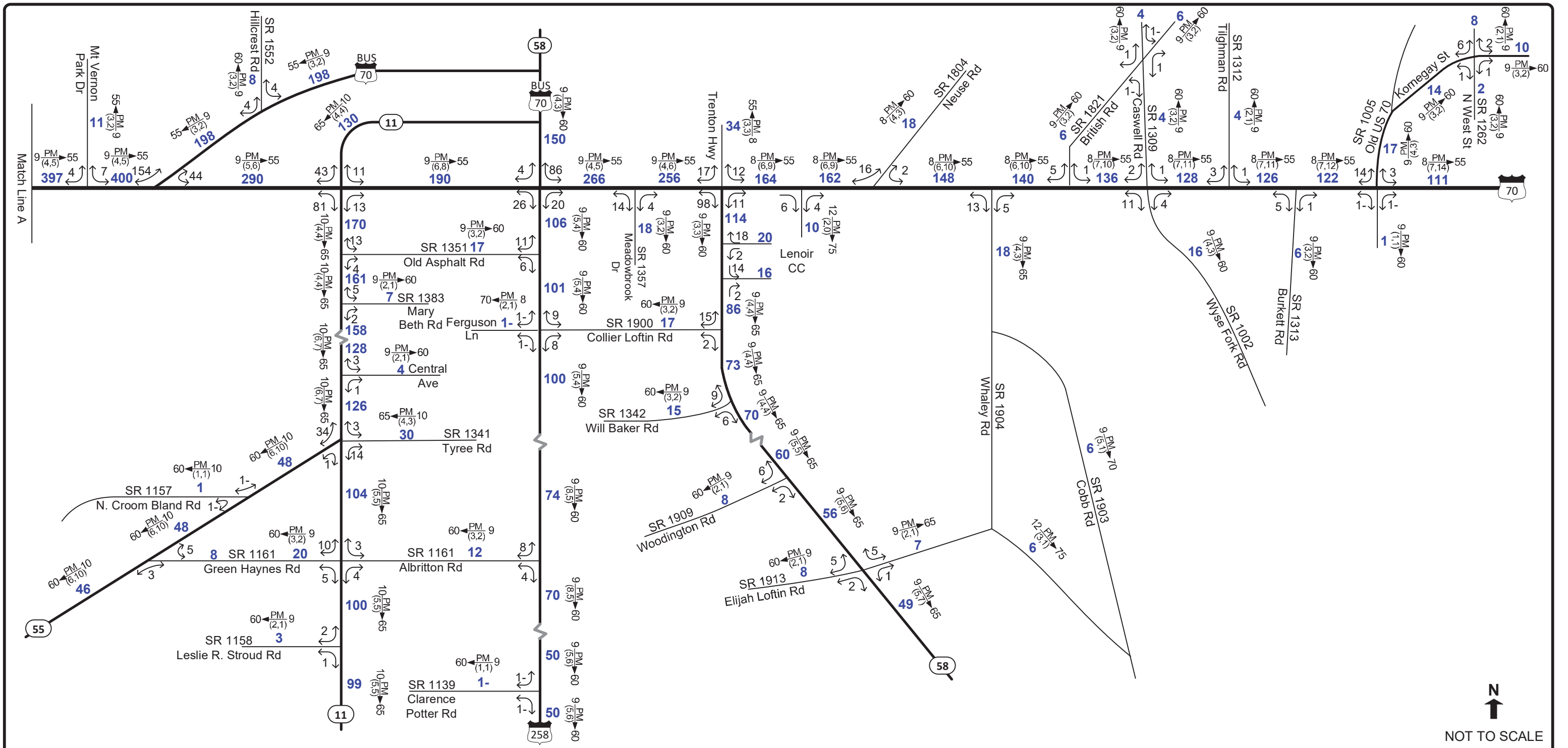


APPENDIX A

R-2553 Traffic Forecast

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2015

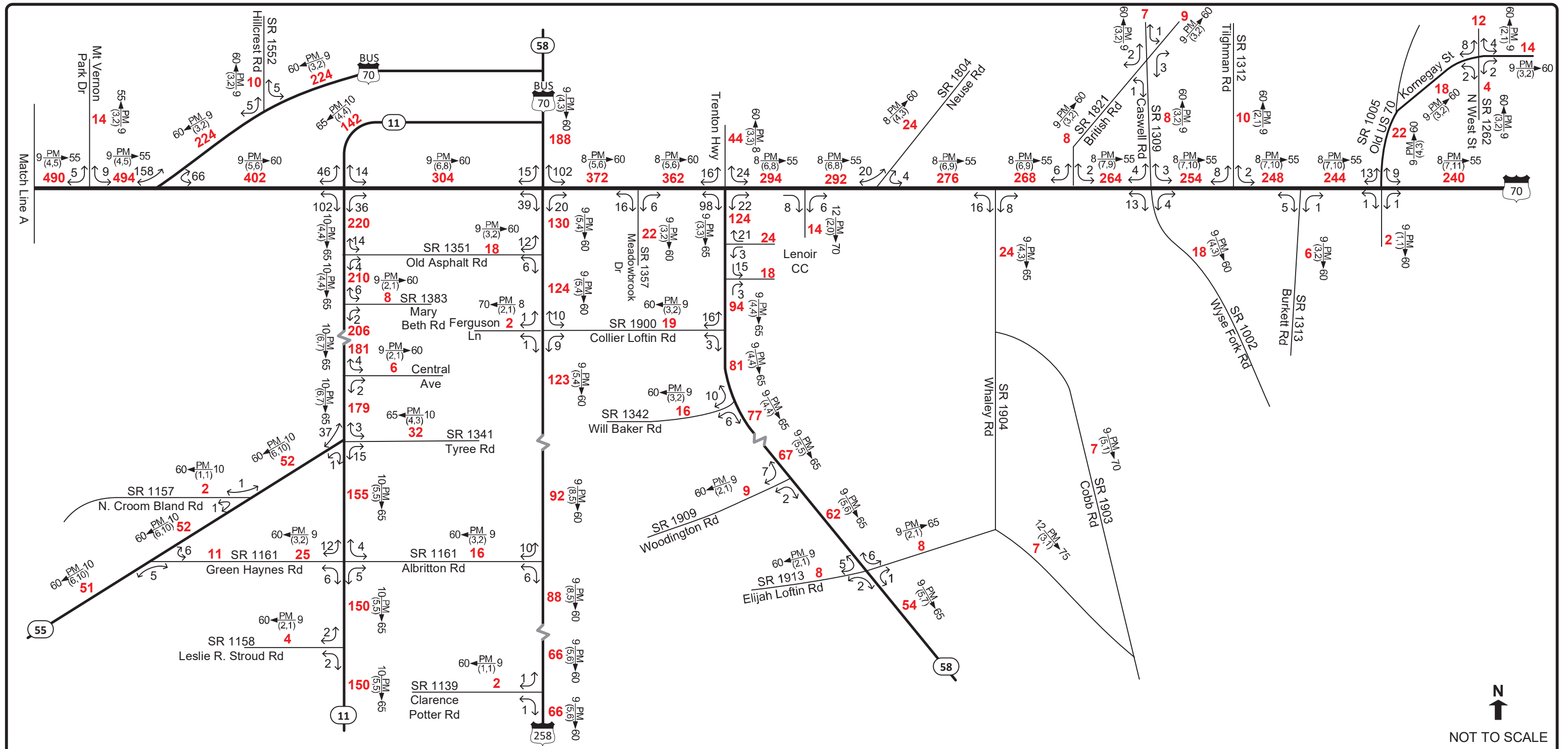
AVERAGE ANNUAL DAILY TRAFFIC

Scenario 1
Base Year

EXISTING CONDITIONS
SHEET 2 OF 2

LEGEND

<ul style="list-style-type: none"> ### Vehicles Per Day (VPD) in 100s 1- Less than 50 VPD X Movement Prohibited — Roadway ● Future Interchange ● Existing Interchange 	<p style="text-align: center;">K PM D (d, t)</p> <ul style="list-style-type: none"> K Design Hour Volume Percentage PM PM Peak Period D Peak Hour Directional Split → Indicates Direction of D (d,t) Duals, TT-STs (%) 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														



2040

AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 14
Horizon Year

NO BUILD ALTERNATIVE
SHEET 2 OF 2

TIP: R-2553

WBS: 34460

COUNTY: Lenoir

DIVISION: 2

DATE: November 7, 2016

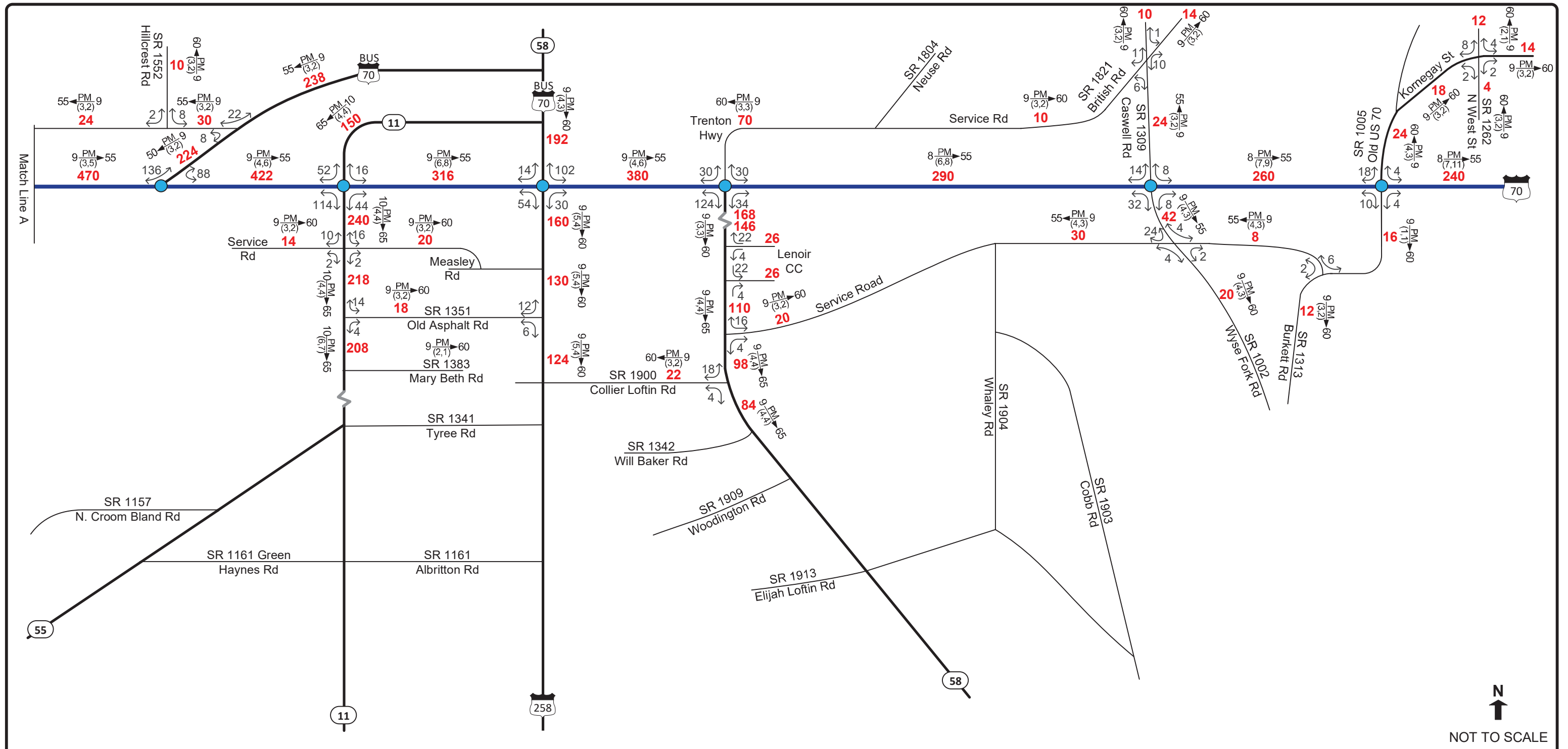
PREPARED BY: Parsons Brinckerhoff

LOCATION: US 70
from west of NC 903 in La Grange
to east of Old US 70 in Dover

PROJECT: US 70 Kinston Bypass

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K PM D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	
--	---	--



2040

AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 15
Horizon Year

BUILD ALTERNATIVE 1
(Upgrade US 70) SHEET 2 OF 2

LEGEND

Vehicles Per Day (VPD) in 100s

1- Less than 50 VPD

X Movement Prohibited

— Roadway

● Future Interchange

● Existing Interchange

K $\xrightarrow{\text{PM}}$ D
(d, t)

K Design Hour Volume Percentage

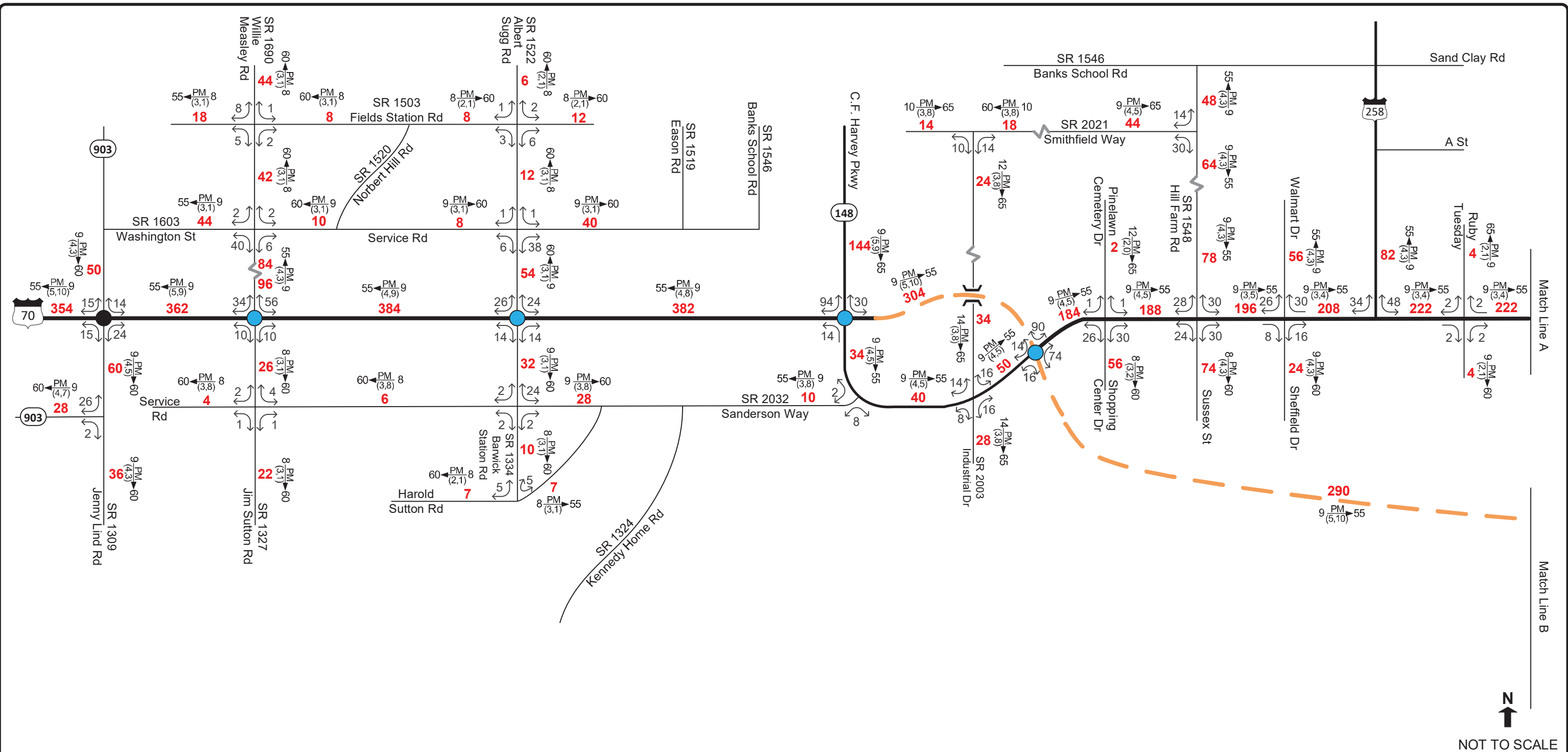
PM PM Peak Period

D Peak Hour Directional Split

→ Indicates Direction of D

(d,t) Duals, TT-STs (%)

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	

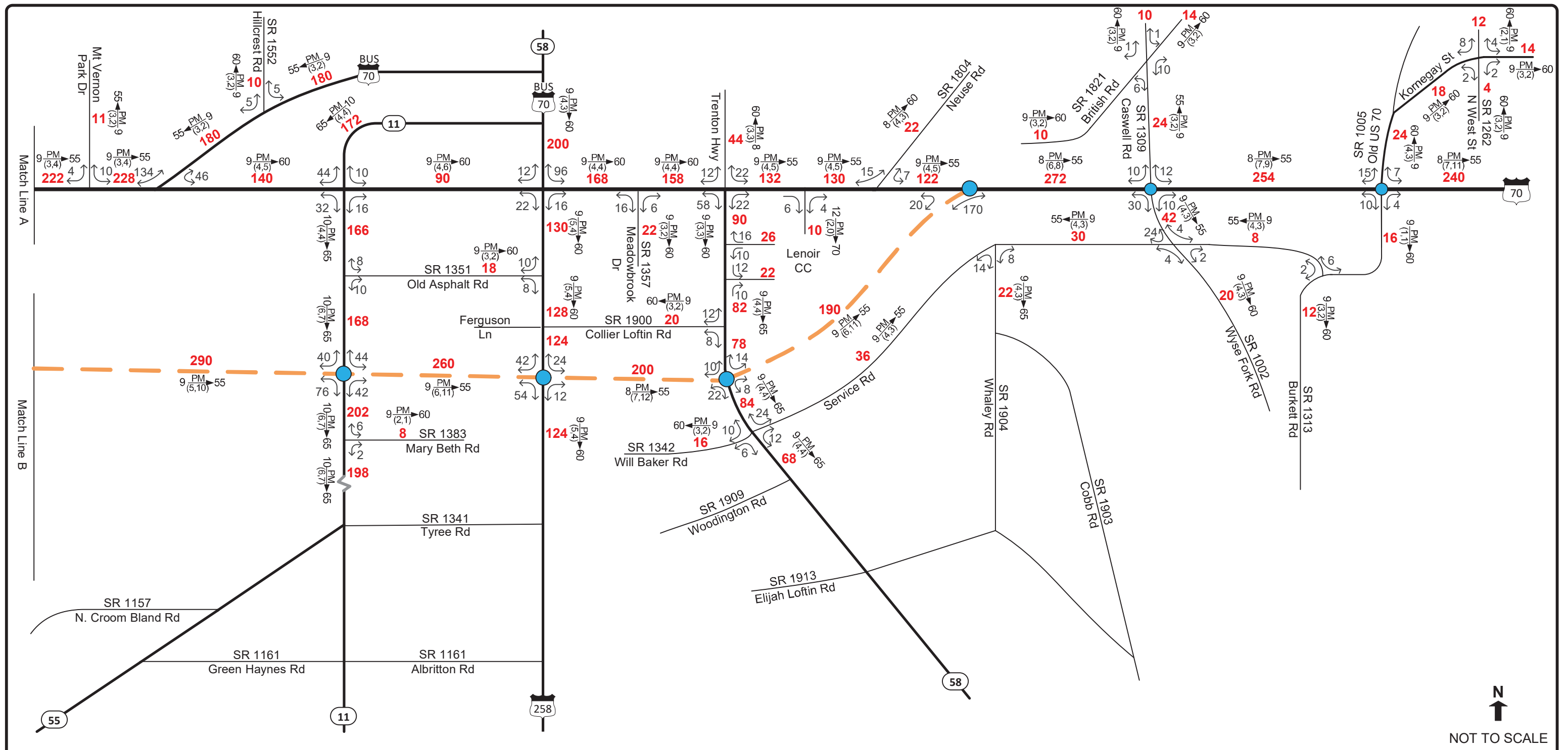


N
NOT TO SCALE



<h1>2040</h1> <p>AVERAGE ANNUAL DAILY TRAFFIC</p>	<p>Scenario 16A Horizon Year</p>	<p>BUILD ALTERNATIVE 1S-S5 (Shallow Bypass) SHEET 1 OF 2</p>	
		<p>TIP: R-2553</p>	<p>WBS: 34460</p>
<p>COUNTY: Lenoir</p>		<p>DIVISION: 2</p>	
<p>DATE: November 7, 2016</p>			
<p>PREPARED BY: Parsons Brinckerhoff</p>			
<p>LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</p>			
<p>PROJECT: US 70 Kinston Bypass</p>			

LEGEND	
###	Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
—	Roadway
●	Future Interchange
●	Existing Interchange
K	Design Hour Volume Percentage
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)



N
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NOT TO SCALE



2040

AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 16A

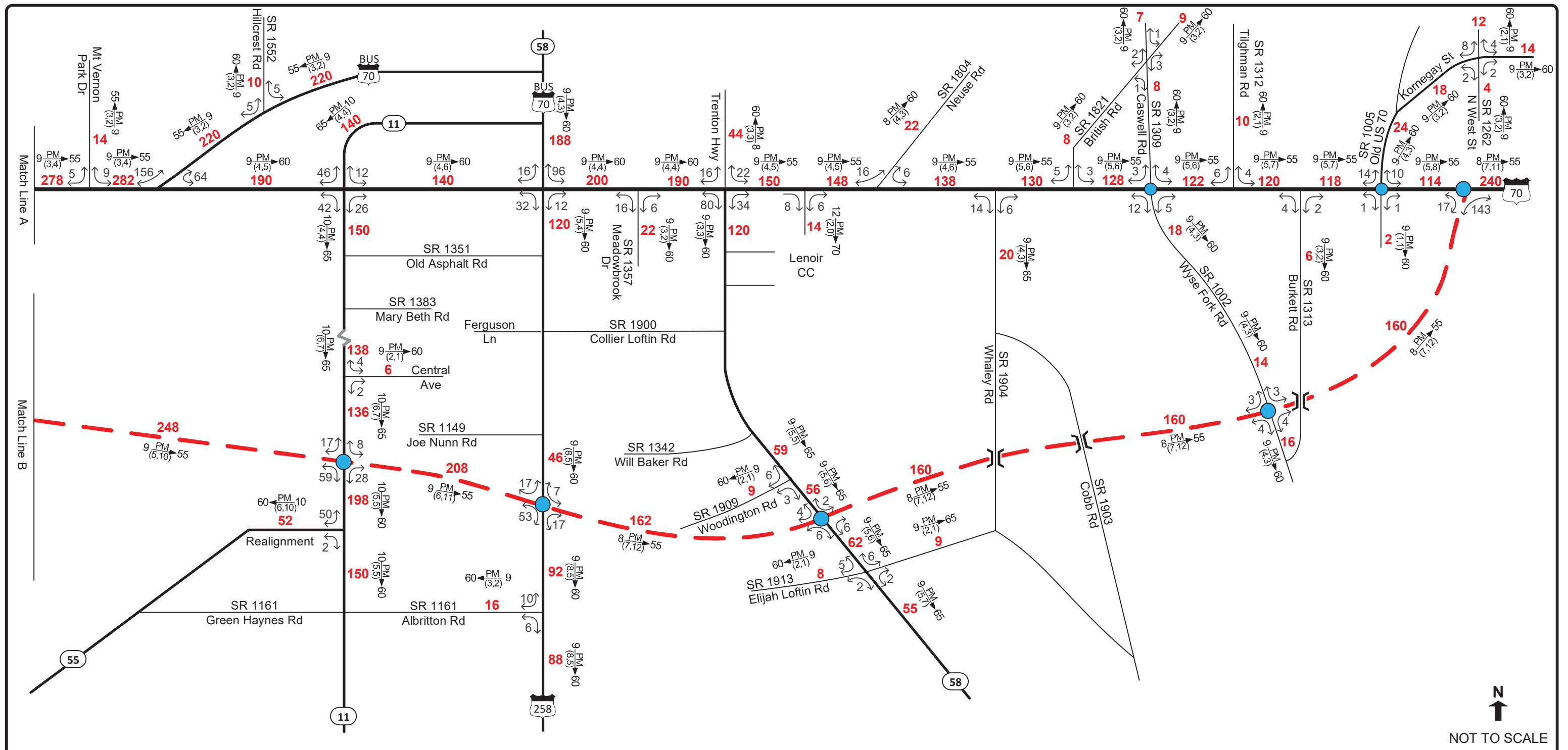
Horizon Year

BUILD ALTERNATIVE 1S-S5

(Shallow Bypass) SHEET 2 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K PM D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														



N
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NOT TO SCALE



2040

AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 17
Horizon Year

BUILD ALTERNATIVE 11
SHEET 2 OF 2

LEGEND

Vehicles Per Day (VPD) in 100s

1- Less than 50 VPD

X Movement Prohibited

— Roadway

● Future Interchange

● Existing Interchange

K PM D
(d, t)

K Design Hour Volume Percentage

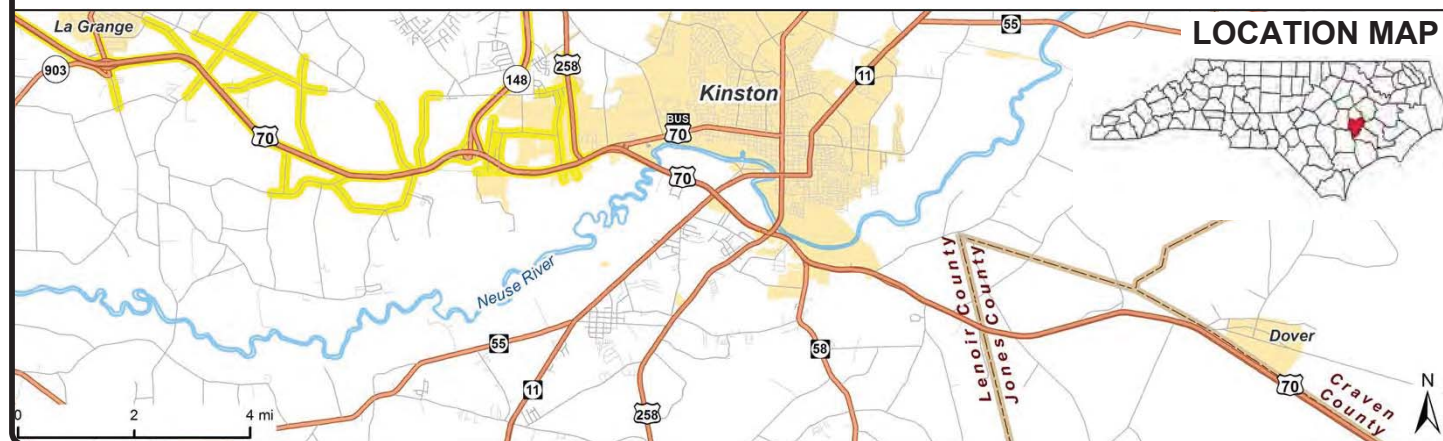
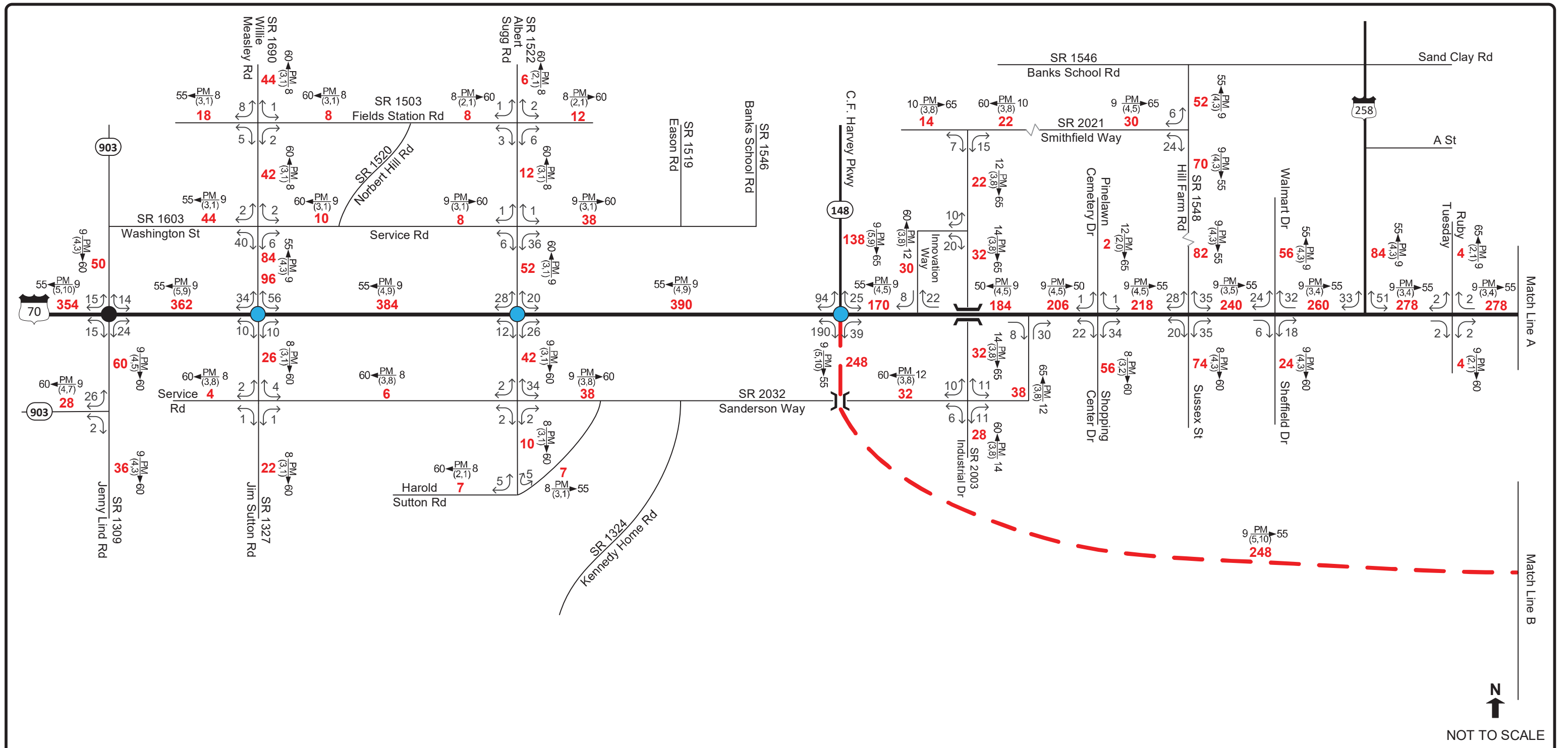
PM PM Peak Period

D Peak Hour Directional Split

→ Indicates Direction of D

(d,t) Duals, TT-STs (%)

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



2040

AVERAGE ANNUAL DAILY TRAFFIC

Scenario 18

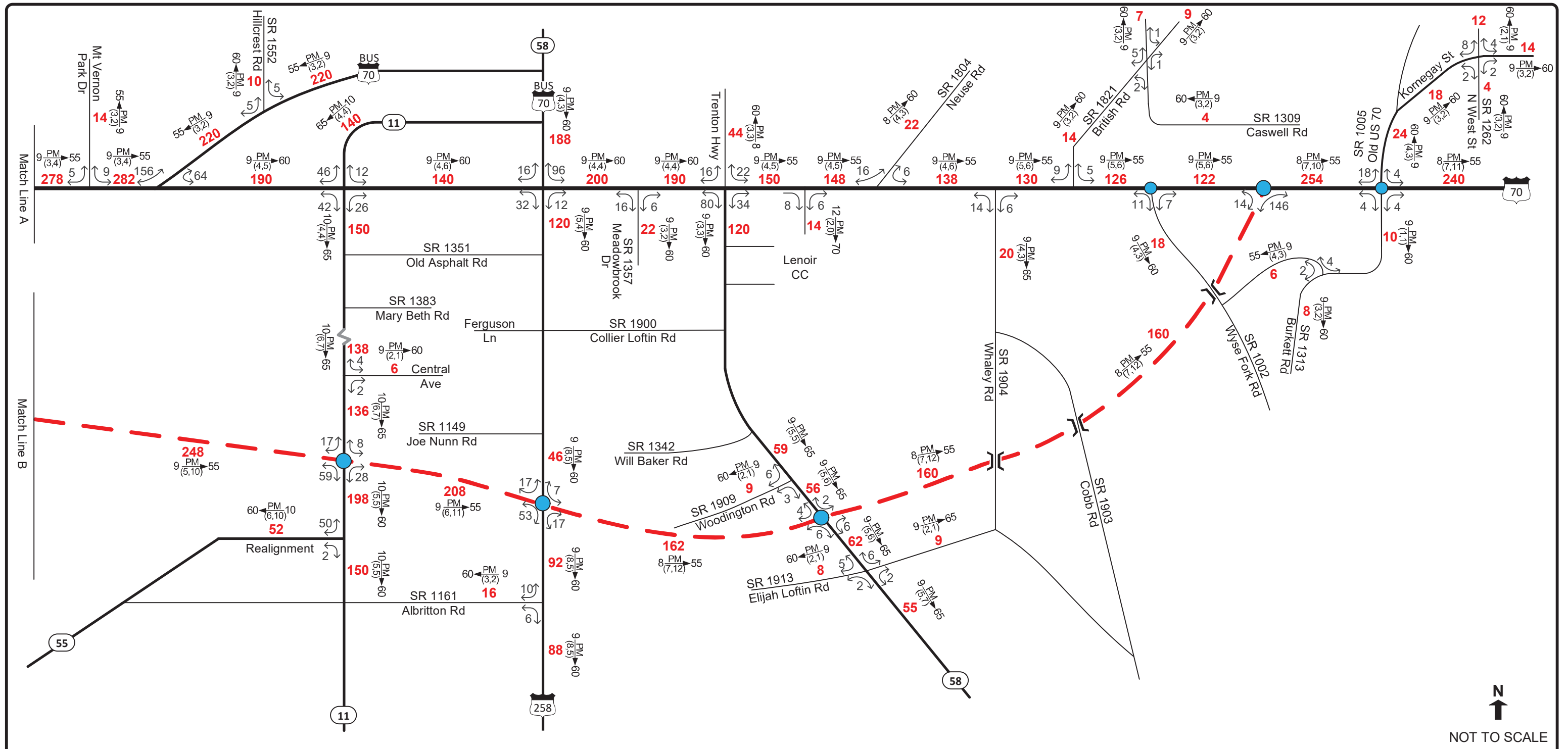
Horizon Year

BUILD ALTERNATIVE 12

SHEET 1 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K $\xrightarrow{\text{PM}}$ D</p> <p style="text-align: center;">(d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														

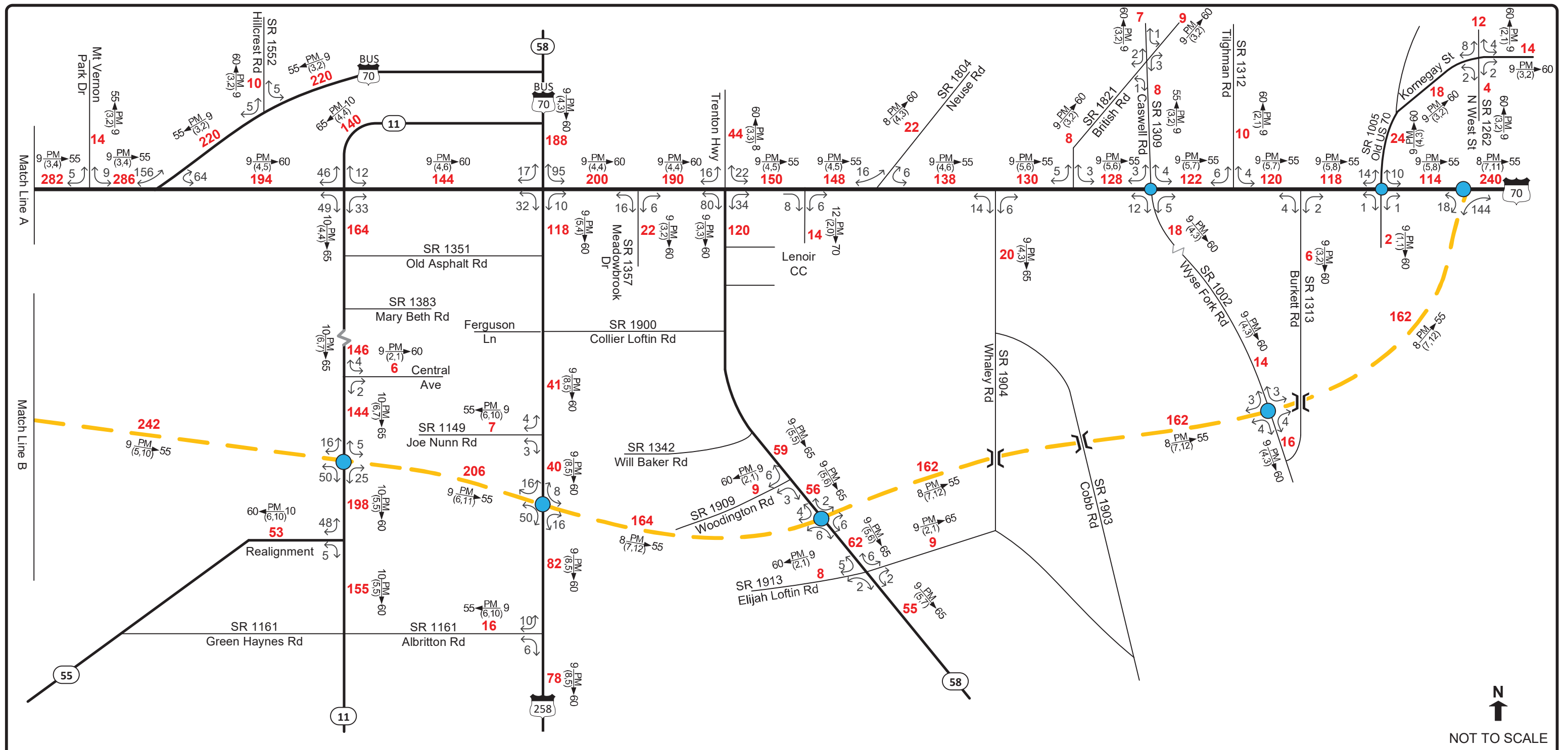


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NOT TO SCALE



<h1>2040</h1>	AVERAGE ANNUAL DAILY TRAFFIC	<h2>Scenario 18</h2> Horizon Year	<h3>BUILD ALTERNATIVE 12</h3> SHEET 2 OF 2	
			LEGEND	
###	Vehicles Per Day (VPD) in 100s	K	$\xrightarrow{\text{PM}}$ Design Hour Volume Percentage	
1-	Less than 50 VPD	PM	\rightarrow PM Peak Period	
X	Movement Prohibited	D	\rightarrow Peak Hour Directional Split	
—	Roadway	\rightarrow	Indicates Direction of D	
●	Future Interchange	(d,t)	Duals, TT-STs (%)	
●	Existing Interchange			

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



2040

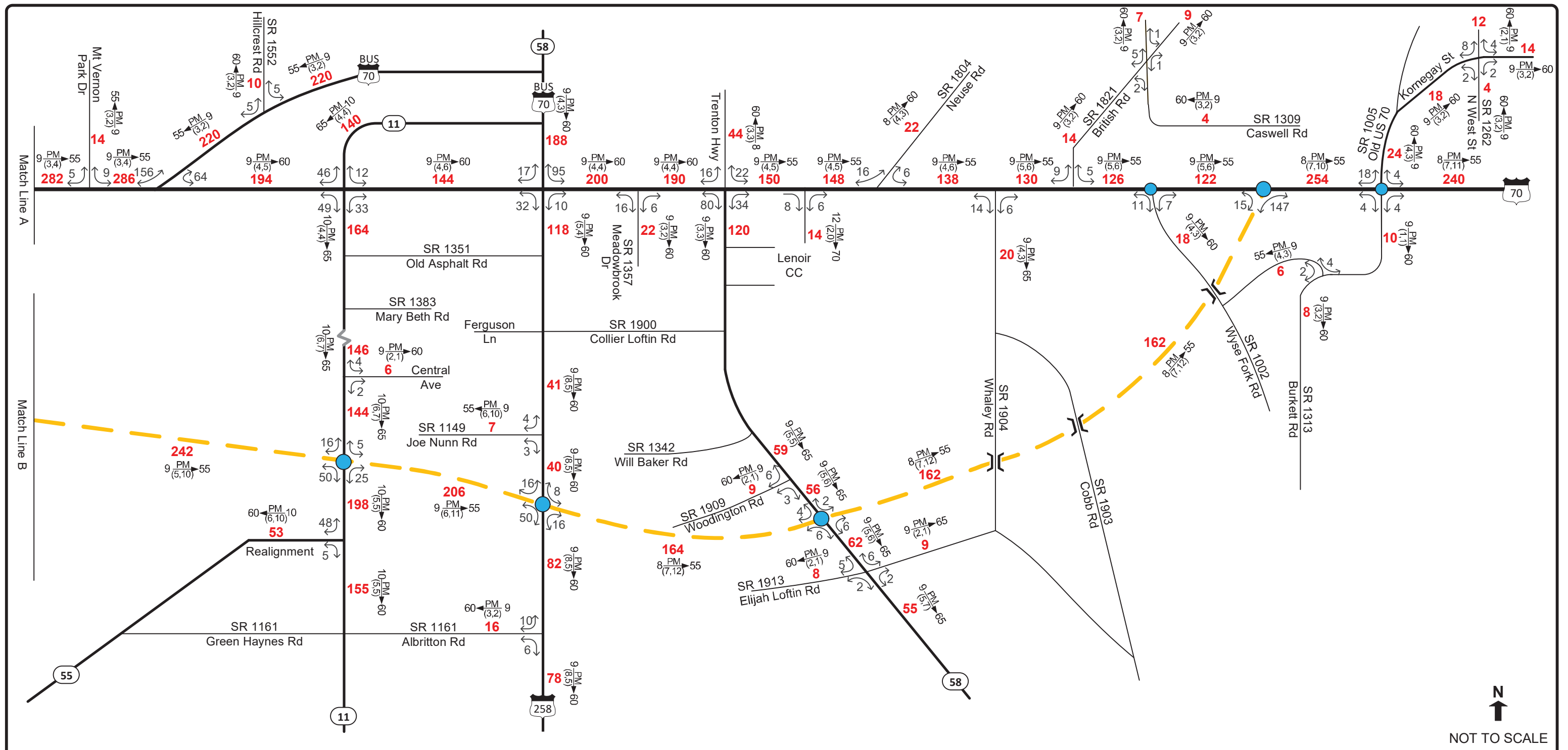
AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 19
Horizon Year

BUILD ALTERNATIVE 31
SHEET 2 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K $\xrightarrow{\text{PM}}$ D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
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COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														

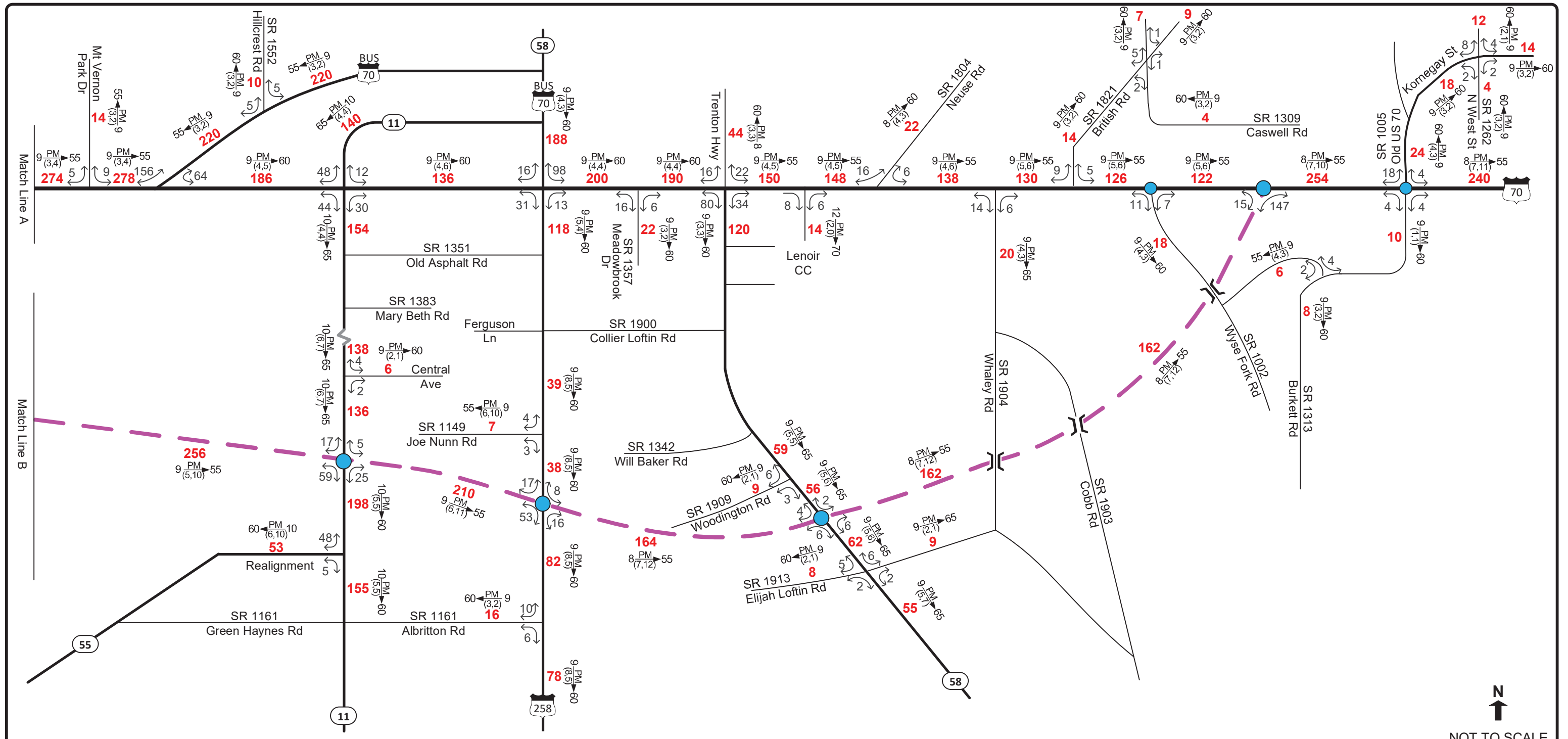


N
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NOT TO SCALE



<h1>2040</h1>	AVERAGE ANNUAL DAILY TRAFFIC	<h2>Scenario 20</h2> Horizon Year	<h3>BUILD ALTERNATIVE 32</h3> SHEET 2 OF 2	
			LEGEND	
###	Vehicles Per Day (VPD) in 100s	K	$\begin{matrix} \text{PM} \\ \leftarrow \text{K} \quad \text{D} \rightarrow \\ \text{(d, t)} \end{matrix}$	
1-	Less than 50 VPD	PM	Design Hour Volume Percentage	
X	Movement Prohibited	D	PM Peak Period	
—	Roadway	→	Peak Hour Directional Split	
● (blue)	Future Interchange	(d,t)	Indicates Direction of D	
● (black)	Existing Interchange	(d,t)	Duals, TT-STs (%)	

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



N
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NOT TO SCALE



2040

AVERAGE ANNUAL
DAILY TRAFFIC

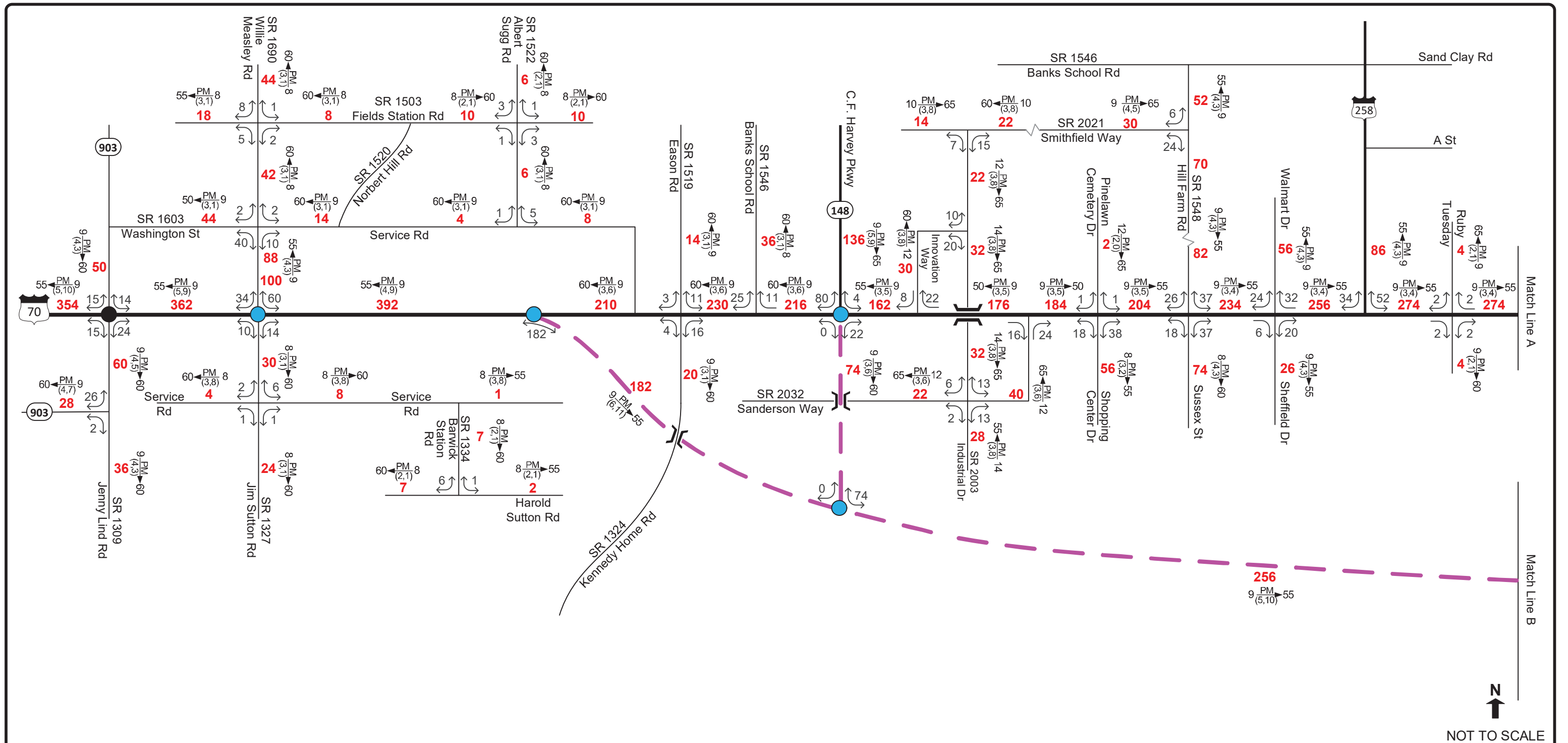
Scenario 25
Horizon Year

BUILD ALTERNATIVE 63
SHEET 2 OF 2

LEGEND

- ### Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Roadway
- Future Interchange
- Existing Interchange
- K Design Hour Volume Percentage
- PM PM Peak Period
- D Peak Hour Directional Split
- Indicates Direction of D
- (d,t) Duals, TT-STs (%)

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



2040

AVERAGE ANNUAL DAILY TRAFFIC

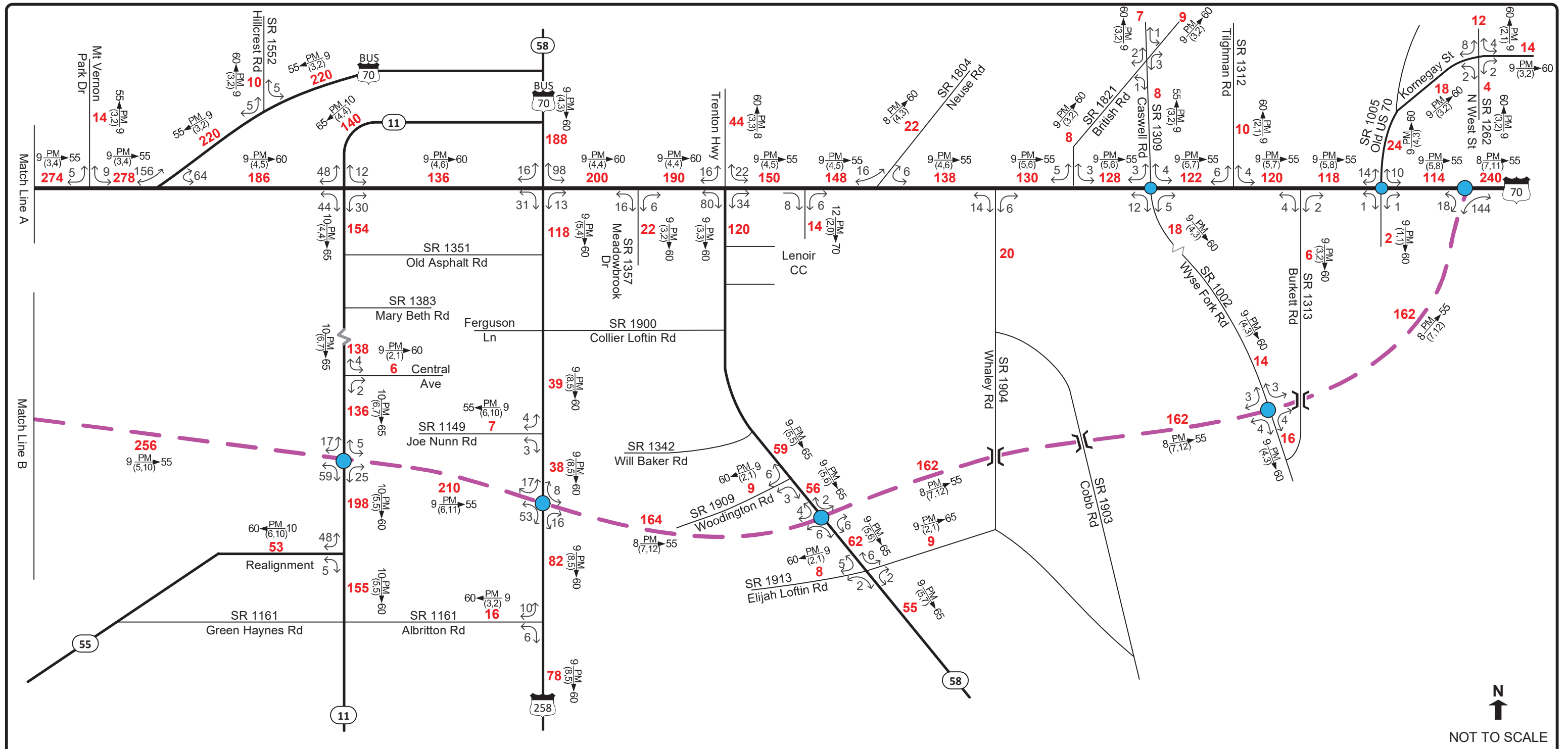
Scenario 26
Horizon Year

BUILD ALTERNATIVE 65
SHEET 1 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K PM D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<p>TIP: R-2553</p> <p>WBS: 34460</p> <p>COUNTY: Lenoir</p> <p>DIVISION: 2</p> <p>DATE: November 7, 2016</p> <p>PREPARED BY: Parsons Brinckerhoff</p> <p>LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</p> <p>PROJECT: US 70 Kinston Bypass</p>
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N
↑
NOT TO SCALE



2040

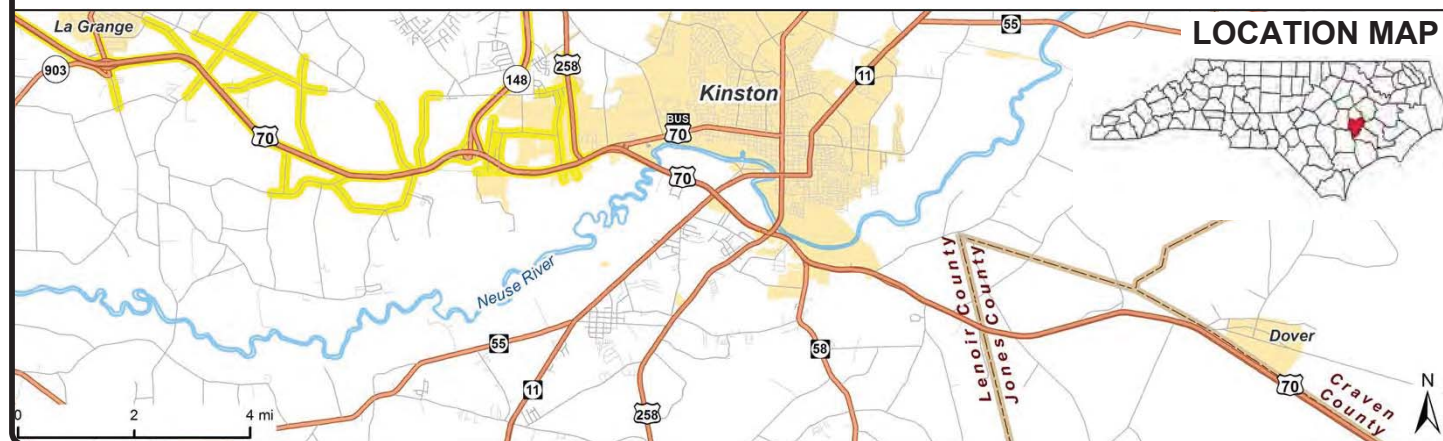
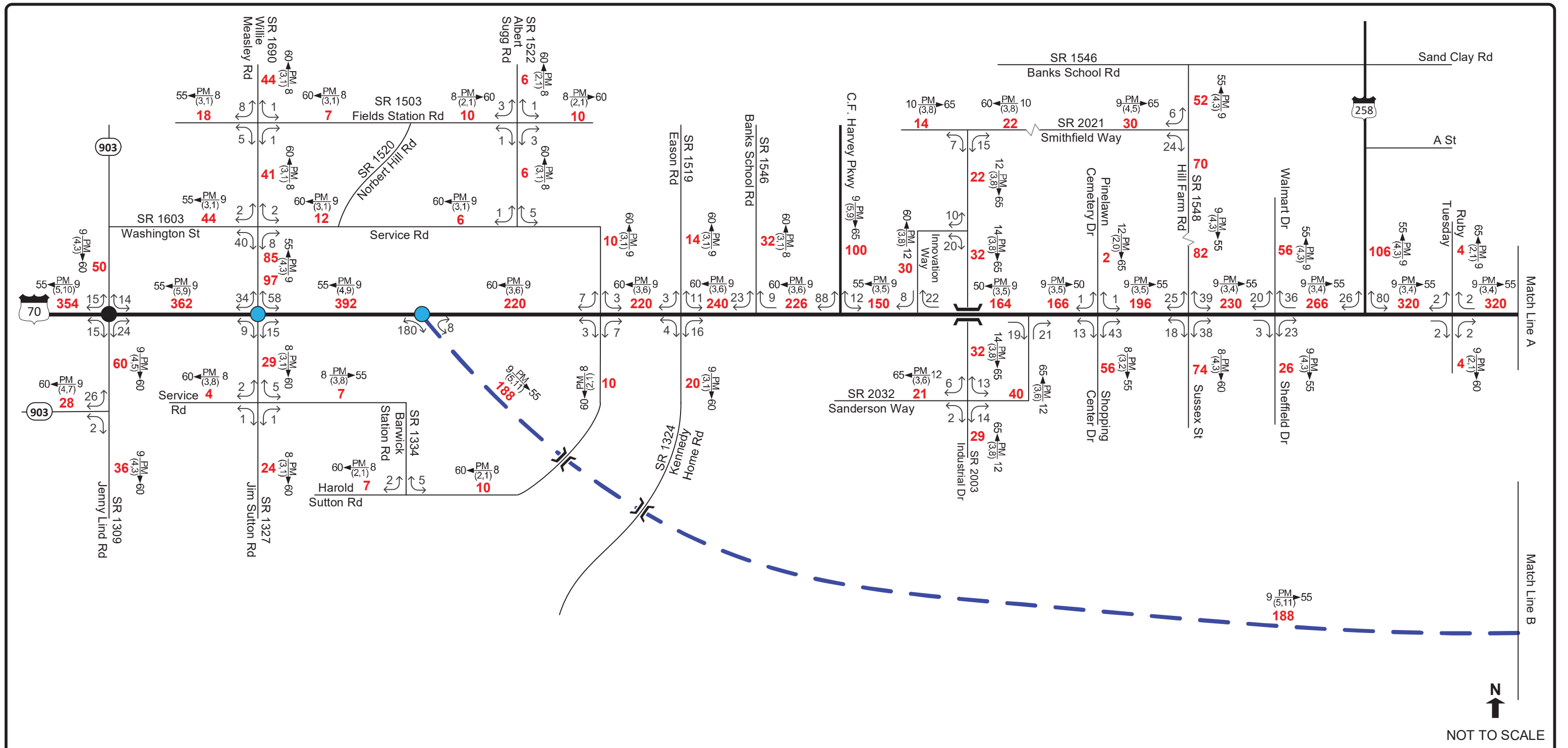
AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 26
Horizon Year

BUILD ALTERNATIVE 65
SHEET 2 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K PM D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														



2040

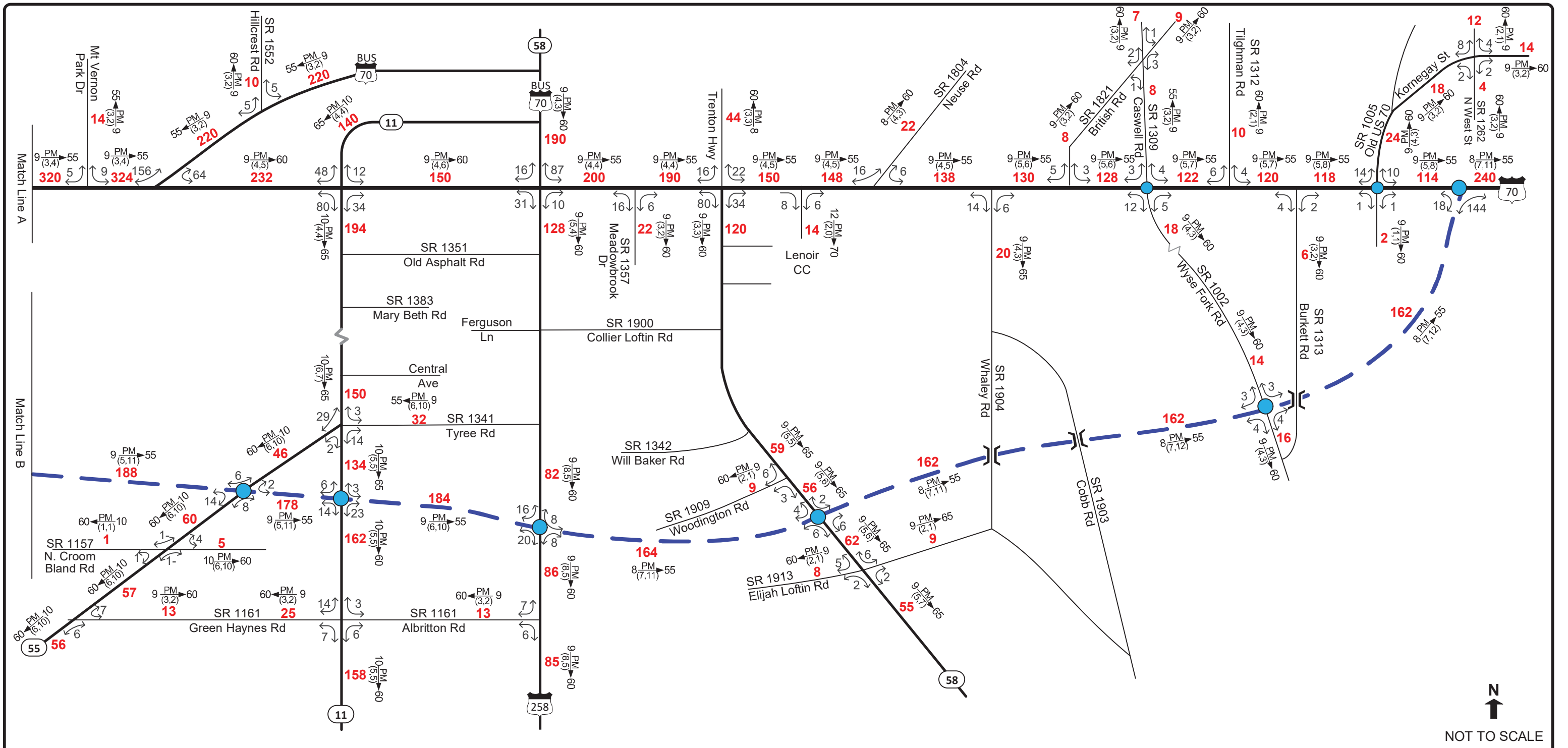
AVERAGE ANNUAL DAILY TRAFFIC

Scenario 23
Horizon Year

BUILD ALTERNATIVE 51
SHEET 1 OF 2

L E G E N D

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K $\xrightarrow{\text{PM}}$ D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														



2040

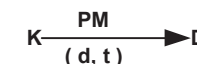
AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 23
Horizon Year

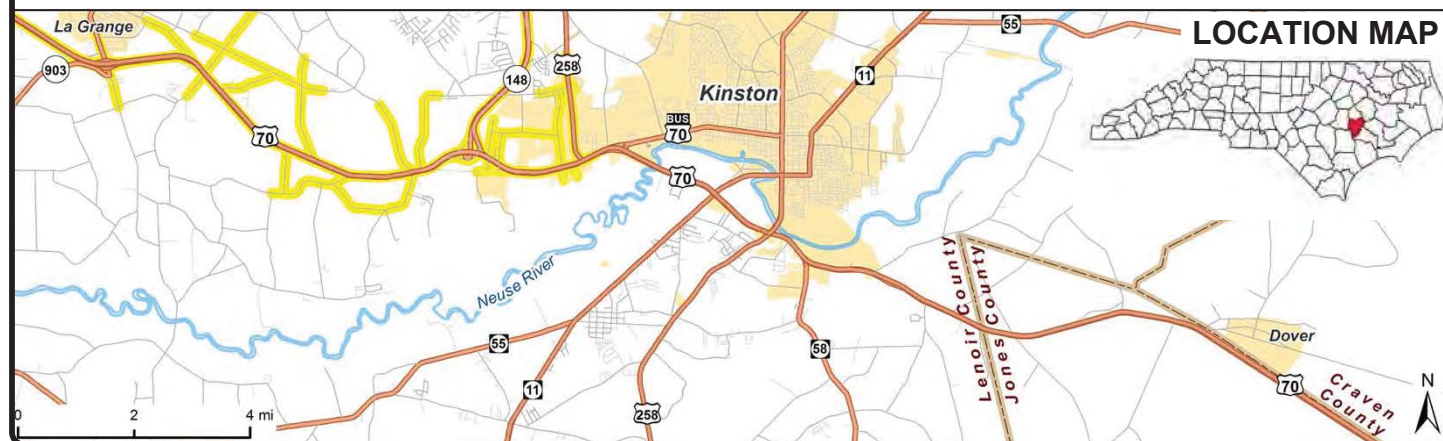
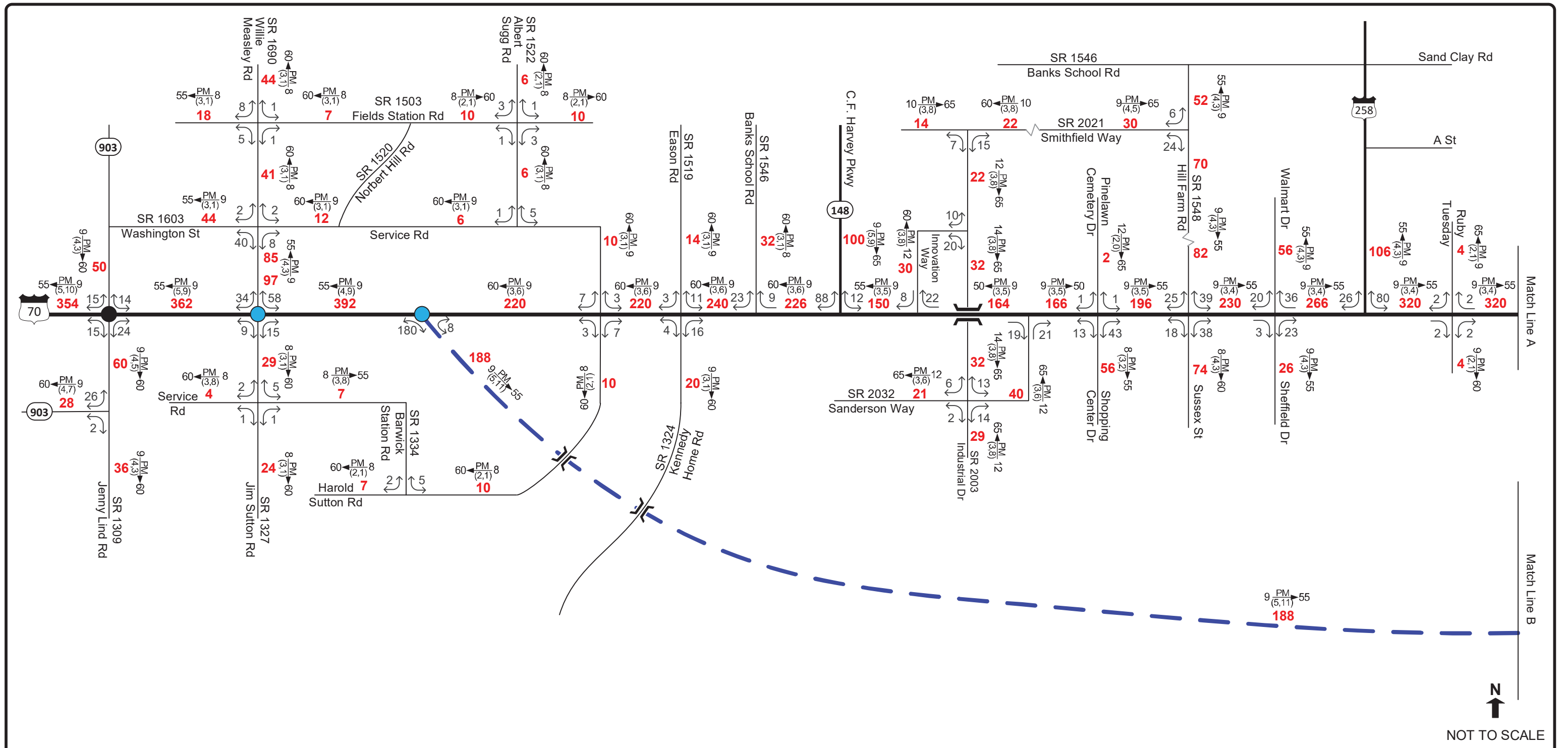
BUILD ALTERNATIVE 51
SHEET 2 OF 2

LEGEND

- ### Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Roadway
- Future Interchange
- Existing Interchange
- K Design Hour Volume Percentage
- PM PM Peak Period
- D Peak Hour Directional Split
- Indicates Direction of D
- (d,t) Duals, TT-STs (%)



TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



2040

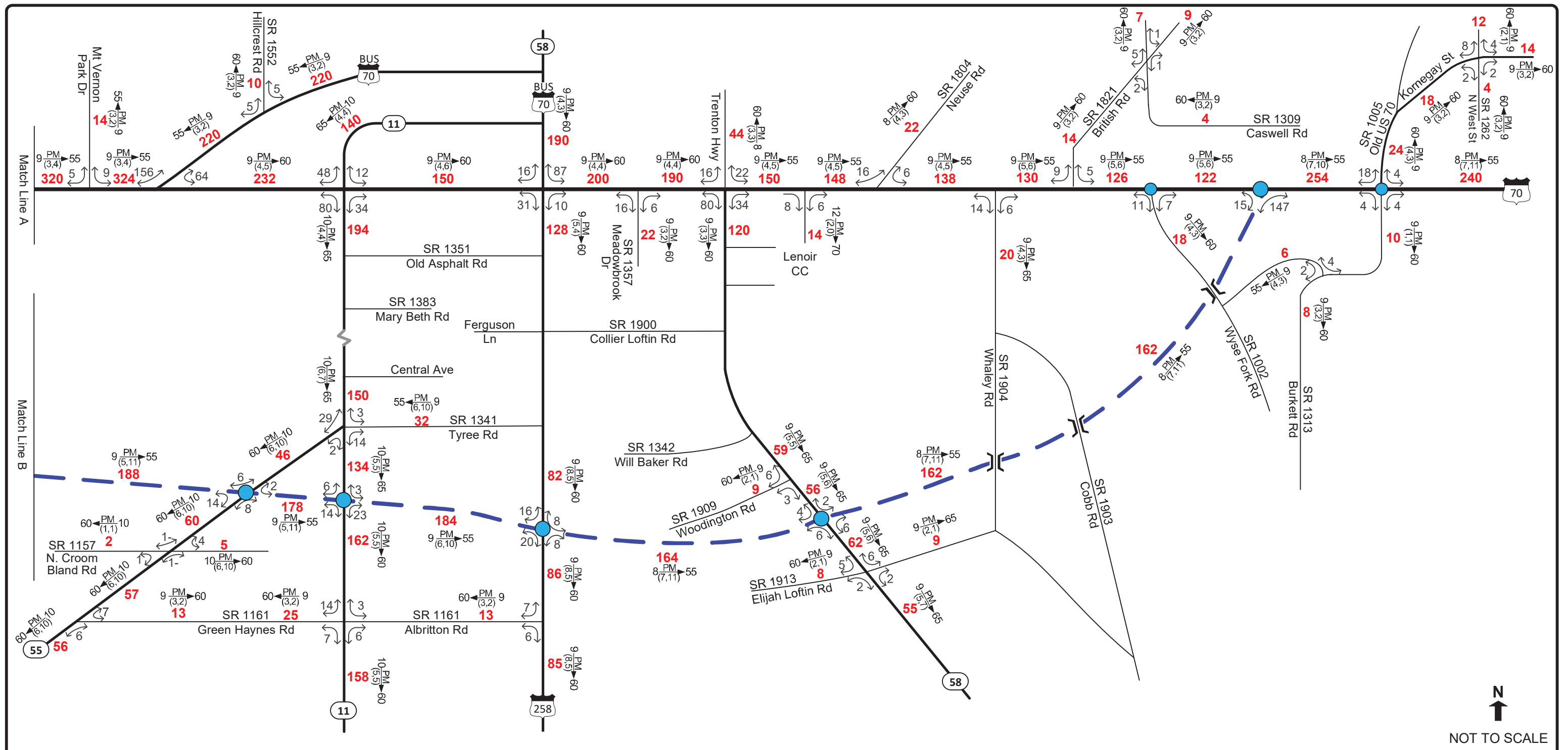
AVERAGE ANNUAL DAILY TRAFFIC

Scenario 24
Horizon Year

BUILD ALTERNATIVE 52
SHEET 1 OF 2

L E G E N D

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K $\xrightarrow{\text{PM}}$ D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														



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NOT TO SCALE



2040

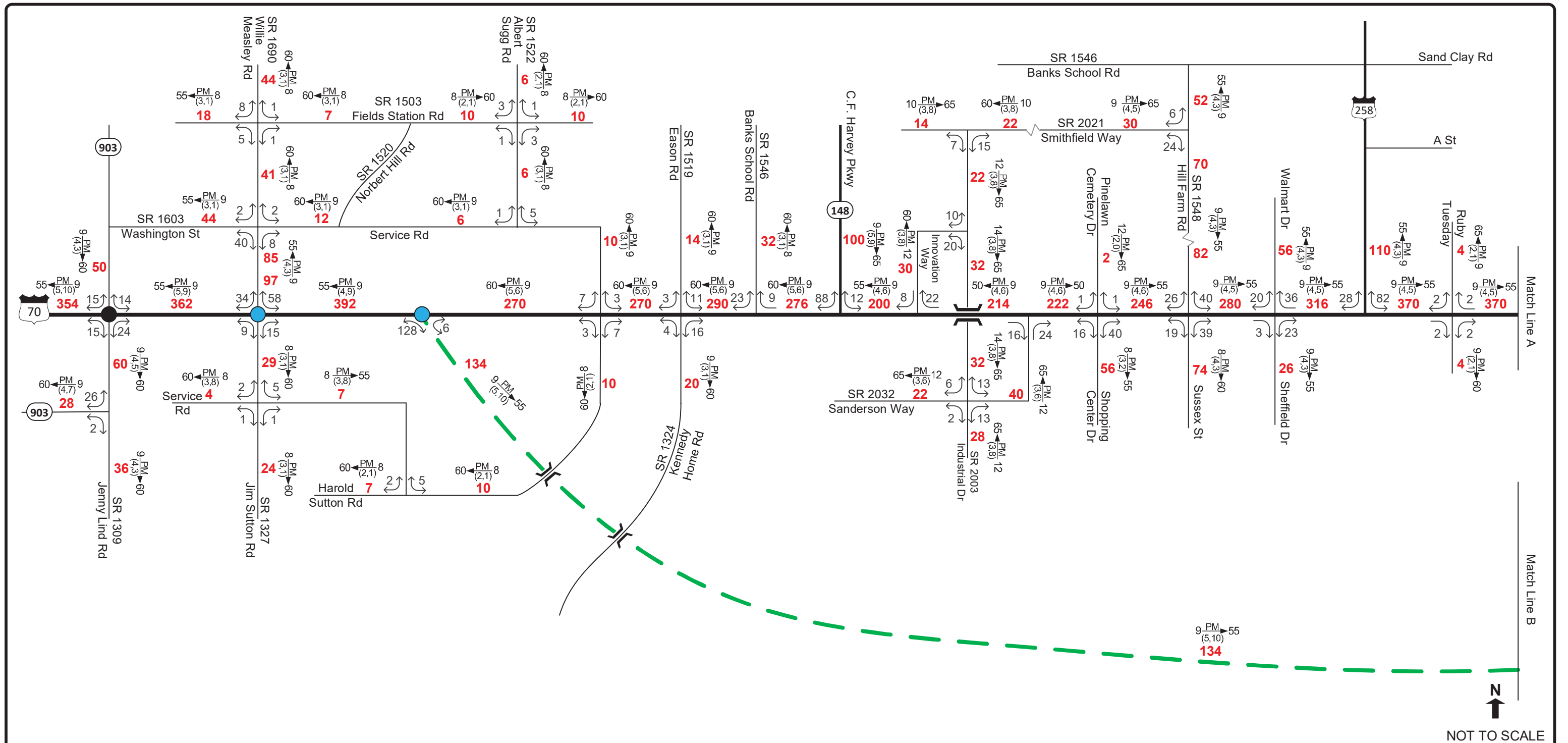
AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 24
Horizon Year

BUILD ALTERNATIVE 52
SHEET 2 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K PM → D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">TIP: R-2553</td> <td style="padding: 2px;">WBS: 34460</td> </tr> <tr> <td style="padding: 2px;">COUNTY: Lenoir</td> <td style="padding: 2px;">DIVISION: 2</td> </tr> <tr> <td colspan="2" style="padding: 2px;">DATE: November 7, 2016</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PREPARED BY: Parsons Brinckerhoff</td> </tr> <tr> <td colspan="2" style="padding: 2px;">LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</td> </tr> <tr> <td colspan="2" style="padding: 2px;">PROJECT: US 70 Kinston Bypass</td> </tr> </table>	TIP: R-2553	WBS: 34460	COUNTY: Lenoir	DIVISION: 2	DATE: November 7, 2016		PREPARED BY: Parsons Brinckerhoff		LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover		PROJECT: US 70 Kinston Bypass	
TIP: R-2553	WBS: 34460													
COUNTY: Lenoir	DIVISION: 2													
DATE: November 7, 2016														
PREPARED BY: Parsons Brinckerhoff														
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover														
PROJECT: US 70 Kinston Bypass														



2040

AVERAGE ANNUAL DAILY TRAFFIC

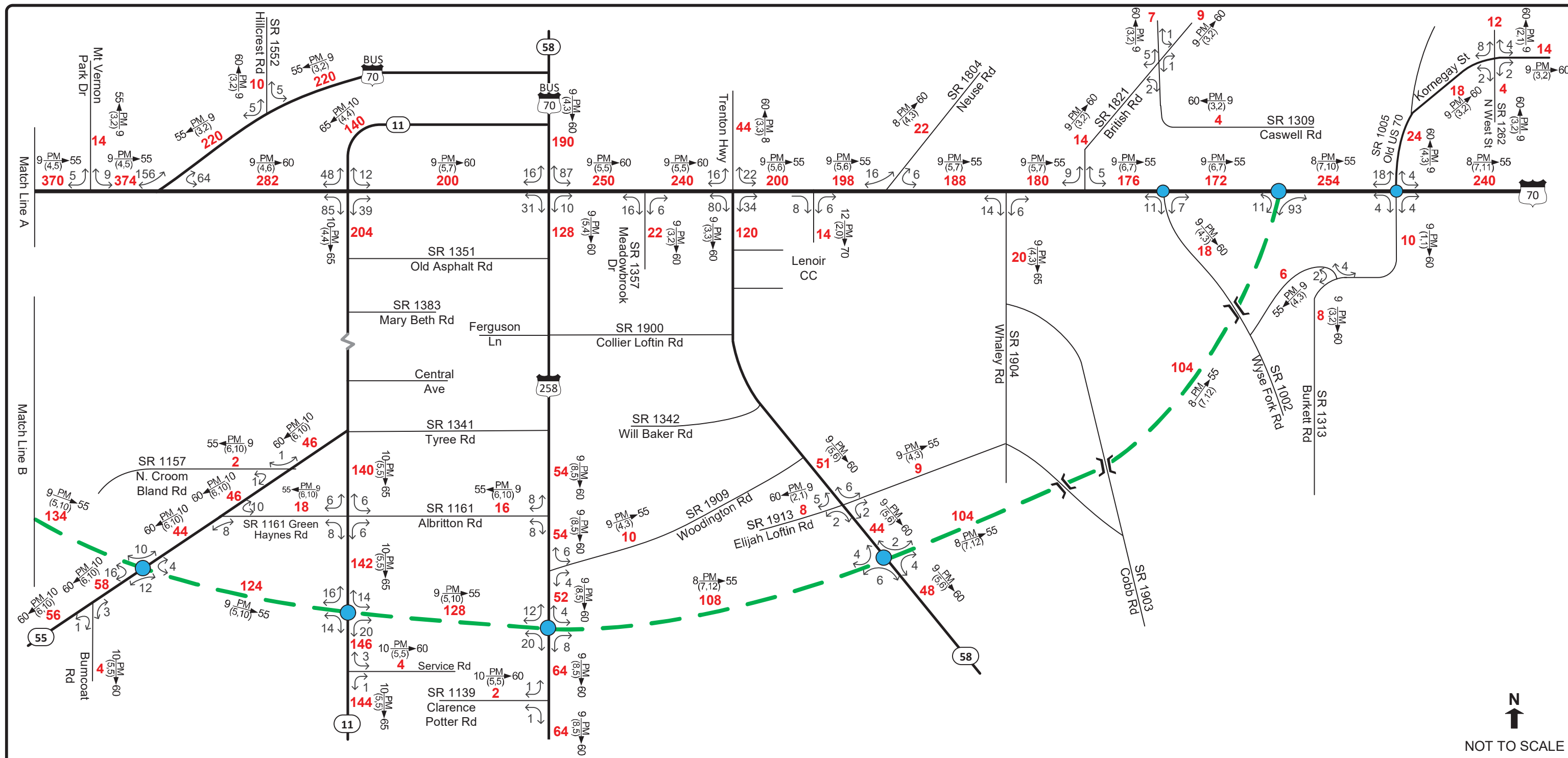
Scenario 21
Horizon Year

BUILD ALTERNATIVE 35
SHEET 1 OF 2

LEGEND

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p style="text-align: center;">K $\xrightarrow{\text{PM}}$ D (d, t)</p> <p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>	<p>TIP: R-2553</p> <p>WBS: 34460</p> <p>COUNTY: Lenoir</p> <p>DIVISION: 2</p> <p>DATE: November 7, 2016</p> <p>PREPARED BY: Parsons Brinckerhoff</p> <p>LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover</p> <p>PROJECT: US 70 Kinston Bypass</p>
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NOT TO SCALE



2040

AVERAGE ANNUAL
DAILY TRAFFIC

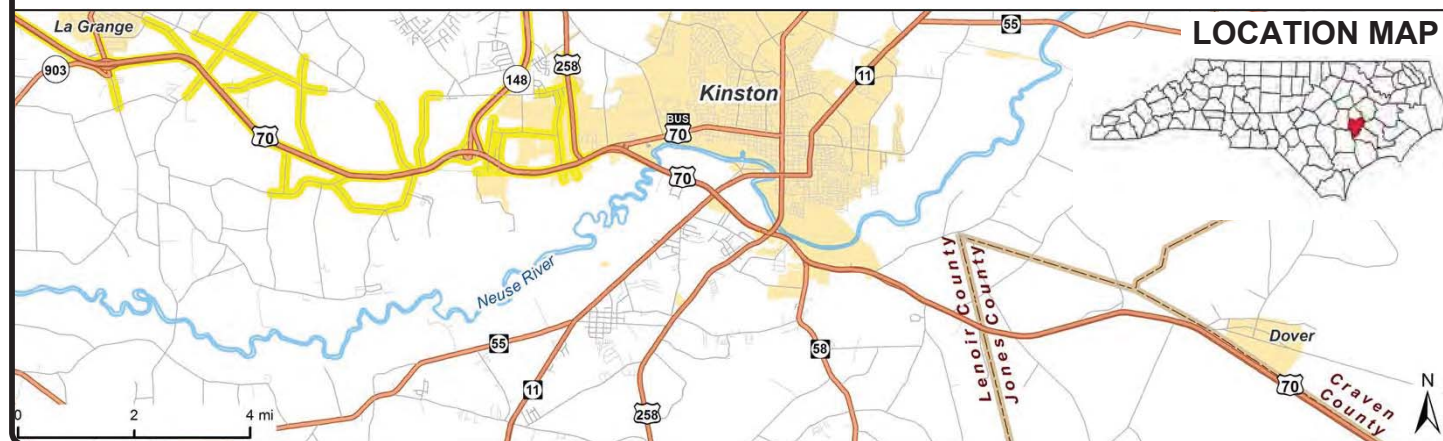
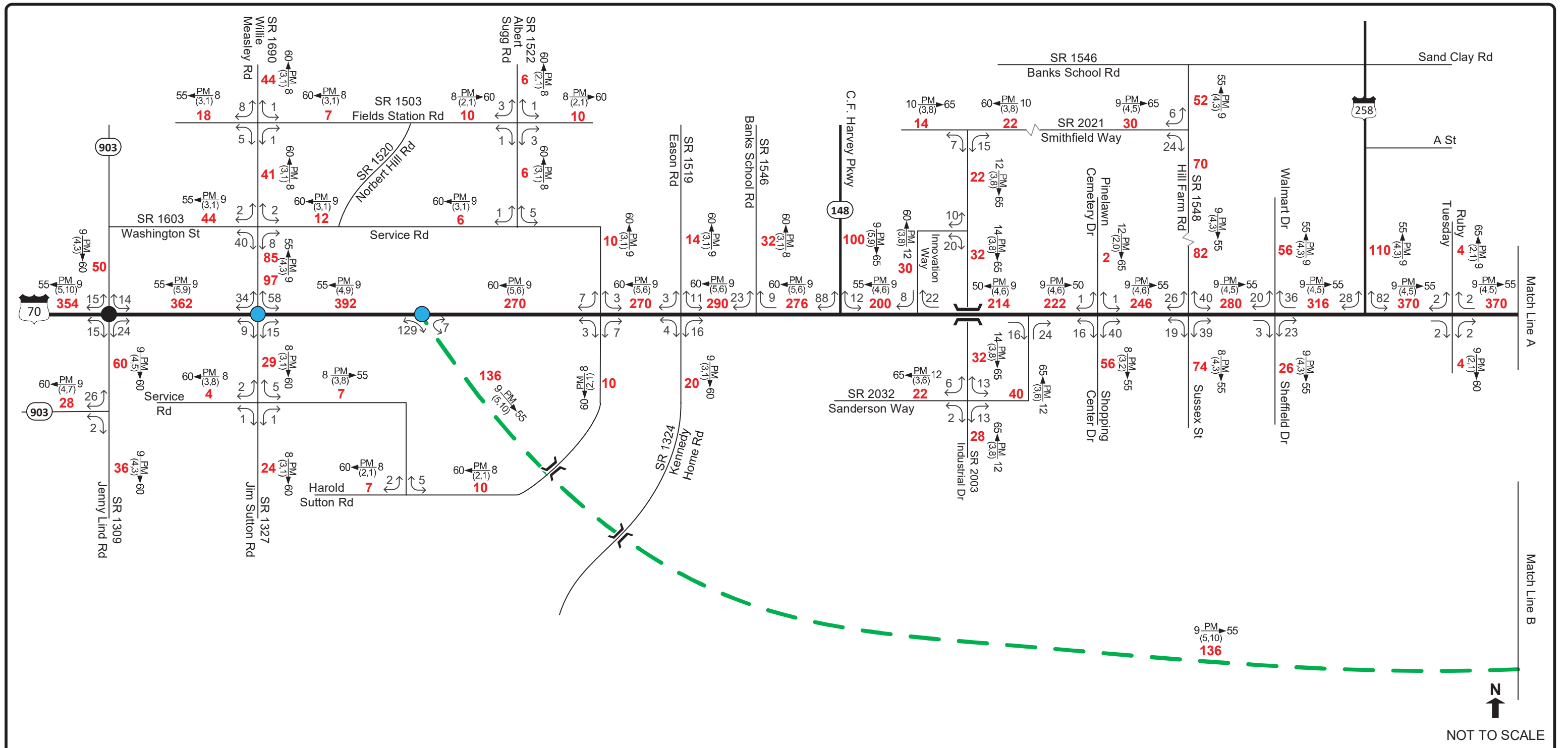
Scenario 21
Horizon Year

BUILD ALTERNATIVE 35
SHEET 2 OF 2

LEGEND

- ### Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Roadway
- Future Interchange
- Existing Interchange
- K Design Hour Volume Percentage
- PM PM Peak Period
- D Peak Hour Directional Split
- Indicates Direction of D
- (d,t) Duals, TT-STs (%)

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



2040

AVERAGE ANNUAL DAILY TRAFFIC

Scenario 22
Horizon Year

BUILD ALTERNATIVE 36
SHEET 1 OF 2

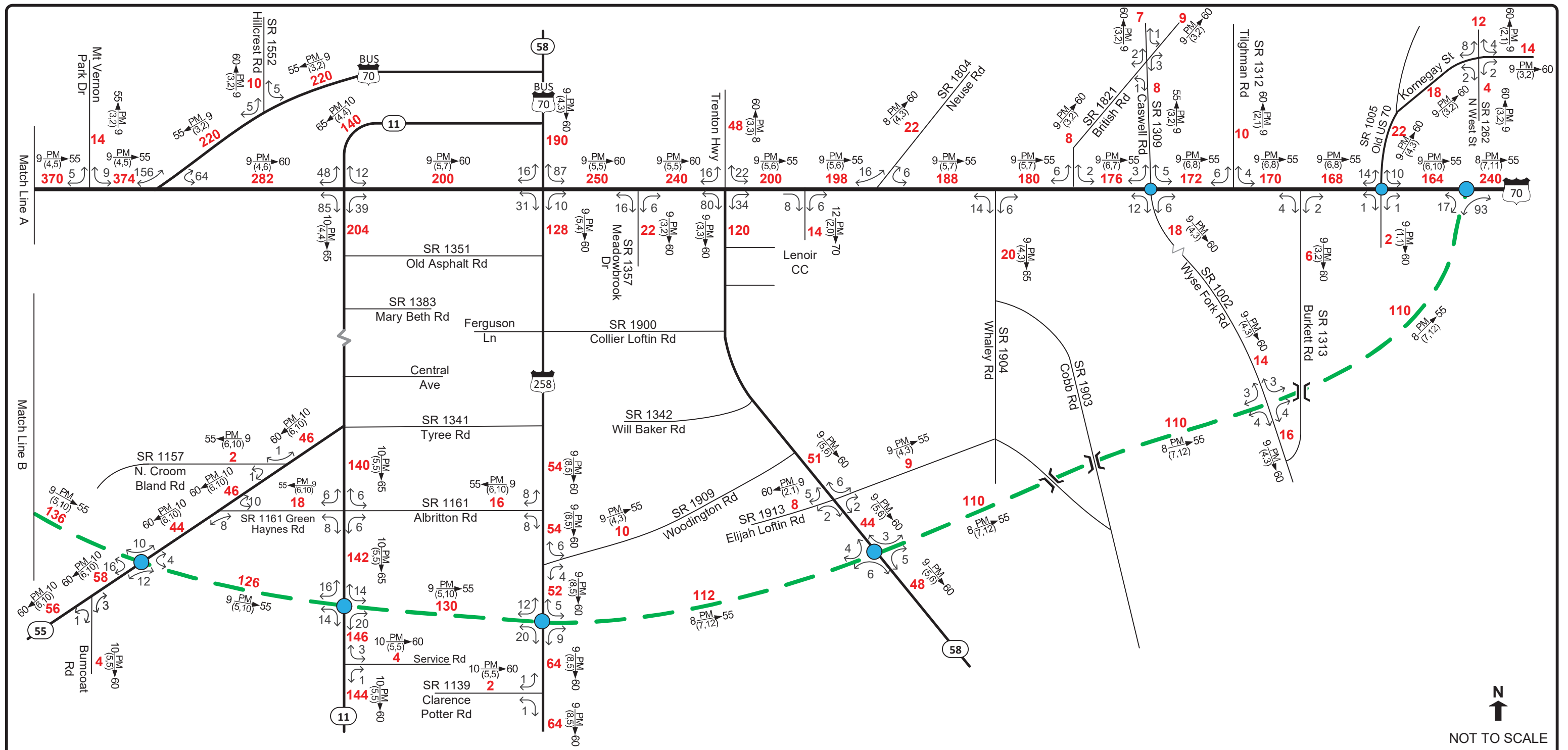
L E G E N D

<p>### Vehicles Per Day (VPD) in 100s</p> <p>1- Less than 50 VPD</p> <p>X Movement Prohibited</p> <p>— Roadway</p> <p>● Future Interchange</p> <p>● Existing Interchange</p>	<p>K Design Hour Volume Percentage</p> <p>PM PM Peak Period</p> <p>D Peak Hour Directional Split</p> <p>→ Indicates Direction of D</p> <p>(d,t) Duals, TT-STs (%)</p>
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NOT TO SCALE

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TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	



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NOT TO SCALE



2040

AVERAGE ANNUAL
DAILY TRAFFIC

Scenario 22
Horizon Year

BUILD ALTERNATIVE 36
SHEET 2 OF 2

LEGEND

Vehicles Per Day (VPD) in 100s

1- Less than 50 VPD

X Movement Prohibited

— Roadway

● Future Interchange

● Existing Interchange

K $\xrightarrow{\text{PM}}$ D
(d, t)

K Design Hour Volume Percentage

PM PM Peak Period

D Peak Hour Directional Split

→ Indicates Direction of D

(d,t) Duals, TT-STs (%)

TIP: R-2553	WBS: 34460
COUNTY: Lenoir	DIVISION: 2
DATE: November 7, 2016	
PREPARED BY: Parsons Brinckerhoff	
LOCATION: US 70 from west of NC 903 in La Grange to east of Old US 70 in Dover	
PROJECT: US 70 Kinston Bypass	

APPENDIX B

2015 No-Build Alternative

Peak Hour Traffic Volume Development and

Synchro & SimTraffic Reports

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**2015 No-Build Alternative
Peak Hour Traffic Volume
Development**

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2015 No Build Alternative

Volume Development

A project-level traffic forecast, titled "Traffic Forecast Technical Memorandum, Kinston Bypass Alternatives Study", was prepared and finalized in November, 2016. This traffic forecast was used to provide peak hour volumes for the analysis of the selected alternatives in this memorandum. The traffic forecast is included in **Attachment A**.

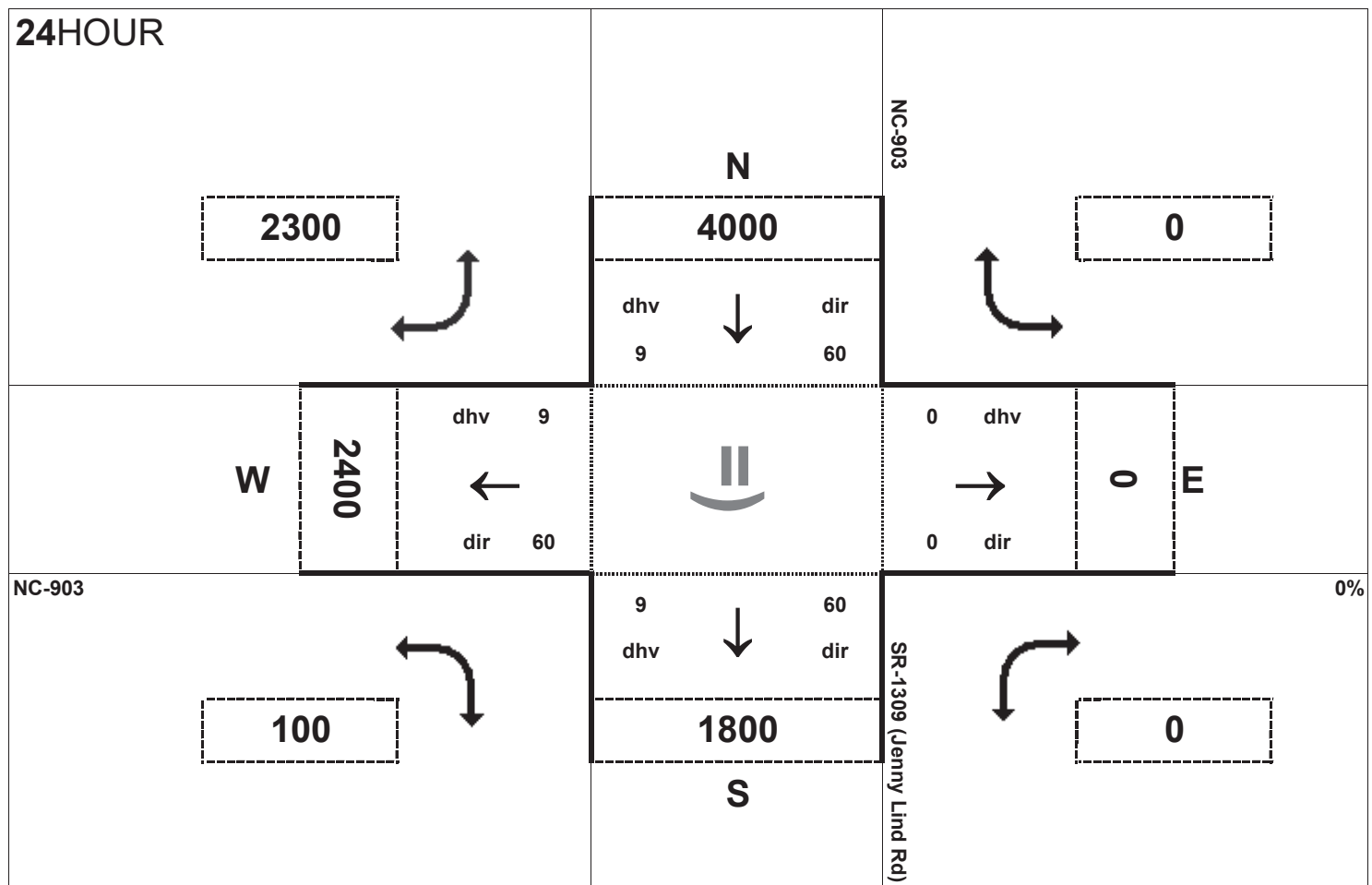
The Intersection Analysis Utility (IAU), provided by NCDOT, was utilized to calculate AM and PM Peak Hour volumes for all intersections and interchanges.

There were several intersections where the traffic forecast indicated less than 100 vehicles per day (shown as "-1") for a certain turning movements. For most locations, zero was used as the input for these movements in the IAUs. However, some locations required an input of 50 vehicles per day to allow for a balanced intersection. This occurred at Intersection 420, Intersection 432 and Intersection 461.

The intersections of NC 58 and the Lenoir Community College driveways (Intersections 450 and 451) were missing volume information and K and D values in the forecast. The K and D values for the Lenoir CC driveways were assumed based on NC 58 K and D values in that area. The volume on the leg of NC 58 between the northern and southern driveways was calculated; the turning movements out of and into the driveways were added and subtracted from the volume on NC 58 just south of US 70.

The intersection of SR 1552 (Hillcrest Road) is displayed in the traffic forecast as being a T intersection on US 70 Bus, separate from the US 70/US 70 Bus system interchange, when it is actually a fourth leg of that interchange. As such, volumes between those respective IAUs interact with each other, and so have been redistributed by weighted proportions. The calculations and final volumes for Intersection 430 and 1430 may be found in the ensuing pages of this appendix. Peak hour volumes are shown in **Figures 1A-1H**.

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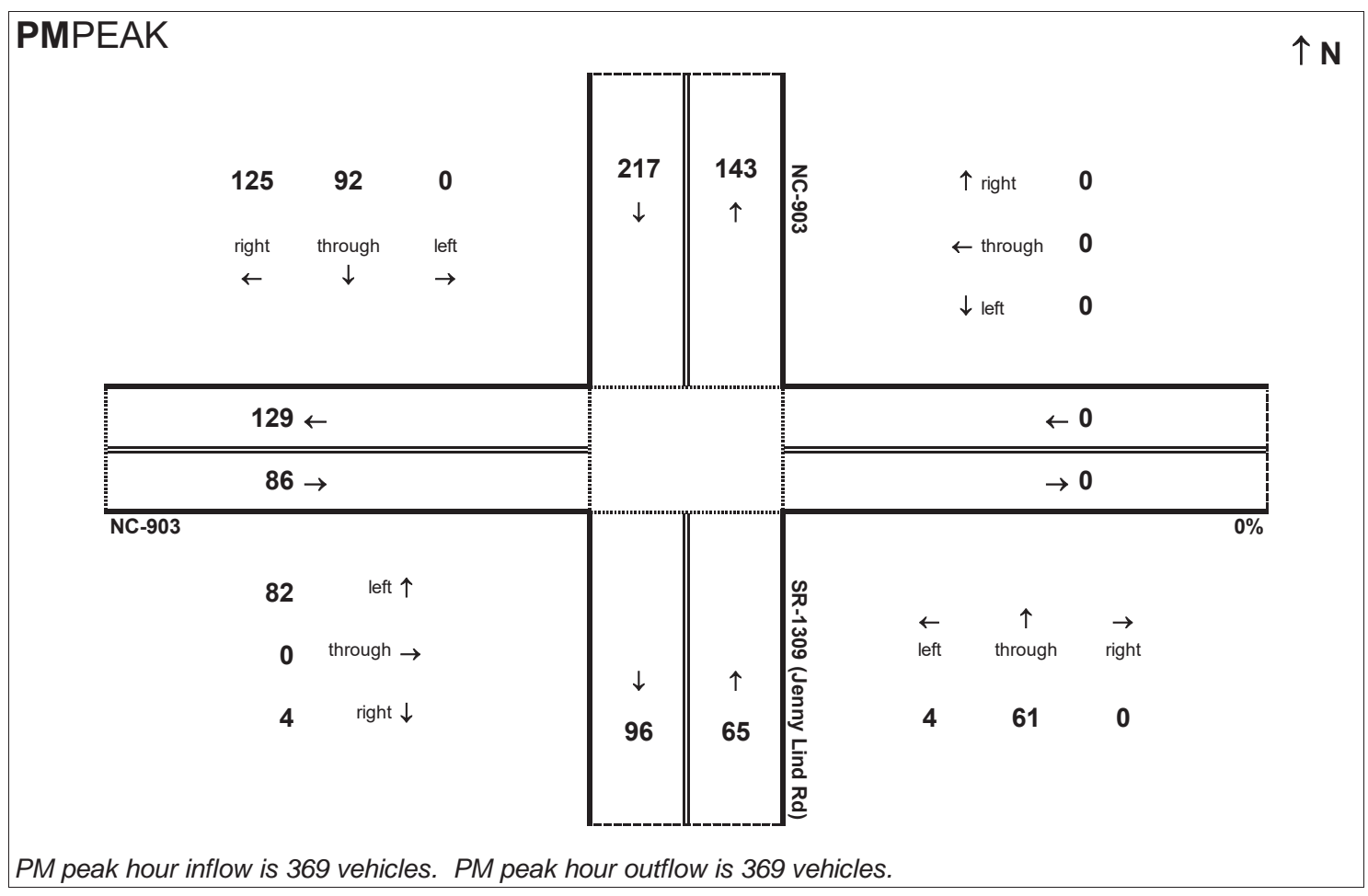
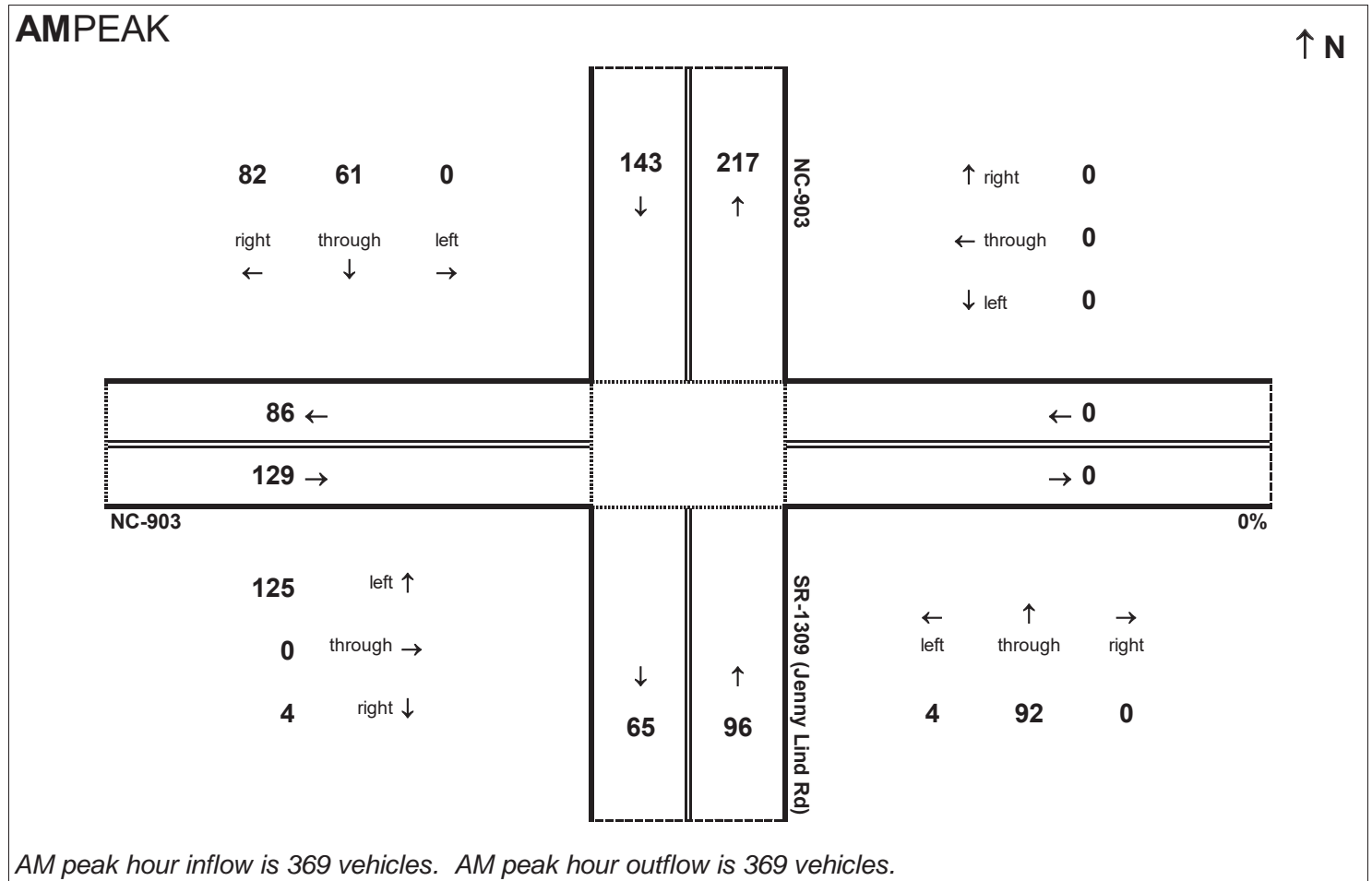


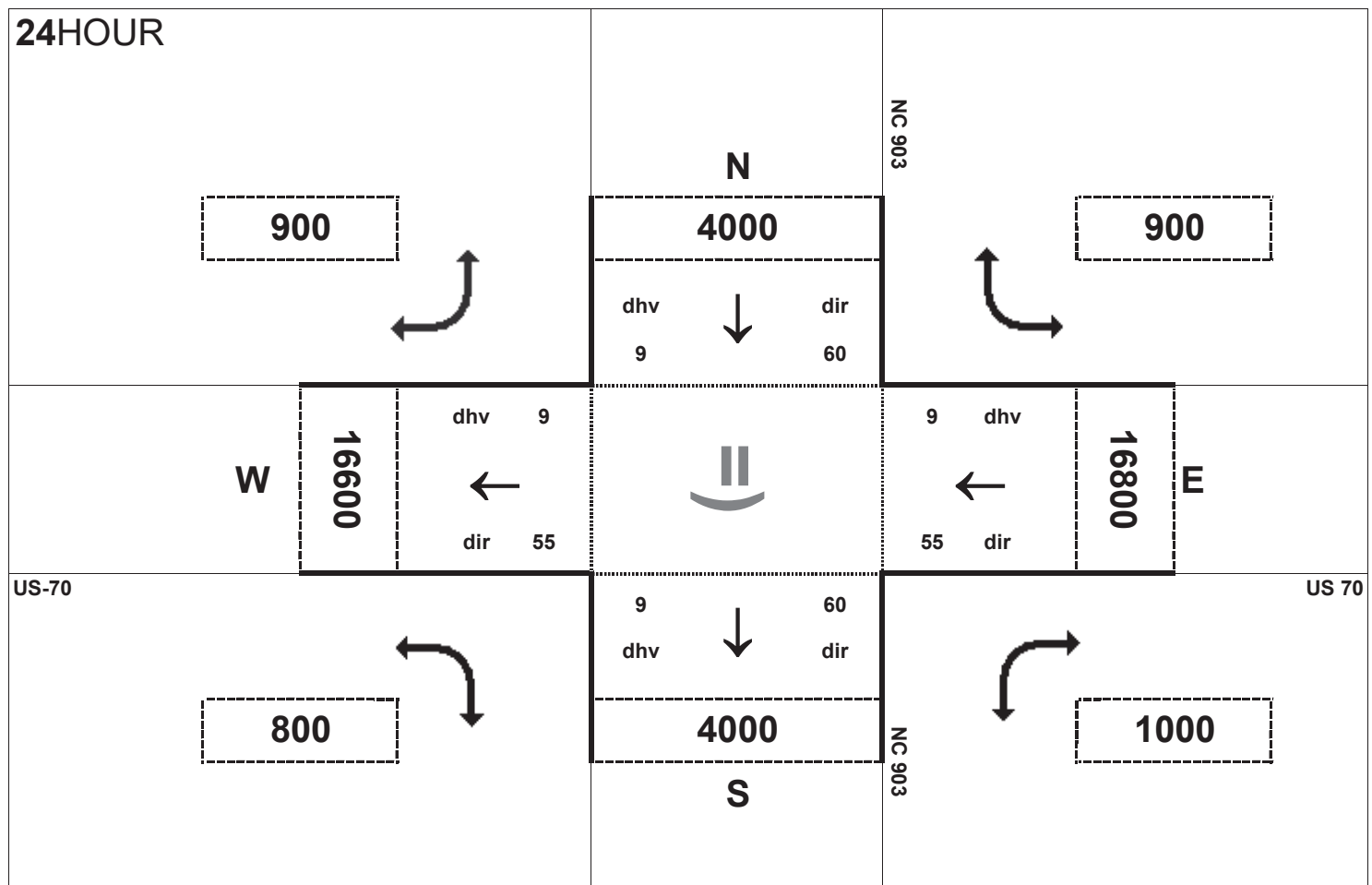
Peak Hour Volume Breakouts Report:
 401 Intersection of NC 903 and SR-1309 (Jenny Lind Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



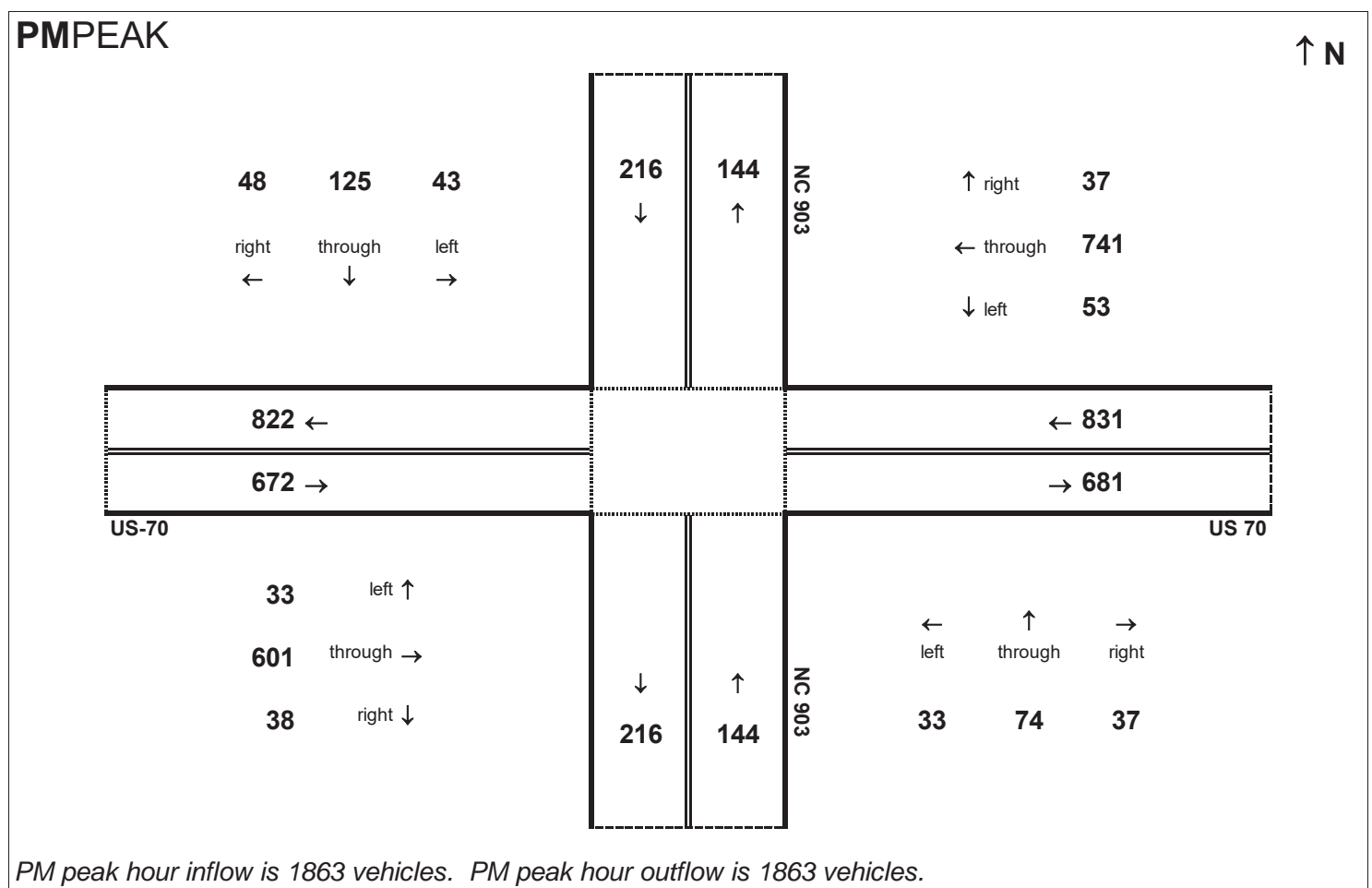
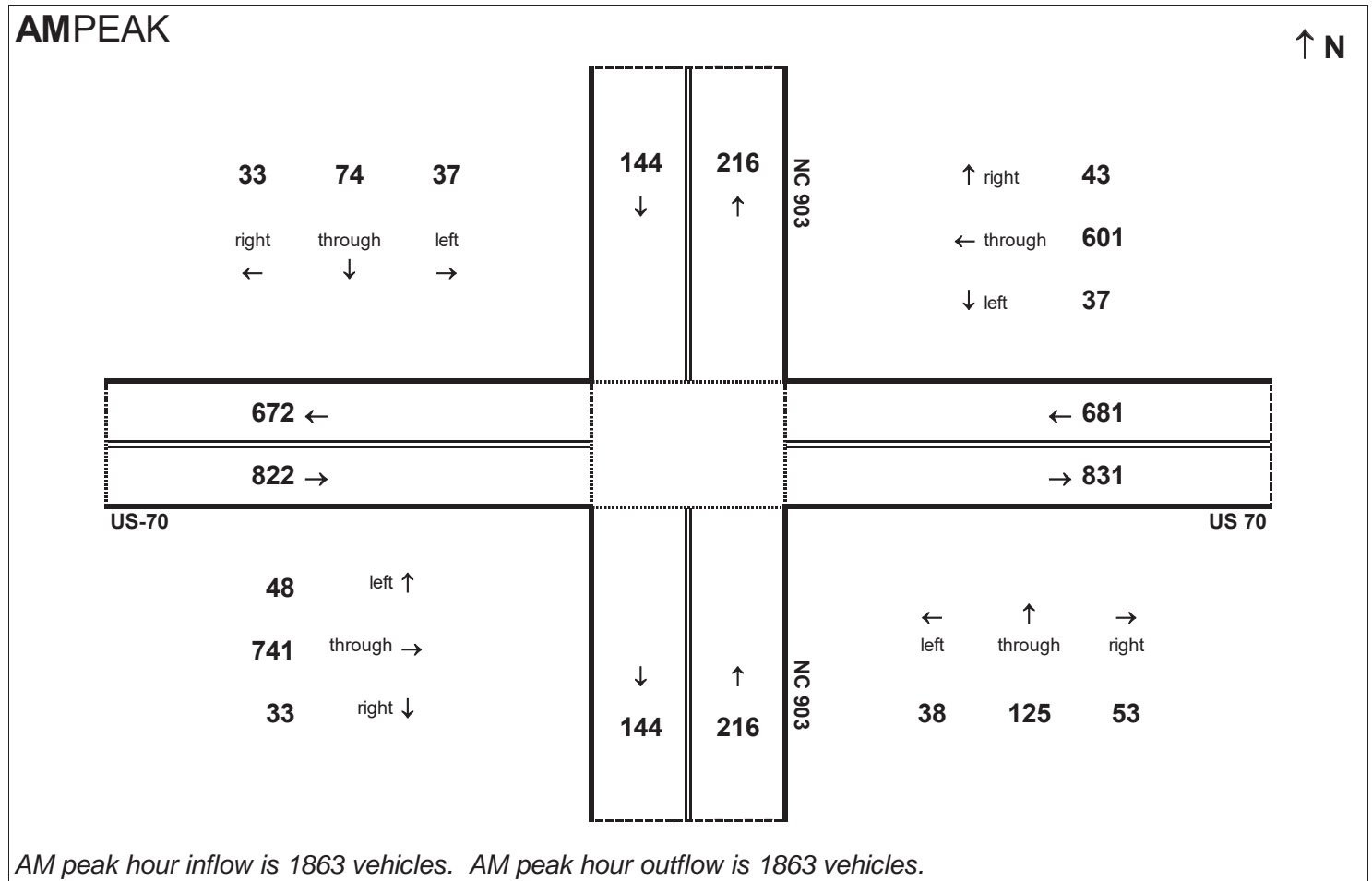


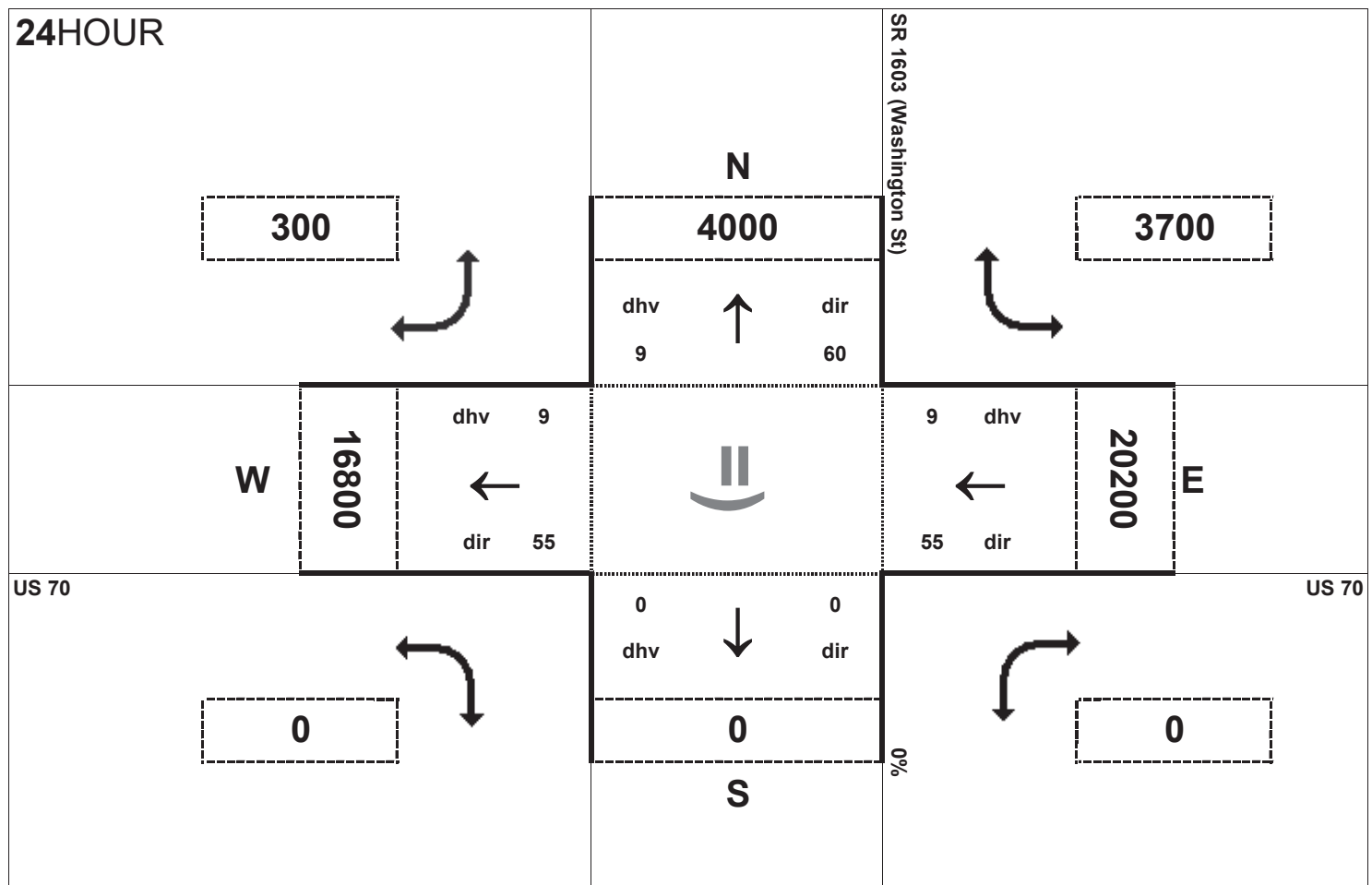
Peak Hour Volume Breakouts Report:
402-3 Intersection of US 70 and NC 903

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



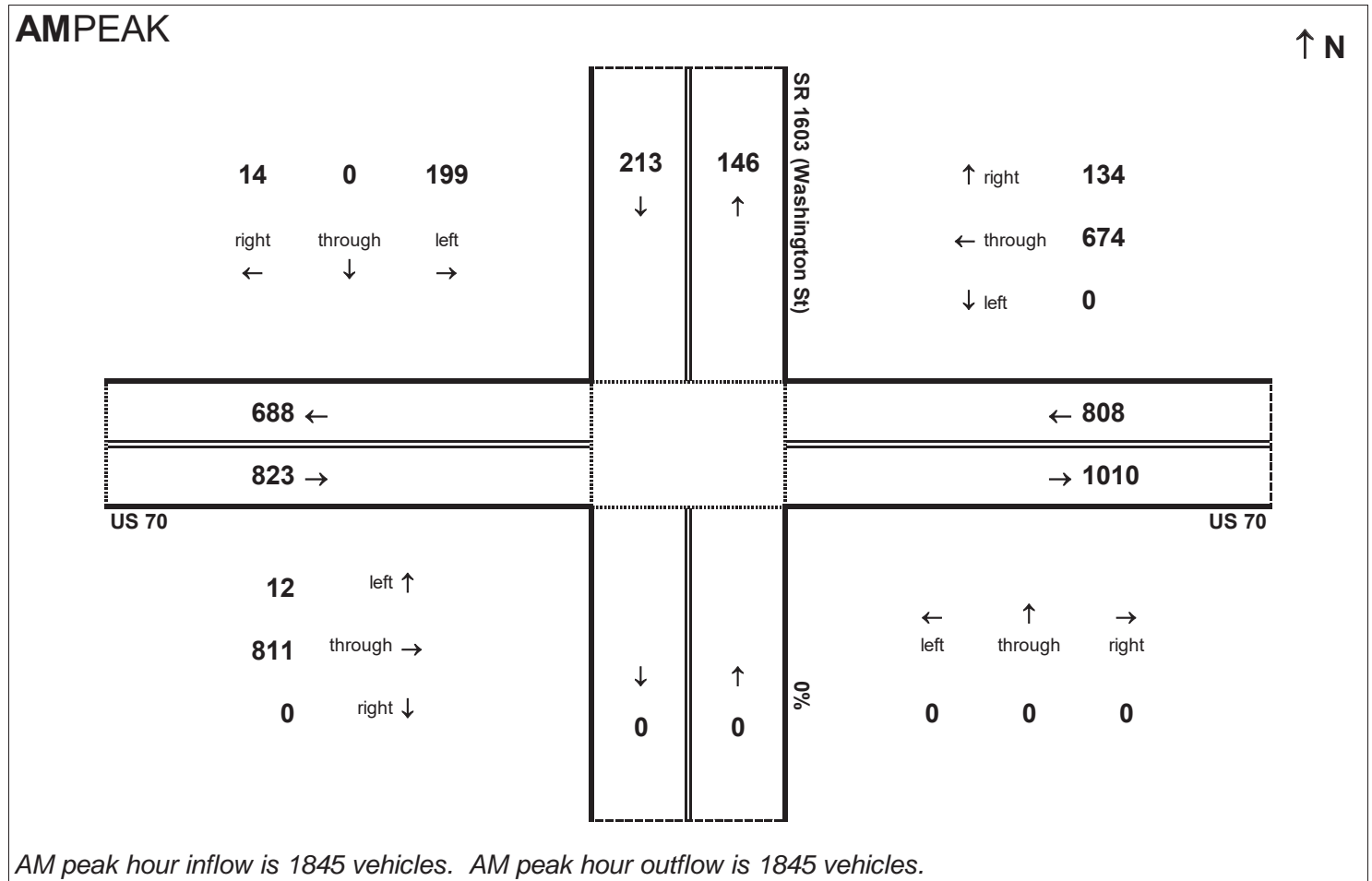


Peak Hour Volume Breakouts Report:
 404 Intersection of US 70 and SR 1603
 (Washington St)

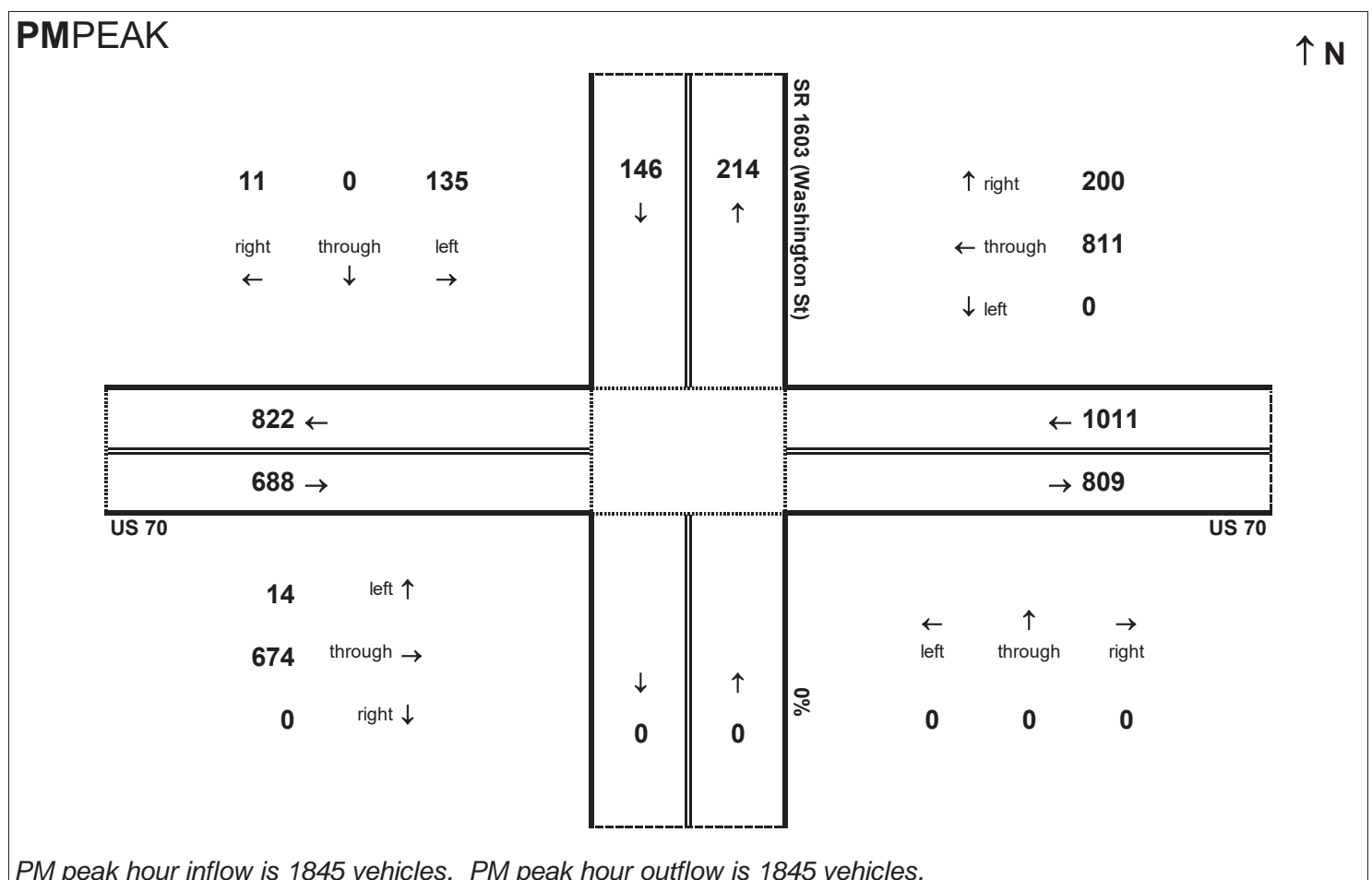
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

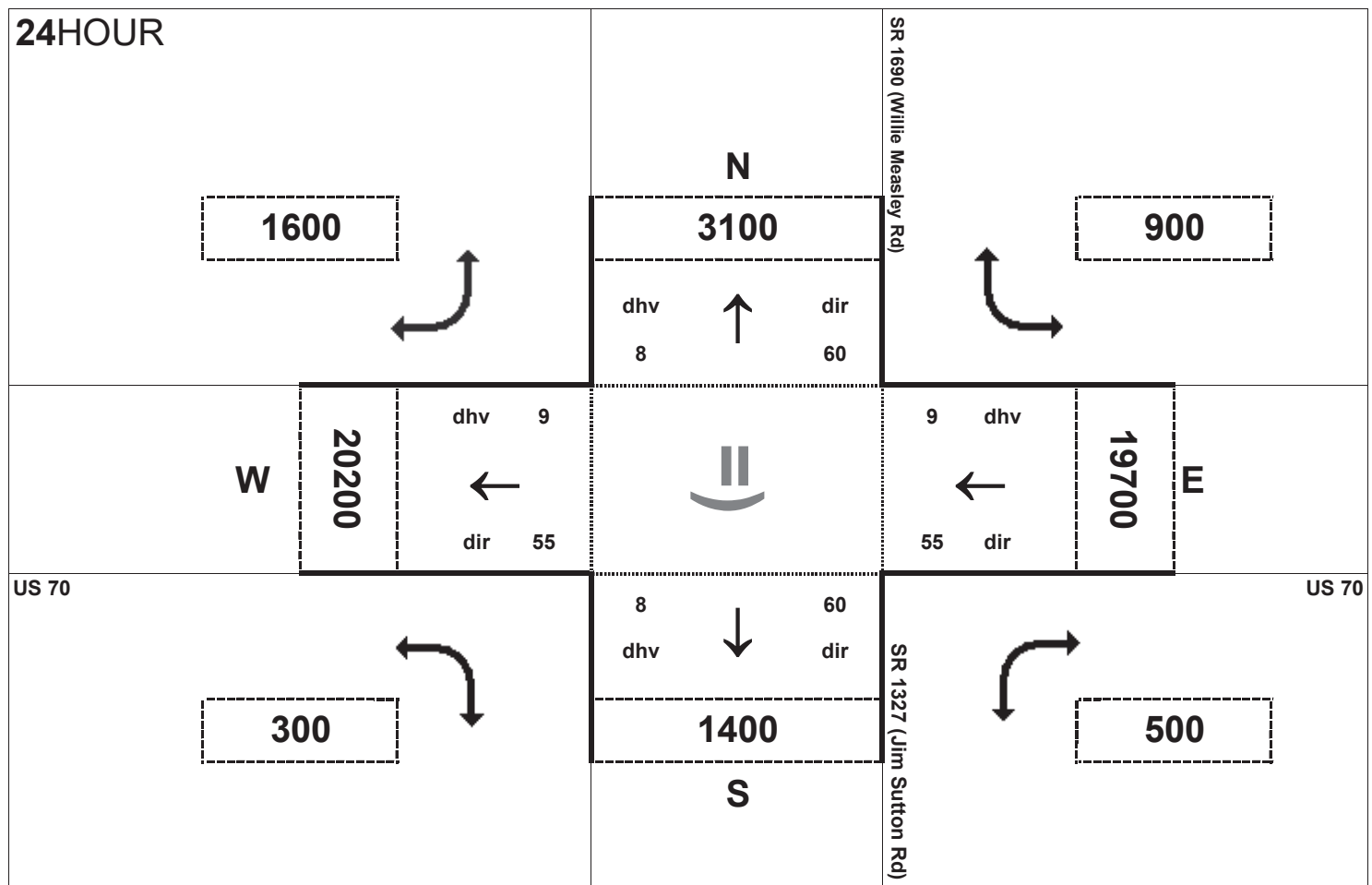
Project:
 R-2553



AM peak hour inflow is 1845 vehicles. AM peak hour outflow is 1845 vehicles.



PM peak hour inflow is 1845 vehicles. PM peak hour outflow is 1845 vehicles.

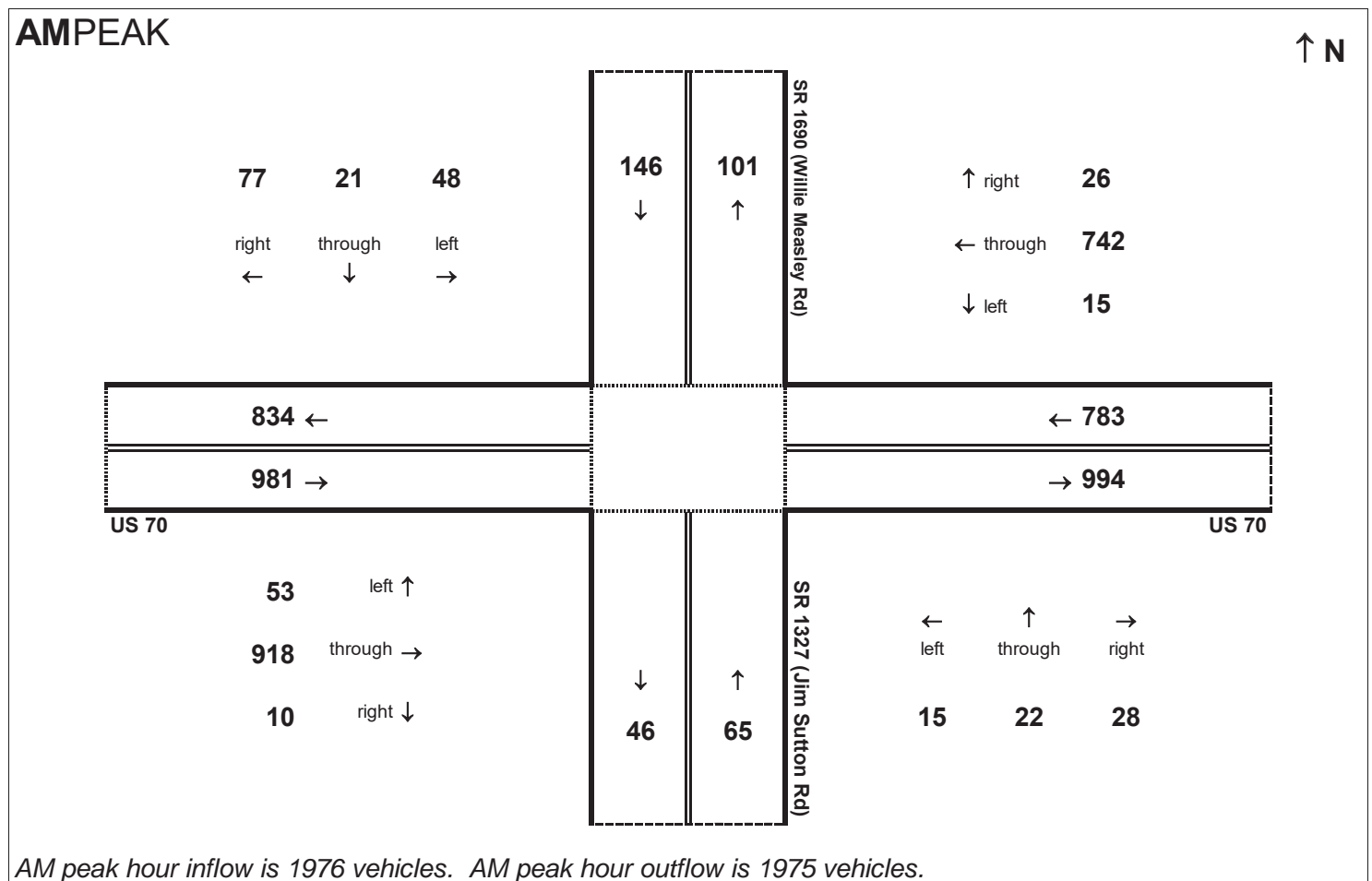


Peak Hour Volume Breakouts Report:
 405 Intersection of US 70 and SR 1690 (Willie Measley Rd) / SR 1327 (Jim Sutton Rd)

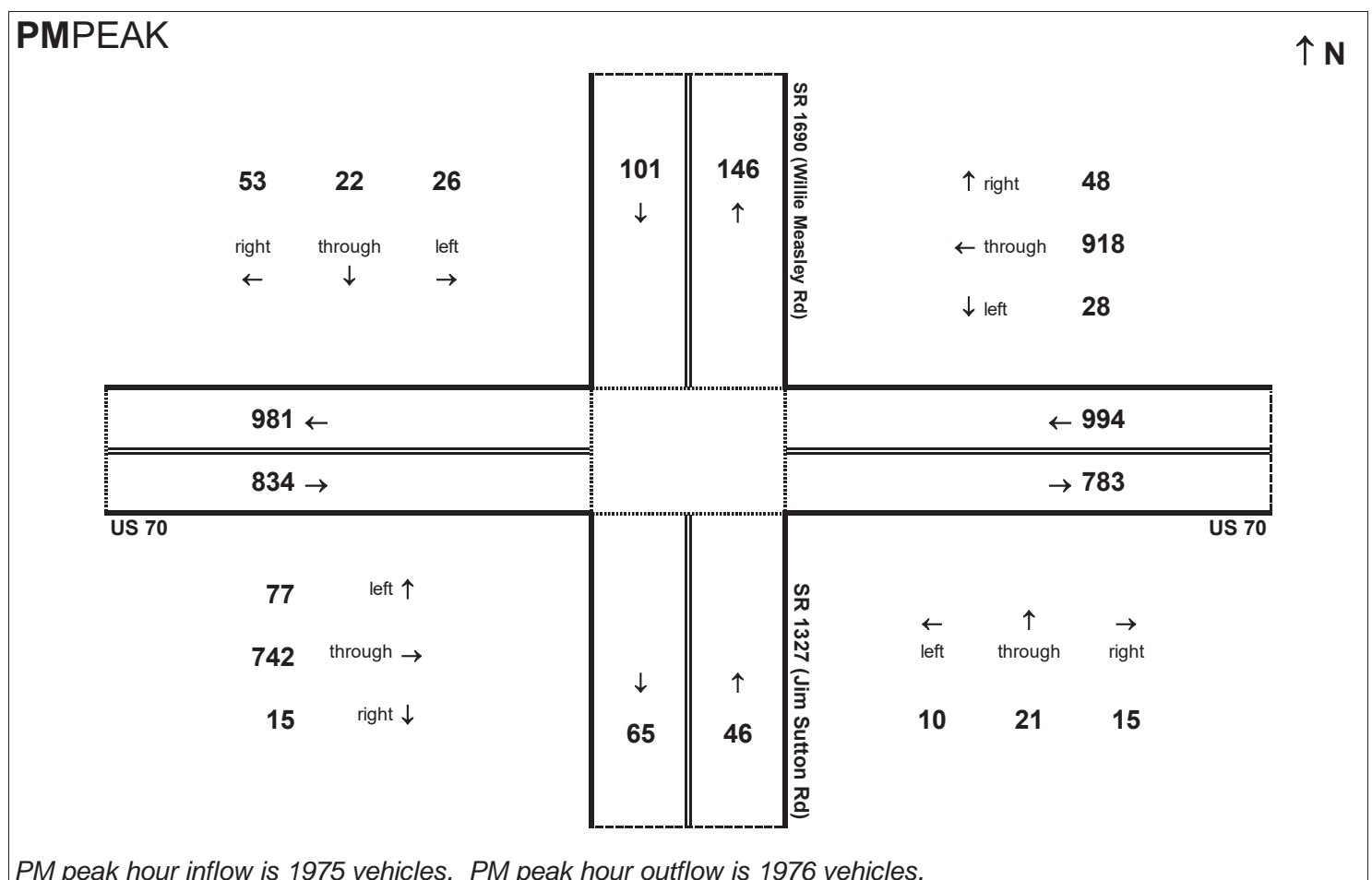
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

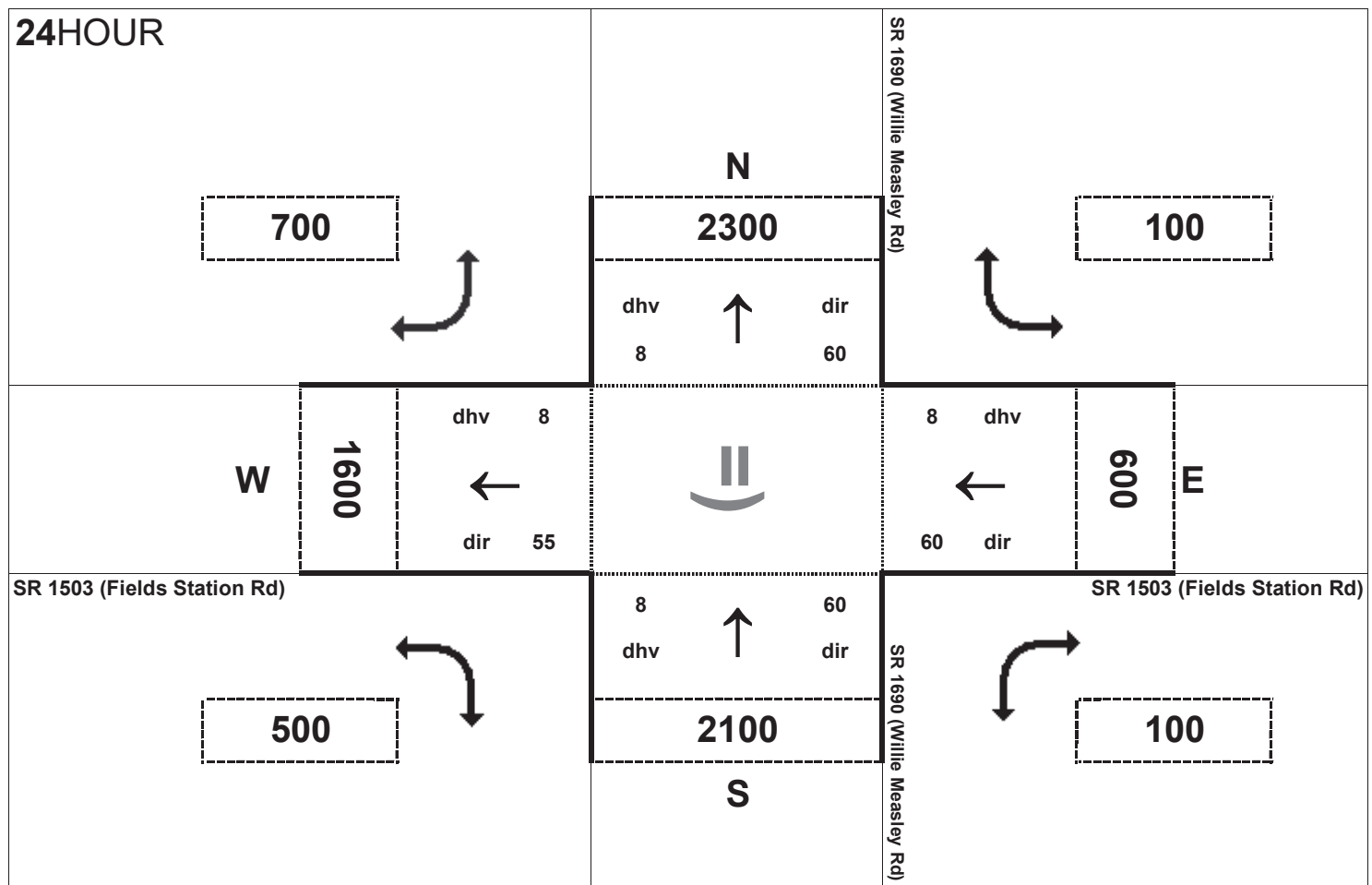
Project:
 R-2553



AM peak hour inflow is 1976 vehicles. AM peak hour outflow is 1975 vehicles.



PM peak hour inflow is 1975 vehicles. PM peak hour outflow is 1976 vehicles.

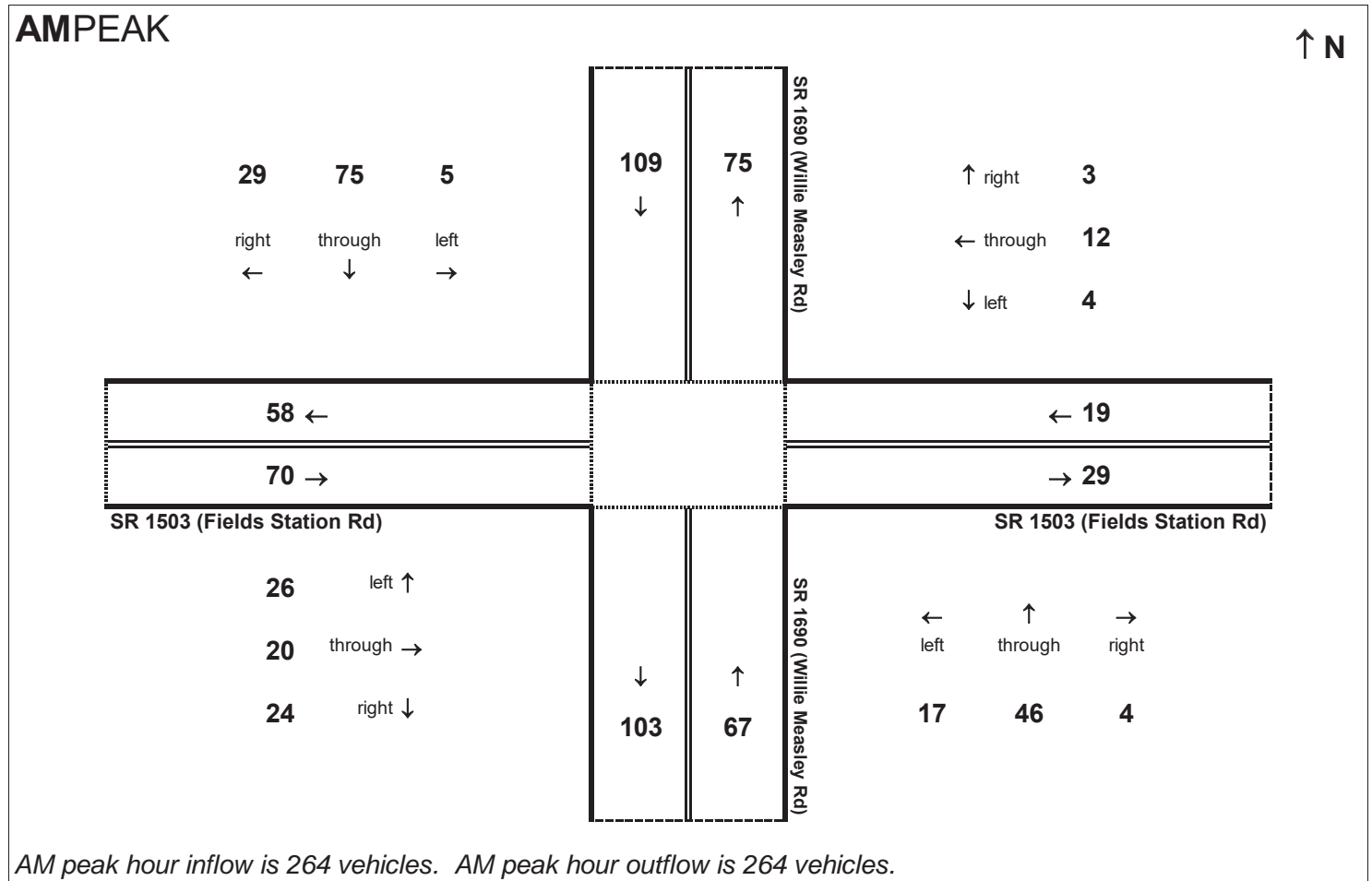


Peak Hour Volume Breakouts Report:
 406 Intersection of SR 1690 (Willie Measley Rd) and SR 1503 (Fields Station Rd)

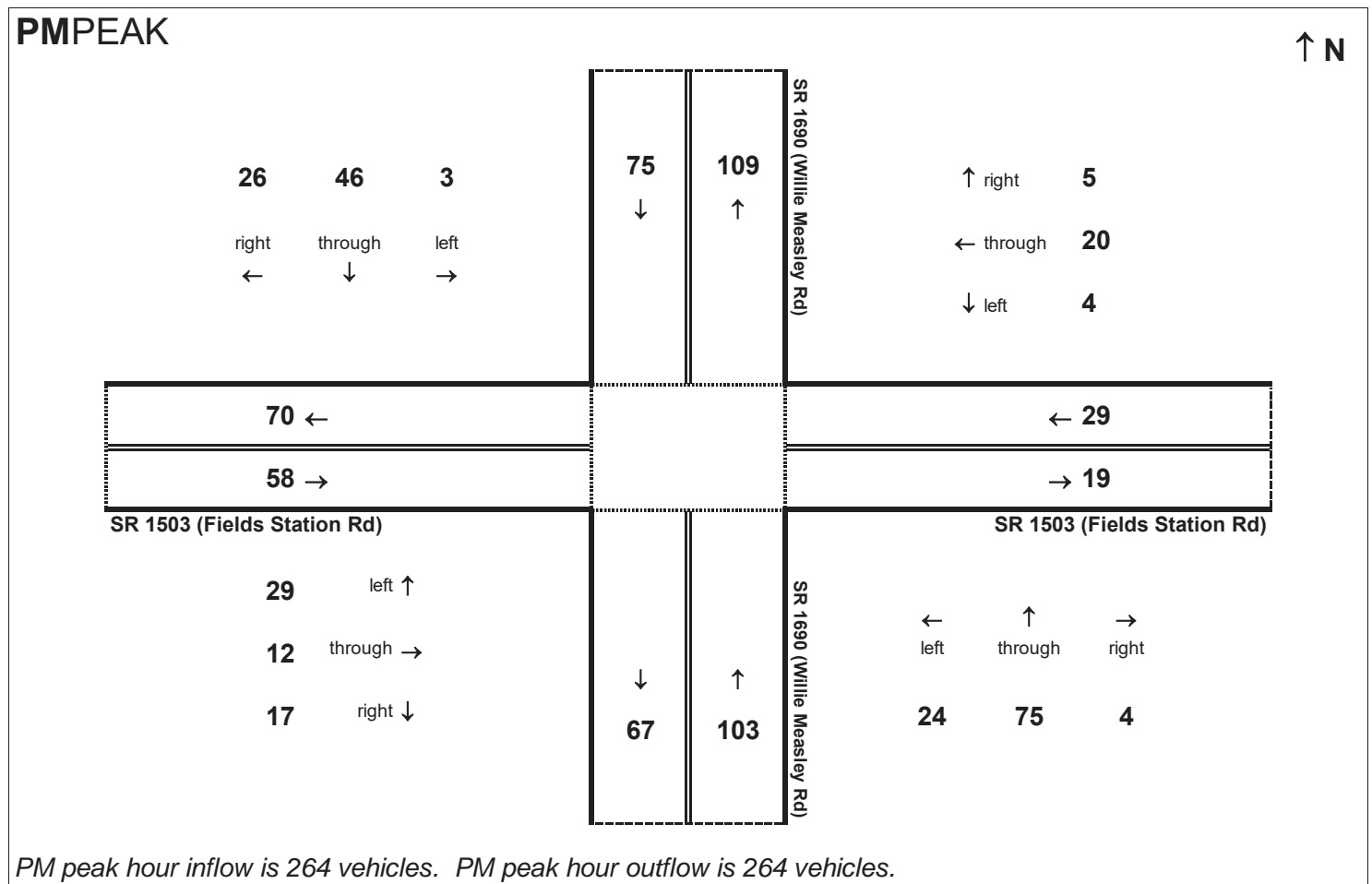
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

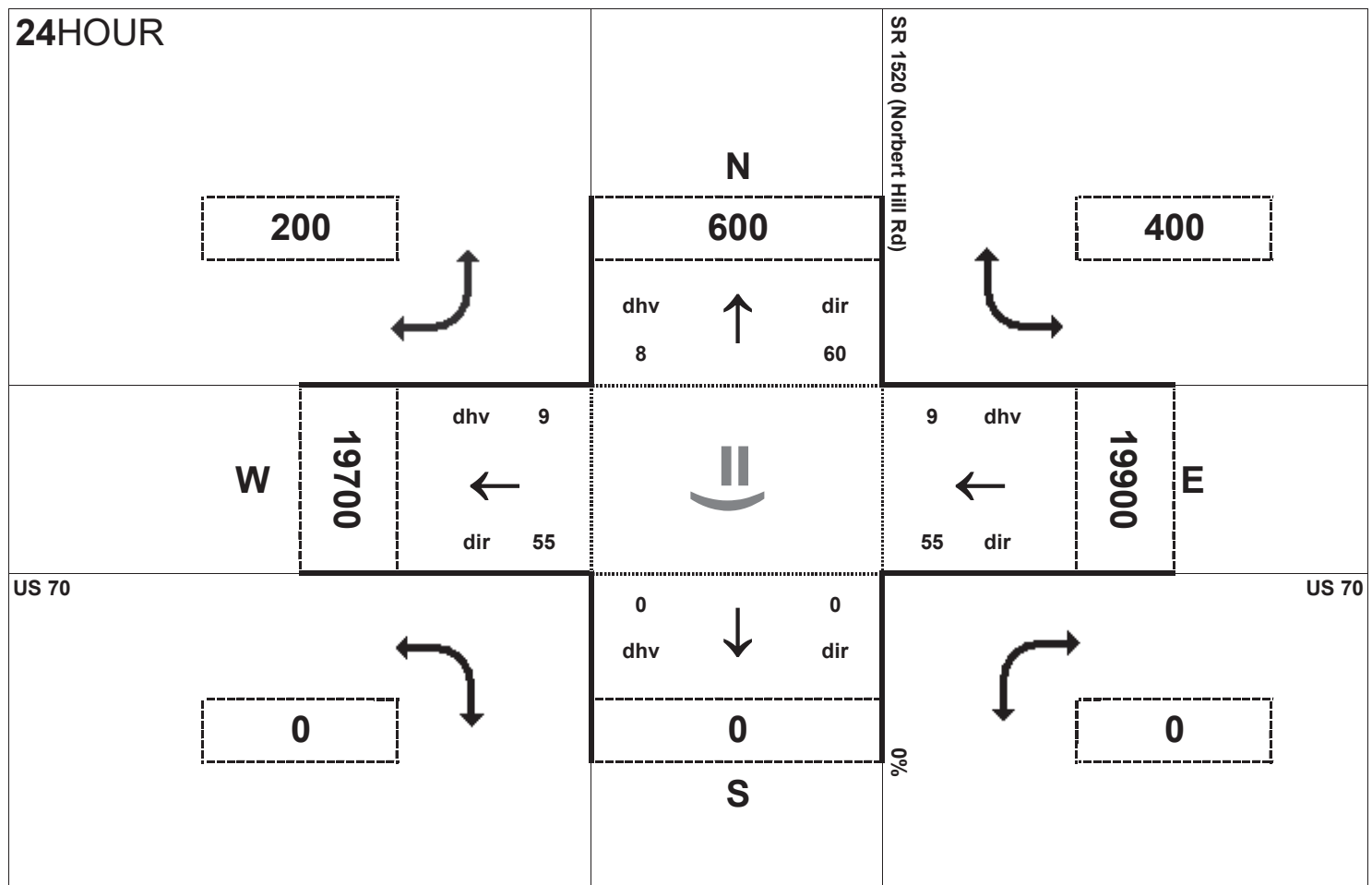
Project:
 R-2553



AM peak hour inflow is 264 vehicles. AM peak hour outflow is 264 vehicles.



PM peak hour inflow is 264 vehicles. PM peak hour outflow is 264 vehicles.

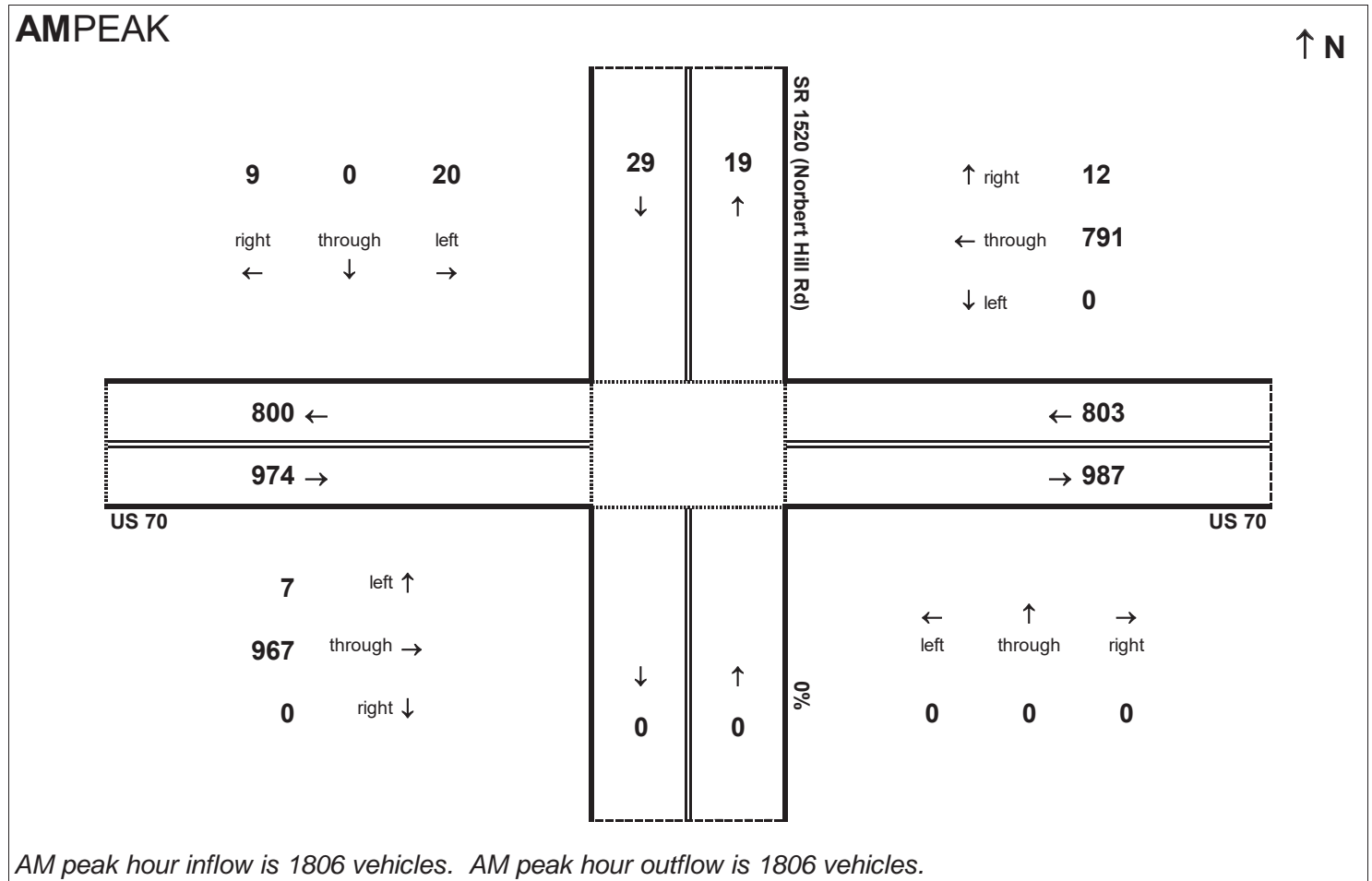


Peak Hour Volume Breakouts Report:
 407 Intersection of US 70 and SR 1520 (Norbert Hill Rd)

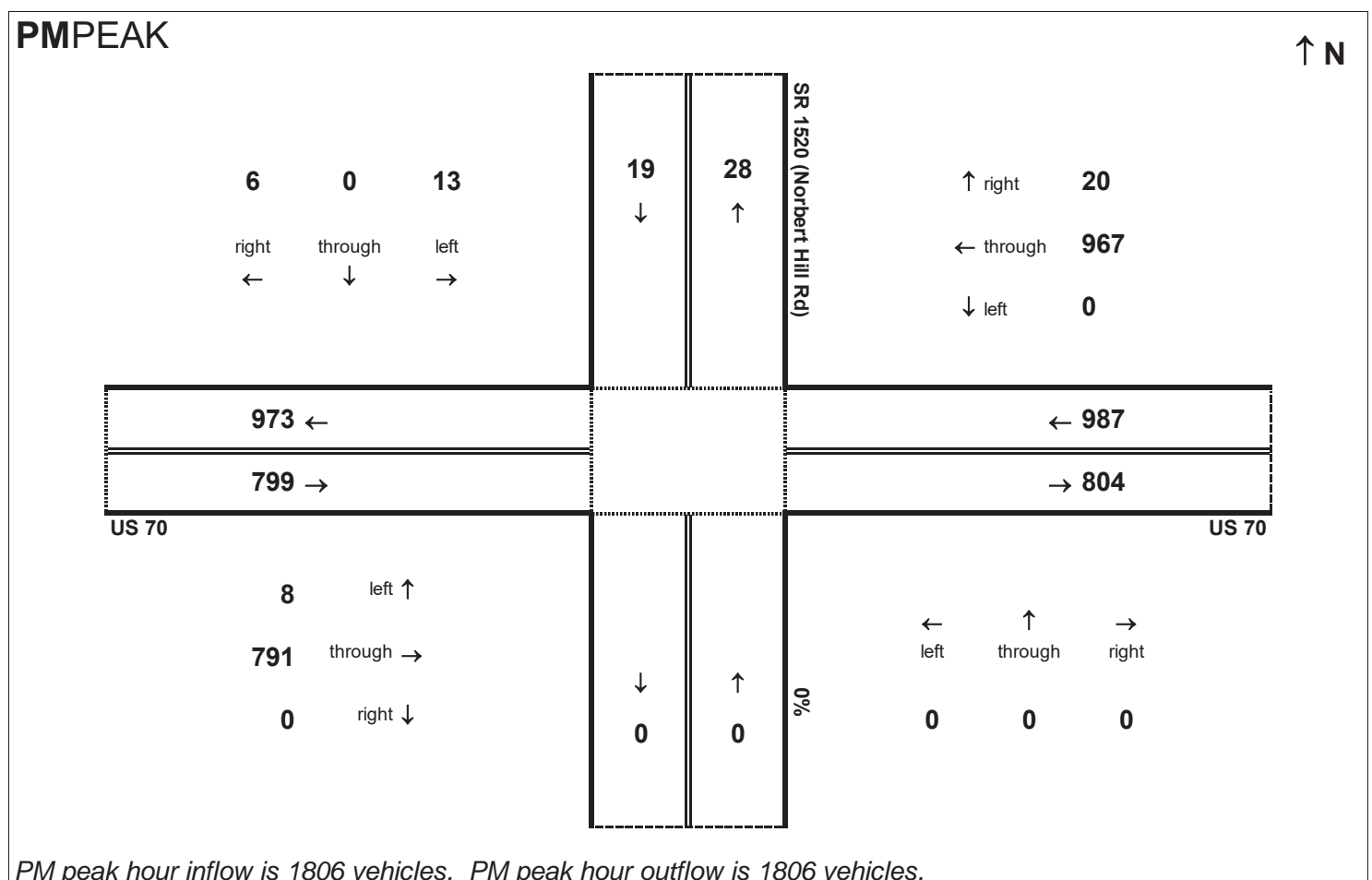
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

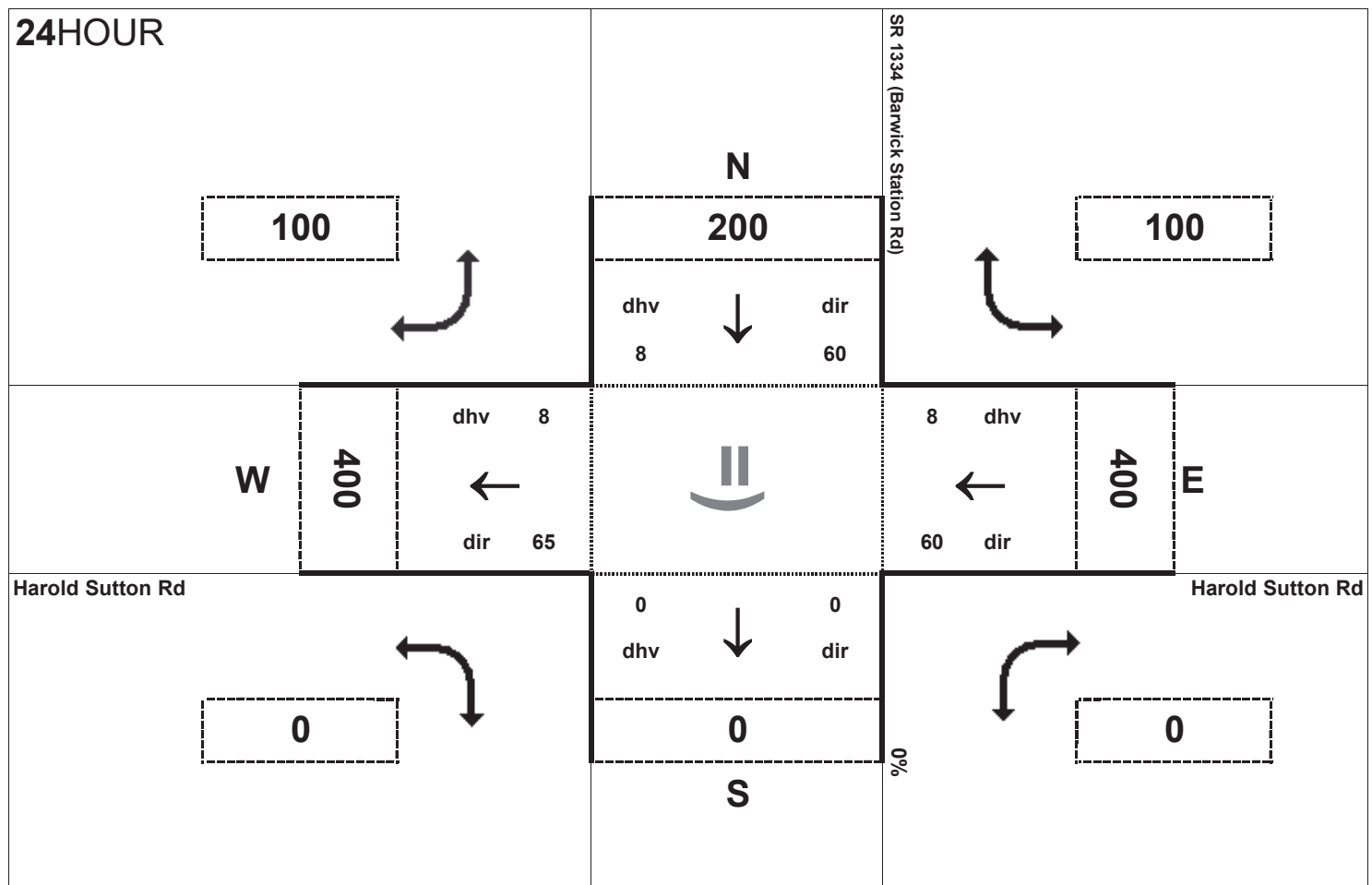
Project:
 R-2553



AM peak hour inflow is 1806 vehicles. AM peak hour outflow is 1806 vehicles.



PM peak hour inflow is 1806 vehicles. PM peak hour outflow is 1806 vehicles.

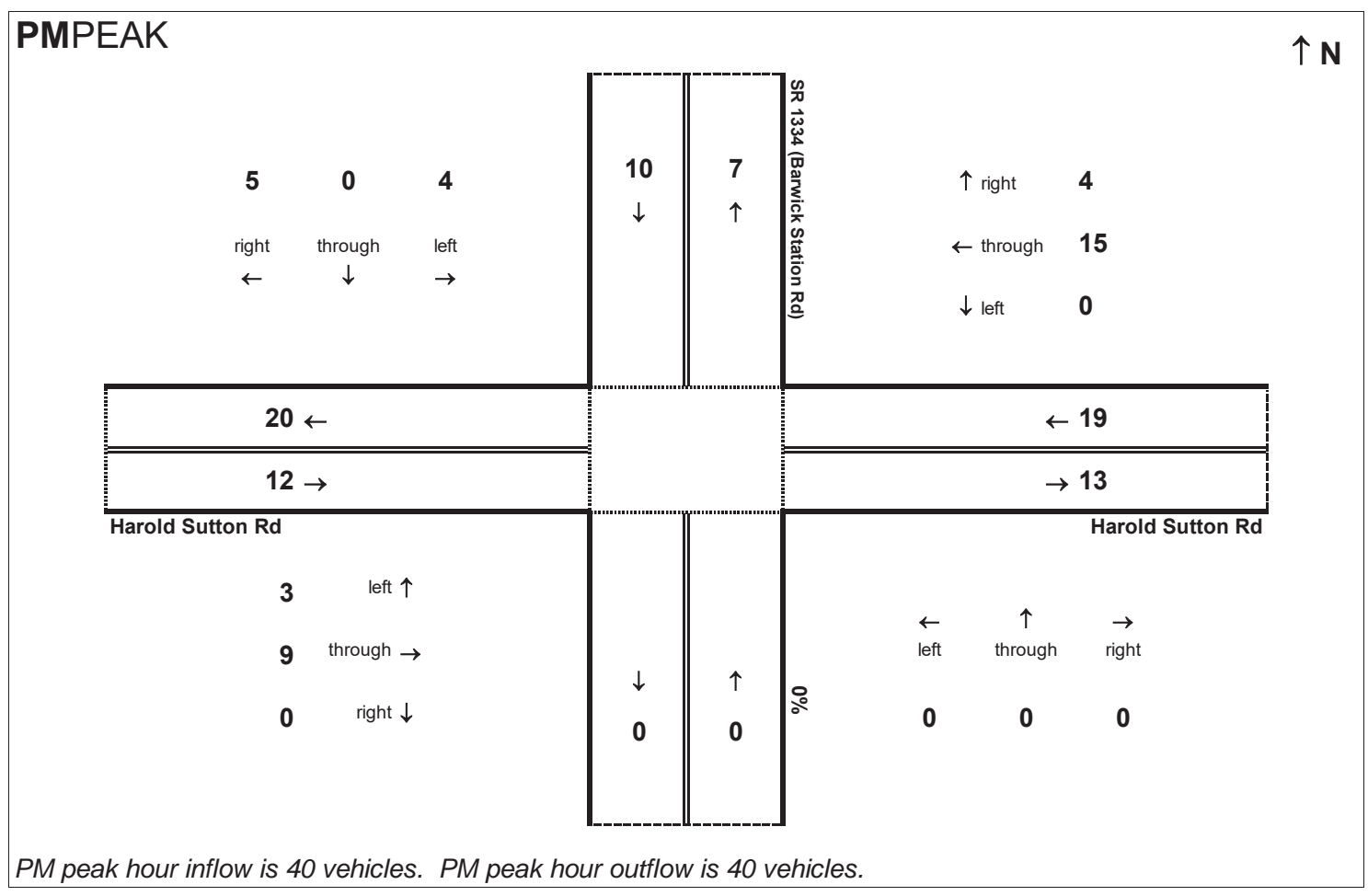
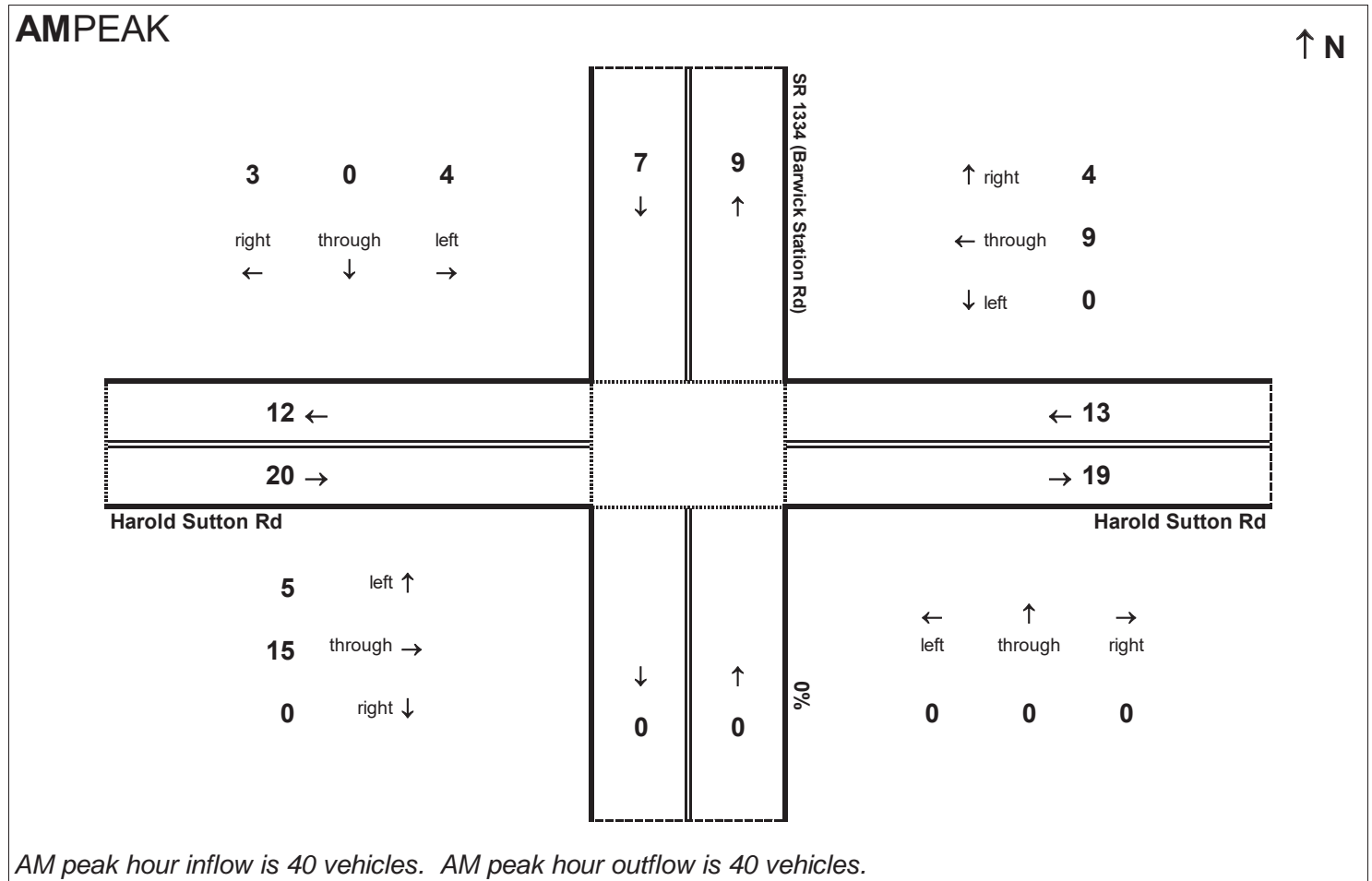


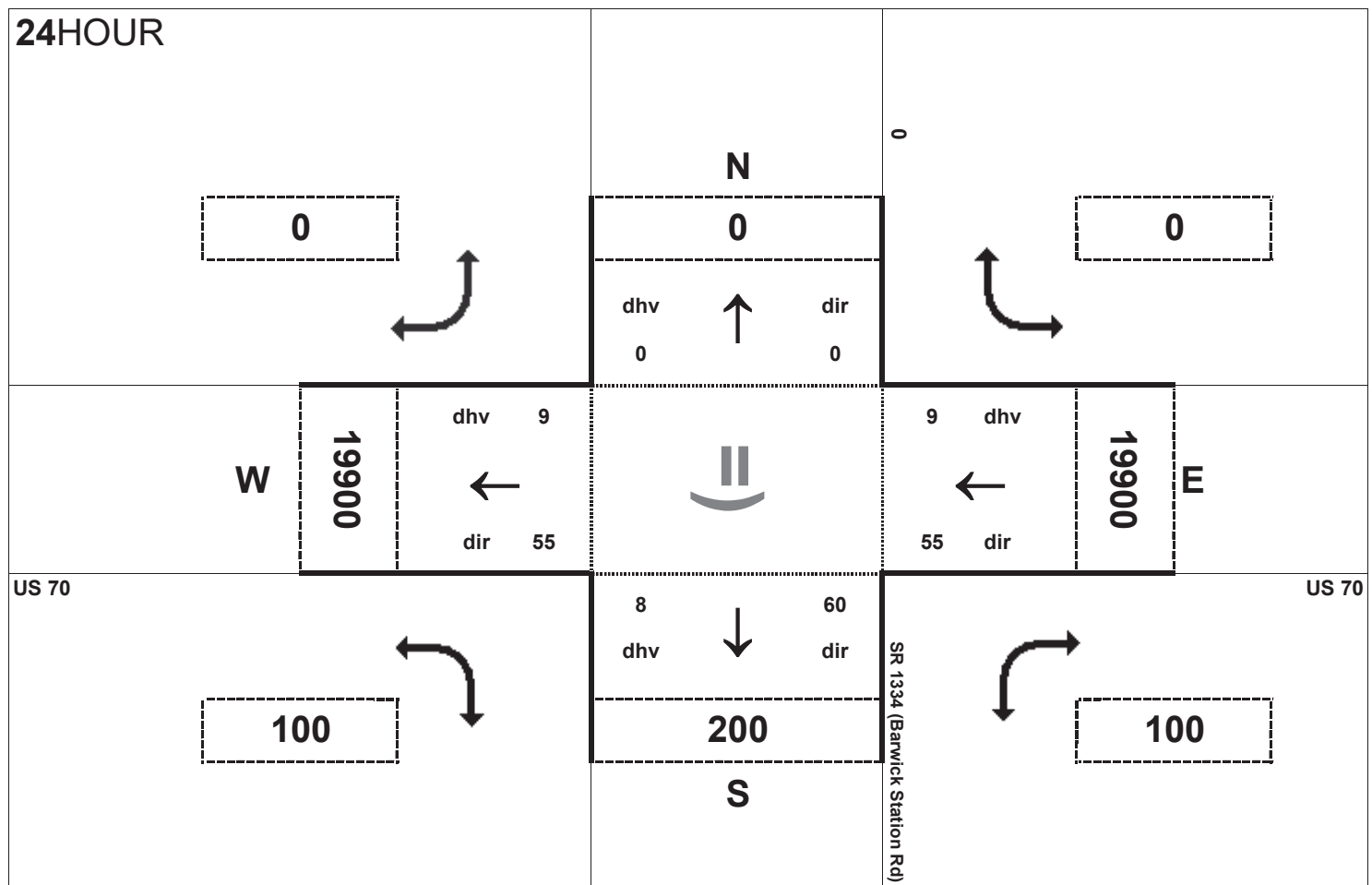
Peak Hour Volume Breakouts Report:
 408 Intersection of SR 1334 (Barwick Station Rd)
 and Harold Sutton Rd

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



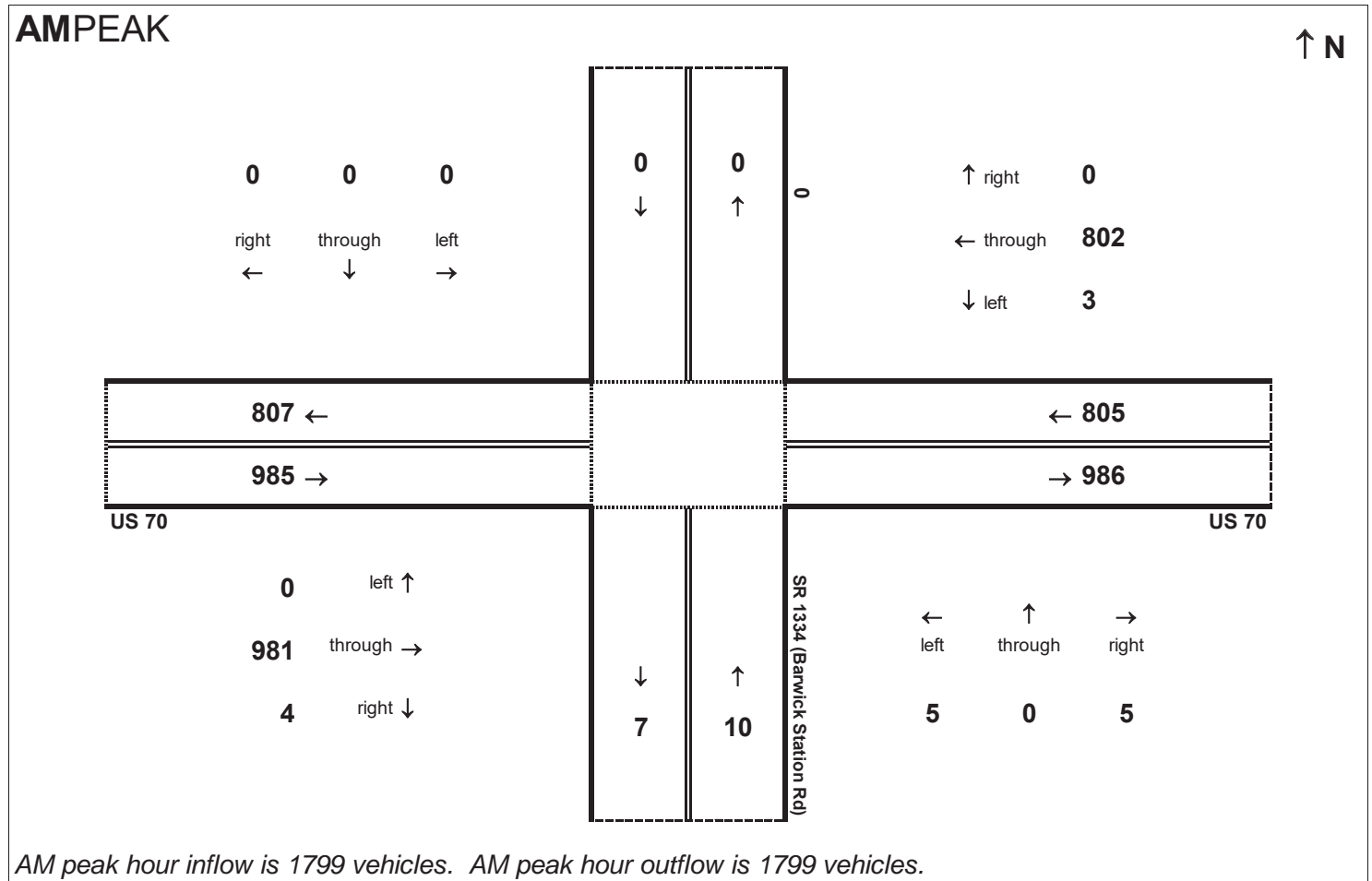


Peak Hour Volume Breakouts Report:
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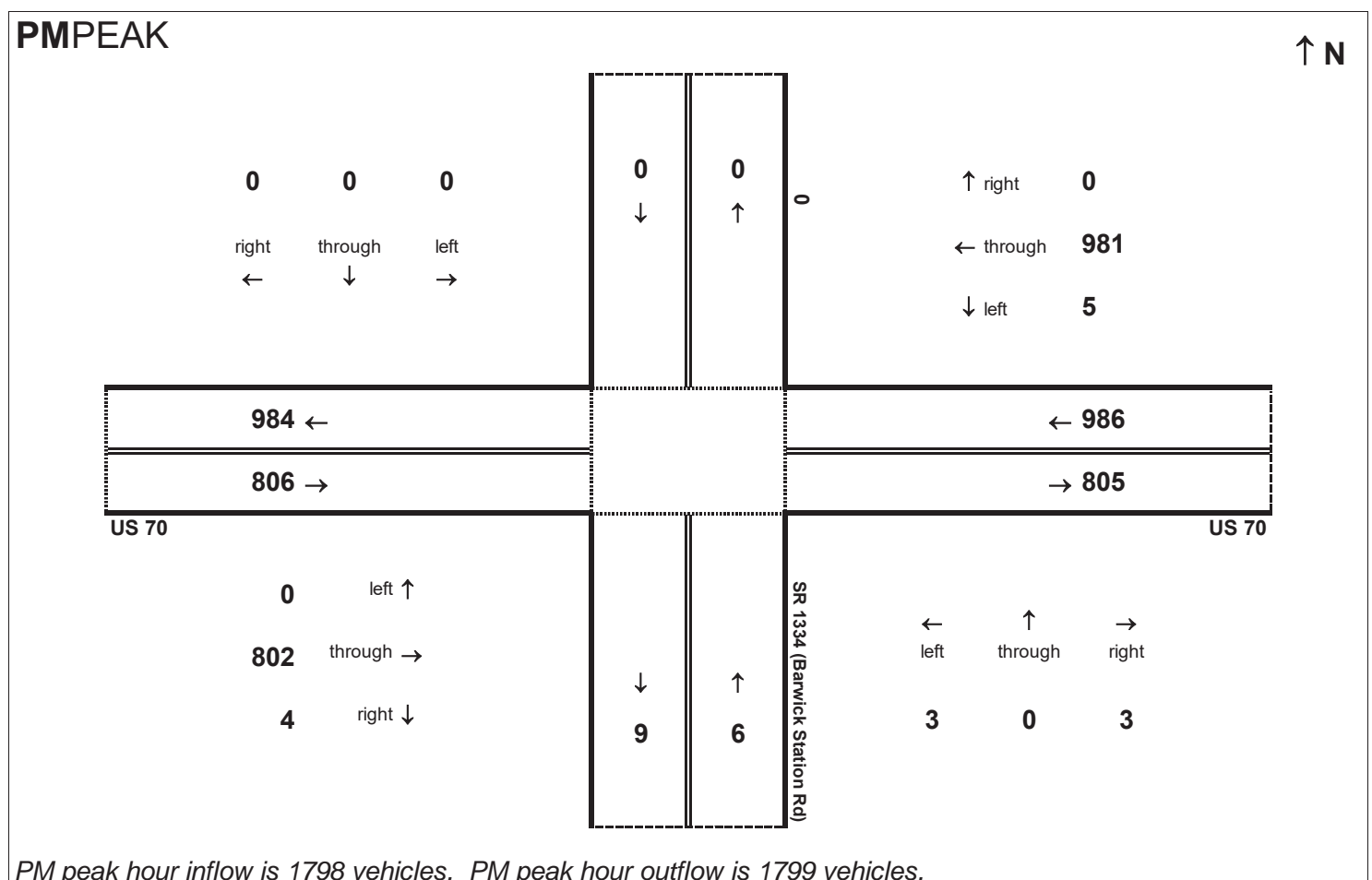
Traffic Forecast Release Date:
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Traffic Data Year:
 2015 Base Year No-Build

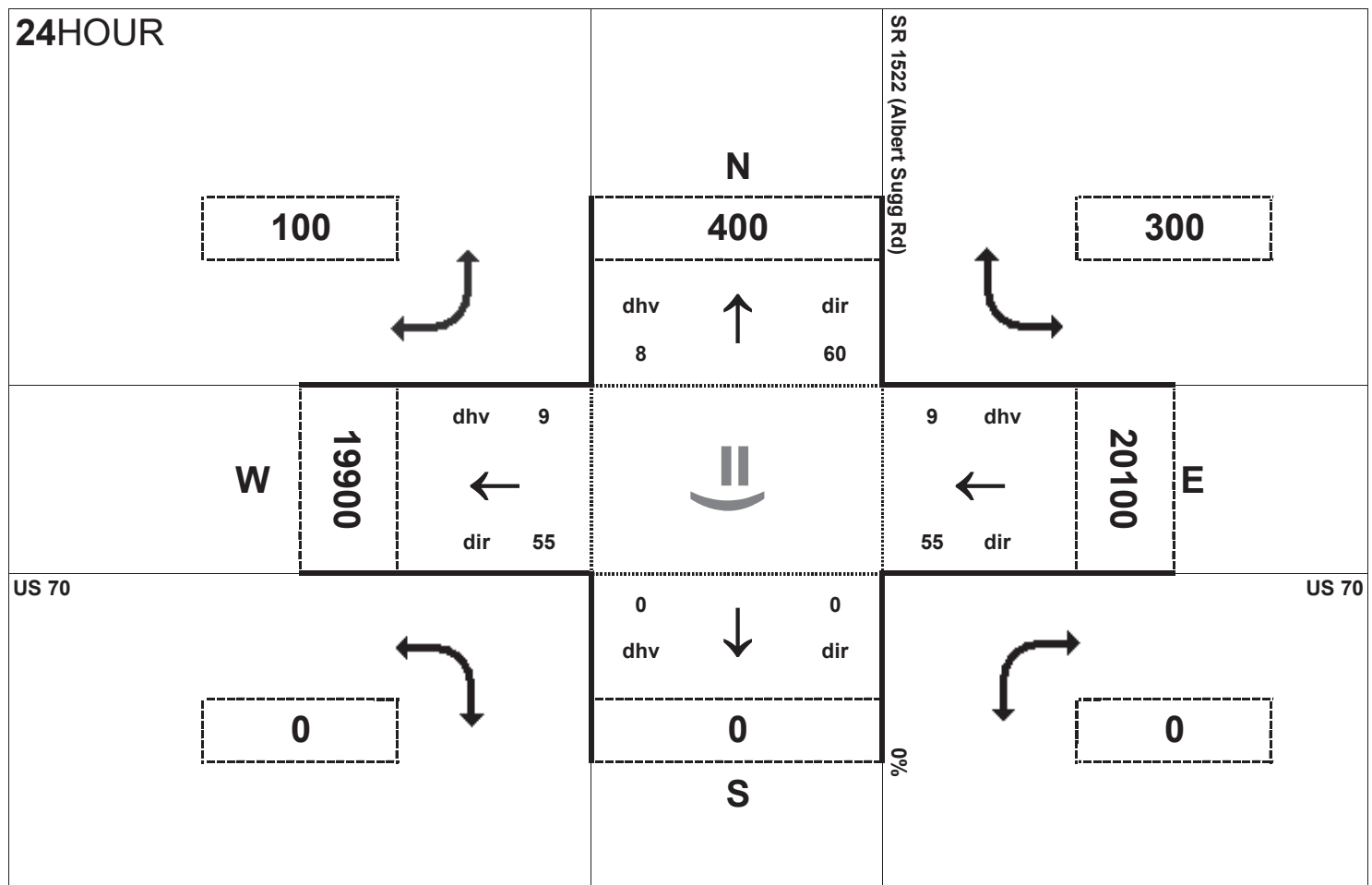
Project:
 R-2553



AM peak hour inflow is 1799 vehicles. AM peak hour outflow is 1799 vehicles.



PM peak hour inflow is 1798 vehicles. PM peak hour outflow is 1799 vehicles.

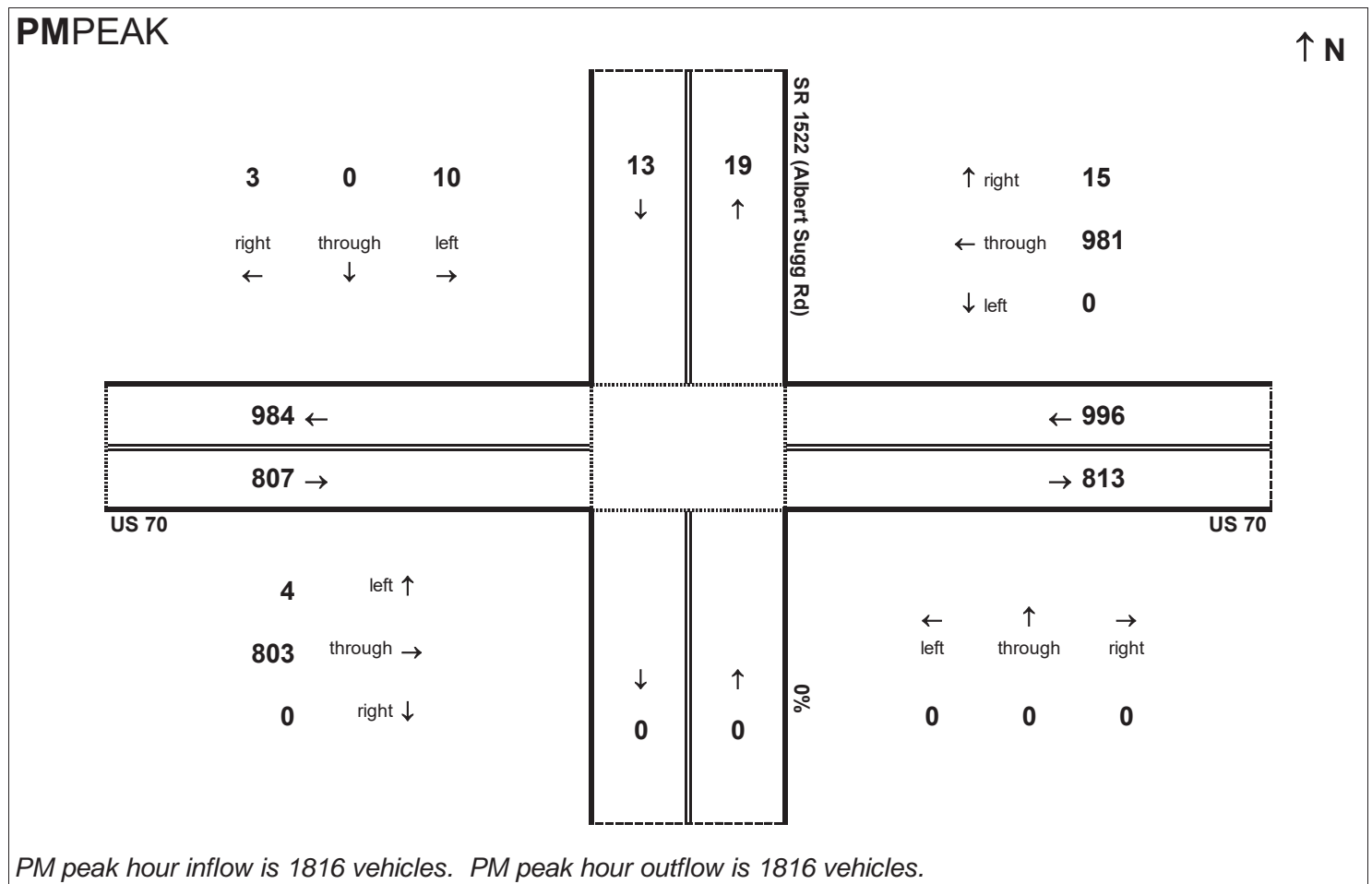
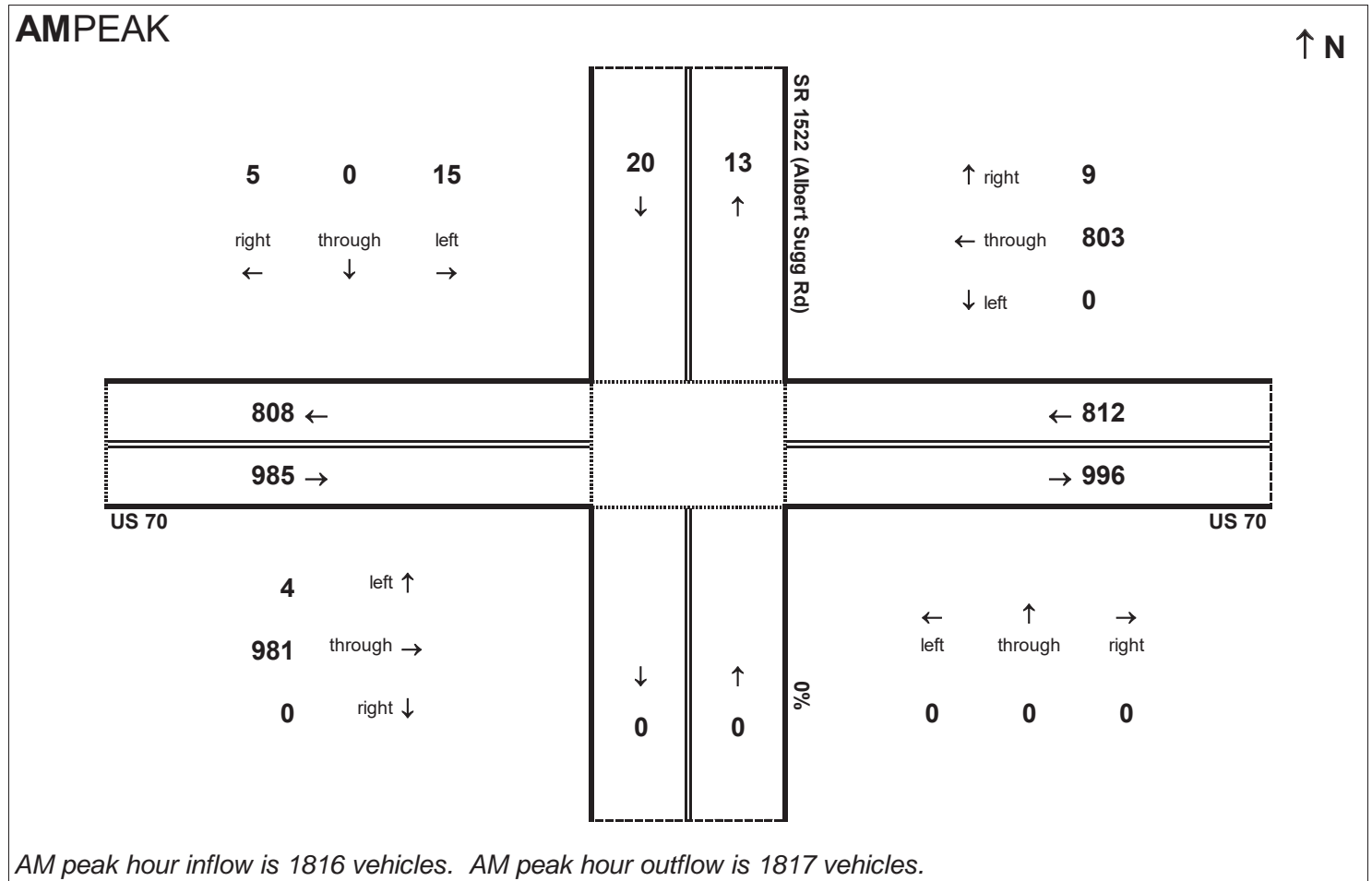


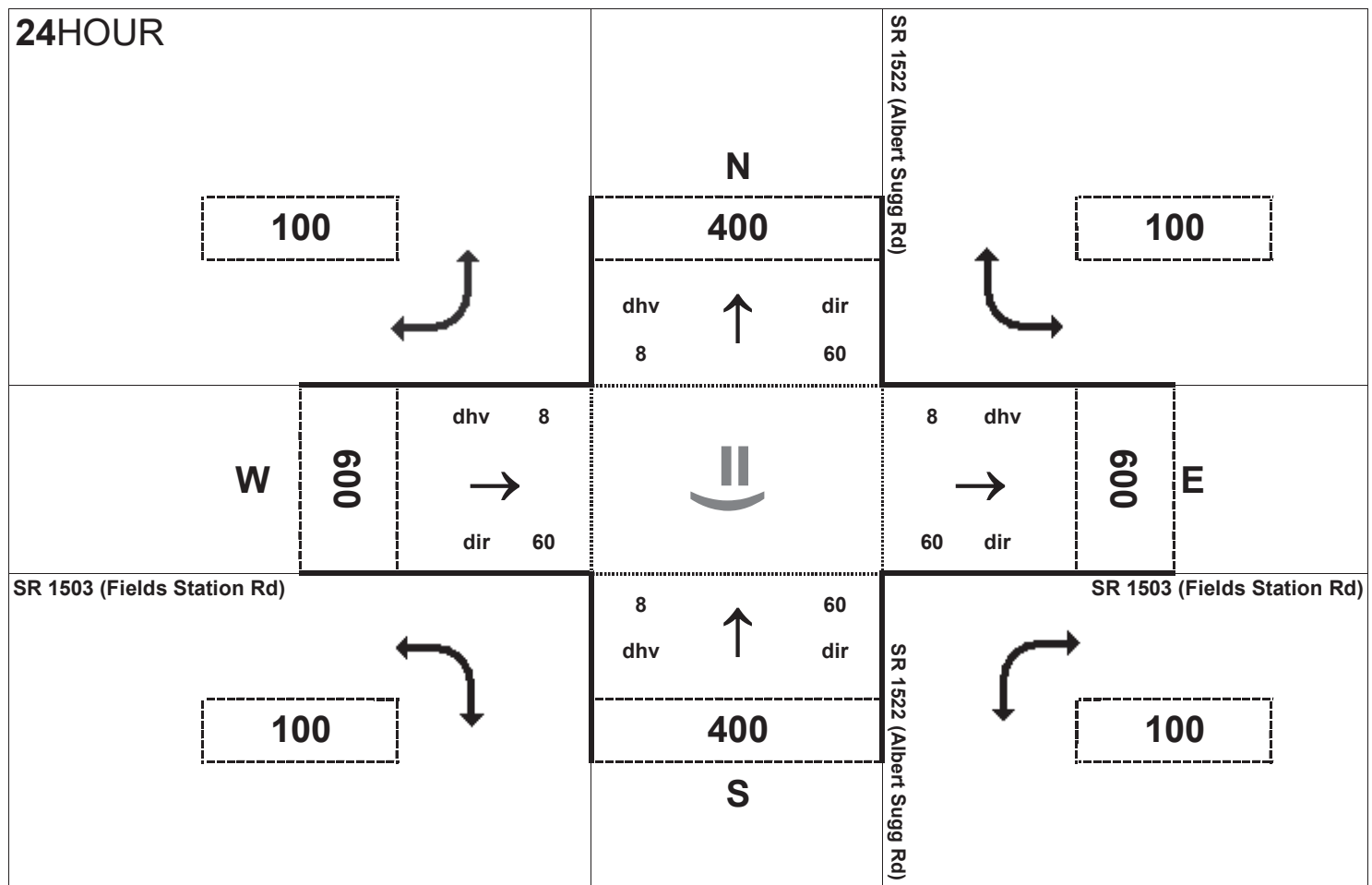
Peak Hour Volume Breakouts Report:
 410 Intersection of US 70 and SR 1522 (Albert Sugg Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



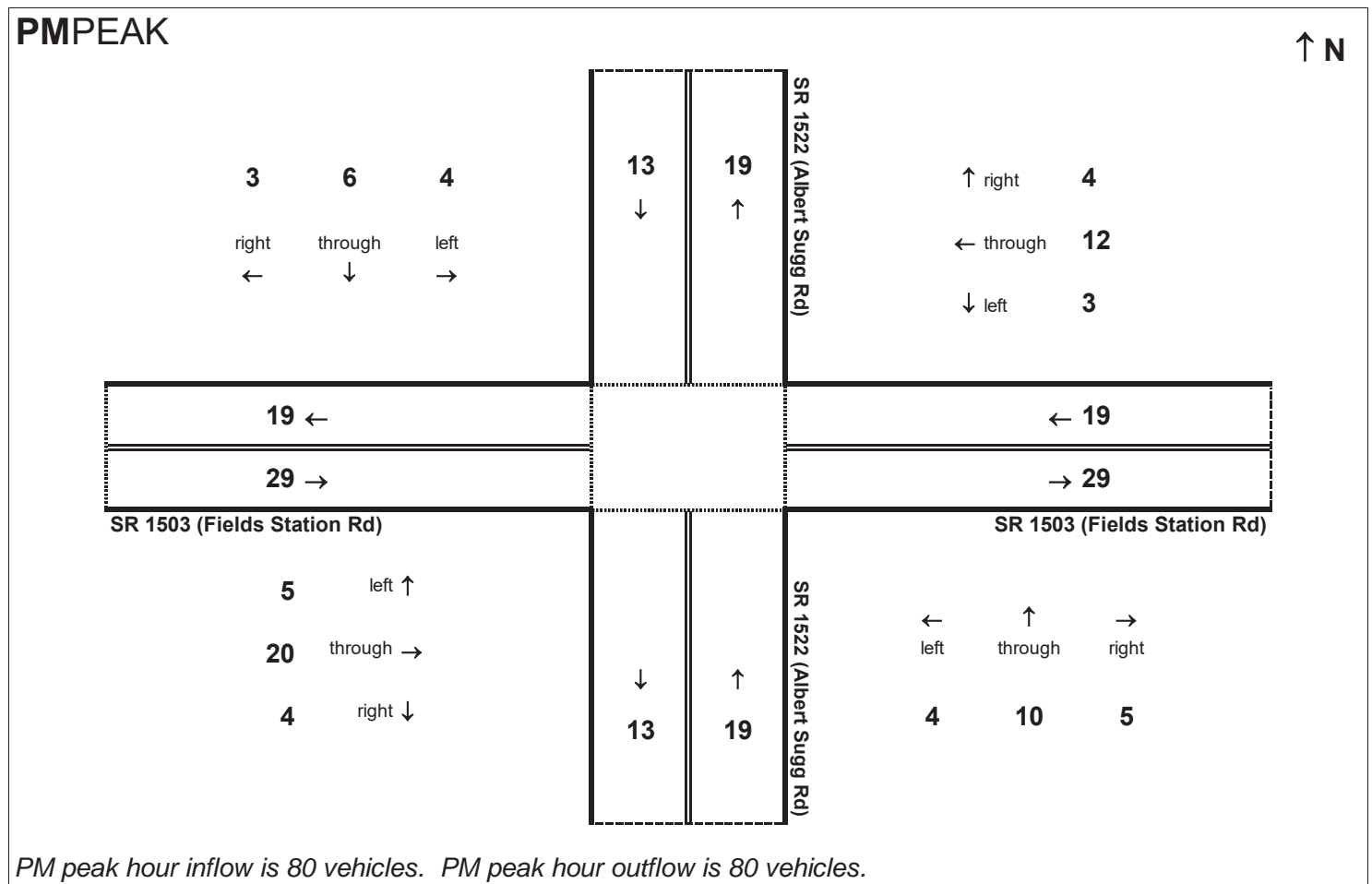
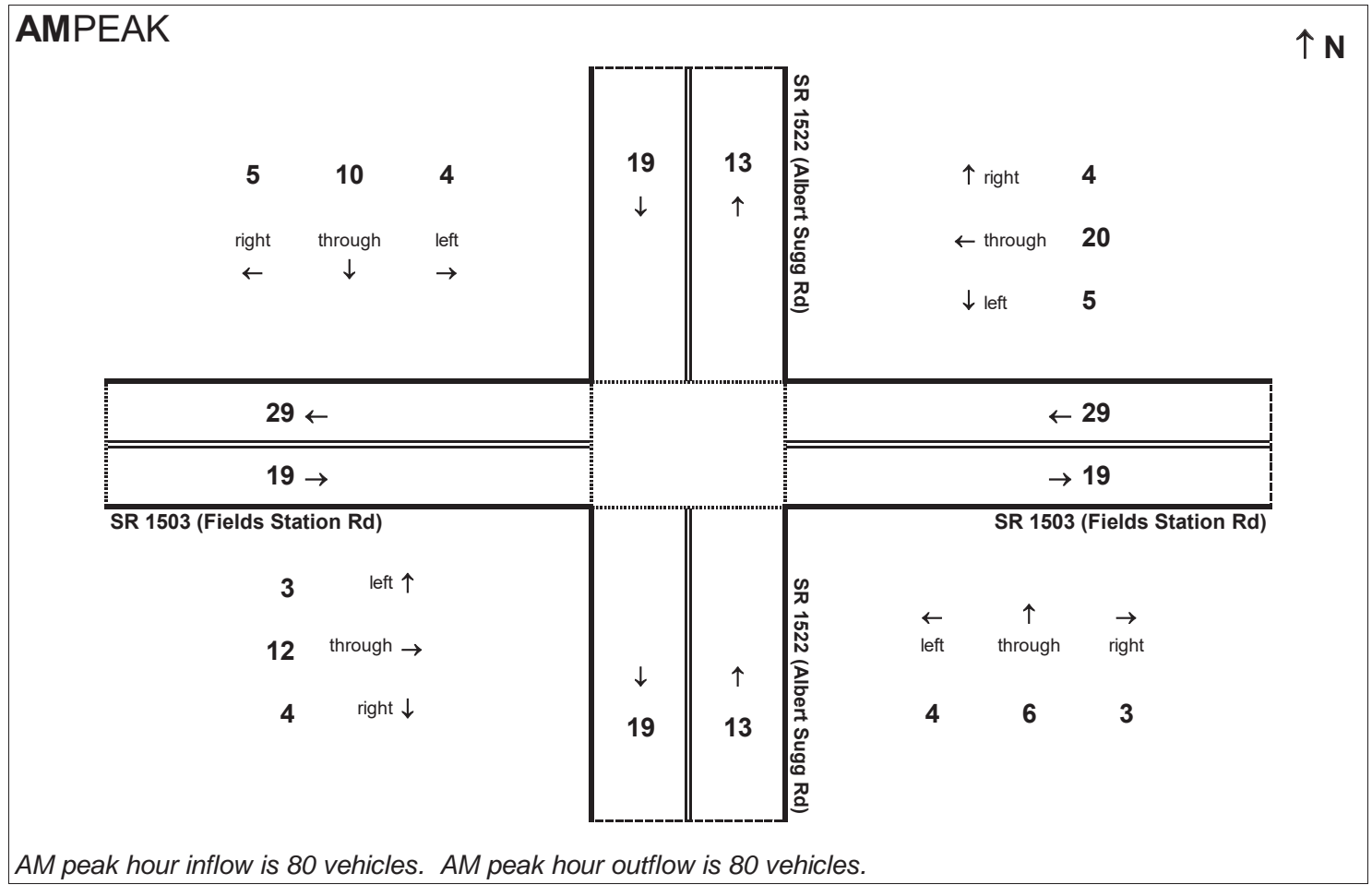


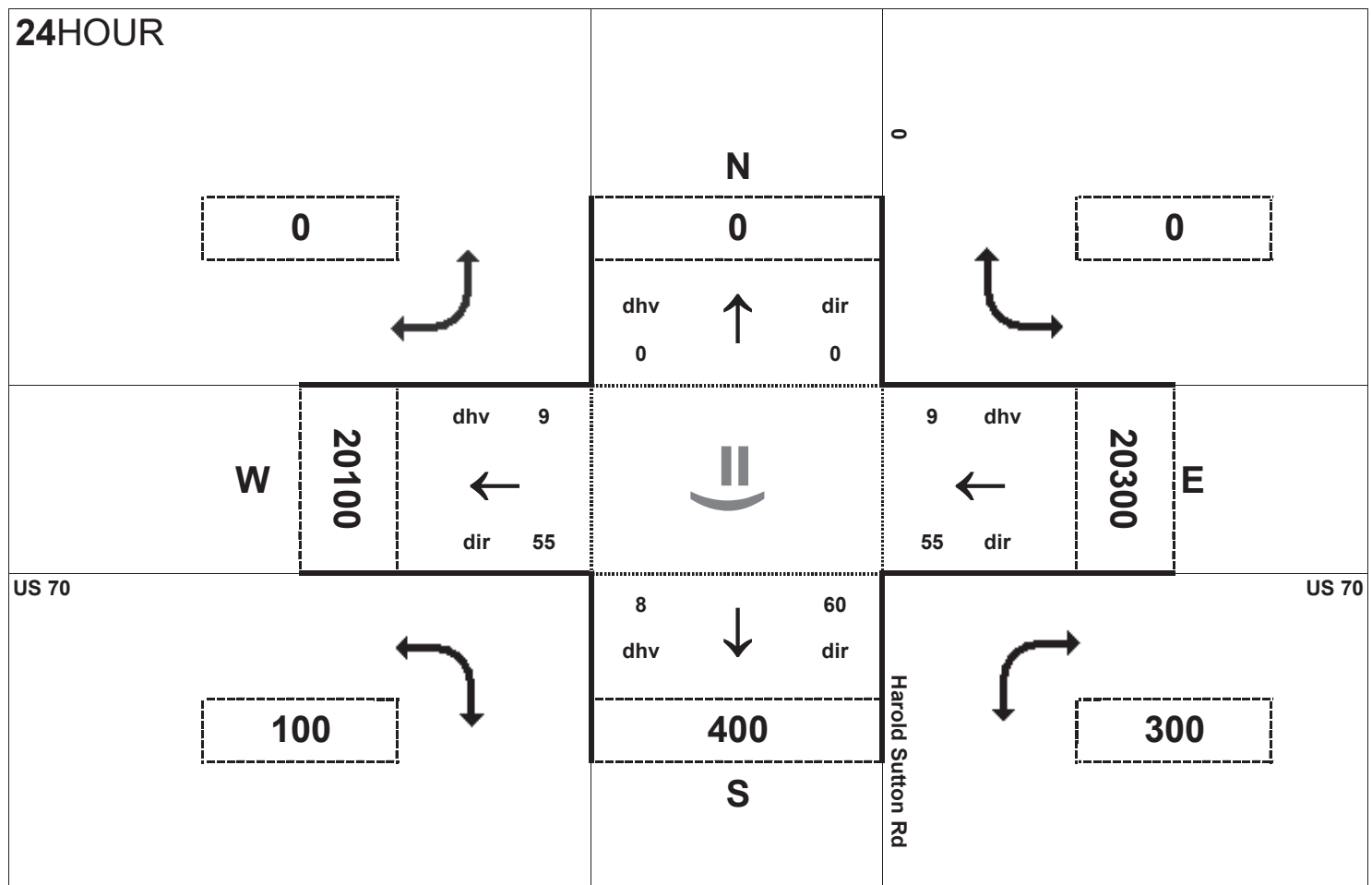
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 411 Intersection of SR 1522 (Albert Sugg Rd) at SR 1503 (Fields Station Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



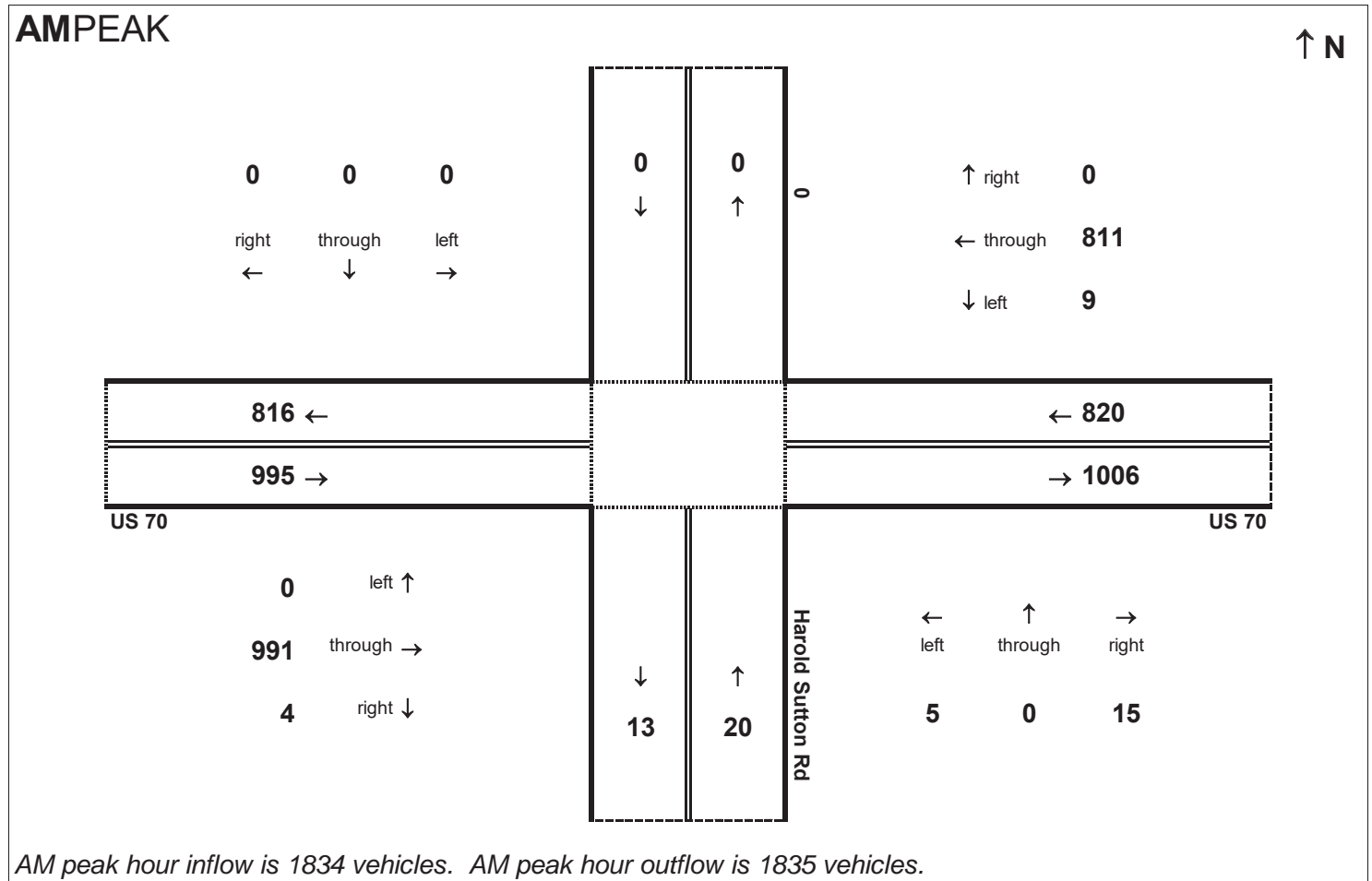


Peak Hour Volume Breakouts Report:
412 Intersection of US 70 and Harold Sutton Rd

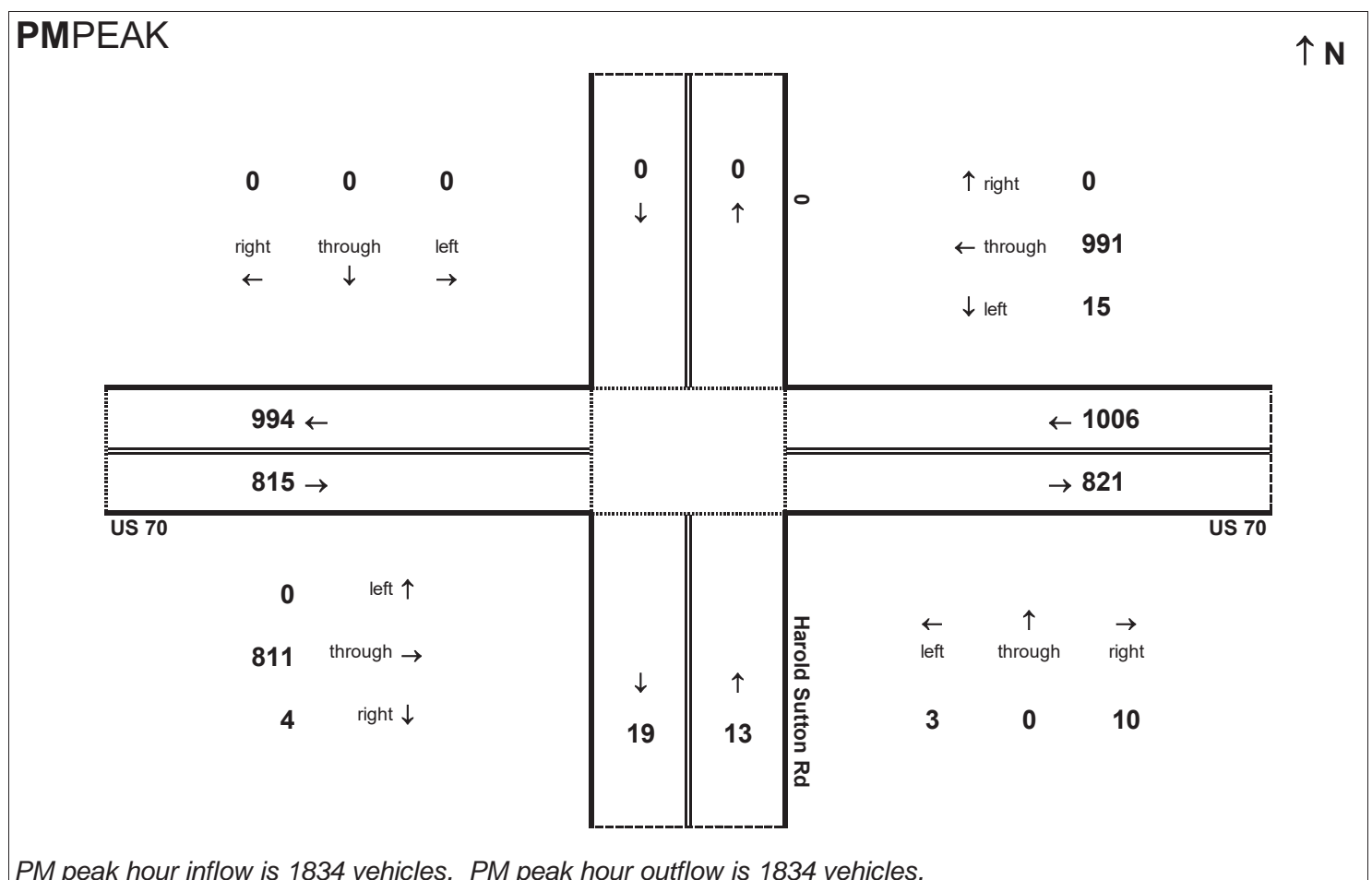
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

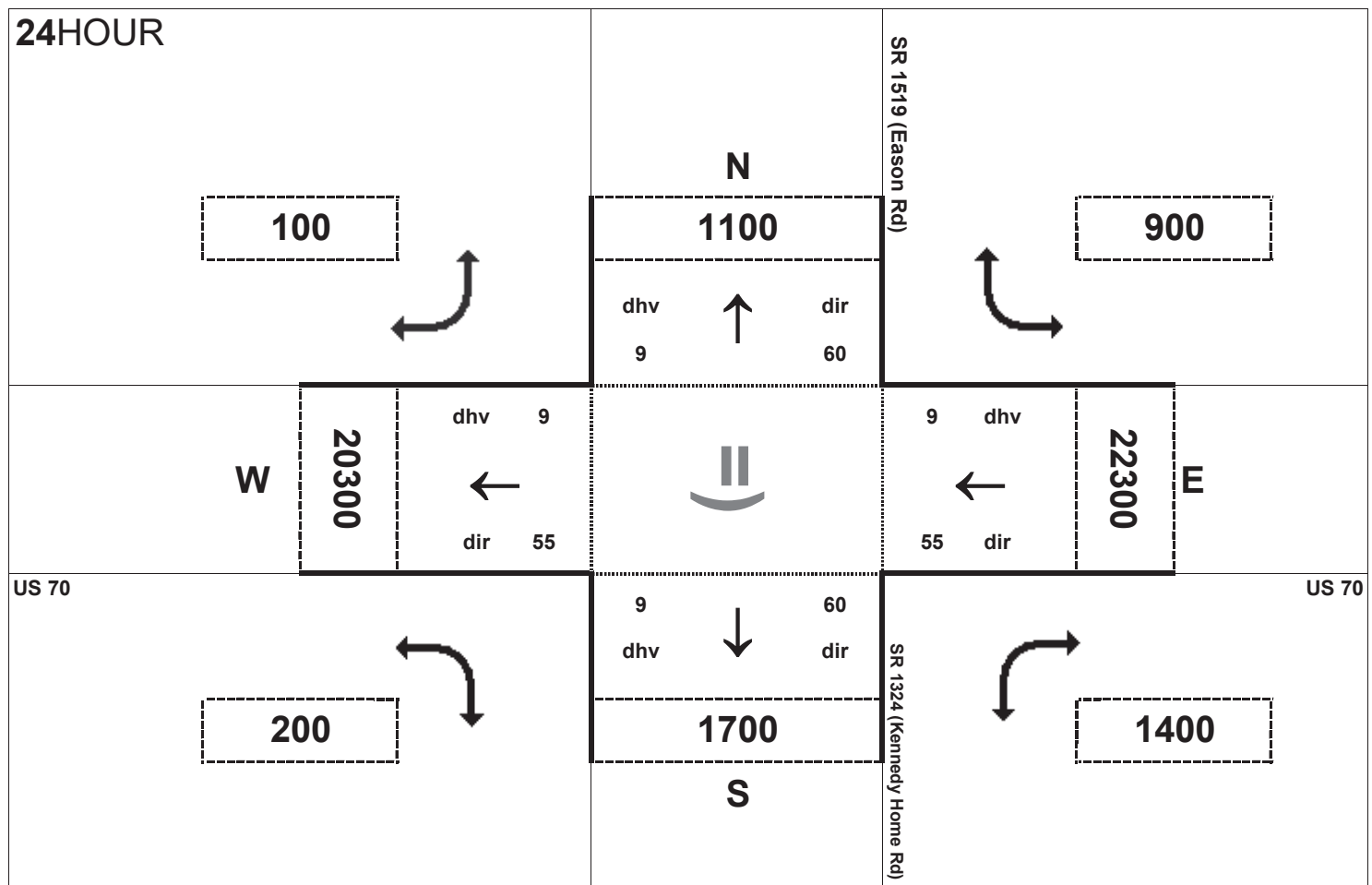
Project:
R-2553



AM peak hour inflow is 1834 vehicles. AM peak hour outflow is 1835 vehicles.



PM peak hour inflow is 1834 vehicles. PM peak hour outflow is 1834 vehicles.

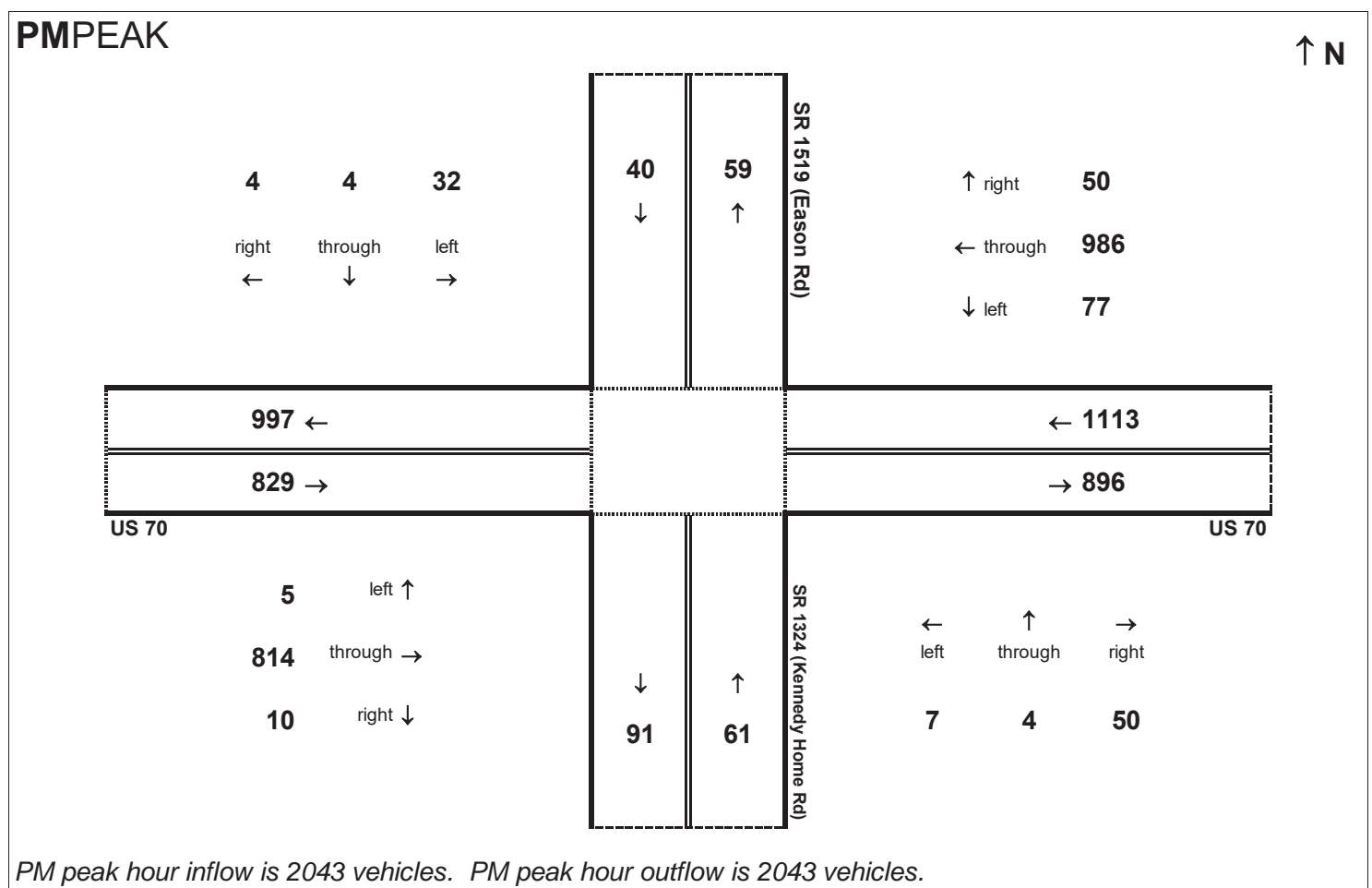
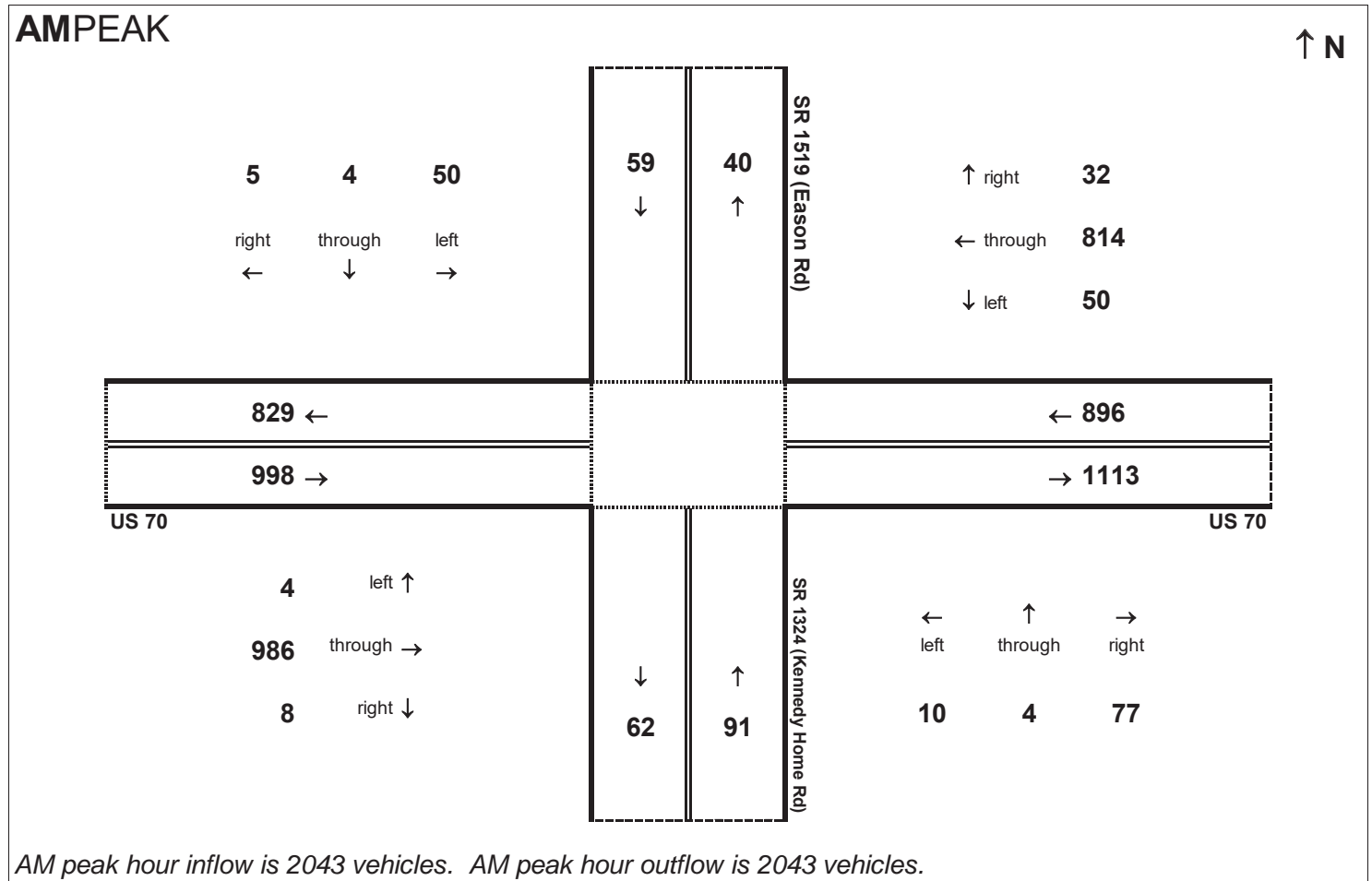


Peak Hour Volume Breakouts Report:
 413 Intersection of US 70 and SR 1519 (Eason Rd) /
 SR 1324 (Kennedy Home Rd)

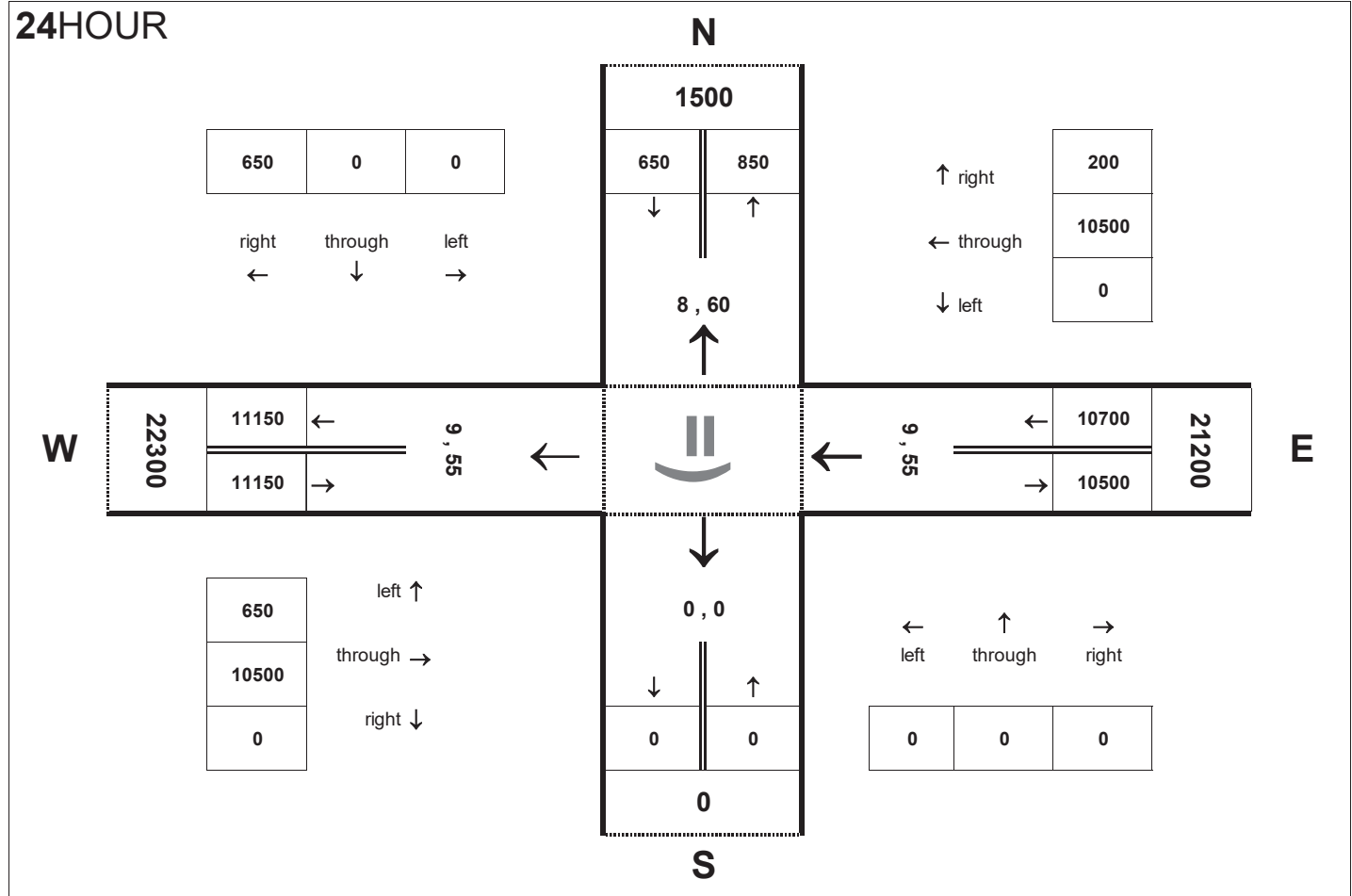
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



24HOUR



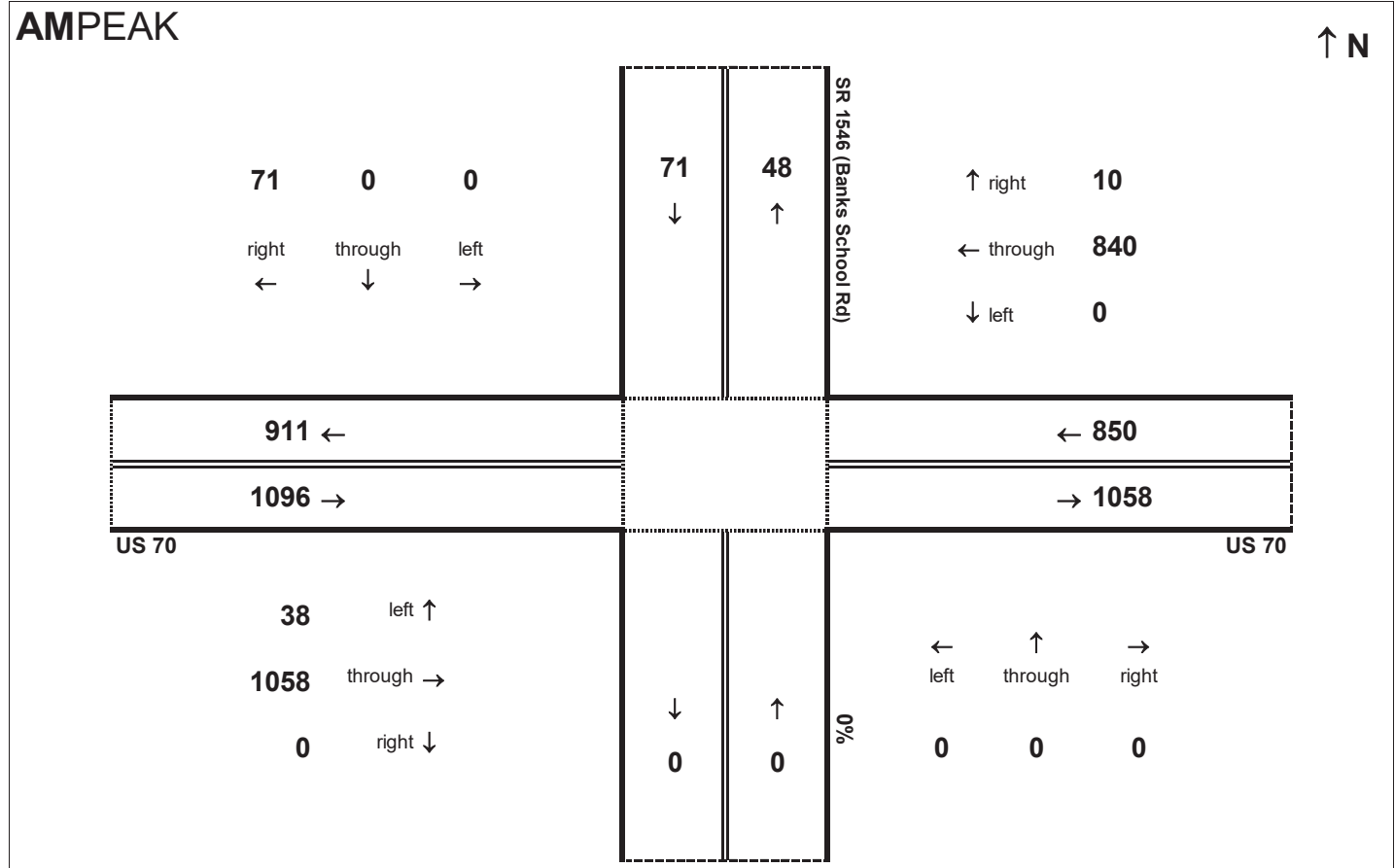
Peak Hour Volume Breakouts Report:
414 Intersection of US 70 and SR 1546 (Banks School Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

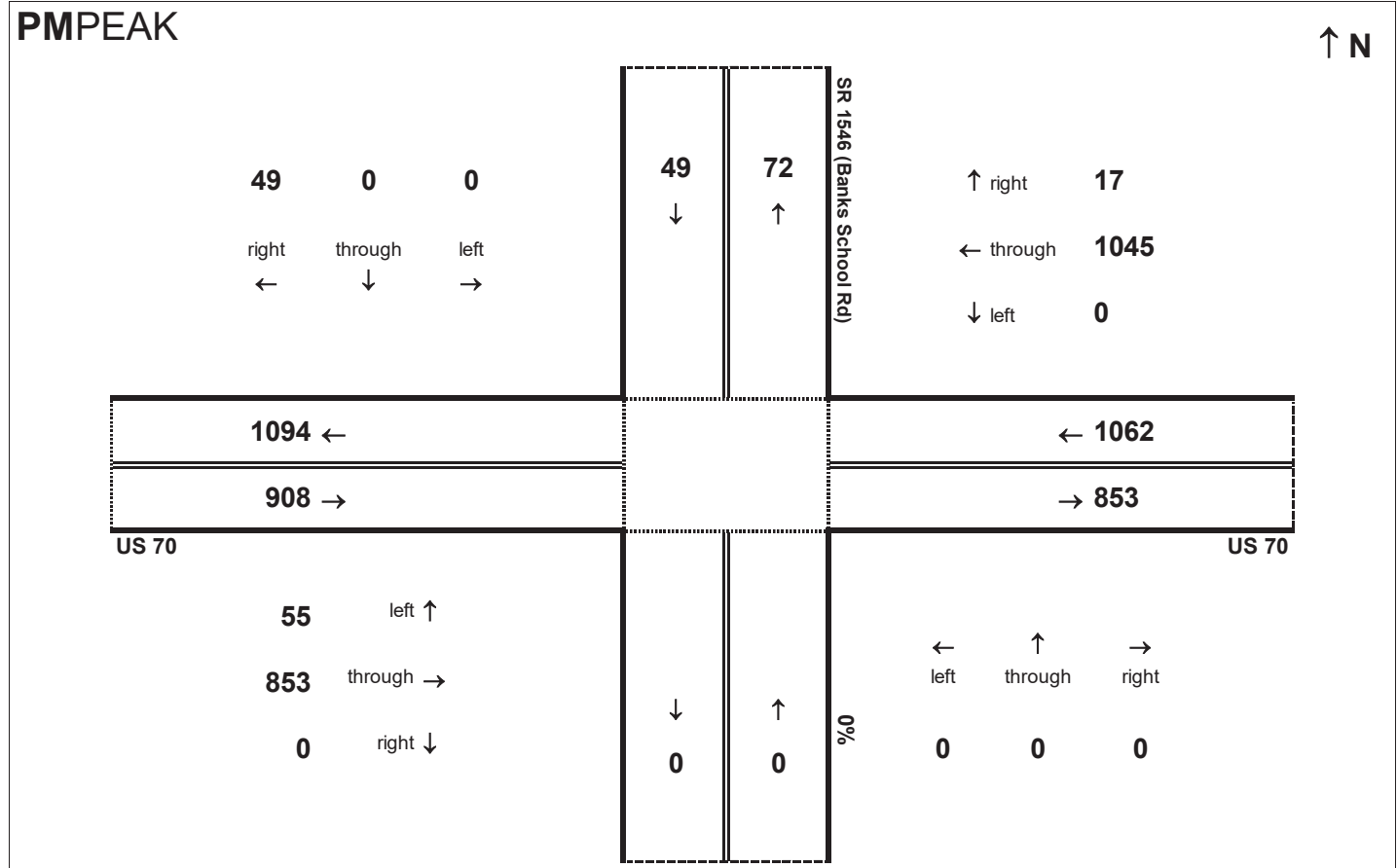
Project:
R-2553

AMPEAK



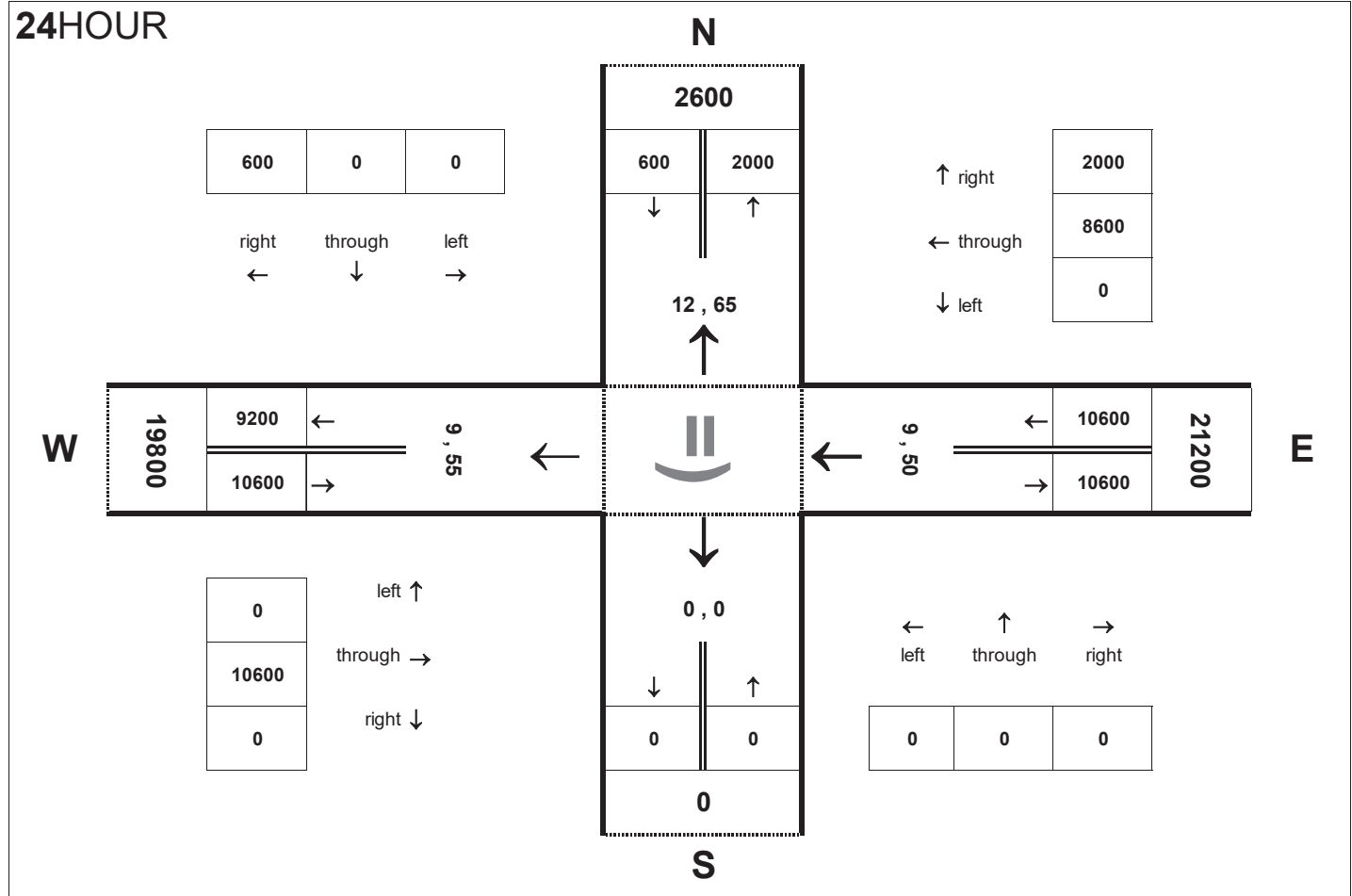
AM peak hour inflow is 2017 vehicles. AM peak hour outflow is 2017 vehicles.

PMPEAK



PM peak hour inflow is 2018 vehicles. PM peak hour outflow is 2017 vehicles.

24HOUR



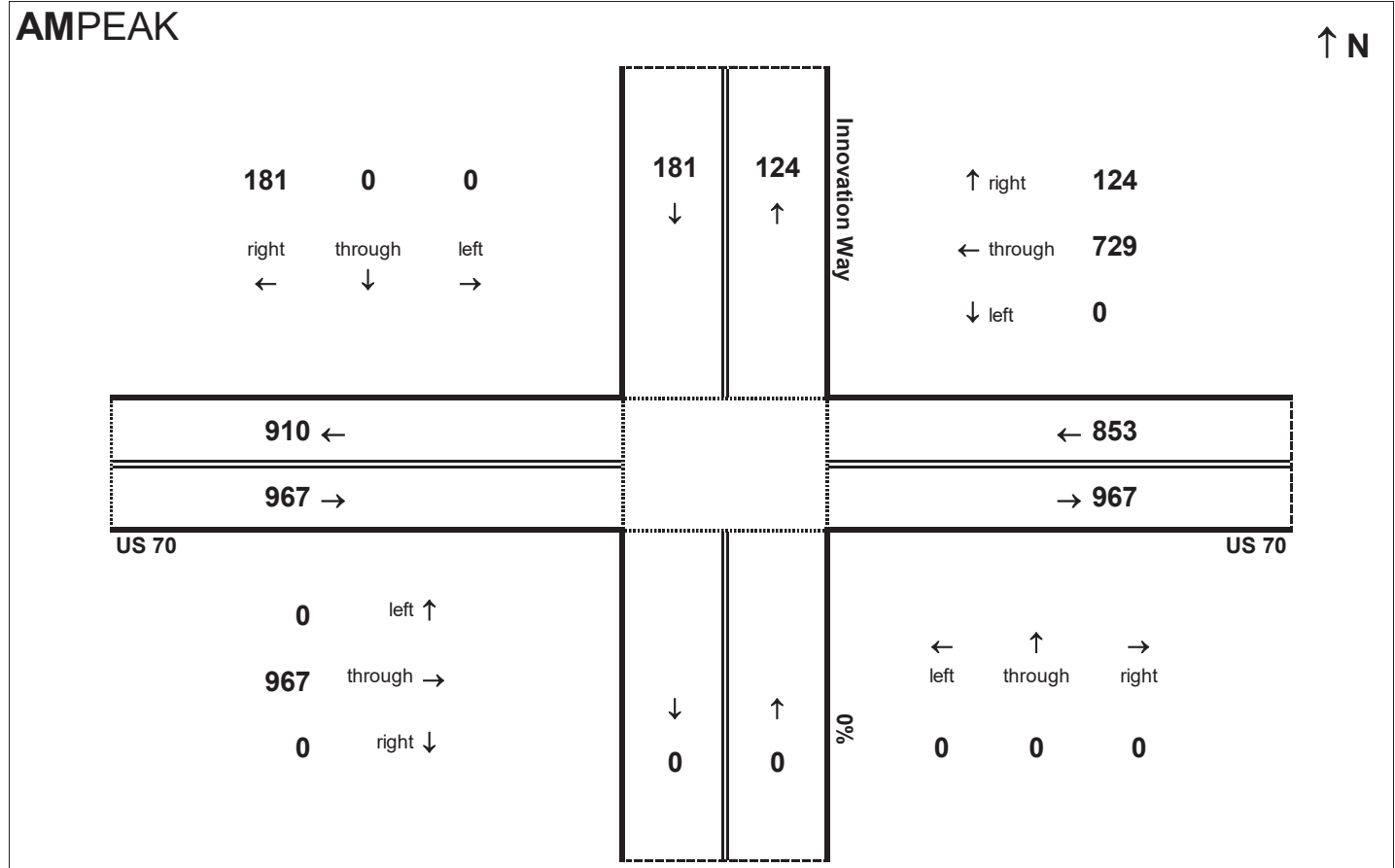
Peak Hour Volume Breakouts Report:
415 Intersection of US 70 and Innovation Way

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

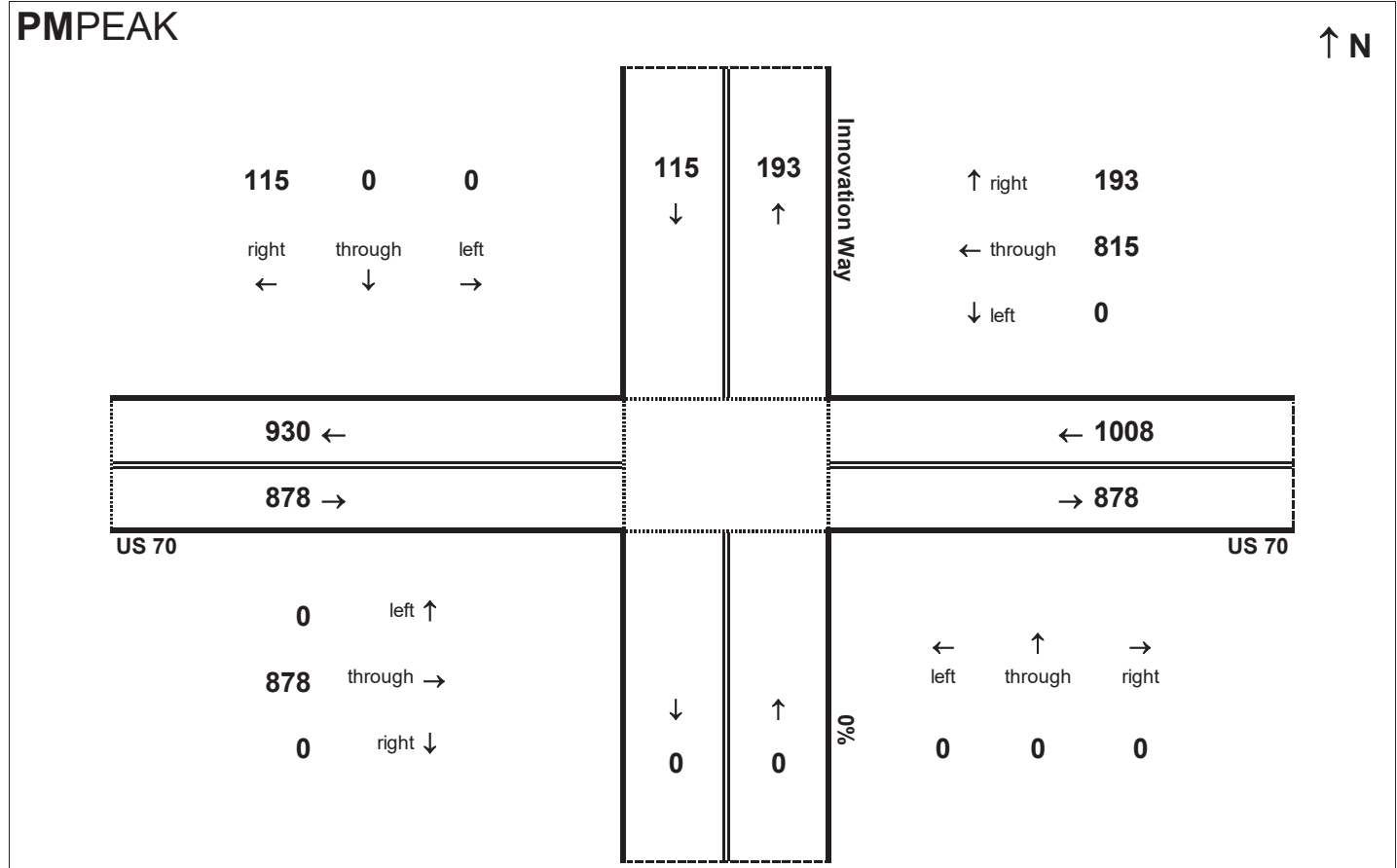
Project:
R-2553

AMPEAK

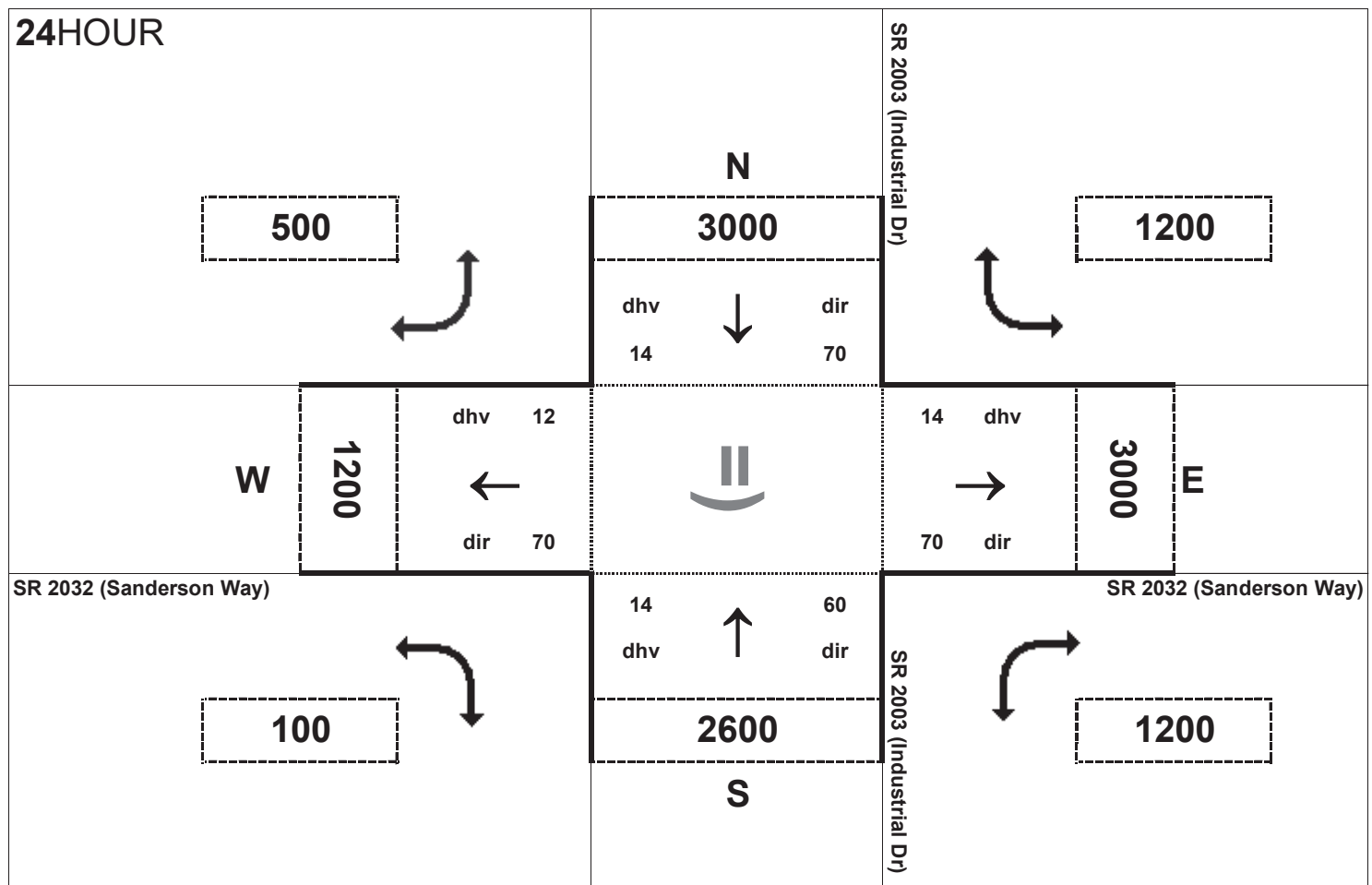


AM peak hour inflow is 2001 vehicles. AM peak hour outflow is 2001 vehicles.

PMPEAK



PM peak hour inflow is 2001 vehicles. PM peak hour outflow is 2002 vehicles.

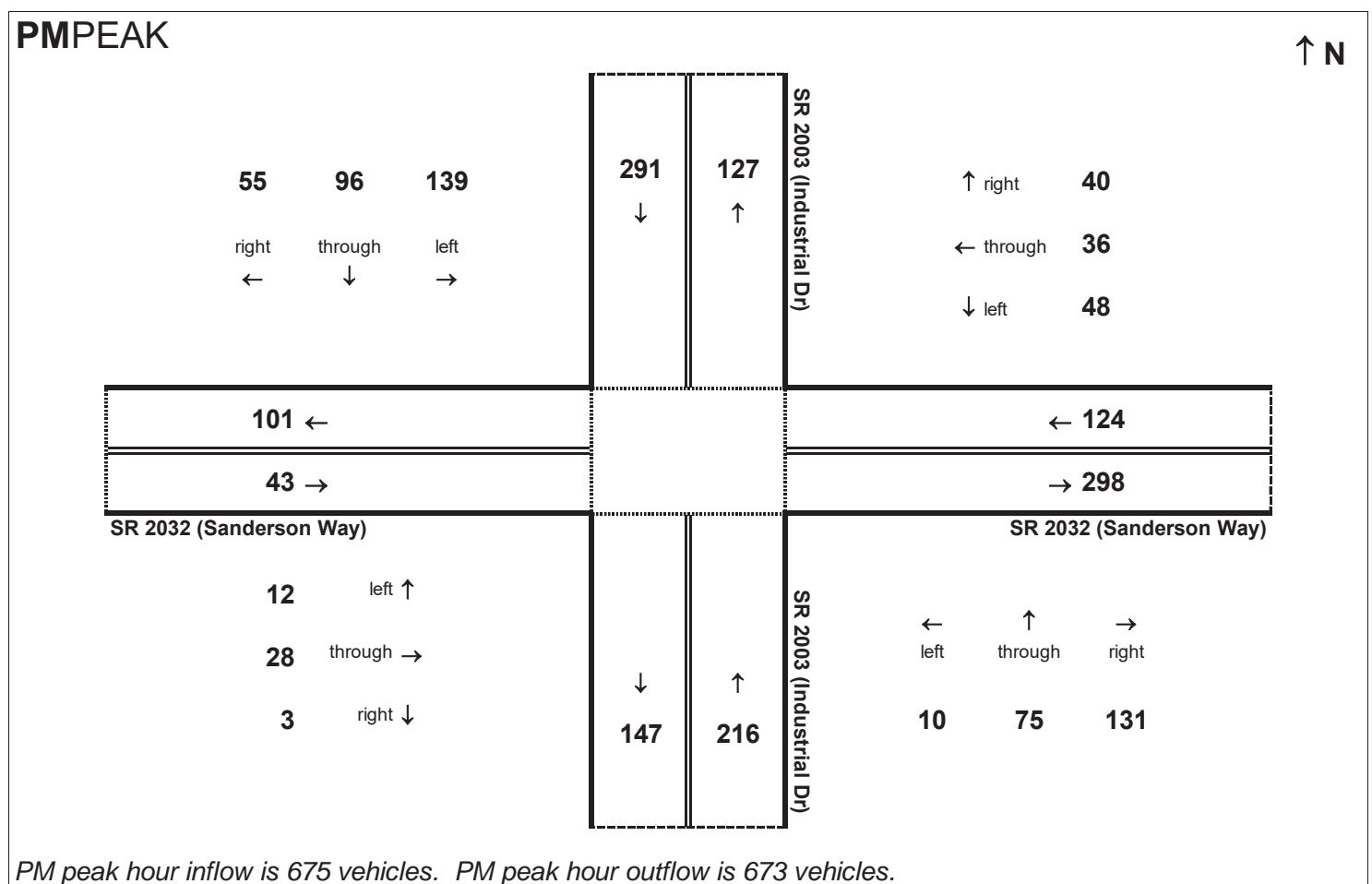
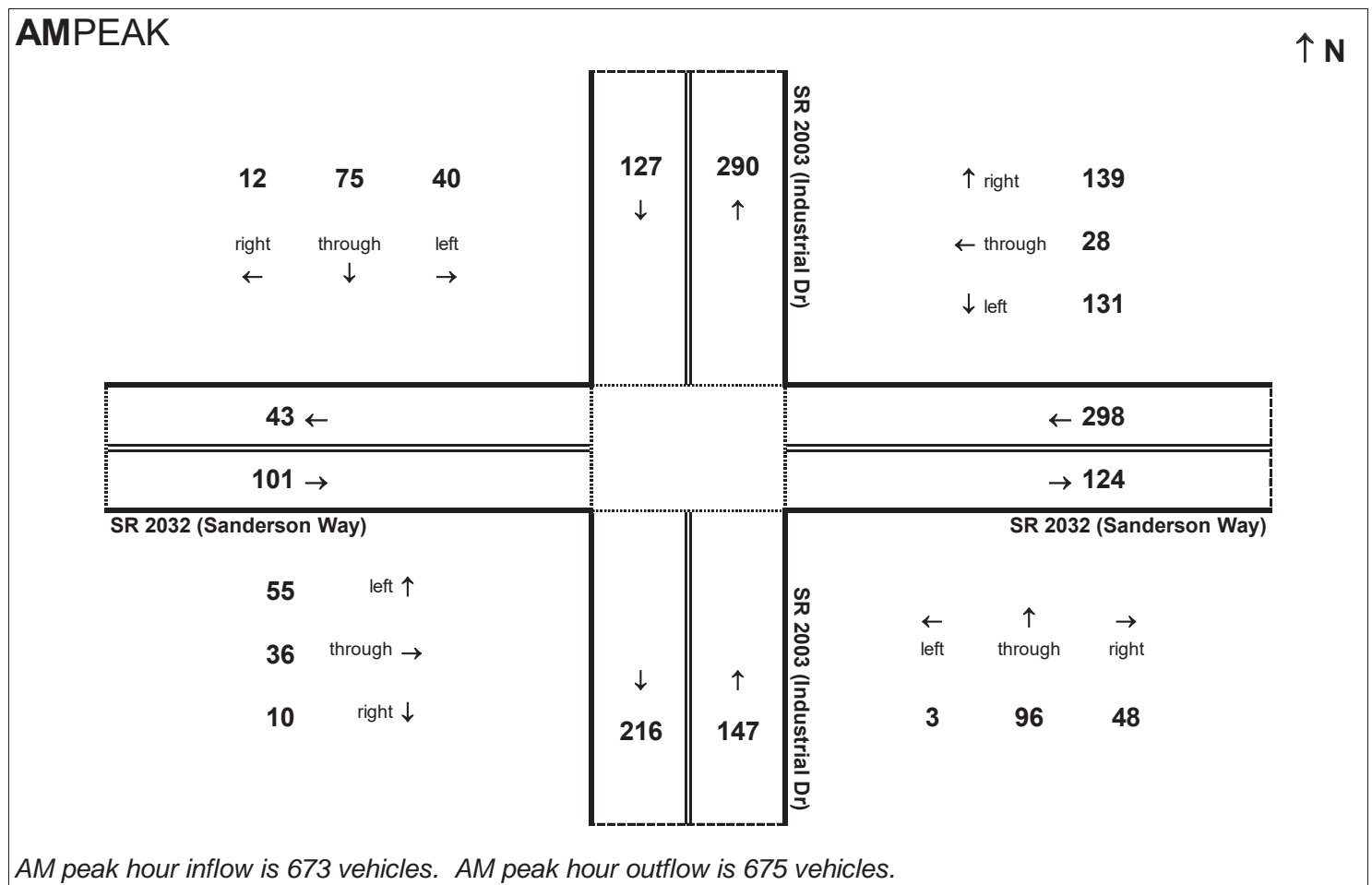


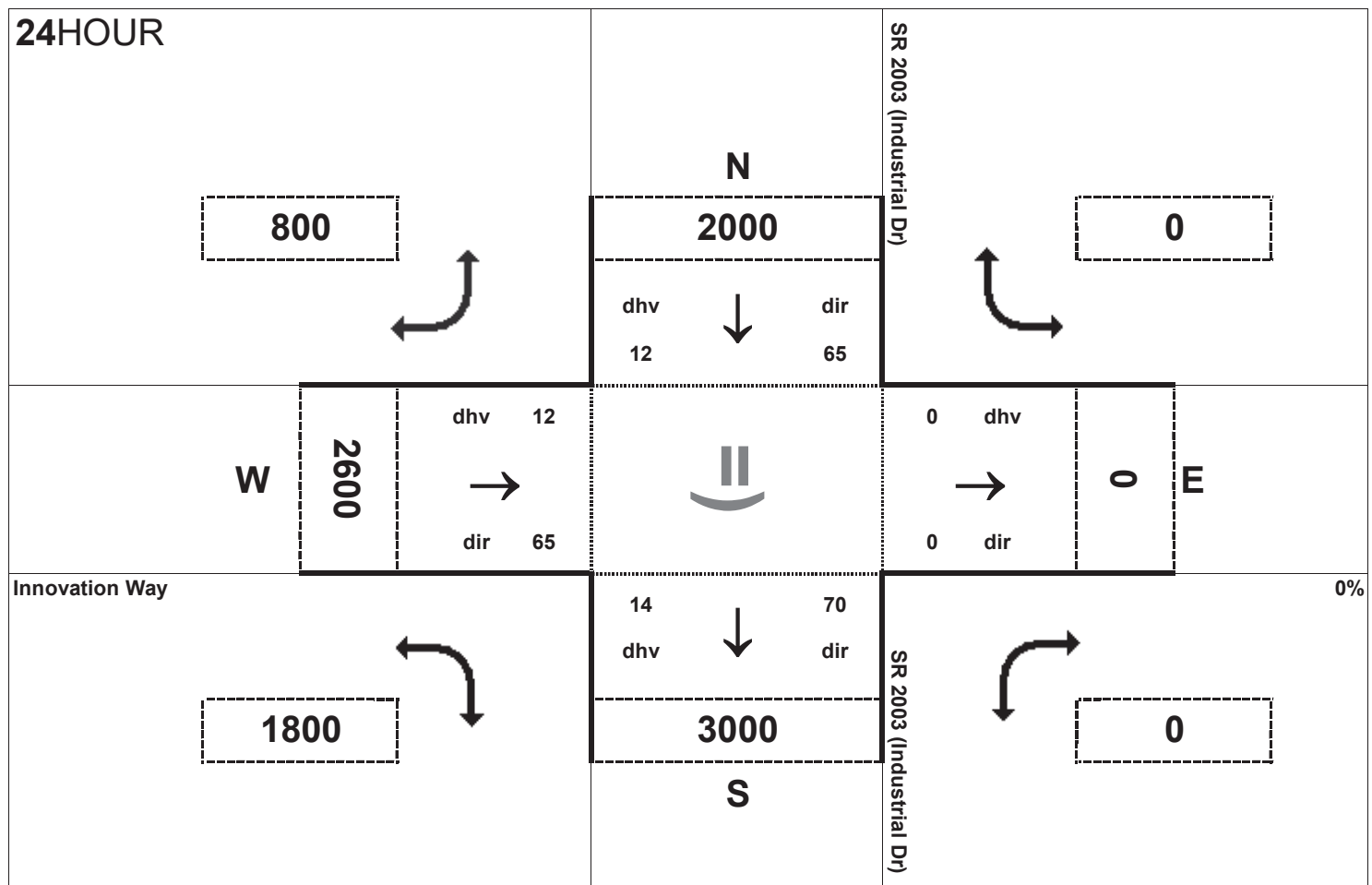
Peak Hour Volume Breakouts Report:
 416 Intersection of SR 2003 (Industrial Dr) and SR 2032 (Sanderson Way)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



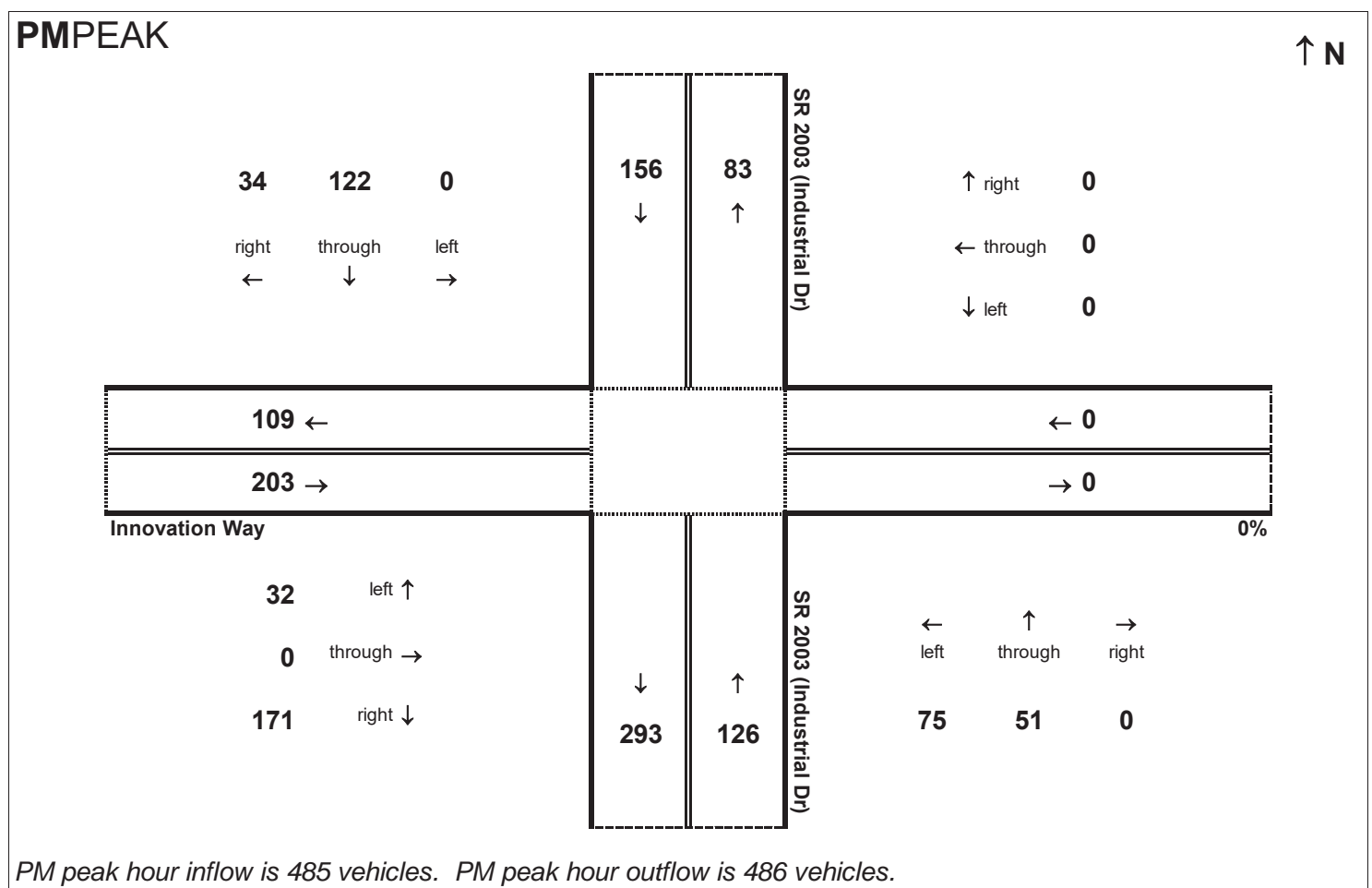
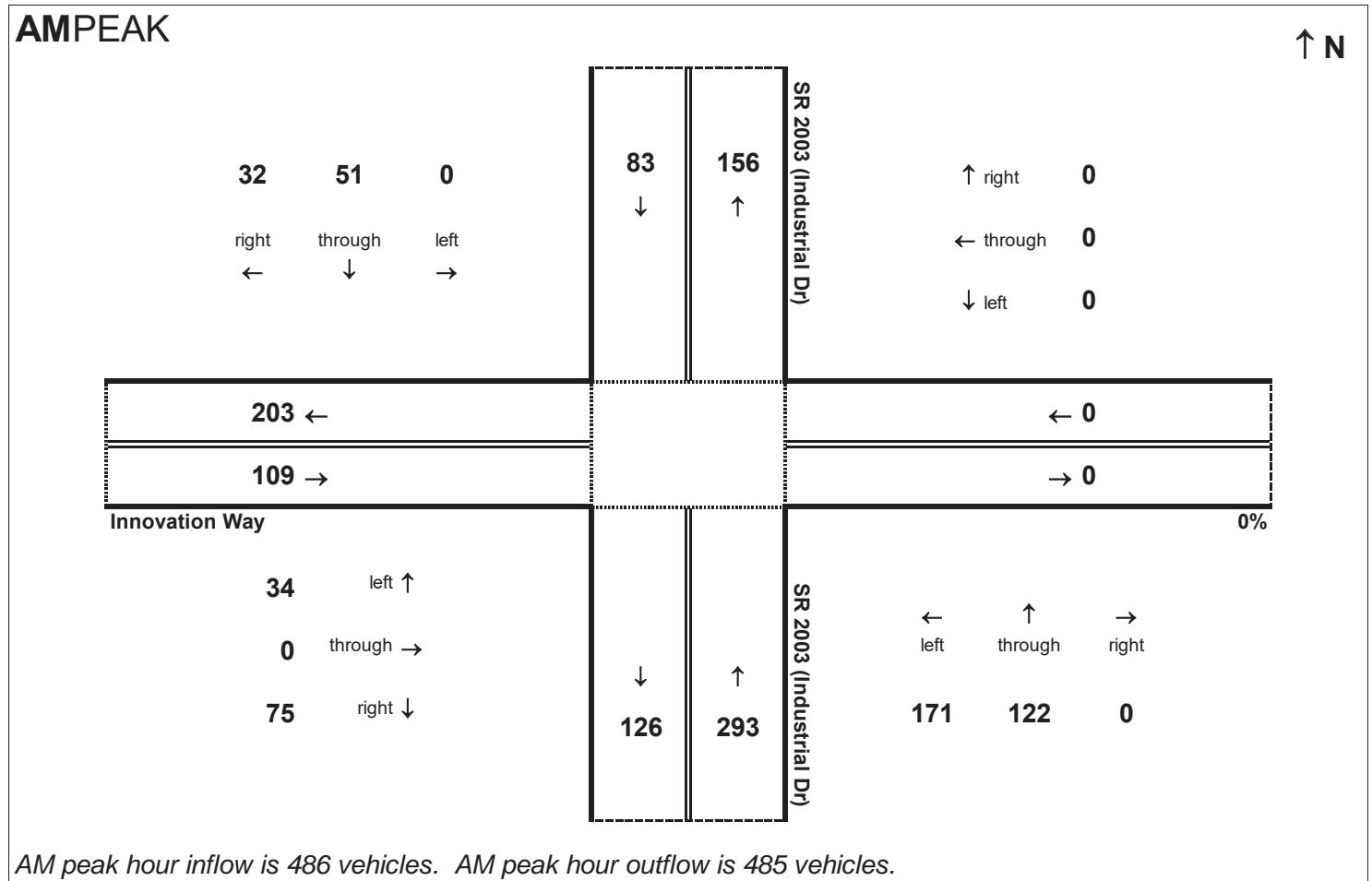


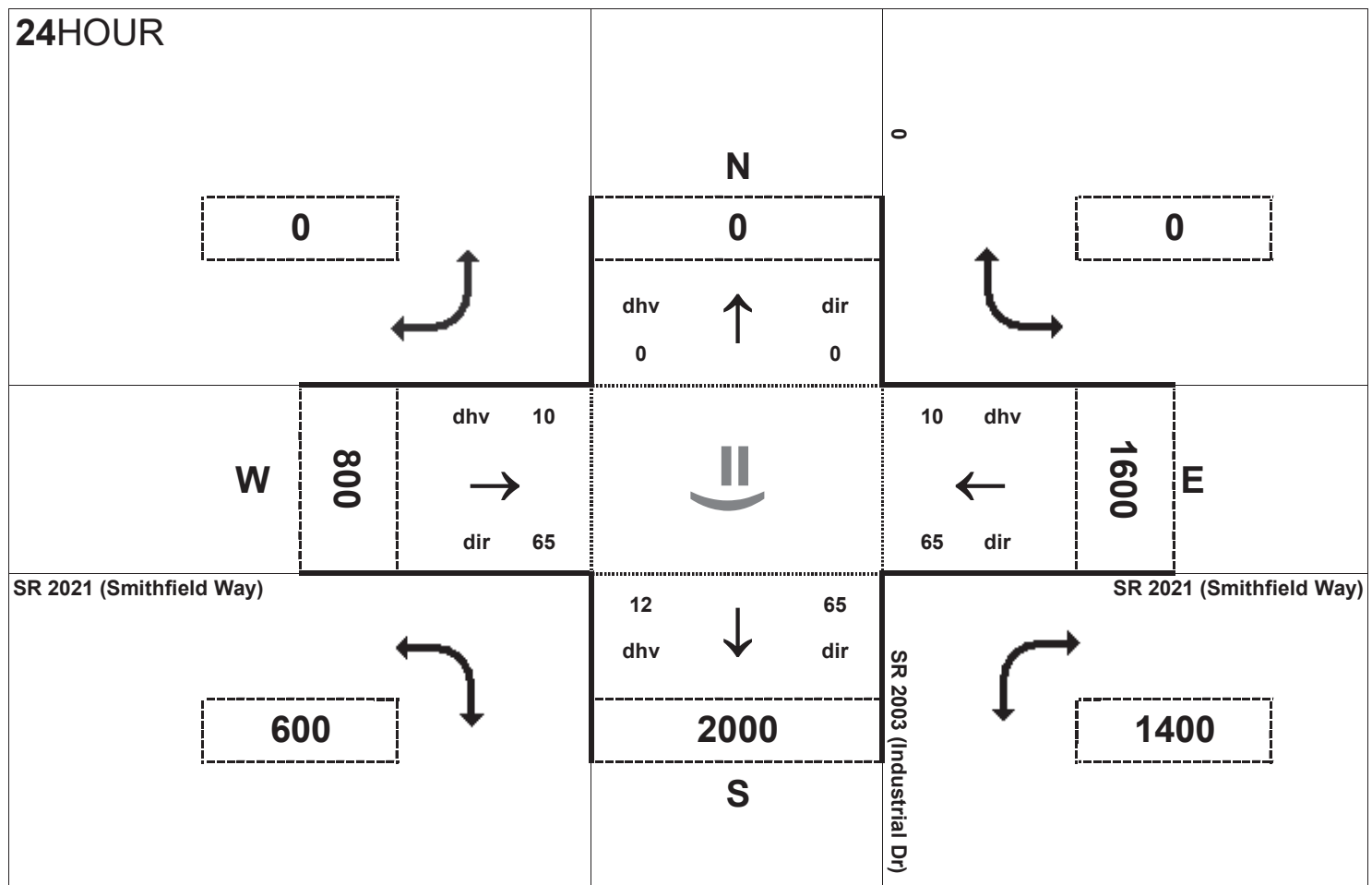
Peak Hour Volume Breakouts Report:
 417 Intersection of SR 2003 (Industrial Dr) and Innovation Way

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



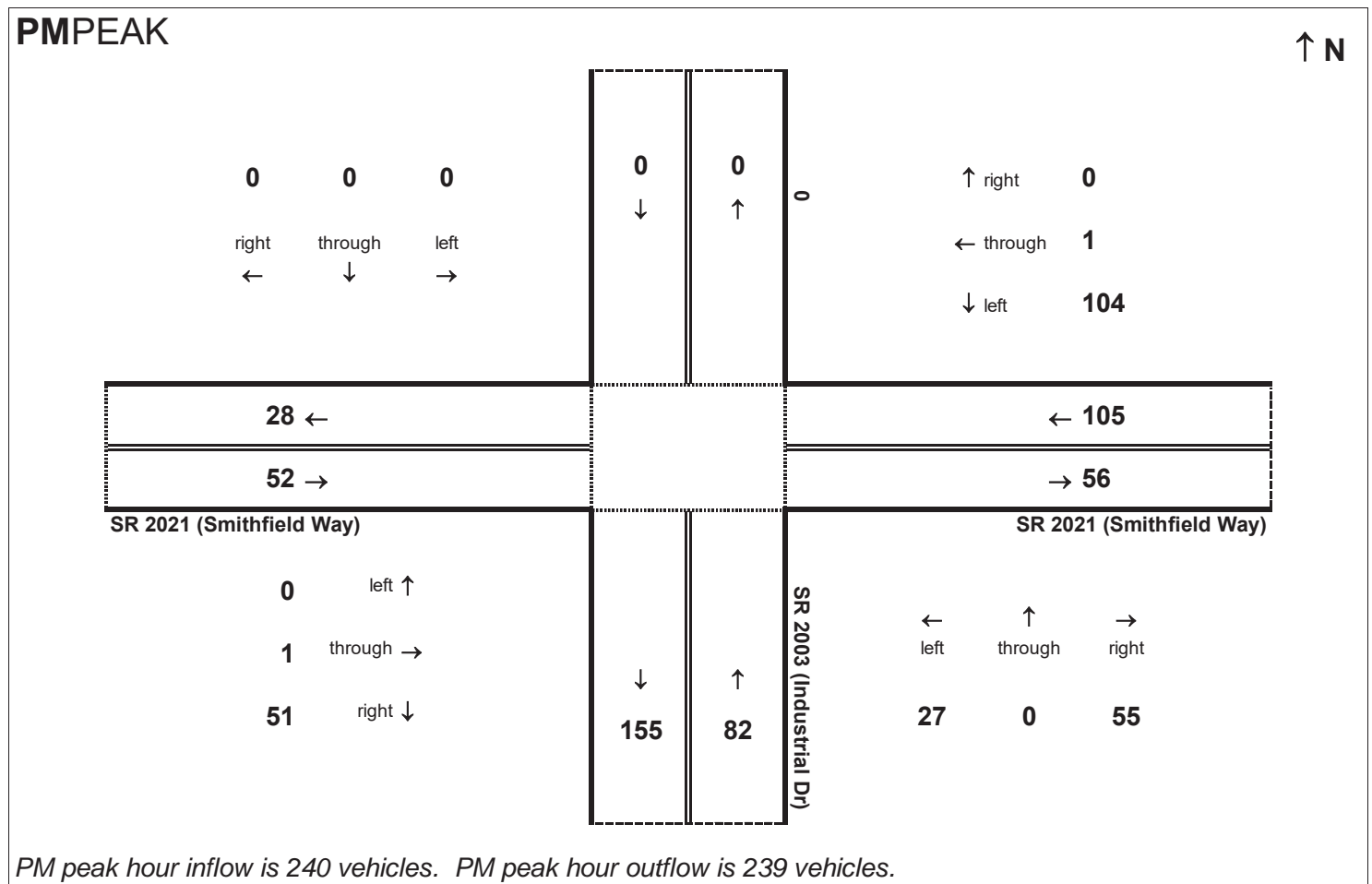
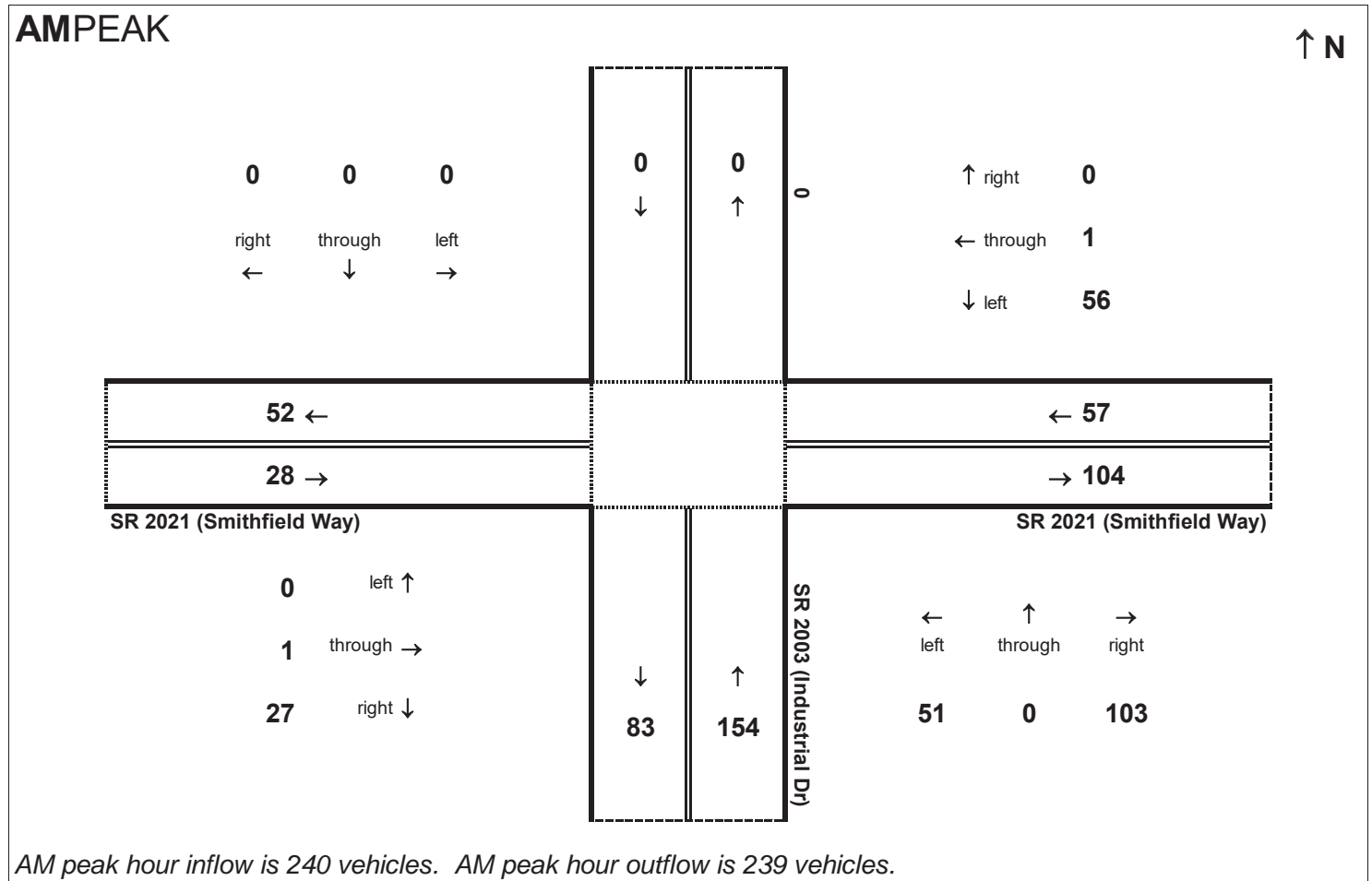


Peak Hour Volume Breakouts Report:
 418 Intersection of SR 2003 (Industrial Dr) and SR 2021 (Smithfield Way)

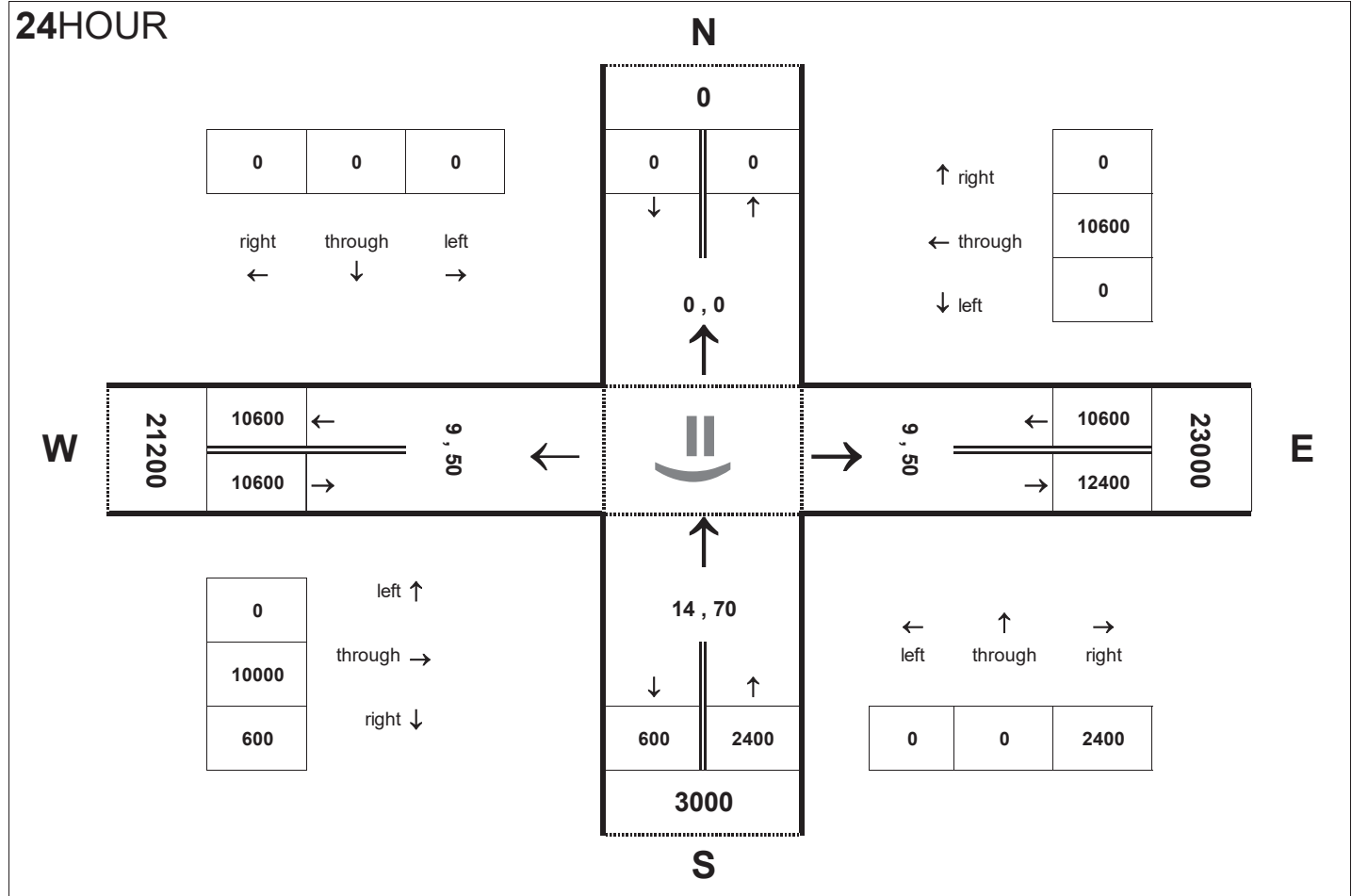
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
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24HOUR



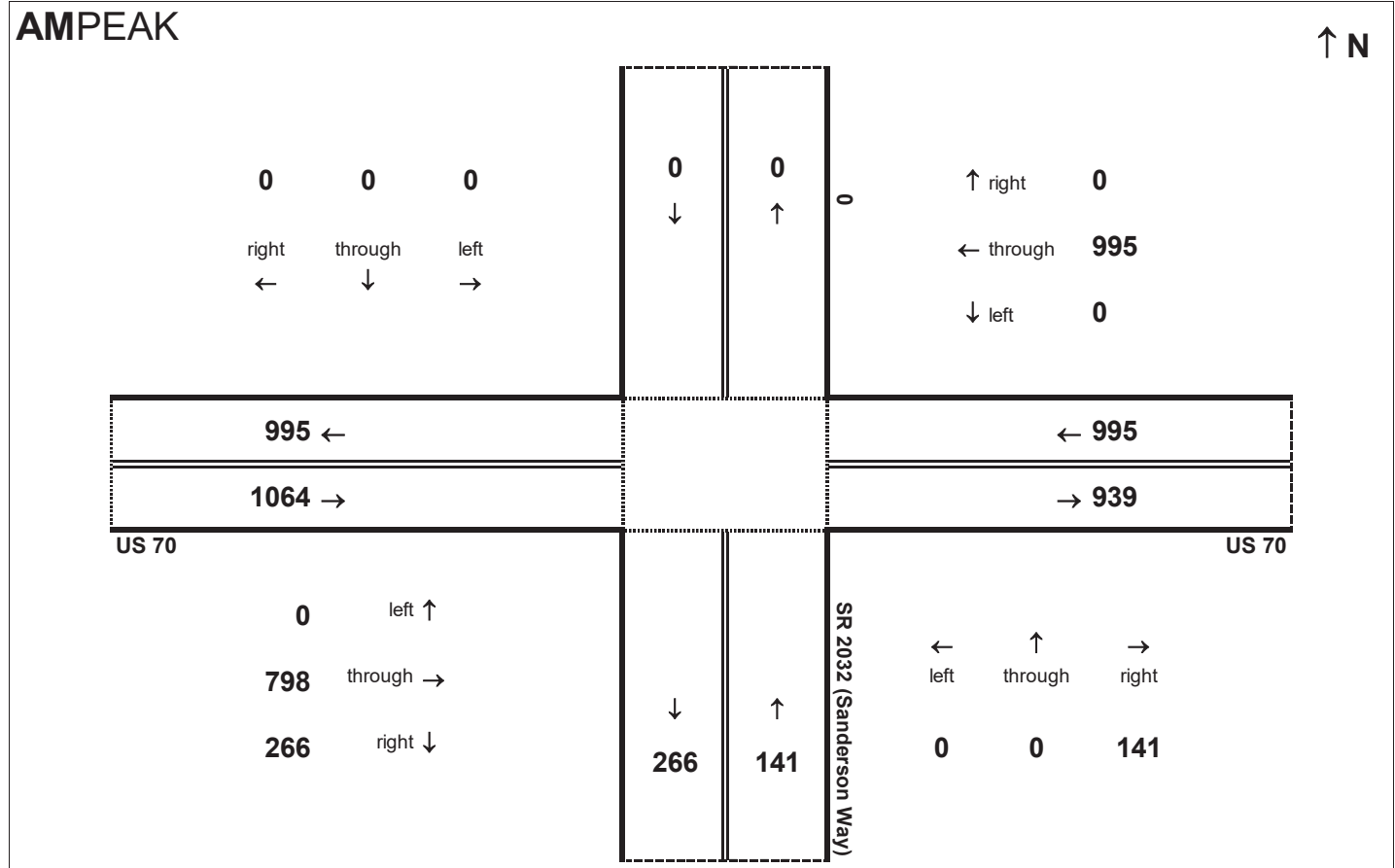
Peak Hour Volume Breakouts Report:
419 Intersection of US 70 and SR 2032 (Sanderson Way)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

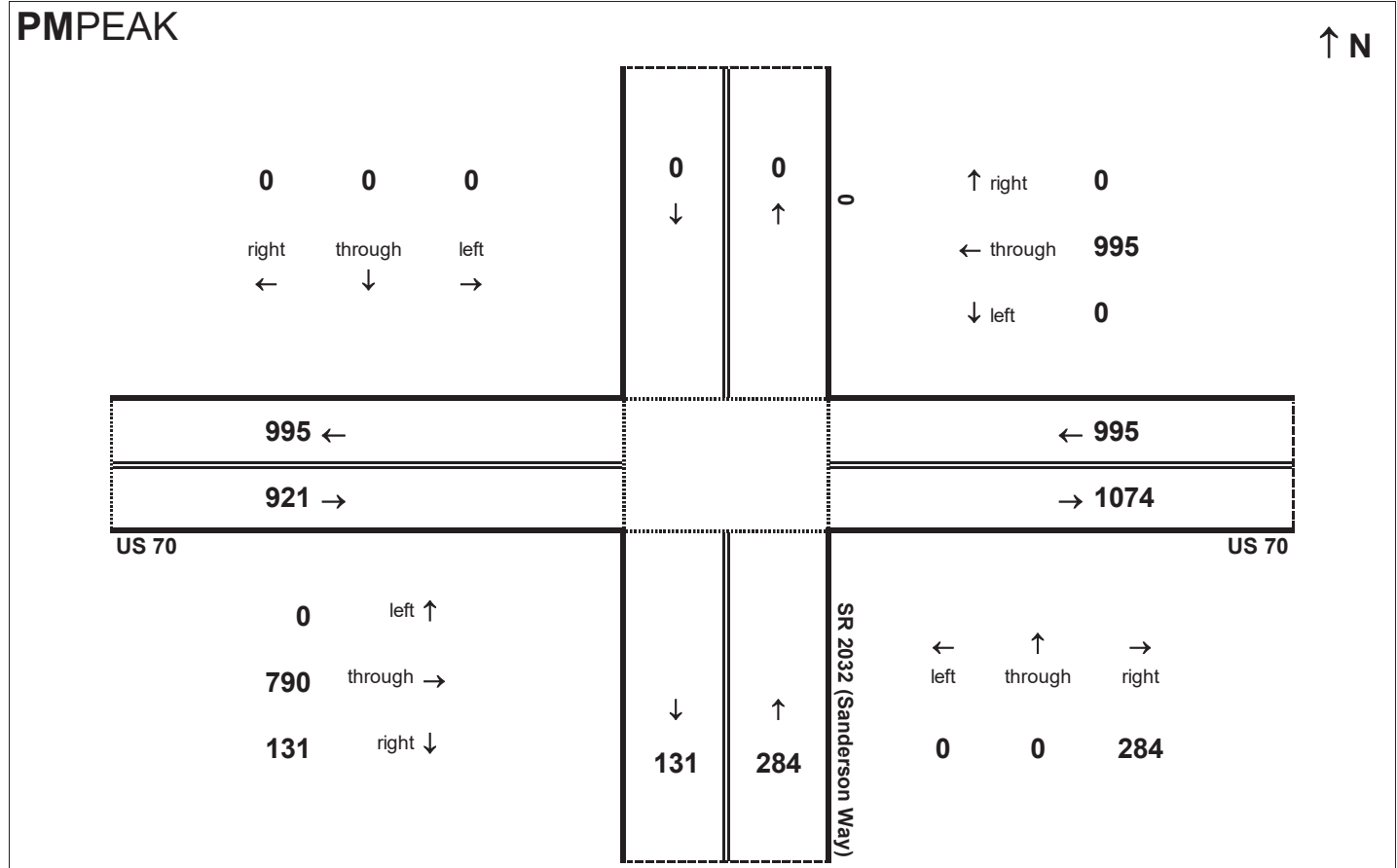
Project:
R 2553

AMPEAK

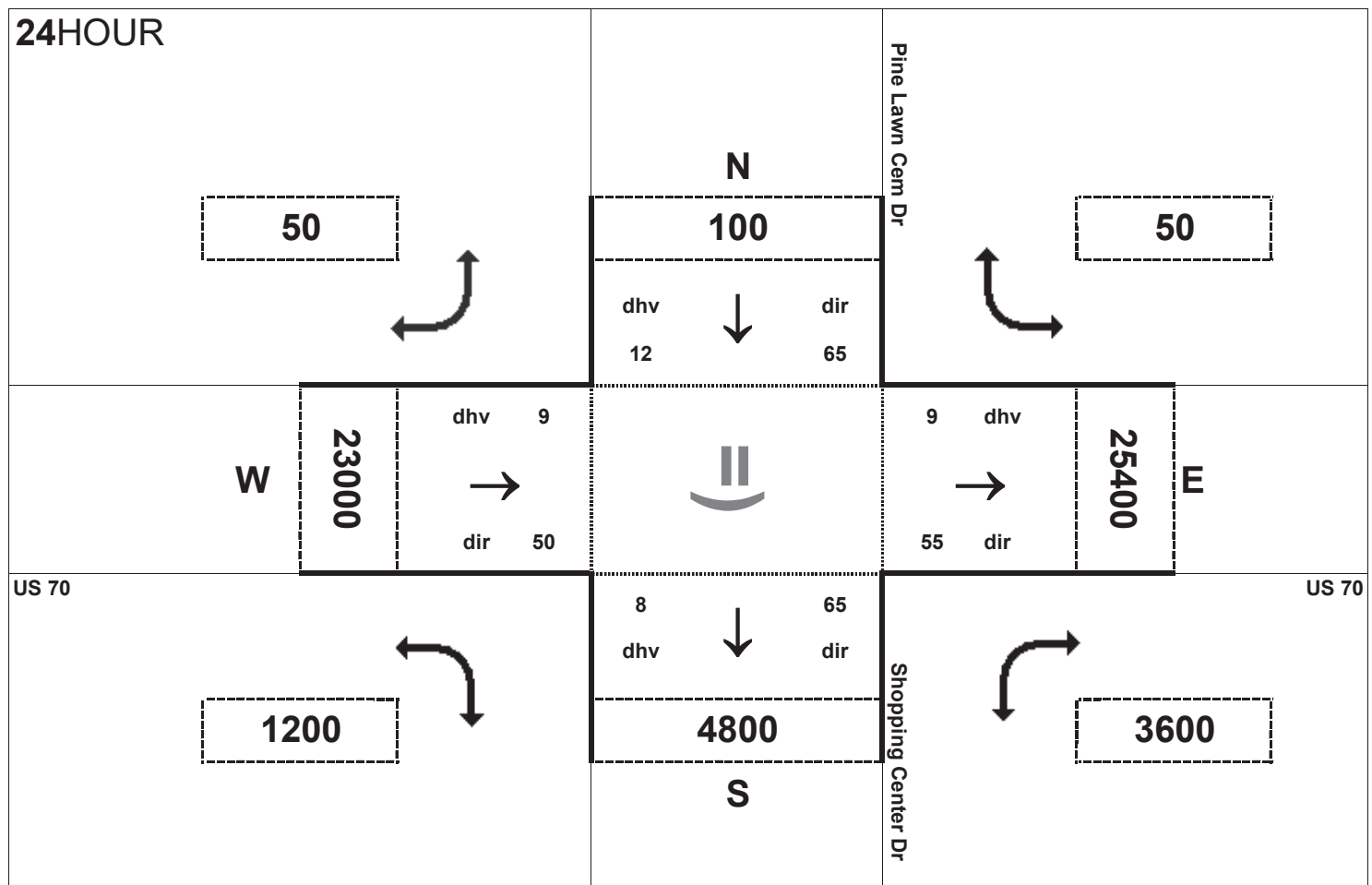


AM peak hour inflow is 2200 vehicles. AM peak hour outflow is 2199 vehicles.

PMPEAK



PM peak hour inflow is 2200 vehicles. PM peak hour outflow is 2200 vehicles.

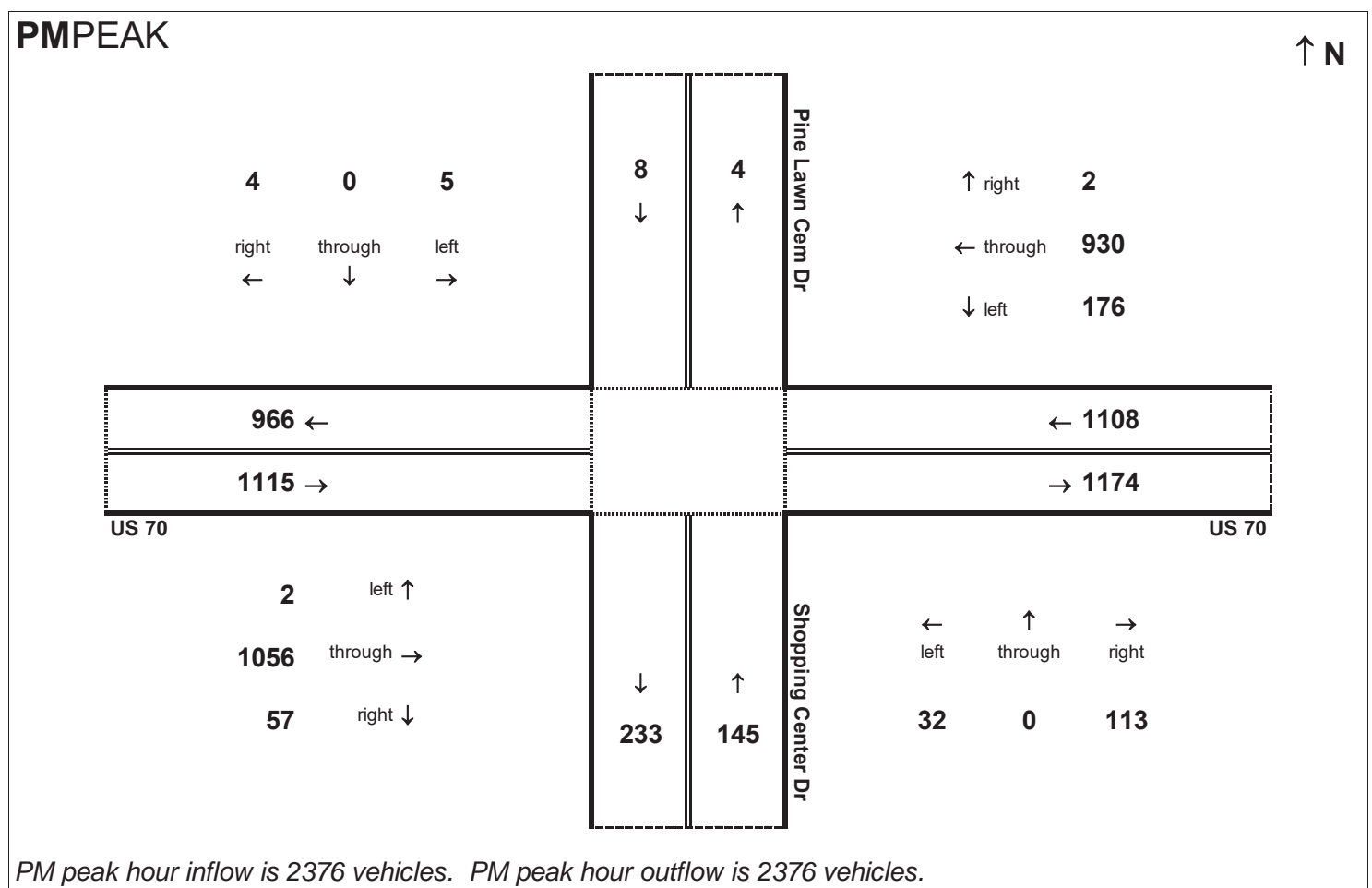
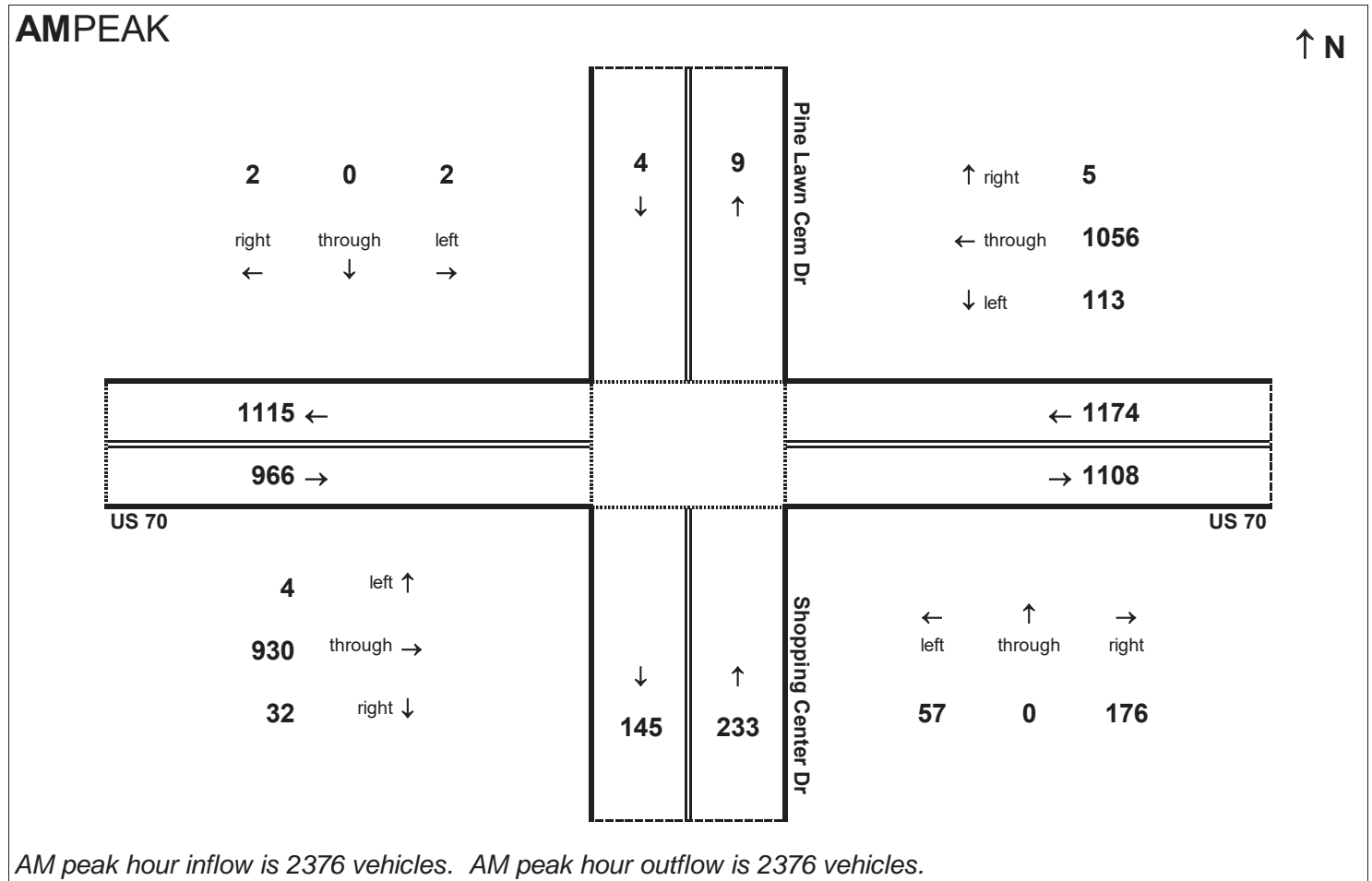


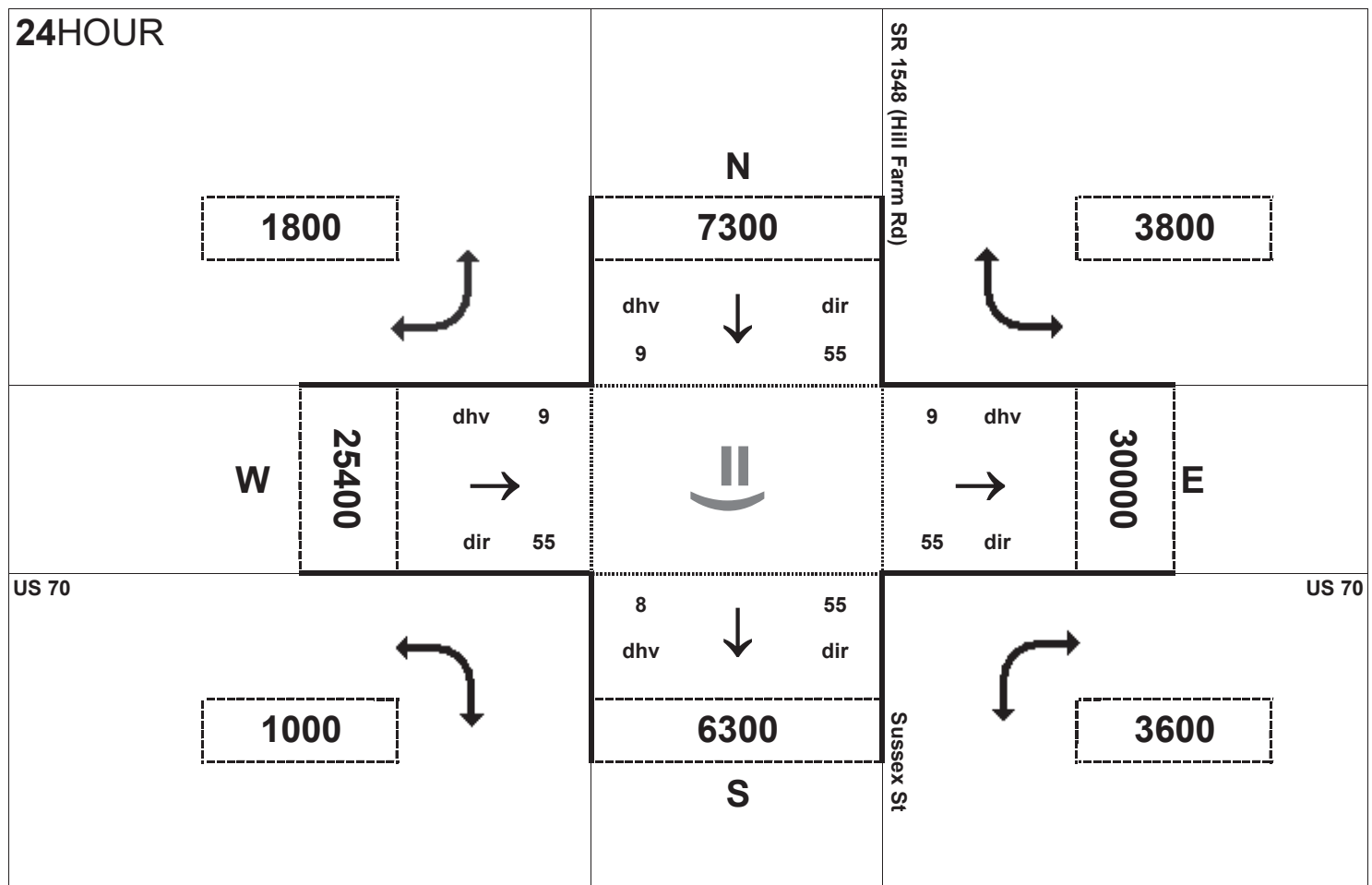
Peak Hour Volume Breakouts Report:
 420 Intersection of US 70 and Pine Lawn Cem Dr / Shopping Center Dr

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



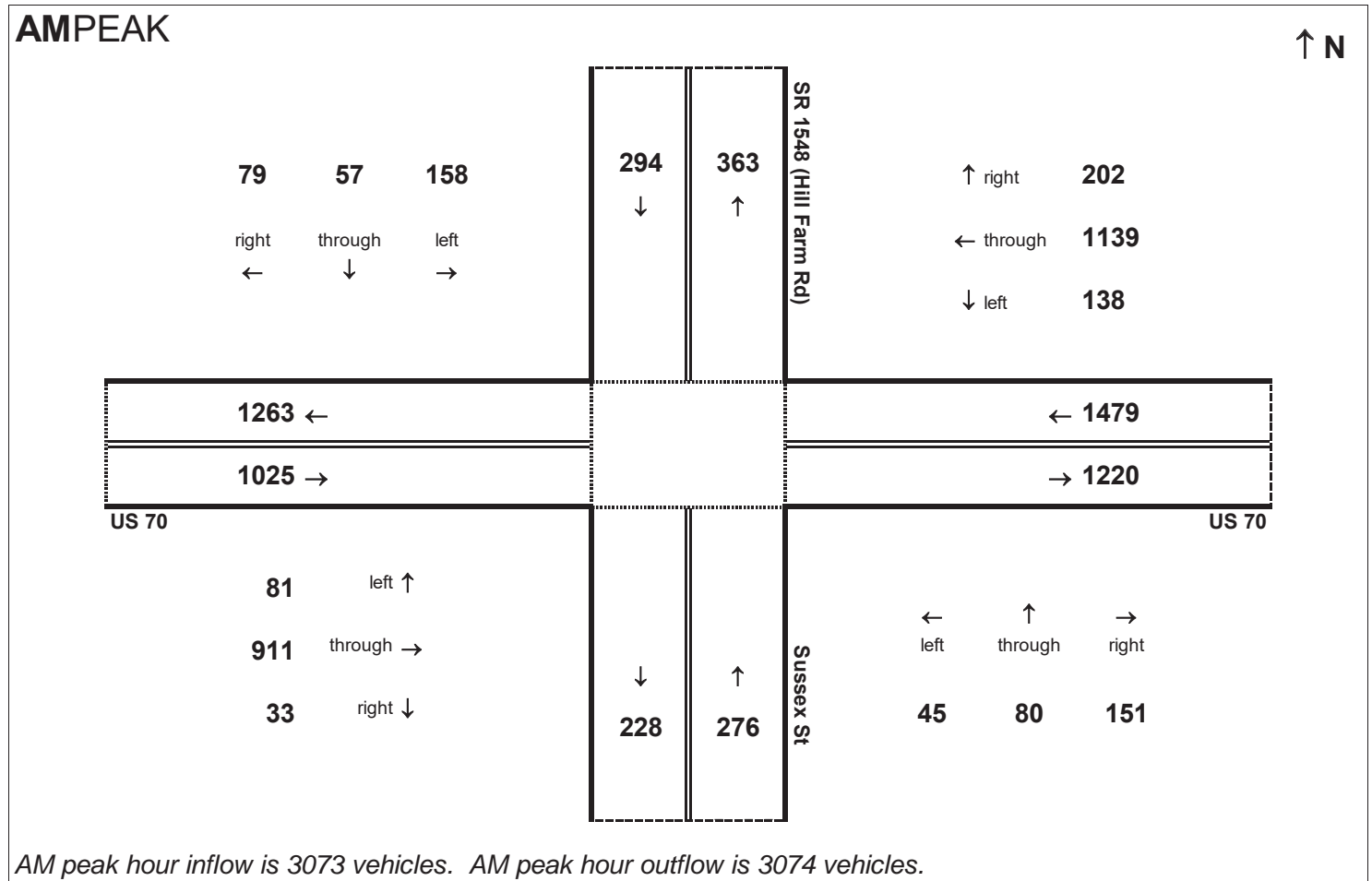


Peak Hour Volume Breakouts Report:
 421 Intersection of US 70 and SR 1548 (Hill Farm Rd) / Sussex St

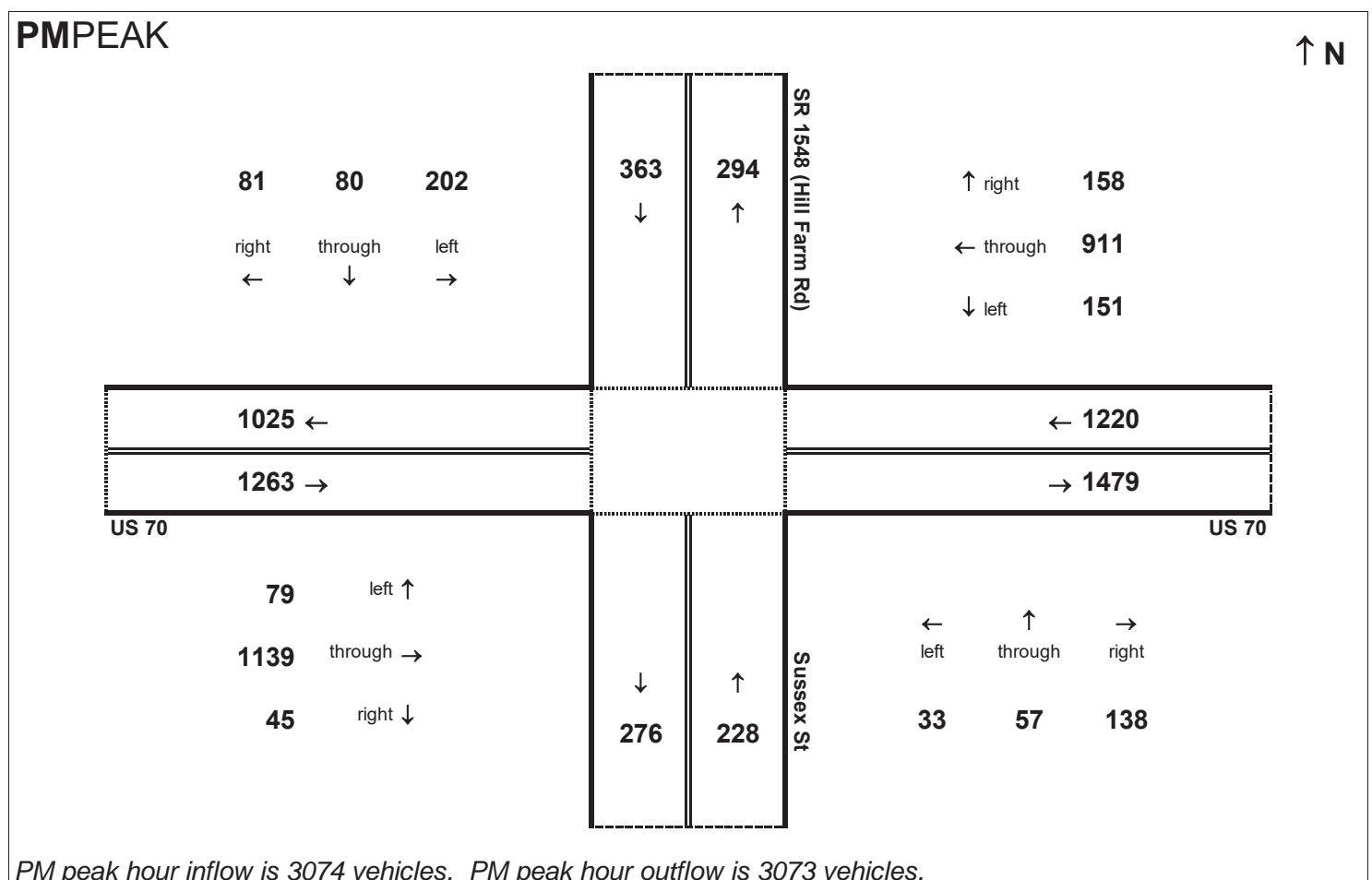
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

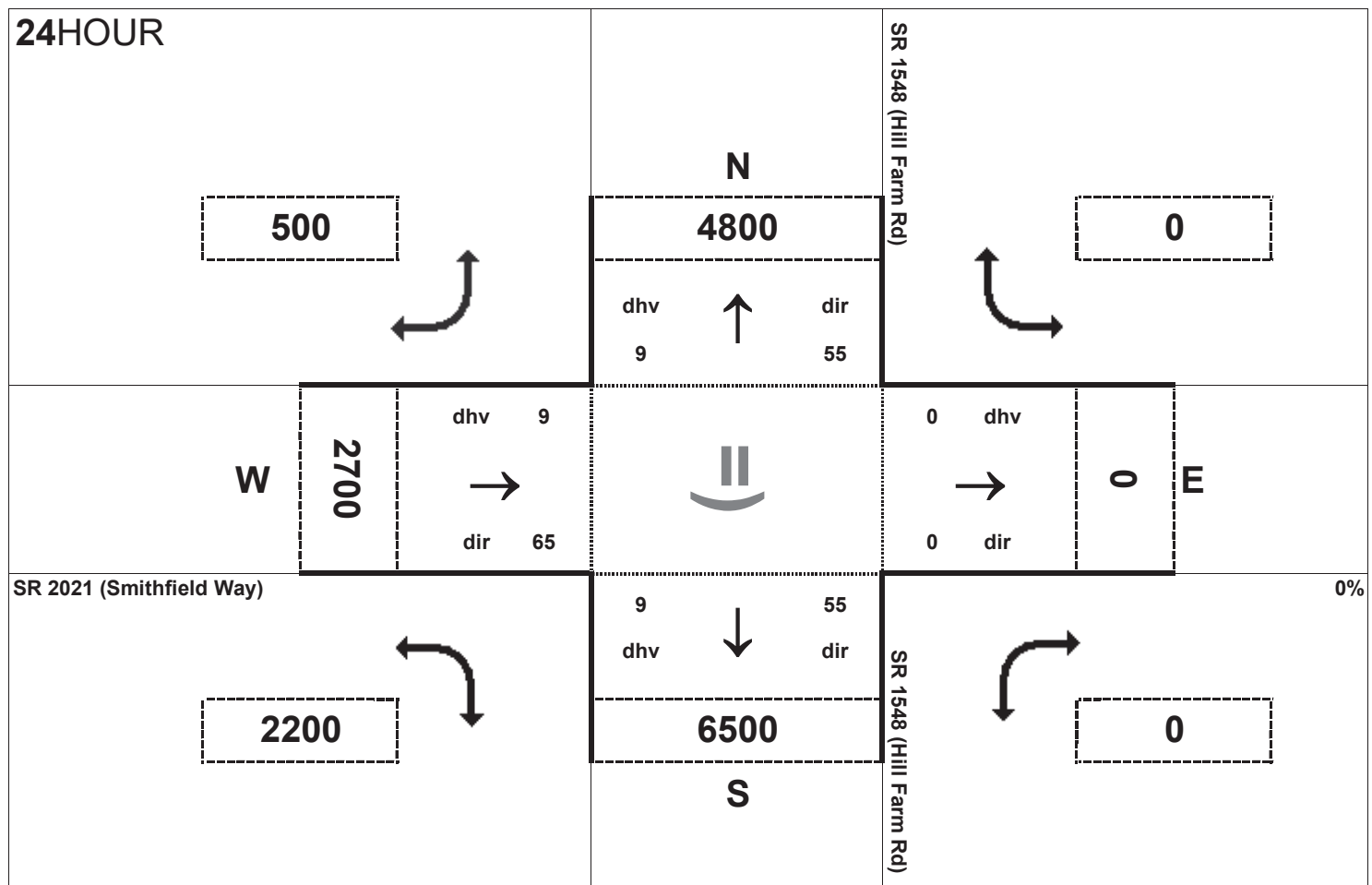
Project:
 R-2553



AM peak hour inflow is 3073 vehicles. AM peak hour outflow is 3074 vehicles.



PM peak hour inflow is 3074 vehicles. PM peak hour outflow is 3073 vehicles.

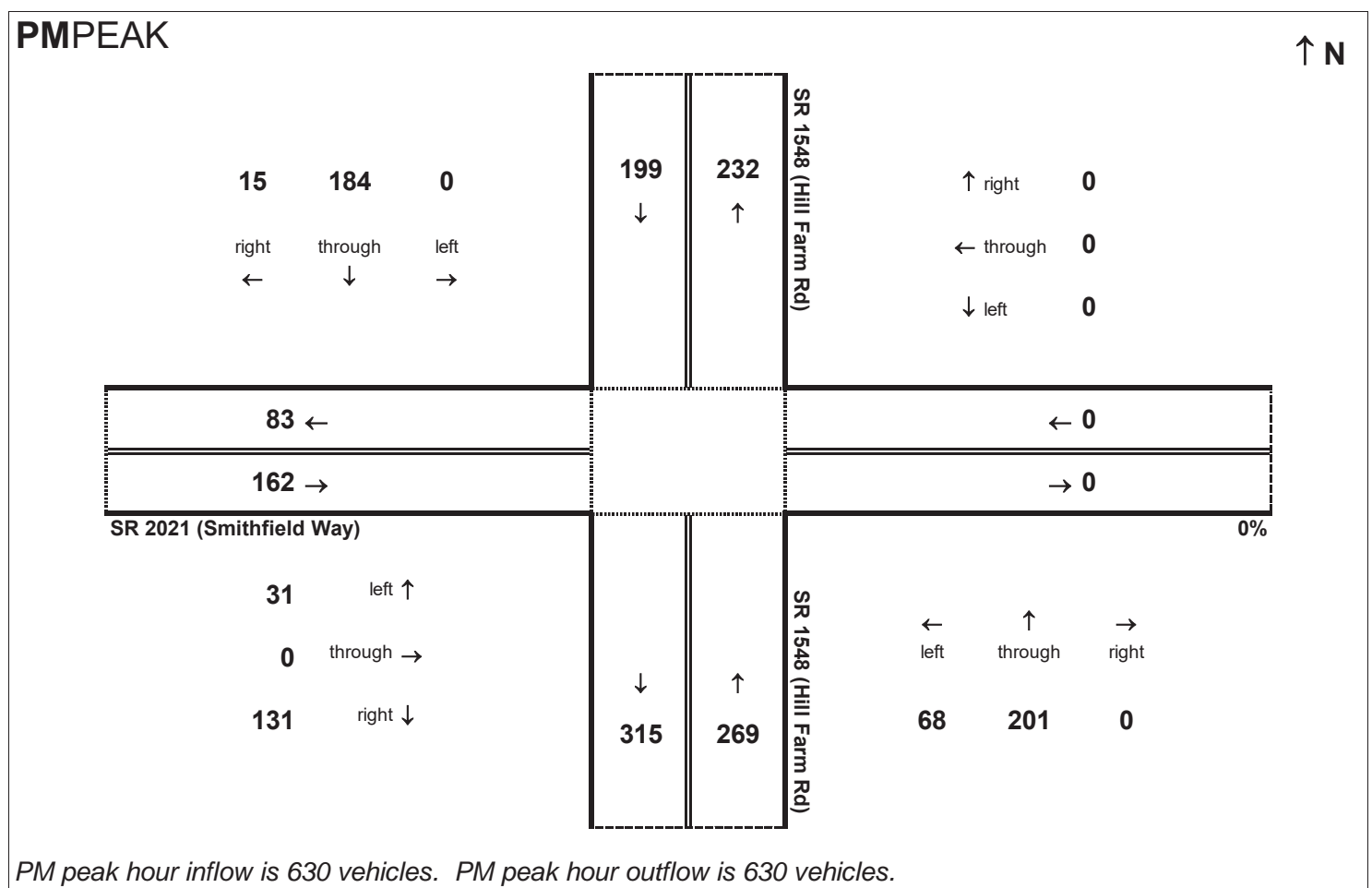
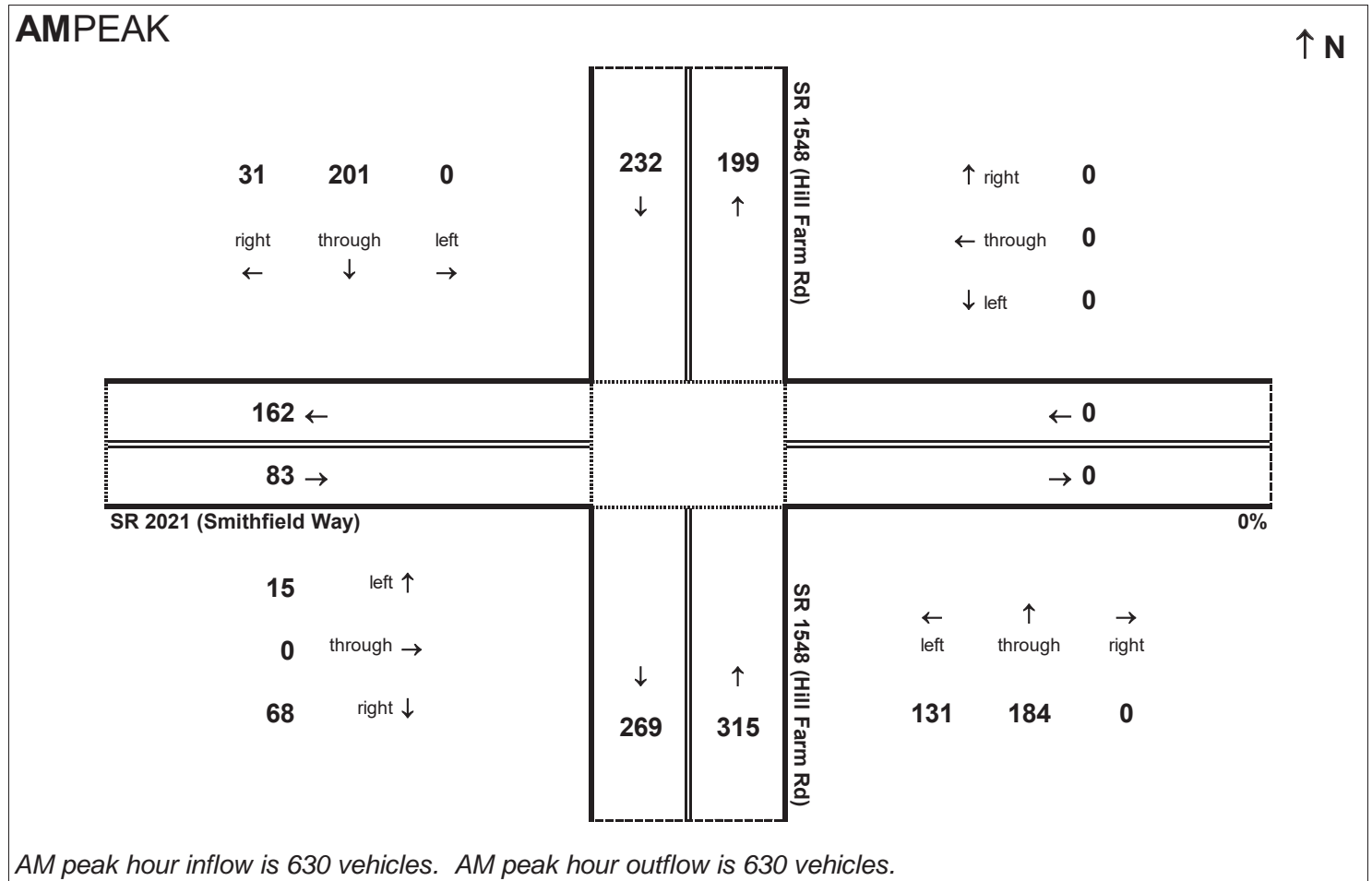


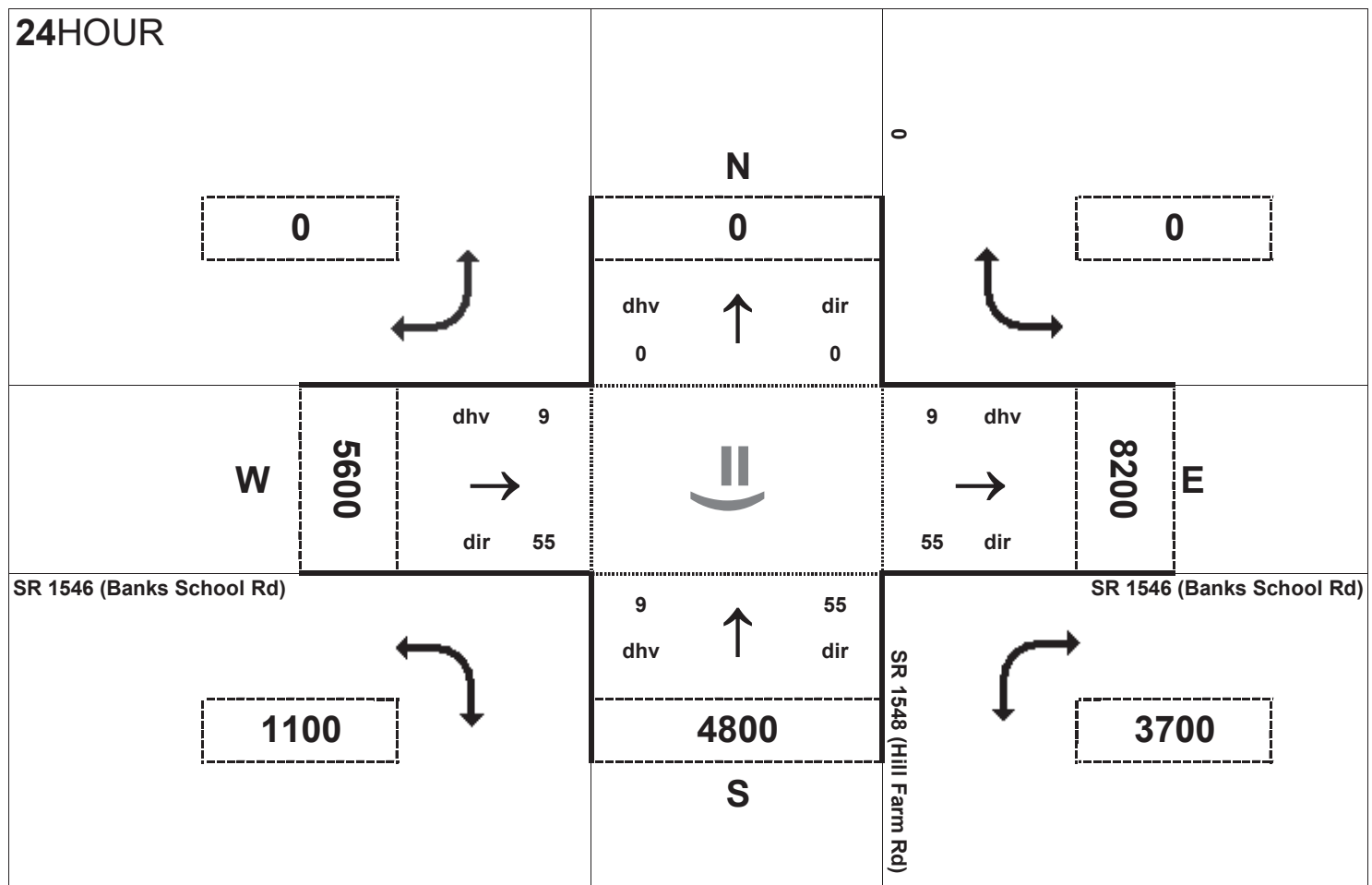
Peak Hour Volume Breakouts Report:
 422 Intersection of SR 2021 (Smithfield Way) and
 SR 1548 (Hill Farm Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



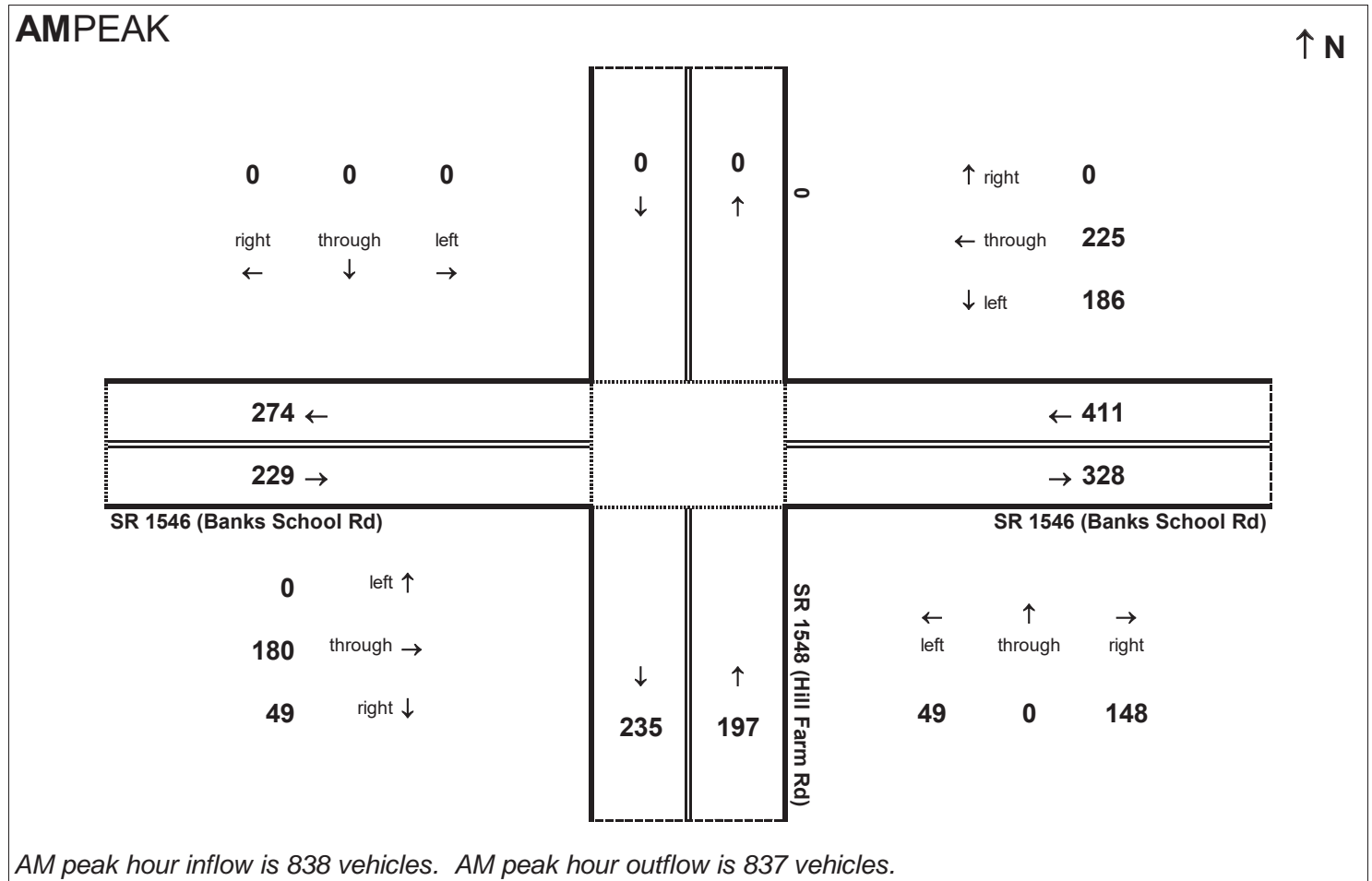


Peak Hour Volume Breakouts Report:
 423 Intersection of SR 1546 (Banks School Rd) and
 SR 1548 (Hill Farm Rd)

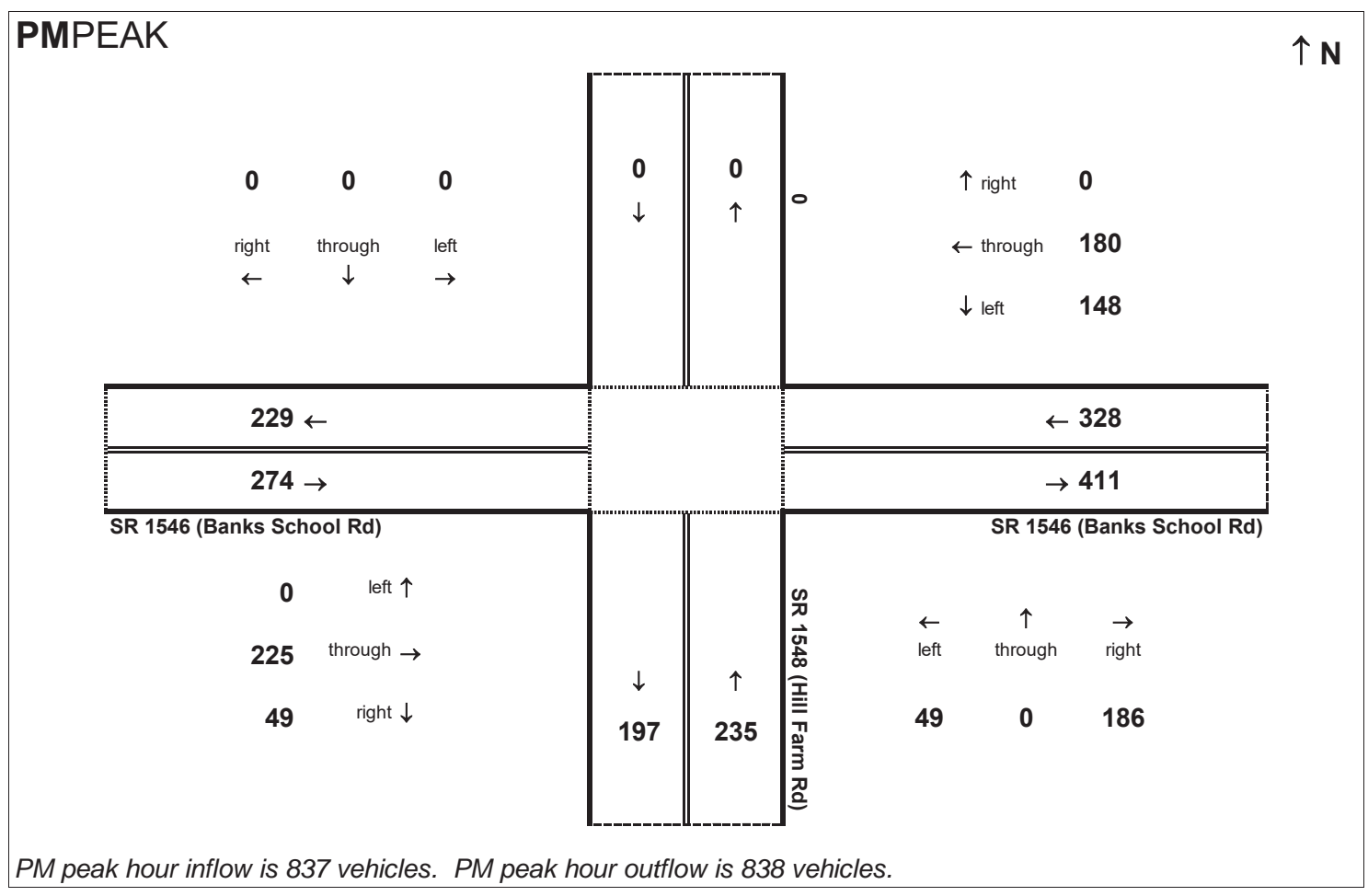
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
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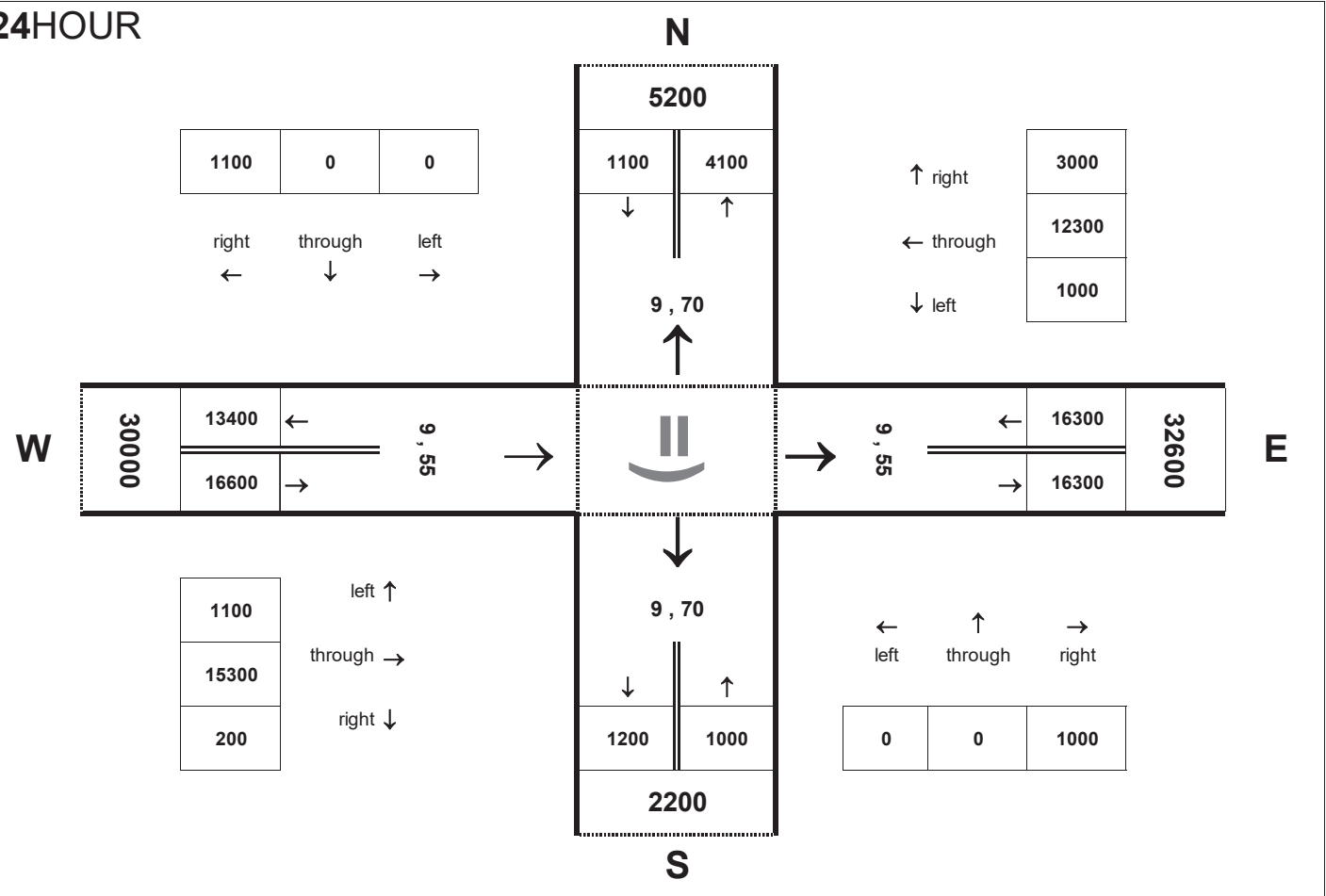


AM peak hour inflow is 838 vehicles. AM peak hour outflow is 837 vehicles.



PM peak hour inflow is 837 vehicles. PM peak hour outflow is 838 vehicles.

24HOUR



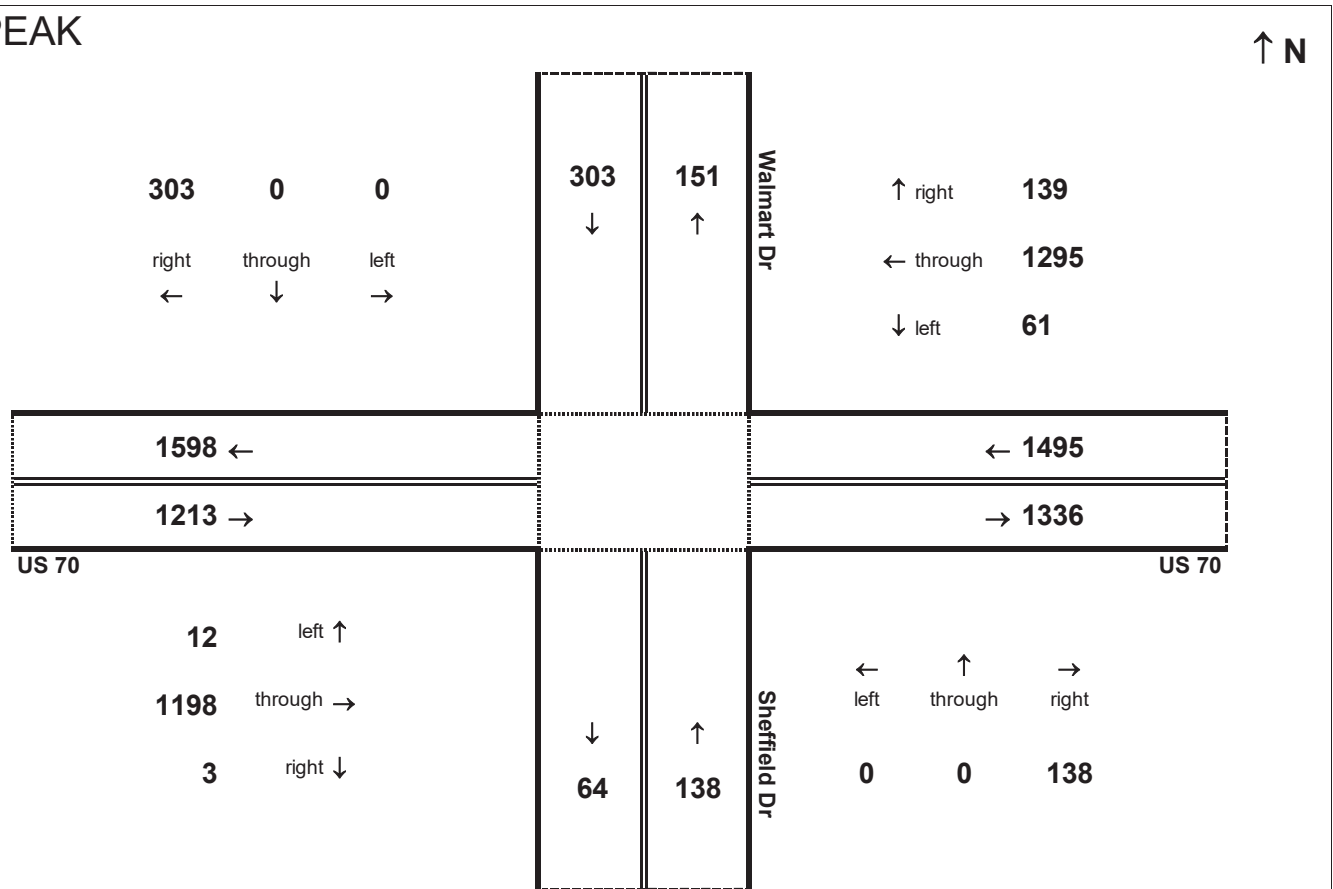
Peak Hour Volume Breakouts Report:
424 Intersection of US 70 and Walmart Dr / Sheffield Dr

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

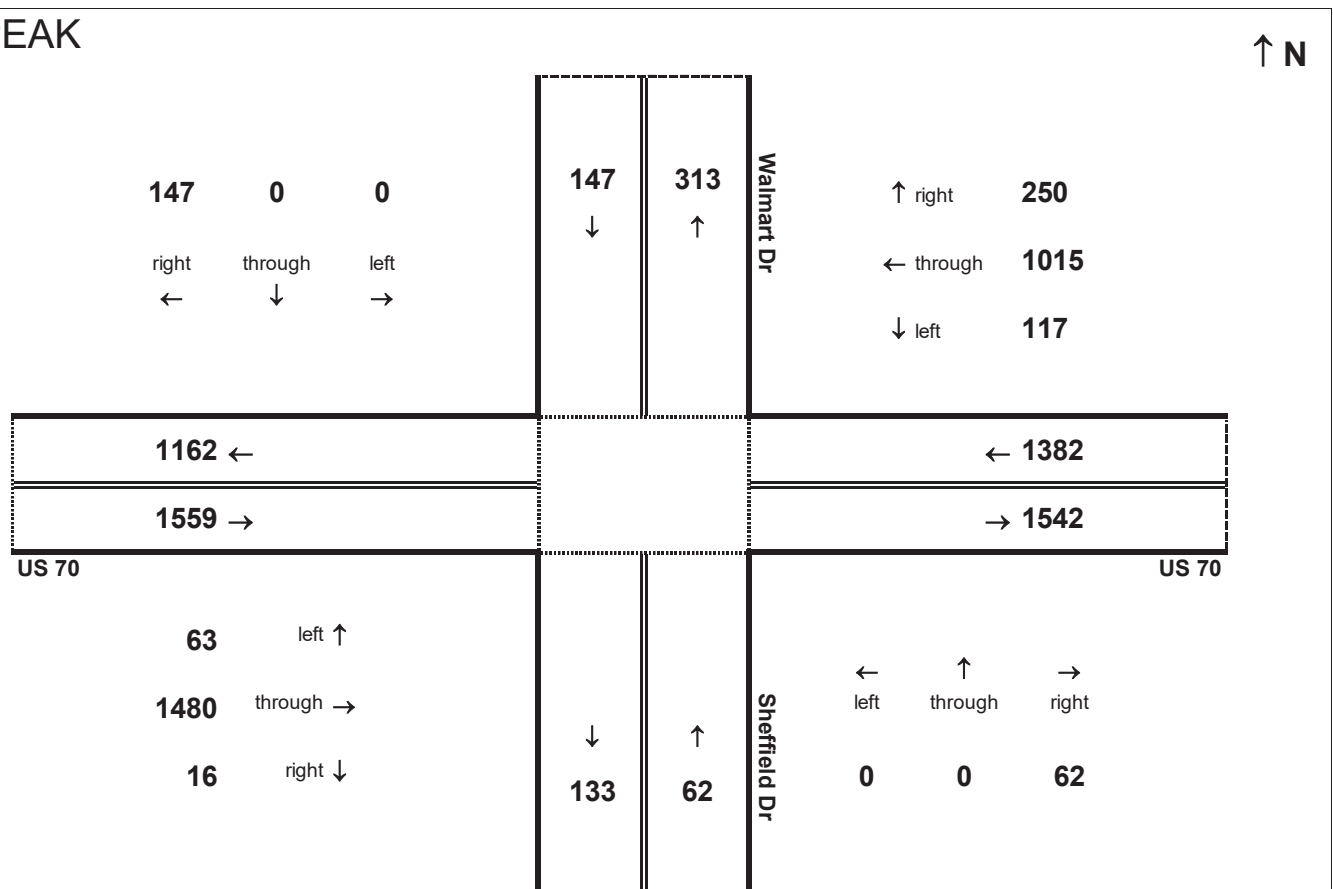
Project:
R-2553

AMPEAK

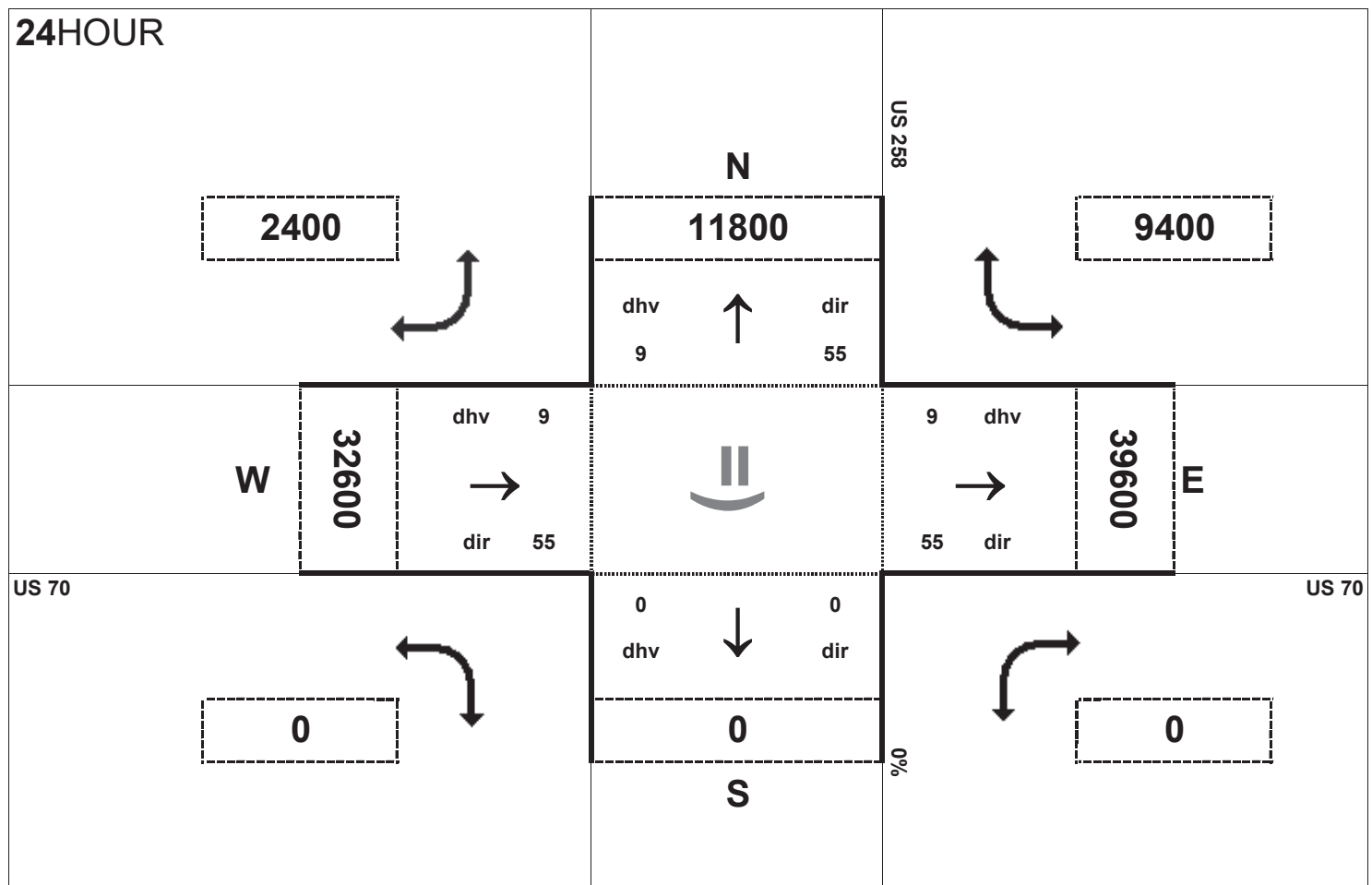


AM peak hour inflow is 3150 vehicles. AM peak hour outflow is 3150 vehicles.

PMPEAK



PM peak hour inflow is 3150 vehicles. PM peak hour outflow is 3150 vehicles.

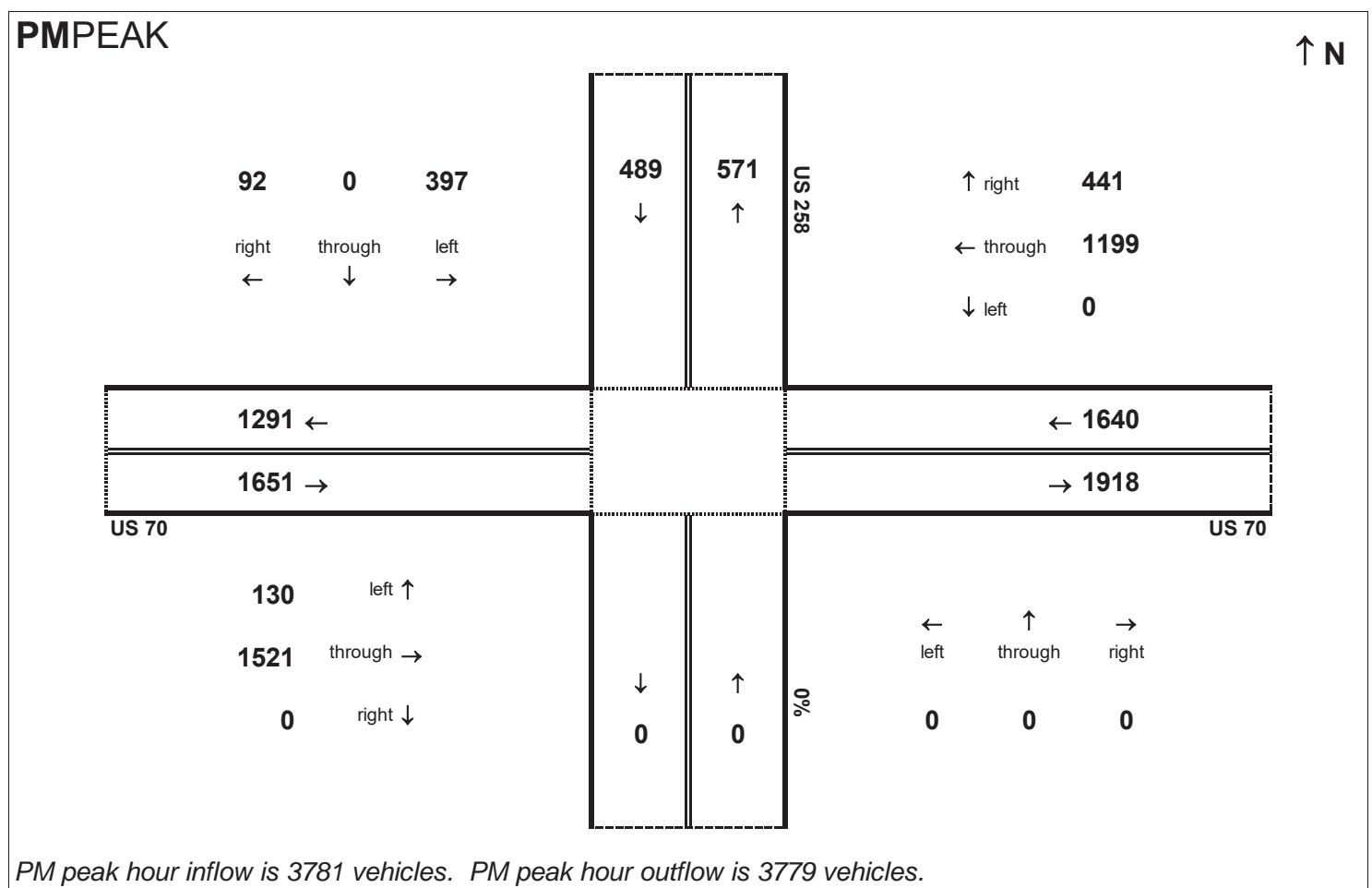
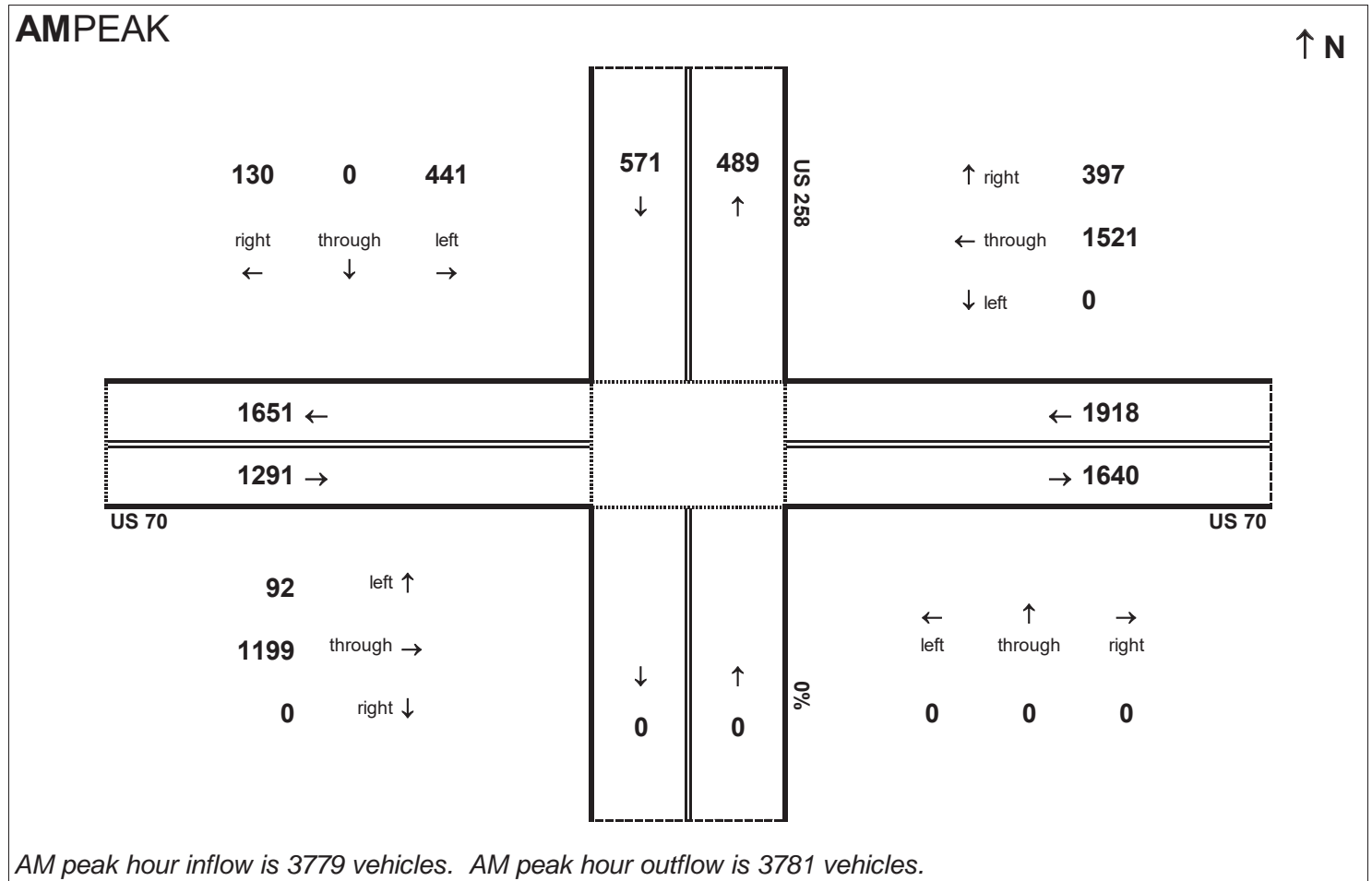


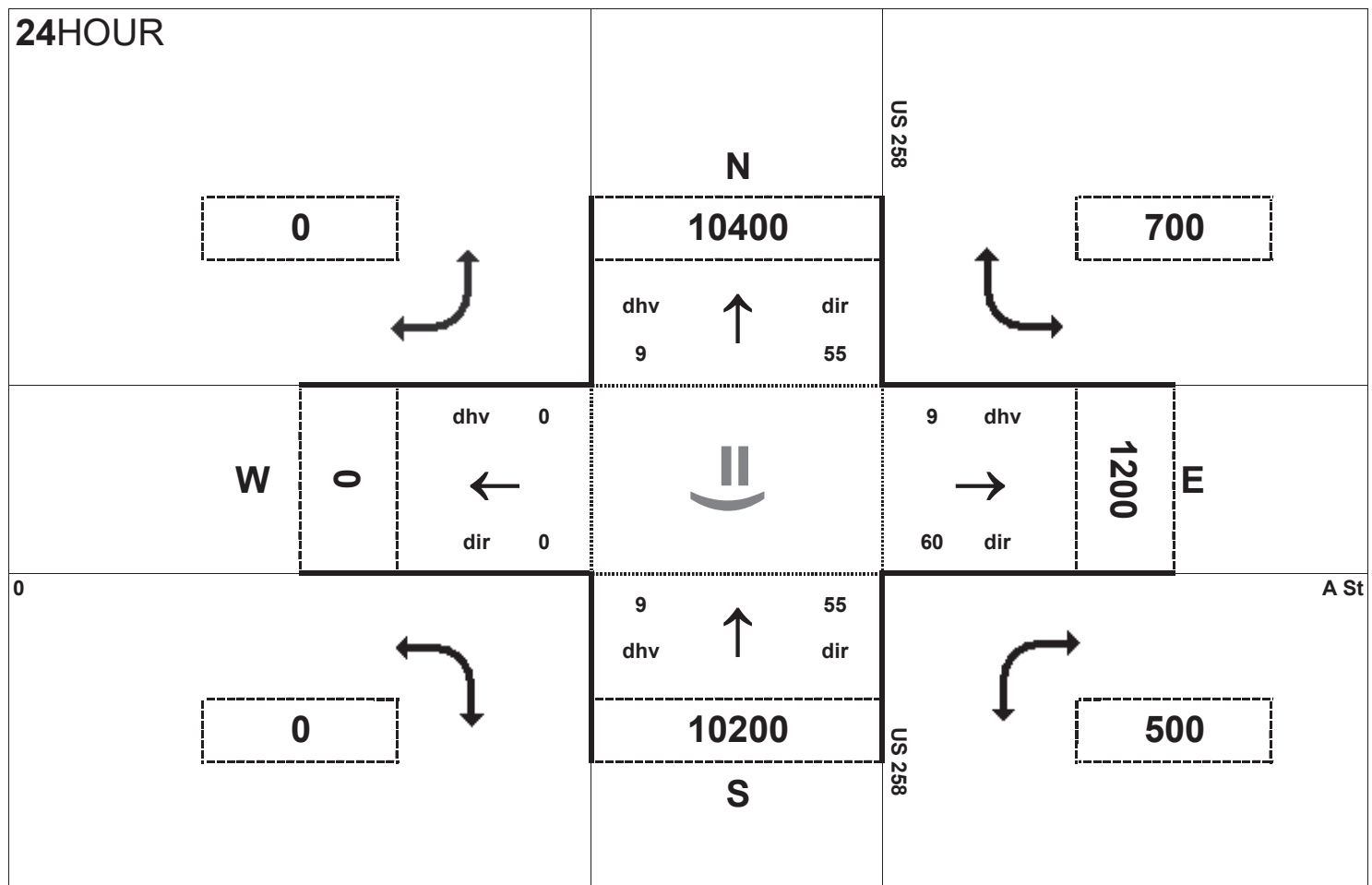
Peak Hour Volume Breakouts Report:
425 Intersection of US 70 and US 258

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



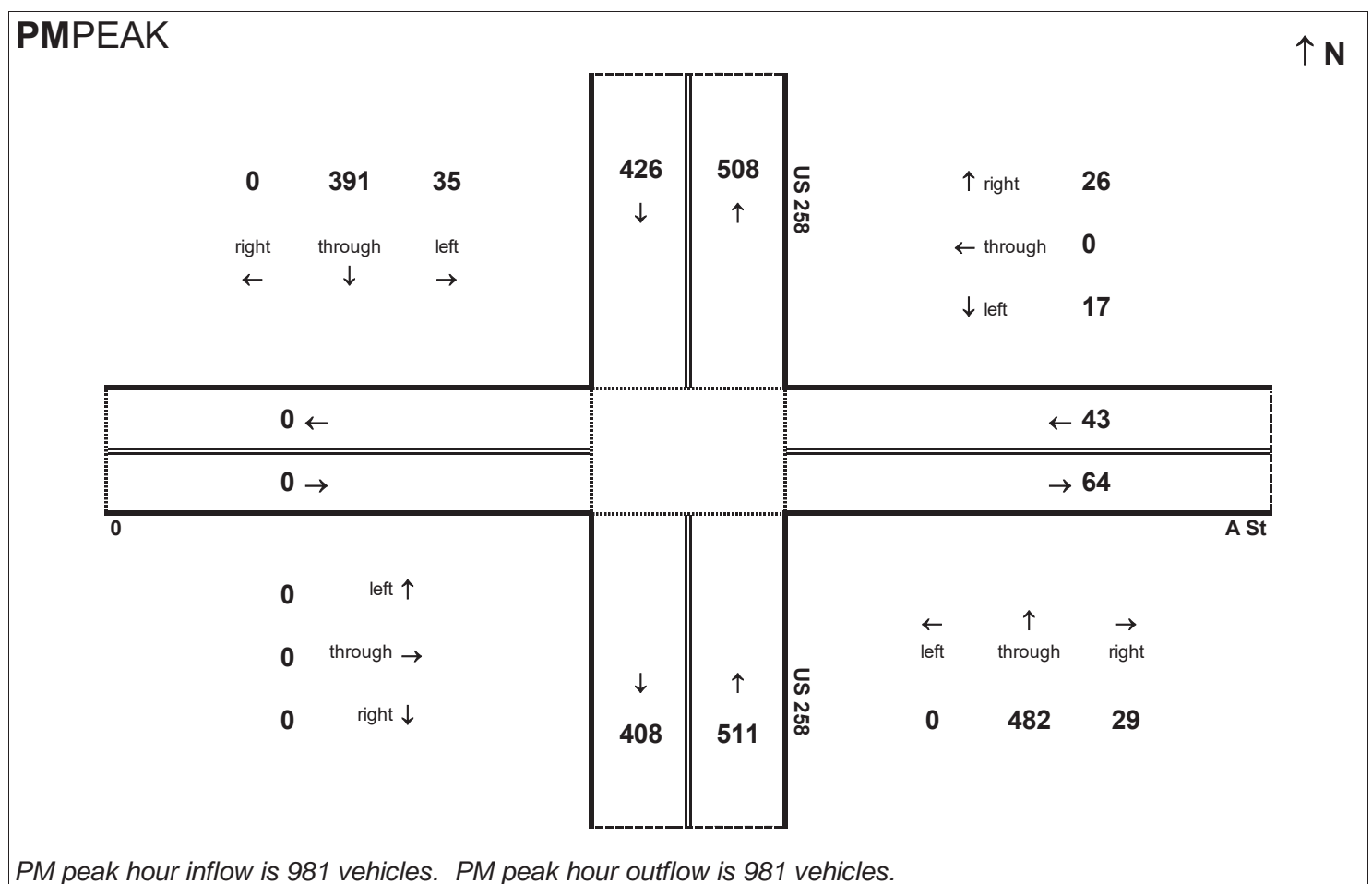
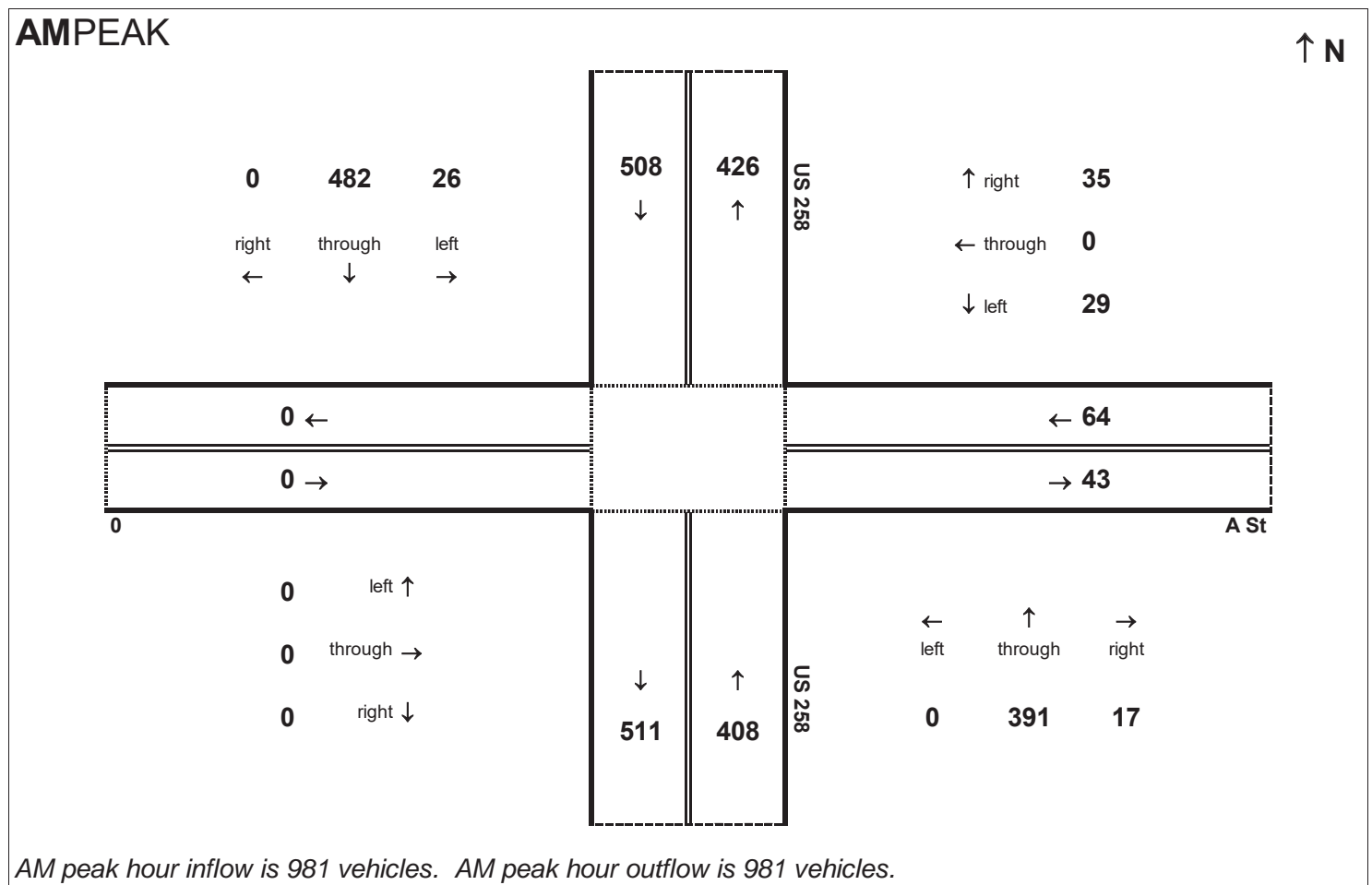


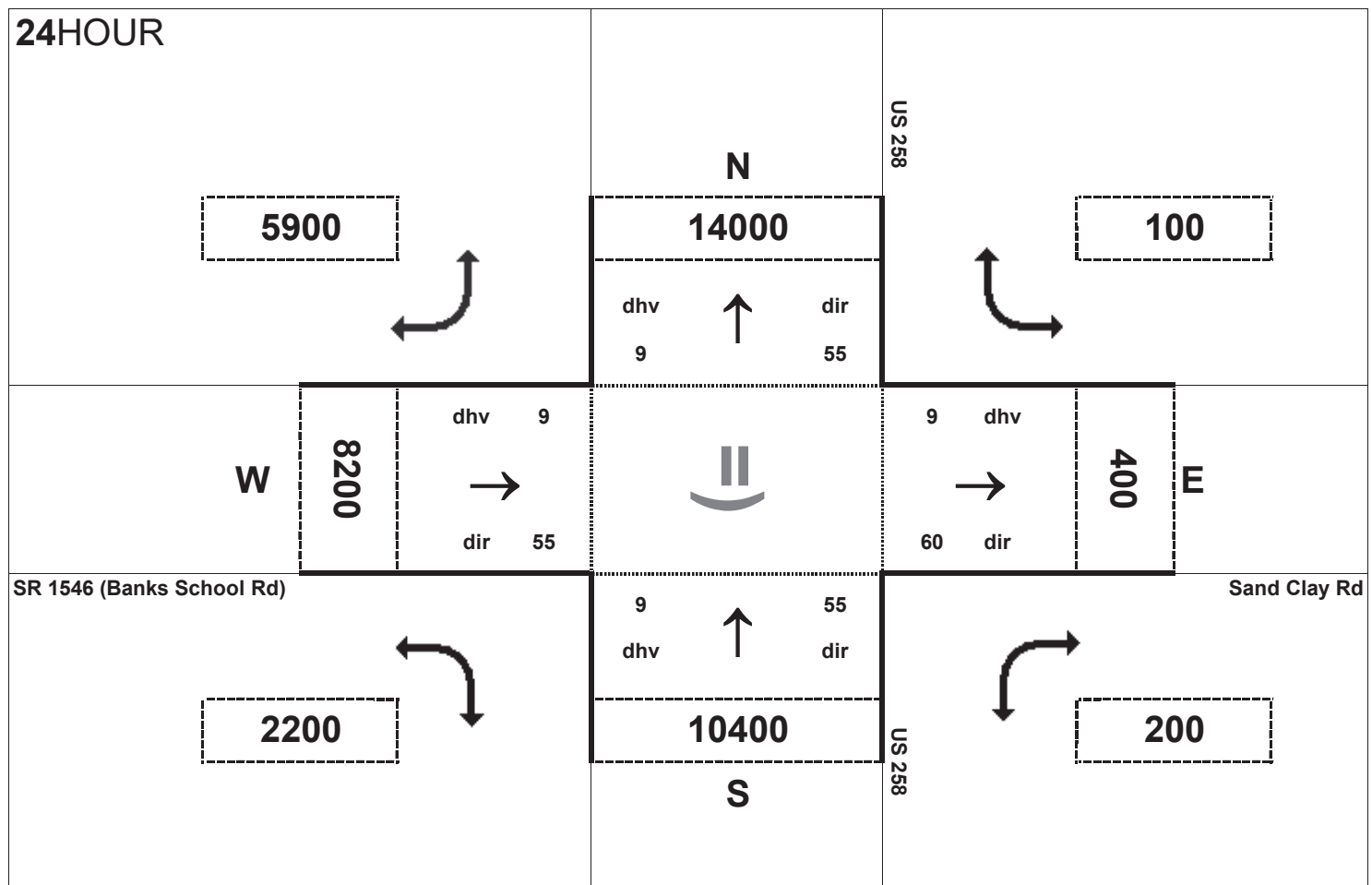
Peak Hour Volume Breakouts Report:
426 Intersection of US 258 and A St

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



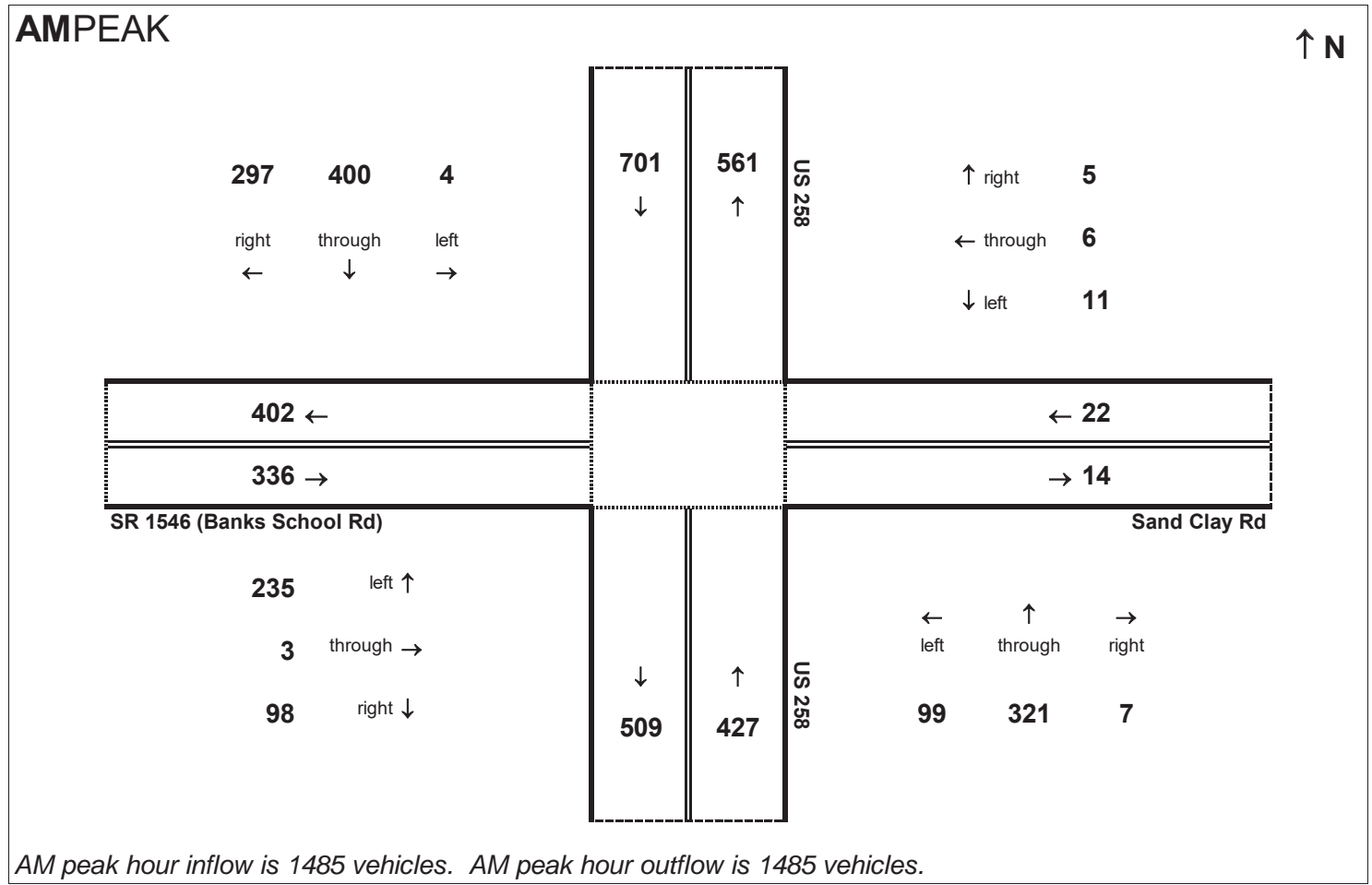


Peak Hour Volume Breakouts Report:
 427 Intersection of US 258 and SR 1546 (Banks School Rd) / Sand Clay Rd

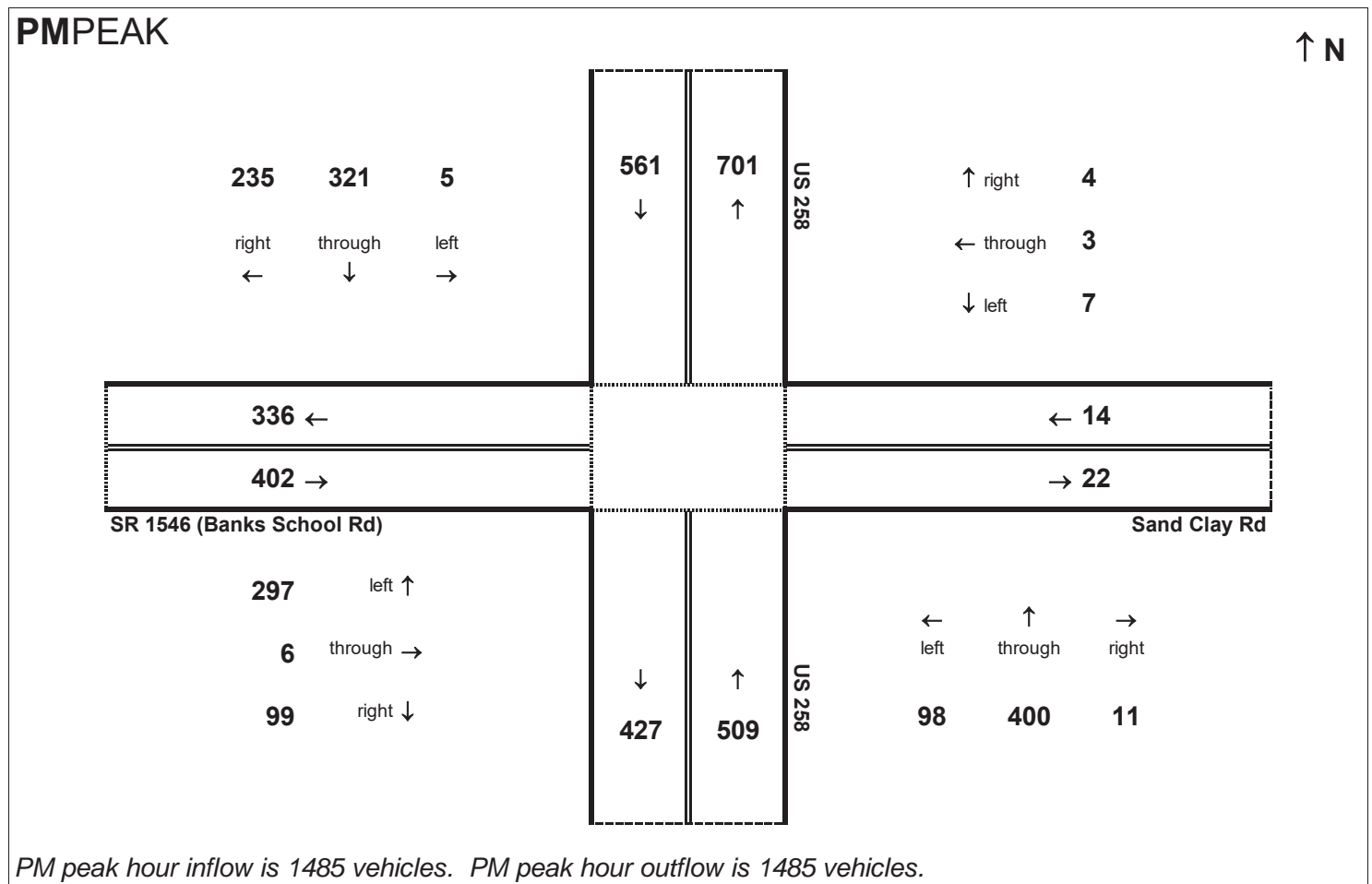
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

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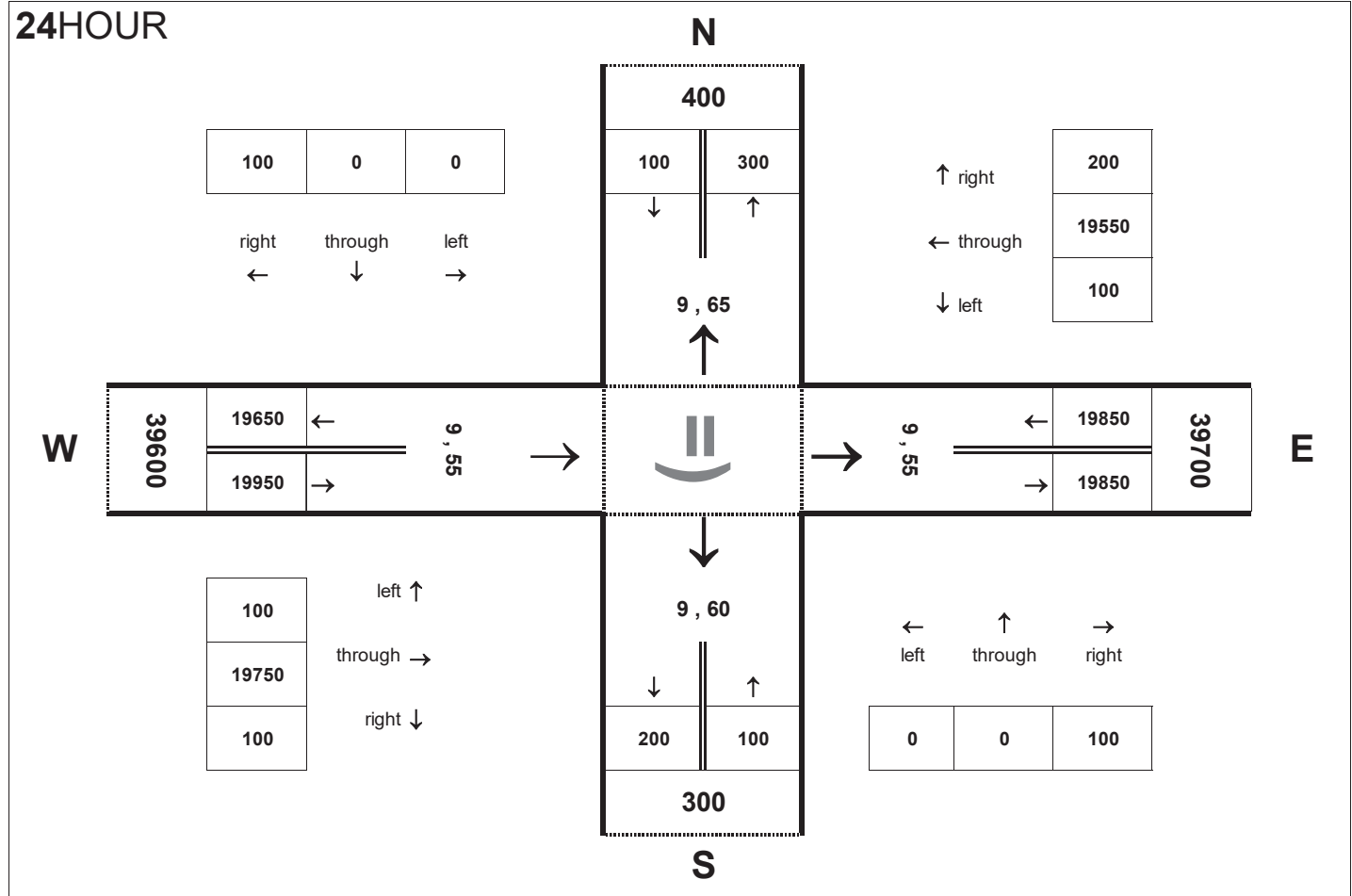


AM peak hour inflow is 1485 vehicles. AM peak hour outflow is 1485 vehicles.



PM peak hour inflow is 1485 vehicles. PM peak hour outflow is 1485 vehicles.

24HOUR



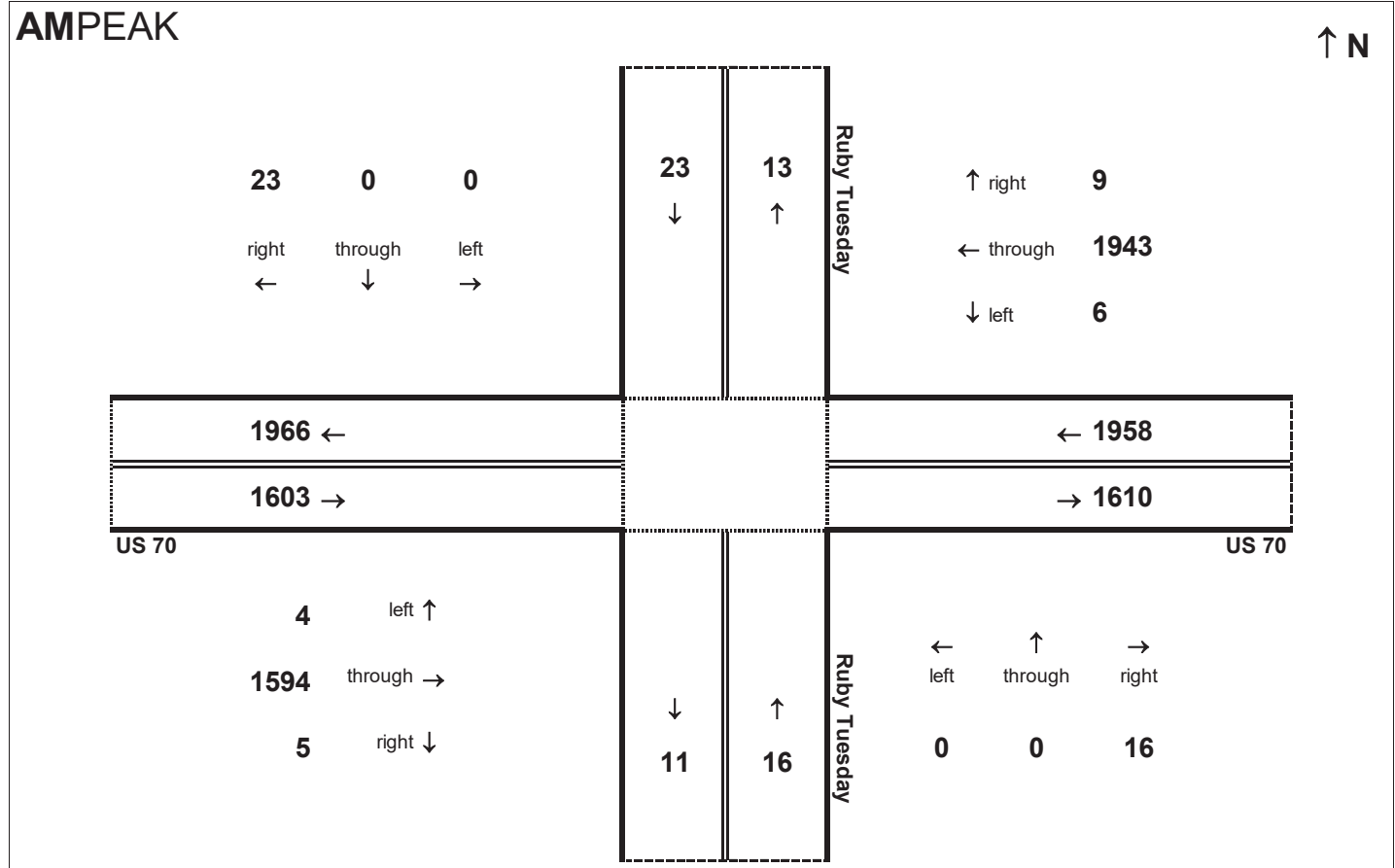
Peak Hour Volume Breakouts Report:
428 Intersection of US 70 and Ruby Tuesday

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

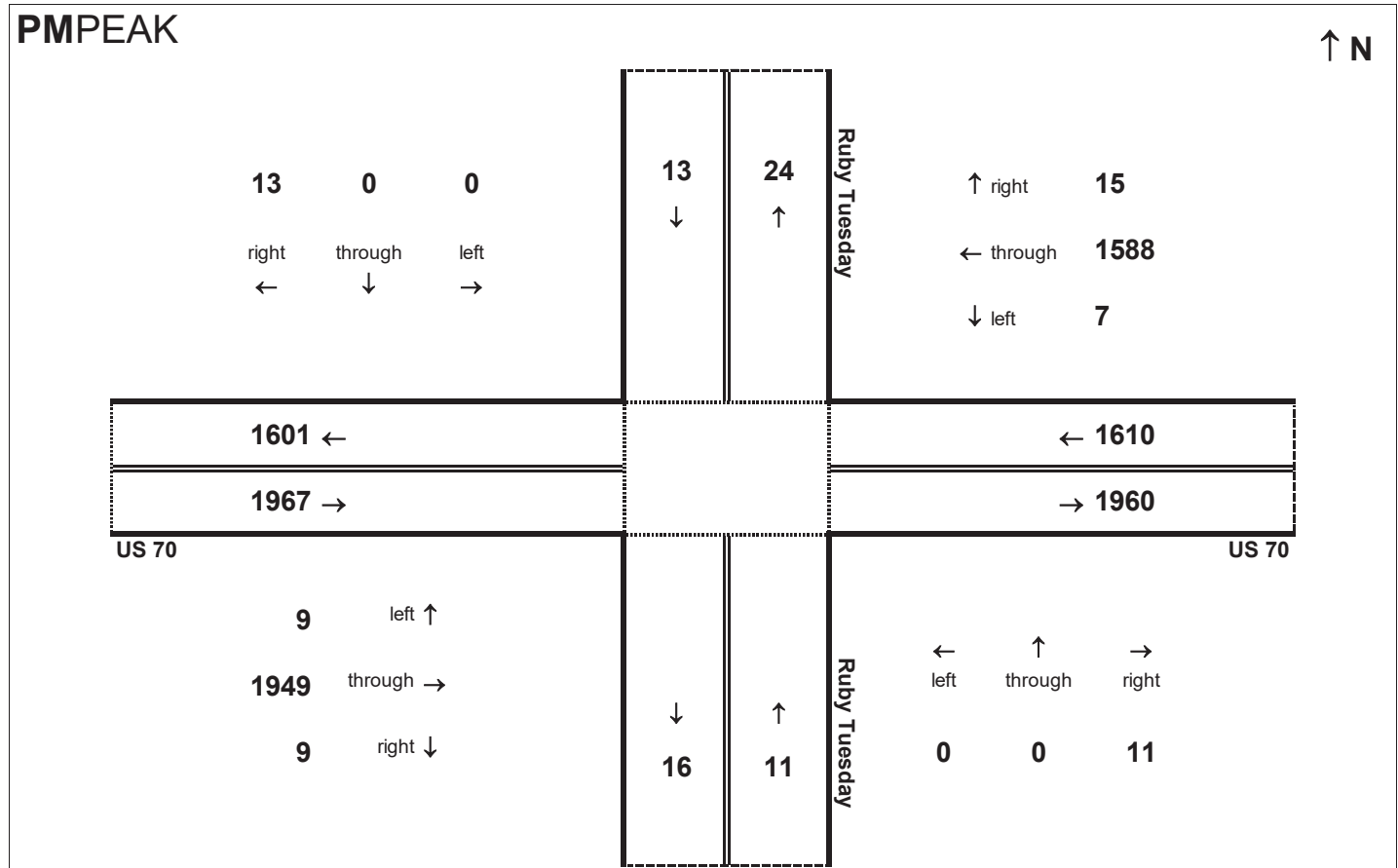
Project:
R-2553

AMPEAK

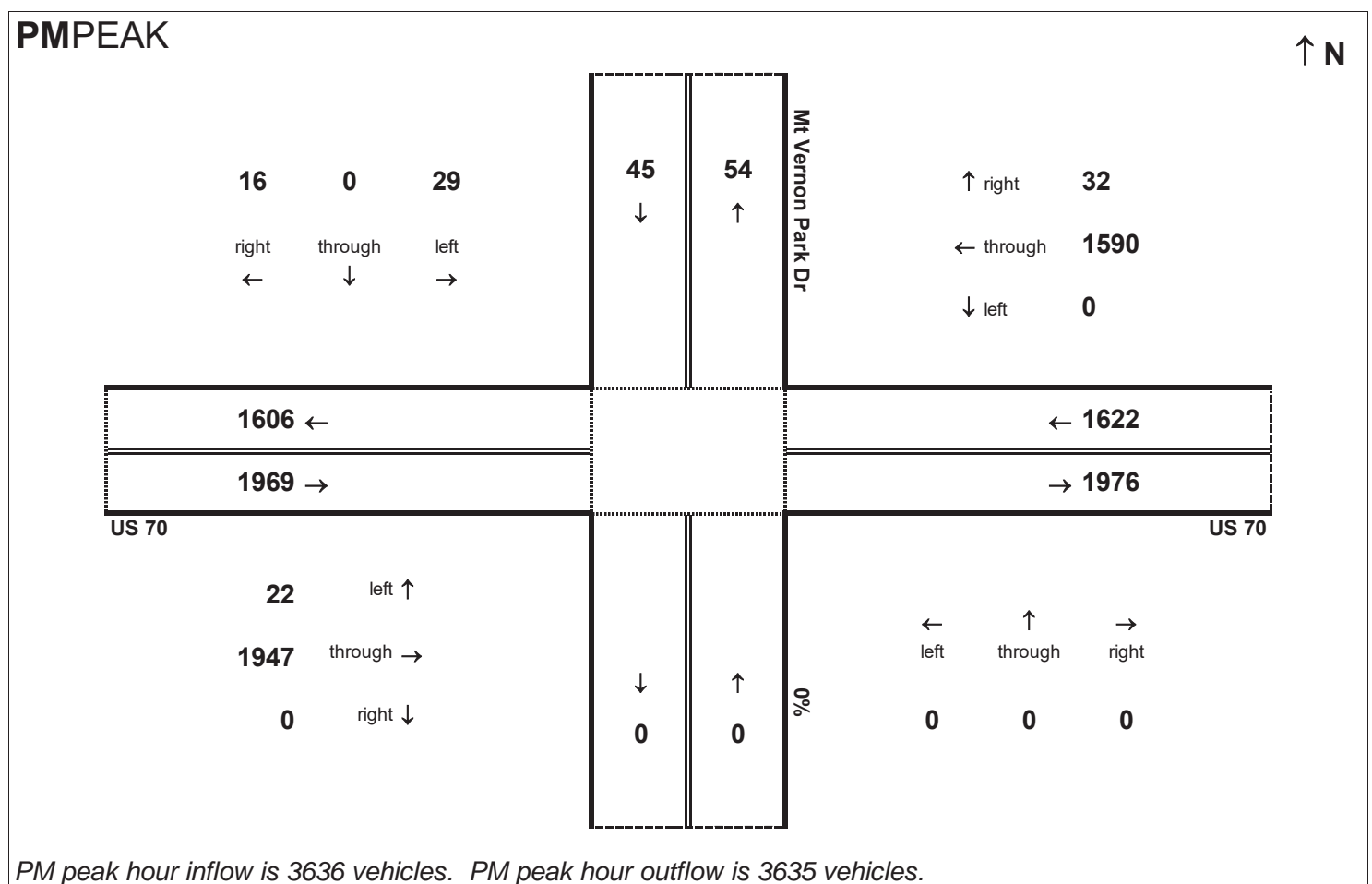
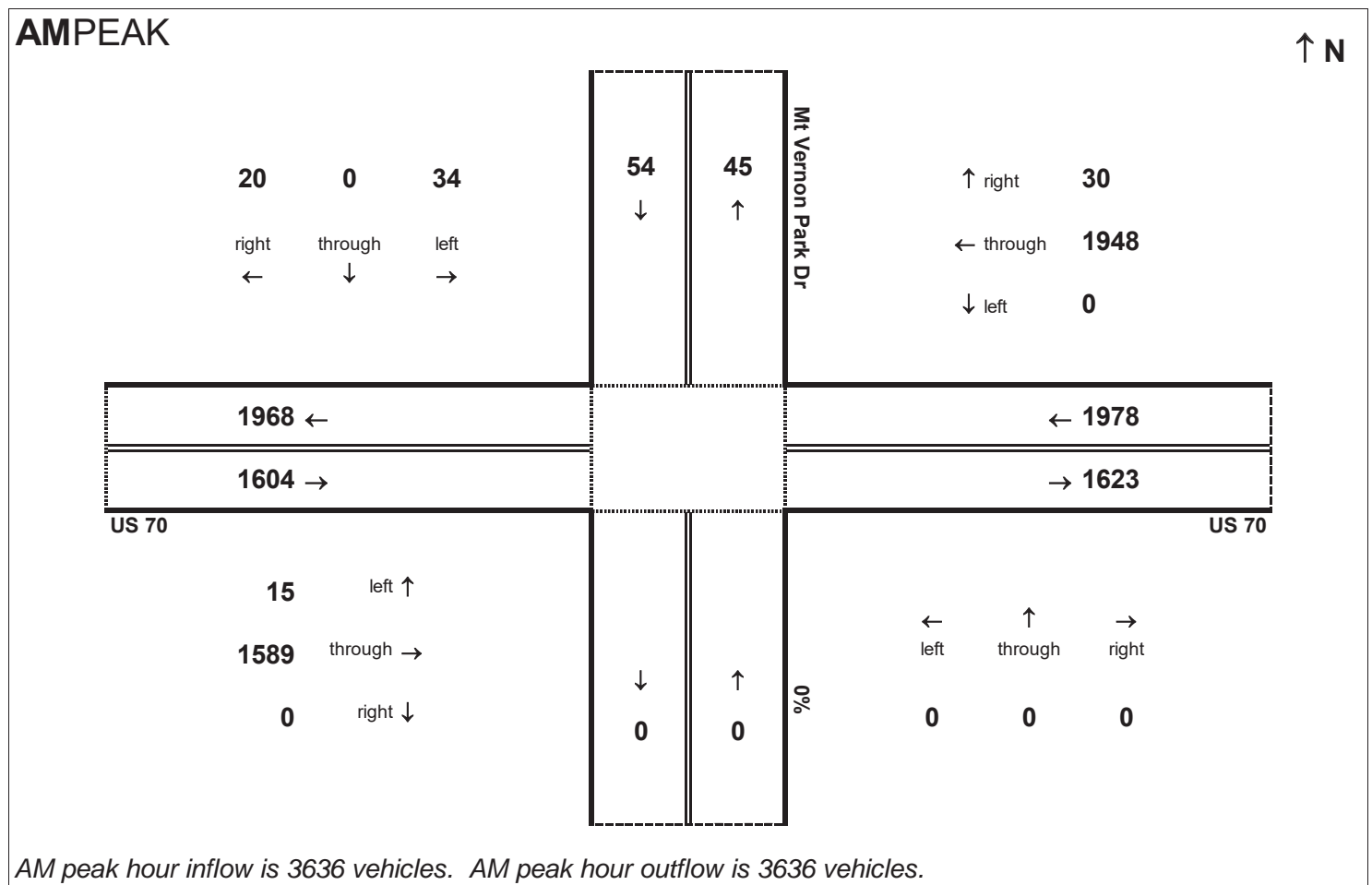
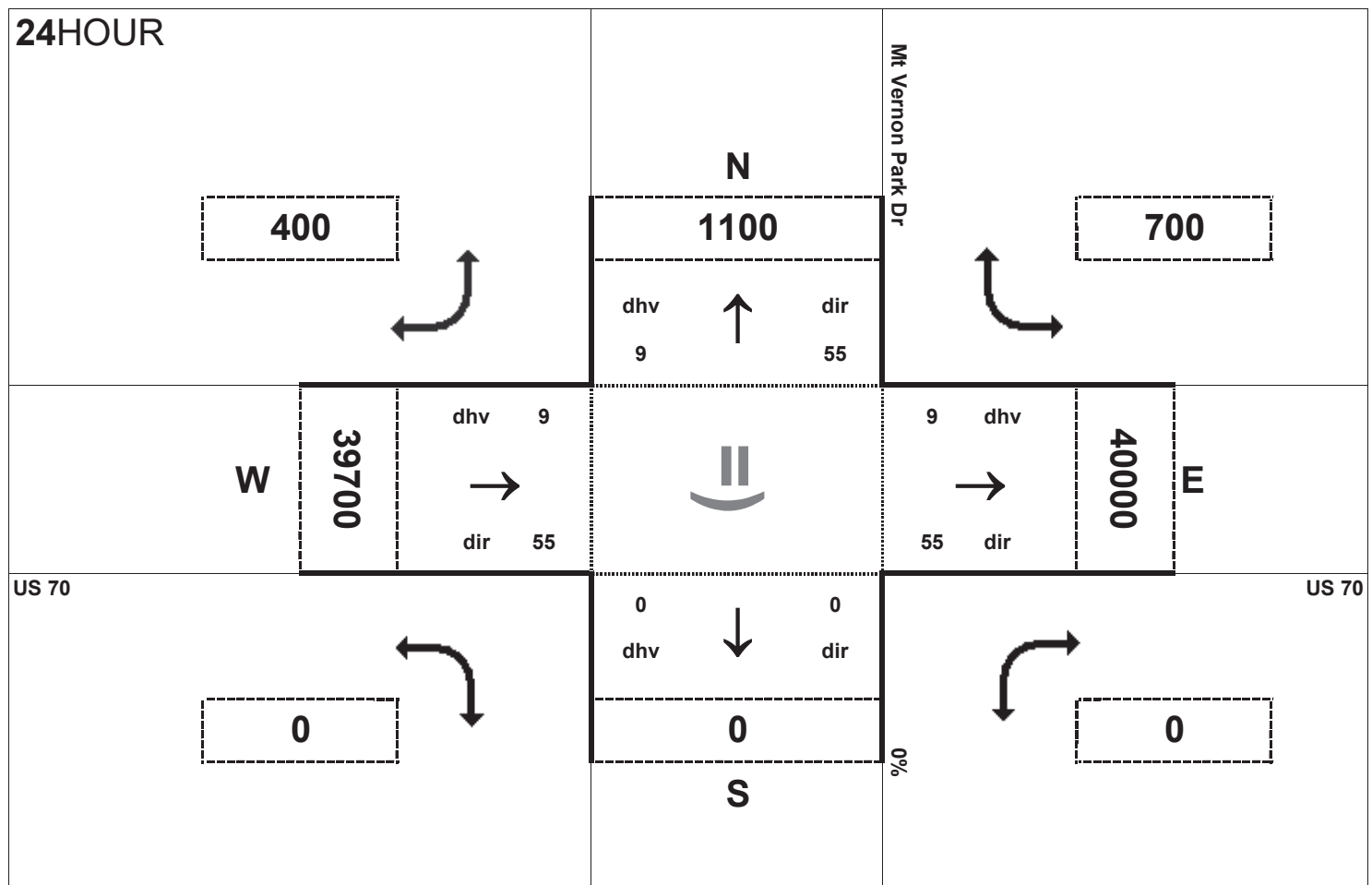


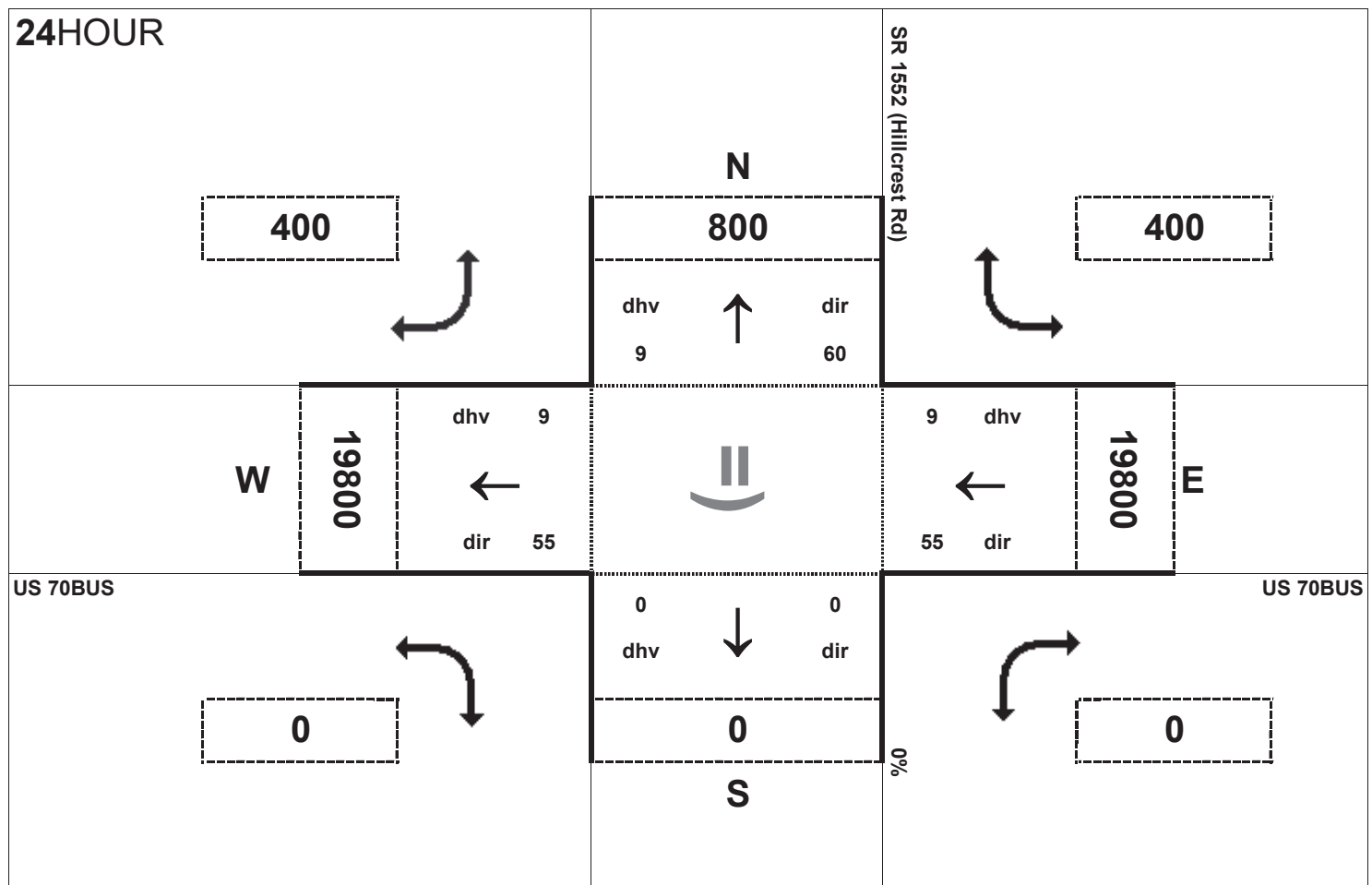
AM peak hour inflow is 3599 vehicles. AM peak hour outflow is 3600 vehicles.

PMPEAK



PM peak hour inflow is 3600 vehicles. PM peak hour outflow is 3600 vehicles.



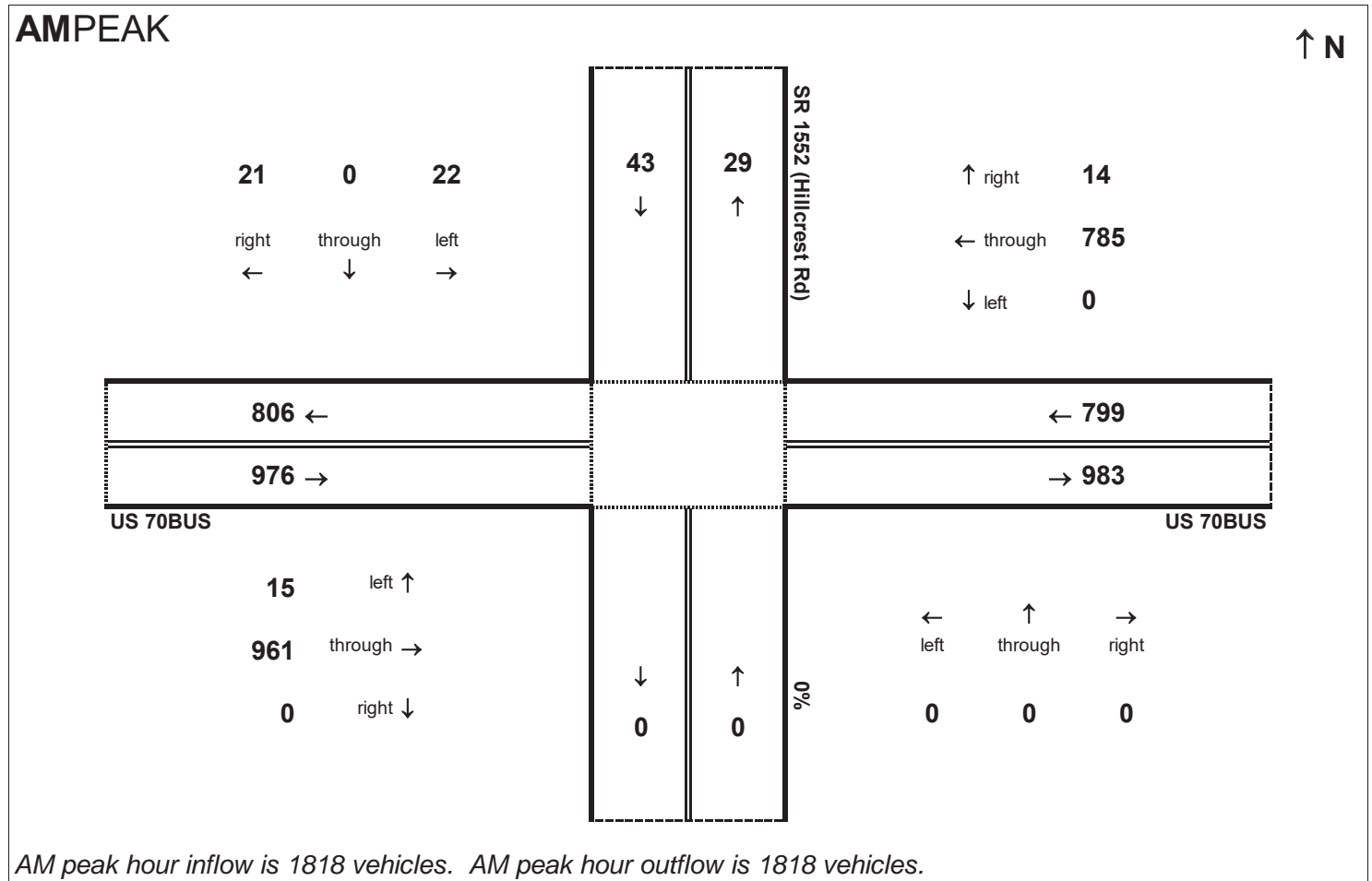


Peak Hour Volume Breakouts Report:
 430 Intersection of US 70BUS and SR 1552
 (Hillcrest Rd)

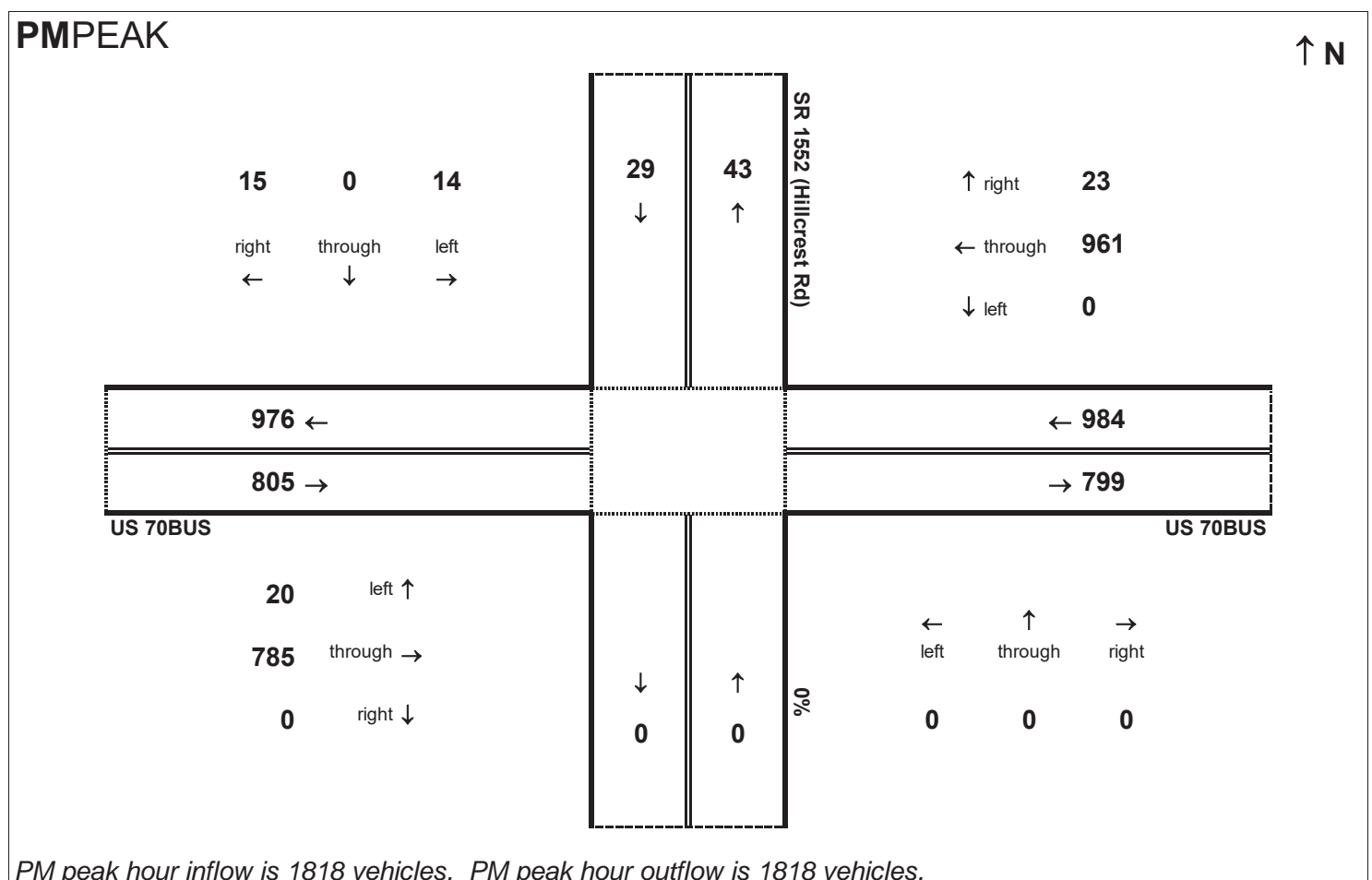
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

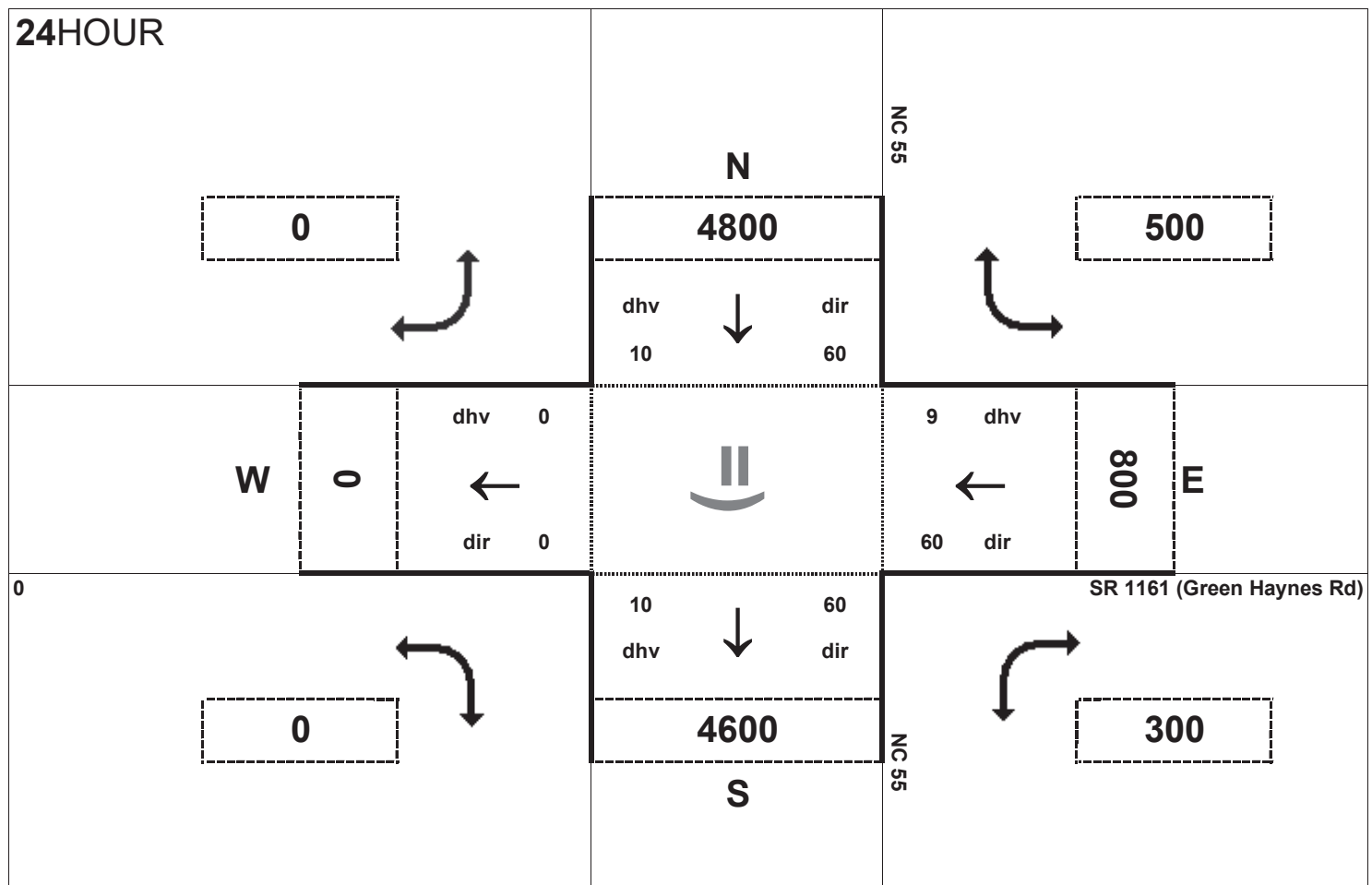
Project:
 R-2553



AM peak hour inflow is 1818 vehicles. AM peak hour outflow is 1818 vehicles.



PM peak hour inflow is 1818 vehicles. PM peak hour outflow is 1818 vehicles.

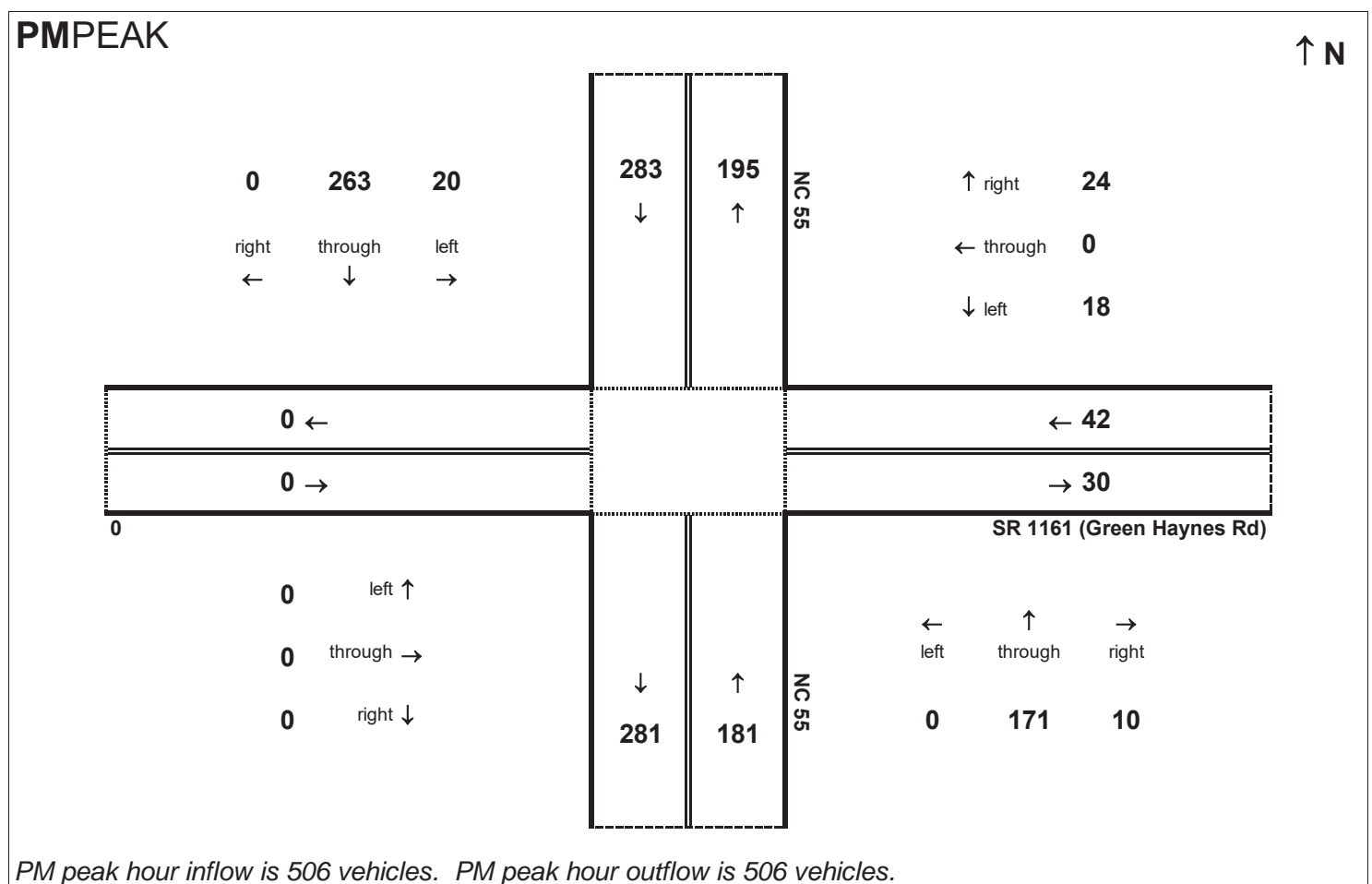
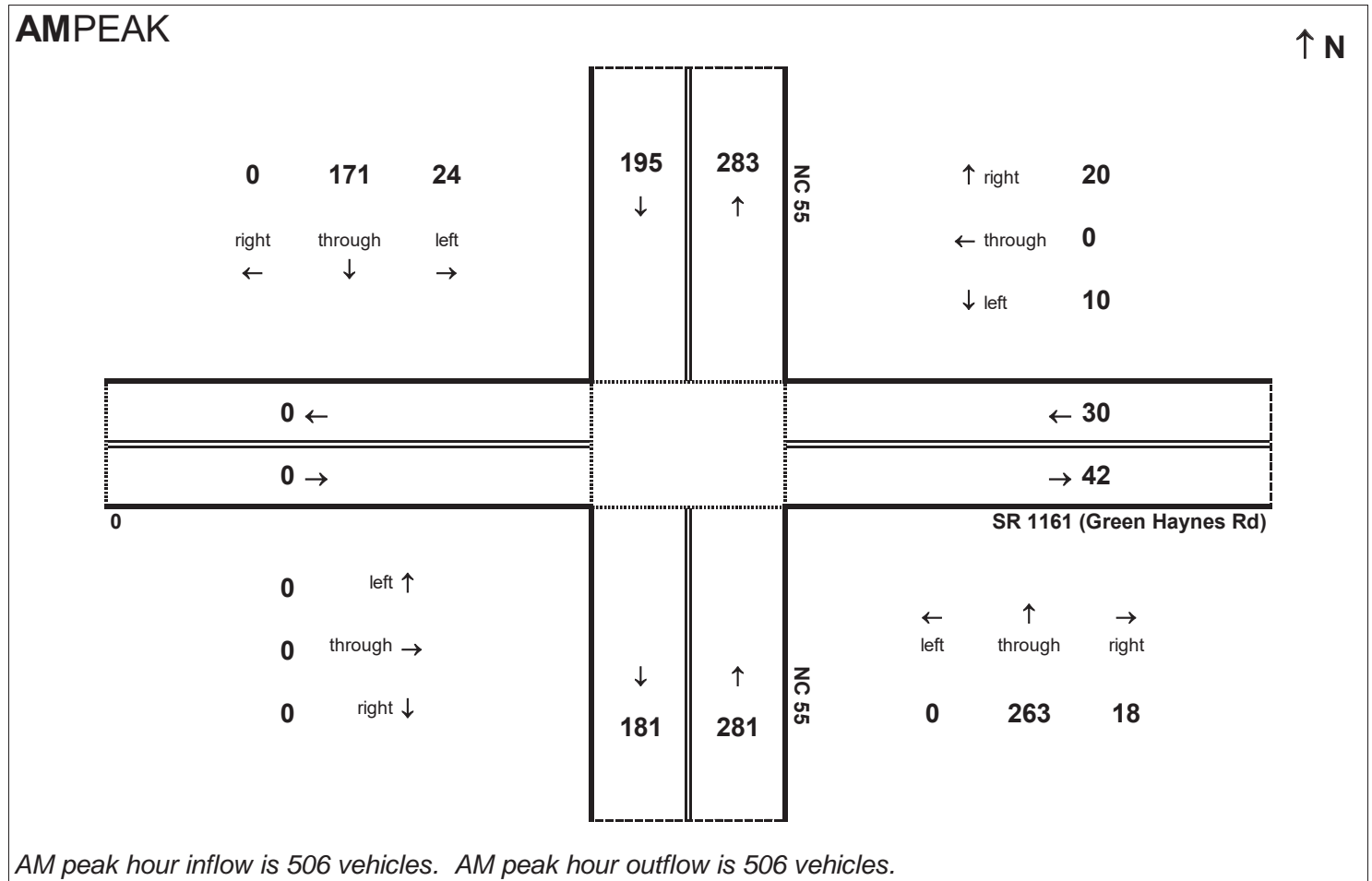


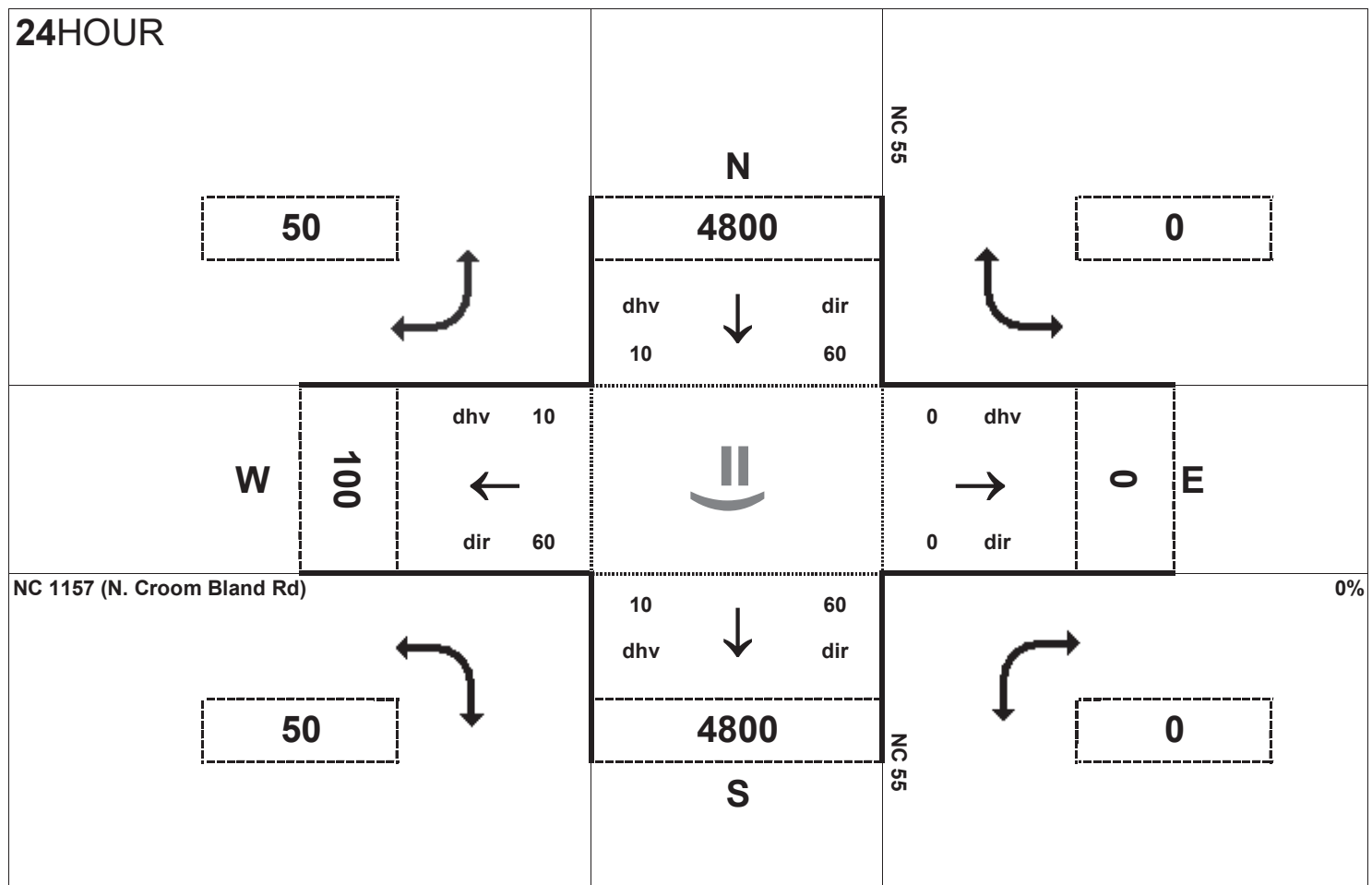
Peak Hour Volume Breakouts Report:
 431 Intersection of NC 55 and SR 1161 (Green Haynes Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
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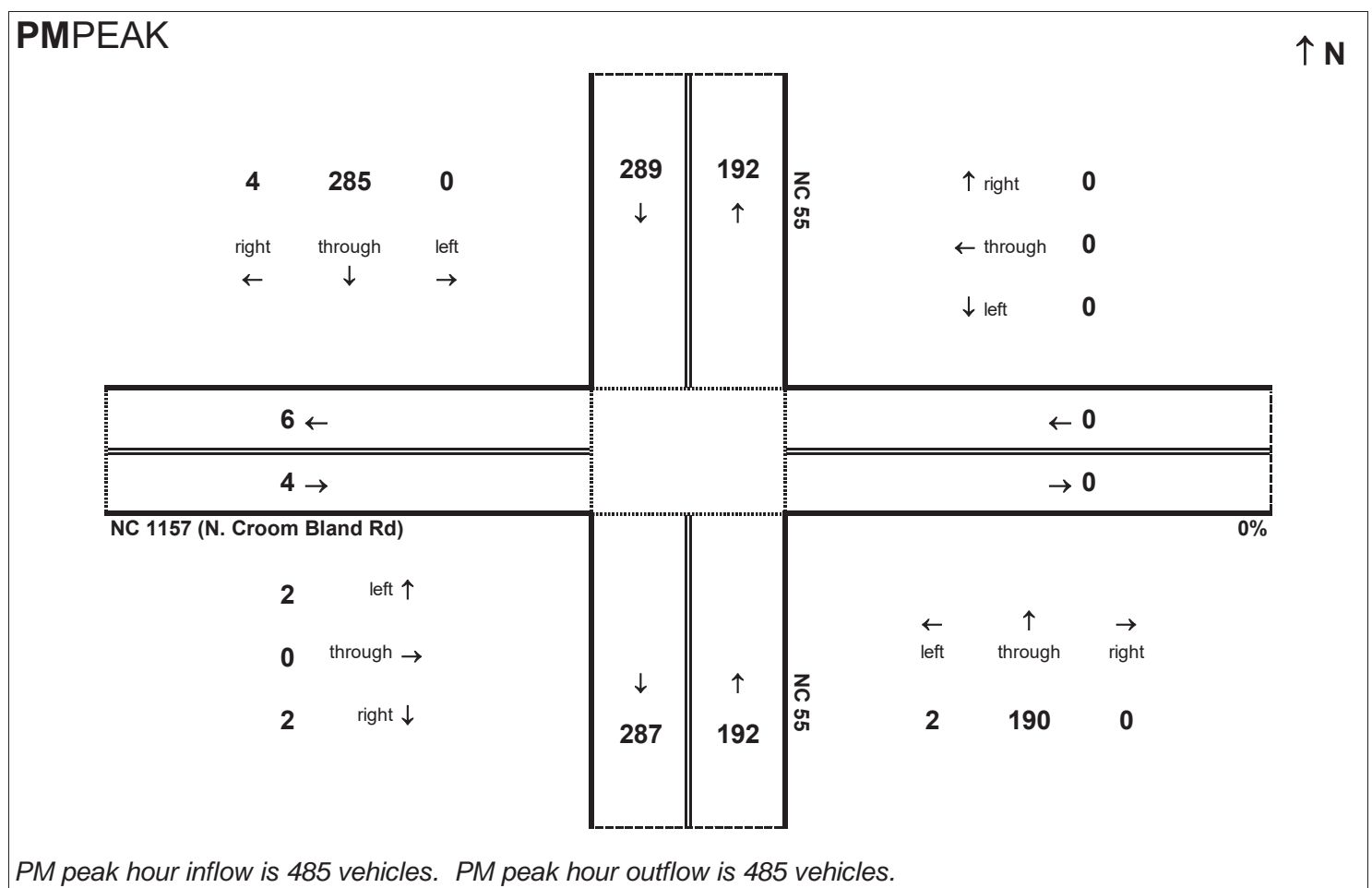
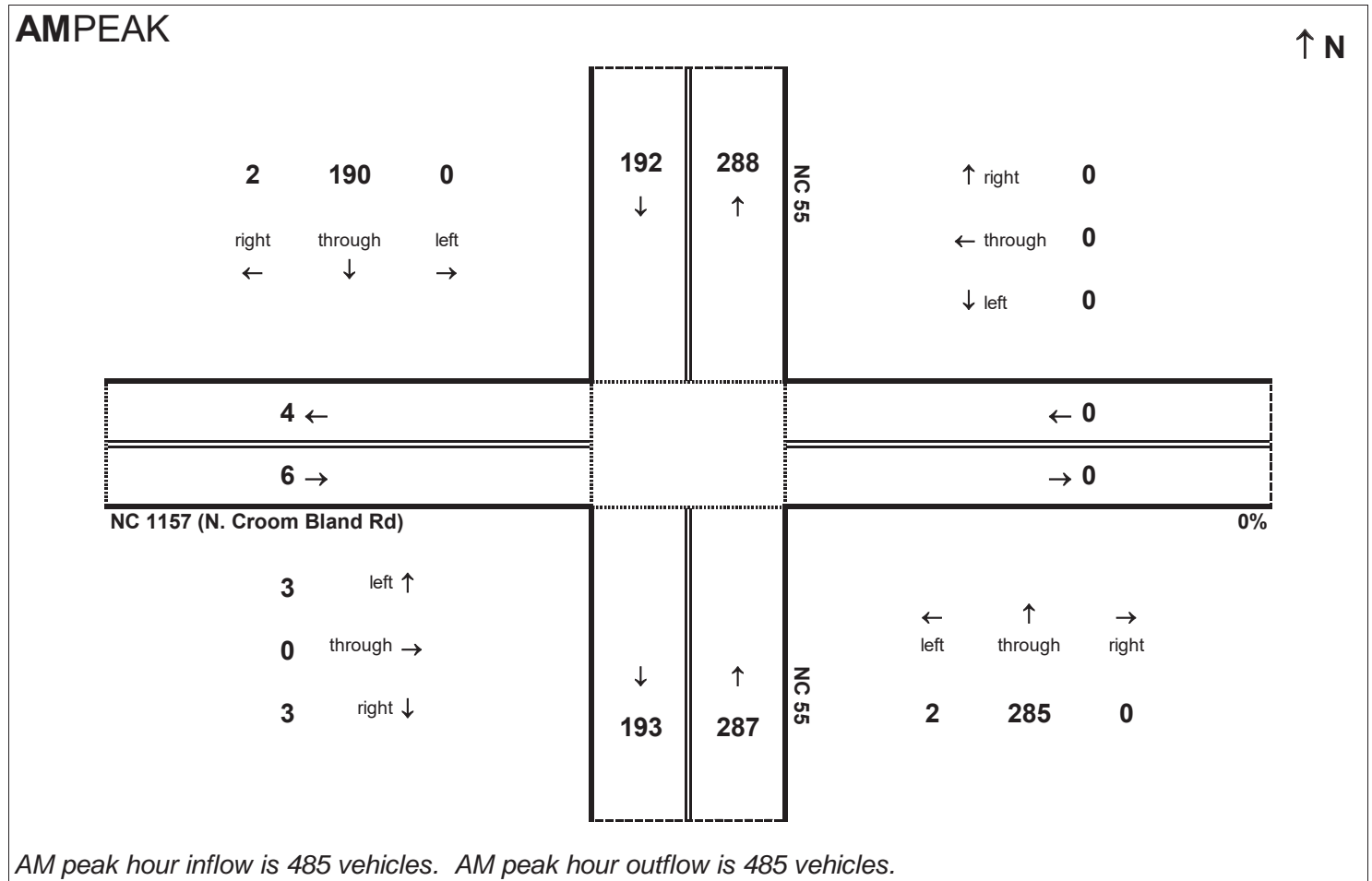


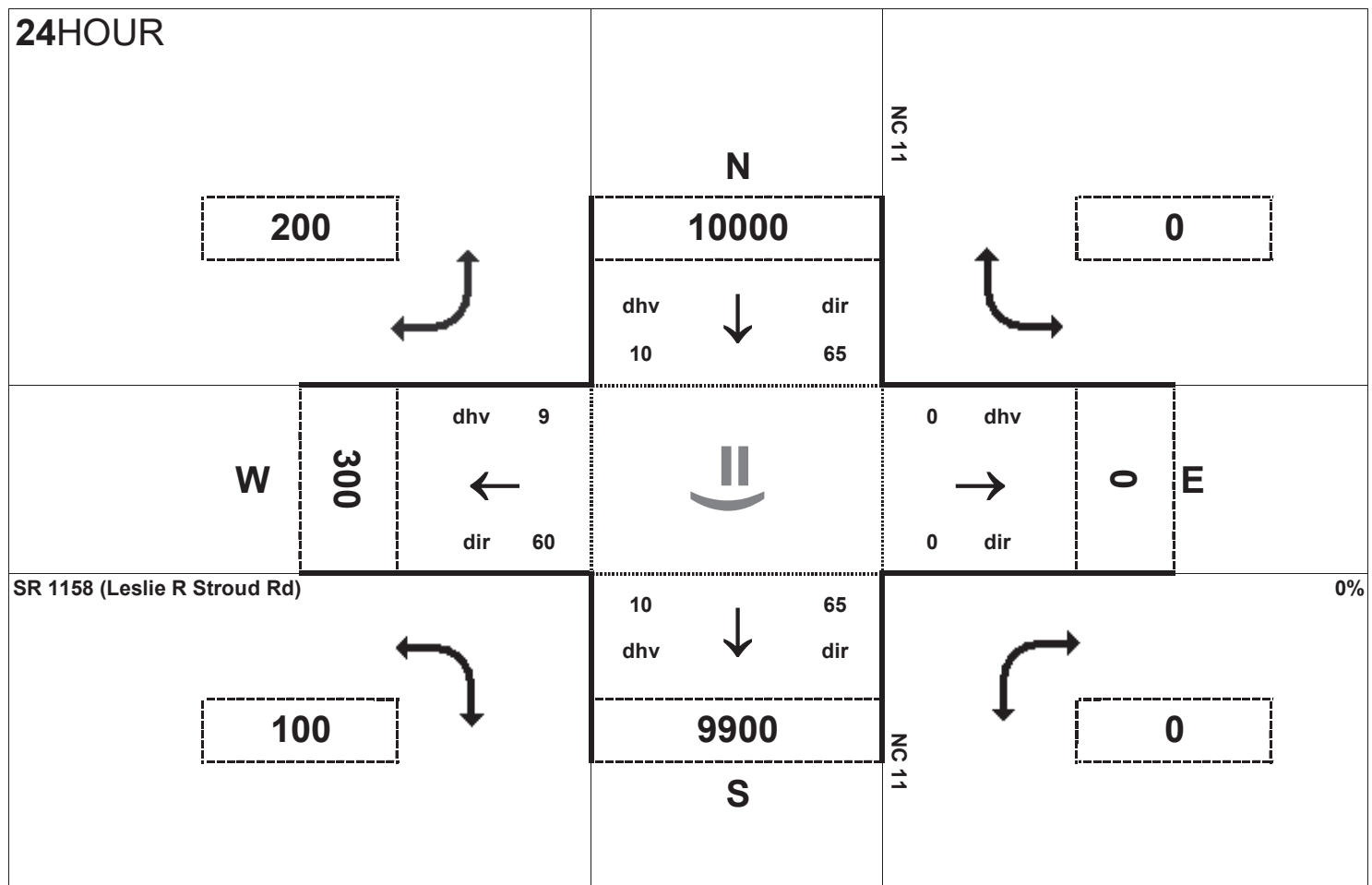
Peak Hour Volume Breakouts Report:
 432 Intersection of NC 55 and SR 1157 (N. Croom Bland Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
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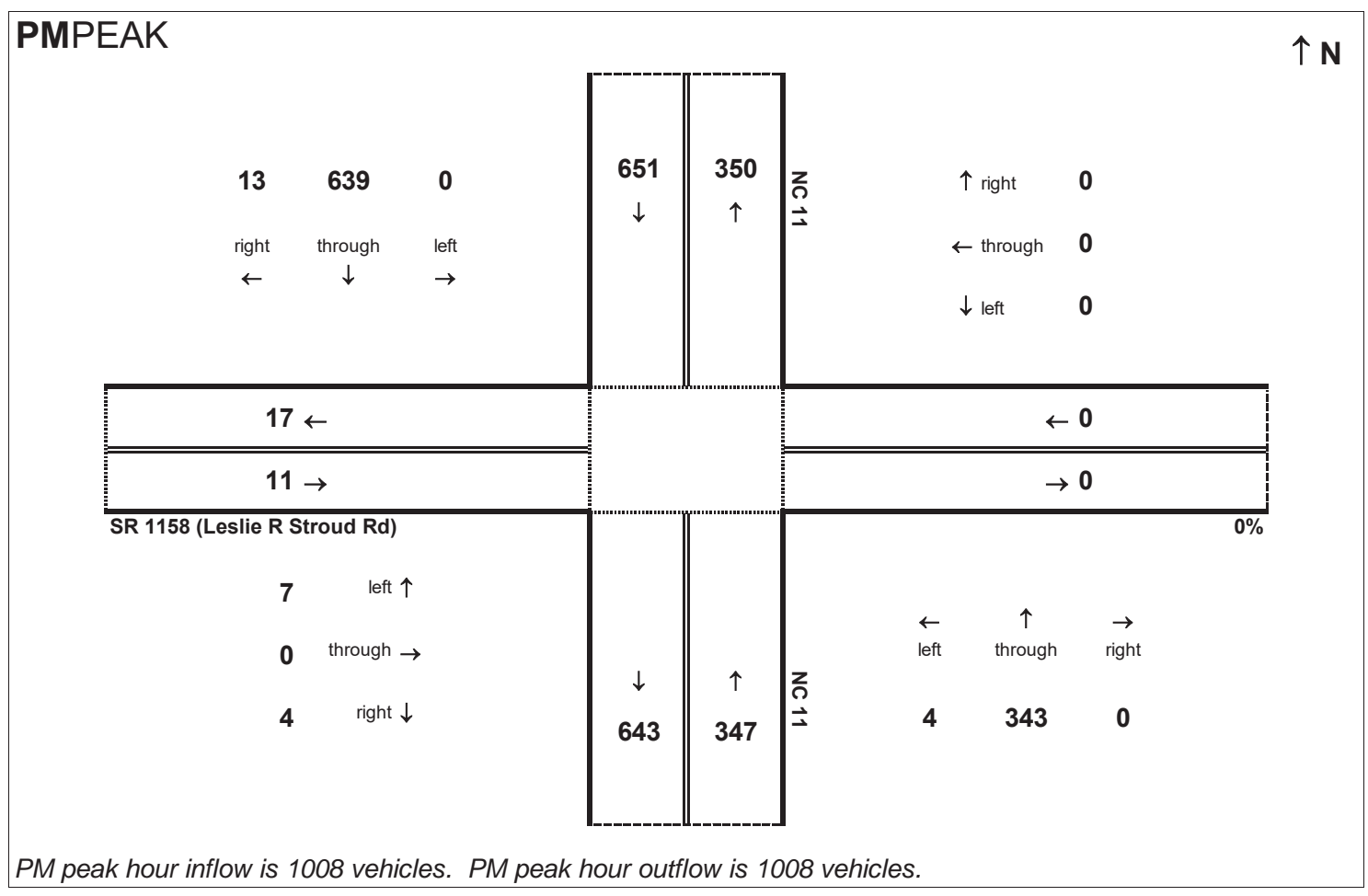
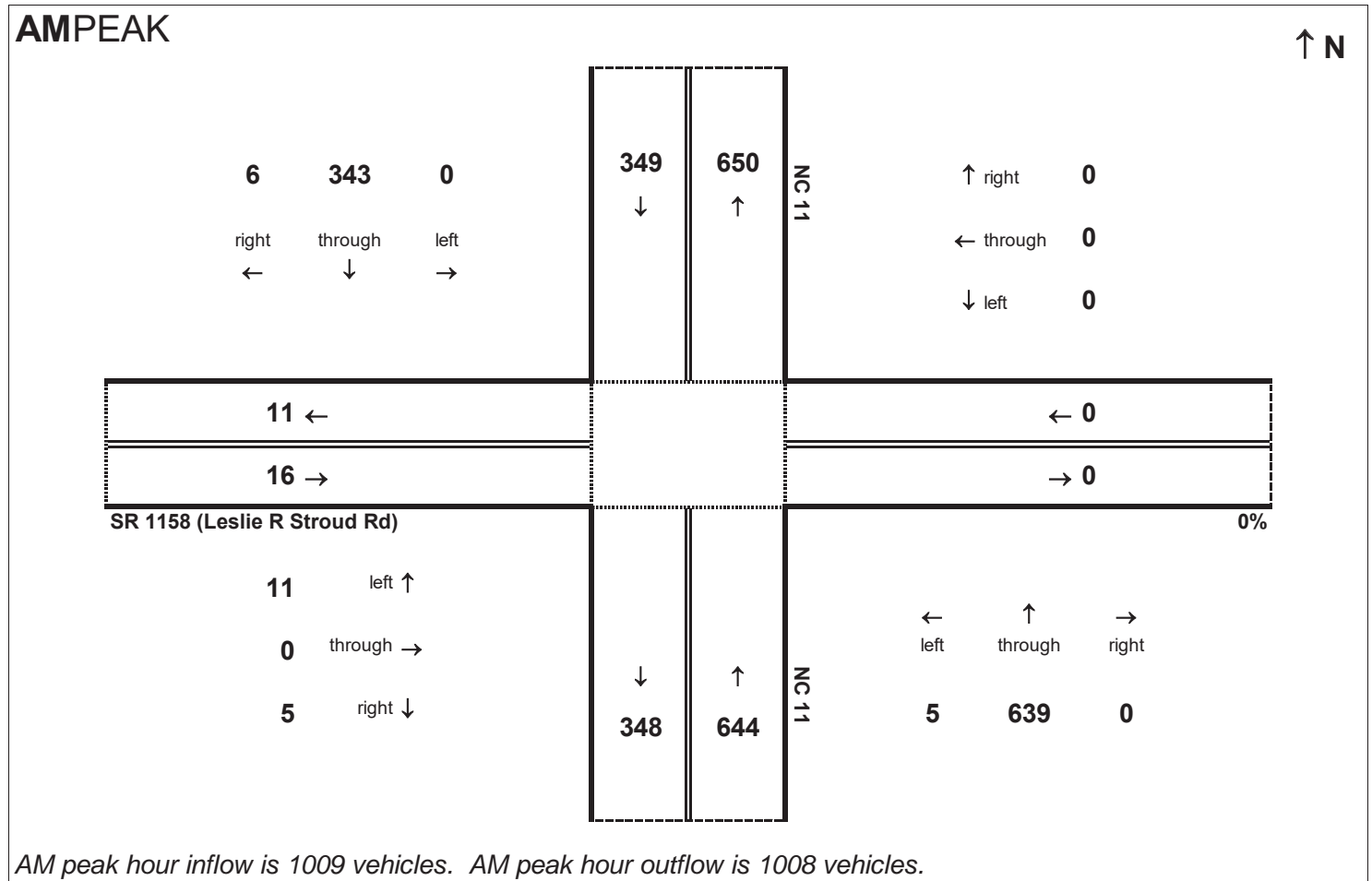


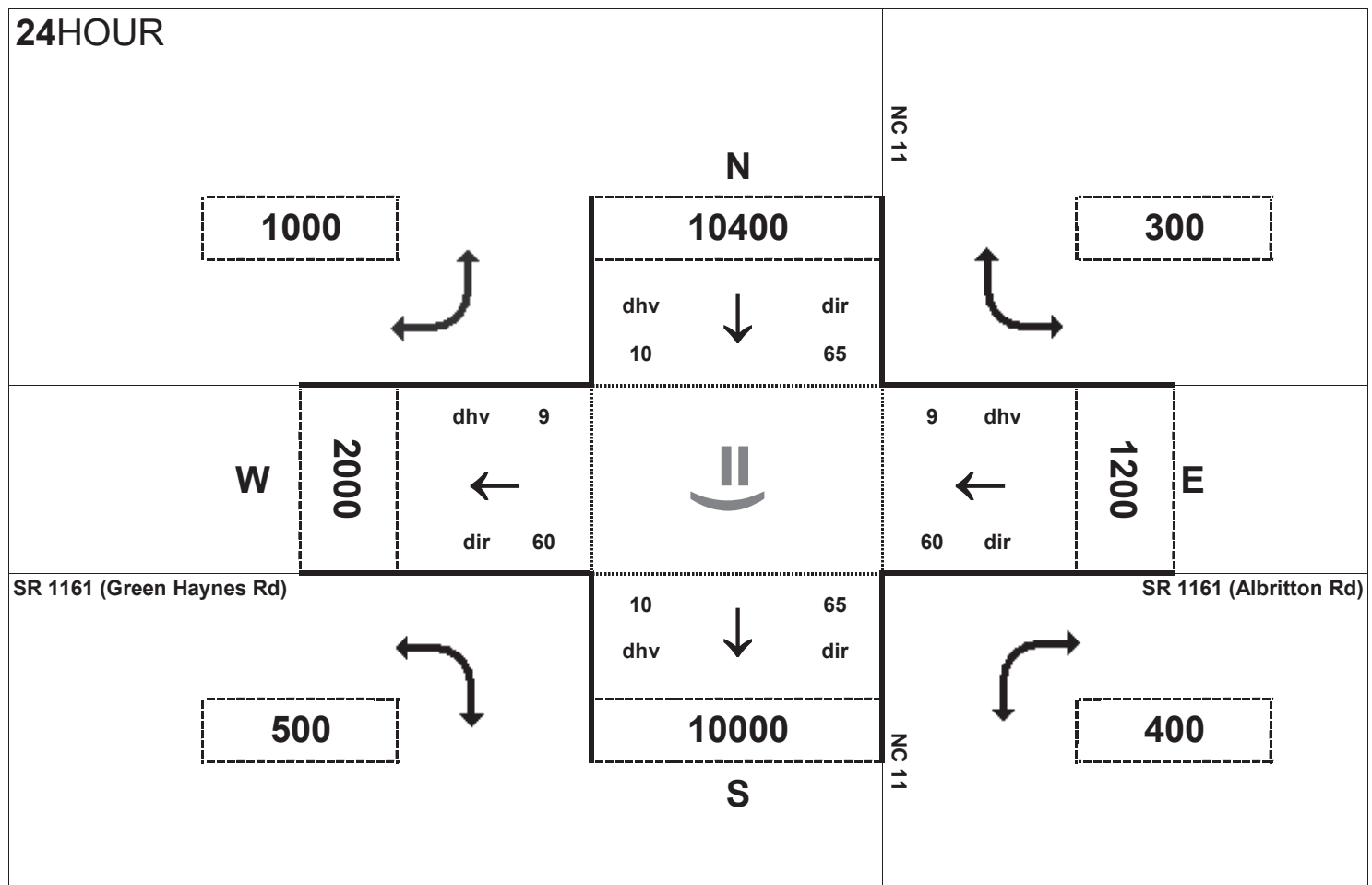
Peak Hour Volume Breakouts Report:
433 Intersection of NC 11 and SR 1158 (Leslie R Stroud Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



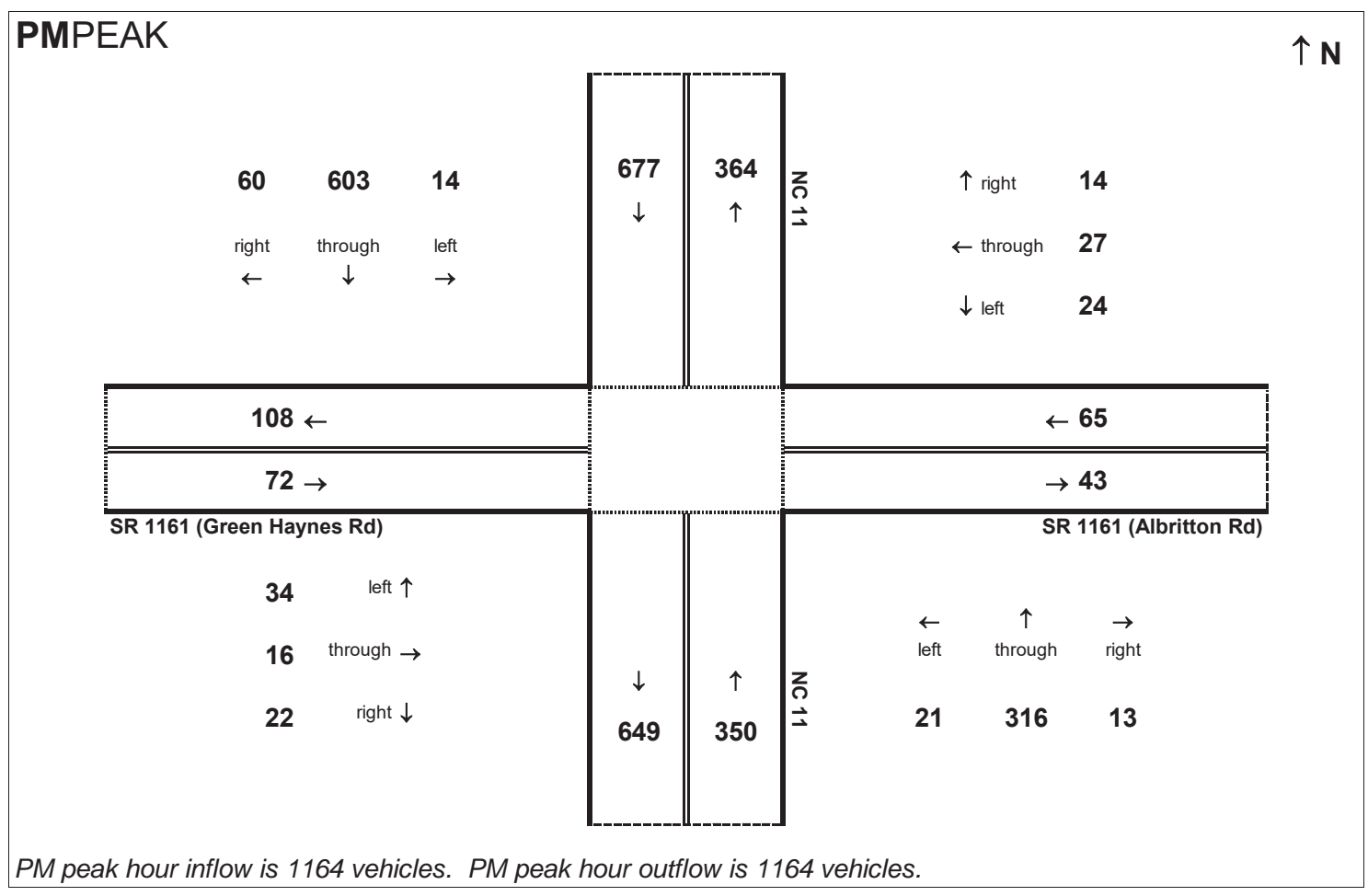
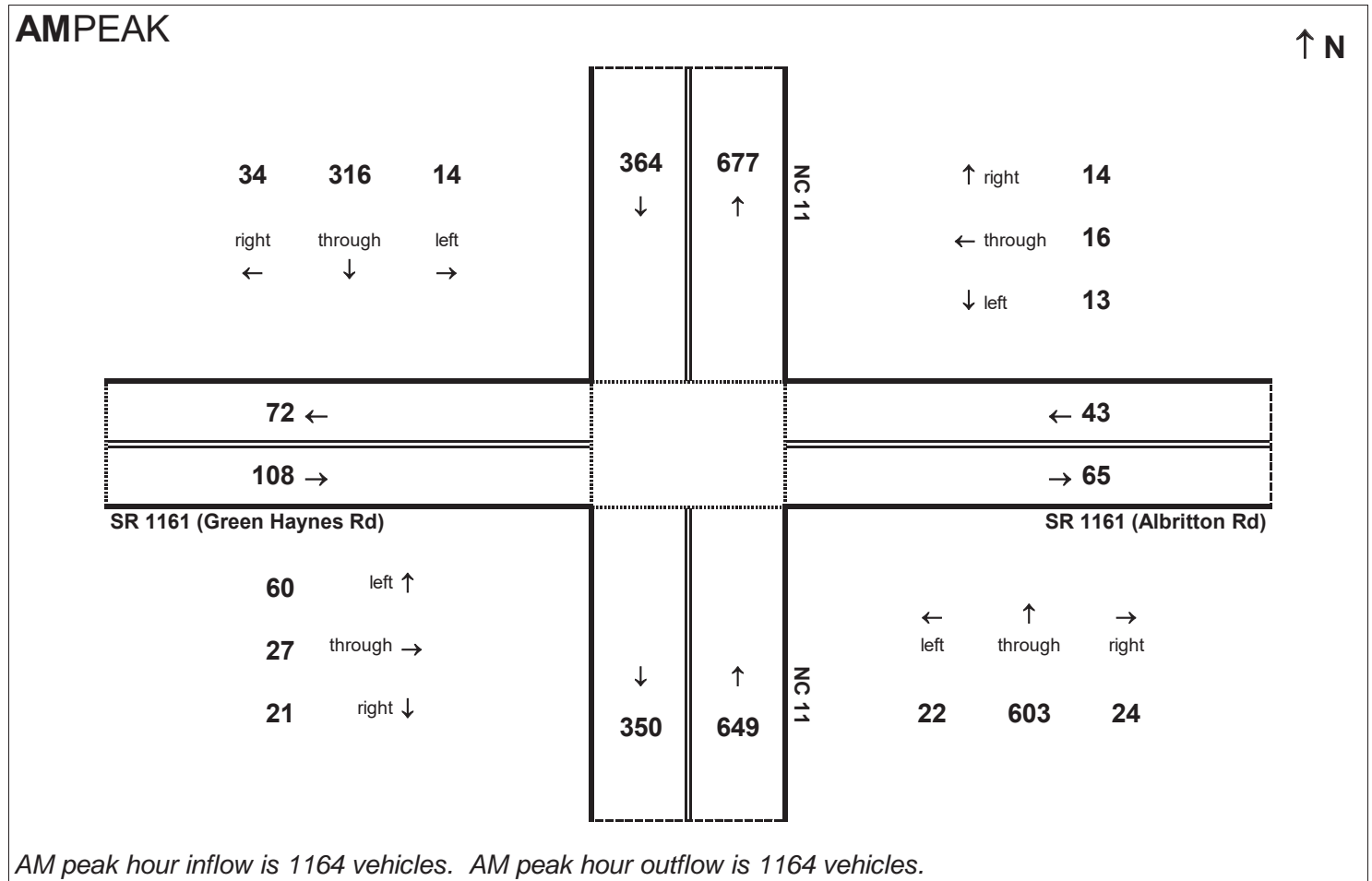


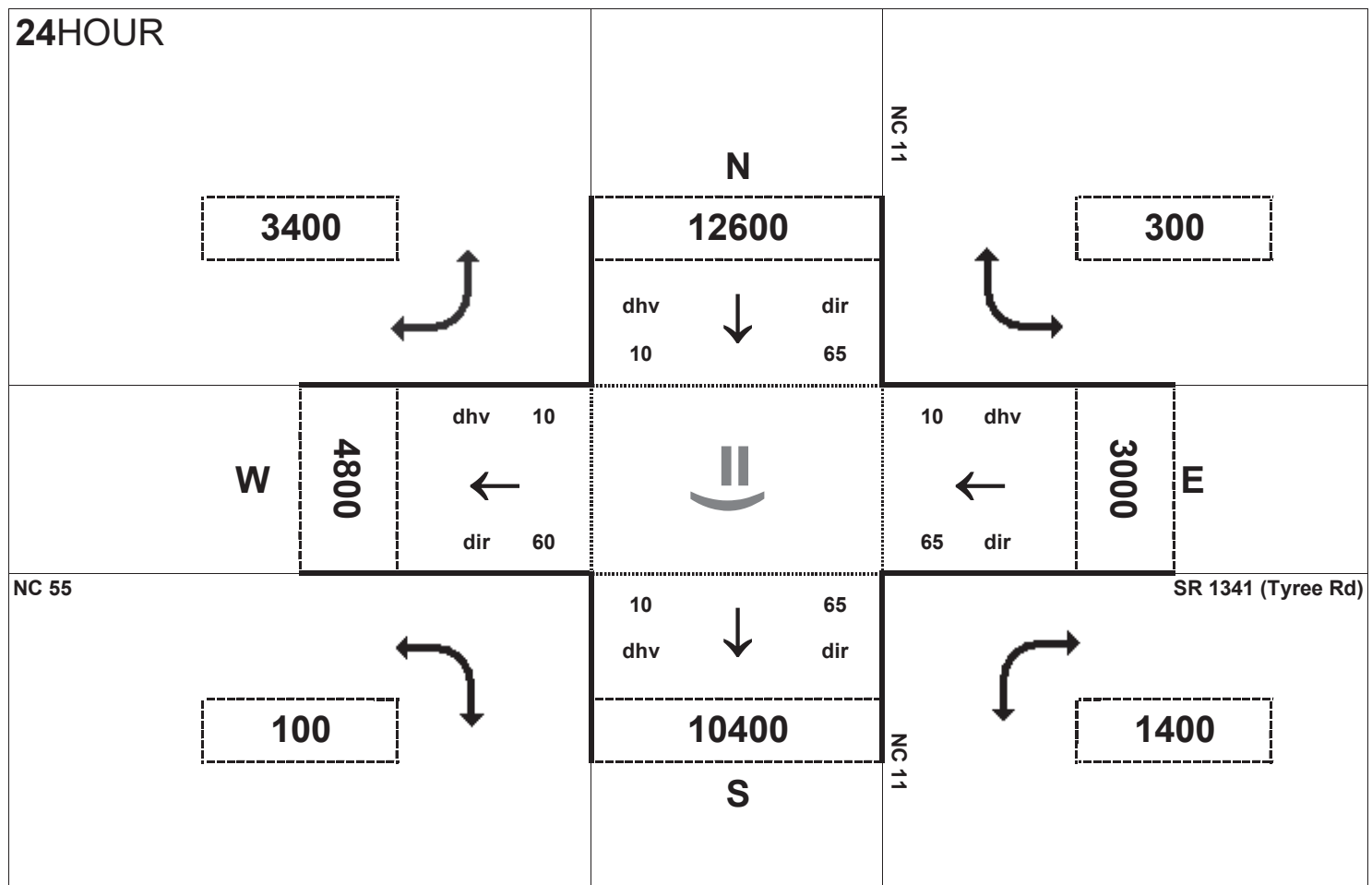
Peak Hour Volume Breakouts Report:
 434 Intersection of NC 11 and SR 1161 (Green Haynes Rd) / SR 1161 (Albritton Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



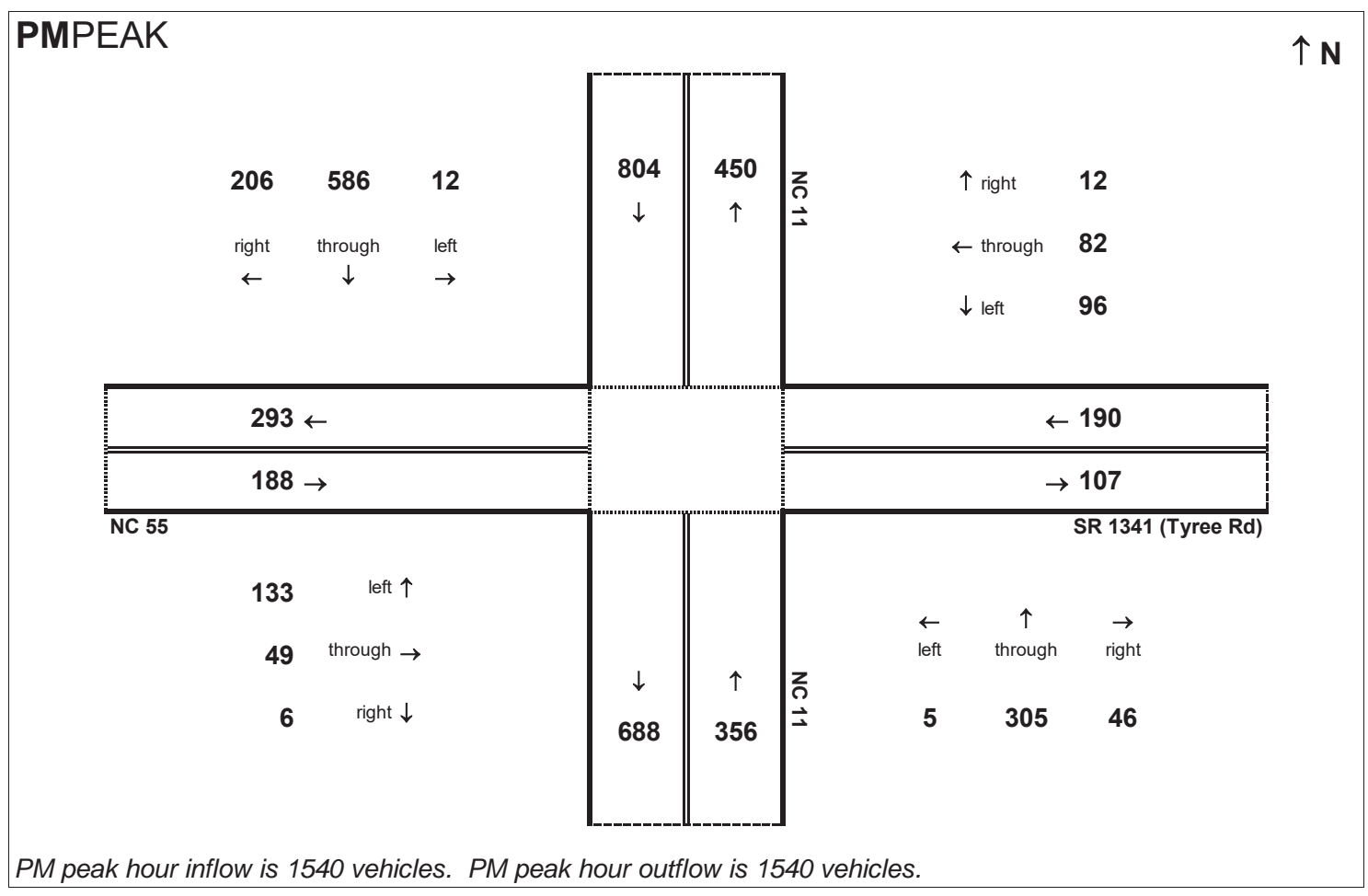
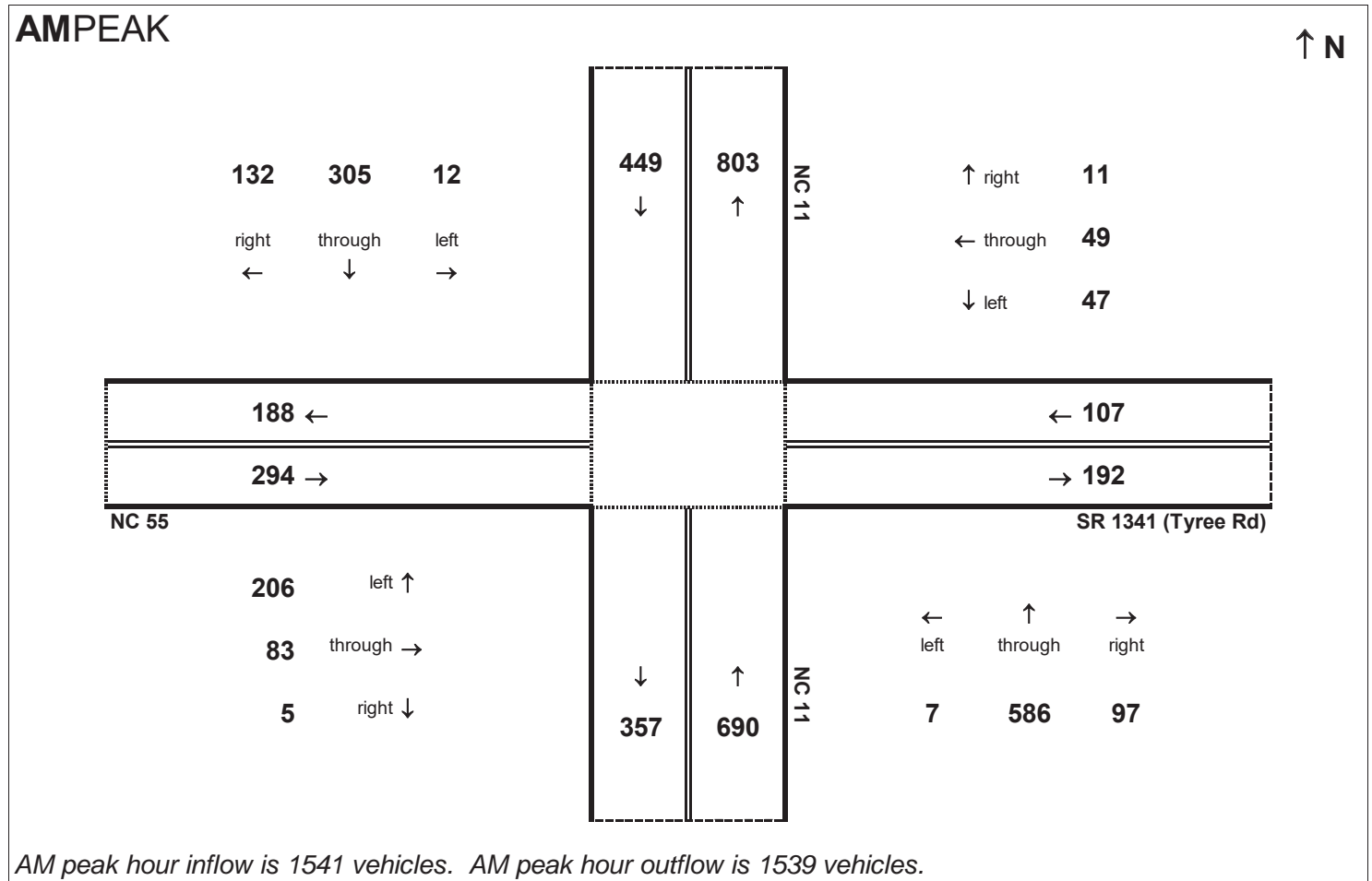


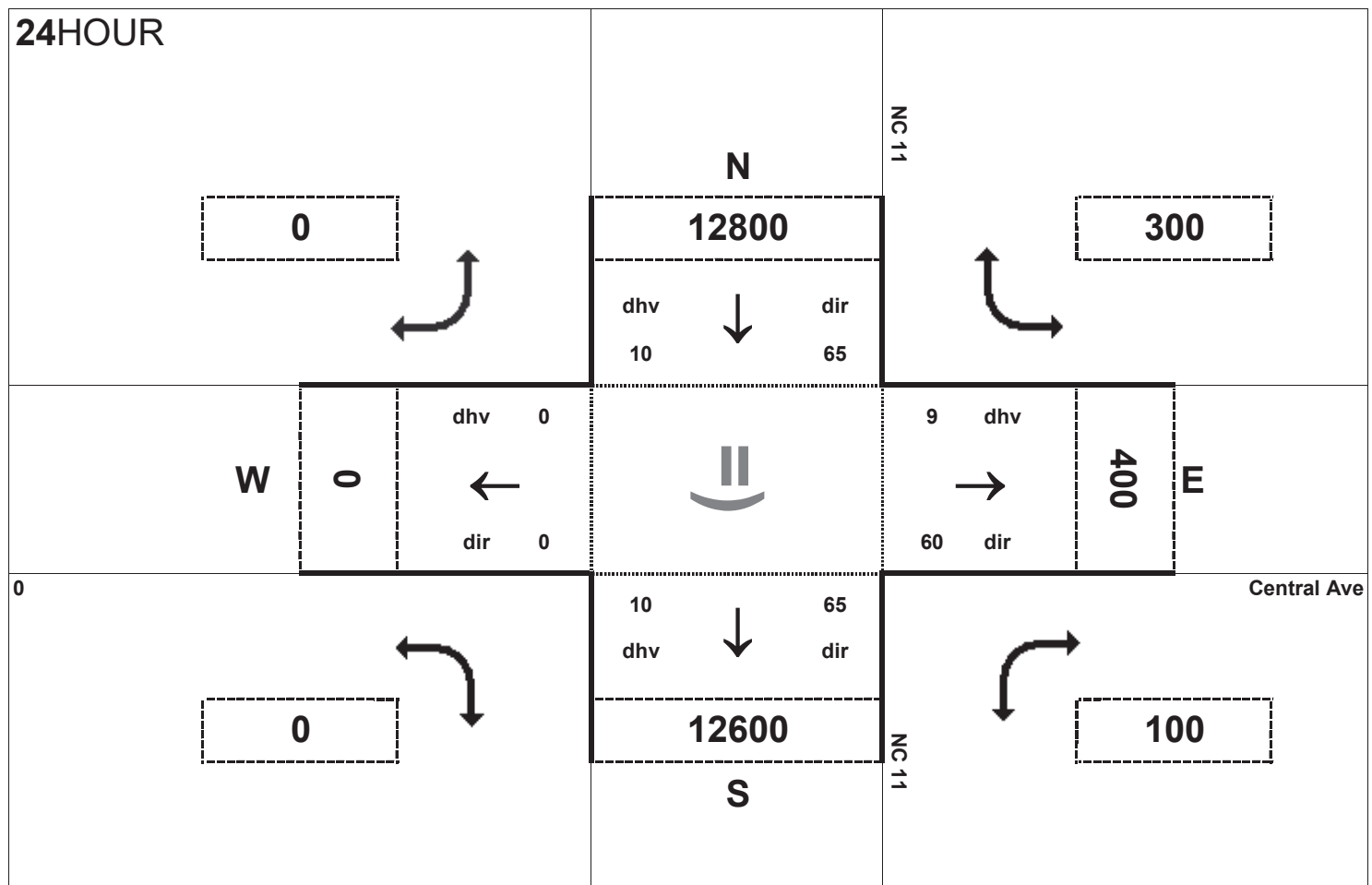
Peak Hour Volume Breakouts Report:
 435 Intersection of NC 55 and NC 11 and SR 1341
 (Tyree Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



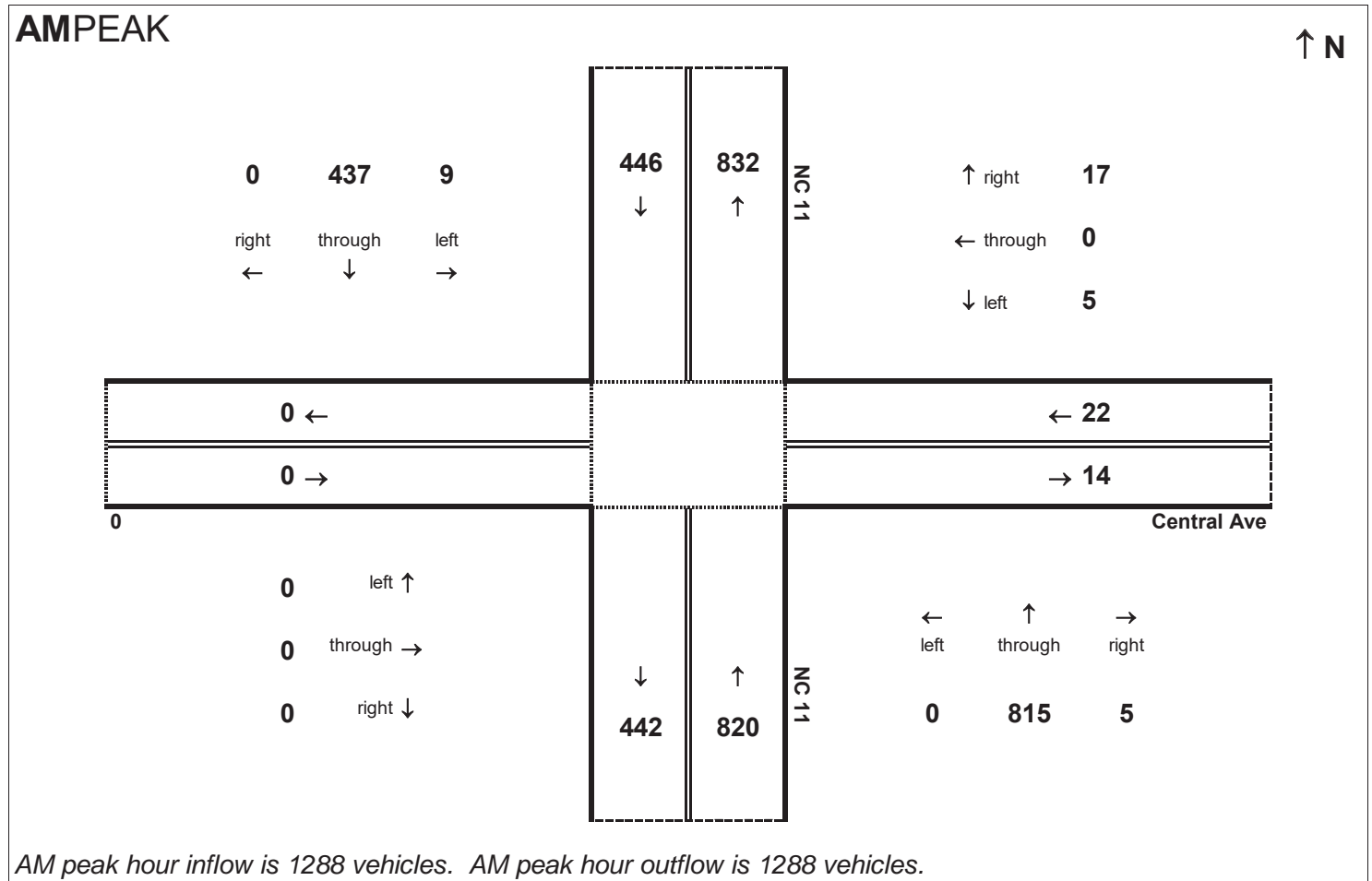


Peak Hour Volume Breakouts Report:
436 Intersection of NC 11 and Central Ave

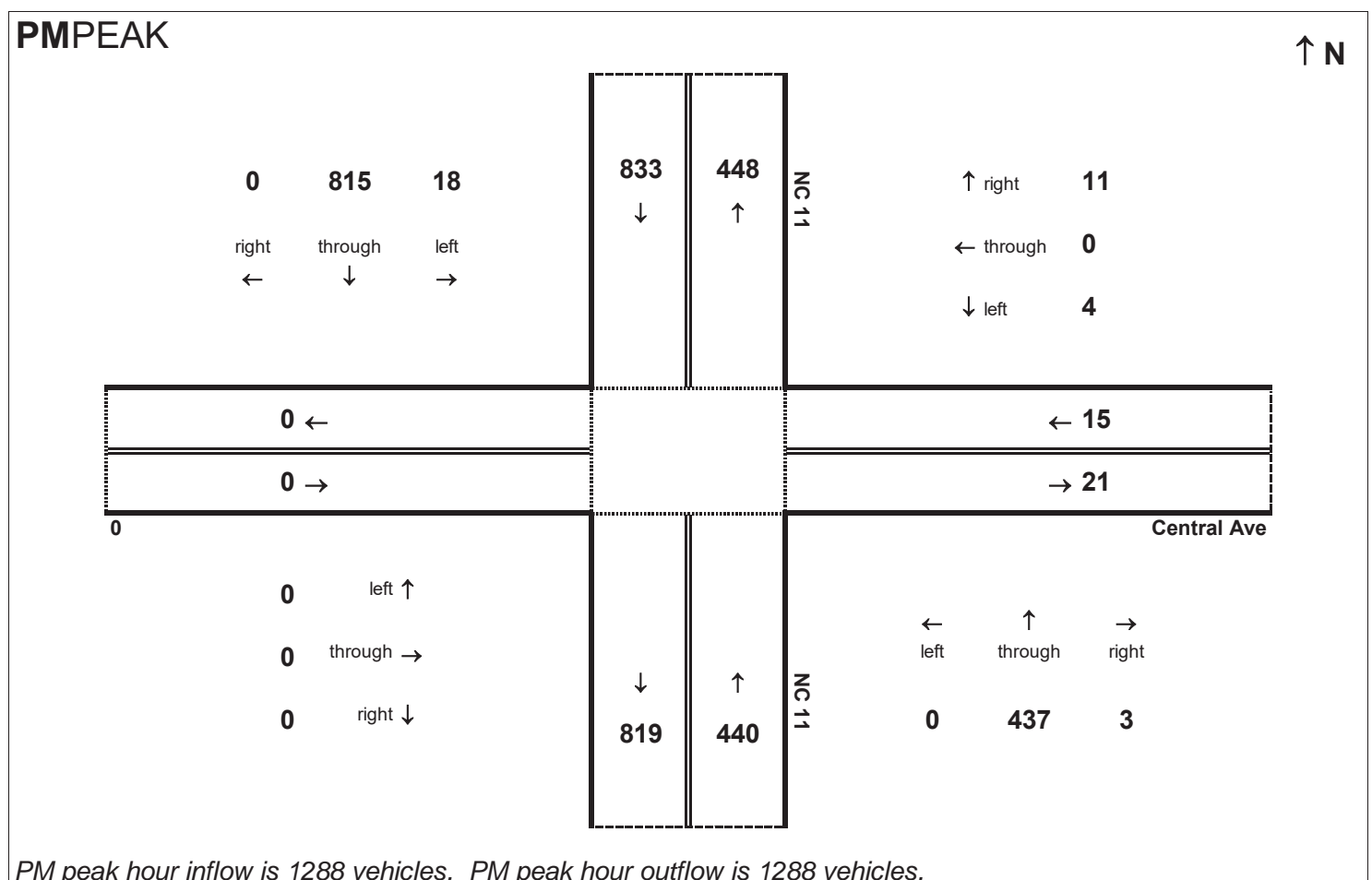
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

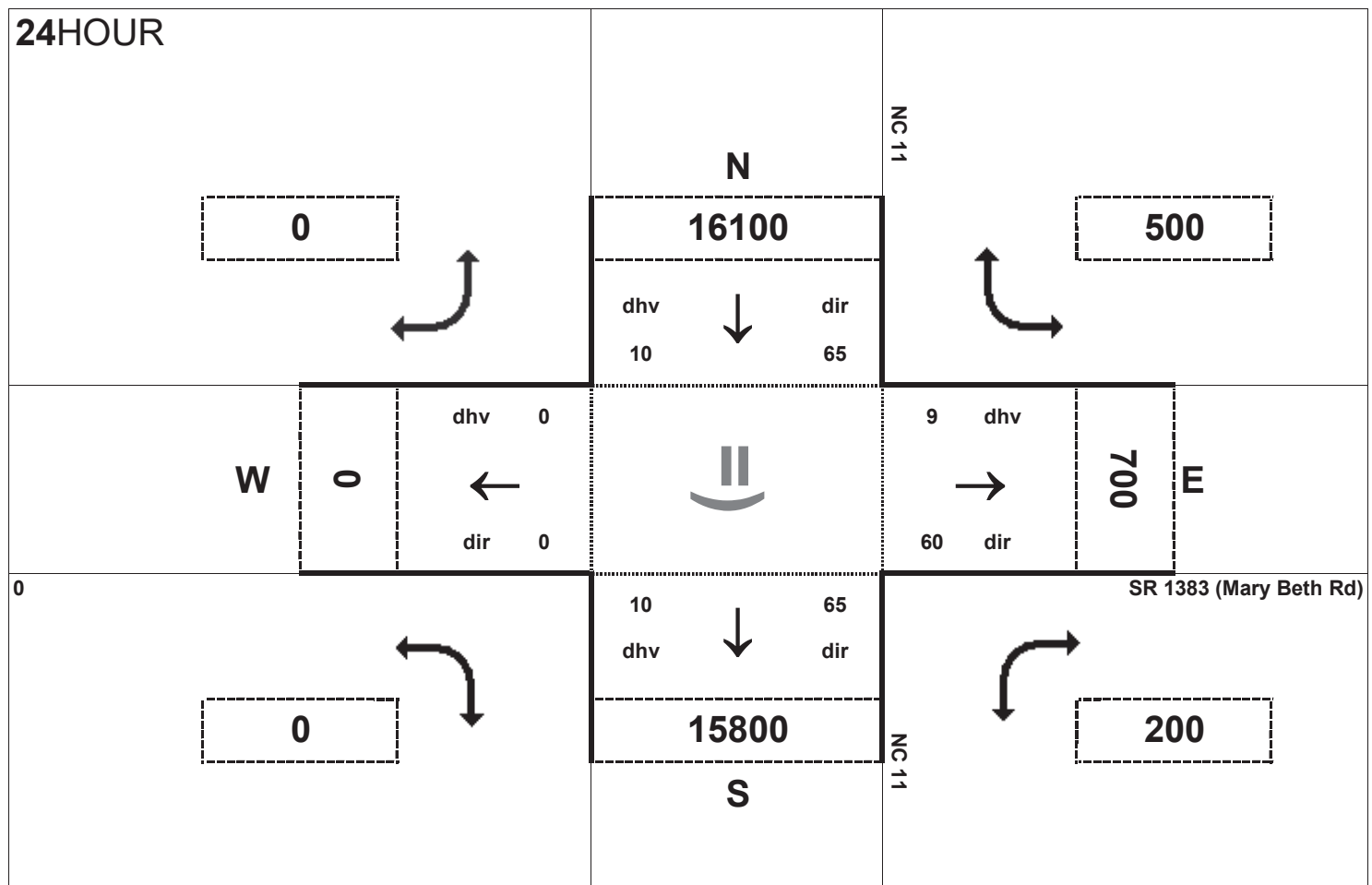
Project:
R-2553



AM peak hour inflow is 1288 vehicles. AM peak hour outflow is 1288 vehicles.



PM peak hour inflow is 1288 vehicles. PM peak hour outflow is 1288 vehicles.

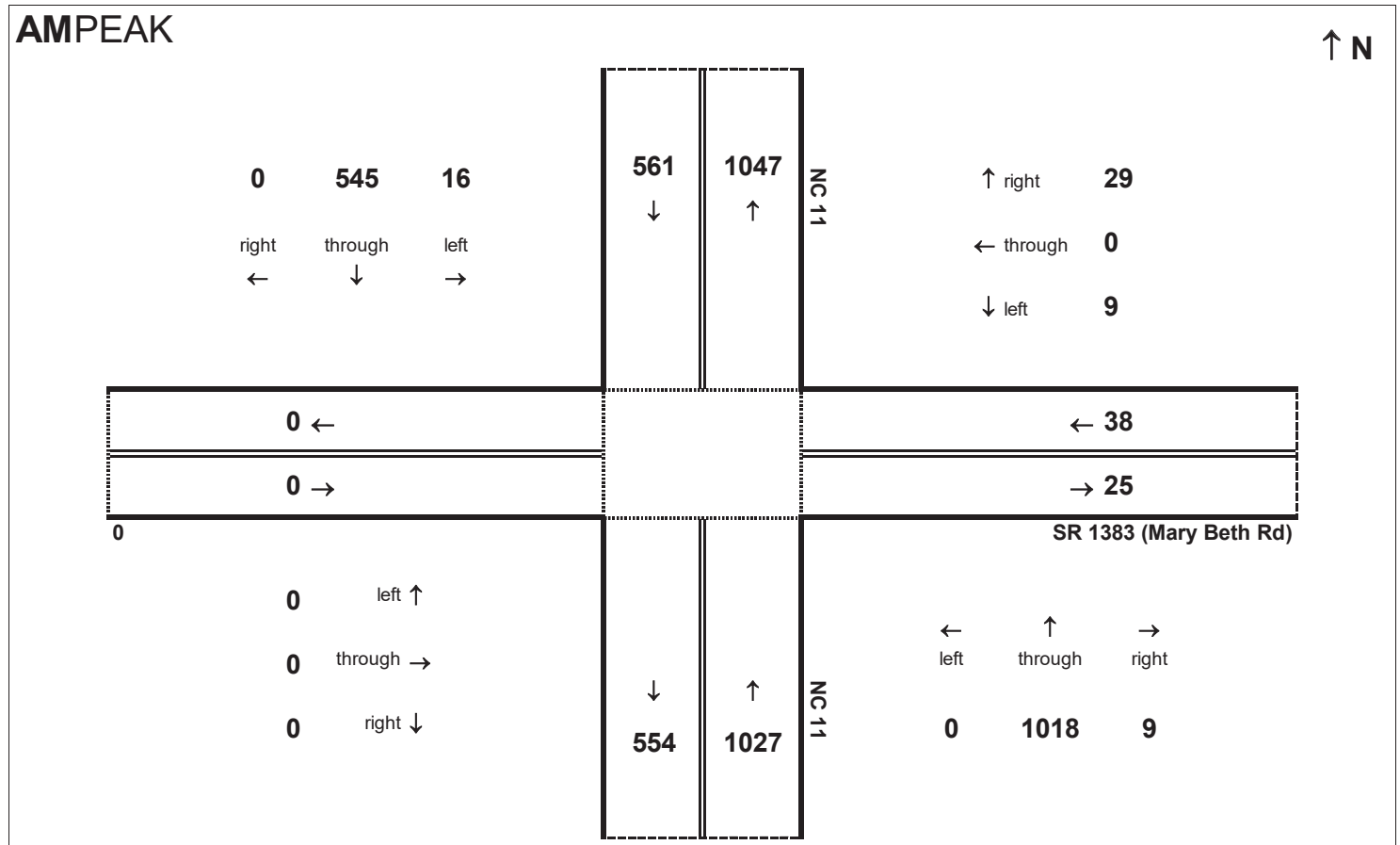


Peak Hour Volume Breakouts Report:
437 Intersection of NC 11 and SR 1383 (Mary Beth Rd)

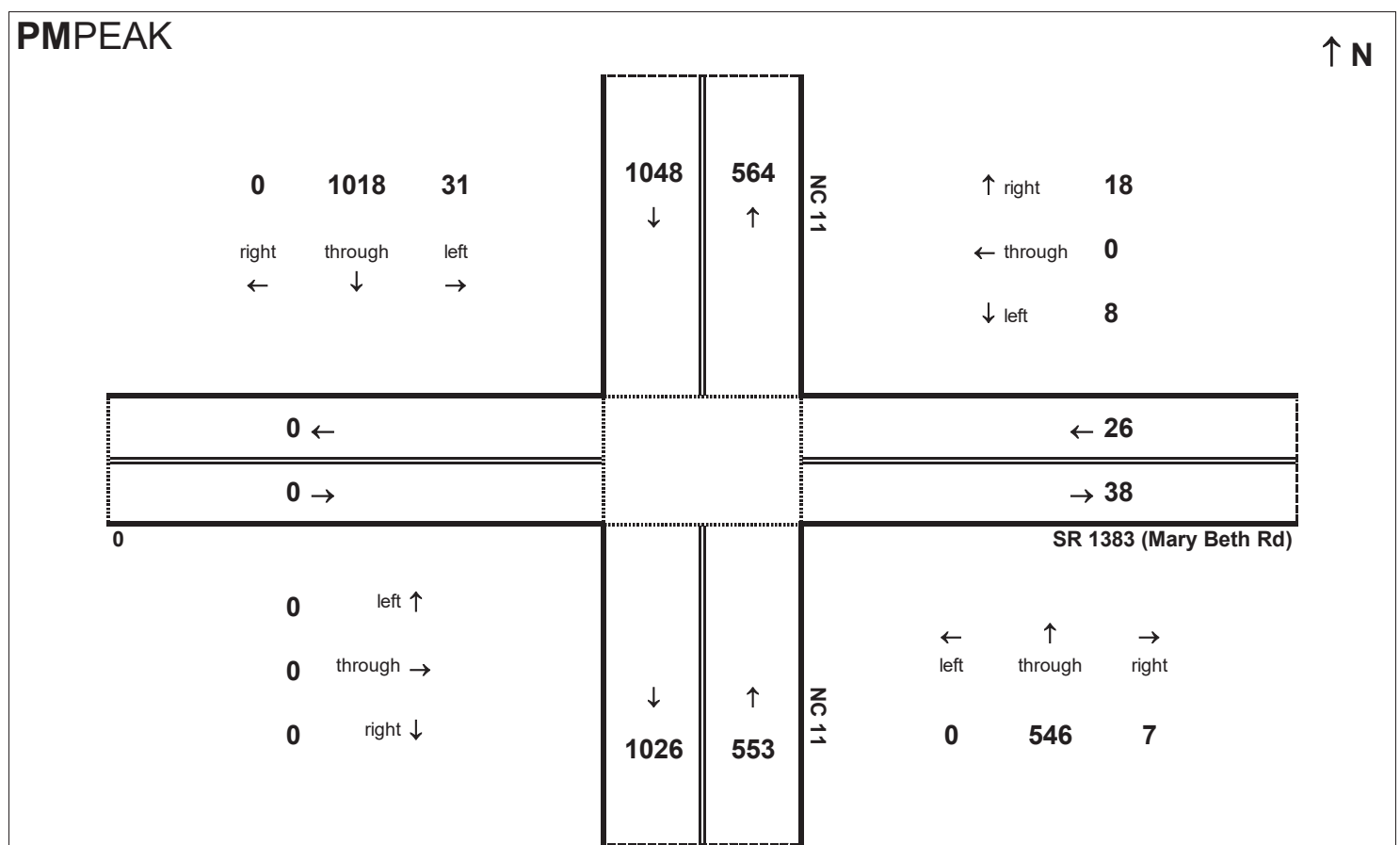
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

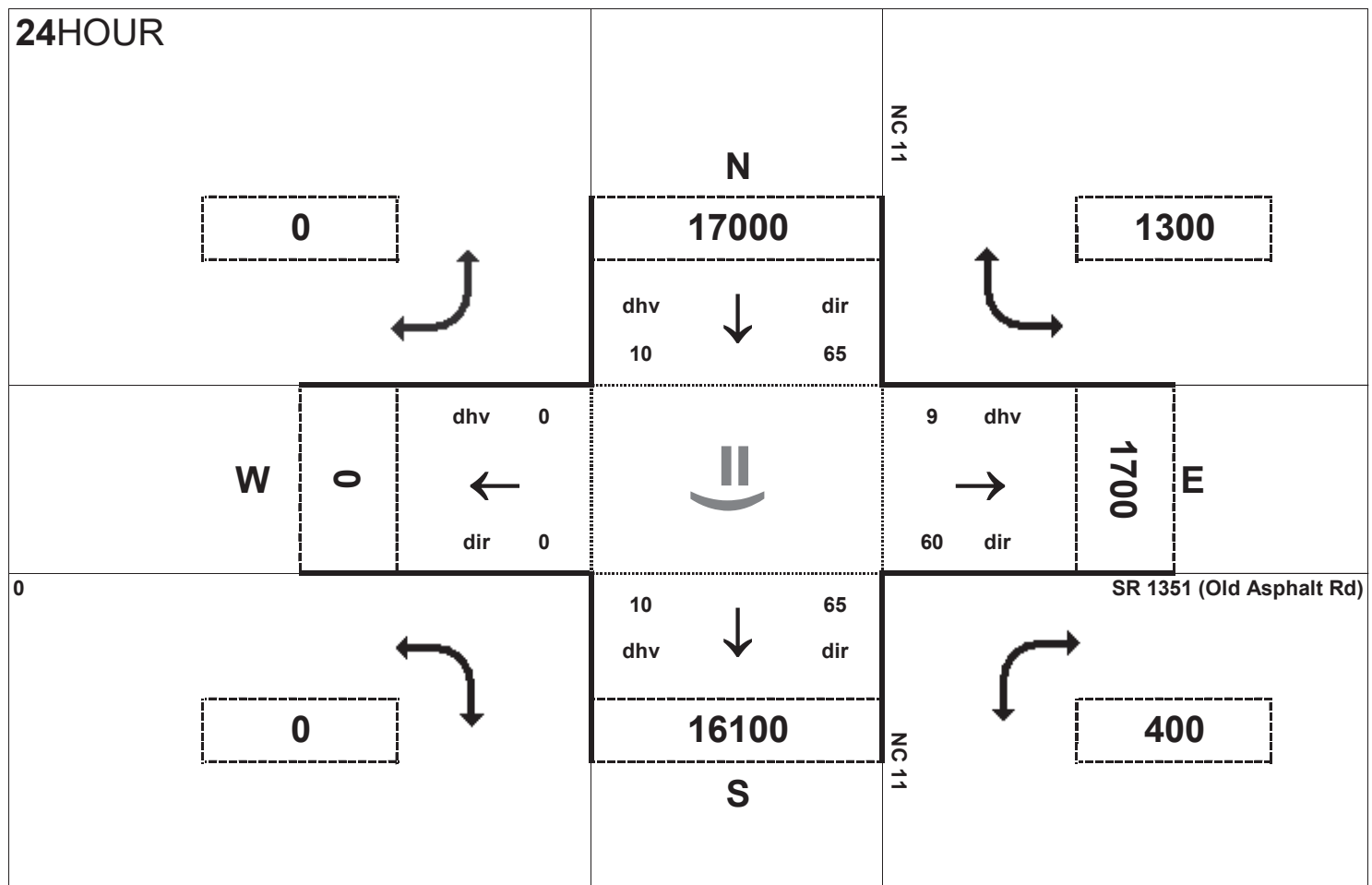
Project:
R-2553



AM peak hour inflow is 1627 vehicles. AM peak hour outflow is 1626 vehicles.



PM peak hour inflow is 1626 vehicles. PM peak hour outflow is 1627 vehicles.

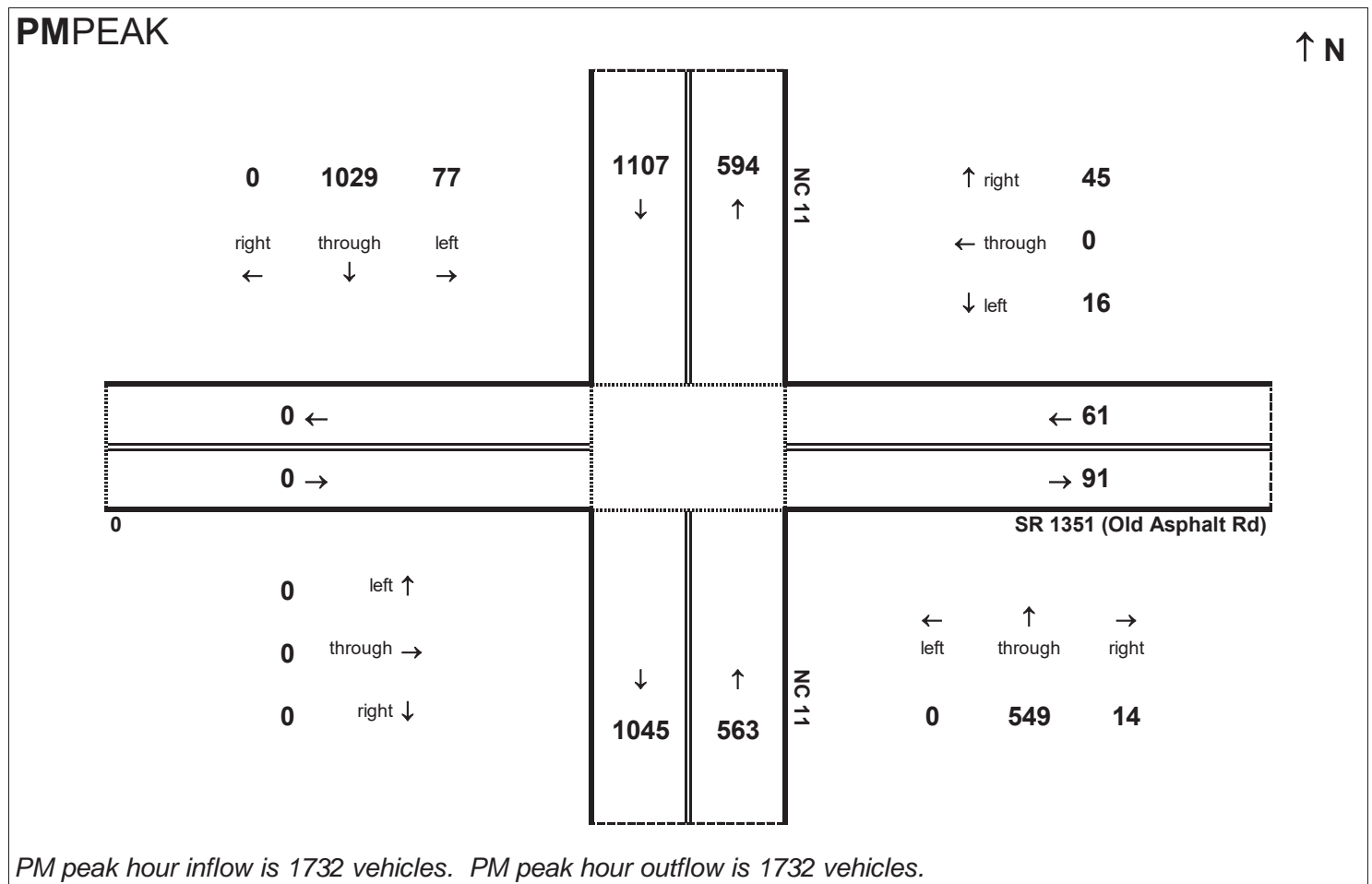
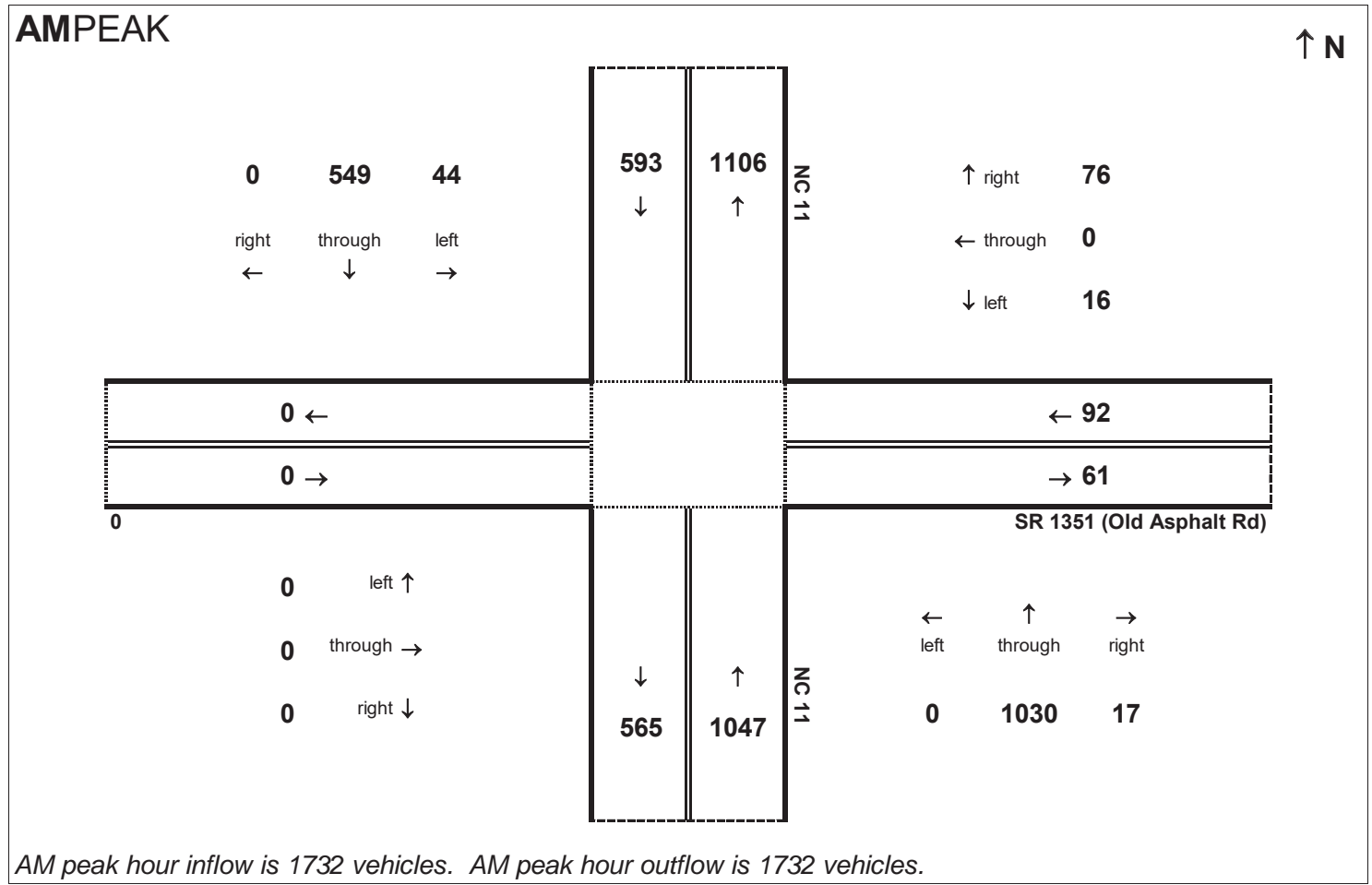


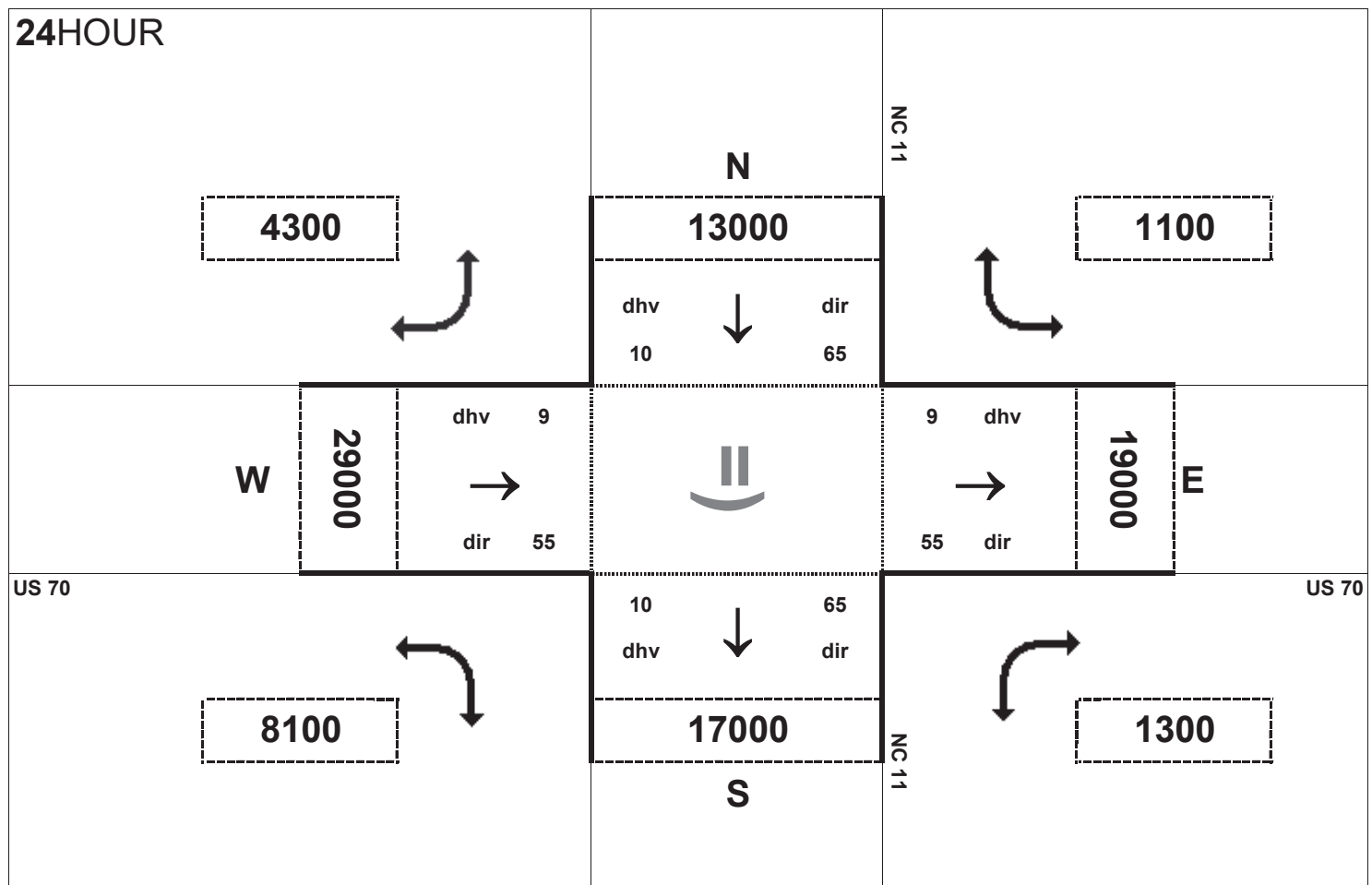
Peak Hour Volume Breakouts Report:
 438 Intersection of NC 11 and SR 1351 (Old Asphalt Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



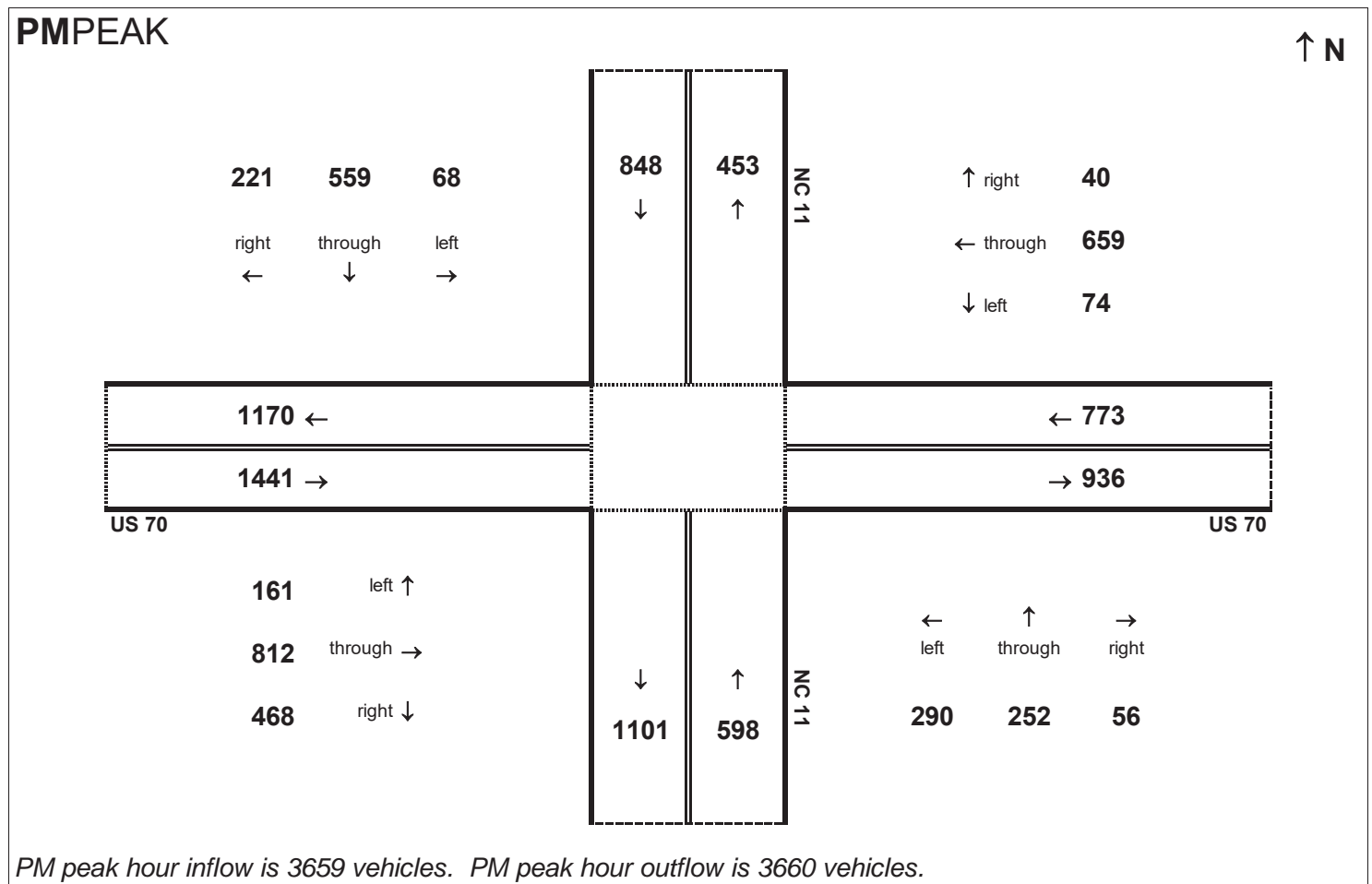
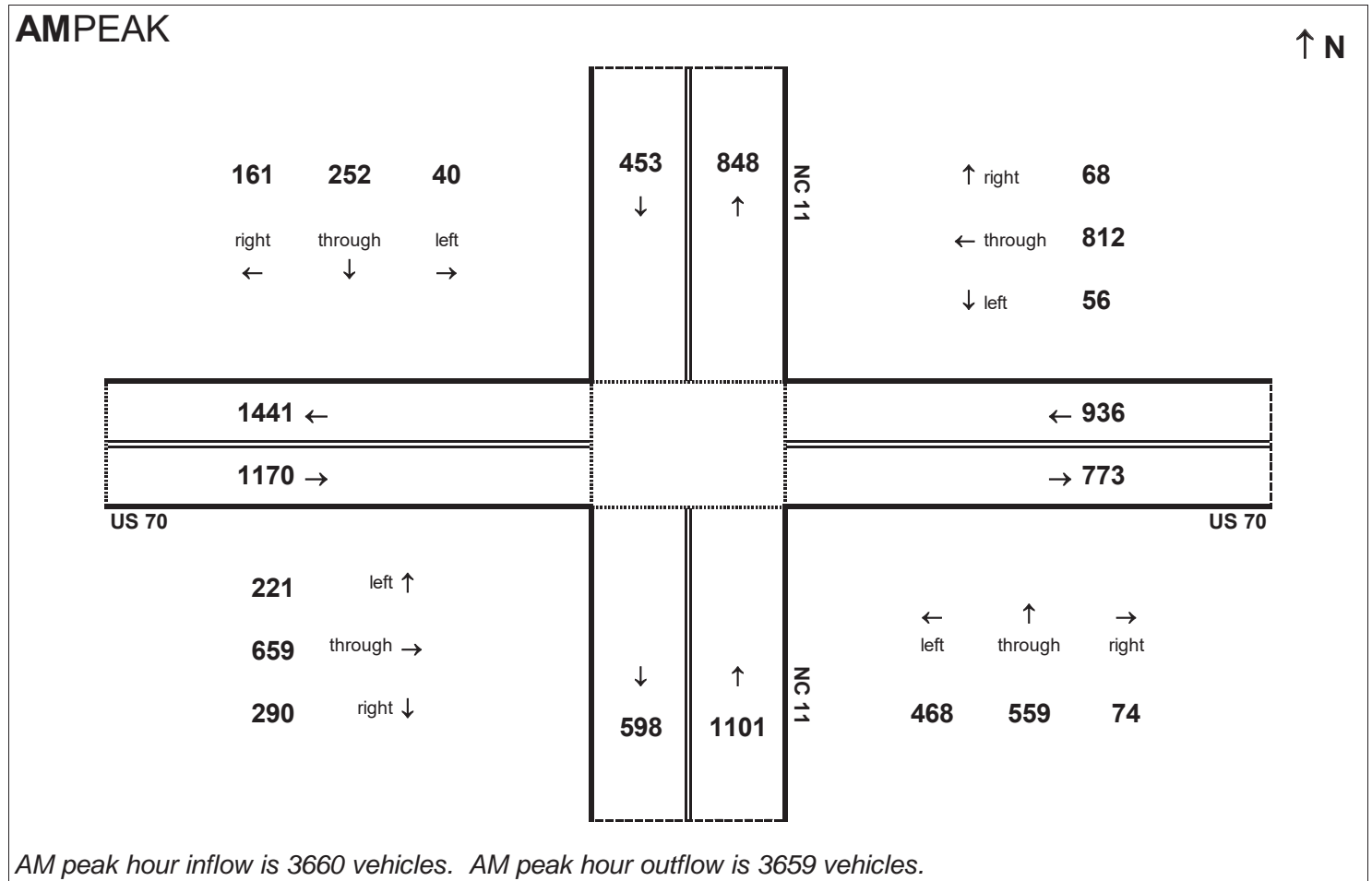


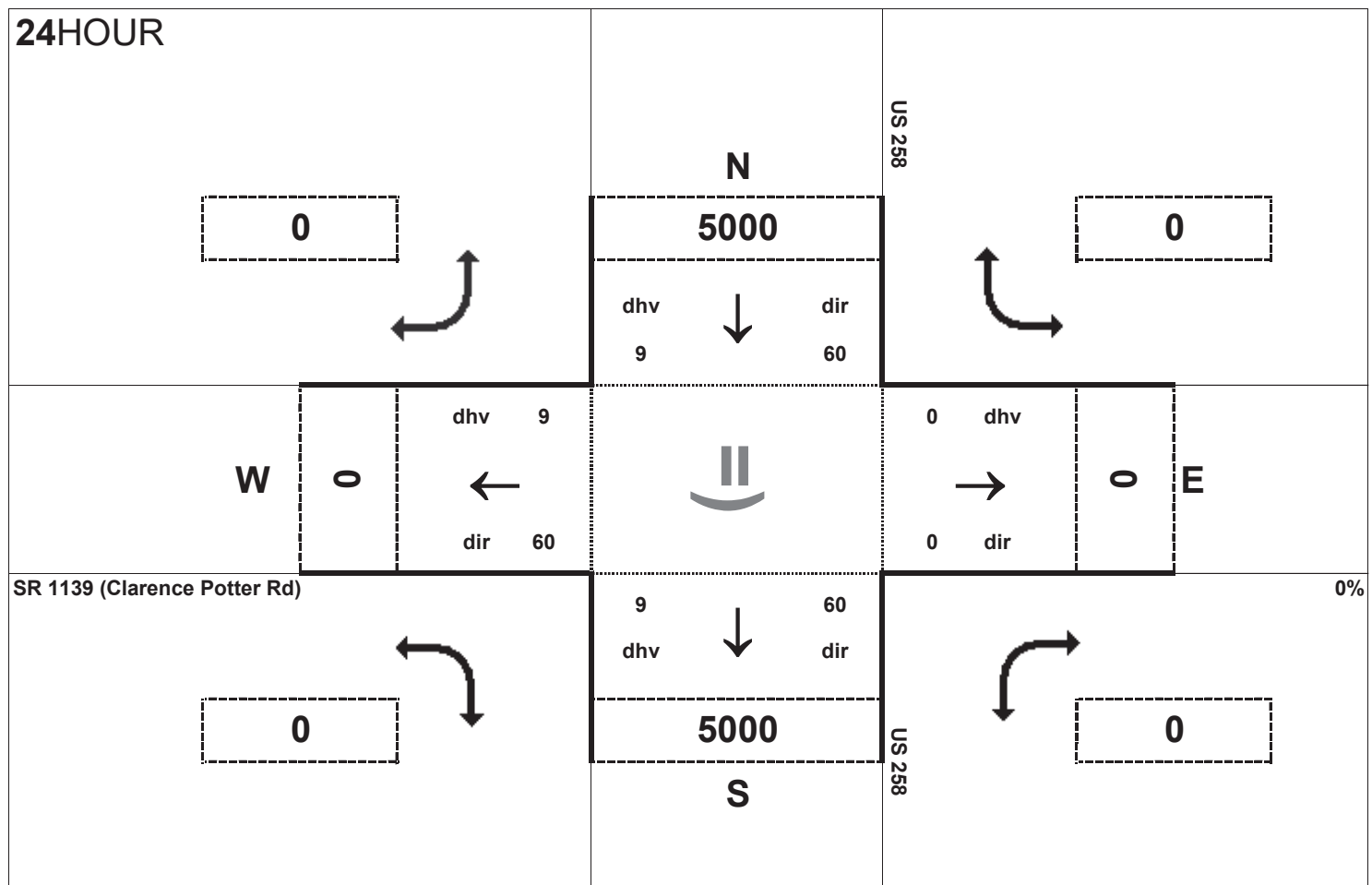
Peak Hour Volume Breakouts Report:
439 Intersection of US 70 and NC 11

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



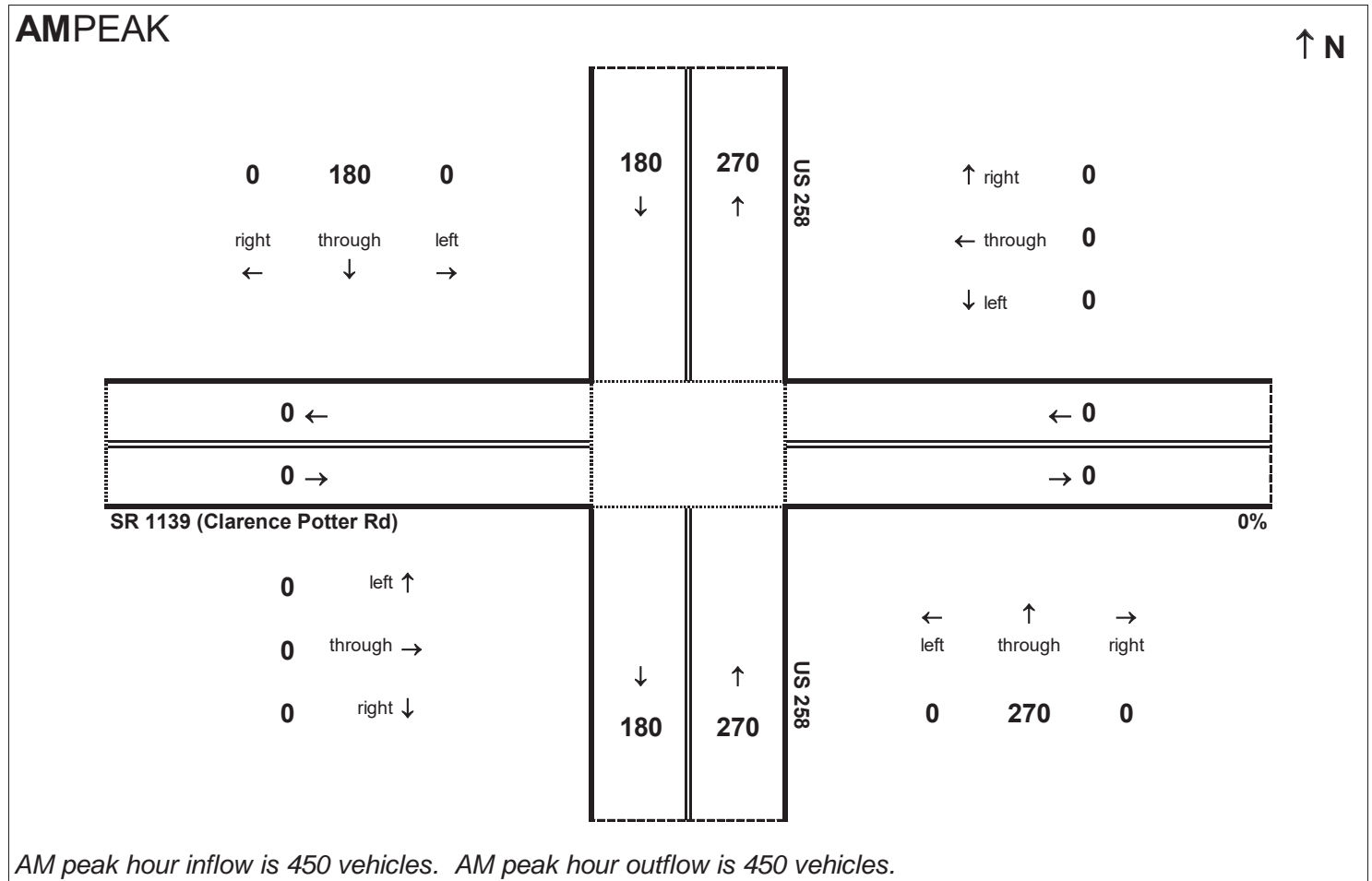


Peak Hour Volume Breakouts Report:
 440 Intersection of US 258 and SR 1139 (Clarence Potter Rd)

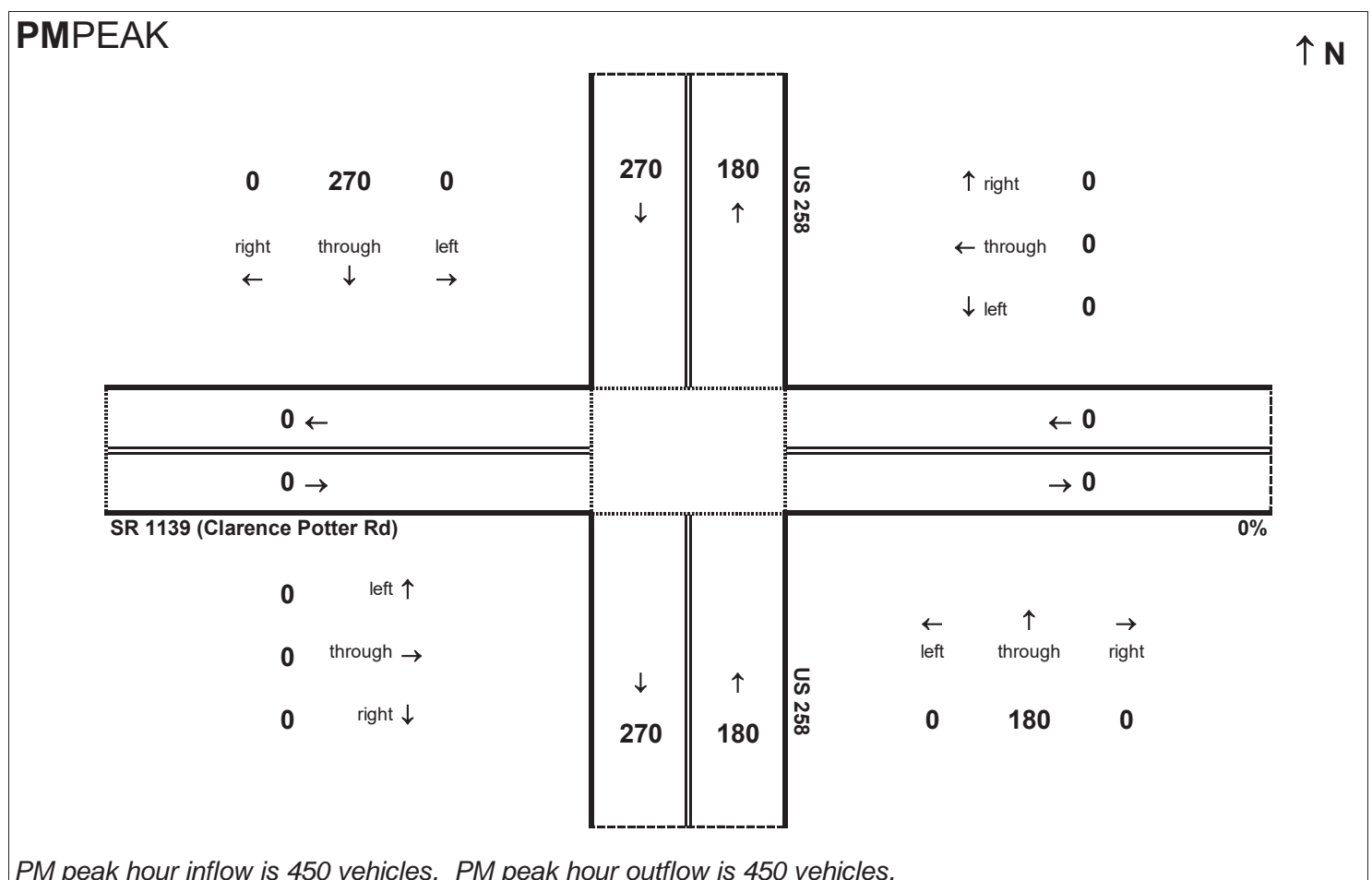
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

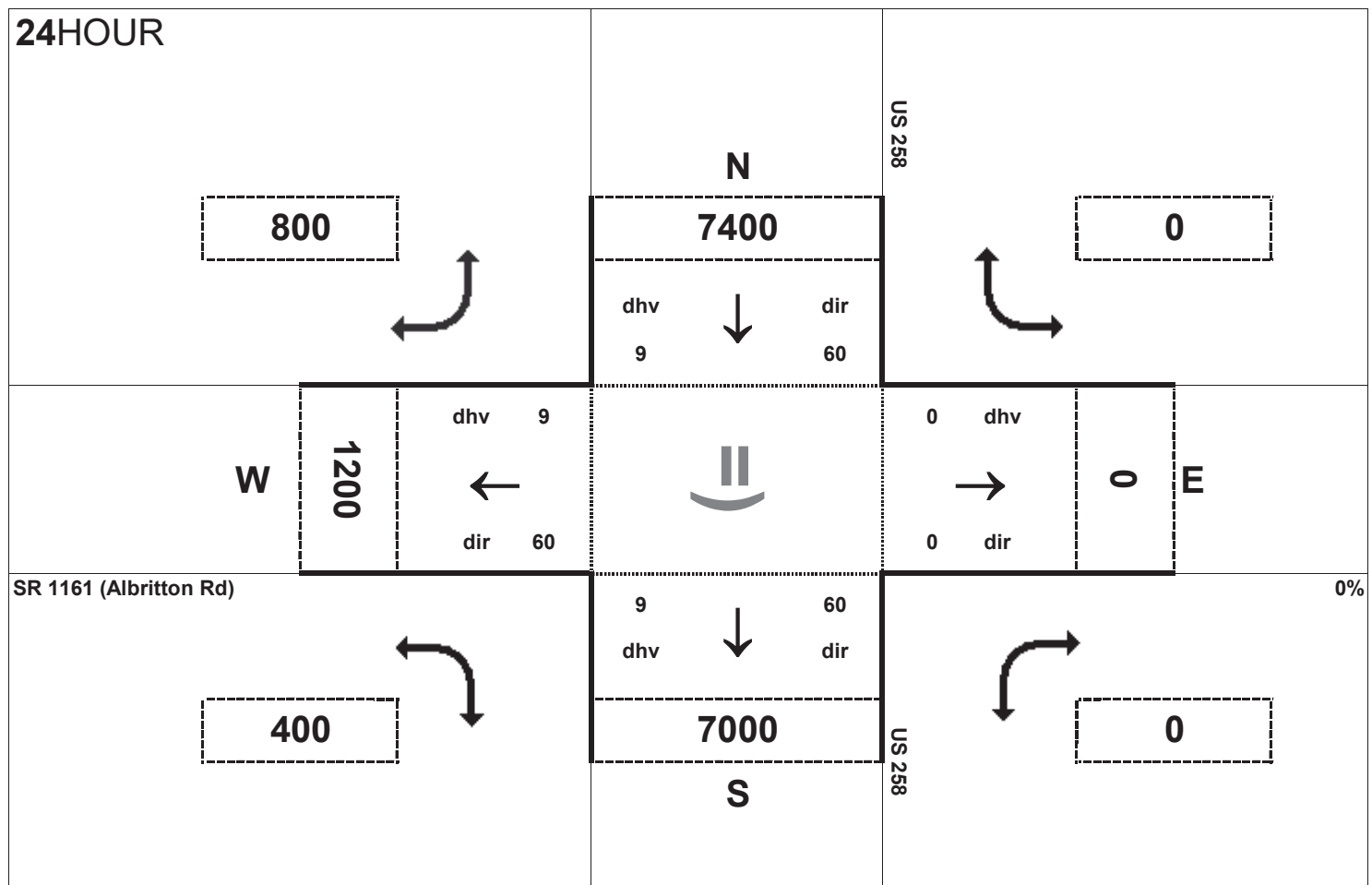
Project:
 R-2553



AM peak hour inflow is 450 vehicles. AM peak hour outflow is 450 vehicles.



PM peak hour inflow is 450 vehicles. PM peak hour outflow is 450 vehicles.

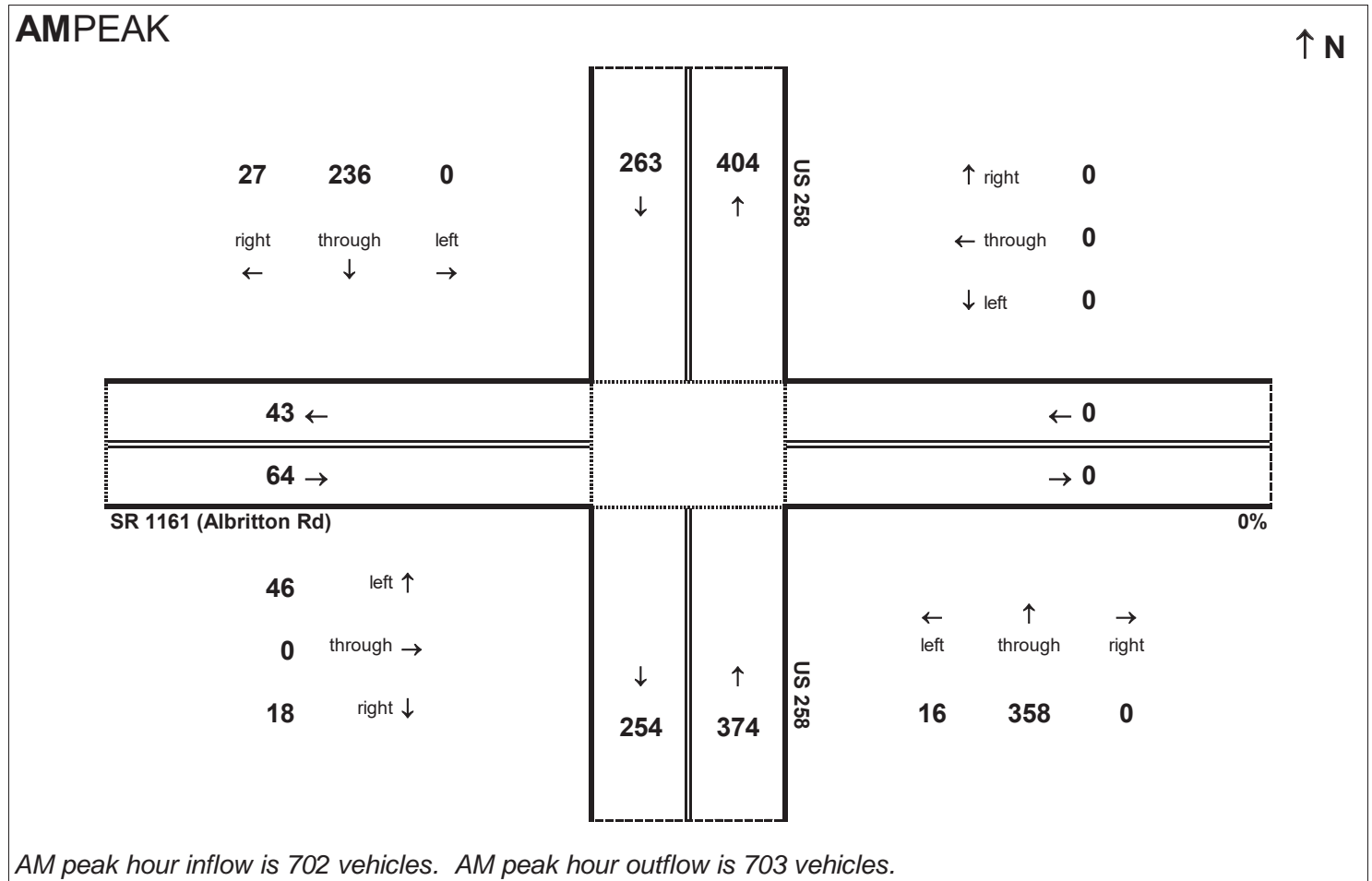


Peak Hour Volume Breakouts Report:
 441 Intersection of US 258 and SR 1161 (Albritton Rd)

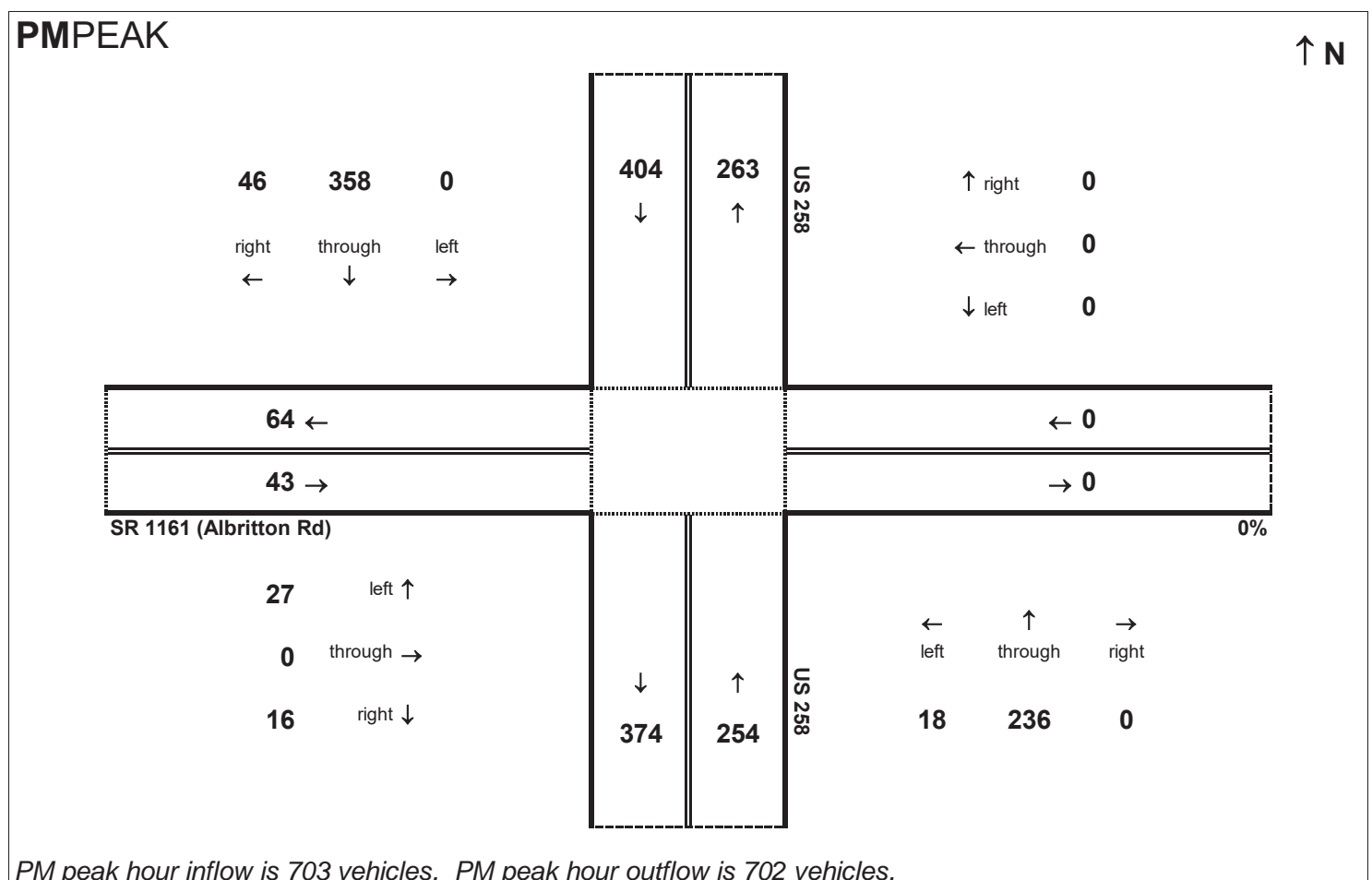
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

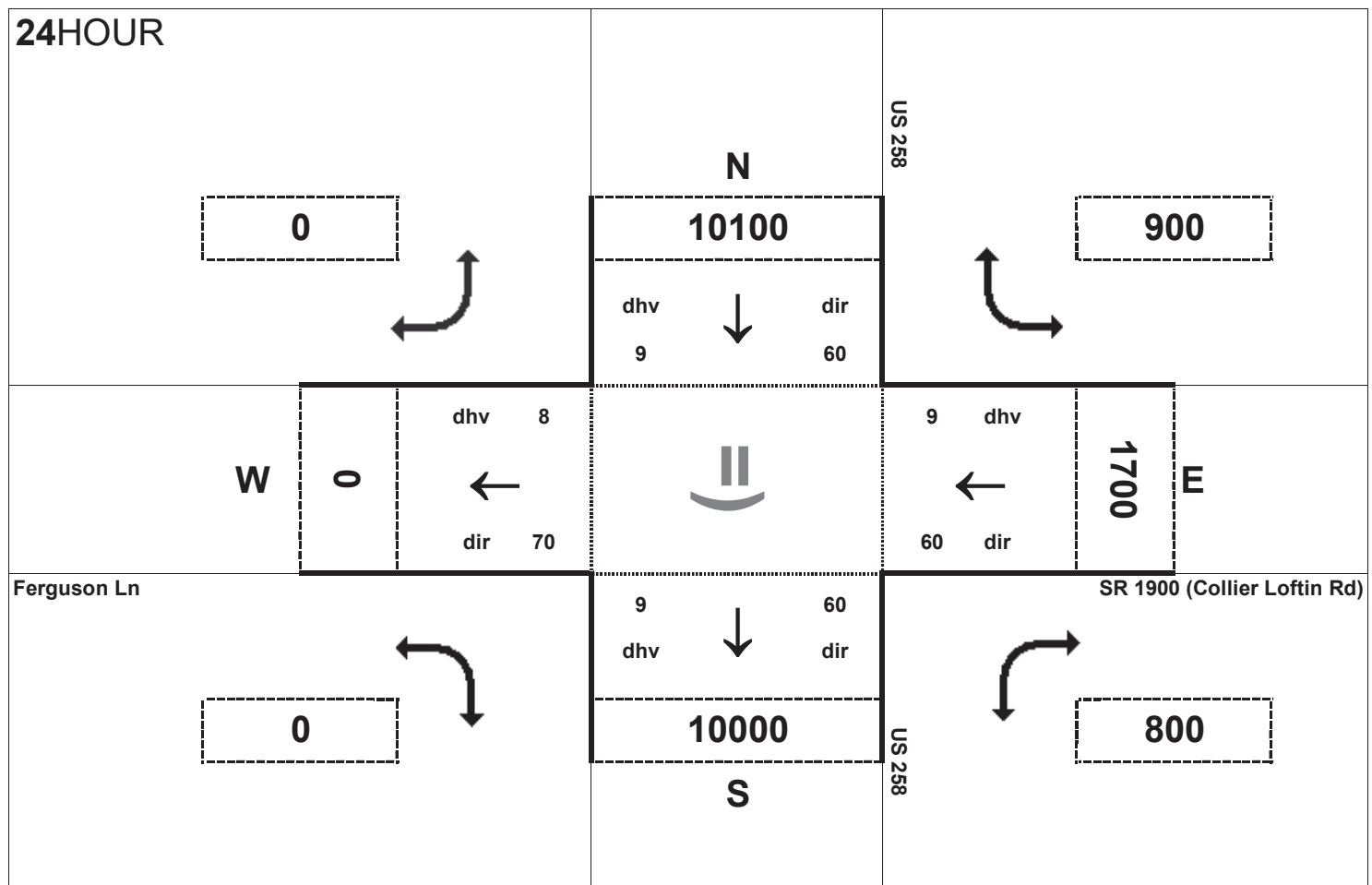
Project:
 R-2553



AM peak hour inflow is 702 vehicles. AM peak hour outflow is 703 vehicles.



PM peak hour inflow is 703 vehicles. PM peak hour outflow is 702 vehicles.

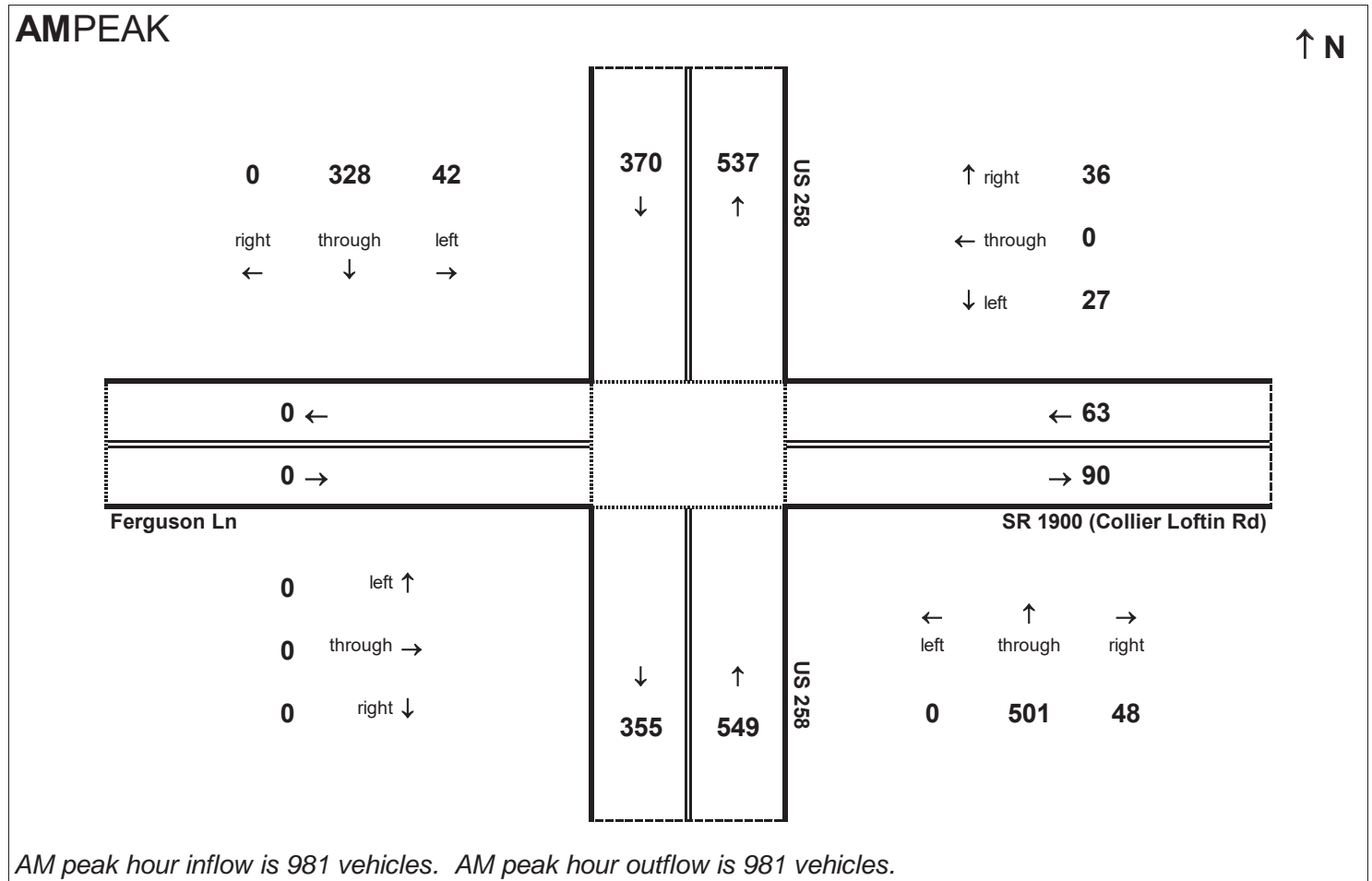


Peak Hour Volume Breakouts Report:
 442 Intersection of US 258 and SR 1900 (Collier Loftin Rd) / Ferguson Ln

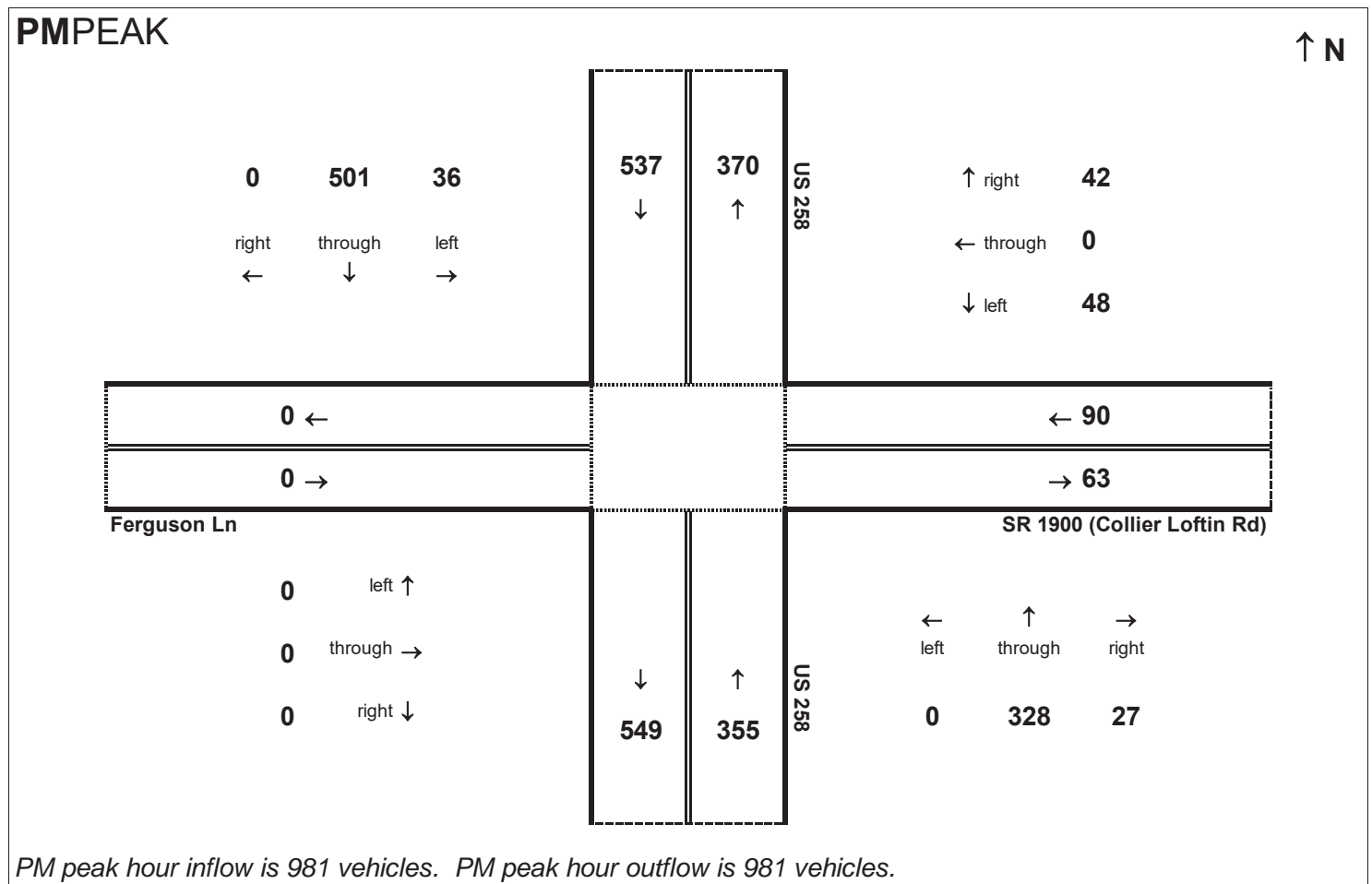
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

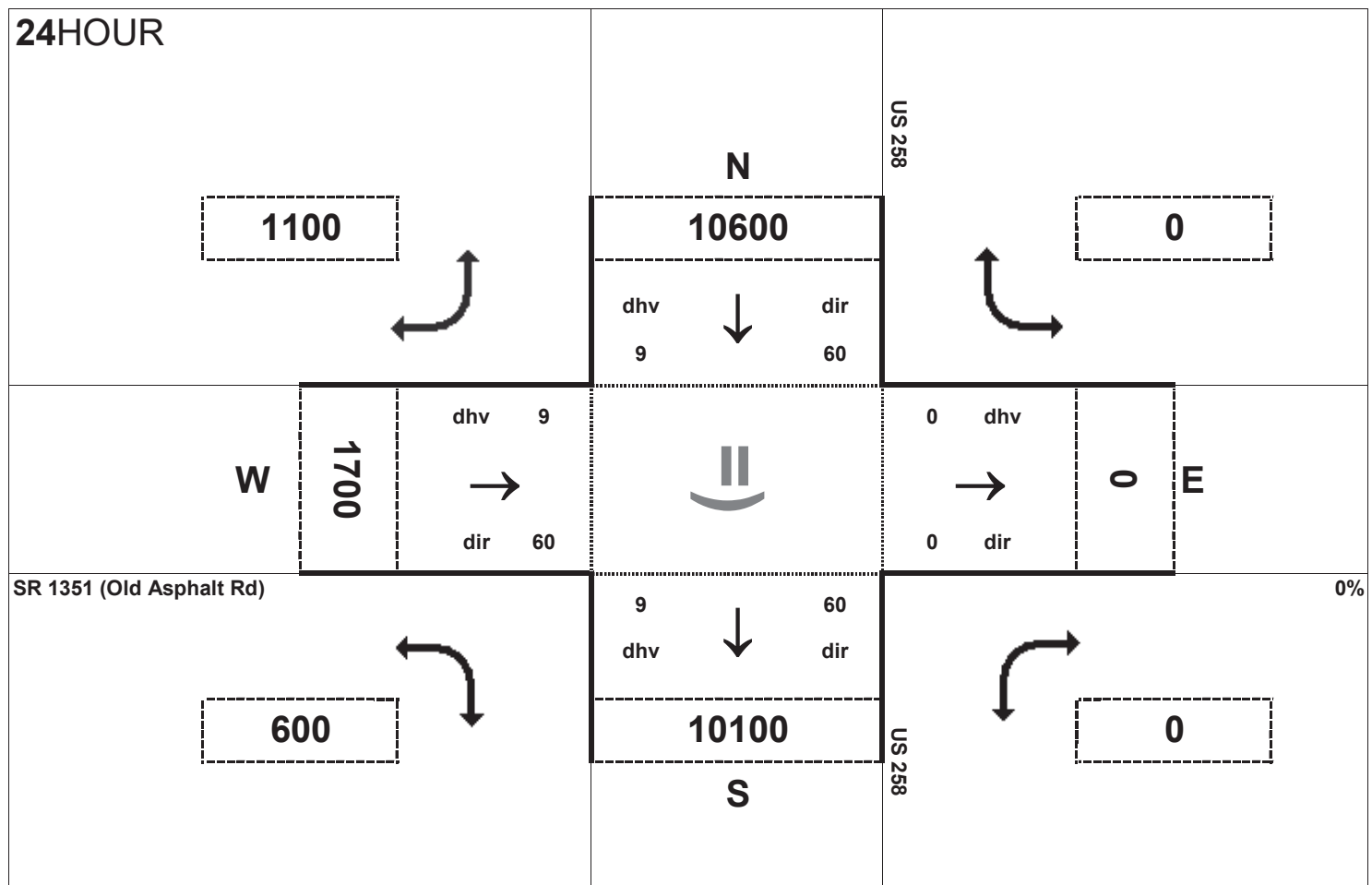
Project:
 R-2553



AM peak hour inflow is 981 vehicles. AM peak hour outflow is 981 vehicles.



PM peak hour inflow is 981 vehicles. PM peak hour outflow is 981 vehicles.

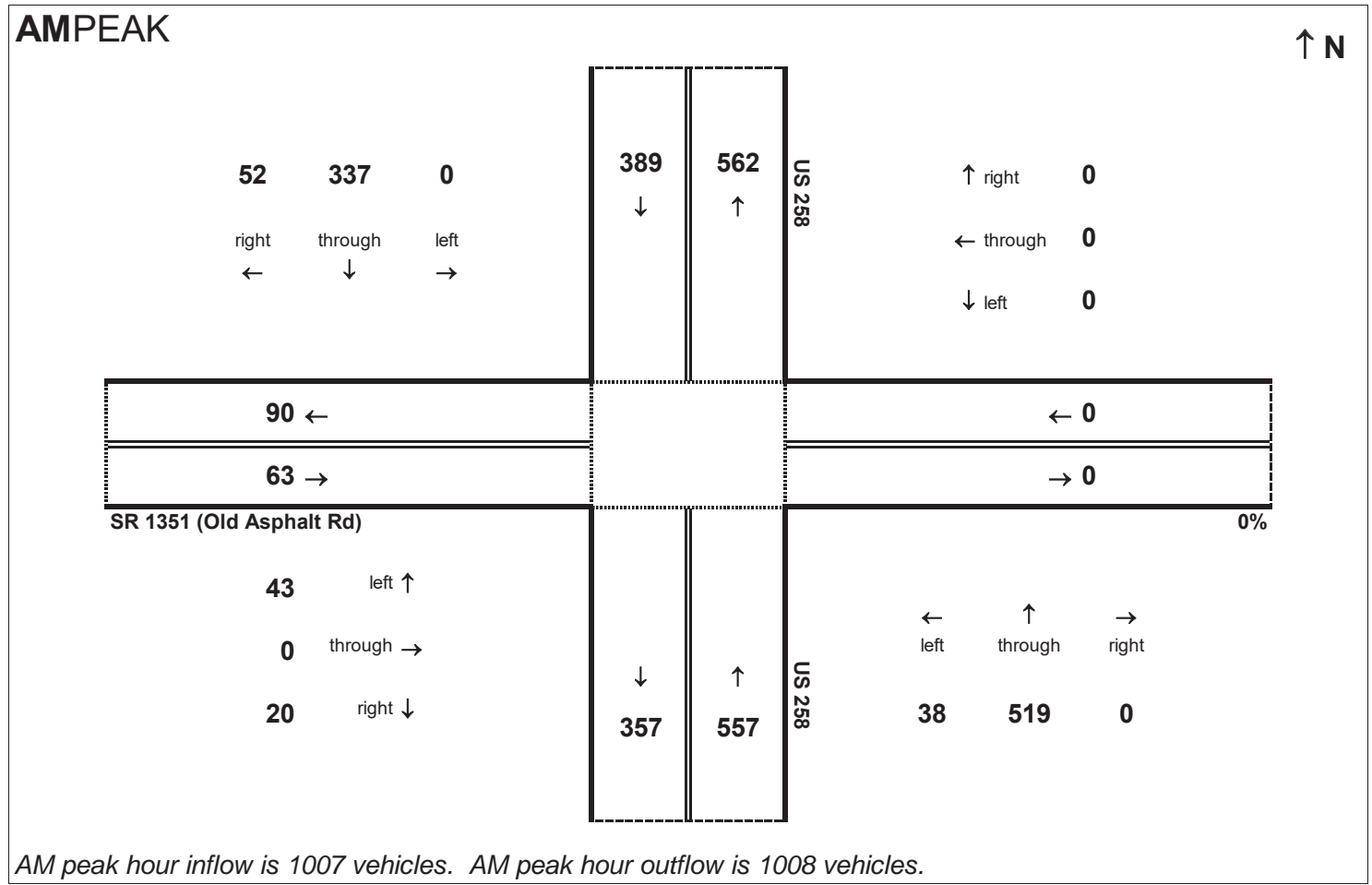


Peak Hour Volume Breakouts Report:
 443 Intersection of US 258 and SR 1351 (Old Asphalt Rd)

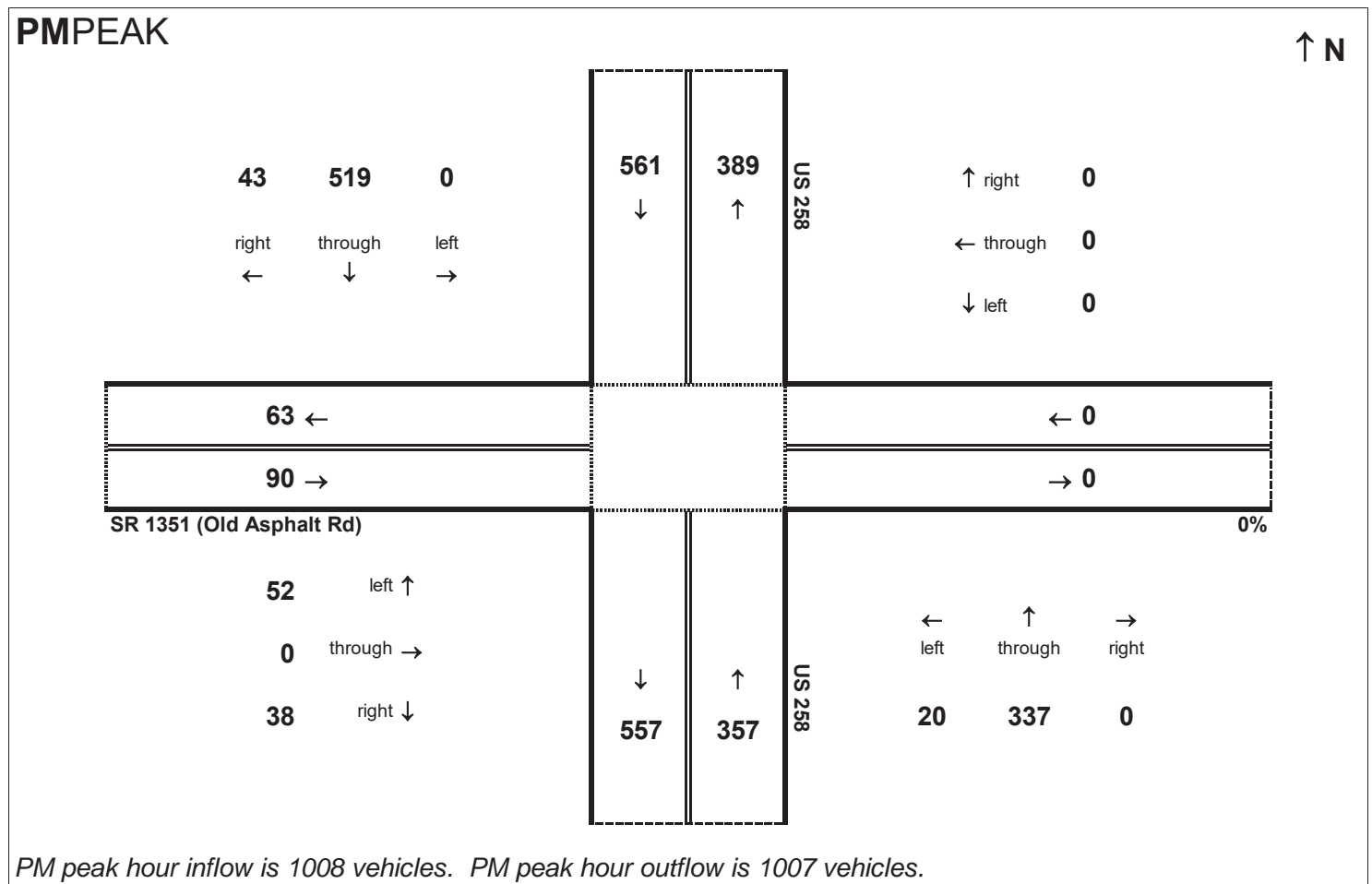
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

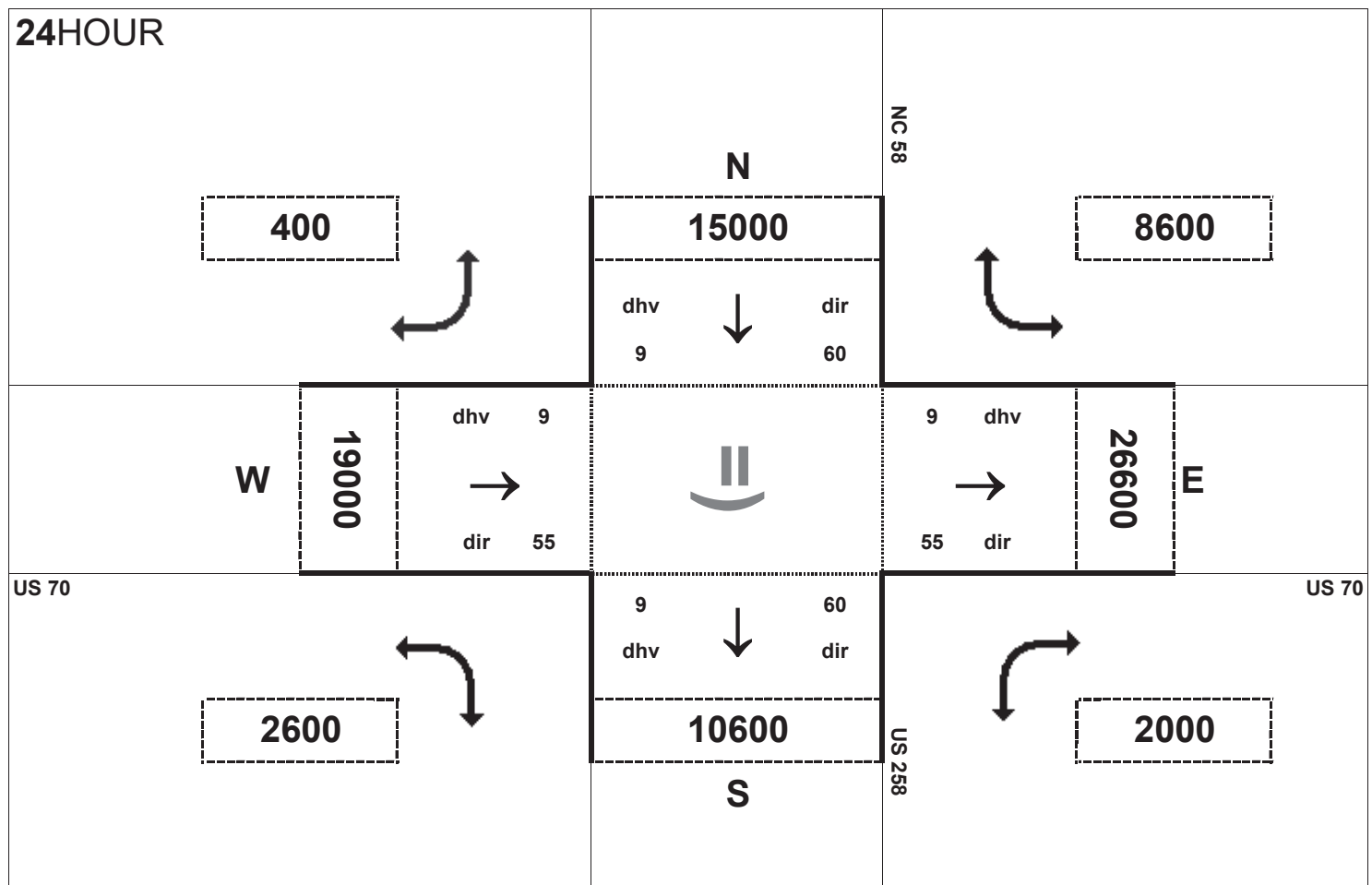
Project:
 R-2553



AM peak hour inflow is 1007 vehicles. AM peak hour outflow is 1008 vehicles.



PM peak hour inflow is 1008 vehicles. PM peak hour outflow is 1007 vehicles.

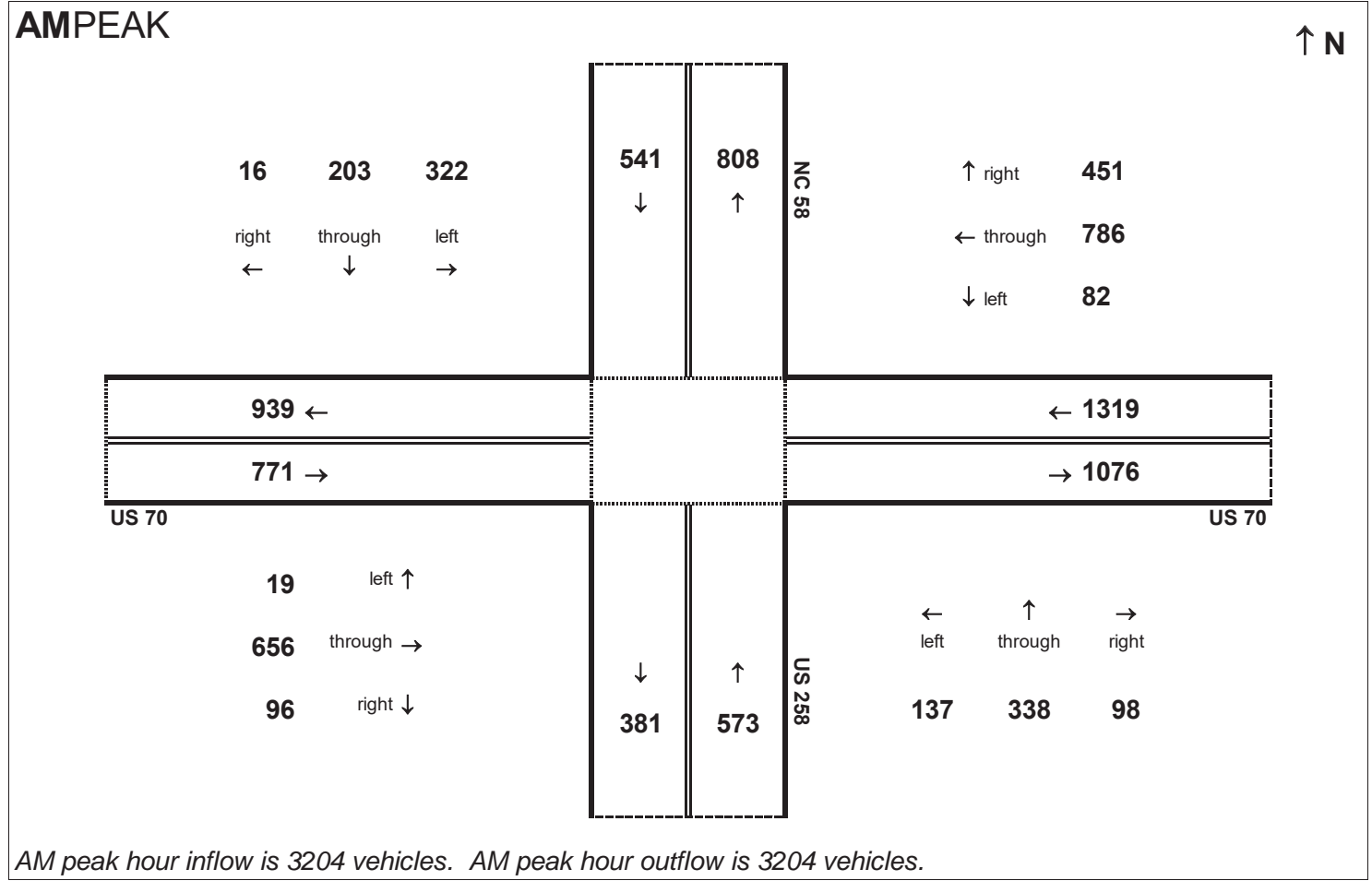


Peak Hour Volume Breakouts Report:
444 Intersection of US 70 and US 258 / NC 58

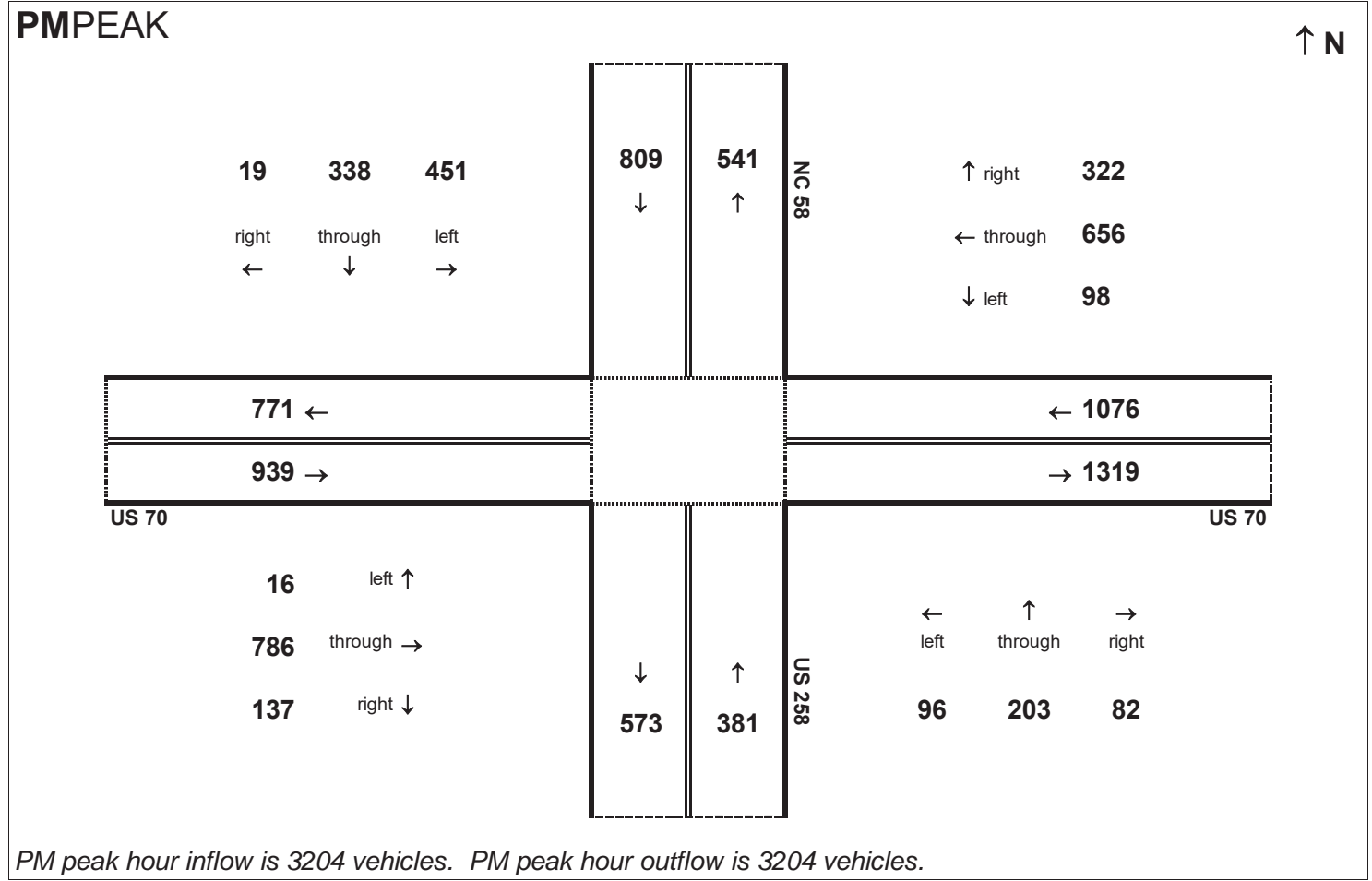
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

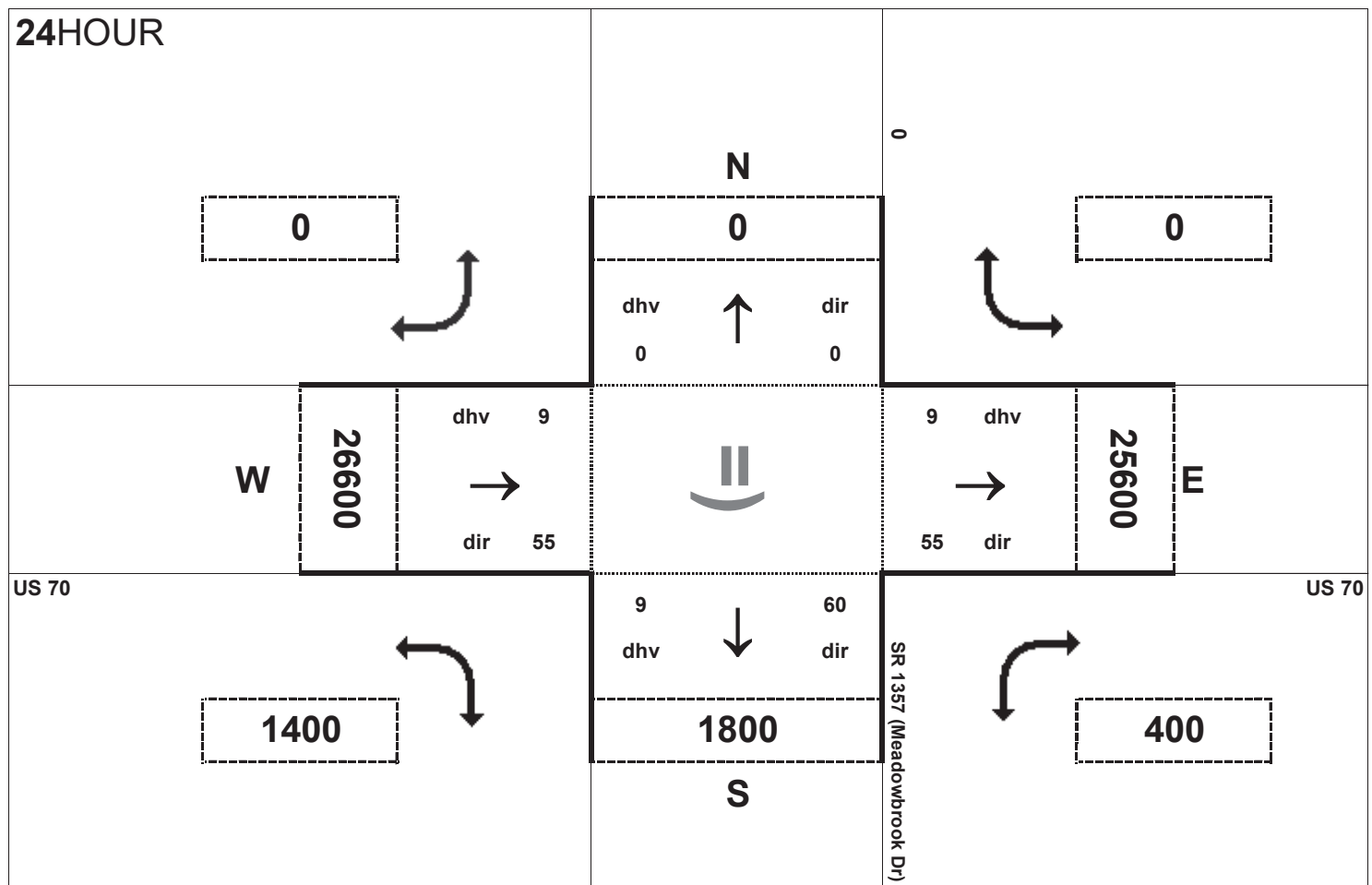
Project:
R-2553



AM peak hour inflow is 3204 vehicles. AM peak hour outflow is 3204 vehicles.



PM peak hour inflow is 3204 vehicles. PM peak hour outflow is 3204 vehicles.

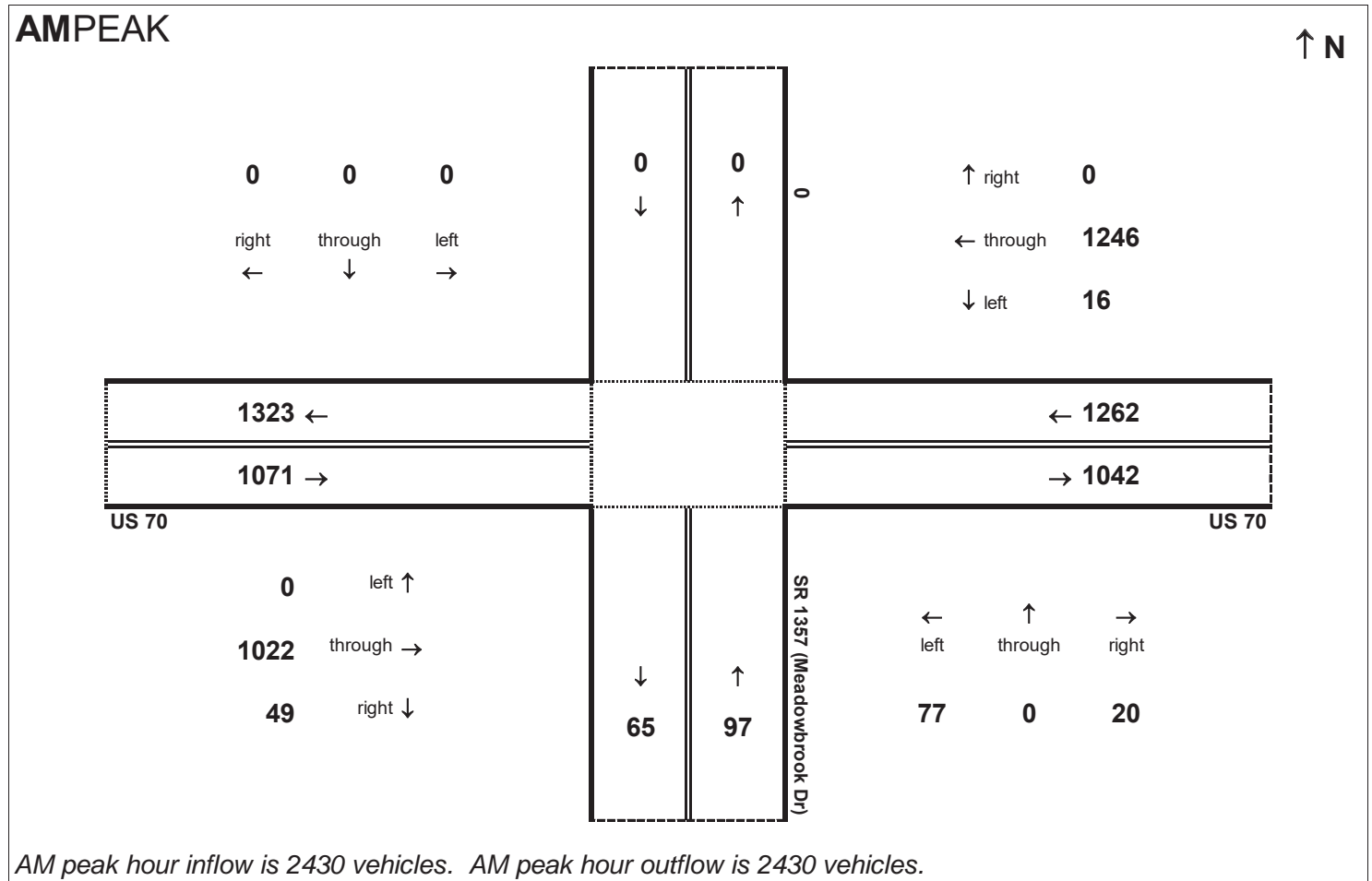


Peak Hour Volume Breakouts Report:
 445 Intersection of US 70 and SR 1357
 (Meadowbrook Dr)

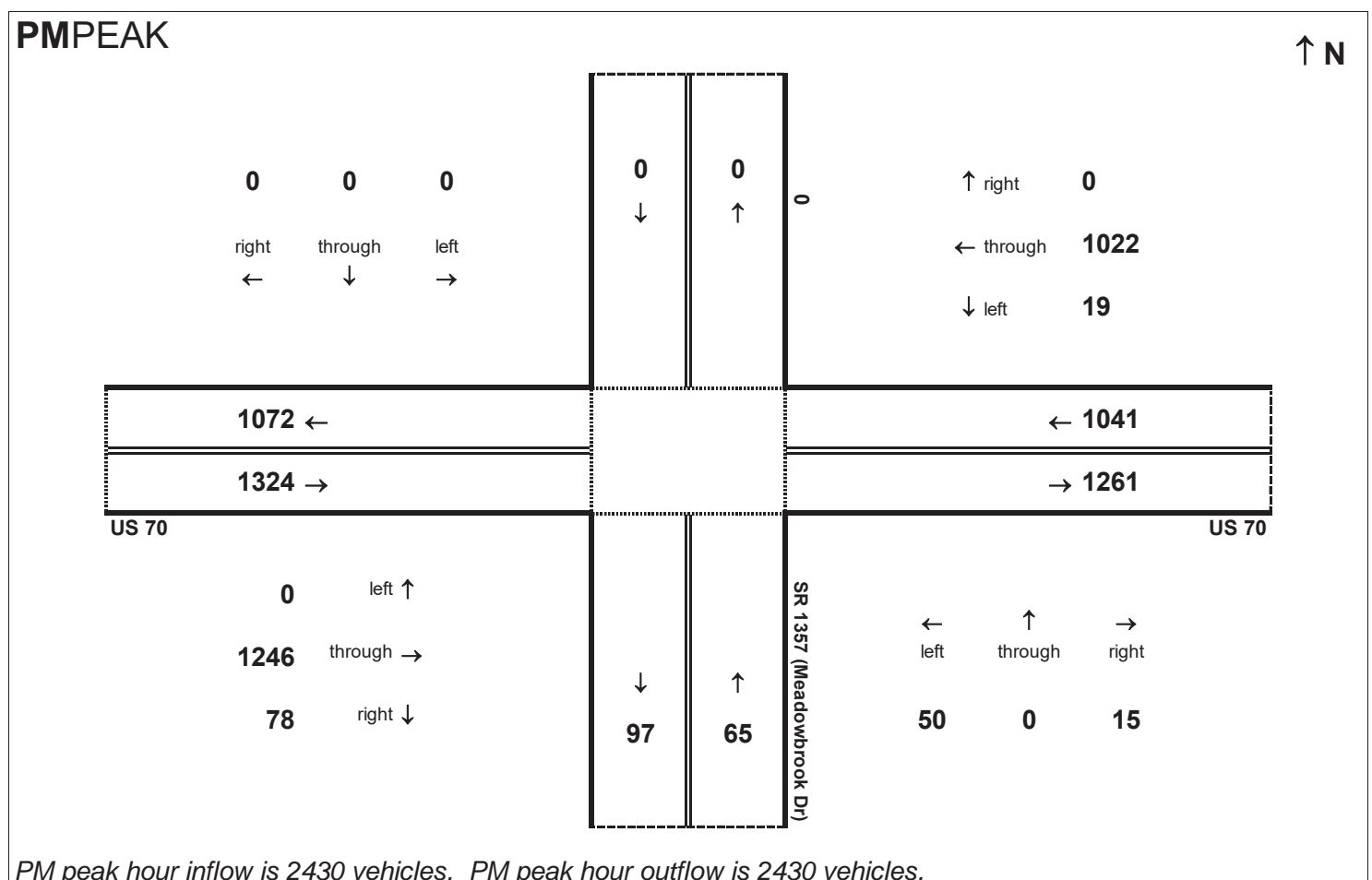
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

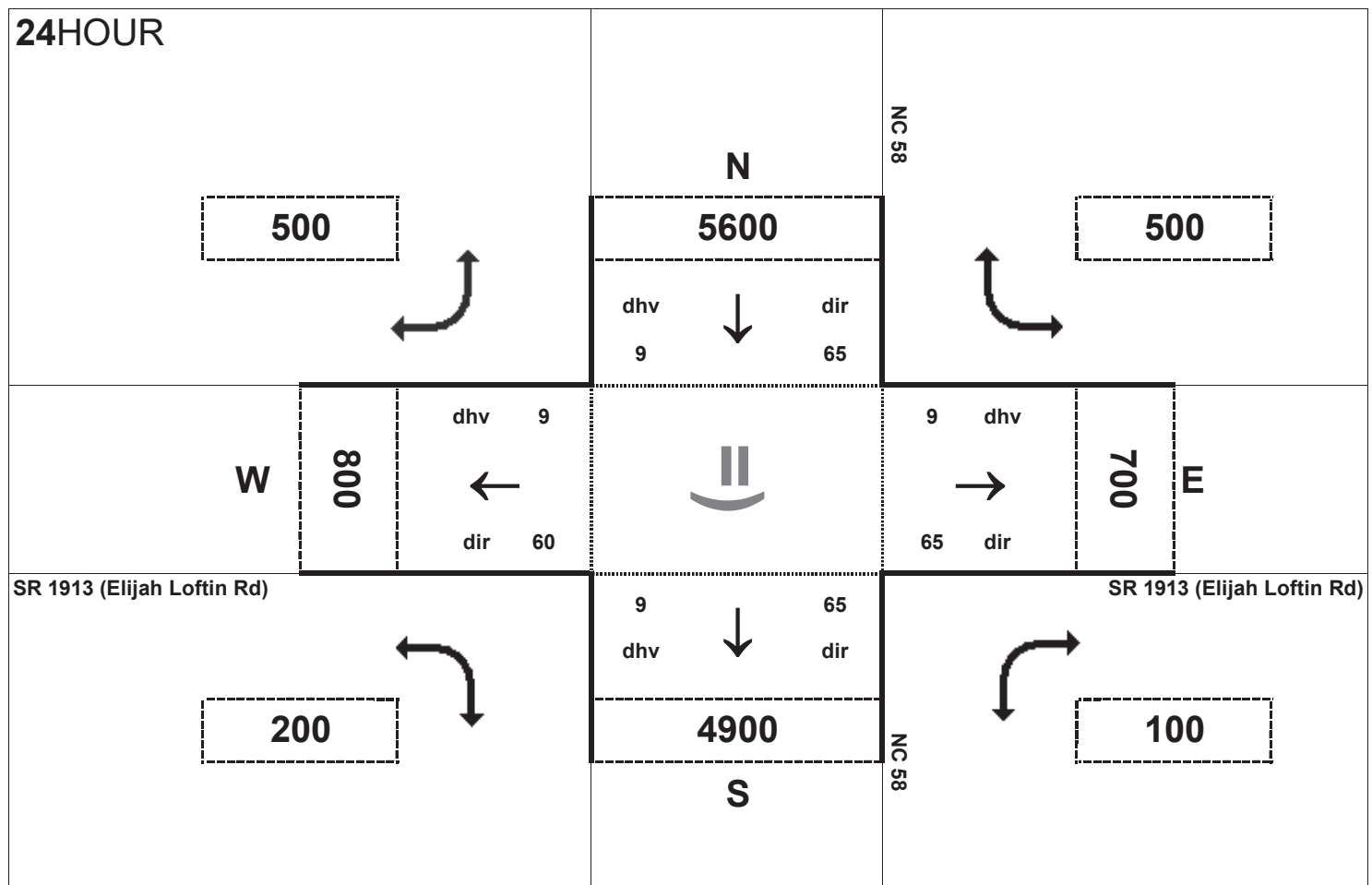
Project:
 R-2553



AM peak hour inflow is 2430 vehicles. AM peak hour outflow is 2430 vehicles.



PM peak hour inflow is 2430 vehicles. PM peak hour outflow is 2430 vehicles.

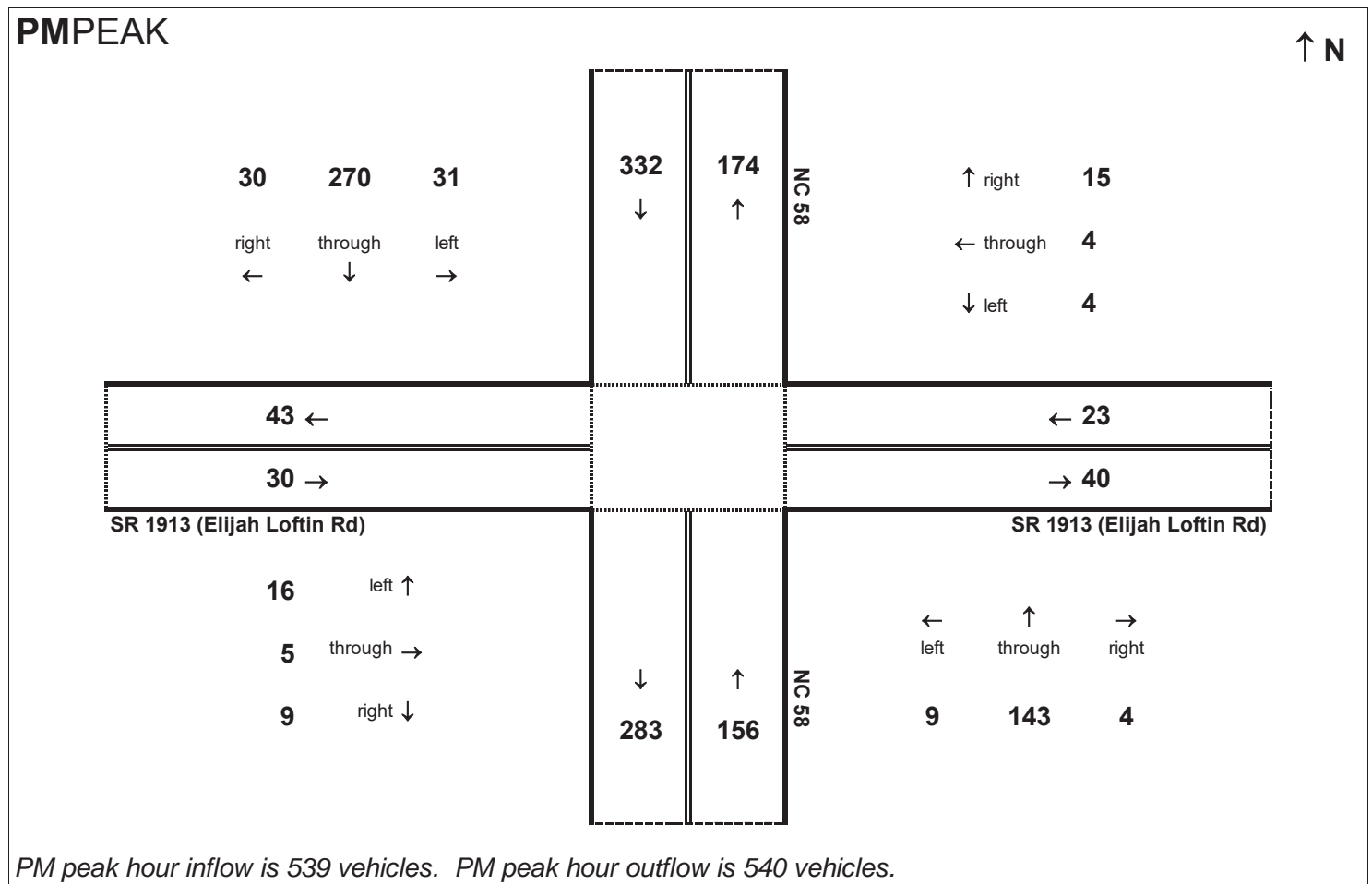
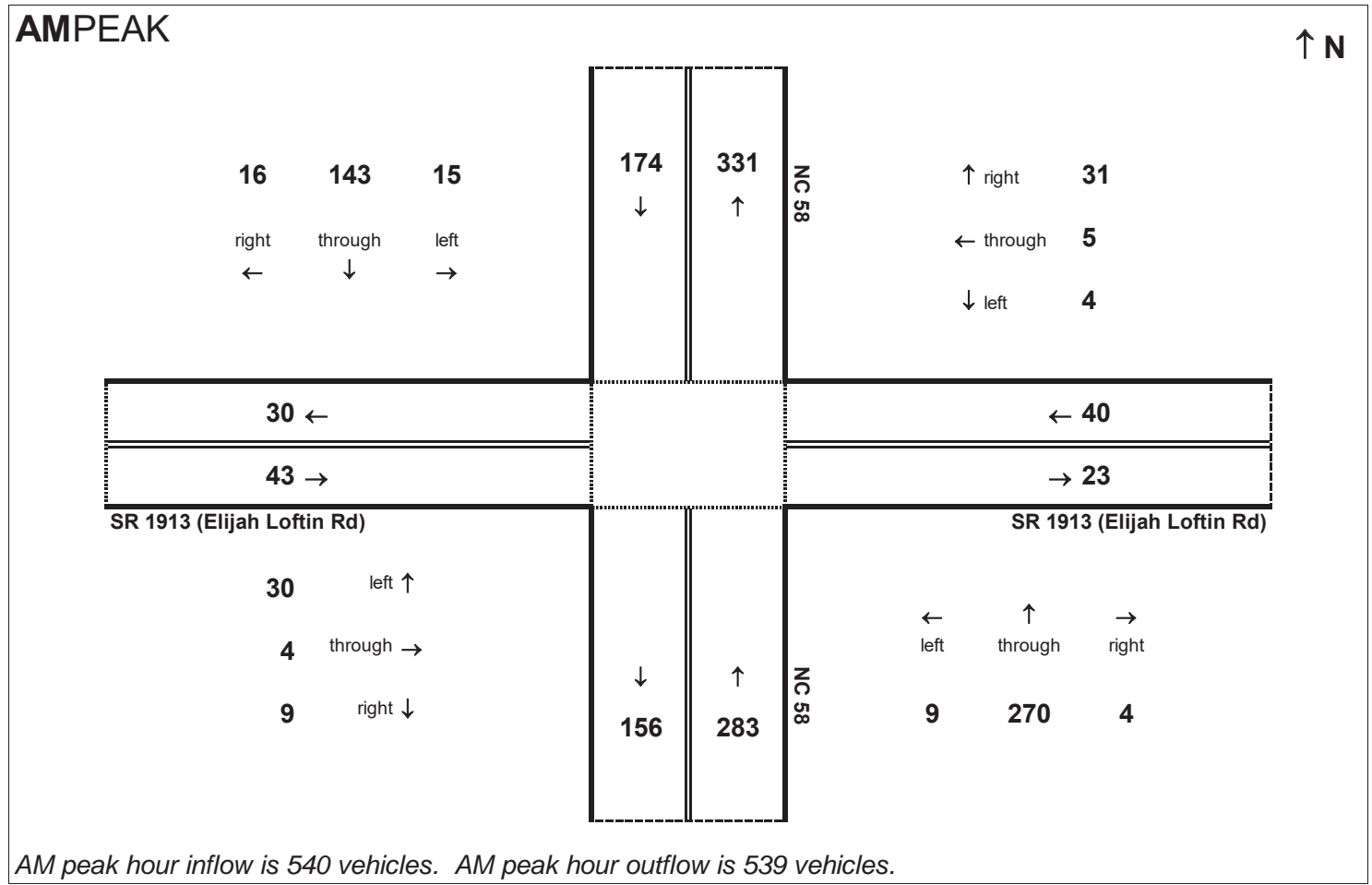


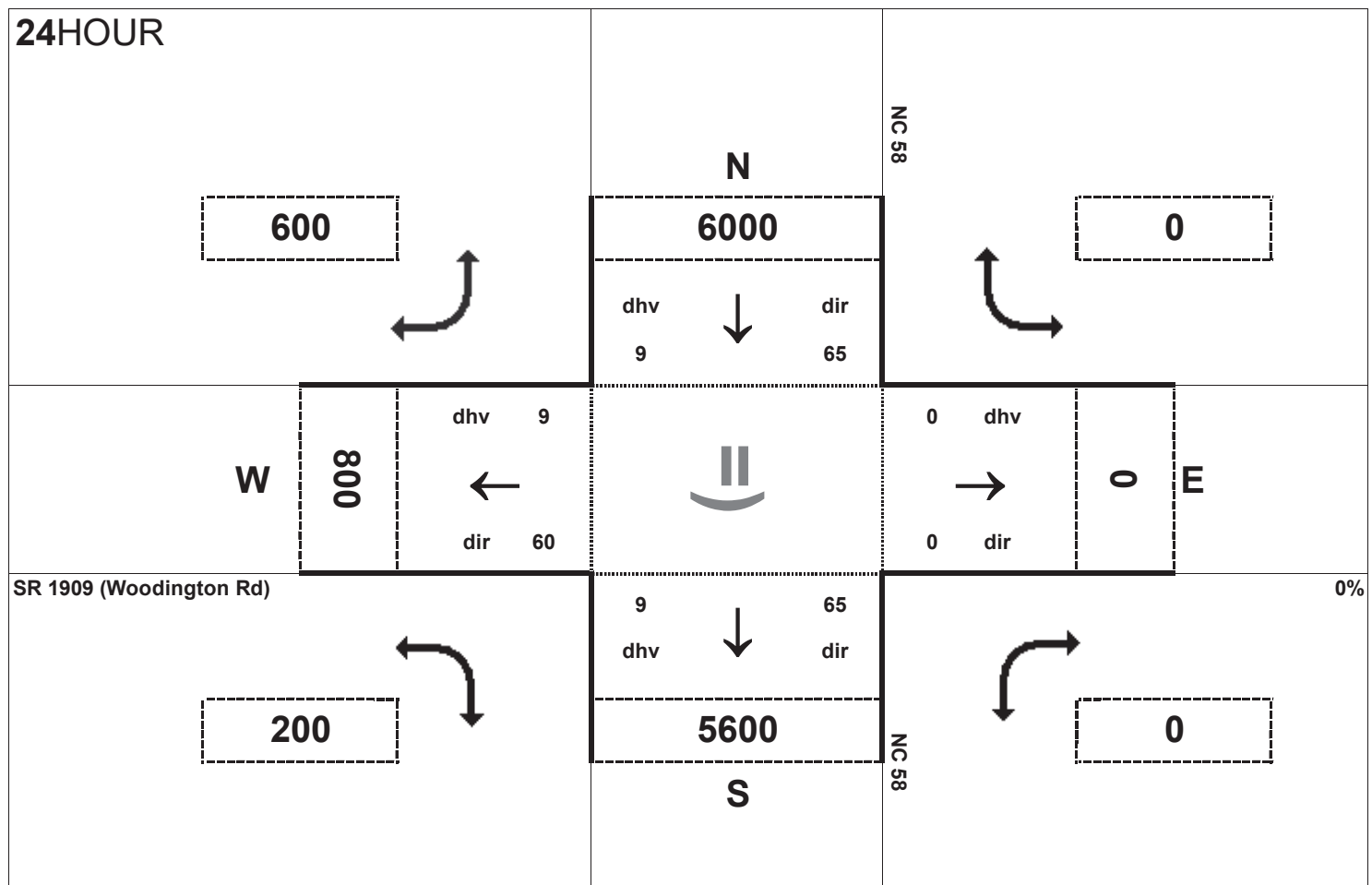
Peak Hour Volume Breakouts Report:
446 Intersection of NC 58 and SR 1913 (Elijah Loftin Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



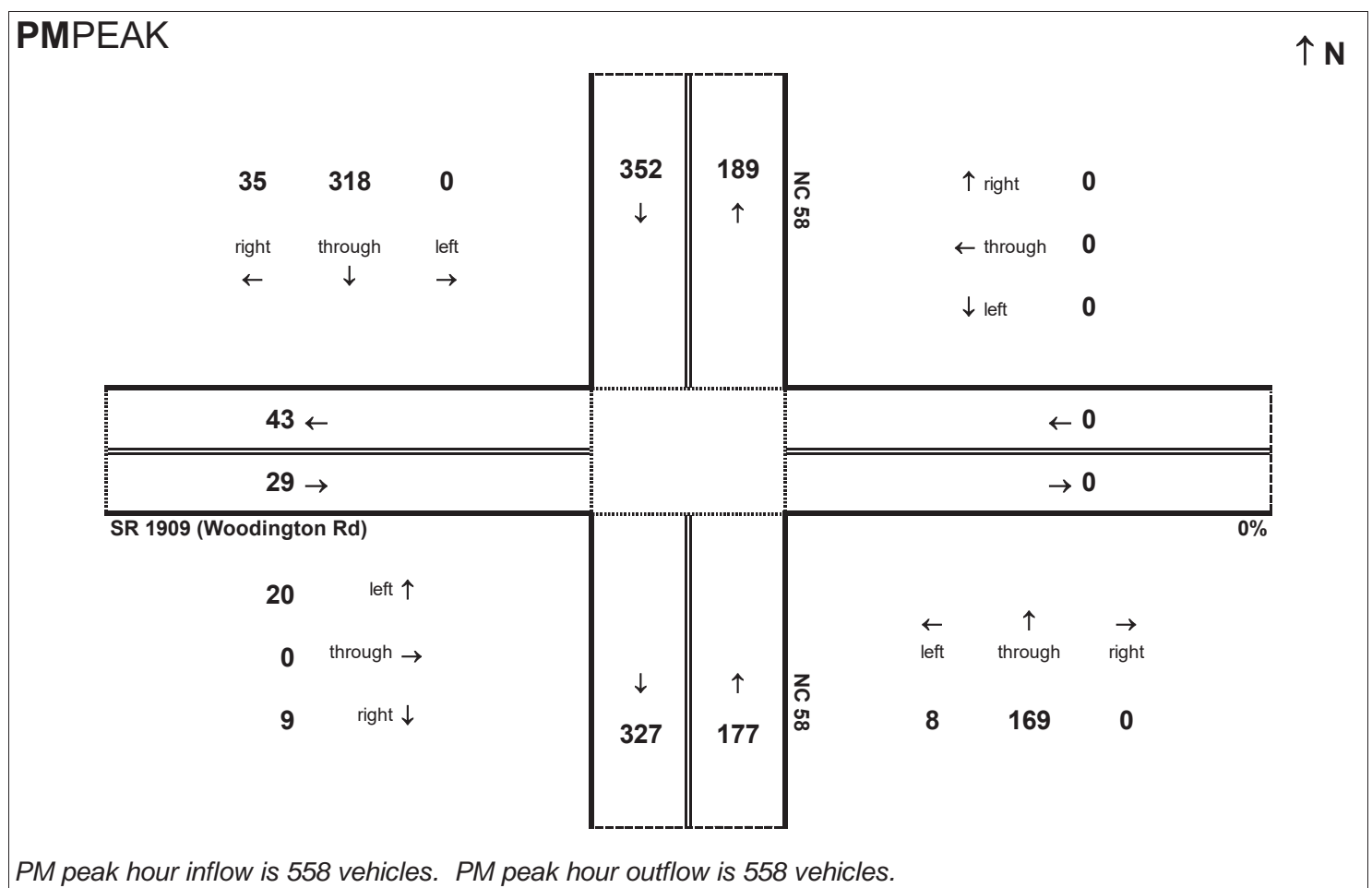
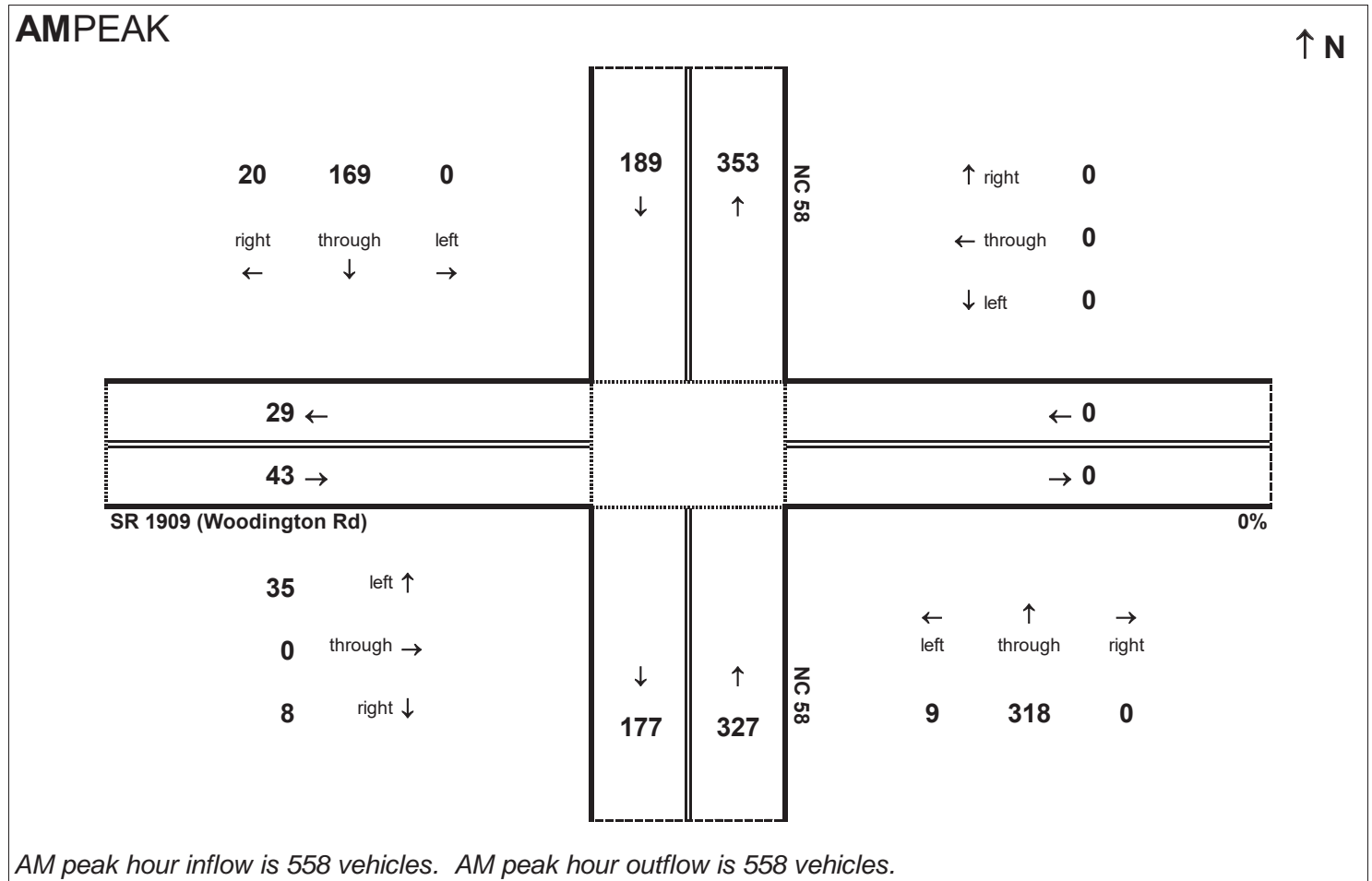


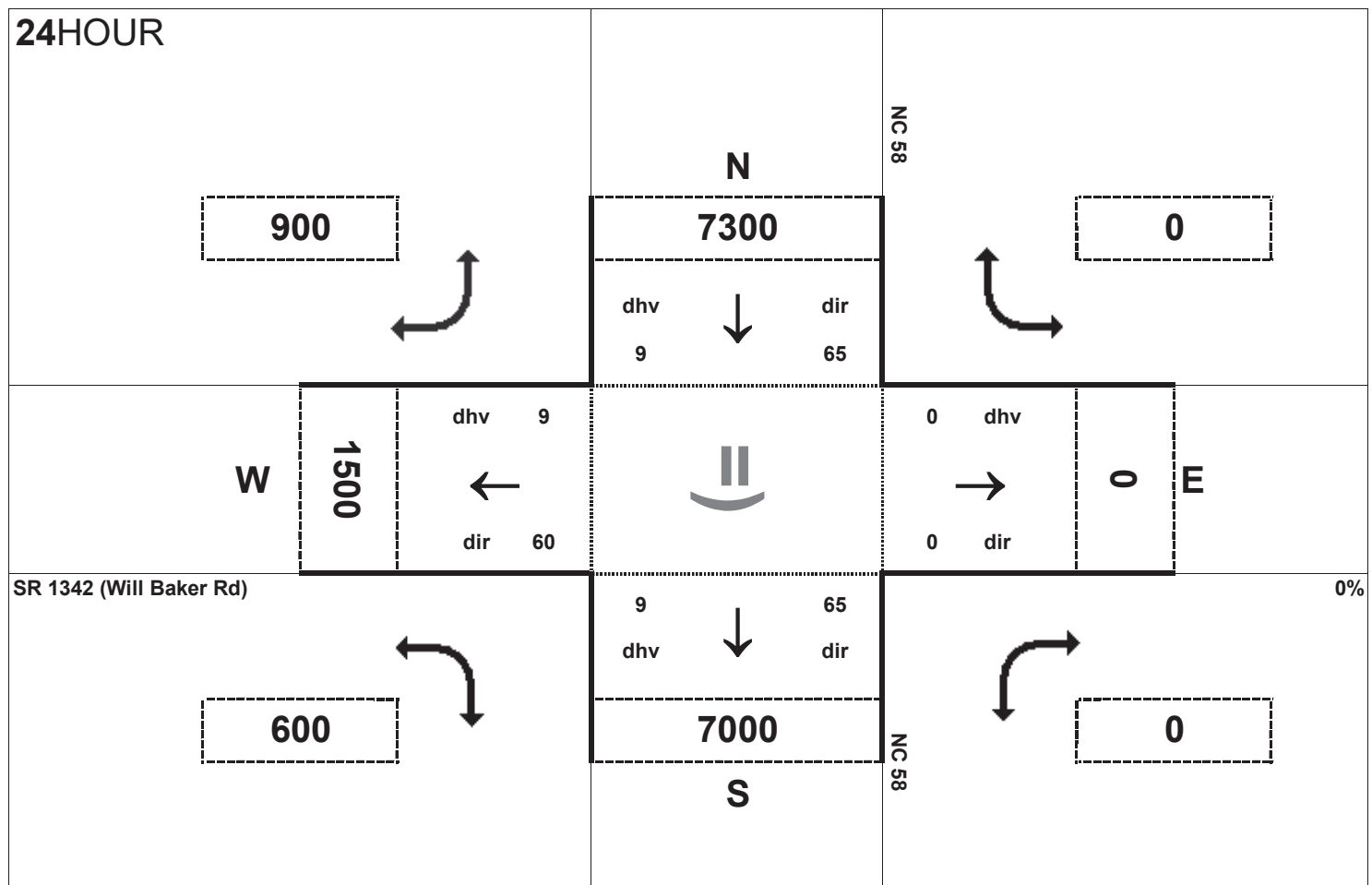
Peak Hour Volume Breakouts Report:
 447 Intersection of NC 58 and SR 1909
 (Woodington Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



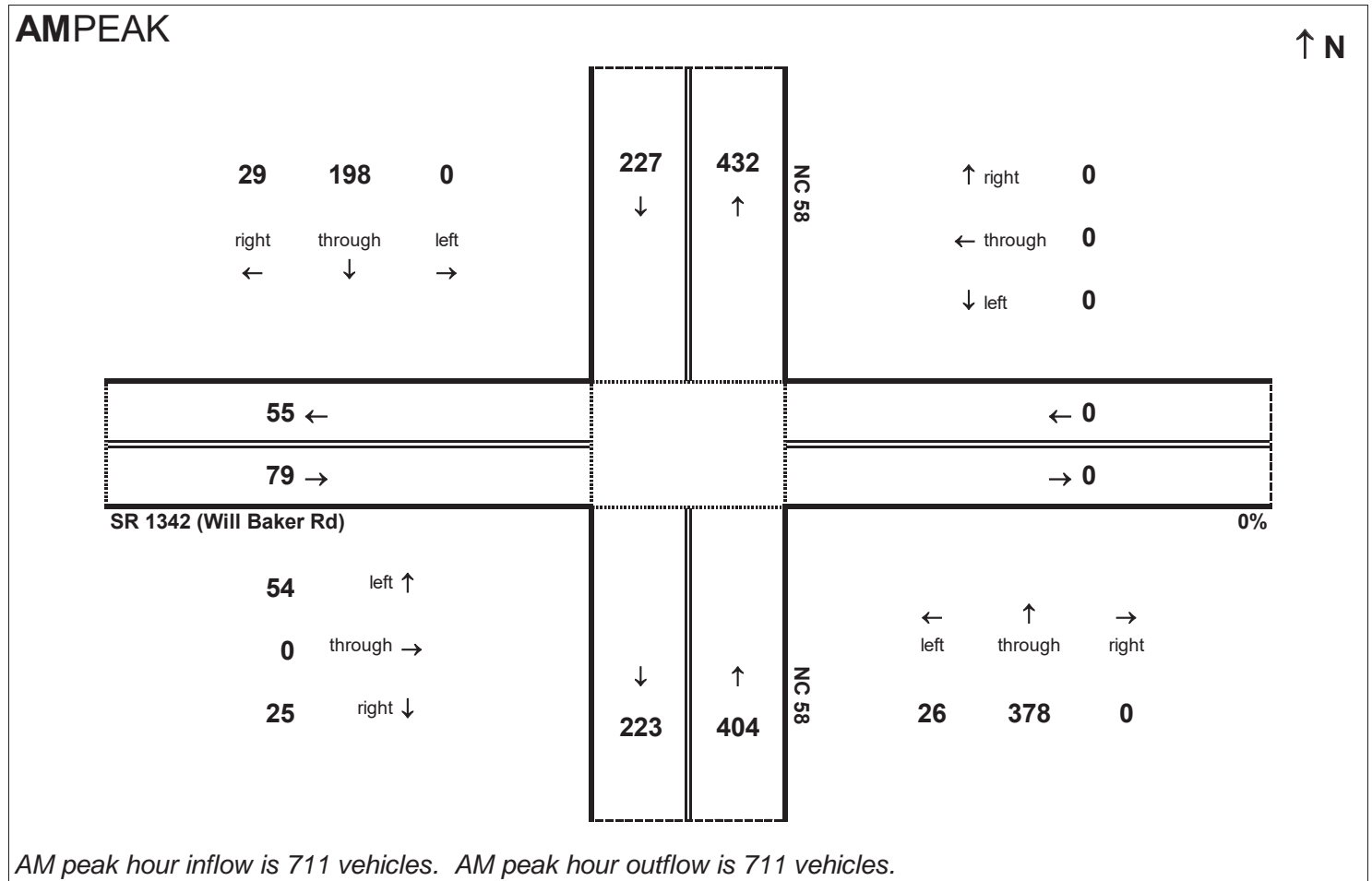


Peak Hour Volume Breakouts Report:
 448 Intersection of NC 58 and SR 1342 (Will Baker Rd)

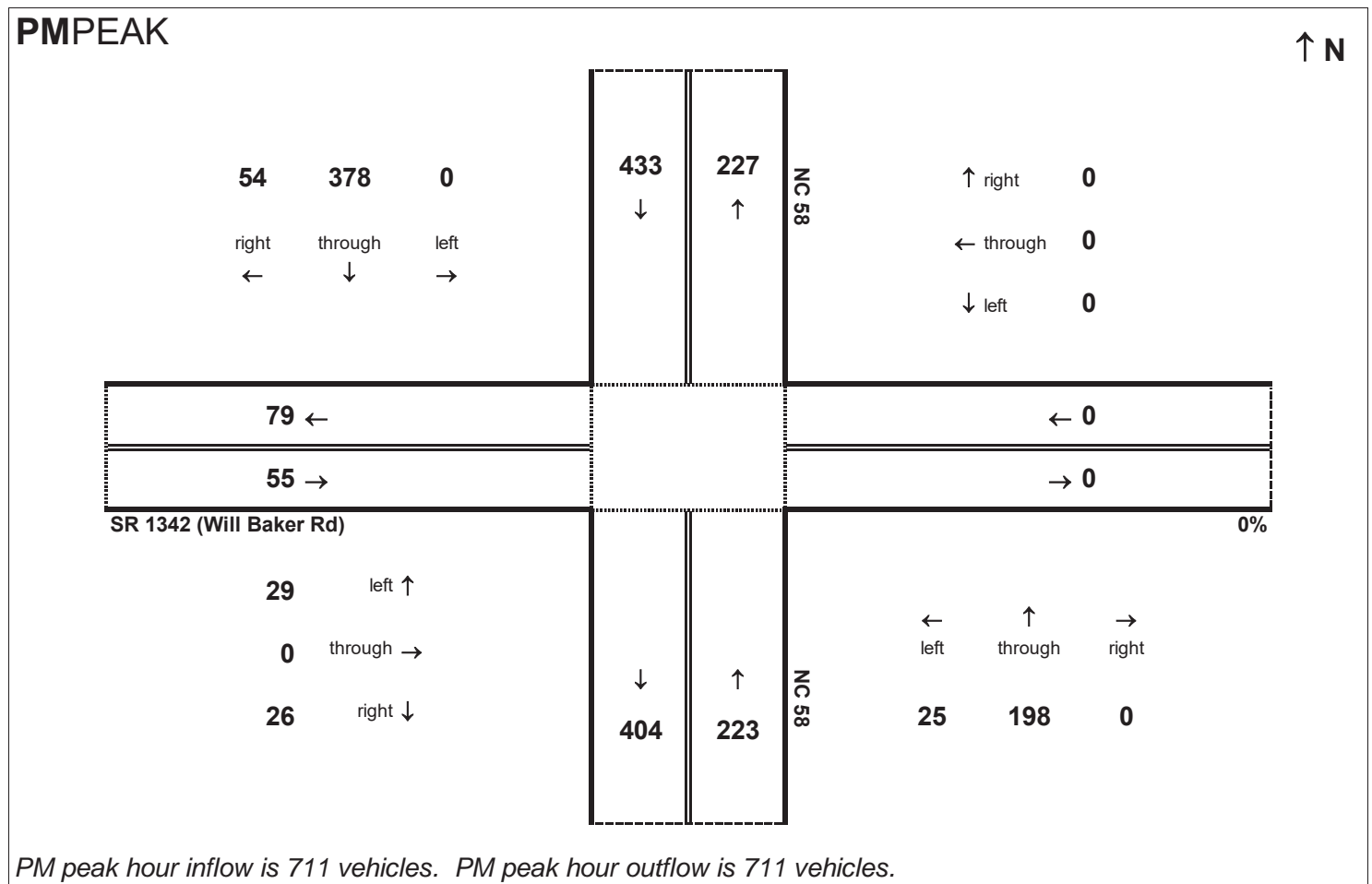
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

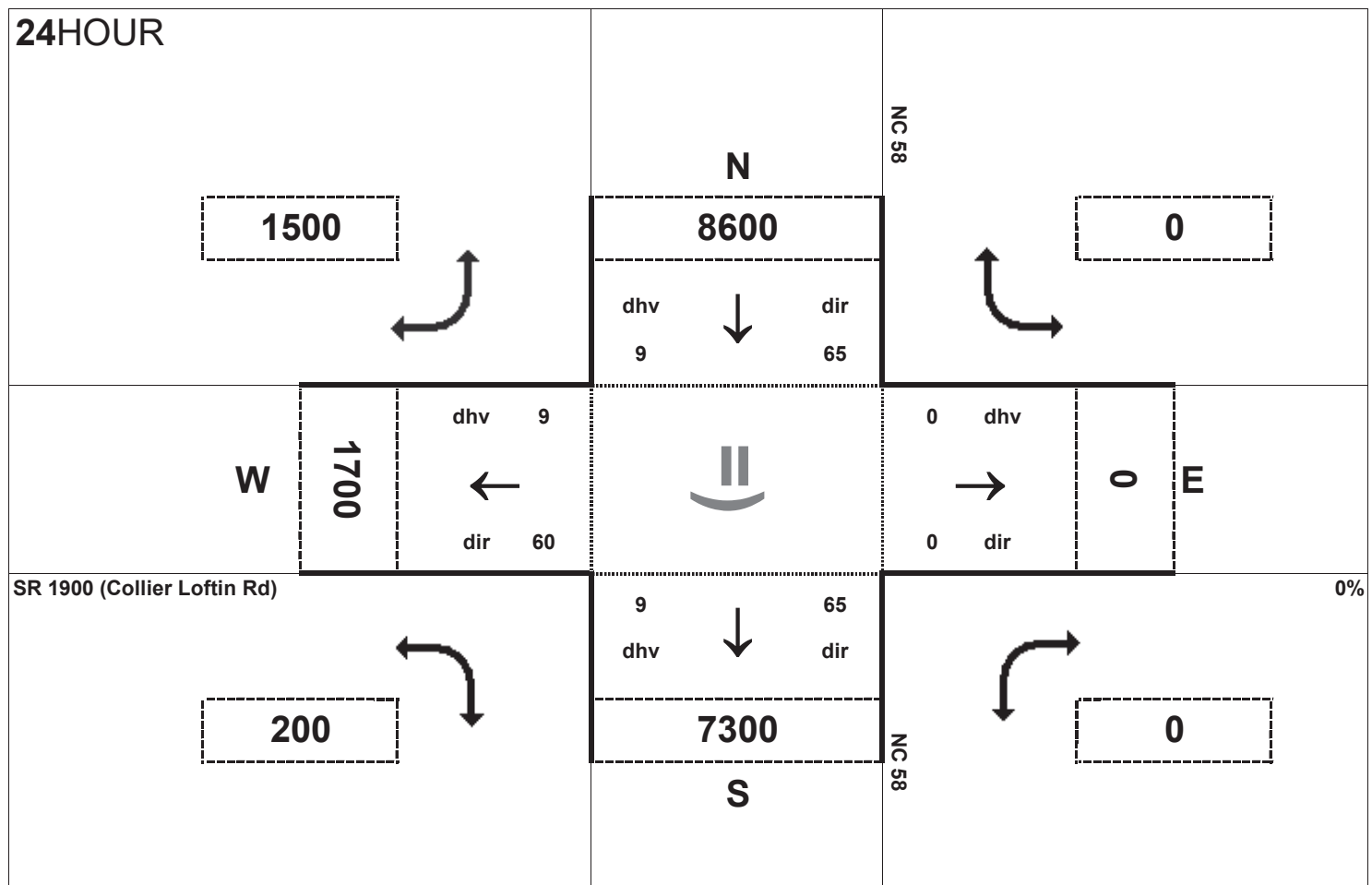
Project:
 R-2553



AM peak hour inflow is 711 vehicles. AM peak hour outflow is 711 vehicles.



PM peak hour inflow is 711 vehicles. PM peak hour outflow is 711 vehicles.

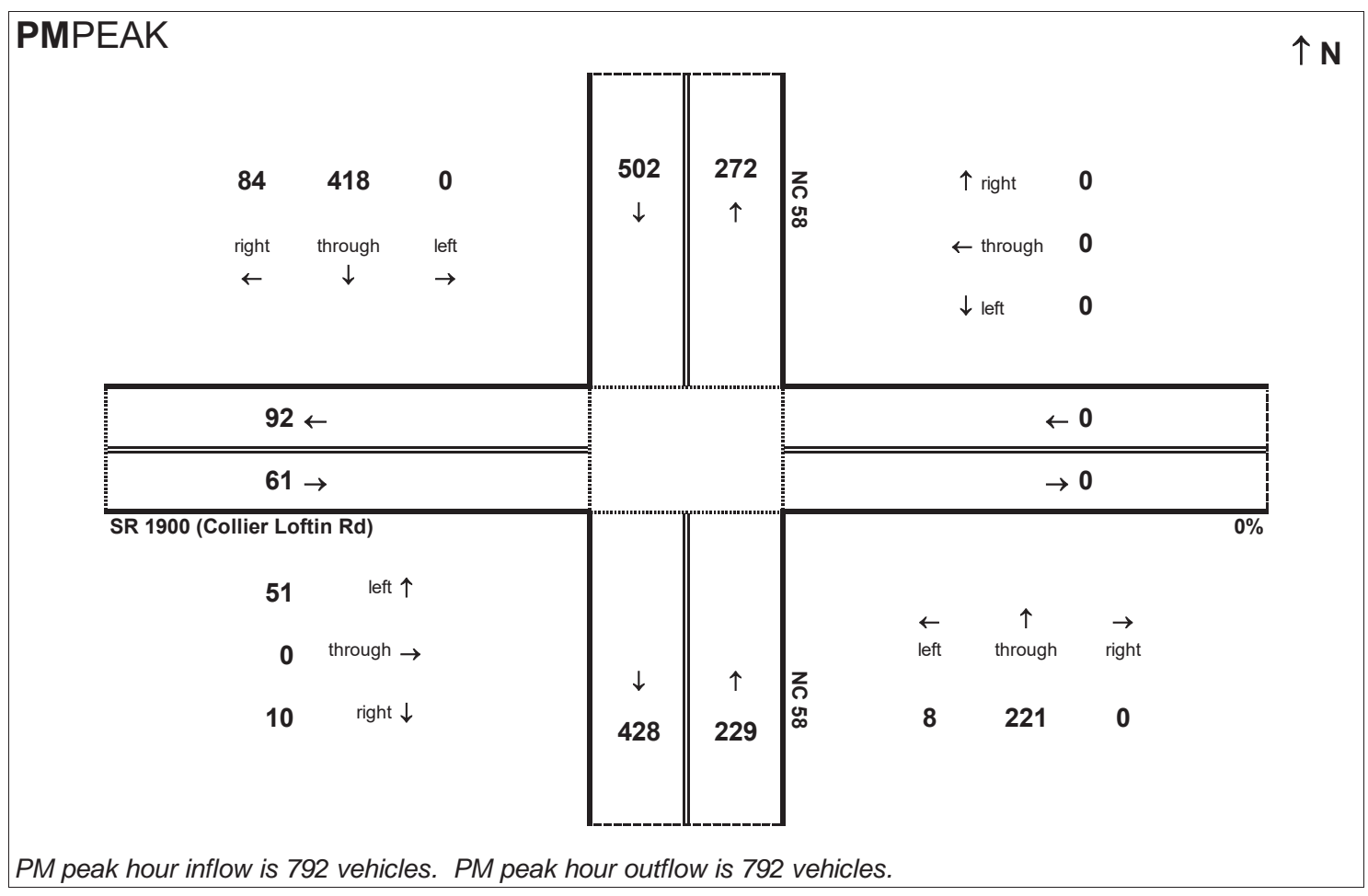
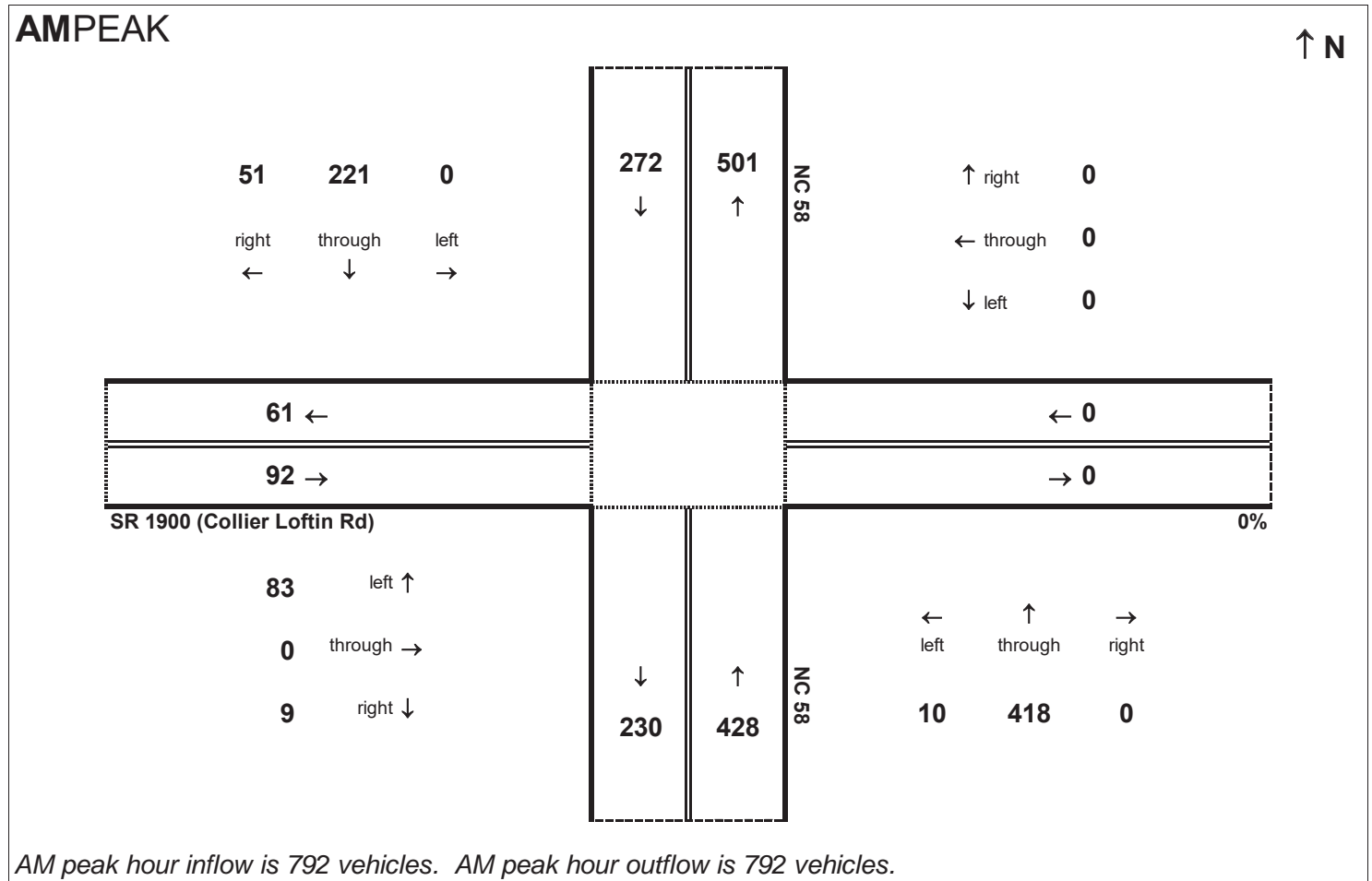


Peak Hour Volume Breakouts Report:
449 Intersection of NC 58 and SR 1900 (Collier Loftin Rd)

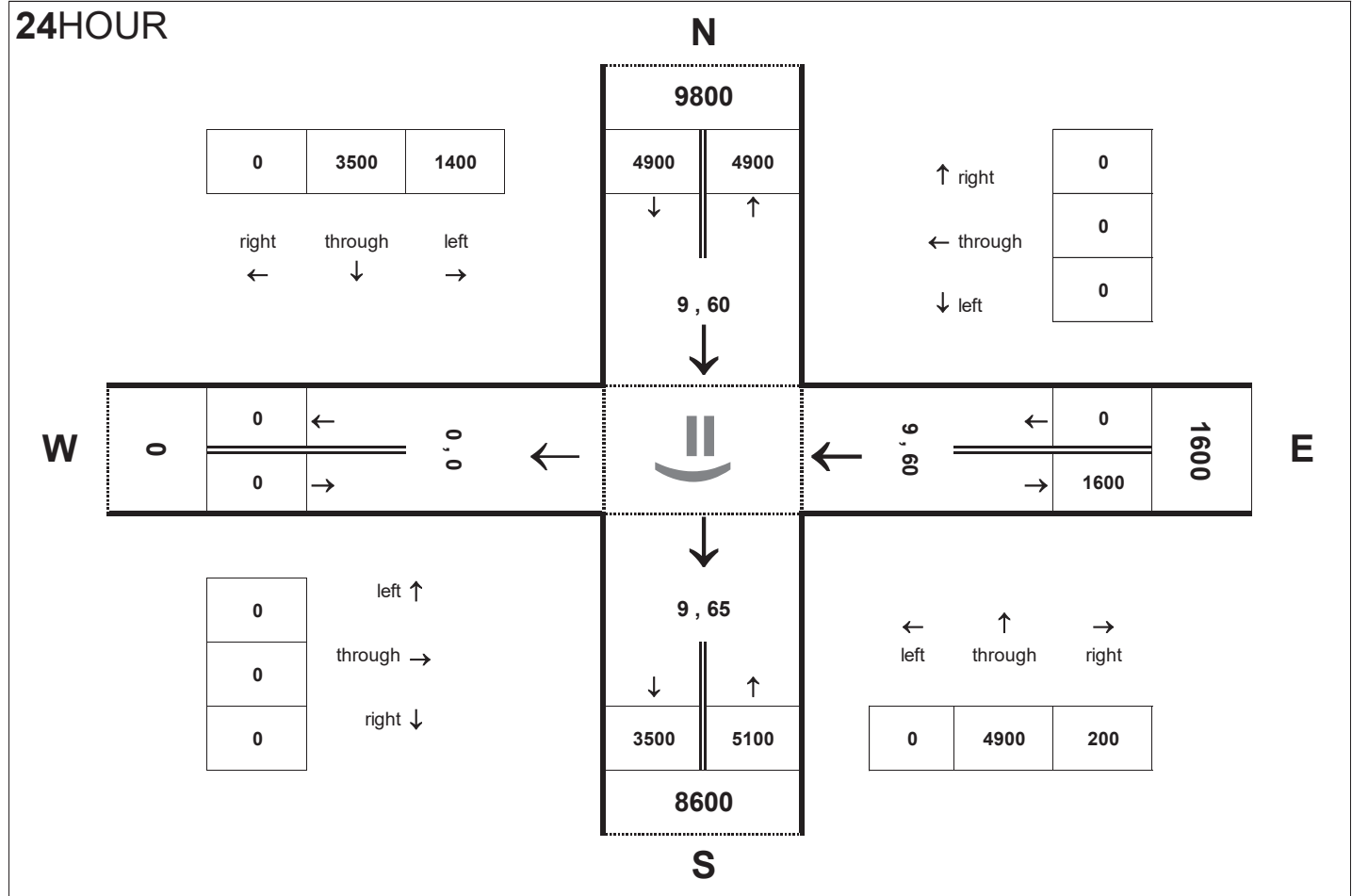
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



24HOUR



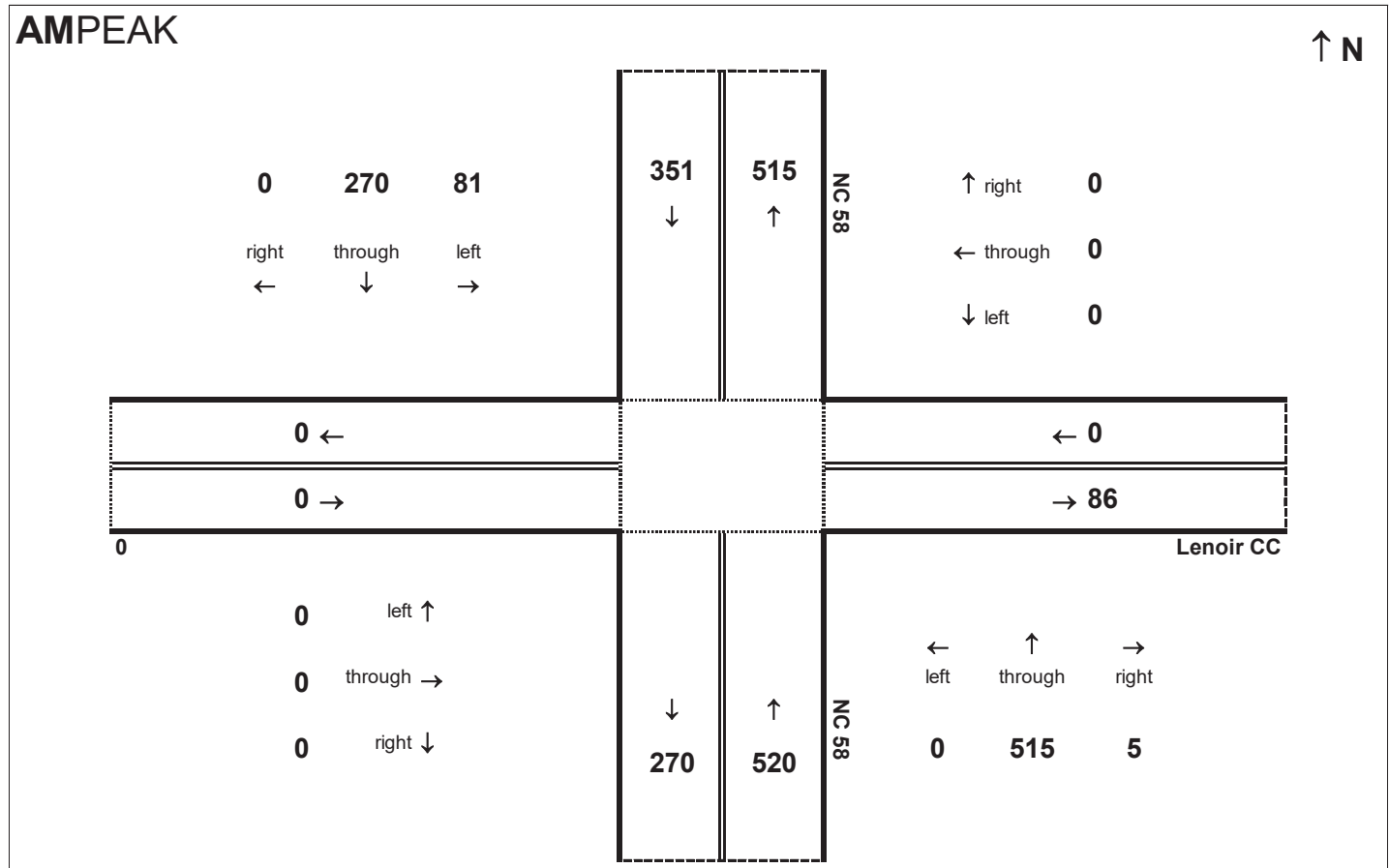
Peak Hour Volume Breakouts Report:
450 Intersection of NC 58 and southern Lenoir CC driveway

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

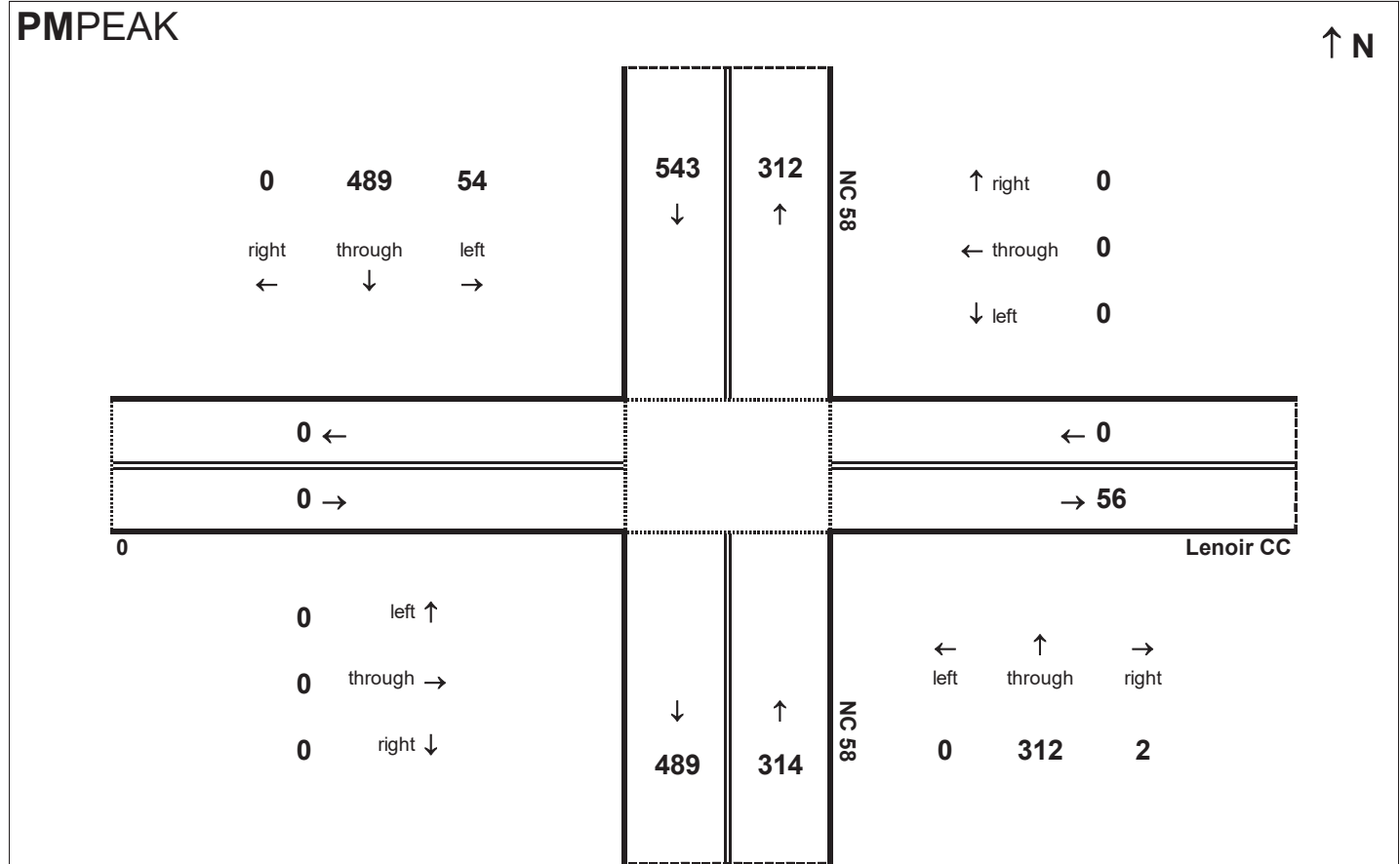
Project:
R-2553

AMPEAK



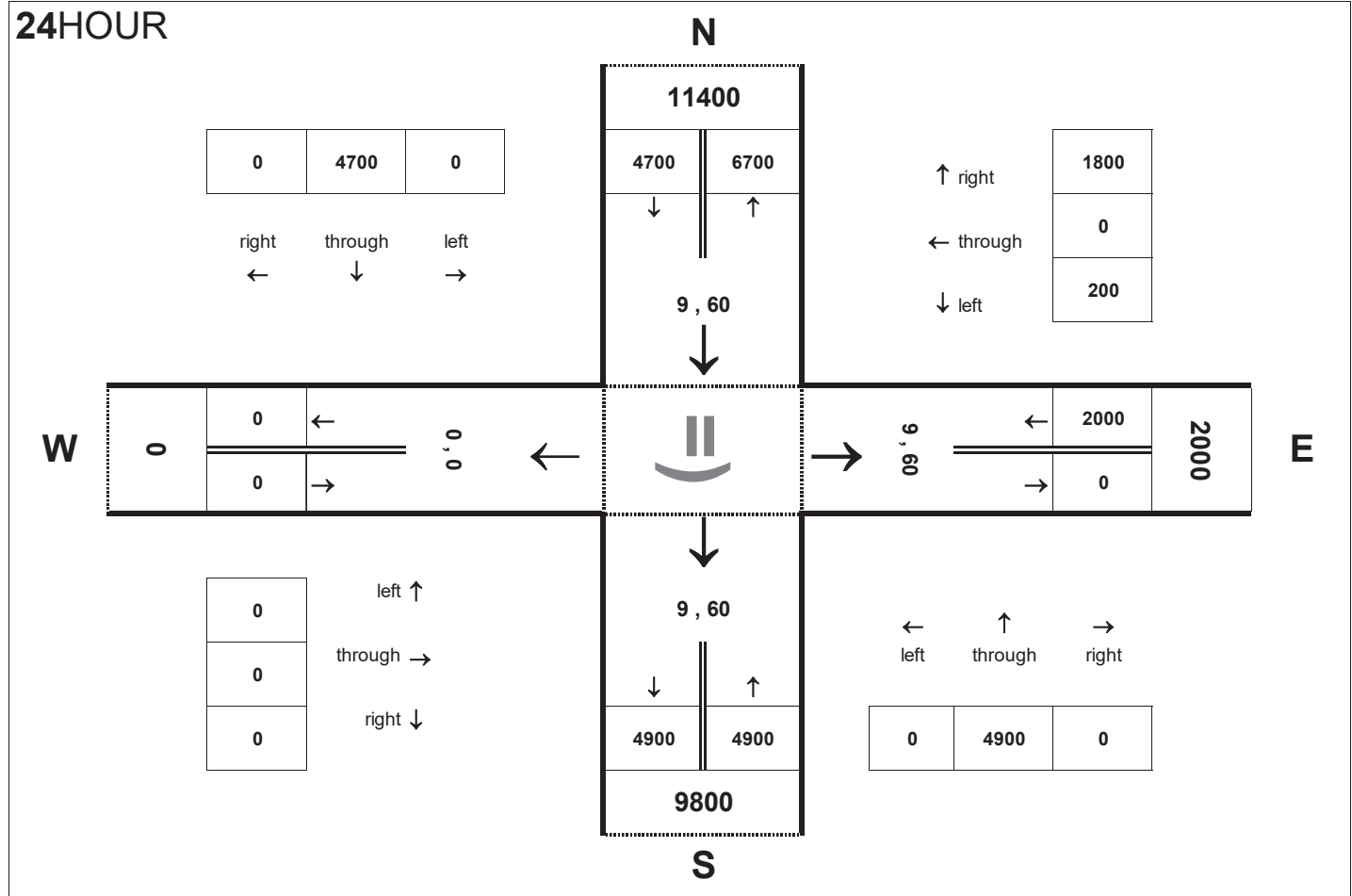
AM peak hour inflow is 872 vehicles. AM peak hour outflow is 871 vehicles.

PMPEAK



PM peak hour inflow is 857 vehicles. PM peak hour outflow is 857 vehicles.

24HOUR



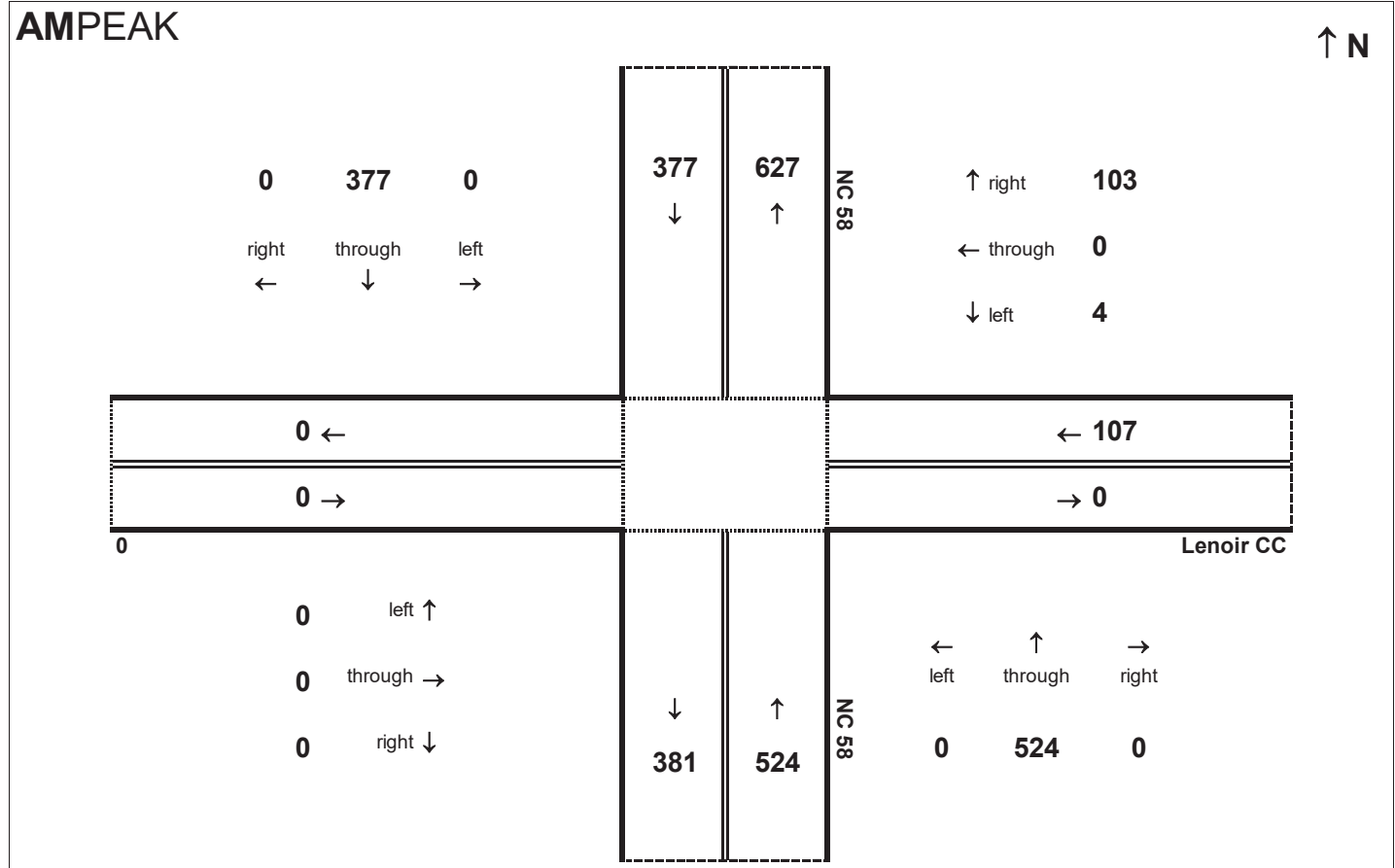
Peak Hour Volume Breakouts Report:
451 Intersection of NC 58 and northern Lenoir CC driveway

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

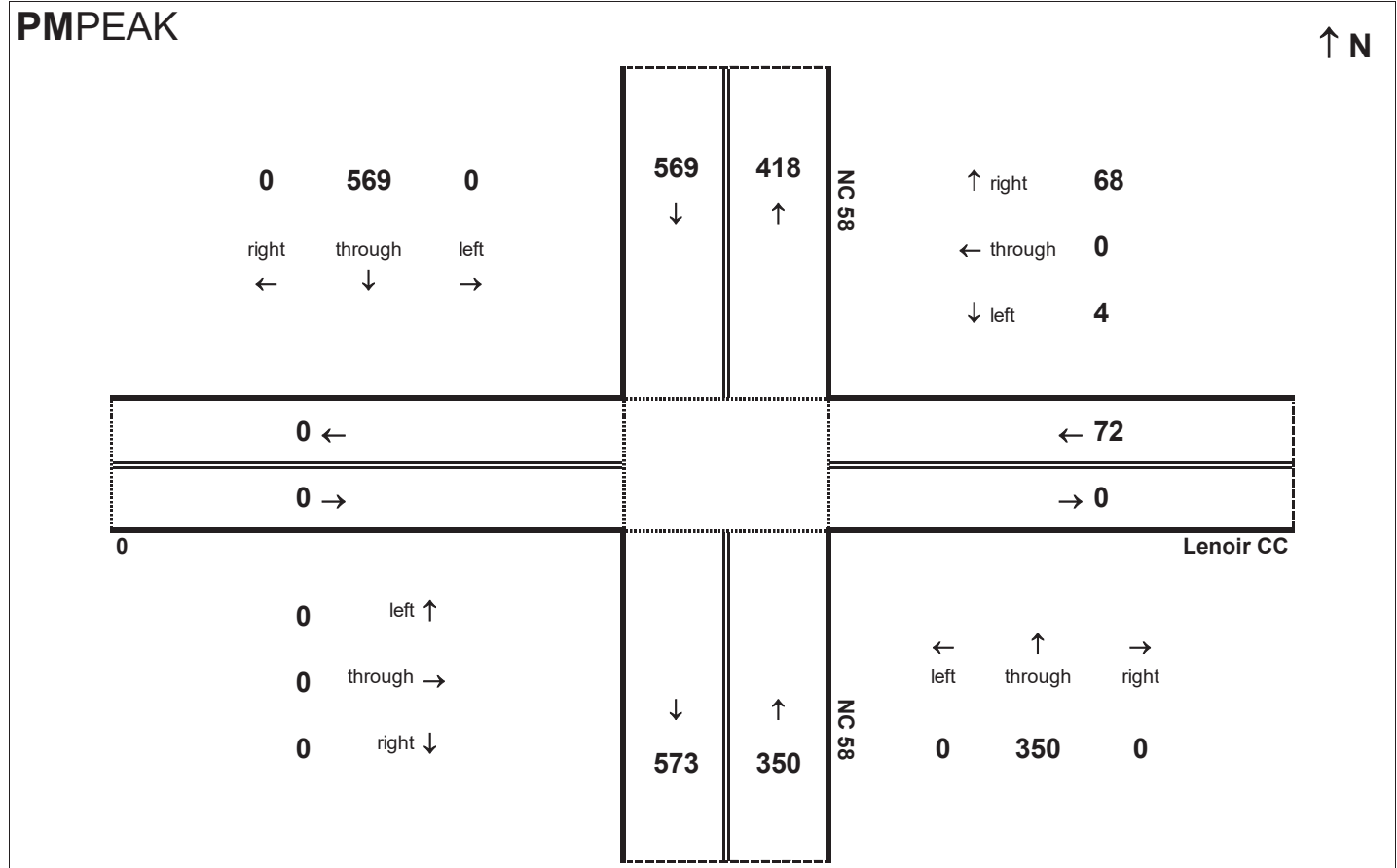
Project:
R-2553

AMPEAK

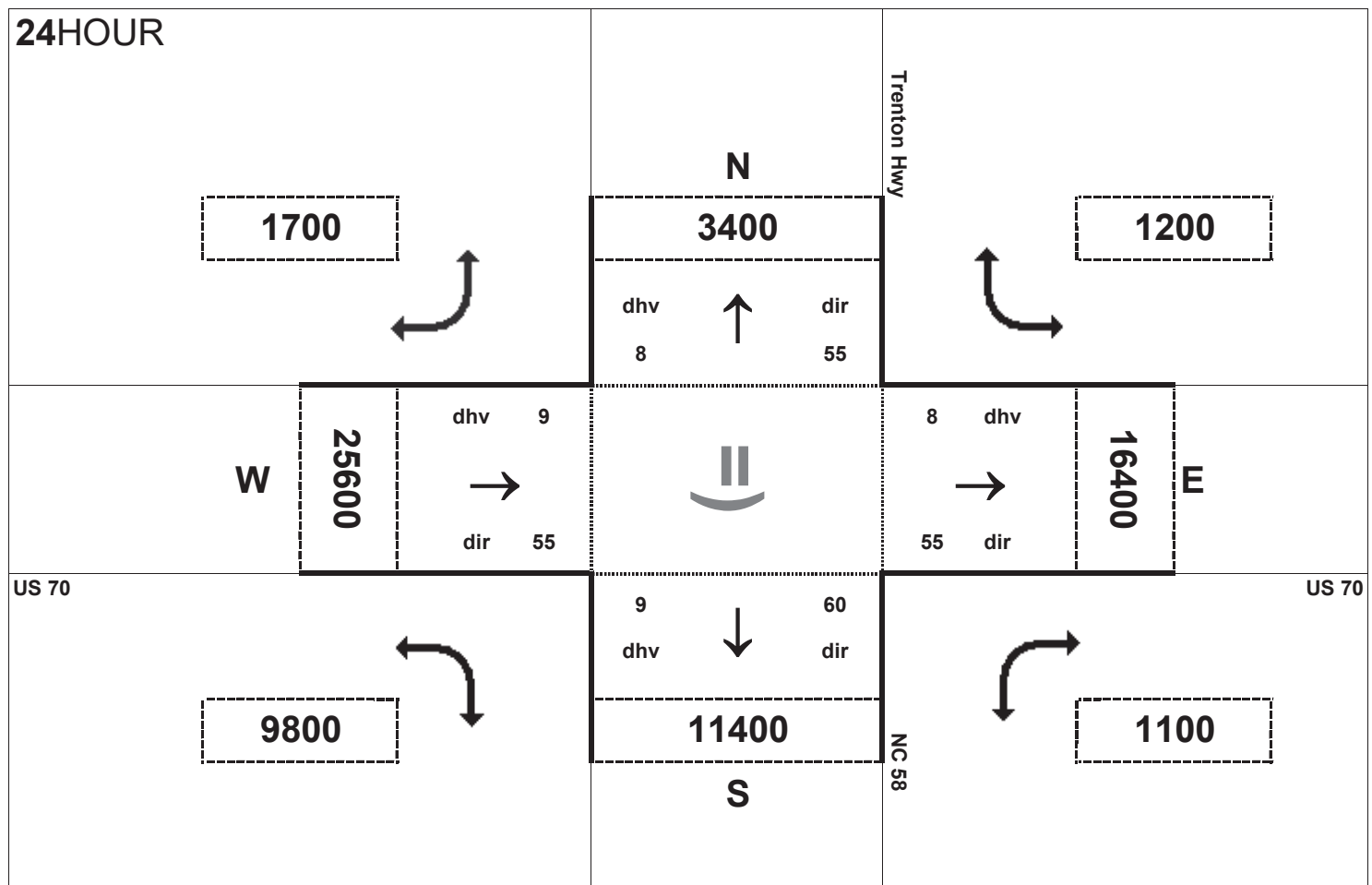


AM peak hour inflow is 1008 vehicles. AM peak hour outflow is 1044 vehicles.

PMPEAK



PM peak hour inflow is 990 vehicles. PM peak hour outflow is 1044 vehicles.

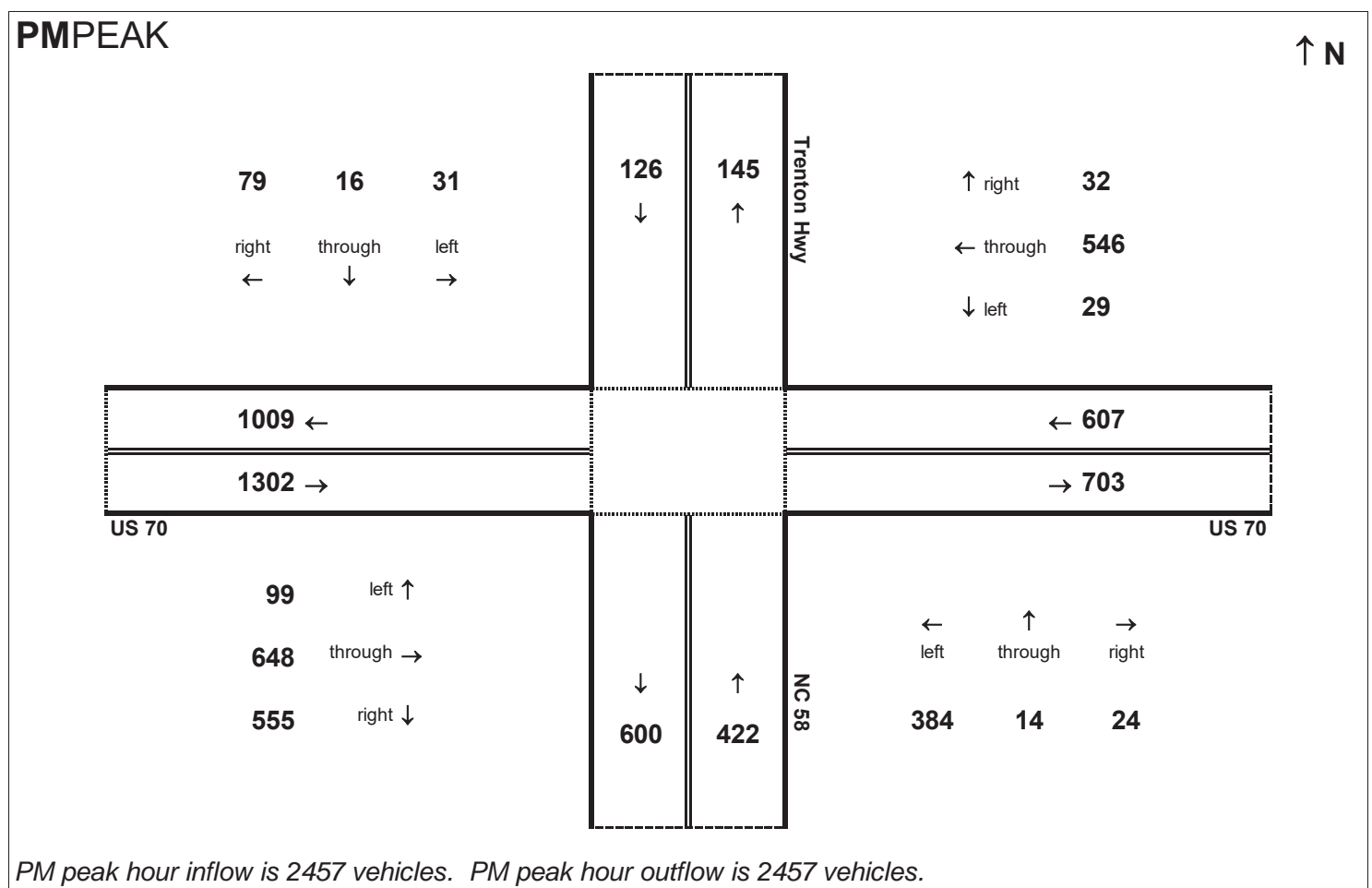
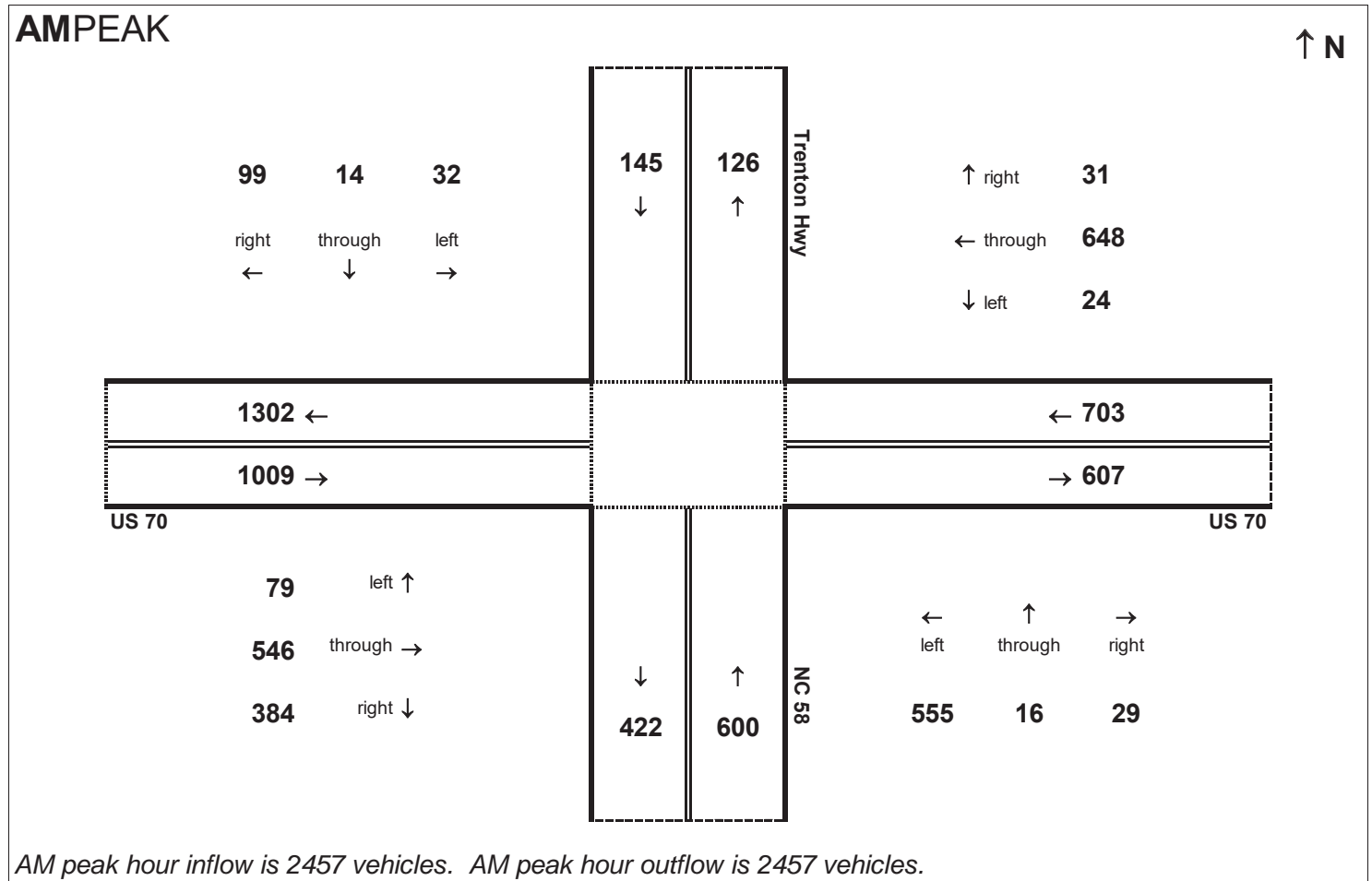


Peak Hour Volume Breakouts Report:
452 Intersection US 70 and NC 58 / Trenton Hwy

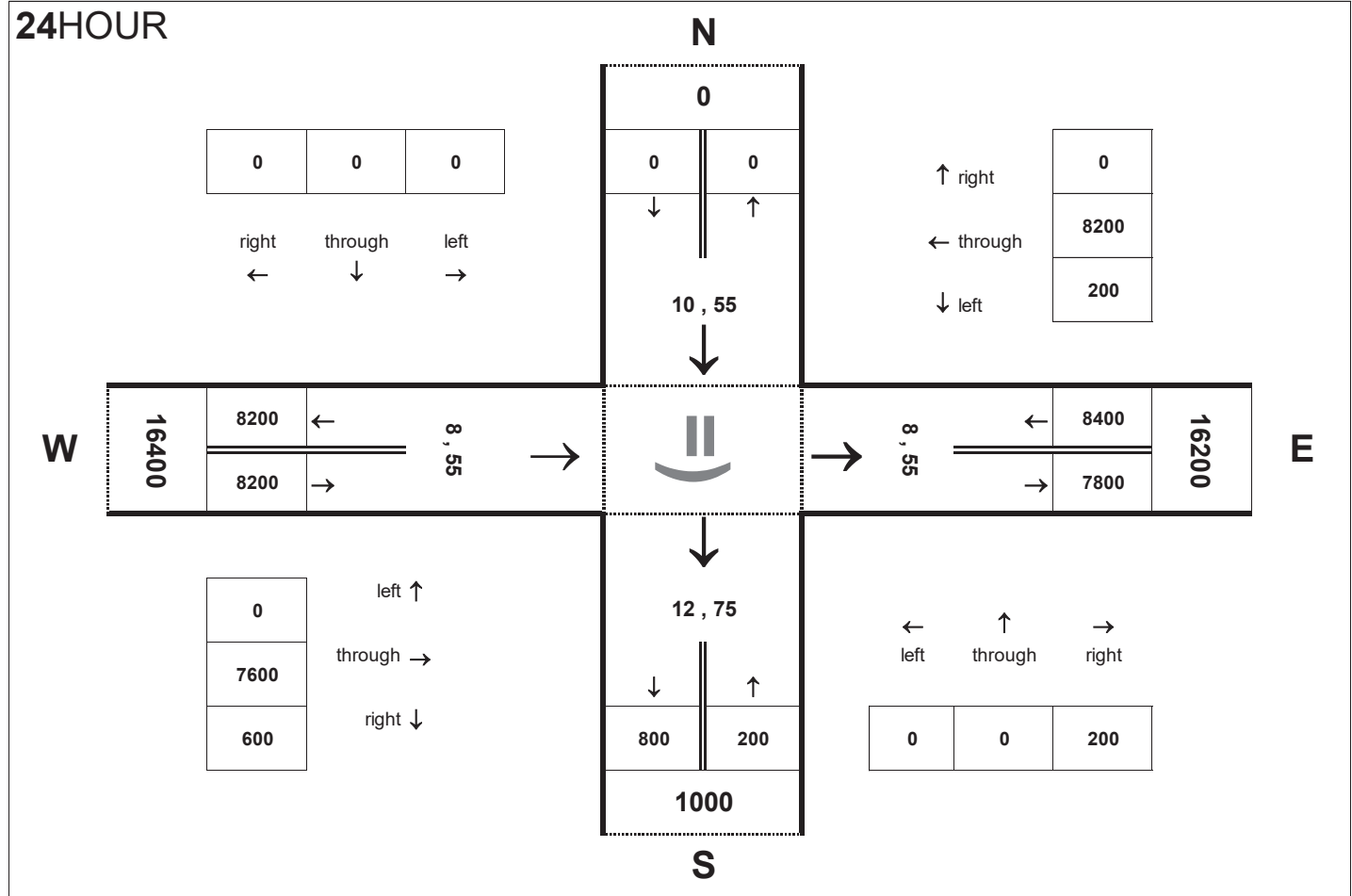
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



24HOUR



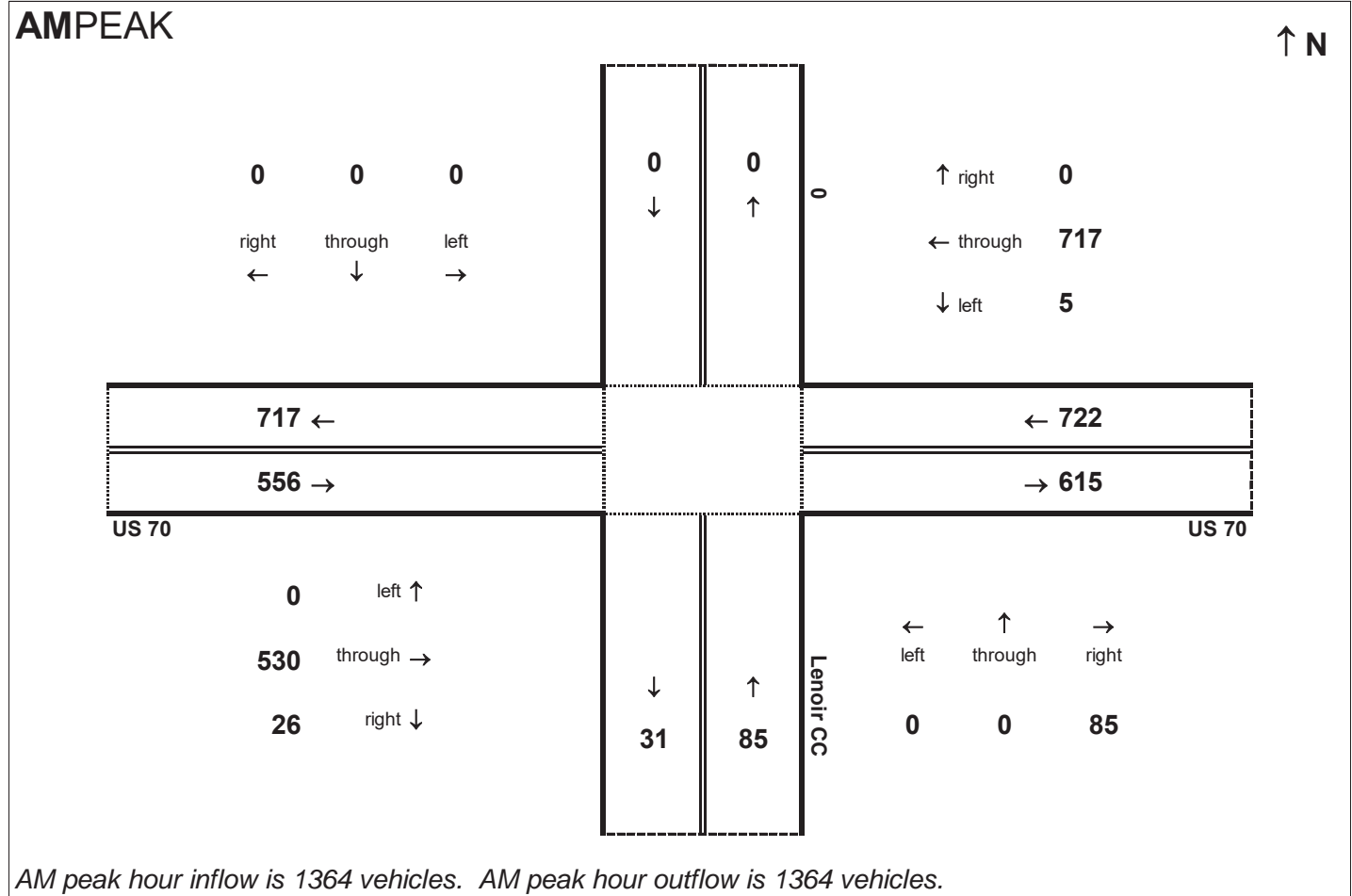
Peak Hour Volume Breakouts Report:
453 Intersection of US 70 at Lenoir CC

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

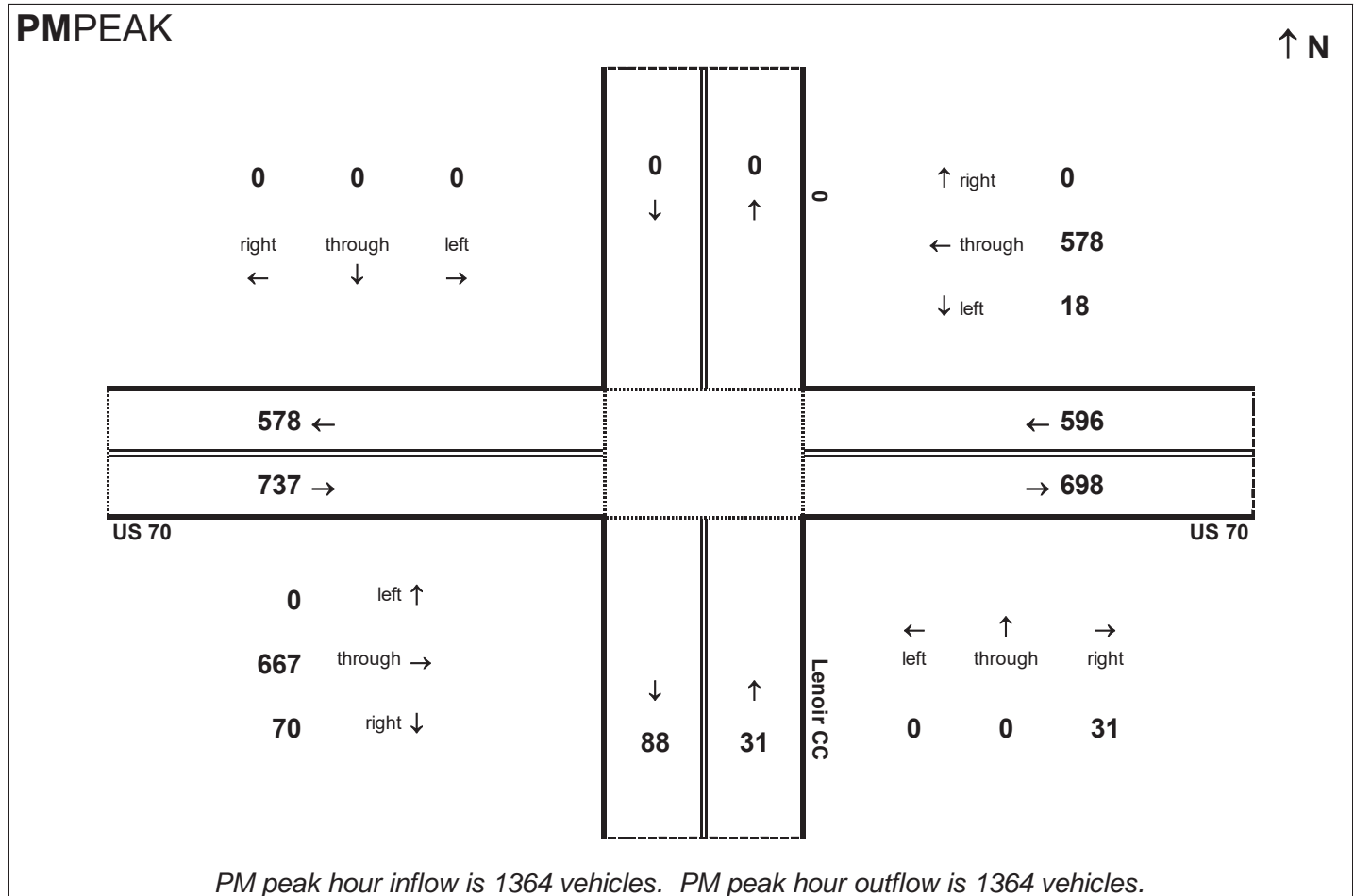
Project:
R-2553

AMPEAK

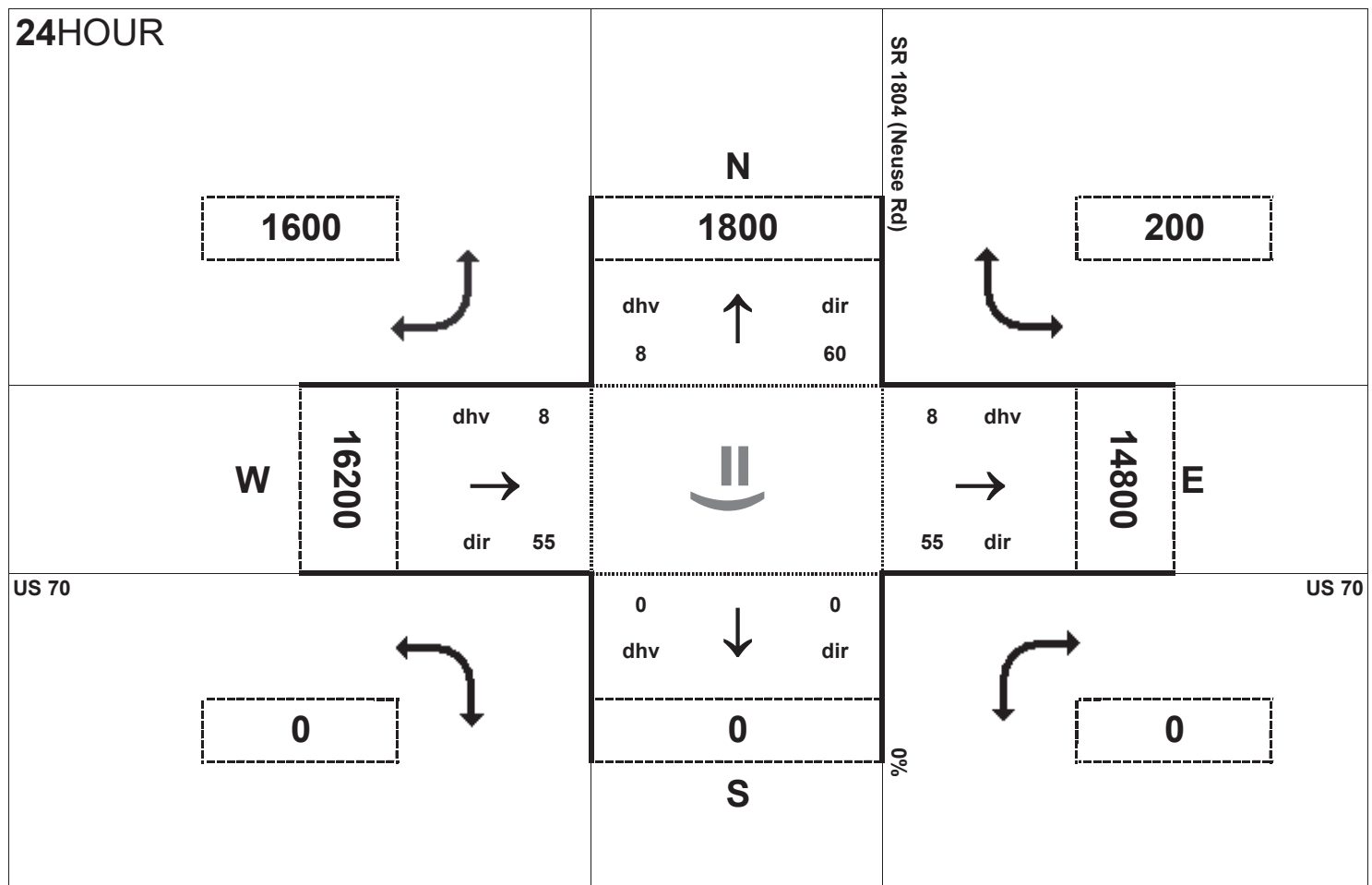


AM peak hour inflow is 1364 vehicles. AM peak hour outflow is 1364 vehicles.

PMPEAK



PM peak hour inflow is 1364 vehicles. PM peak hour outflow is 1364 vehicles.

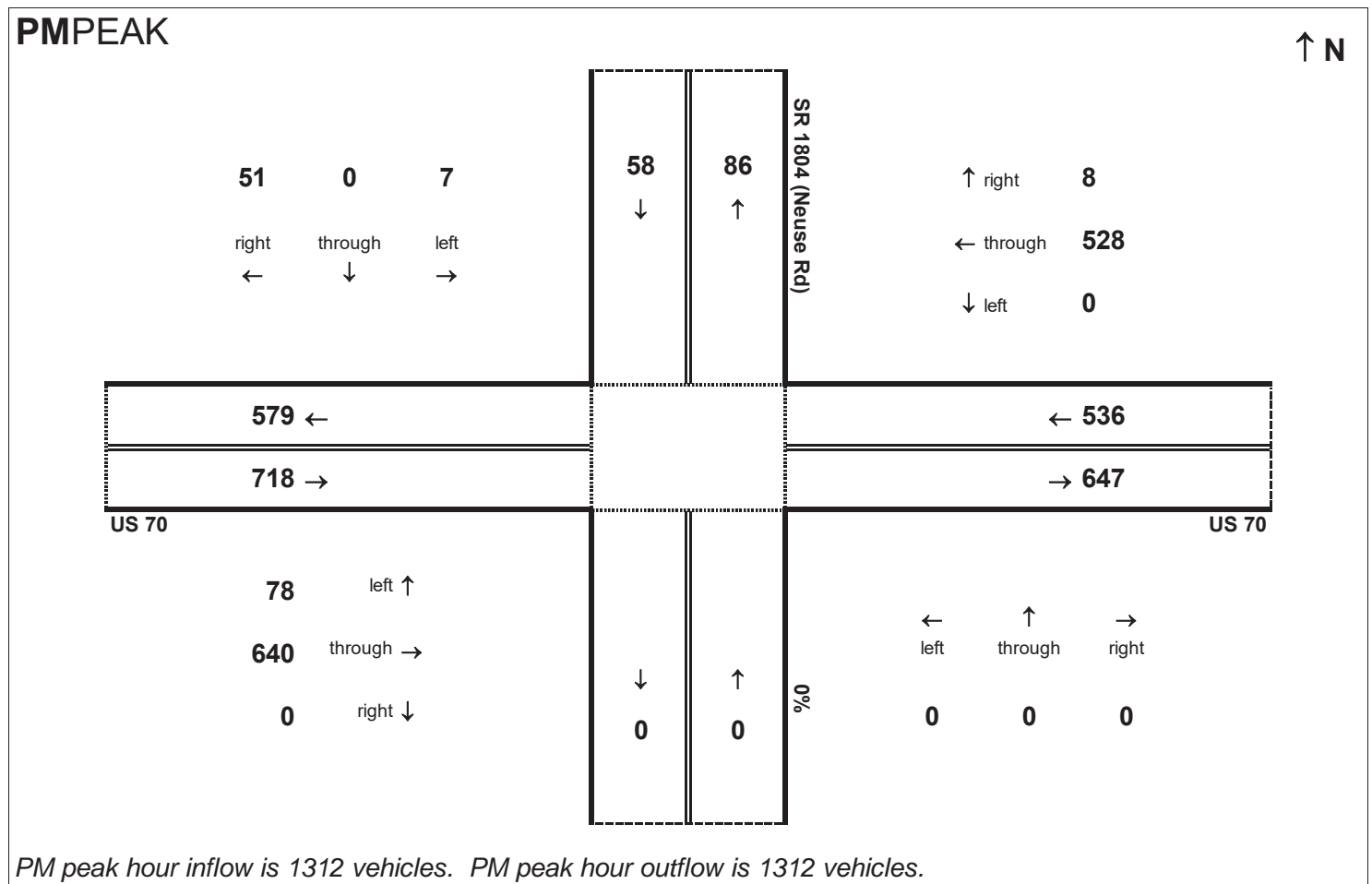
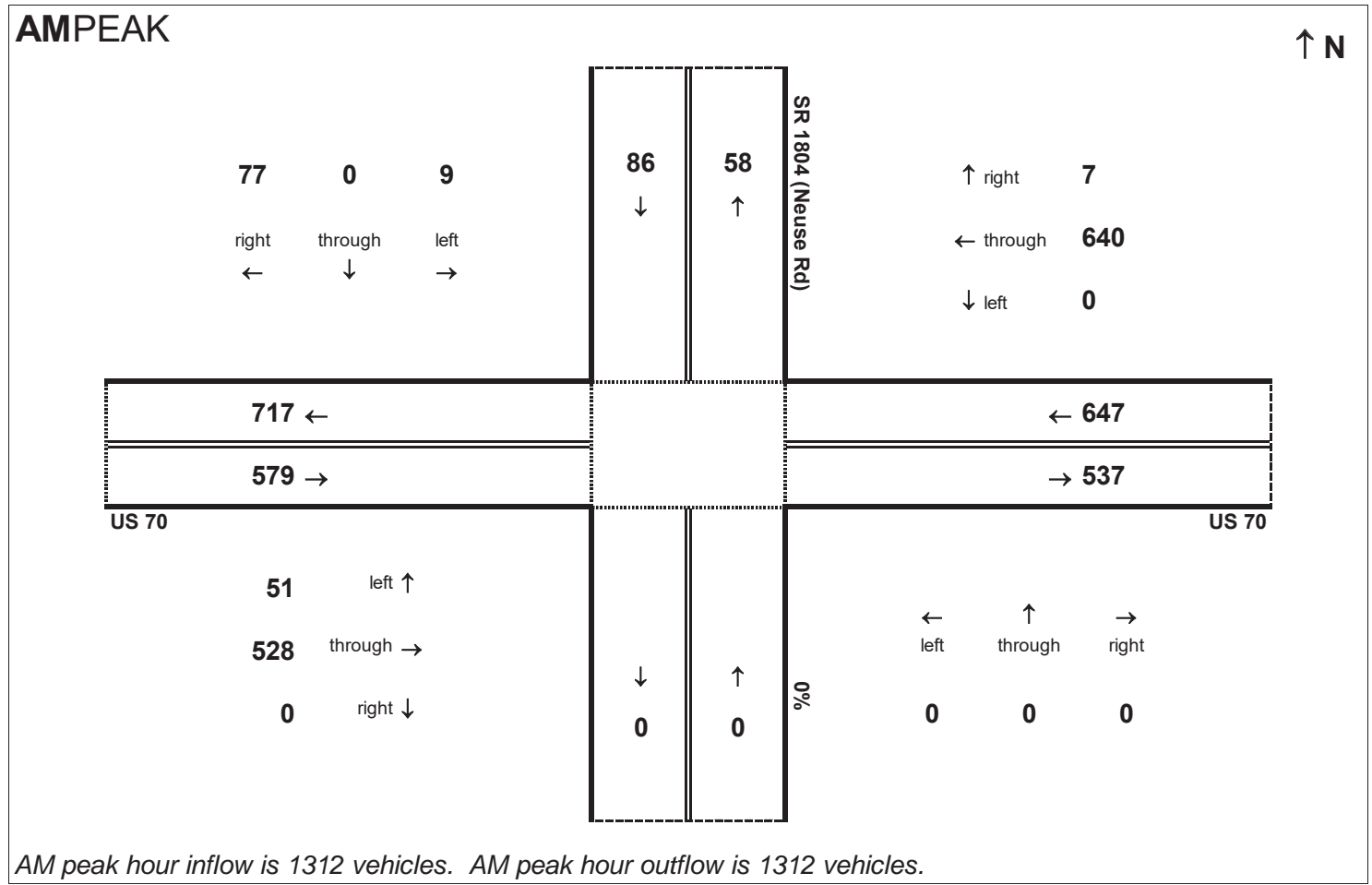


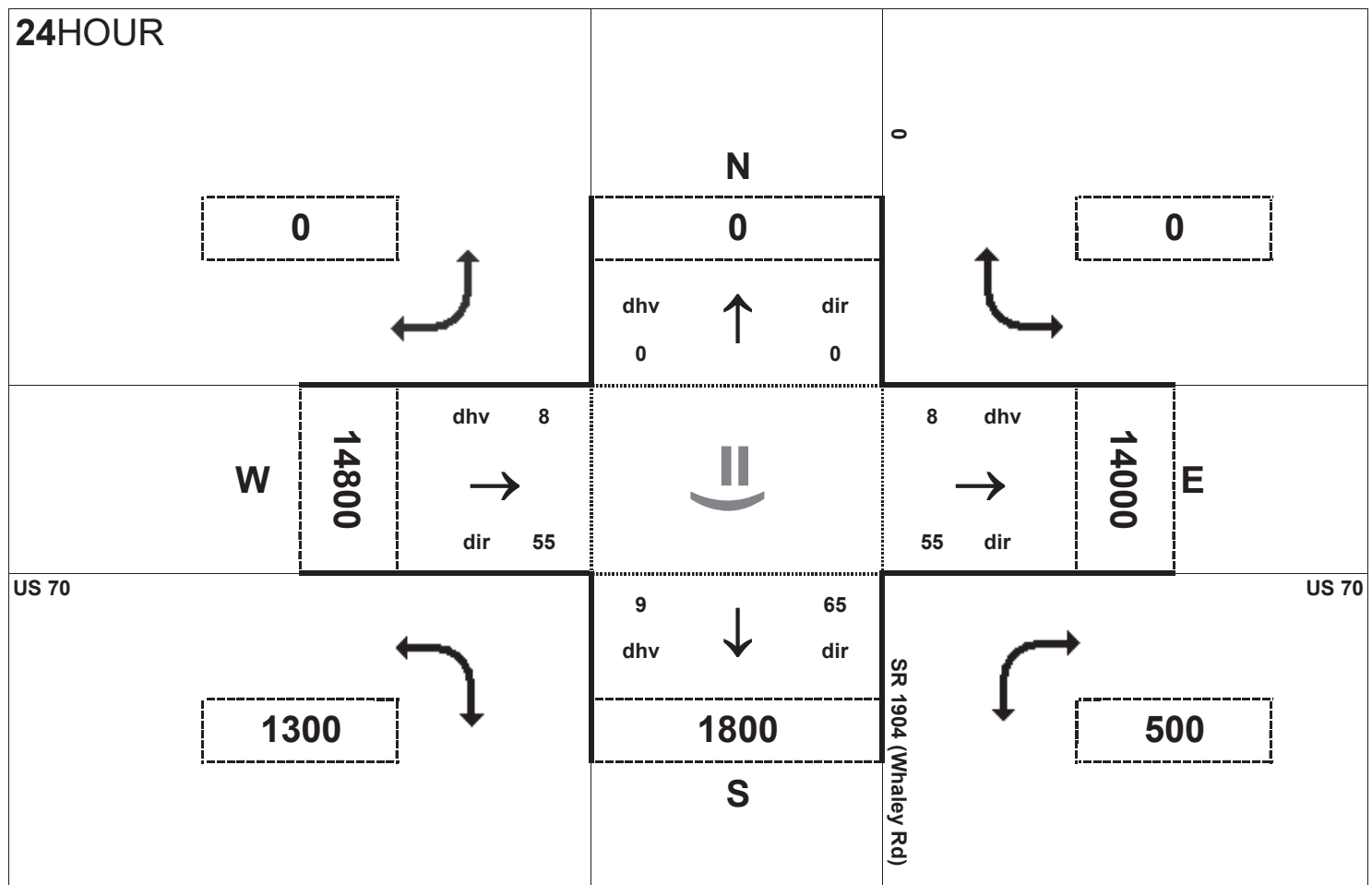
Peak Hour Volume Breakouts Report:
454 Intersection of US 70 and SR 1804 (Neuse Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



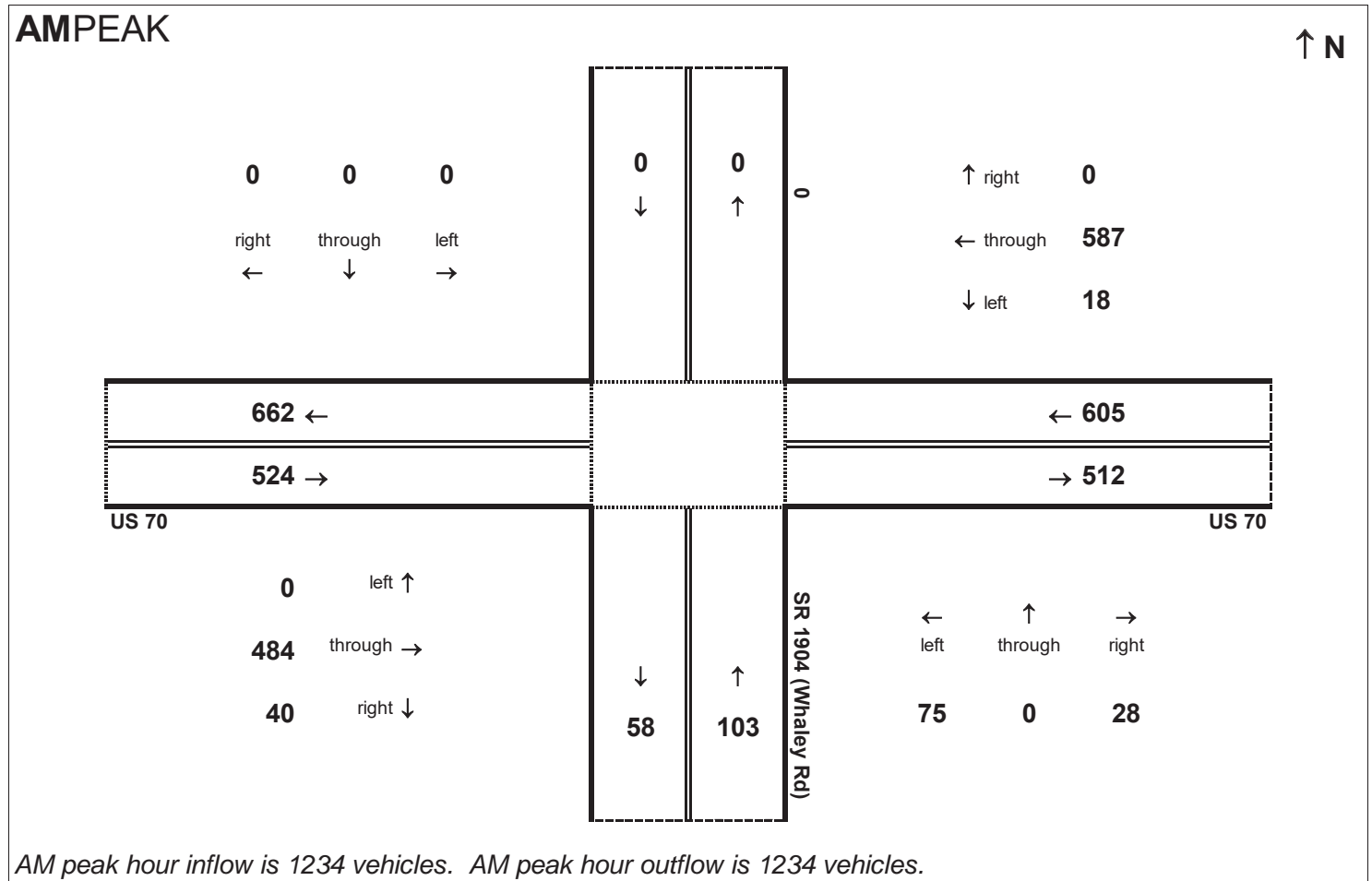


Peak Hour Volume Breakouts Report:
455 Intersection of US 70 and SR 1904 (Whaley Rd)

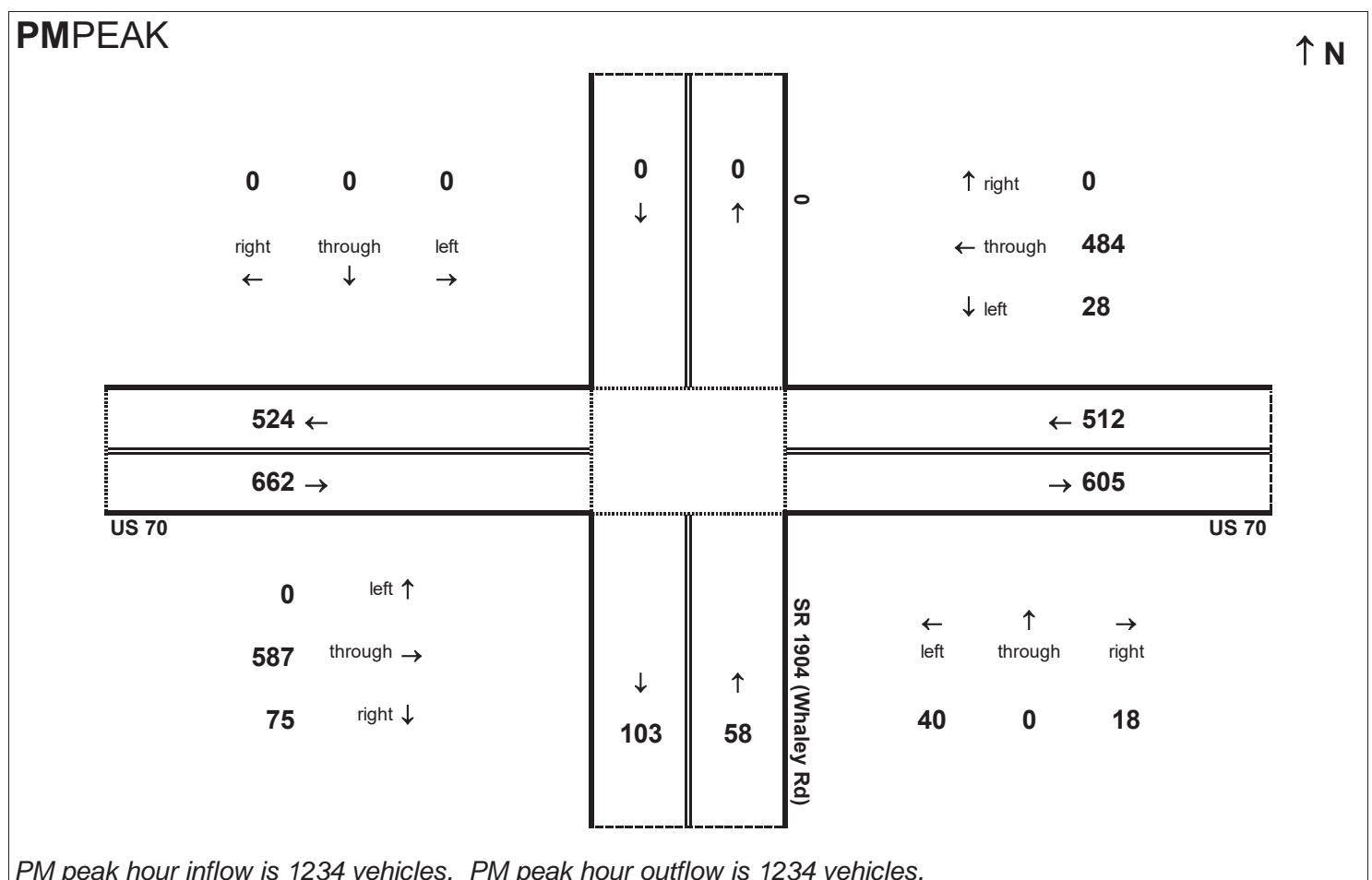
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

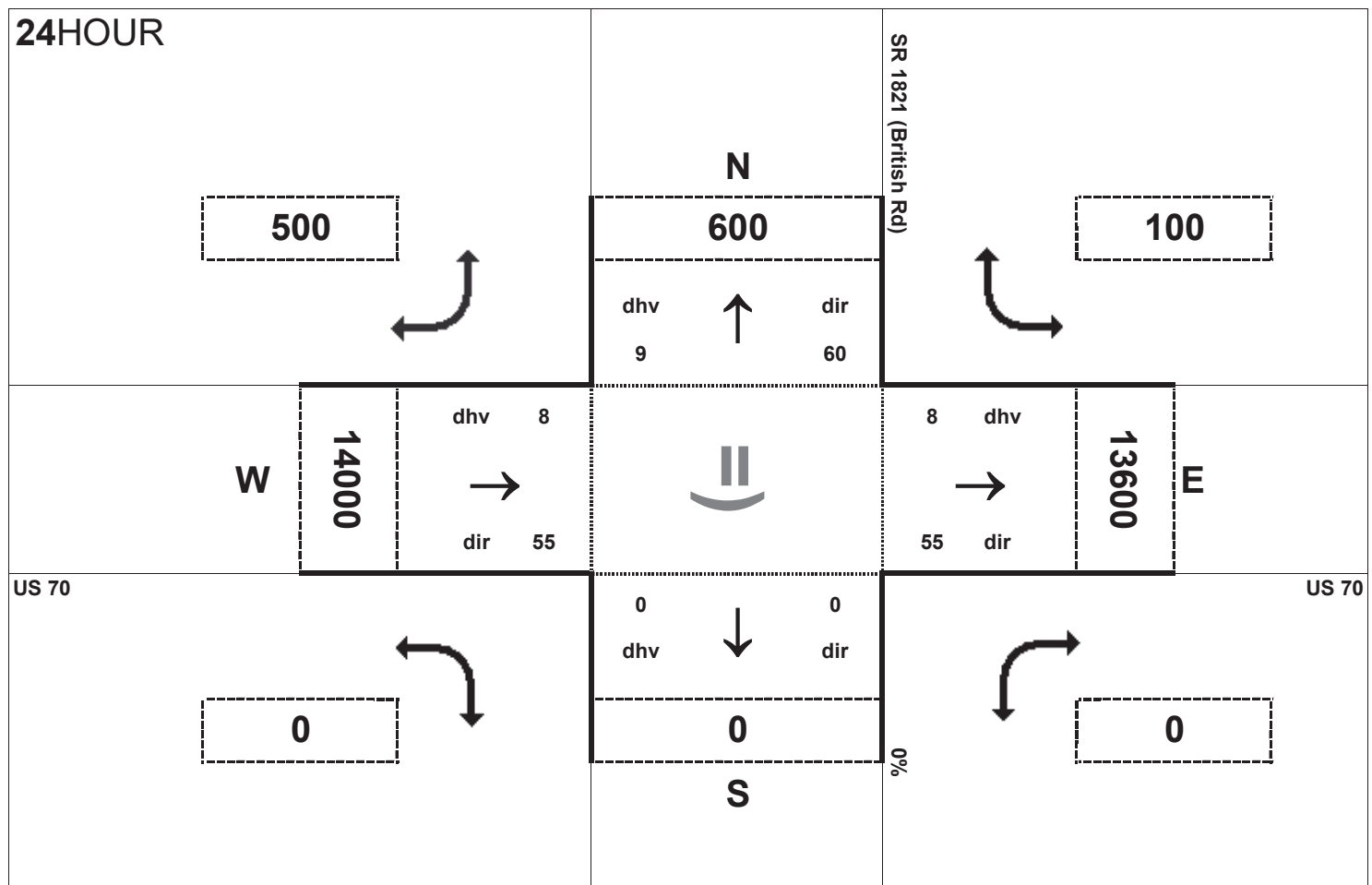
Project:
R-2553



AM peak hour inflow is 1234 vehicles. AM peak hour outflow is 1234 vehicles.



PM peak hour inflow is 1234 vehicles. PM peak hour outflow is 1234 vehicles.

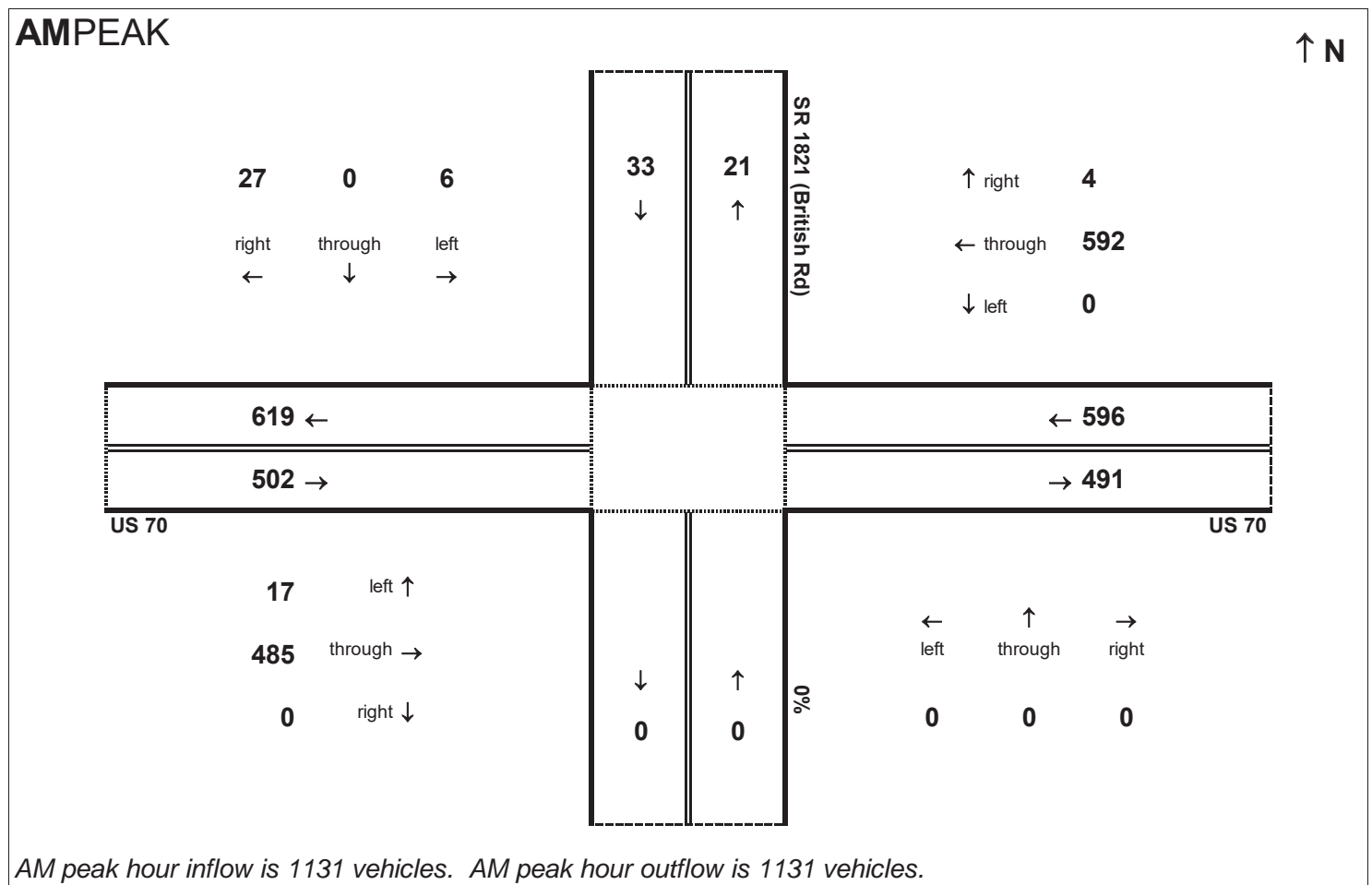


Peak Hour Volume Breakouts Report:
456 Intersection of US 70 and SR 1821 (British Rd)

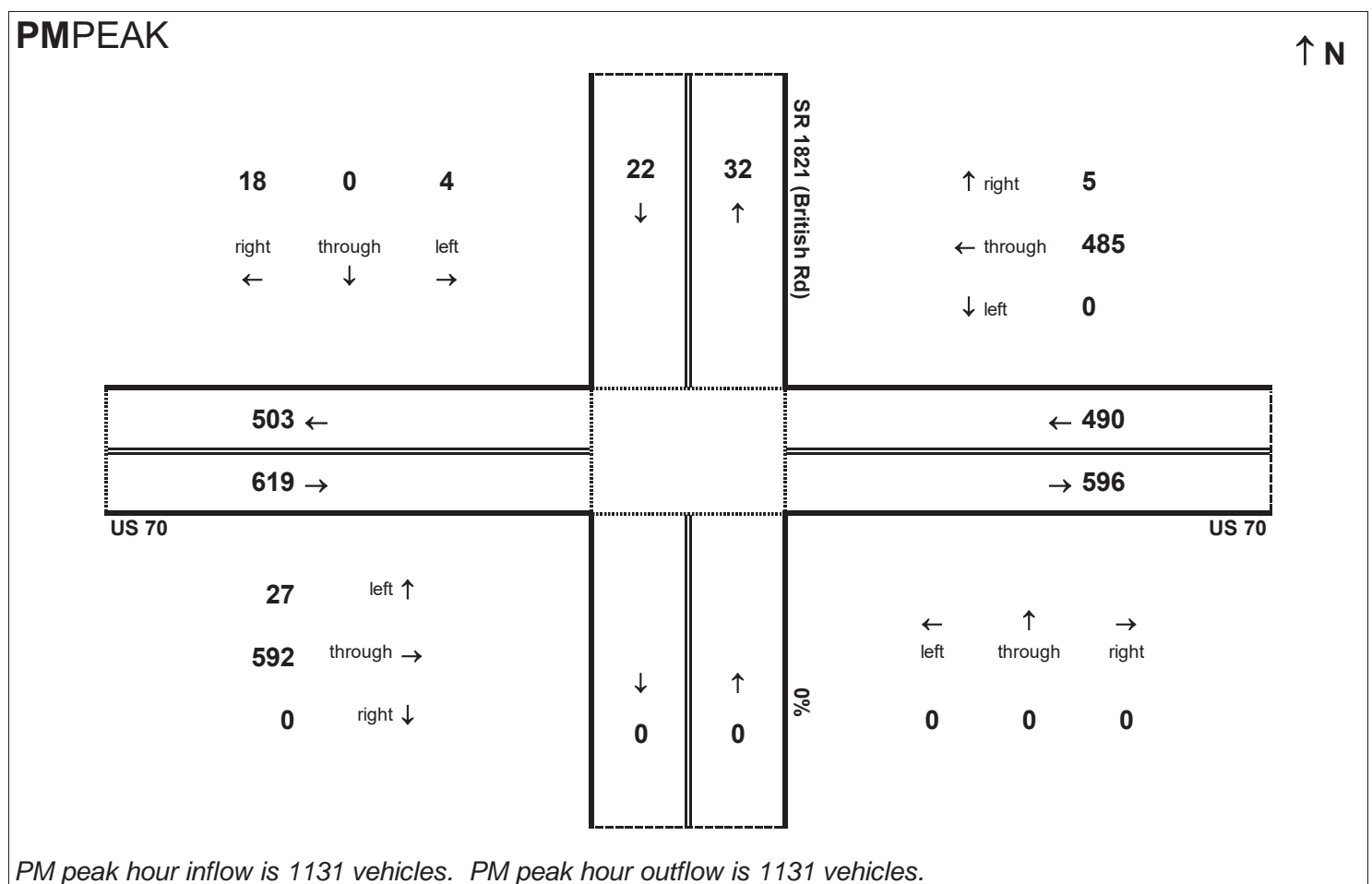
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

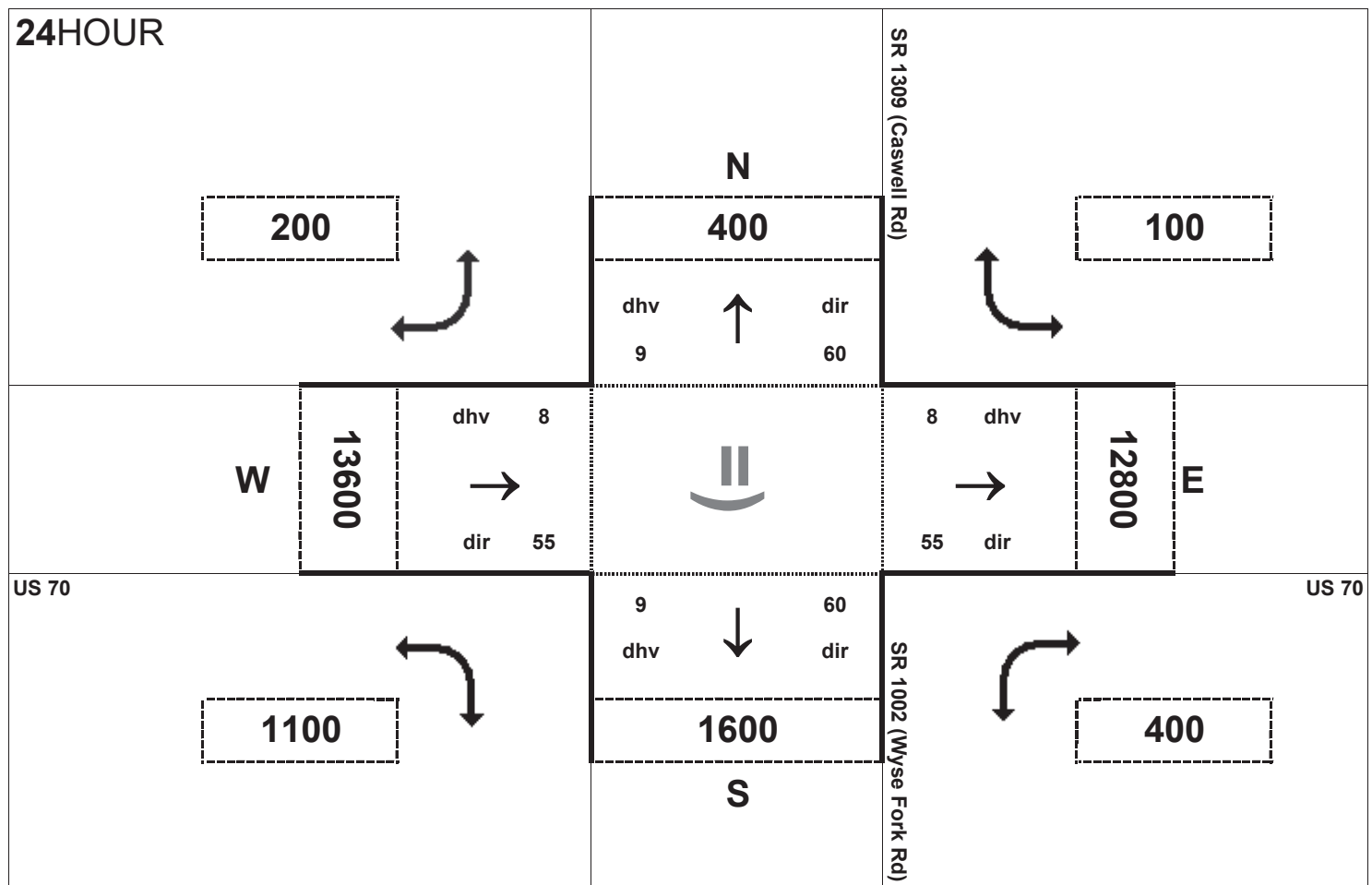
Project:
R-2553



AM peak hour inflow is 1131 vehicles. AM peak hour outflow is 1131 vehicles.



PM peak hour inflow is 1131 vehicles. PM peak hour outflow is 1131 vehicles.

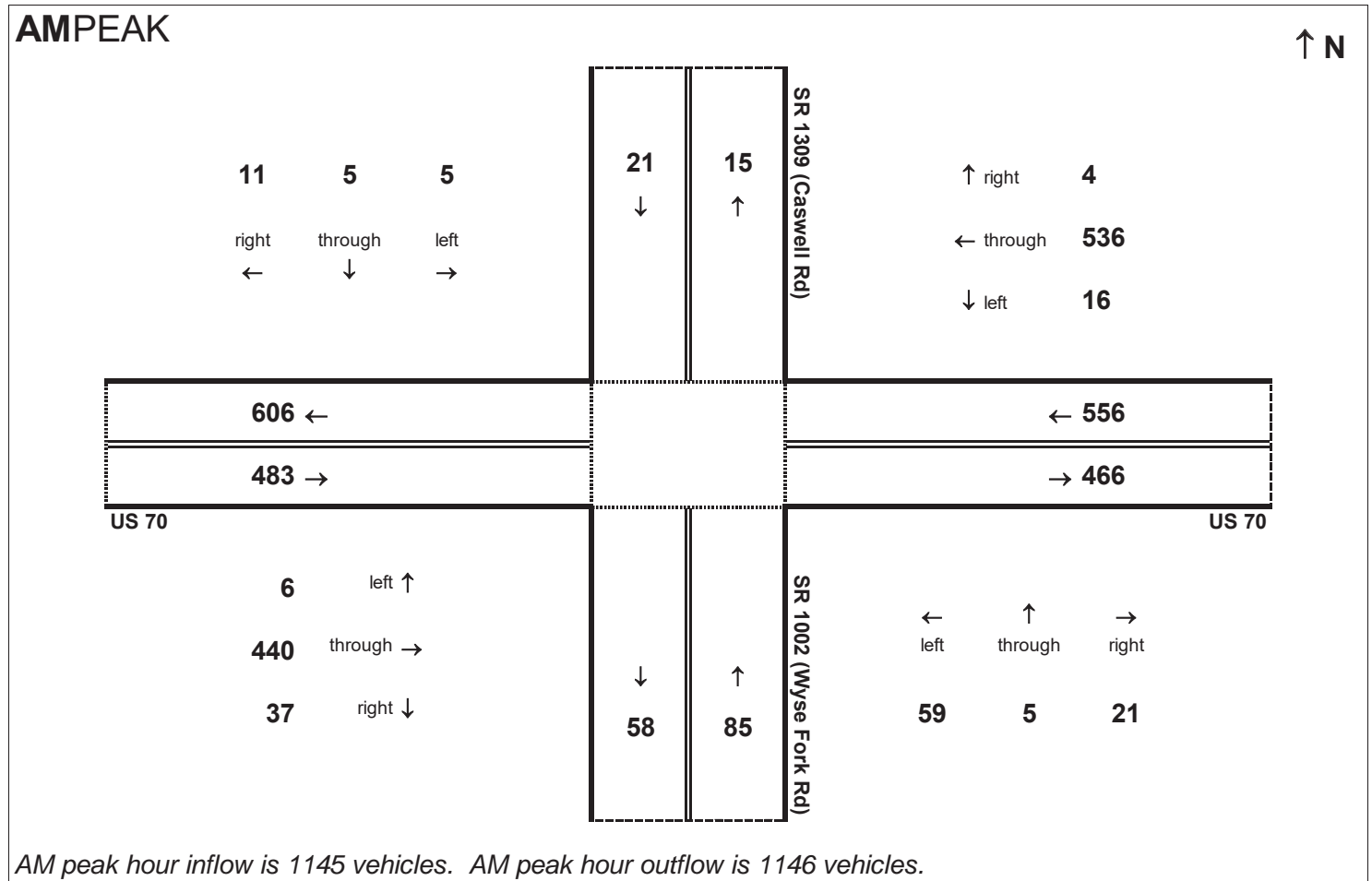


Peak Hour Volume Breakouts Report:
 457 Intersection of US 70 and SR 1309 (Caswell Rd) / SR 1002 (Wyse Fork Rd)

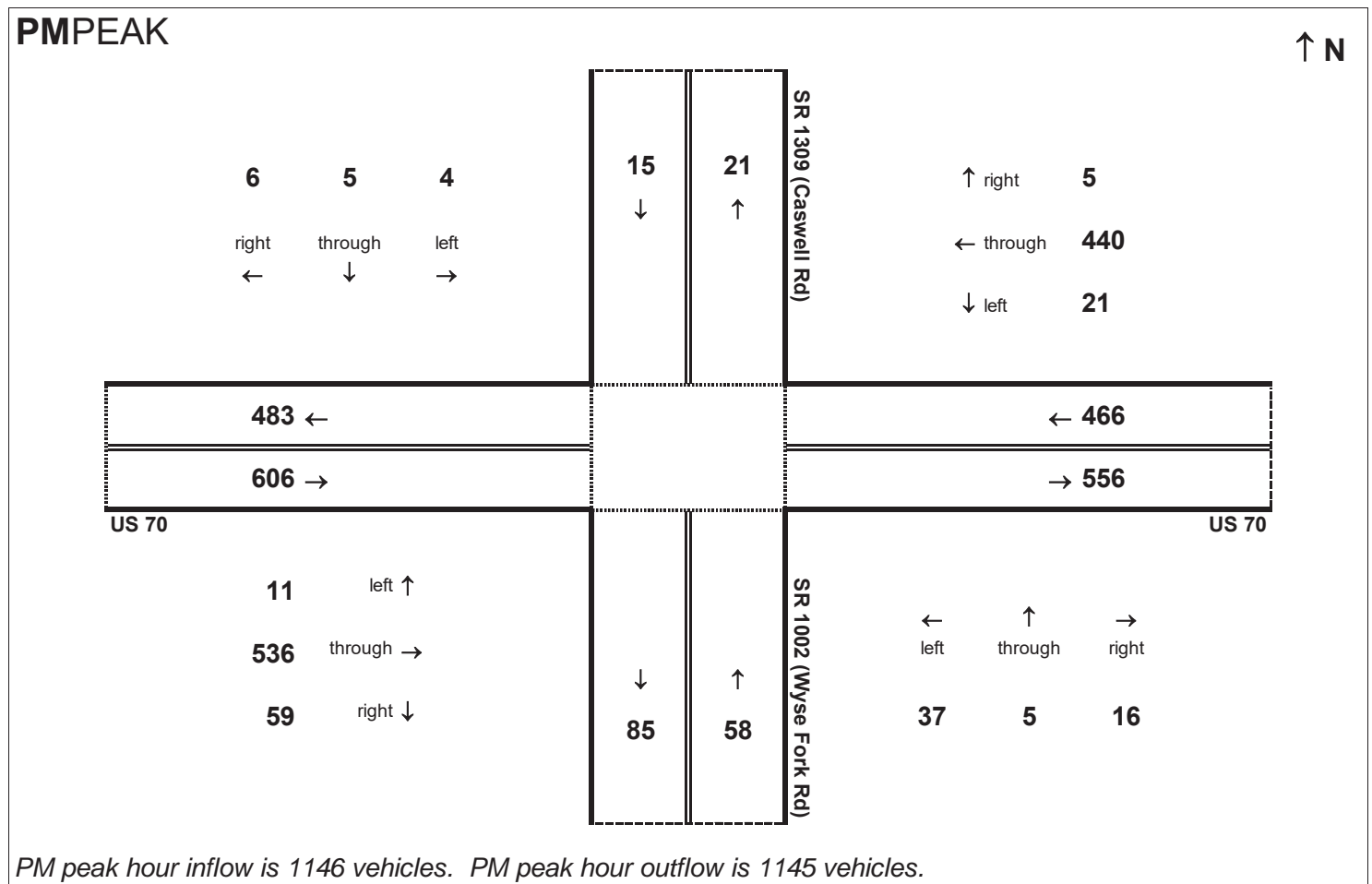
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

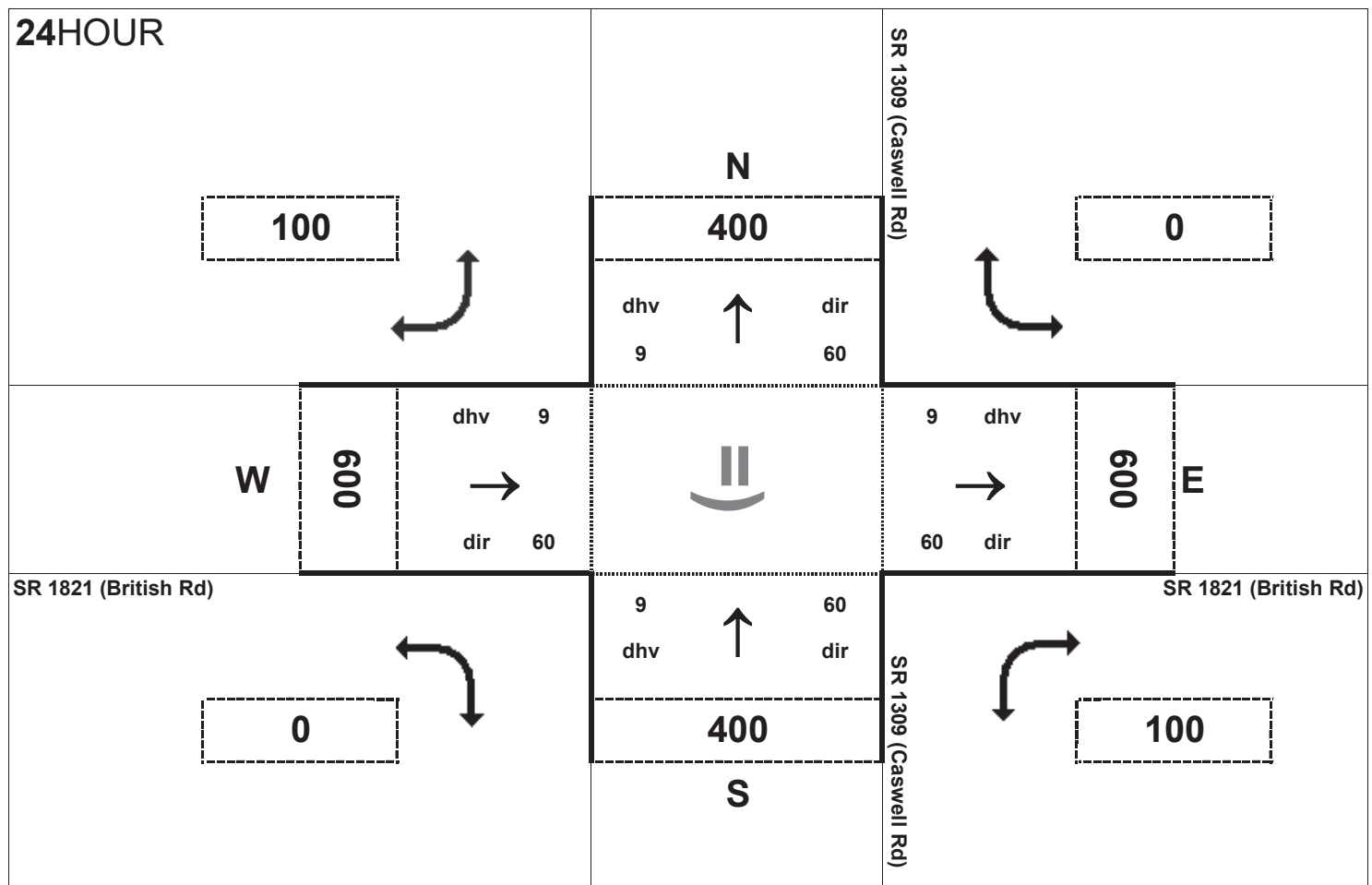
Project:
 R-2553



AM peak hour inflow is 1145 vehicles. AM peak hour outflow is 1146 vehicles.



PM peak hour inflow is 1146 vehicles. PM peak hour outflow is 1145 vehicles.

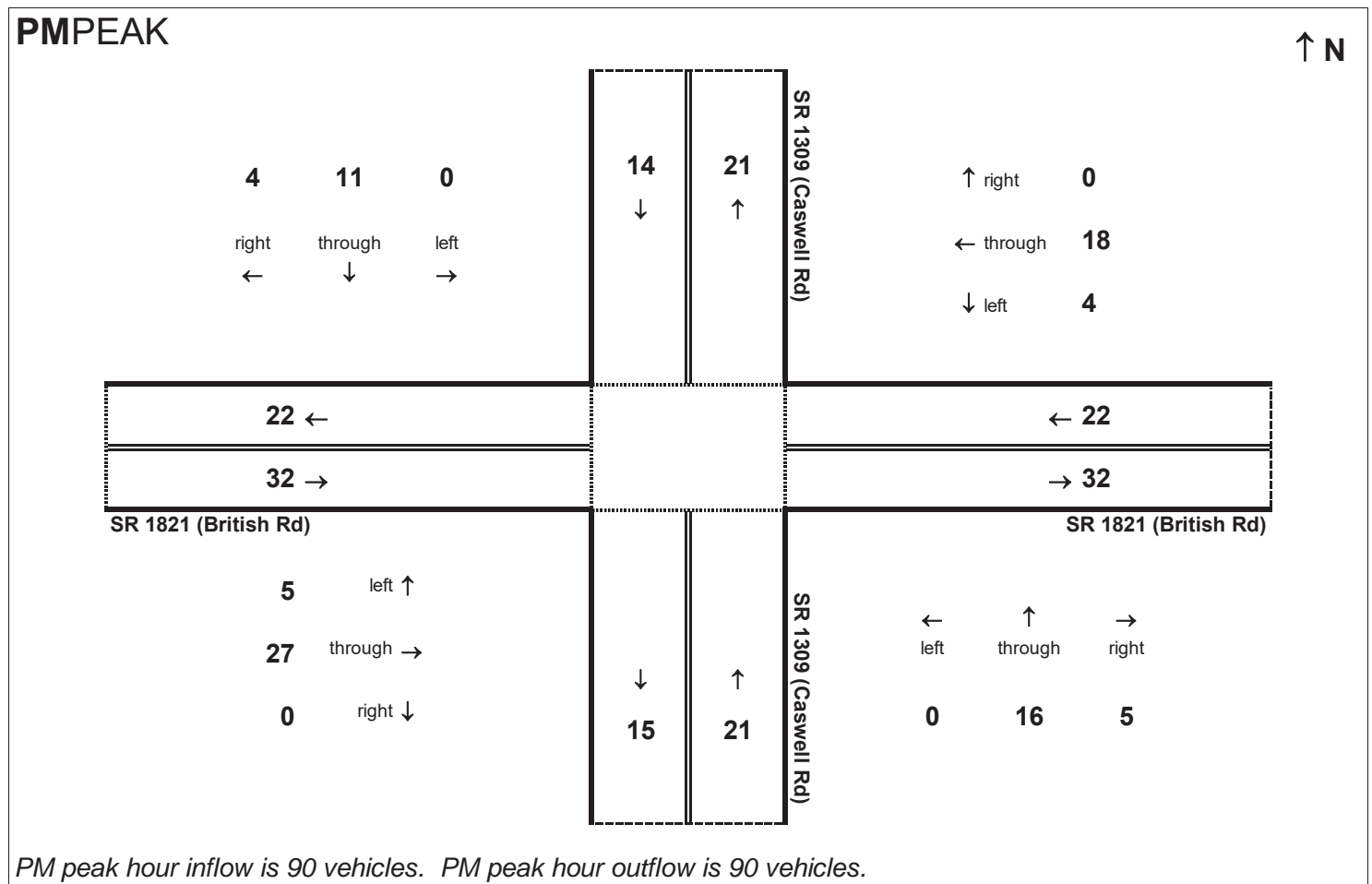
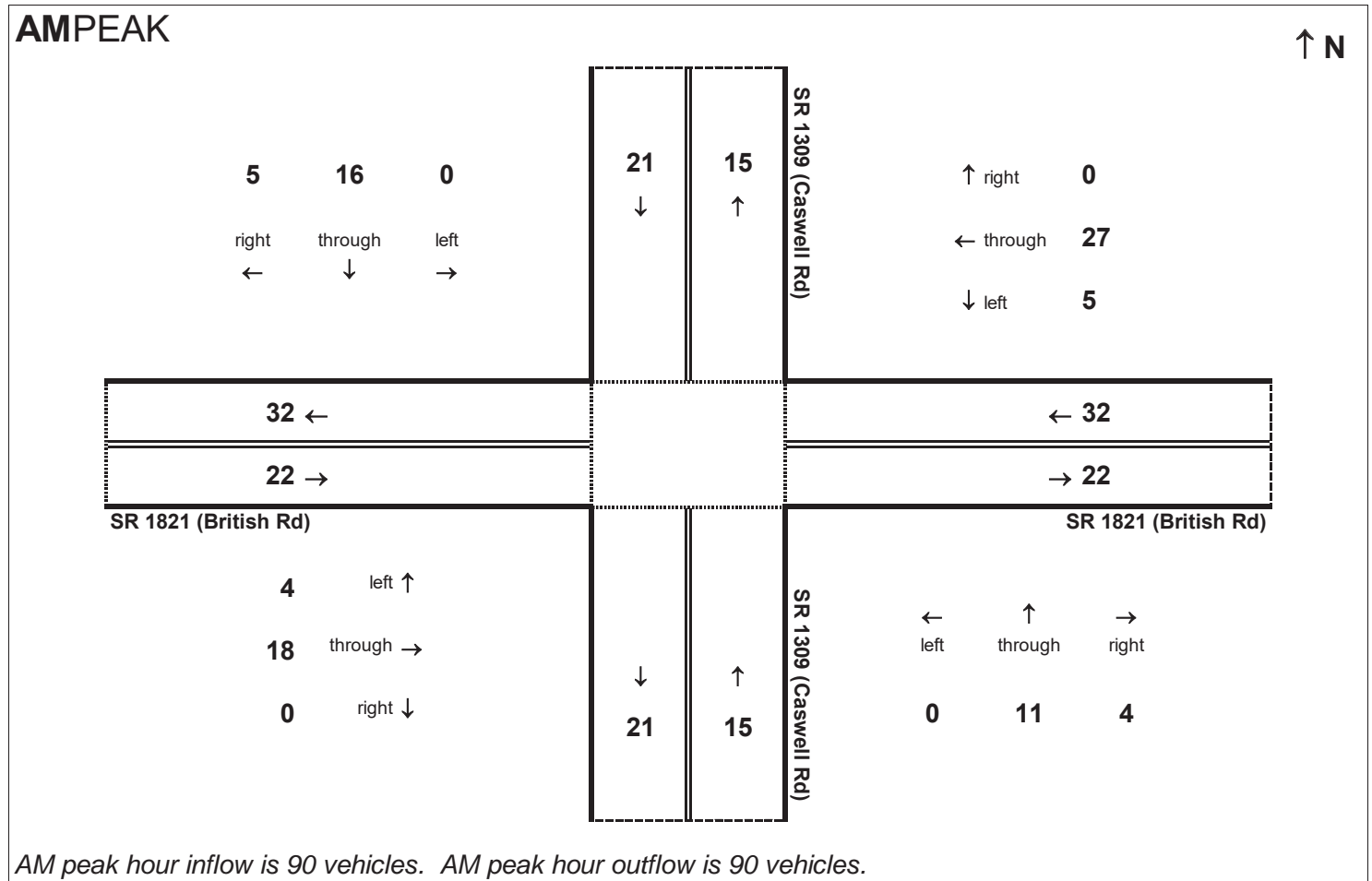


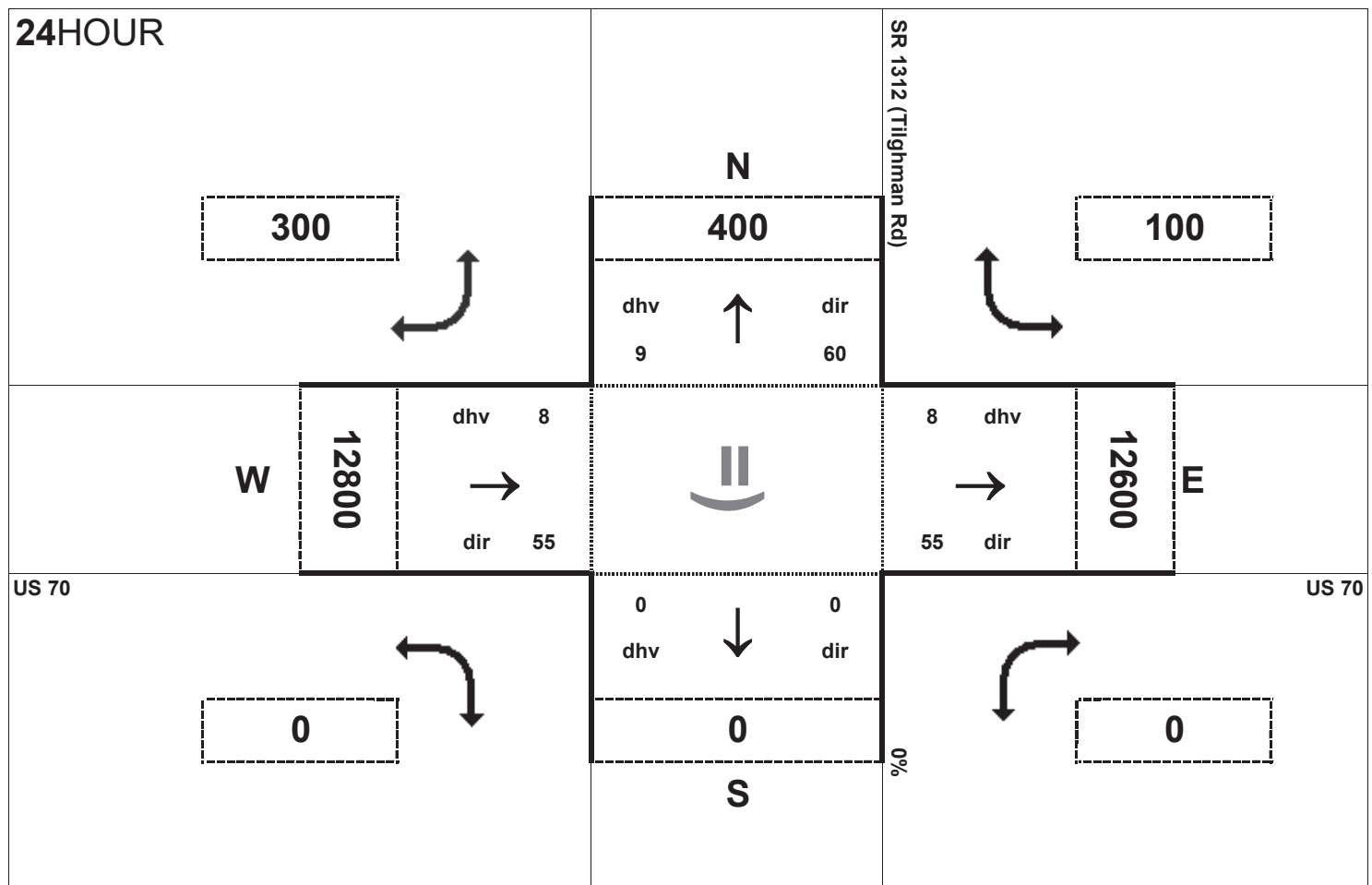
Peak Hour Volume Breakouts Report:
 458 Intersection of SR 1309 (Caswell Rd) at SR 1821 (British Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

Project:
 R-2553



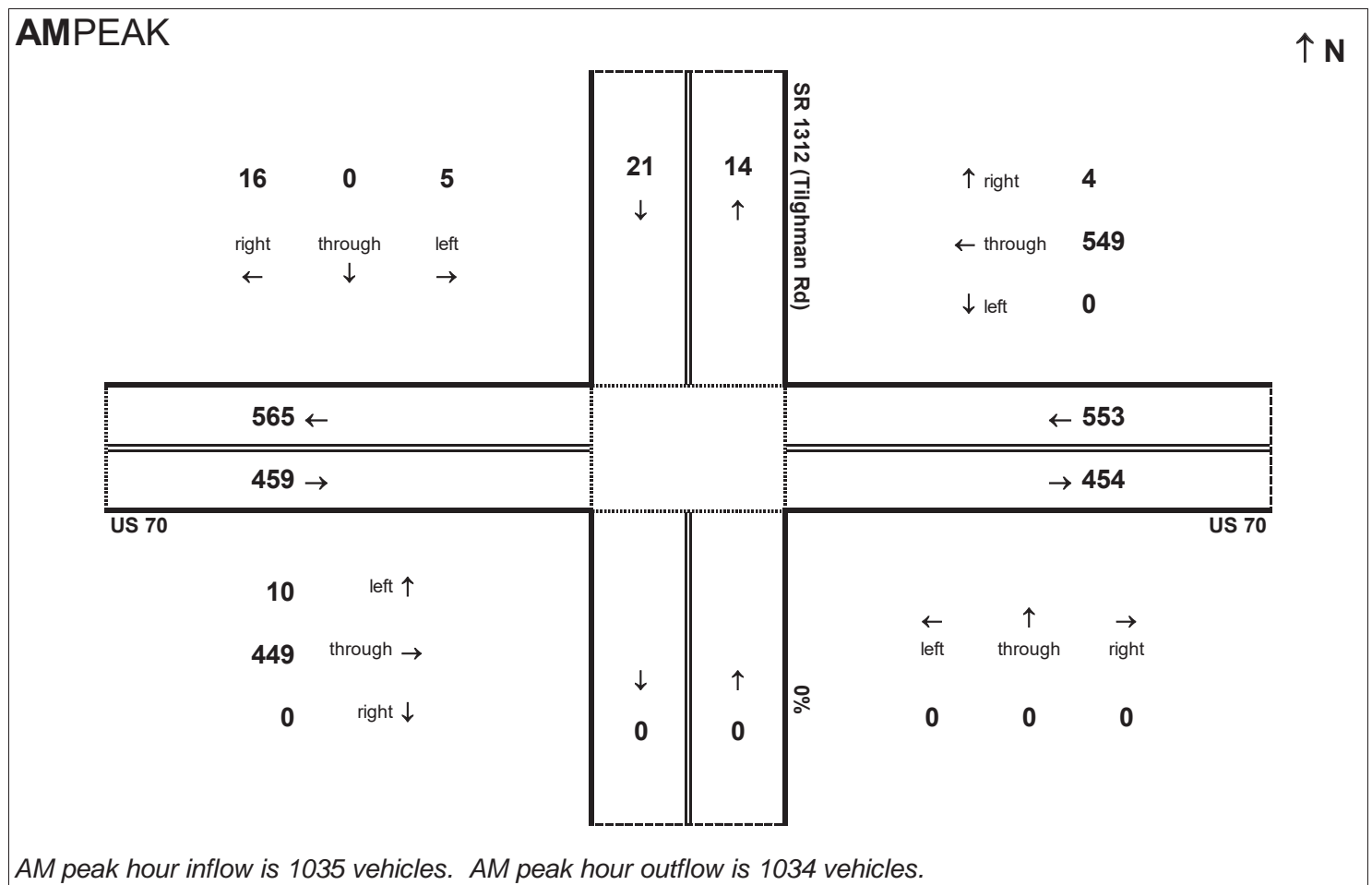


Peak Hour Volume Breakouts Report:
459 Intersection of US 70 and SR 1312 (Tilghman Rd)

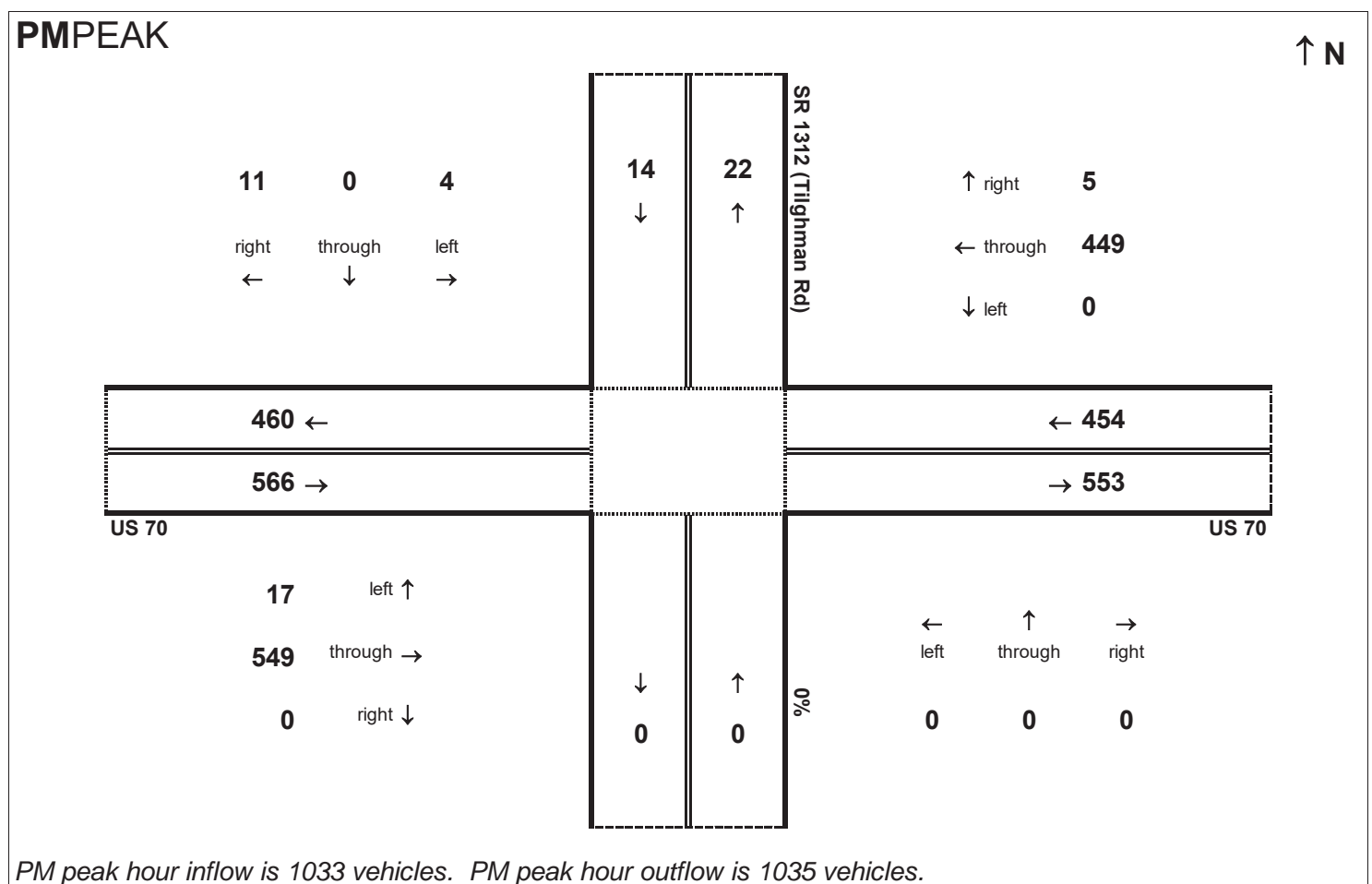
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

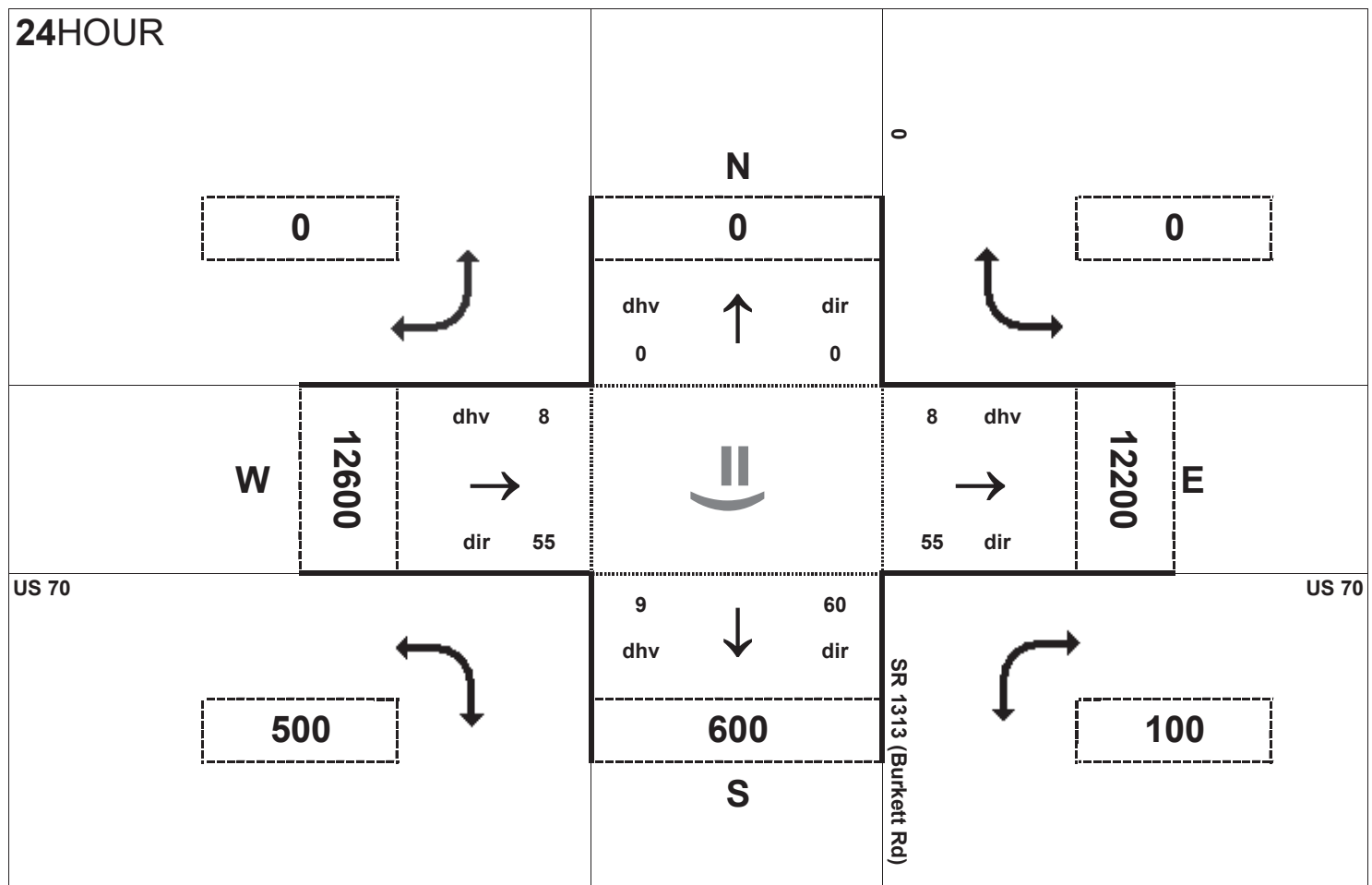
Project:
R-2553



AM peak hour inflow is 1035 vehicles. AM peak hour outflow is 1034 vehicles.



PM peak hour inflow is 1033 vehicles. PM peak hour outflow is 1035 vehicles.

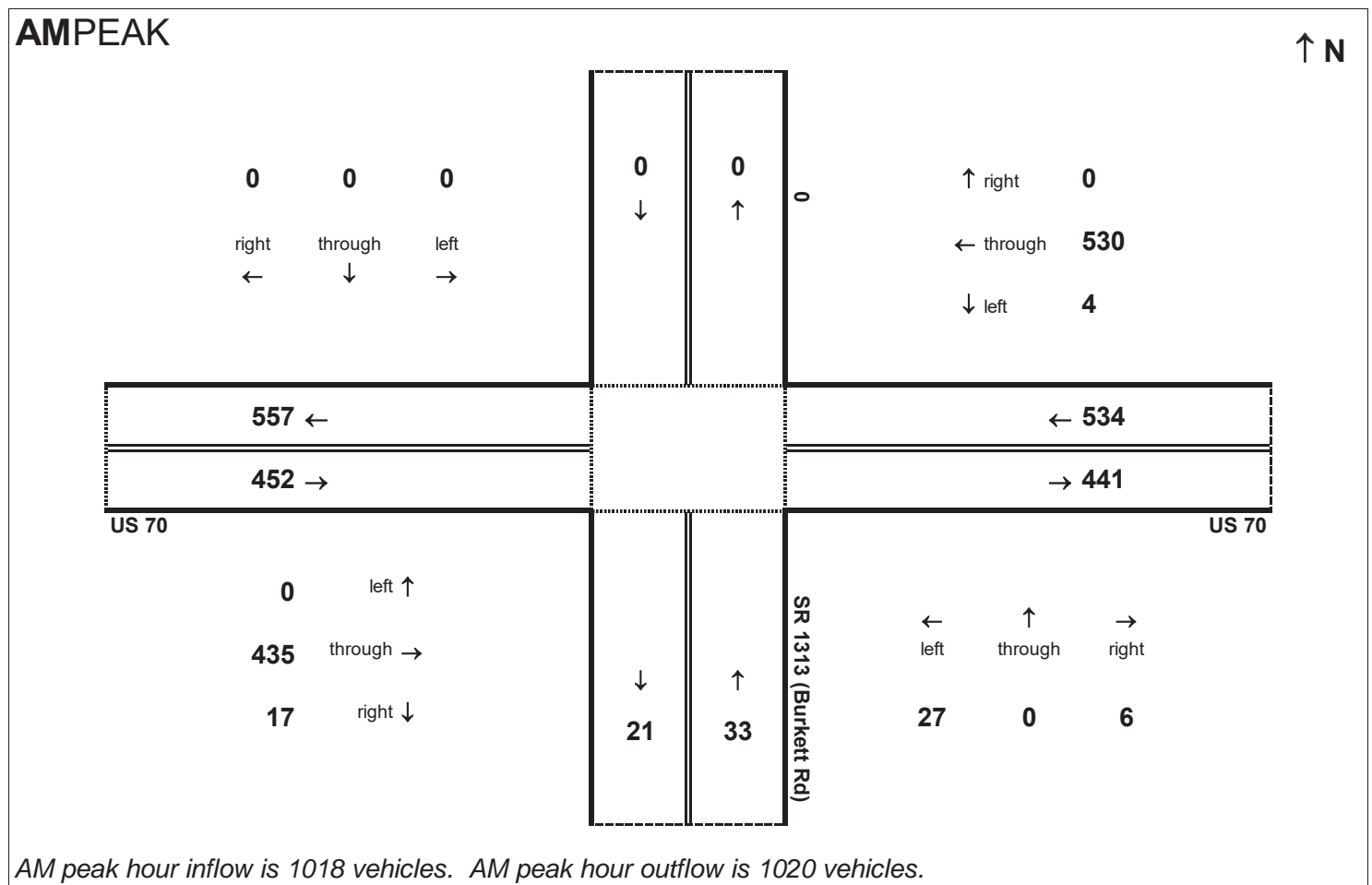


Peak Hour Volume Breakouts Report:
460 Intersection of US 70 and SR 1313 (Burkett Rd)

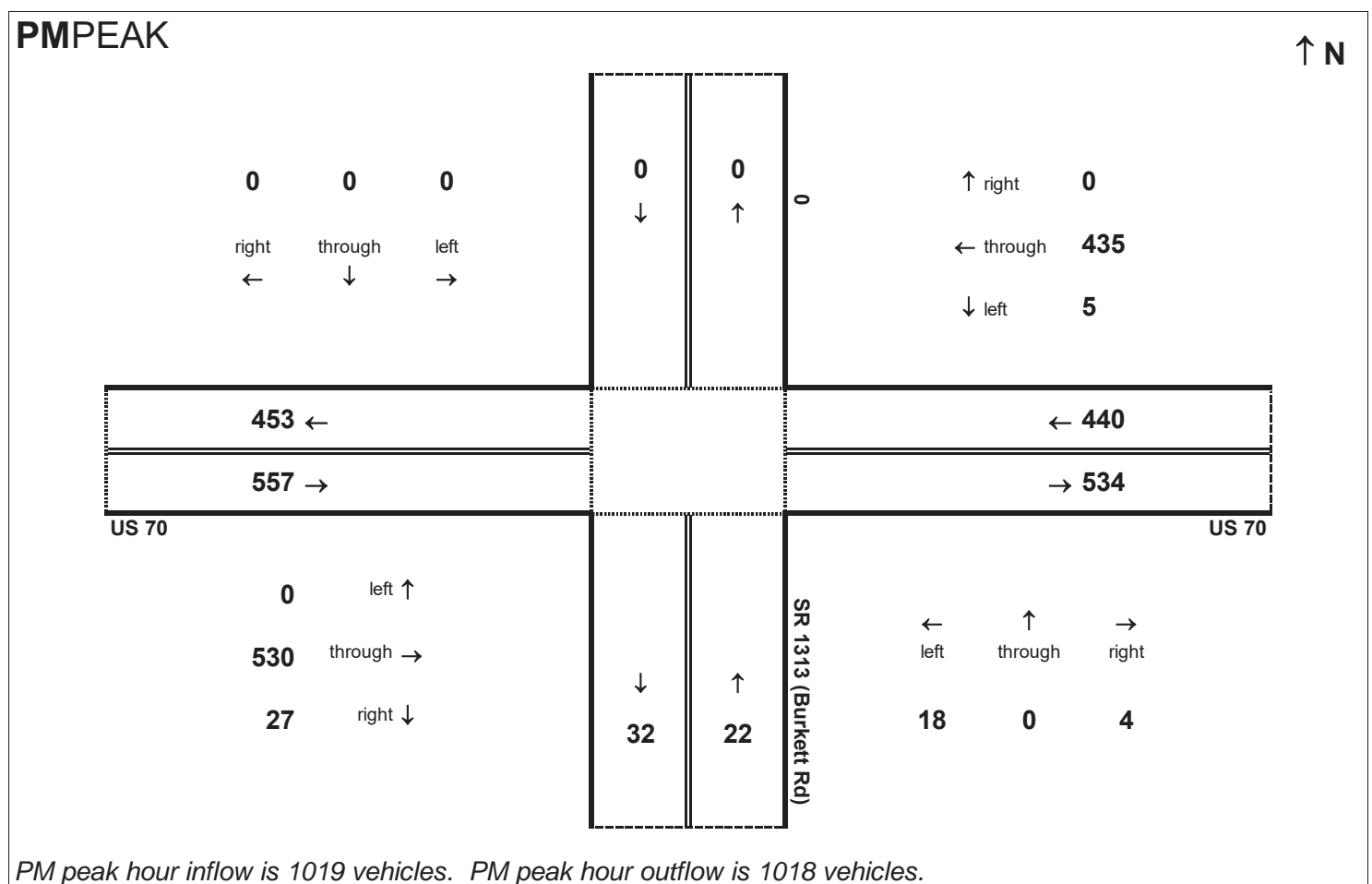
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

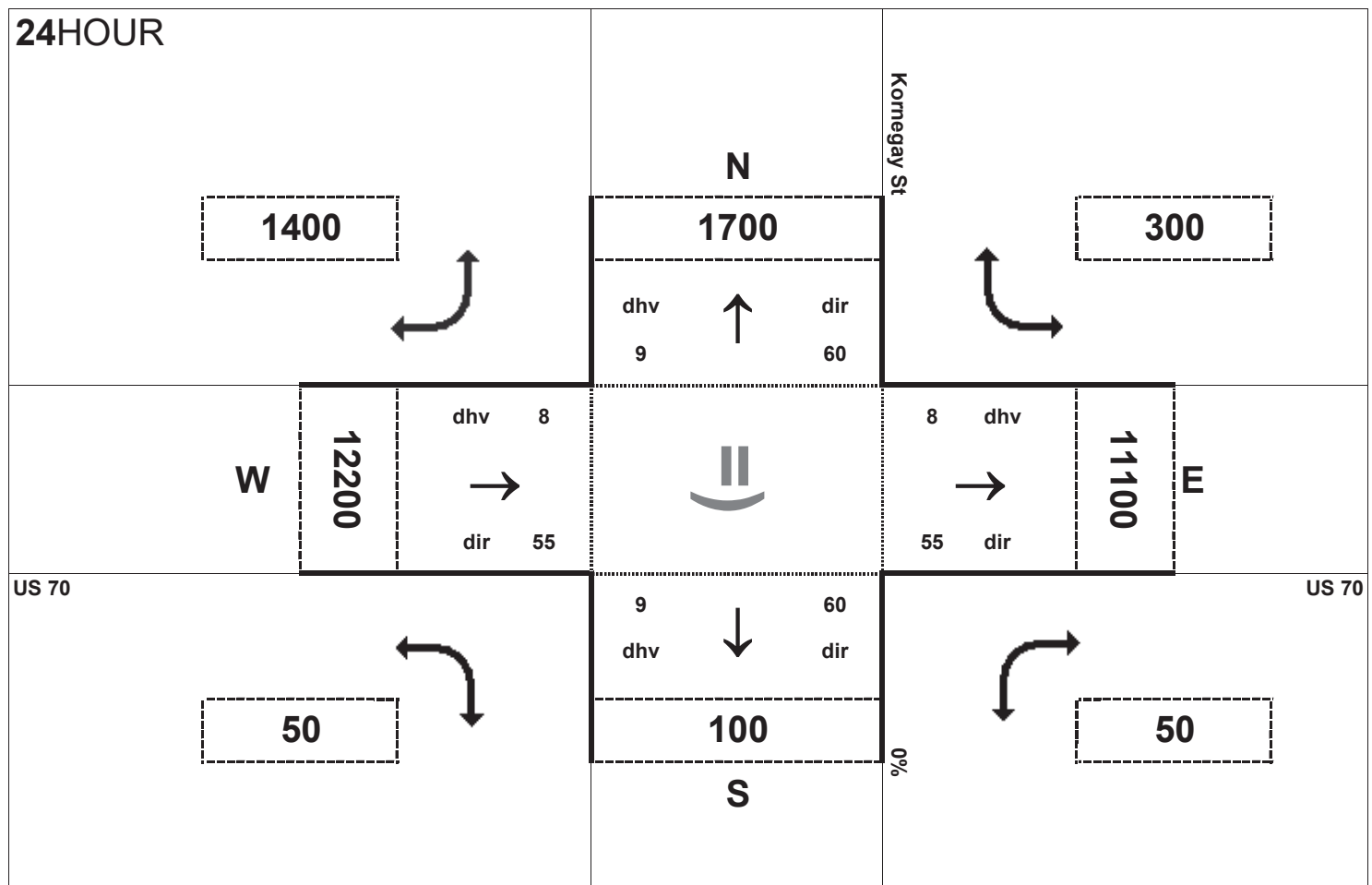
Project:
R-2553



AM peak hour inflow is 1018 vehicles. AM peak hour outflow is 1020 vehicles.



PM peak hour inflow is 1019 vehicles. PM peak hour outflow is 1018 vehicles.

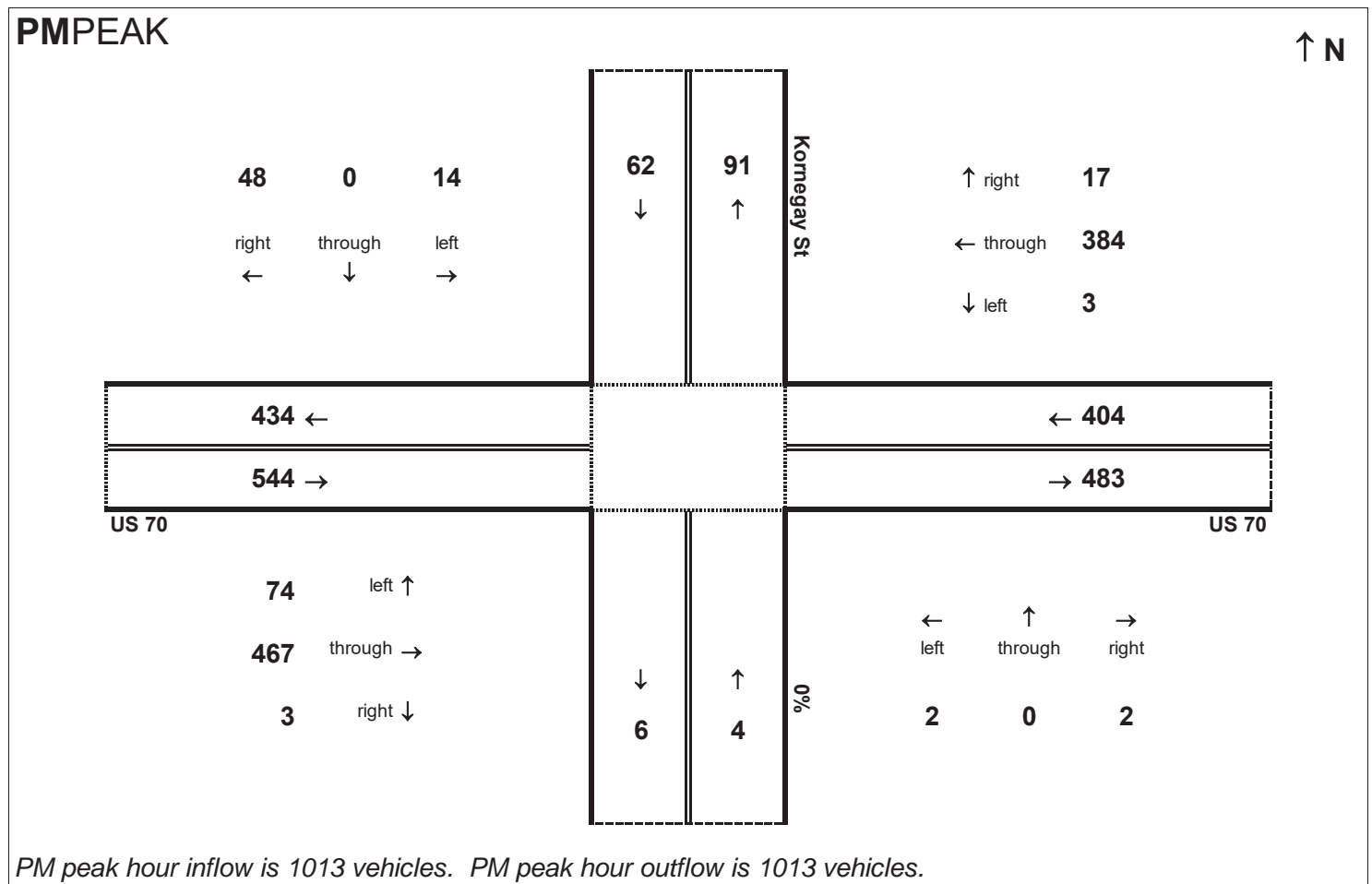
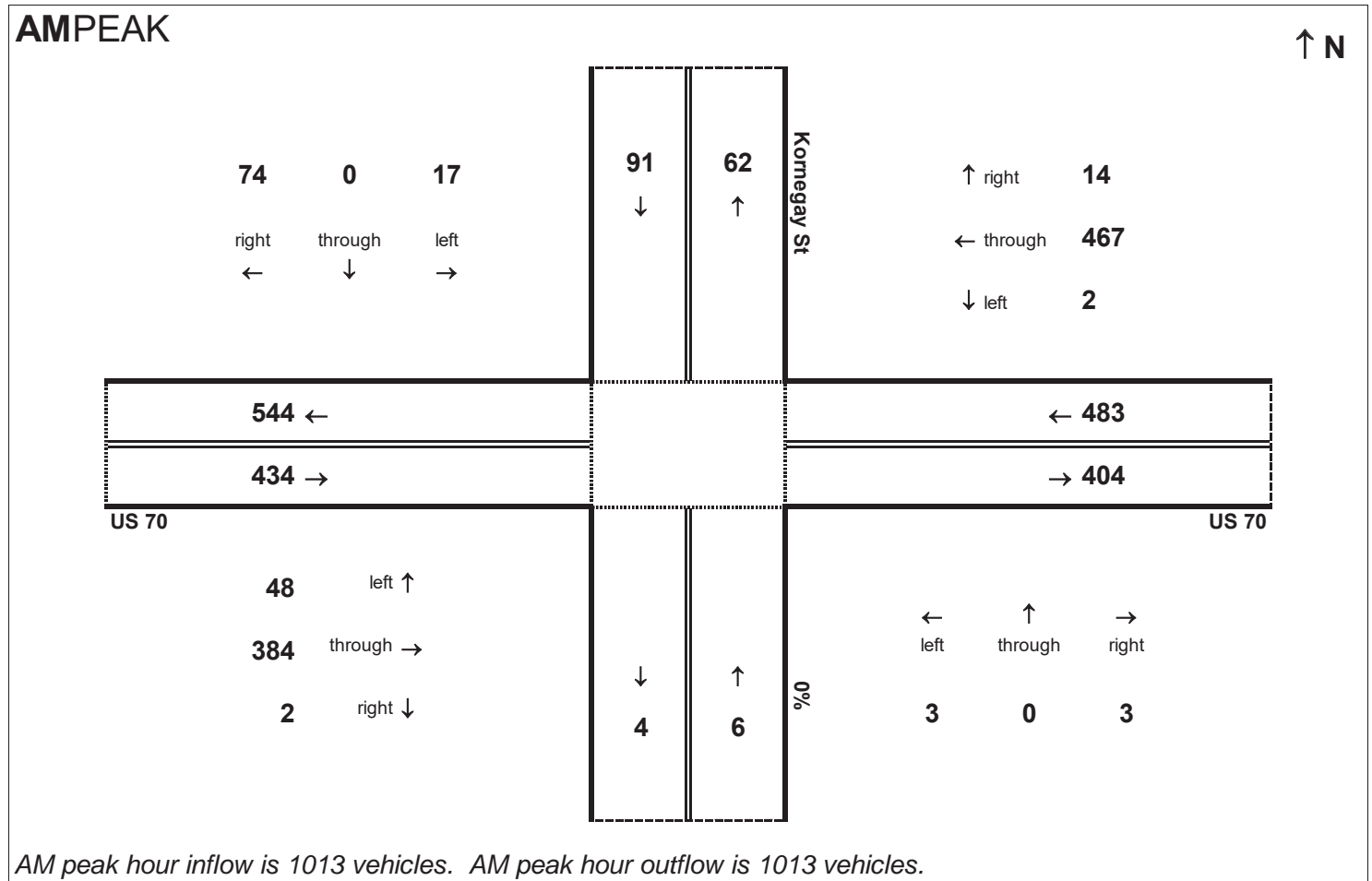


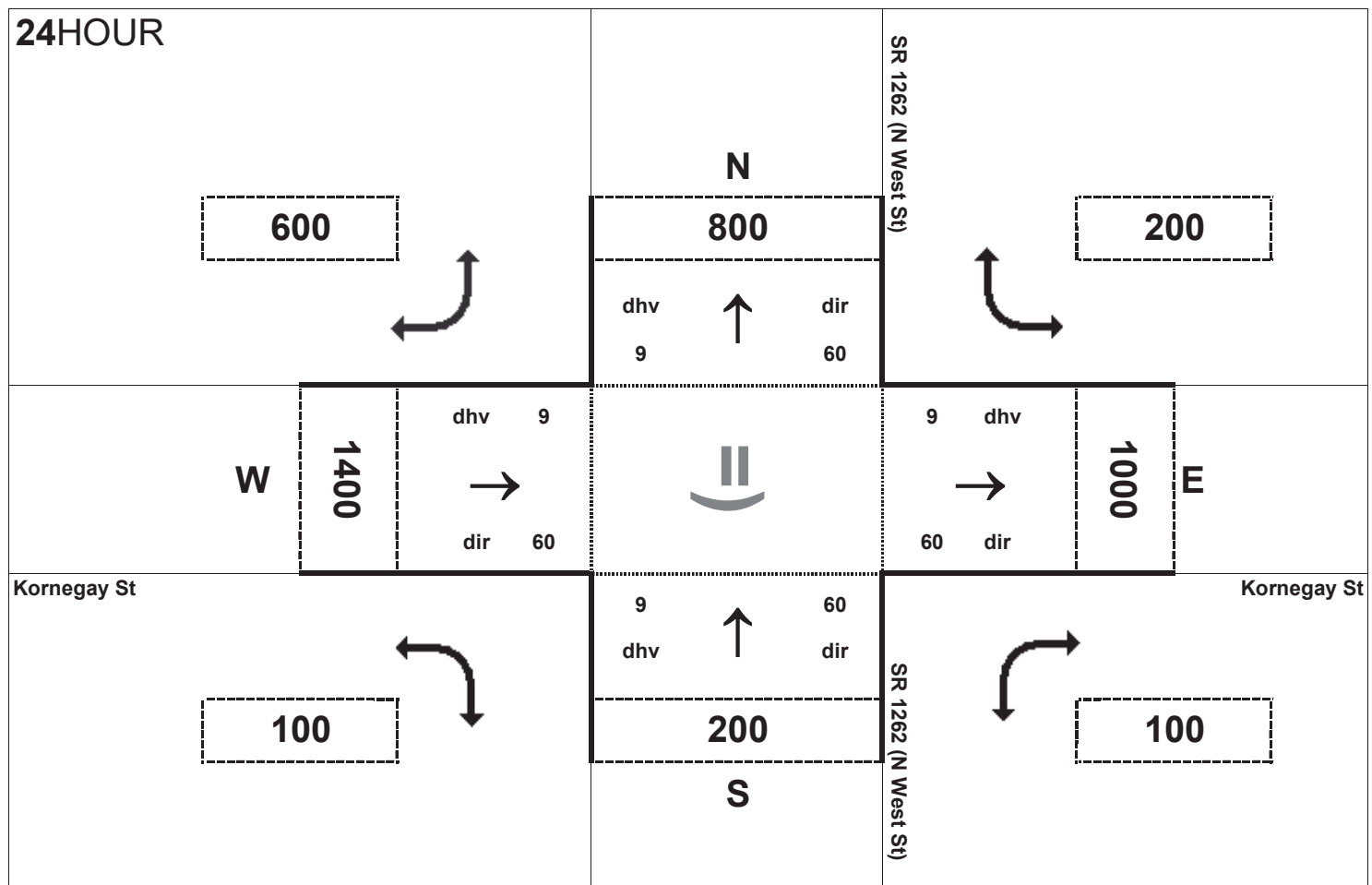
Peak Hour Volume Breakouts Report:
461 Intersection of US 70 and Kornegay St

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



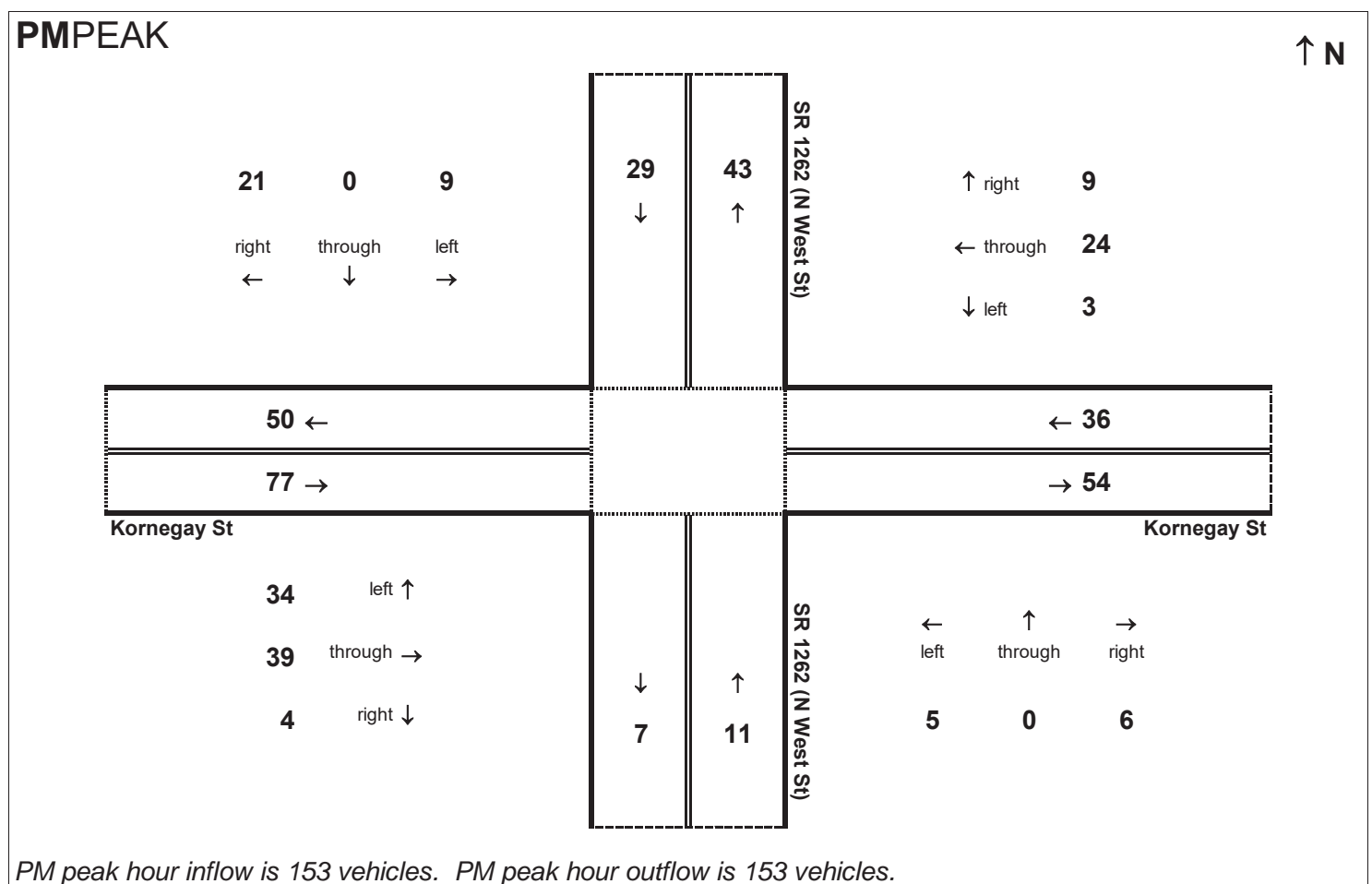
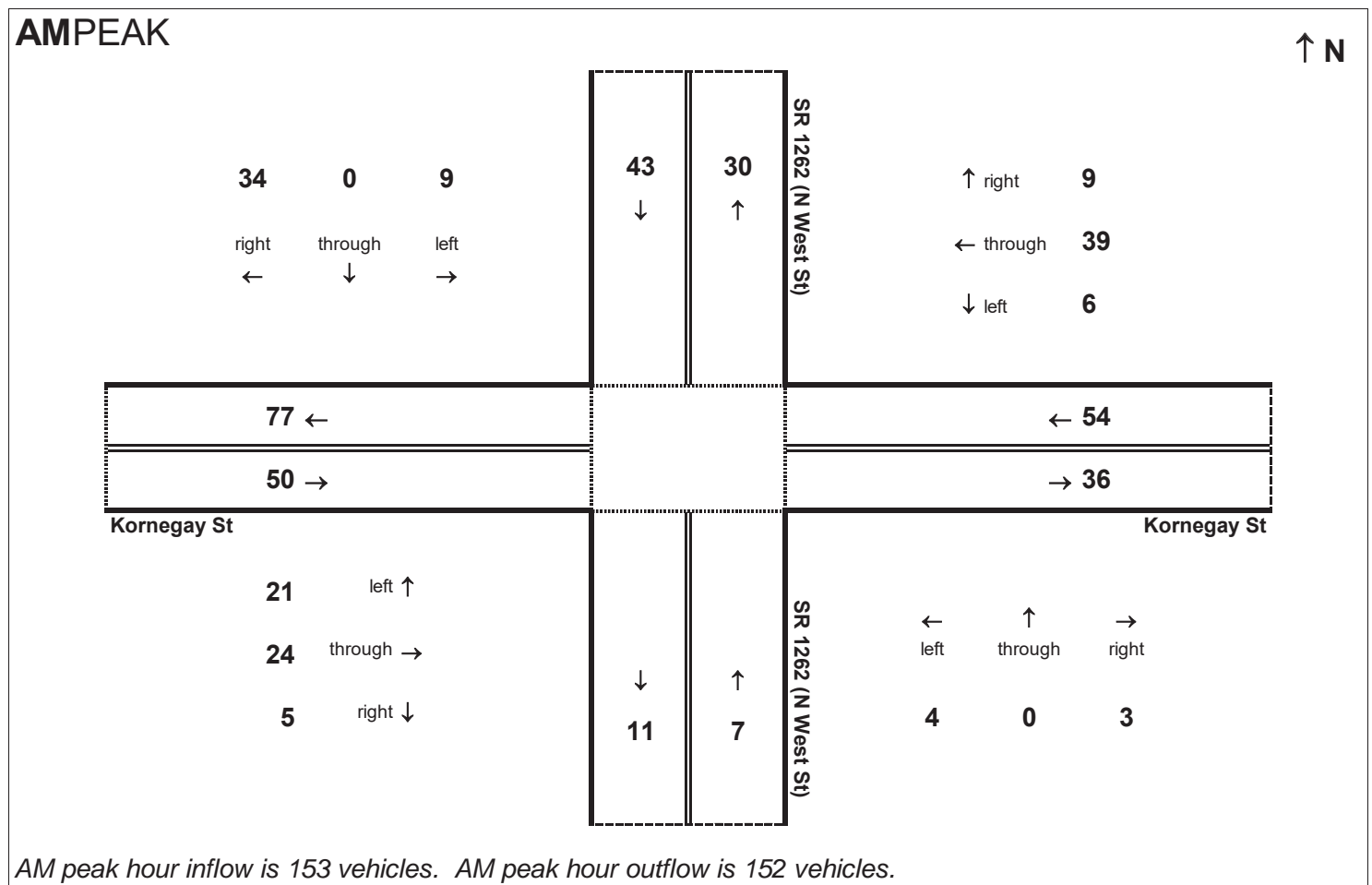


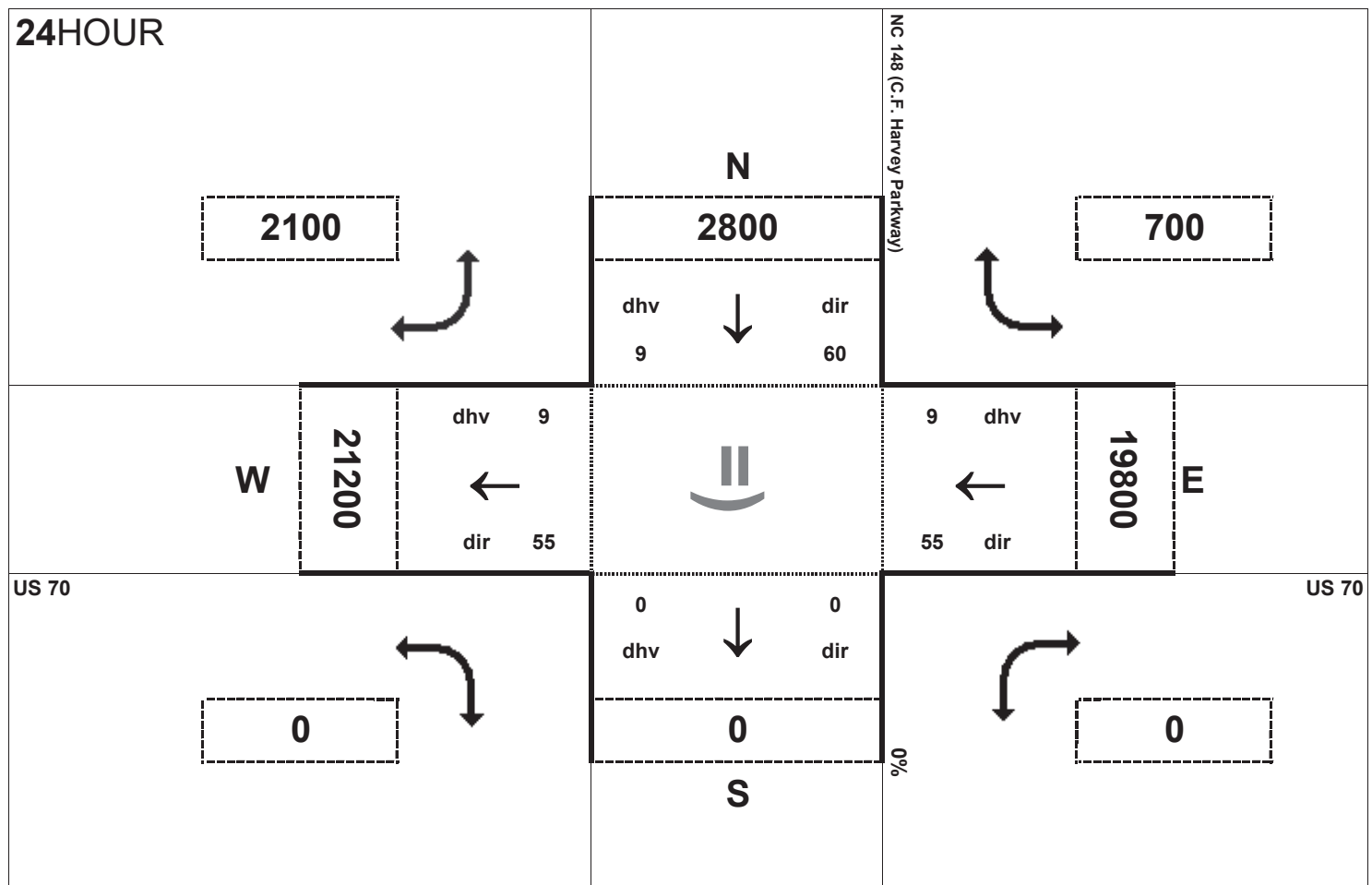
Peak Hour Volume Breakouts Report:
462 Intersection of SR 1262 (N West St) and Kornegay St

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



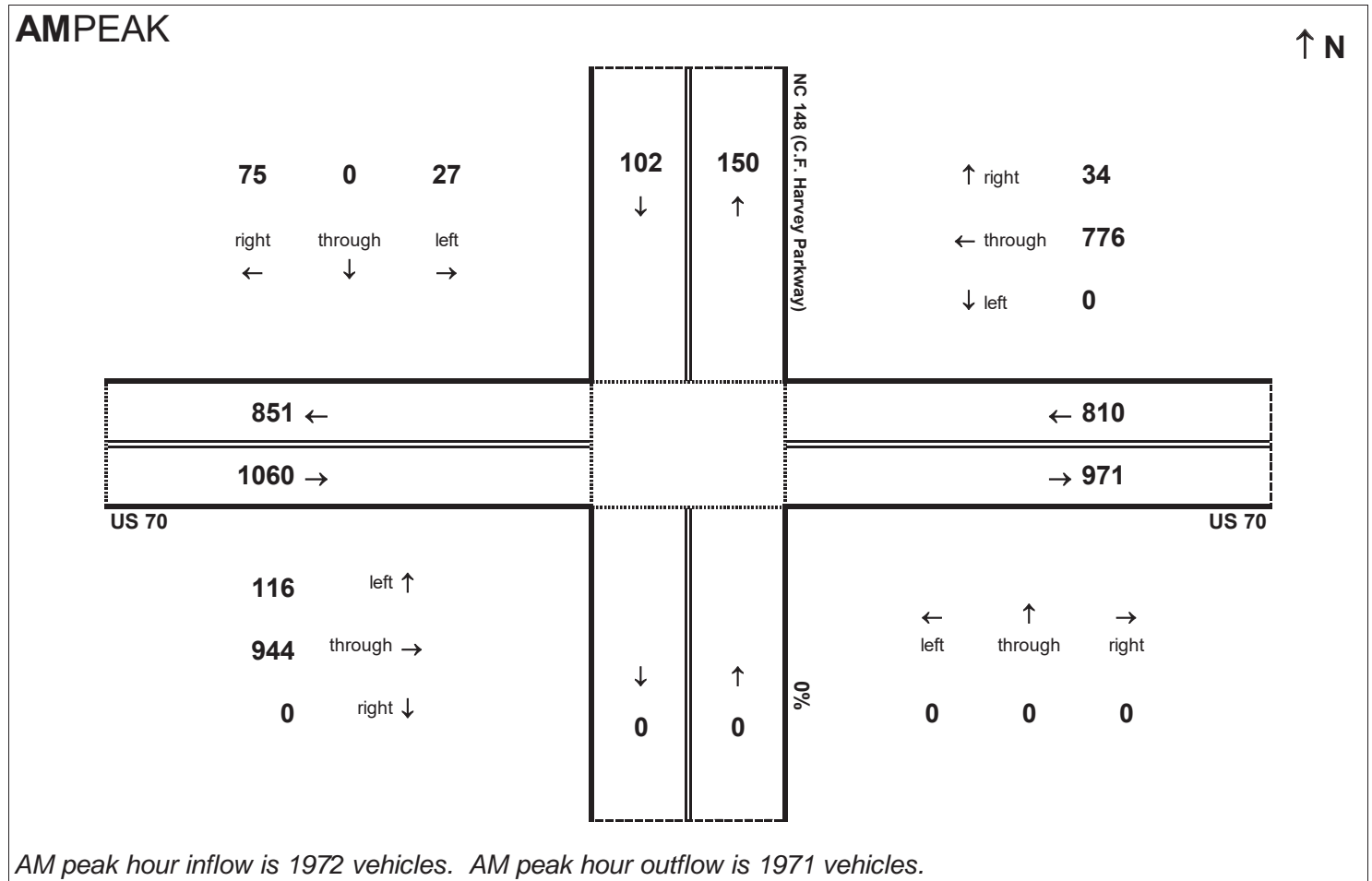


Peak Hour Volume Breakouts Report:
 System 1 Interchange of US 70 at NC 148 (C.F. Harvey Parkway)

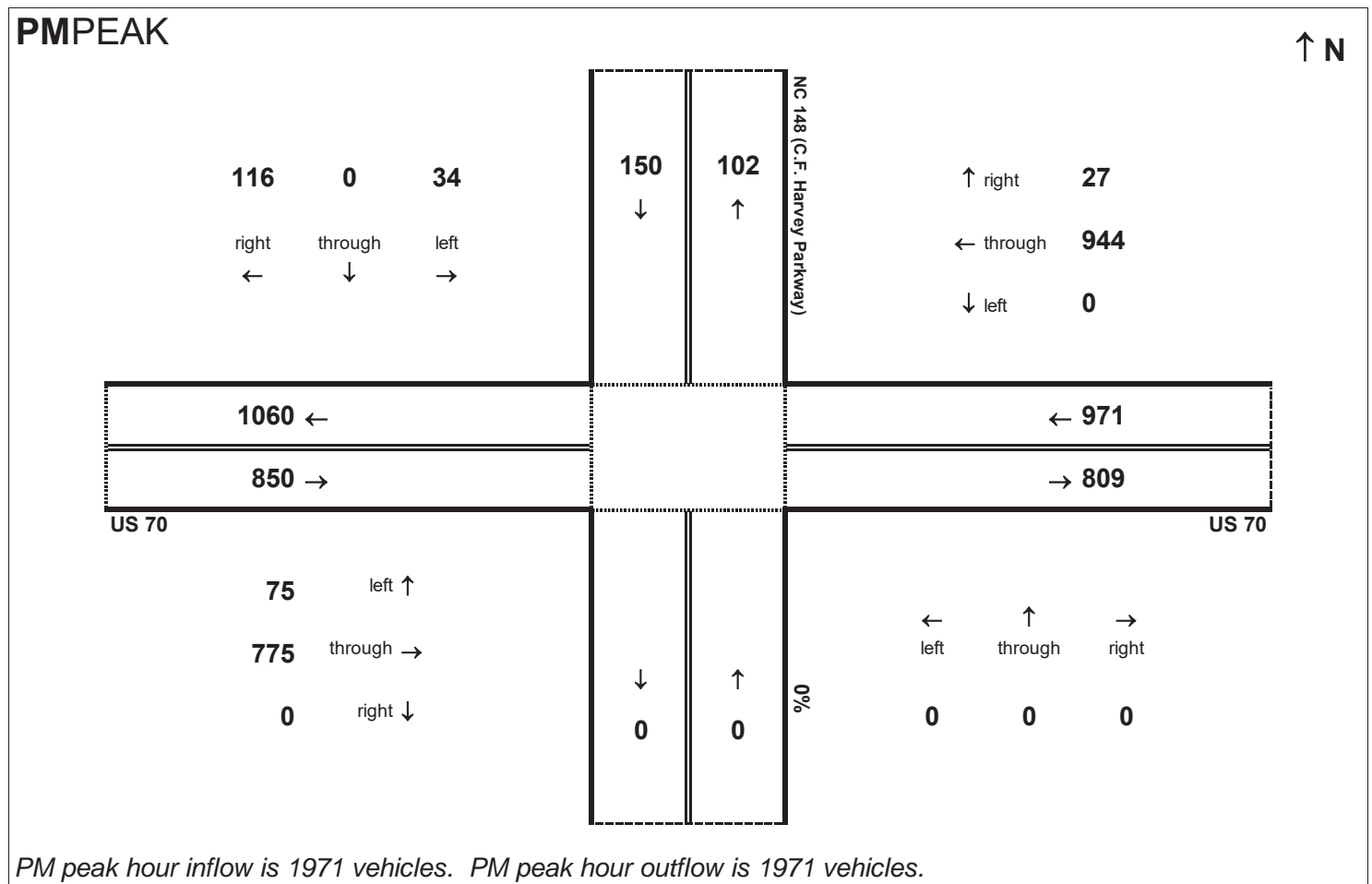
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2015 Base Year No-Build

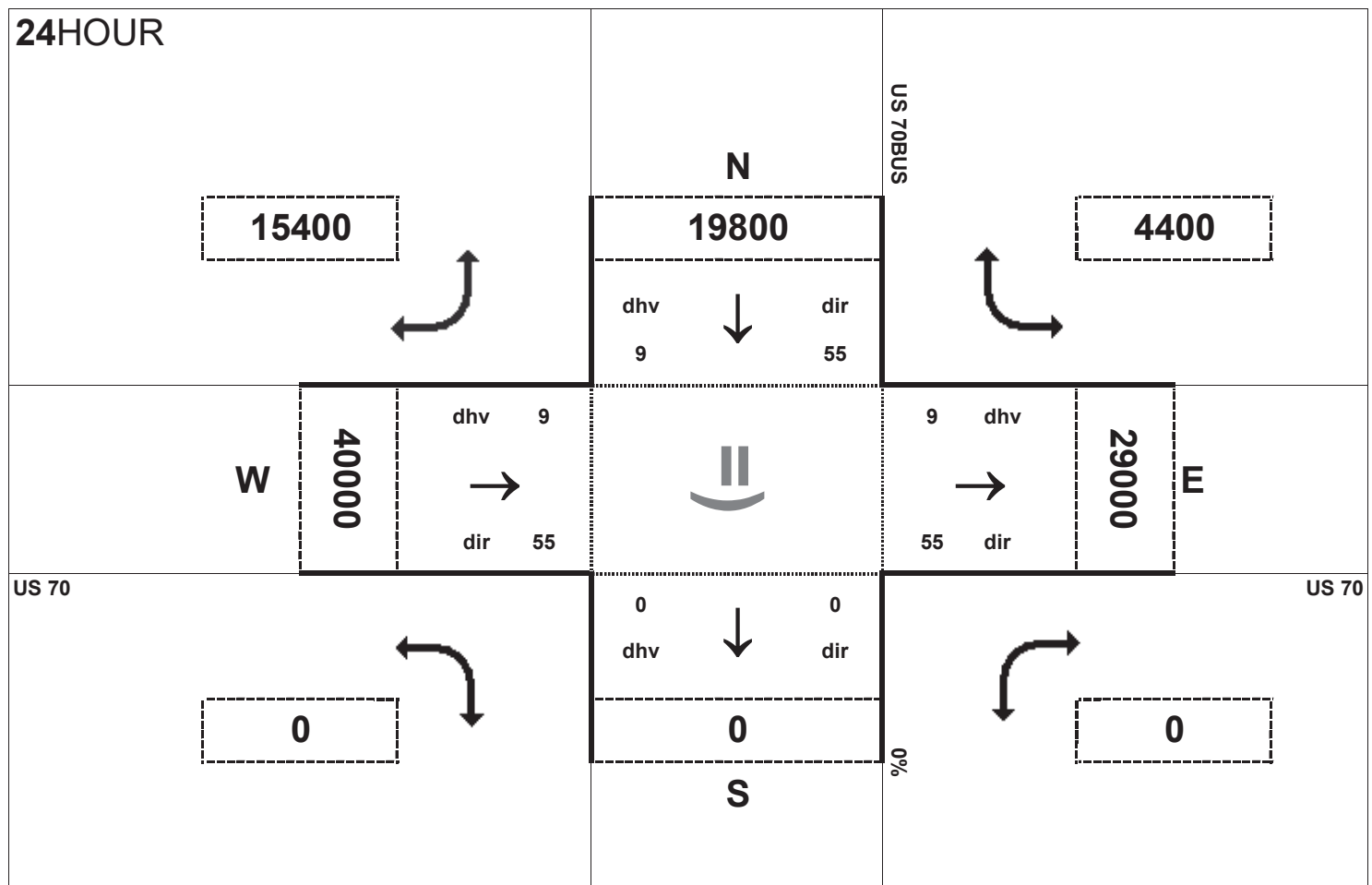
Project:
 R-2553



AM peak hour inflow is 1972 vehicles. AM peak hour outflow is 1971 vehicles.



PM peak hour inflow is 1971 vehicles. PM peak hour outflow is 1971 vehicles.

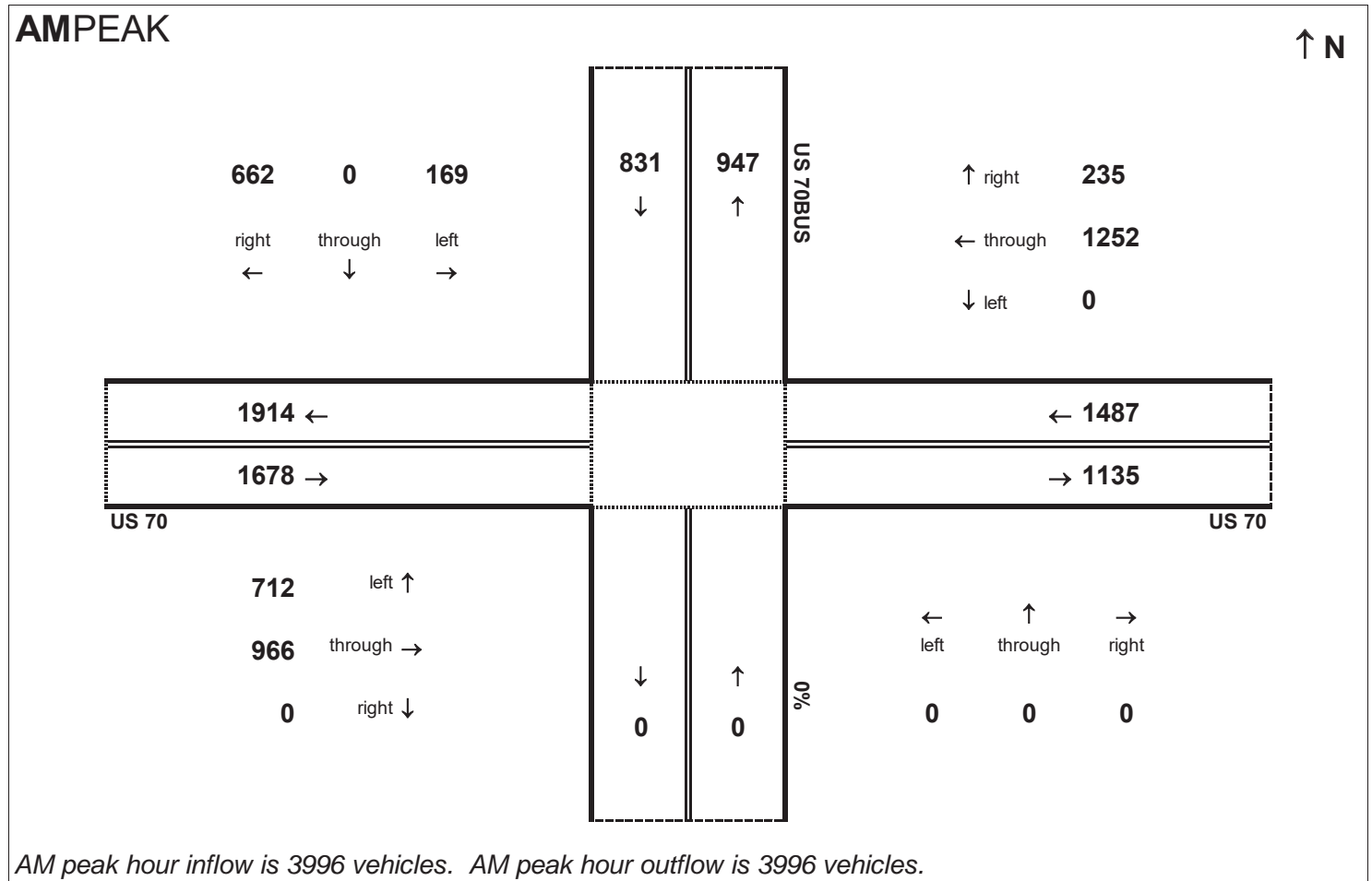


Peak Hour Volume Breakouts Report:
System 2 Interseciton of US 70 and US 70BUS

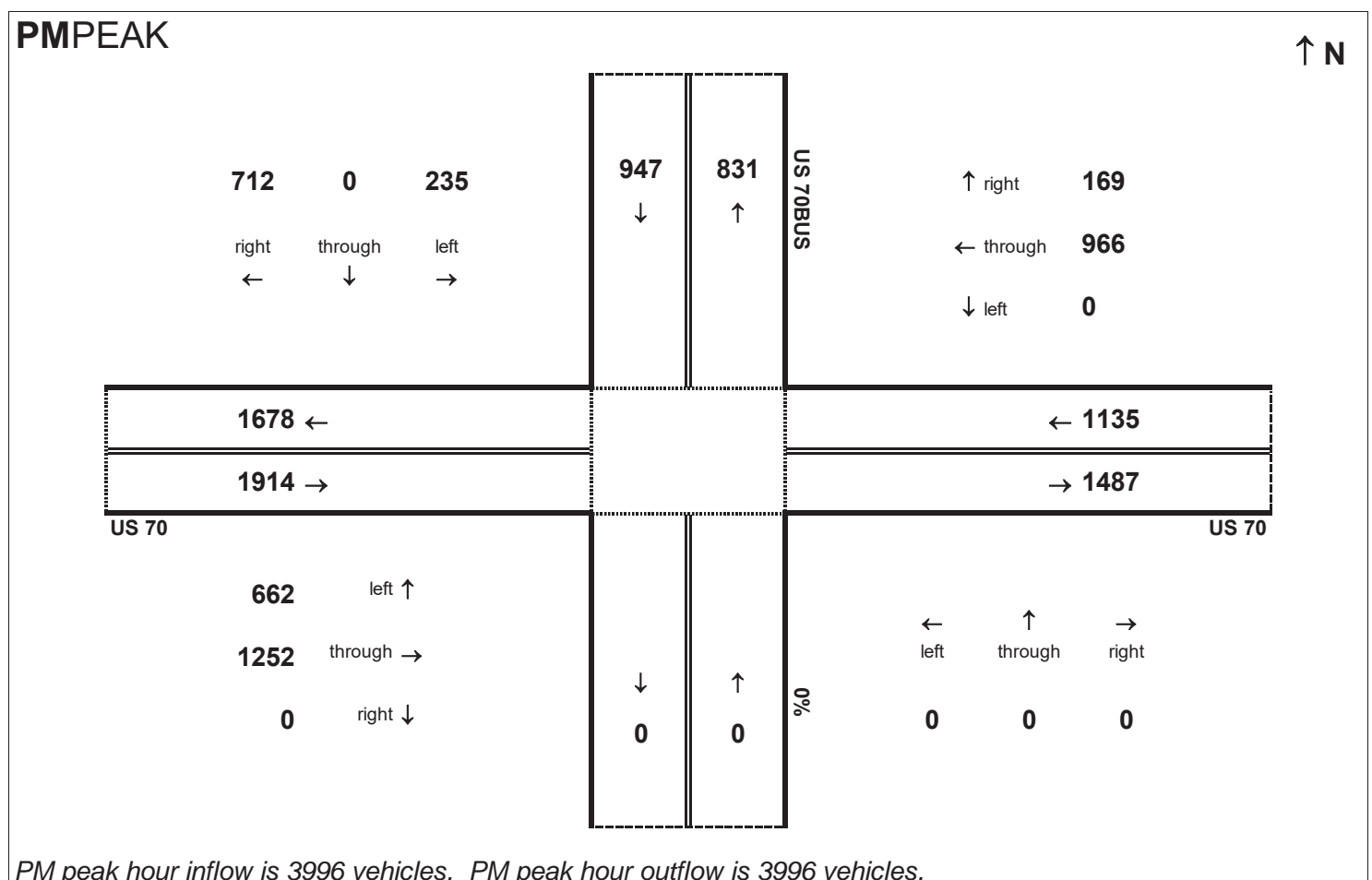
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2015 Base Year No-Build

Project:
R-2553



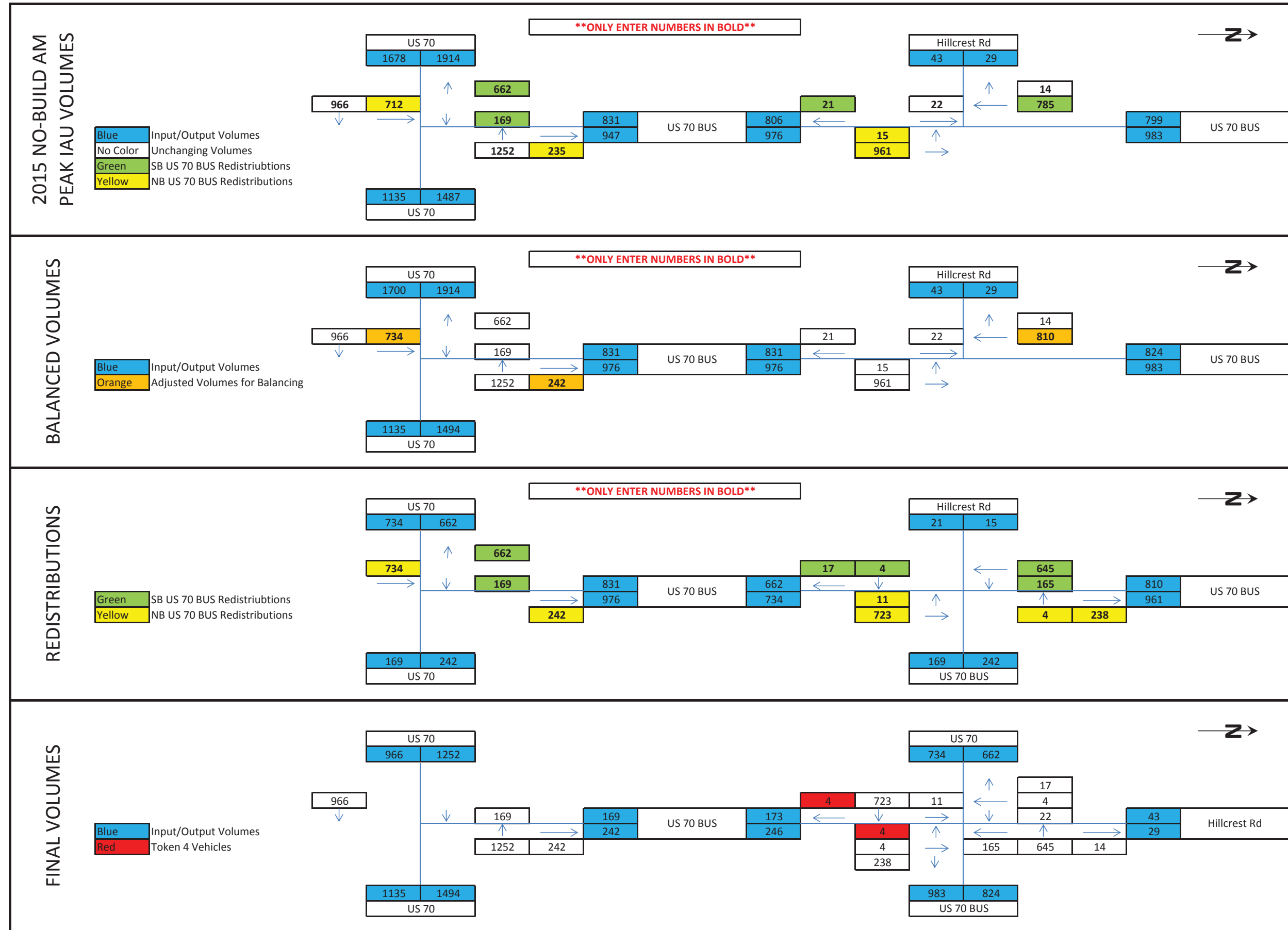
AM peak hour inflow is 3996 vehicles. AM peak hour outflow is 3996 vehicles.

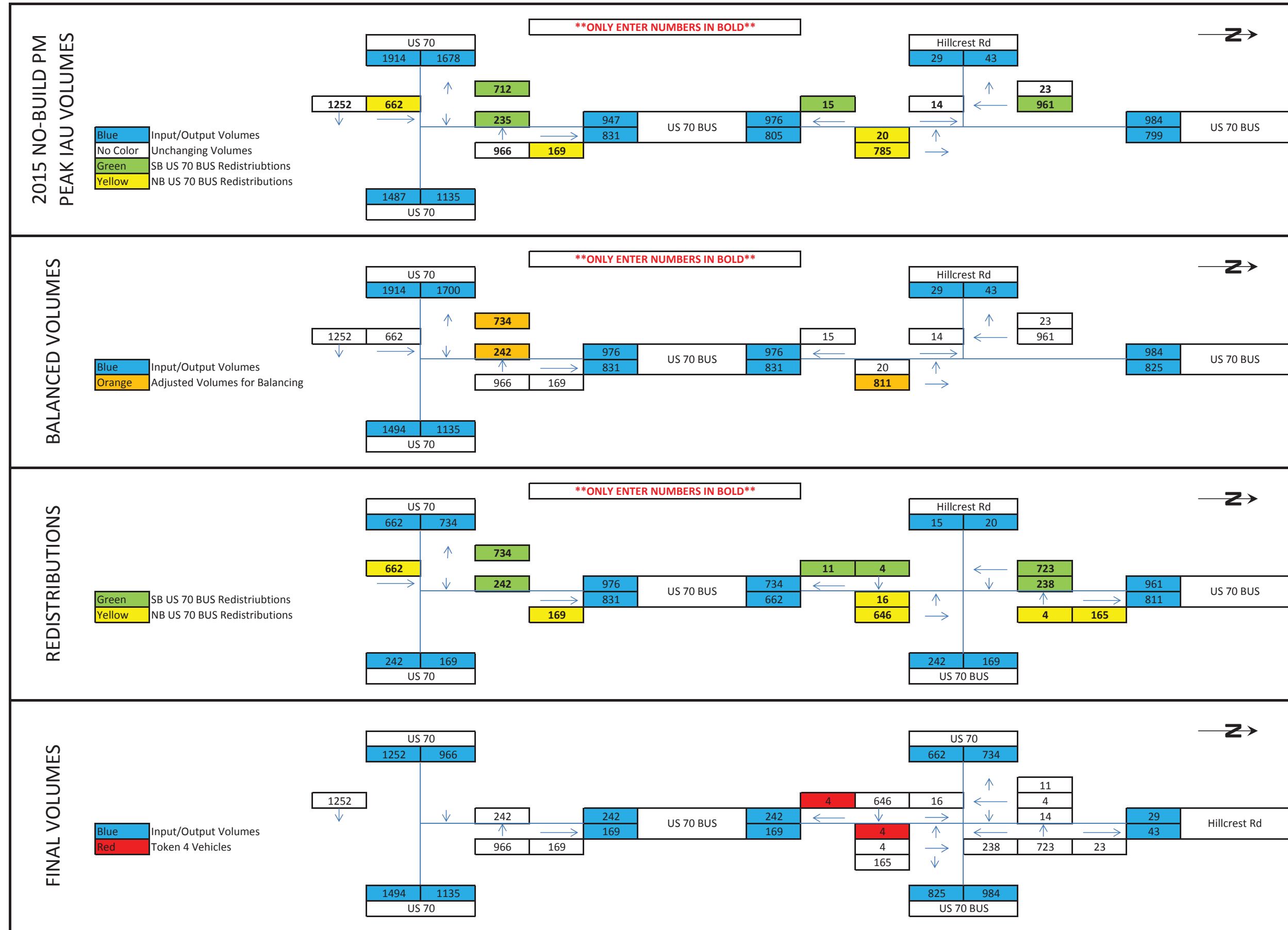


PM peak hour inflow is 3996 vehicles. PM peak hour outflow is 3996 vehicles.

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R-2553 - Kinston Bypass
Traffic Volume Redistributions from IAU





**2015 No-Build Alternative
Synchro Reports**

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R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

401: Jenny Lind Rd & NC 903
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	125	4	4	92	61	82
Future Volume (vph)	125	4	4	92	61	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1703	0	0	1823	1670	0
Flt Permitted	0.954			0.998		
Satd. Flow (perm)	1703	0	0	1823	1670	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1310			602	499	
Travel Time (s)	16.2			7.5	6.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	4%	4%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	0	0	106	159	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	18			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	22.1% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	4	4	92	61	82
Future Volume (Veh/h)	125	4	4	92	61	82
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	139	4	4	102	68	91
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	224	114	159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224	114	159			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	82	100	100			
cM capacity (veh/h)	754	929	1408			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	143	106	159			
Volume Left	139	4	0			
Volume Right	4	0	91			
cSH	758	1408	1700			
Volume to Capacity	0.19	0.00	0.09			
Queue Length 95th (ft)	17	0	0			
Control Delay (s)	10.9	0.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.9	0.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization		22.1%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

401: Jenny Lind Rd & NC 903
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	82	4	4	61	92	125
Future Volume (vph)	82	4	4	61	92	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1700	0	0	1821	1668	0
Flt Permitted	0.954			0.997		
Satd. Flow (perm)	1700	0	0	1821	1668	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1310			602	499	
Travel Time (s)	16.2			7.5	6.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	4%	4%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	0	72	241	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	18			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	82	4	4	61	92	125
Future Volume (Veh/h)	82	4	4	61	92	125
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	91	4	4	68	102	139
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	248	172	241			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	248	172	241			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	88	100	100			
cM capacity (veh/h)	730	862	1314			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	95	72	241			
Volume Left	91	4	0			
Volume Right	4	0	139			
cSH	735	1314	1700			
Volume to Capacity	0.13	0.00	0.14			
Queue Length 95th (ft)	11	0	0			
Control Delay (s)	10.6	0.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.6	0.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			24.0%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

402: NC 903 & US 70 EB Ramps
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↑	
Traffic Volume (vph)	48	4	33	0	0	0	0	163	53	37	111	0
Future Volume (vph)	48	4	33	0	0	0	0	163	53	37	111	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		150	225		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1730	1538	0	0	0	0	1810	1538	1719	1810	0
Flt Permitted		0.956								0.950		
Satd. Flow (perm)	0	1730	1538	0	0	0	0	1810	1538	1719	1810	0
Link Speed (mph)		45			30			55			55	
Link Distance (ft)		1311			824			499			723	
Travel Time (s)		19.9			18.7			6.2			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	37	0	0	0	0	181	59	41	123	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 25.2% ICU Level of Service A
 Analysis Period (min) 15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↑	
Traffic Volume (veh/h)	48	4	33	0	0	0	0	163	53	37	111	0
Future Volume (Veh/h)	48	4	33	0	0	0	0	163	53	37	111	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	53	4	37	0	0	0	0	181	59	41	123	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
			4									
Median type												
								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	386	445	123	388	386	181	123			240		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386	445	123	388	386	181	123			240		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	99	96	100	100	100	100			97		
cM capacity (veh/h)	554	488	920	526	526	854	1446			1309		
Direction, Lane #												
	EB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	94	181	59	41	123							
Volume Left	53	0	0	41	0							
Volume Right	37	0	59	0	0							
cSH	905	1700	1700	1309	1700							
Volume to Capacity	0.10	0.11	0.03	0.03	0.07							
Queue Length 95th (ft)	9	0	0	2	0							
Control Delay (s)	11.0	0.0	0.0	7.8	0.0							
Lane LOS	B			A								
Approach Delay (s)	11.0	0.0		2.0								
Approach LOS	B											
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			25.2%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

402: NC 903 & US 70 EB Ramps
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↖	↗	↑	
Traffic Volume (vph)	33	4	38	0	0	0	0	107	37	43	178	0
Future Volume (vph)	33	4	38	0	0	0	0	107	37	43	178	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		150	225		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1732	1538	0	0	0	0	1810	1538	1719	1810	0
Flt Permitted		0.957								0.950		
Satd. Flow (perm)	0	1732	1538	0	0	0	0	1810	1538	1719	1810	0
Link Speed (mph)		45			30			55			55	
Link Distance (ft)		1311			824			499			723	
Travel Time (s)		19.9			18.7			6.2			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	42	0	0	0	0	119	41	48	198	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↑	
Traffic Volume (veh/h)	33	4	38	0	0	0	0	107	37	43	178	0
Future Volume (Veh/h)	33	4	38	0	0	0	0	107	37	43	178	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	4	42	0	0	0	0	119	41	48	198	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			4									
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	413	454	198	415	413	119	198			160		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	413	454	198	415	413	119	198			160		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	99	95	100	100	100	100			97		
cM capacity (veh/h)	530	480	836	499	507	925	1357			1401		
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	83	119	41	48	198							
Volume Left	37	0	0	48	0							
Volume Right	42	0	41	0	0							
cSH	1063	1700	1700	1401	1700							
Volume to Capacity	0.08	0.07	0.02	0.03	0.12							
Queue Length 95th (ft)	6	0	0	3	0							
Control Delay (s)	11.0	0.0	0.0	7.7	0.0							
Lane LOS	B			A								
Approach Delay (s)	11.0	0.0		1.5								
Approach LOS	B											
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			25.5%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

403: NC 903 & US 70 WB Ramps
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	37	4	43	38	173	0	0	111	33
Future Volume (vph)	0	0	0	37	4	43	38	173	0	0	111	33
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	250		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1730	1538	1719	1810	0	0	1827	1553
Flt Permitted					0.956		0.950					
Satd. Flow (perm)	0	0	0	0	1730	1538	1719	1810	0	0	1827	1553
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1007			1367			723			825	
Travel Time (s)		22.9			20.7			9.0			10.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	45	48	42	192	0	0	123	37
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↖	↗	↖	↑			↗	↖	
Traffic Volume (veh/h)	0	0	0	37	4	43	38	173	0	0	111	33	
Future Volume (Veh/h)	0	0	0	37	4	43	38	173	0	0	111	33	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	0	0	0	41	4	48	42	192	0	0	123	37	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)						4							
Median type								None		None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	401	399	123	399	436	192	160				192		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	401	399	123	399	436	192	160				192		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	100	100	100	92	99	94	97				100		
cM capacity (veh/h)	508	518	920	543	494	842	1401				1370		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2								
Volume Total	93	42	192	123	37								
Volume Left	41	42	0	0	0								
Volume Right	48	0	0	0	37								
cSH	1114	1401	1700	1700	1700								
Volume to Capacity	0.08	0.03	0.11	0.07	0.02								
Queue Length 95th (ft)	7	2	0	0	0								
Control Delay (s)	10.9	7.6	0.0	0.0	0.0								
Lane LOS	B	A											
Approach Delay (s)	10.9	1.4	0.0										
Approach LOS	B												
Intersection Summary													
Average Delay			2.7										
Intersection Capacity Utilization			25.2%		ICU Level of Service				A				
Analysis Period (min)			15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

403: NC 903 & US 70 WB Ramps
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	53	4	37	33	107	0	0	168	48
Future Volume (vph)	0	0	0	53	4	37	33	107	0	0	168	48
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	250		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1728	1538	1719	1810	0	0	1827	1553
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1728	1538	1719	1810	0	0	1827	1553
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1007			1367			723			825	
Travel Time (s)		22.9			20.7			9.0			10.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	63	41	37	119	0	0	187	53
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↶	↷	↶	↷			↷	↷	
Traffic Volume (veh/h)	0	0	0	53	4	37	33	107	0	0	168	48	
Future Volume (Veh/h)	0	0	0	53	4	37	33	107	0	0	168	48	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	0	0	0	59	4	41	37	119	0	0	187	53	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)						4							
Median type								None		None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	382	380	187	380	433	119	240			119			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	382	380	187	380	433	119	240			119			
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	100	100	100	89	99	96	97			100			
cM capacity (veh/h)	530	532	847	560	497	925	1309			1457			
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2								
Volume Total	104	37	119	187	53								
Volume Left	59	37	0	0	0								
Volume Right	41	0	0	0	53								
cSH	918	1309	1700	1700	1700								
Volume to Capacity	0.11	0.03	0.07	0.11	0.03								
Queue Length 95th (ft)	10	2	0	0	0								
Control Delay (s)	11.0	7.8	0.0	0.0	0.0								
Lane LOS	B	A											
Approach Delay (s)	11.0	1.9	0.0										
Approach LOS	B												
Intersection Summary													
Average Delay			2.9										
Intersection Capacity Utilization			25.5%		ICU Level of Service				A				
Analysis Period (min)			15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

404: US 70 & Washington St
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	12	811	4	674	134	199	14
Future Volume (vph)	12	811	4	674	134	199	14
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175		300	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1703	3406	1524	1763	0
Flt Permitted	0.950		0.950			0.955	
Satd. Flow (perm)	1671	3343	1703	3406	1524	1763	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1478		1642		1057	
Travel Time (s)		18.3		20.4		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	13	901	4	749	149	237	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	12	811	4	674	134	199	14
Future Volume (Veh/h)	12	811	4	674	134	199	14
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	901	0	749	149	221	16
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	749		0			1226	374
vC1, stage 1 conf vol						749	
vC2, stage 2 conf vol						476	
vCu, unblocked vol	749		0			1226	374
tC, single (s)	4.3		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	98		0			40	97
cM capacity (veh/h)	817		0			368	623

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	13	450	450	374	374	149	0	237
Volume Left	13	0	0	0	0	0	0	221
Volume Right	0	0	0	0	0	149	0	16
cSH	817	1700	1700	1700	1700	1700	1700	379
Volume to Capacity	0.02	0.27	0.27	0.22	0.22	0.09	0.00	0.63
Queue Length 95th (ft)	1	0	0	0	0	0	0	102
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	0.0	0.0	29.1
Lane LOS	A							D
Approach Delay (s)	0.1			0.0				29.1
Approach LOS								D

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization	41.0%		ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

404: US 70 & Washington St
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	14	674	4	811	200	135	11
Future Volume (vph)	14	674	4	811	200	135	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175		300	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1703	3406	1524	1763	0
Flt Permitted	0.950		0.950			0.956	
Satd. Flow (perm)	1671	3343	1703	3406	1524	1763	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1478		1642		1057	
Travel Time (s)		18.3		20.4		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	16	749	4	901	222	162	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	14	674	4	811	200	135	11
Future Volume (Veh/h)	14	674	4	811	200	135	11
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	749	0	901	222	150	12
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	901		0			1308	450
vC1, stage 1 conf vol						901	
vC2, stage 2 conf vol						406	
vCu, unblocked vol	901		0			1308	450
tC, single (s)	4.3		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	98		0			54	98
cM capacity (veh/h)	713		0			324	556

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	16	374	374	450	450	222	0	162
Volume Left	16	0	0	0	0	0	0	150
Volume Right	0	0	0	0	0	222	0	12
cSH	713	1700	1700	1700	1700	1700	1700	335
Volume to Capacity	0.02	0.22	0.22	0.27	0.27	0.13	0.00	0.48
Queue Length 95th (ft)	2	0	0	0	0	0	0	63
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	0.0	0.0	25.4
Lane LOS	B							D
Approach Delay (s)	0.2			0.0				25.4
Approach LOS								D

Intersection Summary								
Average Delay			2.1					
Intersection Capacity Utilization			37.2%		ICU Level of Service			A
Analysis Period (min)			15					

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	918	10	15	742	26	15	22	28	48	21	77
Future Volume (vph)	53	918	10	15	742	26	15	22	28	48	21	77
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		450	275		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	1524	0	1734	0	0	1668	0
Flt Permitted	0.950			0.950				0.913			0.884	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1524	0	1602	0	0	1499	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55				55
Link Distance (ft)		1642			1972			1012				2836
Travel Time (s)		20.4			24.4			12.5				35.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1020	11	17	824	29	0	72	0	0	162	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	14.0	14.0	7.0	14.0	14.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0	21.0	14.0	21.0	21.0	14.0	14.0		14.0	14.0	
Total Split (s)	16.0	50.0	50.0	14.0	48.0	48.0	26.0	26.0		26.0	26.0	
Total Split (%)	17.8%	55.6%	55.6%	15.6%	53.3%	53.3%	28.9%	28.9%		28.9%	28.9%	
Maximum Green (s)	9.0	43.0	43.0	7.0	41.0	41.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0			-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0			5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effect Green (s)	10.3	57.6	57.6	9.0	50.7	50.7		16.8			16.8	
Actuated g/C Ratio	0.11	0.64	0.64	0.10	0.56	0.56		0.19			0.19	
v/c Ratio	0.30	0.47	0.01	0.10	0.43	0.03		0.24			0.58	
Control Delay	40.6	11.4	10.4	38.4	14.0	12.3		31.5			41.1	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	40.6	11.4	10.4	38.4	14.0	12.3		31.5			41.1	
LOS	D	B	B	D	B	B		C			D	
Approach Delay		12.9			14.5			31.5			41.1	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)	31	112	2	9	145	8		35			85	
Queue Length 95th (ft)	68	277	12	29	221	24		68			138	
Internal Link Dist (ft)		1562			1892			932			2756	
Turn Bay Length (ft)	250		450	275		150						
Base Capacity (vph)	211	2188	979	170	1927	862		377			353	
Starvation Cap Reductn	0	0	0	0	0	0		0			0	
Spillback Cap Reductn	0	0	0	0	0	0		0			0	
Storage Cap Reductn	0	0	0	0	0	0		0			0	
Reduced v/c Ratio	0.28	0.47	0.01	0.10	0.43	0.03		0.19			0.46	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.58
Intersection Signal Delay:	16.2
Intersection LOS:	B
Intersection Capacity Utilization:	56.8%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 405: Jim Sutton Rd/Willie Measley Rd & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	742	15	28	918	48	10	21	15	26	22	53
Future Volume (vph)	77	742	15	28	918	48	10	21	15	26	22	53
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		450	275		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	1524	0	1759	0	0	1675	0
Flt Permitted	0.950			0.950				0.928			0.896	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1524	0	1651	0	0	1521	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55				55
Link Distance (ft)		1642			1972			1012				2836
Travel Time (s)		20.4			24.4			12.5				35.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	824	17	31	1020	53	0	51	0	0	112	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	14.0	14.0	7.0	14.0	14.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0	21.0	14.0	21.0	21.0	14.0	14.0		14.0	14.0	
Total Split (s)	17.0	53.0	53.0	16.0	52.0	52.0	21.0	21.0		21.0	21.0	
Total Split (%)	18.9%	58.9%	58.9%	17.8%	57.8%	57.8%	23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	10.0	46.0	46.0	9.0	45.0	45.0	14.0	14.0		14.0	14.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0			-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0			5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effect Green (s)	11.3	61.0	61.0	9.6	56.5	56.5		13.8			13.8	
Actuated g/C Ratio	0.13	0.68	0.68	0.11	0.63	0.63		0.15			0.15	
v/c Ratio	0.40	0.36	0.02	0.17	0.48	0.06		0.20			0.48	
Control Delay	41.8	10.0	9.9	38.6	13.4	11.1		33.7			41.1	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	41.8	10.0	9.9	38.6	13.4	11.1		33.7			41.1	
LOS	D	B	A	D	B	B		C			D	
Approach Delay		13.0			14.0			33.7			41.1	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)	45	126	4	17	184	13		26			59	
Queue Length 95th (ft)	91	202	15	43	273	34		55			105	
Internal Link Dist (ft)		1562			1892			932			2756	
Turn Bay Length (ft)	250		450	275		150						
Base Capacity (vph)	232	2328	1041	208	2166	969		302			278	
Starvation Cap Reductn	0	0	0	0	0	0		0			0	
Spillback Cap Reductn	0	0	0	0	0	0		0			0	
Storage Cap Reductn	0	0	0	0	0	0		0			0	
Reduced v/c Ratio	0.37	0.35	0.02	0.15	0.47	0.05		0.17			0.40	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.48
Intersection Signal Delay:	15.4
Intersection LOS:	B
Intersection Capacity Utilization:	52.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 405: Jim Sutton Rd/Willie Measley Rd & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

406: Willie Measley Rd & Fields Station Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	26	20	24	4	12	4	17	46	4	5	75	29
Future Volume (vph)	26	20	24	4	12	4	17	46	4	5	75	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1743	0	0	1798	0	0	1826	0	0	1792	0
Flt Permitted		0.982			0.991			0.987			0.998	
Satd. Flow (perm)	0	1743	0	0	1798	0	0	1826	0	0	1792	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1345			1175			2836			1490	
Travel Time (s)		16.7			14.6			35.2			18.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	78	0	0	21	0	0	74	0	0	121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	26	20	24	4	12	4	17	46	4	5	75	29
Future Volume (Veh/h)	26	20	24	4	12	4	17	46	4	5	75	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	29	22	27	4	13	4	19	51	4	6	83	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	212	204	99	240	218	53	115			55		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	212	204	99	240	218	53	115			55		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	97	97	99	98	100	99			100		
cM capacity (veh/h)	721	681	957	668	669	1014	1474			1550		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	78	21	74	121								
Volume Left	29	4	19	6								
Volume Right	27	4	4	32								
cSH	774	715	1474	1550								
Volume to Capacity	0.10	0.03	0.01	0.00								
Queue Length 95th (ft)	8	2	1	0								
Control Delay (s)	10.2	10.2	2.0	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.2	10.2	2.0	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			23.5%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

406: Willie Measley Rd & Fields Station Rd
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	29	12	17	4	20	5	24	75	4	4	46	26
Future Volume (vph)	29	12	17	4	20	5	24	75	4	4	46	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1745	0	0	1805	0	0	1831	0	0	1772	0
Flt Permitted		0.976			0.994			0.988			0.998	
Satd. Flow (perm)	0	1745	0	0	1805	0	0	1831	0	0	1772	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1345			1175			2836			1490	
Travel Time (s)		16.7			14.6			35.2			18.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	32	0	0	114	0	0	84	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	






















Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	29	12	17	4	20	5	24	75	4	4	46	26
Future Volume (Veh/h)	29	12	17	4	20	5	24	75	4	4	46	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	32	13	19	4	22	6	27	83	4	4	51	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	230	214	66	238	227	85	80			87		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	230	214	66	238	227	85	80			87		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	98	98	99	97	99	98			100		
cM capacity (veh/h)	692	669	998	682	659	974	1518			1509		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	64	32	114	84								
Volume Left	32	4	27	4								
Volume Right	19	6	4	29								
cSH	756	704	1518	1509								
Volume to Capacity	0.08	0.05	0.02	0.00								
Queue Length 95th (ft)	7	4	1	0								
Control Delay (s)	10.2	10.4	1.9	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.2	10.4	1.9	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			27.7%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

407: Ken's Grill Driveway/Norbert Hill Rd & US 70
 2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	967	4	4	791	12	4	4	4	20	4	9
Future Volume (vph)	7	967	4	4	791	12	4	4	4	20	4	9
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		100	150		200	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	1524	0	1750	0	0	1738	0
Flt Permitted	0.950			0.950				0.984			0.970	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1524	0	1750	0	0	1738	0
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1972			1238			175			1019	
Travel Time (s)		24.4			15.3			4.8			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	1074	4	4	879	13	0	12	0	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.7%
Analysis Period (min)	15
	ICU Level of Service A
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	7	967	4	4	791	12	4	4	4	20	4	9				
Future Volume (Veh/h)	7	967	4	4	791	12	4	4	4	20	4	9				
Sign Control	Free			Free			Stop			Stop						
Grade	0%			0%			0%			0%						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90				
Hourly flow rate (vph)	8	1074	4	4	879	13	4	4	4	22	4	10				
Pedestrians																
Lane Width (ft)																
Walking Speed (ft/s)																
Percent Blockage																
Right turn flare (veh)																
Median type	Raised			Raised												
Median storage (veh)	2			2												
Upstream signal (ft)																
pX, platoon unblocked																
vC, conflicting volume	892		1078		1550		1990		537		1446		1981		440	
vC1, stage 1 conf vol					1090		1090				887		887			
vC2, stage 2 conf vol					460		900				559		1094			
vCu, unblocked vol	892		1078		1550		1990		537		1446		1981		440	
tC, single (s)	4.2		4.2		7.5		6.5		6.9		7.5		6.5		6.9	
tC, 2 stage (s)					6.5		5.5				6.5		5.5			
tF (s)	2.3		2.3		3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	99		99		98		98		99		92		98		98	
cM capacity (veh/h)	731		620		210		222		488		260		222		565	

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1	
Volume Total	8	537	537	4	4	440	440	13	12	36	
Volume Left	8	0	0	0	4	0	0	0	4	22	
Volume Right	0	0	0	4	0	0	0	13	4	10	
cSH	731	1700	1700	1700	620	1700	1700	1700	265	299	
Volume to Capacity	0.01	0.32	0.32	0.00	0.01	0.26	0.26	0.01	0.05	0.12	
Queue Length 95th (ft)	1	0	0	0	0	0	0	0	4	10	
Control Delay (s)	10.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	19.2	18.7	
Lane LOS	A			B			C			C	
Approach Delay (s)	0.1		0.0		0.0		0.0		19.2		18.7
Approach LOS									C		C

Intersection Summary												
Average Delay	0.5											
Intersection Capacity Utilization	36.7%			ICU Level of Service			A					
Analysis Period (min)	15											

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

407: Ken's Grill Driveway/Norbert Hill Rd & US 70
 2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	791	4	4	967	20	4	4	4	13	4	6
Future Volume (vph)	8	791	4	4	967	20	4	4	4	13	4	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		100	150		200	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	1524	0	1750	0	0	1744	0
Flt Permitted	0.950			0.950				0.984			0.973	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1524	0	1750	0	0	1744	0
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1972			1238			175			1019	
Travel Time (s)		24.4			15.3			4.8			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	879	4	4	1074	22	0	12	0	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	791	4	4	967	20	4	4	4	13	4	6
Future Volume (Veh/h)	8	791	4	4	967	20	4	4	4	13	4	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	879	4	4	1074	22	4	4	4	14	4	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1096			883			1451	2001	440	1546	1983	537
vC1, stage 1 conf vol							897	897		1082	1082	
vC2, stage 2 conf vol							554	1104		464	901	
vCu, unblocked vol	1096			883			1451	2001	440	1546	1983	537
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			98	98	99	93	98	99
cM capacity (veh/h)	610			737			255	217	565	213	224	488

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	9	440	440	4	4	537	537	22	12	25
Volume Left	9	0	0	0	4	0	0	0	4	14
Volume Right	0	0	0	4	0	0	0	22	4	7
cSH	610	1700	1700	1700	737	1700	1700	1700	292	255
Volume to Capacity	0.01	0.26	0.26	0.00	0.01	0.32	0.32	0.01	0.04	0.10
Queue Length 95th (ft)	1	0	0	0	0	0	0	0	3	8
Control Delay (s)	11.0	0.0	0.0	0.0	9.9	0.0	0.0	0.0	17.9	20.6
Lane LOS	B				A				C	C
Approach Delay (s)	0.1				0.0				17.9	20.6
Approach LOS									C	C

Intersection Summary

Average Delay	0.4
Intersection Capacity Utilization	36.7%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	15	9	4	4	4
Future Volume (vph)	5	15	9	4	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1839	1790	0	1694	0
Flt Permitted		0.987			0.976	
Satd. Flow (perm)	0	1839	1790	0	1694	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		1070	1054		1068	
Travel Time (s)		13.3	13.1		13.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	14	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	5	15	9	4	4	4
Future Volume (Veh/h)	5	15	9	4	4	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	17	10	4	4	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	14				41	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14				41	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1604				967	1069
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	23	14	8			
Volume Left	6	0	4			
Volume Right	0	4	4			
cSH	1604	1700	1015			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	1.9	0.0	8.6			
Lane LOS	A		A			
Approach Delay (s)	1.9	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		15.2%		ICU Level of Service		A
Analysis Period (min)		15				

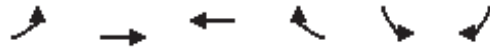
R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

408: Harold Sutton Rd & Barwick Station Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	9	15	4	4	5
Future Volume (vph)	4	9	15	4	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1837	1814	0	1678	0
Flt Permitted		0.986			0.980	
Satd. Flow (perm)	0	1837	1814	0	1678	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		1070	1054		1068	
Travel Time (s)		13.3	13.1		13.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	14	21	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.0% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	9	15	4	4	5
Future Volume (Veh/h)	4	9	15	4	4	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	10	17	4	4	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	21				37	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	21				37	19
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1595				973	1059

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	14	21	10
Volume Left	4	0	4
Volume Right	0	4	6
cSH	1595	1700	1023
Volume to Capacity	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	2.1	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	2.1	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay		2.6	
Intersection Capacity Utilization		14.0%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

409: Barwick Station Rd & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	981	4	4	802	5	5
Future Volume (vph)	4	981	4	4	802	5	5
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	175		0	0
Storage Lanes	1		0	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1703	3402	0	1703	3406	1694	0
Flt Permitted	0.950			0.950		0.976	
Satd. Flow (perm)	1703	3402	0	1703	3406	1694	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1817			2597	1153	
Travel Time (s)		22.5			32.2	14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1094	0	4	891	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰	↑↑		↰	↑↑	↰	
Traffic Volume (veh/h)	4	981	4	4	802	5	5
Future Volume (Veh/h)	4	981	4	4	802	5	5
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1090	4	4	891	6	6
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1094		1546	547
vC1, stage 1 conf vol						1092	
vC2, stage 2 conf vol						454	
vCu, unblocked vol	0			1094		1546	547
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			99		98	99
cM capacity (veh/h)	0			611		261	481

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	727	367	0	4	446	446	12
Volume Left	0	0	0	4	0	0	6
Volume Right	0	4	0	0	0	0	6
cSH	1700	1700	1700	611	1700	1700	339
Volume to Capacity	0.43	0.22	0.00	0.01	0.26	0.26	0.04
Queue Length 95th (ft)	0	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	10.9	0.0	0.0	16.0
Lane LOS				B			C
Approach Delay (s)	0.0			0.0			16.0
Approach LOS							C

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		37.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	802	4	5	981	4	4
Future Volume (vph)	4	802	4	5	981	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	175		0	0
Storage Lanes	1		0	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1703	3402	0	1703	3406	1694	0
Flt Permitted	0.950			0.950		0.976	
Satd. Flow (perm)	1703	3402	0	1703	3406	1694	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1817			2597	1153	
Travel Time (s)		22.5			32.2	14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	895	0	6	1090	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (veh/h)	4	802	4	5	981	4	4
Future Volume (Veh/h)	4	802	4	5	981	4	4
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	891	4	6	1090	4	4
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			895		1450	448
vC1, stage 1 conf vol						893	
vC2, stage 2 conf vol						557	
vCu, unblocked vol	0			895		1450	448
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			99		99	99
cM capacity (veh/h)	0			729		310	559

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	594	301	0	6	545	545	8
Volume Left	0	0	0	6	0	0	4
Volume Right	0	4	0	0	0	0	4
cSH	1700	1700	1700	729	1700	1700	399
Volume to Capacity	0.35	0.18	0.00	0.01	0.32	0.32	0.02
Queue Length 95th (ft)	0	0	0	1	0	0	2
Control Delay (s)	0.0	0.0	0.0	10.0	0.0	0.0	14.2
Lane LOS				A			B
Approach Delay (s)	0.0			0.1			14.2
Approach LOS							B

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		37.1%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

410: US 70 & Albert Sugg Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	4	981	4	803	9	15	5
Future Volume (vph)	4	981	4	803	9	15	5
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150		125	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1703	3406	1703	3406	1524	1733	0
Flt Permitted	0.950		0.950			0.964	
Satd. Flow (perm)	1703	3406	1703	3406	1524	1733	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2597		1253		1100	
Travel Time (s)		32.2		15.5		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1090	4	892	10	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	4	981	4	803	9	15	5
Future Volume (Veh/h)	4	981	4	803	9	15	5
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1090	0	892	10	17	6
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	902		0			1445	446
vC1, stage 1 conf vol						892	
vC2, stage 2 conf vol						553	
vCu, unblocked vol	902		0			1445	446
tC, single (s)	4.2		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	99		0			95	99
cM capacity (veh/h)	725		0			312	560

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	4	545	545	446	446	10	0	23
Volume Left	4	0	0	0	0	0	0	17
Volume Right	0	0	0	0	0	10	0	6
cSH	725	1700	1700	1700	1700	1700	1700	352
Volume to Capacity	0.01	0.32	0.32	0.26	0.26	0.01	0.00	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	0	5
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9
Lane LOS	A							C
Approach Delay (s)	0.0			0.0				15.9
Approach LOS								C

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		37.1%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

410: US 70 & Albert Sugg Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	4	803	4	981	15	10	4
Future Volume (vph)	4	803	4	981	15	10	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150		125	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1703	3406	1703	3406	1524	1733	0
Flt Permitted	0.950		0.950			0.965	
Satd. Flow (perm)	1703	3406	1703	3406	1524	1733	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2597		1253		1100	
Travel Time (s)		32.2		15.5		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	892	4	1090	17	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	4	803	4	981	15	10	4
Future Volume (Veh/h)	4	803	4	981	15	10	4
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	892	0	1090	17	11	4
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1107		0			1544	545
vC1, stage 1 conf vol						1090	
vC2, stage 2 conf vol						454	
vCu, unblocked vol	1107		0			1544	545
tC, single (s)	4.2		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	99		0			96	99
cM capacity (veh/h)	604		0			262	482

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	4	446	446	545	545	17	0	15
Volume Left	4	0	0	0	0	0	0	11
Volume Right	0	0	0	0	0	17	0	4
cSH	604	1700	1700	1700	1700	1700	1700	298
Volume to Capacity	0.01	0.26	0.26	0.32	0.32	0.01	0.00	0.05
Queue Length 95th (ft)	1	0	0	0	0	0	0	4
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0	0.0	17.7
Lane LOS	B							C
Approach Delay (s)	0.0			0.0				17.7
Approach LOS								C

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		37.1%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

411: Albert Sugg Rd & Fields Station Rd
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	12	4	5	20	4	4	6	4	4	10	5
Future Volume (vph)	4	12	4	5	20	4	4	6	4	4	10	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1798	0	0	1815	0	0	1772	0	0	1774	0
Flt Permitted		0.991			0.991			0.987			0.991	
Satd. Flow (perm)	0	1798	0	0	1815	0	0	1772	0	0	1774	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		1018			1043			837			994	
Travel Time (s)		12.6			15.8			10.4			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	0	0	32	0	0	15	0	0	21	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	12	4	5	20	4	4	6	4	4	10	5
Future Volume (Veh/h)	4	12	4	5	20	4	4	6	4	4	10	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	13	4	6	22	4	4	7	4	4	11	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	26			17			70	61	15	66	61	24
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	26			17			70	61	15	66	61	24
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	99	100	100	99	99
cM capacity (veh/h)	1588			1600			902	825	1065	913	825	1052
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	21	32	15	21								
Volume Left	4	6	4	4								
Volume Right	4	4	4	6								
cSH	1588	1600	899	897								
Volume to Capacity	0.00	0.00	0.02	0.02								
Queue Length 95th (ft)	0	0	1	2								
Control Delay (s)	1.4	1.4	9.1	9.1								
Lane LOS	A	A	A	A								
Approach Delay (s)	1.4	1.4	9.1	9.1								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

411: Albert Sugg Rd & Fields Station Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	5	20	4	4	12	4	4	10	5	4	6	4
Future Volume (vph)	5	20	4	4	12	4	4	10	5	4	6	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1815	0	0	1798	0	0	1774	0	0	1772	0
Flt Permitted		0.991			0.991			0.991			0.987	
Satd. Flow (perm)	0	1815	0	0	1798	0	0	1774	0	0	1772	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		1018			1043			837			994	
Travel Time (s)		12.6			15.8			10.4			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	21	0	0	21	0	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	20	4	4	12	4	4	10	5	4	6	4
Future Volume (Veh/h)	5	20	4	4	12	4	4	10	5	4	6	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	22	4	4	13	4	4	11	6	4	7	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	17			26			66	61	24	70	61	15
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			26			66	61	24	70	61	15
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	99	99	100	99	100
cM capacity (veh/h)	1600			1588			913	825	1052	902	825	1065
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	21	21	15								
Volume Left	6	4	4	4								
Volume Right	4	4	6	4								
cSH	1600	1588	897	899								
Volume to Capacity	0.00	0.00	0.02	0.02								
Queue Length 95th (ft)	0	0	2	1								
Control Delay (s)	1.4	1.4	9.1	9.1								
Lane LOS	A	A	A	A								
Approach Delay (s)	1.4	1.4	9.1	9.1								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			13.3%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

412: Harold Sutton Rd & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	991	4	9	811	5	15
Future Volume (vph)	4	991	4	9	811	5	15
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		175	200		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1703	3406	1524	1703	3406	1655	0
Flt Permitted	0.950			0.950		0.987	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1655	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1161			1247	1106	
Travel Time (s)		14.4			15.5	13.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1101	4	10	901	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	991	4	9	811	5	15
Future Volume (Veh/h)	4	991	4	9	811	5	15
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1101	4	10	901	6	17
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1105		1572	550
vC1, stage 1 conf vol						1101	
vC2, stage 2 conf vol						470	
vCu, unblocked vol	0			1105		1572	550
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			98		98	96
cM capacity (veh/h)	0			605		257	478

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	550	550	4	0	10	450	450	23
Volume Left	0	0	0	0	10	0	0	6
Volume Right	0	0	4	0	0	0	0	17
cSH	1700	1700	1700	1700	605	1700	1700	391
Volume to Capacity	0.32	0.32	0.00	0.00	0.02	0.27	0.27	0.06
Queue Length 95th (ft)	0	0	0	0	1	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	11.1	0.0	0.0	14.8
Lane LOS					B			B
Approach Delay (s)	0.0				0.1			14.8
Approach LOS								B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		37.4%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

412: Harold Sutton Rd & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	811	4	15	991	4	10
Future Volume (vph)	4	811	4	15	991	4	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		175	200		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1703	3406	1524	1703	3406	1657	0
Flt Permitted	0.950			0.950		0.987	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1657	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1161			1247	1106	
Travel Time (s)		14.4			15.5	13.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	901	4	17	1101	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.4%
Analysis Period (min)	15
	ICU Level of Service A



























Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩	↑↑	↗	↖	↑↑	↙	↘
Traffic Volume (veh/h)	4	811	4	15	991	4	10
Future Volume (Veh/h)	4	811	4	15	991	4	10
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	901	4	17	1101	4	11
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			905		1486	450
vC1, stage 1 conf vol						901	
vC2, stage 2 conf vol						584	
vCu, unblocked vol	0			905		1486	450
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			98		99	98
cM capacity (veh/h)	0			723		303	556

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	450	450	4	0	17	550	550	15
Volume Left	0	0	0	0	17	0	0	4
Volume Right	0	0	4	0	0	0	0	11
cSH	1700	1700	1700	1700	723	1700	1700	455
Volume to Capacity	0.27	0.27	0.00	0.00	0.02	0.32	0.32	0.03
Queue Length 95th (ft)	0	0	0	0	2	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	10.1	0.0	0.0	13.2
Lane LOS					B			B
Approach Delay (s)	0.0				0.2			13.2
Approach LOS								B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization	37.4%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

413: Kennedy Home Rd/Eason Rd & US 70
 2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				 
Traffic Volume (vph)	4	986	8	50	814	32	10	4	77	50	4	5
Future Volume (vph)	4	986	8	50	814	32	10	4	77	50	4	5
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		250	50		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	1524	0	1640	0	0	1765	0
Flt Permitted	0.950			0.950				0.995			0.959	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1524	0	1640	0	0	1765	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1210			866			1023			1010	
Travel Time (s)		15.0			10.7			12.7			12.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1096	9	56	904	36	0	101	0	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.5%
Analysis Period (min)	15
	ICU Level of Service A
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	4	986	8	50	814	32	10	4	77	50	4	5				
Future Volume (Veh/h)	4	986	8	50	814	32	10	4	77	50	4	5				
Sign Control	Free				Free			Stop			Stop					
Grade	0%				0%			0%			0%					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90				
Hourly flow rate (vph)	4	1096	9	56	904	36	11	4	86	56	4	6				
Pedestrians																
Lane Width (ft)																
Walking Speed (ft/s)																
Percent Blockage																
Right turn flare (veh)																
Median type	Raised				Raised											
Median storage (veh)	2				2											
Upstream signal (ft)																
pX, platoon unblocked																
vC, conflicting volume	940		1105			1676		2156		548		1660		2129		452
vC1, stage 1 conf vol						1104		1104		1016		1016				
vC2, stage 2 conf vol						572		1052		644		1113				
vCu, unblocked vol	940		1105			1676		2156		548		1660		2129		452
tC, single (s)	4.2		4.2			7.5		6.5		6.9		7.5		6.5		6.9
tC, 2 stage (s)						6.5		5.5				6.5		5.5		
tF (s)	2.3		2.3			3.5		4.0		3.3		3.5		4.0		3.3
p0 queue free %	99		91			94		98		82		69		98		99
cM capacity (veh/h)	701		605			197		194		480		181		176		555

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1	
Volume Total	4	548	548	9	56	452	452	36	101	66	
Volume Left	4	0	0	0	56	0	0	0	11	56	
Volume Right	0	0	0	9	0	0	0	36	86	6	
cSH	701	1700	1700	1700	605	1700	1700	1700	395	193	
Volume to Capacity	0.01	0.32	0.32	0.01	0.09	0.27	0.27	0.02	0.26	0.34	
Queue Length 95th (ft)	0	0	0	0	8	0	0	0	25	36	
Control Delay (s)	10.2	0.0	0.0	0.0	11.6	0.0	0.0	0.0	17.2	33.1	
Lane LOS	B				B				C		D
Approach Delay (s)	0.0				0.6				17.2		33.1
Approach LOS									C		D

Intersection Summary												
Average Delay	2.0											
Intersection Capacity Utilization	50.5%				ICU Level of Service				A			
Analysis Period (min)	15											

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

413: Kennedy Home Rd/Eason Rd & US 70
 2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	814	10	77	986	50	7	4	50	32	4	4
Future Volume (vph)	5	814	10	77	986	50	7	4	50	32	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		250	50		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	1524	0	1646	0	0	1769	0
Flt Permitted	0.950			0.950				0.994			0.961	
Satd. Flow (perm)	1703	3406	1524	1703	3406	1524	0	1646	0	0	1769	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1210			866			1023			1010	
Travel Time (s)		15.0			10.7			12.7			12.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	904	11	86	1096	56	0	68	0	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	814	10	77	986	50	7	4	50	32	4	4
Future Volume (Veh/h)	5	814	10	77	986	50	7	4	50	32	4	4
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	904	11	86	1096	56	8	4	56	36	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage (veh)	2			2								
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1152		915		1642		2240	452	1790	2195	548	
vC1, stage 1 conf vol					916		916		1268	1268		
vC2, stage 2 conf vol					726		1324		522	927		
vCu, unblocked vol	1152		915		1642		2240	452	1790	2195	548	
tC, single (s)	4.2		4.2		7.5		6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)					6.5		5.5		6.5	5.5		
tF (s)	2.3		2.3		3.5		4.0	3.3	3.5	4.0	3.3	
p0 queue free %	99		88		96		98	90	75	98	99	
cM capacity (veh/h)	580		716		217		165	555	143	162	480	

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	6	452	452	11	86	548	548	56	68	44
Volume Left	6	0	0	0	86	0	0	0	8	36
Volume Right	0	0	0	11	0	0	0	56	56	4
cSH	580	1700	1700	1700	716	1700	1700	1700	419	155
Volume to Capacity	0.01	0.27	0.27	0.01	0.12	0.32	0.32	0.03	0.16	0.28
Queue Length 95th (ft)	1	0	0	0	10	0	0	0	14	28
Control Delay (s)	11.3	0.0	0.0	0.0	10.7	0.0	0.0	0.0	15.2	37.3
Lane LOS	B			B			C			E
Approach Delay (s)	0.1		0.7		15.2		37.3			
Approach LOS					C		E			

Intersection Summary												
Average Delay	1.6											
Intersection Capacity Utilization	49.5%			ICU Level of Service			A					
Analysis Period (min)	15											

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

414: US 70 & Banks School Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	1058	840	10	0	71
Future Volume (vph)	38	1058	840	10	0	71
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			150	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	1703	3406	3406	1524	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	1703	3406	3406	1524	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		866	1113		995	
Travel Time (s)		10.7	13.8		12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	1176	933	11	0	79
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷↷	↷↷	↷		↷
Traffic Volume (veh/h)	38	1058	840	10	0	71
Future Volume (Veh/h)	38	1058	840	10	0	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	42	1176	933	11	0	79
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	944				1605	466
vC1, stage 1 conf vol					933	
vC2, stage 2 conf vol					672	
vCu, unblocked vol	944				1605	466
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	94				100	85
cM capacity (veh/h)	698				278	543

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	42	588	588	466	466	11	79
Volume Left	42	0	0	0	0	0	0
Volume Right	0	0	0	0	0	11	79
cSH	698	1700	1700	1700	1700	1700	543
Volume to Capacity	0.06	0.35	0.35	0.27	0.27	0.01	0.15
Queue Length 95th (ft)	5	0	0	0	0	0	13
Control Delay (s)	10.5	0.0	0.0	0.0	0.0	0.0	12.8
Lane LOS	B						B
Approach Delay (s)	0.4			0.0			12.8
Approach LOS							B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	34.3%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

414: US 70 & Banks School Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	853	1045	17	0	49
Future Volume (vph)	55	853	1045	17	0	49
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			150	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	1703	3406	3406	1524	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	1703	3406	3406	1524	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		866	1113		995	
Travel Time (s)		10.7	13.8		12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	948	1161	19	0	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	853	1045	17	0	49
Future Volume (Veh/h)	55	853	1045	17	0	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	948	1161	19	0	54
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1180				1757	580
vC1, stage 1 conf vol					1161	
vC2, stage 2 conf vol					596	
vCu, unblocked vol	1180				1757	580
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	89				100	88
cM capacity (veh/h)	566				228	457

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	61	474	474	580	580	19	54
Volume Left	61	0	0	0	0	0	0
Volume Right	0	0	0	0	0	19	54
cSH	566	1700	1700	1700	1700	1700	457
Volume to Capacity	0.11	0.28	0.28	0.34	0.34	0.01	0.12
Queue Length 95th (ft)	9	0	0	0	0	0	10
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	0.0	13.9
Lane LOS	B						B
Approach Delay (s)	0.7			0.0			13.9
Approach LOS							B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		38.9%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

415: US 70 & Innovation Way
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↘
Traffic Volume (vph)	0	967	729	124	0	181
Future Volume (vph)	0	967	729	124	0	181
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			300	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3406	3406	1524	0	1550
Flt Permitted						
Satd. Flow (perm)	0	3406	3406	1524	0	1550
Link Speed (mph)		55	55		45	
Link Distance (ft)		918	1588		1476	
Travel Time (s)		11.4	19.7		22.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1074	810	138	0	201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↘
Traffic Volume (veh/h)	0	967	729	124	0	181
Future Volume (Veh/h)	0	967	729	124	0	181
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1074	810	138	0	201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	810				1347	405
vC1, stage 1 conf vol					810	
vC2, stage 2 conf vol					537	
vCu, unblocked vol	810				1347	405
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.3				3.6	3.4
p0 queue free %	100				100	66
cM capacity (veh/h)	786				331	584
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	537	537	405	405	138	201
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	138	201
cSH	1700	1700	1700	1700	1700	584
Volume to Capacity	0.32	0.32	0.24	0.24	0.08	0.34
Queue Length 95th (ft)	0	0	0	0	0	38
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.4
Lane LOS						B
Approach Delay (s)	0.0		0.0			14.4
Approach LOS						B
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			38.0%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

415: US 70 & Innovation Way
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Volume (vph)	0	878	815	193	0	115
Future Volume (vph)	0	878	815	193	0	115
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			300	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3406	3406	1524	0	1550
Flt Permitted						
Satd. Flow (perm)	0	3406	3406	1524	0	1550
Link Speed (mph)		55	55		45	
Link Distance (ft)		918	1588		1476	
Travel Time (s)		11.4	19.7		22.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	976	906	214	0	128
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary




















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Volume (veh/h)	0	878	815	193	0	115
Future Volume (Veh/h)	0	878	815	193	0	115
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	976	906	214	0	128
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	906				1394	453
vC1, stage 1 conf vol					906	
vC2, stage 2 conf vol					488	
vCu, unblocked vol	906				1394	453
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.3				3.6	3.4
p0 queue free %	100				100	76
cM capacity (veh/h)	722				307	543
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	488	488	453	453	214	128
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	214	128
cSH	1700	1700	1700	1700	1700	543
Volume to Capacity	0.29	0.29	0.27	0.27	0.13	0.24
Queue Length 95th (ft)	0	0	0	0	0	23
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.7
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.7
Approach LOS						B
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			36.3%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

416: Industrial Dr & Sanderson Way
 2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	36	10	131	28	139	4	96	48	40	75	12
Future Volume (vph)	55	36	10	131	28	139	4	96	48	40	75	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	150		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1740	1524	0	1643	0	0	1789	1524	1703	1757	0
Flt Permitted		0.971			0.978			0.998		0.950		
Satd. Flow (perm)	0	1740	1524	0	1643	0	0	1789	1524	1703	1757	0
Link Speed (mph)		55			55			25			55	
Link Distance (ft)		990			864			578			2029	
Travel Time (s)		12.3			10.7			15.8			25.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	101	11	0	331	0	0	111	53	44	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.5%
Analysis Period (min)	15
	ICU Level of Service A




















R-2553 Kinston Bypass 416: Industrial Dr & Sanderson Way
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis 2015 No-Build Alternative AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	36	10	131	28	139	4	96	48	40	75	12
Future Volume (Veh/h)	55	36	10	131	28	139	4	96	48	40	75	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	40	11	146	31	154	4	107	53	44	83	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	185			40			616	639	40	616	562	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	185			40			616	639	40	616	562	108
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	96			91			99	68	95	83	78	99
cM capacity (veh/h)	1366			1544			292	336	1020	256	372	935
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2					
Volume Total	101	11	331	111	53	44	96					
Volume Left	61	0	146	4	0	44	0					
Volume Right	0	11	154	0	53	0	13					
cSH	1366	1700	1544	334	1020	256	405					
Volume to Capacity	0.04	0.01	0.09	0.33	0.05	0.17	0.24					
Queue Length 95th (ft)	4	0	8	35	4	15	23					
Control Delay (s)	4.8	0.0	3.8	21.0	8.7	21.9	16.6					
Lane LOS	A		A	C	A	C	C					
Approach Delay (s)	4.4		3.8	17.0		18.3						
Approach LOS				C		C						
Intersection Summary												
Average Delay			9.5									
Intersection Capacity Utilization			39.5%	ICU Level of Service		A						
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

416: Industrial Dr & Sanderson Way
2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	28	4	48	36	40	10	75	131	139	96	55
Future Volume (vph)	12	28	4	48	36	40	10	75	131	139	96	55
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	150		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1766	1524	0	1683	0	0	1782	1524	1703	1696	0
Flt Permitted		0.985			0.981			0.994		0.950		
Satd. Flow (perm)	0	1766	1524	0	1683	0	0	1782	1524	1703	1696	0
Link Speed (mph)		55			55			25			55	
Link Distance (ft)		990			864			578			2029	
Travel Time (s)		12.3			10.7			15.8			25.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	4	0	137	0	0	94	146	154	168	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	28	4	48	36	40	10	75	131	139	96	55
Future Volume (Veh/h)	12	28	4	48	36	40	10	75	131	139	96	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	31	4	53	40	44	11	83	146	154	107	61
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	84			31			340	247	31	266	225	62
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	84			31			340	247	31	266	225	62
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	99			97			98	87	86	70	83	94
cM capacity (veh/h)	1488			1556			481	621	1032	506	639	992
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2					
Volume Total	44	4	137	94	146	154	168					
Volume Left	13	0	53	11	0	154	0					
Volume Right	0	4	44	0	146	0	61					
cSH	1488	1700	1556	600	1032	506	734					
Volume to Capacity	0.01	0.00	0.03	0.16	0.14	0.30	0.23					
Queue Length 95th (ft)	1	0	3	14	12	32	22					
Control Delay (s)	2.2	0.0	3.0	12.1	9.1	15.2	11.4					
Lane LOS	A		A	B	A	C	B					
Approach Delay (s)	2.1		3.0	10.3		13.2						
Approach LOS				B		B						
Intersection Summary												
Average Delay			9.7									
Intersection Capacity Utilization			34.7%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

417: Industrial Dr & Innovation Way
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	75	171	122	51	32
Future Volume (vph)	34	75	171	122	51	32
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	150			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1601	0	1703	1792	1699	0
Flt Permitted	0.985		0.950			
Satd. Flow (perm)	1601	0	1703	1792	1699	0
Link Speed (mph)	45			55	55	
Link Distance (ft)	1476			2029	1433	
Travel Time (s)	22.4			25.2	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	190	136	93	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	75	171	122	51	32
Future Volume (Veh/h)	34	75	171	122	51	32
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	38	83	190	136	57	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	591	75	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	591	75	93			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	91	91	87			
cM capacity (veh/h)	403	975	1477			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	121	190	136	93		
Volume Left	38	190	0	0		
Volume Right	83	0	0	36		
cSH	675	1477	1700	1700		
Volume to Capacity	0.18	0.13	0.08	0.05		
Queue Length 95th (ft)	16	11	0	0		
Control Delay (s)	11.5	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.5	4.5		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization			29.3%	ICU Level of Service	A	
Analysis Period (min)			15			

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 Synchro 9 – Report Lanes, Volumes, Timings

417: Industrial Dr & Innovation Way
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	171	75	51	122	34
Future Volume (vph)	32	171	75	51	122	34
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	150			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1577	0	1703	1792	1740	0
Flt Permitted	0.992		0.950			
Satd. Flow (perm)	1577	0	1703	1792	1740	0
Link Speed (mph)	45			55	55	
Link Distance (ft)	1476			2029	1433	
Travel Time (s)	22.4			25.2	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	83	57	174	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	171	75	51	122	34
Future Volume (Veh/h)	32	171	75	51	122	34
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	190	83	57	136	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	378	155	174			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	155	174			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	94	78	94			
cM capacity (veh/h)	579	880	1379			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	226	83	57	174		
Volume Left	36	83	0	0		
Volume Right	190	0	0	38		
cSH	813	1379	1700	1700		
Volume to Capacity	0.28	0.06	0.03	0.10		
Queue Length 95th (ft)	28	5	0	0		
Control Delay (s)	11.1	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.1	4.6		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			35.0%	ICU Level of Service	A	
Analysis Period (min)			15			

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 Synchro 9 – Report Lanes, Volumes, Timings

418: Industrial Dr & Smithfield Way
 2015 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	4	27	56	4	51	103
Future Volume (vph)	4	27	56	4	51	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1579	0	0	1712	1605	0
Flt Permitted				0.955	0.984	
Satd. Flow (perm)	1579	0	0	1712	1605	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	923			959	1433	
Travel Time (s)	11.4			11.9	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	66	171	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	4	27	56	4	51	103
Future Volume (Veh/h)	4	27	56	4	51	103
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	30	62	4	57	114
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			34	147		19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			34	147		19
tC, single (s)			4.2	6.5		6.3
tC, 2 stage (s)						
tF (s)			2.3	3.6		3.4
p0 queue free %			96	93		89
cM capacity (veh/h)			1552	803		1048
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	34	66	171			
Volume Left	0	62	57			
Volume Right	30	0	114			
cSH	1700	1552	951			
Volume to Capacity	0.02	0.04	0.18			
Queue Length 95th (ft)	0	3	16			
Control Delay (s)	0.0	7.0	9.6			
Lane LOS			A			
Approach Delay (s)	0.0	7.0	9.6			
Approach LOS			A			
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization			25.8%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

418: Industrial Dr & Smithfield Way
 2015 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	4	51	104	4	27	55
Future Volume (vph)	4	51	104	4	27	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1567	0	0	1710	1605	0
Flt Permitted				0.954	0.984	
Satd. Flow (perm)	1567	0	0	1710	1605	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	923			959	1433	
Travel Time (s)	11.4			11.9	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	0	120	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	4	51	104	4	27	55
Future Volume (Veh/h)	4	51	104	4	27	55
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	57	116	4	30	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			61		268	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			61		268	32
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			92		95	94
cM capacity (veh/h)			1517		658	1030

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	61	120	91
Volume Left	0	116	30
Volume Right	57	0	61
cSH	1700	1517	868
Volume to Capacity	0.04	0.08	0.10
Queue Length 95th (ft)	0	6	9
Control Delay (s)	0.0	7.3	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.6
Approach LOS			A

Intersection Summary			
Average Delay		6.5	
Intersection Capacity Utilization	24.2%		ICU Level of Service A
Analysis Period (min)		15	

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 Synchro 9 – Report Lanes, Volumes, Timings

419: Sanderson Way & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	798	266	0	995	0	141
Future Volume (vph)	798	266	0	995	0	141
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3406	1524	0	3438	0	1550
Flt Permitted						
Satd. Flow (perm)	3406	1524	0	3438	0	1550
Link Speed (mph)	55			55	55	
Link Distance (ft)	1588			916	864	
Travel Time (s)	19.7			11.4	10.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	5%	5%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	887	296	0	1106	0	157
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	50			50	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	798	266	0	995	0	141
Future Volume (Veh/h)	798	266	0	995	0	141
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	887	296	0	1106	0	157
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised		Raised			
Median storage (veh)	2		2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			887		1440	444
vC1, stage 1 conf vol					887	
vC2, stage 2 conf vol					553	
vCu, unblocked vol			887		1440	444
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		100	72
cM capacity (veh/h)			741		305	551
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	444	444	296	553	553	157
Volume Left	0	0	0	0	0	0
Volume Right	0	0	296	0	0	157
cSH	1700	1700	1700	1700	1700	551
Volume to Capacity	0.26	0.26	0.17	0.33	0.33	0.28
Queue Length 95th (ft)	0	0	0	0	0	29
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.1
Lane LOS						B
Approach Delay (s)	0.0				0.0	14.1
Approach LOS						B
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			37.5%	ICU Level of Service	A	
Analysis Period (min)			15			

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 Synchro 9 – Report Lanes, Volumes, Timings

419: Sanderson Way & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	790	131	0	995	0	284
Future Volume (vph)	790	131	0	995	0	284
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3406	1524	0	3438	0	1550
Flt Permitted						
Satd. Flow (perm)	3406	1524	0	3438	0	1550
Link Speed (mph)	55			55	55	
Link Distance (ft)	1588			916	864	
Travel Time (s)	19.7			11.4	10.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	5%	5%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	878	146	0	1106	0	316
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	50			50	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.1% ICU Level of Service A
Analysis Period (min)	15



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	790	131	0	995	0	284
Future Volume (Veh/h)	790	131	0	995	0	284
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	878	146	0	1106	0	316
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised		Raised			
Median storage (veh)	2		2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			878		1431	439
vC1, stage 1 conf vol					878	
vC2, stage 2 conf vol					553	
vCu, unblocked vol			878		1431	439
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.6	3.4
p0 queue free %			100		100	43
cM capacity (veh/h)			746		308	555
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	439	439	146	553	553	316
Volume Left	0	0	0	0	0	0
Volume Right	0	0	146	0	0	316
cSH	1700	1700	1700	1700	1700	555
Volume to Capacity	0.26	0.26	0.09	0.33	0.33	0.57
Queue Length 95th (ft)	0	0	0	0	0	89
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	19.7
Lane LOS						C
Approach Delay (s)	0.0		0.0		19.7	
Approach LOS						C
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			46.1%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	930	32	113	1056	5	57	4	176	4	4	4
Future Volume (vph)	4	930	32	113	1056	5	57	4	176	4	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	400		0	0		100	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	3435	0	0	1762	1568	0	1768	0
Flt Permitted	0.950			0.950				0.955			0.984	
Satd. Flow (perm)	1719	3438	1538	1719	3435	0	0	1762	1568	0	1768	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1082			910			306			327	
Travel Time (s)		16.4			13.8			8.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1033	36	126	1179	0	0	67	196	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			18	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	930	32	113	1056	5	57	4	176	4	4	4
Future Volume (Veh/h)	4	930	32	113	1056	5	57	4	176	4	4	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1033	36	126	1173	6	63	4	196	4	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type		Raised			Raised							
Median storage (veh)		2			2							
Upstream signal (ft)					910							
pX, platoon unblocked	0.72						0.72	0.72		0.72	0.72	0.72
vC, conflicting volume	1179			1069			1886	2472	516	1954	2505	590
vC1, stage 1 conf vol							1041	1041		1428	1428	
vC2, stage 2 conf vol							844	1431		526	1077	
vCu, unblocked vol	473			1069			1453	2267	516	1549	2313	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)							6.6	5.6		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			80			71	98	61	97	97	99
cM capacity (veh/h)	767			630			220	170	501	129	131	784

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	516	516	36	126	782	397	263	12
Volume Left	4	0	0	0	126	0	0	63	4
Volume Right	0	0	0	36	0	0	6	196	4
cSH	767	1700	1700	1700	630	1700	1700	672	180
Volume to Capacity	0.01	0.30	0.30	0.02	0.20	0.46	0.23	0.39	0.07
Queue Length 95th (ft)	0	0	0	0	19	0	0	47	5
Control Delay (s)	9.7	0.0	0.0	0.0	12.1	0.0	0.0	19.8	26.4
Lane LOS	A				B			C	D
Approach Delay (s)	0.0				1.2			19.8	26.4
Approach LOS								C	D

Intersection Summary

Average Delay	2.7
Intersection Capacity Utilization	50.7%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1056	57	176	930	4	32	4	113	5	4	4
Future Volume (vph)	4	1056	57	176	930	4	32	4	113	5	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	400		0	0		100	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	3435	0	0	1765	1568	0	1770	0
Flt Permitted	0.950			0.950				0.957			0.979	
Satd. Flow (perm)	1719	3438	1538	1719	3435	0	0	1765	1568	0	1770	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1082			910			306			327	
Travel Time (s)		16.4			13.8			8.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1173	63	196	1037	0	0	40	126	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			18	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑			↘	↗		↕	
Traffic Volume (veh/h)	4	1056	57	176	930	4	32	4	113	5	4	4
Future Volume (Veh/h)	4	1056	57	176	930	4	32	4	113	5	4	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1173	63	196	1033	4	36	4	126	6	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									4			
Median type		Raised			Raised							
Median storage (veh)		2			2							
Upstream signal (ft)					910							
pX, platoon unblocked	0.81						0.81	0.81		0.81	0.81	0.81
vC, conflicting volume	1037			1236			2096	2610	586	2024	2671	518
vC1, stage 1 conf vol							1181	1181		1427	1427	
vC2, stage 2 conf vol							914	1429		596	1244	
vCu, unblocked vol	576			1236			1883	2518	586	1794	2594	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)							6.6	5.6		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			64			77	97	72	93	91	100
cM capacity (veh/h)	788			543			158	124	451	89	46	881

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	586	586	63	196	689	348	166	14
Volume Left	4	0	0	0	196	0	0	36	6
Volume Right	0	0	0	63	0	0	4	126	4
cSH	788	1700	1700	1700	543	1700	1700	594	88
Volume to Capacity	0.01	0.34	0.34	0.04	0.36	0.41	0.20	0.28	0.16
Queue Length 95th (ft)	0	0	0	0	41	0	0	28	13
Control Delay (s)	9.6	0.0	0.0	0.0	15.3	0.0	0.0	20.9	53.3
Lane LOS	A				C			C	F
Approach Delay (s)	0.0				2.4			20.9	53.3
Approach LOS								C	F

Intersection Summary		
Average Delay		2.7
Intersection Capacity Utilization	54.0%	ICU Level of Service
Analysis Period (min)	15	A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	911	33	138	1139	202	45	80	151	158	57	79
Future Volume (vph)	81	911	33	138	1139	202	45	80	151	158	57	79
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		250	225		450	0		125	325		100
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1794	1553	1649	1696	1553
Flt Permitted	0.108			0.170				0.982		0.950	0.977	
Satd. Flow (perm)	195	3438	1538	308	3438	1538	0	1794	1553	1649	1696	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25				45
Link Distance (ft)		910			969			438				630
Travel Time (s)		13.8			14.7			11.9				9.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)										33%		
Lane Group Flow (vph)	90	1012	37	153	1266	224	0	139	168	118	121	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2		2	6		6			8			4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	58.0	58.0	17.0	61.0	61.0	26.0	26.0	26.0	19.0	19.0	14.0
Total Split (%)	11.7%	48.3%	48.3%	14.2%	50.8%	50.8%	21.7%	21.7%	21.7%	15.8%	15.8%	11.7%
Maximum Green (s)	7.0	51.0	51.0	10.0	54.0	54.0	19.0	19.0	19.0	12.0	12.0	7.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Act Effct Green (s)	66.1	56.9	56.9	70.1	58.9	58.9		18.6	18.6	13.3	13.3	22.5
Actuated g/C Ratio	0.55	0.47	0.47	0.58	0.49	0.49		0.16	0.16	0.11	0.11	0.19
v/c Ratio	0.40	0.62	0.05	0.49	0.75	0.30		0.50	0.70	0.65	0.65	0.30
Control Delay	16.7	26.5	19.2	16.4	28.8	20.4		52.5	63.7	67.8	67.3	26.9

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	26.5	19.2	16.4	28.8	20.4		52.5	63.7	67.8	67.3	26.9
LOS	B	C	B	B	C	C		D	E	E	E	C
Approach Delay		25.5			26.5			58.6			56.6	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	29	318	16	51	427	106		98	123	92	94	39
Queue Length 95th (ft)	53	395	37	84	517	165		163	199	#162	#164	72
Internal Link Dist (ft)		830			889			358			550	
Turn Bay Length (ft)	300		250	225		450			125	325		100
Base Capacity (vph)	224	1630	729	324	1689	755		313	271	193	198	291
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.40	0.62	0.05	0.47	0.75	0.30		0.44	0.62	0.61	0.61	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 31.9
 Intersection LOS: C
 Intersection Capacity Utilization 63.2%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 421: Sussex St/Hill Farm Rd & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1139	45	151	911	158	33	57	138	202	80	81
Future Volume (vph)	79	1139	45	151	911	158	33	57	138	202	80	81
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		250	225		450	0		125	325		100
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1794	1553	1649	1699	1553
Flt Permitted	0.194			0.091				0.982		0.950	0.979	
Satd. Flow (perm)	351	3438	1538	165	3438	1538	0	1794	1553	1649	1699	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25				45
Link Distance (ft)		910			969			438				630
Travel Time (s)		13.8			14.7			11.9				9.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	88	1266	50	168	1012	176	0	100	153	155	158	90
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases	2		2	6		6			8			4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	60.0	60.0	17.0	63.0	63.0	22.0	22.0	22.0	21.0	21.0	14.0
Total Split (%)	11.7%	50.0%	50.0%	14.2%	52.5%	52.5%	18.3%	18.3%	18.3%	17.5%	17.5%	11.7%
Maximum Green (s)	7.0	53.0	53.0	10.0	56.0	56.0	15.0	15.0	15.0	14.0	14.0	7.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Act Effct Green (s)	65.8	56.8	56.8	71.0	59.4	59.4		16.1	16.1	15.5	15.5	24.5
Actuated g/C Ratio	0.55	0.47	0.47	0.59	0.50	0.50		0.13	0.13	0.13	0.13	0.20
v/c Ratio	0.30	0.78	0.07	0.68	0.60	0.23		0.42	0.74	0.73	0.72	0.28
Control Delay	13.1	31.1	18.7	32.9	23.9	18.8		52.9	70.7	70.4	69.2	26.4

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	31.1	18.7	32.9	23.9	18.8		52.9	70.7	70.4	69.2	26.4
LOS	B	C	B	C	C	B		D	E	E	E	C
Approach Delay		29.5			24.4			63.7			60.1	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	27	436	21	59	296	78		71	114	122	124	41
Queue Length 95th (ft)	50	526	45	#145	362	125		127	#206	#221	#222	76
Internal Link Dist (ft)		830			889			358			550	
Turn Bay Length (ft)	300		250	225		450			125	325		100
Base Capacity (vph)	295	1631	729	254	1704	762		254	220	221	228	317
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.30	0.78	0.07	0.66	0.59	0.23		0.39	0.70	0.70	0.69	0.28

Intersection Summary





















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 33.6
 Intersection LOS: C
 Intersection Capacity Utilization 66.7%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 421: Sussex St/Hill Farm Rd & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

422: Hill Farm Rd & Smithfield Way
2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	68	4	4	4	131	184	4	4	201	31
Future Volume (vph)	15	4	68	4	4	4	131	184	4	4	201	31
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	75		0	200		100
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1739	1538	0	1700	0	1736	1821	0	1736	1827	1553
Flt Permitted		0.961			0.984		0.950			0.950		
Satd. Flow (perm)	0	1739	1538	0	1700	0	1736	1821	0	1736	1827	1553
Link Speed (mph)		55			30			45			45	
Link Distance (ft)		932			1050			957			799	
Travel Time (s)		11.6			23.9			14.5			12.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	76	0	12	0	146	208	0	4	223	34
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary





















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↘		↖	↗	↗
Traffic Volume (veh/h)	15	4	68	4	4	4	131	184	4	4	201	31
Future Volume (Veh/h)	15	4	68	4	4	4	131	184	4	4	201	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	4	76	4	4	4	146	204	4	4	223	34
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type							None				None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	733	731	223	769	763	206	257			208		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	733	731	223	769	763	206	257			208		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	99	91	98	99	100	89			100		
cM capacity (veh/h)	299	305	809	257	293	827	1296			1351		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	97	12	146	208	4	223	34					
Volume Left	17	4	146	0	4	0	0					
Volume Right	76	4	0	4	0	0	34					
cSH	1033	352	1296	1700	1351	1700	1700					
Volume to Capacity	0.09	0.03	0.11	0.12	0.00	0.13	0.02					
Queue Length 95th (ft)	8	3	9	0	0	0	0					
Control Delay (s)	11.6	15.6	8.1	0.0	7.7	0.0	0.0					
Lane LOS	B	C	A		A							
Approach Delay (s)	11.6	15.6	3.4		0.1							
Approach LOS	B	C										
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			32.0%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

422: Hill Farm Rd & Smithfield Way
2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	4	131	4	4	4	68	201	4	4	184	15
Future Volume (vph)	31	4	131	4	4	4	68	201	4	4	184	15
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	75		0	200		100
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1732	1538	0	1700	0	1736	1821	0	1736	1827	1553
Flt Permitted		0.957			0.984		0.950			0.950		
Satd. Flow (perm)	0	1732	1538	0	1700	0	1736	1821	0	1736	1827	1553
Link Speed (mph)		55			30			45			45	
Link Distance (ft)		932			1050			957			799	
Travel Time (s)		11.6			23.9			14.5			12.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	146	0	12	0	76	227	0	4	204	17
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖		↖	↕	↗
Traffic Volume (veh/h)	31	4	131	4	4	4	68	201	4	4	184	15
Future Volume (Veh/h)	31	4	131	4	4	4	68	201	4	4	184	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	34	4	146	4	4	4	76	223	4	4	204	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type							None				None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	593	591	204	664	606	225	221			227		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593	591	204	664	606	225	221			227		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	99	82	99	99	100	94			100		
cM capacity (veh/h)	389	391	829	289	383	807	1336			1330		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	184	12	76	227	4	204	17					
Volume Left	34	4	76	0	4	0	0					
Volume Right	146	4	0	4	0	0	17					
cSH	1045	410	1336	1700	1330	1700	1700					
Volume to Capacity	0.18	0.03	0.06	0.13	0.00	0.12	0.01					
Queue Length 95th (ft)	16	2	5	0	0	0	0					
Control Delay (s)	11.3	14.0	7.9	0.0	7.7	0.0	0.0					
Lane LOS	B	B	A		A							
Approach Delay (s)	11.3	14.0	2.0		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			31.1%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

423: Hill Farm Rd & Banks School Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (vph)	180	49	186	225	49	148
Future Volume (vph)	180	49	186	225	49	148
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		100	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1791	0	1736	1827	1736	1553
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1791	0	1736	1827	1736	1553
Link Speed (mph)	45			45	45	
Link Distance (ft)	619			1114	655	
Travel Time (s)	9.4			16.9	9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	254	0	207	250	54	164
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (veh/h)	180	49	186	225	49	148
Future Volume (Veh/h)	180	49	186	225	49	148
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	200	54	207	250	54	164
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	1114					
pX, platoon unblocked						
vC, conflicting volume			254		891	227
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			254		891	227
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		79	80
cM capacity (veh/h)			1300		261	807
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	254	207	250	54	164	
Volume Left	0	207	0	54	0	
Volume Right	54	0	0	0	164	
cSH	1700	1300	1700	261	807	
Volume to Capacity	0.15	0.16	0.15	0.21	0.20	
Queue Length 95th (ft)	0	14	0	19	19	
Control Delay (s)	0.0	8.3	0.0	22.4	10.6	
Lane LOS	A			C	B	
Approach Delay (s)	0.0	3.8		13.5		
Approach LOS				B		
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			36.1%	ICU Level of Service	A	
Analysis Period (min)	15					

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

423: Hill Farm Rd & Banks School Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (vph)	225	49	148	180	49	186
Future Volume (vph)	225	49	148	180	49	186
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		100	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1800	0	1736	1827	1736	1553
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1800	0	1736	1827	1736	1553
Link Speed (mph)	45			45	45	
Link Distance (ft)	619			1114	655	
Travel Time (s)	9.4			16.9	9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	304	0	164	200	54	207
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	225	49	148	180	49	186
Future Volume (Veh/h)	225	49	148	180	49	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	250	54	164	200	54	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	1114					
pX, platoon unblocked						
vC, conflicting volume			304			805 277
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			304			805 277
tC, single (s)			4.1			6.4 6.2
tC, 2 stage (s)						
tF (s)			2.2			3.5 3.3
p0 queue free %			87			82 73
cM capacity (veh/h)			1246			303 757
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	304	164	200	54	207	
Volume Left	0	164	0	54	0	
Volume Right	54	0	0	0	207	
cSH	1700	1246	1700	303	757	
Volume to Capacity	0.18	0.13	0.12	0.18	0.27	
Queue Length 95th (ft)	0	11	0	16	28	
Control Delay (s)	0.0	8.3	0.0	19.4	11.5	
Lane LOS	A		C		B	
Approach Delay (s)	0.0	3.8	13.2			
Approach LOS			B			
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			36.4%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

424: Sheffield Dr/Walmart Dr & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1198	4	61	1295	139	0	0	138	0	0	303
Future Volume (vph)	12	1198	4	61	1295	139	0	0	138	0	0	303
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		150	250		0	0		0	0		0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	4940	0	1719	3438	1538	0	0	1580	0	0	1580
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	4940	0	1719	3438	1538	0	0	1580	0	0	1580
Link Speed (mph)		45			45			35				25
Link Distance (ft)		969			1040			433				297
Travel Time (s)		14.7			15.8			8.4				8.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1335	0	68	1439	154	0	0	153	0	0	337
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				18
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	61.2%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕↕↕		↖	↕↕	↗			↗			↗
Traffic Volume (veh/h)	12	1198	4	61	1295	139	0	0	138	0	0	303
Future Volume (Veh/h)	12	1198	4	61	1295	139	0	0	138	0	0	303
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	1331	4	68	1439	154	0	0	153	0	0	337
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage (veh)		2			2							
Upstream signal (ft)		969			1040							
pX, platoon unblocked	0.62			0.85			0.69	0.69	0.85	0.69	0.69	0.62
vC, conflicting volume	1593			1335			2552	3088	446	2045	2936	720
vC1, stage 1 conf vol							1359	1359		1575	1575	
vC2, stage 2 conf vol							1192	1729		470	1361	
vCu, unblocked vol	723			786			1071	1846	0	338	1626	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			90			100	100	83	100	100	49
cM capacity (veh/h)	529			690			184	153	919	222	181	666

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	13	532	532	270	68	720	720	154	153	337
Volume Left	13	0	0	0	68	0	0	0	0	0
Volume Right	0	0	0	4	0	0	0	154	153	337
cSH	529	1700	1700	1700	690	1700	1700	1700	919	666
Volume to Capacity	0.02	0.31	0.31	0.16	0.10	0.42	0.42	0.09	0.17	0.51
Queue Length 95th (ft)	2	0	0	0	8	0	0	0	15	72
Control Delay (s)	12.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	9.7	15.8
Lane LOS	B				B				A	C
Approach Delay (s)	0.1				0.4				9.7	15.8
Approach LOS									A	C

Intersection Summary

Average Delay	2.2
Intersection Capacity Utilization	61.2%
ICU Level of Service	B
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

424: Sheffield Dr/Walmart Dr & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	1480	16	117	1015	250	0	0	62	0	0	147
Future Volume (vph)	63	1480	16	117	1015	250	0	0	62	0	0	147
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		150	250		0	0		0	0		0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	4930	0	1719	3438	1538	0	0	1580	0	0	1580
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	4930	0	1719	3438	1538	0	0	1580	0	0	1580
Link Speed (mph)		45			45			35				25
Link Distance (ft)		969			1040			433				297
Travel Time (s)		14.7			15.8			8.4				8.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	1662	0	130	1128	278	0	0	69	0	0	163
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				18
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1480	16	117	1015	250	0	0	62	0	0	147
Future Volume (Veh/h)	63	1480	16	117	1015	250	0	0	62	0	0	147
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	70	1644	18	130	1128	278	0	0	69	0	0	163
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage (veh)	2			2								
Upstream signal (ft)	969			1040								
pX, platoon unblocked	0.76			0.77			0.88	0.88	0.77	0.88	0.88	0.76
vC, conflicting volume	1406			1662			2780	3459	557	2076	3190	564
vC1, stage 1 conf vol							1793	1793		1388	1388	
vC2, stage 2 conf vol							987	1666		688	1802	
vCu, unblocked vol	913			830			1199	1973	0	397	1667	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			78			100	100	92	100	100	80
cM capacity (veh/h)	553			602			150	70	834	286	78	823

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	70	658	658	347	130	564	564	278	69	163
Volume Left	70	0	0	0	130	0	0	0	0	0
Volume Right	0	0	0	18	0	0	0	278	69	163
cSH	553	1700	1700	1700	602	1700	1700	1700	834	823
Volume to Capacity	0.13	0.39	0.39	0.20	0.22	0.33	0.33	0.16	0.08	0.20
Queue Length 95th (ft)	11	0	0	0	20	0	0	0	7	18
Control Delay (s)	12.5	0.0	0.0	0.0	12.6	0.0	0.0	0.0	9.7	10.4
Lane LOS	B				B				A	B
Approach Delay (s)	0.5				1.1				9.7	10.4
Approach LOS									A	B

Intersection Summary		
Average Delay		1.4
Intersection Capacity Utilization	43.8%	ICU Level of Service
Analysis Period (min)		15
		A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	92	1199	4	1521	397	441	130
Future Volume (vph)	92	1199	4	1521	397	441	130
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		300		0	250	0
Storage Lanes	2		1		1	1	1
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	3335	4940	1719	3438	1538	3367	1553
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3335	4940	1719	3438	1538	3367	1553
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		1040		666		2390	
Travel Time (s)		15.8		10.1		36.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	102	1332	4	1690	441	490	144
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	Free
Protected Phases	5	2	1	6	4	4	
Permitted Phases					6		Free
Detector Phase	5	2	1	6	4	4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0	14.0	14.0	
Total Split (s)	14.0	55.0	14.0	55.0	21.0	21.0	
Total Split (%)	15.6%	61.1%	15.6%	61.1%	23.3%	23.3%	
Maximum Green (s)	7.0	48.0	7.0	48.0	14.0	14.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	C-Min	None	None	
Act Effect Green (s)	9.0	61.2	9.0	52.8	74.8	16.0	90.0
Actuated g/C Ratio	0.10	0.68	0.10	0.59	0.83	0.18	1.00
v/c Ratio	0.31	0.40	0.02	0.84	0.35	0.82	0.09
Control Delay	40.3	7.4	37.0	16.8	1.7	48.3	0.1

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	7.4	37.0	16.8	1.7	48.3	0.1
LOS	D	A	D	B	A	D	A
Approach Delay		9.8		13.8		37.4	
Approach LOS		A		B		D	
Queue Length 50th (ft)	28	92	2	413	1	139	0
Queue Length 95th (ft)	53	193	m5	235	21	#214	0
Internal Link Dist (ft)		960		586		2310	
Turn Bay Length (ft)	450		300			250	
Base Capacity (vph)	333	3358	171	2017	1278	598	1553
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.40	0.02	0.84	0.35	0.82	0.09

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 16.0
 Intersection LOS: B
 Intersection Capacity Utilization 63.0%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 425: US 70 & US 258



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	130	1521	4	1199	441	397	92
Future Volume (vph)	130	1521	4	1199	441	397	92
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		300		0	250	0
Storage Lanes	2		1		1	1	1
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	3335	4940	1719	3438	1538	3367	1553
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3335	4940	1719	3438	1538	3367	1553
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		1040		666		2390	
Travel Time (s)		15.8		10.1		36.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	144	1690	4	1332	490	441	102
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	Free
Protected Phases	5	2	1	6	4	4	
Permitted Phases					6		Free
Detector Phase	5	2	1	6	4	4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0	14.0	14.0	
Total Split (s)	14.0	53.0	14.0	53.0	23.0	23.0	
Total Split (%)	15.6%	58.9%	15.6%	58.9%	25.6%	25.6%	
Maximum Green (s)	7.0	46.0	7.0	46.0	16.0	16.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	C-Min	None	None	
Act Effect Green (s)	9.4	59.6	9.0	48.0	70.6	17.6	90.0
Actuated g/C Ratio	0.10	0.66	0.10	0.53	0.78	0.20	1.00
v/c Ratio	0.41	0.52	0.02	0.73	0.41	0.67	0.07
Control Delay	41.8	9.4	37.8	15.2	2.5	39.0	0.1

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	9.4	37.8	15.2	2.5	39.0	0.1
LOS	D	A	D	B	A	D	A
Approach Delay		12.0		11.9		31.6	
Approach LOS		B		B		C	
Queue Length 50th (ft)	40	154	2	304	21	116	0
Queue Length 95th (ft)	70	284	m5	162	24	170	0
Internal Link Dist (ft)		960		586		2310	
Turn Bay Length (ft)	450		300			250	
Base Capacity (vph)	347	3270	171	1860	1219	686	1553
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.52	0.02	0.72	0.40	0.64	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 14.5
 Intersection LOS: B
 Intersection Capacity Utilization 62.8%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 425: US 70 & US 258



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

426: US 258 & A St
 2015 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	35	391	17	26	482
Future Volume (vph)	29	35	391	17	26	482
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50	0		0	125	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	3385	0	1703	3406
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3385	0	1703	3406
Link Speed (mph)	25		45			45
Link Distance (ft)	734		2390			743
Travel Time (s)	20.0		36.2			11.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	39	453	0	29	536
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (veh/h)	29	35	391	17	26	482	
Future Volume (Veh/h)	29	35	391	17	26	482	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	32	39	434	19	29	536	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type							
Median storage (veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	770	226			453		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	770	226			453		
tC, single (s)	6.8	6.9			4.2		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.3		
p0 queue free %	90	95			97		
cM capacity (veh/h)	328	776			1076		
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	39	289	164	29	268	268
Volume Left	32	0	0	0	29	0	0
Volume Right	0	39	0	19	0	0	0
cSH	328	776	1700	1700	1076	1700	1700
Volume to Capacity	0.10	0.05	0.17	0.10	0.03	0.16	0.16
Queue Length 95th (ft)	8	4	0	0	2	0	0
Control Delay (s)	17.2	9.9	0.0	0.0	8.4	0.0	0.0
Lane LOS	C	A			A		
Approach Delay (s)	13.2		0.0		0.4		
Approach LOS	B						
Intersection Summary							
Average Delay			1.1				
Intersection Capacity Utilization			28.0%		ICU Level of Service		A
Analysis Period (min)			15				

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

426: US 258 & A St
 2015 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	26	482	29	35	391
Future Volume (vph)	17	26	482	29	35	391
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50	0		0	125	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	3378	0	1703	3406
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3378	0	1703	3406
Link Speed (mph)	25		45			45
Link Distance (ft)	734		2390			743
Travel Time (s)	20.0		36.2			11.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	29	568	0	39	434
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	26	482	29	35	391
Future Volume (Veh/h)	17	26	482	29	35	391
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	29	536	32	39	434
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	847	284			568	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	847	284			568	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	93	96			96	
cM capacity (veh/h)	289	713			973	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	19	29	357	211	39	217	217
Volume Left	19	0	0	0	39	0	0
Volume Right	0	29	0	32	0	0	0
cSH	289	713	1700	1700	973	1700	1700
Volume to Capacity	0.07	0.04	0.21	0.12	0.04	0.13	0.13
Queue Length 95th (ft)	5	3	0	0	3	0	0
Control Delay (s)	18.3	10.3	0.0	0.0	8.9	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	13.5		0.0		0.7		
Approach LOS	B						

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		30.9%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	4	98	11	6	5	99	321	7	4	400	297
Future Volume (vph)	235	4	98	11	6	5	99	321	7	4	400	297
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		300	50		0	400		0	350		450
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1736	1827	1553	1770	1734	0	1703	3395	0	1703	3406	1524
Flt Permitted	0.749			0.755			0.950			0.950		
Satd. Flow (perm)	1368	1827	1553	1406	1734	0	1703	3395	0	1703	3406	1524
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1114			857			901			835	
Travel Time (s)		16.9			13.0			13.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	261	4	109	12	13	0	110	365	0	4	444	330
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	12.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	19.0		14.0	19.0	19.0
Total Split (s)	33.0	33.0	17.0	33.0	33.0		17.0	43.0		14.0	40.0	40.0
Total Split (%)	36.7%	36.7%	18.9%	36.7%	36.7%		18.9%	47.8%		15.6%	44.4%	44.4%
Maximum Green (s)	26.0	26.0	10.0	26.0	26.0		10.0	36.0		7.0	33.0	33.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	C-Min
Act Effect Green (s)	23.2	23.2	40.3	23.2	23.2		12.0	54.0		9.0	39.7	39.7
Actuated g/C Ratio	0.26	0.26	0.45	0.26	0.26		0.13	0.60		0.10	0.44	0.44
v/c Ratio	0.74	0.01	0.16	0.03	0.03		0.48	0.18		0.02	0.30	0.49
Control Delay	43.1	22.0	13.8	22.5	22.5		43.4	10.2		37.0	18.1	22.8

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
 2015 No-Build Alternative AM Peak

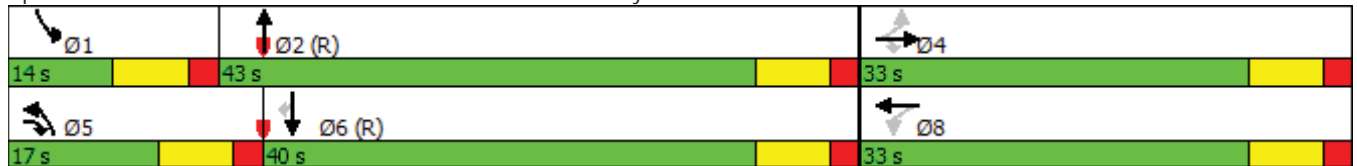


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	43.1	22.0	13.8	22.5	22.5		43.4	10.2		37.0	18.1	22.8
LOS	D	C	B	C	C		D	B		D	B	C
Approach Delay		34.4			22.5			17.9			20.2	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	134	2	34	5	5		58	42		2	86	136
Queue Length 95th (ft)	209	9	61	17	18		111	100		12	129	229
Internal Link Dist (ft)		1034			777			821			755	
Turn Bay Length (ft)	150		300	50			400			350		450
Base Capacity (vph)	425	568	707	437	539		242	2035		170	1519	680
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.61	0.01	0.15	0.03	0.02		0.45	0.18		0.02	0.29	0.49

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	22.8
Intersection LOS:	C
Intersection Capacity Utilization:	49.1%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 427: US 258 & Banks School Rd/Sand Clay Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	6	99	7	4	4	98	400	11	5	321	235
Future Volume (vph)	297	6	99	7	4	4	98	400	11	5	321	235
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		300	50		0	400		0	350		450
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1736	1827	1553	1770	1723	0	1703	3392	0	1703	3406	1524
Flt Permitted	0.752			0.753			0.950			0.950		
Satd. Flow (perm)	1374	1827	1553	1403	1723	0	1703	3392	0	1703	3406	1524
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1114			857			901			835	
Travel Time (s)		16.9			13.0			13.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	330	7	110	8	8	0	109	456	0	6	357	261
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	12.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	19.0		14.0	19.0	19.0
Total Split (s)	38.0	38.0	17.0	38.0	38.0		17.0	38.0		14.0	35.0	35.0
Total Split (%)	42.2%	42.2%	18.9%	42.2%	42.2%		18.9%	42.2%		15.6%	38.9%	38.9%
Maximum Green (s)	31.0	31.0	10.0	31.0	31.0		10.0	31.0		7.0	28.0	28.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	C-Min
Act Effect Green (s)	27.6	27.6	44.6	27.6	27.6		12.0	49.6		9.0	35.4	35.4
Actuated g/C Ratio	0.31	0.31	0.50	0.31	0.31		0.13	0.55		0.10	0.39	0.39
v/c Ratio	0.78	0.01	0.14	0.02	0.02		0.48	0.24		0.04	0.27	0.44
Control Delay	41.5	18.8	11.3	19.0	18.9		43.3	13.0		37.2	20.8	25.0

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	41.5	18.8	11.3	19.0	18.9		43.3	13.0		37.2	20.8	25.0
LOS	D	B	B	B	B		D	B		D	C	C
Approach Delay		33.7			18.9			18.8			22.7	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)	167	3	31	3	3		57	63		3	73	111
Queue Length 95th (ft)	251	12	53	12	12		111	138		15	115	194
Internal Link Dist (ft)		1034			777			821			755	
Turn Bay Length (ft)	150		300	50			400			350		450
Base Capacity (vph)	503	669	783	514	631		241	1867		170	1353	605
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.66	0.01	0.14	0.02	0.01		0.45	0.24		0.04	0.26	0.43

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 24.3
 Intersection Capacity Utilization 52.9%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 427: US 258 & Banks School Rd/Sand Clay Rd



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

428: Driveway/Ruby Tuesday & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1594	5	6	1943	9	0	0	16	0	0	23
Future Volume (vph)	4	1594	5	6	1943	9	0	0	16	0	0	23
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	150		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		666			581			197			240	
Travel Time (s)		10.1			8.8			5.4			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1771	6	7	2169	0	0	0	18	0	0	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		32			32			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷			↷			↷
Traffic Volume (veh/h)	4	1594	5	6	1943	9	0	0	16	0	0	23
Future Volume (Veh/h)	4	1594	5	6	1943	9	0	0	16	0	0	23
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1771	6	7	2159	10	0	0	18	0	0	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage (veh)	1			1								
Upstream signal (ft)	666			581								
pX, platoon unblocked	0.75		0.82		0.83		0.83		0.82		0.83	
vC, conflicting volume	2169		1777		2539		3962		886		3090	
vC1, stage 1 conf vol					1779		1779		2178		2178	
vC2, stage 2 conf vol					760		2183		912		1785	
vCu, unblocked vol	1378		1515		1040		2745		432		1700	
tC, single (s)	4.2		4.2		7.5		6.5		6.9		7.5	
tC, 2 stage (s)					6.5		5.5		6.5		5.5	
tF (s)	2.2		2.2		3.5		4.0		3.3		3.5	
p0 queue free %	99		98		100		100		96		100	
cM capacity (veh/h)	357		348		89		74		471		92	

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1	
Volume Total	4	886	886	6	7	864	864	442	18	26	
Volume Left	4	0	0	0	7	0	0	0	0	0	
Volume Right	0	0	0	6	0	0	0	10	18	26	
cSH	357	1700	1700	1700	348	1700	1700	1700	471	810	
Volume to Capacity	0.01	0.52	0.52	0.00	0.02	0.51	0.51	0.26	0.04	0.03	
Queue Length 95th (ft)	1	0	0	0	2	0	0	0	3	2	
Control Delay (s)	15.2	0.0	0.0	0.0	15.6	0.0	0.0	0.0	13.0	9.6	
Lane LOS	C			C			B			A	
Approach Delay (s)	0.0		0.1		13.0		9.6				
Approach LOS			B		A						

Intersection Summary												
Average Delay	0.2											
Intersection Capacity Utilization	54.1%			ICU Level of Service			A					
Analysis Period (min)	15											

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

428: Driveway/Ruby Tuesday & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1949	9	7	1588	15	0	0	11	0	0	13
Future Volume (vph)	9	1949	9	7	1588	15	0	0	11	0	0	13
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	150		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		666			581			197			240	
Travel Time (s)		10.1			8.8			5.4			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	2166	10	8	1781	0	0	0	12	0	0	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		32			32			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	63.9%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑↑				↗			↗
Traffic Volume (veh/h)	9	1949	9	7	1588	15	0	0	11	0	0	13
Future Volume (Veh/h)	9	1949	9	7	1588	15	0	0	11	0	0	13
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	2166	10	8	1764	17	0	0	12	0	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage (veh)	1			1								
Upstream signal (ft)	666			581								
pX, platoon unblocked	0.84			0.73			0.81	0.81	0.73	0.81	0.81	0.84
vC, conflicting volume	1781			2176			2804	3983	1083	2904	3984	596
vC1, stage 1 conf vol							2186	2186		1788	1788	
vC2, stage 2 conf vol							618	1797		1115	2196	
vCu, unblocked vol	1247			1873			1548	2998	379	1671	2999	0
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			100	100	97	100	100	98
cM capacity (veh/h)	449			223			47	57	453	114	53	906

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	10	1083	1083	10	8	706	706	370	12	14
Volume Left	10	0	0	0	8	0	0	0	0	0
Volume Right	0	0	0	10	0	0	0	17	12	14
cSH	449	1700	1700	1700	223	1700	1700	1700	453	906
Volume to Capacity	0.02	0.64	0.64	0.01	0.04	0.42	0.42	0.22	0.03	0.02
Queue Length 95th (ft)	2	0	0	0	3	0	0	0	2	1
Control Delay (s)	13.2	0.0	0.0	0.0	21.7	0.0	0.0	0.0	13.2	9.0
Lane LOS	B			C			B			A
Approach Delay (s)	0.1				0.1				13.2	9.0
Approach LOS									B	A

Intersection Summary

Average Delay	0.1
Intersection Capacity Utilization	63.9%
ICU Level of Service	B
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	15	1589	4	1948	30	34	20
Future Volume (vph)	15	1589	4	1948	30	34	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		75		0	0	0
Storage Lanes	1		1		0	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1719	3438	1719	4930	0	1698	0
Flt Permitted	0.950		0.950			0.969	
Satd. Flow (perm)	1719	3438	1719	4930	0	1698	0
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		25	
Link Distance (ft)		581		901		412	
Travel Time (s)		8.8		13.7		11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	17	1766	4	2197	0	60	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA		Prot	
Protected Phases	5	2	1	6		4	
Permitted Phases							
Detector Phase	5	2	1	6		4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	
Total Split (s)	14.0	62.0	14.0	62.0		14.0	
Total Split (%)	15.6%	68.9%	15.6%	68.9%		15.6%	
Maximum Green (s)	7.0	55.0	7.0	55.0		7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Min	None	C-Min		None	
Act Effect Green (s)	9.0	71.6	9.0	68.8		9.4	
Actuated g/C Ratio	0.10	0.80	0.10	0.76		0.10	
v/c Ratio	0.10	0.65	0.02	0.58		0.34	
Control Delay	40.8	5.9	37.0	7.6		43.4	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	40.8	5.9	37.0	7.6		43.4	
LOS	D	A	D	A		D	
Approach Delay		6.3		7.7		43.4	
Approach LOS		A		A		D	
Queue Length 50th (ft)	9	102	2	147		32	
Queue Length 95th (ft)	m19	240	12	326		72	
Internal Link Dist (ft)		501		821		332	
Turn Bay Length (ft)	175		75				
Base Capacity (vph)	171	2736	171	3771		176	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.10	0.65	0.02	0.58		0.34	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 7.6
 Intersection LOS: A
 Intersection Capacity Utilization 58.1%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 429: US 70 & Mt Vernon Park Dr



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	1947	4	1590	32	29	16
Future Volume (vph)	22	1947	4	1590	32	29	16
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		75		0	0	0
Storage Lanes	1		1		0	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1719	3438	1719	4925	0	1700	0
Flt Permitted	0.950		0.950			0.969	
Satd. Flow (perm)	1719	3438	1719	4925	0	1700	0
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		25	
Link Distance (ft)		581		901		412	
Travel Time (s)		8.8		13.7		11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	24	2163	4	1803	0	50	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA		Prot	
Protected Phases	5	2	1	6		4	
Permitted Phases							
Detector Phase	5	2	1	6		4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	
Total Split (s)	14.0	62.0	14.0	62.0		14.0	
Total Split (%)	15.6%	68.9%	15.6%	68.9%		15.6%	
Maximum Green (s)	7.0	55.0	7.0	55.0		7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Min	None	C-Min		None	
Act Effect Green (s)	9.0	75.8	9.0	73.0		9.0	
Actuated g/C Ratio	0.10	0.84	0.10	0.81		0.10	
v/c Ratio	0.14	0.75	0.02	0.45		0.29	
Control Delay	39.3	8.2	37.0	5.7		42.5	



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	39.3	8.2	37.0	5.7		42.5	
LOS	D	A	D	A		D	
Approach Delay		8.5		5.8		42.5	
Approach LOS		A		A		D	
Queue Length 50th (ft)	13	188	2	94		27	
Queue Length 95th (ft)	m24	#823	12	235		62	
Internal Link Dist (ft)		501		821		332	
Turn Bay Length (ft)	175		75				
Base Capacity (vph)	171	2895	171	3995		170	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.14	0.75	0.02	0.45		0.29	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 7.7
 Intersection LOS: A
 Intersection Capacity Utilization 68.0%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 429: US 70 & Mt Vernon Park Dr



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	723	4	165	645	14	4	4	238	22	4	17
Future Volume (vph)	11	723	4	165	645	14	4	4	238	22	4	17
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	300		0	0		225	75		0
Storage Lanes	1		0	2		0	0		2	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3501	0	1752	3494	0	0	1800	2760	0	1769	1568
Flt Permitted	0.950			0.950				0.896			0.288	
Satd. Flow (perm)	1752	3501	0	1752	3494	0	0	1653	2760	0	531	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		848			988			656				424
Travel Time (s)		12.8			15.0			12.8				11.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	807	0	183	733	0	0	8	264	0	28	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		76			56			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				7
Permitted Phases							8		8	7		7
Detector Phase	5	2		1	6		8	8	8	7	7	7
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0		14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	45.0		26.0	57.0		23.0	23.0	23.0	26.0	26.0	26.0
Total Split (%)	11.7%	37.5%		21.7%	47.5%		19.2%	19.2%	19.2%	21.7%	21.7%	21.7%
Maximum Green (s)	7.0	38.0		19.0	50.0		16.0	16.0	16.0	19.0	19.0	19.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	9.0	54.5		18.4	72.3			17.0	17.0		16.3	16.3
Actuated g/C Ratio	0.08	0.45		0.15	0.60			0.14	0.14		0.14	0.14
v/c Ratio	0.09	0.51		0.68	0.35			0.03	0.68		0.39	0.09
Control Delay	53.5	28.4		60.9	16.6			44.1	57.9		61.2	43.3

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
 2015 No-Build Alternative AM Peak



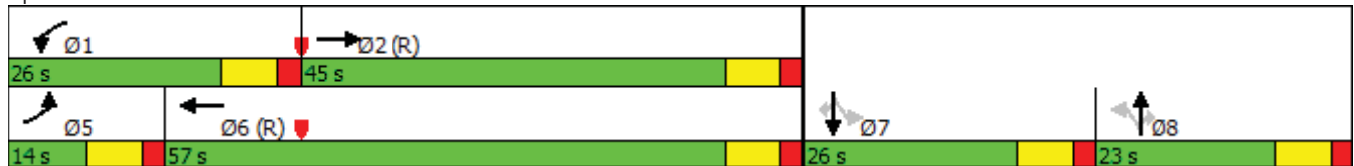
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	53.5	28.4		60.9	16.6			44.1	57.9		61.2	43.3
LOS	D	C		E	B			D	E		E	D
Approach Delay		28.7			25.4			57.5			53.9	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	9	266		134	151			5	110		20	13
Queue Length 95th (ft)	29	356		211	266			20	161		50	35
Internal Link Dist (ft)		768			908			576			344	
Turn Bay Length (ft)	75			300					225			
Base Capacity (vph)	131	1596		306	2112			249	417		93	277
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.09	0.51		0.60	0.35			0.03	0.63		0.30	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 31.7
 Intersection Capacity Utilization 49.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 430: Hillcrest Rd & US 70 Bus



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	646	4	238	723	23	4	4	165	14	4	11
Future Volume (vph)	16	646	4	238	723	23	4	4	165	14	4	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	300		0	0		225	75		0
Storage Lanes	1		0	2		0	0		2	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3501	0	1752	3487	0	0	1800	2760	0	1775	1568
Flt Permitted	0.950			0.950				0.886			0.346	
Satd. Flow (perm)	1752	3501	0	1752	3487	0	0	1634	2760	0	638	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		848			988			656				424
Travel Time (s)		12.8			15.0			12.8				11.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	722	0	264	829	0	0	8	183	0	20	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		76			56			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				7
Permitted Phases							8		8	7		7
Detector Phase	5	2		1	6		8	8	8	7	7	7
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0		14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	44.0		35.0	65.0		19.0	19.0	19.0	22.0	22.0	22.0
Total Split (%)	11.7%	36.7%		29.2%	54.2%		15.8%	15.8%	15.8%	18.3%	18.3%	18.3%
Maximum Green (s)	7.0	37.0		28.0	58.0		12.0	12.0	12.0	15.0	15.0	15.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	9.1	53.6		24.6	77.6			14.2	14.2		13.3	13.3
Actuated g/C Ratio	0.08	0.45		0.20	0.65			0.12	0.12		0.11	0.11
v/c Ratio	0.14	0.46		0.74	0.37			0.04	0.56		0.29	0.07
Control Delay	54.4	27.9		56.7	13.7			46.9	56.9		57.9	46.4

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	54.4	27.9		56.7	13.7			46.9	56.9		57.9	46.4
LOS	D	C		E	B			D	E		E	D
Approach Delay		28.5			24.1			56.5			53.6	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	13	225		192	150			6	76		14	8
Queue Length 95th (ft)	38	316		273	268			21	120		40	27
Internal Link Dist (ft)		768			908			576			344	
Turn Bay Length (ft)	75			300					225			
Base Capacity (vph)	132	1572		438	2275			201	340		90	223
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.14	0.46		0.60	0.36			0.04	0.54		0.22	0.05

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 29.2
 Intersection Capacity Utilization 51.3%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 430: Hillcrest Rd & US 70 Bus



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

431: NC 55 & Green Haynes Rd
 2015 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	20	263	18	24	171
Future Volume (vph)	10	20	263	18	24	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1652	0	1743	0	0	1749
Flt Permitted	0.984					0.994
Satd. Flow (perm)	1652	0	1743	0	0	1749
Link Speed (mph)	55		55			55
Link Distance (ft)	1072		1015			1052
Travel Time (s)	13.3		12.6			13.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	0	312	0	0	217
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	20	263	18	24	171
Future Volume (Veh/h)	10	20	263	18	24	171
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	22	292	20	27	190
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	546	302			312	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	546	302			312	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	98	97			98	
cM capacity (veh/h)	486	735			1215	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	33	312	217			
Volume Left	11	0	27			
Volume Right	22	20	0			
cSH	628	1700	1215			
Volume to Capacity	0.05	0.18	0.02			
Queue Length 95th (ft)	4	0	2			
Control Delay (s)	11.1	0.0	1.2			
Lane LOS	B		A			
Approach Delay (s)	11.1	0.0	1.2			
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			38.6%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

431: NC 55 & Green Haynes Rd
 2015 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	24	171	10	20	263
Future Volume (vph)	18	24	171	10	20	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1665	0	1747	0	0	1754
Flt Permitted	0.979					0.997
Satd. Flow (perm)	1665	0	1747	0	0	1754
Link Speed (mph)	55		55			55
Link Distance (ft)	1072		1015			1052
Travel Time (s)	13.3		12.6			13.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	0	201	0	0	314
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	24	171	10	20	263
Future Volume (Veh/h)	18	24	171	10	20	263
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	27	190	11	22	292
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	532	196			201	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	532	196			201	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	96	97			98	
cM capacity (veh/h)	498	843			1336	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	47	201	314			
Volume Left	20	0	22			
Volume Right	27	11	0			
cSH	651	1700	1336			
Volume to Capacity	0.07	0.12	0.02			
Queue Length 95th (ft)	6	0	1			
Control Delay (s)	11.0	0.0	0.7			
Lane LOS	B		A			
Approach Delay (s)	11.0	0.0	0.7			
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			37.9%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

432: NC 55 & N Croom Bland Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	4	285	190	4
Future Volume (vph)	4	4	4	285	190	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1758	1754	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1758	1754	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1207			1035	1040	
Travel Time (s)	15.0			12.8	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	321	215	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.2%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	4	4	285	190	4
Future Volume (Veh/h)	4	4	4	285	190	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	317	211	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	538	213	215			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538	213	215			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	100	100			
cM capacity (veh/h)	504	830	1320			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	321	215			
Volume Left	4	4	0			
Volume Right	4	0	4			
cSH	627	1320	1700			
Volume to Capacity	0.01	0.00	0.13			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	10.8	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.8	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		28.2%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

432: NC 55 & N Croom Bland Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	4	190	285	4
Future Volume (vph)	4	4	4	190	285	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1758	1756	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1758	1756	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1207			1035	1040	
Travel Time (s)	15.0			12.8	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	215	321	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	4	4	190	285	4
Future Volume (Veh/h)	4	4	4	190	285	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	211	317	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	538	319	321			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538	319	321			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	99	100			
cM capacity (veh/h)	504	724	1206			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	215	321			
Volume Left	4	4	0			
Volume Right	4	0	4			
cSH	594	1206	1700			
Volume to Capacity	0.01	0.00	0.19			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	11.1	0.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.1	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		25.2%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

433: NC 11 & Leslie R Stroud Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	11	5	5	639	4	343	6
Future Volume (vph)	11	5	5	639	4	343	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	275		175		0
Storage Lanes	1	0	1		1		0
Taper Length (ft)	100		100		100		
Satd. Flow (prot)	1722	0	1719	3438	1719	3428	0
Flt Permitted	0.968		0.950		0.950		
Satd. Flow (perm)	1722	0	1719	3438	1719	3428	0
Link Speed (mph)	55			55		55	
Link Distance (ft)	1002			1032		970	
Travel Time (s)	12.4			12.8		12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	18	0	6	710	4	388	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	24			48		48	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		9		9
Sign Control	Stop			Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	11	5	5	639	4	343	6
Future Volume (Veh/h)	11	5	5	639	4	343	6
Sign Control	Stop			Free		Free	
Grade	0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	6	6	710	0	381	7
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				Raised		Raised	
Median storage (veh)				1		1	
Upstream signal (ft)							
pX, platoon unblocked					0.00		
vC, conflicting volume		752	194	388	0		
vC1, stage 1 conf vol		384					
vC2, stage 2 conf vol		367					
vCu, unblocked vol		752	194	388	0		
tC, single (s)		6.8	6.9	4.2	0.0		
tC, 2 stage (s)		5.8					
tF (s)		3.5	3.3	2.2	0.0		
p0 queue free %		97	99	99	0		
cM capacity (veh/h)		460	815	1146	0		

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	18	6	355	355	254	134	0
Volume Left	12	6	0	0	0	0	0
Volume Right	6	0	0	0	0	7	0
cSH	538	1146	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.01	0.21	0.21	0.15	0.08	0.00
Queue Length 95th (ft)	3	0	0	0	0	0	0
Control Delay (s)	11.9	8.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	11.9	0.1	0.0				
Approach LOS	B						

Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utilization			27.7%		ICU Level of Service		A
Analysis Period (min)			15				

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

433: NC 11 & Leslie R Stroud Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	7	4	4	343	4	639	13
Future Volume (vph)	7	4	4	343	4	639	13
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	275		175		0
Storage Lanes	1	0	1		1		0
Taper Length (ft)	100		100		100		
Satd. Flow (prot)	1722	0	1719	3438	1719	3428	0
Flt Permitted	0.968		0.950		0.950		
Satd. Flow (perm)	1722	0	1719	3438	1719	3428	0
Link Speed (mph)	55			55		55	
Link Distance (ft)	1002			1032		970	
Travel Time (s)	12.4			12.8		12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	12	0	4	381	4	724	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	24			48		48	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		9		9
Sign Control	Stop			Free		Free	

Intersection Summary



















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	7	4	4	343	4	639	13
Future Volume (Veh/h)	7	4	4	343	4	639	13
Sign Control	Stop			Free		Free	
Grade	0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	4	4	381	0	710	14
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				Raised		Raised	
Median storage (veh)				1		1	
Upstream signal (ft)							
pX, platoon unblocked					0.00		
vC, conflicting volume	916	362	724	0			
vC1, stage 1 conf vol	717						
vC2, stage 2 conf vol	198						
vCu, unblocked vol	916	362	724	0			
tC, single (s)	6.8	6.9	4.2	0.0			
tC, 2 stage (s)	5.8						
tF (s)	3.5	3.3	2.2	0.0			
p0 queue free %	98	99	100	0			
cM capacity (veh/h)	367	635	855	0			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	4	190	190	473	251	0
Volume Left	8	4	0	0	0	0	0
Volume Right	4	0	0	0	0	14	0
cSH	427	855	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.00	0.11	0.11	0.28	0.15	0.00
Queue Length 95th (ft)	2	0	0	0	0	0	0
Control Delay (s)	13.7	9.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	13.7	0.1	0.0				
Approach LOS	B						
Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utilization			28.1%		ICU Level of Service		A
Analysis Period (min)			15				

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

434: NC 11 & Green Haynes Rd/Albrittons Rd
2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	27	21	13	16	14	22	603	24	14	316	34
Future Volume (vph)	60	27	21	13	16	14	22	603	24	14	316	34
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	225		0	325		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1748	0	0	1737	0	1719	3417	0	1719	3387	0
Flt Permitted		0.973			0.986		0.950			0.950		
Satd. Flow (perm)	0	1748	0	0	1737	0	1719	3417	0	1719	3387	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1085			1033			937			1059	
Travel Time (s)		13.5			12.8			11.6			13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	48	0	24	697	0	16	389	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.7%
Analysis Period (min)	15
	ICU Level of Service A





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	60	27	21	13	16	14	22	603	24	14	316	34
Future Volume (Veh/h)	60	27	21	13	16	14	22	603	24	14	316	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	67	30	23	14	18	16	24	670	27	16	351	38
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage (veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	810	1147	194	977	1152	348	389			697		
vC1, stage 1 conf vol	402	402		732	732							
vC2, stage 2 conf vol	408	745		246	421							
vCu, unblocked vol	810	1147	194	977	1152	348	389			697		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)	6.6	5.6		6.6	5.6							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	90	97	95	94	98	98			98		
cM capacity (veh/h)	362	295	811	285	298	645	1145			875		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	120	48	24	447	250	16	234	155
Volume Left	67	14	24	0	0	16	0	0
Volume Right	23	16	0	0	27	0	0	38
cSH	380	358	1145	1700	1700	875	1700	1700
Volume to Capacity	0.32	0.13	0.02	0.26	0.15	0.02	0.14	0.09
Queue Length 95th (ft)	33	11	2	0	0	1	0	0
Control Delay (s)	18.8	16.6	8.2	0.0	0.0	9.2	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	18.8	16.6	0.3			0.4		
Approach LOS	C	C						

Intersection Summary		
Average Delay		2.6
Intersection Capacity Utilization	35.7%	ICU Level of Service
Analysis Period (min)	15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

434: NC 11 & Green Haynes Rd/Albrittons Rd
 2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	16	22	24	27	14	21	316	13	14	603	60
Future Volume (vph)	34	16	22	24	27	14	21	316	13	14	603	60
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	225		0	325		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1728	0	0	1757	0	1719	3417	0	1719	3390	0
Flt Permitted		0.977			0.982		0.950			0.950		
Satd. Flow (perm)	0	1728	0	0	1757	0	1719	3417	0	1719	3390	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1085			1033			937			1059	
Travel Time (s)		13.5			12.8			11.6			13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	80	0	0	73	0	23	365	0	16	737	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↕		↔	↕	
Traffic Volume (veh/h)	34	16	22	24	27	14	21	316	13	14	603	60
Future Volume (Veh/h)	34	16	22	24	27	14	21	316	13	14	603	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	38	18	24	27	30	16	23	351	14	16	670	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage (veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	988	1146	368	804	1173	182	737			365		
vC1, stage 1 conf vol	736	736		404	404							
vC2, stage 2 conf vol	252	411		400	769							
vCu, unblocked vol	988	1146	368	804	1173	182	737			365		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)	6.6	5.6		6.6	5.6							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	94	96	92	89	98	97			99		
cM capacity (veh/h)	285	300	626	359	286	826	845			1169		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	80	73	23	234	131	16	447	290
Volume Left	38	27	23	0	0	16	0	0
Volume Right	24	16	0	0	14	0	0	67
cSH	345	365	845	1700	1700	1169	1700	1700
Volume to Capacity	0.23	0.20	0.03	0.14	0.08	0.01	0.26	0.17
Queue Length 95th (ft)	22	18	2	0	0	1	0	0
Control Delay (s)	18.5	17.3	9.4	0.0	0.0	8.1	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	18.5	17.3	0.6			0.2		
Approach LOS	C	C						

Intersection Summary		
Average Delay		2.4
Intersection Capacity Utilization	31.1%	ICU Level of Service
Analysis Period (min)	15	A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	83	5	47	49	11	7	586	97	12	305	132
Future Volume (vph)	206	83	5	47	49	11	7	586	97	12	305	132
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	125		150	225		0	150		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1699	1495	1736	1827	1553	1719	3366	0	1687	3222	0
Flt Permitted		0.966		0.950			0.443			0.291		
Satd. Flow (perm)	0	1699	1495	1736	1827	1553	802	3366	0	517	3222	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			35			55				55
Link Distance (ft)		1003			1039			1060				2241
Travel Time (s)		12.4			20.2			13.1				27.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	4%	4%	4%	5%	5%	5%	7%	7%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	6	52	54	12	8	759	0	13	486	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2				6
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	21.0	21.0		21.0	21.0	
Total Split (s)	36.0	36.0	36.0	14.0	14.0	14.0	40.0	40.0		40.0	40.0	
Total Split (%)	40.0%	40.0%	40.0%	15.6%	15.6%	15.6%	44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	29.0	29.0	29.0	7.0	7.0	7.0	33.0	33.0		33.0	33.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min		C-Min	C-Min	
Act Effect Green (s)		24.1	24.1	9.7	9.7	9.7	44.0	44.0		44.0	44.0	
Actuated g/C Ratio		0.27	0.27	0.11	0.11	0.11	0.49	0.49		0.49	0.49	
v/c Ratio		0.71	0.01	0.28	0.28	0.07	0.02	0.46		0.05	0.31	
Control Delay		37.9	21.0	41.1	40.8	37.2	16.7	18.5		17.4	16.7	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
 2015 No-Build Alternative AM Peak

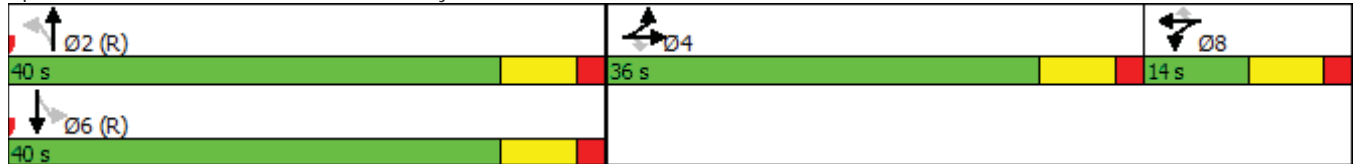


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		37.9	21.0	41.1	40.8	37.2	16.7	18.5		17.4	16.7	
LOS		D	C	D	D	D	B	B		B	B	
Approach Delay		37.6			40.6			18.5			16.7	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)		164	3	28	29	6	2	155		4	91	
Queue Length 95th (ft)		229	11	64	65	23	12	234		17	144	
Internal Link Dist (ft)		923			959			980			2161	
Turn Bay Length (ft)			75	125		150	225			150		
Base Capacity (vph)		585	514	186	196	167	392	1646		253	1576	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.55	0.01	0.28	0.28	0.07	0.02	0.46		0.05	0.31	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 23.1
 Intersection Capacity Utilization 53.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 435: NC 11 & NC 55/Tyree Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↘	↙	↕	↖	↗	↘	↙	↕	↖
Traffic Volume (vph)	133	49	6	96	82	12	5	305	46	12	586	206
Future Volume (vph)	133	49	6	96	82	12	5	305	46	12	586	206
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	125		150	225		0	150		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1698	1495	1736	1827	1553	1719	3369	0	1687	3242	0
Flt Permitted		0.965		0.950			0.249			0.513		
Satd. Flow (perm)	0	1698	1495	1736	1827	1553	451	3369	0	911	3242	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			35			55				55
Link Distance (ft)		1003			1039			1060				2241
Travel Time (s)		12.4			20.2			13.1				27.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	4%	4%	4%	5%	5%	5%	7%	7%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	202	7	107	91	13	6	390	0	13	880	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2				6
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	21.0	21.0		21.0	21.0	
Total Split (s)	26.0	26.0	26.0	19.0	19.0	19.0	45.0	45.0		45.0	45.0	
Total Split (%)	28.9%	28.9%	28.9%	21.1%	21.1%	21.1%	50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	19.0	19.0	19.0	12.0	12.0	12.0	38.0	38.0		38.0	38.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min		C-Min	C-Min	
Act Effect Green (s)		17.3	17.3	12.3	12.3	12.3	45.4	45.4		45.4	45.4	
Actuated g/C Ratio		0.19	0.19	0.14	0.14	0.14	0.50	0.50		0.50	0.50	
v/c Ratio		0.62	0.02	0.45	0.37	0.06	0.03	0.23		0.03	0.54	
Control Delay		41.4	27.5	41.6	39.0	33.3	14.4	14.0		14.0	17.8	

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Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
2015 No-Build Alternative PM Peak

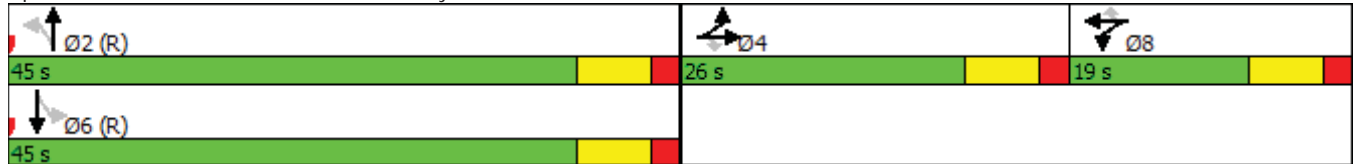


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		41.4	27.5	41.6	39.0	33.3	14.4	14.0		14.0	17.8	
LOS		D	C	D	D	C	B	B		B	B	
Approach Delay		40.9			40.0			14.0			17.7	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)		105	3	56	47	7	2	63		4	175	
Queue Length 95th (ft)		169	14	106	92	23	9	102		15	257	
Internal Link Dist (ft)		923			959			980			2161	
Turn Bay Length (ft)			75	125		150	225			150		
Base Capacity (vph)		396	348	272	286	243	227	1700		459	1635	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.51	0.02	0.39	0.32	0.05	0.03	0.23		0.03	0.54	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 22.4
 Intersection Capacity Utilization 47.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 435: NC 11 & NC 55/Tyree Rd



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

436: NC 11 & Central Ave
 2015 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	17	815	5	9	437
Future Volume (vph)	5	17	815	5	9	437
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1651	0	3370	0	1687	3374
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1651	0	3370	0	1687	3374
Link Speed (mph)	35		55			55
Link Distance (ft)	957		2241			1037
Travel Time (s)	18.6		27.8			12.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	912	0	10	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	17	815	5	9	437
Future Volume (Veh/h)	5	17	815	5	9	437
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	19	906	6	10	486
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1172	456			912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1172	456			912	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	97	97			99	
cM capacity (veh/h)	183	551			712	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	25	604	308	10	243	243
Volume Left	6	0	0	10	0	0
Volume Right	19	0	6	0	0	0
cSH	372	1700	1700	712	1700	1700
Volume to Capacity	0.07	0.36	0.18	0.01	0.14	0.14
Queue Length 95th (ft)	5	0	0	1	0	0
Control Delay (s)	15.4	0.0	0.0	10.1	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	15.4	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			32.7%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

436: NC 11 & Central Ave
 2015 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	11	437	4	18	815
Future Volume (vph)	4	11	437	4	18	815
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1655	0	3370	0	1687	3374
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1655	0	3370	0	1687	3374
Link Speed (mph)	35		55			55
Link Distance (ft)	957		2241			1037
Travel Time (s)	18.6		27.8			12.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	490	0	20	906
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	11	437	4	18	815
Future Volume (Veh/h)	4	11	437	4	18	815
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	12	486	4	20	906
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	981	245			490	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	981	245			490	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	98	98			98	
cM capacity (veh/h)	242	755			1035	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	324	166	20	453	453
Volume Left	4	0	0	20	0	0
Volume Right	12	0	4	0	0	0
cSH	493	1700	1700	1035	1700	1700
Volume to Capacity	0.03	0.19	0.10	0.02	0.27	0.27
Queue Length 95th (ft)	3	0	0	1	0	0
Control Delay (s)	12.5	0.0	0.0	8.5	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	12.5	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			32.5%		ICU Level of Service	A
Analysis Period (min)			15			

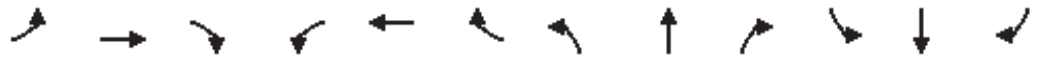
R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

437: NC 11 & Edgewood Dr/Mary Beth Rd
 2015 No-Build Alternative AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	9	4	29	4	1018	9	16	545	4
Future Volume (vph)	4	4	4	9	4	29	4	1018	9	16	545	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1669	0	1687	3370	0	1736	3468	0
Flt Permitted		0.984			0.989		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1669	0	1687	3370	0	1736	3468	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		752			1155			1055			973	
Travel Time (s)		20.5			22.5			16.0			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	46	0	4	1141	0	18	610	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary



















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	4	4	4	9	4	29	4	1018	9	16	545	4
Future Volume (Veh/h)	4	4	4	9	4	29	4	1018	9	16	545	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	10	4	32	4	1131	10	18	606	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1252	1793	305	1489	1790	570	610			1141		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1252	1793	305	1489	1790	570	610			1141		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	96	95	99	87	95	93	100			97		
cM capacity (veh/h)	112	77	691	80	77	464	931			597		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	12	46	4	754	387	18	404	206				
Volume Left	4	10	4	0	0	18	0	0				
Volume Right	4	32	0	0	10	0	0	4				
cSH	129	187	931	1700	1700	597	1700	1700				
Volume to Capacity	0.09	0.25	0.00	0.44	0.23	0.03	0.24	0.12				
Queue Length 95th (ft)	8	23	0	0	0	2	0	0				
Control Delay (s)	35.9	30.4	8.9	0.0	0.0	11.2	0.0	0.0				
Lane LOS	E	D	A			B						
Approach Delay (s)	35.9	30.4	0.0			0.3						
Approach LOS	E	D										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			38.4%	ICU Level of Service	A							
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

437: NC 11 & Edgewood Dr/Mary Beth Rd
 2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	8	4	18	4	546	7	31	1018	4
Future Volume (vph)	4	4	4	8	4	18	4	546	7	31	1018	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1688	0	1687	3367	0	1736	3468	0
Flt Permitted		0.984			0.987		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1688	0	1687	3367	0	1736	3468	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		752			1155			1055			973	
Travel Time (s)		20.5			22.5			16.0			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	33	0	4	615	0	34	1135	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕		↗	↕		↗	↕		
Traffic Volume (veh/h)	4	4	4	8	4	18	4	546	7	31	1018	4	
Future Volume (Veh/h)	4	4	4	8	4	18	4	546	7	31	1018	4	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	4	4	4	9	4	20	4	607	8	34	1131	4	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type													
Median storage veh													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	1534	1824	568	1258	1822	308	1135			615			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1534	1824	568	1258	1822	308	1135			615			
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2			
p0 queue free %	94	95	99	92	95	97	99			96			
cM capacity (veh/h)	71	73	466	117	73	688	583			947			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	12	33	4	405	210	34	754	381					
Volume Left	4	9	4	0	0	34	0	0					
Volume Right	4	20	0	0	8	0	0	4					
cSH	101	206	583	1700	1700	947	1700	1700					
Volume to Capacity	0.12	0.16	0.01	0.24	0.12	0.04	0.44	0.22					
Queue Length 95th (ft)	10	14	1	0	0	3	0	0					
Control Delay (s)	45.6	25.8	11.2	0.0	0.0	8.9	0.0	0.0					
Lane LOS	E	D	B			A							
Approach Delay (s)	45.6	25.8	0.1			0.3							
Approach LOS	E	D											
Intersection Summary													
Average Delay			1.0										
Intersection Capacity Utilization			38.3%	ICU Level of Service					A				
Analysis Period (min)			15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

438: NC 11 & Old Asphalt Rd
 2015 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	76	1030	17	44	549
Future Volume (vph)	16	76	1030	17	44	549
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1625	0	3464	0	1736	3471
Flt Permitted	0.991				0.950	
Satd. Flow (perm)	1625	0	3464	0	1736	3471
Link Speed (mph)	55		45			45
Link Distance (ft)	1048		1215			1123
Travel Time (s)	13.0		18.4			17.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	1163	0	49	610
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	76	1030	17	44	549
Future Volume (Veh/h)	16	76	1030	17	44	549
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	84	1144	19	49	610
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1556	582			1163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1556	582			1163	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	82			92	
cM capacity (veh/h)	94	454			585	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	102	763	400	49	305	305
Volume Left	18	0	0	49	0	0
Volume Right	84	0	19	0	0	0
cSH	271	1700	1700	585	1700	1700
Volume to Capacity	0.38	0.45	0.24	0.08	0.18	0.18
Queue Length 95th (ft)	42	0	0	7	0	0
Control Delay (s)	26.1	0.0	0.0	11.7	0.0	0.0
Lane LOS	D			B		
Approach Delay (s)	26.1	0.0		0.9		
Approach LOS	D					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

438: NC 11 & Old Asphalt Rd
 2015 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	45	549	14	77	1029
Future Volume (vph)	16	45	549	14	77	1029
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1640	0	3457	0	1736	3471
Flt Permitted	0.987				0.950	
Satd. Flow (perm)	1640	0	3457	0	1736	3471
Link Speed (mph)	55		45			45
Link Distance (ft)	1048		1215			1123
Travel Time (s)	13.0		18.4			17.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	626	0	86	1143
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	45	549	14	77	1029
Future Volume (Veh/h)	16	45	549	14	77	1029
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	50	610	16	86	1143
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1362	313			626	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1362	313			626	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	93			91	
cM capacity (veh/h)	125	680			938	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	68	407	219	86	572	572
Volume Left	18	0	0	86	0	0
Volume Right	50	0	16	0	0	0
cSH	313	1700	1700	938	1700	1700
Volume to Capacity	0.22	0.24	0.13	0.09	0.34	0.34
Queue Length 95th (ft)	20	0	0	8	0	0
Control Delay (s)	19.7	0.0	0.0	9.2	0.0	0.0
Lane LOS	C		A			
Approach Delay (s)	19.7	0.0		0.6		
Approach LOS	C					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		38.8%		ICU Level of Service	A	
Analysis Period (min)		15				

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	659	290	56	812	68	468	559	74	40	252	161
Future Volume (vph)	221	659	290	56	812	68	468	559	74	40	252	161
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		475	275		600	275		0	400		400
Storage Lanes	2		1	1		1	2		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3303	3406	1524	1687	3374	1509	3367	3412	0	3367	3471	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3303	3406	1524	1687	3374	1509	3367	3412	0	3367	3471	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1036			1050			1060			982	
Travel Time (s)		15.7			15.9			16.1			14.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	7%	7%	7%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	246	732	322	62	902	76	520	703	0	44	280	179
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		45			45			28			28	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Split	NA		Split	NA	pm+ov
Protected Phases	5	2	8	1	6		8	8		4	4	5
Permitted Phases			2			Free						4
Detector Phase	5	2	8	1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	14.0
Total Split (s)	17.0	51.0	36.0	15.0	49.0		36.0	36.0		18.0	18.0	17.0
Total Split (%)	14.2%	42.5%	30.0%	12.5%	40.8%		30.0%	30.0%		15.0%	15.0%	14.2%
Maximum Green (s)	10.0	44.0	29.0	8.0	42.0		29.0	29.0		11.0	11.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	None
Act Effect Green (s)	12.3	47.7	79.8	9.8	42.5	120.0	31.1	31.1		14.2	14.2	26.4
Actuated g/C Ratio	0.10	0.40	0.66	0.08	0.35	1.00	0.26	0.26		0.12	0.12	0.22
v/c Ratio	0.73	0.54	0.32	0.45	0.76	0.05	0.60	0.80		0.11	0.68	0.52
Control Delay	65.7	30.6	5.9	63.3	39.1	0.1	42.2	49.2		48.4	60.1	27.1

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
 2015 No-Build Alternative AM Peak

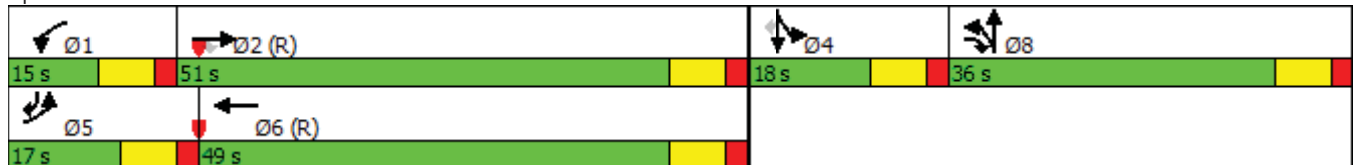


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	65.7	30.6	5.9	63.3	39.1	0.1	42.2	49.2		48.4	60.1	27.1
LOS	E	C	A	E	D	A	D	D		D	E	C
Approach Delay		31.1			37.7			46.2			47.4	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	96	243	58	46	330	0	182	268		15	108	63
Queue Length 95th (ft)	#152	294	72	93	393	0	240	342		35	#169	109
Internal Link Dist (ft)		956			970			980			902	
Turn Bay Length (ft)	325		475	275		600	275			400		400
Base Capacity (vph)	337	1403	1006	141	1246	1509	885	897		397	410	342
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.73	0.52	0.32	0.44	0.72	0.05	0.59	0.78		0.11	0.68	0.52

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 39.4
 Intersection LOS: D
 Intersection Capacity Utilization 69.1%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 439: NC 11 & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	812	468	74	659	40	290	252	56	68	559	221
Future Volume (vph)	161	812	468	74	659	40	290	252	56	68	559	221
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		475	275		600	275		0	400		400
Storage Lanes	2		1	1		1	2		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3303	3406	1524	1687	3374	1509	3367	3377	0	3367	3471	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3303	3406	1524	1687	3374	1509	3367	3377	0	3367	3471	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1036			1050			1060			982	
Travel Time (s)		15.7			15.9			16.1			14.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	7%	7%	7%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	902	520	82	732	44	322	342	0	76	621	246
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		45			45			28			28	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Split	NA		Split	NA	pm+ov
Protected Phases	5	2	8	1	6		8	8		4	4	5
Permitted Phases			2			Free						4
Detector Phase	5	2	8	1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	14.0
Total Split (s)	17.0	47.0	27.0	14.0	44.0		27.0	27.0		32.0	32.0	17.0
Total Split (%)	14.2%	39.2%	22.5%	11.7%	36.7%		22.5%	22.5%		26.7%	26.7%	14.2%
Maximum Green (s)	10.0	40.0	20.0	7.0	37.0		20.0	20.0		25.0	25.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	None
Act Effect Green (s)	11.9	41.9	64.2	9.3	39.3	120.0	22.3	22.3		26.5	26.5	38.4
Actuated g/C Ratio	0.10	0.35	0.54	0.08	0.33	1.00	0.19	0.19		0.22	0.22	0.32
v/c Ratio	0.55	0.76	0.64	0.63	0.66	0.03	0.51	0.54		0.10	0.81	0.50
Control Delay	58.3	39.8	15.9	75.8	38.6	0.0	47.3	47.9		37.2	53.6	20.9

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
 2015 No-Build Alternative PM Peak

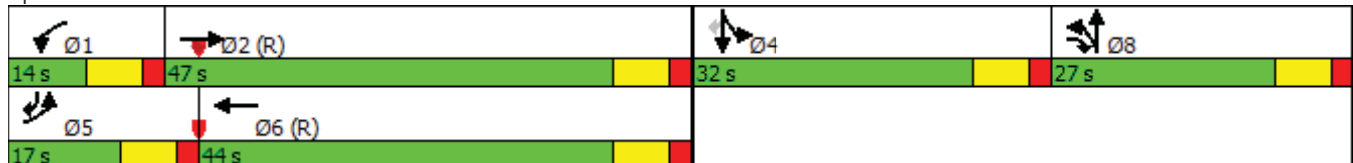


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	58.3	39.8	15.9	75.8	38.6	0.0	47.3	47.9		37.2	53.6	20.9
LOS	E	D	B	E	D	A	D	D		D	D	C
Approach Delay		34.1			40.1			47.6			43.8	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	69	331	180	63	262	0	117	127		23	235	84
Queue Length 95th (ft)	107	402	247	#137	325	0	164	178		45	310	134
Internal Link Dist (ft)		956			970			980			902	
Turn Bay Length (ft)	325		475	275		600	275			400		400
Base Capacity (vph)	334	1229	821	130	1142	1509	640	642		767	791	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.54	0.73	0.63	0.63	0.64	0.03	0.50	0.53		0.10	0.79	0.49

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 39.8
 Intersection LOS: D
 Intersection Capacity Utilization 68.7%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 439: NC 11 & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

440: US 258 & Clarence Potter Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	4	270	180	4
Future Volume (vph)	4	4	4	270	180	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1791	1787	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1791	1787	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1007			1030	1027	
Travel Time (s)	12.5			12.8	12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	304	204	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.4%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	4	4	270	180	4
Future Volume (Veh/h)	4	4	4	270	180	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	300	200	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	510	202	204			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	202	204			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	100	100			
cM capacity (veh/h)	524	841	1344			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	304	204			
Volume Left	4	4	0			
Volume Right	4	0	4			
cSH	645	1344	1700			
Volume to Capacity	0.01	0.00	0.12			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	10.6	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.6	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		27.4%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

440: US 258 & Clarence Potter Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	4	180	270	4
Future Volume (vph)	4	4	4	180	270	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1791	1789	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1791	1789	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1007			1030	1027	
Travel Time (s)	12.5			12.8	12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	204	304	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.5%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	4	4	180	270	4
Future Volume (Veh/h)	4	4	4	180	270	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	200	300	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	510	302	304			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	302	304			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	99	100			
cM capacity (veh/h)	523	740	1234			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	204	304			
Volume Left	4	4	0			
Volume Right	4	0	4			
cSH	613	1234	1700			
Volume to Capacity	0.01	0.00	0.18			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	10.9	0.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.9	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		24.5%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

441: US 258 & Albrittons Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	46	18	16	358	236	27
Future Volume (vph)	46	18	16	358	236	27
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			75
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1712	0	1687	1776	1776	1509
Flt Permitted	0.965		0.950			
Satd. Flow (perm)	1712	0	1687	1776	1776	1509
Link Speed (mph)	55			55	55	
Link Distance (ft)	1002			1057	949	
Travel Time (s)	12.4			13.1	11.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	0	18	398	262	30
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.2% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	18	16	358	236	27
Future Volume (Veh/h)	46	18	16	358	236	27
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	20	18	398	262	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	696	262	292			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696	262	292			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	87	97	99			
cM capacity (veh/h)	400	774	1242			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	71	18	398	262	30	
Volume Left	51	18	0	0	0	
Volume Right	20	0	0	0	30	
cSH	463	1242	1700	1700	1700	
Volume to Capacity	0.15	0.01	0.23	0.15	0.02	
Queue Length 95th (ft)	13	1	0	0	0	
Control Delay (s)	14.2	7.9	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	14.2	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			29.2%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

441: US 258 & Albrittons Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	16	18	236	358	46
Future Volume (vph)	27	16	18	236	358	46
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			75
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1698	0	1687	1776	1776	1509
Flt Permitted	0.970		0.950			
Satd. Flow (perm)	1698	0	1687	1776	1776	1509
Link Speed (mph)	55			55	55	
Link Distance (ft)	1002			1057	949	
Travel Time (s)	12.4			13.1	11.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	20	262	398	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	16	18	236	358	46
Future Volume (Veh/h)	27	16	18	236	358	46
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	30	18	20	262	398	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	700	398	449			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	700	398	449			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	92	97	98			
cM capacity (veh/h)	397	649	1085			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	48	20	262	398	51	
Volume Left	30	20	0	0	0	
Volume Right	18	0	0	0	51	
cSH	464	1085	1700	1700	1700	
Volume to Capacity	0.10	0.02	0.15	0.23	0.03	
Queue Length 95th (ft)	9	1	0	0	0	
Control Delay (s)	13.6	8.4	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	13.6	0.6		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			28.8%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

442: US 258 & Ferguson Ln/Collier Loftin Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	4	4	4	27	4	36	4	501	48	42	328	4
Future Volume (vph)	4	4	4	27	4	36	4	501	48	42	328	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1676	0	1719	1786	0	1719	1806	0
Flt Permitted		0.984			0.980		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1676	0	1719	1786	0	1719	1806	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		499			1019			991			2680	
Travel Time (s)		13.6			19.9			15.0			40.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	74	0	4	610	0	47	368	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.1% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	4	4	4	27	4	36	4	501	48	42	328	4
Future Volume (Veh/h)	4	4	4	27	4	36	4	501	48	42	328	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	30	4	40	4	557	53	47	364	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1067	1078	366	1056	1054	584	368			610		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1067	1078	366	1056	1054	584	368			610		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	84	98	92	100			95		
cM capacity (veh/h)	174	207	679	190	213	510	1174			954		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	12	74	4	610	47	368						
Volume Left	4	30	4	0	47	0						
Volume Right	4	40	0	53	0	4						
cSH	249	290	1174	1700	954	1700						
Volume to Capacity	0.05	0.25	0.00	0.36	0.05	0.22						
Queue Length 95th (ft)	4	25	0	0	4	0						
Control Delay (s)	20.2	21.6	8.1	0.0	9.0	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	20.2	21.6	0.1		1.0							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			47.1%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

442: US 258 & Ferguson Ln/Collier Loftin Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	48	4	42	4	328	27	36	501	4
Future Volume (vph)	4	4	4	48	4	42	4	328	27	36	501	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1689	0	1719	1790	0	1719	1808	0
Flt Permitted		0.984			0.975		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1689	0	1719	1790	0	1719	1808	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		499			1019			991			2680	
Travel Time (s)		13.6			19.9			15.0			40.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	104	0	4	394	0	40	561	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	4	4	4	48	4	42	4	328	27	36	501	4
Future Volume (Veh/h)	4	4	4	48	4	42	4	328	27	36	501	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	53	4	47	4	364	30	40	557	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1060	1041	559	1030	1028	379	561			394		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1060	1041	559	1030	1028	379	561			394		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	99	74	98	93	100			97		
cM capacity (veh/h)	180	221	529	200	224	666	995			1148		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	12	104	4	394	40	561						
Volume Left	4	53	4	0	40	0						
Volume Right	4	47	0	30	0	4						
cSH	250	294	995	1700	1148	1700						
Volume to Capacity	0.05	0.35	0.00	0.23	0.03	0.33						
Queue Length 95th (ft)	4	38	0	0	3	0						
Control Delay (s)	20.1	23.8	8.6	0.0	8.2	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	20.1	23.8	0.1		0.5							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			45.3%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

443: US 258 & Old Asphalt Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	20	38	519	337	52
Future Volume (vph)	43	20	38	519	337	52
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1709	0	1719	1810	1777	0
Flt Permitted	0.967		0.950			
Satd. Flow (perm)	1709	0	1719	1810	1777	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1037			2680	570	
Travel Time (s)	12.9			40.6	8.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	0	42	577	432	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	20	38	519	337	52
Future Volume (Veh/h)	43	20	38	519	337	52
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	48	22	42	577	374	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1064	403	432			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1064	403	432			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	80	97	96			
cM capacity (veh/h)	236	645	1112			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	70	42	577	432		
Volume Left	48	42	0	0		
Volume Right	22	0	0	58		
cSH	295	1112	1700	1700		
Volume to Capacity	0.24	0.04	0.34	0.25		
Queue Length 95th (ft)	23	3	0	0		
Control Delay (s)	20.9	8.4	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	20.9	0.6		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			37.8%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

443: US 258 & Old Asphalt Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	38	20	337	519	43
Future Volume (vph)	52	38	20	337	519	43
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1691	0	1719	1810	1791	0
Flt Permitted	0.972		0.950			
Satd. Flow (perm)	1691	0	1719	1810	1791	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1037			2680	570	
Travel Time (s)	12.9			40.6	8.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	22	374	625	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	38	20	337	519	43
Future Volume (Veh/h)	52	38	20	337	519	43
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	58	42	22	374	577	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1019	601	625			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1019	601	625			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	92	98			
cM capacity (veh/h)	255	498	942			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	100	22	374	625		
Volume Left	58	22	0	0		
Volume Right	42	0	0	48		
cSH	321	942	1700	1700		
Volume to Capacity	0.31	0.02	0.22	0.37		
Queue Length 95th (ft)	32	2	0	0		
Control Delay (s)	21.2	8.9	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	21.2	0.5		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			41.8%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	656	96	82	786	451	137	338	98	322	203	16
Future Volume (vph)	19	656	96	82	786	451	137	338	98	322	203	16
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		250	225		0	400		275	275		0
Storage Lanes	1		1	1		1	2		1	2		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	4848	1509	1719	3438	1538	1719	3438	1538	3367	3433	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1687	4848	1509	1719	3438	1538	1719	3438	1538	3367	3433	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		728			2078			588			1049	
Travel Time (s)		11.0			31.5			8.9			15.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	729	107	91	873	501	152	376	109	358	244	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			18			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	14.0	46.0	24.0	18.0	50.0	30.0	24.0	26.0	18.0	30.0	32.0	
Total Split (%)	11.7%	38.3%	20.0%	15.0%	41.7%	25.0%	20.0%	21.7%	15.0%	25.0%	26.7%	
Maximum Green (s)	7.0	39.0	17.0	11.0	43.0	23.0	17.0	19.0	11.0	23.0	25.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None	None	None	None	
Act Effect Green (s)	9.2	46.9	72.1	12.1	58.2	84.7	25.2	19.5	31.6	21.5	15.8	
Actuated g/C Ratio	0.08	0.39	0.60	0.10	0.48	0.71	0.21	0.16	0.26	0.18	0.13	
v/c Ratio	0.16	0.39	0.12	0.53	0.52	0.46	0.42	0.67	0.27	0.59	0.54	
Control Delay	55.1	28.3	6.0	66.6	13.4	3.9	44.3	53.5	19.9	49.0	52.8	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
 2015 No-Build Alternative AM Peak

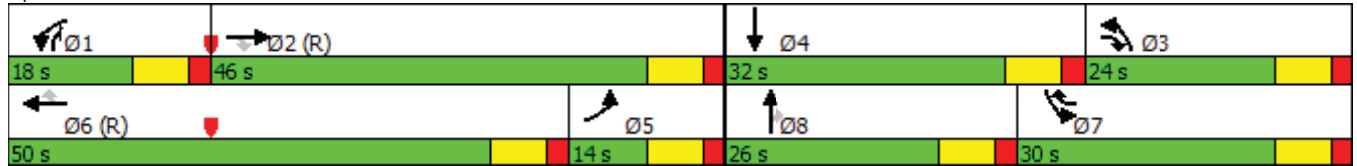


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	28.3	6.0	66.6	13.4	3.9	44.3	53.5	19.9	49.0	52.8	
LOS	E	C	A	E	B	A	D	D	B	D	D	
Approach Delay		26.1			13.5			45.6			50.5	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	16	154	16	56	70	30	100	144	38	130	94	
Queue Length 95th (ft)	42	198	34	122	245	69	167	196	65	176	133	
Internal Link Dist (ft)		648			1998			508			969	
Turn Bay Length (ft)	225		250	225			400		275	275		
Base Capacity (vph)	128	1906	906	188	1681	1078	361	607	417	704	772	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.38	0.12	0.48	0.52	0.46	0.42	0.62	0.26	0.51	0.32	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 34 (28%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 28.5
 Intersection Capacity Utilization 62.8%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 444: US 258/US 70 Bus & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	786	137	98	656	322	96	203	82	451	338	19
Future Volume (vph)	16	786	137	98	656	322	96	203	82	451	338	19
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		250	225		0	400		275	275		0
Storage Lanes	1		1	1		1	2		1	2		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	4848	1509	1719	3438	1538	1719	3438	1538	3367	3443	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1687	4848	1509	1719	3438	1538	1719	3438	1538	3367	3443	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				45
Link Distance (ft)		728			2078			588				1049
Travel Time (s)		11.0			31.5			8.9				15.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	873	152	109	729	358	107	226	91	501	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			18				30
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	43.0	22.0	22.0	51.0	35.0	22.0	20.0	22.0	35.0	33.0	
Total Split (%)	11.7%	35.8%	18.3%	18.3%	42.5%	29.2%	18.3%	16.7%	18.3%	29.2%	27.5%	
Maximum Green (s)	7.0	36.0	15.0	15.0	44.0	28.0	15.0	13.0	15.0	28.0	26.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None	None	None	None	
Act Effect Green (s)	9.1	45.9	64.6	14.3	59.5	89.9	18.8	14.4	33.7	25.5	21.1	
Actuated g/C Ratio	0.08	0.38	0.54	0.12	0.50	0.75	0.16	0.12	0.28	0.21	0.18	
v/c Ratio	0.14	0.47	0.19	0.53	0.43	0.31	0.40	0.55	0.21	0.70	0.66	
Control Delay	54.6	30.5	8.6	56.3	15.4	5.5	49.6	54.9	33.1	49.0	51.2	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
 2015 No-Build Alternative PM Peak



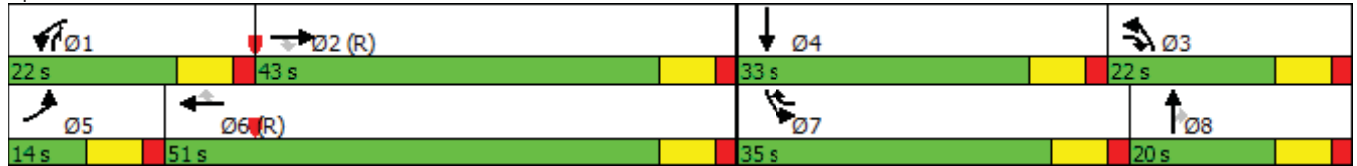
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	30.5	8.6	56.3	15.4	5.5	49.6	54.9	33.1	49.0	51.2	
LOS	D	C	A	E	B	A	D	D	C	D	D	
Approach Delay		27.7			16.2			48.9			50.0	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	13	189	30	83	102	22	75	87	53	186	152	
Queue Length 95th (ft)	38	255	58	120	251	176	131	130	95	230	196	
Internal Link Dist (ft)		648			1998			508			969	
Turn Bay Length (ft)	225		250	225			400		275	275		
Base Capacity (vph)	127	1862	818	243	1710	1213	275	439	466	848	803	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.47	0.19	0.45	0.43	0.30	0.39	0.51	0.20	0.59	0.49	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 22 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 32.0
 Intersection Capacity Utilization 59.3%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 444: US 258/US 70 Bus & US 70





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1022	49	16	1246	4	77	4	20	4	4	4
Future Volume (vph)	4	1022	49	16	1246	4	77	4	20	4	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	4905	0	1719	4940	0	1752	1610	0	0	1750	0
Flt Permitted	0.175			0.219			0.750				0.914	
Satd. Flow (perm)	317	4905	0	396	4940	0	1383	1610	0	0	1626	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			25	
Link Distance (ft)		2078			2483			1026			272	
Travel Time (s)		31.5			37.6			20.0			7.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1190	0	18	1388	0	86	26	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	85.0	85.0		85.0	85.0		35.0	35.0		35.0	35.0	
Total Split (%)	70.8%	70.8%		70.8%	70.8%		29.2%	29.2%		29.2%	29.2%	
Maximum Green (s)	78.0	78.0		78.0	78.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Act Effct Green (s)	99.1	99.1		99.1	99.1		14.7	14.7		14.7	14.7	
Actuated g/C Ratio	0.83	0.83		0.83	0.83		0.12	0.12		0.12	0.12	
v/c Ratio	0.02	0.29		0.06	0.34		0.51	0.13		0.06	0.06	
Control Delay	2.0	2.4		0.5	0.4		58.8	46.3		44.5	44.5	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

445: Meadowbrook Dr/Family Dollar Driveway & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	2.0	2.4		0.5	0.4		58.8	46.3				44.5
LOS	A	A		A	A		E	D				D
Approach Delay		2.4			0.4			55.9				44.5
Approach LOS		A			A			E				D
Queue Length 50th (ft)	0	12		0	6		63	18				8
Queue Length 95th (ft)	m1	34		m0	2		112	44				26
Internal Link Dist (ft)		1998			2403			946				192
Turn Bay Length (ft)	225			225			75					
Base Capacity (vph)	261	4051		327	4080		345	402				406
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.02	0.29		0.06	0.34		0.25	0.06				0.03

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 118 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 3.8
 Intersection Capacity Utilization 43.2%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 445: Meadowbrook Dr/Family Dollar Driveway & US 70





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1246	78	19	1022	4	50	4	15	4	4	4
Future Volume (vph)	4	1246	78	19	1022	4	50	4	15	4	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	4896	0	1719	4935	0	1752	1621	0	0	1750	0
Flt Permitted	0.234			0.161			0.750				0.903	
Satd. Flow (perm)	423	4896	0	291	4935	0	1383	1621	0	0	1606	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		2078			2483			1026				272
Travel Time (s)		31.5			37.6			20.0				7.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1471	0	21	1140	0	56	21	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	93.0	93.0		93.0	93.0		27.0	27.0		27.0	27.0	
Total Split (%)	77.5%	77.5%		77.5%	77.5%		22.5%	22.5%		22.5%	22.5%	
Maximum Green (s)	86.0	86.0		86.0	86.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Act Effct Green (s)	101.4	101.4		101.4	101.4		12.4	12.4		12.4	12.4	
Actuated g/C Ratio	0.84	0.84		0.84	0.84		0.10	0.10		0.10	0.10	
v/c Ratio	0.01	0.36		0.09	0.27		0.39	0.13		0.07	0.07	
Control Delay	0.2	1.5		2.2	1.4		57.4	48.9		47.6	47.6	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

445: Meadowbrook Dr/Family Dollar Driveway & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	0.2	1.5		2.2	1.4		57.4	48.9				47.6
LOS	A	A		A	A		E	D				D
Approach Delay		1.5			1.4			55.1				47.6
Approach LOS		A			A			E				D
Queue Length 50th (ft)	0	3		1	30		41	15				9
Queue Length 95th (ft)	m0	6		m4	45		82	39				27
Internal Link Dist (ft)		1998			2403			946				192
Turn Bay Length (ft)	225			225			75					
Base Capacity (vph)	357	4136		245	4169		253	297				294
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.01	0.36		0.09	0.27		0.22	0.07				0.04

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 112 (93%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.39
 Intersection Signal Delay: 3.2
 Intersection Capacity Utilization 41.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 445: Meadowbrook Dr/Family Dollar Driveway & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

446: NC 58 & Elijah Loftin Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	4	9	4	5	31	9	270	4	15	143	16
Future Volume (vph)	30	4	9	4	5	31	9	270	4	15	143	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1747	0	0	1661	0	0	1785	0	0	1762	0
Flt Permitted		0.966			0.995			0.998			0.996	
Satd. Flow (perm)	0	1747	0	0	1661	0	0	1785	0	0	1762	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1062			1065			993			1087	
Travel Time (s)		13.2			13.2			12.3			13.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	44	0	0	314	0	0	194	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.3% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	30	4	9	4	5	31	9	270	4	15	143	16
Future Volume (Veh/h)	30	4	9	4	5	31	9	270	4	15	143	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	4	10	4	6	34	10	300	4	17	159	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	561	526	168	536	533	302	177			304		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	561	526	168	536	533	302	177			304		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	92	99	99	99	99	95	99			99		
cM capacity (veh/h)	407	447	876	440	443	738	1375			1234		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	47	44	314	194								
Volume Left	33	4	10	17								
Volume Right	10	34	4	18								
cSH	463	640	1375	1234								
Volume to Capacity	0.10	0.07	0.01	0.01								
Queue Length 95th (ft)	8	6	1	1								
Control Delay (s)	13.6	11.0	0.3	0.8								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.6	11.0	0.3	0.8								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			32.3%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

446: NC 58 & Elijah Loftin Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	16	5	9	4	4	15	9	143	4	31	270	30
Future Volume (vph)	16	5	9	4	4	15	9	143	4	31	270	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1742	0	0	1678	0	0	1782	0	0	1762	0
Flt Permitted		0.974			0.992			0.997			0.995	
Satd. Flow (perm)	0	1742	0	0	1678	0	0	1782	0	0	1762	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1062			1065			993			1087	
Travel Time (s)		13.2			13.2			12.3			13.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	25	0	0	173	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.0% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	16	5	9	4	4	15	9	143	4	31	270	30
Future Volume (Veh/h)	16	5	9	4	4	15	9	143	4	31	270	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	6	10	4	4	17	10	159	4	34	300	33
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	584	568	316	578	582	161	333			163		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	584	568	316	578	582	161	333			163		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	96	99	99	99	99	98	99			98		
cM capacity (veh/h)	401	419	724	406	411	884	1204			1392		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	34	25	173	367								
Volume Left	18	4	10	34								
Volume Right	10	17	4	33								
cSH	466	644	1204	1392								
Volume to Capacity	0.07	0.04	0.01	0.02								
Queue Length 95th (ft)	6	3	1	2								
Control Delay (s)	13.3	10.8	0.5	0.9								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.3	10.8	0.5	0.9								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			37.0%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

447: NC 58 & Woodington Rd
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	8	9	318	169	20
Future Volume (vph)	35	8	9	318	169	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1745	0	1703	1792	1784	0
Flt Permitted	0.961		0.950			
Satd. Flow (perm)	1745	0	1703	1792	1784	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1062			1009	1041	
Travel Time (s)	13.2			12.5	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	10	353	210	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	8	9	318	169	20
Future Volume (Veh/h)	35	8	9	318	169	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	39	9	10	353	188	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	572	199	210			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	572	199	210			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	92	99	99			
cM capacity (veh/h)	478	842	1337			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	48	10	353	210		
Volume Left	39	10	0	0		
Volume Right	9	0	0	22		
cSH	520	1337	1700	1700		
Volume to Capacity	0.09	0.01	0.21	0.12		
Queue Length 95th (ft)	8	1	0	0		
Control Delay (s)	12.6	7.7	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.6	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			26.7%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

447: NC 58 & Woodington Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	9	8	169	318	35
Future Volume (vph)	20	9	8	169	318	35
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1726	0	1703	1792	1786	0
Flt Permitted	0.967		0.950			
Satd. Flow (perm)	1726	0	1703	1792	1786	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1062			1009	1041	
Travel Time (s)	13.2			12.5	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	9	188	392	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.9% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	9	8	169	318	35
Future Volume (Veh/h)	20	9	8	169	318	35
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	22	10	9	188	353	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	578	372	392			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	578	372	392			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	95	99	99			
cM capacity (veh/h)	474	673	1145			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	32	9	188	392		
Volume Left	22	9	0	0		
Volume Right	10	0	0	39		
cSH	522	1145	1700	1700		
Volume to Capacity	0.06	0.01	0.11	0.23		
Queue Length 95th (ft)	5	1	0	0		
Control Delay (s)	12.3	8.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.3	0.4		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			28.9%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

448: NC 58 & Will Baker Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	54	25	26	378	198	29
Future Volume (vph)	54	25	26	378	198	29
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	125			125
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1707	0	1736	1827	1827	1553
Flt Permitted	0.967		0.950			
Satd. Flow (perm)	1707	0	1736	1827	1827	1553
Link Speed (mph)	55			50	50	
Link Distance (ft)	1048			1044	1012	
Travel Time (s)	13.0			14.2	13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	29	420	220	32
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	54	25	26	378	198	29
Future Volume (Veh/h)	54	25	26	378	198	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	60	28	29	420	220	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	698	220	252			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	698	220	252			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	97	98			
cM capacity (veh/h)	396	817	1302			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	88	29	420	220	32	
Volume Left	60	29	0	0	0	
Volume Right	28	0	0	0	32	
cSH	474	1302	1700	1700	1700	
Volume to Capacity	0.19	0.02	0.25	0.13	0.02	
Queue Length 95th (ft)	17	2	0	0	0	
Control Delay (s)	14.3	7.8	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	14.3	0.5		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			31.1%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

448: NC 58 & Will Baker Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	26	25	198	378	54
Future Volume (vph)	29	26	25	198	378	54
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	125			125
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1682	0	1736	1827	1827	1553
Flt Permitted	0.974		0.950			
Satd. Flow (perm)	1682	0	1736	1827	1827	1553
Link Speed (mph)	55			50	50	
Link Distance (ft)	1048			1044	1012	
Travel Time (s)	13.0			14.2	13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	28	220	420	60
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	26	25	198	378	54
Future Volume (Veh/h)	29	26	25	198	378	54
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	32	29	28	220	420	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	696	420	480			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696	420	480			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	95	97			
cM capacity (veh/h)	396	631	1072			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	61	28	220	420	60	
Volume Left	32	28	0	0	0	
Volume Right	29	0	0	0	60	
cSH	481	1072	1700	1700	1700	
Volume to Capacity	0.13	0.03	0.13	0.25	0.04	
Queue Length 95th (ft)	11	2	0	0	0	
Control Delay (s)	13.6	8.4	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	13.6	1.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			30.8%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

449: NC 58 & Collier Loftin Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	83	9	10	418	221	51
Future Volume (vph)	83	9	10	418	221	51
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	75			0
Storage Lanes	1	1	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1752	1568	1736	1827	1781	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1752	1568	1736	1827	1781	0
Link Speed (mph)	55			50	50	
Link Distance (ft)	1031			938	1219	
Travel Time (s)	12.8			12.8	16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	10	11	464	303	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	83	9	10	418	221	51
Future Volume (Veh/h)	83	9	10	418	221	51
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	92	10	11	464	246	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	2					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	760	274	303			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	760	274	303			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	75	99	99			
cM capacity (veh/h)	369	762	1247			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	102	11	464	303		
Volume Left	92	11	0	0		
Volume Right	10	0	0	57		
cSH	409	1247	1700	1700		
Volume to Capacity	0.25	0.01	0.27	0.18		
Queue Length 95th (ft)	24	1	0	0		
Control Delay (s)	17.2	7.9	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	17.2	0.2		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			33.3%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

449: NC 58 & Collier Loftin Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	51	10	8	221	418	84
Future Volume (vph)	51	10	8	221	418	84
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	75			0
Storage Lanes	1	1	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1752	1568	1736	1827	1785	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1752	1568	1736	1827	1785	0
Link Speed (mph)	55			50	50	
Link Distance (ft)	1031			938	1219	
Travel Time (s)	12.8			12.8	16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	11	9	246	557	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	10	8	221	418	84
Future Volume (Veh/h)	51	10	8	221	418	84
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	57	11	9	246	464	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	2					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	774	510	557			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774	510	557			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	98	99			
cM capacity (veh/h)	362	561	1004			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	68	9	246	557		
Volume Left	57	9	0	0		
Volume Right	11	0	0	93		
cSH	432	1004	1700	1700		
Volume to Capacity	0.16	0.01	0.14	0.33		
Queue Length 95th (ft)	14	1	0	0		
Control Delay (s)	15.9	8.6	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.9	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			37.1%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

450: NC 58 & Lenoir CC Southern Driveway
 2015 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	515	5	81	270
Future Volume (vph)	0	0	515	5	81	270
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	0	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	1825	0	1736	1827
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	1825	0	1736	1827
Link Speed (mph)	25		45			45
Link Distance (ft)	627		1219			426
Travel Time (s)	17.1		18.5			6.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	578	0	90	300
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↩		↩	↩
Traffic Volume (veh/h)	0	0	515	5	81	270
Future Volume (Veh/h)	0	0	515	5	81	270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	572	6	90	300
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1239
pX, platoon unblocked						
vC, conflicting volume	1055	575			578	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1055	575			578	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			91	
cM capacity (veh/h)	228	519			986	
Direction, Lane #	NB 1	SB 1	SB 2			
Volume Total	578	90	300			
Volume Left	0	90	0			
Volume Right	6	0	0			
cSH	1700	986	1700			
Volume to Capacity	0.34	0.09	0.18			
Queue Length 95th (ft)	0	8	0			
Control Delay (s)	0.0	9.0	0.0			
Lane LOS		A				
Approach Delay (s)	0.0	2.1				
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			40.6%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

450: NC 58 & Lenoir CC Southern Driveway
2015 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	312	4	54	489
Future Volume (vph)	0	0	312	4	54	489
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	0	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	1823	0	1736	1827
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	1823	0	1736	1827
Link Speed (mph)	25		45			45
Link Distance (ft)	627		1219			426
Travel Time (s)	17.1		18.5			6.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	351	0	60	543
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔		↔	↔
Traffic Volume (veh/h)	0	0	312	4	54	489
Future Volume (Veh/h)	0	0	312	4	54	489
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	347	4	60	543
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1239
pX, platoon unblocked						
vC, conflicting volume	1012	349			351	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1012	349			351	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			95	
cM capacity (veh/h)	253	697			1197	
Direction, Lane #						
	NB 1	SB 1	SB 2			
Volume Total	351	60	543			
Volume Left	0	60	0			
Volume Right	4	0	0			
cSH	1700	1197	1700			
Volume to Capacity	0.21	0.05	0.32			
Queue Length 95th (ft)	0	4	0			
Control Delay (s)	0.0	8.2	0.0			
Lane LOS		A				
Approach Delay (s)	0.0	0.8				
Approach LOS						
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			39.9%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	103	524	0	0	377
Future Volume (vph)	4	103	524	0	0	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1787	1599	1827	0	0	1845
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1599	1827	0	0	1845
Link Speed (mph)	25		45			45
Link Distance (ft)	613		426			813
Travel Time (s)	16.7		6.5			12.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	114	582	0	0	419
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↑			↘
Traffic Volume (veh/h)	4	103	524	0	0	377
Future Volume (Veh/h)	4	103	524	0	0	377
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	114	582	0	0	419
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)					813	
pX, platoon unblocked						
vC, conflicting volume	1001	582			582	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1001	582			582	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	78			100	
cM capacity (veh/h)	270	515			987	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	4	114	582	419
Volume Left	4	0	0	0
Volume Right	0	114	0	0
cSH	270	515	1700	1700
Volume to Capacity	0.01	0.22	0.34	0.25
Queue Length 95th (ft)	1	21	0	0
Control Delay (s)	18.5	14.0	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	14.1		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		40.6%	ICU Level of Service
Analysis Period (min)		15	A



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	68	350	0	0	569
Future Volume (vph)	4	68	350	0	0	569
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1787	1599	1827	0	0	1845
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1599	1827	0	0	1845
Link Speed (mph)	25		45			45
Link Distance (ft)	613		426			813
Travel Time (s)	16.7		6.5			12.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	76	389	0	0	632
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	68	350	0	0	569
Future Volume (Veh/h)	4	68	350	0	0	569
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	76	389	0	0	632
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						813
pX, platoon unblocked						
vC, conflicting volume	1021	389			389	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1021	389			389	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	89			100	
cM capacity (veh/h)	263	661			1164	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	4	76	389	632
Volume Left	4	0	0	0
Volume Right	0	76	0	0
cSH	263	661	1700	1700
Volume to Capacity	0.02	0.11	0.23	0.37
Queue Length 95th (ft)	1	10	0	0
Control Delay (s)	18.9	11.1	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	11.5		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		39.9%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	546	384	24	648	31	555	16	29	32	14	99
Future Volume (vph)	79	546	384	24	648	31	555	16	29	32	14	99
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	225		0	275		100	0		100
Storage Lanes	1		1	2		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1671	4769	0	1665	1674	1568	0	1784	1568
Flt Permitted	0.273			0.950			0.950	0.955			0.967	
Satd. Flow (perm)	494	3438	1538	1671	4769	0	1665	1674	1568	0	1784	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				25
Link Distance (ft)		2483			1780			813				641
Travel Time (s)		37.6			27.0			12.3				17.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)							49%					
Lane Group Flow (vph)	88	607	427	27	754	0	315	320	32	0	52	110
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2						8			4
Detector Phase	5	2	2	1	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	50.0	50.0	14.0	50.0		37.0	37.0	37.0	19.0	19.0	19.0
Total Split (%)	11.7%	41.7%	41.7%	11.7%	41.7%		30.8%	30.8%	30.8%	15.8%	15.8%	15.8%
Maximum Green (s)	7.0	43.0	43.0	7.0	43.0		30.0	30.0	30.0	12.0	12.0	12.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	63.0	54.6	54.6	9.1	41.1		28.5	28.5	28.5		13.5	13.5
Actuated g/C Ratio	0.52	0.46	0.46	0.08	0.34		0.24	0.24	0.24		0.11	0.11
v/c Ratio	0.20	0.39	0.61	0.21	0.46		0.80	0.81	0.09		0.26	0.62
Control Delay	11.3	14.0	19.6	56.6	34.2		58.2	58.9	34.4		51.8	66.9

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
 2015 No-Build Alternative AM Peak

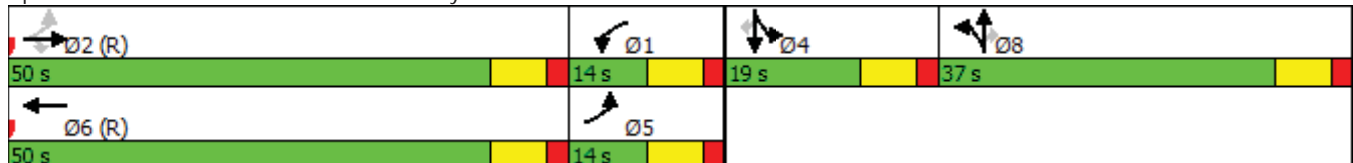


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	11.3	14.0	19.6	56.6	34.2		58.2	58.9	34.4		51.8	66.9
LOS	B	B	B	E	C		E	E	C		D	E
Approach Delay		15.9			35.0			57.4			62.0	
Approach LOS		B			C			E			E	
Queue Length 50th (ft)	24	101	319	20	189		236	241	19		37	81
Queue Length 95th (ft)	44	132	187	51	226		345	350	45		78	#146
Internal Link Dist (ft)		2403			1700			733			561	
Turn Bay Length (ft)	100			225			275		100			100
Base Capacity (vph)	432	1567	701	126	1952		444	446	418		213	187
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.20	0.39	0.61	0.21	0.39		0.71	0.72	0.08		0.24	0.59

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 82 (68%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 34.2
 Intersection LOS: C
 Intersection Capacity Utilization 55.9%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 452: NC 58/Trenton Hwy & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	648	555	29	546	32	384	14	24	31	16	79
Future Volume (vph)	99	648	555	29	546	32	384	14	24	31	16	79
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	225		0	275		100	0		100
Storage Lanes	1		1	2		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1671	4764	0	1665	1675	1568	0	1786	1568
Flt Permitted	0.353			0.950			0.950	0.956			0.968	
Satd. Flow (perm)	639	3438	1538	1671	4764	0	1665	1675	1568	0	1786	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				25
Link Distance (ft)		2483			1780			813				641
Travel Time (s)		37.6			27.0			12.3				17.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)							48%					
Lane Group Flow (vph)	110	720	617	32	643	0	222	221	27	0	52	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2		2						8			4
Detector Phase	5	2	2	1	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	65.0	65.0	14.0	65.0		26.0	26.0	26.0	15.0	15.0	15.0
Total Split (%)	11.7%	54.2%	54.2%	11.7%	54.2%		21.7%	21.7%	21.7%	12.5%	12.5%	12.5%
Maximum Green (s)	7.0	58.0	58.0	7.0	58.0		19.0	19.0	19.0	8.0	8.0	8.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	71.4	66.0	66.0	9.0	60.2		20.0	20.0	20.0		10.6	10.6
Actuated g/C Ratio	0.60	0.55	0.55	0.08	0.50		0.17	0.17	0.17		0.09	0.09
v/c Ratio	0.24	0.38	0.73	0.26	0.27		0.80	0.79	0.10		0.33	0.64
Control Delay	6.6	9.1	18.7	57.8	17.7		69.6	68.6	42.9		57.7	74.2

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	6.6	9.1	18.7	57.8	17.7		69.6	68.6	42.9		57.7	74.2
LOS	A	A	B	E	B		E	E	D		E	E
Approach Delay		13.0			19.6			67.6			68.1	
Approach LOS		B			B			E			E	
Queue Length 50th (ft)	7	176	333	24	104		174	172	18		38	67
Queue Length 95th (ft)	27	73	495	57	128		#295	#294	45		81	#146
Internal Link Dist (ft)		2403			1700			733			561	
Turn Bay Length (ft)	100			225			275		100			100
Base Capacity (vph)	462	1896	848	125	2422		291	293	274		158	139
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.24	0.38	0.73	0.26	0.27		0.76	0.75	0.10		0.33	0.63

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 88 (73%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 26.9
 Intersection LOS: C
 Intersection Capacity Utilization 58.5%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 452: NC 58/Trenton Hwy & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

453: Lenoir CC Driveway & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (vph)	530	26	5	717	0	85
Future Volume (vph)	530	26	5	717	0	85
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	150		0	0
Storage Lanes		1	1		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3343	1495	1671	3343	0	1627
Flt Permitted			0.950			
Satd. Flow (perm)	3343	1495	1671	3343	0	1627
Link Speed (mph)	45			45	25	
Link Distance (ft)	1780			1040	439	
Travel Time (s)	27.0			15.8	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	589	29	6	797	0	94
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	45			45	6	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (veh/h)	530	26	5	717	0	85
Future Volume (Veh/h)	530	26	5	717	0	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	589	29	6	797	0	94
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised			Raised		
Median storage veh	1			1		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			618	1000	294	
vC1, stage 1 conf vol				589		
vC2, stage 2 conf vol				410		
vCu, unblocked vol			618	1000	294	
tC, single (s)			4.3	6.8	6.9	
tC, 2 stage (s)				5.8		
tF (s)			2.3	3.5	3.3	
p0 queue free %			99	100	87	
cM capacity (veh/h)			918	369	705	

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	294	294	29	6	398	398	94
Volume Left	0	0	0	6	0	0	0
Volume Right	0	0	29	0	0	0	94
cSH	1700	1700	1700	918	1700	1700	705
Volume to Capacity	0.17	0.17	0.02	0.01	0.23	0.23	0.13
Queue Length 95th (ft)	0	0	0	0	0	0	11
Control Delay (s)	0.0	0.0	0.0	8.9	0.0	0.0	10.9
Lane LOS				A	B		
Approach Delay (s)	0.0			0.1	10.9		
Approach LOS					B		

Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			26.6%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

453: Lenoir CC Driveway & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (vph)	667	70	18	578	0	31
Future Volume (vph)	667	70	18	578	0	31
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	150		0	0
Storage Lanes		1	1		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3343	1495	1671	3343	0	1627
Flt Permitted			0.950			
Satd. Flow (perm)	3343	1495	1671	3343	0	1627
Link Speed (mph)	45			45	25	
Link Distance (ft)	1780			1040	439	
Travel Time (s)	27.0			15.8	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	741	78	20	642	0	34
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	45			45	6	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (veh/h)	667	70	18	578	0	31
Future Volume (Veh/h)	667	70	18	578	0	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	741	78	20	642	0	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised		Raised			
Median storage veh	1		1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			819		1102	370
vC1, stage 1 conf vol					741	
vC2, stage 2 conf vol					361	
vCu, unblocked vol			819		1102	370
tC, single (s)			4.3		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.3		3.5	3.3
p0 queue free %			97		100	95
cM capacity (veh/h)			768		325	630

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	370	370	78	20	321	321	34
Volume Left	0	0	0	20	0	0	0
Volume Right	0	0	78	0	0	0	34
cSH	1700	1700	1700	768	1700	1700	630
Volume to Capacity	0.22	0.22	0.05	0.03	0.19	0.19	0.05
Queue Length 95th (ft)	0	0	0	2	0	0	4
Control Delay (s)	0.0	0.0	0.0	9.8	0.0	0.0	11.0
Lane LOS				A	B		
Approach Delay (s)	0.0			0.3			11.0
Approach LOS							B

Intersection Summary			
Average Delay			0.4
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)			15

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

454: US 70 & Neuse Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	51	528	4	640	7	9	77
Future Volume (vph)	51	528	4	640	7	9	77
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		175		150	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1671	3343	1495	1598	0
Flt Permitted	0.950		0.950			0.995	
Satd. Flow (perm)	1671	3343	1671	3343	1495	1598	0
Link Speed (mph)		55		55		45	
Link Distance (ft)		1063		973		1036	
Travel Time (s)		13.2		12.1		15.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	57	587	4	711	8	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.3%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

454: US 70 & Neuse Rd
 2015 No-Build Alternative AM Peak



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	51	528	4	640	7	9	77
Future Volume (Veh/h)	51	528	4	640	7	9	77
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	57	587	0	711	8	10	86
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	719		0			1118	356
vC1, stage 1 conf vol						711	
vC2, stage 2 conf vol						408	
vCu, unblocked vol	719		0			1118	356
tC, single (s)	4.3		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	93		0			97	86
cM capacity (veh/h)	839		0			312	635

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	57	294	294	356	356	8	0	96
Volume Left	57	0	0	0	0	0	0	10
Volume Right	0	0	0	0	0	8	0	86
cSH	839	1700	1700	1700	1700	1700	1700	573
Volume to Capacity	0.07	0.17	0.17	0.21	0.21	0.00	0.00	0.17
Queue Length 95th (ft)	5	0	0	0	0	0	0	15
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0	0.0	12.5
Lane LOS	A							B
Approach Delay (s)	0.8			0.0				12.5
Approach LOS								B

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	36.3%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

454: US 70 & Neuse Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	78	640	4	528	8	7	51
Future Volume (vph)	78	640	4	528	8	7	51
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		175		150	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1671	3343	1495	1602	0
Flt Permitted	0.950		0.950			0.994	
Satd. Flow (perm)	1671	3343	1671	3343	1495	1602	0
Link Speed (mph)		55		55		45	
Link Distance (ft)		1063		973		1036	
Travel Time (s)		13.2		12.1		15.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	87	711	4	587	9	65	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.6%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

454: US 70 & Neuse Rd
 2015 No-Build Alternative PM Peak



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	78	640	4	528	8	7	51
Future Volume (Veh/h)	78	640	4	528	8	7	51
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	87	711	0	587	9	8	57
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	596		0			1116	294
vC1, stage 1 conf vol						587	
vC2, stage 2 conf vol						530	
vCu, unblocked vol	596		0			1116	294
tC, single (s)	4.3		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	91		0			97	92
cM capacity (veh/h)	936		0			313	697

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	87	356	356	294	294	9	0	65
Volume Left	87	0	0	0	0	0	0	8
Volume Right	0	0	0	0	0	9	0	57
cSH	936	1700	1700	1700	1700	1700	1700	605
Volume to Capacity	0.09	0.21	0.21	0.17	0.17	0.01	0.00	0.11
Queue Length 95th (ft)	8	0	0	0	0	0	0	9
Control Delay (s)	9.2	0.0	0.0	0.0	0.0	0.0	0.0	11.7
Lane LOS	A							B
Approach Delay (s)	1.0			0.0				11.7
Approach LOS								B

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization	34.6%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

455: Whaley Rd & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	484	40	18	587	75	28
Future Volume (vph)	4	484	40	18	587	75	28
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1671	3343	1495	1671	3343	1698	0
Flt Permitted	0.950			0.950		0.965	
Satd. Flow (perm)	1671	3343	1495	1671	3343	1698	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1018			2379	969	
Travel Time (s)		12.6			29.5	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	538	44	20	652	114	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		48			48	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	484	40	18	587	75	28
Future Volume (Veh/h)	4	484	40	18	587	75	28
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	538	44	20	652	83	31
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			582		904	269
vC1, stage 1 conf vol						538	
vC2, stage 2 conf vol						366	
vCu, unblocked vol	0			582		904	269
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			98		79	96
cM capacity (veh/h)	0			948		391	723

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	269	269	44	0	20	326	326	114
Volume Left	0	0	0	0	20	0	0	83
Volume Right	0	0	44	0	0	0	0	31
cSH	1700	1700	1700	1700	948	1700	1700	447
Volume to Capacity	0.16	0.16	0.03	0.00	0.02	0.19	0.19	0.26
Queue Length 95th (ft)	0	0	0	0	2	0	0	25
Control Delay (s)	0.0	0.0	0.0	0.0	8.9	0.0	0.0	15.8
Lane LOS					A			C
Approach Delay (s)	0.0				0.3			15.8
Approach LOS								C

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization	28.8%		ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

455: Whaley Rd & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	587	75	28	484	40	18
Future Volume (vph)	4	587	75	28	484	40	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1671	3343	1495	1671	3343	1692	0
Flt Permitted	0.950			0.950		0.967	
Satd. Flow (perm)	1671	3343	1495	1671	3343	1692	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1018			2379	969	
Travel Time (s)		12.6			29.5	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	652	83	31	538	64	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		48			48	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	587	75	28	484	40	18
Future Volume (Veh/h)	4	587	75	28	484	40	18
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	652	83	31	538	44	20
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			735		983	326
vC1, stage 1 conf vol						652	
vC2, stage 2 conf vol						331	
vCu, unblocked vol	0			735		983	326
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			96		88	97
cM capacity (veh/h)	0			828		355	664

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	326	326	83	0	31	269	269	64
Volume Left	0	0	0	0	31	0	0	44
Volume Right	0	0	83	0	0	0	0	20
cSH	1700	1700	1700	1700	828	1700	1700	415
Volume to Capacity	0.19	0.19	0.05	0.00	0.04	0.16	0.16	0.15
Queue Length 95th (ft)	0	0	0	0	3	0	0	14
Control Delay (s)	0.0	0.0	0.0	0.0	9.5	0.0	0.0	15.2
Lane LOS					A			C
Approach Delay (s)	0.0				0.5			15.2
Approach LOS								C

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		32.9%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

456: US 70 & British Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	17	485	4	592	4	6	27
Future Volume (vph)	17	485	4	592	4	6	27
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		200	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1656	3312	1482	1629	0
Flt Permitted	0.950		0.950			0.991	
Satd. Flow (perm)	1671	3343	1656	3312	1482	1629	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2379		1010		1049	
Travel Time (s)		29.5		12.5		13.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	9%	9%	9%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	19	539	4	658	4	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	17	485	4	592	4	6	27
Future Volume (Veh/h)	17	485	4	592	4	6	27
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	539	0	658	4	7	30
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	662		0			966	329
vC1, stage 1 conf vol						658	
vC2, stage 2 conf vol						308	
vCu, unblocked vol	662		0			966	329
tC, single (s)	4.3		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	98		0			98	95
cM capacity (veh/h)	883		0			363	664

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	19	270	270	329	329	4	0	37
Volume Left	19	0	0	0	0	0	0	7
Volume Right	0	0	0	0	0	4	0	30
cSH	883	1700	1700	1700	1700	1700	1700	574
Volume to Capacity	0.02	0.16	0.16	0.19	0.19	0.00	0.00	0.06
Queue Length 95th (ft)	2	0	0	0	0	0	0	5
Control Delay (s)	9.2	0.0	0.0	0.0	0.0	0.0	0.0	11.7
Lane LOS	A							B
Approach Delay (s)	0.3			0.0				11.7
Approach LOS								B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization	26.4%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

456: US 70 & British Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	27	592	4	485	5	4	18
Future Volume (vph)	27	592	4	485	5	4	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		200	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1656	3312	1482	1623	0
Flt Permitted	0.950		0.950			0.992	
Satd. Flow (perm)	1671	3343	1656	3312	1482	1623	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2379		1010		1049	
Travel Time (s)		29.5		12.5		13.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	9%	9%	9%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	30	658	4	539	6	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.4%
Analysis Period (min)	15
	ICU Level of Service A
























Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	27	592	4	485	5	4	18
Future Volume (Veh/h)	27	592	4	485	5	4	18
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	30	658	0	539	6	4	20
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	545		0			928	270
vC1, stage 1 conf vol						539	
vC2, stage 2 conf vol						389	
vCu, unblocked vol	545		0			928	270
tC, single (s)	4.3		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	97		0			99	97
cM capacity (veh/h)	980		0			383	725

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	30	329	329	270	270	6	0	24
Volume Left	30	0	0	0	0	0	0	4
Volume Right	0	0	0	0	0	6	0	20
cSH	980	1700	1700	1700	1700	1700	1700	632
Volume to Capacity	0.03	0.19	0.19	0.16	0.16	0.00	0.00	0.04
Queue Length 95th (ft)	2	0	0	0	0	0	0	3
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	0.0	0.0	10.9
Lane LOS	A							B
Approach Delay (s)	0.4			0.0				10.9
Approach LOS								B

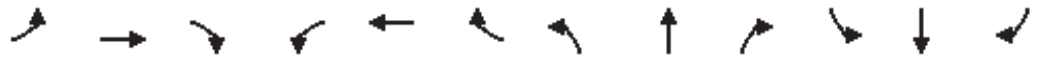
Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		32.4%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

457: Wyse Fork Rd/Caswell Rd & US 70
 2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	440	37	16	536	4	59	5	21	5	5	11
Future Volume (vph)	6	440	37	16	536	4	59	5	21	5	5	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	200		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1656	3312	1482	1656	3312	1482	0	1707	0	0	1699	0
Flt Permitted	0.950			0.950				0.966			0.988	
Satd. Flow (perm)	1656	3312	1482	1656	3312	1482	0	1707	0	0	1699	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1012			1011			1002			1036	
Travel Time (s)		12.5			12.5			12.4			12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	489	41	18	596	4	0	95	0	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		42			42			6			6	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR					
Lane Configurations																	
Traffic Volume (veh/h)	6	440	37	16	536	4	59	5	21	5	5	11					
Future Volume (Veh/h)	6	440	37	16	536	4	59	5	21	5	5	11					
Sign Control	Free				Free			Stop			Stop						
Grade	0%				0%			0%			0%						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90					
Hourly flow rate (vph)	7	489	41	18	596	4	66	6	23	6	6	12					
Pedestrians																	
Lane Width (ft)																	
Walking Speed (ft/s)																	
Percent Blockage																	
Right turn flare (veh)																	
Median type	Raised				Raised												
Median storage veh	1				1												
Upstream signal (ft)																	
pX, platoon unblocked																	
vC, conflicting volume	600			530			852		1139		244		916		1176		298
vC1, stage 1 conf vol							503		503				632		632		
vC2, stage 2 conf vol							349		636				284		544		
vCu, unblocked vol	600			530			852		1139		244		916		1176		298
tC, single (s)	4.3			4.3			7.6		6.6		7.0		7.6		6.6		7.0
tC, 2 stage (s)							6.6		5.6				6.6		5.6		
tF (s)	2.3			2.3			3.5		4.0		3.3		3.5		4.0		3.3
p0 queue free %	99			98			82		98		97		98		98		98
cM capacity (veh/h)	927			986			358		309		750		323		301		695






















Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	7	244	244	41	18	298	298	4	95	24
Volume Left	7	0	0	0	18	0	0	0	66	6
Volume Right	0	0	0	41	0	0	0	4	23	12
cSH	927	1700	1700	1700	986	1700	1700	1700	405	431
Volume to Capacity	0.01	0.14	0.14	0.02	0.02	0.18	0.18	0.00	0.23	0.06
Queue Length 95th (ft)	1	0	0	0	1	0	0	0	22	4
Control Delay (s)	8.9	0.0	0.0	0.0	8.7	0.0	0.0	0.0	16.6	13.9
Lane LOS	A				A			C		B
Approach Delay (s)	0.1				0.3			16.6		13.9
Approach LOS								C		B

Intersection Summary

Average Delay	1.7	
Intersection Capacity Utilization	33.0%	ICU Level of Service
Analysis Period (min)	15	
	A	

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

457: Wyse Fork Rd/Caswell Rd & US 70
2015 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	536	59	21	440	5	37	5	16	4	5	6
Future Volume (vph)	11	536	59	21	440	5	37	5	16	4	5	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	200		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1656	3312	1482	1656	3312	1482	0	1705	0	0	1720	0
Flt Permitted	0.950			0.950				0.969			0.988	
Satd. Flow (perm)	1656	3312	1482	1656	3312	1482	0	1705	0	0	1720	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1012			1011			1002			1036	
Travel Time (s)		12.5			12.5			12.4			12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	596	66	23	489	6	0	65	0	0	17	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		42			42			6			6	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	536	59	21	440	5	37	5	16	4	5	6
Future Volume (Veh/h)	11	536	59	21	440	5	37	5	16	4	5	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	596	66	23	489	6	41	6	18	4	6	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		1			1							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	495			662			920	1161	298	878	1221	244
vC1, stage 1 conf vol							620	620		535	535	
vC2, stage 2 conf vol							300	541		343	686	
vCu, unblocked vol	495			662			920	1161	298	878	1221	244
tC, single (s)	4.3			4.3			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			87	98	97	99	98	99
cM capacity (veh/h)	1017			877			325	302	692	342	285	753

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	12	298	298	66	23	244	244	6	65	17
Volume Left	12	0	0	0	23	0	0	0	41	4
Volume Right	0	0	0	66	0	0	0	6	18	7
cSH	1017	1700	1700	1700	877	1700	1700	1700	378	404
Volume to Capacity	0.01	0.18	0.18	0.04	0.03	0.14	0.14	0.00	0.17	0.04
Queue Length 95th (ft)	1	0	0	0	2	0	0	0	15	3
Control Delay (s)	8.6	0.0	0.0	0.0	9.2	0.0	0.0	0.0	16.5	14.3
Lane LOS	A				A				C	B
Approach Delay (s)	0.2				0.4				16.5	14.3
Approach LOS									C	B

Intersection Summary		
Average Delay		1.3
Intersection Capacity Utilization	31.1%	ICU Level of Service
Analysis Period (min)		15
		A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

458: Caswell Rd & British Rd
2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	18	4	5	27	4	4	11	4	4	16	5
Future Volume (vph)	4	18	4	5	27	4	4	11	4	4	16	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1797	0	0	1806	0	0	1777	0	0	1779	0
Flt Permitted		0.993			0.993			0.990			0.993	
Satd. Flow (perm)	0	1797	0	0	1806	0	0	1777	0	0	1779	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1017			1051			1020			1015	
Travel Time (s)		12.6			13.0			12.6			12.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	40	0	0	20	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	18	4	5	27	4	4	11	4	4	16	5
Future Volume (Veh/h)	4	18	4	5	27	4	4	11	4	4	16	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	20	4	6	30	4	4	12	4	4	18	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	34			24			89	76	22	84	76	32
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34			24			89	76	22	84	76	32
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	99	100	100	98	99
cM capacity (veh/h)	1571			1584			869	807	1052	882	807	1039

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	28	40	20	28
Volume Left	4	6	4	4
Volume Right	4	4	4	6
cSH	1571	1584	860	859
Volume to Capacity	0.00	0.00	0.02	0.03
Queue Length 95th (ft)	0	0	2	3
Control Delay (s)	1.1	1.1	9.3	9.3
Lane LOS	A	A	A	A
Approach Delay (s)	1.1	1.1	9.3	9.3
Approach LOS			A	A

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

458: Caswell Rd & British Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	27	4	4	18	4	4	16	5	4	11	4
Future Volume (vph)	5	27	4	4	18	4	4	16	5	4	11	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1806	0	0	1797	0	0	1779	0	0	1777	0
Flt Permitted		0.993			0.993			0.993			0.990	
Satd. Flow (perm)	0	1806	0	0	1797	0	0	1779	0	0	1777	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1017			1051			1020			1015	
Travel Time (s)		12.6			13.0			12.6			12.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	28	0	0	28	0	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	27	4	4	18	4	4	16	5	4	11	4
Future Volume (Veh/h)	5	27	4	4	18	4	4	16	5	4	11	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	30	4	4	20	4	4	18	6	4	12	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	24			34			84	76	32	89	76	22
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	24			34			84	76	32	89	76	22
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	100	99	100
cM capacity (veh/h)	1584			1571			882	807	1039	869	807	1052

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	40	28	28	20
Volume Left	6	4	4	4
Volume Right	4	4	6	4
cSH	1584	1571	859	860
Volume to Capacity	0.00	0.00	0.03	0.02
Queue Length 95th (ft)	0	0	3	2
Control Delay (s)	1.1	1.1	9.3	9.3
Lane LOS	A	A	A	A
Approach Delay (s)	1.1	1.1	9.3	9.3
Approach LOS			A	A

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

459: US 70 & Tilghman Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	10	449	4	549	4	5	16
Future Volume (vph)	10	449	4	549	4	5	16
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		75	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1656	3312	1656	3312	1482	1655	0
Flt Permitted	0.950		0.950			0.988	
Satd. Flow (perm)	1656	3312	1656	3312	1482	1655	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1066		1064		1004	
Travel Time (s)		13.2		13.2		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	11	499	4	610	4	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		45		45		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	10	449	4	549	4	5	16
Future Volume (Veh/h)	10	449	4	549	4	5	16
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	499	0	610	4	6	18
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	614		0			882	305
vC1, stage 1 conf vol						610	
vC2, stage 2 conf vol						272	
vCu, unblocked vol	614		0			882	305
tC, single (s)	4.3		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	99		0			98	97
cM capacity (veh/h)	915		0			394	691

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	11	250	250	305	305	4	0	24
Volume Left	11	0	0	0	0	0	0	6
Volume Right	0	0	0	0	0	4	0	18
cSH	915	1700	1700	1700	1700	1700	1700	582
Volume to Capacity	0.01	0.15	0.15	0.18	0.18	0.00	0.00	0.04
Queue Length 95th (ft)	1	0	0	0	0	0	0	3
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5
Lane LOS	A							B
Approach Delay (s)	0.2			0.0				11.5
Approach LOS								B

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization	25.2%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

459: US 70 & Tilghman Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	17	549	4	449	5	4	11
Future Volume (vph)	17	549	4	449	5	4	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		75	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1656	3312	1656	3312	1482	1655	0
Flt Permitted	0.950		0.950			0.988	
Satd. Flow (perm)	1656	3312	1656	3312	1482	1655	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1066		1064		1004	
Travel Time (s)		13.2		13.2		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	19	610	4	499	6	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		45		45		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	17	549	4	449	5	4	11
Future Volume (Veh/h)	17	549	4	449	5	4	11
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	610	0	499	6	4	12
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	505		0			842	250
vC1, stage 1 conf vol						499	
vC2, stage 2 conf vol						343	
vCu, unblocked vol	505		0			842	250
tC, single (s)	4.3		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	98		0			99	98
cM capacity (veh/h)	1008		0			418	750

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	19	305	305	250	250	6	0	16
Volume Left	19	0	0	0	0	0	0	4
Volume Right	0	0	0	0	0	6	0	12
cSH	1008	1700	1700	1700	1700	1700	1700	626
Volume to Capacity	0.02	0.18	0.18	0.15	0.15	0.00	0.00	0.03
Queue Length 95th (ft)	1	0	0	0	0	0	0	2
Control Delay (s)	8.6	0.0	0.0	0.0	0.0	0.0	0.0	10.9
Lane LOS	A							B
Approach Delay (s)	0.3			0.0				10.9
Approach LOS								B

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization	25.2%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

460: Burkett Rd & US 70
 2015 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	435	17	4	530	27	6
Future Volume (vph)	4	435	17	4	530	27	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		175	175		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1656	3312	1482	1641	3282	1727	0
Flt Permitted	0.950			0.950		0.961	
Satd. Flow (perm)	1656	3312	1482	1641	3282	1727	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		999			1536	937	
Travel Time (s)		12.4			19.0	11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	10%	10%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	483	19	4	589	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		45			45	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	435	17	4	530	27	6
Future Volume (Veh/h)	4	435	17	4	530	27	6
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	483	19	4	589	30	7
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			502		786	242
vC1, stage 1 conf vol						483	
vC2, stage 2 conf vol						302	
vCu, unblocked vol	0			502		786	242
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			100		93	99
cM capacity (veh/h)	0			1005		439	756

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	242	242	19	0	4	294	294	37
Volume Left	0	0	0	0	4	0	0	30
Volume Right	0	0	19	0	0	0	0	7
cSH	1700	1700	1700	1700	1005	1700	1700	477
Volume to Capacity	0.14	0.14	0.01	0.00	0.00	0.17	0.17	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	8.6	0.0	0.0	13.2
Lane LOS					A			B
Approach Delay (s)	0.0				0.1			13.2
Approach LOS								B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization	24.7%		ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

460: Burkett Rd & US 70
 2015 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	530	27	5	435	18	4
Future Volume (vph)	4	530	27	5	435	18	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		175	175		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1656	3312	1482	1641	3282	1730	0
Flt Permitted	0.950			0.950		0.960	
Satd. Flow (perm)	1656	3312	1482	1641	3282	1730	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		999			1536	937	
Travel Time (s)		12.4			19.0	11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	10%	10%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	589	30	6	483	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		45			45	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.7%
Analysis Period (min)	15
	ICU Level of Service A






















Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	530	27	5	435	18	4
Future Volume (Veh/h)	4	530	27	5	435	18	4
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	589	30	6	483	20	4
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			619		842	294
vC1, stage 1 conf vol						589	
vC2, stage 2 conf vol						254	
vCu, unblocked vol	0			619		842	294
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			99		95	99
cM capacity (veh/h)	0			905		407	699

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	294	294	30	0	6	242	242	24
Volume Left	0	0	0	0	6	0	0	20
Volume Right	0	0	30	0	0	0	0	4
cSH	1700	1700	1700	1700	905	1700	1700	437
Volume to Capacity	0.17	0.17	0.02	0.00	0.01	0.14	0.14	0.05
Queue Length 95th (ft)	0	0	0	0	1	0	0	4
Control Delay (s)	0.0	0.0	0.0	0.0	9.0	0.0	0.0	13.7
Lane LOS					A			B
Approach Delay (s)	0.0				0.1			13.7
Approach LOS								B

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization	24.7%		ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

461: US 70 & Kornegay St
 2015 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	384	4	4	467	14	4	4	4	17	4	74
Future Volume (vph)	48	384	4	4	467	14	4	4	4	17	4	74
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	150		125	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1641	3279	0	1626	3252	1455	0	1768	0	0	1620	0
Flt Permitted	0.950			0.950				0.984			0.991	
Satd. Flow (perm)	1641	3279	0	1626	3252	1455	0	1768	0	0	1620	0
Link Speed (mph)		55			55			30			50	
Link Distance (ft)		1156			1037			281			1046	
Travel Time (s)		14.3			12.9			6.4			14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	10%	10%	11%	11%	11%	1%	1%	1%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	431	0	4	519	16	0	12	0	0	105	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		90			90			0			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	384	4	4	467	14	4	4	4	17	4	74
Future Volume (Veh/h)	48	384	4	4	467	14	4	4	4	17	4	74
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	53	427	4	4	519	16	4	4	4	19	4	82
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage (veh)		3			3							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	535			431			804	1078	216	852	1064	260
vC1, stage 1 conf vol							535	535		527	527	
vC2, stage 2 conf vol							270	543		326	537	
vCu, unblocked vol	535			431			804	1078	216	852	1064	260
tC, single (s)	4.3			4.3			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)							6.5	5.5		6.6	5.6	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			99	99	99	96	99	89
cM capacity (veh/h)	975			1064			437	408	792	457	424	733

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	53	285	146	4	260	260	16	12	105
Volume Left	53	0	0	4	0	0	0	4	19
Volume Right	0	0	4	0	0	0	16	4	82
cSH	975	1700	1700	1064	1700	1700	1700	500	645
Volume to Capacity	0.05	0.17	0.09	0.00	0.15	0.15	0.01	0.02	0.16
Queue Length 95th (ft)	4	0	0	0	0	0	0	2	14
Control Delay (s)	8.9	0.0	0.0	8.4	0.0	0.0	0.0	12.4	11.7
Lane LOS	A			A				B	B
Approach Delay (s)	1.0			0.1				12.4	11.7
Approach LOS								B	B

Intersection Summary		
Average Delay		1.6
Intersection Capacity Utilization	32.7%	ICU Level of Service
Analysis Period (min)		15
		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

461: US 70 & Kornegay St
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	467	4	4	384	17	4	4	4	14	4	48
Future Volume (vph)	74	467	4	4	384	17	4	4	4	14	4	48
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	150		125	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1641	3279	0	1626	3252	1455	0	1768	0	0	1630	0
Flt Permitted	0.950			0.950				0.984			0.989	
Satd. Flow (perm)	1641	3279	0	1626	3252	1455	0	1768	0	0	1630	0
Link Speed (mph)		55			55			30				50
Link Distance (ft)		1156			1037			281				1046
Travel Time (s)		14.3			12.9			6.4				14.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	10%	10%	11%	11%	11%	1%	1%	1%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	523	0	4	427	19	0	12	0	0	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		90			90			0				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	467	4	4	384	17	4	4	4	14	4	48
Future Volume (Veh/h)	74	467	4	4	384	17	4	4	4	14	4	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	82	519	4	4	427	19	4	4	4	16	4	53
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage (veh)		3			3							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	446			523			908	1139	262	864	1122	214
vC1, stage 1 conf vol							685	685		435	435	
vC2, stage 2 conf vol							224	454		430	687	
vCu, unblocked vol	446			523			908	1139	262	864	1122	214
tC, single (s)	4.3			4.3			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)							6.5	5.5		6.6	5.6	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			99	99	99	96	99	93
cM capacity (veh/h)	1056			979			365	375	740	454	381	785

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	82	346	177	4	214	214	19	12	73
Volume Left	82	0	0	4	0	0	0	4	16
Volume Right	0	0	4	0	0	0	19	4	53
cSH	1056	1700	1700	979	1700	1700	1700	444	645
Volume to Capacity	0.08	0.20	0.10	0.00	0.13	0.13	0.01	0.03	0.11
Queue Length 95th (ft)	6	0	0	0	0	0	0	2	10
Control Delay (s)	8.7	0.0	0.0	8.7	0.0	0.0	0.0	13.3	11.3
Lane LOS	A			A				B	B
Approach Delay (s)	1.2			0.1				13.3	11.3
Approach LOS								B	B

Intersection Summary

Average Delay	1.5
Intersection Capacity Utilization	30.9%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

462: N West St & Kornegay St
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	21	24	5	6	39	9	4	4	4	9	4	34
Future Volume (vph)	21	24	5	6	39	9	4	4	4	9	4	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1782	0	0	1791	0	0	1733	0	0	1662	0
Flt Permitted		0.980			0.994			0.984			0.990	
Satd. Flow (perm)	0	1782	0	0	1791	0	0	1733	0	0	1662	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1037			988			846			947	
Travel Time (s)		20.2			19.2			16.5			18.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	60	0	0	12	0	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	21	24	5	6	39	9	4	4	4	9	4	34
Future Volume (Veh/h)	21	24	5	6	39	9	4	4	4	9	4	34
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	23	27	6	7	43	10	4	4	4	10	4	38
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	53			33			178	143	30	144	141	48
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	53			33			178	143	30	144	141	48
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	100	99	99	96
cM capacity (veh/h)	1546			1572			739	732	1042	807	736	1021
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	56	60	12	52								
Volume Left	23	7	4	10								
Volume Right	6	10	4	38								
cSH	1546	1572	815	944								
Volume to Capacity	0.01	0.00	0.01	0.06								
Queue Length 95th (ft)	1	0	1	4								
Control Delay (s)	3.1	0.9	9.5	9.0								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.1	0.9	9.5	9.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			17.2%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

462: N West St & Kornegay St
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	34	39	4	4	24	9	5	4	6	9	4	21
Future Volume (vph)	34	39	4	4	24	9	5	4	6	9	4	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1793	0	0	1775	0	0	1712	0	0	1684	0
Flt Permitted		0.978			0.995			0.983			0.987	
Satd. Flow (perm)	0	1793	0	0	1775	0	0	1712	0	0	1684	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1037			988			846			947	
Travel Time (s)		20.2			19.2			16.5			18.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	85	0	0	41	0	0	17	0	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.8%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	34	39	4	4	24	9	5	4	6	9	4	21
Future Volume (Veh/h)	34	39	4	4	24	9	5	4	6	9	4	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	38	43	4	4	27	10	6	4	7	10	4	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	37			47			186	166	45	170	163	32
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	37			47			186	166	45	170	163	32
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			99	99	99	99	99	98
cM capacity (veh/h)	1567			1554			737	705	1022	769	710	1042
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	85	41	17	37								
Volume Left	38	4	6	10								
Volume Right	4	10	7	23								
cSH	1567	1554	823	909								
Volume to Capacity	0.02	0.00	0.02	0.04								
Queue Length 95th (ft)	2	0	2	3								
Control Delay (s)	3.4	0.7	9.5	9.1								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.4	0.7	9.5	9.1								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			20.8%	ICU Level of Service	A							
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

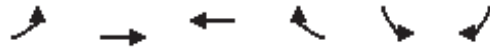
1430: US 70 & Hillcrest Rd
 2015 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (vph)	0	0	1252	242	169	0
Future Volume (vph)	0	0	1252	242	169	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			275	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	3406	1524	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	3406	1524	1752	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		676	1073		656	
Travel Time (s)		10.2	16.3		12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	6%	6%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1391	269	188	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	R NA	Left	Right	L NA	Right
Median Width(ft)		64	48		12	
Link Offset(ft)		0	8		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (veh/h)	0	0	1252	242	169	0
Future Volume (Veh/h)	0	0	1252	242	169	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	1391	269	188	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1391				1391	696
vC1, stage 1 conf vol					1391	
vC2, stage 2 conf vol					0	
vCu, unblocked vol	1391				1391	696
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				1	100
cM capacity (veh/h)	473				189	382

Direction, Lane #	WB 1	WB 2	WB 3	SB 1
Volume Total	696	696	269	188
Volume Left	0	0	0	188
Volume Right	0	0	269	0
cSH	1700	1700	1700	189
Volume to Capacity	0.41	0.41	0.16	0.99
Queue Length 95th (ft)	0	0	0	208
Control Delay (s)	0.0	0.0	0.0	114.7
Lane LOS				F
Approach Delay (s)	0.0			114.7
Approach LOS				F

Intersection Summary			
Average Delay		11.7	
Intersection Capacity Utilization		50.6%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

1430: US 70 & Hillcrest Rd
 2015 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (vph)	0	0	966	169	242	0
Future Volume (vph)	0	0	966	169	242	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			275	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	3406	1524	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	3406	1524	1752	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		676	1073		656	
Travel Time (s)		10.2	16.3		12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	6%	6%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1073	188	269	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	R NA	Left	Right	L NA	Right
Median Width(ft)		64	48		12	
Link Offset(ft)		0	8		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (veh/h)	0	0	966	169	242	0
Future Volume (Veh/h)	0	0	966	169	242	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	1073	188	269	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1073				1073	536
vC1, stage 1 conf vol					1073	
vC2, stage 2 conf vol					0	
vCu, unblocked vol	1073				1073	536
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				4	100
cM capacity (veh/h)	628				280	486

Direction, Lane #	WB 1	WB 2	WB 3	SB 1
Volume Total	536	536	188	269
Volume Left	0	0	0	269
Volume Right	0	0	188	0
cSH	1700	1700	1700	280
Volume to Capacity	0.32	0.32	0.11	0.96
Queue Length 95th (ft)	0	0	0	234
Control Delay (s)	0.0	0.0	0.0	84.0
Lane LOS				F
Approach Delay (s)	0.0			84.0
Approach LOS				F

Intersection Summary			
Average Delay		14.8	
Intersection Capacity Utilization		46.8%	ICU Level of Service A
Analysis Period (min)		15	

**2015 No-Build Alternative
SimTraffic Reports**

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Summary of All Intervals

Run Number	1	2	3	4	Build Alternative AM Peak	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	45803	46195	46043	45998	45528	45608
Vehs Exited	45621	46095	45980	45831	45568	45462
Starting Vehs	875	873	935	869	936	944
Ending Vehs	1057	973	998	1036	896	1090
Travel Distance (mi)	28992	29235	29013	29107	28727	28760
Travel Time (hr)	1065.0	1052.7	991.0	1010.1	969.5	1020.0
Total Delay (hr)	427.1	409.3	352.7	369.6	336.3	388.8
Total Stops	19181	19638	19029	19131	18691	19055
Fuel Used (gal)	1082.2	1089.7	1069.5	1075.5	1052.9	1066.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build Alternative AM Peak	Avg
Vehs Entered	45803	46195	46043	45998	45528	45608
Vehs Exited	45621	46095	45980	45831	45568	45462
Starting Vehs	875	873	935	869	936	944
Ending Vehs	1057	973	998	1036	896	1090
Travel Distance (mi)	28992	29235	29013	29107	28727	28760
Travel Time (hr)	1065.0	1052.7	991.0	1010.1	969.5	1020.0
Total Delay (hr)	427.1	409.3	352.7	369.6	336.3	388.8
Total Stops	19181	19638	19029	19131	18691	19055
Fuel Used (gal)	1082.2	1089.7	1069.5	1075.5	1052.9	1066.7

Intersection: 401: Jenny Lind Rd & NC 903

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	76	4
Average Queue (ft)	34	0
95th Queue (ft)	57	3
Link Distance (ft)	1281	577
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 402: NC 903 & US 70 EB Ramps

Movement	EB	EB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	50	9	37
Average Queue (ft)	23	0	5
95th Queue (ft)	45	7	22
Link Distance (ft)	1276		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	225
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 403: NC 903 & US 70 WB Ramps

Movement	WB	WB	NB
Directions Served	LT	R	L
Maximum Queue (ft)	47	14	31
Average Queue (ft)	19	0	3
95th Queue (ft)	42	11	17
Link Distance (ft)	1330		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	250
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 404: US 70 & Washington St

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	29	29	1008
Average Queue (ft)	4	3	882
95th Queue (ft)	20	16	1179
Link Distance (ft)			967
Upstream Blk Time (%)			64
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	125	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 405: Jim Sutton Rd/Willie Measley Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (ft)	105	127	165	10	41	176	177	32	95	195
Average Queue (ft)	27	56	60	0	8	69	72	4	34	88
95th Queue (ft)	71	115	132	5	27	136	145	18	75	158
Link Distance (ft)		1587	1587			1898	1898		936	2725
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250			450	275			150		
Storage Blk Time (%)								1		
Queuing Penalty (veh)								0		

Intersection: 406: Willie Measley Rd & Fields Station Rd

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	52	32	15
Average Queue (ft)	26	12	1
95th Queue (ft)	41	33	8
Link Distance (ft)	1311	1139	2725
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 407: Ken's Grill Driveway/Norbert Hill Rd & US 70

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	19	11	30	54
Average Queue (ft)	3	1	8	14
95th Queue (ft)	13	6	24	42
Link Distance (ft)			92	921
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	175	150		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 408: Harold Sutton Rd & Barwick Station Rd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	24
Average Queue (ft)	5
95th Queue (ft)	21
Link Distance (ft)	1039
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 409: Barwick Station Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	20	26	24
Average Queue (ft)	2	2	6
95th Queue (ft)	12	13	20
Link Distance (ft)			1080
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 410: US 70 & Albert Sugg Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	21	20	54
Average Queue (ft)	2	2	14
95th Queue (ft)	14	14	38
Link Distance (ft)			1016
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 411: Albert Sugg Rd & Fields Station Rd

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	26	26
Average Queue (ft)	8	10
95th Queue (ft)	25	28
Link Distance (ft)	790	948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 412: Harold Sutton Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	24	26	35
Average Queue (ft)	2	4	9
95th Queue (ft)	14	19	29
Link Distance (ft)			1030
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	200	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 413: Kennedy Home Rd/Eason Rd & US 70

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	T	L	T	R	LTR	LTR
Maximum Queue (ft)	20	3	3	66	15	3	258	522
Average Queue (ft)	2	0	0	26	1	0	89	303
95th Queue (ft)	12	2	2	58	12	2	296	580
Link Distance (ft)		1158	1158		834		933	934
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175			50		50		
Storage Blk Time (%)				4				
Queuing Penalty (veh)				15				

Intersection: 414: US 70 & Banks School Rd

Movement	EB	SB
Directions Served	L	R
Maximum Queue (ft)	62	18
Average Queue (ft)	20	1
95th Queue (ft)	49	8
Link Distance (ft)		911
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	400	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 415: US 70 & Innovation Way

Movement	SB
Directions Served	R
Maximum Queue (ft)	43
Average Queue (ft)	2
95th Queue (ft)	19
Link Distance (ft)	1392
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 416: Industrial Dr & Sanderson Way

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LT	LTR	LT	R	L	TR
Maximum Queue (ft)	53	63	97	9	51	70
Average Queue (ft)	8	9	39	0	13	32
95th Queue (ft)	31	37	74	7	38	57
Link Distance (ft)	945	782	545	545		1949
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					150	
Storage Blk Time (%)	0					
Queuing Penalty (veh)	0					

Intersection: 417: Industrial Dr & Innovation Way

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	72	42
Average Queue (ft)	34	8
95th Queue (ft)	59	29
Link Distance (ft)	1392	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 418: Industrial Dr & Smithfield Way

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	13	57
Average Queue (ft)	1	35
95th Queue (ft)	9	51
Link Distance (ft)	937	1370
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 419: Sanderson Way & US 70

Movement

Directions Served
 Maximum Queue (ft)
 Average Queue (ft)
 95th Queue (ft)
 Link Distance (ft)
 Upstream Blk Time (%)
 Queuing Penalty (veh)
 Storage Bay Dist (ft)
 Storage Blk Time (%)
 Queuing Penalty (veh)

Intersection: 420: Shopping Center Dr/Pinelawn Cemetery Dr & US 70

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	R	L	TR	LT	R	LTR
Maximum Queue (ft)	25	14	155	5	253	199	74
Average Queue (ft)	2	1	60	0	167	103	19
95th Queue (ft)	12	10	121	4	301	233	60
Link Distance (ft)				816	225		259
Upstream Blk Time (%)					38		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)	150	150	400			100	
Storage Blk Time (%)					69	3	
Queuing Penalty (veh)					121	2	

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	T	L	T	T	R	LT	R	L	LT	R
Maximum Queue (ft)	128	328	305	324	440	455	194	281	207	217	279	200
Average Queue (ft)	46	210	201	92	280	289	100	120	103	80	146	60
95th Queue (ft)	94	294	280	227	407	421	175	227	185	194	237	152
Link Distance (ft)		816	816		887	887		364				548
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			225			450		125	325		100
Storage Blk Time (%)		1	2		12	0		10	7		34	0
Queuing Penalty (veh)		0	1		17	1		15	9		54	1

Intersection: 422: Hill Farm Rd & Smithfield Way

Movement	EB	EB	WB	NB	SB	SB
Directions Served	LT	R	LTR	L	L	R
Maximum Queue (ft)	34	44	41	53	3	6
Average Queue (ft)	9	18	9	20	0	0
95th Queue (ft)	27	34	31	47	3	4
Link Distance (ft)	878		1010			
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		75		75	200	100
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

Intersection: 423: Hill Farm Rd & Banks School Rd

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	7	86	68	68
Average Queue (ft)	0	29	27	36
95th Queue (ft)	5	66	55	55
Link Distance (ft)	586			622
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100	100	
Storage Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	

Intersection: 424: Sheffield Dr/Walmart Dr & US 70

Movement	EB	WB	WB	WB	NB	SB
Directions Served	L	L	T	T	R	R
Maximum Queue (ft)	34	97	136	131	49	242
Average Queue (ft)	5	30	5	4	3	141
95th Queue (ft)	21	72	105	100	24	236
Link Distance (ft)			960	960	356	219
Upstream Blk Time (%)						4
Queuing Penalty (veh)						0
Storage Bay Dist (ft)	225	250				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 425: US 70 & US 258

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	L	T	T	T	U	T	T	R	L	L
Maximum Queue (ft)	89	97	292	342	265	99	528	520	234	233	243
Average Queue (ft)	33	45	108	122	39	8	230	238	64	128	140
95th Queue (ft)	71	86	216	241	145	60	413	422	152	204	215
Link Distance (ft)			960	960	960		598	598	598		2293
Upstream Blk Time (%)							0	0	0		
Queuing Penalty (veh)							0	0	0		
Storage Bay Dist (ft)	450	450				300				250	
Storage Blk Time (%)							4			0	0
Queuing Penalty (veh)							0			0	1

Intersection: 426: US 258 & A St

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	53	54	39
Average Queue (ft)	22	24	8
95th Queue (ft)	49	51	29
Link Distance (ft)		688	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50		125
Storage Blk Time (%)	1	0	
Queuing Penalty (veh)	0	0	

Intersection: 427: US 258 & Banks School Rd/Sand Clay Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	231	76	125	35	40	149	111	62	19	174	130	235
Average Queue (ft)	135	5	45	5	7	56	37	13	2	79	22	90
95th Queue (ft)	211	43	98	21	26	118	80	42	11	146	77	184
Link Distance (ft)		1018			793		842	842		785	785	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150		300	50		400			350			450
Storage Blk Time (%)	6			0	1							
Queuing Penalty (veh)	7			0	0							

Intersection: 428: Driveway/Ruby Tuesday & US 70

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	T	L	T	TR	R	R
Maximum Queue (ft)	27	86	79	30	4	4	30	42
Average Queue (ft)	2	3	3	4	0	0	10	17
95th Queue (ft)	12	66	61	19	3	3	30	41
Link Distance (ft)		598	598		525	525	128	166
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	300			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 429: US 70 & Mt Vernon Park Dr

Movement	EB	EB	EB	WB	WB	WB	WB	SB
Directions Served	L	T	T	U	T	T	TR	LR
Maximum Queue (ft)	51	207	223	28	242	217	182	102
Average Queue (ft)	14	50	68	3	100	86	57	42
95th Queue (ft)	41	147	167	17	208	185	138	83
Link Distance (ft)		525	525		861	861	861	340
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175			75				
Storage Blk Time (%)		0			8			
Queuing Penalty (veh)		0			0			

Intersection: 430: Hillcrest Rd & US 70 Bus

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	R	LT	R
Maximum Queue (ft)	152	370	334	324	374	825	27	156	150	57	79
Average Queue (ft)	19	223	182	209	180	340	5	73	68	25	22
95th Queue (ft)	93	345	315	400	447	876	20	128	124	57	60
Link Distance (ft)		785	785			949	449				348
Upstream Blk Time (%)						12					
Queuing Penalty (veh)						0					
Storage Bay Dist (ft)	75			300	300			225	225	75	
Storage Blk Time (%)		41		34	7	0				0	0
Queuing Penalty (veh)		5		113	25	1				0	0

Intersection: 431: NC 55 & Green Haynes Rd

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	41	46
Average Queue (ft)	15	6
95th Queue (ft)	36	27
Link Distance (ft)	1040	1026
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 432: NC 55 & N Croom Bland Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	12
Average Queue (ft)	4	1
95th Queue (ft)	19	6
Link Distance (ft)	1175	1014
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 433: NC 11 & Leslie R Stroud Rd

Movement	EB	NB	SB
Directions Served	LR	L	U
Maximum Queue (ft)	29	20	16
Average Queue (ft)	9	1	2
95th Queue (ft)	27	9	11
Link Distance (ft)	920		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		275	175
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 434: NC 11 & Green Haynes Rd/Albrittons Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	TR
Maximum Queue (ft)	154	51	21	2	24	4
Average Queue (ft)	50	21	5	0	4	0
95th Queue (ft)	105	44	18	2	16	3
Link Distance (ft)	1023	968		896		1015
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			225		325	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 435: NC 11 & NC 55/Tyree Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	T	L	T	TR	L	T	TR
Maximum Queue (ft)	298	29	78	110	6	179	173	44	138	172
Average Queue (ft)	158	2	27	38	0	84	46	10	67	86
95th Queue (ft)	260	32	66	81	3	156	135	33	119	153
Link Distance (ft)	922			958		977	977		2138	2138
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		75	125		225			150		
Storage Blk Time (%)	37		0	0					0	
Queuing Penalty (veh)	2		0	0					0	

Intersection: 436: NC 11 & Central Ave

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	44	31
Average Queue (ft)	13	3
95th Queue (ft)	37	17
Link Distance (ft)	910	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 437: NC 11 & Edgewood Dr/Mary Beth Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	51	62	7	16
Average Queue (ft)	13	23	0	2
95th Queue (ft)	39	49	3	10
Link Distance (ft)	681	1085		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 438: NC 11 & Old Asphalt Rd

Movement	WB	SB	SB
Directions Served	LR	L	T
Maximum Queue (ft)	111	60	18
Average Queue (ft)	38	21	1
95th Queue (ft)	86	48	14
Link Distance (ft)	1000		1097
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 439: NC 11 & US 70

Movement	EB	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	L	L	T	TR
Maximum Queue (ft)	218	261	292	273	152	116	419	384	251	293	298	287
Average Queue (ft)	105	150	199	162	70	45	281	243	144	189	169	185
95th Queue (ft)	207	226	280	240	130	95	378	342	229	263	263	268
Link Distance (ft)			975	975			989	989			983	983
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	325	325			475	275			275	275		
Storage Blk Time (%)			0				6		0	0	0	
Queuing Penalty (veh)			0				3		0	1	1	

Intersection: 439: NC 11 & US 70

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	31	84	204	184	152
Average Queue (ft)	4	30	131	85	76
95th Queue (ft)	20	68	191	168	130
Link Distance (ft)			914	914	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	400	400			400
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 440: US 258 & Clarence Potter Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	8
Average Queue (ft)	6	1
95th Queue (ft)	23	6
Link Distance (ft)	975	1004
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 441: US 258 & Albrittons Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	46	34
Average Queue (ft)	12	3
95th Queue (ft)	32	18
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 442: US 258 & Ferguson Ln/Collier Loftin Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	36	69	19	2	40
Average Queue (ft)	8	31	1	0	12
95th Queue (ft)	30	56	8	2	33
Link Distance (ft)	454	977	952		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100	100	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 443: US 258 & Old Asphalt Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	66	41
Average Queue (ft)	28	9
95th Queue (ft)	54	32
Link Distance (ft)	994	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	175	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 444: US 258/US 70 Bus & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	T	L	T	T	R	L	T	T	R
Maximum Queue (ft)	44	206	220	178	140	289	300	458	201	196	198	98
Average Queue (ft)	11	130	130	99	50	130	150	25	81	98	104	28
95th Queue (ft)	34	191	199	166	114	234	253	193	158	168	172	72
Link Distance (ft)		627	627	627		1931	1931	1931				481
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				225				400	400		275
Storage Blk Time (%)		0		0		1						
Queuing Penalty (veh)		0		0		1						

Intersection: 444: US 258/US 70 Bus & US 70

Movement	SB	SB	SB	SB
Directions Served	L	L	T	TR
Maximum Queue (ft)	200	236	183	141
Average Queue (ft)	74	120	71	29
95th Queue (ft)	172	203	140	101
Link Distance (ft)			951	951
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	275	275		
Storage Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	

Intersection: 445: Meadowbrook Dr/Family Dollar Driveway & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	LTR	
Maximum Queue (ft)	20	147	160	185	35	93	118	96	111	88	49	
Average Queue (ft)	1	33	46	53	8	15	32	26	51	20	12	
95th Queue (ft)	9	95	115	127	29	57	86	74	94	59	37	
Link Distance (ft)		1931	1931	1931		2404	2404	2404		961	211	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				225				75			
Storage Blk Time (%)									5	0		
Queuing Penalty (veh)									1	0		

Intersection: 446: NC 58 & Elijah Loftin Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	43	16	29
Average Queue (ft)	21	14	1	3
95th Queue (ft)	43	31	9	16
Link Distance (ft)	1033	1028	957	1059
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 447: NC 58 & Woodington Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	52	8
Average Queue (ft)	21	1
95th Queue (ft)	44	8
Link Distance (ft)	1028	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 448: NC 58 & Will Baker Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	62	26
Average Queue (ft)	25	3
95th Queue (ft)	48	16
Link Distance (ft)	1006	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 449: NC 58 & Collier Loftin Rd

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	73	28	22
Average Queue (ft)	29	7	2
95th Queue (ft)	55	25	14
Link Distance (ft)	992		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	75
Storage Blk Time (%)	2		
Queuing Penalty (veh)	0		

Intersection: 450: NC 58 & Lenoir CC Southern Driveway

Movement	SB
Directions Served	L
Maximum Queue (ft)	62
Average Queue (ft)	20
95th Queue (ft)	49
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 451: NC 58 & Lenoir CC Northern Driveway

Movement	WB	WB
Directions Served	L	R
Maximum Queue (ft)	31	72
Average Queue (ft)	3	37
95th Queue (ft)	19	63
Link Distance (ft)	579	579
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	LT	R	LT
Maximum Queue (ft)	162	259	245	101	69	196	222	222	274	315	166	193
Average Queue (ft)	51	115	133	4	20	87	112	117	161	189	18	71
95th Queue (ft)	115	208	221	52	55	163	185	191	238	268	111	157
Link Distance (ft)		2404	2404	2404			1703	1703		725		573
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100				225	225			275		100	
Storage Blk Time (%)	2	16				0	0		0	35		3
Queuing Penalty (veh)	6	13				0	0		0	108		3

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	166
Average Queue (ft)	77
95th Queue (ft)	136
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	4
Queuing Penalty (veh)	2

Intersection: 453: Lenoir CC Driveway & US 70

Movement	WB	NB
Directions Served	L	R
Maximum Queue (ft)	25	63
Average Queue (ft)	2	28
95th Queue (ft)	14	49
Link Distance (ft)		364
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 454: US 70 & Neuse Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	89	23	138
Average Queue (ft)	26	2	23
95th Queue (ft)	65	14	83
Link Distance (ft)			917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	350	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 455: Whaley Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	20	43	111
Average Queue (ft)	1	7	39
95th Queue (ft)	11	29	82
Link Distance (ft)			894
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 456: US 70 & British Rd

Movement	EB	WB	WB	SB
Directions Served	L	U	T	LR
Maximum Queue (ft)	42	24	4	22
Average Queue (ft)	8	2	0	2
95th Queue (ft)	30	13	3	12
Link Distance (ft)			920	934
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150	125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 457: Wyse Fork Rd/Caswell Rd & US 70

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	2	5	131	49
Average Queue (ft)	0	0	46	15
95th Queue (ft)	1	3	96	38
Link Distance (ft)			891	936
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150	200		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 458: Caswell Rd & British Rd

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	4	25	14
Average Queue (ft)	0	10	5
95th Queue (ft)	3	27	14
Link Distance (ft)	982	985	963
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 459: US 70 & Tilghman Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	25	16	25
Average Queue (ft)	3	1	8
95th Queue (ft)	17	11	20
Link Distance (ft)			917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 460: Burkett Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	24	20	43
Average Queue (ft)	1	1	16
95th Queue (ft)	11	10	36
Link Distance (ft)			858
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 461: US 70 & Kornegay St

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	81	16	44	33
Average Queue (ft)	18	1	12	6
95th Queue (ft)	52	8	37	20
Link Distance (ft)			195	938
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	150		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 462: N West St & Kornegay St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	28	31	50
Average Queue (ft)	1	10	24
95th Queue (ft)	13	33	46
Link Distance (ft)	1008	818	918
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 1430: US 70 & Hillcrest Rd

Movement	SB
Directions Served	L
Maximum Queue (ft)	468
Average Queue (ft)	398
95th Queue (ft)	562
Link Distance (ft)	449
Upstream Blk Time (%)	24
Queuing Penalty (veh)	42
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 572

Summary of All Intervals

Run Number	1	2	3	4	Build Alternative	PM Peak	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	45587	45165	45403	45289	45583	45834	45464
Vehs Exited	45459	45110	45270	45195	45561	45781	45400
Starting Vehs	892	930	878	896	912	916	866
Ending Vehs	1020	985	1011	990	934	969	939
Travel Distance (mi)	28947	28753	28880	28725	29126	29287	28953
Travel Time (hr)	992.3	982.7	983.5	980.0	929.7	1004.7	978.8
Total Delay (hr)	356.1	350.3	346.7	348.2	288.9	361.3	341.9
Total Stops	19115	19058	19592	18943	19237	19272	19193
Fuel Used (gal)	1069.3	1059.6	1066.5	1060.6	1057.4	1079.3	1065.5

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build Alternative	PM Peak	Avg
Vehs Entered	45587	45165	45403	45289	45583	45834	45464
Vehs Exited	45459	45110	45270	45195	45561	45781	45400
Starting Vehs	892	930	878	896	912	916	866
Ending Vehs	1020	985	1011	990	934	969	939
Travel Distance (mi)	28947	28753	28880	28725	29126	29287	28953
Travel Time (hr)	992.3	982.7	983.5	980.0	929.7	1004.7	978.8
Total Delay (hr)	356.1	350.3	346.7	348.2	288.9	361.3	341.9
Total Stops	19115	19058	19592	18943	19237	19272	19193
Fuel Used (gal)	1069.3	1059.6	1066.5	1060.6	1057.4	1079.3	1065.5

Intersection: 401: Jenny Lind Rd & NC 903

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	66	13
Average Queue (ft)	29	1
95th Queue (ft)	50	10
Link Distance (ft)	1281	577
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 402: NC 903 & US 70 EB Ramps

Movement	EB	EB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	48	9	33
Average Queue (ft)	19	0	4
95th Queue (ft)	42	7	20
Link Distance (ft)	1276		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	225
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 403: NC 903 & US 70 WB Ramps

Movement	WB	WB	NB
Directions Served	LT	R	L
Maximum Queue (ft)	69	26	26
Average Queue (ft)	25	1	3
95th Queue (ft)	50	12	16
Link Distance (ft)	1330		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	250
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 404: US 70 & Washington St

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	35	21	638
Average Queue (ft)	8	2	349
95th Queue (ft)	28	14	699
Link Distance (ft)			967
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 405: Jim Sutton Rd/Willie Measley Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (ft)	121	110	119	8	73	201	201	34	83	127
Average Queue (ft)	46	44	40	0	13	84	98	5	27	58
95th Queue (ft)	99	93	95	4	44	165	175	22	64	107
Link Distance (ft)		1587	1587			1898	1898		936	2725
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250			450	275			150		
Storage Blk Time (%)							2			
Queuing Penalty (veh)							1			

Intersection: 406: Willie Measley Rd & Fields Station Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	35	29	26	3
Average Queue (ft)	22	16	1	0
95th Queue (ft)	38	36	11	2
Link Distance (ft)	1311	1139	2725	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 407: Ken's Grill Driveway/Norbert Hill Rd & US 70

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	R	LTR	LTR
Maximum Queue (ft)	28	9	6	45	46
Average Queue (ft)	4	1	0	9	10
95th Queue (ft)	17	4	5	30	30
Link Distance (ft)				92	921
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	175	150	200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 408: Harold Sutton Rd & Barwick Station Rd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	27
Average Queue (ft)	6
95th Queue (ft)	24
Link Distance (ft)	1039
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 409: Barwick Station Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	24	21	24
Average Queue (ft)	2	3	5
95th Queue (ft)	13	16	20
Link Distance (ft)			1080
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 410: US 70 & Albert Sugg Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	17	30	49
Average Queue (ft)	2	3	10
95th Queue (ft)	13	16	35
Link Distance (ft)			1016
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 411: Albert Sugg Rd & Fields Station Rd

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	30	25
Average Queue (ft)	12	9
95th Queue (ft)	31	26
Link Distance (ft)	790	948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 412: Harold Sutton Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	25	33	50
Average Queue (ft)	3	8	9
95th Queue (ft)	17	29	30
Link Distance (ft)			1030
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	200	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 413: Kennedy Home Rd/Eason Rd & US 70

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	L	T	R	LTR	LTR
Maximum Queue (ft)	31	6	91	49	9	134	260
Average Queue (ft)	3	0	37	3	0	35	131
95th Queue (ft)	16	4	75	33	5	99	297
Link Distance (ft)		1158		834		933	934
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175		50		50		
Storage Blk Time (%)			6				
Queuing Penalty (veh)			30				

Intersection: 414: US 70 & Banks School Rd

Movement	EB	WB	SB
Directions Served	L	T	R
Maximum Queue (ft)	82	8	12
Average Queue (ft)	29	0	0
95th Queue (ft)	64	6	6
Link Distance (ft)		1085	911
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	400		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 415: US 70 & Innovation Way

Movement	SB
Directions Served	R
Maximum Queue (ft)	27
Average Queue (ft)	1
95th Queue (ft)	15
Link Distance (ft)	1392
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 416: Industrial Dr & Sanderson Way

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LT	LTR	LT	R	L	TR
Maximum Queue (ft)	18	24	66	109	58	72
Average Queue (ft)	1	2	31	23	26	36
95th Queue (ft)	9	15	55	79	49	59
Link Distance (ft)	945	782	545	545		1949
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					150	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 417: Industrial Dr & Innovation Way

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	100	40
Average Queue (ft)	43	8
95th Queue (ft)	72	30
Link Distance (ft)	1392	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 418: Industrial Dr & Smithfield Way

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	52	52
Average Queue (ft)	0	5	27
95th Queue (ft)	3	27	46
Link Distance (ft)	889	937	1370
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 419: Sanderson Way & US 70

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 420: Shopping Center Dr/Pinelawn Cemetery Dr & US 70

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	26	27	346	77	9	250	200	127
Average Queue (ft)	2	2	138	3	0	195	68	52
95th Queue (ft)	13	15	284	59	5	292	208	145
Link Distance (ft)				816	816	225		259
Upstream Blk Time (%)						66		
Queuing Penalty (veh)						0		
Storage Bay Dist (ft)	150	150	400				100	
Storage Blk Time (%)			0			86	2	
Queuing Penalty (veh)			1			97	1	

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	173	404	389	233	247	398	381	174	284	219	272	313
Average Queue (ft)	46	287	269	15	87	222	226	80	104	112	113	182
95th Queue (ft)	110	394	373	134	187	357	350	151	224	200	235	284
Link Distance (ft)		816	816			887	887		364			548
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300			250	225			450		125	325	
Storage Blk Time (%)		5	7		0	6	0		7	11		46
Queuing Penalty (veh)		4	3		0	9	0		9	10		84

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	200
Average Queue (ft)	80
95th Queue (ft)	198
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	1
Queuing Penalty (veh)	4

Intersection: 422: Hill Farm Rd & Smithfield Way

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	L	L
Maximum Queue (ft)	59	52	26	49	6
Average Queue (ft)	17	25	9	11	0
95th Queue (ft)	40	44	28	37	3
Link Distance (ft)	878		1010		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		75		75	200
Storage Blk Time (%)	0	0		0	
Queuing Penalty (veh)	0	0		0	

Intersection: 423: Hill Farm Rd & Banks School Rd

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	15	73	67	83
Average Queue (ft)	1	28	29	42
95th Queue (ft)	10	61	55	70
Link Distance (ft)	586		622	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)	0		0	
Queuing Penalty (veh)	0		0	

Intersection: 424: Sheffield Dr/Walmart Dr & US 70

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	TR	L	R	R	R
Maximum Queue (ft)	79	2	4	129	25	9	143
Average Queue (ft)	26	0	0	56	1	0	54
95th Queue (ft)	61	2	3	111	13	7	109
Link Distance (ft)	887			960		356	219
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225		150	250			
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 425: US 70 & US 258

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	
Directions Served	L	L	T	T	T	U	T	T	R	L	L	
Maximum Queue (ft)	99	106	310	330	264	36	333	341	194	222	224	
Average Queue (ft)	40	54	136	152	54	4	173	177	69	109	120	
95th Queue (ft)	80	93	260	284	174	21	287	290	136	182	185	
Link Distance (ft)			960	960	960		598	598	598	2293		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450	450					300				250	
Storage Blk Time (%)							1					0
Queuing Penalty (veh)							0					0

Intersection: 426: US 258 & A St

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	44	46	46
Average Queue (ft)	14	20	12
95th Queue (ft)	41	47	36
Link Distance (ft)	688		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50	125	
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	

Intersection: 427: US 258 & Banks School Rd/Sand Clay Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	246	270	120	27	42	161	138	110	27	188	152	194
Average Queue (ft)	163	21	44	3	6	63	53	23	3	76	23	74
95th Queue (ft)	238	134	93	17	27	126	109	67	15	144	88	158
Link Distance (ft)	1018			793			842	842	785		785	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150	300		50	400			350		450		
Storage Blk Time (%)	11			0	0							
Queuing Penalty (veh)	12			0	0							

Intersection: 428: Driveway/Ruby Tuesday & US 70

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	R	R
Maximum Queue (ft)	37	32	4	33	30
Average Queue (ft)	5	6	0	6	11
95th Queue (ft)	23	23	4	25	33
Link Distance (ft)			525	128	166
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300	150			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 429: US 70 & Mt Vernon Park Dr

Movement	EB	EB	EB	WB	WB	WB	WB	SB
Directions Served	L	T	T	U	T	T	TR	LR
Maximum Queue (ft)	62	208	233	36	182	188	201	94
Average Queue (ft)	22	65	75	5	74	63	61	35
95th Queue (ft)	55	170	183	22	163	147	151	74
Link Distance (ft)		525	525		861	861	861	340
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175			75				
Storage Blk Time (%)		1			6			
Queuing Penalty (veh)		0			0			

Intersection: 430: Hillcrest Rd & US 70 Bus

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	R	LT	R
Maximum Queue (ft)	82	326	296	328	359	781	31	116	112	62	42
Average Queue (ft)	13	193	152	237	188	387	5	52	46	20	13
95th Queue (ft)	59	304	271	399	460	990	20	97	95	51	38
Link Distance (ft)		785	785			949	449				348
Upstream Blk Time (%)						15					
Queuing Penalty (veh)						0					
Storage Bay Dist (ft)	75			300	300		225	225	75		
Storage Blk Time (%)	0	39		34	3	0				1	0
Queuing Penalty (veh)	0	6		132	13	0				0	0

Intersection: 431: NC 55 & Green Haynes Rd

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	57	38
Average Queue (ft)	20	3
95th Queue (ft)	43	19
Link Distance (ft)	1040	1026
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 432: NC 55 & N Croom Bland Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	22	12
Average Queue (ft)	4	1
95th Queue (ft)	19	9
Link Distance (ft)	1175	1014
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 433: NC 11 & Leslie R Stroud Rd

Movement	EB	NB	SB
Directions Served	LR	L	U
Maximum Queue (ft)	22	21	16
Average Queue (ft)	5	2	1
95th Queue (ft)	20	13	9
Link Distance (ft)	920		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		275	175
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 434: NC 11 & Green Haynes Rd/Albrittons Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	108	91	28	22	4
Average Queue (ft)	35	32	6	1	0
95th Queue (ft)	74	67	21	10	3
Link Distance (ft)	1023	968			1015
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			225	325	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 435: NC 11 & NC 55/Tyree Rd

Movement	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	L	T	L	T	TR	L	T	TR
Maximum Queue (ft)	232	120	156	5	101	57	44	226	239
Average Queue (ft)	114	52	54	0	28	4	9	115	143
95th Queue (ft)	198	107	111	3	77	32	33	195	227
Link Distance (ft)	922		958		977	977		2138	2138
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		125		225			150		
Storage Blk Time (%)	28	1	1					2	
Queuing Penalty (veh)	2	1	1					0	

Intersection: 436: NC 11 & Central Ave

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	34	33
Average Queue (ft)	11	4
95th Queue (ft)	33	21
Link Distance (ft)	910	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 437: NC 11 & Edgewood Dr/Mary Beth Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	33	58	6	13
Average Queue (ft)	9	19	0	3
95th Queue (ft)	30	47	3	9
Link Distance (ft)	681	1085		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 438: NC 11 & Old Asphalt Rd

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	121	59
Average Queue (ft)	32	23
95th Queue (ft)	97	48
Link Distance (ft)	1000	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 439: NC 11 & US 70

Movement	EB	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	
Directions Served	L	L	T	T	R	L	T	T	L	L	T	TR	
Maximum Queue (ft)	181	215	372	328	287	178	319	298	189	234	169	182	
Average Queue (ft)	62	118	261	226	151	74	227	196	92	140	84	89	
95th Queue (ft)	159	191	347	310	249	151	299	274	190	218	149	157	
Link Distance (ft)			975	975			989	989			983	983	
Upstream Blk Time (%)													
Queuing Penalty (veh)													
Storage Bay Dist (ft)	325	325			475	275			275	275			
Storage Blk Time (%)			1					1			0		
Queuing Penalty (veh)			2					1			0		

Intersection: 439: NC 11 & US 70

Movement	SB	SB	SB	SB	SB	
Directions Served	L	L	T	T	R	
Maximum Queue (ft)	41	121	314	280	193	
Average Queue (ft)	6	43	217	181	91	
95th Queue (ft)	26	91	295	260	164	
Link Distance (ft)			914	914		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	400	400			400	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 440: US 258 & Clarence Potter Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	4
Average Queue (ft)	6	0
95th Queue (ft)	22	3
Link Distance (ft)	975	1004
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 441: US 258 & Albrittons Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	45	32
Average Queue (ft)	9	5
95th Queue (ft)	26	24
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 442: US 258 & Ferguson Ln/Collier Loftin Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	36	89	12	2	39
Average Queue (ft)	10	40	1	0	9
95th Queue (ft)	32	70	7	2	30
Link Distance (ft)	454	977		952	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 443: US 258 & Old Asphalt Rd

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	98	41	16
Average Queue (ft)	36	9	1
95th Queue (ft)	72	31	12
Link Distance (ft)	994		508
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 444: US 258/US 70 Bus & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	T	L	T	T	R	L	T	T	R
Maximum Queue (ft)	56	262	250	234	148	229	240	147	164	126	140	120
Average Queue (ft)	11	155	155	133	56	117	135	10	61	49	63	33
95th Queue (ft)	37	230	228	210	123	205	219	117	124	109	114	88
Link Distance (ft)		627	627	627		1931	1931	1931				481
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				225				400	400		275
Storage Blk Time (%)		1		0		0						
Queuing Penalty (veh)		0		0		0						

Intersection: 444: US 258/US 70 Bus & US 70

Movement	SB	SB	SB	SB
Directions Served	L	L	T	TR
Maximum Queue (ft)	218	270	220	187
Average Queue (ft)	119	157	115	73
95th Queue (ft)	197	233	192	165
Link Distance (ft)			951	951
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	275	275		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 445: Meadowbrook Dr/Family Dollar Driveway & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	LTR	
Maximum Queue (ft)	20	122	427	157	59	112	133	101	88	59	38	
Average Queue (ft)	2	25	48	45	15	24	40	28	39	14	11	
95th Queue (ft)	11	80	278	120	43	72	99	77	77	41	37	
Link Distance (ft)		1931	1931	1931		2404	2404	2404		961	211	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				225				75			
Storage Blk Time (%)									2		0	
Queuing Penalty (veh)									0		0	

Intersection: 446: NC 58 & Elijah Loftin Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	24	25	36
Average Queue (ft)	17	10	2	4
95th Queue (ft)	38	25	13	20
Link Distance (ft)	1033	1028	957	1059
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 447: NC 58 & Woodington Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	29	21
Average Queue (ft)	16	1
95th Queue (ft)	35	9
Link Distance (ft)	1028	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 448: NC 58 & Will Baker Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	56	34
Average Queue (ft)	20	7
95th Queue (ft)	41	27
Link Distance (ft)	1006	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 449: NC 58 & Collier Loftin Rd

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	64	33	26
Average Queue (ft)	22	8	3
95th Queue (ft)	47	27	16
Link Distance (ft)	992		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	75
Storage Blk Time (%)	1	0	
Queuing Penalty (veh)	0	0	

Intersection: 450: NC 58 & Lenoir CC Southern Driveway

Movement	SB
Directions Served	L
Maximum Queue (ft)	50
Average Queue (ft)	10
95th Queue (ft)	35
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 451: NC 58 & Lenoir CC Northern Driveway

Movement	WB	WB
Directions Served	L	R
Maximum Queue (ft)	26	55
Average Queue (ft)	2	29
95th Queue (ft)	15	51
Link Distance (ft)	579	579
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	LT	R	LT
Maximum Queue (ft)	155	292	307	89	83	148	175	206	220	246	133	162
Average Queue (ft)	55	117	137	4	23	62	84	88	129	154	9	52
95th Queue (ft)	123	222	242	58	62	119	144	163	195	219	76	127
Link Distance (ft)		2404	2404	2404			1703	1703		725		573
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100				225	225			275		100	
Storage Blk Time (%)	1	13							0	27		4
Queuing Penalty (veh)	4	13							0	58		3

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	131
Average Queue (ft)	62
95th Queue (ft)	110
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	3
Queuing Penalty (veh)	1

Intersection: 453: Lenoir CC Driveway & US 70

Movement	EB	WB	NB
Directions Served	R	L	R
Maximum Queue (ft)	7	36	41
Average Queue (ft)	0	6	14
95th Queue (ft)	6	27	35
Link Distance (ft)			364
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 454: US 70 & Neuse Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	77	19	62
Average Queue (ft)	29	2	9
95th Queue (ft)	59	11	37
Link Distance (ft)			917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	350	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 455: Whaley Rd & US 70

Movement	EB	EB	WB	NB
Directions Served	U	R	L	LR
Maximum Queue (ft)	20	4	52	68
Average Queue (ft)	2	0	12	26
95th Queue (ft)	12	3	37	54
Link Distance (ft)				894
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150	150	150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 456: US 70 & British Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	57	16	33
Average Queue (ft)	11	2	2
95th Queue (ft)	37	11	15
Link Distance (ft)			934
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 457: Wyse Fork Rd/Caswell Rd & US 70

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	T	LTR	LTR
Maximum Queue (ft)	2	5	6	126	45
Average Queue (ft)	0	0	0	37	10
95th Queue (ft)	1	4	5	91	33
Link Distance (ft)			912	891	936
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	150	200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 458: Caswell Rd & British Rd

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	4	25	14
Average Queue (ft)	0	12	4
95th Queue (ft)	3	29	12
Link Distance (ft)	982	985	963
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 459: US 70 & Tilghman Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	38	20	24
Average Queue (ft)	6	1	6
95th Queue (ft)	25	11	18
Link Distance (ft)			917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 460: Burkett Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	20	23	54
Average Queue (ft)	2	2	14
95th Queue (ft)	11	14	38
Link Distance (ft)			858
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 461: US 70 & Kornegay St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	R	LTR	LTR
Maximum Queue (ft)	57	4	16	33	37	37
Average Queue (ft)	24	0	2	1	9	5
95th Queue (ft)	52	3	9	15	32	21
Link Distance (ft)		1096			195	938
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225		150	125		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 462: N West St & Kornegay St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	37	31	38
Average Queue (ft)	2	11	19
95th Queue (ft)	17	35	42
Link Distance (ft)	1008	818	918
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 1430: US 70 & Hillcrest Rd

Movement	SB
Directions Served	L
Maximum Queue (ft)	456
Average Queue (ft)	383
95th Queue (ft)	558
Link Distance (ft)	449
Upstream Blk Time (%)	16
Queuing Penalty (veh)	39
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 543

APPENDIX C

2040 No-Build Alternative

Peak Hour Traffic Volume Development and

Synchro & SimTraffic Reports

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**2040 No-Build Alternative
Peak Hour Traffic Volume
Development**

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2040 No-Build Alternative

Volume Development

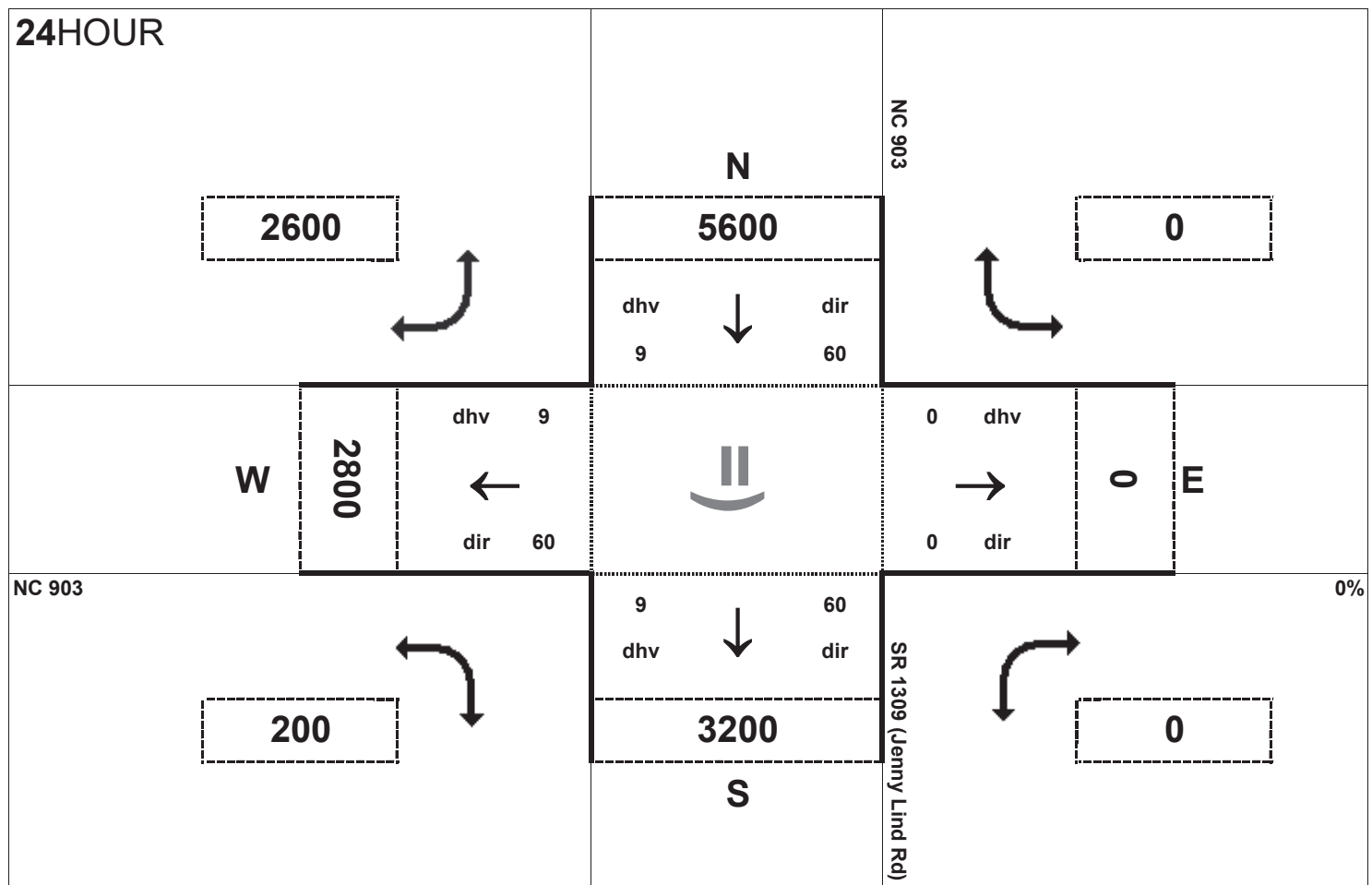
A project-level traffic forecast, titled "Traffic Forecast Technical Memorandum, Kinston Bypass Alternatives Study", was prepared and finalized in November, 2016. This traffic forecast was used to provide peak hour volumes for the analysis of the selected alternatives in this memorandum. The traffic forecast is included in **Attachment A**.

The Intersection Analysis Utility (IAU), provided by NCDOT, was utilized to calculate AM and PM Peak Hour volumes for all intersections and interchanges.

The intersections of NC 58 and the Lenoir Community College driveways (Intersections 450 and 451) were missing volume information and K and D values in the forecast. The K and D values for the Lenoir CC driveways were assumed based on NC 58 K and D values in that area. The volume on the leg of NC 58 between the northern and southern driveways was calculated; the turning movements out of and into the driveways were added and subtracted from the volume on NC 58 just south of US 70.

The intersection of SR 1552 (Hillcrest Road) is displayed in the traffic forecast as being a T intersection on US 70 Bus, separate from the US 70/US 70 Bus system interchange, when it is actually a fourth leg of that interchange. As such, volumes between those respective IAUs interact with each other, and so have been redistributed by weighted proportions. The calculations and final volumes for Intersection 430 and 1430 may be found in the ensuing pages of this appendix. Peak hour volumes are shown in **Figures 2A-2H**.

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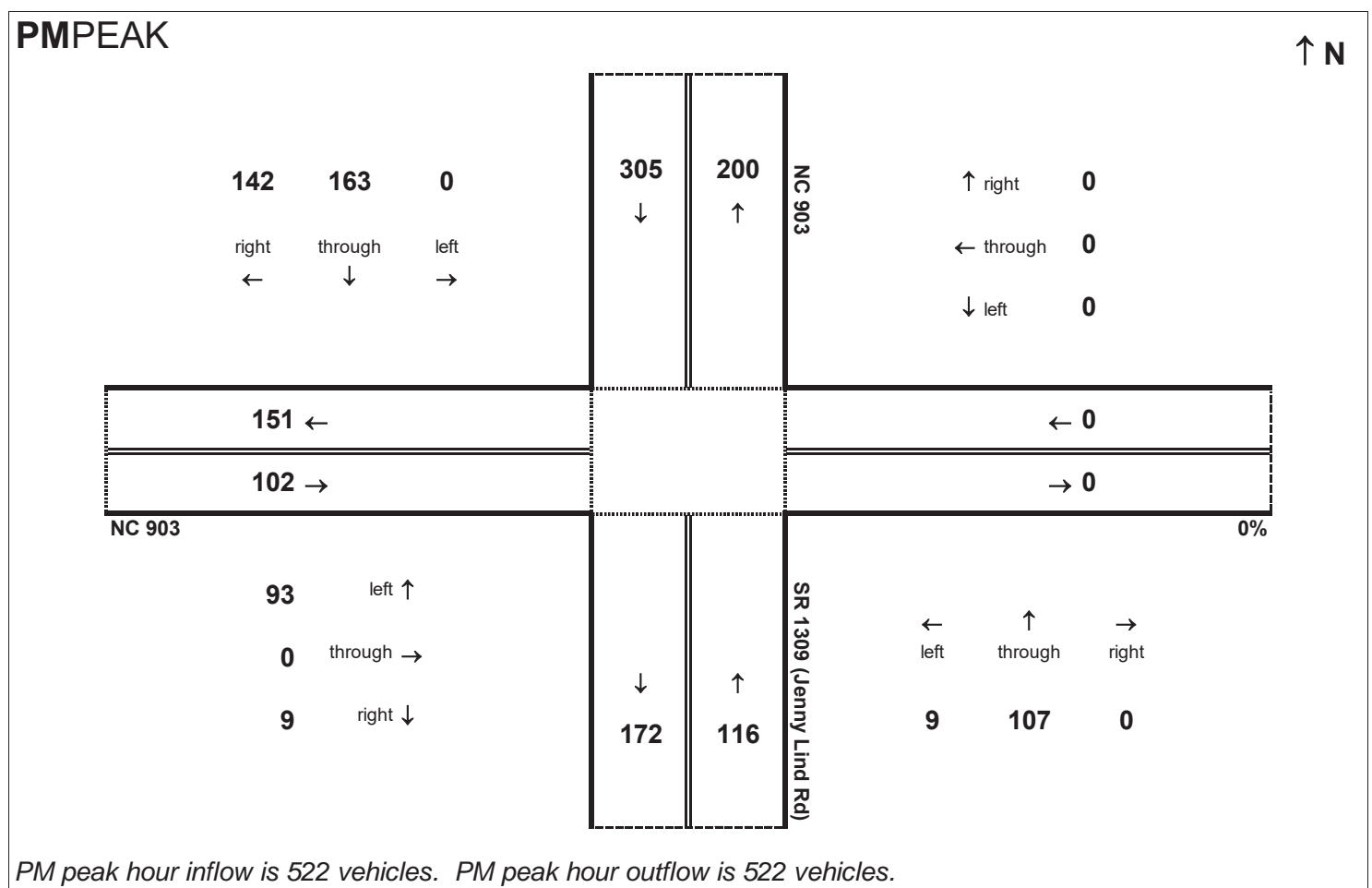
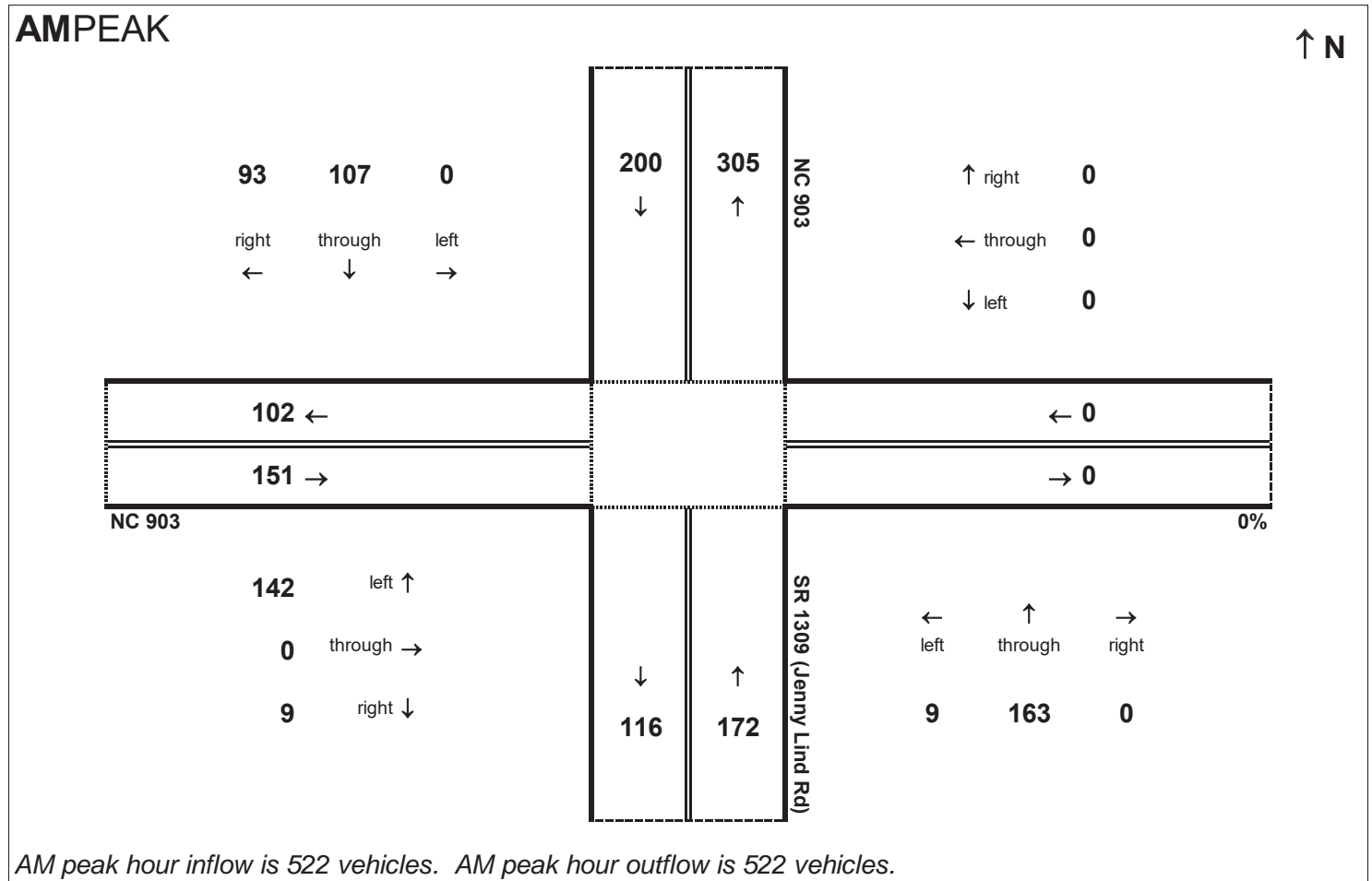


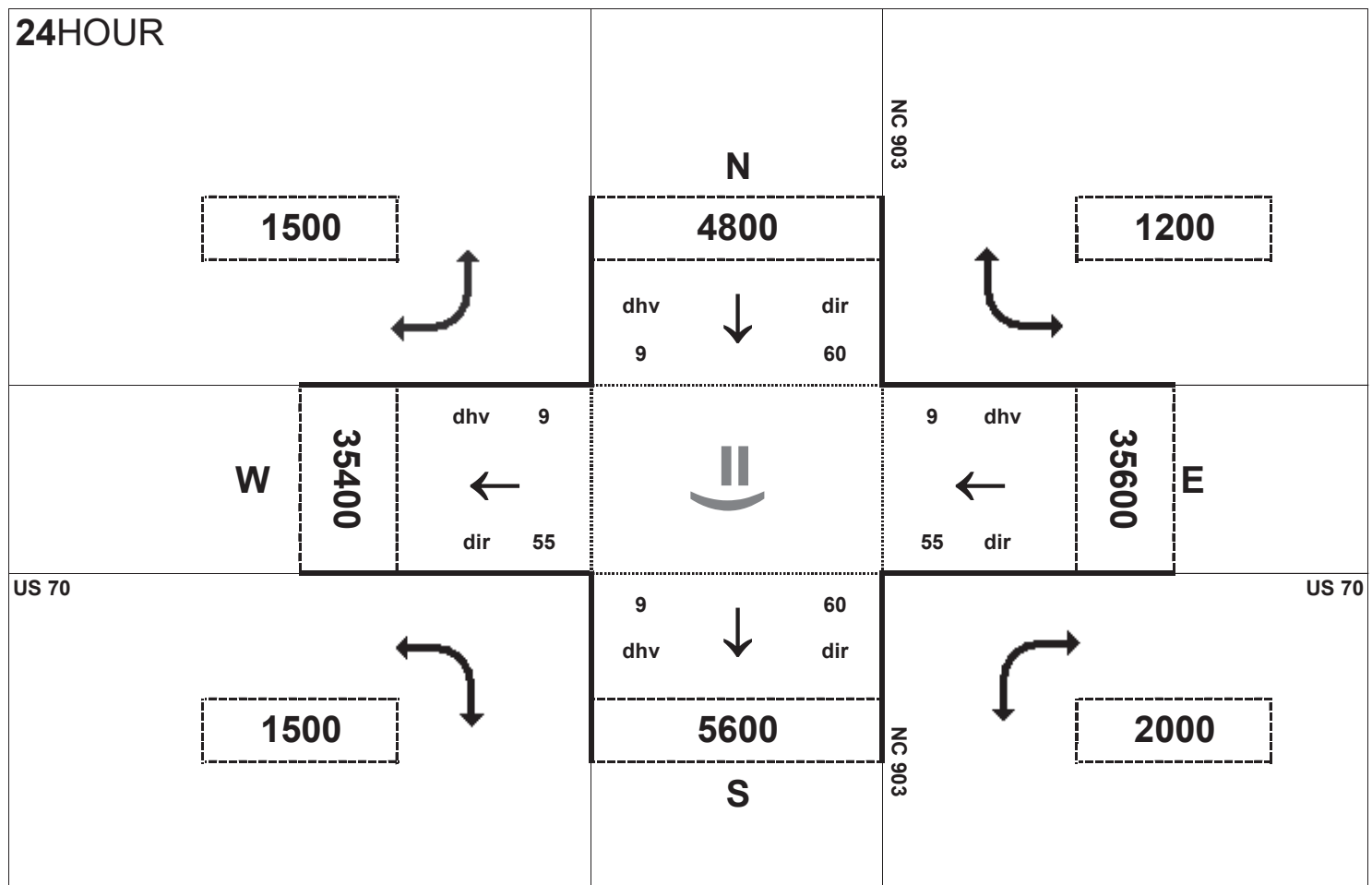
Peak Hour Volume Breakouts Report:
 401 Intersection of NC 903 and SR 1309 (Jenny Lind Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



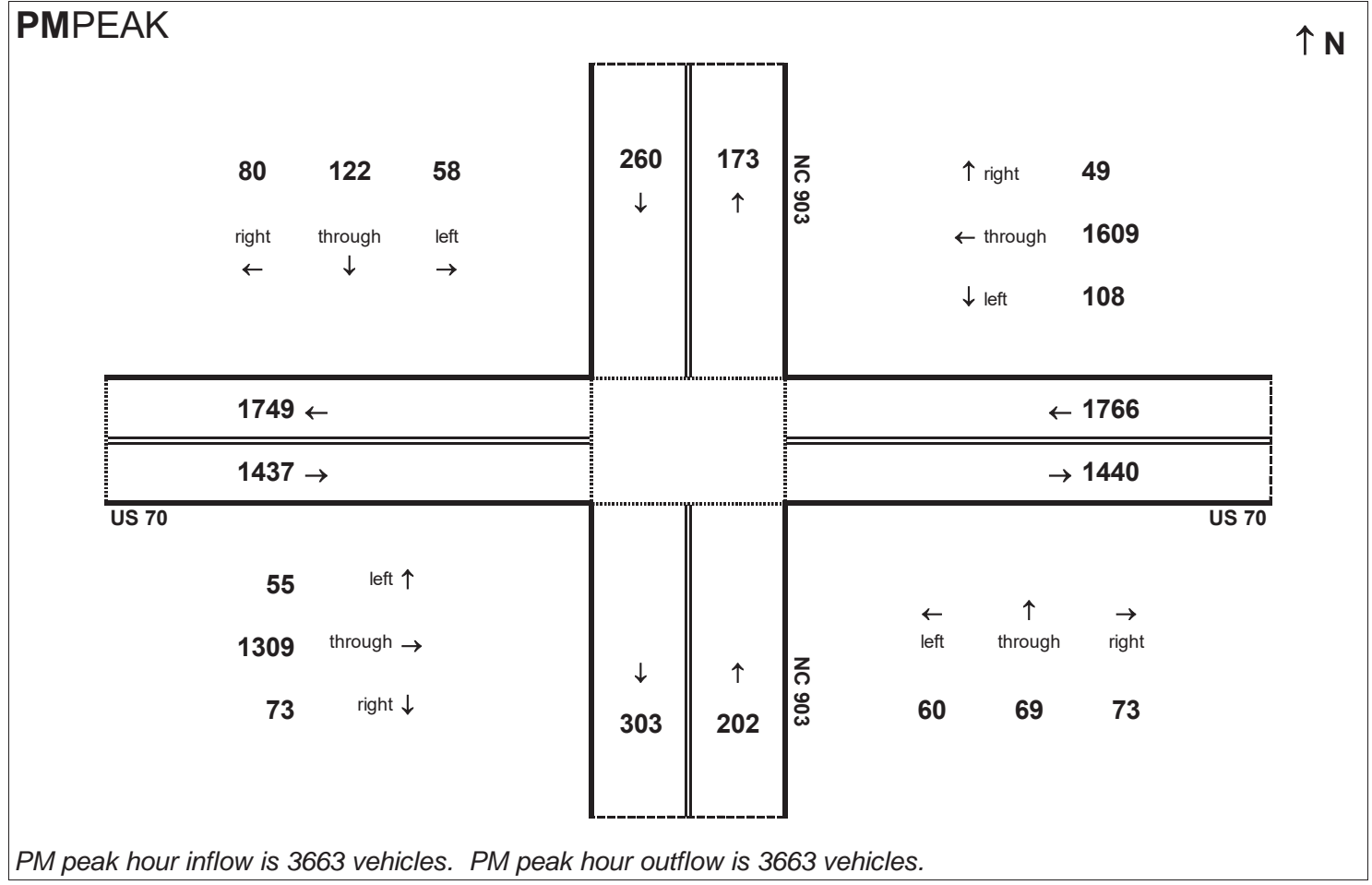
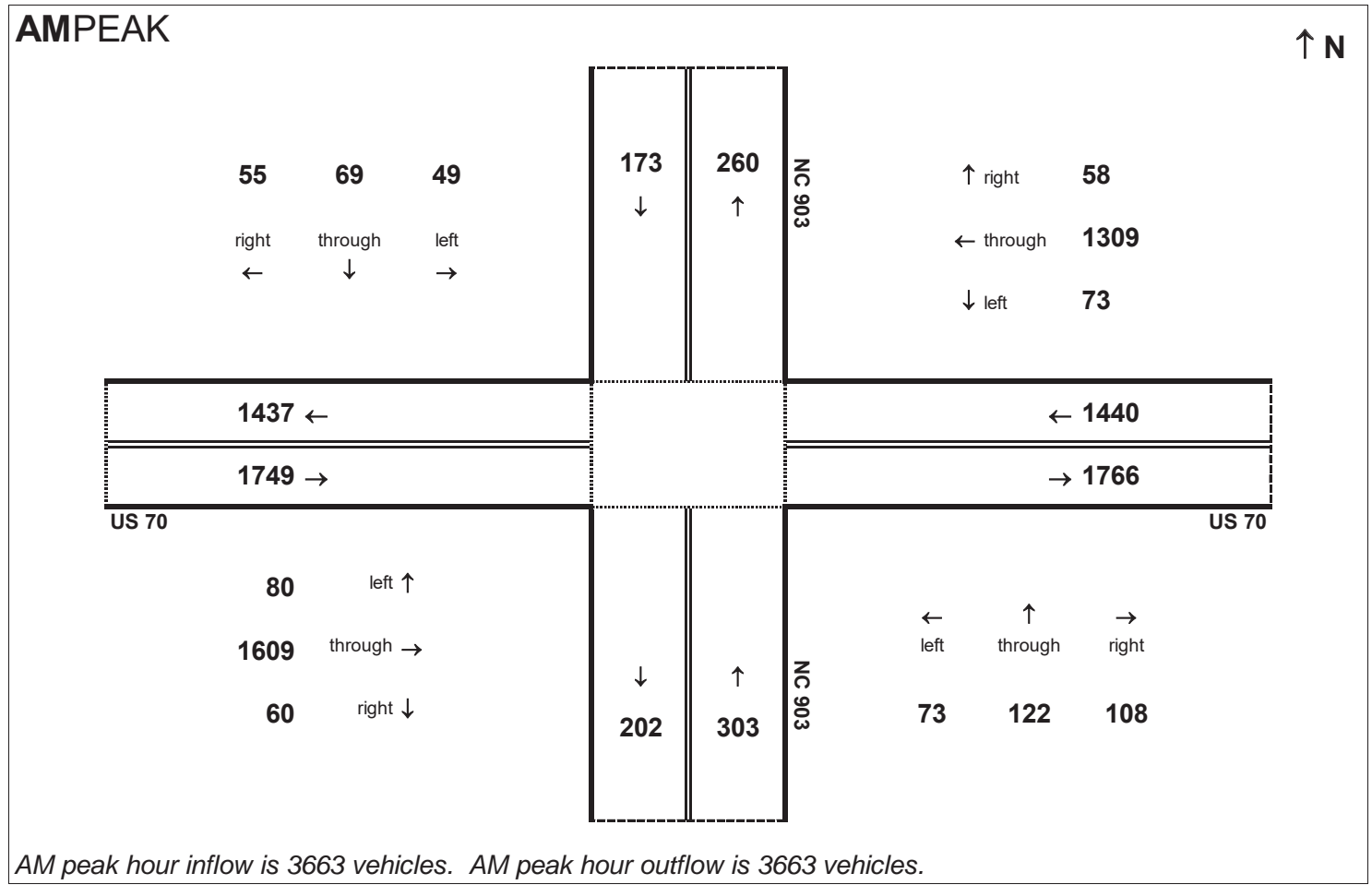


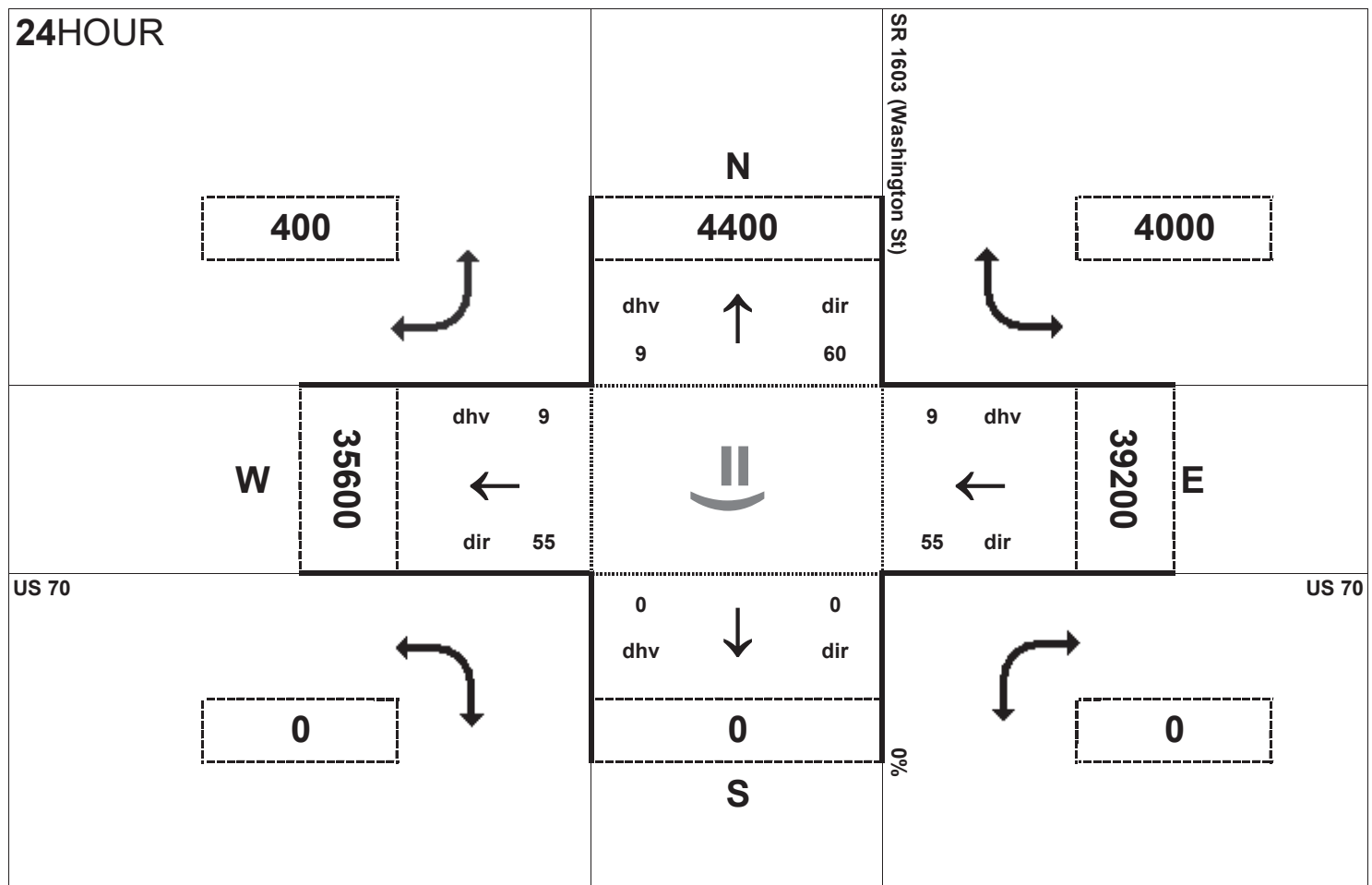
Peak Hour Volume Breakouts Report:
402-3 Intersection of US 70 at NC 903

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



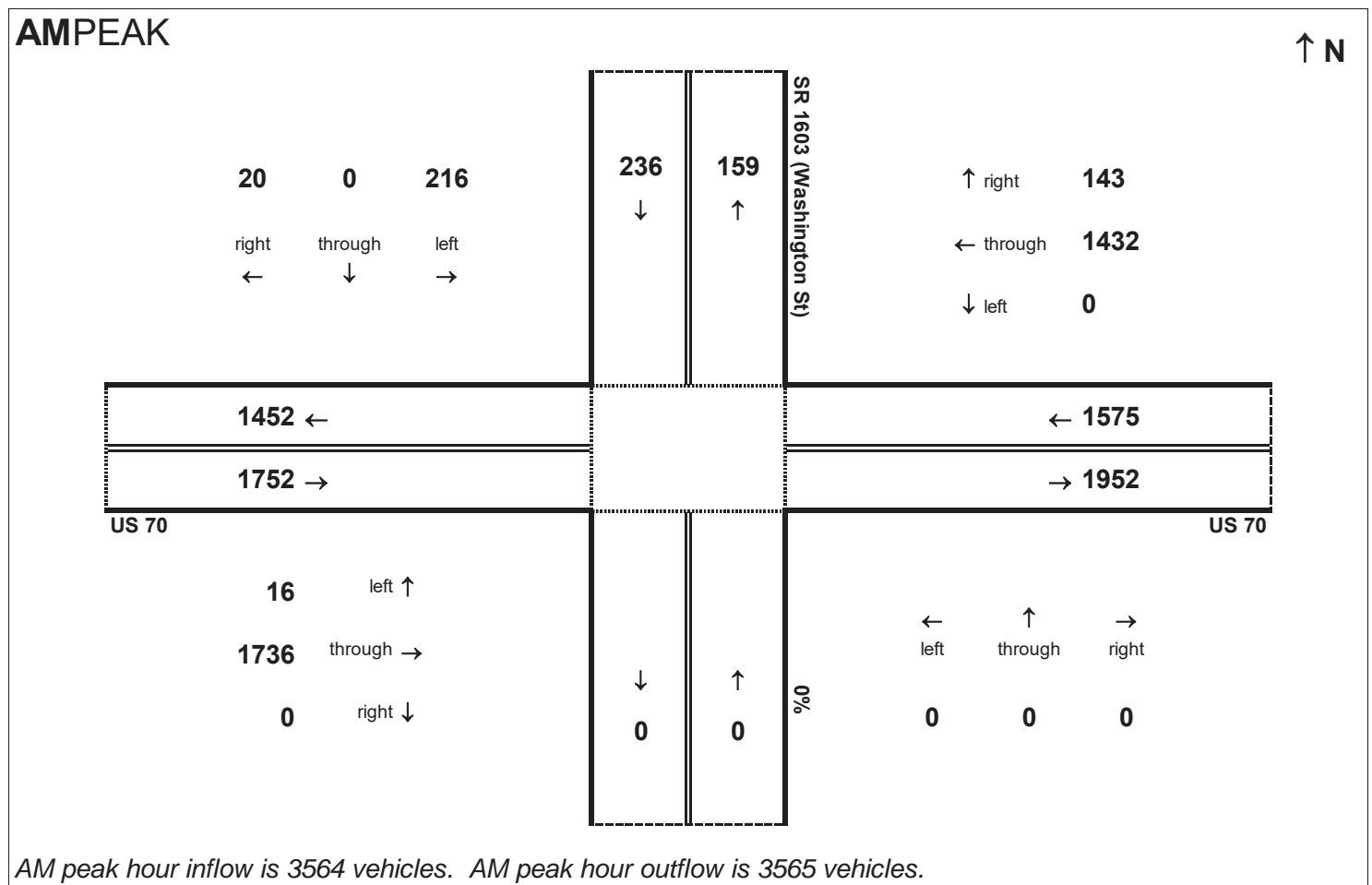


Peak Hour Volume Breakouts Report:
 404 Intersection of US 70 and SR 1603
 (Washington St)

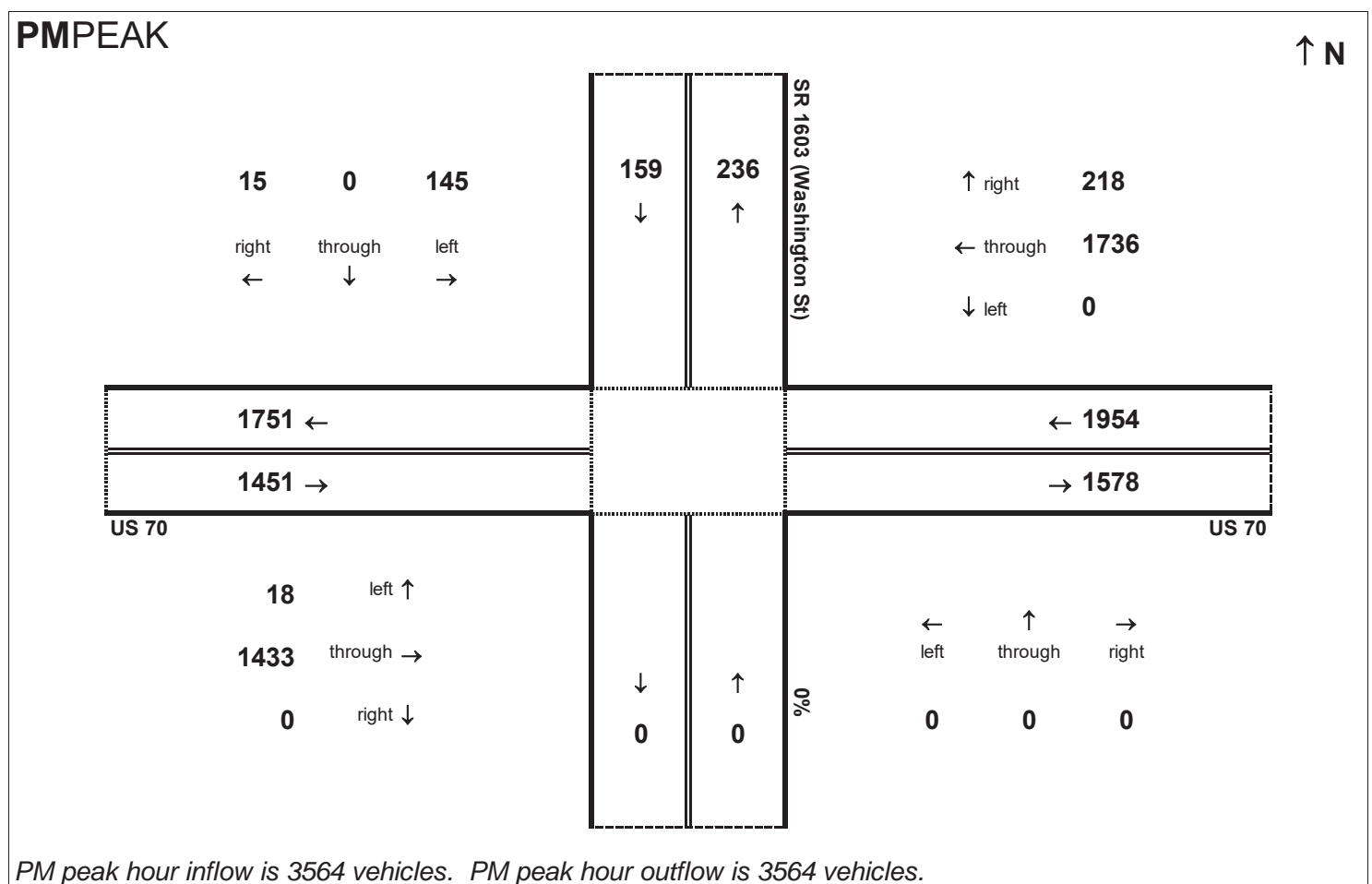
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

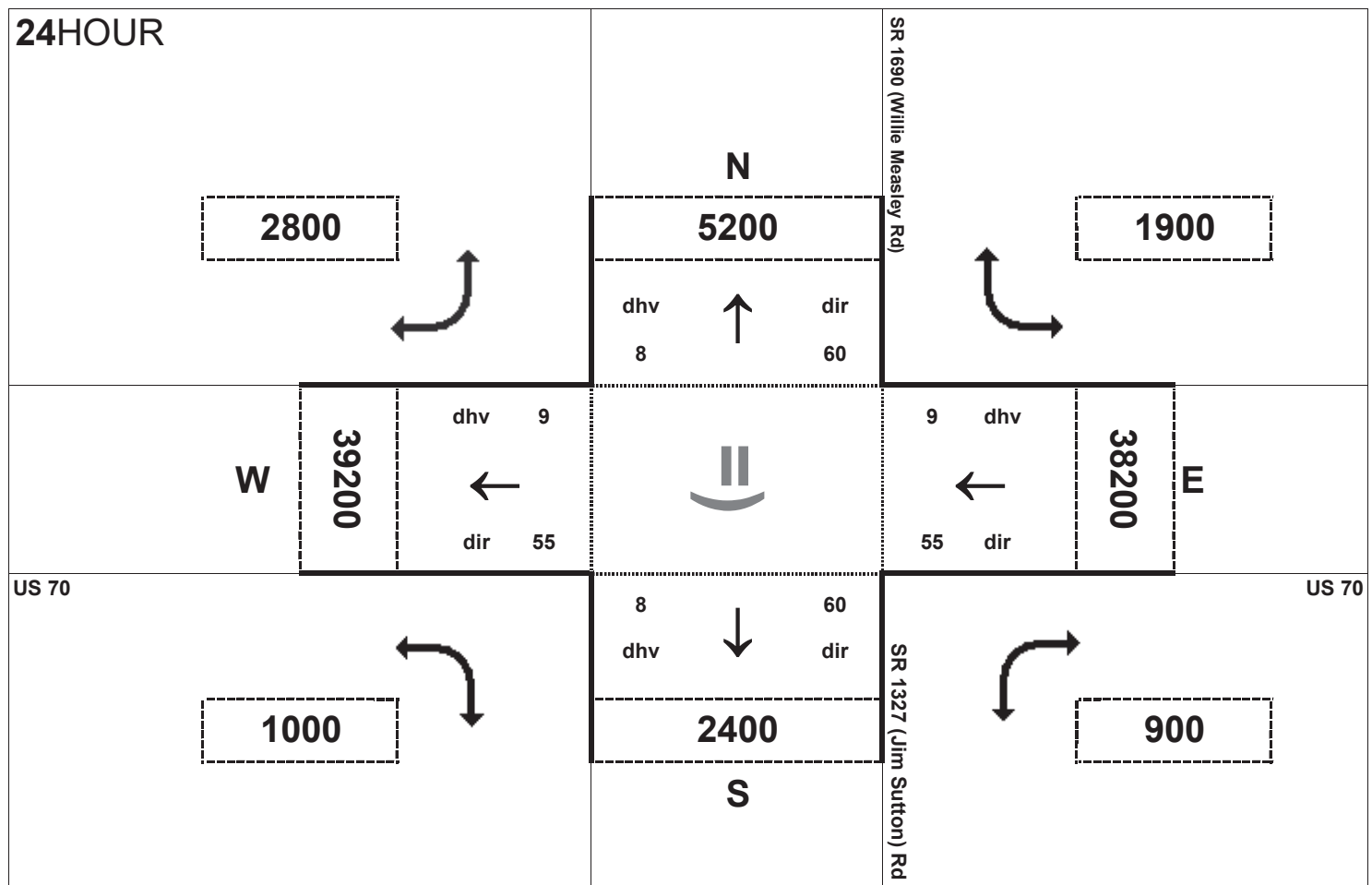
Project:
 R-2553



AM peak hour inflow is 3564 vehicles. AM peak hour outflow is 3565 vehicles.



PM peak hour inflow is 3564 vehicles. PM peak hour outflow is 3564 vehicles.

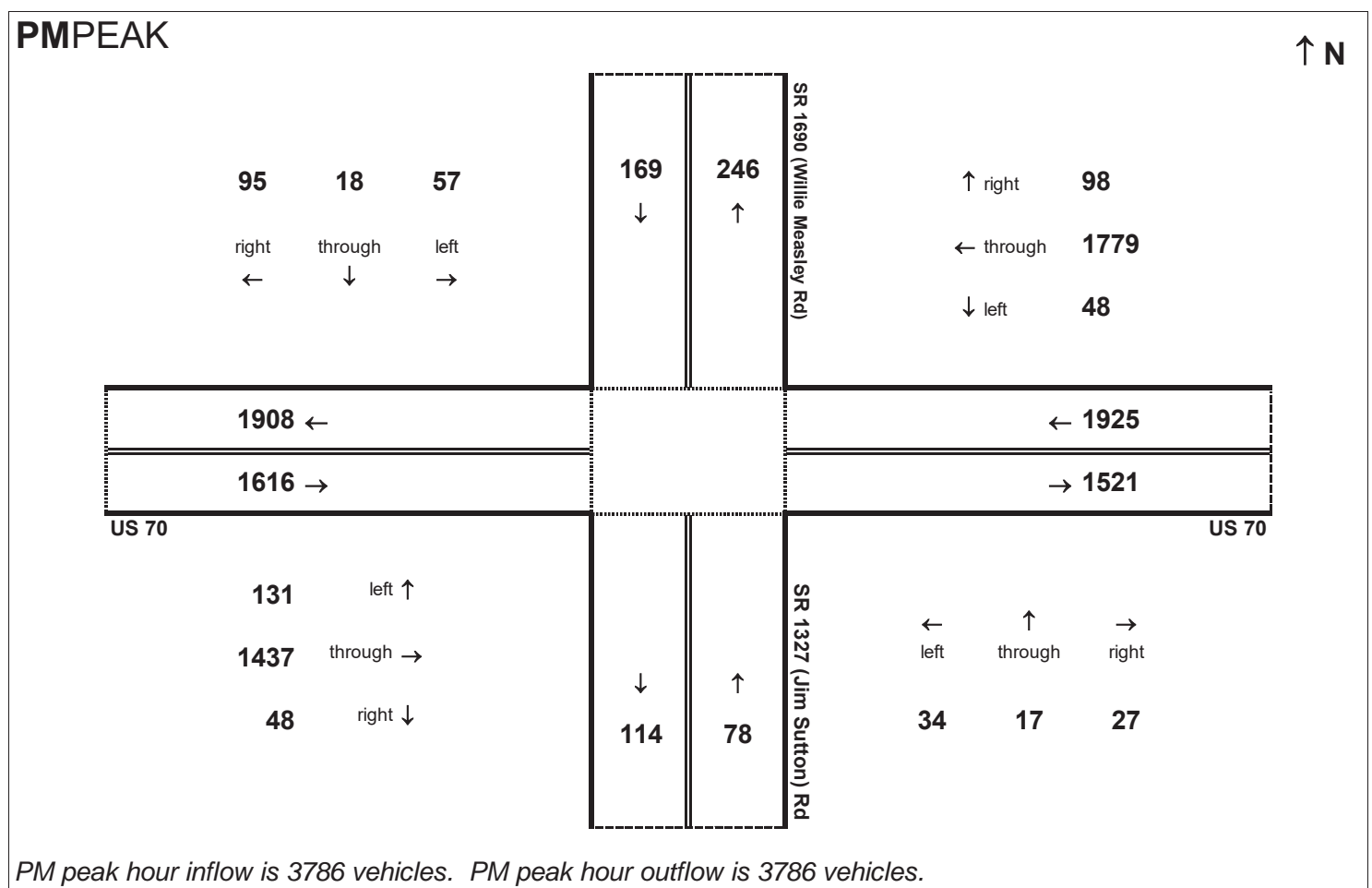
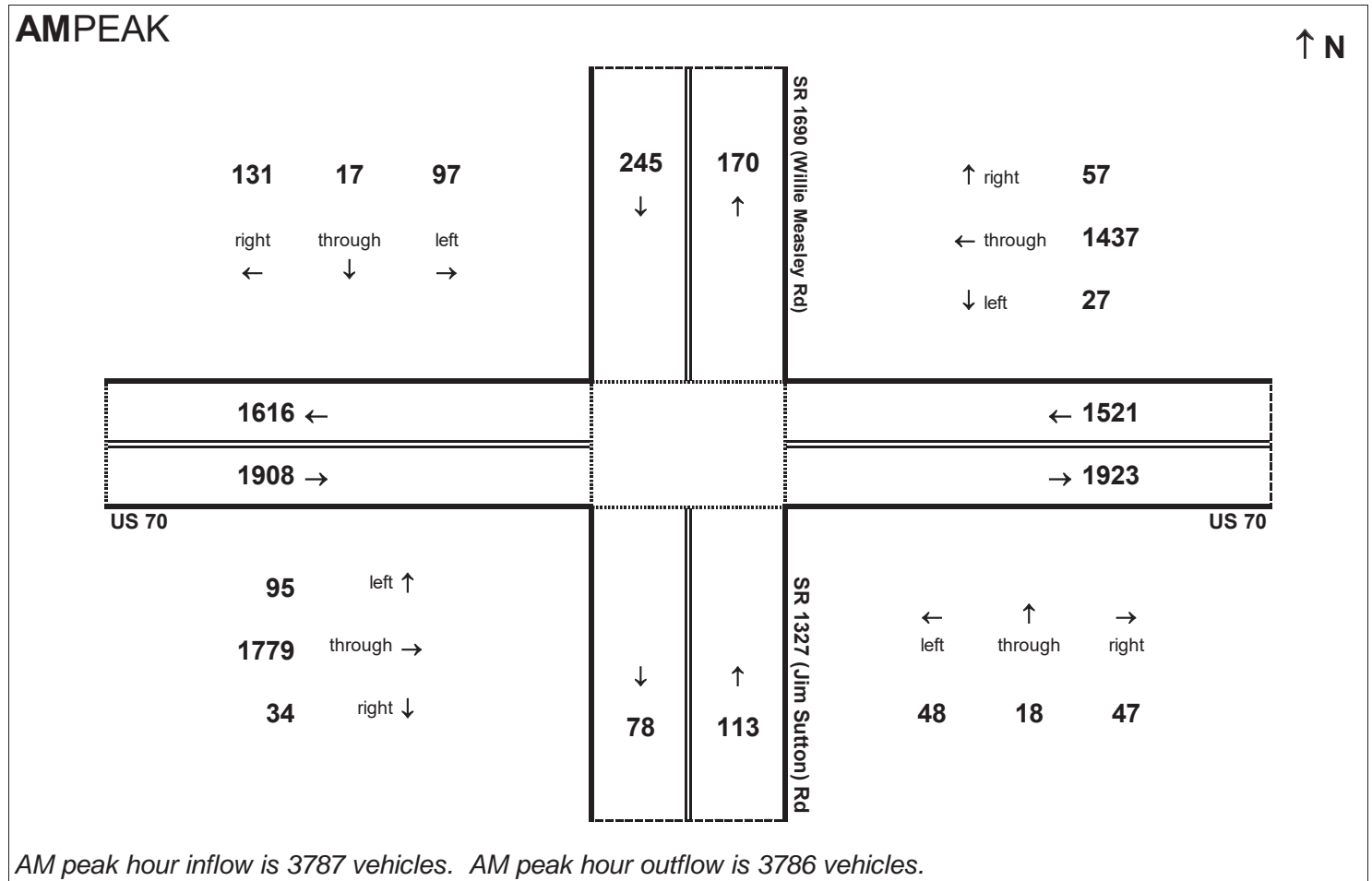


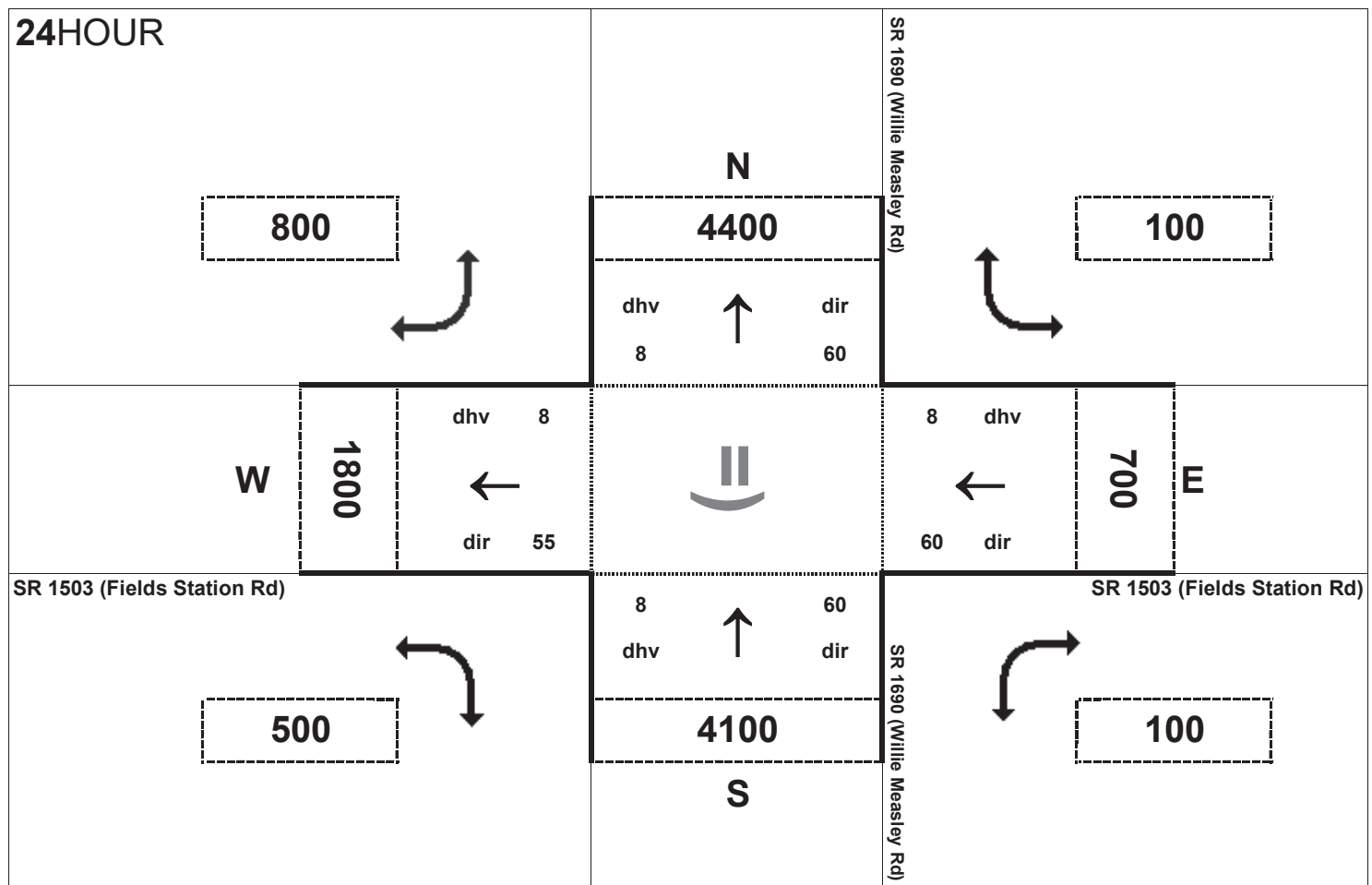
Peak Hour Volume Breakouts Report:
 405 Intersection of US 70 and SR 1690 (Willie Measley Rd) / SR 1327 (Jim Sutton Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



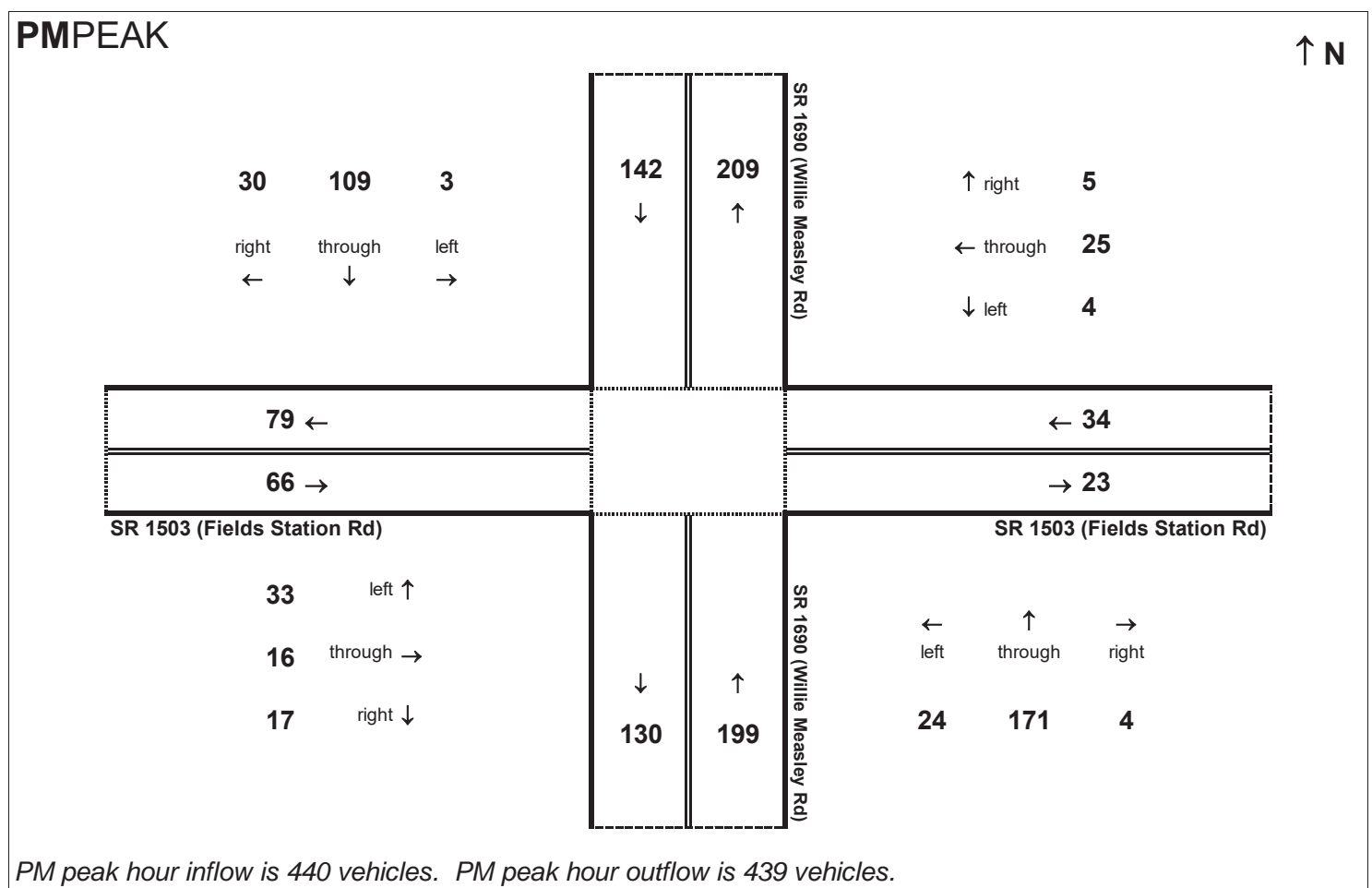
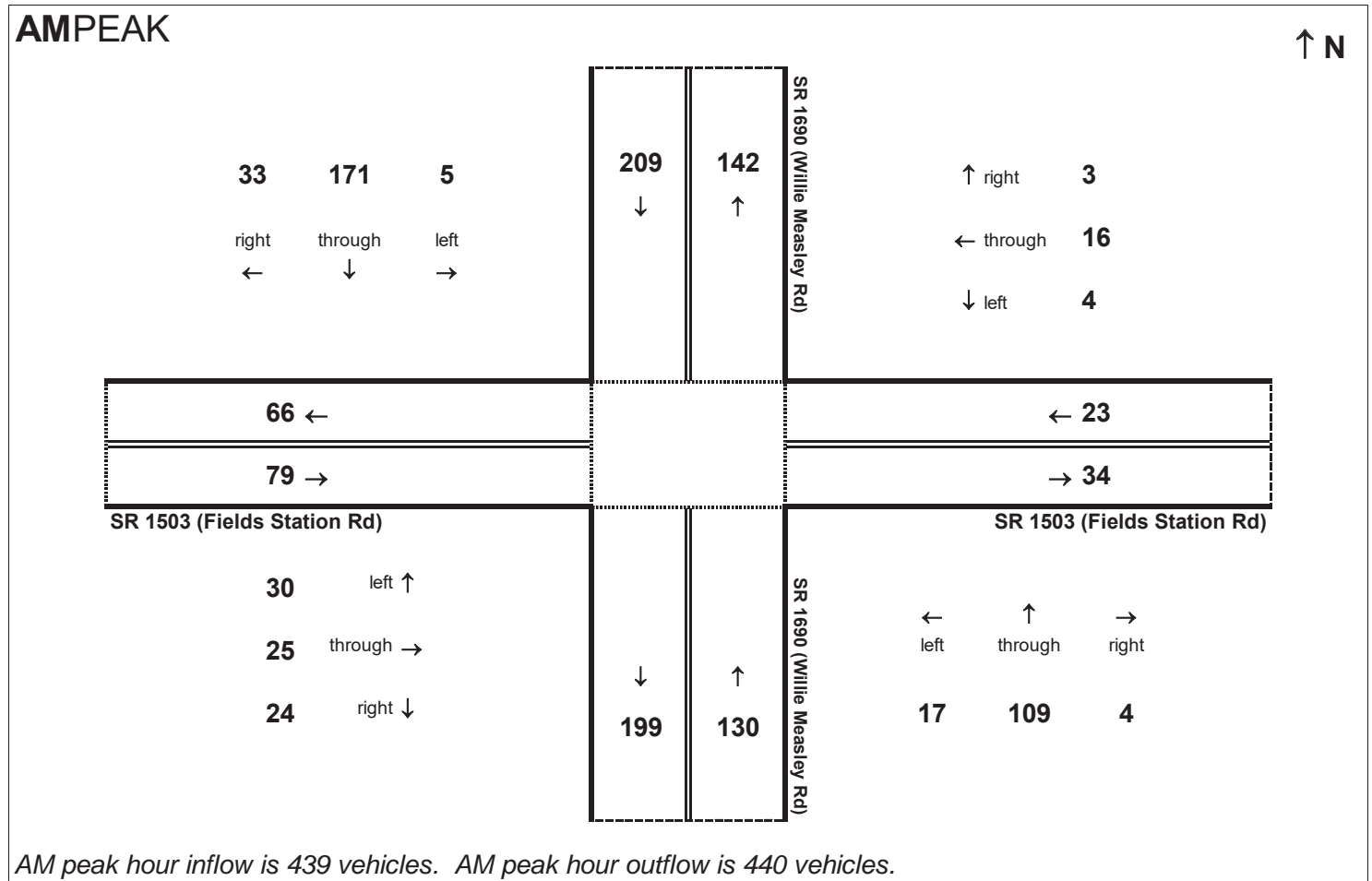


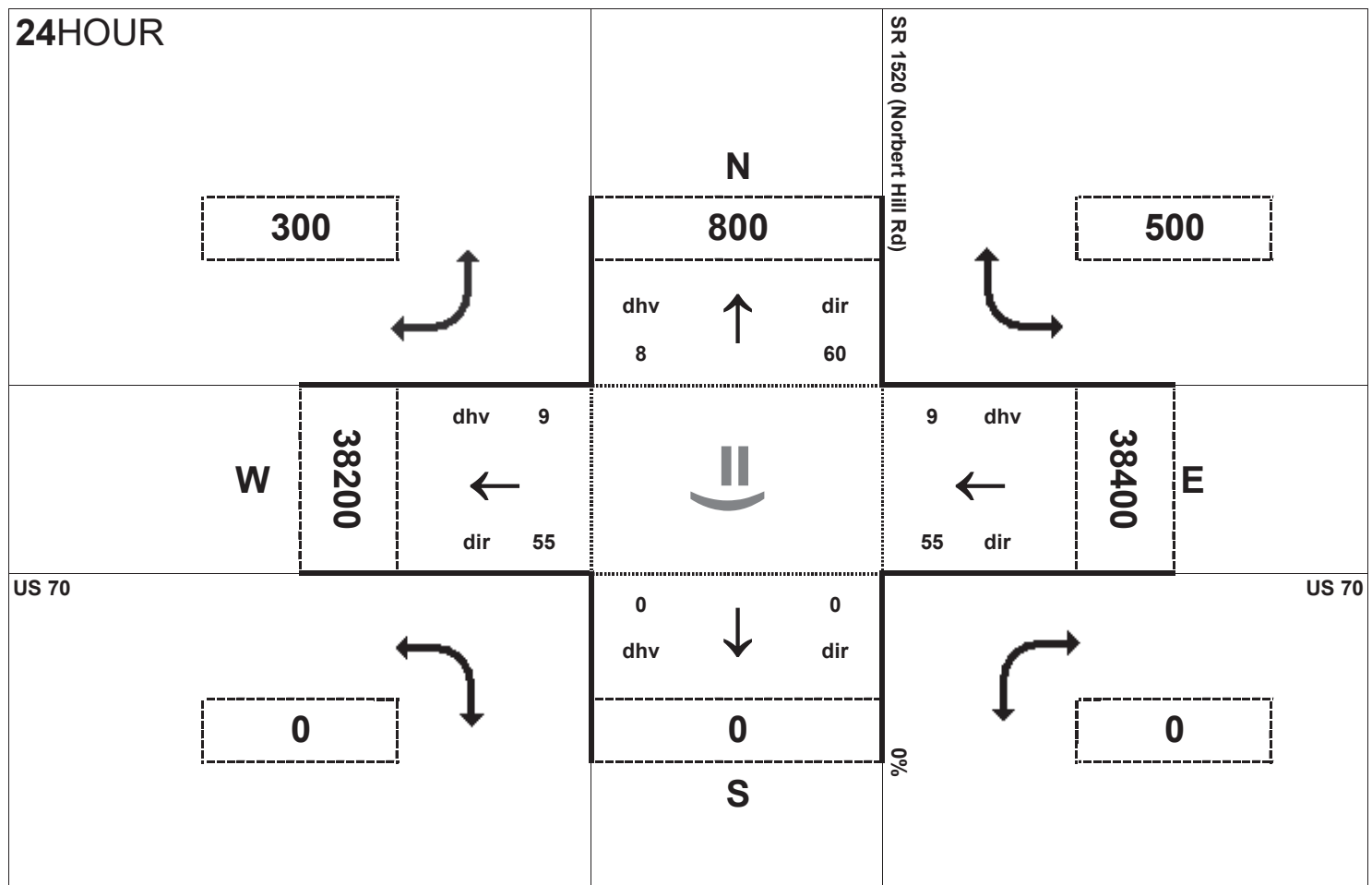
Peak Hour Volume Breakouts Report:
 406 Intersection of SR 1690 (Willie Measley Rd) and SR 1503 (Fields Station Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



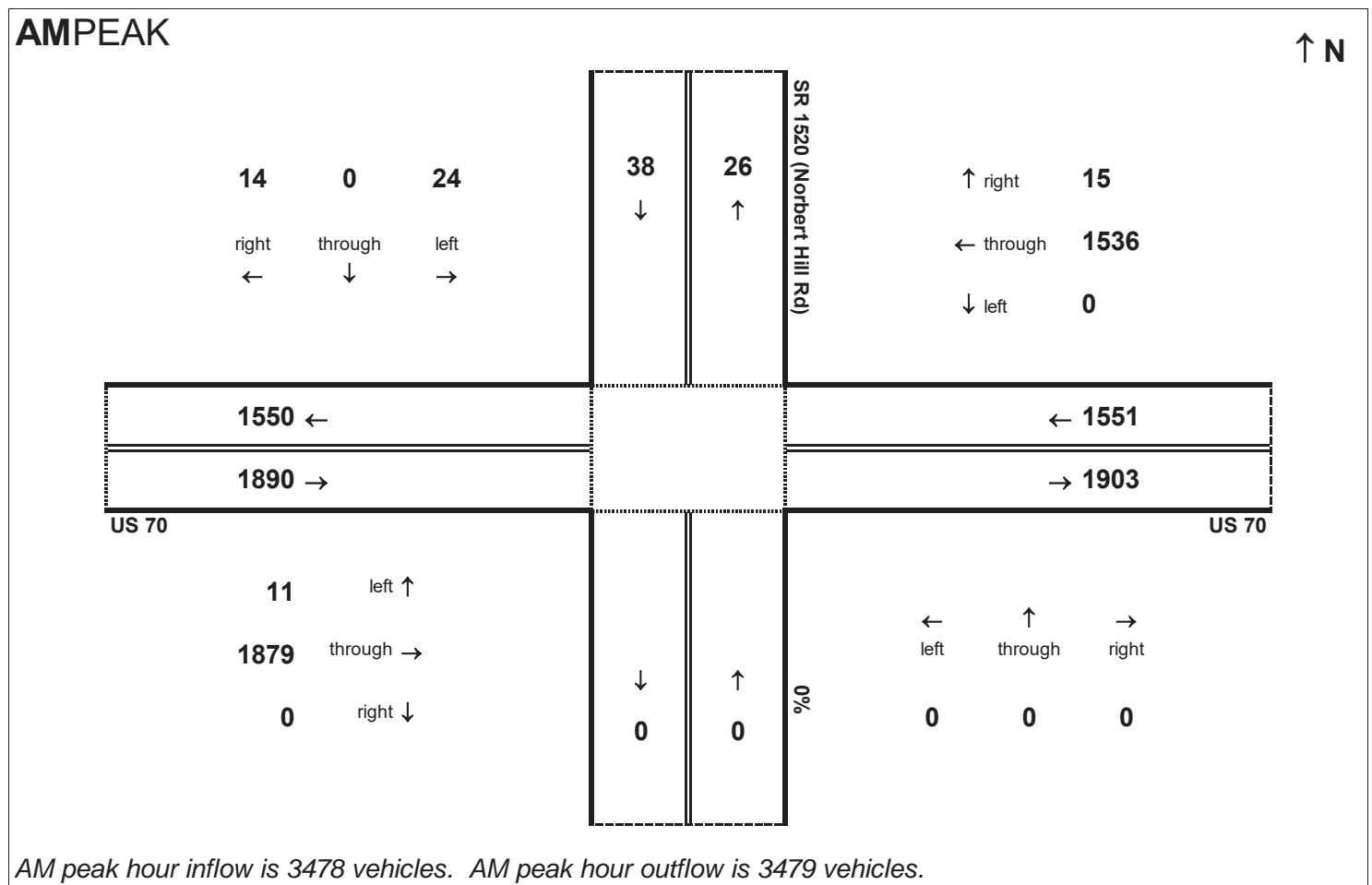


Peak Hour Volume Breakouts Report:
407 Intersection of US 70 and SR 1520 (Norbert Hill Rd)

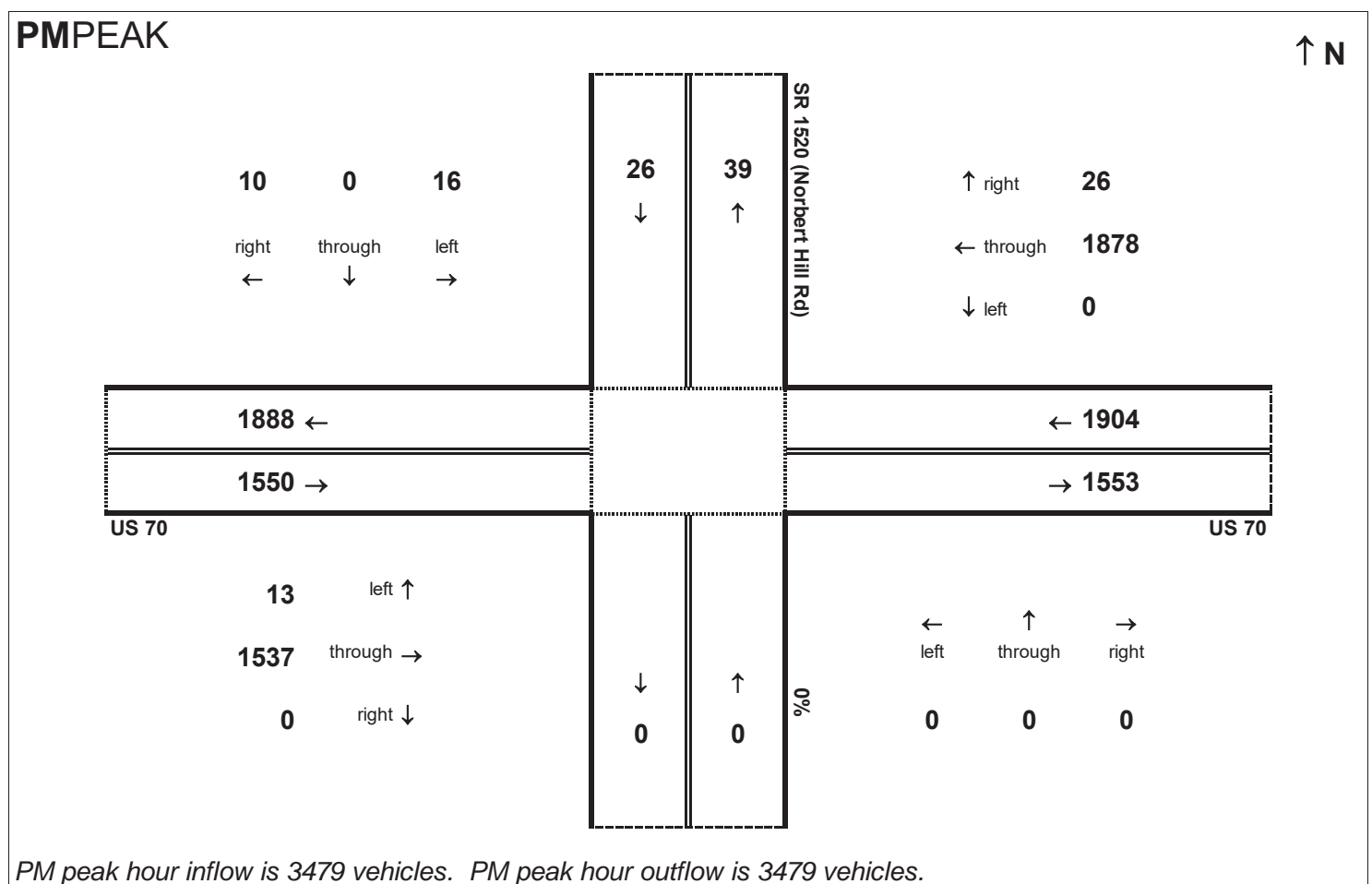
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

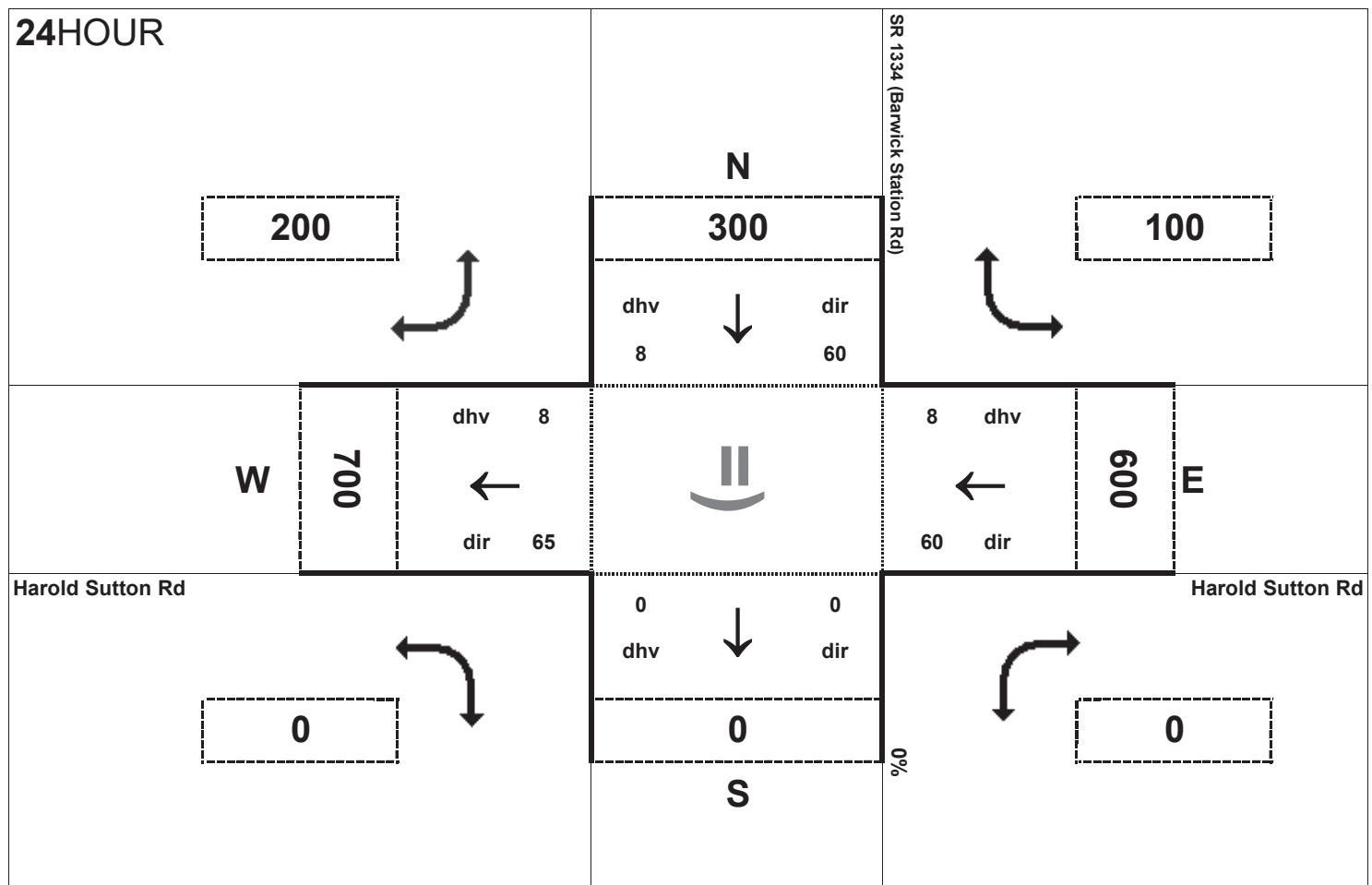
Project:
R-2553



AM peak hour inflow is 3478 vehicles. AM peak hour outflow is 3479 vehicles.



PM peak hour inflow is 3479 vehicles. PM peak hour outflow is 3479 vehicles.

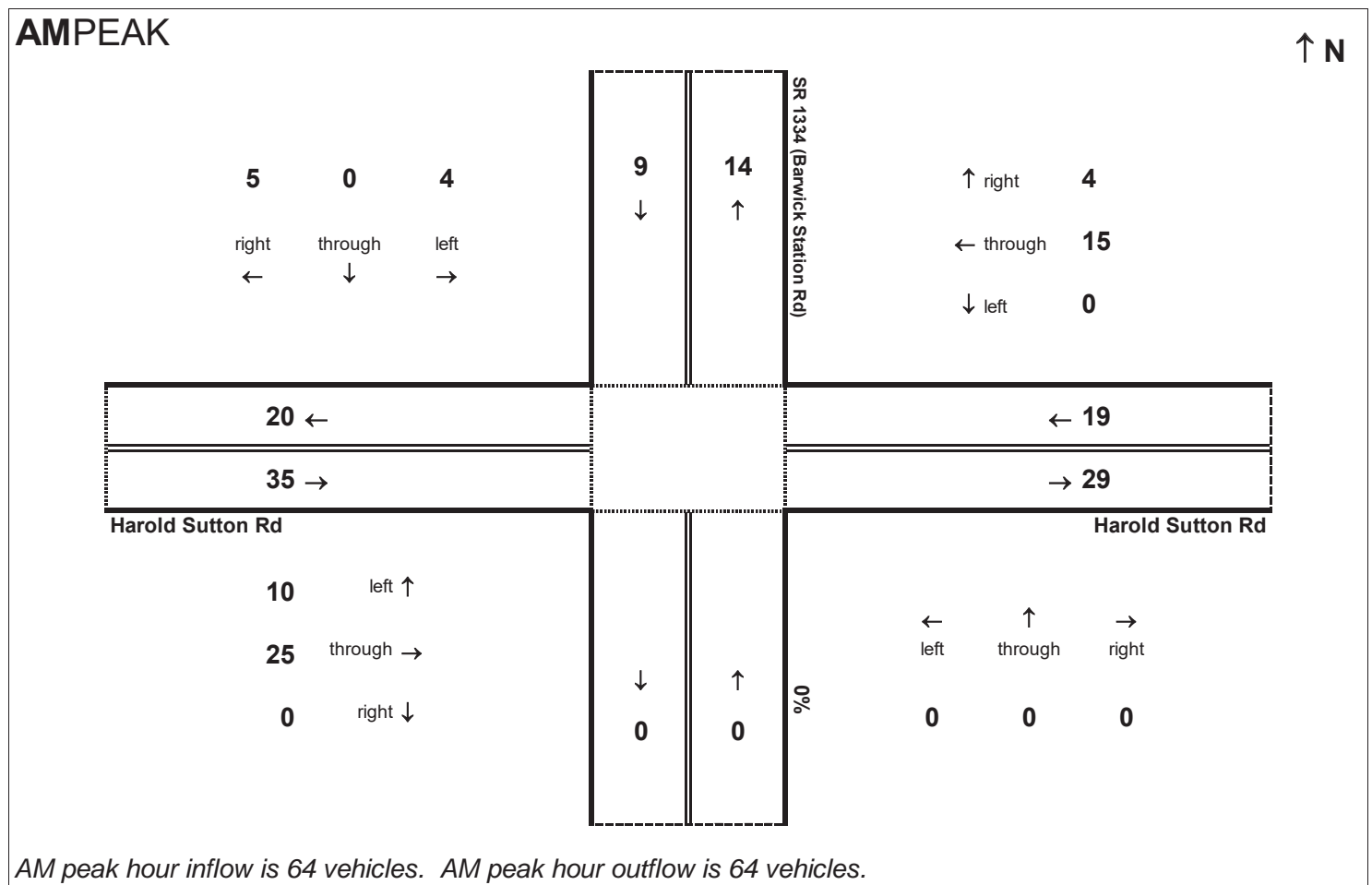


Peak Hour Volume Breakouts Report:
 408 Intersection of SR 1334 (Barwick Station Rd)
 and Harold Sutton Rd

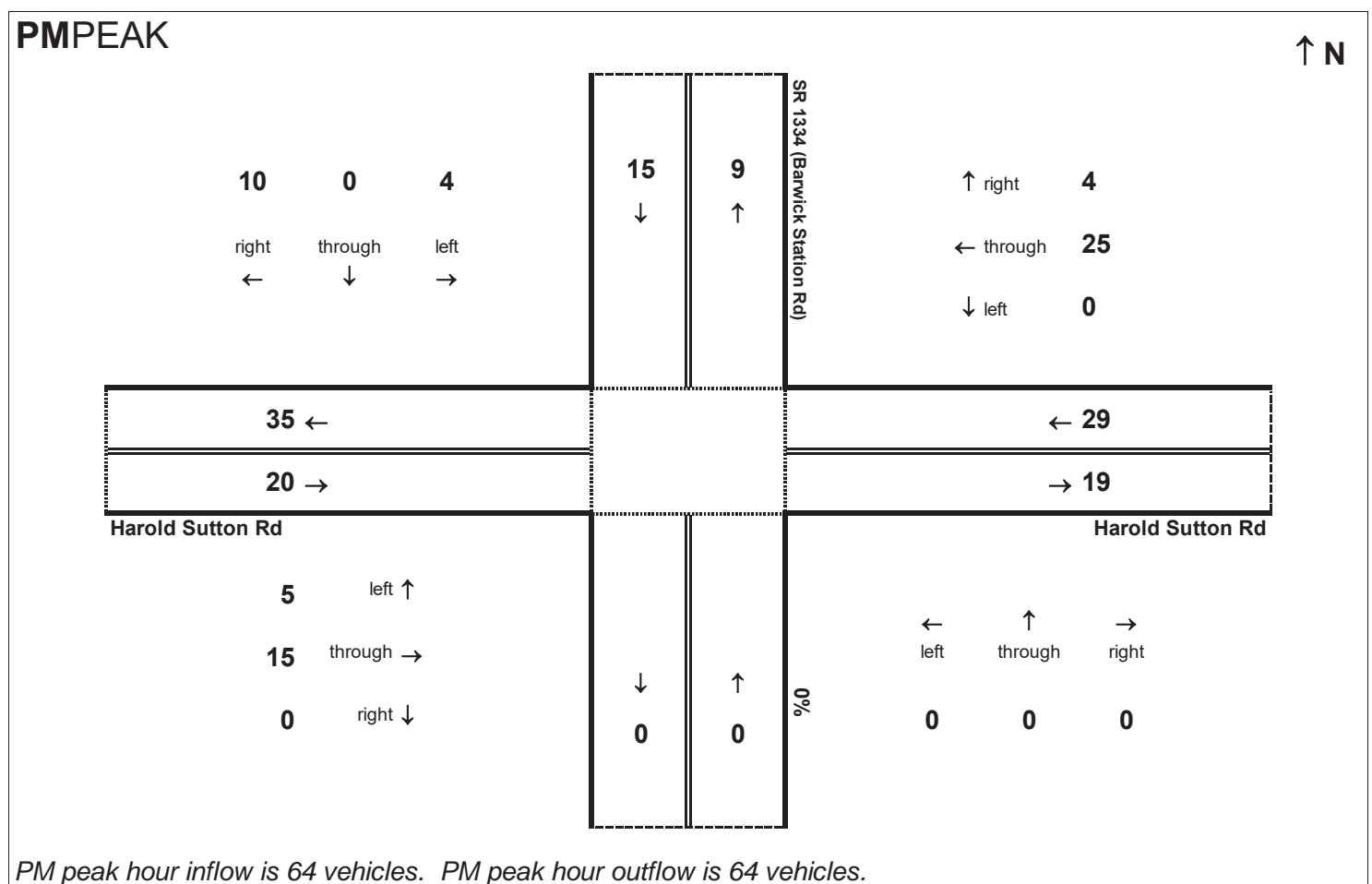
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

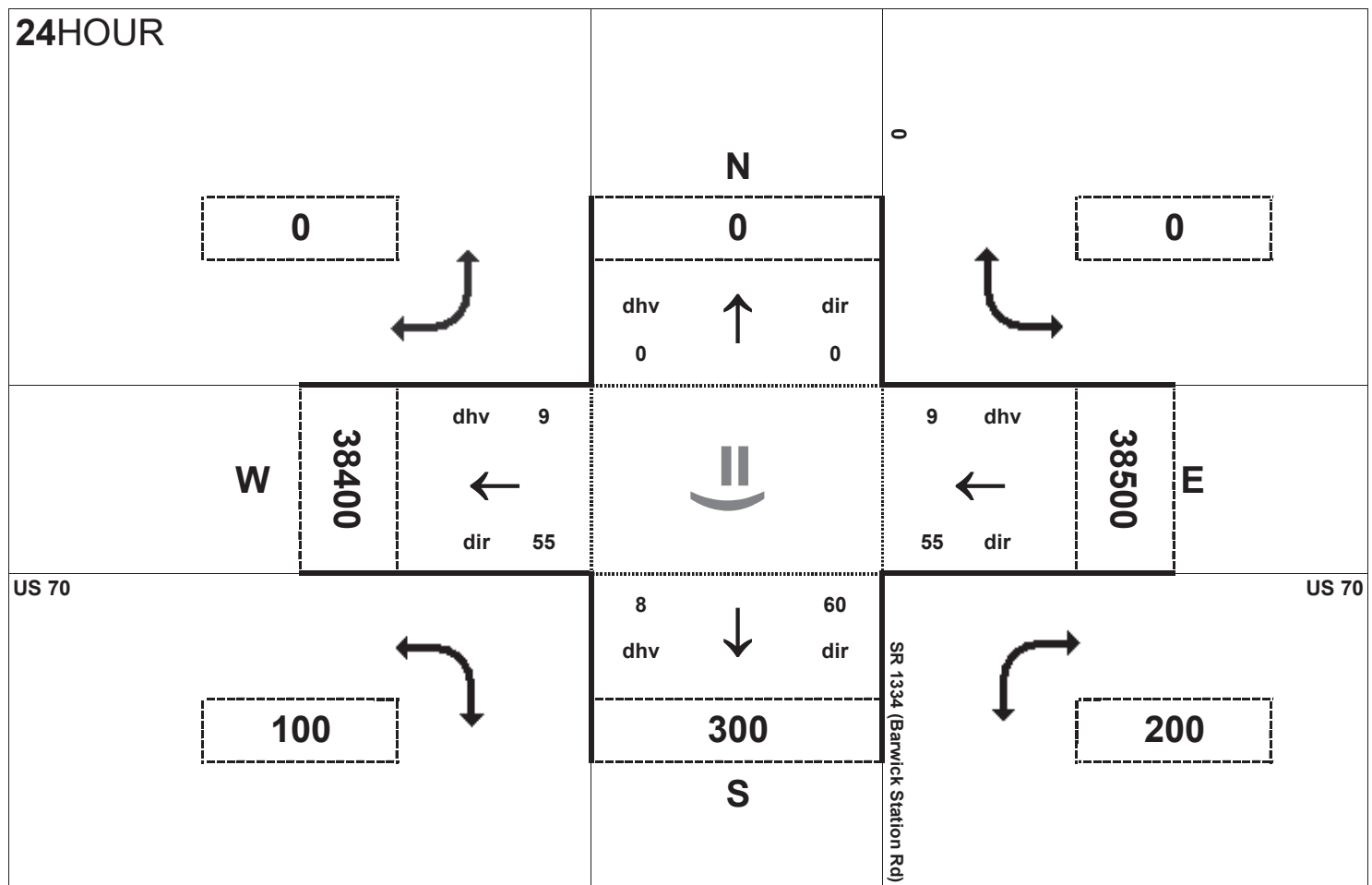
Project:
 R-2553



AM peak hour inflow is 64 vehicles. AM peak hour outflow is 64 vehicles.



PM peak hour inflow is 64 vehicles. PM peak hour outflow is 64 vehicles.

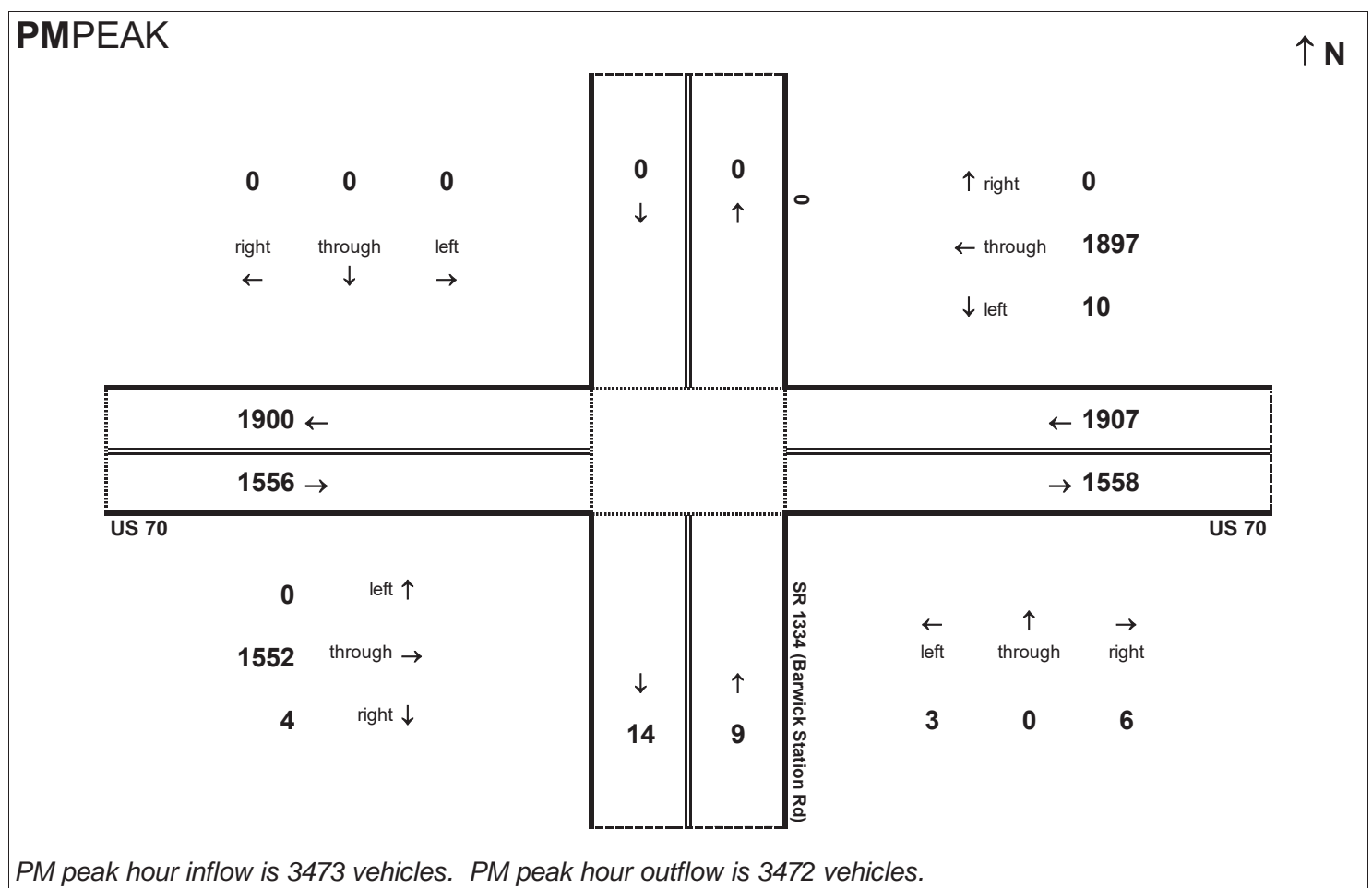
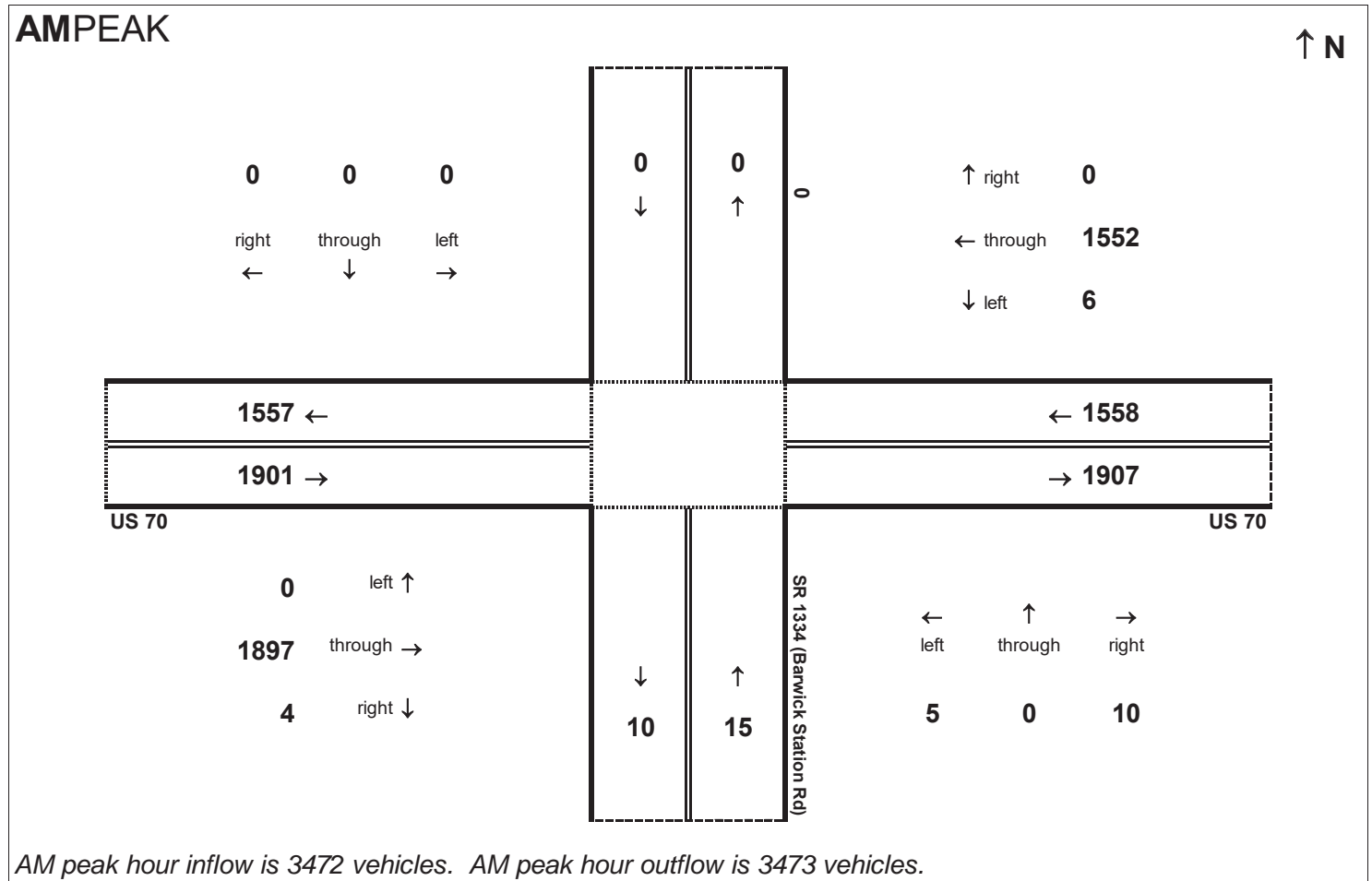


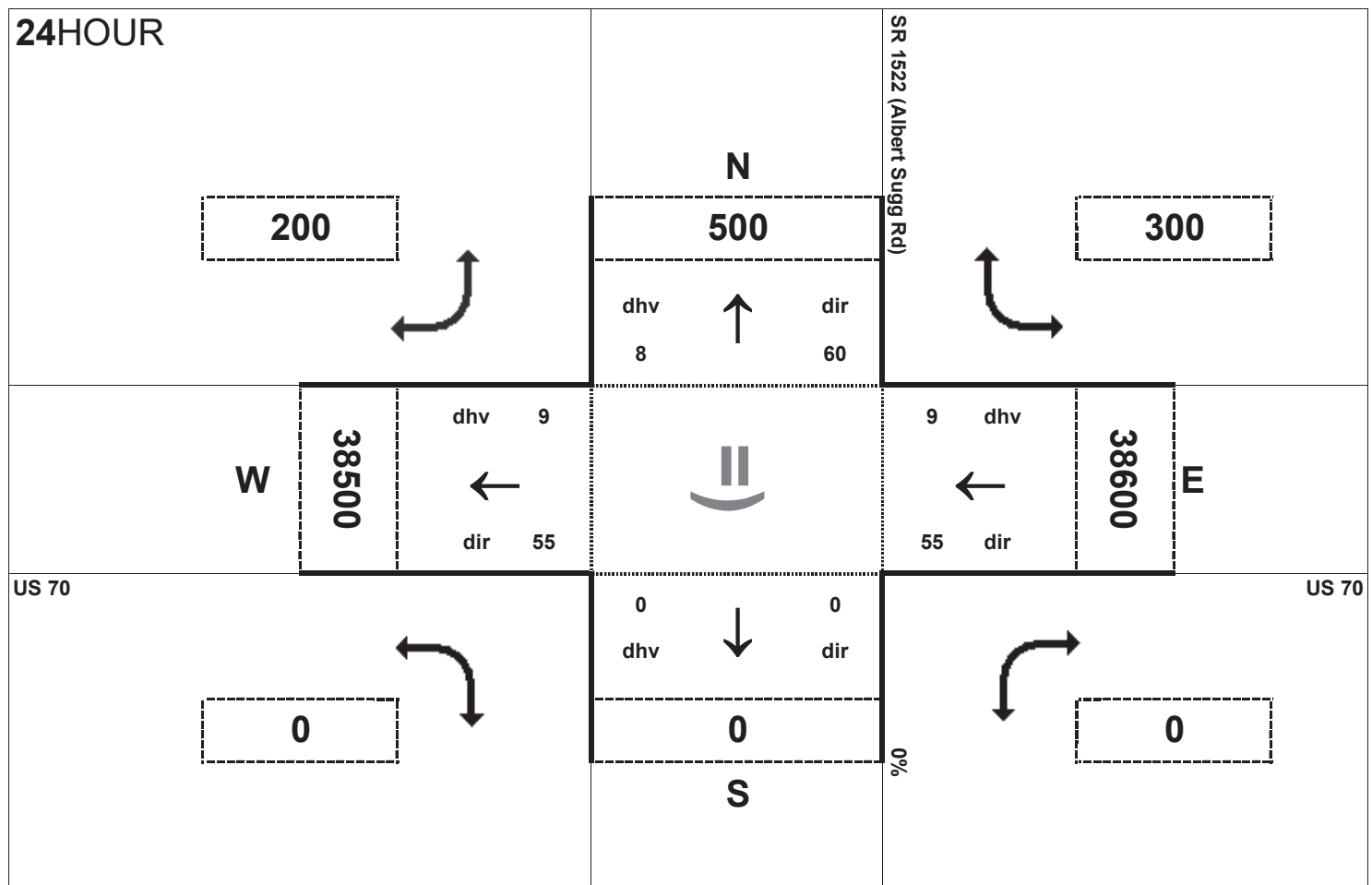
Peak Hour Volume Breakouts Report:
 409 Intersection of US 70 and SR 1334 (Barwick Station Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



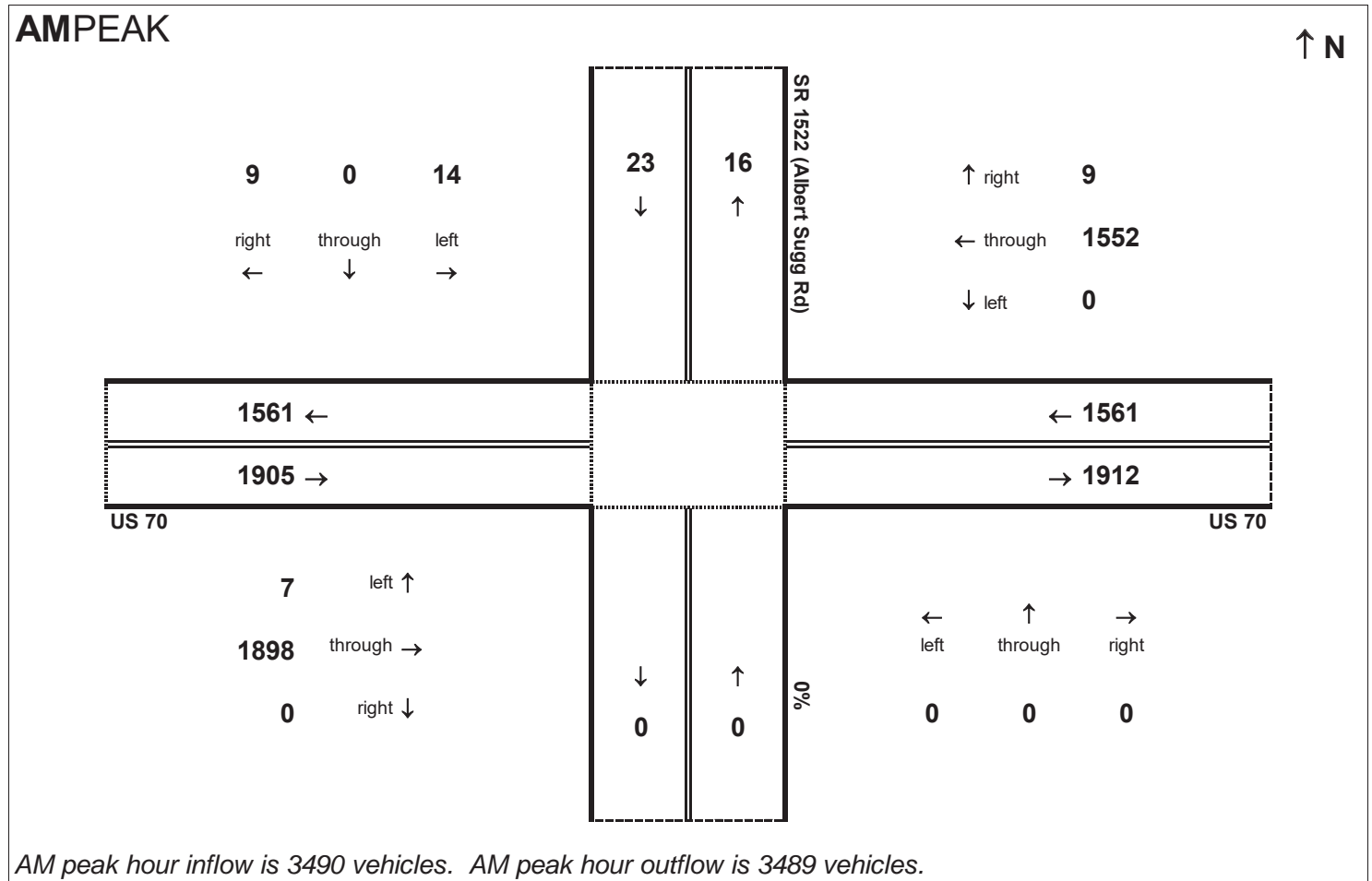


Peak Hour Volume Breakouts Report:
 410 Intersection of US 70 and SR 1522 (Albert Sugg Rd)

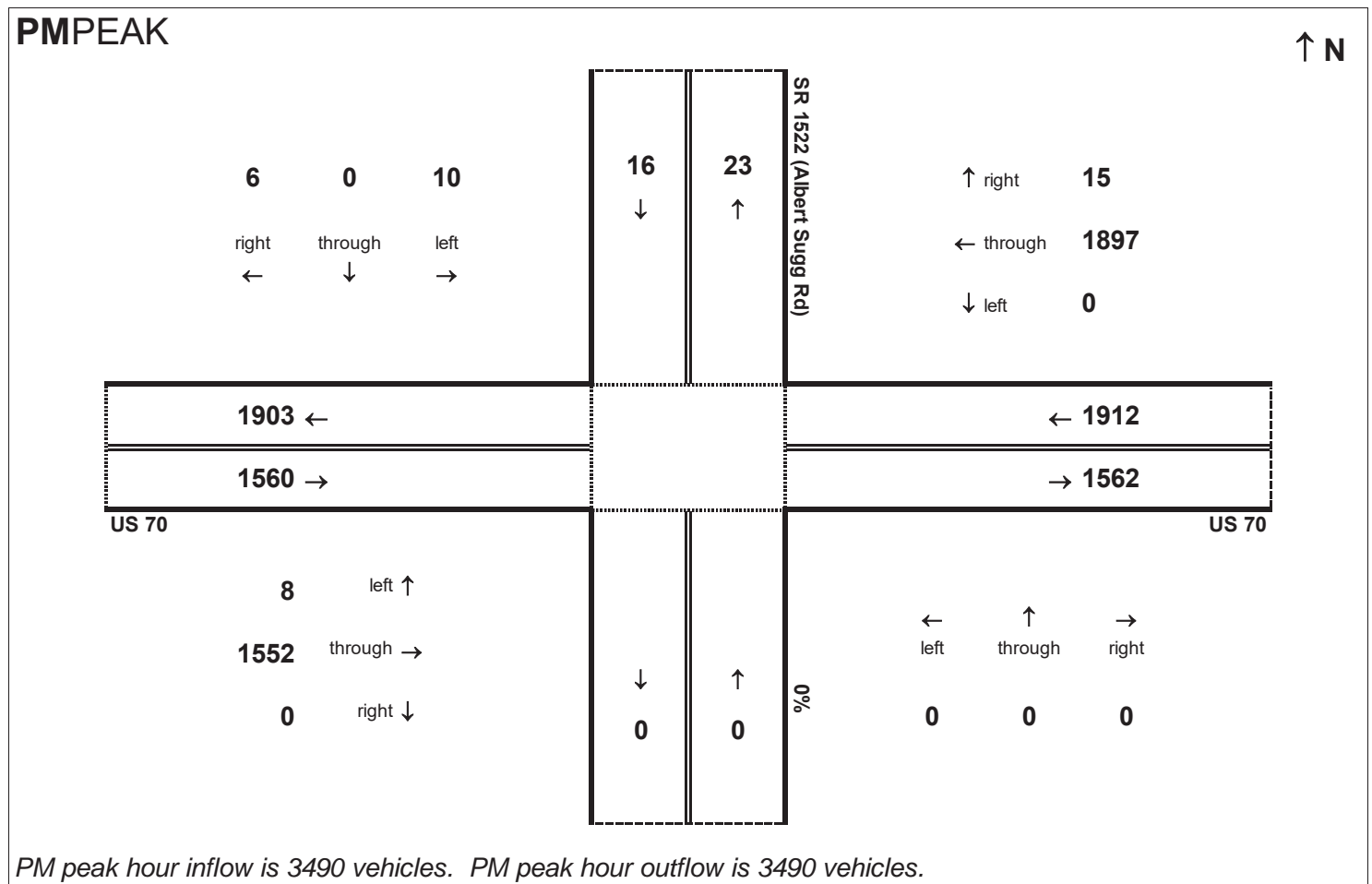
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

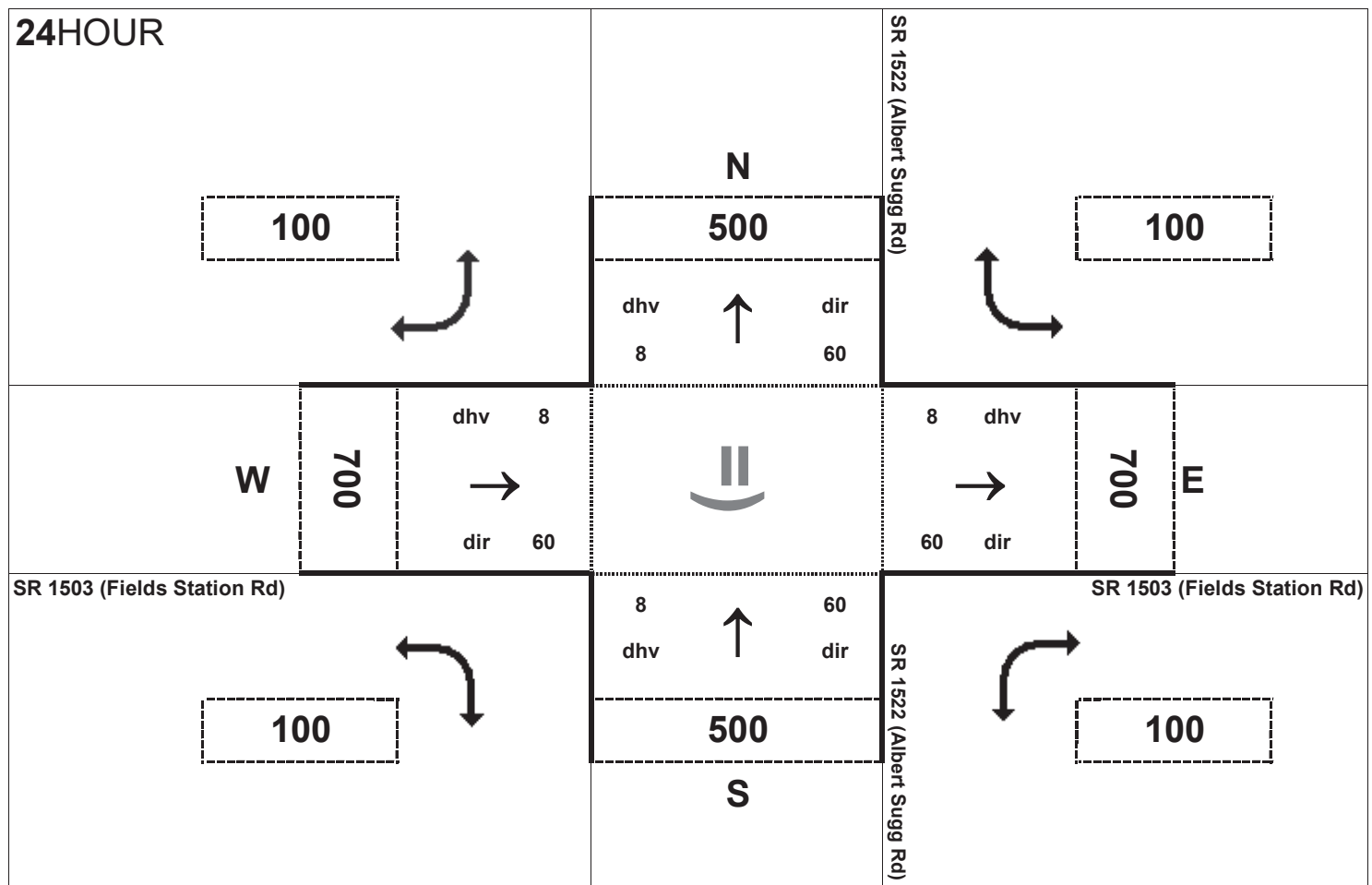
Project:
 R-2553



AM peak hour inflow is 3490 vehicles. AM peak hour outflow is 3489 vehicles.



PM peak hour inflow is 3490 vehicles. PM peak hour outflow is 3490 vehicles.

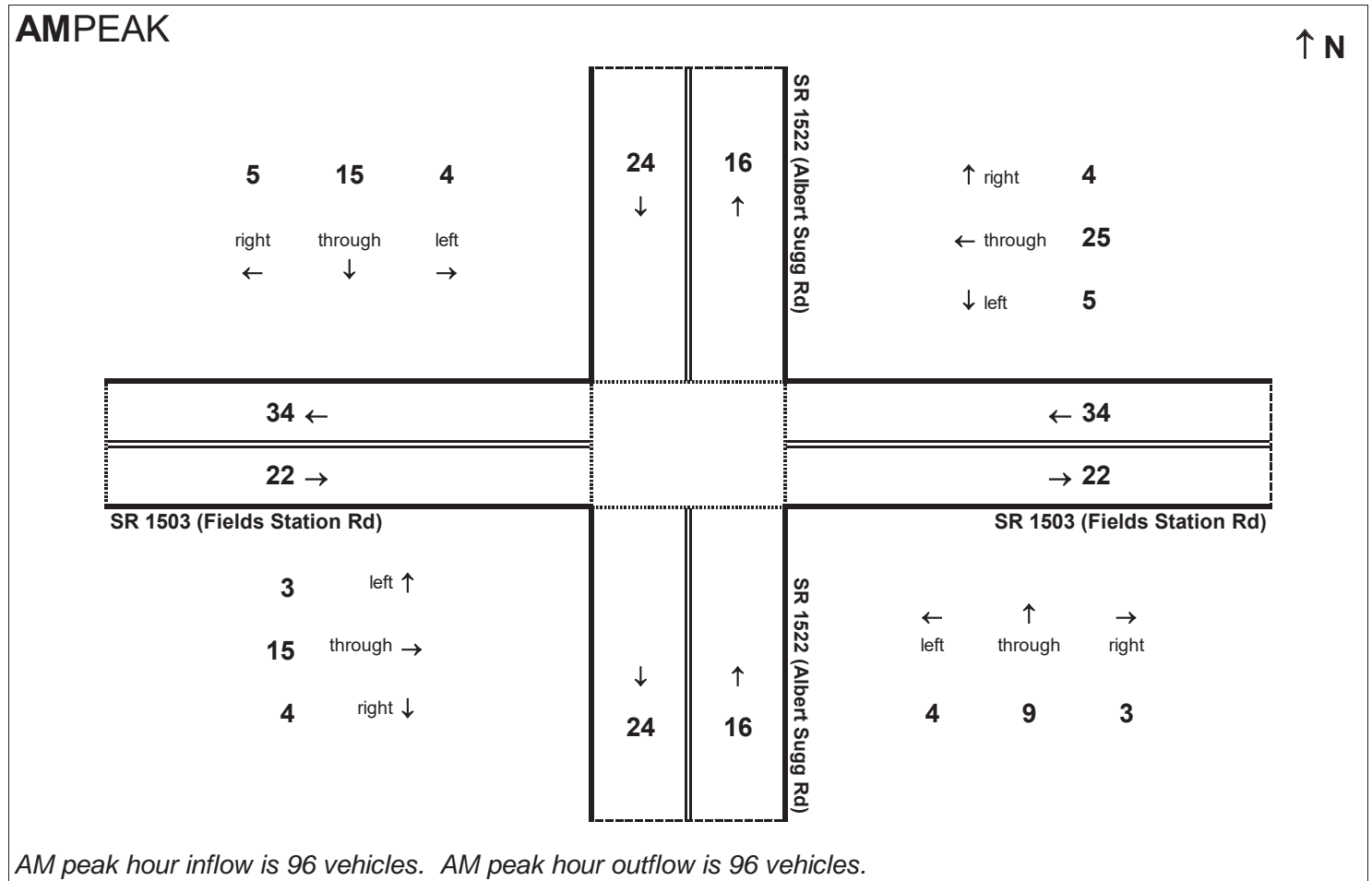


Peak Hour Volume Breakouts Report:
 411 Intersection of SR 1522 (Albert Sugg Rd) and
 SR 1503 (Fields Station Rd)

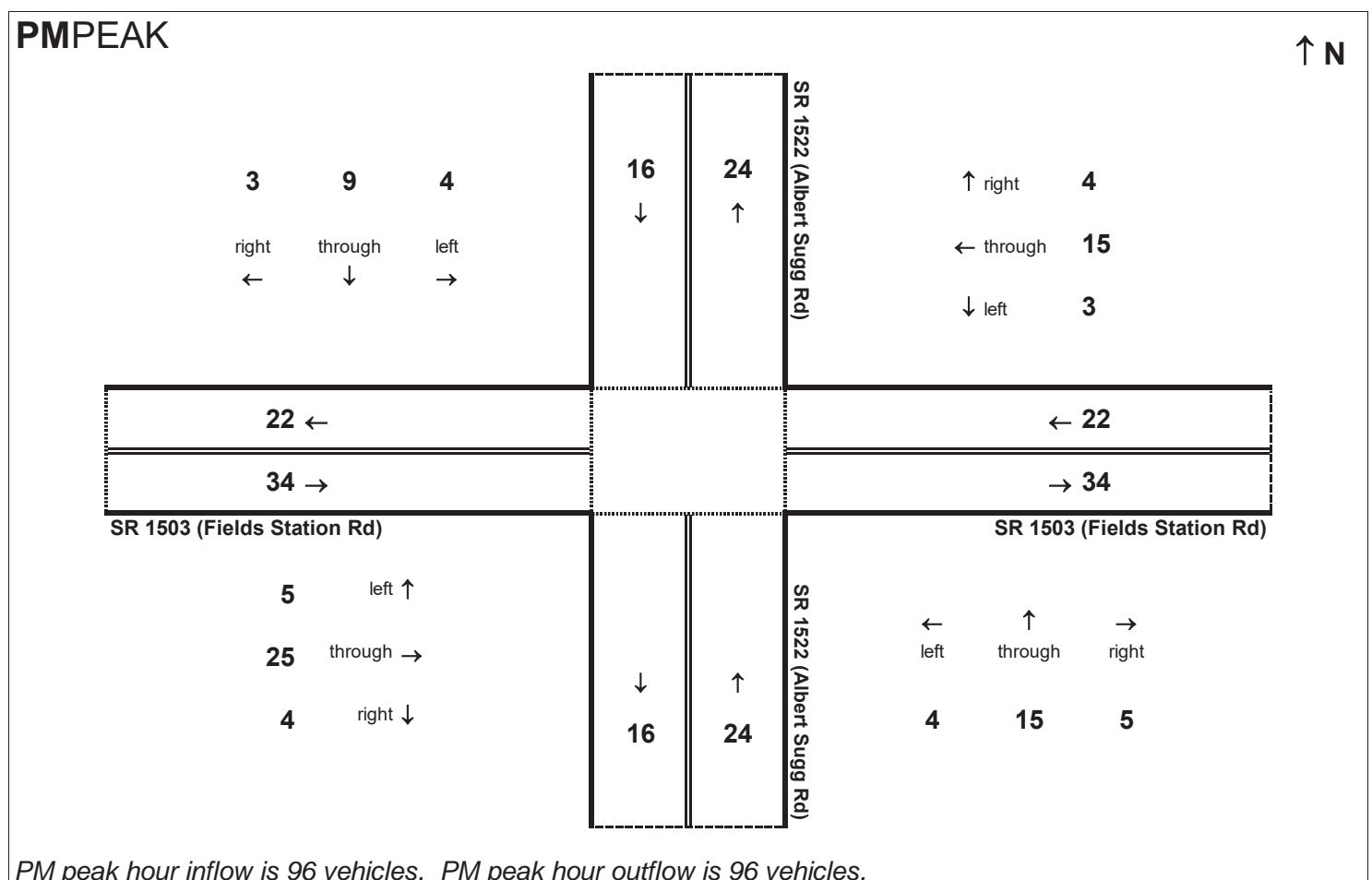
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

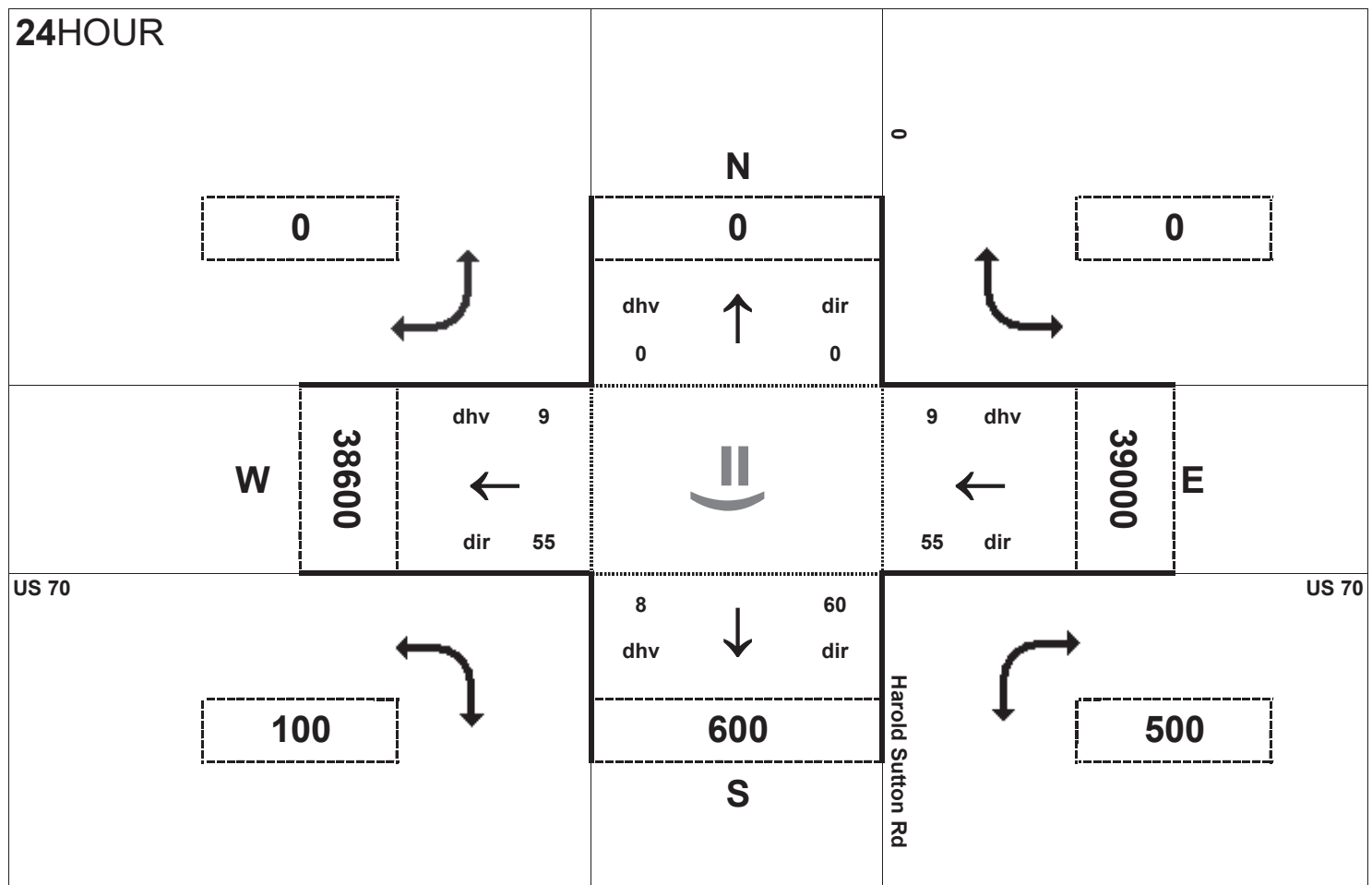
Project:
 R-2553



AM peak hour inflow is 96 vehicles. AM peak hour outflow is 96 vehicles.



PM peak hour inflow is 96 vehicles. PM peak hour outflow is 96 vehicles.

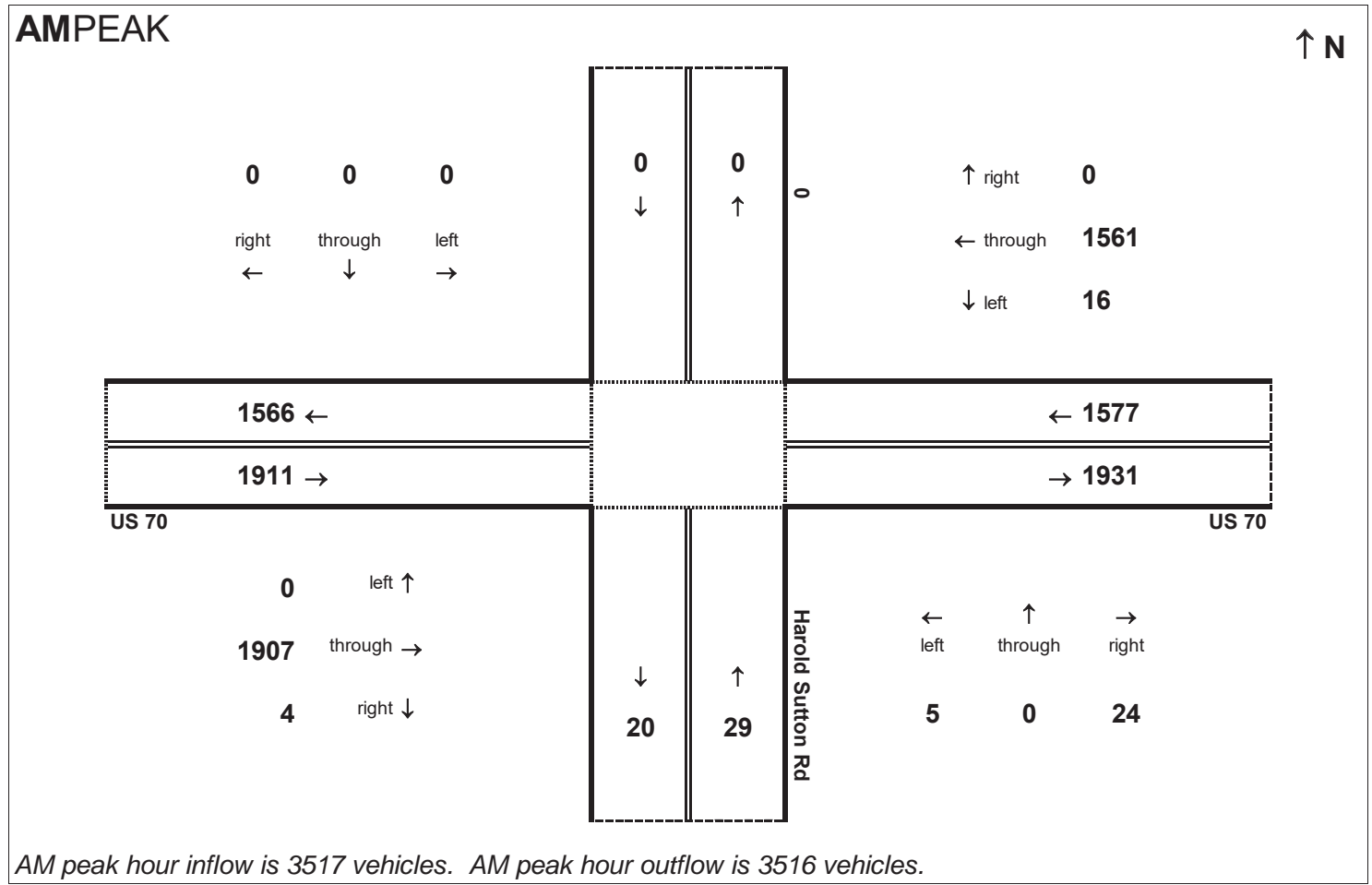


Peak Hour Volume Breakouts Report:
412 Intersection of US 70 and Harold Sutton Rd

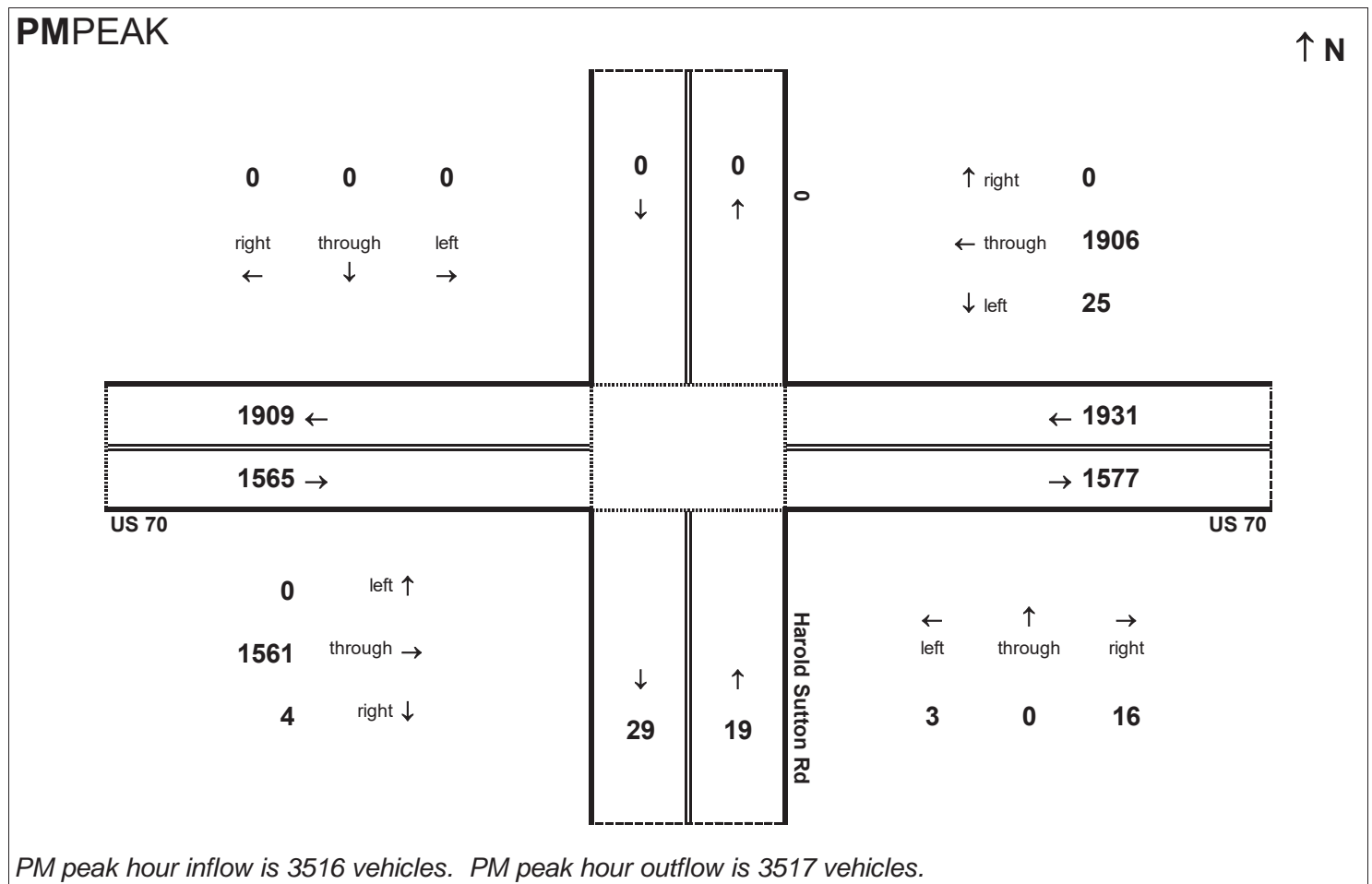
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

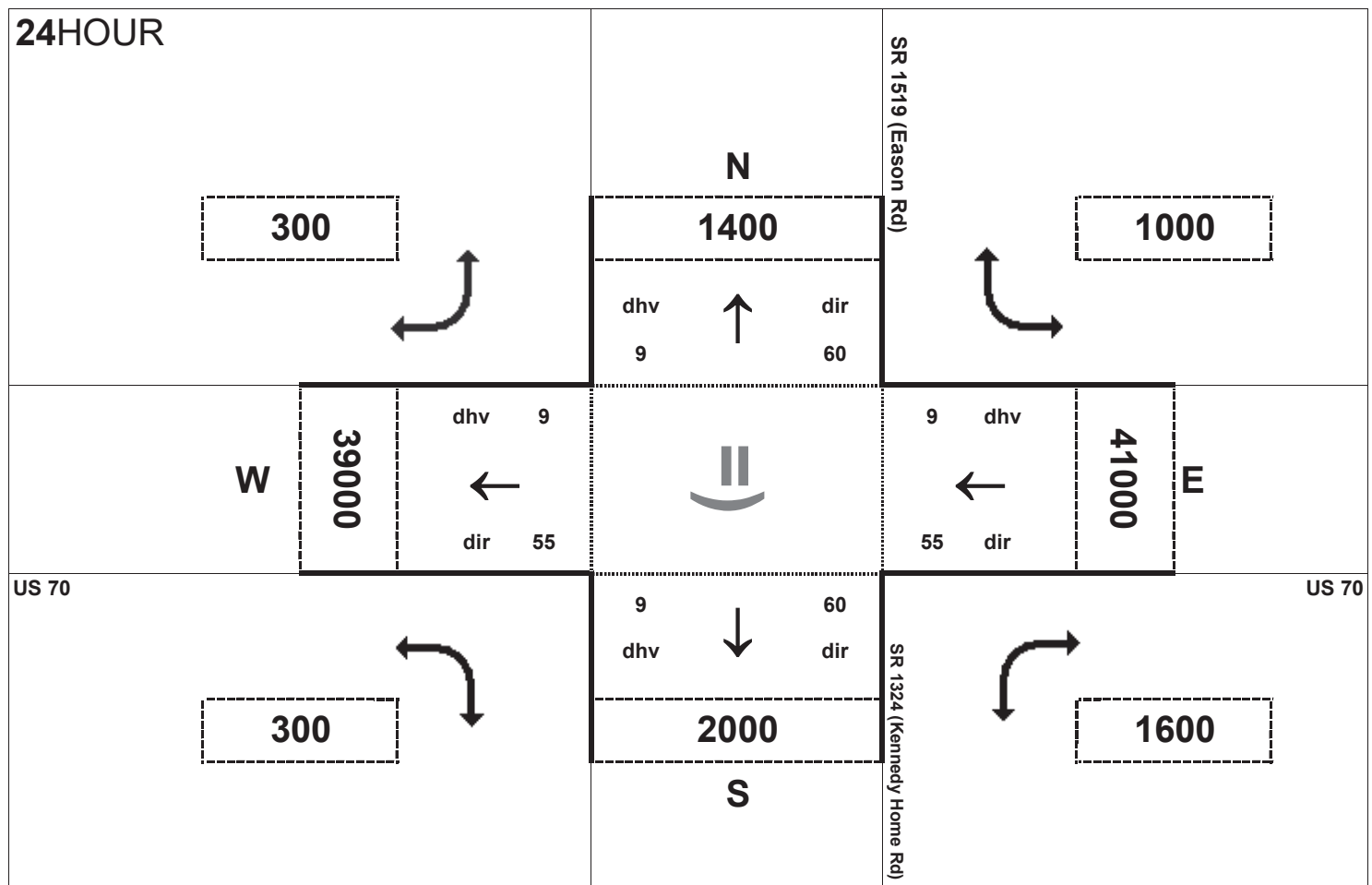
Project:
R-2553



AM peak hour inflow is 3517 vehicles. AM peak hour outflow is 3516 vehicles.



PM peak hour inflow is 3516 vehicles. PM peak hour outflow is 3517 vehicles.

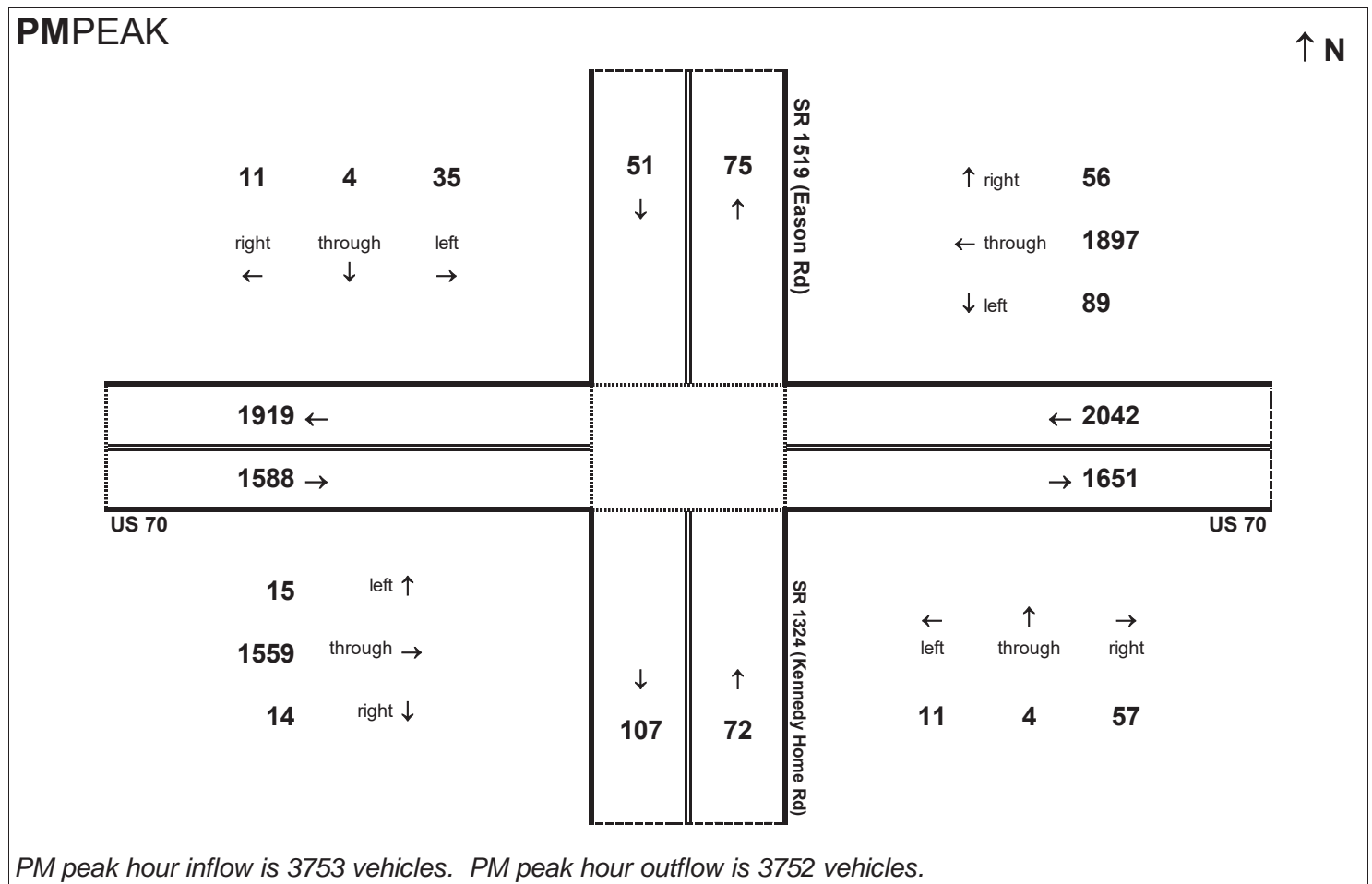
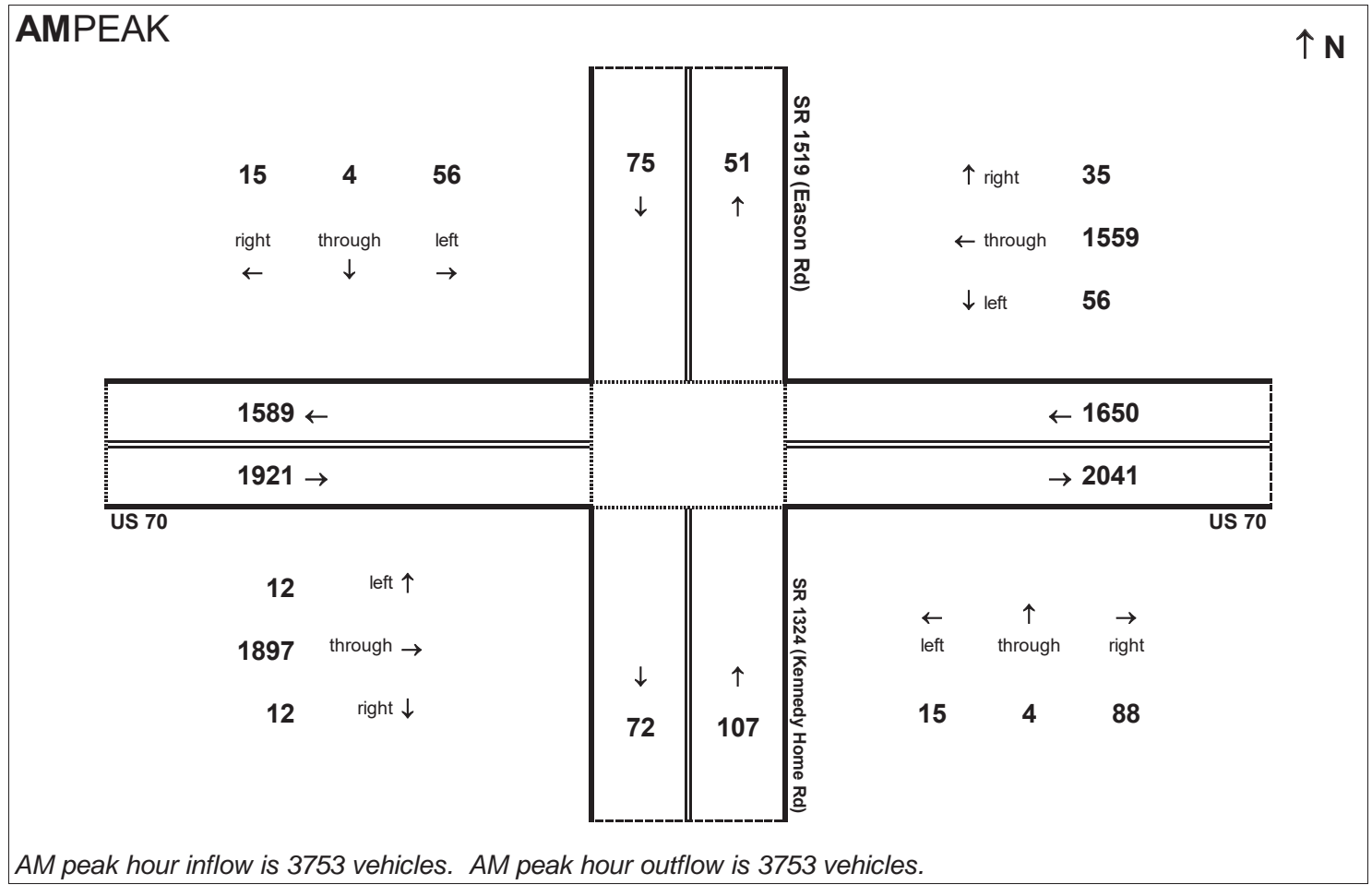


Peak Hour Volume Breakouts Report:
 413 Intersection of US 70 and SR 1519 (Eason Rd) /
 SR 1324 (Kennedy Home Rd)

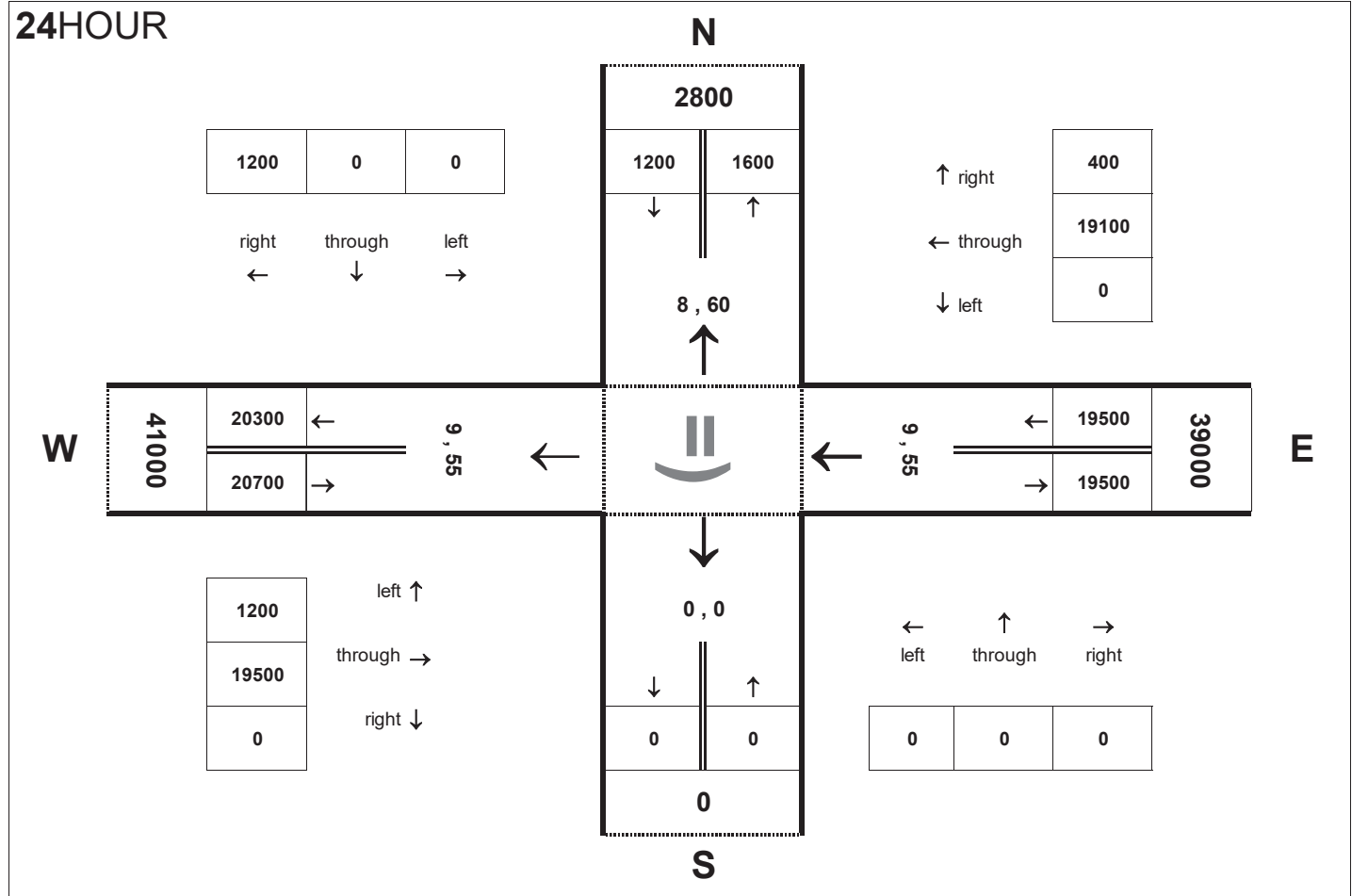
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



24HOUR



Peak Hour Volume Breakouts Report:

414 Intersection of US 70 and SR 1546 (Banks School Rd)

Traffic Forecast Release Date:

November-16

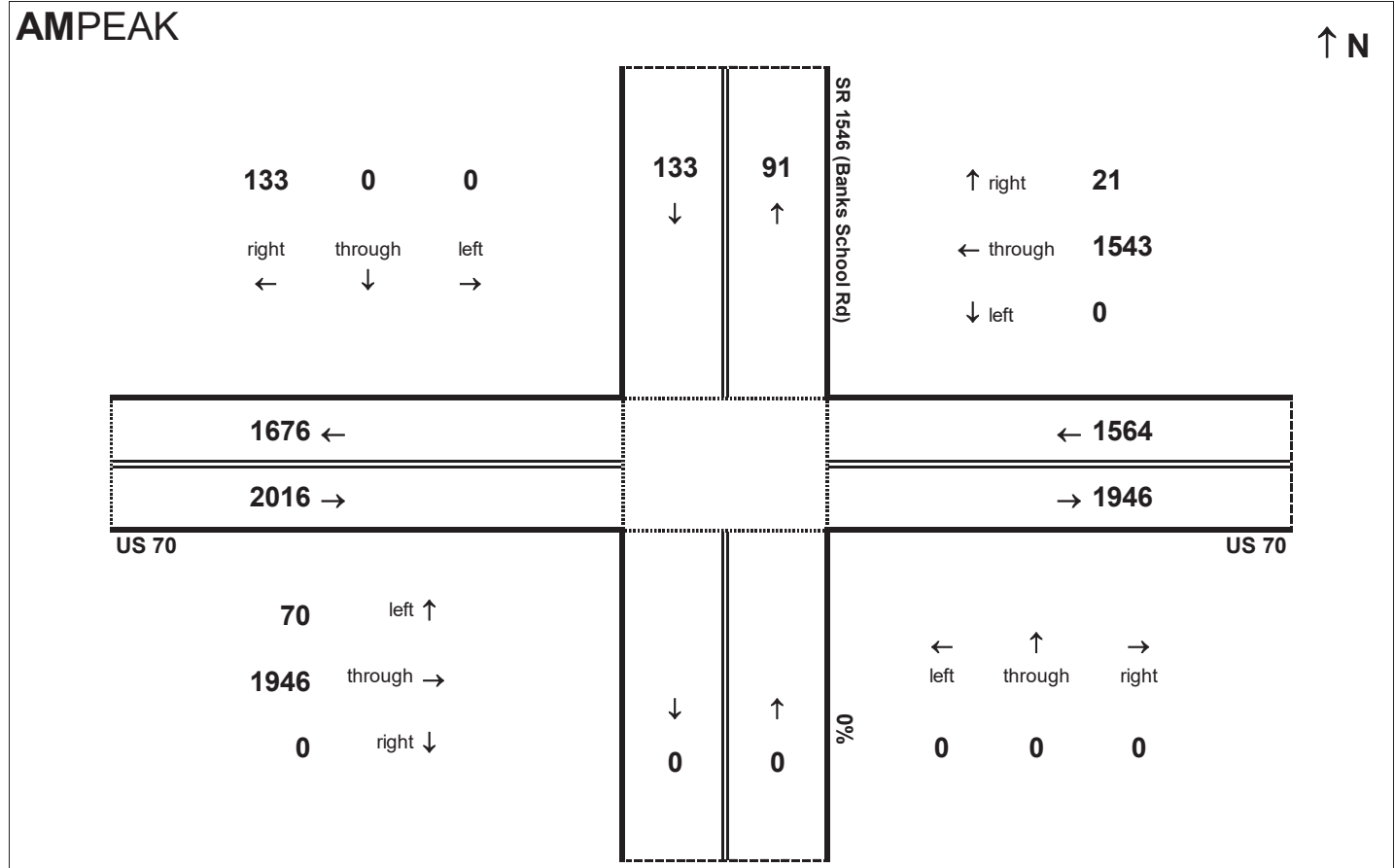
Traffic Data Year:

2040 Future Year No-Build

Project:

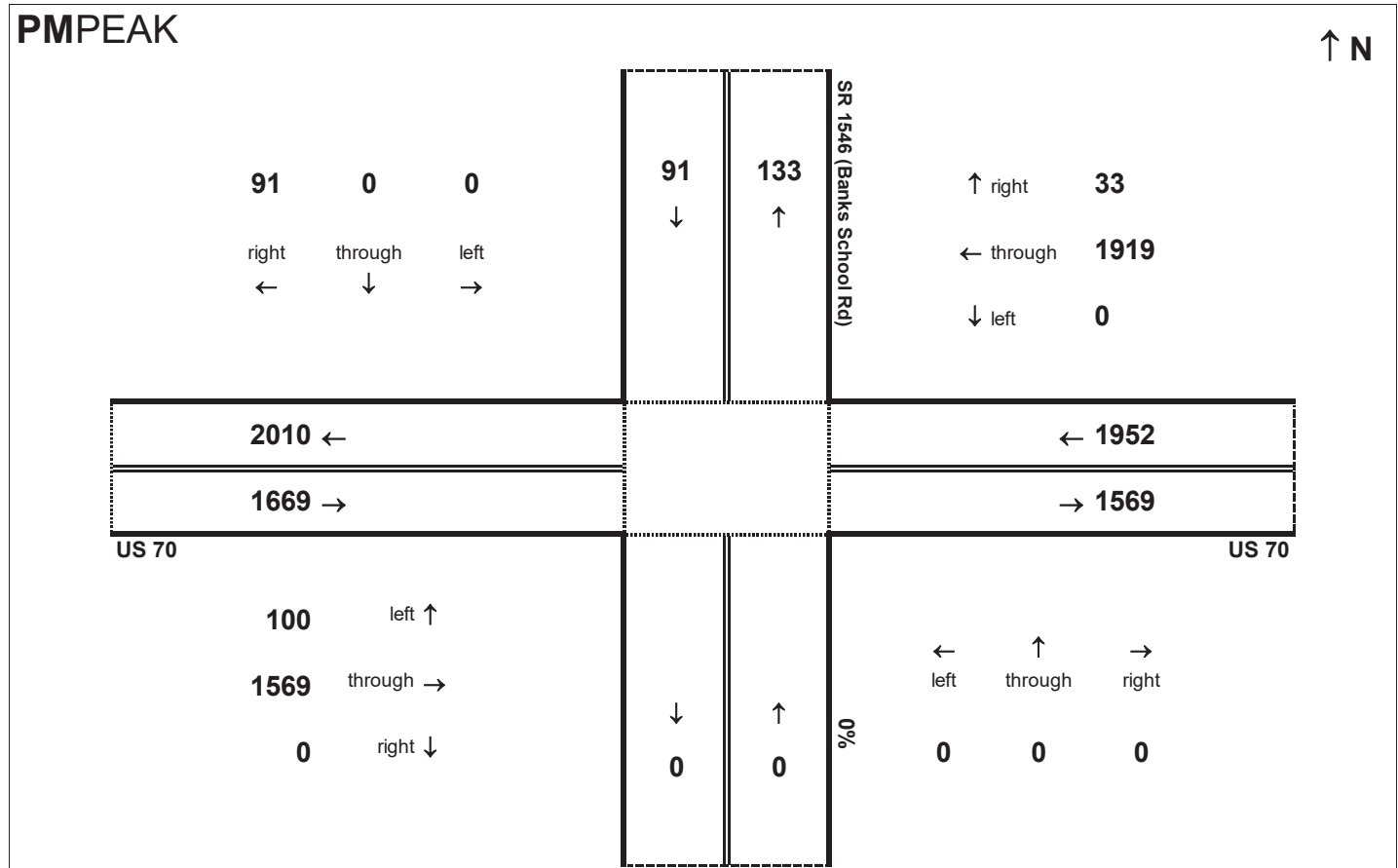
R-2553

AMPEAK



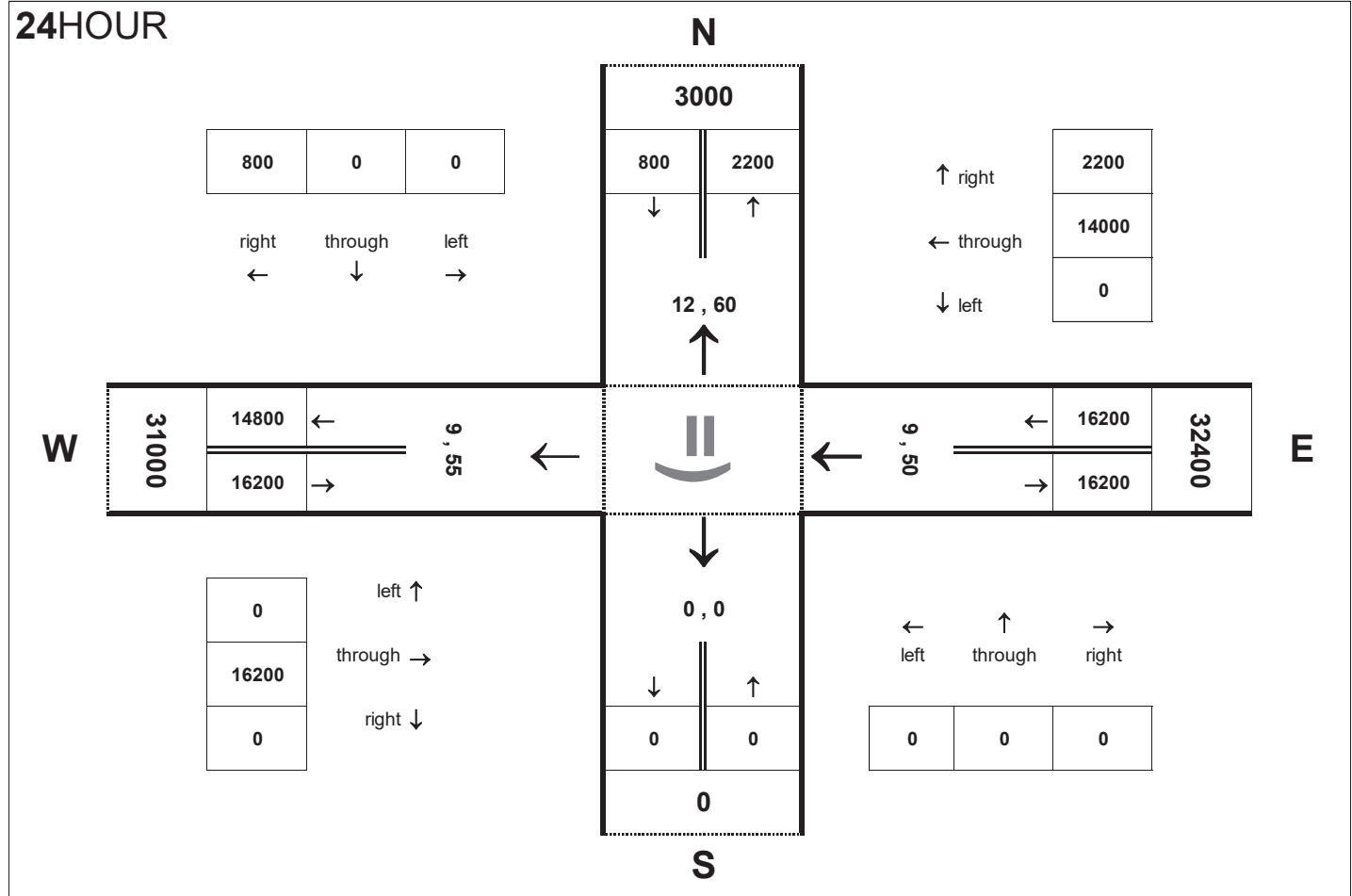
AM peak hour inflow is 3712 vehicles. AM peak hour outflow is 3712 vehicles.

PMPEAK



PM peak hour inflow is 3712 vehicles. PM peak hour outflow is 3712 vehicles.

24HOUR



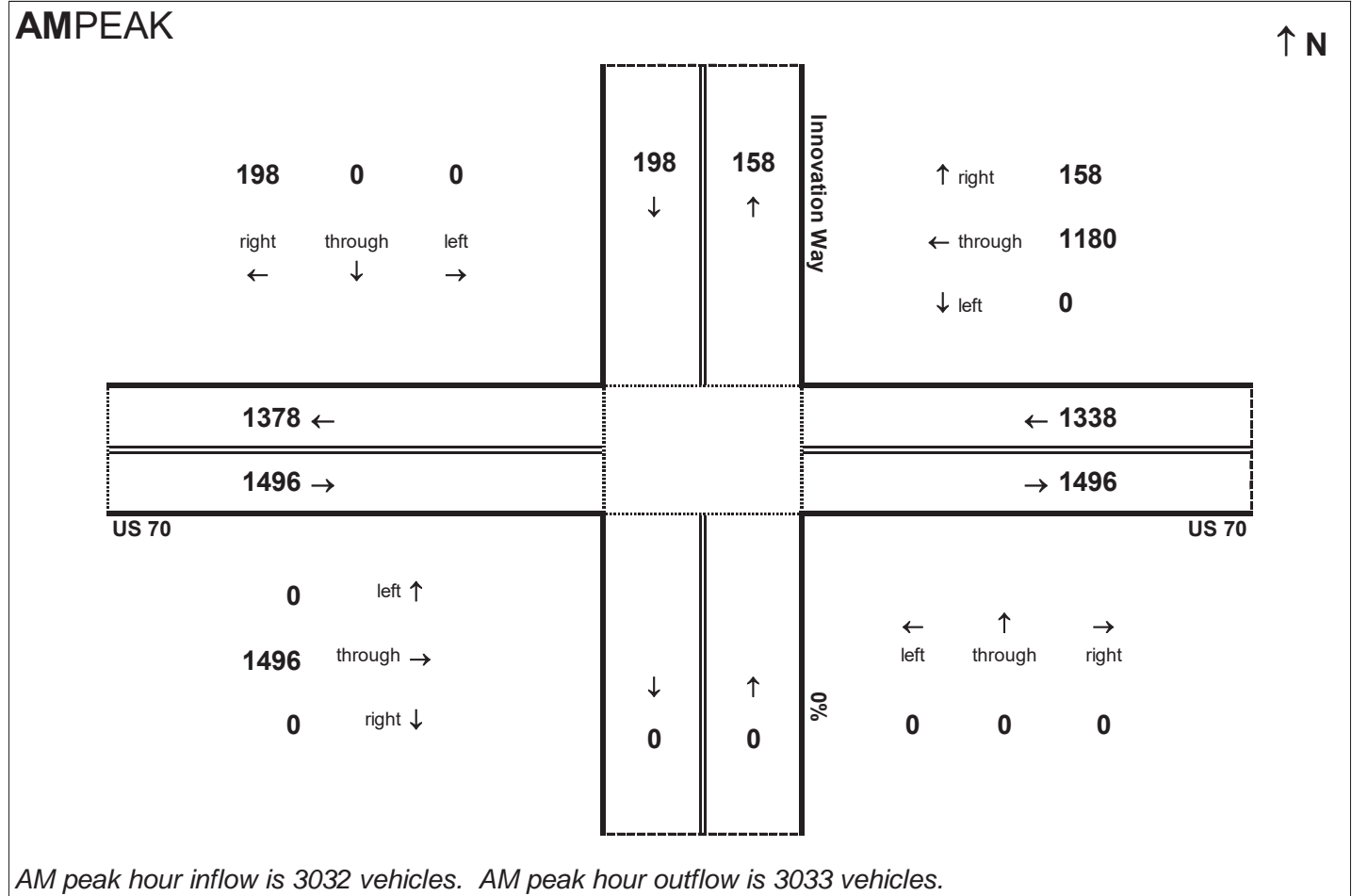
Peak Hour Volume Breakouts Report:
415 Intersection of US 70 and Innovation Way

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

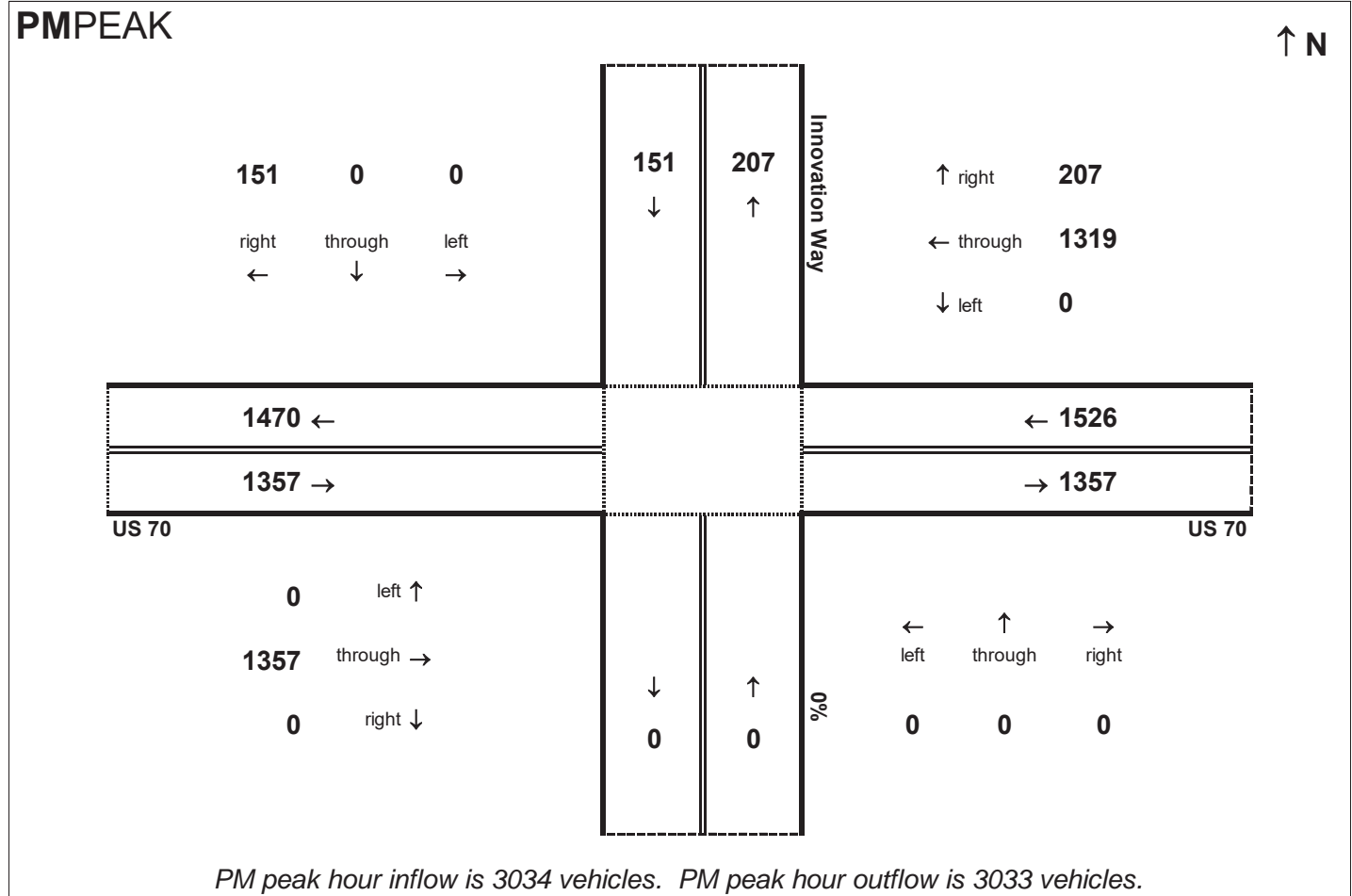
Project:
R-2553

AMPEAK

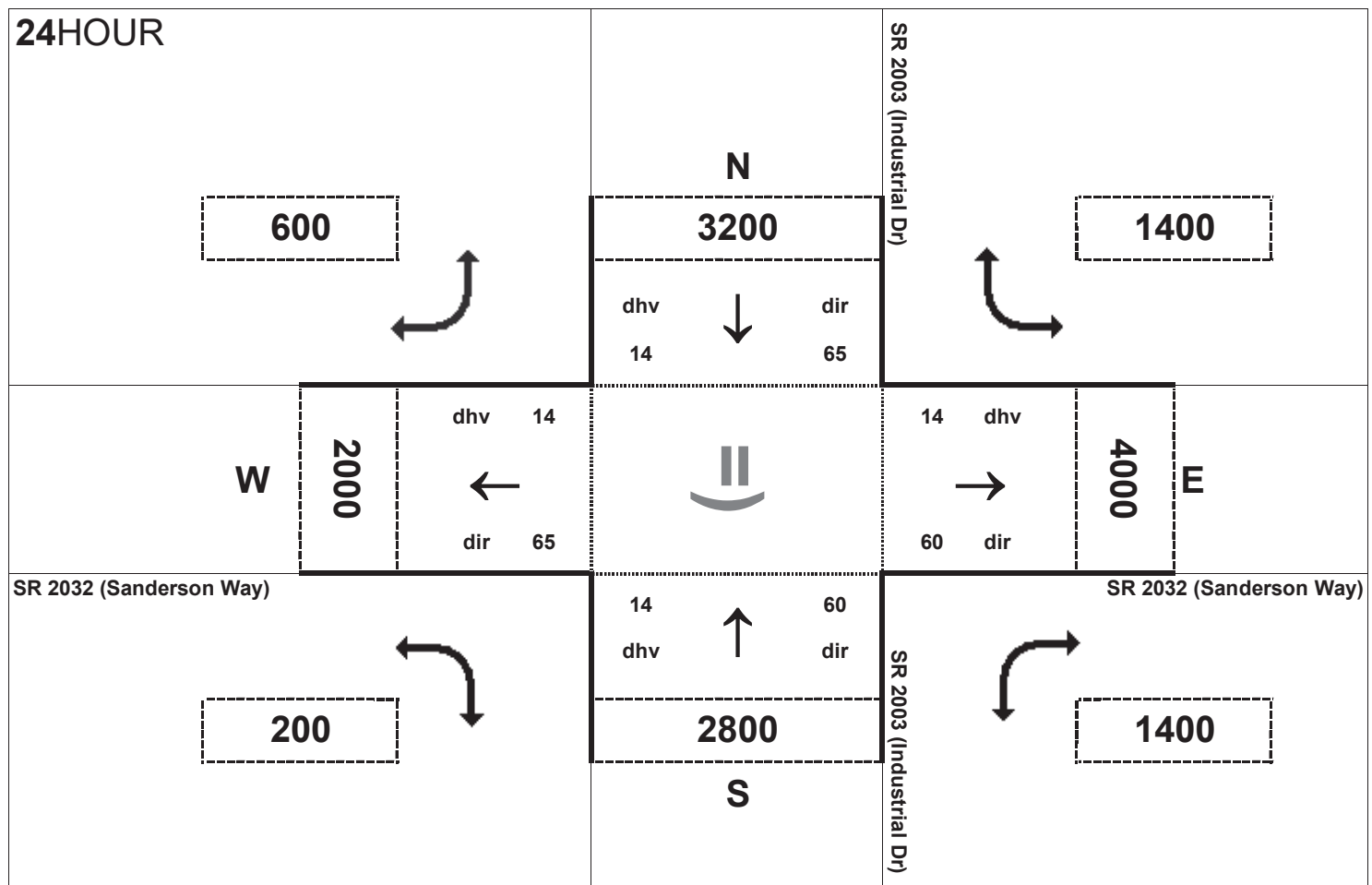


AM peak hour inflow is 3032 vehicles. AM peak hour outflow is 3033 vehicles.

PMPEAK



PM peak hour inflow is 3034 vehicles. PM peak hour outflow is 3033 vehicles.

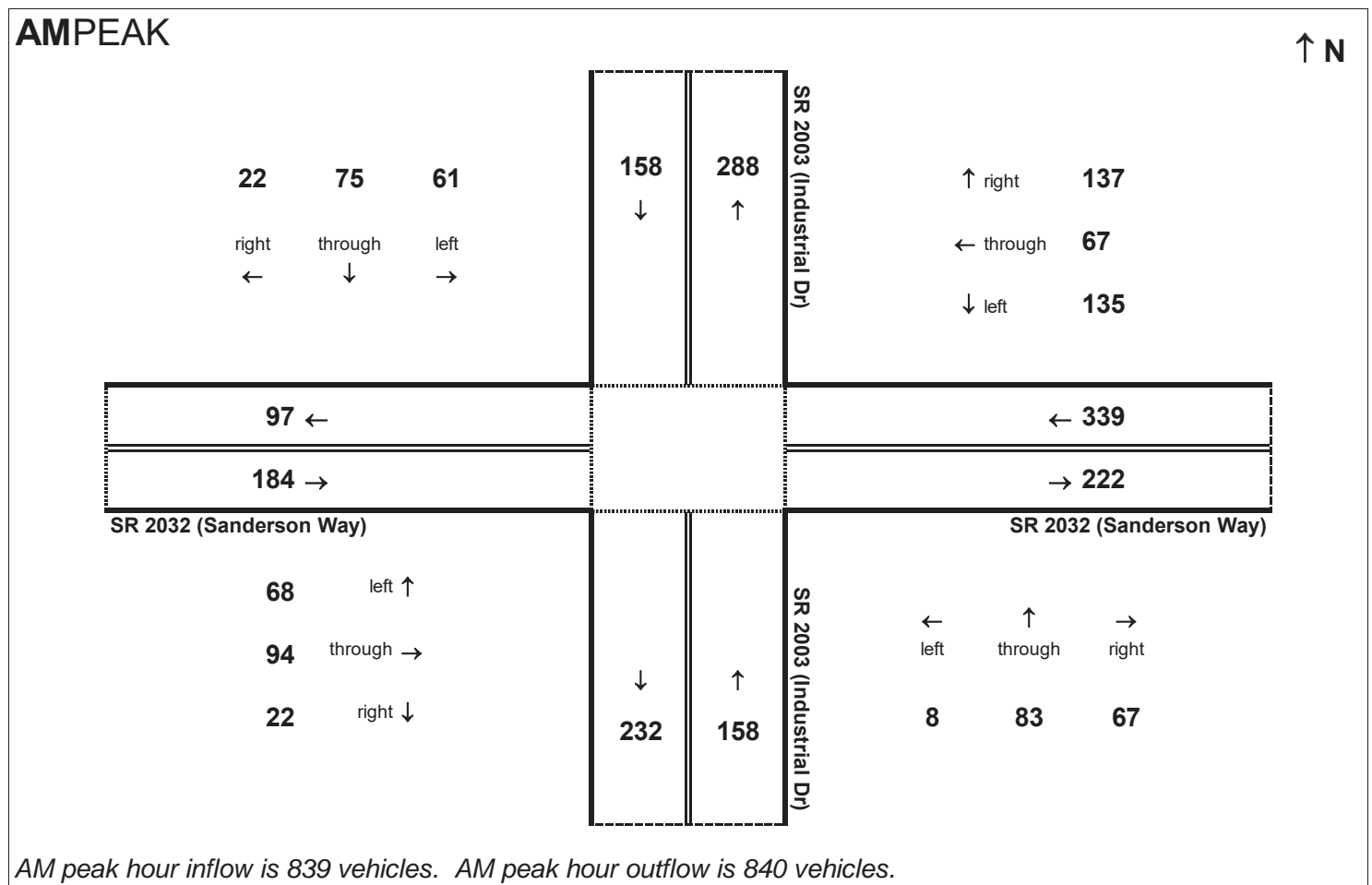


Peak Hour Volume Breakouts Report:
 416 Intersection of SR 2003 (Industrial Dr) and SR 2032 (Sanderson Way)

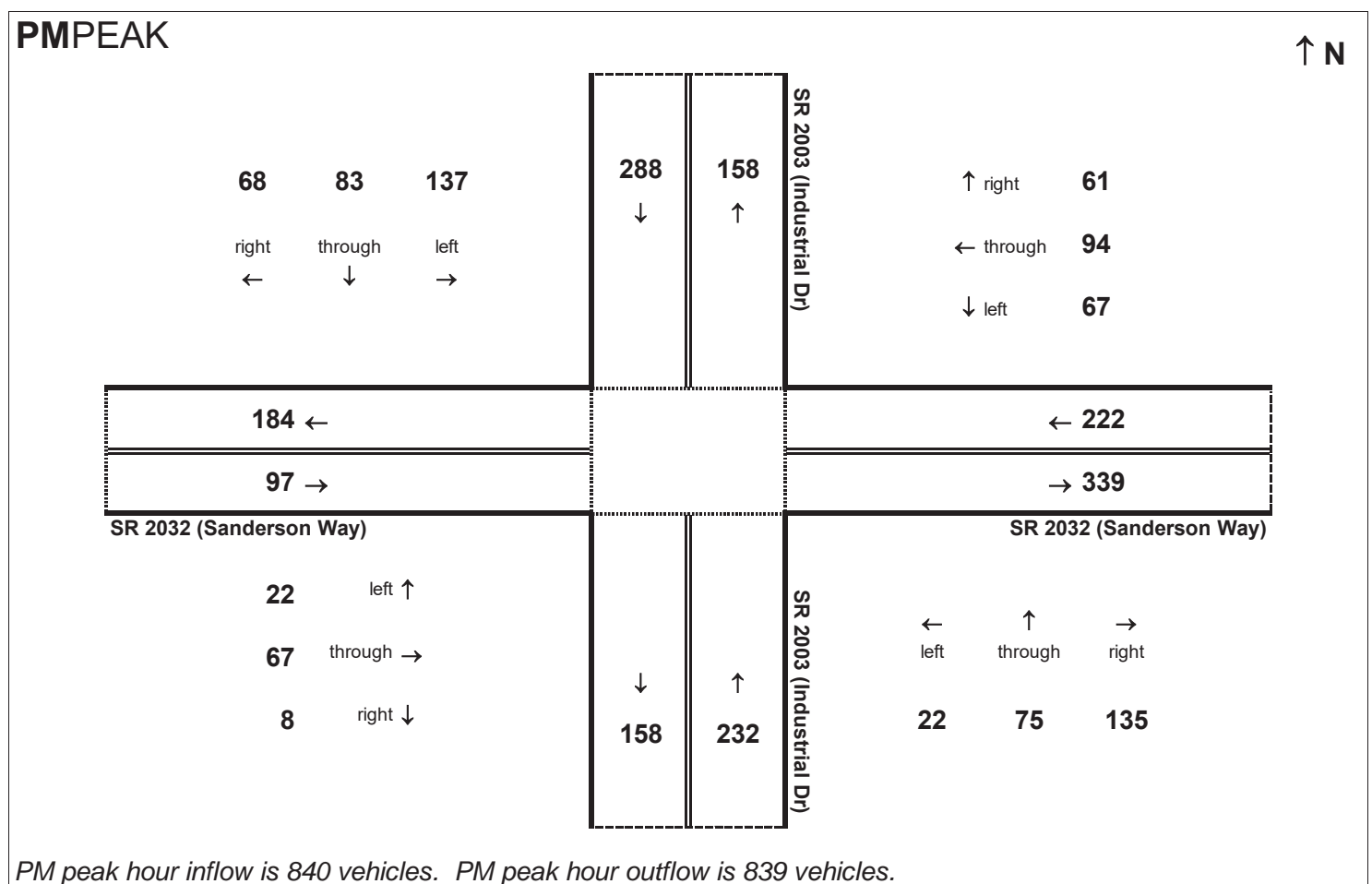
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

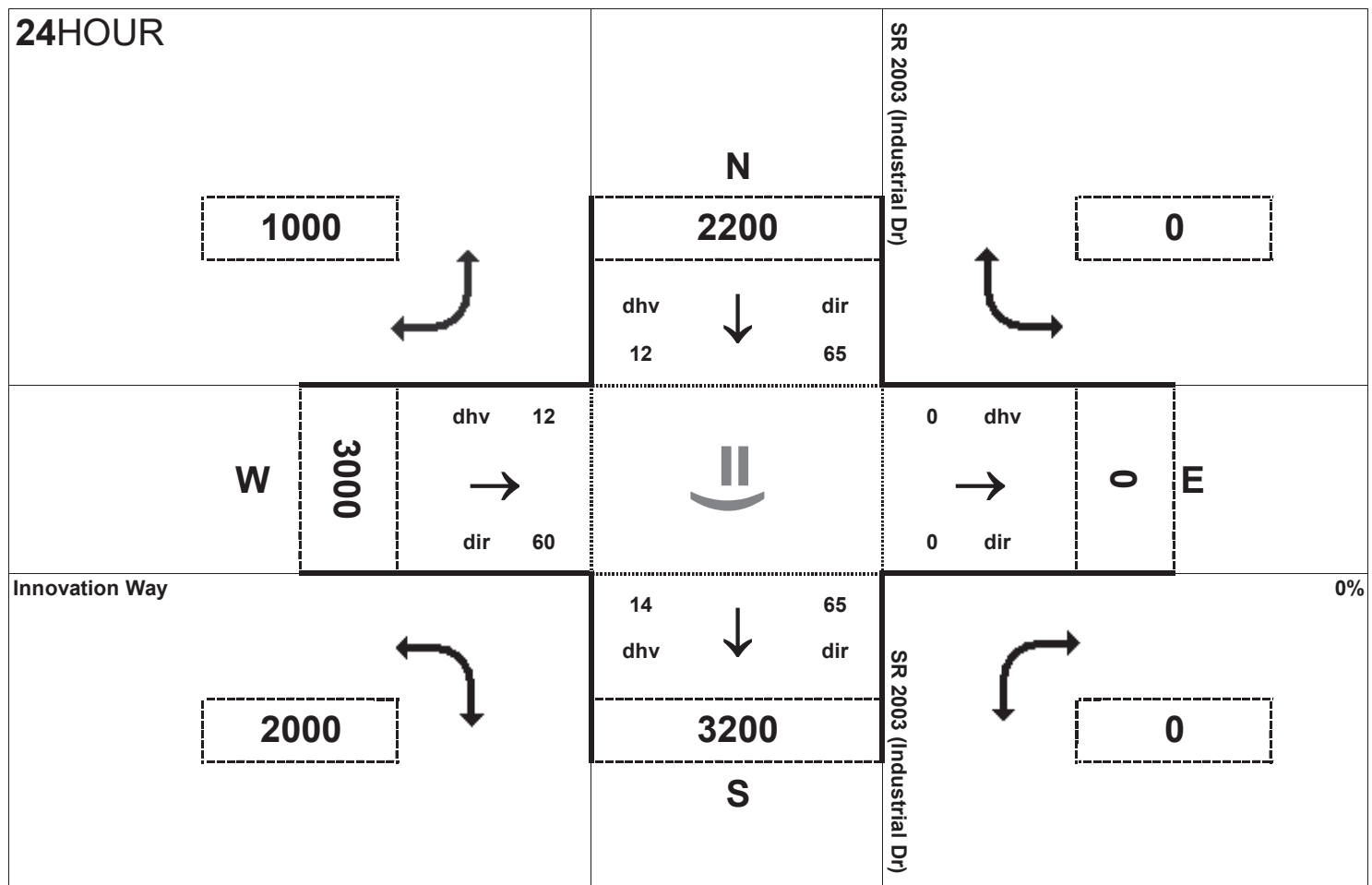
Project:
 R-2553



AM peak hour inflow is 839 vehicles. AM peak hour outflow is 840 vehicles.



PM peak hour inflow is 840 vehicles. PM peak hour outflow is 839 vehicles.

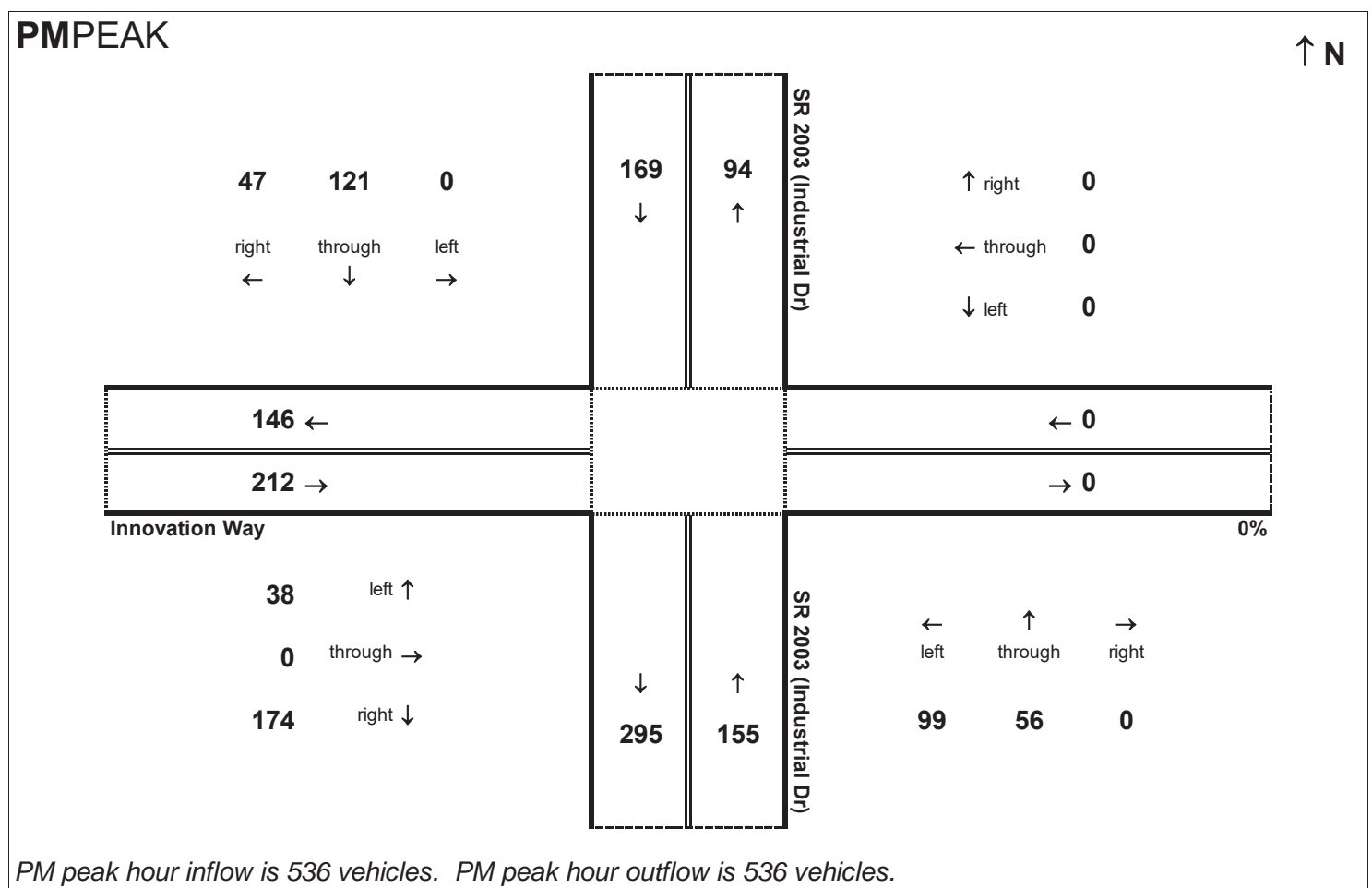
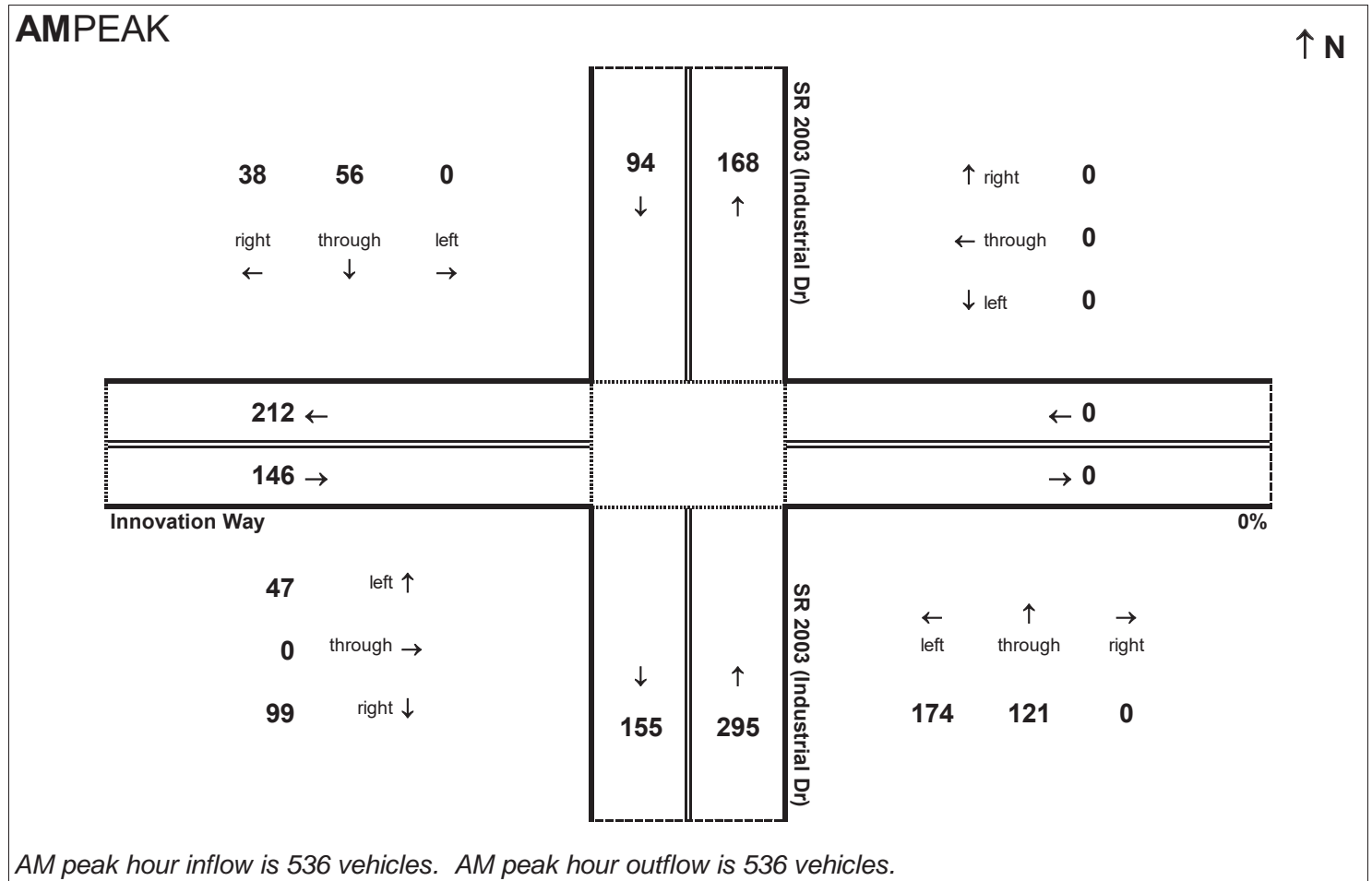


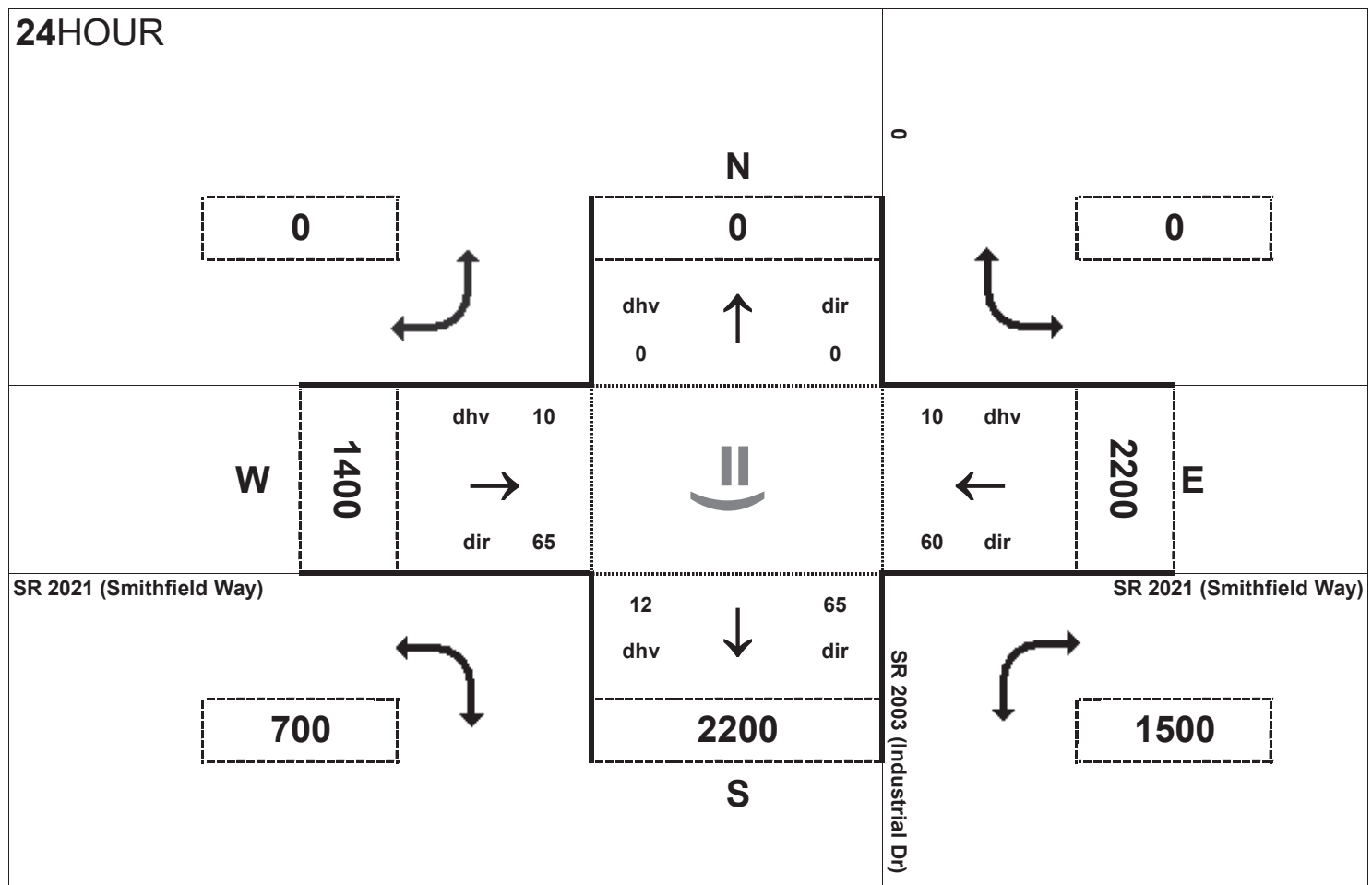
Peak Hour Volume Breakouts Report:
417 Intersection of SR 2003 (Industrial Dr) and Innovation Way

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



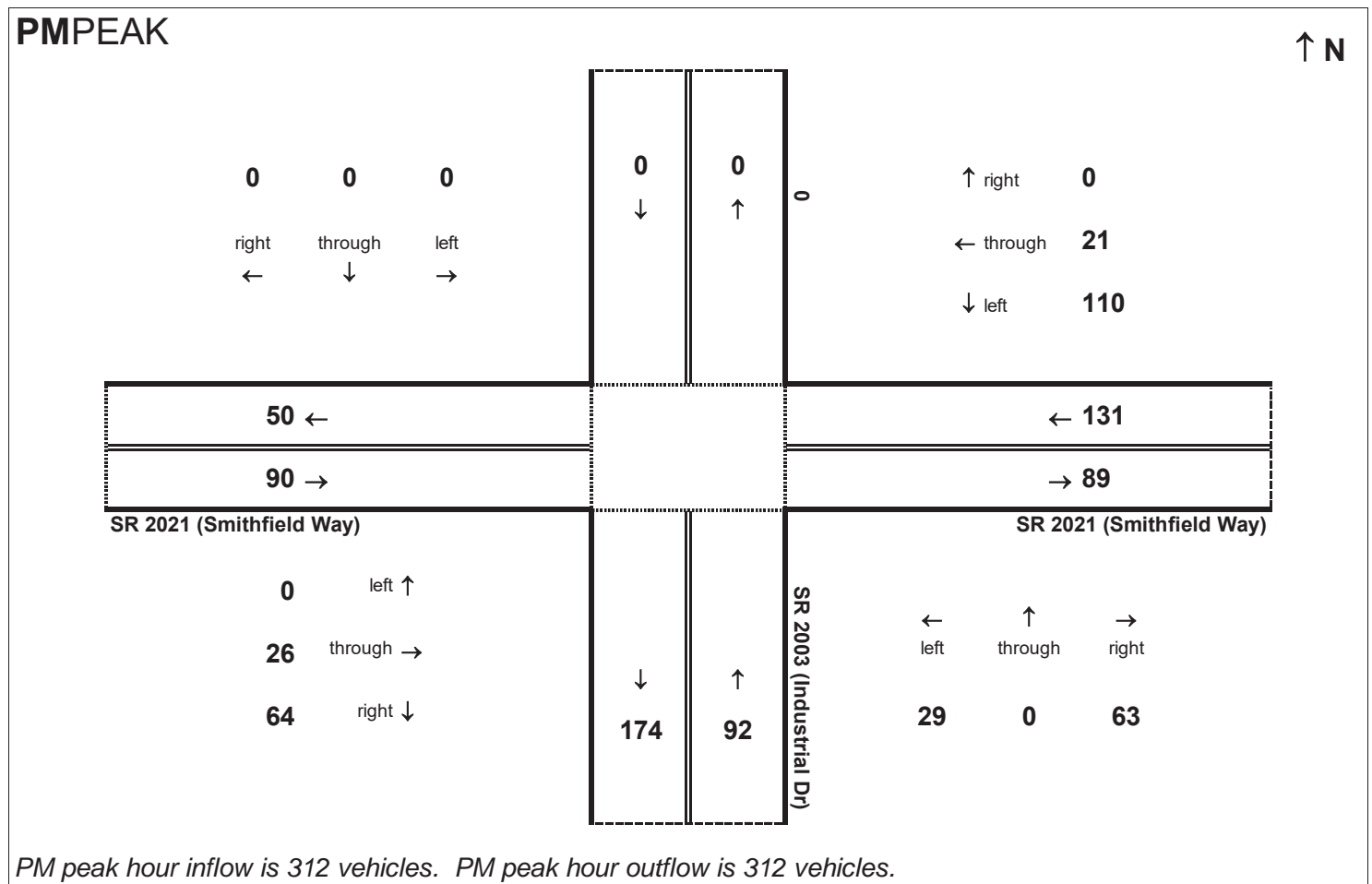
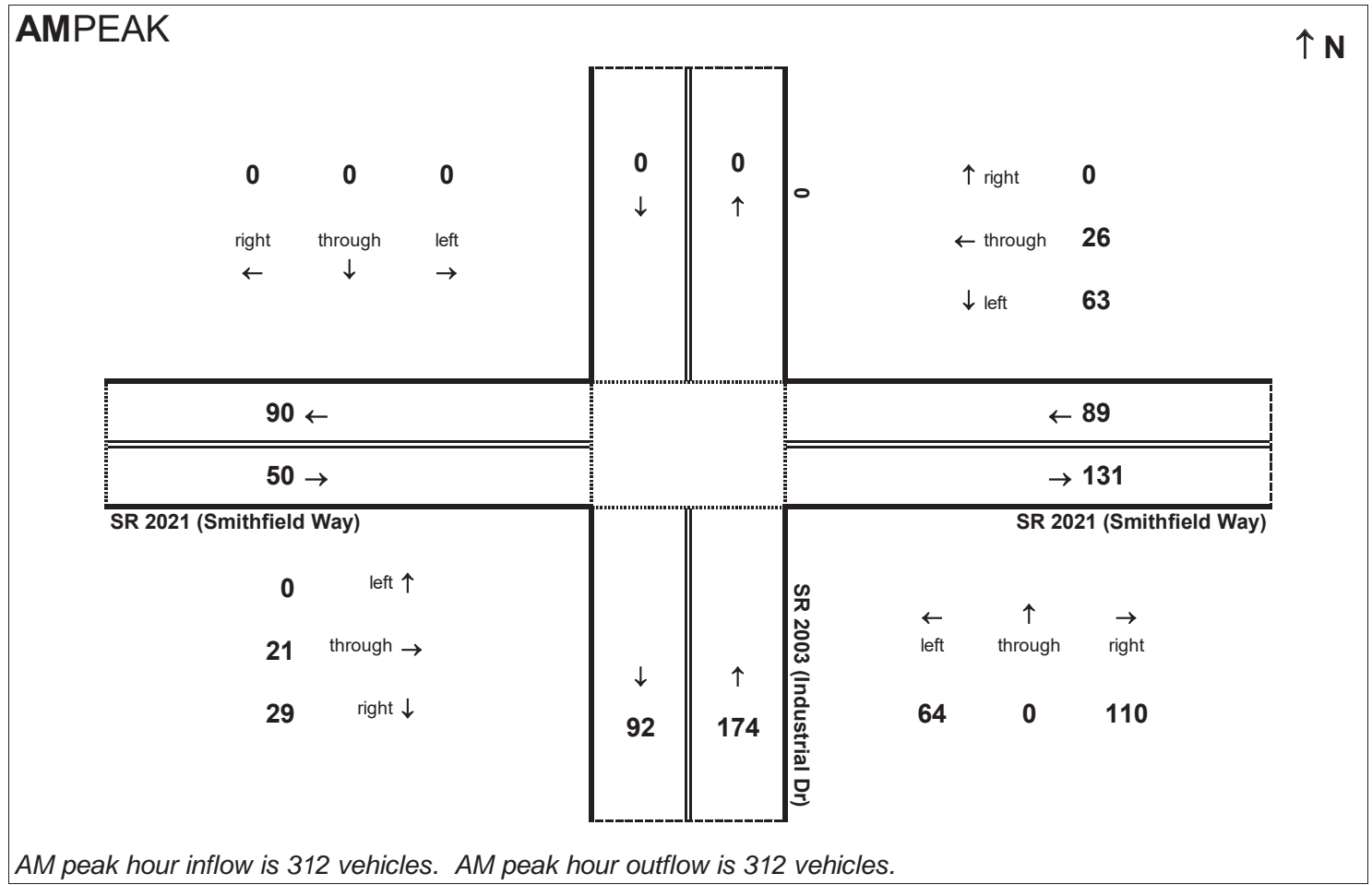


Peak Hour Volume Breakouts Report:
 418 Intersection of SR 2003 (Industrial Dr) and SR 2021 (Smithfield Way)

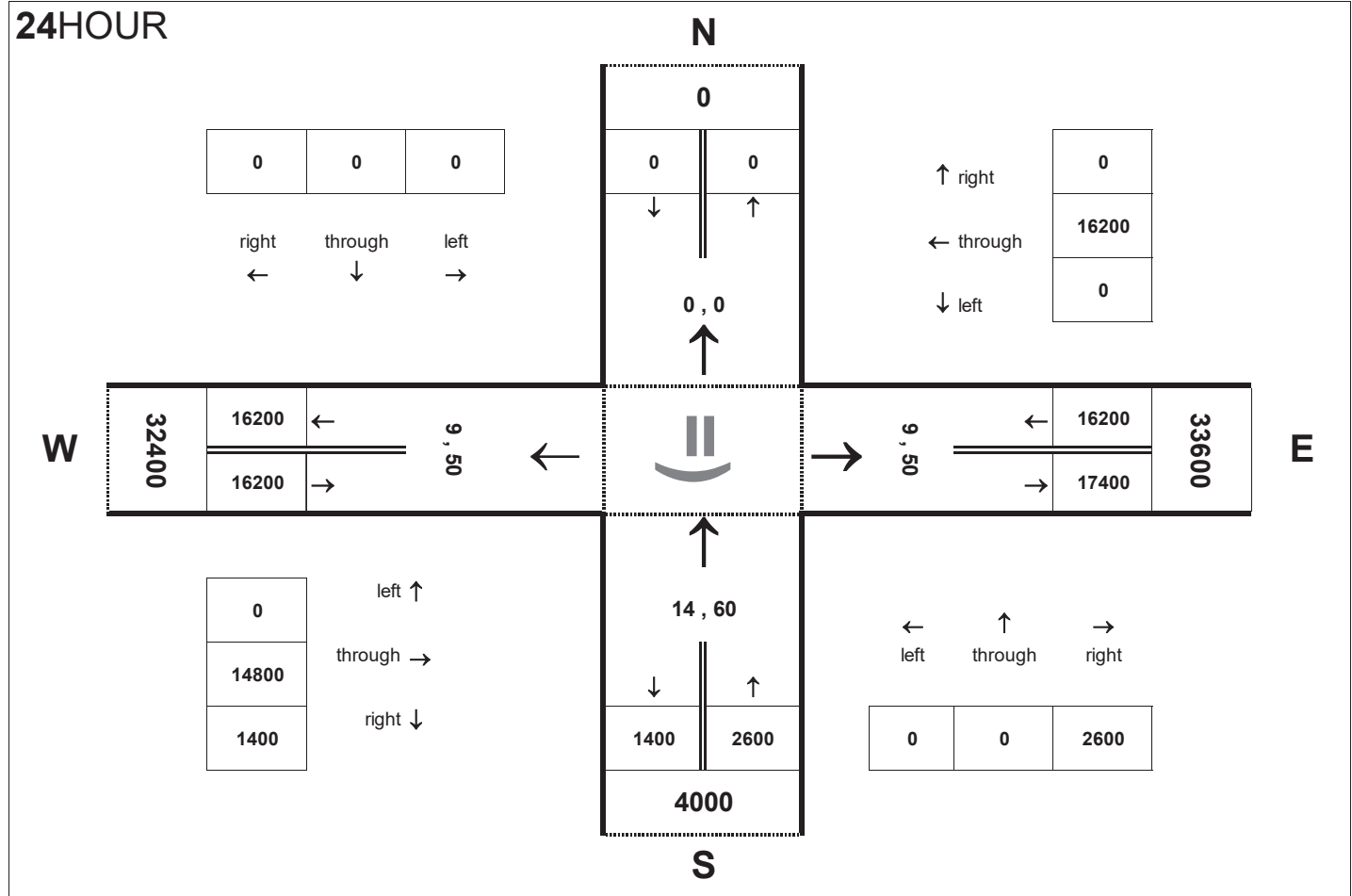
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



24HOUR



Peak Hour Volume Breakouts Report:

419 Intersection of US 70 and SR 2032 (Sanderson Way)

Traffic Forecast Release Date:

November-16

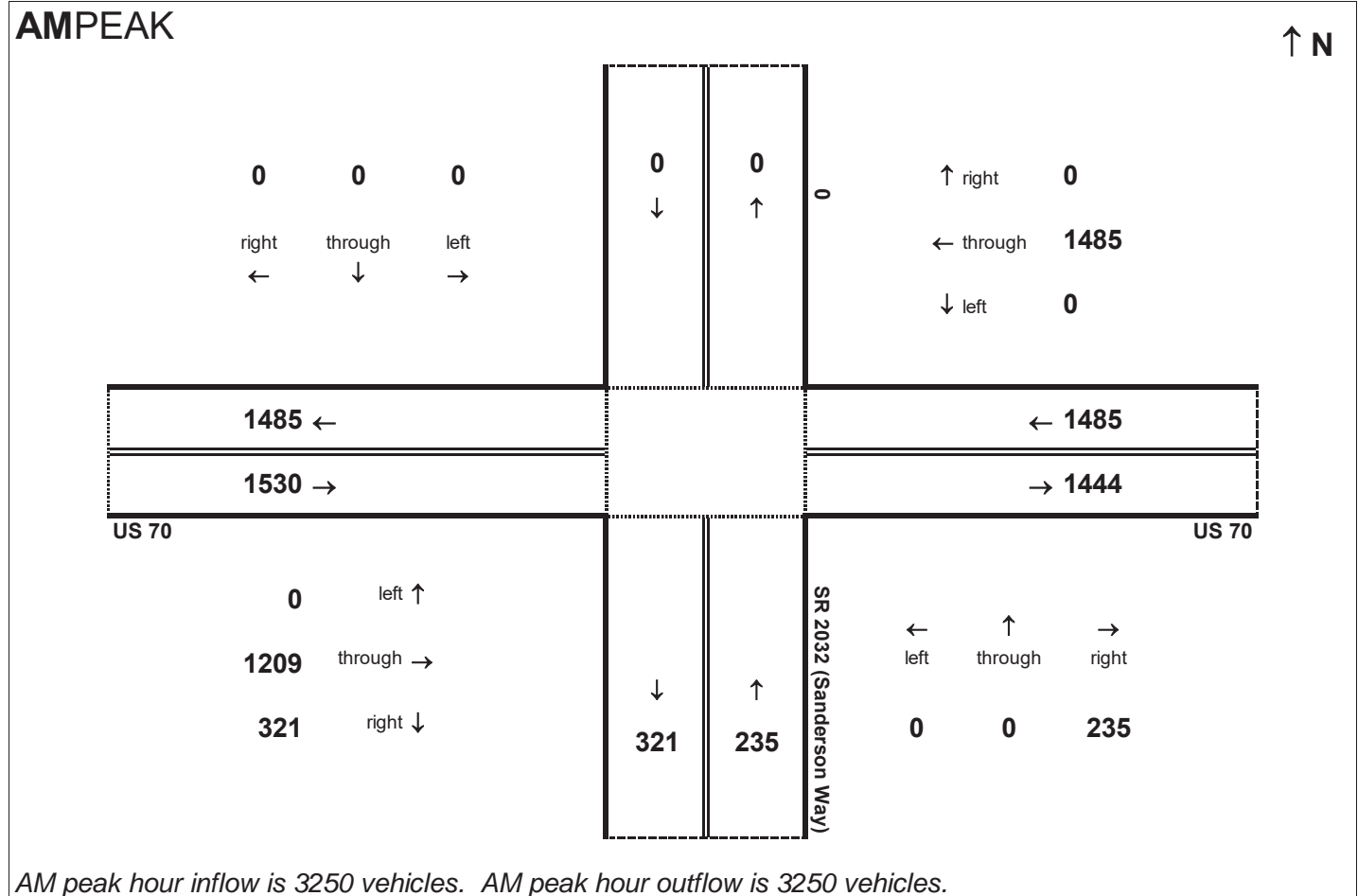
Traffic Data Year:

2040 Future Year No-Build

Project:

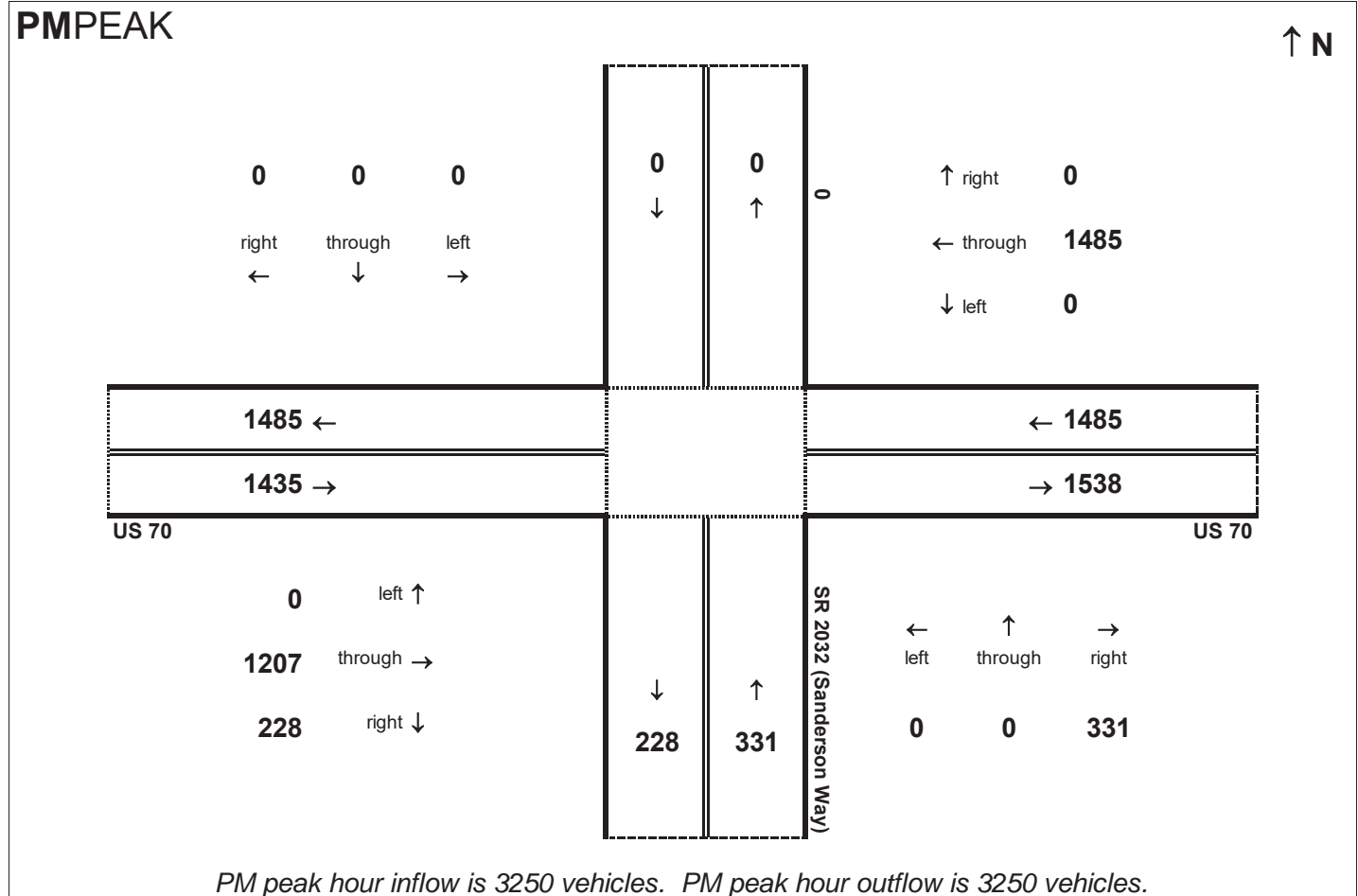
R-2553

AMPEAK

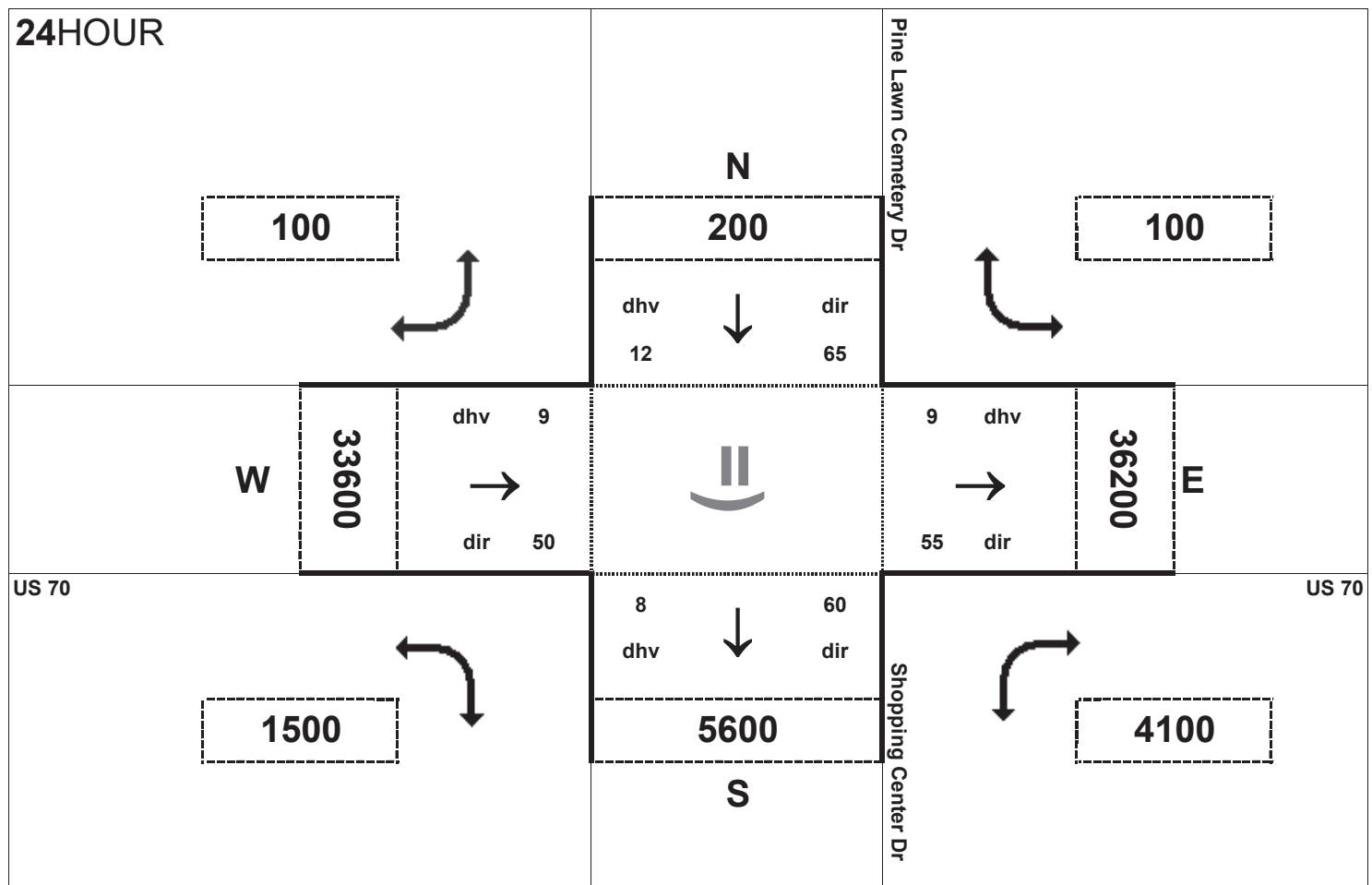


AM peak hour inflow is 3250 vehicles. AM peak hour outflow is 3250 vehicles.

PMPEAK



PM peak hour inflow is 3250 vehicles. PM peak hour outflow is 3250 vehicles.

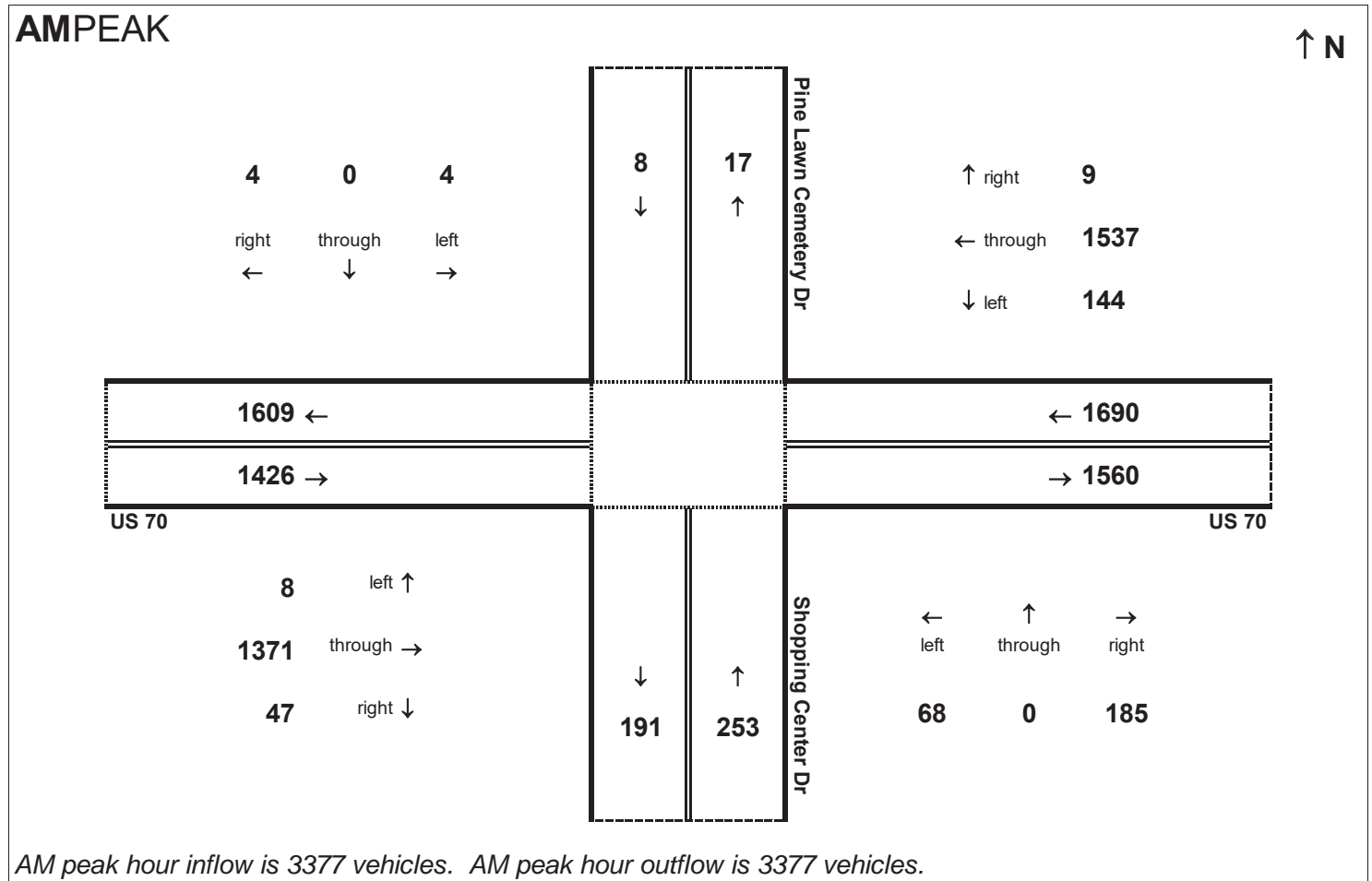


Peak Hour Volume Breakouts Report:
 420 Intersection of US 70 and Pine Lawn Cemetery Dr / Shopping Center Dr

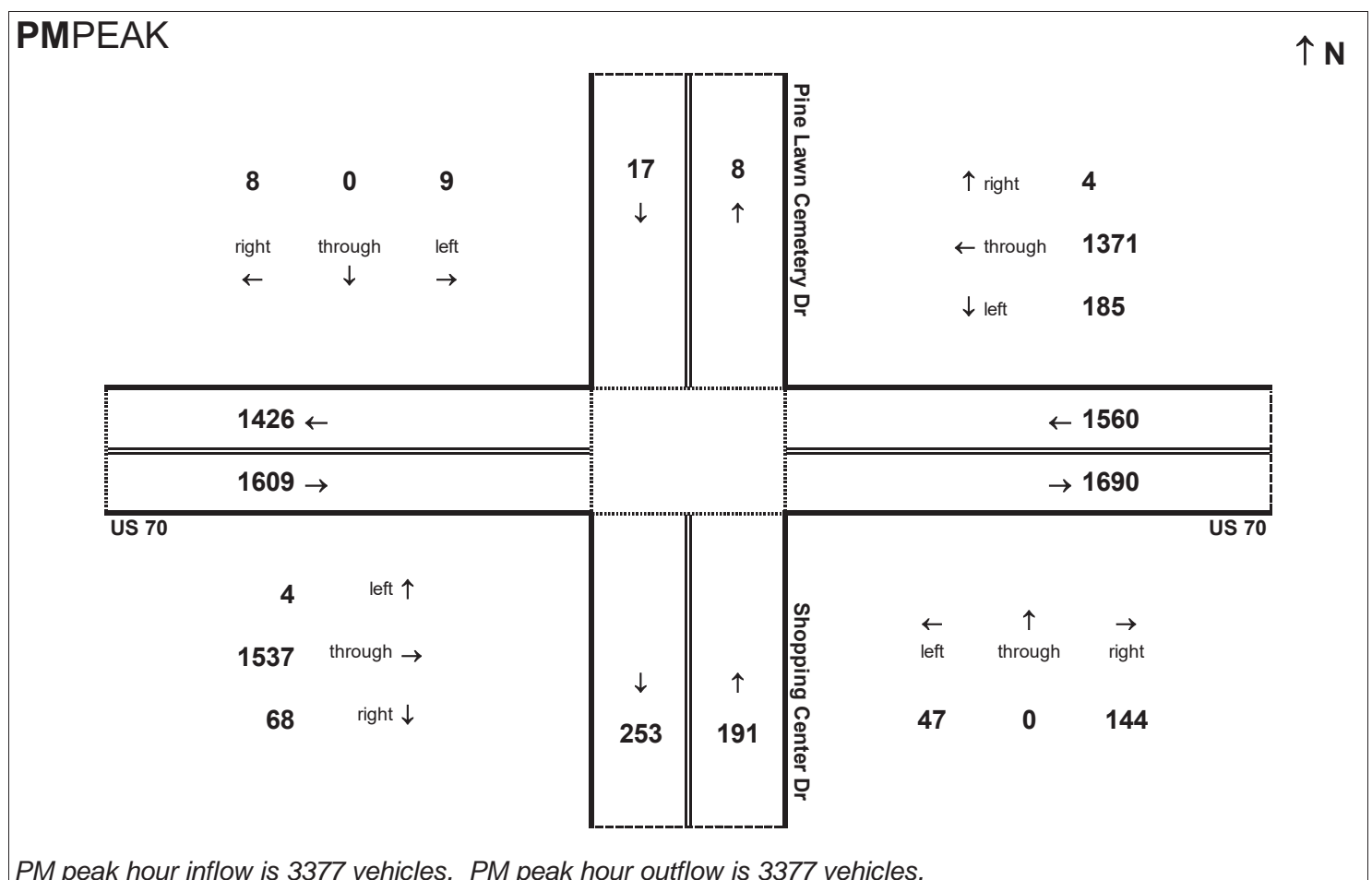
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

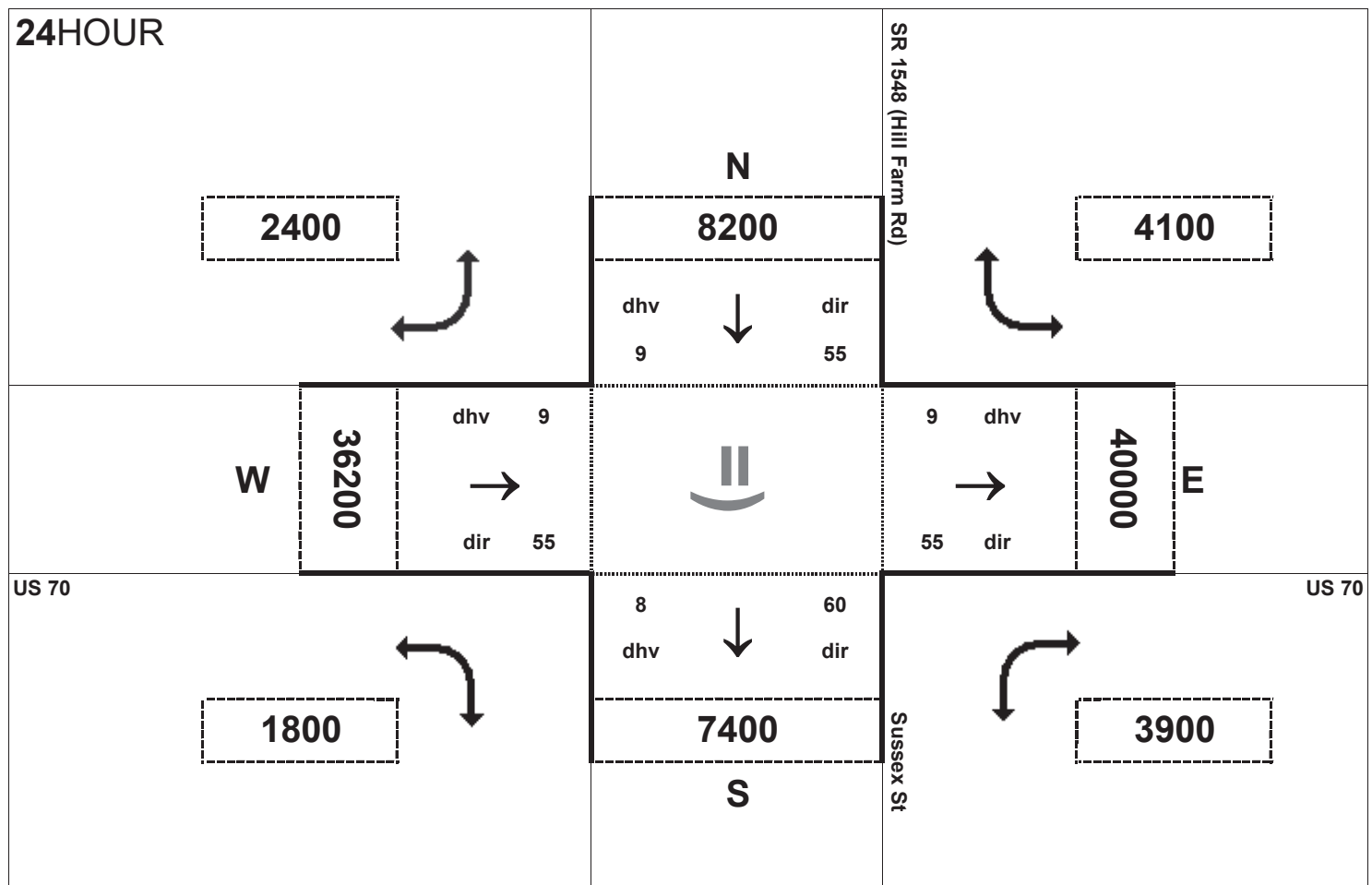
Project:
 R-2553



AM peak hour inflow is 3377 vehicles. AM peak hour outflow is 3377 vehicles.



PM peak hour inflow is 3377 vehicles. PM peak hour outflow is 3377 vehicles.

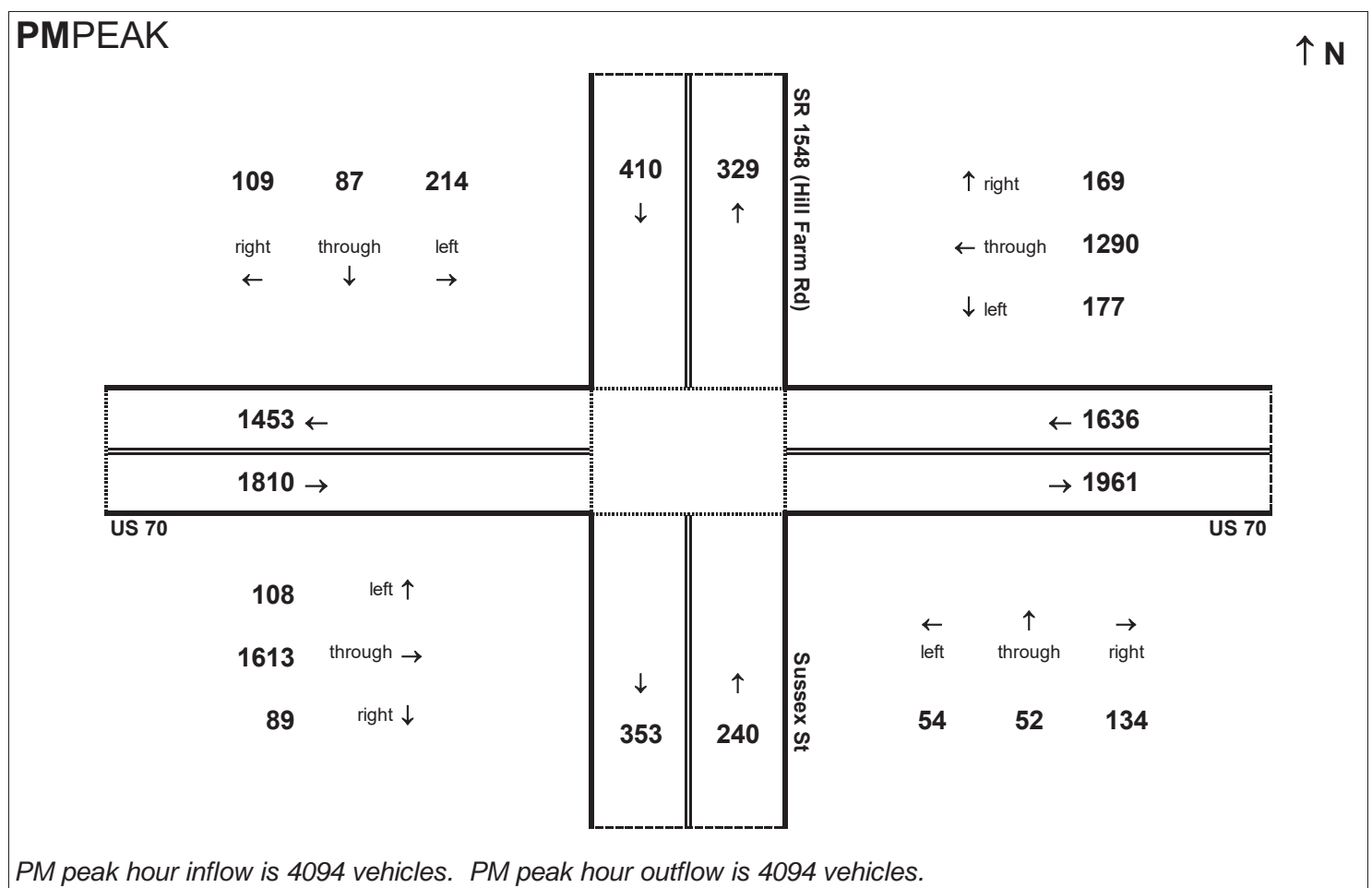
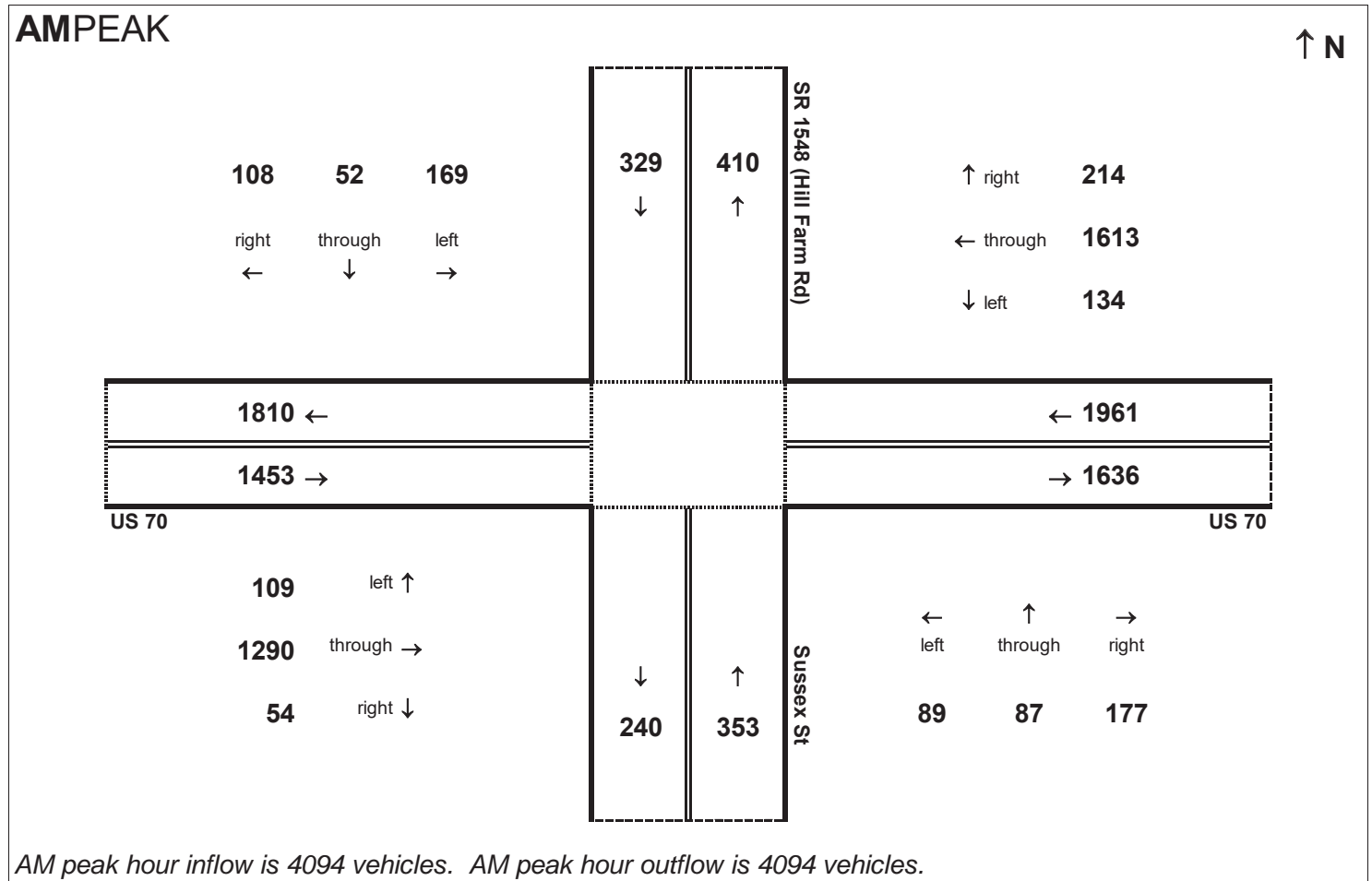


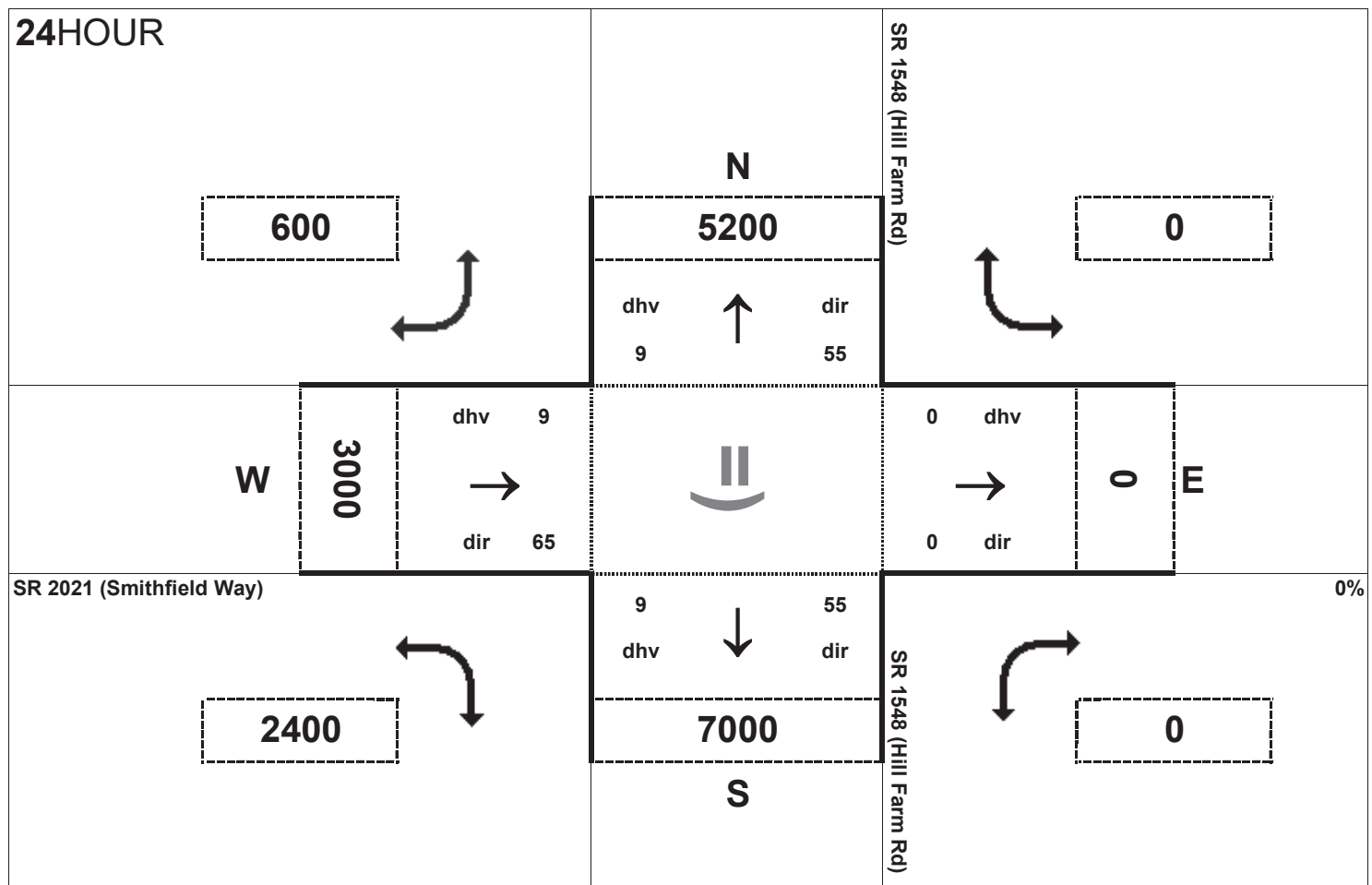
Peak Hour Volume Breakouts Report:
 421 Intersection of US 70 and SR 1548 (Hill Farm) /
 Sussex St

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



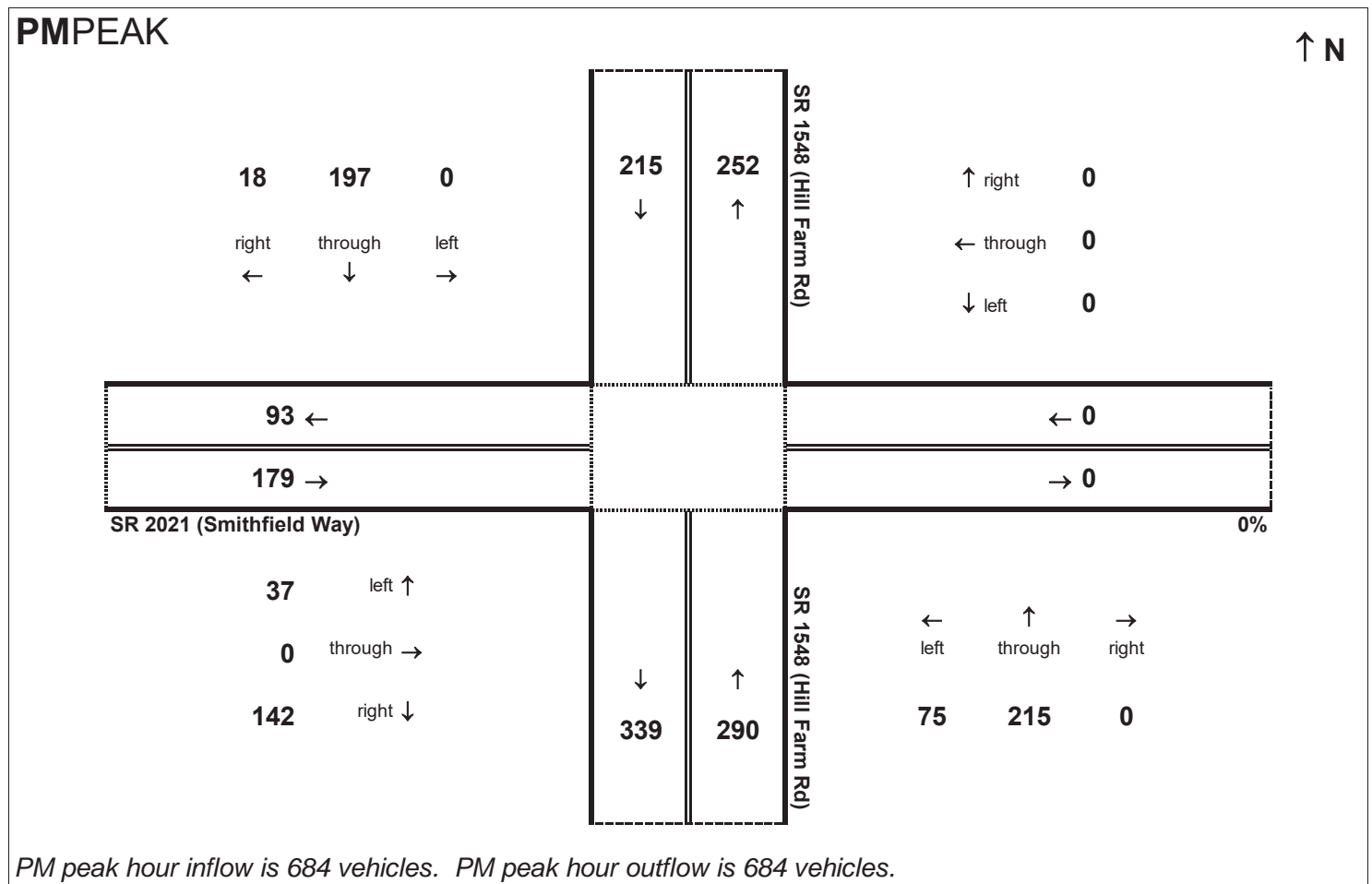
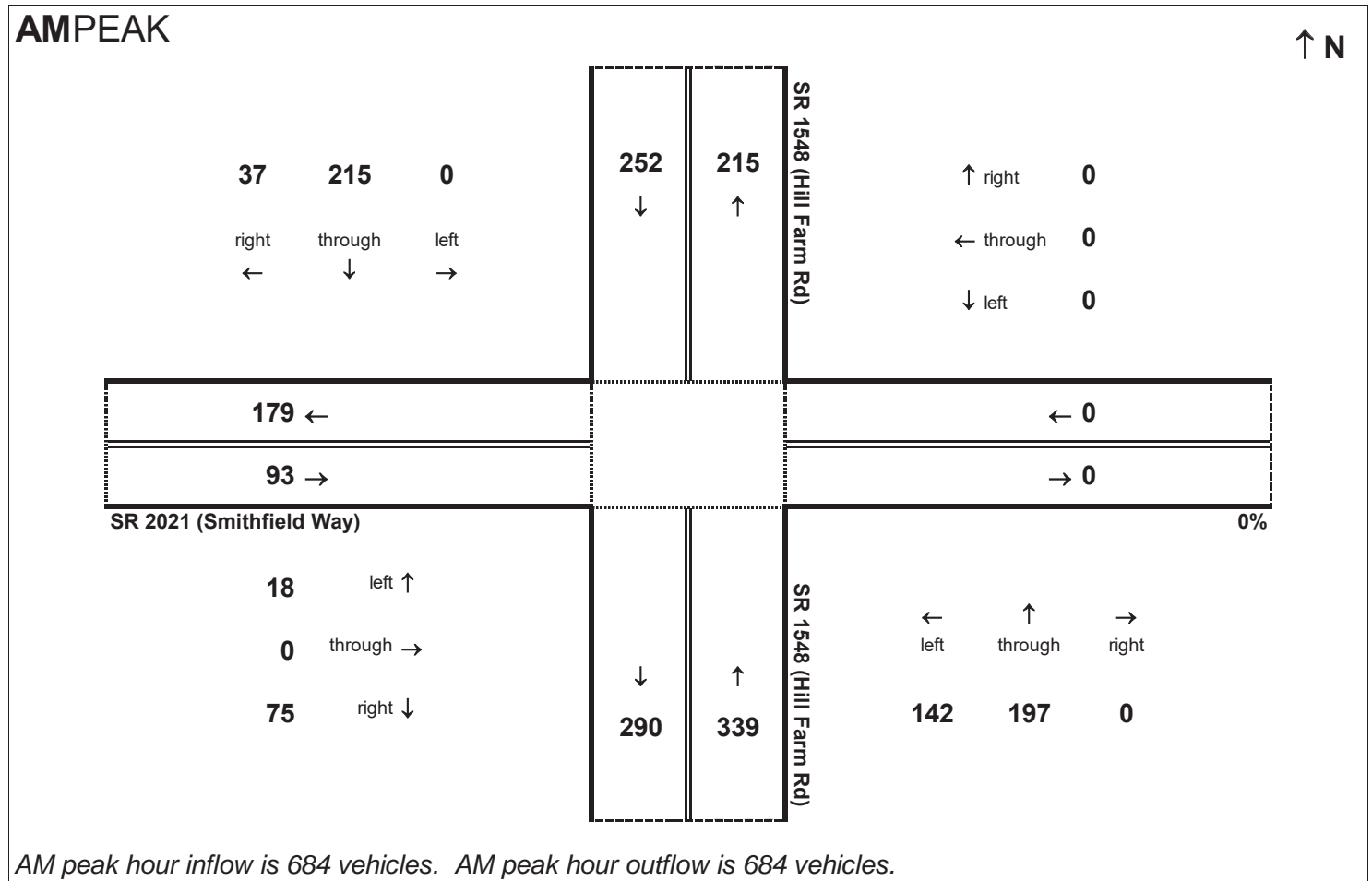


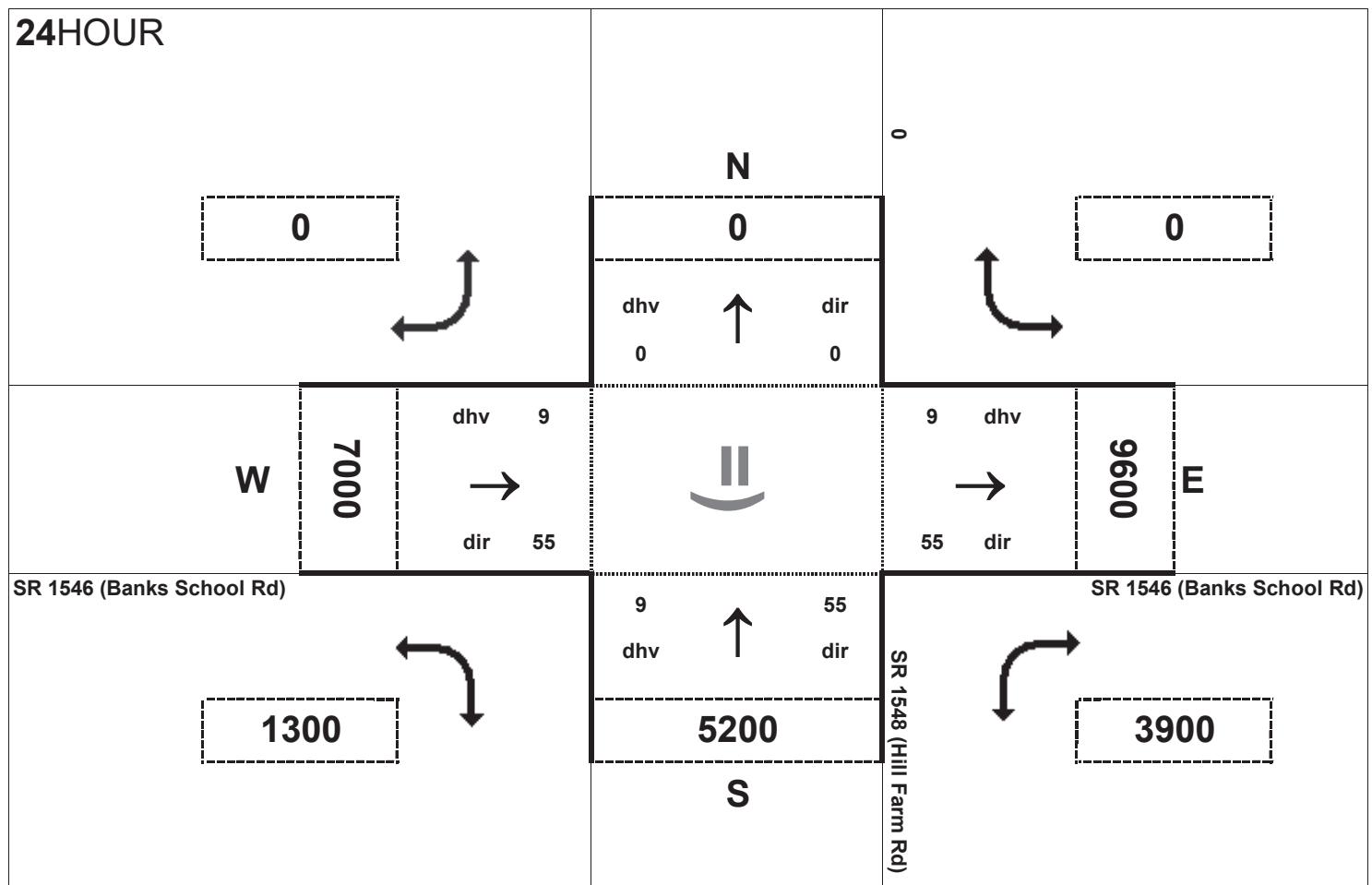
Peak Hour Volume Breakouts Report:
422 Intersection of SR 2021 (Smithfield Way) and SR 1548 (Hill Farm Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



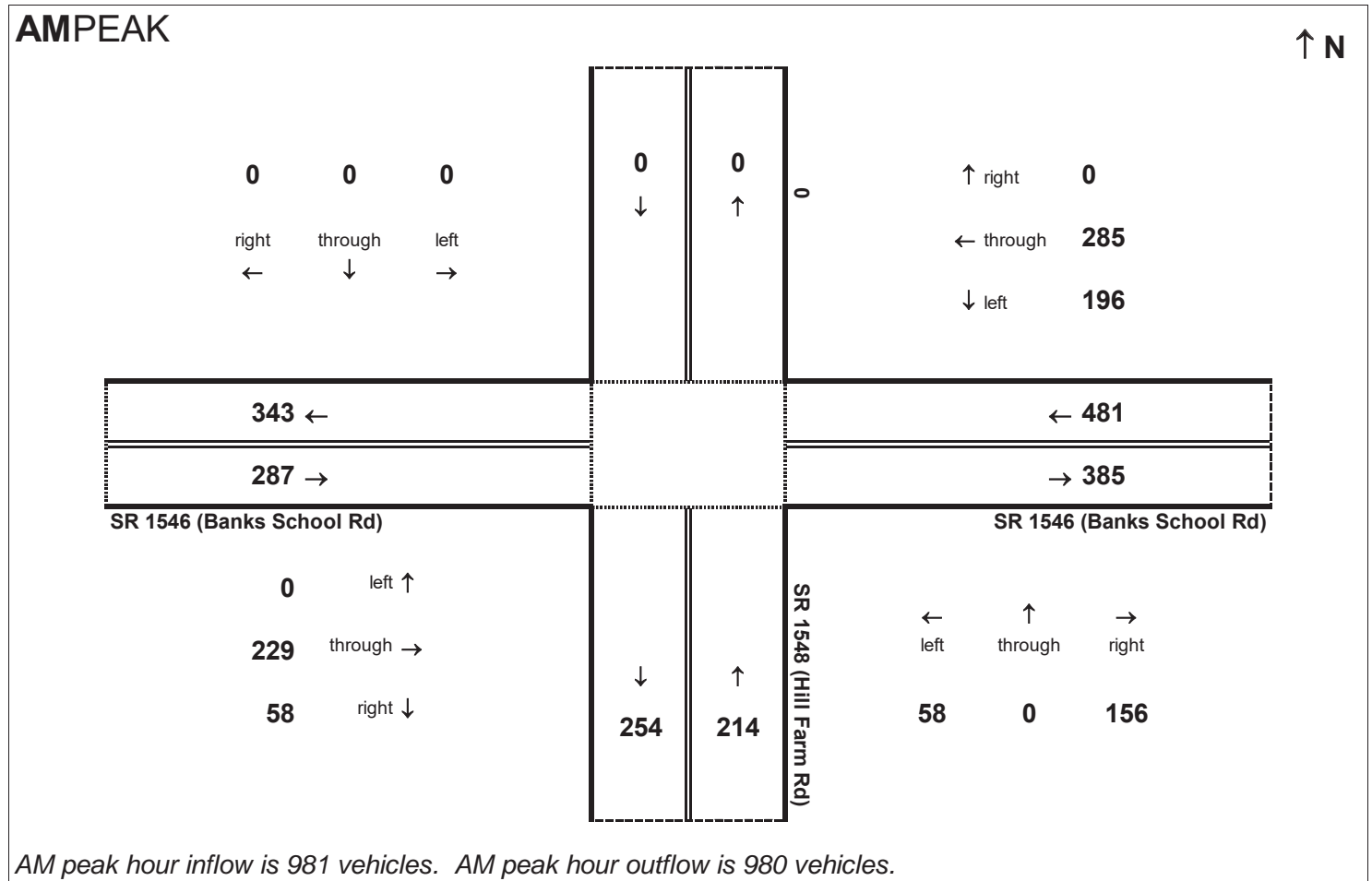


Peak Hour Volume Breakouts Report:
 423 Intersection of SR 1546 (Banks School Rd) and
 SR 1548 (Hill Farm Rd)

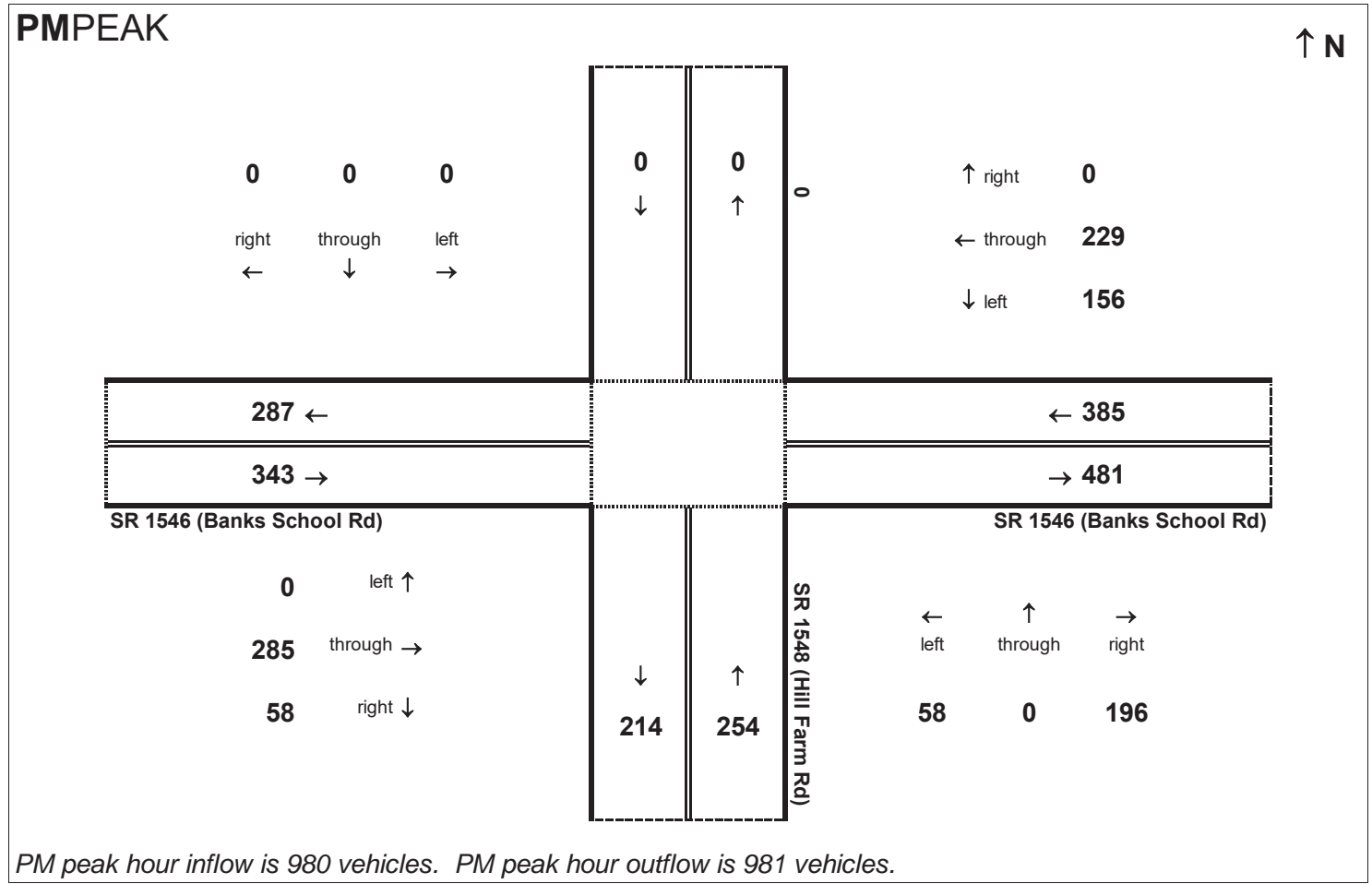
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553

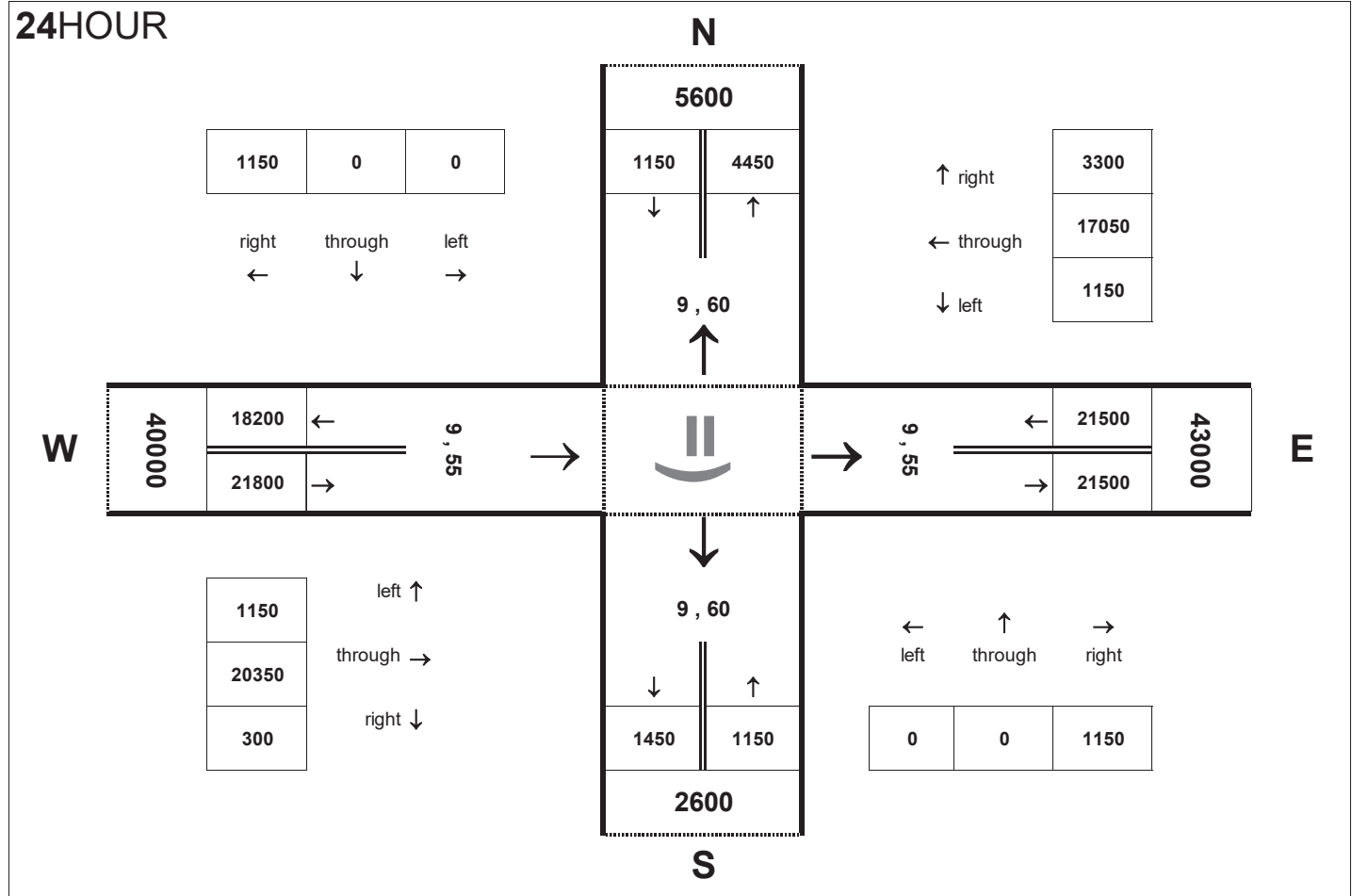


AM peak hour inflow is 981 vehicles. AM peak hour outflow is 980 vehicles.



PM peak hour inflow is 980 vehicles. PM peak hour outflow is 981 vehicles.

24HOUR



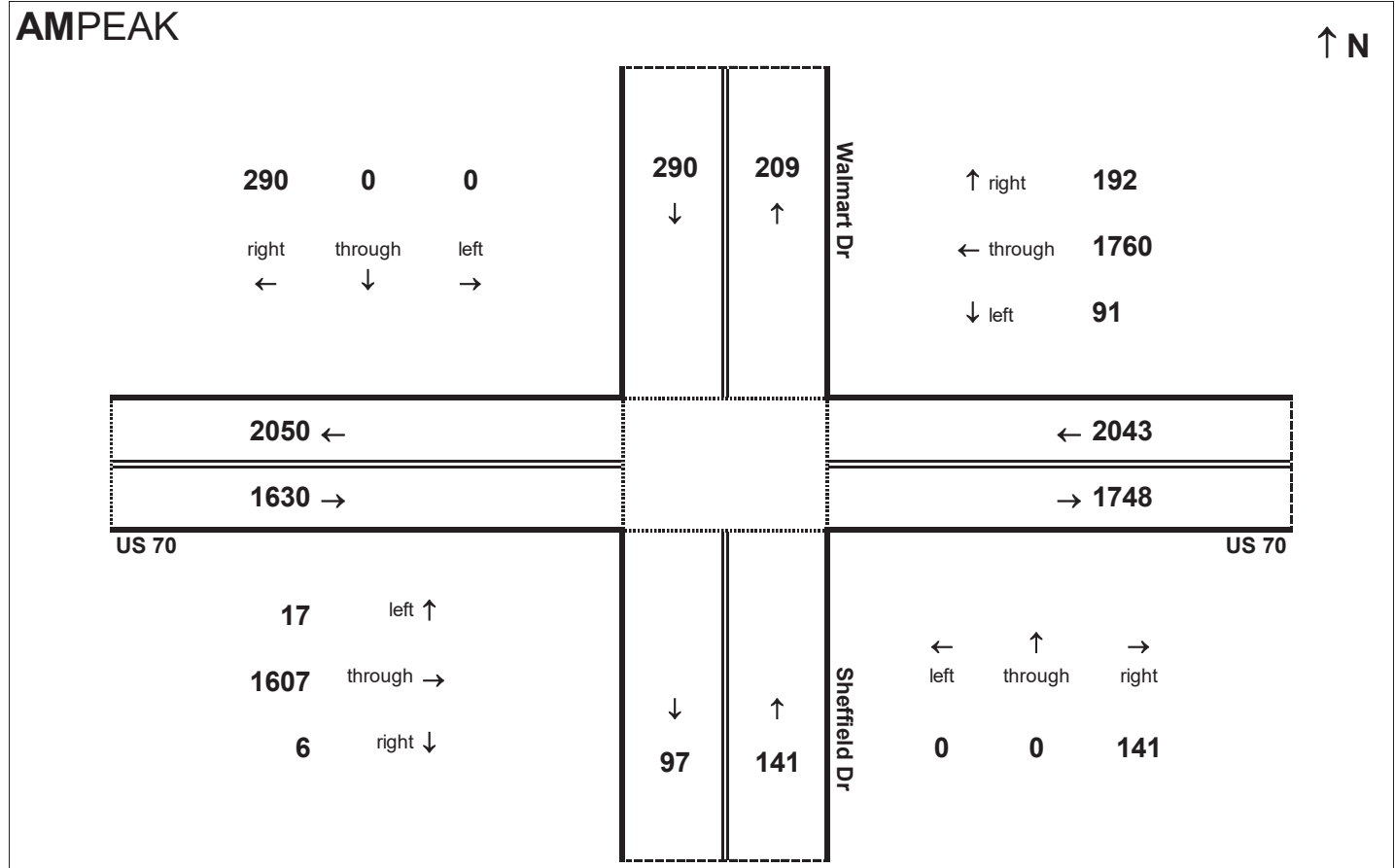
Peak Hour Volume Breakouts Report:
424 Intersection of US 70 and Walmart Dr / Sheffield Dr

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

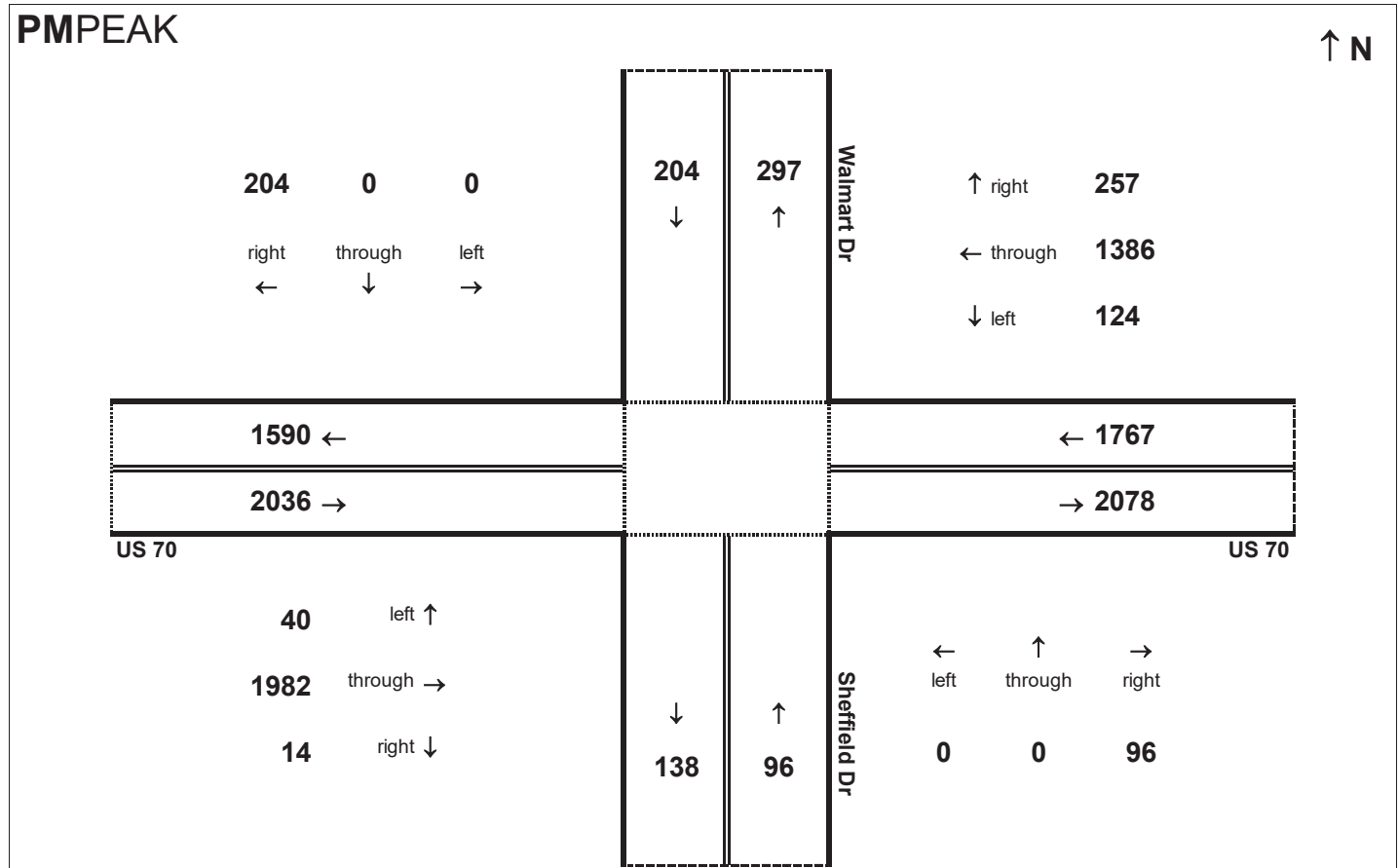
Project:
R-2553

AMPEAK

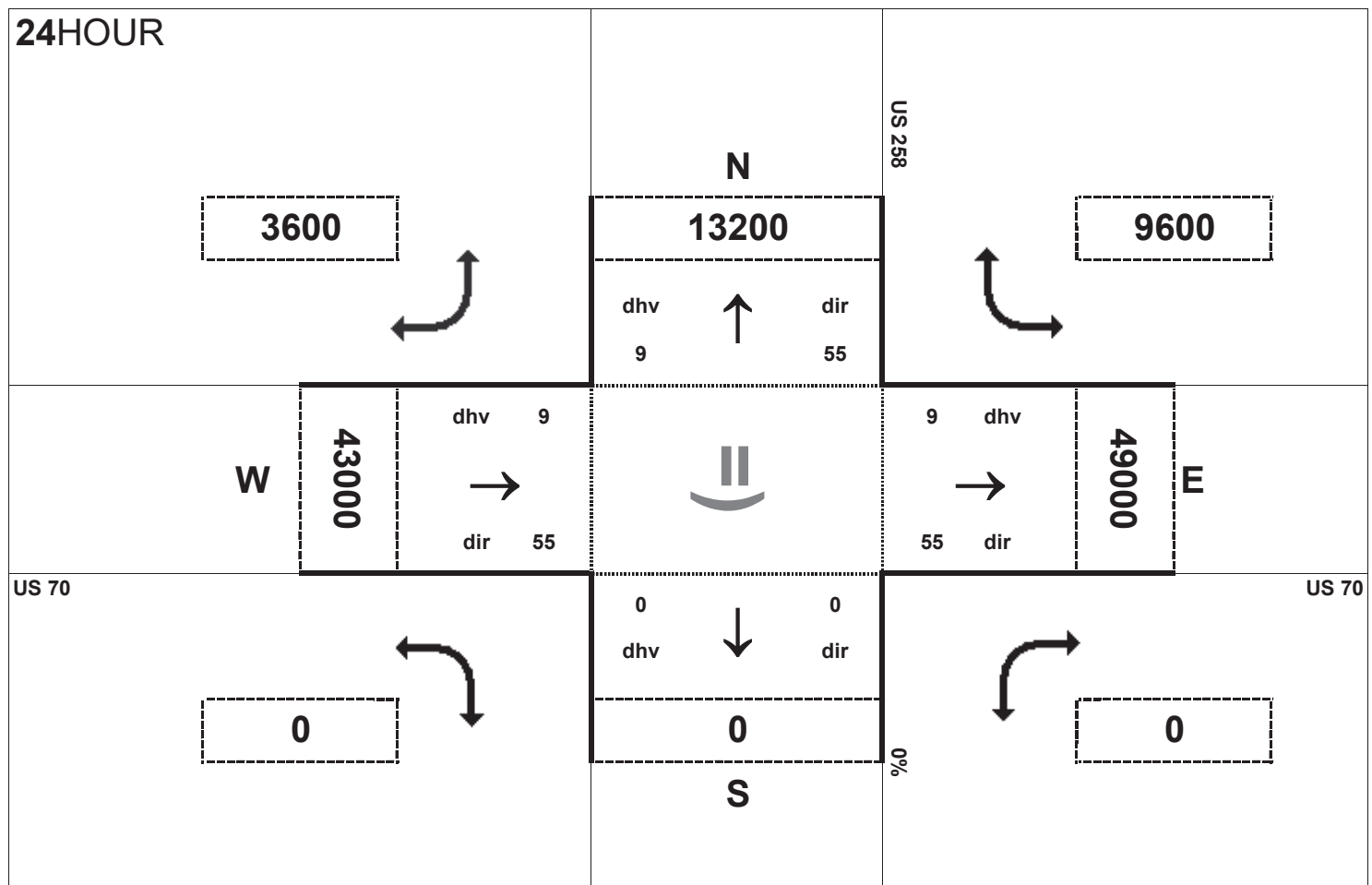


AM peak hour inflow is 4104 vehicles. AM peak hour outflow is 4104 vehicles.

PMPEAK



PM peak hour inflow is 4103 vehicles. PM peak hour outflow is 4105 vehicles.

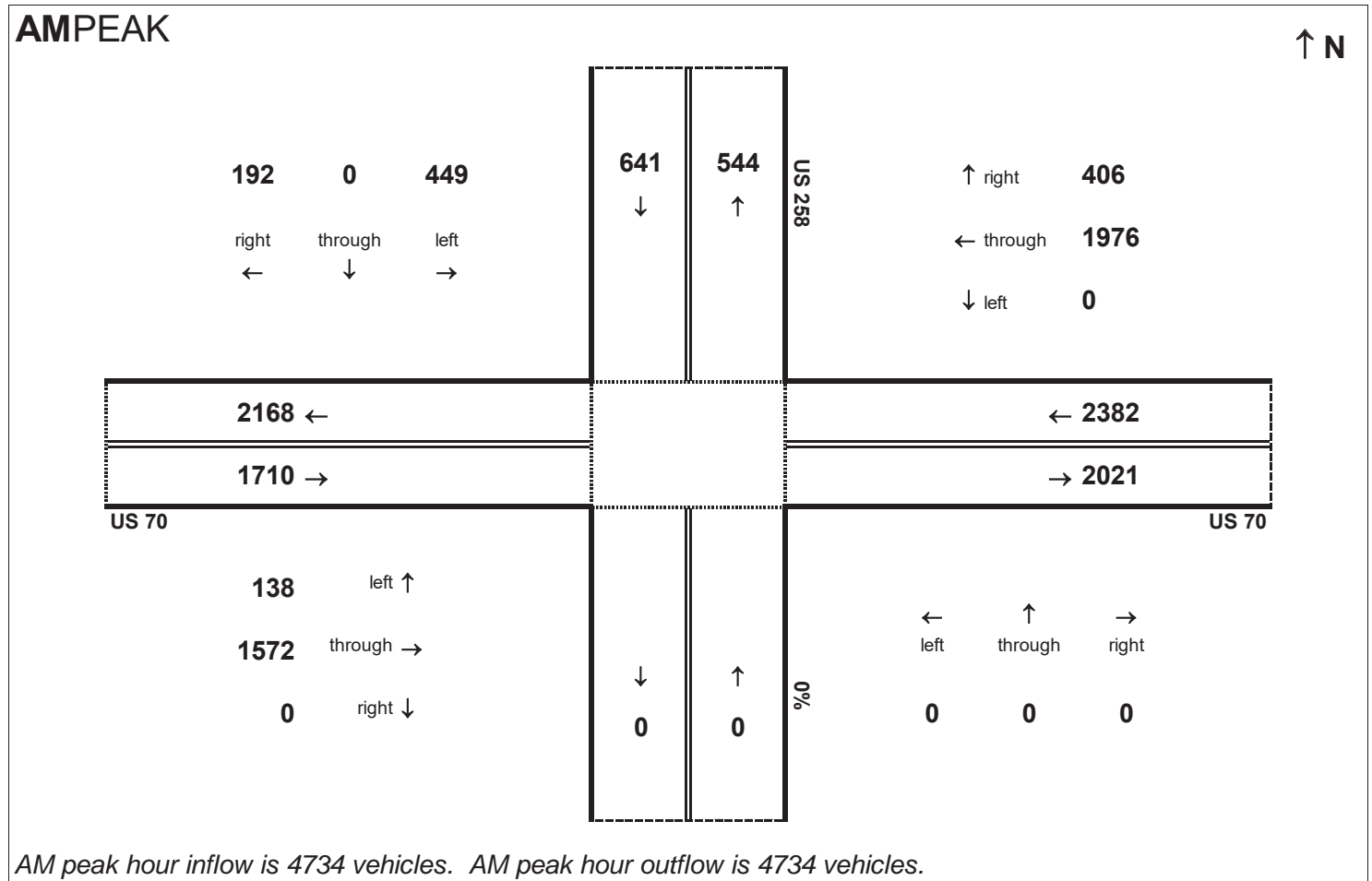


Peak Hour Volume Breakouts Report:
425 Intersection of US 258 and US 70

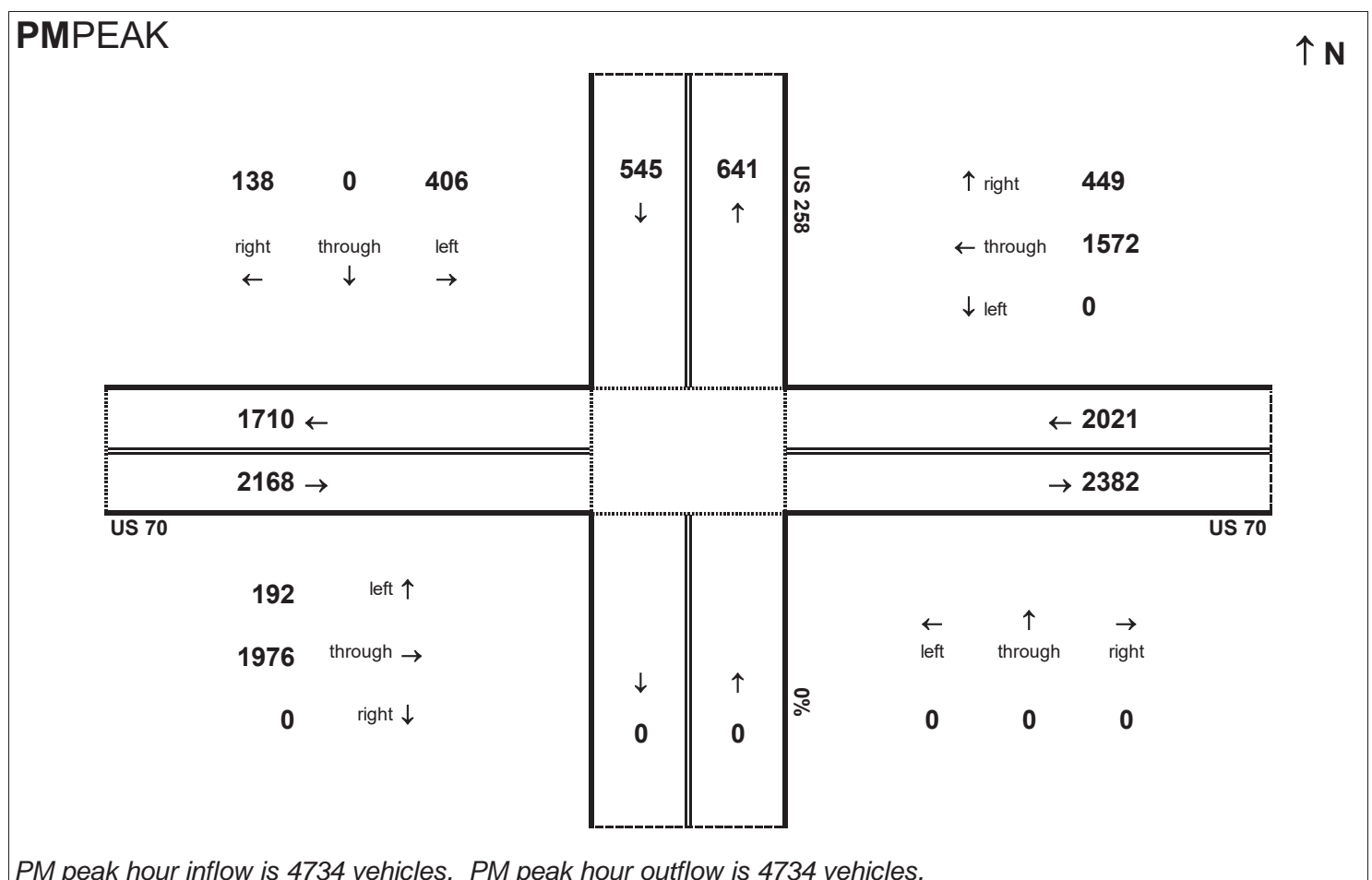
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

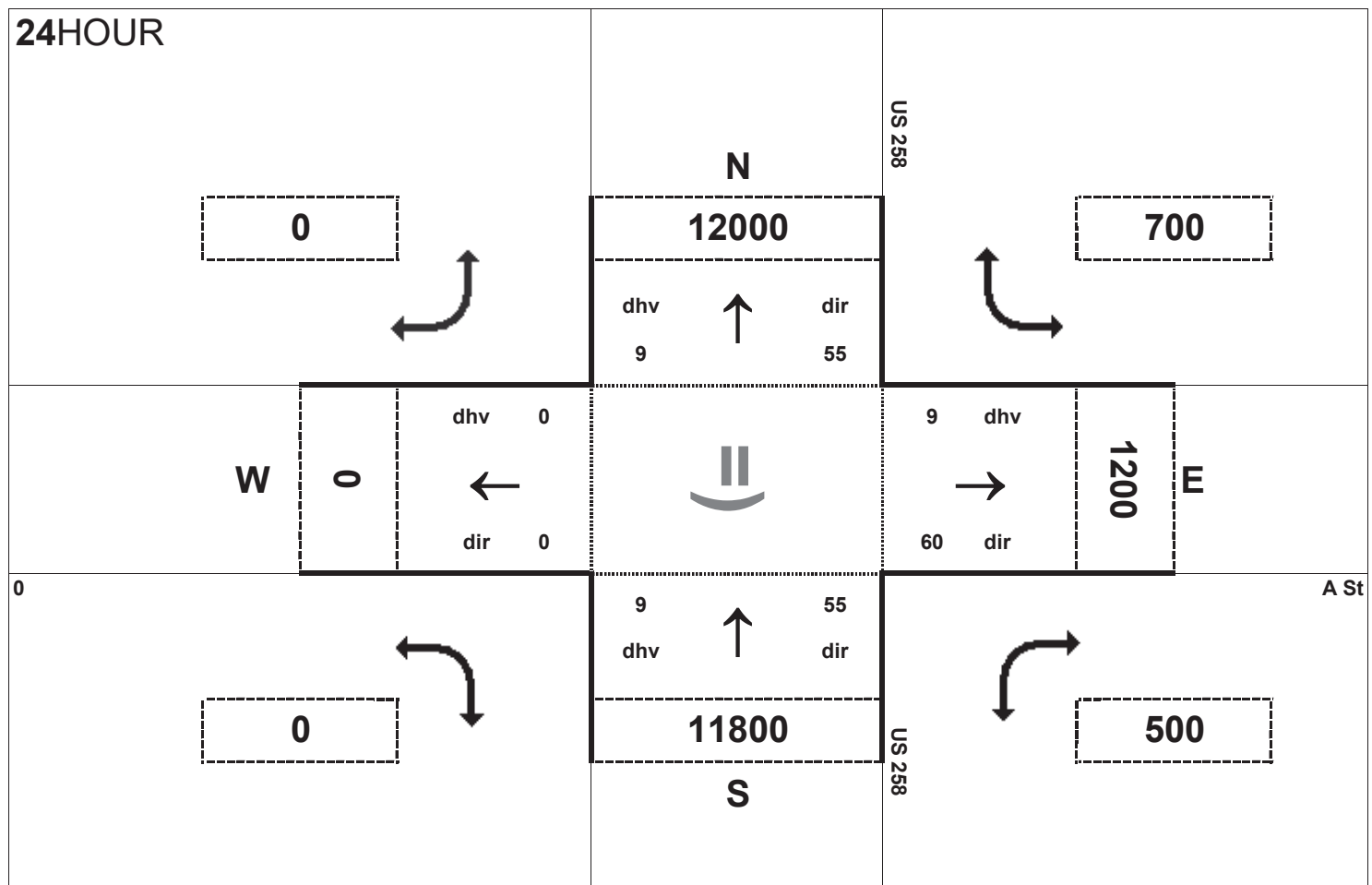
Project:
R-2553



AM peak hour inflow is 4734 vehicles. AM peak hour outflow is 4734 vehicles.



PM peak hour inflow is 4734 vehicles. PM peak hour outflow is 4734 vehicles.

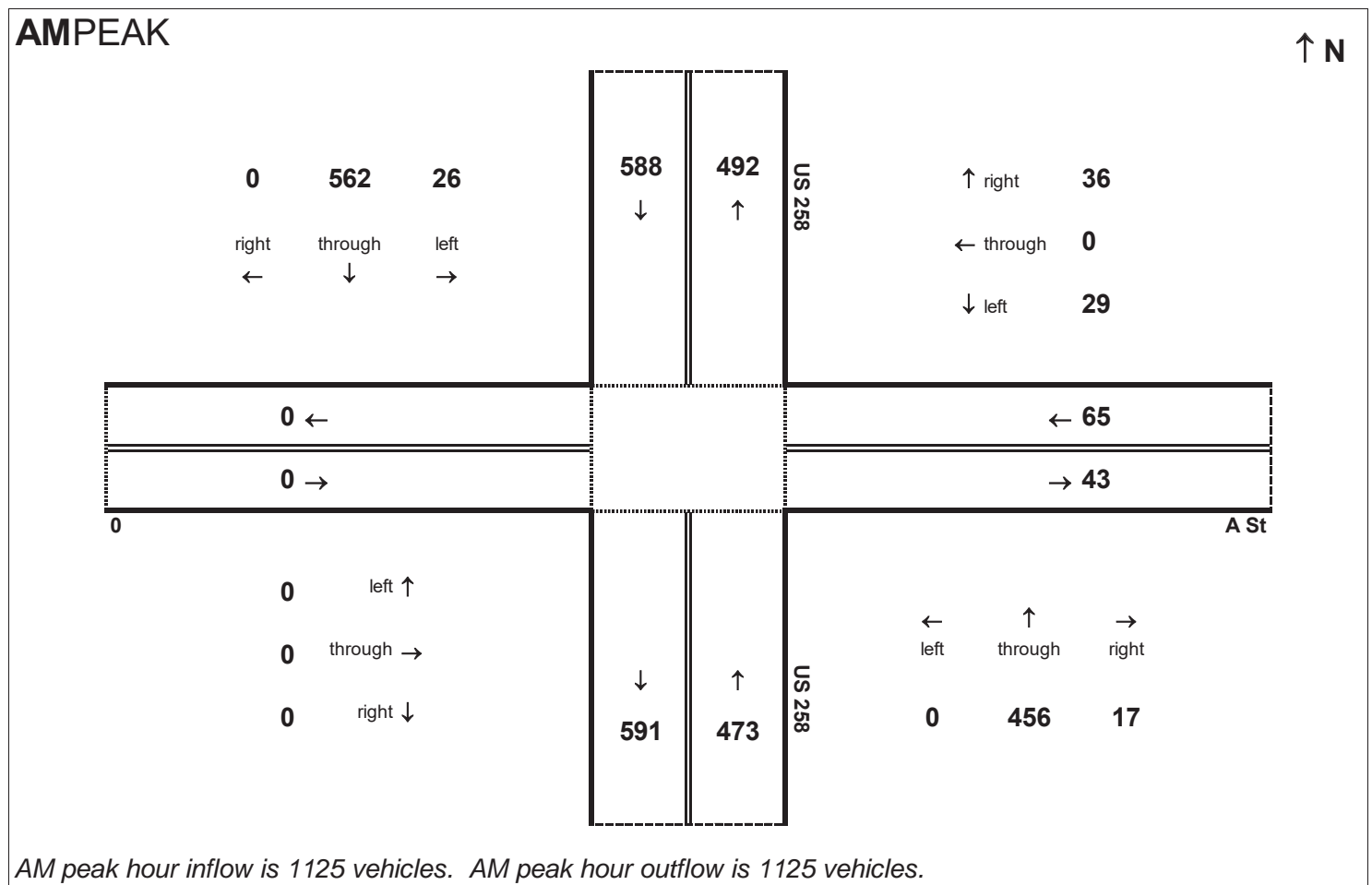


Peak Hour Volume Breakouts Report:
426 Intersection of US 258 and A St

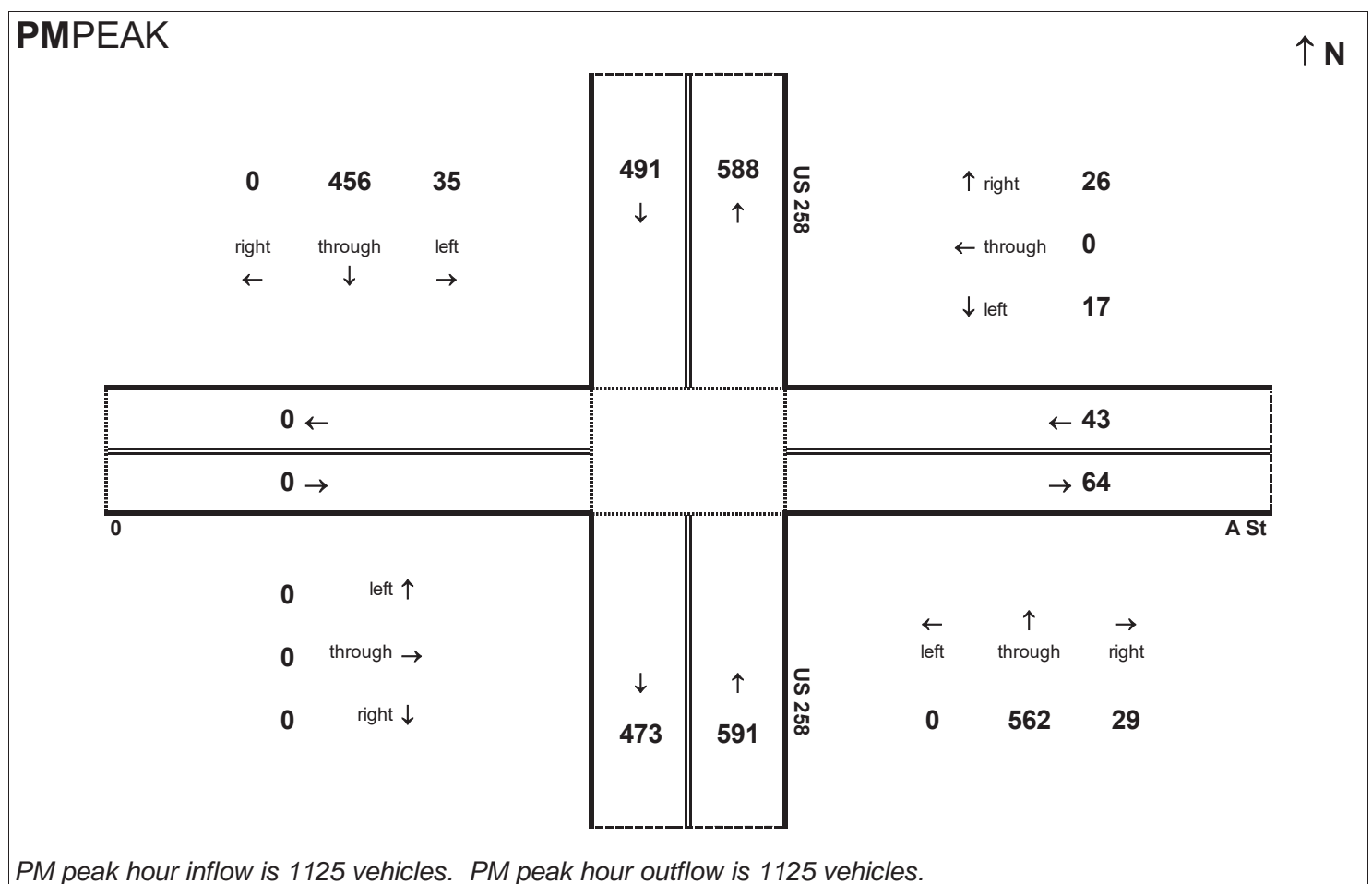
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

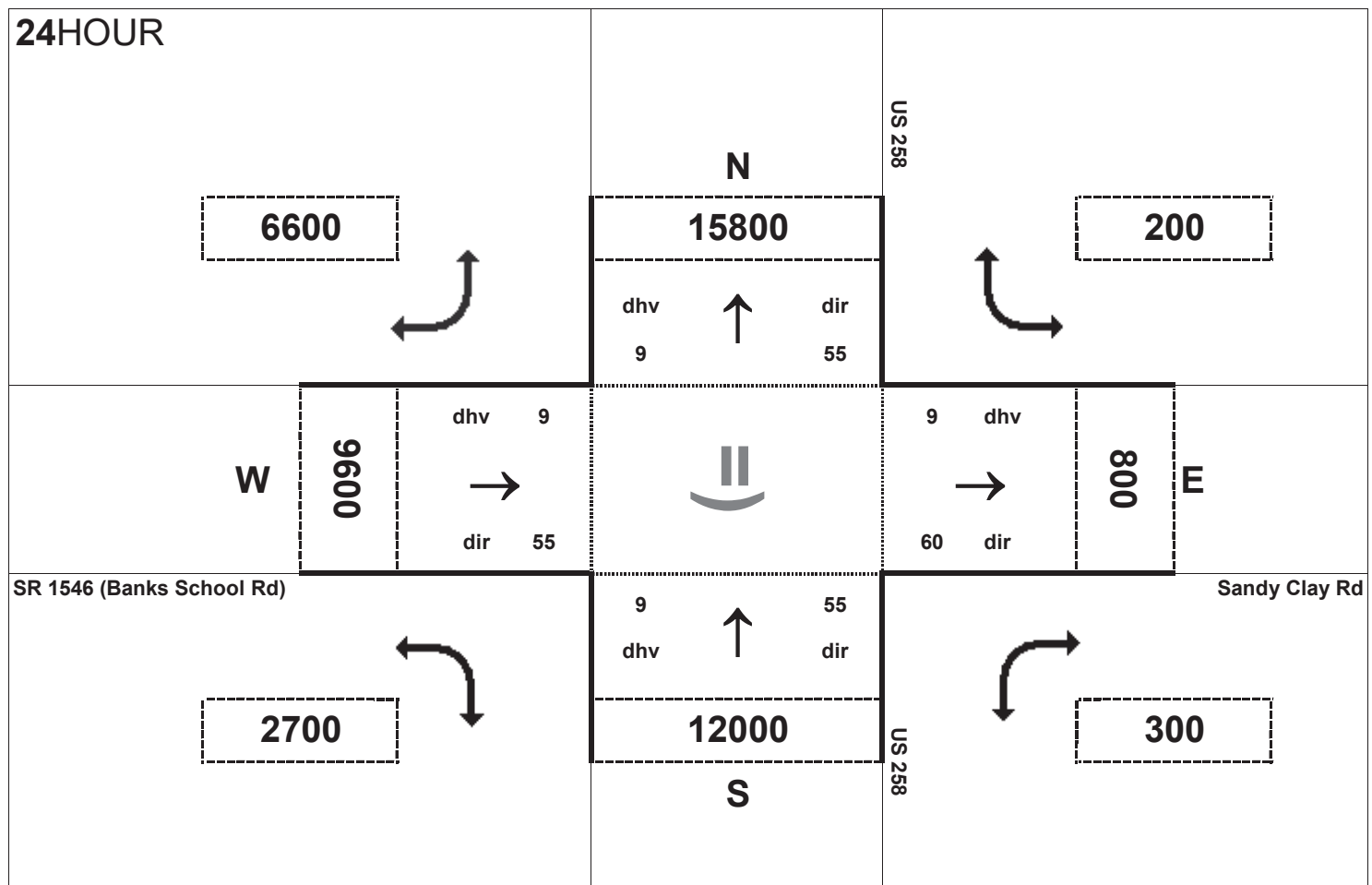
Project:
R-2553



AM peak hour inflow is 1125 vehicles. AM peak hour outflow is 1125 vehicles.



PM peak hour inflow is 1125 vehicles. PM peak hour outflow is 1125 vehicles.

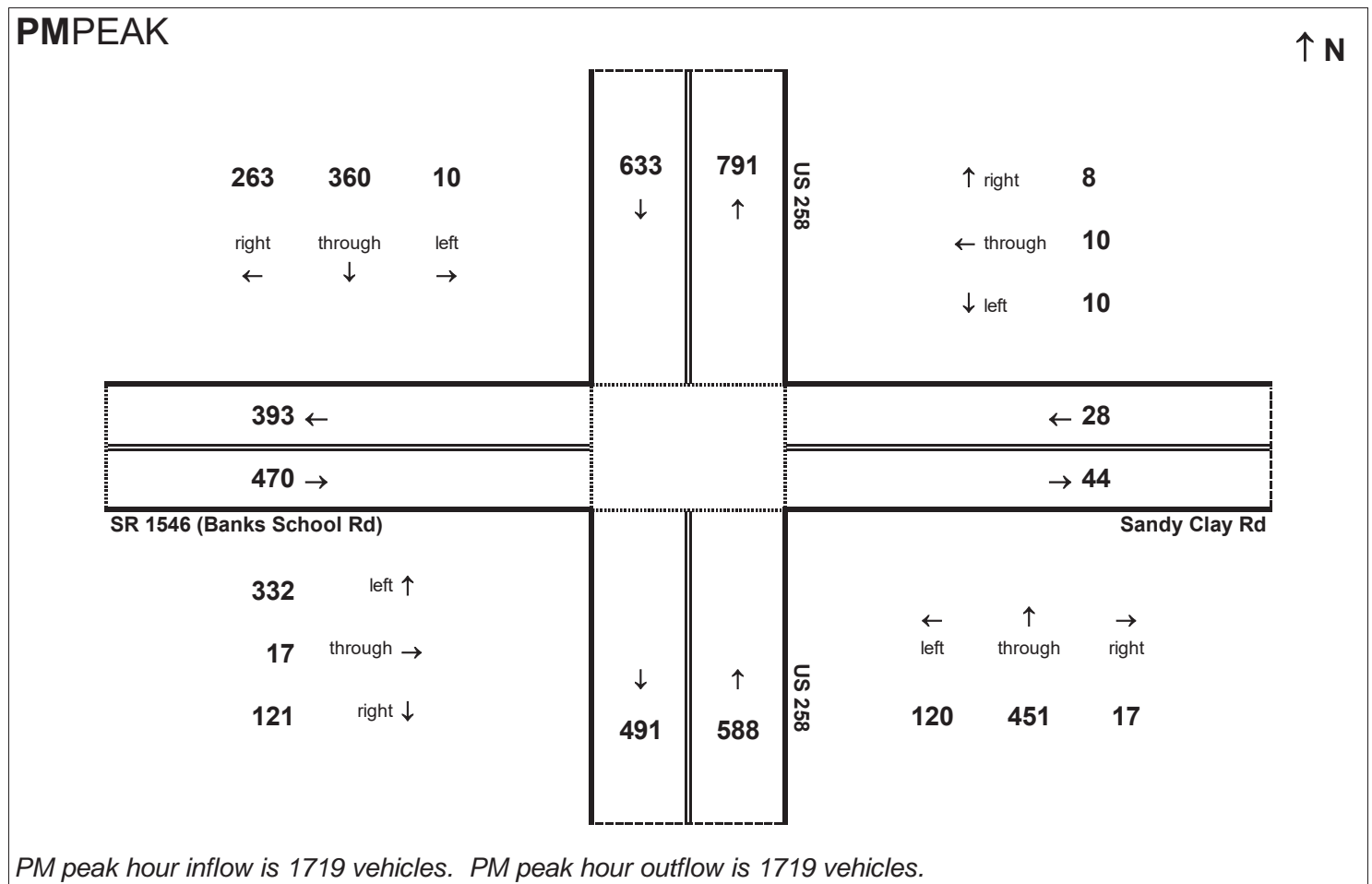
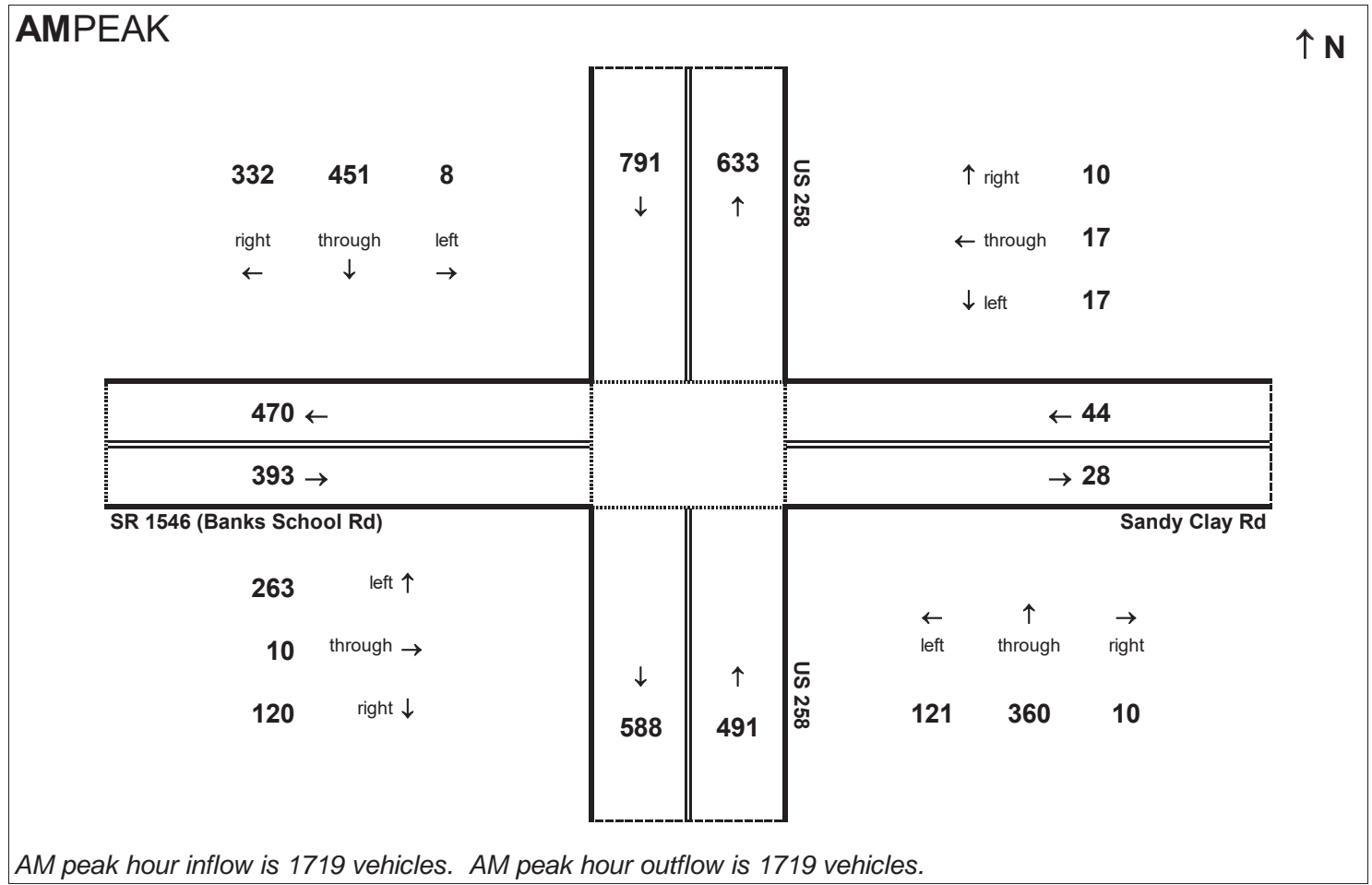


Peak Hour Volume Breakouts Report:
 427 Intersection of US 258 and SR 1546 (Banks School Rd) / Sandy Clay Rd

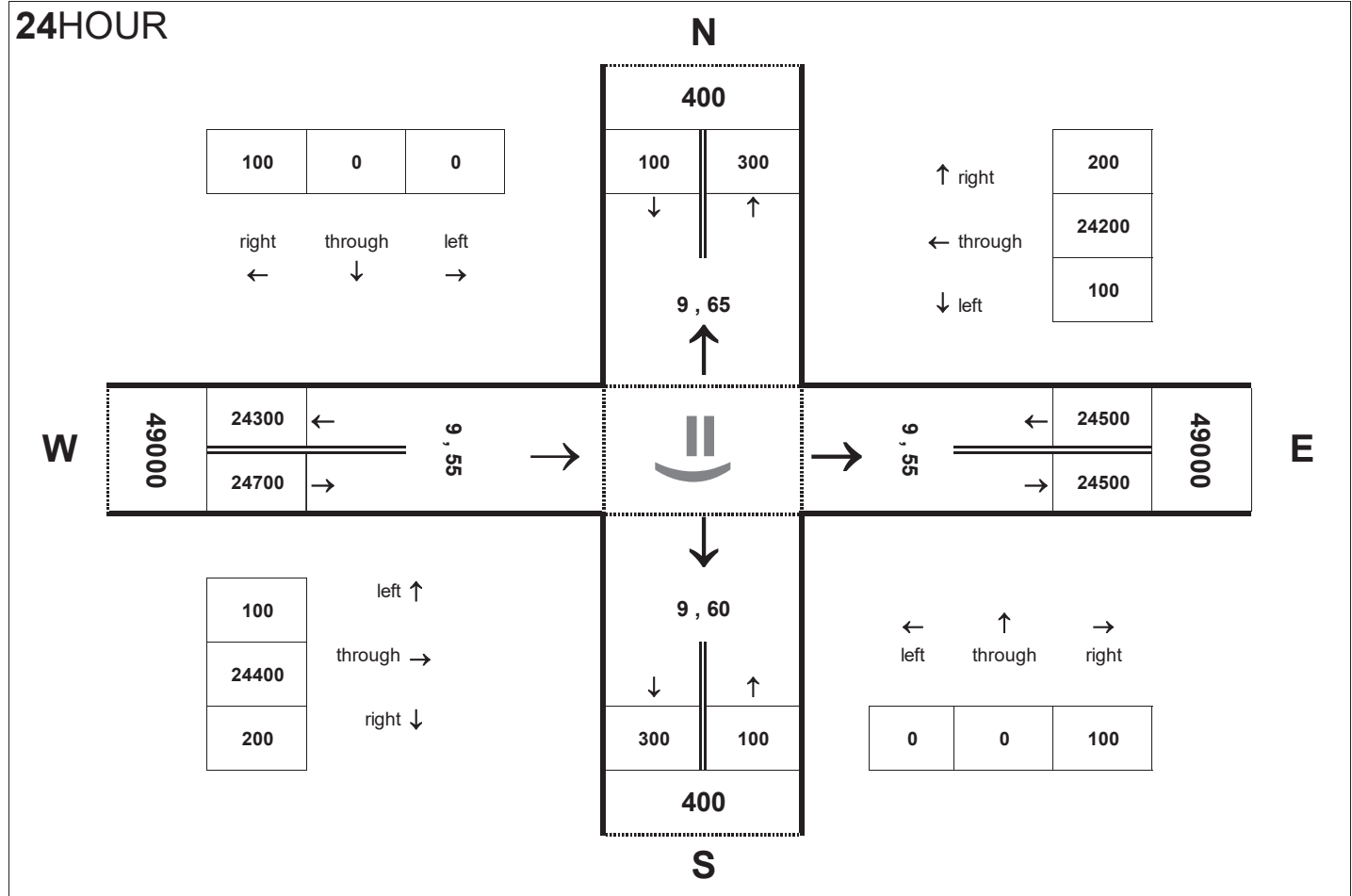
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



24HOUR



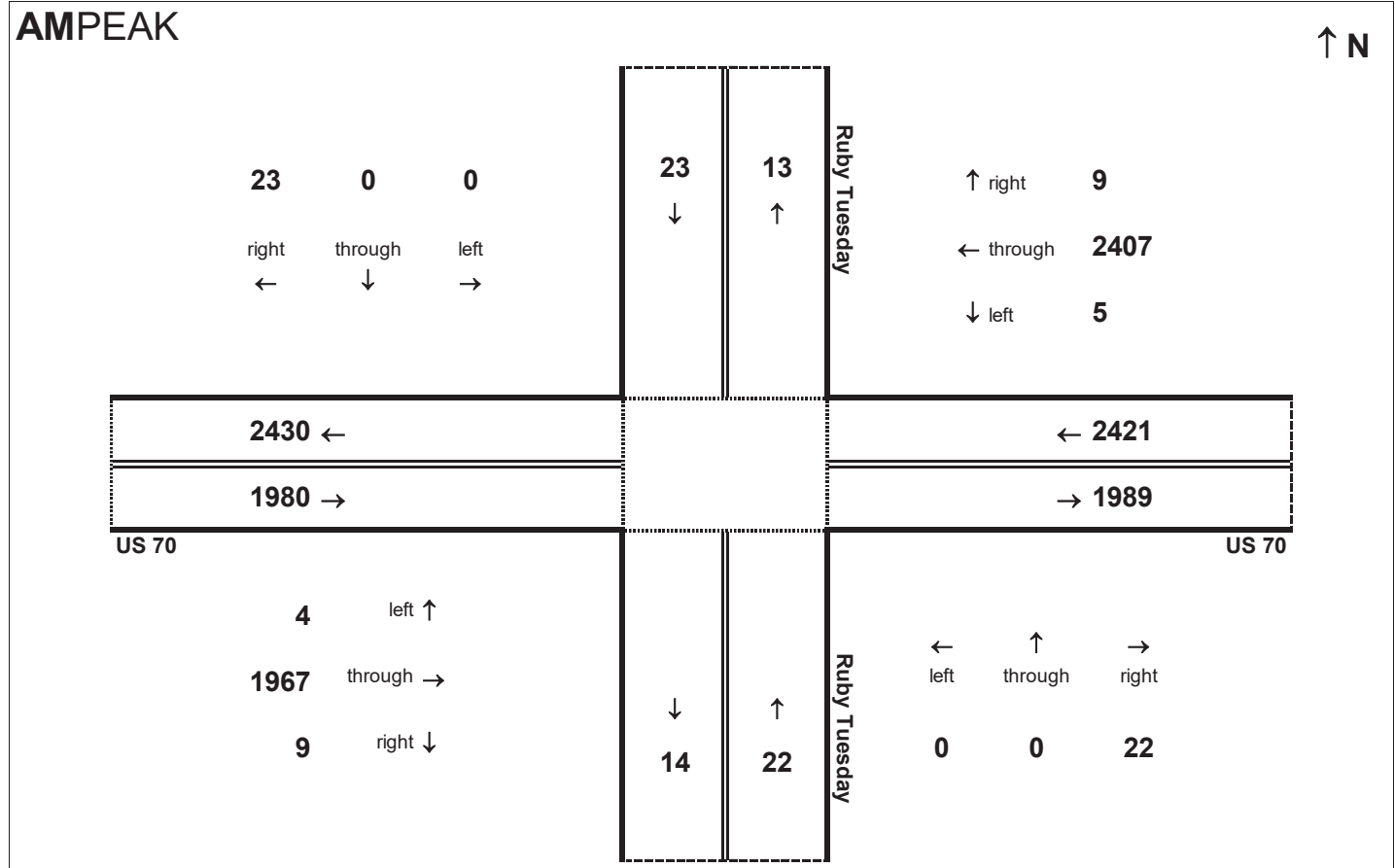
Peak Hour Volume Breakouts Report:
428 Intersection of US 70 and Ruby Tuesday

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

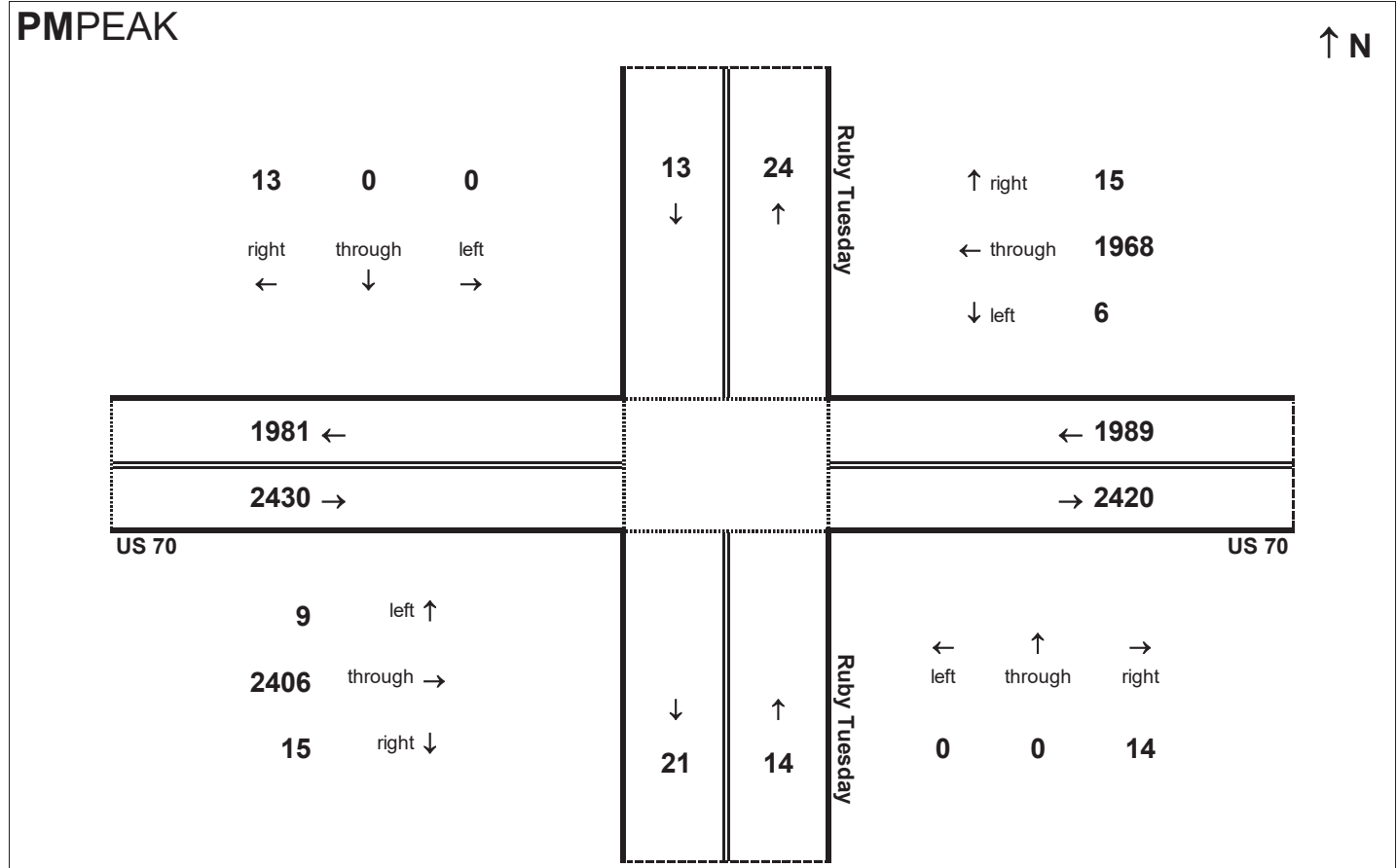
Project:
R-2553

AMPEAK

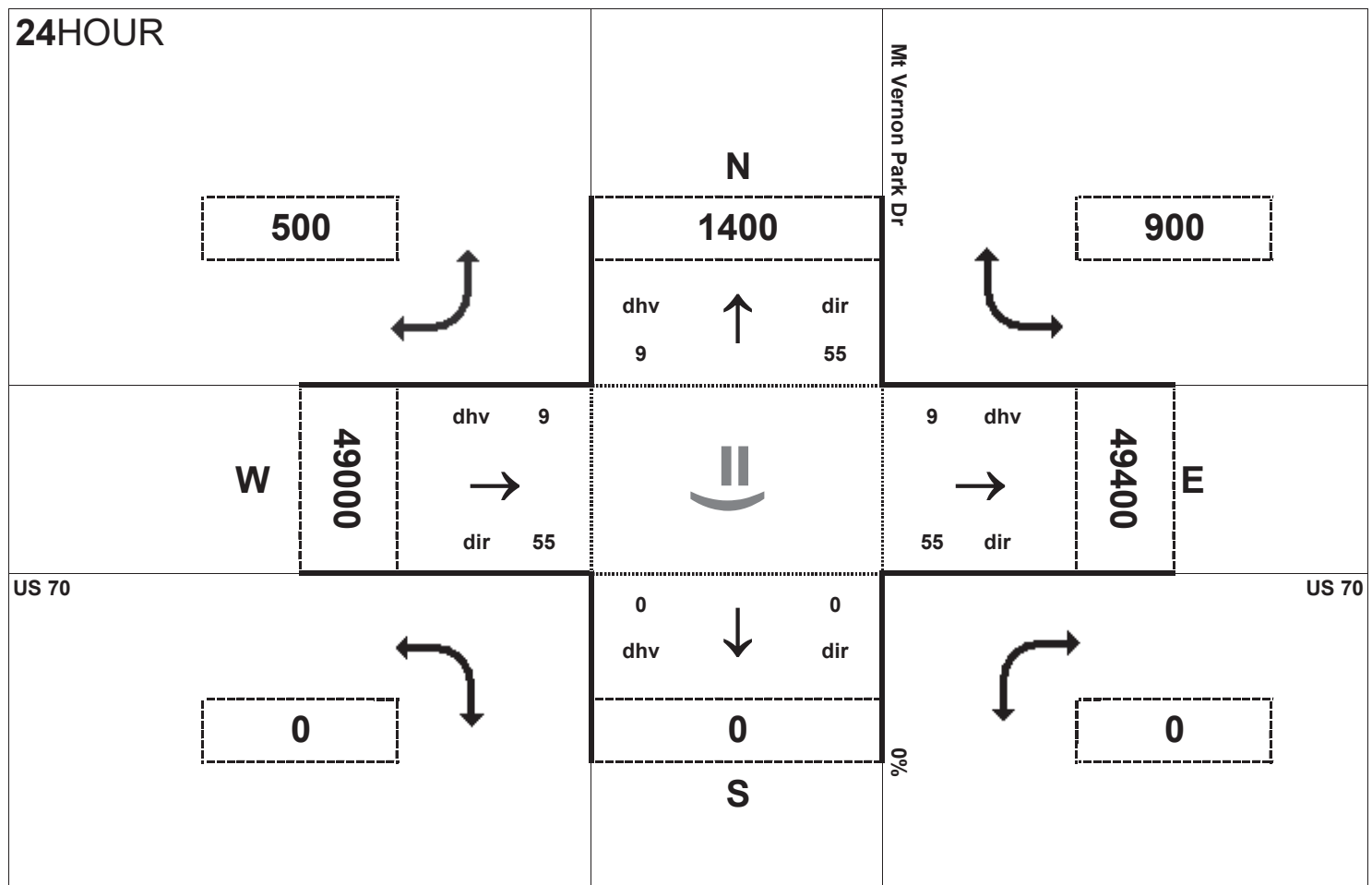


AM peak hour inflow is 4446 vehicles. AM peak hour outflow is 4446 vehicles.

PMPEAK



PM peak hour inflow is 4446 vehicles. PM peak hour outflow is 4446 vehicles.

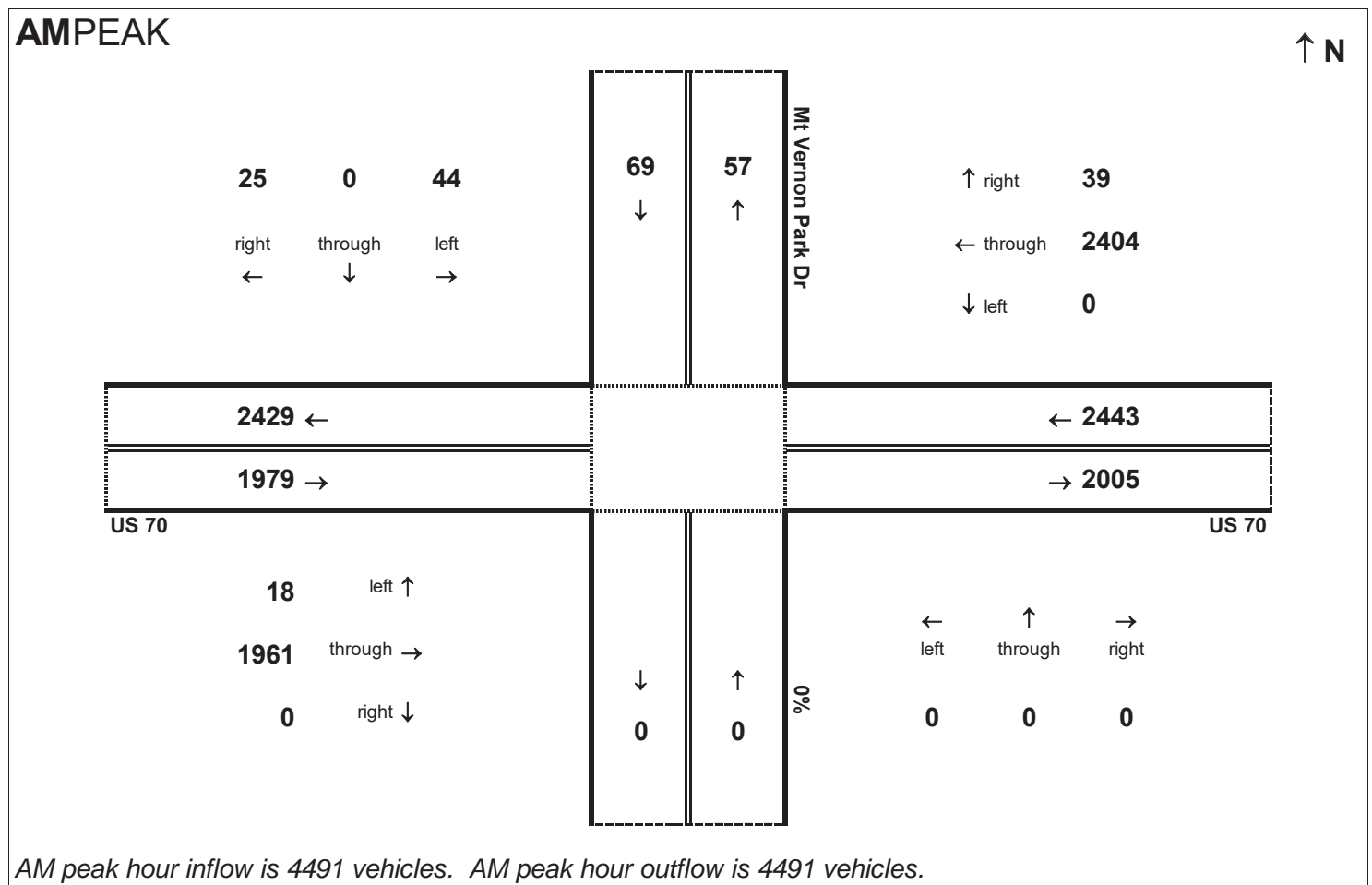


Peak Hour Volume Breakouts Report:
429 Intersection of US 70 and Mt Vernon Park Dr

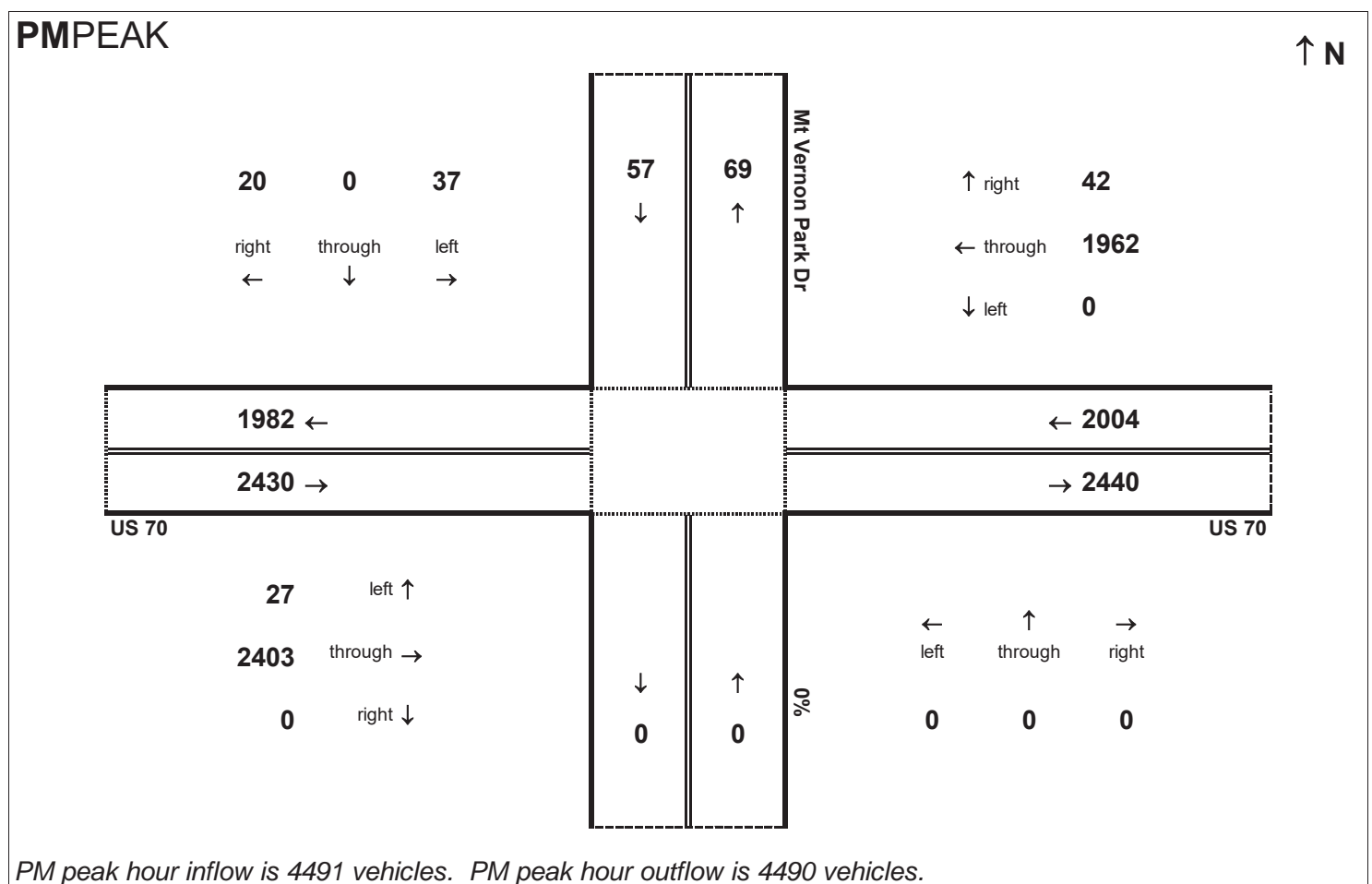
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

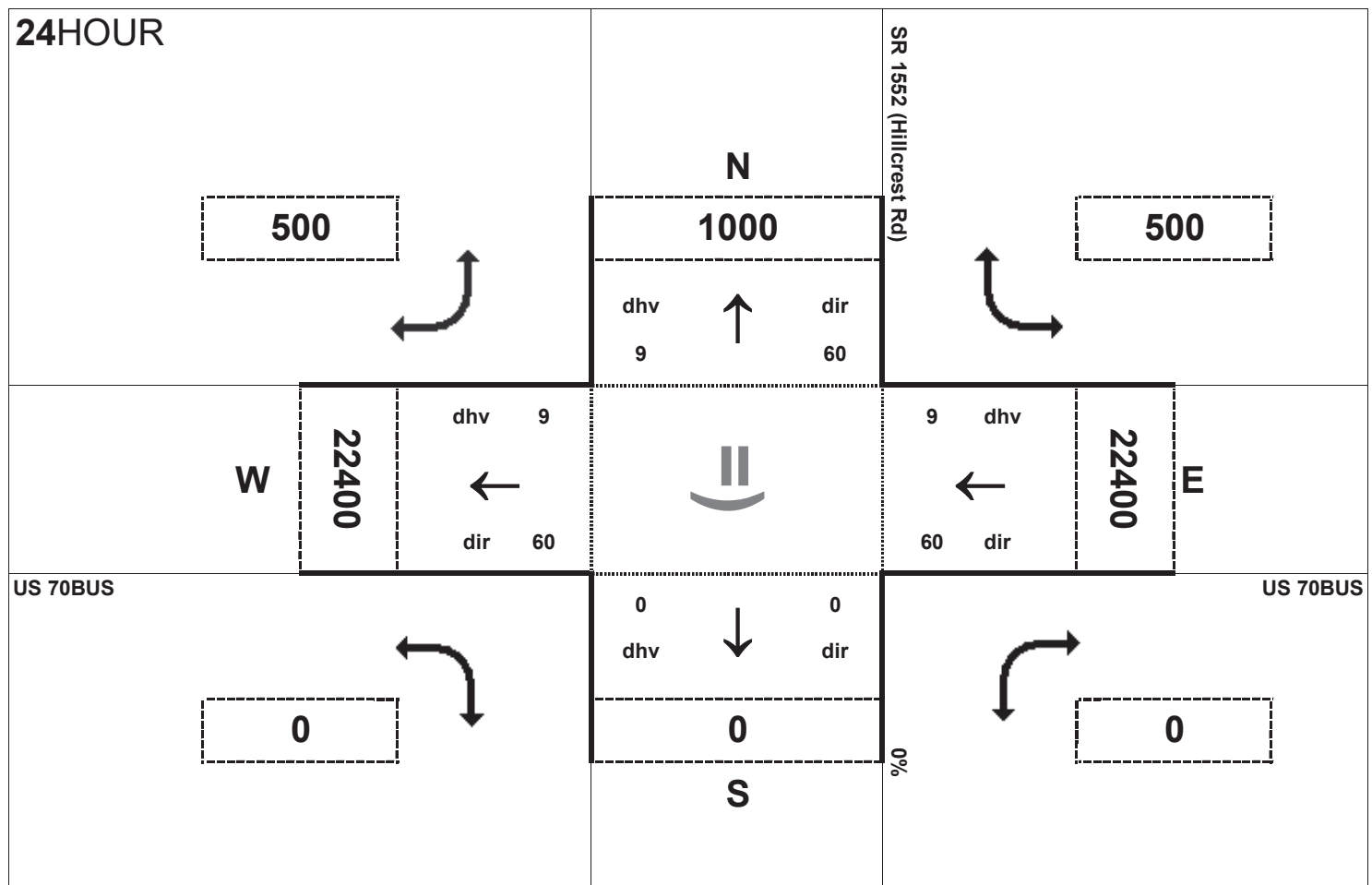
Project:
R-2553



AM peak hour inflow is 4491 vehicles. AM peak hour outflow is 4491 vehicles.



PM peak hour inflow is 4491 vehicles. PM peak hour outflow is 4490 vehicles.

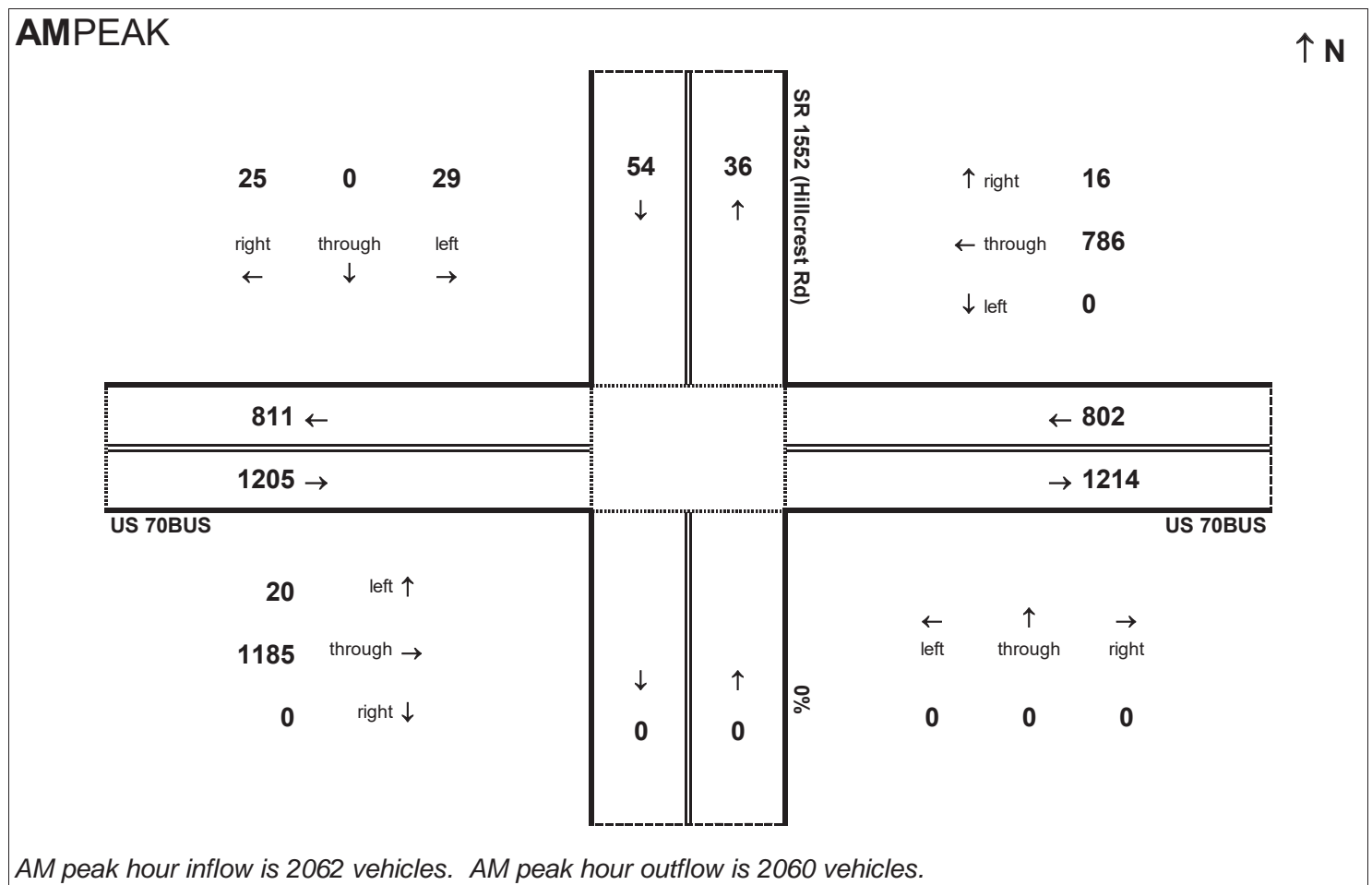


Peak Hour Volume Breakouts Report:
 430 Intersection of US 70BUS and SR 1552
 (Hillcrest Rd)

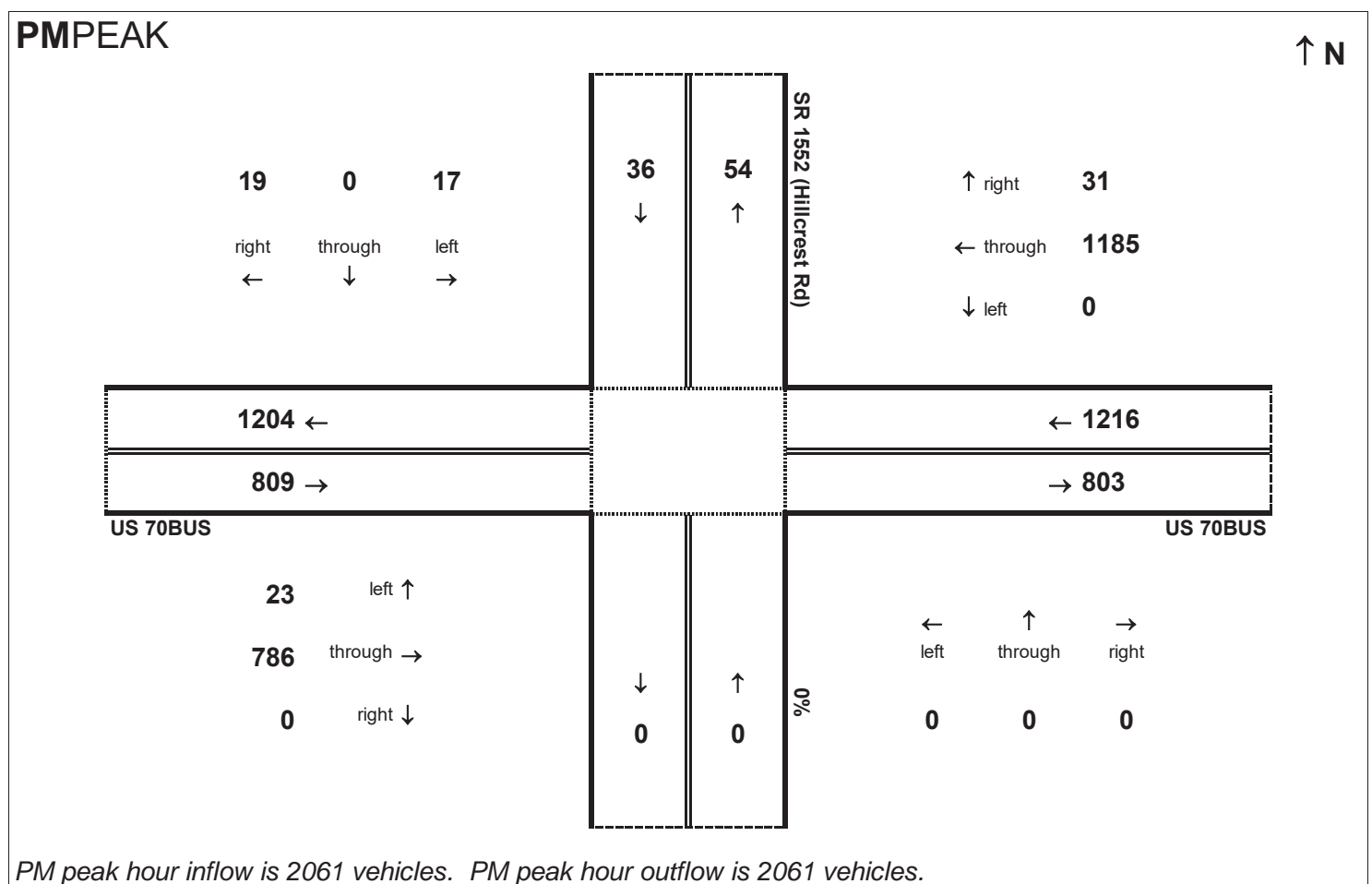
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

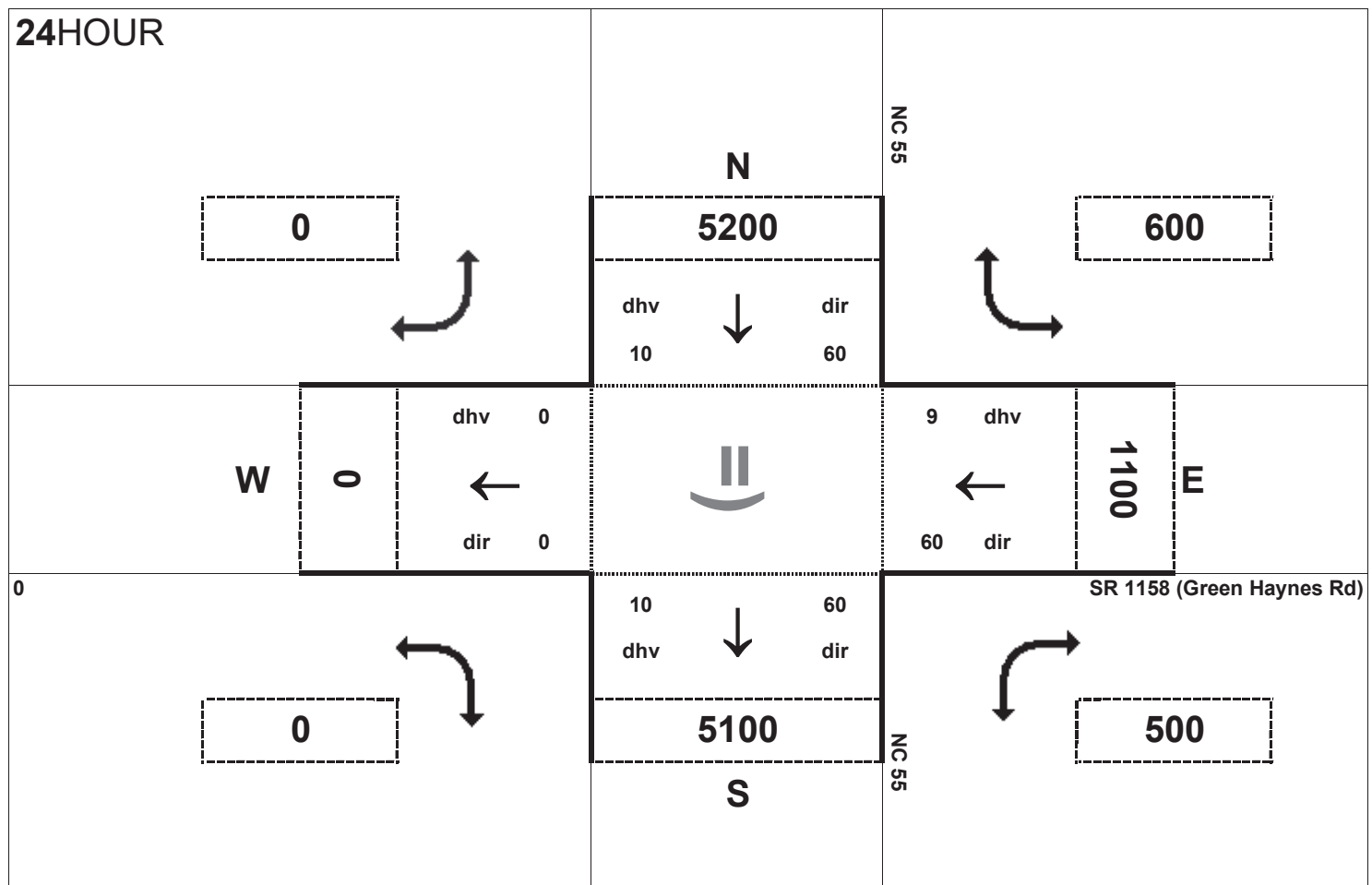
Project:
 R-2553



AM peak hour inflow is 2062 vehicles. AM peak hour outflow is 2060 vehicles.



PM peak hour inflow is 2061 vehicles. PM peak hour outflow is 2061 vehicles.

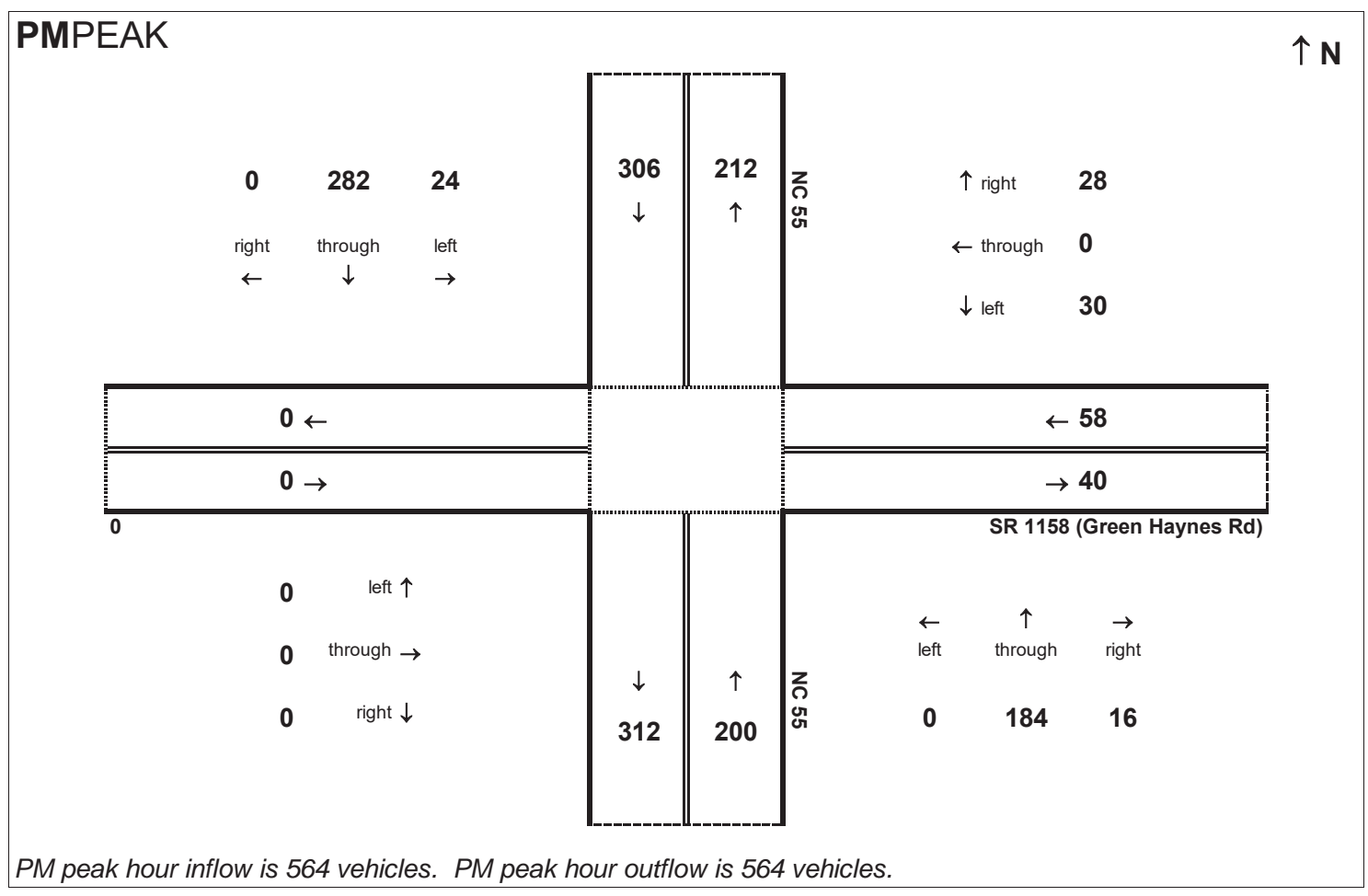
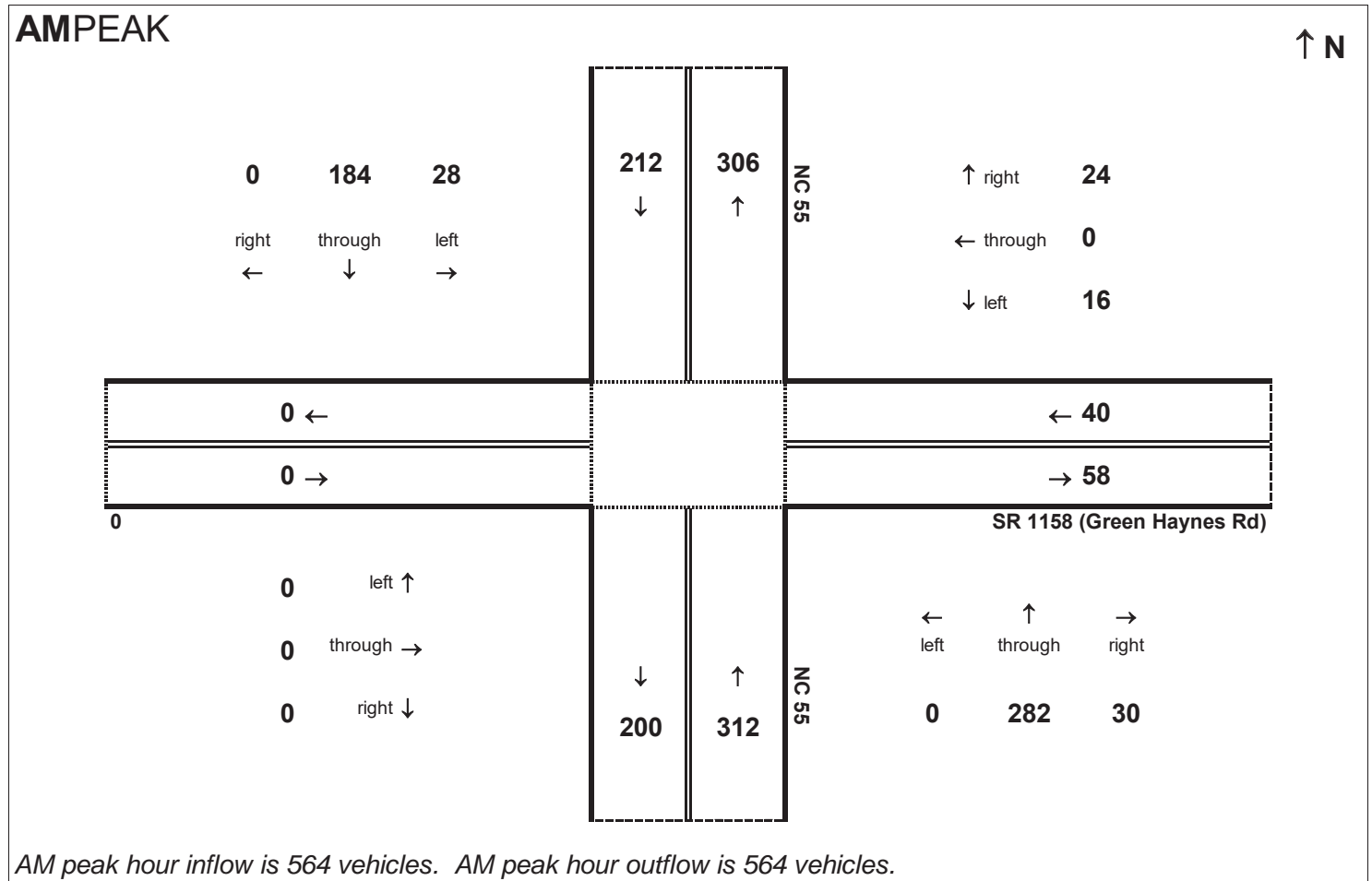


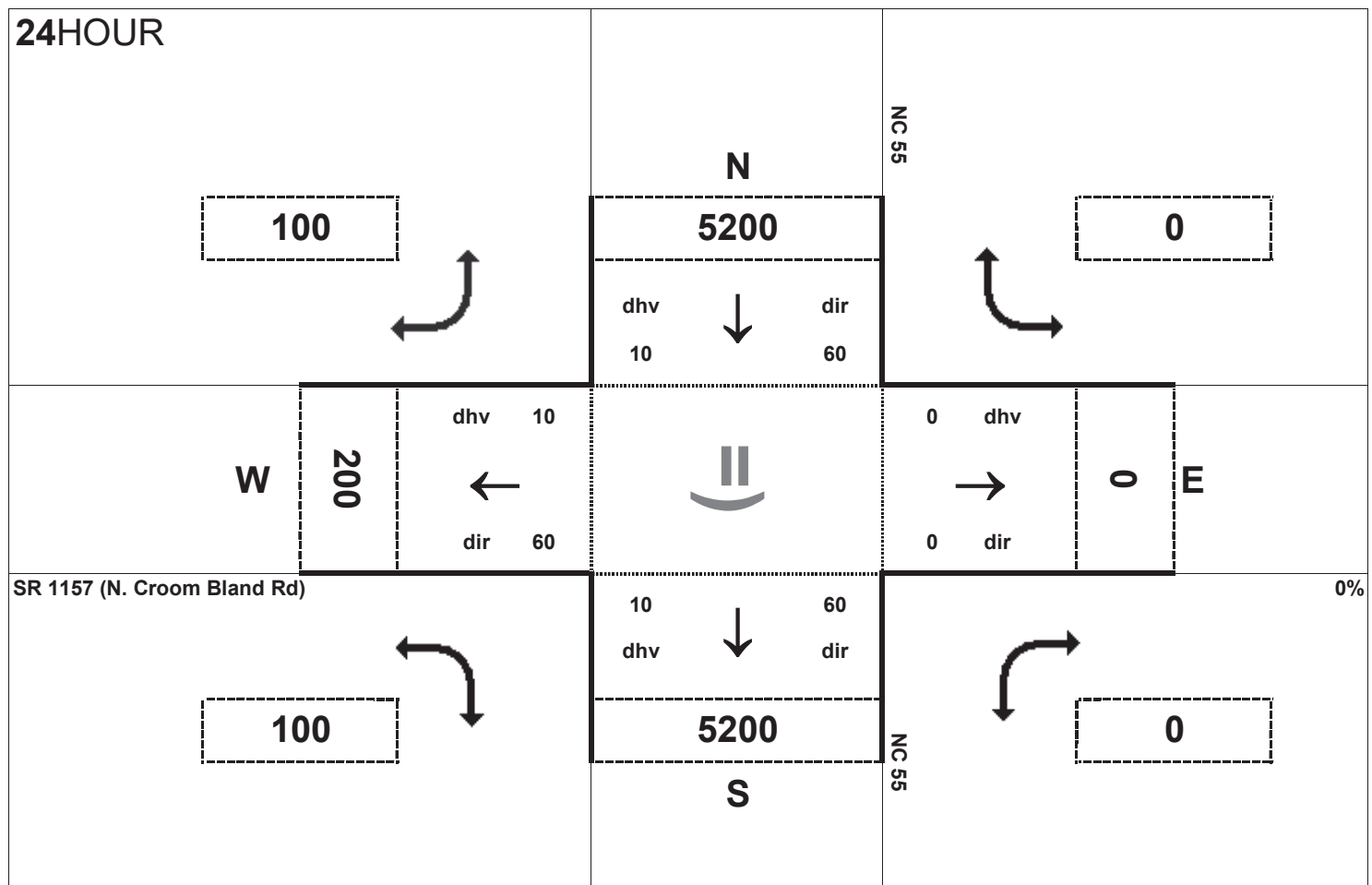
Peak Hour Volume Breakouts Report:
431 Intersection of NC 55 and SR 1161 (Green Haynes Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



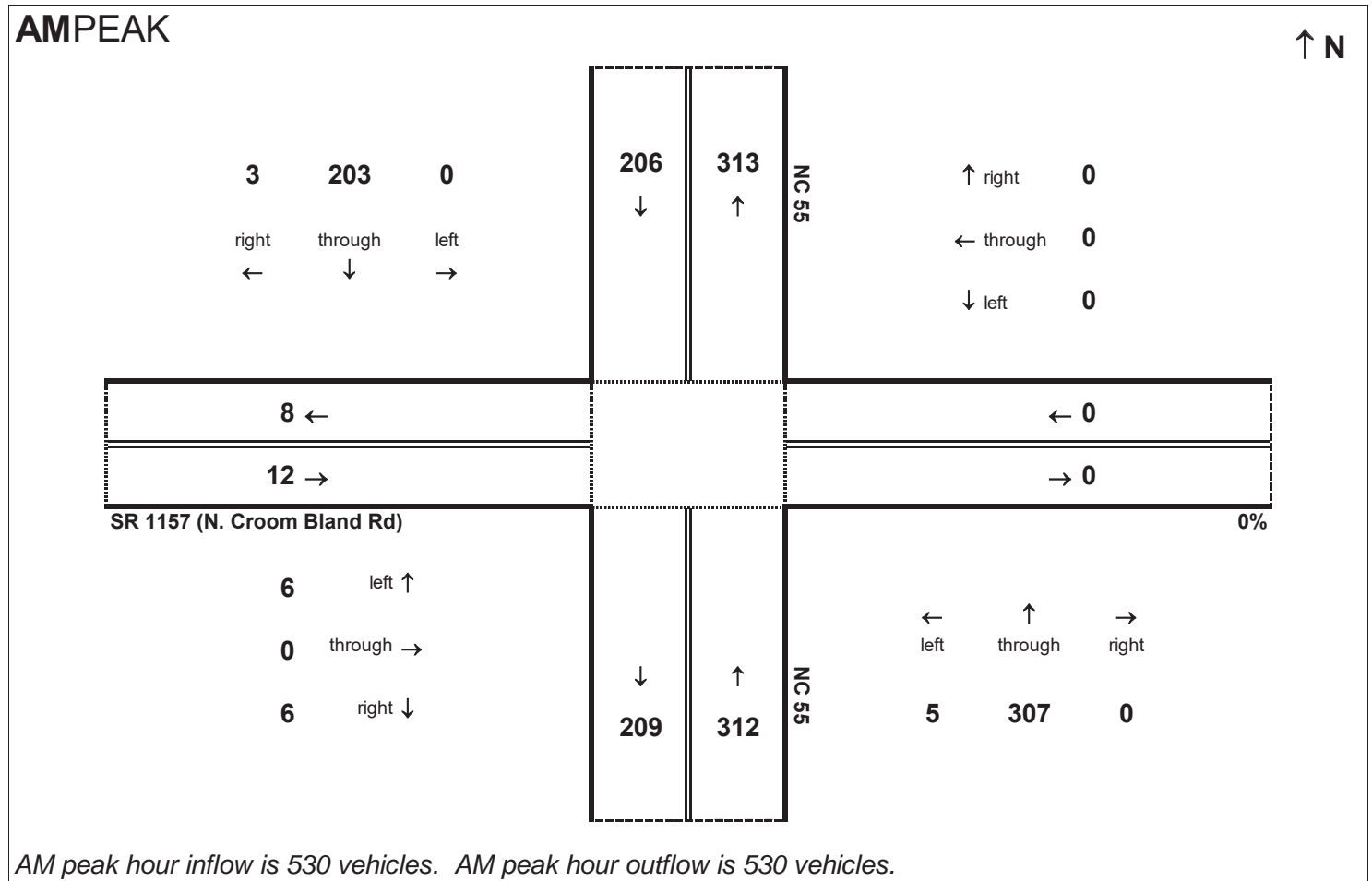


Peak Hour Volume Breakouts Report:
 432 Intersection of NC 55 and SR 1157 (N. Croom Bland Rd)

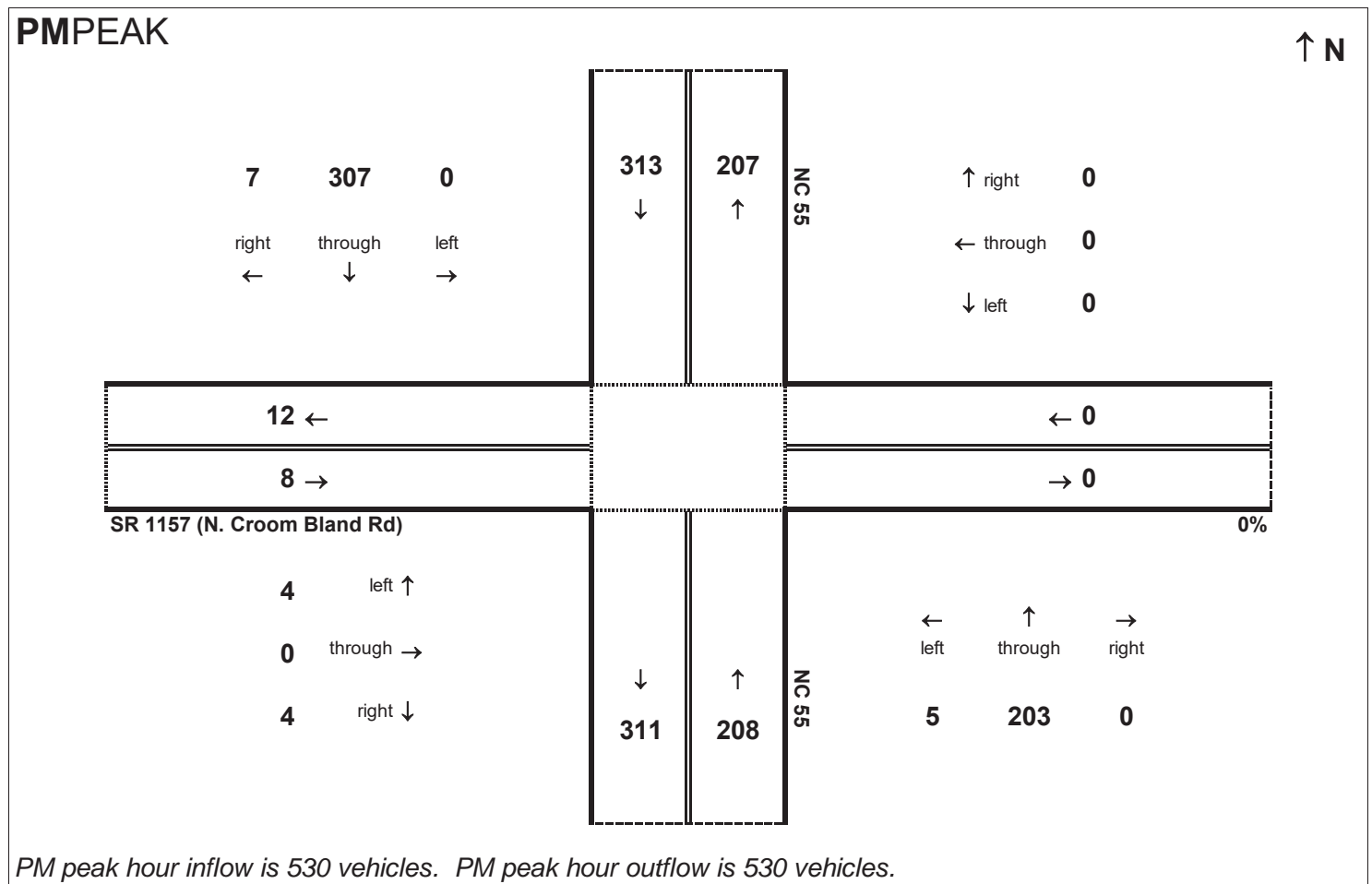
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

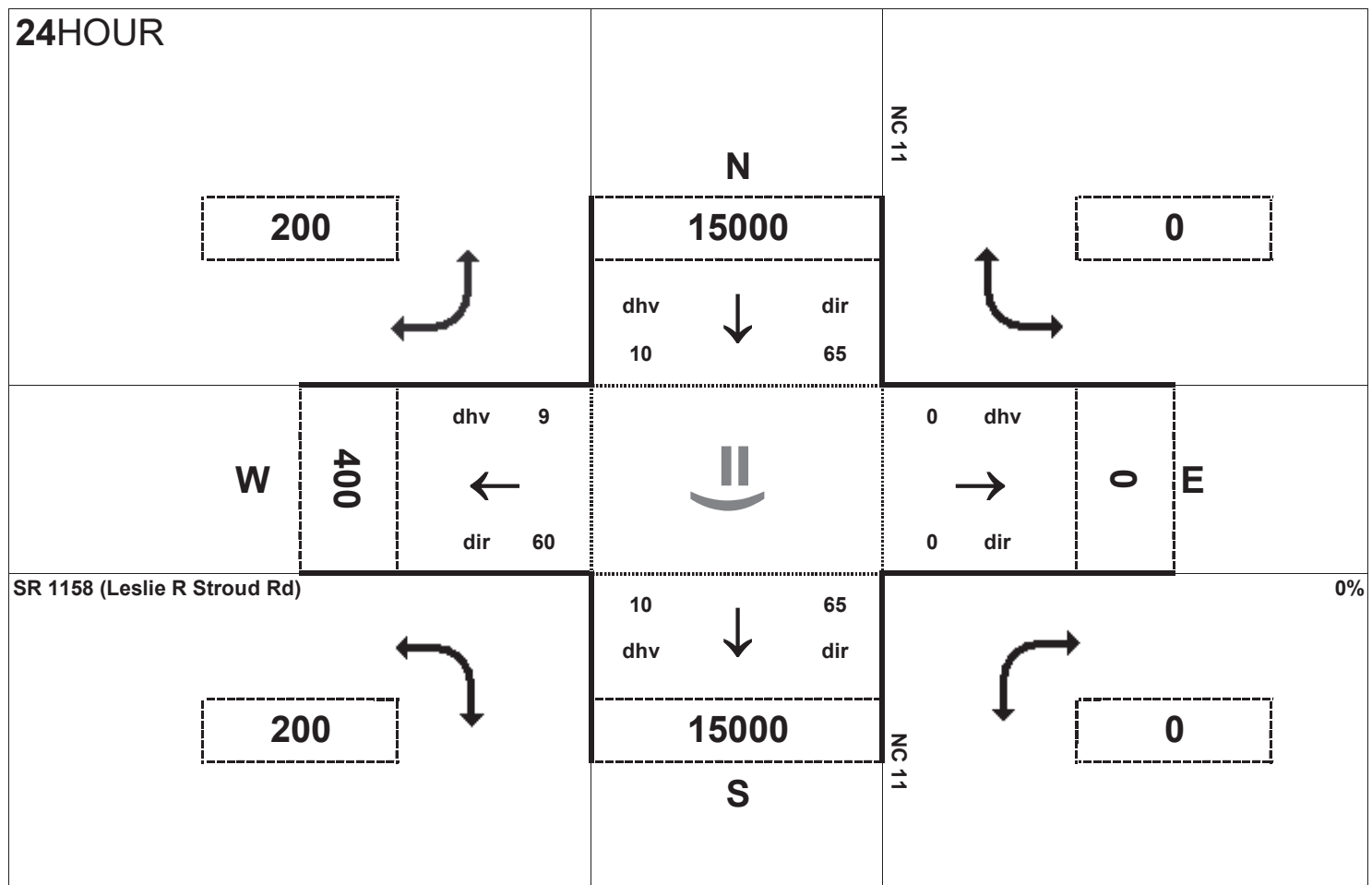
Project:
 R-2553



AM peak hour inflow is 530 vehicles. AM peak hour outflow is 530 vehicles.



PM peak hour inflow is 530 vehicles. PM peak hour outflow is 530 vehicles.

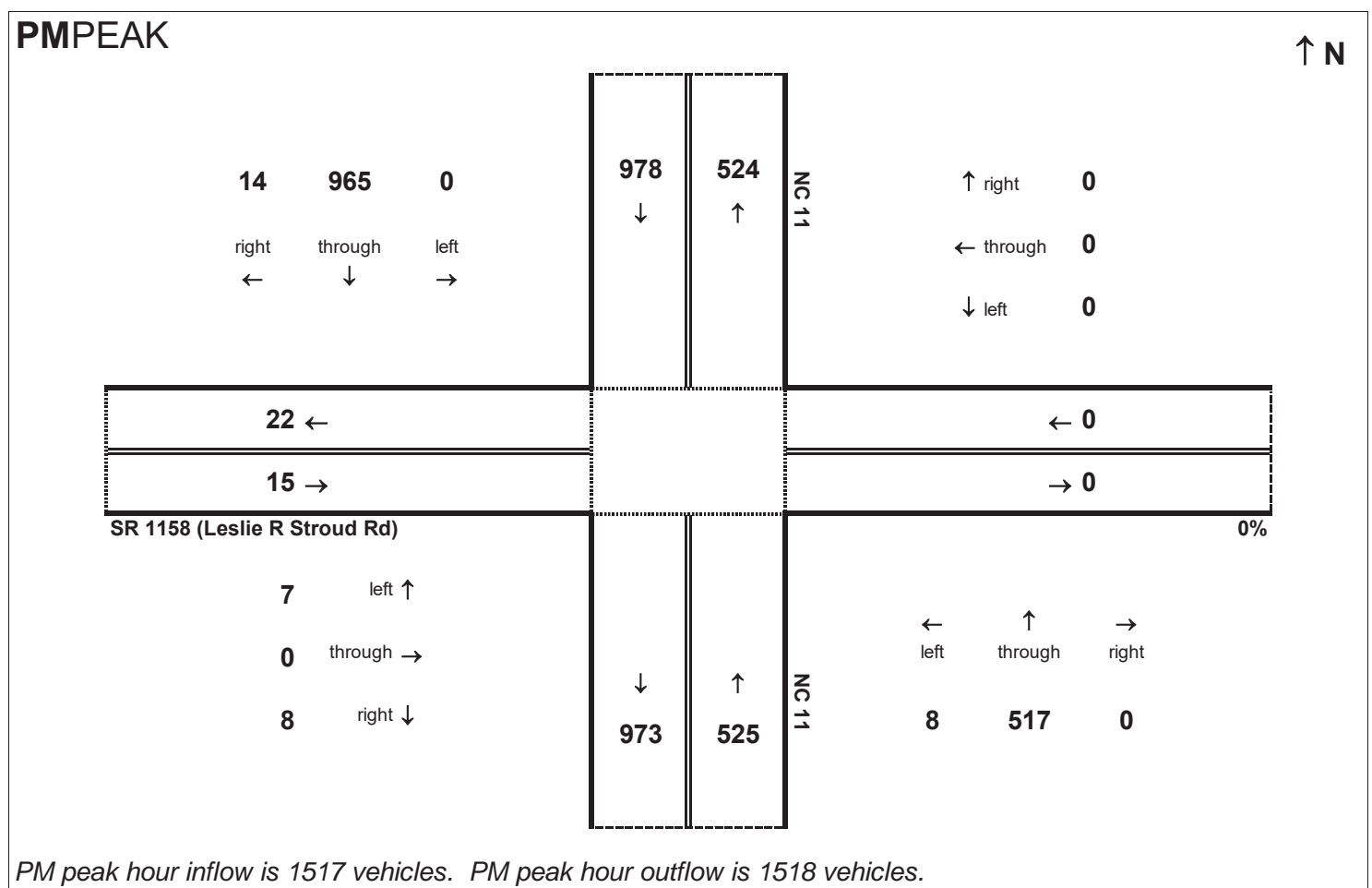
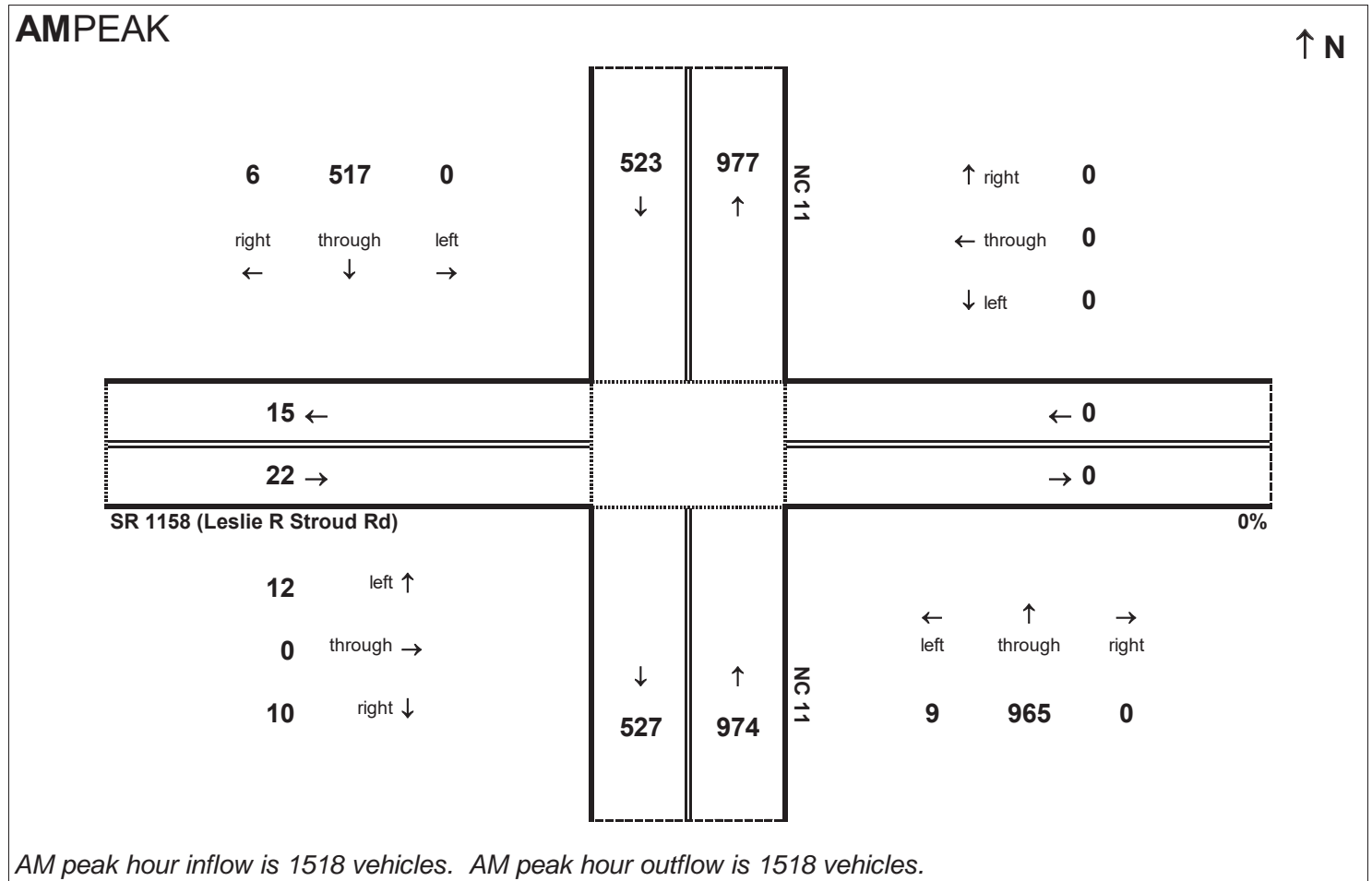


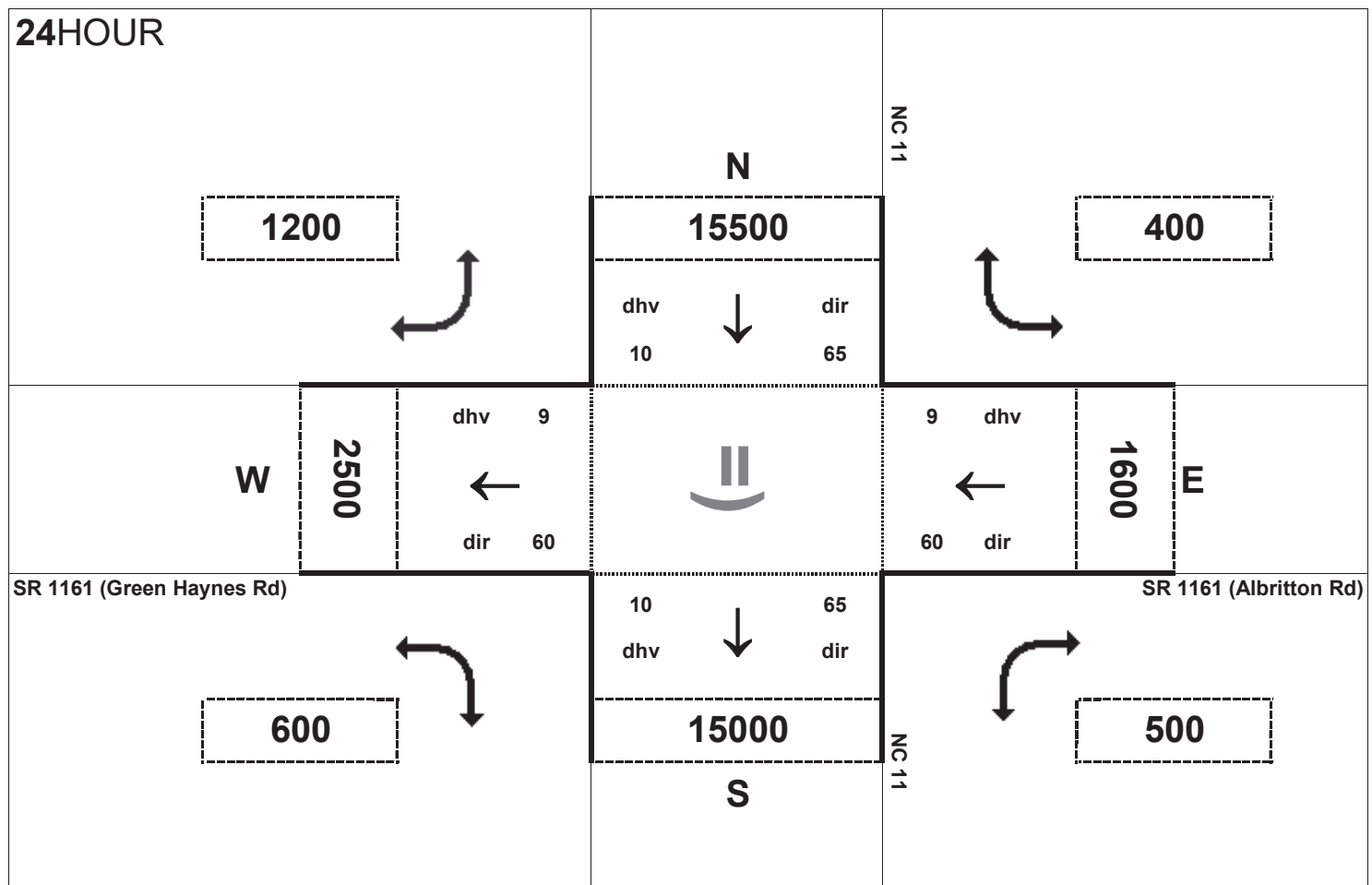
Peak Hour Volume Breakouts Report:
 433 Intersection of NC 11 and SR 1158 (Leslie R Stroud Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



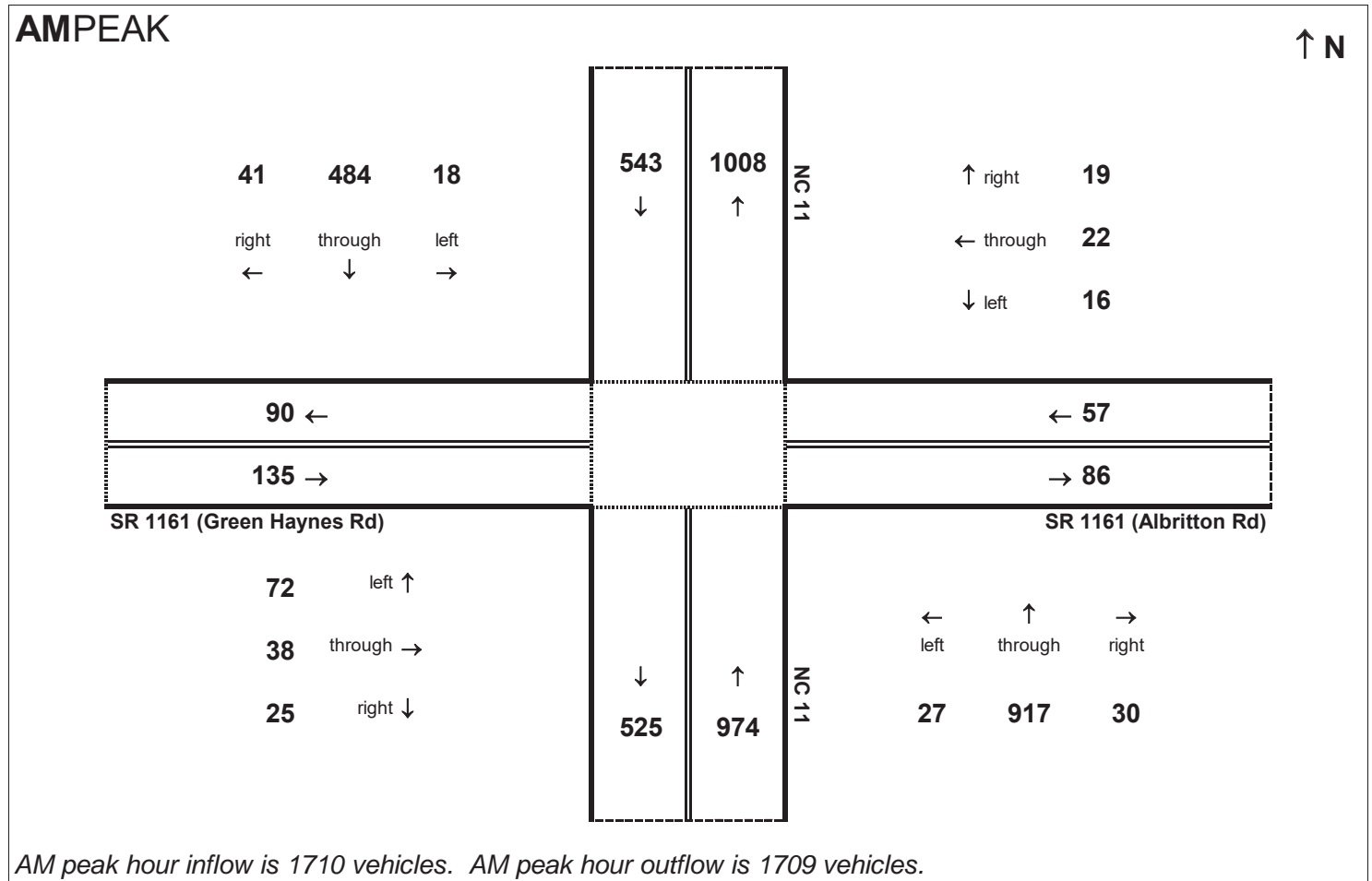


Peak Hour Volume Breakouts Report:
 434 Intersection of NC 11 at SR 1161 (Green Haynes Rd / Albritton Rd)

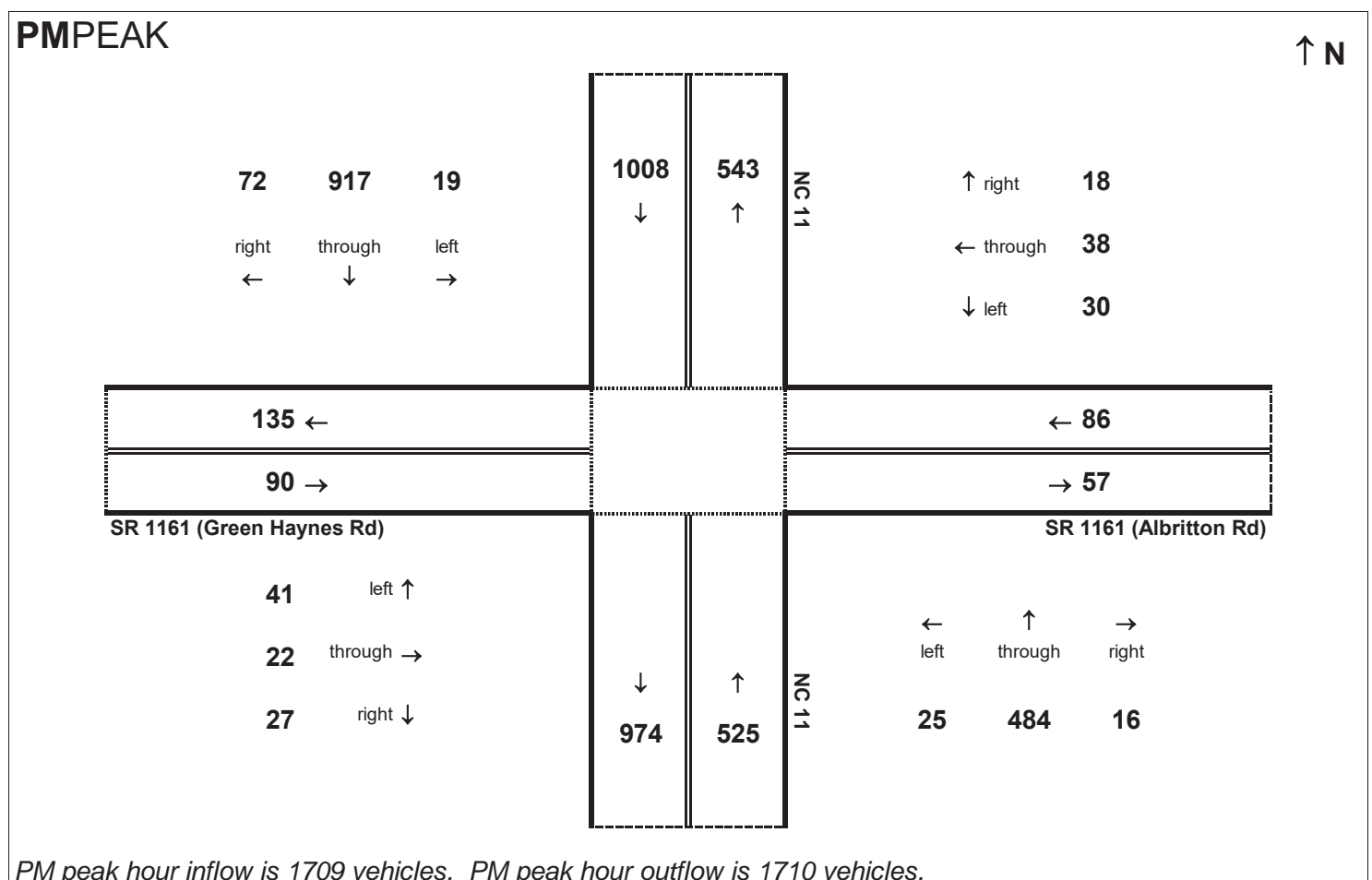
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

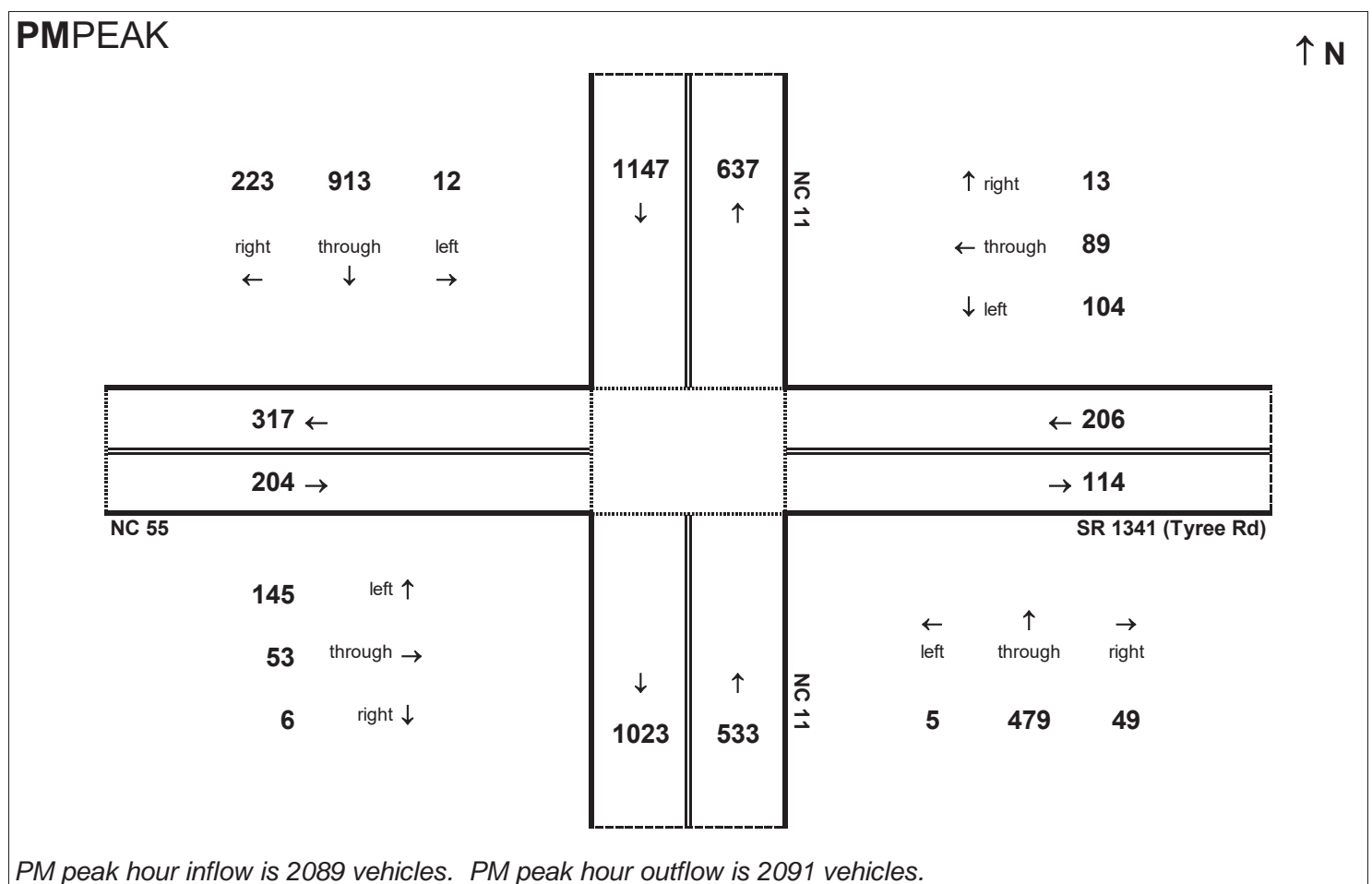
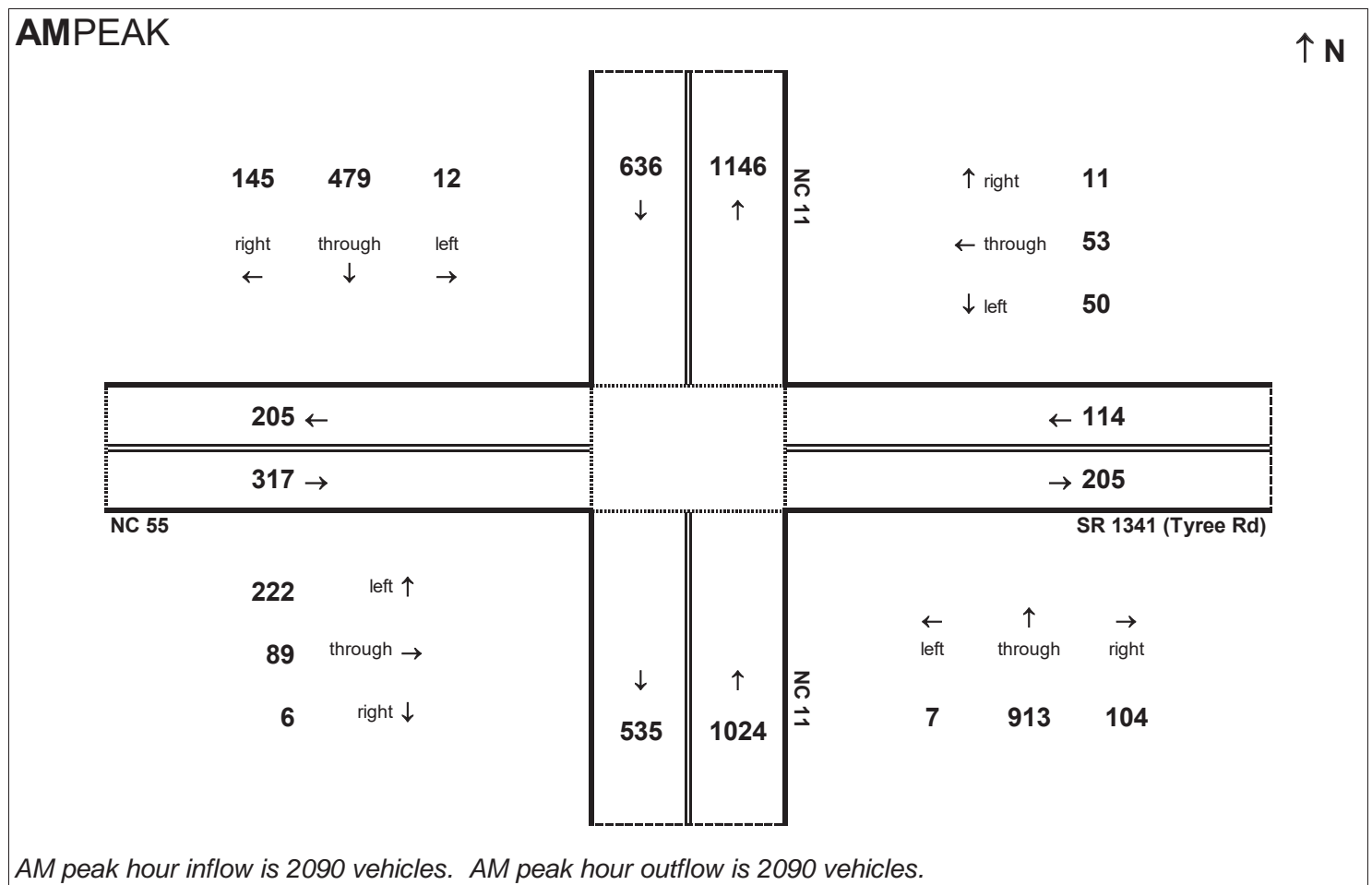
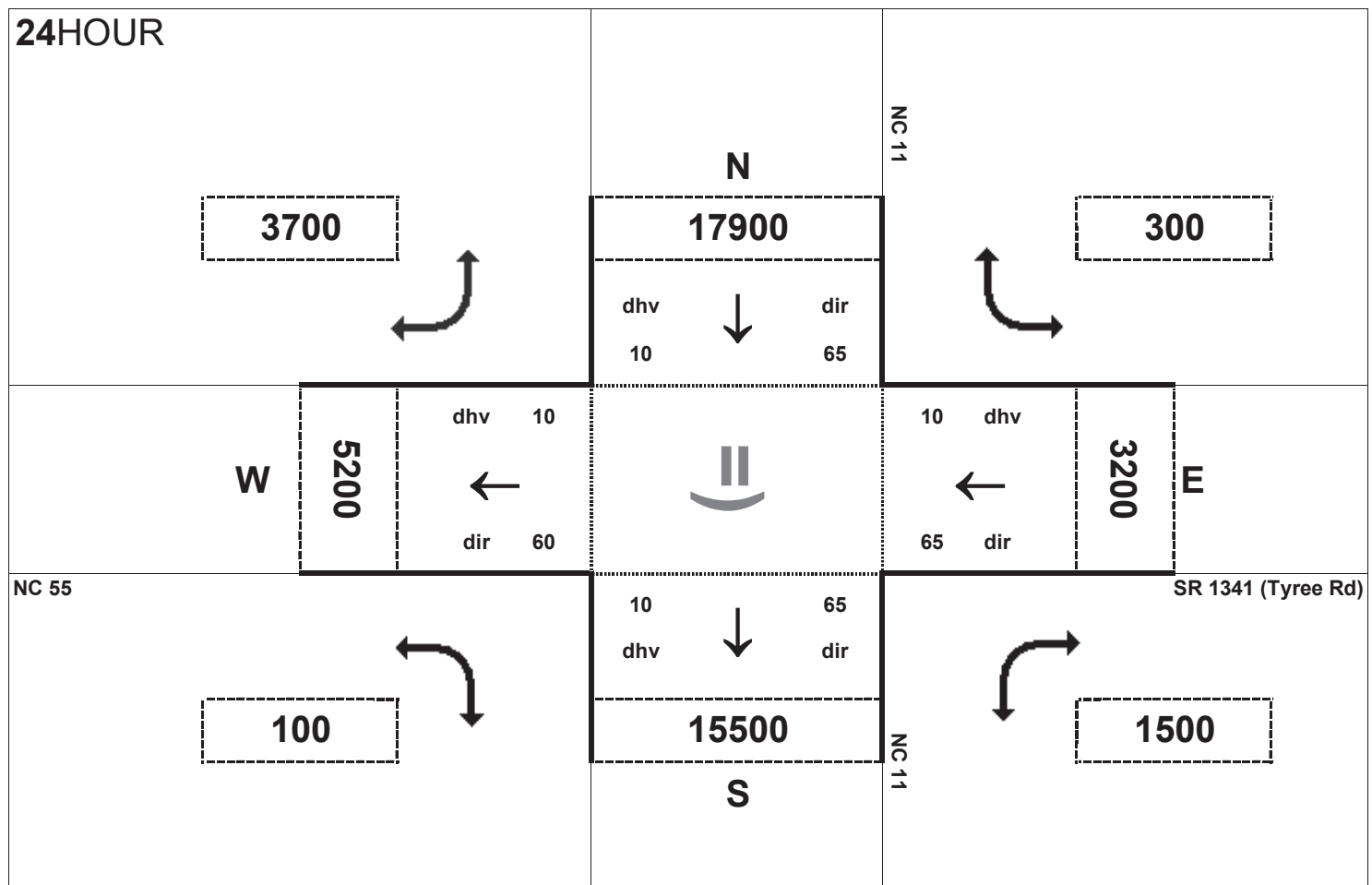
Project:
 R-2553

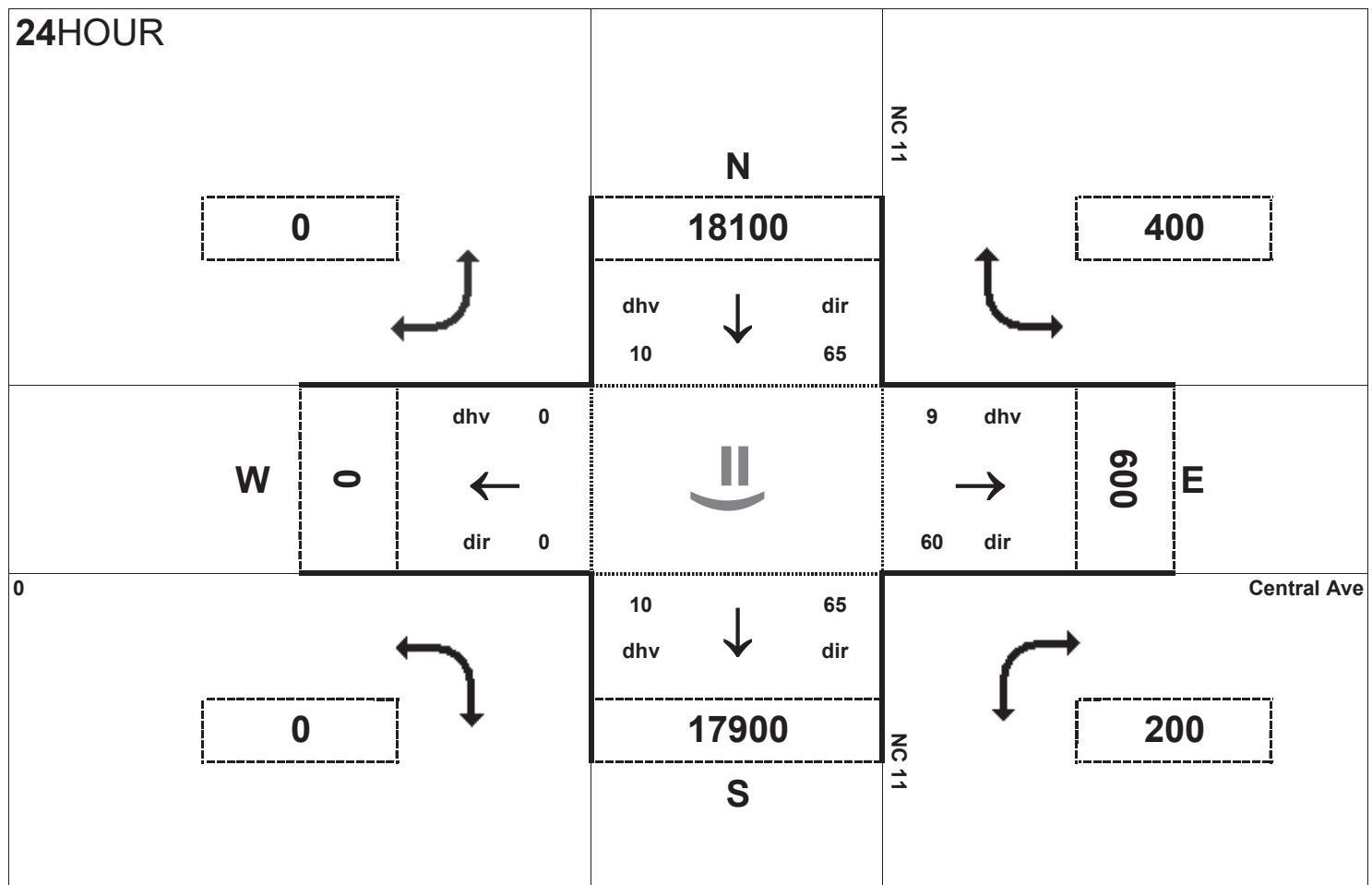


AM peak hour inflow is 1710 vehicles. AM peak hour outflow is 1709 vehicles.



PM peak hour inflow is 1709 vehicles. PM peak hour outflow is 1710 vehicles.



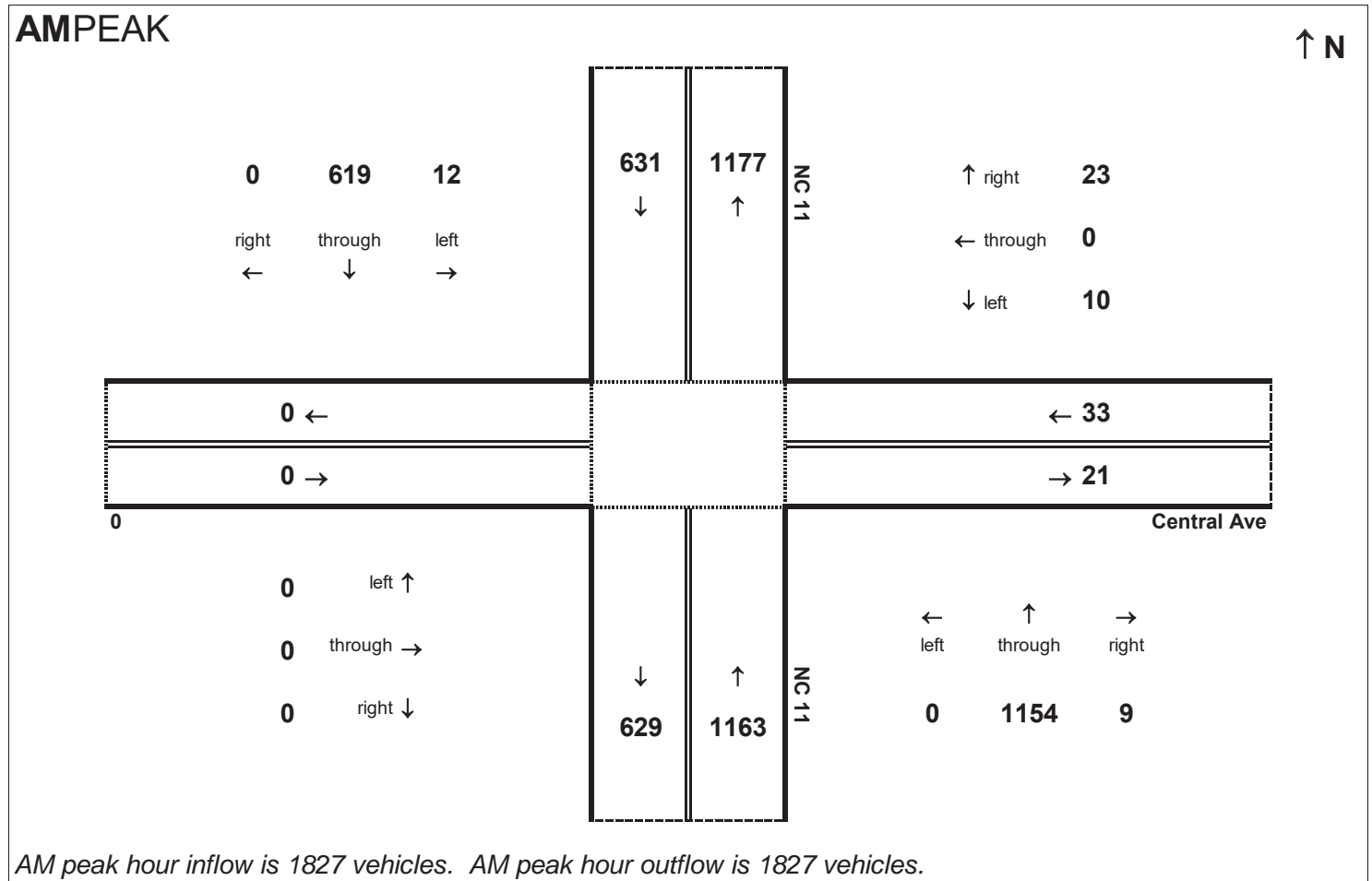


Peak Hour Volume Breakouts Report:
436 Intersection of NC 11 at Central Ave

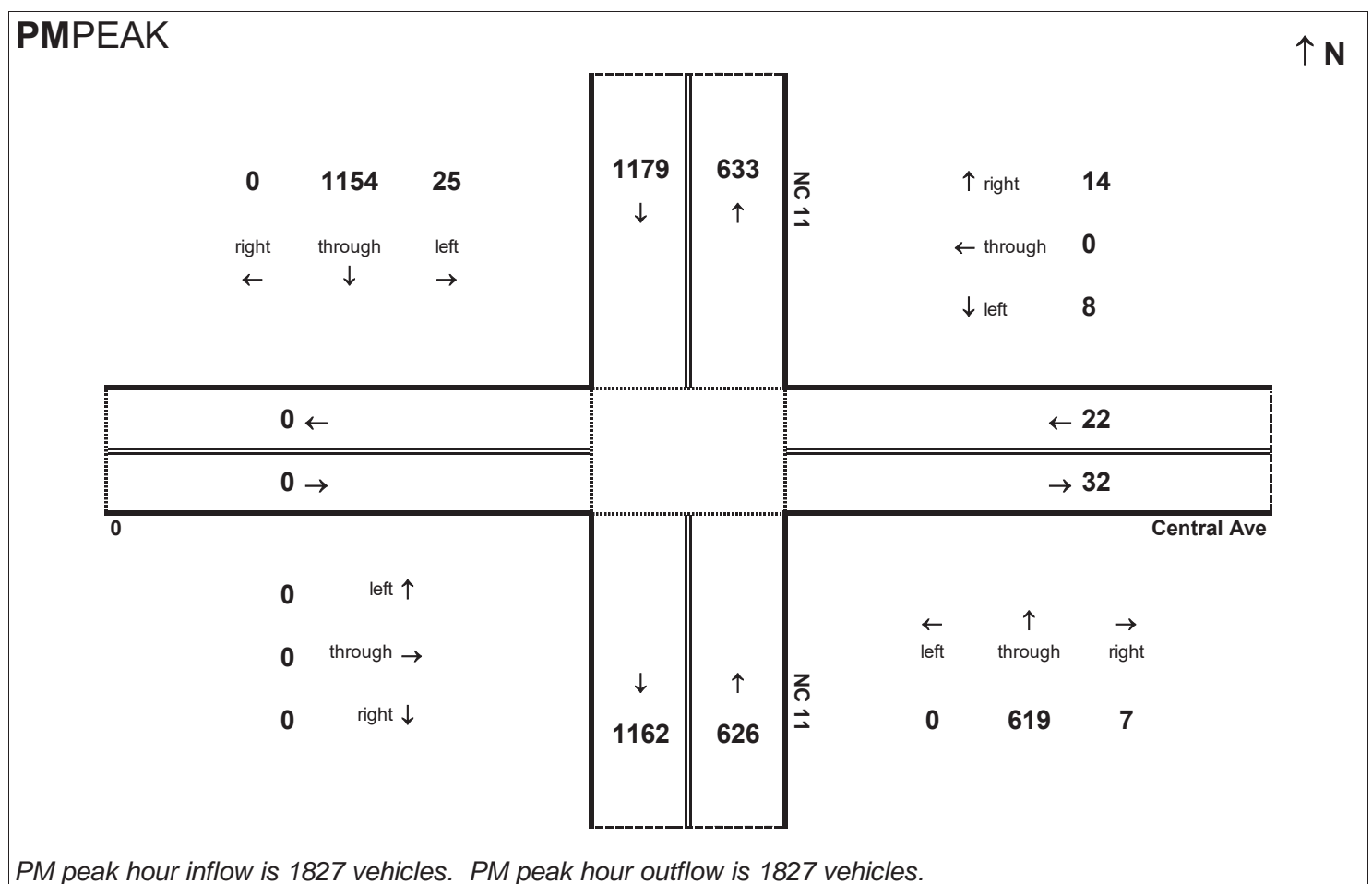
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

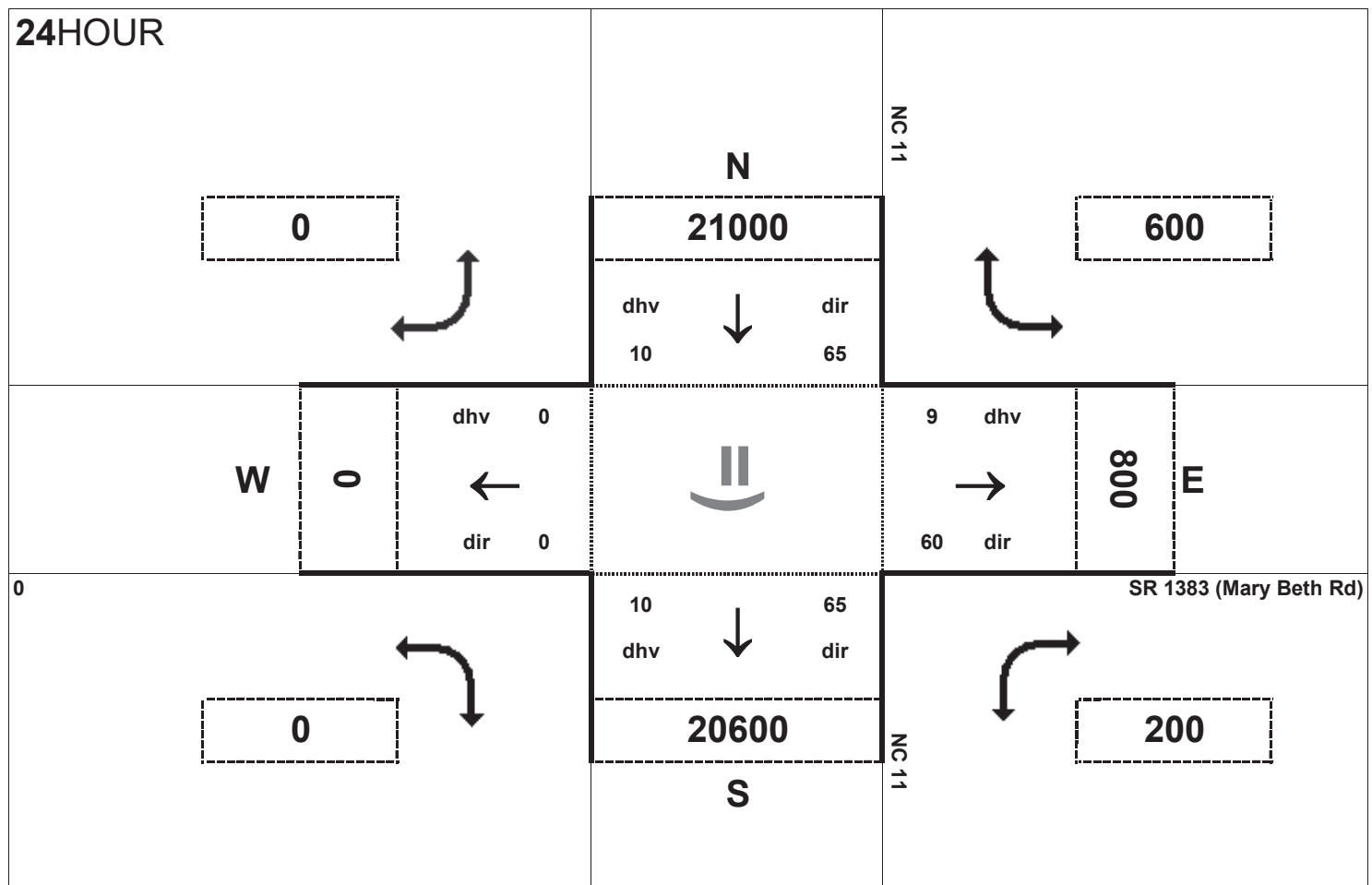
Project:
R-2553



AM peak hour inflow is 1827 vehicles. AM peak hour outflow is 1827 vehicles.



PM peak hour inflow is 1827 vehicles. PM peak hour outflow is 1827 vehicles.

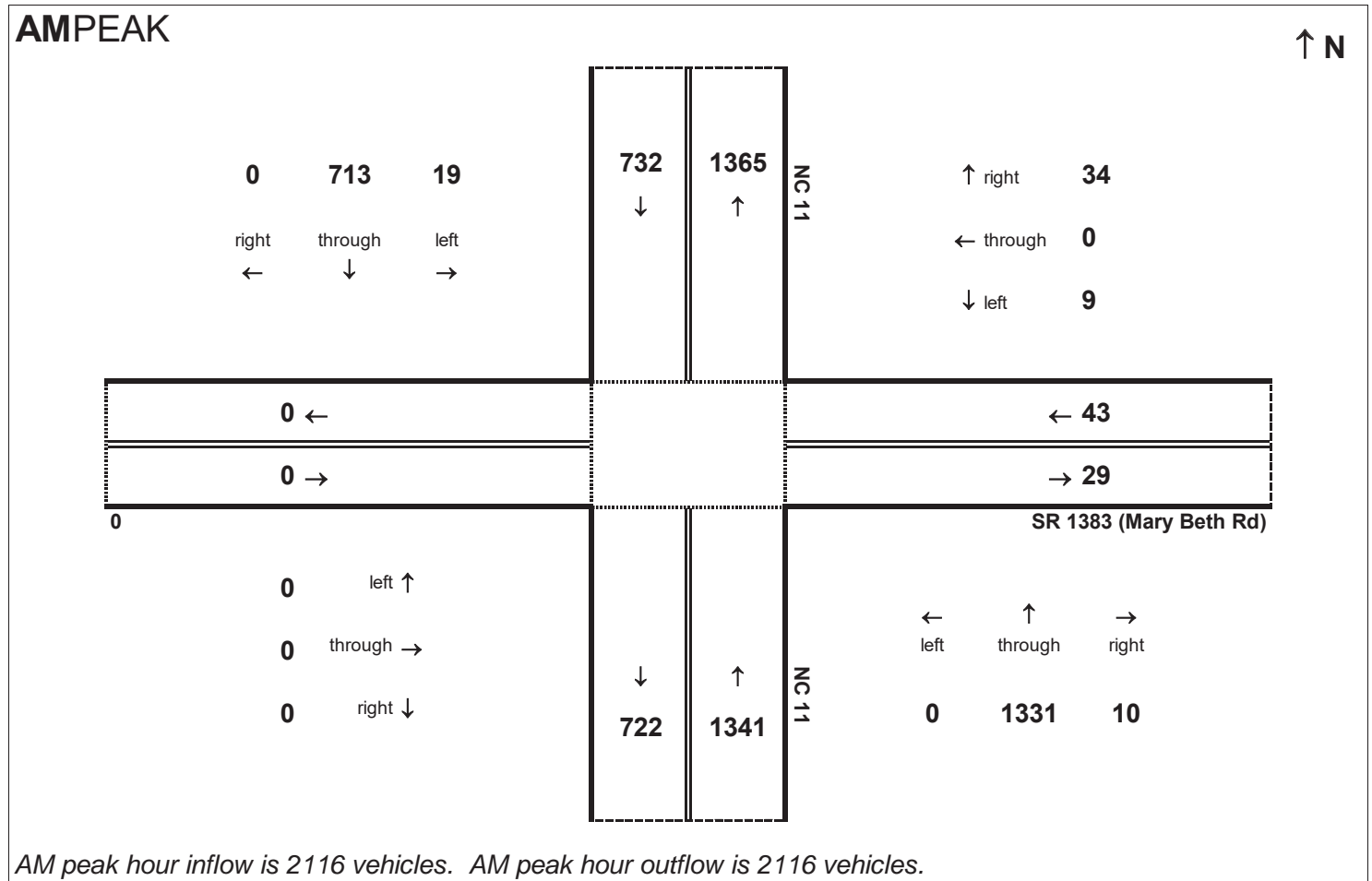


Peak Hour Volume Breakouts Report:
 437 Intersection of NC 11 and SR 1383 (Mary Beth Rd)

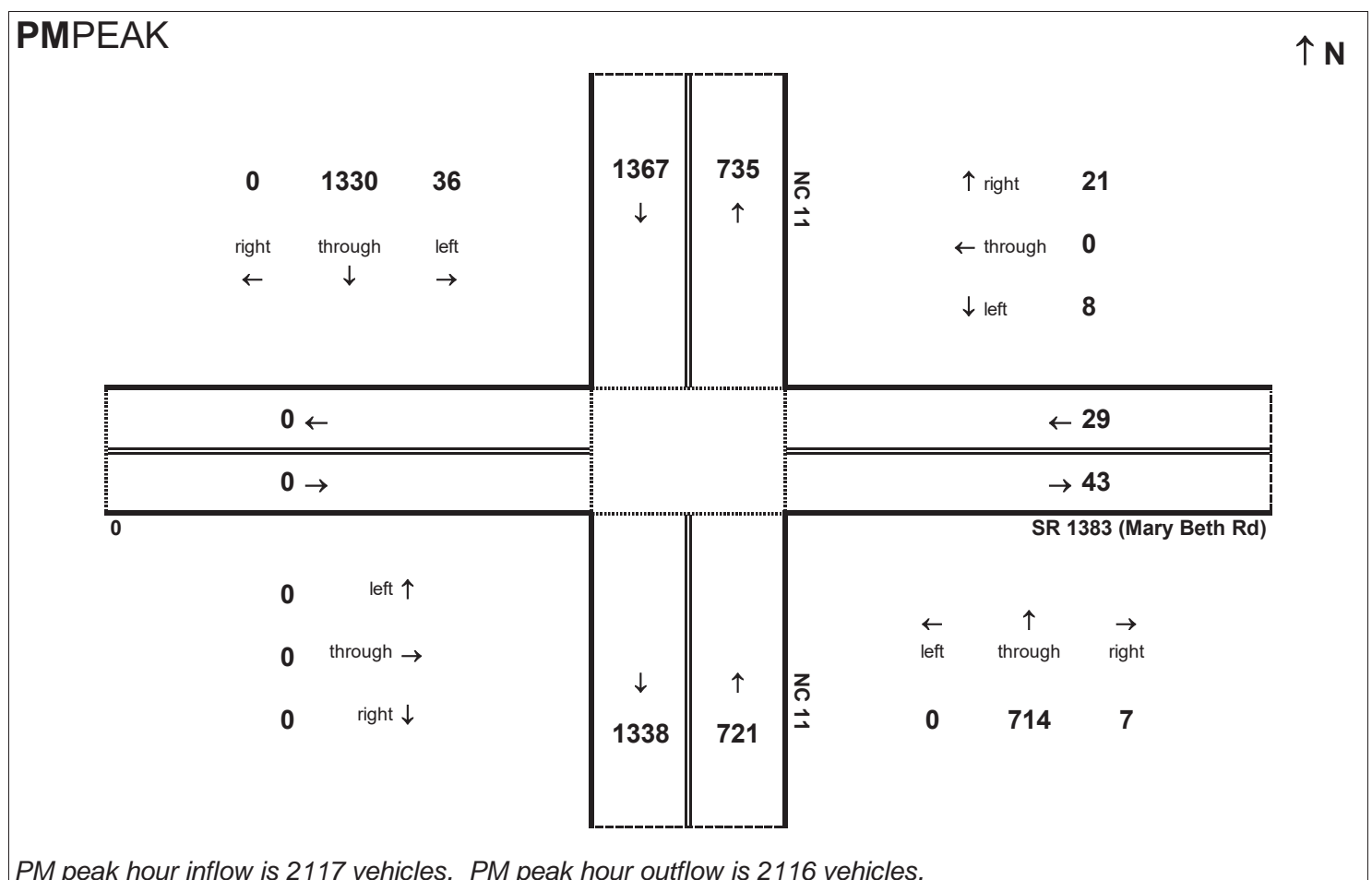
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

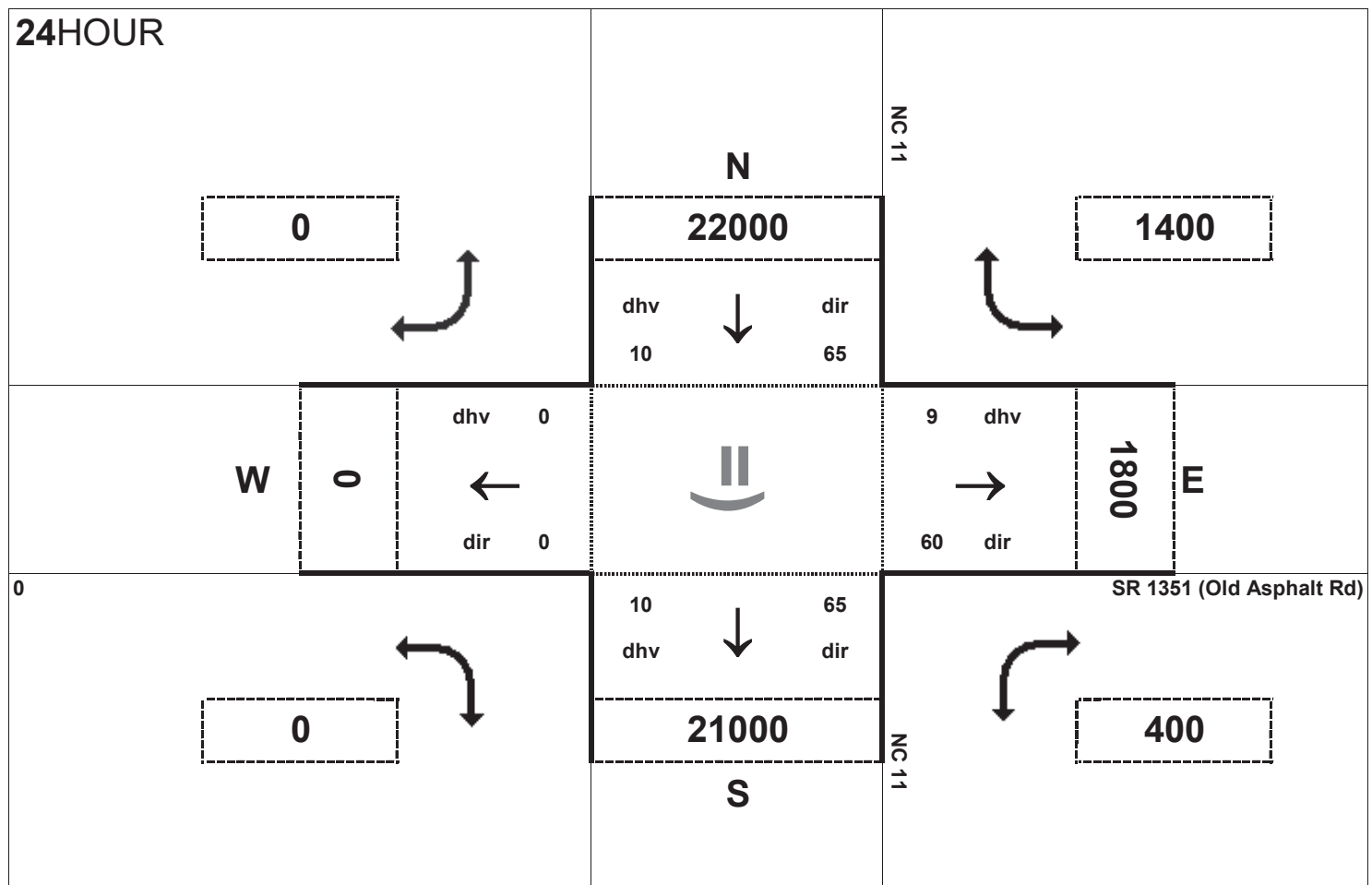
Project:
 R-2553



AM peak hour inflow is 2116 vehicles. AM peak hour outflow is 2116 vehicles.



PM peak hour inflow is 2117 vehicles. PM peak hour outflow is 2116 vehicles.

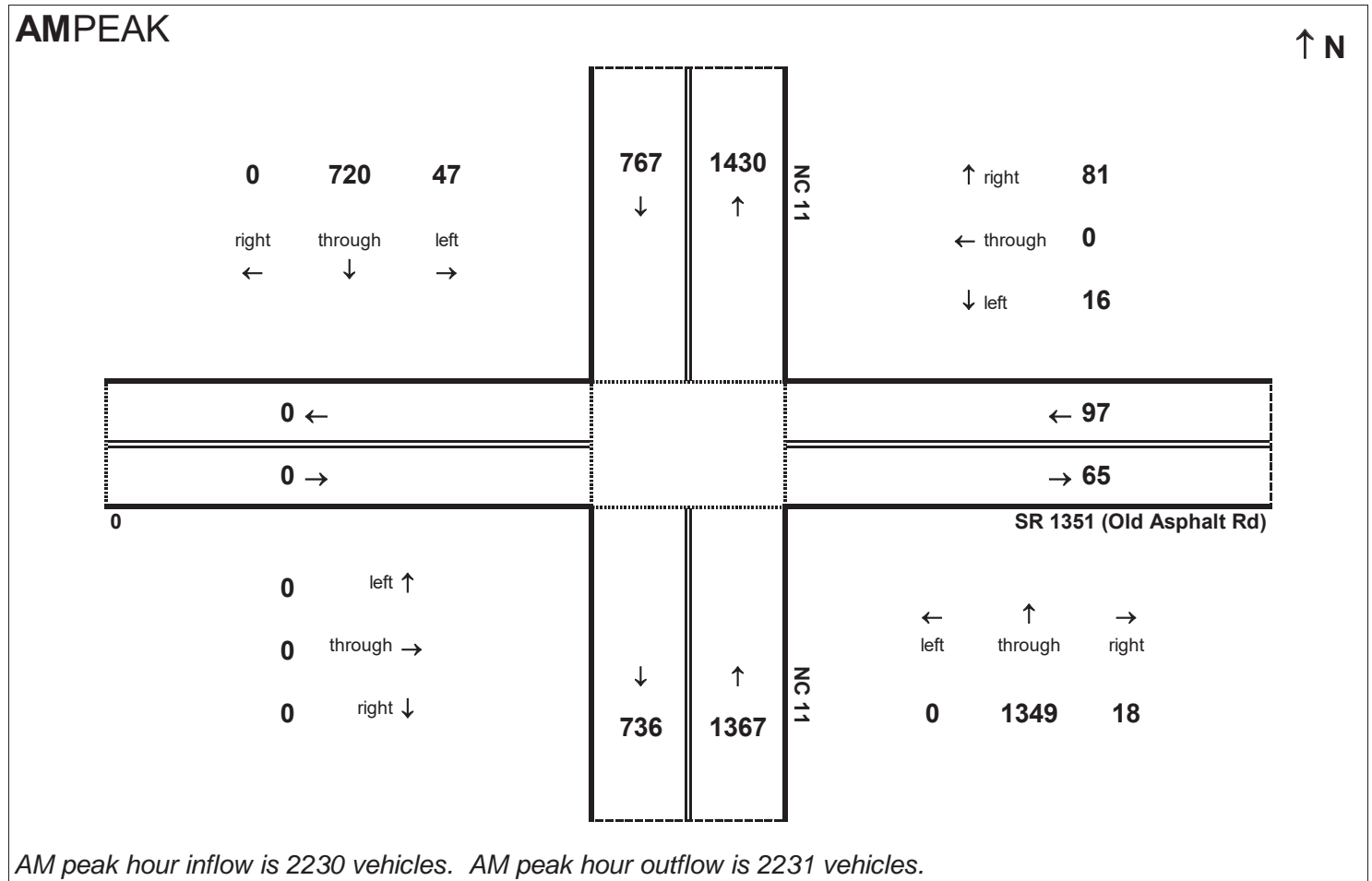


Peak Hour Volume Breakouts Report:
 438 Intersection of NC 11 and SR 1351 (Old Asphalt Rd)

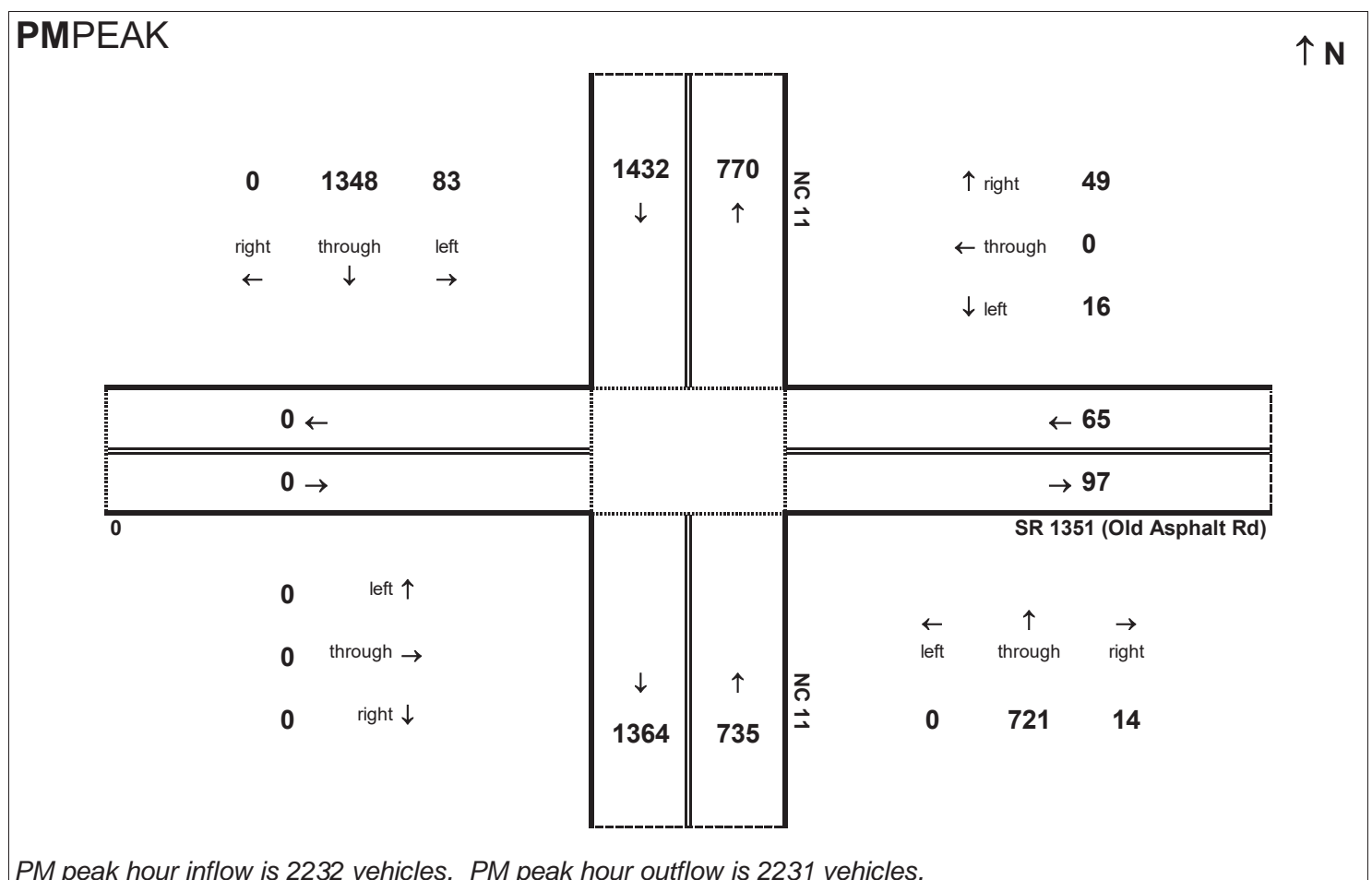
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

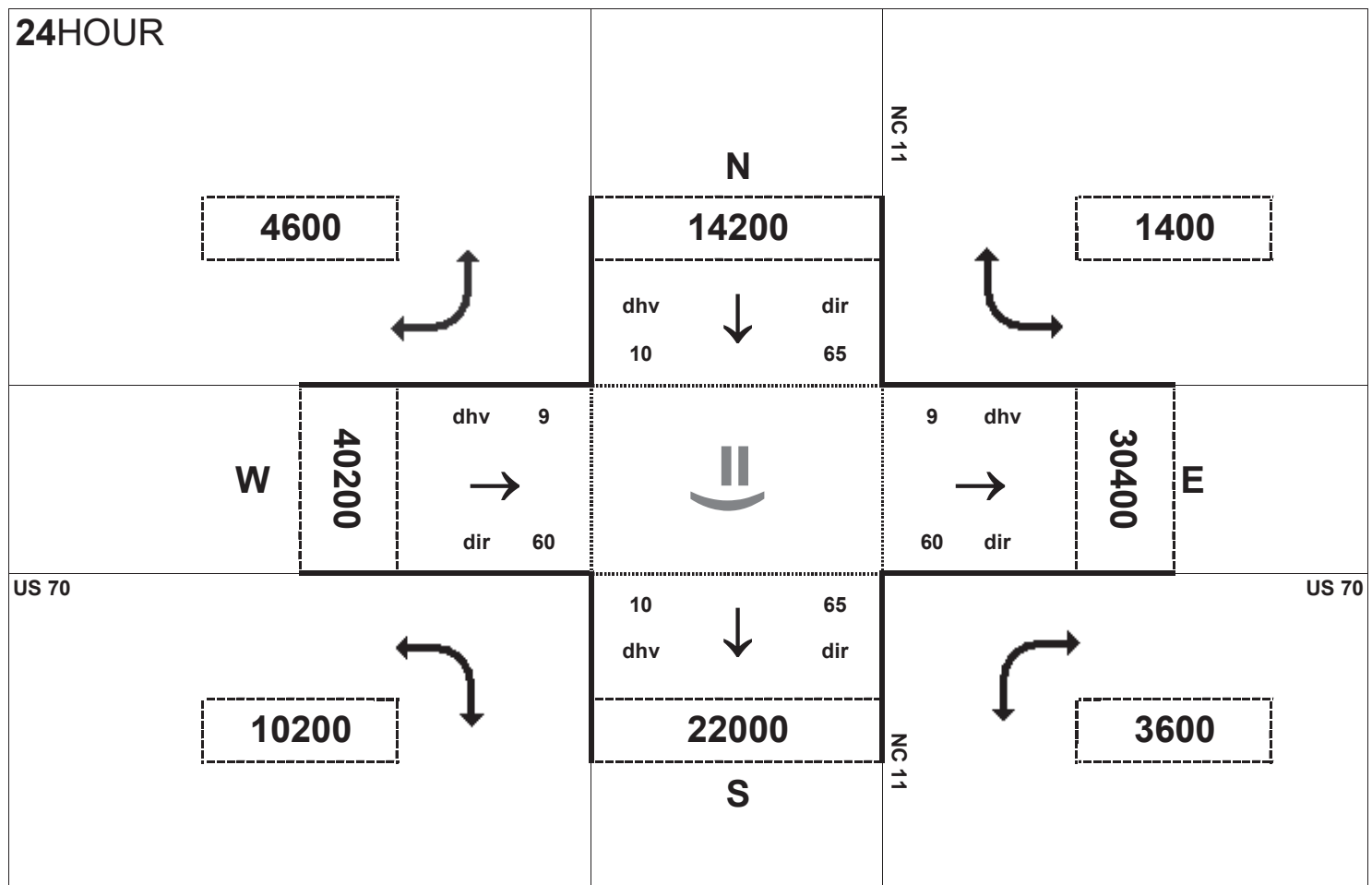
Project:
 R-2553



AM peak hour inflow is 2230 vehicles. AM peak hour outflow is 2231 vehicles.



PM peak hour inflow is 2232 vehicles. PM peak hour outflow is 2231 vehicles.

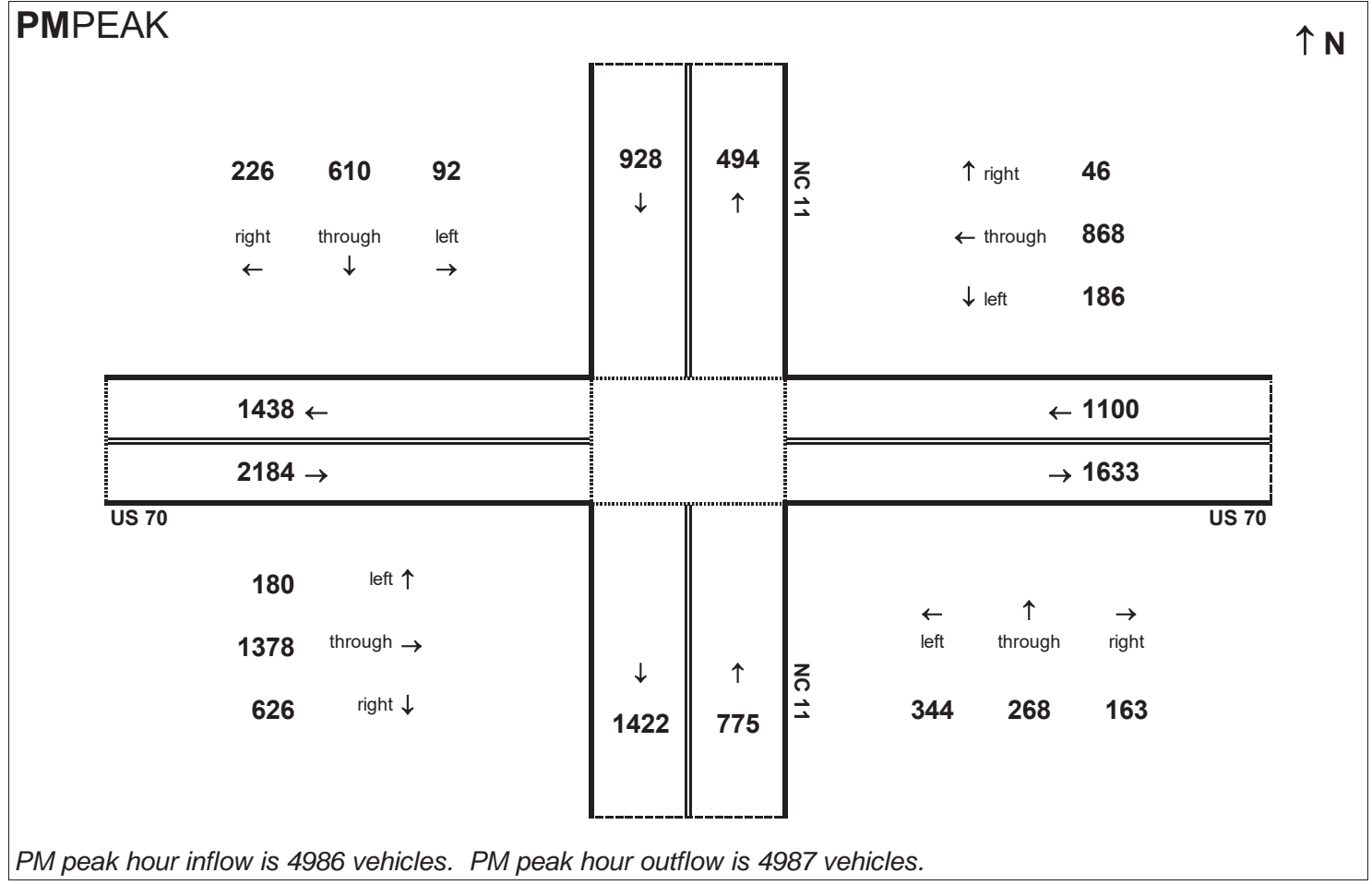
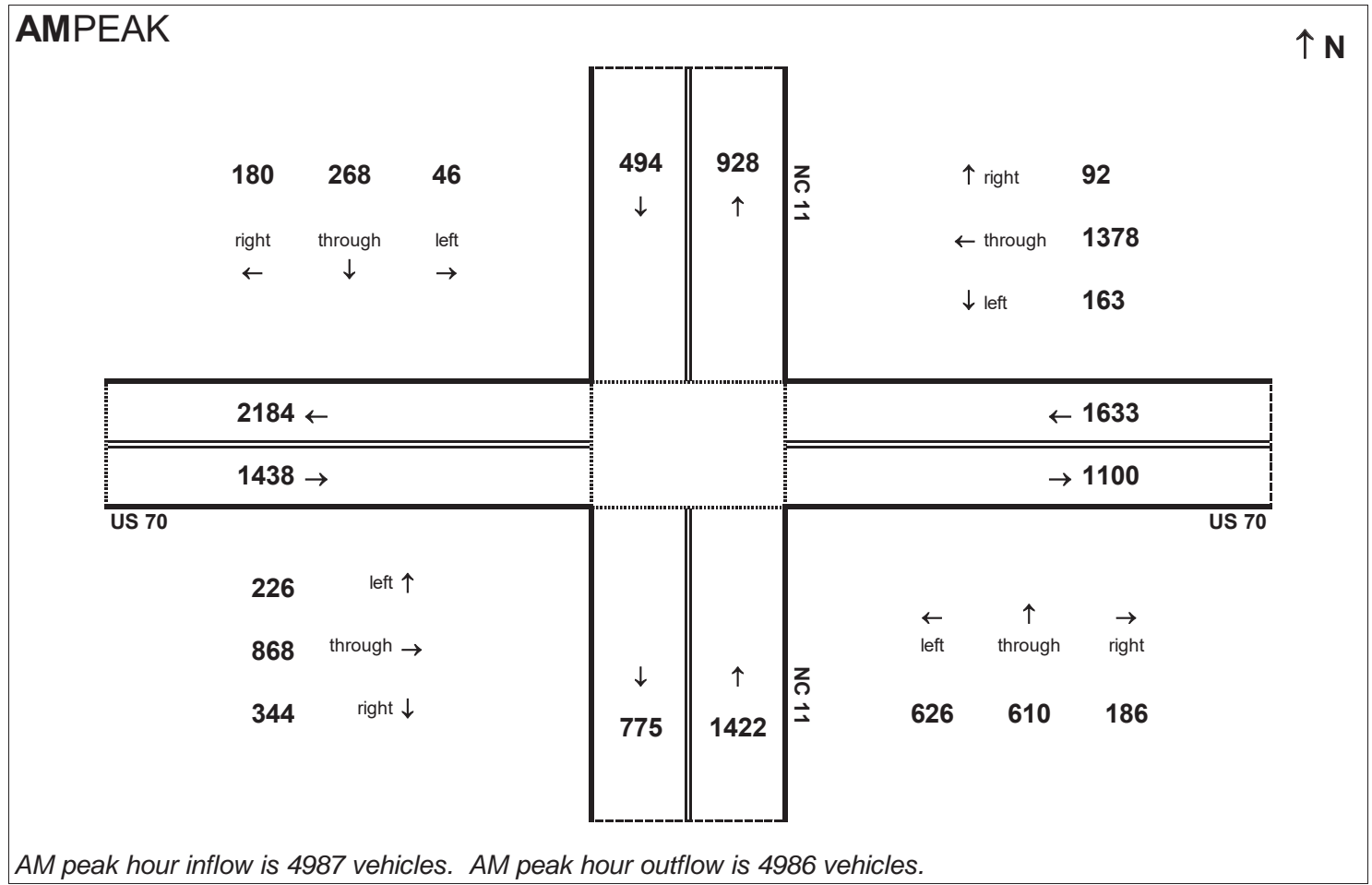


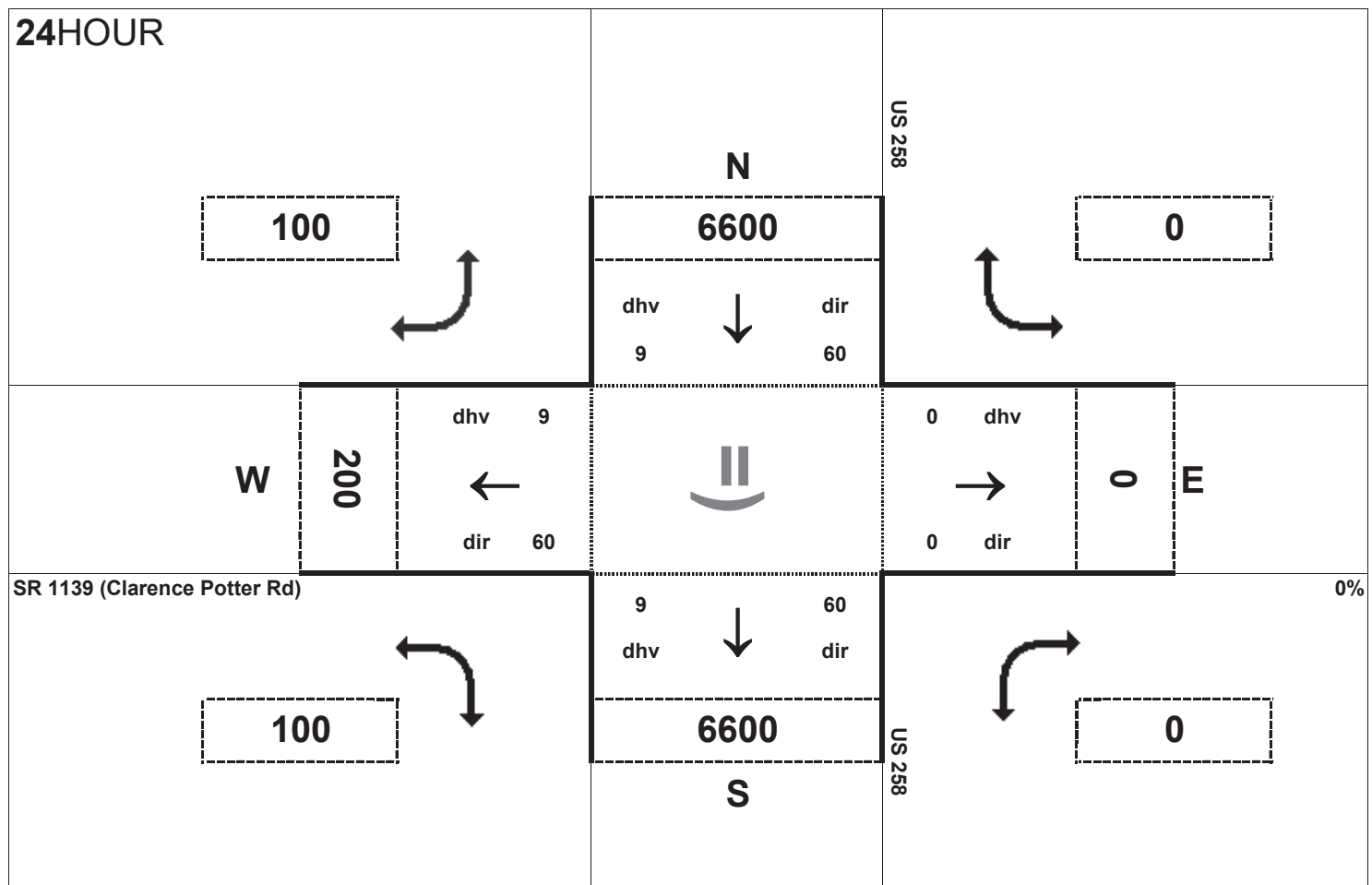
Peak Hour Volume Breakouts Report:
439 Intersection of US 70 and NC 11

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



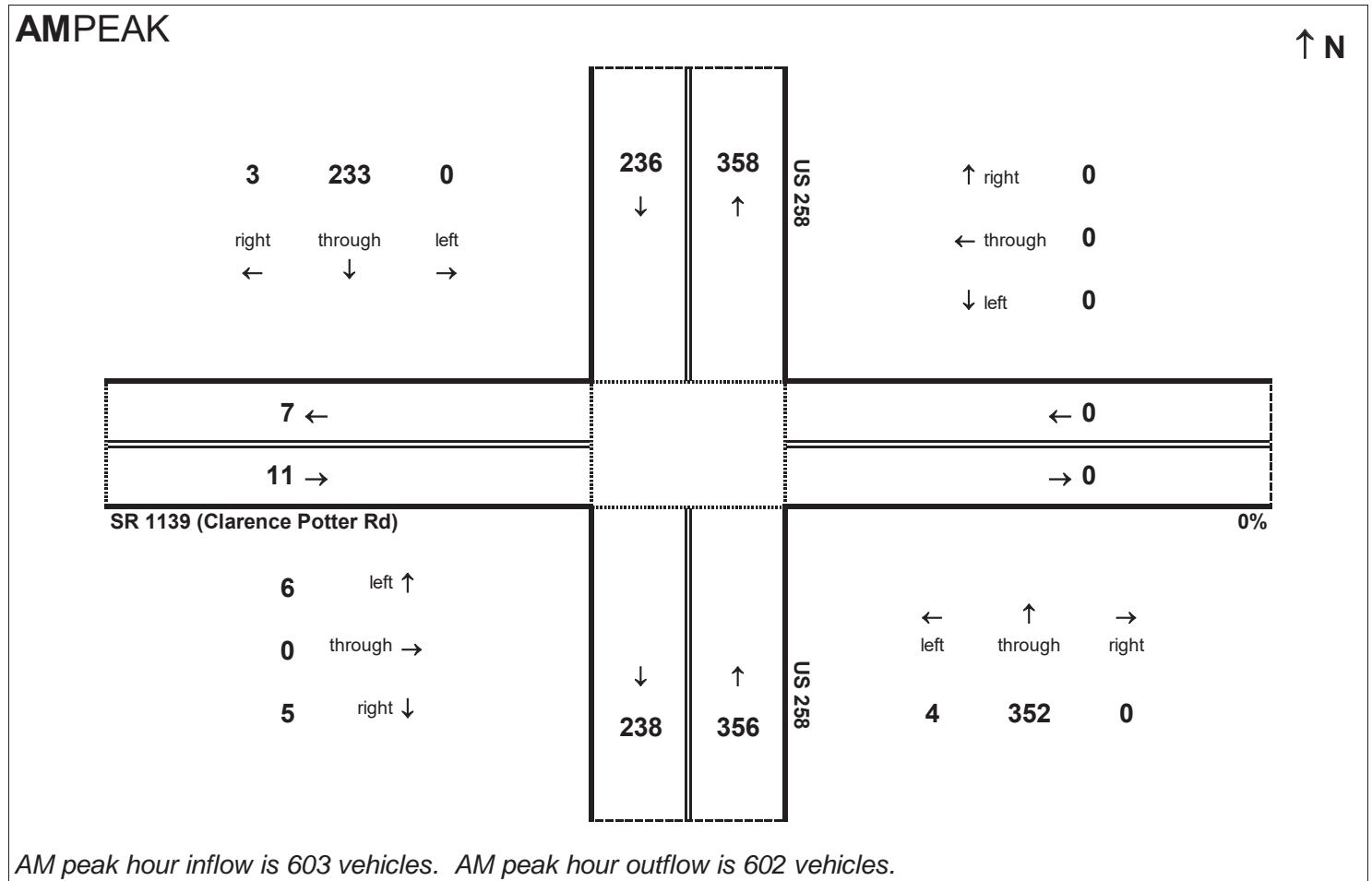


Peak Hour Volume Breakouts Report:
 440 Intersection of US 258 and SR 1139 (Clarence Potter Rd)

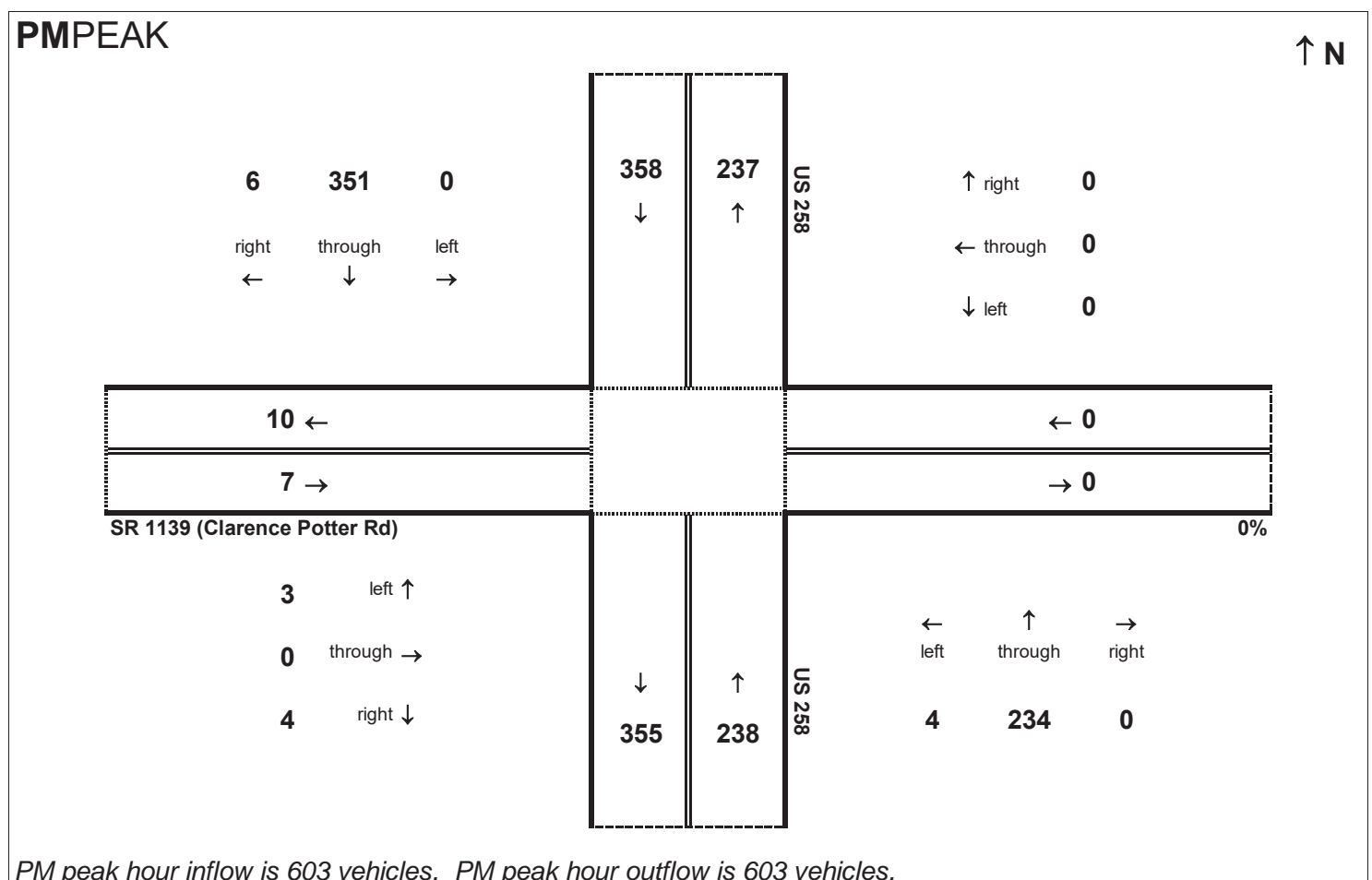
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

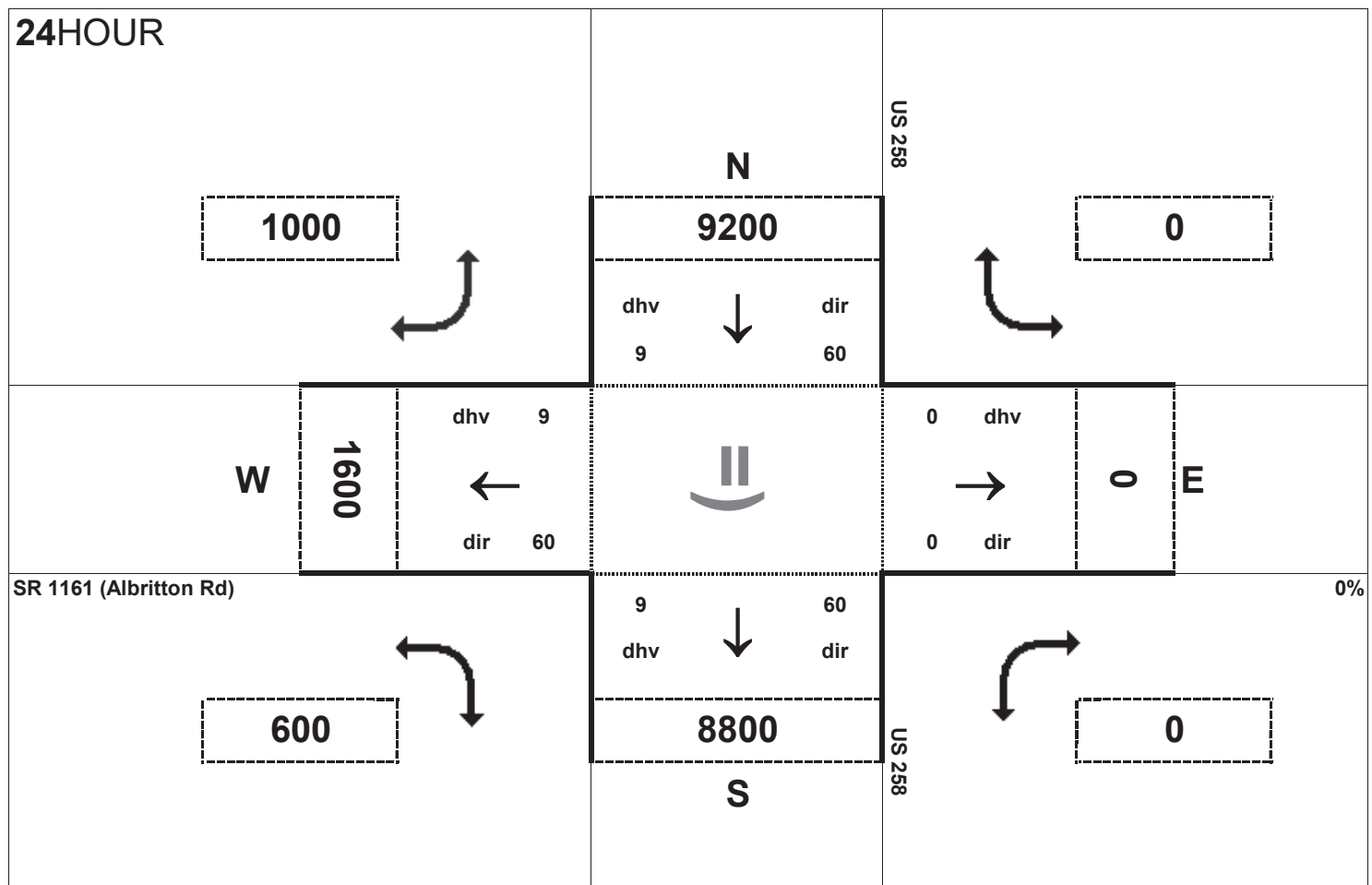
Project:
 R-2553



AM peak hour inflow is 603 vehicles. AM peak hour outflow is 602 vehicles.



PM peak hour inflow is 603 vehicles. PM peak hour outflow is 603 vehicles.

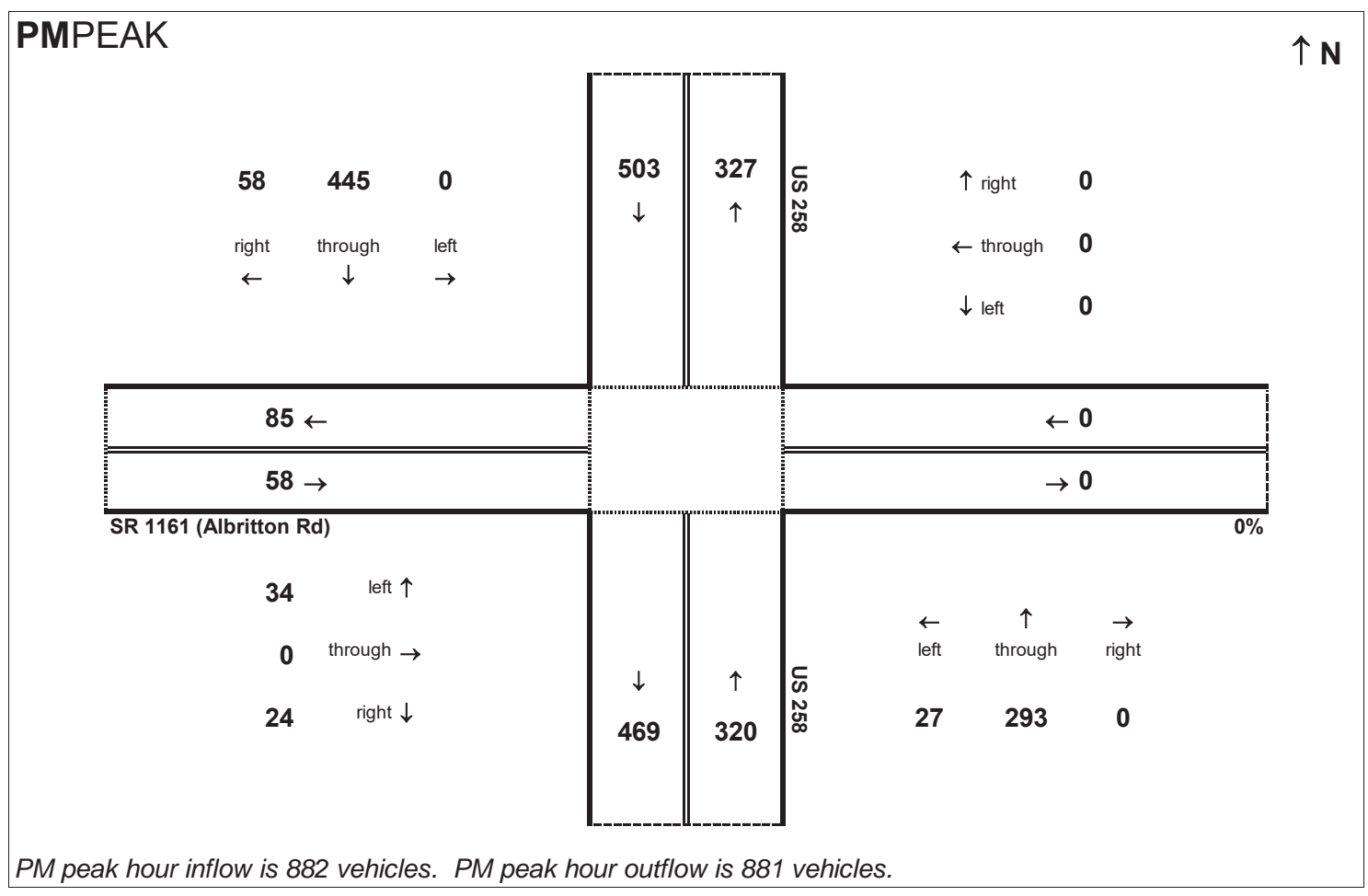
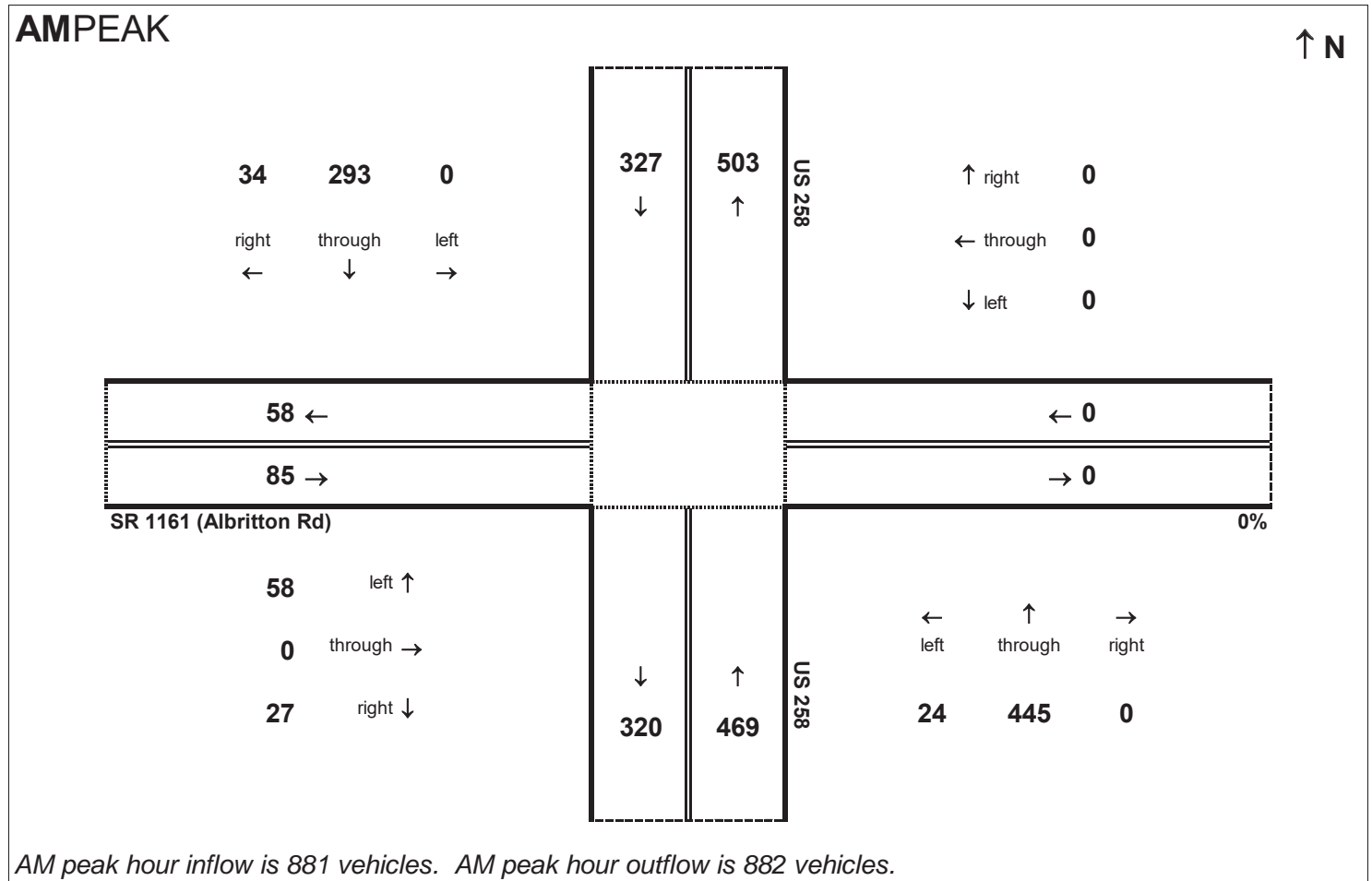


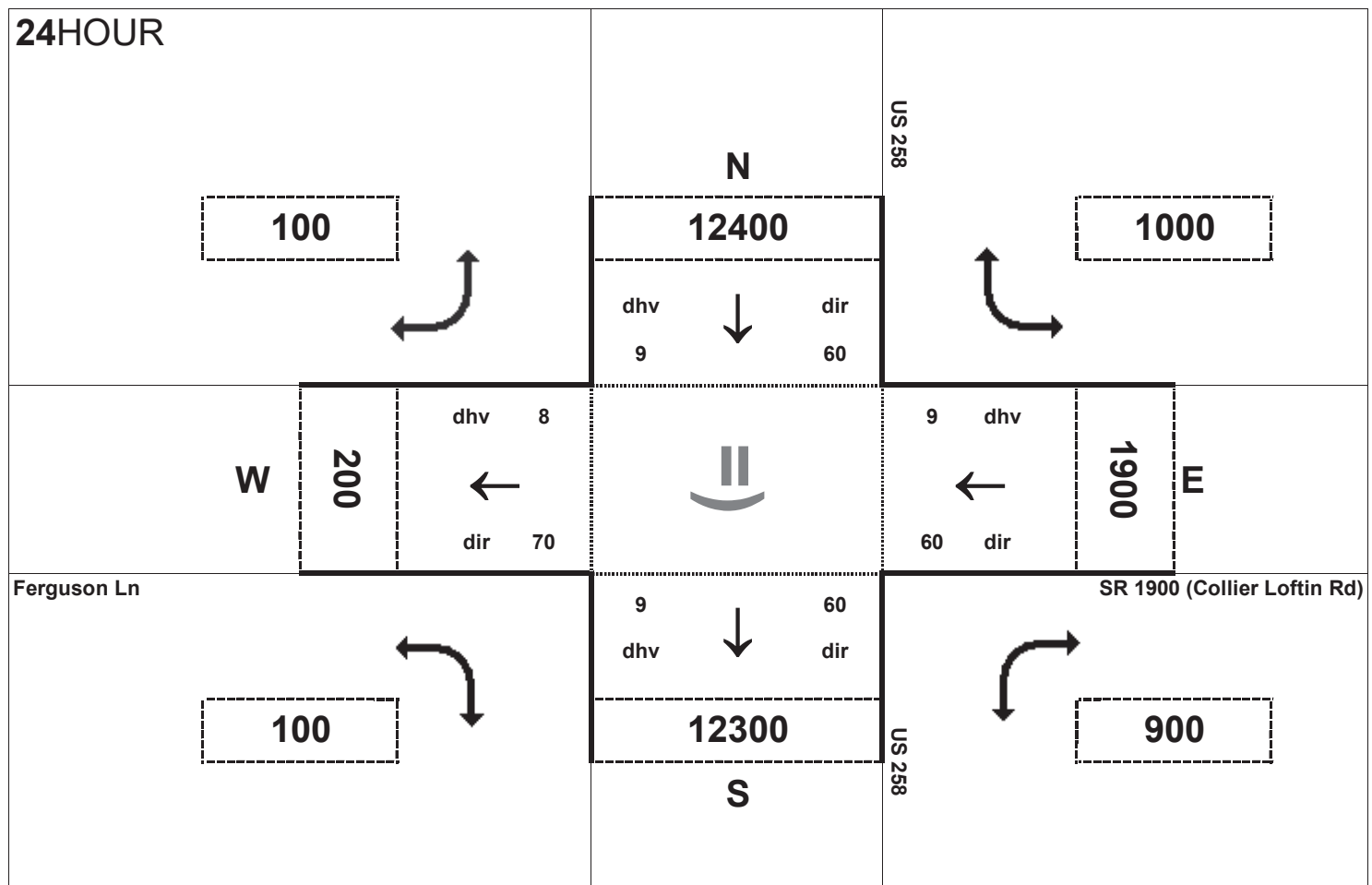
Peak Hour Volume Breakouts Report:
441 US 258 and SR 1161 (Albritton Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



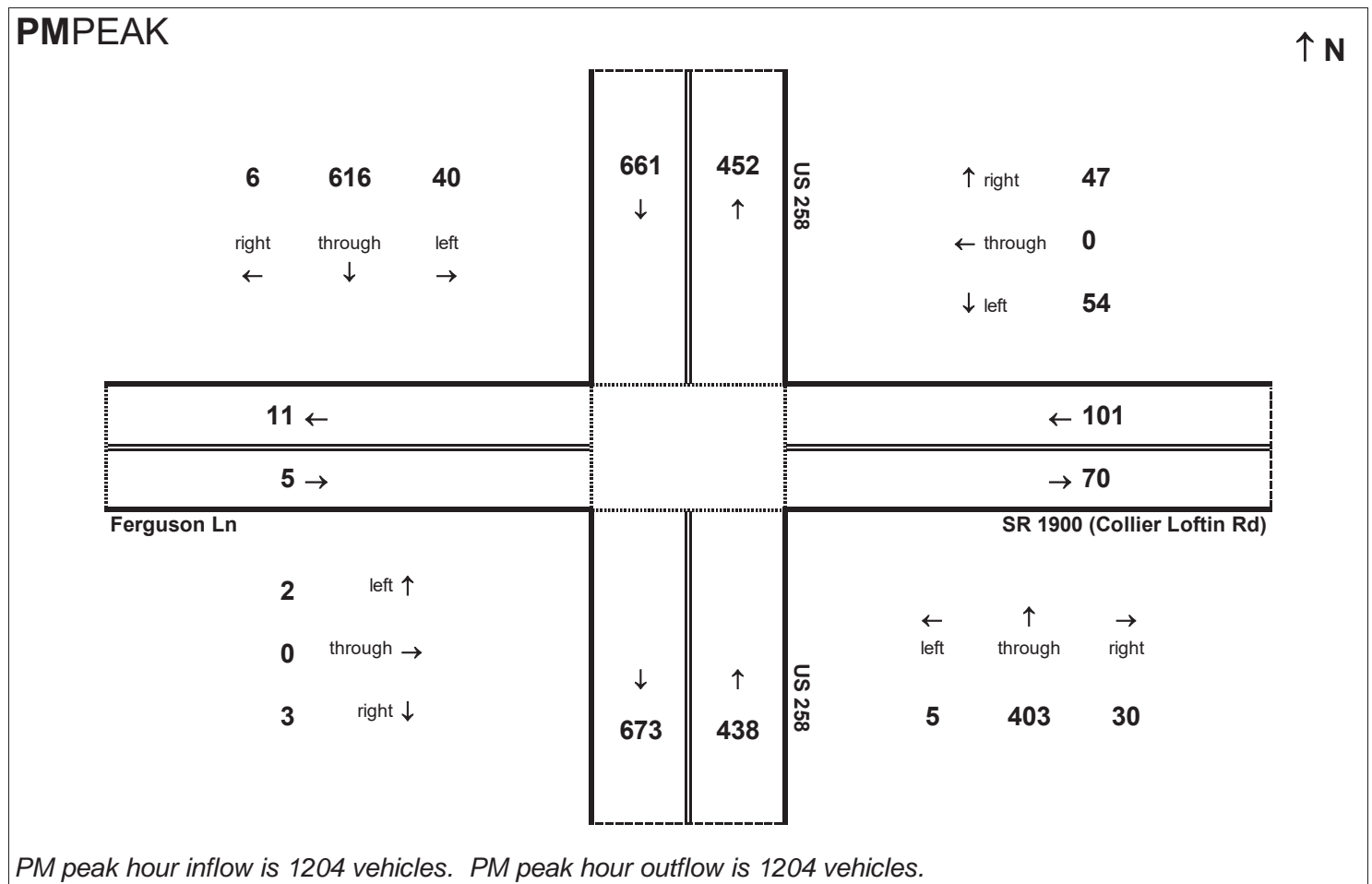
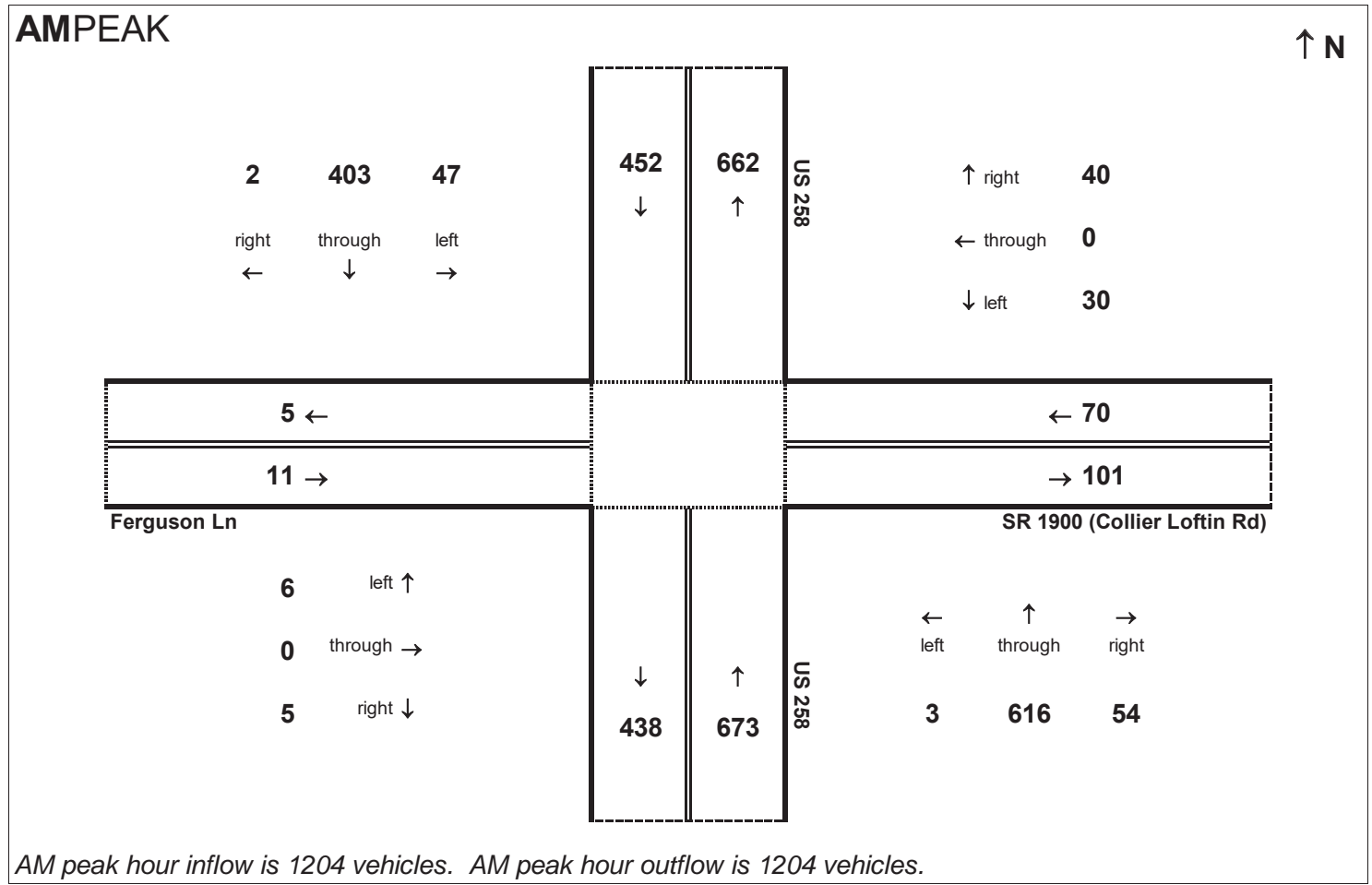


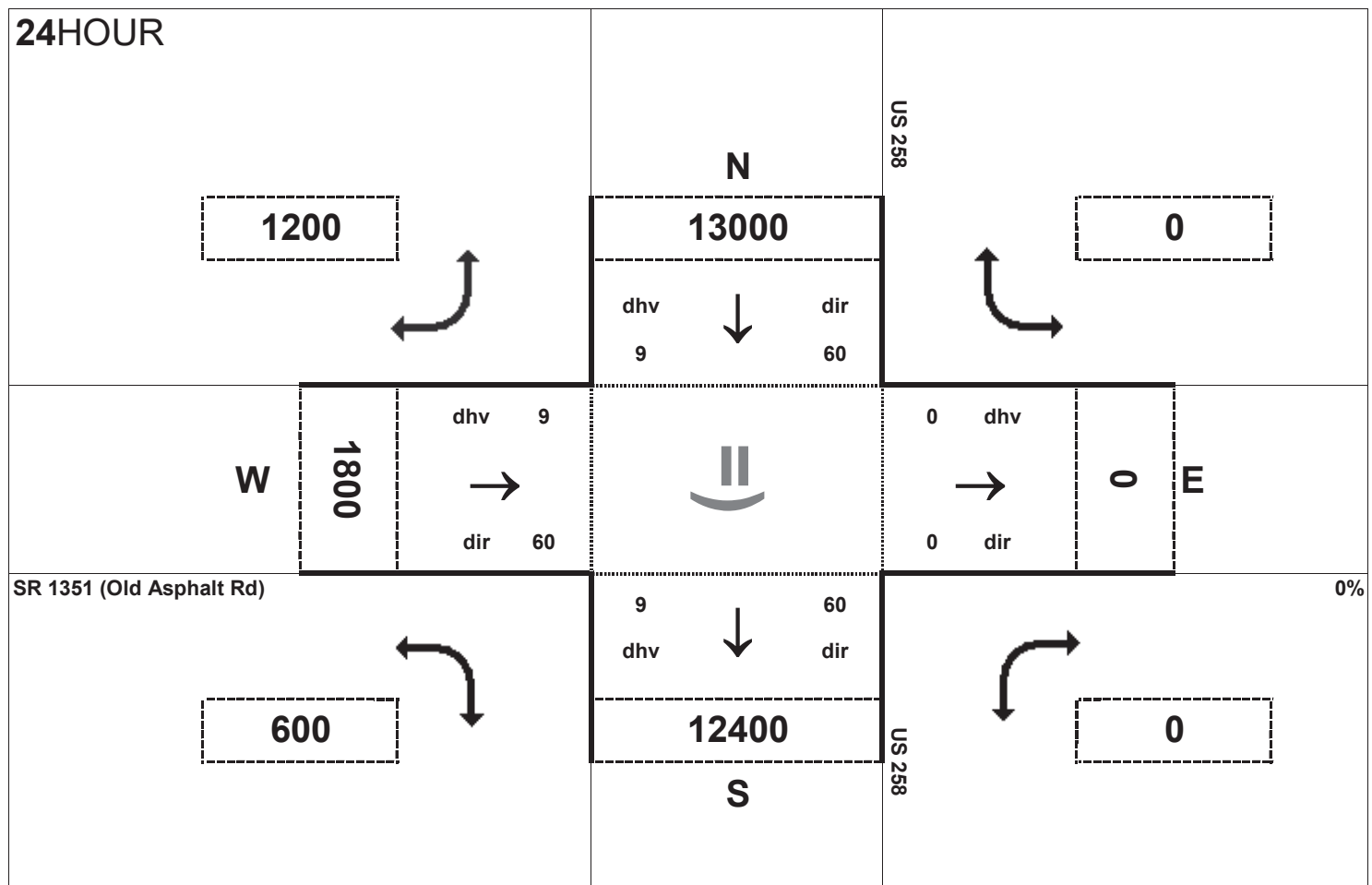
Peak Hour Volume Breakouts Report:
 442 Intersection of US 258 and SR 1900 (Collier Loftin Rd) / Ferguson Ln

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



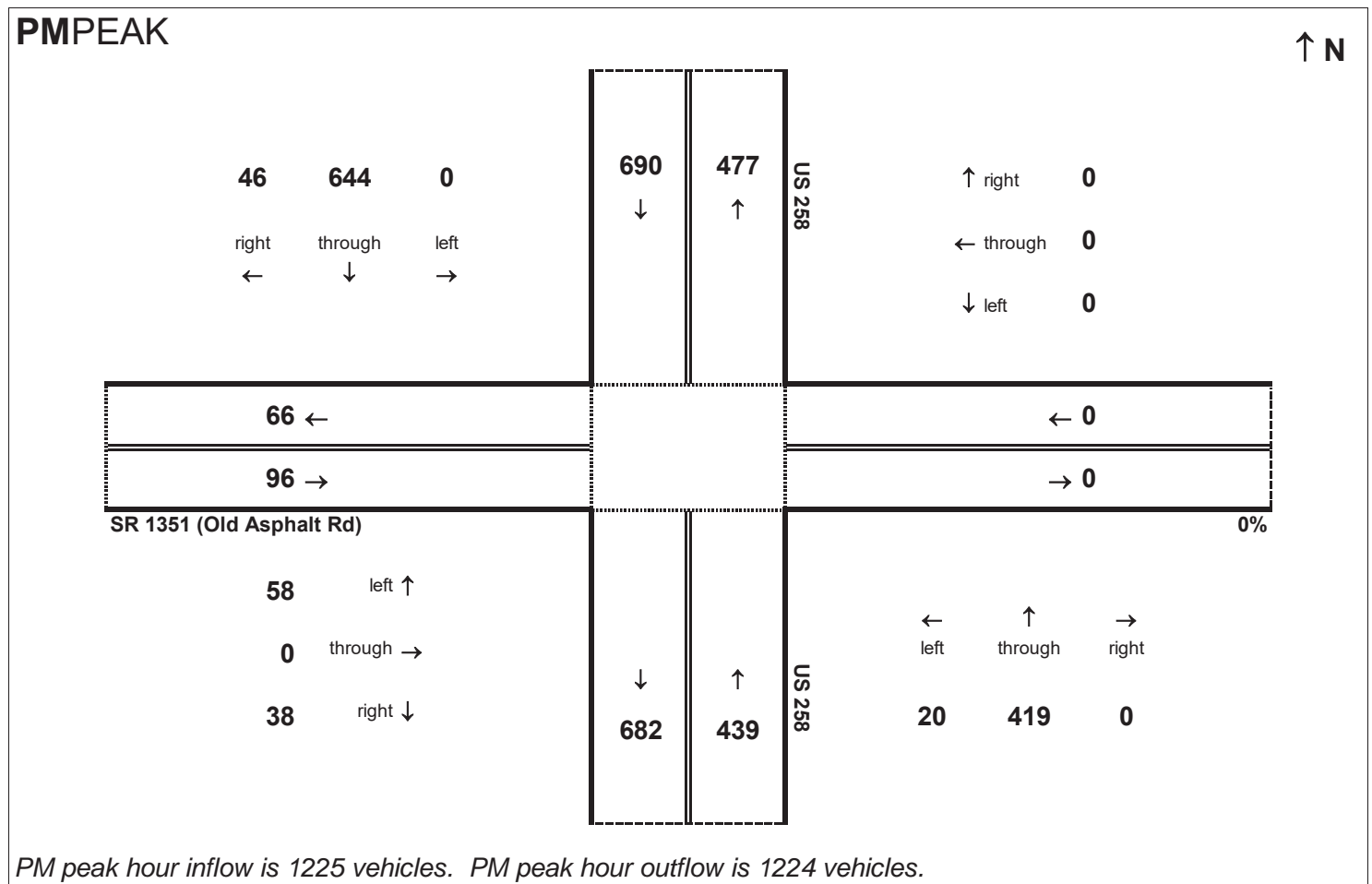
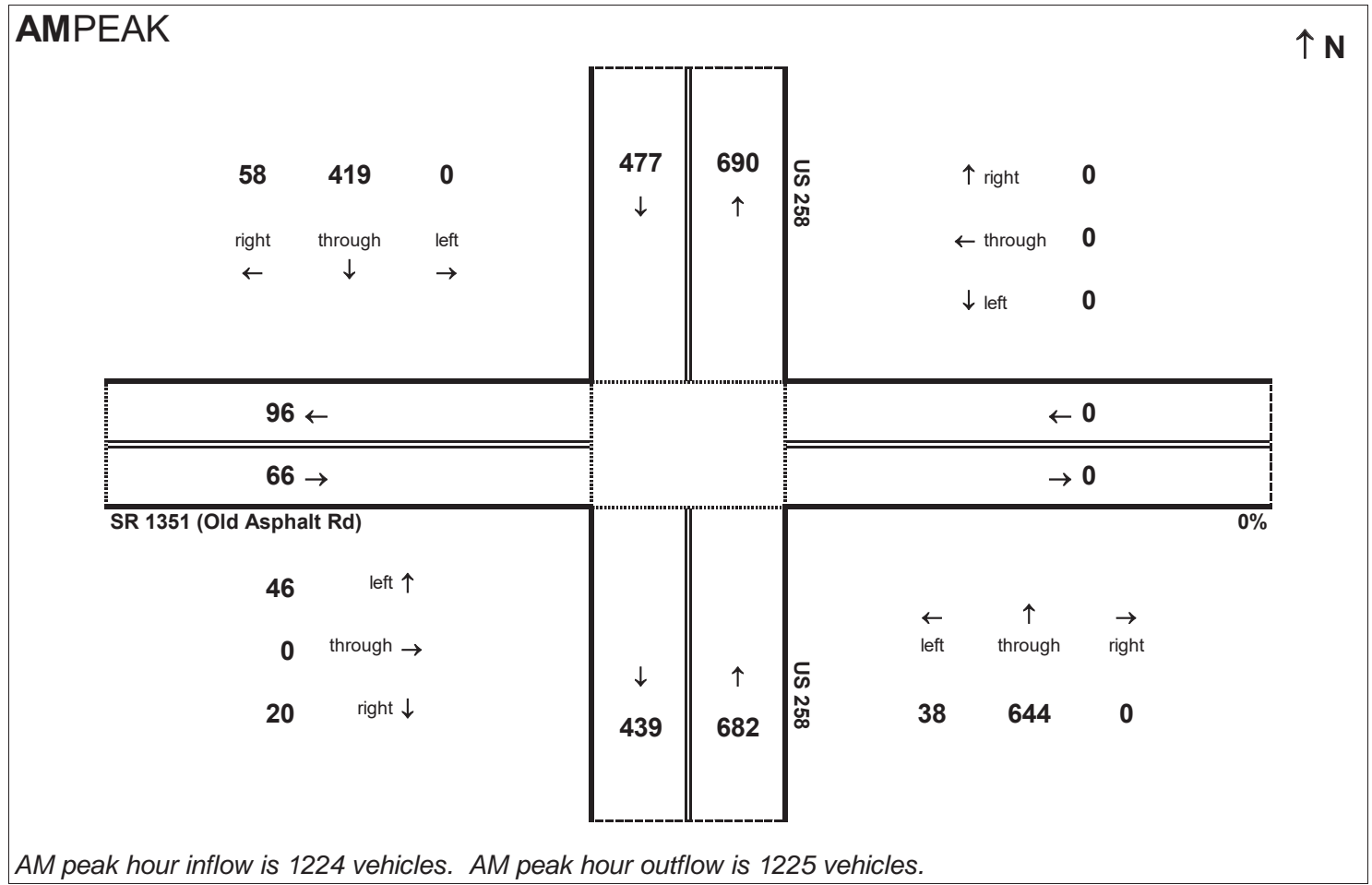


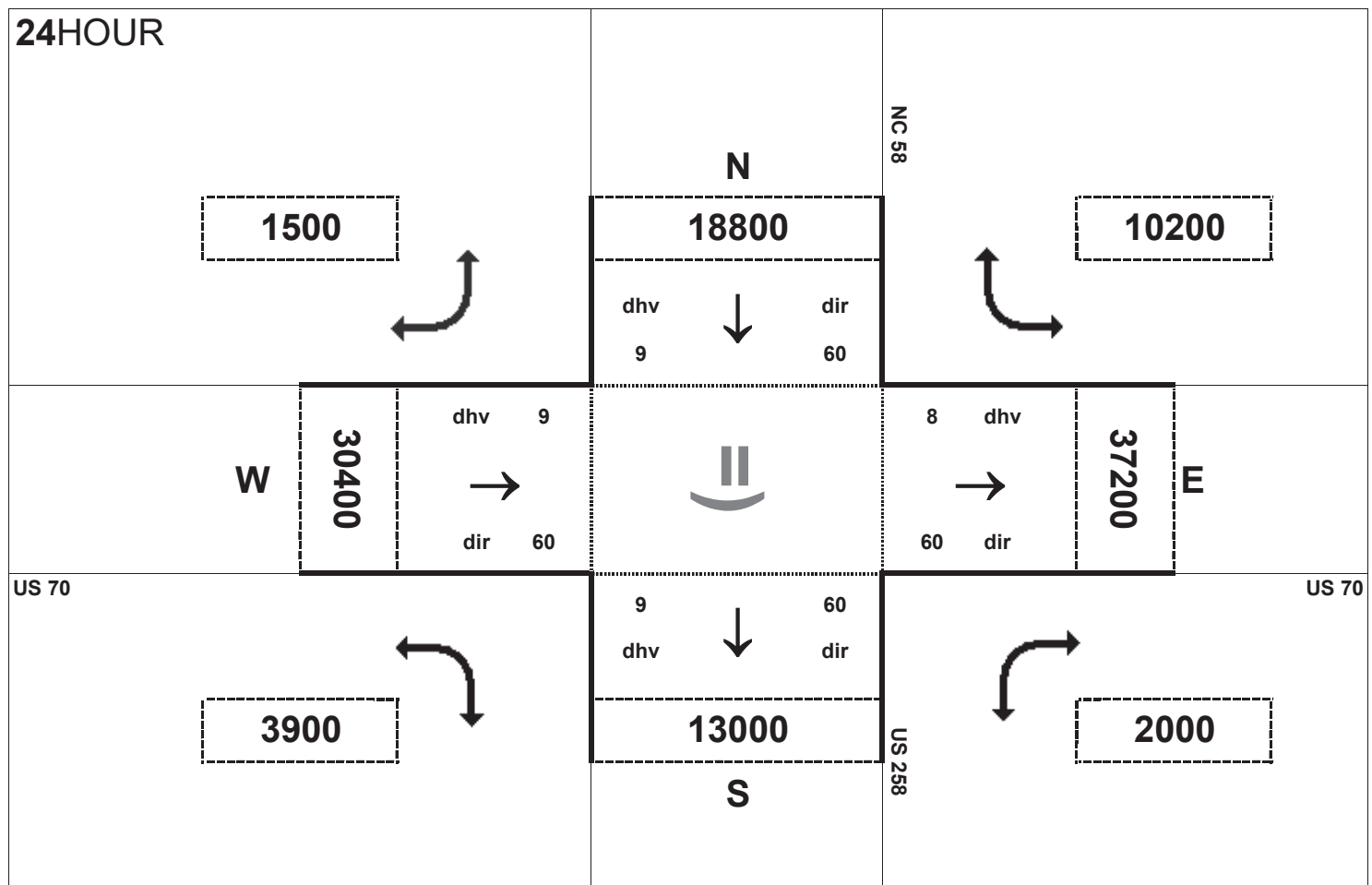
Peak Hour Volume Breakouts Report:
 443 Intersection of US 258 and SR 1351 (Old Asphalt Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



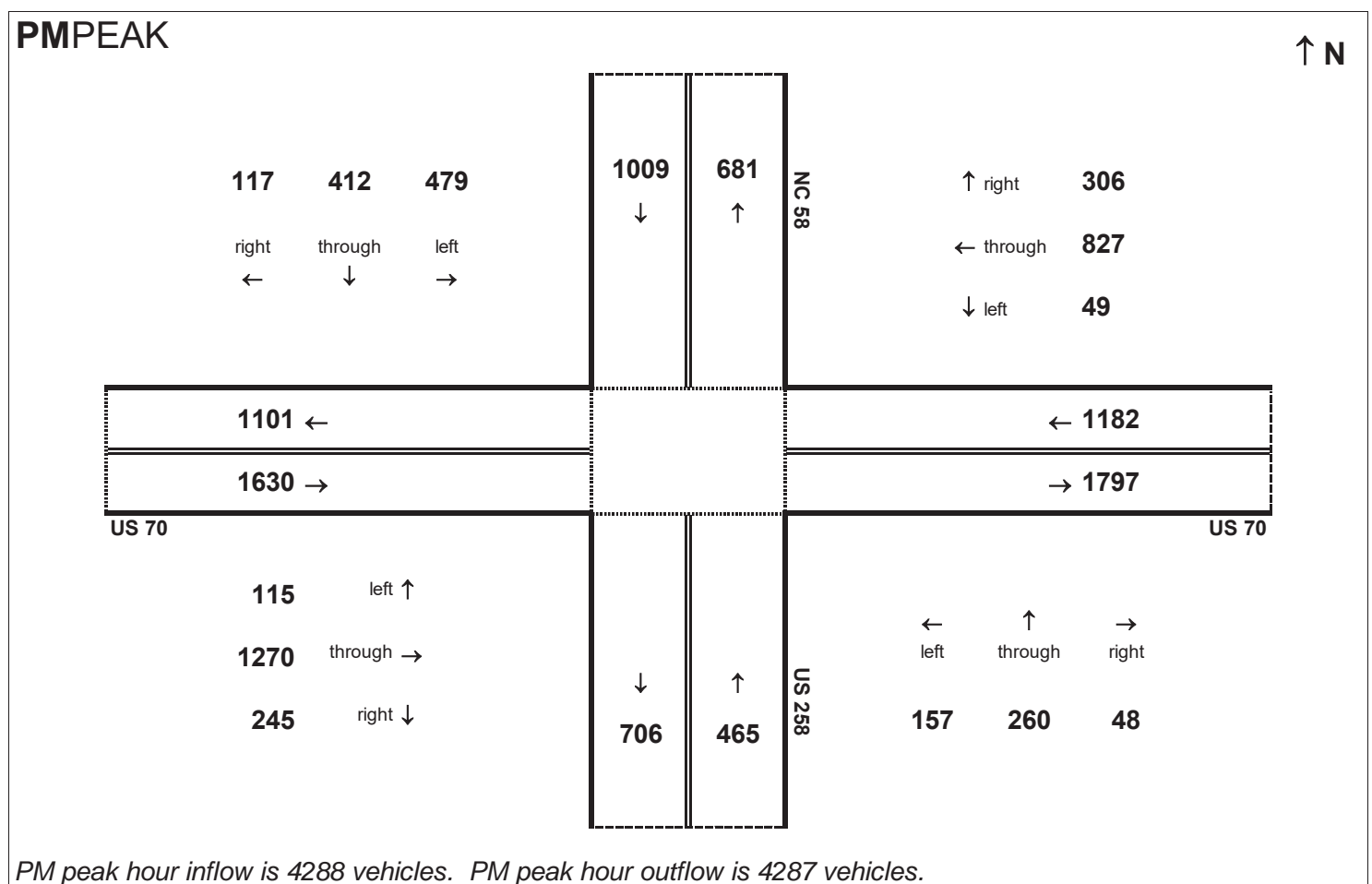
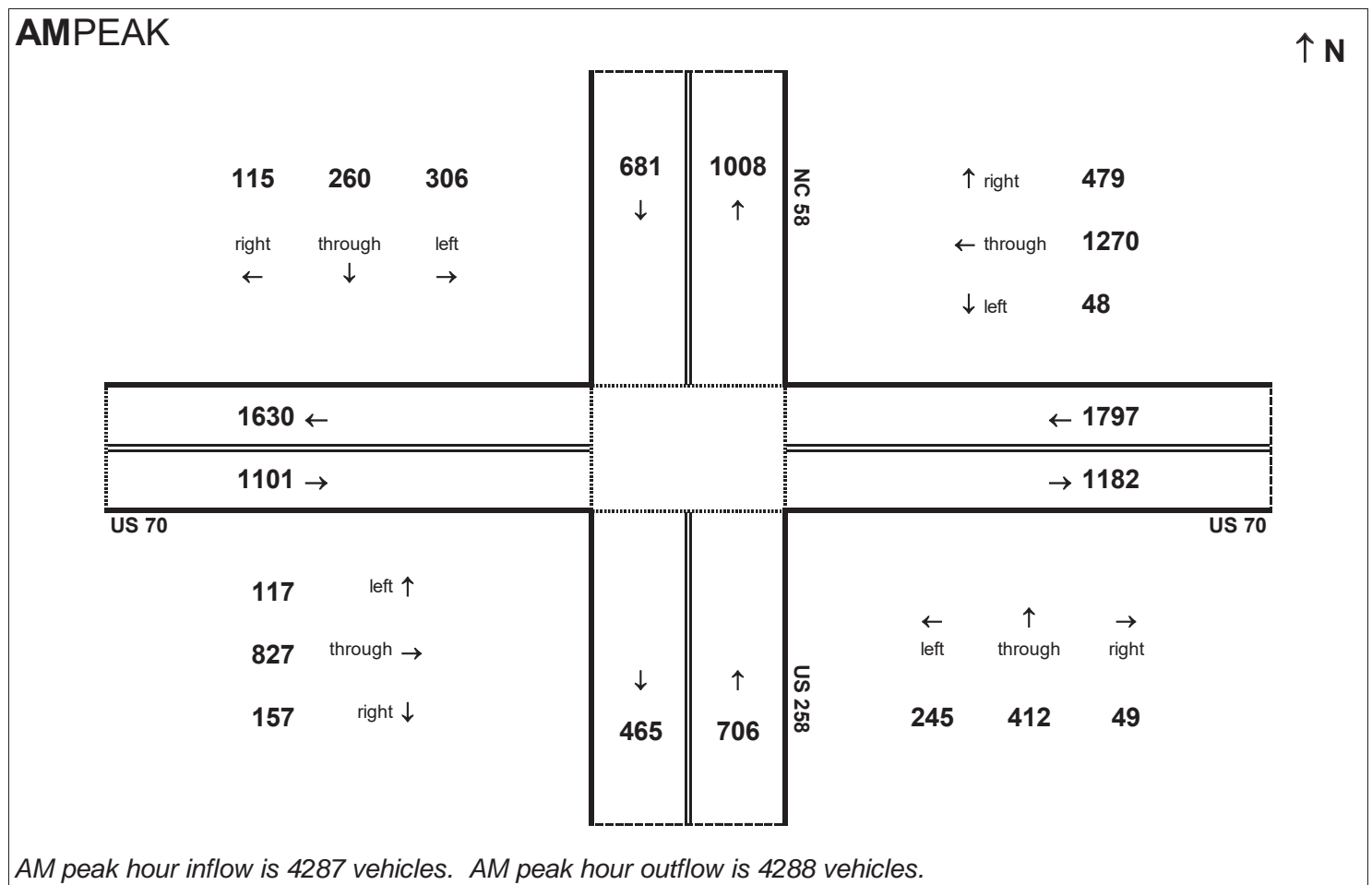


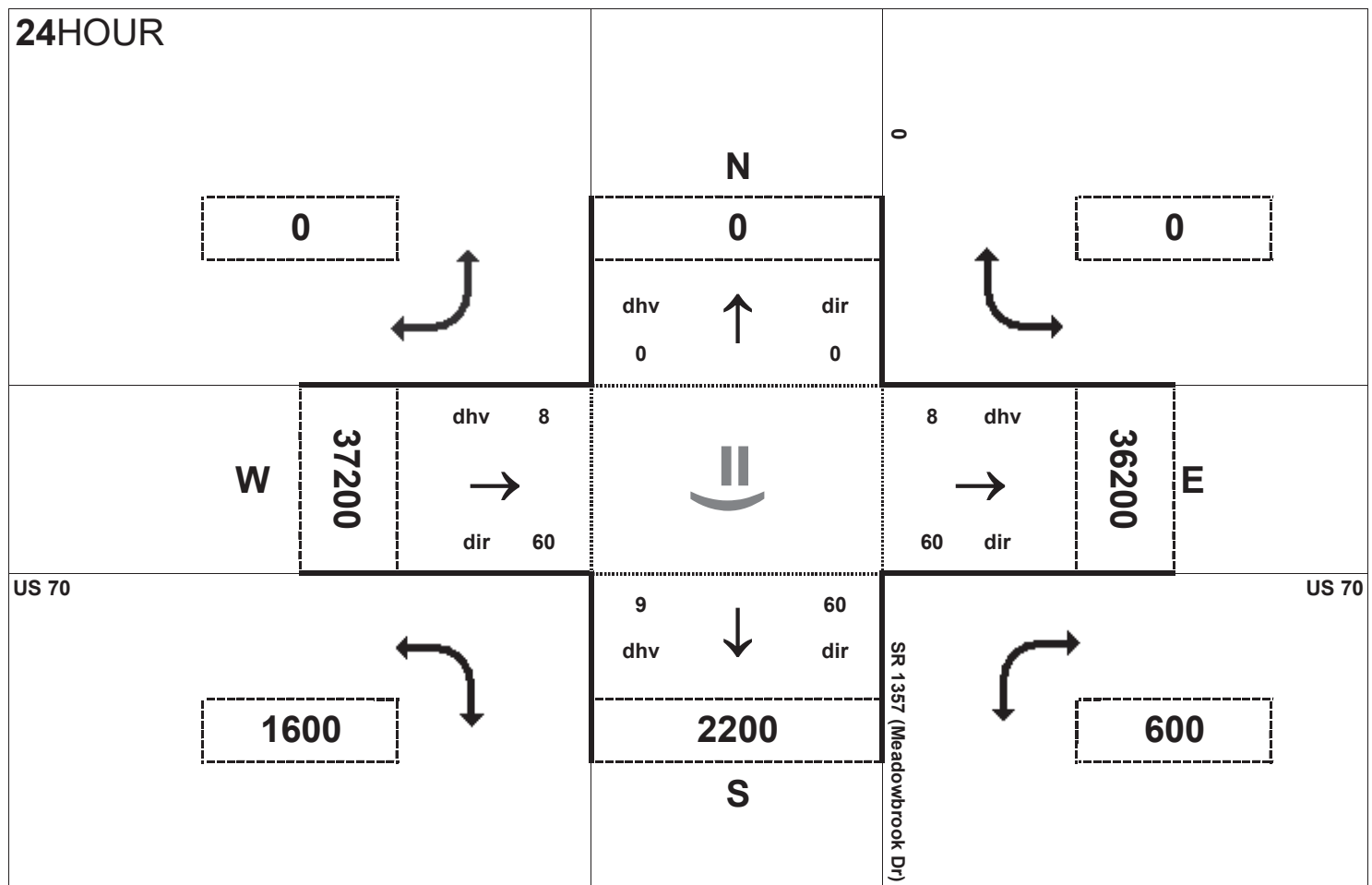
Peak Hour Volume Breakouts Report:
444 Intersection of US 70 at US 258

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



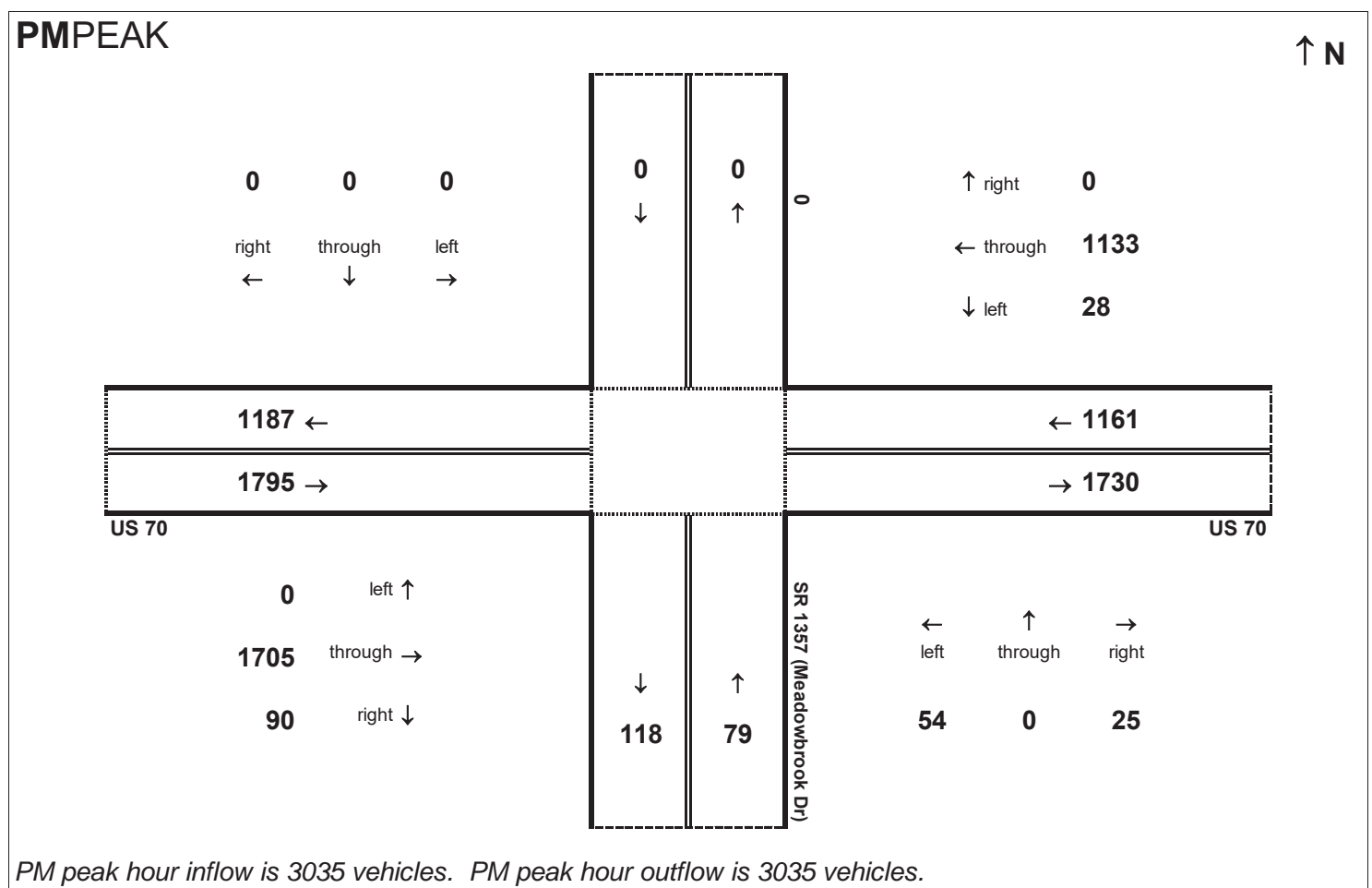
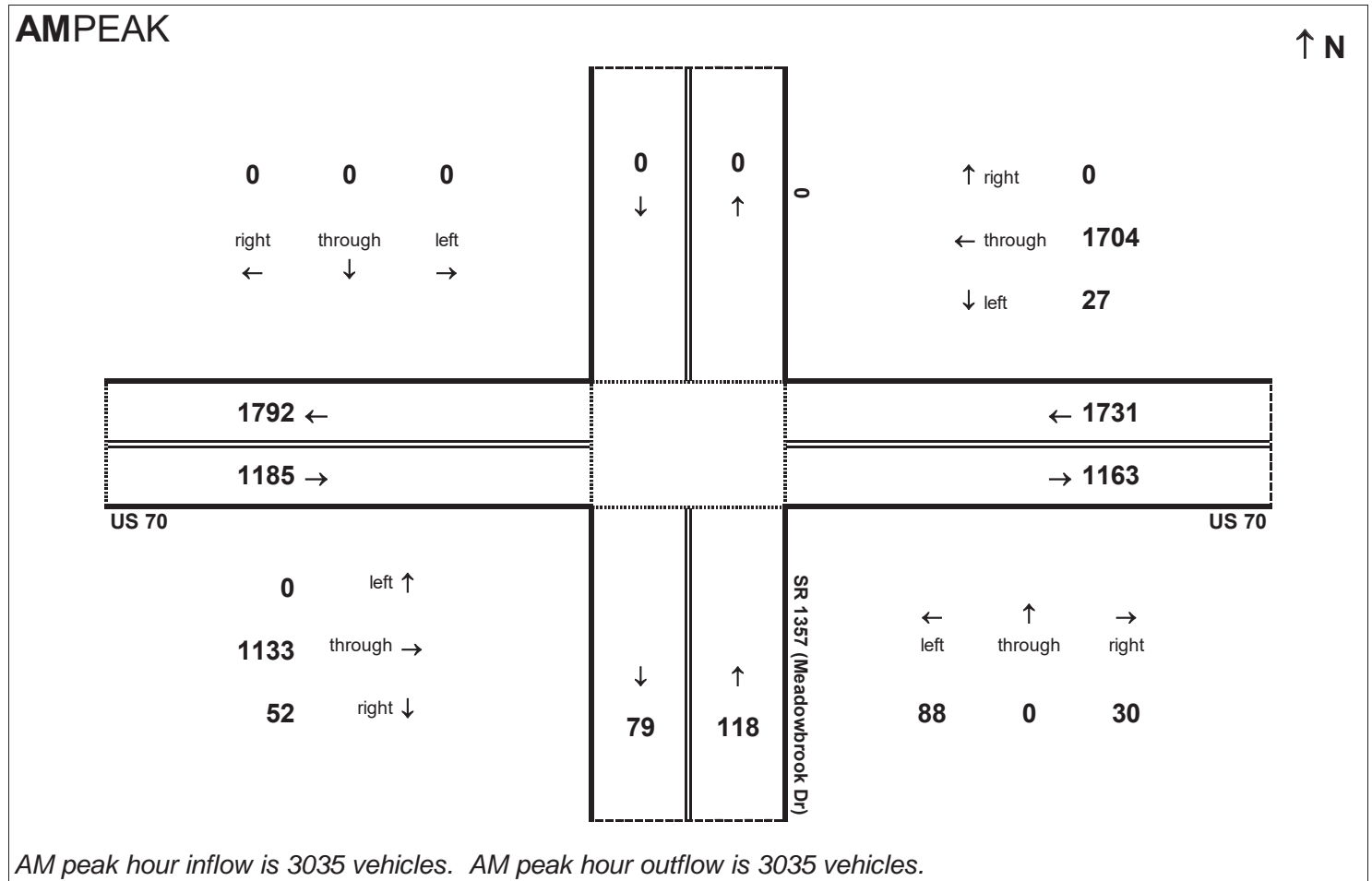


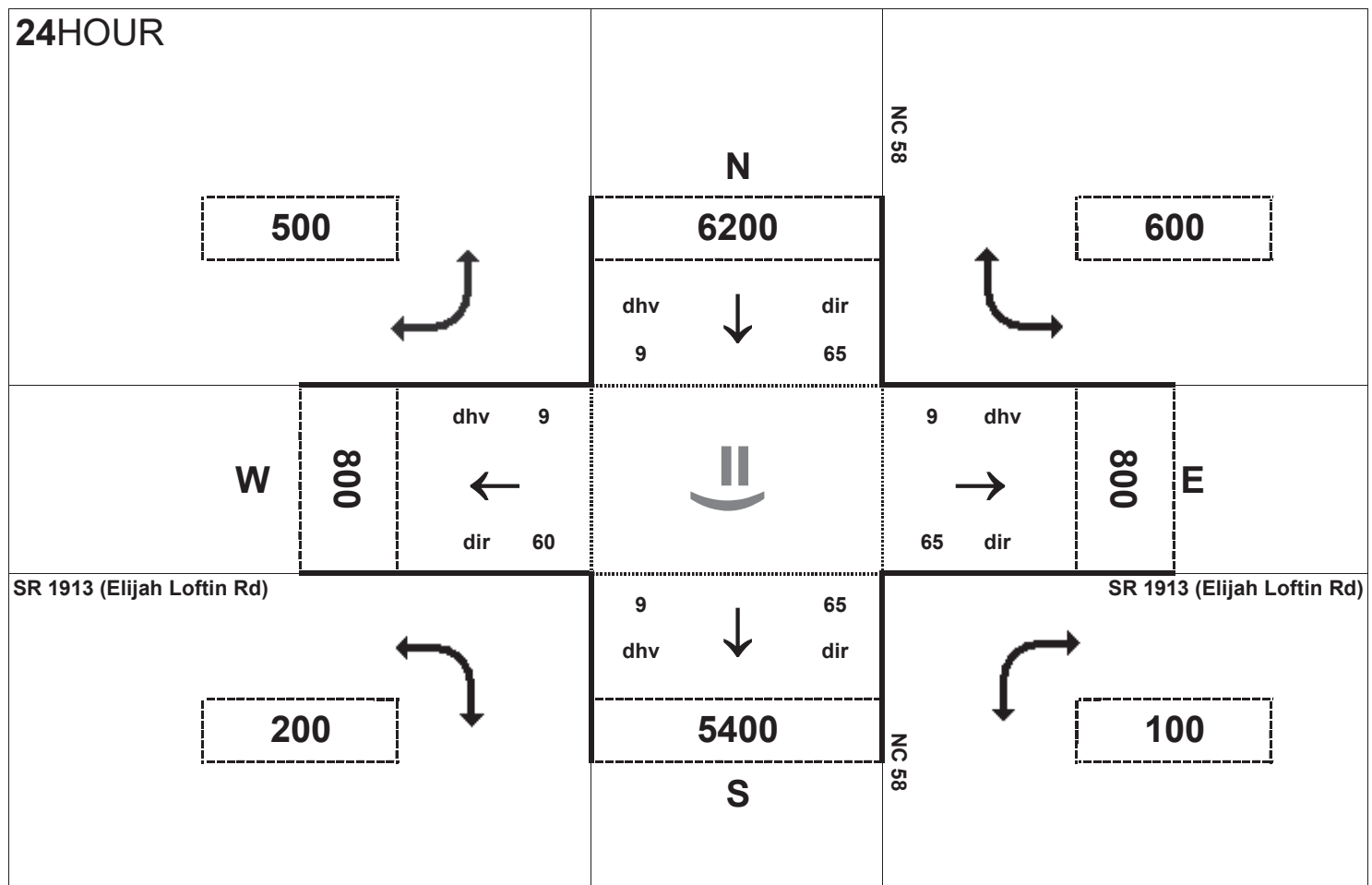
Peak Hour Volume Breakouts Report:
 445 Intersection of US 70 and SR 1357
 (Meadowbrook Dr)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
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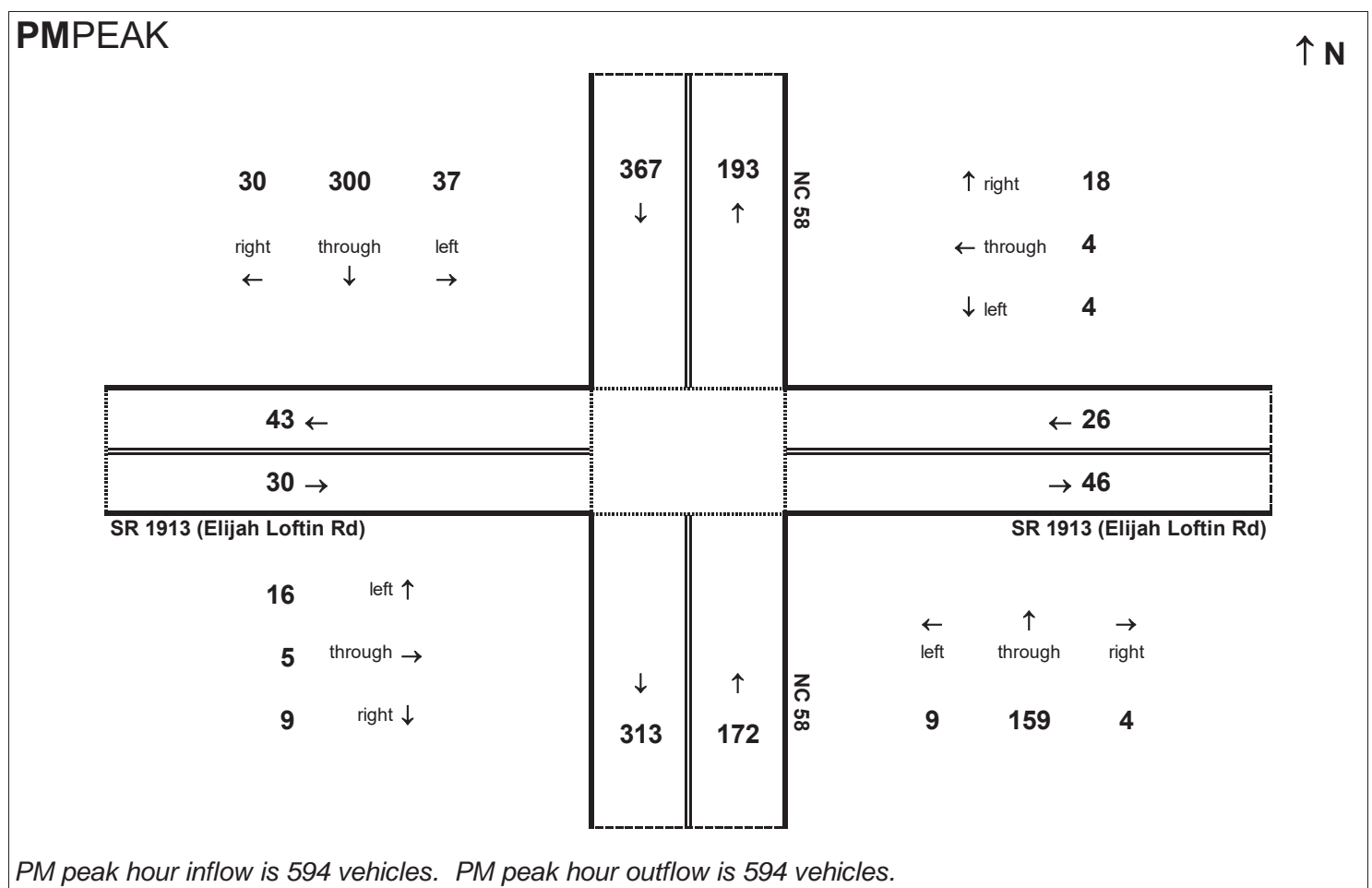
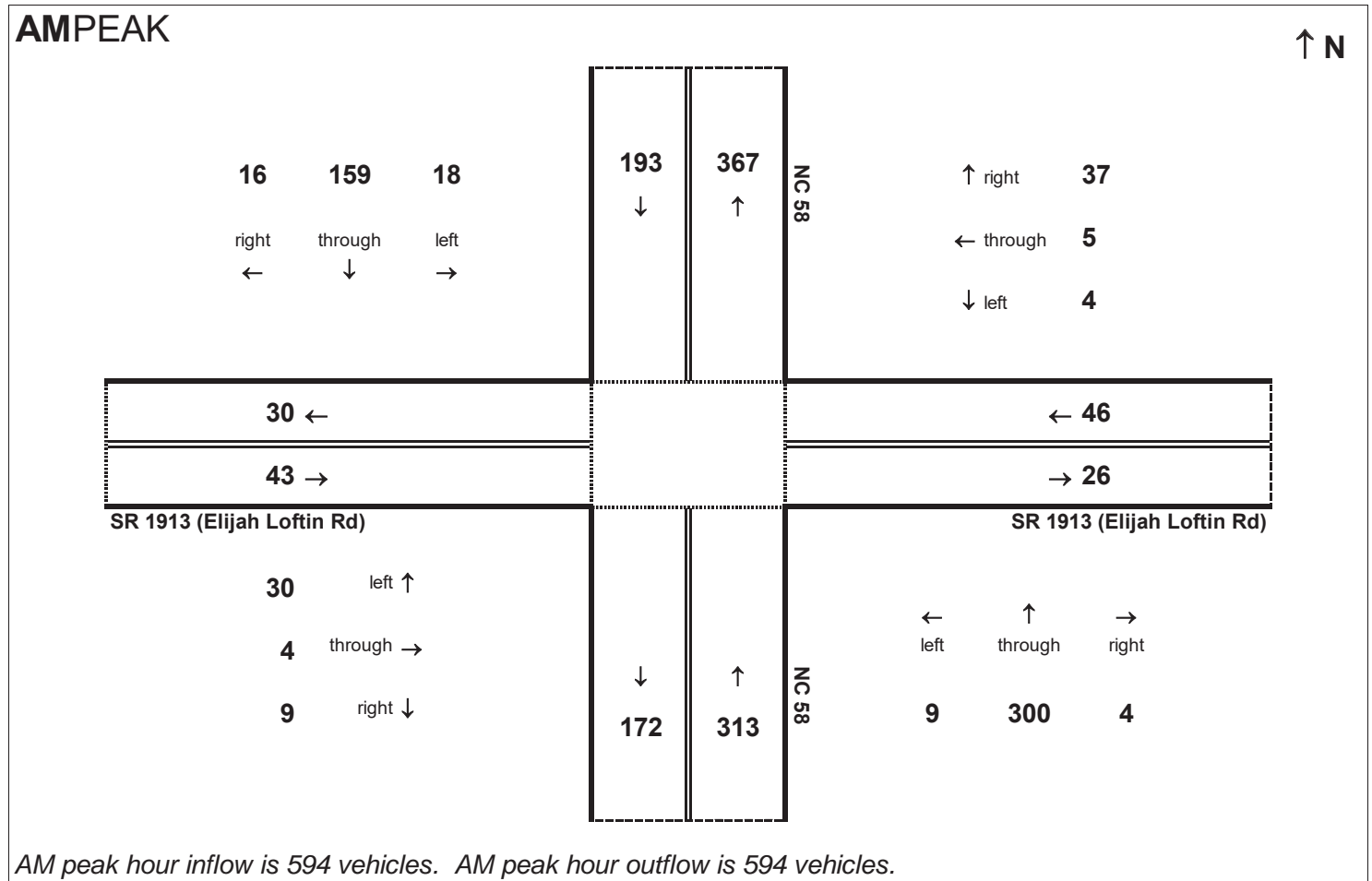


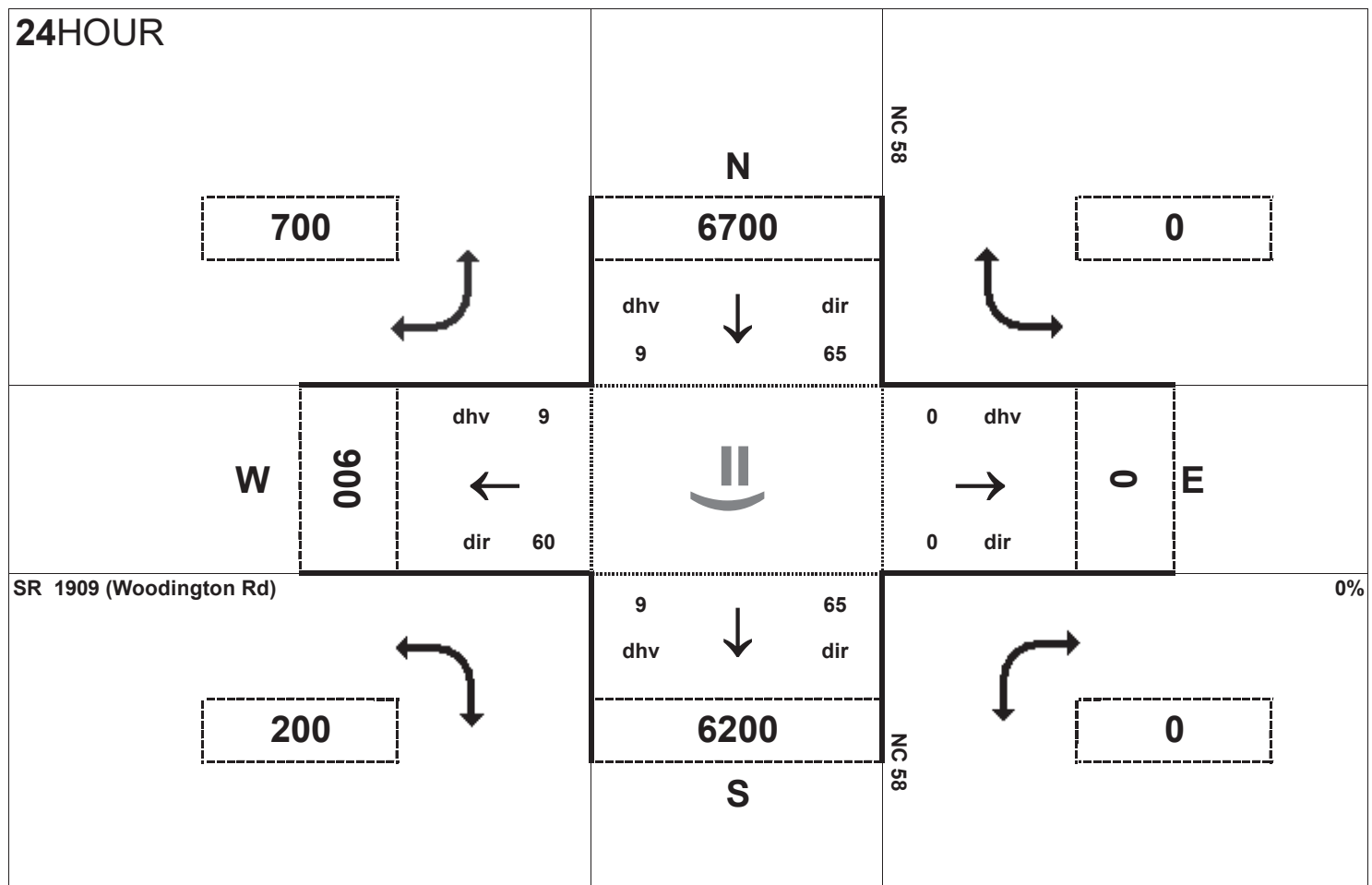
Peak Hour Volume Breakouts Report:
 446 Intersection of NC 58 and SR 1913 (Elijah Loftin Rd)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



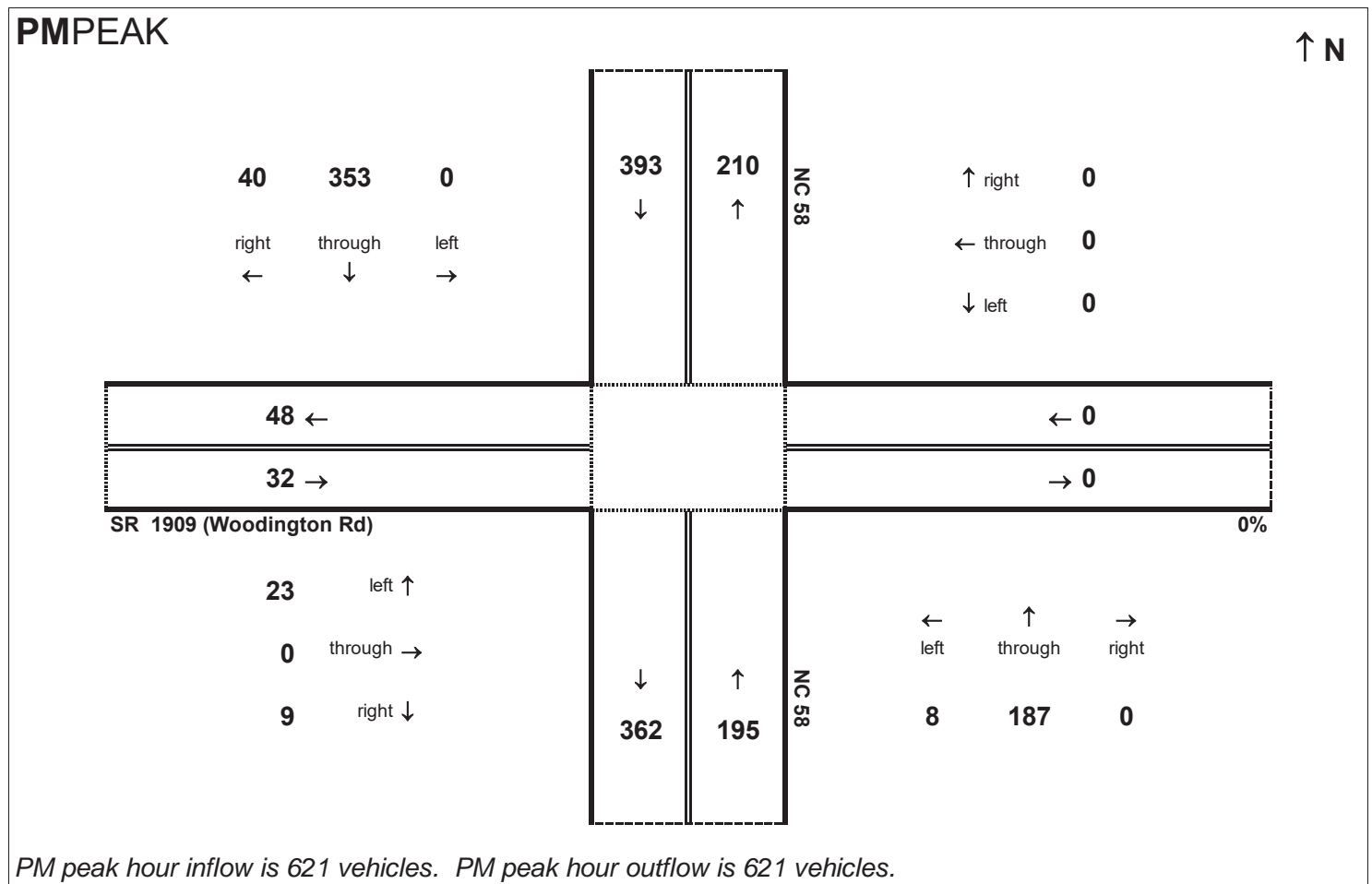
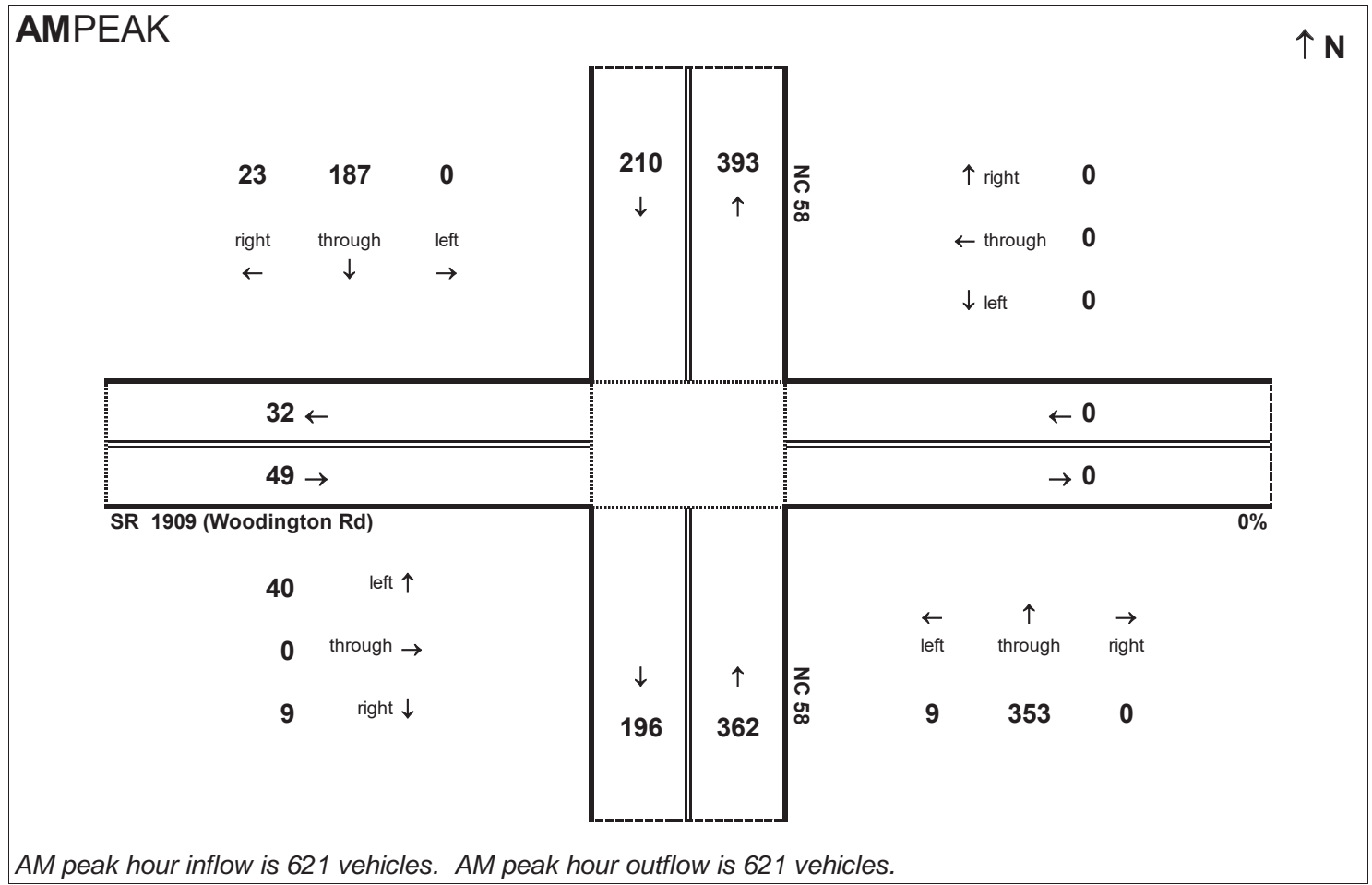


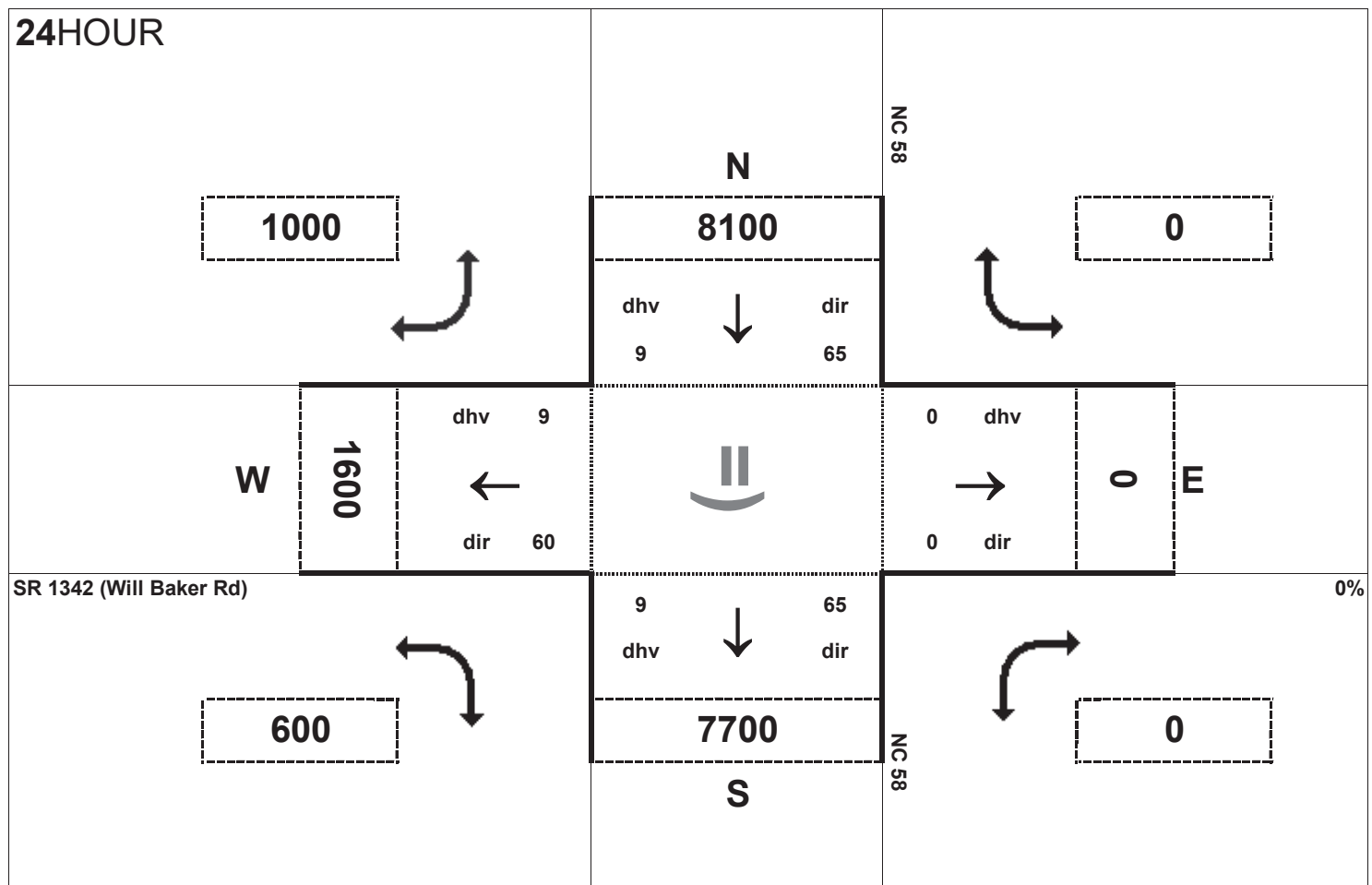
Peak Hour Volume Breakouts Report:
447 Intersection of NC 58 and SR 1909
(Woodington Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



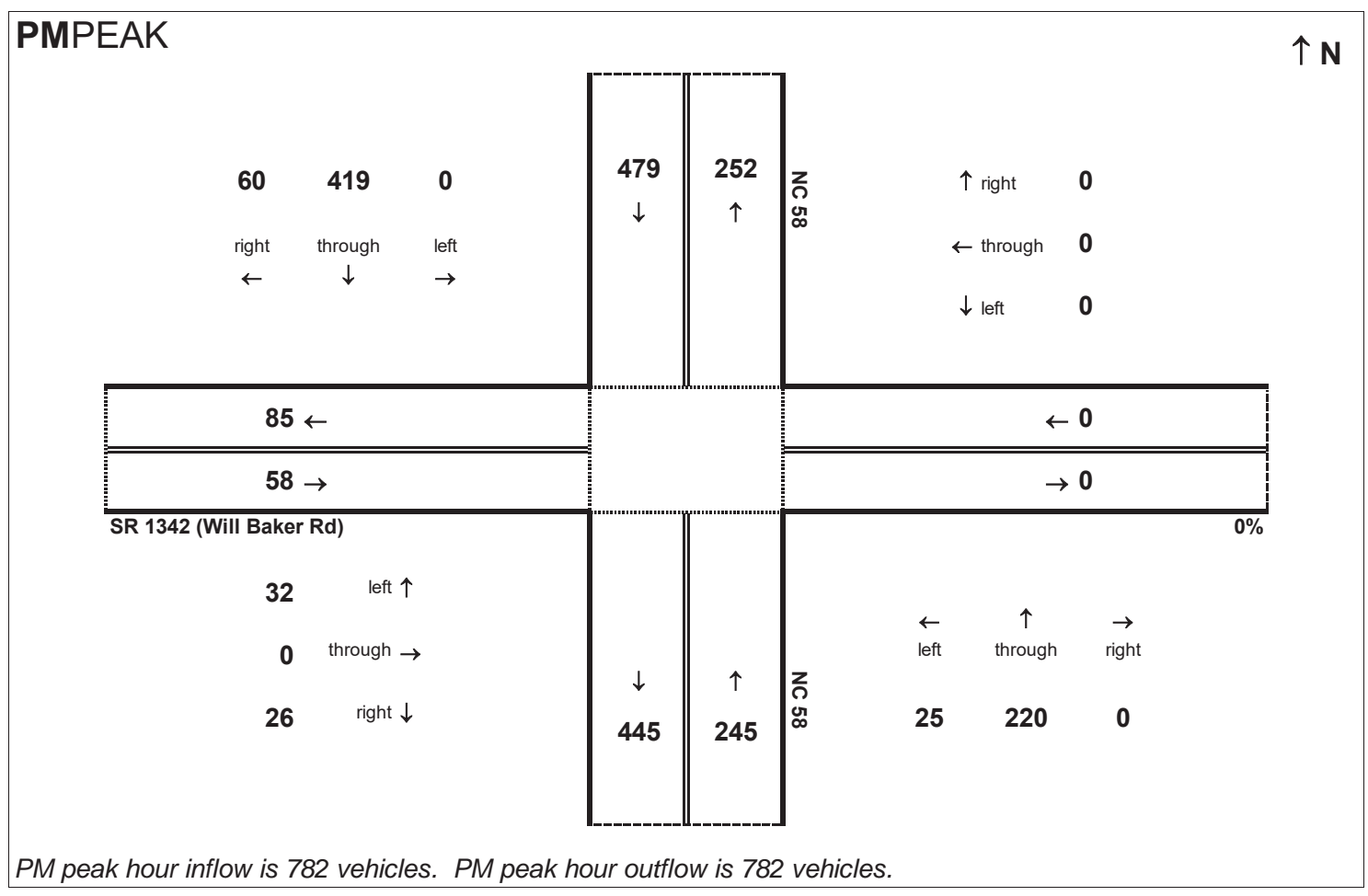
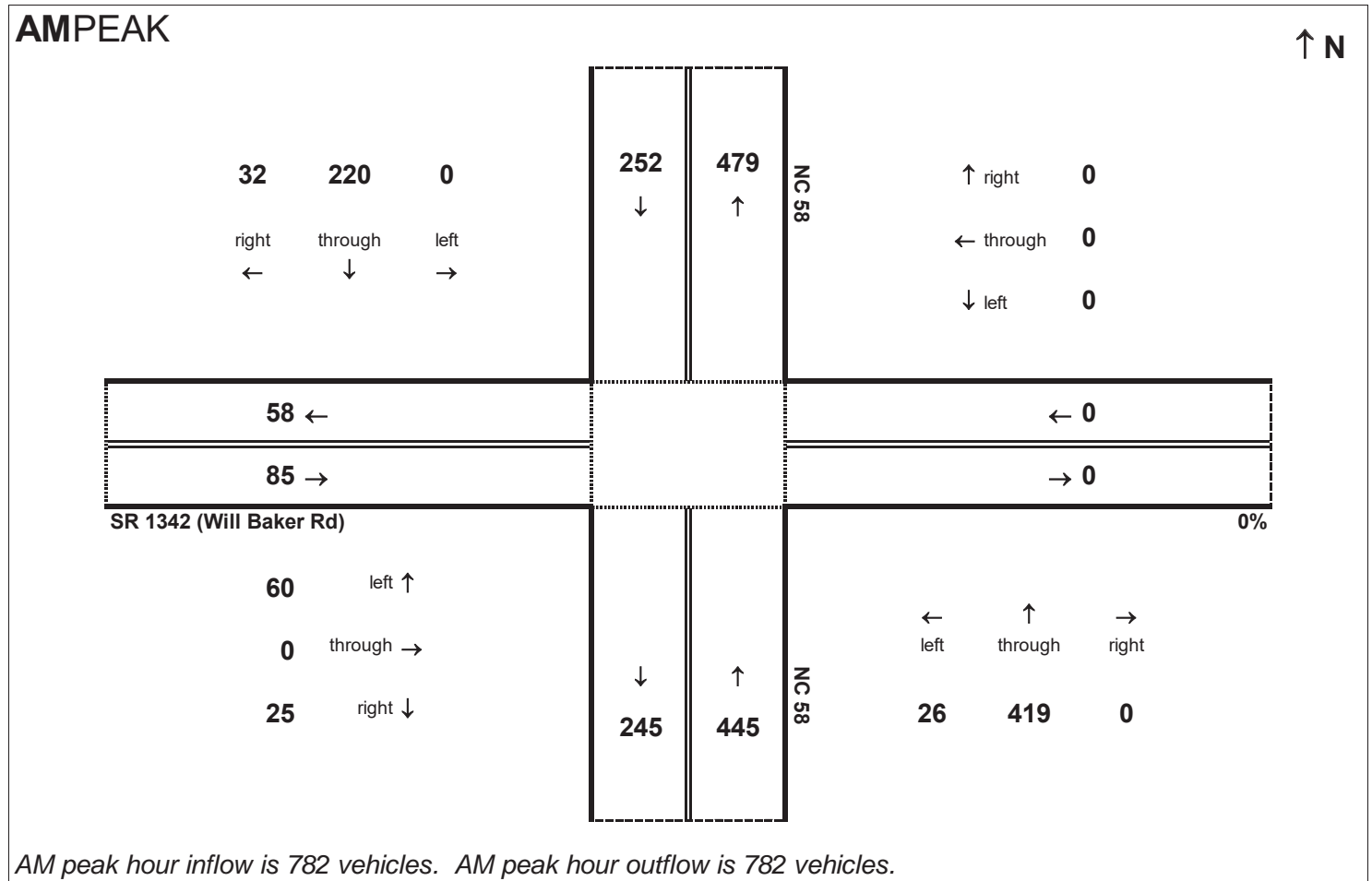


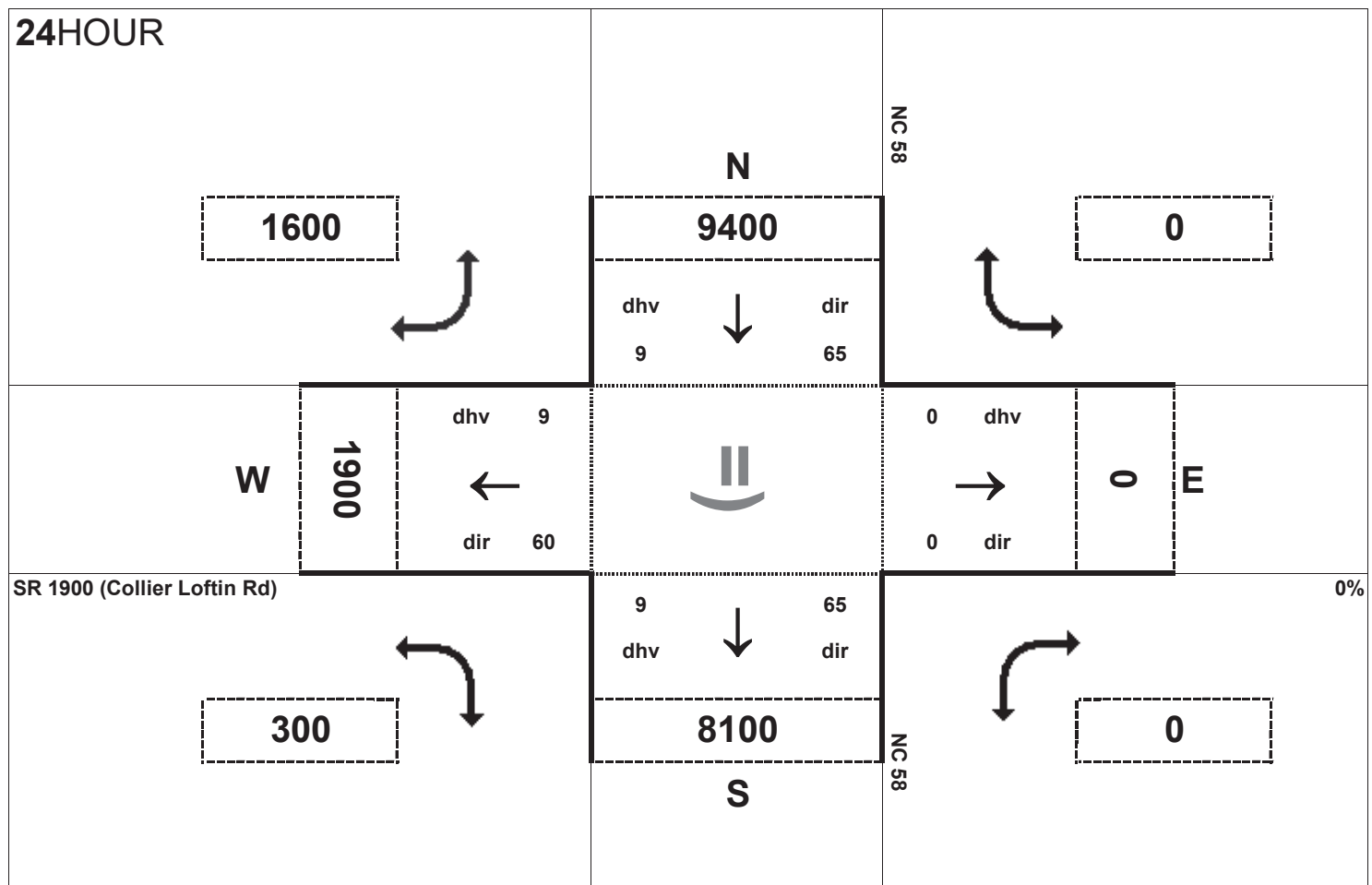
Peak Hour Volume Breakouts Report:
448 Intersection of NC 58 and SR 1342 (Will Baker Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



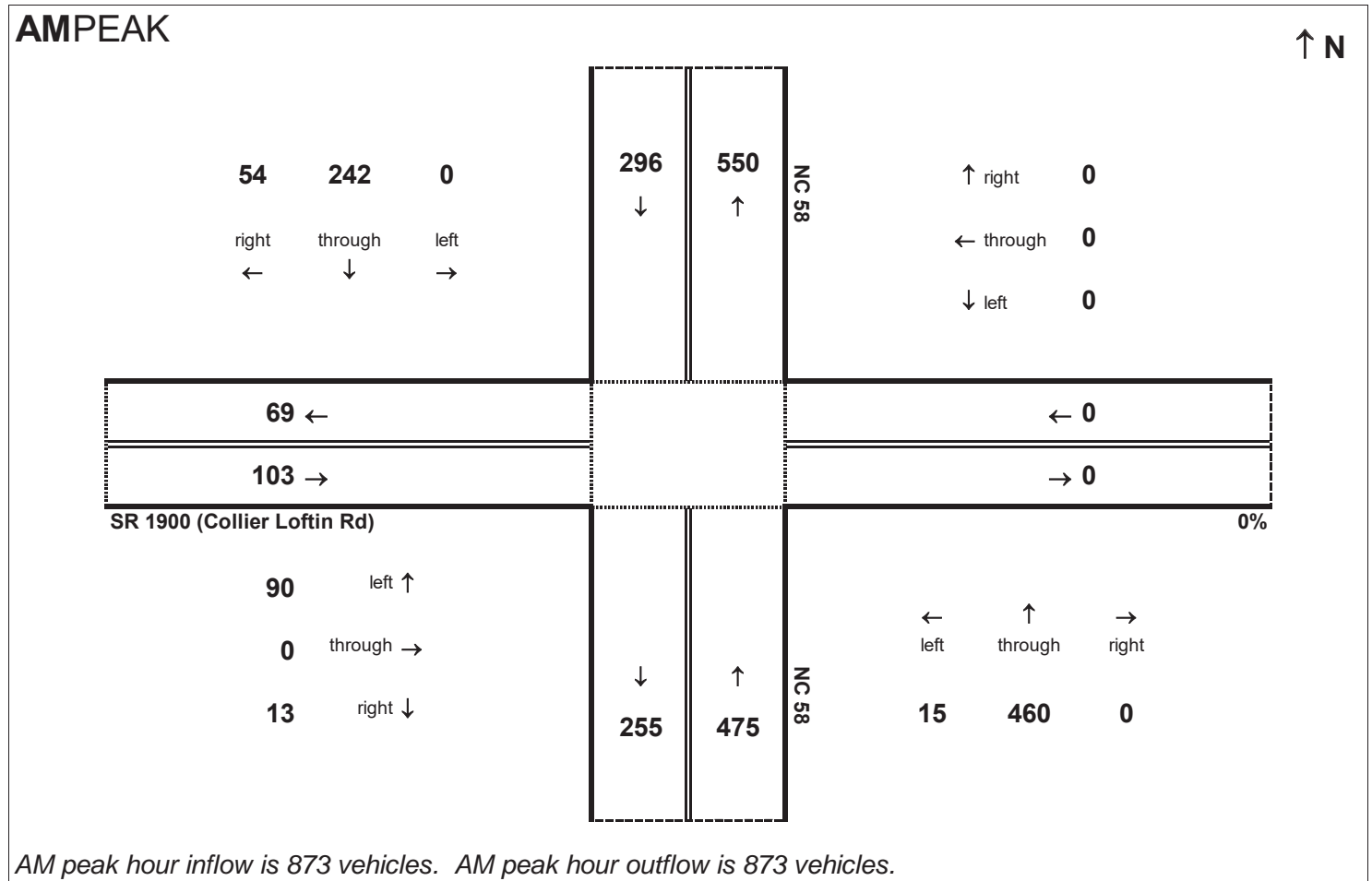


Peak Hour Volume Breakouts Report:
 449 Intersection of NC 58 and SR 1900 (Collier Loftin Rd)

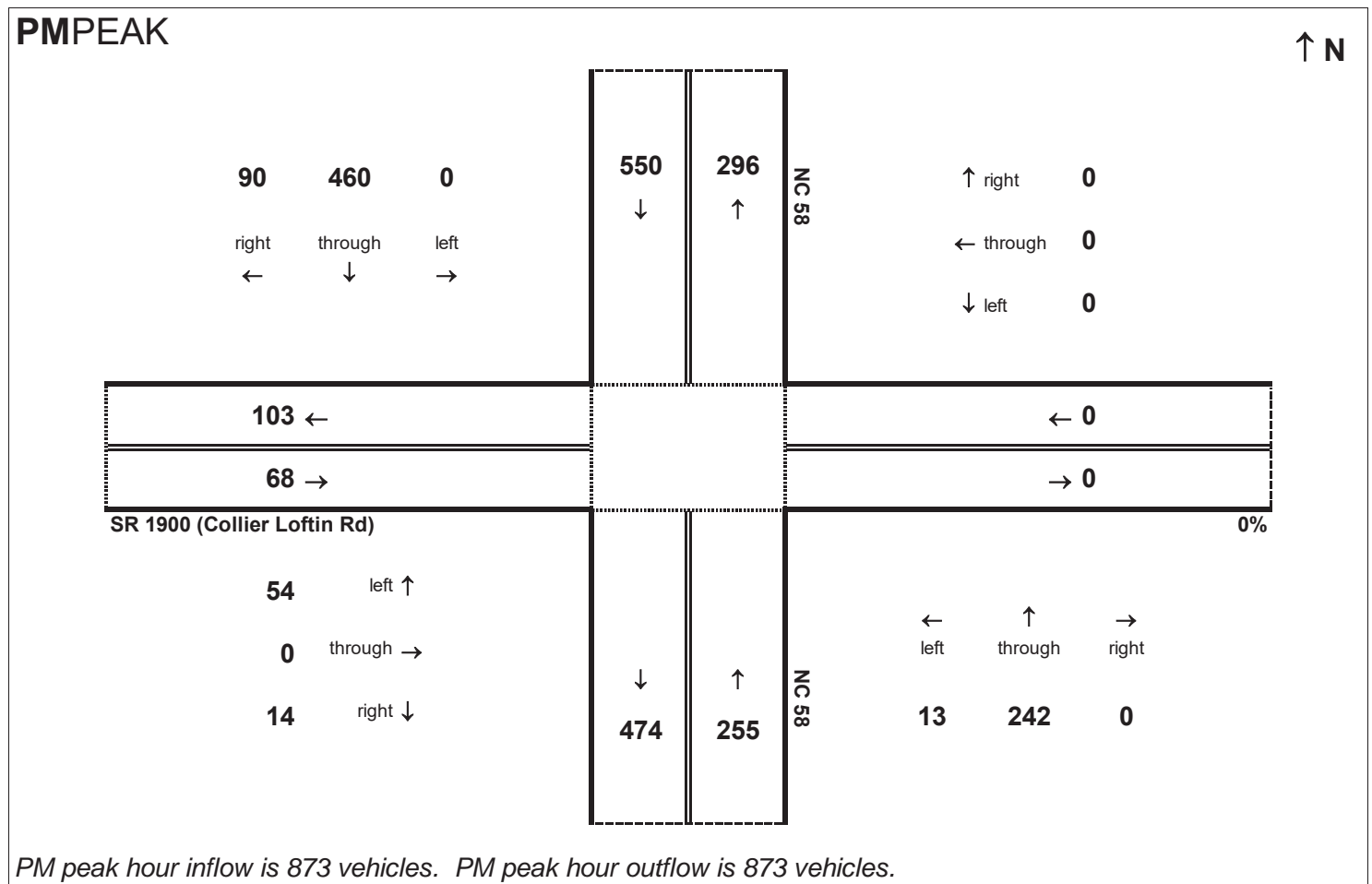
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
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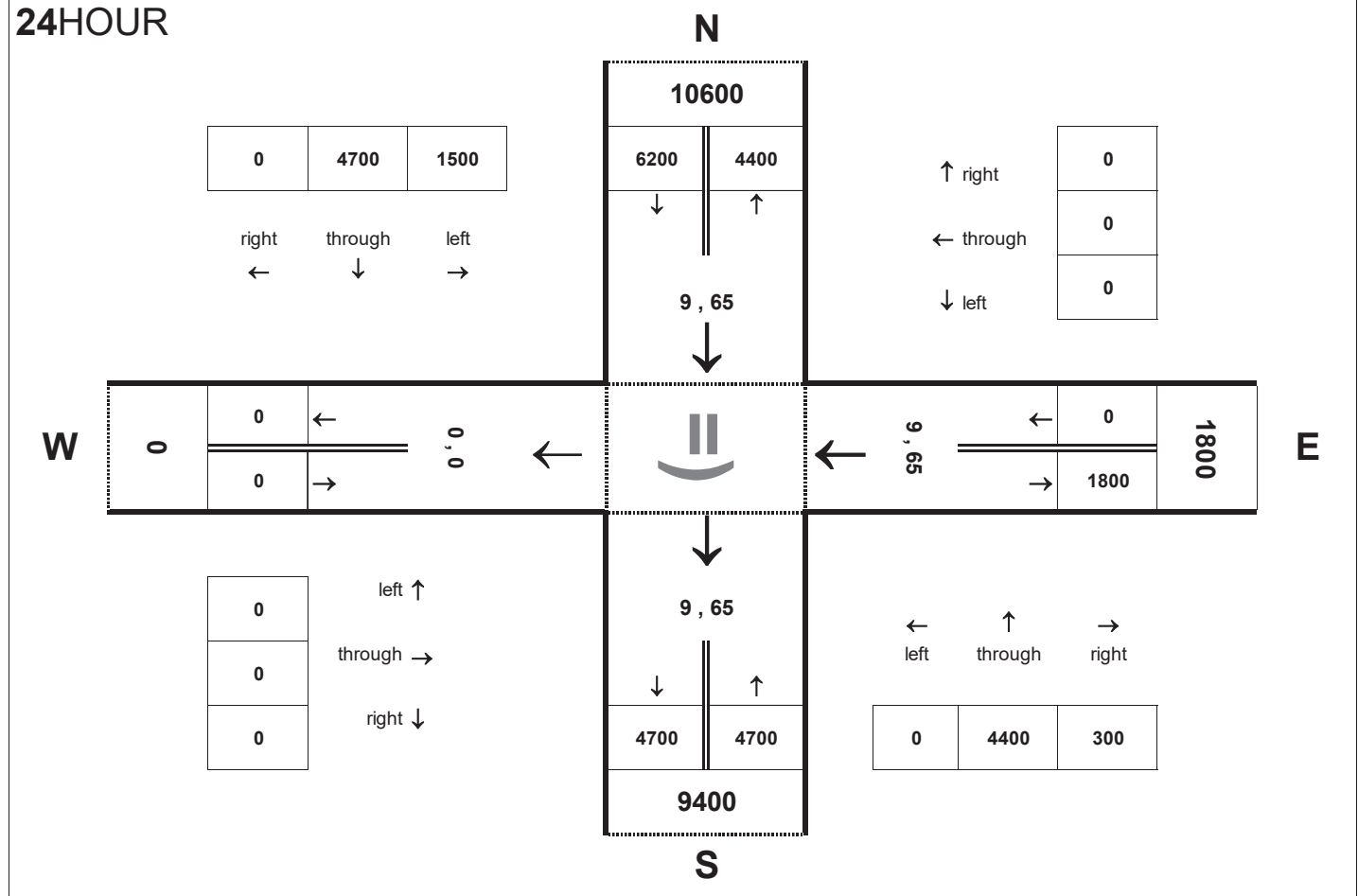


AM peak hour inflow is 873 vehicles. AM peak hour outflow is 873 vehicles.



PM peak hour inflow is 873 vehicles. PM peak hour outflow is 873 vehicles.

24HOUR



Peak Hour Volume Breakouts Report:

450 Intersection of NC 58 and southern Lenoir CC driveway

Traffic Forecast Release Date:

November-16

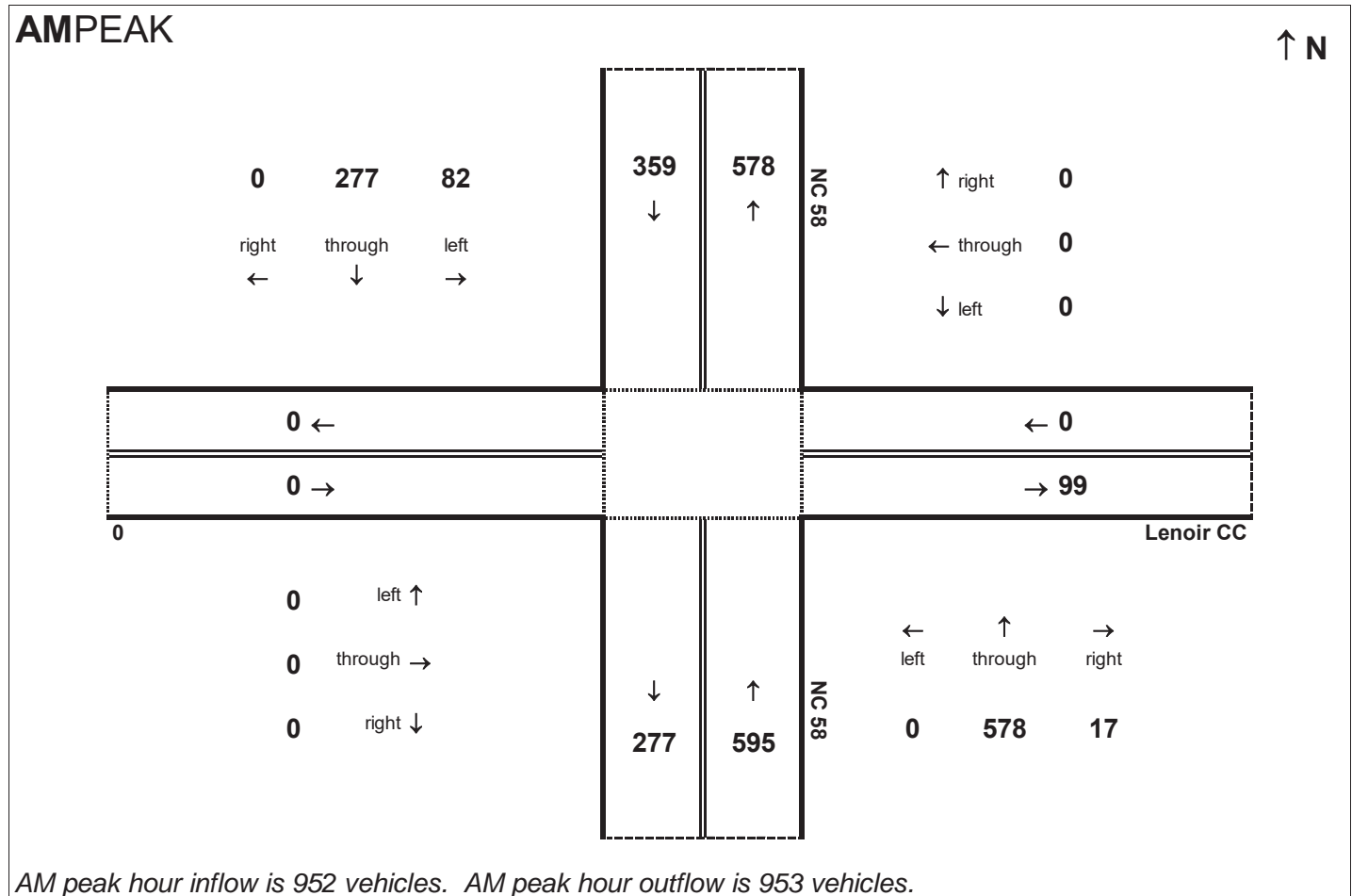
Traffic Data Year:

Future Year No-Build

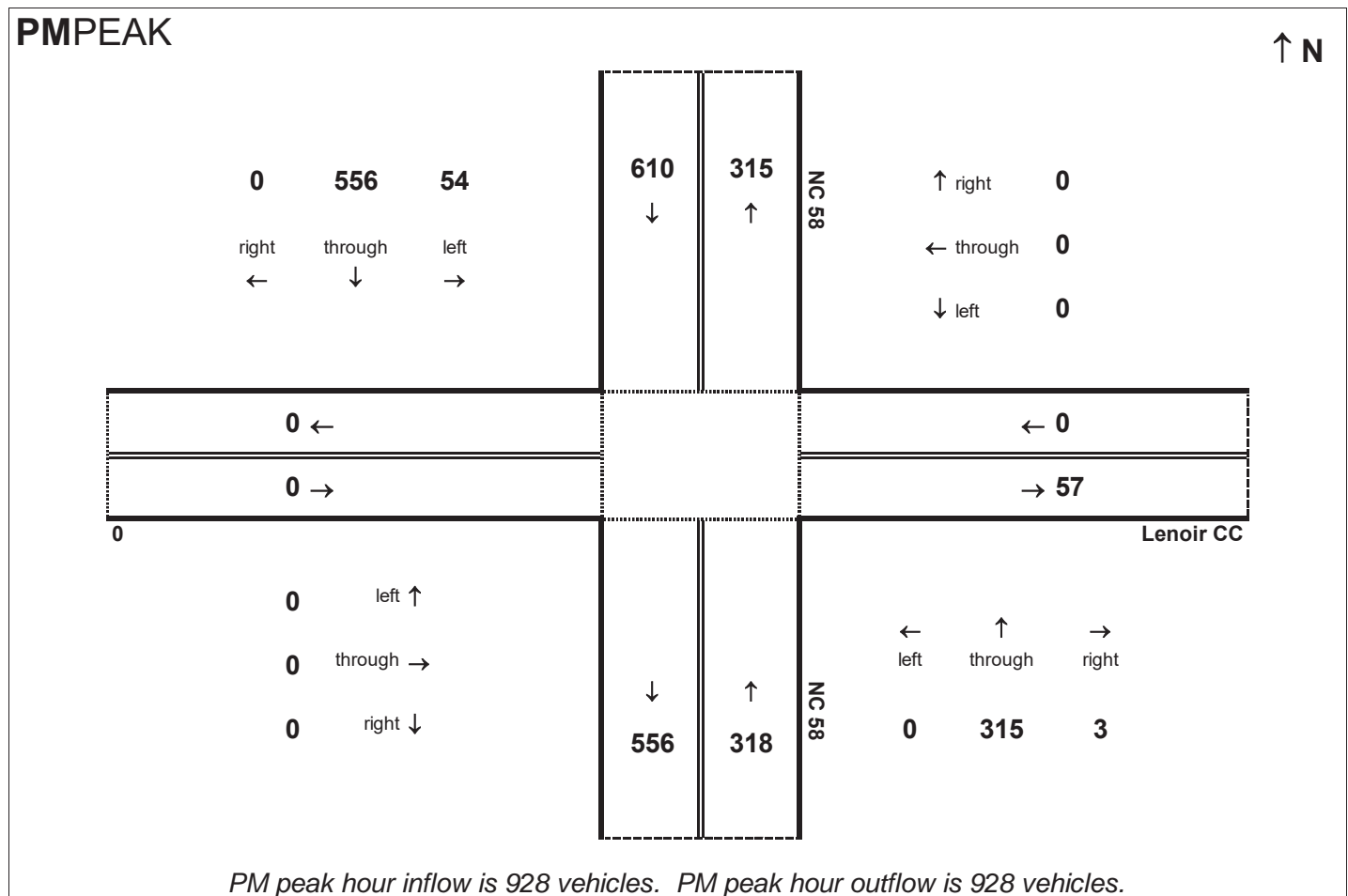
Project:

R-2553

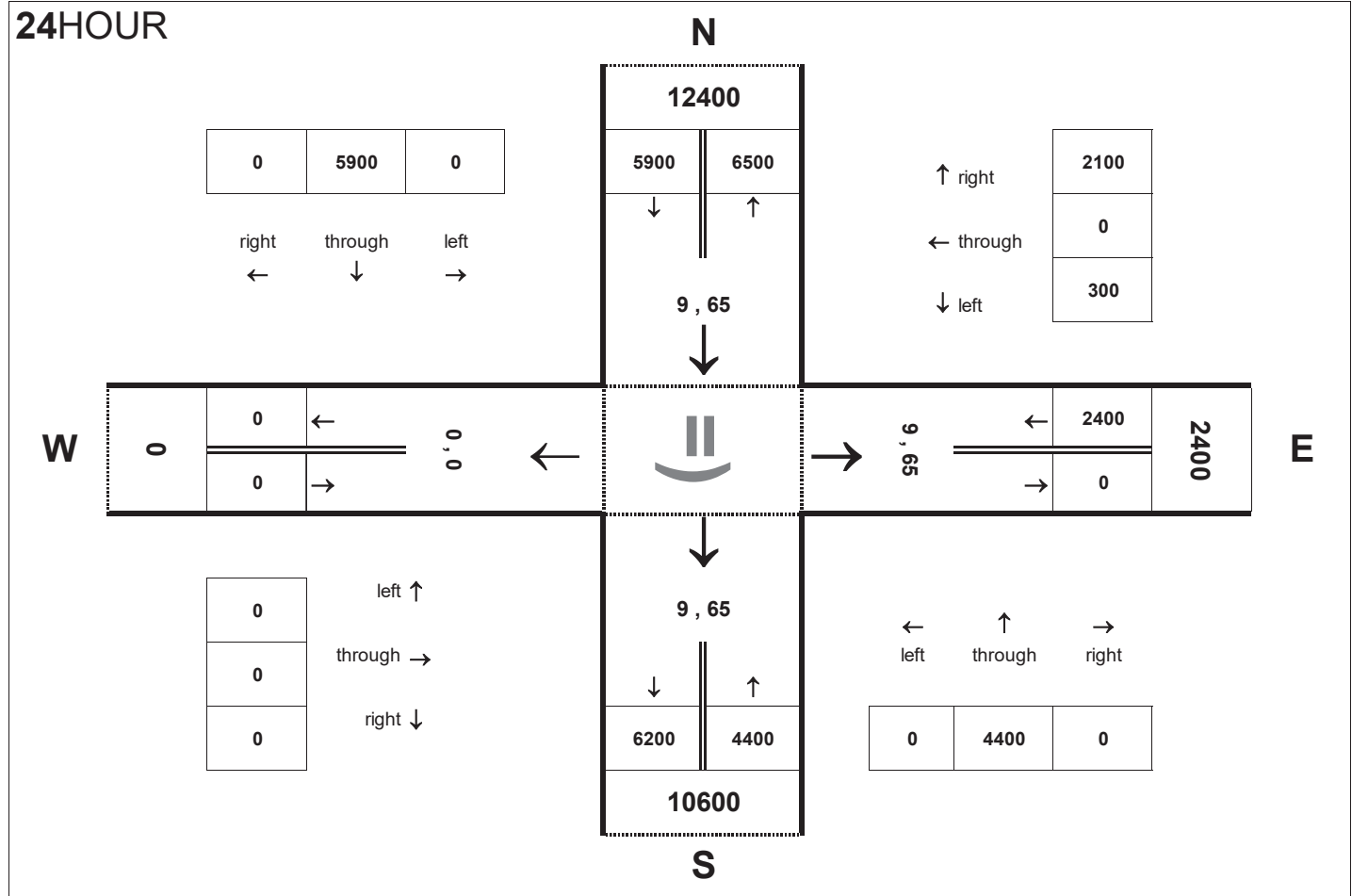
AMPEAK



PMPEAK



24HOUR



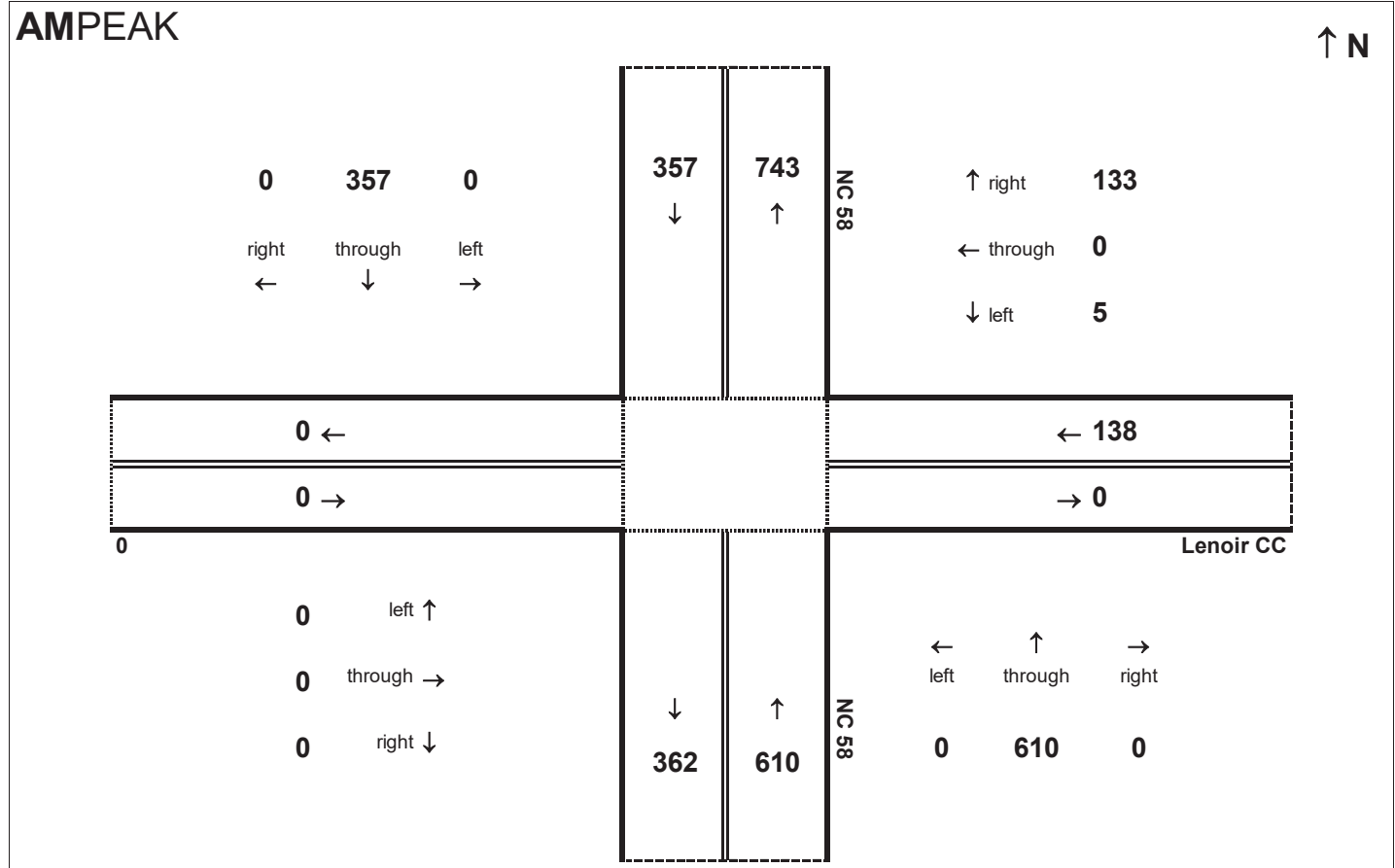
Peak Hour Volume Breakouts Report:
451 Intersection of NC 58 and northern Lenoir CC driveway

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

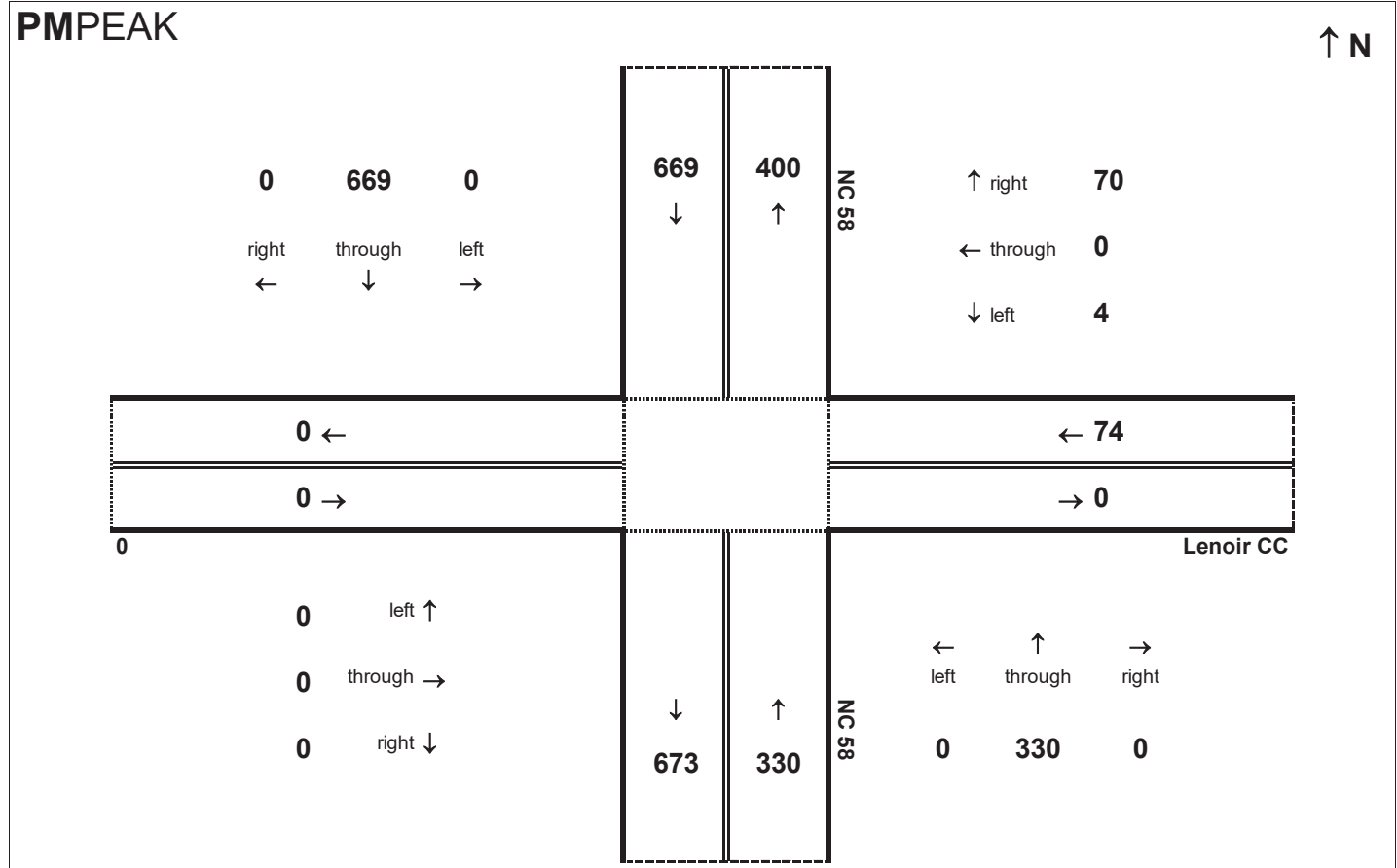
Project:
R-2553

AMPEAK

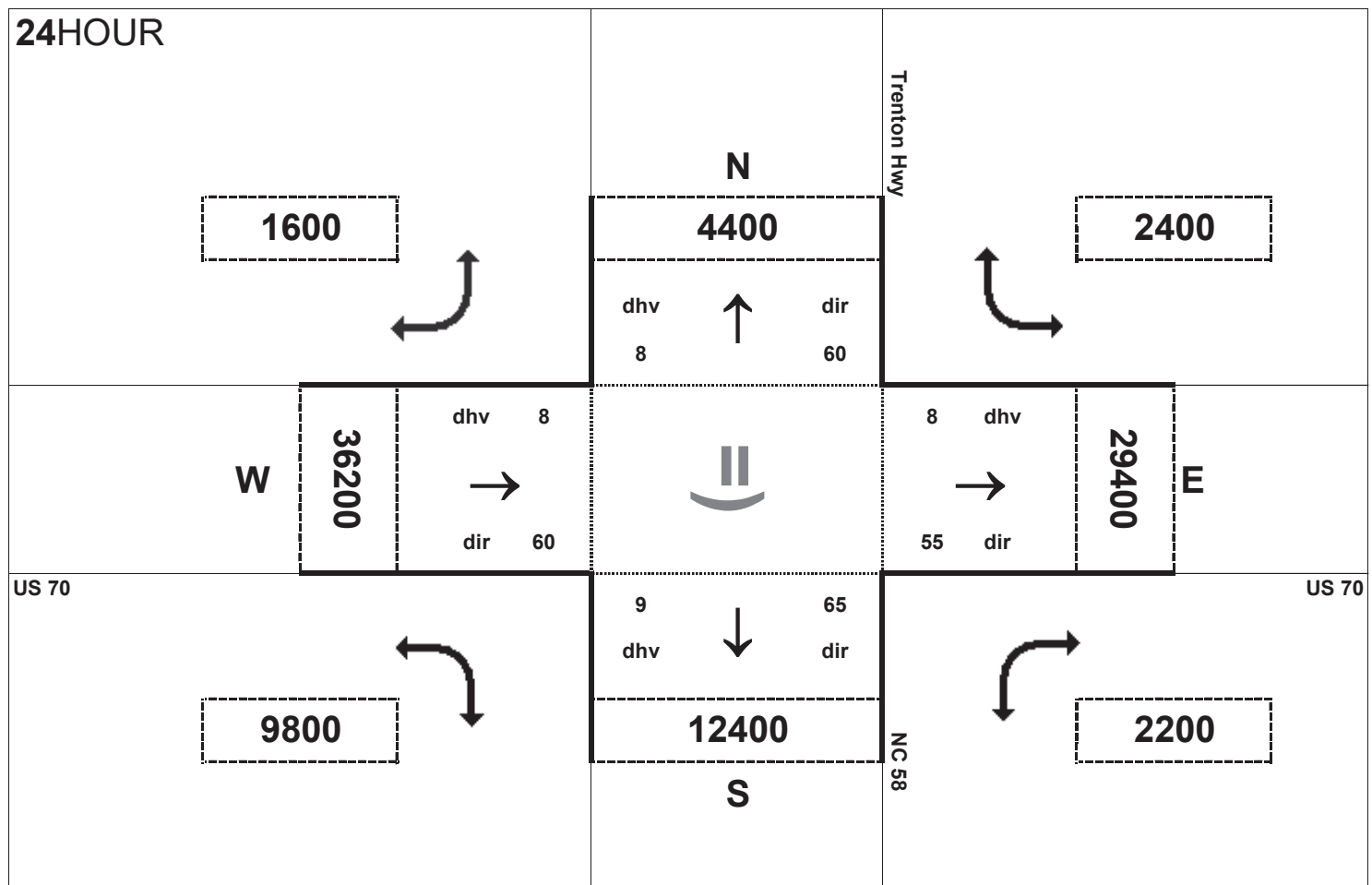


AM peak hour inflow is 1105 vehicles. AM peak hour outflow is 1143 vehicles.

PMPEAK



PM peak hour inflow is 1074 vehicles. PM peak hour outflow is 1143 vehicles.

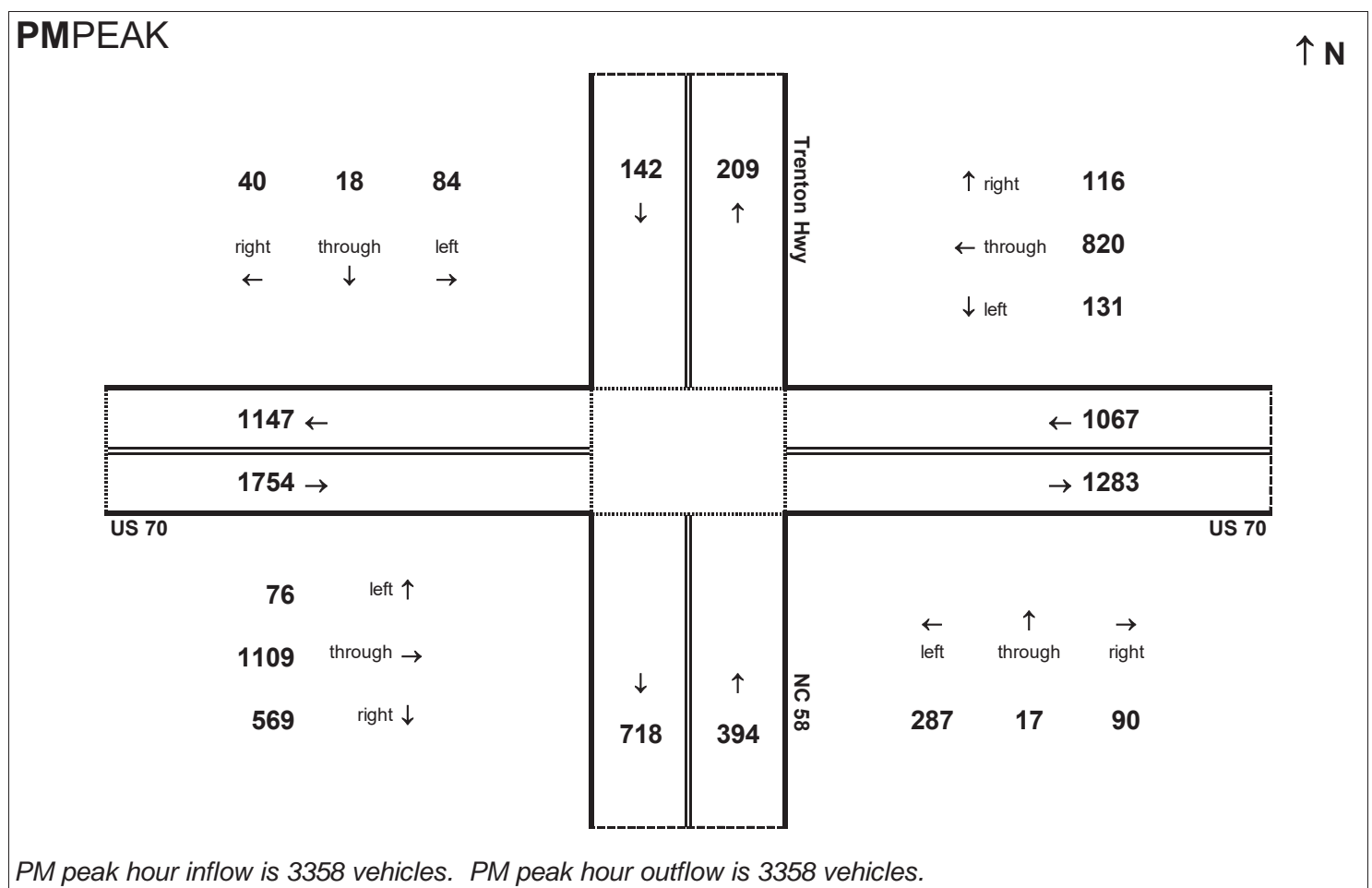
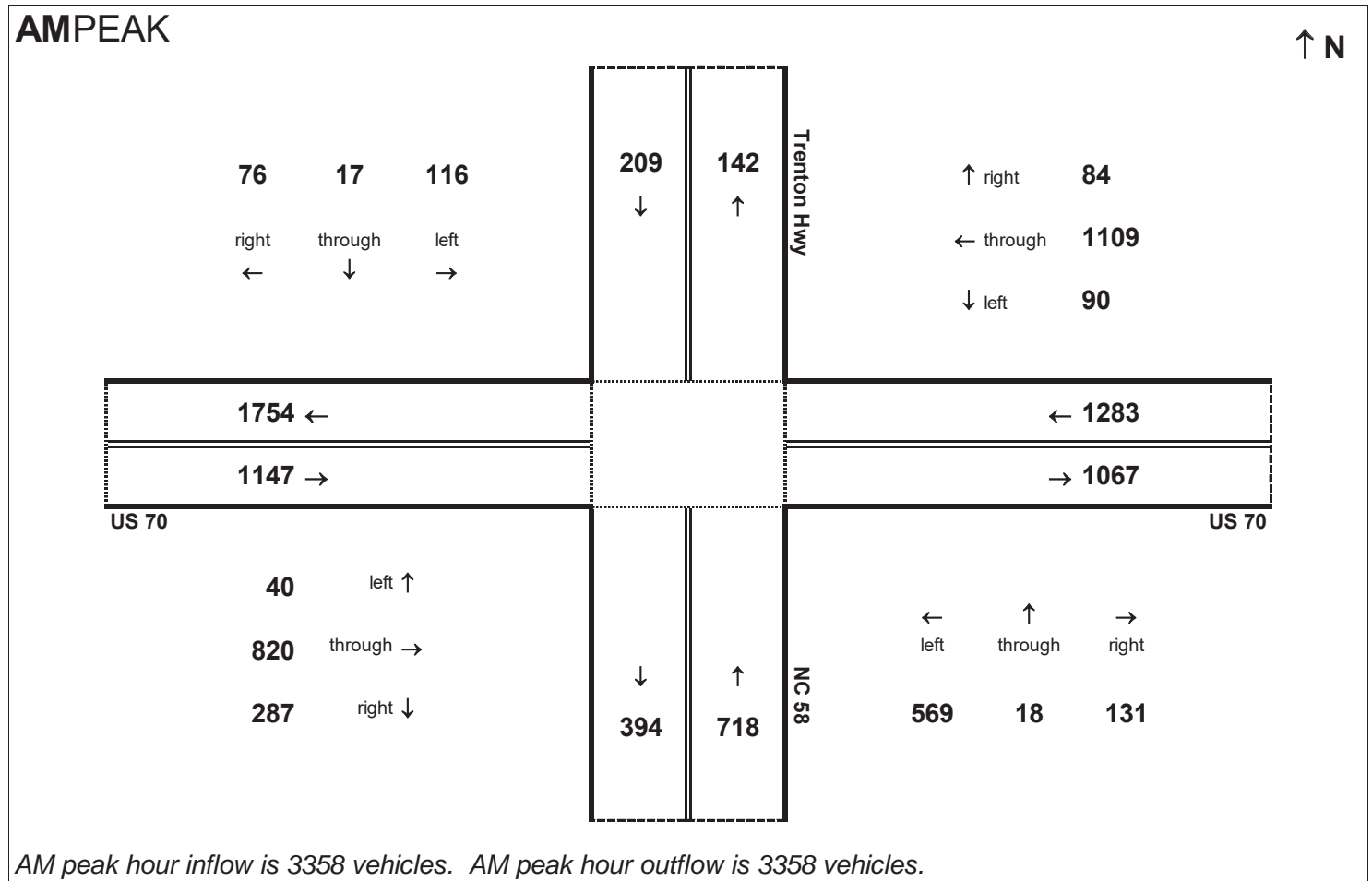


Peak Hour Volume Breakouts Report:
452 Intersection of US 70 and NC 58 / Trenton Hwy

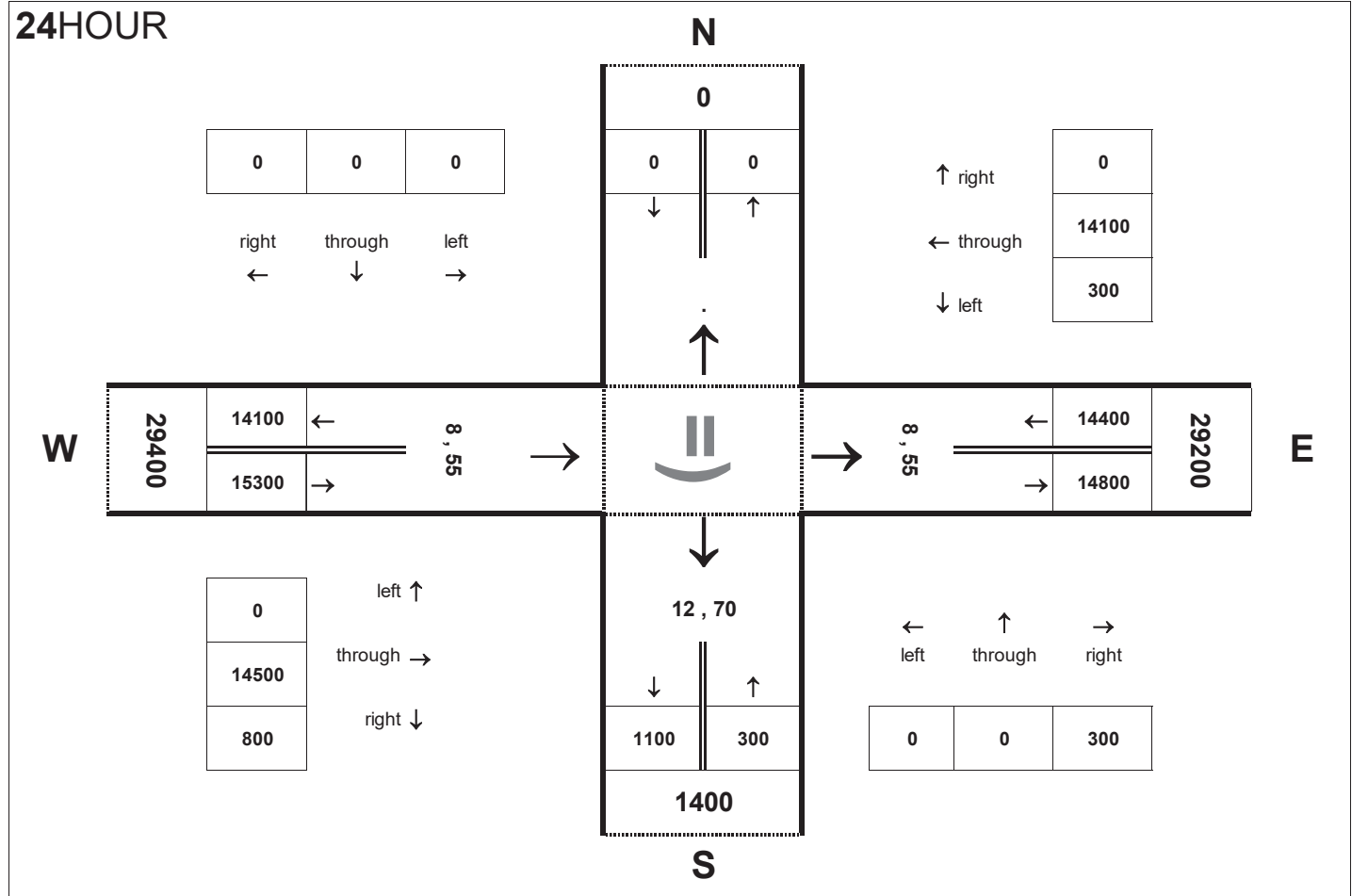
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



24HOUR



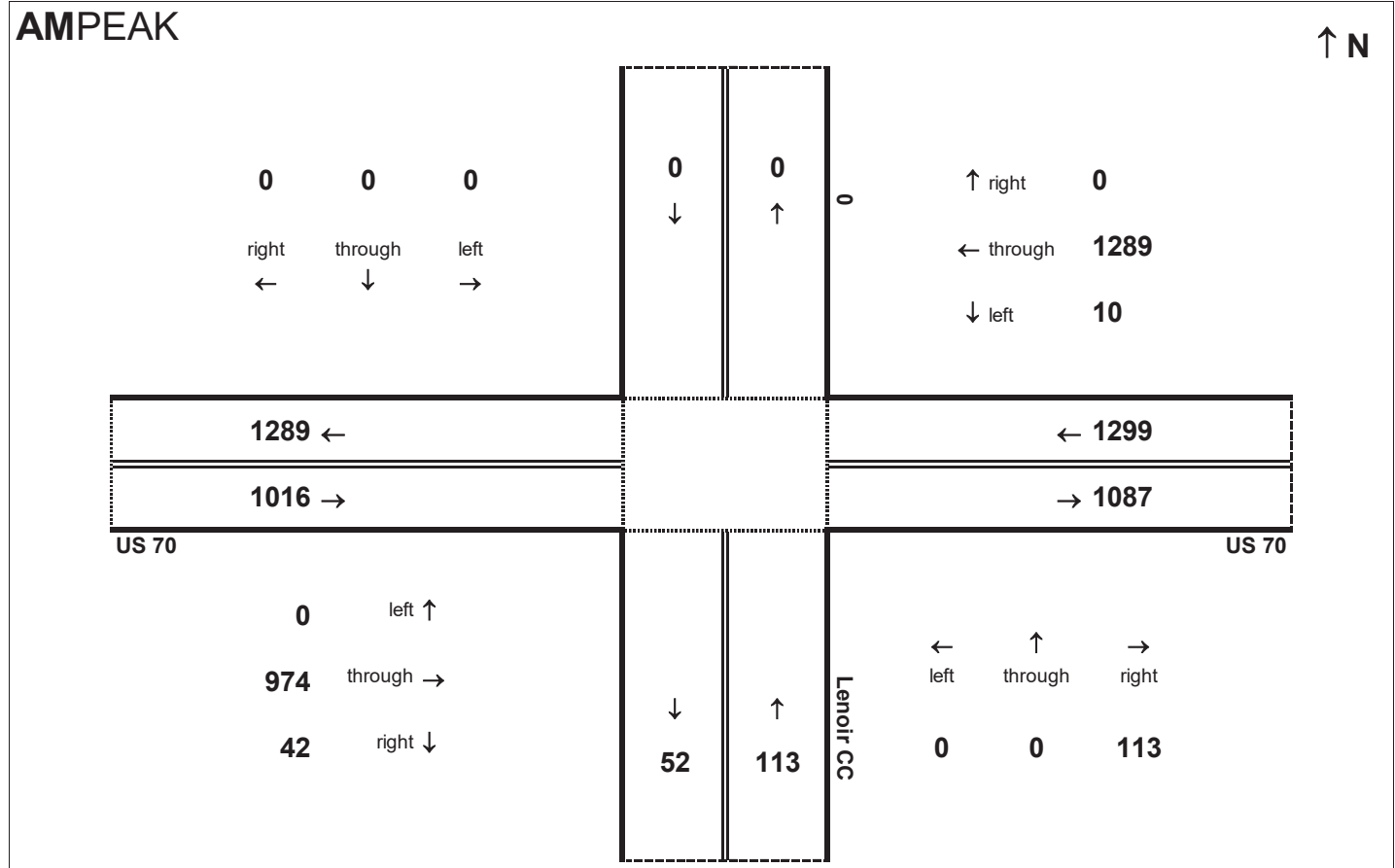
Peak Hour Volume Breakouts Report:
453 Intersection of US 70 and Lenoir CC

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

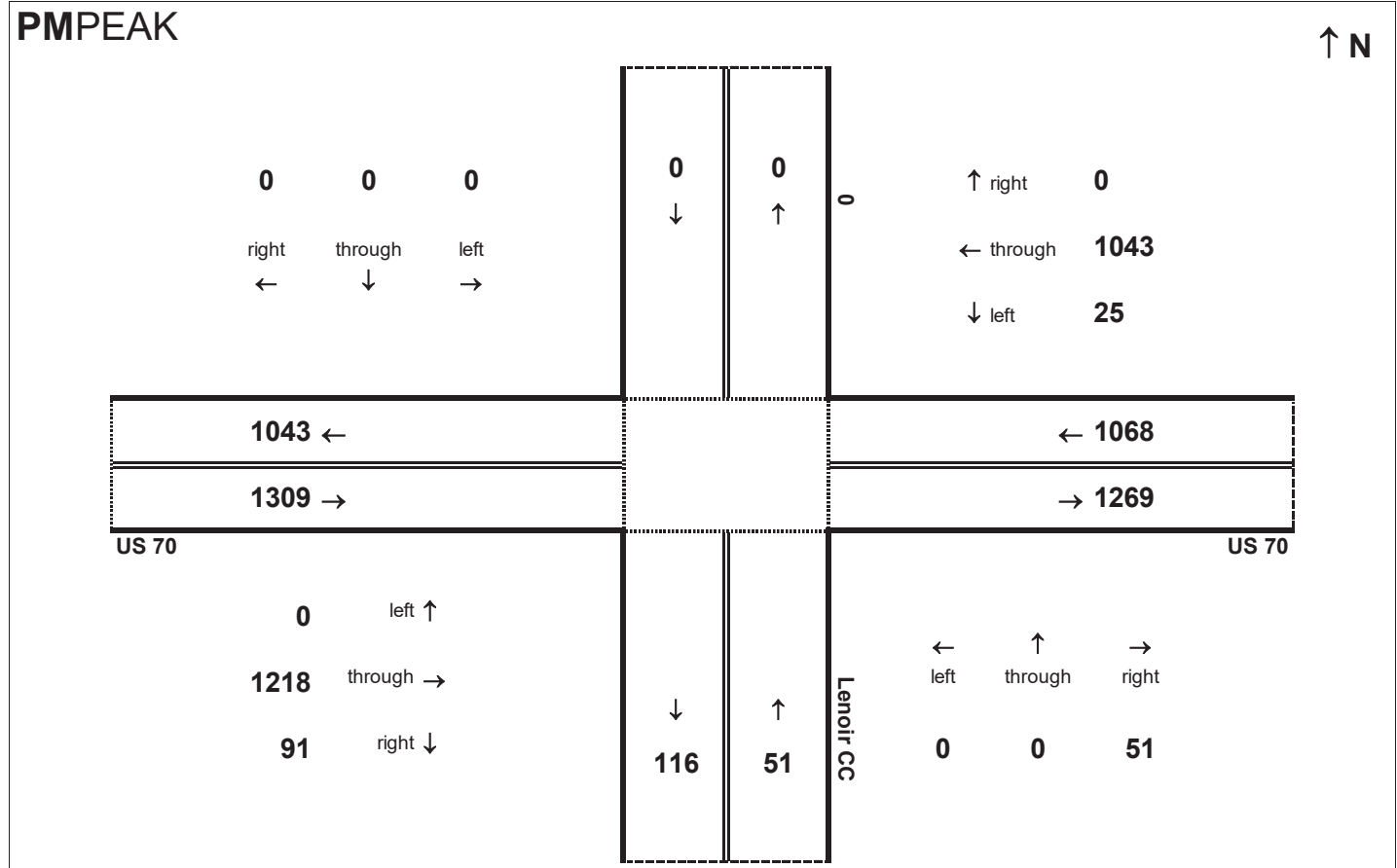
Project:
R-2553

AMPEAK

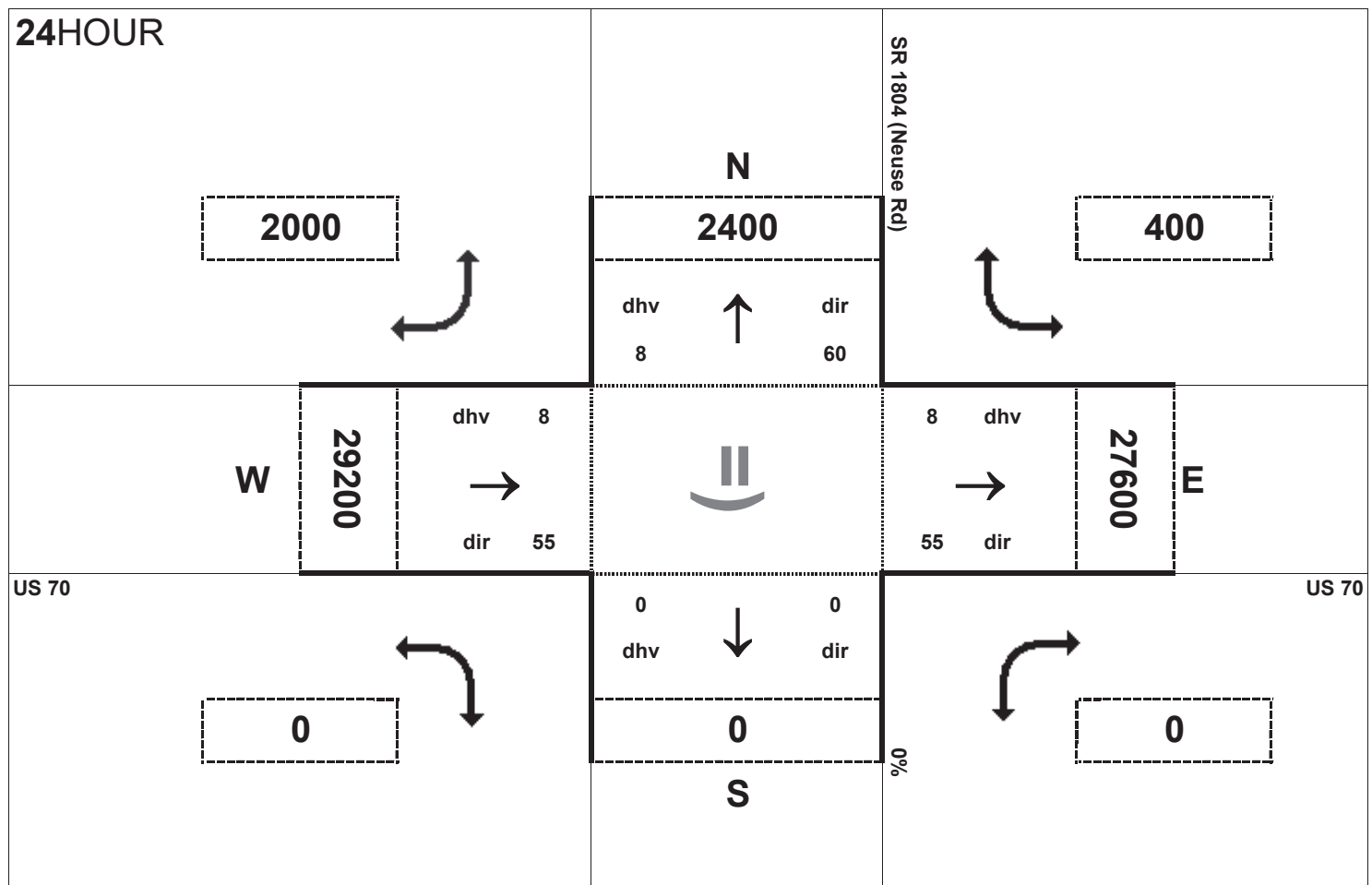


AM peak hour inflow is 2428 vehicles. AM peak hour outflow is 2428 vehicles.

PMPEAK



PM peak hour inflow is 2428 vehicles. PM peak hour outflow is 2428 vehicles.

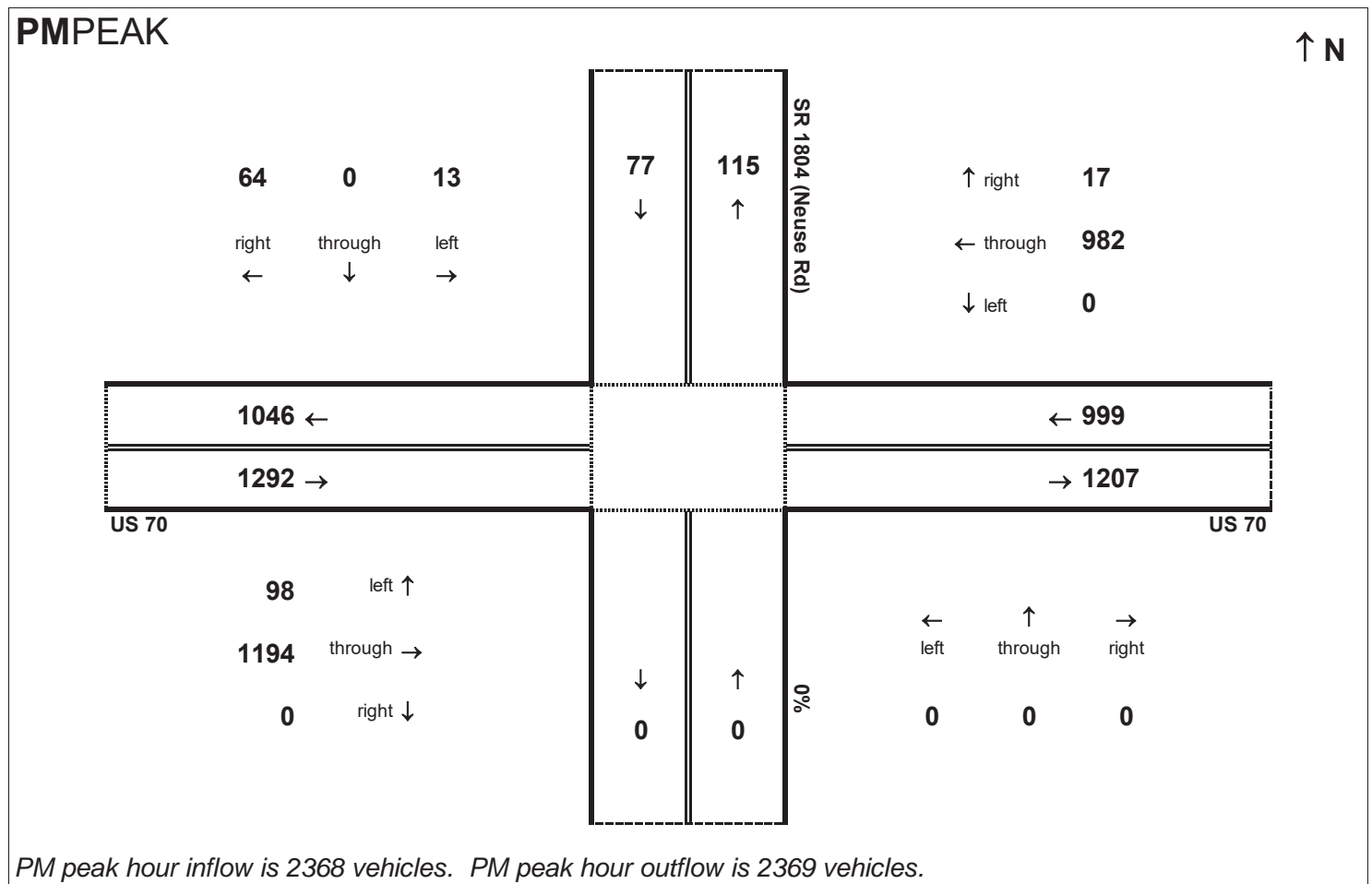
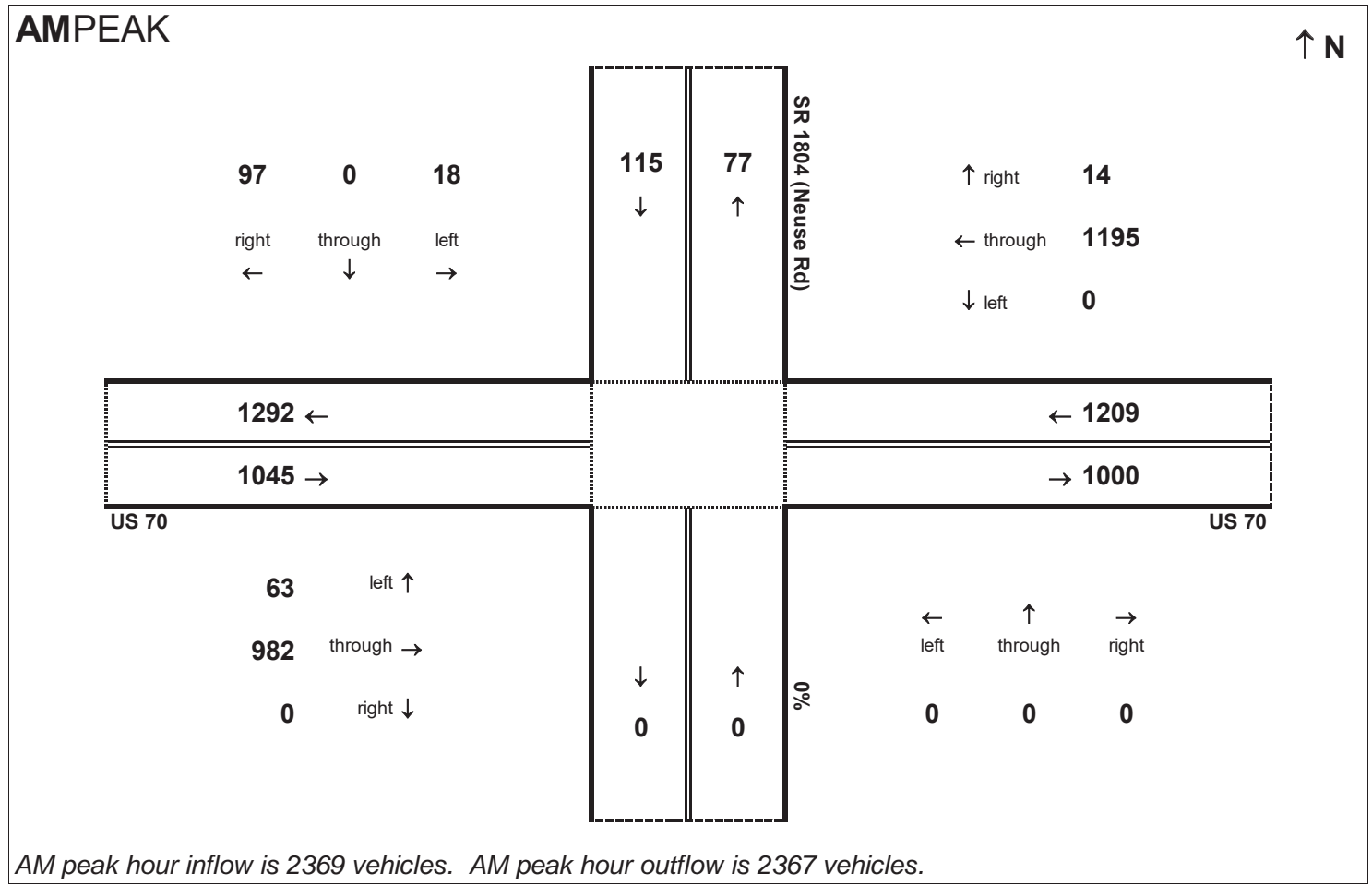


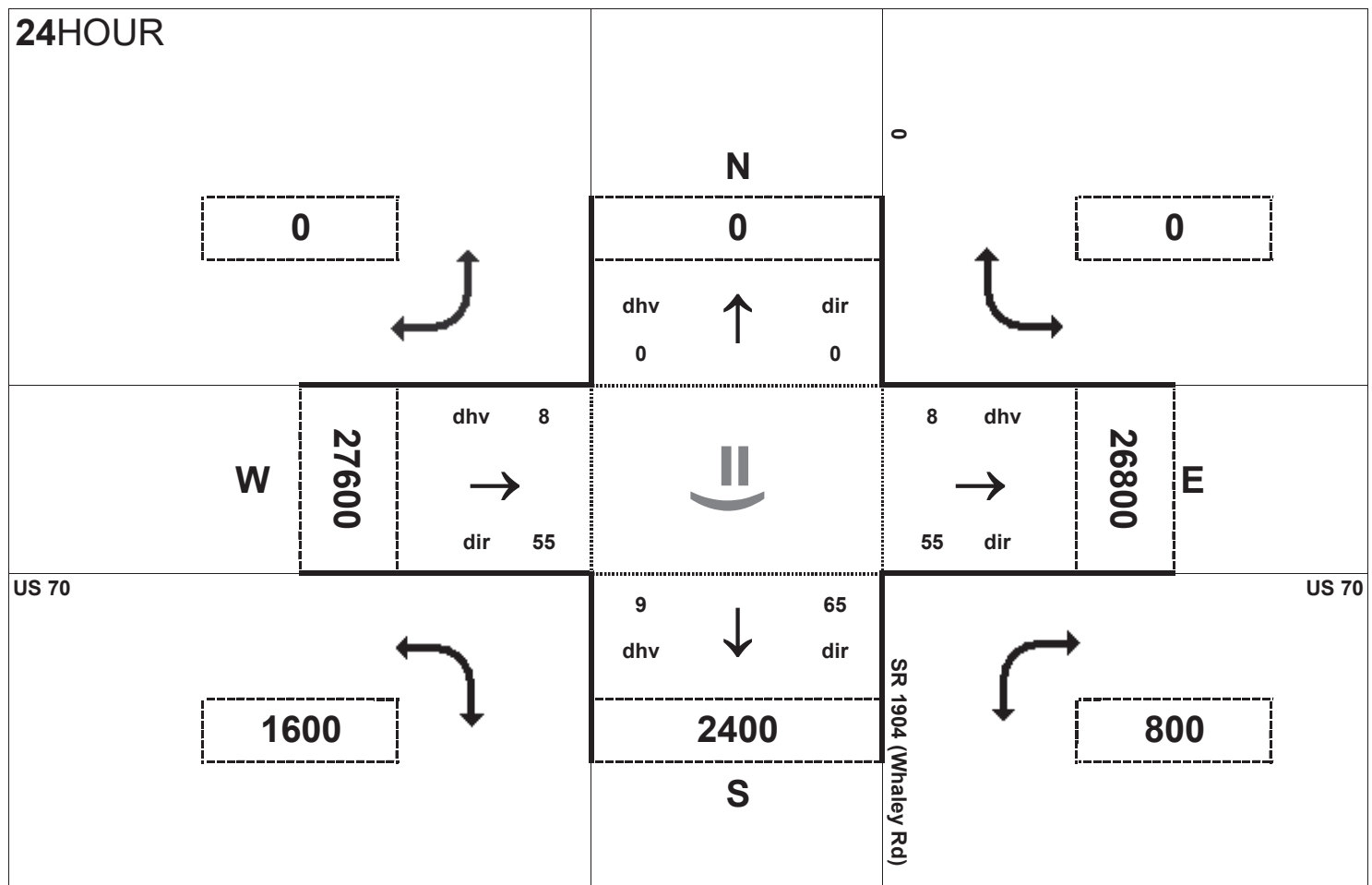
Peak Hour Volume Breakouts Report:
454 Intersection of US 70 and SR 1804 (Neuse Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



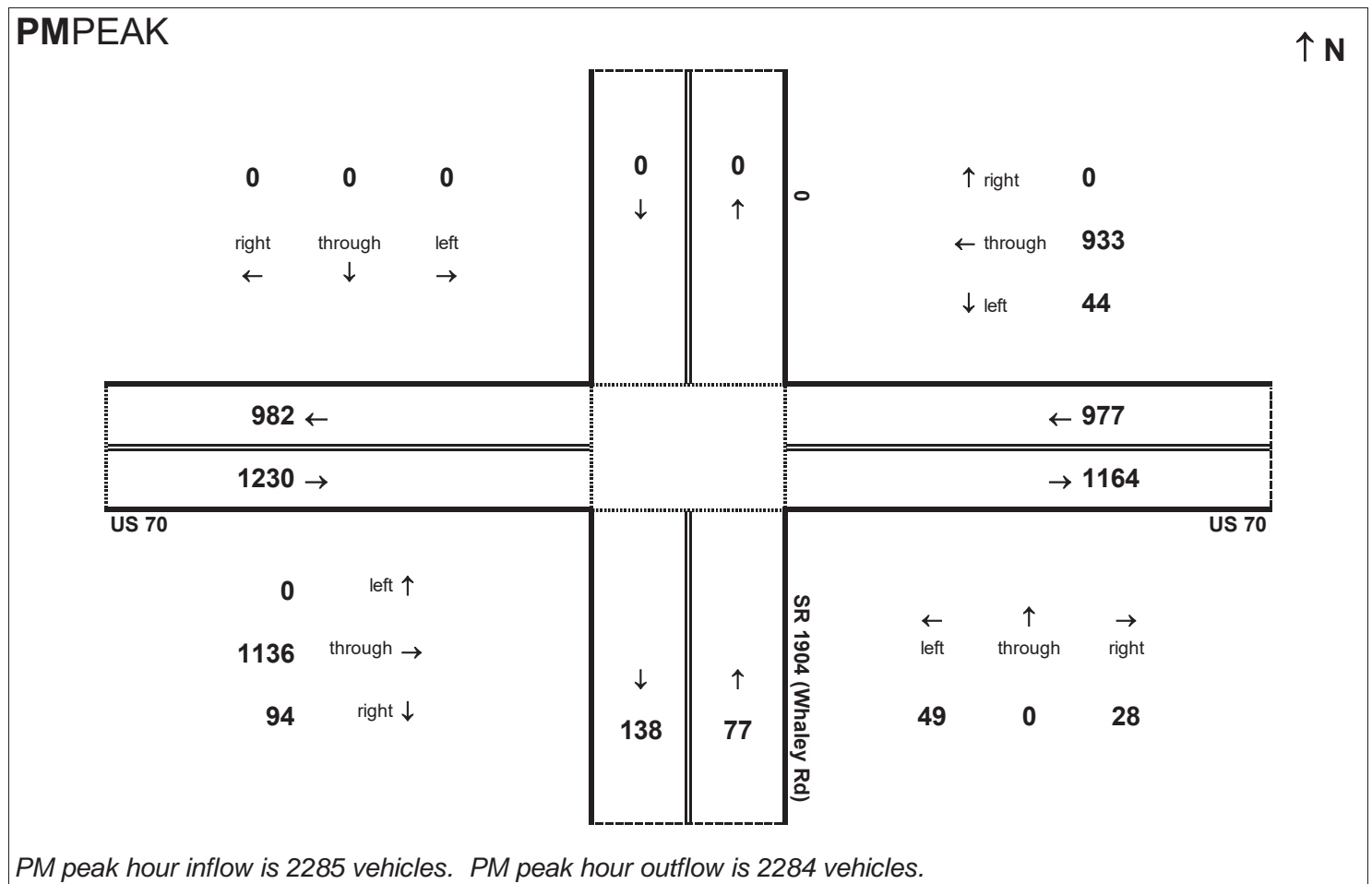
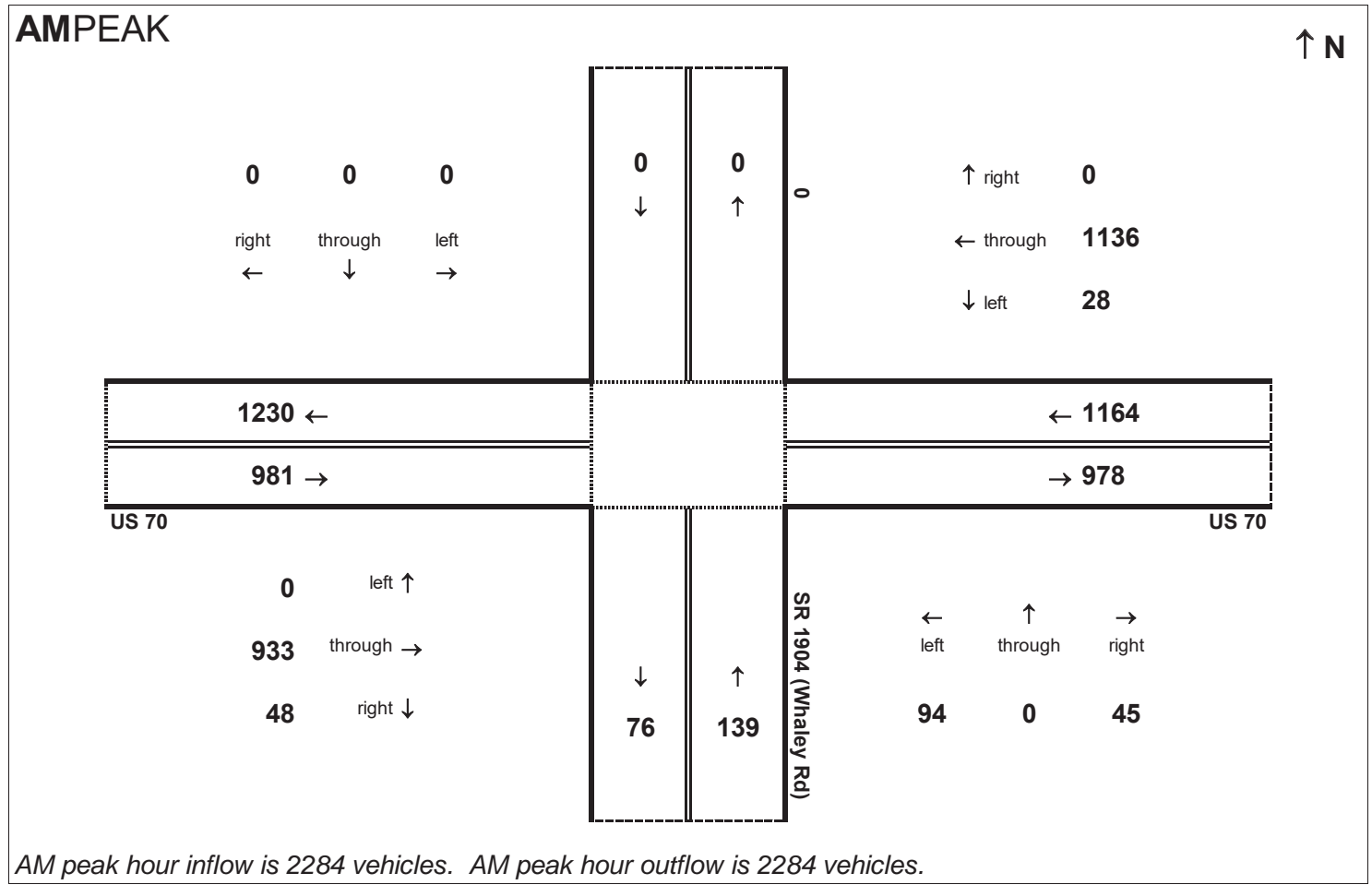


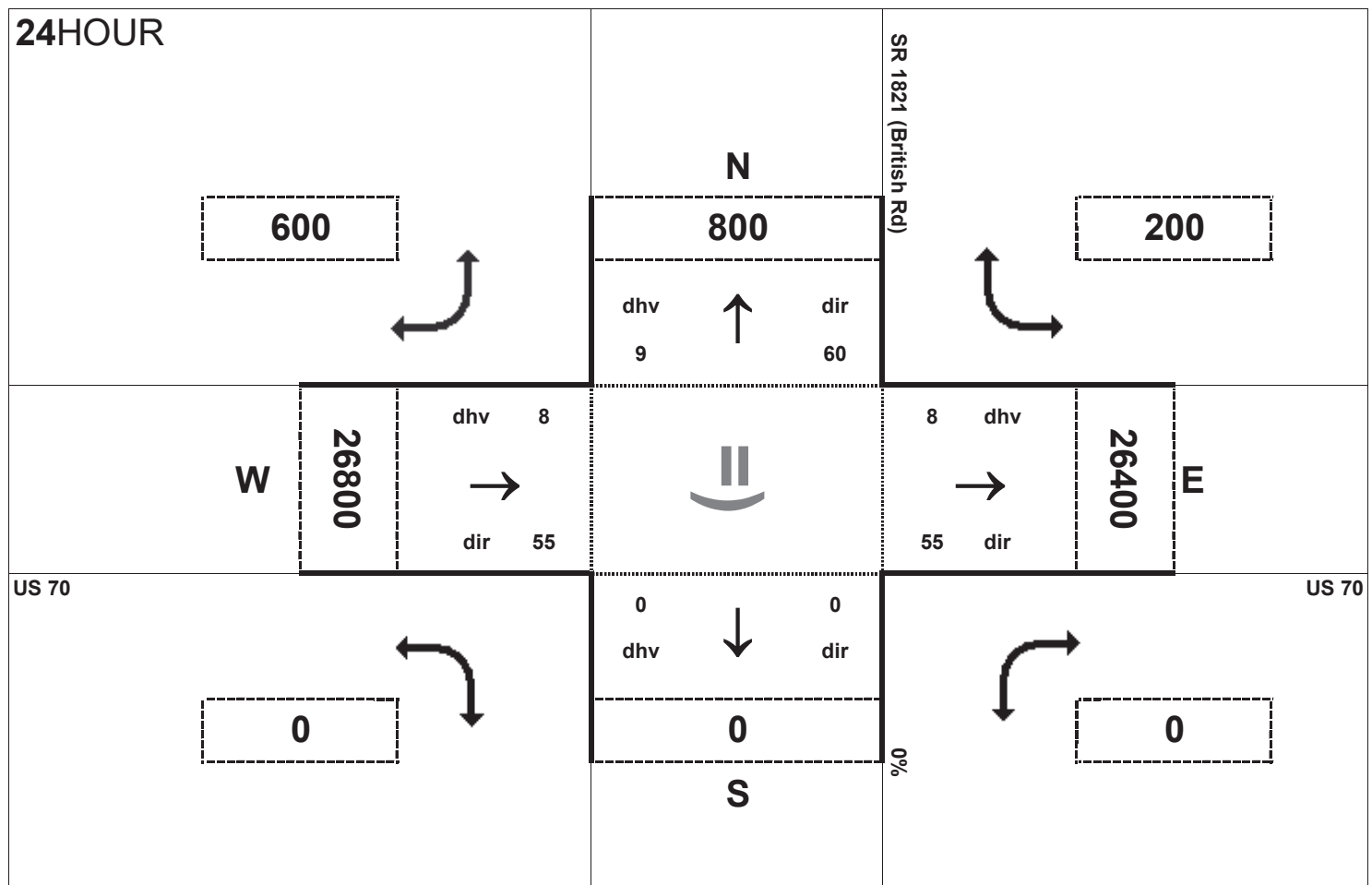
Peak Hour Volume Breakouts Report:
455 Intersection of US 70 and SR 1904 (Whaley Rd)

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



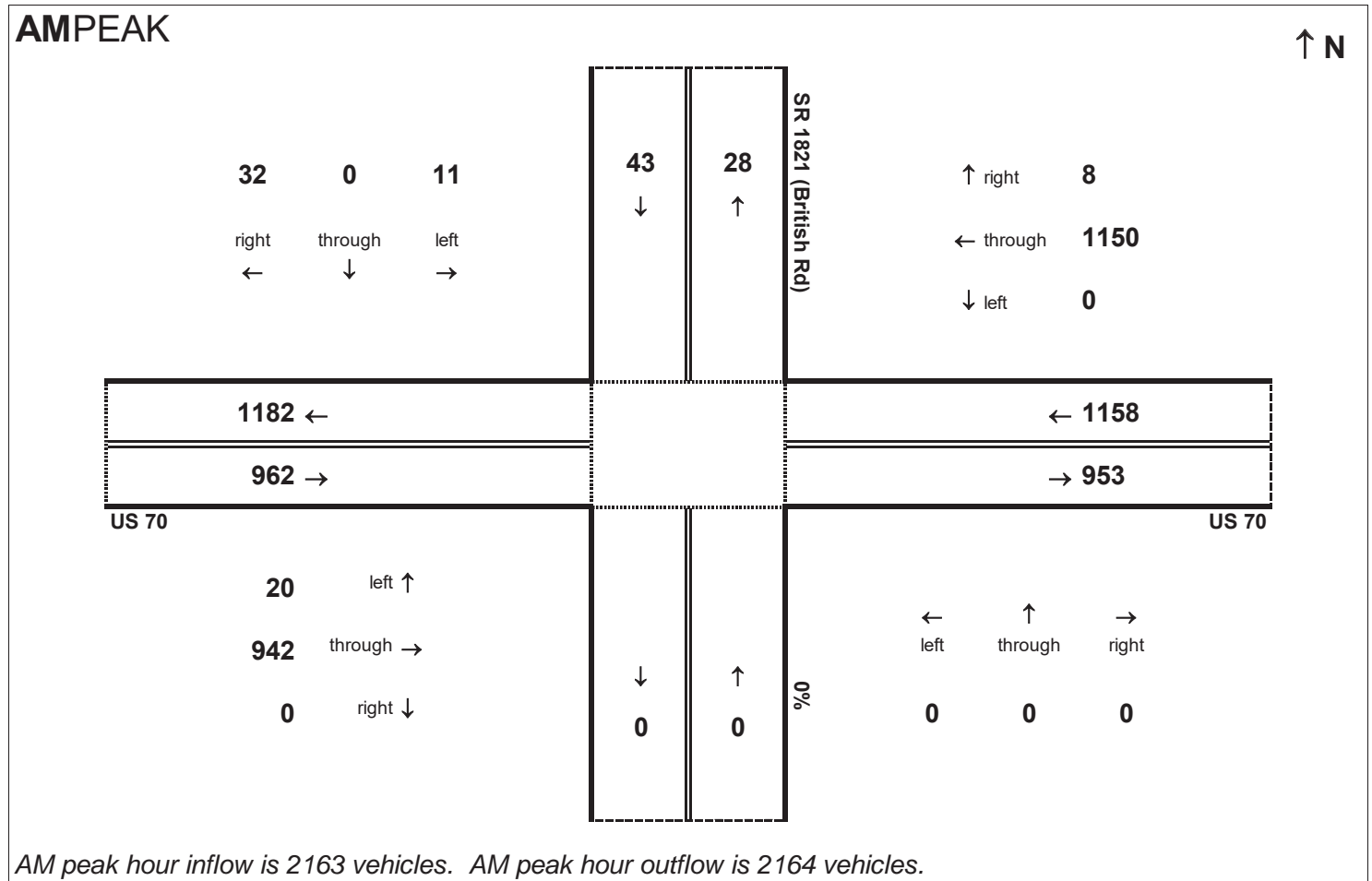


Peak Hour Volume Breakouts Report:
456 Intersection of US 70 and SR 1821 (British Rd)

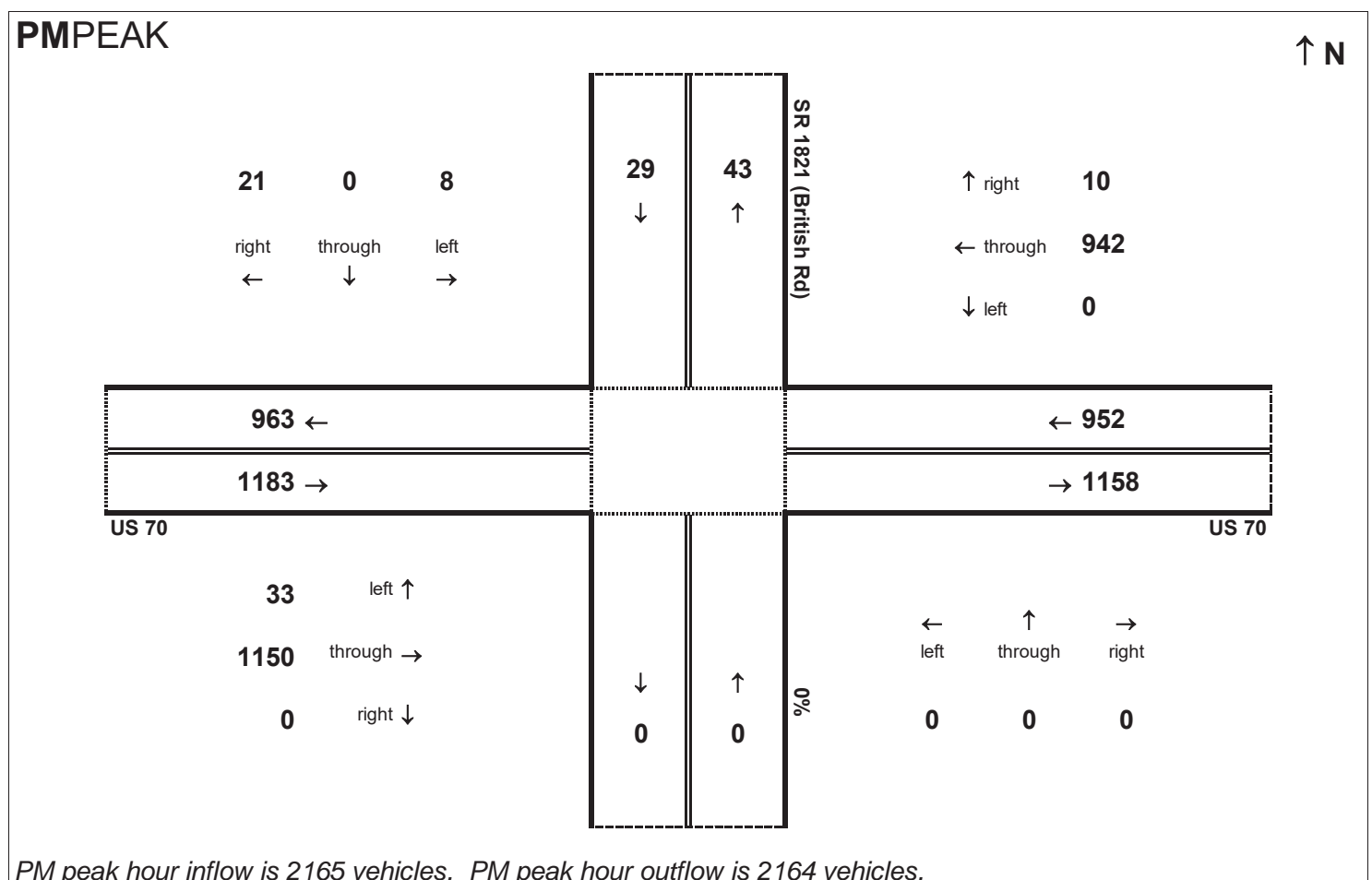
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

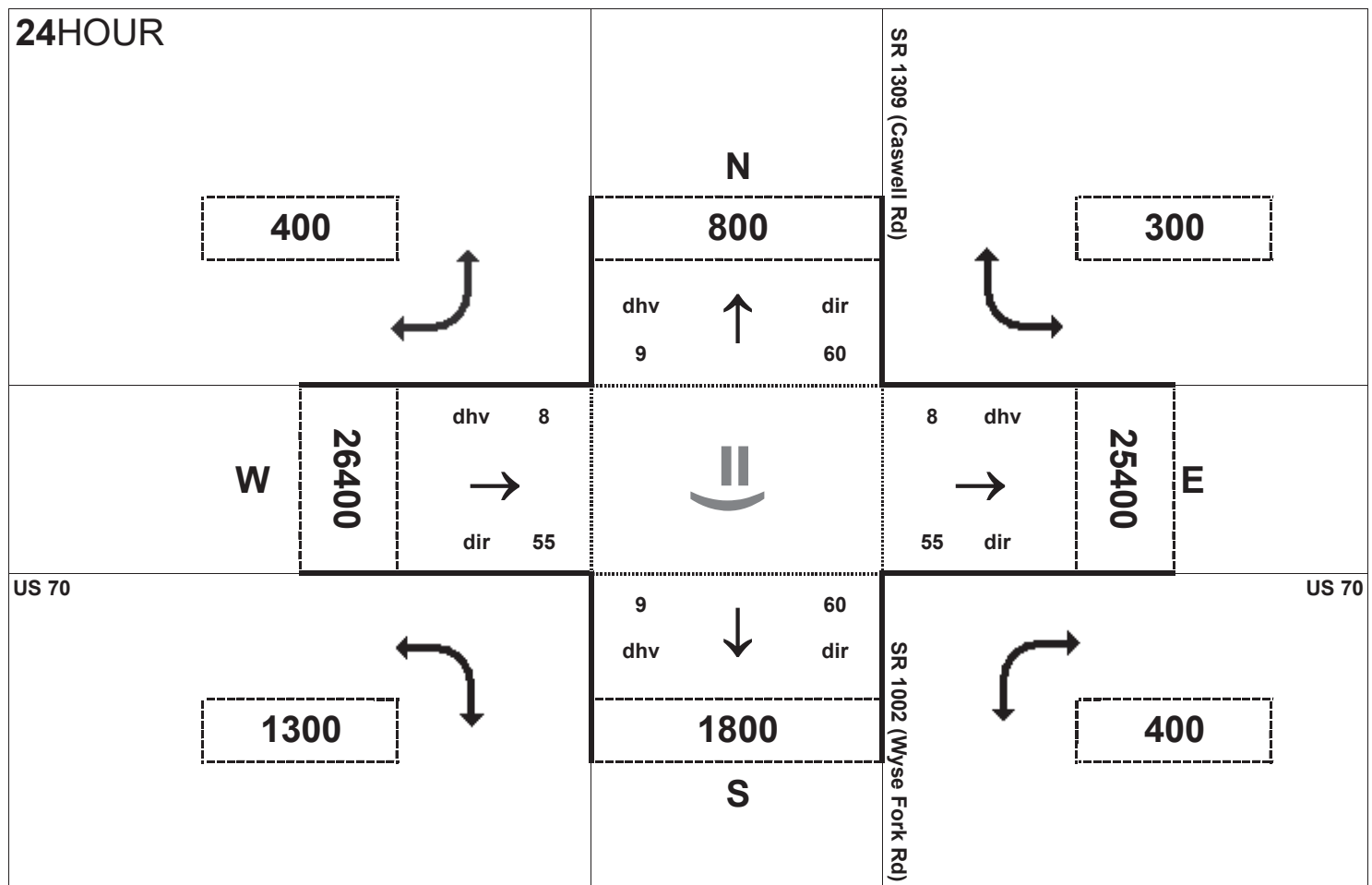
Project:
R-2553



AM peak hour inflow is 2163 vehicles. AM peak hour outflow is 2164 vehicles.



PM peak hour inflow is 2165 vehicles. PM peak hour outflow is 2164 vehicles.

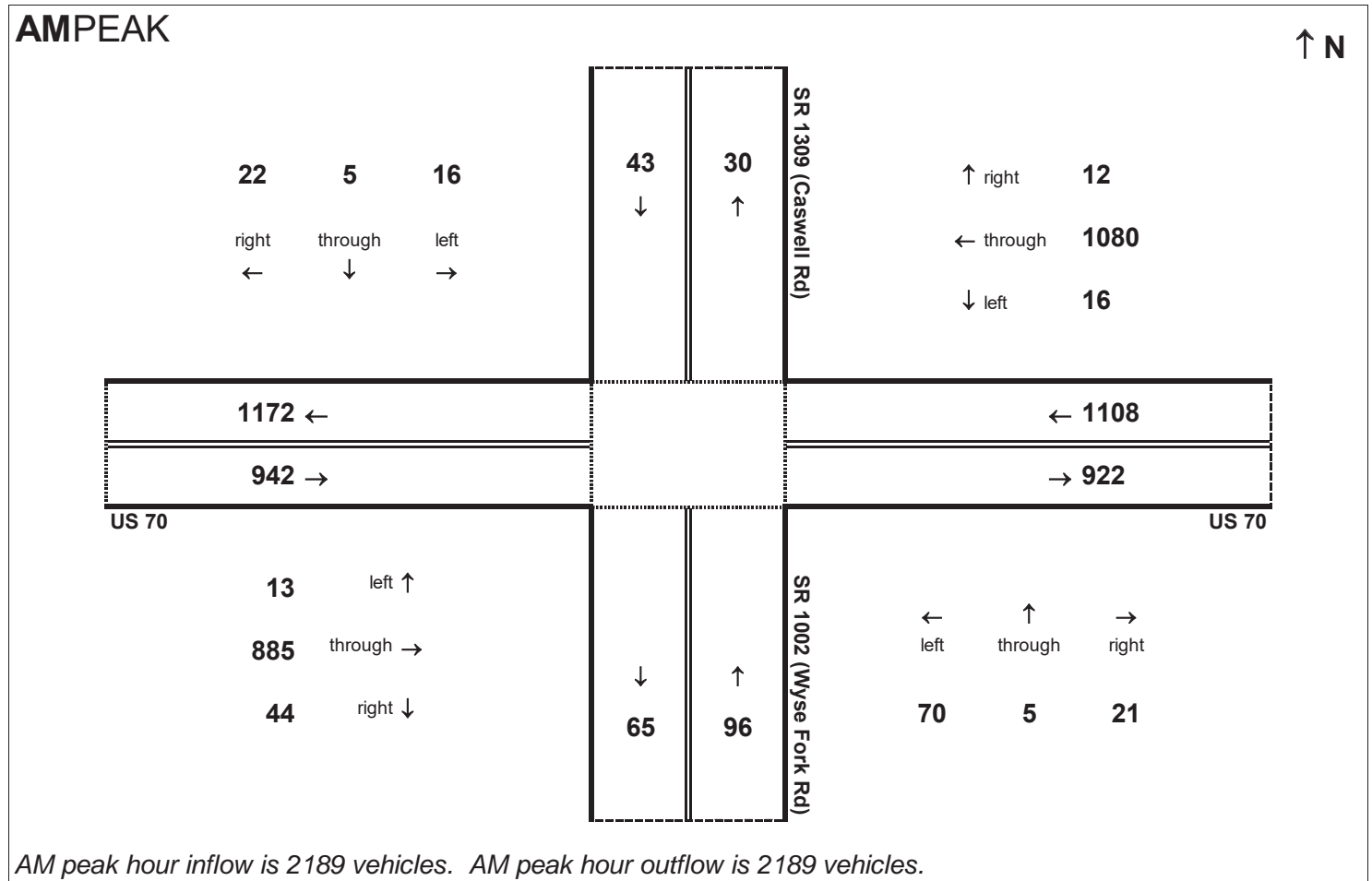


Peak Hour Volume Breakouts Report:
 457 Intersection of US 70 and SR 1309 (Caswell Rd) / SR 1002 (Wyse Fork Rd)

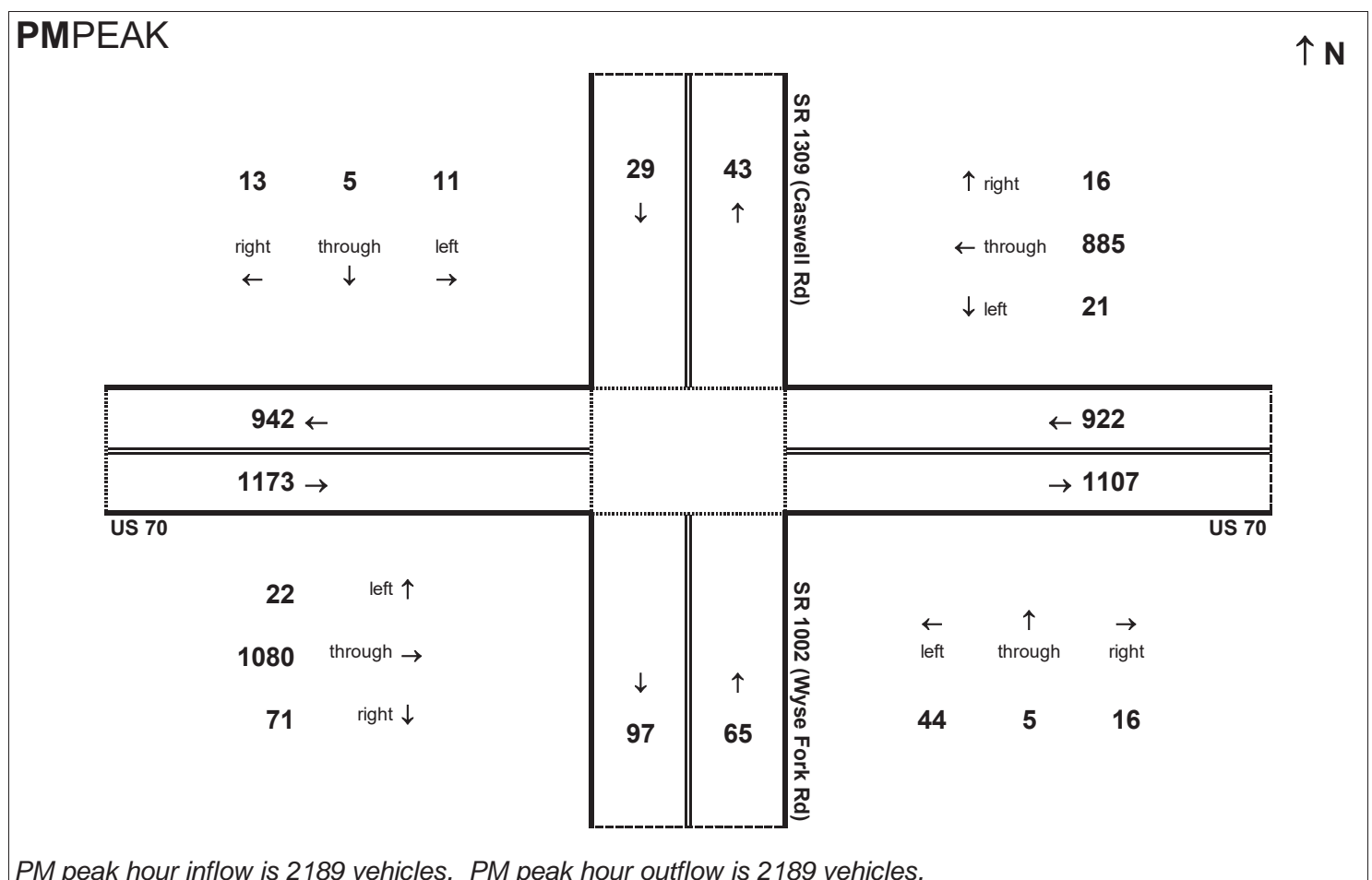
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

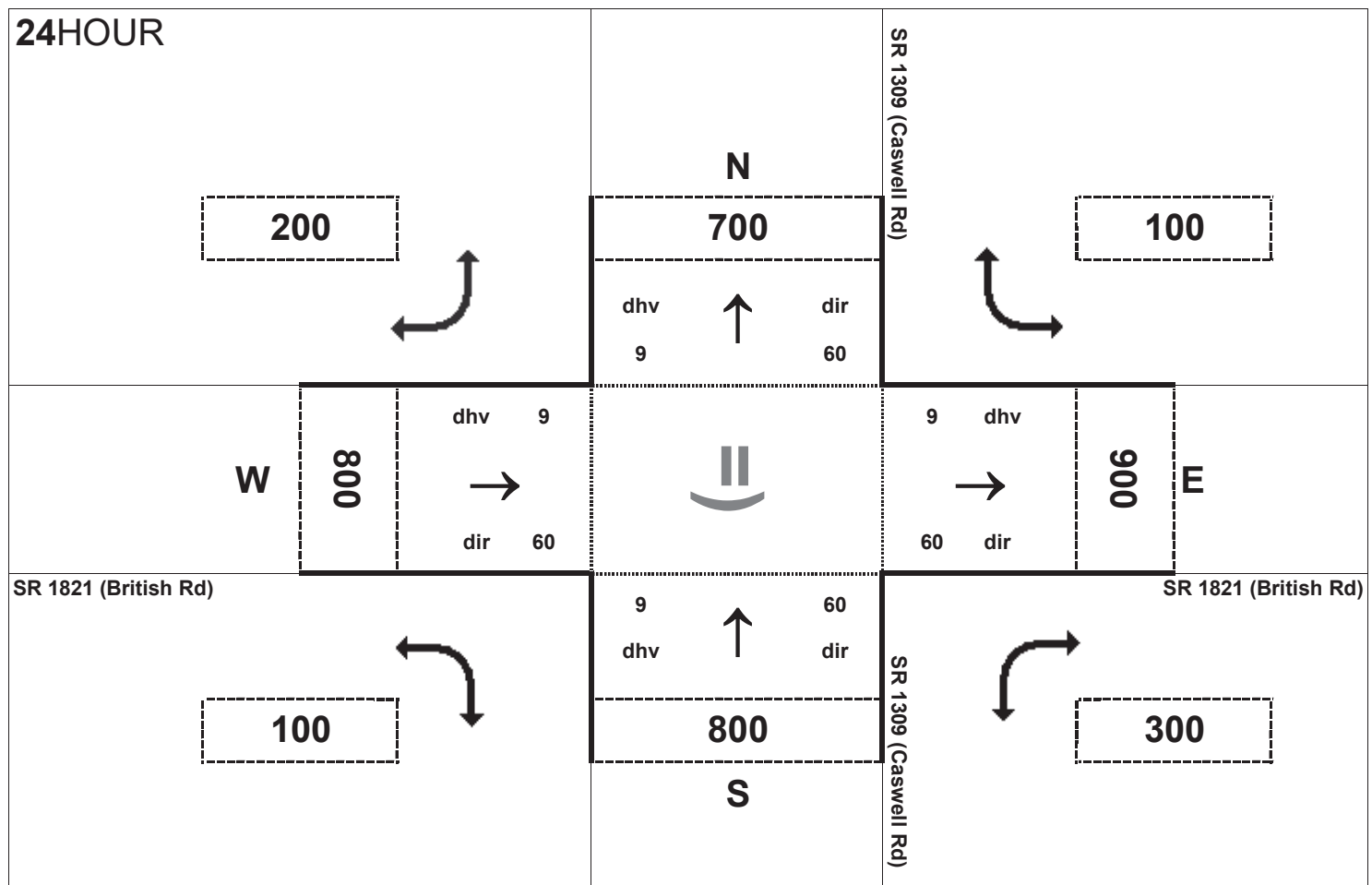
Project:
 R-2553



AM peak hour inflow is 2189 vehicles. AM peak hour outflow is 2189 vehicles.



PM peak hour inflow is 2189 vehicles. PM peak hour outflow is 2189 vehicles.

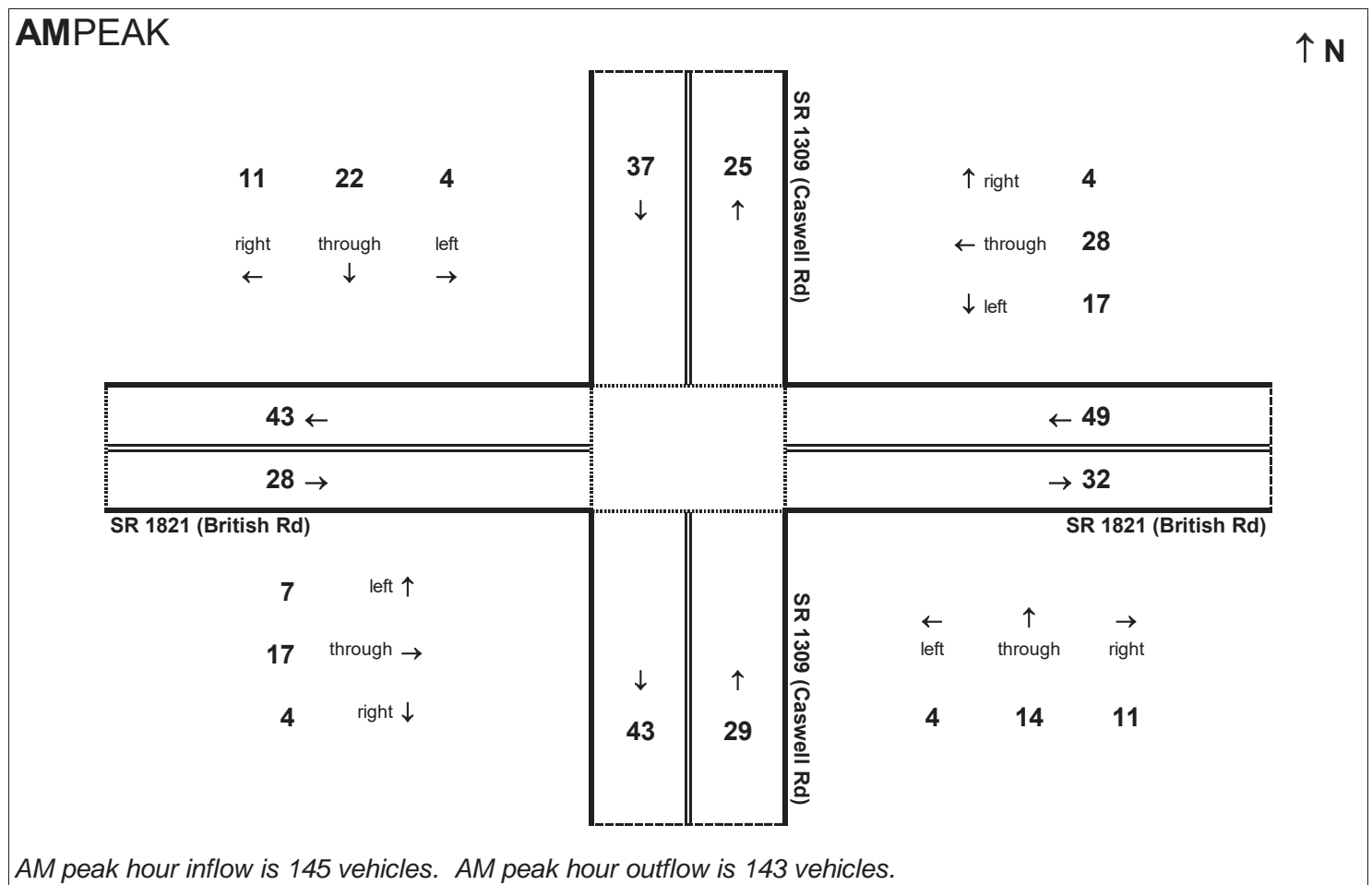


Peak Hour Volume Breakouts Report:
 458 Intersection of SR 1309 (Caswell Rd) and SR 1821 (British Rd)

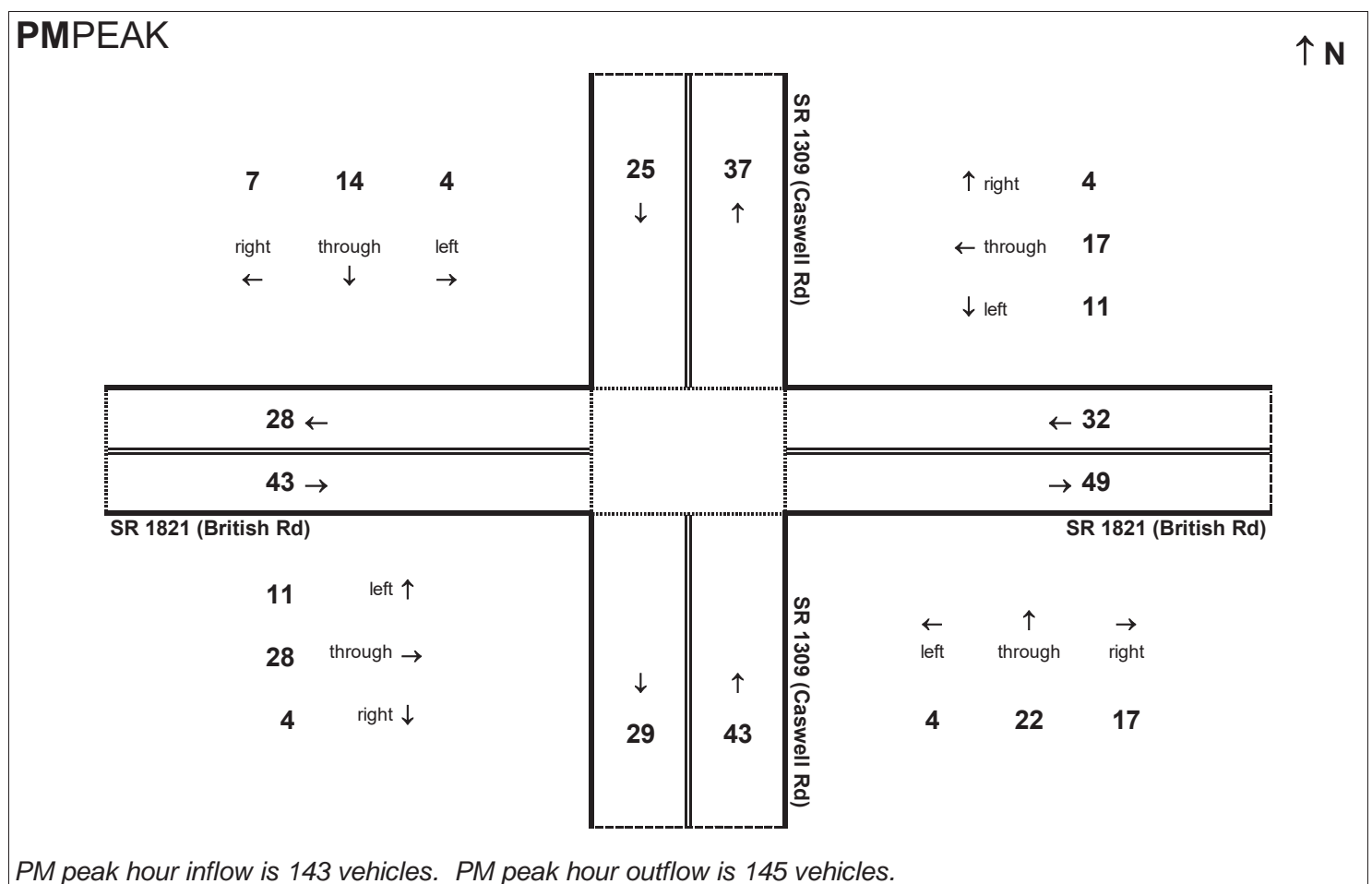
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

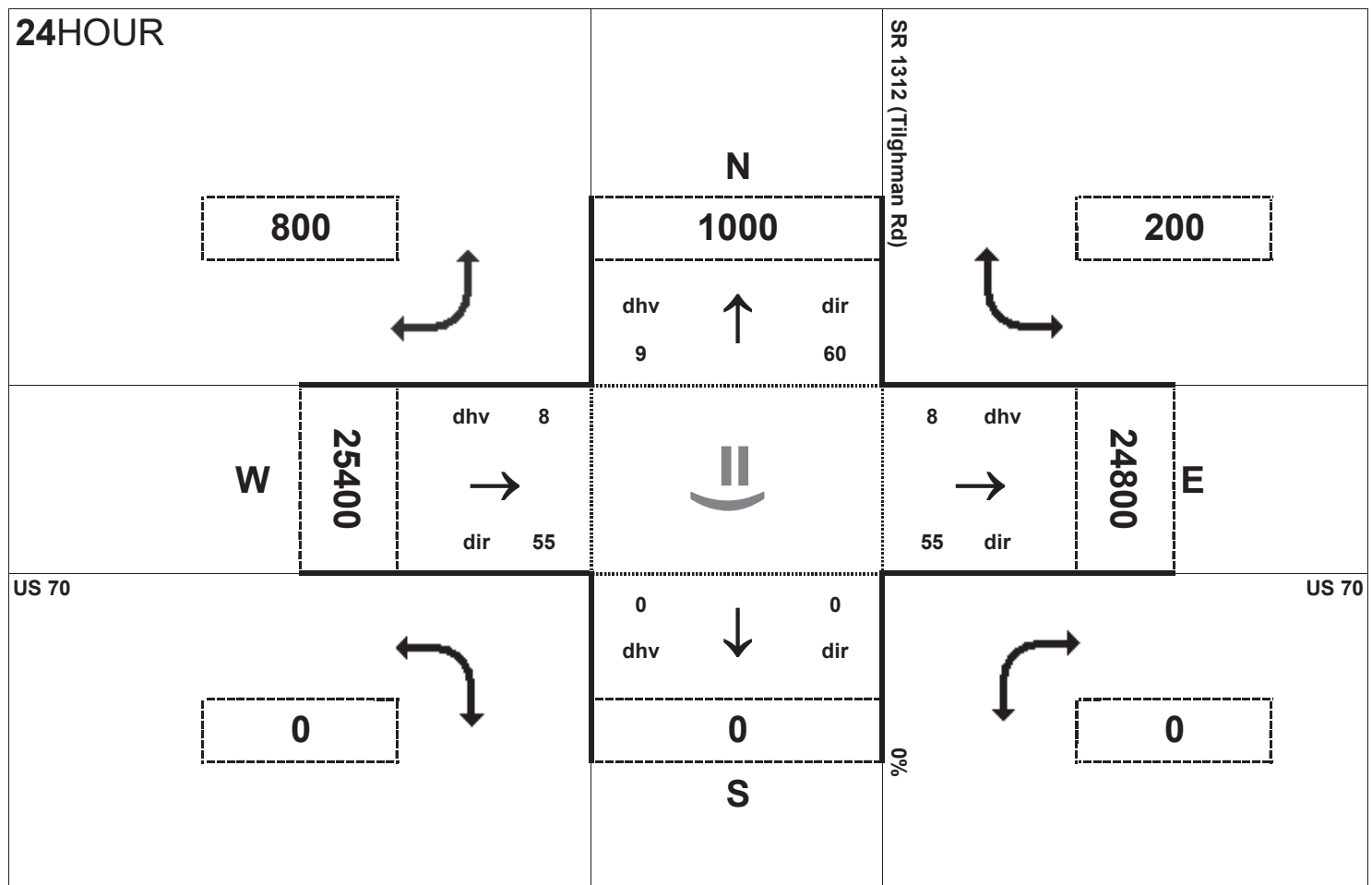
Project:
 R-2553



AM peak hour inflow is 145 vehicles. AM peak hour outflow is 143 vehicles.



PM peak hour inflow is 143 vehicles. PM peak hour outflow is 145 vehicles.

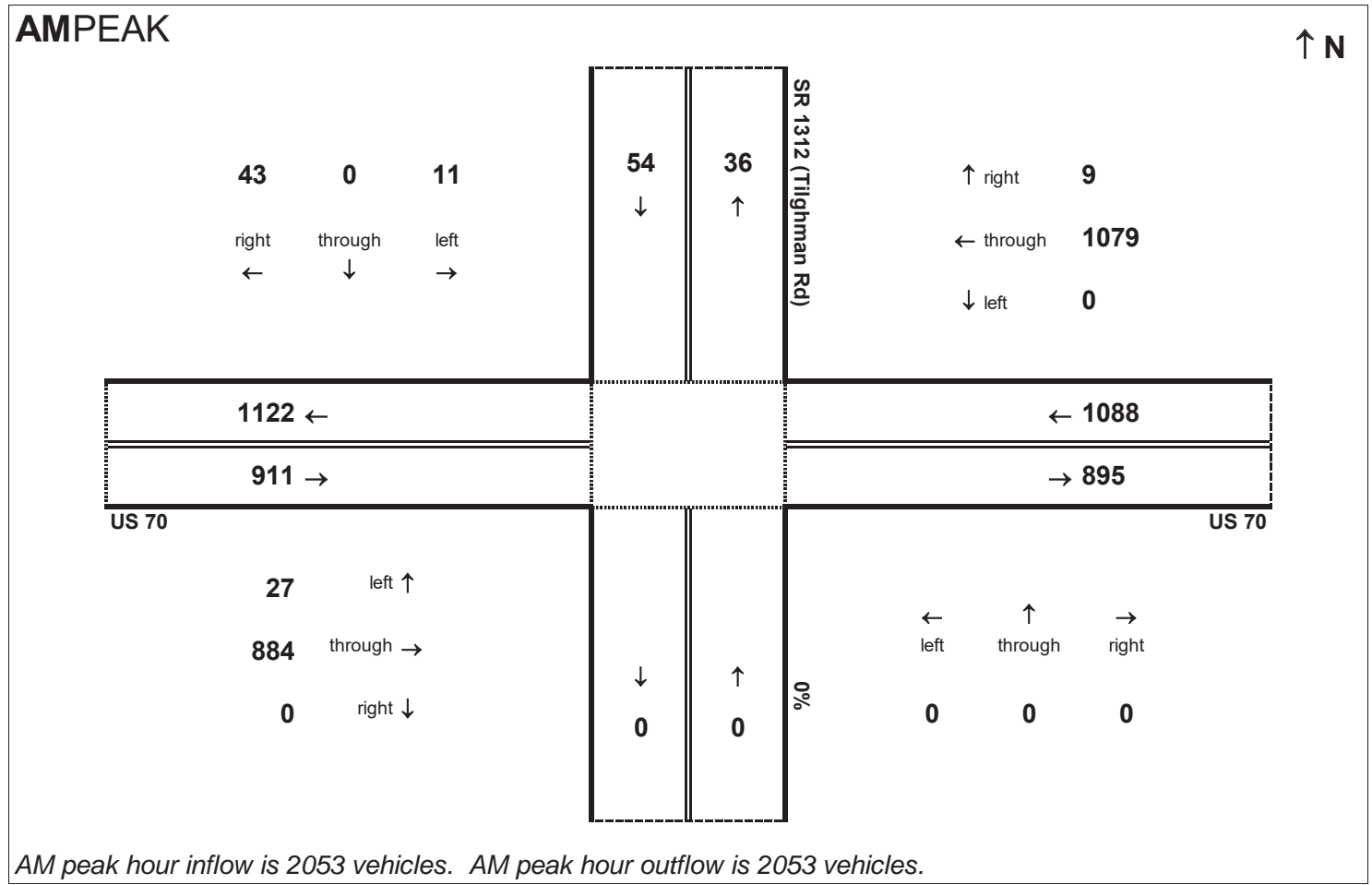


Peak Hour Volume Breakouts Report:
 459 Intersection of US 70 and SR 1312 (Tilghman Rd)

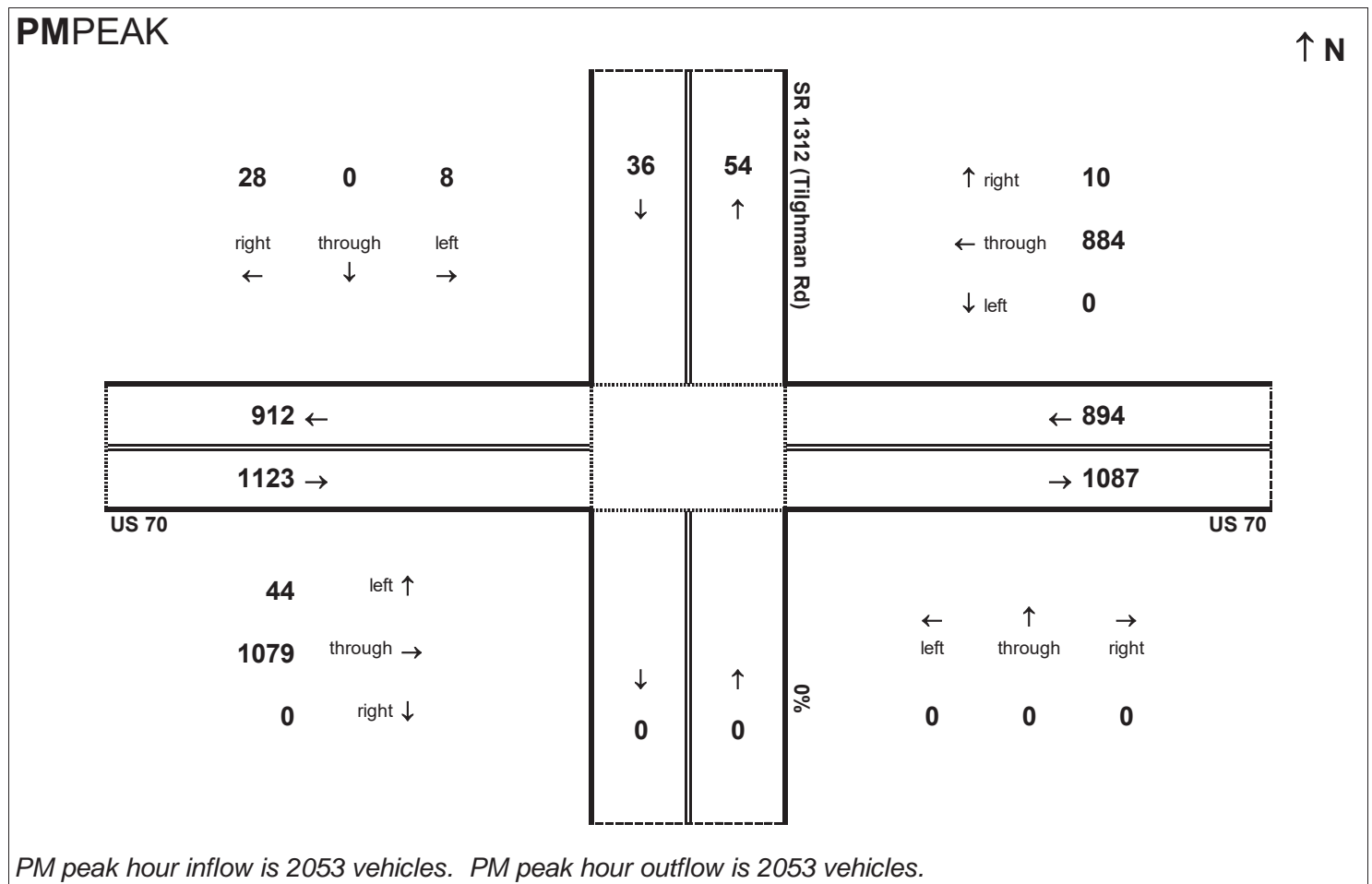
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

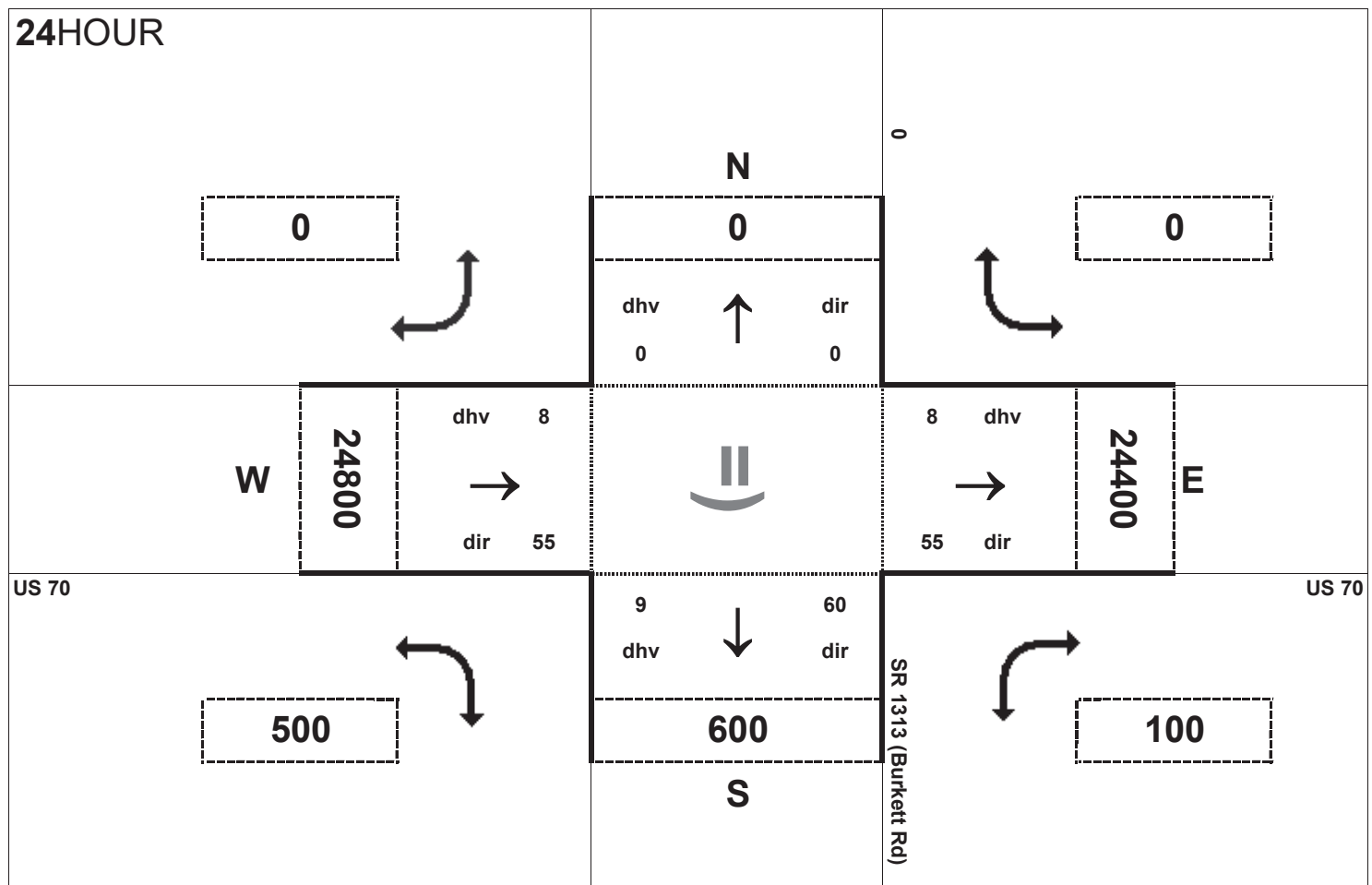
Project:
 R-2553



AM peak hour inflow is 2053 vehicles. AM peak hour outflow is 2053 vehicles.



PM peak hour inflow is 2053 vehicles. PM peak hour outflow is 2053 vehicles.

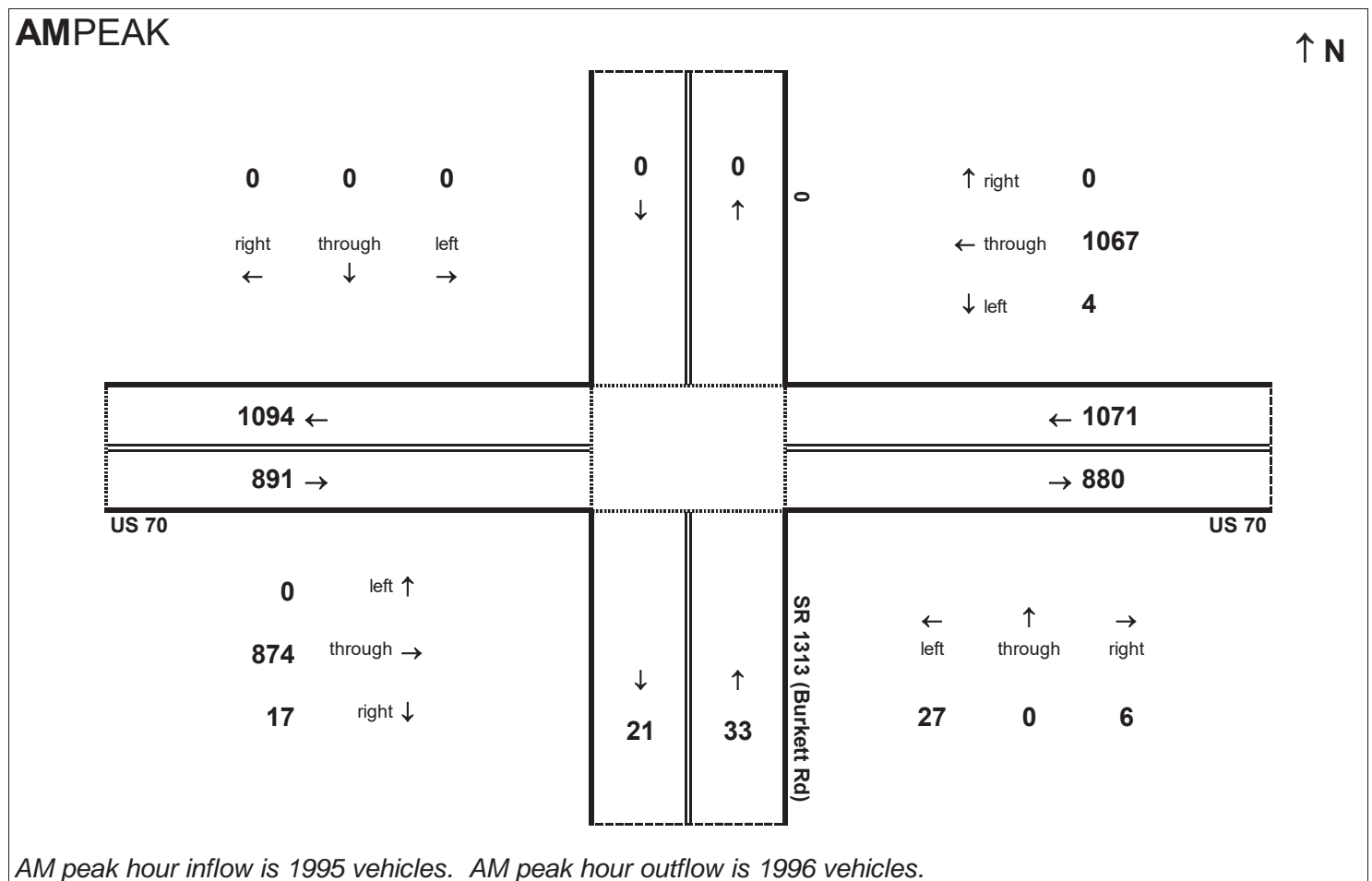


Peak Hour Volume Breakouts Report:
460 Intersection of US 70 and SR 1313 (Burkett Rd)

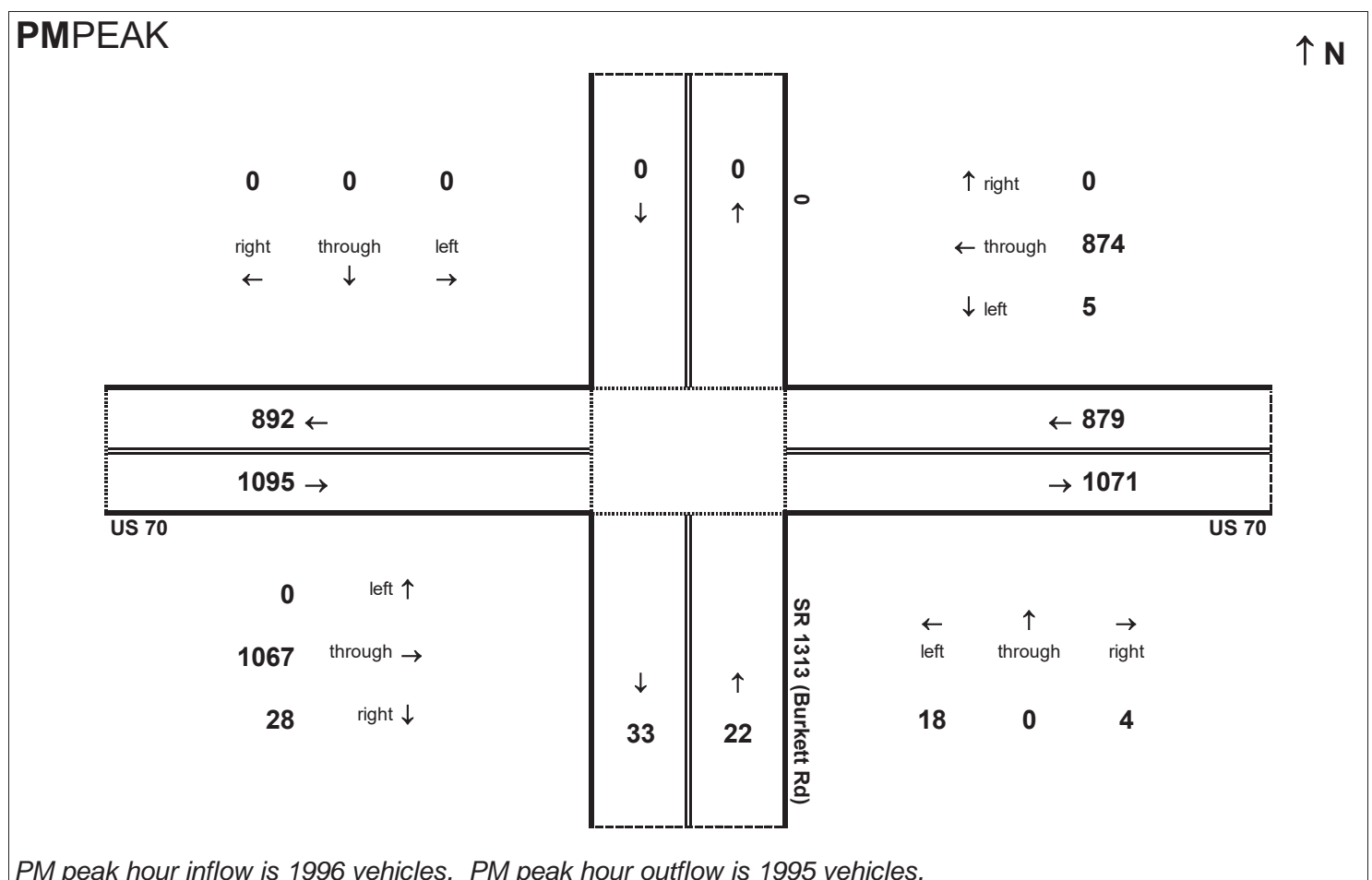
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

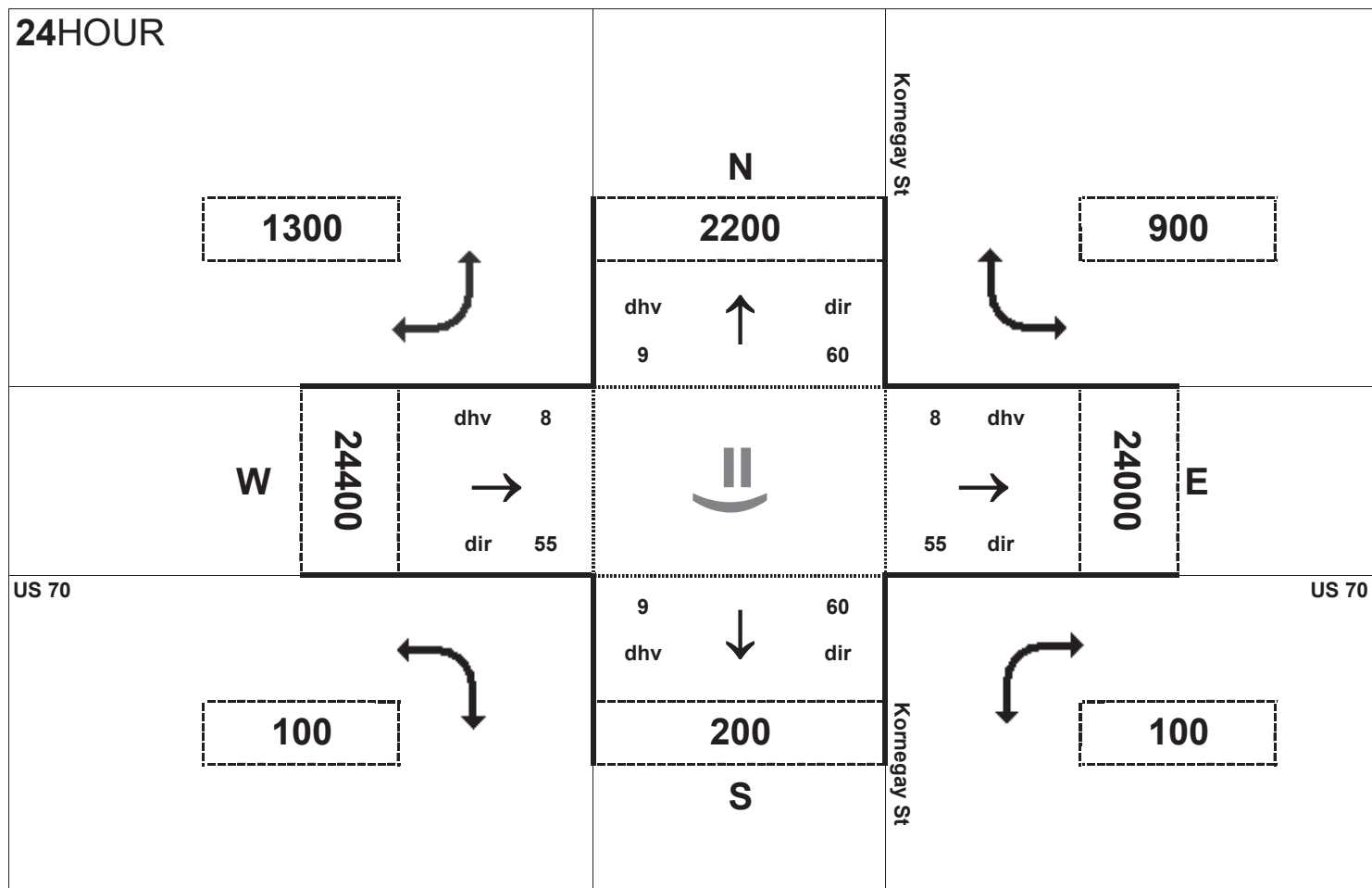
Project:
R-2553



AM peak hour inflow is 1995 vehicles. AM peak hour outflow is 1996 vehicles.



PM peak hour inflow is 1996 vehicles. PM peak hour outflow is 1995 vehicles.

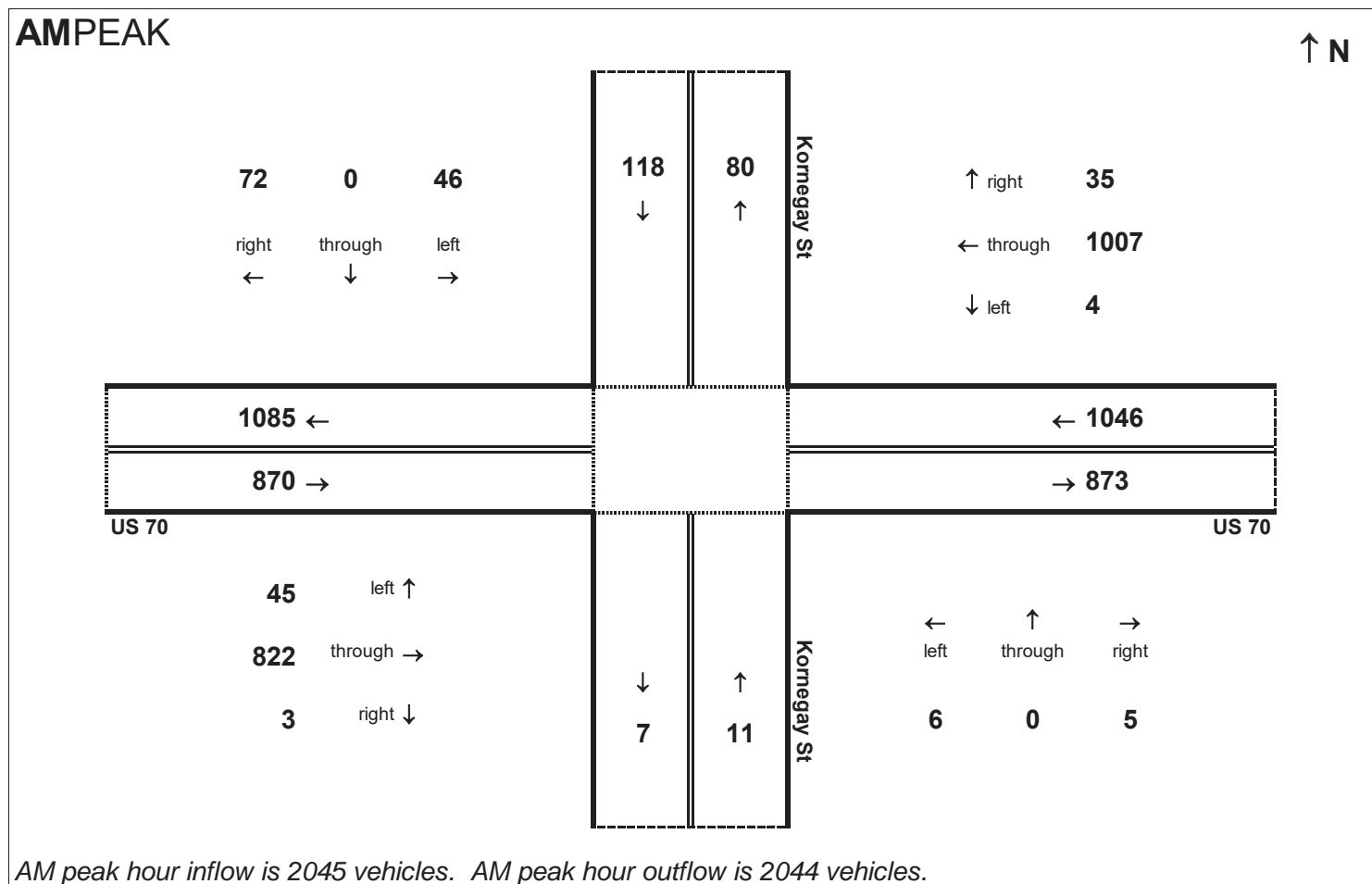


Peak Hour Volume Breakouts Report:
461 Intersection of US 70 and Kornegay St

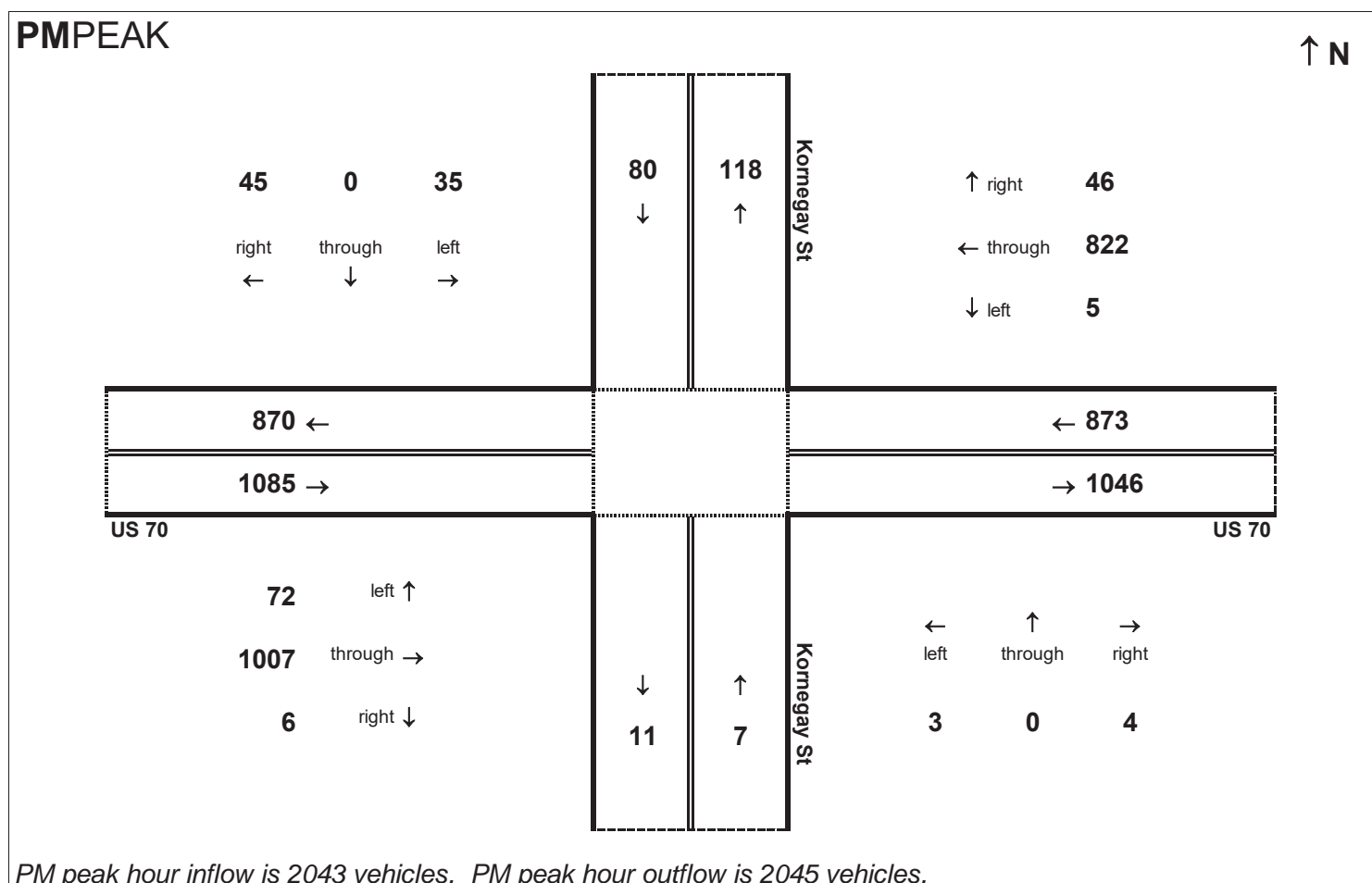
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

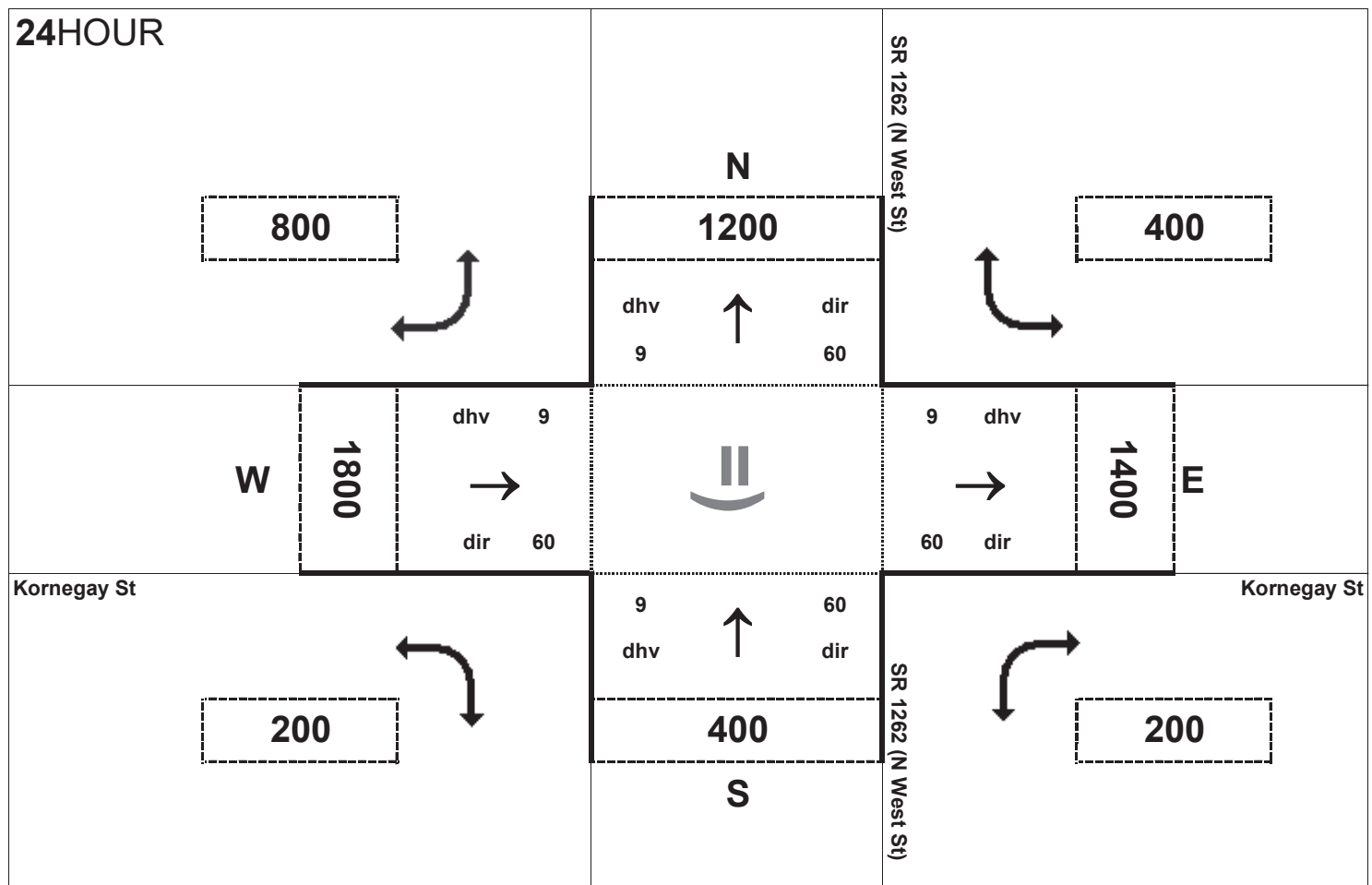
Project:
R-2553



AM peak hour inflow is 2045 vehicles. AM peak hour outflow is 2044 vehicles.



PM peak hour inflow is 2043 vehicles. PM peak hour outflow is 2045 vehicles.

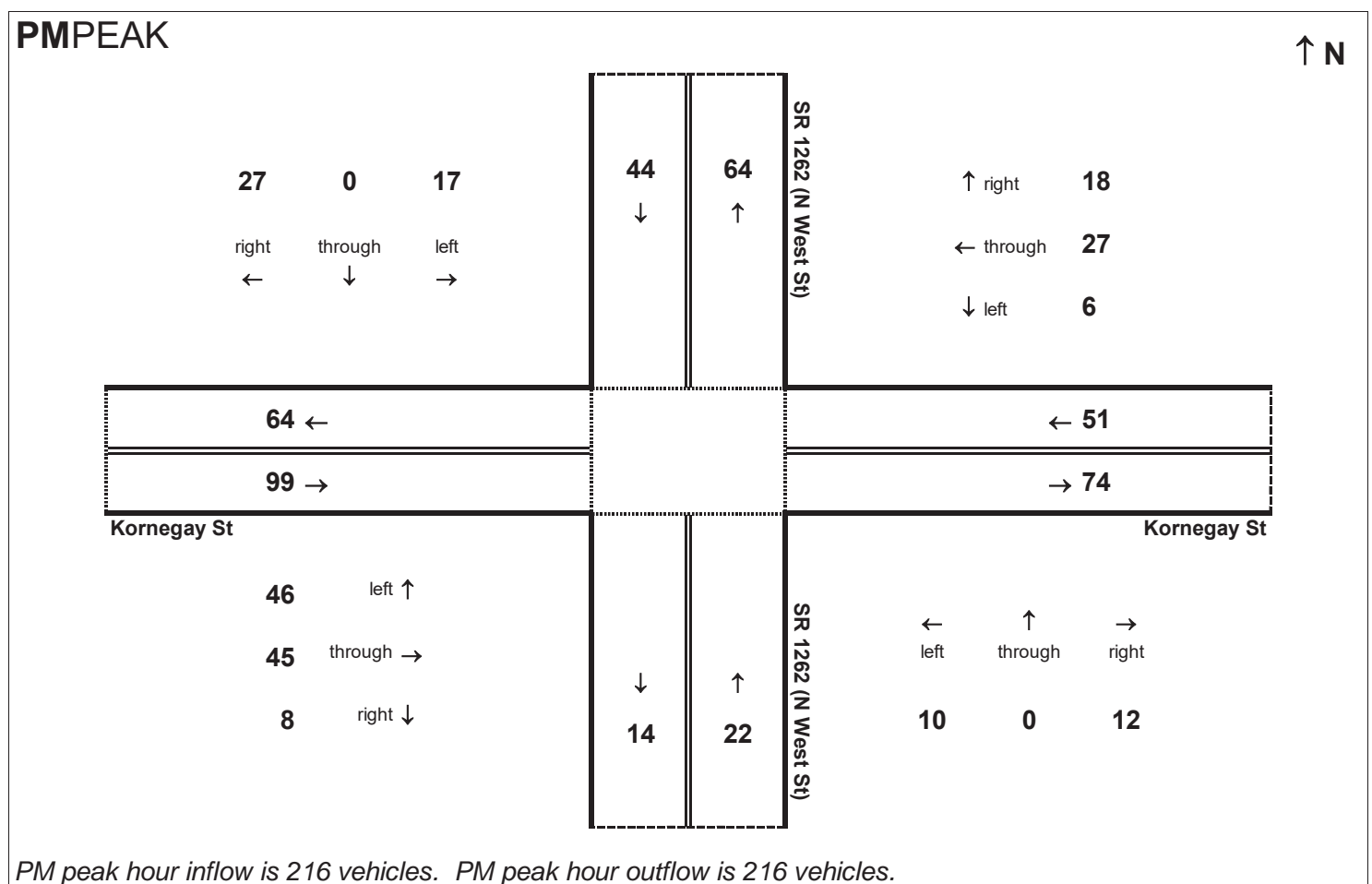
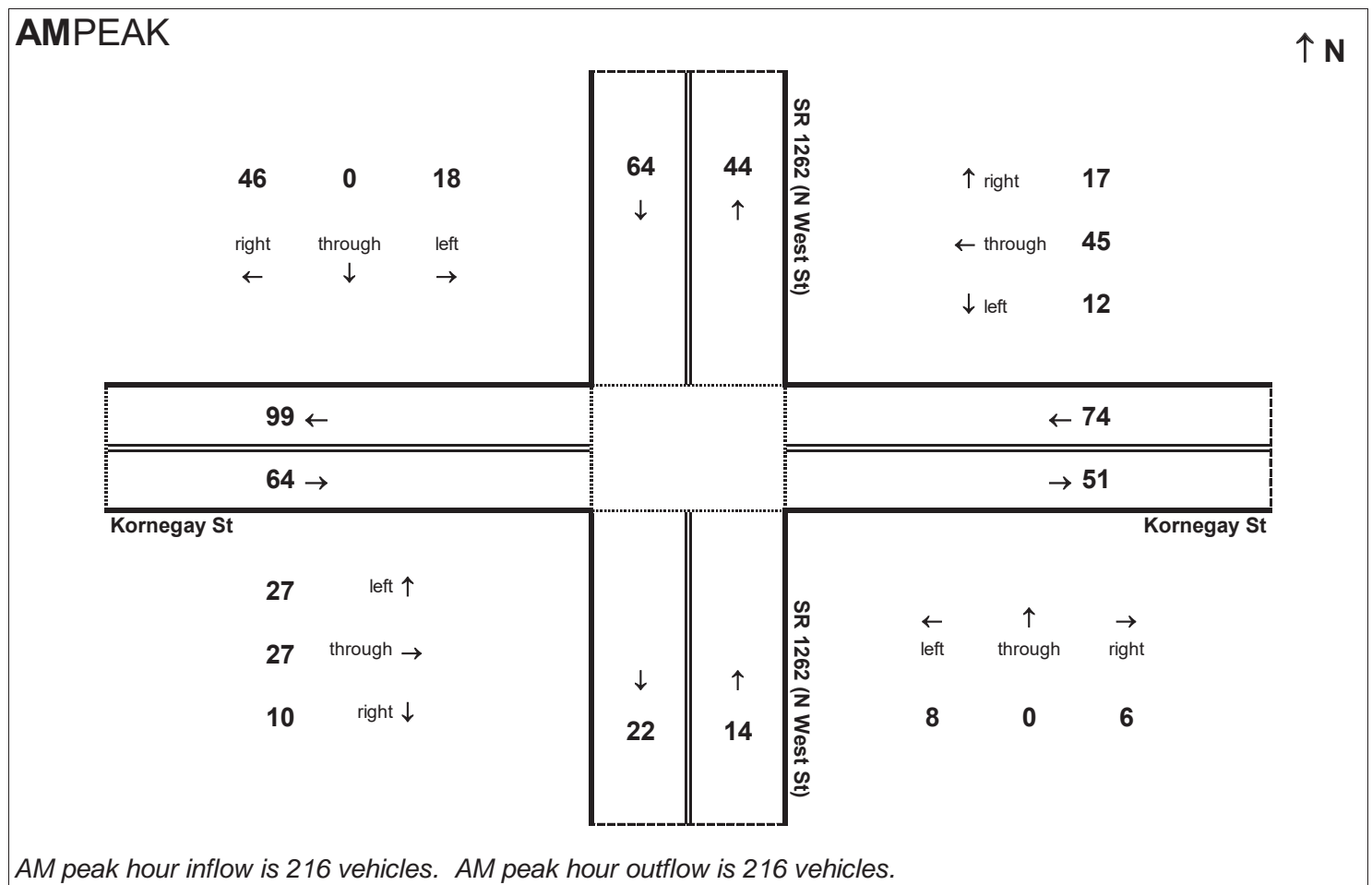


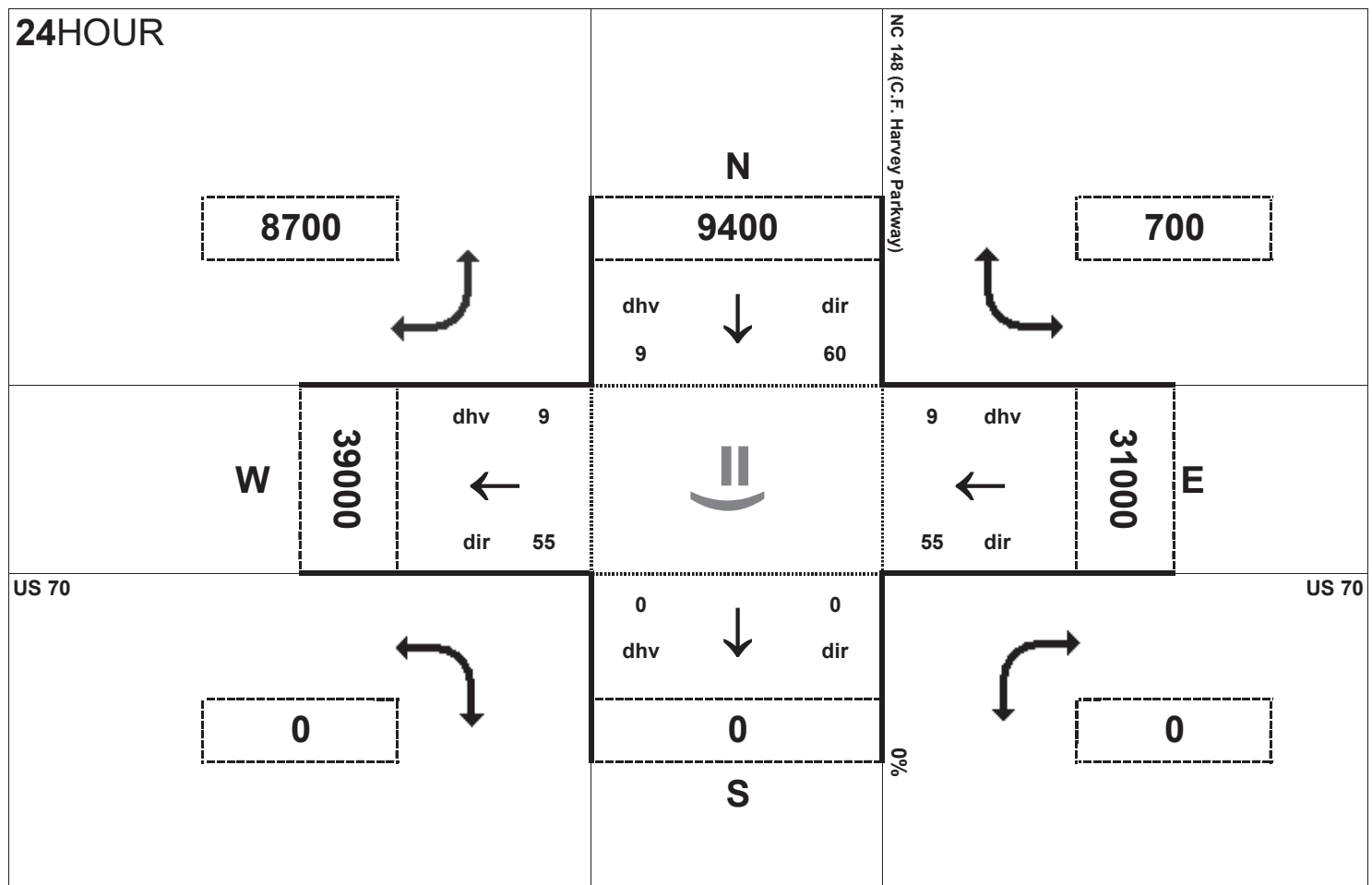
Peak Hour Volume Breakouts Report:
462 Intersection of SR 1262 (N West St) and Kornegay St

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



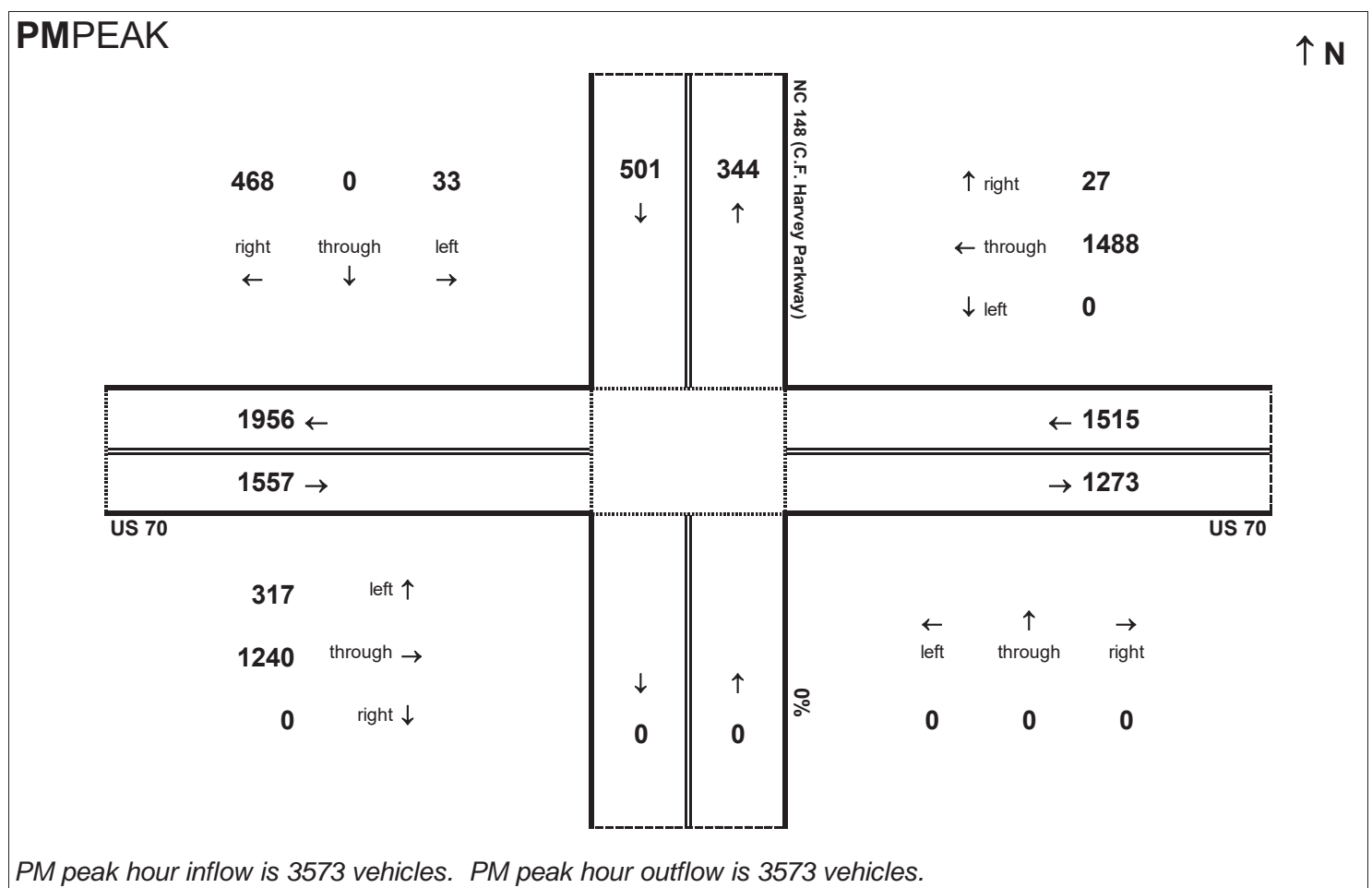
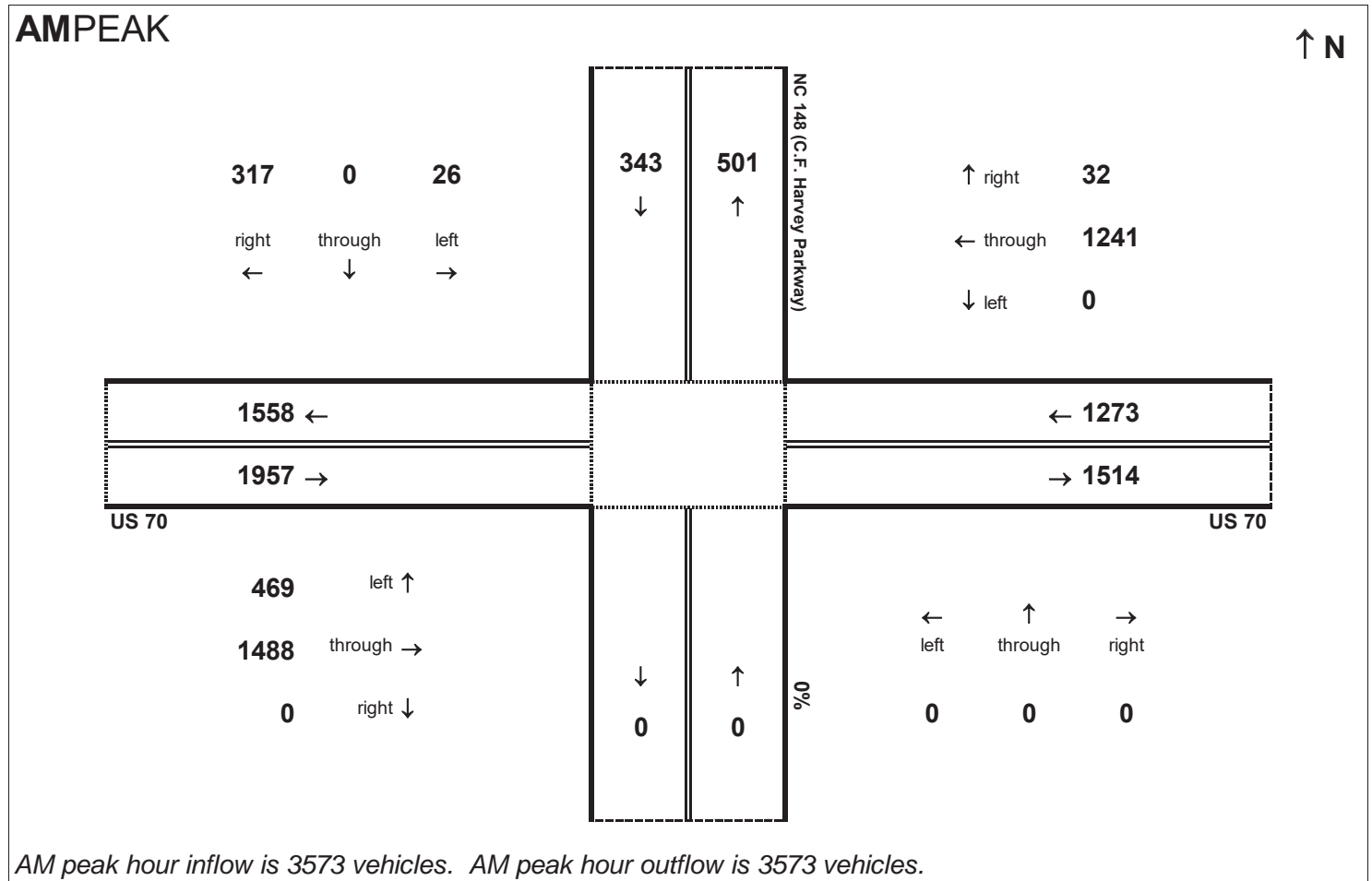


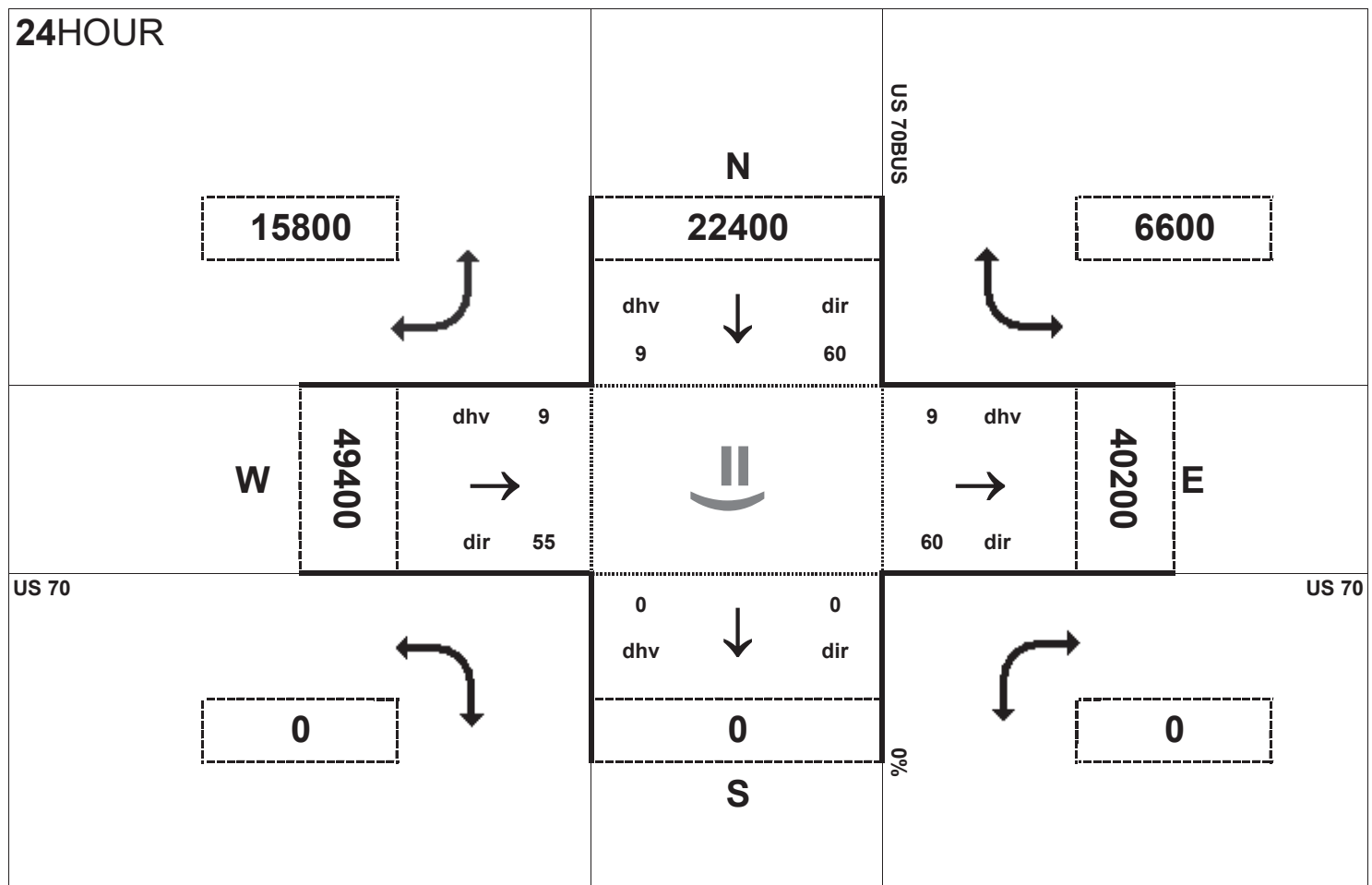
Peak Hour Volume Breakouts Report:
 System 1 Interchange of US 70 and NC 148 (C.F. Harvey Parkway)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Future Year No-Build

Project:
 R-2553



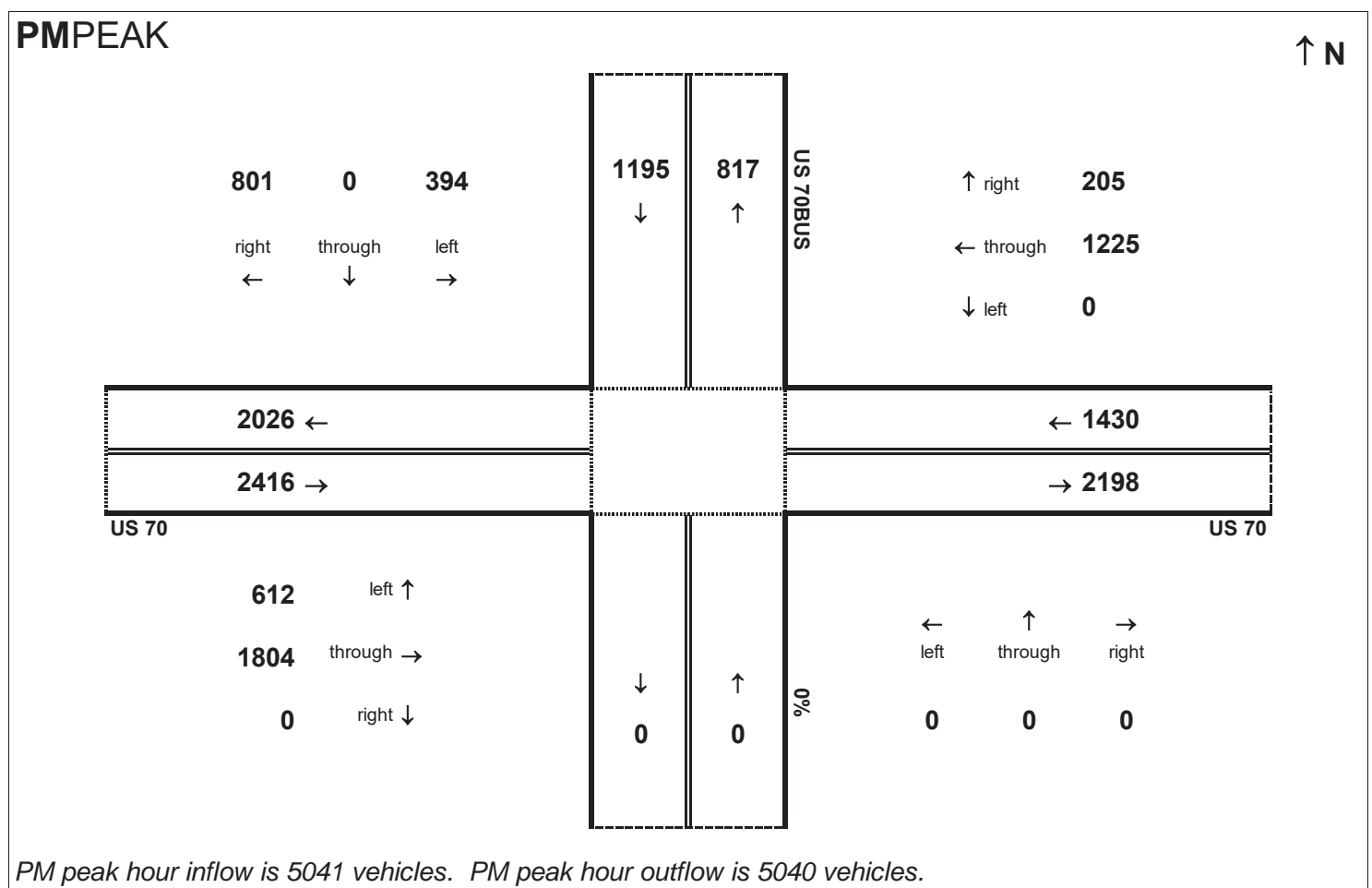
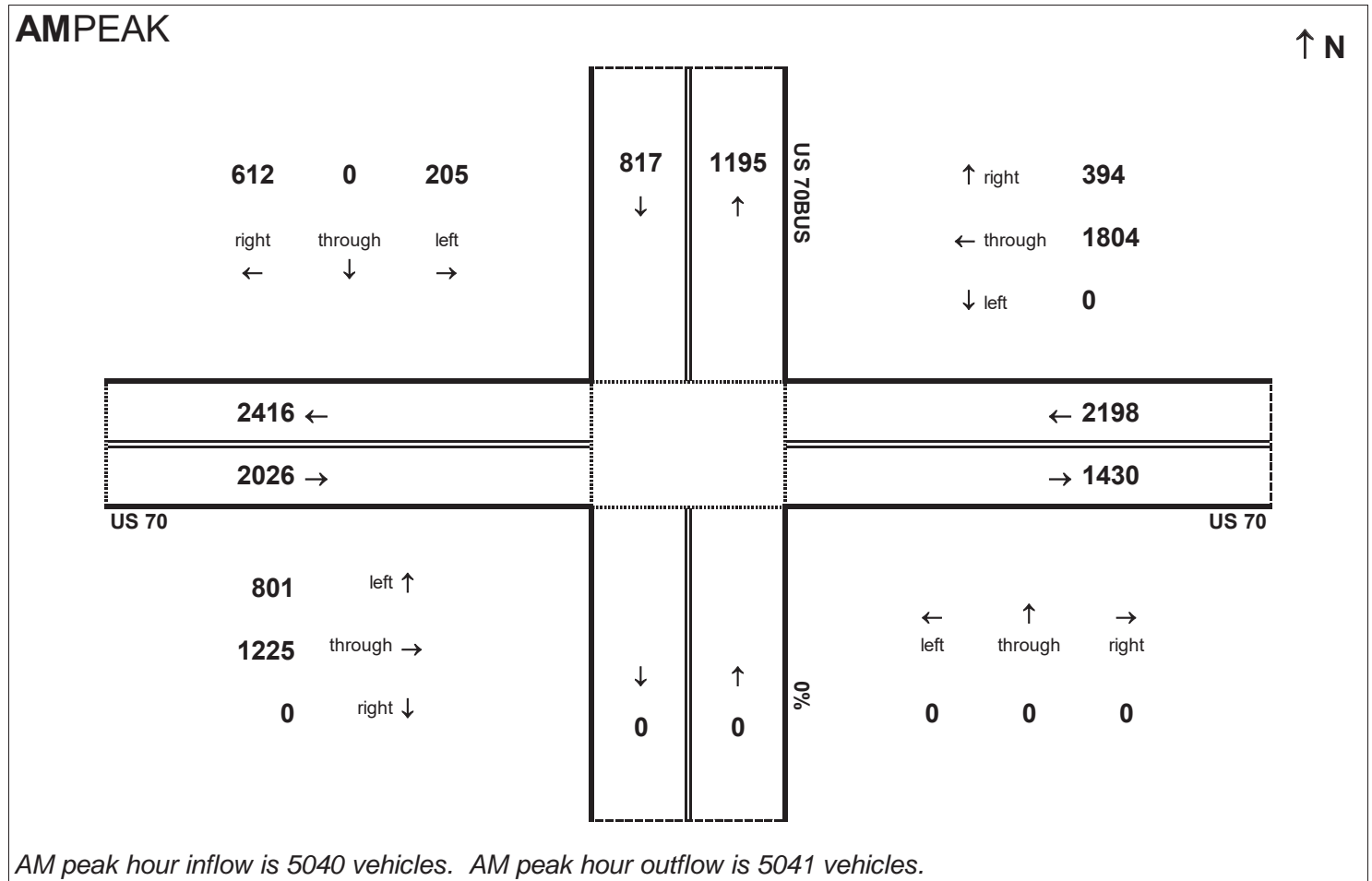


Peak Hour Volume Breakouts Report:
System 2 Interchange of US 70 and US 70BUS

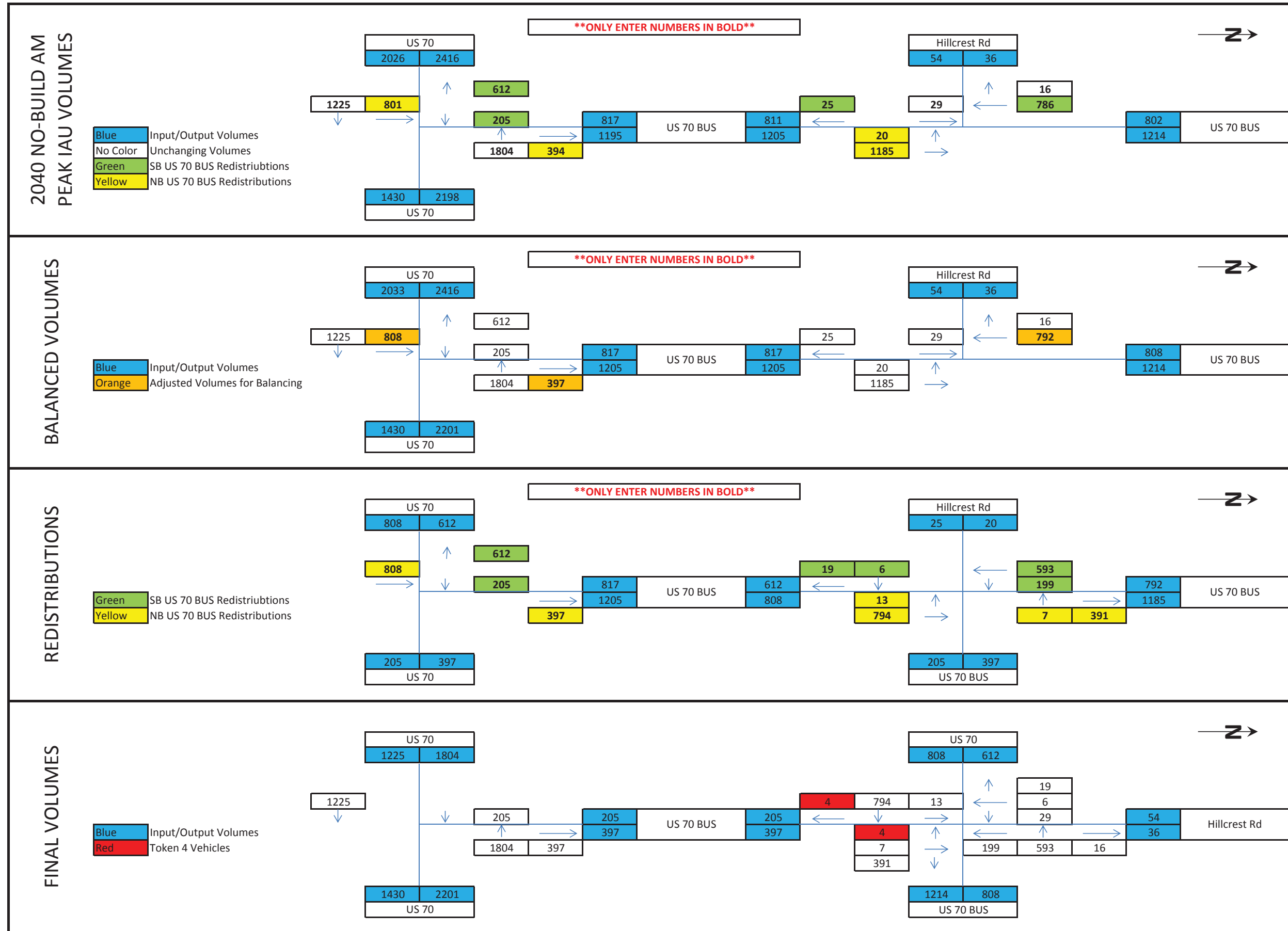
Traffic Forecast Release Date:
November-16

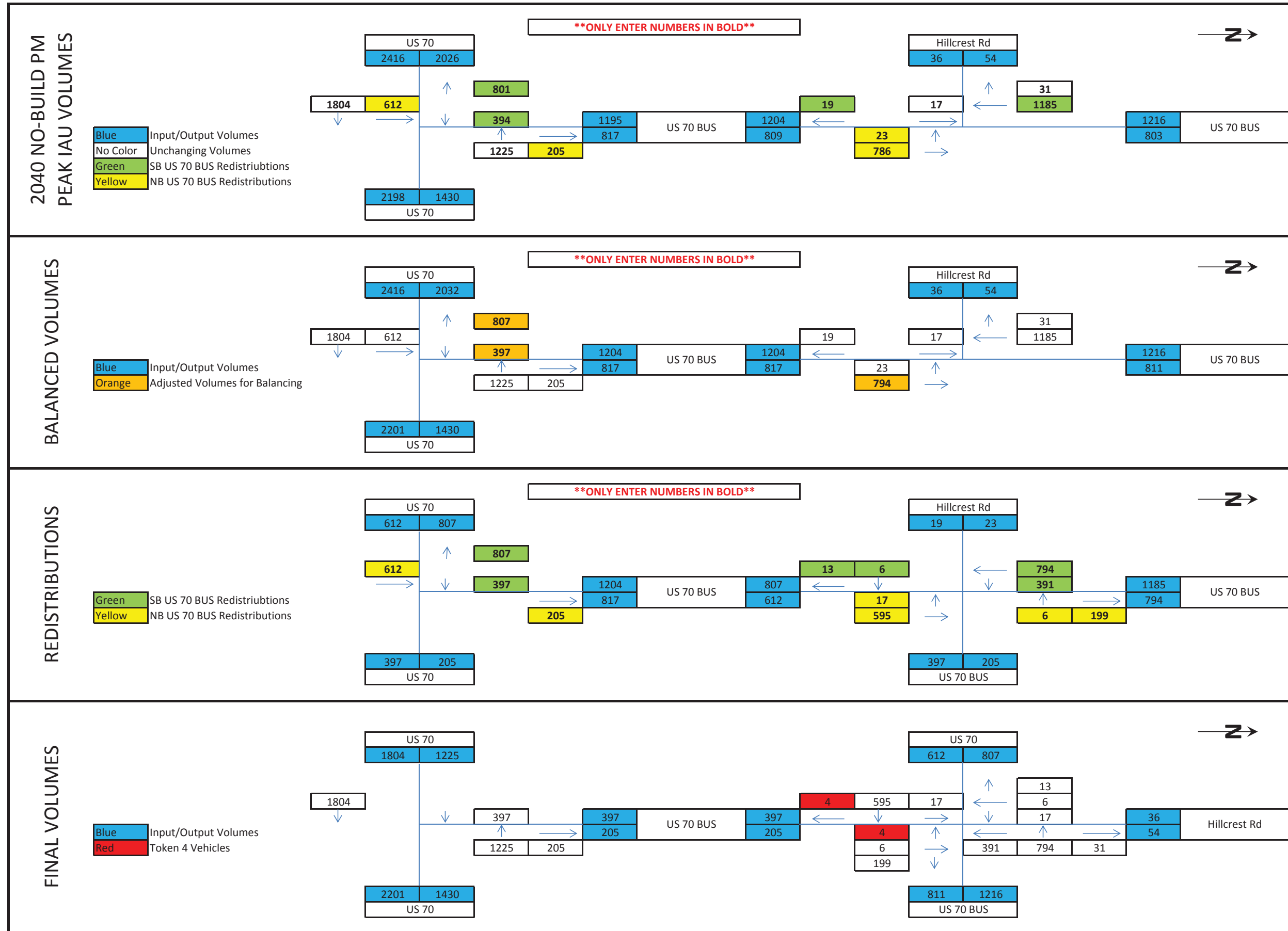
Traffic Data Year:
2040 Future Year No-Build

Project:
R-2553



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**2040 No-Build Alternative
Synchro Reports**

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R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

401: Jenny Lind Rd & NC 903
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	142	9	9	163	107	93
Future Volume (vph)	142	9	9	163	107	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1698	0	0	1821	1696	0
Flt Permitted	0.955			0.997		
Satd. Flow (perm)	1698	0	0	1821	1696	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1310			602	499	
Travel Time (s)	16.2			7.5	6.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	4%	4%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	0	191	222	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	18			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.0% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	142	9	9	163	107	93
Future Volume (Veh/h)	142	9	9	163	107	93
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	158	10	10	181	119	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	372	170	222			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	170	222			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	74	99	99			
cM capacity (veh/h)	617	863	1335			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	168	191	222			
Volume Left	158	10	0			
Volume Right	10	0	103			
cSH	627	1335	1700			
Volume to Capacity	0.27	0.01	0.13			
Queue Length 95th (ft)	27	1	0			
Control Delay (s)	12.8	0.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.8	0.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	3.9					
Intersection Capacity Utilization	31.0%			ICU Level of Service	A	
Analysis Period (min)	15					

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

401: Jenny Lind Rd & NC 903
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	93	9	9	107	163	142
Future Volume (vph)	93	9	9	107	163	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1693	0	0	1820	1696	0
Flt Permitted	0.956			0.996		
Satd. Flow (perm)	1693	0	0	1820	1696	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1310			602	499	
Travel Time (s)	16.2			7.5	6.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	4%	4%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	0	129	339	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	18			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.6%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	93	9	9	107	163	142
Future Volume (Veh/h)	93	9	9	107	163	142
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	103	10	10	119	181	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	399	260	339			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	399	260	339			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	83	99	99			
cM capacity (veh/h)	594	769	1209			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	113	129	339			
Volume Left	103	10	0			
Volume Right	10	0	158			
cSH	606	1209	1700			
Volume to Capacity	0.19	0.01	0.20			
Queue Length 95th (ft)	17	1	0			
Control Delay (s)	12.3	0.7	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.3	0.7	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		29.6%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

402: NC 903 & US 70 EB Ramps
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↑	
Traffic Volume (vph)	80	4	60	0	0	0	0	195	108	49	142	0
Future Volume (vph)	80	4	60	0	0	0	0	195	108	49	142	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		150	225		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1726	1538	0	0	0	0	1810	1538	1719	1810	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1726	1538	0	0	0	0	1810	1538	1719	1810	0
Link Speed (mph)		45			30			55			55	
Link Distance (ft)		1311			824			499			723	
Travel Time (s)		19.9			18.7			6.2			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	67	0	0	0	0	217	120	54	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 28.2% ICU Level of Service A
 Analysis Period (min) 15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↑	
Traffic Volume (veh/h)	80	4	60	0	0	0	0	195	108	49	142	0
Future Volume (Veh/h)	80	4	60	0	0	0	0	195	108	49	142	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	89	4	67	0	0	0	0	217	120	54	158	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			4									
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	483	603	158	485	483	217	158			337		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	483	603	158	485	483	217	158			337		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	99	92	100	100	100	100			96		
cM capacity (veh/h)	472	391	880	432	457	815	1403			1206		
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	160	217	120	54	158							
Volume Left	89	0	0	54	0							
Volume Right	67	0	120	0	0							
cSH	806	1700	1700	1206	1700							
Volume to Capacity	0.20	0.13	0.07	0.04	0.09							
Queue Length 95th (ft)	18	0	0	4	0							
Control Delay (s)	12.4	0.0	0.0	8.1	0.0							
Lane LOS	B			A								
Approach Delay (s)	12.4	0.0		2.1								
Approach LOS	B											
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			28.2%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings



















402: NC 903 & US 70 EB Ramps
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↖	↗	↑	
Traffic Volume (vph)	55	4	73	0	0	0	0	129	73	58	230	0
Future Volume (vph)	55	4	73	0	0	0	0	129	73	58	230	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		150	225		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1728	1538	0	0	0	0	1810	1538	1719	1810	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1728	1538	0	0	0	0	1810	1538	1719	1810	0
Link Speed (mph)		45			30			55			55	
Link Distance (ft)		1311			824			499			723	
Travel Time (s)		19.9			18.7			6.2			9.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	81	0	0	0	0	143	81	64	256	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.0%
Analysis Period (min)	15
	ICU Level of Service A

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	4	73	0	0	0	0	129	73	58	230	0
Future Volume (Veh/h)	55	4	73	0	0	0	0	129	73	58	230	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	61	4	81	0	0	0	0	143	81	64	256	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	4											
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	527	608	256	529	527	143	256			224		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	527	608	256	529	527	143	256			224		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	99	90	100	100	100	100			95		
cM capacity (veh/h)	440	387	775	390	430	897	1292			1327		
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	146	143	81	64	256							
Volume Left	61	0	0	64	0							
Volume Right	81	0	81	0	0							
cSH	981	1700	1700	1327	1700							
Volume to Capacity	0.15	0.08	0.05	0.05	0.15							
Queue Length 95th (ft)	13	0	0	4	0							
Control Delay (s)	12.2	0.0	0.0	7.8	0.0							
Lane LOS	B			A								
Approach Delay (s)	12.2	0.0		1.6								
Approach LOS	B											
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			29.0%	ICU Level of Service	A							
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

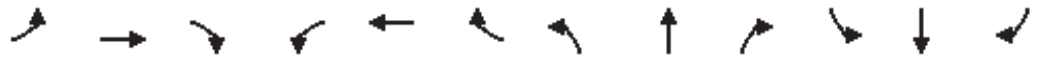
403: NC 903 & US 70 WB Ramps
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	73	4	58	73	202	0	0	118	55
Future Volume (vph)	0	0	0	73	4	58	73	202	0	0	118	55
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	250		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1728	1538	1719	1810	0	0	1827	1553
Flt Permitted					0.955		0.950					
Satd. Flow (perm)	0	0	0	0	1728	1538	1719	1810	0	0	1827	1553
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1007			1367			723			825	
Travel Time (s)		22.9			20.7			9.0			10.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	85	64	81	224	0	0	131	61
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↖	↗	↖	↑			↗	↖	
Traffic Volume (veh/h)	0	0	0	73	4	58	73	202	0	0	118	55	
Future Volume (Veh/h)	0	0	0	73	4	58	73	202	0	0	118	55	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	0	0	0	81	4	64	81	224	0	0	131	61	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)						4							
Median type									None		None		
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	519	517	131	517	578	224	192			224			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	519	517	131	517	578	224	192			224			
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2			
p0 queue free %	100	100	100	82	99	92	94			100			
cM capacity (veh/h)	404	431	911	443	398	808	1364			1333			
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2								
Volume Total	149	81	224	131	61								
Volume Left	81	81	0	0	0								
Volume Right	64	0	0	0	61								
cSH	773	1364	1700	1700	1700								
Volume to Capacity	0.19	0.06	0.13	0.08	0.04								
Queue Length 95th (ft)	18	5	0	0	0								
Control Delay (s)	12.8	7.8	0.0	0.0	0.0								
Lane LOS	B	A											
Approach Delay (s)	12.8	2.1	0.0										
Approach LOS	B												
Intersection Summary													
Average Delay			3.9										
Intersection Capacity Utilization			28.2%			ICU Level of Service				A			
Analysis Period (min)			15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

403: NC 903 & US 70 WB Ramps
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	108	4	49	60	124	0	0	180	80
Future Volume (vph)	0	0	0	108	4	49	60	124	0	0	180	80
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	250		0	0		150
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1726	1538	1719	1810	0	0	1827	1553
Flt Permitted					0.954		0.950					
Satd. Flow (perm)	0	0	0	0	1726	1538	1719	1810	0	0	1827	1553
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		1007			1367			723			825	
Travel Time (s)		22.9			20.7			9.0			10.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	124	54	67	138	0	0	200	89
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↖	↗	↖	↑			↗	↖	
Traffic Volume (veh/h)	0	0	0	108	4	49	60	124	0	0	180	80	
Future Volume (Veh/h)	0	0	0	108	4	49	60	124	0	0	180	80	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	0	0	0	120	4	54	67	138	0	0	200	89	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)						4							
Median type								None		None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	474	472	200	472	561	138	289				138		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	474	472	200	472	561	138	289				138		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	100	100	100	75	99	94	95				100		
cM capacity (veh/h)	444	460	833	477	409	902	1256				1433		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2								
Volume Total	178	67	138	200	89								
Volume Left	120	67	0	0	0								
Volume Right	54	0	0	0	89								
cSH	682	1256	1700	1700	1700								
Volume to Capacity	0.26	0.05	0.08	0.12	0.05								
Queue Length 95th (ft)	26	4	0	0	0								
Control Delay (s)	13.4	8.0	0.0	0.0	0.0								
Lane LOS	B	A											
Approach Delay (s)	13.4	2.6	0.0										
Approach LOS	B												
Intersection Summary													
Average Delay			4.4										
Intersection Capacity Utilization			29.0%	ICU Level of Service		A							
Analysis Period (min)			15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

404: US 70 & Washington St
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	16	1736	4	1432	143	216	20
Future Volume (vph)	16	1736	4	1432	143	216	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175		300	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1687	3374	1687	3374	1509	1761	0
Flt Permitted	0.950		0.950			0.956	
Satd. Flow (perm)	1687	3374	1687	3374	1509	1761	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1478		1642		1057	
Travel Time (s)		18.3		20.4		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	18	1929	4	1591	159	262	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.8%
Analysis Period (min)	15
	ICU Level of Service C



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	16	1736	4	1432	143	216	20
Future Volume (Veh/h)	16	1736	4	1432	143	216	20
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	1929	0	1591	159	240	22
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1591		0			2592	796
vC1, stage 1 conf vol						1591	
vC2, stage 2 conf vol						1000	
vCu, unblocked vol	1591		0			2592	796
tC, single (s)	4.2		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	95		0			0	93
cM capacity (veh/h)	386		0			132	330

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	18	964	964	796	796	159	0	262
Volume Left	18	0	0	0	0	0	0	240
Volume Right	0	0	0	0	0	159	0	22
cSH	386	1700	1700	1700	1700	1700	1700	139
Volume to Capacity	0.05	0.57	0.57	0.47	0.47	0.09	0.00	1.89
Queue Length 95th (ft)	4	0	0	0	0	0	0	506
Control Delay (s)	14.8	0.0	0.0	0.0	0.0	0.0	0.0	478.5
Lane LOS	B							F
Approach Delay (s)	0.1			0.0				478.5
Approach LOS								F

Intersection Summary			
Average Delay		31.7	
Intersection Capacity Utilization	67.8%		ICU Level of Service C
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

404: US 70 & Washington St
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	18	1433	4	1736	218	145	15
Future Volume (vph)	18	1433	4	1736	218	145	15
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		175		300	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1687	3374	1687	3374	1509	1759	0
Flt Permitted	0.950		0.950			0.957	
Satd. Flow (perm)	1687	3374	1687	3374	1509	1759	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1478		1642		1057	
Travel Time (s)		18.3		20.4		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	20	1592	4	1929	242	178	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	63.6%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	18	1433	4	1736	218	145	15
Future Volume (Veh/h)	18	1433	4	1736	218	145	15
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	1592	0	1929	242	161	17
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1929		0			2765	964
vC1, stage 1 conf vol						1929	
vC2, stage 2 conf vol						836	
vCu, unblocked vol	1929		0			2765	964
tC, single (s)	4.2		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	93		0			0	93
cM capacity (veh/h)	283		0			93	255

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	20	796	796	964	964	242	0	178
Volume Left	20	0	0	0	0	0	0	161
Volume Right	0	0	0	0	0	242	0	17
cSH	283	1700	1700	1700	1700	1700	1700	99
Volume to Capacity	0.07	0.47	0.47	0.57	0.57	0.14	0.00	1.79
Queue Length 95th (ft)	6	0	0	0	0	0	0	362
Control Delay (s)	18.7	0.0	0.0	0.0	0.0	0.0	0.0	467.1
Lane LOS	C							F
Approach Delay (s)	0.2			0.0				467.1
Approach LOS								F

Intersection Summary			
Average Delay		21.1	
Intersection Capacity Utilization	63.6%		ICU Level of Service
Analysis Period (min)	15		B

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1779	34	27	1437	57	48	18	47	97	17	131
Future Volume (vph)	95	1779	34	27	1437	57	48	18	47	97	17	131
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		450	275		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	3374	1509	1687	3374	1509	0	1722	0	0	1663	0
Flt Permitted	0.950			0.950				0.671			0.793	
Satd. Flow (perm)	1687	3374	1509	1687	3374	1509	0	1180	0	0	1344	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55				55
Link Distance (ft)		1642			1972			1012				2836
Travel Time (s)		20.4			24.4			12.5				35.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	1977	38	30	1597	63	0	125	0	0	273	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	14.0	14.0	7.0	14.0	14.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0	21.0	14.0	21.0	21.0	14.0	14.0		14.0	14.0	
Total Split (s)	15.0	70.0	70.0	14.0	69.0	69.0	26.0	26.0		26.0	26.0	
Total Split (%)	13.6%	63.6%	63.6%	12.7%	62.7%	62.7%	23.6%	23.6%		23.6%	23.6%	
Maximum Green (s)	8.0	63.0	63.0	7.0	62.0	62.0	19.0	19.0		19.0	19.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0			-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0			5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effect Green (s)	10.0	70.6	70.6	9.0	64.0	64.0		21.0			21.0	
Actuated g/C Ratio	0.09	0.64	0.64	0.08	0.58	0.58		0.19			0.19	
v/c Ratio	0.70	0.91	0.04	0.22	0.81	0.07		0.56			1.07	
Control Delay	72.6	26.7	9.2	51.4	22.5	10.4		50.9			118.4	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				0.0
Total Delay	72.6	26.7	9.2	51.4	22.5	10.4		50.9				118.4
LOS	E	C	A	D	C	B		D				F
Approach Delay		28.7			22.6			50.9				118.4
Approach LOS		C			C			D				F
Queue Length 50th (ft)	74	681	11	20	443	18		81				~213
Queue Length 95th (ft)	#157	#898	25	51	548	38		145				#378
Internal Link Dist (ft)		1562			1892			932				2756
Turn Bay Length (ft)	250		450	275		150						
Base Capacity (vph)	153	2165	968	138	1964	878		225				256
Starvation Cap Reductn	0	0	0	0	0	0		0				0
Spillback Cap Reductn	0	0	0	0	0	0		0				0
Storage Cap Reductn	0	0	0	0	0	0		0				0
Reduced v/c Ratio	0.69	0.91	0.04	0.22	0.81	0.07		0.56				1.07

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 32.7
 Intersection LOS: C
 Intersection Capacity Utilization 85.4%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 405: Jim Sutton Rd/Willie Measley Rd & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	1437	48	48	1779	98	34	17	27	57	18	95
Future Volume (vph)	131	1437	48	48	1779	98	34	17	27	57	18	95
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		450	275		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	3374	1509	1687	3374	1509	0	1738	0	0	1661	0
Flt Permitted	0.950			0.950				0.631			0.872	
Satd. Flow (perm)	1687	3374	1509	1687	3374	1509	0	1120	0	0	1472	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			55				55
Link Distance (ft)		1642			1972			1012				2836
Travel Time (s)		20.4			24.4			12.5				35.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	1597	53	53	1977	109	0	87	0	0	189	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	14.0	14.0	7.0	14.0	14.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	21.0	21.0	14.0	21.0	21.0	14.0	14.0		14.0	14.0	
Total Split (s)	14.0	60.0	60.0	14.0	60.0	60.0	16.0	16.0		16.0	16.0	
Total Split (%)	15.6%	66.7%	66.7%	15.6%	66.7%	66.7%	17.8%	17.8%		17.8%	17.8%	
Maximum Green (s)	7.0	53.0	53.0	7.0	53.0	53.0	9.0	9.0		9.0	9.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0			-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0			5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effect Green (s)	9.0	60.6	60.6	9.0	55.0	55.0		11.0			11.0	
Actuated g/C Ratio	0.10	0.67	0.67	0.10	0.61	0.61		0.12			0.12	
v/c Ratio	0.87	0.70	0.05	0.32	0.96	0.12		0.64			1.06	
Control Delay	84.1	12.7	6.8	43.1	29.8	7.8		60.5			123.7	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

405: Jim Sutton Rd/Willie Measley Rd & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				0.0
Total Delay	84.1	12.7	6.8	43.1	29.8	7.8		60.5				123.7
LOS	F	B	A	D	C	A		E				F
Approach Delay		18.3			29.0			60.5				123.7
Approach LOS		B			C			E				F
Queue Length 50th (ft)	83	322	11	29	506	24		48				~118
Queue Length 95th (ft)	#192	415	25	65	#732	45		#117				#250
Internal Link Dist (ft)		1562			1892			932				2756
Turn Bay Length (ft)	250		450	275		150						
Base Capacity (vph)	168	2271	1016	168	2061	922		136				179
Starvation Cap Reductn	0	0	0	0	0	0		0				0
Spillback Cap Reductn	0	0	0	0	0	0		0				0
Storage Cap Reductn	0	0	0	0	0	0		0				0
Reduced v/c Ratio	0.87	0.70	0.05	0.32	0.96	0.12		0.64				1.06

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 29.4
 Intersection LOS: C
 Intersection Capacity Utilization 80.6%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 405: Jim Sutton Rd/Willie Measley Rd & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

406: Willie Measley Rd & Fields Station Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	25	24	4	16	4	17	109	4	5	171	33
Future Volume (vph)	30	25	24	4	16	4	17	109	4	5	171	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1754	0	0	1809	0	0	1842	0	0	1822	0
Flt Permitted		0.982			0.992			0.993			0.999	
Satd. Flow (perm)	0	1754	0	0	1809	0	0	1842	0	0	1822	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1345			1175			2836			1490	
Travel Time (s)		16.7			14.6			35.2			18.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	26	0	0	144	0	0	233	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	30	25	24	4	16	4	17	109	4	5	171	33
Future Volume (Veh/h)	30	25	24	4	16	4	17	109	4	5	171	33
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	28	27	4	18	4	19	121	4	6	190	37
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	394	384	208	422	400	123	227			125		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	394	384	208	422	400	123	227			125		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	95	97	99	97	100	99			100		
cM capacity (veh/h)	541	540	832	496	528	928	1341			1462		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	88	26	144	233								
Volume Left	33	4	19	6								
Volume Right	27	4	4	37								
cSH	605	560	1341	1462								
Volume to Capacity	0.15	0.05	0.01	0.00								
Queue Length 95th (ft)	13	4	1	0								
Control Delay (s)	12.0	11.7	1.1	0.2								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.0	11.7	1.1	0.2								
Approach LOS	B	B										
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			30.3%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

406: Willie Measley Rd & Fields Station Rd
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	33	16	17	4	25	5	24	171	4	4	109	30
Future Volume (vph)	33	16	17	4	25	5	24	171	4	4	109	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1754	0	0	1815	0	0	1848	0	0	1809	0
Flt Permitted		0.976			0.995			0.994			0.999	
Satd. Flow (perm)	0	1754	0	0	1815	0	0	1848	0	0	1809	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1345			1175			2836			1490	
Travel Time (s)		16.7			14.6			35.2			18.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	74	0	0	38	0	0	221	0	0	158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary






















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	33	16	17	4	25	5	24	171	4	4	109	30
Future Volume (Veh/h)	33	16	17	4	25	5	24	171	4	4	109	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	18	19	4	28	6	27	190	4	4	121	33
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	412	394	138	420	408	192	154			194		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412	394	138	420	408	192	154			194		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	97	98	99	95	99	98			100		
cM capacity (veh/h)	516	531	911	510	521	850	1426			1379		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	74	38	221	158								
Volume Left	37	4	27	4								
Volume Right	19	6	4	33								
cSH	585	554	1426	1379								
Volume to Capacity	0.13	0.07	0.02	0.00								
Queue Length 95th (ft)	11	6	1	0								
Control Delay (s)	12.0	12.0	1.1	0.2								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.0	12.0	1.1	0.2								
Approach LOS	B	B										
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			37.9%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

407: Ken's Grill Driveway/Norbert Hill Rd & US 70
 2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1879	4	4	1536	15	4	4	4	24	4	14
Future Volume (vph)	11	1879	4	4	1536	15	4	4	4	24	4	14
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		100	150		200	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	3374	1509	1687	3374	1509	0	1750	0	0	1727	0
Flt Permitted	0.950			0.950				0.984			0.972	
Satd. Flow (perm)	1687	3374	1509	1687	3374	1509	0	1750	0	0	1727	0
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1972			1238			175			1019	
Travel Time (s)		24.4			15.3			4.8			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	2088	4	4	1707	17	0	12	0	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.7%
Analysis Period (min)	15
	ICU Level of Service B
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1879	4	4	1536	15	4	4	4	24	4	14
Future Volume (Veh/h)	11	1879	4	4	1536	15	4	4	4	24	4	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	2088	4	4	1707	17	4	4	4	27	4	16
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage (veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1724			2092			2992	3844	1044	2789	3831	854
vC1, stage 1 conf vol							2112	2112		1715	1715	
vC2, stage 2 conf vol							880	1732		1074	2116	
vCu, unblocked vol	1724			2092			2992	3844	1044	2789	3831	854
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			92	94	98	67	94	95
cM capacity (veh/h)	341			243			48	67	226	81	67	302

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	12	1044	1044	4	4	854	854	17	12	47
Volume Left	12	0	0	0	4	0	0	0	4	27
Volume Right	0	0	0	4	0	0	0	17	4	16
cSH	341	1700	1700	1700	243	1700	1700	1700	75	105
Volume to Capacity	0.04	0.61	0.61	0.00	0.02	0.50	0.50	0.01	0.16	0.45
Queue Length 95th (ft)	3	0	0	0	1	0	0	0	13	48
Control Delay (s)	15.9	0.0	0.0	0.0	20.1	0.0	0.0	0.0	62.0	64.3
Lane LOS	C				C				F	F
Approach Delay (s)	0.1				0.0				62.0	64.3
Approach LOS									F	F

Intersection Summary		
Average Delay		1.0
Intersection Capacity Utilization	62.7%	ICU Level of Service
Analysis Period (min)	15	B

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

407: Ken's Grill Driveway/Norbert Hill Rd & US 70
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1537	4	4	1878	26	4	4	4	16	4	10
Future Volume (vph)	13	1537	4	4	1878	26	4	4	4	16	4	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		100	150		200	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	3374	1509	1687	3374	1509	0	1750	0	0	1731	0
Flt Permitted	0.950			0.950				0.984			0.973	
Satd. Flow (perm)	1687	3374	1509	1687	3374	1509	0	1750	0	0	1731	0
Link Speed (mph)		55			55			25			45	
Link Distance (ft)		1972			1238			175			1019	
Travel Time (s)		24.4			15.3			4.8			15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	1708	4	4	2087	29	0	12	0	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	61.9%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1537	4	4	1878	26	4	4	4	16	4	10
Future Volume (Veh/h)	13	1537	4	4	1878	26	4	4	4	16	4	10
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	1708	4	4	2087	29	4	4	4	18	4	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage (veh)	2			2								
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2116		1712		2800		3860	854	2983	3835	1044	
vC1, stage 1 conf vol					1736		1736		2095	2095		
vC2, stage 2 conf vol					1064		2124		888	1740		
vCu, unblocked vol	2116		1712		2800		3860	854	2983	3835	1044	
tC, single (s)	4.2		4.2		7.5		6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)					6.5		5.5		6.5	5.5		
tF (s)	2.3		2.3		3.5		4.0	3.3	3.5	4.0	3.3	
p0 queue free %	94		99		95		93	99	64	94	95	
cM capacity (veh/h)	238		345		75		61	302	50	70	226	

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1	
Volume Total	14	854	854	4	4	1044	1044	29	12	33	
Volume Left	14	0	0	0	4	0	0	0	4	18	
Volume Right	0	0	0	4	0	0	0	29	4	11	
cSH	238	1700	1700	1700	345	1700	1700	1700	91	71	
Volume to Capacity	0.06	0.50	0.50	0.00	0.01	0.61	0.61	0.02	0.13	0.46	
Queue Length 95th (ft)	5	0	0	0	1	0	0	0	11	47	
Control Delay (s)	21.1	0.0	0.0	0.0	15.5	0.0	0.0	0.0	50.5	93.3	
Lane LOS	C			C			F			F	
Approach Delay (s)	0.2		0.0		0.0		0.0		50.5	93.3	
Approach LOS									F	F	

Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			61.9%		ICU Level of Service				B			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

408: Harold Sutton Rd & Barwick Station Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	25	15	4	4	5
Future Volume (vph)	10	25	15	4	4	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1837	1814	0	1678	0
Flt Permitted		0.986			0.980	
Satd. Flow (perm)	0	1837	1814	0	1678	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		1070	1054		1068	
Travel Time (s)		13.3	13.1		13.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	39	21	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	10	25	15	4	4	5
Future Volume (Veh/h)	10	25	15	4	4	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	28	17	4	4	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	21				69	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	21				69	19
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1595				929	1059

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	39	21	10
Volume Left	11	0	4
Volume Right	0	4	6
cSH	1595	1700	1003
Volume to Capacity	0.01	0.01	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	2.1	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	2.1	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization		18.5%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

408: Harold Sutton Rd & Barwick Station Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	15	25	4	4	10
Future Volume (vph)	5	15	25	4	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1839	1831	0	1657	0
Flt Permitted		0.987			0.987	
Satd. Flow (perm)	0	1839	1831	0	1657	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		1070	1054		1068	
Travel Time (s)		13.3	13.1		13.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	32	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	25	4	4	10
Future Volume (Veh/h)	5	15	25	4	4	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	17	28	4	4	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	32				59	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32				59	30
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1580				944	1044
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	23	32	15			
Volume Left	6	0	4			
Volume Right	0	4	11			
cSH	1580	1700	1016			
Volume to Capacity	0.00	0.02	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	1.9	0.0	8.6			
Lane LOS	A		A			
Approach Delay (s)	1.9	0.0	8.6			
Approach LOS			A			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		15.2%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

409: Barwick Station Rd & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1897	4	6	1552	5	10
Future Volume (vph)	4	1897	4	6	1552	5	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	175		0	0
Storage Lanes	1		0	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1687	3374	0	1687	3374	1672	0
Flt Permitted	0.950			0.950		0.983	
Satd. Flow (perm)	1687	3374	0	1687	3374	1672	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1817			2597	1153	
Travel Time (s)		22.5			32.2	14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	2112	0	7	1724	17	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.6%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (veh/h)	4	1897	4	6	1552	5	10
Future Volume (Veh/h)	4	1897	4	6	1552	5	10
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2108	4	7	1724	6	11
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			2112		2986	1056
vC1, stage 1 conf vol						2110	
vC2, stage 2 conf vol						876	
vCu, unblocked vol	0			2112		2986	1056
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			97		92	95
cM capacity (veh/h)	0			239		75	222

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	1405	707	0	7	862	862	17
Volume Left	0	0	0	7	0	0	6
Volume Right	0	4	0	0	0	0	11
cSH	1700	1700	1700	239	1700	1700	131
Volume to Capacity	0.83	0.42	0.00	0.03	0.51	0.51	0.13
Queue Length 95th (ft)	0	0	0	2	0	0	11
Control Delay (s)	0.0	0.0	0.0	20.5	0.0	0.0	36.5
Lane LOS				C			E
Approach Delay (s)	0.0			0.1			36.5
Approach LOS							E

Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utilization		62.6%		ICU Level of Service			B
Analysis Period (min)			15				

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

409: Barwick Station Rd & US 70
2040 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1552	4	10	1897	4	6
Future Volume (vph)	4	1552	4	10	1897	4	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		0	175		0	0
Storage Lanes	1		0	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1687	3374	0	1687	3374	1672	0
Flt Permitted	0.950			0.950		0.982	
Satd. Flow (perm)	1687	3374	0	1687	3374	1672	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1817			2597	1153	
Travel Time (s)		22.5			32.2	14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1728	0	11	2108	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.4%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (veh/h)	4	1552	4	10	1897	4	6
Future Volume (Veh/h)	4	1552	4	10	1897	4	6
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1724	4	11	2108	4	7
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1728		2802	864
vC1, stage 1 conf vol						1726	
vC2, stage 2 conf vol						1076	
vCu, unblocked vol	0			1728		2802	864
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			97		96	98
cM capacity (veh/h)	0			340		113	297

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	1149	579	0	11	1054	1054	11
Volume Left	0	0	0	11	0	0	4
Volume Right	0	4	0	0	0	0	7
cSH	1700	1700	1700	340	1700	1700	186
Volume to Capacity	0.68	0.34	0.00	0.03	0.62	0.62	0.06
Queue Length 95th (ft)	0	0	0	3	0	0	5
Control Delay (s)	0.0	0.0	0.0	15.9	0.0	0.0	25.5
Lane LOS				C			D
Approach Delay (s)	0.0			0.1			25.5
Approach LOS							D

Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization		62.4%		ICU Level of Service			B
Analysis Period (min)		15					

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

410: US 70 & Albert Sugg Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	7	1898	4	1552	9	14	9
Future Volume (vph)	7	1898	4	1552	9	14	9
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150		125	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1687	3374	1687	3374	1509	1713	0
Flt Permitted	0.950		0.950			0.970	
Satd. Flow (perm)	1687	3374	1687	3374	1509	1713	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2597		1253		1100	
Travel Time (s)		32.2		15.5		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	8	2109	4	1724	10	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.5%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	7	1898	4	1552	9	14	9
Future Volume (Veh/h)	7	1898	4	1552	9	14	9
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	2109	0	1724	10	16	10
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1734		0			2794	862
vC1, stage 1 conf vol						1724	
vC2, stage 2 conf vol						1070	
vCu, unblocked vol	1734		0			2794	862
tC, single (s)	4.2		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	98		0			86	97
cM capacity (veh/h)	338		0			113	298

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	8	1054	1054	862	862	10	0	26
Volume Left	8	0	0	0	0	0	0	16
Volume Right	0	0	0	0	0	10	0	10
cSH	338	1700	1700	1700	1700	1700	1700	149
Volume to Capacity	0.02	0.62	0.62	0.51	0.51	0.01	0.00	0.17
Queue Length 95th (ft)	2	0	0	0	0	0	0	15
Control Delay (s)	15.9	0.0	0.0	0.0	0.0	0.0	0.0	34.2
Lane LOS	C							D
Approach Delay (s)	0.1			0.0				34.2
Approach LOS								D

Intersection Summary								
Average Delay			0.3					
Intersection Capacity Utilization			62.5%		ICU Level of Service			B
Analysis Period (min)			15					

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

410: US 70 & Albert Sugg Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	8	1552	4	1897	15	10	6
Future Volume (vph)	8	1552	4	1897	15	10	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		150		125	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1687	3374	1687	3374	1509	1711	0
Flt Permitted	0.950		0.950			0.970	
Satd. Flow (perm)	1687	3374	1687	3374	1509	1711	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2597		1253		1100	
Travel Time (s)		32.2		15.5		13.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	9	1724	4	2108	17	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		50		50		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.4%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	8	1552	4	1897	15	10	6
Future Volume (Veh/h)	8	1552	4	1897	15	10	6
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	1724	0	2108	17	11	7
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		2		2			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	2125		0			2988	1054
vC1, stage 1 conf vol						2108	
vC2, stage 2 conf vol						880	
vCu, unblocked vol	2125		0			2988	1054
tC, single (s)	4.2		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	96		0			85	97
cM capacity (veh/h)	236		0			75	222

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	9	862	862	1054	1054	17	0	18
Volume Left	9	0	0	0	0	0	0	11
Volume Right	0	0	0	0	0	17	0	7
cSH	236	1700	1700	1700	1700	1700	1700	101
Volume to Capacity	0.04	0.51	0.51	0.62	0.62	0.01	0.00	0.18
Queue Length 95th (ft)	3	0	0	0	0	0	0	15
Control Delay (s)	20.9	0.0	0.0	0.0	0.0	0.0	0.0	48.2
Lane LOS	C							E
Approach Delay (s)	0.1			0.0				48.2
Approach LOS								E

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization	62.4%		ICU Level of Service B
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

411: Albert Sugg Rd & Fields Station Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	4	15	4	5	25	4	4	9	4	4	15	5
Future Volume (vph)	4	15	4	5	25	4	4	9	4	4	15	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1807	0	0	1822	0	0	1787	0	0	1794	0
Flt Permitted		0.992			0.992			0.989			0.993	
Satd. Flow (perm)	0	1807	0	0	1822	0	0	1787	0	0	1794	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		1018			1043			837			994	
Travel Time (s)		12.6			15.8			10.4			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	38	0	0	18	0	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	4	15	4	5	25	4	4	9	4	4	15	5
Future Volume (Veh/h)	4	15	4	5	25	4	4	9	4	4	15	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	17	4	6	28	4	4	10	4	4	17	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	32			21			84	71	19	78	71	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			21			84	71	19	78	71	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	99	100	100	98	99
cM capacity (veh/h)	1580			1595			880	814	1059	895	814	1044

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	25	38	18	27
Volume Left	4	6	4	4
Volume Right	4	4	4	6
cSH	1580	1595	874	868
Volume to Capacity	0.00	0.00	0.02	0.03
Queue Length 95th (ft)	0	0	2	2
Control Delay (s)	1.2	1.2	9.2	9.3
Lane LOS	A	A	A	A
Approach Delay (s)	1.2	1.2	9.2	9.3
Approach LOS			A	A

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization	13.3%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

411: Albert Sugg Rd & Fields Station Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	5	25	4	4	15	4	4	15	5	4	9	4
Future Volume (vph)	5	25	4	4	15	4	4	15	5	4	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1822	0	0	1807	0	0	1794	0	0	1787	0
Flt Permitted		0.992			0.992			0.993			0.989	
Satd. Flow (perm)	0	1822	0	0	1807	0	0	1794	0	0	1787	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		1018			1043			837			994	
Travel Time (s)		12.6			15.8			10.4			12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	25	0	0	27	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	25	4	4	15	4	4	15	5	4	9	4
Future Volume (Veh/h)	5	25	4	4	15	4	4	15	5	4	9	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	28	4	4	17	4	4	17	6	4	10	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	21			32			78	71	30	84	71	19
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	21			32			78	71	30	84	71	19
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	100	99	100
cM capacity (veh/h)	1595			1580			895	814	1044	880	814	1059

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	25	27	18
Volume Left	6	4	4	4
Volume Right	4	4	6	4
cSH	1595	1580	868	874
Volume to Capacity	0.00	0.00	0.03	0.02
Queue Length 95th (ft)	0	0	2	2
Control Delay (s)	1.2	1.2	9.3	9.2
Lane LOS	A	A	A	A
Approach Delay (s)	1.2	1.2	9.3	9.2
Approach LOS			A	A

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization	13.3%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

412: Harold Sutton Rd & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1907	4	16	1561	5	24
Future Volume (vph)	4	1907	4	16	1561	5	24
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		175	200		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1687	3374	1509	1687	3374	1643	0
Flt Permitted	0.950			0.950		0.991	
Satd. Flow (perm)	1687	3374	1509	1687	3374	1643	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1161			1247	1106	
Travel Time (s)		14.4			15.5	13.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	2119	4	18	1734	33	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.7%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	1907	4	16	1561	5	24
Future Volume (Veh/h)	4	1907	4	16	1561	5	24
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2119	4	18	1734	6	27
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			2123		3022	1060
vC1, stage 1 conf vol						2119	
vC2, stage 2 conf vol						903	
vCu, unblocked vol	0			2123		3022	1060
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			92		92	88
cM capacity (veh/h)	0			236		74	220

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	1060	1060	4	0	18	867	867	33
Volume Left	0	0	0	0	18	0	0	6
Volume Right	0	0	4	0	0	0	0	27
cSH	1700	1700	1700	1700	236	1700	1700	162
Volume to Capacity	0.62	0.62	0.00	0.00	0.08	0.51	0.51	0.20
Queue Length 95th (ft)	0	0	0	0	6	0	0	18
Control Delay (s)	0.0	0.0	0.0	0.0	21.5	0.0	0.0	32.9
Lane LOS					C			D
Approach Delay (s)	0.0				0.2			32.9
Approach LOS								D

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization	62.7%		ICU Level of Service B
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

412: Harold Sutton Rd & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1561	4	25	1906	4	16
Future Volume (vph)	4	1561	4	25	1906	4	16
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		175	200		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1687	3374	1509	1687	3374	1643	0
Flt Permitted	0.950			0.950		0.991	
Satd. Flow (perm)	1687	3374	1509	1687	3374	1643	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1161			1247	1106	
Travel Time (s)		14.4			15.5	13.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	7%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1734	4	28	2118	22	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		50			50	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.7%
Analysis Period (min)	15
	ICU Level of Service B
























Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	1561	4	25	1906	4	16
Future Volume (Veh/h)	4	1561	4	25	1906	4	16
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1734	4	28	2118	4	18
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		2			2		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1738		2849	867
vC1, stage 1 conf vol						1734	
vC2, stage 2 conf vol						1115	
vCu, unblocked vol	0			1738		2849	867
tC, single (s)	0.0			4.2		6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			92		96	94
cM capacity (veh/h)	0			337		109	296

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	867	867	4	0	28	1059	1059	22
Volume Left	0	0	0	0	28	0	0	4
Volume Right	0	0	4	0	0	0	0	18
cSH	1700	1700	1700	1700	337	1700	1700	226
Volume to Capacity	0.51	0.51	0.00	0.00	0.08	0.62	0.62	0.10
Queue Length 95th (ft)	0	0	0	0	7	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	16.6	0.0	0.0	22.6
Lane LOS					C			C
Approach Delay (s)	0.0				0.2			22.6
Approach LOS								C

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization	62.7%		ICU Level of Service B
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

413: Kennedy Home Rd/Eason Rd & US 70
 2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1897	12	56	1559	35	15	4	88	56	4	15
Future Volume (vph)	12	1897	12	56	1559	35	15	4	88	56	4	15
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		250	50		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	3374	1509	1703	3406	1524	0	1644	0	0	1745	0
Flt Permitted	0.950			0.950				0.993			0.964	
Satd. Flow (perm)	1687	3374	1509	1703	3406	1524	0	1644	0	0	1745	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1210			866			1023			1010	
Travel Time (s)		15.0			10.7			12.7			12.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	2108	13	62	1732	39	0	119	0	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	70.0%
Analysis Period (min)	15
	ICU Level of Service C
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1897	12	56	1559	35	15	4	88	56	4	15
Future Volume (Veh/h)	12	1897	12	56	1559	35	15	4	88	56	4	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	2108	13	62	1732	39	17	4	98	62	4	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage (veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1771			2121			3143	4029	1054	3036	4003	866
vC1, stage 1 conf vol							2134	2134		1856	1856	
vC2, stage 2 conf vol							1009	1895		1180	2147	
vCu, unblocked vol	1771			2121			3143	4029	1054	3036	4003	866
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			74			62	92	56	0	80	94
cM capacity (veh/h)	327			240			45	52	222	32	20	297

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	13	1054	1054	13	62	866	866	39	119	83
Volume Left	13	0	0	0	62	0	0	0	17	62
Volume Right	0	0	0	13	0	0	0	39	98	17
cSH	327	1700	1700	1700	240	1700	1700	1700	132	37
Volume to Capacity	0.04	0.62	0.62	0.01	0.26	0.51	0.51	0.02	0.90	2.22
Queue Length 95th (ft)	3	0	0	0	25	0	0	0	148	228
Control Delay (s)	16.5	0.0	0.0	0.0	25.2	0.0	0.0	0.0	117.1	792.1
Lane LOS	C				D				F	F
Approach Delay (s)	0.1				0.9				117.1	792.1
Approach LOS									F	F

Intersection Summary												
Average Delay		19.5										
Intersection Capacity Utilization		70.0%			ICU Level of Service				C			
Analysis Period (min)		15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

413: Kennedy Home Rd/Eason Rd & US 70
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1559	14	89	1897	56	11	4	57	35	4	11
Future Volume (vph)	15	1559	14	89	1897	56	11	4	57	35	4	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		250	50		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	3374	1509	1703	3406	1524	0	1648	0	0	1747	0
Flt Permitted	0.950			0.950				0.992			0.966	
Satd. Flow (perm)	1687	3374	1509	1703	3406	1524	0	1648	0	0	1747	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1210			866			1023			1010	
Travel Time (s)		15.0			10.7			12.7			12.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1732	16	99	2108	62	0	79	0	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.2%
Analysis Period (min)	15
	ICU Level of Service D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1559	14	89	1897	56	11	4	57	35	4	11
Future Volume (Veh/h)	15	1559	14	89	1897	56	11	4	57	35	4	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	1732	16	99	2108	62	12	4	63	39	4	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised					Raised					
Median storage (veh)		2					2					
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2170			1748			3032	4134	866	3271	4088	1054
vC1, stage 1 conf vol							1766	1766		2306	2306	
vC2, stage 2 conf vol							1266	2368		965	1782	
vCu, unblocked vol	2170			1748			3032	4134	866	3271	4088	1054
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			71			79	86	79	0	81	95
cM capacity (veh/h)	226			338			57	28	297	26	21	222
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	17	866	866	16	99	1054	1054	62	79	55		
Volume Left	17	0	0	0	99	0	0	0	12	39		
Volume Right	0	0	0	16	0	0	0	62	63	12		
cSH	226	1700	1700	1700	338	1700	1700	1700	140	31		
Volume to Capacity	0.08	0.51	0.51	0.01	0.29	0.62	0.62	0.04	0.56	1.78		
Queue Length 95th (ft)	6	0	0	0	30	0	0	0	71	157		
Control Delay (s)	22.2	0.0	0.0	0.0	20.0	0.0	0.0	0.0	59.7	647.1		
Lane LOS	C				C				F	F		
Approach Delay (s)	0.2				0.9				59.7	647.1		
Approach LOS									F	F		
Intersection Summary												
Average Delay				10.2								
Intersection Capacity Utilization			75.2%		ICU Level of Service				D			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

414: US 70 & Banks School Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	1946	1543	21	0	133
Future Volume (vph)	70	1946	1543	21	0	133
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			150	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	1703	3406	3374	1509	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	1703	3406	3374	1509	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		866	1113		995	
Travel Time (s)		10.7	13.8		12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	7%	7%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	2162	1714	23	0	148
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.6%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷↷	↷↷	↷		↷
Traffic Volume (veh/h)	70	1946	1543	21	0	133
Future Volume (Veh/h)	70	1946	1543	21	0	133
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	78	2162	1714	23	0	148
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1737				2951	857
vC1, stage 1 conf vol					1714	
vC2, stage 2 conf vol					1237	
vCu, unblocked vol	1737				2951	857
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	77				100	51
cM capacity (veh/h)	341				101	301

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	78	1081	1081	857	857	23	148
Volume Left	78	0	0	0	0	0	0
Volume Right	0	0	0	0	0	23	148
cSH	341	1700	1700	1700	1700	1700	301
Volume to Capacity	0.23	0.64	0.64	0.50	0.50	0.01	0.49
Queue Length 95th (ft)	22	0	0	0	0	0	64
Control Delay (s)	18.6	0.0	0.0	0.0	0.0	0.0	28.0
Lane LOS	C						D
Approach Delay (s)	0.6			0.0			28.0
Approach LOS							D

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		57.6%	ICU Level of Service B
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

414: US 70 & Banks School Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	100	1569	1919	33	0	91
Future Volume (vph)	100	1569	1919	33	0	91
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			150	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	1703	3406	3374	1509	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	1703	3406	3374	1509	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		866	1113		995	
Travel Time (s)		10.7	13.8		12.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	7%	7%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	1743	2132	37	0	101
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.3%
Analysis Period (min)	15
	ICU Level of Service C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	1569	1919	33	0	91
Future Volume (Veh/h)	100	1569	1919	33	0	91
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	111	1743	2132	37	0	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2169				3226	1066
vC1, stage 1 conf vol					2132	
vC2, stage 2 conf vol					1094	
vCu, unblocked vol	2169				3226	1066
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.3				3.5	3.3
p0 queue free %	52				100	54
cM capacity (veh/h)	229				64	218

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	111	872	872	1066	1066	37	101
Volume Left	111	0	0	0	0	0	0
Volume Right	0	0	0	0	0	37	101
cSH	229	1700	1700	1700	1700	1700	218
Volume to Capacity	0.48	0.51	0.51	0.63	0.63	0.02	0.46
Queue Length 95th (ft)	60	0	0	0	0	0	56
Control Delay (s)	34.6	0.0	0.0	0.0	0.0	0.0	35.0
Lane LOS	D						D
Approach Delay (s)	2.1			0.0			35.0
Approach LOS							D

Intersection Summary							
Average Delay			1.8				
Intersection Capacity Utilization			65.3%		ICU Level of Service		C
Analysis Period (min)			15				

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

415: US 70 & Innovation Way
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↘
Traffic Volume (vph)	0	1496	1180	158	0	198
Future Volume (vph)	0	1496	1180	158	0	198
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			300	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3406	3406	1524	0	1550
Flt Permitted						
Satd. Flow (perm)	0	3406	3406	1524	0	1550
Link Speed (mph)		55	55		45	
Link Distance (ft)		918	1588		1476	
Travel Time (s)		11.4	19.7		22.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1662	1311	176	0	220
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↘
Traffic Volume (veh/h)	0	1496	1180	158	0	198
Future Volume (Veh/h)	0	1496	1180	158	0	198
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1662	1311	176	0	220
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1311				2142	656
vC1, stage 1 conf vol					1311	
vC2, stage 2 conf vol					831	
vCu, unblocked vol	1311				2142	656
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.3				3.6	3.4
p0 queue free %	100				100	45
cM capacity (veh/h)	503				180	399
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	831	831	656	656	176	220
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	176	220
cSH	1700	1700	1700	1700	1700	399
Volume to Capacity	0.49	0.49	0.39	0.39	0.10	0.55
Queue Length 95th (ft)	0	0	0	0	0	81
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	24.6
Lane LOS						C
Approach Delay (s)	0.0		0.0			24.6
Approach LOS						C
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			51.5%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

415: US 70 & Innovation Way
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Volume (vph)	0	1357	1319	207	0	151
Future Volume (vph)	0	1357	1319	207	0	151
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			300	0	0
Storage Lanes	0			1	0	1
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	3406	3406	1524	0	1550
Flt Permitted						
Satd. Flow (perm)	0	3406	3406	1524	0	1550
Link Speed (mph)		55	55		45	
Link Distance (ft)		918	1588		1476	
Travel Time (s)		11.4	19.7		22.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1508	1466	230	0	168
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary




















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↘
Traffic Volume (veh/h)	0	1357	1319	207	0	151
Future Volume (Veh/h)	0	1357	1319	207	0	151
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1508	1466	230	0	168
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1466				2220	733
vC1, stage 1 conf vol					1466	
vC2, stage 2 conf vol					754	
vCu, unblocked vol	1466				2220	733
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.3				3.6	3.4
p0 queue free %	100				100	53
cM capacity (veh/h)	437				156	354
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	754	754	733	733	230	168
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	230	168
cSH	1700	1700	1700	1700	1700	354
Volume to Capacity	0.44	0.44	0.43	0.43	0.14	0.47
Queue Length 95th (ft)	0	0	0	0	0	61
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	24.0
Lane LOS						C
Approach Delay (s)	0.0		0.0			24.0
Approach LOS						C
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			52.5%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

416: Industrial Dr & Sanderson Way
2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	94	22	135	67	137	8	83	67	61	75	22
Future Volume (vph)	68	94	22	135	67	137	8	83	67	61	75	22
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	150		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1755	1524	0	1660	0	0	1785	1524	1703	1732	0
Flt Permitted		0.979			0.980			0.996		0.950		
Satd. Flow (perm)	0	1755	1524	0	1660	0	0	1785	1524	1703	1732	0
Link Speed (mph)		55			55			25			55	
Link Distance (ft)		990			864			578			2029	
Travel Time (s)		12.3			10.7			15.8			25.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	180	24	0	376	0	0	101	74	68	107	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.7%
Analysis Period (min)	15
	ICU Level of Service A






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↖	↗	↘	↙	
Traffic Volume (veh/h)	68	94	22	135	67	137	8	83	67	61	75	22
Future Volume (Veh/h)	68	94	22	135	67	137	8	83	67	61	75	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	76	104	24	150	74	152	9	92	74	68	83	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	226			104			772	782	104	752	706	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	226			104			772	782	104	752	706	150
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	94			90			96	66	92	65	72	97
cM capacity (veh/h)	1319			1463			212	272	940	194	301	886

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	180	24	376	101	74	68	107
Volume Left	76	0	150	9	0	68	0
Volume Right	0	24	152	0	74	0	24
cSH	1319	1700	1463	265	940	194	353
Volume to Capacity	0.06	0.01	0.10	0.38	0.08	0.35	0.30
Queue Length 95th (ft)	5	0	9	43	6	37	31
Control Delay (s)	3.6	0.0	3.6	26.7	9.2	33.2	19.6
Lane LOS	A		A	D	A	D	C
Approach Delay (s)	3.2		3.6	19.3		24.9	
Approach LOS			C			C	

Intersection Summary		
Average Delay		10.5
Intersection Capacity Utilization	43.7%	ICU Level of Service
Analysis Period (min)		15
		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

416: Industrial Dr & Sanderson Way
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	67	8	67	94	61	22	75	135	137	83	68
Future Volume (vph)	22	67	8	67	94	61	22	75	135	137	83	68
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	150		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1771	1524	0	1700	0	0	1773	1524	1703	1671	0
Flt Permitted		0.988			0.985			0.989		0.950		
Satd. Flow (perm)	0	1771	1524	0	1700	0	0	1773	1524	1703	1671	0
Link Speed (mph)		55			55			25			55	
Link Distance (ft)		990			864			578			2029	
Travel Time (s)		12.3			10.7			15.8			25.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	9	0	246	0	0	107	150	152	168	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↖	↗	↘	↙	
Traffic Volume (veh/h)	22	67	8	67	94	61	22	75	135	137	83	68
Future Volume (Veh/h)	22	67	8	67	94	61	22	75	135	137	83	68
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	24	74	9	74	104	68	24	83	150	152	92	76
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	172			74			530	442	74	450	408	138
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172			74			530	442	74	450	408	138
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.2	6.6	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	98			95			93	82	85	57	81	92
cM capacity (veh/h)	1381			1500			338	471	977	357	492	900

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	98	9	246	107	150	152	168
Volume Left	24	0	74	24	0	152	0
Volume Right	0	9	68	0	150	0	76
cSH	1381	1700	1500	433	977	357	619
Volume to Capacity	0.02	0.01	0.05	0.25	0.15	0.43	0.27
Queue Length 95th (ft)	1	0	4	24	14	51	27
Control Delay (s)	2.0	0.0	2.6	16.0	9.4	22.4	13.0
Lane LOS	A		A	C	A	C	B
Approach Delay (s)	1.8		2.6	12.1		17.4	
Approach LOS				B		C	

Intersection Summary		
Average Delay		10.2
Intersection Capacity Utilization	42.7%	ICU Level of Service
Analysis Period (min)		15
		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

417: Industrial Dr & Innovation Way
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	47	99	174	121	56	38
Future Volume (vph)	47	99	174	121	56	38
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	150			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1602	0	1703	1792	1694	0
Flt Permitted	0.984		0.950			
Satd. Flow (perm)	1602	0	1703	1792	1694	0
Link Speed (mph)	45			55	55	
Link Distance (ft)	1476			2029	1433	
Travel Time (s)	22.4			25.2	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	162	0	193	134	104	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	99	174	121	56	38
Future Volume (Veh/h)	47	99	174	121	56	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	52	110	193	134	62	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	603	83	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	603	83	104			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	87	89	87			
cM capacity (veh/h)	395	965	1463			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	162	193	134	104		
Volume Left	52	193	0	0		
Volume Right	110	0	0	42		
cSH	660	1463	1700	1700		
Volume to Capacity	0.25	0.13	0.08	0.06		
Queue Length 95th (ft)	24	11	0	0		
Control Delay (s)	12.2	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	12.2	4.6		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			5.9			
Intersection Capacity Utilization			31.7%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

417: Industrial Dr & Innovation Way
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	174	99	56	121	47
Future Volume (vph)	38	174	99	56	121	47
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	150			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1579	0	1703	1792	1724	0
Flt Permitted	0.991		0.950			
Satd. Flow (perm)	1579	0	1703	1792	1724	0
Link Speed (mph)	45			55	55	
Link Distance (ft)	1476			2029	1433	
Travel Time (s)	22.4			25.2	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	235	0	110	62	186	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	174	99	56	121	47
Future Volume (Veh/h)	38	174	99	56	121	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	42	193	110	62	134	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	442	160	186			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	442	160	186			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	92	78	92			
cM capacity (veh/h)	520	875	1365			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	235	110	62	186		
Volume Left	42	110	0	0		
Volume Right	193	0	0	52		
cSH	780	1365	1700	1700		
Volume to Capacity	0.30	0.08	0.04	0.11		
Queue Length 95th (ft)	32	7	0	0		
Control Delay (s)	11.6	7.9	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.6	5.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			6.1			
Intersection Capacity Utilization			37.6%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	21	29	63	26	64	110
Future Volume (vph)	21	29	63	26	64	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1651	0	0	1732	1611	0
Flt Permitted				0.966	0.982	
Satd. Flow (perm)	1651	0	0	1732	1611	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	923			959	1433	
Travel Time (s)	11.4			11.9	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	99	193	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.5%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (veh/h)	21	29	63	26	64	110
Future Volume (Veh/h)	21	29	63	26	64	110
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	23	32	70	29	71	122
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			55		208	39
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			55		208	39
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			95		90	88
cM capacity (veh/h)			1525		736	1021
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	55	99	193			
Volume Left	0	70	71			
Volume Right	32	0	122			
cSH	1700	1525	894			
Volume to Capacity	0.03	0.05	0.22			
Queue Length 95th (ft)	0	4	20			
Control Delay (s)	0.0	5.4	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	5.4	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			28.5%	ICU Level of Service		A
Analysis Period (min)	15					

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

418: Industrial Dr & Smithfield Way
 2040 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	26	64	110	21	29	63
Future Volume (vph)	26	64	110	21	29	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1620	0	0	1721	1601	0
Flt Permitted				0.960	0.985	
Satd. Flow (perm)	1620	0	0	1721	1601	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	923			959	1433	
Travel Time (s)	11.4			11.9	17.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	0	145	102	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	26	64	110	21	29	63
Future Volume (Veh/h)	26	64	110	21	29	63
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	29	71	122	23	32	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			100			64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			100			64
tC, single (s)			4.2			6.3
tC, 2 stage (s)						
tF (s)			2.3			3.4
p0 queue free %			92			93
cM capacity (veh/h)			1468			989
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	100	145	102			
Volume Left	0	122	32			
Volume Right	71	0	70			
cSH	1700	1468	822			
Volume to Capacity	0.06	0.08	0.12			
Queue Length 95th (ft)	0	7	11			
Control Delay (s)	0.0	6.6	10.0			
Lane LOS			A			
Approach Delay (s)	0.0	6.6	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			5.7			
Intersection Capacity Utilization			26.0%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

419: Sanderson Way & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	1209	321	0	1485	0	235
Future Volume (vph)	1209	321	0	1485	0	235
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3406	1524	0	3406	0	1550
Flt Permitted						
Satd. Flow (perm)	3406	1524	0	3406	0	1550
Link Speed (mph)	55			55	55	
Link Distance (ft)	1588			916	864	
Travel Time (s)	19.7			11.4	10.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1343	357	0	1650	0	261
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	50			50	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1209	321	0	1485	0	235
Future Volume (Veh/h)	1209	321	0	1485	0	235
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1343	357	0	1650	0	261
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised		Raised			
Median storage (veh)	2		2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1343		2168	672
vC1, stage 1 conf vol					1343	
vC2, stage 2 conf vol					825	
vCu, unblocked vol			1343		2168	672
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		100	33
cM capacity (veh/h)			488		175	389
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	672	672	357	825	825	261
Volume Left	0	0	0	0	0	0
Volume Right	0	0	357	0	0	261
cSH	1700	1700	1700	1700	1700	389
Volume to Capacity	0.40	0.40	0.21	0.49	0.49	0.67
Queue Length 95th (ft)	0	0	0	0	0	118
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	31.1
Lane LOS						D
Approach Delay (s)	0.0				0.0	31.1
Approach LOS						D
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			54.6%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

419: Sanderson Way & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	1207	228	0	1485	0	331
Future Volume (vph)	1207	228	0	1485	0	331
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		300	0		0	0
Storage Lanes		1	0		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3406	1524	0	3406	0	1550
Flt Permitted						
Satd. Flow (perm)	3406	1524	0	3406	0	1550
Link Speed (mph)	55			55	55	
Link Distance (ft)	1588			916	864	
Travel Time (s)	19.7			11.4	10.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1341	253	0	1650	0	368
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	50			50	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.5%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1207	228	0	1485	0	331
Future Volume (Veh/h)	1207	228	0	1485	0	331
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1341	253	0	1650	0	368
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised		Raised			
Median storage (veh)	2		2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1341		2166	670
vC1, stage 1 conf vol					1341	
vC2, stage 2 conf vol					825	
vCu, unblocked vol			1341		2166	670
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.3		3.6	3.4
p0 queue free %			100		100	6
cM capacity (veh/h)			489		175	390
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	670	670	253	825	825	368
Volume Left	0	0	0	0	0	0
Volume Right	0	0	253	0	0	368
cSH	1700	1700	1700	1700	1700	390
Volume to Capacity	0.39	0.39	0.15	0.49	0.49	0.94
Queue Length 95th (ft)	0	0	0	0	0	261
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	65.5
Lane LOS						F
Approach Delay (s)	0.0		0.0		65.5	
Approach LOS						F
Intersection Summary						
Average Delay			6.7			
Intersection Capacity Utilization			60.5%	ICU Level of Service		B
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	1371	47	144	1537	9	68	4	185	4	4	4
Future Volume (vph)	8	1371	47	144	1537	9	68	4	185	4	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	400		0	0		100	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3402	0	0	1762	1568	0	1768	0
Flt Permitted	0.950			0.950				0.955			0.984	
Satd. Flow (perm)	1703	3406	1524	1703	3402	0	0	1762	1568	0	1768	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1082			910			306			327	
Travel Time (s)		16.4			13.8			8.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	1523	52	160	1718	0	0	80	206	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			18	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	65.6%
Analysis Period (min)	15
	ICU Level of Service C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1371	47	144	1537	9	68	4	185	4	4	4
Future Volume (Veh/h)	8	1371	47	144	1537	9	68	4	185	4	4	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	1523	52	160	1708	10	76	4	206	4	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked	0.51						0.51	0.51		0.51	0.51	0.51
vC, conflicting volume	1718			1575			2721	3579	762	2814	3626	859
vC1, stage 1 conf vol							1541	1541		2033	2033	
vC2, stage 2 conf vol							1180	2038		782	1593	
vCu, unblocked vol	494			1575			2455	4132	762	2637	4224	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)							6.6	5.6		6.5	5.5	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			60			26	94	40	0	0	99
cM capacity (veh/h)	531			396			102	65	346	2	4	556
Direction, Lane #												
Volume Total	9	762	762	52	160	1139	579	286	12			
Volume Left	9	0	0	0	160	0	0	76	4			
Volume Right	0	0	0	52	0	0	10	206	4			
cSH	531	1700	1700	1700	396	1700	1700	359	3			
Volume to Capacity	0.02	0.45	0.45	0.03	0.40	0.67	0.34	0.80	3.63			
Queue Length 95th (ft)	1	0	0	0	48	0	0	169	Err			
Control Delay (s)	11.9	0.0	0.0	0.0	20.1	0.0	0.0	54.2	Err			
Lane LOS	B				C			F	F			
Approach Delay (s)	0.1				1.7			54.2	Err			
Approach LOS								F	F			
Intersection Summary												
Average Delay			36.9									
Intersection Capacity Utilization			65.6%		ICU Level of Service				C			
Analysis Period (min)			15									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1537	68	185	1371	4	47	4	144	9	4	8
Future Volume (vph)	4	1537	68	185	1371	4	47	4	144	9	4	8
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	400		0	0		100	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1703	3406	0	0	1763	1568	0	1744	0
Flt Permitted	0.950			0.950				0.956			0.979	
Satd. Flow (perm)	1703	3406	1524	1703	3406	0	0	1763	1568	0	1744	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1082			910			306			327	
Travel Time (s)		16.4			13.8			8.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	3%	3%	3%	1%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1708	76	206	1527	0	0	56	160	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			0			18	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	70.6%
Analysis Period (min)	15
	ICU Level of Service C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1537	68	185	1371	4	47	4	144	9	4	8
Future Volume (Veh/h)	4	1537	68	185	1371	4	47	4	144	9	4	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1708	76	206	1523	4	52	4	160	10	4	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked	0.67						0.67	0.67		0.67	0.67	0.67
vC, conflicting volume	1527			1784			2900	3655	854	2801	3729	764
vC1, stage 1 conf vol							1716	1716		1937	1937	
vC2, stage 2 conf vol							1184	1939		864	1792	
vCu, unblocked vol	797			1784			2851	3980	854	2702	4090	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.5	6.5	6.9
tC, 2 stage (s)							6.6	5.6		6.5	5.5	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			37			29	90	47	0	0	99
cM capacity (veh/h)	532			327			73	41	300	1	1	727

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	854	854	76	206	1015	512	216	23
Volume Left	4	0	0	0	206	0	0	52	10
Volume Right	0	0	0	76	0	0	4	160	9
cSH	532	1700	1700	1700	327	1700	1700	273	2
Volume to Capacity	0.01	0.50	0.50	0.04	0.63	0.60	0.30	0.79	13.25
Queue Length 95th (ft)	1	0	0	0	101	0	0	153	Err
Control Delay (s)	11.8	0.0	0.0	0.0	33.0	0.0	0.0	61.4	Err
Lane LOS	B				D			F	F
Approach Delay (s)	0.0				3.9			61.4	Err
Approach LOS								F	F

Intersection Summary		
Average Delay		66.5
Intersection Capacity Utilization	70.6%	ICU Level of Service
Analysis Period (min)		15
		C

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	1290	54	134	1613	214	89	87	177	169	52	108
Future Volume (vph)	109	1290	54	134	1613	214	89	87	177	169	52	108
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		250	225		450	0		125	325		100
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1719	3438	1538	0	1781	1553	1649	1690	1553
Flt Permitted	0.950			0.950				0.975		0.950	0.974	
Satd. Flow (perm)	1703	3406	1524	1719	3438	1538	0	1781	1553	1649	1690	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25			45	
Link Distance (ft)		910			969			438			630	
Travel Time (s)		13.8			14.7			11.9			9.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)										35%		
Lane Group Flow (vph)	121	1433	60	149	1792	238	0	196	197	122	124	120
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	66.0	66.0	19.0	71.0	71.0	21.0	21.0	21.0	14.0	14.0	14.0
Total Split (%)	11.7%	55.0%	55.0%	15.8%	59.2%	59.2%	17.5%	17.5%	17.5%	11.7%	11.7%	11.7%
Maximum Green (s)	7.0	59.0	59.0	12.0	64.0	64.0	14.0	14.0	14.0	7.0	7.0	7.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Act Effect Green (s)	9.0	61.3	61.3	13.7	66.0	66.0		16.0	16.0	9.0	9.0	18.0
Actuated g/C Ratio	0.08	0.51	0.51	0.11	0.55	0.55		0.13	0.13	0.08	0.08	0.15
v/c Ratio	0.95	0.82	0.08	0.76	0.95	0.28		0.83	0.95	0.99	0.98	0.52
Control Delay	123.8	29.9	15.5	76.3	37.6	15.5		78.3	103.3	134.9	131.9	38.8

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	123.8	29.9	15.5	76.3	37.6	15.5		78.3	103.3	134.9	131.9	38.8
LOS	F	C	B	E	D	B		E	F	F	F	D
Approach Delay		36.4			37.8			90.8			102.4	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	95	479	23	113	656	94		150	154	101	103	63
Queue Length 95th (ft)	#216	582	47	#214	#857	145		#276	#302	#234	#234	110
Internal Link Dist (ft)		830			889			358			550	
Turn Bay Length (ft)	300		250	225		450			125	325		100
Base Capacity (vph)	127	1740	778	200	1890	845		237	207	123	126	232
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.95	0.82	0.08	0.74	0.95	0.28		0.83	0.95	0.99	0.98	0.52

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 47.1
 Intersection LOS: D
 Intersection Capacity Utilization 79.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 421: Sussex St/Hill Farm Rd & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	1613	89	177	1290	169	54	52	134	214	87	109
Future Volume (vph)	108	1613	89	177	1290	169	54	52	134	214	87	109
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		250	225		450	0		125	325		100
Storage Lanes	1		1	1		1	0		1	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1719	3438	1538	0	1781	1553	1649	1699	1553
Flt Permitted	0.950			0.950				0.975		0.950	0.979	
Satd. Flow (perm)	1703	3406	1524	1719	3438	1538	0	1781	1553	1649	1699	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			25				45
Link Distance (ft)		910			969			438				630
Travel Time (s)		13.8			14.7			11.9				9.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	120	1792	99	197	1433	188	0	118	149	164	171	121
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	pm+ov
Protected Phases	5	2		1	6		8	8		4	4	5
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	20.0	68.0	68.0	19.0	67.0	67.0	16.0	16.0	16.0	17.0	17.0	20.0
Total Split (%)	16.7%	56.7%	56.7%	15.8%	55.8%	55.8%	13.3%	13.3%	13.3%	14.2%	14.2%	16.7%
Maximum Green (s)	13.0	61.0	61.0	12.0	60.0	60.0	9.0	9.0	9.0	10.0	10.0	13.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Act Effect Green (s)	13.8	63.0	63.0	14.0	63.2	63.2		11.0	11.0	12.0	12.0	25.8
Actuated g/C Ratio	0.12	0.52	0.52	0.12	0.53	0.53		0.09	0.09	0.10	0.10	0.22
v/c Ratio	0.62	1.00	0.12	0.98	0.79	0.23		0.72	1.05	1.00	1.01	0.36
Control Delay	64.3	50.7	15.0	113.2	27.4	16.6		77.9	141.8	124.7	126.2	29.2

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

421: Sussex St/Hill Farm Rd & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	50.7	15.0	113.2	27.4	16.6		77.9	141.8	124.7	126.2	29.2
LOS	E	D	B	F	C	B		E	F	F	F	C
Approach Delay		49.7			35.6			113.6			99.9	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	89	~708	38	155	467	77		90	~125	135	~143	60
Queue Length 95th (ft)	153	#901	68	#307	566	124		#181	#261	#286	#296	104
Internal Link Dist (ft)		830			889			358			550	
Turn Bay Length (ft)	300		250	225		450			125	325		100
Base Capacity (vph)	212	1788	800	200	1810	809		163	142	164	169	349
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.57	1.00	0.12	0.98	0.79	0.23		0.72	1.05	1.00	1.01	0.35

Intersection Summary





















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 52.8
 Intersection LOS: D
 Intersection Capacity Utilization 81.8%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 421: Sussex St/Hill Farm Rd & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

422: Hill Farm Rd & Smithfield Way
 2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	4	75	4	4	4	142	197	4	4	215	37
Future Volume (vph)	18	4	75	4	4	4	142	197	4	4	215	37
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	75		0	200		100
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1737	1538	0	1700	0	1736	1821	0	1736	1827	1553
Flt Permitted		0.960			0.984		0.950			0.950		
Satd. Flow (perm)	0	1737	1538	0	1700	0	1736	1821	0	1736	1827	1553
Link Speed (mph)		55			30			45			45	
Link Distance (ft)		932			1050			957			799	
Travel Time (s)		11.6			23.9			14.5			12.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	83	0	12	0	158	223	0	4	239	41
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary





















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗		↖	↗	↗
Traffic Volume (veh/h)	18	4	75	4	4	4	142	197	4	4	215	37
Future Volume (Veh/h)	18	4	75	4	4	4	142	197	4	4	215	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	4	83	4	4	4	158	219	4	4	239	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	788	786	239	828	825	221	280			223		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	788	786	239	828	825	221	280			223		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	99	90	98	98	100	88			100		
cM capacity (veh/h)	271	280	793	229	266	811	1271			1334		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	107	12	158	223	4	239	41					
Volume Left	20	4	158	0	4	0	0					
Volume Right	83	4	0	4	0	0	41					
cSH	1022	321	1271	1700	1334	1700	1700					
Volume to Capacity	0.10	0.04	0.12	0.13	0.00	0.14	0.02					
Queue Length 95th (ft)	9	3	11	0	0	0	0					
Control Delay (s)	12.2	16.7	8.2	0.0	7.7	0.0	0.0					
Lane LOS	B	C	A		A							
Approach Delay (s)	12.2	16.7	3.4		0.1							
Approach LOS	B	C										
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			33.4%	ICU Level of Service	A							
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

422: Hill Farm Rd & Smithfield Way
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	4	142	4	4	4	75	215	4	4	197	18
Future Volume (vph)	37	4	142	4	4	4	75	215	4	4	197	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	75		0	200		100
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1730	1538	0	1700	0	1736	1823	0	1736	1827	1553
Flt Permitted		0.956			0.984		0.950			0.950		
Satd. Flow (perm)	0	1730	1538	0	1700	0	1736	1823	0	1736	1827	1553
Link Speed (mph)		55			30			45			45	
Link Distance (ft)		932			1050			957			799	
Travel Time (s)		11.6			23.9			14.5			12.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	158	0	12	0	83	243	0	4	219	20
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↖		↖	↖	↗
Traffic Volume (veh/h)	37	4	142	4	4	4	75	215	4	4	197	18
Future Volume (Veh/h)	37	4	142	4	4	4	75	215	4	4	197	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	41	4	158	4	4	4	83	239	4	4	219	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			3									
Median type							None				None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	638	636	219	715	654	241	239			243		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	638	636	219	715	654	241	239			243		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	99	81	98	99	99	94			100		
cM capacity (veh/h)	361	366	813	259	357	791	1316			1312		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	203	12	83	243	4	219	20					
Volume Left	41	4	83	0	4	0	0					
Volume Right	158	4	0	4	0	0	20					
cSH	1045	379	1316	1700	1312	1700	1700					
Volume to Capacity	0.19	0.03	0.06	0.14	0.00	0.13	0.01					
Queue Length 95th (ft)	18	2	5	0	0	0	0					
Control Delay (s)	11.8	14.8	7.9	0.0	7.8	0.0	0.0					
Lane LOS	B	B	A		A							
Approach Delay (s)	11.8	14.8	2.0		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			32.5%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

423: Hill Farm Rd & Banks School Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	229	58	196	285	58	156
Future Volume (vph)	229	58	196	285	58	156
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		100	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1795	0	1736	1827	1736	1553
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1795	0	1736	1827	1736	1553
Link Speed (mph)	45			45	45	
Link Distance (ft)	619			1114	655	
Travel Time (s)	9.4			16.9	9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	318	0	218	317	64	173
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (veh/h)	229	58	196	285	58	156
Future Volume (Veh/h)	229	58	196	285	58	156
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	254	64	218	317	64	173
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	1114					
pX, platoon unblocked						
vC, conflicting volume			318	1039		286
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			318	1039		286
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			82	69		77
cM capacity (veh/h)			1231	208		748
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	318	218	317	64	173	
Volume Left	0	218	0	64	0	
Volume Right	64	0	0	0	173	
cSH	1700	1231	1700	208	748	
Volume to Capacity	0.19	0.18	0.19	0.31	0.23	
Queue Length 95th (ft)	0	16	0	31	22	
Control Delay (s)	0.0	8.6	0.0	29.8	11.3	
Lane LOS	A		D		B	
Approach Delay (s)	0.0	3.5	16.2			
Approach LOS			C			
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			39.8%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

423: Hill Farm Rd & Banks School Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	285	58	156	229	58	196
Future Volume (vph)	285	58	156	229	58	196
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		100	0
Storage Lanes		0	1		1	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	1802	0	1736	1827	1736	1553
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1802	0	1736	1827	1736	1553
Link Speed (mph)	45			45	45	
Link Distance (ft)	619			1114	655	
Travel Time (s)	9.4			16.9	9.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	381	0	173	254	64	218
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	↻
Traffic Volume (veh/h)	285	58	156	229	58	196
Future Volume (Veh/h)	285	58	156	229	58	196
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	317	64	173	254	64	218
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	1114					
pX, platoon unblocked						
vC, conflicting volume			381		949	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			381		949	349
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		74	68
cM capacity (veh/h)			1167		244	690
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	381	173	254	64	218	
Volume Left	0	173	0	64	0	
Volume Right	64	0	0	0	218	
cSH	1700	1167	1700	244	690	
Volume to Capacity	0.22	0.15	0.15	0.26	0.32	
Queue Length 95th (ft)	0	13	0	25	34	
Control Delay (s)	0.0	8.6	0.0	24.9	12.6	
Lane LOS		A		C	B	
Approach Delay (s)	0.0	3.5		15.4		
Approach LOS				C		
Intersection Summary						
Average Delay			5.4			
Intersection Capacity Utilization			40.5%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

424: Sheffield Dr/Walmart Dr & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1607	6	91	1760	192	0	0	141	0	0	290
Future Volume (vph)	17	1607	6	91	1760	192	0	0	141	0	0	290
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		150	250		0	0		0	0		0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	4935	0	1719	3438	1538	0	0	1580	0	0	1580
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	4935	0	1719	3438	1538	0	0	1580	0	0	1580
Link Speed (mph)		45			45			35				25
Link Distance (ft)		969			1040			433				297
Travel Time (s)		14.7			15.8			8.4				8.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	1793	0	101	1956	213	0	0	157	0	0	322
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				18
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	73.3%
ICU Level of Service	D
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	1607	6	91	1760	192	0	0	141	0	0	290
Future Volume (Veh/h)	17	1607	6	91	1760	192	0	0	141	0	0	290
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	1786	7	101	1956	213	0	0	157	0	0	322
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage (veh)	2			2								
Upstream signal (ft)	969			1040								
pX, platoon unblocked	0.43			0.72			0.57	0.57	0.72	0.57	0.57	0.43
vC, conflicting volume	2169			1793			3330	4198	599	2791	3989	978
vC1, stage 1 conf vol							1828	1828		2158	2158	
vC2, stage 2 conf vol							1502	2371		633	1831	
vCu, unblocked vol	1047			727			589	2123	0	0	1753	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			83			100	100	80	100	100	30
cM capacity (veh/h)	274			612			85	42	773	427	95	459

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	19	714	714	364	101	978	978	213	157	322
Volume Left	19	0	0	0	101	0	0	0	0	0
Volume Right	0	0	0	7	0	0	0	213	157	322
cSH	274	1700	1700	1700	612	1700	1700	1700	773	459
Volume to Capacity	0.07	0.42	0.42	0.21	0.17	0.58	0.58	0.13	0.20	0.70
Queue Length 95th (ft)	6	0	0	0	15	0	0	0	19	135
Control Delay (s)	19.1	0.0	0.0	0.0	12.0	0.0	0.0	0.0	10.8	29.3
Lane LOS	C				B				B	D
Approach Delay (s)	0.2				0.5				10.8	29.3
Approach LOS									B	D

Intersection Summary											
Average Delay	2.8										
Intersection Capacity Utilization	73.3%			ICU Level of Service						D	
Analysis Period (min)	15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

424: Sheffield Dr/Walmart Dr & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	1982	14	124	1386	257	0	0	96	0	0	204
Future Volume (vph)	40	1982	14	124	1386	257	0	0	96	0	0	204
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		150	250		0	0		0	0		0
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	4935	0	1719	3438	1538	0	0	1580	0	0	1580
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	4935	0	1719	3438	1538	0	0	1580	0	0	1580
Link Speed (mph)		45			45			35				25
Link Distance (ft)		969			1040			433				297
Travel Time (s)		14.7			15.8			8.4				8.1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	44	2218	0	138	1540	286	0	0	107	0	0	227
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		50			50			12				18
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.6%
ICU Level of Service	B
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1982	14	124	1386	257	0	0	96	0	0	204
Future Volume (Veh/h)	40	1982	14	124	1386	257	0	0	96	0	0	204
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	2202	16	138	1540	286	0	0	107	0	0	227
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		2			2							
Upstream signal (ft)		969			1040							
pX, platoon unblocked	0.58			0.55			0.76	0.76	0.55	0.76	0.76	0.58
vC, conflicting volume	1826			2218			3571	4400	742	2638	4122	770
vC1, stage 1 conf vol							2298	2298		1816	1816	
vC2, stage 2 conf vol							1273	2102		822	2306	
vCu, unblocked vol	980			367			393	1481	0	0	1116	0
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			79			100	100	82	100	100	64
cM capacity (veh/h)	396			644			224	65	595	487	115	626
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	44	881	881	456	138	770	770	286	107	227		
Volume Left	44	0	0	0	138	0	0	0	0	0		
Volume Right	0	0	0	16	0	0	0	286	107	227		
cSH	396	1700	1700	1700	644	1700	1700	1700	595	626		
Volume to Capacity	0.11	0.52	0.52	0.27	0.21	0.45	0.45	0.17	0.18	0.36		
Queue Length 95th (ft)	9	0	0	0	20	0	0	0	16	41		
Control Delay (s)	15.2	0.0	0.0	0.0	12.1	0.0	0.0	0.0	12.4	14.0		
Lane LOS	C				B				B	B		
Approach Delay (s)	0.3				0.9				12.4	14.0		
Approach LOS									B	B		
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			57.6%		ICU Level of Service				B			
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	138	1572	4	1976	406	449	192
Future Volume (vph)	138	1572	4	1976	406	449	192
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		300		0	250	0
Storage Lanes	2		1		1	1	1
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	3335	4940	1719	3438	1538	3367	1553
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3335	4940	1719	3438	1538	3367	1553
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		1040		666		2390	
Travel Time (s)		15.8		10.1		36.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	153	1747	4	2196	451	499	213
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	Free
Protected Phases	5	2	1	6	4	4	
Permitted Phases					6		Free
Detector Phase	5	2	1	6	4	4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0	14.0	14.0	
Total Split (s)	14.0	66.0	14.0	66.0	20.0	20.0	
Total Split (%)	14.0%	66.0%	14.0%	66.0%	20.0%	20.0%	
Maximum Green (s)	7.0	59.0	7.0	59.0	13.0	13.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	C-Min	None	None	
Act Effect Green (s)	9.0	72.2	9.0	61.0	81.0	15.0	100.0
Actuated g/C Ratio	0.09	0.72	0.09	0.61	0.81	0.15	1.00
v/c Ratio	0.51	0.49	0.03	1.05	0.36	0.99	0.14
Control Delay	49.8	7.2	42.0	54.2	3.5	80.8	0.2

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.8	7.2	42.0	54.2	3.5	80.8	0.2
LOS	D	A	D	D	A	F	A
Approach Delay		10.6		45.5		56.7	
Approach LOS		B		D		E	
Queue Length 50th (ft)	48	130	2	~805	57	165	0
Queue Length 95th (ft)	81	269	13	#943	87	#271	0
Internal Link Dist (ft)		960		586		2310	
Turn Bay Length (ft)	450		300			250	
Base Capacity (vph)	300	3567	154	2097	1245	505	1553
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.49	0.03	1.05	0.36	0.99	0.14

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 34.4
 Intersection LOS: C
 Intersection Capacity Utilization 80.2%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 425: US 70 & US 258



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	192	1976	4	1572	449	406	138
Future Volume (vph)	192	1976	4	1572	449	406	138
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		300		0	250	0
Storage Lanes	2		1		1	1	1
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	3335	4940	1719	3438	1538	3367	1553
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	3335	4940	1719	3438	1538	3367	1553
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		1040		666		2390	
Travel Time (s)		15.8		10.1		36.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	213	2196	4	1747	499	451	153
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	Free
Protected Phases	5	2	1	6	4	4	
Permitted Phases					6		Free
Detector Phase	5	2	1	6	4	4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0	14.0	14.0	
Total Split (s)	14.0	56.0	14.0	56.0	20.0	20.0	
Total Split (%)	15.6%	62.2%	15.6%	62.2%	22.2%	22.2%	
Maximum Green (s)	7.0	49.0	7.0	49.0	13.0	13.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	C-Min	None	None	
Act Effect Green (s)	9.2	62.2	9.0	50.8	70.8	15.0	90.0
Actuated g/C Ratio	0.10	0.69	0.10	0.56	0.79	0.17	1.00
v/c Ratio	0.63	0.64	0.02	0.90	0.41	0.80	0.10
Control Delay	47.7	9.8	37.0	25.3	4.2	48.4	0.1

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

425: US 70 & US 258
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	9.8	37.0	25.3	4.2	48.4	0.1
LOS	D	A	D	C	A	D	A
Approach Delay		13.1		20.7		36.2	
Approach LOS		B		C		D	
Queue Length 50th (ft)	61	191	2	427	67	128	0
Queue Length 95th (ft)	97	397	12	#563	104	#200	0
Internal Link Dist (ft)		960		586		2310	
Turn Bay Length (ft)	450		300			250	
Base Capacity (vph)	340	3412	171	1948	1210	562	1553
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.64	0.02	0.90	0.41	0.80	0.10

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 19.0
 Intersection LOS: B
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 425: US 70 & US 258



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

426: US 258 & A St
 2040 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	36	456	17	26	562
Future Volume (vph)	29	36	456	17	26	562
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50	0		0	125	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	3389	0	1703	3406
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3389	0	1703	3406
Link Speed (mph)	25		45			45
Link Distance (ft)	734		2390			743
Travel Time (s)	20.0		36.2			11.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	40	526	0	29	624
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	36	456	17	26	562
Future Volume (Veh/h)	29	36	456	17	26	562
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	32	40	507	19	29	624
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	886	263			526	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	886	263			526	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	95			97	
cM capacity (veh/h)	276	735			1010	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	40	338	188	29	312	312
Volume Left	32	0	0	0	29	0	0
Volume Right	0	40	0	19	0	0	0
cSH	276	735	1700	1700	1010	1700	1700
Volume to Capacity	0.12	0.05	0.20	0.11	0.03	0.18	0.18
Queue Length 95th (ft)	10	4	0	0	2	0	0
Control Delay (s)	19.8	10.2	0.0	0.0	8.7	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	14.4		0.0		0.4		
Approach LOS	B						

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

426: US 258 & A St
 2040 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	26	562	29	35	456
Future Volume (vph)	17	26	562	29	35	456
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50	0		0	125	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	3382	0	1703	3406
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	3382	0	1703	3406
Link Speed (mph)	25		45			45
Link Distance (ft)	734		2390			743
Travel Time (s)	20.0		36.2			11.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	29	656	0	39	507
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (veh/h)	17	26	562	29	35	456	
Future Volume (Veh/h)	17	26	562	29	35	456	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	19	29	624	32	39	507	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type			None		None		
Median storage (veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	972	328			656		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	972	328			656		
tC, single (s)	6.8	6.9			4.2		
tC, 2 stage (s)							
tF (s)	3.5	3.3			2.3		
p0 queue free %	92	96			96		
cM capacity (veh/h)	239	668			901		
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	19	29	416	240	39	254	254
Volume Left	19	0	0	0	39	0	0
Volume Right	0	29	0	32	0	0	0
cSH	239	668	1700	1700	901	1700	1700
Volume to Capacity	0.08	0.04	0.24	0.14	0.04	0.15	0.15
Queue Length 95th (ft)	6	3	0	0	3	0	0
Control Delay (s)	21.3	10.6	0.0	0.0	9.2	0.0	0.0
Lane LOS	C	B			A		
Approach Delay (s)	14.9		0.0		0.7		
Approach LOS	B						
Intersection Summary							
Average Delay			0.9				
Intersection Capacity Utilization			33.1%		ICU Level of Service		A
Analysis Period (min)			15				

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	10	120	17	17	10	121	360	10	8	451	332
Future Volume (vph)	263	10	120	17	17	10	121	360	10	8	451	332
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		300	50		0	400		0	350		450
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1736	1827	1553	1770	1760	0	1703	3392	0	1703	3406	1524
Flt Permitted	0.738			0.750			0.950			0.950		
Satd. Flow (perm)	1348	1827	1553	1397	1760	0	1703	3392	0	1703	3406	1524
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1114			857			901			835	
Travel Time (s)		16.9			13.0			13.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	292	11	133	19	30	0	134	411	0	9	501	369
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	12.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	19.0		14.0	19.0	19.0
Total Split (s)	33.0	33.0	16.0	33.0	33.0		16.0	43.0		14.0	41.0	41.0
Total Split (%)	36.7%	36.7%	17.8%	36.7%	36.7%		17.8%	47.8%		15.6%	45.6%	45.6%
Maximum Green (s)	26.0	26.0	9.0	26.0	26.0		9.0	36.0		7.0	34.0	34.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	C-Min
Act Effect Green (s)	24.8	24.8	41.6	24.8	24.8		11.8	52.4		9.0	38.4	38.4
Actuated g/C Ratio	0.28	0.28	0.46	0.28	0.28		0.13	0.58		0.10	0.43	0.43
v/c Ratio	0.79	0.02	0.19	0.05	0.06		0.60	0.21		0.05	0.34	0.57
Control Delay	45.4	21.6	14.0	22.3	22.4		49.5	11.0		37.6	19.1	25.0

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
 2040 No-Build Alternative AM Peak

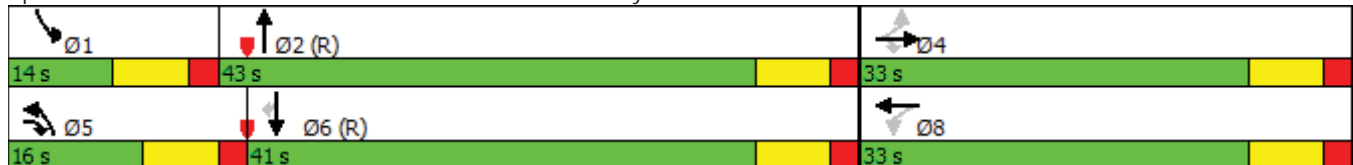


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	45.4	21.6	14.0	22.3	22.4		49.5	11.0		37.6	19.1	25.0
LOS	D	C	B	C	C		D	B		D	B	C
Approach Delay		35.2			22.4			20.4			21.8	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	149	4	38	8	12		70	52		5	107	169
Queue Length 95th (ft)	#243	16	74	24	32		#149	112		19	144	257
Internal Link Dist (ft)		1034			777			821			755	
Turn Bay Length (ft)	150		300	50			400			350		450
Base Capacity (vph)	423	574	722	438	552		227	1974		170	1478	661
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.69	0.02	0.18	0.04	0.05		0.59	0.21		0.05	0.34	0.56

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 24.5
 Intersection LOS: C
 Intersection Capacity Utilization 52.9%
 ICU Level of Service A
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 427: US 258 & Banks School Rd/Sand Clay Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	332	17	121	10	10	8	120	451	17	10	360	263
Future Volume (vph)	332	17	121	10	10	8	120	451	17	10	360	263
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		300	50		0	400		0	350		450
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1736	1827	1553	1770	1736	0	1703	3389	0	1703	3406	1524
Flt Permitted	0.744			0.745			0.950			0.950		
Satd. Flow (perm)	1359	1827	1553	1388	1736	0	1703	3389	0	1703	3406	1524
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1114			857			901			835	
Travel Time (s)		16.9			13.0			13.7			12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	369	19	134	11	20	0	133	520	0	11	400	292
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	12.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	19.0		14.0	19.0	19.0
Total Split (s)	40.0	40.0	16.0	40.0	40.0		16.0	36.0		14.0	34.0	34.0
Total Split (%)	44.4%	44.4%	17.8%	44.4%	44.4%		17.8%	40.0%		15.6%	37.8%	37.8%
Maximum Green (s)	33.0	33.0	9.0	33.0	33.0		9.0	29.0		7.0	27.0	27.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag			Lead				Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	C-Min
Act Effect Green (s)	30.1	30.1	46.9	30.1	30.1		11.8	47.1		9.0	33.1	33.1
Actuated g/C Ratio	0.33	0.33	0.52	0.33	0.33		0.13	0.52		0.10	0.37	0.37
v/c Ratio	0.81	0.03	0.17	0.02	0.03		0.60	0.29		0.06	0.32	0.52
Control Delay	41.7	17.9	10.8	17.6	17.9		49.3	14.7		37.8	22.5	28.0

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

427: US 258 & Banks School Rd/Sand Clay Rd
 2040 No-Build Alternative PM Peak

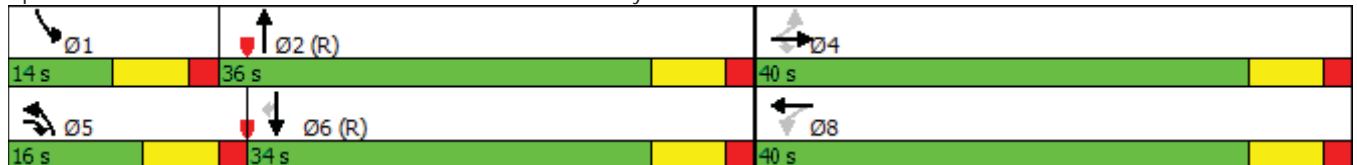


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	41.7	17.9	10.8	17.6	17.9		49.3	14.7		37.8	22.5	28.0
LOS	D	B	B	B	B		D	B		D	C	C
Approach Delay		32.9			17.8			21.8			25.1	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	185	7	34	4	7		70	79		6	91	138
Queue Length 95th (ft)	280	20	62	14	21		#148	165		22	131	224
Internal Link Dist (ft)		1034			777			821			755	
Turn Bay Length (ft)	150		300	50			400			350		450
Base Capacity (vph)	528	710	813	539	675		228	1774		170	1254	561
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.70	0.03	0.16	0.02	0.03		0.58	0.29		0.06	0.32	0.52

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 26.0
 Intersection LOS: C
 Intersection Capacity Utilization 56.4%
 ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 427: US 258 & Banks School Rd/Sand Clay Rd



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

428: Driveway/Ruby Tuesday & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1967	9	5	2407	9	0	0	22	0	0	23
Future Volume (vph)	4	1967	9	5	2407	9	0	0	22	0	0	23
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	150		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		666			581			197			240	
Travel Time (s)		10.1			8.8			5.4			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	2186	10	6	2684	0	0	0	24	0	0	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		32			32			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	64.4%
Analysis Period (min)	15
	ICU Level of Service C

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑	↘	↗	↑↑↑				↗			↗
Traffic Volume (veh/h)	4	1967	9	5	2407	9	0	0	22	0	0	23
Future Volume (Veh/h)	4	1967	9	5	2407	9	0	0	22	0	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	2186	10	6	2674	10	0	0	24	0	0	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		1			1							
Upstream signal (ft)		666			581							
pX, platoon unblocked	0.60			0.76			0.72	0.72	0.76	0.72	0.72	0.60
vC, conflicting volume	2684			2196			3123	4890	1093	3816	4895	896
vC1, stage 1 conf vol							2194	2194		2691	2691	
vC2, stage 2 conf vol							929	2696		1125	2204	
vCu, unblocked vol	1476			1945			851	3306	498	1814	3313	0
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			0	100	94	100	100	96
cM capacity (veh/h)	263			218			0	45	395	64	43	651

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	4	1093	1093	10	6	1070	1070	545	24	26
Volume Left	4	0	0	0	6	0	0	0	0	0
Volume Right	0	0	0	10	0	0	0	10	24	26
cSH	263	1700	1700	1700	218	1700	1700	1700	395	651
Volume to Capacity	0.02	0.64	0.64	0.01	0.03	0.63	0.63	0.32	0.06	0.04
Queue Length 95th (ft)	1	0	0	0	2	0	0	0	5	3
Control Delay (s)	18.9	0.0	0.0	0.0	22.0	0.0	0.0	0.0	14.7	10.8
Lane LOS	C				C				B	B
Approach Delay (s)	0.0				0.0				14.7	10.8
Approach LOS									B	B

Intersection Summary		
Average Delay		0.2
Intersection Capacity Utilization	64.4%	ICU Level of Service
Analysis Period (min)	15	C

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

428: Driveway/Ruby Tuesday & US 70
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (vph)	9	2406	15	6	1968	15	0	0	14	0	0	13
Future Volume (vph)	9	2406	15	6	1968	15	0	0	14	0	0	13
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	150		0	0		0	0		0
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1719	3438	1538	1719	4935	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		666			581			197			240	
Travel Time (s)		10.1			8.8			5.4			6.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	2673	17	7	2204	0	0	0	16	0	0	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		32			32			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	76.5%
Analysis Period (min)	15
	ICU Level of Service D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2406	15	6	1968	15	0	0	14	0	0	13
Future Volume (Veh/h)	9	2406	15	6	1968	15	0	0	14	0	0	13
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	2673	17	7	2187	17	0	0	16	0	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	Raised			Raised								
Median storage veh	1			1								
Upstream signal (ft)	666			581								
pX, platoon unblocked	0.83			0.39			0.47	0.47	0.39	0.47	0.47	0.83
vC, conflicting volume	2204			2690			3450	4911	1336	3582	4920	738
vC1, stage 1 conf vol							2693	2693		2210	2210	
vC2, stage 2 conf vol							757	2218		1372	2710	
vCu, unblocked vol	1723			2198			1753	4842	0	2032	4860	0
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			92			100	100	96	100	100	98
cM capacity (veh/h)	290			88			15	21	419	57	17	896
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	10	1336	1336	17	7	875	875	454	16	14		
Volume Left	10	0	0	0	7	0	0	0	0	0		
Volume Right	0	0	0	17	0	0	0	17	16	14		
cSH	290	1700	1700	1700	88	1700	1700	1700	419	896		
Volume to Capacity	0.03	0.79	0.79	0.01	0.08	0.51	0.51	0.27	0.04	0.02		
Queue Length 95th (ft)	3	0	0	0	6	0	0	0	3	1		
Control Delay (s)	17.9	0.0	0.0	0.0	49.7	0.0	0.0	0.0	13.9	9.1		
Lane LOS	C			E			B			A		
Approach Delay (s)	0.1				0.2				13.9	9.1		
Approach LOS							B			A		
Intersection Summary												
Average Delay	0.2											
Intersection Capacity Utilization	76.5%			ICU Level of Service			D					
Analysis Period (min)	15											

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	18	1961	4	2404	39	44	25
Future Volume (vph)	18	1961	4	2404	39	44	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		75		0	0	0
Storage Lanes	1		1		0	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1719	3438	1719	4930	0	1700	0
Flt Permitted	0.950		0.950			0.969	
Satd. Flow (perm)	1719	3438	1719	4930	0	1700	0
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		25	
Link Distance (ft)		581		901		412	
Travel Time (s)		8.8		13.7		11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	20	2179	4	2714	0	77	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA		Prot	
Protected Phases	5	2	1	6		4	
Permitted Phases							
Detector Phase	5	2	1	6		4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	
Total Split (s)	14.0	62.0	14.0	62.0		14.0	
Total Split (%)	15.6%	68.9%	15.6%	68.9%		15.6%	
Maximum Green (s)	7.0	55.0	7.0	55.0		7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Min	None	C-Min		None	
Act Effect Green (s)	9.0	72.0	9.0	69.2		9.0	
Actuated g/C Ratio	0.10	0.80	0.10	0.77		0.10	
v/c Ratio	0.12	0.79	0.02	0.72		0.45	
Control Delay	38.7	11.2	37.0	9.8		47.4	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	38.7	11.2	37.0	9.8		47.4	
LOS	D	B	D	A		D	
Approach Delay		11.4		9.9		47.4	
Approach LOS		B		A		D	
Queue Length 50th (ft)	11	283	2	200		42	
Queue Length 95th (ft)	32	#824	12	496		86	
Internal Link Dist (ft)		501		821		332	
Turn Bay Length (ft)	175		75				
Base Capacity (vph)	171	2750	171	3790		170	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.12	0.79	0.02	0.72		0.45	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 11.1
 Intersection LOS: B
 Intersection Capacity Utilization 68.4%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 429: US 70 & Mt Vernon Park Dr



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	27	2403	4	1962	42	37	20
Future Volume (vph)	27	2403	4	1962	42	37	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		75		0	0	0
Storage Lanes	1		1		0	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1719	3438	1719	4925	0	1702	0
Flt Permitted	0.950		0.950			0.968	
Satd. Flow (perm)	1719	3438	1719	4925	0	1702	0
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		25	
Link Distance (ft)		581		901		412	
Travel Time (s)		8.8		13.7		11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	30	2670	4	2227	0	63	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		32		32		12	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Turn Type	Prot	NA	Prot	NA		Prot	
Protected Phases	5	2	1	6		4	
Permitted Phases							
Detector Phase	5	2	1	6		4	
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	14.0	19.0		14.0	
Total Split (s)	14.0	112.0	14.0	112.0		14.0	
Total Split (%)	10.0%	80.0%	10.0%	80.0%		10.0%	
Maximum Green (s)	7.0	105.0	7.0	105.0		7.0	
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0	
Lead/Lag	Lead	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Min	None	C-Min		None	
Act Effect Green (s)	9.0	122.0	9.0	116.4		9.0	
Actuated g/C Ratio	0.06	0.87	0.06	0.83		0.06	
v/c Ratio	0.27	0.89	0.04	0.54		0.58	
Control Delay	69.1	13.0	62.2	5.8		84.7	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: US 70 & Mt Vernon Park Dr
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.7	0.0	0.0		0.0	
Total Delay	69.1	13.7	62.2	5.8		84.7	
LOS	E	B	E	A		F	
Approach Delay		14.3		5.9		84.7	
Approach LOS		B		A		F	
Queue Length 50th (ft)	27	570	4	279		57	
Queue Length 95th (ft)	62	#1468	17	311		#116	
Internal Link Dist (ft)		501		821		332	
Turn Bay Length (ft)	175		75				
Base Capacity (vph)	110	2996	110	4095		109	
Starvation Cap Reductn	0	101	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.27	0.92	0.04	0.54		0.58	

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 11.4
 Intersection LOS: B
 Intersection Capacity Utilization 80.6%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 429: US 70 & Mt Vernon Park Dr



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	794	4	199	593	16	4	7	391	29	6	19
Future Volume (vph)	13	794	4	199	593	16	4	7	391	29	6	19
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	300		0	0		225	75		0
Storage Lanes	1		0	2		0	0		2	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3501	0	1752	3491	0	0	1815	2760	0	1773	1568
Flt Permitted	0.950			0.950				0.936			0.268	
Satd. Flow (perm)	1752	3501	0	1752	3491	0	0	1727	2760	0	494	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		848			988			656				424
Travel Time (s)		12.8			15.0			12.8				11.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	886	0	221	677	0	0	12	434	0	39	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		76			56			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				7
Permitted Phases							8		8	7		7
Detector Phase	5	2		1	6		8	8	8	7		7
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0		7.0
Minimum Split (s)	14.0	19.0		14.0	19.0		14.0	14.0	14.0	14.0		14.0
Total Split (s)	14.0	46.0		25.0	57.0		28.0	28.0	28.0	21.0		21.0
Total Split (%)	11.7%	38.3%		20.8%	47.5%		23.3%	23.3%	23.3%	17.5%		17.5%
Maximum Green (s)	7.0	39.0		18.0	50.0		21.0	21.0	21.0	14.0		14.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0		5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0		2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0		5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead		Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0		3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None		None
Act Effect Green (s)	9.0	46.0		19.2	64.6			22.6	22.6			15.2
Actuated g/C Ratio	0.08	0.38		0.16	0.54			0.19	0.19			0.13
v/c Ratio	0.11	0.66		0.79	0.36			0.04	0.83			0.63
Control Delay	53.8	35.4		68.9	19.1			40.0	61.8			90.6

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
 2040 No-Build Alternative AM Peak

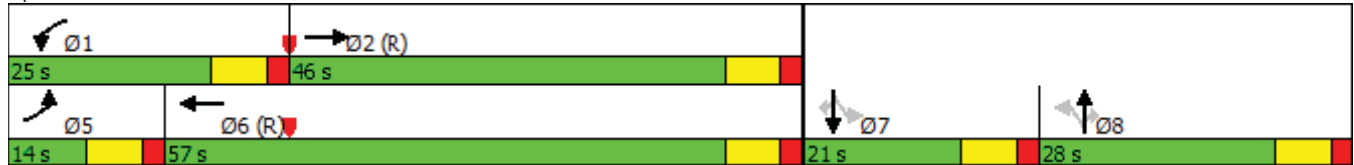


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	53.8	35.4		68.9	19.1			40.0	61.8		90.6	46.9
LOS	D	D		E	B			D	E		F	D
Approach Delay		35.7			31.3			61.2			75.3	
Approach LOS		D			C			E			E	
Queue Length 50th (ft)	10	325		165	153			8	184		28	14
Queue Length 95th (ft)	32	394		#280	243			25	#270		#86	40
Internal Link Dist (ft)		768			908			576			344	
Turn Bay Length (ft)	75			300					225			
Base Capacity (vph)	131	1358		292	1877			333	533		67	214
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.11	0.65		0.76	0.36			0.04	0.81		0.58	0.10

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 40.0
 Intersection LOS: D
 Intersection Capacity Utilization 54.2%
 ICU Level of Service A
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 430: Hillcrest Rd & US 70 Bus



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	595	4	391	794	31	4	6	199	17	6	13
Future Volume (vph)	17	595	4	391	794	31	4	6	199	17	6	13
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	300		0	0		225	75		0
Storage Lanes	1		0	2		0	0		2	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	3501	0	1752	3484	0	0	1811	2760	0	1780	1568
Flt Permitted	0.950			0.950				0.911			0.393	
Satd. Flow (perm)	1752	3501	0	1752	3484	0	0	1680	2760	0	725	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		848			988			656				424
Travel Time (s)		12.8			15.0			12.8				11.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	665	0	434	916	0	0	11	221	0	26	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		76			56			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8				7
Permitted Phases							8		8	7		7
Detector Phase	5	2		1	6		8	8	8	7	7	7
Switch Phase												
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0		14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	37.0		46.0	69.0		19.0	19.0	19.0	18.0	18.0	18.0
Total Split (%)	11.7%	30.8%		38.3%	57.5%		15.8%	15.8%	15.8%	15.0%	15.0%	15.0%
Maximum Green (s)	7.0	30.0		39.0	62.0		12.0	12.0	12.0	11.0	11.0	11.0
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	9.0	44.0		35.8	79.2			14.2	14.2		12.0	12.0
Actuated g/C Ratio	0.08	0.37		0.30	0.66			0.12	0.12		0.10	0.10
v/c Ratio	0.15	0.52		0.83	0.40			0.06	0.68		0.36	0.09
Control Delay	54.7	34.7		53.2	12.6			47.8	61.8		64.4	49.7

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

430: Hillcrest Rd & US 70 Bus
 2040 No-Build Alternative PM Peak

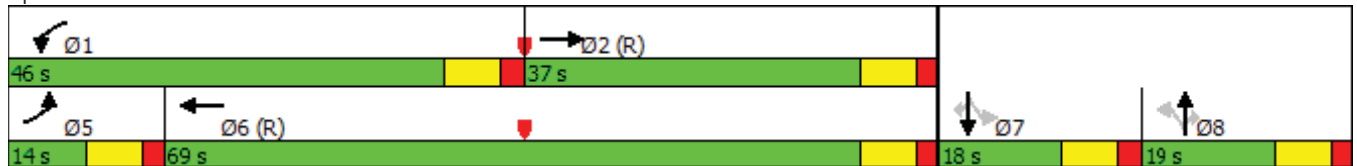


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	54.7	34.7		53.2	12.6			47.8	61.8		64.4	49.7
LOS	D	C		D	B			D	E		E	D
Approach Delay		35.3			25.6			61.2			59.3	
Approach LOS		D			C			E			E	
Queue Length 50th (ft)	14	242		308	176			8	93		19	10
Queue Length 95th (ft)	39	314		417	282			26	142		50	31
Internal Link Dist (ft)		768			908			576			344	
Turn Bay Length (ft)	75			300					225			
Base Capacity (vph)	131	1283		598	2298			203	334		79	172
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.15	0.52		0.73	0.40			0.05	0.66		0.33	0.08

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 32.7
 Intersection Capacity Utilization 58.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 430: Hillcrest Rd & US 70 Bus



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

431: NC 55 & Green Haynes Rd
 2040 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	24	282	30	28	184
Future Volume (vph)	16	24	282	30	28	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1661	0	1736	0	0	1747
Flt Permitted	0.980					0.993
Satd. Flow (perm)	1661	0	1736	0	0	1747
Link Speed (mph)	55		55			55
Link Distance (ft)	1072		1015			1052
Travel Time (s)	13.3		12.6			13.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	346	0	0	235
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.2% ICU Level of Service A
Analysis Period (min)	15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	24	282	30	28	184
Future Volume (Veh/h)	16	24	282	30	28	184
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	27	313	33	31	204
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	596	330			346	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	596	330			346	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	96	96			97	
cM capacity (veh/h)	453	710			1180	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	45	346	235			
Volume Left	18	0	31			
Volume Right	27	33	0			
cSH	578	1700	1180			
Volume to Capacity	0.08	0.20	0.03			
Queue Length 95th (ft)	6	0	2			
Control Delay (s)	11.7	0.0	1.3			
Lane LOS	B		A			
Approach Delay (s)	11.7	0.0	1.3			
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			41.2%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

431: NC 55 & Green Haynes Rd
 2040 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	28	184	16	24	282
Future Volume (vph)	30	28	184	16	24	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1682	0	1740	0	0	1752
Flt Permitted	0.975					0.996
Satd. Flow (perm)	1682	0	1740	0	0	1752
Link Speed (mph)	55		55			55
Link Distance (ft)	1072		1015			1052
Travel Time (s)	13.3		12.6			13.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	222	0	0	340
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	28	184	16	24	282
Future Volume (Veh/h)	30	28	184	16	24	282
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	31	204	18	27	313
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	580	213			222	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	580	213			222	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	93	96			98	
cM capacity (veh/h)	465	825			1312	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	64	222	340			
Volume Left	33	0	27			
Volume Right	31	18	0			
cSH	590	1700	1312			
Volume to Capacity	0.11	0.13	0.02			
Queue Length 95th (ft)	9	0	2			
Control Delay (s)	11.8	0.0	0.8			
Lane LOS	B		A			
Approach Delay (s)	11.8	0.0	0.8			
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization		40.2%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

432: NC 55 & N Croom Bland Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	6	5	307	203	4
Future Volume (vph)	6	6	5	307	203	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1758	1756	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1758	1756	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1207			1035	1040	
Travel Time (s)	15.0			12.8	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	0	347	230	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.2%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	6	5	307	203	4
Future Volume (Veh/h)	6	6	5	307	203	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	7	6	341	226	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	581	228	230			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	581	228	230			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	99	100			
cM capacity (veh/h)	475	814	1303			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	347	230			
Volume Left	7	6	0			
Volume Right	7	0	4			
cSH	600	1303	1700			
Volume to Capacity	0.02	0.00	0.14			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	11.1	0.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.1	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			30.2%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

432: NC 55 & N Croom Bland Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	5	203	307	7
Future Volume (vph)	4	4	5	203	307	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1758	1754	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1758	1754	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1207			1035	1040	
Travel Time (s)	15.0			12.8	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	8%	8%	8%	8%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	232	349	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.6%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	4	5	203	307	7
Future Volume (Veh/h)	4	4	5	203	307	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	6	226	341	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	583	345	349			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	345	349			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	99	99			
cM capacity (veh/h)	474	700	1177			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	232	349			
Volume Left	4	6	0			
Volume Right	4	0	8			
cSH	565	1177	1700			
Volume to Capacity	0.01	0.01	0.21			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	11.5	0.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.5	0.3	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization		26.6%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

433: NC 11 & Leslie R Stroud Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	12	10	9	965	4	517	6
Future Volume (vph)	12	10	9	965	4	517	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	275		175		0
Storage Lanes	1	0	1		1		0
Taper Length (ft)	100		100		100		
Satd. Flow (prot)	1702	0	1719	3438	1719	3431	0
Flt Permitted	0.974		0.950		0.950		
Satd. Flow (perm)	1702	0	1719	3438	1719	3431	0
Link Speed (mph)	55			55		55	
Link Distance (ft)	1002			1032		970	
Travel Time (s)	12.4			12.8		12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	24	0	10	1072	4	581	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	24			48		48	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		9		9
Sign Control	Stop			Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	12	10	9	965	4	517	6
Future Volume (Veh/h)	12	10	9	965	4	517	6
Sign Control	Stop			Free		Free	
Grade	0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	11	10	1072	0	574	7
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				Raised		Raised	
Median storage (veh)				1		1	
Upstream signal (ft)							
pX, platoon unblocked				0.00			
vC, conflicting volume	1134	290	581	0			
vC1, stage 1 conf vol	578						
vC2, stage 2 conf vol	556						
vCu, unblocked vol	1134	290	581	0			
tC, single (s)	6.8	6.9	4.2	0.0			
tC, 2 stage (s)	5.8						
tF (s)	3.5	3.3	2.2	0.0			
p0 queue free %	96	98	99	0			
cM capacity (veh/h)	330	706	969	0			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	24	10	536	536	383	198	0
Volume Left	13	10	0	0	0	0	0
Volume Right	11	0	0	0	0	7	0
cSH	436	969	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.01	0.32	0.32	0.23	0.12	0.00
Queue Length 95th (ft)	4	1	0	0	0	0	0
Control Delay (s)	13.7	8.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A					
Approach Delay (s)	13.7	0.1	0.0				
Approach LOS	B						
Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utilization			36.7%		ICU Level of Service		A
Analysis Period (min)			15				

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

433: NC 11 & Leslie R Stroud Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	7	8	8	517	4	965	14
Future Volume (vph)	7	8	8	517	4	965	14
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	275		175		0
Storage Lanes	1	0	1		1		0
Taper Length (ft)	100		100		100		
Satd. Flow (prot)	1691	0	1719	3438	1719	3431	0
Flt Permitted	0.977		0.950		0.950		
Satd. Flow (perm)	1691	0	1719	3438	1719	3431	0
Link Speed (mph)	55			55		55	
Link Distance (ft)	1002			1032		970	
Travel Time (s)	12.4			12.8		12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	17	0	9	574	4	1088	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	24			48		48	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		9		9
Sign Control	Stop			Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	7	8	8	517	4	965	14
Future Volume (Veh/h)	7	8	8	517	4	965	14
Sign Control	Stop			Free		Free	
Grade	0%			0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	9	9	574	0	1072	16
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				Raised	Raised		
Median storage (veh)				1	1		
Upstream signal (ft)							
pX, platoon unblocked					0.00		
vC, conflicting volume	1385	544	1088	0			
vC1, stage 1 conf vol	1080						
vC2, stage 2 conf vol	305						
vCu, unblocked vol	1385	544	1088	0			
tC, single (s)	6.8	6.9	4.2	0.0			
tC, 2 stage (s)	5.8						
tF (s)	3.5	3.3	2.2	0.0			
p0 queue free %	97	98	99	0			
cM capacity (veh/h)	232	483	620	0			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	17	9	287	287	715	373	0
Volume Left	8	9	0	0	0	0	0
Volume Right	9	0	0	0	0	16	0
cSH	320	620	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.01	0.17	0.17	0.42	0.22	0.00
Queue Length 95th (ft)	4	1	0	0	0	0	0
Control Delay (s)	16.9	10.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	B					
Approach Delay (s)	16.9	0.2	0.0				
Approach LOS	C						
Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utilization			37.1%		ICU Level of Service		A
Analysis Period (min)			15				

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

434: NC 11 & Green Haynes Rd/Albrittons Rd
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	72	38	25	16	22	19	27	917	30	18	484	41
Future Volume (vph)	72	38	25	16	22	19	27	917	30	18	484	41
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	225		0	325		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1752	0	0	1737	0	1719	3421	0	1719	3397	0
Flt Permitted		0.974			0.986		0.950			0.950		
Satd. Flow (perm)	0	1752	0	0	1737	0	1719	3421	0	1719	3397	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1085			1033			937			1059	
Travel Time (s)		13.5			12.8			11.6			13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	0	0	63	0	30	1052	0	20	584	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	72	38	25	16	22	19	27	917	30	18	484	41
Future Volume (Veh/h)	72	38	25	16	22	19	27	917	30	18	484	41
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	80	42	28	18	24	21	30	1019	33	20	538	46
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage (veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1204	1713	292	1454	1720	526	584			1052		
vC1, stage 1 conf vol	601	601		1096	1096							
vC2, stage 2 conf vol	602	1112		358	624							
vCu, unblocked vol	1204	1713	292	1454	1720	526	584			1052		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)	6.6	5.6		6.6	5.6							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	77	96	89	87	96	97			97		
cM capacity (veh/h)	232	183	701	164	189	494	966			640		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	150	63	30	679	373	20	359	225
Volume Left	80	18	30	0	0	20	0	0
Volume Right	28	21	0	0	33	0	0	46
cSH	244	226	966	1700	1700	640	1700	1700
Volume to Capacity	0.61	0.28	0.03	0.40	0.22	0.03	0.21	0.13
Queue Length 95th (ft)	91	28	2	0	0	2	0	0
Control Delay (s)	40.6	27.0	8.8	0.0	0.0	10.8	0.0	0.0
Lane LOS	E	D	A			B		
Approach Delay (s)	40.6	27.0	0.2			0.4		
Approach LOS	E	D						

Intersection Summary		
Average Delay		4.4
Intersection Capacity Utilization	46.6%	ICU Level of Service
Analysis Period (min)	15	A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

434: NC 11 & Green Haynes Rd/Albrittons Rd
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	41	22	27	30	38	18	25	484	16	19	917	72
Future Volume (vph)	41	22	27	30	38	18	25	484	16	19	917	72
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	225		0	325		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1730	0	0	1763	0	1719	3421	0	1719	3400	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1730	0	0	1763	0	1719	3421	0	1719	3400	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1085			1033			937			1059	
Travel Time (s)		13.5			12.8			11.6			13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	0	0	95	0	28	556	0	21	1099	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	41	22	27	30	38	18	25	484	16	19	917	72
Future Volume (Veh/h)	41	22	27	30	38	18	25	484	16	19	917	72
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	46	24	30	33	42	20	28	538	18	21	1019	80
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage (veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1467	1713	550	1196	1744	278	1099			556		
vC1, stage 1 conf vol	1101	1101		603	603							
vC2, stage 2 conf vol	366	612		594	1141							
vCu, unblocked vol	1467	1713	550	1196	1744	278	1099			556		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)	6.6	5.6		6.6	5.6							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	87	94	86	76	97	95			98		
cM capacity (veh/h)	164	190	477	228	175	716	614			990		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	100	95	28	359	197	21	679	420
Volume Left	46	33	28	0	0	21	0	0
Volume Right	30	20	0	0	18	0	0	80
cSH	213	230	614	1700	1700	990	1700	1700
Volume to Capacity	0.47	0.41	0.05	0.21	0.12	0.02	0.40	0.25
Queue Length 95th (ft)	57	47	4	0	0	2	0	0
Control Delay (s)	36.0	31.2	11.1	0.0	0.0	8.7	0.0	0.0
Lane LOS	E	D	B			A		
Approach Delay (s)	36.0	31.2	0.5			0.2		
Approach LOS	E	D						

Intersection Summary		
Average Delay		3.7
Intersection Capacity Utilization	41.7%	ICU Level of Service
Analysis Period (min)	15	A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↖	↗	↖	↖↗		↖	↖↗	
Traffic Volume (vph)	222	89	6	50	53	11	7	913	104	12	479	145
Future Volume (vph)	222	89	6	50	53	11	7	913	104	12	479	145
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	125		150	225		0	150		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1699	1495	1736	1827	1553	1719	3387	0	1687	3256	0
Flt Permitted		0.966		0.950			0.327			0.147		
Satd. Flow (perm)	0	1699	1495	1736	1827	1553	592	3387	0	261	3256	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			35			55				55
Link Distance (ft)		1003			1039			1060				2241
Travel Time (s)		12.4			20.2			13.1				27.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	4%	4%	4%	5%	5%	5%	7%	7%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	346	7	56	59	12	8	1130	0	13	693	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2				6
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	21.0	21.0		21.0	21.0	
Total Split (s)	32.0	32.0	32.0	14.0	14.0	14.0	44.0	44.0		44.0	44.0	
Total Split (%)	35.6%	35.6%	35.6%	15.6%	15.6%	15.6%	48.9%	48.9%		48.9%	48.9%	
Maximum Green (s)	25.0	25.0	25.0	7.0	7.0	7.0	37.0	37.0		37.0	37.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min		C-Min	C-Min	
Act Effect Green (s)		23.8	23.8	9.3	9.3	9.3	44.7	44.7		44.7	44.7	
Actuated g/C Ratio		0.26	0.26	0.10	0.10	0.10	0.50	0.50		0.50	0.50	
v/c Ratio		0.77	0.02	0.31	0.32	0.08	0.03	0.67		0.10	0.43	
Control Delay		42.4	22.7	42.7	42.4	37.9	15.1	21.5		17.9	17.2	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
 2040 No-Build Alternative AM Peak

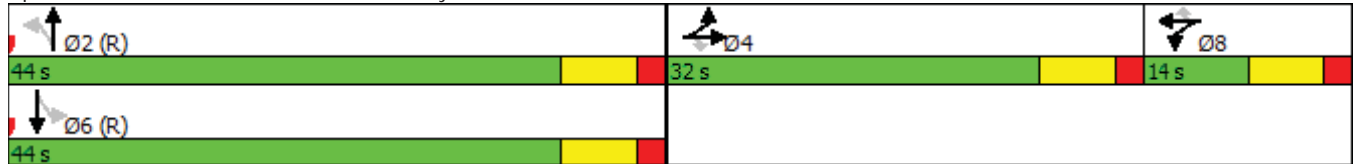


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		42.4	22.7	42.7	42.4	37.9	15.1	21.5		17.9	17.2	
LOS		D	C	D	D	D	B	C		B	B	
Approach Delay		42.0			42.1			21.4			17.2	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)		177	3	30	31	6	3	276		4	143	
Queue Length 95th (ft)		270	13	68	70	23	11	361		17	195	
Internal Link Dist (ft)		923			959			980			2161	
Turn Bay Length (ft)			75	125		150	225			150		
Base Capacity (vph)		509	448	178	187	159	294	1682		129	1617	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.68	0.02	0.31	0.32	0.08	0.03	0.67		0.10	0.43	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 24.4
 Intersection LOS: C
 Intersection Capacity Utilization 63.9%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 435: NC 11 & NC 55/Tyree Rd



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	53	6	104	89	13	5	479	49	12	913	223
Future Volume (vph)	145	53	6	104	89	13	5	479	49	12	913	223
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	125		150	225		0	150		0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1698	1495	1736	1827	1553	1719	3390	0	1687	3276	0
Flt Permitted		0.965		0.950			0.126			0.395		
Satd. Flow (perm)	0	1698	1495	1736	1827	1553	228	3390	0	701	3276	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			35			55				55
Link Distance (ft)		1003			1039			1060				2241
Travel Time (s)		12.4			20.2			13.1				27.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	4%	4%	4%	5%	5%	5%	7%	7%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	220	7	116	99	14	6	586	0	13	1262	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2				6
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	14.0	14.0		14.0	14.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	14.0	21.0	21.0		21.0	21.0	
Total Split (s)	24.0	24.0	24.0	16.0	16.0	16.0	50.0	50.0		50.0	50.0	
Total Split (%)	26.7%	26.7%	26.7%	17.8%	17.8%	17.8%	55.6%	55.6%		55.6%	55.6%	
Maximum Green (s)	17.0	17.0	17.0	9.0	9.0	9.0	43.0	43.0		43.0	43.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	C-Min	C-Min		C-Min	C-Min	
Act Effect Green (s)		17.1	17.1	11.0	11.0	11.0	46.9	46.9		46.9	46.9	
Actuated g/C Ratio		0.19	0.19	0.12	0.12	0.12	0.52	0.52		0.52	0.52	
v/c Ratio		0.68	0.02	0.55	0.44	0.07	0.05	0.33		0.04	0.74	
Control Delay		45.0	28.7	47.4	43.4	35.9	13.2	13.6		12.0	20.7	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

435: NC 11 & NC 55/Tyree Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.0	28.7	47.4	43.4	35.9	13.2	13.6		12.0	20.7	
LOS		D	C	D	D	D	B	B		B	C	
Approach Delay		44.5			45.0			13.6			20.6	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		115	3	62	52	7	2	104		4	302	
Queue Length 95th (ft)		190	15	118	103	25	9	138		13	380	
Internal Link Dist (ft)		923			959			980			2161	
Turn Bay Length (ft)			75	125		150	225			150		
Base Capacity (vph)		358	315	220	231	196	119	1775		366	1715	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.61	0.02	0.53	0.43	0.07	0.05	0.33		0.04	0.74	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 23.6
 Intersection LOS: C
 Intersection Capacity Utilization 58.2%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 435: NC 11 & NC 55/Tyree Rd



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

436: NC 11 & Central Ave
 2040 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	23	1154	9	12	619
Future Volume (vph)	10	23	1154	9	12	619
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1660	0	3370	0	1687	3374
Flt Permitted	0.985				0.950	
Satd. Flow (perm)	1660	0	3370	0	1687	3374
Link Speed (mph)	35		55			55
Link Distance (ft)	957		2241			1037
Travel Time (s)	18.6		27.8			12.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	0	1292	0	13	688
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.2% ICU Level of Service A
Analysis Period (min)	15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	23	1154	9	12	619
Future Volume (Veh/h)	10	23	1154	9	12	619
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	26	1282	10	13	688
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1657	646			1292	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1657	646			1292	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	87	94			97	
cM capacity (veh/h)	86	414			506	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	37	855	437	13	344	344
Volume Left	11	0	0	13	0	0
Volume Right	26	0	10	0	0	0
cSH	195	1700	1700	506	1700	1700
Volume to Capacity	0.19	0.50	0.26	0.03	0.20	0.20
Queue Length 95th (ft)	17	0	0	2	0	0
Control Delay (s)	27.8	0.0	0.0	12.3	0.0	0.0
Lane LOS	D		B			
Approach Delay (s)	27.8	0.0		0.2		
Approach LOS	D					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			42.2%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

436: NC 11 & Central Ave
 2040 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	14	619	7	25	1154
Future Volume (vph)	8	14	619	7	25	1154
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1672	0	3367	0	1687	3374
Flt Permitted	0.982				0.950	
Satd. Flow (perm)	1672	0	3367	0	1687	3374
Link Speed (mph)	35		55			55
Link Distance (ft)	957		2241			1037
Travel Time (s)	18.6		27.8			12.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	696	0	28	1282
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.9% ICU Level of Service A
Analysis Period (min)	15



















R-2553 Kinston Bypass 436: NC 11 & Central Ave
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis 2040 No-Build Alternative PM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	14	619	7	25	1154
Future Volume (Veh/h)	8	14	619	7	25	1154
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	16	688	8	28	1282
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1389	348			696	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1389	348			696	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	93	98			97	
cM capacity (veh/h)	129	648			863	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	25	459	237	28	641	641
Volume Left	9	0	0	28	0	0
Volume Right	16	0	8	0	0	0
cSH	265	1700	1700	863	1700	1700
Volume to Capacity	0.09	0.27	0.14	0.03	0.38	0.38
Queue Length 95th (ft)	8	0	0	3	0	0
Control Delay (s)	20.0	0.0	0.0	9.3	0.0	0.0
Lane LOS	C		A			
Approach Delay (s)	20.0	0.0		0.2		
Approach LOS	C					
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		41.9%		ICU Level of Service	A	
Analysis Period (min)		15				

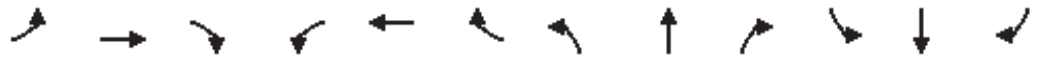
R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

437: NC 11 & Edgewood Dr/Mary Beth Rd
2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	9	4	34	4	1331	10	19	713	4
Future Volume (vph)	4	4	4	9	4	34	4	1331	10	19	713	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1662	0	1687	3370	0	1736	3468	0
Flt Permitted		0.984			0.990		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1662	0	1687	3370	0	1736	3468	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		752			1155			1055			973	
Travel Time (s)		20.5			22.5			16.0			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	52	0	4	1490	0	21	796	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary



















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕		↗	↕↔		↗	↕↔		
Traffic Volume (veh/h)	4	4	4	9	4	34	4	1331	10	19	713	4	
Future Volume (Veh/h)	4	4	4	9	4	34	4	1331	10	19	713	4	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	4	4	4	10	4	38	4	1479	11	21	792	4	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type													
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	1624	2334	398	1936	2330	745	796			1490			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1624	2334	398	1936	2330	745	796			1490			
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2			
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2			
p0 queue free %	92	88	99	71	88	89	99			95			
cM capacity (veh/h)	53	34	601	34	35	357	790			437			
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	12	52	4	986	504	21	528	268					
Volume Left	4	10	4	0	0	21	0	0					
Volume Right	4	38	0	0	11	0	0	4					
cSH	61	101	790	1700	1700	437	1700	1700					
Volume to Capacity	0.20	0.51	0.01	0.58	0.30	0.05	0.31	0.16					
Queue Length 95th (ft)	17	58	0	0	0	4	0	0					
Control Delay (s)	78.6	73.3	9.6	0.0	0.0	13.7	0.0	0.0					
Lane LOS	F	F	A			B							
Approach Delay (s)	78.6	73.3	0.0			0.4							
Approach LOS	F	F											
Intersection Summary													
Average Delay			2.1										
Intersection Capacity Utilization			47.1%	ICU Level of Service					A				
Analysis Period (min)			15										

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

437: NC 11 & Edgewood Dr/Mary Beth Rd
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	4	4	8	4	21	4	714	7	36	1330	4
Future Volume (vph)	4	4	4	8	4	21	4	714	7	36	1330	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1682	0	1687	3370	0	1736	3471	0
Flt Permitted		0.984			0.988		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1682	0	1687	3370	0	1736	3471	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		752			1155			1055			973	
Travel Time (s)		20.5			22.5			16.0			14.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	36	0	4	801	0	40	1482	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (veh/h)	4	4	4	8	4	21	4	714	7	36	1330	4
Future Volume (Veh/h)	4	4	4	8	4	21	4	714	7	36	1330	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	9	4	23	4	793	8	40	1478	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1990	2369	741	1630	2367	400	1482			801		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1990	2369	741	1630	2367	400	1482			801		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	87	88	99	84	88	96	99			95		
cM capacity (veh/h)	30	32	359	58	33	599	426			805		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	12	36	4	529	272	40	985	497				
Volume Left	4	9	4	0	0	40	0	0				
Volume Right	4	23	0	0	8	0	0	4				
cSH	45	113	426	1700	1700	805	1700	1700				
Volume to Capacity	0.27	0.32	0.01	0.31	0.16	0.05	0.58	0.29				
Queue Length 95th (ft)	23	31	1	0	0	4	0	0				
Control Delay (s)	112.5	50.9	13.5	0.0	0.0	9.7	0.0	0.0				
Lane LOS	F	F	B			A						
Approach Delay (s)	112.5	50.9	0.1			0.3						
Approach LOS	F	F										
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			46.9%	ICU Level of Service	A							
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

438: NC 11 & Old Asphalt Rd
 2040 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	81	1349	18	47	720
Future Volume (vph)	16	81	1349	18	47	720
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1623	0	3464	0	1736	3471
Flt Permitted	0.992				0.950	
Satd. Flow (perm)	1623	0	3464	0	1736	3471
Link Speed (mph)	55		45			45
Link Distance (ft)	1048		1215			1123
Travel Time (s)	13.0		18.4			17.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	1519	0	52	800
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.6% ICU Level of Service A
Analysis Period (min)	15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	81	1349	18	47	720
Future Volume (Veh/h)	16	81	1349	18	47	720
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	90	1499	20	52	800
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2013	760			1519	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2013	760			1519	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	59	74			88	
cM capacity (veh/h)	44	347			426	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	108	999	520	52	400	400
Volume Left	18	0	0	52	0	0
Volume Right	90	0	20	0	0	0
cSH	162	1700	1700	426	1700	1700
Volume to Capacity	0.67	0.59	0.31	0.12	0.24	0.24
Queue Length 95th (ft)	96	0	0	10	0	0
Control Delay (s)	63.0	0.0	0.0	14.6	0.0	0.0
Lane LOS	F		B			
Approach Delay (s)	63.0	0.0		0.9		
Approach LOS	F					
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			51.6%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

438: NC 11 & Old Asphalt Rd
 2040 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	49	721	14	83	1348
Future Volume (vph)	16	49	721	14	83	1348
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1638	0	3461	0	1736	3471
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1638	0	3461	0	1736	3471
Link Speed (mph)	55		45			45
Link Distance (ft)	1048		1215			1123
Travel Time (s)	13.0		18.4			17.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	817	0	92	1498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	49	721	14	83	1348
Future Volume (Veh/h)	16	49	721	14	83	1348
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	54	801	16	92	1498
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1742	408			817	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1742	408			817	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	74	91			88	
cM capacity (veh/h)	68	589			794	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	72	534	283	92	749	749
Volume Left	18	0	0	92	0	0
Volume Right	54	0	16	0	0	0
cSH	202	1700	1700	794	1700	1700
Volume to Capacity	0.36	0.31	0.17	0.12	0.44	0.44
Queue Length 95th (ft)	38	0	0	10	0	0
Control Delay (s)	32.3	0.0	0.0	10.1	0.0	0.0
Lane LOS	D		B			
Approach Delay (s)	32.3	0.0		0.6		
Approach LOS	D					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			47.8%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	868	344	163	1378	92	626	610	186	46	268	180
Future Volume (vph)	226	868	344	163	1378	92	626	610	186	46	268	180
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		475	275		600	275		0	400		400
Storage Lanes	2		1	1		1	2		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3303	3406	1524	1687	3374	1509	3367	3350	0	3367	3471	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3303	3406	1524	1687	3374	1509	3367	3350	0	3367	3471	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1036			1050			1060			982	
Travel Time (s)		15.7			15.9			16.1			14.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	7%	7%	7%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	251	964	382	181	1531	102	696	885	0	51	298	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		45			45			28			28	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Split	NA		Split	NA	pm+ov
Protected Phases	5	2	8	1	6		8	8		4	4	5
Permitted Phases			2			Free						4
Detector Phase	5	2	8	1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	14.0
Total Split (s)	14.0	54.0	37.0	23.0	63.0		37.0	37.0		16.0	16.0	14.0
Total Split (%)	10.8%	41.5%	28.5%	17.7%	48.5%		28.5%	28.5%		12.3%	12.3%	10.8%
Maximum Green (s)	7.0	47.0	30.0	16.0	56.0		30.0	30.0		9.0	9.0	7.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	None
Act Effect Green (s)	9.0	49.6	81.6	17.4	58.0	130.0	32.0	32.0		11.0	11.0	20.0
Actuated g/C Ratio	0.07	0.38	0.63	0.13	0.45	1.00	0.25	0.25		0.08	0.08	0.15
v/c Ratio	1.10	0.74	0.40	0.80	1.02	0.07	0.84	1.07		0.18	1.02	0.84
Control Delay	143.8	39.1	7.6	80.3	63.4	0.1	57.0	99.4		57.0	115.2	59.9

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
 2040 No-Build Alternative AM Peak

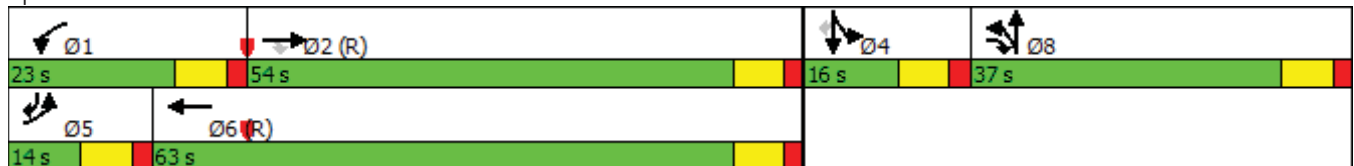


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	143.8	39.1	7.6	80.3	63.4	0.1	57.0	99.4		57.0	115.2	59.9
LOS	F	D	A	F	E	A	E	F		E	F	E
Approach Delay		48.0			61.5			80.7			89.6	
Approach LOS		D			E			F			F	
Queue Length 50th (ft)	~123	368	78	149	~717	0	289	~435		21	~136	99
Queue Length 95th (ft)	#211	451	113	#263	#857	0	#365	#568		42	#235	#200
Internal Link Dist (ft)		956			970			980			902	
Turn Bay Length (ft)	325		475	275		600	275			400		400
Base Capacity (vph)	228	1299	956	233	1505	1509	828	824		284	293	238
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.10	0.74	0.40	0.78	1.02	0.07	0.84	1.07		0.18	1.02	0.84

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay: 65.9
 Intersection LOS: E
 Intersection Capacity Utilization 89.8%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 439: NC 11 & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	1378	626	186	868	46	344	268	163	92	610	226
Future Volume (vph)	180	1378	626	186	868	46	344	268	163	92	610	226
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		475	275		600	275		0	400		400
Storage Lanes	2		1	1		1	2		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	3303	3406	1524	1687	3374	1509	3367	3273	0	3367	3471	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3303	3406	1524	1687	3374	1509	3367	3273	0	3367	3471	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1036			1050			1060			982	
Travel Time (s)		15.7			15.9			16.1			14.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	7%	7%	7%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	1531	696	207	964	51	382	479	0	102	678	251
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		45			45			28			28	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	Free	Split	NA		Split	NA	pm+ov
Protected Phases	5	2	8	1	6		8	8		4	4	5
Permitted Phases			2			Free						4
Detector Phase	5	2	8	1	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0		14.0	14.0		14.0	14.0	14.0
Total Split (s)	21.0	67.0	24.0	20.0	66.0		24.0	24.0		29.0	29.0	21.0
Total Split (%)	15.0%	47.9%	17.1%	14.3%	47.1%		17.1%	17.1%		20.7%	20.7%	15.0%
Maximum Green (s)	14.0	60.0	17.0	13.0	59.0		17.0	17.0		22.0	22.0	14.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag							Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min	None	None	C-Min		None	None		None	None	None
Act Effct Green (s)	14.8	62.0	81.0	15.0	62.2	140.0	19.0	19.0		24.0	24.0	38.8
Actuated g/C Ratio	0.11	0.44	0.58	0.11	0.44	1.00	0.14	0.14		0.17	0.17	0.28
v/c Ratio	0.57	1.02	0.79	1.15	0.64	0.03	0.84	1.08		0.18	1.14	0.58
Control Delay	66.3	65.6	23.7	166.8	32.9	0.0	75.7	121.1		50.5	132.7	31.7

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

439: NC 11 & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	66.3	65.6	23.7	166.8	32.9	0.0	75.7	121.1		50.5	132.7	31.7
LOS	E	E	C	F	C	A	E	F		D	F	C
Approach Delay		53.6			54.2			101.0			100.0	
Approach LOS		D			D			F			F	
Queue Length 50th (ft)	90	~772	249	~220	359	0	177	~255		41	~378	136
Queue Length 95th (ft)	132	#911	407	#385	435	0	#255	#372		69	#505	200
Internal Link Dist (ft)		956			970			980			902	
Turn Bay Length (ft)	325		475	275		600	275			400		400
Base Capacity (vph)	377	1508	881	180	1499	1509	456	444		577	595	443
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	1.02	0.79	1.15	0.64	0.03	0.84	1.08		0.18	1.14	0.57

Intersection Summary

Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 69.7
 Intersection LOS: E
 Intersection Capacity Utilization 91.7%
 ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 439: NC 11 & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

440: US 258 & Clarence Potter Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	5	4	352	233	4
Future Volume (vph)	6	5	4	352	233	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1719	0	0	1791	1789	0
Flt Permitted	0.974			0.999		
Satd. Flow (perm)	1719	0	0	1791	1789	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1007			1030	1027	
Travel Time (s)	12.5			12.8	12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	0	395	263	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.7%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	5	4	352	233	4
Future Volume (Veh/h)	6	5	4	352	233	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	6	4	391	259	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	660	261	263			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	660	261	263			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	98	99	100			
cM capacity (veh/h)	428	780	1278			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	13	395	263			
Volume Left	7	4	0			
Volume Right	6	0	4			
cSH	541	1278	1700			
Volume to Capacity	0.02	0.00	0.15			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	11.8	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.8	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization		31.7%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

440: US 258 & Clarence Potter Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	4	4	234	351	6
Future Volume (vph)	4	4	4	234	351	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1711	0	0	1791	1789	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1711	0	0	1791	1789	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1007			1030	1027	
Travel Time (s)	12.5			12.8	12.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	264	397	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	4	4	234	351	6
Future Volume (Veh/h)	4	4	4	234	351	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	260	390	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	662	394	397			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	662	394	397			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	99	99	100			
cM capacity (veh/h)	427	658	1140			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	264	397			
Volume Left	4	4	0			
Volume Right	4	0	7			
cSH	518	1140	1700			
Volume to Capacity	0.02	0.00	0.23			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	12.1	0.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.1	0.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		28.8%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

441: US 258 & Albrittons Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	27	24	445	293	34
Future Volume (vph)	58	27	24	445	293	34
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			75
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1707	0	1687	1776	1776	1509
Flt Permitted	0.967		0.950			
Satd. Flow (perm)	1707	0	1687	1776	1776	1509
Link Speed (mph)	55			55	55	
Link Distance (ft)	1002			1057	949	
Travel Time (s)	12.4			13.1	11.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	27	494	326	38
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	27	24	445	293	34
Future Volume (Veh/h)	58	27	24	445	293	34
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	64	30	27	494	326	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	874	326	364			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	874	326	364			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	79	96	98			
cM capacity (veh/h)	312	713	1167			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	94	27	494	326	38	
Volume Left	64	27	0	0	0	
Volume Right	30	0	0	0	38	
cSH	380	1167	1700	1700	1700	
Volume to Capacity	0.25	0.02	0.29	0.19	0.02	
Queue Length 95th (ft)	24	2	0	0	0	
Control Delay (s)	17.6	8.2	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	17.6	0.4		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			35.0%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

441: US 258 & Albrittons Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	24	27	293	445	58
Future Volume (vph)	34	24	27	293	445	58
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			75
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1693	0	1687	1776	1776	1509
Flt Permitted	0.972		0.950			
Satd. Flow (perm)	1693	0	1687	1776	1776	1509
Link Speed (mph)	55			55	55	
Link Distance (ft)	1002			1057	949	
Travel Time (s)	12.4			13.1	11.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	7%	7%	7%	7%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	30	326	494	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	34	24	27	293	445	58
Future Volume (Veh/h)	34	24	27	293	445	58
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	38	27	30	326	494	64
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	880	494	558			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	880	494	558			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	88	95	97			
cM capacity (veh/h)	307	573	988			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	65	30	326	494	64	
Volume Left	38	30	0	0	0	
Volume Right	27	0	0	0	64	
cSH	380	988	1700	1700	1700	
Volume to Capacity	0.17	0.03	0.19	0.29	0.04	
Queue Length 95th (ft)	15	2	0	0	0	
Control Delay (s)	16.4	8.8	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	16.4	0.7		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			33.4%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

442: US 258 & Ferguson Ln/Collier Loftin Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	6	4	5	30	4	40	4	616	54	47	403	4
Future Volume (vph)	6	4	5	30	4	40	4	616	54	47	403	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1738	0	0	1676	0	1719	1788	0	1719	1808	0
Flt Permitted		0.980			0.980		0.950			0.950		
Satd. Flow (perm)	0	1738	0	0	1676	0	1719	1788	0	1719	1808	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		499			1019			991			2680	
Travel Time (s)		13.6			19.9			15.0			40.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	17	0	0	81	0	4	744	0	52	452	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	6	4	5	30	4	40	4	616	54	47	403	4
Future Volume (Veh/h)	6	4	5	30	4	40	4	616	54	47	403	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	4	6	33	4	44	4	684	60	52	448	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1292	1306	450	1282	1278	714	452			744		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1292	1306	450	1282	1278	714	452			744		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	99	75	97	90	100			94		
cM capacity (veh/h)	117	150	609	130	155	430	1093			850		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	17	81	4	744	52	452						
Volume Left	7	33	4	0	52	0						
Volume Right	6	44	0	60	0	4						
cSH	176	213	1093	1700	850	1700						
Volume to Capacity	0.10	0.38	0.00	0.44	0.06	0.27						
Queue Length 95th (ft)	8	42	0	0	5	0						
Control Delay (s)	27.6	32.0	8.3	0.0	9.5	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	27.6	32.0	0.0		1.0							
Approach LOS	D	D										
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			51.3%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

442: US 258 & Ferguson Ln/Collier Loftin Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	4	4	4	54	4	47	5	403	30	40	616	6
Future Volume (vph)	4	4	4	54	4	47	5	403	30	40	616	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	0	1689	0	1719	1791	0	1719	1806	0
Flt Permitted		0.984			0.975		0.950			0.950		
Satd. Flow (perm)	0	1750	0	0	1689	0	1719	1791	0	1719	1806	0
Link Speed (mph)		25			35			45			45	
Link Distance (ft)		499			1019			991			2680	
Travel Time (s)		13.6			19.9			15.0			40.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	116	0	6	481	0	44	691	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	4	4	4	54	4	47	5	403	30	40	616	6
Future Volume (Veh/h)	4	4	4	54	4	47	5	403	30	40	616	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	4	60	4	52	6	448	33	44	684	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1290	1268	688	1254	1256	464	691			481		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1290	1268	688	1254	1256	464	691			481		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	98	99	57	98	91	99			96		
cM capacity (veh/h)	121	160	447	138	163	596	890			1066		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	12	116	6	481	44	691						
Volume Left	4	60	6	0	44	0						
Volume Right	4	52	0	33	0	7						
cSH	179	213	890	1700	1066	1700						
Volume to Capacity	0.07	0.55	0.01	0.28	0.04	0.41						
Queue Length 95th (ft)	5	73	1	0	3	0						
Control Delay (s)	26.5	40.5	9.1	0.0	8.5	0.0						
Lane LOS	D	E	A		A							
Approach Delay (s)	26.5	40.5	0.1		0.5							
Approach LOS	D	E										
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			49.6%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

443: US 258 & Old Asphalt Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	46	20	38	644	419	58
Future Volume (vph)	46	20	38	644	419	58
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1709	0	1719	1810	1781	0
Flt Permitted	0.966		0.950			
Satd. Flow (perm)	1709	0	1719	1810	1781	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1037			2680	570	
Travel Time (s)	12.9			40.6	8.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	42	716	530	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.3% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	20	38	644	419	58
Future Volume (Veh/h)	46	20	38	644	419	58
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	22	42	716	466	64
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1298	498	530			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1298	498	530			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	96	96			
cM capacity (veh/h)	170	570	1022			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	73	42	716	530		
Volume Left	51	42	0	0		
Volume Right	22	0	0	64		
cSH	216	1022	1700	1700		
Volume to Capacity	0.34	0.04	0.42	0.31		
Queue Length 95th (ft)	35	3	0	0		
Control Delay (s)	30.0	8.7	0.0	0.0		
Lane LOS	D	A				
Approach Delay (s)	30.0	0.5		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			44.3%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

443: US 258 & Old Asphalt Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	38	20	419	644	46
Future Volume (vph)	58	38	20	419	644	46
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1696	0	1719	1810	1793	0
Flt Permitted	0.971		0.950			
Satd. Flow (perm)	1696	0	1719	1810	1793	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1037			2680	570	
Travel Time (s)	12.9			40.6	8.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	22	466	767	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	38	20	419	644	46
Future Volume (Veh/h)	58	38	20	419	644	46
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	64	42	22	466	716	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1252	742	767			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1252	742	767			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	65	90	97			
cM capacity (veh/h)	184	414	833			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	106	22	466	767		
Volume Left	64	22	0	0		
Volume Right	42	0	0	51		
cSH	236	833	1700	1700		
Volume to Capacity	0.45	0.03	0.27	0.45		
Queue Length 95th (ft)	54	2	0	0		
Control Delay (s)	32.0	9.4	0.0	0.0		
Lane LOS	D	A				
Approach Delay (s)	32.0	0.4		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			48.9%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	827	157	48	1270	479	245	412	49	306	260	115
Future Volume (vph)	117	827	157	48	1270	479	245	412	49	306	260	115
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		250	225		0	400		275	275		0
Storage Lanes	1		1	1		1	2		1	2		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	4848	1509	1703	3406	1524	1719	3438	1538	3367	3311	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1687	4848	1509	1703	3406	1524	1719	3438	1538	3367	3311	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				45
Link Distance (ft)		728			2078			588				1049
Travel Time (s)		11.0			31.5			8.9				15.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	919	174	53	1411	532	272	458	54	340	417	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			18				30
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	15.0	60.0	25.0	14.0	59.0	20.0	25.0	26.0	14.0	20.0	21.0	
Total Split (%)	12.5%	50.0%	20.8%	11.7%	49.2%	16.7%	20.8%	21.7%	11.7%	16.7%	17.5%	
Maximum Green (s)	8.0	53.0	18.0	7.0	52.0	13.0	18.0	19.0	7.0	13.0	14.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None	None	None	None	
Act Effect Green (s)	10.0	57.4	78.4	9.0	53.6	73.6	20.0	21.4	35.4	15.0	16.4	
Actuated g/C Ratio	0.08	0.48	0.65	0.08	0.45	0.61	0.17	0.18	0.30	0.12	0.14	
v/c Ratio	0.93	0.40	0.18	0.42	0.93	0.57	0.95	0.75	0.12	0.81	0.92	
Control Delay	114.1	21.3	5.3	76.8	28.0	8.5	92.1	55.4	32.2	66.7	78.0	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
 2040 No-Build Alternative AM Peak

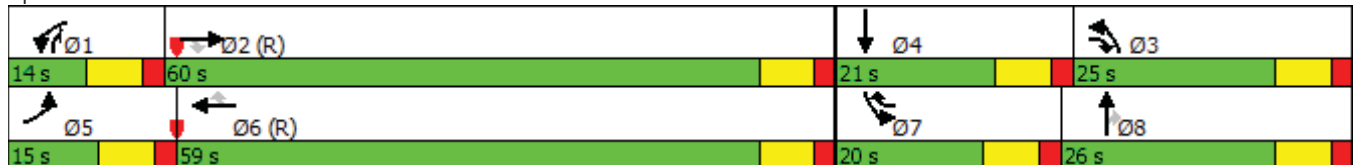


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.1	21.3	5.3	76.8	28.0	8.5	92.1	55.4	32.2	66.7	78.0	
LOS	F	C	A	E	C	A	F	E	C	E	E	
Approach Delay		28.9			24.1			66.5			72.9	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	102	170	27	38	287	166	211	179	31	134	171	
Queue Length 95th (ft)	#225	206	44	86	#508	45	#380	240	64	#203	#271	
Internal Link Dist (ft)		648			1998			508			969	
Turn Bay Length (ft)	225		250	225			400		275	275		
Base Capacity (vph)	140	2317	985	127	1532	934	286	612	453	421	453	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.40	0.18	0.42	0.92	0.57	0.95	0.75	0.12	0.81	0.92	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 116 (97%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 40.1
 Intersection LOS: D
 Intersection Capacity Utilization 82.7%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 444: US 258/US 70 Bus & US 70



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1270	245	49	827	306	157	260	48	479	412	117
Future Volume (vph)	115	1270	245	49	827	306	157	260	48	479	412	117
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		250	225		0	400		275	275		0
Storage Lanes	1		1	1		1	2		1	2		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1687	4848	1509	1703	3406	1524	1719	3438	1538	3367	3357	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1687	4848	1509	1703	3406	1524	1719	3438	1538	3367	3357	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		728			2078			588			1049	
Travel Time (s)		11.0			31.5			8.9			15.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	6%	6%	6%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	1411	272	54	919	340	174	289	53	532	588	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			18			30	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	7.0	7.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	19.0	14.0	14.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0	
Total Split (s)	21.0	57.0	25.0	14.0	50.0	34.0	25.0	25.0	14.0	34.0	34.0	
Total Split (%)	16.2%	43.8%	19.2%	10.8%	38.5%	26.2%	19.2%	19.2%	10.8%	26.2%	26.2%	
Maximum Green (s)	14.0	50.0	18.0	7.0	43.0	27.0	18.0	18.0	7.0	27.0	27.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Min	None	None	C-Min	None	None	None	None	None	None	
Act Effect Green (s)	15.1	57.6	76.9	9.2	49.0	75.8	18.3	19.1	33.3	26.8	27.7	
Actuated g/C Ratio	0.12	0.44	0.59	0.07	0.38	0.58	0.14	0.15	0.26	0.21	0.21	
v/c Ratio	0.66	0.66	0.30	0.45	0.72	0.38	0.72	0.57	0.13	0.77	0.82	
Control Delay	71.2	31.7	9.5	87.7	16.4	4.9	70.4	56.2	37.8	56.4	59.2	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

444: US 258/US 70 Bus & US 70
 2040 No-Build Alternative PM Peak

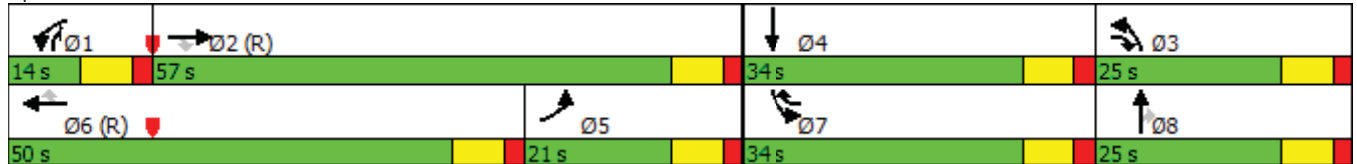


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	31.7	9.5	87.7	16.4	4.9	70.4	56.2	37.8	56.4	59.2	
LOS	E	C	A	F	B	A	E	E	D	E	E	
Approach Delay		31.2			16.4			59.1			57.9	
Approach LOS		C			B			E			E	
Queue Length 50th (ft)	103	367	77	45	160	81	140	118	34	216	246	
Queue Length 95th (ft)	173	422	114	89	200	90	220	167	70	278	317	
Internal Link Dist (ft)		648			1998			508			969	
Turn Bay Length (ft)	225		250	225			400		275	275		
Base Capacity (vph)	210	2152	897	120	1291	913	264	534	394	751	751	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.66	0.30	0.45	0.71	0.37	0.66	0.54	0.13	0.71	0.78	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 50 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 36.4
 Intersection LOS: D
 Intersection Capacity Utilization 70.9%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 444: US 258/US 70 Bus & US 70





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1133	52	27	1704	4	88	4	30	4	4	4
Future Volume (vph)	4	1133	52	27	1704	4	88	4	30	4	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	4859	0	1703	4893	0	1752	1597	0	0	1750	0
Flt Permitted	0.093			0.188			0.750				0.920	
Satd. Flow (perm)	167	4859	0	337	4893	0	1383	1597	0	0	1637	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		2078			2483			1026				272
Travel Time (s)		31.5			37.6			20.0				7.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1317	0	30	1897	0	98	37	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	91.0	91.0		91.0	91.0		29.0	29.0		29.0	29.0	
Total Split (%)	75.8%	75.8%		75.8%	75.8%		24.2%	24.2%		24.2%	24.2%	
Maximum Green (s)	84.0	84.0		84.0	84.0		22.0	22.0		22.0	22.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Act Effect Green (s)	94.3	94.3		94.3	94.3		15.7	15.7		15.7	15.7	
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.13	0.13		0.13	0.13	
v/c Ratio	0.03	0.35		0.11	0.49		0.54	0.18		0.06	0.06	
Control Delay	3.5	3.9		2.4	2.1		59.1	46.3		43.5	43.5	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

445: Meadowbrook Dr/Family Dollar Driveway & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	3.5	3.9		2.4	2.1		59.1	46.3			43.5	
LOS	A	A		A	A		E	D			D	
Approach Delay		3.9			2.1			55.6			43.5	
Approach LOS		A			A			E			D	
Queue Length 50th (ft)	1	63		1	24		72	26			8	
Queue Length 95th (ft)	m1	146		m7	197		123	56			26	
Internal Link Dist (ft)		1998			2403			946			192	
Turn Bay Length (ft)	225			225			75					
Base Capacity (vph)	131	3817		264	3844		276	319			327	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.03	0.35		0.11	0.49		0.36	0.12			0.04	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.54
 Intersection Signal Delay: 5.1
 Intersection Capacity Utilization 52.9%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 445: Meadowbrook Dr/Family Dollar Driveway & US 70





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1705	90	28	1133	4	54	4	25	4	4	4
Future Volume (vph)	4	1705	90	28	1133	4	54	4	25	4	4	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	225		0	75		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	4854	0	1703	4893	0	1752	1603	0	0	1750	0
Flt Permitted	0.204			0.087			0.750				0.903	
Satd. Flow (perm)	366	4854	0	156	4893	0	1383	1603	0	0	1606	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				25
Link Distance (ft)		2078			2483			1026				272
Travel Time (s)		31.5			37.6			20.0				7.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1994	0	31	1263	0	60	32	0	0	12	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	19.0	19.0		19.0	19.0		14.0	14.0		14.0	14.0	
Total Split (s)	106.0	106.0		106.0	106.0		24.0	24.0		24.0	24.0	
Total Split (%)	81.5%	81.5%		81.5%	81.5%		18.5%	18.5%		18.5%	18.5%	
Maximum Green (s)	99.0	99.0		99.0	99.0		17.0	17.0		17.0	17.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	
Act Effct Green (s)	110.7	110.7		110.7	110.7		13.1	13.1		13.1	13.1	
Actuated g/C Ratio	0.85	0.85		0.85	0.85		0.10	0.10		0.10	0.10	
v/c Ratio	0.01	0.48		0.23	0.30		0.43	0.20		0.43	0.07	
Control Delay	1.0	2.4		4.9	0.6		63.6	55.0		63.6	51.8	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

445: Meadowbrook Dr/Family Dollar Driveway & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	1.0	2.4		4.9	0.6		63.6	55.0				51.8
LOS	A	A		A	A		E	D				D
Approach Delay		2.4			0.7			60.6				51.8
Approach LOS		A			A			E				D
Queue Length 50th (ft)	0	2		1	17		48	25				9
Queue Length 95th (ft)	m1	479		m2	1		92	56				29
Internal Link Dist (ft)		1998			2403			946				192
Turn Bay Length (ft)	225			225			75					
Base Capacity (vph)	311	4133		132	4166		202	234				234
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.01	0.48		0.23	0.30		0.30	0.14				0.05

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 3.5
 Intersection Capacity Utilization 50.8%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 445: Meadowbrook Dr/Family Dollar Driveway & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

446: NC 58 & Elijah Loftin Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	30	4	9	4	5	37	9	300	4	18	159	16
Future Volume (vph)	30	4	9	4	5	37	9	300	4	18	159	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1747	0	0	1653	0	0	1787	0	0	1764	0
Flt Permitted		0.966			0.996			0.999			0.995	
Satd. Flow (perm)	0	1747	0	0	1653	0	0	1787	0	0	1764	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1062			1065			993			1087	
Travel Time (s)		13.2			13.2			12.3			13.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	51	0	0	347	0	0	215	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.8%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	30	4	9	4	5	37	9	300	4	18	159	16
Future Volume (Veh/h)	30	4	9	4	5	37	9	300	4	18	159	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	4	10	4	6	41	10	333	4	20	177	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	625	583	186	593	590	335	195			337		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	625	583	186	593	590	335	195			337		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	91	99	99	99	99	94	99			98		
cM capacity (veh/h)	363	414	856	402	410	707	1354			1200		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	47	51	347	215								
Volume Left	33	4	10	20								
Volume Right	10	41	4	18								
cSH	419	618	1354	1200								
Volume to Capacity	0.11	0.08	0.01	0.02								
Queue Length 95th (ft)	9	7	1	1								
Control Delay (s)	14.7	11.4	0.3	0.9								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.7	11.4	0.3	0.9								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			33.8%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

446: NC 58 & Elijah Loftin Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	16	5	9	4	4	18	9	159	4	37	300	30
Future Volume (vph)	16	5	9	4	4	18	9	159	4	37	300	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1742	0	0	1672	0	0	1782	0	0	1764	0
Flt Permitted		0.974			0.993			0.997			0.995	
Satd. Flow (perm)	0	1742	0	0	1672	0	0	1782	0	0	1764	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1062			1065			993			1087	
Travel Time (s)		13.2			13.2			12.3			13.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	28	0	0	191	0	0	407	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.7% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	16	5	9	4	4	18	9	159	4	37	300	30
Future Volume (Veh/h)	16	5	9	4	4	18	9	159	4	37	300	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	6	10	4	4	20	10	177	4	41	333	33
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	652	632	350	644	647	179	366			181		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	652	632	350	644	647	179	366			181		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	95	98	99	99	99	98	99			97		
cM capacity (veh/h)	358	382	694	365	375	864	1171			1371		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	34	28	191	407								
Volume Left	18	4	10	41								
Volume Right	10	20	4	33								
cSH	423	625	1171	1371								
Volume to Capacity	0.08	0.04	0.01	0.03								
Queue Length 95th (ft)	7	4	1	2								
Control Delay (s)	14.3	11.0	0.5	1.0								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.3	11.0	0.5	1.0								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			41.7%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

447: NC 58 & Woodington Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	9	9	353	187	23
Future Volume (vph)	40	9	9	353	187	23
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1745	0	1703	1792	1782	0
Flt Permitted	0.961		0.950			
Satd. Flow (perm)	1745	0	1703	1792	1782	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1062			1009	1041	
Travel Time (s)	13.2			12.5	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	10	392	234	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	9	9	353	187	23
Future Volume (Veh/h)	40	9	9	353	187	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	10	10	392	208	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	633	221	234			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	633	221	234			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	90	99	99			
cM capacity (veh/h)	440	819	1310			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	54	10	392	234		
Volume Left	44	10	0	0		
Volume Right	10	0	0	26		
cSH	482	1310	1700	1700		
Volume to Capacity	0.11	0.01	0.23	0.14		
Queue Length 95th (ft)	9	1	0	0		
Control Delay (s)	13.4	7.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.4	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			28.6%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

447: NC 58 & Woodington Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	9	8	187	353	40
Future Volume (vph)	23	9	8	187	353	40
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	75			0
Storage Lanes	1	0	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1729	0	1703	1792	1784	0
Flt Permitted	0.965		0.950			
Satd. Flow (perm)	1729	0	1703	1792	1784	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	1062			1009	1041	
Travel Time (s)	13.2			12.5	12.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	6%	6%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	0	9	208	436	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.0% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	9	8	187	353	40
Future Volume (Veh/h)	23	9	8	187	353	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	26	10	9	208	392	44
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	640	414	436			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	640	414	436			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	94	98	99			
cM capacity (veh/h)	436	638	1103			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	36	9	208	436		
Volume Left	26	9	0	0		
Volume Right	10	0	0	44		
cSH	478	1103	1700	1700		
Volume to Capacity	0.08	0.01	0.12	0.26		
Queue Length 95th (ft)	6	1	0	0		
Control Delay (s)	13.1	8.3	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.1	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			31.0%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

448: NC 58 & Will Baker Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	25	26	419	220	32
Future Volume (vph)	60	25	26	419	220	32
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	125			125
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1711	0	1736	1827	1827	1553
Flt Permitted	0.966		0.950			
Satd. Flow (perm)	1711	0	1736	1827	1827	1553
Link Speed (mph)	55			50	50	
Link Distance (ft)	1048			1044	1012	
Travel Time (s)	13.0			14.2	13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	29	466	244	36
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.6% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	25	26	419	220	32
Future Volume (Veh/h)	60	25	26	419	220	32
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	67	28	29	466	244	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	768	244	280			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	768	244	280			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	96	98			
cM capacity (veh/h)	360	792	1271			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	95	29	466	244	36	
Volume Left	67	29	0	0	0	
Volume Right	28	0	0	0	36	
cSH	429	1271	1700	1700	1700	
Volume to Capacity	0.22	0.02	0.27	0.14	0.02	
Queue Length 95th (ft)	21	2	0	0	0	
Control Delay (s)	15.8	7.9	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	15.8	0.5		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			33.6%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

448: NC 58 & Will Baker Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	26	25	220	419	60
Future Volume (vph)	32	26	25	220	419	60
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	125			125
Storage Lanes	1	0	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1687	0	1736	1827	1827	1553
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1687	0	1736	1827	1827	1553
Link Speed (mph)	55			50	50	
Link Distance (ft)	1048			1044	1012	
Travel Time (s)	13.0			14.2	13.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	28	244	466	67
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	26	25	220	419	60
Future Volume (Veh/h)	32	26	25	220	419	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	29	28	244	466	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	766	466	533			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	766	466	533			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	95	97			
cM capacity (veh/h)	359	595	1025			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	65	28	244	466	67	
Volume Left	36	28	0	0	0	
Volume Right	29	0	0	0	67	
cSH	436	1025	1700	1700	1700	
Volume to Capacity	0.15	0.03	0.14	0.27	0.04	
Queue Length 95th (ft)	13	2	0	0	0	
Control Delay (s)	14.7	8.6	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	14.7	0.9		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			32.1%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

449: NC 58 & Collier Loftin Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	90	13	15	460	242	54
Future Volume (vph)	90	13	15	460	242	54
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	75			0
Storage Lanes	1	1	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1752	1568	1736	1827	1781	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1752	1568	1736	1827	1781	0
Link Speed (mph)	55			50	50	
Link Distance (ft)	1031			938	1219	
Travel Time (s)	12.8			12.8	16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	14	17	511	329	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	90	13	15	460	242	54
Future Volume (Veh/h)	90	13	15	460	242	54
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	100	14	17	511	269	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	2					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	844	299	329			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	844	299	329			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	69	98	99			
cM capacity (veh/h)	328	738	1219			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	114	17	511	329		
Volume Left	100	17	0	0		
Volume Right	14	0	0	60		
cSH	373	1219	1700	1700		
Volume to Capacity	0.31	0.01	0.30	0.19		
Queue Length 95th (ft)	32	1	0	0		
Control Delay (s)	19.4	8.0	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	19.4	0.3		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay	2.4					
Intersection Capacity Utilization	35.9%			ICU Level of Service	A	
Analysis Period (min)	15					

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

449: NC 58 & Collier Loftin Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	54	14	13	242	460	90
Future Volume (vph)	54	14	13	242	460	90
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	50	75			0
Storage Lanes	1	1	1			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1752	1568	1736	1827	1787	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1752	1568	1736	1827	1787	0
Link Speed (mph)	55			50	50	
Link Distance (ft)	1031			938	1219	
Travel Time (s)	12.8			12.8	16.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	16	14	269	611	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	54	14	13	242	460	90
Future Volume (Veh/h)	54	14	13	242	460	90
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	60	16	14	269	511	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	2					
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	858	561	611			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	858	561	611			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	97	99			
cM capacity (veh/h)	321	525	958			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	76	14	269	611		
Volume Left	60	14	0	0		
Volume Right	16	0	0	100		
cSH	407	958	1700	1700		
Volume to Capacity	0.19	0.01	0.16	0.36		
Queue Length 95th (ft)	17	1	0	0		
Control Delay (s)	17.4	8.8	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	17.4	0.4		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			39.7%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

450: NC 58 & Lenoir CC Southern Driveway
 2040 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	578	17	82	277
Future Volume (vph)	0	0	578	17	82	277
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	0	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	1820	0	1736	1827
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	1820	0	1736	1827
Link Speed (mph)	25		45			45
Link Distance (ft)	627		1219			426
Travel Time (s)	17.1		18.5			6.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	661	0	91	308
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↩		↩	↩
Traffic Volume (veh/h)	0	0	578	17	82	277
Future Volume (Veh/h)	0	0	578	17	82	277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	642	19	91	308
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1239
pX, platoon unblocked						
vC, conflicting volume	1142	652			661	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1142	652			661	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			90	
cM capacity (veh/h)	201	470			918	
Direction, Lane #						
	NB 1	SB 1	SB 2			
Volume Total	661	91	308			
Volume Left	0	91	0			
Volume Right	19	0	0			
cSH	1700	918	1700			
Volume to Capacity	0.39	0.10	0.18			
Queue Length 95th (ft)	0	8	0			
Control Delay (s)	0.0	9.4	0.0			
Lane LOS		A				
Approach Delay (s)	0.0	2.1				
Approach LOS						
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			47.0%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

450: NC 58 & Lenoir CC Southern Driveway
 2040 No-Build Alternative PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	315	4	54	556
Future Volume (vph)	0	0	315	4	54	556
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	125	
Storage Lanes	0	0		0	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	1823	0	1736	1827
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	1823	0	1736	1827
Link Speed (mph)	25		45			45
Link Distance (ft)	627		1219			426
Travel Time (s)	17.1		18.5			6.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	354	0	60	618
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔		↔	↔
Traffic Volume (veh/h)	0	0	315	4	54	556
Future Volume (Veh/h)	0	0	315	4	54	556
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	350	4	60	618
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1239
pX, platoon unblocked						
vC, conflicting volume	1090	352			354	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1090	352			354	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			95	
cM capacity (veh/h)	227	694			1194	
Direction, Lane #	NB 1	SB 1	SB 2			
Volume Total	354	60	618			
Volume Left	0	60	0			
Volume Right	4	0	0			
cSH	1700	1194	1700			
Volume to Capacity	0.21	0.05	0.36			
Queue Length 95th (ft)	0	4	0			
Control Delay (s)	0.0	8.2	0.0			
Lane LOS		A				
Approach Delay (s)	0.0	0.7				
Approach LOS						
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			45.2%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

451: NC 58 & Lenoir CC Northern Driveway
 2040 No-Build Alternative AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	133	610	0	0	357
Future Volume (vph)	5	133	610	0	0	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1787	1599	1827	0	0	1845
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1599	1827	0	0	1845
Link Speed (mph)	25		45			45
Link Distance (ft)	613		426			813
Travel Time (s)	16.7		6.5			12.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	148	678	0	0	397
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	133	610	0	0	357
Future Volume (Veh/h)	5	133	610	0	0	357
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	148	678	0	0	397
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						813
pX, platoon unblocked						
vC, conflicting volume	1075	678			678	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075	678			678	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	67			100	
cM capacity (veh/h)	244	454			909	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	6	148	678	397
Volume Left	6	0	0	0
Volume Right	0	148	0	0
cSH	244	454	1700	1700
Volume to Capacity	0.02	0.33	0.40	0.23
Queue Length 95th (ft)	2	35	0	0
Control Delay (s)	20.1	16.7	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	16.9		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		47.0%	ICU Level of Service
Analysis Period (min)		15	A



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	70	330	0	0	669
Future Volume (vph)	4	70	330	0	0	669
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1787	1599	1827	0	0	1845
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1599	1827	0	0	1845
Link Speed (mph)	25		45			45
Link Distance (ft)	613		426			813
Travel Time (s)	16.7		6.5			12.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	78	367	0	0	743
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.2%
Analysis Period (min)	15
	ICU Level of Service A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	70	330	0	0	669
Future Volume (Veh/h)	4	70	330	0	0	669
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	78	367	0	0	743
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						813
pX, platoon unblocked						
vC, conflicting volume	1110	367			367	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1110	367			367	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	89			100	
cM capacity (veh/h)	233	681			1186	
Direction, Lane #	WB 1	WB 2	NB 1	SB 1		
Volume Total	4	78	367	743		
Volume Left	4	0	0	0		
Volume Right	0	78	0	0		
cSH	233	681	1700	1700		
Volume to Capacity	0.02	0.11	0.22	0.44		
Queue Length 95th (ft)	1	10	0	0		
Control Delay (s)	20.7	11.0	0.0	0.0		
Lane LOS	C	B				
Approach Delay (s)	11.5		0.0	0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			45.2%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	820	287	90	1109	84	569	18	131	116	17	76
Future Volume (vph)	40	820	287	90	1109	84	569	18	131	116	17	76
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	225		0	275		100	0		100
Storage Lanes	1		1	2		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1687	4794	0	1665	1674	1568	0	1767	1568
Flt Permitted	0.950			0.950			0.950	0.955			0.958	
Satd. Flow (perm)	1703	3406	1524	1687	4794	0	1665	1674	1568	0	1767	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				25
Link Distance (ft)		2483			1780			813				641
Travel Time (s)		37.6			27.0			12.3				17.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	7%	7%	7%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)							48%					
Lane Group Flow (vph)	44	911	319	100	1325	0	329	323	146	0	148	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2						8			4
Detector Phase	5	2	2	1	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	14.0	46.0	46.0	16.0	48.0		38.0	38.0	38.0	20.0	20.0	20.0
Total Split (%)	11.7%	38.3%	38.3%	13.3%	40.0%		31.7%	31.7%	31.7%	16.7%	16.7%	16.7%
Maximum Green (s)	7.0	39.0	39.0	9.0	41.0		31.0	31.0	31.0	13.0	13.0	13.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	9.1	44.7	44.7	11.3	49.7		29.6	29.6	29.6		14.4	14.4
Actuated g/C Ratio	0.08	0.37	0.37	0.09	0.41		0.25	0.25	0.25		0.12	0.12
v/c Ratio	0.34	0.72	0.56	0.63	0.67		0.80	0.78	0.38		0.70	0.45
Control Delay	63.9	37.9	37.3	71.0	32.3		57.4	55.7	39.7		68.8	56.9

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
 2040 No-Build Alternative AM Peak

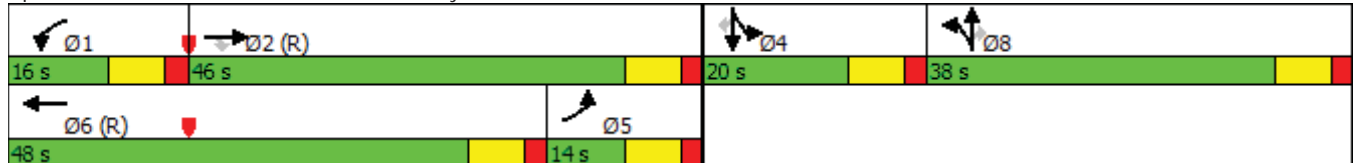


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	63.9	37.9	37.3	71.0	32.3		57.4	55.7	39.7		68.8	56.9
LOS	E	D	D	E	C		E	E	D		E	E
Approach Delay		38.6			35.1			53.5			64.5	
Approach LOS		D			D			D			E	
Queue Length 50th (ft)	32	262	175	75	327		245	238	92		111	61
Queue Length 95th (ft)	77	466	0	#151	389		356	350	152		#196	114
Internal Link Dist (ft)		2403			1700			733			561	
Turn Bay Length (ft)	100			225			275		100			100
Base Capacity (vph)	128	1269	567	161	1985		457	460	431		221	196
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.34	0.72	0.56	0.62	0.67		0.72	0.70	0.34		0.67	0.43

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 88 (73%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 42.0
 Intersection LOS: D
 Intersection Capacity Utilization 64.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 452: NC 58/Trenton Hwy & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1109	569	131	820	116	287	17	90	84	18	40
Future Volume (vph)	76	1109	569	131	820	116	287	17	90	84	18	40
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	225		0	275		100	0		100
Storage Lanes	1		1	2		0	1		1	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1703	3406	1524	1687	4756	0	1665	1679	1568	0	1771	1568
Flt Permitted	0.950			0.950			0.950	0.958			0.960	
Satd. Flow (perm)	1703	3406	1524	1687	4756	0	1665	1679	1568	0	1771	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45				25
Link Distance (ft)		2483			1780			813				641
Travel Time (s)		37.6			27.0			12.3				17.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	7%	7%	7%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)							47%					
Lane Group Flow (vph)	84	1232	632	146	1040	0	169	169	100	0	113	44
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2						8			4
Detector Phase	5	2	2	1	6		8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	19.0	14.0	19.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (s)	18.0	72.0	72.0	20.0	74.0		22.0	22.0	22.0	16.0	16.0	16.0
Total Split (%)	13.8%	55.4%	55.4%	15.4%	56.9%		16.9%	16.9%	16.9%	12.3%	12.3%	12.3%
Maximum Green (s)	11.0	65.0	65.0	13.0	67.0		15.0	15.0	15.0	9.0	9.0	9.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None	None	None	None	None
Act Effect Green (s)	32.8	66.8	66.8	14.8	51.6		16.8	16.8	16.8		11.7	11.7
Actuated g/C Ratio	0.25	0.51	0.51	0.11	0.40		0.13	0.13	0.13		0.09	0.09
v/c Ratio	0.20	0.70	0.81	0.76	0.55		0.79	0.78	0.50		0.72	0.31
Control Delay	22.3	13.2	21.3	80.9	34.6		80.2	79.3	61.7		82.1	62.2

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

452: NC 58/Trenton Hwy & US 70
 2040 No-Build Alternative PM Peak

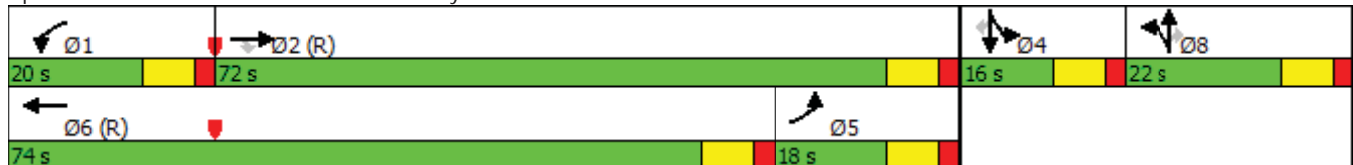


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	22.3	13.2	21.3	80.9	34.6		80.2	79.3	61.7		82.1	62.2
LOS	C	B	C	F	C		F	E	E		F	E
Approach Delay		16.3			40.3			75.6			76.5	
Approach LOS		B			D			E			E	
Queue Length 50th (ft)	49	388	397	121	284		147	147	79		95	36
Queue Length 95th (ft)	78	78	83	#225	306		#267	#266	140		#193	76
Internal Link Dist (ft)		2403			1700			733			561	
Turn Bay Length (ft)	100			225			275		100			100
Base Capacity (vph)	439	1779	796	197	2674		221	223	208		158	140
Starvation Cap Reductn	0	0	0	0	0		0	0	0		0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0		0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0		0	0
Reduced v/c Ratio	0.19	0.69	0.79	0.74	0.39		0.76	0.76	0.48		0.72	0.31

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 128 (98%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 33.4
 Intersection LOS: C
 Intersection Capacity Utilization 65.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 452: NC 58/Trenton Hwy & US 70



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

453: Lenoir CC Driveway & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (vph)	974	42	10	1289	0	113
Future Volume (vph)	974	42	10	1289	0	113
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	150		0	0
Storage Lanes		1	1		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3374	1509	1687	3374	0	1627
Flt Permitted			0.950			
Satd. Flow (perm)	3374	1509	1687	3374	0	1627
Link Speed (mph)	45			45	25	
Link Distance (ft)	1780			1040	439	
Travel Time (s)	27.0			15.8	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1082	47	11	1432	0	126
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	45			45	6	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.6%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑	↑	↓	↑↑		↑	
Traffic Volume (veh/h)	974	42	10	1289	0	113	
Future Volume (Veh/h)	974	42	10	1289	0	113	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	1082	47	11	1432	0	126	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	Raised		Raised				
Median storage veh	1		1				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			1129		1820	541	
vC1, stage 1 conf vol					1082		
vC2, stage 2 conf vol					738		
vCu, unblocked vol			1129		1820	541	
tC, single (s)			4.2		6.8	6.9	
tC, 2 stage (s)					5.8		
tF (s)			2.3		3.5	3.3	
p0 queue free %			98		100	74	
cM capacity (veh/h)			586		187	488	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	541	541	47	11	716	716	126
Volume Left	0	0	0	11	0	0	0
Volume Right	0	0	47	0	0	0	126
cSH	1700	1700	1700	586	1700	1700	488
Volume to Capacity	0.32	0.32	0.03	0.02	0.42	0.42	0.26
Queue Length 95th (ft)	0	0	0	1	0	0	26
Control Delay (s)	0.0	0.0	0.0	11.3	0.0	0.0	14.9
Lane LOS				B			
Approach Delay (s)	0.0			0.1			14.9
Approach LOS							B
Intersection Summary							
Average Delay			0.7				
Intersection Capacity Utilization			40.6%	ICU Level of Service		A	
Analysis Period (min)			15				

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

453: Lenoir CC Driveway & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (vph)	1218	91	25	1043	0	51
Future Volume (vph)	1218	91	25	1043	0	51
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	150		0	0
Storage Lanes		1	1		0	1
Taper Length (ft)			100		100	
Satd. Flow (prot)	3374	1509	1687	3374	0	1627
Flt Permitted			0.950			
Satd. Flow (perm)	3374	1509	1687	3374	0	1627
Link Speed (mph)	45			45	25	
Link Distance (ft)	1780			1040	439	
Travel Time (s)	27.0			15.8	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1353	101	28	1159	0	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	45			45	6	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↓
Traffic Volume (veh/h)	1218	91	25	1043	0	51
Future Volume (Veh/h)	1218	91	25	1043	0	51
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1353	101	28	1159	0	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	Raised		Raised			
Median storage veh	1		1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1454		1988	676
vC1, stage 1 conf vol					1353	
vC2, stage 2 conf vol					636	
vCu, unblocked vol			1454		1988	676
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.3		3.5	3.3
p0 queue free %			94		100	86
cM capacity (veh/h)			437		150	398

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	676	676	101	28	580	580	57
Volume Left	0	0	0	28	0	0	0
Volume Right	0	0	101	0	0	0	57
cSH	1700	1700	1700	437	1700	1700	398
Volume to Capacity	0.40	0.40	0.06	0.06	0.34	0.34	0.14
Queue Length 95th (ft)	0	0	0	5	0	0	12
Control Delay (s)	0.0	0.0	0.0	13.8	0.0	0.0	15.6
Lane LOS				B	C		
Approach Delay (s)	0.0			0.3			15.6
Approach LOS							C

Intersection Summary			
Average Delay			0.5
Intersection Capacity Utilization	43.7%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

454: US 70 & Neuse Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	63	982	4	1195	14	18	97
Future Volume (vph)	63	982	4	1195	14	18	97
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		175		150	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1687	3374	1671	3343	1495	1606	0
Flt Permitted	0.950		0.950			0.992	
Satd. Flow (perm)	1687	3374	1671	3343	1495	1606	0
Link Speed (mph)		55		55		45	
Link Distance (ft)		1063		973		1036	
Travel Time (s)		13.2		12.1		15.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	70	1091	4	1328	16	128	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	63	982	4	1195	14	18	97
Future Volume (Veh/h)	63	982	4	1195	14	18	97
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	70	1091	0	1328	16	20	108
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1344		0			2014	664
vC1, stage 1 conf vol						1328	
vC2, stage 2 conf vol						686	
vCu, unblocked vol	1344		0			2014	664
tC, single (s)	4.2		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	86		0			86	73
cM capacity (veh/h)	483		0			141	398

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	70	546	546	664	664	16	0	128
Volume Left	70	0	0	0	0	0	0	20
Volume Right	0	0	0	0	0	16	0	108
cSH	483	1700	1700	1700	1700	1700	1700	310
Volume to Capacity	0.14	0.32	0.32	0.39	0.39	0.01	0.00	0.41
Queue Length 95th (ft)	13	0	0	0	0	0	0	49
Control Delay (s)	13.7	0.0	0.0	0.0	0.0	0.0	0.0	24.5
Lane LOS	B							C
Approach Delay (s)	0.8			0.0				24.5
Approach LOS								C

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

454: US 70 & Neuse Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	98	1194	4	982	17	13	64
Future Volume (vph)	98	1194	4	982	17	13	64
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		175		150	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1687	3374	1671	3343	1495	1608	0
Flt Permitted	0.950		0.950			0.992	
Satd. Flow (perm)	1687	3374	1671	3343	1495	1608	0
Link Speed (mph)		55		55		45	
Link Distance (ft)		1063		973		1036	
Travel Time (s)		13.2		12.1		15.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	7%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	109	1327	4	1091	19	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.0%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

454: US 70 & Neuse Rd
 2040 No-Build Alternative PM Peak



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	98	1194	4	982	17	13	64
Future Volume (Veh/h)	98	1194	4	982	17	13	64
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	1327	0	1091	19	14	71
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1110		0			1972	546
vC1, stage 1 conf vol						1091	
vC2, stage 2 conf vol						882	
vCu, unblocked vol	1110		0			1972	546
tC, single (s)	4.2		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	82		0			91	85
cM capacity (veh/h)	597		0			151	477

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	109	664	664	546	546	19	0	85
Volume Left	109	0	0	0	0	0	0	14
Volume Right	0	0	0	0	0	19	0	71
cSH	597	1700	1700	1700	1700	1700	1700	352
Volume to Capacity	0.18	0.39	0.39	0.32	0.32	0.01	0.00	0.24
Queue Length 95th (ft)	17	0	0	0	0	0	0	23
Control Delay (s)	12.4	0.0	0.0	0.0	0.0	0.0	0.0	18.5
Lane LOS	B							C
Approach Delay (s)	0.9			0.0				18.5
Approach LOS								C

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization	51.0%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

455: Whaley Rd & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (vph)	4	933	48	28	1136	94	45
Future Volume (vph)	4	933	48	28	1136	94	45
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1671	3343	1495	1671	3343	1689	0
Flt Permitted	0.950			0.950		0.967	
Satd. Flow (perm)	1671	3343	1495	1671	3343	1689	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1018			2379	969	
Travel Time (s)		12.6			29.5	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1037	53	31	1262	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		48			48	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	933	48	28	1136	94	45
Future Volume (Veh/h)	4	933	48	28	1136	94	45
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1037	53	31	1262	104	50
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1090		1730	518
vC1, stage 1 conf vol						1037	
vC2, stage 2 conf vol						693	
vCu, unblocked vol	0			1090		1730	518
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			95		46	90
cM capacity (veh/h)	0			602		193	497

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	518	518	53	0	31	631	631	154
Volume Left	0	0	0	0	31	0	0	104
Volume Right	0	0	53	0	0	0	0	50
cSH	1700	1700	1700	1700	602	1700	1700	241
Volume to Capacity	0.30	0.30	0.03	0.00	0.05	0.37	0.37	0.64
Queue Length 95th (ft)	0	0	0	0	4	0	0	98
Control Delay (s)	0.0	0.0	0.0	0.0	11.3	0.0	0.0	43.2
Lane LOS					B			E
Approach Delay (s)	0.0				0.3			43.2
Approach LOS								E

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization	46.0%		ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

455: Whaley Rd & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1136	94	44	933	49	28
Future Volume (vph)	4	1136	94	44	933	49	28
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1671	3343	1495	1671	3343	1684	0
Flt Permitted	0.950			0.950		0.969	
Satd. Flow (perm)	1671	3343	1495	1671	3343	1684	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		1018			2379	969	
Travel Time (s)		12.6			29.5	12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	4%	4%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1262	104	49	1037	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		48			48	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	1136	94	44	933	49	28
Future Volume (Veh/h)	4	1136	94	44	933	49	28
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1262	104	49	1037	54	31
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1366		1878	631
vC1, stage 1 conf vol						1262	
vC2, stage 2 conf vol						616	
vCu, unblocked vol	0			1366		1878	631
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			90		66	93
cM capacity (veh/h)	0			469		159	419

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	631	631	104	0	49	518	518	85
Volume Left	0	0	0	0	49	0	0	54
Volume Right	0	0	104	0	0	0	0	31
cSH	1700	1700	1700	1700	469	1700	1700	205
Volume to Capacity	0.37	0.37	0.06	0.00	0.10	0.30	0.30	0.41
Queue Length 95th (ft)	0	0	0	0	9	0	0	47
Control Delay (s)	0.0	0.0	0.0	0.0	13.6	0.0	0.0	34.4
Lane LOS					B			D
Approach Delay (s)	0.0				0.6			34.4
Approach LOS								D

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization	47.7%		ICU Level of Service A
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

456: US 70 & British Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	20	942	4	1150	8	11	32
Future Volume (vph)	20	942	4	1150	8	11	32
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		200	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1671	3343	1495	1638	0
Flt Permitted	0.950		0.950			0.988	
Satd. Flow (perm)	1671	3343	1671	3343	1495	1638	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2379		1010		1049	
Travel Time (s)		29.5		12.5		13.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	22	1047	4	1278	9	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.8%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

456: US 70 & British Rd
 2040 No-Build Alternative AM Peak



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	20	942	4	1150	8	11	32
Future Volume (Veh/h)	20	942	4	1150	8	11	32
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	22	1047	0	1278	9	12	36
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1287		0			1846	639
vC1, stage 1 conf vol						1278	
vC2, stage 2 conf vol						568	
vCu, unblocked vol	1287		0			1846	639
tC, single (s)	4.3		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	96		0			93	91
cM capacity (veh/h)	503		0			165	416

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	22	524	524	639	639	9	0	48
Volume Left	22	0	0	0	0	0	0	12
Volume Right	0	0	0	0	0	9	0	36
cSH	503	1700	1700	1700	1700	1700	1700	301
Volume to Capacity	0.04	0.31	0.31	0.38	0.38	0.01	0.00	0.16
Queue Length 95th (ft)	3	0	0	0	0	0	0	14
Control Delay (s)	12.5	0.0	0.0	0.0	0.0	0.0	0.0	19.2
Lane LOS	B							C
Approach Delay (s)	0.3			0.0				19.2
Approach LOS								C

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization	41.8%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

456: US 70 & British Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	33	1150	4	942	10	8	21
Future Volume (vph)	33	1150	4	942	10	8	21
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		200	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1671	3343	1671	3343	1495	1642	0
Flt Permitted	0.950		0.950			0.986	
Satd. Flow (perm)	1671	3343	1671	3343	1495	1642	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		2379		1010		1049	
Travel Time (s)		29.5		12.5		13.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	8%	8%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	37	1278	4	1047	11	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		42		42		18	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.8%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

456: US 70 & British Rd
 2040 No-Build Alternative PM Peak
























Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	33	1150	4	942	10	8	21
Future Volume (Veh/h)	33	1150	4	942	10	8	21
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	1278	0	1047	11	9	23
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1058		0			1760	524
vC1, stage 1 conf vol						1047	
vC2, stage 2 conf vol						713	
vCu, unblocked vol	1058		0			1760	524
tC, single (s)	4.3		0.0			6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	94		0			95	95
cM capacity (veh/h)	620		0			189	496

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	37	639	639	524	524	11	0	32
Volume Left	37	0	0	0	0	0	0	9
Volume Right	0	0	0	0	0	11	0	23
cSH	620	1700	1700	1700	1700	1700	1700	341
Volume to Capacity	0.06	0.38	0.38	0.31	0.31	0.01	0.00	0.09
Queue Length 95th (ft)	5	0	0	0	0	0	0	8
Control Delay (s)	11.2	0.0	0.0	0.0	0.0	0.0	0.0	16.7
Lane LOS	B							C
Approach Delay (s)	0.3			0.0				16.7
Approach LOS								C

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization	41.8%		ICU Level of Service A
Analysis Period (min)	15		

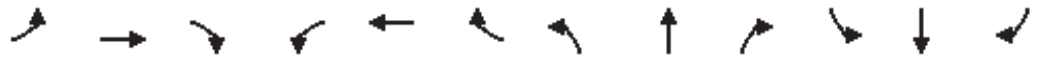
R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

457: Wyse Fork Rd/Caswell Rd & US 70
 2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	885	44	16	1080	12	70	5	21	16	5	22
Future Volume (vph)	13	885	44	16	1080	12	70	5	21	16	5	22
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	200		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1671	3343	1495	1656	3312	1482	0	1712	0	0	1688	0
Flt Permitted	0.950			0.950				0.965			0.982	
Satd. Flow (perm)	1671	3343	1495	1656	3312	1482	0	1712	0	0	1688	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1012			1011			1002			1036	
Travel Time (s)		12.5			12.5			12.4			12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	983	49	18	1200	13	0	107	0	0	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		42			42			6			6	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary






















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	13	885	44	16	1080	12	70	5	21	16	5	22						
Future Volume (Veh/h)	13	885	44	16	1080	12	70	5	21	16	5	22						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			0%			0%							
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90						
Hourly flow rate (vph)	14	983	49	18	1200	13	78	6	23	18	6	24						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type		Raised					Raised											
Median storage veh		1					1											
Upstream signal (ft)																		
pX, platoon unblocked																		
vC, conflicting volume	1213			1032			1674		2260		492		1782		2296		600	
vC1, stage 1 conf vol							1011		1011				1236		1236			
vC2, stage 2 conf vol							663		1249				546		1060			
vCu, unblocked vol	1213			1032			1674		2260		492		1782		2296		600	
tC, single (s)	4.3			4.3			7.6		6.6		7.0		7.6		6.6		7.0	
tC, 2 stage (s)							6.6		5.6				6.6		5.6			
tF (s)	2.3			2.3			3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	97			97			50		95		96		86		95		95	
cM capacity (veh/h)	538			629			156		132		518		132		132		442	
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1								
Volume Total	14	492	492	49	18	600	600	13	107	48								
Volume Left	14	0	0	0	18	0	0	0	78	18								
Volume Right	0	0	0	49	0	0	0	13	23	24								
cSH	538	1700	1700	1700	629	1700	1700	1700	182	203								
Volume to Capacity	0.03	0.29	0.29	0.03	0.03	0.35	0.35	0.01	0.59	0.24								
Queue Length 95th (ft)	2	0	0	0	2	0	0	0	80	22								
Control Delay (s)	11.9	0.0	0.0	0.0	10.9	0.0	0.0	0.0	49.9	28.1								
Lane LOS	B				B				E		D							
Approach Delay (s)	0.2				0.2				49.9		28.1							
Approach LOS									E		D							
Intersection Summary																		
Average Delay				2.9														
Intersection Capacity Utilization				46.5%			ICU Level of Service			A								
Analysis Period (min)				15														

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

457: Wyse Fork Rd/Caswell Rd & US 70
 2040 No-Build Alternative PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	1080	71	21	885	16	44	5	16	11	5	13
Future Volume (vph)	22	1080	71	21	885	16	44	5	16	11	5	13
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		175	200		50	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1671	3343	1495	1656	3312	1482	0	1710	0	0	1705	0
Flt Permitted	0.950			0.950				0.968			0.982	
Satd. Flow (perm)	1671	3343	1495	1656	3312	1482	0	1710	0	0	1705	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1012			1011			1002			1036	
Travel Time (s)		12.5			12.5			12.4			12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	8%	8%	8%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1200	79	23	983	18	0	73	0	0	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		42			42			6			6	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.9%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	1080	71	21	885	16	44	5	16	11	5	13
Future Volume (Veh/h)	22	1080	71	21	885	16	44	5	16	11	5	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	24	1200	79	23	983	18	49	6	18	12	6	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		1			1							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1001			1279			1802	2295	600	1698	2356	492
vC1, stage 1 conf vol							1248	1248		1029	1029	
vC2, stage 2 conf vol							554	1047		669	1327	
vCu, unblocked vol	1001			1279			1802	2295	600	1698	2356	492
tC, single (s)	4.3			4.3			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)							6.6	5.6		6.6	5.6	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			62	95	96	92	95	97
cM capacity (veh/h)	652			502			127	127	439	151	119	520

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	24	600	600	79	23	492	492	18	73	32
Volume Left	24	0	0	0	23	0	0	0	49	12
Volume Right	0	0	0	79	0	0	0	18	18	14
cSH	652	1700	1700	1700	502	1700	1700	1700	154	204
Volume to Capacity	0.04	0.35	0.35	0.05	0.05	0.29	0.29	0.01	0.47	0.16
Queue Length 95th (ft)	3	0	0	0	4	0	0	0	55	14
Control Delay (s)	10.7	0.0	0.0	0.0	12.5	0.0	0.0	0.0	47.7	25.9
Lane LOS	B				B				E	D
Approach Delay (s)	0.2				0.3				47.7	25.9
Approach LOS									E	D

Intersection Summary	
Average Delay	2.0
Intersection Capacity Utilization	42.9%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

458: Caswell Rd & British Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	7	17	4	17	28	4	4	14	11	4	22	11
Future Volume (vph)	7	17	4	17	28	4	4	14	11	4	22	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1790	0	0	1795	0	0	1740	0	0	1760	0
Flt Permitted		0.987			0.983			0.994			0.995	
Satd. Flow (perm)	0	1790	0	0	1795	0	0	1740	0	0	1760	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1017			1051			1020			1015	
Travel Time (s)		12.6			13.0			12.6			12.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	54	0	0	32	0	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.1%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	7	17	4	17	28	4	4	14	11	4	22	11
Future Volume (Veh/h)	7	17	4	17	28	4	4	14	11	4	22	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	19	4	19	31	4	4	16	12	4	24	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	35			23			132	110	21	128	110	33
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			23			132	110	21	128	110	33
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	98	99	100	97	99
cM capacity (veh/h)	1570			1586			798	765	1054	809	765	1038

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	54	32	40
Volume Left	8	19	4	4
Volume Right	4	4	12	12
cSH	1570	1586	857	835
Volume to Capacity	0.01	0.01	0.04	0.05
Queue Length 95th (ft)	0	1	3	4
Control Delay (s)	1.9	2.6	9.4	9.5
Lane LOS	A	A	A	A
Approach Delay (s)	1.9	2.6	9.4	9.5
Approach LOS			A	A

Intersection Summary			
Average Delay		5.6	
Intersection Capacity Utilization	14.1%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

458: Caswell Rd & British Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	11	28	4	11	17	4	4	22	17	4	14	7
Future Volume (vph)	11	28	4	11	17	4	4	22	17	4	14	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1801	0	0	1786	0	0	1736	0	0	1760	0
Flt Permitted		0.987			0.983			0.996			0.993	
Satd. Flow (perm)	0	1801	0	0	1786	0	0	1736	0	0	1760	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		1017			1051			1020			1015	
Travel Time (s)		12.6			13.0			12.6			12.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	35	0	0	47	0	0	28	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	11	28	4	11	17	4	4	22	17	4	14	7
Future Volume (Veh/h)	11	28	4	11	17	4	4	22	17	4	14	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	31	4	12	19	4	4	24	19	4	16	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	23			35			118	104	33	133	104	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			35			118	104	33	133	104	21
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	97	98	99	98	99
cM capacity (veh/h)	1586			1570			826	772	1038	793	772	1054

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	47	35	47	28
Volume Left	12	12	4	4
Volume Right	4	4	19	8
cSH	1586	1570	867	839
Volume to Capacity	0.01	0.01	0.05	0.03
Queue Length 95th (ft)	1	1	4	3
Control Delay (s)	1.9	2.5	9.4	9.4
Lane LOS	A	A	A	A
Approach Delay (s)	1.9	2.5	9.4	9.4
Approach LOS			A	A

Intersection Summary			
Average Delay		5.6	
Intersection Capacity Utilization	13.3%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

459: US 70 & Tilghman Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	27	884	4	1079	9	11	43
Future Volume (vph)	27	884	4	1079	9	11	43
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		75	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1656	3312	1656	3312	1482	1645	0
Flt Permitted	0.950		0.950			0.990	
Satd. Flow (perm)	1656	3312	1656	3312	1482	1645	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1066		1064		1004	
Travel Time (s)		13.2		13.2		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	30	982	4	1199	10	60	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		45		45		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	27	884	4	1079	9	11	43
Future Volume (Veh/h)	27	884	4	1079	9	11	43
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	30	982	0	1199	10	12	48
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	1209		0			1750	600
vC1, stage 1 conf vol						1199	
vC2, stage 2 conf vol						551	
vCu, unblocked vol	1209		0			1750	600
tC, single (s)	4.3		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	94		0			93	89
cM capacity (veh/h)	535		0			181	444

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	30	491	491	600	600	10	0	60
Volume Left	30	0	0	0	0	0	0	12
Volume Right	0	0	0	0	0	10	0	48
cSH	535	1700	1700	1700	1700	1700	1700	344
Volume to Capacity	0.06	0.29	0.29	0.35	0.35	0.01	0.00	0.17
Queue Length 95th (ft)	4	0	0	0	0	0	0	16
Control Delay (s)	12.1	0.0	0.0	0.0	0.0	0.0	0.0	17.7
Lane LOS	B							C
Approach Delay (s)	0.4			0.0				17.7
Approach LOS								C

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	39.8%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

459: US 70 & Tilghman Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	44	1079	4	884	10	8	28
Future Volume (vph)	44	1079	4	884	10	8	28
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		125		75	0	0
Storage Lanes	1		1		1	1	0
Taper Length (ft)	100		100			100	
Satd. Flow (prot)	1656	3312	1656	3312	1482	1649	0
Flt Permitted	0.950		0.950			0.989	
Satd. Flow (perm)	1656	3312	1656	3312	1482	1649	0
Link Speed (mph)		55		55		55	
Link Distance (ft)		1066		1064		1004	
Travel Time (s)		13.2		13.2		12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	2%	2%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	49	1199	4	982	11	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Left	R NA	Left	Right	Left	Right
Median Width(ft)		45		45		24	
Link Offset(ft)		0		0		0	
Crosswalk Width(ft)		16		16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9	15	9
Sign Control		Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.5%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass 459: US 70 & Tilghman Rd
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis 2040 No-Build Alternative PM Peak



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	44	1079	4	884	10	8	28
Future Volume (Veh/h)	44	1079	4	884	10	8	28
Sign Control		Free		Free		Stop	
Grade		0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	49	1199	0	982	11	9	31
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised		Raised			
Median storage (veh)		1		1			
Upstream signal (ft)							
pX, platoon unblocked			0.00				
vC, conflicting volume	993		0			1680	491
vC1, stage 1 conf vol						982	
vC2, stage 2 conf vol						698	
vCu, unblocked vol	993		0			1680	491
tC, single (s)	4.3		0.0			6.8	6.9
tC, 2 stage (s)						5.8	
tF (s)	2.3		0.0			3.5	3.3
p0 queue free %	92		0			96	94
cM capacity (veh/h)	651		0			202	523

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	49	600	600	491	491	11	0	40
Volume Left	49	0	0	0	0	0	0	9
Volume Right	0	0	0	0	0	11	0	31
cSH	651	1700	1700	1700	1700	1700	1700	386
Volume to Capacity	0.08	0.35	0.35	0.29	0.29	0.01	0.00	0.10
Queue Length 95th (ft)	6	0	0	0	0	0	0	9
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4
Lane LOS	B							C
Approach Delay (s)	0.4			0.0				15.4
Approach LOS								C

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization	46.5%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

460: Burkett Rd & US 70
 2040 No-Build Alternative AM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	874	17	4	1067	27	6
Future Volume (vph)	4	874	17	4	1067	27	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		175	175		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1656	3312	1482	1656	3312	1727	0
Flt Permitted	0.950			0.950		0.961	
Satd. Flow (perm)	1656	3312	1482	1656	3312	1727	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		999			1536	937	
Travel Time (s)		12.4			19.0	11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	971	19	4	1186	37	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		45			45	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.5%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↑↑	↗	↖	↑↑	↘	
Traffic Volume (veh/h)	4	874	17	4	1067	27	6
Future Volume (Veh/h)	4	874	17	4	1067	27	6
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	971	19	4	1186	30	7
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			990		1572	486
vC1, stage 1 conf vol						971	
vC2, stage 2 conf vol						601	
vCu, unblocked vol	0			990		1572	486
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			99		87	99
cM capacity (veh/h)	0			653		223	525

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	486	486	19	0	4	593	593	37
Volume Left	0	0	0	0	4	0	0	30
Volume Right	0	0	19	0	0	0	0	7
cSH	1700	1700	1700	1700	653	1700	1700	250
Volume to Capacity	0.29	0.29	0.01	0.00	0.01	0.35	0.35	0.15
Queue Length 95th (ft)	0	0	0	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	10.5	0.0	0.0	21.9
Lane LOS					B			C
Approach Delay (s)	0.0				0.0			21.9
Approach LOS								C

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization	39.5%		ICU Level of Service A
Analysis Period (min)	15		

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

460: Burkett Rd & US 70
 2040 No-Build Alternative PM Peak



Lane Group	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	4	1067	28	5	874	18	4
Future Volume (vph)	4	1067	28	5	874	18	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	175		175	175		0	0
Storage Lanes	1		1	1		1	0
Taper Length (ft)	100			100		100	
Satd. Flow (prot)	1656	3312	1482	1656	3312	1730	0
Flt Permitted	0.950			0.950		0.960	
Satd. Flow (perm)	1656	3312	1482	1656	3312	1730	0
Link Speed (mph)		55			55	55	
Link Distance (ft)		999			1536	937	
Travel Time (s)		12.4			19.0	11.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	3%	3%
Shared Lane Traffic (%)							
Lane Group Flow (vph)	4	1186	31	6	971	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		45			45	12	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.5%
Analysis Period (min)	15
	ICU Level of Service A






















Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	
Traffic Volume (veh/h)	4	1067	28	5	874	18	4
Future Volume (Veh/h)	4	1067	28	5	874	18	4
Sign Control		Free			Free	Stop	
Grade		0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1186	31	6	971	20	4
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		Raised			Raised		
Median storage (veh)		1			1		
Upstream signal (ft)							
pX, platoon unblocked	0.00						
vC, conflicting volume	0			1217		1684	593
vC1, stage 1 conf vol						1186	
vC2, stage 2 conf vol						498	
vCu, unblocked vol	0			1217		1684	593
tC, single (s)	0.0			4.3		6.9	7.0
tC, 2 stage (s)						5.9	
tF (s)	0.0			2.3		3.5	3.3
p0 queue free %	0			99		89	99
cM capacity (veh/h)	0			531		189	446

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1
Volume Total	593	593	31	0	6	486	486	24
Volume Left	0	0	0	0	6	0	0	20
Volume Right	0	0	31	0	0	0	0	4
cSH	1700	1700	1700	1700	531	1700	1700	209
Volume to Capacity	0.35	0.35	0.02	0.00	0.01	0.29	0.29	0.11
Queue Length 95th (ft)	0	0	0	0	1	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	11.9	0.0	0.0	24.4
Lane LOS					B			C
Approach Delay (s)	0.0				0.1			24.4
Approach LOS								C

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization	39.5%		ICU Level of Service A
Analysis Period (min)	15		

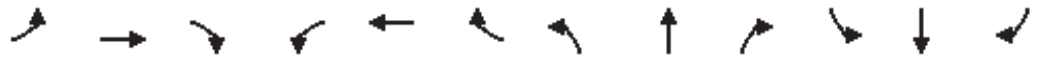
R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

461: US 70 & Kornegay St
 2040 No-Build Alternative AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	822	4	4	1007	35	6	4	5	46	4	72
Future Volume (vph)	45	822	4	4	1007	35	6	4	5	46	4	72
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	150		125	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1656	3309	0	1656	3312	1482	0	1755	0	0	1649	0
Flt Permitted	0.950			0.950				0.980			0.981	
Satd. Flow (perm)	1656	3309	0	1656	3312	1482	0	1755	0	0	1649	0
Link Speed (mph)		55			55			30			50	
Link Distance (ft)		1156			1037			281			1046	
Travel Time (s)		14.3			12.9			6.4			14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	1%	1%	1%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	917	0	4	1119	39	0	17	0	0	135	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		90			90			0			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	50.3%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	822	4	4	1007	35	6	4	5	46	4	72
Future Volume (Veh/h)	45	822	4	4	1007	35	6	4	5	46	4	72
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	50	913	4	4	1119	39	7	4	6	51	4	80
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage (veh)		3			3							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1158			917			1584	2181	458	1692	2144	560
vC1, stage 1 conf vol							1015	1015		1127	1127	
vC2, stage 2 conf vol							570	1166		564	1017	
vCu, unblocked vol	1158			917			1584	2181	458	1692	2144	560
tC, single (s)	4.3			4.3			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)							6.5	5.5		6.6	5.6	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			99			97	98	99	75	98	83
cM capacity (veh/h)	561			697			213	191	552	204	215	467

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	50	609	308	4	560	560	39	17	135
Volume Left	50	0	0	4	0	0	0	7	51
Volume Right	0	0	4	0	0	0	39	6	80
cSH	561	1700	1700	697	1700	1700	1700	263	307
Volume to Capacity	0.09	0.36	0.18	0.01	0.33	0.33	0.02	0.06	0.44
Queue Length 95th (ft)	7	0	0	0	0	0	0	5	54
Control Delay (s)	12.0	0.0	0.0	10.2	0.0	0.0	0.0	19.6	25.6
Lane LOS	B			B				C	D
Approach Delay (s)	0.6			0.0				19.6	25.6
Approach LOS								C	D

Intersection Summary

Average Delay	1.9
Intersection Capacity Utilization	50.3%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

461: US 70 & Kornegay St
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	1007	6	5	822	46	4	4	4	35	4	45
Future Volume (vph)	72	1007	6	5	822	46	4	4	4	35	4	45
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	150		125	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1656	3309	0	1656	3312	1482	0	1768	0	0	1658	0
Flt Permitted	0.950			0.950				0.984			0.979	
Satd. Flow (perm)	1656	3309	0	1656	3312	1482	0	1768	0	0	1658	0
Link Speed (mph)		55			55			30			50	
Link Distance (ft)		1156			1037			281			1046	
Travel Time (s)		14.3			12.9			6.4			14.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	1%	1%	1%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	1126	0	6	913	51	0	12	0	0	93	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		90			90			0			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.4%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	1007	6	5	822	46	4	4	4	35	4	45
Future Volume (Veh/h)	72	1007	6	5	822	46	4	4	4	35	4	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	80	1119	7	6	913	51	4	4	4	39	4	50
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised				Raised						
Median storage veh		3				3						
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	964			1126			1753	2258	563	1650	2211	456
vC1, stage 1 conf vol							1282	1282		925	925	
vC2, stage 2 conf vol							470	976		726	1286	
vCu, unblocked vol	964			1126			1753	2258	563	1650	2211	456
tC, single (s)	4.3			4.3			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)							6.5	5.5		6.6	5.6	
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			99			97	98	99	83	98	91
cM capacity (veh/h)	668			577			152	176	472	236	183	546
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	80	746	380	6	456	456	51	12	93			
Volume Left	80	0	0	6	0	0	0	4	39			
Volume Right	0	0	7	0	0	0	51	4	50			
cSH	668	1700	1700	577	1700	1700	1700	208	333			
Volume to Capacity	0.12	0.44	0.22	0.01	0.27	0.27	0.03	0.06	0.28			
Queue Length 95th (ft)	10	0	0	1	0	0	0	5	28			
Control Delay (s)	11.1	0.0	0.0	11.3	0.0	0.0	0.0	23.3	19.9			
Lane LOS	B			B				C	C			
Approach Delay (s)	0.7			0.1				23.3	19.9			
Approach LOS								C	C			
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			48.4%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

462: N West St & Kornegay St
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	27	27	10	12	45	17	8	4	6	18	4	46
Future Volume (vph)	27	27	10	12	45	17	8	4	6	18	4	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1768	0	0	1773	0	0	1719	0	0	1669	0
Flt Permitted		0.979			0.992			0.978			0.987	
Satd. Flow (perm)	0	1768	0	0	1773	0	0	1719	0	0	1669	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1037			988			846			947	
Travel Time (s)		20.2			19.2			16.5			18.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	0	0	82	0	0	20	0	0	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.8%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	27	27	10	12	45	17	8	4	6	18	4	46
Future Volume (Veh/h)	27	27	10	12	45	17	8	4	6	18	4	46
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	30	30	11	13	50	19	9	4	7	20	4	51
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	69			41			234	190	36	190	186	60
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	69			41			234	190	36	190	186	60
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			99	99	99	97	99	95
cM capacity (veh/h)	1526			1562			665	683	1034	745	688	1006
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	71	82	20	75								
Volume Left	30	13	9	20								
Volume Right	11	19	7	51								
cSH	1526	1562	764	900								
Volume to Capacity	0.02	0.01	0.03	0.08								
Queue Length 95th (ft)	2	1	2	7								
Control Delay (s)	3.2	1.2	9.8	9.4								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.2	1.2	9.8	9.4								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			18.8%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

462: N West St & Kornegay St
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	46	45	8	6	27	18	10	4	12	17	4	27
Future Volume (vph)	46	45	8	6	27	18	10	4	12	17	4	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1782	0	0	1747	0	0	1696	0	0	1690	0
Flt Permitted		0.977			0.994			0.981			0.982	
Satd. Flow (perm)	0	1782	0	0	1747	0	0	1696	0	0	1690	0
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1037			988			846			947	
Travel Time (s)		20.2			19.2			16.5			18.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	57	0	0	28	0	0	53	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	22.3%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	46	45	8	6	27	18	10	4	12	17	4	27
Future Volume (Veh/h)	46	45	8	6	27	18	10	4	12	17	4	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	50	9	7	30	20	11	4	13	19	4	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	50			59			242	220	54	226	215	40
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	50			59			242	220	54	226	215	40
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			98	99	99	97	99	97
cM capacity (veh/h)	1550			1538			666	651	1010	697	657	1031

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	110	57	28	53
Volume Left	51	7	11	19
Volume Right	9	20	13	30
cSH	1550	1538	788	849
Volume to Capacity	0.03	0.00	0.04	0.06
Queue Length 95th (ft)	3	0	3	5
Control Delay (s)	3.6	0.9	9.7	9.5
Lane LOS	A	A	A	A
Approach Delay (s)	3.6	0.9	9.7	9.5
Approach LOS			A	A

Intersection Summary			
Average Delay		4.9	
Intersection Capacity Utilization	22.3%		ICU Level of Service
Analysis Period (min)	15		A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

1430: US 70 & Hillcrest Rd
 2040 No-Build Alternative AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↗	↘	
Traffic Volume (vph)	0	0	1804	397	205	0
Future Volume (vph)	0	0	1804	397	205	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			275	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	3406	1524	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	3406	1524	1752	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		676	1073		656	
Travel Time (s)		10.2	16.3		12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	6%	6%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	2004	441	228	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	R NA	Left	Right	L NA	Right
Median Width(ft)		64	48		12	
Link Offset(ft)		0	8		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	67.9%
Analysis Period (min)	15
	ICU Level of Service C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (veh/h)	0	0	1804	397	205	0
Future Volume (Veh/h)	0	0	1804	397	205	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	2004	441	228	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2004				2004	1002
vC1, stage 1 conf vol					2004	
vC2, stage 2 conf vol					0	
vCu, unblocked vol	2004				2004	1002
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	100
cM capacity (veh/h)	271				87	239

Direction, Lane #	WB 1	WB 2	WB 3	SB 1
Volume Total	1002	1002	441	228
Volume Left	0	0	0	228
Volume Right	0	0	441	0
cSH	1700	1700	1700	87
Volume to Capacity	0.59	0.59	0.26	2.62
Queue Length 95th (ft)	0	0	0	539
Control Delay (s)	0.0	0.0	0.0	835.8
Lane LOS				F
Approach Delay (s)	0.0			835.8
Approach LOS				F

Intersection Summary			
Average Delay		71.3	
Intersection Capacity Utilization		67.9%	ICU Level of Service C
Analysis Period (min)		15	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

1430: US 70 & Hillcrest Rd
 2040 No-Build Alternative PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (vph)	0	0	1225	205	397	0
Future Volume (vph)	0	0	1225	205	397	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			275	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	100				100	
Satd. Flow (prot)	0	0	3406	1524	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	3406	1524	1752	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		676	1073		656	
Travel Time (s)		10.2	16.3		12.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	6%	6%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1361	228	441	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	R NA	Left	Right	L NA	Right
Median Width(ft)		64	48		12	
Link Offset(ft)		0	8		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.5%
Analysis Period (min)	15
	ICU Level of Service B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑	↑	↑	
Traffic Volume (veh/h)	0	0	1225	205	397	0
Future Volume (Veh/h)	0	0	1225	205	397	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	1361	228	441	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		Raised	Raised			
Median storage (veh)		2	1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1361				1361	680
vC1, stage 1 conf vol					1361	
vC2, stage 2 conf vol					0	
vCu, unblocked vol	1361				1361	680
tC, single (s)	4.2				6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	100
cM capacity (veh/h)	486				196	391

Direction, Lane #	WB 1	WB 2	WB 3	SB 1
Volume Total	680	680	228	441
Volume Left	0	0	0	441
Volume Right	0	0	228	0
cSH	1700	1700	1700	196
Volume to Capacity	0.40	0.40	0.13	2.24
Queue Length 95th (ft)	0	0	0	881
Control Delay (s)	0.0	0.0	0.0	614.7
Lane LOS				F
Approach Delay (s)	0.0			614.7
Approach LOS				F

Intersection Summary			
Average Delay		133.5	
Intersection Capacity Utilization		62.5%	ICU Level of Service
Analysis Period (min)		15	B

**2040 No-Build Alternative
SimTraffic Reports**

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Summary of All Intervals

Run Number	1	2	3	4	Build Alternative AM Peak	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	66580	67039	66234	66568	66735	66405
Vehs Exited	66158	66558	65824	66245	66195	66089
Starting Vehs	1546	1538	1558	1556	1530	1634
Ending Vehs	1968	2019	1968	1879	2070	1950
Travel Distance (mi)	43042	43398	42924	43240	43173	43065
Travel Time (hr)	2610.4	2472.0	2468.2	2488.3	2484.4	2458.3
Total Delay (hr)	1692.0	1544.4	1552.1	1564.3	1561.7	1537.8
Total Stops	31526	31868	29246	29283	29421	29741
Fuel Used (gal)	1841.7	1819.5	1806.7	1818.6	1811.2	1808.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build Alternative AM Peak	Avg
Vehs Entered	66580	67039	66234	66568	66735	66405
Vehs Exited	66158	66558	65824	66245	66195	66089
Starting Vehs	1546	1538	1558	1556	1530	1634
Ending Vehs	1968	2019	1968	1879	2070	1950
Travel Distance (mi)	43042	43398	42924	43240	43173	43065
Travel Time (hr)	2610.4	2472.0	2468.2	2488.3	2484.4	2458.3
Total Delay (hr)	1692.0	1544.4	1552.1	1564.3	1561.7	1537.8
Total Stops	31526	31868	29246	29283	29421	29741
Fuel Used (gal)	1841.7	1819.5	1806.7	1818.6	1811.2	1808.7

Intersection: 401: Jenny Lind Rd & NC 903

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	92	25
Average Queue (ft)	43	2
95th Queue (ft)	73	14
Link Distance (ft)	1281	577
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 402: NC 903 & US 70 EB Ramps

Movement	EB	NB	SB
Directions Served	LT	R	L
Maximum Queue (ft)	64	14	35
Average Queue (ft)	30	1	8
95th Queue (ft)	52	8	29
Link Distance (ft)	1276		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		150	225
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 403: NC 903 & US 70 WB Ramps

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	72	9	38	7
Average Queue (ft)	30	0	8	0
95th Queue (ft)	58	7	28	4
Link Distance (ft)	1330			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100	250	150
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Intersection: 404: US 70 & Washington St

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	39	32	985
Average Queue (ft)	10	4	969
95th Queue (ft)	33	20	993
Link Distance (ft)			967
Upstream Blk Time (%)			98
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	125	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 405: Jim Sutton Rd/Willie Measley Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (ft)	218	369	387	30	70	376	411	227	150	399
Average Queue (ft)	67	187	194	2	16	197	208	24	75	211
95th Queue (ft)	159	325	337	13	46	322	336	121	136	369
Link Distance (ft)		1587	1587			1898	1898		936	2725
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250			450	275			150		
Storage Blk Time (%)		3	0			2	13			
Queuing Penalty (veh)		3	0			0	8			

Intersection: 406: Willie Measley Rd & Fields Station Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	70	36	33	2
Average Queue (ft)	28	12	2	0
95th Queue (ft)	51	34	15	2
Link Distance (ft)	1311	1139	2725	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 407: Ken's Grill Driveway/Norbert Hill Rd & US 70

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	L	LTR	LTR
Maximum Queue (ft)	35	4	12	77	655
Average Queue (ft)	6	0	1	34	377
95th Queue (ft)	23	3	6	82	741
Link Distance (ft)		1898		92	921
Upstream Blk Time (%)				4	0
Queuing Penalty (veh)				0	0
Storage Bay Dist (ft)	175		150		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 408: Harold Sutton Rd & Barwick Station Rd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	26
Average Queue (ft)	6
95th Queue (ft)	24
Link Distance (ft)	1039
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 409: Barwick Station Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	30	39	186
Average Queue (ft)	6	7	95
95th Queue (ft)	22	28	250
Link Distance (ft)			1080
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 410: US 70 & Albert Sugg Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	31	25	299
Average Queue (ft)	5	4	143
95th Queue (ft)	22	18	424
Link Distance (ft)			1016
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 411: Albert Sugg Rd & Fields Station Rd

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	26	26
Average Queue (ft)	9	11
95th Queue (ft)	27	30
Link Distance (ft)	790	948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 412: Harold Sutton Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	27	70	310
Average Queue (ft)	3	18	148
95th Queue (ft)	16	51	462
Link Distance (ft)			1030
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	200	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 413: Kennedy Home Rd/Eason Rd & US 70

Movement	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	L	T	T	R	LTR	LTR
Maximum Queue (ft)	41	6	145	316	264	12	944	938
Average Queue (ft)	8	0	80	72	37	0	849	810
95th Queue (ft)	29	3	154	261	211	7	1120	1139
Link Distance (ft)		1158		834	834		933	934
Upstream Blk Time (%)							72	51
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)	175		50			50		
Storage Blk Time (%)			60			0		
Queuing Penalty (veh)			466			0		

Intersection: 414: US 70 & Banks School Rd

Movement	EB	EB	WB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	194	47	7	70
Average Queue (ft)	68	3	0	12
95th Queue (ft)	149	50	4	49
Link Distance (ft)		834	1085	911
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	400			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 415: US 70 & Innovation Way

Movement	SB
Directions Served	R
Maximum Queue (ft)	52
Average Queue (ft)	3
95th Queue (ft)	29
Link Distance (ft)	1392
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 416: Industrial Dr & Sanderson Way

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LT	LTR	LT	R	L	TR
Maximum Queue (ft)	57	68	93	86	71	63
Average Queue (ft)	15	16	35	5	19	32
95th Queue (ft)	42	48	70	39	45	56
Link Distance (ft)	945	782	545	545		1949
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					150	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 417: Industrial Dr & Innovation Way

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	69	43
Average Queue (ft)	38	12
95th Queue (ft)	61	37
Link Distance (ft)	1392	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 418: Industrial Dr & Smithfield Way

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	25	84
Average Queue (ft)	2	40
95th Queue (ft)	14	65
Link Distance (ft)	937	1370
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 419: Sanderson Way & US 70

Movement	NB
Directions Served	R
Maximum Queue (ft)	26
Average Queue (ft)	1
95th Queue (ft)	20
Link Distance (ft)	782
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 420: Shopping Center Dr/Pinelawn Cemetery Dr & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	34	8	10	16	486	632	497	232	75	242
Average Queue (ft)	5	0	0	1	306	181	120	219	3	140
95th Queue (ft)	22	5	6	9	547	647	567	237	38	277
Link Distance (ft)		1045	1045			816	816	225		259
Upstream Blk Time (%)						0	0	99		15
Queuing Penalty (veh)						3	4	0		0
Storage Bay Dist (ft)	150			150	400				100	
Storage Blk Time (%)					27	1		100	0	
Queuing Penalty (veh)					205	1		185	0	

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	206	377	348	58	324	627	624	362	386	225	398	470
Average Queue (ft)	96	254	248	2	148	394	395	140	290	192	190	251
95th Queue (ft)	191	340	332	45	307	679	677	377	470	275	358	425
Link Distance (ft)		816	816			887	887		364			548
Upstream Blk Time (%)						1	1		32			1
Queuing Penalty (veh)						5	8		0			0
Storage Bay Dist (ft)	300			250	225			450		125	325	
Storage Blk Time (%)	0	2	4		2	22	6		37	55	0	81
Queuing Penalty (veh)	0	2	2		18	30	13		66	97	0	155

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	200
Average Queue (ft)	132
95th Queue (ft)	261
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	4
Queuing Penalty (veh)	10

Intersection: 422: Hill Farm Rd & Smithfield Way

Movement	EB	EB	WB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	L	T	R
Maximum Queue (ft)	51	59	30	63	9	3	10
Average Queue (ft)	12	20	10	22	0	0	0
95th Queue (ft)	34	40	31	50	5	2	5
Link Distance (ft)	878		1010			760	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		75		75	200		100
Storage Blk Time (%)	0	0		0			
Queuing Penalty (veh)	0	0		0			

Intersection: 423: Hill Farm Rd & Banks School Rd

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	17	106	84	112
Average Queue (ft)	1	38	31	42
95th Queue (ft)	8	80	64	76
Link Distance (ft)	586		622	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)	0		0	
Queuing Penalty (veh)	0		1	

Intersection: 424: Sheffield Dr/Walmart Dr & US 70

Movement	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	L	T	T	R	R	R
Maximum Queue (ft)	53	130	537	326	5	66	275
Average Queue (ft)	11	47	22	23	0	5	242
95th Queue (ft)	35	100	215	217	4	31	264
Link Distance (ft)			960	960	960	356	219
Upstream Blk Time (%)							96
Queuing Penalty (veh)							0
Storage Bay Dist (ft)	225	250					
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 425: US 70 & US 258

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	96	105	290	291	210	218	655	651	644	349	526	63
Average Queue (ft)	44	56	110	129	38	15	528	542	220	242	295	2
95th Queue (ft)	82	96	216	238	129	113	740	745	610	379	530	49
Link Distance (ft)			960	960	960		598	598	598		2293	2293
Upstream Blk Time (%)							9	12	2			
Queuing Penalty (veh)							74	101	17			
Storage Bay Dist (ft)	450	450					300				250	
Storage Blk Time (%)							30			22	31	
Queuing Penalty (veh)							1			49	69	

Intersection: 426: US 258 & A St

Movement	WB	WB	SB
Directions Served	L	R	L
Maximum Queue (ft)	60	61	43
Average Queue (ft)	22	24	9
95th Queue (ft)	51	53	32
Link Distance (ft)	688		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50	125	
Storage Blk Time (%)	1	0	
Queuing Penalty (veh)	0	0	

Intersection: 427: US 258 & Banks School Rd/Sand Clay Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	244	78	135	41	57	158	132	97	20	204	164	257
Average Queue (ft)	149	10	50	8	16	69	47	21	4	97	45	112
95th Queue (ft)	227	49	103	28	44	128	101	63	14	168	121	210
Link Distance (ft)	1018			793			842	842	785		785	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150	300		50	400			350		450		
Storage Blk Time (%)	11			1	2							
Queuing Penalty (veh)	15			0	0							

Intersection: 428: Driveway/Ruby Tuesday & US 70

Movement	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	L	T	T	TR	R	R
Maximum Queue (ft)	21	67	484	475	452	48	73
Average Queue (ft)	3	7	137	147	95	16	23
95th Queue (ft)	15	53	428	440	366	40	57
Link Distance (ft)			525	525	525	128	166
Upstream Blk Time (%)			0	1	0		
Queuing Penalty (veh)			3	5	3		
Storage Bay Dist (ft)	300	150					
Storage Blk Time (%)			10				
Queuing Penalty (veh)			1				

Intersection: 429: US 70 & Mt Vernon Park Dr

Movement	EB	EB	EB	WB	WB	WB	WB	SB
Directions Served	L	T	T	U	T	T	TR	LR
Maximum Queue (ft)	59	230	212	36	422	412	359	122
Average Queue (ft)	19	81	97	3	184	171	116	57
95th Queue (ft)	49	184	195	18	355	364	275	105
Link Distance (ft)		525	525		861	861	861	340
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	175			75				
Storage Blk Time (%)		1			18			
Queuing Penalty (veh)		0			1			

Intersection: 430: Hillcrest Rd & US 70 Bus

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	R	LT	R
Maximum Queue (ft)	152	736	702	350	400	994	38	194	191	113	135
Average Queue (ft)	15	418	382	338	369	891	6	114	108	48	34
95th Queue (ft)	75	778	753	381	502	1237	24	181	173	122	127
Link Distance (ft)		785	785			949	449				348
Upstream Blk Time (%)		13	11			85					1
Queuing Penalty (veh)		0	0			0					0
Storage Bay Dist (ft)	75			300	300			225	225	75	
Storage Blk Time (%)	0	57		92	10	0		0	0	19	2
Queuing Penalty (veh)	0	7		288	31	0		0	0	4	1

Intersection: 431: NC 55 & Green Haynes Rd

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	49	47
Average Queue (ft)	19	7
95th Queue (ft)	40	31
Link Distance (ft)	1040	1026
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 432: NC 55 & N Croom Bland Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	17
Average Queue (ft)	7	1
95th Queue (ft)	23	8
Link Distance (ft)	1175	1014
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 433: NC 11 & Leslie R Stroud Rd

Movement	EB	NB	SB
Directions Served	LR	L	U
Maximum Queue (ft)	57	26	24
Average Queue (ft)	15	3	2
95th Queue (ft)	42	15	14
Link Distance (ft)	920		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		275	175
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 434: NC 11 & Green Haynes Rd/Albrittons Rd

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	TR	L	T	TR
Maximum Queue (ft)	491	155	31	10	24	2	4
Average Queue (ft)	282	49	7	0	6	0	0
95th Queue (ft)	689	119	25	7	18	1	3
Link Distance (ft)	1023	968		896		1015	1015
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)			225		325		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 435: NC 11 & NC 55/Tyree Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	T	L	T	TR	L	T	TR
Maximum Queue (ft)	325	58	74	107	10	269	243	57	171	205
Average Queue (ft)	178	2	23	37	0	143	106	14	92	114
95th Queue (ft)	285	32	61	79	5	237	208	43	152	188
Link Distance (ft)	922			958		977	977		2138	2138
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		75	125		225			150		
Storage Blk Time (%)	45			0		1			1	
Queuing Penalty (veh)	3			0		0			0	

Intersection: 436: NC 11 & Central Ave

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	57	749	32
Average Queue (ft)	22	25	5
95th Queue (ft)	49	414	23
Link Distance (ft)	910	2138	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			125
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 437: NC 11 & Edgewood Dr/Mary Beth Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	69	197	6	27
Average Queue (ft)	15	56	0	4
95th Queue (ft)	51	174	2	15
Link Distance (ft)	681	1085		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 438: NC 11 & Old Asphalt Rd

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (ft)	189	4	67	15
Average Queue (ft)	57	0	24	0
95th Queue (ft)	139	3	54	11
Link Distance (ft)	1000	1172		1097
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			0	0

Intersection: 439: NC 11 & US 70

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	338	381	571	536	233	375	798	768	233	324	375	1027
Average Queue (ft)	242	281	339	297	91	230	499	461	27	236	360	854
95th Queue (ft)	389	429	709	646	196	433	775	722	250	341	439	1233
Link Distance (ft)			975	975			989	989				983
Upstream Blk Time (%)			1	0			0					33
Queuing Penalty (veh)			0	0			0					0
Storage Bay Dist (ft)	325	325			475	275			600	275	275	
Storage Blk Time (%)	9	22	1	0		1	33	3		8	16	62
Queuing Penalty (veh)	38	96	3	1		8	53	2		25	47	391

Intersection: 439: NC 11 & US 70

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	993	46	217	404	381	337
Average Queue (ft)	813	8	47	256	223	133
95th Queue (ft)	1168	31	151	445	412	261
Link Distance (ft)	983			914	914	
Upstream Blk Time (%)	8					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)		400	400			400
Storage Blk Time (%)				7	4	
Queuing Penalty (veh)				3	7	

Intersection: 440: US 258 & Clarence Potter Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	26	12
Average Queue (ft)	6	1
95th Queue (ft)	22	10
Link Distance (ft)	975	1004
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 441: US 258 & Albrittons Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	63	52
Average Queue (ft)	17	7
95th Queue (ft)	43	28
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 442: US 258 & Ferguson Ln/Collier Loftin Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	43	103	12	51
Average Queue (ft)	11	39	1	14
95th Queue (ft)	35	75	9	37
Link Distance (ft)	454	977		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 443: US 258 & Old Asphalt Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	83	65
Average Queue (ft)	32	15
95th Queue (ft)	66	44
Link Distance (ft)	994	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	175	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 444: US 258/US 70 Bus & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	
Directions Served	L	T	T	T	L	T	T	R	L	T	T	R	
Maximum Queue (ft)	257	294	224	218	324	568	550	470	345	301	257	133	
Average Queue (ft)	129	139	133	120	43	330	336	30	203	137	127	21	
95th Queue (ft)	245	232	203	198	178	504	495	214	348	255	210	79	
Link Distance (ft)	627		627	627	1931			1931	1931	481			
Upstream Blk Time (%)													
Queuing Penalty (veh)													
Storage Bay Dist (ft)	225			225				400			400	275	
Storage Blk Time (%)	7	0	0		23			0			0	0	
Queuing Penalty (veh)	20	0	0		11			1			0	0	

Intersection: 444: US 258/US 70 Bus & US 70

Movement	SB	SB	SB	SB
Directions Served	L	L	T	TR
Maximum Queue (ft)	182	239	283	267
Average Queue (ft)	97	136	135	116
95th Queue (ft)	173	205	241	220
Link Distance (ft)			951	951
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	275	275		
Storage Blk Time (%)			1	
Queuing Penalty (veh)			3	

Intersection: 445: Meadowbrook Dr/Family Dollar Driveway & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	LTR
Maximum Queue (ft)	24	159	205	189	55	148	171	126	128	104	46
Average Queue (ft)	3	59	83	75	13	34	51	35	58	28	11
95th Queue (ft)	15	128	173	155	40	105	133	99	105	73	36
Link Distance (ft)		1931	1931	1931		2404	2404	2404		961	211
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	225				225				75		
Storage Blk Time (%)									9	1	
Queuing Penalty (veh)									3	1	

Intersection: 446: NC 58 & Elijah Loftin Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	43	8	48
Average Queue (ft)	20	15	1	5
95th Queue (ft)	44	33	6	25
Link Distance (ft)	1033	1028	957	1059
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 447: NC 58 & Woodington Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	55	20
Average Queue (ft)	22	1
95th Queue (ft)	43	11
Link Distance (ft)	1028	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 448: NC 58 & Will Baker Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	66	28
Average Queue (ft)	27	3
95th Queue (ft)	48	17
Link Distance (ft)	1006	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 449: NC 58 & Collier Loftin Rd

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	68	30	37
Average Queue (ft)	30	10	4
95th Queue (ft)	53	30	22
Link Distance (ft)	992		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	75
Storage Blk Time (%)	2	0	0
Queuing Penalty (veh)	0	0	0

Intersection: 450: NC 58 & Lenoir CC Southern Driveway

Movement	NB	SB
Directions Served	TR	L
Maximum Queue (ft)	10	65
Average Queue (ft)	0	24
95th Queue (ft)	8	51
Link Distance (ft)	1147	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 451: NC 58 & Lenoir CC Northern Driveway

Movement	WB	WB
Directions Served	L	R
Maximum Queue (ft)	31	86
Average Queue (ft)	5	43
95th Queue (ft)	24	70
Link Distance (ft)	579	579
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	LT	R	LT
Maximum Queue (ft)	199	386	394	34	181	321	406	365	323	360	200	226
Average Queue (ft)	52	188	197	1	70	168	199	210	173	207	63	119
95th Queue (ft)	139	324	331	26	144	282	316	319	266	312	216	191
Link Distance (ft)		2404	2404	2404			1703	1703		725		573
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100				225	225			275		100	
Storage Blk Time (%)	0	29				1	5		0	40		16
Queuing Penalty (veh)	0	12				6	21		2	164		12

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	159
Average Queue (ft)	73
95th Queue (ft)	135
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	6
Queuing Penalty (veh)	8

Intersection: 453: Lenoir CC Driveway & US 70

Movement	EB	WB	NB
Directions Served	R	L	R
Maximum Queue (ft)	7	38	95
Average Queue (ft)	0	5	38
95th Queue (ft)	6	24	71
Link Distance (ft)			364
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 454: US 70 & Neuse Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	121	19	881
Average Queue (ft)	46	2	656
95th Queue (ft)	97	12	1219
Link Distance (ft)			917
Upstream Blk Time (%)			50
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	350	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 455: Whaley Rd & US 70

Movement	EB	EB	WB	NB
Directions Served	U	R	L	LR
Maximum Queue (ft)	20	10	56	938
Average Queue (ft)	1	0	16	743
95th Queue (ft)	11	8	45	1146
Link Distance (ft)				894
Upstream Blk Time (%)				54
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	150	150	150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 456: US 70 & British Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	52	30	170
Average Queue (ft)	14	3	45
95th Queue (ft)	39	18	159
Link Distance (ft)			934
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 457: Wyse Fork Rd/Caswell Rd & US 70

Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	3	910	289
Average Queue (ft)	0	786	139
95th Queue (ft)	2	1092	304
Link Distance (ft)		891	936
Upstream Blk Time (%)		61	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)	150		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 458: Caswell Rd & British Rd

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	7	25	32
Average Queue (ft)	0	13	8
95th Queue (ft)	4	29	20
Link Distance (ft)	1000	985	963
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 459: US 70 & Tilghman Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	54	21	214
Average Queue (ft)	16	3	62
95th Queue (ft)	42	16	185
Link Distance (ft)			917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 460: Burkett Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	24	21	109
Average Queue (ft)	2	2	39
95th Queue (ft)	12	12	92
Link Distance (ft)			858
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 461: US 70 & Kornegay St

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	R	LTR	LTR
Maximum Queue (ft)	91	8	16	8	98	960
Average Queue (ft)	32	0	2	0	34	646
95th Queue (ft)	72	5	10	4	106	1194
Link Distance (ft)		1096			195	938
Upstream Blk Time (%)					3	33
Queuing Penalty (veh)					0	0
Storage Bay Dist (ft)	225		150	125		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 462: N West St & Kornegay St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	14	31	55
Average Queue (ft)	2	1	13	28
95th Queue (ft)	13	9	37	46
Link Distance (ft)	1008	959	818	918
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 1430: US 70 & Hillcrest Rd

Movement	SB
Directions Served	L
Maximum Queue (ft)	465
Average Queue (ft)	453
95th Queue (ft)	461
Link Distance (ft)	449
Upstream Blk Time (%)	72
Queuing Penalty (veh)	151
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 3044

Summary of All Intervals

Run Number	1	2	3	4	Build Alternative	Alternative PM Peak	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	65451	64758	66152	65892	65703	66391	65726
Vehs Exited	64620	64086	65586	65138	65230	65675	65057
Starting Vehs	1490	1551	1519	1448	1580	1483	1472
Ending Vehs	2321	2223	2085	2202	2053	2199	2147
Travel Distance (mi)	42394	41891	43085	42803	42722	43097	42665
Travel Time (hr)	2721.2	2850.2	2592.8	2567.2	2364.5	2516.5	2602.1
Total Delay (hr)	1818.5	1959.6	1673.4	1655.3	1453.1	1598.8	1693.1
Total Stops	33385	30536	32443	32333	30335	31156	31689
Fuel Used (gal)	1854.2	1866.2	1843.2	1832.8	1774.6	1825.0	1832.7

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	Build Alternative	Alternative PM Peak	Avg
Vehs Entered	65451	64758	66152	65892	65703	66391	65726
Vehs Exited	64620	64086	65586	65138	65230	65675	65057
Starting Vehs	1490	1551	1519	1448	1580	1483	1472
Ending Vehs	2321	2223	2085	2202	2053	2199	2147
Travel Distance (mi)	42394	41891	43085	42803	42722	43097	42665
Travel Time (hr)	2721.2	2850.2	2592.8	2567.2	2364.5	2516.5	2602.1
Total Delay (hr)	1818.5	1959.6	1673.4	1655.3	1453.1	1598.8	1693.1
Total Stops	33385	30536	32443	32333	30335	31156	31689
Fuel Used (gal)	1854.2	1866.2	1843.2	1832.8	1774.6	1825.0	1832.7

Intersection: 401: Jenny Lind Rd & NC 903

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	76	30	7
Average Queue (ft)	35	3	0
95th Queue (ft)	63	16	5
Link Distance (ft)	1281	577	432
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 402: NC 903 & US 70 EB Ramps

Movement	EB	EB	NB	SB
Directions Served	LT	R	R	L
Maximum Queue (ft)	68	9	4	39
Average Queue (ft)	26	1	0	10
95th Queue (ft)	51	10	3	32
Link Distance (ft)	1276			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100	150	225
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Intersection: 403: NC 903 & US 70 WB Ramps

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	73	8	39	4
Average Queue (ft)	34	0	10	0
95th Queue (ft)	59	6	30	3
Link Distance (ft)	1330			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100	250	150
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Intersection: 404: US 70 & Washington St

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	54	29	989
Average Queue (ft)	13	3	932
95th Queue (ft)	40	16	1103
Link Distance (ft)			967
Upstream Blk Time (%)			83
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	125	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 405: Jim Sutton Rd/Willie Measley Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (ft)	250	269	235	29	216	422	451	250	167	371
Average Queue (ft)	108	118	120	2	34	230	248	49	60	215
95th Queue (ft)	227	217	209	15	111	375	404	182	124	496
Link Distance (ft)		1587	1587			1898	1898		936	2725
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250			450	275			150		
Storage Blk Time (%)	2	0				4	18			
Queuing Penalty (veh)	14	0				2	17			

Intersection: 406: Willie Measley Rd & Fields Station Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	47	51	26	6
Average Queue (ft)	24	17	2	0
95th Queue (ft)	40	40	14	3
Link Distance (ft)	1311	1139	2725	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 407: Ken's Grill Driveway/Norbert Hill Rd & US 70

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	T	L	R	LTR	LTR
Maximum Queue (ft)	75	7	16	8	94	541
Average Queue (ft)	20	0	1	0	54	280
95th Queue (ft)	61	5	8	6	116	522
Link Distance (ft)		1898			92	921
Upstream Blk Time (%)					37	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	175		150	200		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 408: Harold Sutton Rd & Barwick Station Rd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	25
Average Queue (ft)	9
95th Queue (ft)	27
Link Distance (ft)	1039
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 409: Barwick Station Rd & US 70

Movement	EB	EB	WB	NB
Directions Served	U	TR	L	LR
Maximum Queue (ft)	45	4	47	109
Average Queue (ft)	5	0	9	34
95th Queue (ft)	24	3	32	106
Link Distance (ft)		1770		1080
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	175		175	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 410: US 70 & Albert Sugg Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	65	21	278
Average Queue (ft)	10	3	151
95th Queue (ft)	38	14	325
Link Distance (ft)			1016
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 411: Albert Sugg Rd & Fields Station Rd

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	26	26
Average Queue (ft)	14	9
95th Queue (ft)	32	26
Link Distance (ft)	790	948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 412: Harold Sutton Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	29	81	237
Average Queue (ft)	6	22	116
95th Queue (ft)	23	59	378
Link Distance (ft)			1030
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200	200	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 413: Kennedy Home Rd/Eason Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (ft)	168	457	395	116	149	771	787	7	935	937
Average Queue (ft)	64	131	119	10	123	466	467	0	732	652
95th Queue (ft)	204	519	494	104	189	1051	1102	5	1164	1081
Link Distance (ft)		1158	1158			834	834		933	934
Upstream Blk Time (%)						5	16		51	27
Queuing Penalty (veh)						47	165		0	0
Storage Bay Dist (ft)	175			250	50			50		
Storage Blk Time (%)	9	15	6		82	0				
Queuing Penalty (veh)	69	2	1		777	0				

Intersection: 414: US 70 & Banks School Rd

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	R
Maximum Queue (ft)	496	785	733	950	950	208	107
Average Queue (ft)	356	370	275	374	361	48	18
95th Queue (ft)	618	973	897	1190	1167	211	74
Link Distance (ft)		834	834	1085	1085		911
Upstream Blk Time (%)		9	3	21	19		
Queuing Penalty (veh)		76	25	0	0		
Storage Bay Dist (ft)	400					150	
Storage Blk Time (%)	53	2			28		
Queuing Penalty (veh)	415	2			9		

Intersection: 415: US 70 & Innovation Way

Movement	SB
Directions Served	R
Maximum Queue (ft)	23
Average Queue (ft)	1
95th Queue (ft)	15
Link Distance (ft)	1392
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 416: Industrial Dr & Sanderson Way

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LT	LTR	LT	R	L	TR
Maximum Queue (ft)	35	34	69	105	87	89
Average Queue (ft)	4	5	33	19	32	38
95th Queue (ft)	19	23	59	70	66	70
Link Distance (ft)	945	782	545	545		1949
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					150	
Storage Blk Time (%)						0
Queuing Penalty (veh)						0

Intersection: 417: Industrial Dr & Innovation Way

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	89	40
Average Queue (ft)	46	12
95th Queue (ft)	76	35
Link Distance (ft)	1392	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 418: Industrial Dr & Smithfield Way

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	53	70
Average Queue (ft)	0	9	31
95th Queue (ft)	3	34	53
Link Distance (ft)	889	937	1370
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 419: Sanderson Way & US 70

Movement	NB
Directions Served	R
Maximum Queue (ft)	182
Average Queue (ft)	14
95th Queue (ft)	97
Link Distance (ft)	782
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 420: Shopping Center Dr/Pinelawn Cemetery Dr & US 70

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	TR	LT	R	LTR
Maximum Queue (ft)	18	10	36	500	842	892	223	66	263
Average Queue (ft)	2	0	1	473	700	370	215	6	201
95th Queue (ft)	12	5	13	581	1148	1024	233	61	318
Link Distance (ft)		1045			816	816	225		259
Upstream Blk Time (%)					45	4	82		55
Queuing Penalty (veh)					328	30	0		0
Storage Bay Dist (ft)	150		150	400				100	
Storage Blk Time (%)				86	3		99	2	
Queuing Penalty (veh)				589	5		142	1	

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	L	LT
Maximum Queue (ft)	399	524	502	350	325	908	940	550	384	225	396	518
Average Queue (ft)	103	331	324	31	258	773	767	317	254	178	276	353
95th Queue (ft)	255	481	477	195	457	1109	1129	723	453	274	459	575
Link Distance (ft)		816	816			887	887		364			548
Upstream Blk Time (%)						30	25		26			8
Queuing Penalty (veh)						237	202		0			0
Storage Bay Dist (ft)	300			250	225			450		125	325	
Storage Blk Time (%)	0	9	12		31	68	44	0	35	52	2	83
Queuing Penalty (veh)	0	10	11		203	120	74	0	47	55	7	180

Intersection: 421: Sussex St/Hill Farm Rd & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	200
Average Queue (ft)	159
95th Queue (ft)	271
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	16
Queuing Penalty (veh)	48

Intersection: 422: Hill Farm Rd & Smithfield Way

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	L	TR	L
Maximum Queue (ft)	52	67	26	44	3	9
Average Queue (ft)	18	27	8	11	0	0
95th Queue (ft)	41	52	28	36	2	4
Link Distance (ft)	878		1010		920	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		75		75		200
Storage Blk Time (%)	0	0		0		
Queuing Penalty (veh)	0	0		0		

Intersection: 423: Hill Farm Rd & Banks School Rd

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	20	84	67	105
Average Queue (ft)	1	34	29	50
95th Queue (ft)	11	68	55	85
Link Distance (ft)	586		622	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		100	
Storage Blk Time (%)	0		0	
Queuing Penalty (veh)	0		0	

Intersection: 424: Sheffield Dr/Walmart Dr & US 70

Movement	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	T	R	R	R
Maximum Queue (ft)	62	9	2	350	984	978	920	52	261
Average Queue (ft)	17	0	0	185	504	502	356	3	182
95th Queue (ft)	48	5	2	418	1218	1221	1033	26	290
Link Distance (ft)	887			960		960	960	356	219
Upstream Blk Time (%)					10	11	1	60	
Queuing Penalty (veh)					56	63	4	0	
Storage Bay Dist (ft)	225		150		250				
Storage Blk Time (%)					51				
Queuing Penalty (veh)					63				

Intersection: 425: US 70 & US 258

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB	
Directions Served	L	L	T	T	T	U	T	T	R	L	L	R	
Maximum Queue (ft)	121	126	360	371	294	276	612	623	574	206	274	157	
Average Queue (ft)	59	74	165	186	77	18	418	421	228	123	133	25	
95th Queue (ft)	104	117	302	330	219	144	701	702	605	189	216	194	
Link Distance (ft)			960		960				598	598	598	2293	2293
Upstream Blk Time (%)							21	23	8				
Queuing Penalty (veh)							136		151	51			
Storage Bay Dist (ft)	450		450				300					250	
Storage Blk Time (%)				0				36		0			
Queuing Penalty (veh)				0				1		0			

Intersection: 426: US 258 & A St

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	L
Maximum Queue (ft)	44	54	11	53
Average Queue (ft)	13	20	0	11
95th Queue (ft)	39	48	6	36
Link Distance (ft)		688	2293	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50			125
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 427: US 258 & Banks School Rd/Sand Clay Rd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	249	364	178	29	56	169	169	144	35	164	129	209
Average Queue (ft)	183	49	59	4	13	73	66	39	5	87	27	97
95th Queue (ft)	262	223	141	18	40	134	134	100	19	148	82	173
Link Distance (ft)		1018			793		842	842		785	785	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150		300	50		400			350			450
Storage Blk Time (%)	18			0	2							
Queuing Penalty (veh)	25			0	0							

Intersection: 428: Driveway/Ruby Tuesday & US 70

Movement	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	L	T	T	TR	R	R
Maximum Queue (ft)	29	108	270	175	461	471	470	52	38
Average Queue (ft)	4	4	9	12	163	164	155	11	10
95th Queue (ft)	20	77	125	86	550	554	540	38	32
Link Distance (ft)		598	598		525	525	525	128	166
Upstream Blk Time (%)		0	0		13	15	13	0	
Queuing Penalty (veh)		0	0		83	99	88	0	
Storage Bay Dist (ft)	300			150					
Storage Blk Time (%)					26				
Queuing Penalty (veh)					2				

Intersection: 429: US 70 & Mt Vernon Park Dr

Movement	EB	EB	EB	WB	WB	WB	WB	SB
Directions Served	L	T	T	U	T	T	TR	LR
Maximum Queue (ft)	114	307	306	84	754	763	740	205
Average Queue (ft)	30	108	124	7	277	263	242	75
95th Queue (ft)	79	247	264	46	778	775	764	165
Link Distance (ft)		525	525		861	861	861	340
Upstream Blk Time (%)					14	15	14	0
Queuing Penalty (veh)					0	0	0	0
Storage Bay Dist (ft)	175			75				
Storage Blk Time (%)		2			28			
Queuing Penalty (veh)		0			1			

Intersection: 430: Hillcrest Rd & US 70 Bus

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LT	R	R	LT	R
Maximum Queue (ft)	174	334	290	350	400	998	37	135	116	87	52
Average Queue (ft)	21	226	190	349	396	966	6	64	55	25	13
95th Queue (ft)	97	311	274	353	445	1005	23	110	102	69	40
Link Distance (ft)		785	785			949	449				348
Upstream Blk Time (%)						86					
Queuing Penalty (veh)						0					
Storage Bay Dist (ft)	75			300	300			225	225	75	
Storage Blk Time (%)	0	52		99	2	0				2	0
Queuing Penalty (veh)	1	9		425	10	0				0	0

Intersection: 431: NC 55 & Green Haynes Rd

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	64	30
Average Queue (ft)	23	3
95th Queue (ft)	45	16
Link Distance (ft)	1040	1026
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 432: NC 55 & N Croom Bland Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	24
Average Queue (ft)	5	1
95th Queue (ft)	20	9
Link Distance (ft)	1175	1014
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 433: NC 11 & Leslie R Stroud Rd

Movement	EB	NB	SB
Directions Served	LR	L	U
Maximum Queue (ft)	33	33	20
Average Queue (ft)	11	3	2
95th Queue (ft)	30	19	12
Link Distance (ft)	920		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		275	175
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 434: NC 11 & Green Haynes Rd/Albrittons Rd

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	216	210	44	2	5	28	2	22
Average Queue (ft)	94	75	10	0	0	4	0	1
95th Queue (ft)	220	167	30	2	4	19	1	10
Link Distance (ft)	1023	968		896	896		1015	1015
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			225			325		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 435: NC 11 & NC 55/Tyree Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	T	L	T	TR	L	T	TR
Maximum Queue (ft)	220	58	144	161	9	169	136	65	284	307
Average Queue (ft)	121	2	54	59	0	59	19	13	167	199
95th Queue (ft)	199	32	110	119	5	123	76	43	257	290
Link Distance (ft)	922			958		977	977		2138	2138
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		75	125		225			150		
Storage Blk Time (%)	35		1	1		0			8	
Queuing Penalty (veh)	2		1	2		0			1	

Intersection: 436: NC 11 & Central Ave

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	42	39
Average Queue (ft)	16	7
95th Queue (ft)	41	28
Link Distance (ft)	910	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 437: NC 11 & Edgewood Dr/Mary Beth Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	48	94	6	30
Average Queue (ft)	10	27	0	5
95th Queue (ft)	36	68	3	19
Link Distance (ft)	681	1085		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 438: NC 11 & Old Asphalt Rd

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	114	4	71
Average Queue (ft)	33	0	29
95th Queue (ft)	77	3	56
Link Distance (ft)	1000	1172	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 439: NC 11 & US 70

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	190	425	896	849	575	375	773	716	117	299	335	586
Average Queue (ft)	73	250	541	500	300	263	382	323	4	159	236	356
95th Queue (ft)	166	496	824	772	568	424	687	612	90	260	388	720
Link Distance (ft)			975	975			989	989				983
Upstream Blk Time (%)			1	1			0					1
Queuing Penalty (veh)			0	0			0					0
Storage Bay Dist (ft)	325	325			475	275			600	275	275	
Storage Blk Time (%)			31	8	0	33	5	1		2	4	26
Queuing Penalty (veh)			56	51	2	144	9	0		2	5	91

Intersection: 439: NC 11 & US 70

Movement	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	L	T	T	R
Maximum Queue (ft)	562	96	500	821	785	498
Average Queue (ft)	386	28	250	604	575	282
95th Queue (ft)	672	71	600	979	976	604
Link Distance (ft)	983			914	914	
Upstream Blk Time (%)				16	19	
Queuing Penalty (veh)				0	0	
Storage Bay Dist (ft)		400	400			400
Storage Blk Time (%)			0	50	41	
Queuing Penalty (veh)			0	46	93	

Intersection: 440: US 258 & Clarence Potter Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	21
Average Queue (ft)	6	1
95th Queue (ft)	23	12
Link Distance (ft)	975	1004
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 441: US 258 & Albrittons Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	42	38
Average Queue (ft)	11	9
95th Queue (ft)	29	30
Link Distance (ft)	925	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		75
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 442: US 258 & Ferguson Ln/Collier Loftin Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	40	113	23	44
Average Queue (ft)	9	46	2	11
95th Queue (ft)	31	86	12	32
Link Distance (ft)	454	977		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 443: US 258 & Old Asphalt Rd

Movement	EB	NB	SB	B1007	B1007
Directions Served	LR	L	TR	T	T
Maximum Queue (ft)	133	44	10	78	71
Average Queue (ft)	47	9	0	3	2
95th Queue (ft)	95	34	6	60	55
Link Distance (ft)	994		508	481	481
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)		175			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 444: US 258/US 70 Bus & US 70

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	R	L	T	T
Maximum Queue (ft)	222	310	333	364	232	206	425	431	142	245	160	156
Average Queue (ft)	92	200	219	215	10	33	180	192	5	123	74	89
95th Queue (ft)	175	283	307	323	104	110	343	354	79	213	139	145
Link Distance (ft)		627	627	627			1931	1931	1931			481
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				250	225				400	400	
Storage Blk Time (%)	0	4		5			7					
Queuing Penalty (veh)	0	5		13			3					

Intersection: 444: US 258/US 70 Bus & US 70

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	TR
Maximum Queue (ft)	82	242	285	305	267
Average Queue (ft)	19	146	184	184	150
95th Queue (ft)	57	217	262	275	236
Link Distance (ft)				951	951
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	275	275	275		
Storage Blk Time (%)		0	0	1	
Queuing Penalty (veh)		0	1	5	

Intersection: 445: Meadowbrook Dr/Family Dollar Driveway & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	
Directions Served	L	T	T	TR	L	T	T	TR	L	TR	LTR	
Maximum Queue (ft)	18	152	179	184	70	95	134	104	104	95	42	
Average Queue (ft)	2	30	49	43	19	12	26	18	43	25	9	
95th Queue (ft)	10	104	145	132	52	53	91	65	83	66	31	
Link Distance (ft)		1931	1931	1931		2404	2404	2404		961	211	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	225				225				75			
Storage Blk Time (%)									4	1		
Queuing Penalty (veh)									1	0		

Intersection: 446: NC 58 & Elijah Loftin Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	42	34	30	53
Average Queue (ft)	17	11	2	6
95th Queue (ft)	39	27	14	27
Link Distance (ft)	1033	1028	957	1059
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 447: NC 58 & Woodington Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	40	27
Average Queue (ft)	18	3
95th Queue (ft)	39	15
Link Distance (ft)	1028	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 448: NC 58 & Will Baker Rd

Movement	EB	NB
Directions Served	LR	L
Maximum Queue (ft)	62	34
Average Queue (ft)	22	7
95th Queue (ft)	45	27
Link Distance (ft)	1006	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 449: NC 58 & Collier Loftin Rd

Movement	EB	EB	NB	SB
Directions Served	L	R	L	TR
Maximum Queue (ft)	61	28	33	3
Average Queue (ft)	24	10	4	0
95th Queue (ft)	46	30	20	3
Link Distance (ft)	992		1147	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50		75	
Storage Blk Time (%)	1		0	
Queuing Penalty (veh)	0		0	

Intersection: 450: NC 58 & Lenoir CC Southern Driveway

Movement	SB
Directions Served	L
Maximum Queue (ft)	45
Average Queue (ft)	11
95th Queue (ft)	35
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 451: NC 58 & Lenoir CC Northern Driveway

Movement	WB	WB
Directions Served	L	R
Maximum Queue (ft)	26	60
Average Queue (ft)	3	30
95th Queue (ft)	18	51
Link Distance (ft)	579	579
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	TR	L	LT	R	LT
Maximum Queue (ft)	192	472	495	363	229	283	327	354	192	244	132	184
Average Queue (ft)	66	189	200	37	109	136	166	190	109	135	12	94
95th Queue (ft)	154	373	383	198	191	251	280	308	169	203	90	168
Link Distance (ft)		2404	2404	2404			1703	1703		725		573
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100				225	225			275		100	
Storage Blk Time (%)	4	22			1	1	3			28		15
Queuing Penalty (veh)	20	17			2	3	11			64		6

Intersection: 452: NC 58/Trenton Hwy & US 70

Movement	SB
Directions Served	R
Maximum Queue (ft)	112
Average Queue (ft)	44
95th Queue (ft)	90
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	100
Storage Blk Time (%)	2
Queuing Penalty (veh)	2

Intersection: 453: Lenoir CC Driveway & US 70

Movement	EB	WB	NB
Directions Served	R	L	R
Maximum Queue (ft)	12	64	57
Average Queue (ft)	1	16	24
95th Queue (ft)	6	49	48
Link Distance (ft)			364
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	150	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 454: US 70 & Neuse Rd

Movement	EB	WB	WB	SB
Directions Served	L	U	R	LR
Maximum Queue (ft)	188	24	4	866
Average Queue (ft)	62	3	0	527
95th Queue (ft)	131	15	3	1019
Link Distance (ft)				917
Upstream Blk Time (%)				18
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	350	175	150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 455: Whaley Rd & US 70

Movement	EB	EB	WB	NB
Directions Served	U	R	L	LR
Maximum Queue (ft)	17	8	86	398
Average Queue (ft)	2	0	25	183
95th Queue (ft)	12	6	63	389
Link Distance (ft)				894
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150	150	150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 456: US 70 & British Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	66	24	69
Average Queue (ft)	20	2	11
95th Queue (ft)	49	11	44
Link Distance (ft)			934
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 457: Wyse Fork Rd/Caswell Rd & US 70

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	18	9	915	157
Average Queue (ft)	1	0	640	65
95th Queue (ft)	8	5	1092	154
Link Distance (ft)			891	936
Upstream Blk Time (%)			34	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	150	200		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 458: Caswell Rd & British Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	4	10	48	14
Average Queue (ft)	0	0	18	5
95th Queue (ft)	3	5	38	14
Link Distance (ft)	982	1000	985	963
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 459: US 70 & Tilghman Rd

Movement	EB	WB	SB
Directions Served	L	U	LR
Maximum Queue (ft)	73	24	120
Average Queue (ft)	23	2	34
95th Queue (ft)	55	12	107
Link Distance (ft)			917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	150	125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 460: Burkett Rd & US 70

Movement	EB	WB	NB
Directions Served	U	L	LR
Maximum Queue (ft)	25	26	78
Average Queue (ft)	2	3	20
95th Queue (ft)	14	16	57
Link Distance (ft)			858
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	175	175	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 461: US 70 & Kornegay St

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	R	LTR	LTR
Maximum Queue (ft)	108	8	21	3	42	90	510
Average Queue (ft)	39	0	2	0	2	24	233
95th Queue (ft)	82	6	11	3	19	73	683
Link Distance (ft)		1096		979		195	938
Upstream Blk Time (%)							2
Queuing Penalty (veh)							0
Storage Bay Dist (ft)	225		150		125		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 462: N West St & Kornegay St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	17	38	44
Average Queue (ft)	2	1	19	24
95th Queue (ft)	14	9	42	44
Link Distance (ft)	1008	959	818	918
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 1430: US 70 & Hillcrest Rd

Movement	SB
Directions Served	L
Maximum Queue (ft)	468
Average Queue (ft)	456
95th Queue (ft)	464
Link Distance (ft)	449
Upstream Blk Time (%)	48
Queuing Penalty (veh)	191
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 6030

APPENDIX D

**2040 Build Alternative 1 – Upgrade US 70
Peak Hour Traffic Volume Development and
FREEVAL-E, HCS, Synchro & SimTraffic Reports**

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**2040 Build Alternative 1
Peak Hour Traffic Volume
Development**

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Alternative 1 – Upgrade US 70

Volume Development

A project-level traffic forecast, titled "Traffic Forecast Technical Memorandum, Kinston Bypass Alternatives Study", was prepared and finalized in November, 2016. This traffic forecast was used to provide peak hour volumes for the analysis of the selected alternatives in this memorandum. The traffic forecast is included in **Attachment A**.

The Intersection Analysis Utility (IAU), provided by NCDOT, was utilized to calculate AM and PM Peak Hour volumes for at-grade intersections (ramp terminals and any intersections within 1,000 feet of ramp terminals), interchange ramps, and freeway segments within interchanges. Peak hour volumes for freeway segments between interchanges were calculated by finding the forecasted daily two-way volumes along the link, then breaking the daily volume down by multiplying it by the Design Hour Volume Percentage (K), and the Peak Hour Directional Split (D). All of these volumes are shown in **BLACK** in **Figures 3A-3G**.

The volumes shown on the forecast for the intersection of Sanderson Way and Industrial Dr (Intersection 409) led to an imbalance in the intersection and an error in the IAU. To allow for a balanced intersection, the volume on the northern leg was increased to 2800 vehicles per day.

Volume Redistribution

For Alternative 1, there were multiple instances where the designs did not match the forecast. Since this alternative includes several areas constrained by human and environmental elements, and some areas that travel through more urban settings, it was necessary to provide only partial interchanges at several locations. Because the traffic forecast assumed full movements at nearly all interchanges and intersections, substantial volume redistribution was necessary to project peak-hour traffic volumes onto the proposed roadway network. These redistribution efforts are documented in detail in the ensuing pages of this appendix.

Volumes were redistributed at two major design interchanges. The first interchange was

US 70 at SR 1548 (Hill Farm Road)/Sussex St/ US 258 / US 70BUS

which is a combination of the following interchanges in the forecast:

- US 70 at SR 1548 (Hill Farm Road) / Sussex St
- US 70 at US 258 / Sussex St
- US 70 at US 70 Business

The second interchange was

US 70 at US 258 / NC 58 / Trenton Hwy

which is a combination of the following interchanges in the forecast:

- US 70 at NC 58 / US 258
- US 70 at NC 58 / Trenton Highway

US 70 at SR 1548 (Hill Farm Road) / Sussex St

In the design, there is an eastbound exit ramp and westbound entrance ramp from SR 1548 (Hill Farm Rd) / Sussex St which did not exist in the forecast. These ramps also provide access to Pinelawn Cemetery Drive and Shopping Center Drive.

US 70 at US 258 / Sussex St and US 70 at US 70 Business

In the design, US 70 Eastbound entrance and exit ramps for US 258 / Sussex St and US 70 at US 70 Business are combined.

US 70 Eastbound traffic exiting to US 258 / Sussex St and US 70 Business utilize the same exit ramp. Once the ramp diverges, traffic with a destination of US 258 / Sussex St exits via a loop ramp to intersection 415 (see Figure). The remaining traffic on the ramp then combines with traffic originating from US 258 / Sussex St, and proceeds to US 70 Business northbound.

US 70 Eastbound traffic entering from US 258 / Sussex St and US 70 Business utilize the same entrance ramp. Traffic originating from US 258 enters via the ramp at intersection 415, which then connects to a loop ramp from Southbound US 70 Business.

US 70 at NC 58/ US 258 and US 70 at US 58/ Trenton Hwy

The interchanges at NC 58 / US 258 and NC 58 / Trenton Hwy were combined into a split diamond. The northern service road connecting US 258 and NC 58 provides one-way westbound connectivity, while the southern service road is two-way to facilitate access to businesses in this area.

US 70 at SR 1548(Hill Farm Road)/Sussex St/US 258/US 70BUS Redistribution

Part 1: US 70 at SR 1548 (Hill Farm Road) / Sussex St / US 258

US 70 eastbound traffic can access Hill Farm Rd, western Sussex St, Pinelawn Cemetery Dr, and Shopping Center Dr via an exit ramp which is not present in the forecast. Traffic on these roads can access US 70 westbound via an entrance ramp not present in the forecast.

In the forecast, it was assumed that US 70 eastbound traffic with a destination of Shopping Center Drive and western Sussex St was routed through US 258 to eastern Sussex St. It was also assumed that US 70 westbound traffic with an origin of Shopping Center Drive and western Sussex St was routed through US 258 to eastern Sussex St.

Similarly, it was assumed that traffic with a destination and origin of Pinelawn Cemetery Dr and Hill Farm Rd was routed through US 258, via the service road connecting Hill Farm Rd and US 258. Traffic with an origin of Pinelawn Cemetery Dr and Hill Farm Rd was assumed to be routed through US 258 via the same service road.

Consequently, it was determined that a percentage of US 70 eastbound traffic exiting at US 258 / eastern Sussex St and a percentage of traffic entering US 70 westbound from US 258 / western Sussex St would utilize the ramps at Hill Farm Rd.

Because of this, traffic on the ramps to Hill Farm Rd was rerouted prior to the combining of traffic at the US 258 and US 70 Business joint ramps.

Step 1 – Volumes

IAU volumes for Alternative 1 were broken out at the intersections of US 70 at US 258, US 258 at Service Rd, and Hill Farm Rd at Service Rd.

The No-Build Alternative IAU volumes were broken out at Pinelawn Cemetery Drive and US 70. It was assumed that traffic entering and exiting Pinelawn Cemetery in the No-Build Scenario would not be deterred or encouraged based on changes in volumes or roadway geometry. Therefore, it was assumed that traffic volumes would remain the same through different alternatives.

The No-Build Alternative IAU volumes were broken out at US 70 and western Sussex Street and US 70 at Shopping Center Drive. It was assumed that turning movements entering and exiting these locations would remain proportional between the No-Build Alternative and Alternative 1.

Step 2 – Volume Proportions

For both peak hours, volumes on relevant movements of an intersection leg were calculated as a percentage of the total inbound volume for that leg. This percentage was used to determine the proportion of traffic making a given movement for that approach. For example, based on forecast volumes at US 70 and US 258, it is assumed that 23 percent of southbound inbound traffic on US 258 turns right onto US 70 westbound in the AM Peak.

For both peak hours, volumes on relevant movements of an intersection leg were calculated as a percentage of the total outbound volume for that movement's receiving leg. This percentage was used to determine the proportion of outbound traffic on an intersection leg that originates from a given movement. For example, based on forecast volumes at US 70 and US 258, it is assumed that 11 percent of the outbound traffic on US 70 westbound originated from US 258 southbound in the AM Peak.

Step 3 – Determining Origins and Destinations

Using the percent distributions from Step 2, various assumptions were made to determine the origins and destinations of traffic at the intersection of US 70 and US 258 / Hill Farm Rd. Listed below are the assumptions made for each movement.

Eastbound Left – shown in blue on the diagram

1. Eastbound left traffic makes up a percentage of traffic going north on US 258.
2. Of traffic going north on US 258 from US 70, a percentage turns left onto the service road westbound.
3. Of traffic going west on the service road, a percentage turns right onto Hill Farm Rd northbound and continues off the network:
4. Of traffic going west on the service road, a percentage turns left onto Hill Farm Rd southbound.
5. All traffic going southbound on Hill Farm Rd has a destination of Pinelawn Cemetery and other driveways north of US 70; Pinelawn Cemetery traffic is determined using No-Build Alternative IAU volumes.

Using the above assumption, the amount of US 70 eastbound traffic with a destination of Hill Farm Rd and Pinelawn Cemetery was determined.

Eastbound Right – shown in orange on the diagram

1. Based on businesses in the area, it was assumed that 85% of eastbound right traffic has a destination of western Sussex St and Shopping Center Dr.
2. Based on the amount of traffic turning right into western Sussex St versus the amount of traffic turning right into Shopping Center Dr in the No-Build Alternative, it was assumed that a percentage of the 85% continues to Shopping Center Dr, and a percentage enters driveways along Sussex St.

Using the above assumption, the amount of US 70 eastbound traffic with a destination of western Sussex St and Shopping Center Dr was determined.

Northbound Left – shown in red on the diagram

1. Based on businesses in the area, it was assumed that 85% of northbound left traffic has an origin of western Sussex St and Shopping Center Dr.
2. Based on the amount of traffic turning left out of western Sussex St versus the amount of traffic turning left out of Shopping Center Dr in the No-Build Alternative, it was assumed that a percentage of the 85% has an origin of Shopping Center Dr, and a percentage has an origin of driveways along Sussex St.

Using the above assumption, the amount of US 70 westbound traffic with an origin of western Sussex St and Shopping Center Dr was determined.

Southbound Right – shown in green on the diagram

1. Southbound right traffic makes up a percentage of traffic going south on US 258.
2. A percentage of traffic going south on US 258 from the Service Rd originates from the eastbound right-turn at US 258 and the service road.
3. Of traffic going east on the service road, a percentage originates from the southbound left-turn on Hill Farm Rd.
4. Of traffic going east on the service road, a percentage originates from the northbound right turn on Hill farm Rd.
5. All traffic going northbound on Hill Farm Rd has an origin of Pinelawn Cemetery and other driveways north of US 70; Pinelawn Cemetery traffic is determined using No-Build Alternative IAU volumes.

Using the above assumption, the amount of US 70 westbound traffic with an origin of Hill Farm Rd and Pinelawn Cemetery Dr was determined.

Step 4 – Traffic Rerouting

Traffic with origin and destinations determined at Pinelawn Cemetery Dr, Hill Farm Rd, Shopping Center Dr, and western Sussex St were subtracted from the pathways assumed above, and added to the new ramps. The updated volumes were then determined at each interchange.

Part 2: US 70 at US 258 / US 70BUS / Sussex St

Step 1 – Volumes

Using the rerouted volumes from part one, the interchange of US 70 with US 258 was set up as an intersection, to better depict the origin and destination of each movement. The IAU volumes for US 70 at US 70BUS were broken out.

Step 2 – Volume Proportions

For both peak hours, volumes on relevant movements of an intersection leg were calculated as a percentage of the total inbound volume for that leg. This percentage was used to determine the proportion of traffic making a given movement for that approach. For example, based on forecast volumes at US 70 and US 70BUS, it is assumed that 30 percent of eastbound inbound traffic on US 70 eastbound turns left onto US 70BUS northbound in the AM Peak.

Step 3 – Determining Origins and Destinations

The design configuration of US 70 eastbound at US 70 Business / US 258 has a new ramp connecting US 258 / Sussex St and US 70 Business directly.

The following assumptions were made to determine traffic on the new ramp:

1. A percentage of traffic traveling eastbound on US 70 toward US 70 Business turns north onto US 70 Business.
2. A portion of traffic turning traveling eastbound on US 70 toward US 70 Business originates from US 258.
3. Traffic that originates from US 258 and turns onto US 70 Business will now use the ramp directly connecting the two, bypassing US 70.

Similarly to the previous distribution, the proportions stated above were used to determine the volume of traffic originating from US 258 with a destination of US 70 Business.

Step 4 – Traffic Rerouting

Traffic originating from US 258 with a destination of US 70 Business was rerouted to the connector ramp using the methodology described in step 3.

After the volumes at this ramp were determined, US 70 Eastbound traffic with a destination and origin of US 70 Business and US 258 were combined. The complete interchange configuration can be found in the Alternative 1 Figures.

US 70 Ramps at US 258 and NC 58 Redistribution

The interchanges at US 258 / NC 58 and NC 58 / Trenton Rd were combined to form a split diamond interchange. The northern service road connecting US 258 and NC 58 provides one-way westbound connectivity, while the southern service road is two-way to facilitate access to businesses in this area.

It was assumed that the split diamond setup would facilitate a way for traffic on US 258 / NC 58 / Trenton Rd to access each other while bypassing US 70. This traffic volume was determined below.

Additionally, due to businesses along the two way ramp, it was assumed that a portion of traffic accessing US 70 eastbound from NC 58 / Trenton Rd northbound would utilize the two-way ramp.

Step 1 – IAU Volumes

IAU volumes for Alternative 1 were broken out at the intersections of US 70 at US 258 / NC 58 and US 258 at NC 58 / Trenton Highway

Step 2 – Volume Proportions

For both peak hours, volumes on relevant movements of an intersection leg were calculated as a percentage of the total inbound volume for that leg. This percentage was used to determine the proportion of traffic making a given movement for that approach. For example, based on forecast volumes at US 70 and NC 58 / Trenton Rd, it is assumed that 56 percent of southbound inbound traffic on US 258 turns right onto US 70 eastbound in the AM Peak.

For both peak hours, volumes on relevant movements of an intersection leg were calculated as a percentage of the total outbound volume for that movement's receiving leg. This percentage was used to determine the proportion of outbound traffic on an intersection leg that originates from a given movement. For example, based on forecast volumes at US 70 and NC 58 / Trenton Rd, it is assumed that 7 percent of the outbound traffic on US 70 Eastbound originated from US 258 southbound in the AM Peak.

Step 3 – Determining Origins and Destinations

Using the percent distributions from Step 2, various assumptions were made to determine the destinations of traffic at the intersection of US 70 and NC 58 / Trenton Rd

Northbound Left – shown in blue on the diagram

1. A percentage of traffic traveling westbound on US 70 towards US 258 / NC 58 turns onto US 258 / NC 58 southbound.
2. Of traffic traveling westbound on US 70 towards US 258 / NC 58, a percentage originated from northbound NC 58 / Trenton Rd.
3. Based on businesses on the two-way ramp, it was assumed 10% of northbound NC 58 / Trenton Rd will utilize the two-way ramp to access US 70 westbound.

Using the above assumptions, the amount of traffic originating from northbound NC 58 with a destination of US 258 southbound and US 70 westbound was determined.

Southbound Right – shown in red on the diagram

1. A percentage of traffic traveling westbound on US 70 towards US 258 / NC 58 has a destination of US 258 / NC 58.
2. Of traffic traveling westbound on US 70 towards US 258 / NC 58, a percentage originated from southbound NC 58 / Trenton Rd.

Using the above assumption, the amount of traffic originating from southbound Trenton Rd with a destination of US 258 southbound was determined.

Step 4 – Traffic Rerouting

Traffic with origin and destinations determined at US 258 / NC 58 and NC 58 / Trenton Rd was subtracted from the pathways assumed above, and added to the new ramps. The updated volumes were then determined at the split diamond interchange.

US 70 and CF Harvey Parkway Extension Freeway Analysis

FREEVAL-E does not use a Peak Hour Factor (PHF) to adjust the peak hour volumes to reflect the peak 15-minute period. Additionally, FREEVAL-E requires balanced peak hour mainline volumes, since only the beginning freeway segment and subsequent ramps have volume inputs. To provide peak 15-minute hourly flow rates for the analysis in FREEVAL-E, each of the peak hour volumes calculated for the freeway segments and ramps was divided by 0.90, which is the recommended PHF in the NCDOT Congestion Management Capacity Analysis Guidelines. To balance the peak hour volumes to use with FREEVAL-E, the highest peak 15-minute hourly flow rate was located along the US 70 corridor within the study area. Once this was located, the mainline US 70 volumes were adjusted in each direction to the eastern and western ends of the network by adding and subtracting the relevant ramp volumes.

For Alternative 1 – Upgrade US 70, there were multiple instances where the designs did not match the forecast. Since this alternative includes several areas constrained by human and environmental elements, and some areas that travel through more urban settings, it was necessary to provide only partial interchanges at several locations. Because the traffic forecast assumed full movements at nearly all interchanges and intersections, substantial volume redistribution was necessary to project peak-hour traffic volumes onto the proposed roadway network.

For Alternative 1 – Upgrade US 70, it theoretically would have been possible to balance the entire network; however, the various imbalances through the C.F. Harvey Pkwy and US 258 interchanges created a situation in which balanced volumes created contradictions to the traffic forecast, depending on which side of C.F. Harvey Pkwy was chosen as the balance point. For example, if the balance point was held just to the west of C.F. Harvey Pkwy, the balanced volumes at the eastern end of the project would have been opposite of the traffic forecast. In other words, the traffic forecast shows higher eastbound traffic in the PM Peak Hour on the east end of the project, but balanced volumes would show higher westbound traffic. Because of this, a balanced complete network would not have been feasible.

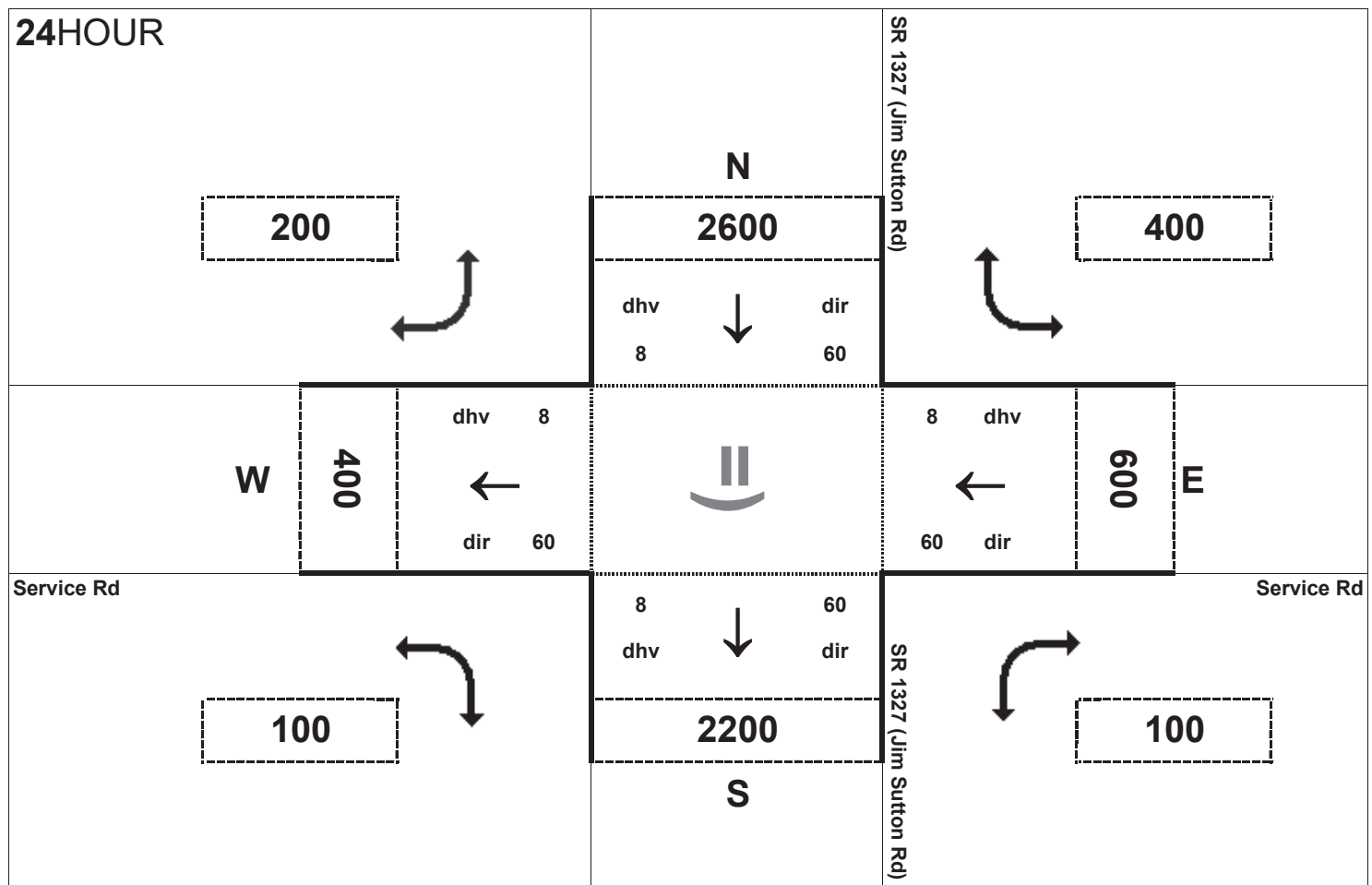
For Alternative 1 – Upgrade US 70, the network was broken into three parts:

- The western portion of the network was balanced between the western terminus of the project and SR 1548 (Hill Farm Rd), with the balance point being held between SR 1522 (Albert Sugg Rd) and C.F. Harvey Pkwy. FREEVAL-E was utilized for this section.
- The middle portion of the network (from SR 1548 (Hill Farm Rd) to NC 58/Trenton Hwy) was left unbalanced. HCS was utilized for this section.
- The eastern portion of the network was balanced between NC 58/Trenton Hwy and the eastern terminus of the project, with the balance point being held between NC 58/Trenton Hwy and SR 1002 (Wyse Fork Rd). FREEVAL-E was utilized for this section.

These volume adjustments are shown in **BLUE** in **Figures 3A-3G**. The ensuing pages of this appendix detail the following step-by-step process used to calculate the volumes used, as well as the various volume redistributions required by the forecast imbalances and mismatches with the roadway designs:

- Step 1 – Freeway segment volumes between interchanges were calculated by multiplying the two-way daily volumes by the K and D factors.
- Step 2 – Volumes for interchange ramps, and freeway segments inside interchanges were collected from the IAU breakout sheets.
- Step 3 – The volumes collected in Step 2 were divided by the NCDOT default PHF of 0.90 to account for the fact that FREEVAL-E does not factor in the PHF, and the highest calculated freeway volume location was used as the base point with which to balance the US 70 freeway corridor.
- Step 4 – The volumes of the subsequent freeway segments were adjusted to allow for a balanced peak hour network in both directions.

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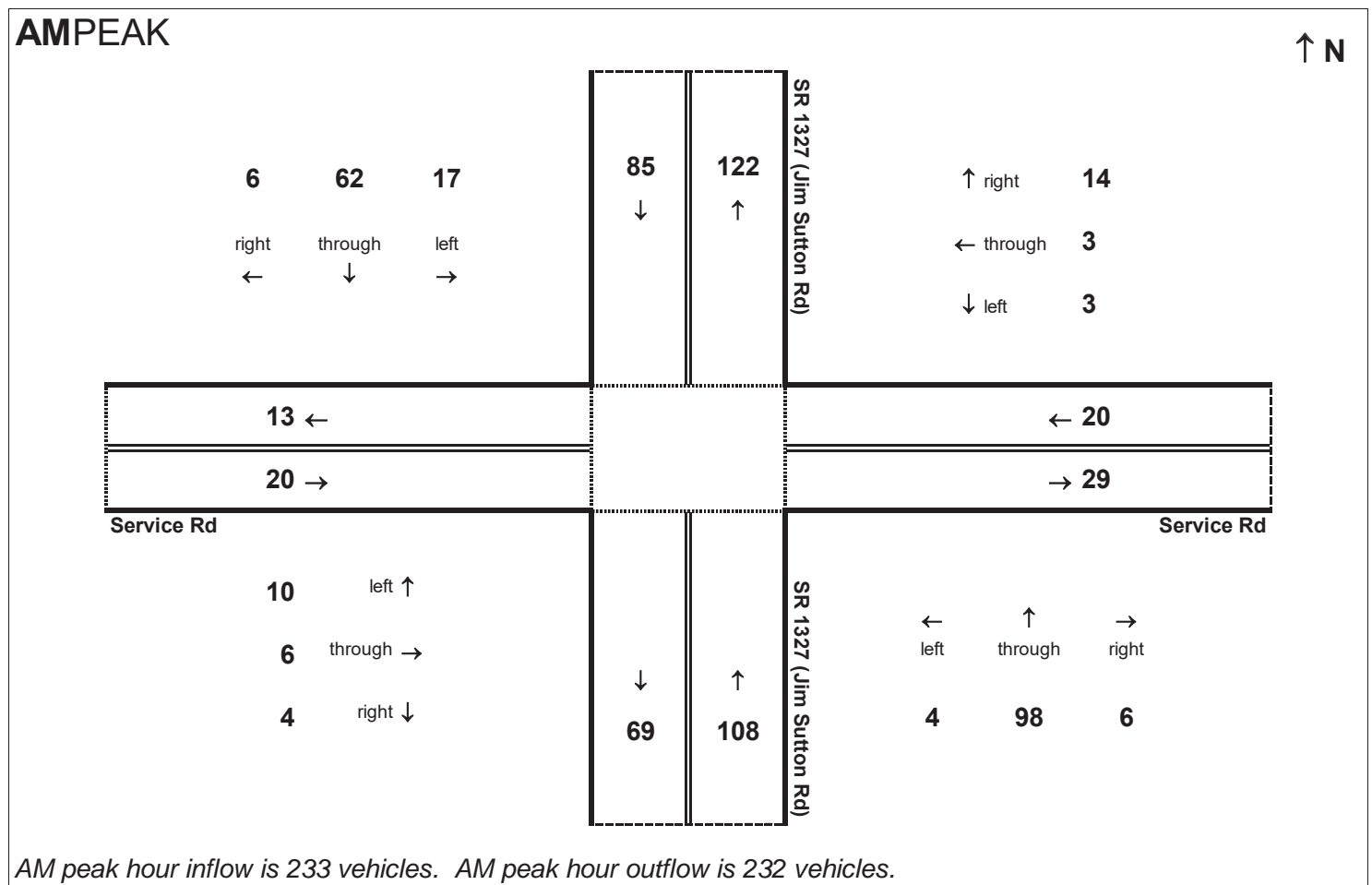


Peak Hour Volume Breakouts Report:
 401 Intersection of SR 1327 (Jim Sutton Rd) at
 Service Rd

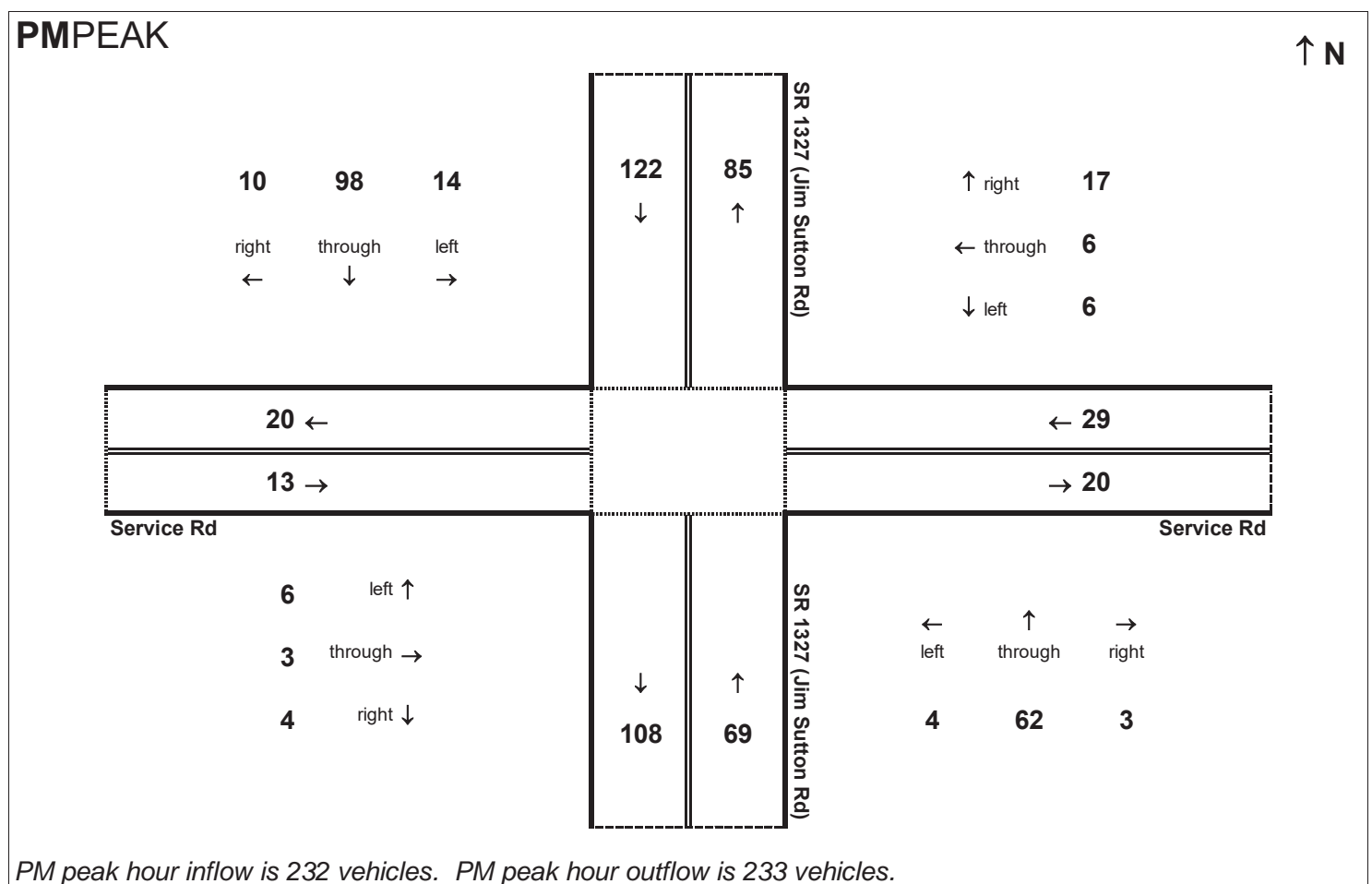
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
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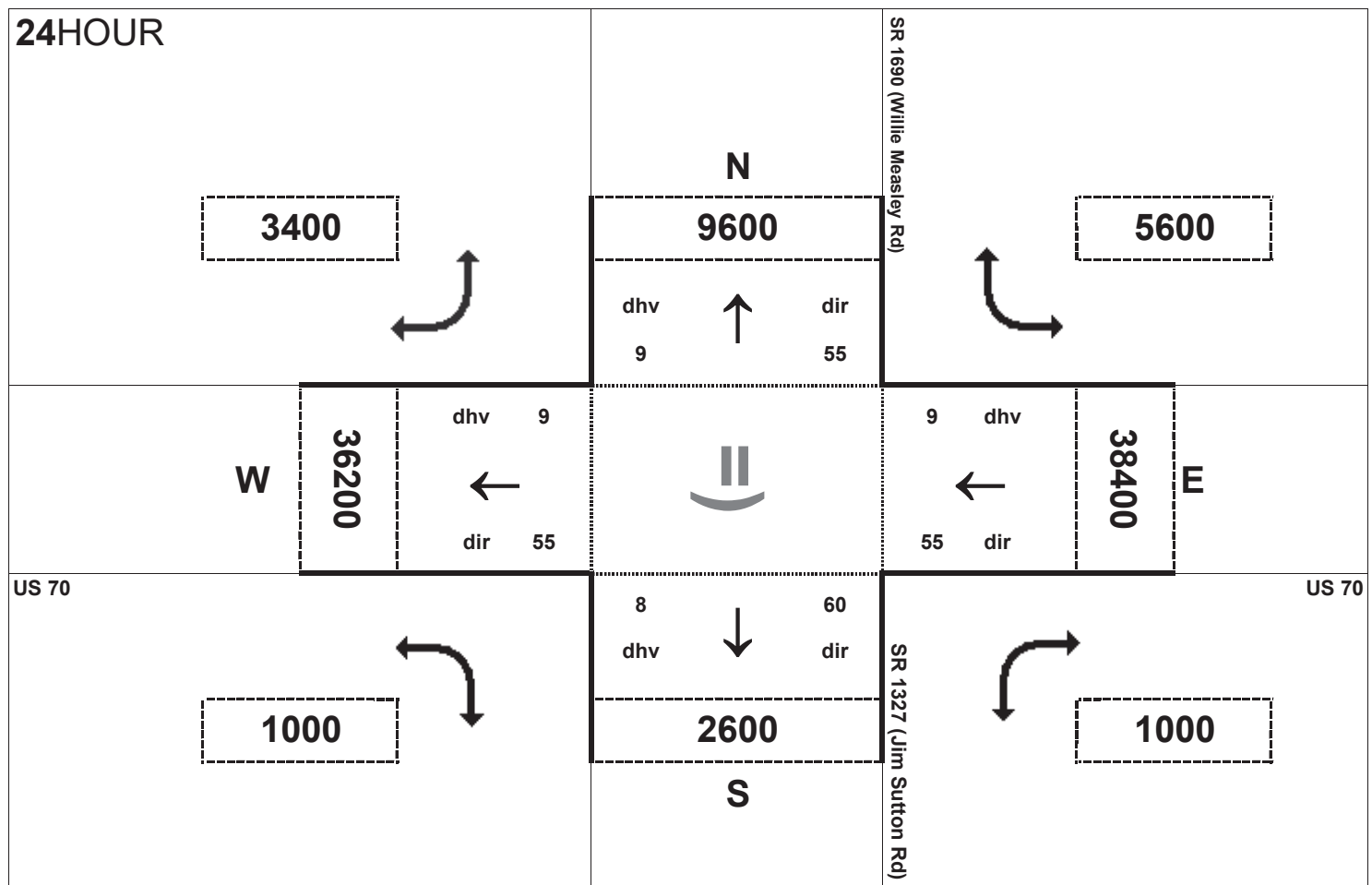
Project:
 R-2553



AM peak hour inflow is 233 vehicles. AM peak hour outflow is 232 vehicles.



PM peak hour inflow is 232 vehicles. PM peak hour outflow is 233 vehicles.

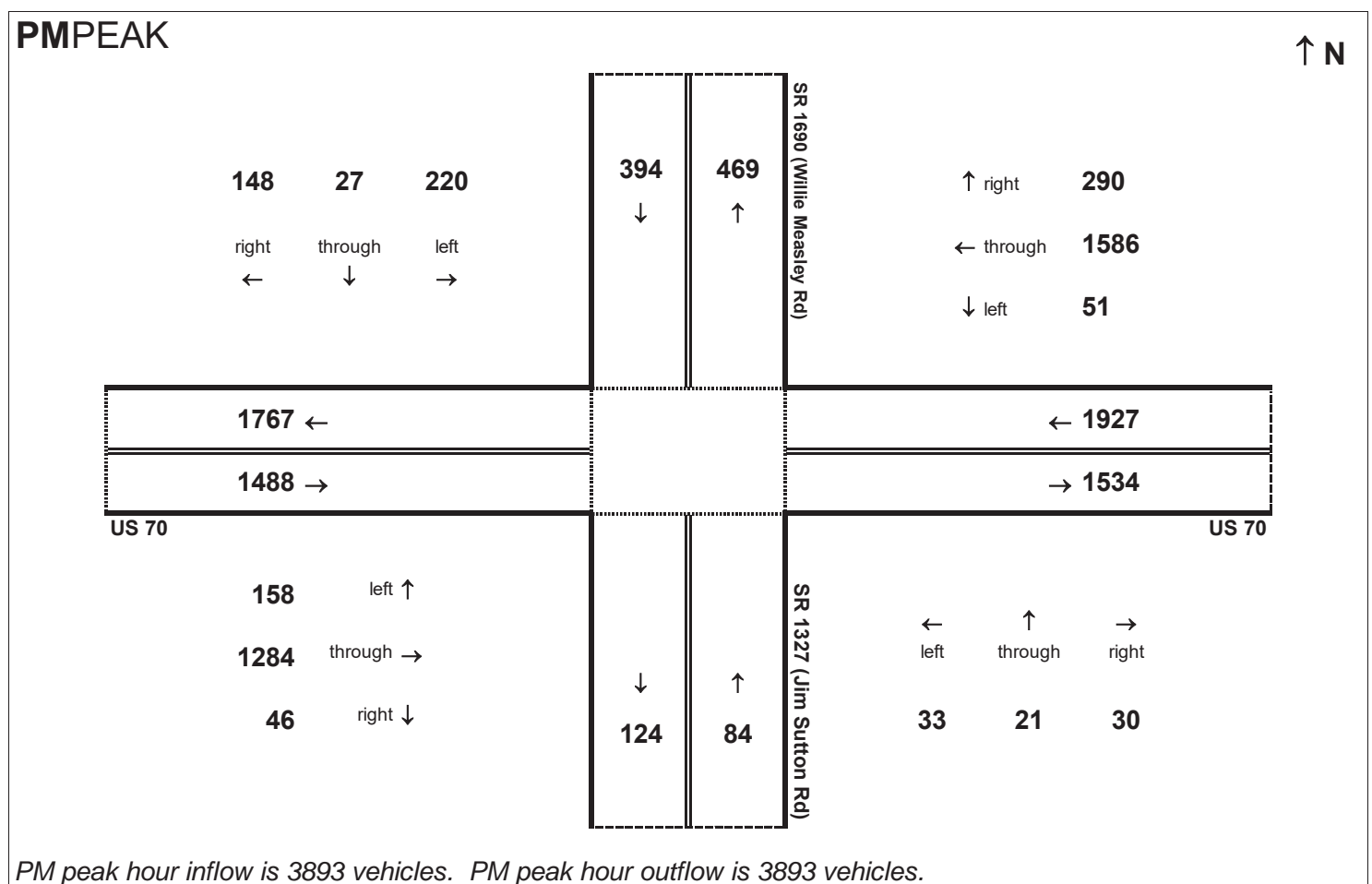
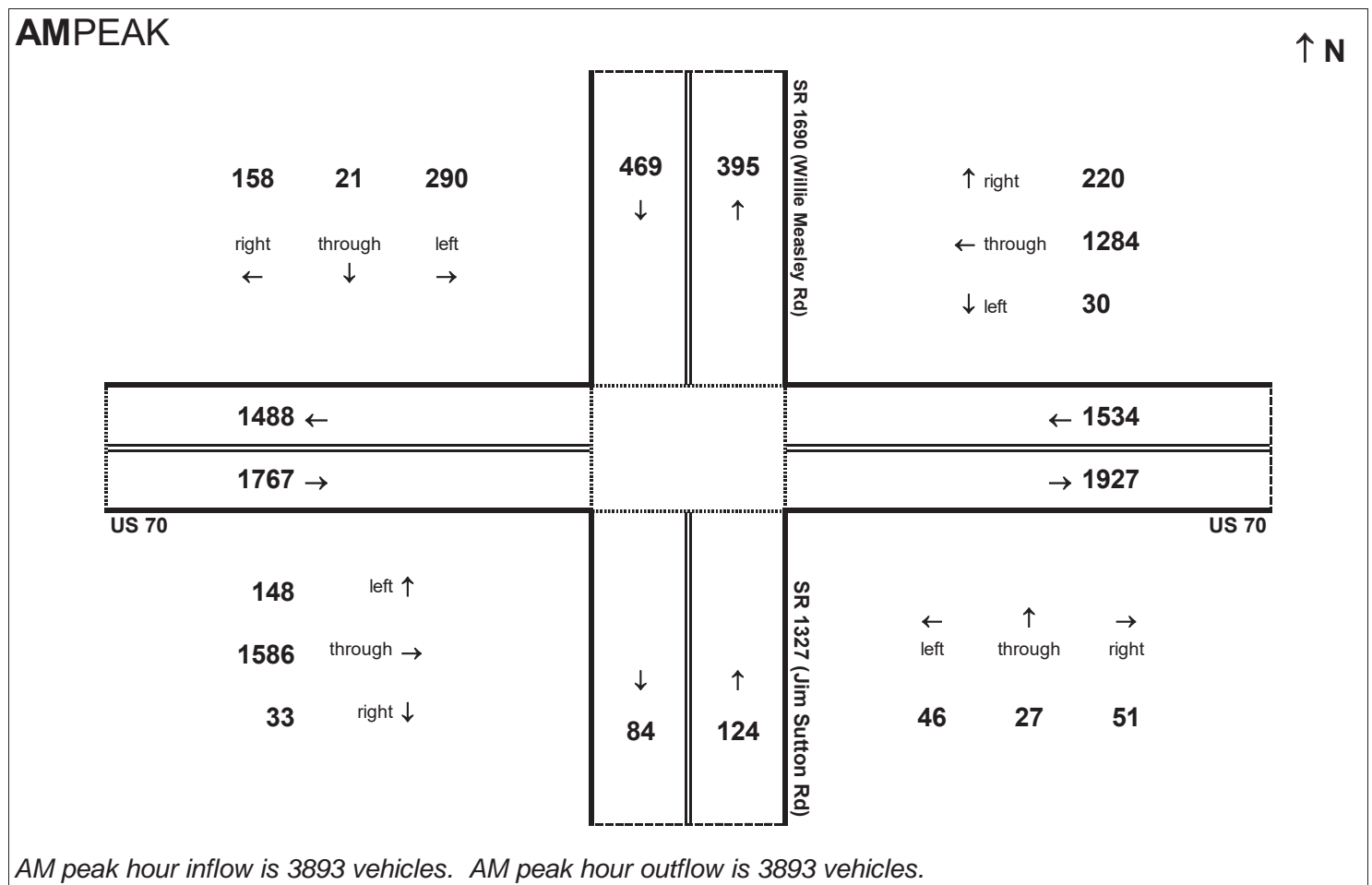


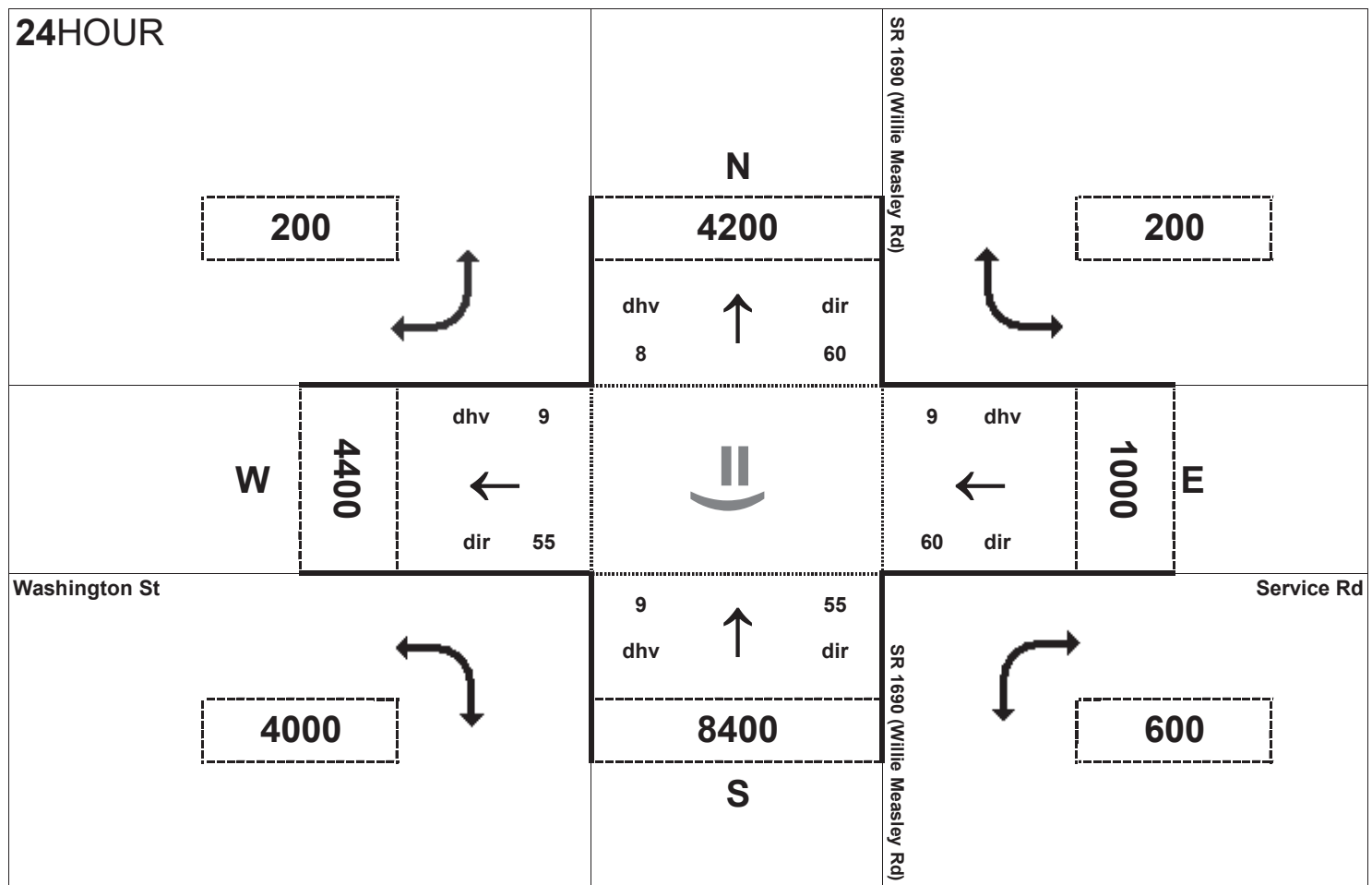
Peak Hour Volume Breakouts Report:
402-3 Intersection of US 70 and Willie Measley Rd / Jim Sutton Rd

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Build Alt 1

Project:
R-2553



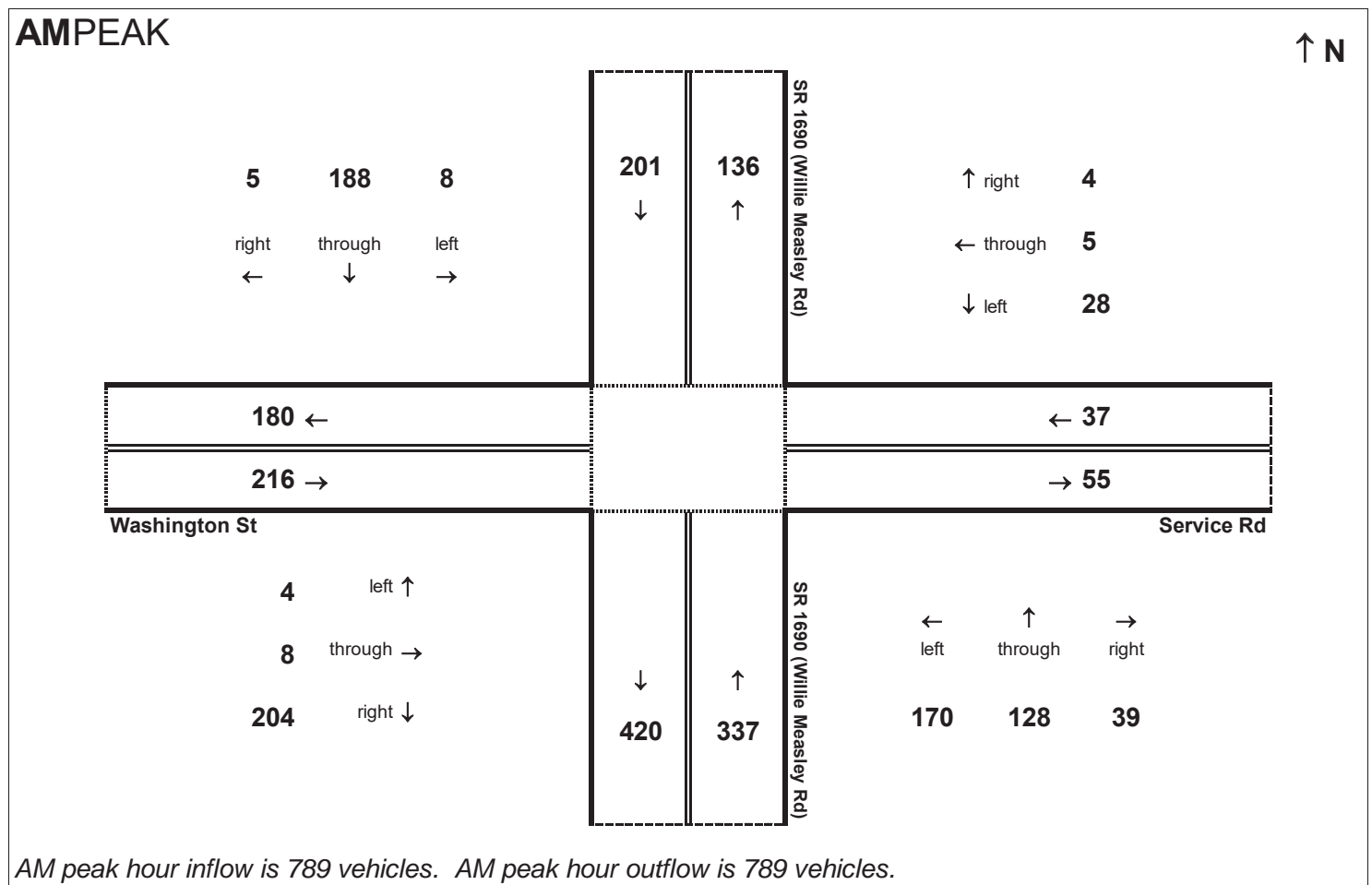


Peak Hour Volume Breakouts Report:
 404 Intersection of SR 1690 (Willie Measley Rd) at
 SR 1603 (Washington St)

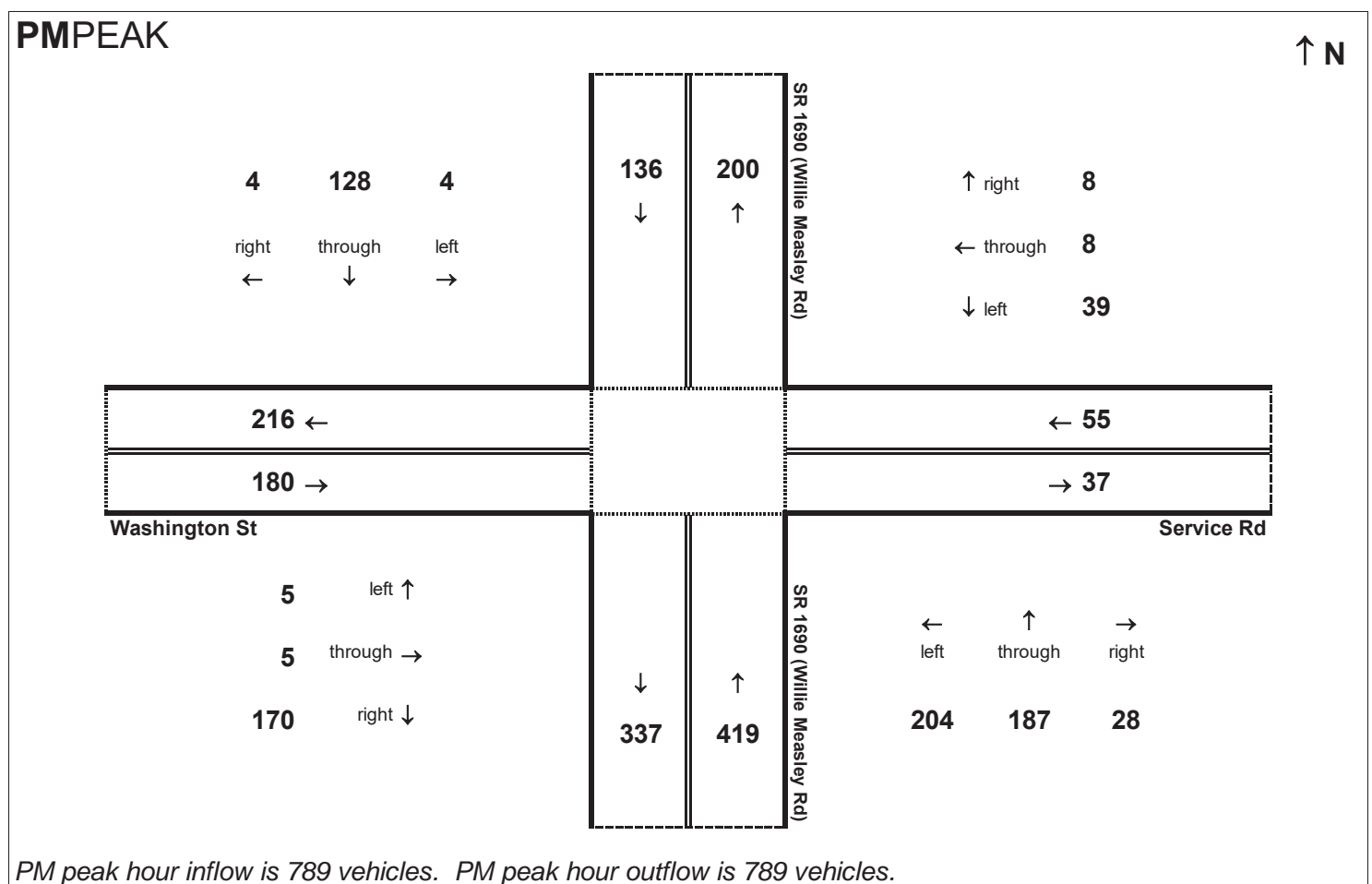
Traffic Forecast Release Date:
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Traffic Data Year:
 2040 Build Alt 1

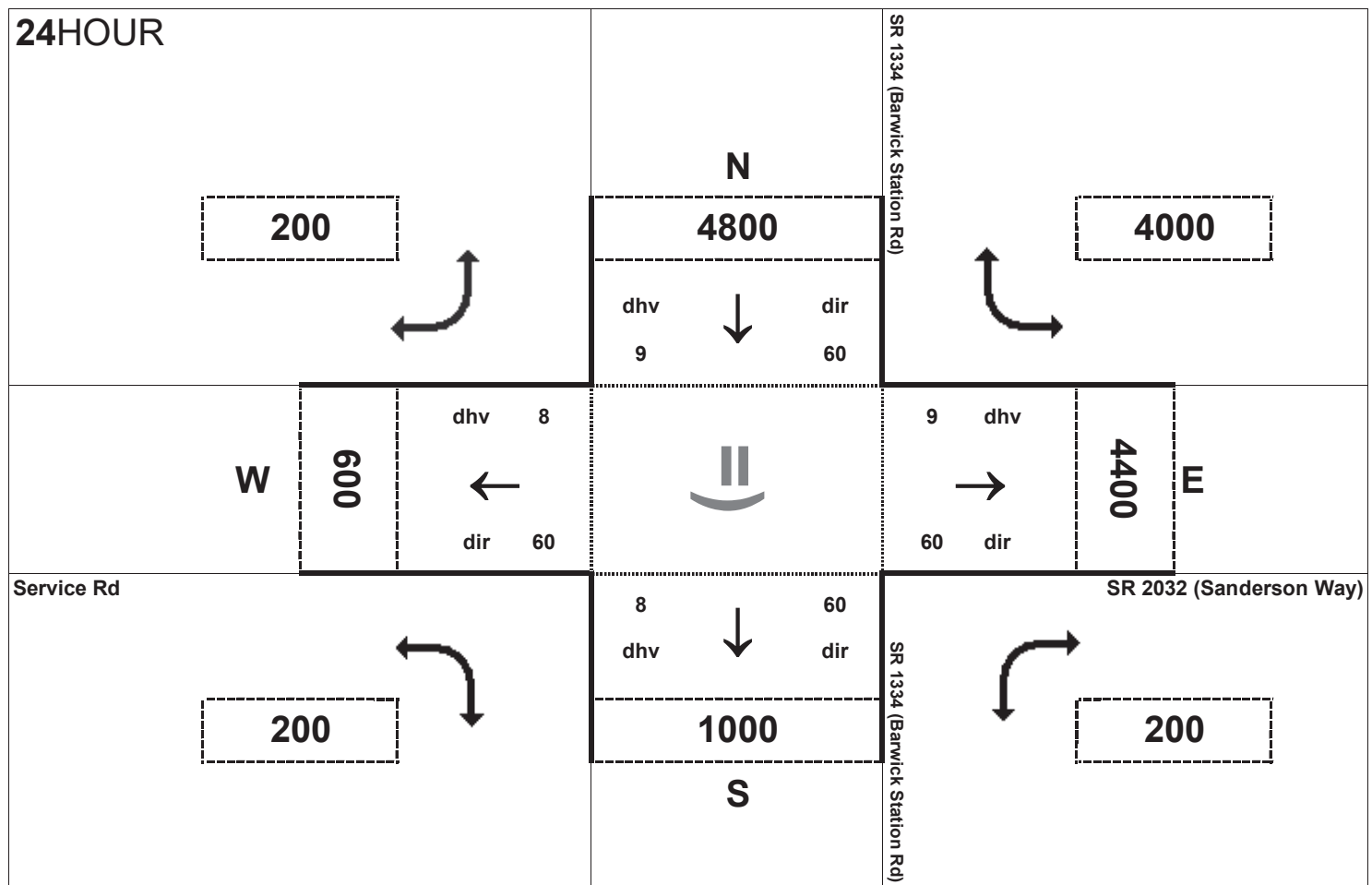
Project:
 R-2553



AM peak hour inflow is 789 vehicles. AM peak hour outflow is 789 vehicles.



PM peak hour inflow is 789 vehicles. PM peak hour outflow is 789 vehicles.

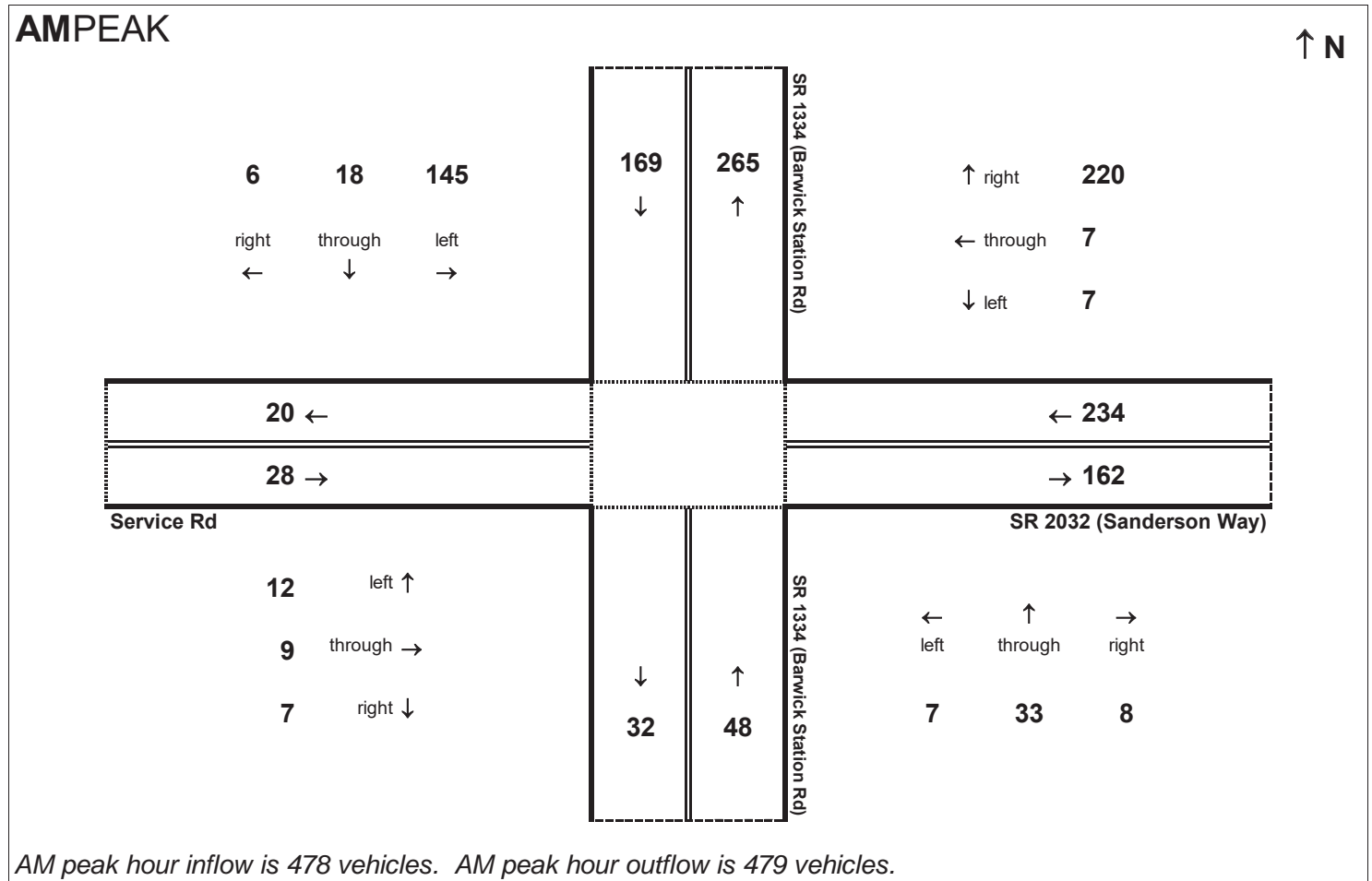


Peak Hour Volume Breakouts Report:
 405 Intersection of SR 1334 (Barwick Station Rd) at
 SR 2032 (Sanderson way)

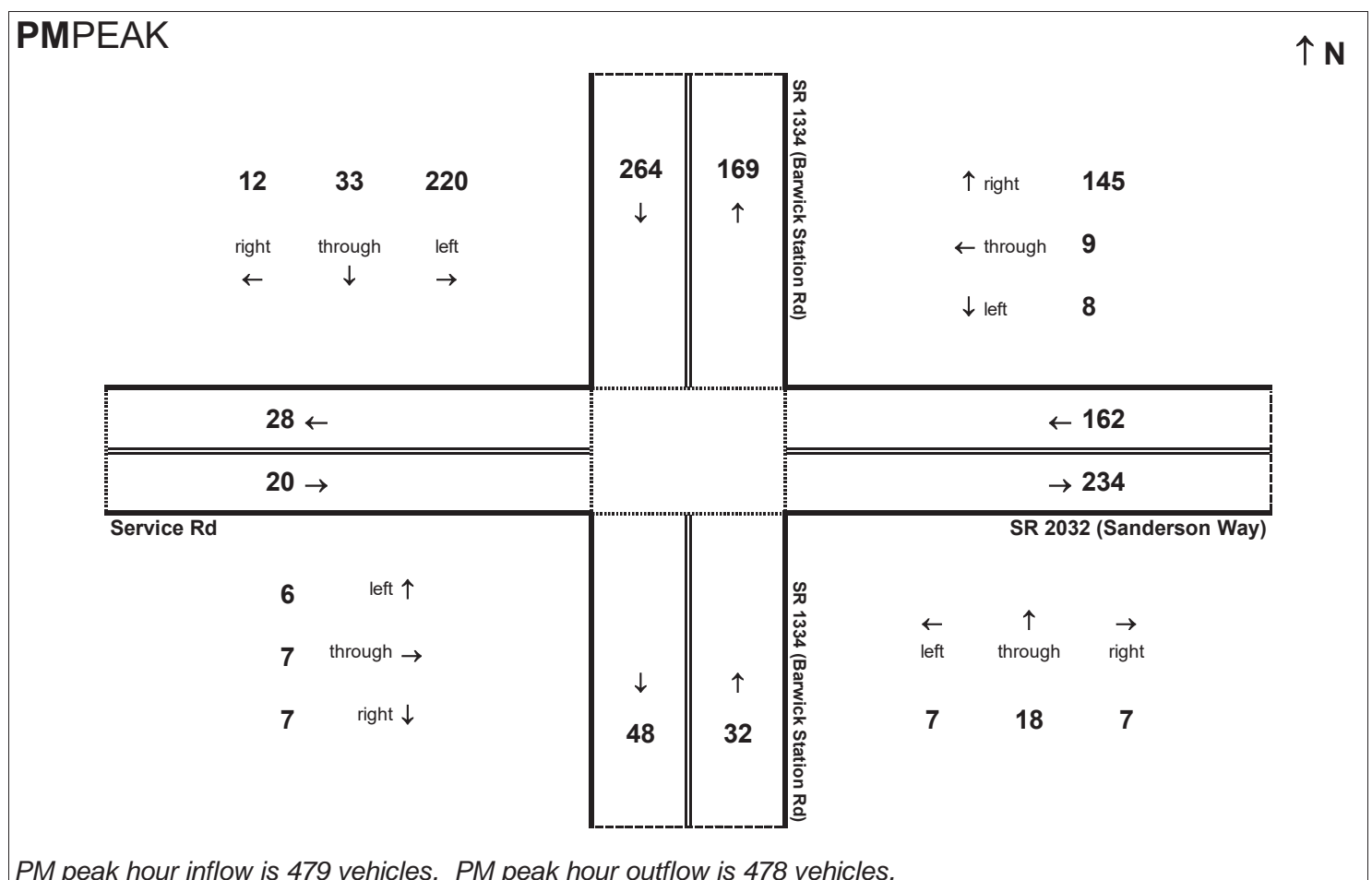
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Traffic Data Year:
 2040 Build Alt 1

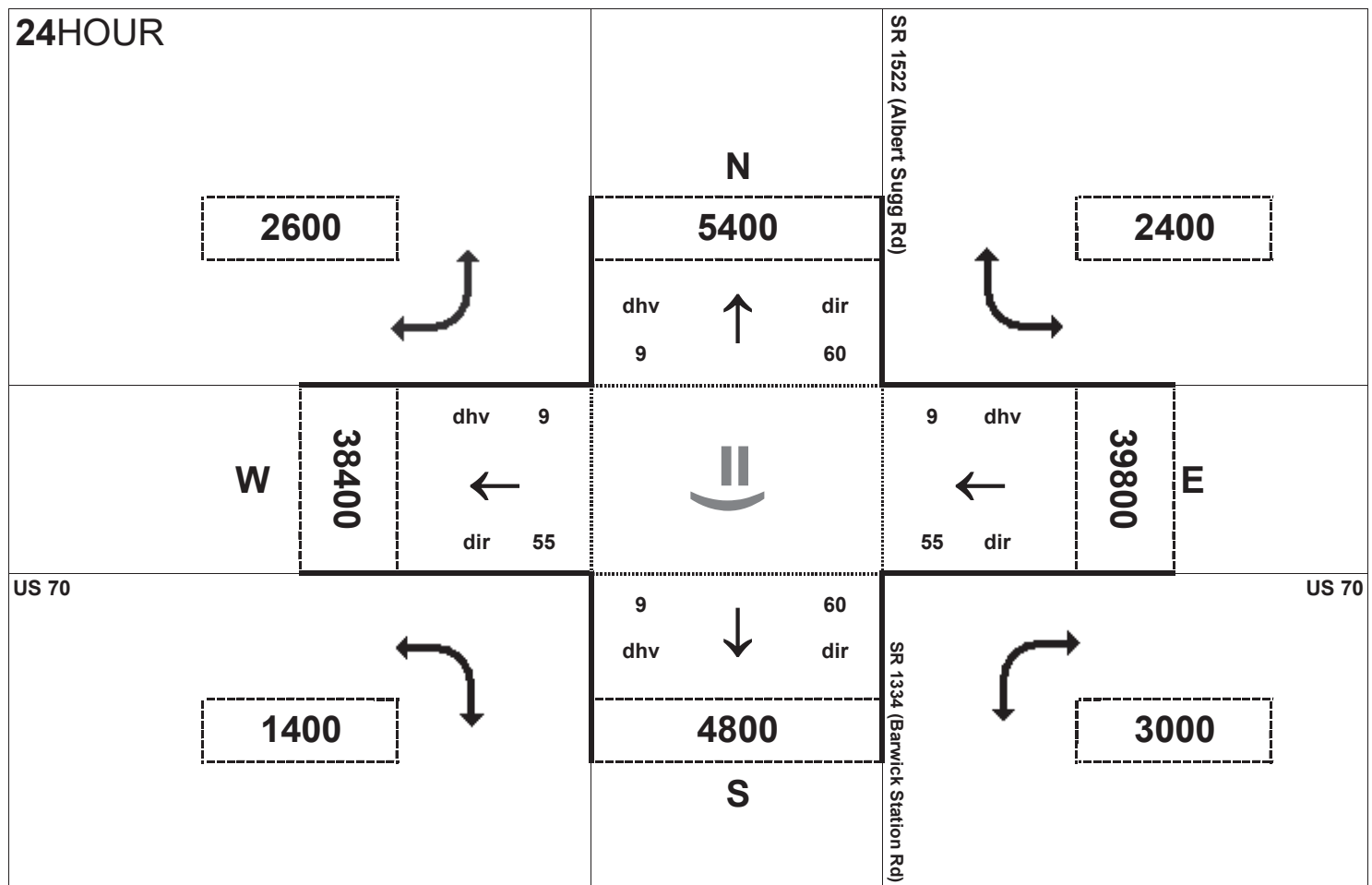
Project:
 R-2553



AM peak hour inflow is 478 vehicles. AM peak hour outflow is 479 vehicles.



PM peak hour inflow is 479 vehicles. PM peak hour outflow is 478 vehicles.

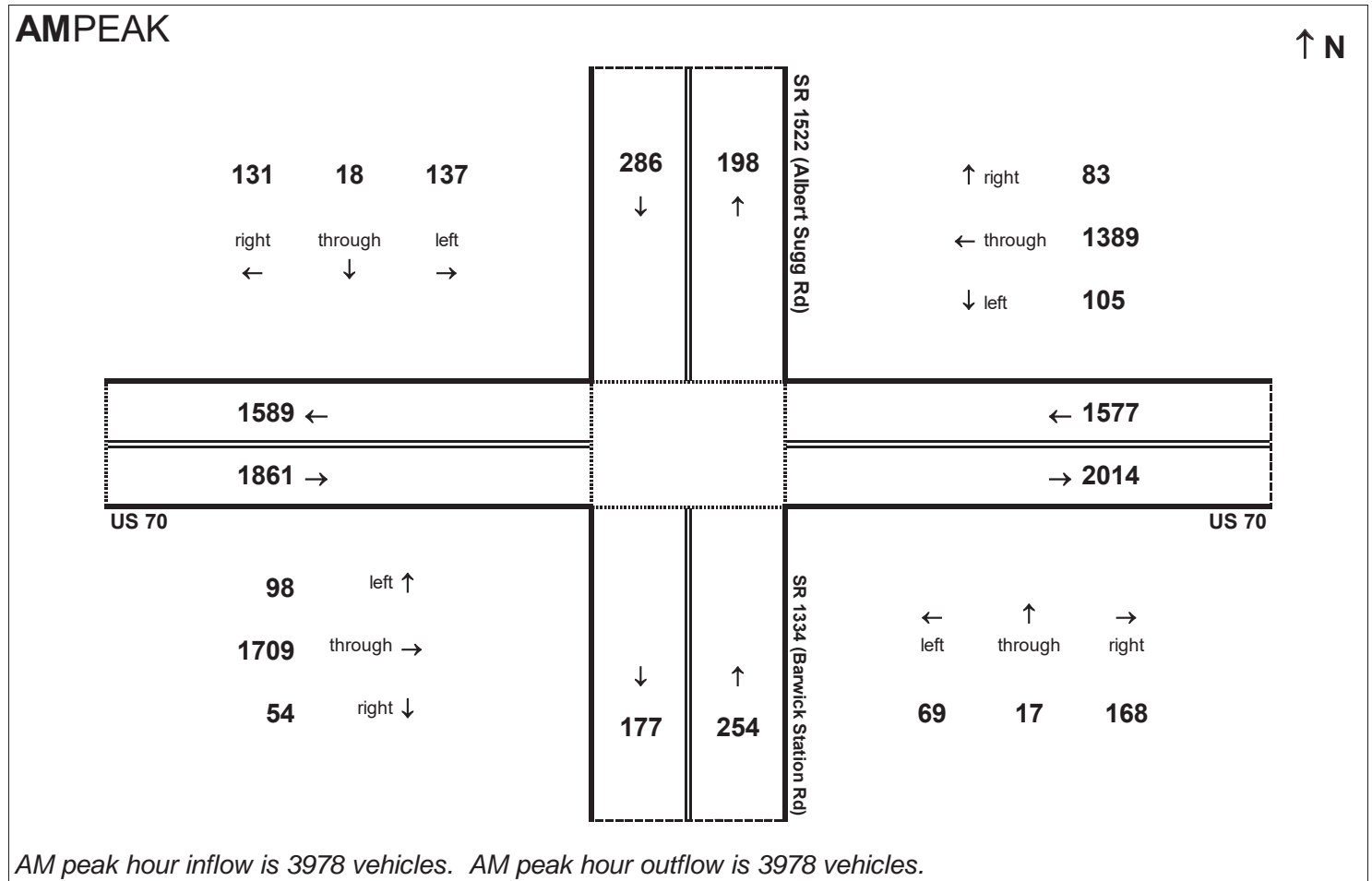


Peak Hour Volume Breakouts Report:
 406-7 Intersection of US 70 and SR 1334 (Barwick Station Rd) / SR 1522 (Albert Sugg Rd)

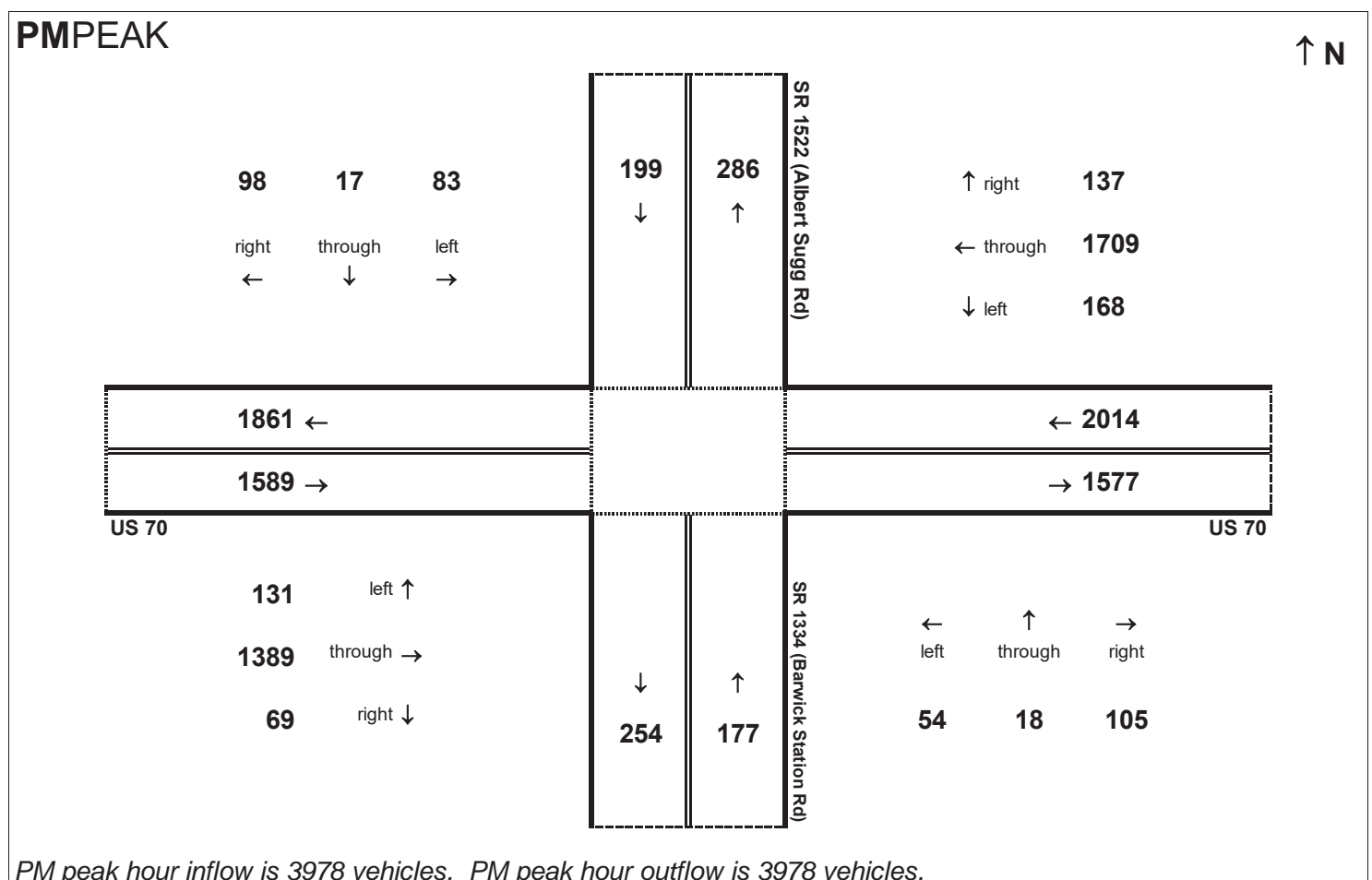
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

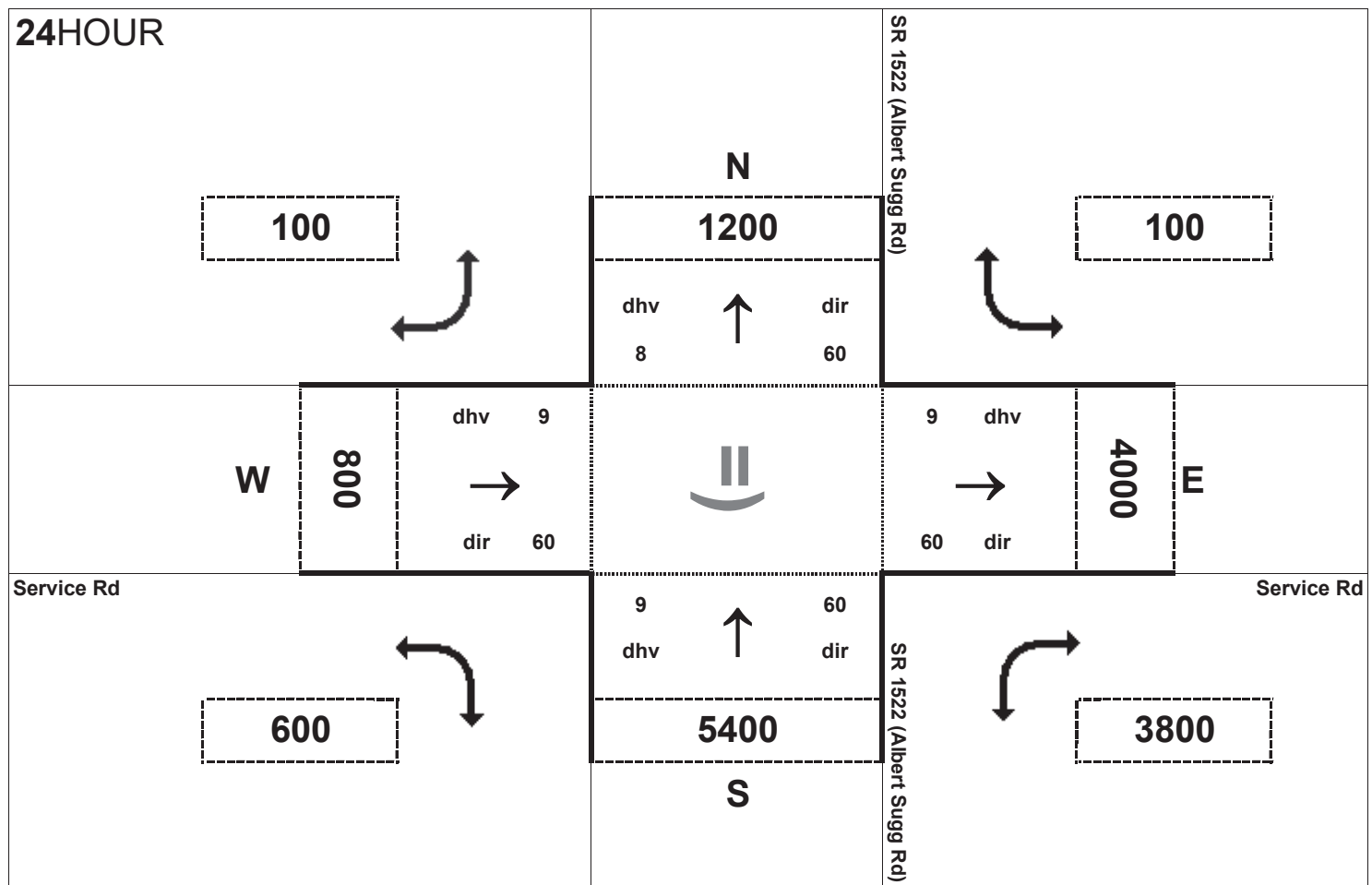
Project:
 R-2553



AM peak hour inflow is 3978 vehicles. AM peak hour outflow is 3978 vehicles.



PM peak hour inflow is 3978 vehicles. PM peak hour outflow is 3978 vehicles.

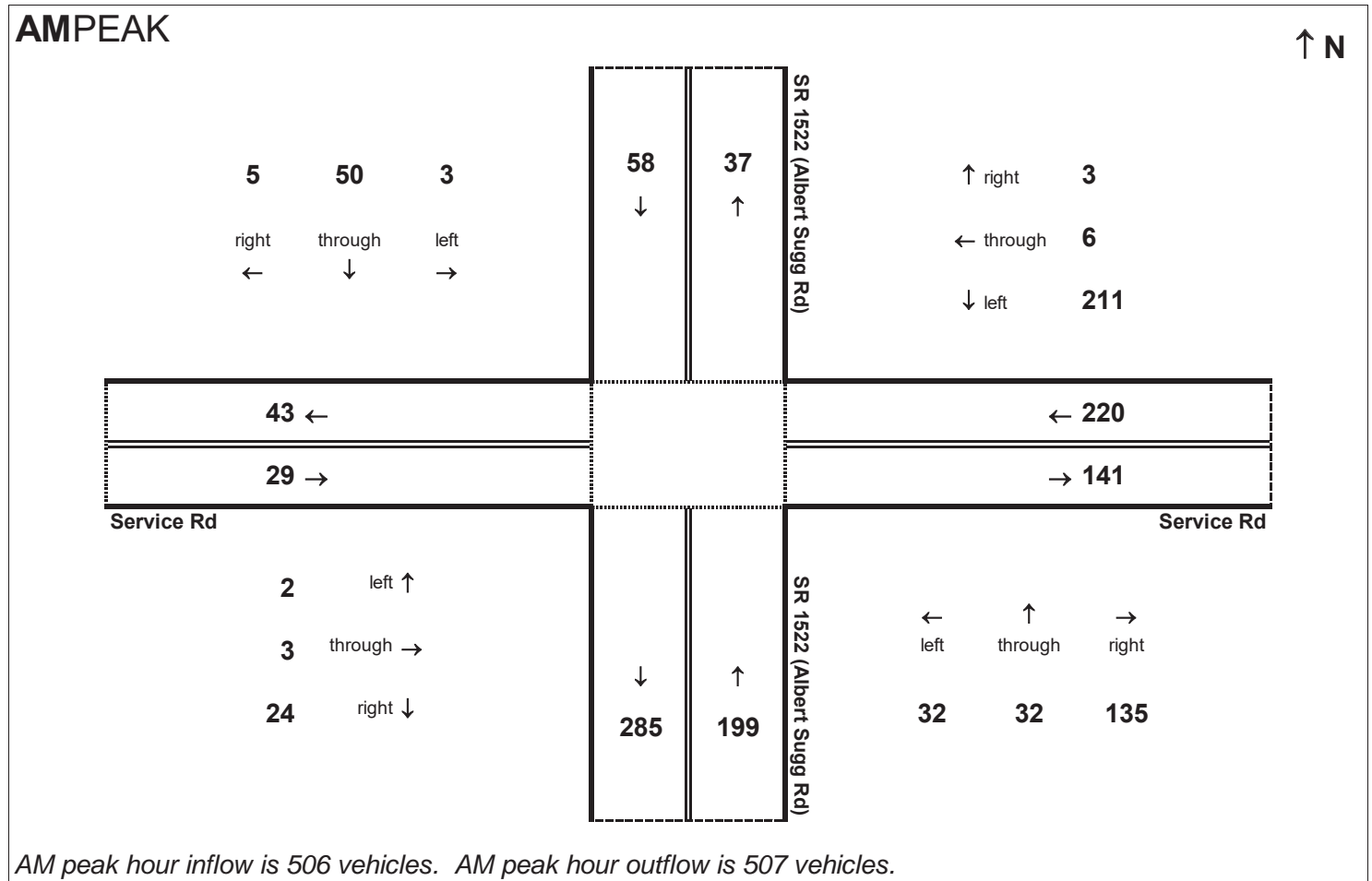


Peak Hour Volume Breakouts Report:
408 Intersection of SR 1522 (Albert Sugg Rd) at Service Rd

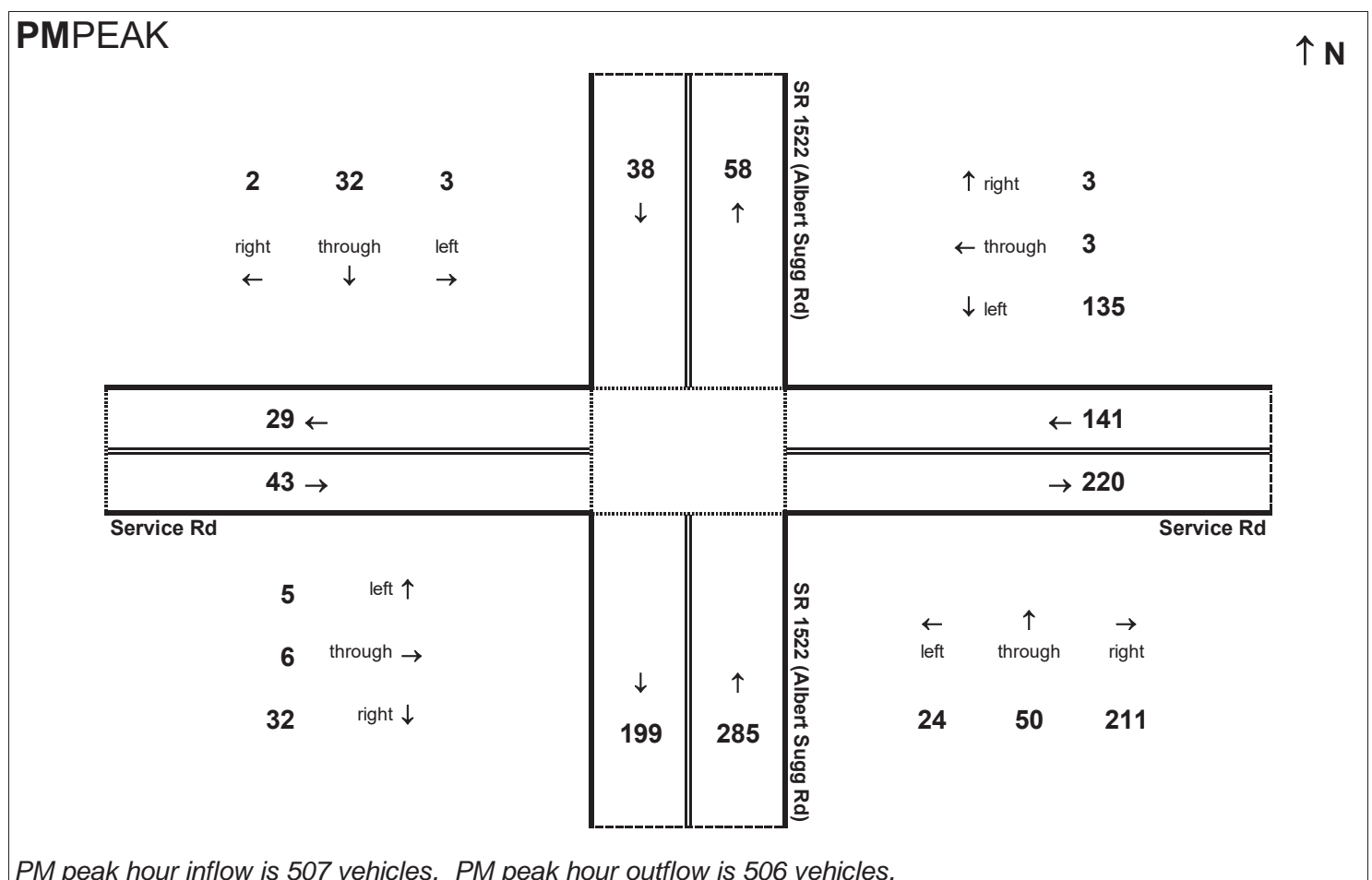
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Build Alt 1

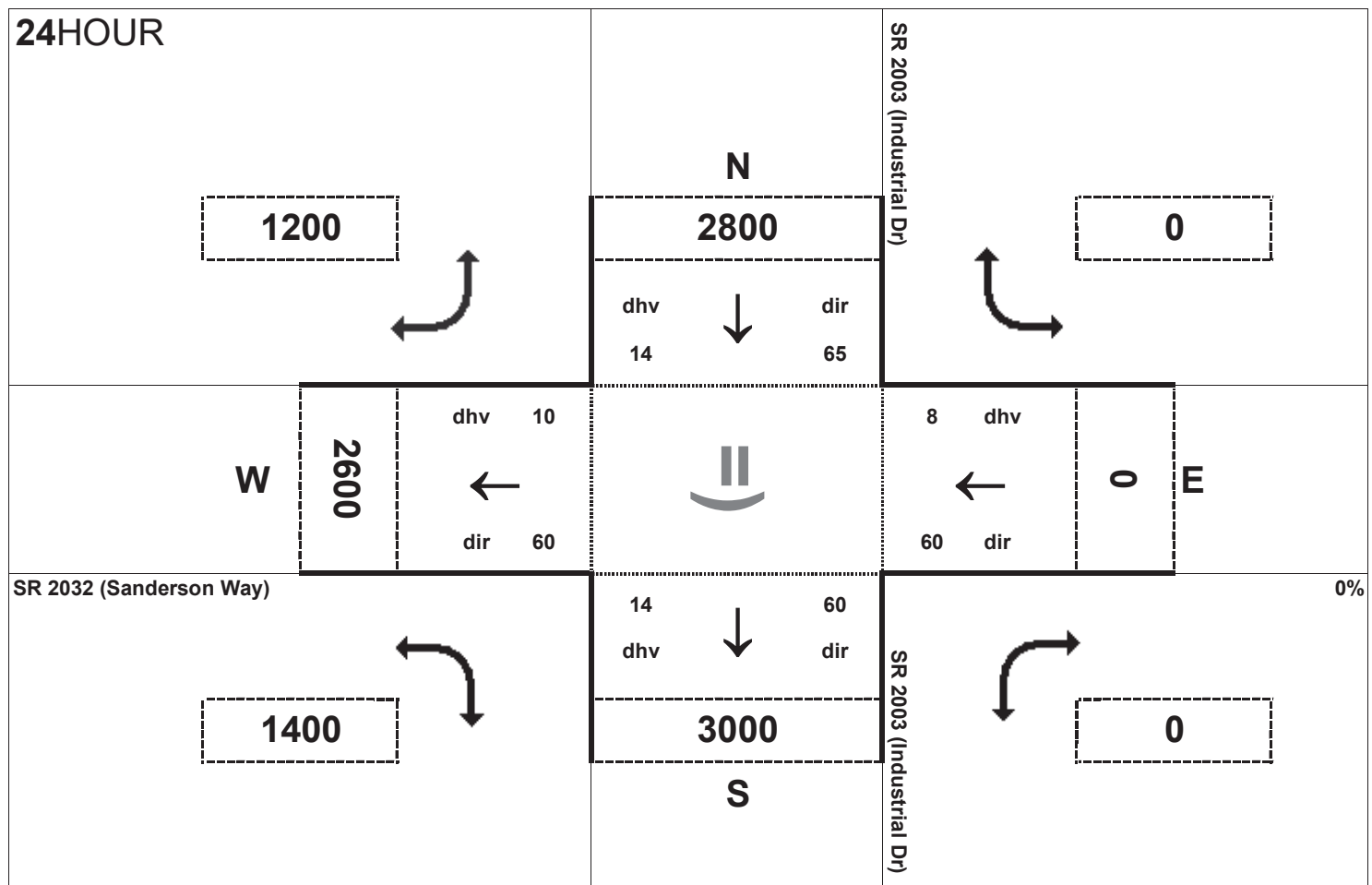
Project:
R-2553



AM peak hour inflow is 506 vehicles. AM peak hour outflow is 507 vehicles.



PM peak hour inflow is 507 vehicles. PM peak hour outflow is 506 vehicles.

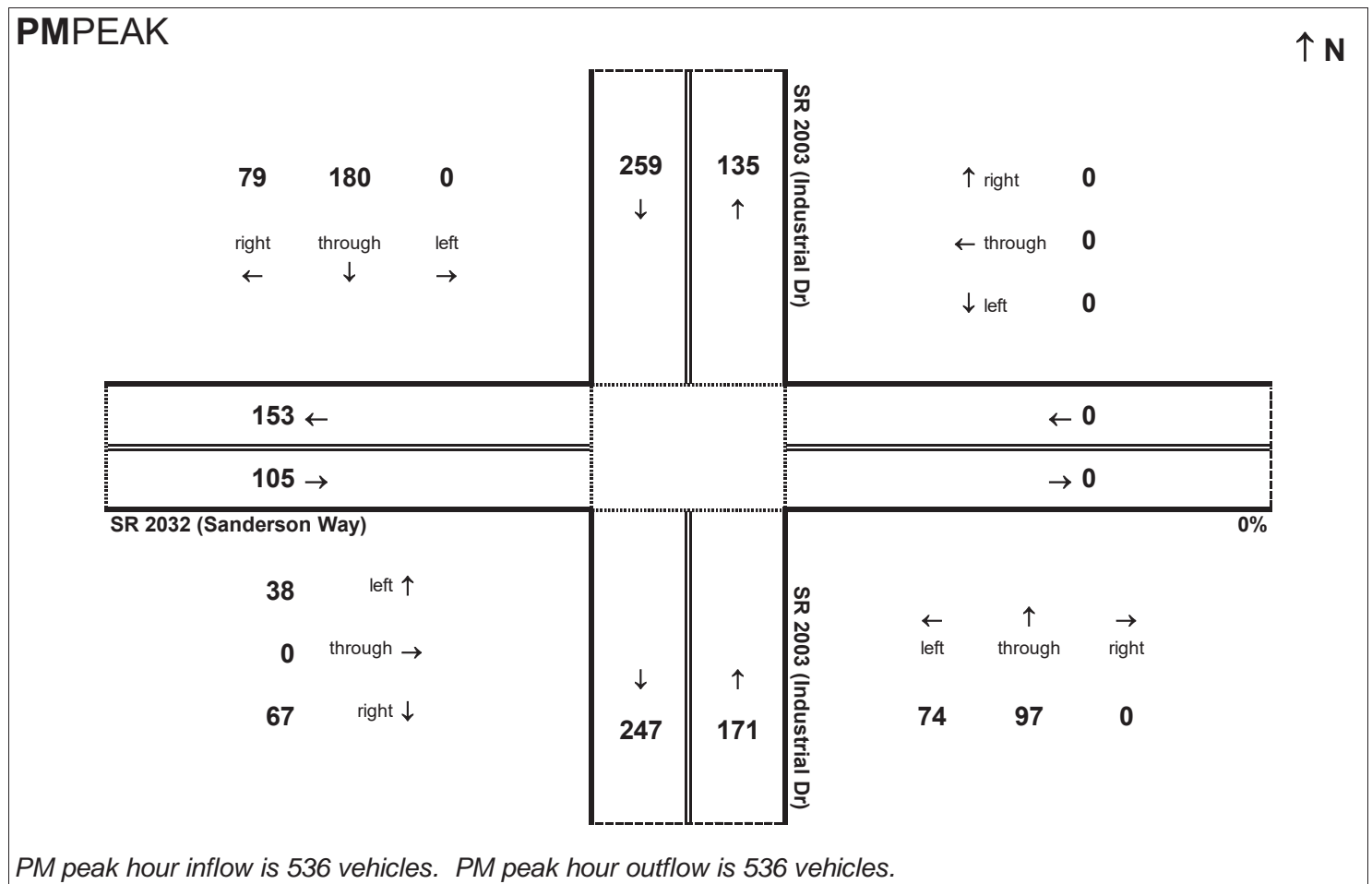
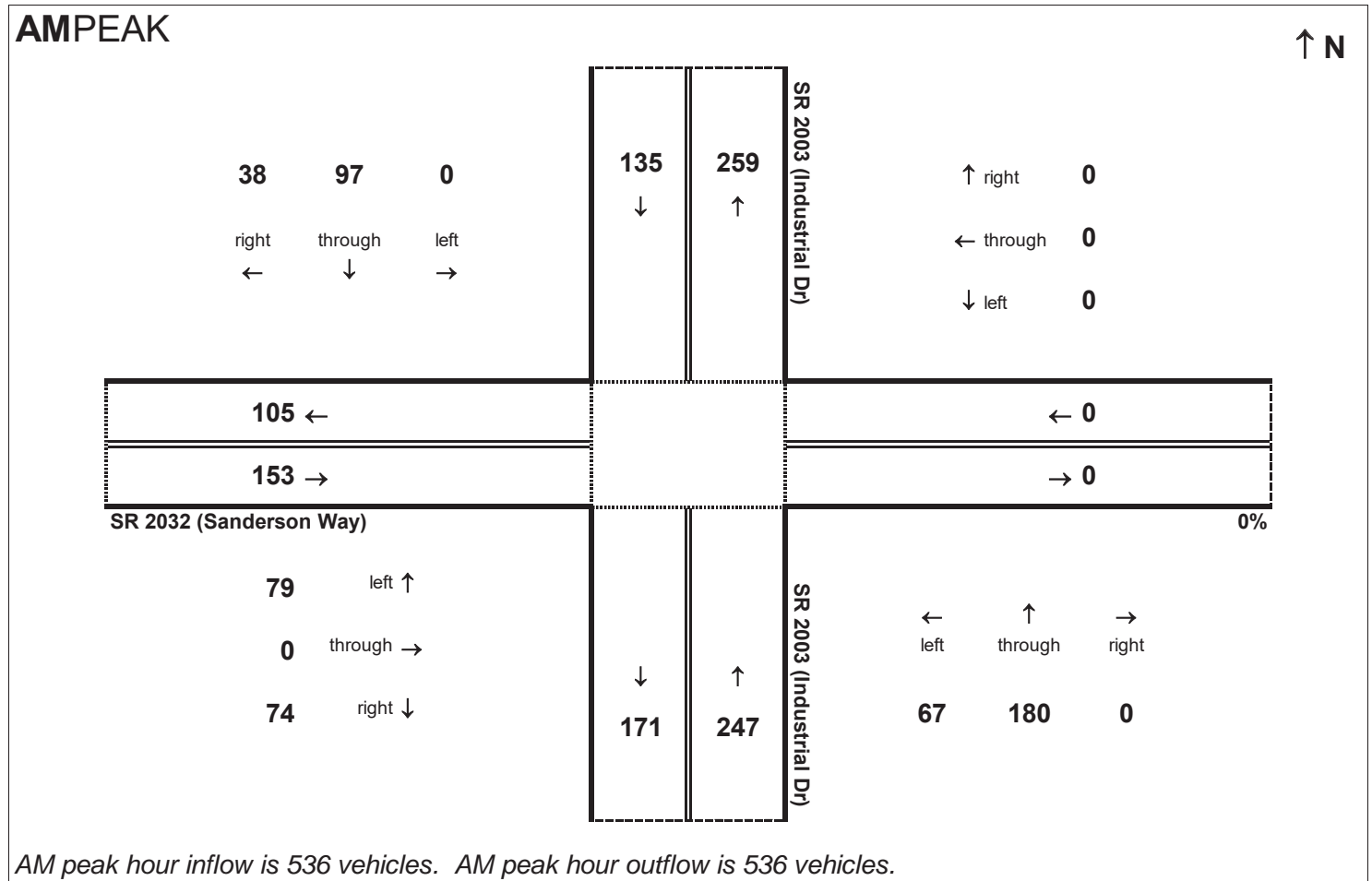


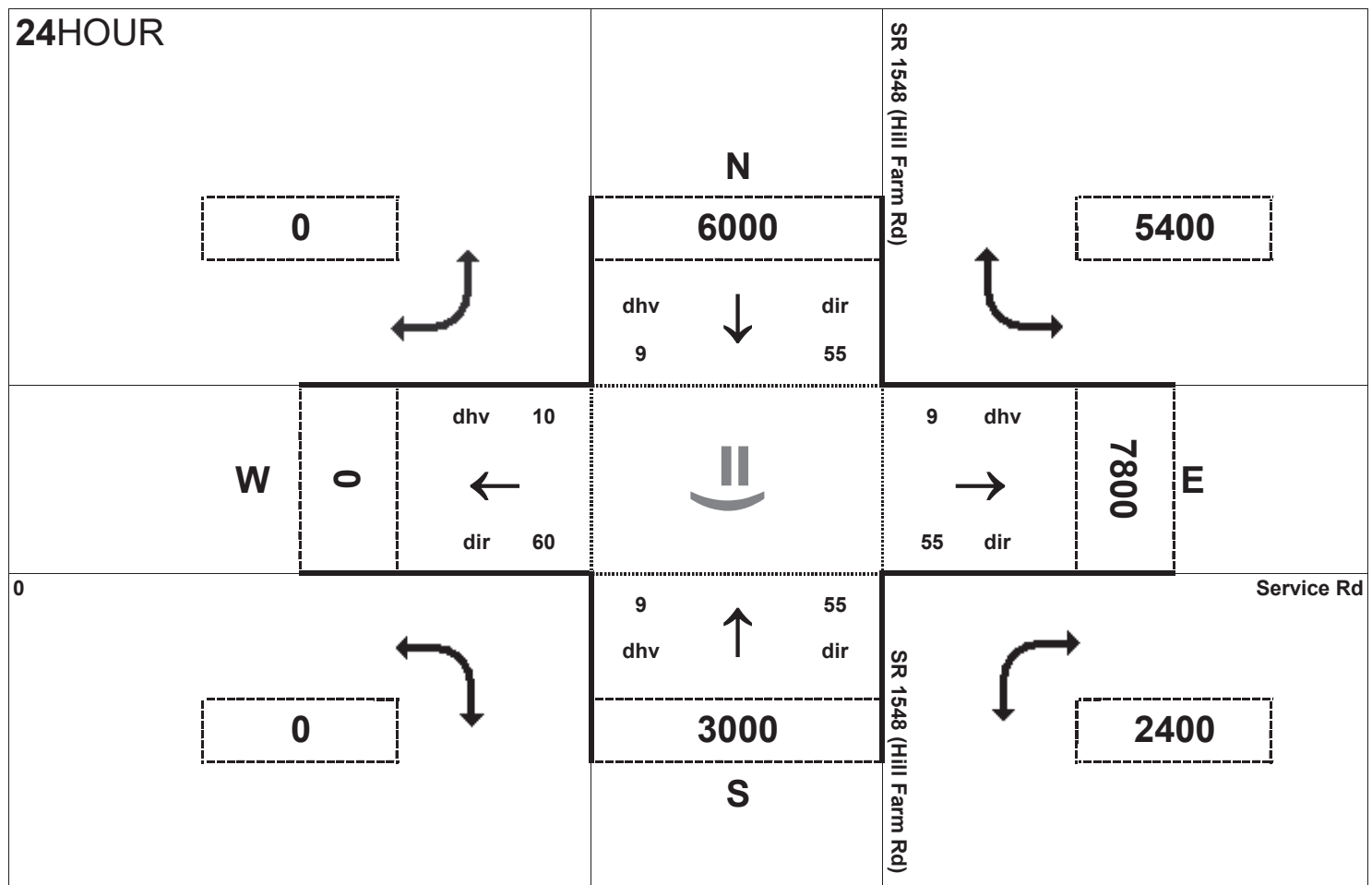
Peak Hour Volume Breakouts Report:
 409 Intersection of SR 2032 (Sanderson Way) at SR 2003 (Industrial Dr)

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

Project:
 R-2553



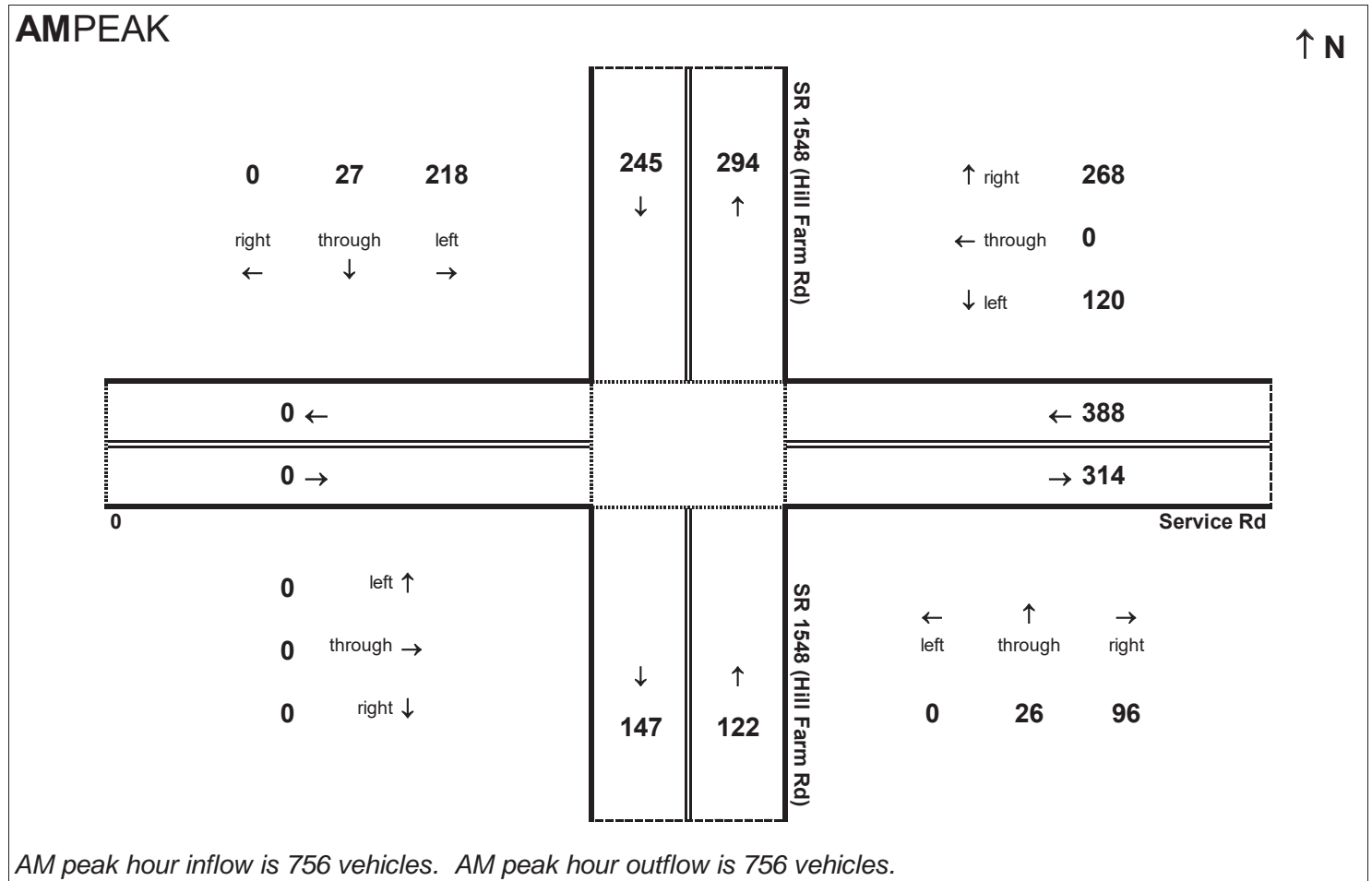


Peak Hour Volume Breakouts Report:
 414 Intersection of SR 1548 (Hill Farm Rd) at Service Rd

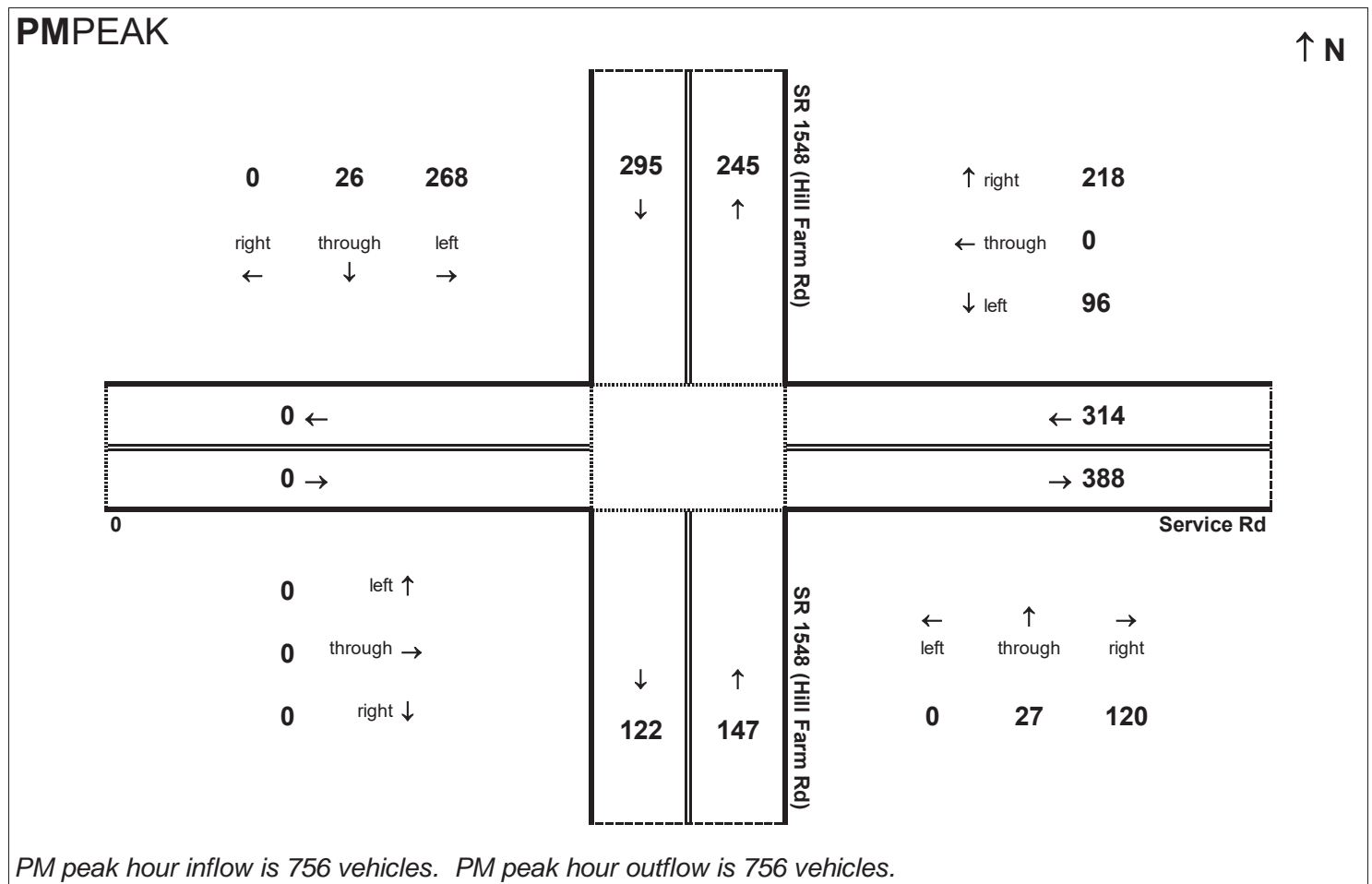
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

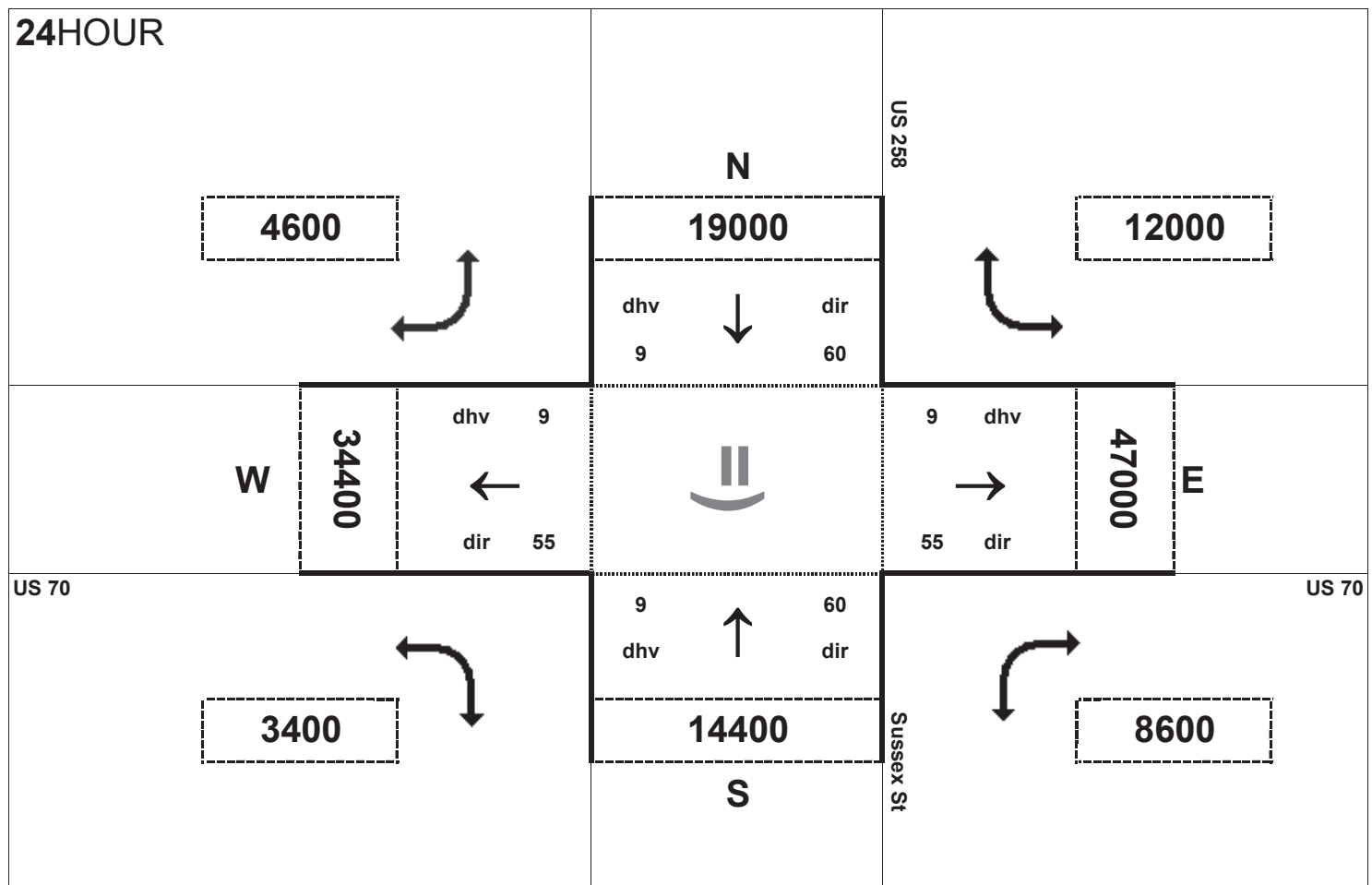
Project:
 R-2553



AM peak hour inflow is 756 vehicles. AM peak hour outflow is 756 vehicles.



PM peak hour inflow is 756 vehicles. PM peak hour outflow is 756 vehicles.

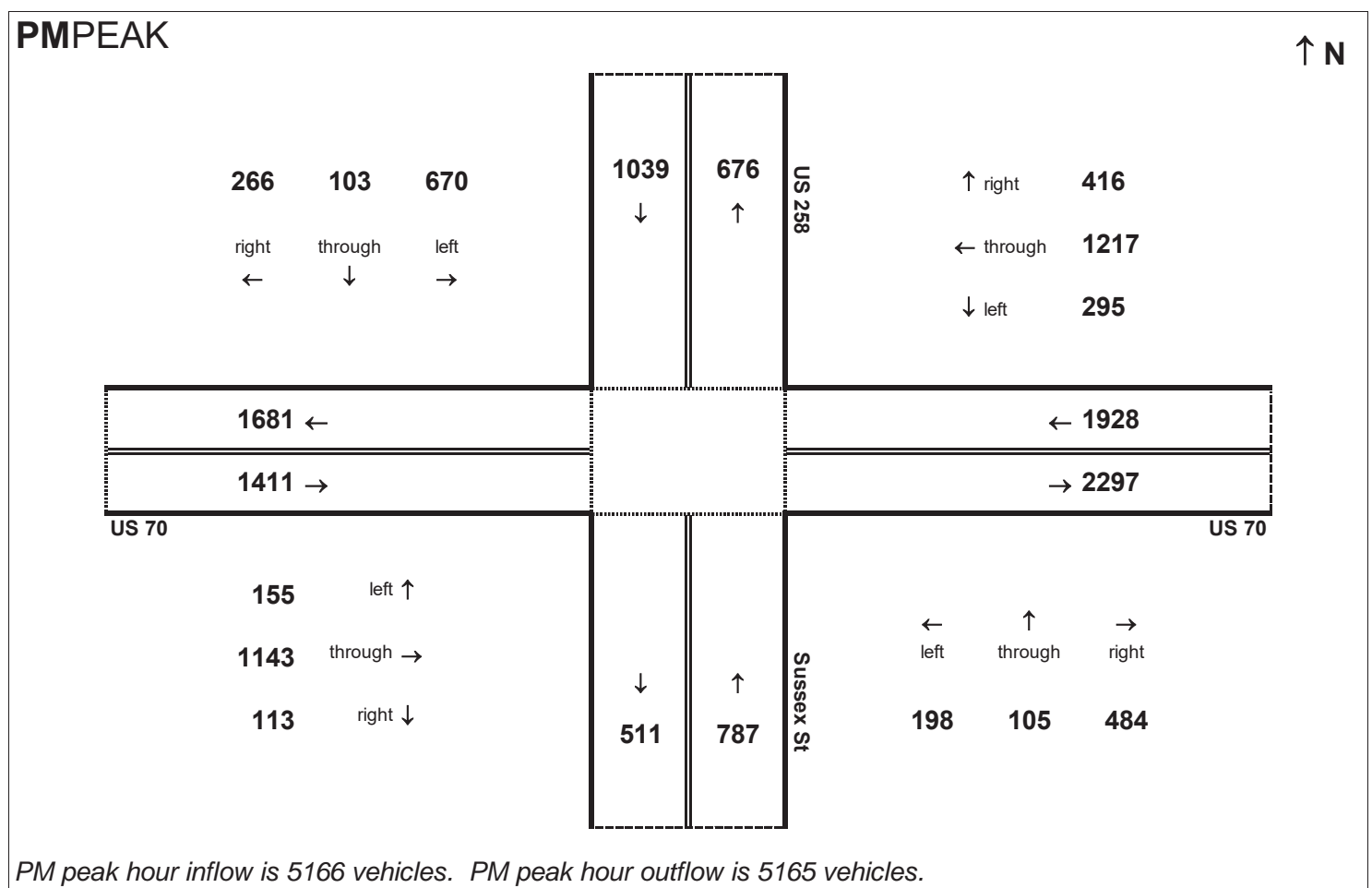
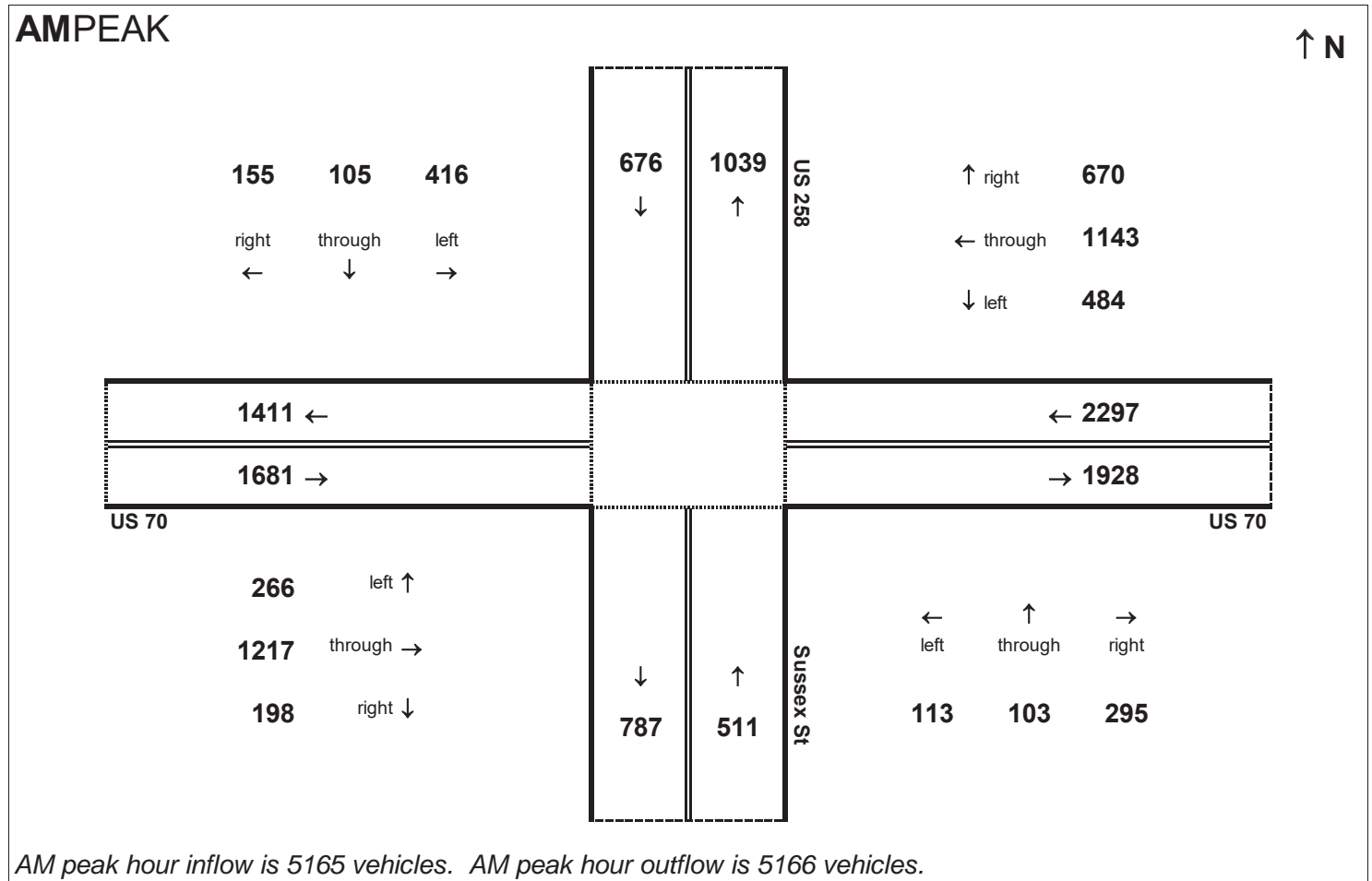


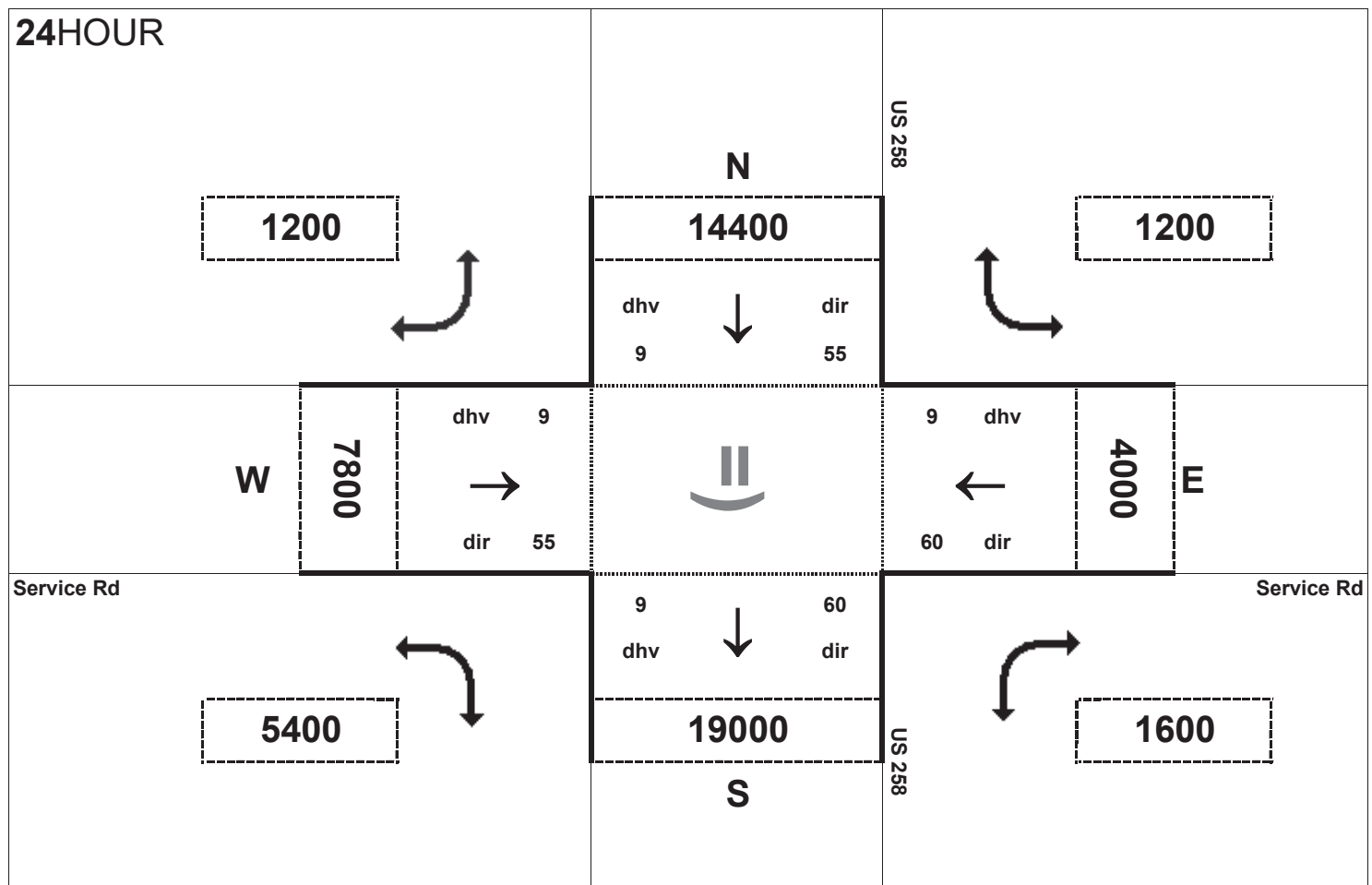
Peak Hour Volume Breakouts Report:
 415-16 Intersection of US 70 and US 258 / Sussex St

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

Project:
 R-2553



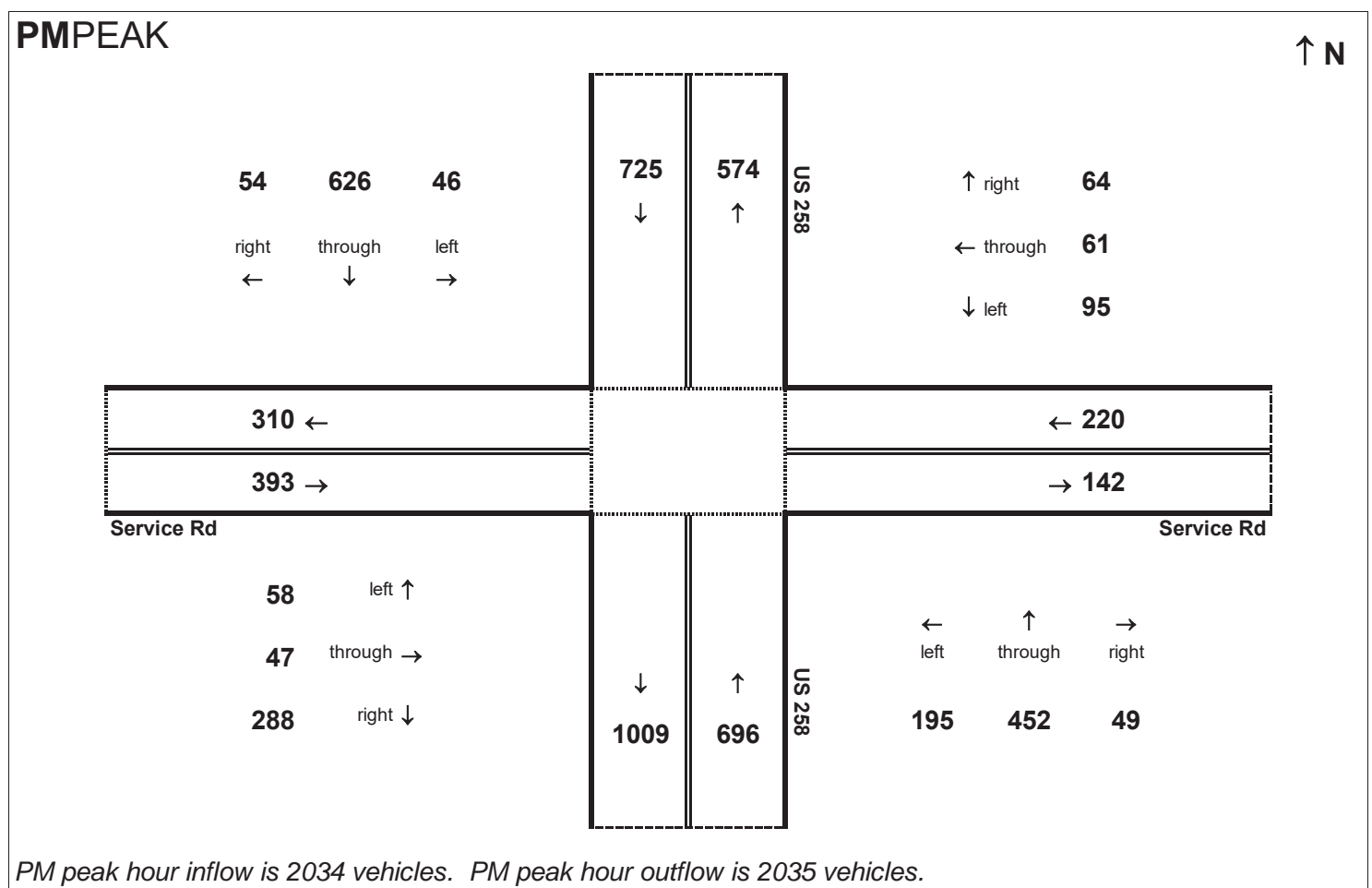
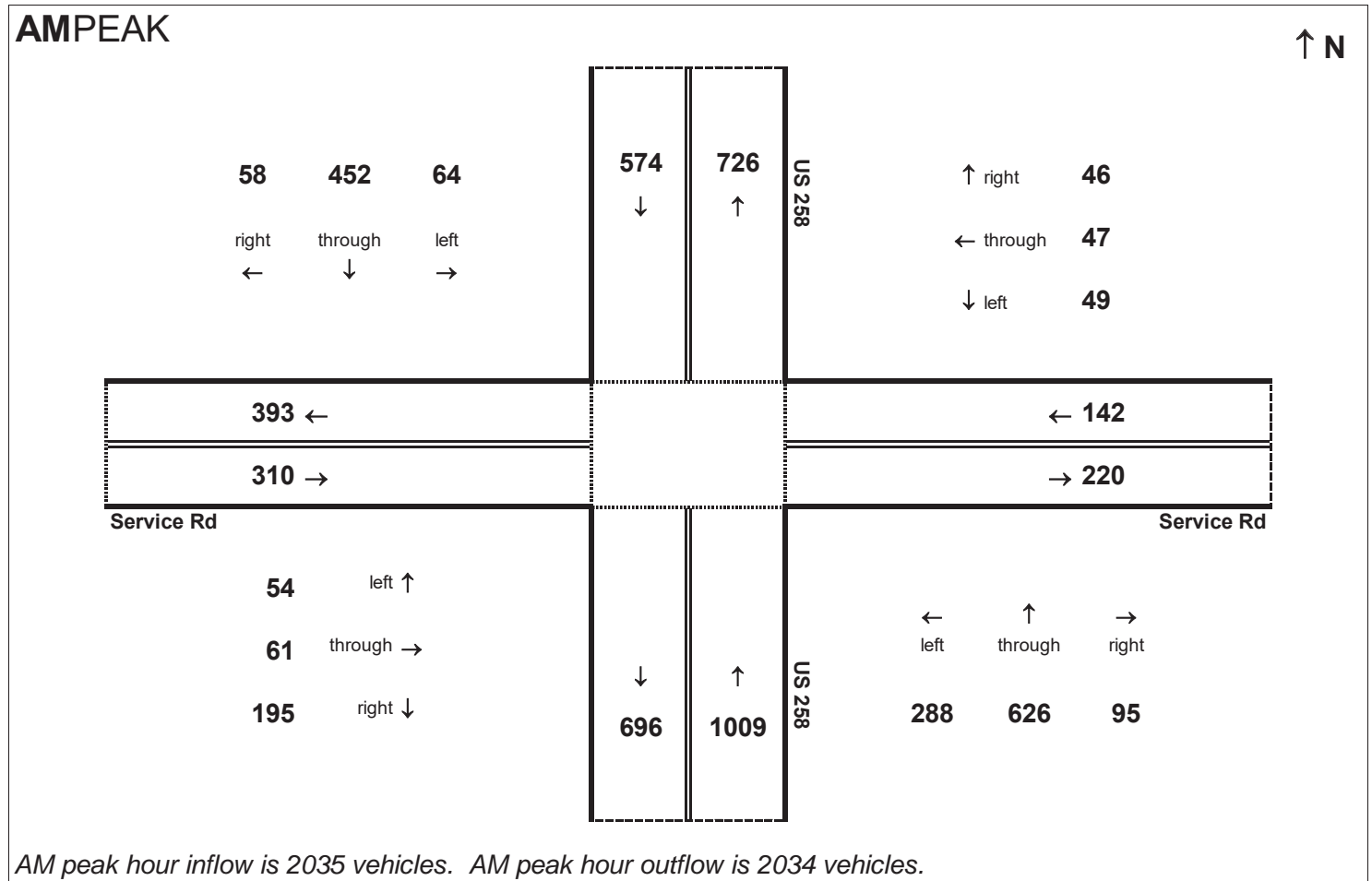


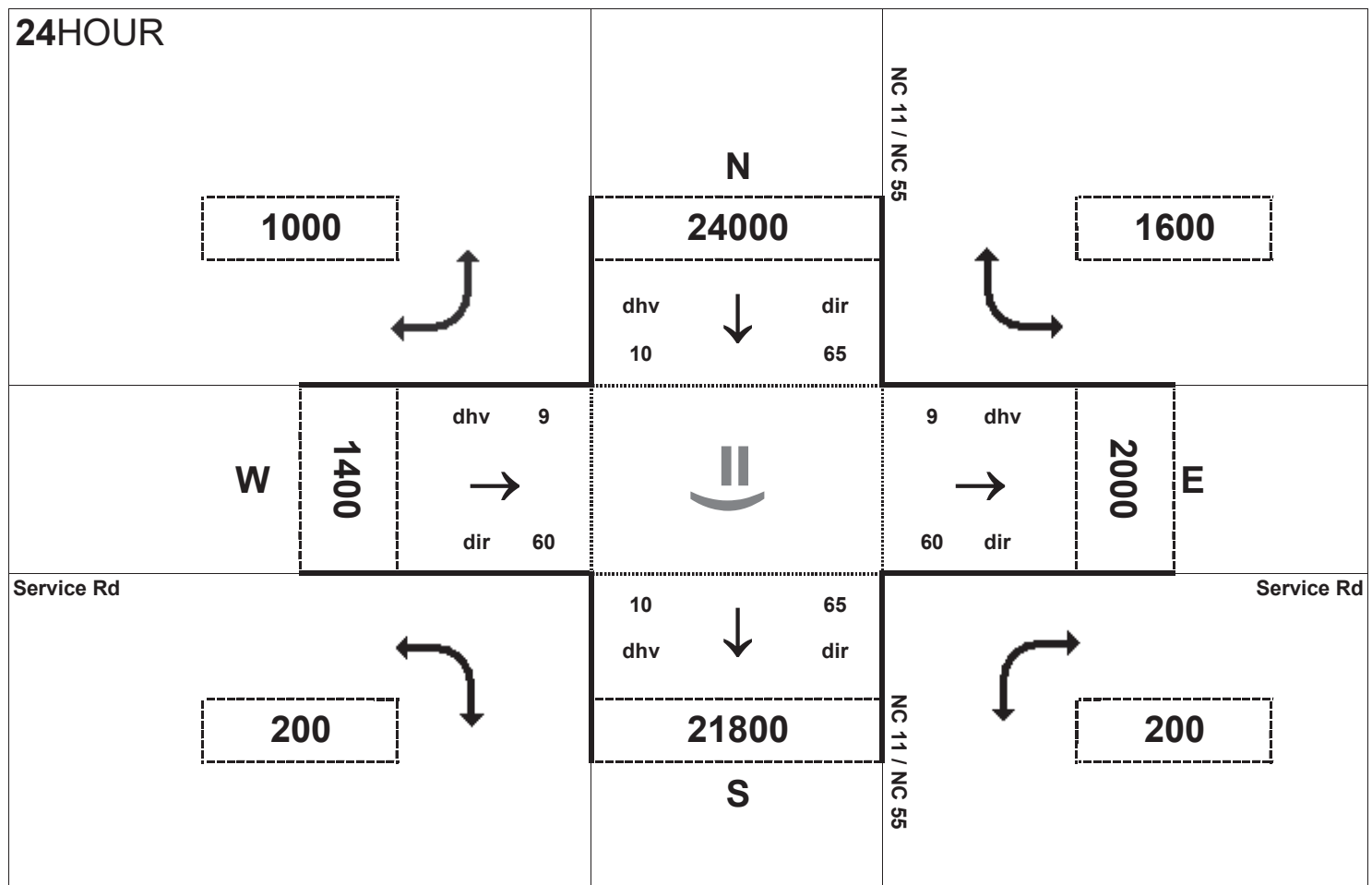
Peak Hour Volume Breakouts Report:
417 Intersection of US 258 and Service Rd

Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Build Alt 1

Project:
R-2553



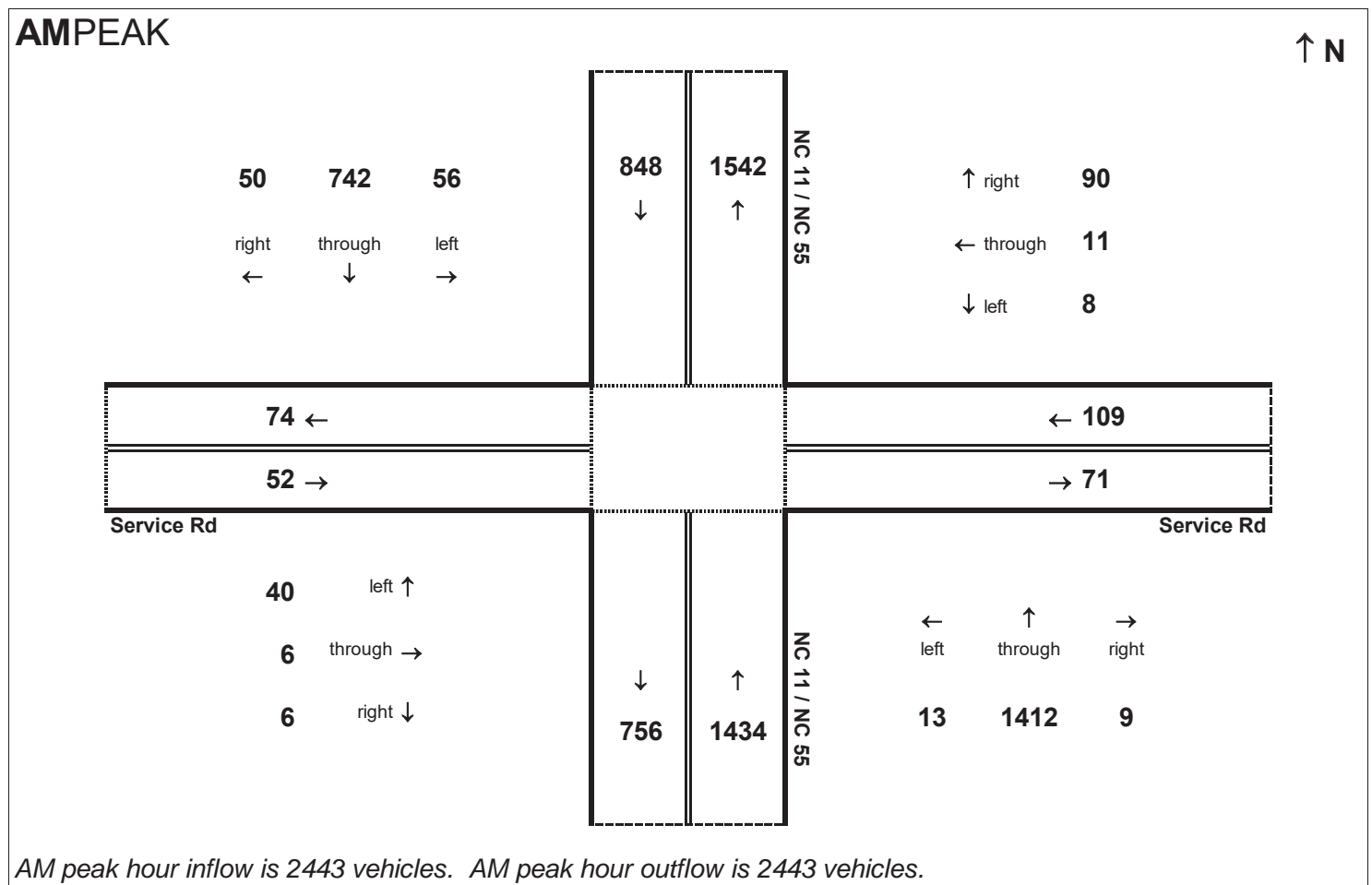


Peak Hour Volume Breakouts Report:
418 Intersection of NC 11 / NC 55 at Service Rd

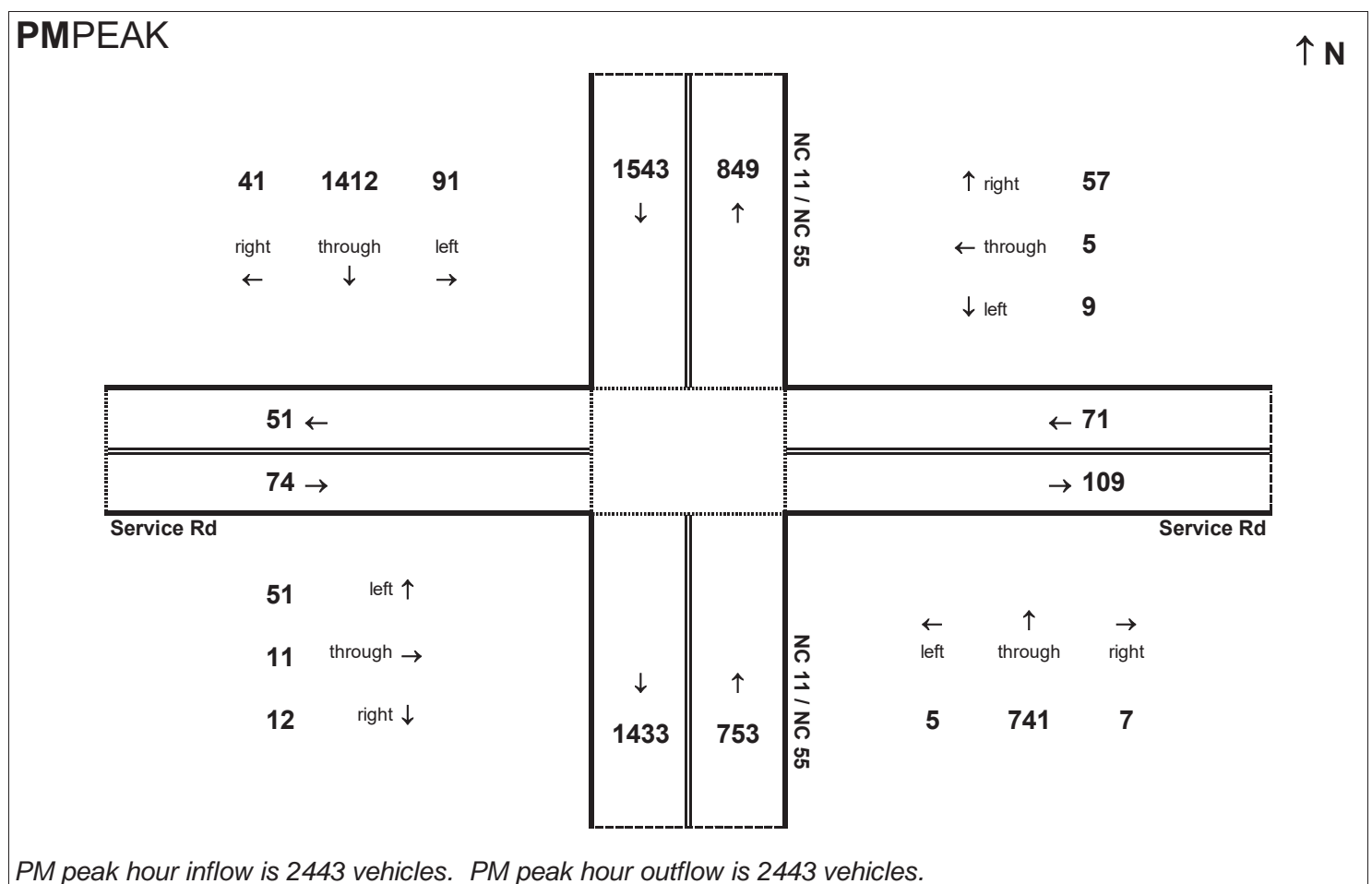
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Build Alt 1

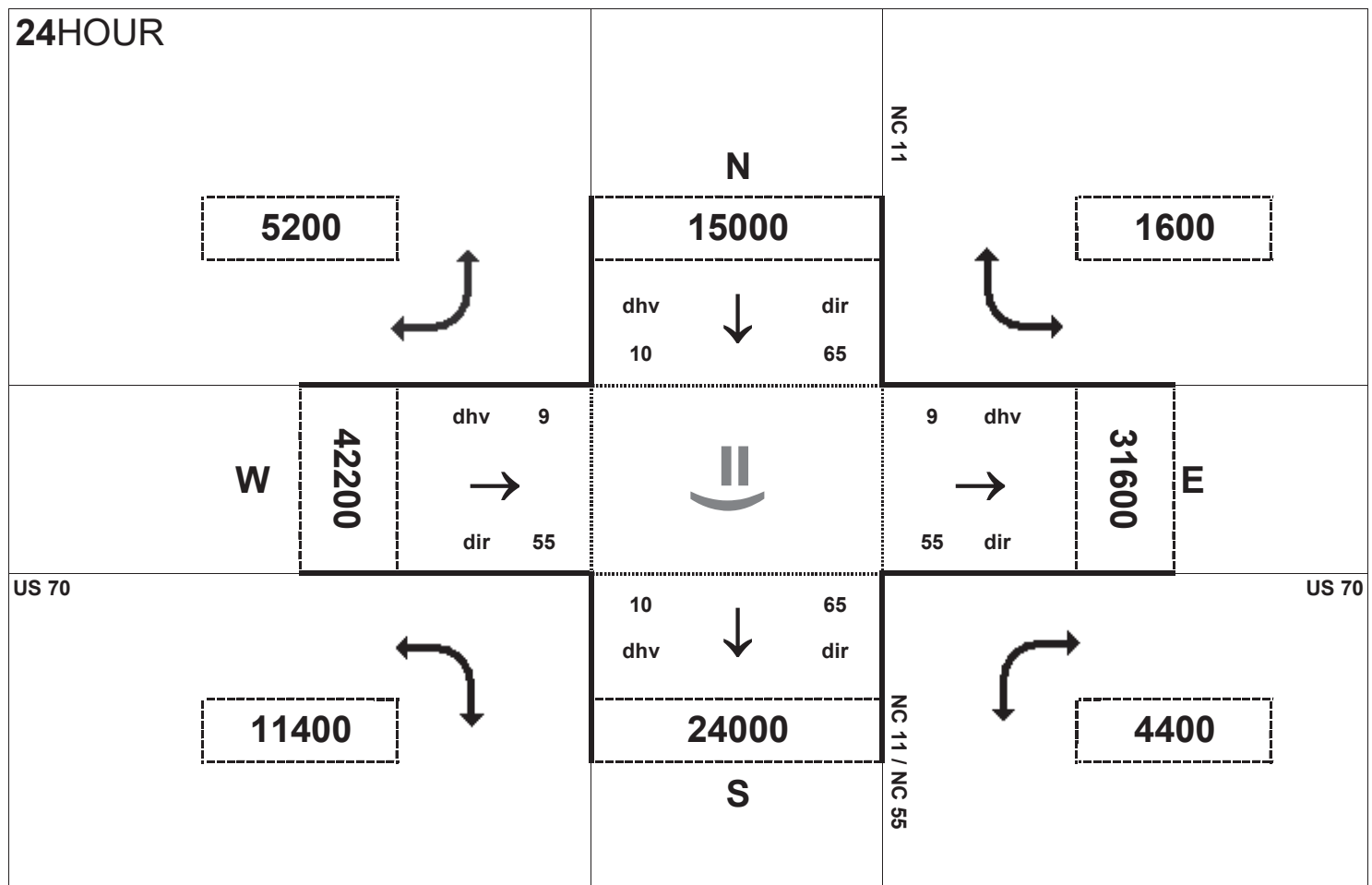
Project:
R-2553



AM peak hour inflow is 2443 vehicles. AM peak hour outflow is 2443 vehicles.



PM peak hour inflow is 2443 vehicles. PM peak hour outflow is 2443 vehicles.

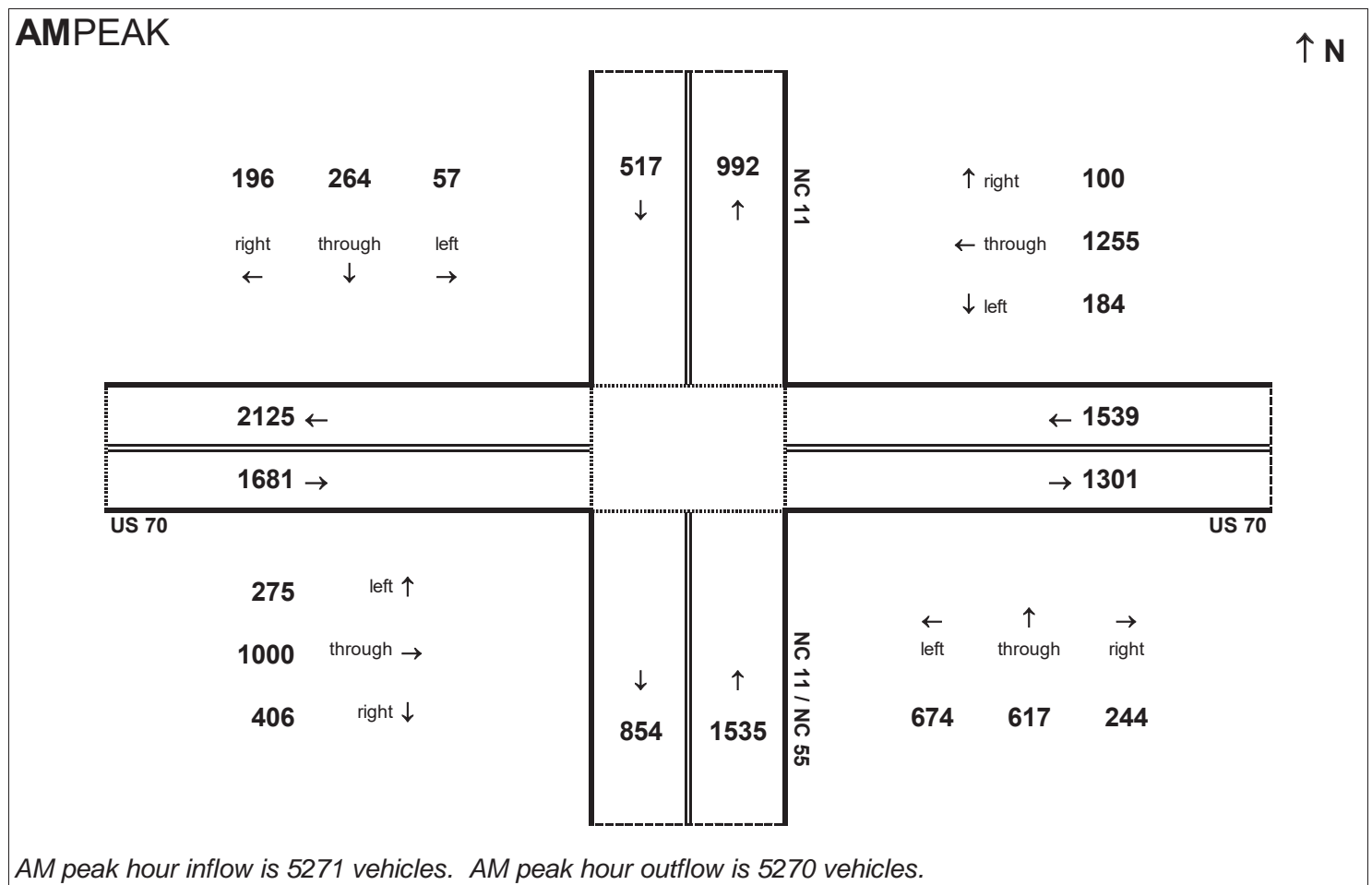


Peak Hour Volume Breakouts Report:
419-20 Intersection of US 70 and NC 11 / NC 55

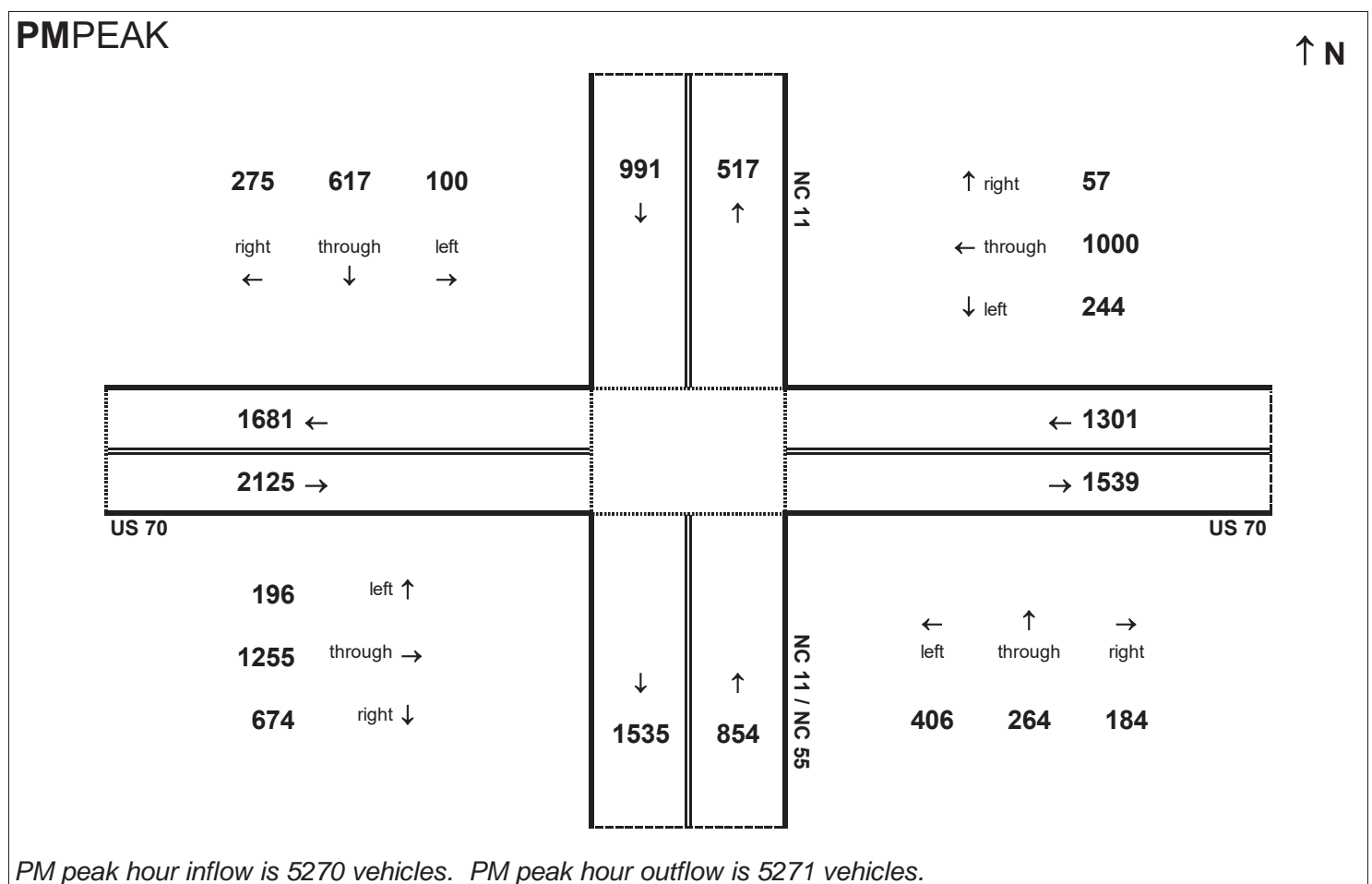
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Build Alt 1

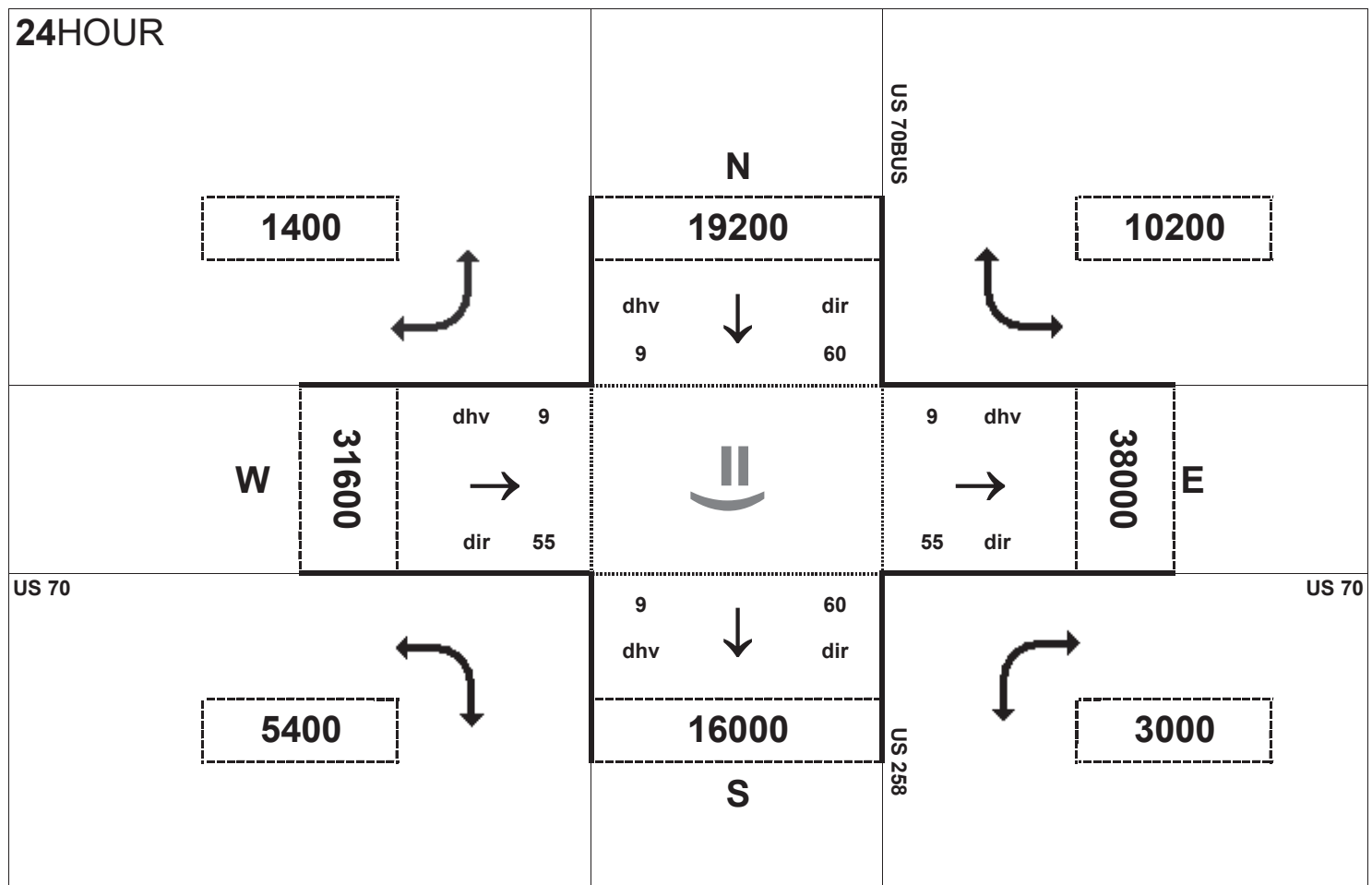
Project:
R-2553



AM peak hour inflow is 5271 vehicles. AM peak hour outflow is 5270 vehicles.



PM peak hour inflow is 5270 vehicles. PM peak hour outflow is 5271 vehicles.

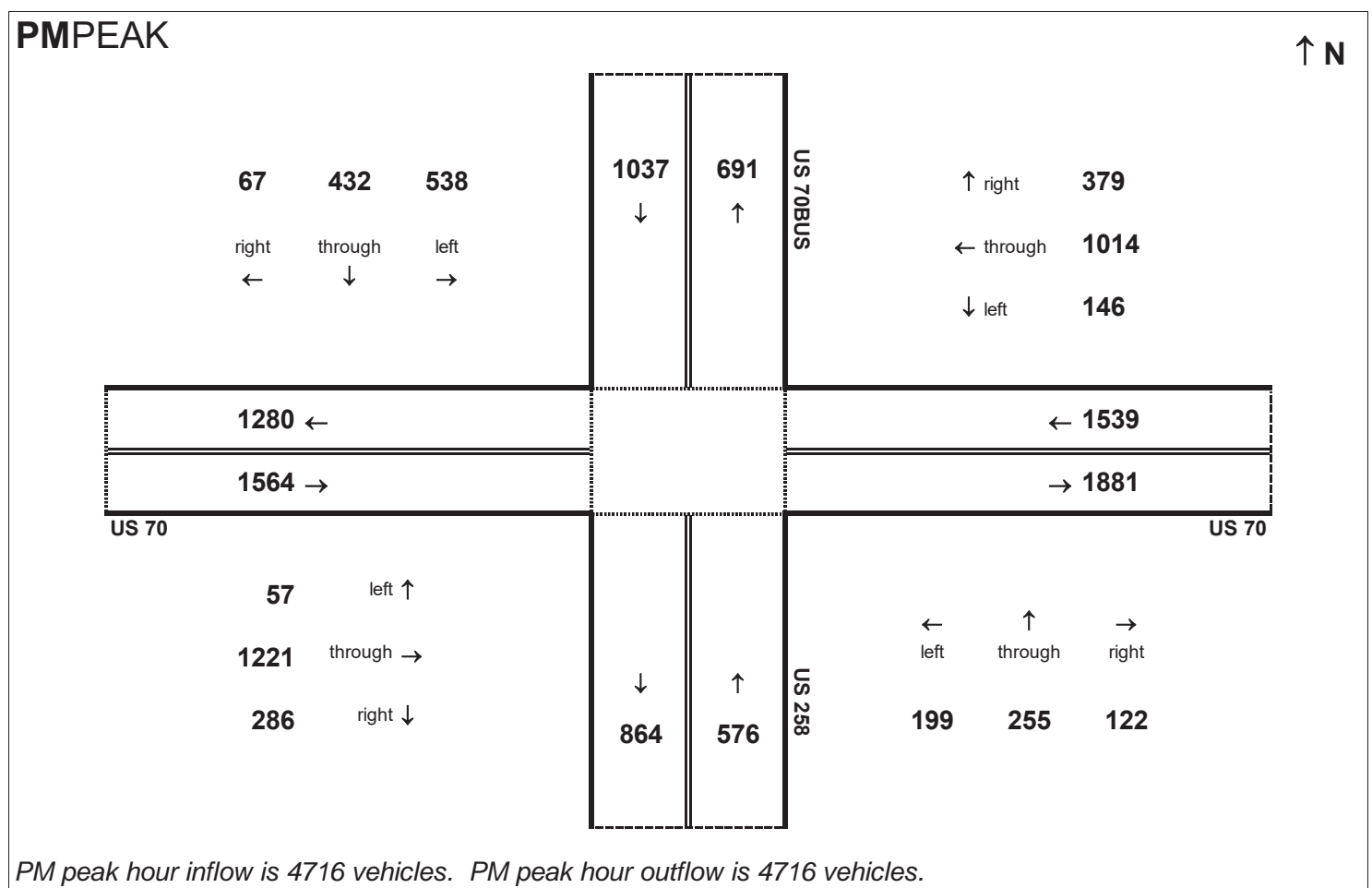
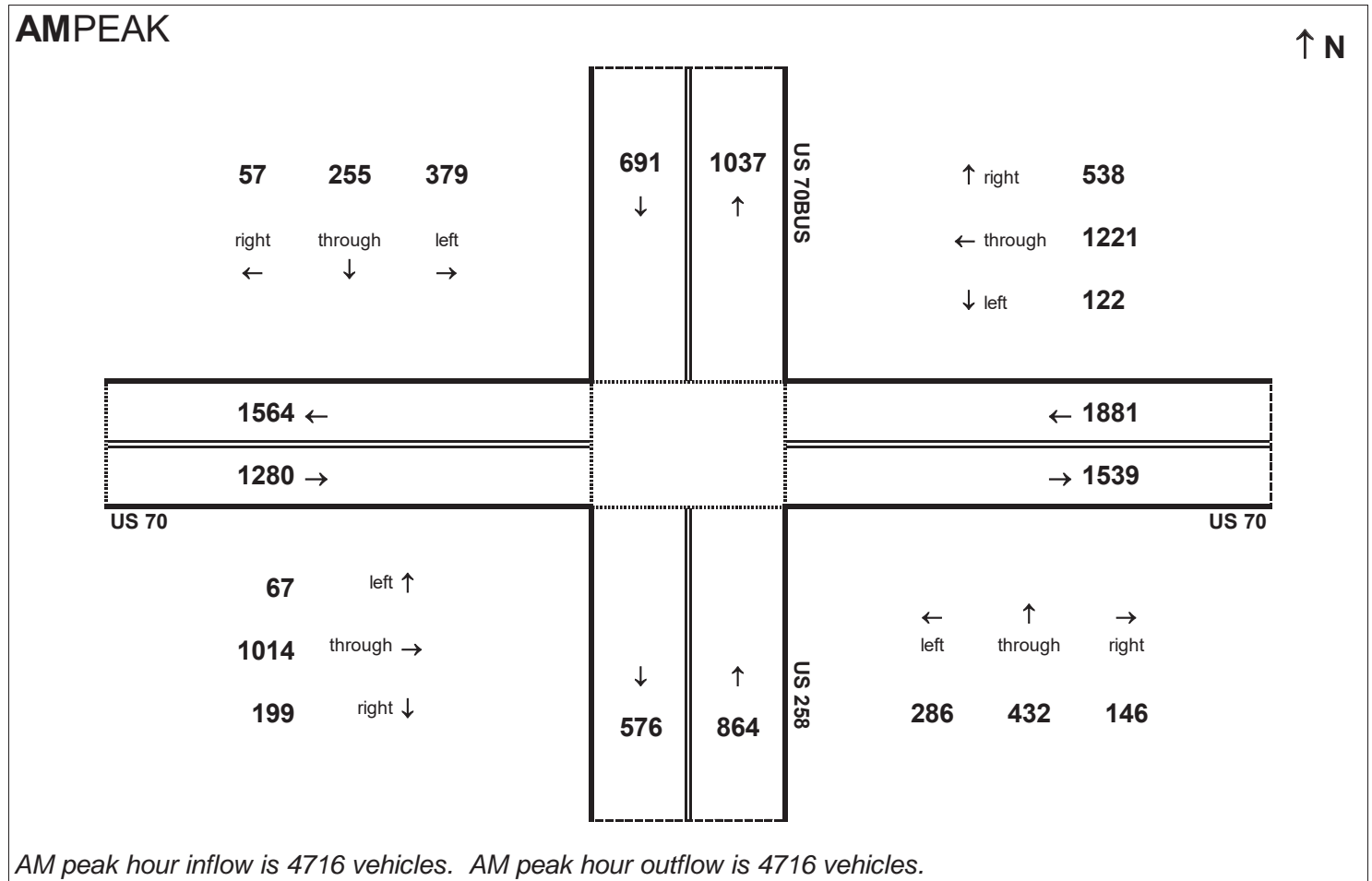


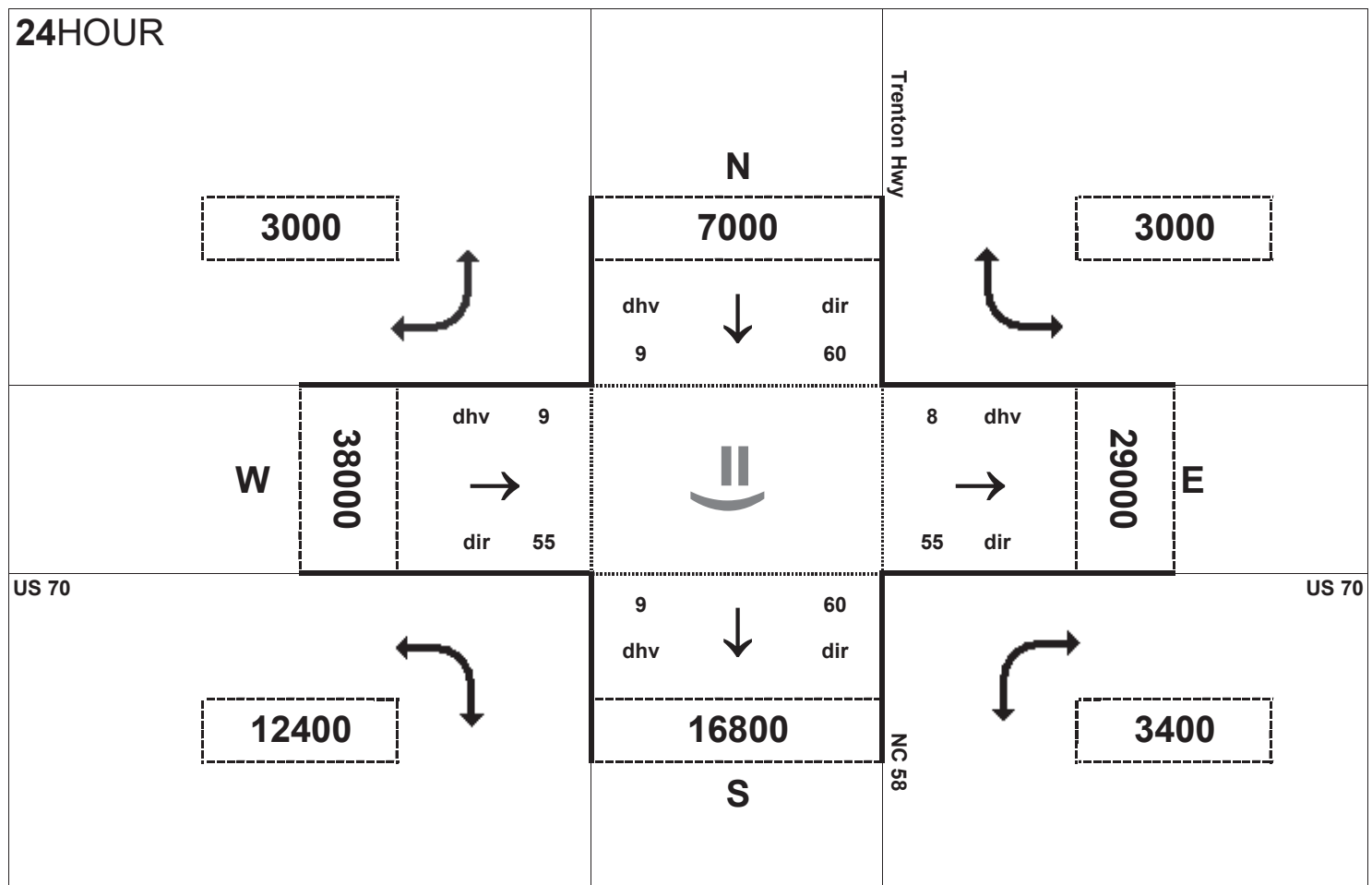
Peak Hour Volume Breakouts Report:
 421-22 Intersection of US 70 and US 70BUS (E) /
 US 258

Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

Project:
 R-2553



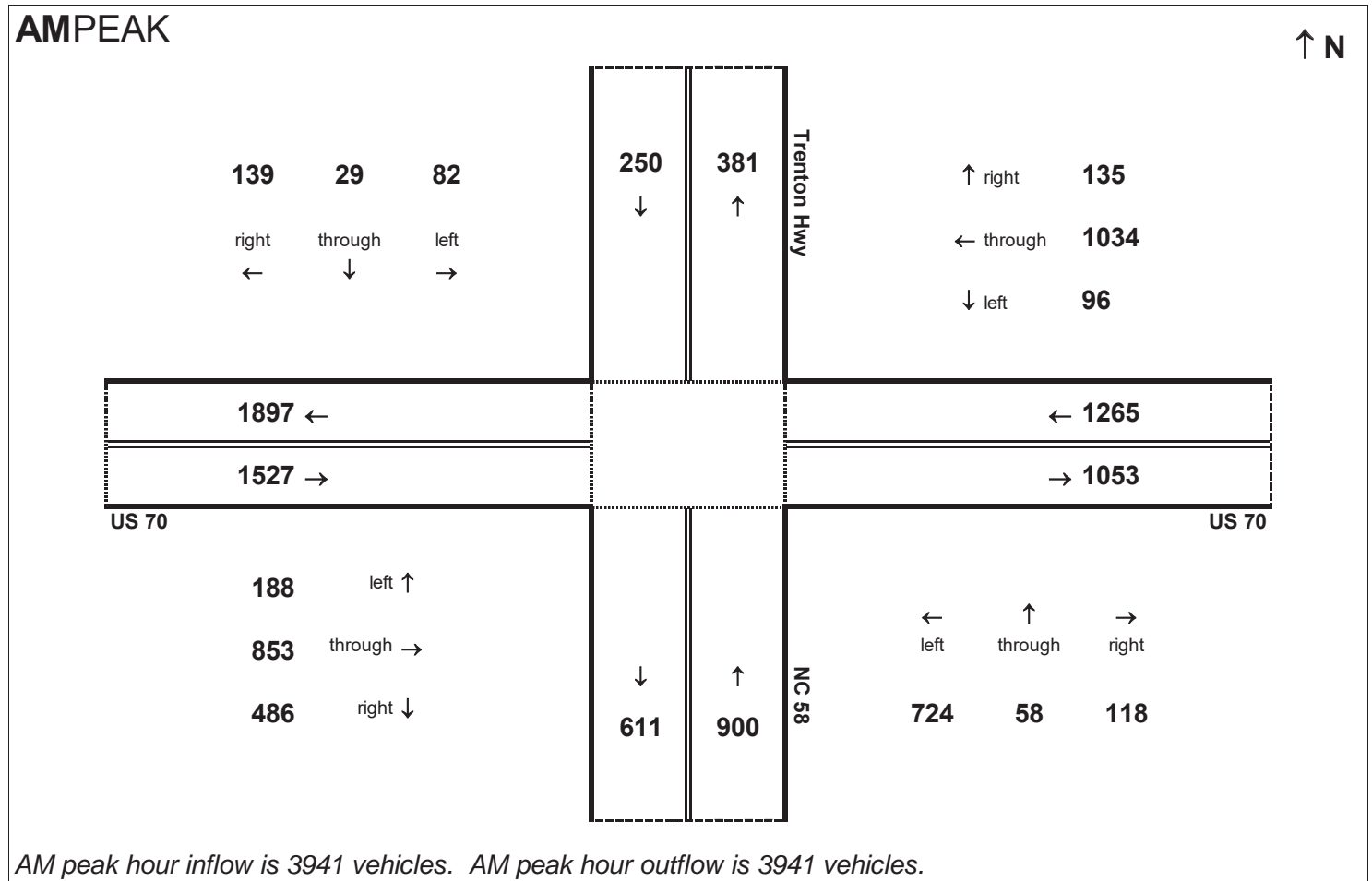


Peak Hour Volume Breakouts Report:
 423-24 Intersection of US 70 and NC 58 / Trenton Hwy

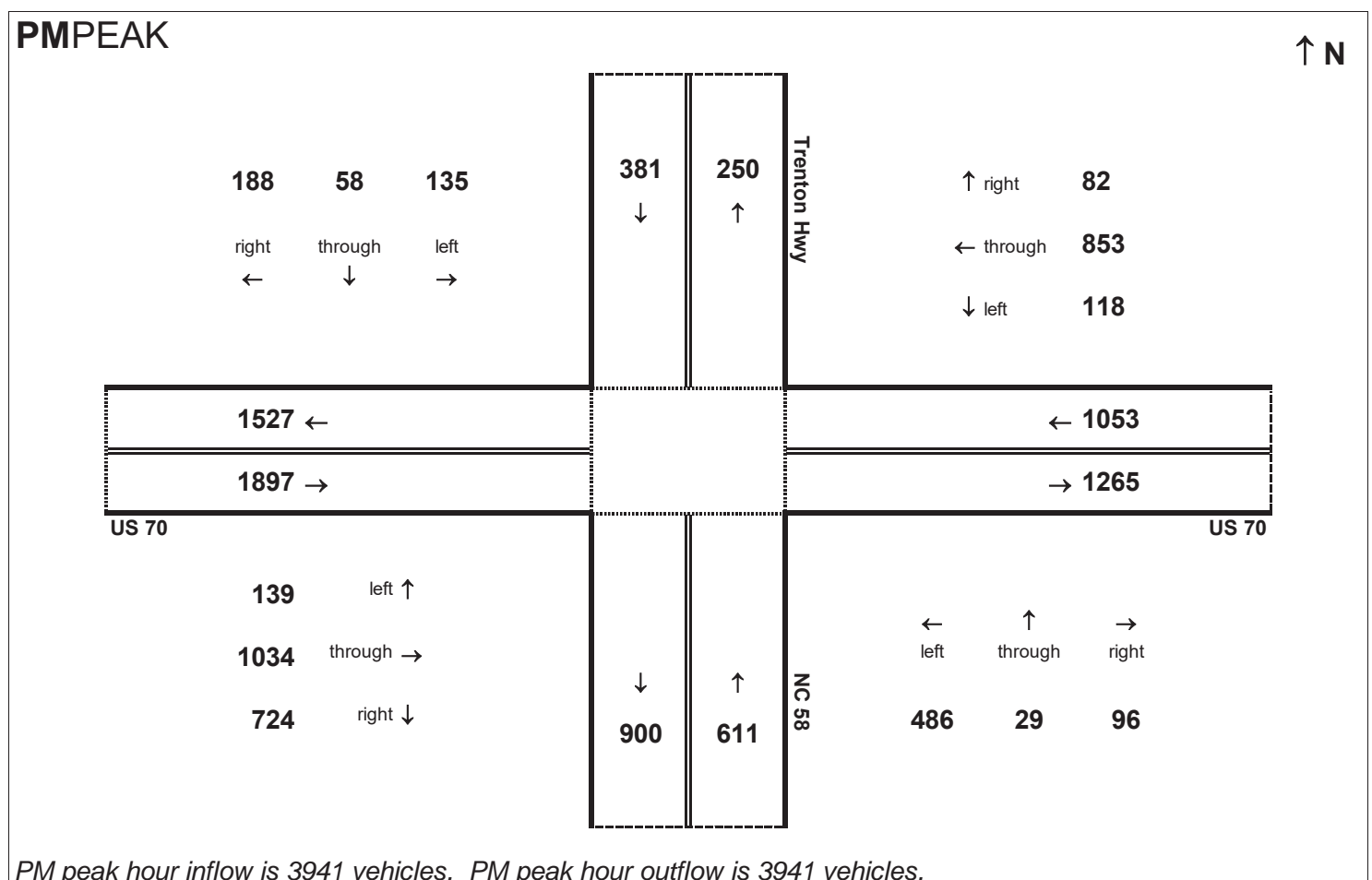
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

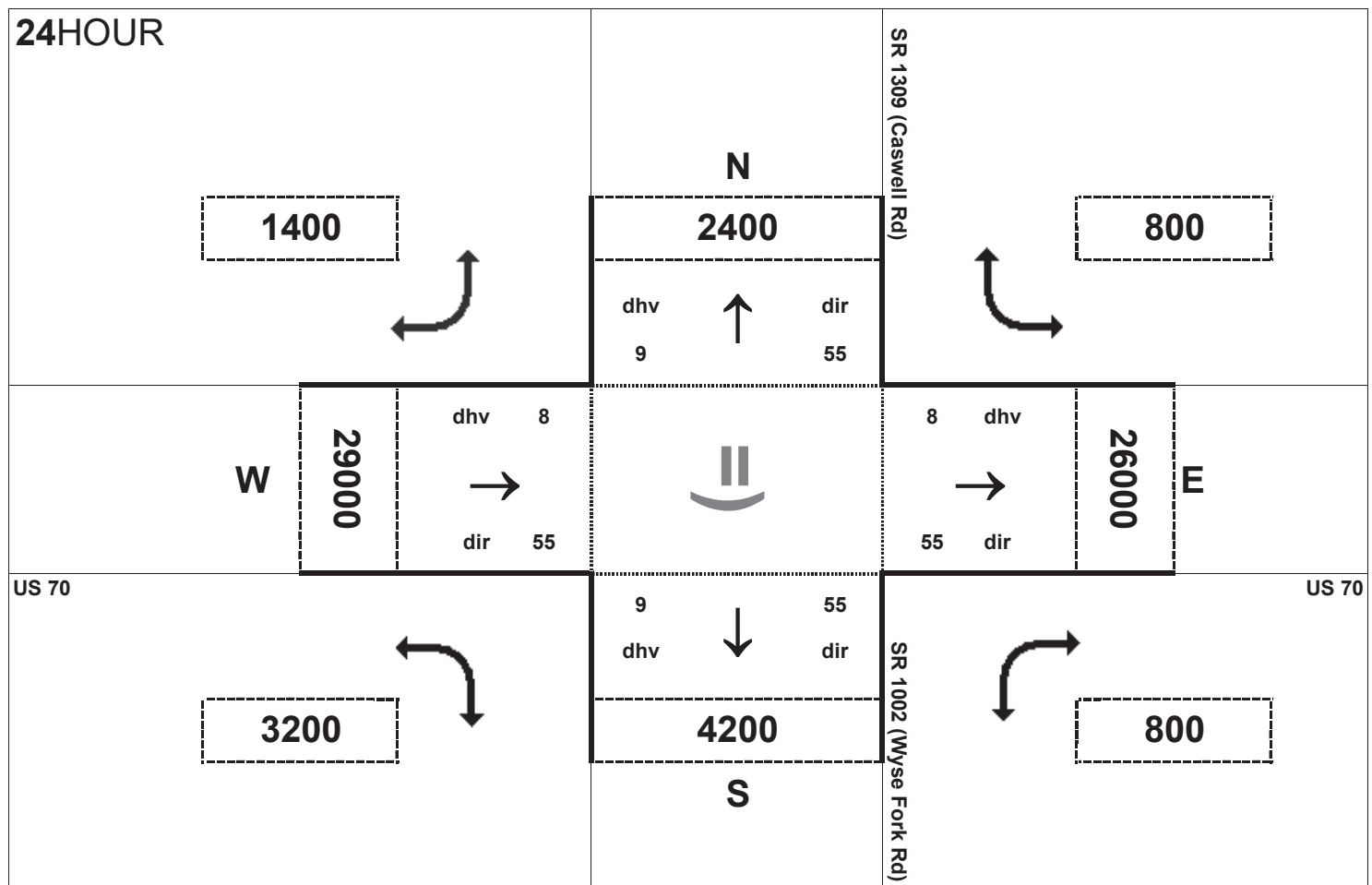
Project:
 R-2553



AM peak hour inflow is 3941 vehicles. AM peak hour outflow is 3941 vehicles.



PM peak hour inflow is 3941 vehicles. PM peak hour outflow is 3941 vehicles.

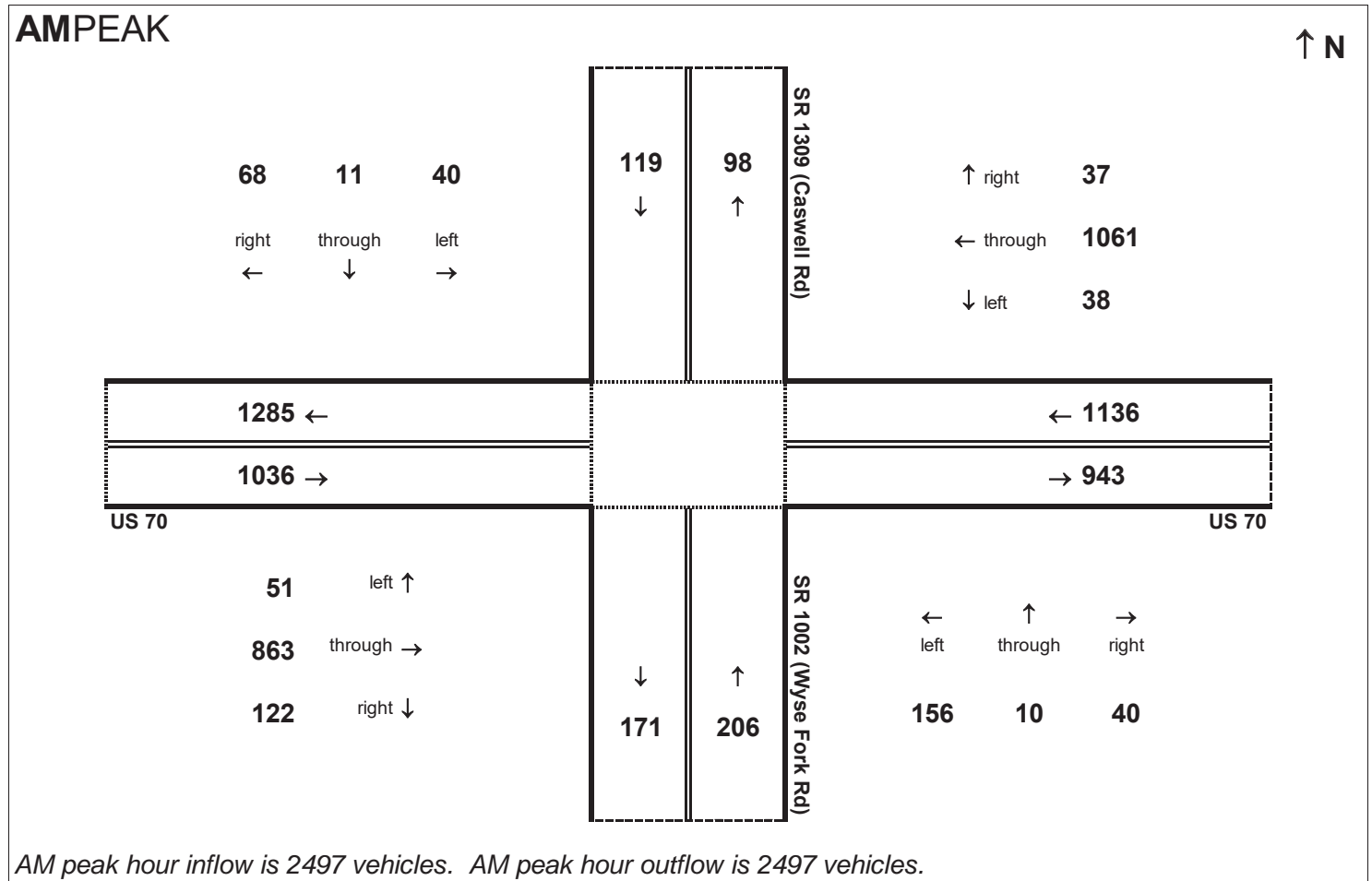


Peak Hour Volume Breakouts Report:
 425-26 Intersection of US 70 and SR 1309 (Caswell Rd) / SR 1002 (Wyse Fork Rd)

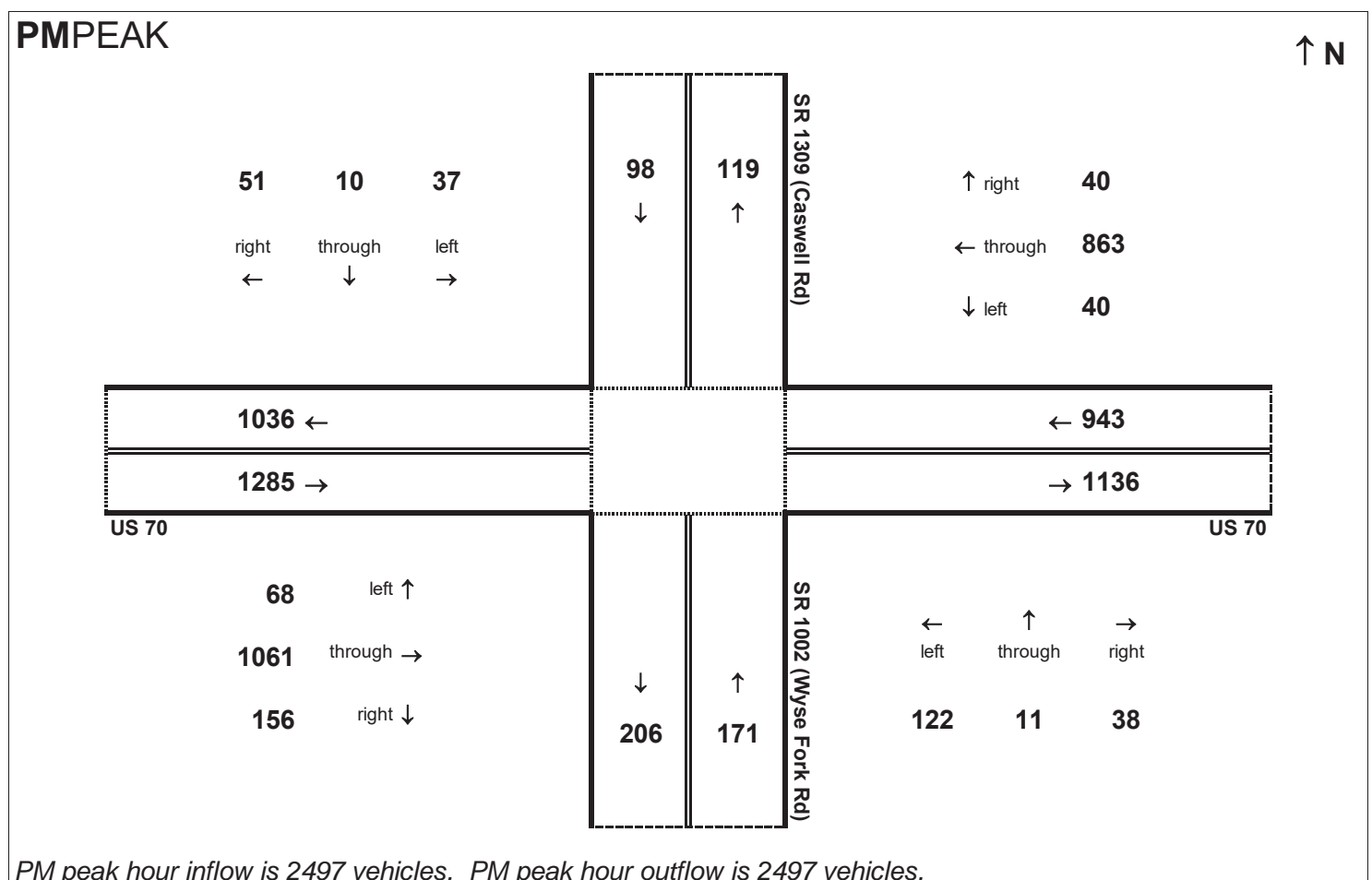
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

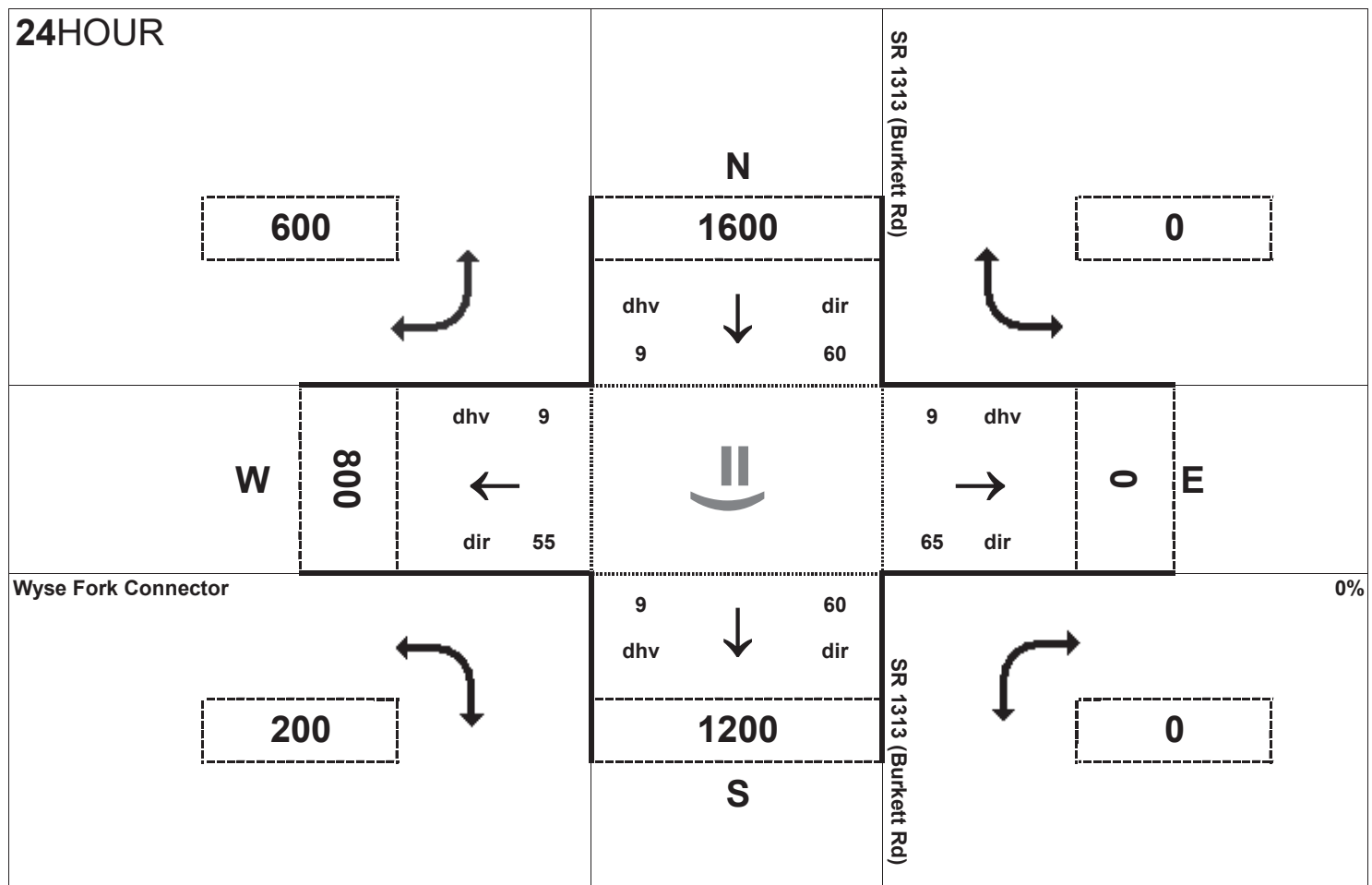
Project:
 R-2553



AM peak hour inflow is 2497 vehicles. AM peak hour outflow is 2497 vehicles.



PM peak hour inflow is 2497 vehicles. PM peak hour outflow is 2497 vehicles.

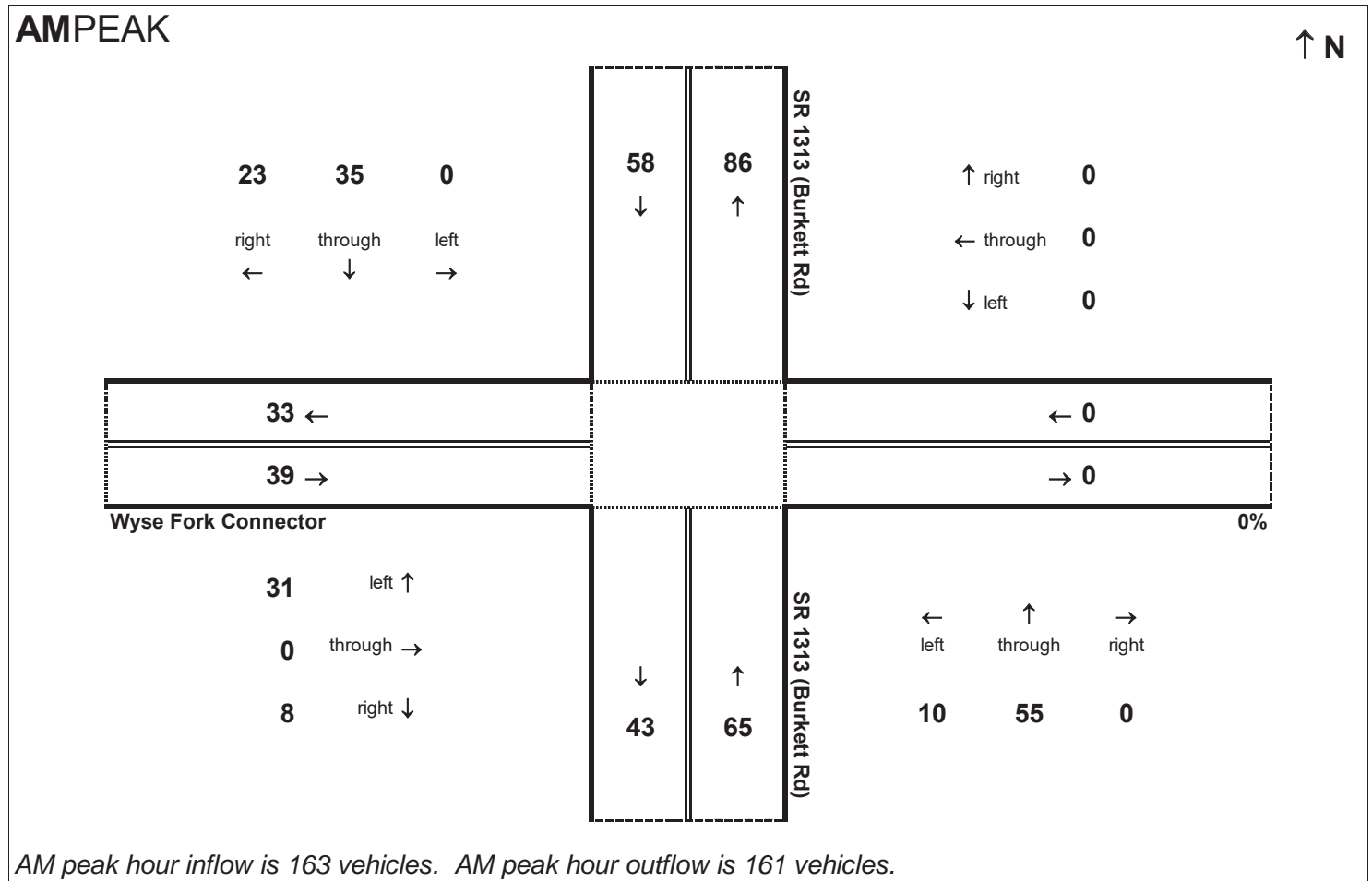


Peak Hour Volume Breakouts Report:
427 SR 1313 (Burkett Rd) at Wyse Fork Connector

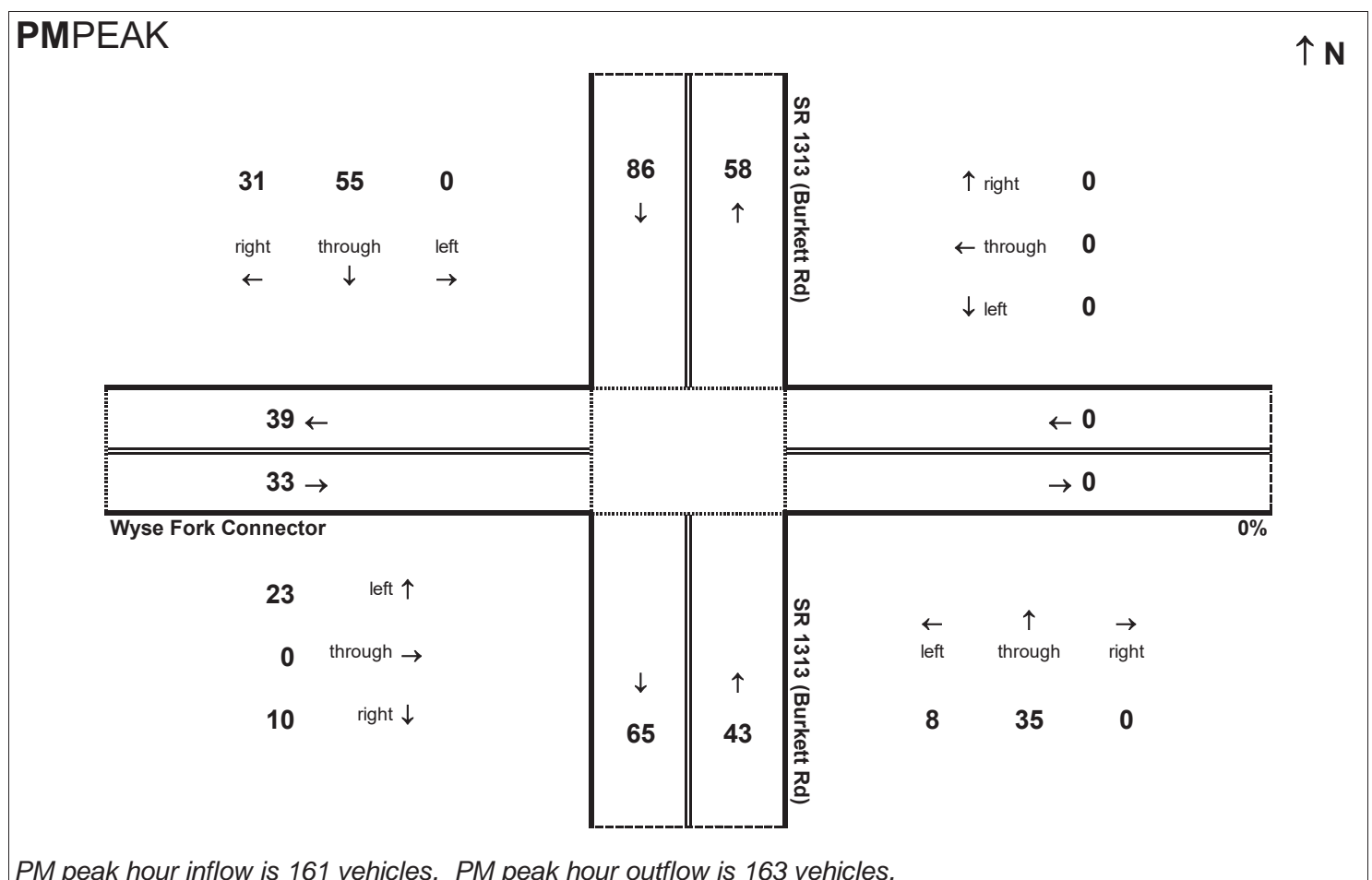
Traffic Forecast Release Date:
November-16

Traffic Data Year:
2040 Build Alt 1

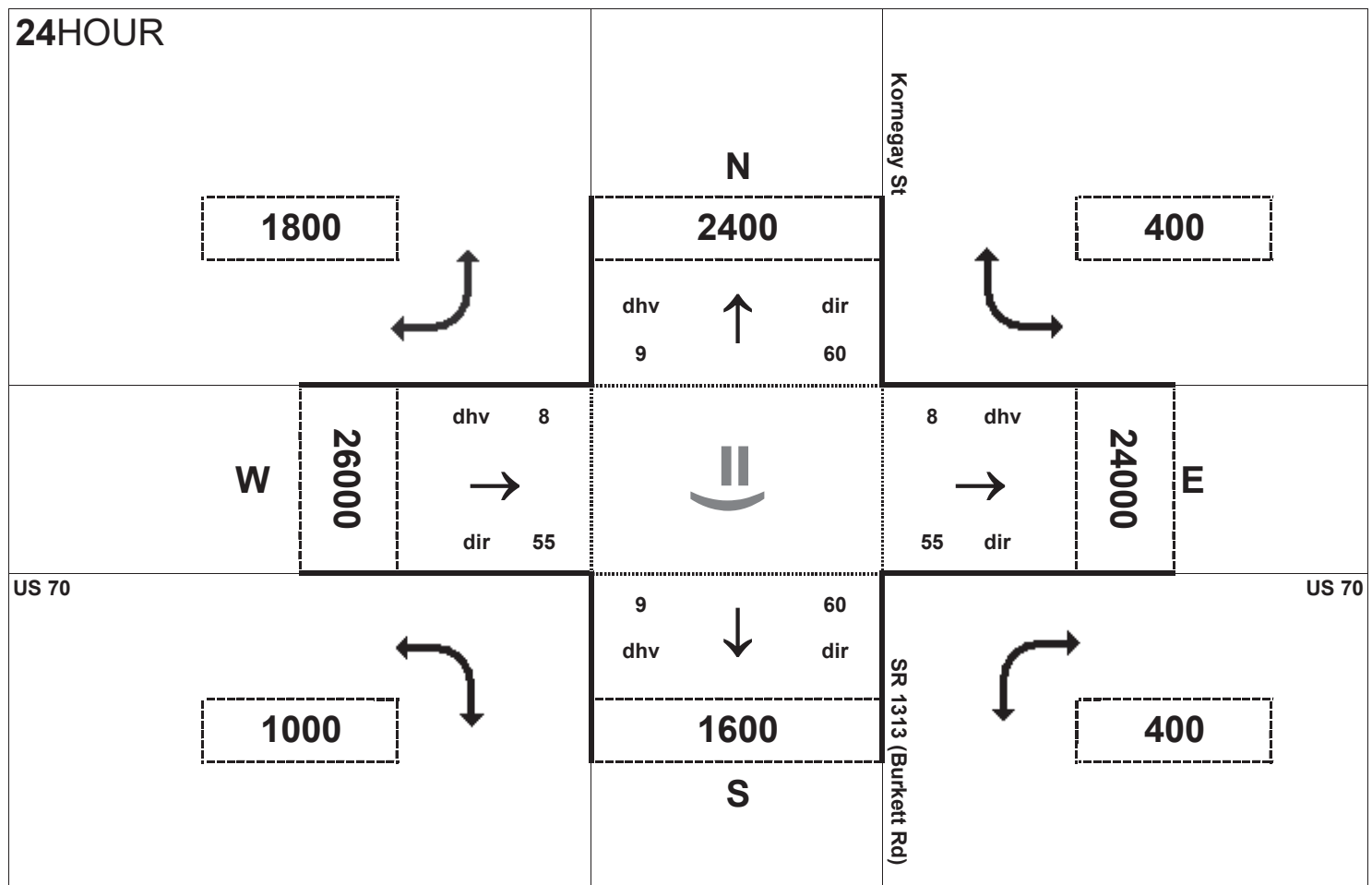
Project:
R-2553



AM peak hour inflow is 163 vehicles. AM peak hour outflow is 161 vehicles.



PM peak hour inflow is 161 vehicles. PM peak hour outflow is 163 vehicles.

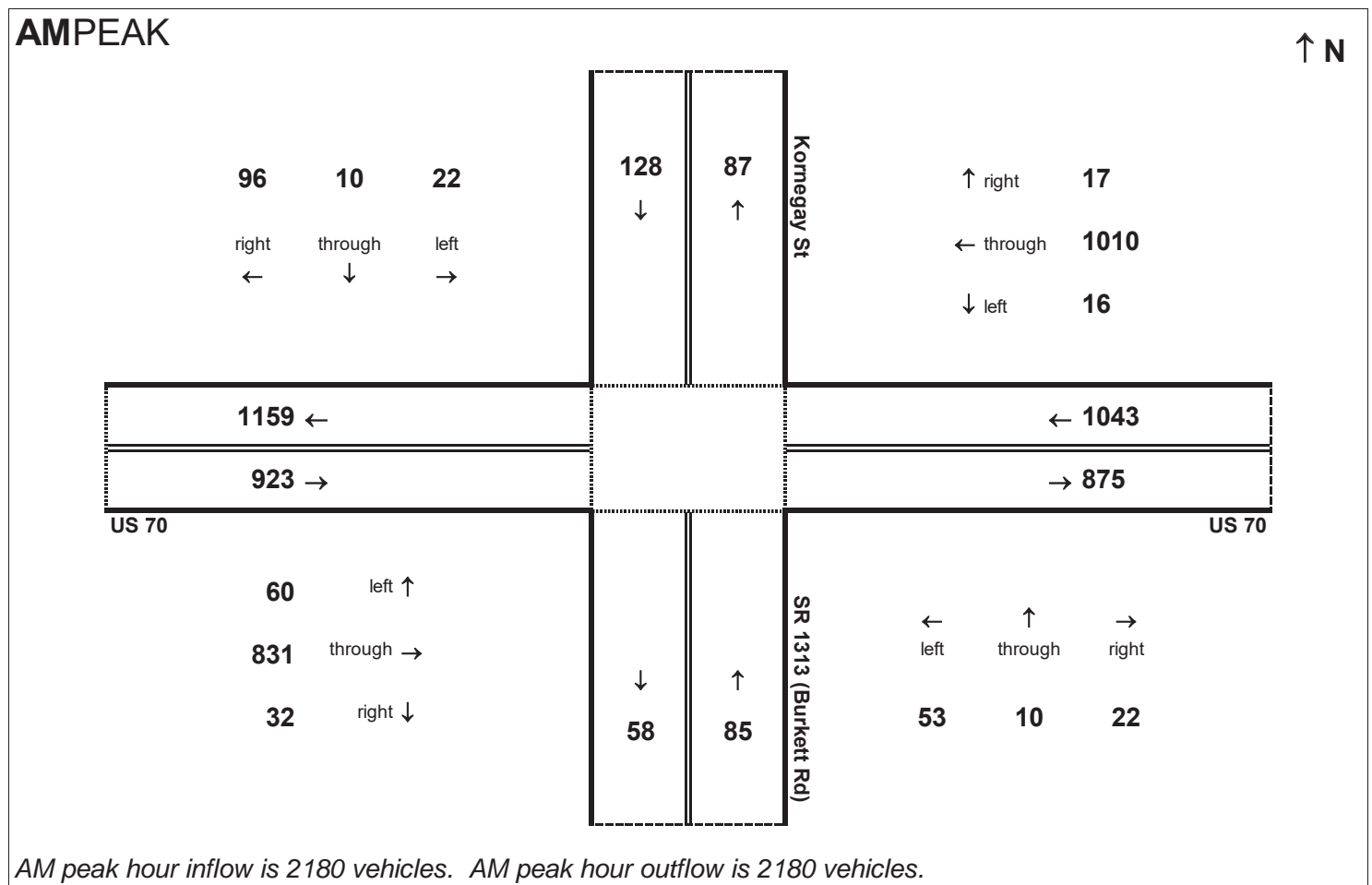


Peak Hour Volume Breakouts Report:
 428-29 Intersection of US 70 and SR 1313 (Burkett Rd) / Kornegay St

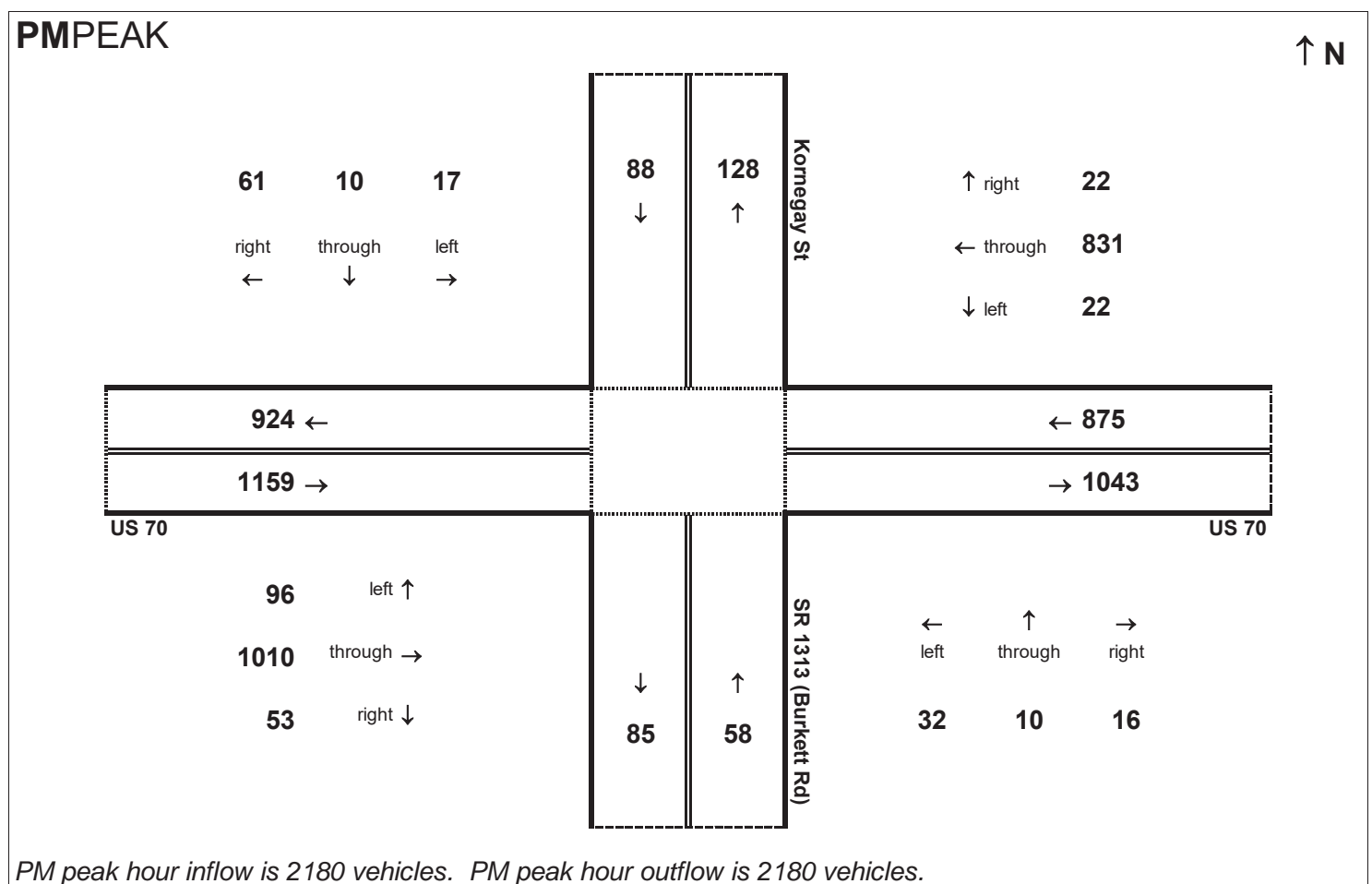
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

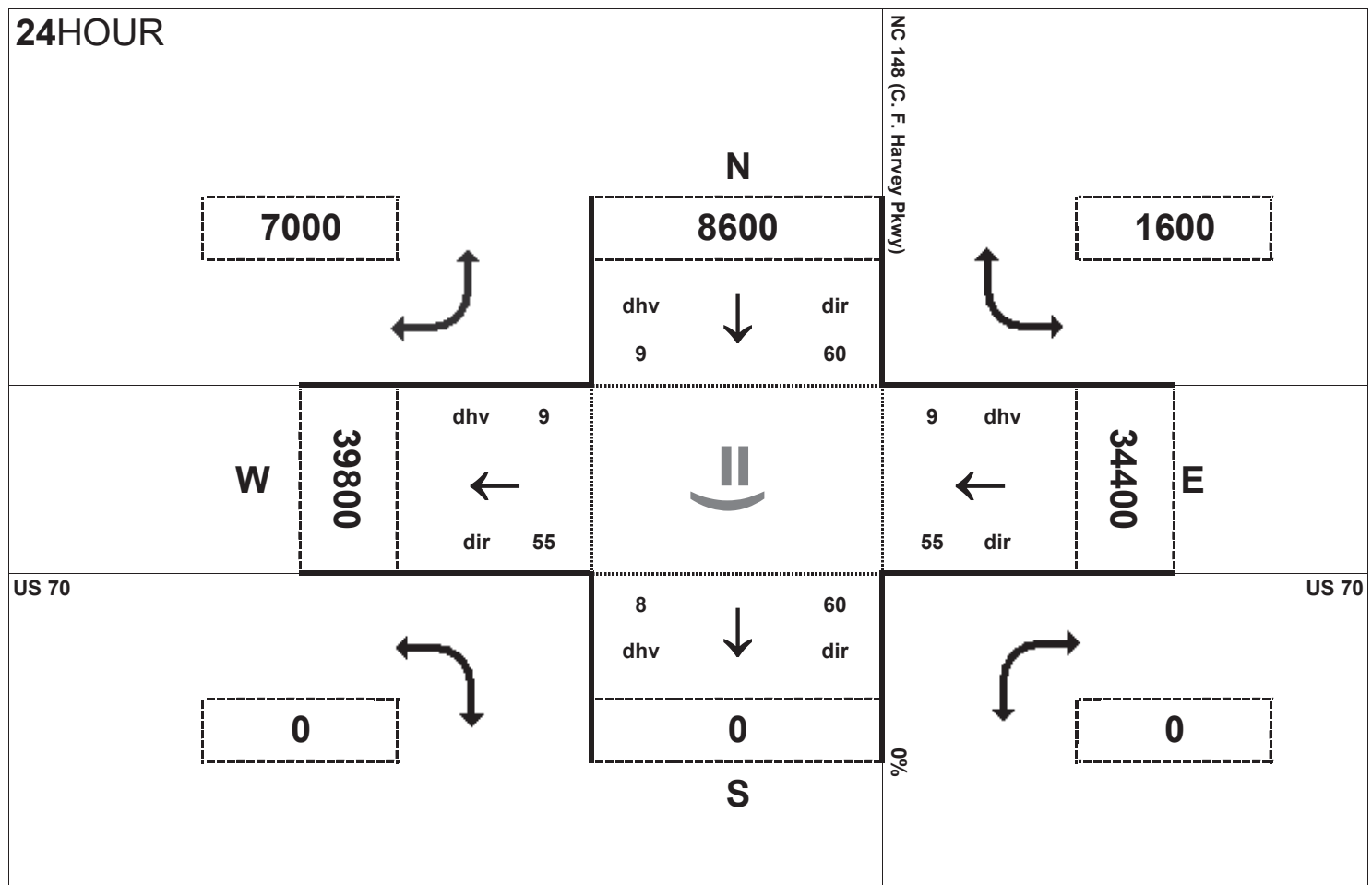
Project:
 R-2553



AM peak hour inflow is 2180 vehicles. AM peak hour outflow is 2180 vehicles.



PM peak hour inflow is 2180 vehicles. PM peak hour outflow is 2180 vehicles.

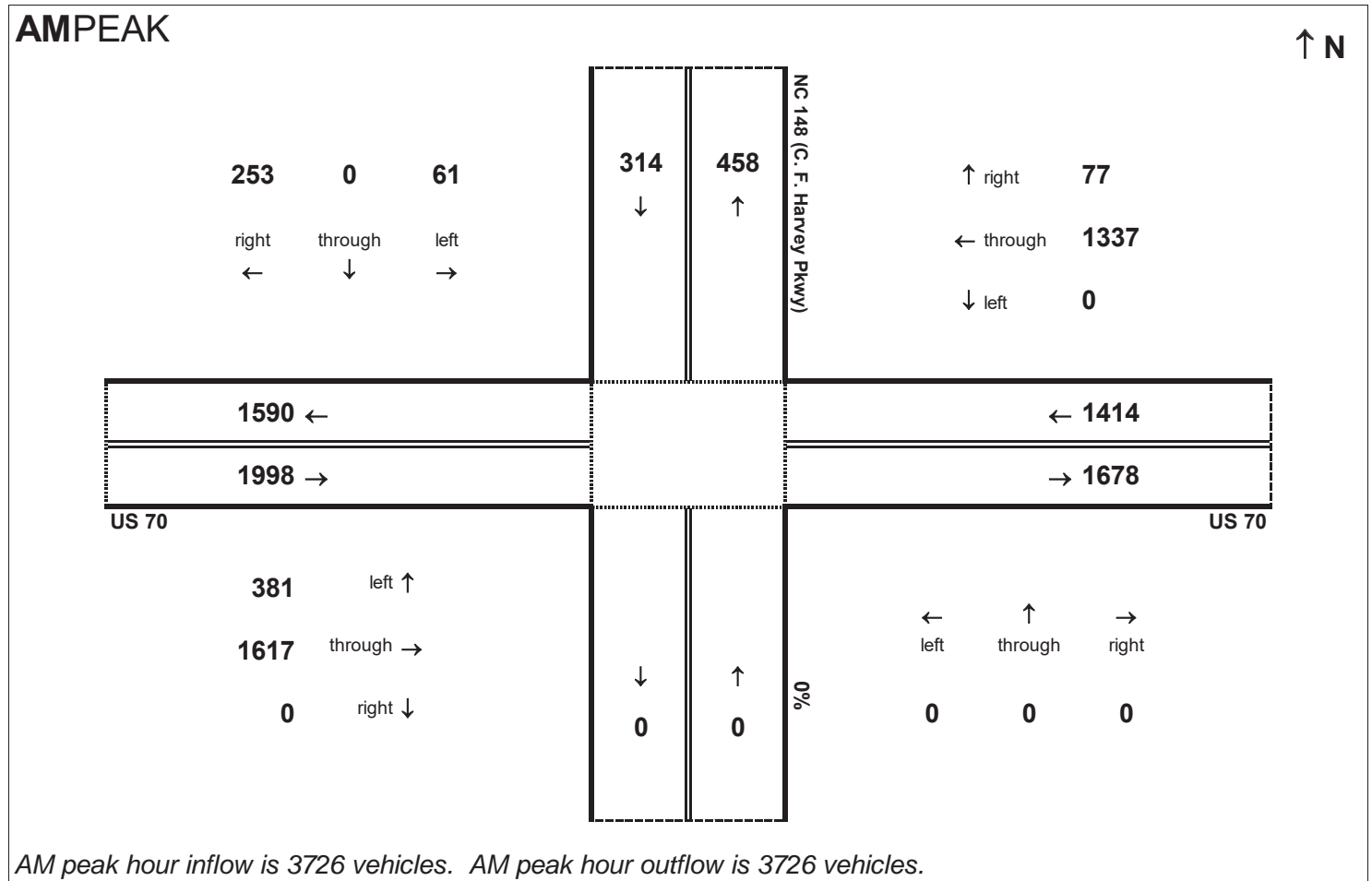


Peak Hour Volume Breakouts Report:
 S1 Intersection of US 70 and NC 148 (C. F. Harvey Pkwy)

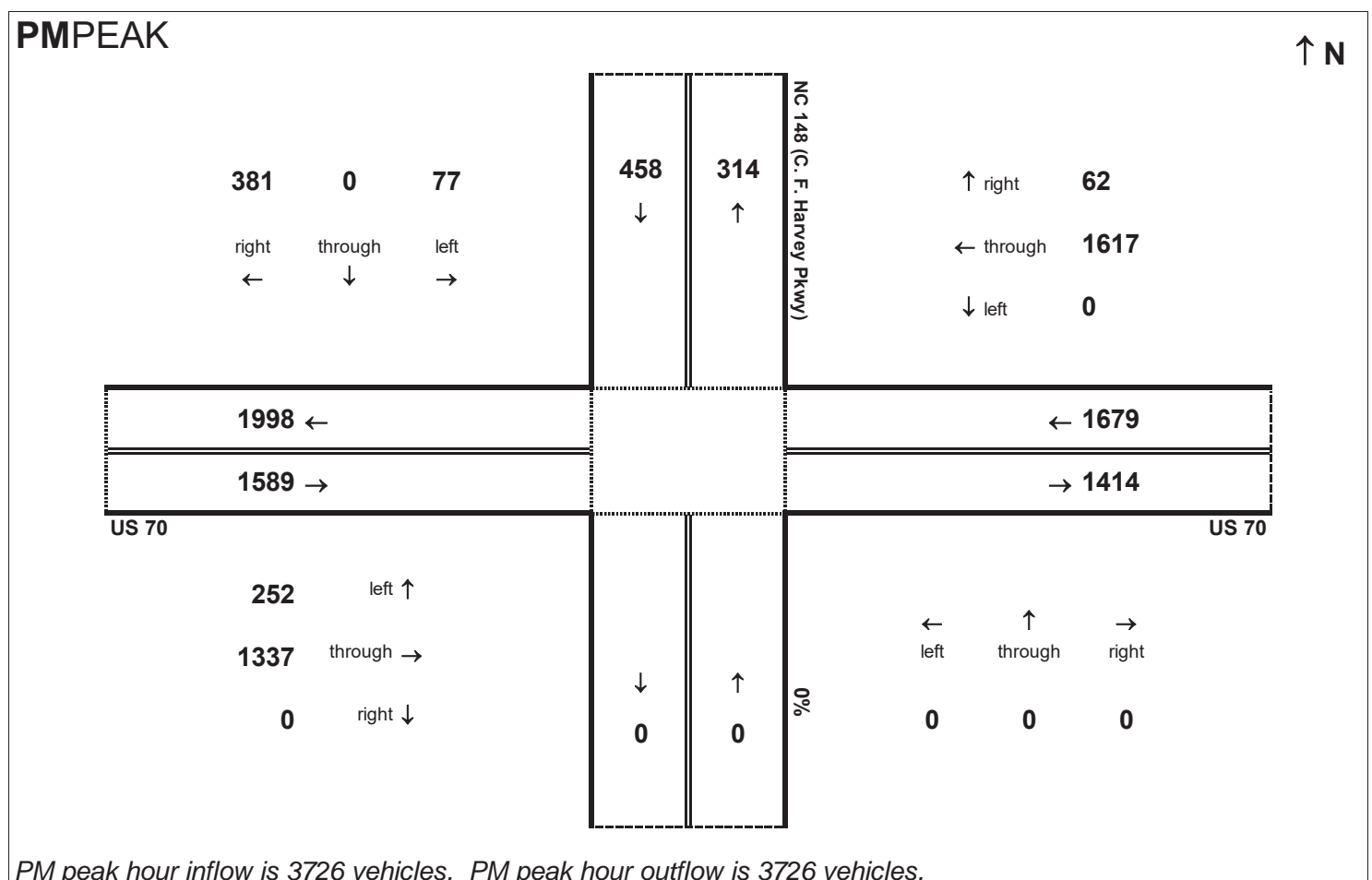
Traffic Forecast Release Date:
 November-16

Traffic Data Year:
 2040 Build Alt 1

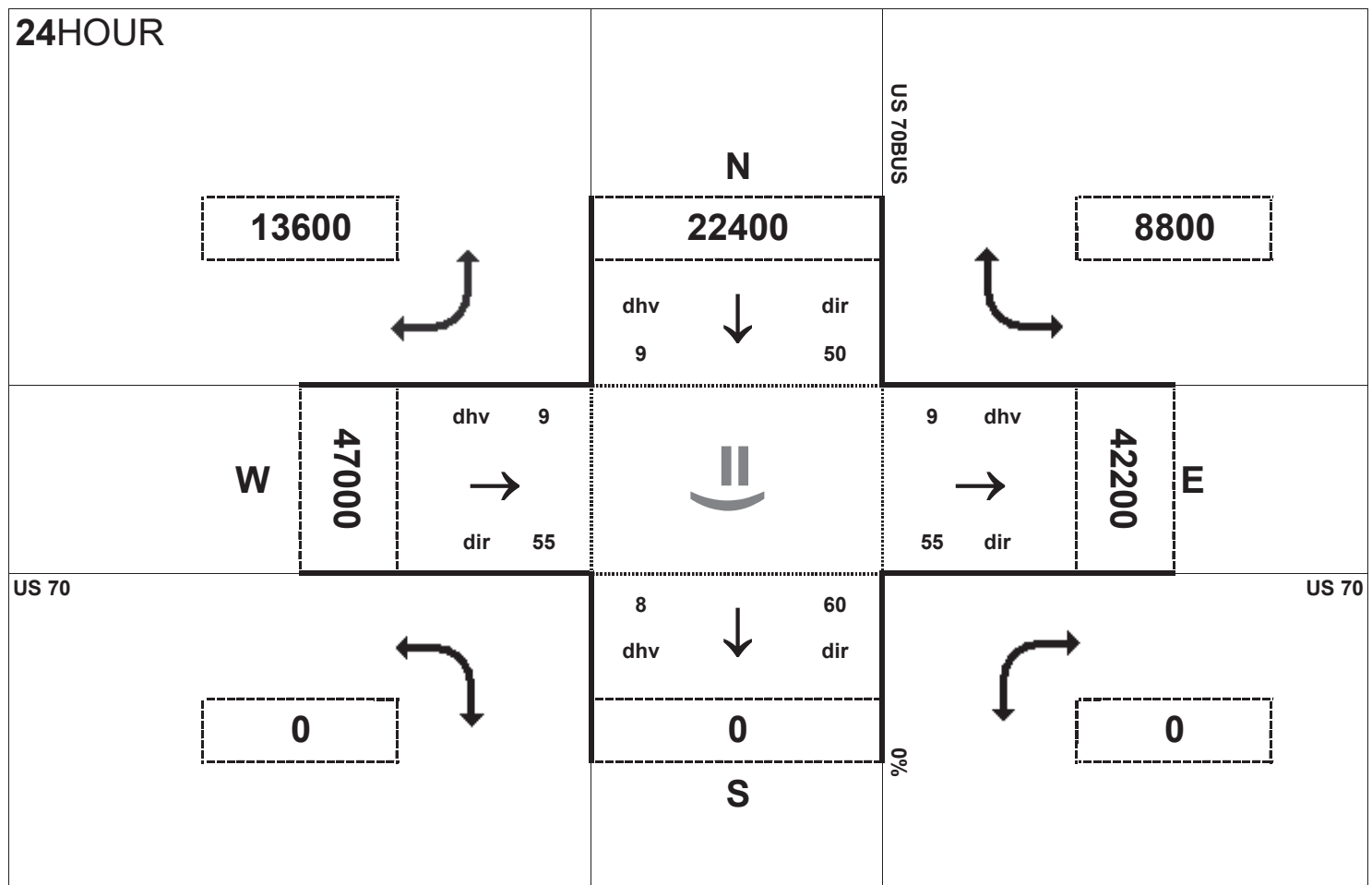
Project:
 R-2553



AM peak hour inflow is 3726 vehicles. AM peak hour outflow is 3726 vehicles.



PM peak hour inflow is 3726 vehicles. PM peak hour outflow is 3726 vehicles.

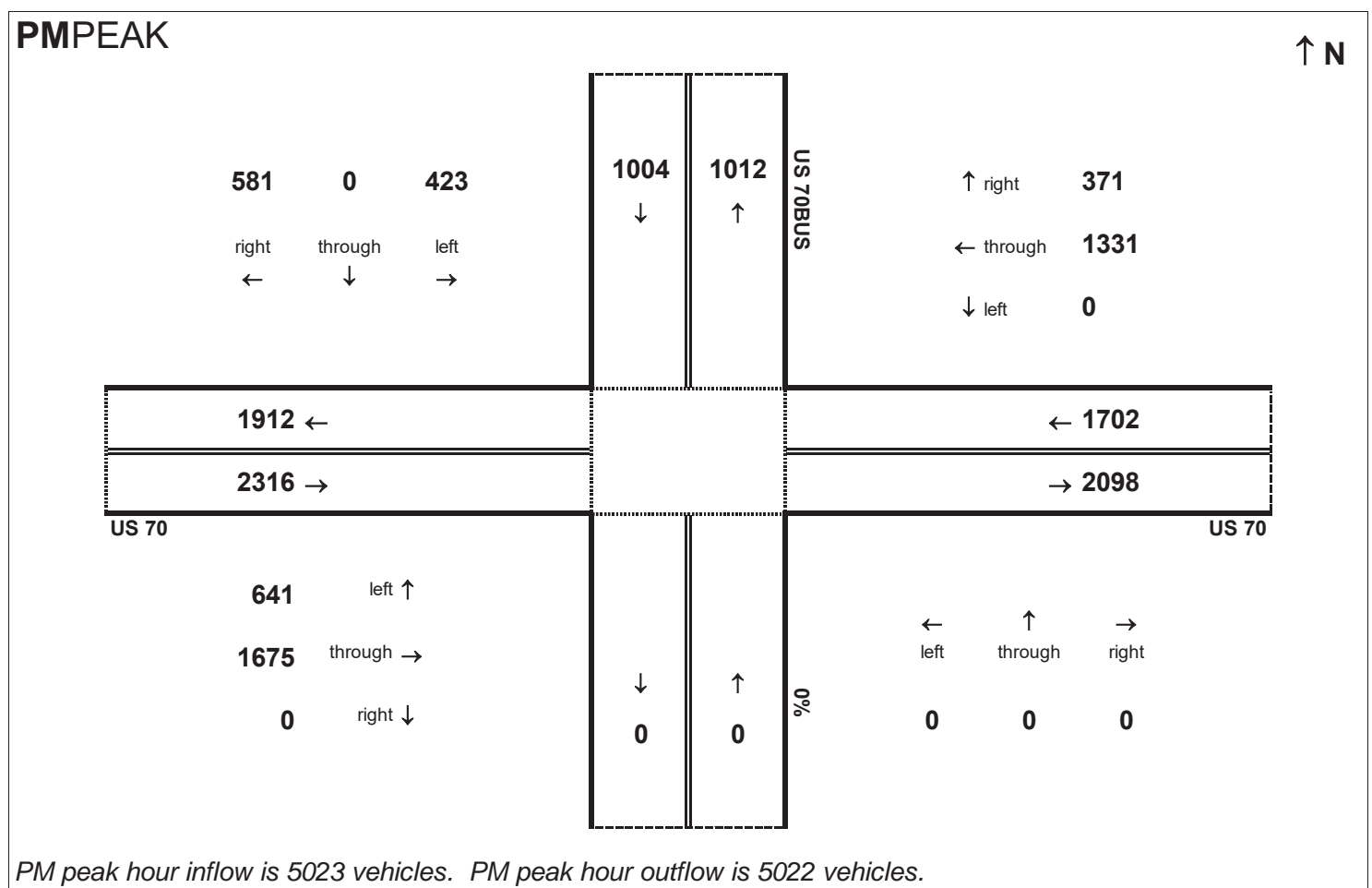
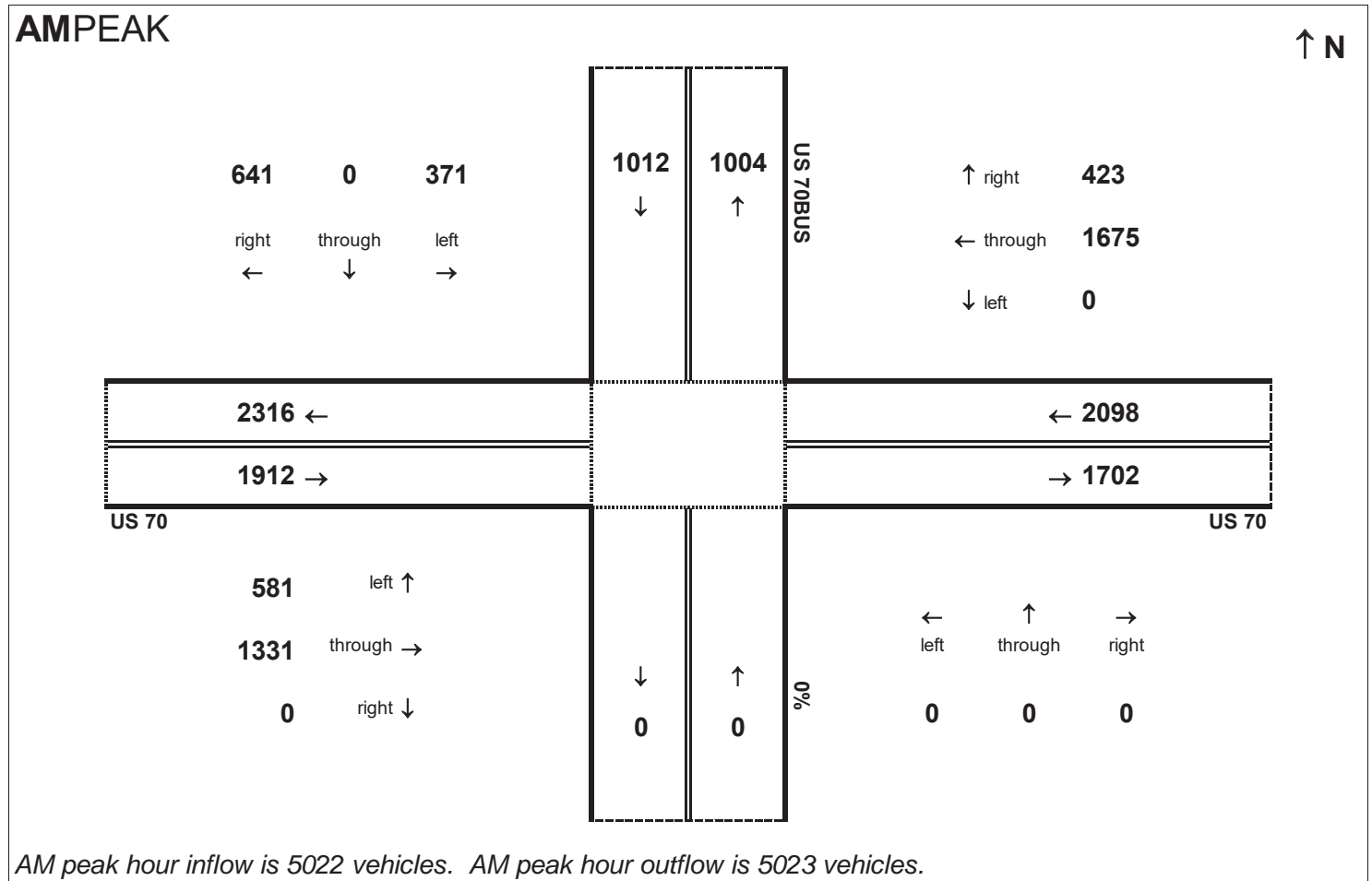


Peak Hour Volume Breakouts Report:
S2 Intersection of US 70 and US 70BUS (W)

Traffic Forecast Release Date:
November-16

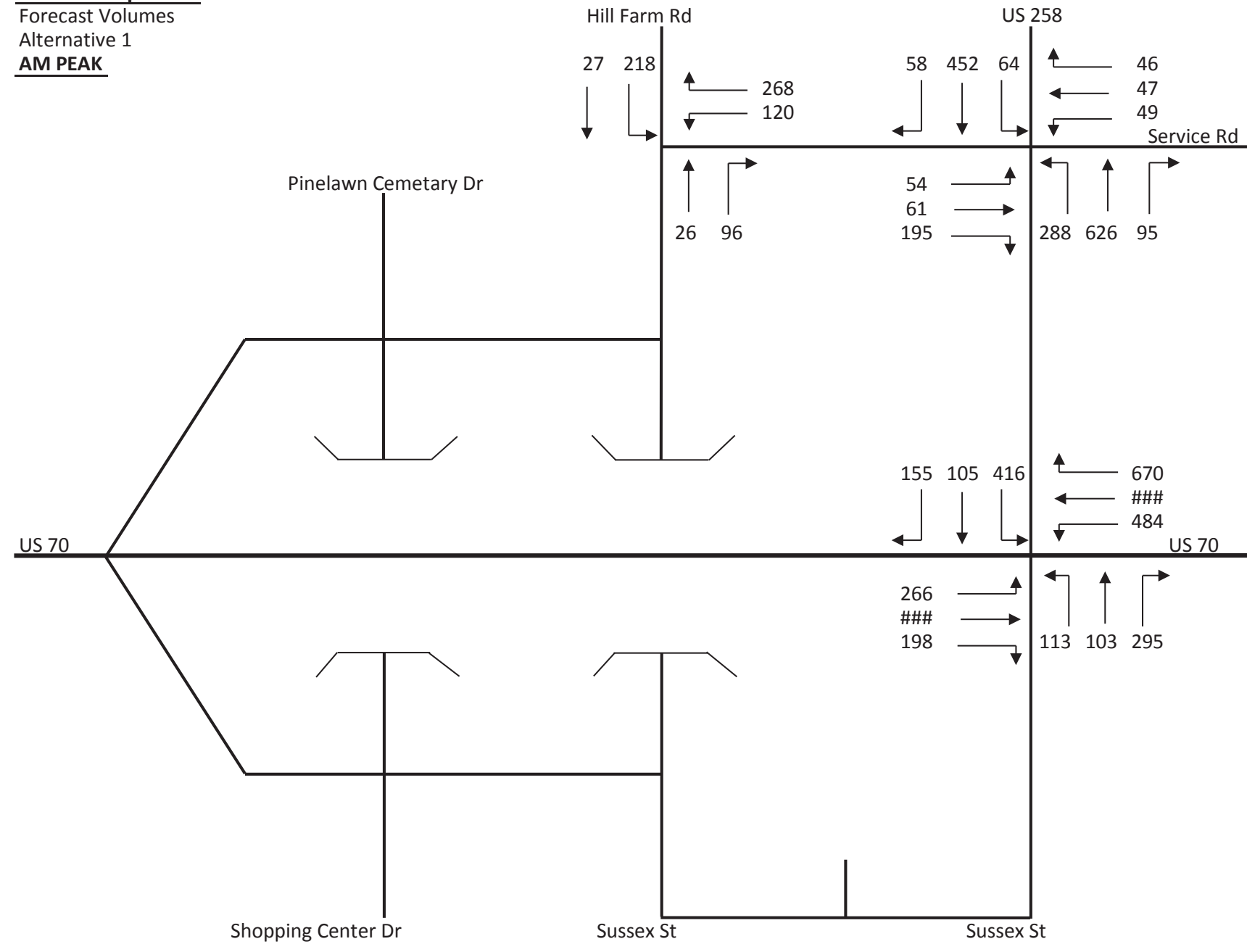
Traffic Data Year:
2040 Build Alt 1

Project:
R-2553

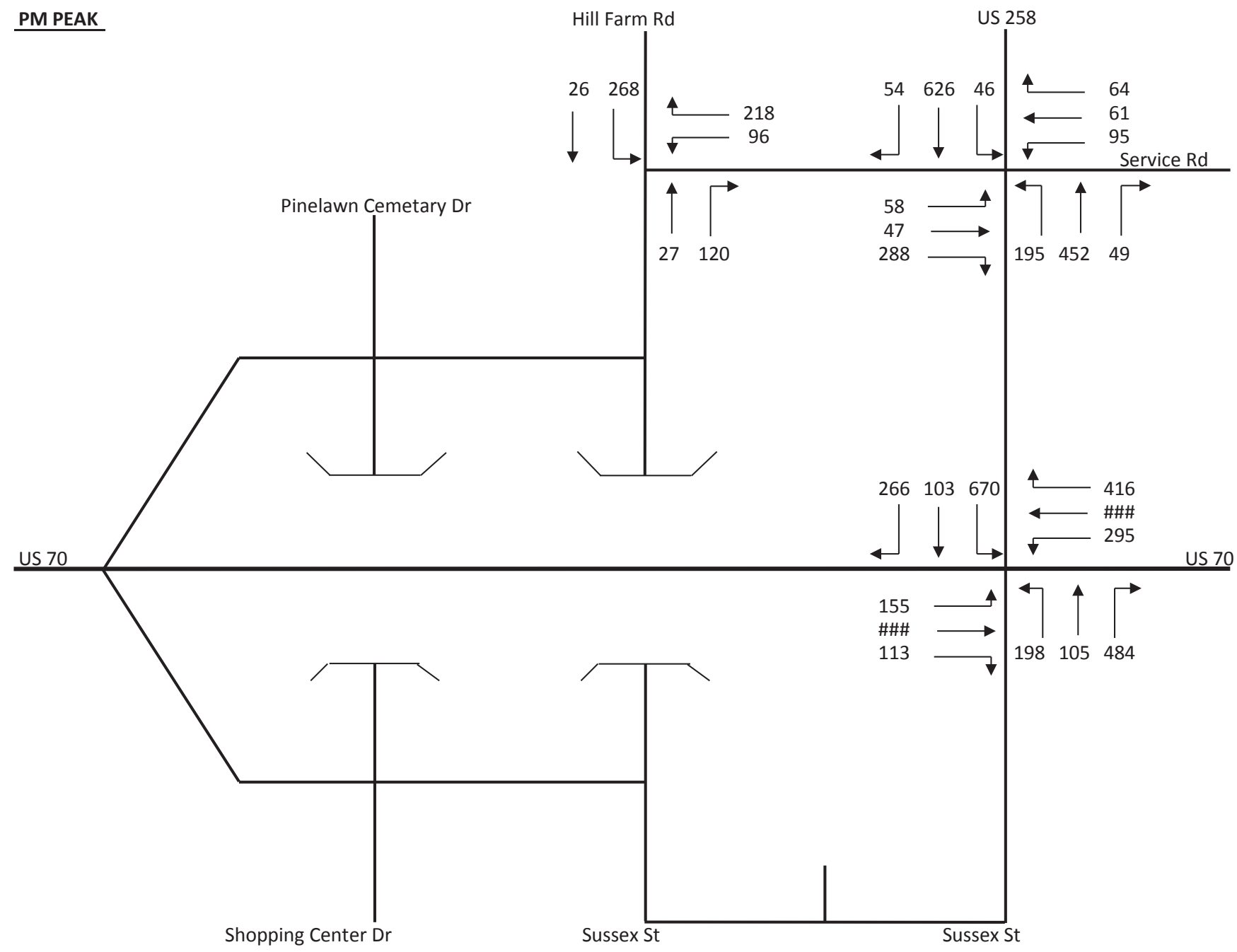


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Part 1 - Step 1
 Forecast Volumes
 Alternative 1
AM PEAK

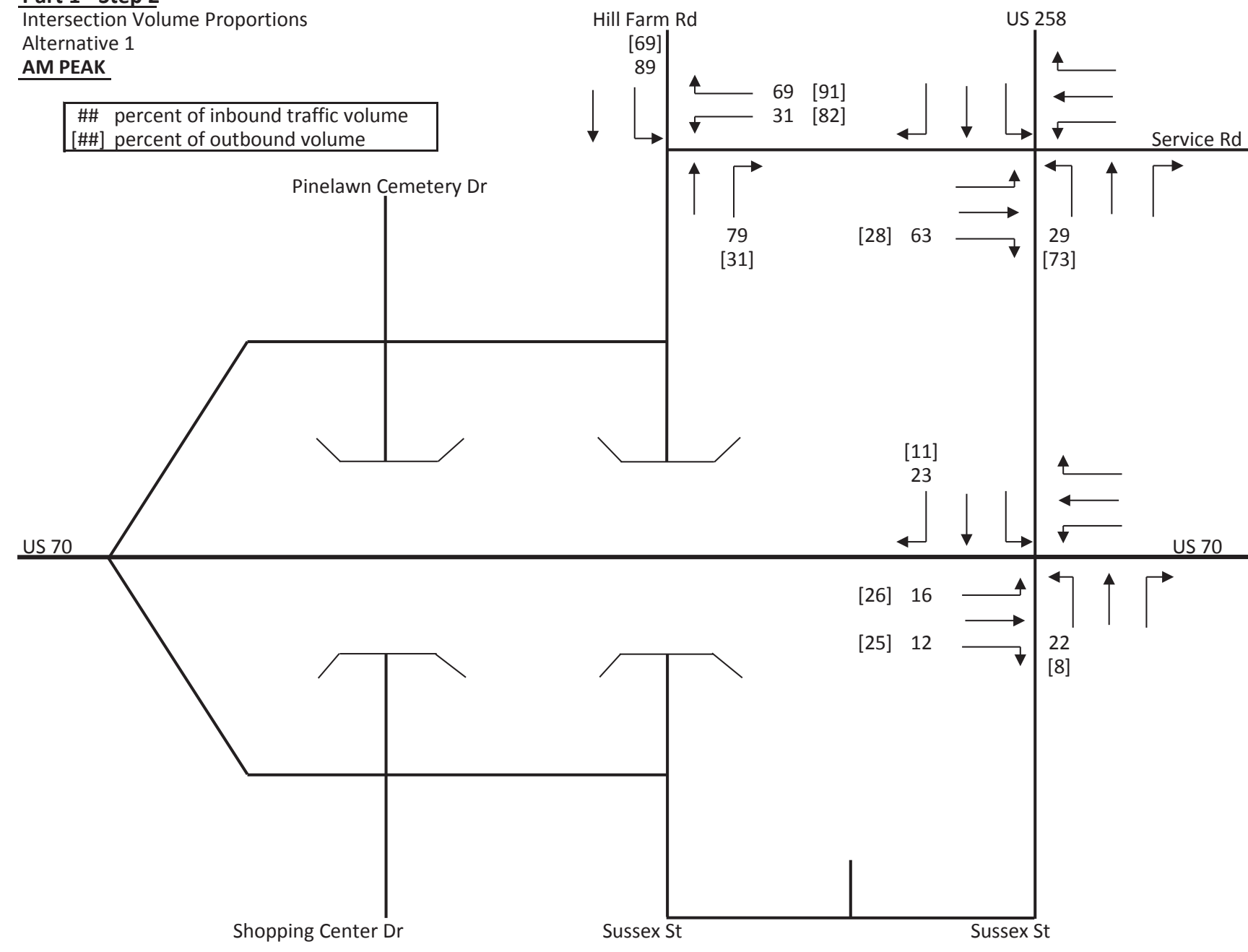


PM PEAK



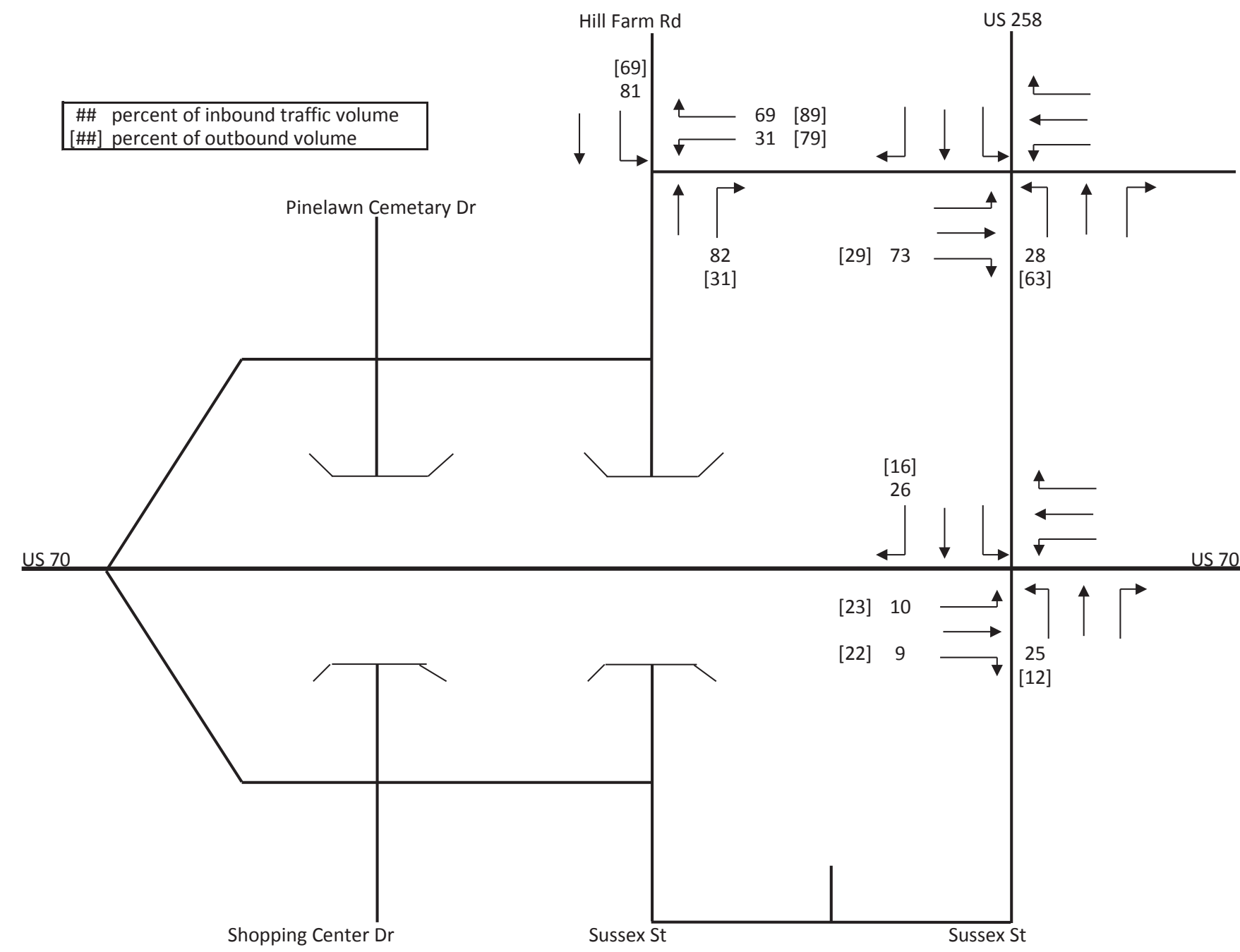
Part 1 - Step 2
 Intersection Volume Proportions
 Alternative 1
AM PEAK

percent of inbound traffic volume
 [##] percent of outbound volume



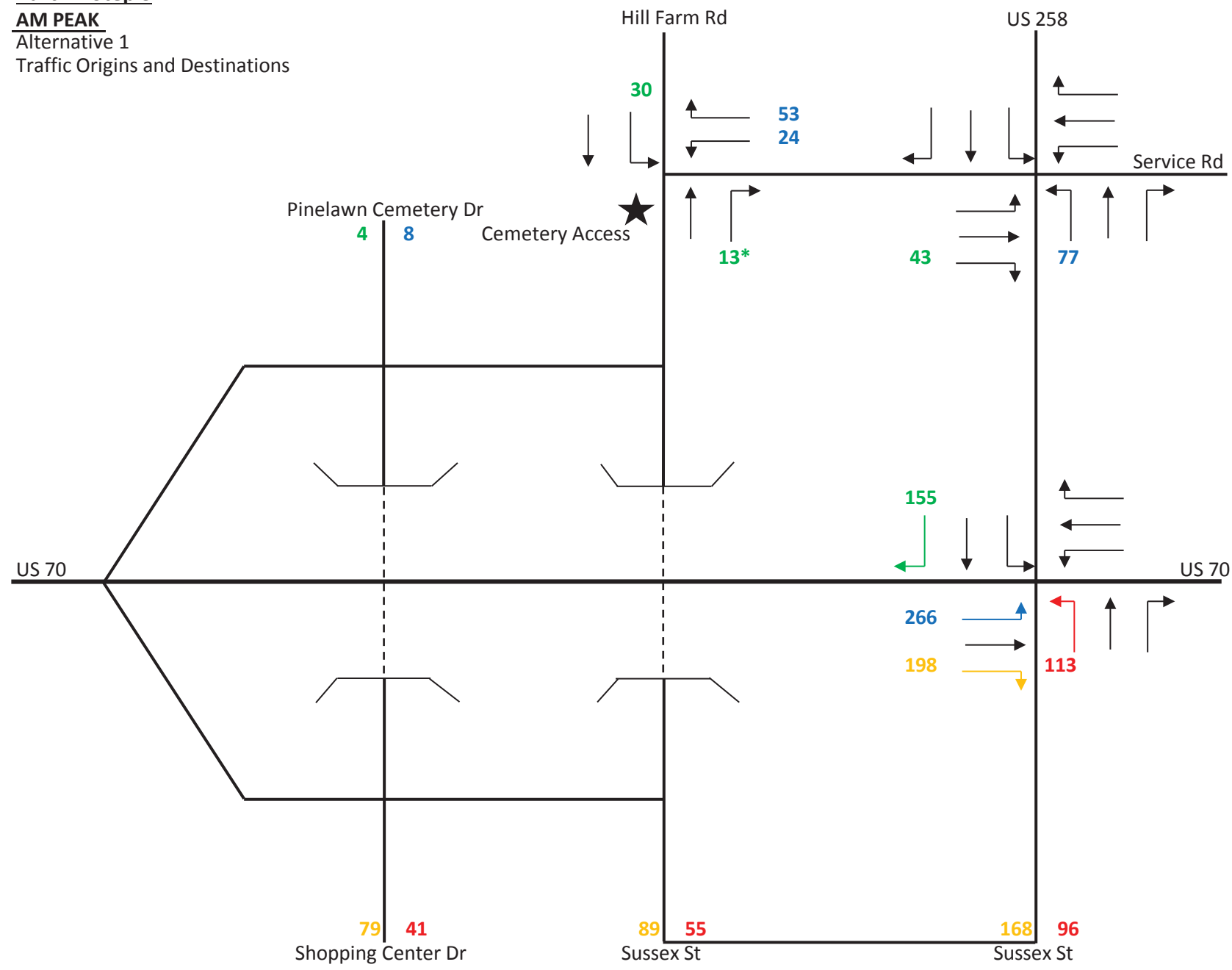
PM PEAK

percent of inbound traffic volume
 [##] percent of outbound volume



Part 1 - Step 3

AM PEAK
Alternative 1
Traffic Origins and Destinations



AM PEAK

EBL

- 266 * 0.29 = 77
- 77 * 0.69 = 53
- 77 * 0.31 = 24
- 5 Vehicles entering cemetery from NB IAU: 8
- Remaining Vehicles entering driveways: 16

Calculations

EBR

- 198 * 0.85 = 168
- Based on turning movements from FY NB Scenario, assume 53% of above traffic has a destination of western Sussex St: 168 * 0.53 = 89
- Based on turning movements from FY NB Scenario, assume 47% of above traffic has a destination of Shopping Center Drive: 168 * 0.47 = 79

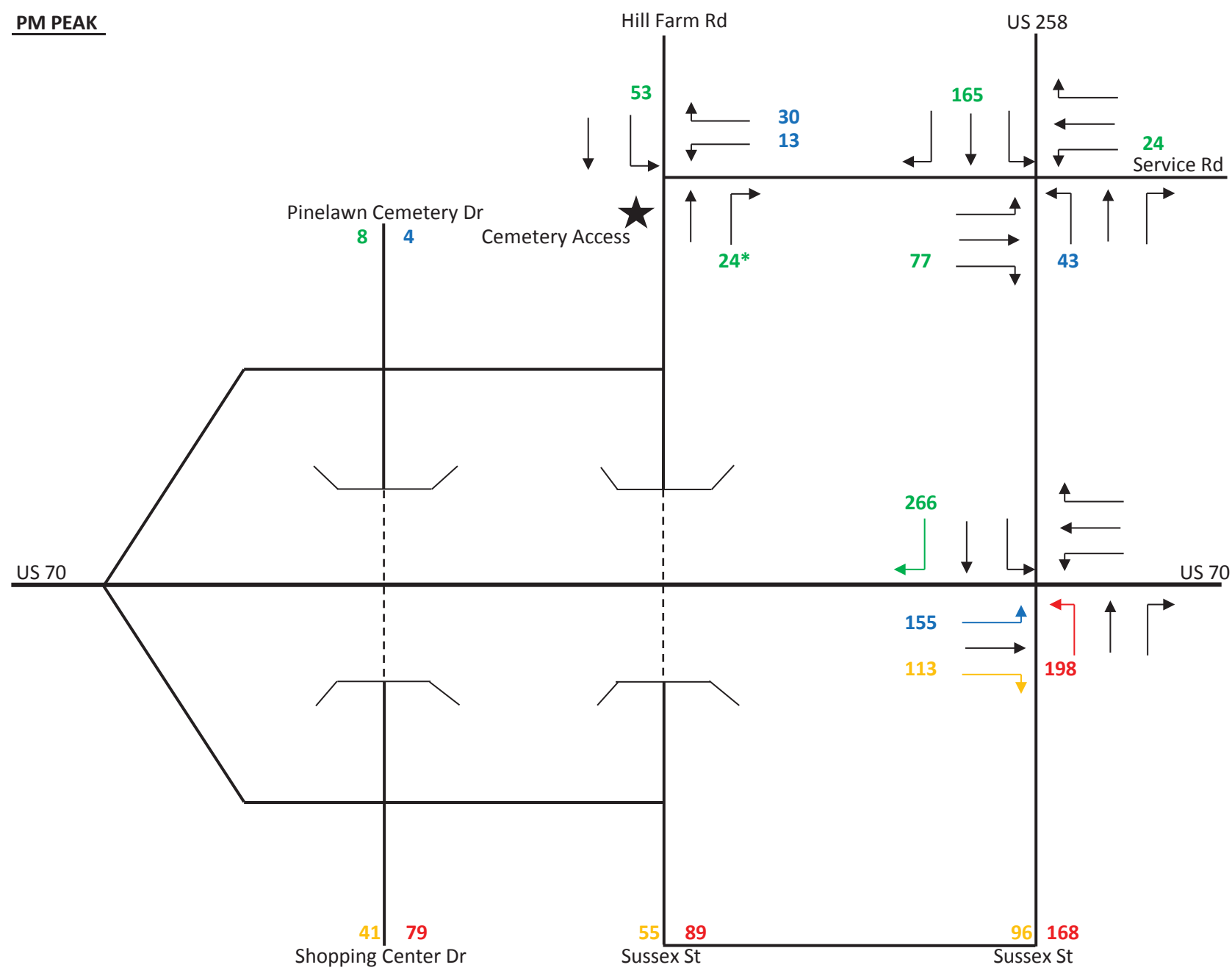
NBL

- 113 * 0.85 = 96
- Based on turning movements from FY NB Scenario, assume 57% of above traffic originates from western Sussex St: 96 * 0.57 = 55
- Based on turning movements from FY NB Scenario, assume 43% of above traffic originates from Shopping Center Drive: 96 * 0.43 = 41

SBR

- 155 * 0.28 = 43
- 43 * 0.69 = 24
- 43 * 0.31 = 13
- 5 Vehicles exiting cemetery from NB IAU: 4
- Remaining Vehicles exiting driveways: 9

PM PEAK



PM PEAK

EBL

- 155 * 0.28 = 43
- 43 * 0.69 = 30
- 43 * 0.31 = 13
- 5 Vehicles entering cemetery from NB IAU: 4
- Remaining Vehicles entering driveways: 9

Calculations

EBR

- 113 * 0.85 = 96
- Based on turning movements from FY NB Scenario, assume 57% of above traffic has a destination of western Sussex St: 96 * 0.57 = 55
- Based on turning movements from FY NB Scenario, assume 43% of above traffic has a destination of Shopping Center Drive: 96 * 0.43 = 41

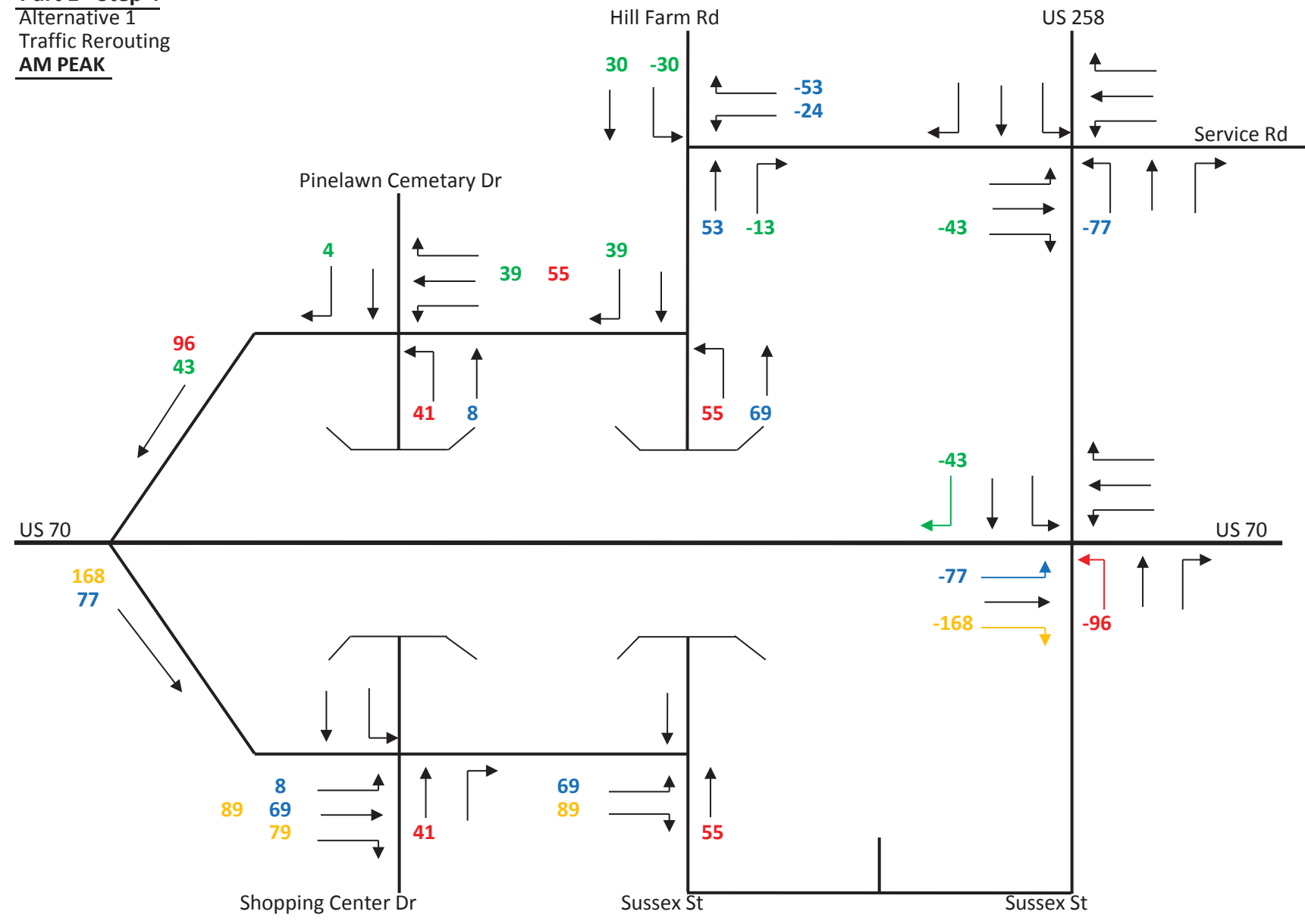
NBL

- 198 * 0.85 = 168
- Based on turning movements from FY NB Scenario, assume 57% of above traffic originates from western Sussex St: 168 * 0.53 = 89
- Based on turning movements from FY NB Scenario, assume 43% of above traffic originates from Shopping Center Drive: 168 * 0.47 = 79

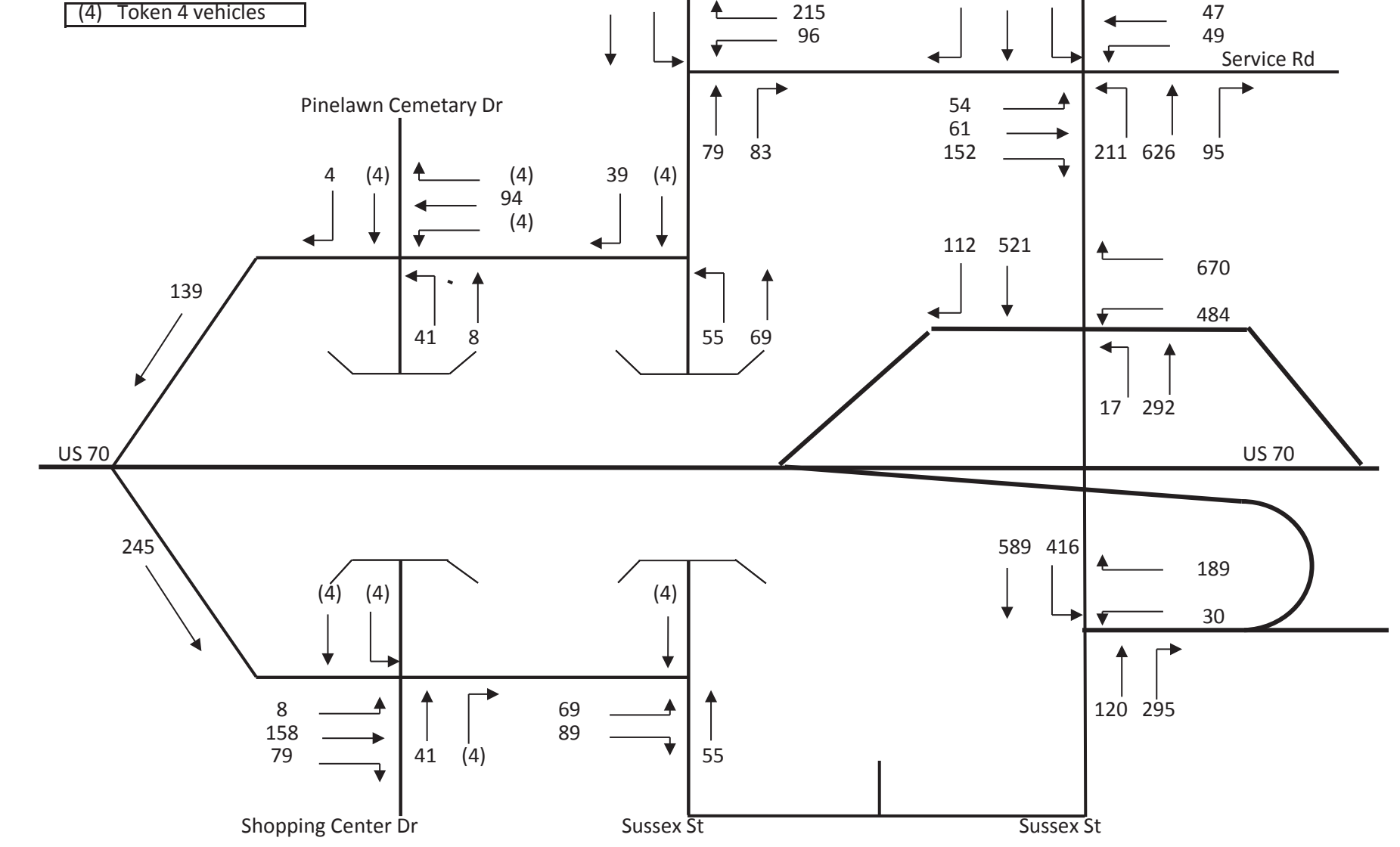
SBR

- 266 * 0.29 = 77
- 77 * 0.69 = 53
- 77 * 0.31 = 24
- 5 Vehicles exiting cemetery from NB IAU: 8
- Remaining Vehicles exiting driveways: 16

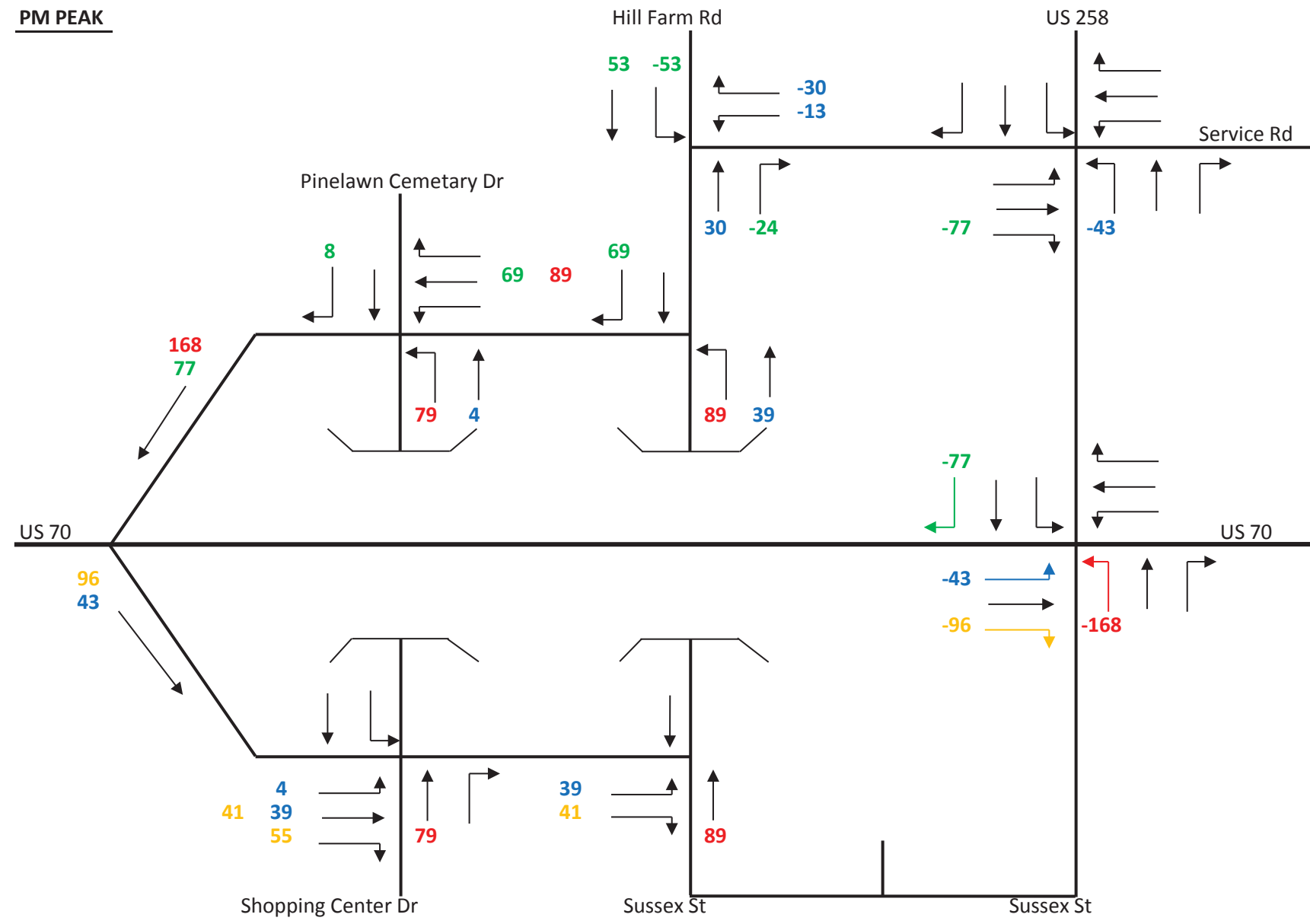
Part 1 - Step 4
 Alternative 1
 Traffic Rerouting
AM PEAK



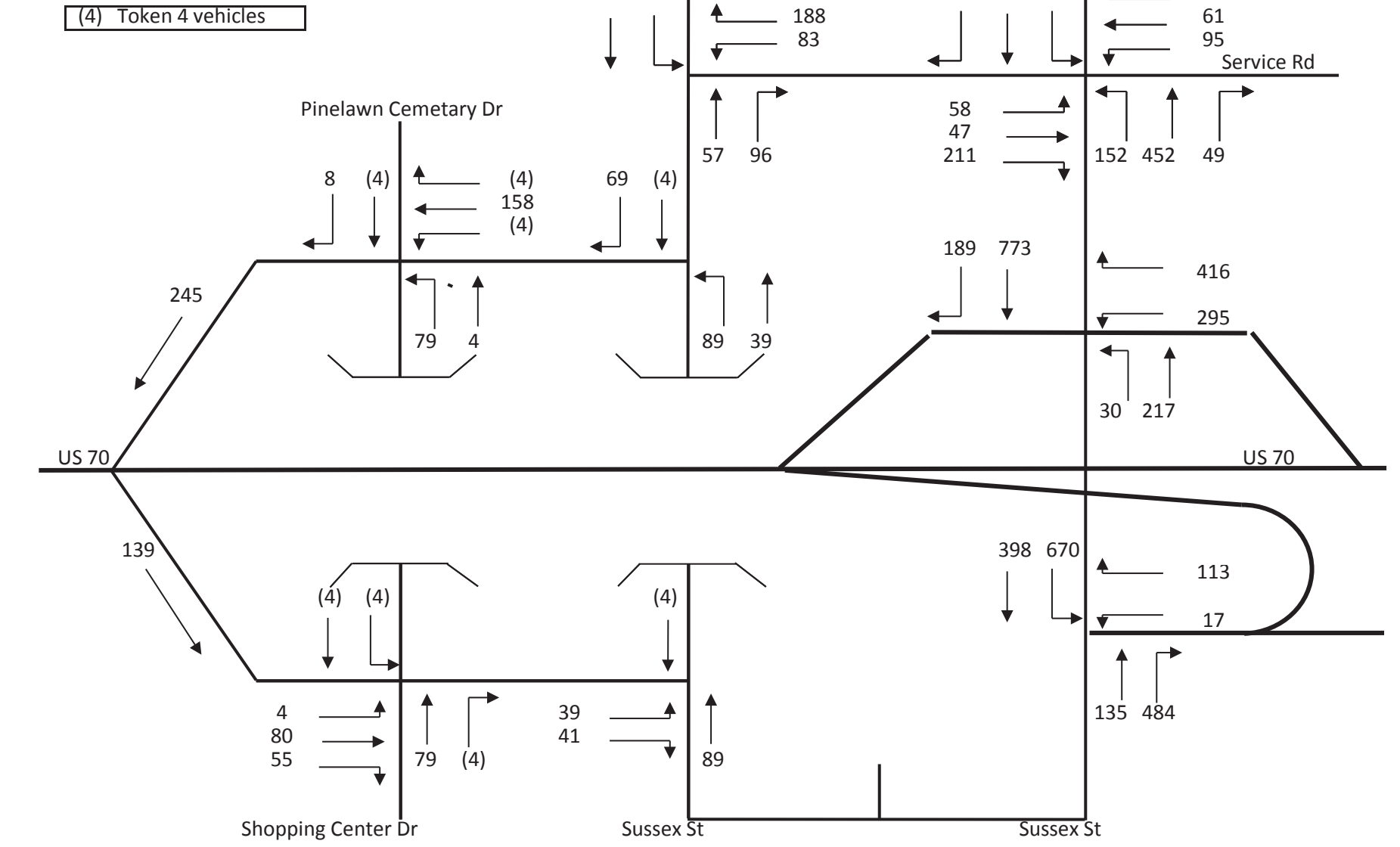
Part 1 - Step 4
 AM PEAK
 Redistributed Volumes



PM PEAK



Part 1 - Step 4
 PM PEAK
 Redistributed Volumes

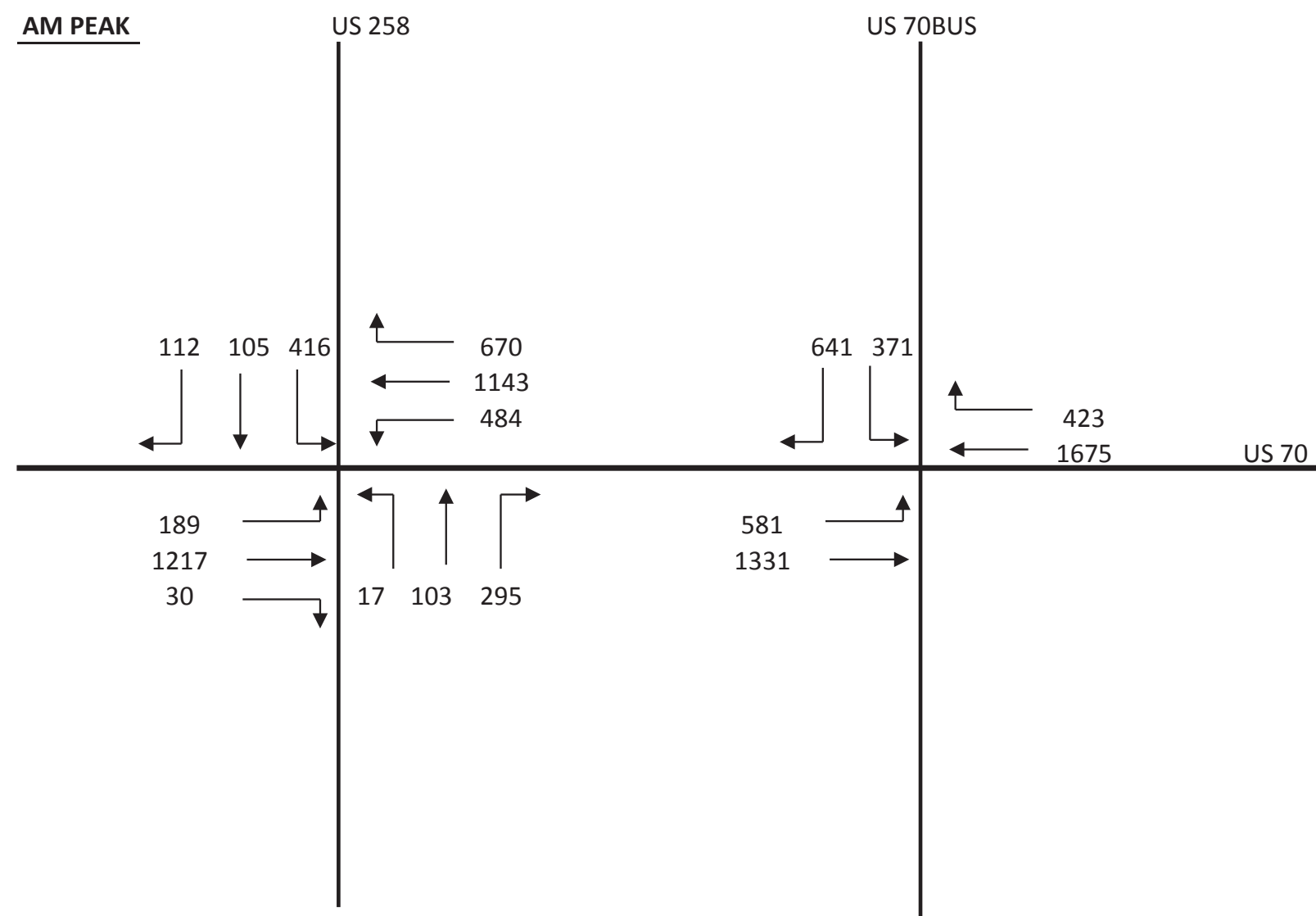


Part 2 - Step 1

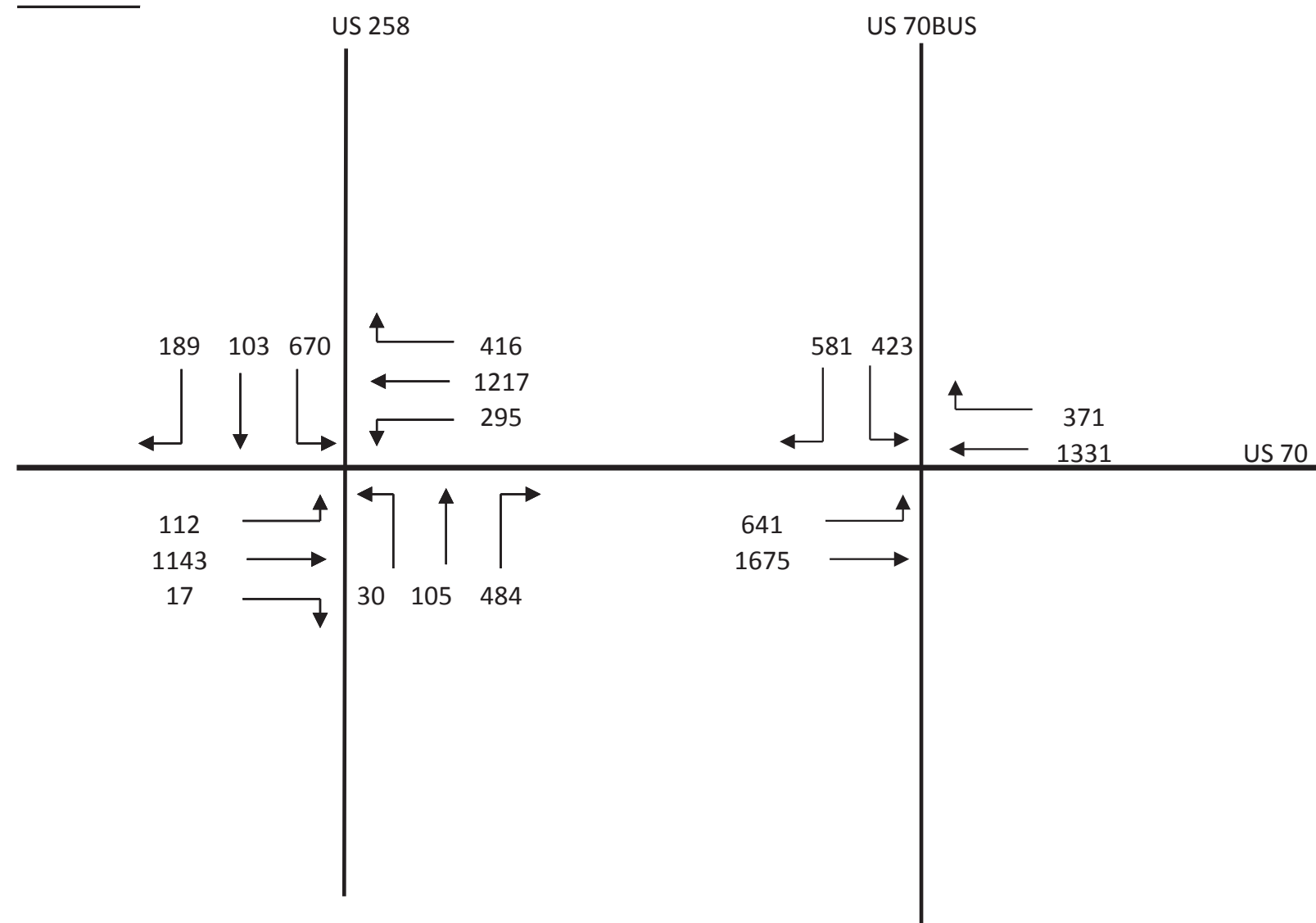
Alternative 1

Volumes

AM PEAK

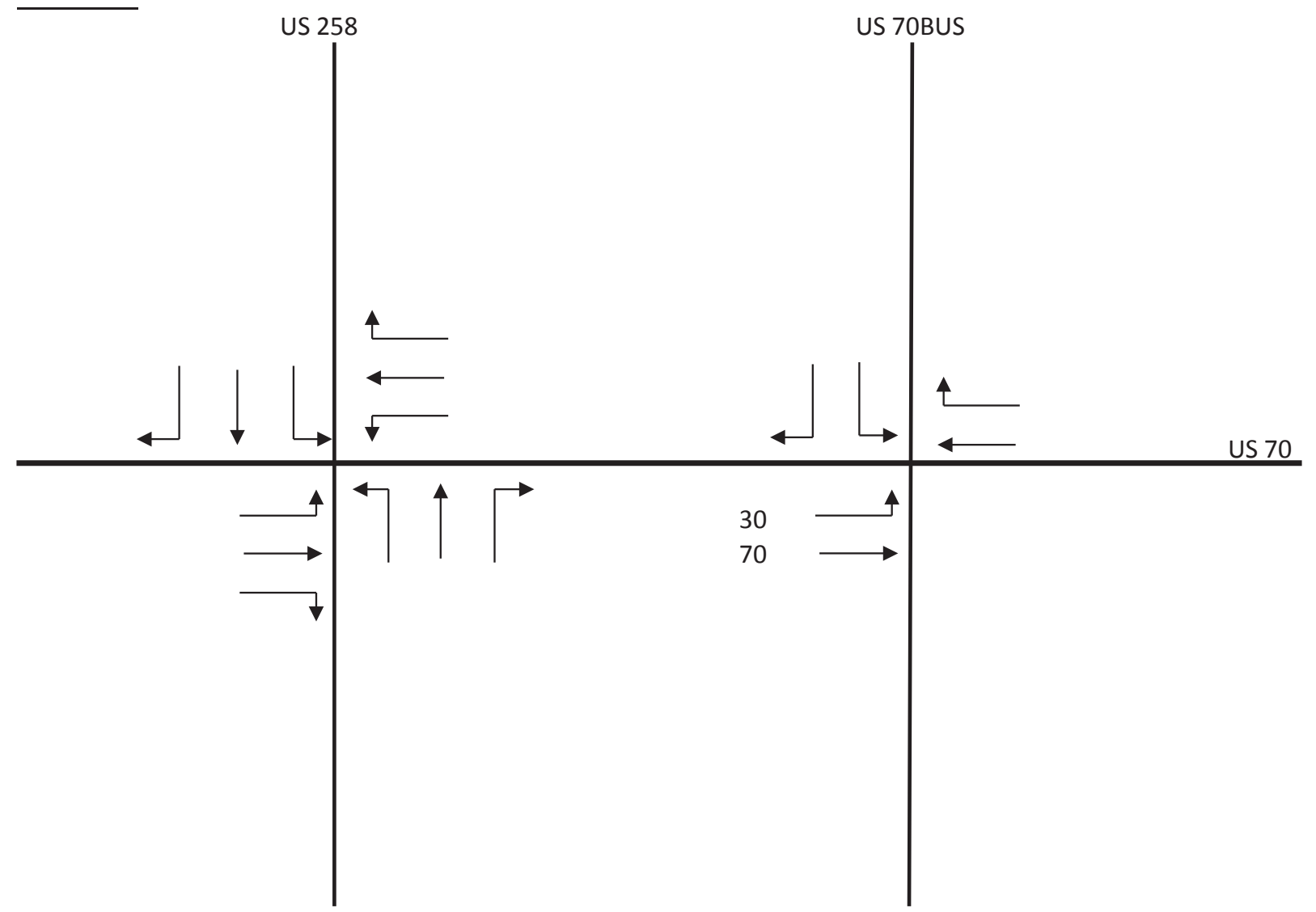


PM PEAK



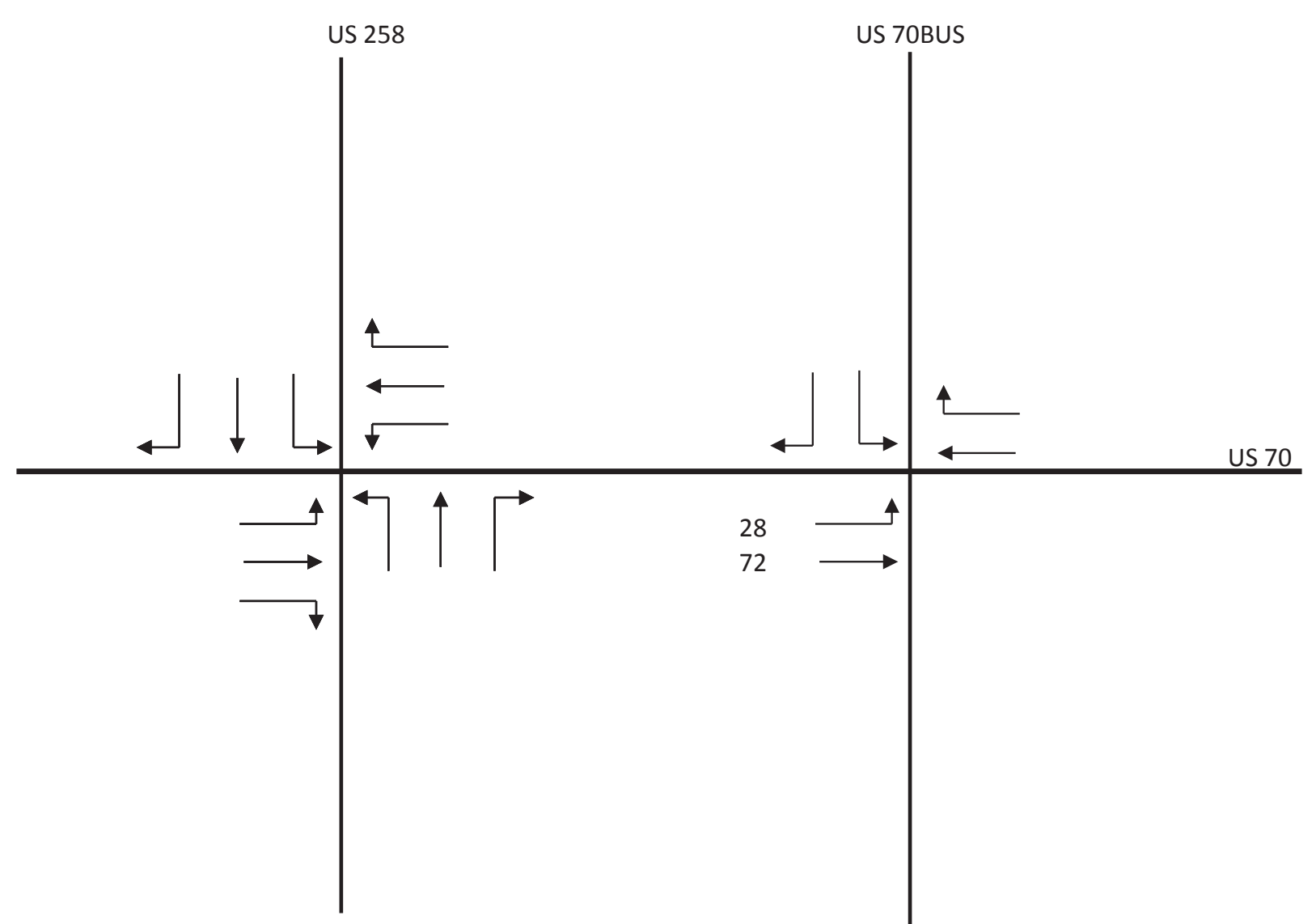
Part 2 - Step 2
Alternative 1
Intersection Volume Proportions
AM PEAK

percent of inbound traffic volume



PM PEAK

percent of inbound traffic volume

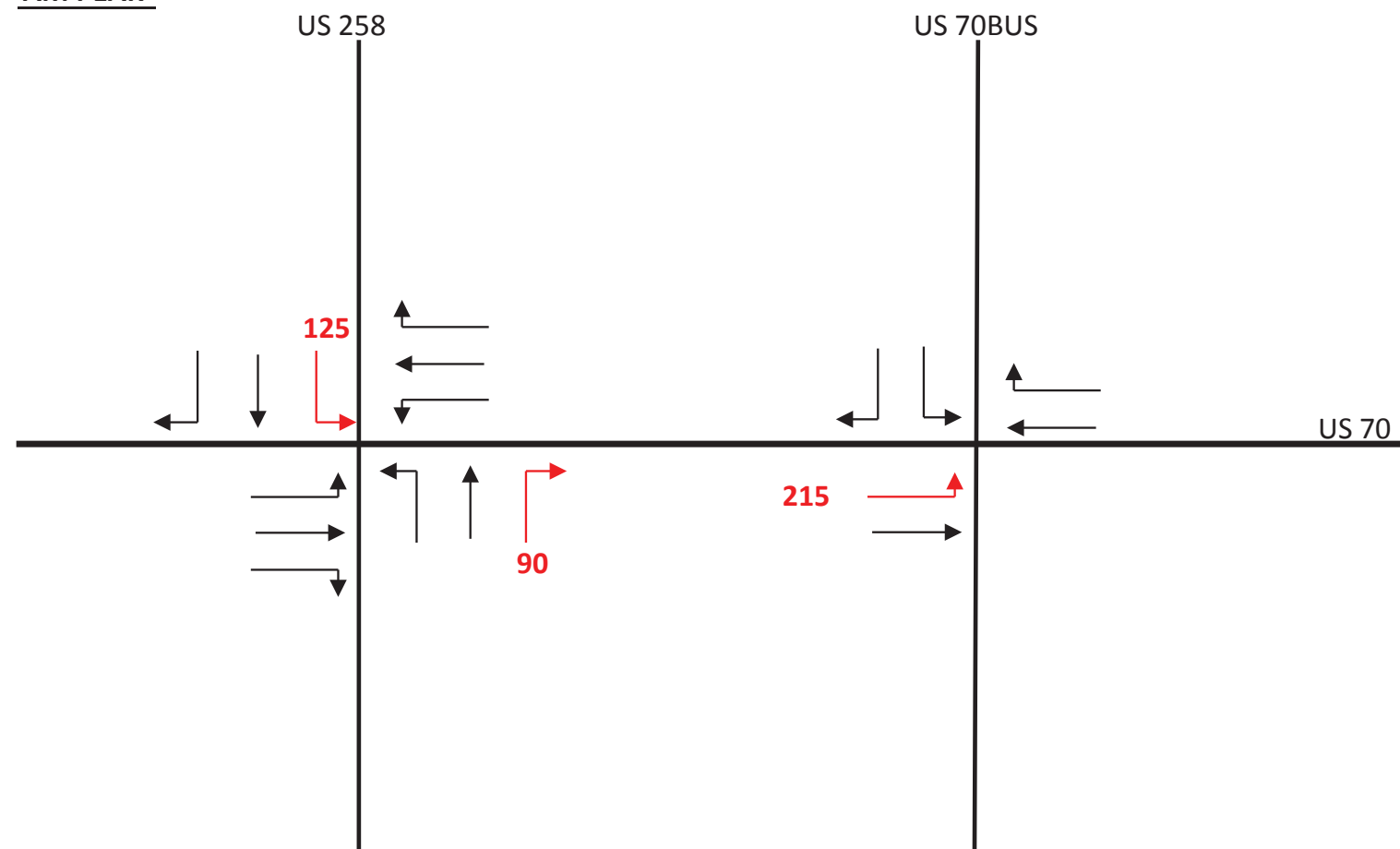


Part 2 - Step 3

Alternative 1

Intersection Volume Proportions

AM PEAK

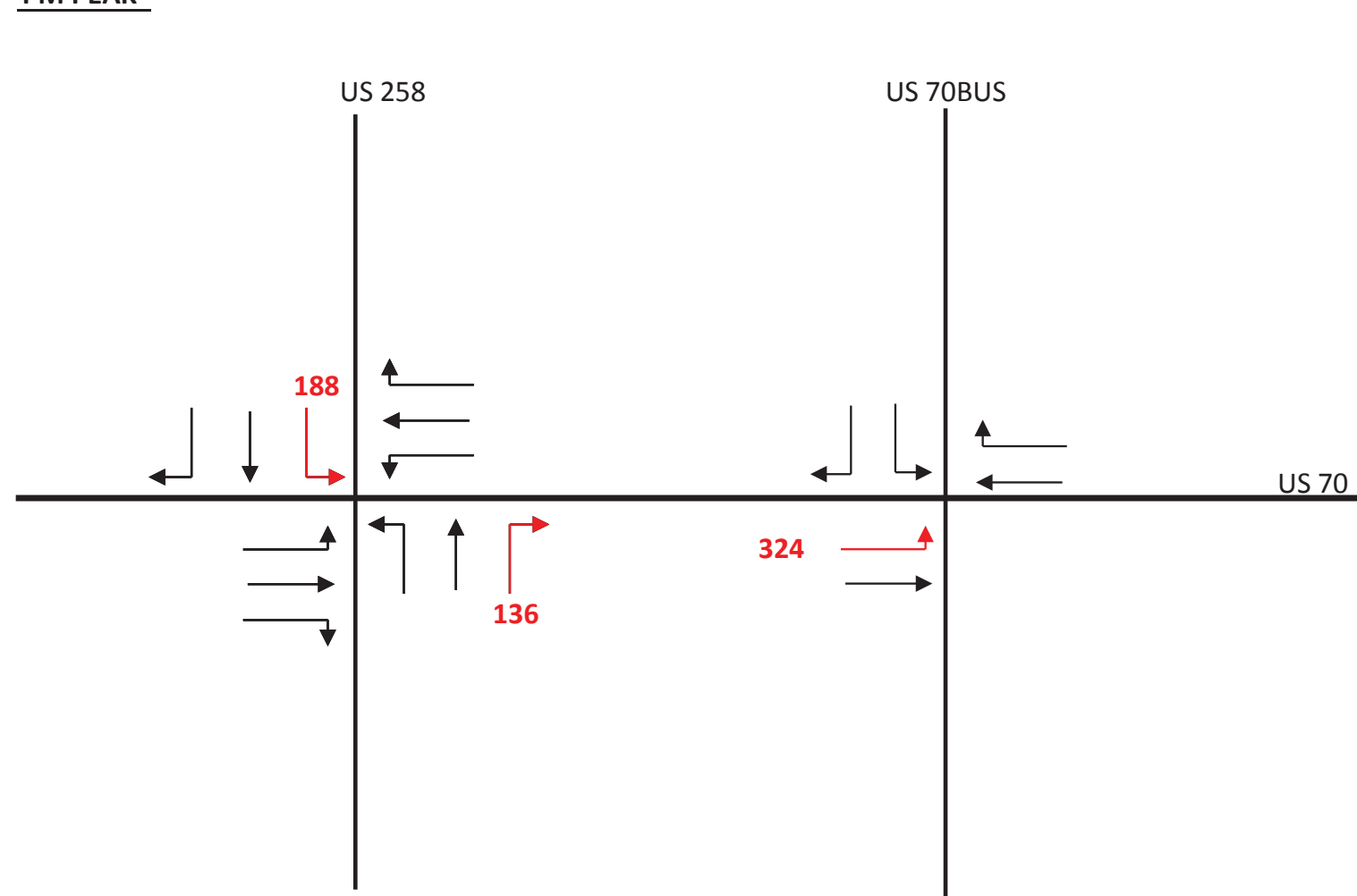


AM PEAK

Calculations

- 1-2. Based on proportions of eastbound traffic at US 70 and US 70BUS, assume 30% of traffic turning onto US 70 EB at US 258 has a destination of US 70 NB
 $416 * 0.3 = 125$
 $295 * 0.3 = 90$
3. $125 + 90 = 215$

PM PEAK

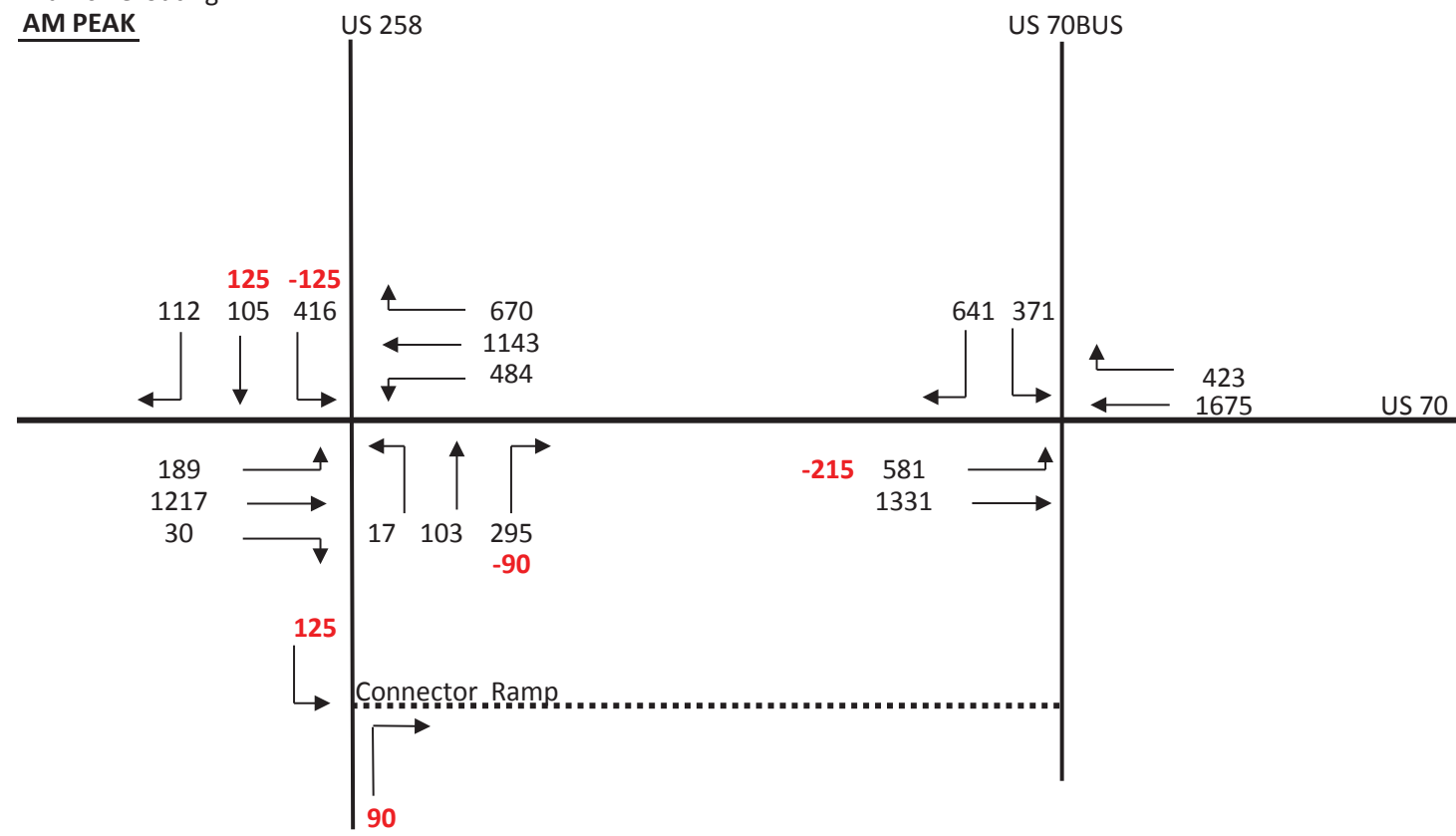


PM PEAK

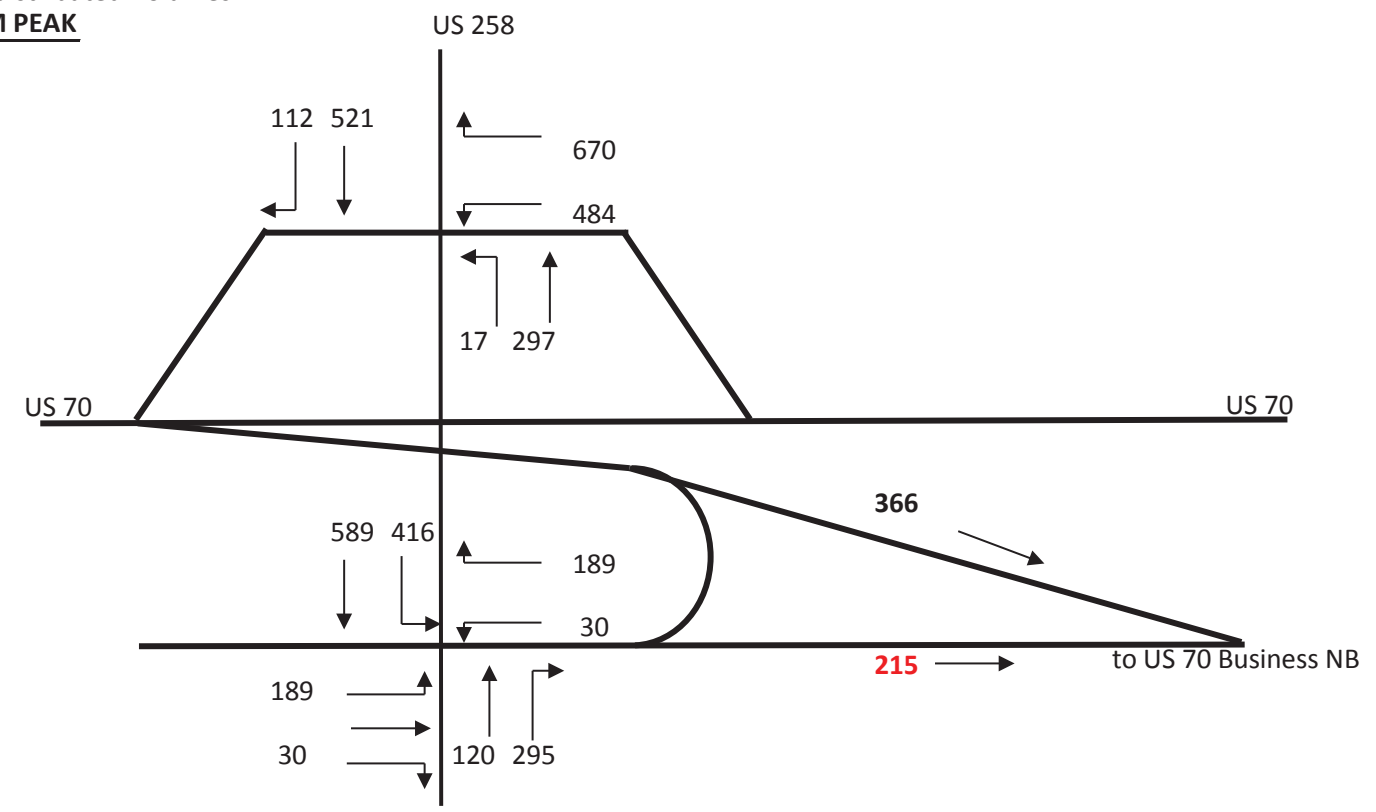
Calculations

- 1-2. Based on proportions of eastbound traffic at US 70 and US 70BUS, assume 28% of traffic turning onto US 70 EB at US 258 has a destination of US 70 NB
 $670 * 0.28 = 188$
 $484 * 0.28 = 136$
3. $188 + 136 = 324$

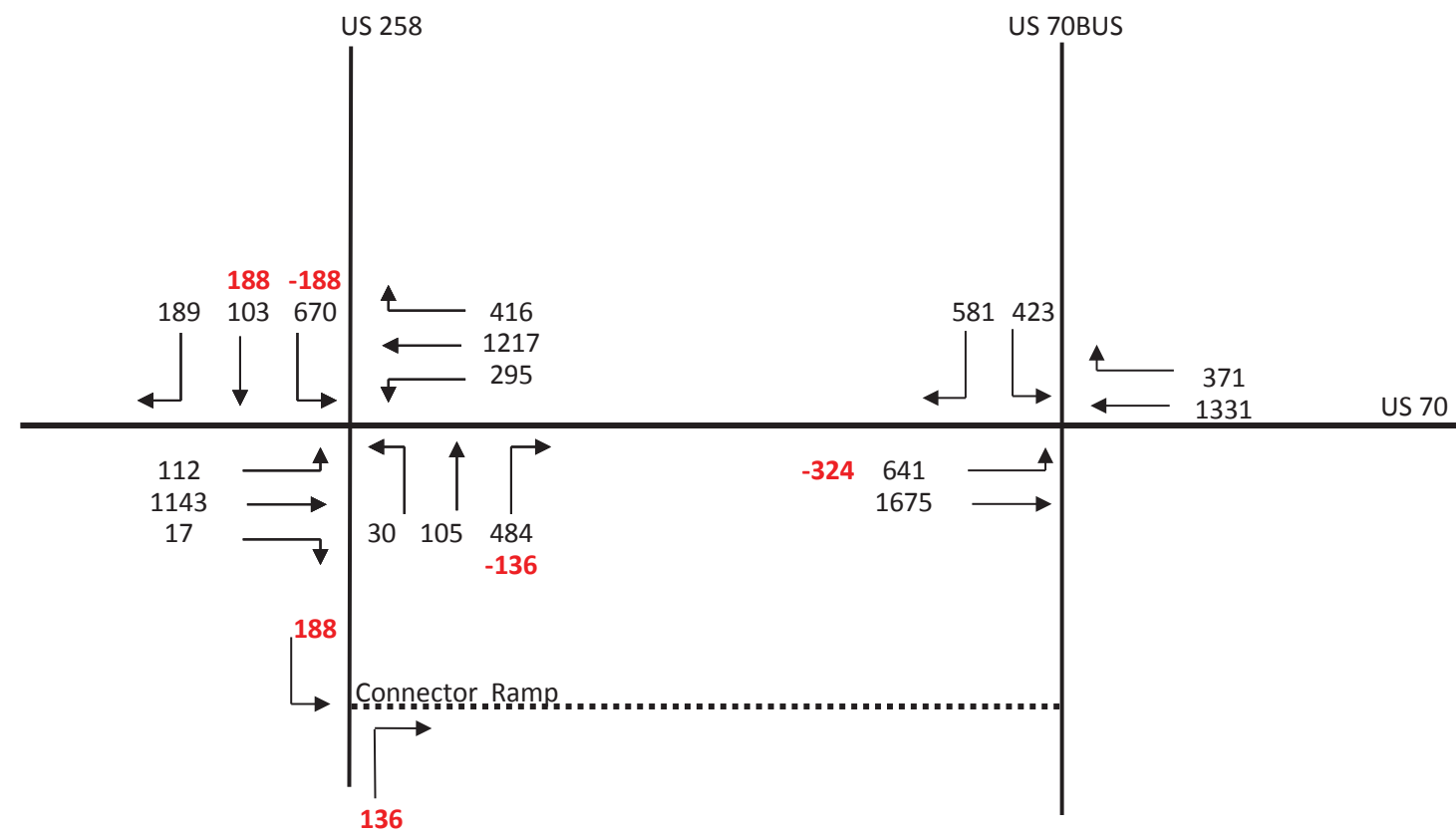
Part 2 - Step 4
 Alternative 1
 Traffic Rerouting
AM PEAK



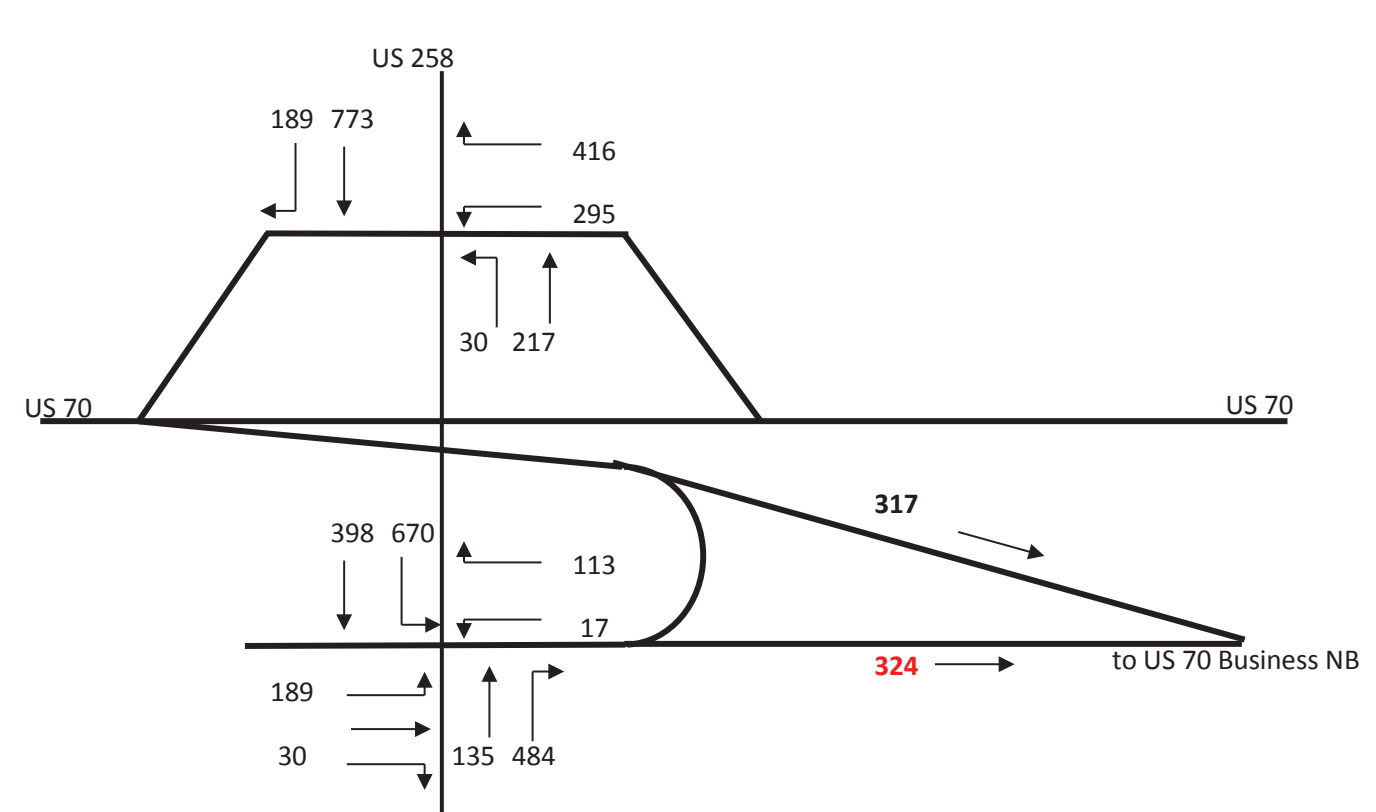
Part 2 - Step 4
 Alternative 1
 Redistributed Volumes
AM PEAK



PM PEAK

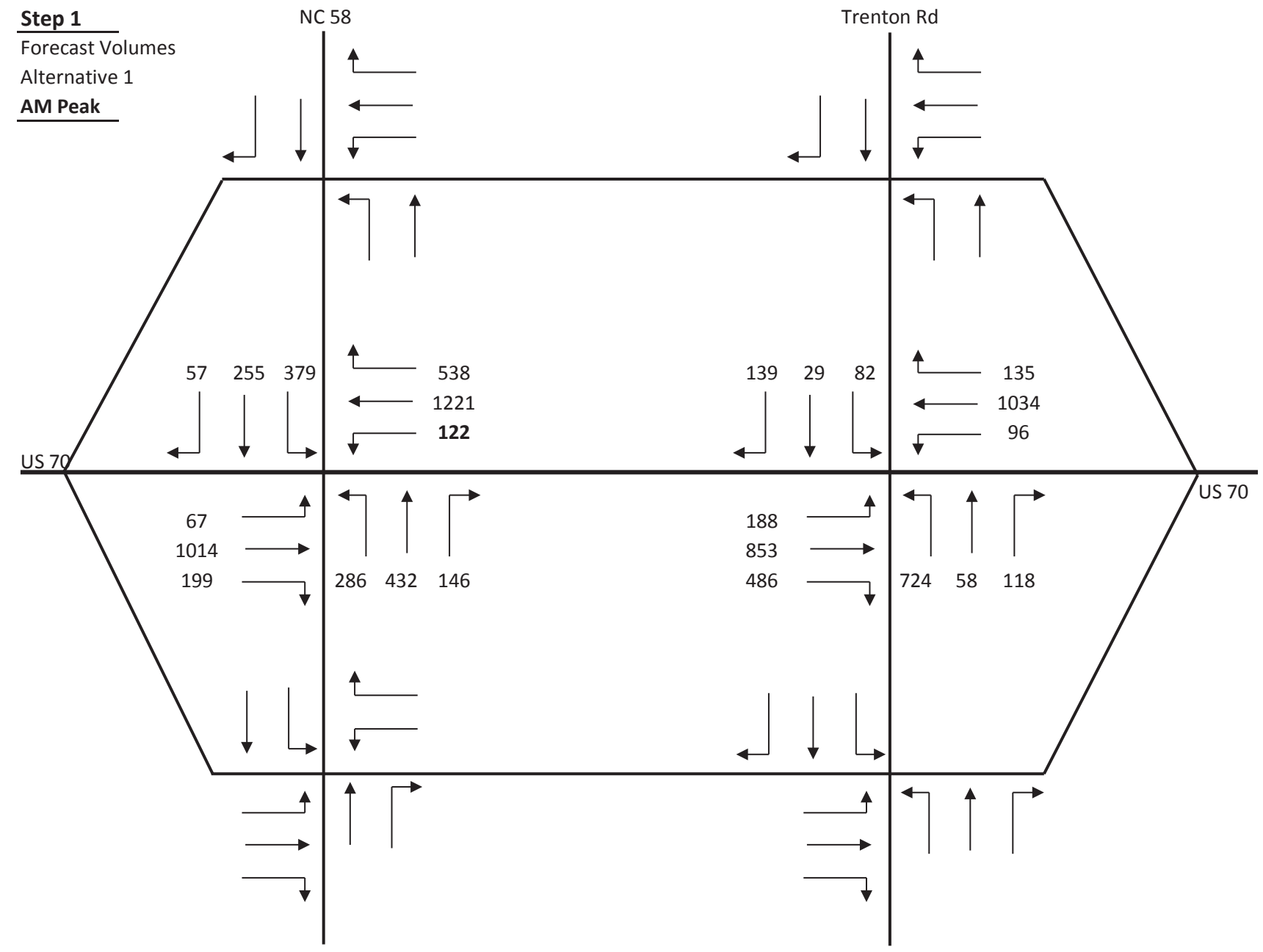


PM PEAK

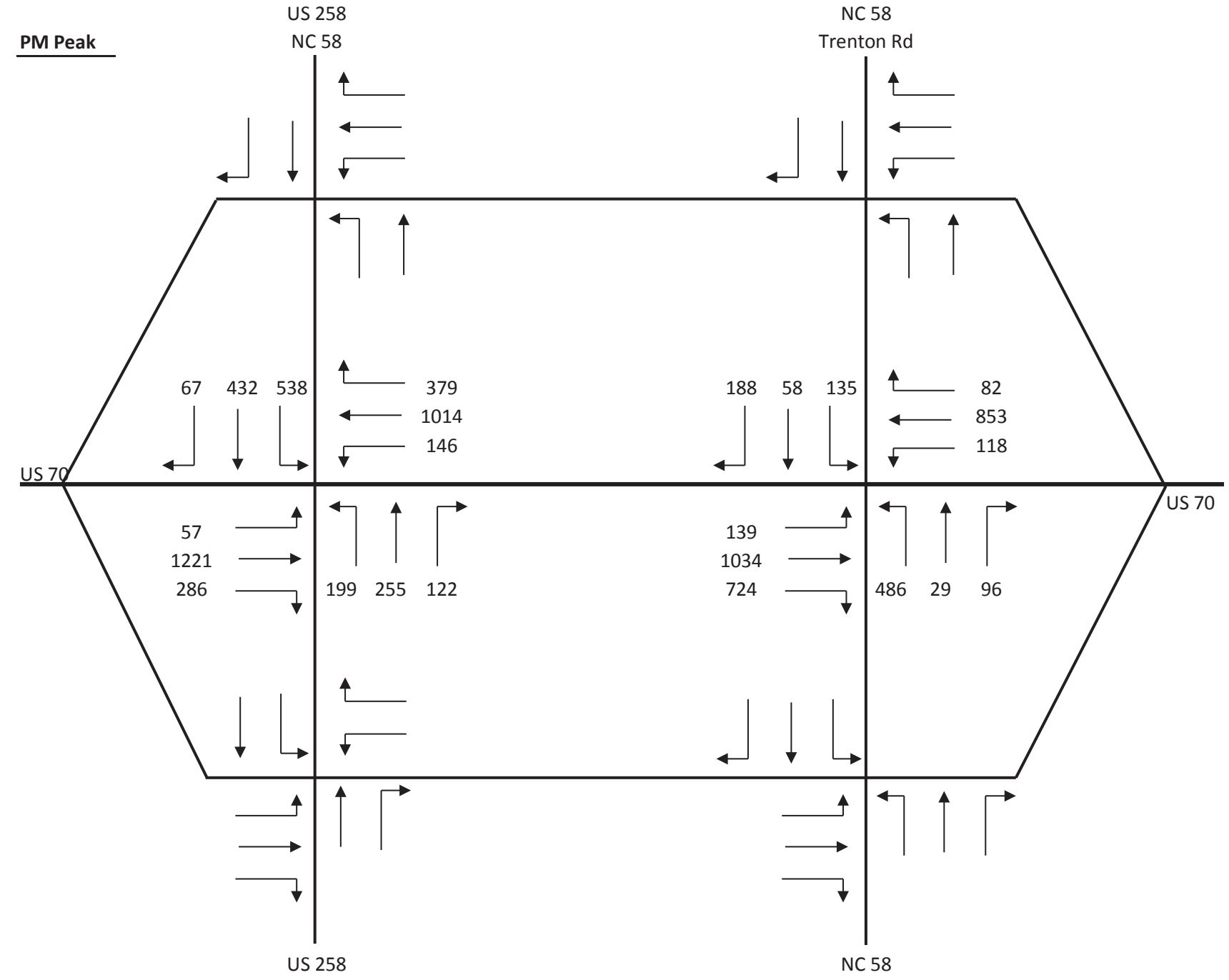


Step 1

Forecast Volumes
Alternative 1
AM Peak



PM Peak

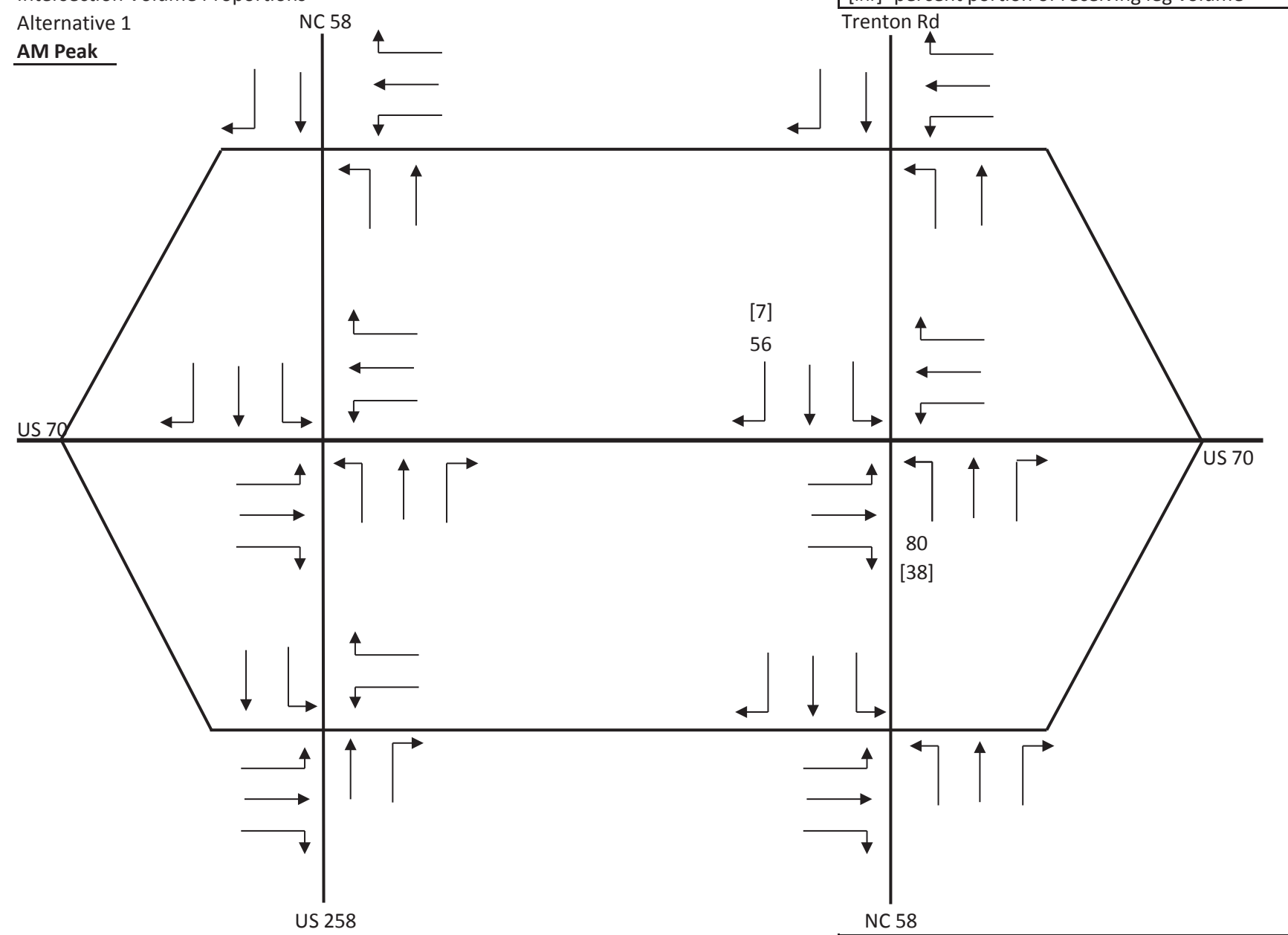


Step 2

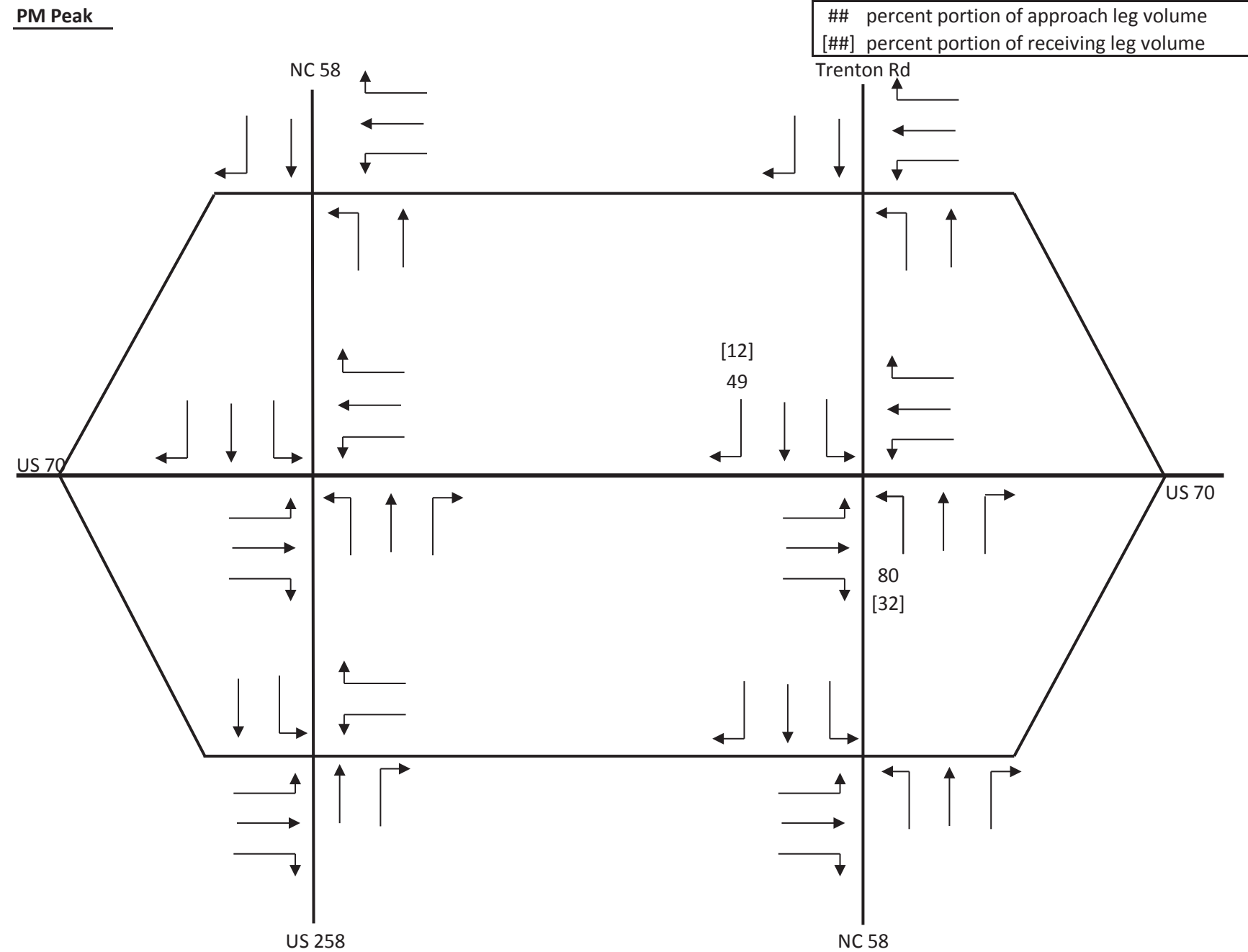
Intersection Volume Proportions

Alternative 1

AM Peak

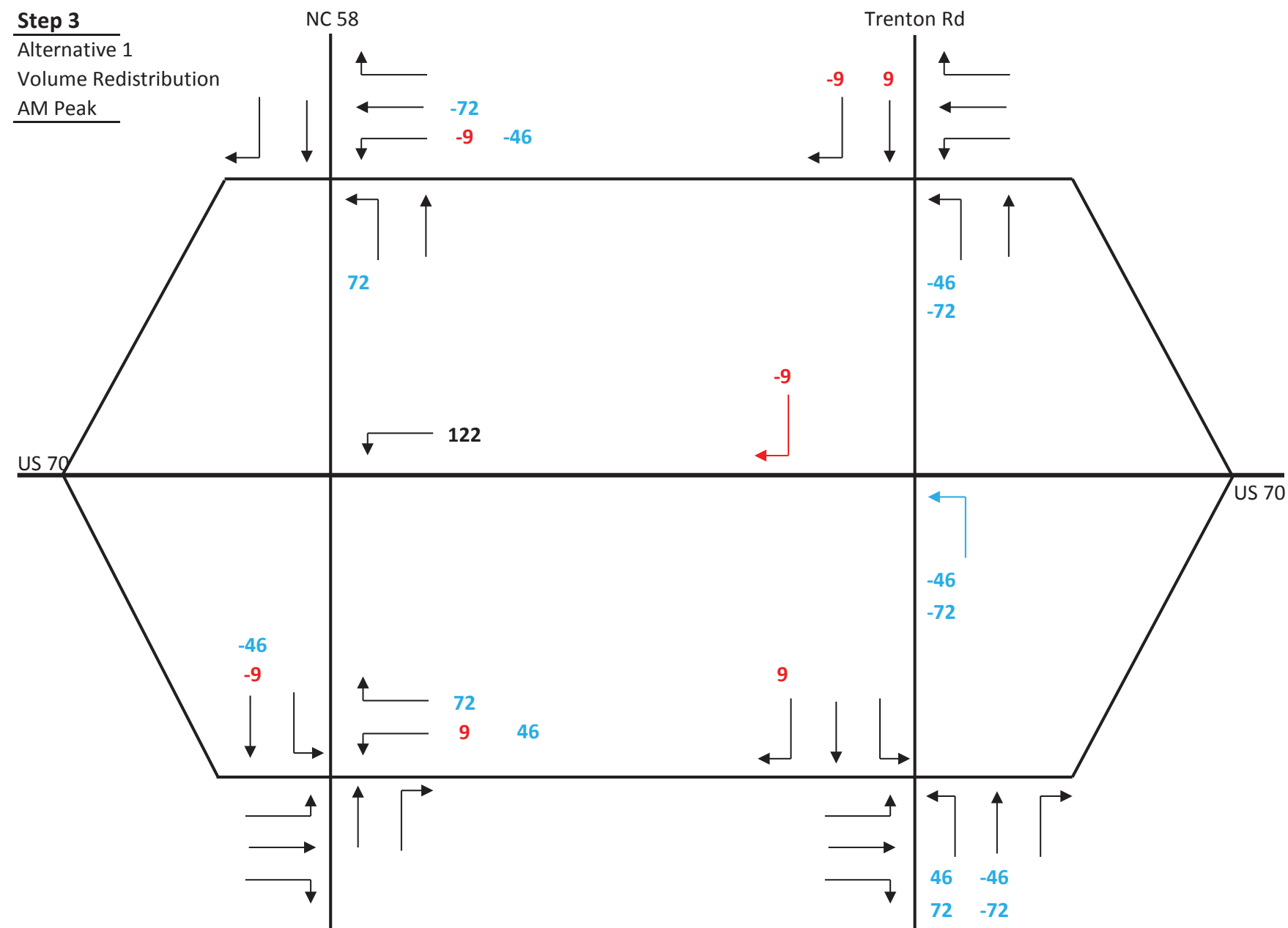


PM Peak



Step 3

Alternative 1
Volume Redistribution
AM Peak



AM PEAK

NBL

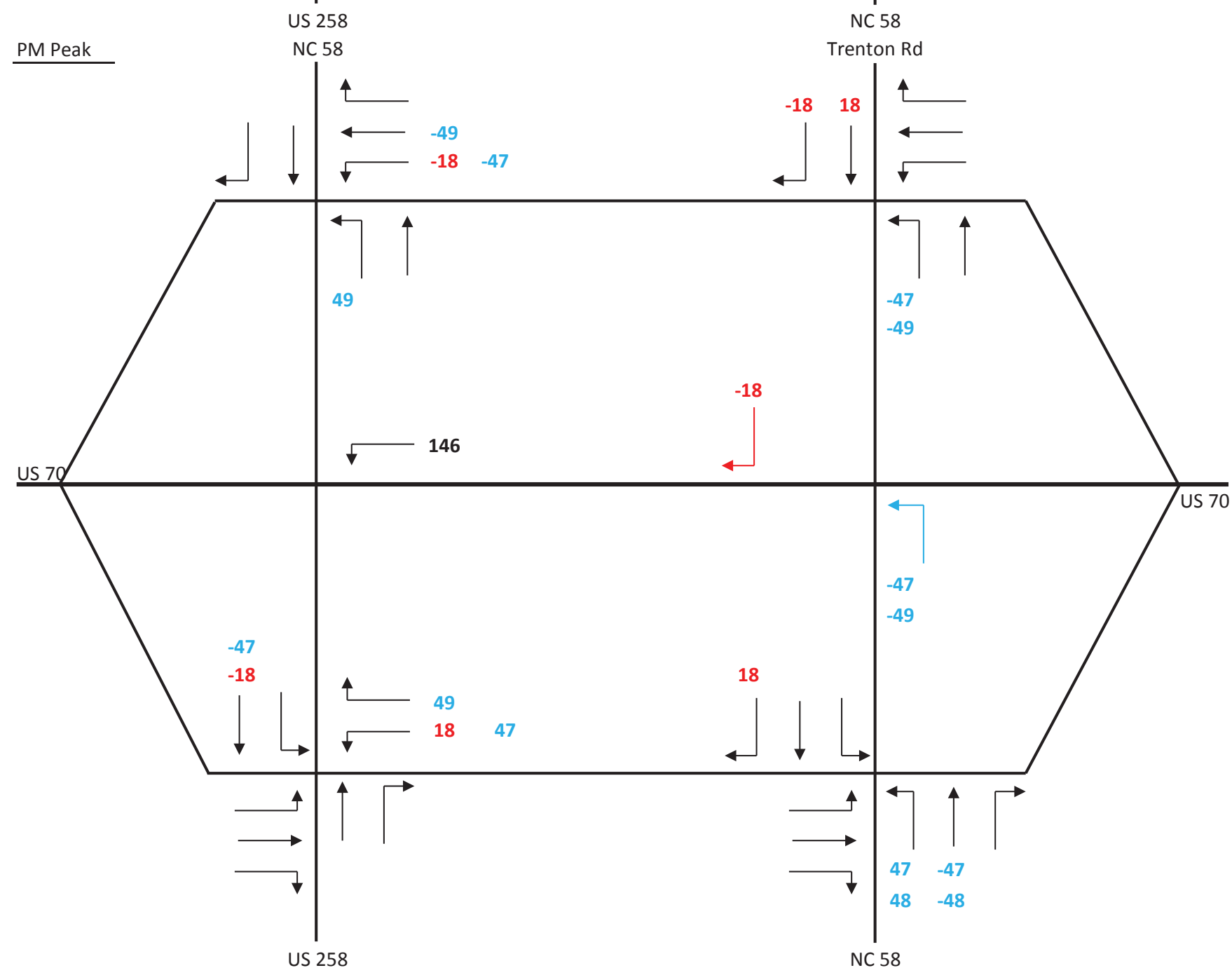
2	$122 * 0.38 =$	46
3	$724 * 0.10 =$	72

SBR

2	$122 * 0.07 =$	9
---	----------------	---

Calculations

PM Peak



PM PEAK

NBL

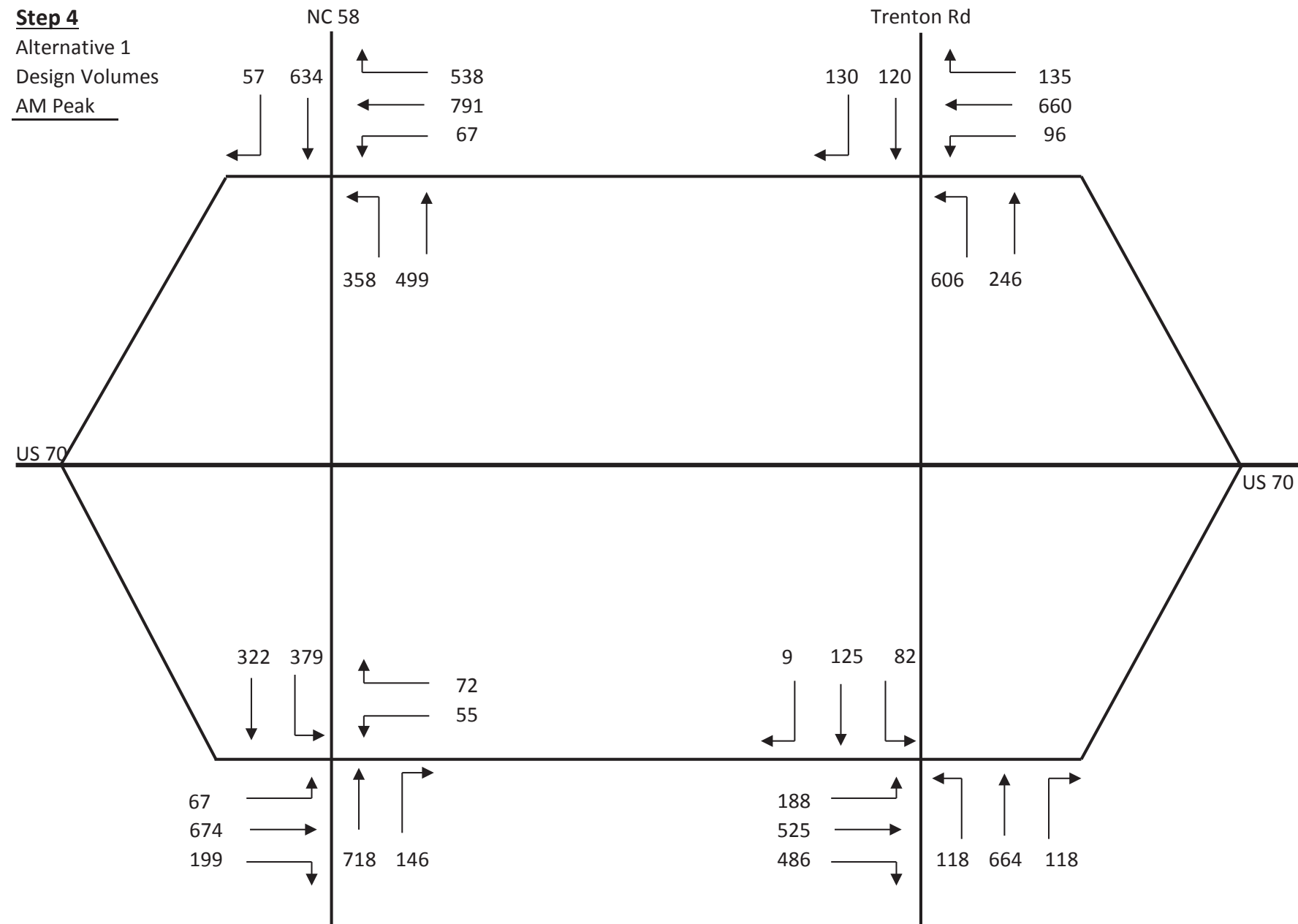
2	$146 * 0.32 =$	47
3	$486 * 0.10 =$	49

SBR

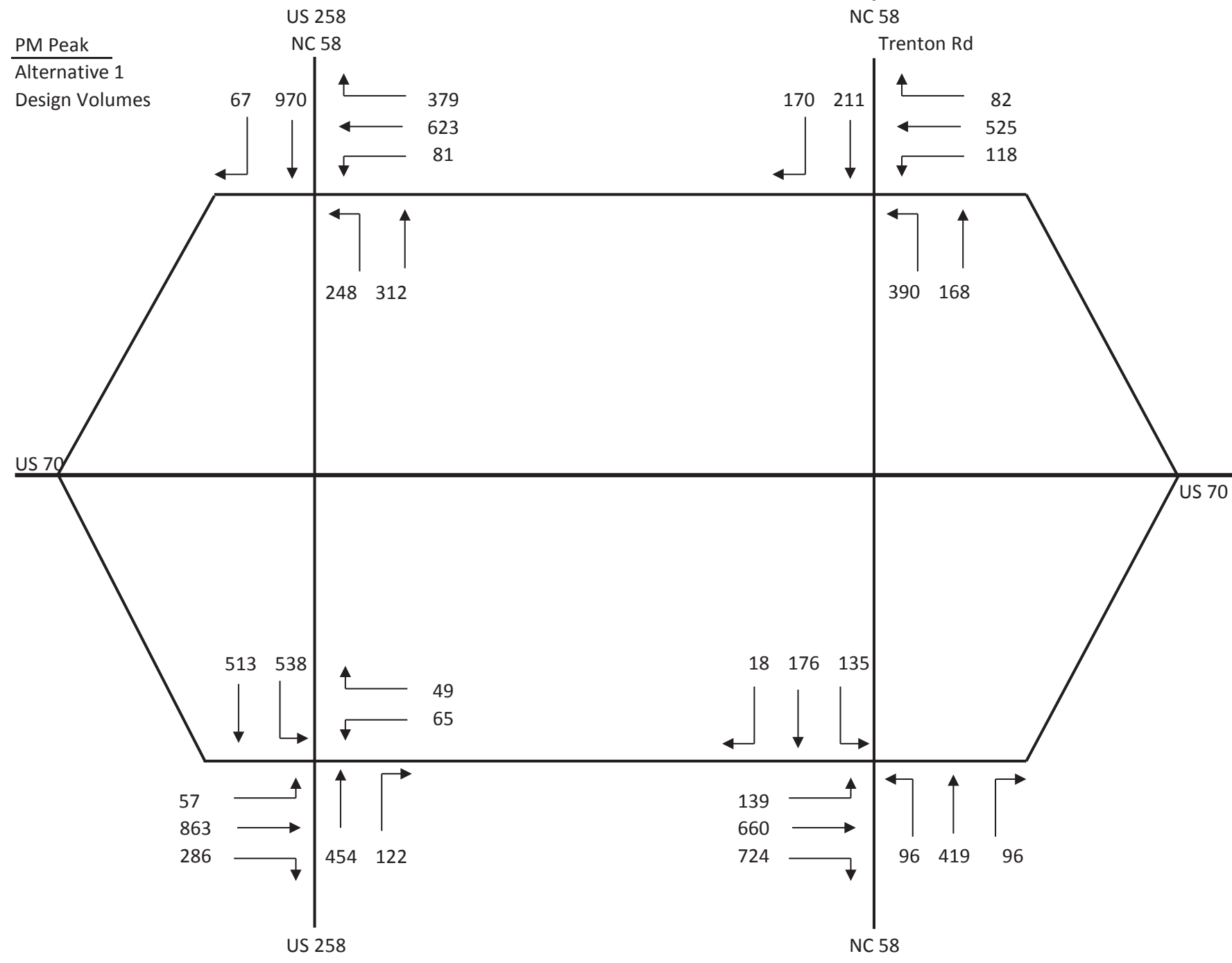
2	$146 * 0.12 =$	18
---	----------------	----

Calculations

Step 4
 Alternative 1
 Design Volumes
 AM Peak



PM Peak
 Alternative 1
 Design Volumes



R-2553 Kinson Bypass
2040 Build Alternative 1
Step 1 - Basic Freeway Segment Volumes Calculations

Basic Freeway Segment Volumes - Eastbound							
Seg.	Description	AADT	K	D (PM)	Total	AM	PM
1E	US 70 EB - West of SR 1690 (Willie Measley Rd)	36,200	0.09	0.45	3,258	1,792	1,467
5E	US 70 EB - SR 1690 (Willie Measley Rd) to SR 1522 (Albert Sugg Rd)	38,400	0.09	0.45	3,456	1,901	1,556
9E	US 70 EB - SR 1522 (Albert Sugg Rd) to C. F. Harvey Pkwy	39,800	0.09	0.45	3,582	1,971	1,612
13E	US 70 EB - C. F. Harvey Pkwy to SR 1548 (Hill Farm Rd) ramps	34,400	0.09	0.45	3,096	1,703	1,394
19E	US 70 EB - US 70BUS to NC 11	42,200	0.09	0.55	3,798	1,710	2,089
23E	US 70 EB - NC 11 to US 70BUS / US 258	31,600	0.09	0.55	2,844	1,280	1,565
27E	US 70 EB - NC 58 to SR 1002 (Wyse Fork Rd)	29,000	0.08	0.55	2,320	1,044	1,276
31E	US 70 EB - SR 1002 (Wyse Fork Rd) to Kornegay St	26,000	0.08	0.55	2,080	936	1,144
35E	US 70 EB - East of Kornegay St	24,000	0.08	0.55	1,920	864	1,056

Basic Freeway Segment Volumes - Westbound							
Seg.	Description	AADT	K	D (PM)	Total	AM	PM
1W	US 70 WB - East of Kornegay St	24,000	0.08	0.45	1,920	1,056	864
5W	US 70 WB - SR 1002 (Wyse Fork Rd) to Kornegay St	26,000	0.08	0.45	2,080	1,144	936
9W	US 70 WB - NC 58 to SR 1002 (Wyse Fork Rd)	29,000	0.08	0.45	2,320	1,276	1,044
13W	US 70 WB - NC 11 to US 70BUS / US 258	31,600	0.09	0.45	2,844	1,565	1,280
17W	US 70 WB - US 70BUS to NC 11	42,200	0.09	0.45	3,798	2,089	1,710
21W	US 70 WB - US 258 to US 70BUS	47,000	0.09	0.45	4,230	2,327	1,904
25W	US 70 WB - C. F. Harvey Pkwy to SR 1548 (Hill Farm Rd) ramps	34,400	0.09	0.55	3,096	1,394	1,703
29W	US 70 WB - SR 1522 (Albert Sugg Rd) to C. F. Harvey Pkwy	39,800	0.09	0.55	3,582	1,612	1,971
33W	US 70 WB - SR 1690 (Willie Measley Rd) to SR 1522 (Albert Sugg Rd)	38,400	0.09	0.55	3,456	1,556	1,901
37W	US 70 WB - West of SR 1690 (Willie Measley Rd)	36,200	0.09	0.55	3,258	1,467	1,792

Basic Freeway Segment Volumes - Northbound							
Seg.	Description	AADT	K	D (PM)	Total	AM	PM
3N	C. F. Harvey Pkwy NB - North of US 70 / US 70BUS	8,600	0.09	0.40	774	465	310

Basic Freeway Segment Volumes - Southbound							
Seg.	Description	AADT	K	D (PM)	Total	AM	PM
1S	C. F. Harvey Pkwy SB - North of US 70 / US 70BUS	8,600	0.09	0.60	774	310	465

R-2553 Kinson Bypass
 2040 Build Alternative 1
 Step 2 - Compiling Ramp Volumes

US 70 Ramp Volumes								
Description	EB Exit		WB Entrance		EB Entrance		WB Exit	
	AM	PM	AM	PM	AM	PM	AM	PM
US 70 at SR 1690 (Willie Measley Rd)	181	204	204	181	341	250	250	341
US 70 at SR 1522 (Albert Sugg Rd)	152	200	200	152	305	188	188	305
US 70 at US 70BUS/C. F. Harvey Pkwy	381	252	253	381	61	77	77	62
US 70 at SR 1548 (Hill Farm Rd)	245	139	139	245				
US 70 at US 258	585	446	130	223			1,158	715
US 70 at US 70BUS (W)			641	581	867	1,253	423	371
US 70 at NC 11	681	870	874	685	301	284	284	301
US 70 at US 70BUS (E) / NC 58	940	1,206	1,206	940	725	891	891	725
US 70 at SR 1002 (Wyse Fork Rd)	173	224	224	173	80	75	75	80
US 70 at Korneqay St	92	149	149	93	44	33	33	44

R-2553 Kinson Bypass
 2040 Build Alternative 1
 Step 3 - Adjusting All Segment Volumes

US 70 Eastbound, Western End Adjusted Segment Volumes					
Seg.	Description	Volumes		Adjusted Volumes	
		AM	PM	AM	PM
1E	US 70 EB - West of SR 1690 (Willie Measley Rd)	1,792	1,467	1,991	1,630
2E	US 70 EB - to SR 1690 (Willie Measley Rd)	181	204	201	227
4E	US 70 EB - from SR 1690 (Willie Measley Rd)	341	250	379	278
5E	US 70 EB - SR 1690 (Willie Measley Rd) to SR 1522 (Albert Sugg Rd)	1,901	1,556	2,112	1,729
6E	US 70 EB - to SR 1522 (Albert Sugg Rd)	152	200	169	222
8E	US 70 EB - from SR 1522 (Albert Sugg Rd)	305	188	339	209
9E	US 70 EB - SR 1522 (Albert Sugg Rd) to C. F. Harvey Pkwy	1,971	1,612	2,190	1,791
10E	US 70 EB - to C. F. Harvey Pkwy	381	252	423	280
12E	US 70 EB - from C.F. Harvey	61	77	68	85
13E	US 70 EB - C. F. Harvey Pkwy to SR 1548 (Hill Farm Rd) Ramps	1,703	1,394	1,892	1,549
US 70 Eastbound, Eastern End Adjusted Segment Volumes					
Seg.	Description	Volumes		Adjusted Volumes	
		AM	PM	AM	PM
27E	US 70 EB - NC 58 to SR 1002 (Wyse Fork Rd)	1,044	1,276	1,160	1,418
28E	US 70 EB - to SR 1002 (Wyse Fork Rd)	173	224	192	249
30E	US 70 EB - from SR 1002 (Wyse Fork Rd)	80	75	89	83
31E	US 70 EB - SR 1002 (Wyse Fork Rd) to Kornegay St	936	1,144	1,040	1,271
32E	US 70 EB - to Kornegay St	92	149	102	166
34E	US 70 EB - from Kornegay St	44	33	49	36
35E	US 70 EB - East of Kornegay St	864	1,056	960	1,173

	AM	PM
Western End Maximum Volume	2,190	1,791
Eastern End Maximum Volume	1,160	1,418

XXX	Ramp
XXX	Freeway Segment

R-2553 Kinson Bypass
 2040 Build Alternative 1
 Step 3 - Adjusting All Segment Volumes

Westbound, Eastern End Adjusted Segment Volumes					
Seg.	Description	Volumes		Adjusted Volumes	
		AM	PM	AM	PM
1W	US 70 WB - East of Kornegay St	1,056	864	1,173	960
2W	US 70 WB - to Kornegay St	33	44	37	49
4W	US 70 WB - from Kornegay St	149	93	166	103
5W	US 70 WB - SR 1002 (Wyse Fork Rd) to Kornegay St	1,144	936	1,271	1,040
6W	US 70 WB - to SR 1002 (Wyse Fork Rd)	75	80	83	89
8W	US 70 WB - from SR 1002 (Wyse Fork Rd)	224	173	249	192
9W	US 70 WB - NC 58 to SR 1002 (Wyse Fork Rd)	1,276	1,044	1,418	1,160
Westbound, Western End Adjusted Segment Volumes					
Seg.	Description	Volumes		Adjusted Volumes	
		AM	PM	AM	PM
25W	US 70 WB - C. F. Harvey Pkwy to SR 1548 (Hill Farm Rd) Ramps	1,394	1,703	1,549	1,892
26W	US 70 WB - to C.F. Harvey	77	62	86	69
28W	US 70 WB - from C. F. Harvey Pkwy	253	381	281	423
29W	US 70 WB - SR 1522 (Albert Sugg Rd) to C. F. Harvey Pkwy	1,612	1,971	1,791	2,190
30W	US 70 WB - to SR 1522 (Albert Sugg Rd)	188	305	209	339
32W	US 70 WB - from SR 1522 (Albert Sugg Rd)	200	152	222	169
33W	US 70 WB - SR 1690 (Willie Measley Rd) to SR 1522 (Albert Sugg Rd)	1,556	1,901	1,729	2,112
34W	US 70 WB - to SR 1690 (Willie Measley Rd)	250	341	278	379
36W	US 70 WB - from SR 1690 (Willie Measley Rd)	204	181	227	201
37W	US 70 WB - West of SR 1690 (Willie Measley Rd)	1,467	1,792	1,630	1,991

Western End Maximum Volume	1,791	2,190
Eastern End Maximum Volume	1,418	1,160

XXX	Ramp
XXX	Freeway Segment

R-2553 Kinson Bypass
 2040 Build Alternative 1
 Step 4 - Balancing Freeway Segment Volumes

US 70 Eastbound, Western End Freeway Volume Balancing					
Seg.	Description	Adjusted Ramp Volumes		Balanced Freeway Volumes	
		AM	PM	AM	PM
1E	US 70 EB - West of SR 1690 (Willie Measley Rd)			1,842	1,753
2E	US 70 EB - to SR 1690 (Willie Measley Rd)	201	227		
3E	US 70 EB - within SR 1690 (Willie Measley Rd) Interchange			1,641	1,526
4E	US 70 EB - from SR 1690 (Willie Measley Rd)	379	278		
5E	US 70 EB - SR 1690 (Willie Measley Rd) to SR 1522 (Albert Sugg Rd)			2,020	1,804
6E	US 70 EB - to SR 1522 (Albert Sugg Rd)	169	222		
7E	US 70 EB - within SR 1522 (Albert Sugg Rd) Interchange			1,851	1,582
8E	US 70 EB - from SR 1522 (Albert Sugg Rd)	339	209		
9E	US 70 EB - SR 1522 (Albert Sugg Rd) to C. F. Harvey Pkwy			2,190	1,791
10E	US 70 EB - to C. F. Harvey Pkwy	423	280		
11E	US 70 EB - within C. F. Harvey Interchange			1,767	1,511
12E	US 70 EB - from C.F. Harvey	68	85		
13E	US 70 EB - C. F. Harvey Pkwy to SR 1548 (Hill Farm Rd) Ramps			1,835	1,596
US 70 Eastbound, Eastern End Freeway Volume Balancing					
Seg.	Description	Adjusted Ramp Volumes		Balanced Freeway Volumes	
		AM	PM	AM	PM
27E	US 70 EB - NC 58 to SR 1002 (Wyse Fork Rd)			1,160	1,418
28E	US 70 EB - to SR 1002 (Wyse Fork Rd)	192	249		
29E	US 70 EB - within SR 1002 Interchange			968	1,169
30E	US 70 EB - from SR 1002 (Wyse Fork Rd)	89	83		
31E	US 70 EB - SR 1002 (Wyse Fork Rd) to Kornegay St			1,057	1,252
32E	US 70 EB - to Kornegay St	102	166		
33E	US 70 EB - within Kornegay St interchange			955	1,086
34E	US 70 EB - from Kornegay St	49	36		
35E	US 70 EB - East of Kornegay St			1,004	1,122

	Western End Balance Point
	Eastern End Balance Point
XXX	Ramp
XXX	Basic Freeway Segment

R-2553 Kinson Bypass
2040 Build Alternative 1
Step 4 - Balancing Freeway Segment Volumes

US 70 Westbound, Eastern End Freeway Volume Balancing					
Seg.	Description	Adjusted Ramp Volumes		Balanced Freeway Volumes	
		AM	PM	AM	PM
1W	US 70 WB - East of Kornegay St			1,123	1,003
2W	US 70 WB - to Kornegay St	37	49		
3W	US 70 WB - within Kornegay St interchange			1,086	954
4W	US 70 WB - from Kornegay St	166	103		
5W	US 70 WB - SR 1002 (Wyse Fork Rd) to Kornegay St			1,252	1,057
6W	US 70 WB - to SR 1002 (Wyse Fork Rd)	83	89		
7W	US 70 WB - within SR 1002 Interchange			1,169	968
8W	US 70 WB - from SR 1002 (Wyse Fork Rd)	249	192		
9W	US 70 WB - NC 58 to SR 1002 (Wyse Fork Rd)			1,418	1,160
US 70 Westbound, Western End Freeway Volume Balancing					
Seg.	Description	Adjusted Ramp Volumes		Balanced Freeway Volumes	
		AM	PM	AM	PM
25W	US 70 WB - C. F. Harvey Pkwy to SR 1548 (Hill Farm Rd) Ramps			1,664	2,039
26W	US 70 WB - to C.F. Harvey	154	272		
27W	US 70 WB - within C. F. Harvey Interchange			1,510	1,767
28W	US 70 WB - from C. F. Harvey Pkwy	281	423		
29W	US 70 WB - SR 1522 (Albert Sugg Rd) to C. F. Harvey Pkwy			1,791	2,190
30W	US 70 WB - to SR 1522 (Albert Sugg Rd)	209	339		
31W	US 70 WB - within SR 1522 (Albert Sugg Rd) Interchange			1,582	1,851
32W	US 70 WB - from SR 1522 (Albert Sugg Rd)	222	169		
33W	US 70 WB - SR 1690 (Willie Measley Rd) to SR 1522 (Albert Sugg Rd)			1,804	2020
34W	US 70 WB - to SR 1690 (Willie Measley Rd)	278	379		
35W	US 70 WB - within SR 1690 (Willie Measley Rd) Interchange			1,526	1641
36W	US 70 WB - from SR 1690 (Willie Measley Rd)	227	201		
37W	US 70 WB - West of SR 1690 (Willie Measley Rd)			1,753	1,842

	Western End Balance Point
	Eastern End Balance Point
XXX	Ramp
XXX	Basic Freeway Segment

**2040 Build Alternative 1
FREEVAL-E and HCS
Reports**

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HIGHWAY CAPACITY SOFTWARE 2010 (Release 6.80)

NETWORK DATA SUMMARY - ANALYSIS NOTES

General Information

Site Information

Analyst	AECOM	Date Performed	2017
Agency or Company		Analysis Year	2040 Build
Project Description	R-2553 Kinston Bypass - Alt 1 Build Conditions		

Date of NCDOT Capacity Analysis Guidelines for TIP Project Analyses used for this Study: **July, 2015**

Default Values - Freeways			Default Values - Signalized Intersections		
Peak Hour Factor (PHF)	0.90	NCDOT Standard	Signal System Type	Coordinated	NCDOT Standard
Terrain	Rolling	AASHTO Classification	Right Turn on Red	Not Allowed	NCDOT Standard
Driver Population Factor	1.00	NCDOT Standard	Total Loss Time	5 sec.	NCDOT Standard
Truck Percentages	1/2 of TTST+Duals	NCDOT Standard (rounded up)	Yellow/All Red	5 sec./2 sec.	NCDOT Standard
Measured Free-Flow Speed for Freeway	Varies	Based on average measured speeds gathered from INRIX data provided from the year 2013.	Minimum Initial Green	7 sec. - Minor	NCDOT Standard
				10-14 sec. - Major (based on speed)	
Freeway Type	Urban/Rural	AASHTO Classification	Minimum Cycle Length	60 sec - 2 phases	NCDOT Standard
				90 sec - 3 phases	
				120 sec - 4-8 phases	
Base Free-flow Speed - Ramps (where no posted speed exists)	Ramp: 45 mph	NCDOT Standard	Maximum Cycle Length	180 sec.	NCDOT Recommendation
	Loop: 25 mph		Saturation Flow Rate	1900 vphpl	NCDOT Standard
Y-line Truck Percentages - Ramps	Same as Y-line truck percentage	Due to more through trips by trucks this is most reasonable method			
Y-line Truck Percentages - Weaving	Use Freeway truck percentage for all movements	NCDOT Standard			

Level of Service Standards - HCS Segments

Level of Service Standards - Signalized Intersections

Assumed Improvements

TIP No.	Description

General Analysis Notes

- ▶ Ramp Acceleration/Deceleration Length - Measured from the point where the edge of the ramp lane and edge of freeway lane converge to the end of the taper
- ▶ Basic Freeway Segment Volumes: Peak Hour Volumes from traffic forecast
- ▶ Ramp Junction Volumes: Peak Hour Volumes from traffic forecast
- ▶ Ramp Junctions - Maximum adjacent ramp distance in HCS is 9999 ft. Distances greater than this will be shown in HCS as 9999 ft.
- ▶ Basic Freeway Segments within interchanges - Higher of two heavy vehicle percentages will be used if between segments with two different values.
- ▶ Ramp Junctions - Higher of two heavy vehicle percentages will be used if exiting to or entering from y-line with two different values.
- ▶ Freeway to freeway ramps are analyzed with speeds 5 mph below design speed.

Design Specific Analysis Notes

Analysis Points Note

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - BASIC FREEWAY SEGMENTS

General Information

Site Information

Analyst AECOM

Date Performed 2017

Agency or Company

Analysis Year 2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

	15E		17E		19E
	US 70 EB - Ramp to Hill Farm Rd to Ramp to US 70 Bus/US 258/Sussex St		US 70 EB - within US 70 Bus/US 258/Sussex St Int		US 70 EB - US 70 Bus/US 258/Sussex St to NC 11/NC 55
AM Peak Volume	1436		851		1710
PM Peak Volume	1272		826		2089
Peak Hour Factor	0.90		0.90		0.90
Number of Lanes	2		2		2
Terrain	Level		Level		Level
Truck Percentage	6%		4%		5%
Driver Pop. Adj.	1.00		1.00		1.00
Measured FFS	70 mph		70 mph		70 mph
Lane Width	N/A ft		N/A ft		N/A ft
Right Side Clearance	N/A ft		N/A ft		N/A ft
Total Ramp Density	N/A ramp/mi		N/A ramp/mi		N/A ramp/mi
	21E		23E		25E
	US 70 EB - within NC 11/NC 55 Int		US 70 EB - NC 11/NC 55 to US 70 Bus/US 258/NC 58/Trenton Hwy		US 70 EB - within US 70 Bus/US 258/NC 58/Trenton Hwy Int
AM Peak Volume	1000		1280		340
PM Peak Volume	1255		1565		359
Peak Hour Factor	0.90		0.90		0.90
Number of Lanes	2		2		2
Terrain	Level		Level		Level
Truck Percentage	7%		7%		7%
Driver Pop. Adj.	1.00		1.00		1.00
Measured FFS	70 mph		70 mph		70 mph
Lane Width	N/A ft		N/A ft		N/A ft
Right Side Clearance	N/A ft		N/A ft		N/A ft
Total Ramp Density	N/A ramp/mi		N/A ramp/mi		N/A ramp/mi

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - RAMP MERGE AND DIVERGE SEGMENTS

General Information		Site Information	
Analyst	AECOM	Date Performed	2017
Agency or Company		Analysis Year	2040 Build
Project Description	R-2553 Kinston Bypass - Alt 1 Build Conditions		
14E		16E	
US 70 EB - to Hill Farm Rd		US 70 EB - to US 70 Bus/US 258/ Sussex St	
Merge/Diverge	Diverge	Merge/Diverge	Diverge
No. of lanes on Freeway	2	No. of lanes on Freeway	2
Freeway FFS	70 mph	Freeway FFS	70 mph
Freeway Volume (AM/PM)	1,703 1,394	Freeway Volume (AM/PM)	1,436 1,272
Ramp Side (Left or Right)	Right	Ramp Side (Left or Right)	Right
Ramp FFS	45 mph	Ramp FFS	45 mph
Ramp Volume (AM/PM)	245 139	Ramp Volume (AM/PM)	585 446
No. Lanes on Ramp	1	No. Lanes on Ramp	1
Accel/Decel Distance 1	490 ft	Accel/Decel Distance 1	490 ft
Accel/Decel Distance 2	N/A ft	Accel/Decel Distance 2	N/A ft
Adjacent Upstream	N/A	Adjacent Upstream	N/A
Off/On	N/A	Off/On	N/A
Distance	N/A ft	Distance	N/A ft
Truck %	N/A	Truck %	N/A
Ramp Volume (AM/PM)	N/A N/A	Ramp Volume (AM/PM)	N/A N/A
Adjacent Downstream	N/A	Adjacent Downstream	N/A
Off/On	N/A	Off/On	N/A
Distance	N/A ft	Distance	N/A ft
Truck %	N/A	Truck %	N/A
Ramp Volume (AM/PM)	N/A N/A	Ramp Volume (AM/PM)	N/A N/A
Peak Hour Factor	0.90	Peak Hour Factor	0.90
Terrain	Level	Terrain	Level
Population Adj. Factor	1.00	Population Adj. Factor	1.00
Freeway Truck %	6%	Freeway Truck %	6%
Ramp Truck %	5%	Ramp Truck %	5%
18E		20E	
US 70 EB - from US 70 Bus/US 258/ Sussex St		US 70 EB - to NC 11/NC 55	
Merge/Diverge	Merge	Merge/Diverge	Diverge
No. of lanes on Freeway	2	No. of lanes on Freeway	2
Freeway FFS	70 mph	Freeway FFS	70 mph
Freeway Volume (AM/PM)	851 826	Freeway Volume (AM/PM)	1,710 2,089
Ramp Side (Left or Right)	Right	Ramp Side (Left or Right)	Right
Ramp FFS	45 mph	Ramp FFS	45 mph
Ramp Volume (AM/PM)	867 1,253	Ramp Volume (AM/PM)	681 870
No. Lanes on Ramp	2	No. Lanes on Ramp	1
Accel/Decel Distance 1	2,500 ft	Accel/Decel Distance 1	490 ft
Accel/Decel Distance 2	N/A ft	Accel/Decel Distance 2	N/A ft
Adjacent Upstream	N/A	Adjacent Upstream	N/A
Off/On	N/A	Off/On	N/A
Distance	N/A ft	Distance	N/A ft
Truck %	N/A	Truck %	N/A
Ramp Volume (AM/PM)	N/A N/A	Ramp Volume (AM/PM)	N/A N/A
Adjacent Downstream	N/A	Adjacent Downstream	N/A
Off/On	N/A	Off/On	N/A
Distance	N/A ft	Distance	N/A ft
Truck %	N/A	Truck %	N/A
Ramp Volume (AM/PM)	N/A N/A	Ramp Volume (AM/PM)	N/A N/A
Peak Hour Factor	0.90	Peak Hour Factor	0.90
Terrain	Level	Terrain	Level
Population Adj. Factor	1.00	Population Adj. Factor	1.00
Freeway Truck %	5%	Freeway Truck %	5%
Ramp Truck %	5%	Ramp Truck %	5%
22E		24E	
US 70 EB - from NC 11/NC 55		US 70 EB - to US 70 Bus/US 258/NC 58/ Trenton Hwy	
Merge/Diverge	Merge	Merge/Diverge	Diverge
No. of lanes on Freeway	2	No. of lanes on Freeway	2
Freeway FFS	70 mph	Freeway FFS	70 mph
Freeway Volume (AM/PM)	1,000 1,255	Freeway Volume (AM/PM)	1,280 1,565
Ramp Side (Left or Right)	Right	Ramp Side (Left or Right)	Right
Ramp FFS	25 mph	Ramp FFS	45 mph
Ramp Volume (AM/PM)	301 284	Ramp Volume (AM/PM)	940 1,206
No. Lanes on Ramp	1	No. Lanes on Ramp	1
Accel/Decel Distance 1	1,620 ft	Accel/Decel Distance 1	490 ft
Accel/Decel Distance 2	N/A ft	Accel/Decel Distance 2	N/A ft
Adjacent Upstream	N/A	Adjacent Upstream	N/A
Off/On	N/A	Off/On	N/A
Distance	N/A ft	Distance	N/A ft
Truck %	N/A	Truck %	N/A
Ramp Volume (AM/PM)	N/A N/A	Ramp Volume (AM/PM)	N/A N/A
Adjacent Downstream	N/A	Adjacent Downstream	N/A
Off/On	N/A	Off/On	N/A
Distance	N/A ft	Distance	N/A ft
Truck %	N/A	Truck %	N/A
Ramp Volume (AM/PM)	N/A N/A	Ramp Volume (AM/PM)	N/A N/A
Peak Hour Factor	0.90	Peak Hour Factor	0.90
Terrain	Level	Terrain	Level
Population Adj. Factor	1.00	Population Adj. Factor	1.00
Freeway Truck %	7%	Freeway Truck %	7%
Ramp Truck %	4%	Ramp Truck %	5%

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - RAMP MERGE AND DIVERGE SEGMENTS

General Information		Site Information																																																																																																					
Analyst	AECOM	Date Performed	2017																																																																																																				
Agency or Company		Analysis Year	2040 Build																																																																																																				
Project Description		R-2553 Kinston Bypass - Alt 1 Build Conditions																																																																																																					
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HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - BASIC FREEWAY SEGMENTS

General Information

Site Information

Analyst AECOM

Date Performed 2017

Agency or Company

Analysis Year 2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

	11W		13W		15W
	US 70 WB - within US 70 Bus/US 258/ NC 58/Trenton Hwy Int		US 70 WB - US 70 Bus/US 258/NC 58/ Trenton Hwy to NC 11/NC 55		US 70 WB - within NC 11/NC 55 Int
AM Peak Volume	359		1565		1255
PM Peak Volume	340		1280		1000
Peak Hour Factor	0.90		0.90		0.90
Number of Lanes	2		2		2
Terrain	Level		Level		Level
Truck Percentage	7%		7%		7%
Driver Pop. Adj.	1.00		1.00		1.00
Measured FFS	70 mph		70 mph		70 mph
Lane Width	N/A ft		N/A ft		N/A ft
Right Side Clearance	N/A ft		N/A ft		N/A ft
Total Ramp Density	N/A ramp/mi		N/A ramp/mi		N/A ramp/mi
	17W		19W		21W
	US 70 WB - NC 11/NC 55 to US 70 Bus		US 70 WB - within US 70 Bus Int		US 70 WB - within US 258/Sussex St Int
AM Peak Volume	2089		1675		1143
PM Peak Volume	1710		1331		1217
Peak Hour Factor	0.90		0.90		0.90
Number of Lanes	2		2		2
Terrain	Level		Level		Level
Truck Percentage	5%		5%		6%
Driver Pop. Adj.	1.00		1.00		1.00
Measured FFS	70 mph		70 mph		70 mph
Lane Width	N/A ft		N/A ft		N/A ft
Right Side Clearance	N/A ft		N/A ft		N/A ft
Total Ramp Density	N/A ramp/mi		N/A ramp/mi		N/A ramp/mi
	23W				
	US 70 WB - Ramp from US 258/Sussex St to Ramp from Hill Farm Rd				
AM Peak Volume	1272				
PM Peak Volume	1436				
Peak Hour Factor	0.90				
Number of Lanes	2				
Terrain	Level				
Truck Percentage	6%				
Driver Pop. Adj.	1.00				
Measured FFS	70 mph				
Lane Width	N/A ft				
Right Side Clearance	N/A ft				
Total Ramp Density	N/A ramp/mi				

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - RAMP MERGE AND DIVERGE SEGMENTS

General Information			Site Information					
Analyst	AECOM		Date Performed	2017				
Agency or Company			Analysis Year	2040 Build				
Project Description	R-2553 Kinston Bypass - Alt 1 Build Conditions							
10W			12W					
US 70 WB - To US 70 Bus/US 258/ NC 58/Trenton Hwy			US 70 WB - From US 70 Bus/US 258/ NC 58/Trenton Hwy			14W		
US 70 WB - To US 70 Bus/US 258/ NC 58/Trenton Hwy			US 70 WB - From US 70 Bus/US 258/ NC 58/Trenton Hwy			US 70 WB - To NC 11/NC 55		
Merge/Diverge	Diverge		Merge/Diverge	Merge		Merge/Diverge	Diverge	
No. of lanes on Freeway	2		No. of lanes on Freeway	2		No. of lanes on Freeway	2	
Freeway FFS	70	mph	Freeway FFS	70	mph	Freeway FFS	70	mph
Freeway Volume (AM/PM)	1,276	1,044	Freeway Volume (AM/PM)	359	340	Freeway Volume (AM/PM)	1,565	1,280
Ramp Side (Left or Right)	Right		Ramp Side (Left or Right)	Right		Ramp Side (Left or Right)	Right	
Ramp FFS	45	mph	Ramp FFS	45	mph	Ramp FFS	45	mph
Ramp Volume (AM/PM)	891	725	Ramp Volume (AM/PM)	1,206	940	Ramp Volume (AM/PM)	284	301
No. Lanes on Ramp	1		No. Lanes on Ramp	1		No. Lanes on Ramp	1	
Accel/Decel Distance 1	490	ft	Accel/Decel Distance 1	920	ft	Accel/Decel Distance 1	490	ft
Accel/Decel Distance 2	N/A		Accel/Decel Distance 2	N/A		Accel/Decel Distance 2	N/A	
Adjacent Upstream	N/A		Adjacent Upstream	N/A		Adjacent Upstream	N/A	
Off/On	N/A		Off/On	N/A		Off/On	N/A	
Distance	N/A		Distance	N/A		Distance	N/A	
Truck %	N/A		Truck %	N/A		Truck %	N/A	
Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A
Adjacent Downstream	N/A		Adjacent Downstream	N/A		Adjacent Downstream	N/A	
Off/On	N/A		Off/On	N/A		Off/On	N/A	
Distance	N/A		Distance	N/A		Distance	N/A	
Truck %	N/A		Truck %	N/A		Truck %	N/A	
Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A
Peak Hour Factor	0.90		Peak Hour Factor	0.90		Peak Hour Factor	0.90	
Terrain	Level		Terrain	Level		Terrain	Level	
Population Adj. Factor	1.00		Population Adj. Factor	1.00		Population Adj. Factor	1.00	
Freeway Truck %	7%		Freeway Truck %	7%		Freeway Truck %	7%	
Ramp Truck %	5%		Ramp Truck %	5%		Ramp Truck %	4%	
16W			18W			22W		
US 70 WB - From NC 11/NC 55			US 70 WB - To US 70 Bus			US 70 WB - From US 258/Sussex St		
US 70 WB - From NC 11/NC 55			US 70 WB - To US 70 Bus			US 70 WB - From US 258/Sussex St		
Merge/Diverge	Merge		Merge/Diverge	Diverge		Merge/Diverge	Merge	
No. of lanes on Freeway	2		No. of lanes on Freeway	2		No. of lanes on Freeway	2	
Freeway FFS	70	mph	Freeway FFS	70	mph	Freeway FFS	70	mph
Freeway Volume (AM/PM)	1,255	1,000	Freeway Volume (AM/PM)	2,089	1,710	Freeway Volume (AM/PM)	1,143	1,217
Ramp Side (Left or Right)	Right		Ramp Side (Left or Right)	Right		Ramp Side (Left or Right)	Right	
Ramp FFS	25	mph	Ramp FFS	45	mph	Ramp FFS	45	mph
Ramp Volume (AM/PM)	870	681	Ramp Volume (AM/PM)	423	371	Ramp Volume (AM/PM)	129	219
No. Lanes on Ramp	1		No. Lanes on Ramp	1		No. Lanes on Ramp	1	
Accel/Decel Distance 1	1,620	ft	Accel/Decel Distance 1	490	ft	Accel/Decel Distance 1	920	ft
Accel/Decel Distance 2	N/A		Accel/Decel Distance 2	N/A		Accel/Decel Distance 2	N/A	
Adjacent Upstream	N/A		Adjacent Upstream	N/A		Adjacent Upstream	N/A	
Off/On	N/A		Off/On	N/A		Off/On	N/A	
Distance	N/A		Distance	N/A		Distance	N/A	
Truck %	N/A		Truck %	N/A		Truck %	N/A	
Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A
Adjacent Downstream	N/A		Adjacent Downstream	N/A		Adjacent Downstream	N/A	
Off/On	N/A		Off/On	N/A		Off/On	N/A	
Distance	N/A		Distance	N/A		Distance	N/A	
Truck %	N/A		Truck %	N/A		Truck %	N/A	
Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A	Ramp Volume (AM/PM)	N/A	N/A
Peak Hour Factor	0.90		Peak Hour Factor	0.90		Peak Hour Factor	0.90	
Terrain	Level		Terrain	Level		Terrain	Level	
Population Adj. Factor	1.00		Population Adj. Factor	1.00		Population Adj. Factor	1.00	
Freeway Truck %	7%		Freeway Truck %	5%		Freeway Truck %	6%	
Ramp Truck %	4%		Ramp Truck %	3%		Ramp Truck %	5%	

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - RAMP MERGE AND DIVERGE SEGMENTS

General Information		Site Information	
Analyst	AECOM	Date Performed	2017
Agency or Company		Analysis Year	2040 Build
Project Description		R-2553 Kinston Bypass - Alt 1 Build Conditions	

<div style="border: 1px solid black; display: inline-block; padding: 2px 5px; margin-bottom: 10px;">24W</div> <p style="text-align: center; margin-top: 10px;">US 70 WB - From Hill Farm Rd</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Merge/Diverge</td> <td style="text-align: center;">Merge</td> <td></td> </tr> <tr> <td>No. of lanes on Freeway</td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td>Freeway FFS</td> <td style="text-align: center;">70</td> <td style="text-align: right;">mph</td> </tr> <tr> <td>Freeway Volume (AM/PM)</td> <td style="text-align: center;">1,272</td> <td style="text-align: right;">1,436</td> </tr> <tr> <td>Ramp Side (Left or Right)</td> <td style="text-align: center;">Right</td> <td></td> </tr> <tr> <td>Ramp FFS</td> <td style="text-align: center;">45</td> <td style="text-align: right;">mph</td> </tr> <tr> <td>Ramp Volume (AM/PM)</td> <td style="text-align: center;">139</td> <td style="text-align: right;">245</td> </tr> <tr> <td>No. Lanes on Ramp</td> <td style="text-align: center;">1</td> <td></td> </tr> <tr> <td>Accel/Decel Distance 1</td> <td style="text-align: center;">920</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Accel/Decel Distance 2</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Adjacent Upstream</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Off/On</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Distance</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td> Truck %</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Ramp Volume (AM/PM)</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">N/A</td> </tr> <tr> <td>Adjacent Downstream</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Off/On</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Distance</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td> Truck %</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Ramp Volume (AM/PM)</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">N/A</td> </tr> <tr> <td>Peak Hour Factor</td> <td style="text-align: center;">0.90</td> <td></td> </tr> <tr> <td>Terrain</td> <td style="text-align: center;">Level</td> <td></td> </tr> <tr> <td>Population Adj. Factor</td> <td style="text-align: center;">1.00</td> <td></td> </tr> <tr> <td>Freeway Truck %</td> <td style="text-align: center;">6%</td> <td></td> </tr> <tr> <td>Ramp Truck %</td> <td style="text-align: center;">5%</td> <td></td> </tr> </table>	Merge/Diverge	Merge		No. of lanes on Freeway	2		Freeway FFS	70	mph	Freeway Volume (AM/PM)	1,272	1,436	Ramp Side (Left or Right)	Right		Ramp FFS	45	mph	Ramp Volume (AM/PM)	139	245	No. Lanes on Ramp	1		Accel/Decel Distance 1	920	ft	Accel/Decel Distance 2	N/A	ft	Adjacent Upstream	N/A		Off/On	N/A		Distance	N/A	ft	Truck %	N/A		Ramp Volume (AM/PM)	N/A	N/A	Adjacent Downstream	N/A		Off/On	N/A		Distance	N/A	ft	Truck %	N/A		Ramp Volume (AM/PM)	N/A	N/A	Peak Hour Factor	0.90		Terrain	Level		Population Adj. Factor	1.00		Freeway Truck %	6%		Ramp Truck %	5%			
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HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - WEAVING SEGMENTS

General Information	Site Information
Analyst Agency or Company	AECOM
Date Performed Analysis Year	2017 2040 Build
Project Description	R-2553 Kinston Bypass - Alt 1 Build Conditions

20W																																														
US 70 WB - US 70 Bus to US 258/Sussex St																																														
Sides (One or Two)	One																																													
No. of Lanes	3																																													
Weaving Length, L_s	1440	ft																																												
Freeway FFS	70	mph																																												
Min. Speed (Def. = 15)	15	mph																																												
Segment Type	Freeway																																													
Terrain	Level																																													
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%;"></th> <th style="width: 15%; text-align: center;">Vol</th> <th style="width: 15%; text-align: center;">Truck</th> </tr> </thead> <tbody> <tr> <td colspan="4">AM Peak</td> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">→</td> <td style="text-align: center;">V_{FF}</td> <td style="text-align: center;">850</td> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">↘</td> <td style="text-align: center;">V_{RF}</td> <td style="text-align: center;">323</td> </tr> <tr> <td style="text-align: center;">R</td> <td style="text-align: center;">↗</td> <td style="text-align: center;">V_{FR}</td> <td style="text-align: center;">836</td> </tr> <tr> <td style="text-align: center;">R</td> <td style="text-align: center;">→</td> <td style="text-align: center;">V_{RR}</td> <td style="text-align: center;">318</td> </tr> <tr> <td colspan="4">PM Peak</td> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">→</td> <td style="text-align: center;">V_{FF}</td> <td style="text-align: center;">829</td> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">↘</td> <td style="text-align: center;">V_{RF}</td> <td style="text-align: center;">364</td> </tr> <tr> <td style="text-align: center;">R</td> <td style="text-align: center;">↗</td> <td style="text-align: center;">V_{FR}</td> <td style="text-align: center;">494</td> </tr> <tr> <td style="text-align: center;">R</td> <td style="text-align: center;">→</td> <td style="text-align: center;">V_{RR}</td> <td style="text-align: center;">217</td> </tr> </tbody> </table>					Vol	Truck	AM Peak				F	→	V_{FF}	850	F	↘	V_{RF}	323	R	↗	V_{FR}	836	R	→	V_{RR}	318	PM Peak				F	→	V_{FF}	829	F	↘	V_{RF}	364	R	↗	V_{FR}	494	R	→	V_{RR}	217
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F	↘	V_{RF}	323																																											
R	↗	V_{FR}	836																																											
R	→	V_{RR}	318																																											
PM Peak																																														
F	→	V_{FF}	829																																											
F	↘	V_{RF}	364																																											
R	↗	V_{FR}	494																																											
R	→	V_{RR}	217																																											
Peak Hour Factor	0.90																																													
Driver Pop. Adj.	1.00																																													
Maneuver Lns., N_{WL}	2																																													
Interchange Density	1.00																																													
Min. RF In. chng., LC_{RF}	1																																													
Min. FR In. chng., LC_{FR}	1																																													
Min. RR In. chng., LC_{RR}	N/A																																													
Proportions used to calculate weaving volumes																																														

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - WEAVING SEGMENTS

General Information

Site Information

Analyst AECOM

Date Performed 2017

Agency or Company

Analysis Year 2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

20W

US 70 WB - US 70 Bus to US 258/Sussex St

<u>Interchange</u>	<u>No.</u>
US 70 at US 70 Bus	1
US 70 at NC 11/NC 55	1
US 70 at US 258/NC 58	1
US 70 at US 258/Sussex St	1
US 70 at Hill Farm Rd	1
US 70 at C.F. Harvey Pkwy	1

Interchange Density 1.00 int/mi

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - BASIC FREEWAY SEGMENTS

General Information

Site Information

Analyst: AECOM

Date Performed: 2017

Agency or Company:

Analysis Year: 2040 Build

Project Description: R-2553 Kinston Bypass - Alt 1 Build Conditions

	1N		3N		
	C.F. Harvey Parkway NB - South of US 70		C.F. Harvey Parkway NB - North of US 70		
AM Peak Volume	381		AM Peak Volume	465	
PM Peak Volume	252		PM Peak Volume	310	
Peak Hour Factor	0.90		Peak Hour Factor	0.90	
Number of Lanes	2		Number of Lanes	2	
Terrain	Level		Terrain	Level	
Truck Percentage	7%		Truck Percentage	7%	
Driver Pop. Adj.	1.00		Driver Pop. Adj.	1.00	
Measured FFS	70 mph		Measured FFS	70 mph	
Lane Width	N/A ft		Lane Width	N/A ft	
Right Side Clearance	N/A ft		Right Side Clearance	N/A ft	
Total Ramp Density	N/A ramp/mi		Total Ramp Density	N/A ramp/mi	

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - RAMP MERGE AND DIVERGE SEGMENTS

General Information	Site Information
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Analyst	AECOM	Date Performed	2017
Agency or Company		Analysis Year	2040 Build

Project Description	R-2553 Kinston Bypass - Alt 1 Build Conditions
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HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - BASIC FREEWAY SEGMENTS

General Information

Site Information

Analyst AECOM

Date Performed 2017

Agency or Company

Analysis Year 2040 Build

Project Description

R-2553 Kinston Bypass - Alt 1 Build Conditions

1S

C.F. Harvey Parkway SB - North of US 70

AM Peak Volume	310	
PM Peak Volume	465	
Peak Hour Factor	0.90	
Number of Lanes	2	
Terrain	Level	
Truck Percentage	7%	
Driver Pop. Adj.	1.00	
Measured FFS	70	mph
Lane Width	N/A	ft
Right Side Clearance	N/A	ft
Total Ramp Density	N/A	ramp/mi

HIGHWAY CAPACITY SOFTWARE 2010

NETWORK DATA SUMMARY - RAMP MERGE AND DIVERGE SEGMENTS

General Information	Site Information
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Analyst	AECOM	Date Performed	2017
Agency or Company		Analysis Year	2040 Build

Project Description	R-2553 Kinston Bypass - Alt 1 Build Conditions
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<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">2S</div> <p>C.F. Harvey Parkway SB - To US 70 WB</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Merge/Diverge</td> <td style="text-align: center;">Diverge</td> <td></td> </tr> <tr> <td>No. of lanes on Freeway</td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td>Freeway FFS</td> <td style="text-align: center;">70</td> <td style="text-align: right;">mph</td> </tr> <tr> <td>Freeway Volume (AM/PM)</td> <td style="text-align: center;">310</td> <td style="text-align: right;">465</td> </tr> <tr> <td>Ramp Side (Left or Right)</td> <td style="text-align: center;">Right</td> <td></td> </tr> <tr> <td>Ramp FFS</td> <td style="text-align: center;">45</td> <td style="text-align: right;">mph</td> </tr> <tr> <td>Ramp Volume (AM/PM)</td> <td style="text-align: center;">253</td> <td style="text-align: right;">381</td> </tr> <tr> <td>No. Lanes on Ramp</td> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td>Accel/Decel Distance 1</td> <td style="text-align: center;">2,500</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Accel/Decel Distance 2</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>Adjacent Upstream</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Off/On</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Distance</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td> Truck %</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Ramp Volume (AM/PM)</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">N/A</td> </tr> <tr> <td>Adjacent Downstream</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Off/On</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Distance</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">ft</td> </tr> <tr> <td> Truck %</td> <td style="text-align: center;">N/A</td> <td></td> </tr> <tr> <td> Ramp Volume (AM/PM)</td> <td style="text-align: center;">N/A</td> <td style="text-align: right;">N/A</td> </tr> <tr> <td>Peak Hour Factor</td> <td style="text-align: center;">0.90</td> <td></td> </tr> <tr> <td>Terrain</td> <td style="text-align: center;">Level</td> <td></td> </tr> <tr> <td>Population Adj. Factor</td> <td style="text-align: center;">1.00</td> <td></td> </tr> <tr> <td>Freeway Truck %</td> <td style="text-align: center;">7%</td> <td></td> </tr> <tr> <td>Ramp Truck %</td> <td style="text-align: center;">6%</td> <td></td> </tr> </table>	Merge/Diverge	Diverge		No. of lanes on Freeway	2		Freeway FFS	70	mph	Freeway Volume (AM/PM)	310	465	Ramp Side (Left or Right)	Right		Ramp FFS	45	mph	Ramp Volume (AM/PM)	253	381	No. Lanes on Ramp	2		Accel/Decel Distance 1	2,500	ft	Accel/Decel Distance 2	N/A	ft	Adjacent Upstream	N/A		Off/On	N/A		Distance	N/A	ft	Truck %	N/A		Ramp Volume (AM/PM)	N/A	N/A	Adjacent Downstream	N/A		Off/On	N/A		Distance	N/A	ft	Truck %	N/A		Ramp Volume (AM/PM)	N/A	N/A	Peak Hour Factor	0.90		Terrain	Level		Population Adj. Factor	1.00		Freeway Truck %	7%		Ramp Truck %	6%			
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R-2553 US 70 Kinston Bypass, Alternative 1
US 70 EB - AM Peak

Segment	Seg. 10	Seg. 11	Seg. 12	Seg. 13
General Purpose Segment Data	10E	11E	12E	13E
General Purpose Segment Name	To CF Harvey	Within CF Harvey Int	From CF Harvey	CF Harvey to Hill Farm
General Purpose Segment Type	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	2500	1500	1620	2690
Terrain	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2
Free Flow Speed (mph)	70	70	70	70
Mainline Dem. (vph)	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	2500	N/A	1620	N/A
ONR Side	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	1	N/A
ONR Free Flow Speed (mph)	N/A	N/A	25	N/A
ONR/Entering Dem. (vph)	N/A	N/A	68	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	7	N/A
OFR Side	Right	N/A	N/A	N/A
# Lanes: OFR	2	N/A	N/A	N/A
OFR Free Flow Speed (mph)	60	N/A	N/A	N/A
OFR/Exit Dem. (vph)	423	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	7	N/A	N/A	N/A
Total Density (pc/mi/ln)	1.2	13.0	10.0	13.5
V/C	0.47	0.38	0.39	0.39
Density Based LOS	A	B	A	B

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to Hill Farm Rd
Date Performed	2017	Jurisdiction	Segment #14E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1703 Ramp Volume, V _R 245 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1703	0.90	Level	6	0	0.971	1.00	1949
Ramp	245	0.90	Level	5	0	0.976	1.00	279
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1949 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	
	V _F	1949	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	1670	Exhibit 13-8 4800 No
		V _R	279 Exhibit 13-10 2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1949	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 16.6 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.323 (Exhibit 13-12)
 S_R = 61.0 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 61.0 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	rp to HillFarm to rp to US70B
Date Performed	2017	Jurisdiction	Segment #15E
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1436	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			6
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0		mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	822	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	11.7	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #16E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1436 Ramp Volume, V _R 585 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1436	0.90	Level	6	0	0.971	1.00	1643
Ramp	585	0.90	Level	5	0	0.976	1.00	666
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} = using Equation (Exhibit 13-6)
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} = (Equation 13-12 or 13-13)
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1643 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?	
		Exhibit 13-8			
V _{FO}		Exhibit 13-8			
	V _F	1643	Exhibit 13-8	4800	No
	V _{FO} = V _F - V _R	977	Exhibit 13-8	4800	No
	V _R	666	Exhibit 13-10	2100	No

Capacity Checks

	Actual	Capacity		LOS F?	
		Exhibit 13-8			
	V ₁₂	1643	Exhibit 13-8	4400:All	No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1643	Exhibit 13-8	4400:All

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 14.0 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.358 (Exhibit 13-12)
 S_R = 60.0 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 60.0 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	within US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #17E
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	851	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 4
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.980
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	482 pc/h/ln	Design LOS	
S	70.0 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	6.9 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
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Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	from US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #18E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: center;">1000</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: center;">851</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: center;">867</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: center;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: center;">45.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	2	Acceleration Lane Length, L _A	1000	Deceleration Lane Length L _D		Freeway Volume, V _F	851	Ramp Volume, V _R	867	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	2																	
Acceleration Lane Length, L _A	1000																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	851																	
Ramp Volume, V _R	867																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	45.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	851	0.90	Level	5	0	0.930	1.00	1016
Ramp	867	0.90	Level	5	0	0.976	1.00	987
UpStream								
DownStream								

Merge Areas	Diverge Areas
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Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 1016 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	2003	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area	Flow Entering Diverge Influence Area
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	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	2003	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = -1.3 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

M _S = 0.035 (Exhibit 13-11) S _R = 69.0 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 69.0 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	US70B to NC 11_NC 55
Date Performed	2017	Jurisdiction	Segment #19E
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs			
Volume, V	1710	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976

Speed Inputs	Calc Speed Adj and FFS
Lane Width	ft
Rt-Side Lat. Clearance	ft
Number of Lanes, N	2
Total Ramp Density, TRD	ramps/mi
FFS (measured)	70.0
Base free-flow Speed, BFFS	mph
	f _{LW}
	f _{LC}
	TRD Adjustment
	FFS
	70.0
	mph

LOS and Performance Measures	Design (N)
Operational (LOS)	Design (N)
v _p = (V or DDHV) / (PHF x N x f _{HV})	Design LOS
974	v _p = (V or DDHV) / (PHF x N x f _{HV})
pc/h/ln	pc/h/ln
S	S
70.0	mph
mph	pc/mi/ln
D = v _p / S	D = v _p / S
13.9	pc/mi/ln
pc/mi/ln	Required Number of Lanes, N
LOS	B

Glossary	Factor Location
N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v _p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	
	E _R - Exhibits 11-10, 11-12
	f _{LW} - Exhibit 11-8
	E _T - Exhibits 11-10, 11-11, 11-13
	f _{LC} - Exhibit 11-9
	f _p - Page 11-18
	TRD - Page 11-11
	LOS, S, FFS, v _p - Exhibits 11-2, 11-3

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #20E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1710 Ramp Volume, V _R 681 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1710	0.90	Level	5	0	0.976	1.00	1948
Ramp	681	0.90	Level	4	0	0.980	1.00	772
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1948 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	
	V _F	1948	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	1176	Exhibit 13-8 4800 No
		Exhibit 13-10	2100 No

Capacity Checks

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1948	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 16.6 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.367 (Exhibit 13-12)
 S_R = 59.7 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 59.7 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information				Site Information			
Analyst	AECOM			Highway/Direction of Travel	US 70 EB		
Agency or Company				From/To	within NC 11/NC 55 Int		
Date Performed	2017			Jurisdiction	Segment #21E		
Analysis Time Period	AM Peak			Analysis Year	2040 Build		
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions							
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data			
Flow Inputs							
Volume, V	1000	veh/h	Peak-Hour Factor, PHF	0.90			
AADT		veh/day	%Trucks and Buses, P _T	7			
Peak-Hr Prop. of AADT, K			%RVs, P _R	0			
Peak-Hr Direction Prop, D			General Terrain:	Level			
DDHV = AADT x K x D		veh/h	Grade % Length	mi			
			Up/Down %				
Calculate Flow Adjustments							
f _p	1.00		E _R	1.2			
E _T	1.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966			
Speed Inputs				Calc Speed Adj and FFS			
Lane Width		ft					
Rt-Side Lat. Clearance		ft	f _{LW}	mph			
Number of Lanes, N	2		f _{LC}	mph			
Total Ramp Density, TRD		ramps/mi	TRD Adjustment	mph			
FFS (measured)	70.0	mph	FFS	70.0 mph			
Base free-flow Speed, BFFS		mph					
LOS and Performance Measures				Design (N)			
<u>Operational (LOS)</u>				<u>Design (N)</u>			
v _p = (V or DDHV) / (PHF x N x f _{HV})	575	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln			
x f _p)			x f _p)				
S	70.0	mph	S	mph			
D = v _p / S	8.2	pc/mi/ln	D = v _p / S	pc/mi/ln			
LOS	A		Required Number of Lanes, N				
Glossary				Factor Location			
N - Number of lanes	S - Speed			E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8		
V - Hourly volume	D - Density			E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9		
v _p - Flow rate	FFS - Free-flow speed			f _p - Page 11-18	TRD - Page 11-11		
LOS - Level of service speed	BFFS - Base free-flow speed			LOS, S, FFS, v _p - Exhibits 11-2, 11-3			
DDHV - Directional design hour volume							

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	from NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #22E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A 1500 Deceleration Lane Length L _D 1500 Freeway Volume, V _F 1000 Ramp Volume, V _R 301 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1000	0.90	Level	7	0	0.905	1.00	1228
Ramp	301	0.90	Level	4	0	0.980	1.00	341
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 0.90 V ₁₂ = 1228 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = 1.000 using Equation (Exhibit 13-7) P _{FD} = 0.90 V ₁₂ = 341 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1569	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1569	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 8.2 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

M _S = 0.265 (Exhibit 13-11) S _R = 62.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 62.6 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	NC 11/NC 55 to US 70
Date Performed	2017	Jurisdiction	Bus/US 25
Analysis Time Period	AM Peak	Analysis Year	Segment #23E 2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1280	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	736	Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	10.5	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #24E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1280 Ramp Volume, V _R 940 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1280	0.90	Level	7	0	0.966	1.00	1472
Ramp	940	0.90	Level	5	0	0.976	1.00	1071
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} = using Equation (Exhibit 13-6)
 P_{FM} = pc/h
 V₁₂ = pc/h (Equation 13-14 or 13-17)
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} = 1.000 using Equation 0 (Exhibit 13-7)
 P_{FD} = 1472 pc/h
 V₁₂ = 0 pc/h (Equation 13-14 or 13-17)
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}	V _F	1472	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	401	Exhibit 13-8 4800 No
	V _R	1071	Exhibit 13-10 2100 No

Capacity Checks

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1472	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 12.5 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.394 (Exhibit 13-12)
 S_R = 59.0 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 59.0 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	within US 70 Bus/US 258 Int
Date Performed	2017	Jurisdiction	Segment #25E
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			

Flow Inputs			
Volume, V	340	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0		mph
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	195	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	2.8	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
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Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	from US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #26E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: center;">920</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: center;">340</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: center;">725</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: center;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: center;">25.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	920	Deceleration Lane Length L _D		Freeway Volume, V _F	340	Ramp Volume, V _R	725	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	920																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	340																	
Ramp Volume, V _R	725																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	25.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	340	0.90	Level	7	0	0.905	1.00	417
Ramp	725	0.90	Level	5	0	0.976	1.00	826
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 417 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1243	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1243	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 9.0 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
---	---

Speed Determination

Speed Determination

M _S = 0.289 (Exhibit 13-11) S _R = 61.9 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 61.9 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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R-2553 US 70 Kinston Bypass, Alternative 1
US 70 EB - PM Peak

Segment	Seg. 10	Seg. 11	Seg. 12	Seg. 13
General Purpose Segment Data	10E	11E	12E	13E
General Purpose Segment Name	To CF Harvey	Within CF Harvey	From CF Harvey	CF Harvey to Hill Farm
General Purpose Segment Type	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	2500	1500	1620	2690
Terrain	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2
Free Flow Speed (mph)	70	70	70	70
Mainline Dem. (vph)	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	2500	N/A	1620	N/A
ONR Side	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	1	N/A
ONR Free Flow Speed (mph)	N/A	N/A	25	N/A
ONR/Entering Dem. (vph)	N/A	N/A	85	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	7	N/A
OFR Side	Right	N/A	N/A	N/A
# Lanes: OFR	2	N/A	N/A	N/A
OFR Free Flow Speed (mph)	60	N/A	N/A	N/A
OFR/Exit Dem. (vph)	280	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	7	N/A	N/A	N/A
Total Density (pc/mi/ln)	0.0*	11.2	8.2	11.8
V/C	0.39	0.33	0.34	0.34
Density Based LOS	A	B	A	B

* Denotes ramps that technically have negative density based on calculations in the HCM.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to Hill Farm Rd
Date Performed	2017	Jurisdiction	Segment #14E
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1394 Ramp Volume, V _R 139 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1394	0.90	Level	6	0	0.971	1.00	1595
Ramp	139	0.90	Level	5	0	0.976	1.00	158
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1595 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	
	V _F	1595	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	1437	Exhibit 13-8 4800 No
	V _R	158	Exhibit 13-10 2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1595	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 13.6 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.312 (Exhibit 13-12)
 S_R = 61.3 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 61.3 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	rp to HillFarm to rp to US70B
Date Performed	2017	Jurisdiction	Segment #15E
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1272	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			6
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	728	pc/h/ln	
x f _p)			
S	70.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV})
D = v _p / S	10.4	pc/mi/ln	x f _p)
LOS	A		S
			D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #16E
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1272 Ramp Volume, V _R 446 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1272	0.90	Level	6	0	0.971	1.00	1456
Ramp	446	0.90	Level	5	0	0.976	1.00	508
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1456 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	
	V _F	1456	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	948	Exhibit 13-8 4800 No
		V _R	508 Exhibit 13-10 2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1456	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 12.4 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.344 (Exhibit 13-12)
 S_R = 60.4 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 60.4 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	within US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #17E
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	826	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			4
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.980
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	468		v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	70.0		S
D = v _p / S	6.7		D = v _p / S
LOS	A		pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	from US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #18E
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: center;">1000</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: center;">826</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: center;">1253</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: center;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: center;">45.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	2	Acceleration Lane Length, L _A	1000	Deceleration Lane Length L _D		Freeway Volume, V _F	826	Ramp Volume, V _R	1253	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	2																	
Acceleration Lane Length, L _A	1000																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	826																	
Ramp Volume, V _R	1253																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	45.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	826	0.90	Level	5	0	0.930	1.00	987
Ramp	1253	0.90	Level	5	0	0.976	1.00	1427
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 0.987 pc/h V ₁₂ = 987 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	2414	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	2414	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 1.7 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

M _S = 0.050 (Exhibit 13-11) S _R = 68.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 68.6 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	US70B to NC 11_NC 55
Date Performed	2017	Jurisdiction	Segment #19E
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2089	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	70.0	mph	FFS 70.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1190	pc/h/ln	Design LOS
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	70.0	mph	x f _p)
D = v _p / S	17.0	pc/mi/ln	S
LOS	B		D = v _p / S
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #20E
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 2089 Ramp Volume, V _R 870 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	2089	0.90	Level	5	0	0.976	1.00	2379
Ramp	870	0.90	Level	4	0	0.980	1.00	986
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 2379 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	2379	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	1393	Exhibit 13-8	4800 No
V _R	986	Exhibit 13-10	2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	2379	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 20.3 (pc/mi/ln)
 LOS = C (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.387 (Exhibit 13-12)
 S_R = 59.2 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 59.2 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	within NC 11/NC 55 Int
Date Performed	2017	Jurisdiction	Segment #21E
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1255	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	722 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0 mph	x f _p)	
D = v _p / S	10.3 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET											
General Information				Site Information							
Analyst	AECOM		Freeway/Dir of Travel	US 70 EB							
Agency or Company			Junction	from NC 11/NC 55							
Date Performed	2017		Jurisdiction	Segment #22E							
Analysis Time Period	PM Peak		Analysis Year	2040 Build							
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions											
Inputs											
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h		Freeway Number of Lanes, N	2		Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h			Ramp Number of Lanes, N		1	
		Acceleration Lane Length, L _A	1500					Freeway Volume, V _F	1255		Ramp Volume, V _R
		Deceleration Lane Length L _D			Freeway Free-Flow Speed, S _{FF}	70.0		Ramp Free-Flow Speed, S _{FR}	25.0		
Conversion to pc/h Under Base Conditions											
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p			
Freeway	1255	0.90	Level	7	0	0.905	1.00	1541			
Ramp	284	0.90	Level	4	0	0.980	1.00	322			
UpStream											
DownStream											
Merge Areas					Diverge Areas						
Estimation of v₁₂					Estimation of v₁₂						
		$V_{12} = V_F (P_{FM})$					$V_{12} = V_R + (V_F - V_R)P_{FD}$				
L _{EQ} =		(Equation 13-6 or 13-7)			L _{EQ} =		(Equation 13-12 or 13-13)				
P _{FM} =		1.000 using Equation 0 (Exhibit 13-6)			P _{FD} =		using Equation (Exhibit 13-7)				
V ₁₂ =		1541 pc/h			V ₁₂ =		pc/h				
V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)				
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No				
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No				
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks						
	Actual	Capacity		LOS F?		Actual	Capacity	LOS F?			
V _{FO}	1863	Exhibit 13-8		No	V _F		Exhibit 13-8				
					V _{FO} = V _F - V _R		Exhibit 13-8				
					V _R		Exhibit 13-10				
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area						
	Actual	Max Desirable		Violation?		Actual	Max Desirable	Violation?			
V _{R12}	1863	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8				
Level of Service Determination (if not F)					Level of Service Determination (if not F)						
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$						
D _R = 10.5 (pc/mi/ln)					D _R = (pc/mi/ln)						
LOS = B (Exhibit 13-2)					LOS = (Exhibit 13-2)						
Speed Determination					Speed Determination						
M _S = 0.271 (Exhibit 13-11)					D _S = (Exhibit 13-12)						
S _R = 62.4 mph (Exhibit 13-11)					S _R = mph (Exhibit 13-12)						
S ₀ = N/A mph (Exhibit 13-11)					S ₀ = mph (Exhibit 13-12)						
S = 62.4 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)						

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	NC 11/NC 55 to US 70
Date Performed	2017	Jurisdiction	Bus/US 25
Analysis Time Period	PM Peak	Analysis Year	Segment #23E 2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1565	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.90
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	900	Design LOS	
x f _p)	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	12.9	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #24E
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1565 Ramp Volume, V _R 1206 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	--	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1565	0.90	Level	7	0	0.966	1.00	1800
Ramp	1206	0.90	Level	5	0	0.976	1.00	1374
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1800 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	1800	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	426	Exhibit 13-8	4800 No
V _R	1374	Exhibit 13-10	2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1800	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 15.3 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.422 (Exhibit 13-12)
 S_R = 58.2 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 58.2 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	within US 70 Bus/US 258 Int
Date Performed	2017	Jurisdiction	Segment #25E
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	359	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			7
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	206	pc/h/ln	
x f _p)			
S	70.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV})
D = v _p / S	2.9	pc/mi/ln	x f _p)
LOS	A		S
			D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	from US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #26E
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: center;">920</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: center;">359</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: center;">891</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: center;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: center;">25.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	920	Deceleration Lane Length L _D		Freeway Volume, V _F	359	Ramp Volume, V _R	891	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	920																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	359																	
Ramp Volume, V _R	891																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	25.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	359	0.90	Level	7	0	0.905	1.00	441
Ramp	891	0.90	Level	5	0	0.976	1.00	1015
UpStream								
DownStream								

Merge Areas	Diverge Areas
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Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 441 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} 0 pc/h Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} pc/h Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1456	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area	Flow Entering Diverge Influence Area
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	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1456	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 10.6 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

M _S = 0.292 (Exhibit 13-11) S _R = 61.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 61.8 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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R-2553 US 70 Kinston Bypass, Alternative 1

US 70 EB - PM Peak

Segment	Seg. 27	Seg. 28	Seg. 29	Seg. 30	Seg. 31	Seg. 32	Seg. 33	Seg. 34	Seg. 35
General Purpose Segment Data	27E	28E	29E	30E	31E	32E	33E	34E	35E
General Purpose Segment Name	NC 58/US 258 to Wyse Fork	To Wyse Fork	Within Wyse Fork Int	From Wyse Fork	Wyse Fork to Burkett/Kornegay	To Burkett/Kornegay	Within Burkett/Kornegay Int	From Burkett/Kornegay	E of Burkett/Kornegay
General Purpose Segment Type	BFS	Off-Ramp	BFS	On-Ramp	BFS	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	14990	1500	1500	1500	12230	1500	3000	1500	5280
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2	2	2	2	2	2
Free Flow Speed (mph)	70	70	70	70	70	70	70	70	70
Mainline Dem. (vph)	1418	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	7	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	N/A	750	N/A	920	N/A	490	N/A	920	N/A
ONR Side	N/A	N/A	N/A	Right	N/A	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	N/A	1	N/A	N/A	N/A	2	N/A
ONR Free Flow Speed (mph)	N/A	N/A	N/A	45	N/A	N/A	N/A	45	N/A
ONR/Entering Dem. (vph)	N/A	N/A	N/A	83	N/A	N/A	N/A	36	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	N/A	4	N/A	N/A	N/A	4	N/A
OFR Side	N/A	Right	N/A	N/A	N/A	Right	N/A	N/A	N/A
# Lanes: OFR	N/A	1	N/A	N/A	N/A	1	N/A	N/A	N/A
OFR Free Flow Speed (mph)	N/A	25	N/A	N/A	N/A	45	N/A	N/A	N/A
OFR/Exit Dem. (vph)	N/A	249	N/A	N/A	N/A	166	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	N/A	4	N/A	N/A	N/A	4	N/A	N/A	N/A
Total Density (pc/mi/ln)	10.5	10.1	8.7	9.8	9.3	11.0	8.1	8.8	8.3
V/C	0.31	0.31	0.25	0.27	0.27	0.27	0.24	0.24	0.24
Density Based LOS	A	B	A	A	A	B	A	A	A

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	to US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #10W
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1276 Ramp Volume, V _R 891 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1276	0.90	Level	7	0	0.966	1.00	1467
Ramp	891	0.90	Level	5	0	0.976	1.00	1015
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1467 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	1467	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	452	Exhibit 13-8	4800 No
V _R	1015	Exhibit 13-10	2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1467	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 12.5 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.389 (Exhibit 13-12)
 S_R = 59.1 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 59.1 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	within US 70 Bus_US 258
Date Performed	2017	Jurisdiction	Segment #11W
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	359	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	206	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	70.0	mph	x f _p)
D = v _p / S	2.9	pc/mi/ln	S
LOS	A		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #12W
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: center;">920</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: center;">359</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: center;">1206</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: center;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: center;">45.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	920	Deceleration Lane Length L _D		Freeway Volume, V _F	359	Ramp Volume, V _R	1206	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	920																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	359																	
Ramp Volume, V _R	1206																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	45.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	359	0.90	Level	7	0	0.905	1.00	441
Ramp	1206	0.90	Level	5	0	0.976	1.00	1374
UpStream								
DownStream								

Merge Areas	Diverge Areas
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Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 441 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} 0 pc/h Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} pc/h Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1815	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area	Flow Entering Diverge Influence Area
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	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1815	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 13.2 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
--	---

Speed Determination

M _S = 0.262 (Exhibit 13-11) S _R = 62.7 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 62.7 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	US 70 Bus/US 258 to NC11
Date Performed	2017	Jurisdiction	WC55
Analysis Time Period	AM Peak	Analysis Year	Segment #13W 2040 Build

Project Description *R-2553 Kinston Bypass - Alt 1 Build Conditions*

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs

Volume, V	1565	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	7
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966

Speed Inputs

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0 mph
FFS (measured)	70.0 mph		
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	900 pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	70.0 mph	S	mph
D = v _p / S	12.9 pc/mi/ln	D = v _p / S	pc/mi/ln
LOS	B	Required Number of Lanes, N	

Glossary

Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	to NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #14W
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1565 Ramp Volume, V _R 284 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1565	0.90	Level	7	0	0.966	1.00	1800
Ramp	284	0.90	Level	4	0	0.980	1.00	322
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation 0 (Exhibit 13-7) V ₁₂ = 1800 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

Capacity Checks

	Actual		Capacity		LOS F?
	V _{FO}		Exhibit 13-8		
	V _F	1800	Exhibit 13-8	4800	No
	V _{FO} = V _F - V _R	1478	Exhibit 13-8	4800	No
	V _R	322	Exhibit 13-10	2100	No

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual		Max Desirable		Violation?
	V _{R12}		Exhibit 13-8		
	V ₁₂	1800	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 15.3 (pc/mi/ln) LOS = B (Exhibit 13-2)
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Speed Determination

Speed Determination

M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)	D _S = 0.327 (Exhibit 13-12) S _R = 60.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 60.8 mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	within NC 11/NC 55 Int
Date Performed	2017	Jurisdiction	Segment #15W
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1255	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			7
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	722		v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	70.0		S
D = v _p / S	10.3		D = v _p / S
LOS	A		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #16W
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Freeway Number of Lanes, N Ramp Number of Lanes, N Acceleration Lane Length, L _A Deceleration Lane Length L _D Freeway Volume, V _F Ramp Volume, V _R Freeway Free-Flow Speed, S _{FF} Ramp Free-Flow Speed, S _{FR}	2 1 1500 1255 870 70.0 25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1255	0.90	Level	7	0	0.905	1.00	1541
Ramp	870	0.90	Level	4	0	0.980	1.00	986
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation 0 (Exhibit 13-6) V ₁₂ = 1541 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
--	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	2527	Exhibit 13-8	No	V _F	Exhibit 13-8		
				V _{FO} = V _F - V _R	Exhibit 13-8		
				V _R	Exhibit 13-10		

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	2527	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 15.3 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

M _S = 0.295 (Exhibit 13-11)	D _S = (Exhibit 13-12)
S _R = 61.7 mph (Exhibit 13-11)	S _R = mph (Exhibit 13-12)
S ₀ = N/A mph (Exhibit 13-11)	S ₀ = mph (Exhibit 13-12)
S = 61.7 mph (Exhibit 13-13)	S = mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	NC 11/NC 55 to US 70 Bus
Date Performed	2017	Jurisdiction	Segment #17W
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2089	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			5
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1190	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	17.0	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	AECOM		Freeway/Dir of Travel	US 70 WB					
Agency or Company			Junction	to US 70 Bus					
Date Performed	2017		Jurisdiction	Segment #18W					
Analysis Time Period	AM Peak		Analysis Year	2040 Build					
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h		Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 2089 Ramp Volume, V _R 423 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0			Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2089	0.90	Level	5	0	0.976	1.00	2379	
Ramp	423	0.90	Level	3	0	0.985	1.00	477	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = using Equation (Exhibit 13-6) P _{FM} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} pc/h Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-7) P _{FD} = 2379 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} 0 pc/h Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2379	Exhibit 13-8	4800	No
					V _{FO} = V _F - V _R	1902	Exhibit 13-8	4800	No
					V _R	477	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
	V _{R12}	Exhibit 13-8			V ₁₂	2379	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = 20.3 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.341 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 60.5 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 60.5 mph (Exhibit 13-13)				

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	within US 70 Bus Int
Date Performed	2017	Jurisdiction	Segment #19W
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs			
Volume, V	1675	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976

Speed Inputs	Calc Speed Adj and FFS
Lane Width	ft
Rt-Side Lat. Clearance	ft
Number of Lanes, N	2
Total Ramp Density, TRD	ramps/mi
FFS (measured)	70.0
Base free-flow Speed, BFFS	mph
	f _{LW} mph
	f _{LC} mph
	TRD Adjustment mph
	FFS 70.0 mph

LOS and Performance Measures	Design (N)
<u>Operational (LOS)</u>	<u>Design (N)</u>
v _p = (V or DDHV) / (PHF x N x f _{HV})	Design LOS
954 pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)	x f _p)
S 70.0 mph	S mph
D = v _p / S	D = v _p / S
13.6 pc/mi/ln	pc/mi/ln
LOS B	Required Number of Lanes, N

Glossary	Factor Location
N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v _p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	
	E _R - Exhibits 11-10, 11-12
	f _{LW} - Exhibit 11-8
	E _T - Exhibits 11-10, 11-11, 11-13
	f _{LC} - Exhibit 11-9
	f _p - Page 11-18
	TRD - Page 11-11
	LOS, S, FFS, v _p - Exhibits 11-2, 11-3

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency/Company	Segment #20W	Weaving Segment Location	US 70 Bus to US 258
Date Performed	2017	Analysis Year	2040 Build
Analysis Time Period	AM Peak		

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	3	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1440ft	Freeway maximum capacity, C_{IFL}	2400
Freeway free-flow speed, FFS	70 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	850	0.90	4	0	1.5	1.2	0.980	1.00	963
V_{RF}	323	0.90	4	0	2.5	1.2	0.943	1.00	380
V_{FR}	836	0.90	4	0	1.5	1.2	0.980	1.00	947
V_{RR}	318	0.90	4	0	1.5	1.2	0.980	1.00	360
V_{NW}	1323							V =	2650
V_W	1327								
VR	0.501								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	2 lc	Minimum weaving lane changes, LC_{MIN}	1327 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1533 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	475 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	2008 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	191

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	2586 veh/h	Weaving intensity factor, W	0.294
Weaving segment capacity, c_w	4699 veh/h	Weaving segment speed, S	56.9 mph
Weaving segment v/c ratio	0.550	Average weaving speed, S_W	57.5 mph
Weaving segment density, D	15.5 pc/mi/ln	Average non-weaving speed, S_{NW}	56.2 mph
Level of Service, LOS	B	Maximum weaving length, L_{MAX}	7835 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	within US 258 Int
Date Performed	2017	Jurisdiction	Segment #21W
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1143	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
Up/Down %			
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	654	pc/h/ln	
x f _p)			
S	70.0	mph	v _p = (V or DDHV) / (PHF x N x f _{HV})
D = v _p / S	9.3	pc/mi/ln	x f _p)
LOS	A		S
			D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from US 258/Sussex St
Date Performed	2017	Jurisdiction	Segment #22W
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A 920 Deceleration Lane Length L _D Freeway Volume, V _F 1143 Ramp Volume, V _R 129 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1143	0.90	Level	6	0	0.917	1.00	1384
Ramp	129	0.90	Level	5	0	0.976	1.00	147
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 L_{EQ} = (Equation 13-6 or 13-7)
 P_{FM} = 1.000 using Equation 0 (Exhibit 13-6)
 V₁₂ = 1384 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 L_{EQ} = (Equation 13-12 or 13-13)
 P_{FD} = using Equation (Exhibit 13-7)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1531	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1531	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = 11.6 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Speed Determination

Speed Determination

M_S = 0.256 (Exhibit 13-11)
 S_R = 62.8 mph (Exhibit 13-11)
 S₀ = N/A mph (Exhibit 13-11)
 S = 62.8 mph (Exhibit 13-13)

D_S = (Exhibit 13-12)
 S_R = mph (Exhibit 13-12)
 S₀ = mph (Exhibit 13-12)
 S = mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	rp fm US 258 to rp fm HillFarm
Date Performed	2017	Jurisdiction	Segment #23W
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1272	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			6
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0		mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	728	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	10.4	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from Hill Farm Rd
Date Performed	2017	Jurisdiction	Segment #24W
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp	Freeway Number of Lanes, N	2	Downstream Adj Ramp
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N	1	<input type="checkbox"/> Yes <input type="checkbox"/> On
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L_A	920	<input checked="" type="checkbox"/> No <input type="checkbox"/> Off
	Deceleration Lane Length L_D		
$L_{up} =$ ft	Freeway Volume, V_F	1272	$L_{down} =$ ft
	Ramp Volume, V_R	139	
$V_u =$ veh/h	Freeway Free-Flow Speed, S_{FF}	70.0	$V_D =$ veh/h
	Ramp Free-Flow Speed, S_{FR}	45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1272	0.90	Level	6	0	0.917	1.00	1541
Ramp	139	0.90	Level	5	0	0.976	1.00	158
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v_{12}

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$ $L_{EQ} =$ (Equation 13-6 or 13-7) $P_{FM} =$ 1.000 using Equation 0 (Exhibit 13-6) $V_{12} =$ 1541 pc/h V_3 or $V_{av34} =$ 0 pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{EQ} =$ (Equation 13-12 or 13-13) $P_{FD} =$ using Equation (Exhibit 13-7) $V_{12} =$ pc/h V_3 or $V_{av34} =$ pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)
--	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V_{FO}	1699	Exhibit 13-8	No	V_F		Exhibit 13-8	
				$V_{FO} = V_F - V_R$		Exhibit 13-8	
				V_R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V_{R12}	1699	Exhibit 13-8	4600:All	No	V_{12}	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ $D_R =$ 12.9 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R =$ (pc/mi/ln) LOS = (Exhibit 13-2)
--	---

Speed Determination

Speed Determination

$M_S =$ 0.260 (Exhibit 13-11) $S_R =$ 62.7 mph (Exhibit 13-11) $S_0 =$ N/A mph (Exhibit 13-11) $S =$ 62.7 mph (Exhibit 13-13)	$D_S =$ (Exhibit 13-12) $S_R =$ mph (Exhibit 13-12) $S_0 =$ mph (Exhibit 13-12) $S =$ mph (Exhibit 13-13)
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R-2553 US 70 Kinston Bypass, Alternative 1
US 70 WB - AM Peak

Segment	Seg. 25	Seg. 26	Seg. 27	Seg. 28	Seg. 29	Seg. 30	Seg. 31	Seg. 32	Seg. 33
General Purpose Segment Data	25W	26W	27W	28W	29W	30W	31W	32W	33W
General Purpose Segment Name	Hill Farm to CF Harvey	To CF Harvey	Within CF Harvey	From CF Harvey	CF Harvey to Albert Sugg/Barwick Station	To Albert Sugg/Barwick Station	Within Albert Sugg/Barwick Station Int	From Albert Sugg/Barwick Station	Albert Sugg/Barwick Station to Jim Sutton/Willie
General Purpose Segment Type	BFS	Off-Ramp	BFS	On-Ramp	BFS	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	1320	1500	3480	2500	9090	1500	1500	1620	6050
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2	2	2	2	2	2
Free Flow Speed (mph)	70	70	70	70	70	70	70	70	70
Mainline Dem. (vph)	1596	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	6	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	N/A	490	N/A	2500	N/A	490	N/A	1620	N/A
ONR Side	N/A	N/A	N/A	Right	N/A	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	N/A	1	N/A	N/A	N/A	1	N/A
ONR Free Flow Speed (mph)	N/A	N/A	N/A	45	N/A	N/A	N/A	25	N/A
ONR/Entering Dem. (vph)	N/A	N/A	N/A	281	N/A	N/A	N/A	222	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	N/A	7	N/A	N/A	N/A	2	N/A
OFR Side	N/A	Right	N/A	N/A	N/A	Right	N/A	N/A	N/A
# Lanes: OFR	N/A	1	N/A	N/A	N/A	1	N/A	N/A	N/A
OFR Free Flow Speed (mph)	N/A	45	N/A	N/A	N/A	45	N/A	N/A	N/A
OFR/Exit Dem. (vph)	N/A	86	N/A	N/A	N/A	209	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	N/A	7	N/A	N/A	N/A	2	N/A	N/A	N/A
Total Density (pc/mi/ln)	11.7	14.0	11.1	4.1	13.2	15.7	11.7	9.7	13.3
V/C	0.34	0.34	0.32	0.38	0.38	0.38	0.34	0.39	0.39
Density Based LOS	B	B	B	A	B	B	B	A	B

R-2553 US 70 Kinston Bypass, Alternative 1
US 70 WB - AM Peak

Segment	Seg. 34	Seg. 35	Seg. 36	Seg. 37
General Purpose Segment Data	34W	35W	36W	37W
General Purpose Segment Name	To Jim Sutton/Willie Measley	Within Jim Sutton/Willie Measley Int	From Jim Sutton/Willie Measley	W of Jim Sutton/Willie Measley
General Purpose Segment Type	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	1500	1500	1620	5280
Terrain	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2
Free Flow Speed (mph)	70	70	70	70
Mainline Dem. (vph)	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	490	N/A	1620	N/A
ONR Side	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	1	N/A
ONR Free Flow Speed (mph)	N/A	N/A	25	N/A
ONR/Entering Dem. (vph)	N/A	N/A	227	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	4	N/A
OFR Side	Right	N/A	N/A	N/A
# Lanes: OFR	1	N/A	N/A	N/A
OFR Free Flow Speed (mph)	45	N/A	N/A	N/A
OFR/Exit Dem. (vph)	278	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	4	N/A	N/A	N/A
Total Density (pc/mi/ln)	15.8	11.3	9.3	12.9
V/C	0.39	0.33	0.38	0.38
Density Based LOS	B	B	A	B

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	to US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #10W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1044 Ramp Volume, V _R 725 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1044	0.90	Level	7	0	0.966	1.00	1201
Ramp	725	0.90	Level	5	0	0.976	1.00	826
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1201 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	1201	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	375	Exhibit 13-8	4800 No
V _R	826	Exhibit 13-10	2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1201	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 10.2 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.372 (Exhibit 13-12)
 S_R = 59.6 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 59.6 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	within US 70 Bus_US 258
Date Performed	2017	Jurisdiction	Segment #11W
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	340	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			7
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	195		v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	70.0		S
D = v _p / S	2.8		D = v _p / S
LOS	A		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from US 70 Bus/US 258
Date Performed	2017	Jurisdiction	Segment #12W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: center;">920</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: center;">340</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: center;">940</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: center;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: center;">45.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	920	Deceleration Lane Length L _D		Freeway Volume, V _F	340	Ramp Volume, V _R	940	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	920																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	340																	
Ramp Volume, V _R	940																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	45.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	340	0.90	Level	7	0	0.905	1.00	417
Ramp	940	0.90	Level	5	0	0.976	1.00	1071
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 417 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
---	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1488	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1488	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 10.8 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

M _S = 0.255 (Exhibit 13-11) S _R = 62.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 62.8 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	US 70 Bus/US 258 to NC11 WC55
Date Performed	2017	Jurisdiction	Segment #13W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description *R-2553 Kinston Bypass - Alt 1 Build Conditions*

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs

Volume, V	1280	veh/h	Peak-Hour Factor, PHF	0.90
AADT		veh/day	%Trucks and Buses, P _T	7
Peak-Hr Prop. of AADT, K			%RVs, P _R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length	mi
			Up/Down %	

Calculate Flow Adjustments

f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966

Speed Inputs

Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0 mph
FFS (measured)	70.0 mph		
Base free-flow Speed, BFFS	mph		

LOS and Performance Measures

LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	736 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0 mph	x f _p)	
D = v _p / S	10.5 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	

Glossary

N - Number of lanes
 V - Hourly volume
 v_p - Flow rate
 LOS - Level of service
 DDHV - Directional design hour volume
 S - Speed
 D - Density
 FFS - Free-flow speed
 BFFS - Base free-flow speed

Factor Location

E_R - Exhibits 11-10, 11-12
 E_T - Exhibits 11-10, 11-11, 11-13
 f_p - Page 11-18
 LOS, S, FFS, v_p - Exhibits 11-2, 11-3
 f_{LW} - Exhibit 11-8
 f_{LC} - Exhibit 11-9
 TRD - Page 11-11

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	to NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #14W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1280 Ramp Volume, V _R 301 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1280	0.90	Level	7	0	0.966	1.00	1472
Ramp	301	0.90	Level	4	0	0.980	1.00	341
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1472 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	1472	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	1131	Exhibit 13-8	4800 No
V _R	341	Exhibit 13-10	2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1472	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 12.5 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.329 (Exhibit 13-12)
 S_R = 60.8 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 60.8 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	within NC 11/NC 55 Int
Date Performed	2017	Jurisdiction	Segment #15W
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	1000	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
Design LOS		Design LOS	
$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	575 pc/h/ln	$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p)$	pc/h/ln
S	70.0 mph	S	mph
D = v _p / S	8.2 pc/mi/ln	D = v _p / S	pc/mi/ln
LOS	A	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from NC 11/NC 55
Date Performed	2017	Jurisdiction	Segment #16W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A 1500 Deceleration Lane Length L _D 1500 Freeway Volume, V _F 1000 Ramp Volume, V _R 681 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1000	0.90	Level	7	0	0.905	1.00	1228
Ramp	681	0.90	Level	4	0	0.980	1.00	772
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 0.90 V ₁₂ = 1228 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = 1228 pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = 1.000 using Equation (Exhibit 13-7) P _{FD} = 0.90 V ₁₂ = 772 pc/h V ₃ or V _{av34} = 681 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 681 pc/h (Equation 13-16, 13-18, or 13-19)
--	---

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	2000	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	2000	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 11.3 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
--	---

Speed Determination

Speed Determination

M _S = 0.275 (Exhibit 13-11) S _R = 62.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 62.3 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	NC 11/NC 55 to US 70 Bus
Date Performed	2017	Jurisdiction	Segment #17W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)	<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data	

Flow Inputs			
Volume, V	1710	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %

Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976

Speed Inputs	Calc Speed Adj and FFS
Lane Width	ft
Rt-Side Lat. Clearance	ft
Number of Lanes, N	2
Total Ramp Density, TRD	ramps/mi
FFS (measured)	70.0
Base free-flow Speed, BFFS	mph
	f _{LW} mph
	f _{LC} mph
	TRD Adjustment mph
	FFS 70.0 mph

LOS and Performance Measures	Design (N)
<u>Operational (LOS)</u>	<u>Design (N)</u>
v _p = (V or DDHV) / (PHF x N x f _{HV})	v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)	x f _p)
S	S
D = v _p / S	D = v _p / S
LOS	Required Number of Lanes, N

Glossary	Factor Location
N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v _p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	
	E _R - Exhibits 11-10, 11-12
	E _T - Exhibits 11-10, 11-11, 11-13
	f _{LW} - Exhibit 11-8
	f _{LC} - Exhibit 11-9
	f _p - Page 11-18
	TRD - Page 11-11
	LOS, S, FFS, v _p - Exhibits 11-2, 11-3

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	to US 70 Bus
Date Performed	2017	Jurisdiction	Segment #18W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1710 Ramp Volume, V _R 371 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1710	0.90	Level	5	0	0.976	1.00	1948
Ramp	371	0.90	Level	3	0	0.985	1.00	418
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1948 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	1948	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	1530	Exhibit 13-8	4800 No
V _R	418	Exhibit 13-10	2100 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1948	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = 16.6 (pc/mi/ln)
 LOS = B (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.336 (Exhibit 13-12)
 S_R = 60.6 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 60.6 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	<i>AECOM</i>	Highway/Direction of Travel	<i>US 70 WB</i>
Agency or Company		From/To	<i>within US 70 Bus Int</i>
Date Performed	<i>2017</i>	Jurisdiction	<i>Segment #19W</i>
Analysis Time Period	<i>PM Peak</i>	Analysis Year	<i>2040 Build</i>
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1331</i>	veh/h	Peak-Hour Factor, PHF <i>0.90</i>
AADT		veh/day	%Trucks and Buses, P _T <i>5</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.976</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	<i>2</i>	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	<i>70.0</i>	FFS	<i>70.0</i>
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	<i>758</i> pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	<i>70.0</i> mph	x f _p)	
D = v _p / S	<i>10.8</i> pc/mi/ln	S	mph
LOS	<i>A</i>	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

FREEWAY WEAVING WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency/Company	Segment #20W	Weaving Segment Location	US 70 Bus to US 258
Date Performed	2017	Analysis Year	2040 Build
Analysis Time Period	PM Peak		

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Weaving configuration	One-Sided	Segment type	Freeway
Weaving number of lanes, N	3	Freeway minimum speed, S_{MIN}	15
Weaving segment length, L_S	1440ft	Freeway maximum capacity, C_{IFL}	2400
Freeway free-flow speed, FFS	70 mph	Terrain type	Level

Conversions to pc/h Under Base Conditions

	V (veh/h)	PHF	Truck (%)	RV (%)	E_T	E_R	f_{HV}	f_p	v (pc/h)
V_{FF}	829	0.90	4	0	1.5	1.2	0.980	1.00	940
V_{RF}	364	0.90	4	0	2.5	1.2	0.943	1.00	429
V_{FR}	494	0.90	4	0	1.5	1.2	0.980	1.00	560
V_{RR}	217	0.90	4	0	1.5	1.2	0.980	1.00	246
V_{NW}	1186							V =	2175
V_W	989								
VR	0.455								

Configuration Characteristics

Minimum maneuver lanes, N_{WL}	2 lc	Minimum weaving lane changes, LC_{MIN}	989 lc/h
Interchange density, ID	1.0 int/mi	Weaving lane changes, LC_W	1195 lc/h
Minimum RF lane changes, LC_{RF}	1 lc/pc	Non-weaving lane changes, LC_{NW}	447 lc/h
Minimum FR lane changes, LC_{FR}	1 lc/pc	Total lane changes, LC_{ALL}	1642 lc/h
Minimum RR lane changes, LC_{RR}	lc/pc	Non-weaving vehicle index, I_{NW}	171

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment flow rate, v	2116 veh/h	Weaving intensity factor, W	0.251
Weaving segment capacity, c_w	5175 veh/h	Weaving segment speed, S	59.2 mph
Weaving segment v/c ratio	0.409	Average weaving speed, S_W	59.0 mph
Weaving segment density, D	12.2 pc/mi/ln	Average non-weaving speed, S_{NW}	59.4 mph
Level of Service, LOS	B	Maximum weaving length, L_{MAX}	7302 ft

Notes

- a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments".
- b. For volumes that exceed the weaving segment capacity, the level of service is "F".

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst *AECOM*
 Agency or Company
 Date Performed *2017*
 Analysis Time Period *PM Peak*

Site Information

Highway/Direction of Travel *US 70 WB*
 From/To *within US 258 Int*
 Jurisdiction *Segment #21W*
 Analysis Year *2040 Build*

Project Description *R-2553 Kinston Bypass - Alt 1 Build Conditions*

Oper.(LOS)

Des.(N)

Planning Data

Flow Inputs

Volume, V *1217* veh/h Peak-Hour Factor, PHF *0.90*
 AADT veh/day %Trucks and Buses, P_T *6*
 Peak-Hr Prop. of AADT, K %RVs, P_R *0*
 Peak-Hr Direction Prop, D General Terrain: *Level*
 DDHV = AADT x K x D veh/h Grade % Length *mi*
 Up/Down %

Calculate Flow Adjustments

f_p *1.00* E_R *1.2*
 E_T *1.5* f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)] *0.971*

Speed Inputs

Lane Width ft
 Rt-Side Lat. Clearance ft
 Number of Lanes, N *2*
 Total Ramp Density, TRD ramps/mi
 FFS (measured) *70.0* mph
 Base free-flow Speed, BFFS mph

Calc Speed Adj and FFS

f_{LW} mph
 f_{LC} mph
 TRD Adjustment mph
 FFS *70.0* mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV}) *696* pc/h/ln
 x f_p)
 S *70.0* mph
 D = v_p / S *9.9* pc/mi/ln
 LOS *A*

Design (N)

Design (N)
 Design LOS
 v_p = (V or DDHV) / (PHF x N x f_{HV}) pc/h/ln
 x f_p)
 S mph
 D = v_p / S pc/mi/ln
 Required Number of Lanes, N

Glossary

N - Number of lanes S - Speed
 V - Hourly volume D - Density
 v_p - Flow rate FFS - Free-flow speed
 LOS - Level of service BFFS - Base free-flow speed
 DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12 f_{LW} - Exhibit 11-8
 E_T - Exhibits 11-10, 11-11, 11-13 f_{LC} - Exhibit 11-9
 f_p - Page 11-18 TRD - Page 11-11
 LOS, S, FFS, v_p - Exhibits 11-2, 11-3

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from US 258/Sussex St
Date Performed	2017	Jurisdiction	Segment #22W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp	Freeway Number of Lanes, N	2	Downstream Adj Ramp
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N	1	<input type="checkbox"/> Yes <input type="checkbox"/> On
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L_A	920	<input checked="" type="checkbox"/> No <input type="checkbox"/> Off
	Deceleration Lane Length L_D		
$L_{up} =$ ft	Freeway Volume, V_F	1217	$L_{down} =$ ft
$V_u =$ veh/h	Ramp Volume, V_R	219	$V_D =$ veh/h
	Freeway Free-Flow Speed, S_{FF}	70.0	
	Ramp Free-Flow Speed, S_{FR}	45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1217	0.90	Level	6	0	0.917	1.00	1474
Ramp	219	0.90	Level	5	0	0.976	1.00	249
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v_{12}

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$ $L_{EQ} =$ (Equation 13-6 or 13-7) $P_{FM} =$ 1.000 using Equation 0 (Exhibit 13-6) $V_{12} =$ 1474 pc/h V_3 or $V_{av34} =$ 0 pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{EQ} =$ (Equation 13-12 or 13-13) $P_{FD} =$ using Equation (Exhibit 13-7) $V_{12} =$ pc/h V_3 or $V_{av34} =$ pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)
--	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V_{FO}	1723	Exhibit 13-8	No	V_F		Exhibit 13-8	
				$V_{FO} = V_F - V_R$		Exhibit 13-8	
				V_R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V_{R12}	1723	Exhibit 13-8	4600:All	No	V_{12}	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ $D_R =$ 13.0 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R =$ (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

$M_S =$ 0.260 (Exhibit 13-11) $S_R =$ 62.7 mph (Exhibit 13-11) $S_0 =$ N/A mph (Exhibit 13-11) $S =$ 62.7 mph (Exhibit 13-13)	$D_S =$ (Exhibit 13-12) $S_R =$ mph (Exhibit 13-12) $S_0 =$ mph (Exhibit 13-12) $S =$ mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 WB
Agency or Company		From/To	rp fm US 258 to rp fm HillFarm
Date Performed	2017	Jurisdiction	Segment #23W
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description <i>R-2553 Kinston Bypass - Alt 1 Build Conditions</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1436	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			6
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0
FFS (measured)	70.0		mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	822	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	11.7	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 WB
Agency or Company		Junction	from Hill Farm Rd
Date Performed	2017	Jurisdiction	Segment #24W
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp	Freeway Number of Lanes, N	2	Downstream Adj Ramp
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N	1	<input type="checkbox"/> Yes <input type="checkbox"/> On
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L_A	920	<input checked="" type="checkbox"/> No <input type="checkbox"/> Off
	Deceleration Lane Length L_D		
$L_{up} =$ ft	Freeway Volume, V_F	1436	$L_{down} =$ ft
$V_u =$ veh/h	Ramp Volume, V_R	245	$V_D =$ veh/h
	Freeway Free-Flow Speed, S_{FF}	70.0	
	Ramp Free-Flow Speed, S_{FR}	45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1436	0.90	Level	6	0	0.917	1.00	1739
Ramp	245	0.90	Level	5	0	0.976	1.00	279
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v_{12}

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$ $L_{EQ} =$ (Equation 13-6 or 13-7) $P_{FM} =$ 1.000 using Equation 0 (Exhibit 13-6) $V_{12} =$ 1739 pc/h V_3 or $V_{av34} =$ 0 pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{EQ} =$ (Equation 13-12 or 13-13) $P_{FD} =$ using Equation (Exhibit 13-7) $V_{12} =$ pc/h V_3 or $V_{av34} =$ pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)
--	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V_{FO}	2018	Exhibit 13-8	No	V_F		Exhibit 13-8	
				$V_{FO} = V_F - V_R$		Exhibit 13-8	
				V_R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V_{R12}	2018	Exhibit 13-8	4600:All	No	V_{12}	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ $D_R =$ 15.3 (pc/mi/ln) LOS = B (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R =$ (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

$M_S =$ 0.268 (Exhibit 13-11) $S_R =$ 62.5 mph (Exhibit 13-11) $S_0 =$ N/A mph (Exhibit 13-11) $S =$ 62.5 mph (Exhibit 13-13)	$D_S =$ (Exhibit 13-12) $S_R =$ mph (Exhibit 13-12) $S_0 =$ mph (Exhibit 13-12) $S =$ mph (Exhibit 13-13)
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R-2553 US 70 Kinston Bypass, Alternative 1

US 70 WB - PM Peak

Segment	Seg. 25	Seg. 26	Seg. 27	Seg. 28	Seg. 29	Seg. 30	Seg. 31	Seg. 32	Seg. 33
General Purpose Segment Data	25W	26W	27W	28W	29W	30W	31W	32W	33W
General Purpose Segment Name	Hill Farm to CF Harvey	To CF Harvey	Within CF Harvey	From CF Harvey	CF Harvey to Albert Sugg/Barwick Station	To Albert Sugg/Barwick Station	Within Albert Sugg/Barwick Station Int	From Albert Sugg/Barwick Station	Albert Sugg/Barwick Station to Jim Sutton/Willie
General Purpose Segment Type	BFS	Off-Ramp	BFS	On-Ramp	BFS	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	1320	1500	3480	2500	9090	1500	1500	1620	6050
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2	2	2	2	2	2
Free Flow Speed (mph)	70	70	70	70	70	70	70	70	70
Mainline Dem. (vph)	1836	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	6	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	N/A	490	N/A	2500	N/A	490	N/A	1620	N/A
ONR Side	N/A	N/A	N/A	Right	N/A	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	N/A	1	N/A	N/A	N/A	1	N/A
ONR Free Flow Speed (mph)	N/A	N/A	N/A	45	N/A	N/A	N/A	25	N/A
ONR/Entering Dem. (vph)	N/A	N/A	N/A	423	N/A	N/A	N/A	169	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	N/A	7	N/A	N/A	N/A	2	N/A
OFR Side	N/A	Right	N/A	N/A	N/A	Right	N/A	N/A	N/A
# Lanes: OFR	N/A	1	N/A	N/A	N/A	1	N/A	N/A	N/A
OFR Free Flow Speed (mph)	N/A	45	N/A	N/A	N/A	45	N/A	N/A	N/A
OFR/Exit Dem. (vph)	N/A	69	N/A	N/A	N/A	339	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	N/A	7	N/A	N/A	N/A	2	N/A	N/A	N/A
Total Density (pc/mi/ln)	13.5	16.1	13.0	7.2	16.1	19.3	13.7	11.5	14.9
V/C	0.39	0.39	0.38	0.47	0.47	0.47	0.40	0.43	0.43
Density Based LOS	B	B	B	A	B	B	B	B	B

R-2553 US 70 Kinston Bypass, Alternative 1
US 70 WB - PM Peak

Segment	Seg. 34	Seg. 35	Seg. 36	Seg. 37
General Purpose Segment Data	34W	35W	36W	37W
General Purpose Segment Name	To Jim Sutton/Willie Measley	Within Jim Sutton/Willie Measley Int	From Jim Sutton/Willie Measley	W of Jim Sutton/Willie Measley
General Purpose Segment Type	Off-Ramp	BFS	On-Ramp	BFS
Segment Length (ft)	1500	1500	1620	5280
Terrain	Level	Level	Level	Level
Truck-PC Equivalent (ET)	1.5	1.5	1.5	1.5
# of Lanes: Mainline	2	2	2	2
Free Flow Speed (mph)	70	70	70	70
Mainline Dem. (vph)	N/A_S	N/A_S	N/A_S	N/A_S
Mainline Single Unit Truck and Bus (%)	N/A_S	N/A_S	N/A_S	N/A_S
Acc/Dec Lane Length (ft)	490	N/A	1620	N/A
ONR Side	N/A	N/A	Right	N/A
# Lanes: ONR	N/A	N/A	1	N/A
ONR Free Flow Speed (mph)	N/A	N/A	25	N/A
ONR/Entering Dem. (vph)	N/A	N/A	201	N/A
ONR Single Unit Truck and Bus (%)	N/A	N/A	4	N/A
OFR Side	Right	N/A	N/A	N/A
# Lanes: OFR	1	N/A	N/A	N/A
OFR Free Flow Speed (mph)	45	N/A	N/A	N/A
OFR/Exit Dem. (vph)	379	N/A	N/A	N/A
OFR Single Unit Truck and Bus (%)	4	N/A	N/A	N/A
Total Density (pc/mi/ln)	17.8	12.1	10.1	13.6
V/C	0.43	0.35	0.40	0.40
Density Based LOS	B	B	B	B

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	CF Harvey Pkwy NB
Agency or Company		From/To	south of US 70
Date Performed	2017	Jurisdiction	Segment #1N
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	381	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0 mph
FFS (measured)	70.0 mph		
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	219 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0 mph	x f _p)	
D = v _p / S	3.1 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information	Site Information
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Analyst	AECOM	Freeway/Dir of Travel	CF Harvey Pkwy NB
Agency or Company		Junction	from US 70 WB
Date Performed	2017	Jurisdiction	Segment #2N
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off $L_{up} =$ ft $V_u =$ veh/h	<table style="width: 100%;"> <tr> <td>Freeway Number of Lanes, N</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: right;">920</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: right;">381</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: right;">77</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: right;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: right;">45.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	1	Acceleration Lane Length, L_A	920	Deceleration Lane Length L_D		Freeway Volume, V_F	381	Ramp Volume, V_R	77	Freeway Free-Flow Speed, S_{FF}	70.0	Ramp Free-Flow Speed, S_{FR}	45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off $L_{down} =$ ft $V_D =$ veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L_A	920																	
Deceleration Lane Length L_D																		
Freeway Volume, V_F	381																	
Ramp Volume, V_R	77																	
Freeway Free-Flow Speed, S_{FF}	70.0																	
Ramp Free-Flow Speed, S_{FR}	45.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	381	0.90	Level	7	0	0.905	1.00	468
Ramp	77	0.90	Level	6	0	0.971	1.00	88
UpStream								
DownStream								

Merge Areas	Diverge Areas
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Estimation of v_{12}

$V_{12} = V_F (P_{FM})$ $L_{EQ} =$ (Equation 13-6 or 13-7) $P_{FM} =$ 1.000 using Equation 0 (Exhibit 13-6) $V_{12} =$ 468 pc/h V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{EQ} =$ (Equation 13-12 or 13-13) $P_{FD} =$ using Equation (Exhibit 13-7) $V_{12} =$ pc/h V_3 or V_{av34} pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V_{FO}	556	Exhibit 13-8	No		V_F	Exhibit 13-8	
					$V_{FO} = V_F - V_R$	Exhibit 13-8	
					V_R	Exhibit 13-10	

Flow Entering Merge Influence Area	Flow Entering Diverge Influence Area
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	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V_{R12}	556	Exhibit 13-8	4600:All	No	V_{12}	Exhibit 13-8	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ $D_R =$ 4.0 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R =$ (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

$M_S =$ 0.245 (Exhibit 13-11) $S_R =$ 63.1 mph (Exhibit 13-11) $S_0 =$ N/A mph (Exhibit 13-11) $S =$ 63.1 mph (Exhibit 13-13)	$D_S =$ (Exhibit 13-12) $S_R =$ mph (Exhibit 13-12) $S_0 =$ mph (Exhibit 13-12) $S =$ mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	CF Harvey Pkwy NB
Agency or Company		From/To	North of US 70
Date Performed	2017	Jurisdiction	Segment #3N
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	465	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			7
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	267	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	70.0	S	
		mph	
D = v _p / S	3.8	D = v _p / S	
		pc/mi/ln	
LOS	A	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	CF Harvey Pkwy NB
Agency or Company		From/To	South of US 70
Date Performed	2017	Jurisdiction	Segment #1N
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	252	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
Up/Down %			
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	145 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0 mph	x f _p)	
D = v _p / S	2.1 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	CF Harvey Pkwy NB
Agency or Company		Junction	from US 70 WB
Date Performed	2017	Jurisdiction	Segment #2N
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp	Freeway Number of Lanes, N	2	Downstream Adj Ramp
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N	1	<input type="checkbox"/> Yes <input type="checkbox"/> On
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L_A	920	<input checked="" type="checkbox"/> No <input type="checkbox"/> Off
	Deceleration Lane Length L_D		
$L_{up} =$ ft	Freeway Volume, V_F	252	$L_{down} =$ ft
	Ramp Volume, V_R	62	
$V_u =$ veh/h	Freeway Free-Flow Speed, S_{FF}	70.0	$V_D =$ veh/h
	Ramp Free-Flow Speed, S_{FR}	45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	252	0.90	Level	7	0	0.905	1.00	309
Ramp	62	0.90	Level	6	0	0.971	1.00	71
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v_{12}

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$ $L_{EQ} =$ (Equation 13-6 or 13-7) $P_{FM} =$ 1.000 using Equation 0 (Exhibit 13-6) $V_{12} =$ 309 pc/h V_3 or $V_{av34} =$ 0 pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{EQ} =$ (Equation 13-12 or 13-13) $P_{FD} =$ using Equation (Exhibit 13-7) $V_{12} =$ pc/h V_3 or $V_{av34} =$ pc/h (Equation 13-14 or 13-17) Is V_3 or $V_{av34} > 2,700$ pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, $V_{12a} =$ pc/h (Equation 13-16, 13-18, or 13-19)
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Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V_{FO}	380	Exhibit 13-8	No	V_F		Exhibit 13-8	
				$V_{FO} = V_F - V_R$		Exhibit 13-8	
				V_R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V_{R12}	380	Exhibit 13-8	4600:All	No	V_{12}	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ $D_R =$ 2.6 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R =$ (pc/mi/ln) LOS = (Exhibit 13-2)
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Speed Determination

Speed Determination

$M_S =$ 0.244 (Exhibit 13-11) $S_R =$ 63.2 mph (Exhibit 13-11) $S_0 =$ N/A mph (Exhibit 13-11) $S =$ 63.2 mph (Exhibit 13-13)	$D_S =$ (Exhibit 13-12) $S_R =$ mph (Exhibit 13-12) $S_0 =$ mph (Exhibit 13-12) $S =$ mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information	Site Information
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Analyst <i>AECOM</i>	Highway/Direction of Travel <i>CF Harvey Pkwy NB</i>
Agency or Company	From/To <i>North of US 70</i>
Date Performed <i>2017</i>	Jurisdiction <i>Segment #3N</i>
Analysis Time Period <i>PM Peak</i>	Analysis Year <i>2040 Build</i>

Project Description *R-2553 Kinston Bypass - Alt 1 Build Conditions*

Oper.(LOS)
 Des.(N)
 Planning Data

Flow Inputs

Volume, V <i>310</i>	veh/h	Peak-Hour Factor, PHF <i>0.90</i>	
AADT	veh/day	%Trucks and Buses, P _T <i>7</i>	
Peak-Hr Prop. of AADT, K		%RVs, P _R <i>0</i>	
Peak-Hr Direction Prop, D		General Terrain: <i>Level</i>	
DDHV = AADT x K x D	veh/h	Grade % Length <i>mi</i>	
		Up/Down %	

Calculate Flow Adjustments

f _p <i>1.00</i>	E _R <i>1.2</i>
E _T <i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.966</i>

Speed Inputs

Lane Width	ft
Rt-Side Lat. Clearance	ft
Number of Lanes, N <i>2</i>	
Total Ramp Density, TRD	ramps/mi
FFS (measured) <i>70.0</i>	mph
Base free-flow Speed, BFFS	mph

Calc Speed Adj and FFS

f _{LW}	mph
f _{LC}	mph
TRD Adjustment	mph
FFS	<i>70.0</i> mph

LOS and Performance Measures

Operational (LOS)

v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	<i>178</i>	pc/h/ln
S	<i>70.0</i>	mph
D = v _p / S	<i>2.5</i>	pc/mi/ln
LOS	<i>A</i>	

Design (N)

Design (N)

Design LOS	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
S	mph
D = v _p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v _p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
f _p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v _p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	CF Harvey Pkwy SB
Agency or Company		From/To	North of US 70
Date Performed	2017	Jurisdiction	Segment #1S
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	310	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			7
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
	178	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	70.0	x f _p)	
D = v _p / S	2.5	S	
LOS	A	D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	CF Harvey Pkwy SB
Agency or Company		Junction	to US 70 WB
Date Performed	2017	Jurisdiction	Segment #2S
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 2 Acceleration Lane Length, L _A Deceleration Lane Length L _D 1000 Freeway Volume, V _F 310 Ramp Volume, V _R 253 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
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Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	310	0.90	Level	7	0	0.966	1.00	356
Ramp	253	0.90	Level	6	0	0.971	1.00	290
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 356 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	356	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	66	Exhibit 13-8	4800 No
V _R	290	Exhibit 13-10	4200 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	356	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = -24.2 (pc/mi/ln)
 LOS = A (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.324 (Exhibit 13-12)
 S_R = 60.9 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 60.9 mph (Exhibit 13-13)

FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Site Information

Analyst	AECOM	Freeway/Dir of Travel	CF Harvey Pkwy Ext SB
Agency or Company		Junction	Ramp to US 70 WB to ramp to US 70 WB
Date Performed	2017	Jurisdiction	Segment 3S
Analysis Time Period	AM Peak	Analysis Year	2040 Build Alt 1

Project Description R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	7 %
Heavy Veh. Factor	0.966
Volume	61
Flow Rate	70
Vol. to Cap. Ratio	0.04

ISOLATED RAMP V/C RATIO:	0.04
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	CF Harvey Pkwy SB
Agency or Company		From/To	North of US 70
Date Performed	2017	Jurisdiction	Segment #1S
Analysis Time Period	PM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	465	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	%Trucks and Buses, P _T
Peak-Hr Prop. of AADT, K			%RVs, P _R
Peak-Hr Direction Prop, D			General Terrain:
DDHV = AADT x K x D		veh/h	Grade % Length
			Up/Down %
			0.90
			7
			0
			Level
			mi
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width			
Rt-Side Lat. Clearance		f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD		TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS			mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
Design LOS		Design LOS	
v _p = (V or DDHV) / (PHF x N x f _{HV})	267	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	70.0	mph	S
D = v _p / S	3.8	pc/mi/ln	D = v _p / S
LOS	A		pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	CF Harvey Pkwy SB
Agency or Company		Junction	to US 70 WB
Date Performed	2017	Jurisdiction	Segment #2S
Analysis Time Period	PM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 2 Acceleration Lane Length, L _A Deceleration Lane Length L _D 1000 Freeway Volume, V _F 465 Ramp Volume, V _R 381 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	465	0.90	Level	7	0	0.966	1.00	535
Ramp	381	0.90	Level	6	0	0.971	1.00	436
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 535 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	

Capacity Checks

	Actual	Capacity	LOS F?
V _F	535	Exhibit 13-8	4800 No
V _{FO} = V _F - V _R	99	Exhibit 13-8	4800 No
V _R	436	Exhibit 13-10	4200 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	535	Exhibit 13-8	4400:All No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = -22.6 (pc/mi/ln)
 LOS = A (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.337 (Exhibit 13-12)
 S_R = 60.6 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 60.6 mph (Exhibit 13-13)

**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel CF Harvey Pkwy Ext SB
 Junction Ramp to US 70 WB to ramp to US 70 WB
 Jurisdiction Segment 3S
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	7 %
Heavy Veh. Factor	0.966
Volume	77
Flow Rate	89
Vol. to Cap. Ratio	0.05

ISOLATED RAMP V/C RATIO:	0.05
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period AM Peak

Site Information

Freeway/Dir of Travel US 70 CD
 Junction Ramp to US 258/Sussex St
 Jurisdiction Segment 1CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	219
Flow Rate	249
Vol. to Cap. Ratio	0.13

ISOLATED RAMP V/C RATIO:	0.13
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FREEWAY MERGE AND DIVERGE SEGMENTS

RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS

General Information

Analyst AECOM
Agency or Company
Date Performed 2017
Analysis Time Period AM Peak

Site Information

Freeway/Dir of Travel US 70 CD Ramp
Junction Ramp to US 258/Sussex St to ramp to US 70 E
Jurisdiction Segment 2CDE
Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	366
Flow Rate	417
Vol. to Cap. Ratio	0.20

ISOLATED RAMP V/C RATIO:	0.20
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period AM Peak

Site Information

Freeway/Dir of Travel US 70 CD
 Junction Ramp to US 70 EB to ramp from US 70 EB
 Jurisdiction Segment 3CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	215
Flow Rate	245
Vol. to Cap. Ratio	0.12

ISOLATED RAMP V/C RATIO:	0.12
--------------------------	------

**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period AM Peak

Site Information

Freeway/Dir of Travel US 70 CD Ramp
 Junction Ramp to ramp from US 70 Bus
 Jurisdiction Segment 4CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	496
Flow Rate	565
Vol. to Cap. Ratio	0.27

ISOLATED RAMP V/C RATIO:	0.27
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period AM Peak

Site Information

Freeway/Dir of Travel US 70 CD
 Junction Ramp from US 70 EB to ramp to US 70 EB
 Jurisdiction Segment 5CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	581
Flow Rate	662
Vol. to Cap. Ratio	0.32

ISOLATED RAMP V/C RATIO:	0.32
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period AM Peak

Site Information

Freeway/Dir of Travel US 70 CD Ramp
 Junction Ramp to ramp from US 258/Sussex St
 Jurisdiction Segment 6CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	371
Flow Rate	423
Vol. to Cap. Ratio	0.22

ISOLATED RAMP V/C RATIO:	0.22
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel US 70 CD
 Junction Ramp to US 258/Sussex St
 Jurisdiction Segment 1CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	129
Flow Rate	147
Vol. to Cap. Ratio	0.08

ISOLATED RAMP V/C RATIO:	0.08
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel US 70 CD Ramp
 Junction ramp to US 258/Sussex St to ramp to US 70 E
 Jurisdiction Segment 2CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	317
Flow Rate	361
Vol. to Cap. Ratio	0.17

ISOLATED RAMP V/C RATIO:	0.17
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel US 70 CD
 Junction Ramp to US 70 EB to ramp from US 70 EB
 Jurisdiction Segment 3CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	324
Flow Rate	369
Vol. to Cap. Ratio	0.18

ISOLATED RAMP V/C RATIO:	0.18
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel US 70 CD Ramp
 Junction Ramp to ramp from US 70 Bus
 Jurisdiction Segment 4CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	830
Flow Rate	945
Vol. to Cap. Ratio	0.45

ISOLATED RAMP V/C RATIO:	0.45
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel US 70 CD
 Junction Ramp from US 70 EB to ramp to US 70 EB
 Jurisdiction Segment 5CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	45
Capacity (vph)	2100
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	641
Flow Rate	730
Vol. to Cap. Ratio	0.35

ISOLATED RAMP V/C RATIO:	0.35
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**FREEWAY MERGE AND DIVERGE SEGMENTS
RAMP ROADWAY CAPACITY FOR ISOLATED RAMPS**

General Information

Analyst AECOM
 Agency or Company
 Date Performed 2017
 Analysis Time Period PM Peak

Site Information

Freeway/Dir of Travel US 70 CD Ramp
 Junction Ramp to ramp from US 258/Sussex St
 Jurisdiction Segment 6CDE
 Analysis Year 2040 Build Alt 1

Project Description

R-2553 US 70 Kinston Bypass

Inputs

Terrain:	Level
Peak Hour Factor	0.90
Pop. Factor	1
Heavy Veh. PCE	1.5

Lanes	1
Speed (mph)	25
Capacity (vph)	1900
Heavy Veh. %	5 %
Heavy Veh. Factor	0.976
Volume	423
Flow Rate	482
Vol. to Cap. Ratio	0.25

ISOLATED RAMP V/C RATIO:	0.25
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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to US 70 Bus
Date Performed	2017	Jurisdiction	Segment #10E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 SB Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 1 Acceleration Lane Length, L _A Deceleration Lane Length L _D 490 Freeway Volume, V _F 1891 Ramp Volume, V _R 490 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 45.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	---	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1891	0.90	Level	6	0	0.971	1.00	2164
Ramp	490	0.90	Level	6	0	0.971	1.00	561
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation 0 (Exhibit 13-7) V ₁₂ = 2164 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
--	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	
	V _F	2164	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	1603	Exhibit 13-8 4800 No
		V _R	561 Exhibit 13-10 2100 No

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

	Actual	Max Desirable	Violation?
V ₁₂	2164	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 18.5 (pc/mi/ln) LOS = B (Exhibit 13-2)
--	---

Speed Determination

Speed Determination

M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)	D _S = 0.348 (Exhibit 13-12) S _R = 60.2 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 60.2 mph (Exhibit 13-13)
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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	rp to US70Bus to rp to CFHarNB
Date Performed	2017	Jurisdiction	Segment #11E
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 SB Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1340	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0 mph
FFS (measured)	70.0 mph		
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	767 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0 mph	x f _p)	
D = v _p / S	11.0 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	to CF Harvey Pkwy NB
Date Performed	2017	Jurisdiction	Segment #12E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 SB Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N 2 Ramp Number of Lanes, N 2 Acceleration Lane Length, L _A Deceleration Lane Length L _D 1000 Freeway Volume, V _F 1340 Ramp Volume, V _R 572 Freeway Free-Flow Speed, S _{FF} 70.0 Ramp Free-Flow Speed, S _{FR} 60.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
--	--	--

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	1340	0.90	Level	6	0	0.971	1.00	1534
Ramp	572	0.90	Level	7	0	0.966	1.00	658
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$
 (Equation 13-6 or 13-7)
 L_{EQ} =
 P_{FM} = using Equation (Exhibit 13-6)
 V₁₂ = pc/h
 V₃ or V_{av34} pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v₁₂

$V_{12} = V_R + (V_F - V_R)P_{FD}$
 (Equation 13-12 or 13-13)
 L_{EQ} =
 P_{FD} = 1.000 using Equation 0 (Exhibit 13-7)
 V₁₂ = 1534 pc/h
 V₃ or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
 Is V₃ or V_{av34} > 2,700 pc/h? Yes No
 Is V₃ or V_{av34} > 1.5 * V₁₂/2 Yes No
 If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity	LOS F?
V _{FO}		Exhibit 13-8	
	V _F	1534	Exhibit 13-8 4800 No
	V _{FO} = V _F - V _R	876	Exhibit 13-8 4800 No
		V _R	658 Exhibit 13-10 4400 No

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
V _{R12}		Exhibit 13-8	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
V ₁₂	1534	Exhibit 13-8 4400:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
 D_R = (pc/mi/ln)
 LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$
 D_R = -14.1 (pc/mi/ln)
 LOS = A (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)
 S_R = mph (Exhibit 13-11)
 S₀ = mph (Exhibit 13-11)
 S = mph (Exhibit 13-13)

Speed Determination

D_S = 0.162 (Exhibit 13-12)
 S_R = 65.5 mph (Exhibit 13-12)
 S₀ = N/A mph (Exhibit 13-12)
 S = 65.5 mph (Exhibit 13-13)

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Highway/Direction of Travel	US 70 EB
Agency or Company		From/To	rp to CFHarNB to rp fm CFHarSB
Date Performed	2017	Jurisdiction	Segment #13E
Analysis Time Period	AM Peak	Analysis Year	2040 Build
Project Description R-2553 Kinston Bypass - Alt 1 SB Build Conditions			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	768	veh/h	Peak-Hour Factor, PHF 0.90
AADT		veh/day	%Trucks and Buses, P _T 6
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	70.0 mph
FFS (measured)	70.0 mph		
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	439 pc/h/ln	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0 mph	x f _p)	
D = v _p / S	6.3 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	AECOM	Freeway/Dir of Travel	US 70 EB
Agency or Company		Junction	from CF Harvey Pkwy SB
Date Performed	2017	Jurisdiction	Segment #14E
Analysis Time Period	AM Peak	Analysis Year	2040 Build

Project Description R-2553 Kinston Bypass - Alt 1 SB Build Conditions

Inputs

Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Freeway Number of Lanes, N</td> <td style="width: 50%; text-align: right;">2</td> </tr> <tr> <td>Ramp Number of Lanes, N</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Acceleration Lane Length, L_A</td> <td style="text-align: right;">1500</td> </tr> <tr> <td>Deceleration Lane Length L_D</td> <td></td> </tr> <tr> <td>Freeway Volume, V_F</td> <td style="text-align: right;">768</td> </tr> <tr> <td>Ramp Volume, V_R</td> <td style="text-align: right;">88</td> </tr> <tr> <td>Freeway Free-Flow Speed, S_{FF}</td> <td style="text-align: right;">70.0</td> </tr> <tr> <td>Ramp Free-Flow Speed, S_{FR}</td> <td style="text-align: right;">25.0</td> </tr> </table>	Freeway Number of Lanes, N	2	Ramp Number of Lanes, N	1	Acceleration Lane Length, L _A	1500	Deceleration Lane Length L _D		Freeway Volume, V _F	768	Ramp Volume, V _R	88	Freeway Free-Flow Speed, S _{FF}	70.0	Ramp Free-Flow Speed, S _{FR}	25.0	Downstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{down} = ft V _D = veh/h
Freeway Number of Lanes, N	2																	
Ramp Number of Lanes, N	1																	
Acceleration Lane Length, L _A	1500																	
Deceleration Lane Length L _D																		
Freeway Volume, V _F	768																	
Ramp Volume, V _R	88																	
Freeway Free-Flow Speed, S _{FF}	70.0																	
Ramp Free-Flow Speed, S _{FR}	25.0																	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	768	0.90	Level	6	0	0.917	1.00	930
Ramp	88	0.90	Level	7	0	0.966	1.00	101
UpStream								
DownStream								

Merge Areas

Diverge Areas

Estimation of v₁₂

Estimation of v₁₂

$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = 1.000 using Equation 0 (Exhibit 13-6) P _{FM} = 0.930 pc/h V ₁₂ = 0 pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = using Equation (Exhibit 13-7) P _{FD} = pc/h V ₁₂ = pc/h (Equation 13-14 or 13-17) V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)
---	--

Capacity Checks

Capacity Checks

	Actual	Capacity	LOS F?		Actual	Capacity	LOS F?
V _{FO}	1031	Exhibit 13-8	No	V _F		Exhibit 13-8	
				V _{FO} = V _F - V _R		Exhibit 13-8	
				V _R		Exhibit 13-10	

Flow Entering Merge Influence Area

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?		Actual	Max Desirable	Violation?
V _{R12}	1031	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8	

Level of Service Determination (if not F)

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 4.1 (pc/mi/ln) LOS = A (Exhibit 13-2)	$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)
---	---

Speed Determination

Speed Determination

M _S = 0.257 (Exhibit 13-11) S _R = 62.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 62.8 mph (Exhibit 13-13)	D _S = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)
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**2040 Build Alternative 1
Synchro Reports**

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R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

401: Jim Sutton Rd & Service Rd
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	10	6	4	4	4	14	4	98	6	17	62	6
Future Volume (vph)	10	6	4	4	4	14	4	98	6	17	62	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1706	0	0	1618	0	1770	1846	0	1770	1837	0
Flt Permitted		0.976			0.992		0.950			0.950		
Satd. Flow (perm)	0	1706	0	0	1618	0	1770	1846	0	1770	1837	0
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		883			854			935			1001	
Travel Time (s)		13.4			12.9			11.6			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	0	0	24	0	4	116	0	19	76	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.6% ICU Level of Service A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

401: Jim Sutton Rd & Service Rd

Alternative 1 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	10	6	4	4	4	14	4	98	6	17	62	6
Future Volume (Veh/h)	10	6	4	4	4	14	4	98	6	17	62	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	7	4	4	4	16	4	109	7	19	69	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											1001	
pX, platoon unblocked												
vC, conflicting volume	246	234	72	235	234	112	76			116		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	246	234	72	235	234	112	76			116		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	98	99	100	99	99	98	100			99		
cM capacity (veh/h)	677	649	979	694	649	930	1523			1473		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	22	24	4	116	19	76						
Volume Left	11	4	4	0	19	0						
Volume Right	4	16	0	7	0	7						
cSH	707	824	1523	1700	1473	1700						
Volume to Capacity	0.03	0.03	0.00	0.07	0.01	0.04						
Queue Length 95th (ft)	2	2	0	0	1	0						
Control Delay (s)	10.3	9.5	7.4	0.0	7.5	0.0						
Lane LOS	B	A	A		A							
Approach Delay (s)	10.3	9.5	0.2		1.5							
Approach LOS	B	A										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			17.6%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

401: Jim Sutton Rd & Service Rd
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	6	4	4	6	6	17	4	62	4	14	98	10
Future Volume (vph)	6	4	4	6	6	17	4	62	4	14	98	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1688	0	0	1636	0	1770	1848	0	1770	1837	0
Flt Permitted		0.977			0.990		0.950			0.950		
Satd. Flow (perm)	0	1688	0	0	1636	0	1770	1848	0	1770	1837	0
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		883			854			935			1001	
Travel Time (s)		13.4			12.9			11.6			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	33	0	4	73	0	16	120	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.4%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

401: Jim Sutton Rd & Service Rd

Alternative 1 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	6	4	4	6	6	17	4	62	4	14	98	10
Future Volume (Veh/h)	6	4	4	6	6	17	4	62	4	14	98	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	4	4	7	7	19	4	69	4	16	109	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											1001	
pX, platoon unblocked												
vC, conflicting volume	246	228	114	226	231	71	120			73		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	246	228	114	226	231	71	120			73		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	99	99	100	99	99	98	100			99		
cM capacity (veh/h)	673	656	927	707	653	980	1468			1527		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	15	33	4	73	16	120						
Volume Left	7	7	4	0	16	0						
Volume Right	4	19	0	4	0	11						
cSH	721	825	1468	1700	1527	1700						
Volume to Capacity	0.02	0.04	0.00	0.04	0.01	0.07						
Queue Length 95th (ft)	2	3	0	0	1	0						
Control Delay (s)	10.1	9.5	7.5	0.0	7.4	0.0						
Lane LOS	B	A	A		A							
Approach Delay (s)	10.1	9.5	0.4		0.9							
Approach LOS	B	A										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			17.4%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	33	148	73	51	290	51
Future Volume (vph)	33	148	73	51	290	51
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200		100	300	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1736	1553	1863	1583	1736	1827
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1553	1863	1583	1736	1827
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		55			55
Link Distance (ft)	999		1001			1313
Travel Time (s)	27.2		12.4			16.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	164	81	57	322	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	18.0	45.0	27.0	18.0	45.0	72.0
Total Split (%)	20.0%	50.0%	30.0%	20.0%	50.0%	80.0%
Maximum Green (s)	11.0	38.0	20.0	11.0	38.0	65.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	9.9	36.6	43.4	55.5	24.5	73.9
Actuated g/C Ratio	0.11	0.41	0.48	0.62	0.27	0.82
v/c Ratio	0.19	0.26	0.09	0.06	0.68	0.04
Control Delay	38.5	16.4	17.2	8.9	32.8	2.3

R-2553 Kinston Bypass 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	16.4	17.2	8.9	32.8	2.3
LOS	D	B	B	A	C	A
Approach Delay	20.5		13.8			28.2
Approach LOS	C		B			C
Queue Length 50th (ft)	20	58	25	12	124	5
Queue Length 95th (ft)	48	77	64	34	167	13
Internal Link Dist (ft)	919		921			1233
Turn Bay Length (ft)		200		100	300	
Base Capacity (vph)	250	733	898	946	771	1500
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.22	0.09	0.06	0.42	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 48 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 23.3 Intersection LOS: C
 Intersection Capacity Utilization 36.9% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps



R-2553 Kinston Bypass 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	158	54	30	220	78
Future Volume (vph)	46	158	54	30	220	78
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200		100	300	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1736	1553	1863	1583	1736	1827
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1553	1863	1583	1736	1827
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		55			55
Link Distance (ft)	999		1001			1313
Travel Time (s)	27.2		12.4			16.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	176	60	33	244	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	20.0	42.0	28.0	20.0	42.0	70.0
Total Split (%)	22.2%	46.7%	31.1%	22.2%	46.7%	77.8%
Maximum Green (s)	13.0	35.0	21.0	13.0	35.0	63.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	10.4	32.8	47.2	62.7	20.1	73.4
Actuated g/C Ratio	0.12	0.36	0.52	0.70	0.22	0.82
v/c Ratio	0.26	0.31	0.06	0.03	0.63	0.06
Control Delay	38.9	19.6	14.7	6.7	33.2	2.3

R-2553 Kinston Bypass 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak

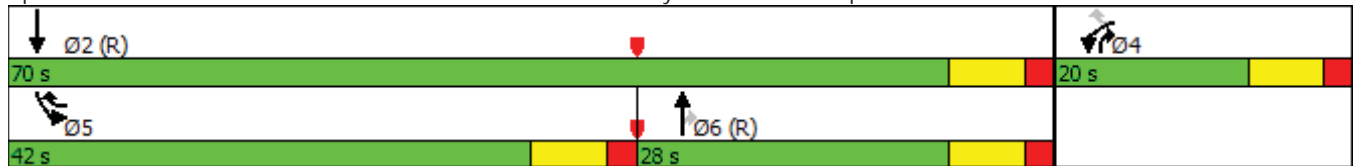


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	19.6	14.7	6.7	33.2	2.3
LOS	D	B	B	A	C	A
Approach Delay	24.0		11.9			25.1
Approach LOS	C		B			C
Queue Length 50th (ft)	27	67	17	6	109	8
Queue Length 95th (ft)	60	94	46	19	156	16
Internal Link Dist (ft)	919		921			1233
Turn Bay Length (ft)		200		100	300	
Base Capacity (vph)	289	856	977	1182	713	1489
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.21	0.06	0.03	0.34	0.06

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	34 (38%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	22.8
Intersection LOS:	C
Intersection Capacity Utilization:	33.0%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps



R-2553 Kinston Bypass 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings

Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	30	220	175	46	158	311
Future Volume (vph)	30	220	175	46	158	311
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	325		100	200	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1553	1827	1553	1736	1827
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		55			55
Link Distance (ft)	987		1313			996
Travel Time (s)	15.0		16.3			12.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	244	194	51	176	346
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	20.0	33.0	37.0	20.0	33.0	70.0
Total Split (%)	22.2%	36.7%	41.1%	22.2%	36.7%	77.8%
Maximum Green (s)	13.0	26.0	30.0	13.0	26.0	63.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	9.7	30.7	49.3	61.2	18.8	74.1
Actuated g/C Ratio	0.11	0.34	0.55	0.68	0.21	0.82
v/c Ratio	0.18	0.46	0.19	0.05	0.49	0.23
Control Delay	38.4	24.4	10.5	3.9	35.4	2.9

R-2553 Kinston Bypass 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak

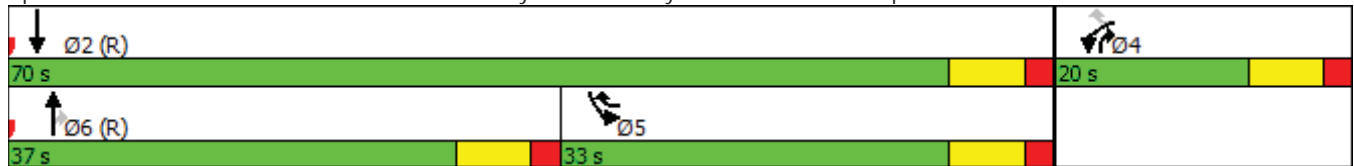


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	24.4	10.5	3.9	35.4	2.9
LOS	D	C	B	A	D	A
Approach Delay	26.1		9.1			13.9
Approach LOS	C		A			B
Queue Length 50th (ft)	18	103	47	5	89	39
Queue Length 95th (ft)	44	147	95	15	142	71
Internal Link Dist (ft)	907		1233			916
Turn Bay Length (ft)		325		100	200	
Base Capacity (vph)	289	575	1000	1051	540	1503
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.42	0.19	0.05	0.33	0.23

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 16.0 Intersection LOS: B
 Intersection Capacity Utilization 38.8% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps



R-2553 Kinston Bypass 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings

Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	290	179	33	148	247
Future Volume (vph)	51	290	179	33	148	247
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	325		100	200	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1553	1827	1553	1736	1827
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		55			55
Link Distance (ft)	987		1313			996
Travel Time (s)	15.0		16.3			12.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	322	199	37	164	274
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	19.0	36.0	35.0	19.0	36.0	71.0
Total Split (%)	21.1%	40.0%	38.9%	21.1%	40.0%	78.9%
Maximum Green (s)	12.0	29.0	28.0	12.0	29.0	64.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	10.7	36.0	44.0	56.8	23.2	73.1
Actuated g/C Ratio	0.12	0.40	0.49	0.63	0.26	0.81
v/c Ratio	0.28	0.52	0.22	0.04	0.37	0.18
Control Delay	39.1	22.0	11.4	6.2	29.0	3.1

R-2553 Kinston Bypass 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak

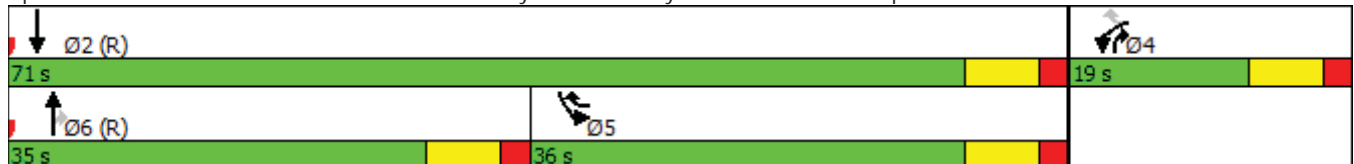


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	22.0	11.4	6.2	29.0	3.1
LOS	D	C	B	A	C	A
Approach Delay	24.5		10.6			12.8
Approach LOS	C		B			B
Queue Length 50th (ft)	30	128	32	5	76	32
Queue Length 95th (ft)	64	168	99	16	122	62
Internal Link Dist (ft)	907		1233			916
Turn Bay Length (ft)		325		100	200	
Base Capacity (vph)	270	657	892	951	597	1484
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.49	0.22	0.04	0.27	0.18

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	88 (98%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.52
Intersection Signal Delay:	16.5
Intersection LOS:	B
Intersection Capacity Utilization	38.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

404: Willie Measley Rd & Washington St/Service Rd
 Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	4	8	204	28	5	4	170	128	39	8	188	5
Future Volume (vph)	4	8	204	28	5	4	170	128	39	8	188	5
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1623	0	0	1772	0	1736	1763	0	1770	1855	0
Flt Permitted		0.999			0.964		0.950			0.950		
Satd. Flow (perm)	0	1623	0	0	1772	0	1736	1763	0	1770	1855	0
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		970			951			996			1084	
Travel Time (s)		14.7			14.4			12.3			13.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	0	0	41	0	189	185	0	9	215	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	4	8	204	28	5	4	170	128	39	8	188	5
Future Volume (Veh/h)	4	8	204	28	5	4	170	128	39	8	188	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	9	227	31	6	4	189	142	43	9	209	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								996				
pX, platoon unblocked												
vC, conflicting volume	757	793	212	1000	774	164	215			185		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	757	793	212	1000	774	164	215			185		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	97	73	78	98	100	86			99		
cM capacity (veh/h)	282	274	828	139	281	881	1343			1390		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	240	41	189	185	9	215						
Volume Left	4	31	189	0	9	0						
Volume Right	227	4	0	43	0	6						
cSH	747	165	1343	1700	1390	1700						
Volume to Capacity	0.32	0.25	0.14	0.11	0.01	0.13						
Queue Length 95th (ft)	35	23	12	0	0	0						
Control Delay (s)	12.1	33.8	8.1	0.0	7.6	0.0						
Lane LOS	B	D	A		A							
Approach Delay (s)	12.1	33.8	4.1		0.3							
Approach LOS	B	D										
Intersection Summary												
Average Delay			6.7									
Intersection Capacity Utilization			49.0%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

404: Willie Measley Rd & Washington St/Service Rd
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	5	5	170	39	8	8	204	187	28	4	128	4
Future Volume (vph)	5	5	170	39	8	8	204	187	28	4	128	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1625	0	0	1763	0	1736	1792	0	1770	1855	0
Flt Permitted		0.999			0.966		0.950			0.950		
Satd. Flow (perm)	0	1625	0	0	1763	0	1736	1792	0	1770	1855	0
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		970			951			996			1084	
Travel Time (s)		14.7			14.4			12.3			13.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	201	0	0	61	0	227	239	0	4	146	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary



















Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.0%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	5	5	170	39	8	8	204	187	28	4	128	4
Future Volume (Veh/h)	5	5	170	39	8	8	204	187	28	4	128	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	6	189	43	9	9	227	208	31	4	142	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								996				
pX, platoon unblocked												
vC, conflicting volume	828	845	144	1020	832	224	146			239		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	828	845	144	1020	832	224	146			239		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	98	79	71	96	99	84			100		
cM capacity (veh/h)	245	251	903	146	256	816	1424			1328		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	201	61	227	239	4	146						
Volume Left	6	43	227	0	4	0						
Volume Right	189	9	0	31	0	4						
cSH	780	179	1424	1700	1328	1700						
Volume to Capacity	0.26	0.34	0.16	0.14	0.00	0.09						
Queue Length 95th (ft)	26	35	14	0	0	0						
Control Delay (s)	11.2	35.1	8.0	0.0	7.7	0.0						
Lane LOS	B	E	A		A							
Approach Delay (s)	11.2	35.1	3.9		0.2							
Approach LOS	B	E										
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization			46.0%		ICU Level of Service					A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

405: Barwick Station Rd & Service Rd/Sanderson Way
Alternative 1 AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	9	7	7	7	220	7	33	8	145	18	6
Future Volume (vph)	12	9	7	7	7	220	7	33	8	145	18	6
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1693	0	0	1562	0	1770	1809	0	1770	1790	0
Flt Permitted		0.979			0.998		0.950			0.950		
Satd. Flow (perm)	0	1693	0	0	1562	0	1770	1809	0	1770	1790	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		842			950			832			1210	
Travel Time (s)		10.4			11.8			10.3			15.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	260	0	8	46	0	161	27	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.8%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	12	9	7	7	7	220	7	33	8	145	18	6
Future Volume (Veh/h)	12	9	7	7	7	220	7	33	8	145	18	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	10	8	8	8	244	8	37	9	161	20	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	646	408	24	412	406	42	27			46		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646	408	24	412	406	42	27			46		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	95	98	99	98	98	76	99			90		
cM capacity (veh/h)	261	470	1042	486	471	1018	1587			1562		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	31	260	8	46	161	27						
Volume Left	13	8	8	0	161	0						
Volume Right	8	244	0	9	0	7						
cSH	394	952	1587	1700	1562	1700						
Volume to Capacity	0.08	0.27	0.01	0.03	0.10	0.02						
Queue Length 95th (ft)	6	28	0	0	9	0						
Control Delay (s)	14.9	10.2	7.3	0.0	7.6	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	14.9	10.2	1.1		6.5							
Approach LOS	B	B										
Intersection Summary												
Average Delay			8.2									
Intersection Capacity Utilization			35.8%	ICU Level of Service		A						
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

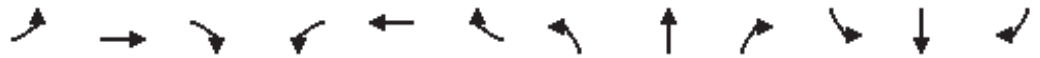
405: Barwick Station Rd & Service Rd/Sanderson Way
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	6	7	7	8	9	145	7	18	7	220	33	12
Future Volume (vph)	6	7	7	8	9	145	7	18	7	220	33	12
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1683	0	0	1572	0	1770	1783	0	1770	1790	0
Flt Permitted		0.985			0.998		0.950			0.950		
Satd. Flow (perm)	0	1683	0	0	1572	0	1770	1783	0	1770	1790	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		842			950			832			1210	
Travel Time (s)		10.4			11.8			10.3			15.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	0	0	180	0	8	28	0	244	50	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.7%
Analysis Period (min)	15
	ICU Level of Service A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	6	7	7	8	9	145	7	18	7	220	33	12
Future Volume (Veh/h)	6	7	7	8	9	145	7	18	7	220	33	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	8	8	9	10	161	8	20	8	244	37	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											1210	
pX, platoon unblocked												
vC, conflicting volume	734	576	44	577	578	24	50			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	734	576	44	577	578	24	50			28		
tC, single (s)	7.2	6.6	6.3	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	97	98	99	98	97	85	99			85		
cM capacity (veh/h)	241	356	1015	361	355	1041	1557			1585		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	23	180	8	28	244	50						
Volume Left	7	9	8	0	244	0						
Volume Right	8	161	0	8	0	13						
cSH	387	866	1557	1700	1585	1700						
Volume to Capacity	0.06	0.21	0.01	0.02	0.15	0.03						
Queue Length 95th (ft)	5	19	0	0	14	0						
Control Delay (s)	14.9	10.2	7.3	0.0	7.7	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	14.9	10.2	1.6		6.4							
Approach LOS	B	B										
Intersection Summary												
Average Delay			7.7									
Intersection Capacity Utilization			35.7%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	54	98	86	168	137	123
Future Volume (vph)	54	98	86	168	137	123
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	175		100	175	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		55			55
Link Distance (ft)	1083		1210			1234
Travel Time (s)	29.5		15.0			15.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	109	96	187	152	137
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	25.0	33.0	32.0	25.0	33.0	65.0
Total Split (%)	27.8%	36.7%	35.6%	27.8%	36.7%	72.2%
Maximum Green (s)	18.0	26.0	25.0	18.0	26.0	58.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	11.2	31.2	48.8	65.0	15.0	68.8
Actuated g/C Ratio	0.12	0.35	0.54	0.72	0.17	0.76
v/c Ratio	0.27	0.20	0.10	0.16	0.52	0.10
Control Delay	38.2	19.9	12.0	4.9	28.6	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

R-2553 Kinston Bypass Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	38.2	19.9	12.0	4.9	28.6	2.1
LOS	D	B	B	A	C	A
Approach Delay	26.4		7.3			16.0
Approach LOS	C		A			B
Queue Length 50th (ft)	32	43	25	28	76	9
Queue Length 95th (ft)	66	69	60	61	124	23
Internal Link Dist (ft)	1003		1130			1154
Turn Bay Length (ft)		175		100	175	
Base Capacity (vph)	393	564	1009	1142	550	1424
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.10	0.16	0.28	0.10

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 22 (24%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 15.1 Intersection LOS: B
 Intersection Capacity Utilization 28.4% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 406: Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps



R-2553 Kinston Bypass Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	131	72	105	83	185
Future Volume (vph)	69	131	72	105	83	185
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	175		100	175	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		55		55	
Link Distance (ft)	1083		1210		1234	
Travel Time (s)	29.5		15.0		15.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	146	80	117	92	206
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	16		16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	28.0	29.0	33.0	28.0	29.0	62.0
Total Split (%)	31.1%	32.2%	36.7%	31.1%	32.2%	68.9%
Maximum Green (s)	21.0	22.0	26.0	21.0	22.0	55.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	11.5	30.4	49.6	66.1	13.9	68.5
Actuated g/C Ratio	0.13	0.34	0.55	0.73	0.15	0.76
v/c Ratio	0.34	0.27	0.08	0.10	0.34	0.15
Control Delay	39.3	21.9	11.4	4.1	22.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

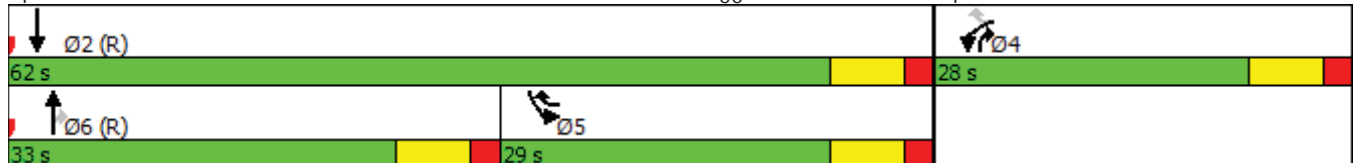
R-2553 Kinston Bypass Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	39.3	21.9	11.4	4.1	22.7	1.3
LOS	D	C	B	A	C	A
Approach Delay	27.9		7.1			7.9
Approach LOS	C		A			A
Queue Length 50th (ft)	41	60	20	16	48	9
Queue Length 95th (ft)	79	94	49	36	87	17
Internal Link Dist (ft)	1003		1130			1154
Turn Bay Length (ft)		175		100	175	
Base Capacity (vph)	452	534	1026	1162	472	1417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.27	0.08	0.10	0.19	0.15

Intersection Summary
 Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 32 (36%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 13.9 Intersection LOS: B
 Intersection Capacity Utilization 28.1% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 406: Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps



R-2553 Kinston Byp~~407~~: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings

Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	105	83	115	69	131	155
Future Volume (vph)	105	83	115	69	131	155
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150		100	175	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		55			55
Link Distance (ft)	1104		1234			1203
Travel Time (s)	16.7		15.3			14.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	117	92	128	77	146	172
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	27.0	31.0	32.0	27.0	31.0	63.0
Total Split (%)	30.0%	34.4%	35.6%	30.0%	34.4%	70.0%
Maximum Green (s)	20.0	24.0	25.0	20.0	24.0	56.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	13.3	33.0	47.0	65.3	14.7	66.7
Actuated g/C Ratio	0.15	0.37	0.52	0.73	0.16	0.74
v/c Ratio	0.45	0.16	0.13	0.07	0.51	0.12
Control Delay	39.8	17.8	9.5	3.2	39.8	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

R-2553 Kinston Byp407: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings

Alternative 1 AM Peak

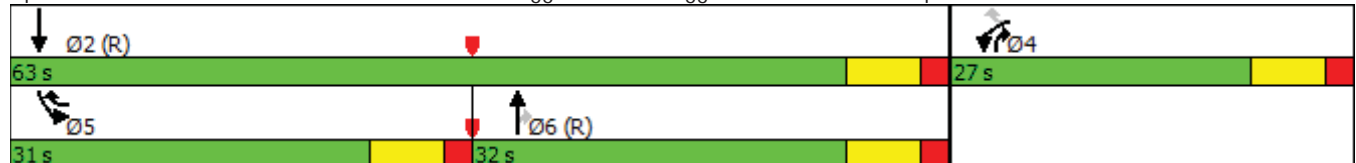


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	39.8	17.8	9.5	3.2	39.8	4.0
LOS	D	B	A	A	D	A
Approach Delay	30.1		7.1			20.4
Approach LOS	C		A			C
Queue Length 50th (ft)	62	35	16	5	77	23
Queue Length 95th (ft)	108	56	90	40	127	49
Internal Link Dist (ft)	1024		1154			1123
Turn Bay Length (ft)		150		100	175	
Base Capacity (vph)	432	778	973	1302	511	1381
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.12	0.13	0.06	0.29	0.12

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	19.5
Intersection LOS:	B
Intersection Capacity Utilization:	28.1%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 407: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps



R-2553 Kinston Byp~~407~~: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings

Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	168	137	149	54	98	100
Future Volume (vph)	168	137	149	54	98	100
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150		100	175	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1583	1863	1583	1770	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	45		55			55
Link Distance (ft)	1104		1234			1203
Travel Time (s)	16.7		15.3			14.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	187	152	166	60	109	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	4	5	6	4	5	2
Permitted Phases		4		6		
Detector Phase	4	5	6	4	5	2
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	33.0	25.0	32.0	33.0	25.0	57.0
Total Split (%)	36.7%	27.8%	35.6%	36.7%	27.8%	63.3%
Maximum Green (s)	26.0	18.0	25.0	26.0	18.0	50.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effct Green (s)	16.8	34.7	45.3	67.1	12.9	63.2
Actuated g/C Ratio	0.19	0.39	0.50	0.75	0.14	0.70
v/c Ratio	0.57	0.25	0.18	0.05	0.43	0.08
Control Delay	39.4	18.2	11.0	1.5	39.7	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0

R-2553 Kinston Byp~~407~~: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings

Alternative 1 PM Peak

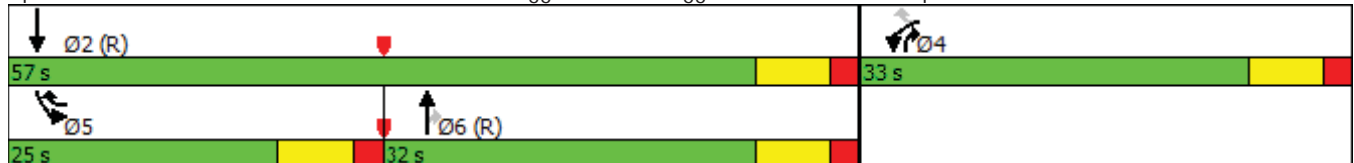


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Delay	39.4	18.2	11.0	1.5	39.7	5.2
LOS	D	B	B	A	D	A
Approach Delay	29.9		8.4			22.3
Approach LOS	C		A			C
Queue Length 50th (ft)	98	58	17	3	57	17
Queue Length 95th (ft)	152	83	97	6	103	41
Internal Link Dist (ft)	1024		1154			1123
Turn Bay Length (ft)		150		100	175	
Base Capacity (vph)	550	735	937	1377	393	1308
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.21	0.18	0.04	0.28	0.08

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	21.6
Intersection LOS:	C
Intersection Capacity Utilization:	39.3%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 407: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

408: Albert Sugg Rd & Service Rd
 Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	4	4	24	211	6	4	32	32	135	4	50	5
Future Volume (vph)	4	4	24	211	6	4	32	32	135	4	50	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1659	0	0	1774	0	1770	1637	0	1770	1835	0
Flt Permitted		0.994			0.954		0.950			0.950		
Satd. Flow (perm)	0	1659	0	0	1774	0	1770	1637	0	1770	1835	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		789			856			1203			959	
Travel Time (s)		9.8			10.6			14.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	245	0	36	186	0	4	62	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.6%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

408: Albert Sugg Rd & Service Rd
 Alternative 1 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	4	4	24	211	6	4	32	32	135	4	50	5
Future Volume (Veh/h)	4	4	24	211	6	4	32	32	135	4	50	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	27	234	7	4	36	36	150	4	56	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1203				
pX, platoon unblocked												
vC, conflicting volume	182	325	59	276	253	111	62			186		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	182	325	59	276	253	111	62			186		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	97	64	99	100	98			100		
cM capacity (veh/h)	754	577	1007	642	633	942	1541			1388		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	35	245	36	186	4	62						
Volume Left	4	234	36	0	4	0						
Volume Right	27	4	0	150	0	6						
cSH	896	645	1541	1700	1388	1700						
Volume to Capacity	0.04	0.38	0.02	0.11	0.00	0.04						
Queue Length 95th (ft)	3	44	2	0	0	0						
Control Delay (s)	9.2	14.0	7.4	0.0	7.6	0.0						
Lane LOS	A	B	A		A							
Approach Delay (s)	9.2	14.0	1.2		0.5							
Approach LOS	A	B										
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization			35.6%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

408: Albert Sugg Rd & Service Rd
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	6	32	135	4	4	24	50	211	4	32	4
Future Volume (vph)	5	6	32	135	4	4	24	50	211	4	32	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1668	0	0	1774	0	1770	1637	0	1770	1835	0
Flt Permitted		0.994			0.955		0.950			0.950		
Satd. Flow (perm)	0	1668	0	0	1774	0	1770	1637	0	1770	1835	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		789			856			1203			959	
Travel Time (s)		9.8			10.6			14.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	158	0	27	290	0	4	40	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.9%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

408: Albert Sugg Rd & Service Rd
 Alternative 1 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	5	6	32	135	4	4	24	50	211	4	32	4
Future Volume (Veh/h)	5	6	32	135	4	4	24	50	211	4	32	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	7	36	150	4	4	27	56	234	4	36	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1203				
pX, platoon unblocked	1.00	1.00		1.00	1.00	1.00				1.00		
vC, conflicting volume	162	390	38	310	275	173	40			290		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	158	386	38	307	271	169	40			286		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	97	75	99	100	98			100		
cM capacity (veh/h)	786	535	1034	606	621	873	1570			1272		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	49	158	27	290	4	40						
Volume Left	6	150	27	0	4	0						
Volume Right	36	4	0	234	0	4						
cSH	882	611	1570	1700	1272	1700						
Volume to Capacity	0.06	0.26	0.02	0.17	0.00	0.02						
Queue Length 95th (ft)	4	26	1	0	0	0						
Control Delay (s)	9.3	12.9	7.3	0.0	7.8	0.0						
Lane LOS	A	B	A		A							
Approach Delay (s)	9.3	12.9	0.6		0.7							
Approach LOS	A	B										
Intersection Summary												
Average Delay			4.8									
Intersection Capacity Utilization			36.9%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

409: Sanderson Farms/Industrial Dr & Sanderson Way
Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	79	74	67	180	97	38
Future Volume (vph)	79	74	67	180	97	38
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1703	1524	0	1769	1724	0
Flt Permitted	0.950			0.987		
Satd. Flow (perm)	1703	1524	0	1769	1724	0
Link Speed (mph)	45			25	45	
Link Distance (ft)	1120			749	948	
Travel Time (s)	17.0			20.4	14.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	82	0	274	150	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.0%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

409: Sanderson Farms/Industrial Dr & Sanderson Way
 Alternative 1 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	79	74	67	180	97	38
Future Volume (vph)	79	74	67	180	97	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	88	82	74	200	108	42

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total (vph)	88	82	274	150
Volume Left (vph)	88	0	74	0
Volume Right (vph)	0	82	0	42
Hadj (s)	0.60	-0.60	0.16	-0.07
Departure Headway (s)	6.1	4.9	4.7	4.6
Degree Utilization, x	0.15	0.11	0.36	0.19
Capacity (veh/h)	551	681	741	737
Control Delay (s)	9.0	7.3	10.3	8.7
Approach Delay (s)	8.2		10.3	8.7
Approach LOS	A		B	A

Intersection Summary			
Delay		9.3	
Level of Service		A	
Intersection Capacity Utilization		35.0%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

409: Sanderson Farms/Industrial Dr & Sanderson Way
Alternative 1 PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	67	74	97	180	79
Future Volume (vph)	38	67	74	97	180	79
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	1703	1524	0	1755	1719	0
Flt Permitted	0.950			0.979		
Satd. Flow (perm)	1703	1524	0	1755	1719	0
Link Speed (mph)	45			25	45	
Link Distance (ft)	1120			749	948	
Travel Time (s)	17.0			20.4	14.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	74	0	190	288	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.8%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

409: Sanderson Farms/Industrial Dr & Sanderson Way
 Alternative 1 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	38	67	74	97	180	79
Future Volume (vph)	38	67	74	97	180	79
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	42	74	82	108	200	88

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total (vph)	42	74	190	288
Volume Left (vph)	42	0	82	0
Volume Right (vph)	0	74	0	88
Hadj (s)	0.60	-0.60	0.19	-0.08
Departure Headway (s)	6.2	5.0	4.7	4.4
Degree Utilization, x	0.07	0.10	0.25	0.35
Capacity (veh/h)	538	662	735	796
Control Delay (s)	8.5	7.4	9.3	9.7
Approach Delay (s)	7.8		9.3	9.7
Approach LOS	A		A	A

Intersection Summary			
Delay		9.2	
Level of Service		A	
Intersection Capacity Utilization		36.8%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

410: Shopping Center Dr & US 70 EB Ramps
 Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	158	79	0	0	0	0	41	4	4	4	0
Future Volume (vph)	8	158	79	0	0	0	0	41	4	4	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1726	0	0	0	0	0	1790	0	0	1766	0
Flt Permitted		0.998									0.976	
Satd. Flow (perm)	0	1726	0	0	0	0	0	1790	0	0	1766	0
Link Speed (mph)		45			30			25			25	
Link Distance (ft)		1256			873			1303			149	
Travel Time (s)		19.0			19.8			35.5			4.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	273	0	0	0	0	0	50	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.0%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

410: Shopping Center Dr & US 70 EB Ramps

Alternative 1 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Volume (veh/h)	8	158	79	0	0	0	0	41	4	4	4	0
Future Volume (Veh/h)	8	158	79	0	0	0	0	41	4	4	4	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	176	88	0	0	0	0	46	4	4	4	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			264			240	238	220	265	282	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			264			240	238	220	265	282	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	93	100	99	99	100
cM capacity (veh/h)	1604			1300			701	654	812	639	618	1076
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	273	50	8									
Volume Left	9	0	4									
Volume Right	88	4	0									
cSH	1604	664	628									
Volume to Capacity	0.01	0.08	0.01									
Queue Length 95th (ft)	0	6	1									
Control Delay (s)	0.3	10.9	10.8									
Lane LOS	A	B	B									
Approach Delay (s)	0.3	10.9	10.8									
Approach LOS		B	B									
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			24.0%		ICU Level of Service				A			
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

410: Shopping Center Dr & US 70 EB Ramps
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	80	55	0	0	0	0	79	4	4	4	0
Future Volume (vph)	4	80	55	0	0	0	0	79	4	4	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1712	0	0	0	0	0	1799	0	0	1766	0
Flt Permitted		0.999									0.976	
Satd. Flow (perm)	0	1712	0	0	0	0	0	1799	0	0	1766	0
Link Speed (mph)		45			30			25			25	
Link Distance (ft)		1256			873			1303			149	
Travel Time (s)		19.0			19.8			35.5			4.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	154	0	0	0	0	0	92	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.9%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

410: Shopping Center Dr & US 70 EB Ramps

Alternative 1 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Volume (veh/h)	4	80	55	0	0	0	0	79	4	4	4	0
Future Volume (Veh/h)	4	80	55	0	0	0	0	79	4	4	4	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	89	61	0	0	0	0	88	4	4	4	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			150			130	128	120	176	158	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			150			130	128	120	176	158	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	88	100	99	99	100
cM capacity (veh/h)	1604			1431			831	756	924	706	727	1076

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	154	92	8
Volume Left	4	0	4
Volume Right	61	4	0
cSH	1604	762	716
Volume to Capacity	0.00	0.12	0.01
Queue Length 95th (ft)	0	10	1
Control Delay (s)	0.2	10.4	10.1
Lane LOS	A	B	B
Approach Delay (s)	0.2	10.4	10.1
Approach LOS		B	B

Intersection Summary		
Average Delay		4.2
Intersection Capacity Utilization	18.9%	ICU Level of Service
Analysis Period (min)		15
		A

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

411: US 70 WB Ramps & Pinelawn Cemetery Dr
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↑			↑	
Traffic Volume (vph)	0	0	0	4	94	4	41	8	0	0	4	4
Future Volume (vph)	0	0	0	4	94	4	41	8	0	0	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	0	0	0	1797	0	0	1737	0	0	1736	0
Flt Permitted					0.998			0.960				
Satd. Flow (perm)	0	0	0	0	1797	0	0	1737	0	0	1736	0
Link Speed (mph)		30			45			25			25	
Link Distance (ft)		1245			898			149			1208	
Travel Time (s)		28.3			13.6			4.1			32.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	112	0	0	55	0	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	21.4%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

411: US 70 WB Ramps & Pinelawn Cemetery Dr

Alternative 1 AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	4	94	4	41	8	0	0	4	4
Future Volume (Veh/h)	0	0	0	4	94	4	41	8	0	0	4	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	4	104	4	46	9	0	0	4	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	108			0			120	116	0	118	114	106
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	108			0			120	116	0	118	114	106
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			95	99	100	100	99	100
cM capacity (veh/h)	1483			1604			840	767	1076	848	774	948
Direction, Lane #												
	WB 1	NB 1	SB 1									
Volume Total	112	55	8									
Volume Left	4	46	0									
Volume Right	4	0	4									
cSH	1604	827	852									
Volume to Capacity	0.00	0.07	0.01									
Queue Length 95th (ft)	0	5	1									
Control Delay (s)	0.3	9.7	9.3									
Lane LOS	A	A	A									
Approach Delay (s)	0.3	9.7	9.3									
Approach LOS		A	A									
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			21.4%	ICU Level of Service						A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

411: US 70 WB Ramps & Pinelawn Cemetery Dr
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↕			↕	
Traffic Volume (vph)	0	0	0	4	158	4	79	4	0	0	4	8
Future Volume (vph)	0	0	0	4	158	4	79	4	0	0	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	0	0	0	1802	0	0	1726	0	0	1690	0
Flt Permitted					0.999			0.954				
Satd. Flow (perm)	0	0	0	0	1802	0	0	1726	0	0	1690	0
Link Speed (mph)		30			45			25			25	
Link Distance (ft)		1245			898			149			1208	
Travel Time (s)		28.3			13.6			4.1			32.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	184	0	0	92	0	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.7%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

411: US 70 WB Ramps & Pinelawn Cemetery Dr

Alternative 1 PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	4	158	4	79	4	0	0	4	8
Future Volume (Veh/h)	0	0	0	4	158	4	79	4	0	0	4	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	4	176	4	88	4	0	0	4	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	180			0			197	188	0	188	186	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	180			0			197	188	0	188	186	178
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			88	99	100	100	99	99
cM capacity (veh/h)	1396			1604			743	700	1076	768	707	865
Direction, Lane #												
	WB 1	NB 1	SB 1									
Volume Total	184	92	13									
Volume Left	4	88	0									
Volume Right	4	0	9									
cSH	1604	741	809									
Volume to Capacity	0.00	0.12	0.02									
Queue Length 95th (ft)	0	11	1									
Control Delay (s)	0.2	10.5	9.5									
Lane LOS	A	B	A									
Approach Delay (s)	0.2	10.5	9.5									
Approach LOS		B	A									
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization		26.7%		ICU Level of Service						A		
Analysis Period (min)			15									

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

412: Sussex St & US 70 EB Ramps
 Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	69	89	0	55	4	0
Future Volume (vph)	69	89	0	55	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1637	0	0	1810	1810	0
Flt Permitted	0.979					
Satd. Flow (perm)	1637	0	0	1810	1810	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	873			906	168	
Travel Time (s)	13.2			13.7	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	176	0	0	61	4	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.3%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

412: Sussex St & US 70 EB Ramps
 Alternative 1 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	89	0	55	4	0
Future Volume (Veh/h)	69	89	0	55	4	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	77	99	0	61	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	91	100			
cM capacity (veh/h)	933	1071	1598			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	176	61	4			
Volume Left	77	0	0			
Volume Right	99	0	0			
cSH	1006	1700	1700			
Volume to Capacity	0.17	0.04	0.00			
Queue Length 95th (ft)	16	0	0			
Control Delay (s)	9.3	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.3	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization		19.3%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

412: Sussex St & US 70 EB Ramps
 Alternative 1 PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	41	0	89	4	0
Future Volume (vph)	39	41	0	89	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1642	0	0	1810	1810	0
Flt Permitted	0.976					
Satd. Flow (perm)	1642	0	0	1810	1810	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	873			906	168	
Travel Time (s)	13.2			13.7	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	89	0	0	99	4	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.0%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

412: Sussex St & US 70 EB Ramps
 Alternative 1 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	39	41	0	89	4	0
Future Volume (Veh/h)	39	41	0	89	4	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	43	46	0	99	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	103	4	4			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	103	4	4			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	96	100			
cM capacity (veh/h)	888	1071	1598			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	89	99	4			
Volume Left	43	0	0			
Volume Right	46	0	0			
cSH	974	1700	1700			
Volume to Capacity	0.09	0.06	0.00			
Queue Length 95th (ft)	8	0	0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.1	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			16.0%	ICU Level of Service	A	
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

413: US 70 WB Ramps & Hill Farm Rd
 Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕	↕	
Traffic Volume (vph)	0	0	55	69	4	39
Future Volume (vph)	0	0	55	69	4	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	0	0	1770	1600	0
Flt Permitted				0.978		
Satd. Flow (perm)	0	0	0	1770	1600	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	898			168	1618	
Travel Time (s)	20.4			2.5	24.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	138	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.7%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

413: US 70 WB Ramps & Hill Farm Rd

Alternative 1 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕	↕	
Traffic Volume (veh/h)	0	0	55	69	4	39
Future Volume (Veh/h)	0	0	55	69	4	39
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	61	77	4	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	224	26	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224	26	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	96			
cM capacity (veh/h)	733	1050	1541			
Direction, Lane #						
	NB 1	SB 1				
Volume Total	138	47				
Volume Left	61	0				
Volume Right	0	43				
cSH	1541	1700				
Volume to Capacity	0.04	0.03				
Queue Length 95th (ft)	3	0				
Control Delay (s)	3.5	0.0				
Lane LOS	A					
Approach Delay (s)	3.5	0.0				
Approach LOS						
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			16.7%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

413: US 70 WB Ramps & Hill Farm Rd
 Alternative 1 PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕	↕	
Traffic Volume (vph)	0	0	89	39	4	69
Future Volume (vph)	0	0	89	39	4	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	0	0	1748	1593	0
Flt Permitted				0.966		
Satd. Flow (perm)	0	0	0	1748	1593	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	898			168	1618	
Travel Time (s)	20.4			2.5	24.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	5%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	142	81	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.0% ICU Level of Service A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

413: US 70 WB Ramps & Hill Farm Rd
 Alternative 1 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕	↕	
Traffic Volume (veh/h)	0	0	89	39	4	69
Future Volume (Veh/h)	0	0	89	39	4	69
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	99	43	4	77
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	284	42	81			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284	42	81			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	93			
cM capacity (veh/h)	660	1028	1498			
Direction, Lane #						
	NB 1	SB 1				
Volume Total	142	81				
Volume Left	99	0				
Volume Right	0	77				
cSH	1498	1700				
Volume to Capacity	0.07	0.05				
Queue Length 95th (ft)	5	0				
Control Delay (s)	5.4	0.0				
Lane LOS	A					
Approach Delay (s)	5.4	0.0				
Approach LOS						
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			17.0%	ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

414: Hill Farm Rd & Service Rd
 Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	215	79	83	188	57
Future Volume (vph)	96	215	79	83	188	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1632	0	1701	0	0	1759
Flt Permitted	0.985					0.963
Satd. Flow (perm)	1632	0	1701	0	0	1759
Link Speed (mph)	45		45			45
Link Distance (ft)	1362		1618			759
Travel Time (s)	20.6		24.5			11.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	346	0	180	0	0	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.2%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

414: Hill Farm Rd & Service Rd
 Alternative 1 AM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	96	215	79	83	188	57
Future Volume (Veh/h)	96	215	79	83	188	57
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	107	239	88	92	209	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	615	134			180	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	615	134			180	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	74			85	
cM capacity (veh/h)	383	910			1384	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	346	180	272			
Volume Left	107	0	209			
Volume Right	239	92	0			
cSH	638	1700	1384			
Volume to Capacity	0.54	0.11	0.15			
Queue Length 95th (ft)	81	0	13			
Control Delay (s)	17.1	0.0	6.5			
Lane LOS	C		A			
Approach Delay (s)	17.1	0.0	6.5			
Approach LOS	C					
Intersection Summary						
Average Delay			9.6			
Intersection Capacity Utilization			51.2%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

414: Hill Farm Rd & Service Rd
Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	83	188	57	96	215	79
Future Volume (vph)	83	188	57	96	215	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1630	0	1672	0	0	1763
Flt Permitted	0.985					0.965
Satd. Flow (perm)	1630	0	1672	0	0	1763
Link Speed (mph)	45		45			45
Link Distance (ft)	1362		1618			759
Travel Time (s)	20.6		24.5			11.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	301	0	170	0	0	327
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.1% ICU Level of Service A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis














414: Hill Farm Rd & Service Rd
 Alternative 1 PM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	83	188	57	96	215	79
Future Volume (Veh/h)	83	188	57	96	215	79
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	92	209	63	107	239	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	682	116			170	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	116			170	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	78			83	
cM capacity (veh/h)	342	930			1395	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	301	170	327			
Volume Left	92	0	239			
Volume Right	209	107	0			
cSH	609	1700	1395			
Volume to Capacity	0.49	0.10	0.17			
Queue Length 95th (ft)	68	0	15			
Control Delay (s)	16.5	0.0	6.3			
Lane LOS	C		A			
Approach Delay (s)	16.5	0.0	6.3			
Approach LOS	C					
Intersection Summary						
Average Delay			8.8			
Intersection Capacity Utilization			51.1%		ICU Level of Service	A
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

415: Sussex St/US 258 & US 70 EB Ramps
Alternative 1 AM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations					 	
Traffic Volume (vph)	30	189	120	295	416	589
Future Volume (vph)	30	189	120	295	416	589
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100	0		350	325	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1719	1538	1810	1538	3335	1810
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	1538	1810	1538	3335	1810
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		45			45
Link Distance (ft)	936		597			762
Travel Time (s)	25.5		9.0			11.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	210	133	328	462	654
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	14.0	14.0	19.0	14.0	14.0	19.0
Total Split (s)	22.0	29.0	39.0	22.0	29.0	68.0
Total Split (%)	24.4%	32.2%	43.3%	24.4%	32.2%	75.6%
Maximum Green (s)	15.0	22.0	32.0	15.0	22.0	61.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	16.2	41.1	38.9	60.1	19.9	63.8
Actuated g/C Ratio	0.18	0.46	0.43	0.67	0.22	0.71
v/c Ratio	0.11	0.30	0.17	0.32	0.63	0.51
Control Delay	29.3	15.2	19.2	8.0	26.5	6.7

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

415: Sussex St/US 258 & US 70 EB Ramps
Alternative 1 AM Peak

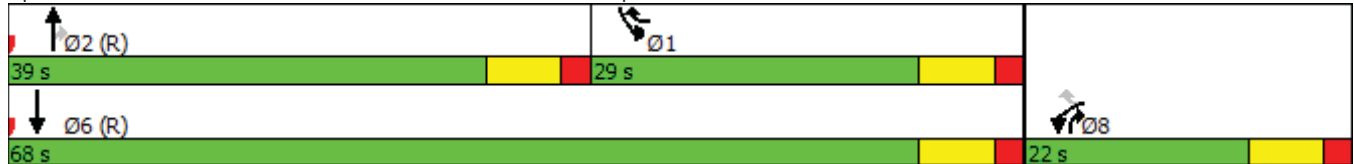


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	15.2	19.2	8.0	26.5	6.7
LOS	C	B	B	A	C	A
Approach Delay	17.1		11.2			14.9
Approach LOS	B		B			B
Queue Length 50th (ft)	16	74	44	68	86	101
Queue Length 95th (ft)	37	89	103	133	95	172
Internal Link Dist (ft)	856		517			682
Turn Bay Length (ft)	100			350	325	
Base Capacity (vph)	352	688	809	1010	895	1313
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.31	0.16	0.32	0.52	0.50

Intersection Summary













Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	72 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	14.3
Intersection Capacity Utilization	45.2%
Analysis Period (min)	15
Intersection LOS:	B
ICU Level of Service	A

Splits and Phases: 415: Sussex St/US 258 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

415: Sussex St/US 258 & US 70 EB Ramps
Alternative 1 PM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	112	135	484	670	398
Future Volume (vph)	17	112	135	484	670	398
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100	0		350	325	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1719	1538	1810	1538	3335	1810
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	1538	1810	1538	3335	1810
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		45			45
Link Distance (ft)	936		597			762
Travel Time (s)	25.5		9.0			11.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	124	150	538	744	442
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		24			24
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	14.0	14.0	19.0	14.0	14.0	19.0
Total Split (s)	35.0	33.0	22.0	35.0	33.0	55.0
Total Split (%)	38.9%	36.7%	24.4%	38.9%	36.7%	61.1%
Maximum Green (s)	28.0	26.0	15.0	28.0	26.0	48.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	25.4	56.6	23.4	53.8	26.2	54.6
Actuated g/C Ratio	0.28	0.63	0.26	0.60	0.29	0.61
v/c Ratio	0.04	0.13	0.32	0.59	0.77	0.40
Control Delay	21.1	5.9	32.2	15.0	23.3	5.1

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

415: Sussex St/US 258 & US 70 EB Ramps
 Alternative 1 PM Peak

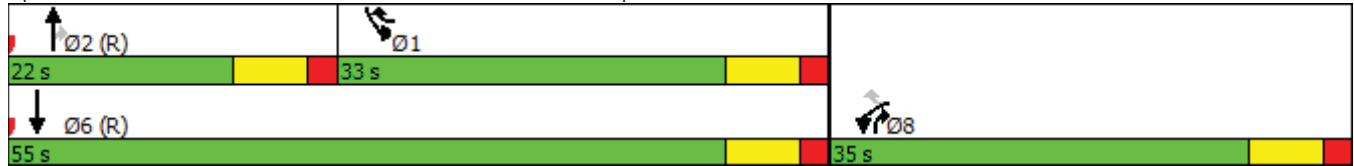


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	5.9	32.2	15.0	23.3	5.1
LOS	C	A	C	B	C	A
Approach Delay	7.9		18.7			16.6
Approach LOS	A		B			B
Queue Length 50th (ft)	8	22	73	182	80	68
Queue Length 95th (ft)	23	37	134	287	115	86
Internal Link Dist (ft)	856		517			682
Turn Bay Length (ft)	100			350	325	
Base Capacity (vph)	573	942	472	910	1040	1098
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.13	0.32	0.59	0.72	0.40

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 80 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 16.7
 Intersection Capacity Utilization 57.4%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 415: Sussex St/US 258 & US 70 EB Ramps



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

416: US 258 & US 70 WB Ramps
 Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	484	4	670	17	292	0	0	521	112
Future Volume (vph)	0	0	0	484	4	670	17	292	0	0	521	112
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	550		0	100		0	375		225
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	1719	1540	0	1719	1810	0	0	3471	1553
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1719	1540	0	1719	1810	0	0	3471	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		1103			1182			762			1169	
Travel Time (s)		25.1			17.9			11.5			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	538	748	0	19	324	0	0	579	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA		Prot	NA			NA	Perm
Protected Phases				3	8		5	2			6	
Permitted Phases												6
Detector Phase				3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				14.0	14.0		14.0	19.0			19.0	19.0
Total Split (s)				53.0	53.0		14.0	37.0			23.0	23.0
Total Split (%)				58.9%	58.9%		15.6%	41.1%			25.6%	25.6%
Maximum Green (s)				46.0	46.0		7.0	30.0			16.0	16.0
Yellow Time (s)				5.0	5.0		5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				-2.0	-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)				5.0	5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				47.1	47.1		9.0	32.9			27.3	27.3
Actuated g/C Ratio				0.52	0.52		0.10	0.37			0.30	0.30
v/c Ratio				0.60	0.93		0.11	0.49			0.55	0.26
Control Delay				18.1	39.8		31.8	23.5			31.1	29.0

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

416: US 258 & US 70 WB Ramps
 Alternative 1 AM Peak

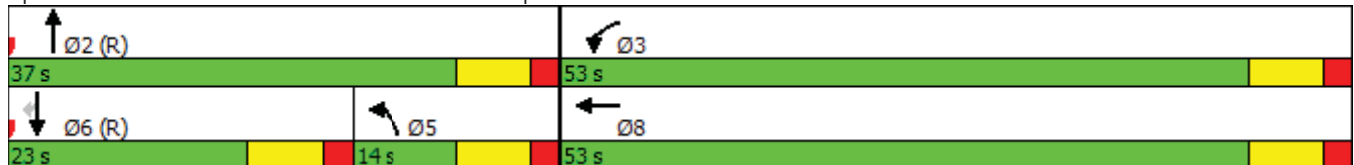


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay				0.0	0.0		0.0	0.0			0.0	0.0
Total Delay				18.1	39.8		31.8	23.5			31.1	29.0
LOS				B	D		C	C			C	C
Approach Delay					30.7			24.0			30.7	
Approach LOS					C			C			C	
Queue Length 50th (ft)				193	358		8	109			133	49
Queue Length 95th (ft)				296	#621		27	181			#251	115
Internal Link Dist (ft)		1023				1102			682		1089	
Turn Bay Length (ft)				550			100					225
Base Capacity (vph)				919	824		171	665			1054	471
Starvation Cap Reductn				0	0		0	0			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.59	0.91		0.11	0.49			0.55	0.26

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 29.7
 Intersection LOS: C
 Intersection Capacity Utilization 70.0%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 416: US 258 & US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

416: US 258 & US 70 WB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	295	4	416	30	217	0	0	773	189
Future Volume (vph)	0	0	0	295	4	416	30	217	0	0	773	189
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	550		0	100		0	375		225
Storage Lanes	0		0	1		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	1719	1540	0	1719	1810	0	0	3471	1553
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1719	1540	0	1719	1810	0	0	3471	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		1103			1182			762			1169	
Travel Time (s)		25.1			17.9			11.5			17.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	328	466	0	33	241	0	0	859	210
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA		Prot	NA			NA	Perm
Protected Phases				3	8		5	2			6	
Permitted Phases												6
Detector Phase				3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0		7.0	12.0			12.0	12.0
Minimum Split (s)				14.0	14.0		14.0	19.0			19.0	19.0
Total Split (s)				42.0	42.0		14.0	48.0			34.0	34.0
Total Split (%)				46.7%	46.7%		15.6%	53.3%			37.8%	37.8%
Maximum Green (s)				35.0	35.0		7.0	41.0			27.0	27.0
Yellow Time (s)				5.0	5.0		5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0		2.0	2.0			2.0	2.0
Lost Time Adjust (s)				-2.0	-2.0		-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)				5.0	5.0		5.0	5.0			5.0	5.0
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effect Green (s)				32.8	32.8		9.0	47.2			38.8	38.8
Actuated g/C Ratio				0.36	0.36		0.10	0.52			0.43	0.43
v/c Ratio				0.52	0.83		0.19	0.25			0.57	0.31
Control Delay				25.1	39.4		34.1	7.5			24.0	22.1

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

416: US 258 & US 70 WB Ramps
 Alternative 1 PM Peak

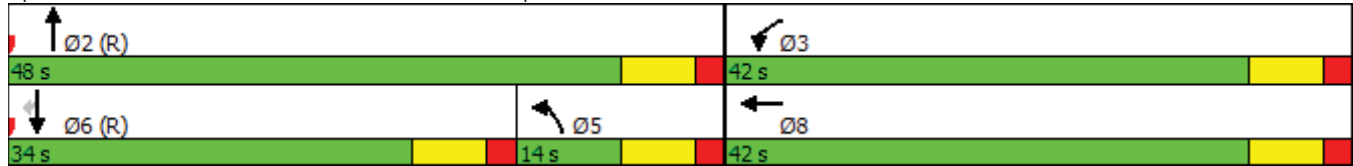


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay				0.0	0.0		0.0	0.0			0.0	0.0
Total Delay				25.1	39.4		34.1	7.5			24.0	22.1
LOS				C	D		C	A			C	C
Approach Delay					33.4			10.7			23.6	
Approach LOS					C			B			C	
Queue Length 50th (ft)				139	230		19	29			218	89
Queue Length 95th (ft)				207	341		50	50			301	157
Internal Link Dist (ft)		1023				1102			682		1089	
Turn Bay Length (ft)				550			100					225
Base Capacity (vph)				706	633		171	949			1497	669
Starvation Cap Reductn				0	0		0	0			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.46	0.74		0.19	0.25			0.57	0.31

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 25.6
 Intersection Capacity Utilization 59.2%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 416: US 258 & US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

417: US 258 & Service Rd
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	61	152	49	47	46	211	626	95	64	452	58
Future Volume (vph)	54	61	152	49	47	46	211	626	95	64	452	58
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	175		0	325		0	175		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1785	1553	1752	1708	0	1736	1790	0	1703	1762	0
Flt Permitted		0.800		0.950			0.950			0.950		
Satd. Flow (perm)	0	1462	1553	1752	1708	0	1736	1790	0	1703	1762	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1362			1382			1169			818	
Travel Time (s)		20.6			20.9			17.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	169	54	103	0	234	802	0	71	566	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4	5	3	8		5	2		1	6	
Permitted Phases	4		4									
Detector Phase	4	4	5	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	19.0		14.0	19.0	
Total Split (s)	20.0	20.0	27.0	14.0	34.0		27.0	72.0		14.0	59.0	
Total Split (%)	16.7%	16.7%	22.5%	11.7%	28.3%		22.5%	60.0%		11.7%	49.2%	
Maximum Green (s)	13.0	13.0	20.0	7.0	27.0		20.0	65.0		7.0	52.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lead		Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effect Green (s)		14.4	38.6	9.2	25.8		23.2	72.0		10.0	56.0	
Actuated g/C Ratio		0.12	0.32	0.08	0.22		0.19	0.60		0.08	0.47	
v/c Ratio		0.74	0.34	0.40	0.28		0.70	0.75		0.50	0.69	
Control Delay		75.2	22.9	62.3	39.9		56.9	25.7		65.7	32.5	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

417: US 258 & Service Rd
 Alternative 1 AM Peak

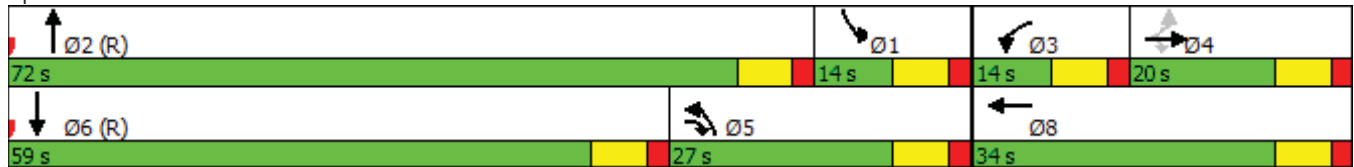


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		75.2	22.9	62.3	39.9		56.9	25.7		65.7	32.5	
LOS		E	C	E	D		E	C		E	C	
Approach Delay		45.4			47.6			32.7			36.2	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)		96	67	40	64		160	513		52	391	
Queue Length 95th (ft)		#186	124	84	115		#284	663		#110	487	
Internal Link Dist (ft)		1282			1302			1089			738	
Turn Bay Length (ft)			225	175			325			175		
Base Capacity (vph)		183	499	134	416		351	1093		141	860	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.70	0.34	0.40	0.25		0.67	0.73		0.50	0.66	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 36.6
 Intersection LOS: D
 Intersection Capacity Utilization 69.9%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 417: US 258 & Service Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

417: US 258 & Service Rd
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	47	211	95	61	64	152	452	49	46	626	54
Future Volume (vph)	58	47	211	95	61	64	152	452	49	46	626	54
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		225	175		0	325		0	175		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1778	1553	1752	1703	0	1736	1800	0	1703	1771	0
Flt Permitted		0.753		0.950			0.950			0.950		
Satd. Flow (perm)	0	1376	1553	1752	1703	0	1736	1800	0	1703	1771	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1362			1382			1169			818	
Travel Time (s)		20.6			20.9			17.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	4%	4%	4%	6%	6%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	234	106	139	0	169	556	0	51	756	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4	5	3	8		5	2		1	6	
Permitted Phases	4		4									
Detector Phase	4	4	5	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	12.0		7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		14.0	19.0		14.0	19.0	
Total Split (s)	18.0	18.0	20.0	15.0	33.0		20.0	73.0		14.0	67.0	
Total Split (%)	15.0%	15.0%	16.7%	12.5%	27.5%		16.7%	60.8%		11.7%	55.8%	
Maximum Green (s)	11.0	11.0	13.0	8.0	26.0		13.0	66.0		7.0	60.0	
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lag	Lead			Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Min		None	C-Min	
Act Effect Green (s)		13.1	28.6	10.7	28.8		15.5	69.9		9.1	60.7	
Actuated g/C Ratio		0.11	0.24	0.09	0.24		0.13	0.58		0.08	0.51	
v/c Ratio		0.77	0.63	0.68	0.34		0.75	0.53		0.40	0.84	
Control Delay		84.1	36.6	75.3	40.7		72.1	18.3		62.5	36.0	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

417: US 258 & Service Rd
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		84.1	36.6	75.3	40.7		72.1	18.3		62.5	36.0	
LOS		F	D	E	D		E	B		E	D	
Approach Delay		52.4				55.7		30.8			37.7	
Approach LOS		D				E		C			D	
Queue Length 50th (ft)		89	124	81	90		127	257		38	489	
Queue Length 95th (ft)		#189	196	#171	152		#239	359		81	667	
Internal Link Dist (ft)		1282				1302		1089			738	
Turn Bay Length (ft)			225	175			325			175		
Base Capacity (vph)		154	372	156	412		227	1066		128	922	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.75	0.63	0.68	0.34		0.74	0.52		0.40	0.82	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 39.8
 Intersection LOS: D
 Intersection Capacity Utilization 74.3%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 417: US 258 & Service Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

418: NC 11/55 & Service Rd
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (vph)	40	6	6	8	11	90	13	1412	9	56	742	50
Future Volume (vph)	40	6	6	8	11	90	13	1412	9	56	742	50
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	175		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1748	0	0	1632	0	1736	3468	0	1736	3436	0
Flt Permitted		0.543			0.976		0.950			0.950		
Satd. Flow (perm)	0	986	0	0	1599	0	1736	3468	0	1736	3436	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1064			977			1217			959	
Travel Time (s)		16.1			14.8			18.4			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	121	0	14	1579	0	62	880	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	12.0		7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	19.0		14.0	19.0	
Total Split (s)	24.0	24.0		24.0	24.0		14.0	81.0		15.0	82.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		11.7%	67.5%		12.5%	68.3%	
Maximum Green (s)	17.0	17.0		17.0	17.0		7.0	74.0		8.0	75.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effect Green (s)		15.7			15.7		9.0	81.3		10.8	88.7	
Actuated g/C Ratio		0.13			0.13		0.08	0.68		0.09	0.74	
v/c Ratio		0.45			0.58		0.11	0.67		0.40	0.35	
Control Delay		58.6			59.7		53.8	14.8		52.5	3.4	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

418: NC 11/55 & Service Rd
 Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		58.6			59.7		53.8	14.8		52.5	3.4	
LOS		E			E		D	B		D	A	
Approach Delay		58.6			59.7			15.1			6.6	
Approach LOS		E			E			B			A	
Queue Length 50th (ft)		42			89		10	391		42	35	
Queue Length 95th (ft)		85			149		32	486		m91	77	
Internal Link Dist (ft)		984			897			1137			879	
Turn Bay Length (ft)							100			175		
Base Capacity (vph)		156			253		130	2365		158	2538	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.37			0.48		0.11	0.67		0.39	0.35	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 15.1
 Intersection LOS: B
 Intersection Capacity Utilization 64.4%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 418: NC 11/55 & Service Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

418: NC 11/55 & Service Rd
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (vph)	51	11	12	9	5	57	5	741	7	91	1412	41
Future Volume (vph)	51	11	12	9	5	57	5	741	7	91	1412	41
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	175		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1745	0	0	1636	0	1736	3468	0	1736	3457	0
Flt Permitted		0.694			0.957		0.950			0.950		
Satd. Flow (perm)	0	1253	0	0	1575	0	1736	3468	0	1736	3457	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1064			977			1217			959	
Travel Time (s)		16.1			14.8			18.4			14.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	0	79	0	6	831	0	101	1615	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	12.0		7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	19.0		14.0	19.0	
Total Split (s)	22.0	22.0		22.0	22.0		14.0	78.0		20.0	84.0	
Total Split (%)	18.3%	18.3%		18.3%	18.3%		11.7%	65.0%		16.7%	70.0%	
Maximum Green (s)	15.0	15.0		15.0	15.0		7.0	71.0		13.0	77.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lead		Lag	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Act Effect Green (s)		13.7			13.7		9.0	76.4		17.6	97.3	
Actuated g/C Ratio		0.11			0.11		0.08	0.64		0.15	0.81	
v/c Ratio		0.57			0.44		0.05	0.38		0.40	0.58	
Control Delay		65.6			56.5		52.6	14.2		40.9	5.7	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

418: NC 11/55 & Service Rd
 Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		65.6			56.5		52.6	14.2		40.9	5.7	
LOS		E			E		D	B		D	A	
Approach Delay		65.6			56.5			14.5			7.8	
Approach LOS		E			E			B			A	
Queue Length 50th (ft)		61			58		4	146		64	175	
Queue Length 95th (ft)		113			106		19	322		m74	287	
Internal Link Dist (ft)		984			897			1137			879	
Turn Bay Length (ft)							100			175		
Base Capacity (vph)		177			223		130	2344		285	2802	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.46			0.35		0.05	0.35		0.35	0.58	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 110 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.58
 Intersection Signal Delay: 13.0
 Intersection LOS: B
 Intersection Capacity Utilization 69.5%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 418: NC 11/55 & Service Rd



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

419: NC 11/55 & US 70 EB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	275	406	244	1291	448	57
Future Volume (vph)	275	406	244	1291	448	57
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350	0	300			125
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1736	1553	1736	3471	3471	1553
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1736	1553	1736	3471	3471	1553
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	1054			959	1180	
Travel Time (s)	16.0			14.5	17.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	306	451	271	1434	498	63
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	42.0	38.0	38.0	78.0	40.0	42.0
Total Split (%)	35.0%	31.7%	31.7%	65.0%	33.3%	35.0%
Maximum Green (s)	35.0	31.0	31.0	71.0	33.0	35.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	28.4	65.4	32.0	81.6	44.6	78.0
Actuated g/C Ratio	0.24	0.54	0.27	0.68	0.37	0.65
v/c Ratio	0.75	0.53	0.59	0.61	0.39	0.06
Control Delay	53.4	19.0	32.6	4.5	20.5	3.8

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

419: NC 11/55 & US 70 EB Ramps
 Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.4	19.0	32.6	4.5	20.5	3.8
LOS	D	B	C	A	C	A
Approach Delay	32.9			9.0	18.6	
Approach LOS	C			A	B	
Queue Length 50th (ft)	221	212	186	61	124	10
Queue Length 95th (ft)	297	232	257	100	150	4
Internal Link Dist (ft)	974			879	1100	
Turn Bay Length (ft)	350		300			125
Base Capacity (vph)	535	828	492	2361	1305	997
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.54	0.55	0.61	0.38	0.06

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	55
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	16.8
Intersection LOS:	B
Intersection Capacity Utilization	59.3%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 419: NC 11/55 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

419: NC 11/55 & US 70 EB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	196	674	184	670	861	100
Future Volume (vph)	196	674	184	670	861	100
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350	0	300			125
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1736	1553	1736	3471	3471	1553
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1736	1553	1736	3471	3471	1553
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45	45	
Link Distance (ft)	1054			959	1180	
Travel Time (s)	16.0			14.5	17.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	749	204	744	957	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	25.0	49.0	49.0	95.0	46.0	25.0
Total Split (%)	20.8%	40.8%	40.8%	79.2%	38.3%	20.8%
Maximum Green (s)	18.0	42.0	42.0	88.0	39.0	18.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Min	C-Min	None
Act Effct Green (s)	19.1	68.8	44.7	90.9	41.2	65.3
Actuated g/C Ratio	0.16	0.57	0.37	0.76	0.34	0.54
v/c Ratio	0.79	0.84	0.32	0.28	0.80	0.13
Control Delay	69.0	31.6	31.8	5.3	35.7	9.6

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

419: NC 11/55 & US 70 EB Ramps
 Alternative 1 PM Peak

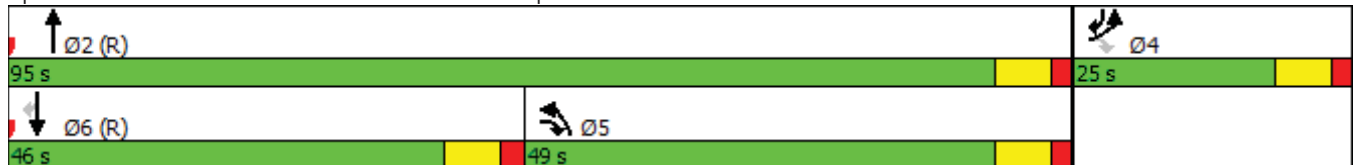


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	31.6	31.8	5.3	35.7	9.6
LOS	E	C	C	A	D	A
Approach Delay	40.0			11.0	32.9	
Approach LOS	D			B	C	
Queue Length 50th (ft)	163	453	78	70	374	37
Queue Length 95th (ft)	#276	#668	250	49	386	m27
Internal Link Dist (ft)	974			879	1100	
Turn Bay Length (ft)	350		300			125
Base Capacity (vph)	289	890	646	2628	1208	831
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.84	0.32	0.28	0.79	0.13

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 28.3
 Intersection LOS: C
 Intersection Capacity Utilization 73.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 419: NC 11/55 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

420: NC 11/55 & Service Rd/US 70 WB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗	↗	↖	↗	
Traffic Volume (vph)	4	4	4	184	4	100	4	892	674	196	321	4
Future Volume (vph)	4	4	4	184	4	100	4	892	674	196	321	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	300		0	100		300	375		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	1736	1562	0	1736	3471	1553	1736	1823	0
Flt Permitted		0.984		0.950			0.950			0.950		
Satd. Flow (perm)	0	1750	0	1736	1562	0	1736	3471	1553	1736	1823	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		931			1030			1180			1989	
Travel Time (s)		14.1			15.6			17.9			30.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	204	115	0	4	991	749	218	361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8		5	2	8	1	6	
Permitted Phases									2			
Detector Phase	4	4		8	8		5	2	8	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0		35.0	35.0		14.0	47.0	35.0	24.0	57.0	
Total Split (%)	11.7%	11.7%		29.2%	29.2%		11.7%	39.2%	29.2%	20.0%	47.5%	
Maximum Green (s)	7.0	7.0		28.0	28.0		7.0	40.0	28.0	17.0	50.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)		9.0		32.8	32.8		11.2	47.2	83.0	19.4	66.6	
Actuated g/C Ratio		0.08		0.27	0.27		0.09	0.39	0.69	0.16	0.56	
v/c Ratio		0.09		0.43	0.27		0.02	0.73	0.70	0.78	0.36	
Control Delay		53.5		40.0	37.1		53.5	29.3	11.2	67.7	19.4	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

420: NC 11/55 & Service Rd/US 70 WB Ramps
 Alternative 1 AM Peak

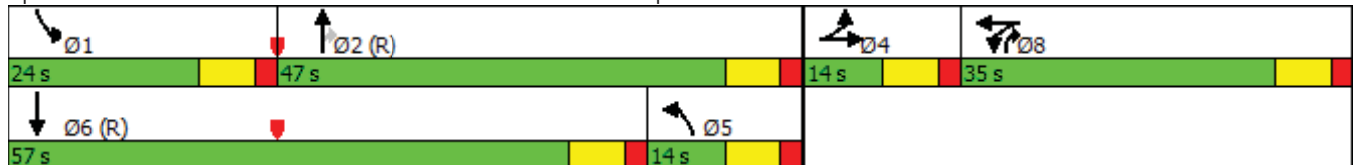


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		53.5		40.0	37.1		53.5	29.3	11.2	67.7	19.4	
LOS		D		D	D		D	C	B	E	B	
Approach Delay		53.5			38.9			21.6			37.6	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)		9		129	69		3	228	172	158	118	
Queue Length 95th (ft)		29		212	127		m3	384	304	#288	330	
Internal Link Dist (ft)		851			950			1100			1909	
Turn Bay Length (ft)				300			100		300	375		
Base Capacity (vph)		131		474	426		162	1366	1074	289	1045	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		0.09		0.43	0.27		0.02	0.73	0.70	0.75	0.35	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 27.3
 Intersection LOS: C
 Intersection Capacity Utilization 70.9%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 420: NC 11/55 & Service Rd/US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

420: NC 11/55 & Service Rd/US 70 WB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↕	↗	↖	↗	
Traffic Volume (vph)	4	4	4	244	4	57	4	460	406	275	717	4
Future Volume (vph)	4	4	4	244	4	57	4	460	406	275	717	4
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	300		0	100		300	375		0
Storage Lanes	0		0	1		0	1		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1750	0	1736	1569	0	1736	3471	1553	1736	1825	0
Flt Permitted		0.984		0.950			0.950			0.950		
Satd. Flow (perm)	0	1750	0	1736	1569	0	1736	3471	1553	1736	1825	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		931			1030			1180			1989	
Travel Time (s)		14.1			15.6			17.9			30.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	271	67	0	4	511	451	306	801	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8		5	2	8	1	6	
Permitted Phases									2			
Detector Phase	4	4		8	8		5	2	8	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	12.0	7.0	7.0	12.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		14.0	19.0	14.0	14.0	19.0	
Total Split (s)	14.0	14.0		28.0	28.0		14.0	41.0	28.0	37.0	64.0	
Total Split (%)	11.7%	11.7%		23.3%	23.3%		11.7%	34.2%	23.3%	30.8%	53.3%	
Maximum Green (s)	7.0	7.0		21.0	21.0		7.0	34.0	21.0	30.0	57.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min	None	None	C-Min	
Act Effect Green (s)		9.0		25.1	25.1		9.0	47.0	75.1	27.3	76.5	
Actuated g/C Ratio		0.08		0.21	0.21		0.08	0.39	0.63	0.23	0.64	
v/c Ratio		0.09		0.75	0.20		0.03	0.38	0.46	0.77	0.69	
Control Delay		53.5		57.9	40.3		38.2	17.2	9.2	56.8	21.5	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

420: NC 11/55 & Service Rd/US 70 WB Ramps
 Alternative 1 PM Peak

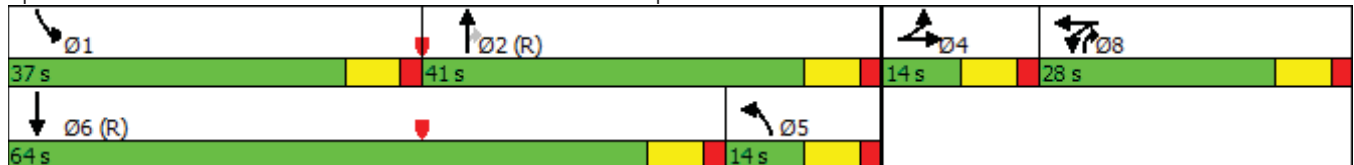


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		53.5		57.9	40.3		38.2	17.2	9.2	56.8	21.5	
LOS		D		E	D		D	B	A	E	C	
Approach Delay		53.5			54.4			13.5				31.3
Approach LOS		D			D			B				C
Queue Length 50th (ft)		9		191	42		2	93	158	221	319	
Queue Length 95th (ft)		29		#340	87		m7	140	116	314	#808	
Internal Link Dist (ft)		851			950			1100			1909	
Turn Bay Length (ft)				300			100		300	375		
Base Capacity (vph)		131		374	338		130	1402	982	462	1163	
Starvation Cap Reductn		0		0	0		0	0	0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0	0	0	
Storage Cap Reductn		0		0	0		0	0	0	0	0	
Reduced v/c Ratio		0.09		0.72	0.20		0.03	0.36	0.46	0.66	0.69	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 27.5
 Intersection LOS: C
 Intersection Capacity Utilization 76.5%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 420: NC 11/55 & Service Rd/US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

421: US 258 & US 70 EB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	674	199	55	0	72	0	718	146	379	322	0
Future Volume (vph)	67	674	199	55	0	72	0	718	146	379	322	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		325	0		150	475		100	0		0
Storage Lanes	1		1	1		1	2		1	2		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1752	0	1568	0	4940	1538	3335	1810	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1719	3438	1538	1752	0	1568	0	4940	1538	3335	1810	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				35
Link Distance (ft)		990			4517			912				258
Travel Time (s)		15.0			68.4			17.8				5.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	749	221	61	0	80	0	798	162	421	358	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot		pm+ov		NA	pm+ov	Prot	NA	
Protected Phases	7	4		3		1		2	3	1	6	
Permitted Phases			4			3			2			
Detector Phase	7	4	4	3		1		2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		10.0	7.0	7.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	14.0		14.0		17.0	14.0	14.0	17.0	
Total Split (s)	56.0	42.0	42.0	14.0		28.0		36.0	14.0	28.0	64.0	
Total Split (%)	46.7%	35.0%	35.0%	11.7%		23.3%		30.0%	11.7%	23.3%	53.3%	
Maximum Green (s)	49.0	35.0	35.0	7.0		21.0		29.0	7.0	21.0	57.0	
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0	5.0	
Lead/Lag		Lag	Lag	Lead		Lag		Lead	Lead	Lag		
Lead-Lag Optimize?		Yes	Yes	Yes		Yes		Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None		None		C-Min	None	None	C-Min	
Act Effect Green (s)	42.0	33.8	33.8	9.7		35.9		35.3	45.0	21.2	61.4	
Actuated g/C Ratio	0.35	0.28	0.28	0.08		0.30		0.29	0.38	0.18	0.51	
v/c Ratio	0.12	0.77	0.51	0.43		0.17		0.55	0.28	0.72	0.39	
Control Delay	22.8	45.3	40.1	62.6		31.6		38.4	15.8	21.6	7.4	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

421: US 258 & US 70 EB Ramps
 Alternative 1 AM Peak

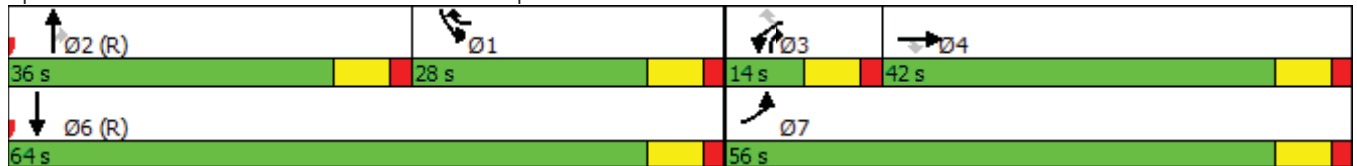


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	2.1	0.8	
Total Delay	22.8	45.3	40.1	62.6		31.6		38.5	15.8	23.7	8.2	
LOS	C	D	D	E		C		D	B	C	A	
Approach Delay		42.6				45.0		34.6			16.6	
Approach LOS		D				D		C			B	
Queue Length 50th (ft)	33	275	141	45		44		201	50	17	45	
Queue Length 95th (ft)	65	341	216	92		86		247	85	179	90	
Internal Link Dist (ft)		910				4437		832			178	
Turn Bay Length (ft)	150		325			150			100			
Base Capacity (vph)	733	1060	474	141		452		1454	576	640	929	
Starvation Cap Reductn	0	0	0	0		0		0	0	107	300	
Spillback Cap Reductn	0	0	0	0		0		41	0	0	0	
Storage Cap Reductn	0	0	0	0		0		0	0	0	0	
Reduced v/c Ratio	0.10	0.71	0.47	0.43		0.18		0.56	0.28	0.79	0.57	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 96 (80%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 33.2
 Intersection Capacity Utilization 62.5%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 421: US 258 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

421: US 258 & US 70 EB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	863	286	65	0	49	0	454	122	538	513	0
Future Volume (vph)	57	863	286	65	0	49	0	454	122	538	513	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		325	0		150	475		100	0		0
Storage Lanes	1		1	1		1	2		1	2		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1719	3438	1538	1752	0	1568	0	4940	1538	3335	1810	0
Flt Permitted	0.950			0.950						0.950		
Satd. Flow (perm)	1719	3438	1538	1752	0	1568	0	4940	1538	3335	1810	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35				35
Link Distance (ft)		990			4517			912				258
Travel Time (s)		15.0			68.4			17.8				5.0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	5%	5%	5%	5%	5%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	959	318	72	0	54	0	504	136	598	570	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot		pm+ov		NA	pm+ov	Prot	NA	
Protected Phases	7	4		3		1		2	3	1	6	
Permitted Phases			4			3			2			
Detector Phase	7	4	4	3		1		2	3	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		10.0	7.0	7.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	14.0		14.0		17.0	14.0	14.0	17.0	
Total Split (s)	63.0	48.0	48.0	15.0		34.0		23.0	15.0	34.0	57.0	
Total Split (%)	52.5%	40.0%	40.0%	12.5%		28.3%		19.2%	12.5%	28.3%	47.5%	
Maximum Green (s)	56.0	41.0	41.0	8.0		27.0		16.0	8.0	27.0	50.0	
Yellow Time (s)	5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0	2.0		2.0		2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0		-2.0		-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0		5.0		5.0	5.0	5.0	5.0	
Lead/Lag		Lead	Lead	Lag		Lead		Lag	Lag	Lead		
Lead-Lag Optimize?		Yes	Yes	Yes		Yes		Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None		None		C-Min	None	None	C-Min	
Act Effect Green (s)	47.9	41.0	41.0	10.0		42.0		21.9	32.0	27.0	54.0	
Actuated g/C Ratio	0.40	0.34	0.34	0.08		0.35		0.18	0.27	0.22	0.45	
v/c Ratio	0.09	0.82	0.61	0.49		0.10		0.56	0.33	0.80	0.70	
Control Delay	18.0	42.4	38.0	64.6		25.9		48.5	21.5	32.1	16.5	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

421: US 258 & US 70 EB Ramps
 Alternative 1 PM Peak

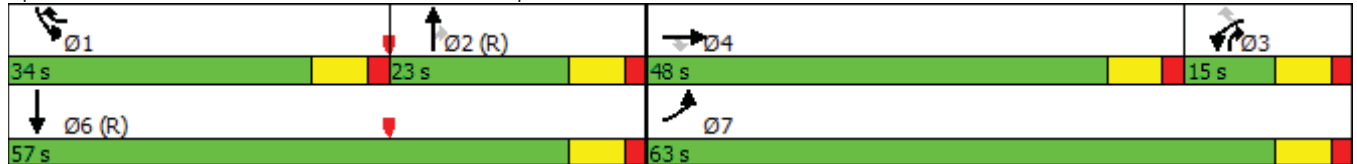


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0	1.5	1.8	
Total Delay	18.0	42.4	38.0	64.6		25.9		48.5	21.5	33.6	18.3	
LOS	B	D	D	E		C		D	C	C	B	
Approach Delay		40.2				48.0		42.8			26.1	
Approach LOS		D				D		D			C	
Queue Length 50th (ft)	25	345	198	54		27		136	49	47	420	
Queue Length 95th (ft)	51	427	295	104		56		178	83	130	170	
Internal Link Dist (ft)		910				4437		832			178	
Turn Bay Length (ft)	150		325			150			100			
Base Capacity (vph)	830	1231	551	149		575		903	411	805	814	
Starvation Cap Reductn	0	0	0	0		0		0	0	82	115	
Spillback Cap Reductn	0	0	0	0		0		0	0	0	0	
Storage Cap Reductn	0	0	0	0		0		0	0	0	0	
Reduced v/c Ratio	0.08	0.78	0.58	0.48		0.09		0.56	0.33	0.83	0.82	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	30 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	36.0
Intersection LOS:	D
Intersection Capacity Utilization:	67.4%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 421: US 258 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

422: US 258/NC 58 & US 70 WB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	67	791	538	358	499	0	0	634	57
Future Volume (vph)	0	0	0	67	791	538	358	499	0	0	634	57
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		525	0		0	450		100
Storage Lanes	0		0	1		1	2		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	1719	3438	1538	3335	1810	0	0	4988	1553
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1719	3438	1538	3335	1810	0	0	4988	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			35				35
Link Distance (ft)		1101			4364			258				999
Travel Time (s)		25.0			66.1			5.0				19.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	74	879	598	398	554	0	0	704	63
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA	Perm	Prot	NA			NA	Perm
Protected Phases				3	8		5	2			6	
Permitted Phases						8						6
Detector Phase				3	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	10.0			10.0	10.0
Minimum Split (s)				14.0	14.0	14.0	14.0	17.0			17.0	17.0
Total Split (s)				66.0	66.0	66.0	25.0	54.0			29.0	29.0
Total Split (%)				55.0%	55.0%	55.0%	20.8%	45.0%			24.2%	24.2%
Maximum Green (s)				59.0	59.0	59.0	18.0	47.0			22.0	22.0
Yellow Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)				-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Act Effect Green (s)				48.8	56.1	56.1	19.5	53.9			29.5	29.5
Actuated g/C Ratio				0.41	0.47	0.47	0.16	0.45			0.25	0.25
v/c Ratio				0.11	0.55	0.83	0.74	0.68			0.58	0.17
Control Delay				17.8	23.8	38.6	40.5	13.2			43.4	40.4

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

422: US 258/NC 58 & US 70 WB Ramps
 Alternative 1 AM Peak

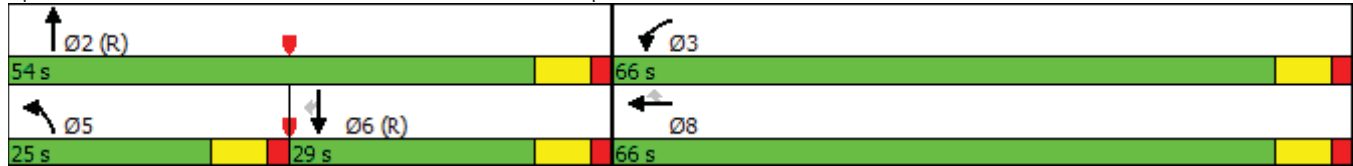


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay				0.0	0.0	0.0	1.6	5.3			0.1	0.0
Total Delay				17.8	23.8	38.6	42.0	18.5			43.5	40.4
LOS				B	C	D	D	B			D	D
Approach Delay					29.2			28.4			43.2	
Approach LOS					C			C			D	
Queue Length 50th (ft)				30	238	375	46	146			186	41
Queue Length 95th (ft)				55	285	520	114	201			234	83
Internal Link Dist (ft)		1021			4284			178			919	
Turn Bay Length (ft)				150		525						100
Base Capacity (vph)				873	1747	781	563	813			1224	381
Starvation Cap Reductn				0	0	0	59	196			0	0
Spillback Cap Reductn				0	0	0	0	0			60	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.08	0.50	0.77	0.79	0.90			0.60	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 32.3
 Intersection Capacity Utilization 67.9%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 422: US 258/NC 58 & US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

422: US 258/NC 58 & US 70 WB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↕	↗	↙↗	↕			↕↗↘	↗
Traffic Volume (vph)	0	0	0	81	623	379	248	312	0	0	970	67
Future Volume (vph)	0	0	0	81	623	379	248	312	0	0	970	67
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		525	0		0	450		100
Storage Lanes	0		0	1		1	2		0	2		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	1719	3438	1538	3335	1810	0	0	4988	1553
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1719	3438	1538	3335	1810	0	0	4988	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			35				35
Link Distance (ft)		1101			4364			258				999
Travel Time (s)		25.0			66.1			5.0				19.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	90	692	421	276	347	0	0	1078	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA	Perm	Prot	NA			NA	Perm
Protected Phases				3	8		5	2			6	
Permitted Phases						8						6
Detector Phase				3	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	10.0			10.0	10.0
Minimum Split (s)				14.0	14.0	14.0	14.0	17.0			17.0	17.0
Total Split (s)				55.0	55.0	55.0	21.0	65.0			44.0	44.0
Total Split (%)				45.8%	45.8%	45.8%	17.5%	54.2%			36.7%	36.7%
Maximum Green (s)				48.0	48.0	48.0	14.0	58.0			37.0	37.0
Yellow Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)				-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Act Effect Green (s)				42.2	42.2	42.2	15.6	67.8			47.2	47.2
Actuated g/C Ratio				0.35	0.35	0.35	0.13	0.56			0.39	0.39
v/c Ratio				0.15	0.57	0.78	0.64	0.34			0.55	0.12
Control Delay				25.2	32.8	44.6	25.0	8.4			30.9	27.0

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

422: US 258/NC 58 & US 70 WB Ramps
 Alternative 1 PM Peak



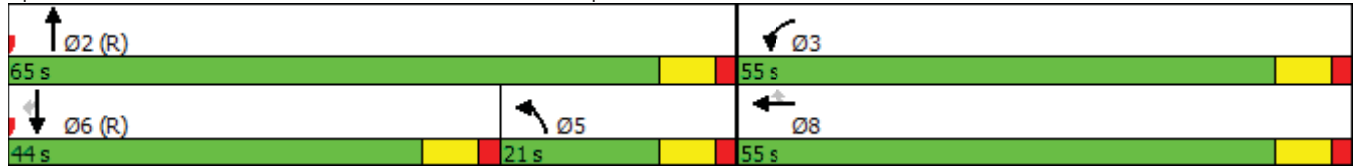
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay				0.0	0.0	0.0	0.9	1.2			0.1	0.0
Total Delay				25.2	32.8	44.6	25.9	9.6			31.0	27.0
LOS				C	C	D	C	A			C	C
Approach Delay					36.4			16.8			30.7	
Approach LOS					D			B			C	
Queue Length 50th (ft)				47	223	284	22	76			243	38
Queue Length 95th (ft)				77	258	376	158	115			313	78
Internal Link Dist (ft)		1021			4284			178			919	
Turn Bay Length (ft)				150		525						100
Base Capacity (vph)				716	1432	640	453	1022			1960	610
Starvation Cap Reductn				0	0	0	45	454			0	0
Spillback Cap Reductn				0	0	0	0	0			100	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.13	0.48	0.66	0.68	0.61			0.58	0.12

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 30.1
 Intersection Capacity Utilization 55.5%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 422: US 258/NC 58 & US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

423: NC 58 & US 70 EB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	525	486	0	0	0	118	664	118	82	125	9
Future Volume (vph)	188	525	486	0	0	0	118	664	118	82	125	9
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	225		0	200		0
Storage Lanes	1		1	0		0	3		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	1845	1568	0	0	0	1752	4920	0	1752	1826	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1752	1845	1568	0	0	0	1752	4920	0	1752	1826	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			30			45			45	
Link Distance (ft)		4517			1170			1050			421	
Travel Time (s)		68.4			26.6			15.9			6.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	583	540	0	0	0	131	869	0	91	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases	7	4	5				5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	5				5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0				7.0	12.0		7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0				14.0	19.0		14.0	19.0	
Total Split (s)	57.0	57.0	26.0				26.0	36.0		17.0	27.0	
Total Split (%)	51.8%	51.8%	23.6%				23.6%	32.7%		15.5%	24.5%	
Maximum Green (s)	50.0	50.0	19.0				19.0	29.0		10.0	20.0	
Yellow Time (s)	5.0	5.0	5.0				5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0				2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0				-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0				5.0	5.0		5.0	5.0	
Lead/Lag			Lag				Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0		3.0	3.0	
Recall Mode	None	None	None				None	C-Min		None	C-Min	
Act Effect Green (s)	43.2	43.2	74.6				26.4	39.4		15.2	25.4	
Actuated g/C Ratio	0.39	0.39	0.68				0.24	0.36		0.14	0.23	
v/c Ratio	0.30	0.81	0.51				0.31	0.49		0.38	0.35	
Control Delay	23.0	38.3	10.2				37.8	31.3		43.4	29.8	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

423: NC 58 & US 70 EB Ramps
 Alternative 1 AM Peak

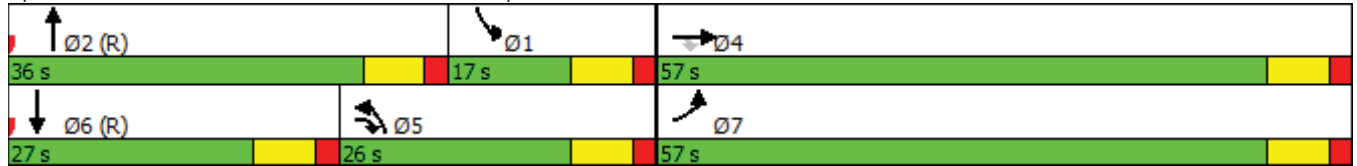


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0				0.0	0.0		0.0	0.0	
Total Delay	23.0	38.3	10.2				37.8	31.3		43.4	29.8	
LOS	C	D	B				D	C		D	C	
Approach Delay		24.5						32.1			34.9	
Approach LOS		C						C			C	
Queue Length 50th (ft)	99	355	152				74	192		52	61	
Queue Length 95th (ft)	137	435	215				140	242		98	182	
Internal Link Dist (ft)		4437			1090			970			341	
Turn Bay Length (ft)	300						225			200		
Base Capacity (vph)	828	872	1063				420	1762		251	425	
Starvation Cap Reductn	0	0	0				0	0		0	0	
Spillback Cap Reductn	0	0	0				0	40		0	0	
Storage Cap Reductn	0	0	0				0	0		0	0	
Reduced v/c Ratio	0.25	0.67	0.51				0.31	0.50		0.36	0.35	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 42 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 28.4
 Intersection Capacity Utilization 61.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 423: NC 58 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

423: NC 58 & US 70 EB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	660	724	0	0	0	96	419	96	135	176	18
Future Volume (vph)	139	660	724	0	0	0	96	419	96	135	176	18
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	225		0	200		0
Storage Lanes	1		1	0		0	3		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1752	1845	1568	0	0	0	1752	4895	0	1752	1819	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1752	1845	1568	0	0	0	1752	4895	0	1752	1819	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			30			45			45	
Link Distance (ft)		4517			1170			1050			421	
Travel Time (s)		68.4			26.6			15.9			6.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	733	804	0	0	0	107	573	0	150	216	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases	7	4	5				5	2		1	6	
Permitted Phases			4									
Detector Phase	7	4	5				5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0				7.0	12.0		7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0				14.0	19.0		14.0	19.0	
Total Split (s)	46.0	46.0	24.0				24.0	24.0		20.0	20.0	
Total Split (%)	51.1%	51.1%	26.7%				26.7%	26.7%		22.2%	22.2%	
Maximum Green (s)	39.0	39.0	17.0				17.0	17.0		13.0	13.0	
Yellow Time (s)	5.0	5.0	5.0				5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0				2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0				-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	5.0				5.0	5.0		5.0	5.0	
Lead/Lag			Lag				Lag	Lag		Lead	Lead	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0				3.0	3.0		3.0	3.0	
Recall Mode	None	None	None				None	C-Min		None	C-Min	
Act Effct Green (s)	39.5	39.5	63.7				19.2	21.9		13.6	16.3	
Actuated g/C Ratio	0.44	0.44	0.71				0.21	0.24		0.15	0.18	
v/c Ratio	0.20	0.90	0.72				0.29	0.48		0.57	0.66	
Control Delay	15.8	39.8	12.3				32.3	31.7		30.0	33.3	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

423: NC 58 & US 70 EB Ramps
 Alternative 1 PM Peak

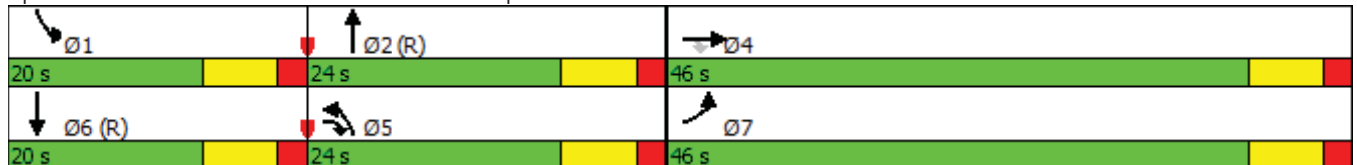


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0				0.0	0.0		0.0	0.0	
Total Delay	15.8	39.8	12.3				32.3	31.7		30.0	33.3	
LOS	B	D	B				C	C		C	C	
Approach Delay		24.6						31.8			31.9	
Approach LOS		C						C			C	
Queue Length 50th (ft)	50	363	219				52	106		69	130	
Queue Length 95th (ft)	89	#590	355				99	143		134	#223	
Internal Link Dist (ft)		4437			1090			970				341
Turn Bay Length (ft)	300						225			200		
Base Capacity (vph)	798	840	1110				373	1191		292	328	
Starvation Cap Reductn	0	0	0				0	0		0	0	
Spillback Cap Reductn	0	0	0				0	0		0	0	
Storage Cap Reductn	0	0	0				0	0		0	0	
Reduced v/c Ratio	0.19	0.87	0.72				0.29	0.48		0.51	0.66	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 22 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 27.3
 Intersection LOS: C
 Intersection Capacity Utilization 65.0%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 423: NC 58 & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

424: NC 58/Trenton Rd & US 70 WB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	96	660	135	606	246	0	0	120	130
Future Volume (vph)	0	0	0	96	660	135	606	246	0	0	120	130
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		175	0		0	0		225
Storage Lanes	0		0	1		1	2		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	1752	1845	1568	3400	1845	0	0	1845	1568
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1752	1845	1568	3400	1845	0	0	1845	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45				45
Link Distance (ft)		4364			1124			421				1084
Travel Time (s)		99.2			17.0			6.4				16.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	107	733	150	673	273	0	0	133	144
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			36				36
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA	Perm	Prot	NA				NA
Protected Phases				3	8		5	2				6
Permitted Phases						8						6
Detector Phase				3	8	8	5	2				6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0				12.0
Minimum Split (s)				14.0	14.0	14.0	14.0	19.0				19.0
Total Split (s)				58.0	58.0	58.0	31.0	52.0				21.0
Total Split (%)				52.7%	52.7%	52.7%	28.2%	47.3%				19.1%
Maximum Green (s)				51.0	51.0	51.0	24.0	45.0				14.0
Yellow Time (s)				5.0	5.0	5.0	5.0	5.0				5.0
All-Red Time (s)				2.0	2.0	2.0	2.0	2.0				2.0
Lost Time Adjust (s)				-2.0	-2.0	-2.0	-2.0	-2.0				-2.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0				5.0
Lead/Lag							Lag				Lead	Lead
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0				3.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Act Effect Green (s)				49.8	49.8	49.8	25.6	50.2				19.6
Actuated g/C Ratio				0.45	0.45	0.45	0.23	0.46				0.18
v/c Ratio				0.13	0.88	0.21	0.85	0.32				0.52
Control Delay				17.1	40.0	18.3	31.3	8.0				50.3

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

424: NC 58/Trenton Rd & US 70 WB Ramps
 Alternative 1 AM Peak

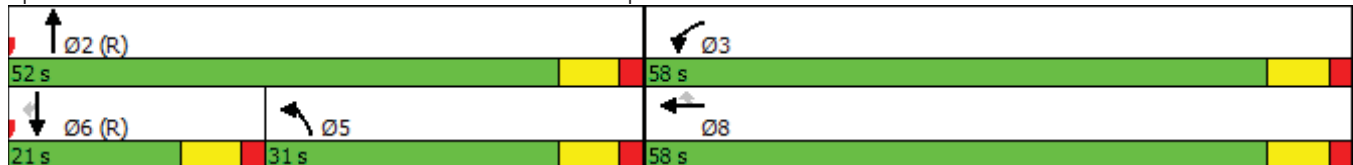


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay				0.0	0.0	0.0	0.0	0.1			0.0	0.0
Total Delay				17.1	40.0	18.3	31.3	8.1			46.2	50.3
LOS				B	D	B	C	A			D	D
Approach Delay					34.3			24.6			48.3	
Approach LOS					C			C			D	
Queue Length 50th (ft)				41	437	60	242	41			87	96
Queue Length 95th (ft)				73	#609	100	#133	68			151	#168
Internal Link Dist (ft)		4284			1044			341			1004	
Turn Bay Length (ft)				175		175						225
Base Capacity (vph)				844	888	755	807	841			328	279
Starvation Cap Reductn				0	0	0	0	117			0	0
Spillback Cap Reductn				0	0	0	0	0			0	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.13	0.83	0.20	0.83	0.38			0.41	0.52

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 26 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 31.9
 Intersection LOS: C
 Intersection Capacity Utilization 74.5%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 424: NC 58/Trenton Rd & US 70 WB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

424: NC 58/Trenton Rd & US 70 WB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	118	525	82	390	168	0	0	211	170
Future Volume (vph)	0	0	0	118	525	82	390	168	0	0	211	170
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		175	0		0	0		225
Storage Lanes	0		0	1		1	2		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	1752	1845	1568	3400	1845	0	0	1845	1568
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1752	1845	1568	3400	1845	0	0	1845	1568
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			45			45			45	
Link Distance (ft)		4364			1124			421			1084	
Travel Time (s)		99.2			17.0			6.4			16.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	131	583	91	433	187	0	0	234	189
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA	Perm	Prot	NA			NA	Perm
Protected Phases				3	8		5	2			6	
Permitted Phases						8						6
Detector Phase				3	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				14.0	14.0	14.0	14.0	19.0			19.0	19.0
Total Split (s)				44.0	44.0	44.0	21.0	46.0			25.0	25.0
Total Split (%)				48.9%	48.9%	48.9%	23.3%	51.1%			27.8%	27.8%
Maximum Green (s)				37.0	37.0	37.0	14.0	39.0			18.0	18.0
Yellow Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)				-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Act Effct Green (s)				34.8	34.8	34.8	16.3	45.2			23.9	23.9
Actuated g/C Ratio				0.39	0.39	0.39	0.18	0.50			0.27	0.27
v/c Ratio				0.19	0.82	0.15	0.70	0.20			0.48	0.45
Control Delay				17.9	34.6	17.3	25.6	8.0			33.5	33.7

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

424: NC 58/Trenton Rd & US 70 WB Ramps
 Alternative 1 PM Peak

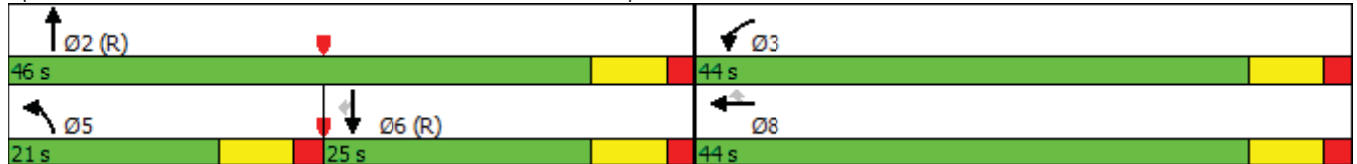


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay				17.9	34.6	17.3	25.6	8.0			33.5	33.7
LOS				B	C	B	C	A			C	C
Approach Delay					29.9			20.3			33.6	
Approach LOS					C			C			C	
Queue Length 50th (ft)				47	282	32	120	65			119	95
Queue Length 95th (ft)				81	396	60	172	143			195	164
Internal Link Dist (ft)		4284			1044			341			1004	
Turn Bay Length (ft)				175		175						225
Base Capacity (vph)				759	799	679	629	926			490	416
Starvation Cap Reductn				0	0	0	0	0			0	0
Spillback Cap Reductn				0	0	0	0	0			0	0
Storage Cap Reductn				0	0	0	0	0			0	0
Reduced v/c Ratio				0.17	0.73	0.13	0.69	0.20			0.48	0.45

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	62 (69%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	27.5
Intersection LOS:	C
Intersection Capacity Utilization:	62.4%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 424: NC 58/Trenton Rd & US 70 WB Ramps



R-2553 Kinston Bypass 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	122	51	166	40	40	49
Future Volume (vph)	122	51	166	40	40	49
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	125		100	125	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1553	1827	1553	1736	1827
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		55			55
Link Distance (ft)	1605		1388			1420
Travel Time (s)	43.8		17.2			17.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	57	184	44	44	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	30.0	20.0	40.0	30.0	20.0	60.0
Total Split (%)	33.3%	22.2%	44.4%	33.3%	22.2%	66.7%
Maximum Green (s)	23.0	13.0	33.0	23.0	13.0	53.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	14.3	29.5	53.3	73.6	10.2	65.7
Actuated g/C Ratio	0.16	0.33	0.59	0.82	0.11	0.73
v/c Ratio	0.49	0.11	0.17	0.03	0.22	0.04
Control Delay	39.9	19.8	11.0	2.6	31.8	1.9

R-2553 Kinston Bypass 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak

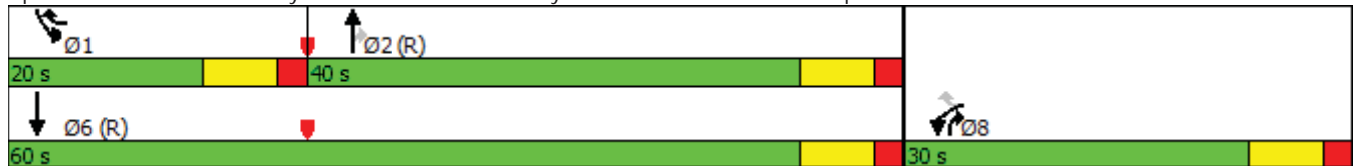


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	19.8	11.0	2.6	31.8	1.9
LOS	D	B	B	A	C	A
Approach Delay	33.9		9.4			15.3
Approach LOS	C		A			B
Queue Length 50th (ft)	71	23	47	4	19	3
Queue Length 95th (ft)	120	44	99	12	39	8
Internal Link Dist (ft)	1525		1308			1340
Turn Bay Length (ft)		125		100	125	
Base Capacity (vph)	482	592	1081	1400	289	1333
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.10	0.17	0.03	0.15	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 34 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 19.6 Intersection LOS: B
 Intersection Capacity Utilization 36.8% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps



R-2553 Kinston Bypass 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	156	68	133	38	37	50
Future Volume (vph)	156	68	133	38	37	50
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	125		100	125	
Storage Lanes	1	1		1	1	
Taper Length (ft)	100				100	
Satd. Flow (prot)	1736	1553	1827	1553	1736	1827
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1736	1553	1827	1553	1736	1827
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		55			55
Link Distance (ft)	1605		1388			1420
Travel Time (s)	43.8		17.2			17.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	76	148	42	41	56
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	Prot	NA
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phase	8	1	2	8	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	14.0	7.0	7.0	14.0
Minimum Split (s)	14.0	14.0	21.0	14.0	14.0	21.0
Total Split (s)	35.0	20.0	35.0	35.0	20.0	55.0
Total Split (%)	38.9%	22.2%	38.9%	38.9%	22.2%	61.1%
Maximum Green (s)	28.0	13.0	28.0	28.0	13.0	48.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Min	None	None	C-Min
Act Effect Green (s)	16.3	31.3	51.5	73.8	10.0	63.7
Actuated g/C Ratio	0.18	0.35	0.57	0.82	0.11	0.71
v/c Ratio	0.55	0.14	0.14	0.03	0.21	0.04
Control Delay	39.5	19.0	11.9	2.6	32.9	2.9

R-2553 Kinston Bypass 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak

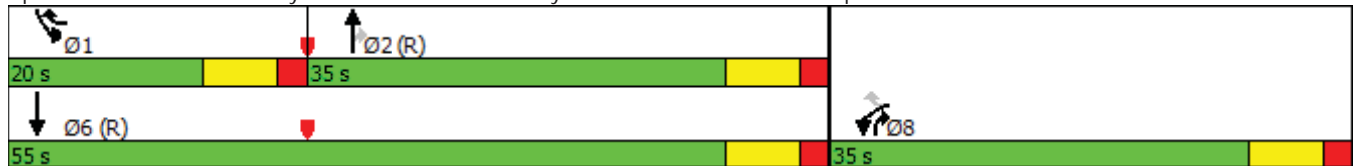


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	19.0	11.9	2.6	32.9	2.9
LOS	D	B	B	A	C	A
Approach Delay	33.3		9.8			15.6
Approach LOS	C		A			B
Queue Length 50th (ft)	90	30	39	4	18	3
Queue Length 95th (ft)	144	52	86	12	39	10
Internal Link Dist (ft)	1525		1308			1340
Turn Bay Length (ft)		125		100	125	
Base Capacity (vph)	578	626	1044	1443	289	1293
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.12	0.14	0.03	0.14	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 32 (36%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 21.8 Intersection LOS: C
 Intersection Capacity Utilization 38.6% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps



R-2553 Kinston Bypass 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	37	38	156	61	51	68
Future Volume (vph)	37	38	156	61	51	68
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100	200			100
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1736	1553	1736	1827	1845	1568
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1736	1553	1736	1827	1845	1568
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			55	55	
Link Distance (ft)	1065			1420	1360	
Travel Time (s)	29.0			17.6	16.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	42	173	68	57	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	14.0	21.0	21.0	14.0
Total Split (s)	22.0	38.0	38.0	68.0	30.0	22.0
Total Split (%)	24.4%	42.2%	42.2%	75.6%	33.3%	24.4%
Maximum Green (s)	15.0	31.0	31.0	61.0	23.0	15.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	10.0	28.6	16.3	73.8	51.4	63.7
Actuated g/C Ratio	0.11	0.32	0.18	0.82	0.57	0.71
v/c Ratio	0.21	0.09	0.55	0.05	0.05	0.07
Control Delay	38.6	17.9	32.0	2.0	11.9	5.1

R-2553 Kinston Bypass 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	17.9	32.0	2.0	11.9	5.1
LOS	D	B	C	A	B	A
Approach Delay	28.2			23.6	8.0	
Approach LOS	C			C	A	
Queue Length 50th (ft)	22	16	96	5	14	11
Queue Length 95th (ft)	51	33	82	13	39	30
Internal Link Dist (ft)	985			1340	1280	
Turn Bay Length (ft)		100	200			100
Base Capacity (vph)	327	594	636	1497	1054	1108
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.07	0.27	0.05	0.05	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 19.9 Intersection LOS: B
 Intersection Capacity Utilization 29.5% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps



R-2553 Kinston Bypass 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	40	122	79	47	51
Future Volume (vph)	40	40	122	79	47	51
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100	200			100
Storage Lanes	1	1	1			1
Taper Length (ft)	100		100			
Satd. Flow (prot)	1736	1553	1736	1827	1845	1568
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1736	1553	1736	1827	1845	1568
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			55	55	
Link Distance (ft)	1065			1420	1360	
Travel Time (s)	29.0			17.6	16.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	4%	3%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	44	136	88	52	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	14.0	14.0	7.0
Minimum Split (s)	14.0	14.0	14.0	21.0	21.0	14.0
Total Split (s)	24.0	36.0	36.0	66.0	30.0	24.0
Total Split (%)	26.7%	40.0%	40.0%	73.3%	33.3%	26.7%
Maximum Green (s)	17.0	29.0	29.0	59.0	23.0	17.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lag	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Min	C-Min	None
Act Effect Green (s)	10.2	26.8	14.4	73.6	53.2	65.6
Actuated g/C Ratio	0.11	0.30	0.16	0.82	0.59	0.73
v/c Ratio	0.22	0.10	0.49	0.06	0.05	0.05
Control Delay	38.7	19.4	32.8	1.7	10.9	4.3

R-2553 Kinston Bypass 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps
 Synchro 9 – Report Lanes, Volumes, Timings Alternative 1 PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	19.4	32.8	1.7	10.9	4.3
LOS	D	B	C	A	B	A
Approach Delay	29.0			20.6	7.4	
Approach LOS	C			C	A	
Queue Length 50th (ft)	23	17	65	6	12	8
Queue Length 95th (ft)	54	36	78	13	34	21
Internal Link Dist (ft)	985			1340	1280	
Turn Bay Length (ft)		100	200			100
Base Capacity (vph)	366	558	597	1494	1090	1142
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.08	0.23	0.06	0.05	0.05

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 19.0 Intersection LOS: B
 Intersection Capacity Utilization 27.6% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps



R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

427: Burkett Rd & Wyse Fork Conn.
 Alternative 1 AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	55	35	23	31	8
Future Volume (vph)	10	55	35	23	31	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1830	1780	0	1708	0
Flt Permitted		0.992			0.962	
Satd. Flow (perm)	0	1830	1780	0	1708	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		873	821		789	
Travel Time (s)		13.2	12.4		12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	1%	1%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	72	65	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	20.1%
ICU Level of Service	A
Analysis Period (min)	15

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

427: Burkett Rd & Wyse Fork Conn.
 Alternative 1 AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	55	35	23	31	8
Future Volume (Veh/h)	10	55	35	23	31	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	61	39	26	34	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65				135	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65				135	52
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	99
cM capacity (veh/h)	1531				848	1010

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	72	65	43
Volume Left	11	0	34
Volume Right	0	26	9
cSH	1531	1700	877
Volume to Capacity	0.01	0.04	0.05
Queue Length 95th (ft)	1	0	4
Control Delay (s)	1.2	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		20.1%	ICU Level of Service
Analysis Period (min)		15	A

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

427: Burkett Rd & Wyse Fork Conn.
 Alternative 1 PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	35	55	31	23	10
Future Volume (vph)	8	35	55	31	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1828	1791	0	1694	0
Flt Permitted		0.991			0.966	
Satd. Flow (perm)	0	1828	1791	0	1694	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		873	821		789	
Travel Time (s)		13.2	12.4		12.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	3%	1%	1%	4%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	48	95	0	37	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.7%
Analysis Period (min)	15
	ICU Level of Service A

R-2553 Kinston Bypass
 Synchro 9 – Report HCM Unsignalized Intersection Capacity Analysis

427: Burkett Rd & Wyse Fork Conn.
 Alternative 1 PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	35	55	31	23	10
Future Volume (Veh/h)	8	35	55	31	23	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	39	61	34	26	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	95				135	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	95				135	78
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	1493				849	977
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	48	95	37			
Volume Left	9	0	26			
Volume Right	0	34	11			
cSH	1493	1700	883			
Volume to Capacity	0.01	0.06	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	1.4	0.0	9.3			
Lane LOS	A		A			
Approach Delay (s)	1.4	0.0	9.3			
Approach LOS			A			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		18.7%		ICU Level of Service		A
Analysis Period (min)			15			

R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

428: Service Rd/Kornegay St & US 70 EB Ramps
Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	4	32	0	0	0	0	63	22	22	26	0
Future Volume (vph)	60	4	32	0	0	0	0	63	22	22	26	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		125	0		0	0		100	100		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1745	1553	0	0	0	0	1881	1599	1736	1827	0
Flt Permitted		0.955								0.950		
Satd. Flow (perm)	0	1745	1553	0	0	0	0	1881	1599	1736	1827	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			45				45
Link Distance (ft)		937			1062			1018				808
Travel Time (s)		11.6			13.2			15.4				12.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	0%	0%	0%	1%	1%	1%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	71	36	0	0	0	0	70	24	24	29	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Detector Phase	4	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	31.0	31.0	31.0					35.0	35.0	24.0	59.0	
Total Split (%)	34.4%	34.4%	34.4%					38.9%	38.9%	26.7%	65.6%	
Maximum Green (s)	24.0	24.0	24.0					28.0	28.0	17.0	52.0	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Act Effect Green (s)		11.3	11.3					66.5	66.5	9.4	72.5	
Actuated g/C Ratio		0.13	0.13					0.74	0.74	0.10	0.81	
v/c Ratio		0.32	0.19					0.05	0.02	0.13	0.02	
Control Delay		39.2	36.5					6.9	7.3	38.3	3.8	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

428: Service Rd/Kornegay St & US 70 EB Ramps
 Alternative 1 AM Peak

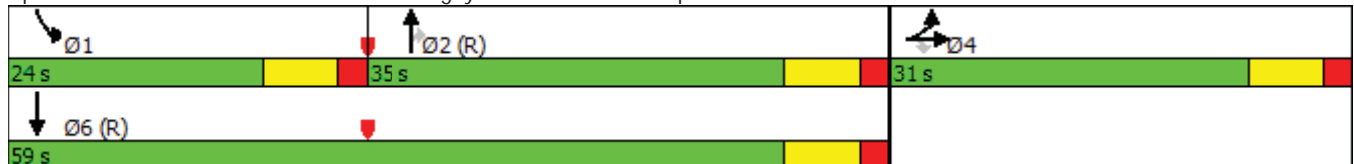


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		39.2	36.5					6.9	7.3	38.3	3.8	
LOS		D	D					A	A	D	A	
Approach Delay		38.3						7.0			19.4	
Approach LOS		D						A			B	
Queue Length 50th (ft)		38	19					8	3	15	1	
Queue Length 95th (ft)		75	45					36	17	42	19	
Internal Link Dist (ft)		857			982			938			728	
Turn Bay Length (ft)			125						100	100		
Base Capacity (vph)		504	448					1389	1180	366	1471	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.14	0.08					0.05	0.02	0.07	0.02	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	42 (47%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.32
Intersection Signal Delay:	22.8
Intersection LOS:	C
Intersection Capacity Utilization	34.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 428: Service Rd/Kornegay St & US 70 EB Ramps



R-2553 Kinston Bypass
Synchro 9 – Report Lanes, Volumes, Timings

428: Service Rd/Kornegay St & US 70 EB Ramps
Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑	↗	↖	↑	
Traffic Volume (vph)	96	4	53	0	0	0	0	42	16	17	32	0
Future Volume (vph)	96	4	53	0	0	0	0	42	16	17	32	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		125	0		0	0		100	100		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1743	1553	0	0	0	0	1881	1599	1736	1827	0
Flt Permitted		0.954								0.950		
Satd. Flow (perm)	0	1743	1553	0	0	0	0	1881	1599	1736	1827	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			55			45				45
Link Distance (ft)		937			1062			1018				808
Travel Time (s)		11.6			13.2			15.4				12.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	0%	0%	0%	1%	1%	1%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	59	0	0	0	0	47	18	19	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases			4						2			
Detector Phase	4	4	4					2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0					12.0	12.0	7.0	12.0	
Minimum Split (s)	14.0	14.0	14.0					19.0	19.0	14.0	19.0	
Total Split (s)	38.0	38.0	38.0					30.0	30.0	22.0	52.0	
Total Split (%)	42.2%	42.2%	42.2%					33.3%	33.3%	24.4%	57.8%	
Maximum Green (s)	31.0	31.0	31.0					23.0	23.0	15.0	45.0	
Yellow Time (s)	5.0	5.0	5.0					5.0	5.0	5.0	5.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0					-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Recall Mode	None	None	None					C-Min	C-Min	None	C-Min	
Act Effect Green (s)		13.2	13.2					64.8	64.8	9.3	70.6	
Actuated g/C Ratio		0.15	0.15					0.72	0.72	0.10	0.78	
v/c Ratio		0.44	0.26					0.03	0.02	0.11	0.03	
Control Delay		39.6	35.7					7.9	8.4	35.2	5.6	

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

428: Service Rd/Kornegay St & US 70 EB Ramps
 Alternative 1 PM Peak

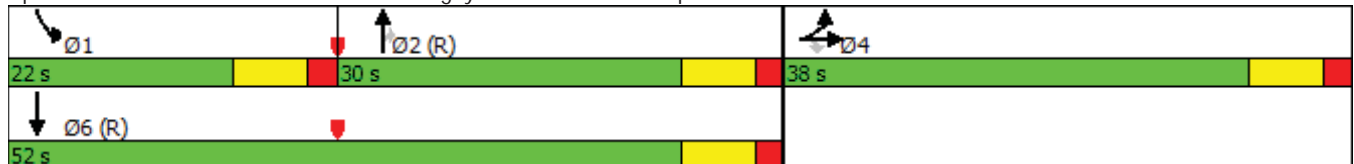


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay		39.6	35.7					7.9	8.4	35.2	5.6	
LOS		D	D					A	A	D	A	
Approach Delay		38.3						8.0			15.9	
Approach LOS		D						A			B	
Queue Length 50th (ft)		58	30					6	2	12	11	
Queue Length 95th (ft)		104	63					29	15	36	27	
Internal Link Dist (ft)		857			982			938			728	
Turn Bay Length (ft)			125						100	100		
Base Capacity (vph)		639	569					1353	1151	327	1434	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.17	0.10					0.03	0.02	0.06	0.03	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	42 (47%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	27.3
Intersection LOS:	C
Intersection Capacity Utilization:	34.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 428: Service Rd/Kornegay St & US 70 EB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑			↑	↗
Traffic Volume (vph)	0	0	0	16	4	17	53	70	0	0	32	96
Future Volume (vph)	0	0	0	16	4	17	53	70	0	0	32	96
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	100		0	0		100
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1756	1553	1736	1827	0	0	1827	1553
Flt Permitted					0.961		0.950					
Satd. Flow (perm)	0	0	0	0	1756	1553	1736	1827	0	0	1827	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1012			920			808			961	
Travel Time (s)		15.3			13.9			12.2			14.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	22	19	59	78	0	0	36	107
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				14.0	14.0	14.0	14.0	19.0			19.0	19.0
Total Split (s)				23.0	23.0	23.0	26.0	67.0			41.0	41.0
Total Split (%)				25.6%	25.6%	25.6%	28.9%	74.4%			45.6%	45.6%
Maximum Green (s)				16.0	16.0	16.0	19.0	60.0			34.0	34.0
Yellow Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-2.0	-2.0	-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Act Effect Green (s)					9.4	9.4	10.8	78.2			64.3	64.3
Actuated g/C Ratio					0.10	0.10	0.12	0.87			0.71	0.71
v/c Ratio					0.12	0.12	0.29	0.05			0.03	0.10
Control Delay					38.0	38.1	30.5	1.1			7.5	7.4

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: Burkett / Kornegay/Kornegay St & US 70 WB Ramps

Alternative 1 AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					38.0	38.1	30.5	1.1			7.5	7.4
LOS					D	D	C	A			A	A
Approach Delay					38.1			13.7			7.4	
Approach LOS					D			B			A	
Queue Length 50th (ft)					12	10	19	4			7	23
Queue Length 95th (ft)					34	31	40	8			21	51
Internal Link Dist (ft)		932			840			728			881	
Turn Bay Length (ft)						100	100					100
Base Capacity (vph)					351	310	405	1588			1305	1109
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.06	0.06	0.15	0.05			0.03	0.10

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 40 (44%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.29
 Intersection Signal Delay: 14.0
 Intersection Capacity Utilization 34.2%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 429: Burkett / Kornegay/Kornegay St & US 70 WB Ramps





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	22	4	22	32	106	0	0	27	61
Future Volume (vph)	0	0	0	22	4	22	32	106	0	0	27	61
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		100	100		0	0		100
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	0	0	1752	1553	1736	1827	0	0	1827	1553
Flt Permitted					0.959		0.950					
Satd. Flow (perm)	0	0	0	0	1752	1553	1736	1827	0	0	1827	1553
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1012			920			808			961	
Travel Time (s)		15.3			13.9			12.2			14.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	28	24	36	118	0	0	30	68
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	7.0	12.0			12.0	12.0
Minimum Split (s)				14.0	14.0	14.0	14.0	19.0			19.0	19.0
Total Split (s)				26.0	26.0	26.0	26.0	64.0			38.0	38.0
Total Split (%)				28.9%	28.9%	28.9%	28.9%	71.1%			42.2%	42.2%
Maximum Green (s)				19.0	19.0	19.0	19.0	57.0			31.0	31.0
Yellow Time (s)				5.0	5.0	5.0	5.0	5.0			5.0	5.0
All-Red Time (s)				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)					-2.0	-2.0	-2.0	-2.0			-2.0	-2.0
Total Lost Time (s)					5.0	5.0	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode				None	None	None	None	C-Min			C-Min	C-Min
Act Effct Green (s)					9.6	9.6	9.9	78.0			68.8	68.8
Actuated g/C Ratio					0.11	0.11	0.11	0.87			0.76	0.76
v/c Ratio					0.15	0.15	0.19	0.07			0.02	0.06
Control Delay					38.2	38.3	21.9	0.9			6.9	6.9

R-2553 Kinston Bypass
 Synchro 9 – Report Lanes, Volumes, Timings

429: Burkett / Kornegay/Kornegay St & US 70 WB Ramps

Alternative 1 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay					0.0	0.0	0.0	0.0			0.0	0.0
Total Delay					38.2	38.3	21.9	0.9			6.9	6.9
LOS					D	D	C	A			A	A
Approach Delay					38.2			5.8			6.9	
Approach LOS					D			A			A	
Queue Length 50th (ft)					15	13	7	4			6	14
Queue Length 95th (ft)					40	36	18	6			18	34
Internal Link Dist (ft)		932			840			728			881	
Turn Bay Length (ft)						100	100					100
Base Capacity (vph)					408	362	405	1584			1396	1187
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					0	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					0.07	0.07	0.09	0.07			0.02	0.06

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 40 (44%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.19
 Intersection Signal Delay: 11.7
 Intersection Capacity Utilization 34.2%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 429: Burkett / Kornegay/Kornegay St & US 70 WB Ramps



**2040 Build Alternative 1
SimTraffic Reports**

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Summary of All Intervals

Run Number	1	2	3	4	2553 Alternative 1 AM	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	14484	14515	14453	14710	14675	14569
Vehs Exited	14445	14557	14389	14693	14736	14563
Starting Vehs	551	606	527	554	602	553
Ending Vehs	590	564	591	571	541	559
Travel Distance (mi)	10585	10613	10533	10705	10717	10638
Travel Time (hr)	575.2	543.1	578.4	544.3	588.8	564.5
Total Delay (hr)	289.4	256.7	294.3	256.1	300.2	277.8
Total Stops	17364	17352	17177	17720	17516	17400
Fuel Used (gal)	460.5	454.5	458.7	460.2	469.5	460.5

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	2553 Alternative 1 AM	Avg
Vehs Entered	14484	14515	14453	14710	14675	14569
Vehs Exited	14445	14557	14389	14693	14736	14563
Starting Vehs	551	606	527	554	602	553
Ending Vehs	590	564	591	571	541	559
Travel Distance (mi)	10585	10613	10533	10705	10717	10638
Travel Time (hr)	575.2	543.1	578.4	544.3	588.8	564.5
Total Delay (hr)	289.4	256.7	294.3	256.1	300.2	277.8
Total Stops	17364	17352	17177	17720	17516	17400
Fuel Used (gal)	460.5	454.5	458.7	460.2	469.5	460.5

Intersection: 401: Jim Sutton Rd & Service Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	43	43	4	20
Average Queue (ft)	13	13	0	1
95th Queue (ft)	36	36	3	8
Link Distance (ft)	848	806	905	935
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	75	157	68	58	292	37
Average Queue (ft)	26	72	24	13	153	3
95th Queue (ft)	59	132	57	40	245	19
Link Distance (ft)	951	951	935	935	1248	1248
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200		100	300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	77	237	134	74	180	90
Average Queue (ft)	23	110	44	14	90	22
95th Queue (ft)	59	193	103	46	159	67
Link Distance (ft)	939	939	1248	1248	934	934
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		325		100	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 404: Willie Measley Rd & Washington St/Service Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	92	58	65	16
Average Queue (ft)	42	18	20	1
95th Queue (ft)	71	43	49	8
Link Distance (ft)	924	913	934	1055
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 405: Barwick Station Rd & Service Rd/Sanderson Way

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	46	100	38
Average Queue (ft)	17	43	4
95th Queue (ft)	40	72	22
Link Distance (ft)	809	899	1140
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 406: Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	107	133	84	85	152	62
Average Queue (ft)	43	56	25	27	70	16
95th Queue (ft)	85	109	62	64	131	47
Link Distance (ft)	1036	1036	1140	1140	1165	1165
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		175		100	175	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 407: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	140	101	72	50	152	71
Average Queue (ft)	66	41	20	9	85	20
95th Queue (ft)	117	83	56	33	137	55
Link Distance (ft)	1058	1058	1165	1165	1141	1141
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150		100	175	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 408: Albert Sugg Rd & Service Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	28	83	16	3	8
Average Queue (ft)	14	41	1	0	0
95th Queue (ft)	32	65	7	4	5
Link Distance (ft)	740	822	1141	1141	929
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 409: Sanderson Farms/Industrial Dr & Sanderson Way

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	67	65	102	80
Average Queue (ft)	32	31	56	39
95th Queue (ft)	55	53	85	67
Link Distance (ft)	1091	1091	714	914
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 410: Shopping Center Dr & US 70 EB Ramps

Movement	EB	NB	SB
Directions Served	LTR	TR	LT
Maximum Queue (ft)	4	56	30
Average Queue (ft)	0	26	6
95th Queue (ft)	3	50	26
Link Distance (ft)	1225	1273	115
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 411: US 70 WB Ramps & Pinelawn Cemetery Dr

Movement	NB	SB
Directions Served	LT	TR
Maximum Queue (ft)	56	28
Average Queue (ft)	26	8
95th Queue (ft)	48	28
Link Distance (ft)	115	1177
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 412: Sussex St & US 70 EB Ramps

Movement	EB
Directions Served	LR
Maximum Queue (ft)	63
Average Queue (ft)	34
95th Queue (ft)	53
Link Distance (ft)	813
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 413: US 70 WB Ramps & Hill Farm Rd

Movement	NB
Directions Served	LT
Maximum Queue (ft)	33
Average Queue (ft)	2
95th Queue (ft)	17
Link Distance (ft)	126
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 414: Hill Farm Rd & Service Rd

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	156	55
Average Queue (ft)	88	23
95th Queue (ft)	153	57
Link Distance (ft)	1268	738
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 415: Sussex St/US 258 & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	R	L	L	T
Maximum Queue (ft)	91	174	139	189	205	201	200
Average Queue (ft)	27	95	59	87	106	100	93
95th Queue (ft)	68	159	108	167	168	175	187
Link Distance (ft)	883	883	550	550	703	703	703
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			350	325		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 416: US 258 & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	T	T	R
Maximum Queue (ft)	536	704	48	263	233	354	137
Average Queue (ft)	178	292	14	136	89	203	65
95th Queue (ft)	369	540	39	227	179	324	124
Link Distance (ft)	1138	1138	703	703	1061	1061	1061
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	550		100		375		225
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 417: US 258 & Service Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	153	102	99	130	324	556	152	559
Average Queue (ft)	90	44	28	31	144	373	42	288
95th Queue (ft)	162	94	65	85	245	568	106	456
Link Distance (ft)	1268	1268	1316	1316	1061	1061	753	753
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		225	175		325		175	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 418: NC 11/55 & Service Rd

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	119	202	65	643	766	128	126	153
Average Queue (ft)	36	84	12	250	370	48	35	66
95th Queue (ft)	85	157	42	530	640	101	92	123
Link Distance (ft)	1016	918	1187	1187	1187	897	897	897
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100			175		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 419: NC 11/55 & US 70 EB Ramps

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	331	301	282	301	463	239	273	62
Average Queue (ft)	181	151	136	73	205	90	157	14
95th Queue (ft)	296	254	236	216	395	195	255	43
Link Distance (ft)	994	994	897	897	897	1105	1105	1105
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	350		300					125
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 420: NC 11/55 & Service Rd/US 70 WB Ramps

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	T	R	L	TR
Maximum Queue (ft)	54	213	150	32	347	366	259	269	281
Average Queue (ft)	11	106	52	4	224	240	143	138	112
95th Queue (ft)	35	184	117	21	317	340	230	239	222
Link Distance (ft)	869	969	969	1105	1105	1105	1105	1950	1950
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		300		100			300	375	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 421: US 258 & US 70 EB Ramps

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	R	T	T	T	R	L	L
Maximum Queue (ft)	143	326	332	236	119	130	197	227	457	81	170	170
Average Queue (ft)	28	176	168	117	45	59	99	59	253	14	91	82
95th Queue (ft)	88	276	272	203	94	115	181	166	426	50	182	171
Link Distance (ft)	907	907	907	907	4381	4381	820	820	820	820	149	149
Upstream Blk Time (%)											3	2
Queuing Penalty (veh)											7	5
Storage Bay Dist (ft)	150			325		150	475	475		100		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 421: US 258 & US 70 EB Ramps

Movement	SB
Directions Served	T
Maximum Queue (ft)	162
Average Queue (ft)	26
95th Queue (ft)	101
Link Distance (ft)	149
Upstream Blk Time (%)	2
Queuing Penalty (veh)	5
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 422: US 258/NC 58 & US 70 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	T	T	R
Maximum Queue (ft)	98	274	289	508	178	171	167	177	174	286	37
Average Queue (ft)	19	140	155	299	124	117	63	97	71	145	3
95th Queue (ft)	63	238	251	459	190	182	146	163	151	270	18
Link Distance (ft)	4201	4201	4201	4201	149	149	149	893	893	893	893
Upstream Blk Time (%)					14	15	1				
Queuing Penalty (veh)					39	42	4				
Storage Bay Dist (ft)	150			525			450	450			100
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 423: NC 58 & US 70 EB Ramps

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	T	TR	L	TR
Maximum Queue (ft)	239	645	424	156	212	214	318	142	171
Average Queue (ft)	99	309	146	72	118	101	149	63	71
95th Queue (ft)	191	549	313	134	195	183	271	125	144
Link Distance (ft)	4381	4381	4381	1007	1007	1007	1007	342	342
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	300			225	225	225		200	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 424: NC 58/Trenton Rd & US 70 WB Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	L	T	T	R
Maximum Queue (ft)	139	604	154	334	346	206	191	196
Average Queue (ft)	52	330	65	171	185	69	74	87
95th Queue (ft)	107	521	131	289	308	153	145	158
Link Distance (ft)	1083	1083	1083	342	342	342	1004	1004
Upstream Blk Time (%)				0	1			
Queuing Penalty (veh)				1	2			
Storage Bay Dist (ft)	175		175					225
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	179	80	122	38	105	51
Average Queue (ft)	78	23	33	4	31	5
95th Queue (ft)	144	60	87	20	74	26
Link Distance (ft)	1540	1540	1333	1333	1355	1355
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		125		100	125	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	75	77	196	39	63	61
Average Queue (ft)	30	24	97	4	13	13
95th Queue (ft)	63	60	170	23	43	41
Link Distance (ft)	1015	1015	1355	1355	1321	1321
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100	200			100
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 427: Burkett Rd & Wyse Fork Conn.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	4	44
Average Queue (ft)	0	15
95th Queue (ft)	3	38
Link Distance (ft)	852	757
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 428: Service Rd/Kornegay St & US 70 EB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	R	L	T
Maximum Queue (ft)	111	79	53	26	55	41
Average Queue (ft)	48	28	10	3	18	4
95th Queue (ft)	94	68	38	15	48	21
Link Distance (ft)	902	902	979	979	772	772
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		125		100	100	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 429: Burkett / Kornegay/Kornegay St & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	56	65	95	30	39	78
Average Queue (ft)	16	16	37	2	5	15
95th Queue (ft)	47	45	77	16	24	48
Link Distance (ft)	885	885	772	772	921	921
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100	100			100
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 298

Summary of All Intervals

Run Number	1	2	3	4	2553 Alternative 1 PM	Avg
Start Time	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	14682	14385	14615	14619	14707	14596
Vehs Exited	14586	14425	14603	14593	14749	14593
Starting Vehs	471	535	535	515	583	523
Ending Vehs	567	495	547	541	541	523
Travel Distance (mi)	10592	10437	10664	10550	10634	10578
Travel Time (hr)	548.0	552.4	565.5	556.0	583.0	559.6
Total Delay (hr)	262.7	271.2	278.8	271.5	297.1	274.8
Total Stops	18235	18359	18713	18407	18942	18511
Fuel Used (gal)	458.8	454.6	463.5	459.4	466.9	460.4

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	2553 Alternative 1 PM	Avg
Vehs Entered	14682	14385	14615	14619	14707	14596
Vehs Exited	14586	14425	14603	14593	14749	14593
Starting Vehs	471	535	535	515	583	523
Ending Vehs	567	495	547	541	541	523
Travel Distance (mi)	10592	10437	10664	10550	10634	10578
Travel Time (hr)	548.0	552.4	565.5	556.0	583.0	559.6
Total Delay (hr)	262.7	271.2	278.8	271.5	297.1	274.8
Total Stops	18235	18359	18713	18407	18942	18511
Fuel Used (gal)	458.8	454.6	463.5	459.4	466.9	460.4

Intersection: 401: Jim Sutton Rd & Service Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	29	39	4	8
Average Queue (ft)	9	16	0	0
95th Queue (ft)	29	37	3	6
Link Distance (ft)	848	806	905	935
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 402: Jim Sutton Rd/Jim Sutton / Willie Measley & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	116	196	63	58	267	43
Average Queue (ft)	43	85	15	9	135	6
95th Queue (ft)	92	156	48	33	221	27
Link Distance (ft)	951	951	935	935	1248	1248
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200		100	300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 403: Jim Sutton / Willie Measley/Willie Measley Rd & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	93	305	118	53	160	58
Average Queue (ft)	37	139	38	7	76	16
95th Queue (ft)	79	256	89	29	141	51
Link Distance (ft)	939	939	1248	1248	934	934
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		325		100	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 404: Willie Measley Rd & Washington St/Service Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	73	50	57	9
Average Queue (ft)	37	23	18	0
95th Queue (ft)	62	43	47	6
Link Distance (ft)	924	913	934	1055
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 405: Barwick Station Rd & Service Rd/Sanderson Way

Movement	EB	WB	SB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	33	78	37
Average Queue (ft)	11	36	5
95th Queue (ft)	32	60	23
Link Distance (ft)	809	899	1140
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 406: Barwick Station Rd/Barwick Station / Albert Sugg Rd & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	118	172	66	59	133	90
Average Queue (ft)	51	68	17	21	44	14
95th Queue (ft)	97	137	50	53	101	52
Link Distance (ft)	1036	1036	1140	1140	1165	1165
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		175		100	175	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 407: Barwick Station / Albert Sugg Rd/Albert Sugg Rd & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	197	134	77	38	145	65
Average Queue (ft)	99	64	28	6	66	15
95th Queue (ft)	165	119	65	27	122	47
Link Distance (ft)	1058	1058	1165	1165	1141	1141
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150		100	175	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 408: Albert Sugg Rd & Service Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	43	82	16	6	4
Average Queue (ft)	20	36	1	0	0
95th Queue (ft)	38	61	8	3	3
Link Distance (ft)	740	822	1141	1141	929
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 409: Sanderson Farms/Industrial Dr & Sanderson Way

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	50	66	85	92
Average Queue (ft)	19	28	48	48
95th Queue (ft)	43	56	76	76
Link Distance (ft)	1091	1091	714	914
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 410: Shopping Center Dr & US 70 EB Ramps

Movement	NB	SB
Directions Served	TR	LT
Maximum Queue (ft)	72	30
Average Queue (ft)	34	6
95th Queue (ft)	60	26
Link Distance (ft)	1273	115
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 411: US 70 WB Ramps & Pinelawn Cemetery Dr

Movement	NB	SB
Directions Served	LT	TR
Maximum Queue (ft)	68	28
Average Queue (ft)	33	8
95th Queue (ft)	56	29
Link Distance (ft)	115	1177
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 412: Sussex St & US 70 EB Ramps

Movement	EB
Directions Served	LR
Maximum Queue (ft)	56
Average Queue (ft)	29
95th Queue (ft)	49
Link Distance (ft)	813
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 413: US 70 WB Ramps & Hill Farm Rd

Movement	NB
Directions Served	LT
Maximum Queue (ft)	42
Average Queue (ft)	5
95th Queue (ft)	24
Link Distance (ft)	126
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 414: Hill Farm Rd & Service Rd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	141	15	81
Average Queue (ft)	65	1	22
95th Queue (ft)	119	7	59
Link Distance (ft)	1268	1541	738
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 415: Sussex St/US 258 & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	R	L	L	T
Maximum Queue (ft)	48	117	167	329	323	322	173
Average Queue (ft)	11	39	68	161	163	163	69
95th Queue (ft)	39	92	128	289	274	279	147
Link Distance (ft)	883	883	550	550	703	703	703
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100			350	325		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 416: US 258 & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	T	T	R
Maximum Queue (ft)	260	406	82	136	235	303	202
Average Queue (ft)	130	208	25	55	111	170	83
95th Queue (ft)	220	341	63	120	209	271	157
Link Distance (ft)	1138	1138	703	703	1061	1061	1061
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	550		100		375		225
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 417: US 258 & Service Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	168	224	153	165	225	342	81	576
Average Queue (ft)	72	95	64	53	104	181	25	344
95th Queue (ft)	136	172	126	120	186	324	66	523
Link Distance (ft)	1268	1268	1316	1316	1061	1061	753	753
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		225	175		325		175	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 418: NC 11/55 & Service Rd

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	138	158	30	404	497	173	336	348
Average Queue (ft)	60	55	5	117	201	74	129	157
95th Queue (ft)	115	117	20	294	393	138	254	284
Link Distance (ft)	1016	918	1187	1187	1187	897	897	897
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100			175		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 419: NC 11/55 & US 70 EB Ramps

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	283	695	251	196	298	779	846	106
Average Queue (ft)	151	365	111	41	152	521	593	32
95th Queue (ft)	256	636	210	124	268	913	961	76
Link Distance (ft)	994	994	897	897	897	1105	1105	1105
Upstream Blk Time (%)						0	0	
Queuing Penalty (veh)						0	1	
Storage Bay Dist (ft)	350		300					125
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 420: NC 11/55 & Service Rd/US 70 WB Ramps

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	T	R	L	TR
Maximum Queue (ft)	47	288	114	29	226	233	292	372	498
Average Queue (ft)	11	153	34	3	102	111	103	184	223
95th Queue (ft)	33	244	81	17	199	213	218	310	409
Link Distance (ft)	869	969	969	1105	1105	1105	1105	1950	1950
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		300		100			300	375	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 421: US 258 & US 70 EB Ramps

Movement	EB	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	R	T	T	T	R	L	L
Maximum Queue (ft)	60	350	365	305	133	91	169	181	399	97	176	172
Average Queue (ft)	13	212	207	149	46	24	83	36	192	17	135	134
95th Queue (ft)	46	313	311	259	104	65	140	133	349	59	197	197
Link Distance (ft)	907	907	907	907	4381	4381	820	820	820	820	149	149
Upstream Blk Time (%)											20	20
Queuing Penalty (veh)											69	69
Storage Bay Dist (ft)	150			325		150	475	475		100		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 421: US 258 & US 70 EB Ramps

Movement	SB
Directions Served	T
Maximum Queue (ft)	163
Average Queue (ft)	73
95th Queue (ft)	183
Link Distance (ft)	149
Upstream Blk Time (%)	3
Queuing Penalty (veh)	10
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 422: US 258/NC 58 & US 70 WB Ramps

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	T	T	R
Maximum Queue (ft)	133	320	322	428	172	163	166	288	263	425	30
Average Queue (ft)	26	138	150	218	85	79	63	125	106	218	2
95th Queue (ft)	84	254	260	376	160	150	153	221	213	369	14
Link Distance (ft)	4201	4201	4201	4201	149	149	149	893	893	893	893
Upstream Blk Time (%)					2	2	4				
Queuing Penalty (veh)					5	3	8				
Storage Bay Dist (ft)	150			525				450	450		100
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 423: NC 58 & US 70 EB Ramps

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	T	TR	L	TR
Maximum Queue (ft)	287	655	502	119	152	131	231	175	209
Average Queue (ft)	66	341	235	52	74	54	112	84	100
95th Queue (ft)	175	592	442	104	128	110	196	153	177
Link Distance (ft)	4381	4381	4381	1007	1007	1007	1007	342	342
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	300			225	225	225		200	
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 424: NC 58/Trenton Rd & US 70 WB Ramps

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	L	T	T	R
Maximum Queue (ft)	150	373	108	275	263	127	198	201
Average Queue (ft)	60	228	37	116	126	38	95	92
95th Queue (ft)	113	341	84	215	217	96	174	164
Link Distance (ft)	1083	1083	1083	342	342	342	1004	1004
Upstream Blk Time (%)				0				
Queuing Penalty (veh)				0				
Storage Bay Dist (ft)	175		175					225
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 425: Wyse Fork Rd/Caswell Rd/Wyse Fork Rd & US 70 EB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	190	105	86	42	87	56
Average Queue (ft)	90	33	28	5	29	8
95th Queue (ft)	161	76	72	24	70	34
Link Distance (ft)	1540	1540	1333	1333	1355	1355
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		125		100	125	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 426: Caswell Rd/Wyse Fork Rd/Caswell Rd & US 70 WB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (ft)	86	86	172	44	47	53
Average Queue (ft)	32	27	76	6	9	11
95th Queue (ft)	67	66	140	26	33	38
Link Distance (ft)	1015	1015	1355	1355	1321	1321
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100	200			100
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 427: Burkett Rd & Wyse Fork Conn.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	13	52
Average Queue (ft)	1	18
95th Queue (ft)	7	39
Link Distance (ft)	852	757
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 428: Service Rd/Kornegay St & US 70 EB Ramps

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	R	L	T
Maximum Queue (ft)	145	100	28	22	61	40
Average Queue (ft)	62	36	6	2	14	4
95th Queue (ft)	113	80	24	14	42	21
Link Distance (ft)	902	902	979	979	772	772
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		125		100	100	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 429: Burkett / Kornegay/Kornegay St & US 70 WB Ramps

Movement	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	R
Maximum Queue (ft)	74	65	74	35	28	46
Average Queue (ft)	21	20	27	4	3	8
95th Queue (ft)	57	53	65	21	17	32
Link Distance (ft)	885	885	772	772	921	921
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		100	100			100
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 199