

CHANNEL 15
MODIFY SPLICE ENCLOSURE AT
AIRLINE AVE. (SR 1339) AT TRENTON ST.
SIG ID 12-0058
(AIRLINE AVE. [SR 1339] AT HIGHLAND ST.)

COLOR CODE
TIA/EIA 598-C

| | |
|------------|-------------|
| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
| (4) BROWN | (10) VIOLET |
| (5) SLATE | (11) ROSE |
| (6) WHITE | (12) AQUA |

LEGEND

X - FUSION SPLICE INDIVIDUAL FIBER
 O - EXISTING SPLICE
 □ - EXPRESS INDIVIDUAL FIBER

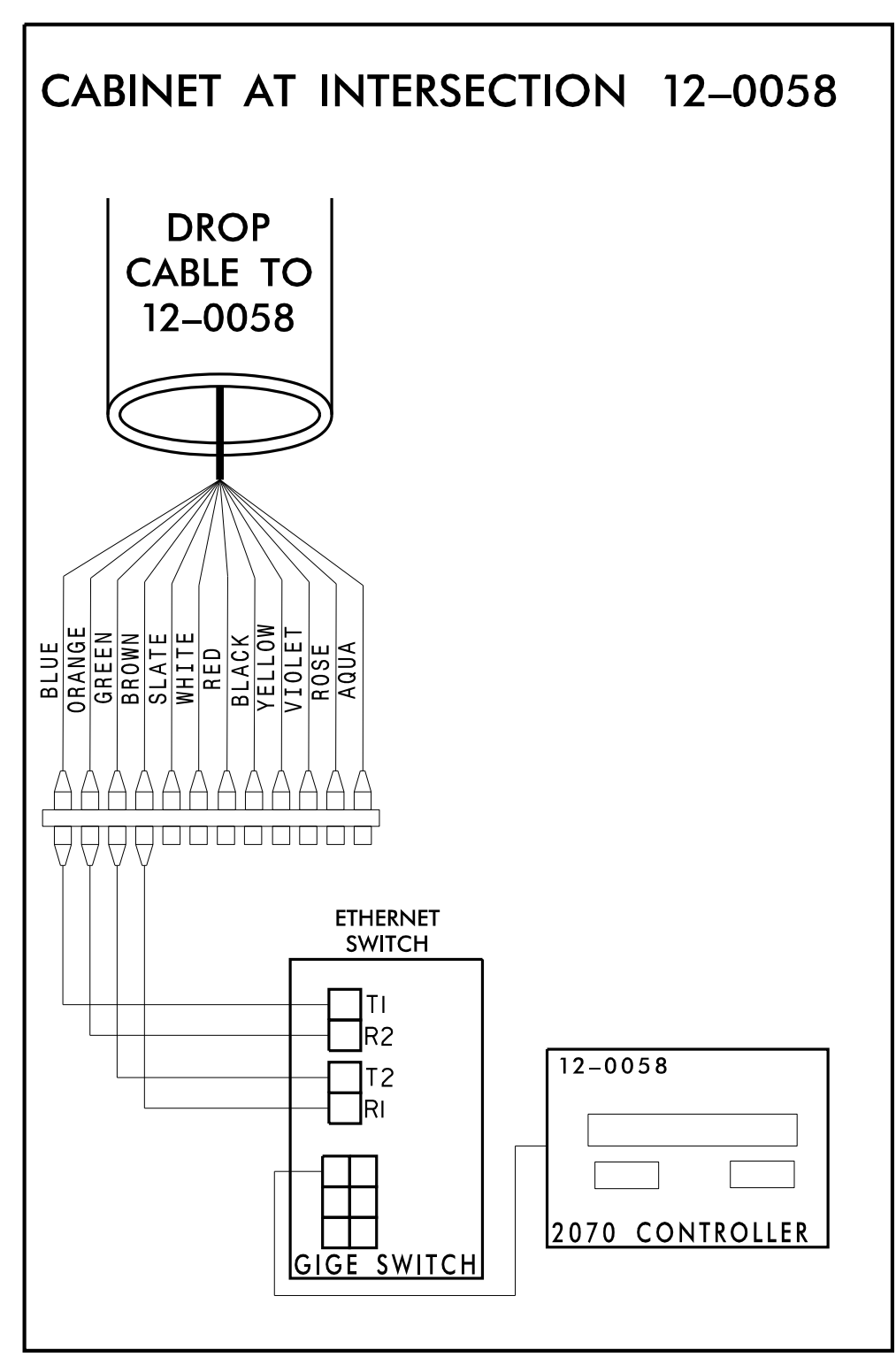
EXPRESS - EXPRESS ENTIRE BUFFER TUBE
 SPLICE - SPLICE ENTIRE BUFFER TUBE OR MAINTAIN IF EXISTING EXPRESSED

NOTES:
 1. FIBER INTERCONNECT CENTER RACKS ARE SCHEMATIC ONLY - ACTUAL EQUIPMENT FORM MAY VARY.
 2. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING /ENSURING PROPER TERMINATION.
 3. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING SPLICING. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER WHERE EXISTING SPLICING IS NOT AS EXPECTED.

CABLE 15B TO
INTERSECTION 12-0060
(GASTON AVE. [SR 1339] AT
FIRESTONE ST.)
24 FIBERS IN 2 BUFFER TUBES

CABLE 15A
INTERSECTION 12-0213
(CHESTER ST. [US 321] AT
RANKIN AVE.)
72 FIBERS IN 6 BUFFER TUBES

EXISTING CABLE TO
INTERSECTION 12-0203
(CHESTER ST. [US 321]
AT LONG AVE. [NC 7])
EXISTING 144 FIBERS IN 12 BUFFER TUBES



DROP TO 12-0058

EXISTING CABLE TO
INTERSECTION 12-0037
MAIN AVE. AT WHITESIDES ST.
EXISTING 144 FIBERS IN 12 BUFFER TUBES

CHANNEL 15
CITY OF GASTONIA COMPUTERIZED
SIGNAL SYSTEM
SPLICE DETAIL

Division 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

Scale: 0

Revisions table:

| NO. | REVISIONS | INIT. | DATE |
|-----|-----------|-------|------|
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DocuSigned by: Inger Van Osdel 3/16/2022

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

Professional Engineer Seal: I. Van Osdel, No. 028952

3/15/2022
\\kimley-horn.com\SE\RAL\NRAL_TPTD\ITS\01036569_Gastonia_Signal_System\6_Tasks\Splicing\SPL148.dgn

CHANNEL 15
MODIFY SPlice ENCLOSURE AT
AIRLINE AVE. (SR 1339) AT TRENTON ST.
SIG ID 12-0058
(AIRLINE AVE. [SR 1339] AT HIGHLAND ST.)

PHASE 2: MODIFY SPlice ENCLOSURE SPL-148
AT AIRLINE AVE. (SR 1339) AT TRENTON ST.
ONCE ALL CONNECTIONS FOR NEW
GASTONIA FIBER OPTIC CABLE
HAVE BEEN COMPLETED

COLOR CODE
TIA/EIA 598-C

| | |
|------------|-------------|
| (1) BLUE | (7) RED |
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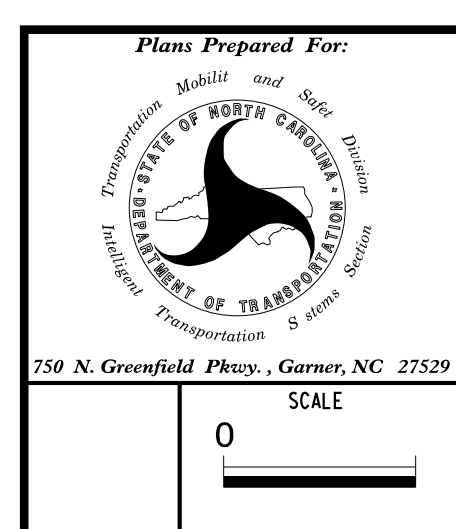
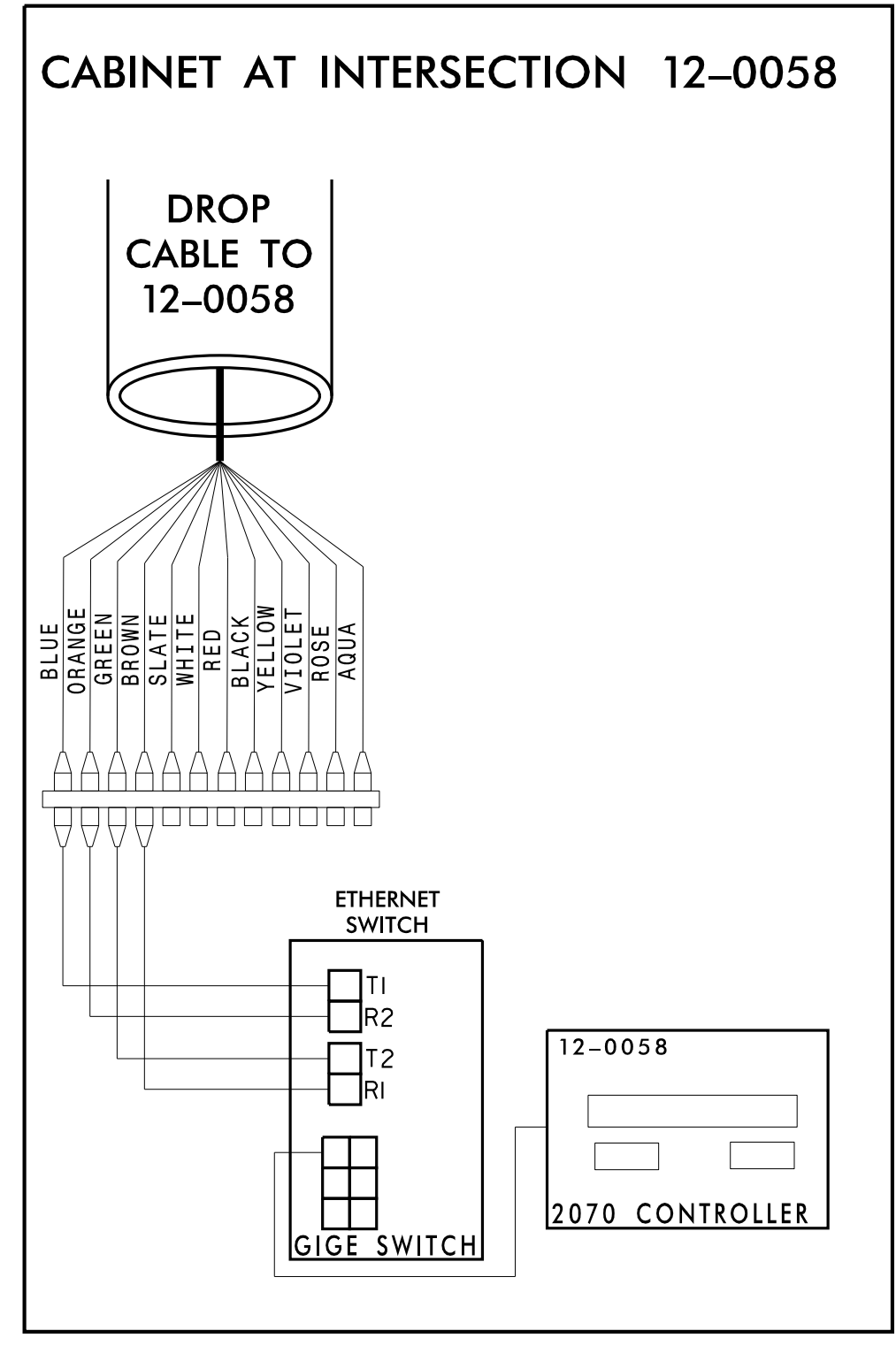
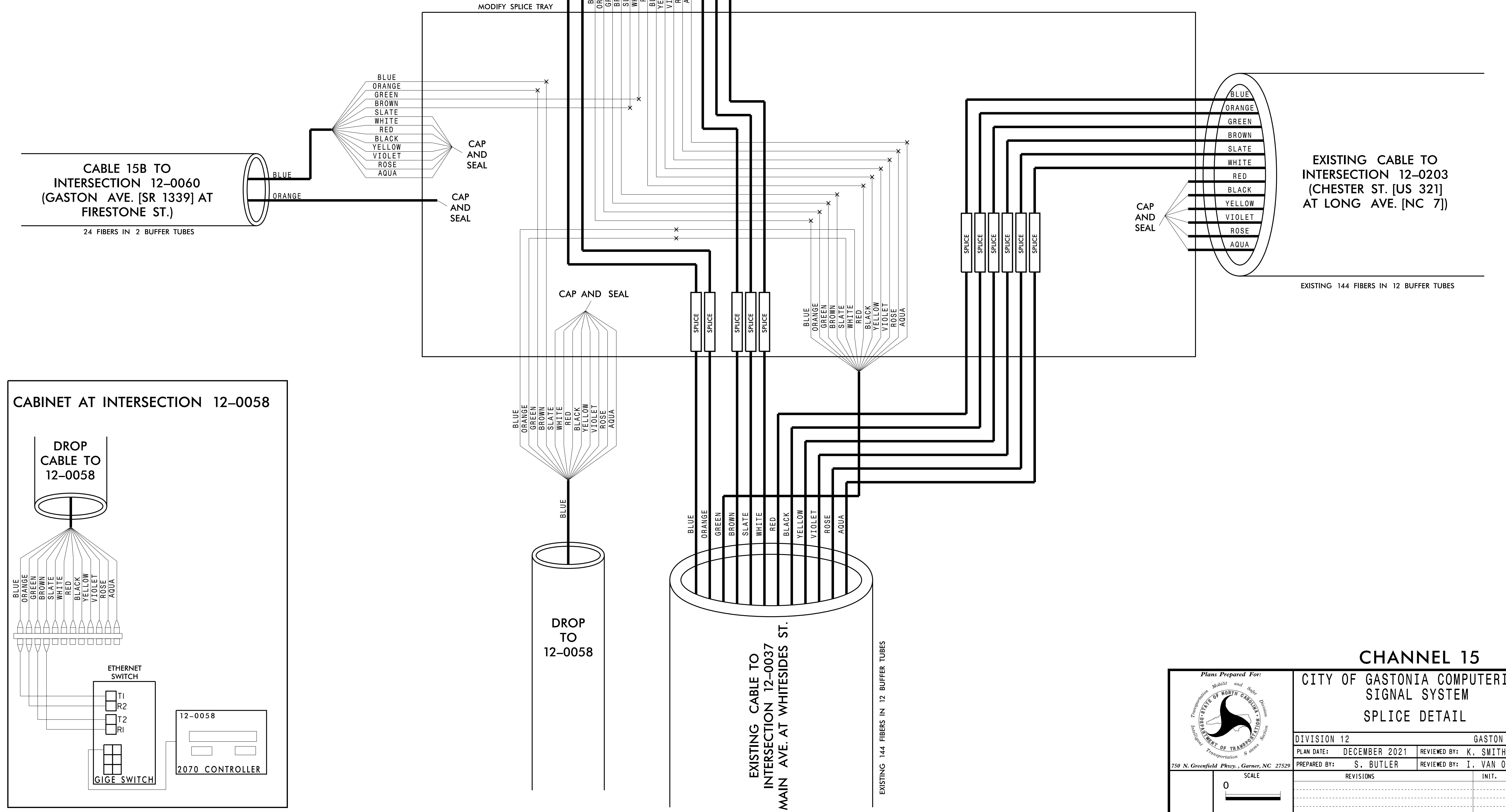
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CHANNEL 15
CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
SPlice DETAIL

DIVISION 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH

PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

Kimley-Horn
NC License #F-0102
421 Fayetteville St., Suite 600
Raleigh, NC 27601
Tel: (919) 677-2000
Fax: (919) 677-2050



3/15/2022 KARAL_TPTD_LITS_010036569_Gastonia_SignalSystemV6_Tasks_Splicing_SPL148A.dgn

CHANNEL 15
SPLICE ENCLOSURE AT
GASTON AVE. (SR 1339) AT FIRESTONE ST.
SIG ID 12-0060 (GASTON AVE. [SR 1339] AT FIRESTONE ST.)
SIG ID 12-0059 (GASTON AVE. [SR 1339] AT RANSOM ST.)

COLOR CODE
TIA/EIA 598-C

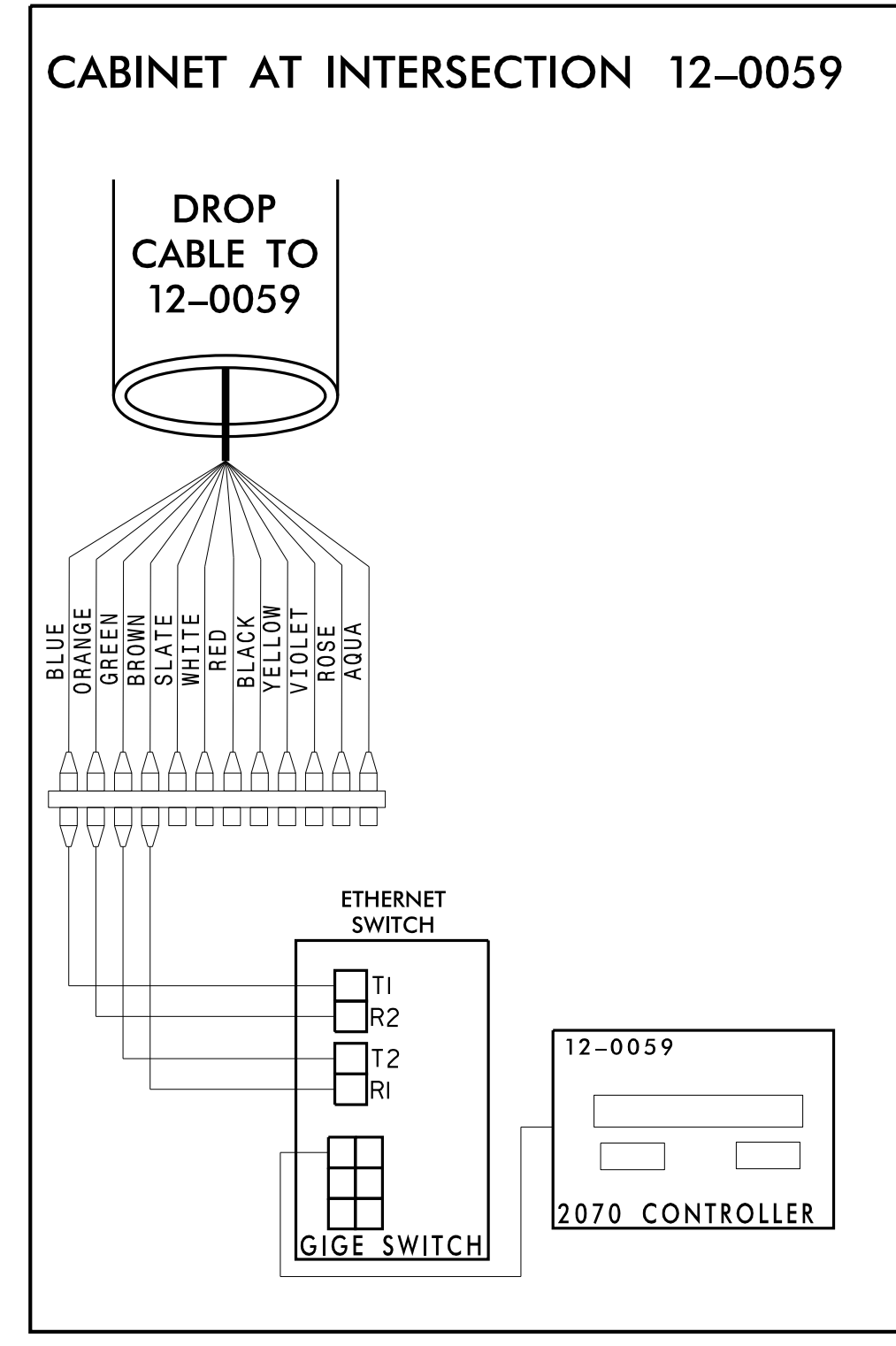
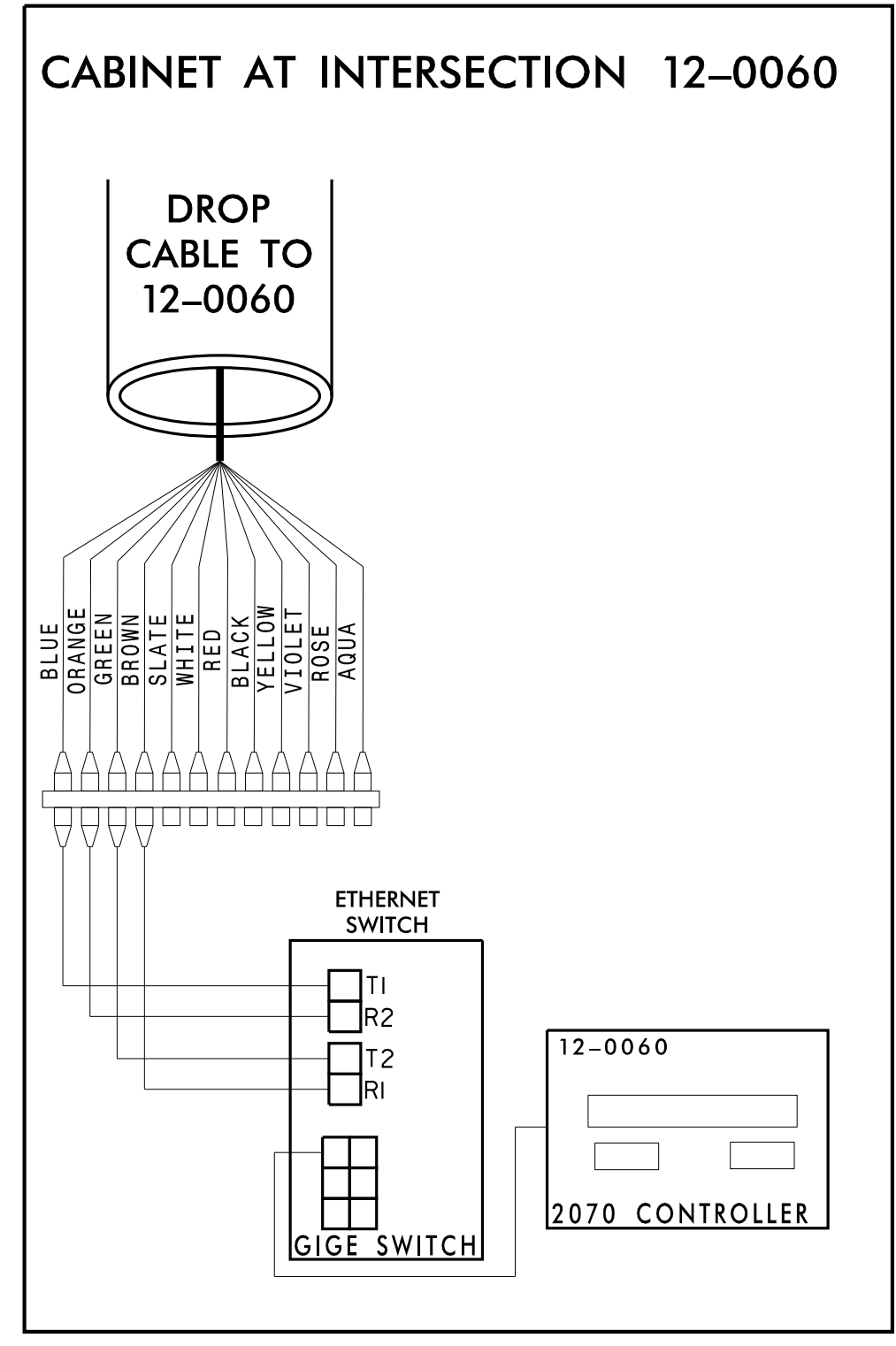
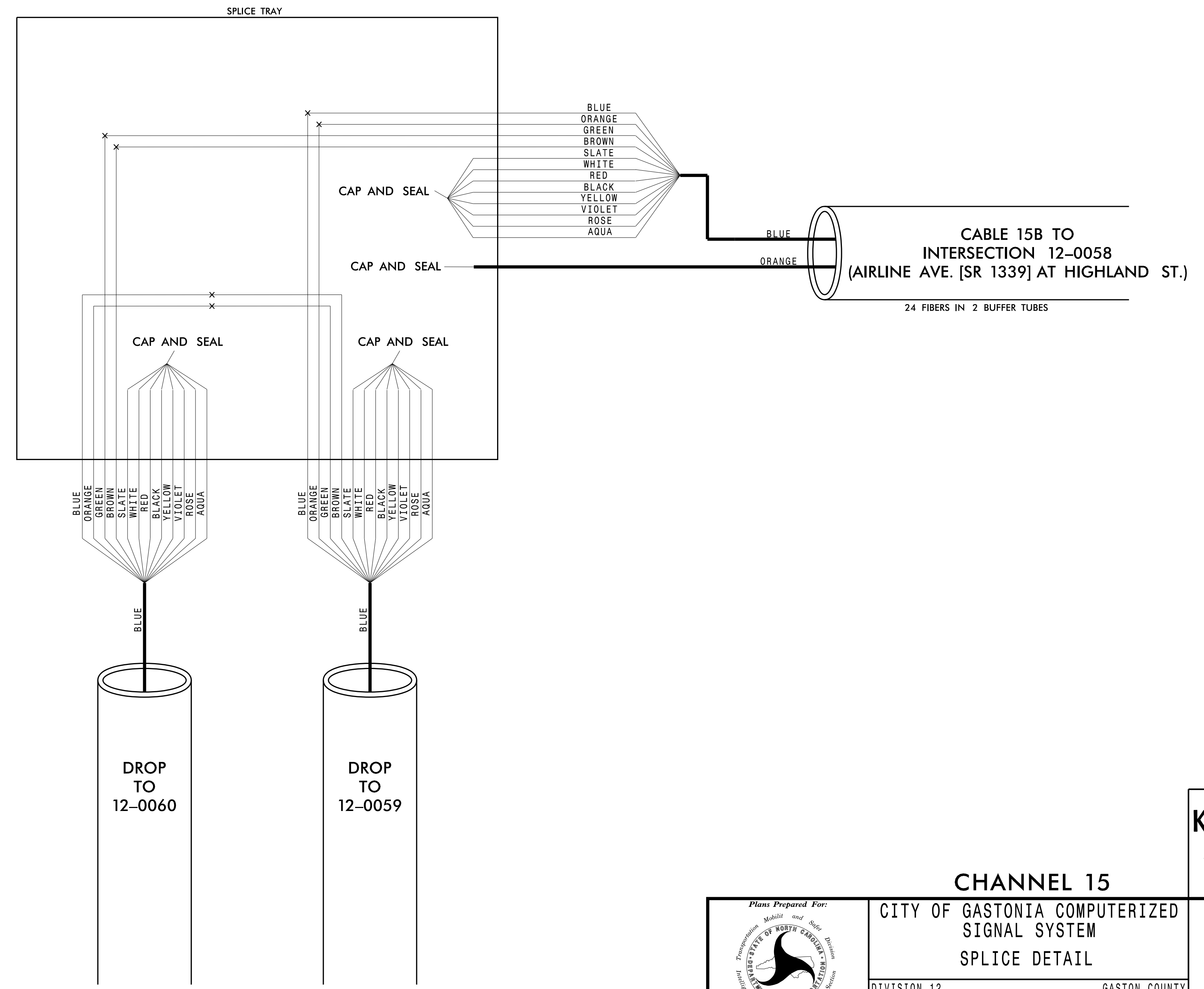
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| (4) BROWN | (10) VIOLET |
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CHANNEL 15
CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
SPLICE DETAIL

DIVISION 12 GASTON COUNTY
 PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

250 N. Greenfield Place, Garner, NC 27529

SCALE: 0

REVISIONS: _____ INIT. DATE

DocuSigned by: *Inger Van OsdeLL* 3/16/2022

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

SEAL
 NORTH CAROLINA PROFESSIONAL SEAL 028952
 INGER Z. VAN OSDELL
 ENGINEER

CADD File name: _____ DATE _____

3/15/2022
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CHANNEL 15
SPLICE ENCLOSURE AT
(CHESTER ST. [US 321] AT RANKIN AVE.)
SIG ID 12-0213

COLOR CODE
TIA/EIA 598-C

| | |
|------------|-------------|
| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
| (4) BROWN | (10) VIOLET |
| (5) SLATE | (11) ROSE |
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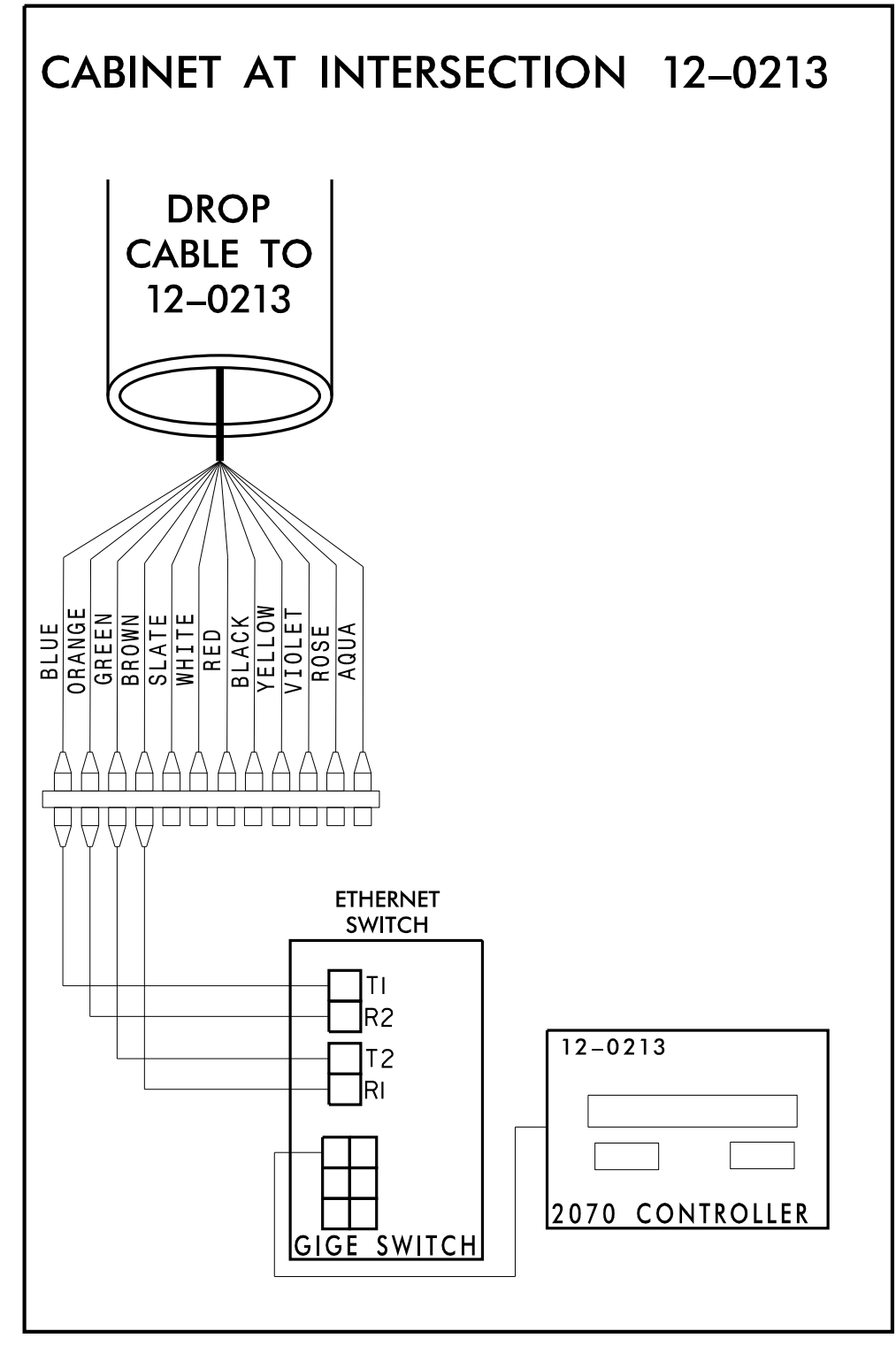
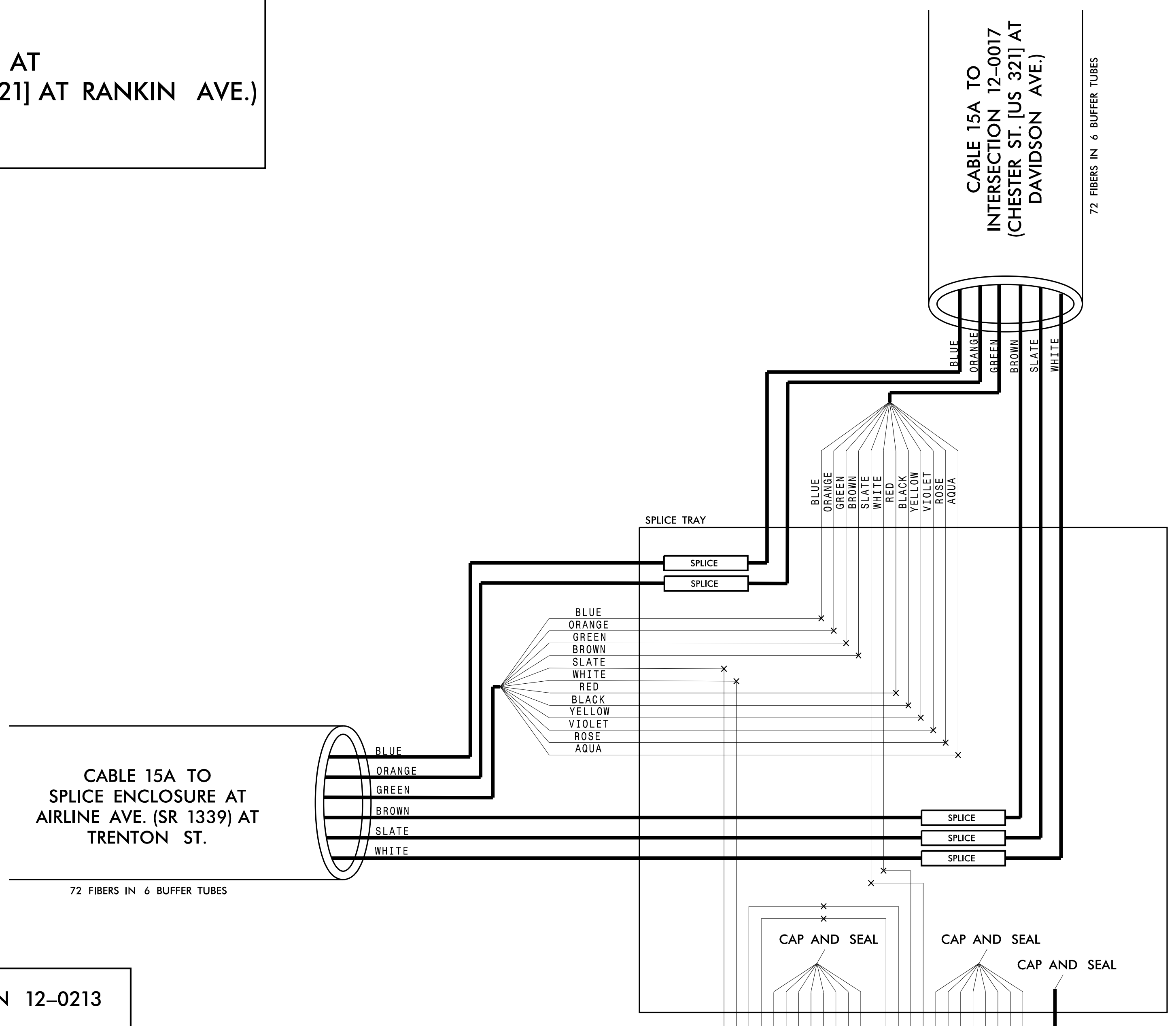
LEGEND

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CHANNEL 15
CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
SPLICE DETAIL

DIVISION 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

Scale: 0

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
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DocuSigned by: *Ivyer Van OsdeLL* 3/16/2022

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

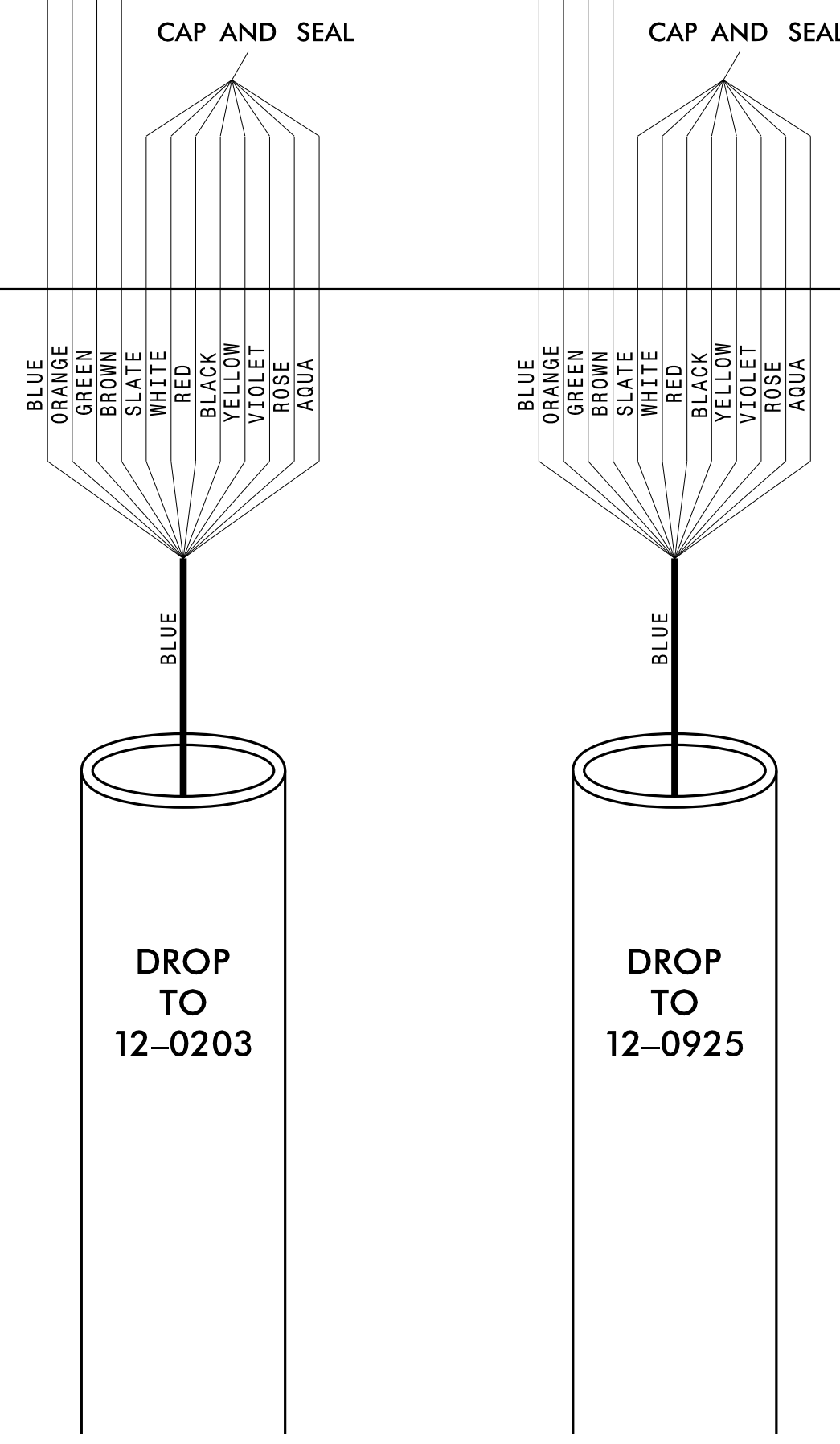
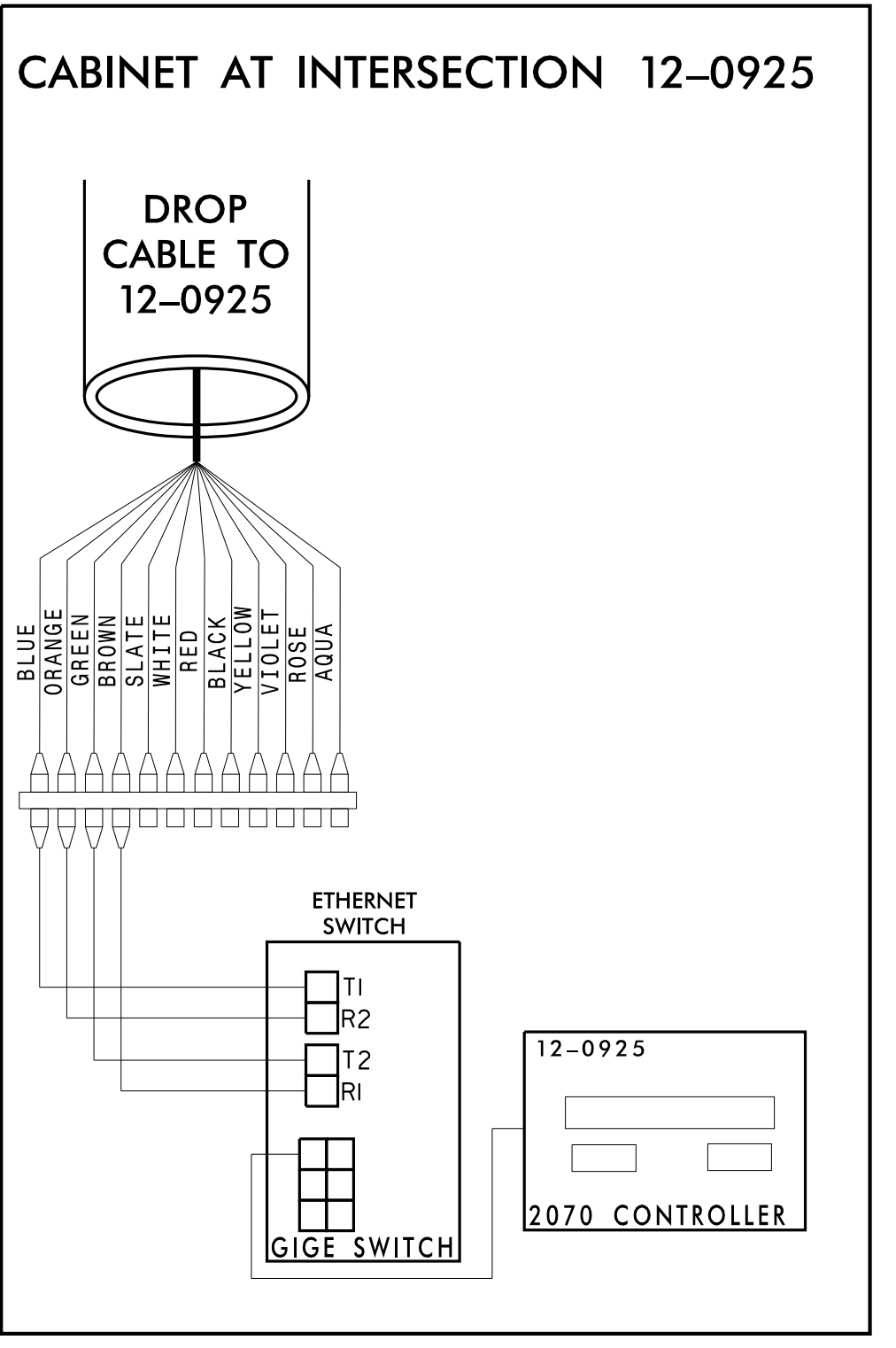
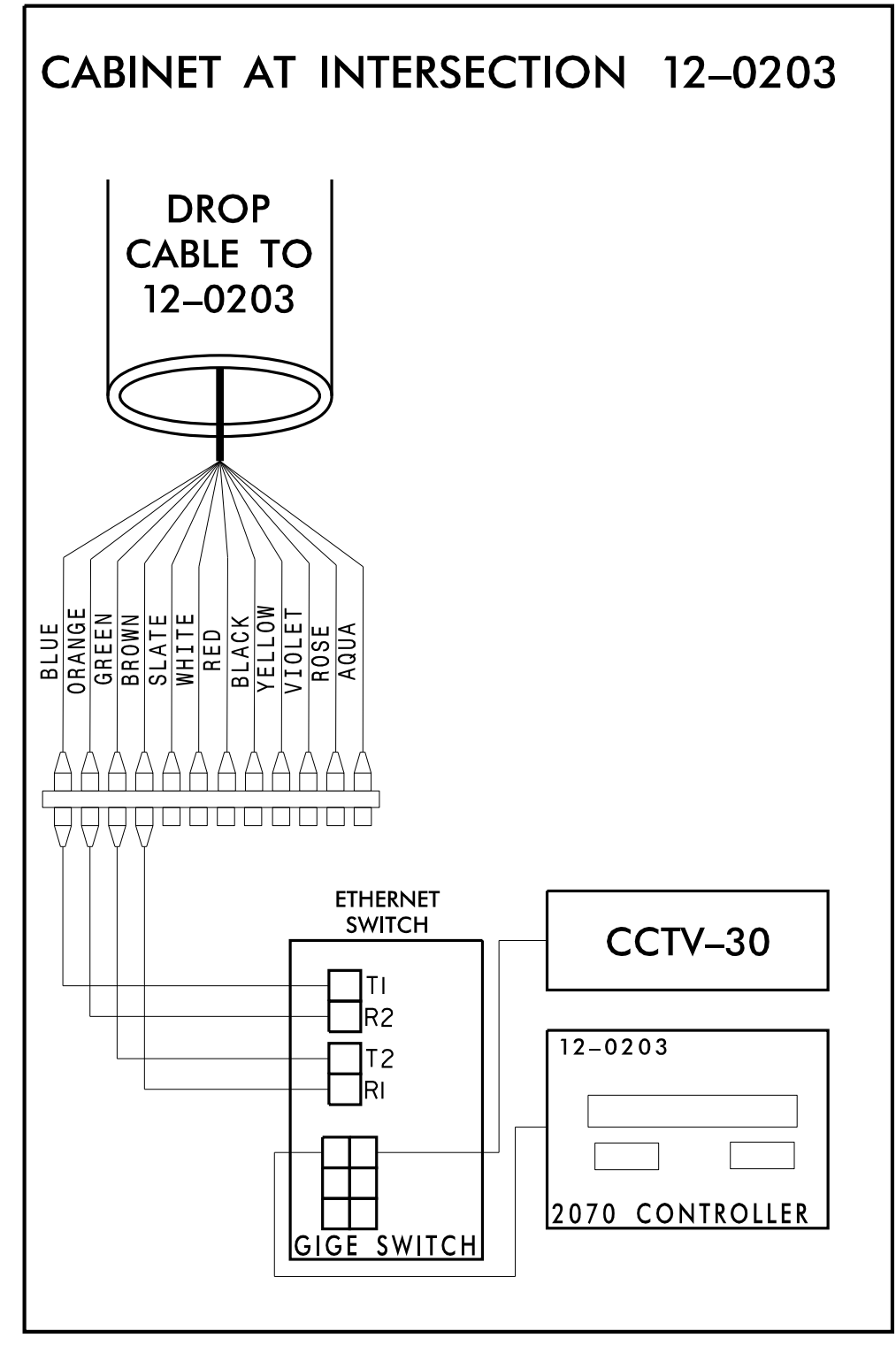
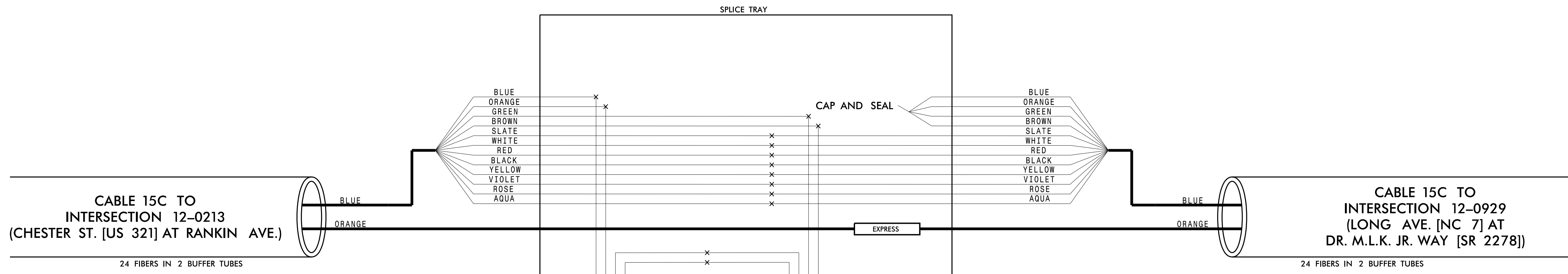
Professional Engineer Seal: IYER, Z. VAN OSDELL, No. 028952

3/15/2022
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CHANNEL 15
SPLICE ENCLOSURE AT
CHESTER ST. (US 321) AT AIRLINE AVE./LONG AVE. (NC 7)
SIG ID 12-0203 (CHESTER ST. [US 321] AT AIRLINE AVE./LONG AVE. [NC 7])
SIG ID 12-0925 (YORK RD. [US 321] AT LONG AVE. [NC 7])
CCTV CAMERA-30

| COLOR CODE TIA/EIA 598-C | | LEGEND | |
|-----------------------------|-------------|------------------------------------|---|
| (1) BLUE | (7) RED | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (2) ORANGE | (8) BLACK | O - EXISTING SPLICE | |
| (3) GREEN | (9) YELLOW | □ - EXPRESS INDIVIDUAL FIBER | |
| (4) BROWN | (10) VIOLET | EXPRESS | EXPRESS ENTIRE BUFFER TUBE |
| (5) SLATE | (11) ROSE | SPLICE | SPLICE ENTIRE BUFFER TUBE OR MAINTAIN IF EXISTING EXPRESSED |
| (6) WHITE | (12) AQUA | | |

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CHANNEL 15
CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
SPLICE DETAIL

Division 12 GASTON COUNTY
 PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

SCALE: 0

Revisions table with columns: REVISIONS, INIT., DATE.

DocuSigned by: *Ivy Van OsdeLL* 3/16/2022

CADD File name:

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

SEAL
 NORTH CAROLINA PROFESSIONAL SEAL 028952
 I. VAN OSDELL
 CIVIL ENGINEER

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CHANNEL 15
SPLICE ENCLOSURE AT
(CHESTER ST. [US 321] AT
DAVIDSON AVE.)
SIG ID 12-0017

COLOR CODE
TIA/EIA 598-C

| | |
|------------|-------------|
| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
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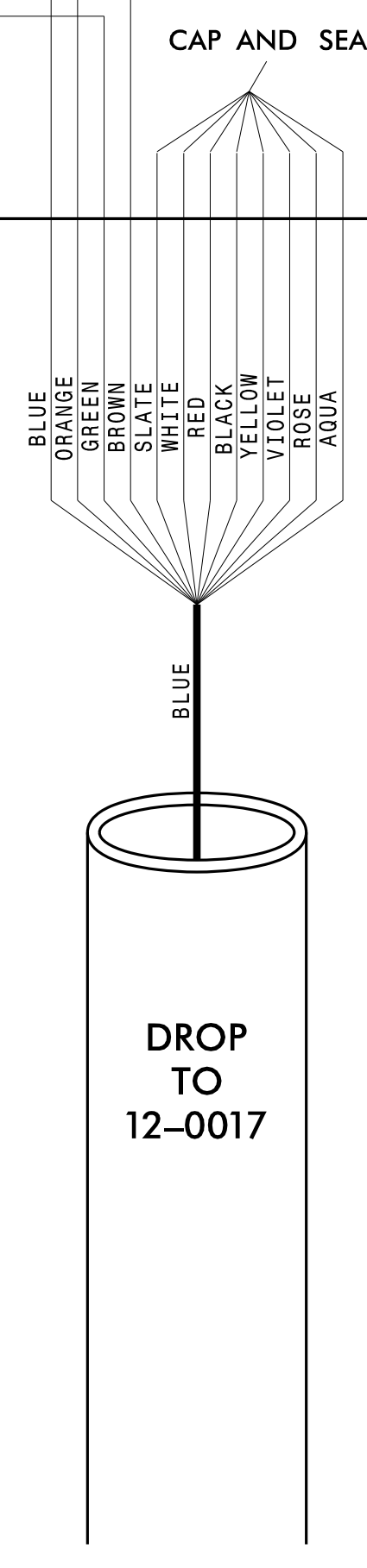
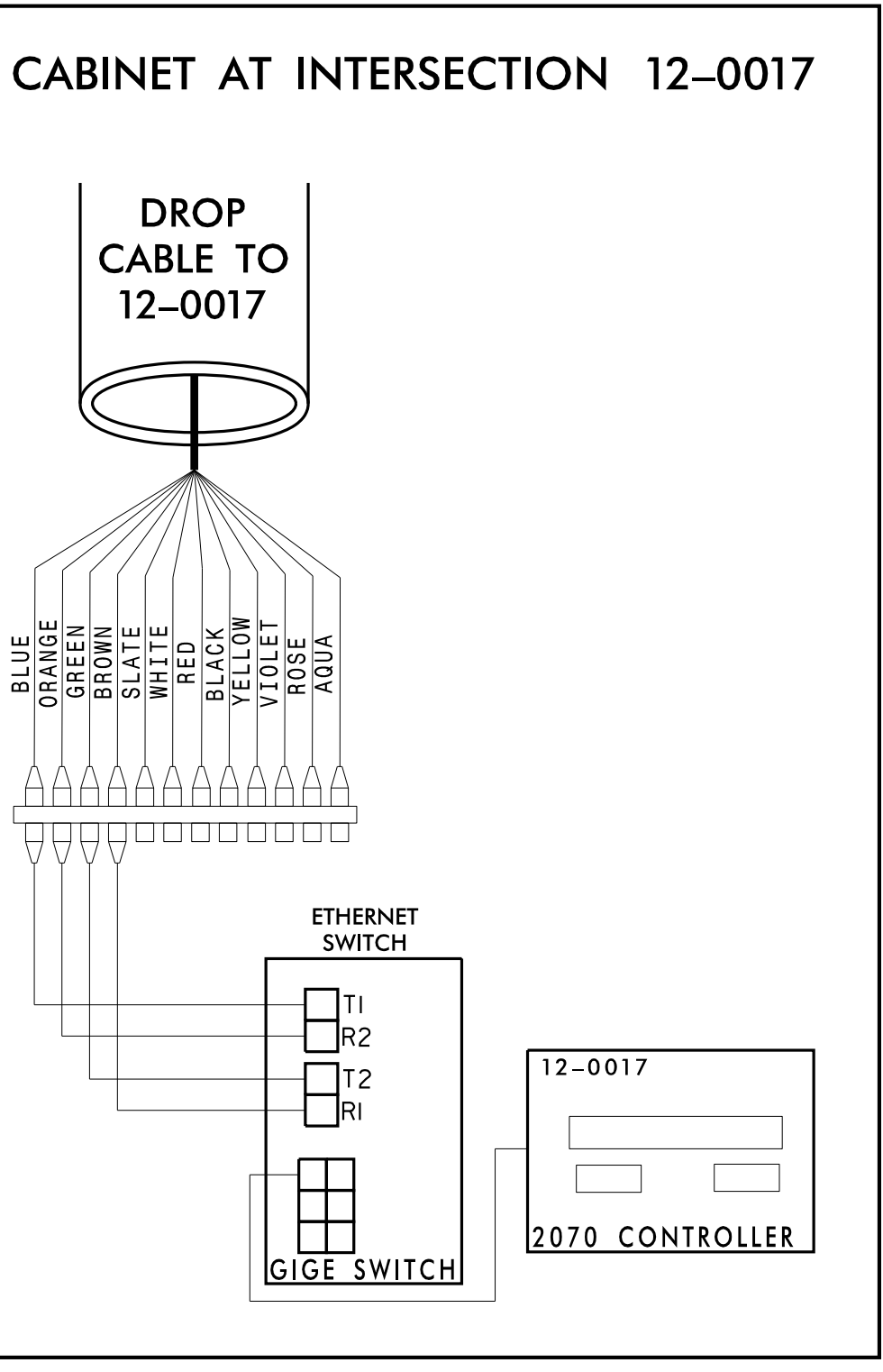
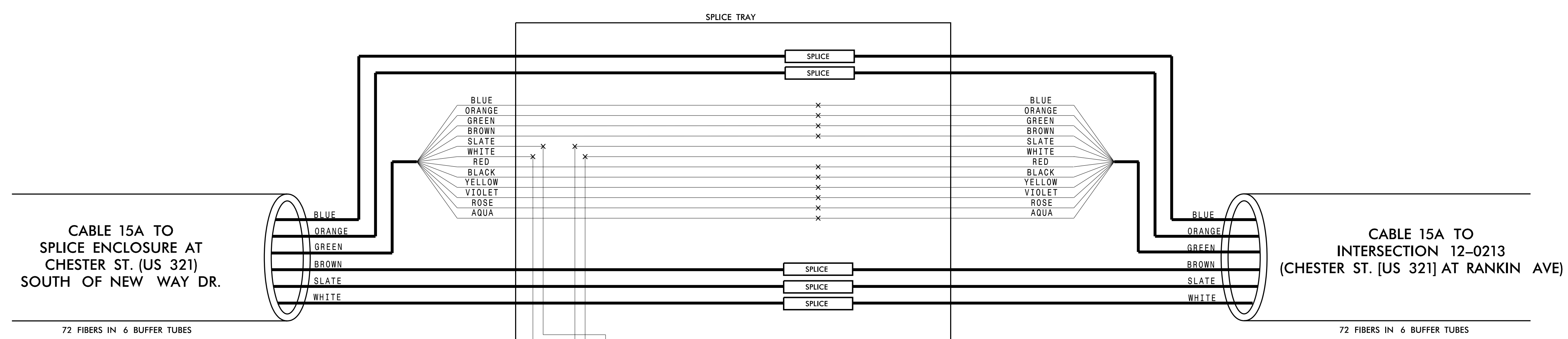
LEGEND

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CITY OF GASTONIA COMPUTERIZED
SIGNAL SYSTEM
SPlice DETAIL

DIVISION 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

250 N. Greenfield Place, Garner, NC 27529

SCALE: 0

REVISIONS: _____

INIT. DATE

DocuSigned by: *Iger Van Osdel* 3/16/2022

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 028952

CADD File name: _____

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

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CHANNEL 15
SPlice ENCLOSURE AT
CHESTER ST. (US 321)
SOUTH OF NEW WAY DR.

COLOR CODE
TIA/EIA 598-C

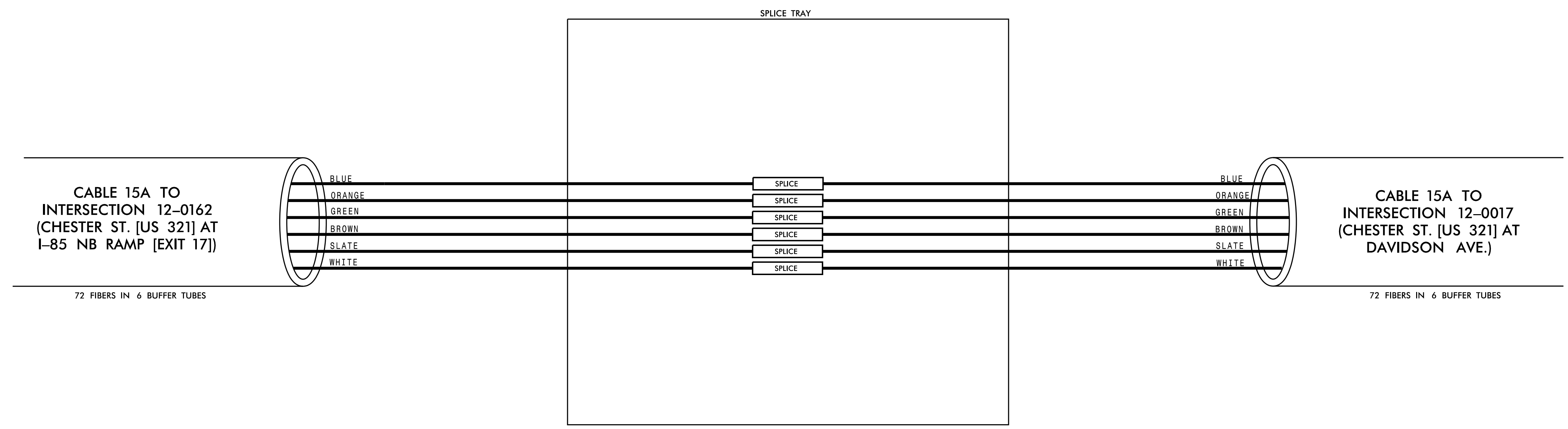
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| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
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CHANNEL 15
CITY OF GASTONIA COMPUTERIZED
SIGNAL SYSTEM
SPlice DETAIL

| | | | |
|--------------------------|----------------------------|---------------|--|
| DIVISION 12 | | GASTON COUNTY | |
| PLAN DATE: DECEMBER 2021 | REVIEWED BY: K. SMITH | | |
| PREPARED BY: S. BUTLER | REVIEWED BY: I. VAN OSDELL | | |
| REVISIONS | INIT. | DATE | |
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| | | | |
| | | | |

SCALE
0

Plans Prepared For:
 Transportation, Mobility and Safe Division
 DEPARTMENT OF TRANSPORTATION
 250 N. Greenfield Place, Garner, NC 27529

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 028952
 IGER Z. VAN OSDELL

DocuSigned by:
 Iger Van OsdeLL
 3/16/2022

CADD Filename:

CHANNEL 15
SPLICE ENCLOSURE AT
CHESTER ST. (US 321) AT I-85 NB RAMP (EXIT 17)
SIG ID 12-0162 (CHESTER ST. [US 321] AT I-85 NB RAMP [EXIT 17])
SIG ID 12-1623 (CHESTER ST. [US 321] AT RADIO ST.)

COLOR CODE
TIA/EIA 598-C

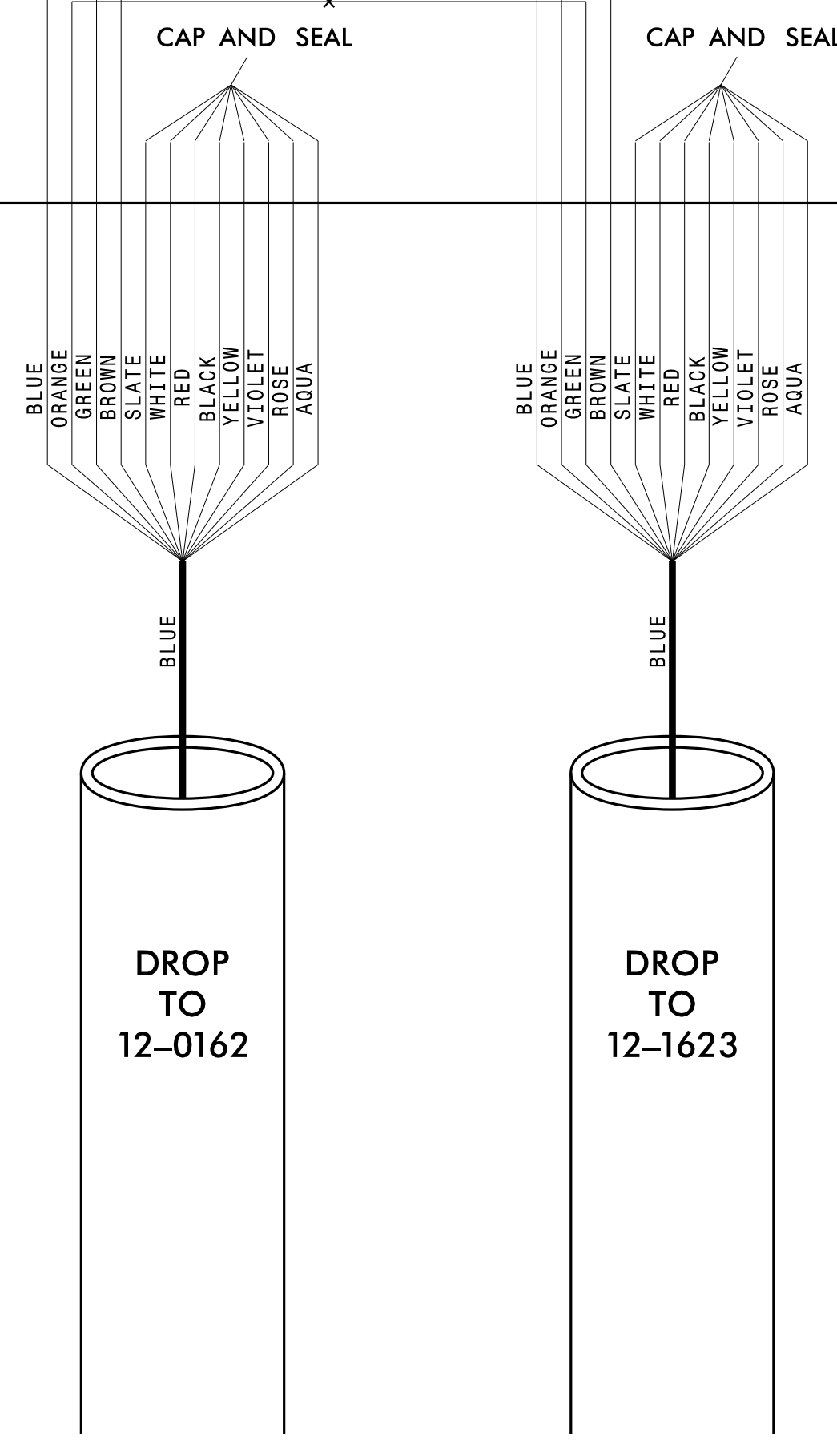
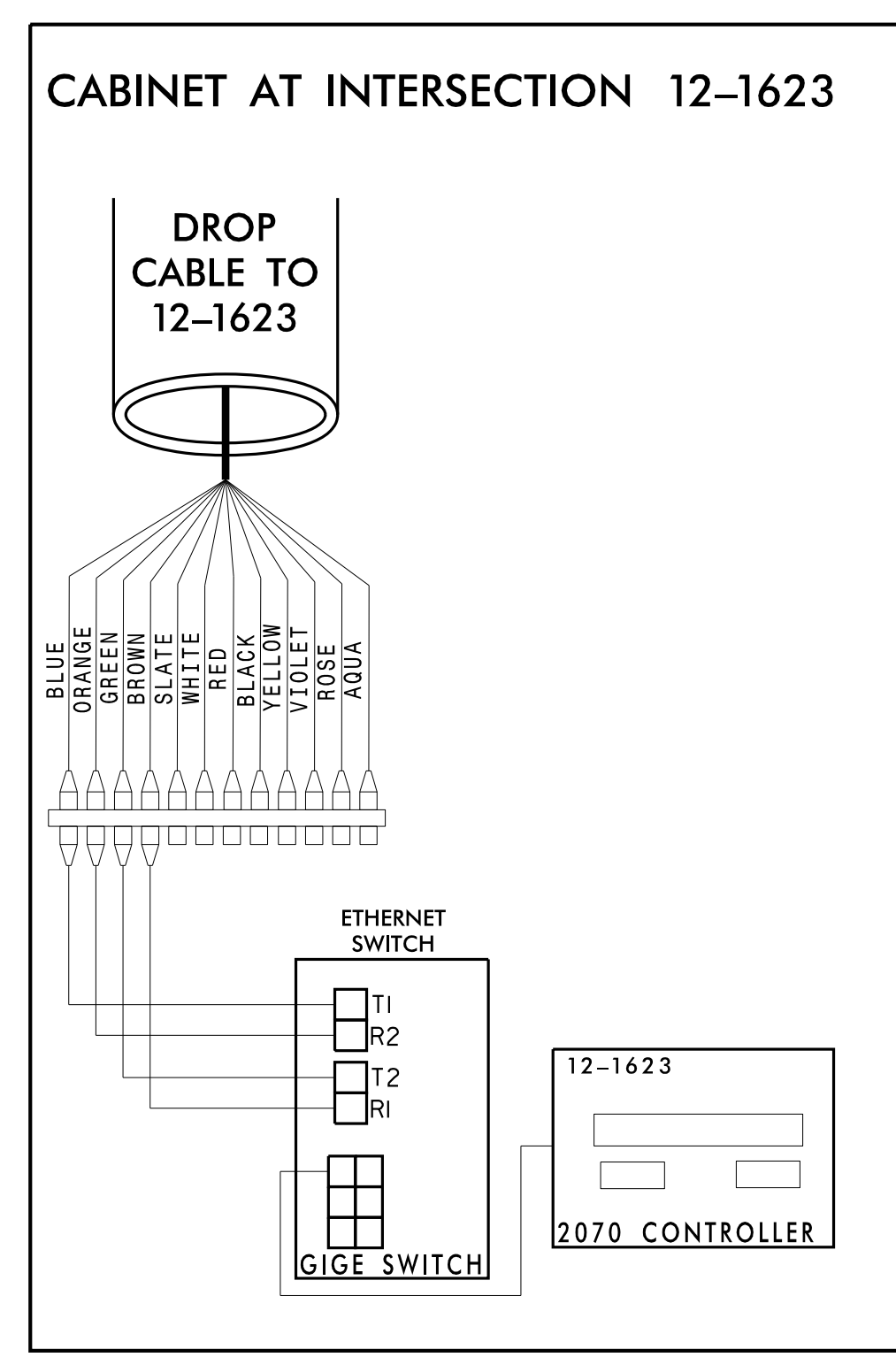
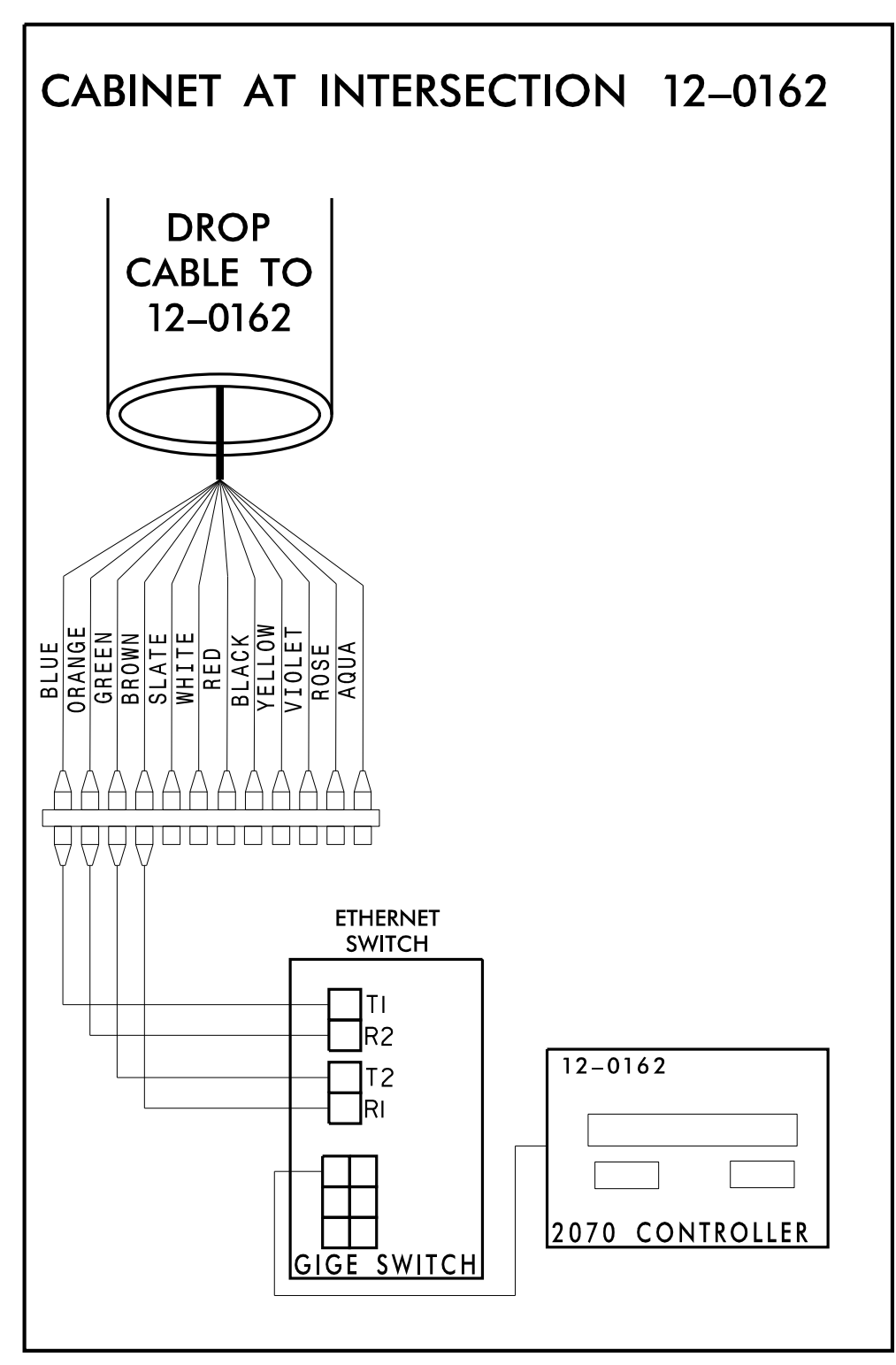
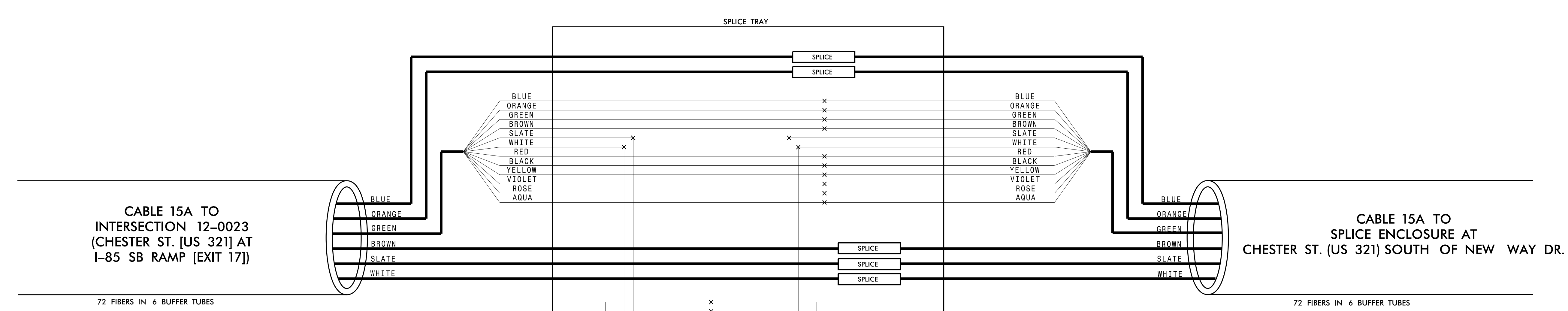
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CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
SPlice DETAIL

Division 12 GASTON COUNTY
 PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

Scale: 0

Revisions table with columns: REVISIONS, INIT., DATE

Seal: **Kimley»Horn**
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

Professional Engineer Seal: **INGER Z. VAN OSDELL**
 SEAL 028952
 DATE 3/16/2022

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**CHANNEL 15
SPLICE ENCLOSURE AT
CHESTER ST. (US 321) AT I-85 SB RAMP (EXIT 17)
SIG ID 12-0023 (CHESTER ST. [US 321] AT I-85 SB RAMP [EXIT 17])
SIG ID 12-0921 (CHESTER ST. [US 321] AT RANKIN LAKE RD.)
SIG ID 12-1803 (CHESTER ST. [US 321] AT I-85 SB EXIT RAMP/I-85 NB ENTRANCE RAMP)
CCTV CAMERA-32**

COLOR CODE
TIA/EIA 598-C

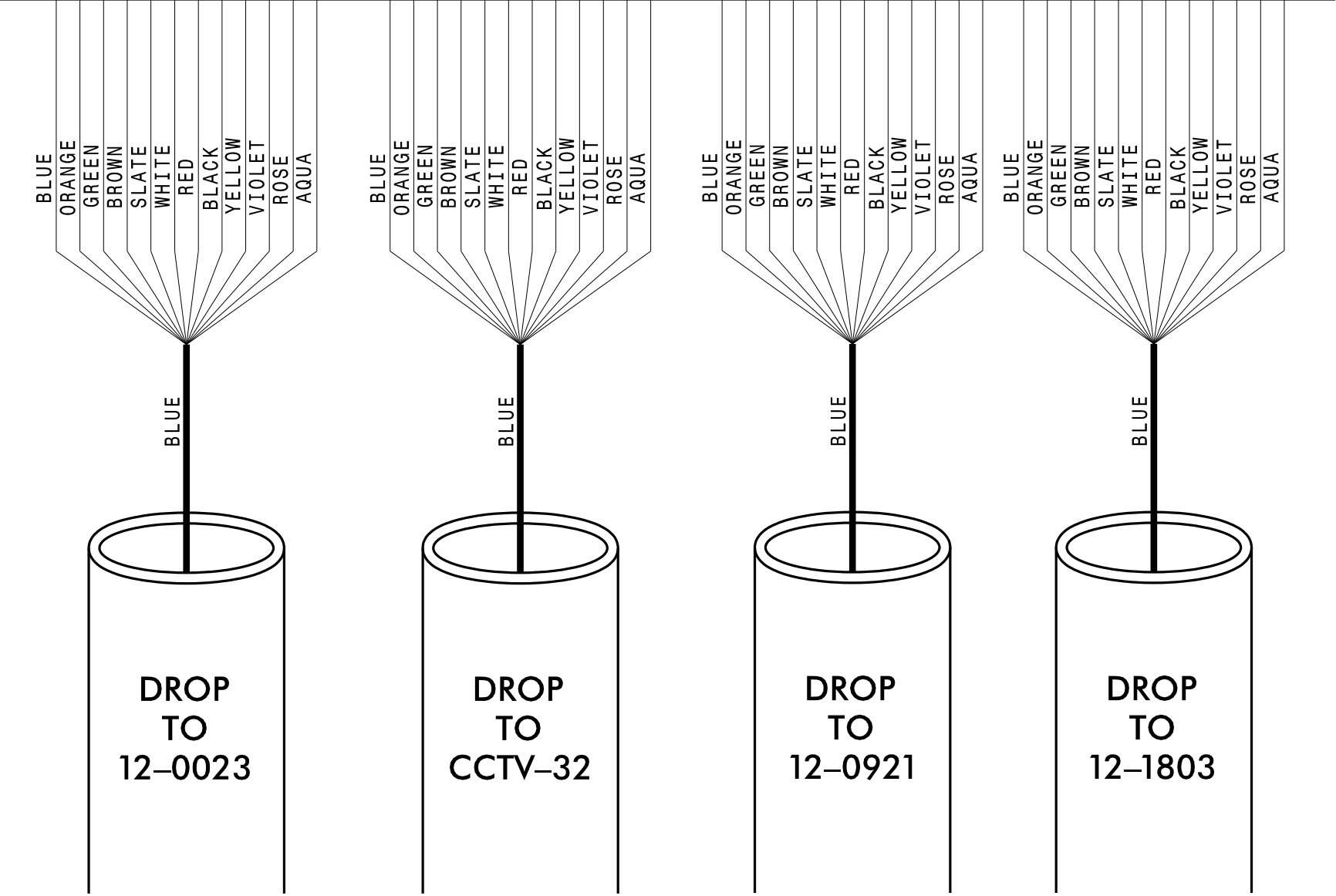
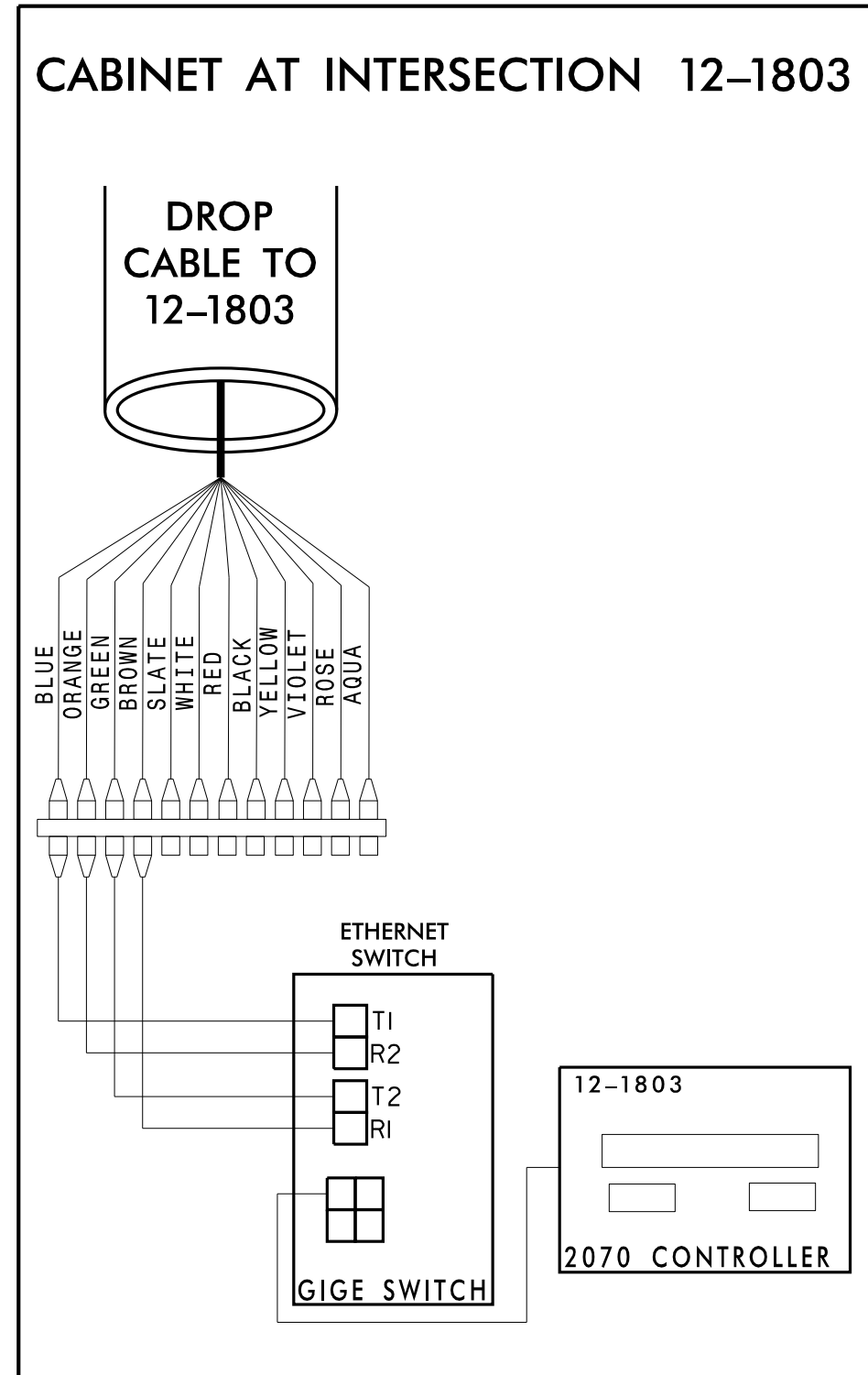
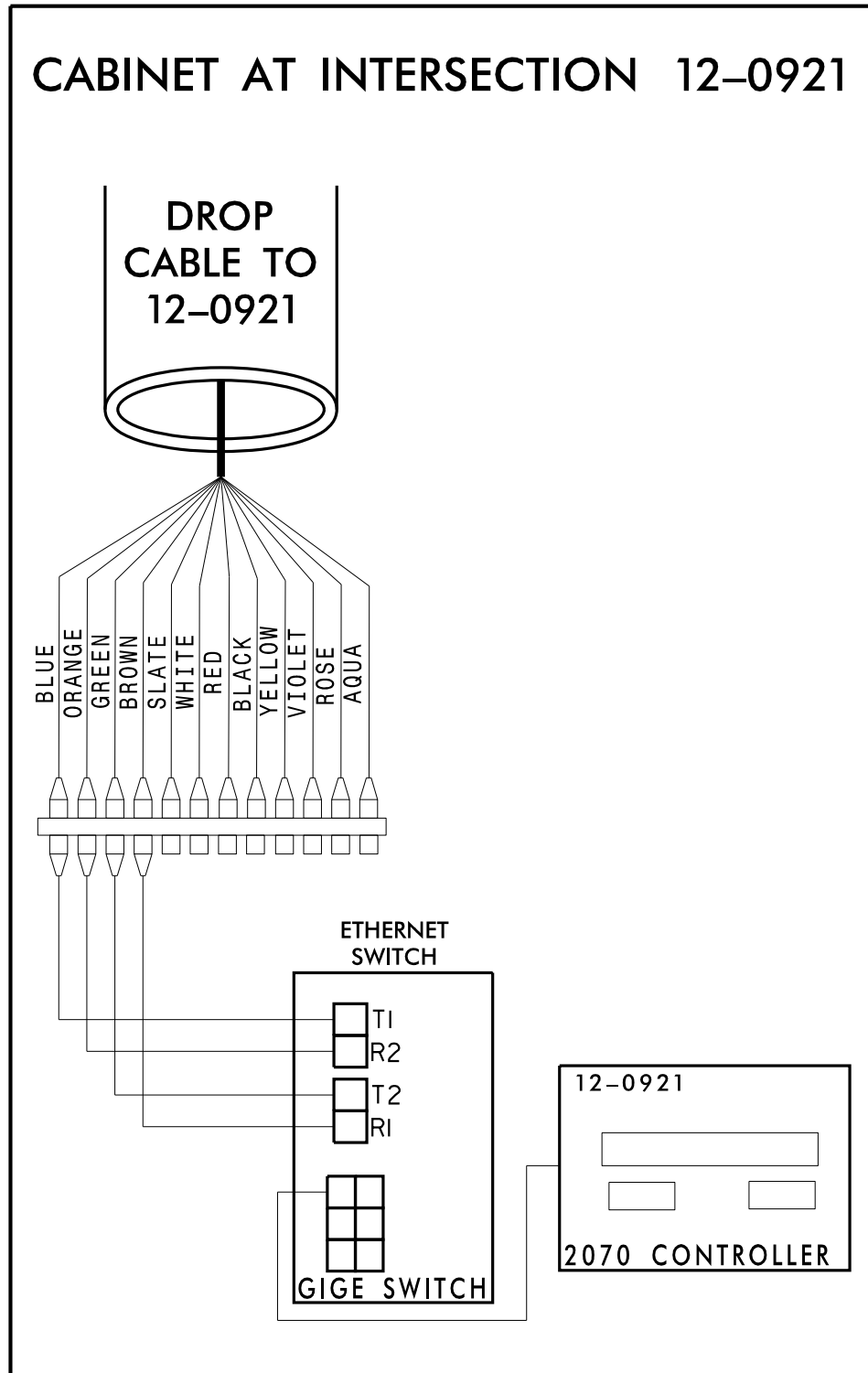
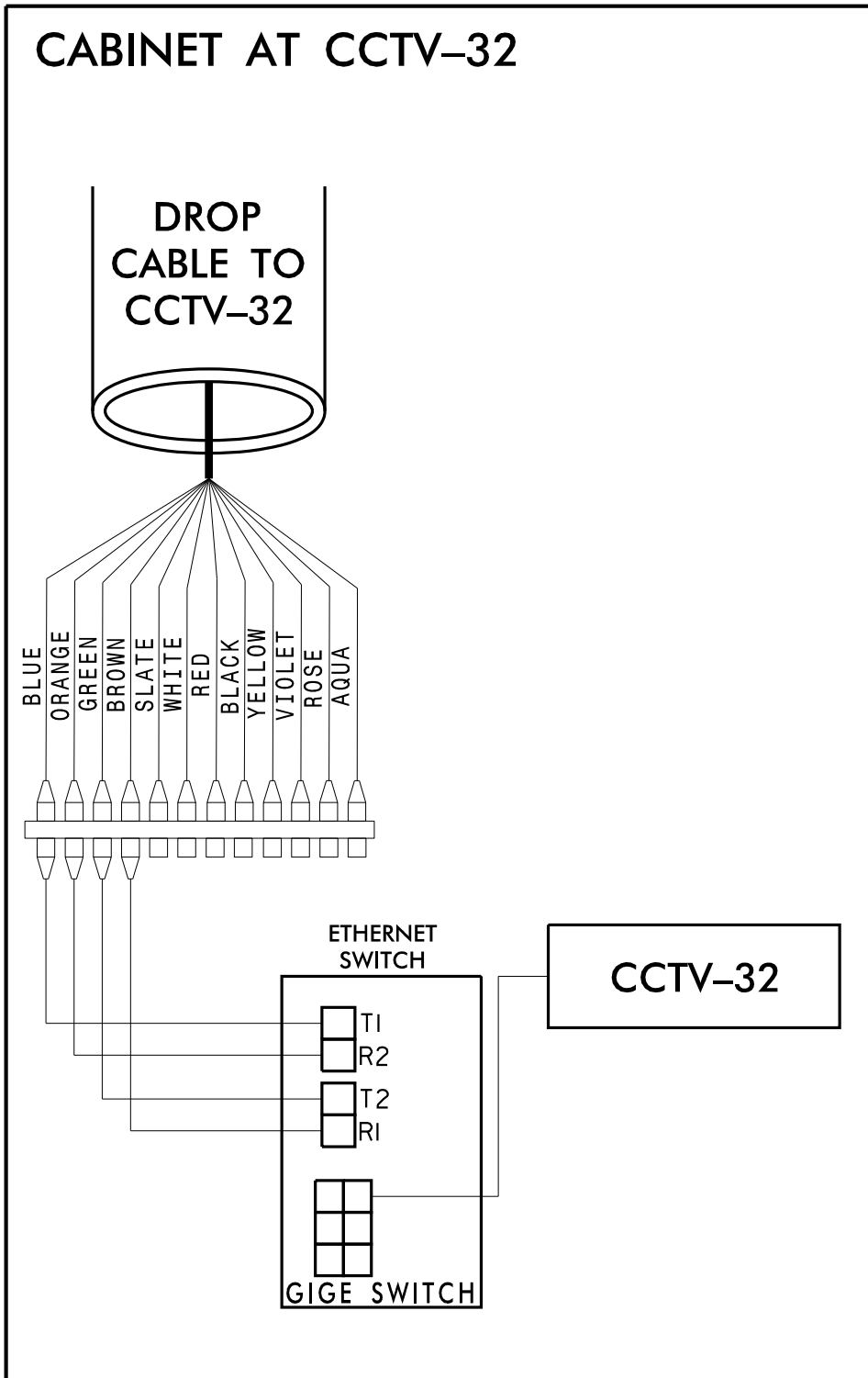
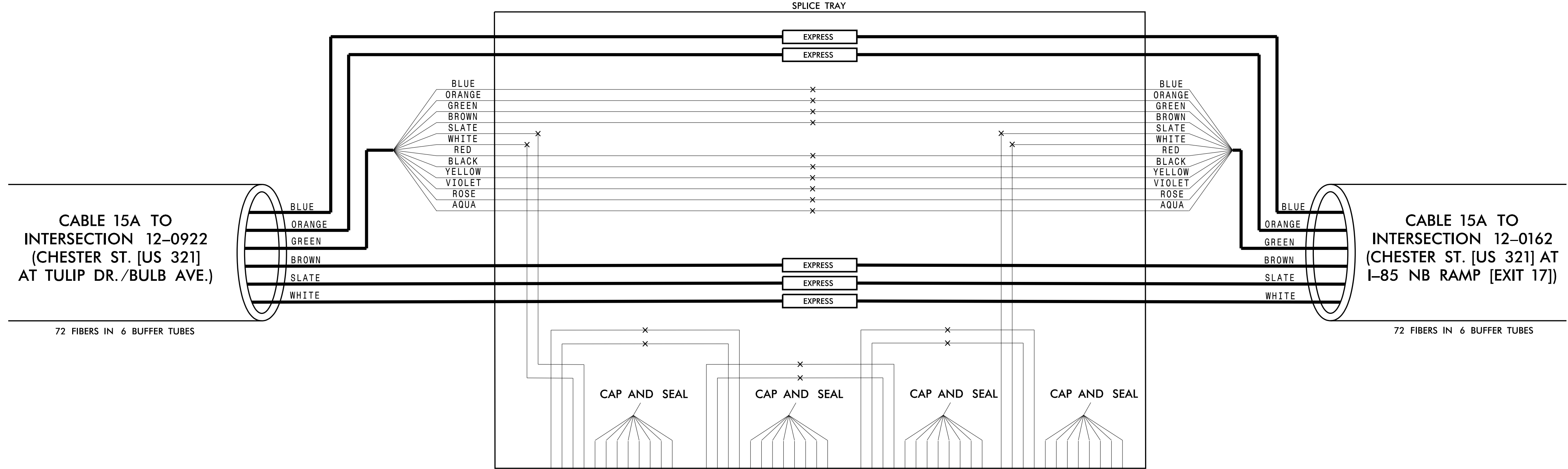
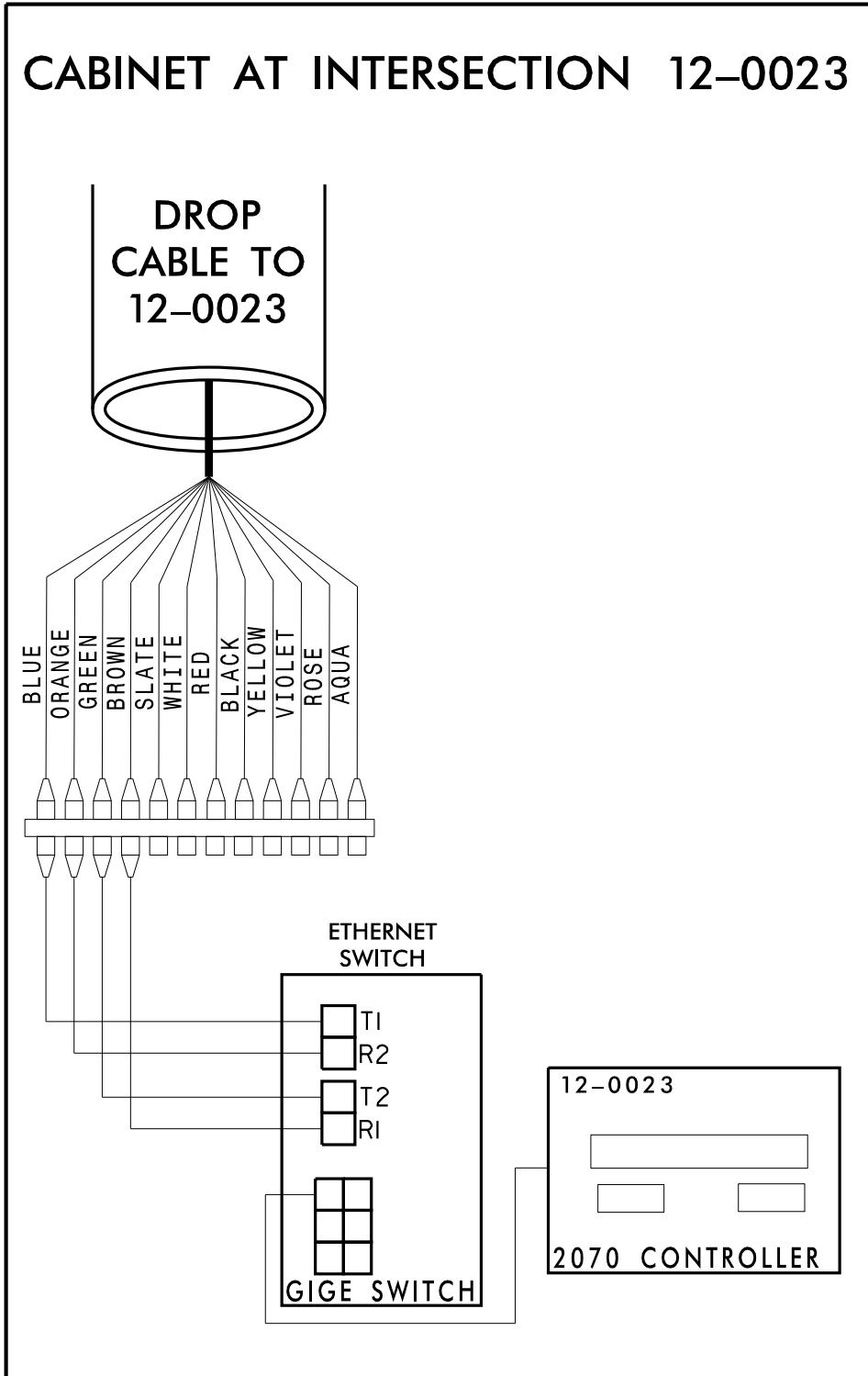
| | |
|------------|-------------|
| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
| (4) BROWN | (10) VIOLET |
| (5) SLATE | (11) ROSE |
| (6) WHITE | (12) AQUA |

LEGEND

X - FUSION SPLICE INDIVIDUAL FIBER
 O - EXISTING SPLICE
 □ - EXPRESS INDIVIDUAL FIBER

EXPRESS - EXPRESS ENTIRE BUFFER TUBE
 SPLICE - SPLICE ENTIRE BUFFER TUBE OR MAINTAIN IF EXISTING EXPRESSED

NOTES:
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**CHANNEL 15
CITY OF GASTONIA COMPUTERIZED
SIGNAL SYSTEM
SPLICE DETAIL**

Division 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH

PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

SCALE: 0

REVISIONS: INIT. DATE

DocuSigned by: *Ivy Van OsdeLL* 3/16/2022

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 028952

CADD File name:

Kimley»Horn

NC License #F-0102
421 Fayetteville St., Suite 600
Raleigh, NC 27601
Tel: (919) 677-2000
Fax: (919) 677-2050

3/15/2022 \\kimley-horn.com\SE-RAL\NRA\...TPTO\ITS\01036569_Gastonia_Signal_System\6_Tasks\Splicing\SPL155.dgn

CHANNEL 15
SPlice ENCLOSURE AT
(CHESTER ST. [US 321] AT TULIP DR./BULB AVE.)
SIG ID 12-0922
CCTV CAMERA-33

COLOR CODE
TIA/EIA 598-C

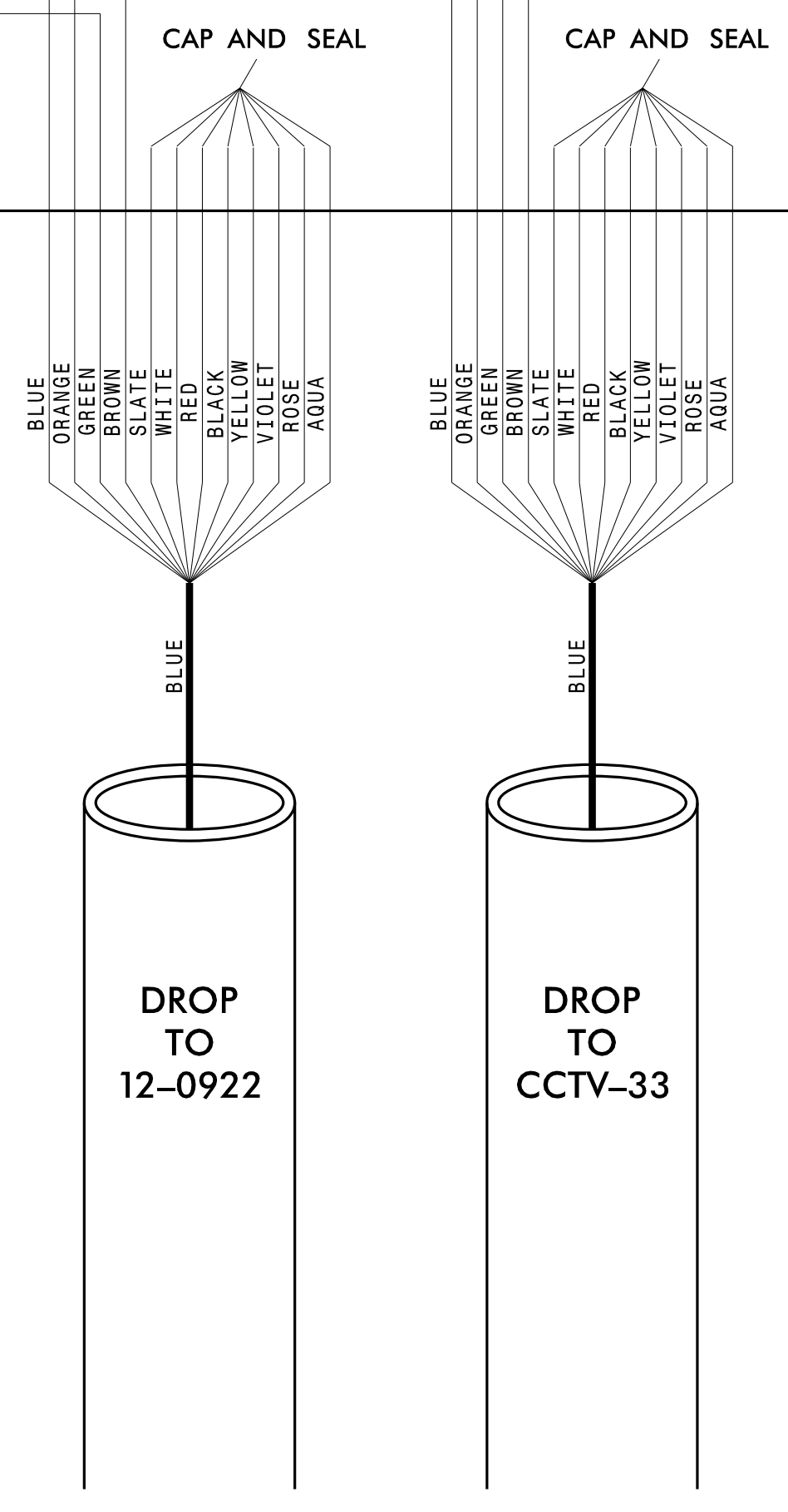
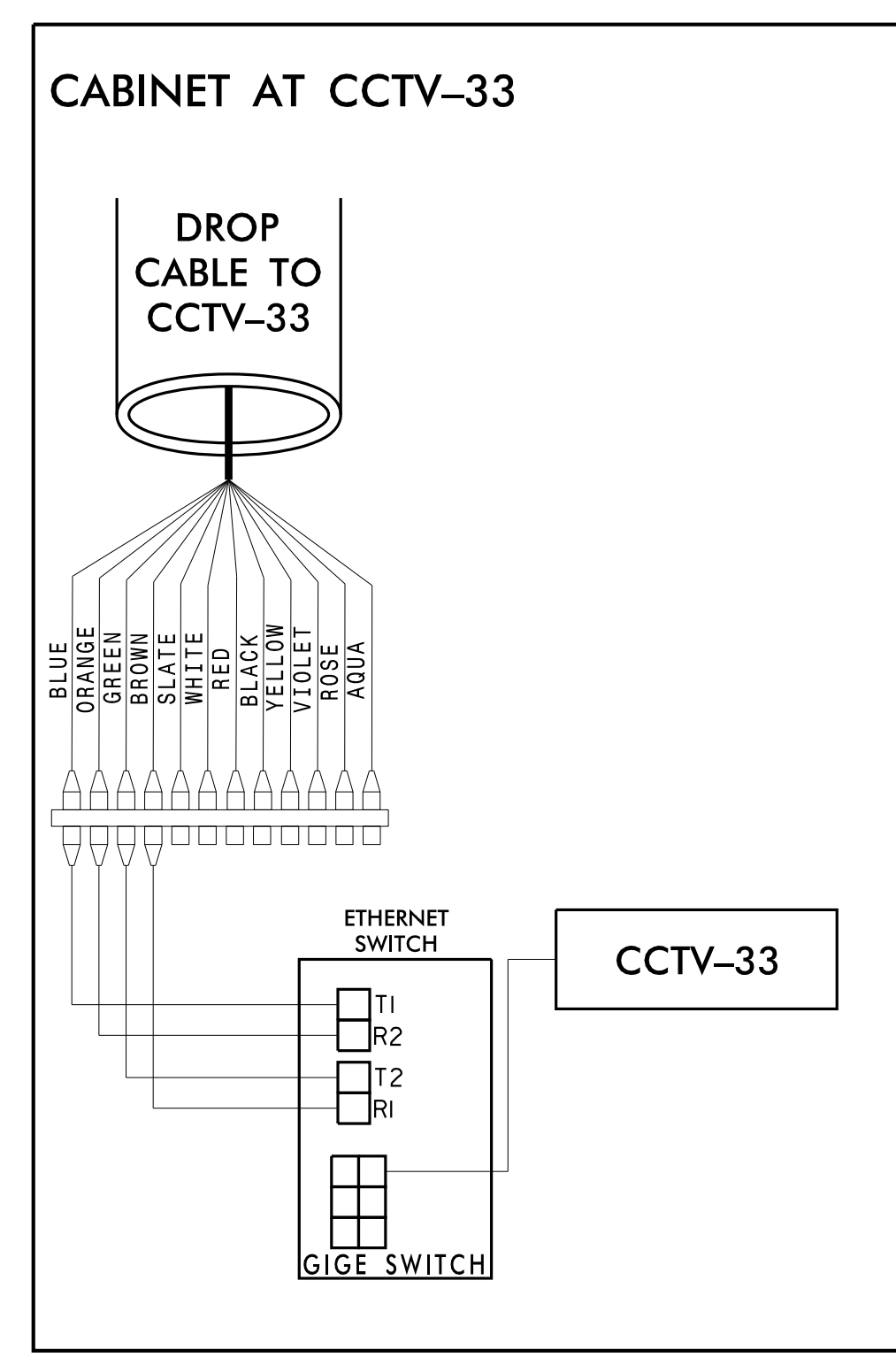
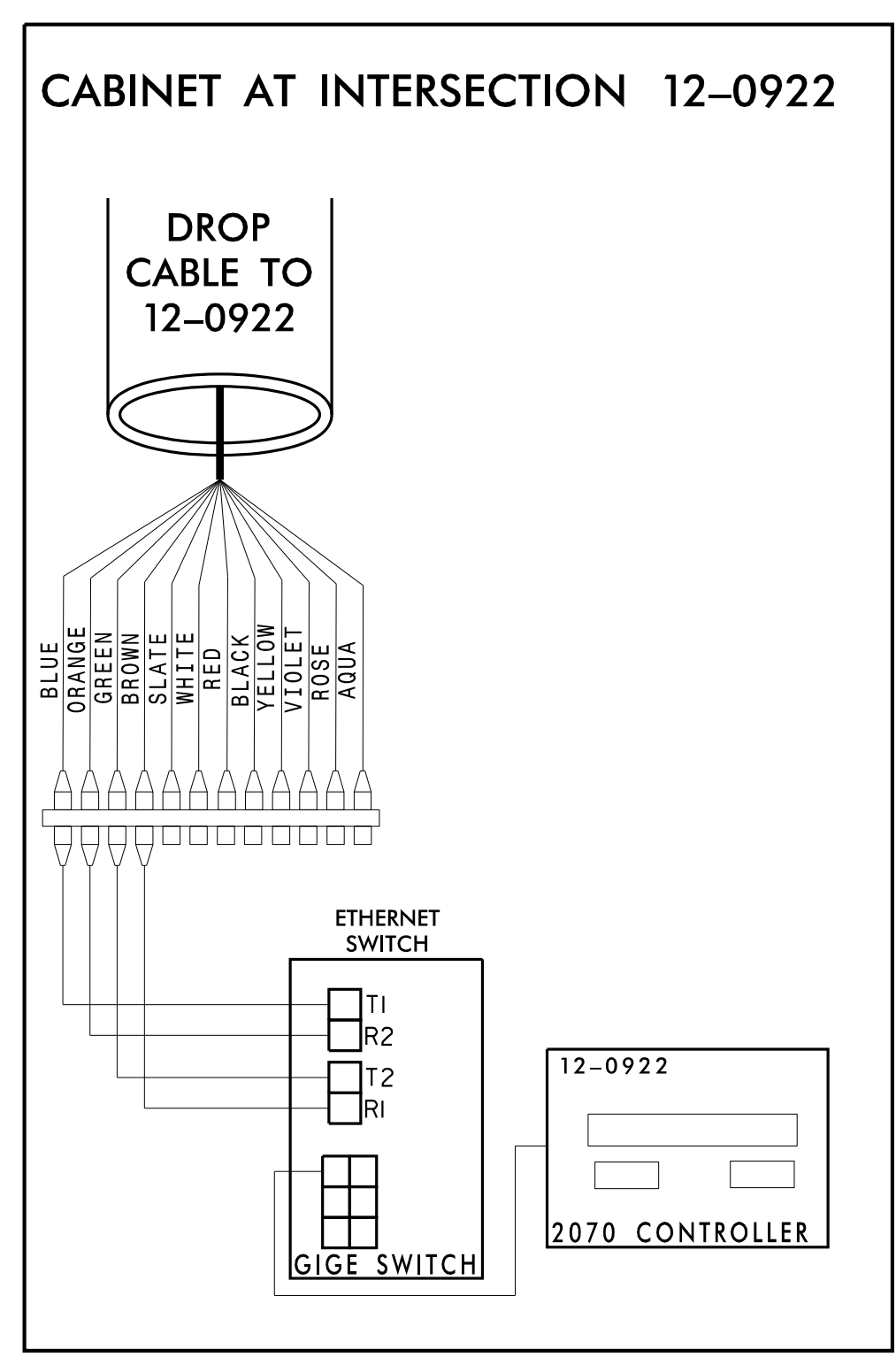
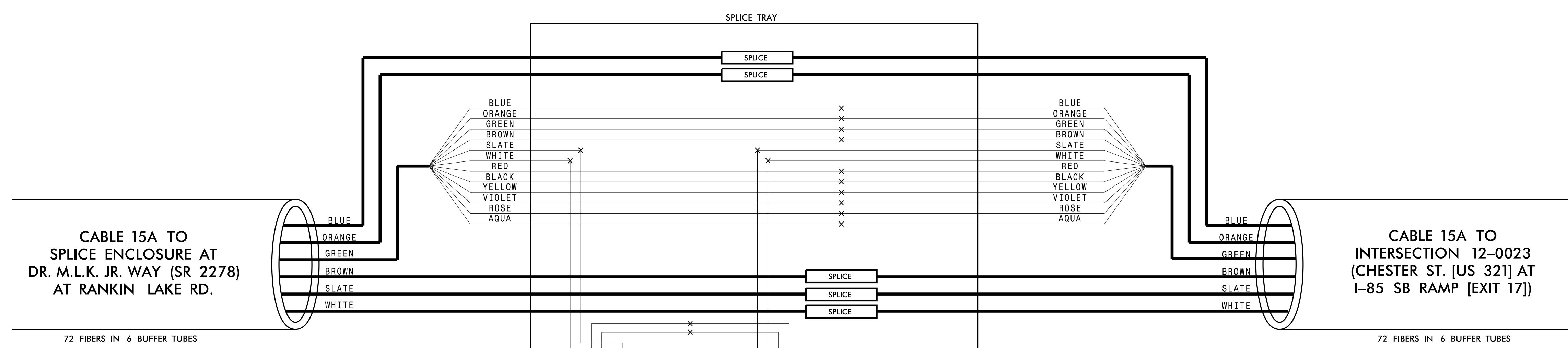
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| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
| (4) BROWN | (10) VIOLET |
| (5) SLATE | (11) ROSE |
| (6) WHITE | (12) AQUA |

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CHANNEL 15
CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
SPlice DETAIL

Division 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH
 PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

REVISIONS: _____ INIT. DATE

SCALE: 0 _____

DocuSigned by: *Inger Van OsdeLL* 3/16/2022

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 028952

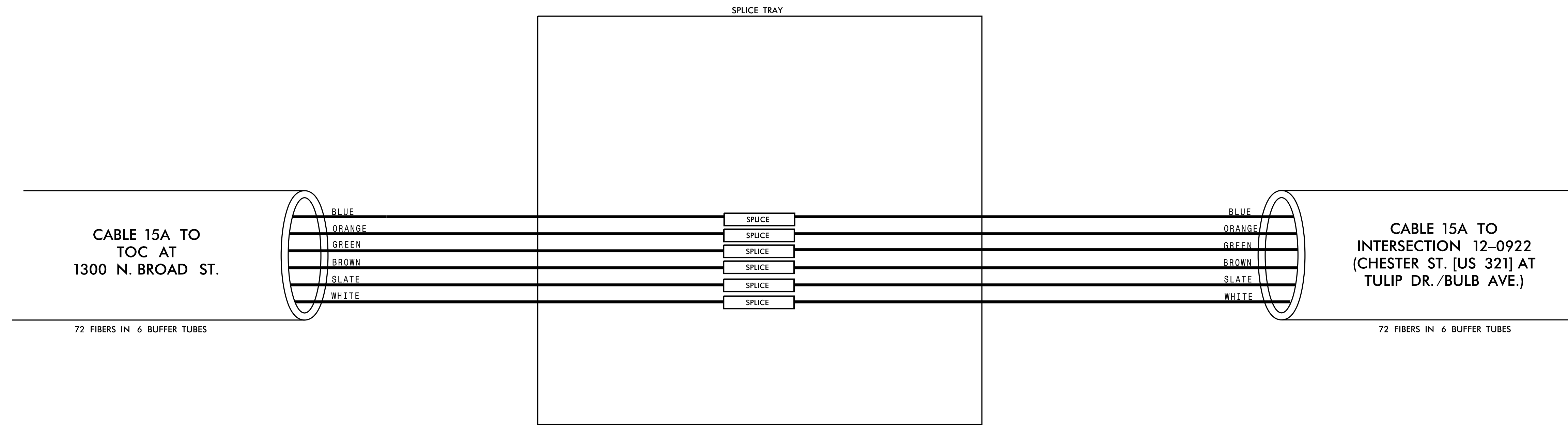
CADD File name: _____

Kimley»Horn
 NC License #F-0102
 421 Fayetteville St., Suite 600
 Raleigh, NC 27601
 Tel: (919) 677-2000
 Fax: (919) 677-2050

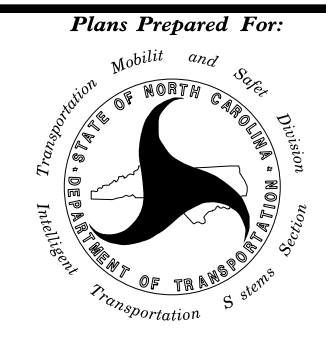

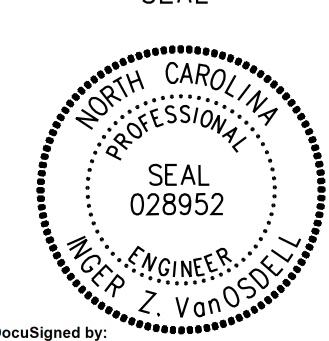

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**CHANNEL 15
SPlice ENCLOSURE AT
DR. M.L.K. JR. WAY (SR 2278) AT
RANKIN LAKE RD.**

| | | | |
|---|-------------|---------------|---|
| COLOR CODE TIA/EIA 598-C | | LEGEND | |
| (1) BLUE | (7) RED | X | - FUSION SPlice INDIVIDUAL FIBER |
| (2) ORANGE | (8) BLACK | O | - EXISTING SPlice |
| (3) GREEN | (9) YELLOW | □ | - EXPRESS INDIVIDUAL FIBER |
| (4) BROWN | (10) VIOLET | EXPRESS | EXPRESS ENTIRE BUFFER TUBE |
| (5) SLATE | (11) ROSE | SPlice | SPlice ENTIRE BUFFER TUBE OR MAINTAIN IF EXISTING EXPRESSED |
| (6) WHITE | (12) AQUA | NOTES: | |
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3/15/2022 \\kimley-horn.com\SE-RAL\NRA\TPTD\ITS\01036569_Gastonia_Signal_System\6_Tasks\Splicing_SPL157.dgn

|  Plans Prepared For: Transportation, Mobility and Safe Division DEPARTMENT OF TRANSPORTATION 250 N. Greenfield Place, Garner, NC 27529 | CHANNEL 15 | |  NC License #F-0102 421 Fayetteville St., Suite 600 Raleigh, NC 27601 Tel: (919) 677-2000 Fax: (919) 677-2050 | | | | | |
|---|---|---|---|-------------|--|--|--|--------------------------------------|
| | CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM SPlice DETAIL | | | | | | | |
| DIVISION 12 PLAN DATE: DECEMBER 2021 PREPARED BY: S. BUTLER | GASTON COUNTY REVIEWED BY: K. SMITH REVIEWED BY: I. VAN OSDELL | SEAL  Iger Van OsdeLL 3/16/2022 | | | | | | |
| SCALE  | REVISIONS <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> | NO. | DATE | DESCRIPTION | | | | DATE Iger Van OsdeLL 3/16/2022 |
| NO. | DATE | DESCRIPTION | | | | | | |
| | | | | | | | | |

TRAFFIC OPERATIONS CENTER
1300 N. BROAD ST.
RACK MOUNTED PATCH PANELS

COLOR CODE
TIA/EIA 598-C

| | |
|------------|-------------|
| (1) BLUE | (7) RED |
| (2) ORANGE | (8) BLACK |
| (3) GREEN | (9) YELLOW |
| (4) BROWN | (10) VIOLET |
| (5) SLATE | (11) ROSE |
| (6) WHITE | (12) AQUA |

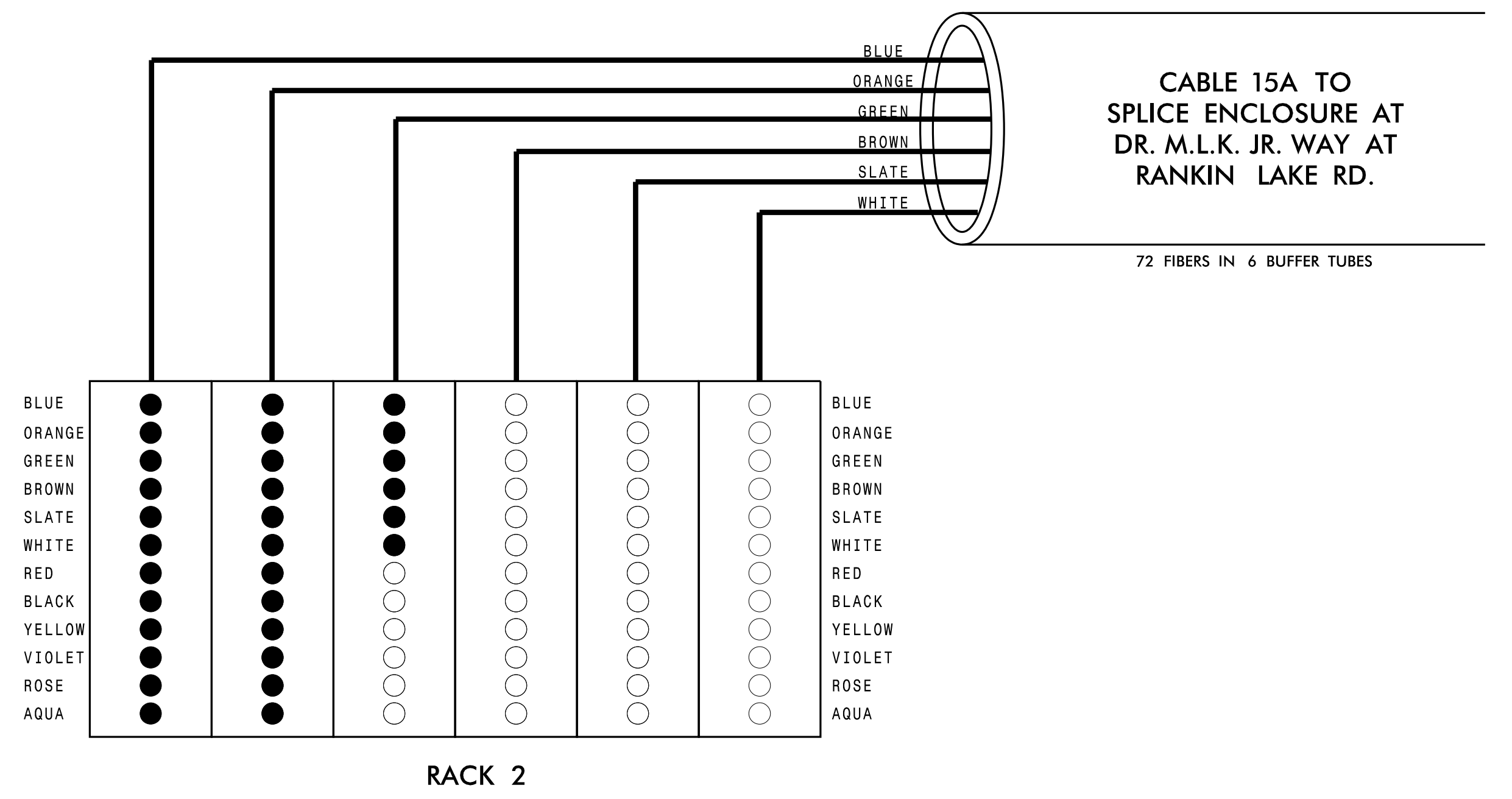
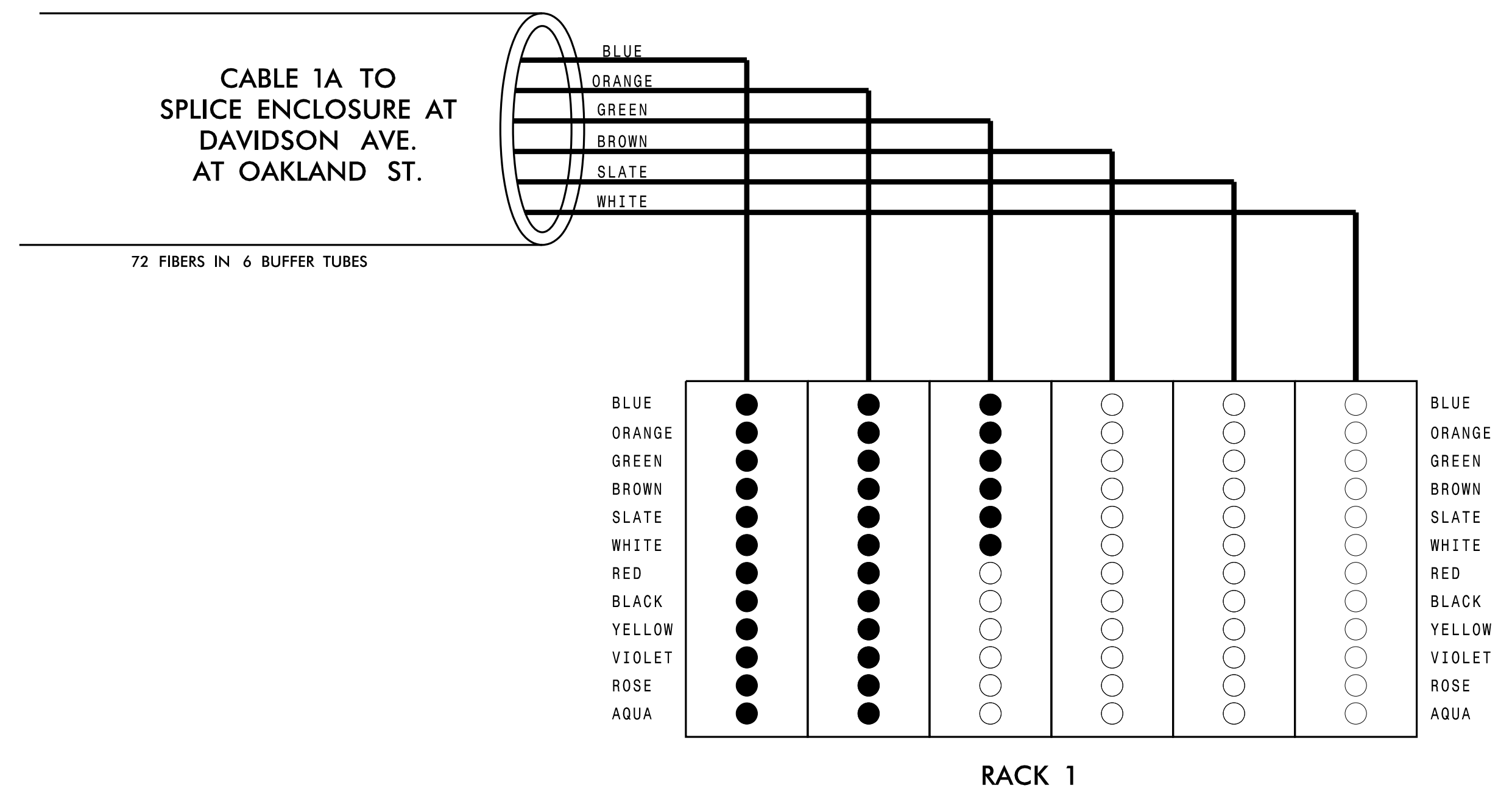
LEGEND

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3/15/2022 KARAL.TPTD.LTS\01036569 Gastonia SignalSystem\6 Tasks\Splicing\SPL158.dgn

Kimley»Horn
NC License #F-0102
421 Fayetteville St., Suite 600
Raleigh, NC 27601
Tel: (919) 677-2000
Fax: (919) 677-2050

Plans Prepared For:

 CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM
 SPLICE DETAIL

DIVISION 12 GASTON COUNTY

PLAN DATE: DECEMBER 2021 REVIEWED BY: K. SMITH

PREPARED BY: S. BUTLER REVIEWED BY: I. VAN OSDELL

SCALE: 0

REVISIONS: _____

INIT. DATE

DocuSigned by: *Inger Van OsdeLL* 3/16/2022

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028952 INGER Z. VAN OSDELL

CADD File name: _____

TRAFFIC OPERATIONS CENTER
1300 N. BROAD ST.
RACK MOUNTED PATCH PANELS

TOC at 1300 N. Broad St: RACK MOUNTED PATCH PANEL ASSIGNMENTS

Cable 1A- Channel 1

To Splice Enclosure at Davidson Ave. at Oakland St.

| BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC |
|-------------|-------|------|---------------|-------|-------|--------------|-------|-------|--------------|-------|------|--------------|-------|------|--------------|-------|------|
| BLUE | BL | CH 1 | ORANGE | BL | CH 7 | GREEN | BL | CH 13 | BROWN | BL | | SLATE | BL | | WHITE | BL | |
| | O | CH 1 | | O | CH 7 | | O | CH 13 | | O | | | O | | | | |
| | G | CH 2 | | G | CH 8 | | G | CH 14 | | G | | | G | | | | |
| | BR | CH 2 | | BR | CH 8 | | BR | CH 14 | | BR | | | BR | | | | |
| | S | CH 3 | | S | CH 9 | | S | CH 15 | | S | | | S | | | | |
| | W | CH 3 | | W | CH 9 | | W | CH 15 | | W | | | W | | | | |
| | R | CH 4 | | R | CH 10 | | R | | | R | | | R | | | | |
| | BK | CH 4 | | BK | CH 10 | | BK | | | BK | | | BK | | | | |
| | Y | CH 5 | | Y | CH 11 | | Y | | | Y | | | Y | | | | |
| | V | CH 5 | | V | CH 11 | | V | | | V | | | V | | | | |
| RS | CH 6 | RS | CH 12 | RS | | RS | | RS | | | | | | | | | |
| A | CH 6 | A | CH 12 | A | | A | | A | | | | | | | | | |

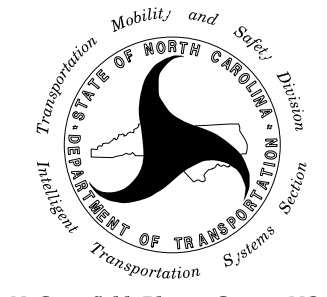
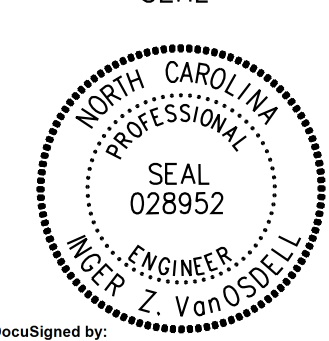
Cable 15A- Channel 15

To Splice Enclosure at Dr. M.L.K. Jr. Way at Rankin Lake Rd.

| BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC | BUFFER | FIBER | DESC |
|-------------|-------|------|---------------|-------|-------|--------------|-------|-------|--------------|-------|------|--------------|-------|------|--------------|-------|------|
| BLUE | BL | CH 1 | ORANGE | BL | CH 7 | GREEN | BL | CH 13 | BROWN | BL | | SLATE | BL | | WHITE | BL | |
| | O | CH 1 | | O | CH 7 | | O | CH 13 | | O | | | O | | | | |
| | G | CH 2 | | G | CH 8 | | G | CH 14 | | G | | | G | | | | |
| | BR | CH 2 | | BR | CH 8 | | BR | CH 14 | | BR | | | BR | | | | |
| | S | CH 3 | | S | CH 9 | | S | CH 15 | | S | | | S | | | | |
| | W | CH 3 | | W | CH 9 | | W | CH 15 | | W | | | W | | | | |
| | R | CH 4 | | R | CH 10 | | R | | | R | | | R | | | | |
| | BK | CH 4 | | BK | CH 10 | | BK | | | BK | | | BK | | | | |
| | Y | CH 5 | | Y | CH 11 | | Y | | | Y | | | Y | | | | |
| | V | CH 5 | | V | CH 11 | | V | | | V | | | V | | | | |
| RS | CH 6 | RS | CH 12 | RS | | RS | | RS | | | | | | | | | |
| A | CH 6 | A | CH 12 | A | | A | | A | | | | | | | | | |

3/15/2022 KARAL_TPTD_LTS_010036569_Gaestonia_SignalSystemV6_Tasks_Splicing\SPL159.dgn

Kimley»Horn
NC License #F-0102
421 Fayetteville St., Suite 600
Raleigh, NC 27601
Tel: (919) 677-2000
Fax: (919) 677-2050


| | | | |
|--|---|--|--|
|  Plans Prepared For: Transportation Mobility and Safety Division DEPARTMENT OF TRANSPORTATION 250 N. Greenfield Place, Garner, NC 27529 | CITY OF GASTONIA COMPUTERIZED SIGNAL SYSTEM SPLICE DETAIL | | SEAL  Iger Van Osdel 3/16/2022 |
| | DIVISION 12 PLAN DATE: DECEMBER 2021 PREPARED BY: S. BUTLER | GASTON COUNTY REVIEWED BY: K. SMITH REVIEWED BY: I. VAN OSDELL | |

| State ID | City ID | Street 1 | Street 2 | Signal Plan Sheet No. |
|----------|---------|---|---|-----------------------|
| 12-0012 | | NC 274 (Bessemer City Road) | NC275 (Dallas- Bessemer City Road) and SR 1312 (Oates Road) | 2 |
| 12-0016 | | US 321 (York Road) | SR 1255 (Hudson Boulevard) | 3 |
| 12-0017 | | US 321 (N. Chester Street) | Davidson Avenue | 4 |
| 12-0023 | | US 321 (N. Chester Street) | I- 85 Southbound Ramp | 5 |
| 12-0029 | | US 29-74 (Franklin Boulevard) | SR 1136 (Myrtle School Road) | 6 |
| 12-0030 | | US 29-74 (Franklin Boulevard) | NC 274 (Bessemer City Road)/SR 2466 (Garrison Boulevard) | 7 |
| 12-0031 | | US 29-74-NC 274 (W. Franklin Boulevard) | Webb Street | 8 |
| 12-0032 | | US 29-74-NC 274 (W. Franklin Boulevard) | Linwood Road/ Gaston Avenue | 9 |
| 12-0033 | | US 29-74-NC 274 (W. Franklin Boulevard) | Vance Street | 10 |
| 12-0034 | | US 29-74-NC 274 (W. Franklin Boulevard) | Firestone Street | 11 |
| 12-0035 | | US 29-74-NC 274 (W. Franklin Boulevard) | Weldon Street | 12 |
| 12-0037 | | US 29-74-NC 274 (Franklin Boulevard) | Whitesides Street | 13 |
| 12-0038 | | US 29-74-NC 274 (W. Franklin Boulevard) | US 321 S (Chester Street) | 14 |
| 12-0039 | | US 29-74-NC 274 (E. Franklin Boulevard) | US 321 N (York Street) | 15 |
| 12-0040 | | US 29-74-NC 274 (Franklin Boulevard) | South Street | 16 |
| 12-0041 | | US 29-74-NC 274 (E. Franklin Boulevard) | S. Marietta Street/ Dr. Martin Luther King Jr. Way | 17 |
| 12-0042 | | US 29-74-NC 274 (E. Franklin Boulevard) | Oakland Street | 18 |
| 12-0043 | | US 29-74-NC 274 (E. Franklin Boulevard) | NC 274 (Broad Street) | 19 |
| 12-0044 | | US 29-74 (E. Franklin Boulevard) | S. Avon Street | 20 |
| 12-0045 | | US 29-74 (E. Franklin Boulevard) | Chestnut Street | 21 |
| 12-0046 | | US 29-74 (E. Franklin Boulevard) | S. Church Street | 22 |
| 12-0047 | | US 29-74 (Franklin Boulevard) | Belvedere Avenue | 23 |
| 12-0048 | | US 29-74 (Franklin Boulevard) | Thomas Street/ Belvedere Avenue | 24 |
| 12-0049 | | US 29-74 (Franklin Boulevard) | Beverly Drive | 25 |
| 12-0050 | | US 29-74 (Franklin Boulevard) | NC 279 (New Hope Road) | 26 |
| 12-0053 | | NC 279 (N. New Hope Road) | NC 7 (E. Ozark Avenue) | 27 |
| 12-0058 | | SR 1339 (Airline Avenue) | Highland Street | 28 |
| 12-0059 | | SR 1339 (Gaston Avenue) | Ransom Street | 29 |
| 12-0060 | | SR 1339 (Gaston Avenue) | Firestone Street | 30 |
| 12-0061 | | Linwood Road | Second Avenue | 31 |
| 12-0062 | | SR 1131 (Linwood Road) | Spencer Avenue | 32 |
| 12-0065 | | US 321 (York Road) | Clyde Street | 33 |
| 12-0066 | | US 321 (York Road) | Carolina Avenue | 34 |
| 12-0067 | | US 321 (York Road) | Jackson Rd./ Dale Ave. | 35 |
| 12-0068 | | US 321 N. (S. York Street) | SR 2466 (Garrison Boulevard) | 36 |
| 12-0069 | | US 321 S. (S. Chester Street) | SR 2466 (W. Garrison Boulevard) | 37 |
| 12-0071 | | US 321 (Chester Street) | West Fifth Avenue | 38 |
| 12-0072 | | US 321 (York Street) | Third Avenue | 39 |
| 12-0073 | | US 321 NB (South York Street) | West Second Avenue | 40 |
| 12-0074 | | S. Chester Street | W. Second Avenue | 41 |
| 12-0077 | | US 29-74 (Franklin Boulevard) | SR 2200 (Armstrong Park Road/ Cox Road) | 42 |
| 12-0079 | | NC 279 (S. New Hope Road) | SR 2466 (E. Garrison Boulevard/ Armstrong Park Drive) | 43 |
| 12-0080 | | US 29-74 (Wilkinson Blvd.) | SR 2213 (Groves St.)/ Keith Hawthorne Hyundai Entrance | 44 |
| 12-0086 | | US 321 N. (York Street) | W. Main Avenue | 45 |
| 12-0096 | | SR 2466 (E. Garrison Boulevard) | S. Chestnut Street | 46 |
| 12-0097 | | SR 2278 (Dr. Martin Luther King, Jr. Way) | Walnut Avenue | 47 |
| 12-0098 | | SR 2466 (E. Garrison Boulevard) | NC 274 (Union Road) | 48 |
| 12-0102 | | NC 274 (Broad Street) | Second Avenue | 49 |
| 12-0103 | | NC 279 (New Hope Road) | SR 1255 (Hudson Boulevard)/ SR 2478 (Titman Road) | 50 |

| State ID | City ID | Street 1 | Street 2 | Signal Plan Sheet No. |
|----------|---------|---|---|-----------------------|
| 12-0151 | | US 29-74 (Wilkinson Boulevard) | SR 2329 (Main Street/ Redbud Drive) | 51 |
| 12-0152 | | NC 279 (New Hope Road) | Burtonwood Drive/ Shopping Center Entrance | 52 |
| 12-0154 | | NC 279 (New Hope Road) | SR 2457 (Robinwood Road) | 53 |
| 12-0155 | | NC 274 (Bessemer City Road) | SR 1338 (Northwest Blvd.) | 54 |
| 12-0157 | | US 29-74 (W. Franklin Boulevard) | SR 1307 (Edgewood Road/ Archie Whitesides) | 55 |
| 12-0162 | | US 321 (N. Chester Street) | I-85 Northbound Ramp | 56 |
| 12-0165 | | SR 1136 (Davis Park Rd.) / Myrtle School Road | SR 1131 (Linwood Rd.) | 57 |
| 12-0169 | | NC 279 (New Hope Road) | Court Drive | 58 |
| 12-0173 | | NC 279 (North New Hope Road) | SR 2265 (Auten Road) | 59 |
| 12-0176 | | NC 279 (N. New Hope Road) | Pearl Street and Eastridge Mall Entrance | 60 |
| 12-0181 | | SR 1255 (Hudson Boulevard) | Lynhaven Drive/ Lyon Street | 61 |
| 12-0190 | | SR 1136 (Davis Park Rd.) | SR 1255 (Hudson Blvd.)/ Bi-Lo Entrance | 62 |
| 12-0194 | | NC 279 (New Hope Road) | I-85 Southbound Ramp | 63 |
| 12-0195 | | NC 279 (New Hope Road) | I-85 Northbound Ramp | 64 |
| 12-0203 | | US 321 S. (N. Chester Street) | NC 7 (Long Avenue)/ Airline Avenue | 65 |
| 12-0213 | | US 321 S. (N. Chester Street)/ US 321 N. (S. York Street) | Rankin Avenue | 66 |
| 12-0234 | | NC 274 (Bessemer City Road) | SR 1351 (Isley Drive) | 67 |
| 12-0245 | | NC 274 (Union Road) | SR 2400 (Neal Hawkins Road) and SR 2446 (Robinwood Road) | 68 |
| 12-0264 | | NC 274 (Bessemer City Road) | Brown Street and Milton Street | 69 |
| 12-0270 | | SR 2200 (Cox Rd.) | Court Drive | 70 |
| 12-0276 | | SR 2466 (Garrison Boulevard) | Churchill Drive | 71 |
| 12-0310 | | NC 274 (Union Road) | SR 2416 (Robinson Road) | 72 |
| 12-0326 | | NC 279 (S. New Hope Road) | SR 2329 (Redbud Drive) | 73 |
| 12-0331 | | NC 7 (Long Avenue/ Ozark Avenue) | Modena Street | 74 |
| 12-0335 | | NC 274 (Bessemer City Road) | SR 1334 (Jenkins Dairy Road)/ SR 1135 (Shannon Bradley Road) | 75 |
| 12-0357 | | NC 279 (South New Hope Road) | SR 2439 (Beaty Road/ Lowell Bethesda Road) | 76 |
| 12-0373 | | SR 2439 (Lowell- Bethesda Road) | SR 2478 (Titman Road) and SR 3030 (Regal Oaks Ct) | 77 |
| 12-0609 | | SR 2200 (Armstrong Park Road) | SR 2466 (Armstrong Park Drive)/ Gardner Park Drive | 78 |
| 12-0632 | | SR 2466 (Garrison Boulevard) | SR 1131 (Linwood Road) | 79 |
| 12-0633 | | SR 2466 (E. Garrison Boulevard) | S. Marietta Street | 80 |
| 12-0634 | | SR 2466 (Garrison Boulevard) | Burtonwood Drive | 81 |
| 12-0636 | | NC 274 (Bessemer City Road) | Arkray St. & Myrtle School Road | 82 |
| 12-0902 | | SR 2200 (Cox Rd.) | I-85 Southbound Ramps | 83 |
| 12-0921 | | US 321 (N. Chester Street) | Rankin Lake Road | 84 |
| 12-0922 | | US 321 (N. Chester Street) | Bulb Avenue/ Tulip Drive | 85 |
| 12-0923 | | NC 7 (Long Avenue) | Broad Street | 86 |
| 12-0924 | | US 321 (S. Chester St.) | West Main Avenue | 87 |
| 12-0925 | | US 321 N. (N. York Street) | NC 7 (Long Avenue) | 88 |
| 12-0928 | | NC 274 (Bessemer City Road) | I- 85 Northbound Ramp and Loop | 89 |
| 12-0929 | | NC 7 (Long Avenue) | SR 2278 (Dr. Martin Luther King, Jr. Way) | 90 |
| 12-0931 | | NC 274 (Bessemer City Road) | I- 85 Southbound Ramp and Loop | 91 |
| 12-0942 | | US 29-74 (Franklin Boulevard) | SR 2905 (West Club Circle) | 92 |
| 12-0986 | | NC 279 (New Hope Road) | SR 2200 (Armstrong Park Road) | 93 |
| 12-0990 | | SR 2446 (Robinwood Road) | SR 2445 (Kendrick Road) | 94 |
| 12-1046 | | SR 2439 (Lowell Bethesda Road) | SR 2209 (Cramerton Rd) | 95 |
| 12-1086 | | SR 2200 (Cox Rd.) | I-85 Northbound Ramps | 96 |
| 12-1105 | | US 29-74 (Franklin Blvd.) | Franklin Square Entrance # 1/ Site Access | 97 |
| 12-1124 | | US 29-74 (Franklin Blvd.) | SR 1135 (Shannon Bradley Road)/ Patterson Circle & Commercial Drive | 98 |
| 12-1195 | | NC 279 (S. New Hope Road) | Twin Tops Road/ Armstrong Ford Road | 99 |
| 12-1209 | | SR 2446 (Robinwood Road/ Hoffman Road) | SR 2457 (Robinwood Road) | 100 |

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Signal Upgrade



PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000


City of Gastonia Computerized
Signal System

Signal Design Cover Sheet

PLAN DATE: March 2022 REVIEWED BY: KP Baumann
PREPARED BY: DM Curri REVIEWED BY:

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |
| | | |
| | | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



DocuSigned by:
Kevin P. Baumann
3/11/2022

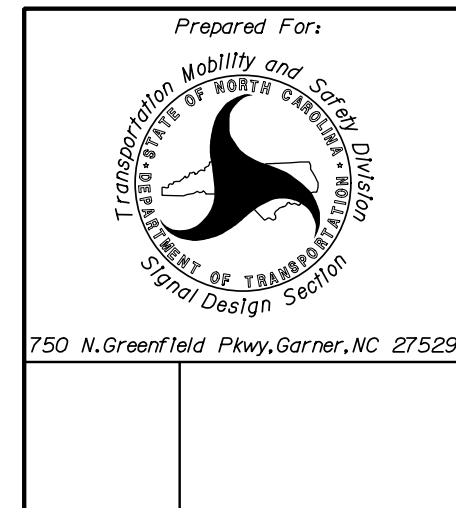
SIG. INVENTORY NO.

| State ID | City ID | Street 1 | Street 2 | Signal Plan Sheet No. |
|----------|---------|--|--|-----------------------|
| 12-1231 | | NC 279 (S. New Hope Road) | Pineview Lane | 101 |
| 12-1238 | | SR 2200 (Cox Rd.) | Gaston Mall Entrance/ Commercial Driveway | 102 |
| 12-1282 | | SR 2200 (Cox Rd.) | Aberdeen Road | 103 |
| 12-1304 | | NC 274 (Union Road) | SR 2200 (Gaston Day School Road)/ SR 2656 (Honeywood Lane) | 104 |
| 12-1319 | | SR 2329 (S. Main Street) | I-85 Northbound Ramp | 105 |
| 12-1320 | | SR 2329 (S. Main Street) | I-85 Southbound Ramp | 106 |
| 12-1348 | | US 29-74 (Wilkinson Boulevard) | SR 2481 (Westover Road)/ Westover Road | 107 |
| 12-1354 | | NC 279 (New Hope Road) | Country Club Road/ Cotton Blossom Circle | 108 |
| 12-1358 | | NC 274 (Union Road) | Osceola Street | 109 |
| 12-1373 | | NC 279 (N. New Hope Road) | Modena Street/ Montrose Drive | 110 |
| 12-1378 | | SR 1255 (Hudson Boulevard) | SR 2457 (Robinwood Drive) | 111 |
| 12-1401 | | US 29-74 (Franklin Blvd.) | Franklin Square Entrance # 2/ Site Access | 112 |
| 12-1410 | | SR 1255 (Hudson Boulevard) | SR 2400 (Neal Hawkins Road)/ Hilltop Street | 113 |
| 12-1411 | | SR 1255 (Hudson Boulevard) | NC 274 (Union Road) | 114 |
| 12-1454 | | US 29-74 (Franklin Boulevard) | Shopping Area - Home Depot | 115 |
| 12-1459 | | SR 1255 (Hudson Boulevard) | SR 3217 (Bradford Heights) | 116 |
| 12-1460 | | SR 1255 (Hudson Boulevard) | SR 2446 (Hoffman Road)/ SR 2329 (Redbud Drive) | 117 |
| 12-1495 | | US 29-74 (W. Franklin Boulevard) | Entrance to Highway Patrol/DMV and Dixie Village | 118 |
| 12-1512 | | SR 2457 (Robinwood Road) | Covenant Drive | 119 |
| 12-1535 | | NC 279 (New Hope Road) | Remount Road | 120 |
| 12-1536 | | NC 279 (New Hope Road) | Stroupe Road | 121 |
| 12-1541 | | NC 279 (New Hope Road) | SR 2490 (Cramer Mountain Road) | 122 |
| 12-1543 | | SR 2466 (W. Garrison Boulevard) | S. Trenton Street/ Athenian Drive | 123 |
| 12-1562 | | US 29-74 (Franklin Boulevard) | Lineberger Road | 124 |
| 12-1563 | | US 29-74 (Franklin Boulevard) | SR 2339 (Church Street)/ Franklin Crossing | 125 |
| 12-1603 | | SR 2200 (Armstrong Park Road) | Gardner Park Elem. School (Spirit Circle) | 126 |
| 12-1604 | | SR 2200 (Gaston Day School Rd) | Hoffman Road | 127 |
| 12-1605 | | SR 1255 (Hudson Boulevard) | Gaston Day School Road/ Armstrong Park Road | 128 |
| 12-1623 | | US 321 (N. Chester Street) | Radio Street | 129 |
| 12-1706 | | SR 1136 (N. Myrtle School Road) | Wal-Mart Entrance | 130 |
| 12-1712 | | SR 2481 (Gaston Road)/ Westover Street | SR 2439 (Lowell Bethesda Road) | 131 |
| 12-1715 | | US 29-74 (W. Franklin Boulevard) | Edward D. Sadler, Jr. Elementary School/ Frontage Road | 132 |
| 12-1718 | | NC 279 (New Hope Road) | SR 2436 (Stowe Road) | 133 |
| 12-1778 | | US 29-74 (Franklin Boulevard) | Gaston Mall Drive/ Nissan Dealer | 134 |
| 12-1803 | | US 321 (N. Chester Street) | I-85 SB Exit Ramp/ I-85 NB Entrance Ramp | 135 |
| | City-01 | Lynhaven Drive | Edgefield Avenue | 136 |
| | City-02 | Spencer Avenue | Miller Street | 137 |
| | City-06 | East Main Avenue | South Oakland Street/ Bus Station Entrance | 138 |
| | City-07 | Aberdeen Boulevard | Remount Road | 139 |
| | City-09 | Aberdeen Boulevard | West Club Circle | 140 |
| | City-10 | East Main Avenue/West Mian Avenue | Dr. Martin Luther King, Jr. Way | 141 |
| | City-11 | Court Drive | CareMont Health Drive | 142 |
| | City-13 | Davidson Avenue | Hargrove Avenue | 143 |
| | City-14 | Court Drive | Gaston Memorial Drive | 144 |
| 12-1825 | | SR 2457 (Robinwood Road) | Robinson Oaks Drive/ YMCA Driveway | 145 |

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Signal Upgrade

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000



Prepared For:
City of Gastonia Computerized Signal System

Signal Design Cover Sheet

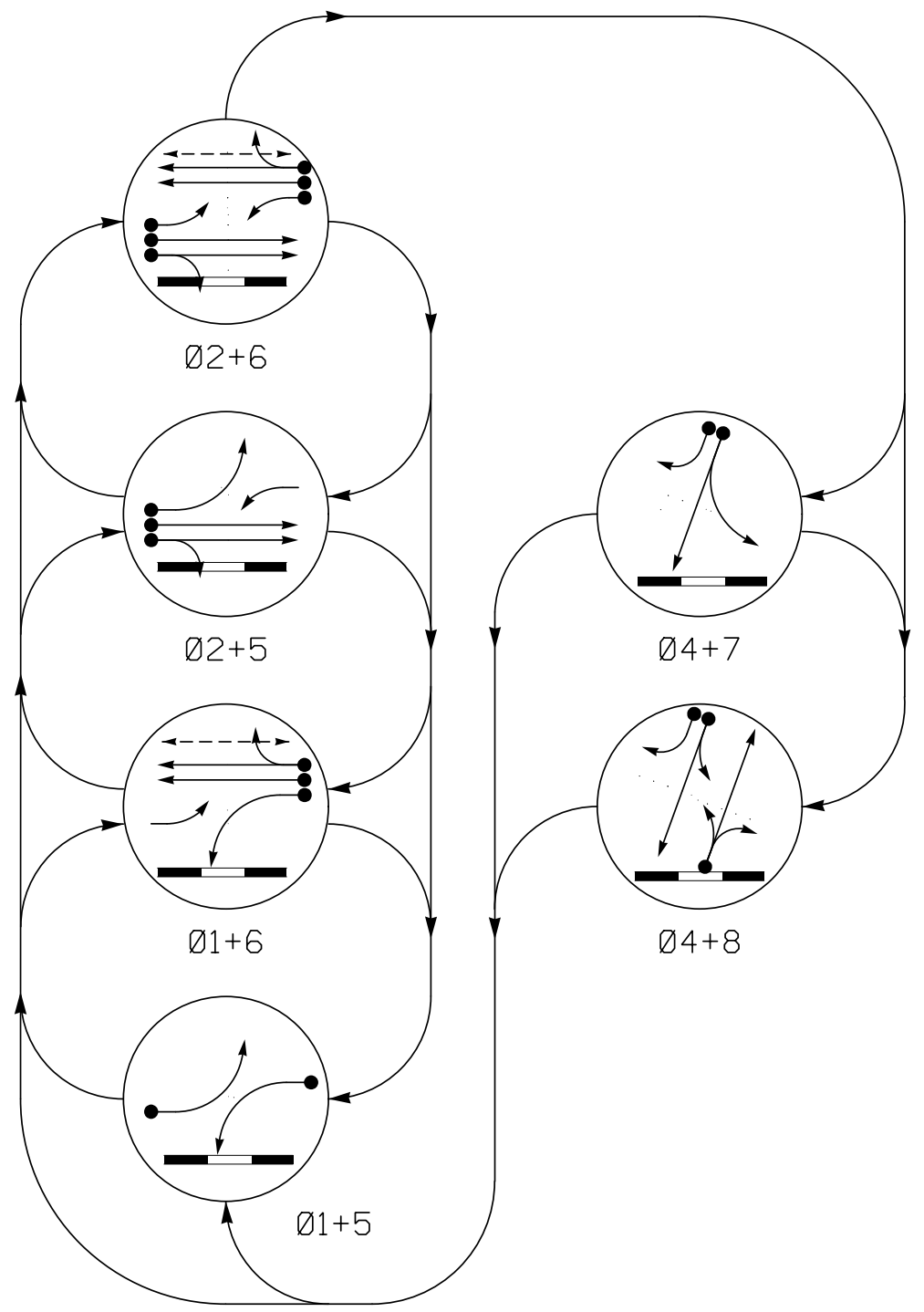
| | |
|-----------------------|-------------------------|
| PLAN DATE: March 2022 | REVIEWED BY: KP Baumann |
| PREPARED BY: DM Curri | REVIEWED BY: |
| REVISIONS | INIT. DATE |
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

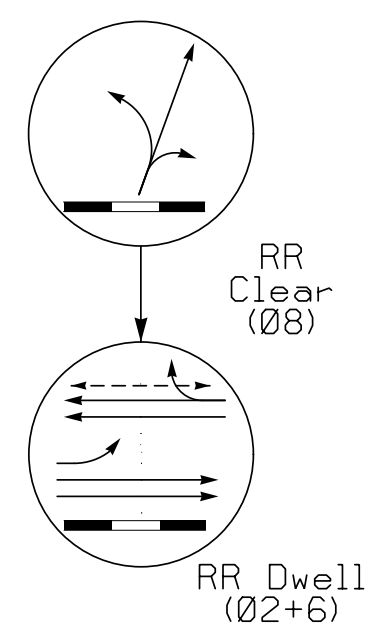
DocuSigned by:
 Kevin P. Baumann
 3/11/2022

SIG. INVENTORY NO.

DEFAULT PHASING DIAGRAM



DEFAULT RAIL PREEMPT PHASES (High Priority)

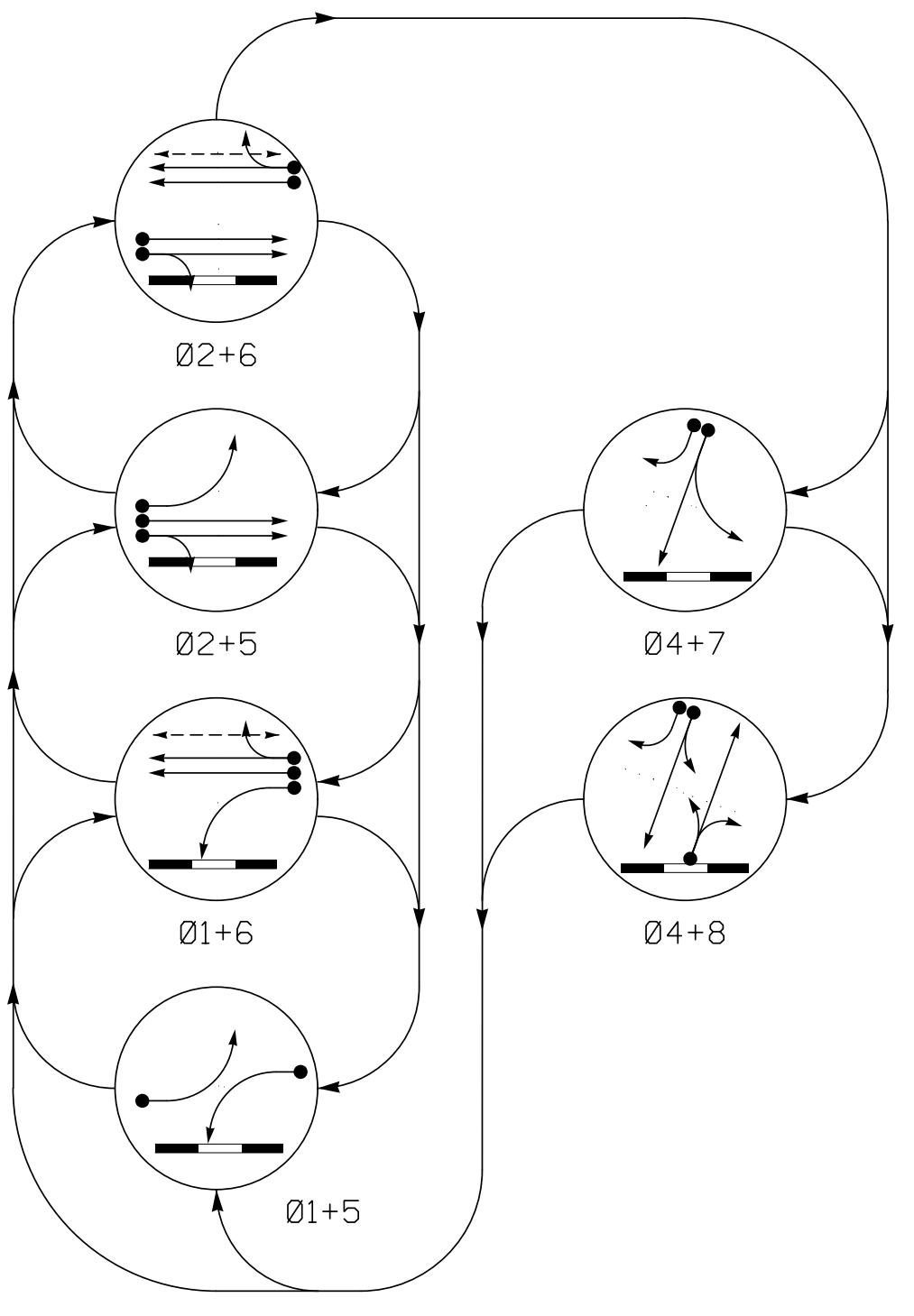


DEFAULT PHASING TABLE OF OPERATION

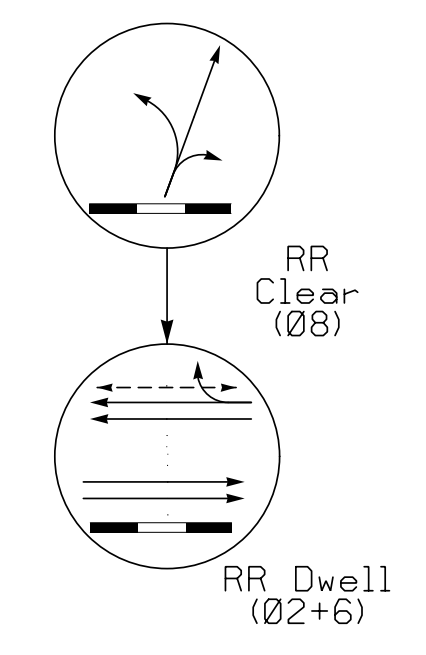
| SIGNAL FACE | PHASE | | | | | | | | | | | |
|-------------|-------|------|------|------|------|------|---------------|-----------------|-------|-----|---|---|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø4+7 | Ø4+8 | RR CLEAR (Ø8) | RR DWELL (Ø2+6) | FLASH | FLY | Y | |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | R | R | G | Y | | | |
| 41 | R | R | R | R | G | R | R | R | R | | | |
| 42 | R | R | R | R | G | R | R | R | R | | | |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | R | R | G | Y | | | |
| 81 | R | R | R | R | R | G | R | R | R | | | |
| 82 | R | R | R | R | R | G | R | R | R | | | |
| P61, P62 | DW | W | DW | W | DW | DW | DW | W | DRK | | | |
| SIGN | Ⓟ | OFF | OFF | OFF | OFF | OFF | OFF | ON | ON | * | | |

* See Note #10

ALTERNATE PHASING DIAGRAM



ALTERNATE RAIL PREEMPT PHASES (High Priority)



ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | | | |
|-------------|-------|------|------|------|------|------|---------------|-----------------|-------|-----|---|---|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø4+7 | Ø4+8 | RR CLEAR (Ø8) | RR DWELL (Ø2+6) | FLASH | FLY | Y | |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | R | R | G | Y | | | |
| 41 | R | R | R | R | G | R | R | R | R | | | |
| 42 | R | R | R | R | G | R | R | R | R | | | |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | R | R | G | Y | | | |
| 81 | R | R | R | R | R | G | R | R | R | | | |
| 82 | R | R | R | R | R | G | R | R | R | | | |
| P61, P62 | DW | W | DW | W | DW | DW | DW | W | DRK | | | |
| SIGN | Ⓟ | OFF | OFF | OFF | OFF | OFF | OFF | ON | ON | * | | |

* See Note #10

6 Phase Fully Actuated w/ Railroad Preemption and Alternate Phasing Operation Gastonia Signal System

NOTES

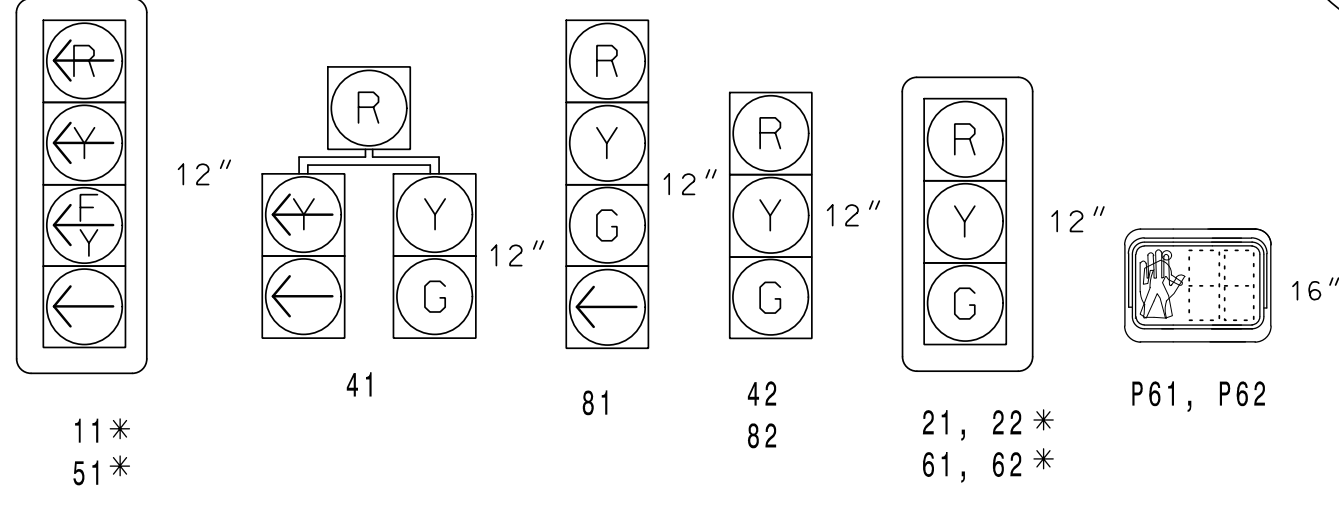
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- This location contains railroad preemption phasing. Do not program for late night flashing operation.
- Omit phase 7 during phase 8 on.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Remove existing "No Left Turn - Train" LED Blankout sign.
- Pavement markings are existing.
- Ensure flashing operation does not alter operation of blankout signs.
- The City Engineer or their representative will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Disconnect and abandon existing loops 2C, 2D, 6C and 6D.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- All proposed pedestrian pedestals and pushbutton posts shall be black in color. See Project Special Provisions for details.
- City system data: Controller Asset #0012.

PHASING DIAGRAM DETECTION LEGEND

- ← ● → DETECTED MOVEMENT
- ← ○ → UNDETECTED MOVEMENT (OVERLAP)
- ← ○ → UNSIGNALIZED MOVEMENT
- ← ○ → PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

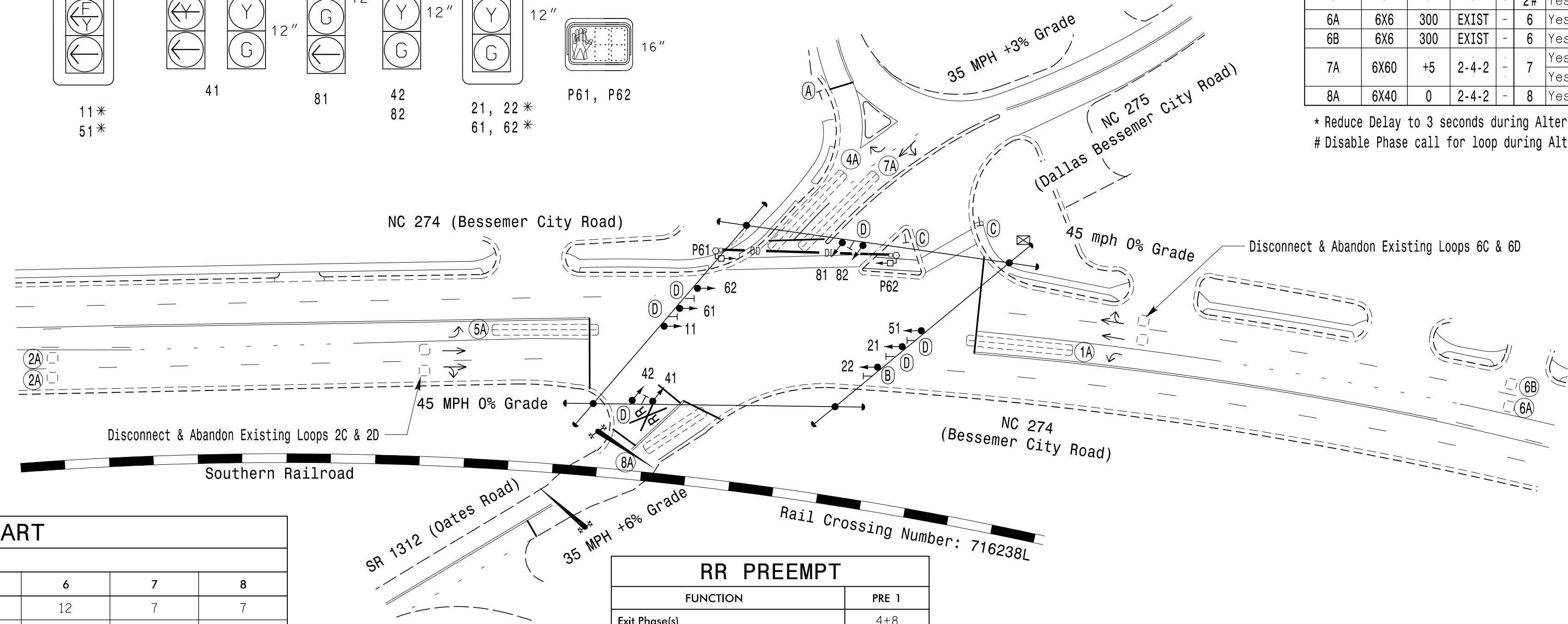
All Heads L.E.D.
* Backplates with reflective borders



DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | PHASE | PROGRAMMING | | | | | | |
|------|-----------|----------------------------|-------|-------|-------------|-------------|------------|-------------------|------|-------------|---------|
| | | | | | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CAB |
| 1A | 6X60 | +5 | 2-4-2 | 1 | Yes | - | 10* | - | N | - | X |
| 2A | 6X6 | 300 | EXIST | 2 | Yes | - | - | - | X | N | - |
| 2B | 6X6 | 300 | EXIST | 2 | Yes | - | - | - | X | N | - |
| 4A | 6X60 | +5 | 2-4-2 | 4 | Yes | - | 10 | - | N | - | X |
| 5A | 6X60 | +5 | 2-4-2 | 5 | Yes | - | 10* | - | N | - | X |
| 6A | 6X6 | 300 | EXIST | 6 | Yes | - | - | - | X | N | - |
| 6B | 6X6 | 300 | EXIST | 6 | Yes | - | - | - | X | N | - |
| 7A | 6X60 | +5 | 2-4-2 | 7 | Yes | - | 15 | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | 8 | Yes | - | 3 | - | N | - | X |

* Reduce Delay to 3 seconds during Alternate Phasing operation.
Disable Phase call for loop during Alternate Phasing operation.



TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|------------|-----|-----|------------|-----|-----|--|
| | 1 | 2 | 4 | 5 | 6 | 7 | 8 | |
| Min Green * | 7 | 12 | 7 | 7 | 12 | 7 | 7 | |
| Walk * | - | - | - | - | 7 | - | - | |
| Ped Clear | - | - | - | - | 19 | - | - | |
| Veh. Extension * | 1.0 | 6.0 | 2.0 | 1.0 | 6.0 | 2.0 | 4.0 | |
| Max 1 * | 20 | 100 | 30 | 20 | 100 | 25 | 30 | |
| Yellow | 3.0 | 4.5 | 3.7 | 3.0 | 4.5 | 3.0 | 3.7 | |
| Red Clear | 4.4 | 2.9 | 2.3 | 3.8 | 2.9 | 1.9 | 2.3 | |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | |
| Actuations B4 Add * | - | - | - | - | - | - | - | |
| Seconds / Actuation * | - | 1.5 | - | - | 1.5 | - | - | |
| Max Initial * | - | 34 | - | - | 34 | - | - | |
| Time Before Reduction * | - | 15 | - | - | 15 | - | - | |
| Time To Reduce * | - | 40 | - | - | 40 | - | - | |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - | - | |
| Locking Detector | - | X | - | - | X | - | - | |
| Recall Position | - | MIN RECALL | - | - | MIN RECALL | - | - | |
| Dual Entry | - | - | X | - | - | - | X | |
| Simultaneous Gap | X | X | X | X | X | X | X | |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

RR PREEMPT

| FUNCTION | PRE 1 |
|---------------------------|-------|
| Exit Phase(s) | 4+8 |
| Preempt Override | ON |
| Delay Time | 0 |
| Ped Clear Trough Yellow | Y |
| Terminate Phases | N |
| Track Clear Reserve | Y |
| Entrance Walk | 1 |
| Entrance Ped Clear | 5 |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 4.5 |
| Entrance Red Clear | 4.4 |
| Track Clear Min Green | 17 |
| Track Clear Yellow Change | 3.7 |
| Track Clear Red Clear | 2.3 |
| Min Dwell Time | 7 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation

THIS SIGNAL WAS DESIGNED FOR ADVANCE PREEMPTION

LEGEND

- | PROPOSED | EXISTING |
|---|---|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ● → Modified Signal Head | N/A |
| ○ → Pedestrian Signal Head | ○ → Pedestrian Signal Head |
| ○ → Signal Pole with Guy | ○ → Signal Pole with Guy |
| ○ → Signal Pole with Sidewalk Guy | ○ → Signal Pole with Sidewalk Guy |
| ⊗ → Inductive Loop Detector | ⊗ → Inductive Loop Detector |
| ⊠ → Controller & Cabinet | ⊠ → Controller & Cabinet |
| □ → Junction Box | □ → Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A → Right of Way | --- Right of Way |
| → → Directional Arrow | → → Directional Arrow |
| N/A → Railroad Cantilever | --- Railroad Cantilever |
| N/A → Railroad Gate and Flasher | --- Railroad Gate and Flasher |
| N/A → Railroad Tracks | --- Railroad Tracks |
| (A) → "STOP" Sign (R1-1) | (A) → "STOP" Sign (R1-1) |
| (B) → "NO RIGHT TURN - TRAIN" LED Blankout Sign | (B) → "NO RIGHT TURN - TRAIN" LED Blankout Sign |
| (C) → "YIELD" Sign (R1-2) | (C) → "YIELD" Sign (R1-2) |
| (D) → Street Name Sign (D3-1) | (D) → Street Name Sign (D3-1) |

Signal Upgrade

Prepared For:
Kimley-Horn

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

NC 274 (Bessemmer City Road) at NC 275 (Dallas-Bessemmer City Rd) and SR 1312 (Oates Road)

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: SP Pennington REVIEWED BY: KP Baumann

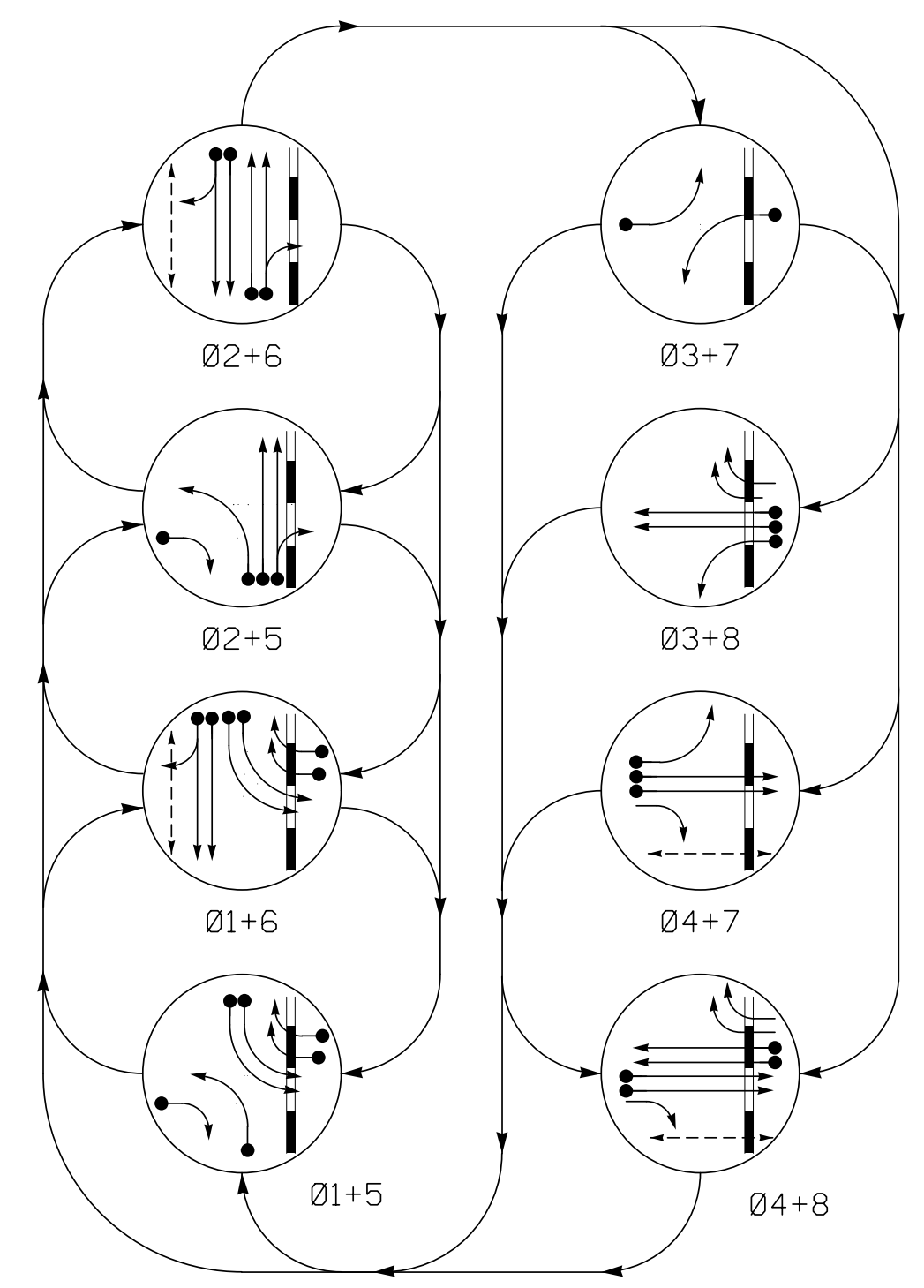
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Seal of North Carolina Professional Engineer
K. P. BAUMANN
044434

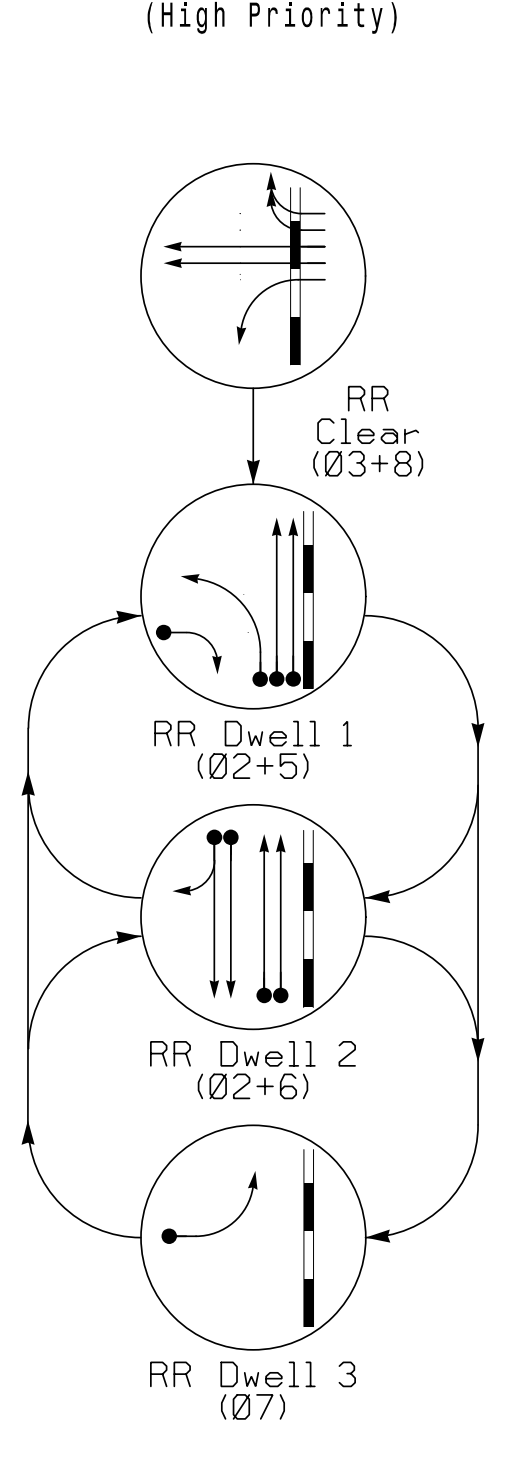
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SIG. INVENTORY NO. 12-0012

PHASING DIAGRAM



RAIL PREEMPT PHASES (High Priority)



EV PREEMPT PHASES (Medium Priority)

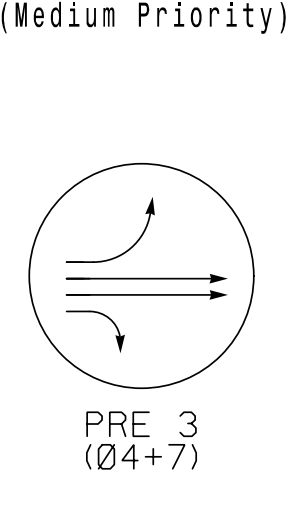


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|----|--------------|----|----|-----|
| | 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | 07 | PRE 3 (04+7) | 1 | 2 | 3 |
| 11,12 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21,22,23 | R | R | G | G | R | R | R | R | R | G | G | R | R |
| 31 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | R | R | R | R | R | G | G | R | R | R | R | G | R |
| 42 | R | R | R | R | R | G | G | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | R | R | R | R | G | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 81,82 | R | R | R | R | G | R | G | R | R | R | R | R | R |
| 83,84 | ← | ← | R | R | ← | R | ← | R | ← | R | R | R | R |
| P41, P42 | DW | DW | DW | DW | DW | DW | W | W | DW | DW | DW | DW | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DW | DW | DW | DW | DRK |
| SIGN (A) | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | ON | ON | ON | ON | OFF |

* See Note 11

DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP | NEW CAND |
| 1A | 6X60 | +5 | 2-4-2 | - | 1 | Yes | - | 3 | - | N | - | X |
| 1B | 6X60 | +5 | 2-4-2 | - | 1 | Yes | - | - | - | N | - | X |
| 1C | 6X60 | +5 | 2-4-2 | - | 1 | Yes | - | 15 | - | N | - | X |
| 1D | 6X60 | +5 | 2-4-2 | - | 1 | Yes | - | 15 | - | N | - | X |
| 2A | 6X6 | 50 | EXIST | - | 2 | Yes | - | - | - | N | - | X |
| 2B | 6X6 | 50 | EXIST | - | 2 | Yes | - | - | - | N | - | X |
| 3A | 6X60 | +5 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 4A | 6X6 | 300 | EXIST | - | 4 | No | - | - | - | N | - | X |
| 4B | 6X6 | 300 | EXIST | - | 4 | No | - | - | - | N | - | X |
| 4C | 6X40 | 0 | 2-4-2 | - | 4 | Yes | 2 | 5 | - | N | - | X |
| 4D | 6X40 | 0 | 2-4-2 | - | 4 | Yes | 2 | 5 | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 3 | - | N | - | X |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - | X |
| 6A | 6X6 | 70 | EXIST | - | 6 | Yes | - | - | - | N | - | X |
| 6B | 6X6 | 70 | EXIST | - | 6 | Yes | - | - | - | N | - | X |
| 7A | 6X60 | 0 | 2-4-2 | - | 7 | Yes | - | - | - | N | - | X |
| 8A | 6X6 | 300 | EXIST | - | 8 | No | - | - | - | N | - | X |
| 8B | 6X6 | 300 | EXIST | - | 8 | No | - | - | - | N | - | X |
| 8C | 6X40 | 0 | 2-4-2 | - | 8 | Yes | 2 | 5 | - | N | - | X |
| 8D | 6X40 | 0 | 2-4-2 | - | 8 | Yes | 2 | 5 | - | N | - | X |
| S1 | 6X6 | +250 | EXIST | - | - | No | - | - | - | N | X | X |
| S2 | 6X6 | +250 | EXIST | - | - | No | - | - | - | N | X | X |

8 Phase Fully Actuated With Railroad Preemption and Emergency Vehicle Preemption Gastonia Signal System

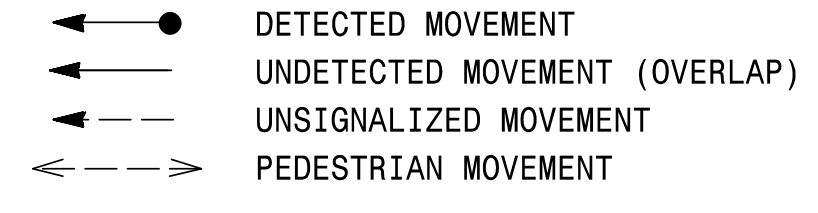
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- This location contains railroad preemption phasing. Do not program for late night flashing operation.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Ensure flashing operation does not alter operation of blankout signs.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- City of system data: Controller Asset #0016.

| EV PREEMPT | |
|---------------------------------|-------|
| FUNCTION | PRE 3 |
| Exit Phase(s) | 2+6 |
| Preempt Override | OFF |
| Delay Time | 0 |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 25.5* |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Minimum Dwell Time | 7 |
| Preempt Input Extension Time ** | 2 |
| Preempt Max Time | 120 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation
** Program Timing on GPS Detection Unit

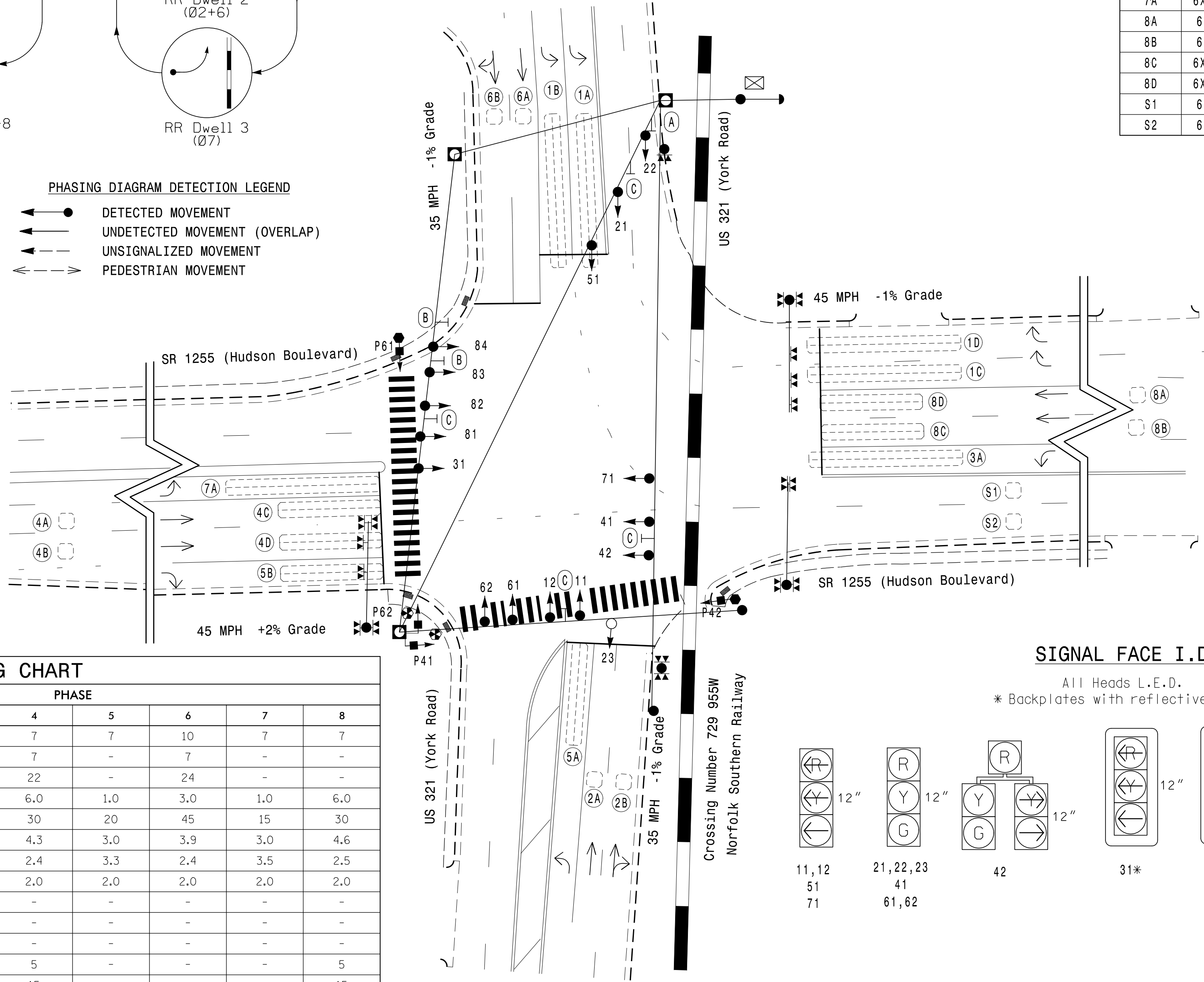
PHASING DIAGRAM DETECTION LEGEND



TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|------------|-----|-----|-----|------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 10 | 7 | 7 | 7 | 10 | 7 | 7 |
| Walk * | - | - | - | 7 | - | 7 | - | - |
| Ped Clear | - | - | - | 22 | - | 24 | - | - |
| Veh. Extension * | 1.0 | 3.0 | 2.0 | 6.0 | 1.0 | 3.0 | 1.0 | 6.0 |
| Max 1 * | 20 | 45 | 15 | 30 | 20 | 45 | 15 | 30 |
| Yellow | 3.0 | 3.9 | 3.0 | 4.3 | 3.0 | 3.9 | 3.0 | 4.6 |
| Red Clear | 3.4 | 2.5 | 3.8 | 2.4 | 3.3 | 2.4 | 3.5 | 2.5 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - | - | - |
| Seconds / Actuation * | - | - | - | - | - | - | - | - |
| Max Initial * | - | - | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | 5 | - | - | - | 5 |
| Time To Reduce * | - | - | - | 15 | - | - | - | 15 |
| Minimum Gap | - | - | - | 3.0 | - | - | - | 3.0 |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | MIN RECALL | - | - | - | MIN RECALL | - | - |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



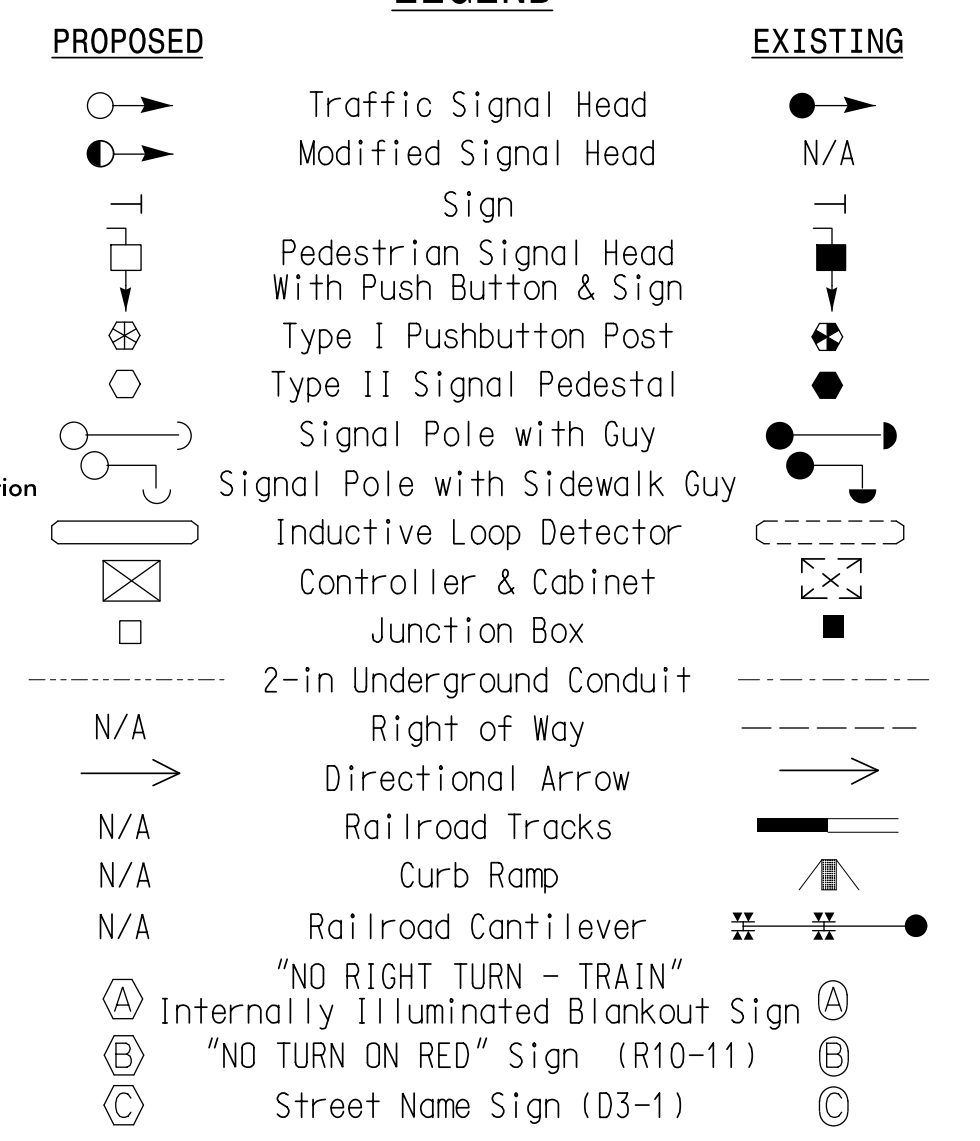
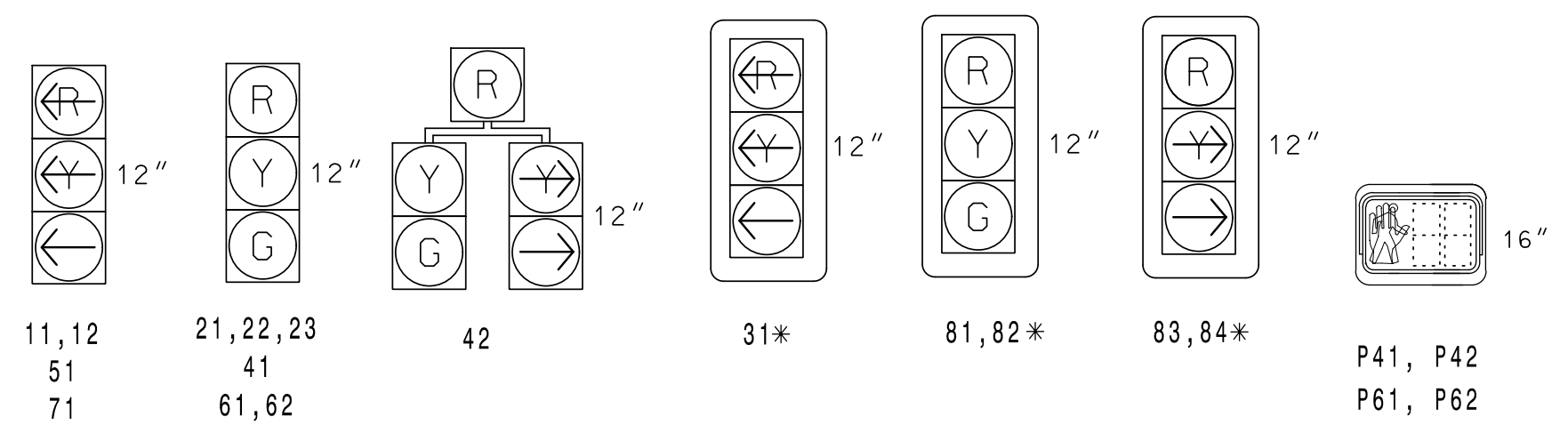
| RR PREEMPT | |
|---------------------------|-------|
| FUNCTION | PRE 1 |
| Exit Phase(s) | 3+7 |
| Preempt Override | ON |
| Delay Time | 0 |
| Ped Clear Trough Yellow | Y |
| Terminate Phases | N |
| Track Clear Reserve | Y |
| Entrance Walk | 1 |
| Entrance Ped Clear | 5 |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 4.6 |
| Entrance Red Clear | 3.8 |
| Track Clear Min Green | 11 |
| Track Clear Yellow Change | 4.3 |
| Track Clear Red Clear | 3.5 |
| Min Dwell Time | 7 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation

THIS SIGNAL WAS DESIGNED FOR SIMULTANEOUS PREEMPTION

SIGNAL FACE I.D.

All Heads L.E.D.
* Backplates with reflective borders



Signal Upgrade

Prepared For: **Transposition Mobility and Safety Solutions**
 PREPARED BY: **DM Curri**
 REVIEWED BY: **SL Phillips**
 DATE: **May 2021**
 SCALE: **0 30**
1" = 30'

US 321 (York Road) at SR 1255 (Hudson Boulevard)

Division 12 Gaston County Gastonia

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 NC License #0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

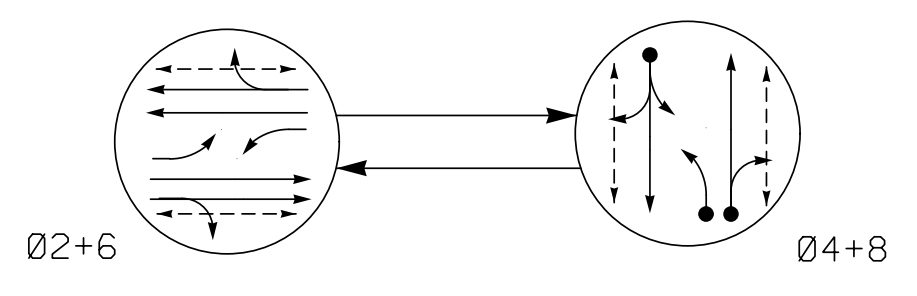
Seal of **KEVIN P. BAUMANN**, PROFESSIONAL ENGINEER, No. 044434

SIGNATURE: **KEVIN P. BAUMANN** DATE: **3/11/2022**

SIG. INVENTORY NO. **12-0016**

11:13:43 AM Dantelle.Curri ***K:\meyer-horn.com\SE_RALI_MRAL_TPI\DK_LTS\011036569_Gastonia Signal System\9_Signal\Drawings\20016-2021.dgn

PHASING DIAGRAM



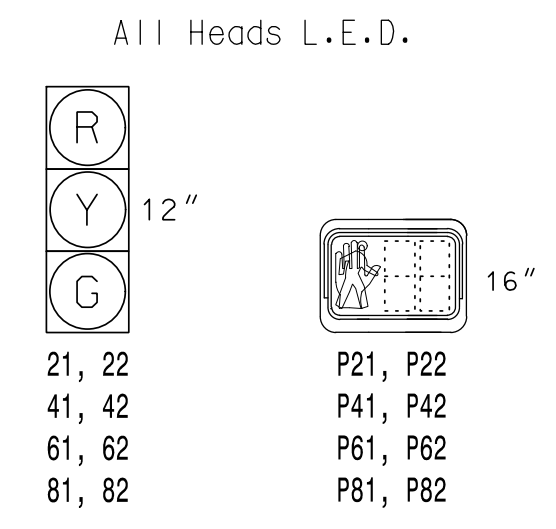
PHASING DIAGRAM DETECTION LEGEND

- ◄●► DETECTED MOVEMENT
- ◄◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄◄◄ UNSIGNALIZED MOVEMENT
- ◄◄◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | Ø2+6 | Ø4+8 | FLASH |
| 21, 22 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P41, P42 | DW | W | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

SIGNAL FACE I.D.



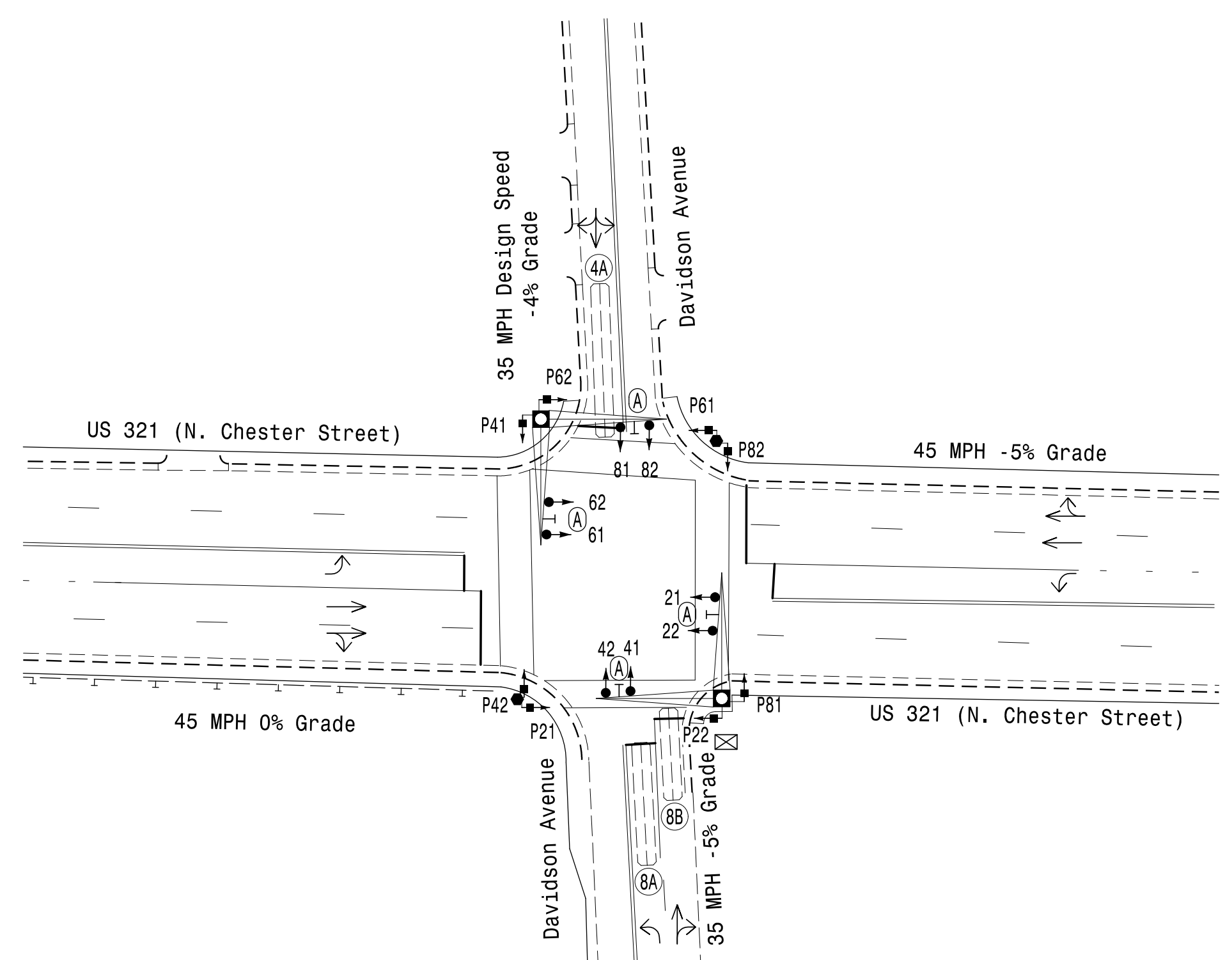
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|------|------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP | CARD |
| 4A | 6X50 | +5 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | - | - | N | - | X |
| 8B | 6X30 | +5 | 2-4-2 | - | 8 | Yes | - | - | - | N | - | X |

2 Phase Semi-Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls on phases 4 and 8.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset #0017.



TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 12 | 7 | 12 | 7 |
| Walk * | 7 | 7 | 7 | 7 |
| Ped Clear | 10 | 16 | 11 | 18 |
| Veh. Extension * | - | 2.0 | - | 2.0 |
| Max I * | 45 | 25 | 45 | 25 |
| Yellow | 5.0 | 4.2 | 5.0 | 4.2 |
| Red Clear | 1.2 | 3.3 | 1.2 | 3.3 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

| PROPOSED | EXISTING |
|--|-----------|
| ○ → Traffic Signal Head | ● → N/A |
| ◐ → Modified Signal Head | ◐ → N/A |
| ◑ → Sign | ◑ → N/A |
| ◒ → Pedestrian Signal Head With Push Button & Sign | ◒ → N/A |
| ◓ → Type II Signal Pedestal | ◓ → N/A |
| ◔ → Metal Pole with Mastarm | ◔ → N/A |
| ◕ → Inductive Loop Detector | ◕ → N/A |
| ◖ → Controller & Cabinet | ◖ → N/A |
| ◗ → Junction Box | ◗ → N/A |
| ◘ → 2-in Underground Conduit | ◘ → N/A |
| N/A → Right of Way | N/A → N/A |
| → → Directional Arrow | → → N/A |
| Ⓐ → Street Name Sign (D3-1) | Ⓐ → N/A |

Signal Upgrade

Prepared For:

 750 N. Greenfield Pkwy, Garner, NC 27529
 NC License #0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

**US 321 (N. Chester Street)
at
Davidson Avenue**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
 PREPARED BY: DM Curri REVIEWED BY: KP Baumann

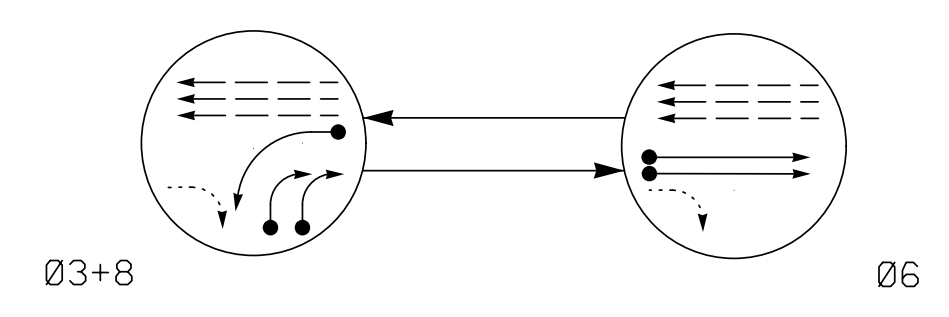
REVISIONS: _____ INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 KEVIN P. BAUMANN
 ENGINEER
 3/11/2022
 DATE
 12-0017
 INVENTORY NO.

3/9/2022 11:15:10 AM DanHille.Curri ***K:\meyer-horn.com\SE-RAL\MRAL_TIP\DK_LTS\011036569_Gastonia Signal System9 Signal.kws4 - Signal Design\ME120017-2021.dgn

PHASING DIAGRAM

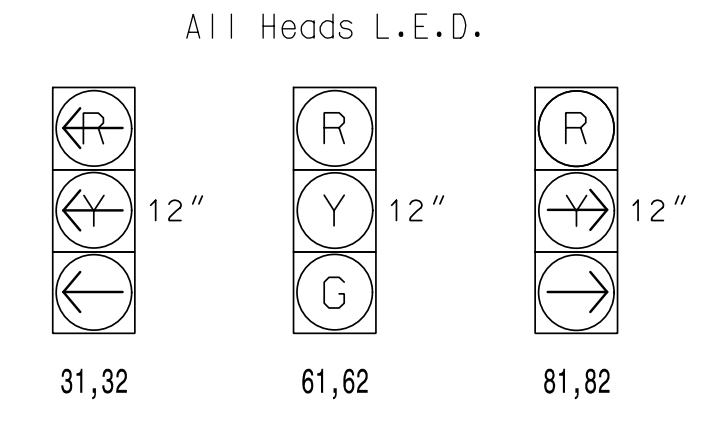


PHASING DIAGRAM DETECTION LEGEND

- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ←..... UNSIGNALIZED MOVEMENT
- ←- - - PEDESTRIAN MOVEMENT

| SIGNAL FACE | PHASE | | |
|-------------|-------|-----|-----------|
| | Ø 3+8 | Ø 6 | F L HEADS |
| 31,32 | ← | ← | ← |
| 61,62 | R | G | Y |
| 81,82 | → | R | R |

SIGNAL FACE I.D.

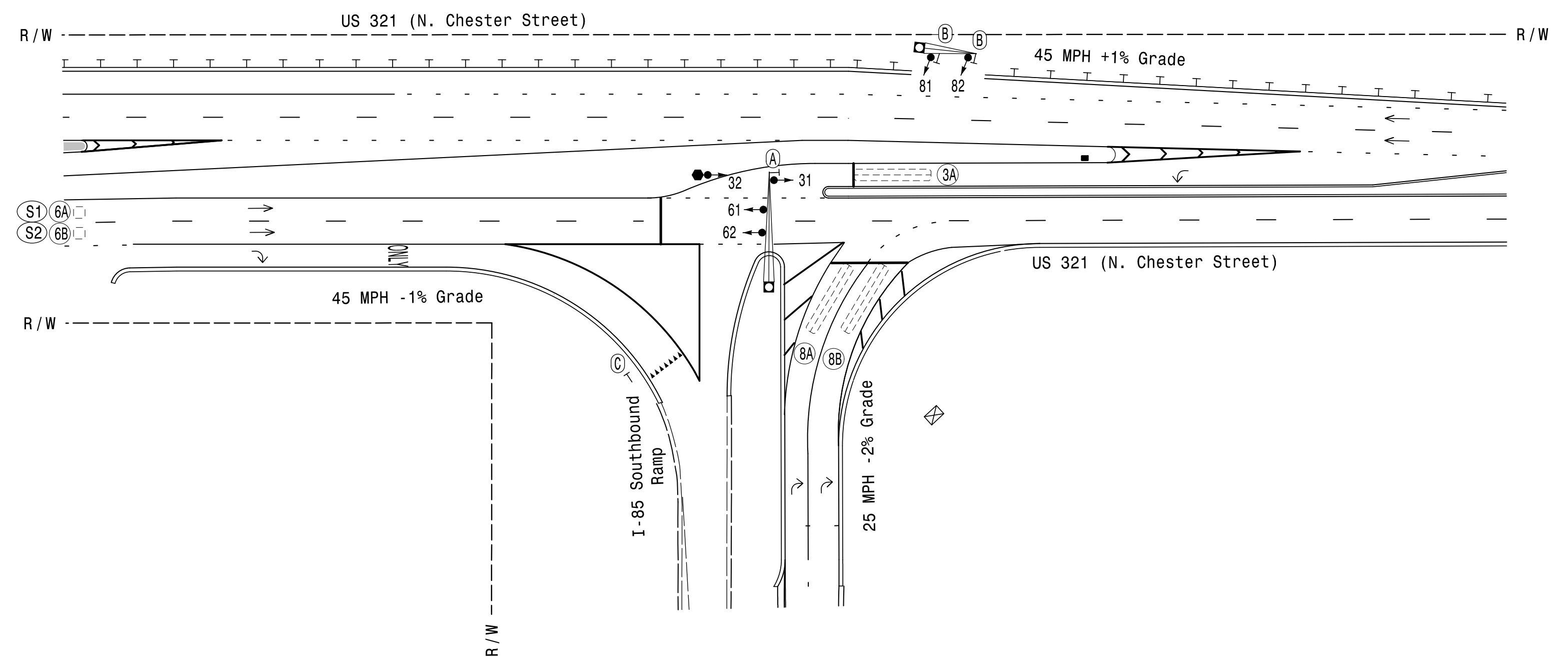


| DETECTOR INSTALLATION CHART | | | | | | | | | | | | |
|-----------------------------|-----------|----------------------------|-------|----------|-------|-------------|-------------|------------|-------------------|------|-------------|----------|
| DETECTOR | | | | | | PROGRAMMING | | | | | | |
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP SYSTEM | NEW CARD |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 6A/S1 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X | X |
| 6B/S2 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X | X |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | - | - | N | - | X |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | - | - | N | - | X |

2 Phase Fully Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- Existing signal heads 33 & 34 have been relabeled to 81 & 82, respectively.
- Existing loops 3B & 3C have been relabeled to 8A & 8B, respectively.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset #0023.



| FEATURE | PHASE | | |
|-------------------------|-------|------------|-----|
| | 3 | 6 | 8 |
| Min Green * | 7 | 12 | 7 |
| Walk * | - | - | - |
| Ped Clear | - | - | - |
| Veh. Extension * | 2.0 | 6.0 | 2.0 |
| Max 1 * | 25 | 90 | 25 |
| Yellow | 3.0 | 4.6 | 3.0 |
| Red Clear | 2.9 | 2.0 | 2.9 |
| Red Revert | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - |
| Seconds /Actuation * | - | 1.5 | - |
| Max Initial * | - | 34 | - |
| Time Before Reduction * | - | 15 | - |
| Time To Reduce * | - | 30 | - |
| Minimum Gap | - | 3.0 | - |
| Lacking Detector | - | X | - |
| Recall Position | - | MIN RECALL | - |
| Dual Entry | X | - | X |
| Simultaneous Gap | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phase 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

| PROPOSED | | EXISTING | |
|----------|--|----------|-----|
| ○→ | Traffic Signal Head | ●→ | N/A |
| ●→ | Modified Signal Head | + | N/A |
| ↓ | Sign | + | N/A |
| ○ | Pedestrian Signal Head | ○ | N/A |
| □ | With Push Button & Sign | ○ | N/A |
| ○ | Type III Signal Pedestal | ○ | N/A |
| ○ | Metal Pole with Mastarm | ○ | N/A |
| □ | Inductive Loop Detector | □ | N/A |
| □ | Controller & Cabinet | □ | N/A |
| □ | Junction Box | □ | N/A |
| --- | 2-in Underground Conduit | --- | N/A |
| N/A | Right of Way | --- | N/A |
| → | Directional Arrow | → | N/A |
| N/A | Guardrail | --- | N/A |
| Ⓐ | "U-Turn Yield to Right Turn" Sign (R10-16) | Ⓐ | N/A |
| Ⓑ | Right Arrow "ONLY" Sign (R3-5R) | Ⓑ | N/A |
| Ⓒ | "YIELD" Sign (R1-2) | Ⓒ | N/A |

Signal Upgrade

Prepared For:

 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE: 1" = 50'

US 321 (N. Chester Street) at I-85 Southbound Ramp

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
 PREPARED BY: CF Davis REVIEWED BY: KP Baumann

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Seal of Kevin P. Baumann, Professional Engineer, No. 044434, State of North Carolina.

DocuSigned by:

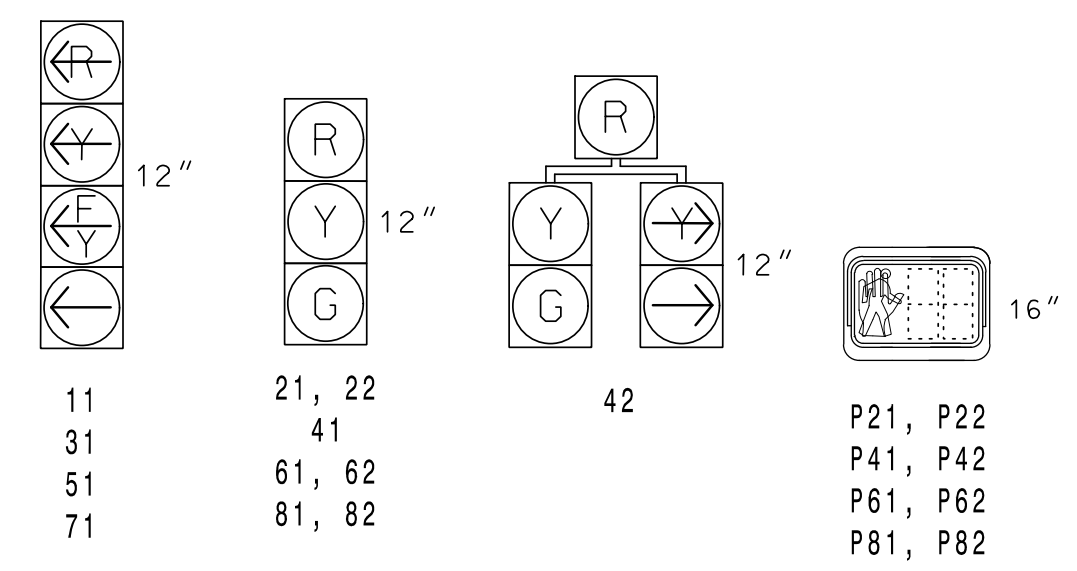
 DATE: 3/11/2022
 SIGNATURE: KEVIN P. BAUMANN
 DATE: 3/11/2022
 SIG. INVENTORY NO. 12-0023

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

3/9/2022 11:15:12 AM Dantelle.Curt1 ***Kinley-Horn.comSE-RAL\MRAL-TIP\DK-TIS\011036569_Gastonia Signal System9_Signal\KWS4 - Signal Design\ME120023-2021.dgn

SIGNAL FACE I.D.

All Heads L.E.D.



DETECTOR INSTALLATION CHART

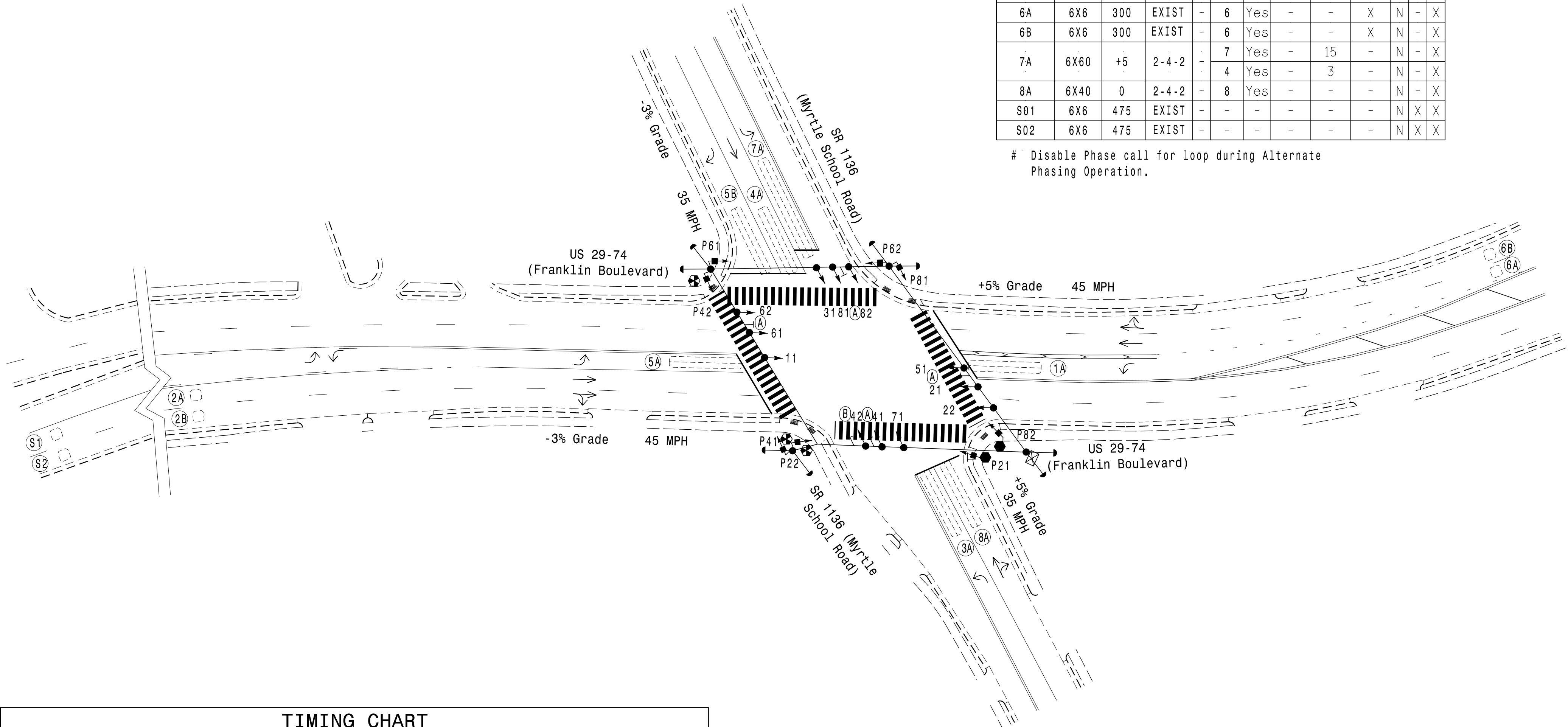
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Yes | - | 3 | - | N | - | X |
| 2A | 6X6 | 300 | EXIST | - | 6# | Yes | - | 3 | - | G | - | X |
| 2B | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | - | X |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Yes | - | 15 | - | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | 3 | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 3 | - | N | - | X |
| 6A | 6X6 | 300 | EXIST | - | 5 | Yes | - | 15 | - | N | - | X |
| 6B | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | - | X |
| 7A | 6X60 | +5 | 2-4-2 | - | 7 | Yes | - | 15 | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - | X |
| S01 | 6X6 | 475 | EXIST | - | - | - | - | - | - | N | X | X |
| S02 | 6X6 | 475 | EXIST | - | - | - | - | - | - | N | X | X |

Disable Phase call for loop during Alternate Phasing Operation.

8 Phase Fully Acutated w/ Alternate Phasing Operation and Emergency Vehicle Preemption Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The City Engineer or their representative will determine the hours of use for each phasing plan.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- City System Data: Controller Asset: #0029

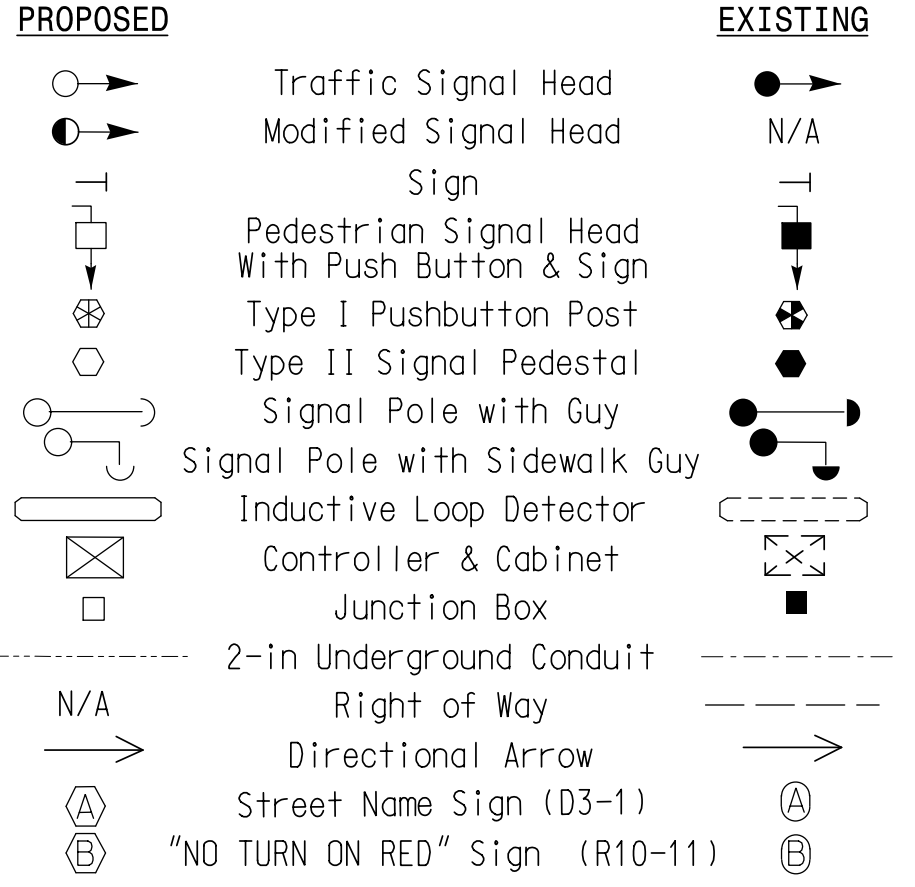


TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|------------|-----|-----|-----|------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 7 | 12 | 7 | 7 |
| Walk * | - | 7 | - | 7 | - | 7 | - | 7 |
| Ped Clear | - | 21 | - | 21 | - | 26 | - | 20 |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 2.0 | 6.0 | 1.0 | 2.0 |
| Max I * | 20 | 90 | 15 | 30 | 20 | 90 | 15 | 30 |
| Yellow | 3.0 | 4.8 | 3.0 | 4.1 | 3.0 | 4.8 | 3.0 | 4.1 |
| Red Clear | 2.1 | 1.7 | 3.5 | 2.9 | 2.4 | 1.7 | 3.4 | 2.9 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - | - | - |
| Seconds /Actuation * | - | 1.5 | - | - | - | 1.5 | - | - |
| Max Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 30 | - | - | - | 30 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | MIN RECALL | - | - | - | MIN RECALL | - | - |
| Dual Entry | - | - | - | X | - | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND



Signal Upgrade - Sheet 1 of 2

Prepared For:

 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE: 1" = 40'

US 29/74 (Franklin Boulevard) at SR 1136 (Myrtle School Road)
 Division 12 Gaston County Gastonia
 PLAN DATE: May 2021 REVIEWED BY: SL Phillips
 PREPARED BY: DM Curri REVIEWED BY: KP Baumann

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Seal of Kevin P. Baumann, Professional Engineer, License No. 044434. Signature and Date: 3/11/2022.

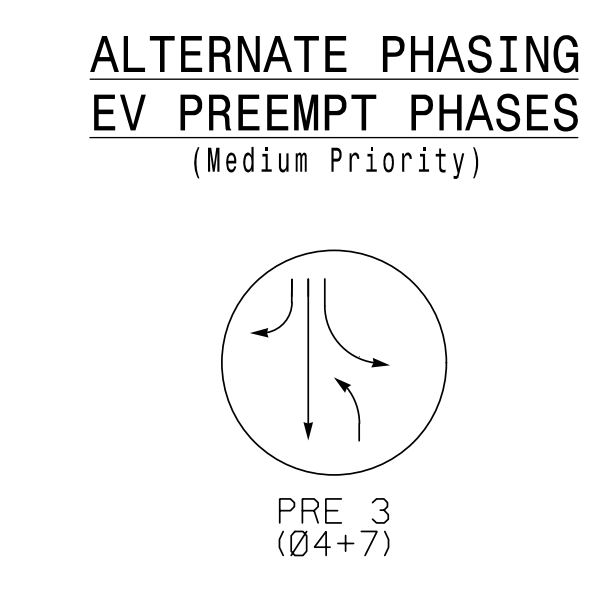
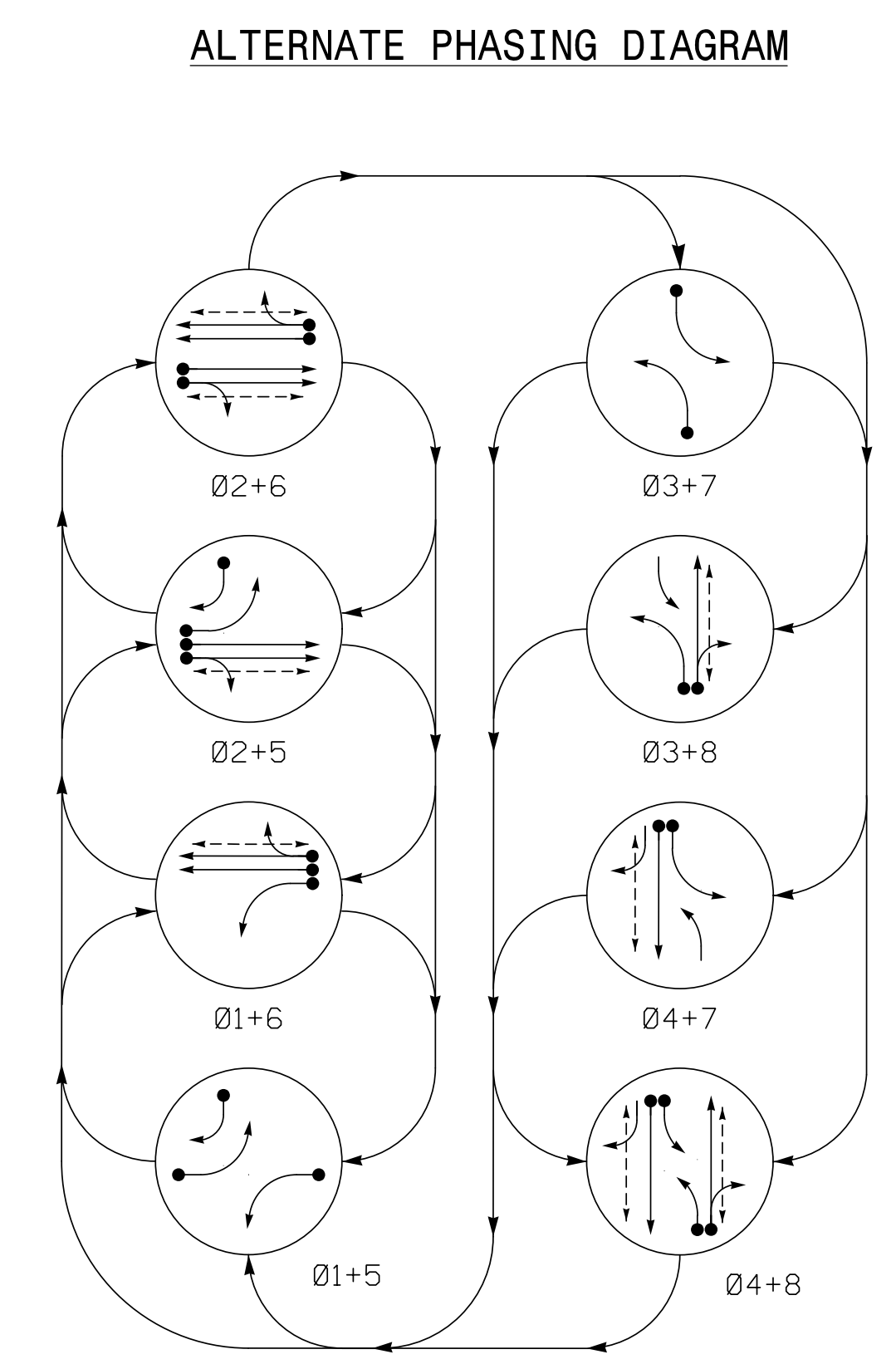
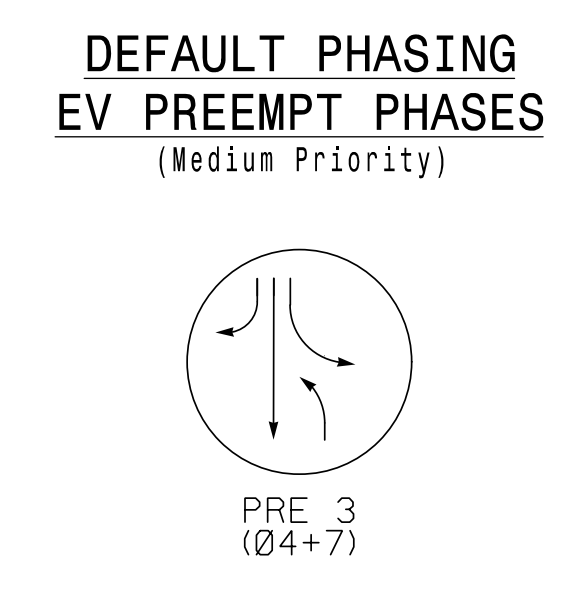
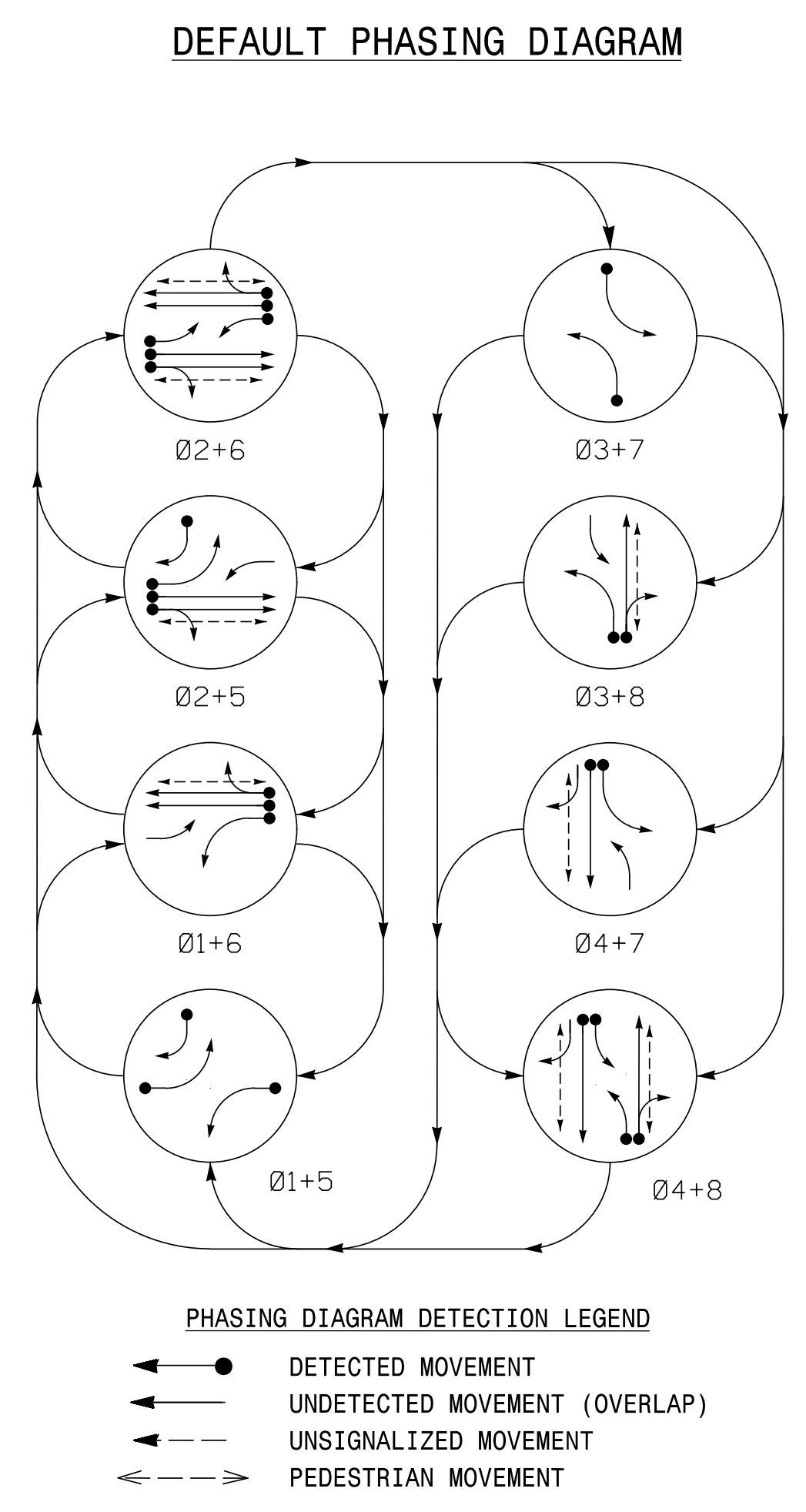
PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

3/9/2022 11:12:56 AM Dan.Hell@khor.com

8 Phase Fully Acutated w/ Alternate Phasing Operation and Emergency Vehicle Preemption Gastonia Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. The City Engineer or their representative will determine the hours of use for each phasing plan.
11. Pavement markings are existing.
12. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
13. Install new cabinet on the existing cabinet foundation.
14. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
15. Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
16. City System Data:
Controller Asset: #0029



DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|----|-----|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø3+7 | Ø3+8 | Ø4+7 | Ø4+8 | P | F |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | R | R | R | R | Y |
| 31 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | R | R | R | R | R | R | G | G | G | R |
| 42 | R | R | R | R | R | R | G | G | G | R |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | R | R | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 81, 82 | R | R | R | R | R | R | G | R | G | R |
| P21, P22 | DW | DW | W | W | DW | DW | DW | DW | DW | DRK |
| P41, P42 | DW | DW | DW | DW | DW | DW | W | W | DW | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DW | DRK |
| P81, P82 | DW | DW | DW | DW | DW | DW | W | W | DW | DRK |

ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|----|-----|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø3+7 | Ø3+8 | Ø4+7 | Ø4+8 | P | F |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | R | R | R | R | Y |
| 31 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | R | R | R | R | R | R | G | G | G | R |
| 42 | R | R | R | R | R | R | G | G | G | R |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | R | R | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 81, 82 | R | R | R | R | R | R | G | R | G | R |
| P21, P22 | DW | DW | W | W | DW | DW | DW | DW | DW | DRK |
| P41, P42 | DW | DW | DW | DW | DW | DW | W | W | DW | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DW | DRK |
| P81, P82 | DW | DW | DW | DW | DW | DW | W | W | DW | DRK |

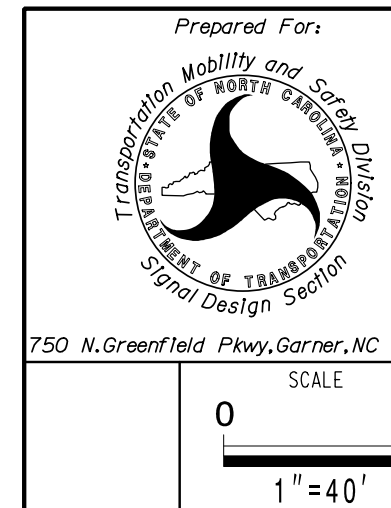
EV PREEMPT

| FUNCTION | PRE 3 |
|---------------------------------|-------|
| Exit Phase(s) | 4+8 |
| Preempt Override | OFF |
| Delay Time | 0 |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 255* |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Minimum Dwell Time | 7 |
| Preempt Input Extension Time ** | 2 |
| Preempt Max Time | 120 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation
** Program Timing on GPS Detection Unit

Signal Upgrade - Sheet 2 of 2

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000



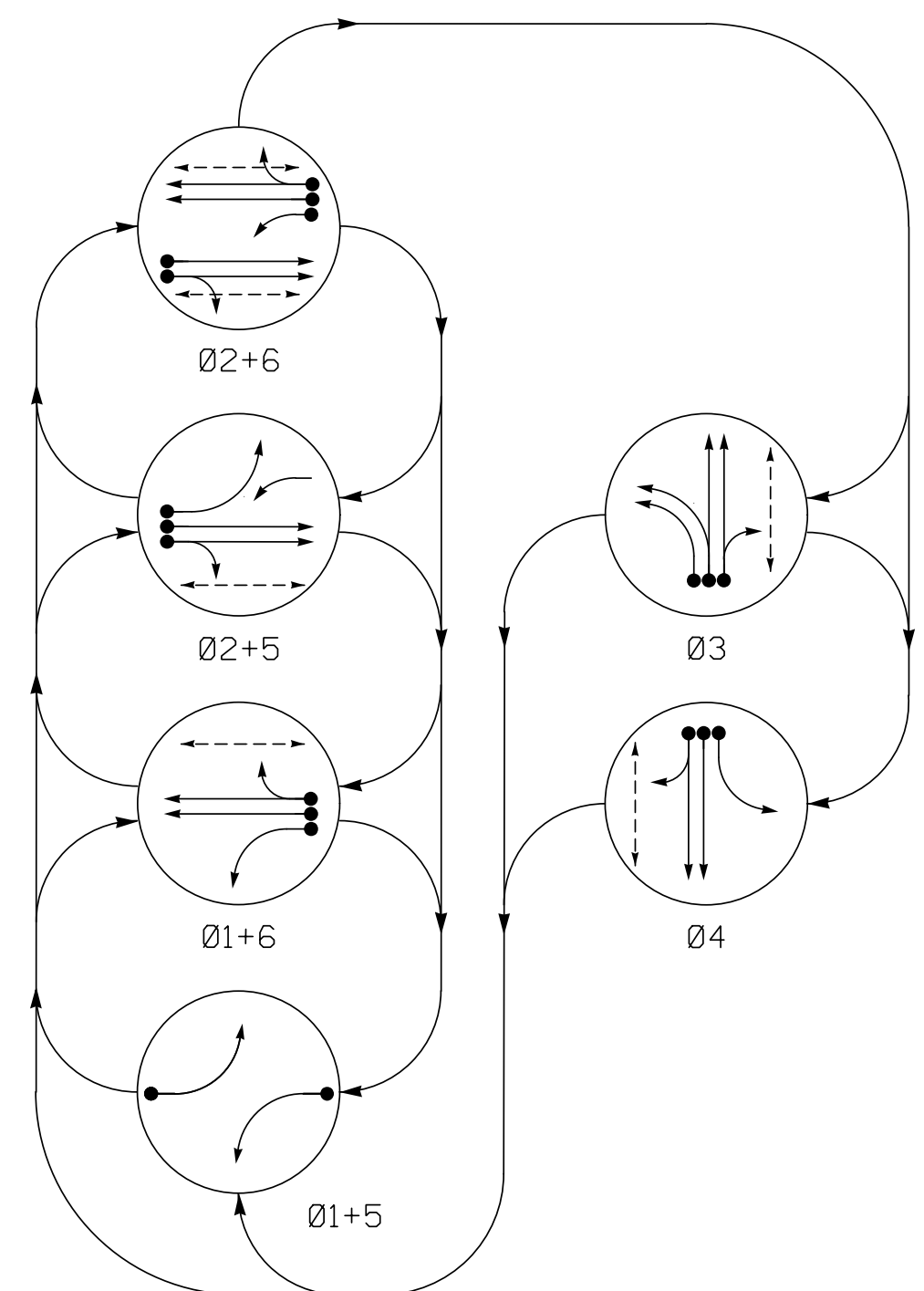
US 29/74 (Franklin Boulevard) at SR 1136 (Myrtle School Road)
Division 12 Gaston County Gastonia
PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: DM Curri REVIEWED BY: KP Baumann

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

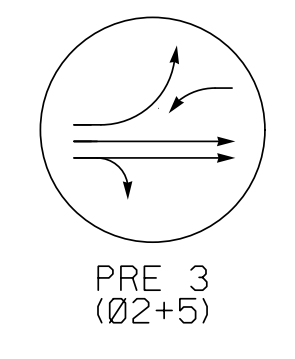
Signature: *Kevin P. Baumann*
DATE: 3/11/2022
SIG. INVENTORY NO. 12-0029

3/9/2022 11:12:57 AM Dantelle.Curri ***K:\meyer-horn.com\SE_RAL\MRAL_TIP\DK_LTS\011036569_Gastonia Signal System\Signal_Signals\Signal_Signals.dgn

DEFAULT PHASING DIAGRAM



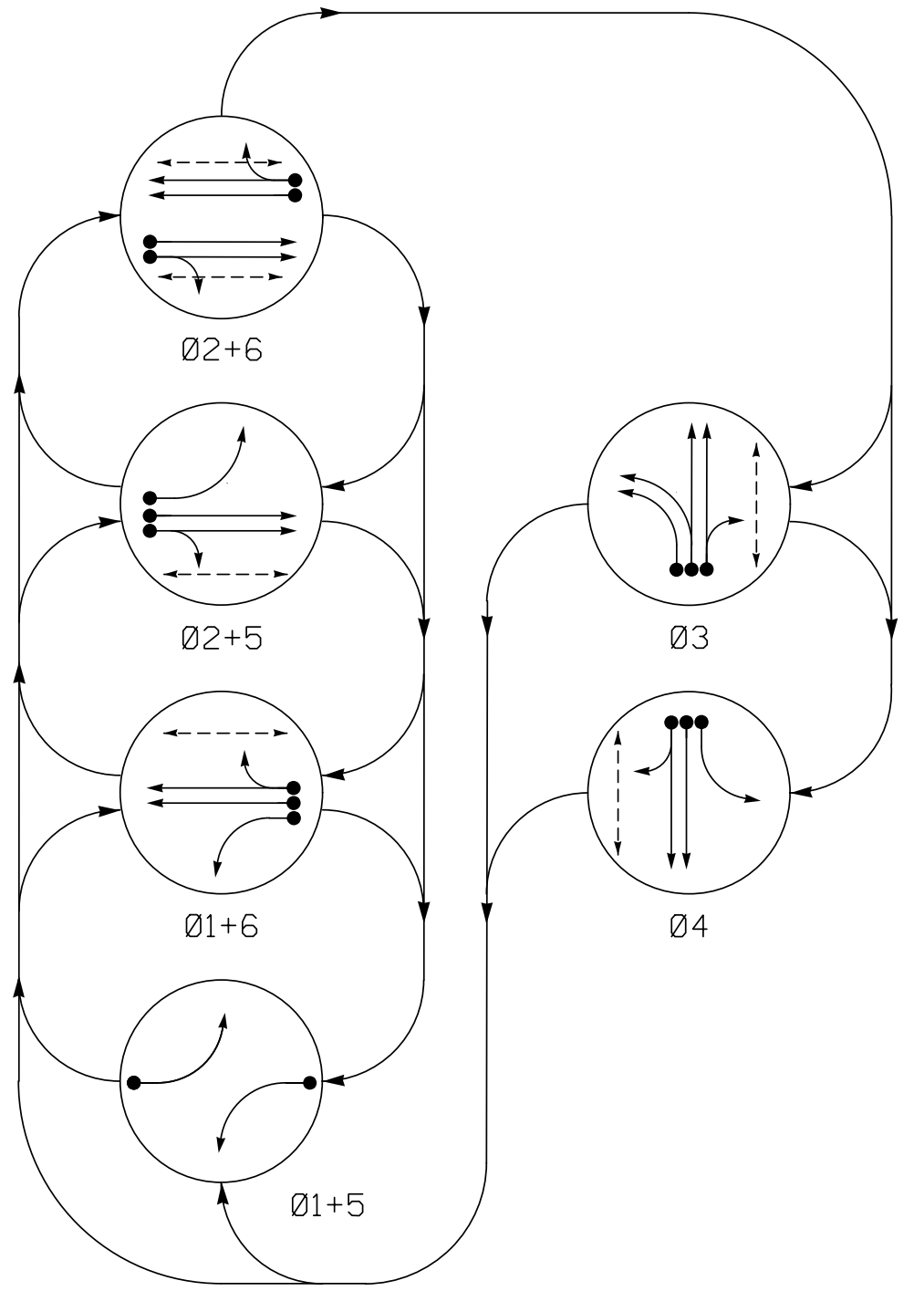
DEFAULT PHASING EV PREEMPT PHASES (Medium Priority)



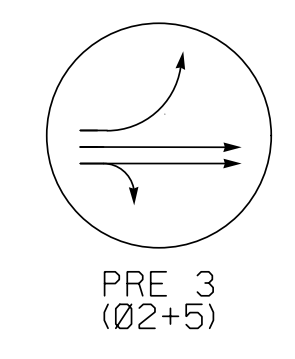
DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | |
|-------------|-------|------|------|------|----|----|-------|-------|---|---|
| | 01+5 | 01+6 | 02+5 | 02+6 | 03 | 04 | PRE 3 | FLASH | | |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | R | G | Y | | |
| 31 | R | R | R | R | G | R | R | R | | |
| 32 | R | R | R | R | G | R | R | R | | |
| 41 | R | R | R | R | G | R | R | R | | |
| 42 | R | R | R | R | G | R | R | R | | |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | | |
| 61, 62 | R | G | R | G | R | R | Y | | | |
| P21, P22 | DW | DW | W | W | DW | DW | DRK | | | |
| P31, P32 | DW | DW | DW | DW | W | DW | DRK | | | |
| P41, P42 | DW | DW | DW | DW | W | DW | DRK | | | |
| P61, P62 | DW | W | DW | W | DW | DW | DRK | | | |

ALTERNATE PHASING DIAGRAM



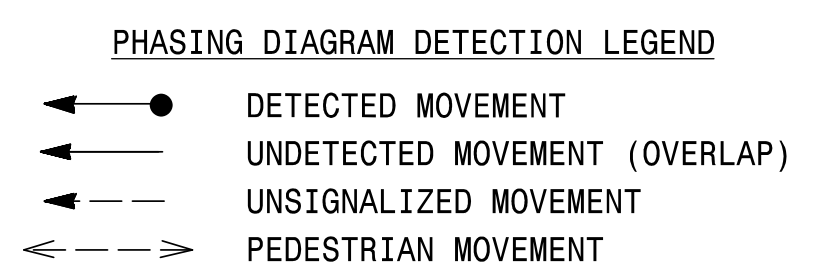
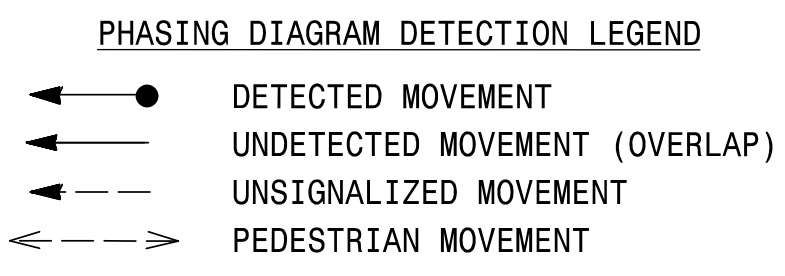
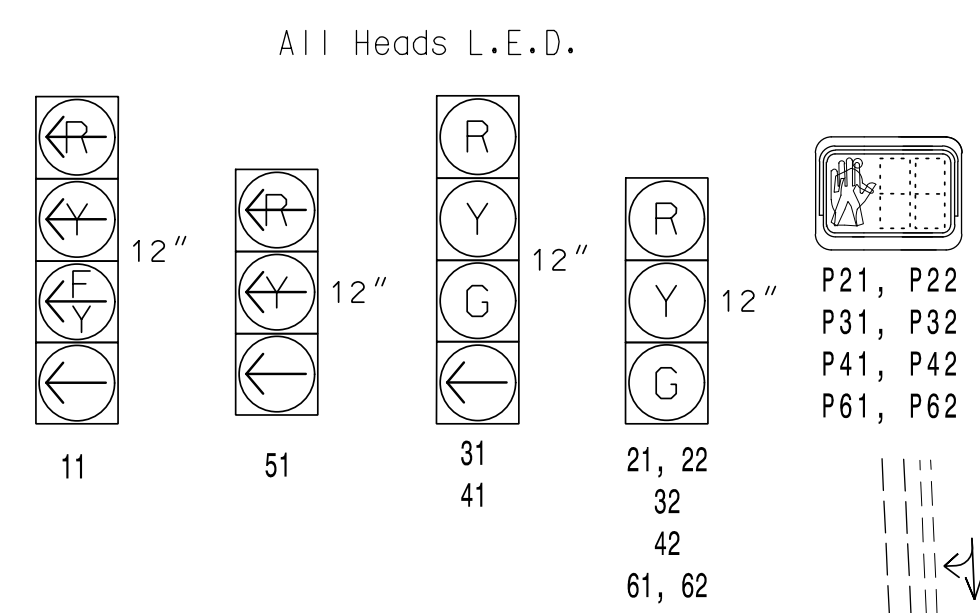
ALTERNATE PHASING EV PREEMPT PHASES (Medium Priority)



ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | |
|-------------|-------|------|------|------|----|----|-------|-------|---|---|
| | 01+5 | 01+6 | 02+5 | 02+6 | 03 | 04 | PRE 3 | FLASH | | |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | R | G | Y | | |
| 31 | R | R | R | R | G | R | R | R | | |
| 32 | R | R | R | R | G | R | R | R | | |
| 41 | R | R | R | R | G | R | R | R | | |
| 42 | R | R | R | R | G | R | R | R | | |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | | |
| 61, 62 | R | G | R | G | R | R | Y | | | |
| P21, P22 | DW | DW | W | W | DW | DW | DRK | | | |
| P31, P32 | DW | DW | DW | DW | W | DW | DRK | | | |
| P41, P42 | DW | DW | DW | DW | W | DW | DRK | | | |
| P61, P62 | DW | W | DW | W | DW | DW | DRK | | | |

SIGNAL FACE I.D.



DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X60 | 0 | 2-4-2 | - | 1 | Yes | - | 3 | - | N | - | X |
| 2A | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | - | N | - | X |
| 2B | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | - | X | N | - |
| 3A | 6X60 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 3B | 6X60 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 3C | 6X60 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 4C | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | - | - | N | - | X |
| 6A | 6X6 | 70 | EXIST | - | 6 | Yes | - | - | - | N | - | X |
| 6B | 6X6 | 70 | EXIST | - | 6 | Yes | - | - | - | N | - | X |

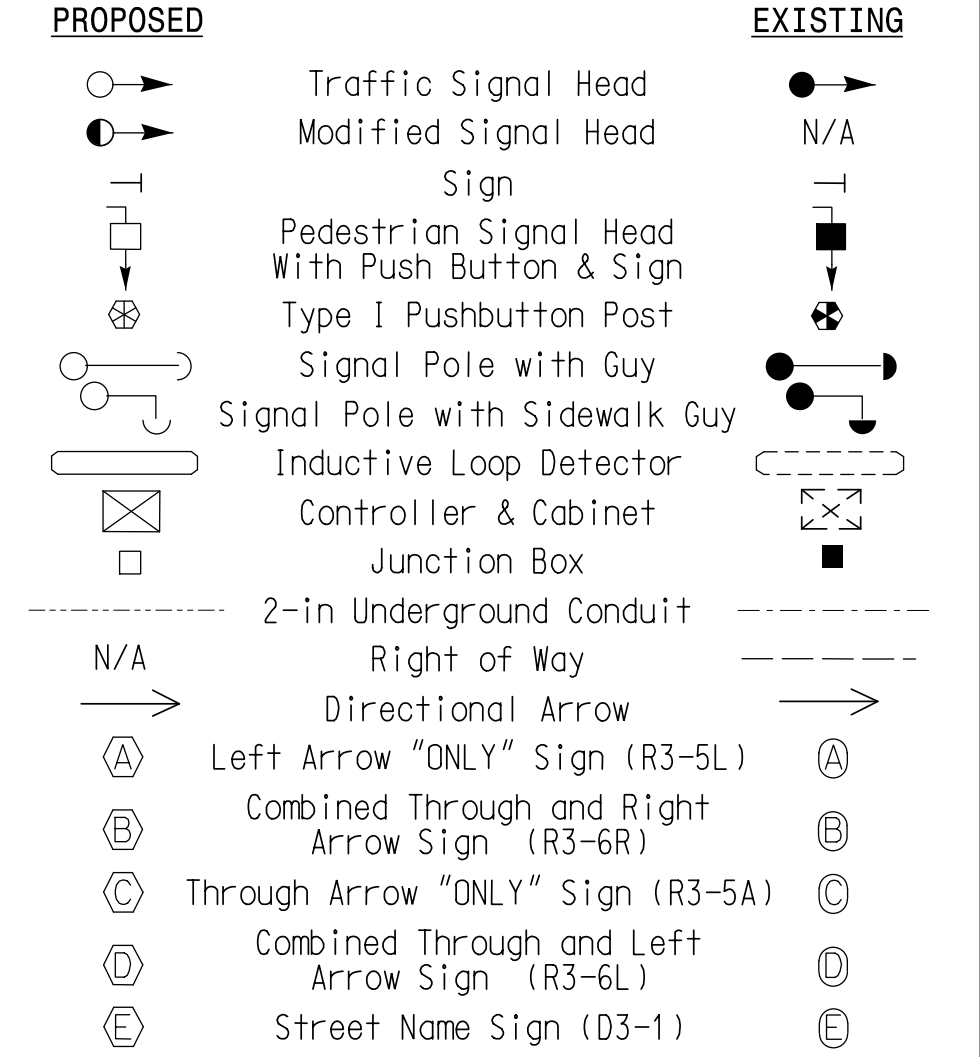
Disable Phase call for loop during Alternate Phasing Operation.

6 Phase Fully Actuated w/ Emergency Vehicle Preemption Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- The City Engineer or their representative will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- City system data:
Controller Asset: #0030

LEGEND



TIMING CHART

| FEATURE | PHASE | | | | | |
|-------------------------|-------|------------|-----|-----|-----|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Min Green * | 7 | 12 | 7 | 7 | 7 | 12 |
| Walk * | - | 7 | 7 | 7 | - | 7 |
| Ped Clear | - | 18 | 22 | 25 | - | 24 |
| Veh. Extension * | 1.0 | 6.0 | 2.0 | 2.0 | 2.0 | 3.0 |
| Max I * | 15 | 45 | 30 | 30 | 15 | 45 |
| Yellow | 3.0 | 4.2 | 4.4 | 4.4 | 3.0 | 4.2 |
| Red Clear | 2.6 | 2.0 | 1.9 | 2.1 | 2.9 | 2.0 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - |
| Seconds / Actuation * | - | 1.5 | - | - | - | - |
| Max Initial * | - | 34 | - | - | - | - |
| Time Before Reduction * | - | 15 | - | - | - | - |
| Time To Reduce * | - | 30 | - | - | - | - |
| Minimum Gap | - | 3.0 | - | - | - | - |
| Locking Detector | - | X | - | - | - | X |
| Recall Position | - | MIN RECALL | - | - | - | MIN RECALL |
| Dual Entry | - | - | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON | ON | ON |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

EV PREEMPT

| FUNCTION | PRE 3 |
|---------------------------------|-------|
| Exit Phase(s) | 2+6 |
| Preempt Override | OFF |
| Delay Time | 0 |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 255* |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Minimum Dwell Time | 7 |
| Preempt Input Extension Time ** | 2 |
| Preempt Max Time | 120 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation
** Program Timing on GPS Detection Unit

Signal Upgrade

Prepared For: **US 29/74 (Franklin Boulevard) at NC 274 (Bessemer City Road) / SR 2466 (Garrison Boulevard)**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: DM Curri REVIEWED BY: KP Baumann

Scale: 1" = 40'

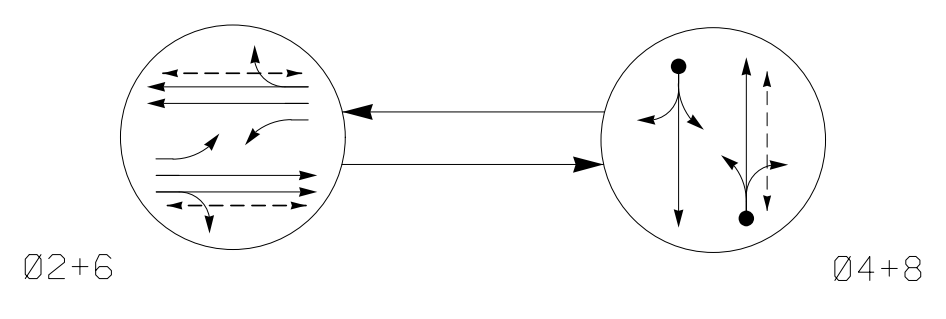
Signature: *Kevin P. Baumann* 3/11/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
750 N. Greenfield Pkwy, Garner, NC 27529
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

3/9/2022 11:12:59 AM Don't lie, Curri

PHASING DIAGRAM

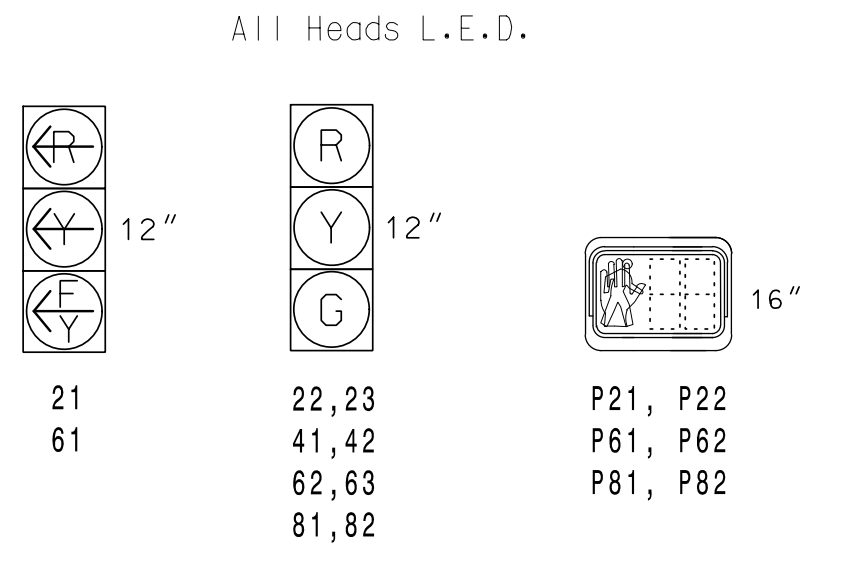


PHASING DIAGRAM DETECTION LEGEND
DETECTED MOVEMENT
UNDETECTED MOVEMENT (OVERLAP)
UNSIGNALIZED MOVEMENT
PEDESTRIAN MOVEMENT

TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE, and specific phase assignments (e.g., 21, 22, 23, 41, 42, 61, 62, 63, P21, P22, P61, P62, P81, P82).

SIGNAL FACE I.D.

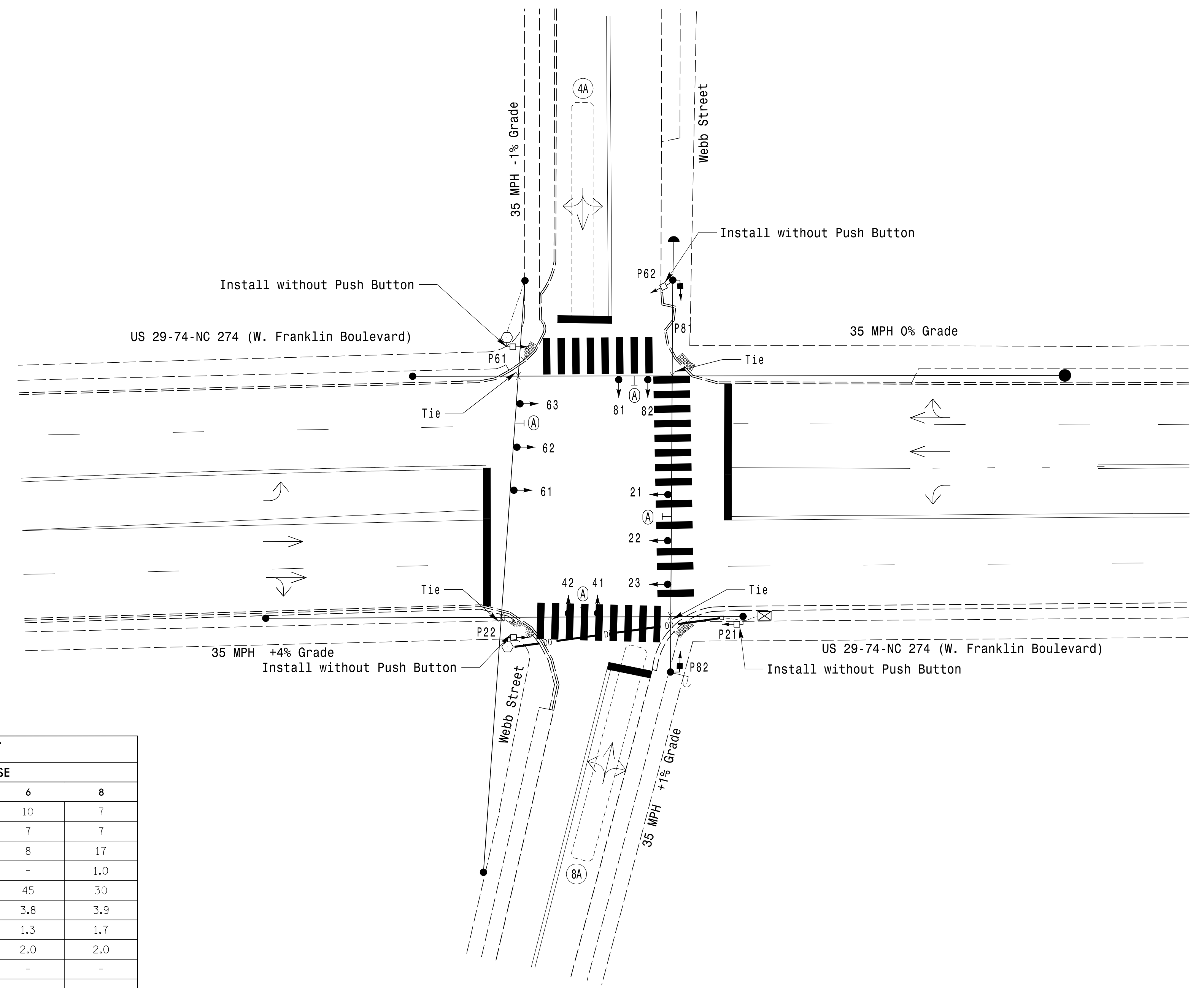


DETECTOR INSTALLATION CHART

Table with columns: LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD.

2 Phase Semi-Actuated Gastonia Signal System NOTES

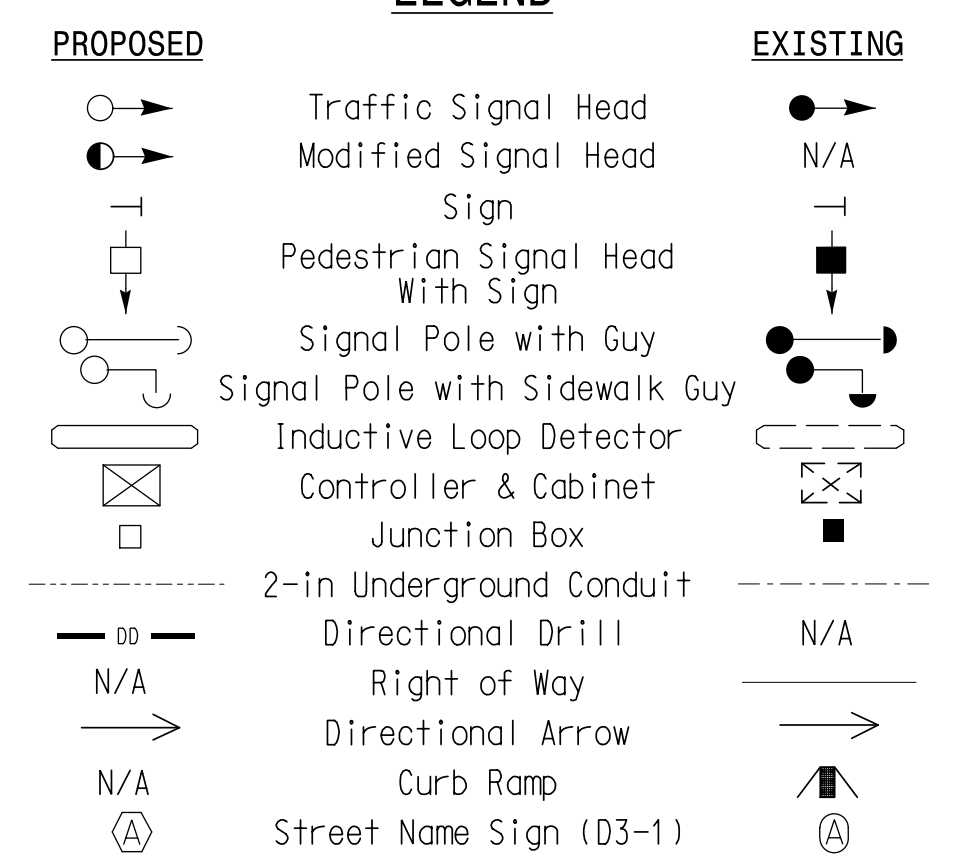
- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018...
2. Do not program signal for late night flashing operation...
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signal Design Manual...
5. Locate new cabinet so as not to obstruct sight distance...
6. Install new cabinet on the existing cabinet foundation.
7. All new cabinets and base extenders shall be black in color...
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls...
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only...
12. All proposed pedestrian signal heads shall be black in color...
13. All proposed pedestrian pedestals and pushbutton posts shall be black in color...
14. City system data: Controller Asset #0031.



TIMING CHART

Timing chart table with columns: FEATURE, PHASE (2, 4, 6, 8), and timing values (Min Green, Walk, Ped Clear, Veh. Extension, Max I, Yellow, Red Clear, Red Revert, Actuations B4 Add, Seconds / Actuation, Max Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Locking Detector, Recall Position, Dual Entry, Simultaneous Gap).

LEGEND

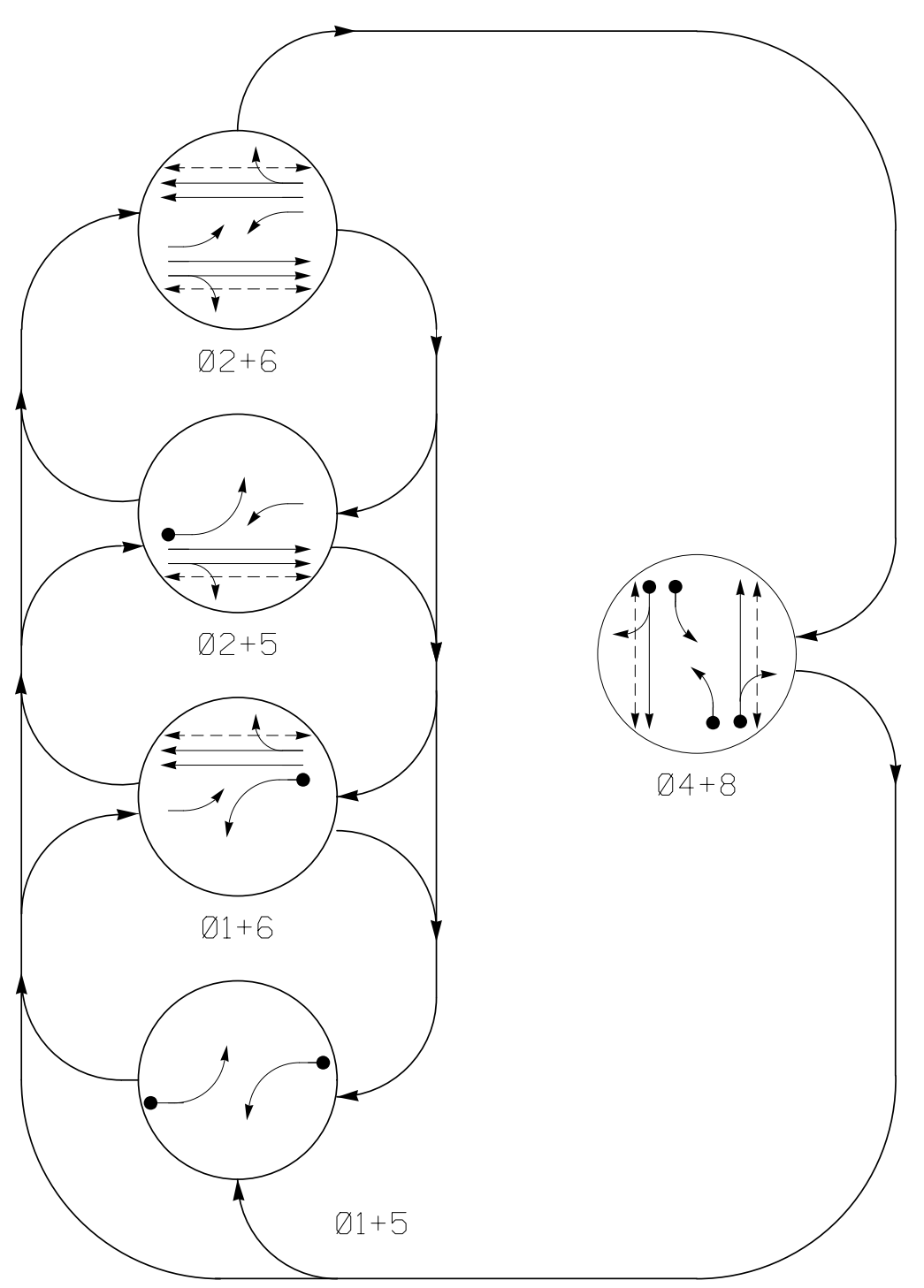


Signal Upgrade

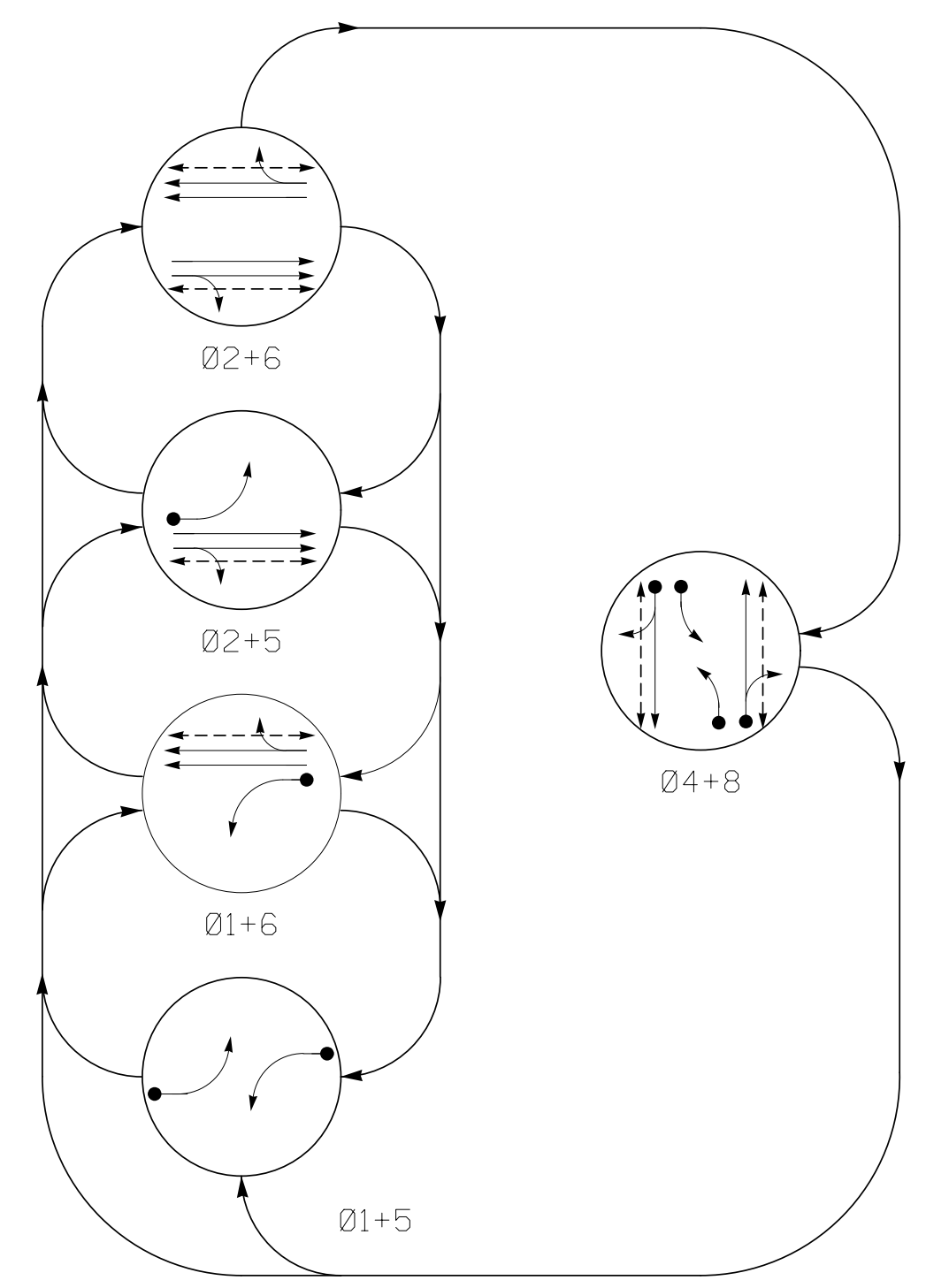
Project information block including: Prepared For (Kimley-Horn), Project Location (US 29-74-NC 274 at Webb Street), Division (12), Plan Date (May 2021), Reviewer (SL Phillips), and other project details.

3/9/2022 11:12:01 AM Don@le.corr**k:miley-horn.com\$ELRAL\IP\GAL...ITS\01\026569 Gastonia Signal System\$ Signal Design\$2021-2021.dgn

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | |
|-------------|-------|------|------|------|------|-----|-----|
| | 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | TR | FL |
| 11 | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | Y | Y |
| 41 | R | R | R | R | R | R | R |
| 42, 43 | R | R | R | R | G | R | R |
| 51 | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | Y | Y |
| 81 | R | R | R | R | R | R | R |
| 82, 83 | R | R | R | R | G | R | R |
| P21, P22 | DW | DW | W | W | DW | DRK | DRK |
| P41, P42 | DW | DW | DW | DW | W | DRK | DRK |
| P61, P62 | DW | W | DW | W | DW | DRK | DRK |
| P81, P82 | DW | DW | DW | DW | W | DRK | DRK |

ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | |
|-------------|-------|------|------|------|------|-----|-----|
| | 01+5 | 01+6 | 02+5 | 02+6 | 04+8 | TR | FL |
| 11 | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | Y | Y |
| 41 | R | R | R | R | R | R | R |
| 42, 43 | R | R | R | R | G | R | R |
| 51 | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | Y | Y |
| 81 | R | R | R | R | R | R | R |
| 82, 83 | R | R | R | R | G | R | R |
| P21, P22 | DW | DW | W | W | DW | DRK | DRK |
| P41, P42 | DW | DW | DW | DW | W | DRK | DRK |
| P61, P62 | DW | W | DW | W | DW | DRK | DRK |
| P81, P82 | DW | DW | DW | DW | W | DRK | DRK |

DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP SYSTEM | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Yes | - | 3 | - | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - | X |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 3 | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | 3 | - | N | - | X |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | 3 | - | N | - | X |

5 Phase Semi-Actuated w/ Alternate Phasing Operation Gastonia Signal System

NOTES

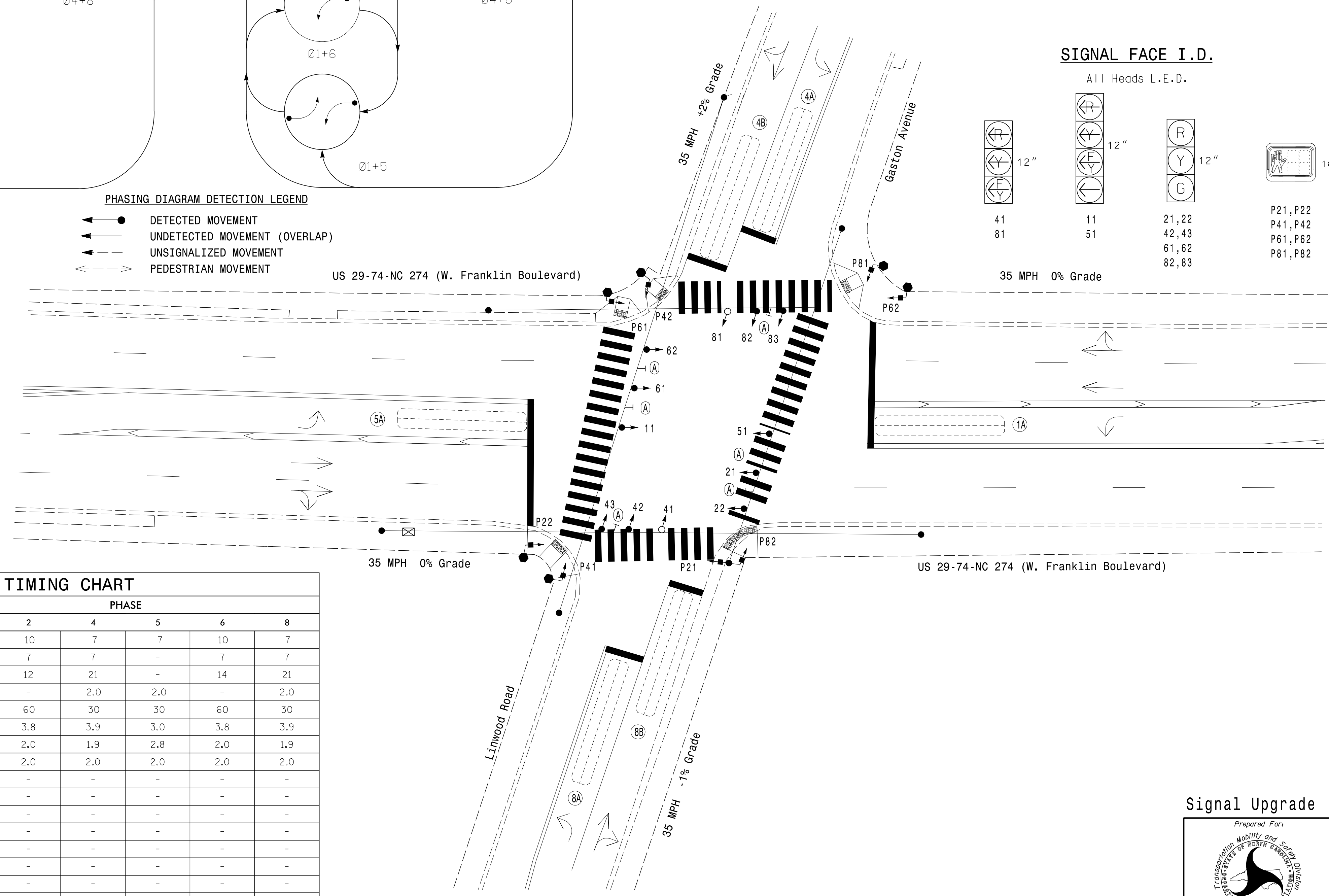
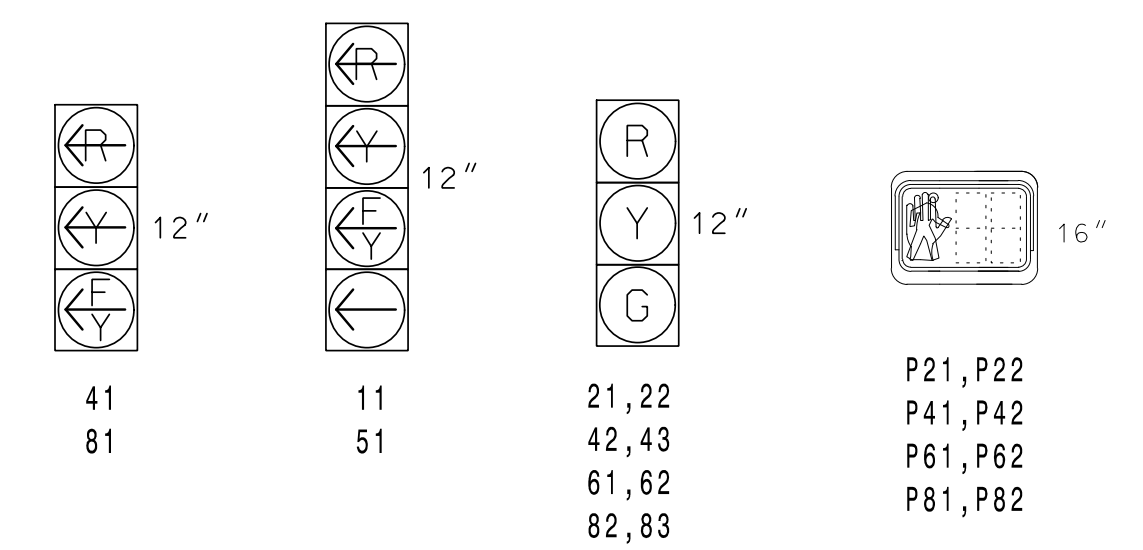
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Reposition existing signal heads numbered 42, 43, 82, and 83.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls on pedestrian phases 4 and 8.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The City Engineer or their representative will determine the hours of use for each phasing plan.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Existing signal heads 41, 42, 81, and 82 have been relabeled to 42, 43, 82, and 83, respectively.
- City system data:
Controller Asset #0032

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.



TIMING CHART

| FEATURE | PHASE | | | | | | |
|-------------------------|-------|---------|-----|-----|---------|-----|--|
| | 1 | 2 | 4 | 5 | 6 | 8 | |
| Min Green * | 7 | 10 | 7 | 7 | 10 | 7 | |
| Walk * | - | 7 | 7 | - | 7 | 7 | |
| Ped Clear | - | 12 | 21 | - | 14 | 21 | |
| Veh. Extension * | 2.0 | - | 2.0 | 2.0 | - | 2.0 | |
| Max 1 * | 30 | 60 | 30 | 30 | 60 | 30 | |
| Yellow | 3.0 | 3.8 | 3.9 | 3.0 | 3.8 | 3.9 | |
| Red Clear | 2.8 | 2.0 | 1.9 | 2.8 | 2.0 | 1.9 | |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | |
| Actuations B4 Add * | - | - | - | - | - | - | |
| Seconds / Actuation * | - | - | - | - | - | - | |
| Max Initial * | - | - | - | - | - | - | |
| Time Before Reduction * | - | - | - | - | - | - | |
| Time To Reduce * | - | - | - | - | - | - | |
| Minimum Gap | - | - | - | - | - | - | |
| Locking Detector | - | - | - | - | - | - | |
| Recall Position | - | PED/MAX | - | - | PED/MAX | - | |
| Dual Entry | - | - | X | - | - | X | |
| Simultaneous Gap | X | X | X | X | X | X | |

LEGEND

- PROPOSED: Traffic Signal Head, Modified Signal Head, Sign, Pedestrian Signal Head With Push Button & Sign, Signal Pole with Guy, Signal Pole with Sidewalk Guy, Inductive Loop Detector Controller & Cabinet, Junction Box, 2-in Underground Conduit, Right of Way, Directional Arrow, Type II Signal Pedestal, Street Name Sign (D3-1)
- EXISTING: N/A, Signal Pole with Guy, Inductive Loop Detector Controller & Cabinet, Junction Box, Right of Way, Directional Arrow, Type II Signal Pedestal, Street Name Sign (D3-1)

Signal Upgrade

Prepared For: **US 29-74-NC 274 (W. Franklin Boulevard) at Linwood Road/Gaston Avenue**
 Division 12 Gaston County Gastonia

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

750 N. Greenfield Pkwy, Garner, NC 27529

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
 PREPARED BY: DM Curri REVIEWED BY: KP Baumann

REVISIONS: [Table with columns for REVISIONS, INIT., DATE]

Scale: 1" = 20'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

North Carolina Professional Engineer Seal: SEAL 044434, KYLE W. BAUMANN

3/9/2022 11:12:04 AM Donnie C. Curri

3/11/2022

SIG. INVENTORY NO. 12-0032

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

PHASING DIAGRAM

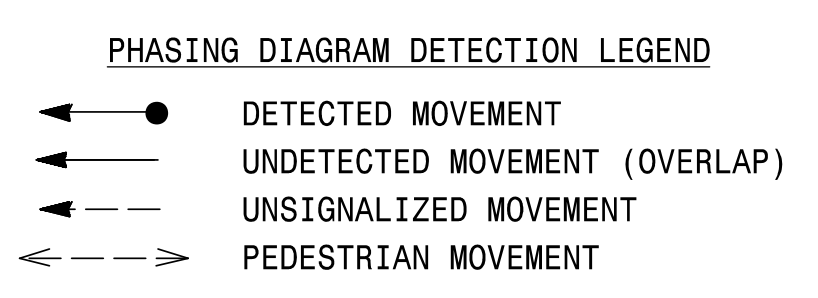
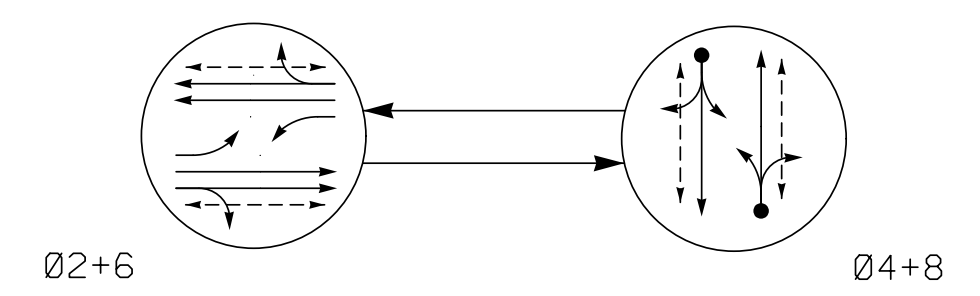


TABLE OF OPERATION

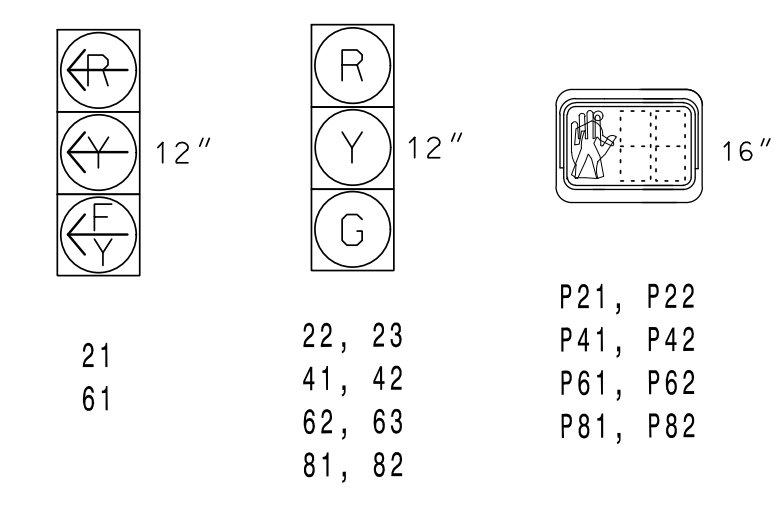
| SIGNAL FACE | PHASE | | |
|-------------|-------|-------|--------|
| | Ø 6+8 | Ø 4+8 | F LASH |
| 21 | Y | R | Y |
| 22, 23 | G | R | Y |
| 41, 42 | R | G | R |
| 61 | Y | R | Y |
| 62, 63 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P41, P42 | DW | W | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

DETECTOR INSTALLATION CHART

| DETECTOR | | | | PROGRAMMING | | | | | | | | |
|----------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|----------|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X60 | +5 | EXIST | - | 4 | Yes | - | - | - | N | - | X |
| 8A | 6X60 | +5 | EXIST | - | 8 | Yes | - | - | - | N | - | X |

SIGNAL FACE I.D.

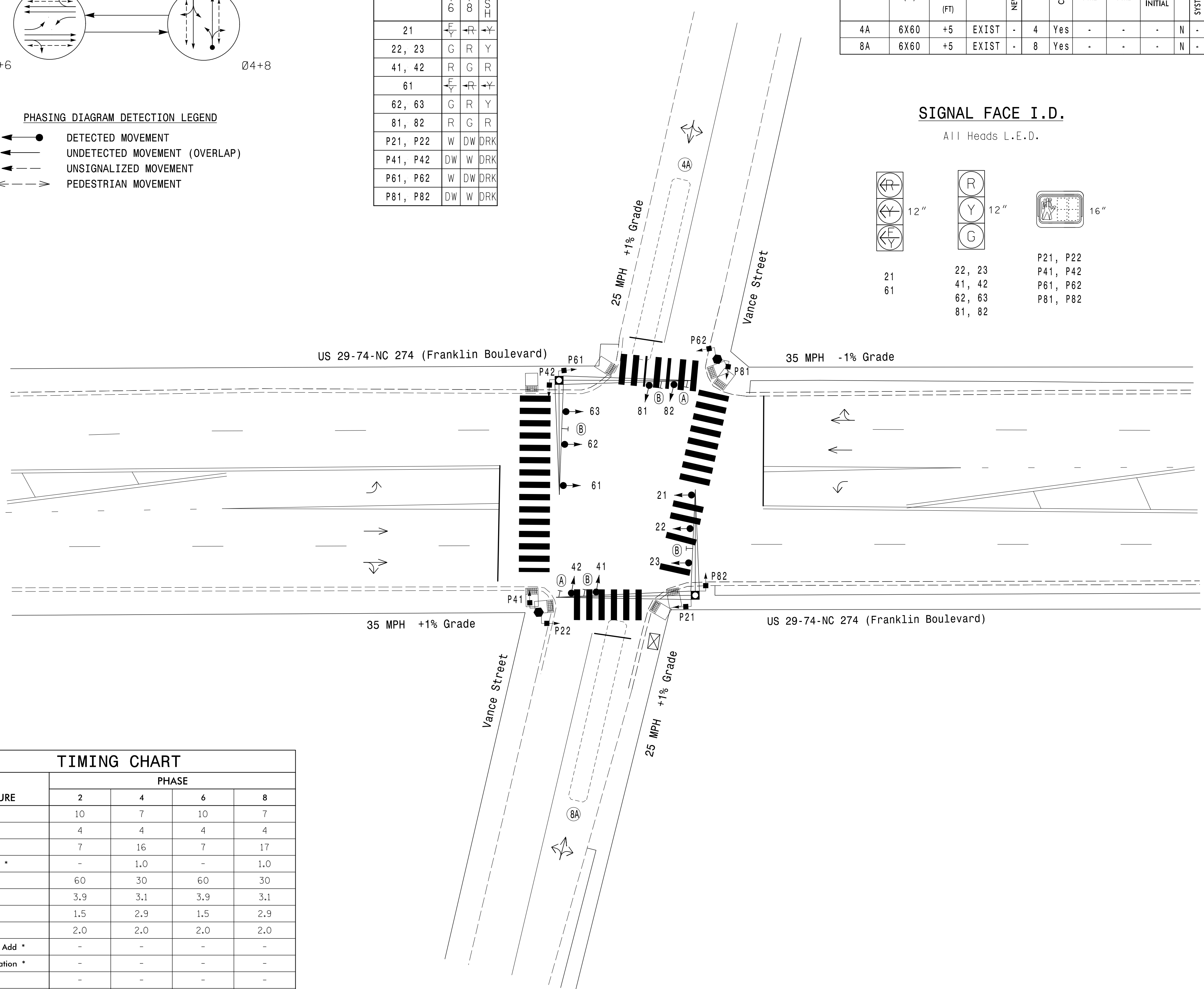
All Heads L.E.D.



TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 4 | 4 | 4 | 4 |
| Ped. Clear | 7 | 16 | 7 | 17 |
| Veh. Extension * | - | 1.0 | - | 1.0 |
| Max 1 * | 60 | 30 | 60 | 30 |
| Yellow | 3.9 | 3.1 | 3.9 | 3.1 |
| Red Clear | 1.5 | 2.9 | 1.5 | 2.9 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

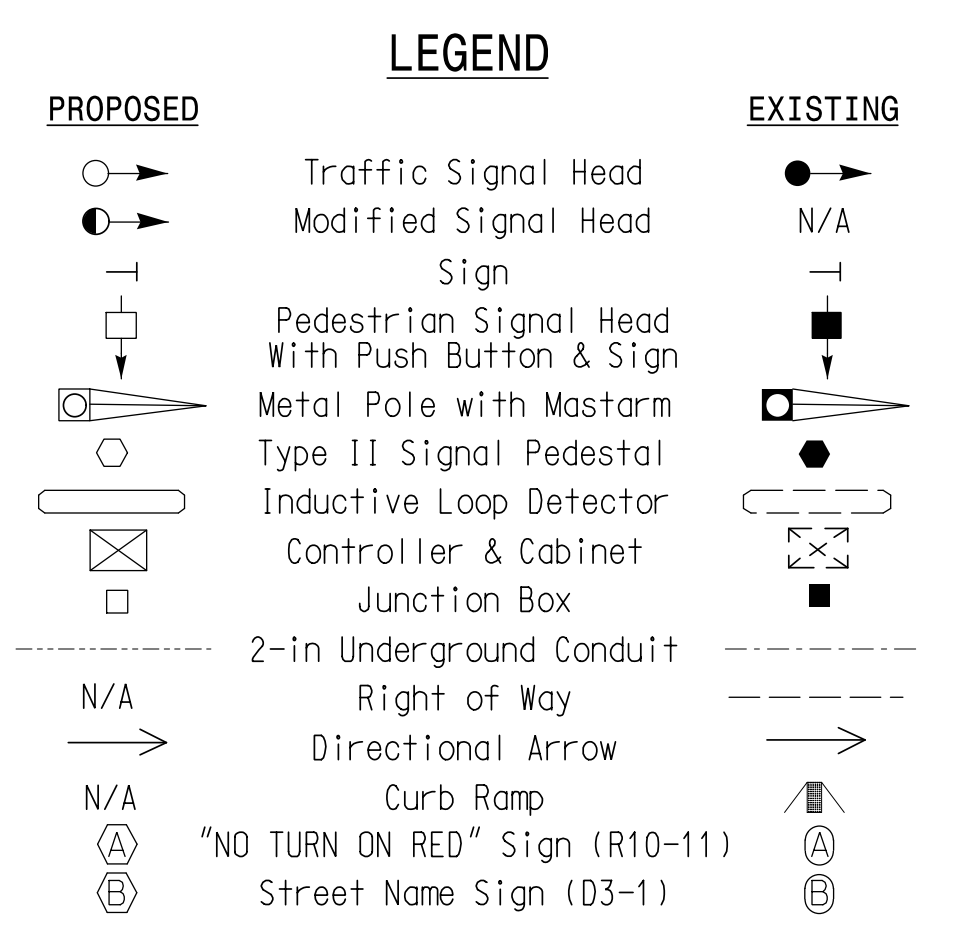
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



2 Phase Semi-Actuated Gastonia Signal System

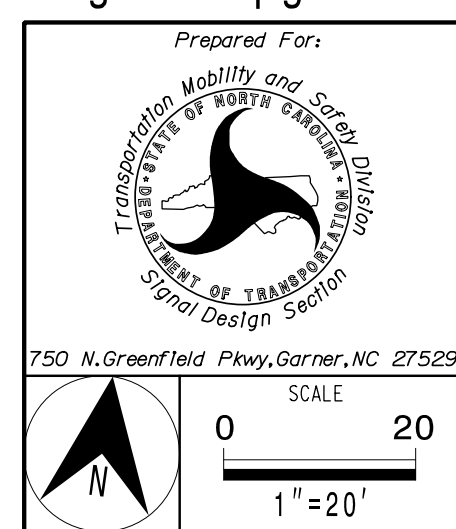
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and "DON'T WALK" with no pedestrian calls on phases 4 & 8.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
10. Install new cabinet on the existing cabinet foundation.
11. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
12. City system data:
Controller asset: #0033



Signal Upgrade

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

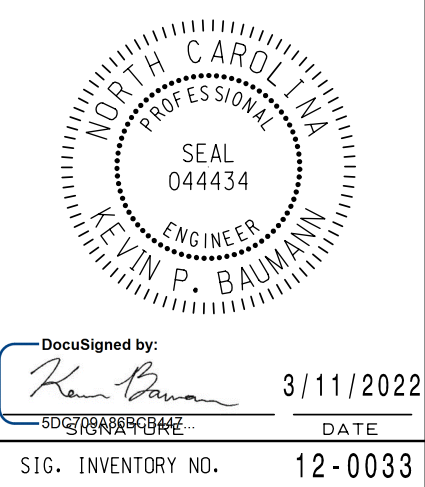


US 29-74-NC 274 (W. Franklin Boulevard) at Vance Street

Division 12 Gaston County Gastonia

| | |
|-----------------------|--------------------------|
| PLAN DATE: May 2021 | REVIEWED BY: SL Phillips |
| PREPARED BY: CF Davis | REVIEWED BY: KP Baumann |
| REVISIONS | INIT. DATE |

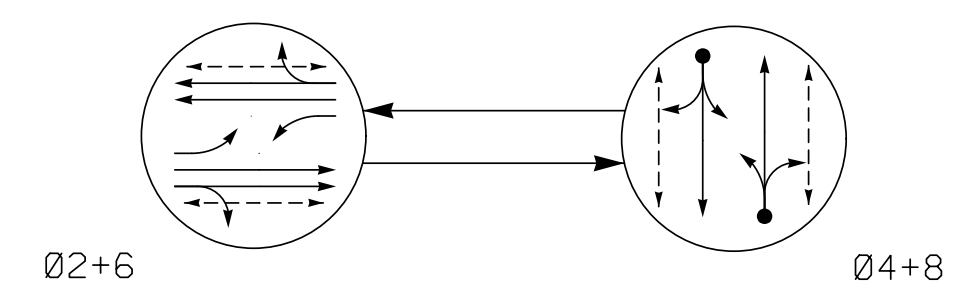
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



3/11/2022
DATE
12-0033
SIG. INVENTORY NO.

3/9/2022 11:13:01 AM D:\m181\le_c\curf1 ***kimley-horn.com\SELE_RAL\IP\OK-ITS\01030569 Gastonia Signal System\Signal Design\2003-2021.dgn

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ↔ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|------|------|
| | 02+6 | 04+8 | 05+0 | 05+1 |
| 21 | ← | ← | ← | ← |
| 22, 23 | G | R | Y | |
| 41, 42 | R | G | R | |
| 61 | ← | ← | ← | ← |
| 62, 63 | G | R | Y | |
| 81, 82 | R | G | R | |
| P21, P22 | W | DW | DRK | |
| P41, P42 | DW | W | DRK | |
| P61, P62 | W | DW | DRK | |
| P81, P82 | DW | W | DRK | |

DETECTOR INSTALLATION CHART

| LOOP | DETECTOR | | | | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X60 | +5 | EXIST | - | 4 | Yes | - | 5 | - | N | - | X |
| 8A | 6X60 | +5 | EXIST | - | 8 | Yes | - | 5 | - | N | - | X |
| S1 | 6x6 | +275 | EXIST | - | - | - | - | - | - | N | X | X |
| S2 | 6x6 | +275 | EXIST | - | - | - | - | - | - | N | X | X |

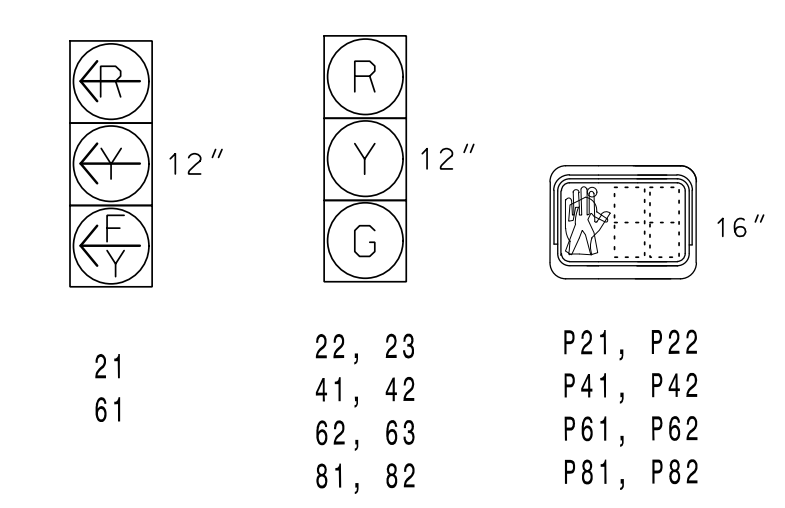
2 Phase Semi-Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls on phases 4 & 8.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset: #0034

SIGNAL FACE I.D.

All Heads L.E.D.

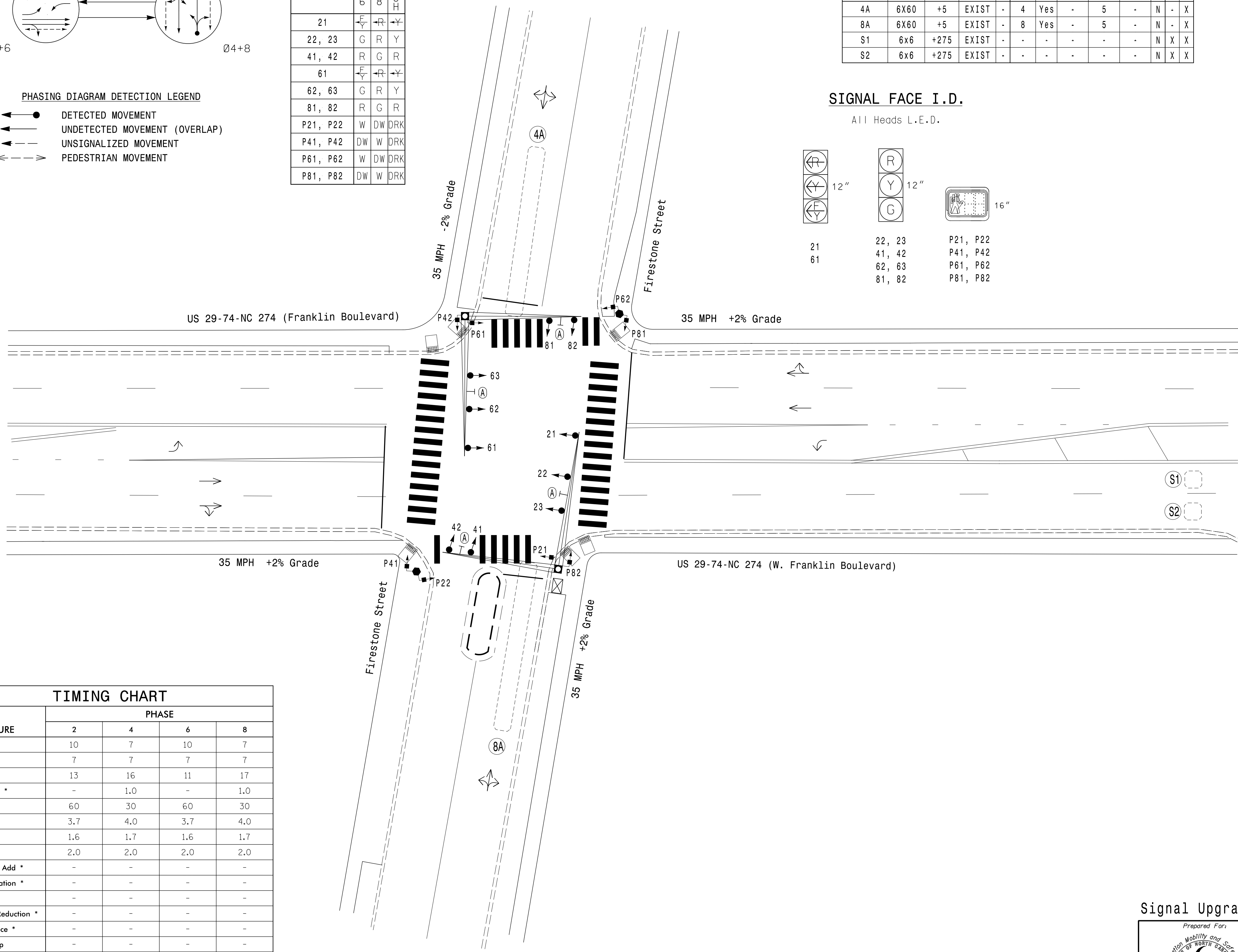


TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | 7 | 7 | 7 |
| Ped Clear | 13 | 16 | 11 | 17 |
| Veh. Extension * | - | 1.0 | - | 1.0 |
| Max 1 * | 60 | 30 | 60 | 30 |
| Yellow | 3.7 | 4.0 | 3.7 | 4.0 |
| Red Clear | 1.6 | 1.7 | 1.6 | 1.7 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

3/9/2022 11:13:05 AM Don@le.corr1 ***kimley-horn.com\SEL_RAL_IPTOK_LITS\01036569_Gastonia_Signal_System\9_Signal_Design\120034-2021.dgn



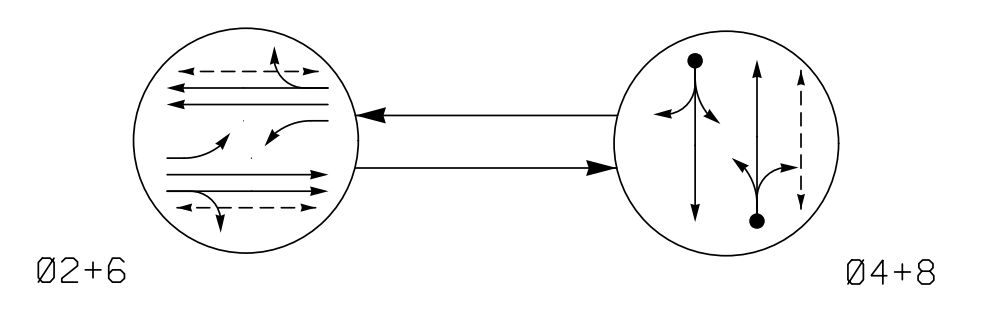
LEGEND

| PROPOSED | EXISTING |
|--|-----------|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| □ → Sign | □ → N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A |
| ○ → Metal Pole with Mastarm | ○ → N/A |
| ○ → Type II Signal Pedestal | ○ → N/A |
| ○ → Inductive Loop Detector | ○ → N/A |
| □ → Controller & Cabinet | □ → N/A |
| □ → Junction Box | □ → N/A |
| --- 2-in Underground Conduit | --- N/A |
| N/A → Right of Way | N/A → N/A |
| N/A → Directional Arrow | N/A → N/A |
| N/A → Curb Ramp | N/A → N/A |
| (A) → Street Name Sign (D3-1) | (A) → N/A |

Signal Upgrade

| | | |
|---|--|--|
| PLANS PREPARED IN THE OFFICE OF: Kimley-Horn NC License #F-0102 421 Fayetteville Street, Suite 600 Raleigh, NC 27601 (919) 677-2000 | Prepared For: TRANSFORMATION, MOBILITY AND SAFETY DIVISION DEPARTMENT OF TRANSPORTATION SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529 | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |
| | US 29-74-NC 274 (W. Franklin Boulevard) at Firestone Street Division 12 Gaston County Gastonia | PLAN DATE: May 2021 PREPARED BY: CF Davis REVISIONS: _____ INIT.: _____ DATE: _____ |

PHASING DIAGRAM



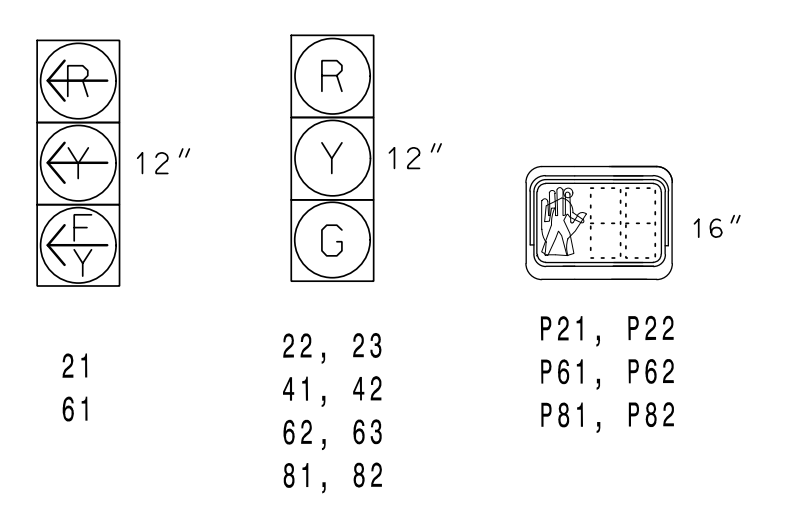
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | Ø2+6 | Ø4+8 | FLASH |
| 21 | ← | → | Y |
| 22, 23 | G | R | Y |
| 41, 42 | R | G | Y |
| 61 | ← | → | Y |
| 62, 63 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

SIGNAL FACE I.D.
All Heads L.E.D.



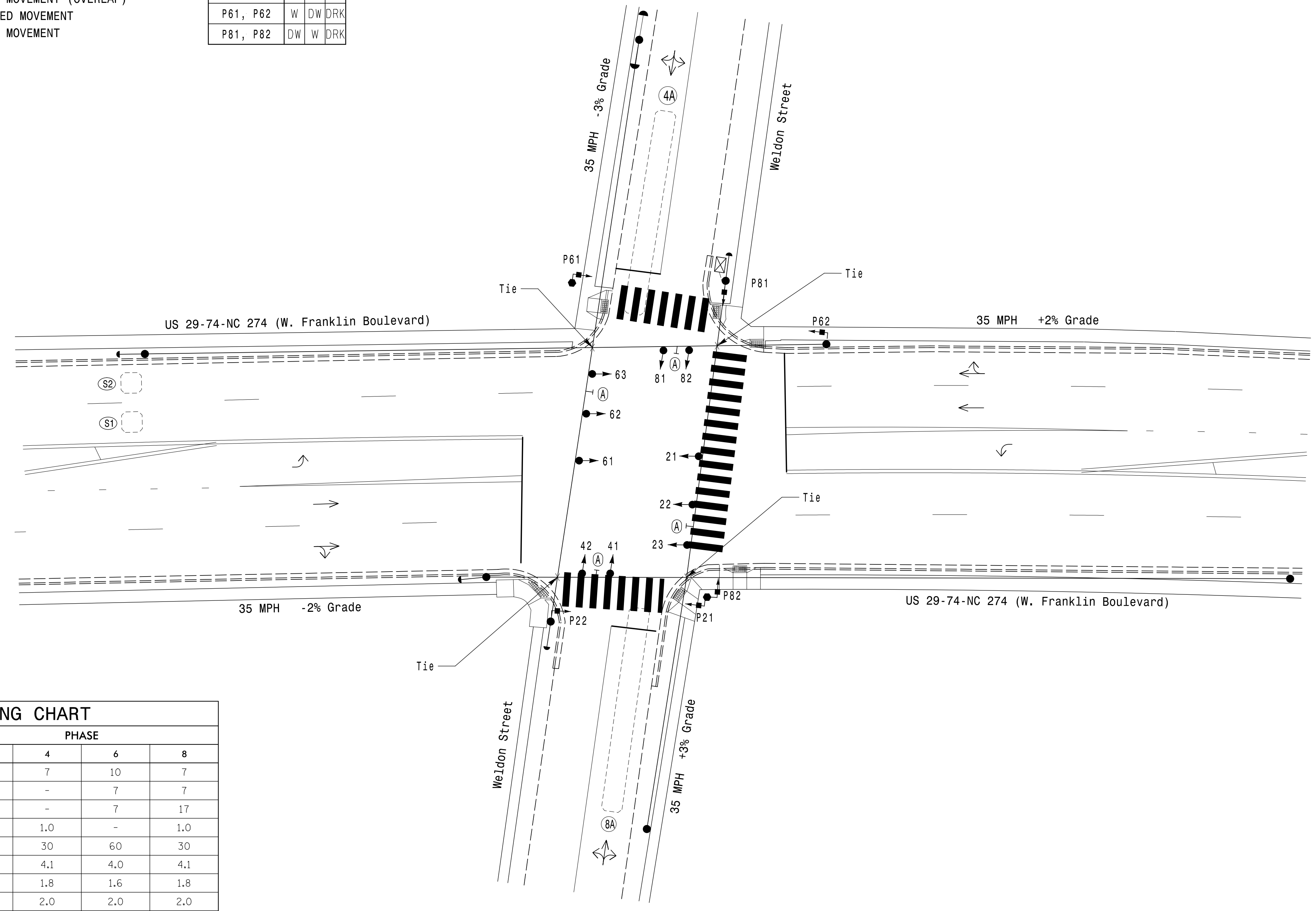
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP SYSTEM | NEW CARD |
| 4A | 6X60 | +10 | EXIST | - | 4 | Yes | - | 5 | - | N | - | X |
| 8A | 6X60 | +5 | EXIST | - | 8 | Yes | - | 5 | - | N | - | X |
| S1 | 6X6 | +180 | EXIST | - | - | - | - | - | - | N | X | X |
| S2 | 6X6 | +180 | EXIST | - | - | - | - | - | - | N | X | X |

2 Phase Semi-Actuated Gastonia Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
5. Install new cabinet on a new cabinet foundation.
6. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls for phase 8.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
12. Rewire all intersection equipment to new cabinet.
13. City system data:
Controller Asset: #0035



TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | - | 7 | 7 |
| Ped Clear | 8 | - | 7 | 17 |
| Veh. Extension * | - | 1.0 | - | 1.0 |
| Max I * | 60 | 30 | 60 | 30 |
| Yellow | 4.0 | 4.1 | 4.0 | 4.1 |
| Red Clear | 1.6 | 1.8 | 1.6 | 1.8 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

| PROPOSED | EXISTING |
|--|-----------|
| ○ → Traffic Signal Head | ● → N/A |
| ● → Modified Signal Head | ● → N/A |
| ○ Type II Signal Pedestal | ○ → N/A |
| ⊥ Sign | ⊥ → N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ → N/A |
| ⊥ Signal Pole with Guy | ⊥ → N/A |
| ⊥ Signal Pole with Sidewalk Guy | ⊥ → N/A |
| ⊥ Inductive Loop Detector | ⊥ → N/A |
| ⊥ Controller & Cabinet | ⊥ → N/A |
| ⊥ Junction Box | ⊥ → N/A |
| ⊥ 2-in Underground Conduit | ⊥ → N/A |
| N/A Right of Way | --- → N/A |
| N/A Directional Arrow | → → N/A |
| N/A Curb Ramp | ▬ → N/A |
| ⊙ Street Name Sign (D3-1) | ⊙ → N/A |

Signal Upgrade

Prepared For:
US 29-74-NC 274 (W. Franklin Boulevard) at Weldon Street

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: CF Davis REVIEWED BY: KP Baumann

750 N. Greenfield Pkwy, Garner, NC 27529
PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

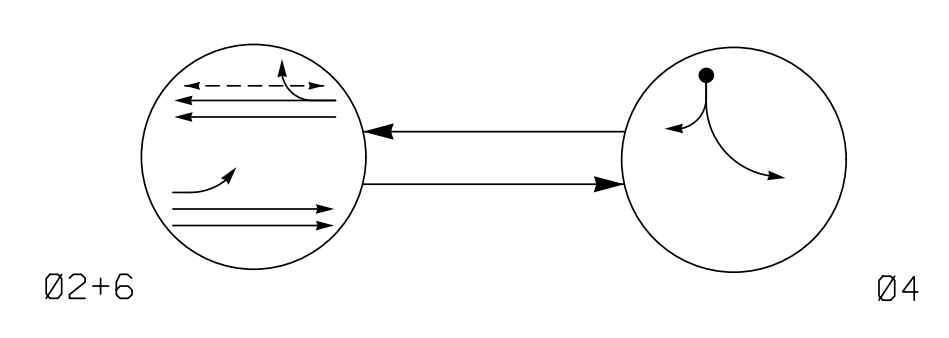
Seal of Kevin P. Baumann, Professional Engineer, No. 044434, State of North Carolina.

3/9/2022 11:13:06 AM Don't like Curf!

3/11/2022

SIG. INVENTORY NO. 12-0035

PHASING DIAGRAM



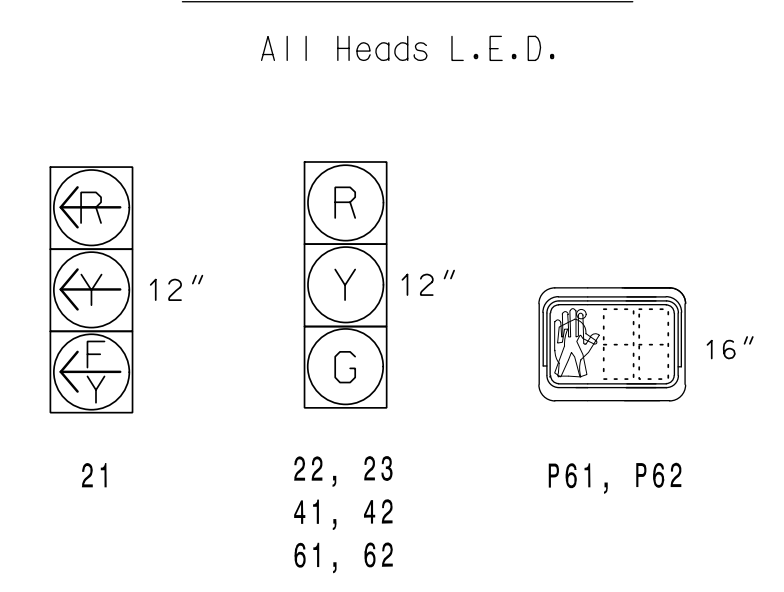
PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←- - -→ UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|--------|
| | 02+6 | 04+8 | FLIGHT |
| 21 | Y | R | Y |
| 22, 23 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| P61, P62 | W | DW | DRK |

SIGNAL FACE I.D.



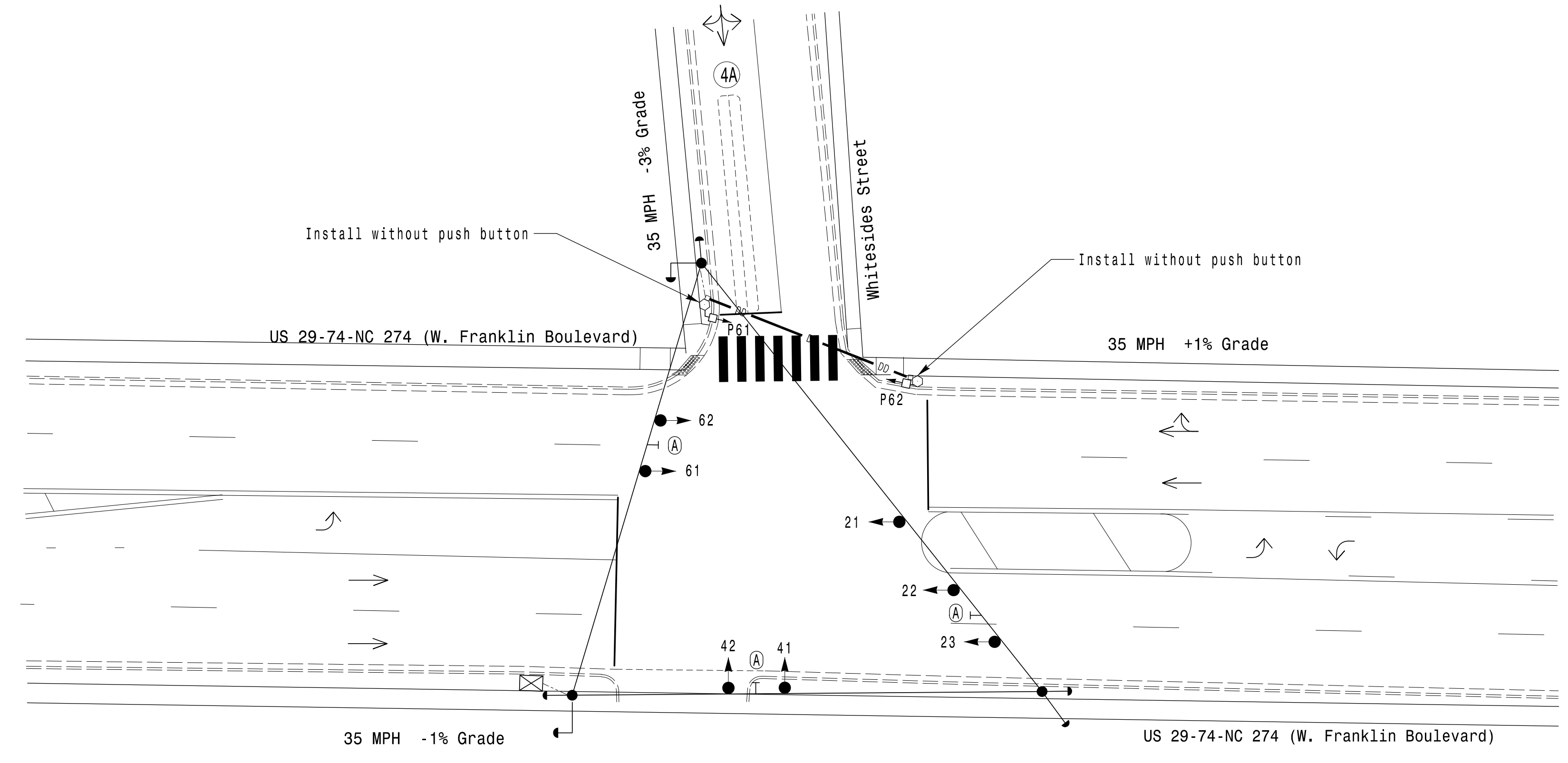
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X50 | 0 | 2-4-2 | - | 4 | Yes | - | 10 | - | N | - | X |

2 Phase Semi-Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Install new cabinet on a new cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Rewire all intersection equipment to new cabinet.
- All proposed pedestrian pedestals shall be black in color. See Project Special Provisions for details.
- All proposed pedestrian signal heads shall be black in color. See project Special Provisions for details.
- City system data:
Controller Asset: #0037



TIMING CHART

| FEATURE | PHASE | | |
|-------------------------|------------|-----|-----------|
| | 2 | 4 | 6 |
| Min Green * | 10 | 7 | 10 |
| Walk * | - | - | 4 |
| Ped Clear | - | - | 8 |
| Veh. Extension * | - | 1.0 | - |
| Max 1 * | 60 | 30 | 60 |
| Yellow | 3.9 | 3.0 | 3.9 |
| Red Clear | 1.1 | 2.3 | 1.1 |
| Red Revert | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - |
| Seconds / Actuation * | - | - | - |
| Max Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Locking Detector | - | - | - |
| Recall Position | MAX RECALL | - | PED / MAX |
| Dual Entry | - | - | - |
| Simultaneous Gap | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

| PROPOSED | EXISTING |
|--------------------------------------|--------------------------------------|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ● → Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ○ ⊥ Type II Signal Pedestal | ● ⊥ Pedestrian Signal Head |
| ○ ⊥ Pedestrian Signal Head With Sign | ● ⊥ Pedestrian Signal Head With Sign |
| ○ ⊥ Signal Pole with Guy | ● ⊥ Signal Pole with Guy |
| ○ ⊥ Signal Pole with Sidewalk Guy | ● ⊥ Signal Pole with Sidewalk Guy |
| ⊥ Inductive Loop Detector | ⊥ Inductive Loop Detector |
| ⊥ Controller & Cabinet | ⊥ Controller & Cabinet |
| ⊥ Junction Box | ⊥ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| --- Directional Drill | N/A |
| N/A Right of Way | N/A |
| → Directional Arrow | → Directional Arrow |
| (A) Street Name Sign (D3-1) | (A) Street Name Sign (D3-1) |

Signal Upgrade

Prepared For:

750 N. Greenfield Pkwy, Garner, NC 27529

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn

NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

**US 29-74-NC 274
(Franklin Boulevard)
at
Whitesides Street**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: CF Davis REVIEWED BY: KP Baumann

REVISIONS: _____ INIT. DATE

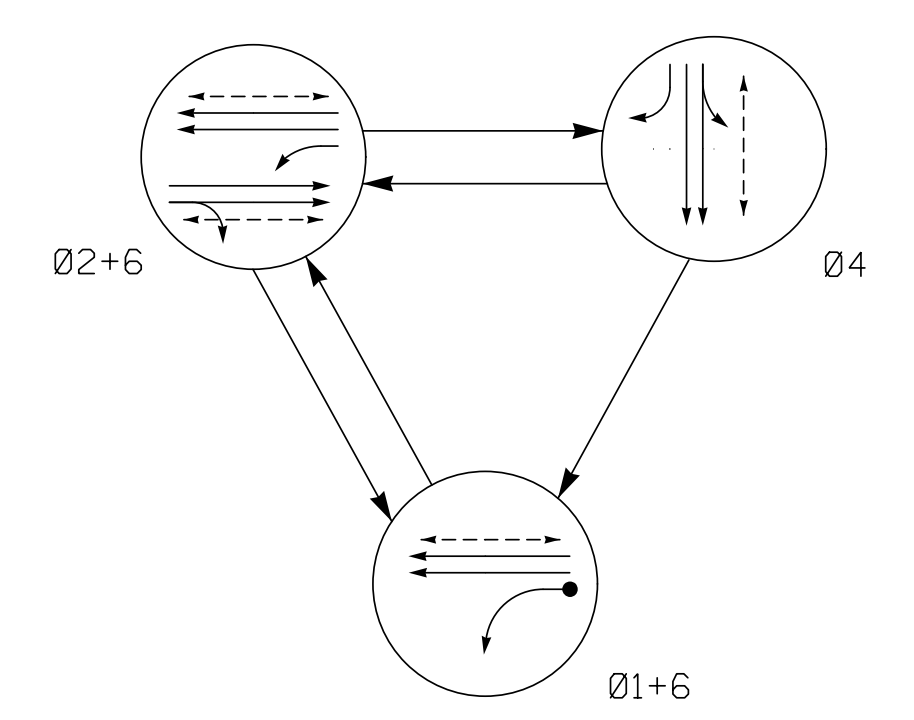
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DocuSigned by:
Kevin P. Baumann
3/11/2022

SIG. INVENTORY NO. 12-0037

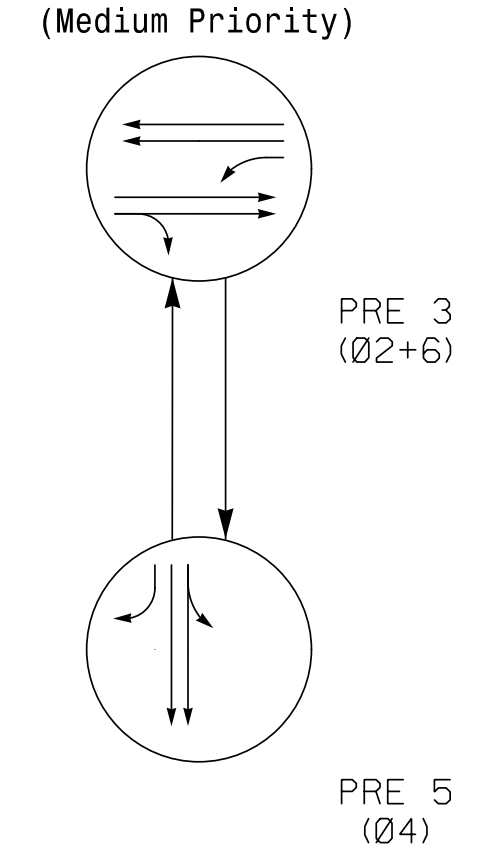
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DEFAULT PHASING DIAGRAM

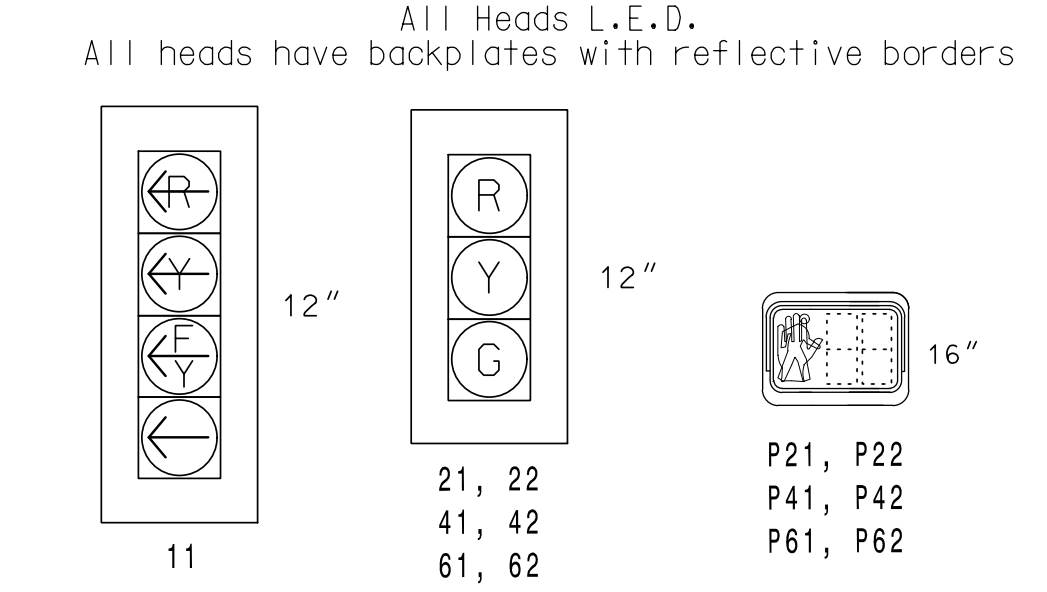


PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ◀ UNDETECTED MOVEMENT (OVERLAP)
 ◀ UNSIGNALIZED MOVEMENT
 ◀ PEDESTRIAN MOVEMENT

DEFAULT EV PREEMPT PHASES (Medium Priority)



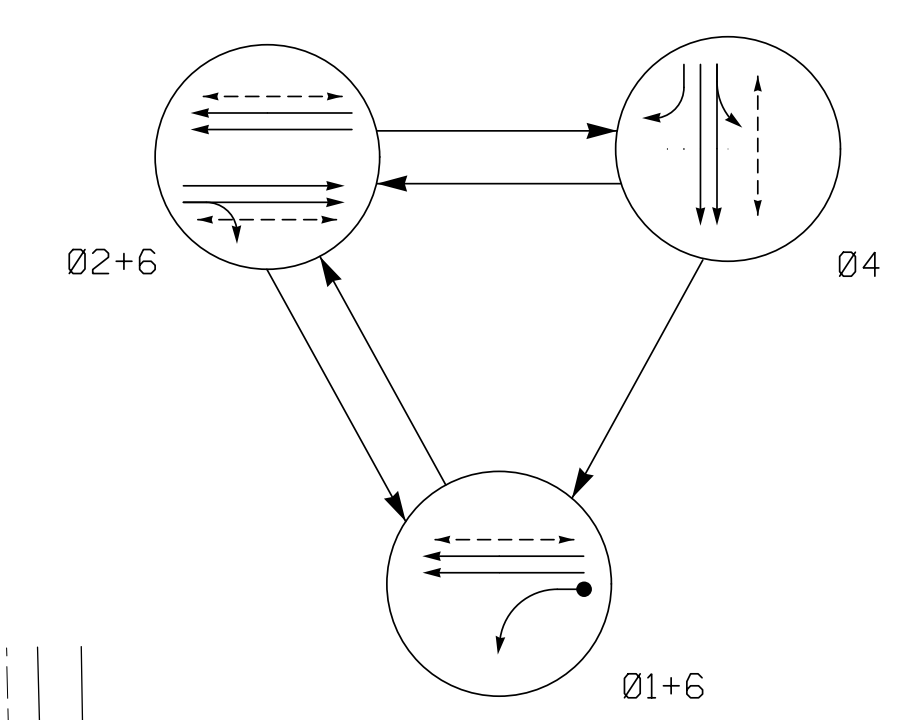
SIGNAL FACE I.D.



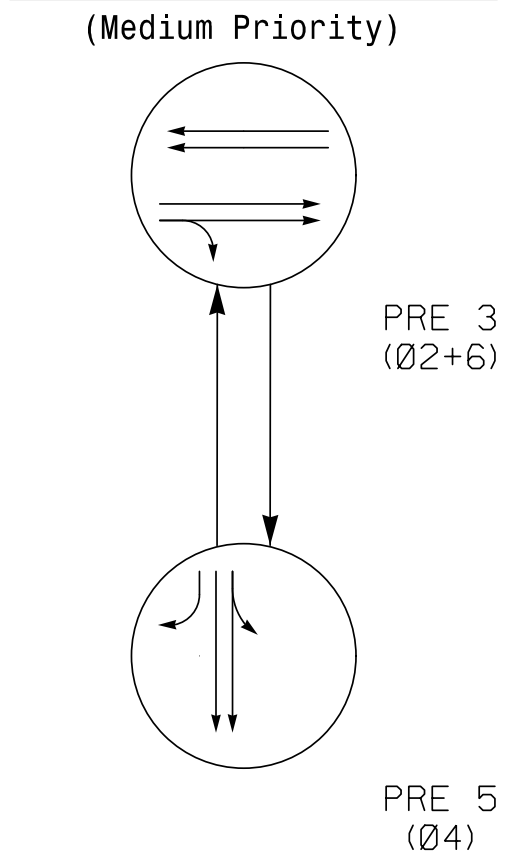
DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|-------|-----|-------|-------|-------|
| | Ø 1+6 | Ø 2+6 | Ø 4 | PRE 3 | PRE 5 | FLASH |
| 11 | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | G | R | G | R | Y |
| 41, 42 | R | R | G | R | G | R |
| 61, 62 | G | G | R | G | R | Y |
| P21, P22 | DW | W | DW | DW | DRK | |
| P41, P42 | DW | DW | W | DW | DRK | |
| P61, P62 | W | W | DW | DW | DRK | |

ALTERNATE PHASING DIAGRAM



ALTERNATE EV PREEMPT PHASES (Medium Priority)



ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|-------|-----|-------|-------|-------|
| | Ø 1+6 | Ø 2+6 | Ø 4 | PRE 3 | PRE 5 | FLASH |
| 11 | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | G | R | G | R | Y |
| 41, 42 | R | R | G | R | G | R |
| 61, 62 | G | G | R | G | R | Y |
| P21, P22 | DW | W | DW | DW | DRK | |
| P41, P42 | DW | DW | W | DW | DRK | |
| P61, P62 | W | W | DW | DW | DRK | |

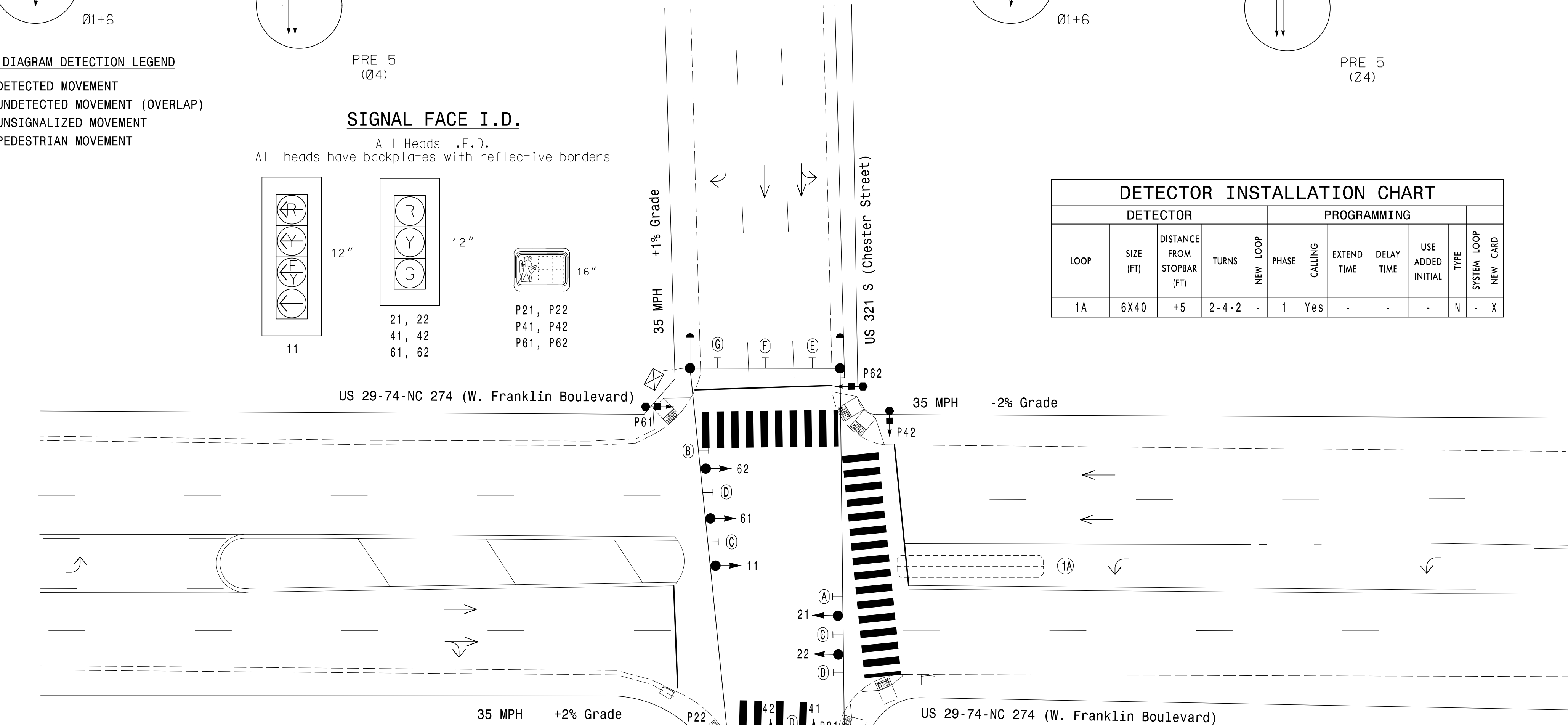
3 Phase Semi-Actuated w/ Alternate Phasing Operation and Emergency Vehicle Preemption Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- The City Engineer or their representative will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- All proposed pedestrian pedestals and pushbutton posts shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset: #0038

DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | PROGRAMMING | | | | | | | | |
|------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | +5 | 2-4-2 | - | 1 | Yes | - | - | - | N | - | X |



TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|-------|---------|---------|---------|
| | 1 | 2 | 4 | 6 |
| Min Green * | 7 | 10 | 7 | 10 |
| Walk * | - | 7 | 7 | 7 |
| Ped Clear | - | 7 | 17 | 12 |
| Veh. Extension * | 2.0 | - | - | - |
| Max 1 * | 30 | 60 | 30 | 60 |
| Yellow | 3.0 | 4.0 | 3.8 | 4.0 |
| Red Clear | 2.4 | 1.2 | 1.7 | 1.2 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | - | PED/MAX | PED/MAX | PED/MAX |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | X | X | X | X |

EV PREEMPT

| FUNCTION | PRE 3 | PRE 5 |
|---------------------------------|-------|-------|
| Exit Phase(s) | 2+6 | 4 |
| Preempt Override | OFF | OFF |
| Delay Time | 0 | 0 |
| Ped Clear Through Yellow | Y | Y |
| Terminate Phases | N | N |
| Entrance Walk | 1 | 1 |
| Entrance Ped Clear | 225* | 225* |
| Entrance Min Green | 1 | 1 |
| Entrance Yellow Change | 25.5* | 25.5* |
| Entrance Red Clear | 25.5* | 25.5* |
| Minimum Dwell Time | 7 | 7 |
| Preempt Input Extension Time ** | 2 | 2 |
| Preempt Max Time | 120 | 120 |
| Exit Yellow Change | 25.5* | 25.5* |
| Exit Red Clear | 25.5* | 25.5* |

* Time defaults to time used for phase during normal operation.
 ** Program Timing on GPS Detection Unit.

LEGEND

| PROPOSED | EXISTING |
|--|----------|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ○ → Sign | ○ → N/A |
| ○ → Type II Signal Pedestal | ○ → N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Signal Pole with Sidewalk Guy | ○ → N/A |
| ○ → Inductive Loop Detector | ○ → N/A |
| ○ → Controller & Cabinet | ○ → N/A |
| ○ → Junction Box | ○ → N/A |
| ○ → 2-in Underground Conduit | ○ → N/A |
| ○ → Right of Way | ○ → N/A |
| ○ → Directional Arrow | ○ → N/A |
| ○ → Curb Ramp | ○ → N/A |
| ○ → No Left Turn Sign (R3-2) | ○ → N/A |
| ○ → No Right Turn Sign (R3-1) | ○ → N/A |
| ○ → One Way Sign (R6-1) | ○ → N/A |
| ○ → Street Name Sign (D3-1) | ○ → N/A |
| ○ → Left / Thru Sign (R3-6) | ○ → N/A |
| ○ → Thru Movement Only (R3-5a) | ○ → N/A |
| ○ → Right Turn Only Sign (R3-5R) | ○ → N/A |
| ○ → Left "TURNING VEHICLES" Yield "TO" Pedestrians (R10-15L) | ○ → N/A |

Signal Upgrade

Prepared For: **US 29-74-NC 274 (W. Franklin Boulevard) at US 321 S (Chester Street)**
 Division 12 Gaston County Gastonia

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

NC License #F-0102
 PREPARED BY: CF Davis
 REVIEWED BY: SL Phillips
 DATE: May 2021

750 N. Greenfield Pkwy, Garner, NC 27529
 (919) 677-2000

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

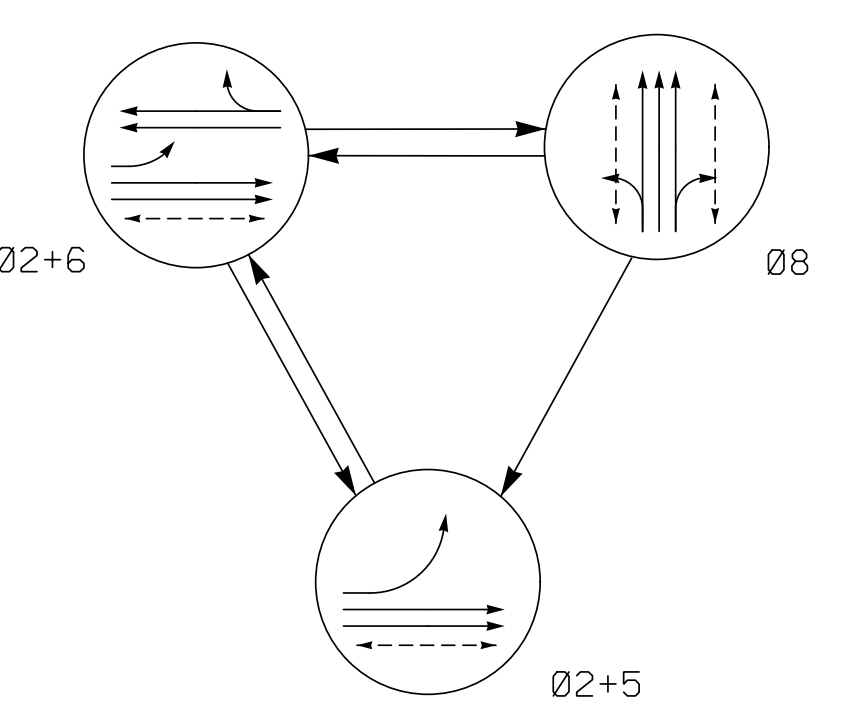
Seal of Kevin P. Baumann, Professional Engineer, License No. 044434

3/11/2022
 12-0038

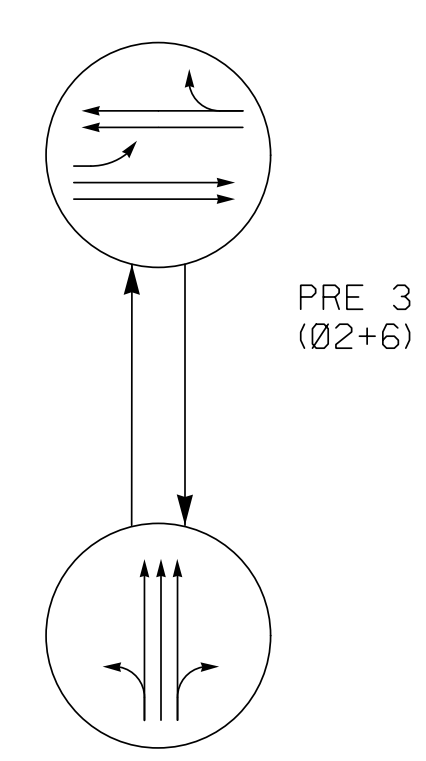
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3 Phase Pre-Timed w/ Alternate Phasing Operation and Emergency Vehicle Preemption Gastonia Signal System

DEFAULT PHASING DIAGRAM



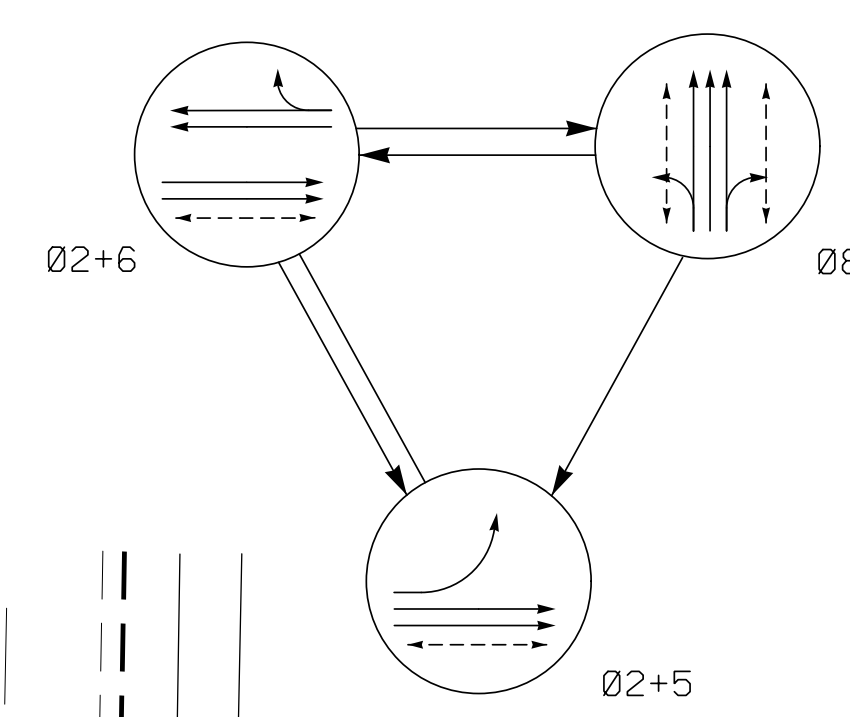
DEFAULT EV PREEMPT PHASES



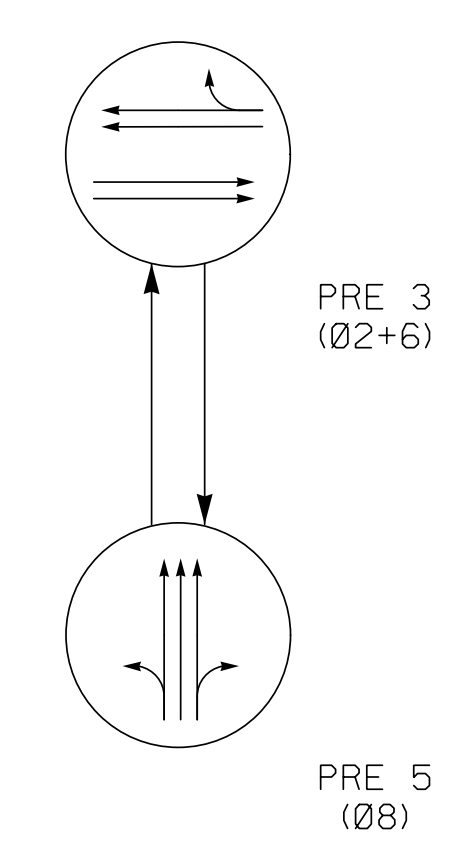
DEFAULT TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|-------|------|----|-------|-------|-------|--------|--------|
| | 02+5 | 02+6 | 08 | PRE 3 | PRE 5 | PRE 8 | PRE 10 | PRE 11 |
| 21, 22 | G | G | R | G | R | Y | | |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | Y | | |
| 81, 82 | R | R | G | R | G | R | | |
| P21, P22 | W | W | DW | DW | DW | DRK | | |
| P81, P82 | DW | DW | W | DW | DW | DRK | | |
| P83, P84 | | | | | | | | |

ALTERNATE PHASING DIAGRAM

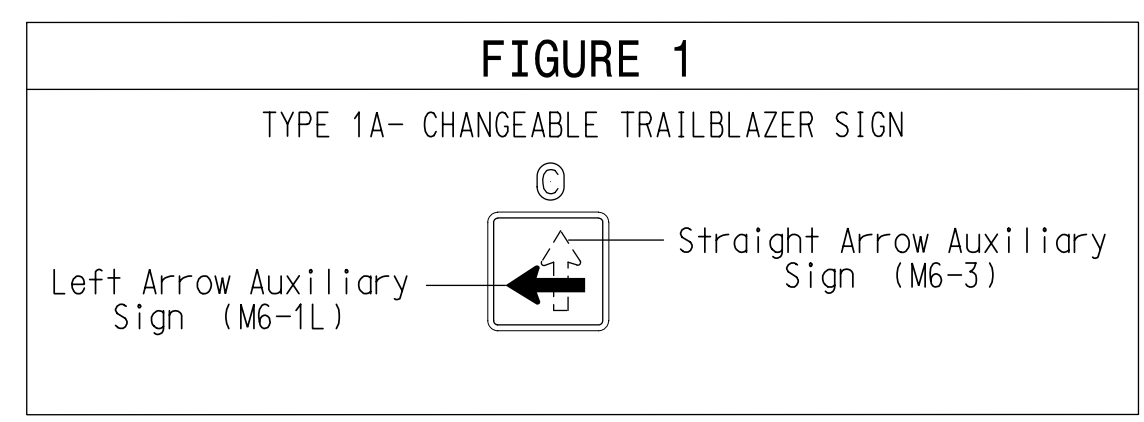
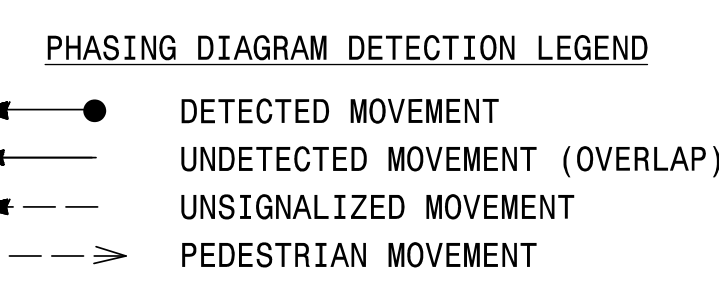


ALTERNATE EV PREEMPT PHASES

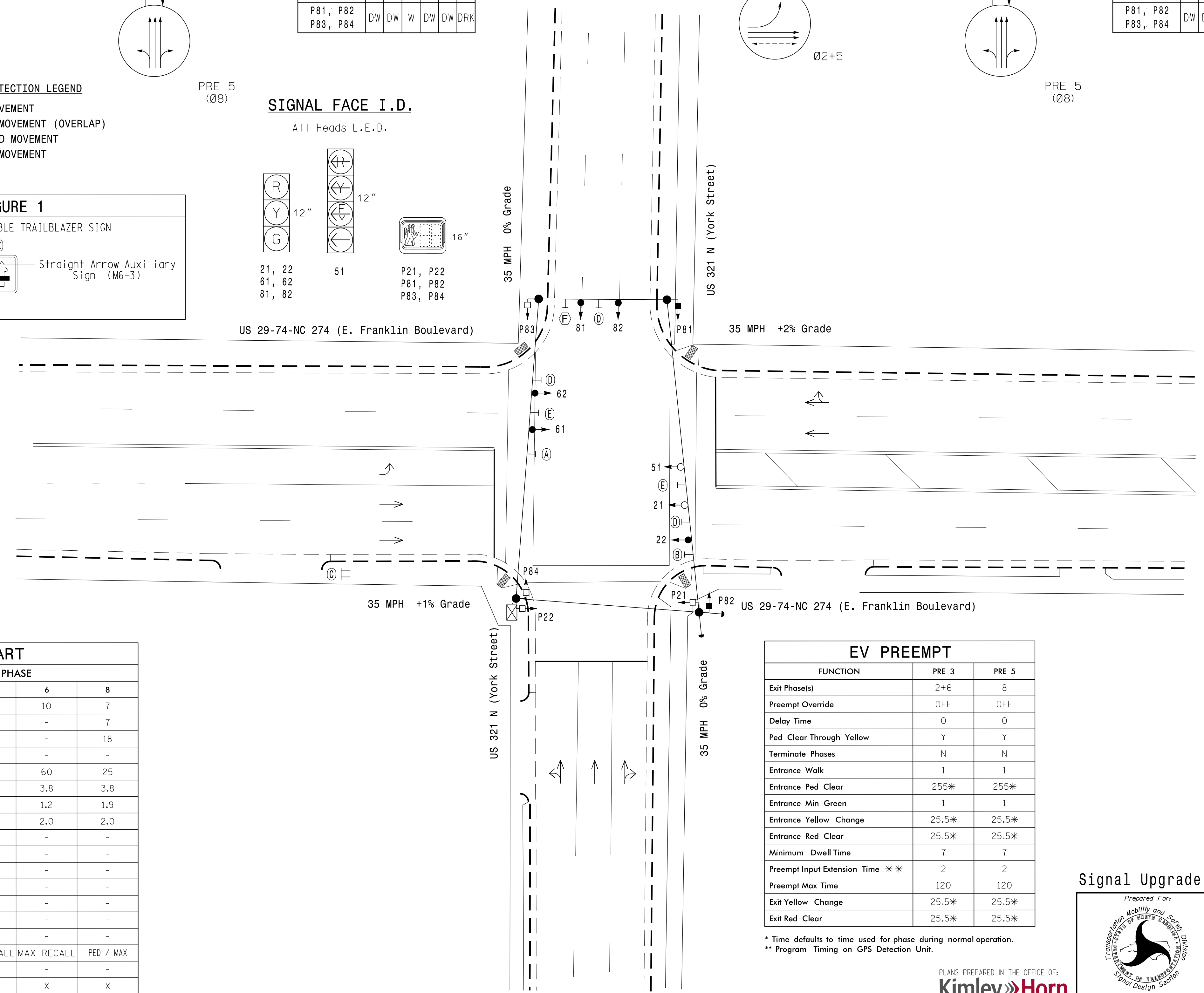
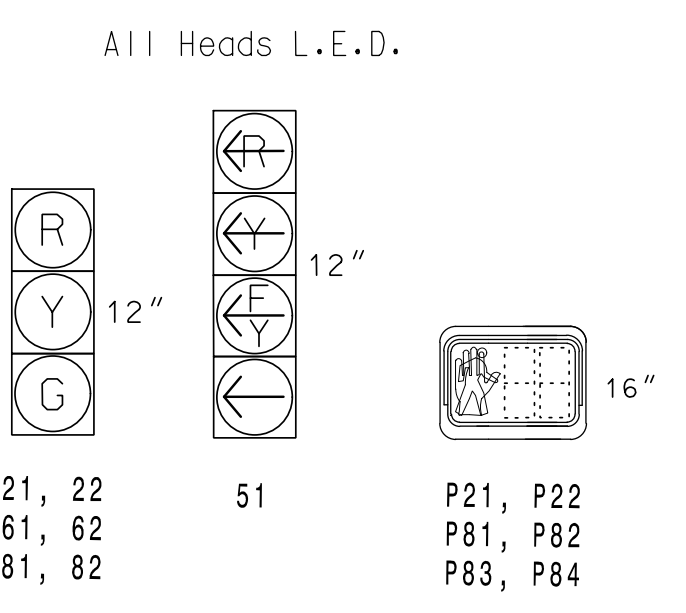


ALTERNATE TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|-------|------|----|-------|-------|-------|--------|--------|
| | 02+5 | 02+6 | 08 | PRE 3 | PRE 5 | PRE 8 | PRE 10 | PRE 11 |
| 21, 22 | G | G | R | G | R | Y | | |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | Y | | |
| 81, 82 | R | R | G | R | G | R | | |
| P21, P22 | W | W | DW | DW | DW | DRK | | |
| P81, P82 | DW | DW | W | DW | DW | DRK | | |
| P83, P84 | | | | | | | | |



SIGNAL FACE I.D.



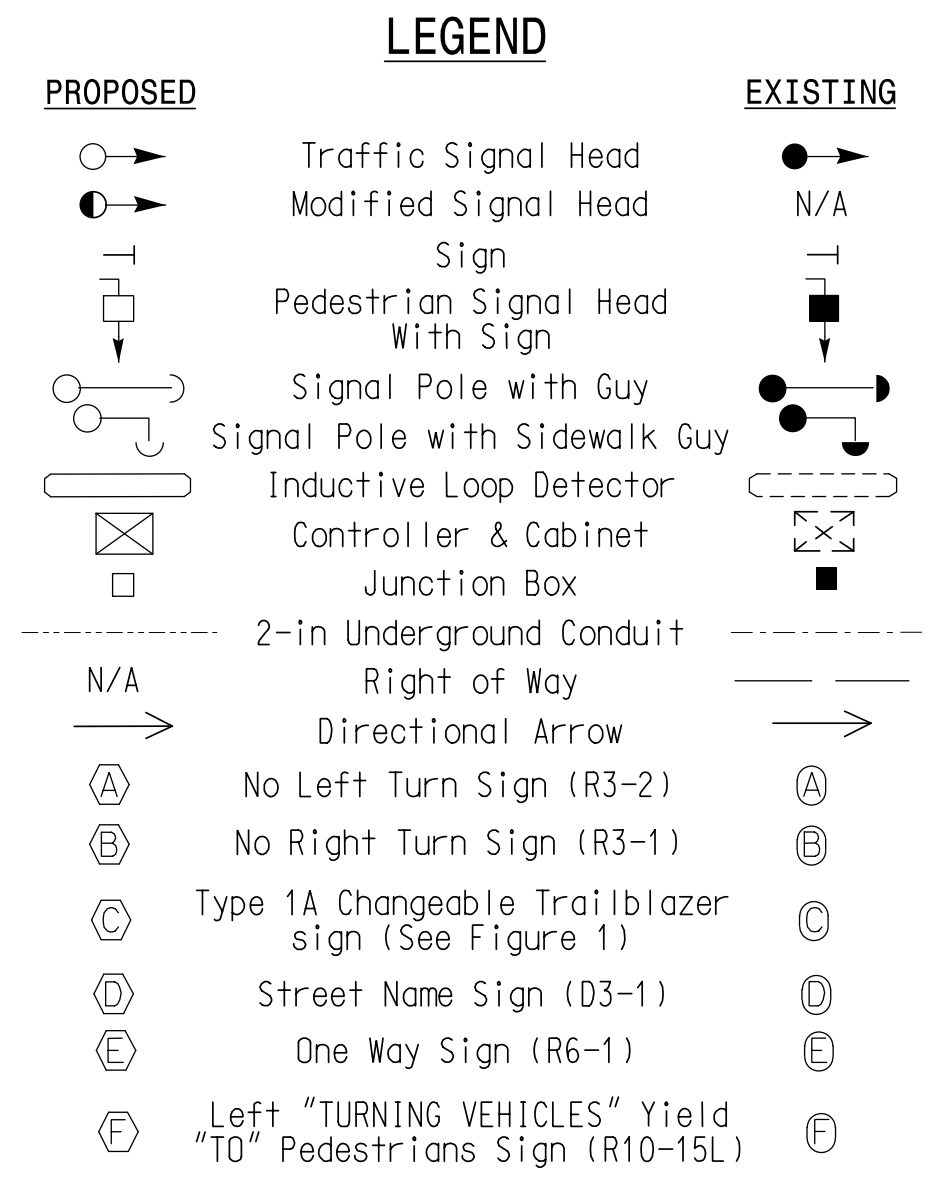
- NOTES
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
 - Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
 - Set all detector units to presence mode.
 - Install new cabinet on a new cabinet foundation.
 - All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
 - Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
 - Phase 5 may be lagged.
 - Existing phase 4 has been changed to phase 8 on this plan. Change all signal heads, pedestrian signal heads, pedestrian push buttons, and loops as needed to achieve the phasing shown.
 - Program pedestrian heads to countdown the flashing "Don't Walk" time only.
 - Pavement markings are existing.
 - The City Engineer or their representative will determine the hours of use for each phasing plan.
 - Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
 - Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
 - Rewire all interlocking equipment to new cabinet.
 - All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
 - City system data:
Controller Asset: #0039

TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|-----------|------------|------------|-----------|
| | 2 | 5 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | - | - | 7 |
| Ped Clear | 12 | - | - | 18 |
| Veh. Extension * | - | - | - | - |
| Max I * | 60 | 15 | 60 | 25 |
| Yellow | 3.8 | 3.0 | 3.8 | 3.8 |
| Red Clear | 1.2 | 1.8 | 1.2 | 1.9 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED / MAX | MAX RECALL | MAX RECALL | PED / MAX |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | X | X | X | X |

EV PREEMPT

| FUNCTION | PRE 3 | PRE 5 |
|---------------------------------|-------|-------|
| Exit Phase(s) | 2+6 | 8 |
| Preempt Override | OFF | OFF |
| Delay Time | 0 | 0 |
| Ped Clear Through Yellow | Y | Y |
| Terminate Phases | N | N |
| Entrance Walk | 1 | 1 |
| Entrance Ped Clear | 25.5* | 25.5* |
| Entrance Min Green | 1 | 1 |
| Entrance Yellow Change | 25.5* | 25.5* |
| Entrance Red Clear | 25.5* | 25.5* |
| Minimum Dwell Time | 7 | 7 |
| Preempt Input Extension Time ** | 2 | 2 |
| Preempt Max Time | 120 | 120 |
| Exit Yellow Change | 25.5* | 25.5* |
| Exit Red Clear | 25.5* | 25.5* |



3/9/2022 11:13:12 AM Don@le.corr1 ***k:miley-horn.com:SE:RAL:W:RAL:IP:OK-LITS:01:03:05:69 Gastonia Signal System9 Signal Des:gn:W:12:00:19-2021.dgn

Signal Upgrade

Prepared For: **US 29-74-NC 274 (E. Franklin Boulevard) at US 321 N (York Street)**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: CF Davis REVIEWED BY: KP Baumann

REVISIONS: _____ INIT. DATE

Scale: 1" = 20'

PLANS PREPARED IN THE OFFICE OF: **Kimley-Horn**

NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

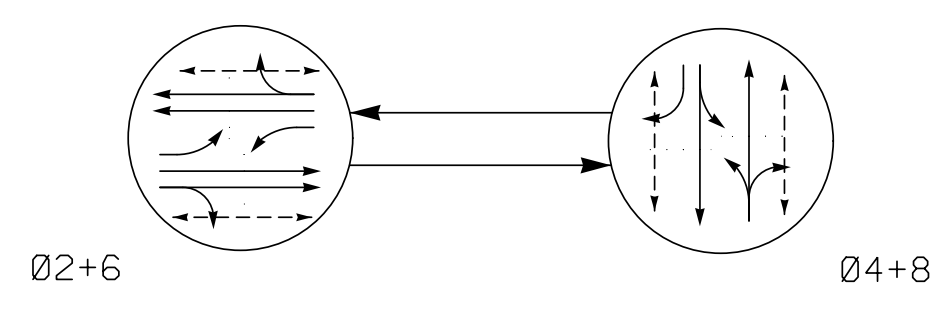
Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044434 KEVIN P. BAUMANN

3/11/2022

SIG. INVENTORY NO. 12-0039

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

PHASING DIAGRAM



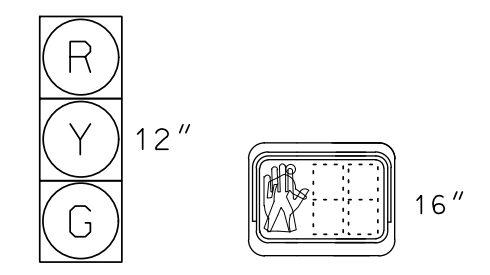
PHASING DIAGRAM DETECTION LEGEND
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE, and Flash. Rows include signal faces 21, 22; 41, 42; 61, 62; 81, 82 and their corresponding phases and flash types.

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22 P21, P22
41, 42 P41, P42
61, 62 P61, P62
81, 82 P81, P82

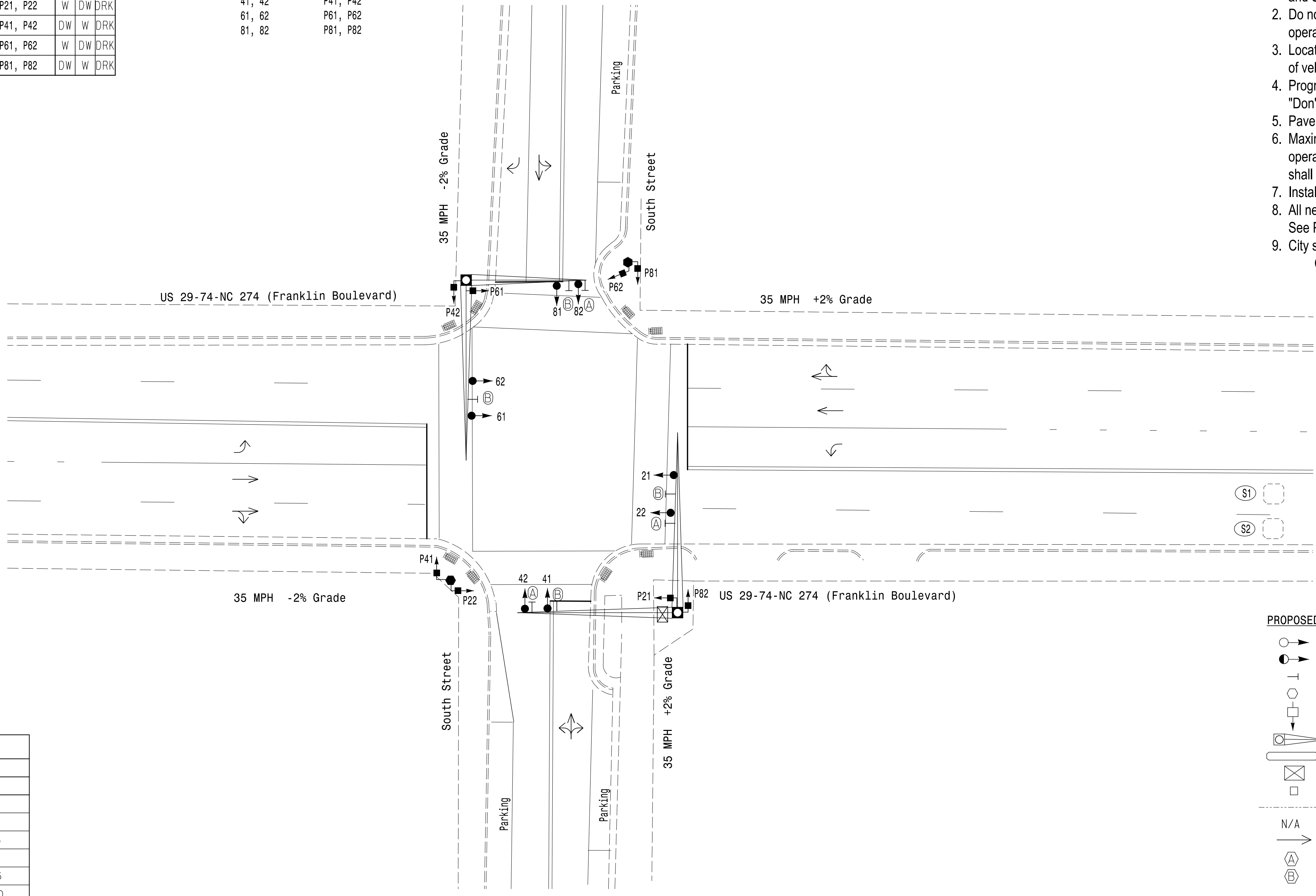
DETECTOR INSTALLATION CHART

Table with columns: LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD. Rows S1 and S2.

2 Phase Pre-Timed Gastonia Signal System

NOTES

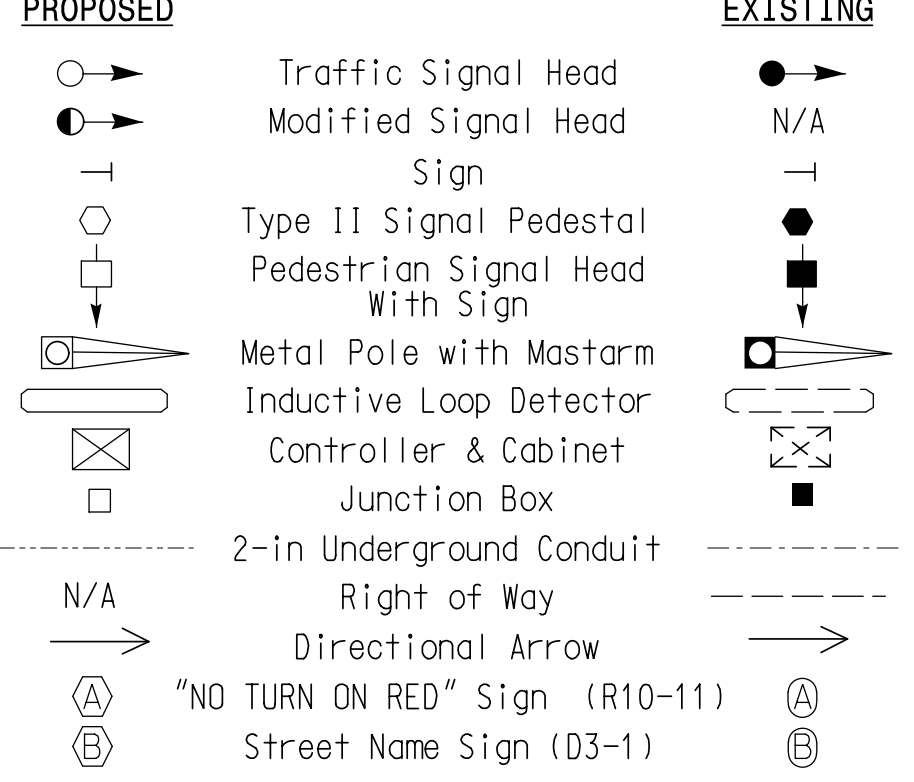
- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018...
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
4. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only.
7. Install new cabinet on the existing cabinet foundation.
8. All new cabinets and base extenders shall be black in color.
9. City system data: Controller Asset: #0040



TIMING CHART table with columns: FEATURE, PHASE (2, 4, 6, 8). Rows include Min Green, Walk, Ped Clear, Veh. Extension, Max I, Yellow, Red Clear, Red Revert, Actuations B4 Add, Seconds / Actuation, Max Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Locking Detector, Recall Position, Dual Entry, Simultaneous Gap.

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

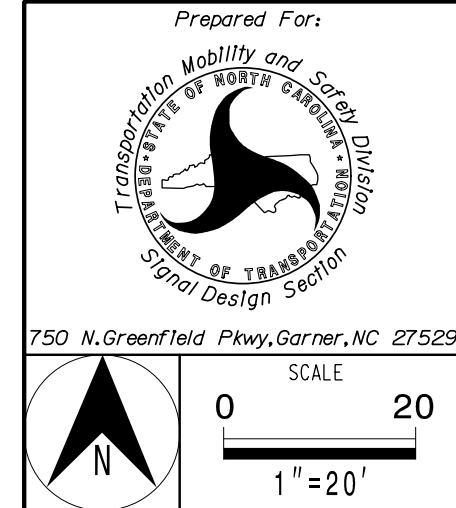
LEGEND



3/9/2022 11:13:14 AM Don@le.corr1 ***kimley-horn.com\\SLE\\RAL\\IP\\OK_LITS\\01036569_Gastonia Signal System\\Signal Design\\0200-2021.dgn

Signal Upgrade

PLANS PREPARED IN THE OFFICE OF: Kimley Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

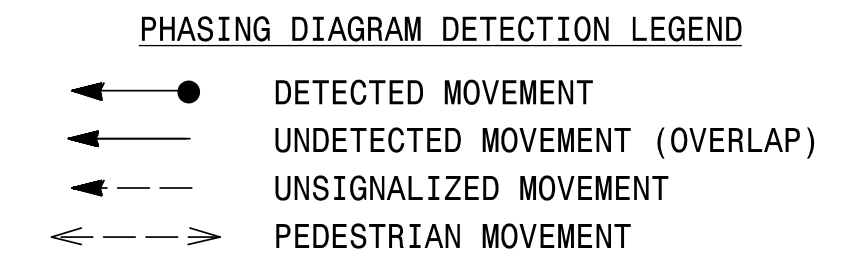
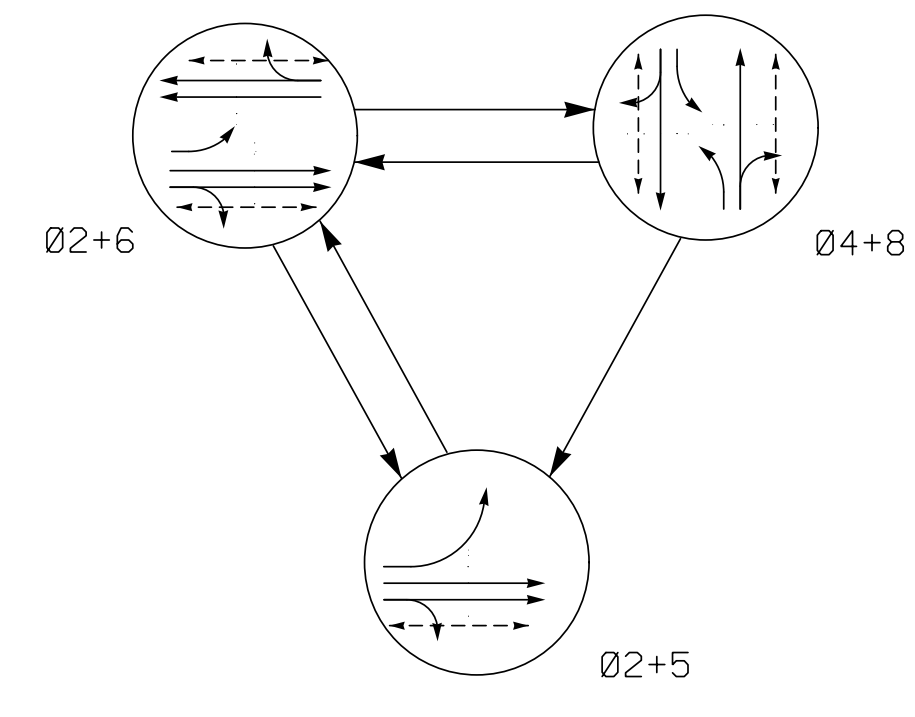


Project information: US 29-74-NC 274 (Franklin Boulevard) at South Street, Gastonia. Includes dates (May 2021), names (SP Pennington, SL Phillips, KP Baumann), and revision table.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signature and date block: Kevin P. Baumann, 3/11/2022, Inventory No. 12-0040.

PHASING DIAGRAM



EV PREEMPT PHASES
(Medium Priority)

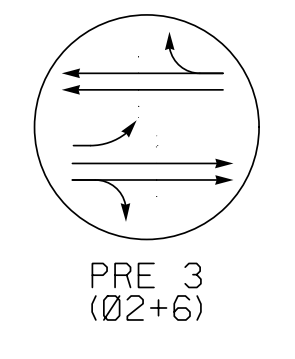
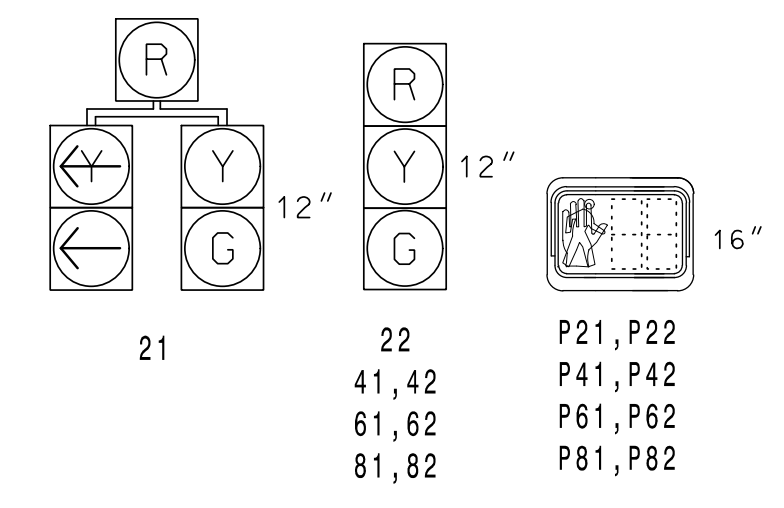


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | |
|-------------|-------|-------|-------|-------|-------|
| | Ø 2+5 | Ø 2+6 | Ø 4+8 | PRE 3 | FLASH |
| 21 | G | R | G | Y | |
| 22 | G | G | R | G | Y |
| 41, 42 | R | R | G | R | R |
| 61, 62 | R | G | R | G | Y |
| 81, 82 | R | R | G | R | R |
| P21, P22 | W | W | DW | DW | DRK |
| P41, P42 | DW | DW | W | DW | DRK |
| P61, P62 | DW | W | DW | DW | DRK |
| P81, P82 | DW | DW | W | DW | DRK |

SIGNAL FACE I.D.
All Heads L.E.D.



DETECTOR INSTALLATION CHART

| LOOP | DETECTOR | | | PROGRAMMING | | | | | | | | |
|------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|----------|
| | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| S1 | 6X6 | +220 | EXIST | - | - | No | - | - | - | N | X | X |
| S2 | 6X6 | +220 | EXIST | - | - | No | - | - | - | N | X | X |

3 Phase Pre-Timed w/ Emergency Vehicle Preemption Gastonia Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Install new cabinet on the existing cabinet foundation.
9. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
10. Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
11. City system data:
Controller Asset: #0041

EV PREEMPT

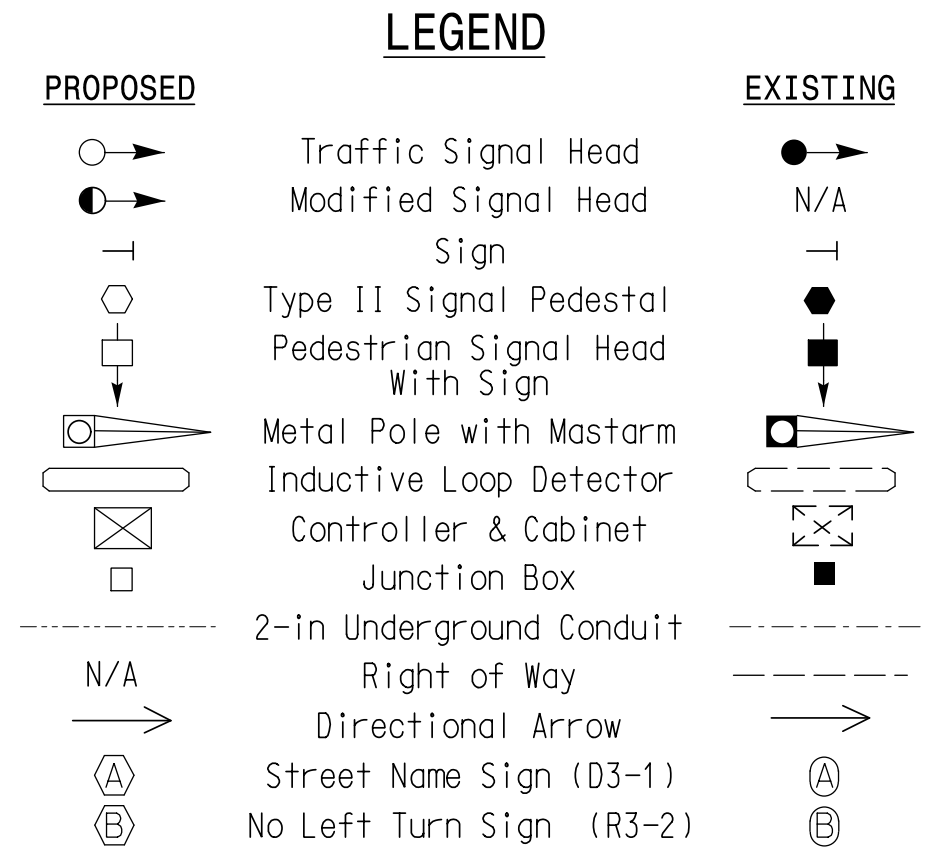
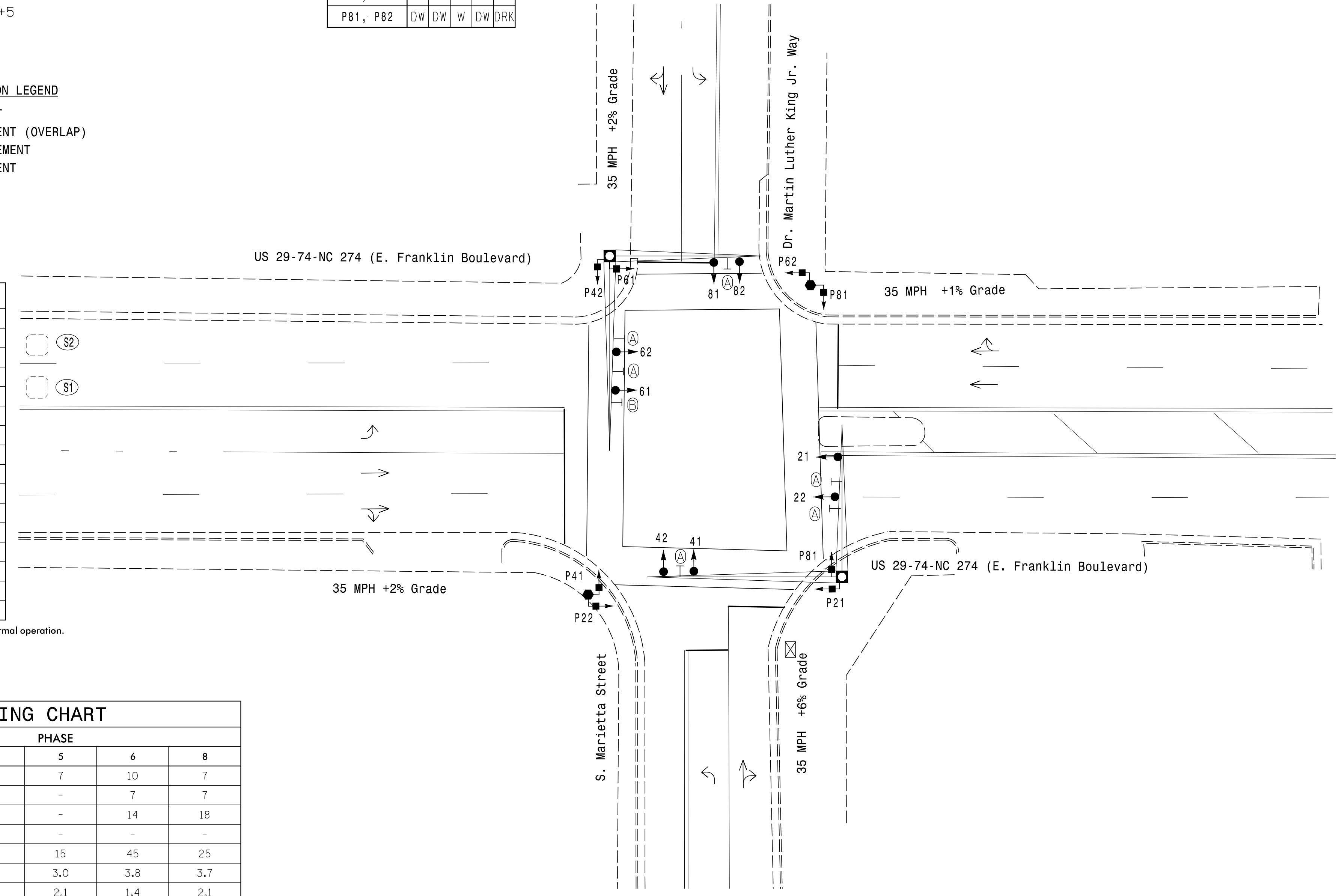
| FUNCTION | PRE 3 |
|--------------------------------|-------|
| Exit Phase(s) | 2+6 |
| Preempt Override | OFF |
| Delay Time | 0 |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 255* |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Minimum Dwell Time | 10 |
| Preempt Input Extension Time** | 2 |
| Preempt Max Time | 120 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation.
** Program Timing on GPS Detection Unit.

TIMING CHART

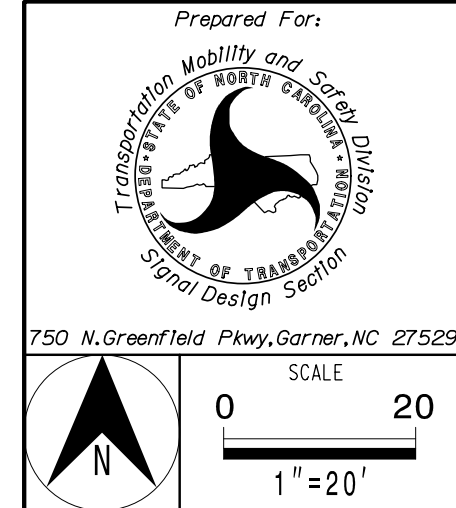
| FEATURE | PHASE | | | | |
|-------------------------|---------|---------|------------|---------|---------|
| | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 10 | 7 | 7 | 10 | 7 |
| Walk * | 7 | 7 | - | 7 | 7 |
| Ped Clear | 14 | 18 | - | 14 | 18 |
| Veh. Extension * | - | - | - | - | - |
| Max 1 * | 45 | 25 | 15 | 45 | 25 |
| Yellow | 3.8 | 3.7 | 3.0 | 3.8 | 3.7 |
| Red Clear | 1.4 | 2.1 | 2.1 | 1.4 | 2.1 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - |
| Seconds /Actuation * | - | - | - | - | - |
| Max Initial * | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - |
| Minimum Gap | - | - | - | - | - |
| Locking Detector | - | - | - | - | - |
| Recall Position | PED/MAX | PED/MAX | MAX RECALL | PED/MAX | PED/MAX |
| Dual Entry | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000



US 29-74-NC 274
(E. Franklin Boulevard)
at S. Marietta Street/
Dr. Martin Luther King Jr. Way

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: SP Pennington REVIEWED BY: KP Baumann

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

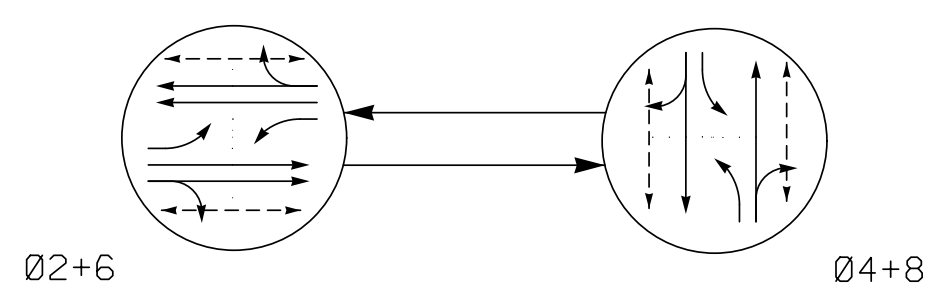
North Carolina Professional Engineer Seal: KEVIN P. BAUMANN, License No. 044434

3/11/2022

SIG. INVENTORY NO. 12-0041

3/9/2022 11:13:16 AM Don@le.corr1 ***kimley-horn.com\SERIAL\RAL\IP\OK-LTS\01036569 Gastonia Signal System9 Signal Des\gmbl20041-2021.dgn

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ← → PEDESTRIAN MOVEMENT

EV PREEMPT PHASES
(Medium Priority)

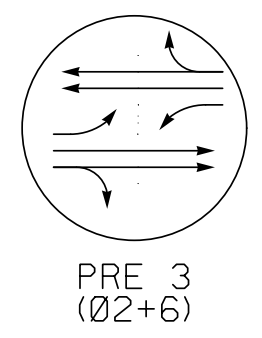
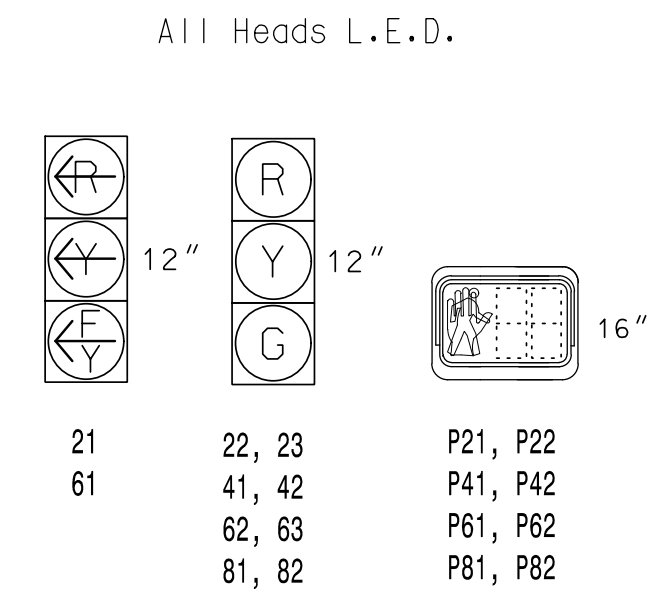


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|----|-------|
| | 02+6 | 04+8 | P | FLASH |
| 21 | F | R | F | Y |
| 22, 23 | G | R | G | Y |
| 41, 42 | R | G | R | R |
| 61 | F | R | F | Y |
| 62, 63 | G | R | G | Y |
| 81, 82 | R | G | R | R |
| P21, P22 | W | DW | DW | DRK |
| P41, P42 | DW | W | DW | DRK |
| P61, P62 | W | DW | DW | DRK |
| P81, P82 | DW | W | DW | DRK |

SIGNAL FACE I.D.



2 Phase Pre-Timed w/ Emergency Vehicle Preemption Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered 22, 23, 62, and 63.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on a new cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- Rewire all intersection equipment to the new cabinet.
- City system data
Controller Asset: #0042

EV PREEMPT

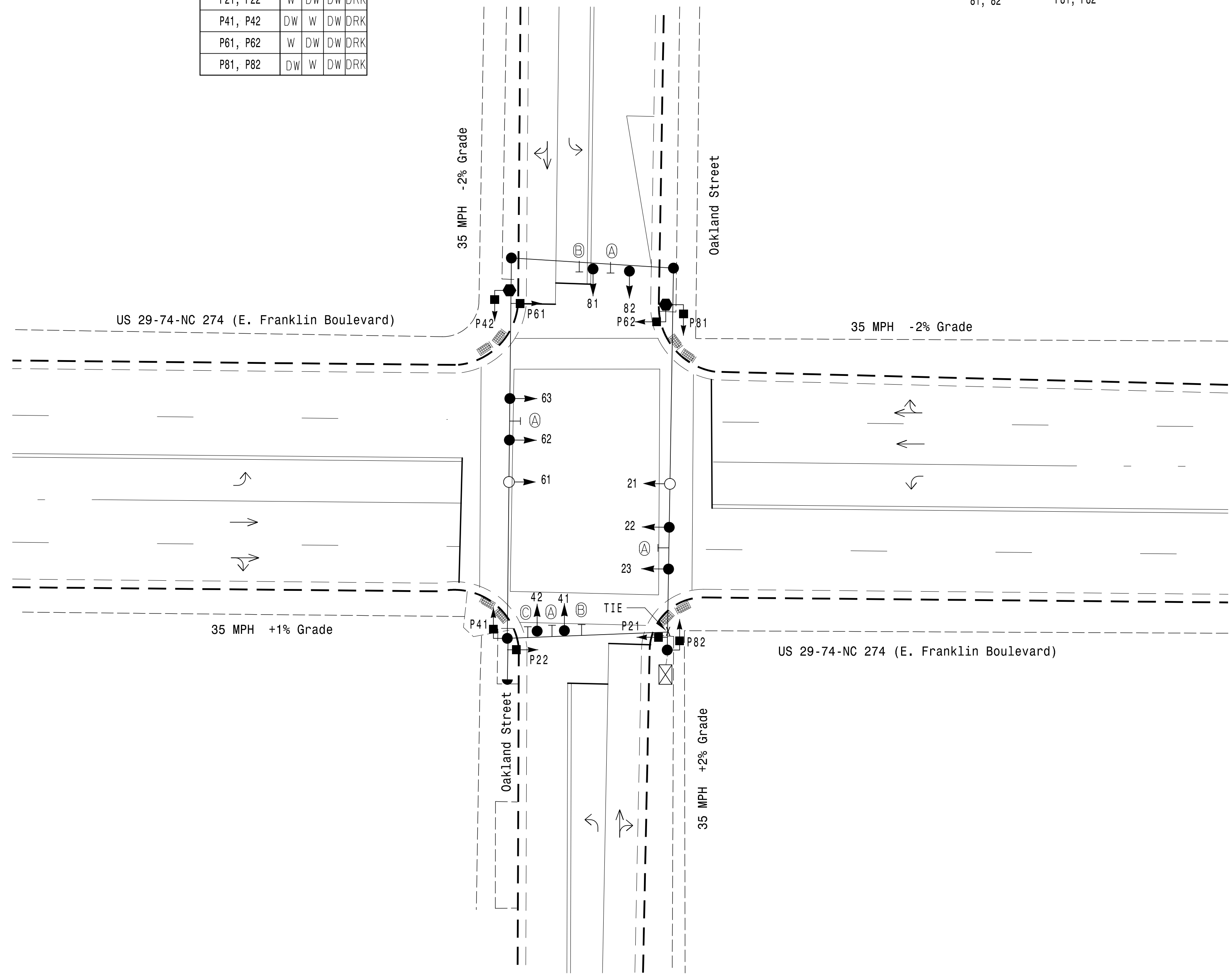
| FUNCTION | PRE 3 |
|--------------------------------|-------|
| Exit Phase(s) | 2+6 |
| Preempt Override | OFF |
| Delay Time | 0 |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 255* |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Minimum Dwell Time | 10 |
| Preempt Input Extension Time** | 2 |
| Preempt Max Time | 120 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation.
** Program Timing on GPS Detection Unit.

TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|---------|------------|---------|------------|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | 7 | 7 | 7 |
| Ped Clear | 10 | 16 | 11 | 15 |
| Veh. Extension * | - | - | - | - |
| Max 1 * | 45 | 25 | 45 | 25 |
| Yellow | 4.0 | 4.0 | 4.0 | 4.0 |
| Red Clear | 1.1 | 1.7 | 1.1 | 1.7 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | MAX RECALL | PED/MAX | MAX RECALL |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

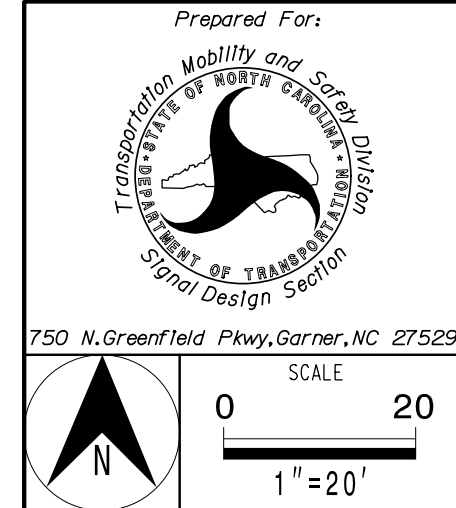


LEGEND

| PROPOSED | EXISTING |
|------------------------------------|------------------------------------|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ● → Modified Signal Head | N/A |
| ○ Type II Signal Pedestal | ○ Type II Signal Pedestal |
| ○ Pedestrian Signal Head With Sign | ○ Pedestrian Signal Head With Sign |
| ○ Signal Pole with Guy | ○ Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ○ Signal Pole with Sidewalk Guy |
| ⊠ Inductive Loop Detector | ⊠ Inductive Loop Detector |
| ⊠ Controller & Cabinet | ⊠ Controller & Cabinet |
| ⊠ Junction Box | ⊠ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | N/A Right of Way |
| → Directional Arrow | → Directional Arrow |
| (A) Street Name Sign (D3-1) | (A) Street Name Sign (D3-1) |
| (B) Left Arrow "ONLY" Sign (R3-5L) | (B) Left Arrow "ONLY" Sign (R3-5L) |
| (C) "NO TURN ON RED" Sign (R10-11) | (C) "NO TURN ON RED" Sign (R10-11) |

Signal Upgrade

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
750 N. Greenfield Pkwy, Garner, NC 27529
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000



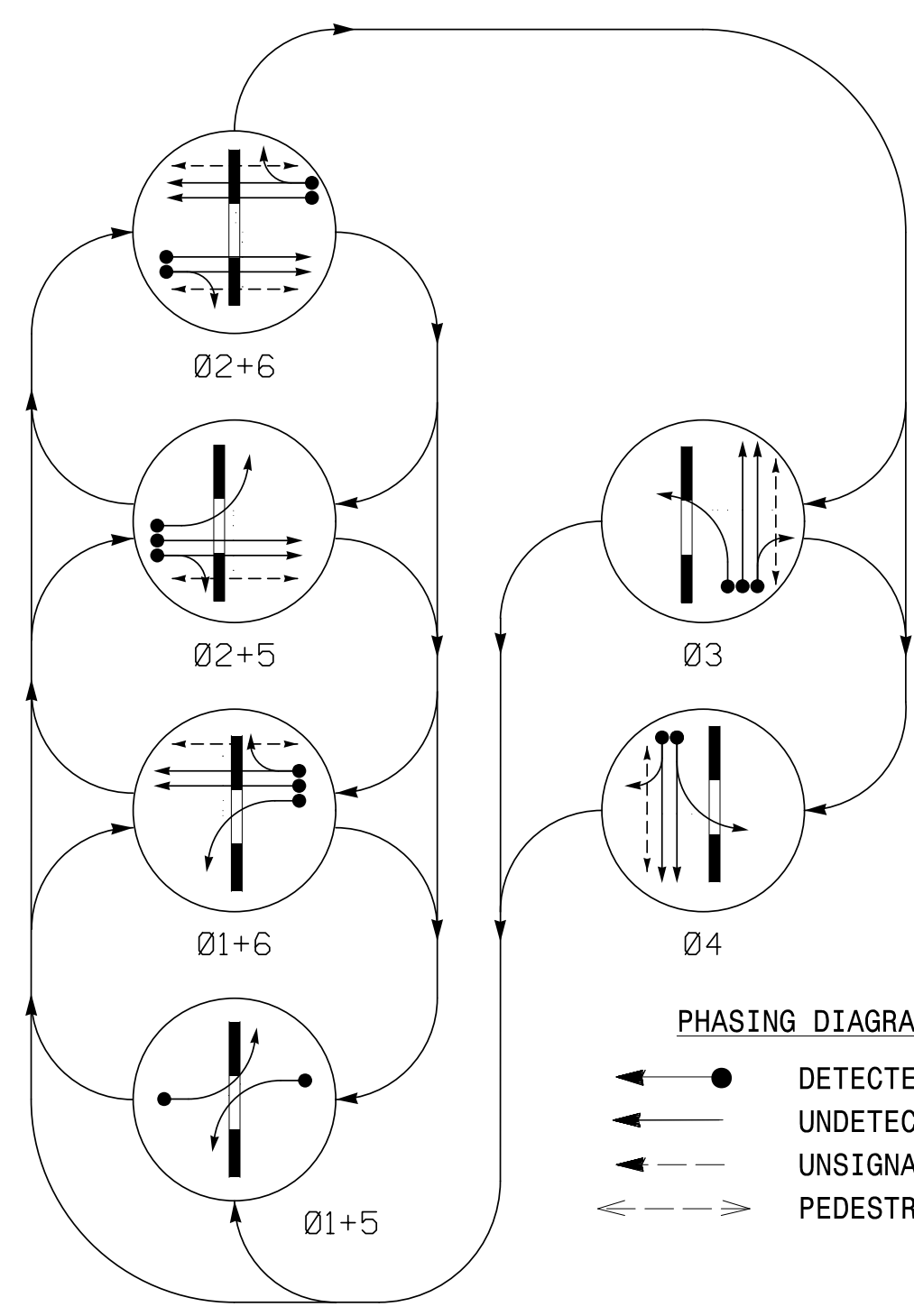
US 29-74-NC 274
(E. Franklin Boulevard)
at
Oakland Street
Division 12 Gaston County Gastonia
PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: SP Pennington REVIEWED BY: KP Baumann

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

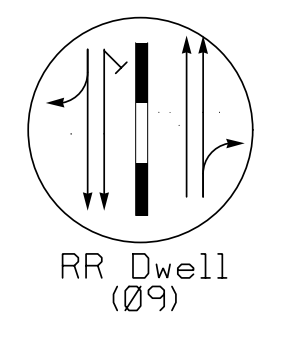
3/11/2022
DATE
12-0042
SIG. INVENTORY NO.

3/9/2022 11:13:18 AM Don@le.corr1 ***kimley-horn.com\SELRAL\IPDK\ITS\01\036569 Gastonia Signal System\Signal Design\02-2021.dgn

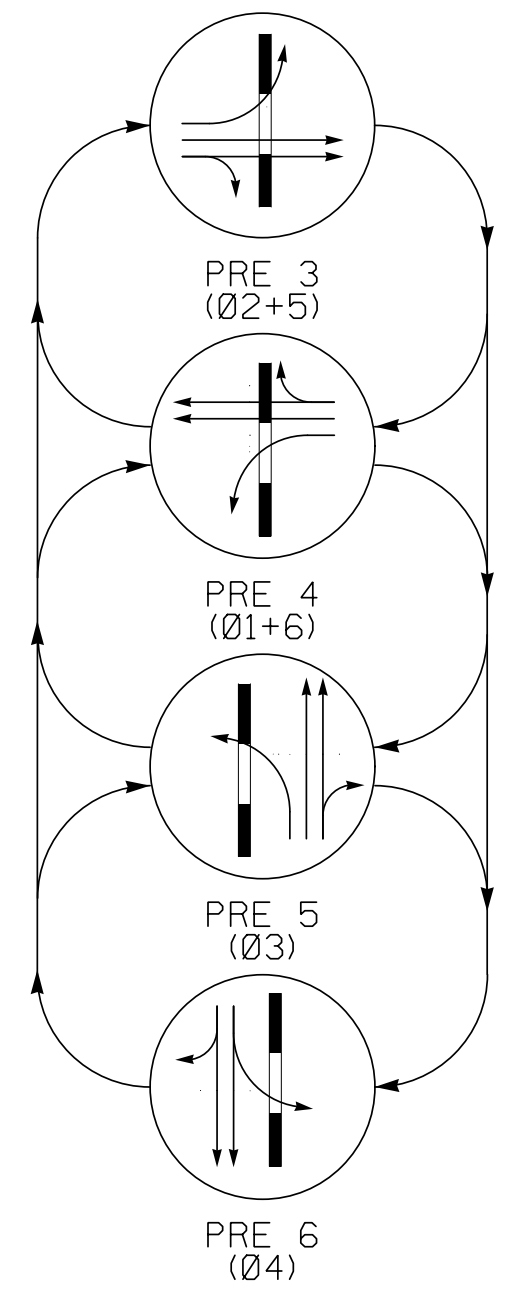
PHASING DIAGRAM



RAIL PREEMPT PHASES (High Priority)



EV PREEMPT PHASES (Medium Priority)



DETECTOR INSTALLATION CHART

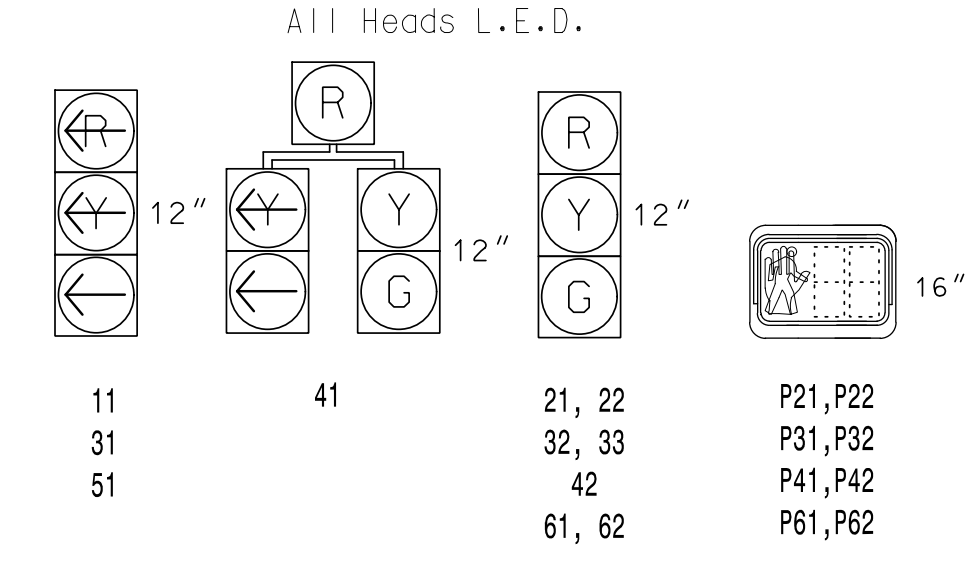
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Yes | - | 3 | - | N | - | X |
| 3A | 6X40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 3B | 6X40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 3C | 6X40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 3 | - | N | - | X |

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | | | | | | | |
|-------------|-------|-------|-------|-------|-----|-----|-------|-------|-------|-------|-----|-----|-------|-------|-------|-------|
| | Ø 1+5 | Ø 1+6 | Ø 2+5 | Ø 2+6 | Ø 3 | Ø 4 | Ø 1+5 | Ø 1+6 | Ø 2+5 | Ø 2+6 | Ø 3 | Ø 4 | Ø 1+5 | Ø 1+6 | Ø 2+5 | Ø 2+6 |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 31 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 32, 33 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 42 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| P21, P22 | DW | DW | W | DW | DW | DW | DW | DW | DW | DW | DW | DW | DW | DW | DRK | DRK |
| P31, P32 | DW | DW | DW | DW | W | DW | DW | DW | DW | DW | DW | DW | DW | DW | DRK | DRK |
| P41, P42 | DW | DW | DW | DW | W | DW | DW | DW | DW | DW | DW | DW | DW | DW | DRK | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DW | DW | DW | DW | DW | DW | DRK | DRK |
| Sign (A) | OFF | OFF | OFF | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF | * |

* See Note 10.

SIGNAL FACE I.D.



EV PREEMPT

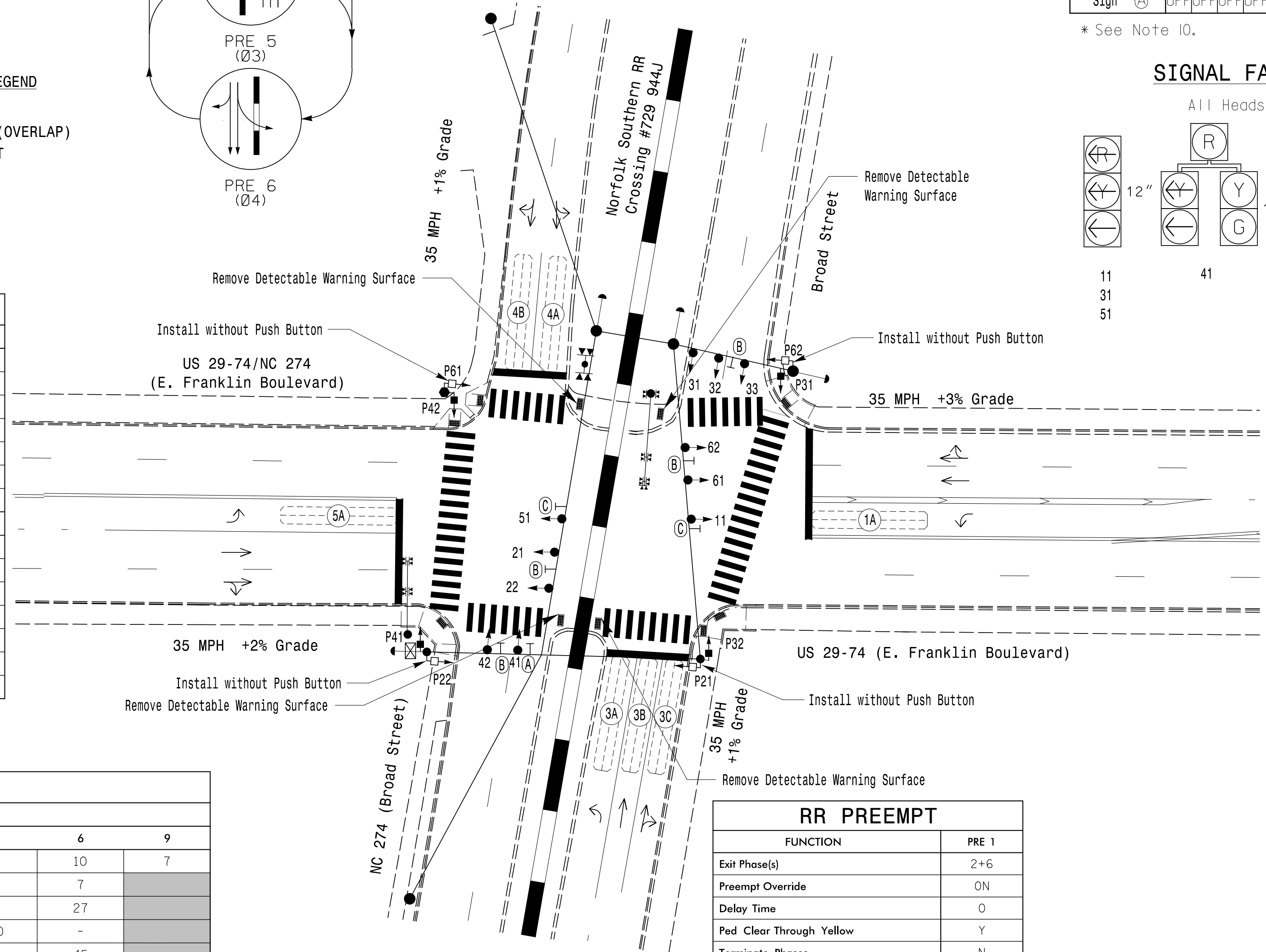
| FUNCTION | PRE 3 | PRE 4 | PRE 5 | PRE 6 |
|--------------------------------|-------|-------|-------|-------|
| Exit Phase(s) | 2+6 | 2+6 | 3 | 4 |
| Preempt Override | OFF | OFF | OFF | OFF |
| Delay Time | 0 | 0 | 0 | 0 |
| Ped Clear Through Yellow | Y | Y | Y | Y |
| Terminate Phases | N | N | N | N |
| Entrance Walk | 1 | 1 | 1 | 1 |
| Entrance Ped Clear | 25.5* | 25.5* | 25.5* | 25.5* |
| Entrance Min Green | 1 | 1 | 1 | 1 |
| Entrance Yellow Change | 25.5* | 25.5* | 25.5* | 25.5* |
| Entrance Red Clear | 25.5* | 25.5* | 25.5* | 25.5* |
| Minimum Dwell Time | 7 | 7 | 7 | 7 |
| Preempt Input Extension Time** | 2 | 2 | 2 | 2 |
| Preempt Max Time | 120 | 120 | 120 | 120 |
| Exit Yellow Change | 25.5* | 25.5* | 25.5* | 25.5* |
| Exit Red Clear | 25.5* | 25.5* | 25.5* | 25.5* |

* Time defaults to time used for phase during normal operation.
** Program Timing on GPS Detection Unit.

TIMING CHART

| FEATURE | PHASE | | | | | | |
|-------------------------|-------|---------|-----|-----|-----|---------|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 9 |
| Min Green * | 7 | 10 | 7 | 7 | 7 | 10 | 7 |
| Walk * | - | 7 | 7 | 7 | - | 7 | - |
| Ped Clear | - | 23 | 18 | 17 | - | 27 | - |
| Veh. Extension * | 2.0 | - | 2.0 | 2.0 | 2.0 | - | - |
| Max 1 * | 15 | 45 | 25 | 25 | 15 | 45 | - |
| Yellow | 3.0 | 3.7 | 3.8 | 3.8 | 3.0 | 3.7 | 3.8 |
| Red Clear | 3.3 | 2.2 | 2.1 | 2.4 | 3.3 | 2.4 | 2.4 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - | - |
| Seconds / Actuation * | - | - | - | - | - | - | - |
| Max Initial * | - | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - | - |
| Minimum Gap | - | - | - | - | - | - | - |
| Locking Detector | - | - | - | - | - | - | - |
| Recall Position | - | PED/MAX | - | - | - | PED/MAX | - |
| Dual Entry | - | - | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



RR PREEMPT

| FUNCTION | PRE 1 |
|---------------------------|-------|
| Exit Phase(s) | 2+6 |
| Preempt Override | ON |
| Delay Time | 0 |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Track Clear Reserve | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 4 |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 3.8 |
| Entrance Red Clear | 3.3 |
| Track Clear Min Green | 0 |
| Track Clear Yellow Change | 25.5* |
| Track Clear Red Clear | 25.5* |
| Min Dwell Time | 7 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

* Time defaults to time used for phase during normal operation.

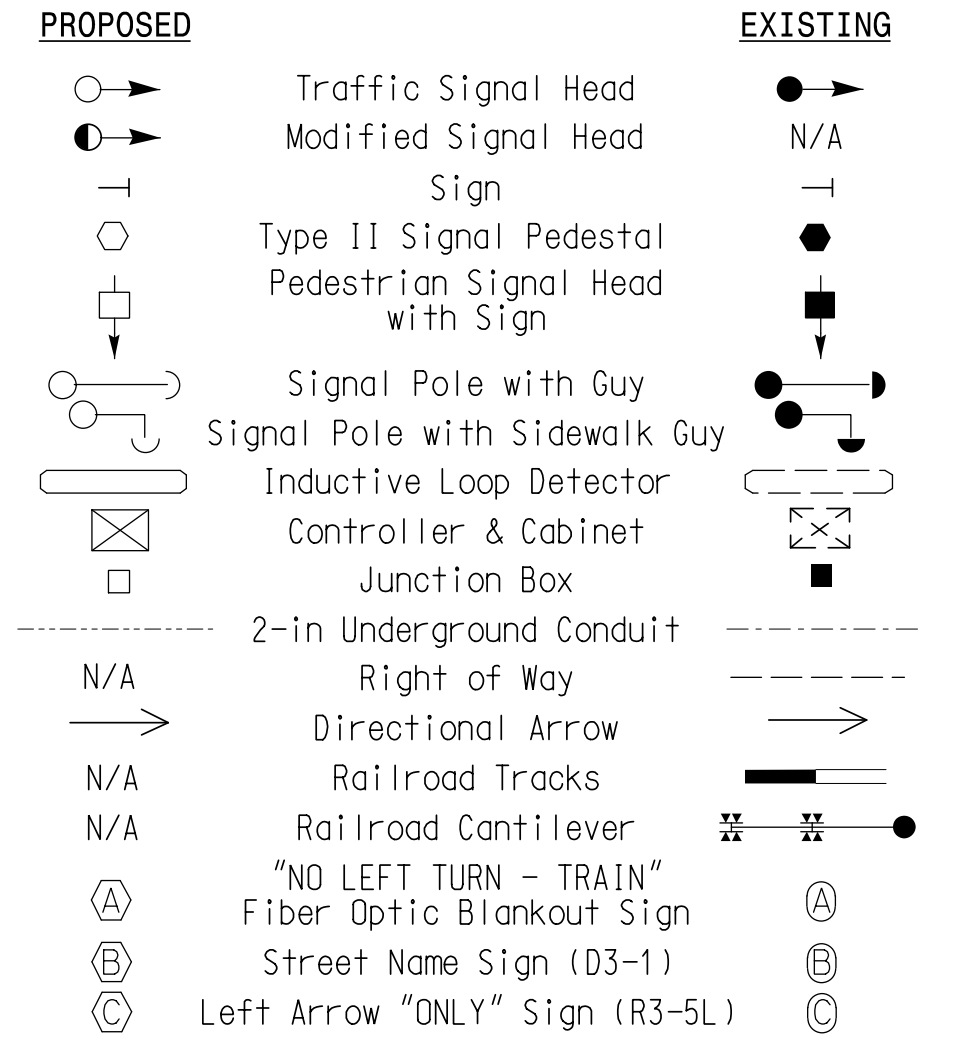
THIS SIGNAL WAS DESIGNED FOR SIMULTANEOUS PREEMPTION

6 Phase Semi-Actuated With Railroad Preemption and Emergency Vehicle Preemption Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls for phases 3 & 4.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Ensure flashing operation does not alter operation of blankout signs.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset: #0043

LEGEND



Signal Upgrade

Prepared For: **US 29-74/NC 274 (E. Franklin Boulevard) at NC 274 (Broad Street)**
 Division 12 Gaston County Gastonia
 PLAN DATE: May 2021 REVIEWED BY: SL Phillips
 PREPARED BY: SP Pennington REVIEWED BY: KP Baumann
 SCALE: 1" = 30'
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044434
 KETIN P. BAUMANN
 3/11/2022
 SIG. INVENTORY NO. 12-0043

11:13:21 AM Dantellb.Cur1
 ***Imley-Horn.comSE-RAI-MRAL-TIPDK-TIS011036569 Gastonia Signal System9 SignalSW54 - Signal Design120043-2021.dgn
 3/9/2022

PHASING DIAGRAM

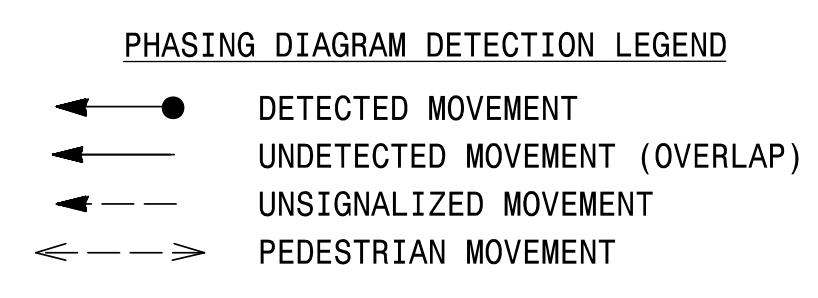
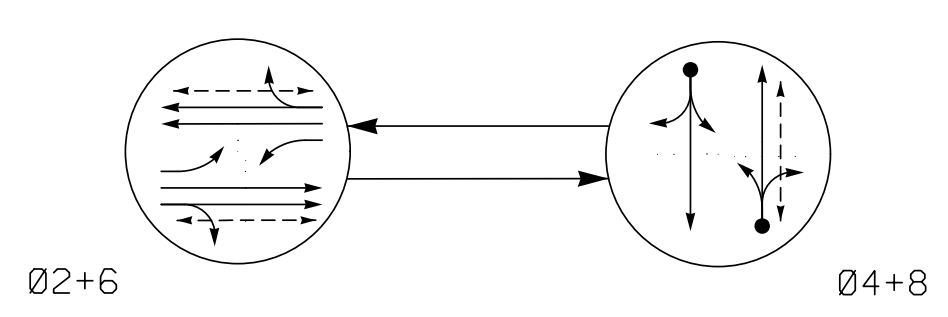


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|------|
| | Ø2+6 | Ø4+8 | Ø4+8 |
| 21 | F | R | Y |
| 22, 23 | G | R | Y |
| 41, 42 | R | G | R |
| 61 | F | R | Y |
| 62, 63 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

DETECTOR INSTALLATION CHART

| DETECTOR | | | | PROGRAMMING | | | | | | | |
|----------|-----------|----------------------------|-------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X40 | 0 | EXIST | - | 4 | Yes | - | 5 | - | N | X |
| 8A | 6X40 | 0 | EXIST | - | 8 | Yes | - | 5 | - | N | X |

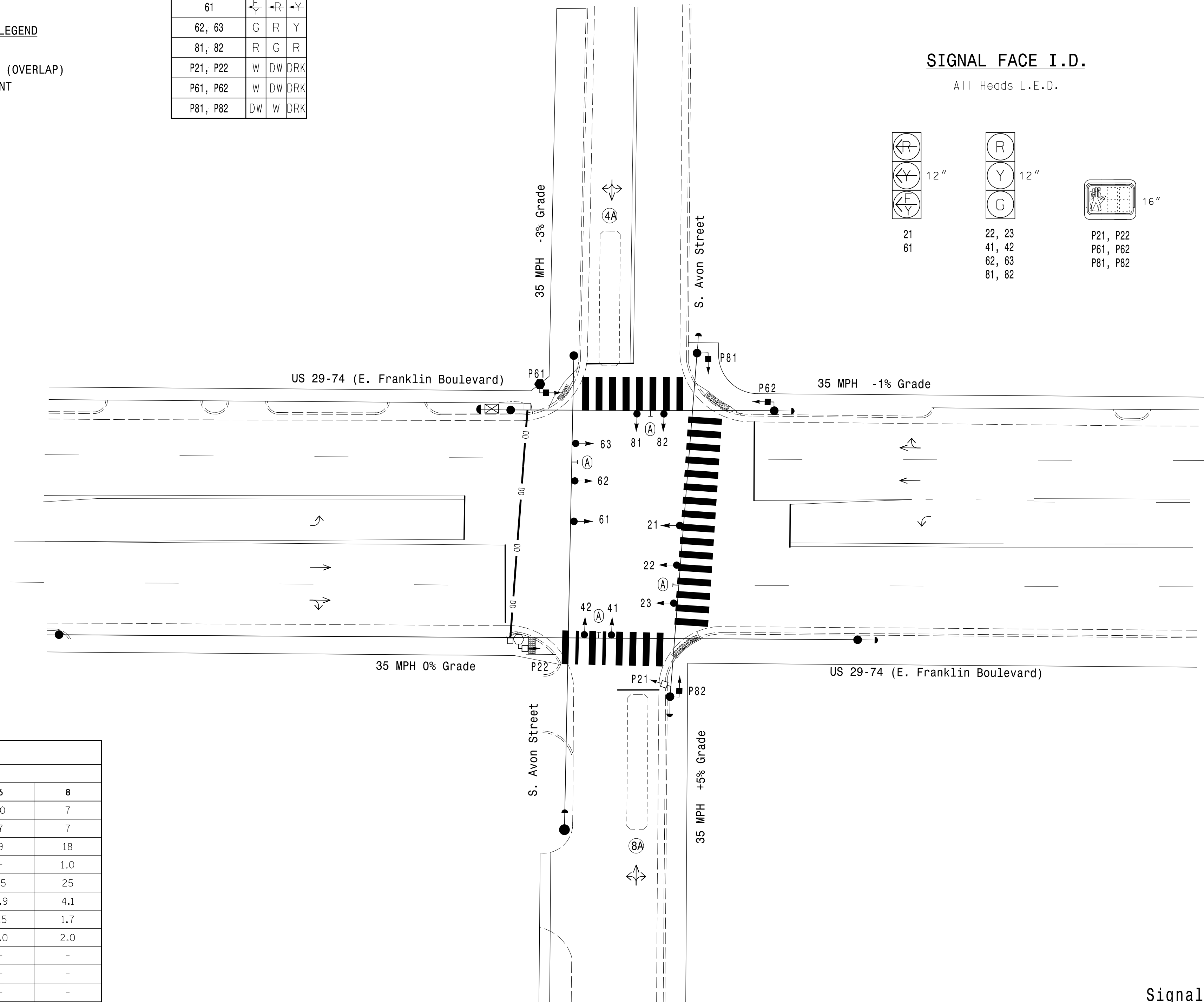
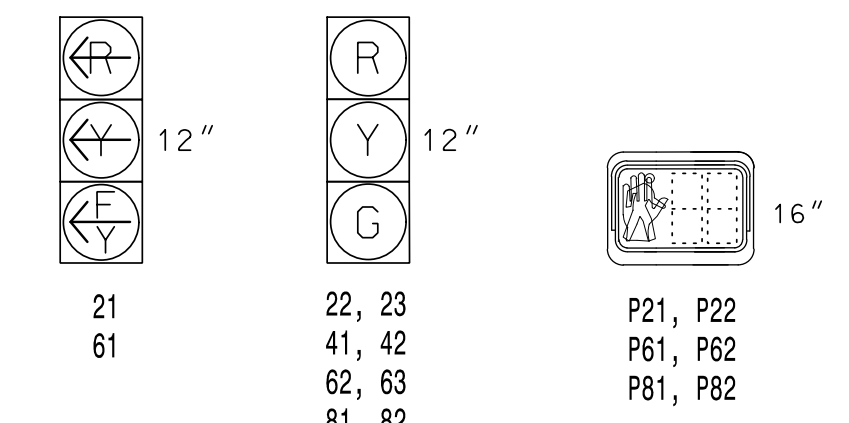
2 Phase Semi-Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls on pedestrian phase 8.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Loop data based on previous plan and/or field observations.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Pavement markings are existing.
- All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
- All proposed pedestrian pedestals and pushbutton posts shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset #0044

SIGNAL FACE I.D.

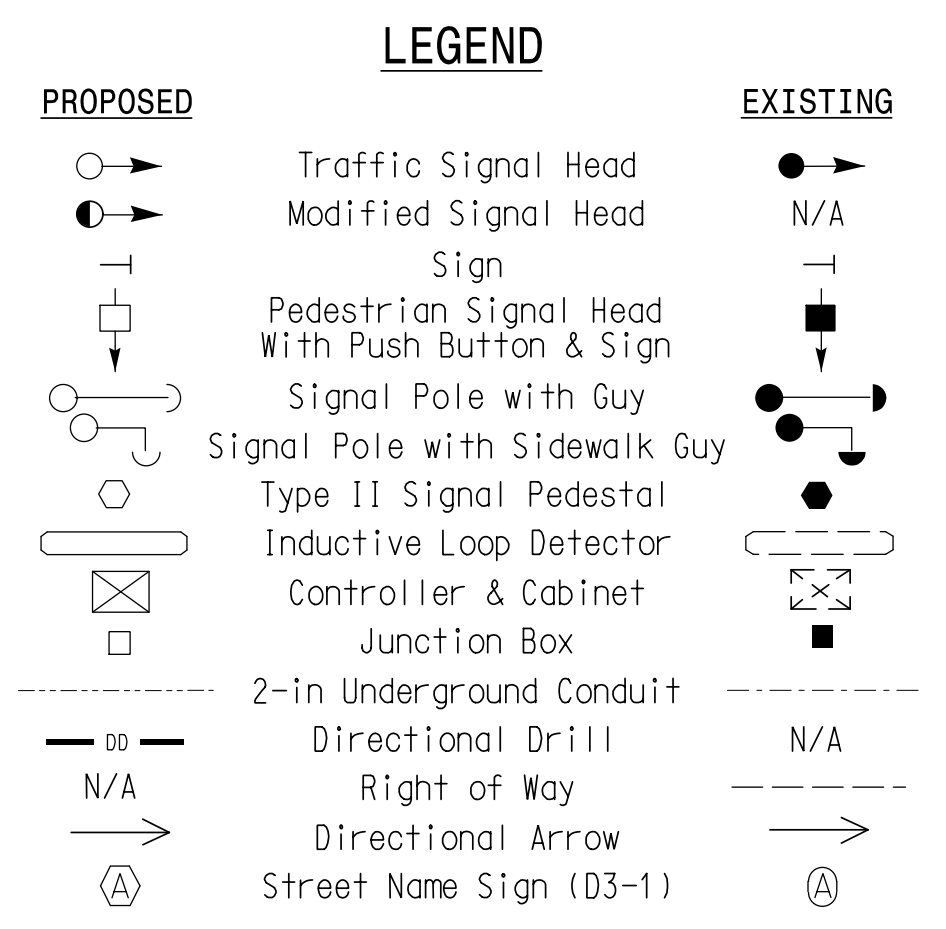
All Heads L.E.D.



TIMING CHART

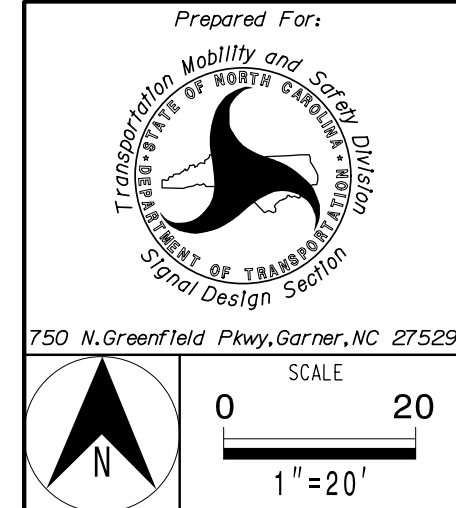
| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | - | 7 | 7 |
| Ped Clear | 8 | - | 9 | 18 |
| Veh. Extension * | - | 1.0 | - | 1.0 |
| Max I * | 45 | 25 | 45 | 25 |
| Yellow | 3.9 | 4.1 | 3.9 | 4.1 |
| Red Clear | 1.5 | 1.7 | 1.5 | 1.7 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds /Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000



US 29-74 (E. Franklin Boulevard) at S. Avon Street

Division 12 Gaston County Gastonia

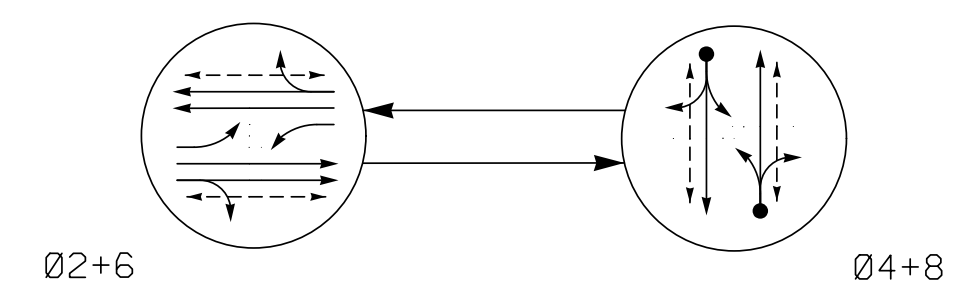
| | |
|-----------------------|--------------------------|
| PLAN DATE: May 2021 | REVIEWED BY: SL Phillips |
| PREPARED BY: CF Davis | REVIEWED BY: KP Baumann |

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/9/2022 11:12:06 AM Don@le.curf1
3/11/2022
SIC. INVENTORY NO. 12-0044

PHASING DIAGRAM



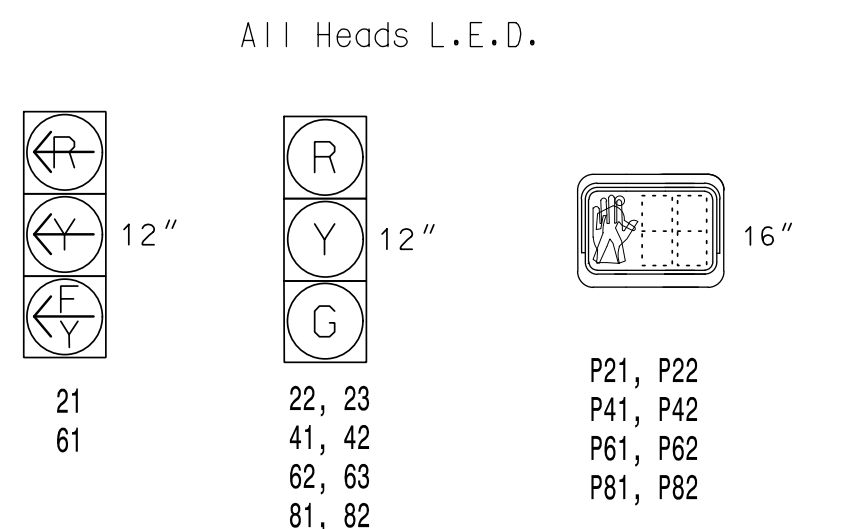
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄◄ UNSIGNALIZED MOVEMENT
- ◄◄◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | Ø2+6 | Ø4+8 | FLASH |
| 21 | F | R | Y |
| 22, 23 | G | R | Y |
| 41, 42 | F | R | Y |
| 61 | F | R | Y |
| 62, 63 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P41, P42 | DW | W | DRK |
| P61, P62 | W | DW | DRK |
| P81, P82 | DW | W | DRK |

SIGNAL FACE I.D.



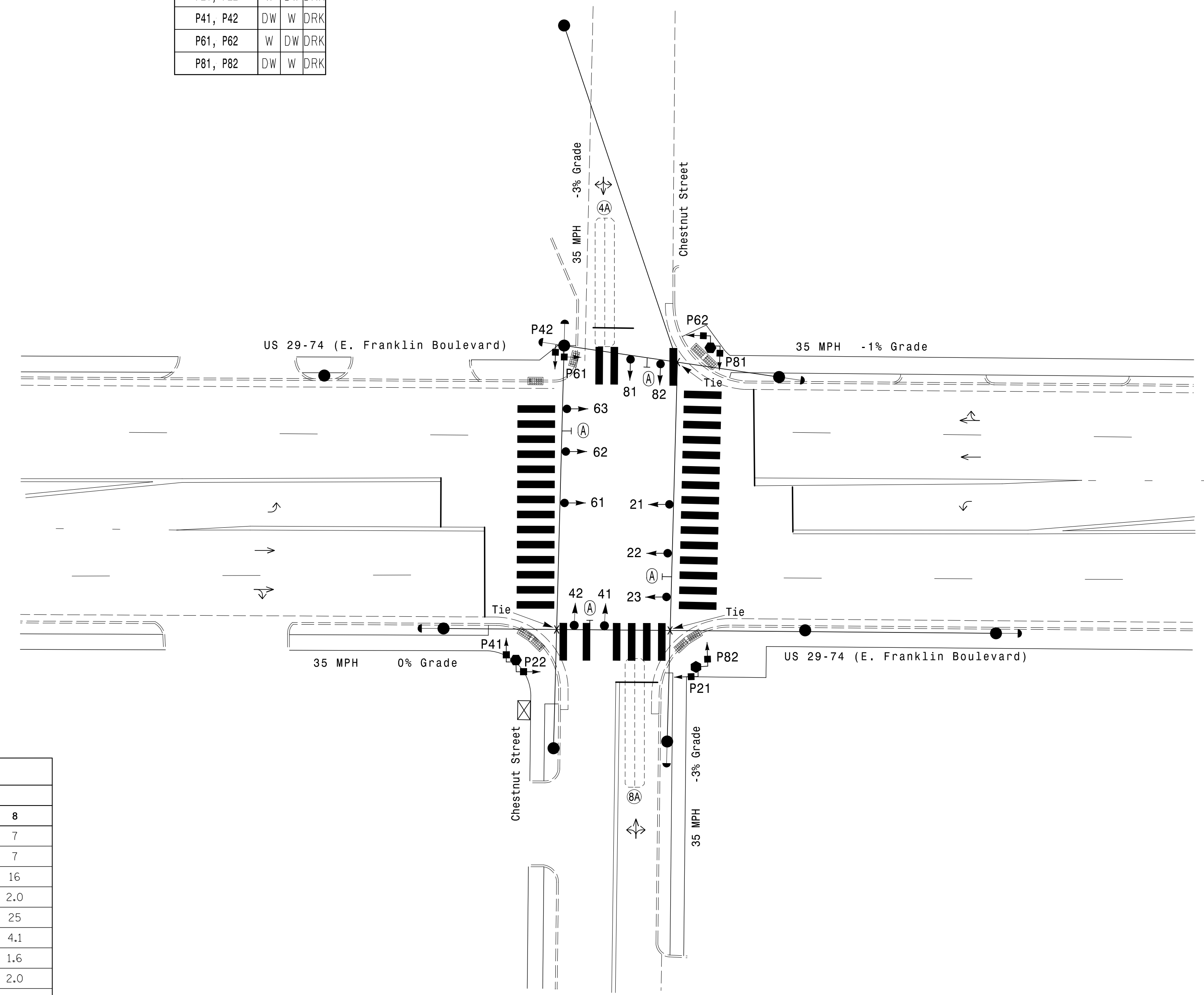
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X40 | +5 | 2-4-2 | - | 4 | Yes | - | 5 | - | N | - | X |
| 8A | 6X40 | +5 | 2-4-2 | - | 8 | Yes | - | 5 | - | N | - | X |

2 Phase Semi-Actuated Gastonia Signal System

NOTES

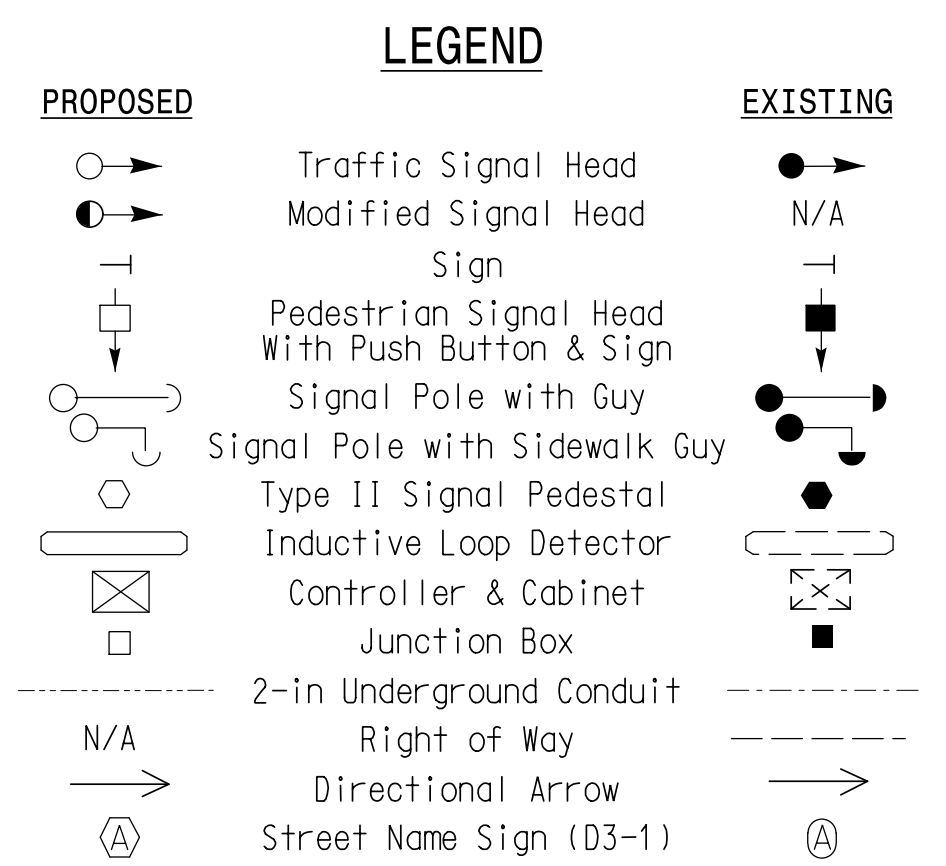
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls on pedestrian phases 4 and 8.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset #0045



TIMING CHART

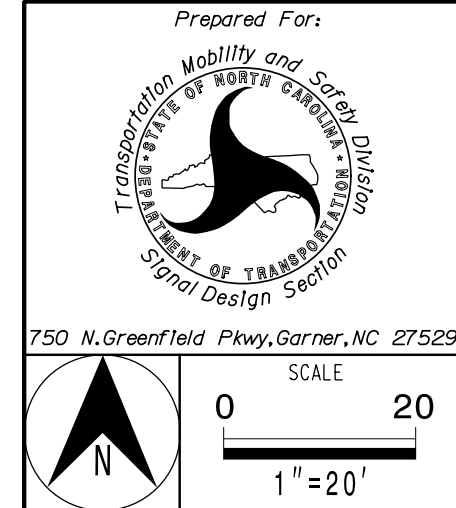
| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | 7 | 7 | 7 |
| Ped Clear | 8 | 16 | 7 | 16 |
| Veh. Extension * | - | 2.0 | - | 2.0 |
| Max I * | 45 | 25 | 45 | 25 |
| Yellow | 3.9 | 4.1 | 3.9 | 4.1 |
| Red Clear | 1.5 | 1.6 | 1.5 | 1.6 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000



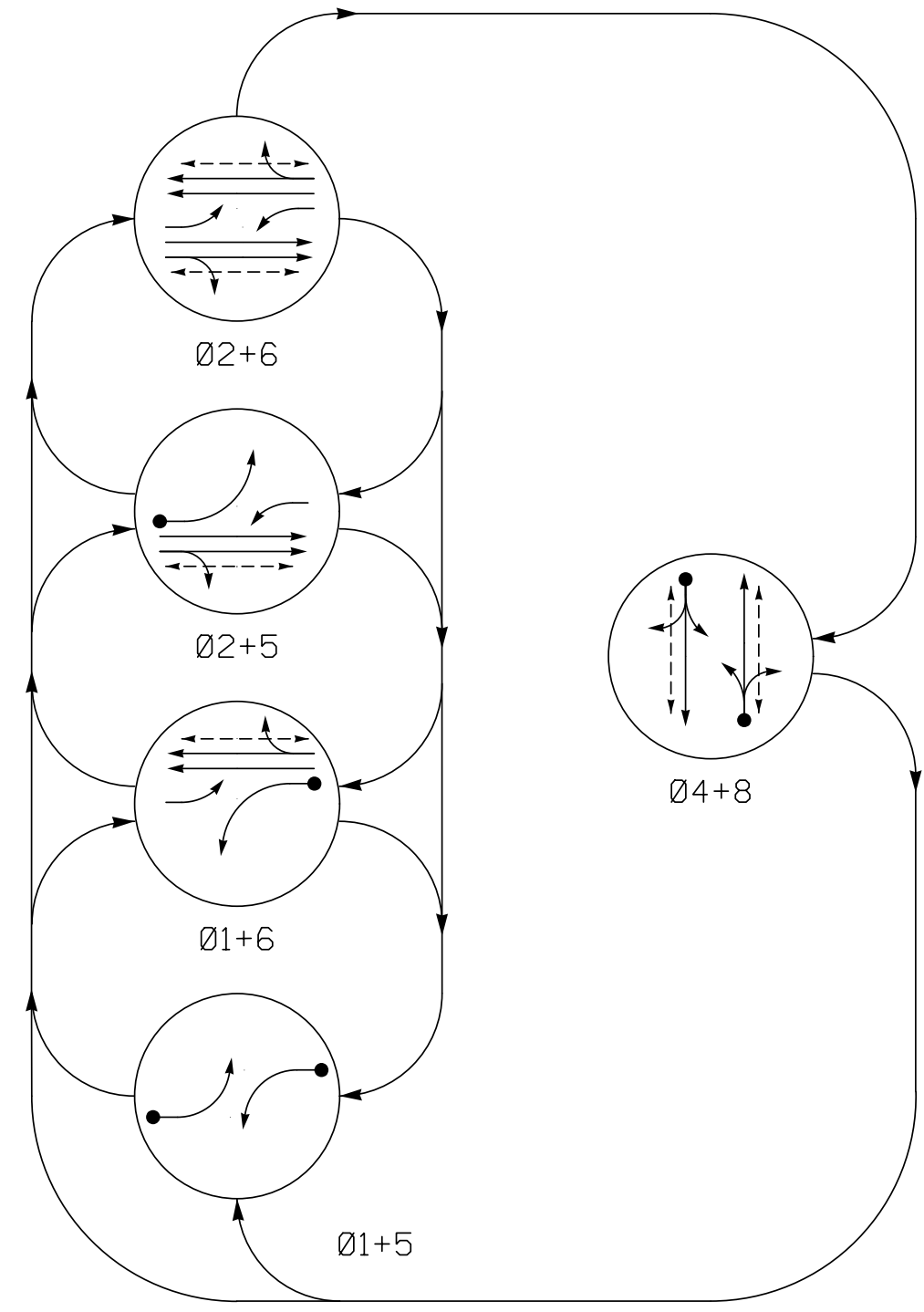
| | |
|--|--------------------------|
| US 29-74 (E. Franklin Boulevard) at Chestnut Street | |
| Division 12 | Gaston County Gastonia |
| PLAN DATE: May 2021 | REVIEWED BY: SL Phillips |
| PREPARED BY: CF Davis | REVIEWED BY: KP Baumann |
| REVISIONS | INIT. DATE |
| | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/11/2022
DATE
12-0045
SIG. INVENTORY NO.

3/9/2022 11:12:09 AM D:\m181\ie-curr1 ***kimley-horn.com\SELRAL\IP\OK-LITS\01036569 Gastonia Signal System\9 Signal Design\20045-2021.dgn

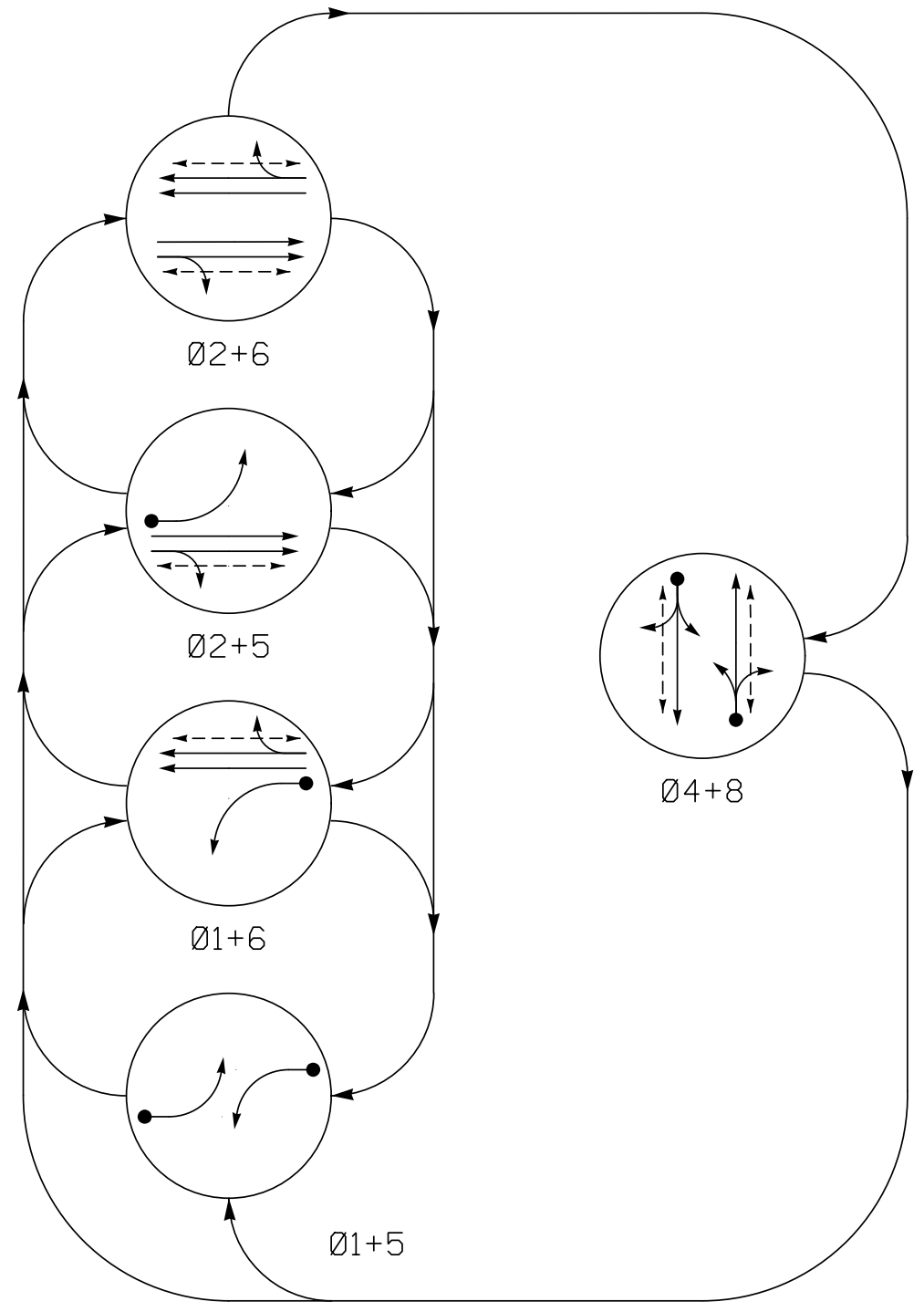
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|-------|-------|-------|-------|------|
| | Ø 1+5 | Ø 1+6 | Ø 2+5 | Ø 2+6 | Ø 4+8 | FLSH |
| 11 | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | Y |
| 41, 42 | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | Y |
| 81, 82 | R | R | R | R | G | R |
| P21, P22 | DW | DW | W | W | DW | DRK |
| P41, P42 | DW | DW | DW | DW | W | DRK |
| P61, P62 | DW | W | DW | W | DW | DRK |
| P81, P82 | DW | DW | DW | DW | W | DRK |

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|-------|-------|-------|-------|------|
| | Ø 1+5 | Ø 1+6 | Ø 2+5 | Ø 2+6 | Ø 4+8 | FLSH |
| 11 | ← | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | R | Y |
| 41, 42 | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | R | Y |
| 81, 82 | R | R | R | R | G | R |
| P21, P22 | DW | DW | W | W | DW | DRK |
| P41, P42 | DW | DW | DW | DW | W | DRK |
| P61, P62 | DW | W | DW | W | DW | DRK |
| P81, P82 | DW | DW | DW | DW | W | DRK |

DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Yes | - | 15* | - | N | - | X |
| 4A | EXIST | +5 | EXIST | - | 4 | Yes | - | 10 | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 15* | - | N | - | X |
| 8A | EXIST | +5 | EXIST | - | 8 | Yes | - | 10 | - | N | - | X |

* Reduce delay to 3 seconds during Alternate Phasing Operation.

5 Phase Semi-Actuated w/ Alternate Phasing Operation Gastonia Signal System

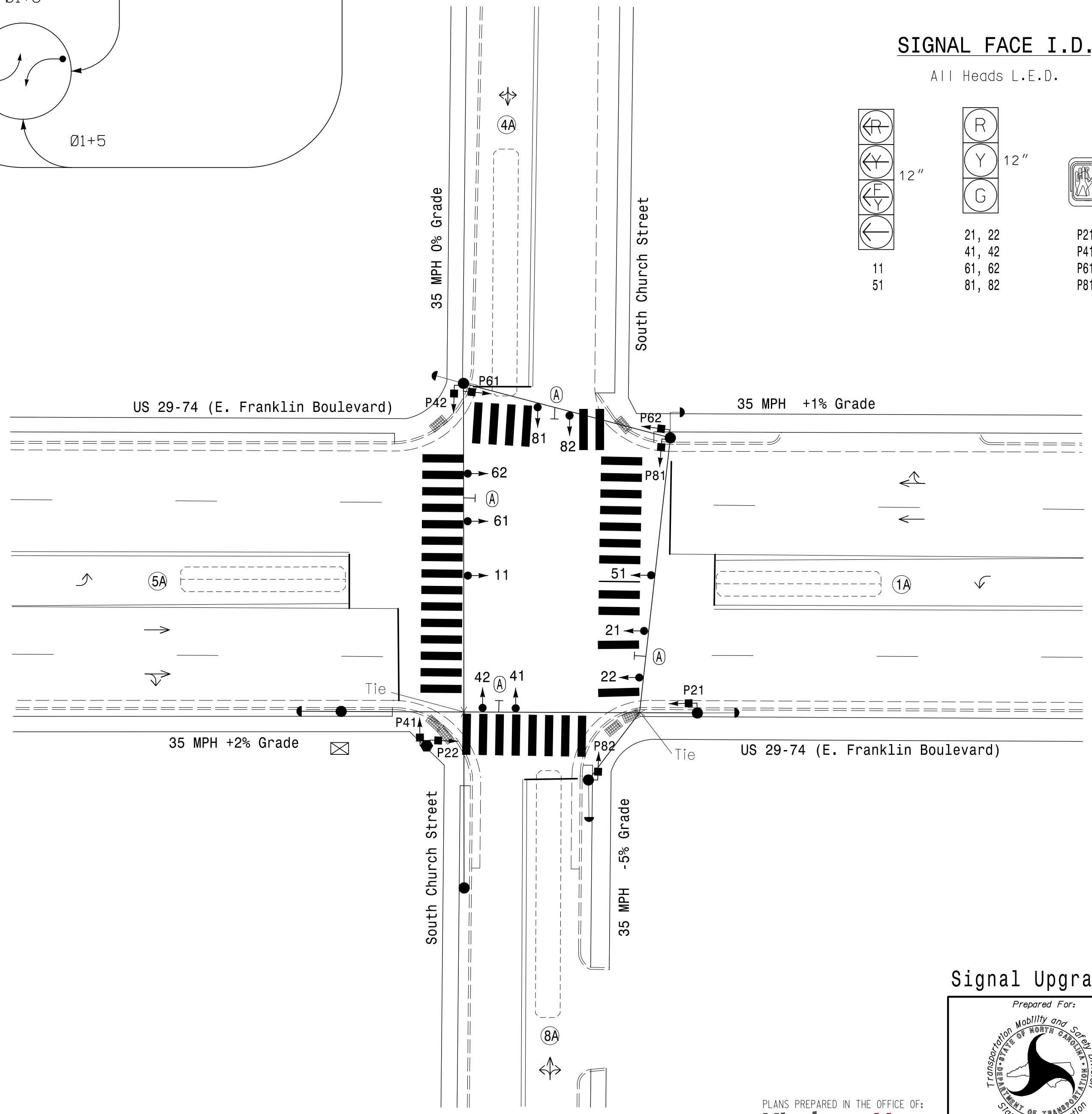
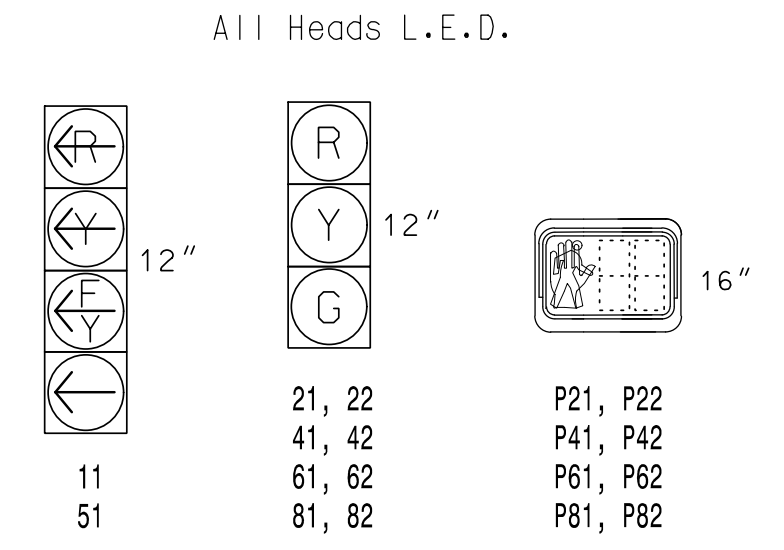
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls on pedestrian phases 4 and 8.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The City Engineer or their representative will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset #0046

PHASING DIAGRAM DETECTION LEGEND

- ← ● → DETECTED MOVEMENT
- ← ○ → UNDETECTED MOVEMENT (OVERLAP)
- ← - - - → UNSIGNALIZED MOVEMENT
- ← - - - → PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.



TIMING CHART

| FEATURE | PHASE | | | | | |
|-------------------------|-------|---------|-----|-----|---------|-----|
| | 1 | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 7 | 10 | 7 | 7 | 10 | 7 |
| Walk * | - | 7 | 7 | - | 7 | 7 |
| Ped Clear | - | 7 | 18 | - | 10 | 16 |
| Veh. Extension * | 2.0 | - | 1.0 | 2.0 | - | 1.0 |
| Max 1 * | 25 | 60 | 30 | 25 | 60 | 30 |
| Yellow | 3.0 | 3.8 | 4.2 | 3.0 | 3.8 | 4.2 |
| Red Clear | 2.1 | 1.4 | 1.6 | 2.1 | 1.4 | 1.6 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - |
| Seconds / Actuation * | - | - | - | - | - | - |
| Max Initial * | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - |
| Minimum Gap | - | - | - | - | - | - |
| Locking Detector | - | - | - | - | - | - |
| Recall Position | - | PED/MAX | - | - | PED/MAX | - |
| Dual Entry | - | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|--|----------|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Signal Pole with Sidewalk Guy | ○ → N/A |
| ○ → Type II Signal Pedestal | ○ → N/A |
| ○ → Inductive Loop Detector | ○ → N/A |
| ○ → Controller & Cabinet | ○ → N/A |
| ○ → Junction Box | ○ → N/A |
| ○ → 2-in Underground Conduit | ○ → N/A |
| ○ → Right of Way | ○ → N/A |
| ○ → Directional Arrow | ○ → N/A |
| ○ → Street Name Sign (D3-1) | ○ → N/A |

Signal Upgrade

Prepared For:
Kimley-Horn

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

US 29-74 (E. Franklin Boulevard) at S. Church Street

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: CF Davis REVIEWED BY: KP Baumann

SCALE: 1" = 20'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

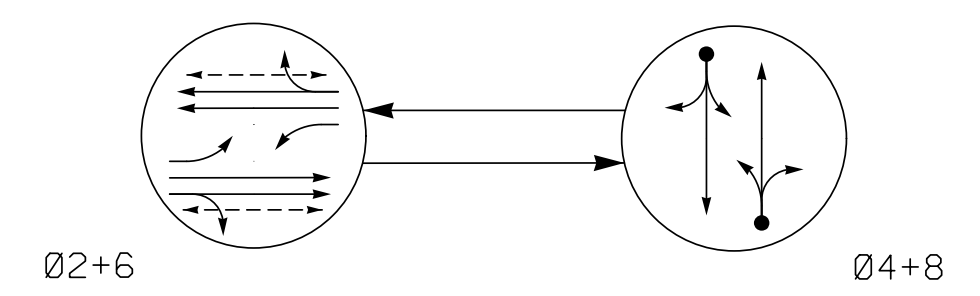
Seal of Kevin P. Baumann, Professional Engineer, No. 044434

3/11/2022

SIG. INVENTORY NO. 12-0046

3/9/2022 11:12:10 AM D:\m181\ie-Curr1 ***kimley-horn.com\SELRAL\IP\OK-ITS\01030569 Gastonia Signal System9 Signal Design Section

PHASING DIAGRAM



- PHASING DIAGRAM DETECTION LEGEND**
- DETECTED MOVEMENT
 - ◄ UNDETECTED MOVEMENT (OVERLAP)
 - ◄ UNSIGNALIZED MOVEMENT
 - ◄ PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

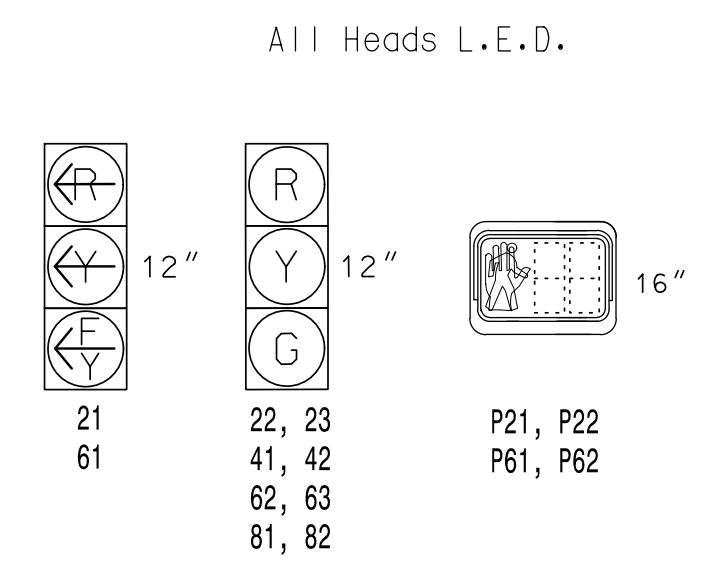


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|-------|-------|
| | 0+2+8 | 0+4+8 | FLASH |
| 21 | F | R | Y |
| 22, 23 | G | R | Y |
| 41, 42 | R | G | R |
| 61 | F | R | Y |
| 62, 63 | G | R | Y |
| 81, 82 | R | G | R |
| P21, P22 | W | DW | DRK |
| P61, P62 | W | DW | DRK |

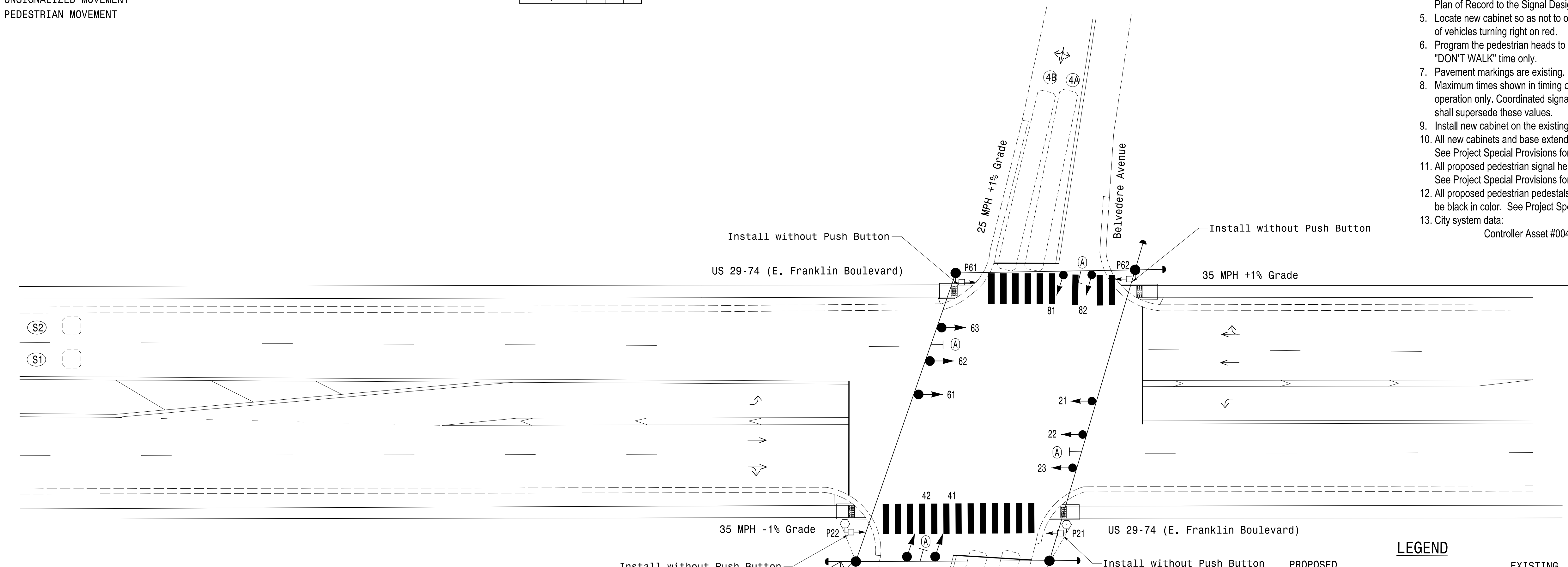
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | PROGRAMMING | | | | | | | | |
|------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X60 | +2 | EXIST | - | 4 | Yes | - | 3 | - | N | - | X |
| 4B | 6X60 | +2 | EXIST | - | 4 | Yes | - | 10 | - | N | - | X |
| 8A | 6X60 | +2 | EXIST | - | 8 | Yes | - | 3 | - | N | - | X |
| 8B | 6X60 | +2 | EXIST | - | 8 | Yes | - | 10 | - | N | - | X |
| S1 | 6X6 | +350 | EXIST | - | - | - | - | - | - | N | X | X |
| S2 | 6X6 | +350 | EXIST | - | - | - | - | - | - | N | X | X |

2 Phase Semi-Actuated Gastonia Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Program the pedestrian heads to countdown the flashing "DON'T WALK" time only.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Install new cabinet on the existing cabinet foundation.
10. All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
11. All proposed pedestrian signal heads shall be black in color. See Project Special Provisions for details.
12. All proposed pedestrian pedestals and pushbutton posts shall be black in color. See Project Special Provisions for details.
13. City system data: Controller Asset #0047



TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|---------|-----|---------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 7 | - | 7 | - |
| Ped Clear | 14 | - | 12 | - |
| Veh. Extension * | - | 1.0 | - | 1.0 |
| Max I * | 45 | 30 | 45 | 30 |
| Yellow | 3.9 | 3.1 | 3.9 | 3.1 |
| Red Clear | 1.7 | 2.5 | 1.7 | 2.5 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | PED/MAX | - | PED/MAX | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

| PROPOSED | EXISTING |
|------------------------------------|----------|
| ○ Traffic Signal Head | ● N/A |
| ◐ Modified Signal Head | ◐ N/A |
| ◑ Sign | ◑ N/A |
| ◒ Pedestrian Signal Head With Sign | ◒ N/A |
| ◓ Type II Signal Pedestal | ◓ N/A |
| ◔ Signal Pole with Guy | ◔ N/A |
| ◕ Signal Pole with Sidewalk Guy | ◕ N/A |
| ◖ Inductive Loop Detector | ◖ N/A |
| ◗ Controller & Cabinet | ◗ N/A |
| ◘ Junction Box | ◘ N/A |
| ◙ 2-in Underground Conduit | ◙ N/A |
| ◚ Right of Way | ◚ N/A |
| ◛ Directional Arrow | ◛ N/A |
| ◜ Street Name Sign (D3-1) | ◜ N/A |

Signal Upgrade

Prepared For: **US 29-74 (Franklin Boulevard) at Belvedere Avenue**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: CF Davis REVIEWED BY: KP Baumann

REVISIONS: _____ INIT. DATE

Scale: 1" = 20'

3/9/2022 11:12:12 AM Don @ i.le.Curr1

PLANS PREPARED IN THE OFFICE OF: **Kimley-Horn**

NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

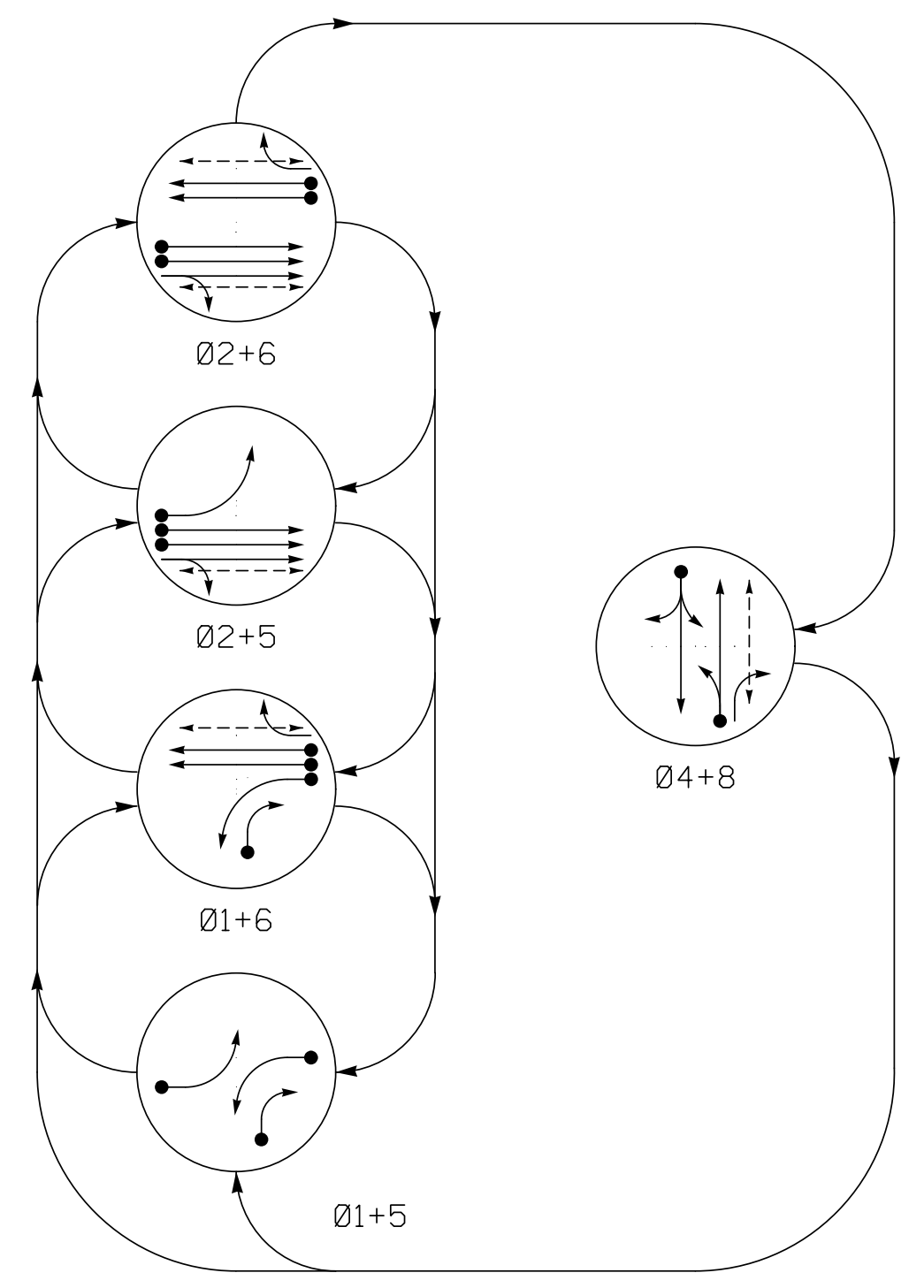
Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044434 KEVIN P. BAUMANN

3/11/2022

SIG. INVENTORY NO. 12-0047

3/9/2022 11:12:12 AM Don @ i.le.Curr1 ***k:miley-horn.com\\SLE\\RAL\\IP\\OK-ITS\\011036569 Gastonia Signal System\\S1\\Signal Design\\gm\\A20047-2021.dgn

PHASING DIAGRAM



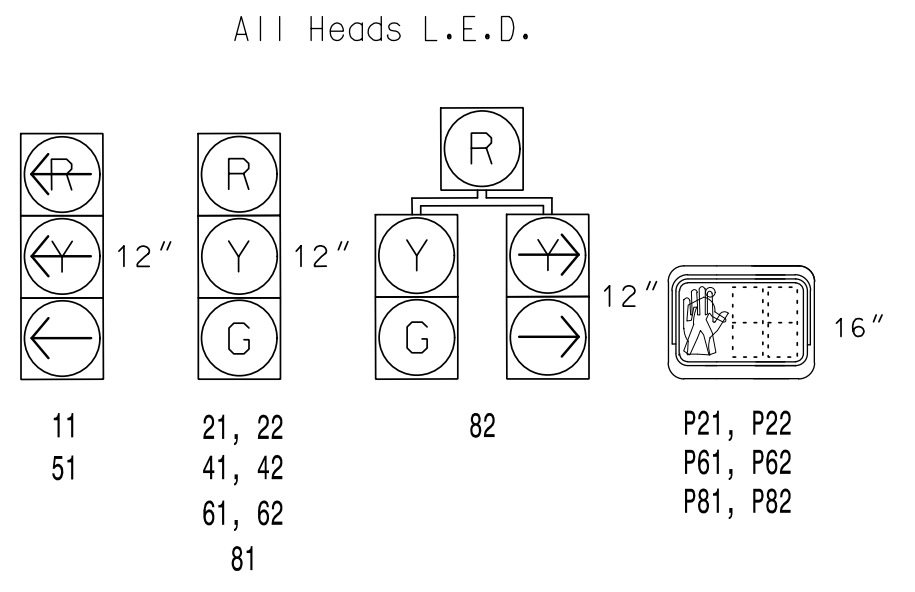
PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ⇄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | |
|-------------|-------|------|------|------|-------|
| | 01+5 | 02+6 | 04+8 | 01+6 | FLASH |
| 11 | ← | ← | ← | ← | ← |
| 21, 22 | R | R | G | G | Y |
| 41, 42 | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← |
| 61, 62 | R | G | R | G | Y |
| 81 | R | R | R | G | R |
| 82 | R | R | R | G | R |
| P21, P22 | DW | DW | W | W | DRK |
| P61, P62 | DW | W | DW | W | DRK |
| P81, P82 | DW | DW | DW | W | DRK |

SIGNAL FACE I.D.



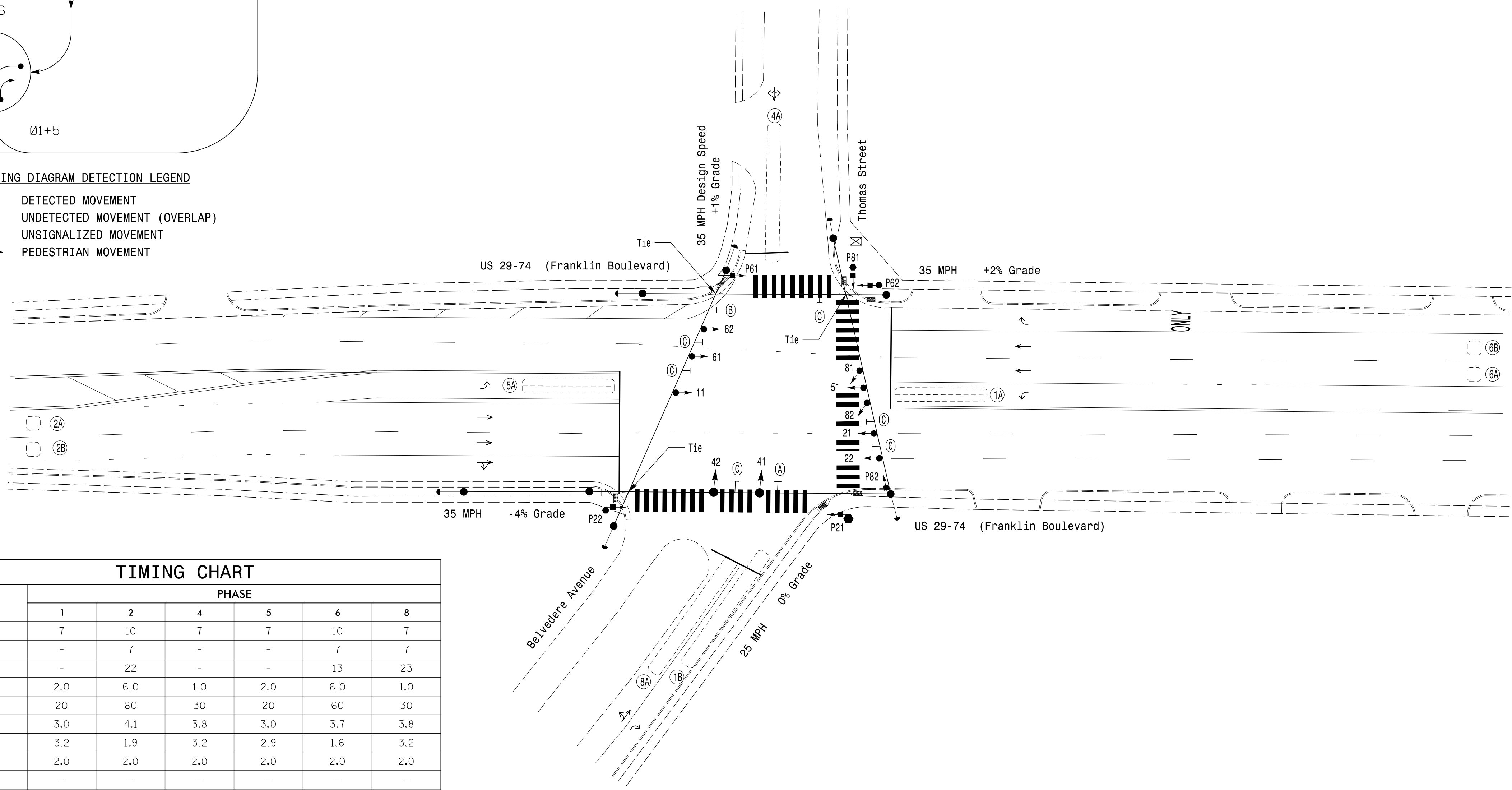
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Yes | - | - | - | N | - | X |
| 1B | 6X60 | +5 | EXIST | - | 1 | Yes | - | - | - | N | - | X |
| 2A | 6X6 | 250 | EXIST | - | 2 | Yes | - | - | X | N | - | X |
| 2B | 6X6 | 250 | EXIST | - | 2 | Yes | - | - | X | N | - | X |
| 4A | 6X60 | +5 | EXIST | - | 4 | Yes | - | - | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | - | - | N | - | X |
| 6A | 6X6 | 250 | EXIST | - | 6 | Yes | - | - | X | N | - | X |
| 6B | 6X6 | 250 | EXIST | - | 6 | Yes | - | - | X | N | - | X |
| 8A | 6X60 | 0 | EXIST | - | 8 | Yes | - | - | - | N | - | X |

5 Phase Fully Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing.
- Relabel existing loop 8B as 1B.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- City system data:
Controller Asset #0048



TIMING CHART

| FEATURE | PHASE | | | | | |
|-------------------------|-------|------------|-----|-----|------------|-----|
| | 1 | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 7 | 10 | 7 | 7 | 10 | 7 |
| Walk * | - | 7 | - | - | 7 | 7 |
| Ped Clear | - | 22 | - | - | 13 | 23 |
| Veh. Extension * | 2.0 | 6.0 | 1.0 | 2.0 | 6.0 | 1.0 |
| Max 1 * | 20 | 60 | 30 | 20 | 60 | 30 |
| Yellow | 3.0 | 4.1 | 3.8 | 3.0 | 3.7 | 3.8 |
| Red Clear | 3.2 | 1.9 | 3.2 | 2.9 | 1.6 | 3.2 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - |
| Seconds / Actuation * | - | 1.5 | - | - | 1.5 | - |
| Max Initial * | - | 29 | - | - | 29 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 30 | - | - | 30 | - |
| Minimum Gap | - | 3.5 | - | - | 3.5 | - |
| Locking Detector | - | X | - | - | X | - |
| Recall Position | - | MIN RECALL | - | - | MIN RECALL | - |
| Dual Entry | - | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|--|---|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| □ → Sign | □ → N/A |
| □ → Pedestrian Signal Head With Push Button & Sign | □ → N/A |
| ○ → Type II Signal Pedestal | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Signal Pole with Sidewalk Guy | ○ → N/A |
| □ → Inductive Loop Detector | □ → N/A |
| □ → Controller & Cabinet | □ → N/A |
| □ → Junction Box | □ → N/A |
| □ → 2-in Underground Conduit | □ → N/A |
| N/A → Right of Way | --- → Right of Way |
| → → Directional Arrow | → → Directional Arrow |
| Ⓐ → "LEFT TURN" - "YIELD" Combination Sign (R1-2) | Ⓐ → "LEFT TURN" - "YIELD" Combination Sign (R1-2) |
| Ⓑ → Right Arrow "ONLY" Sign (R3-5R) | Ⓑ → Right Arrow "ONLY" Sign (R3-5R) |
| Ⓒ → Street Name Sign (D3-1) | Ⓒ → Street Name Sign (D3-1) |

Signal Upgrade

Prepared For:
Kimley-Horn

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

US 29-74 (Franklin Boulevard) at Thomas Street/Belvedere Avenue

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips
PREPARED BY: CF Davis REVIEWED BY: KP Baumann

REVISIONS: _____ INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KEVIN P. BAUMANN
PROFESSIONAL ENGINEER
SEAL 044434

3/11/2022

SIG. INVENTORY NO. 12-0048

PHASING DIAGRAM

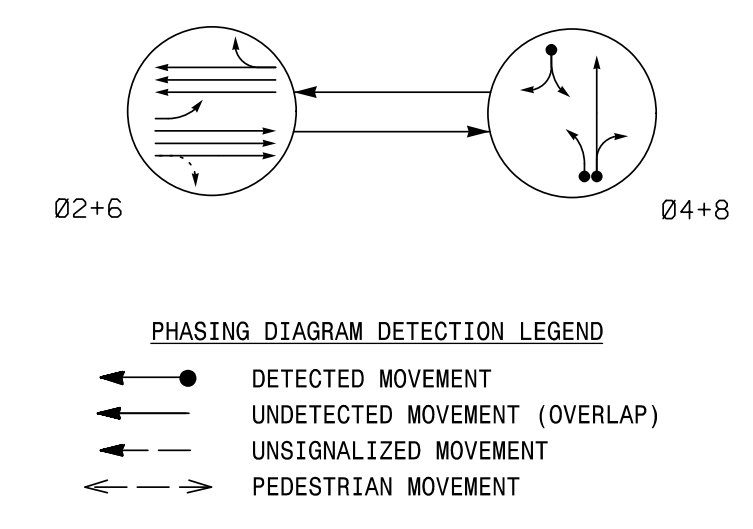
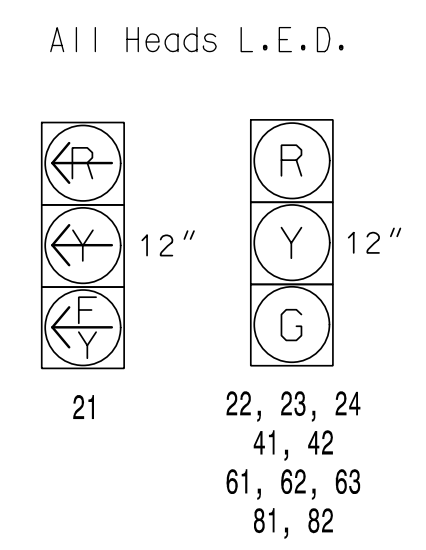


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | 02+6 | 04+8 | FLASH |
| 21 | F | R | Y |
| 22, 23, 24 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62, 63 | G | R | Y |
| 81, 82 | R | G | R |

SIGNAL FACE I.D.



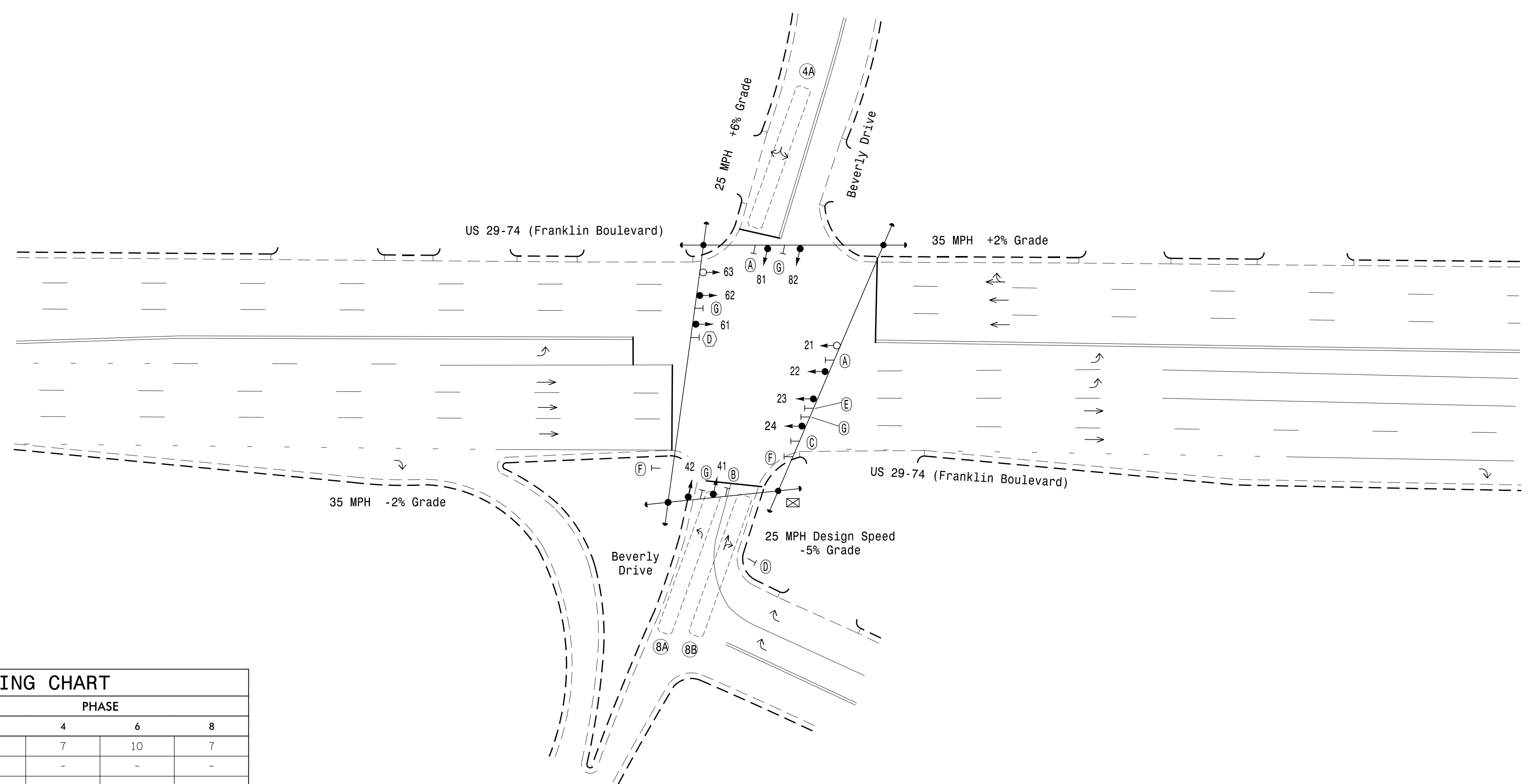
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP | NEW CARD |
| 4A | 6X60 | 0 | EXIST | - | 4 | Yes | - | 5 | - | N | - | X |
| 8A | 6X60 | 0 | EXIST | - | 8 | Yes | - | - | - | N | - | X |
| 8B | 6X60 | 0 | EXIST | - | 8 | Yes | - | 5 | - | N | - | X |

2 Phase Semi-Actuated Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Reposition existing signal heads 61 and 62.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Existing signal heads 21, 22, and 23 have been relabeled to 22, 23, and 24, respectively.
- City system data:
Controller Asset #0049



LEGEND

| PROPOSED | EXISTING |
|--|----------|
| ○ Traffic Signal Head | ● N/A |
| ○ Modified Signal Head | ○ N/A |
| ⊥ Sign | ⊥ N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ N/A |
| ○ Signal Pole with Guy | ● N/A |
| ○ Signal Pole with Sidewalk Guy | ● N/A |
| ⊠ Inductive Loop Detector | ⊠ N/A |
| ⊠ Controller & Cabinet | ⊠ N/A |
| □ Junction Box | □ N/A |
| --- 2-in Underground Conduit | --- N/A |
| N/A Right of Way | N/A |
| → Directional Arrow | → N/A |
| (A) Left Arrow "ONLY" Sign (R3-5L) | (A) N/A |
| (B) Dual Turn Arrows Sign (R3-18) | (B) N/A |
| (C) Through Arrow "ONLY" Sign (R3-5A) | (C) N/A |
| (D) No U-Turn/No Left Turn Sign (R3-18) | (D) N/A |
| (E) "DO NOT BLOCK INTERSECTION" Sign (R10-7) | (E) N/A |
| (F) No Right Turn Sign (R3-1) | (F) N/A |
| (G) Street Name Sign (D3-1) | (G) N/A |

TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|------------|-----|------------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | - | - | - | - |
| Ped Clear | - | - | - | - |
| Veh. Extension * | - | 2.0 | - | 1.0 |
| Max 1 * | 60 | 30 | 60 | 30 |
| Yellow | 4.0 | 3.5 | 4.0 | 3.5 |
| Red Clear | 2.0 | 2.6 | 2.0 | 2.6 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - |
| Seconds /Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | MAX RECALL | - | MAX RECALL | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared For: **US 29-74 (Franklin Boulevard) at Beverly Drive**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: CF Davis REVIEWED BY: KP Baumann

750 N. Greenfield Pkwy, Garner, NC 27529

NC License #0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

SCALE: 1" = 30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

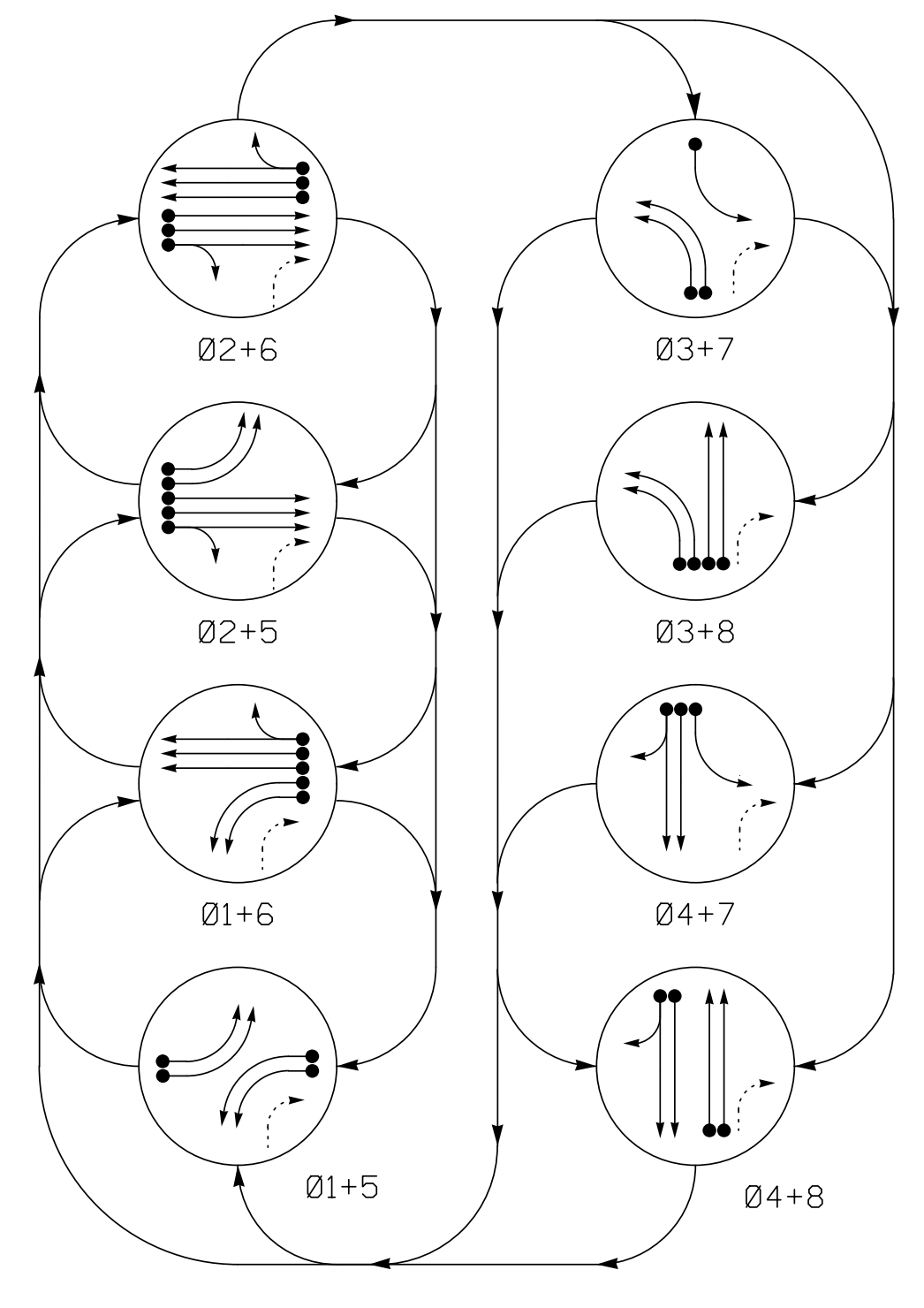
Seal of K. P. Baumann, Professional Engineer, No. 044434

Signature: *[Signature]* DATE: 3/11/2022

SIG. INVENTORY NO. 12-0049

3/9/2022 11:12:16 AM Don'tell,Cur1 ***Kimley-Horn.com\SE-RAL\MRAL\TIPDK_LTS\011036569_Gastonia Signal System\Signal\SW4 - Signal Design\W120049-2021.dgn

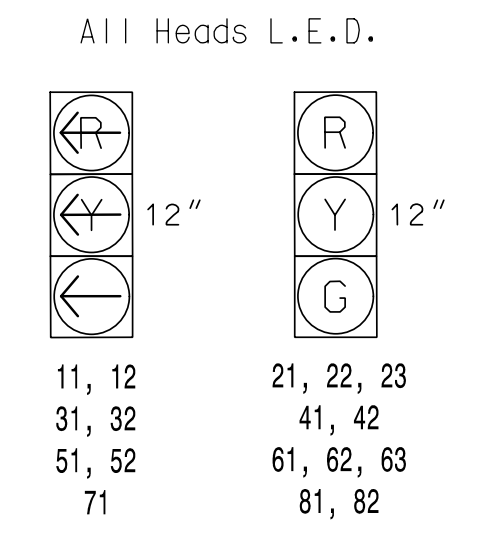
PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.



EV PREEMPT PHASES
(Medium Priority)

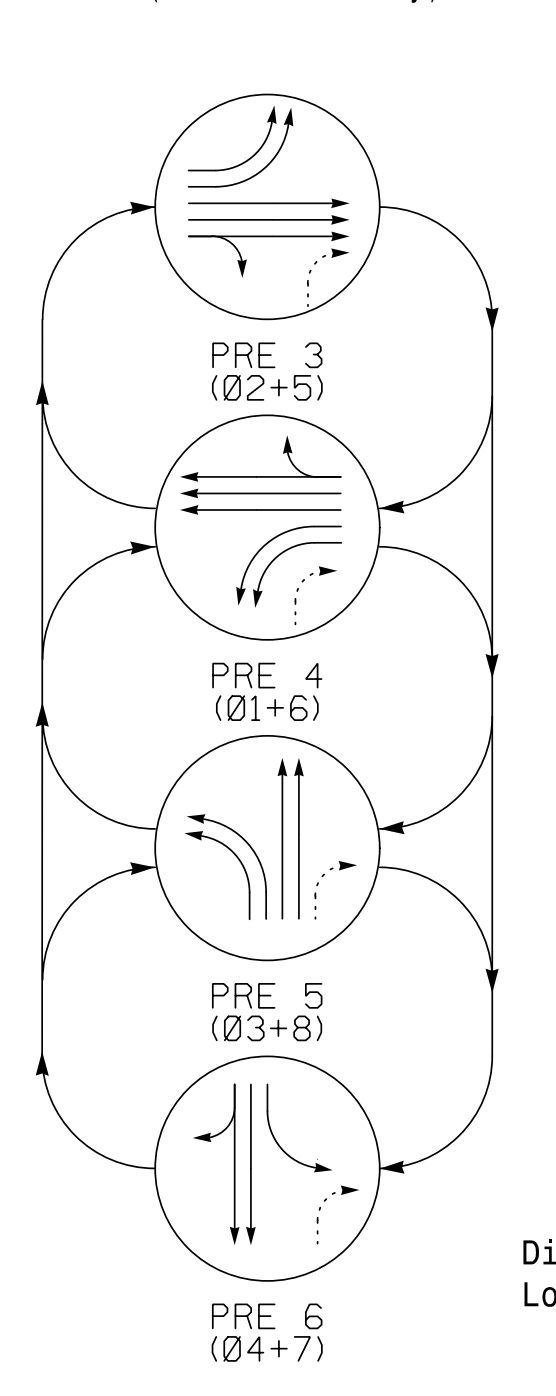


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| | 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 | PRE 3 | PRE 4 | PRE 5 | PRE 6 |
| 11, 12 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 21, 22, 23 | R | R | G | G | R | R | R | R | G | R | R | R |
| 31, 32 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 41, 42 | R | R | R | R | R | R | G | G | R | R | R | G |
| 51, 52 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 61, 62, 63 | R | G | R | G | R | R | R | R | R | G | R | R |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| 81, 82 | R | R | R | R | R | G | R | G | R | R | G | R |
| SIGN 'C' | * | * | * | * | * | * | * | * | * | * | * | OFF |
| SIGN 'D' | * | * | * | * | * | * | * | * | * | * | * | OFF |
| SIGN 'E' | * | * | * | * | * | * | * | * | * | * | * | OFF |
| SIGN 'F' | * | * | * | * | * | * | * | * | * | * | * | OFF |

* Changeable Trailblazer Signs controlled remotely

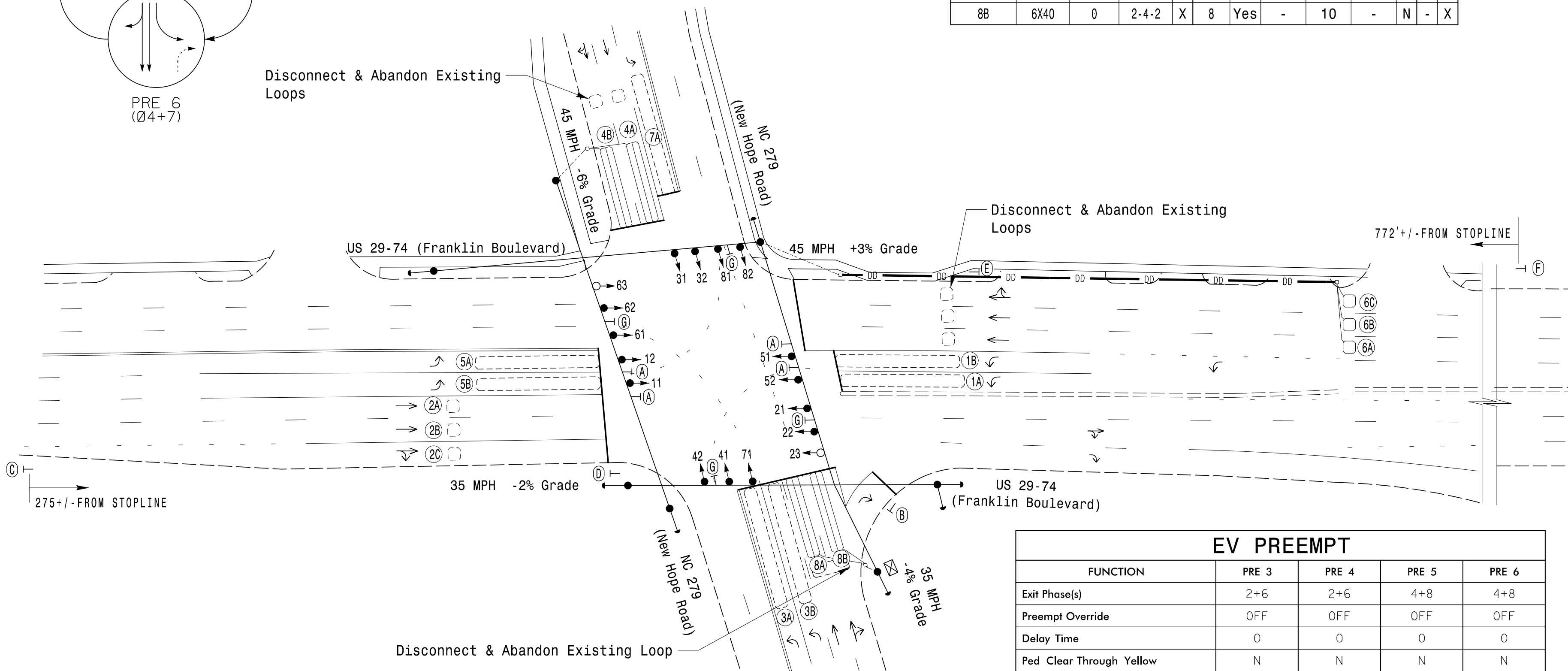
DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP | NEW CARD |
| 1A | 6X60 | 0 | EXIST | - | 1 | Yes | - | - | - | N | - | X |
| 1B | 6X60 | 0 | EXIST | - | 1 | Yes | - | - | - | N | - | X |
| 2A | 6X6 | 70 | EXIST | - | 2 | Yes | - | - | - | N | - | X |
| 2B | 6X6 | 70 | EXIST | - | 2 | Yes | - | - | - | N | - | X |
| 2C | 6X6 | 70 | EXIST | - | 2 | Yes | - | - | - | N | - | X |
| 3A | 6X60 | 0 | EXIST | - | 3 | Yes | - | 3 | - | N | - | X |
| 3B | 6X60 | 0 | EXIST | - | 3 | Yes | - | - | - | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | - | - | N | - | X |
| 4B | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 10 | - | N | - | X |
| 5A | 6X80 | 0 | EXIST | - | 5 | Yes | - | - | - | N | - | X |
| 5B | 6X60 | 0 | EXIST | - | 5 | Yes | - | - | - | N | - | X |
| 6A | 6X6 | 300 | 6 | X | 6 | Yes | - | - | X | N | - | X |
| 6B | 6X6 | 300 | 6 | X | 6 | Yes | - | - | X | N | - | X |
| 6C | 6X6 | 300 | 6 | X | 6 | Yes | - | - | X | N | - | X |
| 7A | 6X60 | 0 | EXIST | - | 7 | Yes | - | - | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | - | - | N | - | X |
| 8B | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | 10 | - | N | - | X |

8 Phase Fully Actuated w/ Emergency Vehicle Preemption Gastonia Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Reposition existing signal heads 21, 22, 61, and 62.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Disconnect and abandon existing loops 4A, 4B, 6A, 6B, 6C, and 8A and recut new loops as shown on plan.
- Install new cabinet on the existing cabinet foundation.
- All new cabinets and base extenders shall be black in color. See Project Special Provisions for details.
- Install GPS emergency preemption system per manufacturer's instructions to achieve preemption needed, as shown in phasing diagram.
- City system data:
Controller Asset #0050



LEGEND

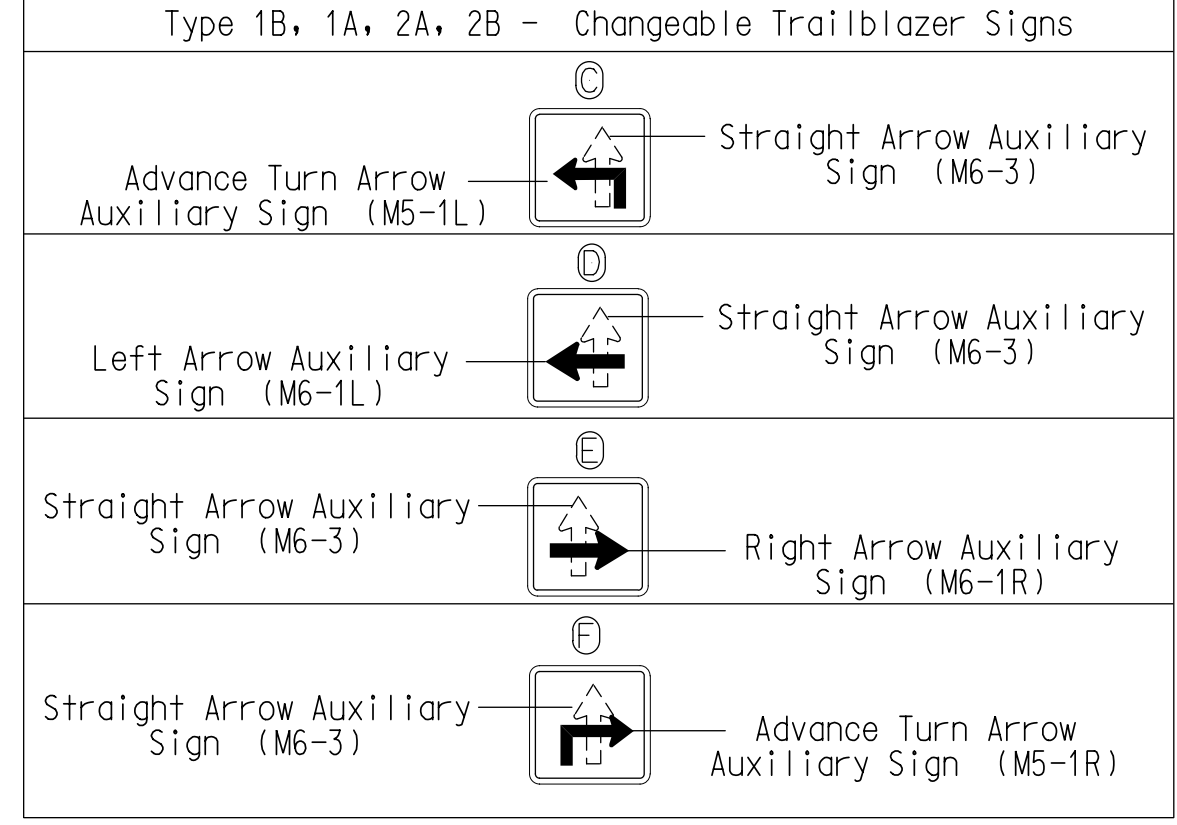
| PROPOSED | EXISTING |
|--|----------|
| ○ Traffic Signal Head | ● N/A |
| ○ Modified Signal Head | ○ N/A |
| ○ Sign | ○ N/A |
| ○ Pedestrian Signal Head With Push Button & Sign | ○ N/A |
| ○ Signal Pole with Guy | ○ N/A |
| ○ Signal Pole with Sidewalk Guy | ○ N/A |
| ○ Inductive Loop Detector | ○ N/A |
| ○ Controller & Cabinet | ○ N/A |
| ○ Junction Box | ○ N/A |
| ○ 2-in Underground Conduit | ○ N/A |
| ○ Right of Way | ○ N/A |
| → Directional Arrow | → N/A |
| (A) Left Arrow "ONLY" Sign (R3-5L) | (A) N/A |
| (B) "YIELD" Sign (R1-2) | (B) N/A |
| (C) Type 1B Changeable Trailblazer sign (See Figure 1) | (C) N/A |
| (D) Type 1A Changeable Trailblazer sign (See Figure 1) | (D) N/A |
| (E) Type 2A Changeable Trailblazer sign (See Figure 1) | (E) N/A |
| (F) Type 2B Changeable Trailblazer sign (See Figure 1) | (F) N/A |
| (G) Street Name Sign (D3-1) | (G) N/A |

EV PREEMPT

| FUNCTION | PRE 3 | PRE 4 | PRE 5 | PRE 6 |
|---------------------------------|-------|-------|-------|-------|
| Exit Phase(s) | 2+6 | 2+6 | 4+8 | 4+8 |
| Preempt Override | OFF | OFF | OFF | OFF |
| Delay Time | 0 | 0 | 0 | 0 |
| Ped Clear Through Yellow | N | N | N | N |
| Terminate Phases | N | N | N | N |
| Entrance Walk | - | - | - | - |
| Entrance Ped Clear | - | - | - | - |
| Entrance Min Green | 1 | 1 | 1 | 1 |
| Entrance Yellow Change | 25.5* | 25.5* | 25.5* | 25.5* |
| Entrance Red Clear | 25.5* | 25.5* | 25.5* | 25.5* |
| Minimum Dwell Time | 7 | 7 | 7 | 7 |
| Preempt Input Extension Time ** | 2 | 2 | 2 | 2 |
| Preempt Max Time | 120 | 120 | 120 | 120 |
| Exit Yellow Change | 25.5* | 25.5* | 25.5* | 25.5* |
| Exit Red Clear | 25.5* | 25.5* | 25.5* | 25.5* |

* Time defaults to time used for phase during normal operation
** Program Timing on GPS Detection Unit

FIGURE 1



TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|------------|-----|------------|-----|------------|-----|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 10 | 7 | 10 | 7 | 10 | 7 | 10 |
| Walk * | - | - | - | - | - | - | - | - |
| Ped Clear | - | - | - | - | - | - | - | - |
| Veh. Extension * | 2.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 |
| Max 1 * | 2.0 | 6.0 | 2.0 | 3.0 | 2.0 | 6.0 | 2.0 | 3.0 |
| Yellow | 3.0 | 4.0 | 3.0 | 5.1 | 3.0 | 4.3 | 3.1 | 4.1 |
| Red Clear | 2.9 | 2.1 | 3.3 | 3.2 | 2.9 | 2.0 | 3.6 | 3.2 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Actuations B4 Add * | - | - | - | - | - | - | - | - |
| Seconds /Actuation * | - | - | - | - | - | 1.0 | - | - |
| Max Initial * | - | - | - | - | - | 34 | - | - |
| Time Before Reduction * | - | - | - | - | - | 15 | - | - |
| Time To Reduce * | - | - | - | - | - | 45 | - | - |
| Minimum Gap | - | - | - | - | - | 3.0 | - | - |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | MIN RECALL | - | MIN RECALL | - | MIN RECALL | - | MIN RECALL |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared For: **US 29-74 (Franklin Boulevard) at NC 279 (New Hope Road)**

Division 12 Gaston County Gastonia

PLAN DATE: May 2021 REVIEWED BY: SL Phillips

PREPARED BY: CF Davis REVIEWED BY: KP Baumann

REVISIONS: INIT. DATE

Scale: 1" = 40'

Document Not Considered Final Unless All Signatures Completed

North Carolina Professional Engineer Seal: KETIN P. BAUMANN, No. 044434

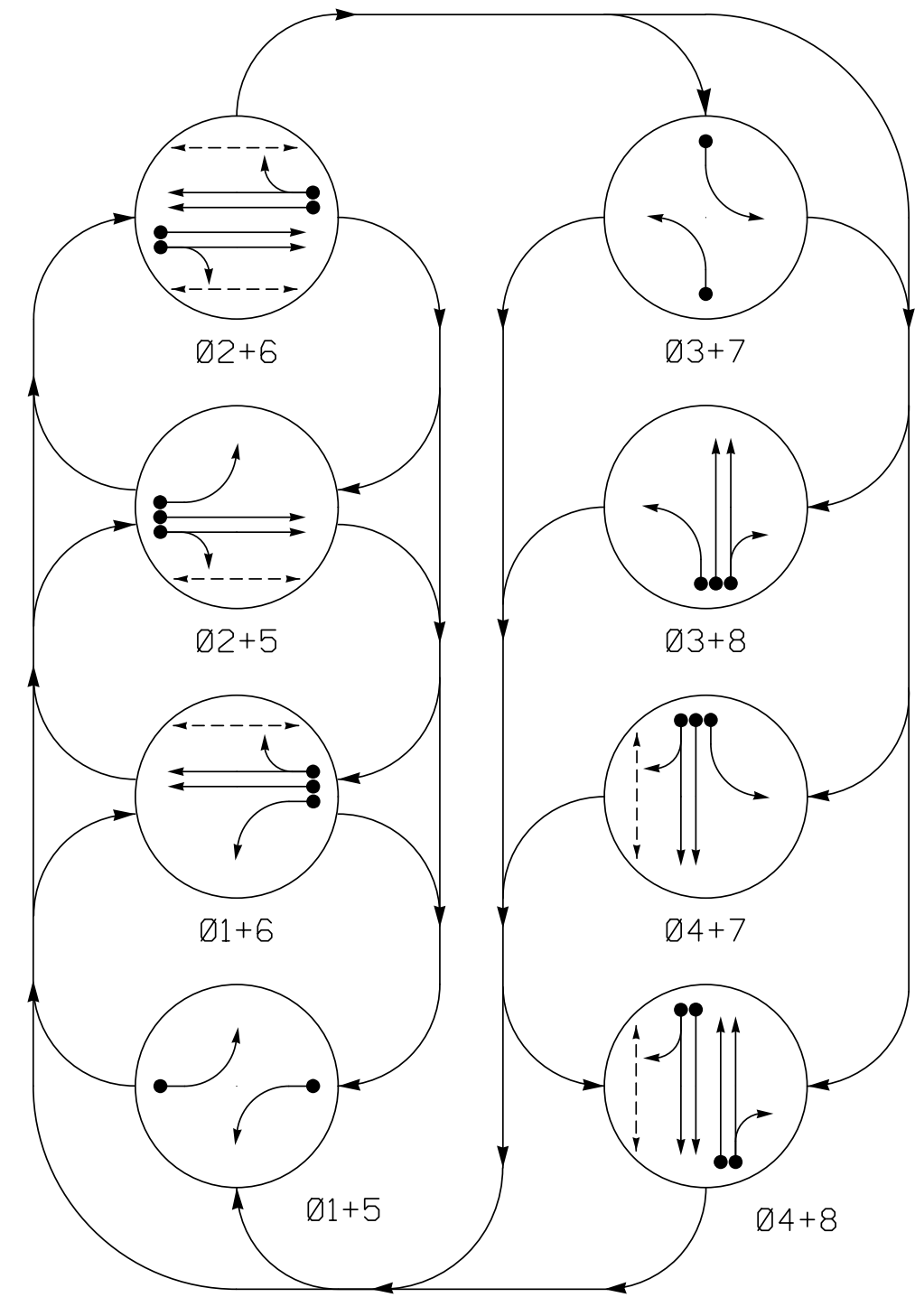
Signature: [Signature] Date: 3/11/2022

Signature Inventory No. 12-0050

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
NC License #0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

11:12:19 AM Dantellie.Curr1 ***\\imley-horn.com\SE_RAL\MRAL_TPIDK_LTS\011036569_Gastonia Signal System\Signal\KWS4 - Signal Design\12050-D-2021.dgn 3/9/2022

PHASING DIAGRAM



EV PREEMPT PHASES (Medium Priority)

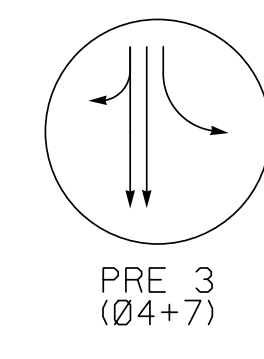


TABLE OF OPERATION table with columns for SIGNAL FACE, PHASE (Ø1-Ø8, P, F, L, S, H, S), and corresponding signal states (R, G, Y, DRK).

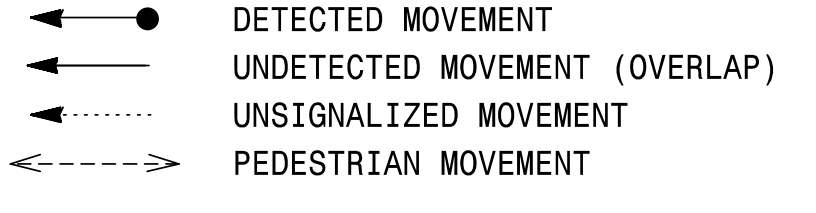
DETECTOR INSTALLATION CHART table with columns for LOOP, SIZE, DISTANCE FROM STOPBAR, TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD.

8 Phase Fully Actuated w/ Emergency Vehicle Preemption Gastonia Signal System

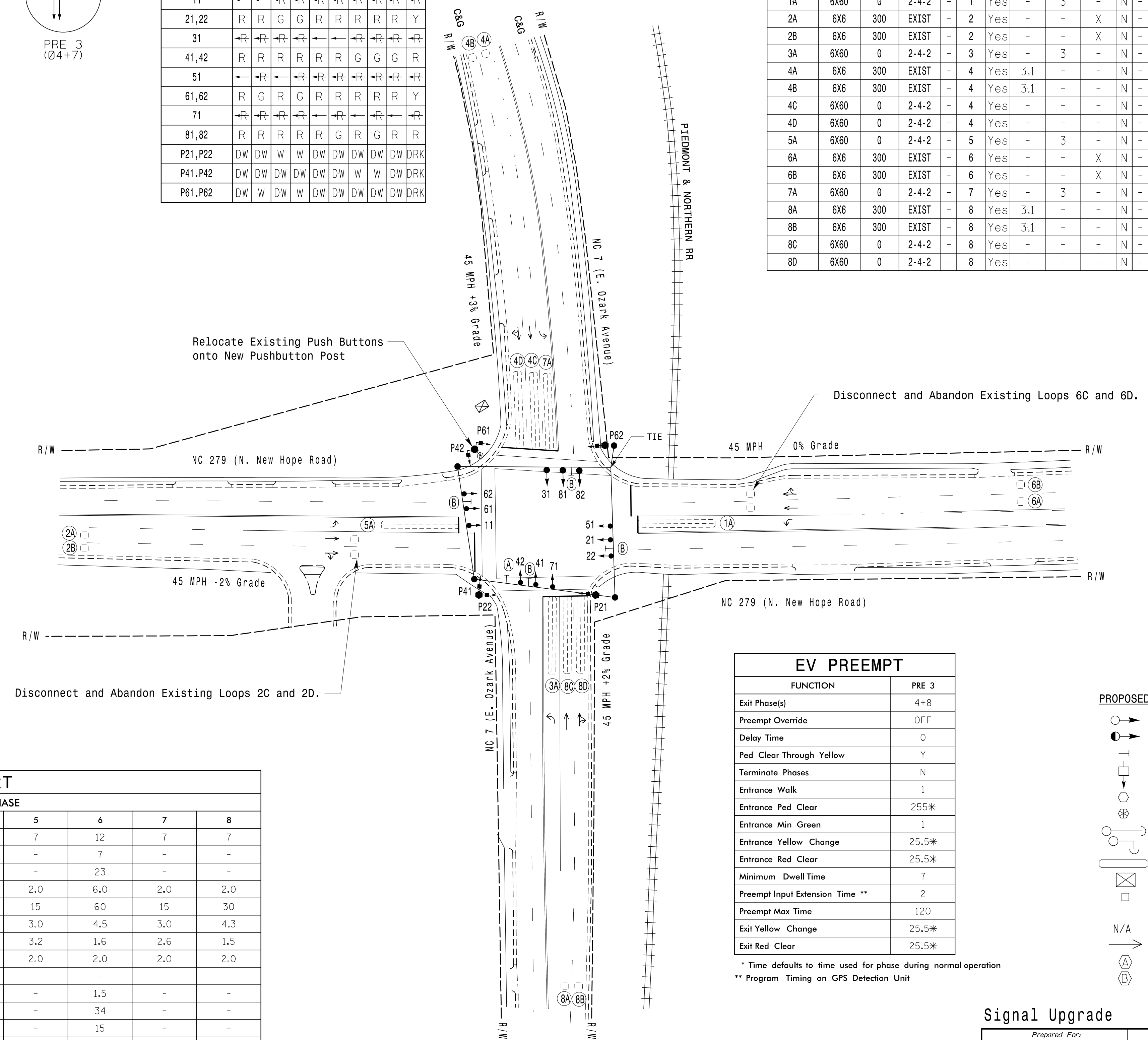
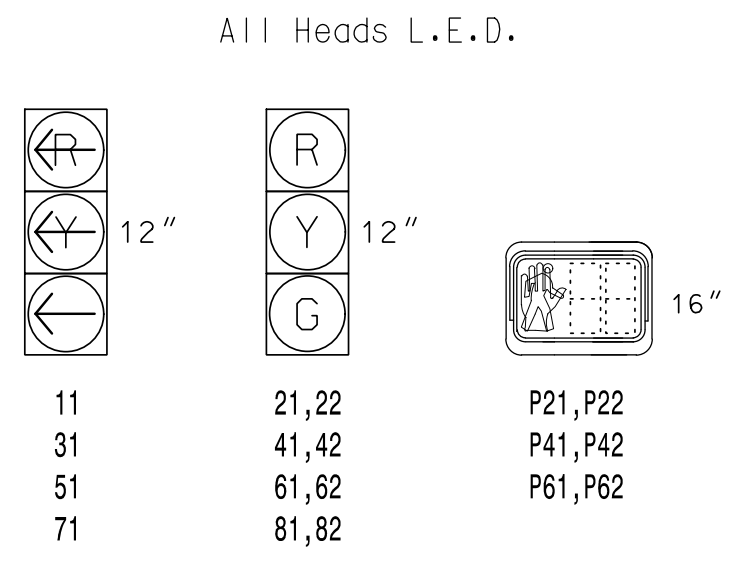
NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018... 2. Do not program signal for late night flashing operation... 3. Phase 1 and/or phase 5 may be lagged... 18. City of system data: Controller Asset #0053.

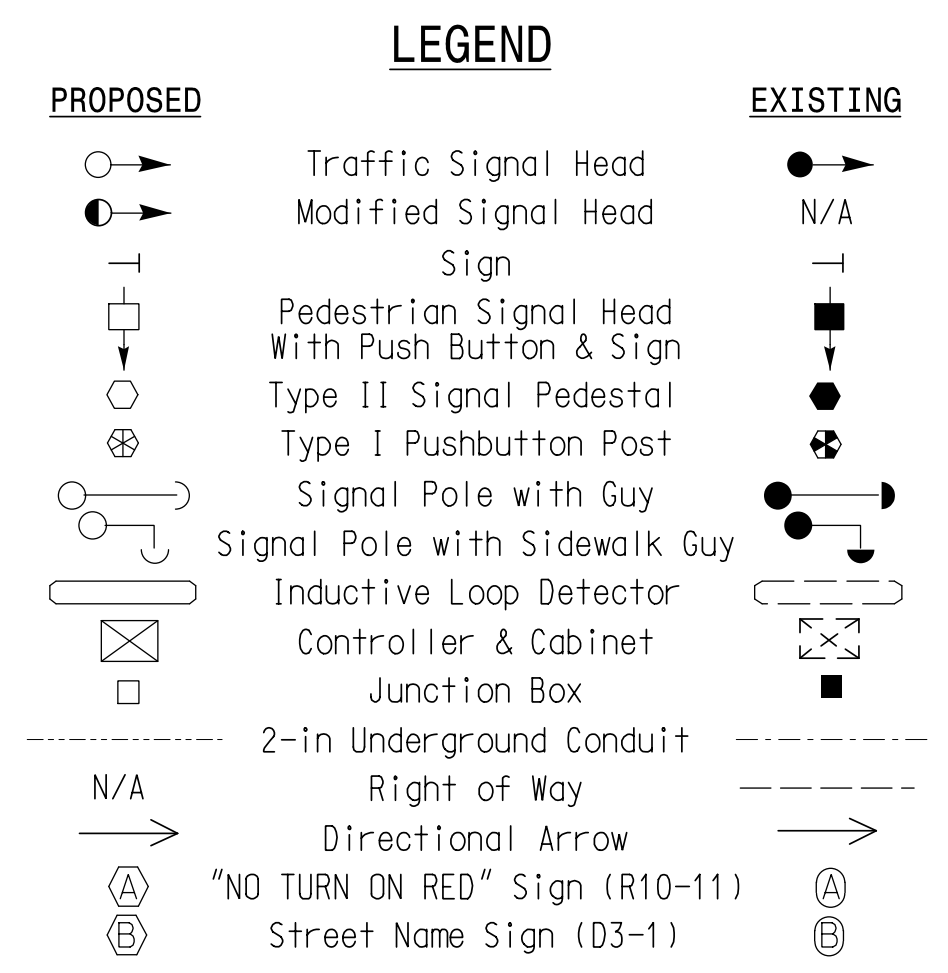
PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.



EV PREEMPT table with columns for FUNCTION and PRE 3 settings (e.g., Exit Phase(s) 4+8, Preempt Override OFF).

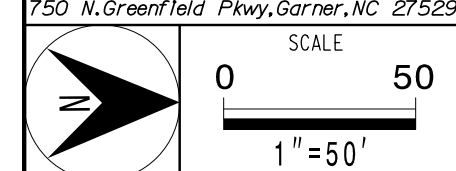


TIMING CHART table with columns for FEATURE and PHASE (1-8) showing timing values in seconds for various features like Min Green, Walk, Ped Clear, Veh. Extension, etc.

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade title block containing project information (NC 279 at NC 7), dates (May 2021), signatures (SL Phillips, KP Baumann), and a professional engineer seal for Kevin P. Baumann.

PLANS PREPARED IN THE OFFICE OF: Kimley-Horn... 421 Fayetteville Street, Suite 600, Raleigh, NC 27601



Vertical text on the left margin: 3/9/2022 11:15:15 AM DanHelle.Curr1 \\K:\miley-horn.com\SE-RAL\MRAL-TIP\DK-TIS\011036569 Gastonia Signal System\Signal\Signal\54 - Signal Design\120053-2021.dgn