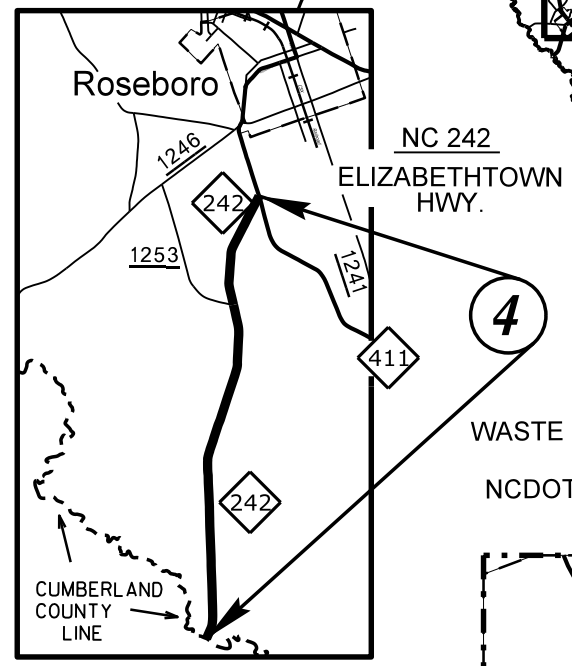
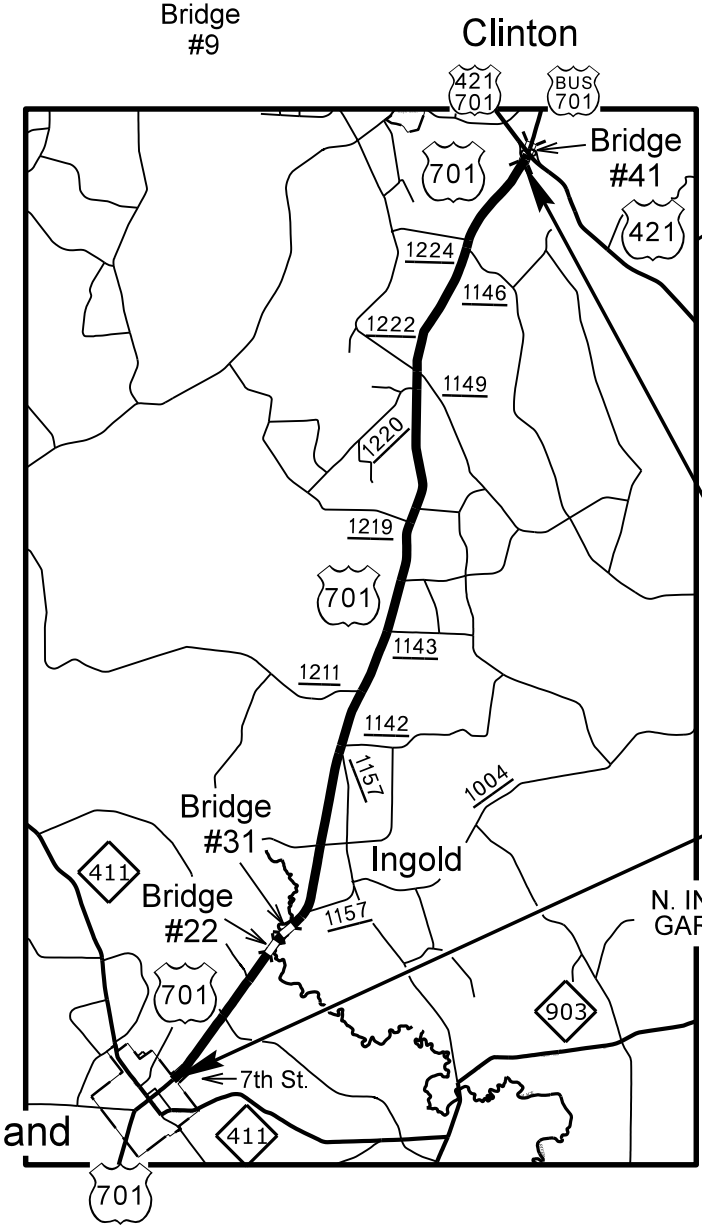
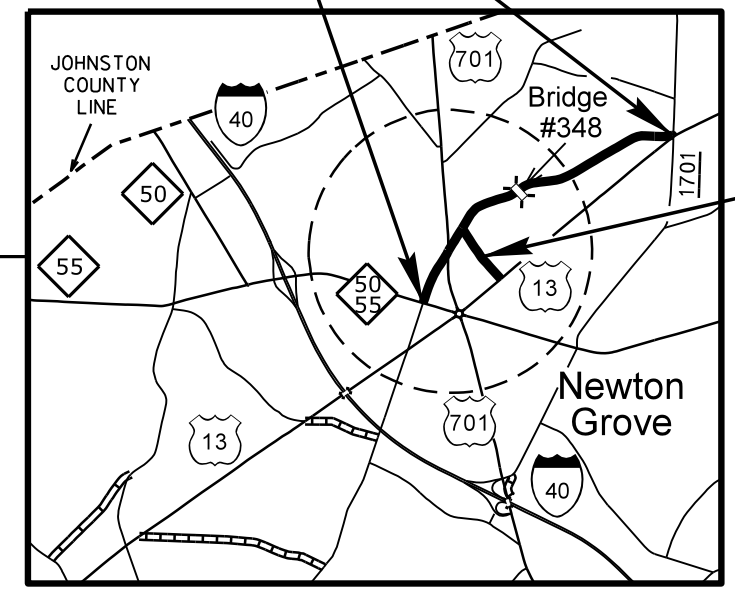
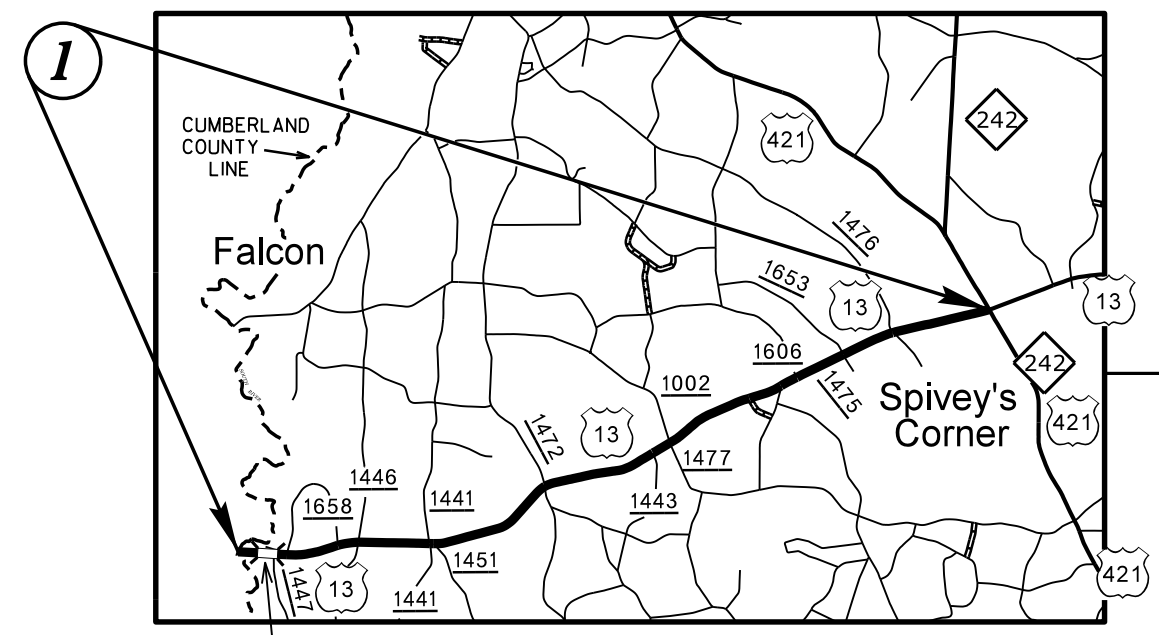


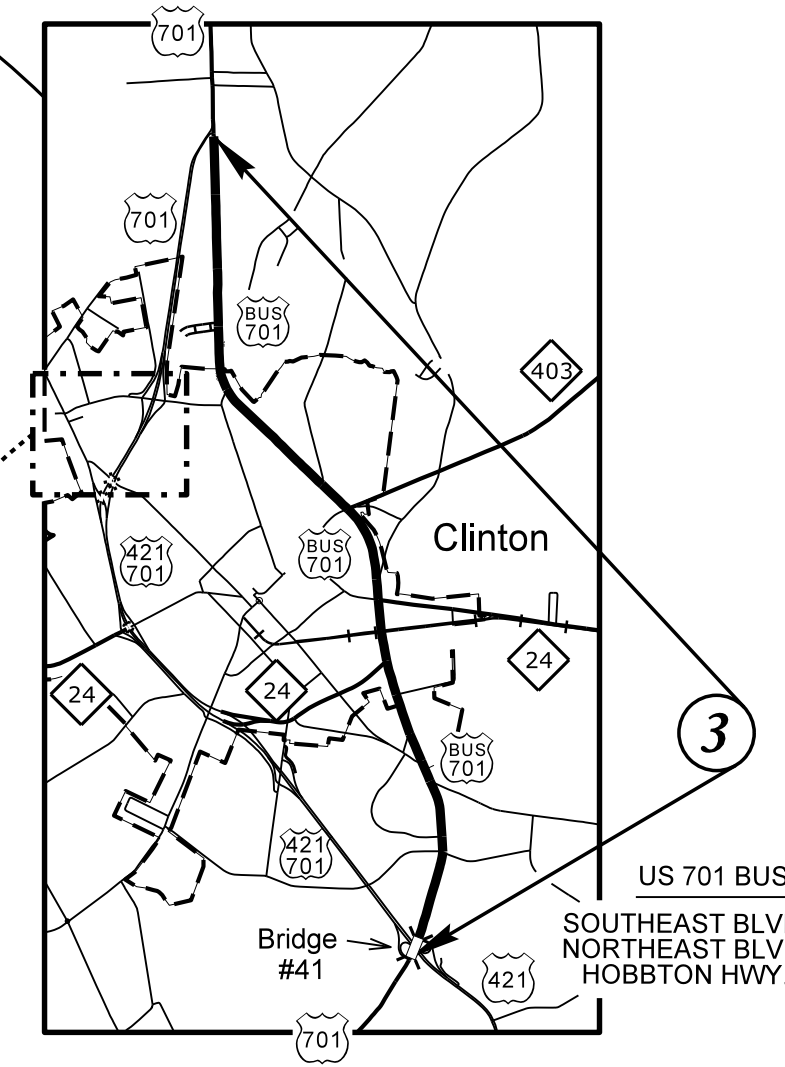
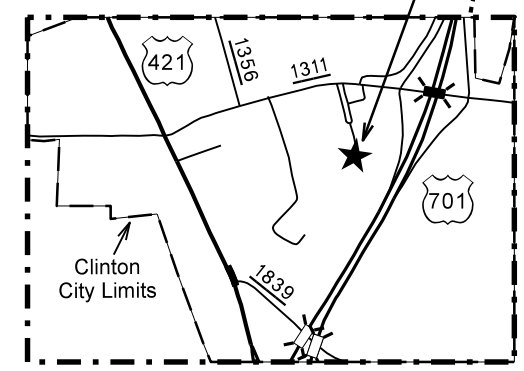
US 13
FAYETTEVILLE HWY.

SAMPSON COUNTY

SR 1703
CHURCH ST./
OLD GOLDSBORO RD.



WASTE MATERIAL FROM WIDENING
To Be Delivered To:
NCDOT Sampson Maintenance Yard
(Maps No. 5, 8 & 10)

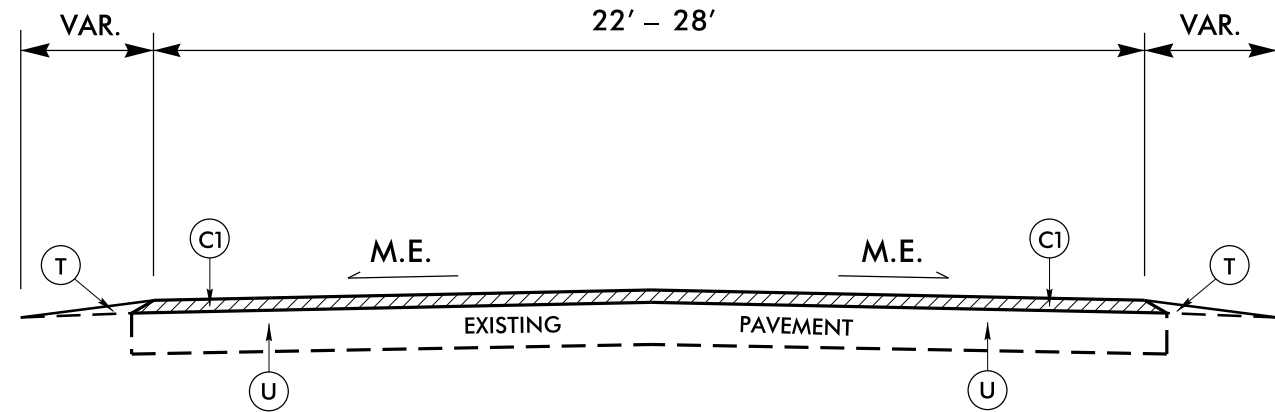


MAPS N.T.S.

22-JUN-2017 10:55
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 \$\$\$SUNSERVING\$\$\$

REVISIONS

8/17/99



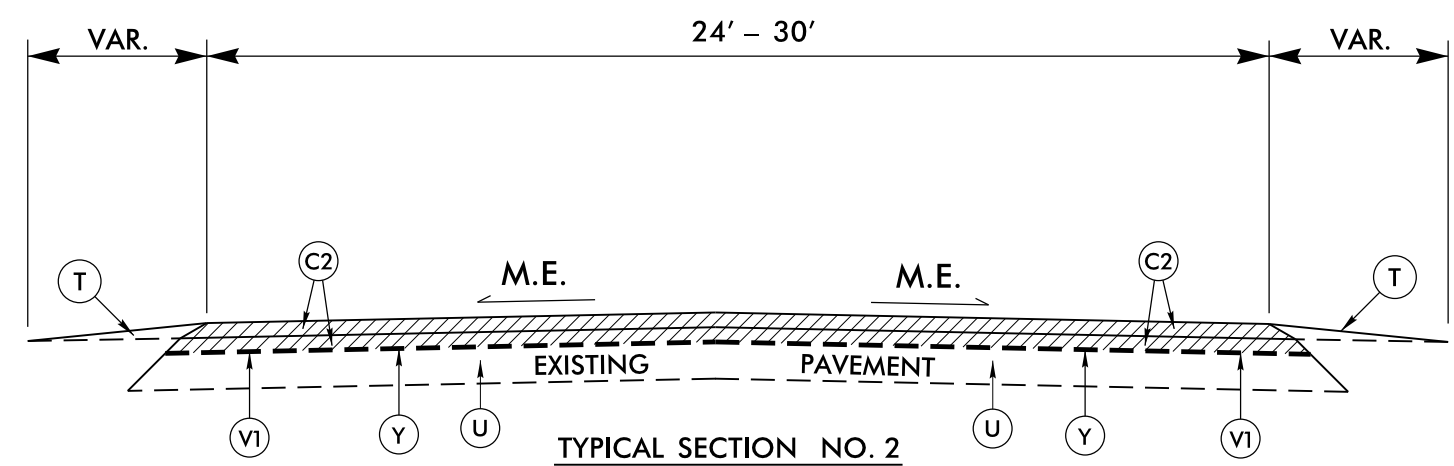
TYPICAL SECTION NO. 1

MAP NO. 1
US 13 (FAYETTEVILLE HWY.)
MP 0.000 – MP 9.309
NO WORK ON SAMPSON
BRIDGE NO. 9

MAP NO. 4
NC 242 (ELIZABETHTOWN HWY.)
MP 0.000 – MP 3.710

(VI) 1.5" MILLING ONLY AT INTERSECTION
OF US 421/NC 242 – SPIVEY'S
CORNER (SEE MAP 1 DETAIL SHEET)

(VI) MAP NO. 4 – MILLING (1.5")
ENTIRE ROADWAY – ALL MILLED SURFACES
MUST BE RESURFACED BY THE END OF
EACH WORK DAY



TYPICAL SECTION NO. 2

MAP NO. 2
US 701 (N. INGOLD AVE./GARLAND HWY.)
MP 2.336 – MP 15.771

MAP NO. 3
US 701 BUS. (SOUTHEAST BLVD./HOBBDON HWY.)
MP 0.040 – MP 1.122
MP 4.212 – MP 5.704

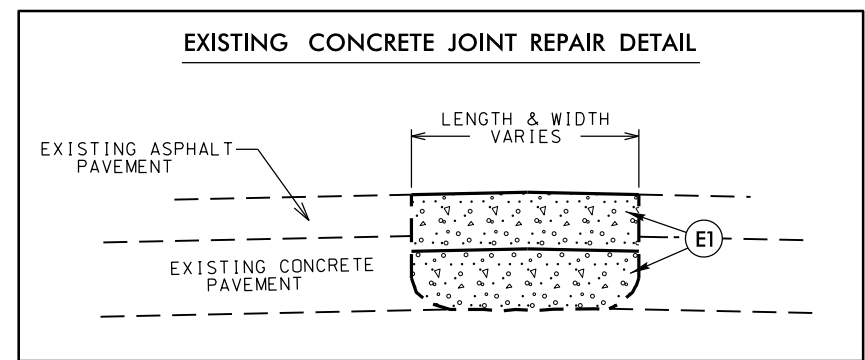
CONSTRUCTION SEQUENCE:

- REPAIR EXISTING CONCRETE JOINTS
B25.0B (2 LIFTS 5" EACH)
- MILL EACH LANE 1.5" DEPTH
- PLACE PAVEMENT INTERLAYER
- RESURFACE S9.5B (2 LIFTS 1.5" EACH)

NOTES: ALL MILLED SURFACES MUST BE RESURFACED
BY THE END OF EACH WORK DAY.

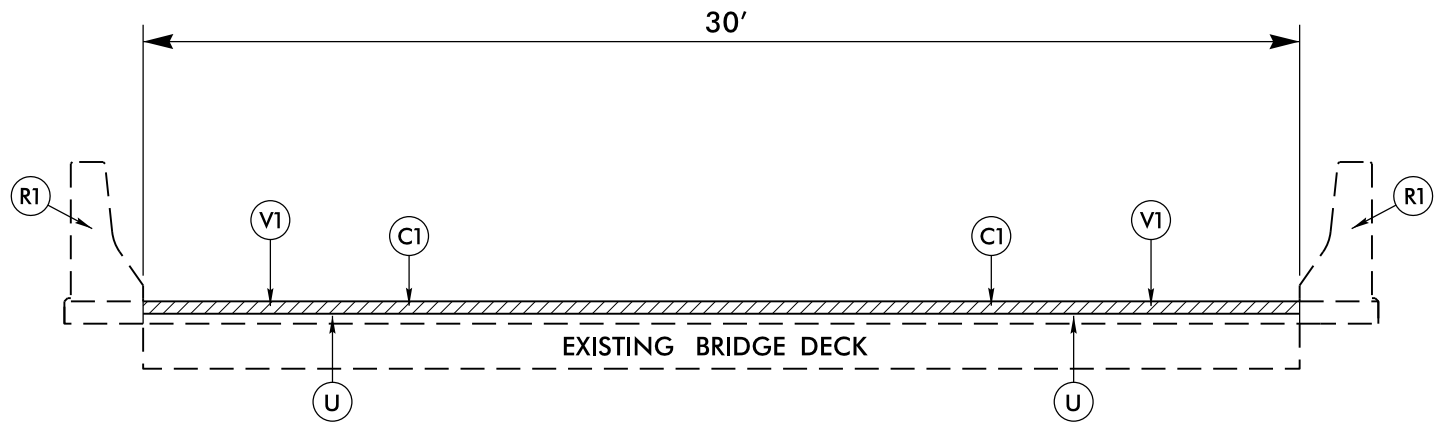
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
C2	PROP. APPROX. 3" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
C3	PROP. APPROX. 1" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 113 LBS. PER SQ.YD.
E1	PROP. APPROX. 10" DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ.YD. IN EACH OF TWO LAYERS
E2	PROP. APPROX. 4" DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ.YD.
R1	EXISTING CONCRETE BRIDGE RAIL
R2	EXISTING CONCRETE 2'-6" CURB & GUTTER
T	AGGREGATE SHOULDER BORROW (ASB)
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 1½" DEPTH
V2	MILLING ASPHALT PAVEMENT, 3" DEPTH
Y	PAVEMENT INTERLAYER

PAVEMENT EDGE SLOPES ARE 1:1, EXCEPT FINAL SURFACE COURSE.
SEE SHOULDER WEDGE DETAIL.



USE DETAIL FOR MAP 2 (US 701) & MAP 3 (US 701 BUS.)

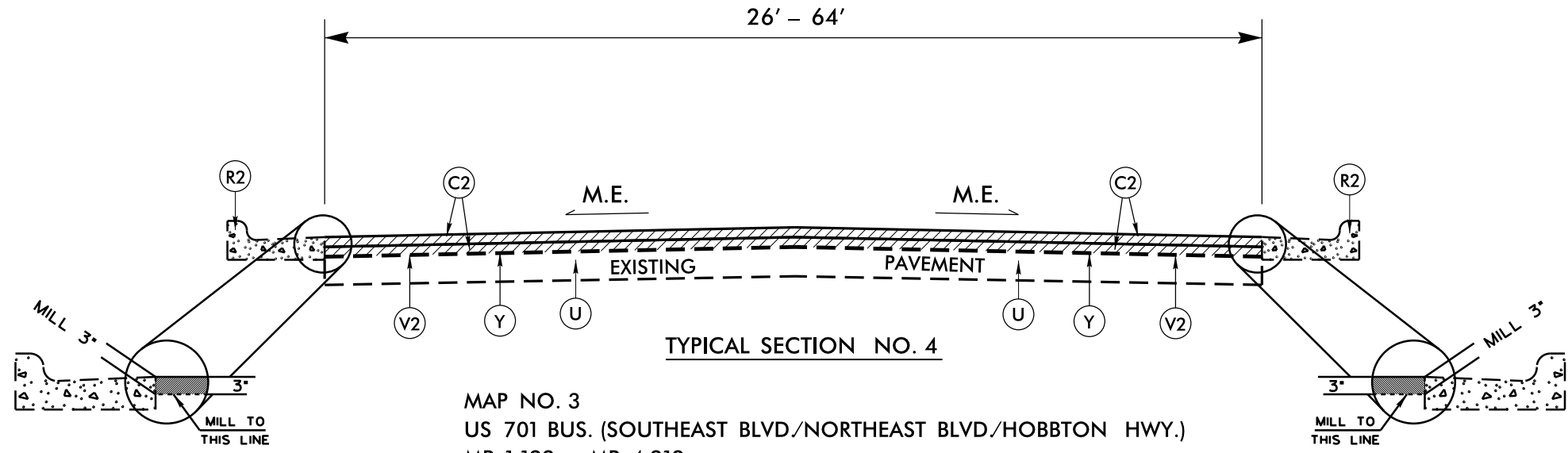
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 \$\$\$SUNAME\$\$\$



TYPICAL SECTION NO. 3

MAP NO. 2
 US 701 (GARLAND HWY.)
 SAMPSON BRIDGE NO. 22 & 31
 MP 4.489 TO MP 4.515
 MP 4.804 TO MP 4.831

PAVEMENT SCHEDULE	
C1	1½" S9.5B
C2	3" S9.5B (2 LIFTS)
R1	EXISTING CONCRETE BRIDGE RAIL
R2	EXISTING 2'-6" CURB & GUTTER
U	EXISTING PAVEMENT
V1	MILLING 1½" DEPTH
V2	MILLING 3" DEPTH
Y	PAVEMENT INTERLAYER



TYPICAL SECTION NO. 4

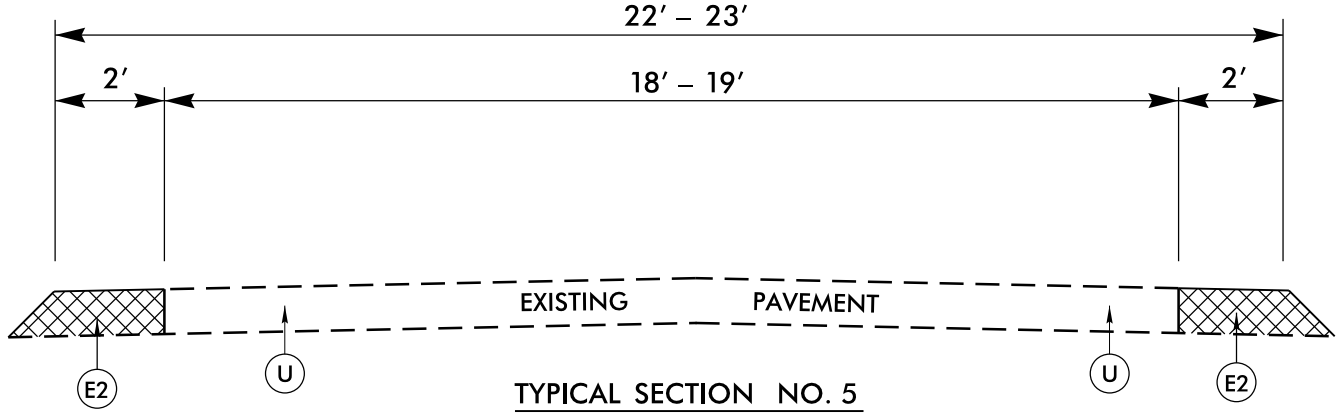
MAP NO. 3
 US 701 BUS. (SOUTHEAST BLVD/NORTHEAST BLVD/HOBSTON HWY.)
 MP 1.122 - MP 4.212

NOTE: SEE EXISTING CONCRETE JOINT REPAIR DETAIL FOR MAP 3 (PSH 3).
 -Y- LINE TIE-INS WILL BE MILLED 1.5" DEPTH AND RESURFACED S9.5B (1.5" DEPTH)

CONSTRUCTION SEQUENCE:

- REPAIR EXISTING CONCRETE JOINTS B25.0B (2 LIFTS 5" EACH)
- MILL EACH LANE 3" DEPTH
- PLACE PAVEMENT INTERLAYER
- RESURFACE MILLED SURFACES S9.5B (1.5" LIFT) BY THE END OF EACH WORK DAY
- RESURFACE REMAINING S9.5B (1.5" LIFT)

16-JUN-2017 14:27
 S:\Division\Resurfacing\Resurfacing Data\2018
 Resurfacing\Sampson Co\2018CPT.03.02.10821, Etc.\US_13_701, NC_50\2018CPT.03.02.10821, Etc.\Rdy_tup.dgn
 \$\$\$SUN\$\$\$



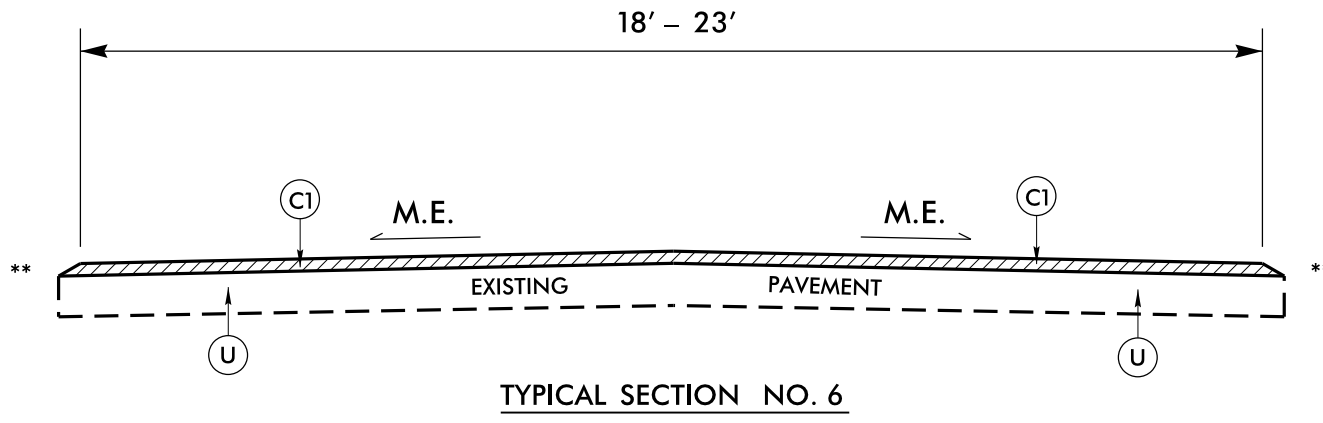
MAP NO. 5 SR 1742 (GOVERNOR MOORE RD.) MP 1.505 – MP 1.566 MP 3.104 – MP 3.530 MP 4.372 – MP 5.854	MAP NO. 8 SR 1100 (IVANHOE RD.) MP 0.000 – MP 4.938 MAP NO. 10 SR 1002 (DUNN RD.) MP 4.361 – MP 11.705
--	---

MAP NO. 5 – SR 1742

WIDENING LOCATIONS:

RIGHT SIDE ONLY:
MP 1.642 – MP 1.723
MP 1.925 – MP 2.184
MP 4.160 – MP 4.372

LEFT SIDE ONLY:
MP 0.000 – MP 0.175
MP 0.661 – MP 0.780
MP 0.938 – MP 1.104
MP 1.312 – MP 1.505
MP 2.904 – MP 3.104

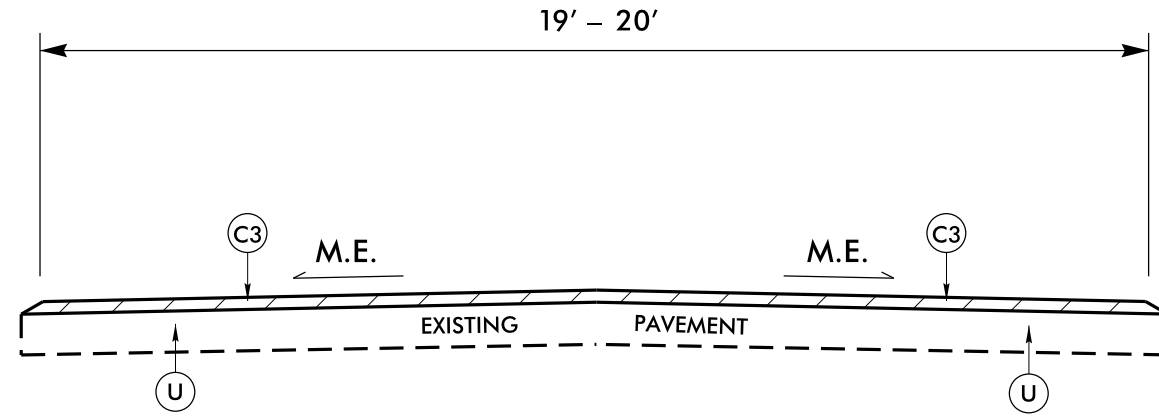


MAP NO. 5 SR 1742 (GOVERNOR MOORE RD.) MP 0.000 – MP 5.854	MAP NO. 6 SR 1451 (BAPTIST CHAPEL RD.) MP 0.000 – MP 4.669	MAP NO. 8 SR 1100 (IVANHOE RD.) MP 0.000 – MP 4.938	MAP NO. 10 SR 1002 (DUNN RD.) MP 4.361 – MP 11.705
(NO ASPHALT WORK: SAMPSON BRIDGE NO. 224)	MAP NO. 7 SR 1441 (WELCOME SCHOOL RD.) MP 0.000 – MP 2.420	MAP NO. 9 SR 1258 (HAIRR ST.) MP 0.000 – MP 0.490	MAP NO. 11 SR 1006 (MAXWELL RD.) MP 11.520 – MP 16.930

PAVEMENT SCHEDULE	
C1	1½" S9.5B
E2	4" B25.0B
U	EXISTING PAVEMENT

** NOTE: MAP NO. 5-11
SHOULDER WORK TO BE
DONE BY STATE FORCES

8/17/99
 I8-JUN-2017 13:44
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TYPICAL SECTION NO. 7

PAVEMENT SCHEDULE	
C3	1" S4.75A
U	EXISTING PAVEMENT

MAP NO. 12
SR 1492 (JACKSON ST/OLD FAYETTEVILLE RD.)
MP 1.170 – MP 1.480

MAP NO. 14
SR 1704 (IRWIN RD.)
MP 0.000 – MP 0.453

MAP NO. 16
SR 1910 (HUDSON RD.)
MP 0.000 – MP 1.360

MAP NO. 13
SR 1703 (CHURCH ST/OLD GOLDSBORO RD.)
MP 10.046 – MP 12.342

MAP NO. 15
SR 1317 (FREDERICK RD.)
MP 0.000 – MP 1.630

(NO ASPHALT WORK ON
SAMPSON BRIDGE NO. 348)

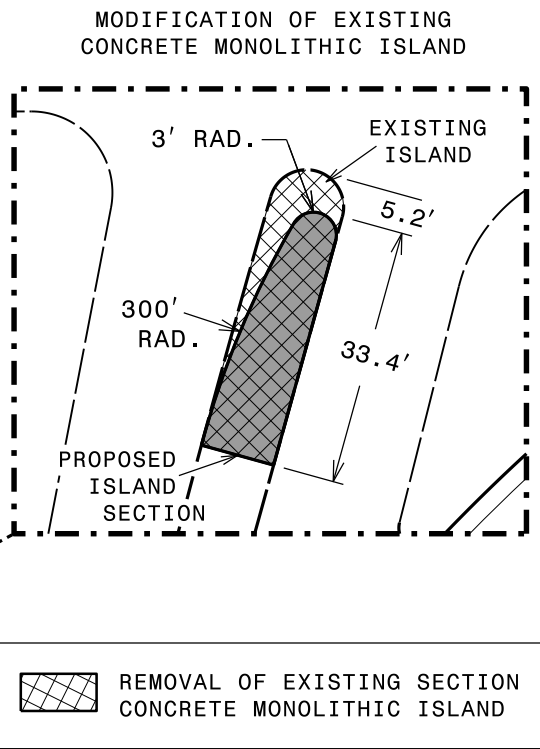
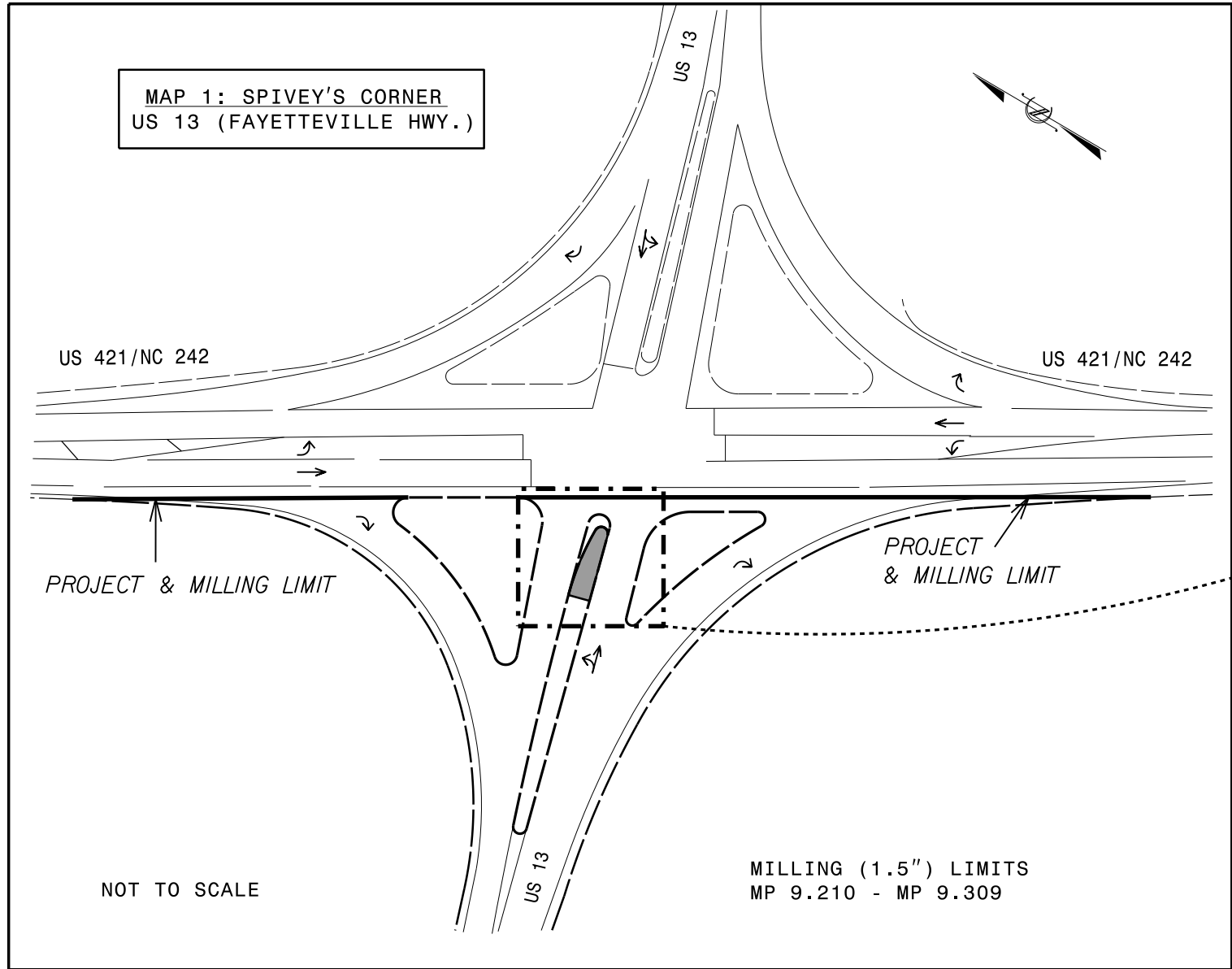
EFF.01-17-2012
REV.02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

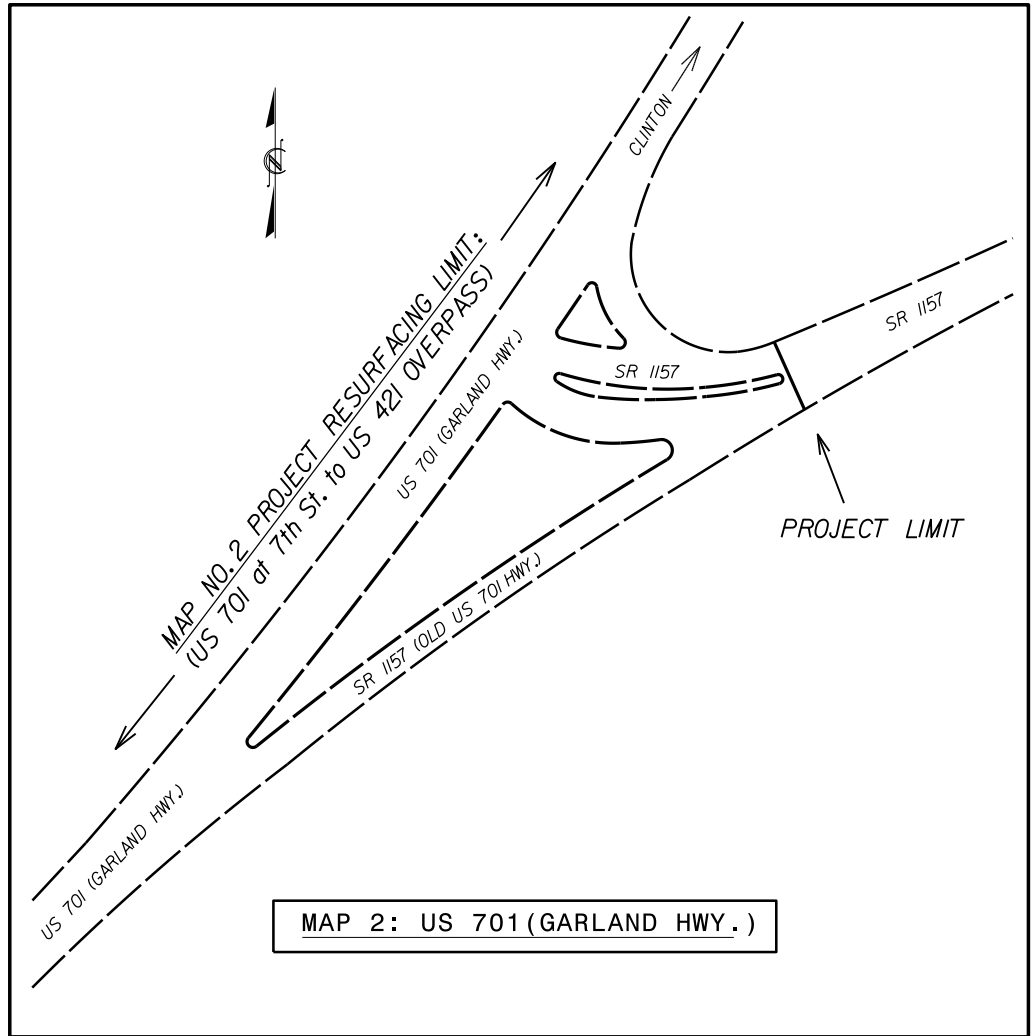
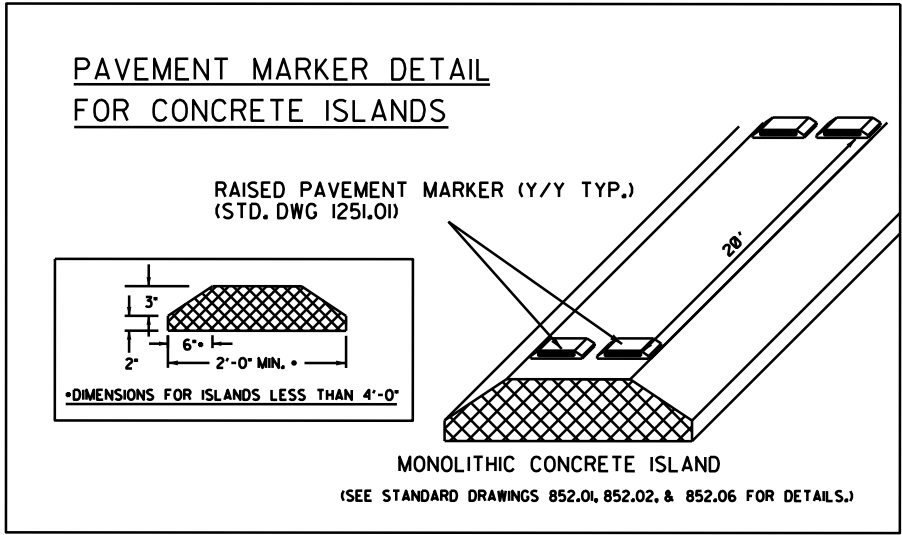
STD.NO.	TITLE
DIVISION 8 - INCIDENTALS	
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.05	Curb Ramp - Proposed Curb & Gutter
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units

8/17/99
 Resurfacing\Sampson_Co\2018CPT.03.02.10821, Etc.US_13.701, NC_50\2018CPT.03.02.10821, Etc.Rdy_tup.dgn
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 \$\$\$SERIAL\$\$\$



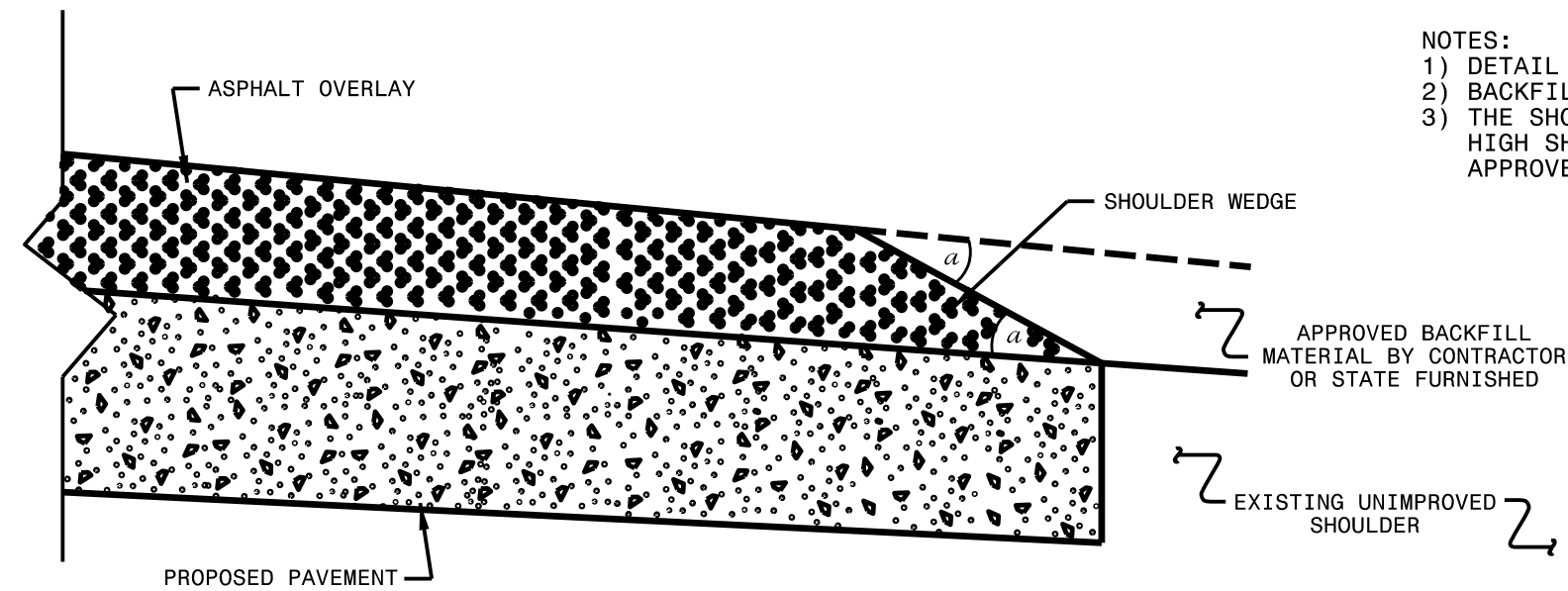
RESURFACING LIMITS & MODIFICATION OF MONOLITHIC CONCRETE ISLAND

NOTE: SEE SIGNAL PLANS FOR LOCATION OF INDUCTIVE LOOPS & STOP BARS

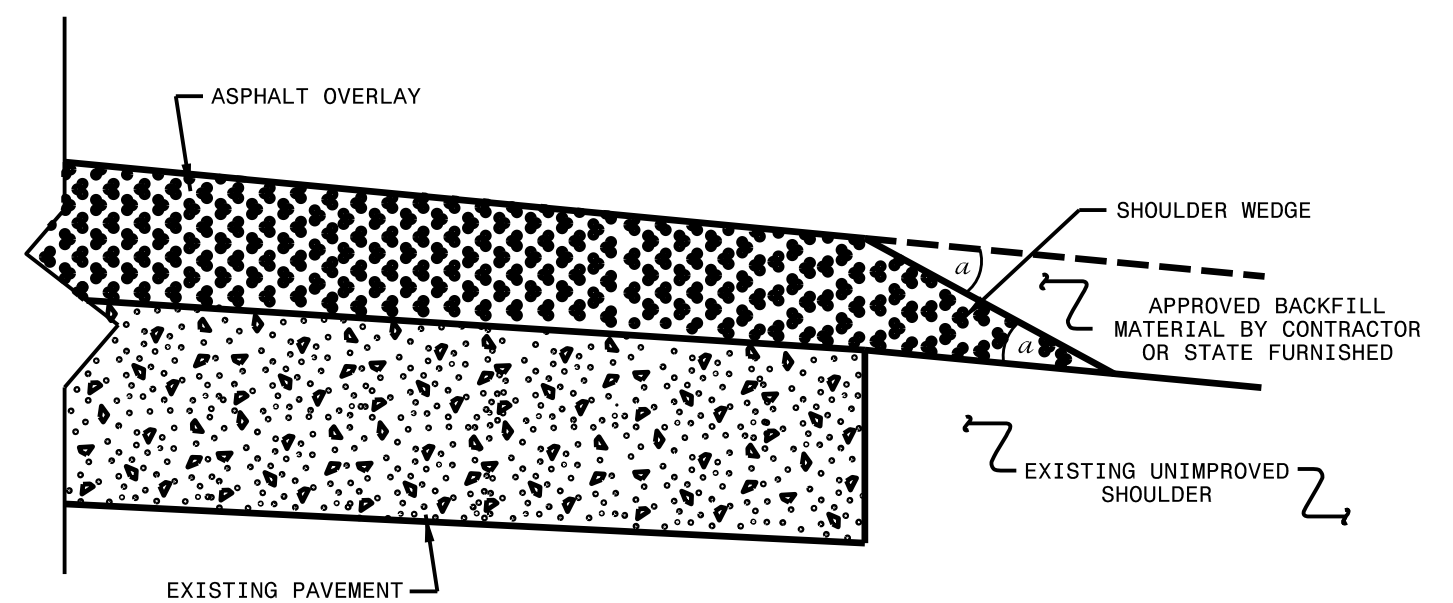


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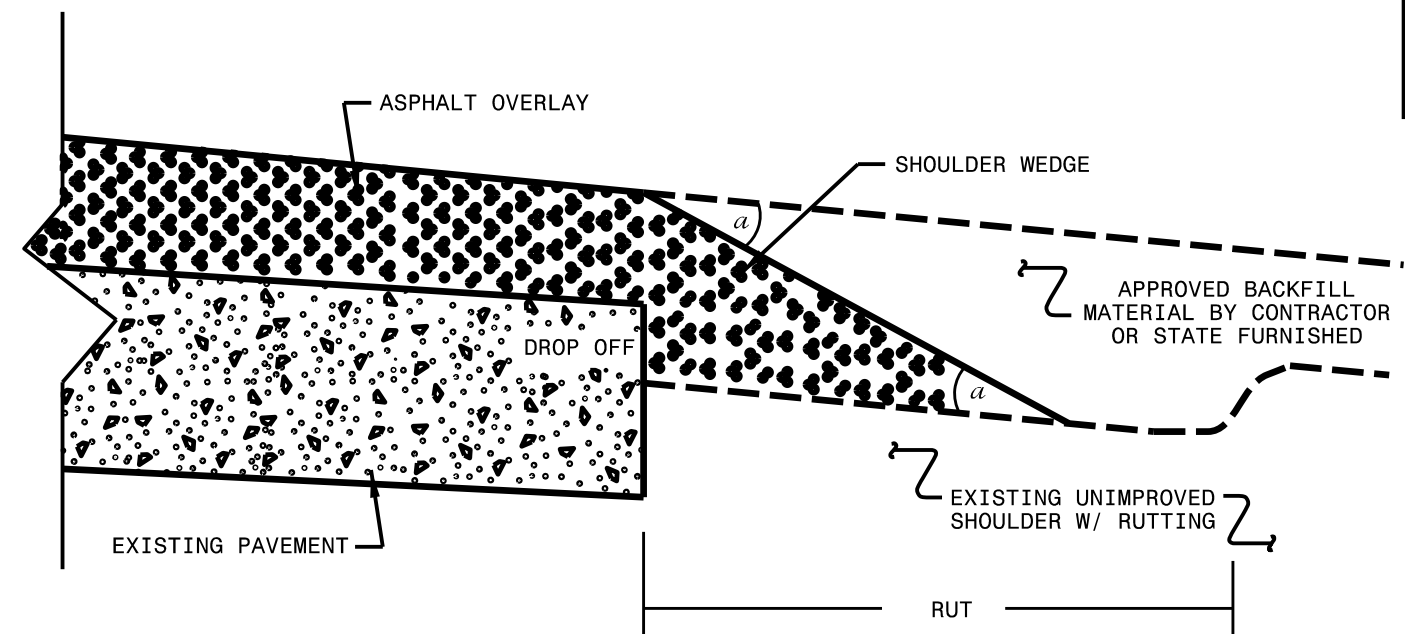
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFD AND ULTRA-THIN BONDED WEARING COURSE.
 - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



SHOULDER WEDGE DETAIL
(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL
(Resurfacing Projects w/ NO Widening)

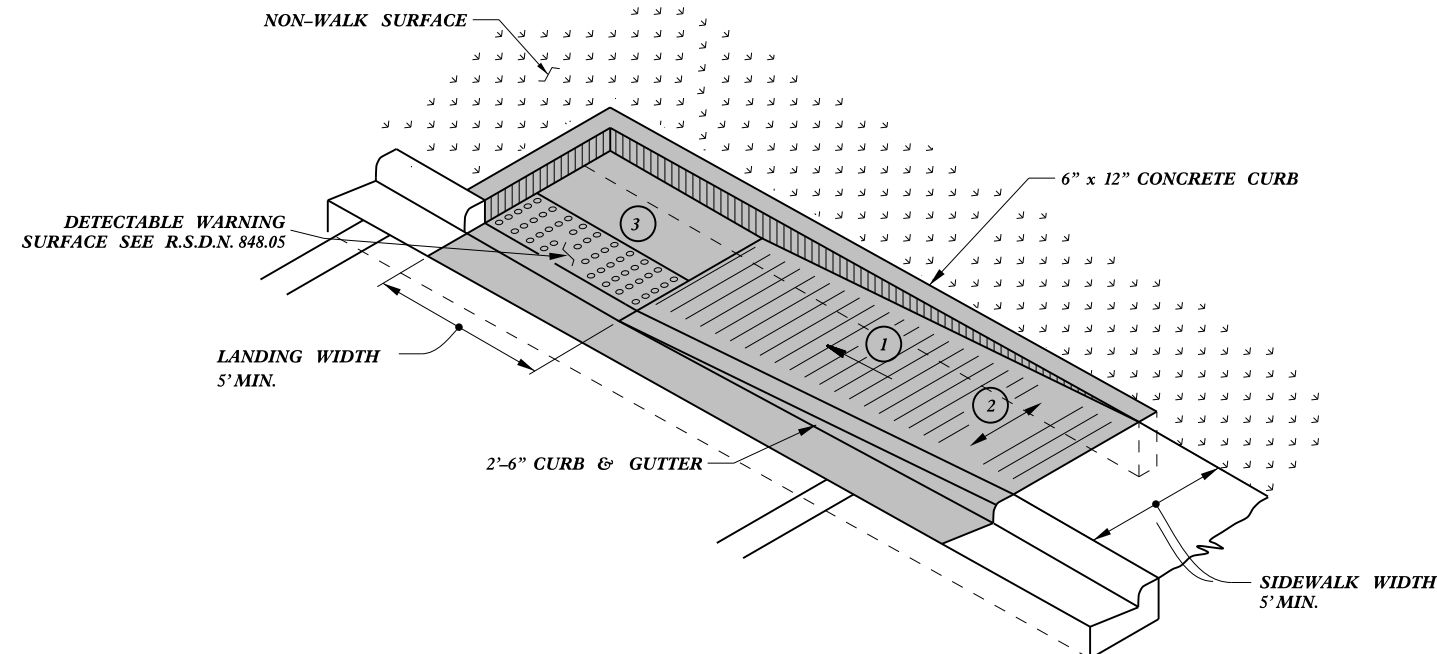


SHOULDER WEDGE DETAIL
(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

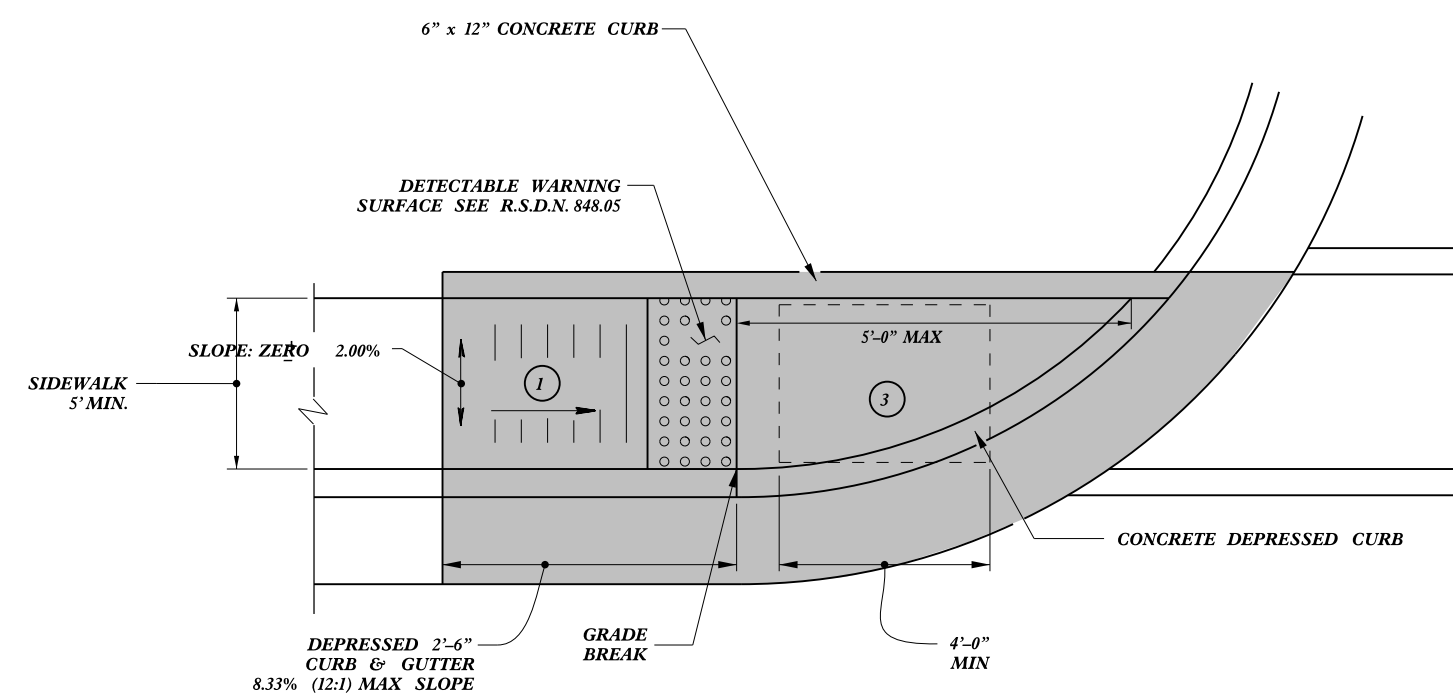
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
SHOULDER WEDGE DETAILS	
ORIGINAL BY: T.SPELL	DATE: 7-19-11
MODIFIED BY:	DATE: 2/2/16
CHECKED BY:	DATE:
FILE SPEC.: s:\usr\details\stand\shoulderwedgedetail.dgn	

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USER\$\$\$\$\$



PAY LIMITS FOR CURB RAMP

TYPE 1A



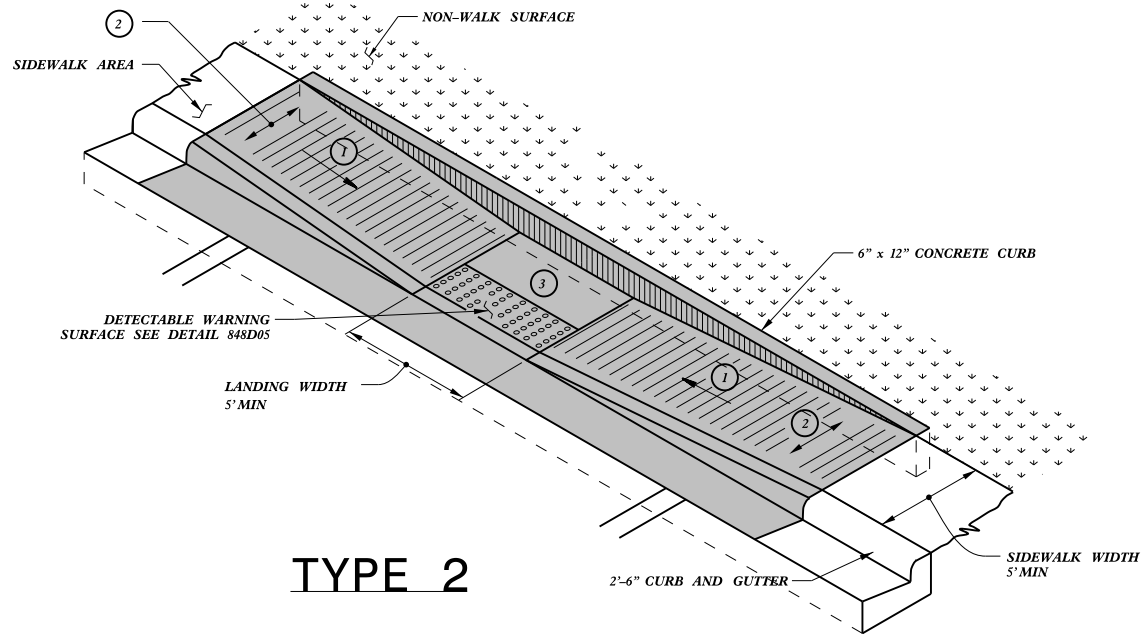
TYPE 1

- ① 8.33% (12:1) MAX RAMP SLOPE
- ② CROSS SLOPE: 2.00%
- ③ CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: sstds/2012CurbRamp/CurbRampDetails.dwg	

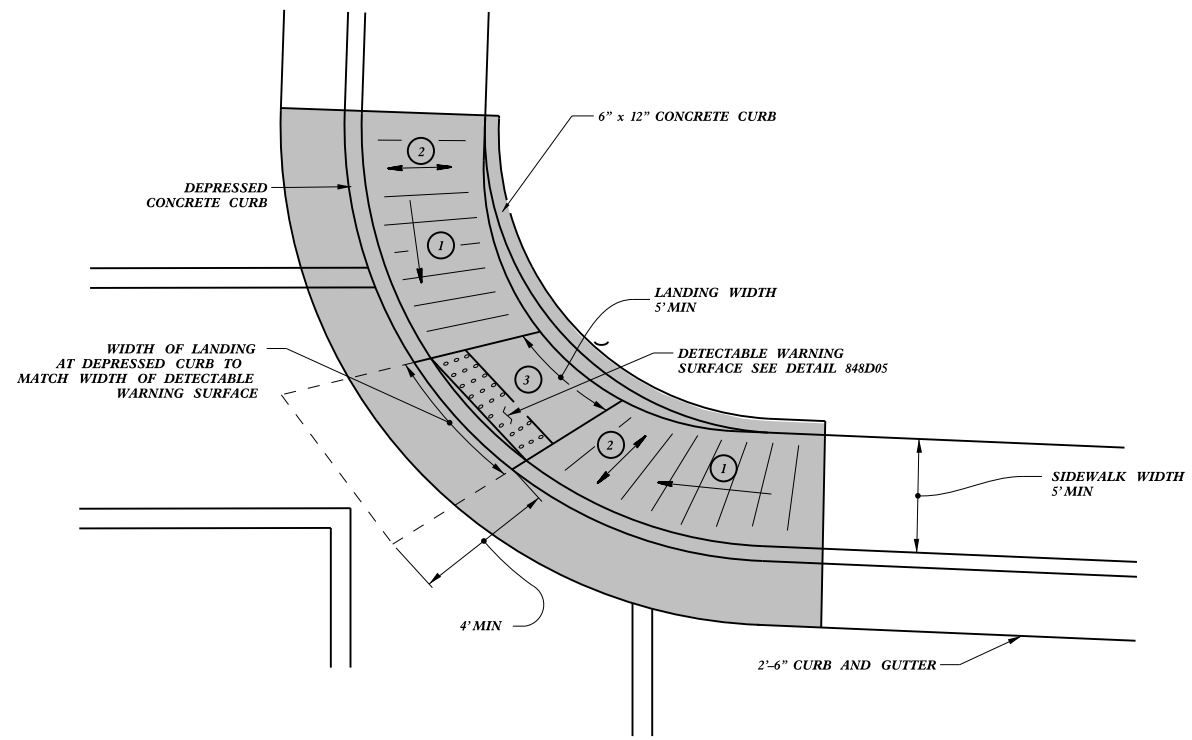
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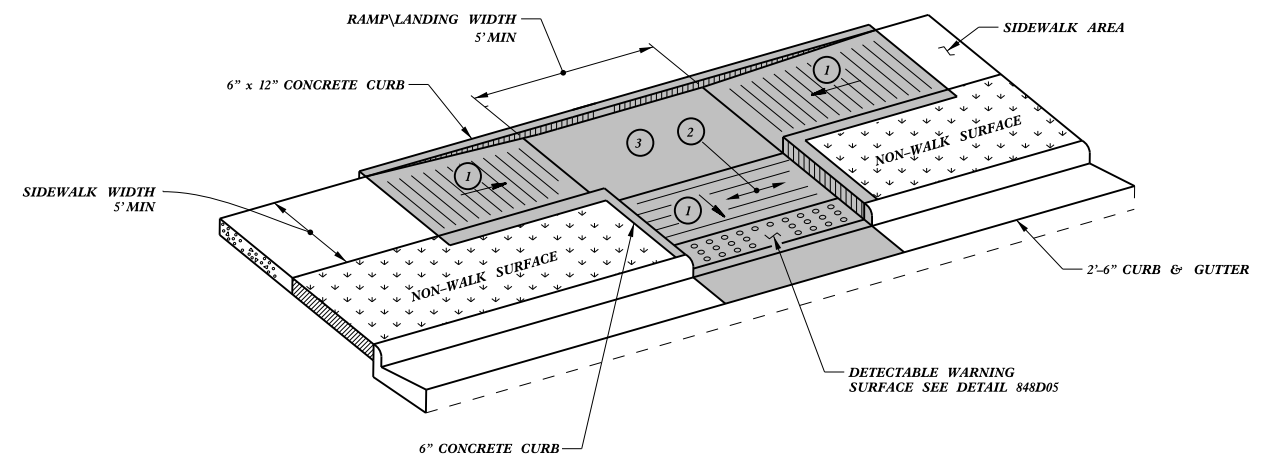
TYPE 2

PAY LIMITS FOR CURB RAMP

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 2A

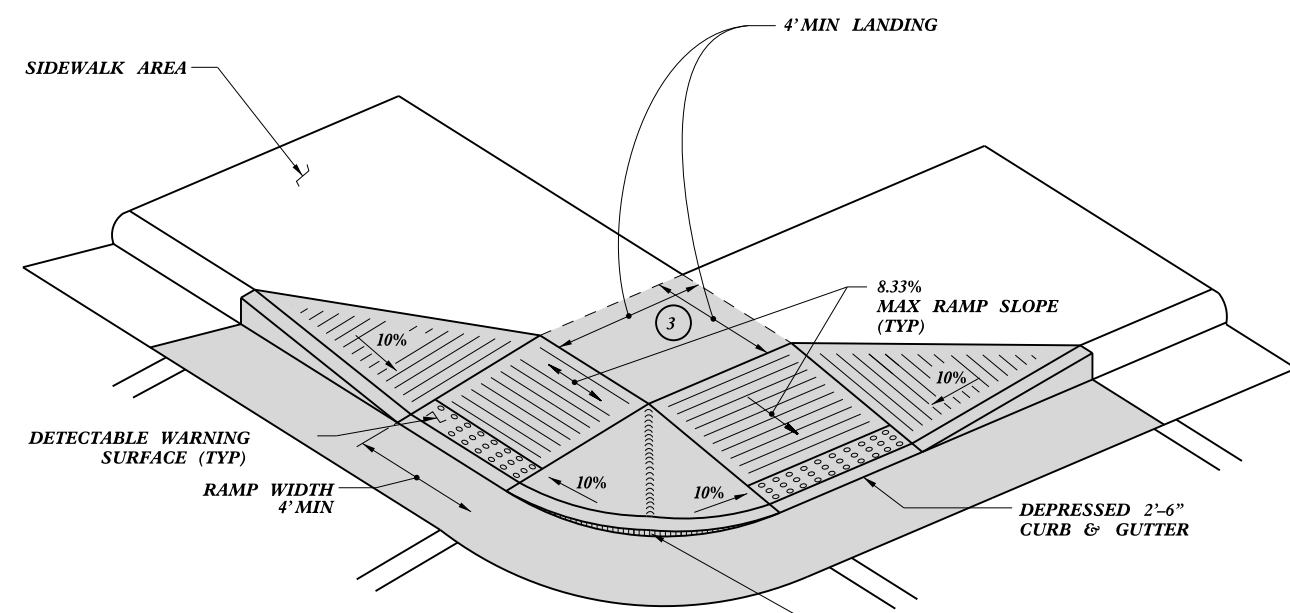


TYPE 3

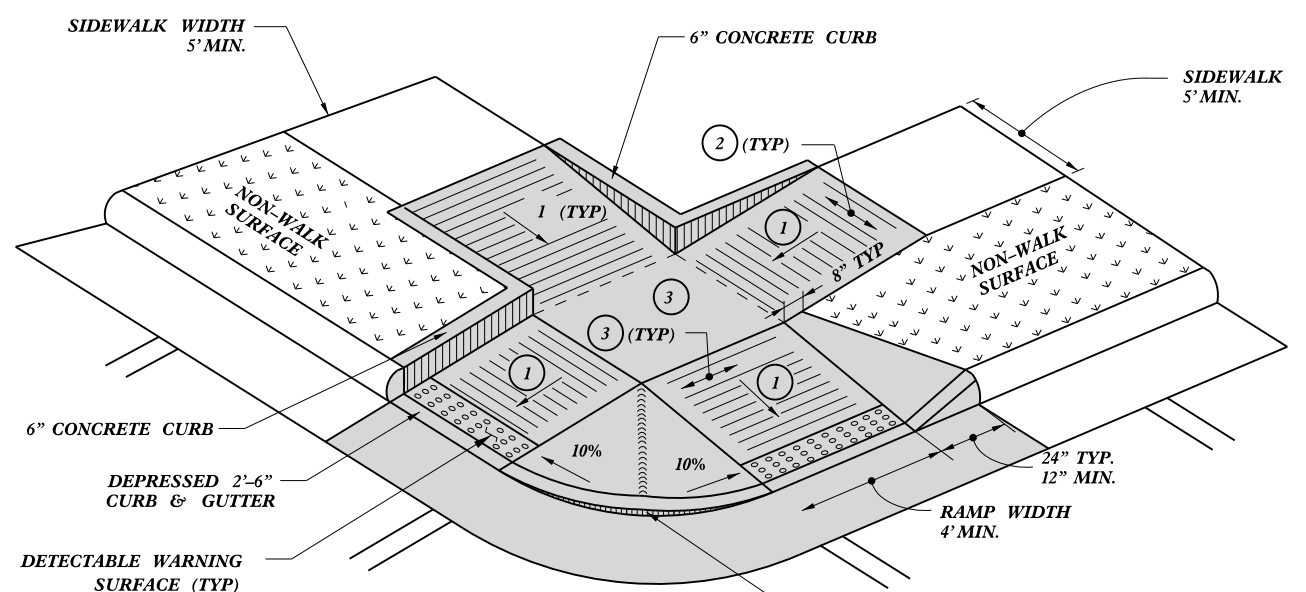
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
Parallel Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
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REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

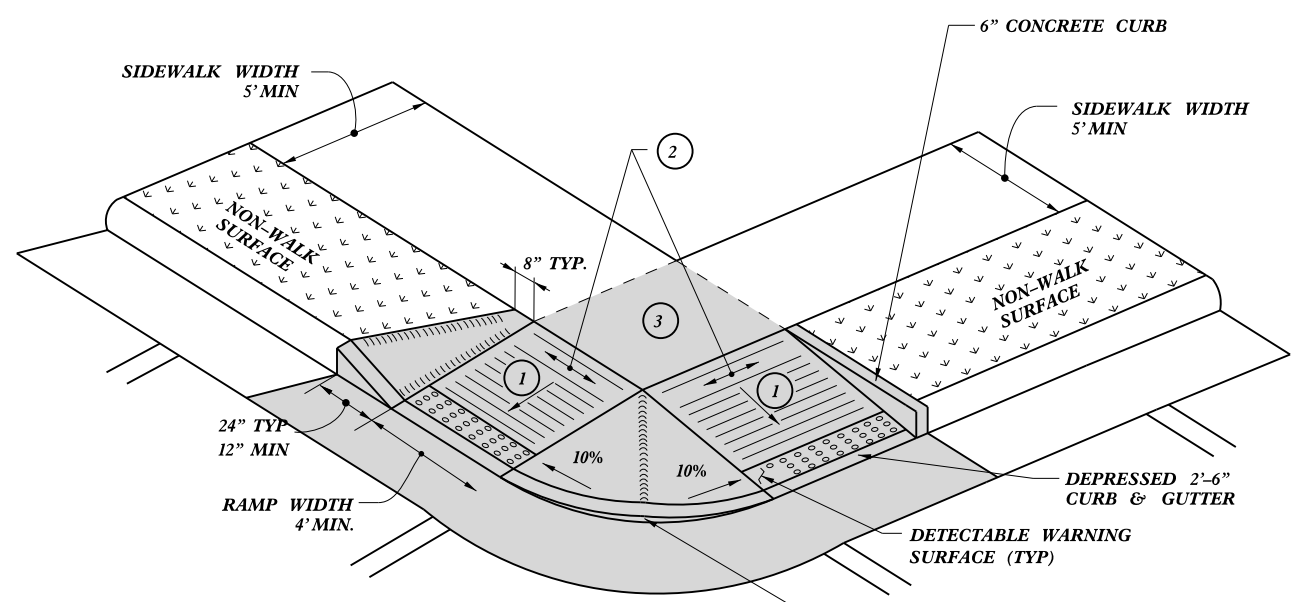
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TYPE 4



TYPE 5



TYPE 4A

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

PAY LIMITS FOR CURB RAMP

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
Shared Landing	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: sstds/2012CurbRamp/CurbRampDetails.dwg	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

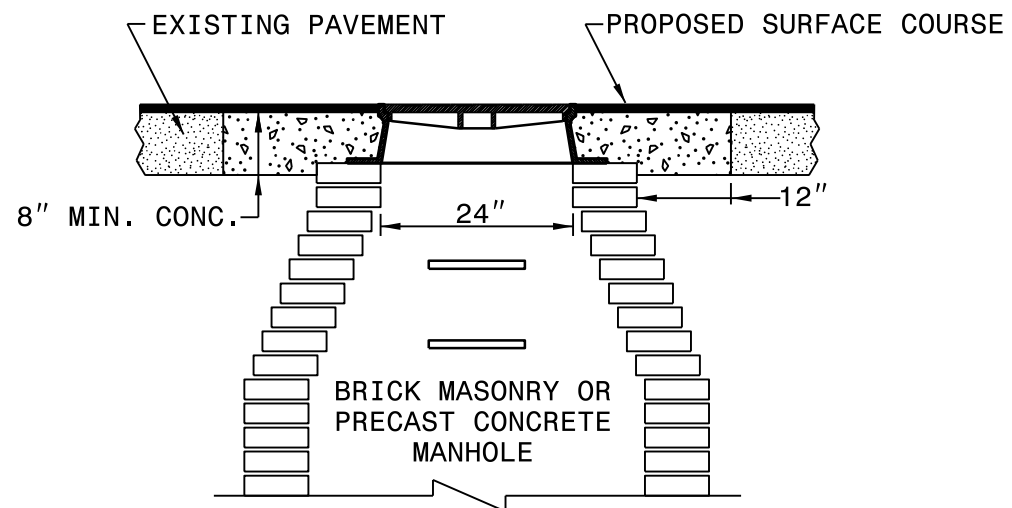
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STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

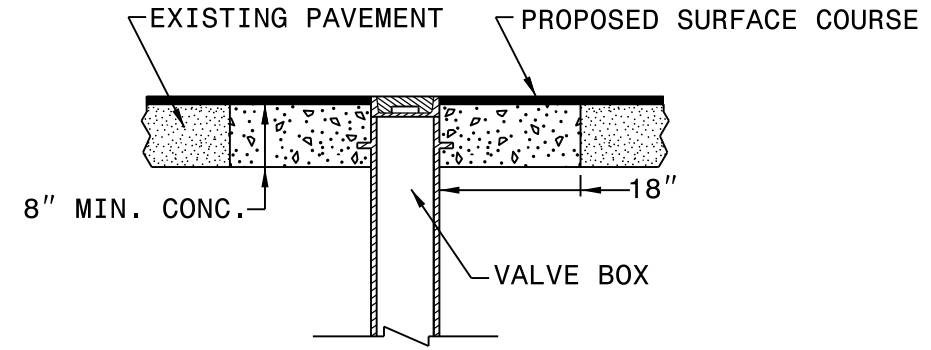
ENGLISH DETAIL DRAWING FOR
MANHOLE AND VALVE BOX ADJUSTMENTS
SHEET 1 OF 1
840D55

GENERAL NOTES:

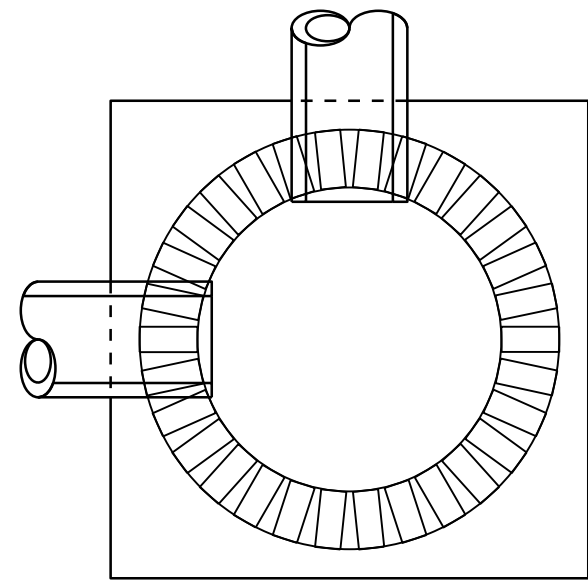
1. USE RAPID SET GROUT, MORTAR, OR CONCRETE THAT WILL TAKE FULL SET AND BECOME LOAD BEARING WITHIN SIXTY MINUTES OF PLACEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
2. REMOVE ALL FAULTY EXISTING BRICKWORK AND REPLACE WITH NEW BRICK MASONRY.
3. SHEER CUT EXCAVATION FOR THE ADJUSTMENT ON ALL SIDES.
4. FILL AREA BELOW 8" DEPTH WITH 78M OR NO. 57 CLEAN STONE.
5. MIX MORTAR TO NCDOT SPECIFICATIONS.
6. MORTAR JOINTS $\frac{1}{2}$ " +/- $\frac{1}{8}$ "
7. CONSTRUCT AN ASPHALT RAMP IN ACCORDANCE WITH SECTION 858-3 OF THE 2012 STANDARD SPECIFICATIONS.



MANHOLE CONCRETE ENCASEMENT



VALVE BOX CONCRETE ENCASEMENT



ELEVATION VIEW

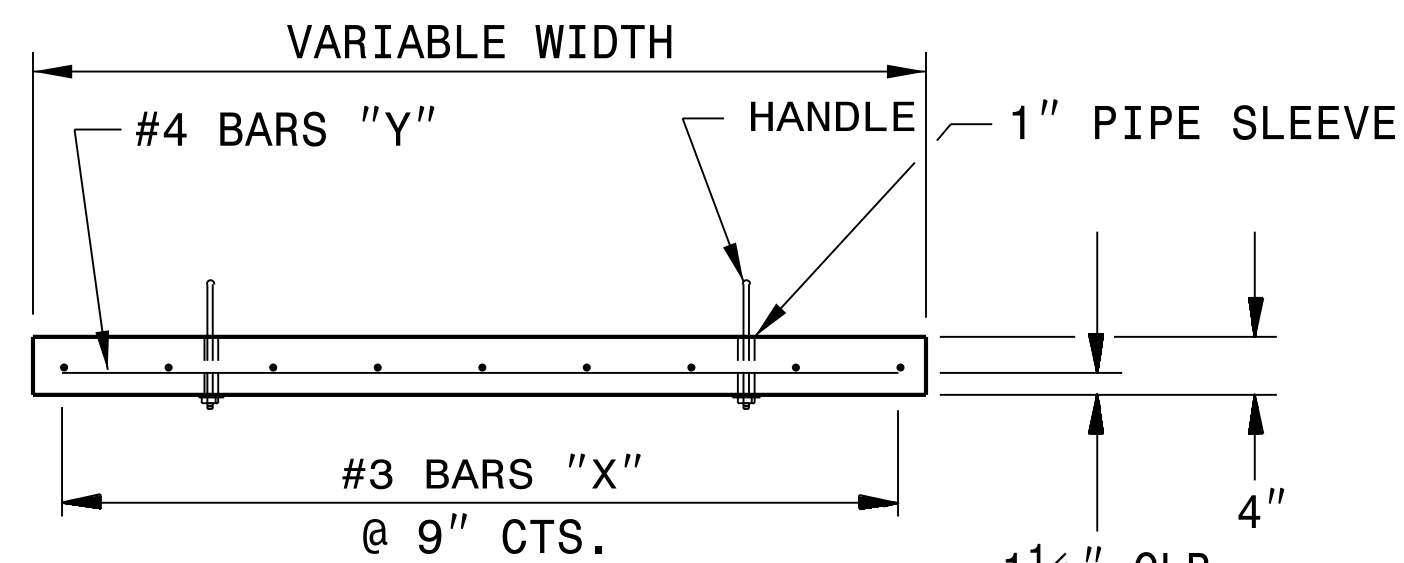
PLACE BRICK ACCORDING TO ELEVATION VIEW

ENGLISH DETAIL DRAWING FOR
MANHOLE AND VALVE BOX ADJUSTMENTS

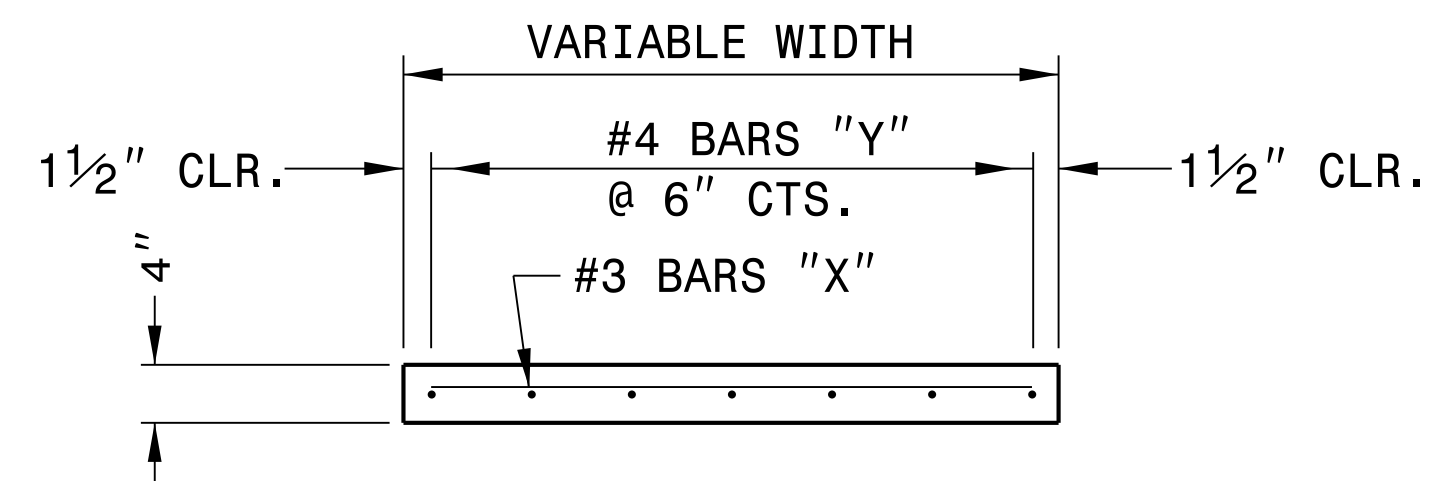
SHEET 1 OF 1
840D55

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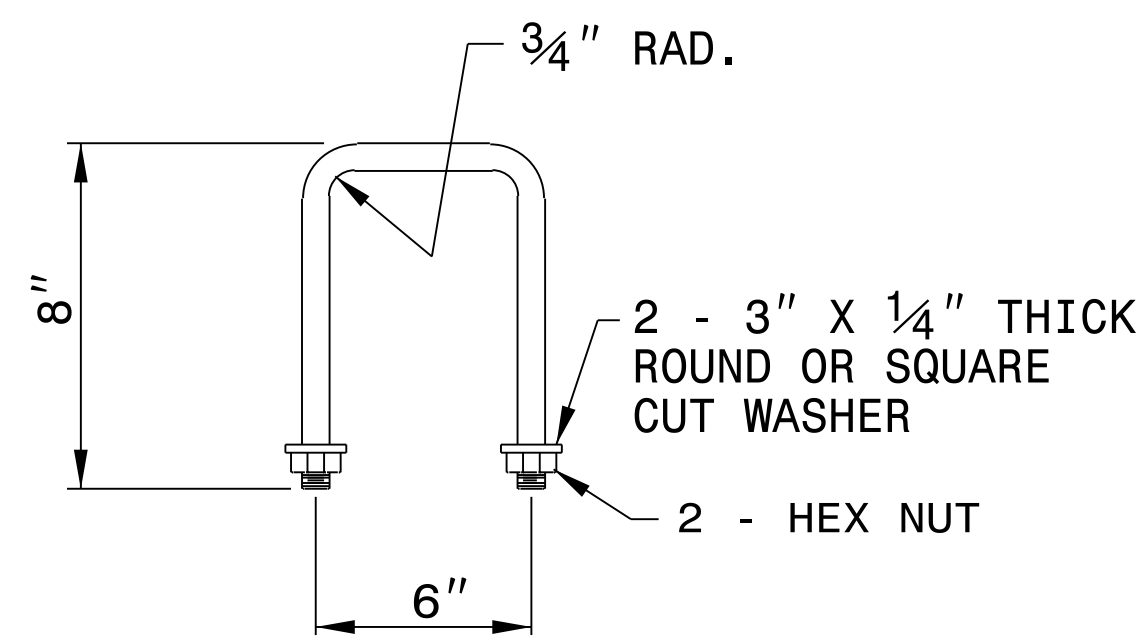
8/17/99



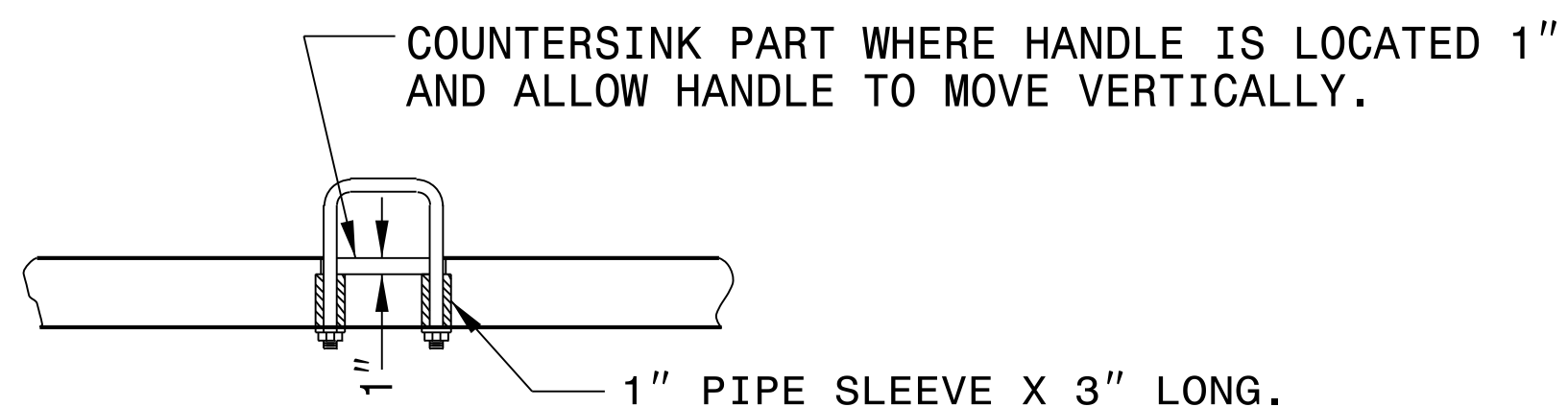
SECTION V-V



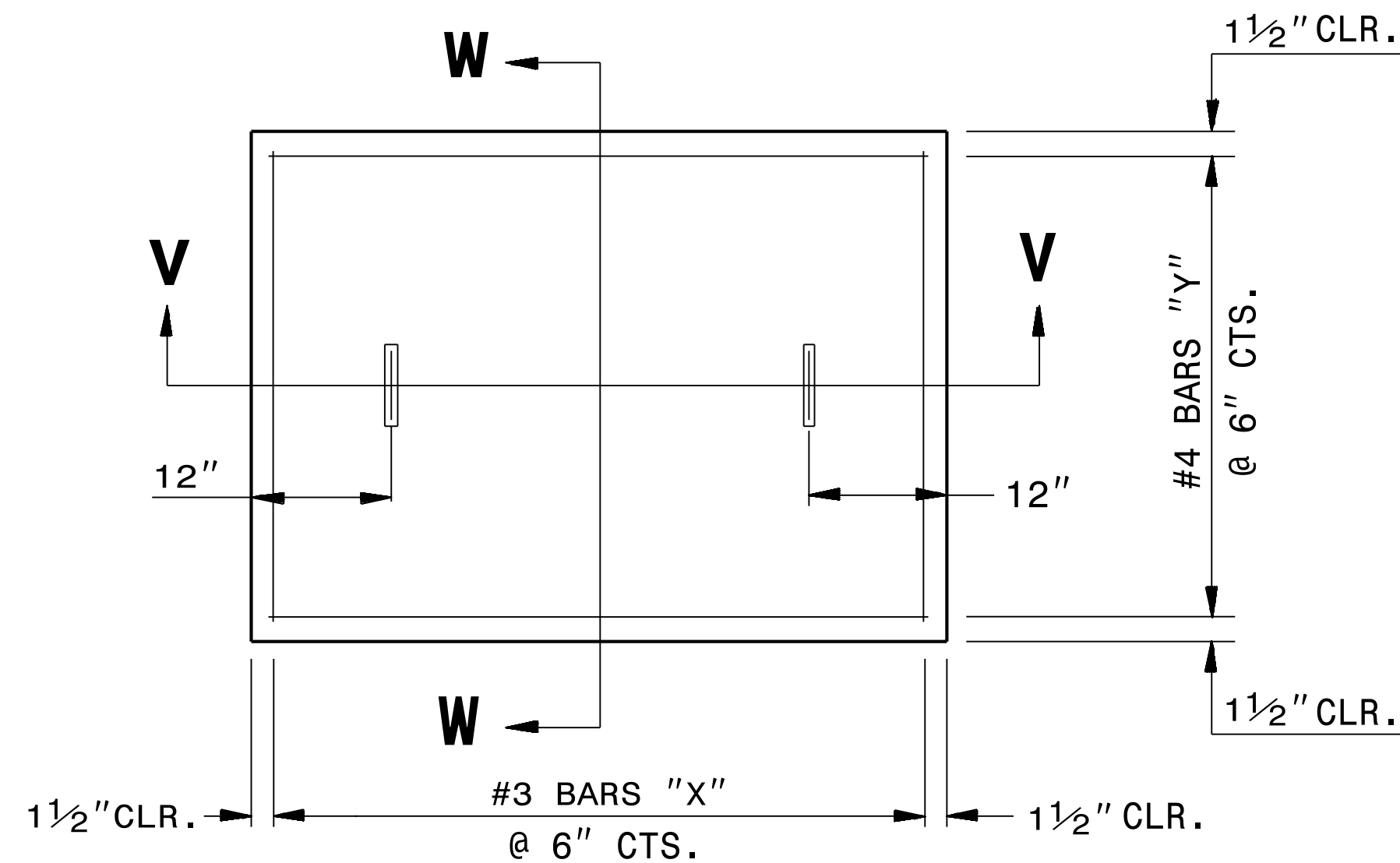
SECTION W-W



DETAIL OF HANDLE

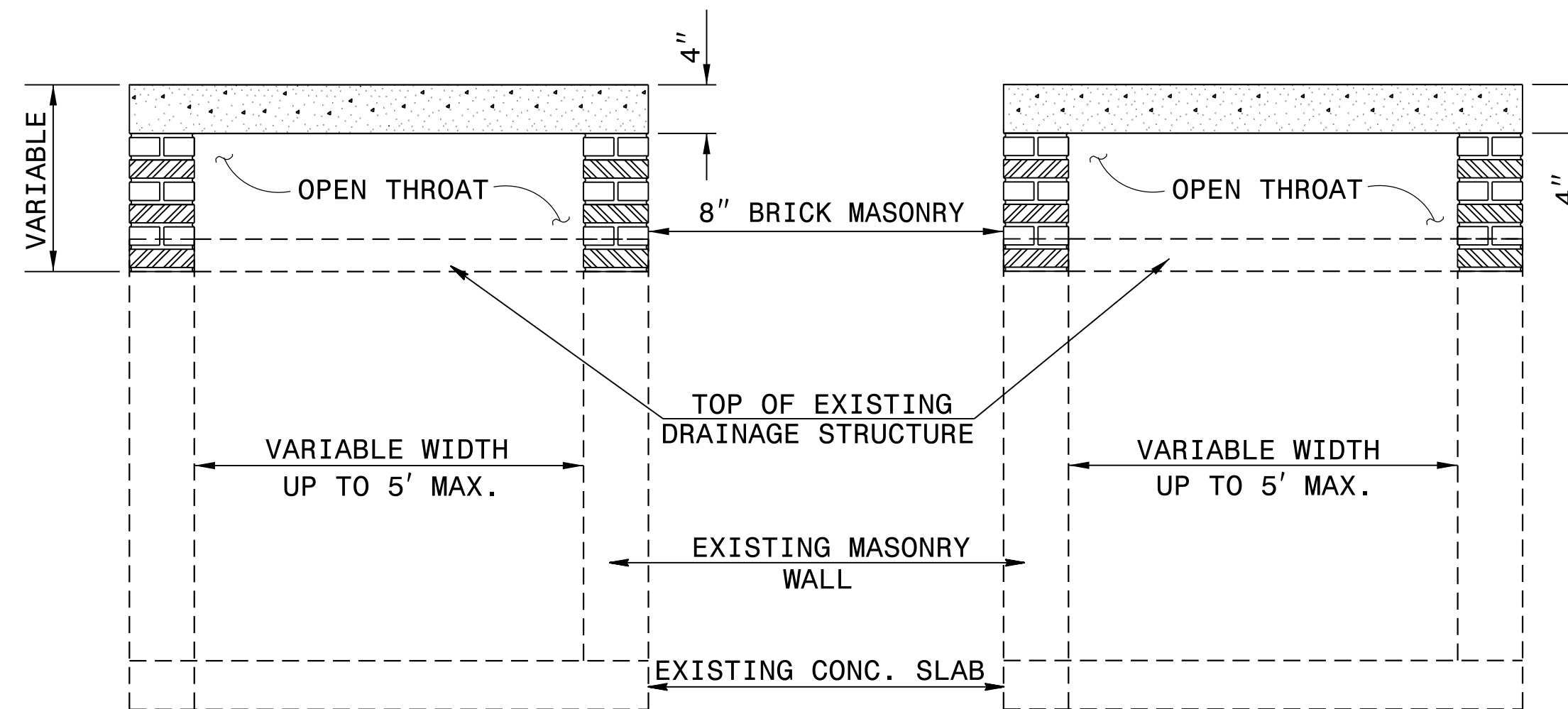


PART SECTION
THRU COVER SHOWING HANDLE



PLAN

PRECAST OR CAST IN PLACE TOP SLAB



SECTION W-W

SECTION V-V

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

REINFORCING STEEL

CODE	SIZE	QTY.	LENGTH	REINF. STEEL lbs.
X	#3	9	3'-1"	10.4
Y	#4	7	4'-1"	19.1
TOTAL				29.5 *

MASONRY

CY

TOP SLAB CONCRETE CLASS "B"	0.1783 *
BRICK MASONRY PER FT HT (MIN)	0.3127 *

NO DEDUCTIONS HAVE BEEN TAKEN FOR OPEN THROAT OPENINGS

*** NOTE:**

QUANTITIES BASED ON 3'-0" X 2'-0" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES.



Designed by:
Joel S. Haverstick
873F3D17DCDC45F

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DETAIL TO CONVERT EXISTING DRAINAGE BOX TO OPEN THROAT CATCH BASIN

ORIGINAL BY: E.E. WARD DATE: 9-02-03
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FILE SPEC.: s:usr/details/stand/cbto_openthrt.dgn

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04-MAY-2017 15:14 S:\Contracts\Contractors\Special Details\Howerton\Standard Drawings\Details in Lieu of Standards\Drawings\862d01 862d03 862d03 862d01.dgn
 Howerton A: CS0-29295

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT	SHEET 2 OF 11 862D01
<p>NOTE SPECIAL LAYER OF PAVEMENT</p> <p>USE 3'-1 1/2" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS. GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STANDARD 862D01 SHEET 1 OF 12).</p>		
<p>SECT. YY</p>	<p>SECT. ZZ</p>	
DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT		

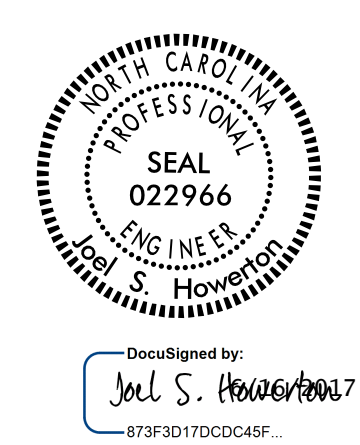
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT	SHEET 1 OF 11 862D01
<p>NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6" BEGIN 3'-1 1/2" POST SPACING AT A POINT 25' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.</p>		
<p>SECT. XX</p>	<p>SECT. YY</p>	<p>SECT. ZZ</p>
DETAIL OF MEDIAN TREATMENT AT UNDERPASS		

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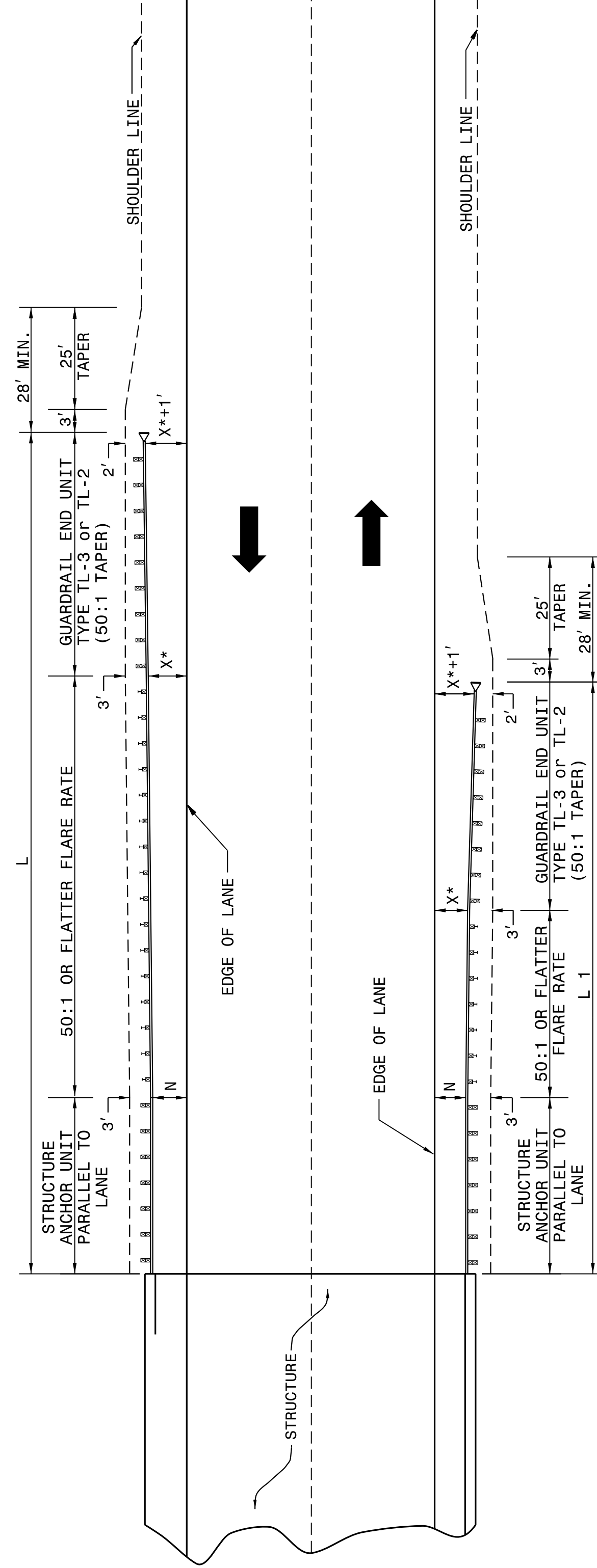
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01



GUARDRAIL INSTALLATION AT BRIDGE APPROACHES FOR TWO-LANE, TWO-WAY TRAFFIC

DESIGN SPEED (MPH)	"L" APPROACH LENGTH (FT.)		"L1" TRAILING LENGTH (FT.)	
	DESIGN YEAR ADT	CURRENT YEAR ADT	DESIGN YEAR ADT	CURRENT YEAR ADT
70	1001-2000	400-1000	OVER 2000	1001-2000
60	362.5'	382.5'	350.0'	287.5'
50	300.0'	287.5'	275.0'	225.0'
40	212.5'	212.5'	200.0'	162.5'
	175.0'	150.0'	137.5'	112.5'
X*	8'	6'	4'	4'

* USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1).

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

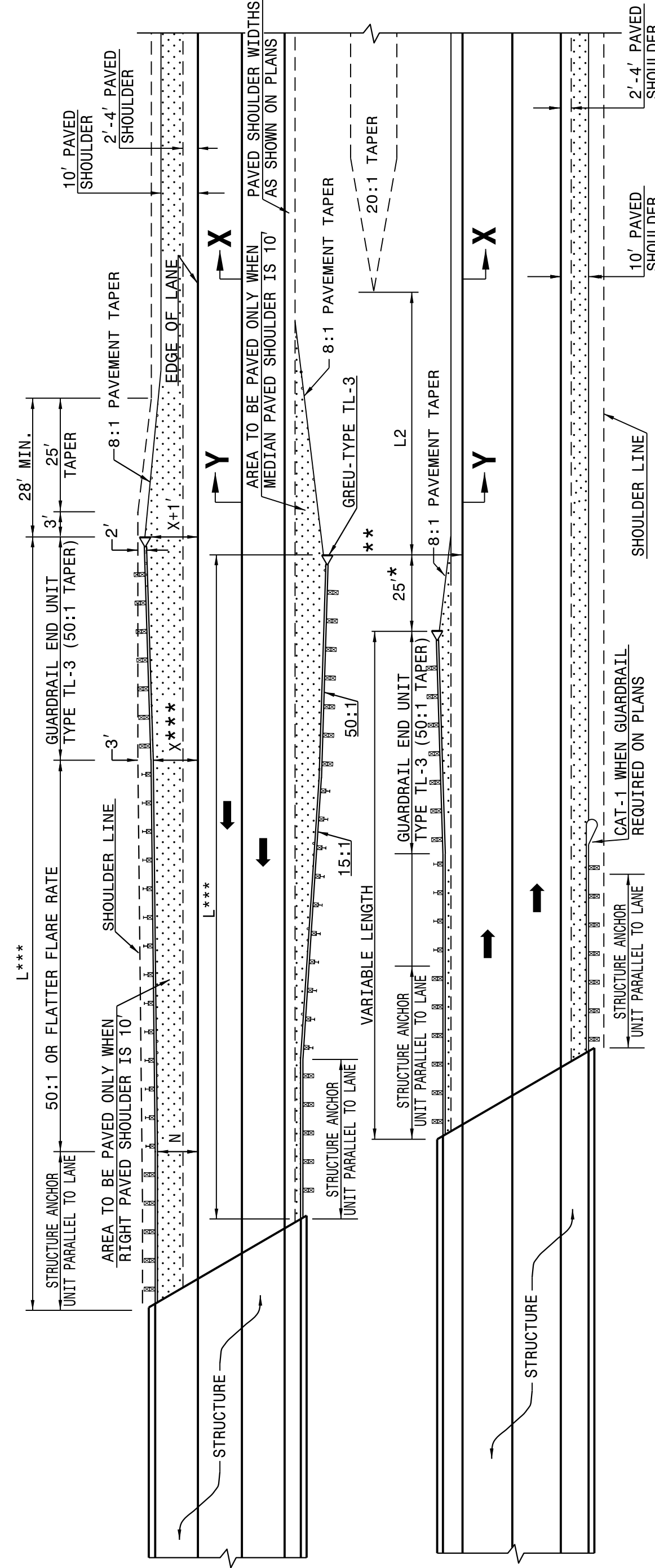
FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

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SHEET 3 OF 11
862D01



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

MEDIAN WIDTH	-L-***	60 MPH	50 MPH	-L2- DIM.
30'	300.0'	250.0'	150.0'	80.0'
36'	300.0'	250.0'	150.0'	60.0'
40' & ABOVE	300.0'	250.0'	150.0'	40.0'

NOTES: * MINOR VARIATION TO THE 25'-0" DIMENSION IS PERMISSIBLE TO ACCOMMODATE THE 12'-6" IN GUARDRAIL LENGTHS.

** NO GUARDRAIL IS REQUIRED ON THE TRAILING END WHEN THIS DISTANCE EXCEEDS CLEAR ROADSIDE RECOVERY AREA FOR THE APPROPRIATE DESIGN SPEED.

*** BASED ON "X" OF 12' USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE. THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.

SEE SHEET 1 OF 12 FOR SECTIONS XX, YY
SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

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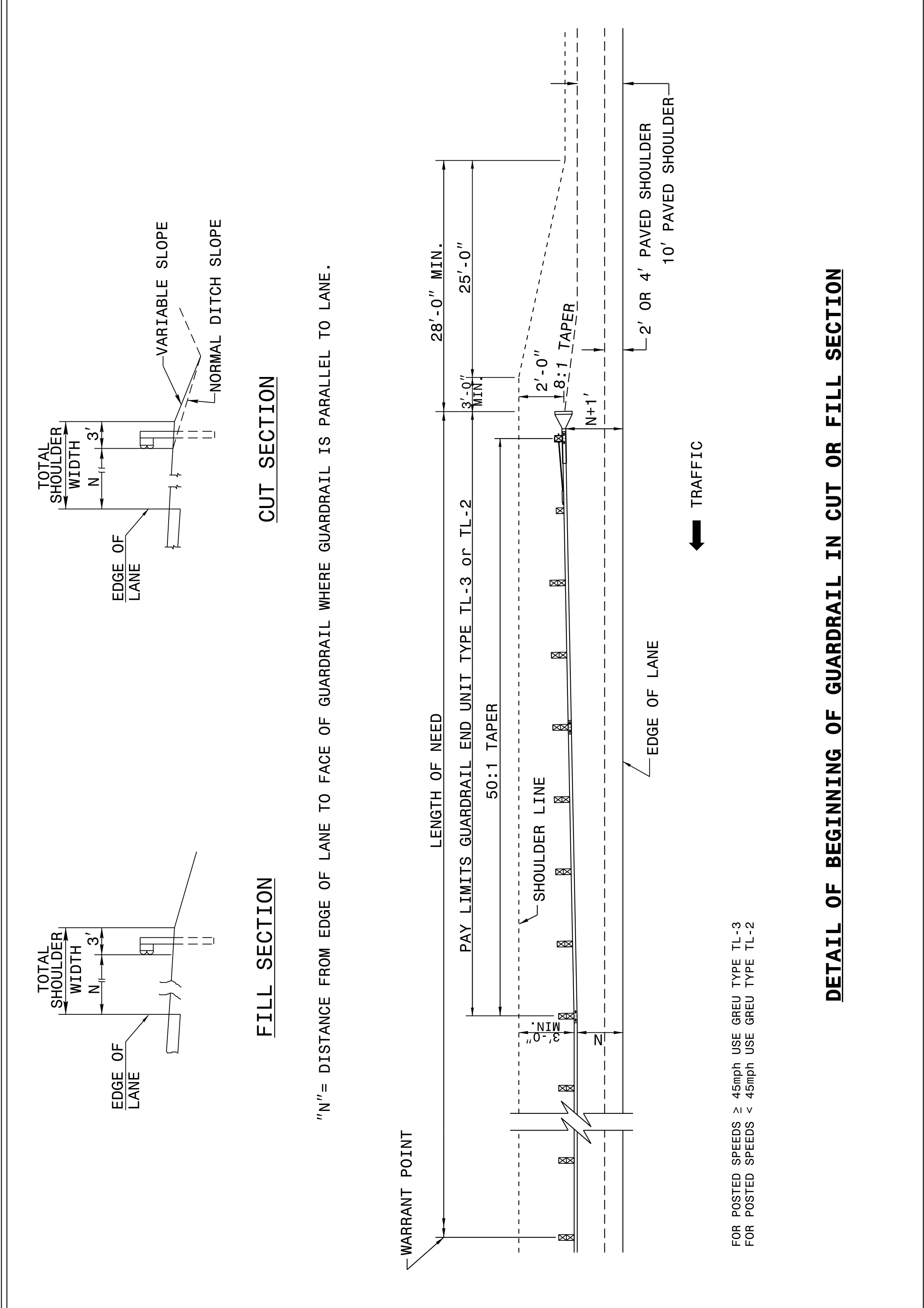
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 11
862D01

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FILL SECTION

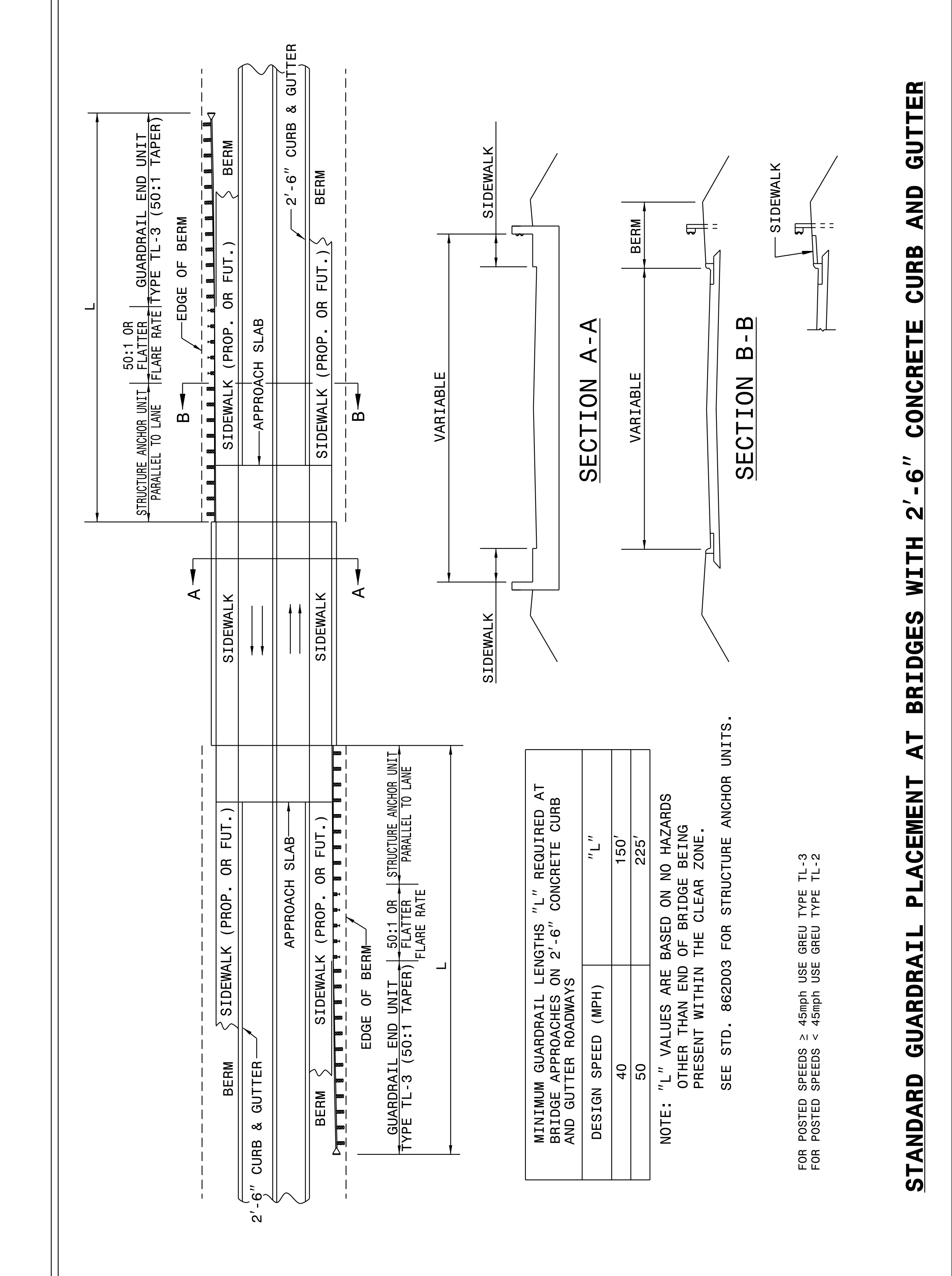
CUT SECTION

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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DESIGN SPEED (MPH)	"L"
40	150'
50	225'

NOTE: "L" VALUES ARE BASED ON NO HAZARDS OTHER THAN END OF BRIDGE BEING PRESENT WITHIN THE CLEAR ZONE.

SEE STD. 862D03 FOR STRUCTURE ANCHOR UNITS.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 5 OF 11
862D01

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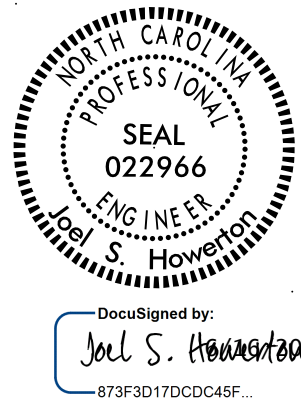
STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

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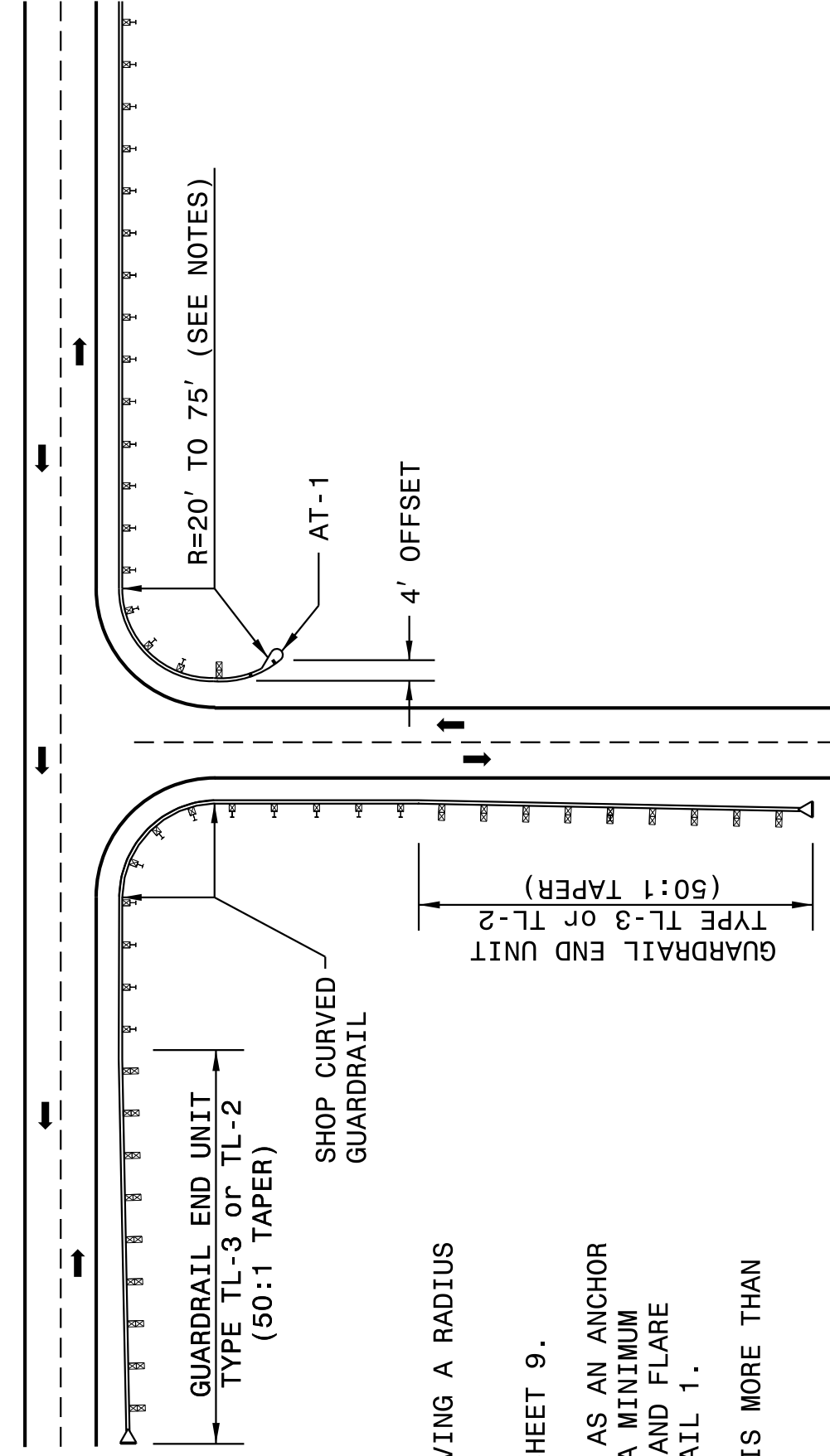
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 8 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 8 OF 11
862D01

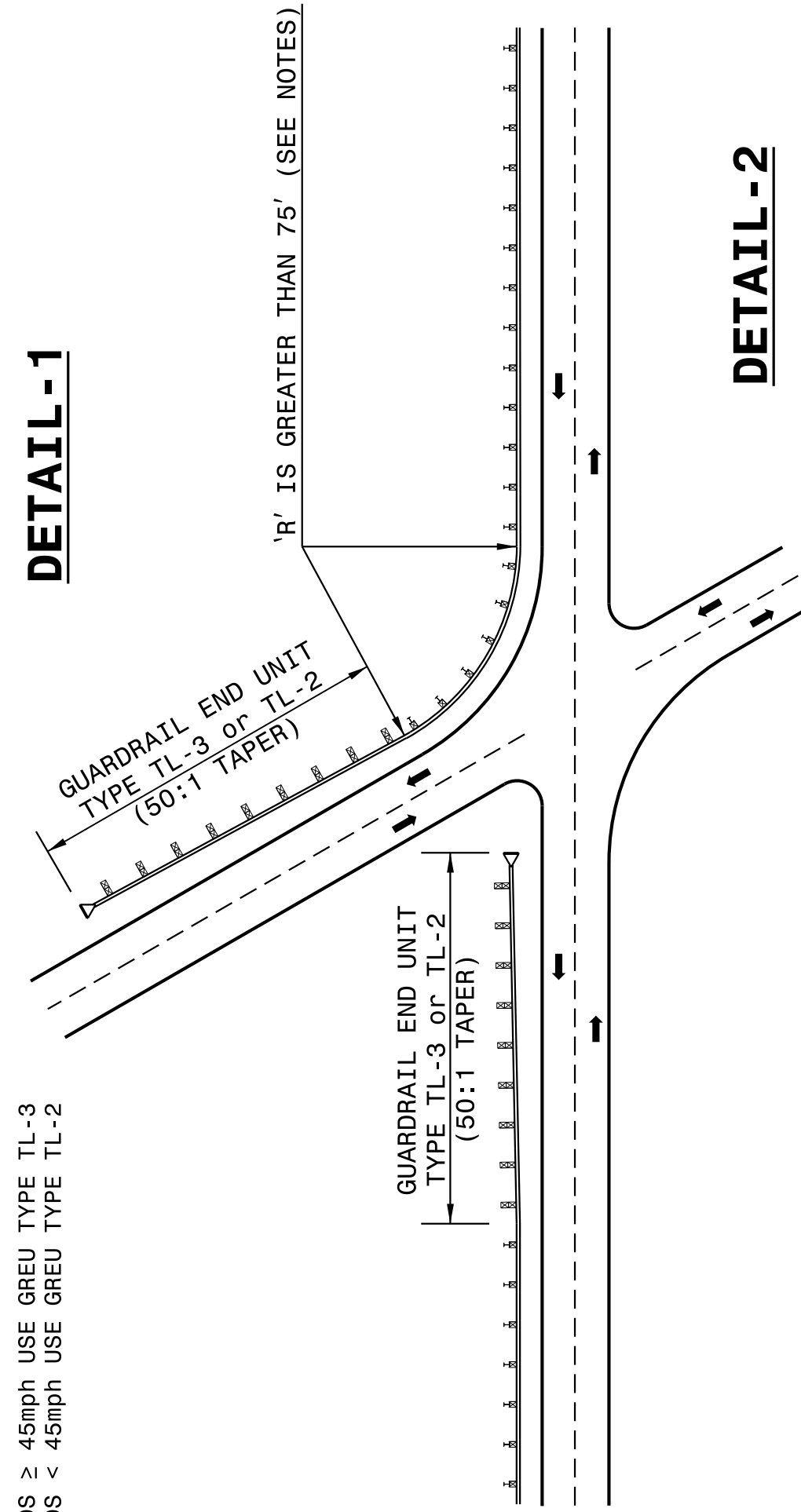


NOTES:
SHOP CURVED GUARDRAIL IS DEFINED AS HAVING A RADIUS OF 150' OR LESS.
WHEN RADIUS IS LESS THAN 20' REFER TO SHEET 9.
WHENEVER SHOP CURVED GUARDRAIL IS USED AS AN ANCHOR AND THE RADIUS IS FROM 20' TO 75', USE A MINIMUM LENGTH OF 50' OF SHOP CURVED GUARDRAIL AND FLARE WITH AN AT-1 ANCHOR UNIT. REFER TO DETAIL 1.
WHENEVER SHOP CURVED GUARDRAIL RADIUS IS MORE THAN 75', REFER TO DETAIL 2.

MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL - 1



DETAIL - 2

GUARDRAIL TREATMENT AT INTERSECTIONS

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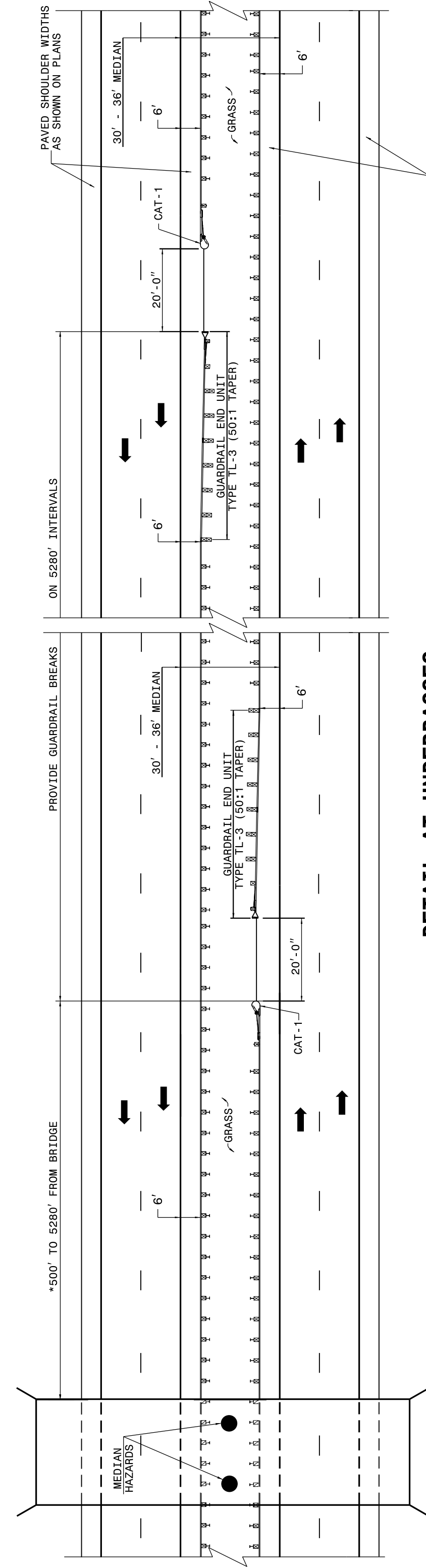
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 7 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 7 OF 11
862D01

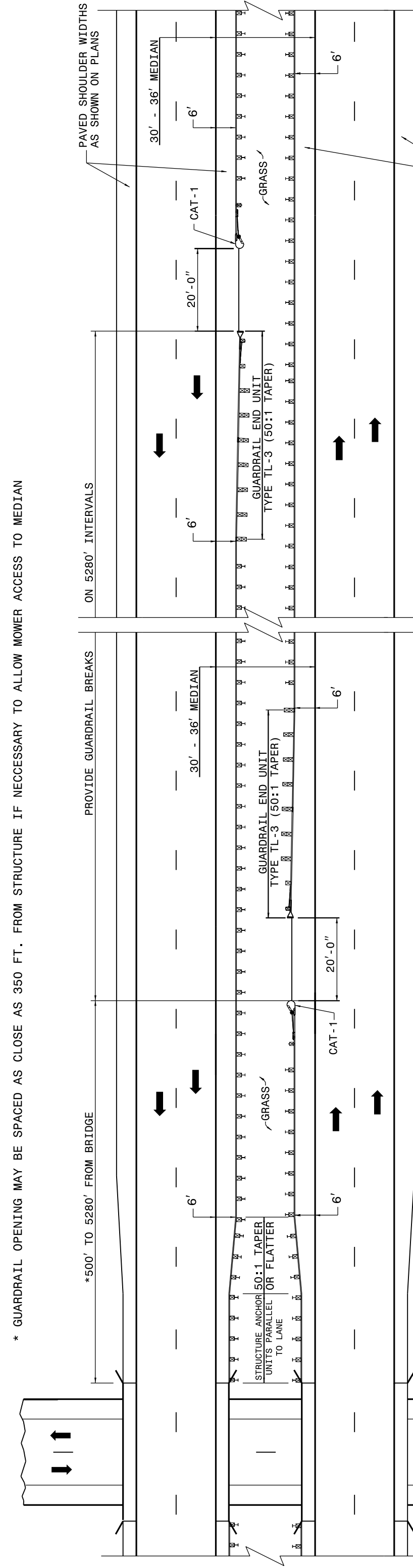


DETAIL AT UNDERPASSES

* GUARDRAIL OPENING MAY BE SPACED AS CLOSE AS 350 FT. FROM STRUCTURE IF NECESSARY TO ALLOW MOWER ACCESS TO MEDIAN

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 7 OF 11
862D01



DETAIL AT OVERPASSES

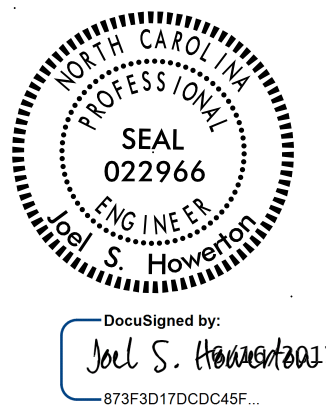
FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

GUARDRAIL BREAK INTERVALS WITH 30' - 36' MEDIANS

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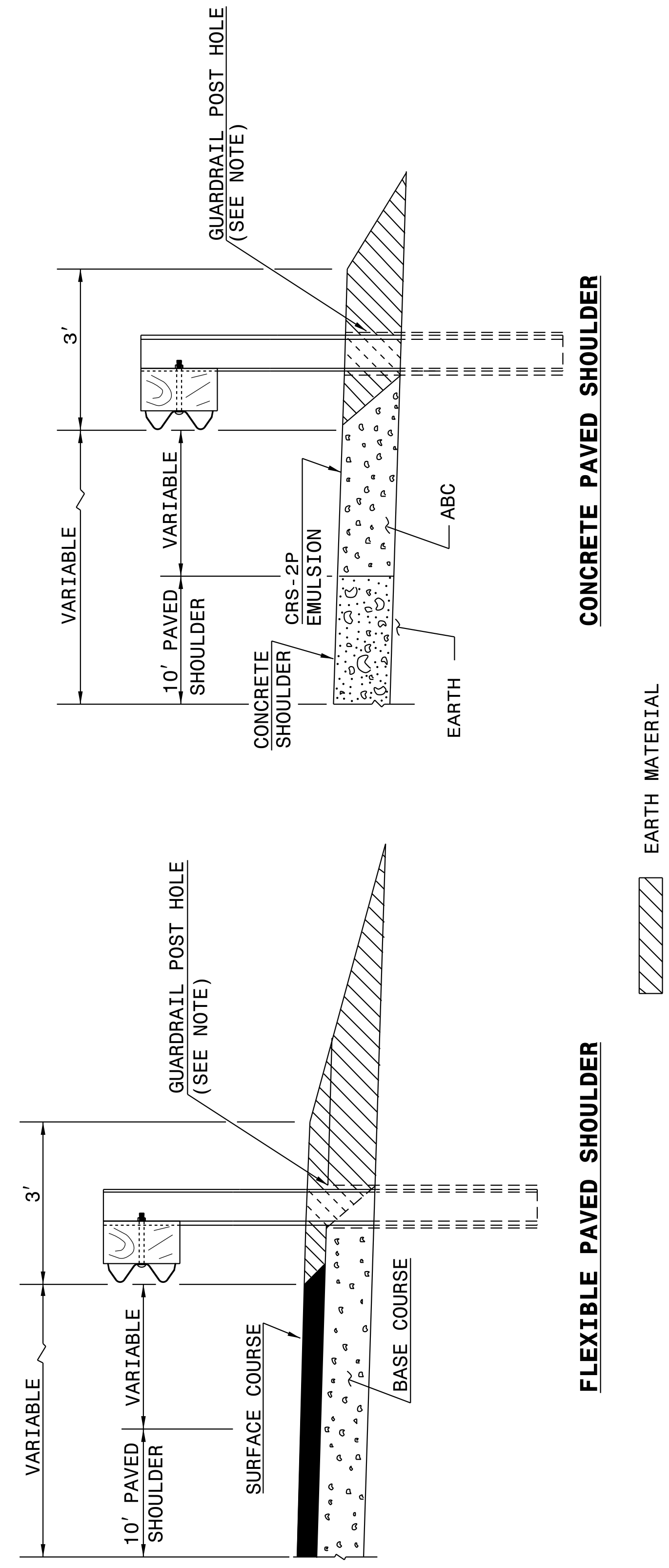
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ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 10 OF 11
862D01



FLEXIBLE PAVED SHOULDER

CONCRETE PAVED SHOULDER

NOTE: WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

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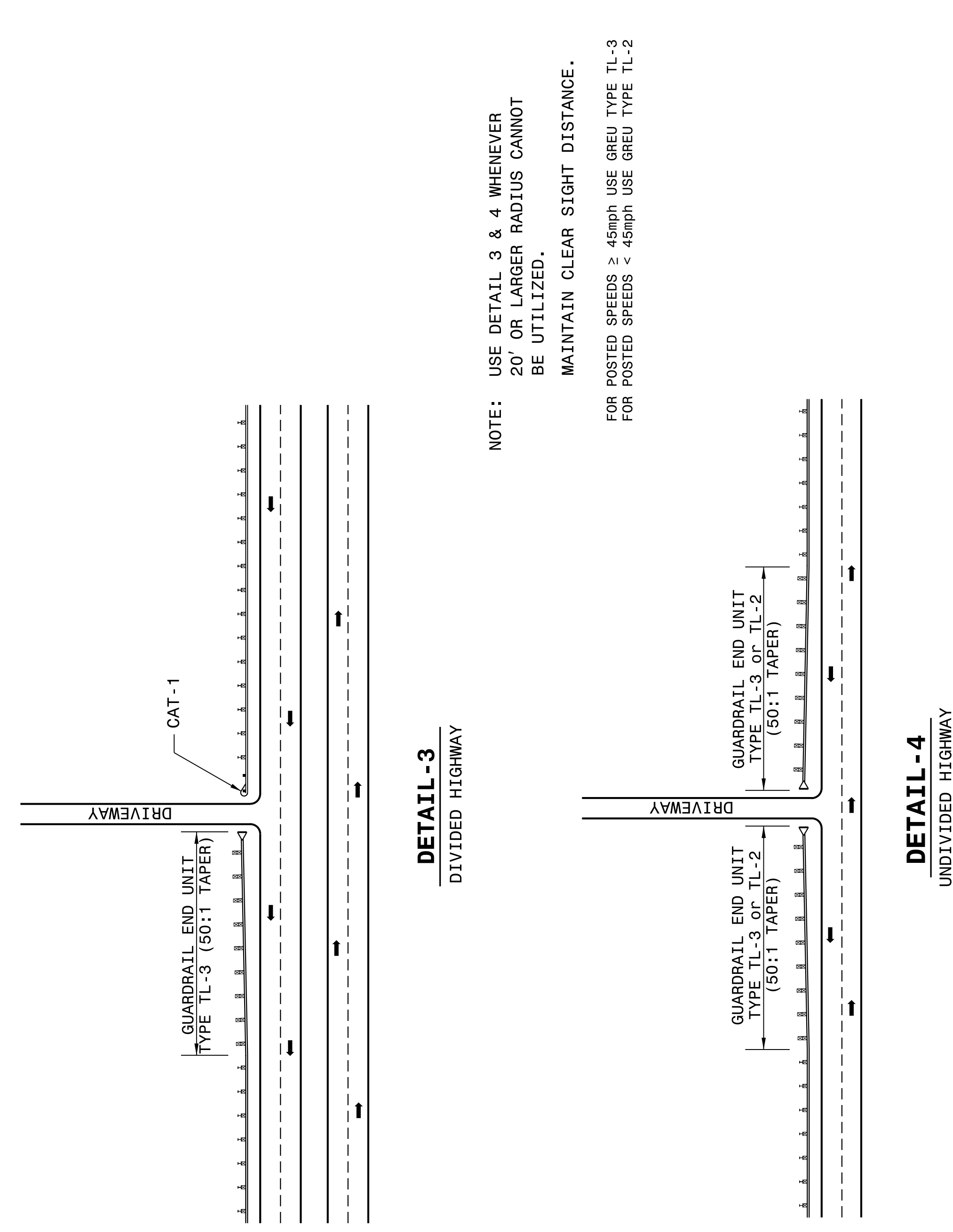
ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 9 OF 11
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 9 OF 11
862D01



DETAIL -3
DIVIDED HIGHWAY

DETAIL -4
UNDIVIDED HIGHWAY

GUARDRAIL TREATMENT AT DRIVEWAYS

NOTE: USE DETAIL 3 & 4 WHENEVER 20' OR LARGER RADIUS CANNOT BE UTILIZED.
MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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ROADWAY DETAIL DRAWING FOR
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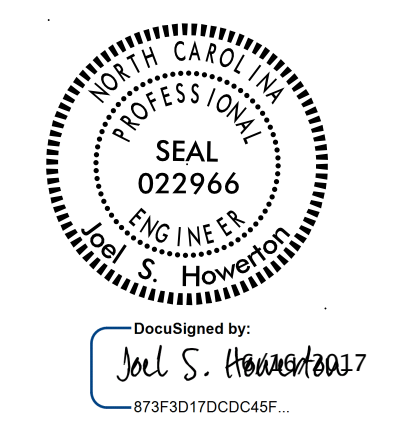
SHEET 9 OF 11
862D01

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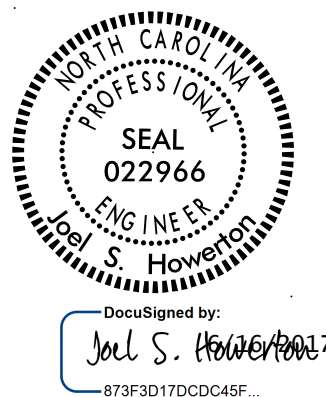
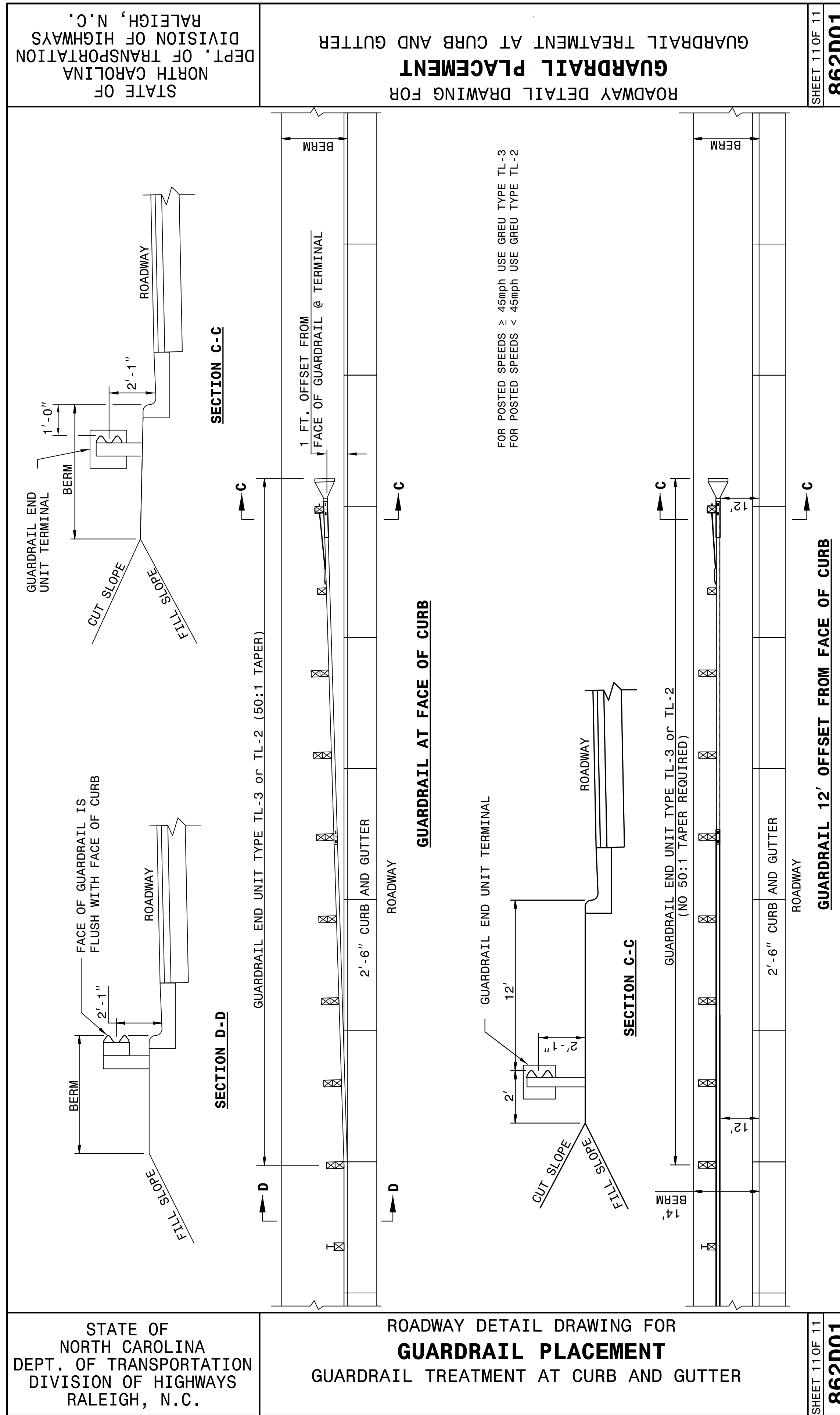
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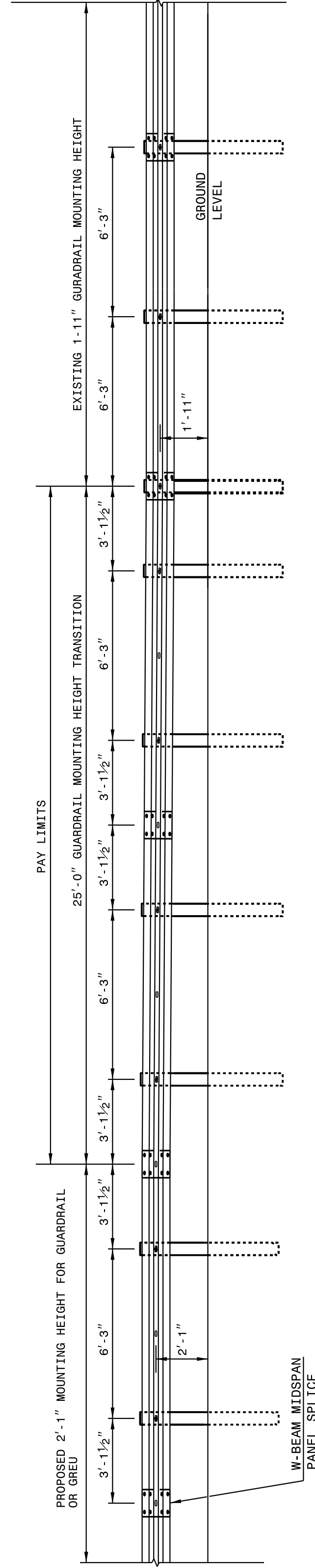
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 1'-11", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 2'-1" GUARDRAIL.



ELEVATION VIEW

TRANSITION FROM OR 1'-11" TO 2'-1" W-BEAM GUARDRAIL MOUNTING HEIGHT

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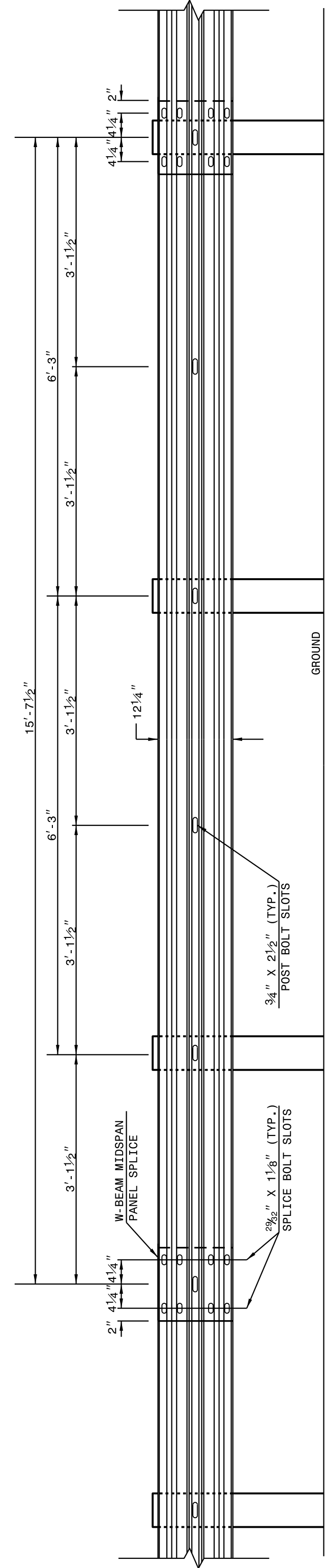
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



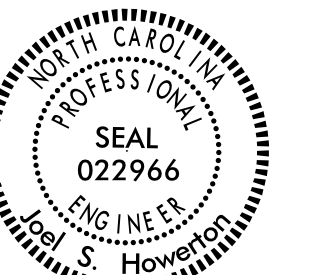
15'-7 1/2" W-BEAM GUARDRAIL PANEL

NOTE: USE 5-SPACE 15'-7 1/2" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT OR EXISTING GUARDRAIL THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN

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ROADWAY DETAIL DRAWING FOR
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SHEET 3 OF 8
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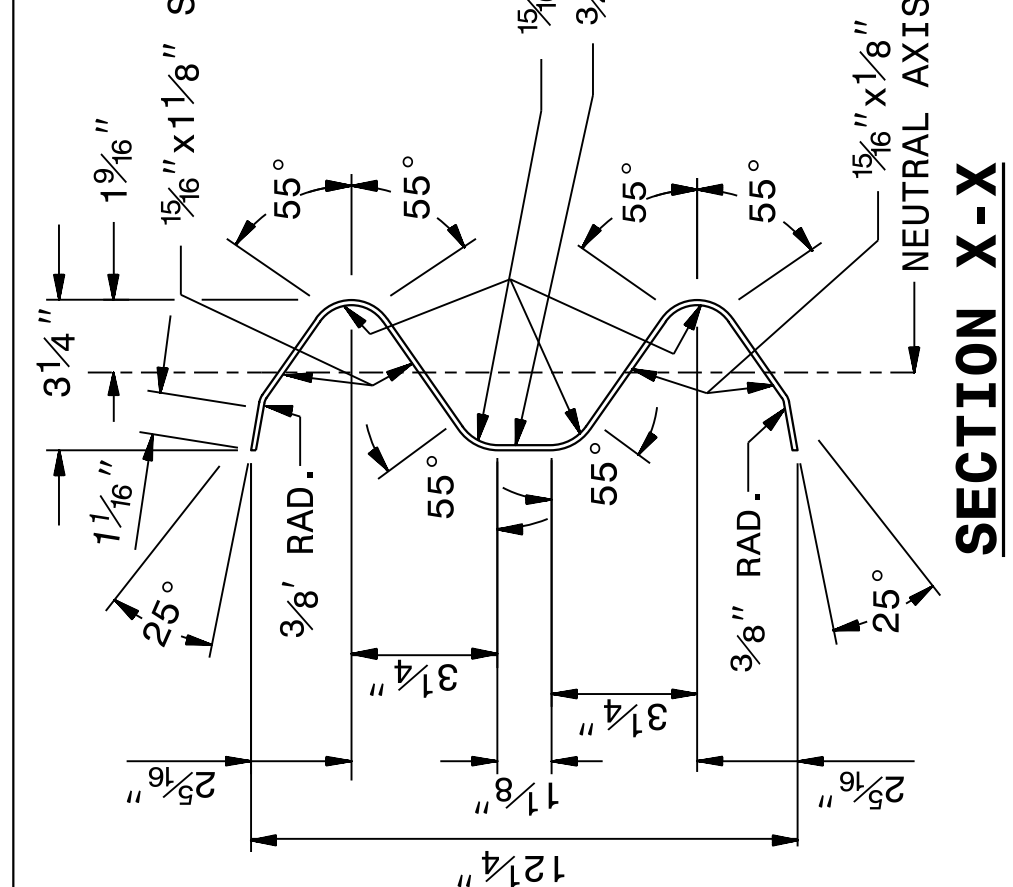
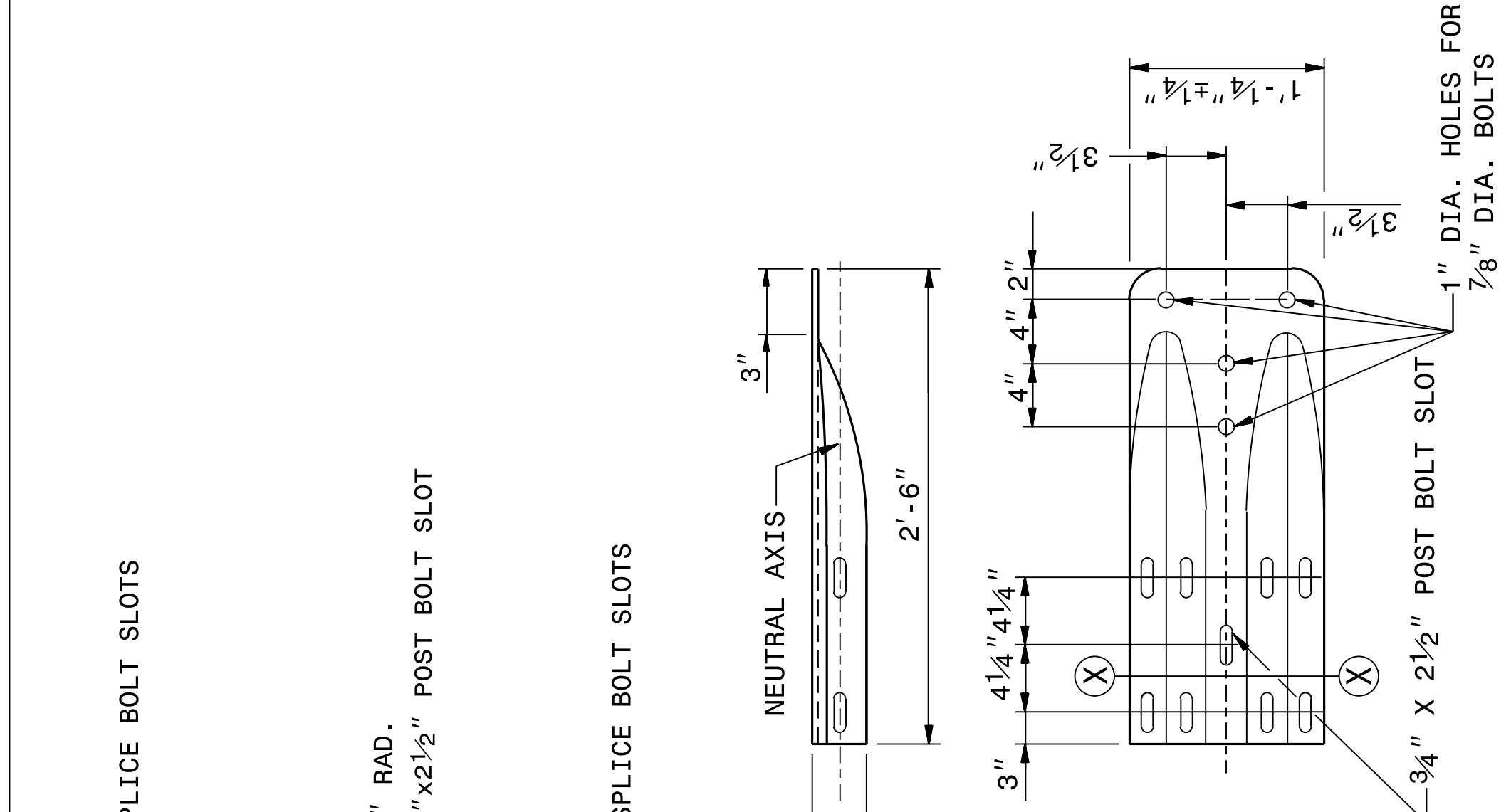
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION	SHEET 6 OF 8 862D02
SYSTEM PARTS		
<p>WOOD OFFSET BLOCK (FOR WOOD POSTS)</p>	<p>STEEL TUBE TS 6"X8"X0.1875"</p>	<p>WOOD OFFSET BLOCK (FOR WOOD POSTS)</p>
<p>STANDARD LINE POST</p>	<p>SHORT WOOD BREAKAWAY POST</p>	<p>WOOD OFFSET BLOCK (FOR WOOD POSTS)</p>
<p>PLAN</p>	<p>FRONT</p>	<p>FRONT</p>
<p>SIDE</p>	<p>SIDE</p>	<p>SIDE</p>
<p>FRONT</p>	<p>FRONT</p>	<p>FRONT</p>
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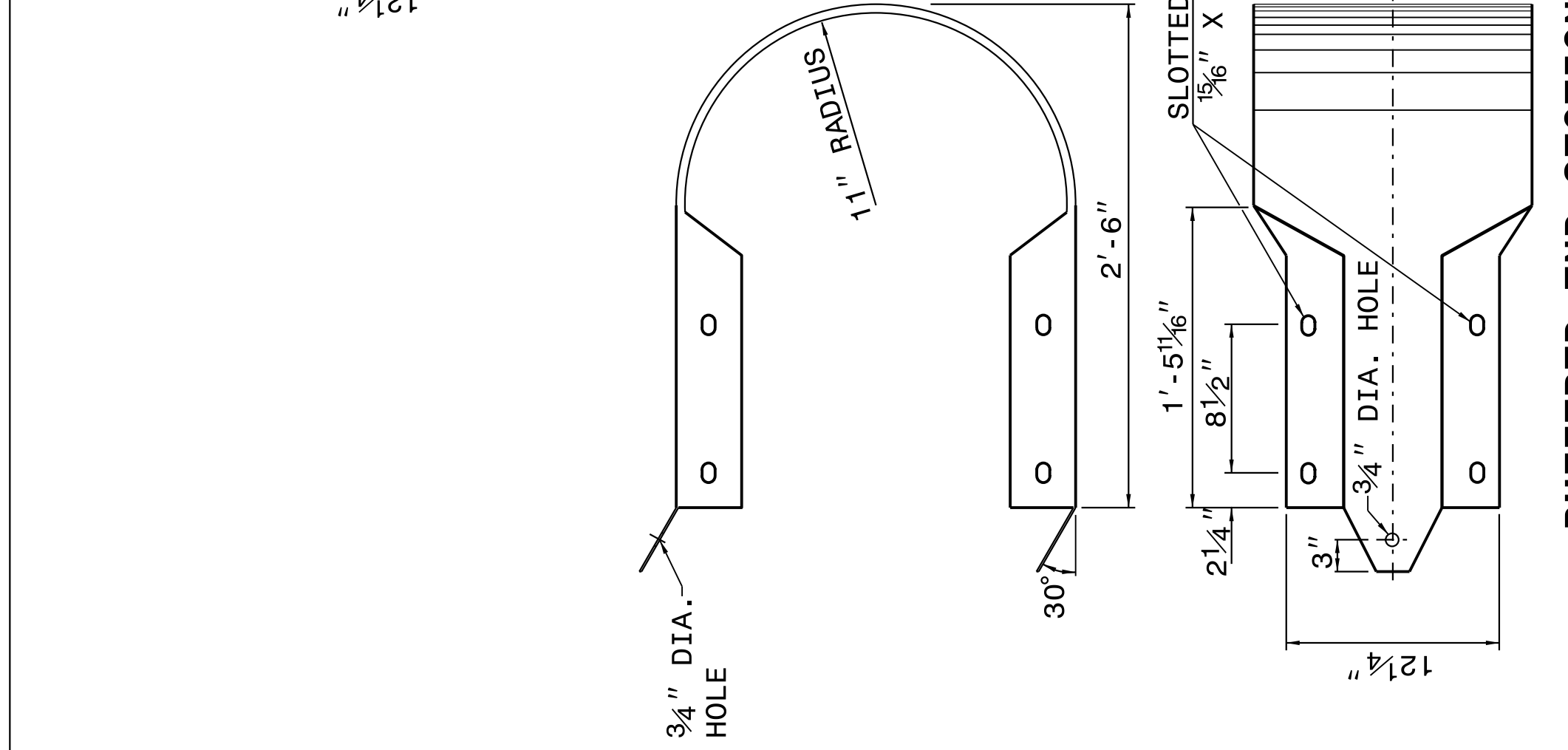
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GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02



SECTION X-X

TYPICAL END SHOE



BUFFERED END SECTION

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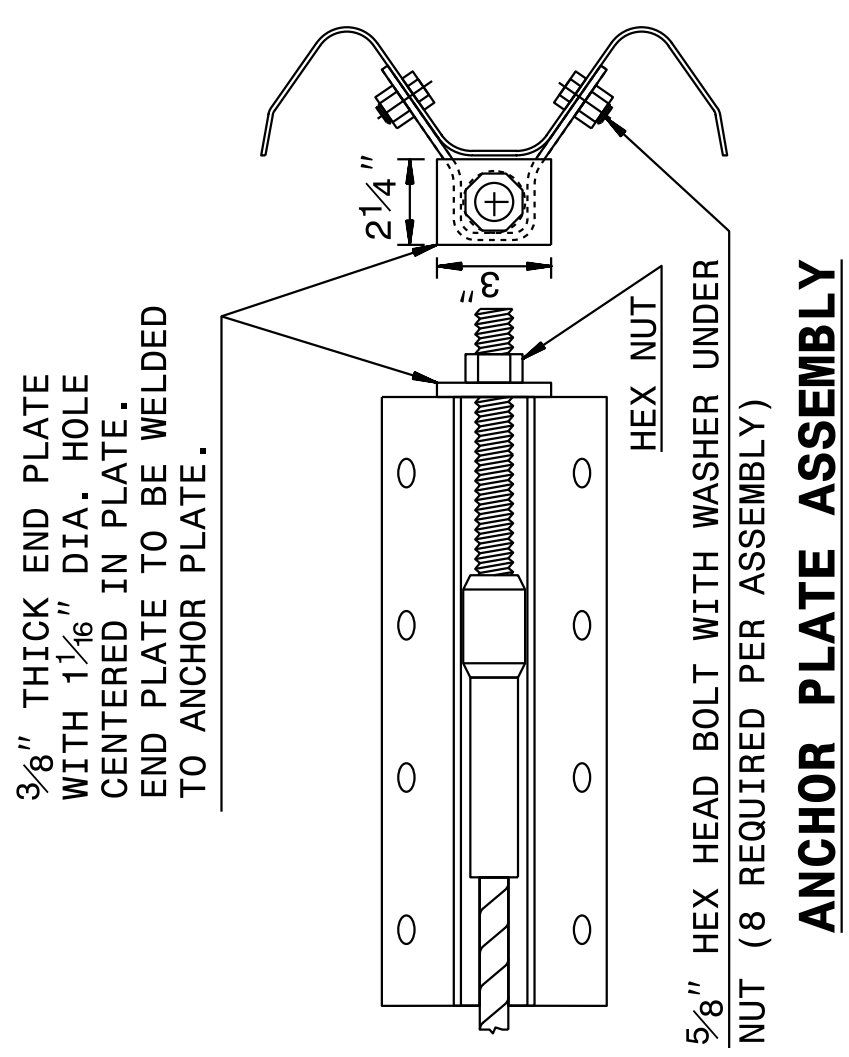
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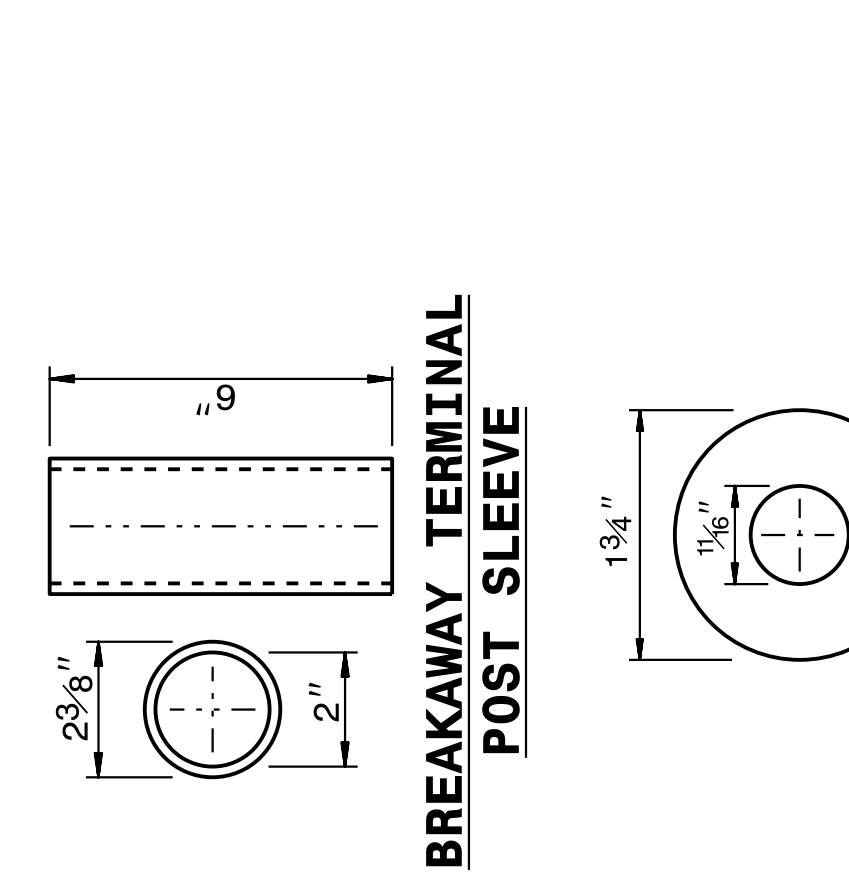
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ROADWAY DETAIL DRAWING FOR
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SHEET 7 OF 8
862D02

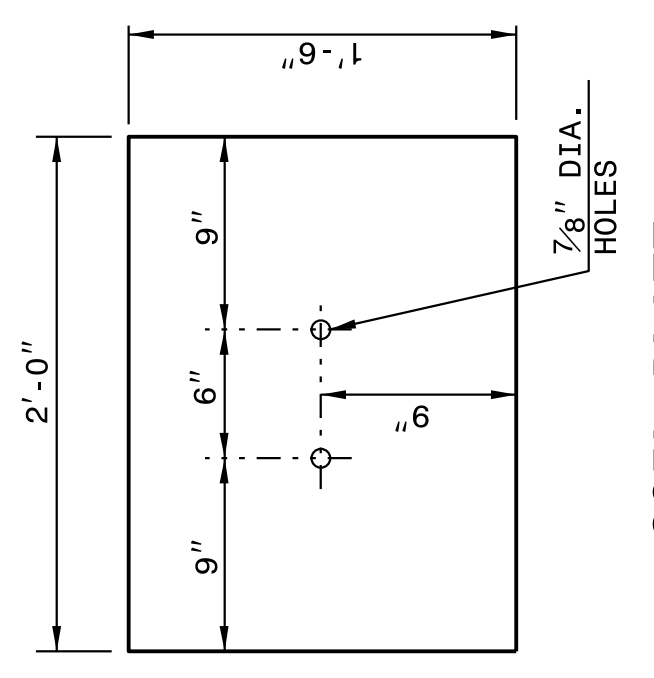


ANCHOR PLATE ASSEMBLY



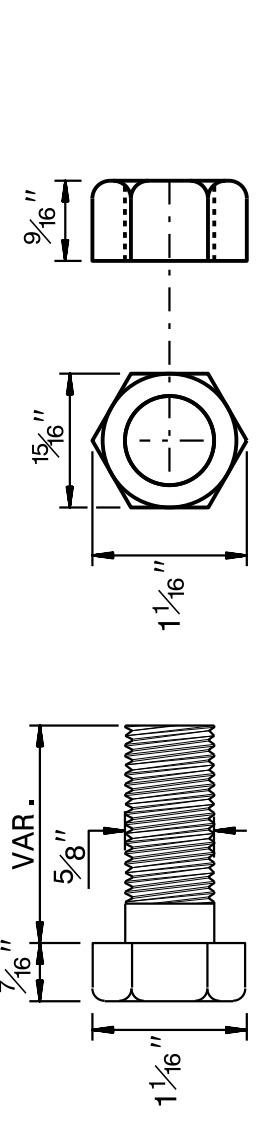
BREAKAWAY TERMINAL POST SLEEVE

DETAIL OF STANDARD WASHER

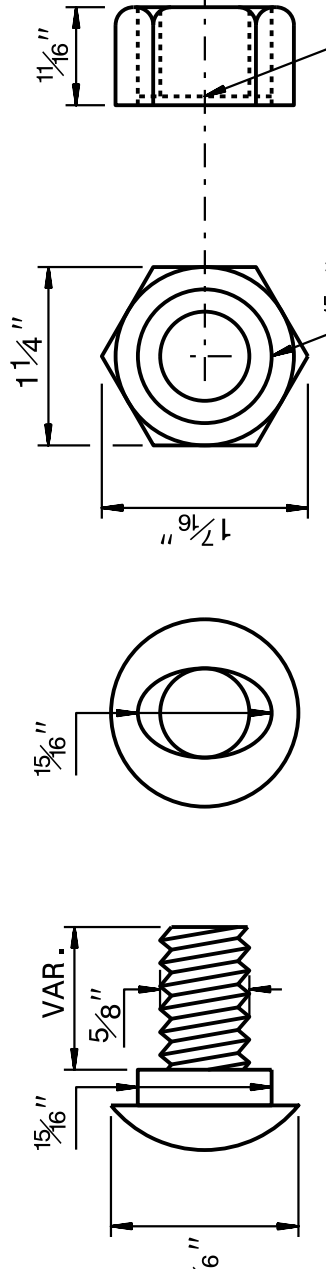


SOIL PLATE

BEARING PLATE



DETAIL OF STANDARD HEX BOLT AND NUT

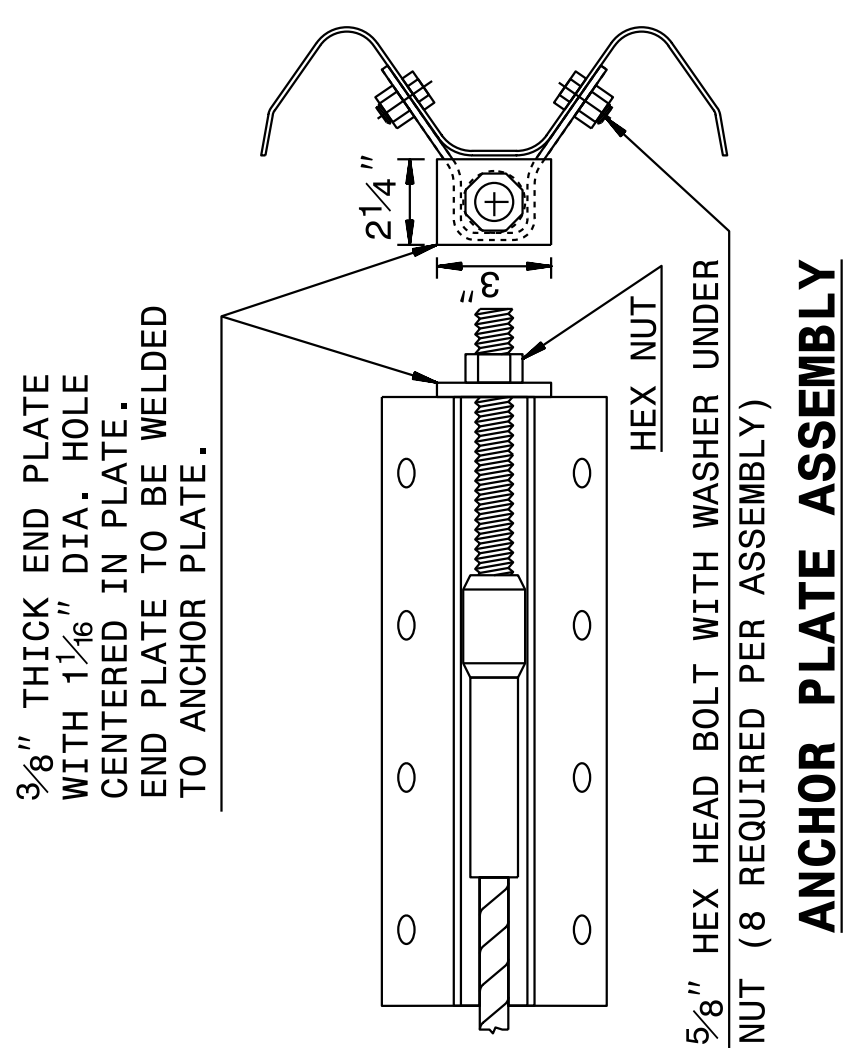


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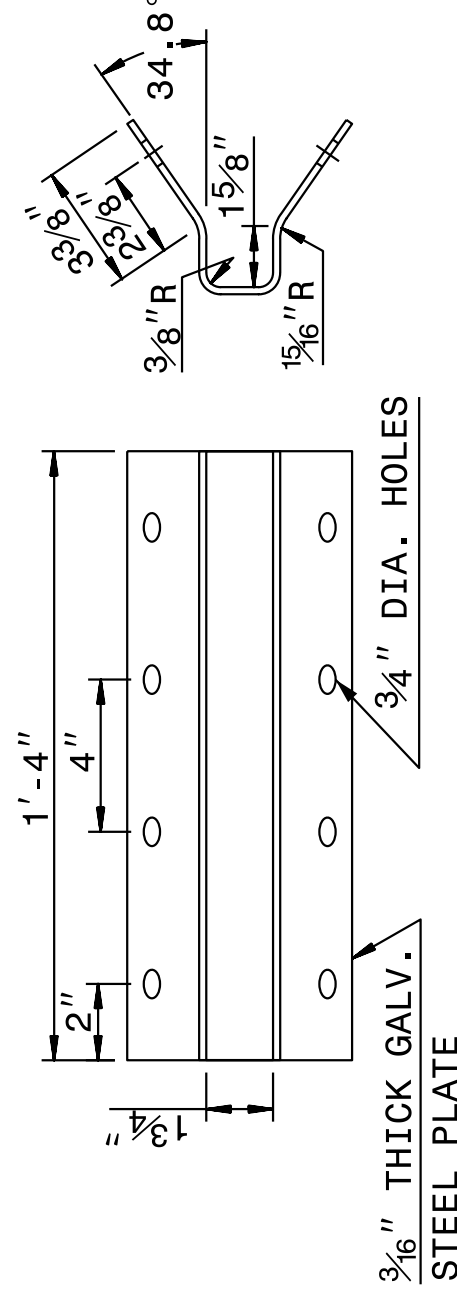
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02



SWAGED CABLE



ANCHOR PLATE

CABLE ASSEMBLY

SYSTEM PARTS

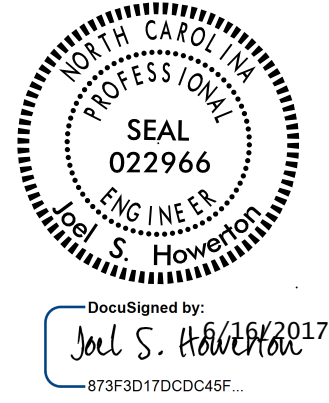
SYSTEM PARTS - GENERAL USE

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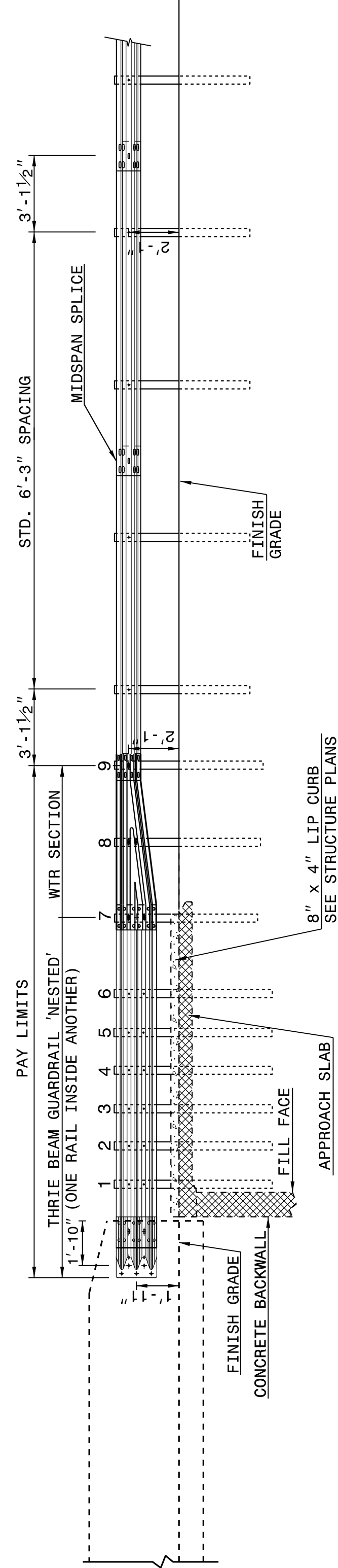
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STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

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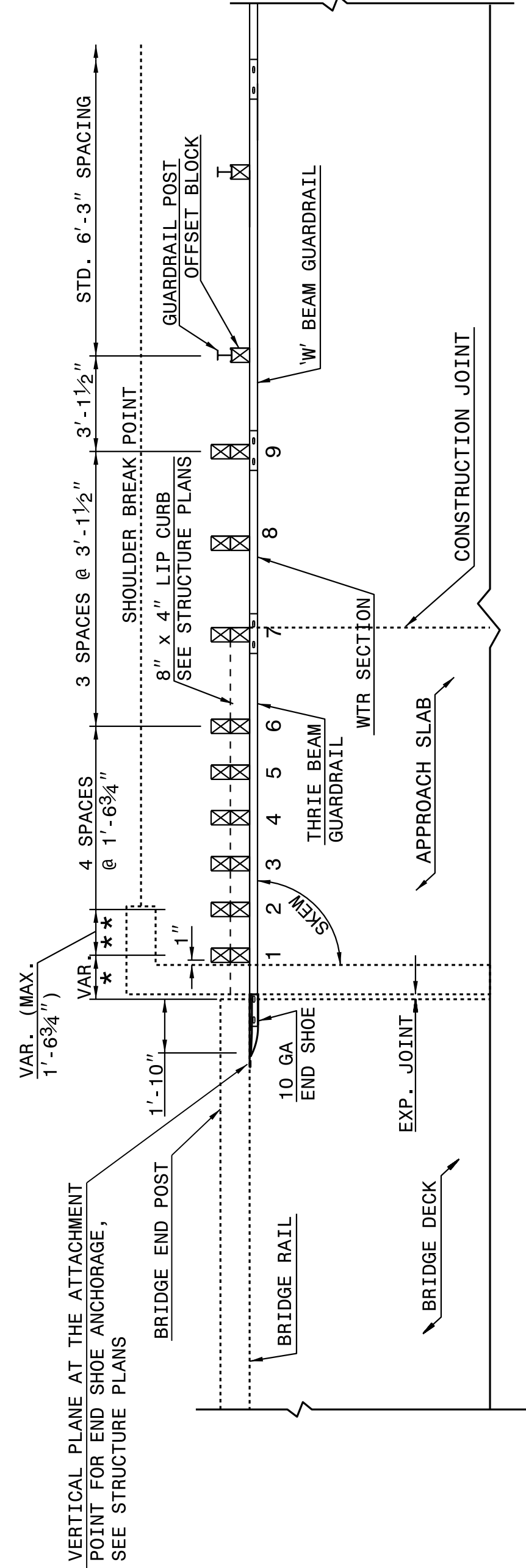
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STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



ELEVATION

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8' x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER**

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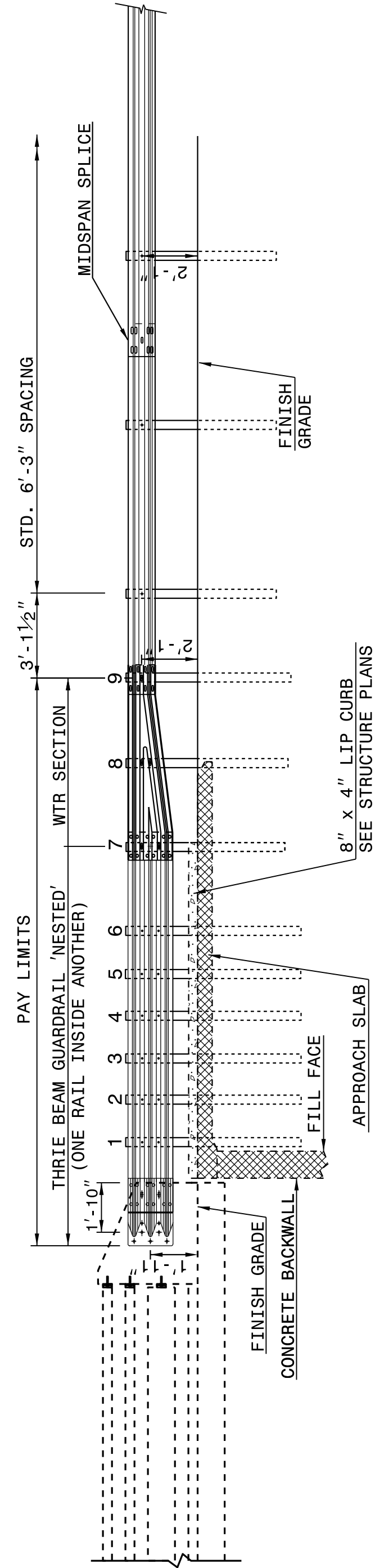
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

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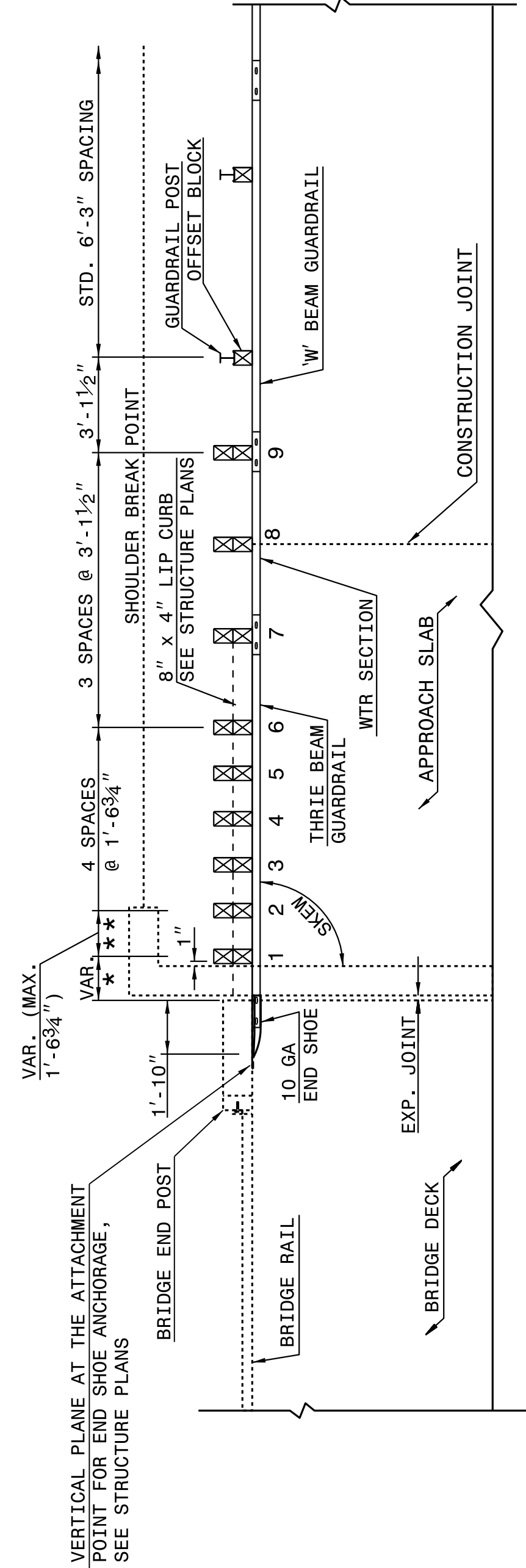
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



ELEVATION

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8' x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE**



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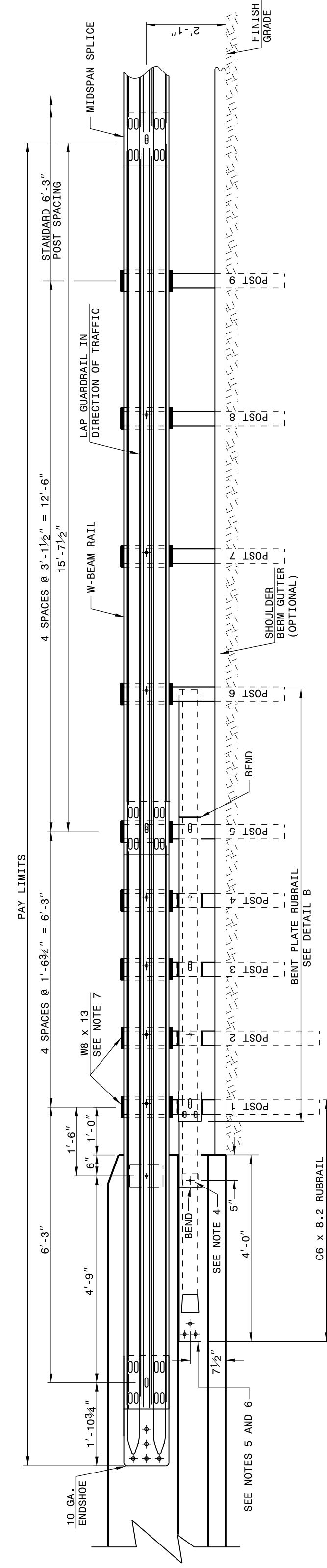
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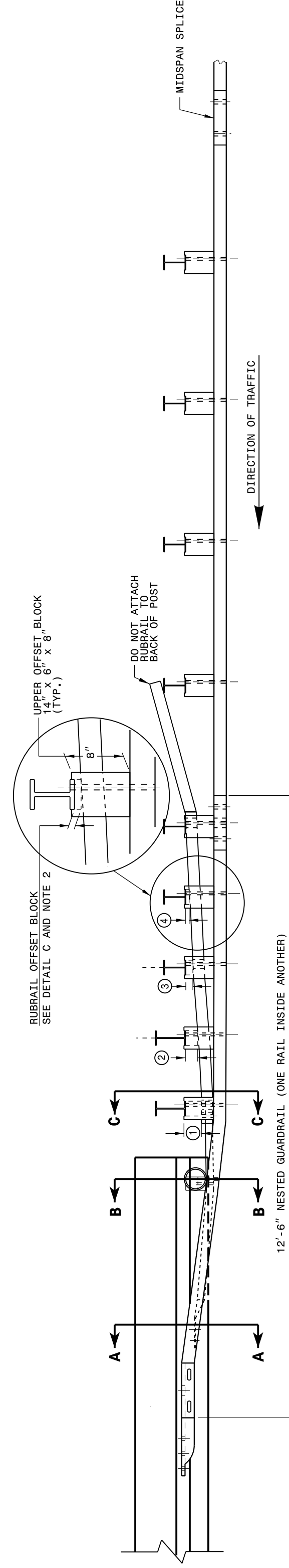
ROADWAY DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
 GUARDRAIL ANCHOR UNIT TYPE B-77
 FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03



ELEVATION

- GENERAL NOTES:
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL. RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 3/8" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE RUBRAIL BLOCKOUTS TO POSTS 1 AND 4, SECURE RUBRAIL AND BLOCKOUTS TO POSTS 2 AND 3. RUBRAIL IS SECURED TO POST 5 WITH 3/8" BUTTONHEAD BOLTS. RUBRAIL IS NOT TO BE USED ON POST 6.
 - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER X 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" X 1 1/4" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
 - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" X 3" LAG BOLT WITH FLAT WASHER. 5) SHOP FABRICATE THE C6 X 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH FLUSH WITH THE SLOPED END OF THE BARRIER OR BRIDGE RAIL.
 - ANCHOR THE BARRIER OR BRIDGE RAIL.
 - (a) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE 5/8" X 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1/2".
 - (b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04).
 - A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01).
 - (c) AT NEW BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
 - POSTS 1 AND 2 ARE W8 X 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 X 8.5.



PLAN

GUARDRAIL ANCHOR UNIT TYPE B-77

SHEET 4 OF 7
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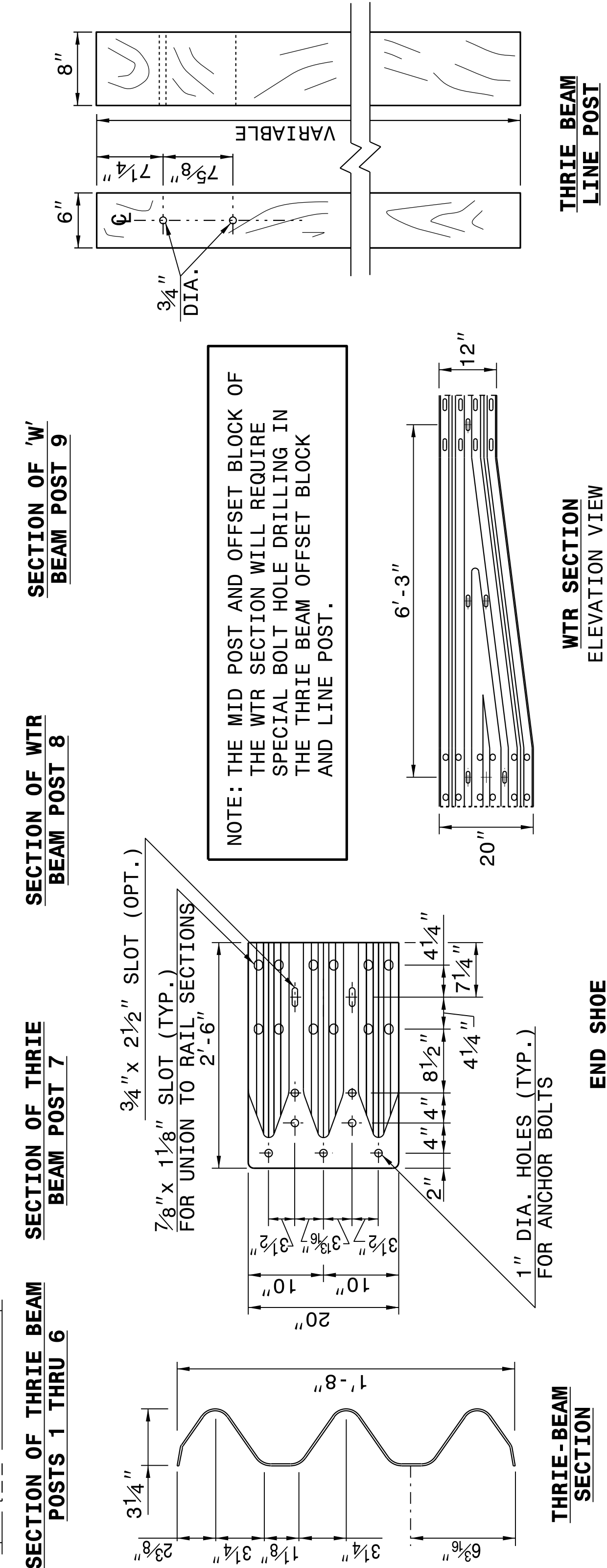
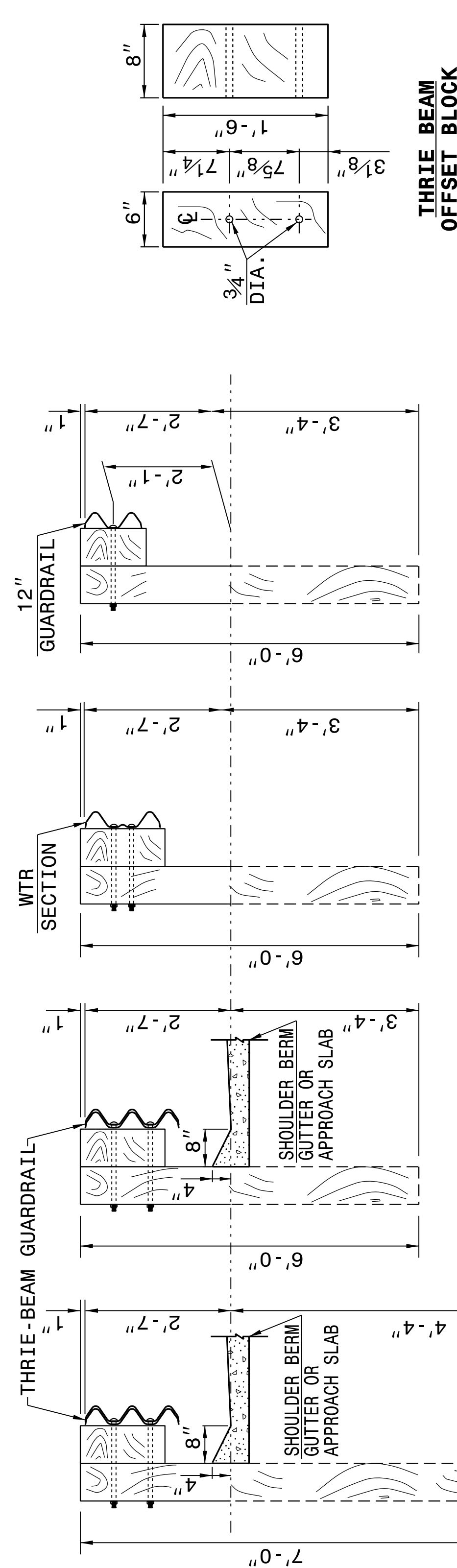
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STRUCTURE ANCHOR UNIT
 FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03

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ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
862D03



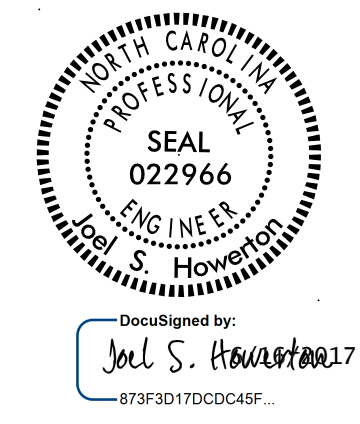
NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.

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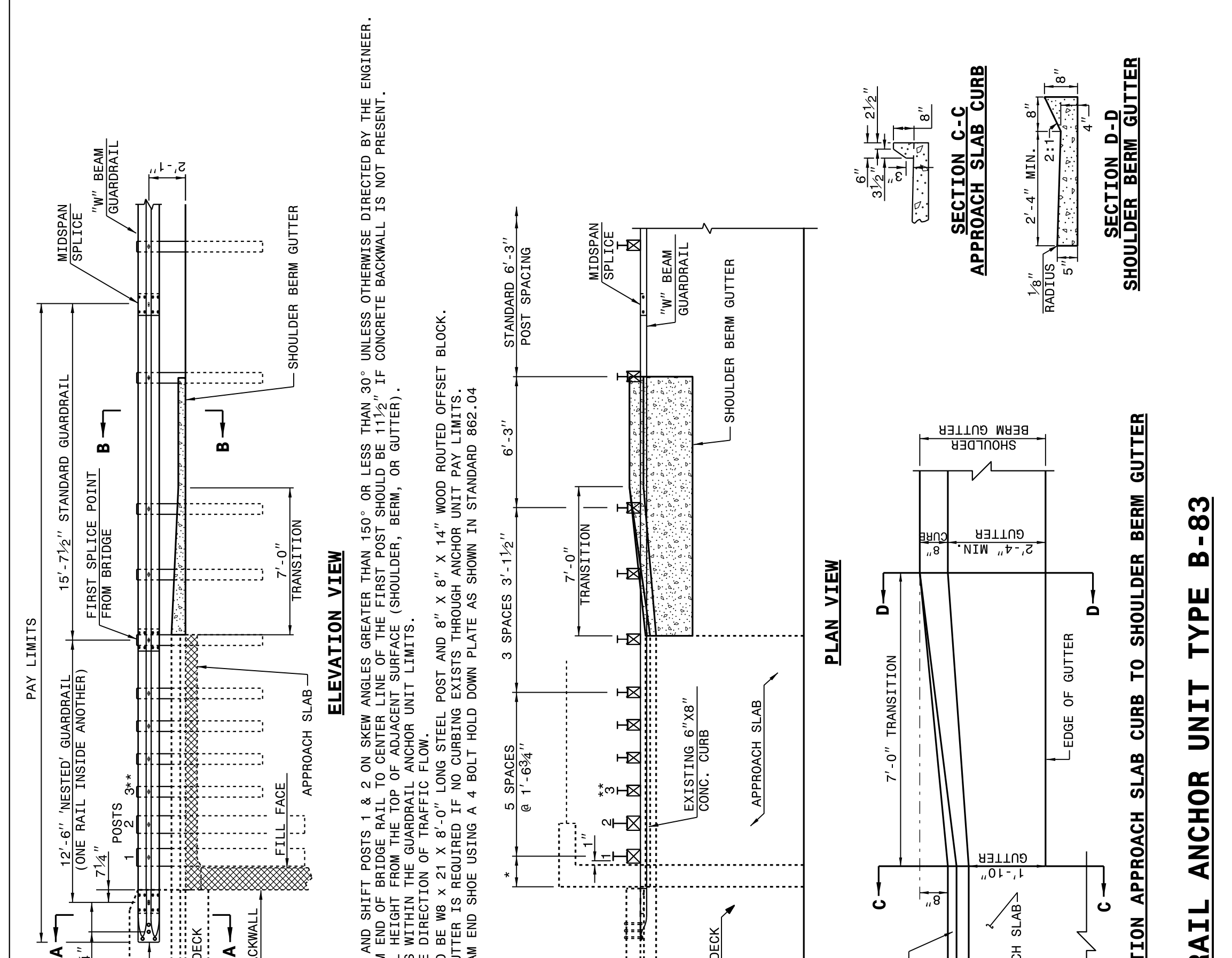
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 GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7
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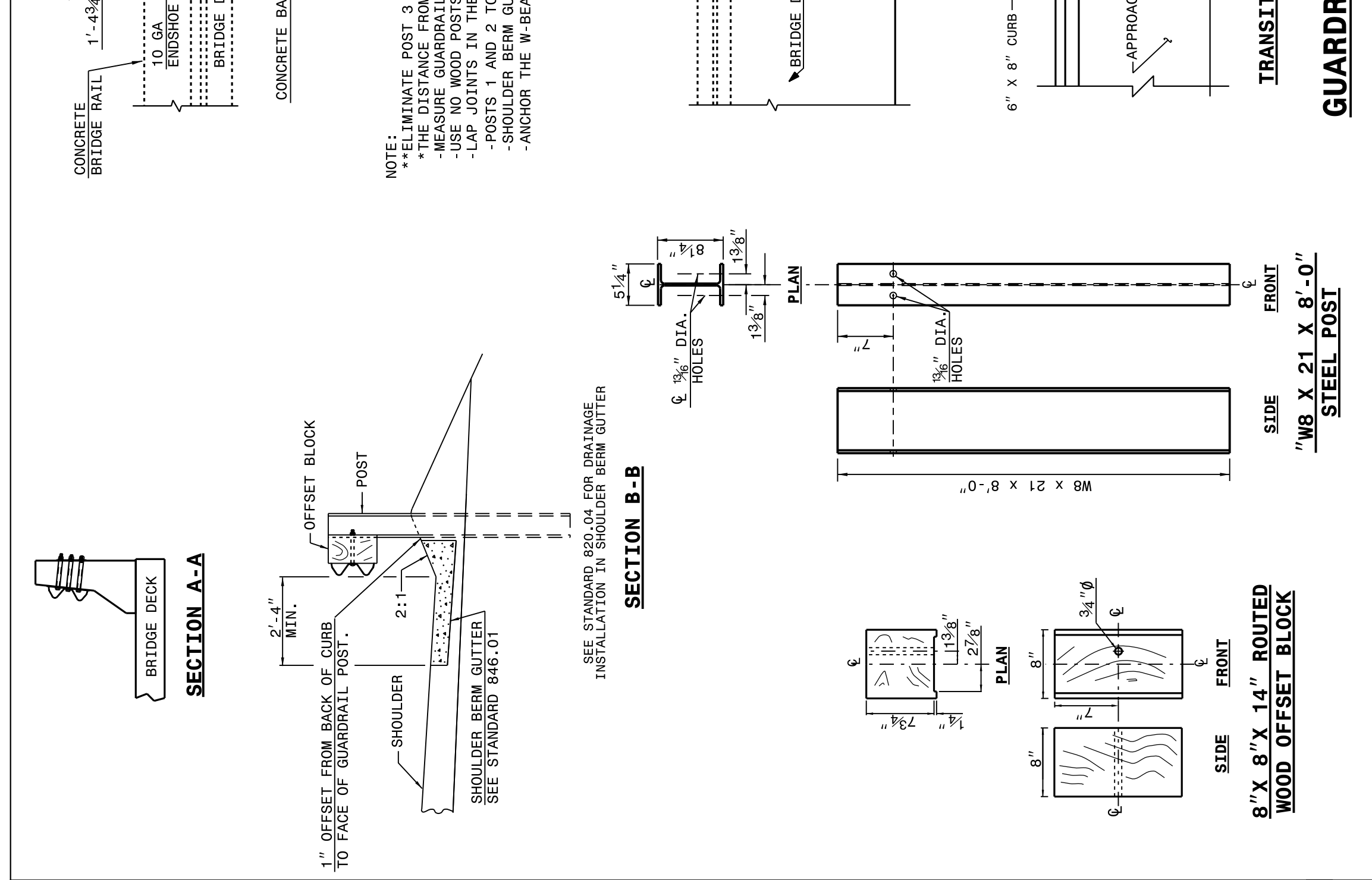
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ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7
862D03



NOTE:
 *ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 **THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
 -POSTS 1 AND 2 ARE TO BE 21" X 8" LONG STEEL POST AND 8" X 8" X 14" WOOD ROUTED OFFSET BLOCK.
 -SHOULDER BERM GUTTER IS REQUIRED IF NO CURBING EXISTS THROUGH ANCHOR UNIT PAY LIMITS.
 -ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE AS SHOWN IN STANDARD 862.04

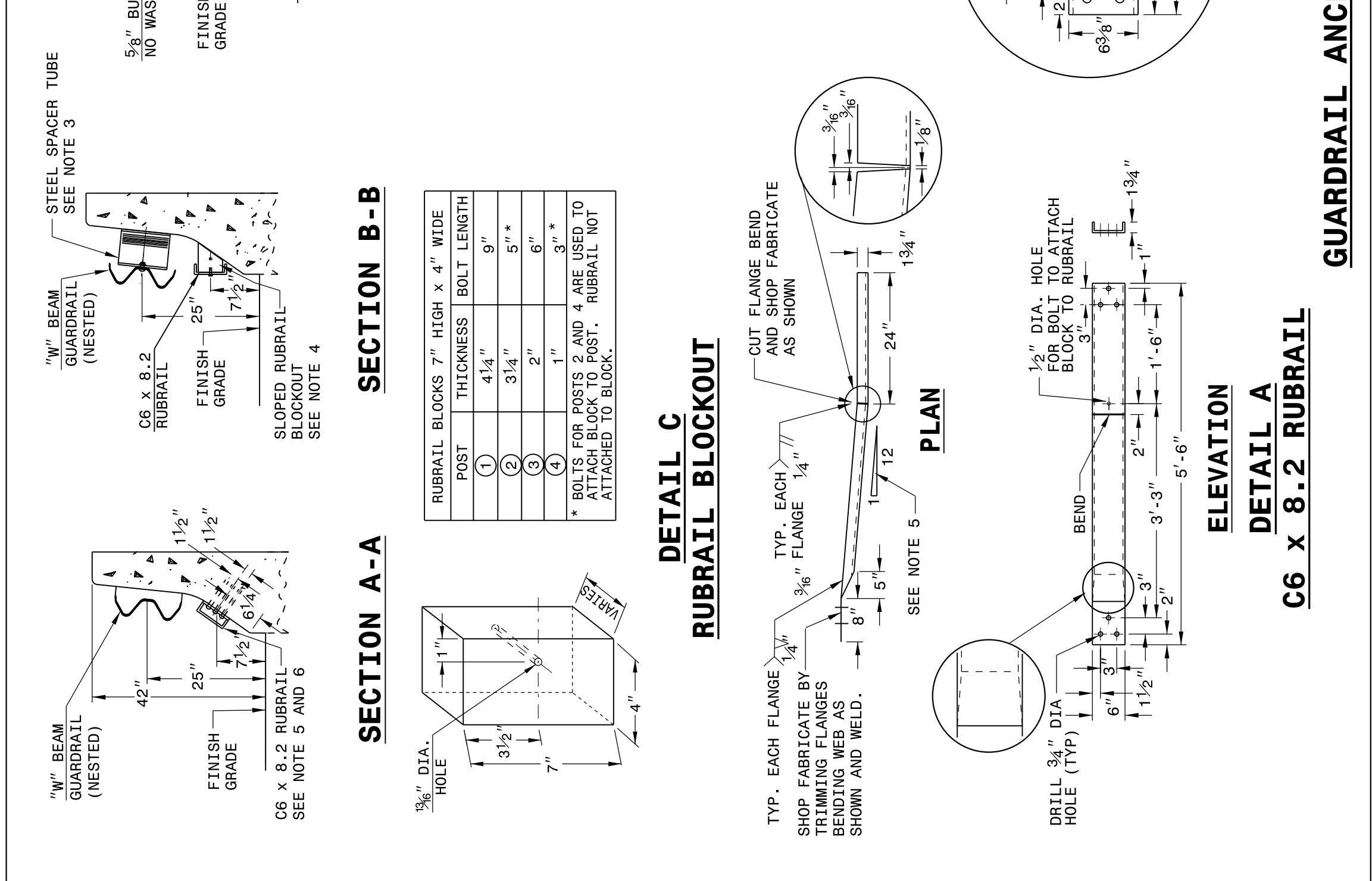
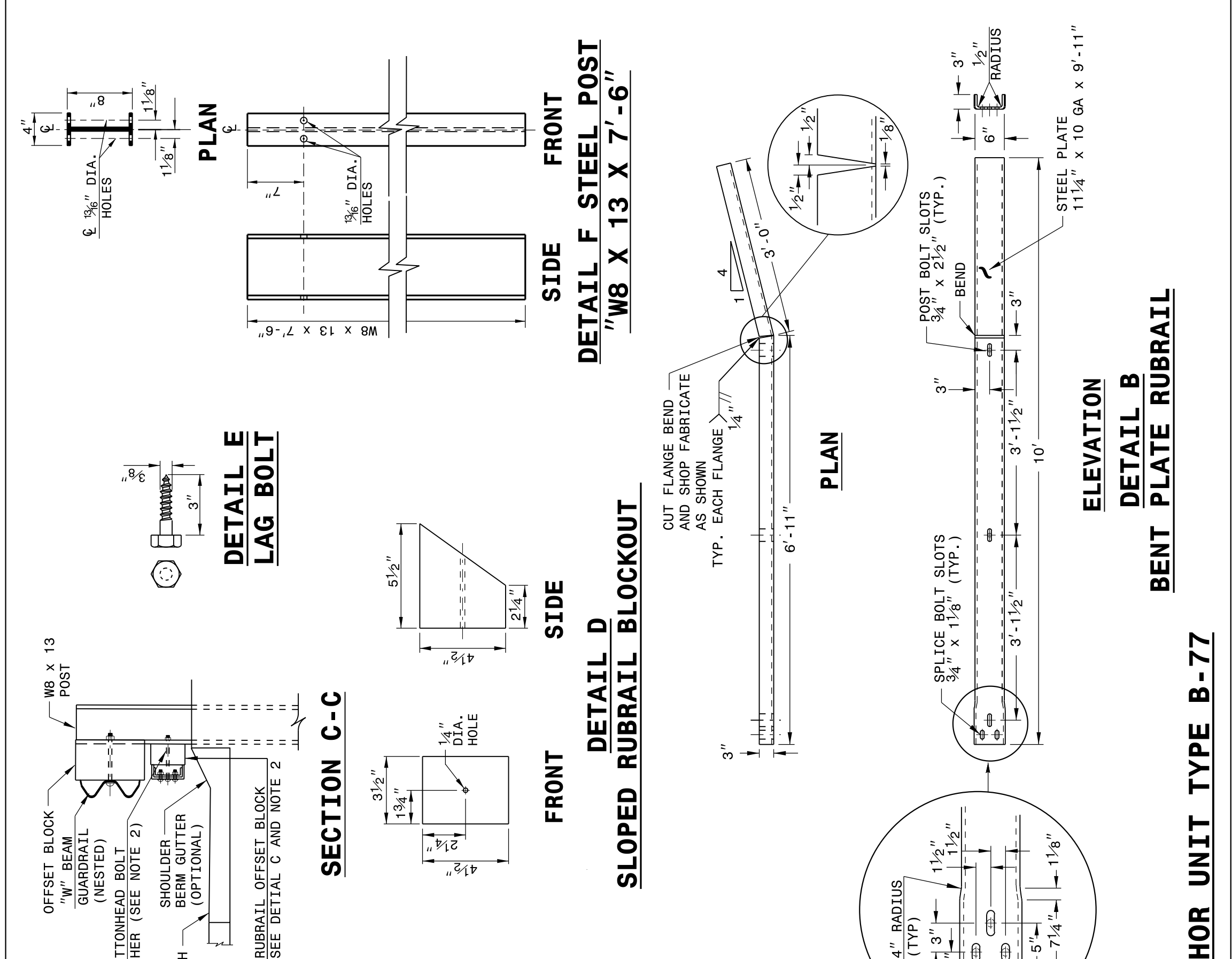


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ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT TYPE B-77

SHEET 5 OF 7
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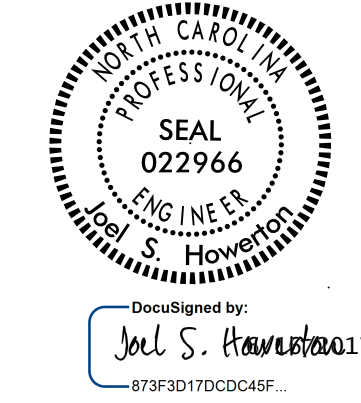
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 GUARDRAIL ANCHOR UNIT TYPE B-77
 FOR F-SHAPE BARRIER

SHEET 5 OF 7
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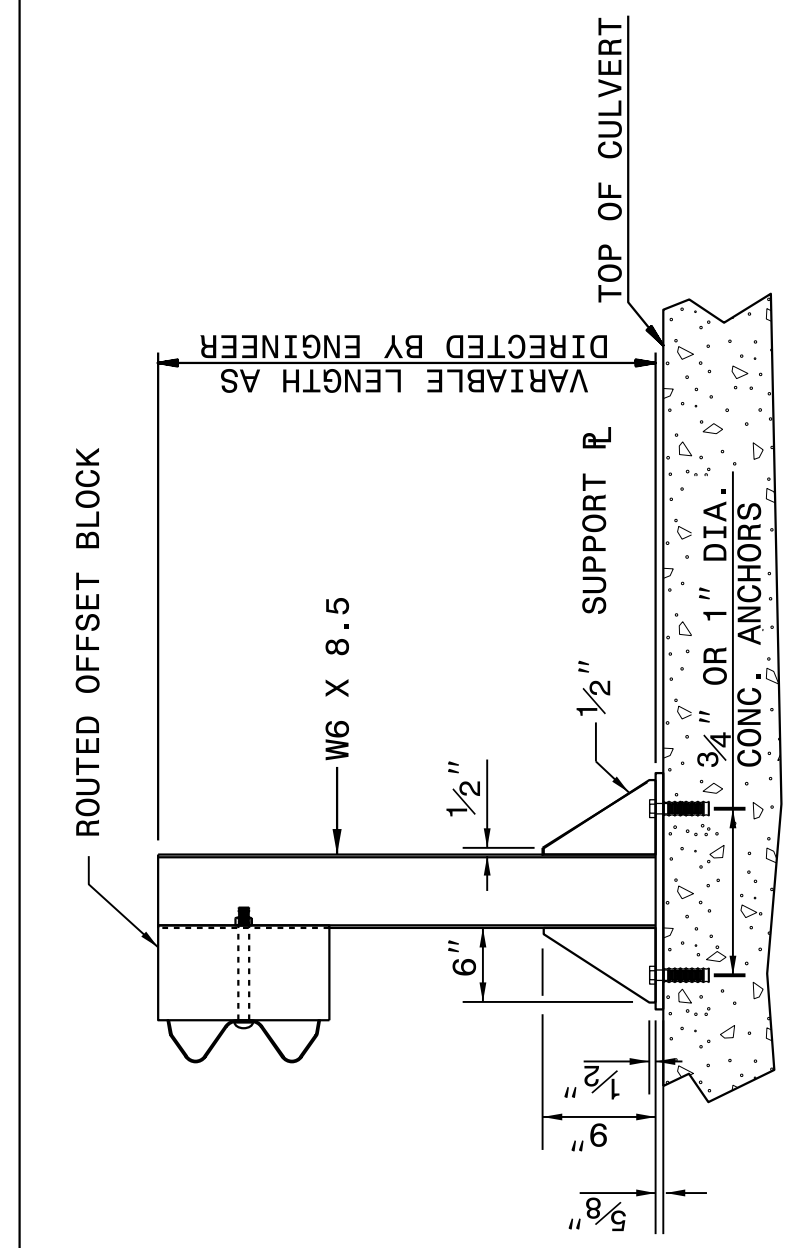
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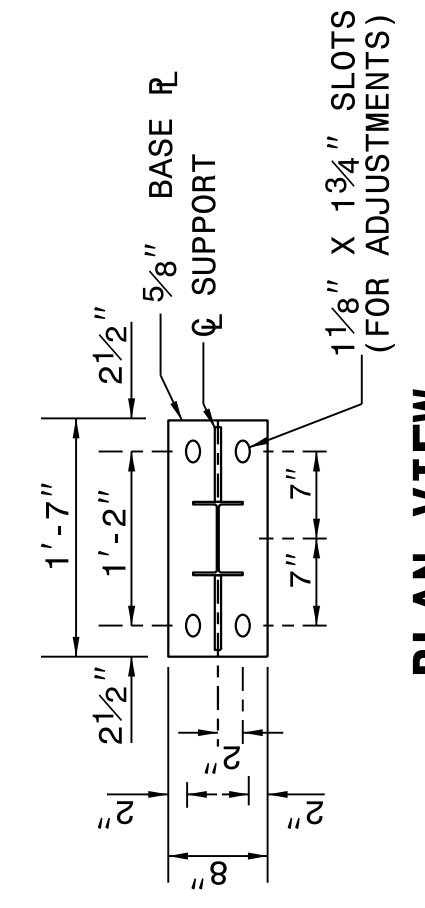
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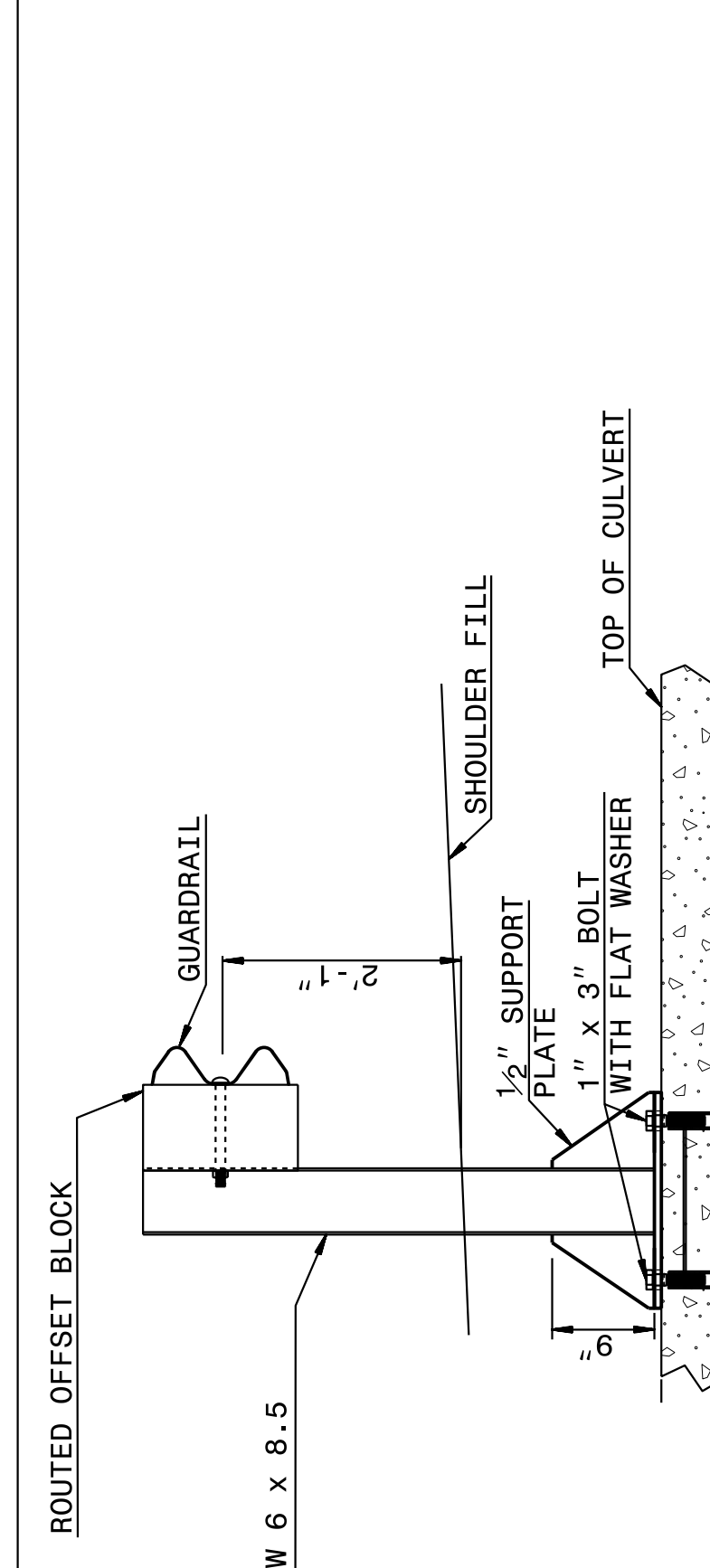
SHEET 7 OF 7
862D03



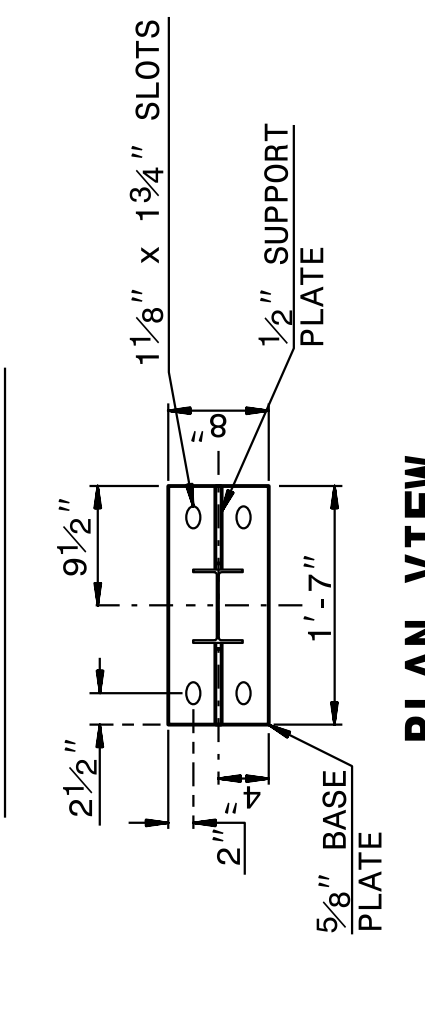
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW



PLAN VIEW

GUARDRAIL ANCHOR ASSEMBLY ASSEMBLED
 AND INSTALLED IN ACCORDANCE WITH
 STRUCTURE PLANS (SEE NOTES)

STATE OF
 NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

SHEET 7 OF 7
862D03

NOTES FOR:
 -USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 2875 LBS. FOR A 3/4" OR 1" DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON 1/4 THE ACTUAL HOLDING POWER OF THE ANCHOR IN 3500 PSI CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.
 -USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

NEW STRUCTURES:
 -ATTACH POST TO INSERT ASSEMBLY UNITS (USING ANCHOR BOLTS SUPPLIED WITH INSERTS) WHICH HAVE BEEN CAST INTO THE STRUCTURE DURING CONSTRUCTION.

EXISTING STRUCTURES:
 -USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 2875 LBS. FOR A 3/4" OR 1" DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON 1/4 THE ACTUAL HOLDING POWER OF THE ANCHOR IN 3500 PSI CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.

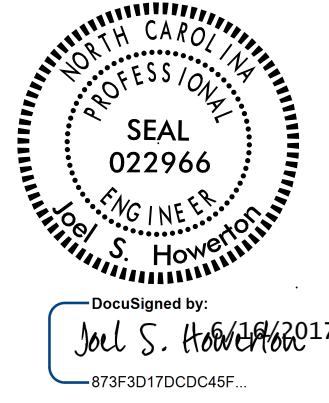
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON	DATE: 06-22-12
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	



PROJECT NO.	SHEET NO.
2018CPT.03.02.10821, ETC.	30

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	AGGREGATE SHOULDER BORROW TON	INC. STONE BASE TON	SHOULDER RECONST. SMI	1 1/2" MILLING SY	3" MILLING SY	INC. MILLING SY	BASE COURSE, B25.0B TONS	SURFACE COURSE, S9.5B TONS	LEVELING COURSE, S9.5B TON	SURFACE COURSE, S4.75A TON	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT (MILL) TON	ASPHALT FOR PAVEMENT INTERLAYER (S4.75A) TON
2018CPT.03.02.10821	Sampson	1	US 13 (FAYETTEVILLE HWY.)	FROM CUMBERLAND CO. TO US 421 AT SPIVEY'S CORNER (MP 0.000 - MP 9.309) (NO WORK SAMPSON BRIDGE #9)	1	2	2WU	NO	NO	9.309	28	1,585	480	18.61	3,095		1,150		14,331	25		861	250	
		2	US 701 (N. INGOLD AVE./ GARLAND HWY)	FROM PVMT. SEAM NORTH OF 7TH ST. IN GARLAND TO OVERPASS AT US 421 (MP 2.336 - MP 15.771)	2, 3	2	2WU	YES	NO	13.435	24	2,285	900	26.87	198,750				32,934			1,976		500
		3	US 701 BUS (SOUTHEAST & NORTHEAST BLVD./ HOBBS HWY.)	FROM OVERPASS AT US 421 TO US 701 GARLAND HWY (MP 0.00 - MP 5.704)	2, 4	2 - 5	MU	NO	NO	5.704	26 - 64	415	310	4.50	54,875	120,175	200		29,600			1,776		300
		4	NC 242 (ELIZABETHTOWN HWY.)	FROM CUMBERLAND CO TO NC 411 (MP 0.00 - MP 3.710)	1	2	2WU	NO	NO	3.71	22	645	225	7.42	49,660				4,160	20		251		
TOTAL FOR PROJ NO. 2018CPT.03.02.10821										32.158		4,930	1,915	57.40	306,380	120,175	1,350		81,025	45		4,864	250	800
2018CPT.03.02.20821	Sampson	5	SR 1742 (GOVERNOR MOORE RD.)	FROM SR 1751 TO SR 1746 (MP 0.000 - MP 5.854) NO ASPHALT WORK SAMPSON BRIDGE # 224	5, 6	2	2WU	NO	NO	5.854	18						500	677	5,653			369		
		6	SR 1451 (BAPTIST CHAPEL RD.)	FROM SR 1002 TO US 13 (MP 0.000 - MP 4.669)	6	2	2WU	NO	NO	4.669	20							330	4	4,661			280	
		7	SR 1441 (WELCOME SCHOOL RD.)	FROM SR 1431 TO SR 1006 (MP 0.000 - MP 2.420)	6	2	2WU	NO	NO	2.42	20							330	40	2,416			147	
		8	SR 1100 (IVANHOE RD.)	FROM SR 1007 TO SR 1105 (MP 0.000 - MP 4.938)	5, 6	2	2WU	NO	NO	4.938	19							320	2,919	5,771			475	
		9	SR 1258 (HAIRR ST.)	FROM SR 1233 TO END MAINTENANCE (MP 0.000 - MP 0.490)	6	2	2WU	NO	NO	0.49	20							330		510			31	
		10	SR 1002 (DUNN RD.)	FROM SR 1233 (AUTRYVILLE RD.) MP 4.361 TO SR 1006 (MAXWELL RD.) MP 11.705	5, 6	2	2WU	NO	NO	7.344	18							300	4,555	8,512	60		715	
		11	SR 1006 (MAXWELL RD.)	FROM SR 1440 (BUTLER RD.) MP 11.520 TO CUMBERLAND COUNTY LINE MP 18.059	6	2	2WU	NO	NO	6.539	22								370	8	8,268			496
TOTAL FOR PROJ NO. 2018CPT.03.02.20821										32.254							2,480	8,203	35,791	60		2,513		
2018CPT.03.02.20822	Sampson	12	SR 1492 (JACKSON ST./ OLD FAYETTEVILLE ST.)	FROM PVMT. SEAM AT OLD FAYETTEVILLE ST./W. PINE ST TO SR 1501 (MP 1.170 TO MP 1.480)	7	2	2WU	NO	NO	0.31	19						320				196	13		
		13	SR 1703 (CHURCH ST./OLD GOLDSBORO RD)	FROM NC 50 (RALEIGH ST) TO SR 1701 (MP 10.046 - MP 12.342) (NO WORK MP 10.41 - MP 10.51 & NO ASPHALT WORK SAMPSON BRIDGE # 348)	7	2	2WU	NO	NO	2.296	19							530				1,418	95	
		14	SR 1704 (IRWIN RD.)	FROM US 13 (GOLDSBORO ST.) TO SR 1703 [MP 0.000 - MP 0.453]	7	2	2WD	NO	NO	0.453	19							320				286	19	
		15	SR 1317 (FREDRICK RD.)	FROM SR 1311 TO SR 1315 (MP 0.000 - MP 1.630)	7	2	2WU	NO	NO	1.63	20							330				1,091	73	
		16	SR 1910 (HUDSON RD.)	FROM SR 1919 TO SR 1909 (MP 0.000 - MP 1.360)	7	2	2WU	NO	NO	1.36	20							330				910	61	
TOTAL FOR PROJ NO. 2018CPT.03.02.20822										6.049							1,830				3,901	261		
GRAND TOTAL										70.461		4,930	1,915	57.40	306,380	120,175	5,660	8,203	116,816	105	3,901	7,638	250	800

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	CONCRETE JOINT REPAIR TON	PAVEMENT INTERLAYER SY	2'-6" CONCRETE CURB & GUTTER LF	CONCRETE CURB RAMP EA	6" CONCRETE DRIVEWAY SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) SY	REMOVE MONOLITHIC CONC. ISLAND SY	REMOVE AND REPLACE 4" CONCRETE SIDEWALK SY	REMOVE & REPLACE 2'-6" CURB & GUTTER LF	REMOVE & REPLACE CURB RAMPS EA	REMOVE CONCRETE CURB RAMPS EA	ADJ. OF MANHOLES EA	ADJ. OF METER OR VALVE BOX EA	CONVERT EXISTING DROP INLET TO OPEN THROAT CATCH BASIN EA	GR END UNITS, TYPE TL-3 EA	GR ANCHOR UNITS, TYPE B-83 EA			
2018CPT.03.02.10821	Sampson	1	US 13 (FAYETTEVILLE HWY.)	FROM CUMBERLAND CO. TO US 421 AT SPIVEY'S CORNER (MP 0.000 - MP 9.309) (NO WORK SAMPSON BRIDGE #9)	1	2	2WU	NO					50	75	100												
		2	US 701 (N. INGOLD AVE./ GARLAND HWY)	FROM PVMT. SEAM NORTH OF 7TH ST. IN GARLAND TO OVERPASS AT US 421 (MP 2.336 - MP 15.771)	2, 3	2	2WU	YES	300.00	194,265				150							1			2	2		
		3	US 701 BUS (SOUTHEAST & NORTHEAST BLVD./ HOBBS HWY.)	FROM OVERPASS AT US 421 TO US 701 GARLAND HWY (MP 0.00 - MP 5.704)	2, 4	2-5	MU	NO	450.00	166,850	20	1					10	85	1	1	47	19	1	3	2		
		4	NC 242 (ELIZABETHTOWN HWY.)	FROM CUMBERLAND CO TO NC 411 (MP 0.00 - MP 3.710)	1	2	2WU	NO						20													
TOTAL FOR PROJ NO. 2018CPT.03.02.10821								750.00	361,115		20	1	220	75	100	10	85	1	1	48	19	1	5	4			
2018CPT.03.02.20821	Sampson	5	SR 1742 (GOVERNOR MOORE RD.)	FROM SR 1751 TO SR 1746 (MP 0.000 - MP 5.854) NO ASPHALT WORK SAMPSON BRIDGE # 224	5, 6	2	2WU	NO																			
		6	SR 1451 (BAPTIST CHAPEL RD.)	FROM SR 1002 TO US 13 (MP 0.000 - MP 4.669)	6	2	2WU	NO																			
		7	SR 1441 (WELCOME SCHOOL RD.)	FROM SR 1431 TO SR 1006 (MP 0.000 - MP 2.420)	6	2	2WU	NO																			
		8	SR 1100 (IVANHOE RD.)	FROM SR 1007 TO SR 1105 (MP 0.000 - MP 4.938)	5, 6	2	2WU	NO																			
		9	SR 1258 (HAIRR ST.)	FROM SR 1233 TO END MAINTENANCE (MP 0.000 - MP 0.490)	6	2	2WU	NO																			
		10	SR 1002 (DUNN RD.)	FROM SR 1233 (AUTRYVILLE RD.) MP 4.361 TO SR 1006 (MAXWELL RD.) MP 11.705	5, 6	2	2WU	NO																			
TOTAL FOR PROJ NO. 2018CPT.03.02.20821																											
2018CPT.03.02.20822	Sampson	12	SR 1492 (JACKSON ST./ OLD FAYETTEVILLE ST.)	FROM PVMT. SEAM AT OLD FAYETTEVILLE ST./W. PINE ST TO SR 1501 (MP 1.170 TO MP 1.480)	7	2	2WU	NO																			
		13	SR 1703 (CHURCH ST./OLD GOLDSBORO RD)	FROM NC 50 (RALEIGH ST) TO SR 1701 (MP 10.046 - MP 12.342) (NO WORK MP 10.41 - MP 10.51 & NO ASPHALT WORK SAMPSON BRIDGE # 348)	7	2	2WU	NO																			
		14	SR 1704 (IRWIN RD.)	FROM US 13 (GOLDSBORO ST.) TO SR 1703 [MP 0.000 - MP 0.453]	7	2	2WD	NO																			
		15	SR 1317 (FREDRICK RD.)	FROM SR 1311 TO SR 1315 (MP 0.000 - MP 1.630)	7	2	2WU	NO																			
		16	SR 1910 (HUDSON RD.)	FROM SR 1919 TO SR 1909 (MP 0.000 - MP 1.360)	7	2	2WU	NO																			
TOTAL FOR PROJ NO. 2018CPT.03.02.20822																											
GRAND TOTAL								750.00	361,115		20	1	220	75	100	10	85	1	1	48	19	1	5	4			

PROJECT NO.	SHEET NO.
2018CPT.03.02.10821, ETC.	32

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	REMOVE & REPLACE EXISTING GR (GENERIC) LF	UNPAVED TRENCHING (1 CONDUIT, 2 INCH) LF	JUNCTION BOX (STANDARD SIZE) EA	2" RISER WITH WEATHER - HEAD EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2) LF	SIGN FOR SIGNALS EA
2018CPT.03.02.10821	Sampson	1	US 13 (FAYETTEVILLE HWY.)	FROM CUMBERLAND CO. TO US 421 AT SPIVEY'S CORNER (MP 0.000 - MP 9.309) (NO WORK SAMPSON BRIDGE #9)	1	2	2WU	NO					240		
		2	US 701 (N. INGOLD AVE./ GARLAND HWY)	FROM PVMT. SEAM NORTH OF 7TH ST. IN GARLAND TO OVERPASS AT US 421 (MP 2.336 - MP 15.771)	2, 3	2	2WU	YES	275.00						
		3	US 701 BUS (SOUTHEAST & NORTHEAST BLVD./ HOBBS RD.)	FROM OVERPASS AT US 421 TO US 701 GARLAND HWY (MP 0.00 - MP 5.704)	2, 4	2 - 5	MU	NO	1,037.50	1,089	21	1	7,998	8,070	2
		4	NC 242 (ELIZABETHTOWN HWY.)	FROM CUMBERLAND CO TO NC 411 (MP 0.00 - MP 3.710)	1	2	2WU	NO							
TOTAL FOR PROJ NO. 2018CPT.03.02.10821									1,312.50	1,089	21	1	8,238	8,070	2
2018CPT.03.02.20821	Sampson	5	SR 1742 (GOVERNOR MOORE RD.)	FROM SR 1751 TO SR 1746 (MP 0.000 - MP 5.854) NO ASPHALT WORK SAMPSON BRIDGE # 224	5, 6	2	2WU	NO							
		6	SR 1451 (BAPTIST CHAPEL RD.)	FROM SR 1002 TO US 13 (MP 0.000 - MP 4.669)	6	2	2WU	NO							
		7	SR 1441 (WELCOME SCHOOL RD.)	FROM SR 1431 TO SR 1006 (MP 0.000 - MP 2.420)	6	2	2WU	NO							
		8	SR 1100 (IVANHOE RD.)	FROM SR 1007 TO SR 1105 (MP 0.000 - MP 4.938)	5, 6	2	2WU	NO							
		9	SR 1258 (HAIRR ST.)	FROM SR 1233 TO END MAINTENANCE (MP 0.000 - MP 0.490)	6	2	2WU	NO							
		10	SR 1002 (DUNN RD.)	FROM SR 1233 (AUTRYVILLE RD.) MP 4.361 TO SR 1006 (MAXWELL RD.) MP 11.705	5, 6	2	2WU	NO							
		11	SR 1006 (MAXWELL RD.)	FROM SR 1440 (BUTLER RD.) MP 11.520 TO CUMBERLAND COUNTY LINE MP 18.059	6	2	2WU	NO							
TOTAL FOR PROJ NO. 2018CPT.03.02.20821															
2018CPT.03.02.20822	Sampson	12	SR 1492 (JACKSON ST./ OLD FAYETTEVILLE ST.)	FROM PVMT. SEAM AT OLD FAYETTEVILLE ST./W. PINE ST TO SR 1501 (MP 1.170 TO MP 1.480)	7	2	2WU	NO							
		13	SR 1703 (CHURCH ST./OLD GOLDSBORO RD)	FROM NC 50 (RALEIGH ST) TO SR 1701 (MP 10.046 - MP 12.342) (NO WORK MP 10.41 - MP 10.51 & NO ASPHALT WORK SAMPSON BRIDGE # 348)	7	2	2WU	NO							
		14	SR 1704 (IRWIN RD.)	FROM US 13 (GOLDSBORO ST.) TO SR 1703 [MP 0.000 - MP 0.453]	7	2	2WD	NO							
		15	SR 1317 (FREDRICK RD.)	FROM SR 1311 TO SR 1315 (MP 0.000 - MP 1.630)	7	2	2WU	NO							
		16	SR 1910 (HUDSON RD.)	FROM SR 1919 TO SR 1909 (MP 0.000 - MP 1.360)	7	2	2WU	NO							
TOTAL FOR PROJ NO. 2018CPT.03.02.20822															
GRAND TOTAL									1,312.50	1,089	21	1	8,238	8,070	2

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	4725000000-E					4770000000-E	4795000000-E	4805000000-N	4810000000-E		4820000000-E	4820000000-E	4825000000-E	4830000000-E	4835000000-E	4840000000-N	4840000000-N			
							THERMO LT ARROW 90 M	THERMO STR ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & RT ARROW 90 M	MERGE ARROW 90 M	THERMO LT STR RT ARROW 90 M	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE 2 (4")	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE 2 (24")	COLD APPLIED PAVEMENT MARKING SYMBOL, TYPE 2	4" YELLOW PAINT	4" WHITE PAINT	8" YELLOW PAINT	8" WHITE PAINT	12" YELLOW PAINT	16" WHITE PAINT	24" WHITE PAINT	PAINT MSG. RXR	PAINT MSG. ONLY		
EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA			
2018CPT.03.02.10821	Sampson	1	US 13 (FAYETTEVILLE HWY.)	FROM CUMBERLAND CO. TO US 421 AT SPIVEY'S CORNER (MP 0.000 - MP 9.309) (NO WORK SAMPSON BRIDGE #9)		1	2	29	12	10																
TOTAL FOR MAP NO. 1									29	12	10															
2018CPT.03.02.10821	Sampson	2	US 701 (N. INGOLD AVE./ GARLAND HWY)	FROM PVMT. SEAM NORTH OF 7TH ST. IN GARLAND TO OVERPASS AT US 421 (MP 2.336 - MP 15.771)		2, 3	2	8	9	4					93,330	145,616			465							
TOTAL FOR MAP NO. 2									8	9	4				93,330	145,616			465							
2018CPT.03.02.10821	Sampson	3	US 701 BUS (SOUTHEAST & NORTHEAST BLVD./ HOBBS RD.)	FROM OVERPASS AT US 421 TO US 701 GARLAND HWY (MP 0.00 - MP 5.704)		2, 4	2	129	47	13	32	10	1	45.00	25	2	62,640	35,860	50	450	225	400	1,510	16	16	
TOTAL FOR MAP NO. 3									129	47	13	32	10	1	45.00	25	2	62,640	35,860	50	450	225	400	1,510	16	16
2018CPT.03.02.10821	Sampson	4	NC 242 (ELIZABETHTOWN HWY.)	FROM CUMBERLAND CO TO NC 411 (MP 0.00 - MP 3.710)		1	2																			
TOTAL FOR MAP NO. 4																										
TOTAL FOR PROJ NO. 2018CPT.03.02.10821									166	68	23	36	10	1	45.00	25	2	155,970	181,476	50	450	690	400	1,510	16	16
									304							337,446		500						32		
2018CPT.03.02.20821	Sampson	5	SR 1742 (GOVERNOR MOORE RD.)	FROM SR 1751 TO SR 1746 (MP 0.000 - MP 5.854) NO ASPHALT WORK SAMPSON BRIDGE # 224		5, 6	2							220.00												
TOTAL FOR MAP NO. 5														220.00												
2018CPT.03.02.20821	Sampson	6	SR 1451 (BAPTIST CHAPEL RD.)	FROM SR 1002 TO US 13 (MP 0.000 - MP 4.669)		6	2																			
TOTAL FOR MAP NO. 6																										
2018CPT.03.02.20821	Sampson	7	SR 1441 (WELCOME SCHOOL RD.)	FROM SR 1431 TO SR 1006 (MP 0.000 - MP 2.420)		6	2																			
TOTAL FOR MAP NO. 7																										
2018CPT.03.02.20821	Sampson	8	SR 1100 (IVANHOE RD.)	FROM SR 1007 TO SR 1105 (MP 0.000 - MP 4.938)		5, 6	2																			
TOTAL FOR MAP NO. 8																										
2018CPT.03.02.20821	Sampson	9	SR 1258 (HAIRR ST.)	FROM SR 1233 TO END MAINTENANCE (MP 0.000 - MP 0.490)		6	2																			
TOTAL FOR MAP NO. 9																										
2018CPT.03.02.20821	Sampson	10	SR 1002 (DUNN RD.)	FROM SR 1233 (AUTRYVILLE RD.) MP 4.361 TO SR 1006 (MAXWELL RD.) MP 11.705		5, 6	2																			
TOTAL FOR MAP NO. 10																										
2018CPT.03.02.20821	Sampson	11	SR 1006 (MAXWELL RD.)	FROM SR 1440 (BUTLER RD.) MP 11.520 TO CUMBERLAND COUNTY LINE MP 18.059		6	2	6		2																
TOTAL FOR MAP NO. 11									6		2															
TOTAL FOR PROJ NO. 2018CPT.03.02.20821									6		2				220.00											
									8																	
2018CPT.03.02.20822	Sampson	12	SR 1492 (JACKSON ST./OLD FAYETTEVILLE ST.)	FROM PVMT. SEAM AT OLD FAYETTEVILLE ST./W. PINE ST TO SR 1501 (MP 1.170 TO MP 1.480)		7	2																			
TOTAL FOR MAP NO. 12																										
2018CPT.03.02.20822	Sampson	13	SR 1703 (CHURCH ST./OLD GOLDSBORO RD)	FROM NC 50 (RALEIGH ST) TO SR 1701 (MP 10.046 - MP 12.342) (NO WORK MP 10.41 - MP 10.51 & NO ASPHALT WORK SAMPSON BRIDGE # 348)		7	2							160.00												
TOTAL FOR MAP NO. 13														160												
2018CPT.03.02.20822	Sampson	14	SR 1704 (IRWIN RD.)	FROM US 13 (GOLDSBORO ST.) TO SR 1703 [MP 0.000 - MP 0.453]		7	2	0																		
TOTAL FOR MAP NO. 14									0																	
2018CPT.03.02.20822	Sampson	15	SR 1317 (FREDRICK RD.)	FROM SR 1311 TO SR 1315 (MP 0.000 - MP 1.630)		7	2																			
TOTAL FOR MAP NO. 15																										
2018CPT.03.02.20822	Sampson	16	SR 1910 (HUDSON RD.)	FROM SR 1919 TO SR 1909 (MP 0.000 - MP 1.360)		7	2																			
TOTAL FOR MAP NO. 16																										
TOTAL FOR PROJ NO. 2018CPT.03.02.20822															160											
GRAND TOTAL									172	68	25	36	10	1	425	25	2	155,970	181,476	50	450	690	400	1,510	16	16
									312							337,446		500						32		

THERMOPLASTIC AND PAINT QUANTITIES

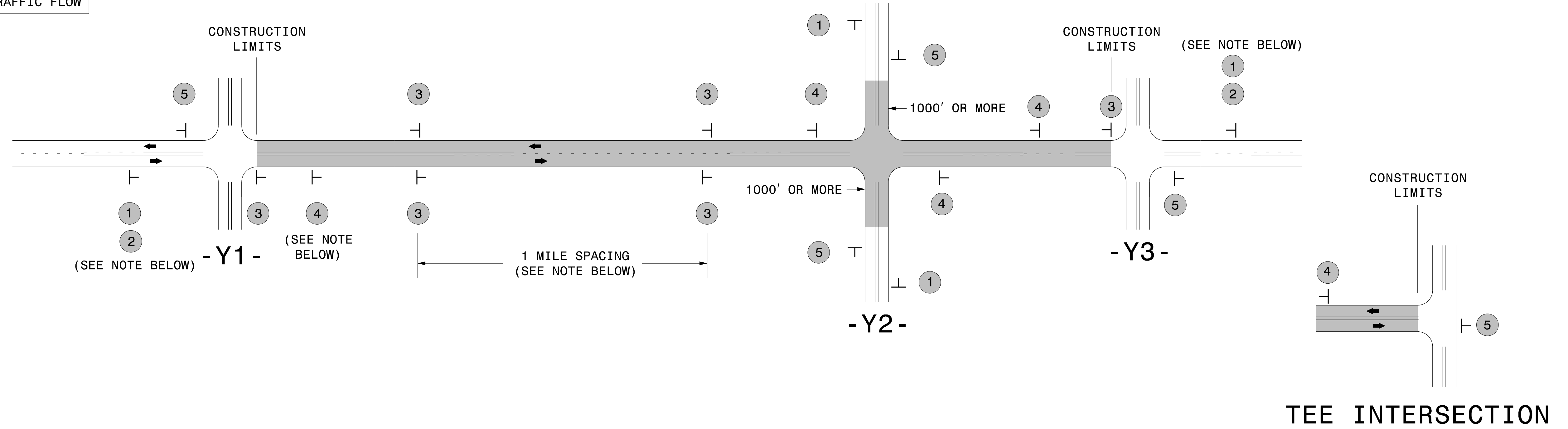
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	4845000000-N						4850000000-E	4900000000-N		4905000000-N	
							PAINT STR & RT ARROW	PAINT STR ARROW	PAINT RT ARROW	PAINT LT ARROW	PAINT LT STR & RT ARROW	PAINT MERGE ARROW	REMOVAL OF PAVEMENT MARKING LINES (4")	YELLOW & YELLOW MARKERS	CRYSTAL & RED MARKERS	SNOW PLOWABLE MARKERS (Y/Y)	SNOW PLOWABLE MARKERS (C/R)
							EA	EA	EA	EA	EA	EA	LF	EA	EA	EA	EA
2018CPT.03.02.10821	Sampson	1	US 13 (FAYETTEVILLE HWY.)	FROM CUMBERLAND CO. TO US 421 AT SPIVEY'S CORNER (MP 0.000 - MP 9.309) (NO WORK SAMPSON BRIDGE #9)	1	2								25		660	120
TOTAL FOR MAP NO. 1														25		660	120
2018CPT.03.02.10821	Sampson	2	US 701 (N. INGOLD AVE./ GARLAND HWY)	FROM PVMT. SEAM NORTH OF 7TH ST. IN GARLAND TO OVERPASS AT US 421 (MP 2.336 - MP 15.771)	2,3	2	4	9		8				48		912	35
TOTAL FOR MAP NO. 2							4	9		8				48		912	35
2018CPT.03.02.10821	Sampson	3	US 701 BUS (SOUTHEAST & NORTHEAST BLVD./ HOBBS HWY.)	FROM OVERPASS AT US 421 TO US 701 GARLAND HWY (MP 0.00 - MP 5.704)	2,4	2	32	47	13	129	1	10	865	25		805	535
TOTAL FOR MAP NO. 3							32	47	13	129	1	10	865	25		805	535
2018CPT.03.02.10821	Sampson	4	NC 242 (ELIZABETHTOWN HWY.)	FROM CUMBERLAND CO TO NC 411 (MP 0.00 - MP 3.710)	1	2										245	
TOTAL FOR MAP NO. 4																245	
TOTAL FOR PROJ NO. 2018CPT.03.02.10821							36	56	13	137	1	10	865	98		2,622	690
									253					98		3,312	
2018CPT.03.02.20821	Sampson	5	SR 1742 (GOVERNOR MOORE RD.)	FROM SR 1751 TO SR 1746 (MP 0.000 - MP 5.854) NO ASPHALT WORK SAMPSON BRIDGE # 224	5,6	2							220	391			
TOTAL FOR MAP NO. 5													220	391			
2018CPT.03.02.20821	Sampson	6	SR 1451 (BAPTIST CHAPEL RD.)	FROM SR 1002 TO US 13 (MP 0.000 - MP 4.669)	6	2								309			
TOTAL FOR MAP NO. 6														309			
2018CPT.03.02.20821	Sampson	7	SR 1441 (WELCOME SCHOOL RD.)	FROM SR 1431 TO SR 1006 (MP 0.000 - MP 2.420)	6	2								160			
TOTAL FOR MAP NO. 7														160			
2018CPT.03.02.20821	Sampson	8	SR 1100 (IVANHOE RD.)	FROM SR 1007 TO SR 1105 (MP 0.000 - MP 4.938)	5,6	2								340			
TOTAL FOR MAP NO. 8														340			
2018CPT.03.02.20821	Sampson	9	SR 1258 (HAIRR ST.)	FROM SR 1233 TO END MAINTENANCE (MP 0.000 - MP 0.490)	6	2											
TOTAL FOR MAP NO. 9																	
2018CPT.03.02.20821	Sampson	10	SR 1002 (DUNN RD.)	FROM SR 1233 (AUTRYVILLE RD.) MP 4.361 TO SR 1006 (MAXWELL RD.) MP 11.705	5,6	2								490			
TOTAL FOR MAP NO. 10														490			
2018CPT.03.02.20821	Sampson	11	SR 1006 (MAXWELL RD.)	FROM SR 1440 (BUTLER RD.) MP 11.520 TO CUMBERLAND COUNTY LINE MP 18.059	6	2								466	4		
TOTAL FOR MAP NO. 11														466	4		
TOTAL FOR PROJ NO. 2018CPT.03.02.20821													220	2,156	4		
														2,160			
2018CPT.03.02.20822	Sampson	12	SR 1492 (JACKSON ST./OLD FAYETTEVILLE ST.)	FROM PVMT. SEAM AT OLD FAYETTEVILLE ST./W. PINE ST TO SR 1501 (MP 1.170 TO MP 1.480)	7	2											
TOTAL FOR MAP NO. 12																	
2018CPT.03.02.20822	Sampson	13	SR 1703 (CHURCH ST./OLD GOLDSBORO RD)	FROM NC 50 (RALEIGH ST) TO SR 1701 (MP 10.046 - MP 12.342) (NO WORK MP 10.41 - MP 10.51 & NO ASPHALT WORK SAMPSON BRIDGE # 348)	7	2							160				
TOTAL FOR MAP NO. 13													160				
2018CPT.03.02.20822	Sampson	14	SR 1704 (IRWIN RD.)	FROM US 13 (GOLDSBORO ST.) TO SR 1703 [MP 0.000 - MP 0.453]	7	2											
TOTAL FOR MAP NO. 14																	
2018CPT.03.02.20822	Sampson	15	SR 1317 (FREDRICK RD.)	FROM SR 1311 TO SR 1315 (MP 0.000 - MP 1.630)	7	2											
TOTAL FOR MAP NO. 15																	
2018CPT.03.02.20822	Sampson	16	SR 1910 (HUDSON RD.)	FROM SR 1919 TO SR 1909 (MP 0.000 - MP 1.360)	7	2											
TOTAL FOR MAP NO. 16																	
TOTAL FOR PROJ NO. 2018CPT.03.02.20822													160				
GRAND TOTAL							36	56	13	137	1	10	1,245	2,254	4	2,622	690
									253					2,258		3,312	

SIGNING FOR RESURFACING PROJECTS

LEGEND

┆ STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW



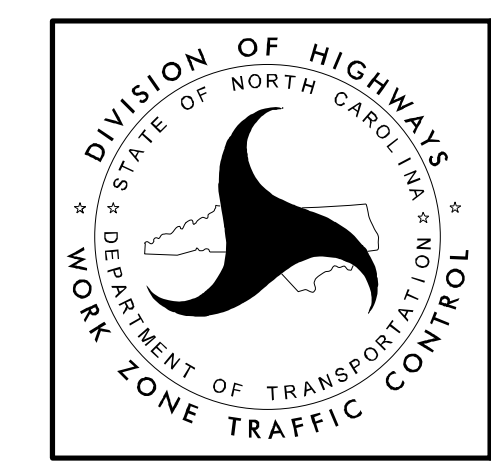
MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 W20-1 48" X 48"	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS: 1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK. <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> W20-1 48" X 48" </div> <div style="text-align: center;"> W20-7 A 48" X 48" </div> </div> PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.
	2	 W7-3aP 24" X 18"	#2 SIGN ONLY USED WHEN CONSTRUCTION LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)	
	3	 SP 13107 48" X 48"	- PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACE 1 MILE APART THEREAFTER. - AT TEE INTERSECTIONS INSTALL INITIALLY 1/2 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.	
	4	 SP 13106 48" X 48"	- THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. - DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. - INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. - FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. - A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN. - FOR TEE INTERSECTIONS, INSTALL WITHIN 500' +/- OF THE INTERSECTION ALONG -L- LINE.	
	5	 G20-2 A 48" X 24"	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.	

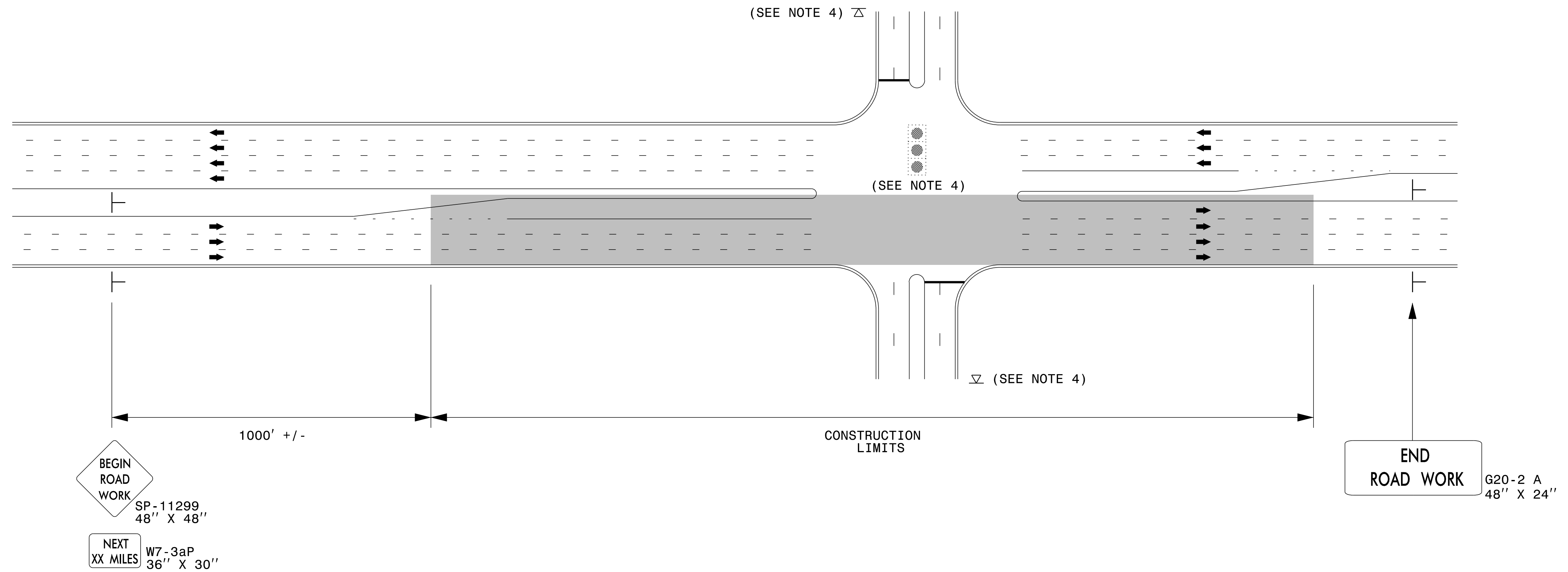
MAPS LESS THAN 2 MILES

FOR RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, NO STATIONARY SIGNS ARE REQUIRED. USE PORTABLE "ROAD UNDER CONSTRUCTION" OR "ROAD WORK AHEAD" SIGNS IN LIEU OF STATIONARY ADVANCE WARNINGS SIGNS.



ADVANCE WARNING SIGNS FOR RURAL AND SUBURBAN 2-LANE ROADWAY RESURFACING

URBAN / SUBURBAN WORKZONES

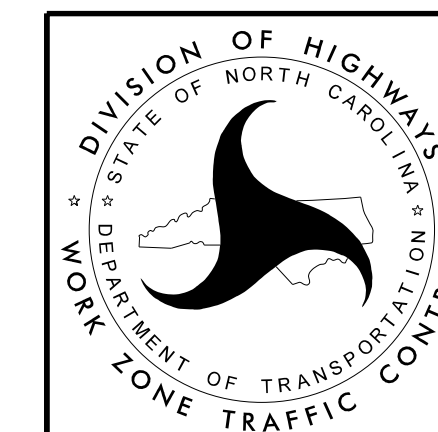


NOTES:

- 1) 48" x 48" SIZED SIGNS (SP- 11299) MAY BE REDUCED TO 36" X 36" ON ROADWAYS WITH SPEED LIMITS OF 40 MPH OR LESS.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) ADVANCE WARNING SIGNS NOT REQUIRED ON NON-SIGNALIZED SIDE STREETS.
- 4) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.
- 5) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 2' AS MEASURED FROM THE EDGE OF PAVEMENT OR THE FACE OF THE CURB. WHEN UNABLE TO OBTAIN THE LATERAL CLEARANCE WITHIN THE MEDIAN AREA USE SHOULDER MOUNTS ONLY.
- 6) SIGN MOUNT LOCATIONS SHALL NOT BLOCK SIDEWALKS OR DRIVEWAYS.
- 7) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 8) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER WHERE LATERAL CLEARANCE CAN BE OBTAINED WITHIN THE MEDIAN AREAS. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

LEGEND

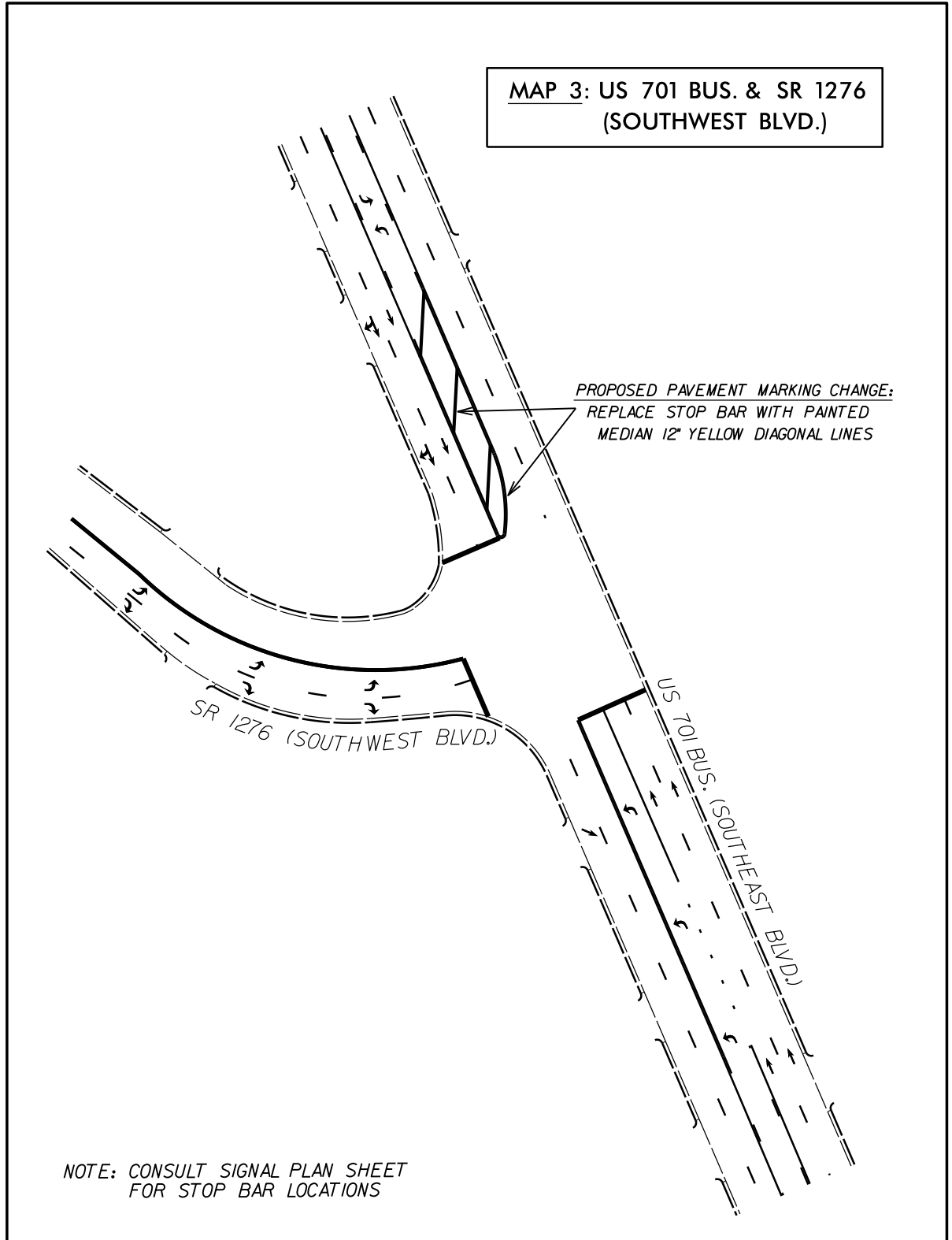
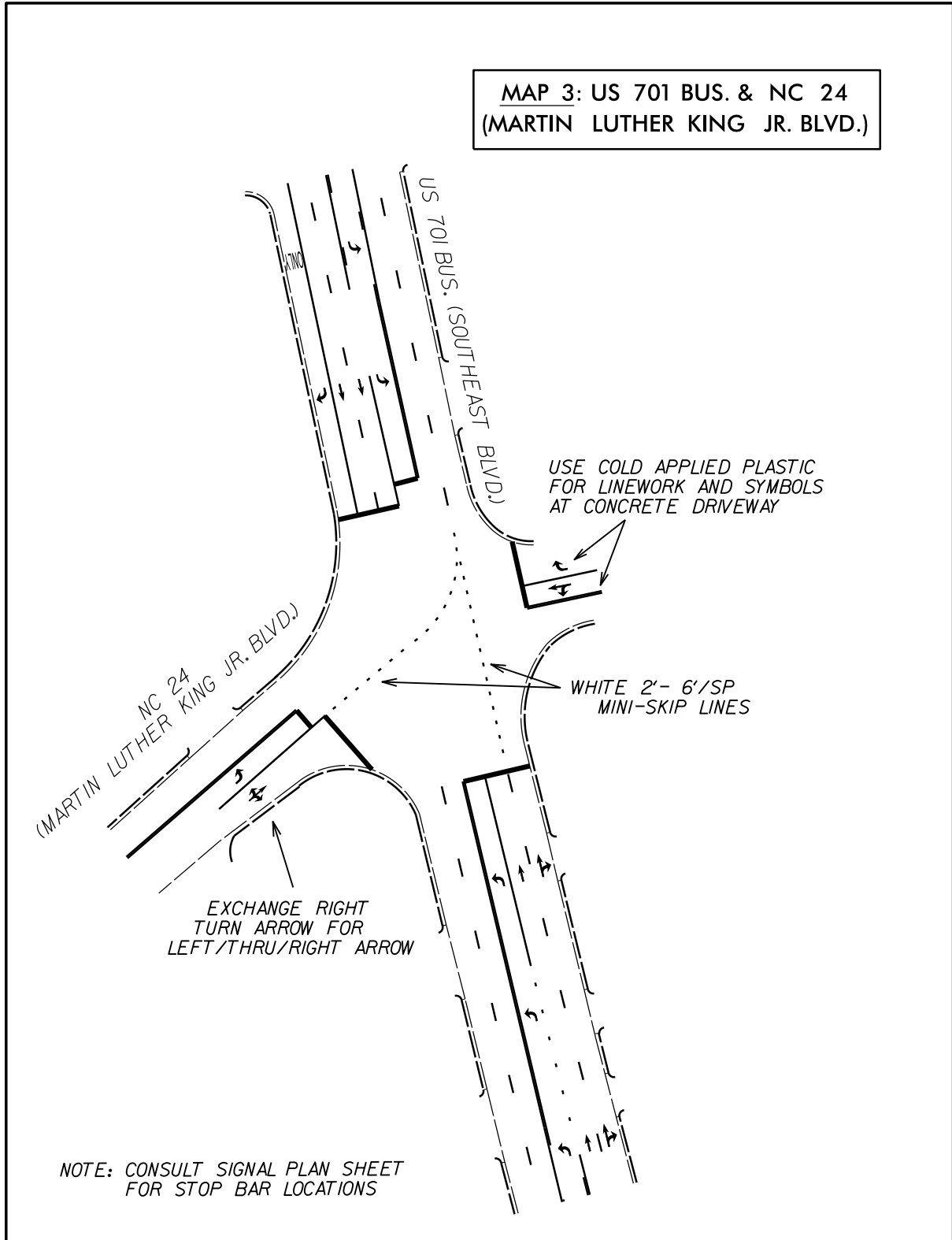
- ├ STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW



**RESURFACING ADVANCE
WARNING SIGNS FOR
URBAN / SUBURBAN
FACILITIES**

US 701 BUS (SOUTHEAST BLVD.) – PAVEMENT MARKING DETAILS

REVISIONS
 12-JUN-2017 09:20
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 Resurfacing\Samoson, Co.\2018CPT.03.02.10821, Etc.\US 13, 701, NC 50\PLAN SHEETS\2017CPT.03.02.10821, Etc.\SW Blvd., Pymt. Mark, DTL.dgn
 \$\$\$SERNAME\$\$\$



TIP NO. 2018CPT.03.02.10821, Etc. SHEET NO. PMP-2

APPROVED: *RWF*

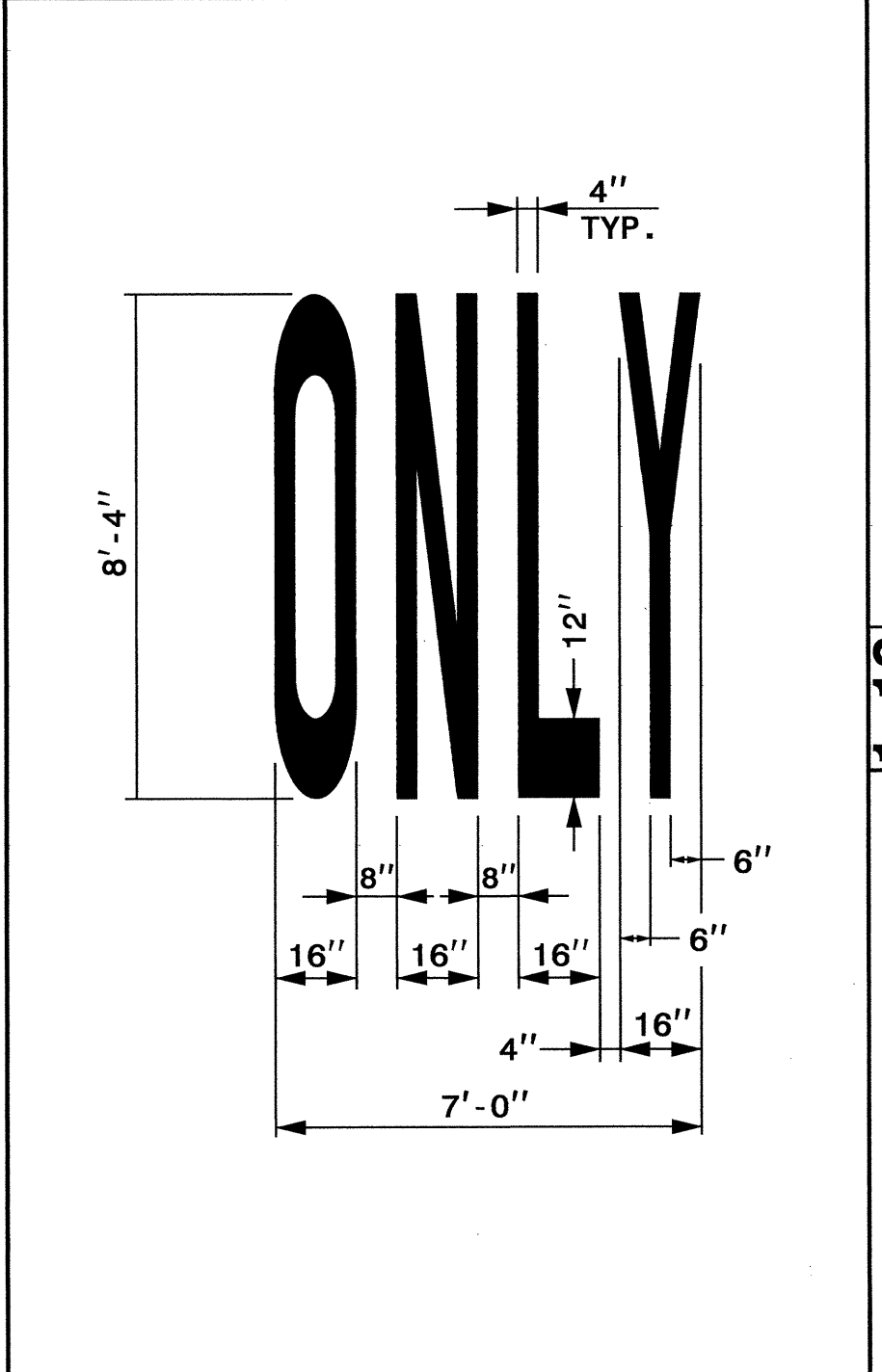
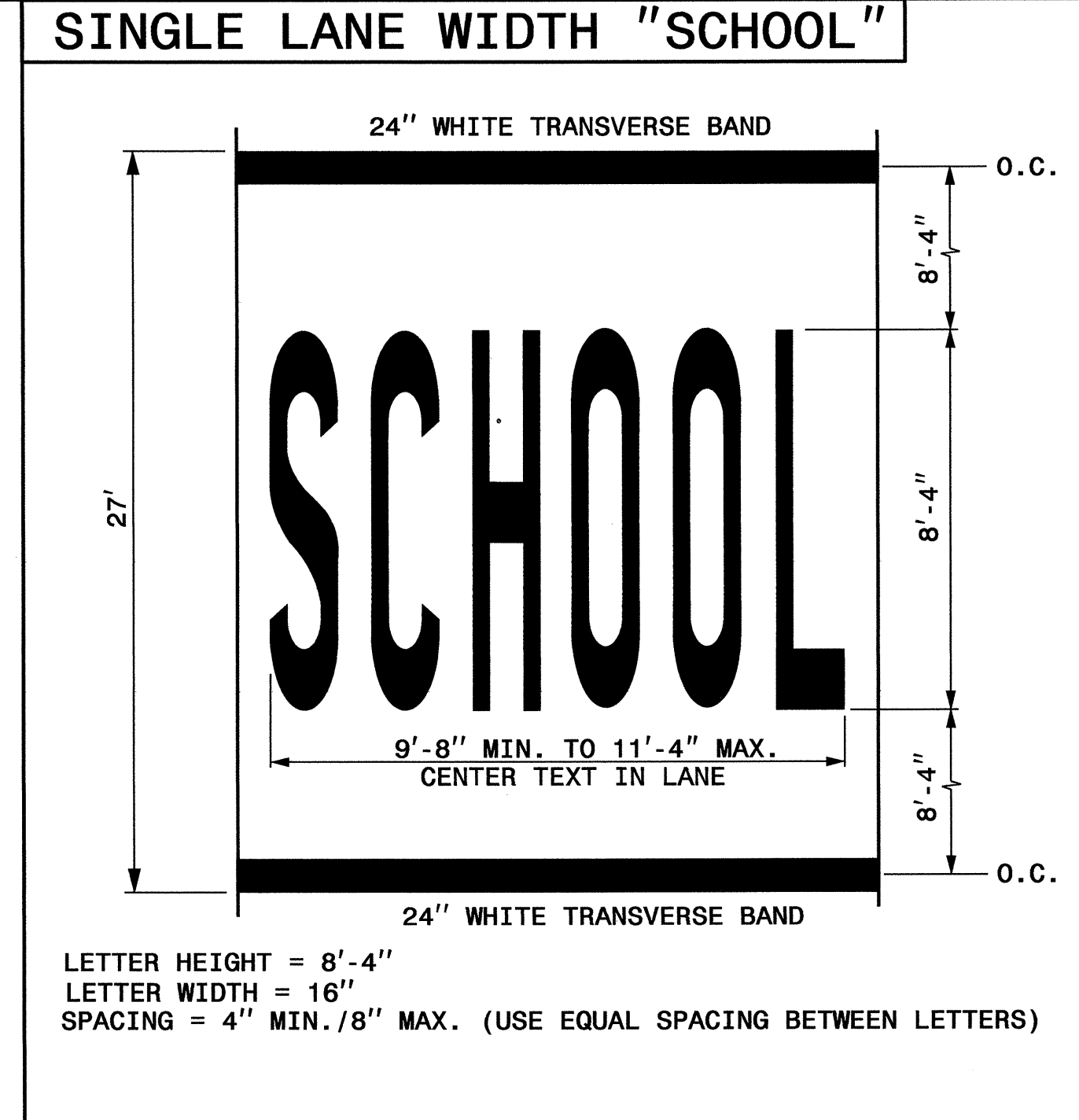
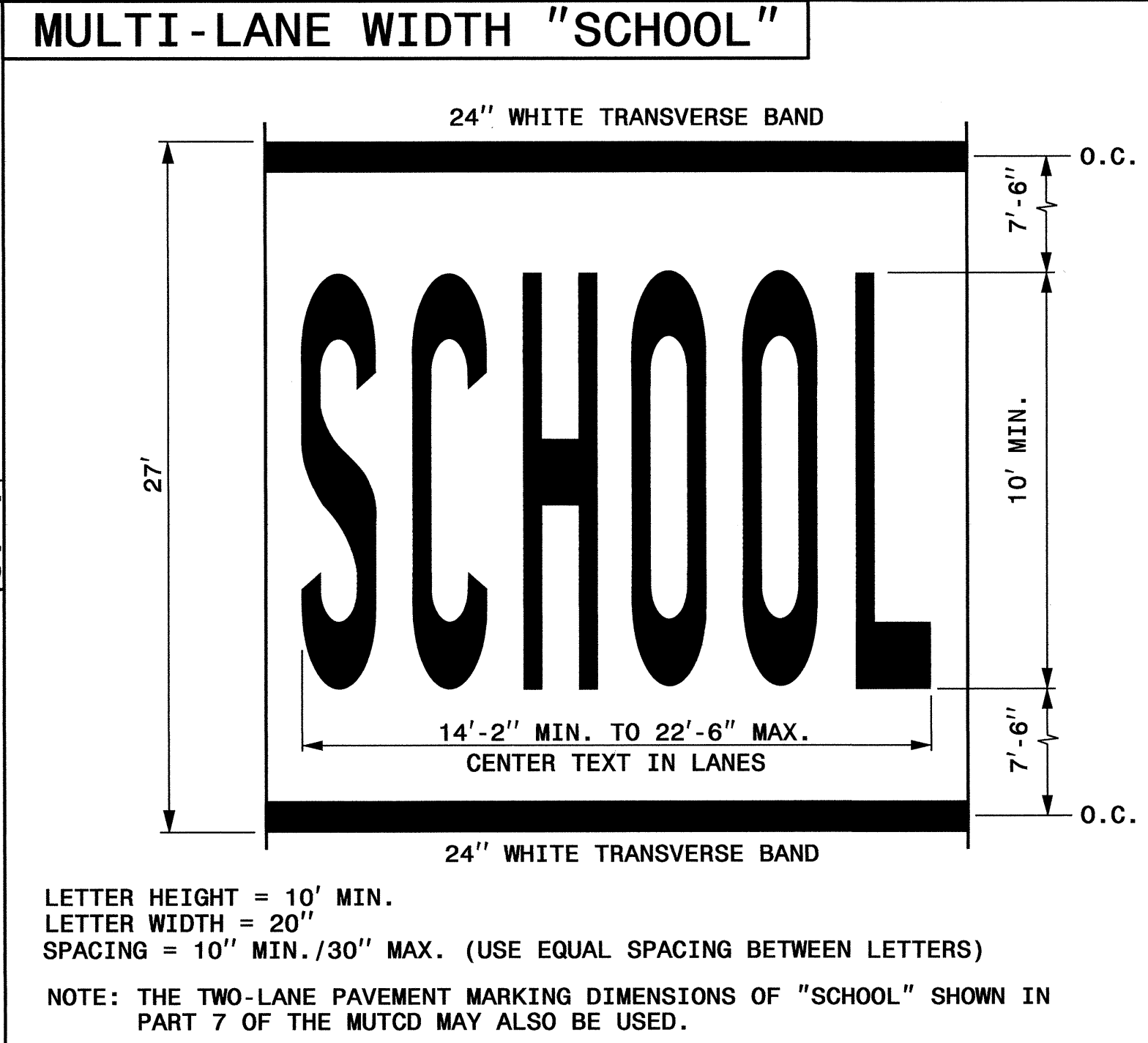
DATE: 3/8/12

SEAL

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
SYMBOLS AND WORD MESSAGES

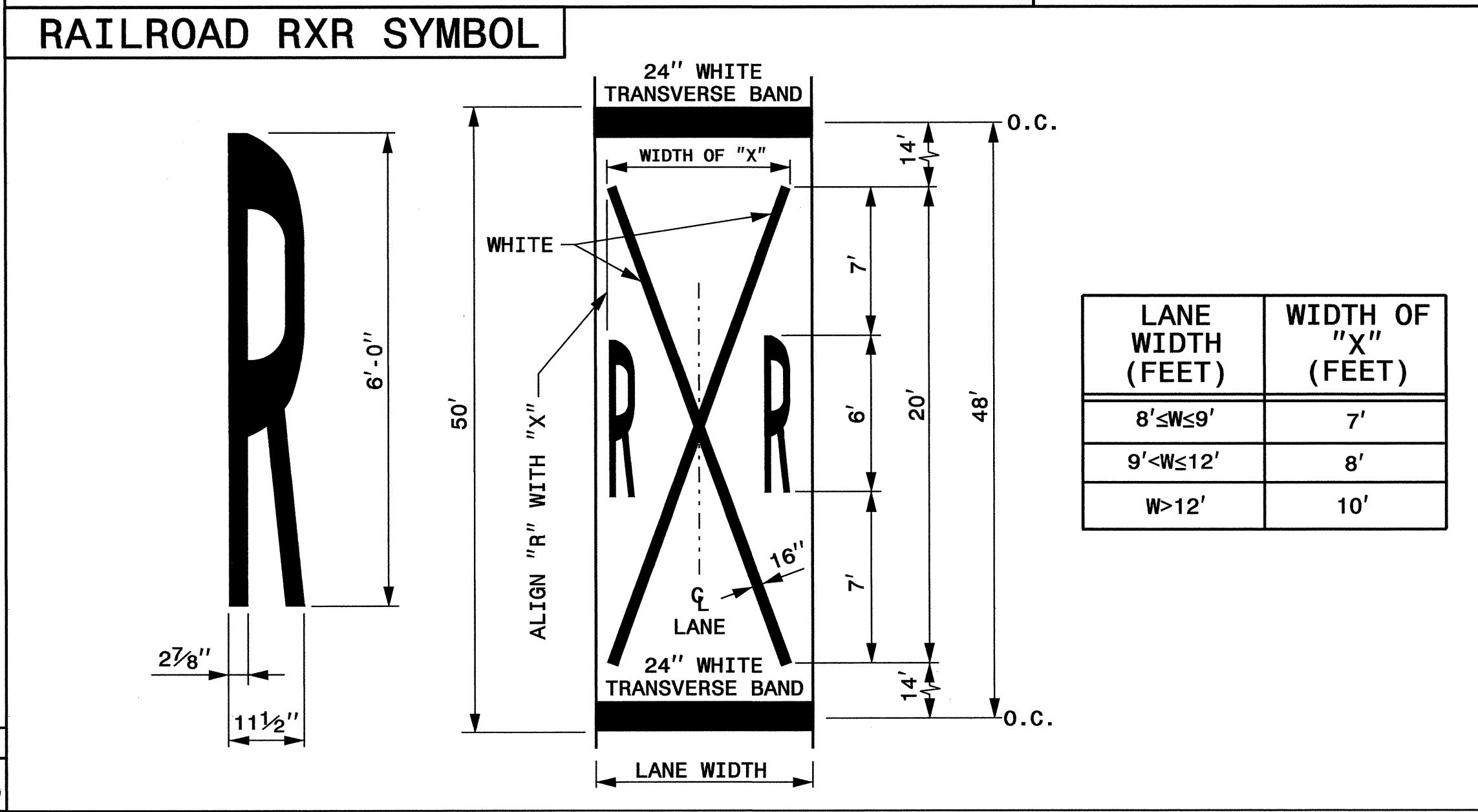
SHEET 3 OF 8
1205D08



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
SYMBOLS AND WORD MESSAGES

SHEET 3 OF 8
1205D08




GENERAL NOTES:

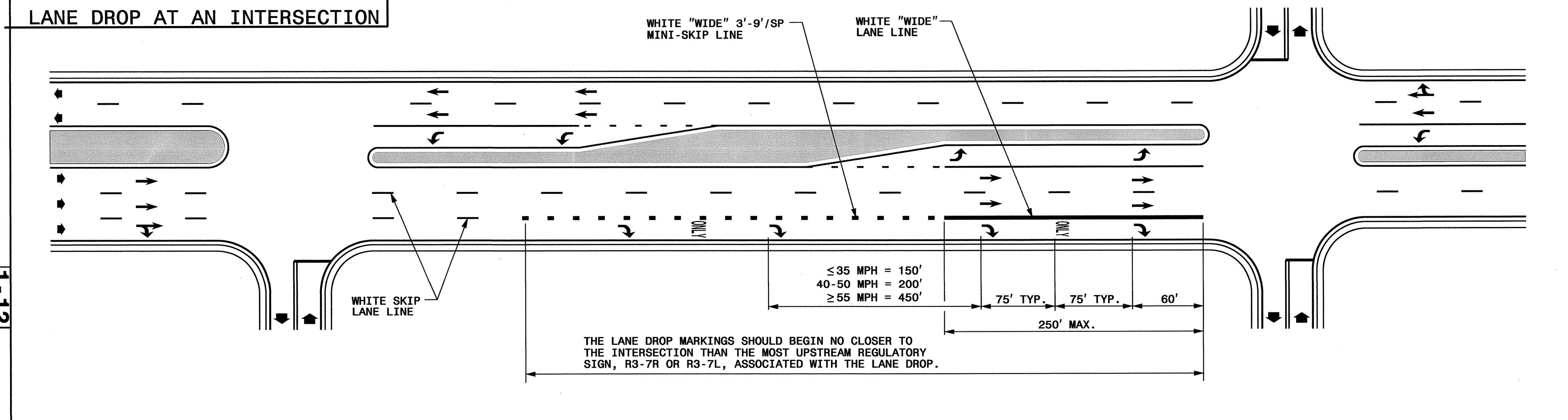
- 1- THE SCHOOL PAVEMENT MARKING CONSISTS OF SIX (6) CHARACTERS. THE TWO (2) 24" TRANSVERSE BANDS WILL BE PAID FOR UNDER A SEPARATE PAY ITEM. REFER TO ROADWAY STANDARD DRAWING 1205.10 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.
- 2- PAVEMENT MARKING IN ADVANCE OF A HIGHWAY-RAIL CROSSING SHALL CONSIST OF TWO (2) CHARACTERS AND TWO (2) 16" LINES (FORMING AN X) WHICH ARE PAID FOR UNDER TWO SEPARATE PAY ITEMS. THE TWO (2) 24" TRANSVERSE BANDS WILL BE PAID FOR UNDER A SEPARATE PAY ITEM. REFER TO ROADWAY STANDARD DRAWING 1205.11 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

**REVISED PAVEMENT MARKING
ROADWAY STANDARD DRAWING**

08-MAR-2012 12:18 S:\S&D\Standards_Group\NMP\2012 Standard Drawings\Standard Dwas 8-17-11\Revised\12050803_Rev12.dgn

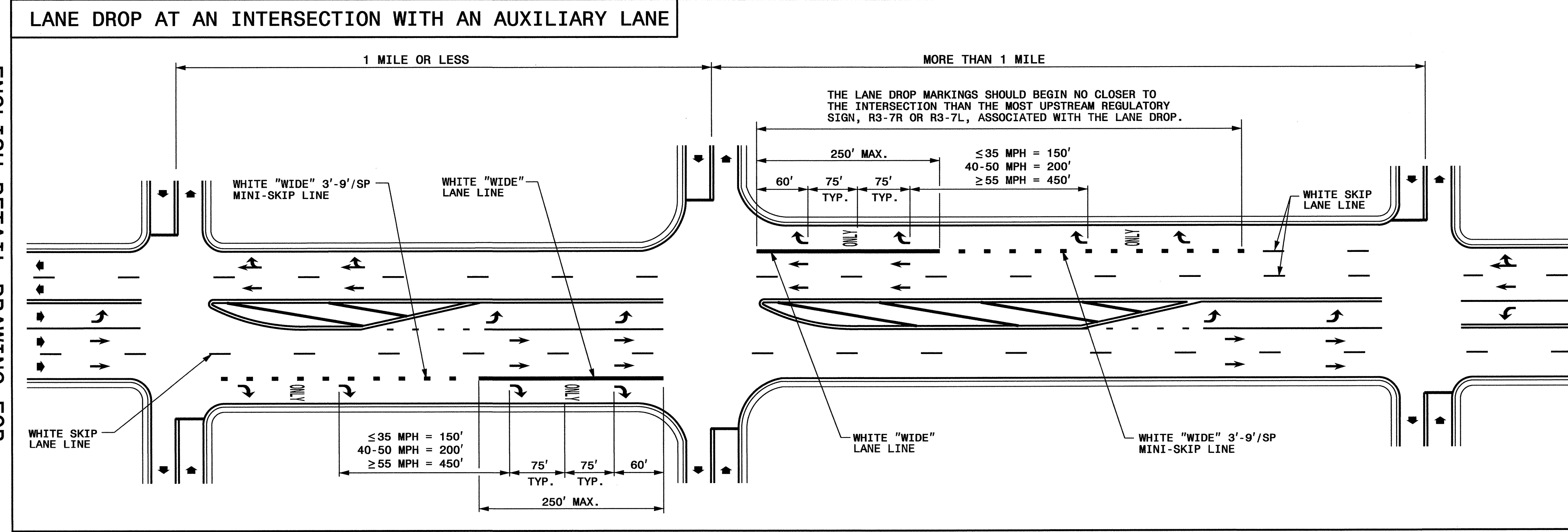
TIP NO. 2018CPT.03.02.10821, Etc.	SHEET NO. PMP-3
APPROVED: <i>RW</i>	DATE: 3/6/12
SEAL	
	

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.



STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
LANE DROPS



ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
LANE DROPS

- GENERAL NOTES:**
- USE THE GUIDANCE SHOWN ON THE ABOVE DETAILS IN CONJUNCTION WITH INTERSECTION GUIDANCE SHOWN ON ROADWAY STANDARD DRAWING 1205.04.
 - LANE LINES INDICATED AS "WIDE" SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.

LEGEND

W = WIDTH OF TRAVEL LANE	ONLY PAVEMENT MARKING SYMBOLS & CHARACTERS
➔ DIRECTION OF TRAFFIC FLOW	

SHEET 1 OF 3
1205D06

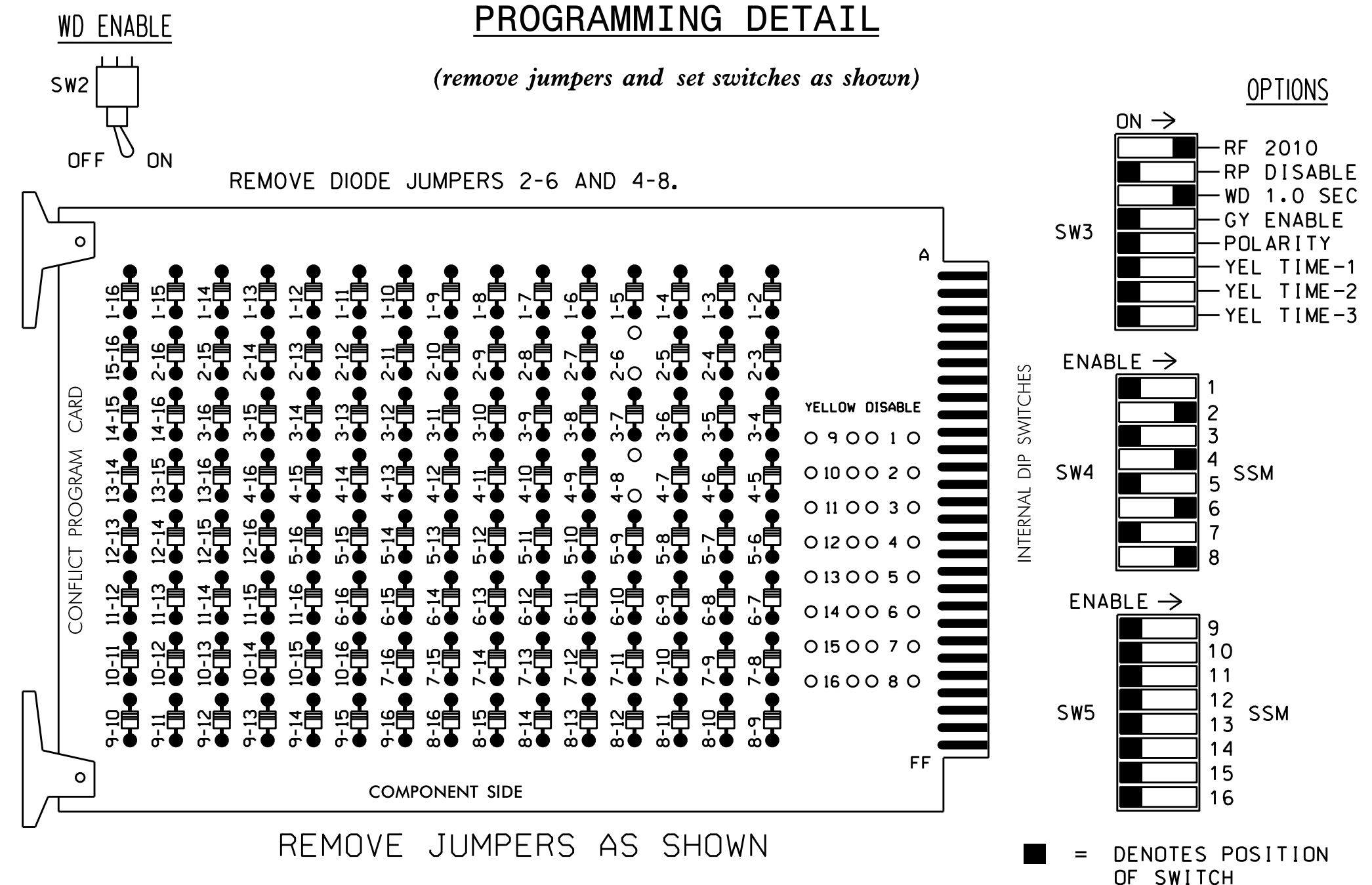
SHEET 1 OF 3
1205D06

**REVISED PAVEMENT MARKING
ROADWAY STANDARD DRAWING**

08-MAR-2012 11:09 S:\S&DU\Standards\Group\PM\2012 Standard Drawings\Standard Dwg 8-17-11\Revised\1205060_1_12-11_Scaled.dgn AT 12:47:45

EDI MODEL 2010ECL-HCK CONFLICT MONITOR

PROGRAMMING DETAIL



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US 701 Bus. (Clinton) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....336
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S4,S6,S8
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

FILE	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
SYS. DET. SD1	S	SYS. DET. SD3	∅ 4	∅ 2	∅ 6	∅ 8	∅ 8	S	S	S	S	S	S	S	FS
SYS. DET. SD2	Y	SYS. DET. SD4	4A	2A,2B	6A,6B	8C	8A	Y	Y	Y	Y	Y	Y	Y	DC ISOLATOR
			4B	6C	NOT USED	2C	8B	Y	Y	Y	Y	Y	Y	Y	DC ISOLATOR

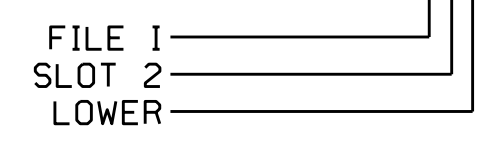
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB21-9,10	15U	55	17	5	2	Y	Y			
2C	TB23-13,14	17L	50	12	28	2	Y	Y			3
4A	TB21-7,8	14U	41	3	4	4	Y	Y			3
4B	TB23-7,8	14L	45	7	14	4	Y	Y			10
6A,6B	TB21-11,12	16U	40	2	6	6	Y	Y			
6C	TB23-9,10	15L	48	10	26	6	Y	Y			3
8A	TB22-1,2	18U	42	4	8	8	Y	Y		3.0	
8B	TB24-1,2	18L	46	8	18	8	Y	Y			3
8C	TB21-13,14	17U	57	19	7	8	Y	Y			10
*SD1	TB21-1,2	11U	56	18	1	SYS					
*SD2	TB23-1,2	11L	47	9	22	SYS					
*SD3	TB21-5,6	13U	58	20	3	SYS					
*SD4	TB23-5,6	13L	49	11	24	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: 12L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0178
 DESIGNED: March 2017
 SEALED: 4-26-17
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 701 Bus. (Northeast Blvd.) at (Issac Weeks Road) / SR 1749 (Dixon Street)

Prepared In the Offices of:

Division 3 Sampson County Clinton

PLAN DATE: April 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

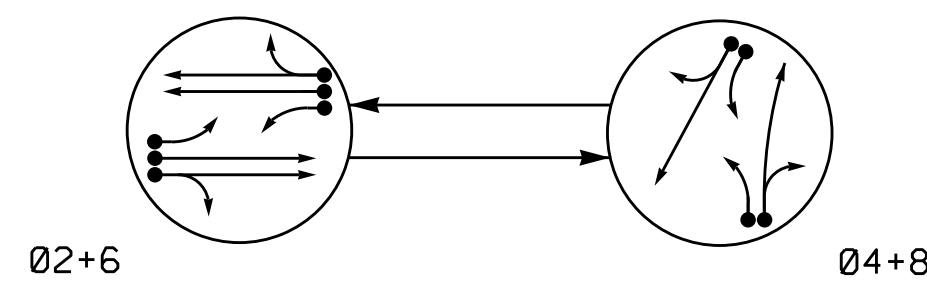
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

DocuSigned by: Keith M. Mims 5/4/2017

SIG. INVENTORY NO. 03-0178

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

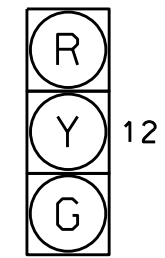
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- - - UNSIGNALIZED MOVEMENT
- ← PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	2 6	4 8	FL R
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62
81, 82

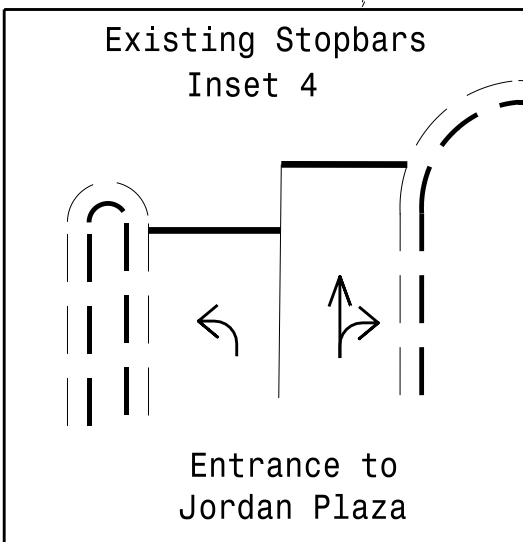
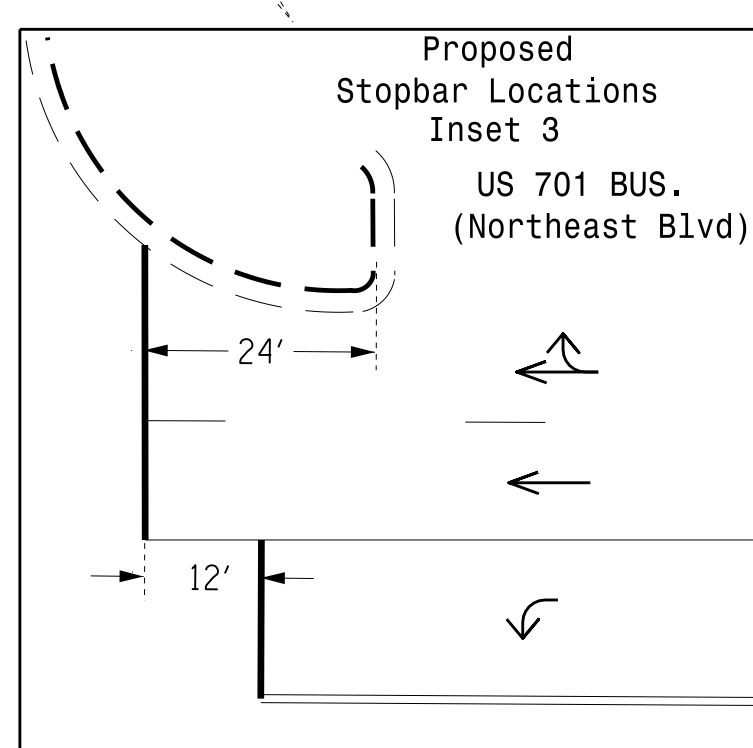
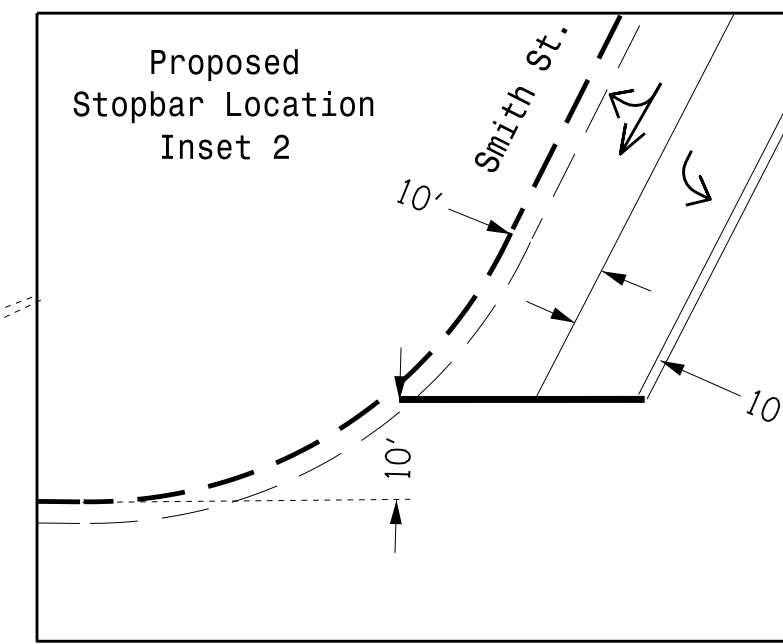
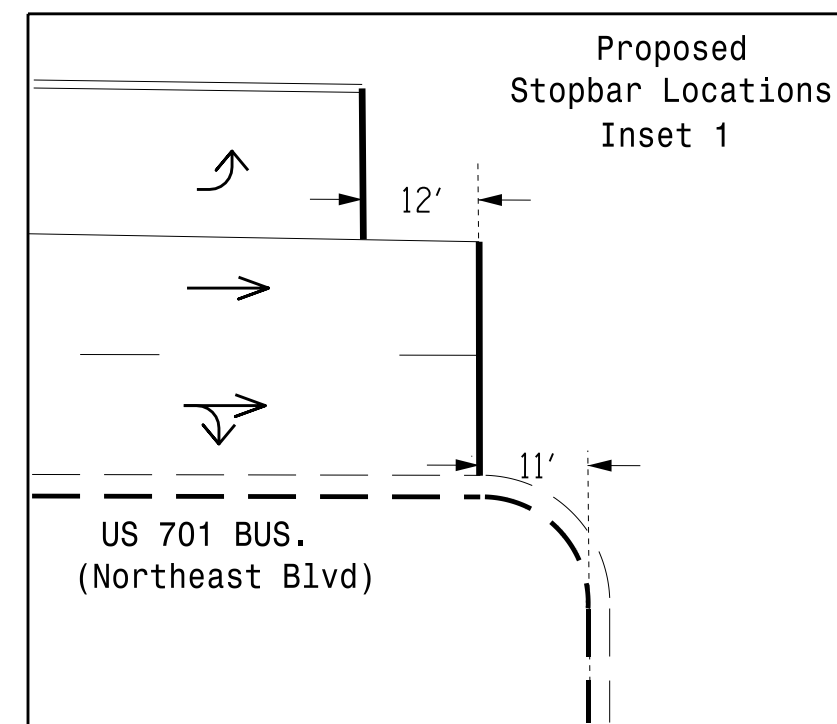
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	-
2B, 2C	6X6	70	4	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	-
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	-
6B, 6C	6X6	70	3	Y	6	Y	Y	-	-	-	-	-
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	-	-	-
8B	6X60	+1	2-4-2	-	8	Y	Y	-	-	10	-	-

2 Phase
Fully Actuated
US 701 Bus. (Clinton) CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- 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 Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Closed loop system data: Controller Asset #: 0360



OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	20	7	20	7
Extension 1 *	3.0	1.0	3.0	1.0
Max Green 1 *	75	30	75	30
Yellow Clearance	3.9	3.9	3.9	3.9
Red Clearance	2.4	2.3	2.4	2.3
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	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.

LEGEND

- | | | | |
|--|---|--|---|
| | PROPOSED Traffic Signal Head | | EXISTING Traffic Signal Head |
| | PROPOSED Modified Signal Head | | EXISTING Modified Signal Head |
| | PROPOSED Sign | | EXISTING Sign |
| | PROPOSED Pedestrian Signal Head With Push Button & Sign | | EXISTING Pedestrian Signal Head With Push Button & Sign |
| | PROPOSED Signal Pole with Guy | | EXISTING Signal Pole with Guy |
| | PROPOSED Signal Pole with Sidewalk Guy | | EXISTING Signal Pole with Sidewalk Guy |
| | PROPOSED Inductive Loop Detector | | EXISTING Inductive Loop Detector |
| | PROPOSED Controller & Cabinet | | EXISTING Controller & Cabinet |
| | PROPOSED Junction Box | | EXISTING Junction Box |
| | PROPOSED 2-in Underground Conduit | | EXISTING 2-in Underground Conduit |
| | PROPOSED Right of Way | | EXISTING Right of Way |
| | PROPOSED Directional Arrow | | EXISTING Directional Arrow |

Signal Upgrade

US 701 Bus. (Northeast Blvd)
at
Smith Street / Jordan Plaza

Division 3 Sampson County Clinton

PLAN DATE: March 2017 REVIEWED BY: JPG, PE

PREPARED BY: EM Minshew REVIEWED BY:

REVISIONS

INIT. DATE

DocuSigned by: Jason P. Gallaway 4/26/2017

SIG. INVENTORY NO. 03-0360

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

STATE OF NORTH CAROLINA

PROFESSIONAL ENGINEER

JASON P. GALLAWAY

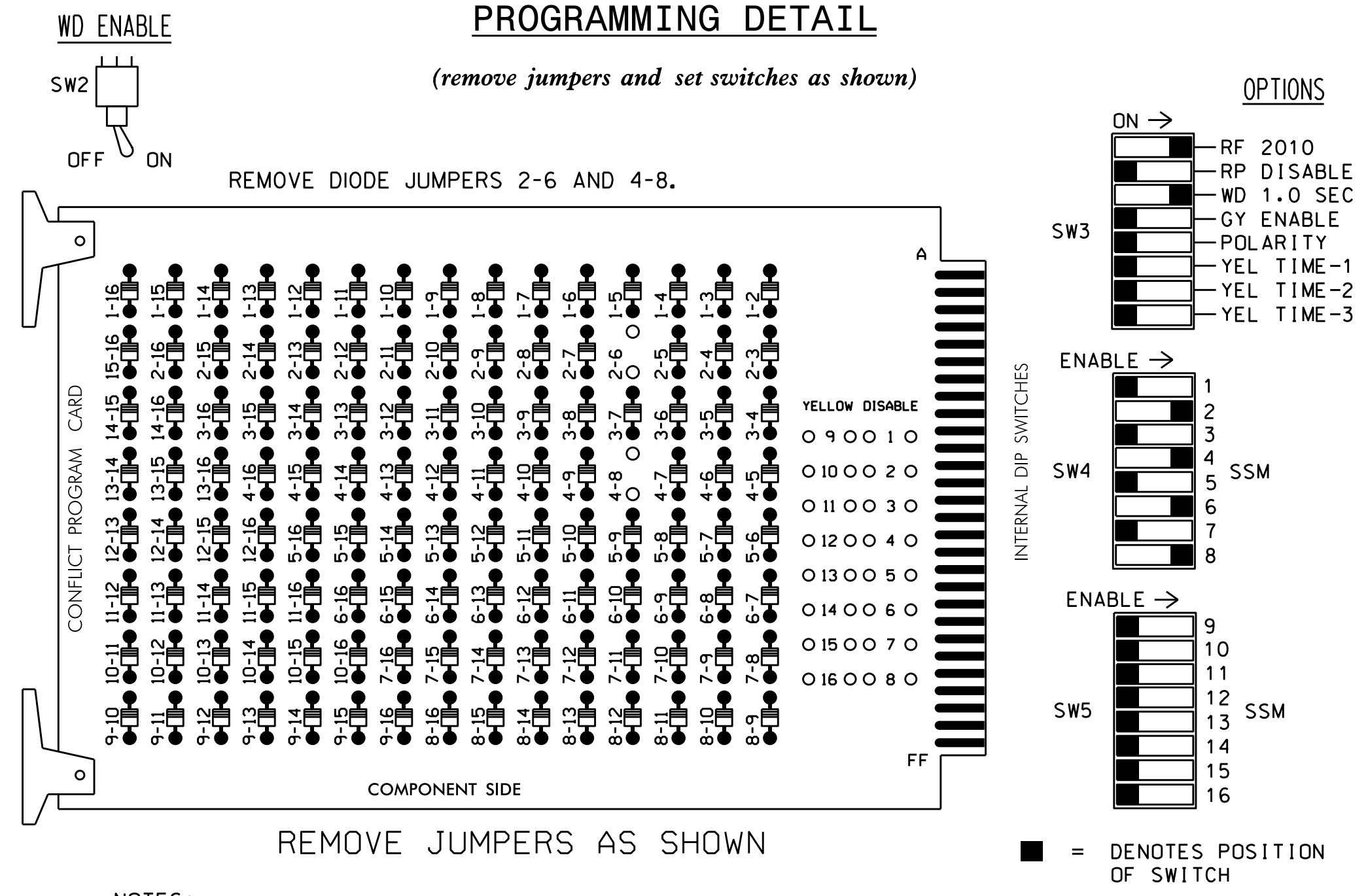
SEAL 029904

DocuSigned by: Jason P. Gallaway 4/26/2017

SIG. INVENTORY NO. 03-0360

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EDI MODEL 2010ECL-HCK CONFLICT MONITOR
PROGRAMMING DETAIL



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US 701 Bus. (Clinton) Closed Loop System.

EQUIPMENT INFORMATION

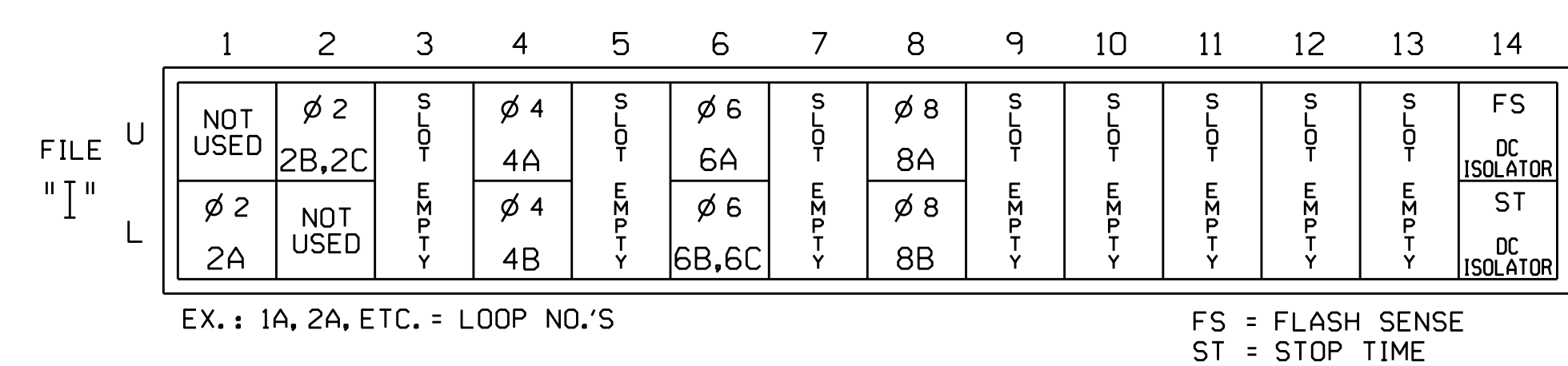
CONTROLLER.....2070
CABINET.....336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

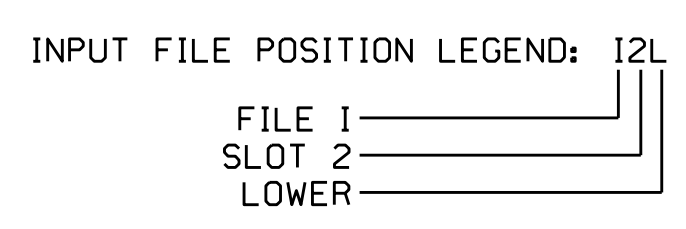
NU = Not Used

INPUT FILE POSITION LAYOUT
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB23-1,2	I1L	47	9	22	2	Y	Y			
2B,2C	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			10
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B,6C	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			10



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0360
DESIGNED: March 2017
SEALED: 4-26-17
REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 701 Bus. (Northeast Blvd.) at Smith Street / Jordan Plaza

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Division 3 Sampson County Clinton

PLAN DATE: April 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by: Keith M. Mins 5/4/2017

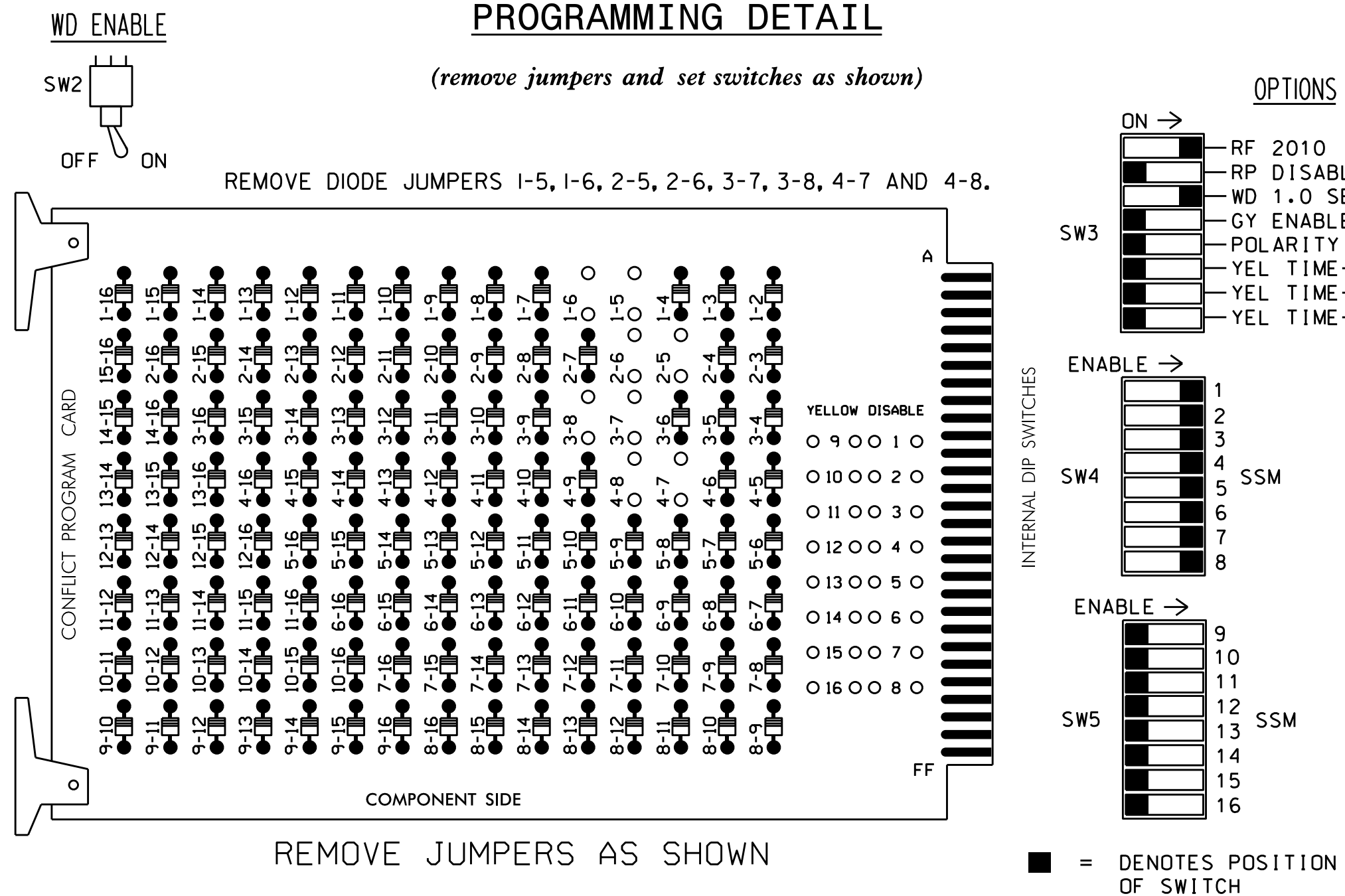
SEAL NORTH CAROLINA PROFESSIONAL ENGINEER KEITH M. MINS SEAL 036880

SIG. INVENTORY NO. 03-0360

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J Peterson

EDI MODEL 2010ECL-HCK CONFLICT MONITOR

PROGRAMMING DETAIL



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US 701 Bus. (Clinton) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	61	21,22	NU	81	41,42	NU	21	61,62	NU	41	81,82	NU	NU	NU	NU	NU	NU	NU
RED	*	128		*	101		*	134		*	107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW	126				117			132			123							
GREEN ARROW	127				118			133			124							

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

- From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Functions 1 and 2.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

DYNAMIC/BACKUP CONTROL FUNCTION #01
OVERLAPS: ABCDEFGHIJKLMNP
IF OVERLAPS ARE ACTIVE :
OR PHASES: 12345678910111213141516
IF PHASES ARE ON: X
OMIT PHASES : X
CALL PHASES :

PRESS 'NEXT'

DYNAMIC/BACKUP CONTROL FUNCTION #02
OVERLAPS: ABCDEFGHIJKLMNP
IF OVERLAPS ARE ACTIVE :
OR PHASES: 12345678910111213141516
IF PHASES ARE ON: X
OMIT PHASES : X
CALL PHASES :

BACKUP PROTECTION PROGRAMMING COMPLETE

BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 & 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0146
DESIGNED: March 2017
SEALED: 5/2/2017
REVISED:

INPUT FILE POSITION LAYOUT

(front view)

FILE "I" L	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	S TOP	∅ 2 2A,2B	∅ 5 5A	S TOP	S TOP	∅ 4 4A	NOT USED	∅ 4 7A	SYS. DET. SD5	S TOP	S TOP	S TOP	S TOP	FS DC ISOLATOR
L	Y TOP	NOT USED	∅ 2 5A	Y TOP	Y TOP	NOT USED	∅ 7 7A	NOT USED	SYS. DET. SD6	Y TOP	Y TOP	Y TOP	Y TOP	ST DC ISOLATOR
U	S TOP	∅ 1 1A	∅ 6 6A,6B	S TOP	S TOP	∅ 3 3A	∅ 8 8A	S TOP	SYS. DET. SD7	S TOP	S TOP	S TOP	S TOP	S TOP
L	Y TOP	∅ 6 1A	NOT USED	Y TOP	Y TOP	∅ 8 3A	NOT USED	NOT USED	SYS. DET. SD8	Y TOP	Y TOP	Y TOP	Y TOP	Y TOP

EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

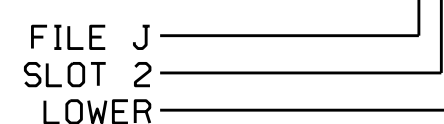
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB3-5,6	J2U	40	2	6	1	Y	Y			15
	TB3-7,8	J2L	44	6	16	6	Y	Y			
2A,2B	TB2-5,6	J2U	39	1	2	2	Y	Y			
3A ²	TB5-9,10	J6U	42	4	8	3	Y	Y			15
	TB5-11,12	J6L	46	8	18	8	Y	Y			3
4A	TB4-9,10	J6U	41	3	4	4	Y	Y			10
5A ³	TB2-9,10	J3U	63	25	32	5	Y	Y			15
	TB2-11,12	J3L	76	38	42	2	Y	Y			
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
7A ⁴	TB6-3,4	J7L	78	40	44	7	Y	Y			15
	TB6-5,6	J8U	49	11	24	4	Y	Y			3
8A	TB7-1,2	J7U	66	28	38	8	Y	Y			10
*SD5	TB6-9,10	J9U	60	22	11	SYS					
*SD6	TB6-11,12	J9L	62	24	13	SYS					
*SD7	TB7-9,10	J9U	59	21	15	SYS					
*SD8	TB7-11,12	J9L	61	23	17	SYS					

- Add jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.
- Add jumpers from TB5-9 to TB5-11, and from TB5-10 to TB5-12.
- Add jumpers from TB2-9 to TB2-11, and from TB2-10 to TB2-12.
- Add jumpers from TB6-3 to TB6-5, and from TB6-4 to TB6-6.

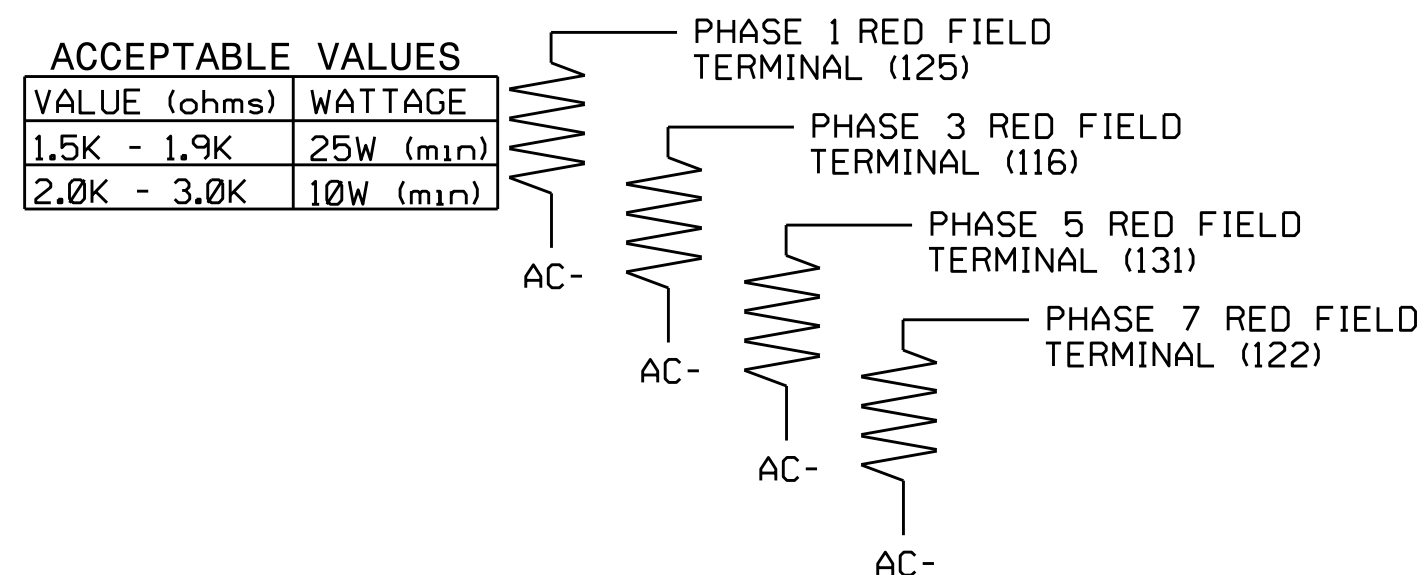
* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

Electrical Detail

Electrical and Programming Details For: US 701 Business (Northeast Blvd./ Southeast Blvd.) at NC 403 (Faison Hwy.)/ SR 1856 (College St.)

Prepared In the Offices of: [Logo]

Division 3 Sampson County Clinton

PLAN DATE: May 2017 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

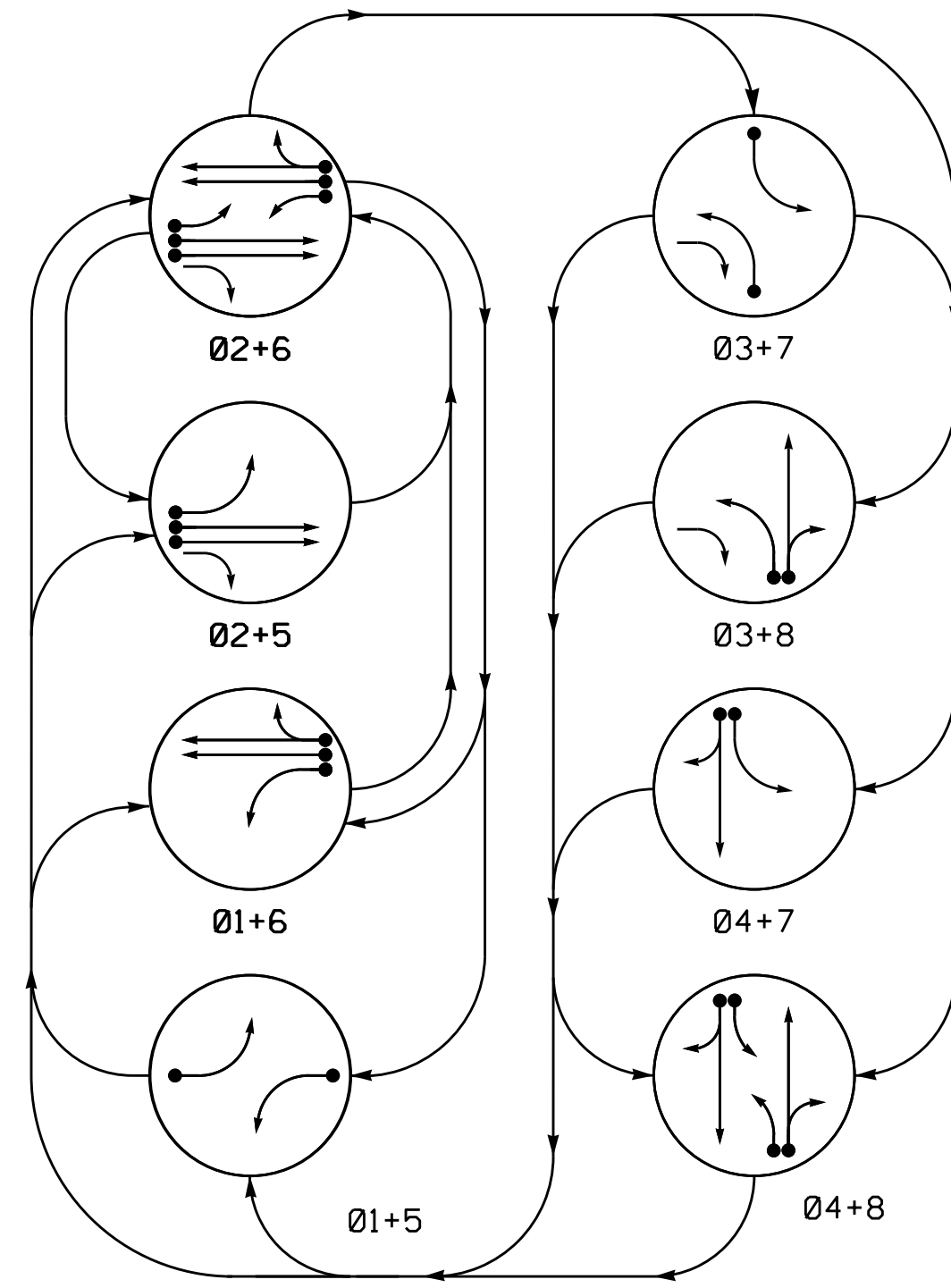
DocuSigned by: [Signature] 5/4/2017

SIG. INVENTORY NO. 03-0146

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030530 JACOBARY M. LITTLE

PHASING DIAGRAM



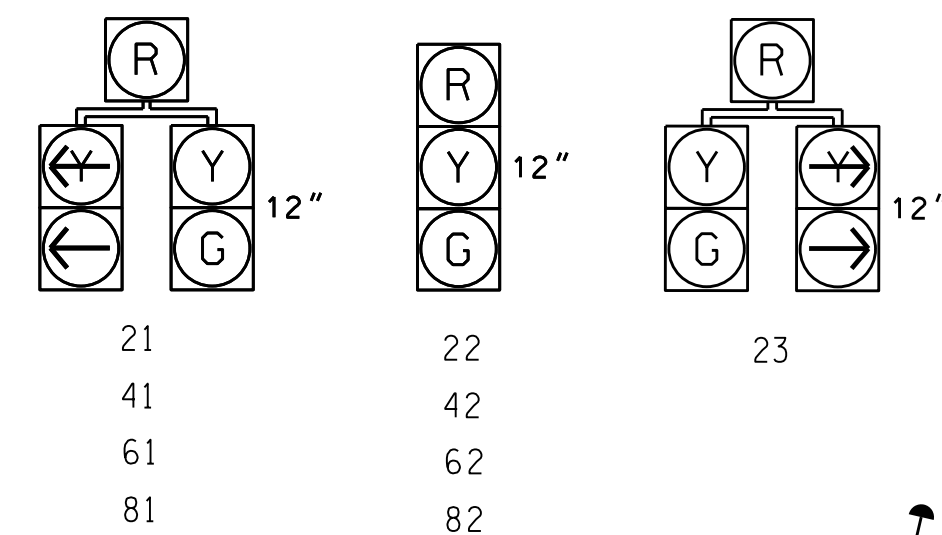
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE							
	01+5	02+5	02+6	03+7	03+8	04+7	04+8	F L S H
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
23	R	R	G	G	R	R	R	Y
41	R	R	R	R	R	R	G	R
42	R	R	R	R	R	R	G	R
61	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	Y
81	R	R	R	R	R	R	G	R
82	R	R	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

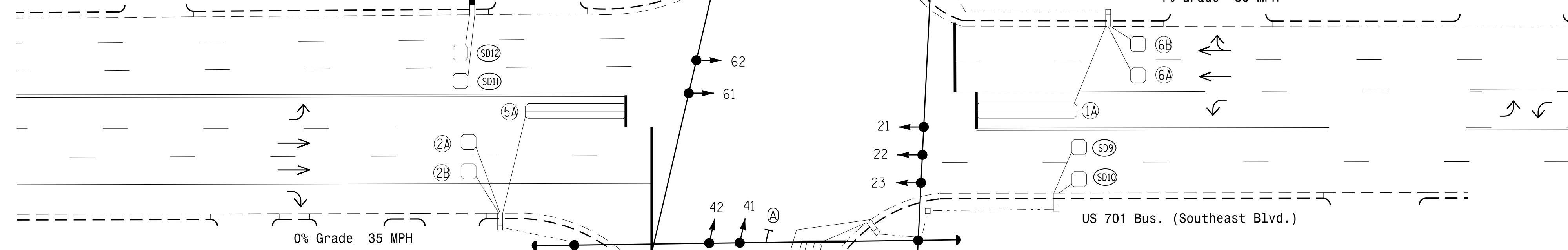
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	-
2A,2B	6X6	70	4	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	15	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	-
6A,6B	6X6	70	4	Y	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	15	-	-
8A	6X6	300	5	-	8	-	Y	-	3.0	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	-
SD9	6X6	+200	4	Y	-	-	-	-	-	-	Y	-
SD10	6X6	+200	4	Y	-	-	-	-	-	-	Y	-
SD11	6X6	+200	3	Y	-	-	-	-	-	-	Y	-
SD12	6X6	+200	3	Y	-	-	-	-	-	-	Y	-

8 Phase Fully Actuated US 701 Bus. (Clinton) CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 3 during phase 4 on.
- Omit phase 7 during phase 8 on.
- Enable Backup Protect for phase 2 and 6 to allow the controller to clear from phase 2+6 to phase 2+5 or 1+6 by progressing through an all red display.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 0145.

US 701 Bus. - NC 24 (Southeast Blvd.)



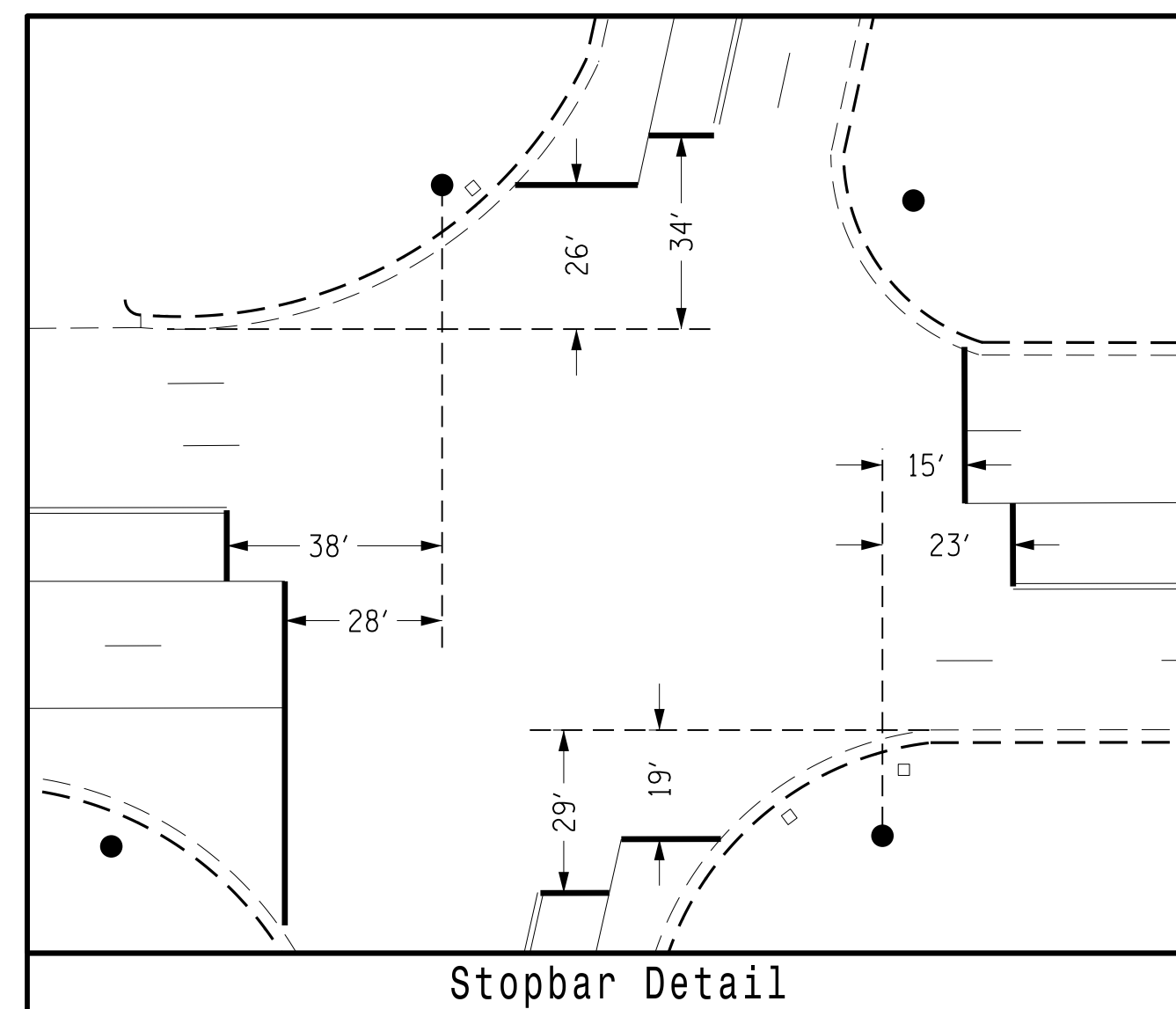
OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1 *	15	40	15	30	15	40	15	30
Yellow Clearance	3.0	3.9	3.0	4.6	3.0	3.9	3.0	4.6
Red Clearance	3.1	2.3	2.6	2.1	3.1	2.3	2.9	2.1
Red Revert	2.0	5.0	2.0	2.0	2.0	5.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	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.

LEGEND

- | PROPOSED | EXISTING |
|---|----------|
| ○→ Traffic Signal Head | ●→ N/A |
| ●→ 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 | - - - |
| N/A | - - - |
| → Right of Way | - - - |
| → Directional Arrow | → |
| ⊙ Left Arrow "Only" Sign (R3-5L) | ⊙ |



Signal Upgrade

Prepared In the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 701 Business - NC 24 (Southeast Boulevard) at NC 24/SR 1855 (Warsaw Road)

Division 3 Sampson County Clinton

PLAN DATE: March 2017 REVIEWED BY: JPG

PREPARED BY: KGP, Jr. REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

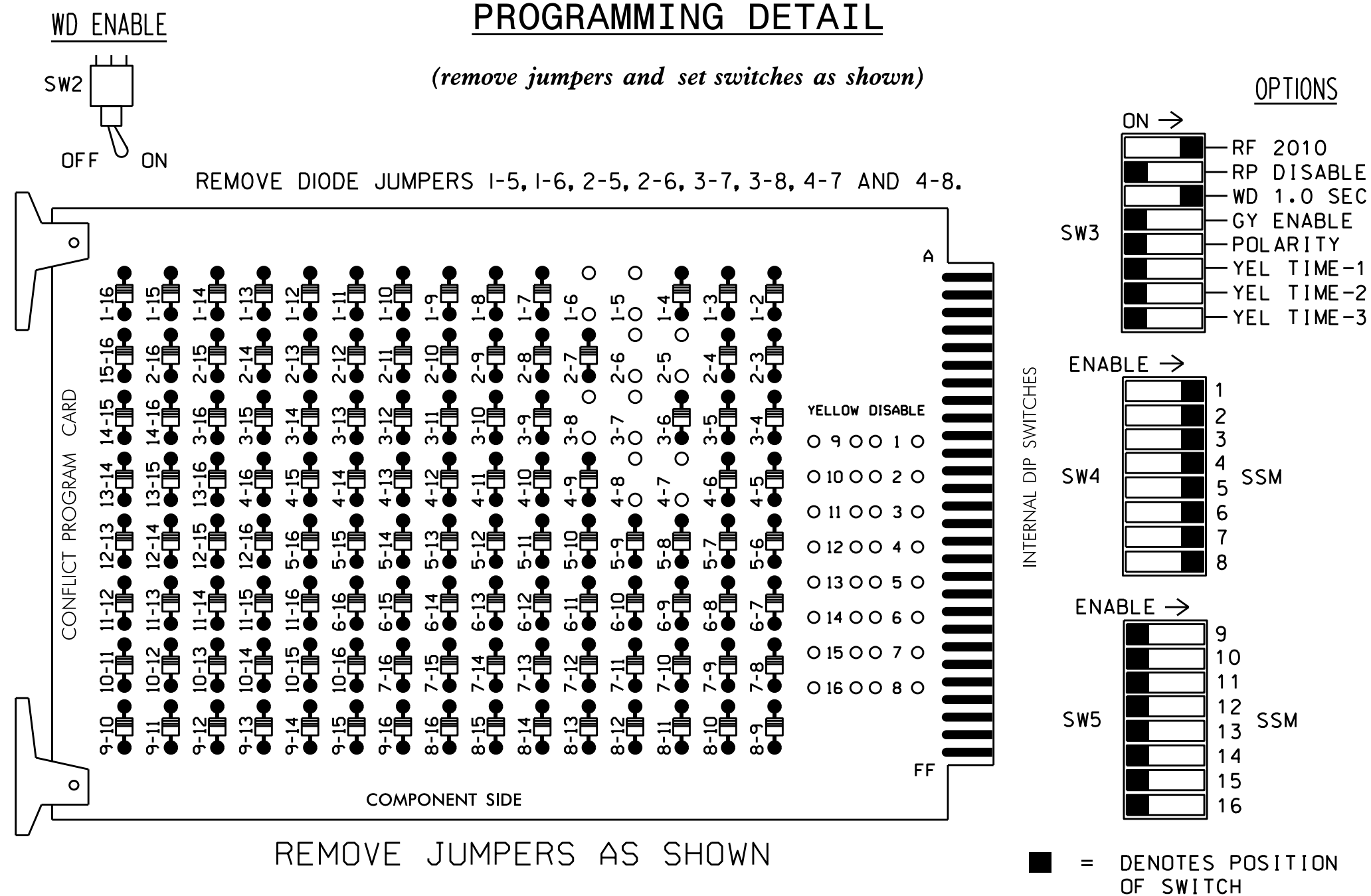
Jason P. Gallaway 5/2/2017

SIG. INVENTORY NO. 03-0145

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EDI MODEL 2010ECL-HCK CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US 701 Bus. (Clinton) CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	61	21,22 23	NU	23,81	41,42	NU	21	61,62	NU	41	81,82	NU	NU	NU	NU	NU	NU	NU
RED	*	128		*	101		*	134		*	107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW	126			117			132			123								
GREEN ARROW	127			118			133			124								

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

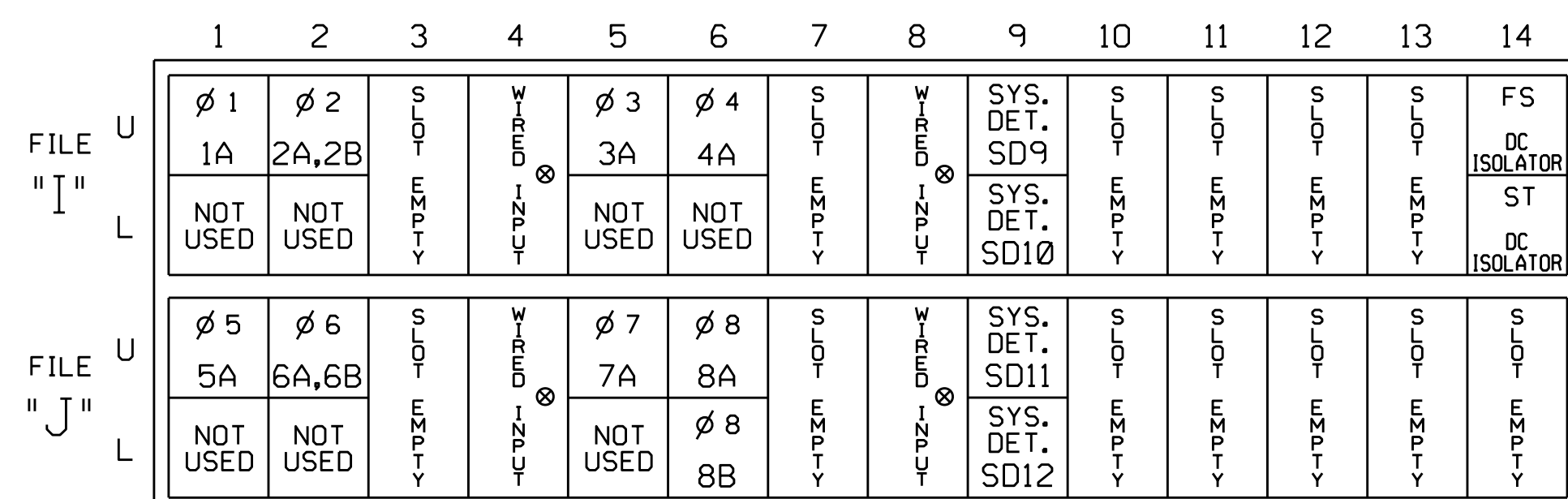
DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

- From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Functions 1 and 2.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

INPUT FILE POSITION LAYOUT

(front view)

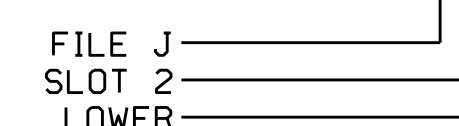


INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
	-	J8U	50	12	28	8	Y	Y			3
3A ²	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
	*SD9	TB6-9,10	I9U	60	22	11	SYS				
*SD10	TB6-11,12	I9L	62	24	13	SYS					
	-	J8U	50	12	28	8	Y	Y			3
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y			
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
	-	I8U	49	11	24	4	Y	Y			3
7A ⁴	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y		3.0	
	8B	TB5-11,12	J6L	46	8	18	8	Y	Y		10
*SD11	TB7-9,10	J9U	59	21	15	SYS					
	*SD12	TB7-11,12	J9L	61	23	17	SYS				

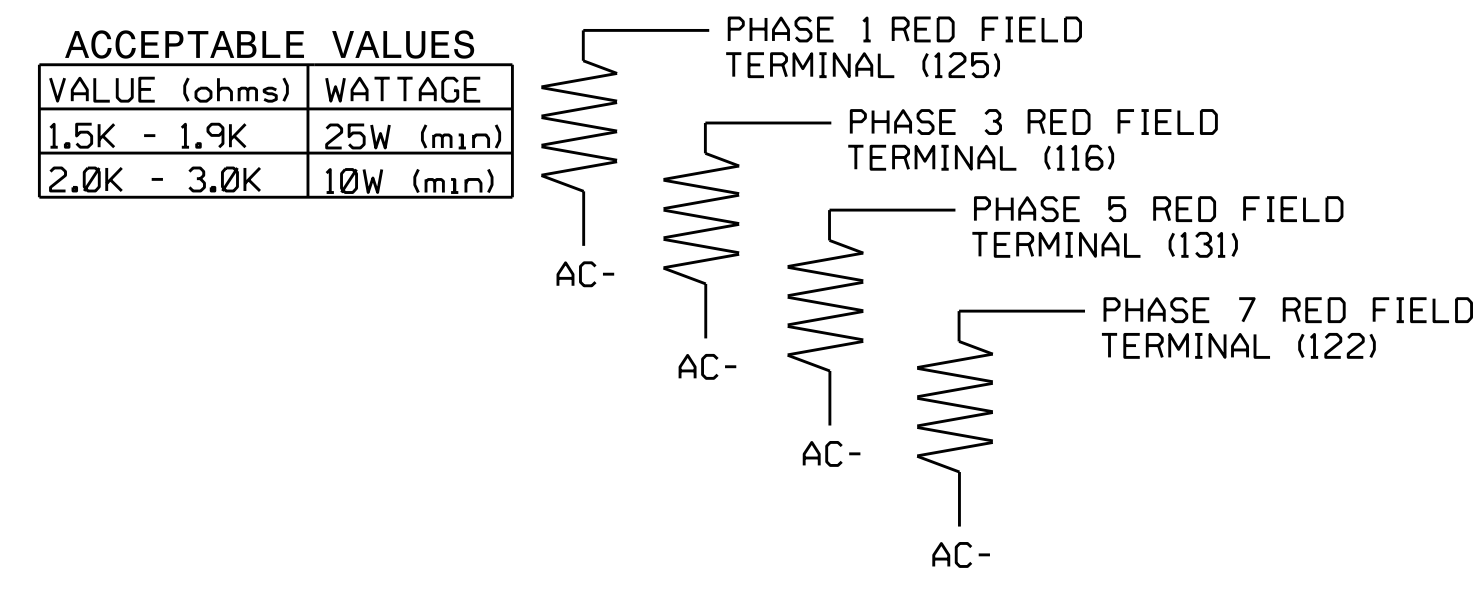
- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from I5-W to J8-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - Add jumper from J5-W to I8-W, on rear of input file.
- * System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



Electrical Detail

Electrical and Programming Details For:

Prepared In the Offices of:

TRANSPORTATION MOBILITY AND SAFETY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 701 Business - NC 24
(Southeast Boulevard)
at NC 24/SR 1855 (Warsaw Road)

Division 3 Sampson County Clinton

PLAN DATE: April 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

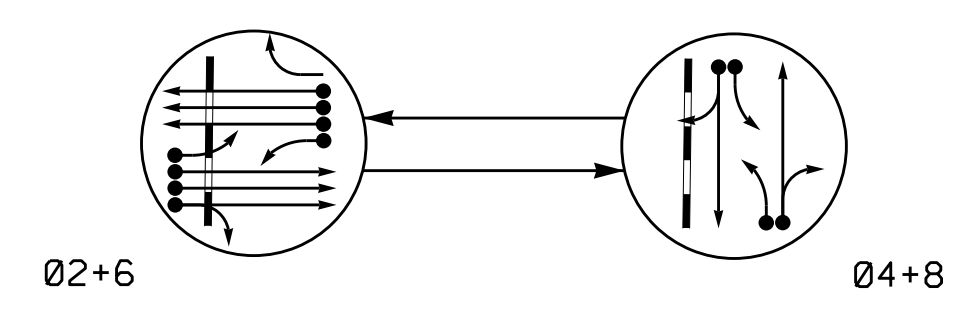
DocuSigned by:
Keith M. Mims 5/11/2017
2F8079E6C02465 DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
036880
KEITH M. MIMS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIG. INVENTORY NO. 03-0145

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

RAIL PREEMPT PHASES
(High Priority)

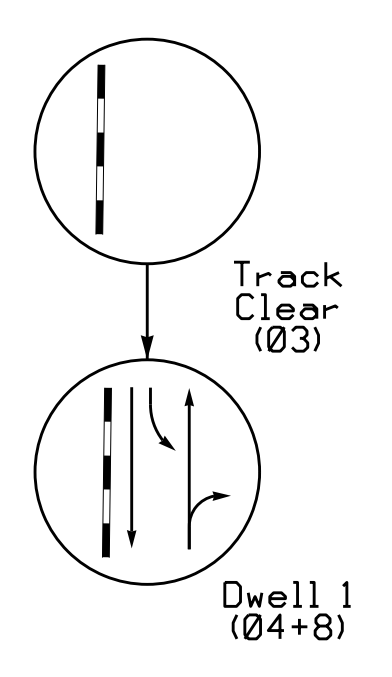


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	02+6	04+8	R	R	R	R	R	R
21,22,23	G	R	R	R	R	R	R	Y
41,42	R	G	R	G	R	R	R	
61,62,63,64,65	G	R	R	R	R	R	R	Y
81,82	R	G	R	G	R	R	R	
Sign A	OFF	OFF	ON	ON	ON	ON	ON	*
Sign B	OFF	OFF	ON	ON	ON	ON	ON	*

* See Note 5

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	+5	2-4-2	Y	2	Y	Y	-	-	3	-	-
2B,2C,2D	6X6	70	5	Y	2	Y	Y	-	-	-	-	-
4A	6X40	+5	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X40	+5	2-4-2	Y	4	Y	Y	-	-	10	-	-
6A	6X40	+5	2-4-2	Y	6	Y	Y	Y	-	3	-	-
6B,6C,6D	6X6	70	3	Y	6	Y	Y	-	-	-	-	-
8A	6X40	+5	2-4-2	Y	8	Y	Y	-	-	3	-	-
8B	6X60	+5	2-4-2	Y	8	Y	Y	-	-	10	-	-

2 Phase Fully Actuated w/ Railroad Preemption US 701 Bus. (Clinton) CLS

NOTES

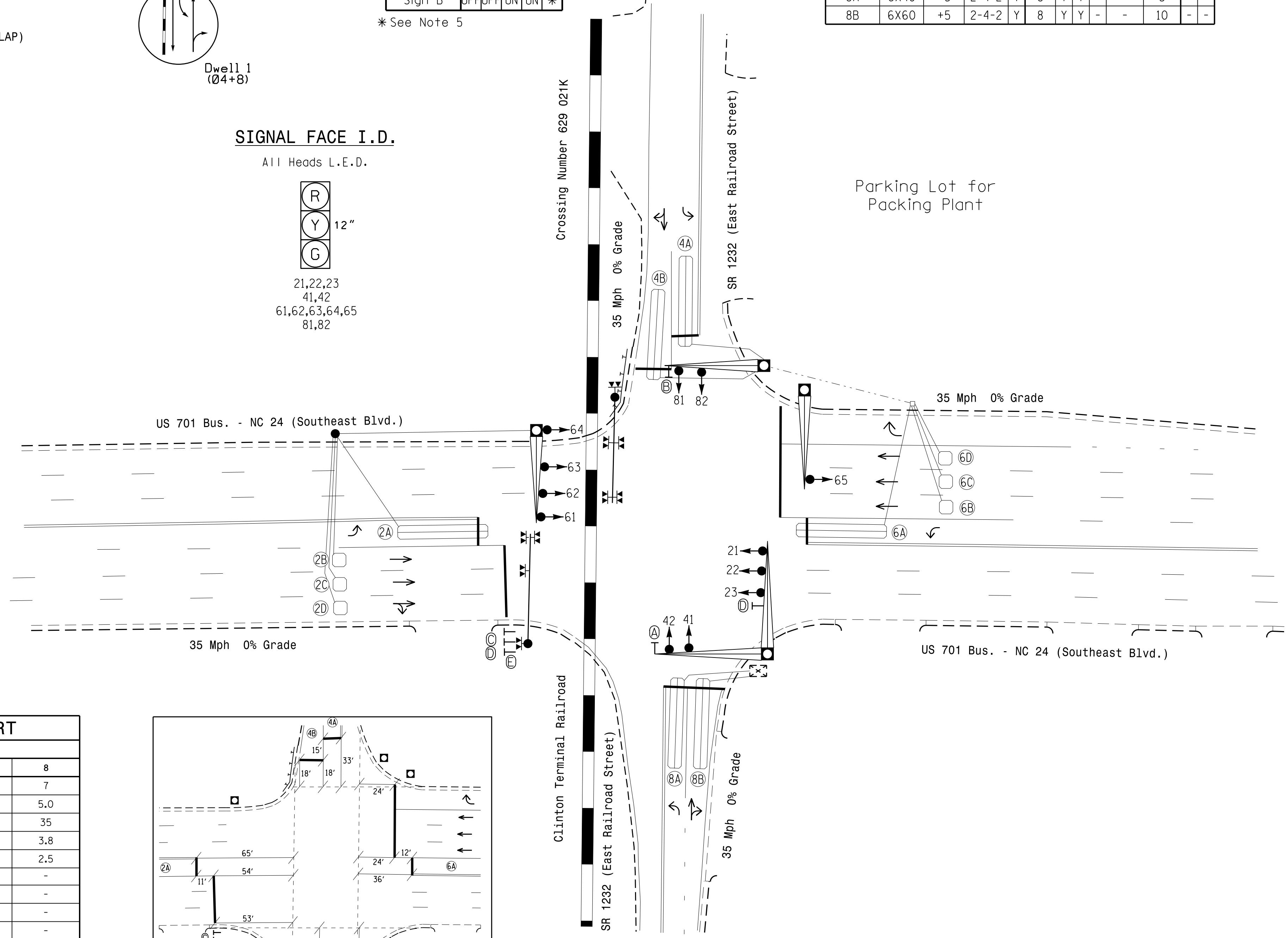
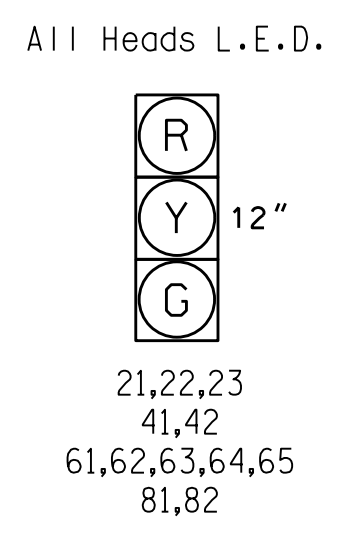
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
- Set all detector units to presence mode.
- Ensure 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 supersede these values.
- Signal system data: Controller Asset # 0177.

OASIS 2070 RR PREEMPT

FUNCTION	PRE 1
Interval 1 - Track Clearance Green	1
Interval 1 - Track Clearance Yellow	3.0
Interval 1 - Track Clearance Red	1.0
Interval 2 - Dwell Green	255
Interval 2 - Dwell Yellow	0.0*
Interval 2 - Dwell Red	0.0*
Interval 5 - Exit Green	1
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Exit Phase(s)	2,6
Priority	High
Delay Time	0.0
Min Green Before Pre	1
Ped Clear Before Pre	0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	7
Enable Backup Protection	N
Ped Clear Through Yellow	N
Omit Overlaps	-

* Time defaults to time used for phase during normal operation
This Signal Designed for Simultaneous Preemption

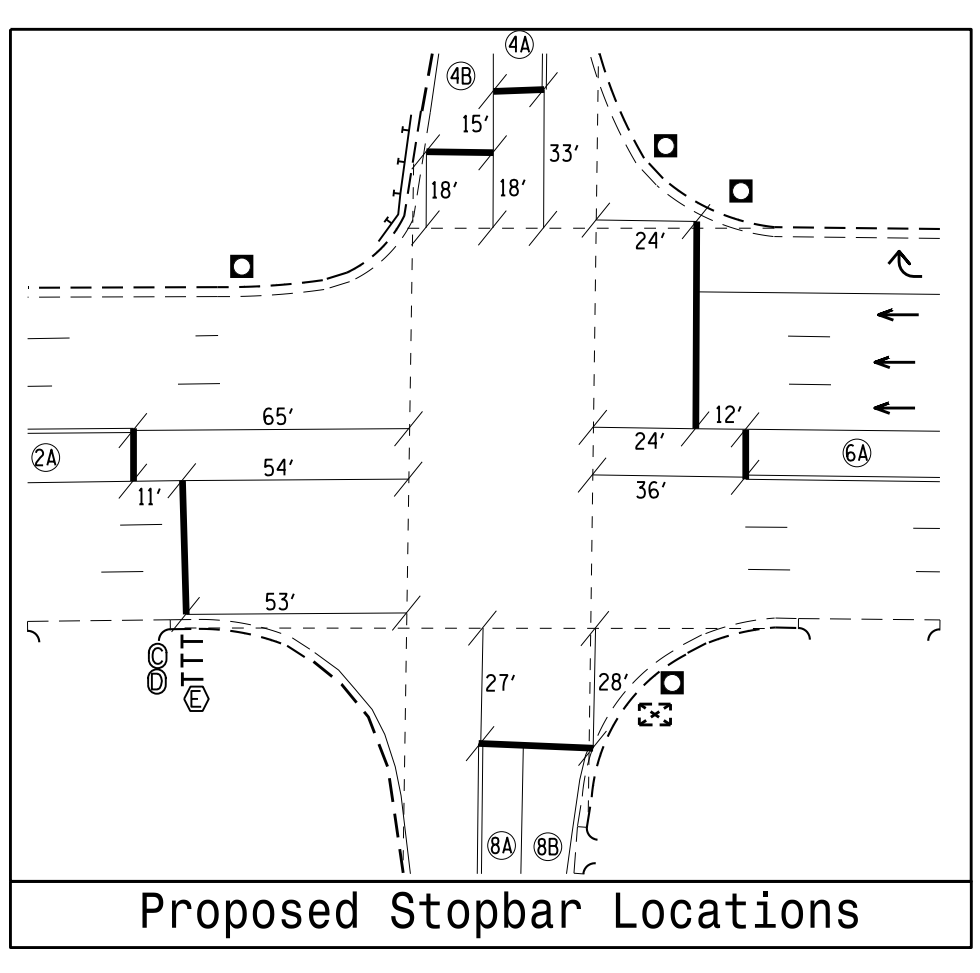
SIGNAL FACE I.D.



OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	5.0	3.0	5.0
Max Green 1 *	45	35	45	35
Yellow Clearance	3.8	3.8	3.8	3.8
Red Clearance	2.7	2.5	2.0	2.5
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	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.



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
○→	○→	"NO RIGHT TURN - TRAIN" Fiber Optic Blankout Sign	ⓐ
○→	○→	"NO LEFT TURN - TRAIN" Fiber Optic Blankout Sign	ⓑ
○→	○→	"DO NOT STOP ON TRACKS" Sign (R8-8)	ⓒ
○→	○→	"NO TURN ON RED" Sign (R10-11)	ⓓ
○→	○→	"STOP HERE ON RED" Sign	ⓔ

Signal Upgrade

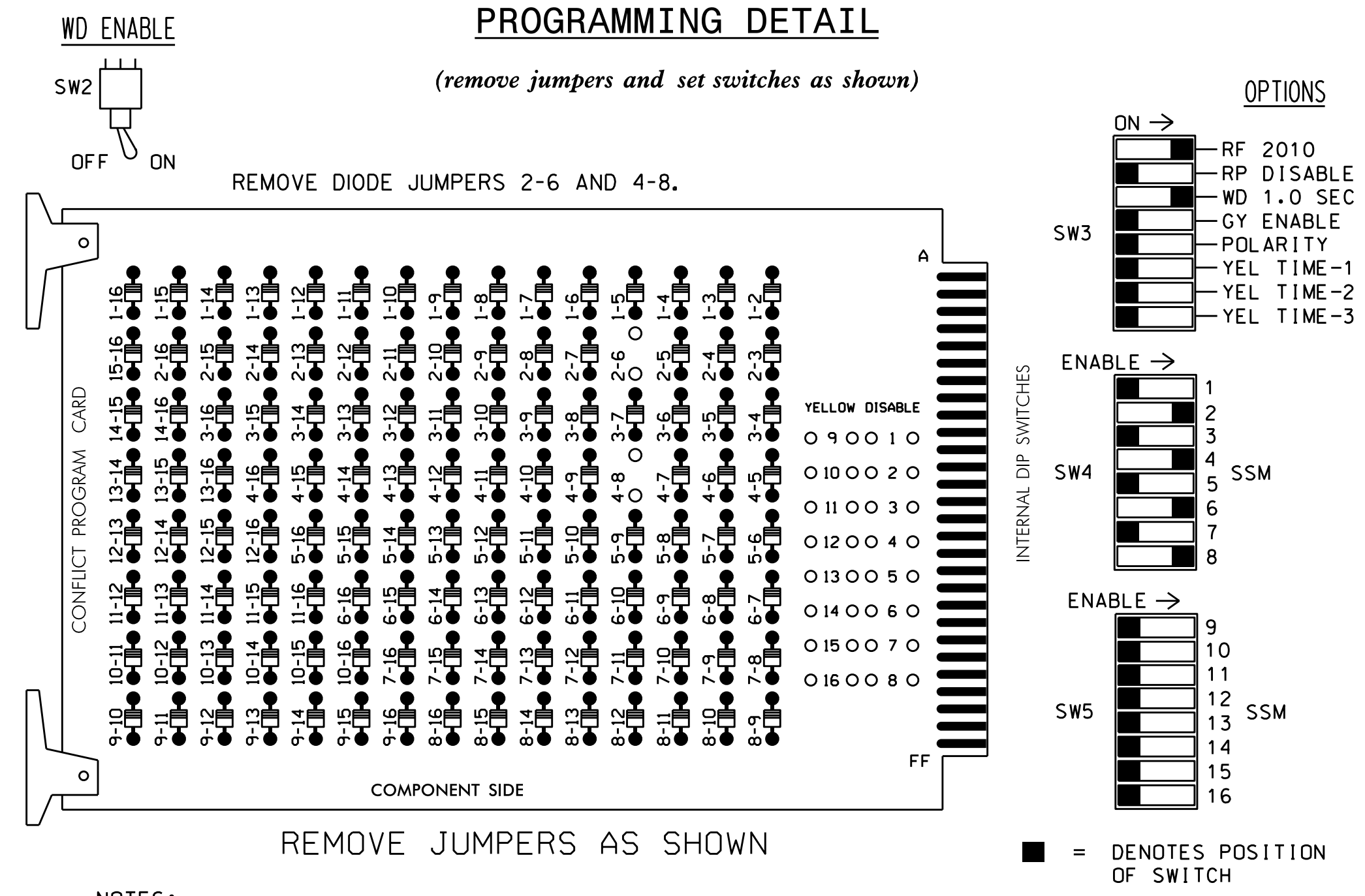
Prepared in the Offices of:

 US 701 Bus. / NC 24 (Southeast Blvd.) at SR 1232 (East Railroad Street)
 Division 3 Sampson County Clinton
 PLAN DATE: March 2017 REVIEWED BY: JPG
 PREPARED BY: Jeff Spence REVIEWED BY:
 SCALE: 1" = 30'
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL: JASON P. GALLOWAY, PROFESSIONAL ENGINEER, No. 22994
 DATE: 5/9/2017
 SIG. INVENTORY NO. 03-0177

09-MAY-2017 10:51 S:\IT\55\K\15\S\01\04\Signal_Design_Sect\04\Eastern_Reg\04\03\01\17\17\030117_15\04\03\01\17\030117.dgn

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7, 9,10,11,12,13,14,15 and 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6 for Yellow Flash.
6. Program phases 4 and 8, on the controller unit, for Dual Entry.
7. The cabinet and controller are part of the Clinton Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22 23	NU	NC	41,42	NU	NU	61,62 63,64 65	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used
NC = No Connection

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....EXISTING 332
 SOFTWARE.....ECONOLITE OASIS 3.03.32E
 OR LATEST APPROVED VERSION
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S4,S6,S8
 PHASES USED.....2,*3,4,6,8
 OVERLAPS.....NONE
 *USED IN RR PREEMPT SEQUENCE.

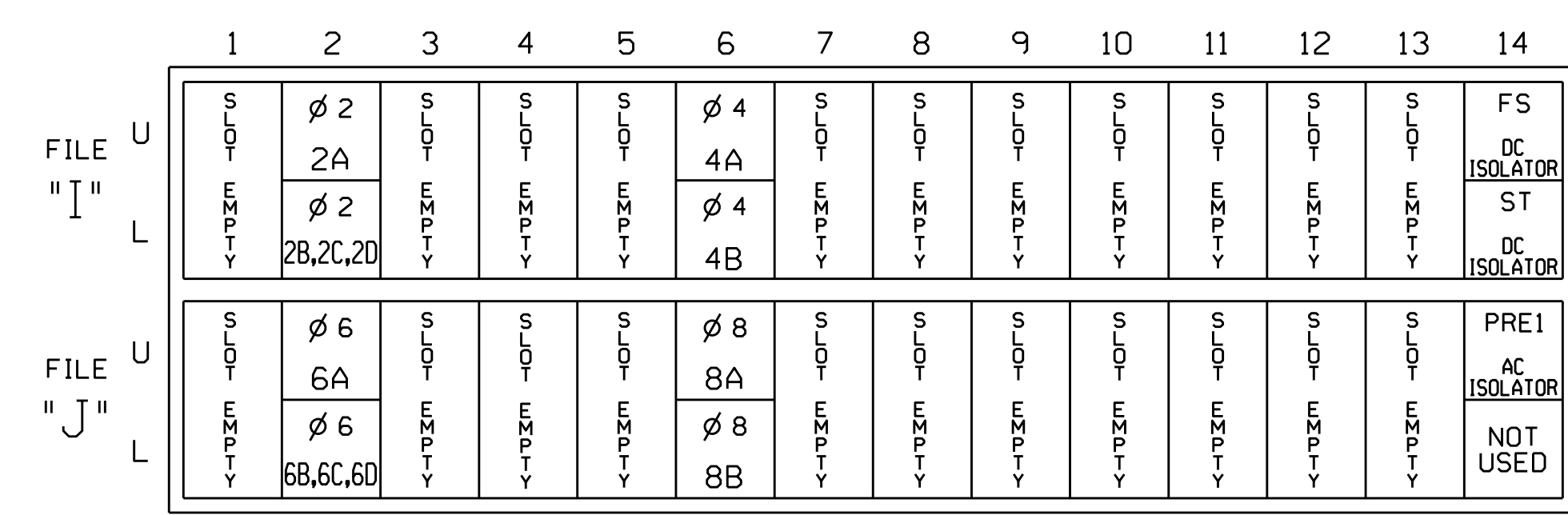
PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 3 for 'Omit Phase' and Phases 2, 4, 6 and 8 for 'Startup Calls'. This is to prevent Phase 3 from being served when not in Preempt.

INPUT FILE POSITION LAYOUT

(front view)



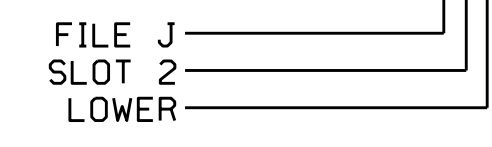
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME
 PRE 1 = RR PREEMPT

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y	Y		3
2B,2C,2D	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y	Y		3
6B,6C,6D	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

INPUT FILE POSITION LEGEND:



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0177
 DESIGNED: March 2017
 SEALED: 5/9/2017
 REVISED:

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details for:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 701 Bus./NC 24 (Southeast Blvd.) at SR 1232 (East Railroad Street)

Division 03 Sampson County Clinton

PLAN DATE: April 2017 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

Sealed by: *Carlynn M. Little* 5/15/2017

SIG. INVENTORY NO. 03-0177

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030530 VICTORY M. LITTLE

1:4:18-2017 10:39
 S:\MITS\0115\SIGNAL\work\hgr\oups\g\Map\511-1ck\lanc#030177_sml.e_xxx.dgn
 cbsr\ckland

RAILROAD PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

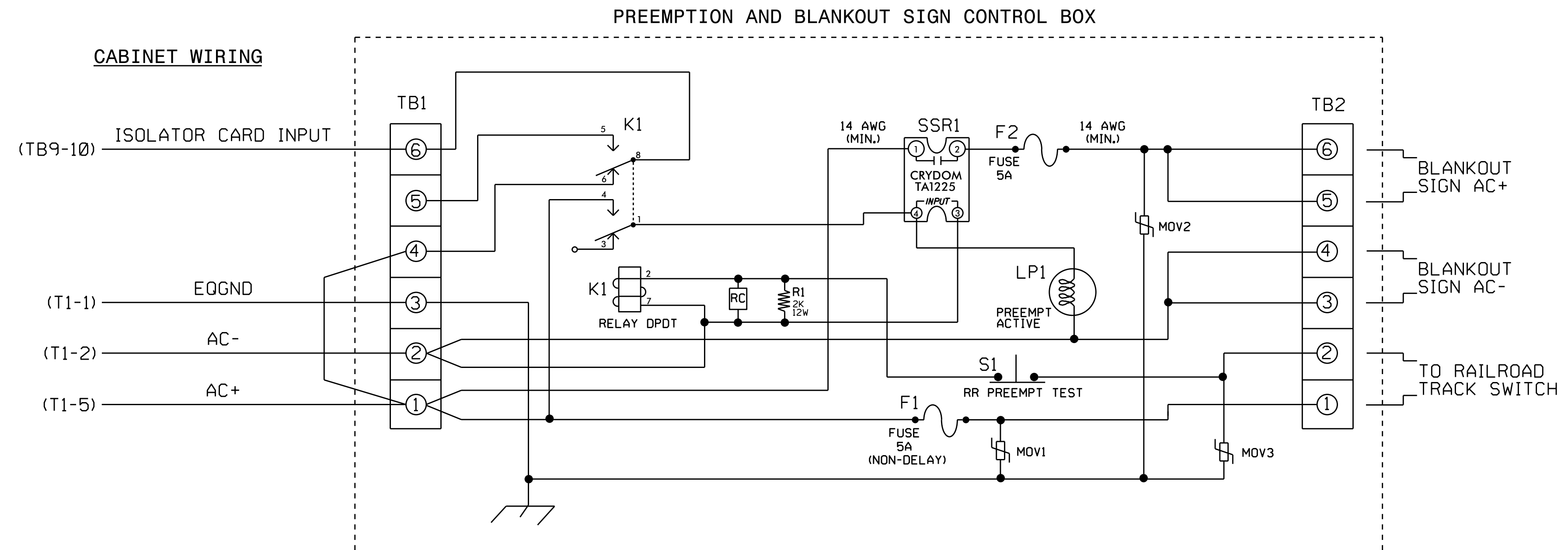
From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions).

PREEMPTION #	INTERVAL/TIMING	SETTINGS (NEXT:1-10)	CLEAR/DWELL PHASES
GRN	YEL	RED	12345678910111213141516
1	1	3.0 1.0	X X
2	255	0.0 0.0	X X
3	0	0.0 0.0	
4	0	0.0 0.0	
5	1	0.0 0.0	X X

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	HIGH
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	0
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY? ..	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION? ..	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMN
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

RAILROAD PREEMPTION WIRING DETAIL

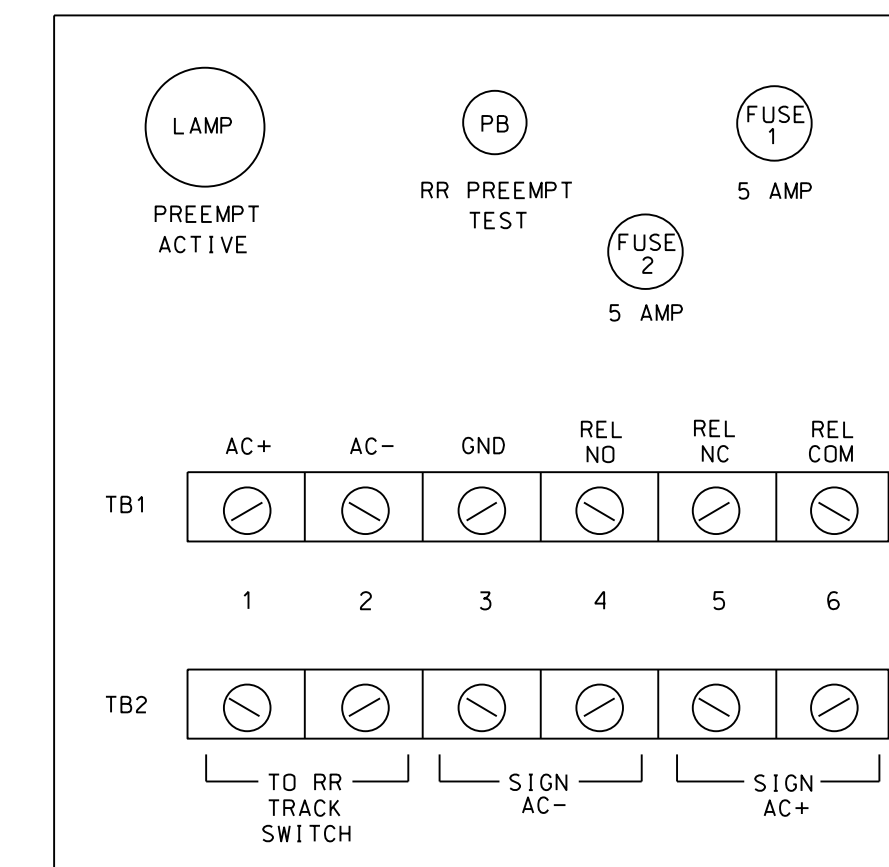
(wire as shown below)



NOTES

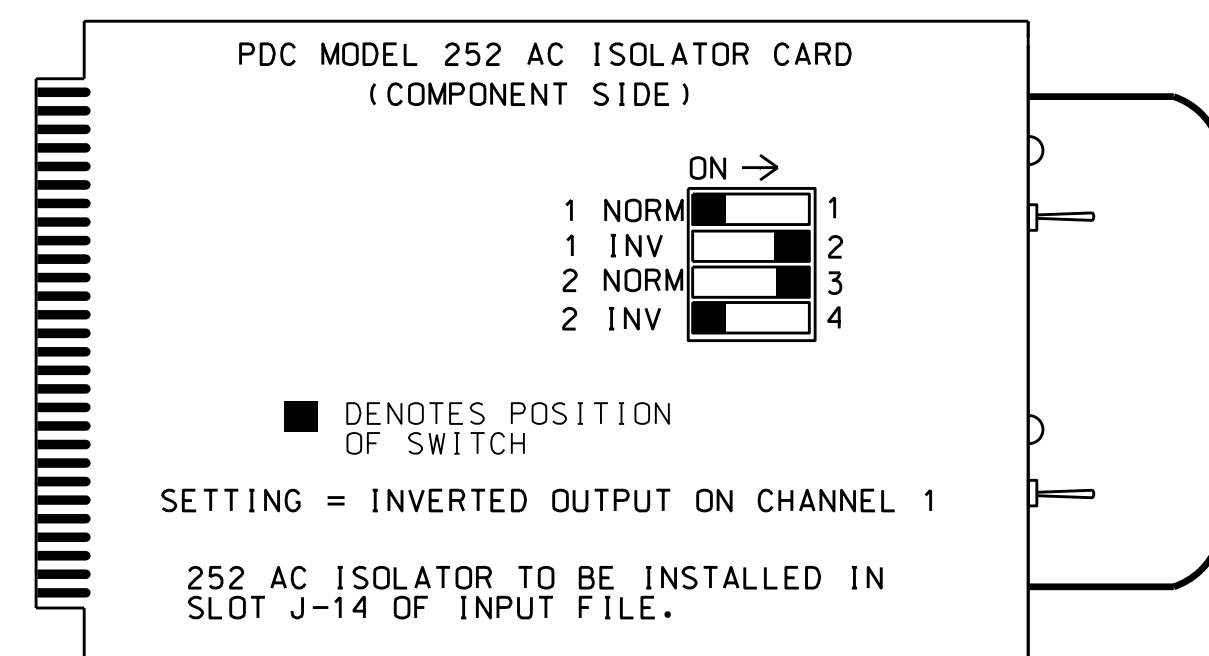
- Relay K1 is shown in the energized (Preempt not active) normal operation state.
- Relay K1 is a Potter & Brumfield KRP11AG DPDT Relay with 120VAC coil and octal base.
- Relay SSR1 is a Crydom TA1225 SPST (normally open) Solid State Relay with AC input and AC (25 Amp) output. Dot Material# 625028740.
- AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
- Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K; DOT Material# 625011550.
- RC network is valued at .1 microfarad, 100 ohm.
- If replacement movs are needed, GE part no. V150LA20A (Dot Material# 106023975) may be used.
- Preemption and Blankout Sign Control Box is a Control Technologies Part No. 2299-101. DOT Material # 619033450.
- IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, Terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



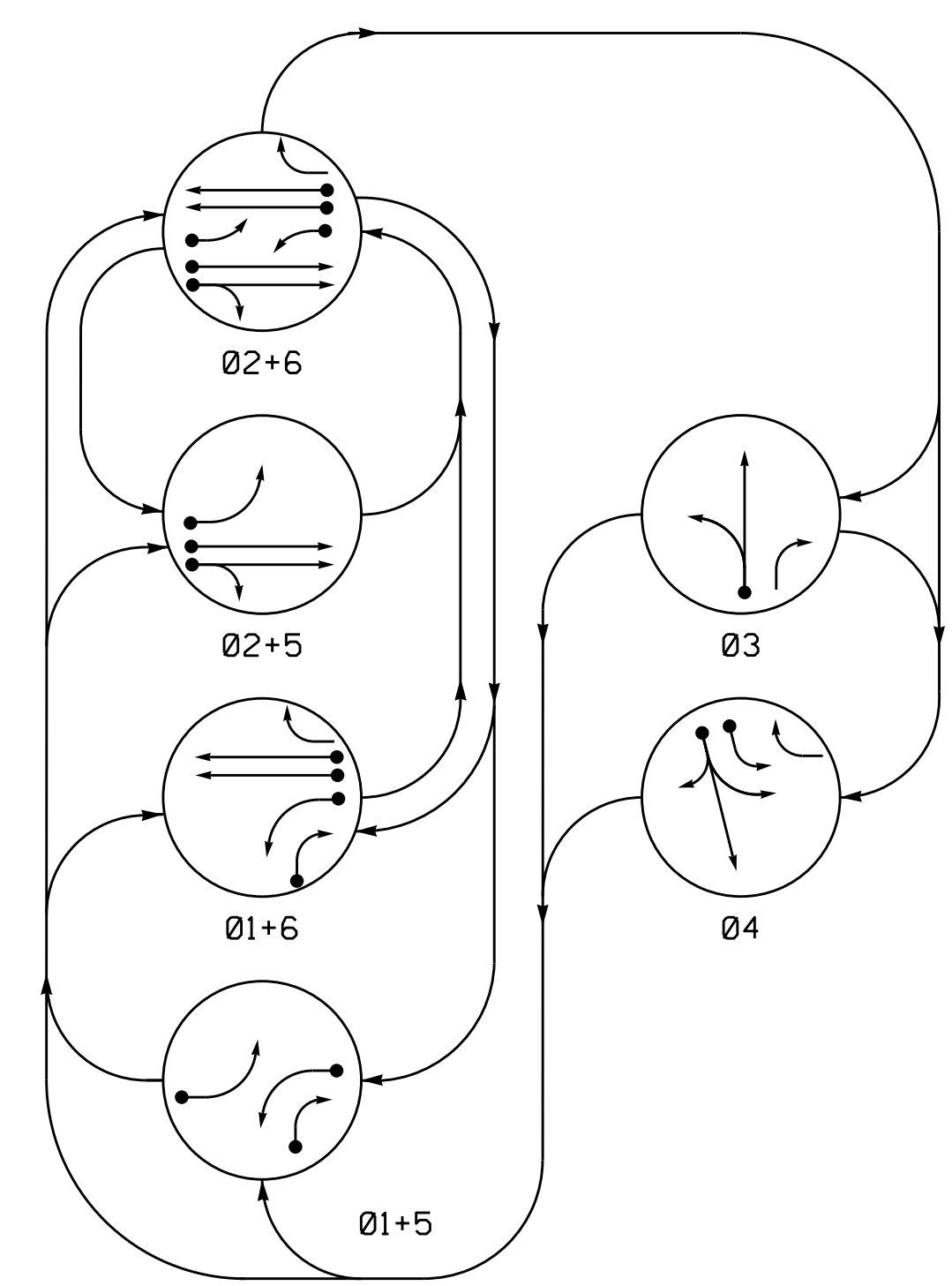
NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0177
 DESIGNED: March 2017
 SEALED: 5/9/2017
 REVISED:

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 701 Bus./NC 24 (Southeast Blvd.) at SR 1232 (East Railroad Street)		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL GREGORY M. LITTLE ENGINEER STATE OF NORTH CAROLINA LICENSE NO. 030530
	Division 03 PLAN DATE: April 2017 PREPARED BY: C. Strickland	Sampson County REVIEWED BY: T. Joyce REVIEWED BY:	

PHASING DIAGRAM



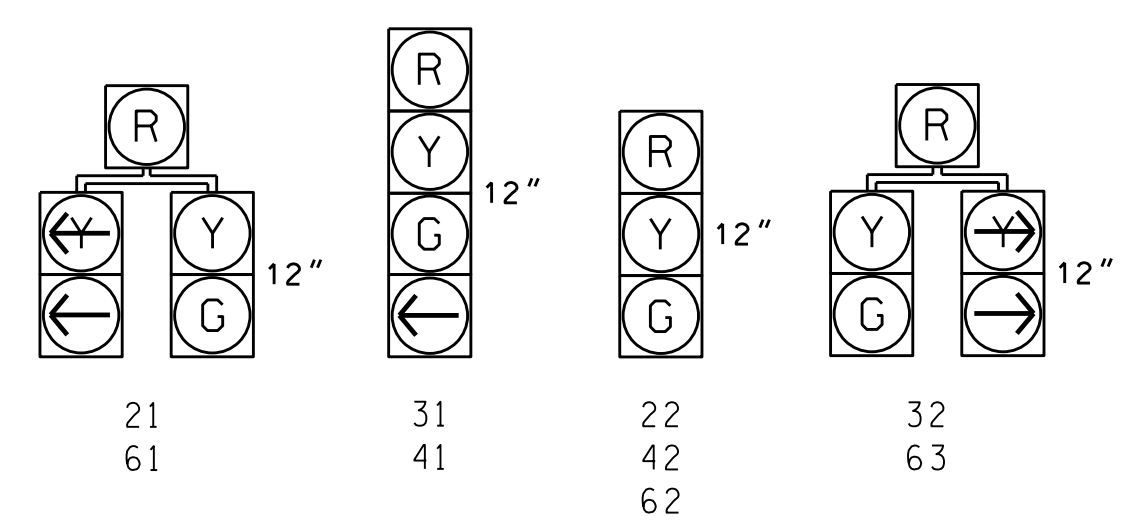
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE						FLIGHT
	01+5	01+6	02+5	02+6	03	04	
21	R	R	G	G	R	R	Y
22	R	R	G	G	R	R	Y
31	R	R	R	R	G	R	R
32	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
61	R	G	R	G	R	R	Y
62	R	G	R	G	R	R	Y
63	R	G	R	G	R	R	Y

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



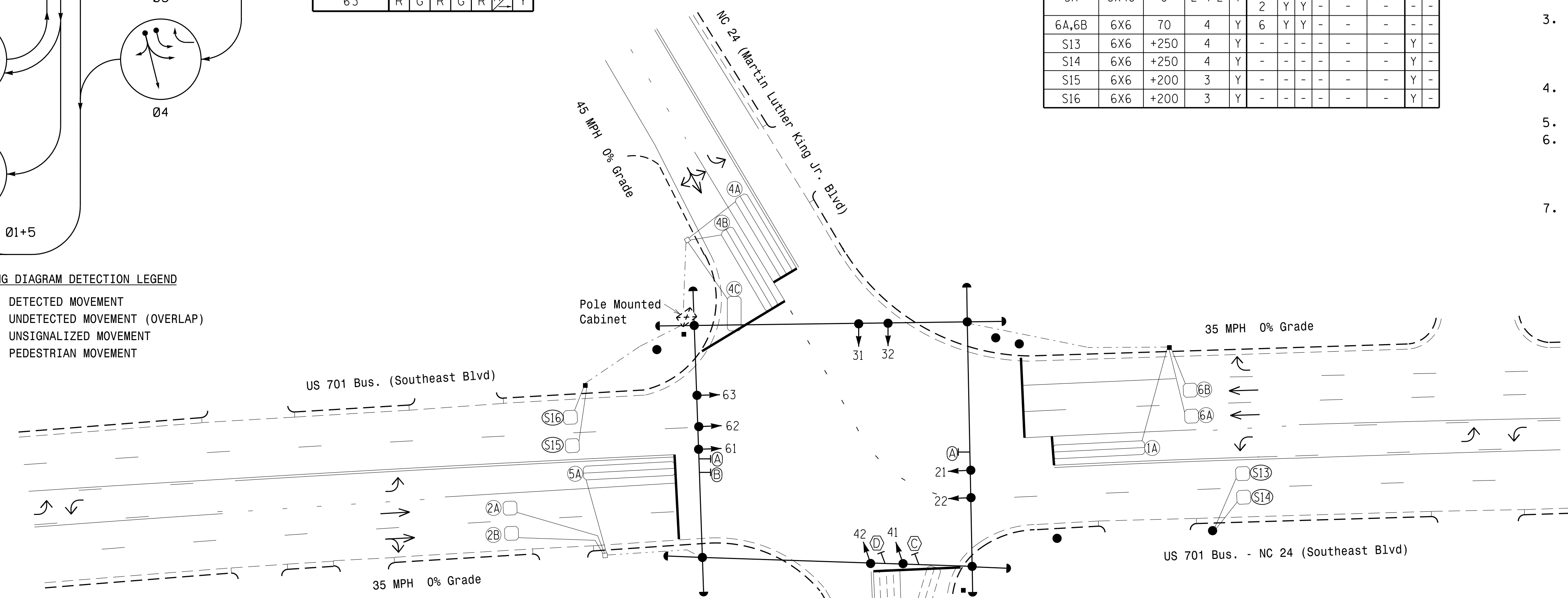
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY		
1A	6X40	0	2-4-2	Y	1	Y	Y	-	15	-
1B	6X40	0	2-4-2	-	6	Y	Y	-	-	-
2A,2B	6X6	70	3	Y	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	3	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	3	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	15	-
4C	6X15	0	3	Y	4	Y	Y	-	5	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	15	-
6A,6B	6X6	70	4	Y	6	Y	Y	-	-	-
S13	6X6	+250	4	Y	-	-	-	-	-	Y
S14	6X6	+250	4	Y	-	-	-	-	-	Y
S15	6X6	+200	3	Y	-	-	-	-	-	Y
S16	6X6	+200	3	Y	-	-	-	-	-	Y

6 Phase Fully Actuated US 701 Bus. (Clinton) CLS

NOTES

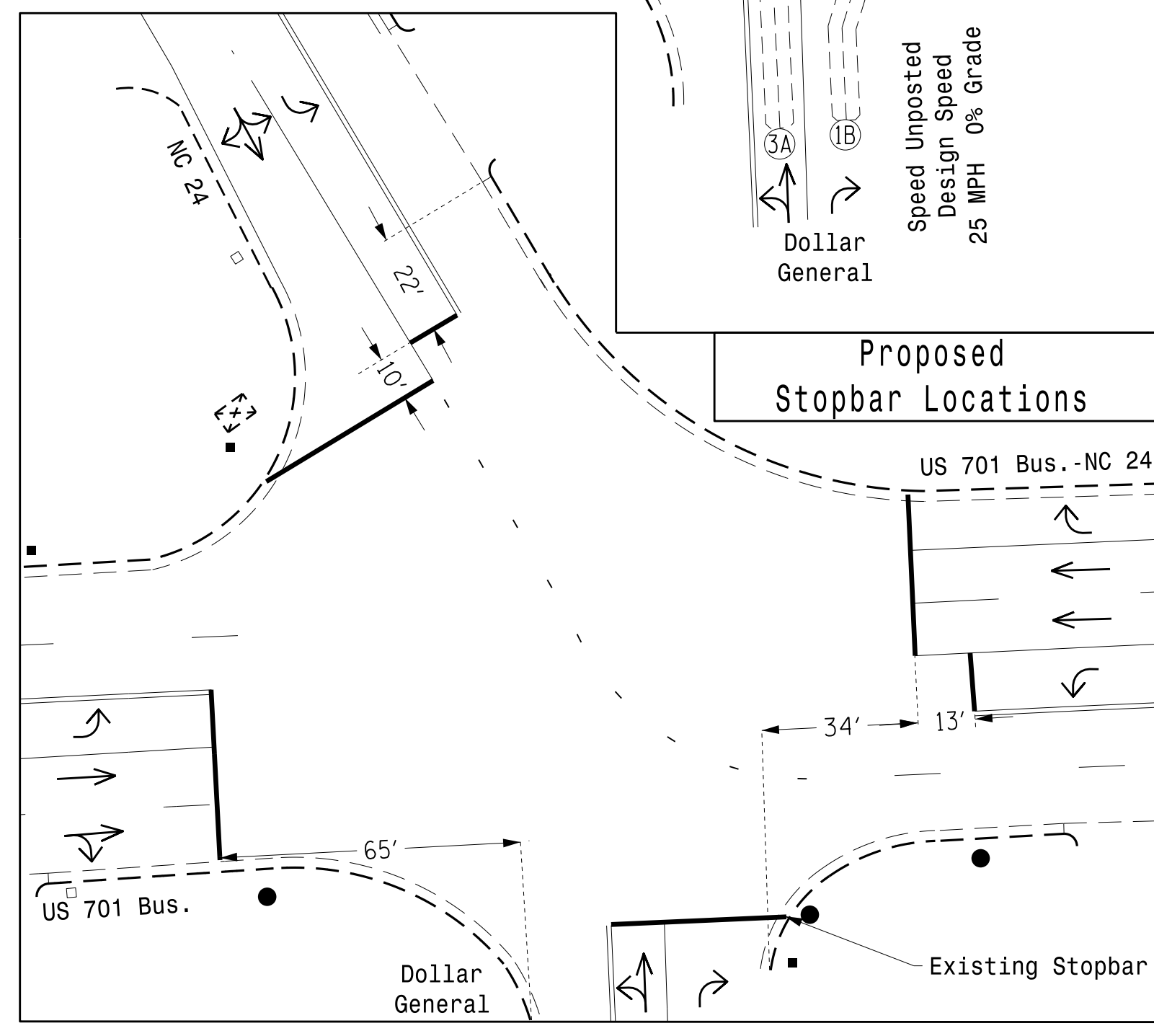
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Enable Backup Protect for phase 2+6 to allow the controller to clear from phase 1+6 or 2+5 by progressing through an all red display.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #0221.



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1 *	7	10	7	7	7	10
Extension 1 *	2.0	3.0	2.0	2.0	2.0	3.0
Max Green 1 *	20	60	20	40	20	60
Yellow Clearance	3.0	3.8	3.2	4.5	3.0	3.8
Red Clearance	3.2	2.7	3.0	2.0	3.2	2.7
Red Revert	2.0	5.0	2.0	2.0	2.0	5.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
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.



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
○ 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
Ⓐ "LEFT TURN YIELD ON GREEN" Sign (R10-12)	Ⓐ
Ⓑ U-Turn "MUST YIELD" Sign (R3-27)	Ⓑ
Ⓒ Left Arrow "ONLY" Sign (R3-5L)	Ⓒ
Ⓓ Dual Turn and Through Arrows Sign (R3-19)	Ⓓ

Signal Upgrade

Prepared in the Offices of:
 Transportation Mobility and Safety Solutions
 NORTH CAROLINA
 PROFESSIONAL ENGINEERS
 J. J. JENSEN P. C. GALLIWAY

US 701 Bus.-NC 24/US 701 Bus. (Southeast Boulevard) at NC 24 (Martin Luther King Jr. Blvd) / Dollar General

Division 3 Sampson County Clinton

PLAN DATE: March 2017 REVIEWED BY: JPG, PE

PREPARED BY: EM Minshew REVIEWED BY:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 1"=30'

REVISIONS: INIT. DATE

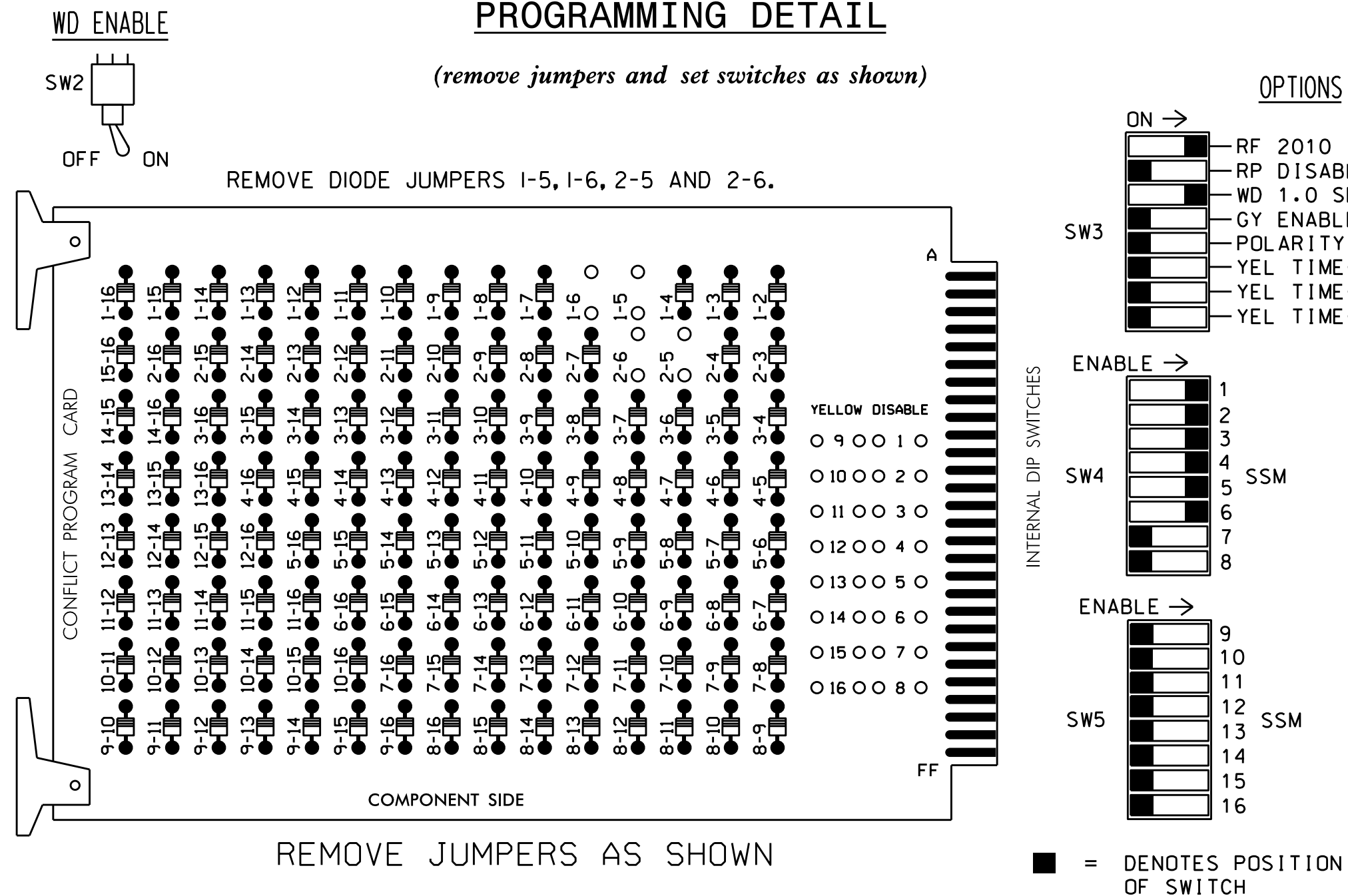
DocuSigned by: Jason P. Gallaway 4/26/2017

SIG. INVENTORY NO. 03-0221

26-APR-2017 11:48
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 emminshew

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 7,8,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US 701 Bus. (Clinton) CLS.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8				
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8				
SIGNAL HEAD NO.	32	61	21,22	NU	31	32	41	42	63	NU	21	61,62 63	NU	NU	NU
RED	*		128		116	116	101	101			*	134			
YELLOW			129		117	117	102	102				135			
GREEN			130		118	118	103	103				136			
RED ARROW															
YELLOW ARROW	126	126						102				132			
GREEN ARROW	127	127			118		103	103				133			

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....336
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
 PHASES USED.....1,2,3,4,5,6
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

FILE	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
∅ 5	NOT USED	∅ 1	∅ 4	∅ 4	∅ 4	SYS DET S13	SYS DET S15	S	S	S	S	S	S	S	FS
5A	2A,2B	1A	3A	1B	6A,6B	S14	S16	STOP	STOP	STOP	STOP	STOP	STOP	STOP	DC ISOLATOR
∅ 2	∅ 2	∅ 6	∅ 3	∅ 1	∅ 6	SYS DET S14	SYS DET S16	STOP	STOP	STOP	STOP	STOP	STOP	STOP	ST
5A	2A,2B	1A	3A	1B	6A,6B	S14	S16	STOP	STOP	STOP	STOP	STOP	STOP	STOP	DC ISOLATOR

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

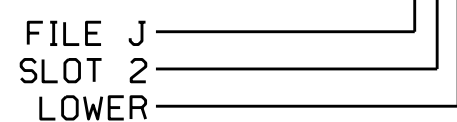
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
5A ¹	TB21-1,2	I1U	56	18	1	5	Y	Y			15
	TB23-1,2	I1L	47	9	22	2	Y	Y			
2A,2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
1A ²	TB21-5,6	I3U	58	20	3	1	Y	Y			15
	TB23-5,6	I3L	49	11	24	6	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
3A	TB23-7,8	I4L	45	7	14	3	Y	Y			3
4B	TB21-9,10	I5U	55	17	5	4	Y	Y			15
1B	TB23-9,10	I5L	48	10	26	1	Y	Y			15
4C	TB21-11,12	I6U	40	2	6	4	Y	Y			5
6A,6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
S13	TB21-13,14	I7U	57	19	7	SYS					
S14	TB23-13,14	I7L	50	12	28	SYS					
S15	TB22-1,2	I8U	42	4	8	SYS					
S16	TB24-1,2	I8L	46	8	18	SYS					

*System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

¹Add jumper from TB21-1 to TB23-1 and from TB21-2 to TB23-2.

²Add jumper from TB21-5 to TB23-5 and from TB21-6 to TB23-6.

INPUT FILE POSITION LEGEND: J2L

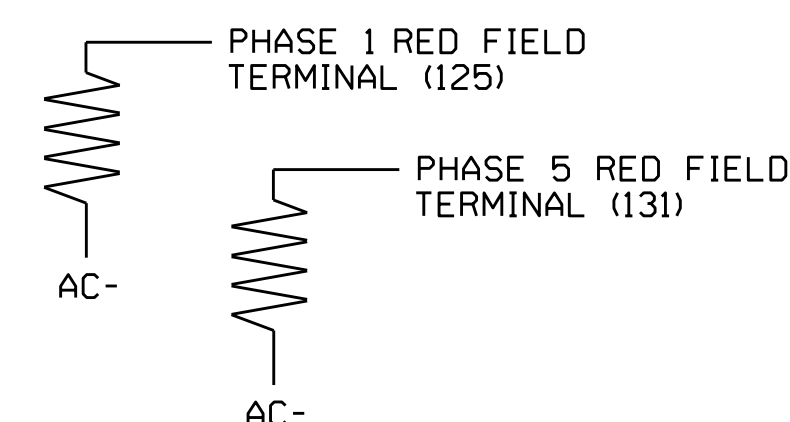


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



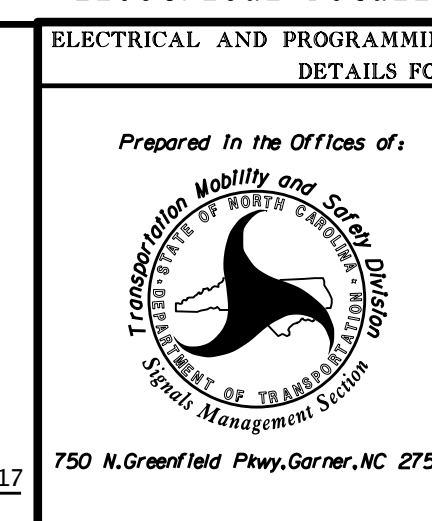
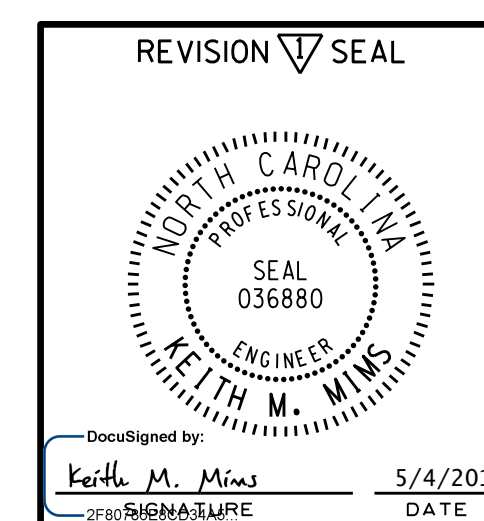
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0221
 DESIGNED: March 2017
 SEALED: 4-26-17
 REVISED: N/A

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and **DISABLE**, Dynamic/Backup Control Functions 1 and 2, if present.

Electrical Detail



US 701 Bus.-NC 24/US 701 Bus. (Southeast Boulevard) at NC 24 (Martin Luther King Jr. Blvd)/Dollar General

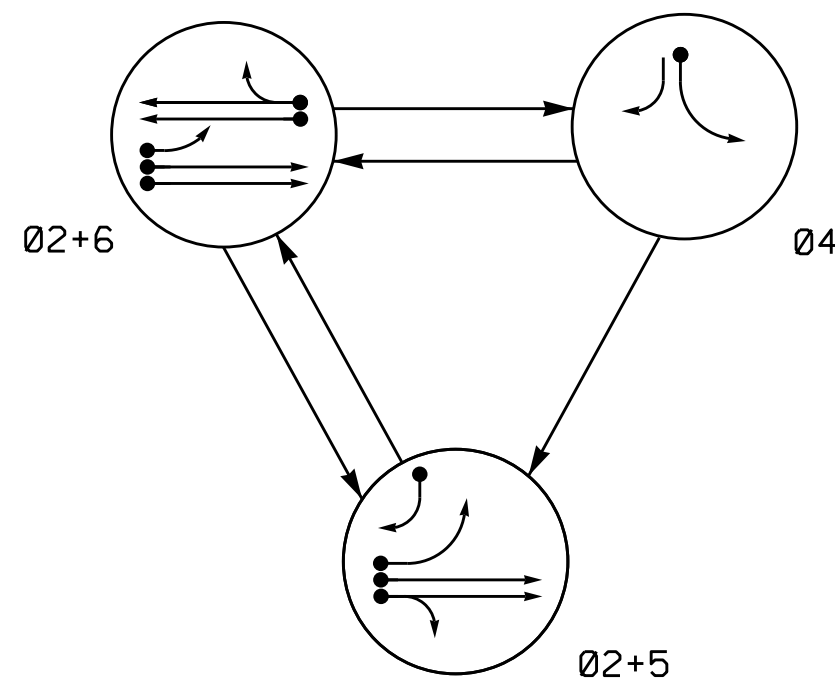
Division 3	Sampson County	Clinton
PLAN DATE: September 2005	REVIEWED BY:	
PREPARED BY: SP Pennington	REVIEWED BY:	
REVISIONS	DATE	
Added new loops, note 5 and backup protection. (JPL)	KMM	5/4/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Not a certified document as to the Original Document but only as to the Revisions - This document originally issued and sealed by Marceau, Daren E., PE#02490, on 11-01-05. This document is only certified as to the revisions.

SIG. INVENTORY NO. 03-0221

PHASING DIAGRAM



SIGNAL FACE	PHASE			
	02+5	02+6	04	FLY
21	G	R	Y	
22	G	R	Y	
41	R	G	R	
42	R	G	R	
61, 62	R	G	R	Y

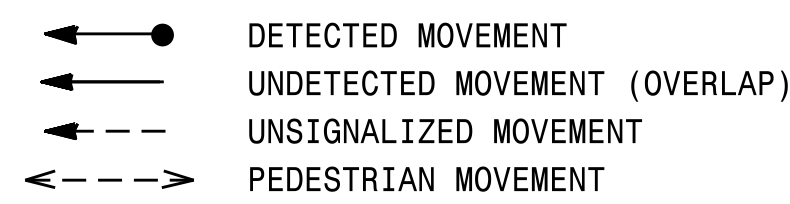
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
LOOP	INDUCTIVE LOOPS				DETECTOR PROGRAMMING							
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	6	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	6	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	-
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	4	Y	6	Y	Y	-	-	-	-	-
S17	6X6	+200	4	Y	-	-	-	-	-	-	Y	-
S18	6X6	+200	4	Y	-	-	-	-	-	-	Y	-

3-Phase Fully Actuated US 701 Bus. (Clinton) CLS

NOTES

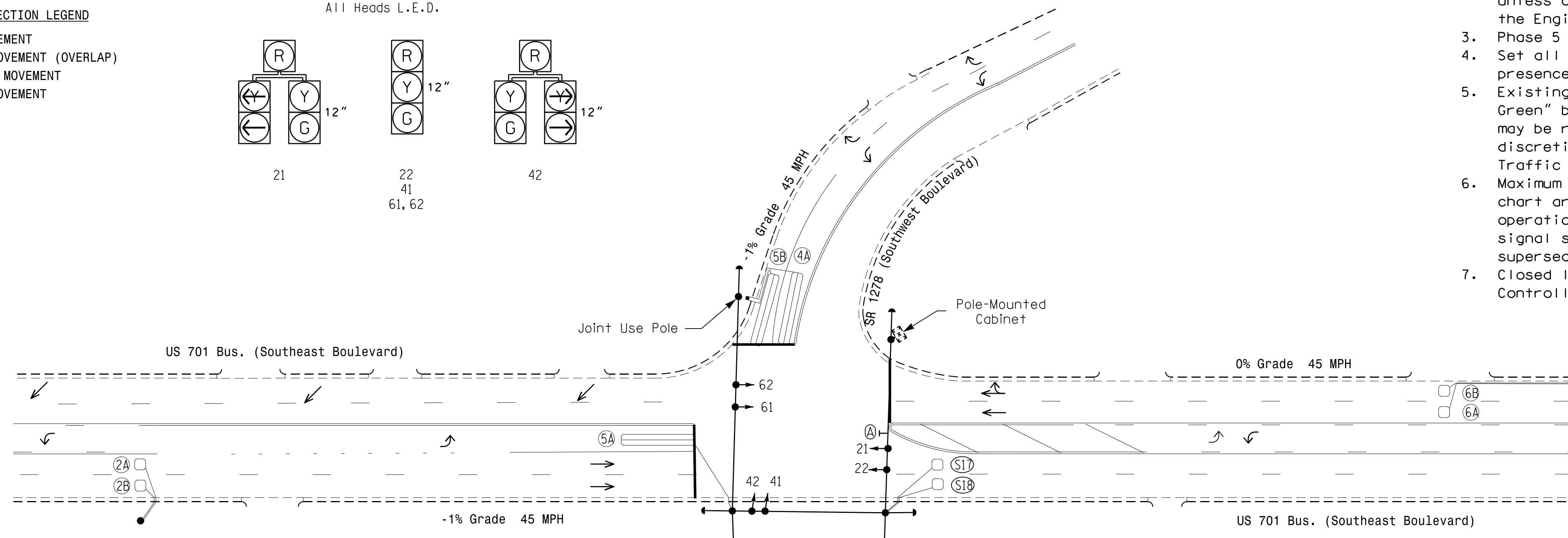
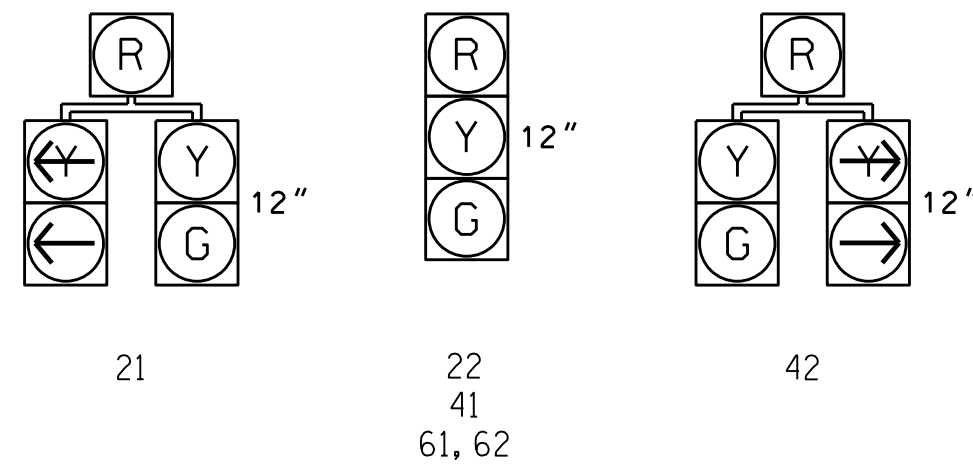
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Existing "Left Turn Yield on Green" ball sign(s)-(R10-12) may be removed at the discretion of the Regional Traffic Engineer.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset #: 0179.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

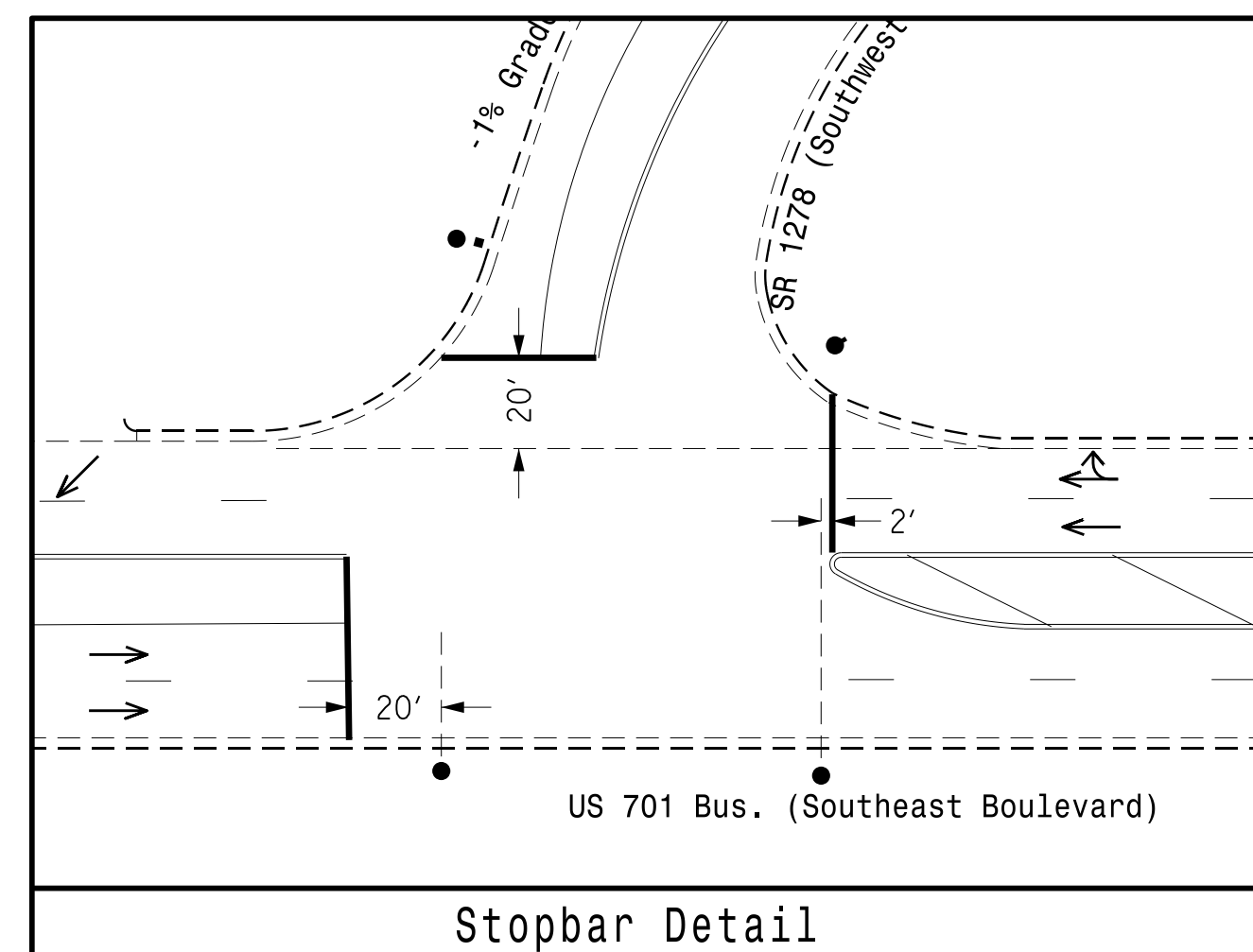
All Heads L.E.D.



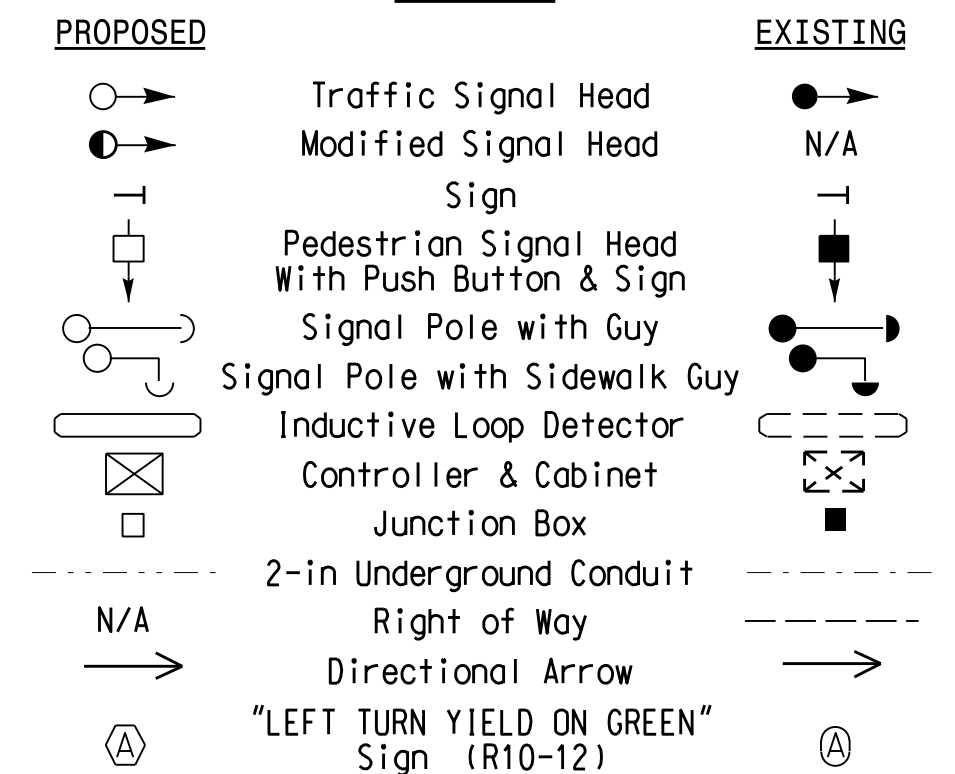
OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	90	20	30	90
Yellow Clearance	4.6	3.0	3.0	4.6
Red Clearance	1.5	2.8	2.4	1.5
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.5	-	-	1.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	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.



LEGEND



Signal Upgrade

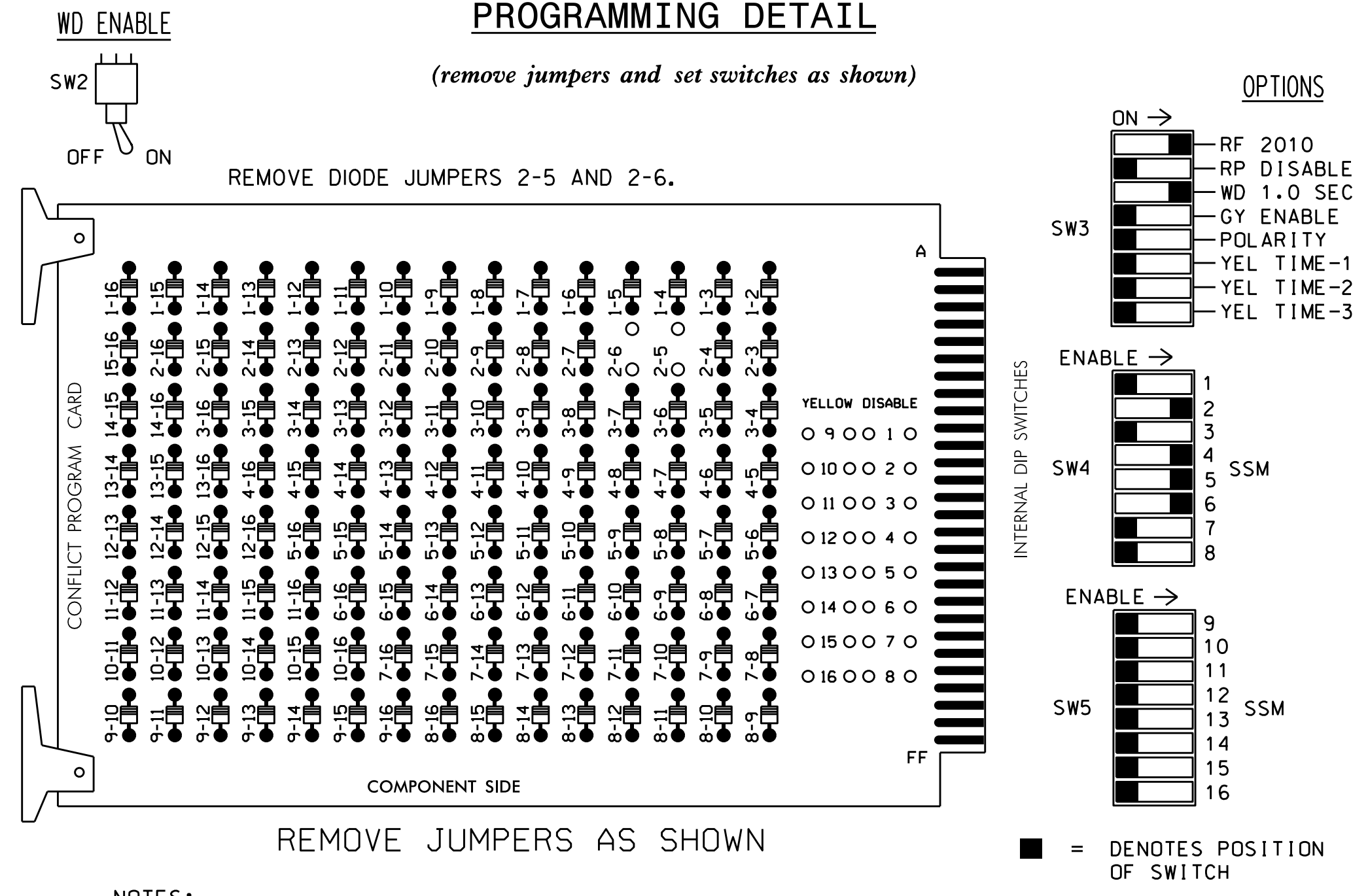
Prepared In the Offices of:

US 701 Business (Southeast Boulevard) at SR 1276 (Southwest Boulevard)
 Division 3 Sampson County Clinton
 PLAN DATE: April 2017 REVIEWED BY: JGP
 PREPARED BY: KGP, Jr. REVIEWED BY:
 SCALE: 1" = 40'
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER JASON P. GALLOWAY SEAL 029904
 DATE: 5/2/2017
 SIG. INVENTORY NO. 03-0179

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the US 701 Business (Clinton) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	21,42	61,62	NU	NU	NU	NU
RED		128			101		*	134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW								132				
GREEN ARROW								133				

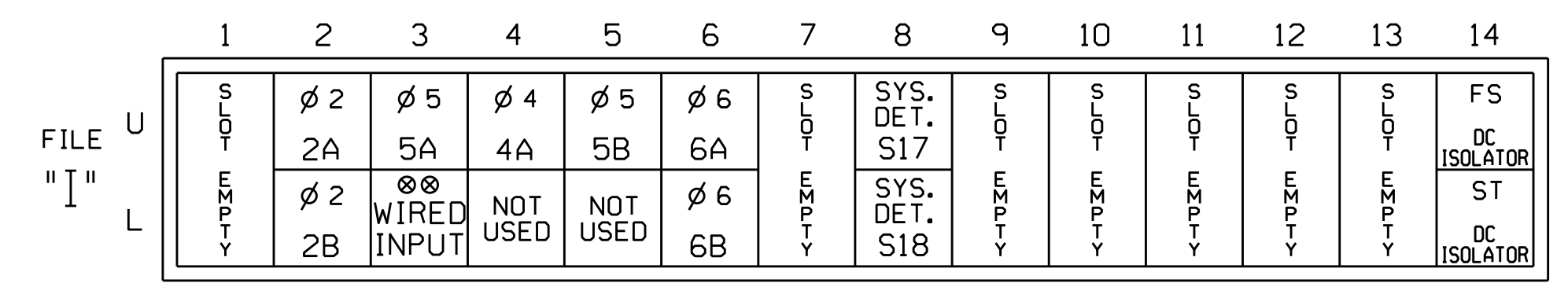
NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6
PHASES USED.....2,4,5,6
OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

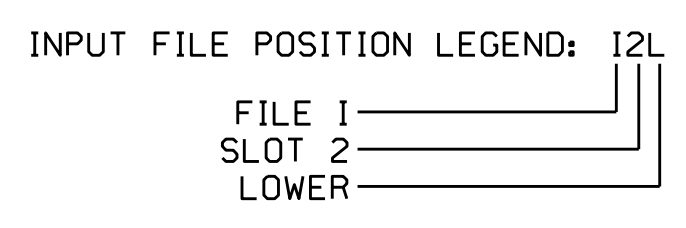


EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME
⊗⊗ Wired Input - Disable Channel 2

INPUT FILE CONNECTION & PROGRAMMING CHART

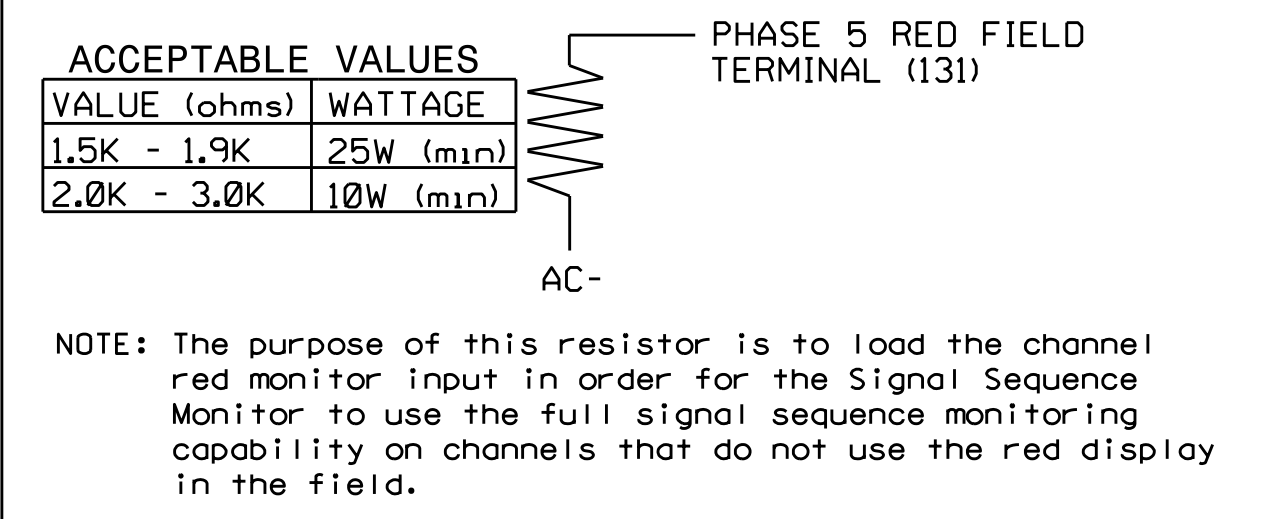
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
5A ¹	TB21-5,6	I3U	58	20	3	5	Y	Y			15
	-	I3L	49	11	24	2	Y	Y	Y		3
5B	TB21-9,10	I5U	55	17	5	5	Y	Y			15
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
* S17	TB22-1,2	I8U	42	4	8	SYS					
* S18	TB24-1,2	I8L	46	8	18	SYS					

¹Add jumper from I3-F to I3-W, on rear of input file.
* System detector only. Remove the vehicle phase assigned to this detector in the default programming.



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0179
DESIGNED: April 2017
SEALED: 5-02-17
REVISED: N/A

Electrical Detail

Electrical and Programming Details For: **US 701 Business (Southeast Boulevard) at SR 1276 (Southwest Boulevard)**

Division 3 Sampson County Clinton

PLAN DATE: April 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: _____ INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 036880

KEITH M. MINS ENGINEER

DocuSigned by: Keith M. Mins 5/11/2017

SIG. INVENTORY NO. 03-0179

I:\MSD-2017_03\14
 S:\MITS\501\15\Sig\ed\work\hgr\cupa\51g_Mon\eter\son\030179_smc.e_20141105.dgn
 J:\peterson

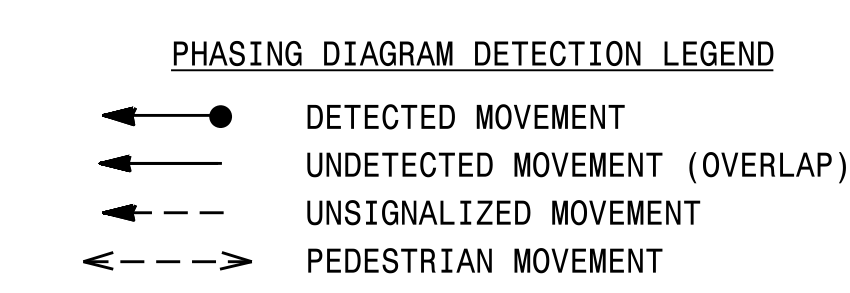
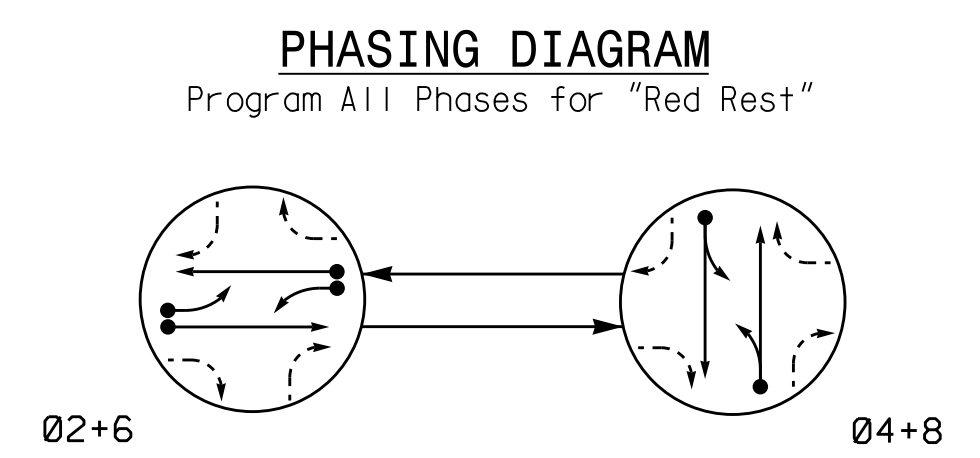
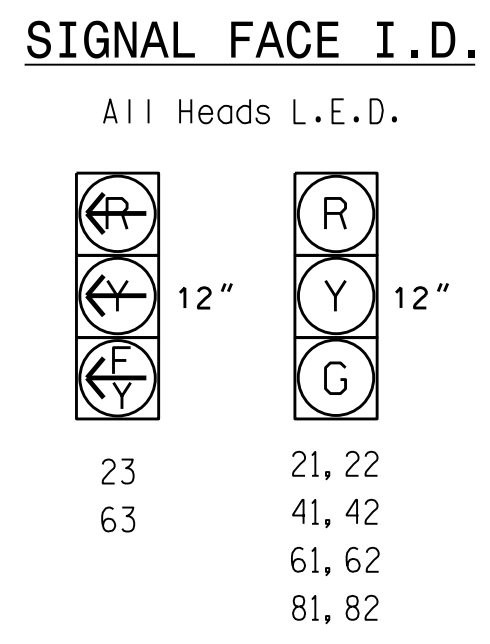


TABLE OF OPERATION

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



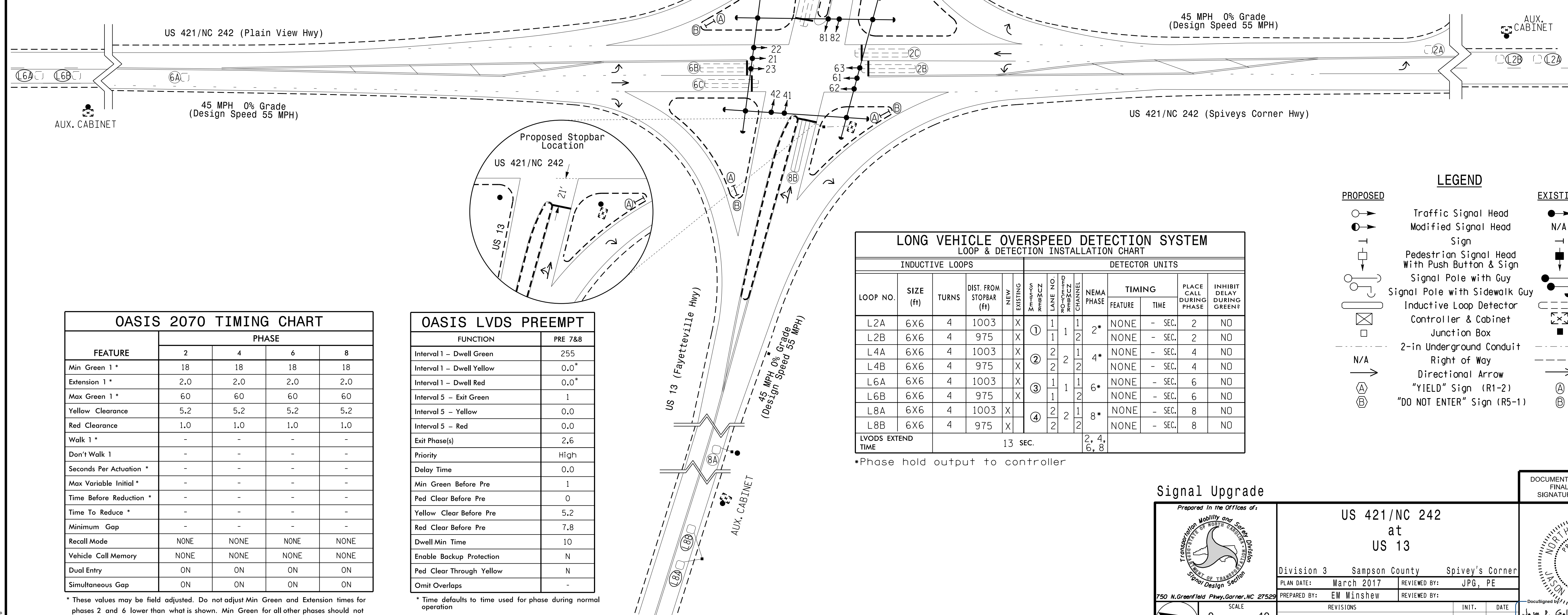
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	420	4	-	2	-	Y	-	4	-	-	-
2B	6X40	+5	2-4-2	-	2	Y	Y	Y	-	3	-	-
2C	6X40	+5	2-4-2	-	2	Y	Y	-	-	-	-	-
4A	6X6	420	4	-	4	-	Y	-	4	-	-	-
4B	6X40	+5	2-4-2	-	4	Y	Y	-	-	-	-	-
6A	6X6	420	4	-	6	-	Y	-	4	-	-	-
6B	6X40	+5	2-4-2	-	6	Y	Y	Y	-	3	-	-
6C	6X40	+5	2-4-2	-	6	Y	Y	-	-	-	-	-
8A	6X6	420	4	Y	8	-	Y	-	4	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	-

2 Phase Fully Actuated Isolated

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.



OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	18	18	18	18
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	60	60	60	60
Yellow Clearance	5.2	5.2	5.2	5.2
Red Clearance	1.0	1.0	1.0	1.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	NONE	NONE	NONE	NONE
Vehicle Call Memory	NONE	NONE	NONE	NONE
Dual Entry	ON	ON	ON	ON
Simultaneous Gap	ON	ON	ON	ON

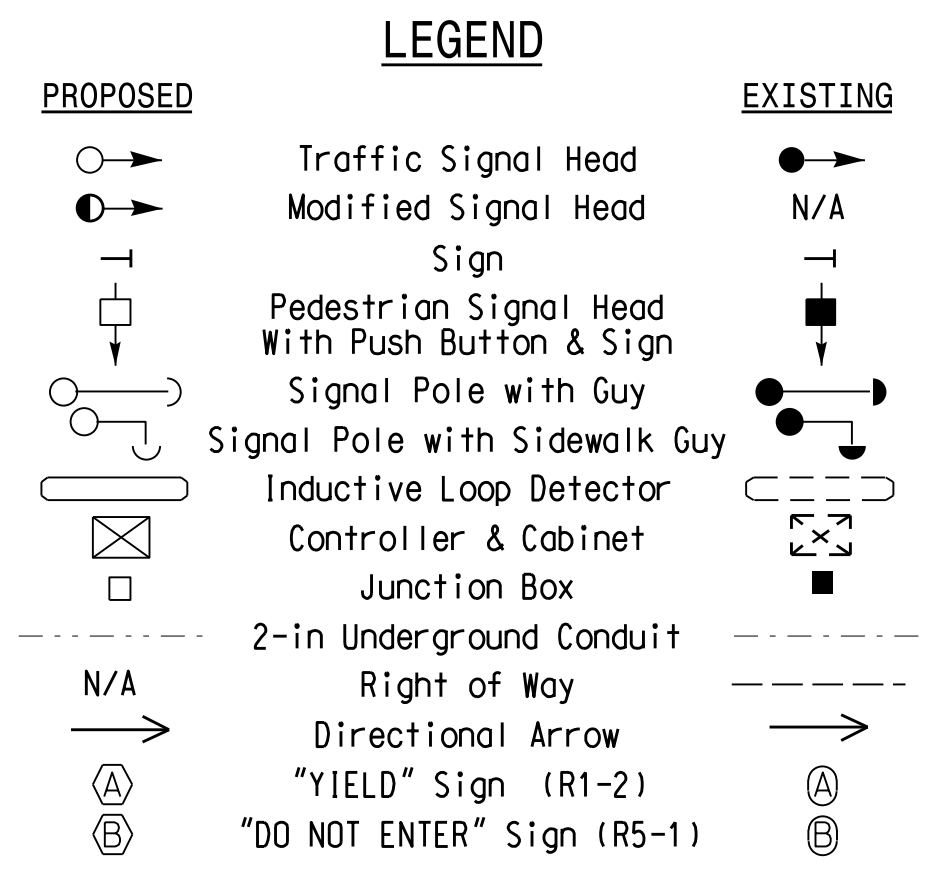
OASIS LVDS PREEMPT

FUNCTION	PRE 7&8
Interval 1 - Dwell Green	255
Interval 1 - Dwell Yellow	0.0*
Interval 1 - Dwell Red	0.0*
Interval 5 - Exit Green	1
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Exit Phase(s)	2,6
Priority	High
Delay Time	0.0
Min Green Before Pre	1
Ped Clear Before Pre	0
Yellow Clear Before Pre	5.2
Red Clear Before Pre	7.8
Dwell Min Time	10
Enable Backup Protection	N
Ped Clear Through Yellow	N
Omit Overlaps	-

LONG VEHICLE OVERSPEED DETECTION SYSTEM LOOP & DETECTOR INSTALLATION CHART

LOOP NO.	SIZE (FT)	TURNS	DIST. FROM STOPBAR (ft)	NEW EXISTING	DETECTOR UNITS							
					INDUCTIVE LOOPS	INDUCTIVE LOOPS	INDUCTIVE LOOPS	INDUCTIVE LOOPS	INDUCTIVE LOOPS			
L2A	6X6	4	1003	X	1	1	1	2*	NONE	- SEC.	2	NO
L2B	6X6	4	975	X	1	1	2	2*	NONE	- SEC.	2	NO
L4A	6X6	4	1003	X	2	2	1	4*	NONE	- SEC.	4	NO
L4B	6X6	4	975	X	2	2	2	2	NONE	- SEC.	4	NO
L6A	6X6	4	1003	X	1	1	1	6*	NONE	- SEC.	6	NO
L6B	6X6	4	975	X	1	1	2	2	NONE	- SEC.	6	NO
L8A	6X6	4	1003	X	2	2	1	8*	NONE	- SEC.	8	NO
L8B	6X6	4	975	X	2	2	2	2	NONE	- SEC.	8	NO
LVDS EXTEND TIME				13 SEC.				2, 4, 6, 8				

*Phase hold output to controller



04-MAR-2017 14:51
 S:\MITSUBISHI\SIGNAL DESIGN\Section\Eastern Region\03-Sampson County Resurfacing 2018\03-0159\030159_5.dwg, den, 2017mdd.dgn
 emminshew

Prepared in the Office of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
 STATE OF NORTH CAROLINA
 SIGNAL DESIGN SECTION

750 N. Greenfield Pkwy, Garner, NC 27529

US 421/NC 242 at US 13

Division 3 Sampson County Spivey's Corner

PLAN DATE: March 2017 REVIEWED BY: JPG, PE

PREPARED BY: EM Minshew REVIEWED BY:

REVISIONS: INIT. DATE

SCALE: 0 40
1" = 40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 JASON P. GALLOWAY
 PROFESSIONAL ENGINEER
 NO. 029904
 DATE: 5/4/2017

SIG. INVENTORY NO. 03-0159

LVDS PHASE HOLD, FAIL-SAFE FLASH & SPECIAL FUNCTION ALARM INPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '5' (INPUTS), THEN TYPE IN 22 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN:60 HOLD PHASES
INPUT ASSIGNMENT #.....22
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....2
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

NEXT TYPE IN 24 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN:62 HOLD PHASES
INPUT ASSIGNMENT #.....24
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....4
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

NEXT TYPE IN 21 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN:59 HOLD PHASES
INPUT ASSIGNMENT #.....21
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....6
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

NEXT TYPE IN 23 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN:61 HOLD PHASES
INPUT ASSIGNMENT #.....23
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....8
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

NEXT TYPE IN 64 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN:0 PREEMPT
INPUT ASSIGNMENT #.....64
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....7
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

FROM MAIN MENU PRESS '5' (INPUTS), THEN TYPE IN 51 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN: SPECIAL FUNCTION ALAR
INPUT ASSIGNMENT #.....51
DEBOUNCE TIME (0-25.5 SEC).....0.0
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....1
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

```

PAGE: 1 C1 PIN:0 SPECIAL FUNCTION ALAR
INPUT ASSIGNMENT #.....52
DEBOUNCE TIME (0-25.5 SEC).....0.0
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....2
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

```

PAGE: 1 C1 PIN:0 SPECIAL FUNCTION ALAR
INPUT ASSIGNMENT #.....53
DEBOUNCE TIME (0-25.5 SEC).....0.0
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....3
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

```

PAGE: 1 C1 PIN:0 SPECIAL FUNCTION ALAR
INPUT ASSIGNMENT #.....54
DEBOUNCE TIME (0-25.5 SEC).....0.0
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....4
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

NEXT TYPE IN 63 FOR INPUT ASSIGNMENT.

```

PAGE: 1 C1 PIN:0 PREEMPT
INPUT ASSIGNMENT #.....63
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....
-----
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....8
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

PRESS '+'

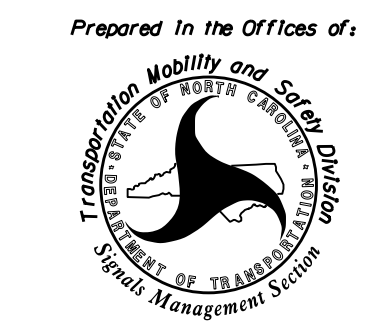
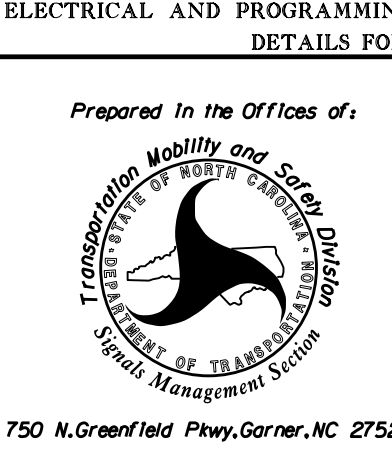
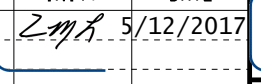
PRESS '+'

PRESS '+'

INPUT PROGRAMMING COMPLETE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0159
DESIGNED: March 2017
SEALED: 05-04-17
REVISED: N/A

Electrical Detail Sheet 2 of 8		US 421/NC 242 at US 13	
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	Division 3 Sampson County Spivey's Corner PLAN DATE: January 2017 REVIEWED BY: PREPARED BY: B. SIMMONS REVIEWED BY: REVISIONS No change to electrical detail. (J.P.)	SEAL  SEAL 030530 ENGINEER ZACHARY M. LITTLE	DocuSigned by:  1-31-17 DATE SIG. INVENTORY NO. 03-0159

14-MAR-2017 13:25
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 J. Peterson

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

FOR LVDS FAIL-SAFE FLASH CONTROL & CAPABILITY TO LOG MALFUNCTIONING HOLD INPUTS

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 AND 14.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF INPUT ASSIGNMENT #21 IS ON

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #1 ON
DELAY FOR 120.0 SECONDS
SET INPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR PHASE 6 HOLD AND ALARM LOGGING.

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF INPUT ASSIGNMENT #22 IS ON

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #2 ON
DELAY FOR 120.0 SECONDS
SET INPUT ASSIGNMENT #52 ON

PRESS '+'

NOTE: LOGIC FOR PHASE 2 HOLD AND ALARM LOGGING.

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF INPUT ASSIGNMENT #23 IS ON

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #3 ON
DELAY FOR 120.0 SECONDS
SET INPUT ASSIGNMENT #53 ON

PRESS '+'

NOTE: LOGIC FOR PHASE 8 HOLD AND ALARM LOGGING.

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF INPUT ASSIGNMENT #24 IS ON

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #4 ON
DELAY FOR 120.0 SECONDS
SET INPUT ASSIGNMENT #54 ON

PRESS '+'

NOTE: LOGIC FOR PHASE 4 HOLD AND ALARM LOGGING.

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF INPUT ASSIGNMENT #21 IS OFF

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #1 OFF

PRESS '+'

NOTE: LOGIC TO RELEASE PHASE 6 HOLD.

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF INPUT ASSIGNMENT #22 IS OFF

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #2 OFF

PRESS '+'

NOTE: LOGIC TO RELEASE PHASE 2 HOLD.

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF INPUT ASSIGNMENT #23 IS OFF

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #3 OFF

PRESS '+'

NOTE: LOGIC TO RELEASE PHASE 8 HOLD.

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF INPUT ASSIGNMENT #24 IS OFF

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #4 OFF

PRESS '+'

NOTE: LOGIC TO RELEASE PHASE 4 HOLD.

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF LOGIC FLAG #1 IS ON
OR LOGIC FLAG #2 IS ON

↓

SCROLL DOWN

THEN:
DELAY FOR 240.0 SECONDS
SET LOGIC FLAG #5 ON

PRESS '+'

NOTE: LOGIC FOR PREEMPT FLASH IF PHASES 2 OR 6 HOLD INPUTS ARE ACTIVE FOR MORE THAN 4 MIN.

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF LOGIC FLAG #3 IS ON
OR LOGIC FLAG #4 IS ON

↓

SCROLL DOWN

THEN:
DELAY FOR 240.0 SECONDS
SET LOGIC FLAG #6 ON

PRESS '+'

NOTE: LOGIC FOR PREEMPT FLASH IF PHASES 4 OR 8 HOLD INPUTS ARE ACTIVE FOR MORE THAN 4 MIN.

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF LOGIC FLAG #5 IS ON

↓

SCROLL DOWN

THEN:
SET INPUT ASSIGNMENT #64 ON

PRESS '+'

NOTE: LOGIC TO ACTIVATE PREEMPT 7 (FAIL-SAFE FLASH).

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF LOGIC FLAG #1 IS OFF
AND LOGIC FLAG #2 IS OFF

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #5 OFF

PRESS '+'

NOTE: LOGIC TO DE-ACTIVATE PREEMPT 7 (FAIL-SAFE FLASH) FOR 2+6 APPROACH.

LOGICAL I/O COMMAND #13 (+/-COMMAND#)
IF LOGIC FLAG #3 IS OFF
AND LOGIC FLAG #4 IS OFF

↓

SCROLL DOWN

THEN:
SET LOGIC FLAG #6 OFF

PRESS '+'

NOTE: LOGIC TO DE-ACTIVATE PREEMPT 7 (FAIL-SAFE FLASH) FOR 4+8 APPROACH.

LOGICAL I/O COMMAND #14 (+/-COMMAND#)
IF LOGIC FLAG #6 IS ON

↓

SCROLL DOWN

THEN:
SET INPUT ASSIGNMENT #63 ON

PRESS '+'

NOTE: LOGIC TO ACTIVATE PREEMPT 8 (FAIL-SAFE FLASH).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

INPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

INPUT 21 = PHASE 6 HOLD (J9U)
INPUT 22 = PHASE 2 HOLD (I9U)
INPUT 23 = PHASE 8 HOLD (J9L)
INPUT 24 = PHASE 4 HOLD (I9L)
INPUT 51 = SPECIAL ALARM 1
INPUT 52 = SPECIAL ALARM 2
INPUT 53 = SPECIAL ALARM 3
INPUT 54 = SPECIAL ALARM 4
INPUT 64 = PREEMPT 7
INPUT 63 = PREEMPT 8

NOTE: ALL INPUTS LISTED ABOVE REQUIRE REMAPPING. SEE INPUT ASSIGNMENT PROGRAMMING DETAIL ON SHEET 2.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0159
DESIGNED: March 2017
SEALED: 05-04-17
REVISED: N/A

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press '8' (OVERLAPS), then '1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

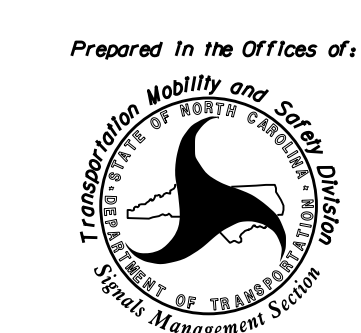
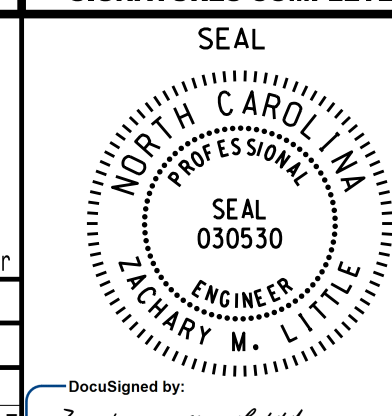
PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

Electrical Detail Sheet 3 of 8

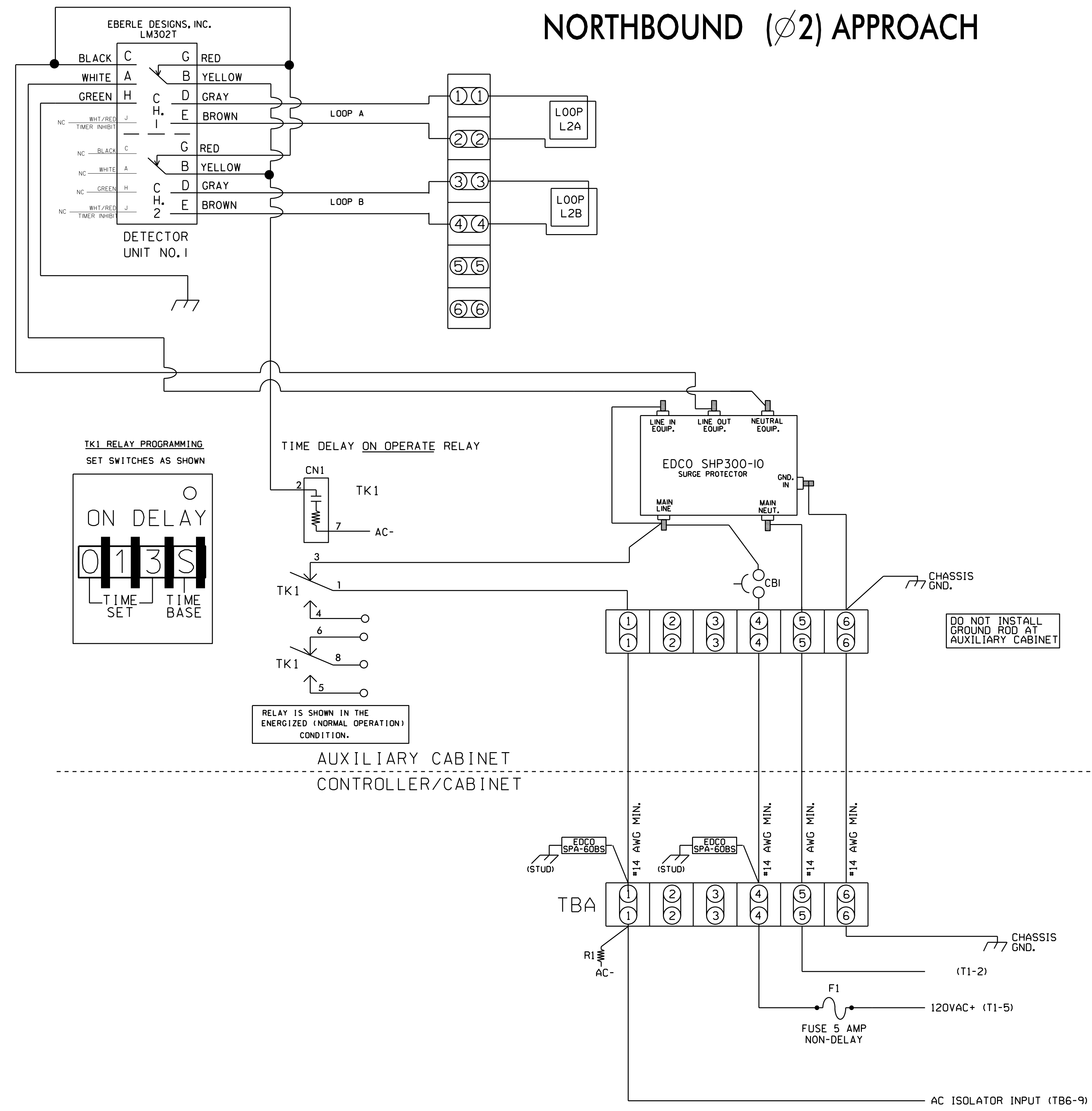
<p>Electrical and Programming Details For:</p> <p>Prepared In the Offices of:</p>  <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 421/NC 242 at US 13</p> <p>Division 3 Sampson County Spivey's Corner</p> <p>PLAN DATE: January 2017 REVIEWED BY: PREPARED BY: B. Simmons REVIEWED BY: REVISIONS: <table border="1" style="font-size: small;"> <tr><th>NO.</th><th>DATE</th></tr> <tr><td>1</td><td>3/12/2017</td></tr> </table> <p>DocuSigned by: <i>Lucy M. Little</i> 1-31-17 001EFD4F8341F DATE</p> </p>	NO.	DATE	1	3/12/2017	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>SEAL</p>  <p>SEAL 030530 ENGINEER LUCY M. LITTLE</p>	
NO.	DATE						
1	3/12/2017						

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LONG VEHICLE DETECTION SYSTEM (wire as shown)

SYSTEM 1

NORTHBOUND (Ø2) APPROACH

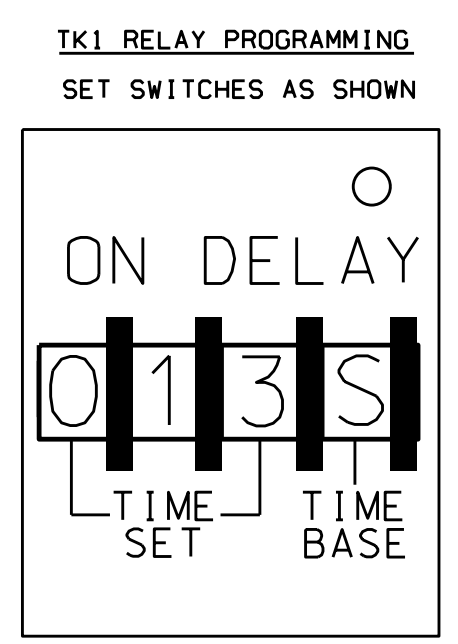


NOTES

1. ALL LOOP LEAD-INS SHALL BE TWISTED.
 2. LOOP SPACING IS CRITICAL TO THE PROPER OPERATION OF THIS LONG VEHICLE DETECTION SYSTEM. CONSULT SIGNAL DESIGN PLANS FOR LOOP SPACING.
 3. LONG VEHICLE SYSTEM SHALL BE HOUSED IN AN AUXILIARY CABINET ADJACENT TO LONG VEHICLE DETECTION LOOPS.
 4. DETECTOR UNIT IS A NEMA TS1 STANDARD 2 CHANNEL INDUCTIVE LOOP DETECTOR UNIT. DOT MATERIAL NO. 617Ø3153Ø.
 5. TERMINAL STRIPS TO BE ADDED BY INSTALLER.
 6. RESISTOR IS A 2K OHM, 12 WATT. DOT MATERIAL NO. 625Ø1155Ø
 7. EDCO SPA-6ØBS IS A SURGE PROTECTOR FOR 12ØVAC INTERCONNECT CIRCUITS. DOT MATERIAL NO. 625Ø22Ø76.
 8. RELAY TK1 IS AN ON DELAY. TIME DELAY RELAY WITH DIGITAL TIMING ADJUSTMENT, 12ØVAC COIL, 1Ø AMP CONTACTS. POTTER AND BRUMFIELD PART NO. CN1.
 9. EDCO SHP3ØØ-1Ø IS AN AC SERVICE SURGE PROTECTOR. DOT MATERIAL NO. 625Ø22Ø75.
 10. CBI IS A 15 AMP CIRCUIT BREAKER.
11. IMPORTANT! A JUMPER MUST BE INSTALLED BETWEEN INPUT FILE TERMINALS I9-E AND I9-K IF NOT ALREADY PRESENT.

12. IMPORTANT! FOR PROPER OPERATION OF THE LONG VEHICLE DETECTION UNIT, REMOVE SURGE PROTECTION FROM TERMINALS TB6-9, TB6-10, TB6-11 AND TB6-12. TIE TB6-12 TO AC NEUTRAL.

13. IMPORTANT! MAKE SURE AC ISOLATOR CARD INSERTED AT INPUT FILE POSITION I9 IS SET FOR INVERTED OPERATION.
14. SET DETECTORS TO "LONG PRESENCE" MODE.



RELAY IS SHOWN IN THE ENERGIZED (NORMAL OPERATION) CONDITION.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0159
 DESIGNED: March 2017
 SEALED: 05-04-17
 REVISED: N/A

Electrical Detail Sheet 4 of 8

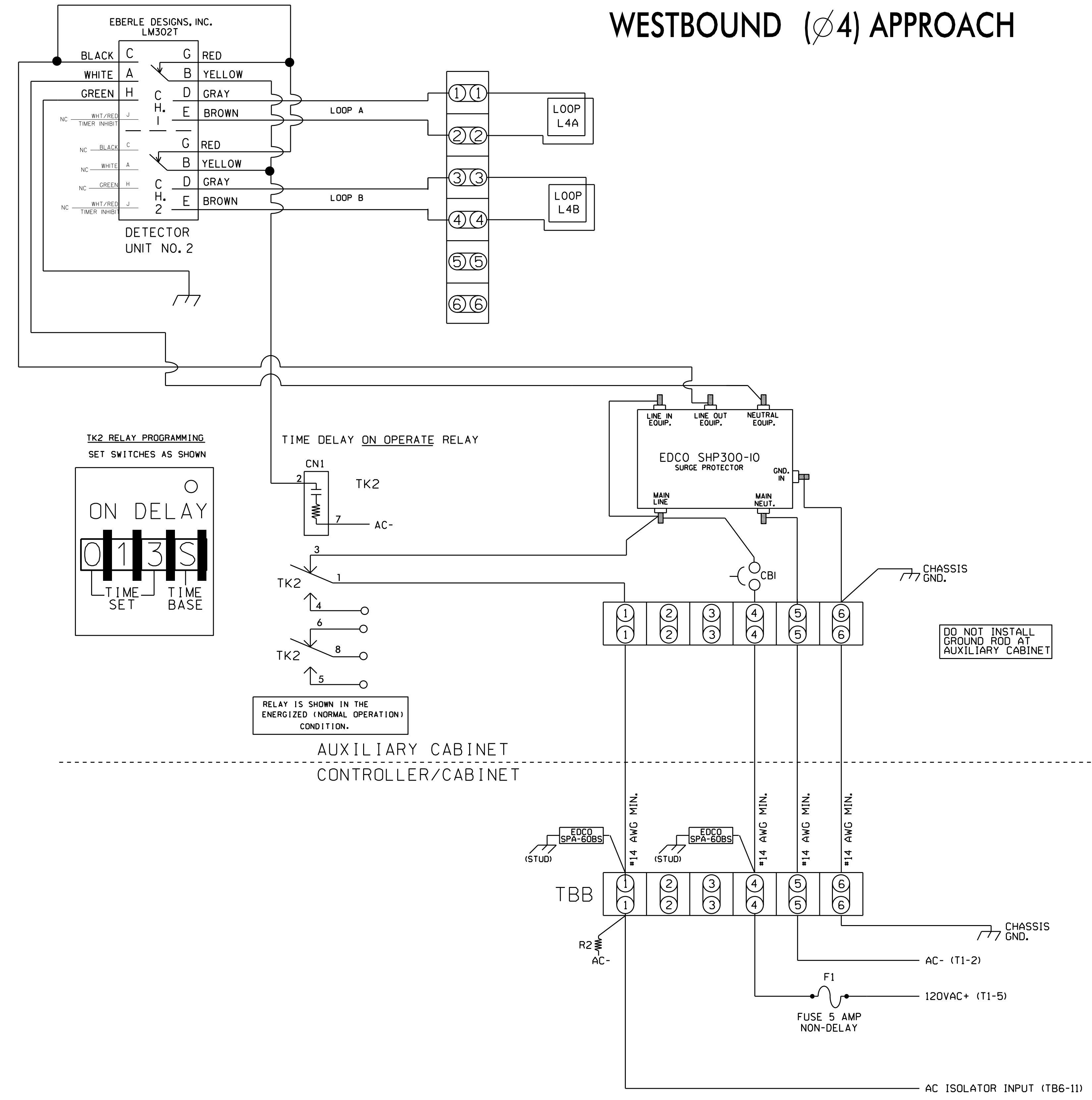
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS, INC. Signal Management Solutions 750 N. Greenfield Pkwy, Garner, NC 27529	US 421/NC 242 at US 13 Division 3 Sampson County Spivey's Corner PLAN DATE: January 2017 REVIEWED BY: PREPARED BY: B. SIMMONS REVIEWED BY: REVISIONS: No change to electrical detail. (JJP) DATE: 3/12/2017 DATE:	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030530 VICTORY M. LITTLE DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED DATE: 1-31-17 DATE:
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LONG VEHICLE DETECTION SYSTEM (wire as shown)

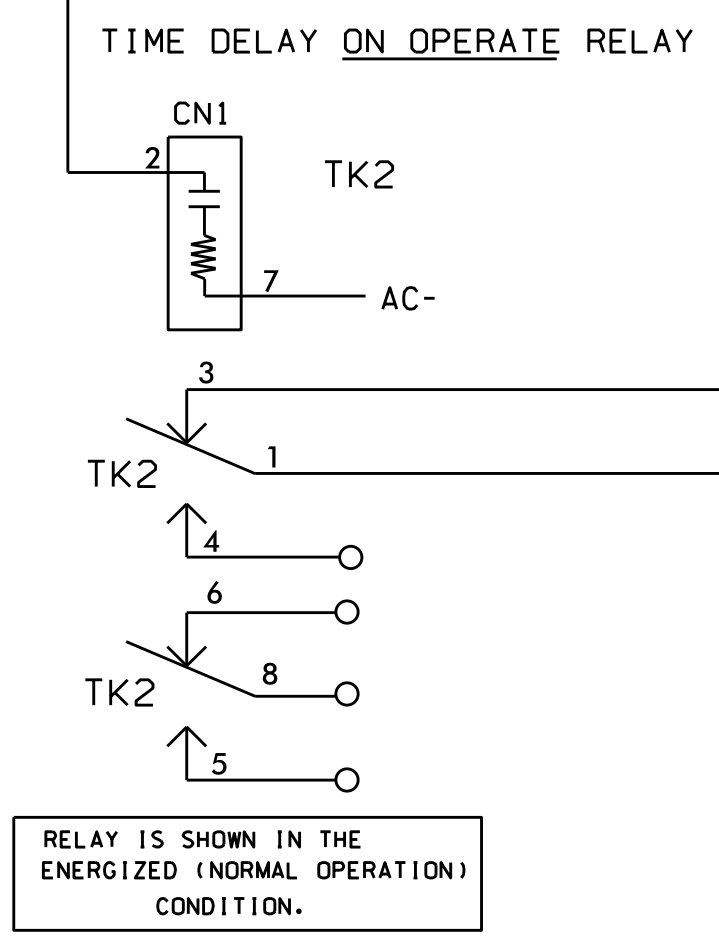
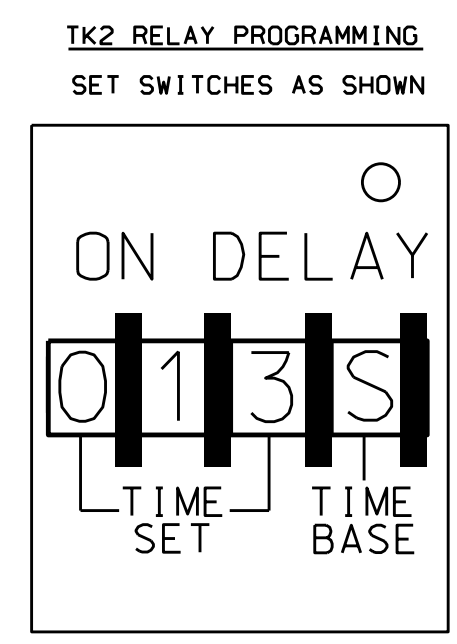
SYSTEM 2

WESTBOUND (Ø4) APPROACH



NOTES

1. ALL LOOP LEAD-INS SHALL BE TWISTED.
 2. LOOP SPACING IS CRITICAL TO THE PROPER OPERATION OF THIS LONG VEHICLE DETECTION SYSTEM. CONSULT SIGNAL DESIGN PLANS FOR LOOP SPACING.
 3. LONG VEHICLE SYSTEM SHALL BE HOUSED IN AN AUXILIARY CABINET ADJACENT TO LONG VEHICLE DETECTION LOOPS.
 4. DETECTOR UNIT IS A NEMA TS1 STANDARD 2 CHANNEL INDUCTIVE LOOP DETECTOR UNIT. DOT MATERIAL NO. 617031530.
 5. TERMINAL STRIPS TO BE ADDED BY INSTALLER.
 6. RESISTOR IS A 2K OHM, 12 WATT. DOT MATERIAL NO. 625011550.
 7. EDCO SPA-60BS IS A SURGE PROTECTOR FOR 120VAC INTERCONNECT CIRCUITS. DOT MATERIAL NO. 625022076.
 8. RELAY TK2 IS AN ON DELAY, TIME DELAY RELAY WITH DIGITAL TIMING ADJUSTMENT, 120VAC COIL, 10 AMP CONTACTS. POTTER AND BRUMFIELD PART NO. CN1.
 9. EDCO SHP300-10 IS AN AC SERVICE SURGE PROTECTOR. DOT MATERIAL NO. 625022075.
 10. CB1 IS A 15 AMP CIRCUIT BREAKER.
11. IMPORTANT! A JUMPER MUST BE INSTALLED BETWEEN INPUT FILE TERMINALS I9-E AND I9-K IF NOT ALREADY PRESENT.
 12. IMPORTANT! FOR PROPER OPERATION OF THE LONG VEHICLE DETECTION UNIT, REMOVE SURGE PROTECTION FROM TERMINALS TB6-9, TB6-10, TB6-11 AND TB6-12. TIE TB6-12 TO AC NEUTRAL.
 13. IMPORTANT! MAKE SURE AC ISOLATOR CARD INSERTED AT INPUT FILE POSITION I9 IS SET FOR INVERTED OPERATION.
14. SET DETECTORS TO "LONG PRESENCE" MODE.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0159
DESIGNED: March 2017
SEALED: 05-04-17
REVISED: N/A

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Electrical Detail Sheet 5 of 8

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS, INC. 750 N. Greenfield Pkwy, Garner, NC 27529	US 421/NC 242 at US 13	SEAL SEAL 030530 ENGINEER CARY M. LITTLE
Division 3 Sampson County Spivey's Corner		DocuSigned by: DATE: 3/12/2017
PLAN DATE: January 2017 REVIEWED BY:		
PREPARED BY: B. SIMMONS REVIEWED BY:		DATE:
REVISIONS: No change to electrical detail. (JJP)		
SIG. INVENTORY NO. 03-0159		1-31-17

**PREEMPTION PROGRAMMING DETAIL
FOR LVDS FAIL-SAFE FLASH**

(program controller as shown below)

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). PRESS "+" UNTIL PREEMPT 7 IS REACHED.

```

PREEMPTION #7 SETTINGS (NEXT:1-10)
INTERVAL/TIMING CLEAR/DWELL PHASES
GRN YEL RED 12345678910111213141516
1 255 0.0 0.0 X X
2 0 0.0 0.0
3 0 0.0 0.0
4 0 0.0 0.0
5 1 0.0 0.0 X X
EXIT CALLS
OPTIONS
PRIORITY (Y/N TO SELECT) .....HIGH
DELAY TIMER (0-255 SEC) .....0
MIN GREEN BEFORE PRE (0= DEFAULT)...1
PED CLEAR BEFORE PRE (0= DEFAULT)...0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).5.2
RED CLEAR BEFORE PRE (0= DEFAULT)...7.8
DWELL MIN TIMER (0-255 SEC) .....10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .....0
LATCH CALL? .....N
LINK TO NEXT PREEMPT? .....N
ENABLE BACKUP PROTECTION? .....N
HOLD CLEAR 1 PHASES DURING DELAY? ..N
FAST GREEN FLASH DWELL PHASES? .....N
PED CLEARANCE THROUGH YELLOW? .....N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? .....N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? .....Y
ALLOW PEDS IN DWELL INTERVAL? .....N
RE-TIME DWELL INTERVAL? .....N
OVERLAPS: ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW X X
OMIT OVERLAPS:

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← NOTICE
"FLASH DWELL
INTERVAL"
SETTING.

PRESS "+" ONCE

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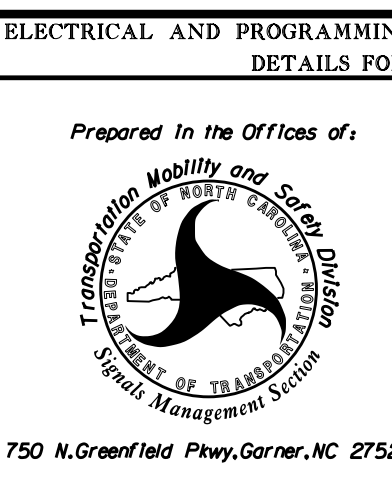
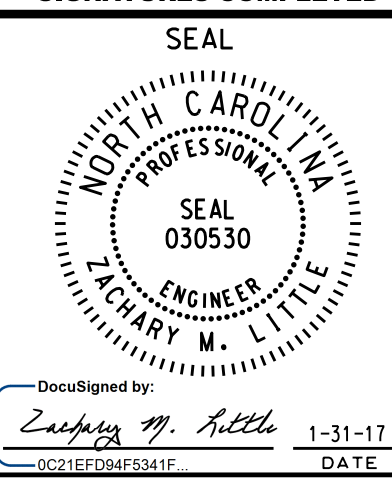
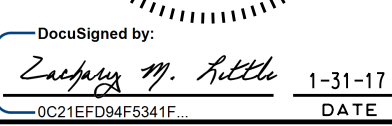
PREEMPTION #8 SETTINGS (NEXT:1-10)
INTERVAL/TIMING CLEAR/DWELL PHASES
GRN YEL RED 12345678910111213141516
1 255 0.0 0.0 X X
2 0 0.0 0.0
3 0 0.0 0.0
4 0 0.0 0.0
5 1 0.0 0.0 X X
EXIT CALLS
OPTIONS
PRIORITY (Y/N TO SELECT) .....HIGH
DELAY TIMER (0-255 SEC) .....0
MIN GREEN BEFORE PRE (0= DEFAULT)...1
PED CLEAR BEFORE PRE (0= DEFAULT)...0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).5.2
RED CLEAR BEFORE PRE (0= DEFAULT)...7.8
DWELL MIN TIMER (0-255 SEC) .....10
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .....0
LATCH CALL? .....N
LINK TO NEXT PREEMPT? .....N
ENABLE BACKUP PROTECTION? .....N
HOLD CLEAR 1 PHASES DURING DELAY? ..N
FAST GREEN FLASH DWELL PHASES? .....N
PED CLEARANCE THROUGH YELLOW? .....N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? .....N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? .....Y
ALLOW PEDS IN DWELL INTERVAL? .....N
RE-TIME DWELL INTERVAL? .....N
OVERLAPS: ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW X X
OMIT OVERLAPS:

```

← NOTICE
"FLASH DWELL
INTERVAL"
SETTING.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0159
DESIGNED: March 2017
SEALED: 05-04-17
REVISED: N/A

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Electrical Detail Sheet 8 of 8		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 		SEAL 		
US 421/NC 242 at US 13				
Division 3	Sampson County	Spivey's Corner		
PLAN DATE: January 2017	REVIEWED BY:			
PREPARED BY: B. Simmons	REVIEWED BY:			
REVISIONS: <table border="1"> <tr> <td>✓ No change to electrical detail. (JJP)</td> <td>DATE: 5/12/2017</td> </tr> </table>			✓ No change to electrical detail. (JJP)	DATE: 5/12/2017
✓ No change to electrical detail. (JJP)	DATE: 5/12/2017			
DocuSigned by:  Cary M. Little		1-31-17 DATE		
SIG. INVENTORY NO. 03-0159				