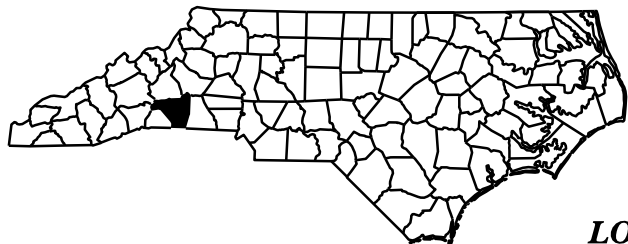


09/08/99

See Sheet 1A For Index of Sheets

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**RUTHERFORD COUNTY**



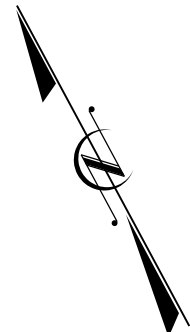
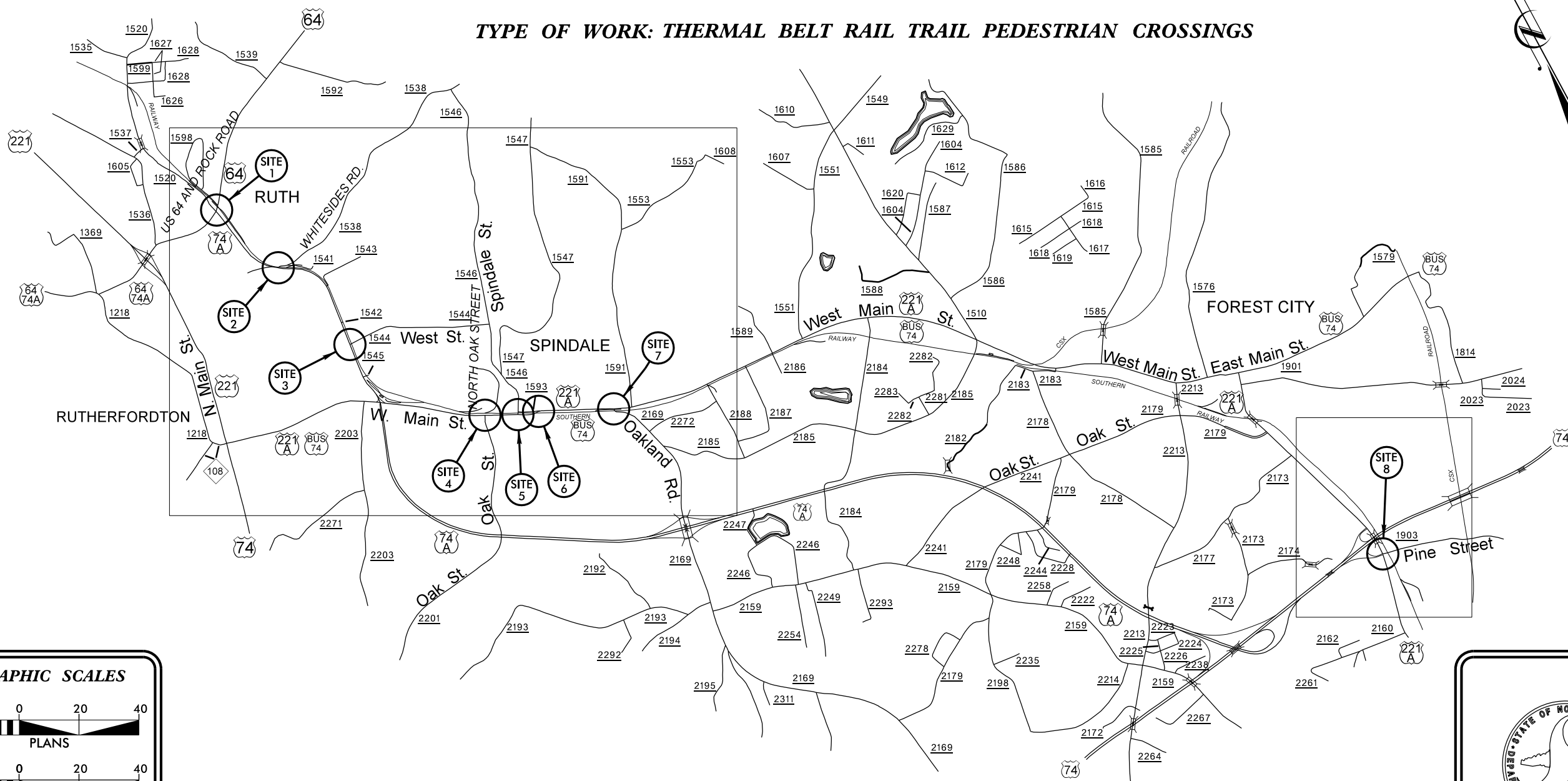
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	EB-5915	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47581.1.1		PE	
47581.3.1	0064209	CONST.	

- LOCATIONS:**
- SITE 1 - INTERSECTION OF US 64 AND ROCK ROAD AND ALT 74**
  - SITE 2 - INTERSECTION OF US 221A/74 BUS AND SR 1538 (WHITESIDES ROAD)**
  - SITE 3 - INTERSECTION OF US 221A/74 BUS AND SR 1544 (WEST STREET)**
  - SITE 4 - INTERSECTION OF US 221A/74 BUS AND (NORTH OAK STREET)**
  - SITE 5 - INTERSECTION OF US 221A/74 BUS AND SR 1546 (SPINDALE STREET)**
  - SITE 6 - INTERSECTION OF MARYLAND AND US 221A**
  - SITE 7 - INTERSECTION OF US 221A/74 BUS AND SR 2169 (OAKLAND ROAD)**
  - SITE 8 - INTERSECTION OF US 221A AND SR 1903 (PINE STREET)**

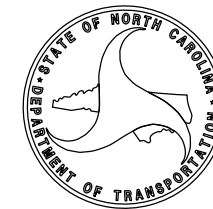
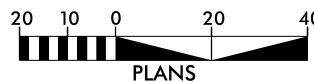
**TYPE OF WORK: THERMAL BELT RAIL TRAIL PEDESTRIAN CROSSINGS**

**TIP PROJECT: EB-5915**

**CONTRACT: DM00344**



**GRAPHIC SCALES**



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
EB-5915	1A

ROADWAY DESIGN  
ENGINEER

GENERAL NOTES:

2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

EFF. 01-16-2018  
REV.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

2018 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, 2018 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
852.01	Concrete Islands

SHEET NUMBER	SHEET	INDEX OF SHEETS
1	TITLE SHEET	
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS	
1B	CONVENTIONAL SYMBOLS	
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS	
2A THRU 2C-4	ROADWAY DETAILS	
4 THRU 11A	PLAN SHEETS	
PED-1 THRU PED-9	PEDESTRIAN TRAFFIC CONTROL SHEETS	
SIG-1 THRU SIG-7.2	SIGNAL PLANS	

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- MLB
Proposed Wetland Boundary	----- MLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Existing Historic Property Boundary	----- HPB
Known Contamination Area: Soil	----- S
Potential Contamination Area: Soil	----- S
Known Contamination Area: Water	----- W
Potential Contamination Area: Water	----- W
Contaminated Site: Known or Potential	☠️ ?

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□ †
Building	□
School	□ ↑
Church	□ ✝
Dam	-----

## HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	----- JS
Buffer Zone 1	----- BZ 1
Buffer Zone 2	----- BZ 2
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

## RAILROADS:

Standard Gauge	----- CSX TRANSPORTATION
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

## RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	▲
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite RW Marker	-----
New Control of Access Line with Concrete CA Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	----- C
Proposed Slope Stakes Fill	----- F
Proposed Curb Ramp	----- CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

## VEGETATION:

Single Tree	☼
Single Shrub	☼

Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	----- Vineyard

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

## UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
U/G Power Line LOS B (S.U.E.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

## TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Pedestal	□
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

## WATER:

Water Manhole	⊙
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

## TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	-----
U/G TV Cable LOS B (S.U.E.*)	-----
U/G TV Cable LOS C (S.U.E.*)	-----
U/G TV Cable LOS D (S.U.E.*)	-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----

## GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	-----
U/G Gas Line LOS C (S.U.E.*)	-----
U/G Gas Line LOS D (S.U.E.*)	-----
Above Ground Gas Line	----- A/G Gas

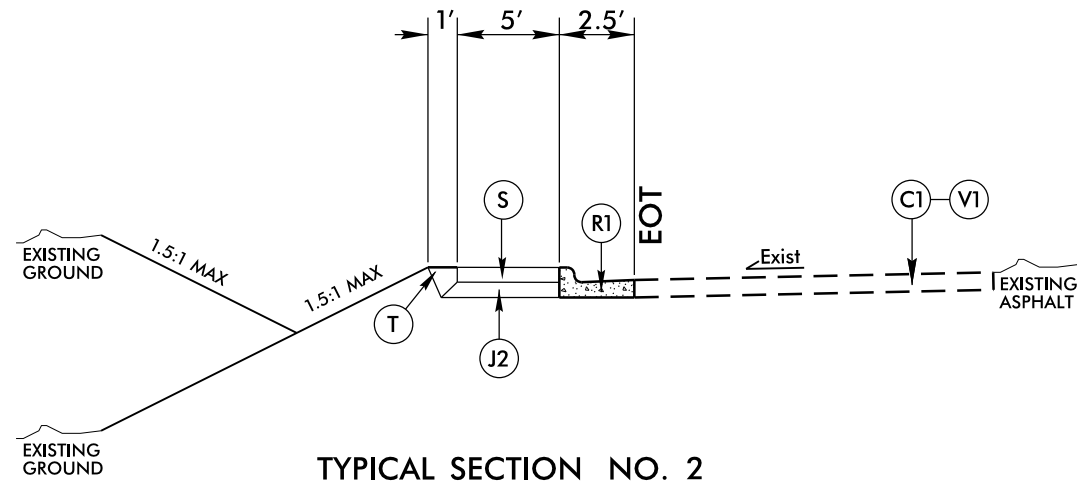
## SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
SS Forced Main Line LOS B (S.U.E.*)	-----
SS Forced Main Line LOS C (S.U.E.*)	-----
SS Forced Main Line LOS D (S.U.E.*)	-----

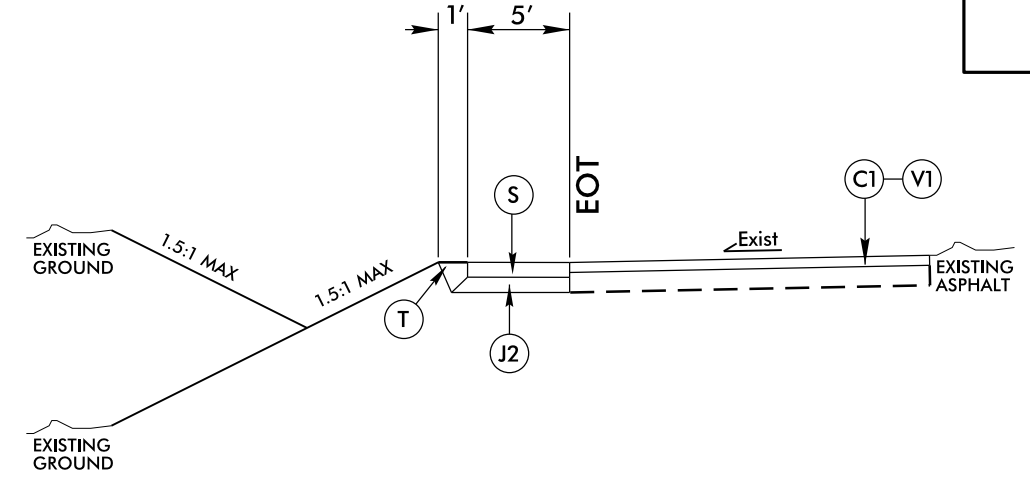
## MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	-----
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	----- UST
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	-----
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

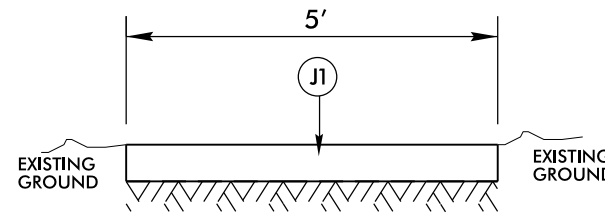
PROJECT REFERENCE NO.	SHEET NO.
EB-5915	2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER



**TYPICAL SECTION NO. 2**  
SITE #4 NORTH OAK STREET



**TYPICAL SECTION NO. 3**  
SITE #5 SPINDALE STREET



**TYPICAL SECTION NO. 4**  
SITE #4 NORTH OAK STREETS  
SITE #5 SPINDALE ST

C1	1.5" S9.5C, AVG. RATE 168 LBS PER SQ. YD
J1	4" AGGREGATE BASE COURSE
J2	INCIDENTAL STONE BASE
R1	2'6" CURB AND GUTTER
S	4" SIDEWALK
T	SHOULDER RECONSTRUCTION
V1	1.5" MILLING
U	EXISTING ASPHALT

**TYPICAL SECTION NOTES**

- \* MILL AND RESURFACE AS NEEDED OR AS DIRECTED BY THE ENGINEER
- \* THE 5' SIDEWALK @ SITE #4 WILL NEED TO TRANSITION LEVEL WITH EXISTING ASPHALT THROUGH OUT THE CROSSWALK AND CONNECT TO THE ADA RAMP NEAR US221A AND NORTH OAK STREET INTERSECTION.
- \* THE 5' CONC. SIDEWALK @ SITE #5 WILL NEED TO BE INSTALLED LEVEL WITH THE EXISTING ASPHALT FROM THE EXISTING ADA RAMP THROUGH OUT THE CROSSWALK TO MEET THE END OF THE TRAIL NEAR THE 221A AND SPINDALE STREET INTERSECTION.

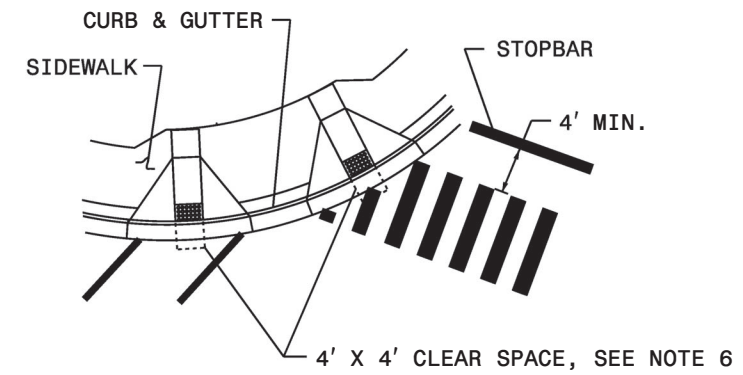
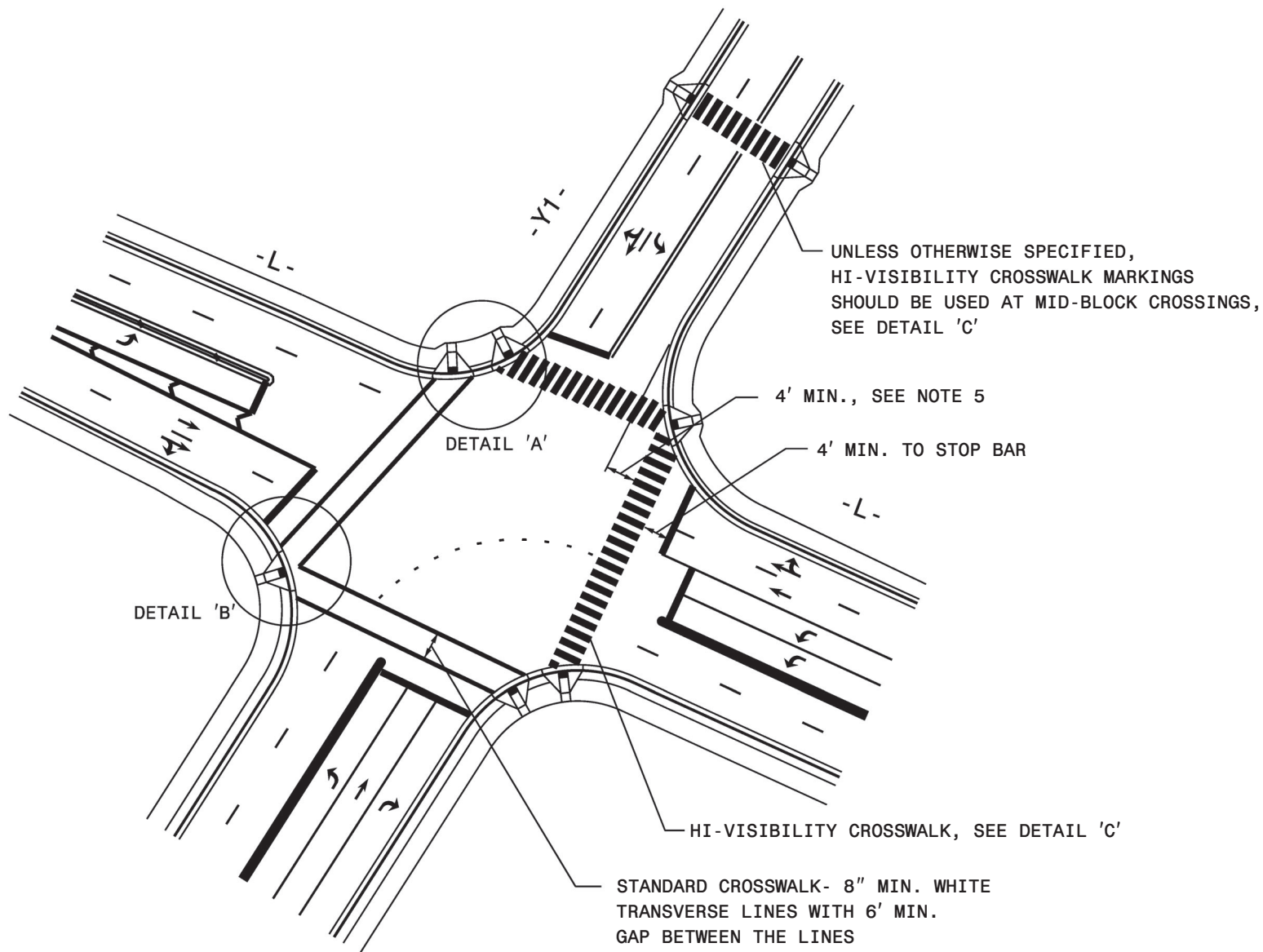
8/17/99

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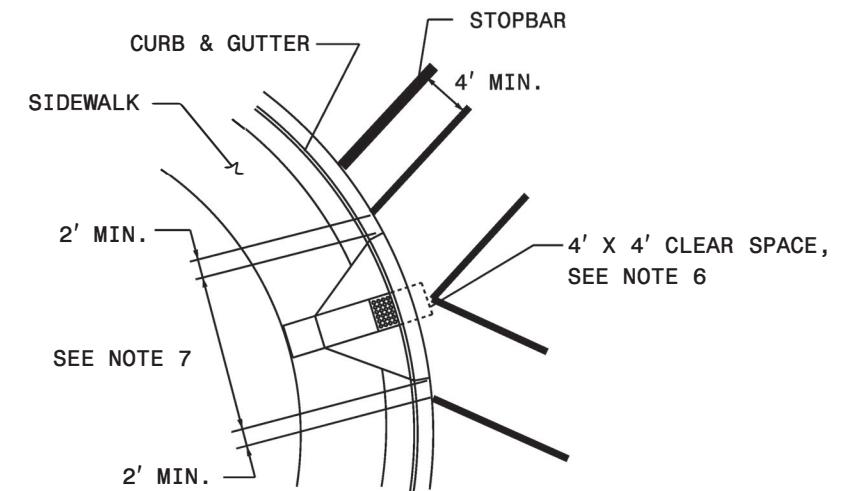
DU 04/22/21

# CROSSWALK PLACEMENT GUIDANCE

PROJECT REFERENCE NO. EB-5915	SHEET NO. 2-A
----------------------------------	------------------



DETAIL 'A' - DUAL CURB RAMPS



DETAIL 'B' - SINGLE DIAGONAL CURB RAMP



DETAIL 'C' - HI-VISIBILITY CROSSWALK

## GENERAL NOTES:

- USE THE DETAILS ABOVE AND THE FOLLOWING NOTES FOR GUIDANCE IN PLACING CROSSWALK MARKINGS. REFER TO NCDOT ROADWAY STANDARD DRAWINGS, MUTCD AND ADA STANDARDS FOR ADDITIONAL GUIDANCE.
- THE LOCATION AND TYPE OF CROSSWALK MARKINGS SHOWN ON THE ABOVE DETAILS ARE FOR REFERENCE ONLY. LOCATE CROSSWALK MARKINGS AS SHOWN ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER. THE CROSSWALK MARKING TYPE, STANDARD OR HI-VISIBILITY, SHALL BE INSTALLED AS SPECIFIED ON THE PROJECT DETAIL SHEETS OR AS DIRECTED BY THE ENGINEER.
- THE STANDARD CROSSWALK IS TWO WHITE 8" MIN. TRANSVERSE LINES WITH A 6' MIN. GAP BETWEEN THE LINES. THE HI-VISIBILITY CROSSWALK IS WHITE 24" MAX. WIDE LONGITUDINAL LINES WITH 24" MIN. GAPS BETWEEN LINES, SEE DETAIL 'C'. HI-VISIBILITY CROSSWALKS SHOULD BE A MINIMUM OF 6' WIDE. CURB RAMPS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARES.
- STOP BARS SHOULD BE PLACED A 4' MIN. IN ADVANCE OF NEAREST CROSSWALK LINE.
- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.
- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' X 4' MIN. SHALL BE PROVIDED WITHIN THE MARKINGS.
- SINGLE DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 2' MIN. LONG LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING, SEE DETAIL 'B'.
- CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST NCDOT ROADWAY STANDARD DRAWINGS. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR DETAILS OR A SPECIAL DESIGN.

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

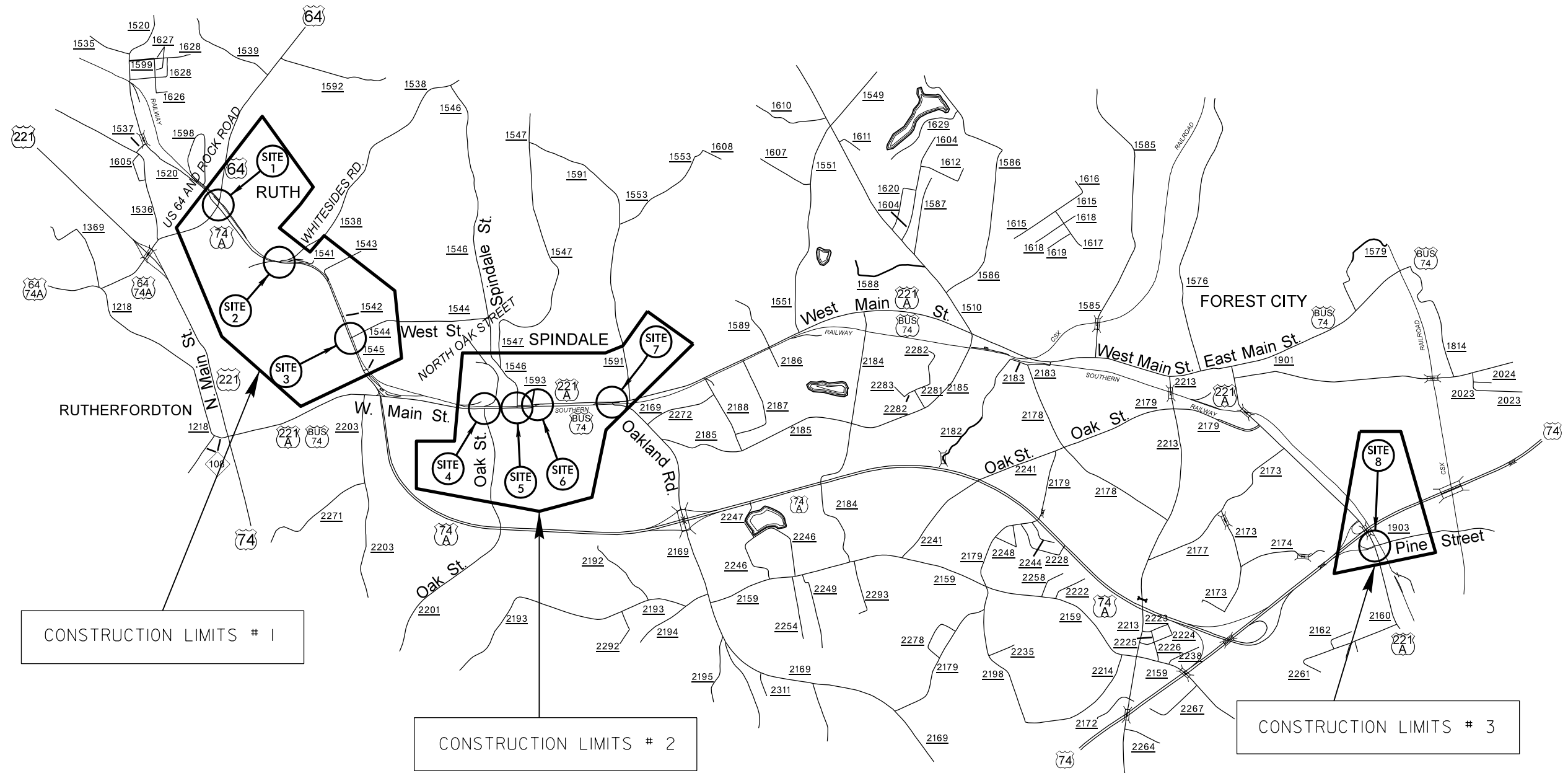
ROADWAY STANDARD DRAWING FOR  
**PAVEMENT MARKINGS**  
 PEDESTRIAN CROSSWALKS

PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>2B</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# WORK ZONE ADVANCE/GENERAL WARNING SIGN PLAN LOCATION SHEET

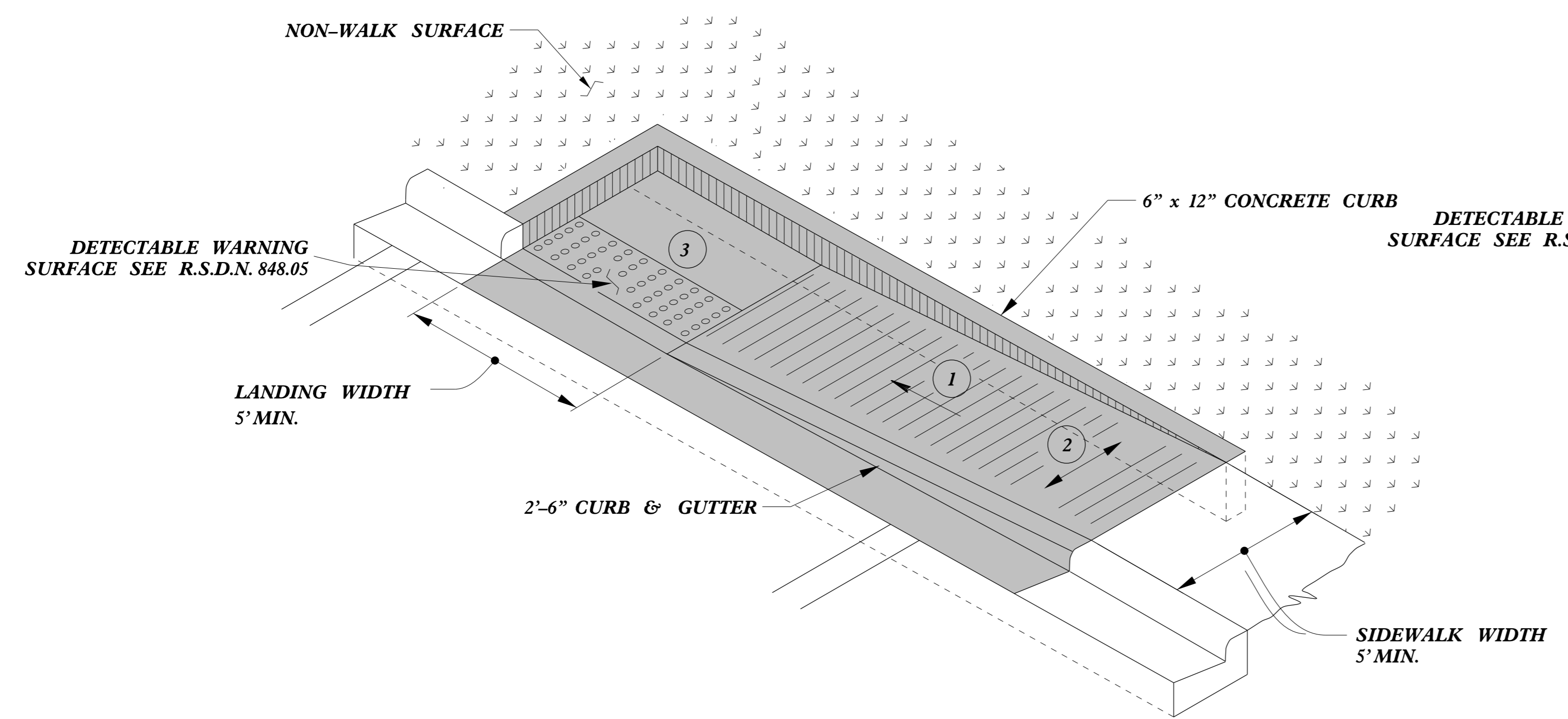


REVISIONS

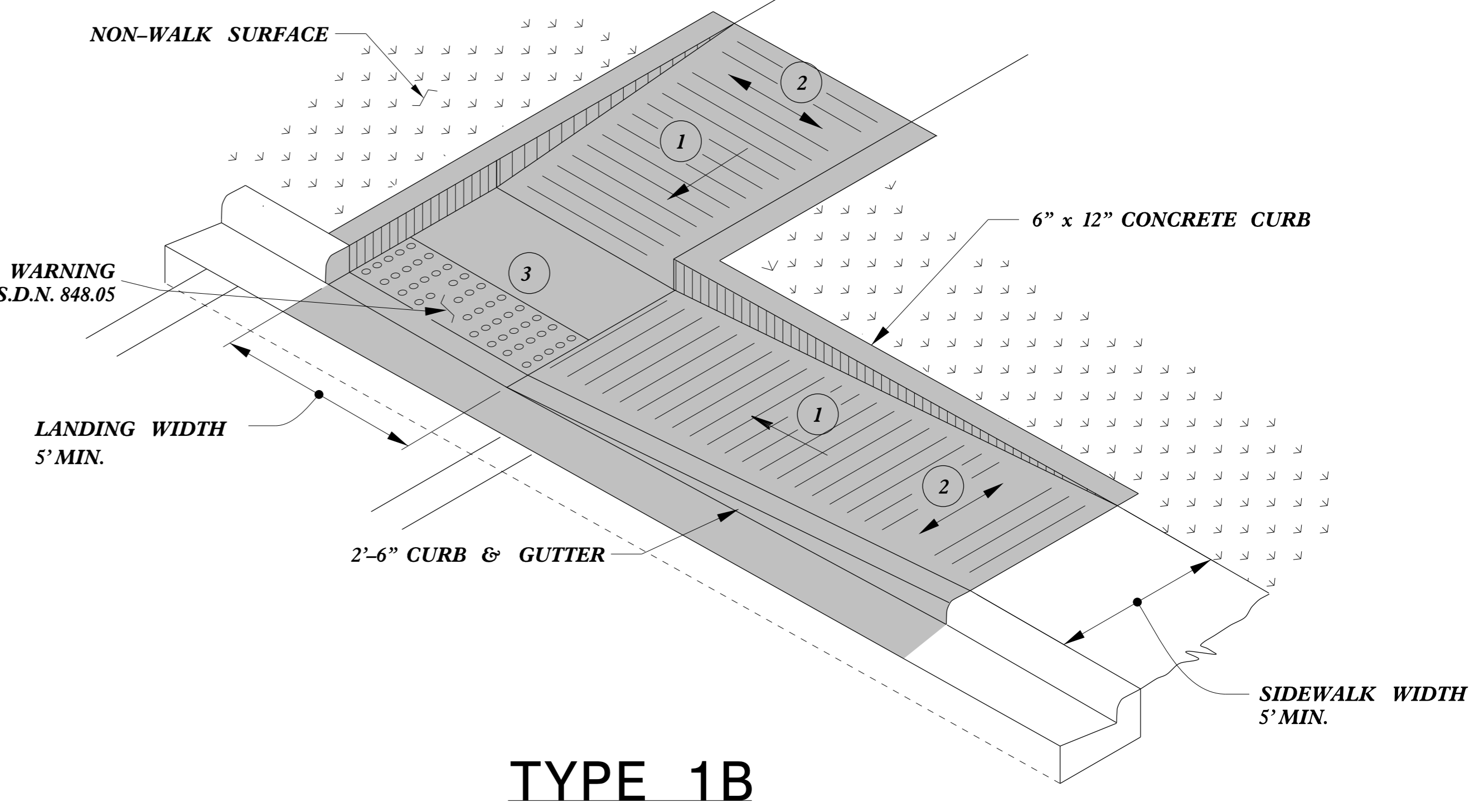


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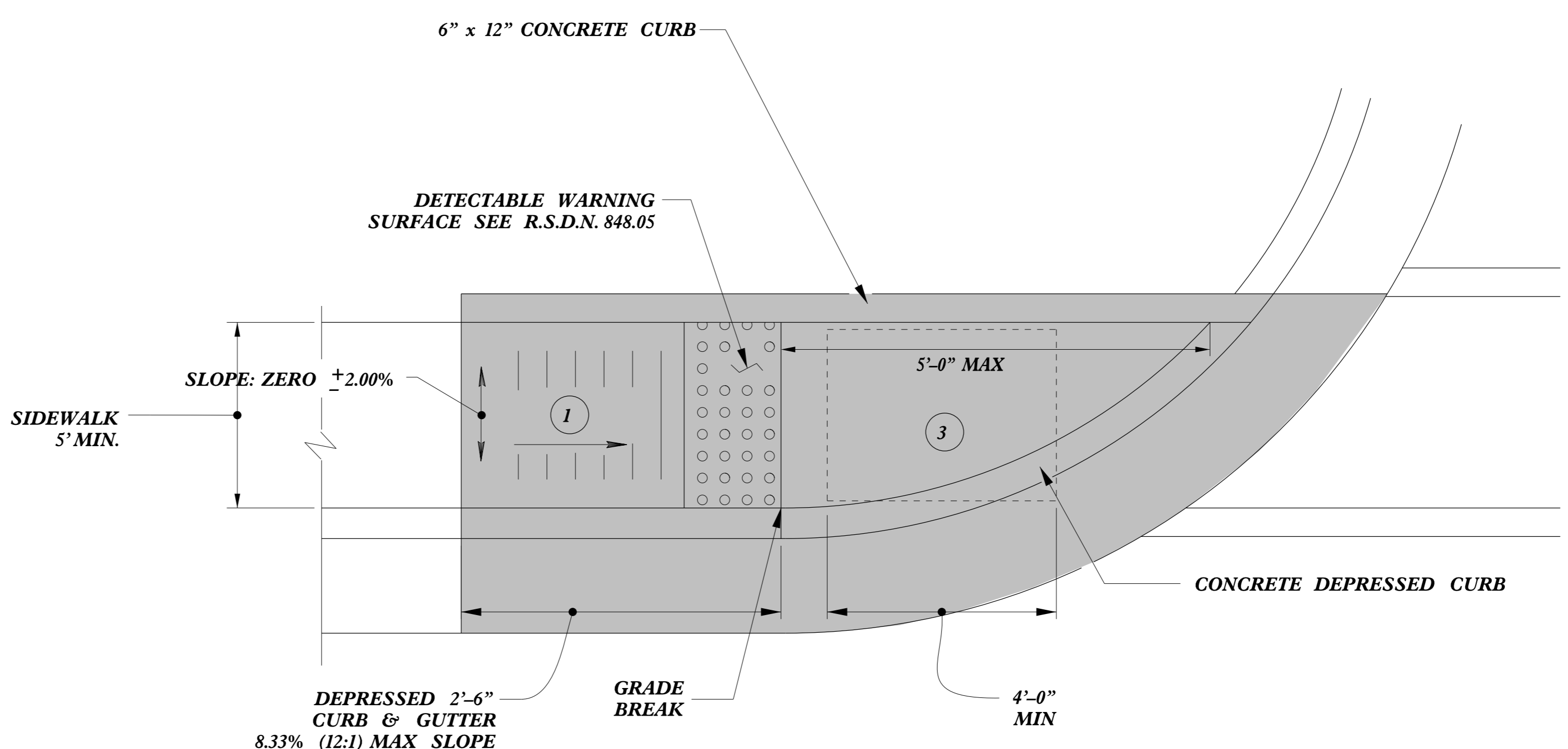
29-SEP-2020-14:06



**TYPE 1A**



**TYPE 1B**



**TYPE 1**

**PAY LIMITS FOR 1 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.

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

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

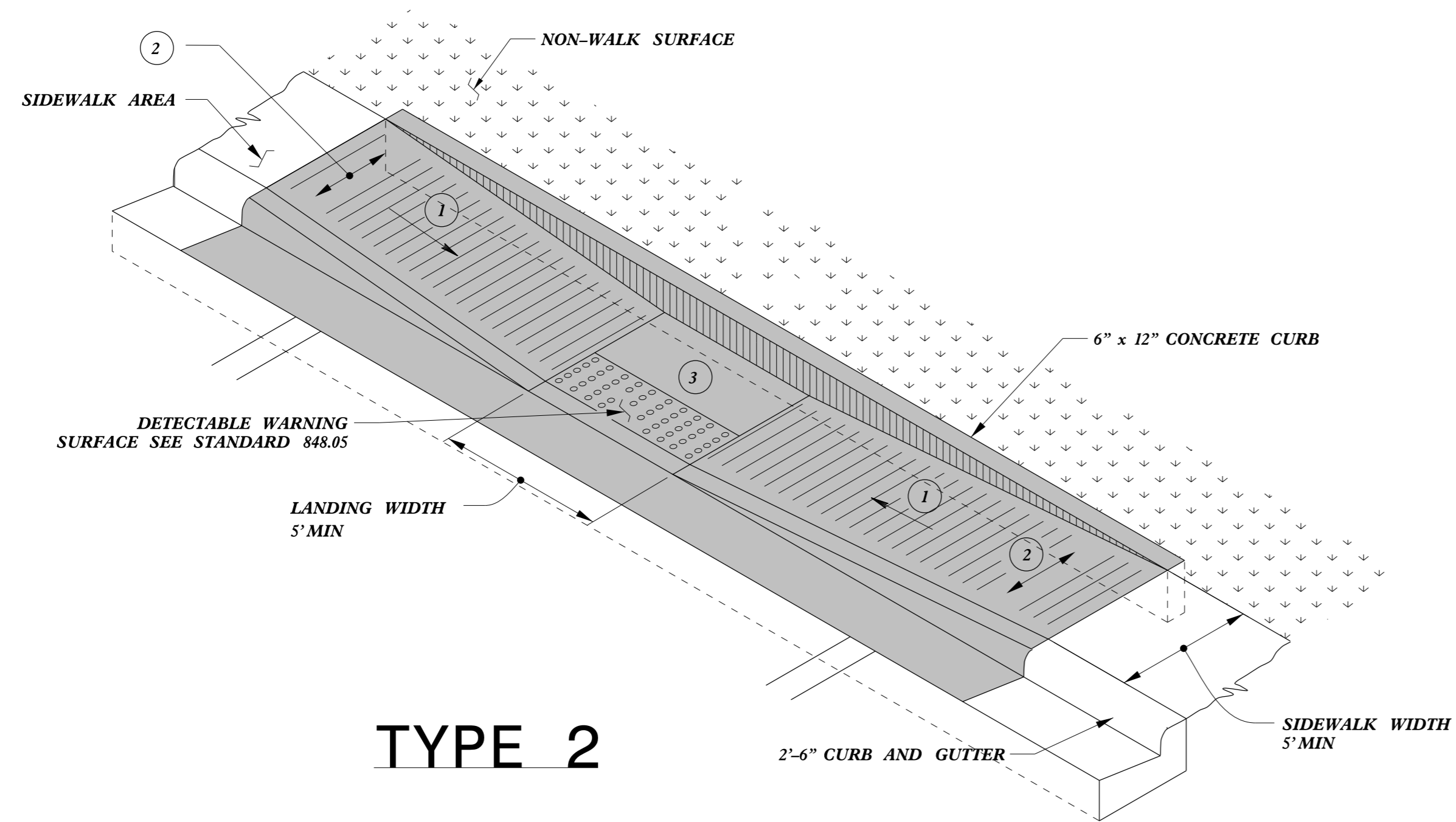
**CURB RAMPS**  
Directional Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11  
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 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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5/14/99  
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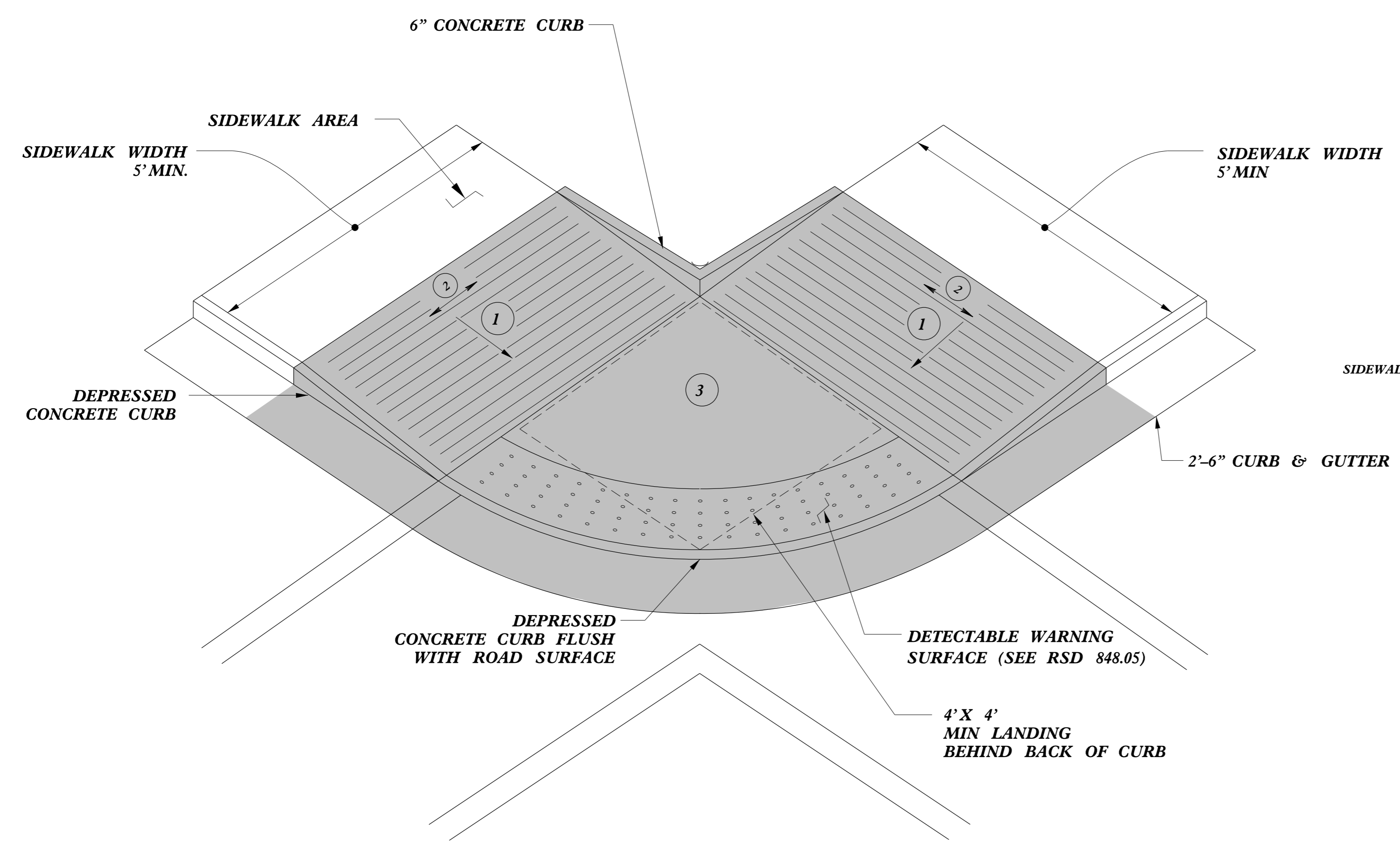




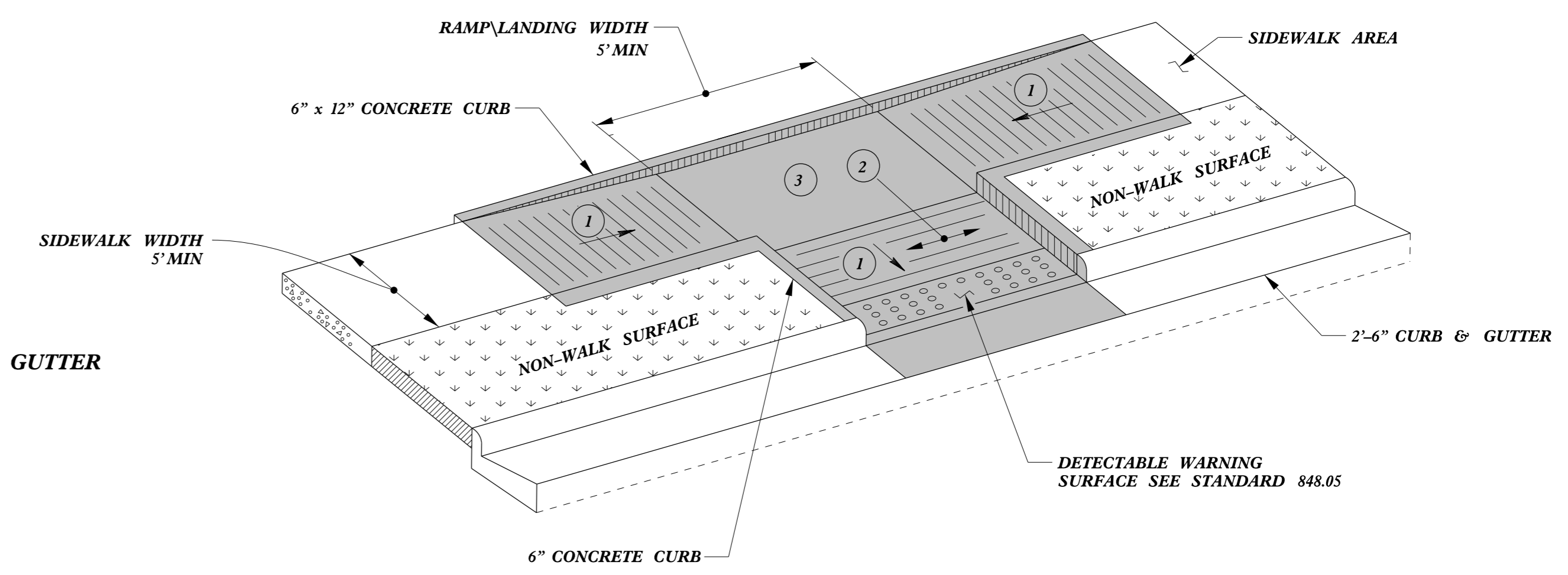
**TYPE 2**

PAY LIMITS FOR 1 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**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

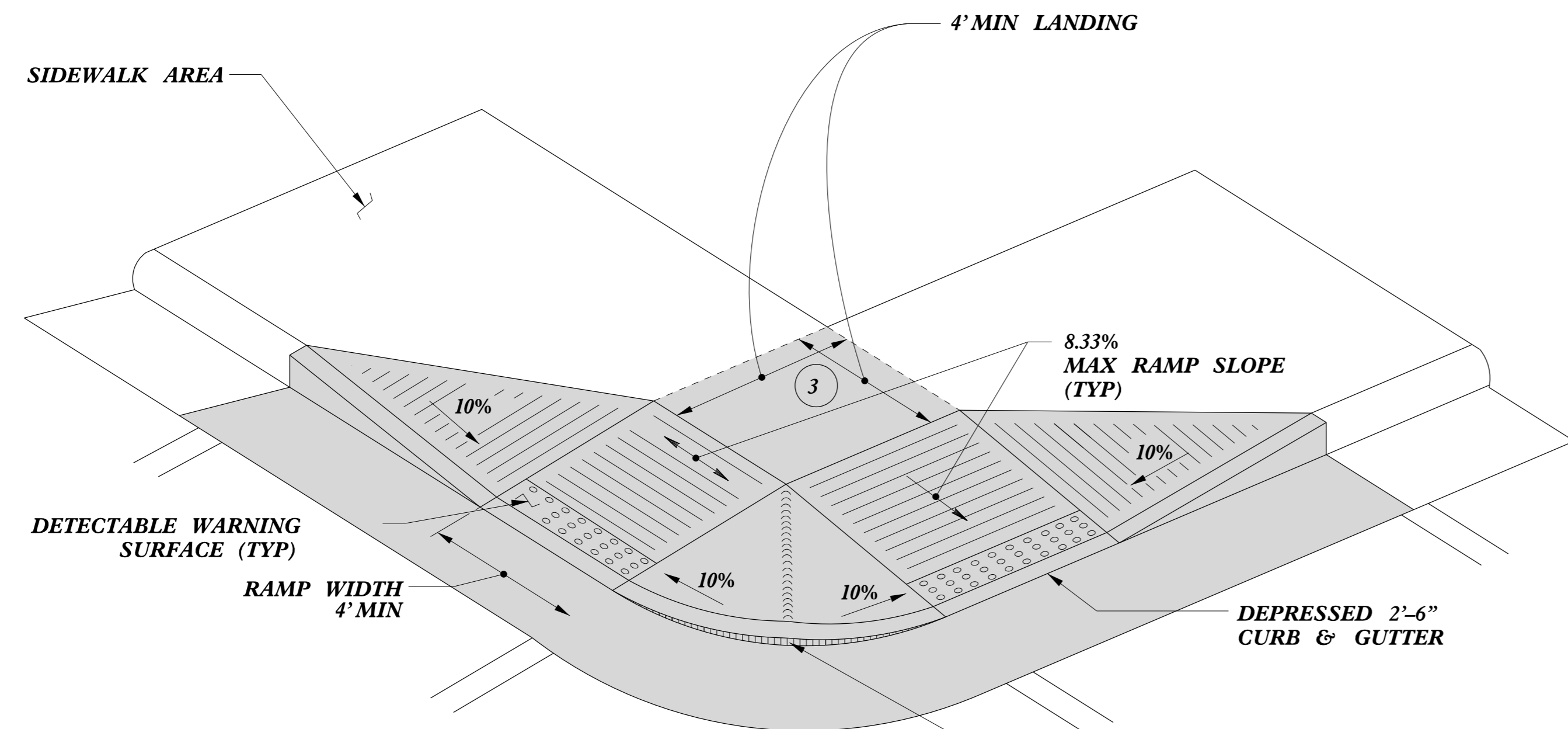
**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**CURB RAMPS**  
Parallel Ramps

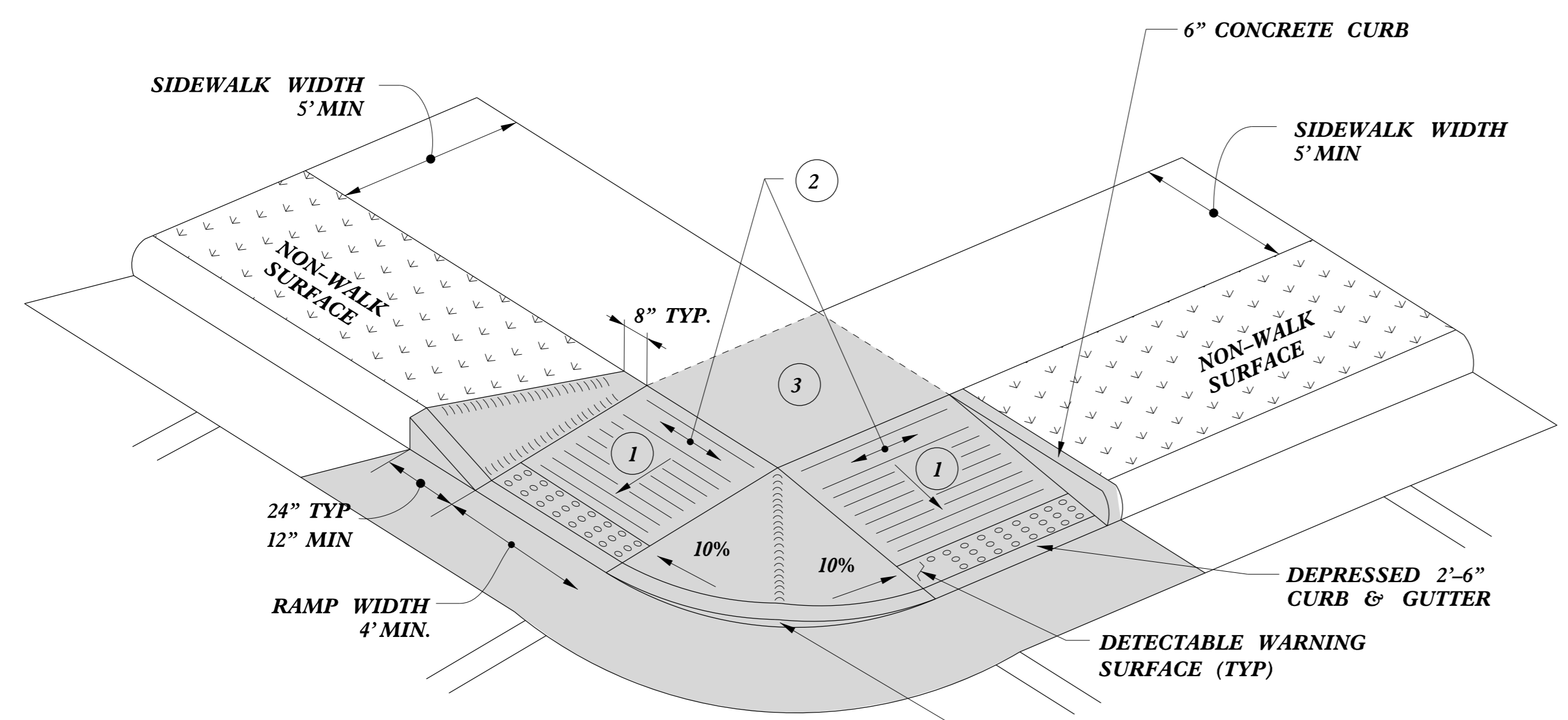
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 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
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REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

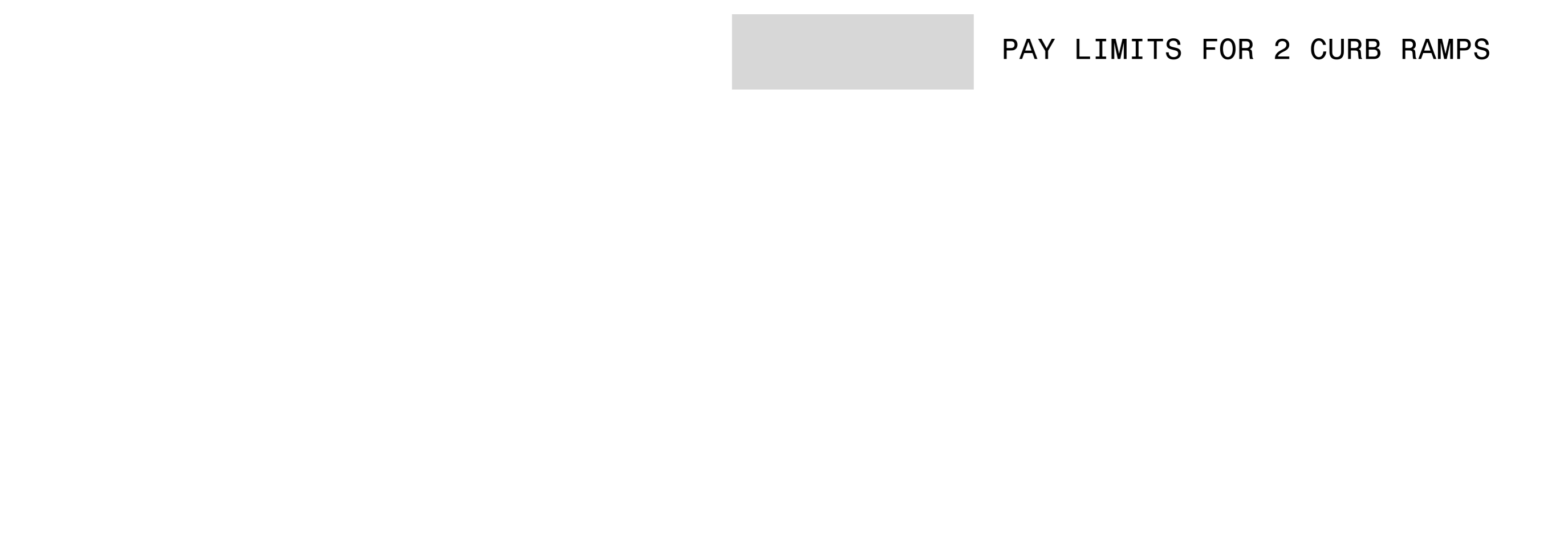
5/14/99  
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**TYPE 4**



**TYPE 4A**



**TYPE 5**

- 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 2 CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**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: \_\_\_\_\_  
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REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

5/14/99  
 CURB RAMPS  
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 USER: J.S.HOWERTON  
 TIME: 10:00 AM

8/17/99

REVISIONS

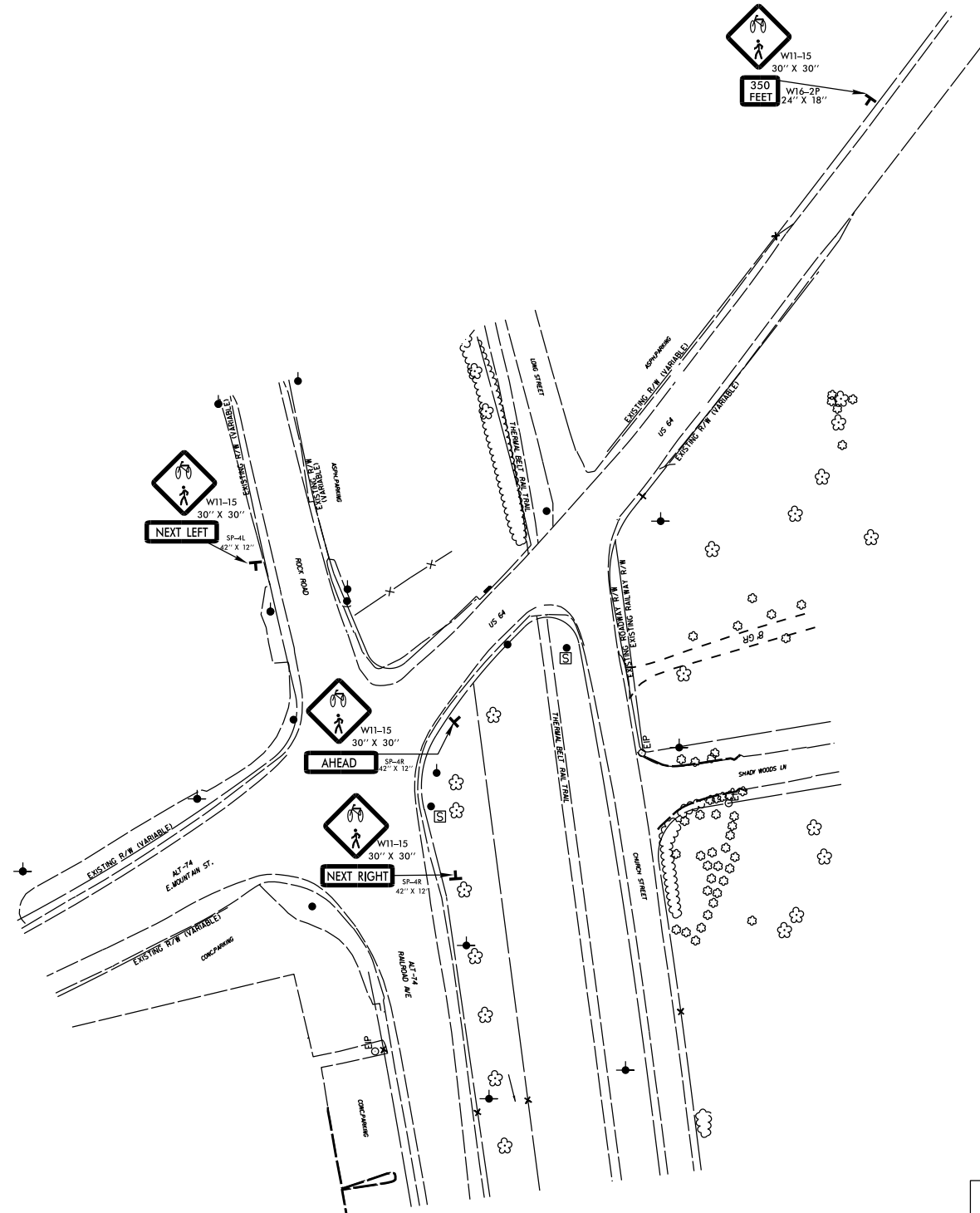
8/17/99

# SITE 1

PROJECT REFERENCE NO.	SHEET NO.
EB-5915	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SCAN WITH A QR READER FOR LOCATION

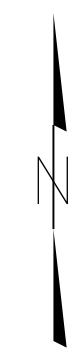


SEE SHEET 2A FOR CROSSWALK DETAILS  
AND SHEET 2C FOR CURB RAMP DETAILS

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT.  
ALL INFORMATION TAKEN FROM NC ONE MAP

PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# SITE 2



SCAN WITH A QR READER FOR LOCATION

PAVEMENT MARKING SCHEDULE	
SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LT/RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3"/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT/STRAIGHT ARROW

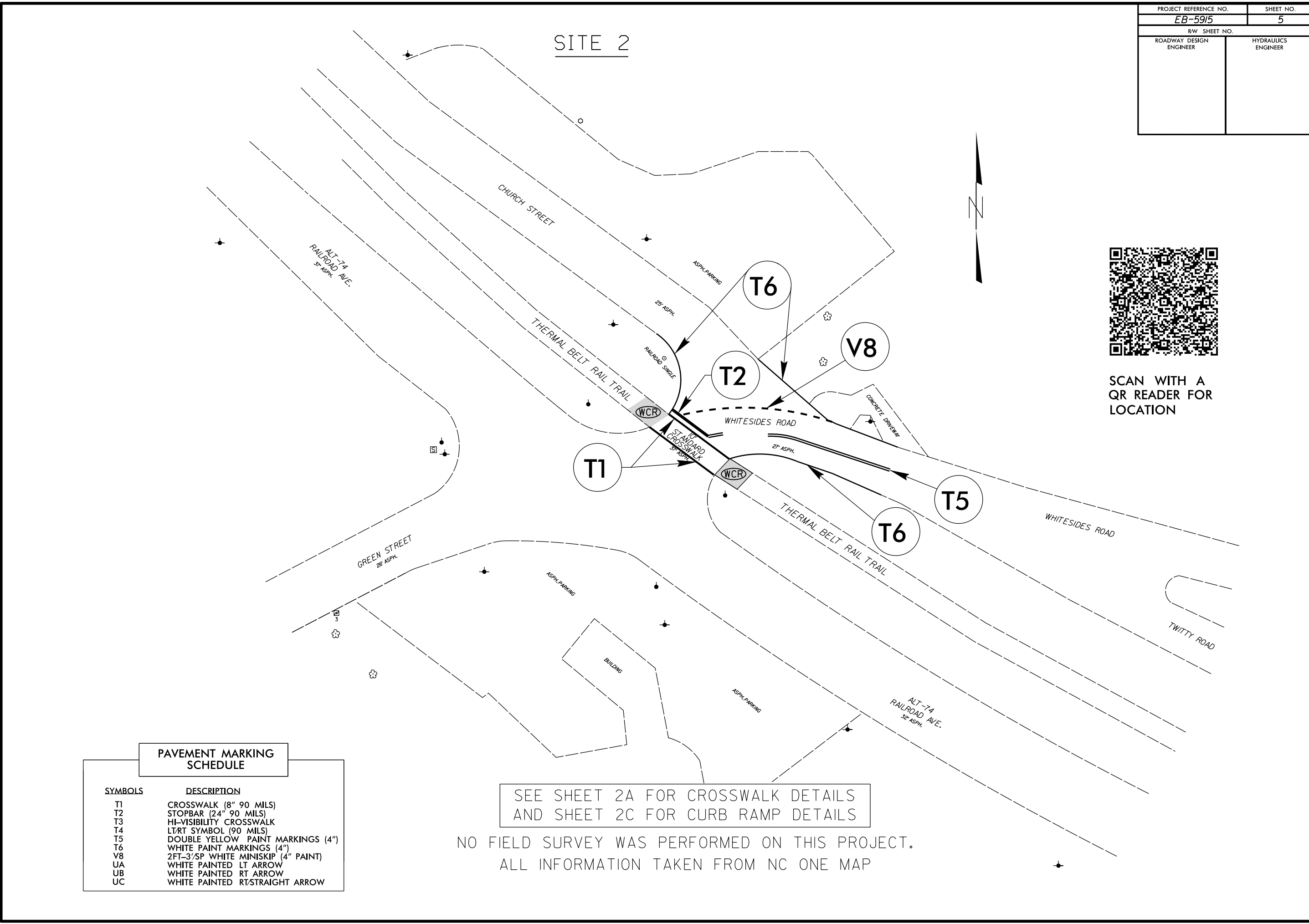
SEE SHEET 2A FOR CROSSWALK DETAILS AND SHEET 2C FOR CURB RAMP DETAILS

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT.  
ALL INFORMATION TAKEN FROM NC ONE MAP

REVISIONS

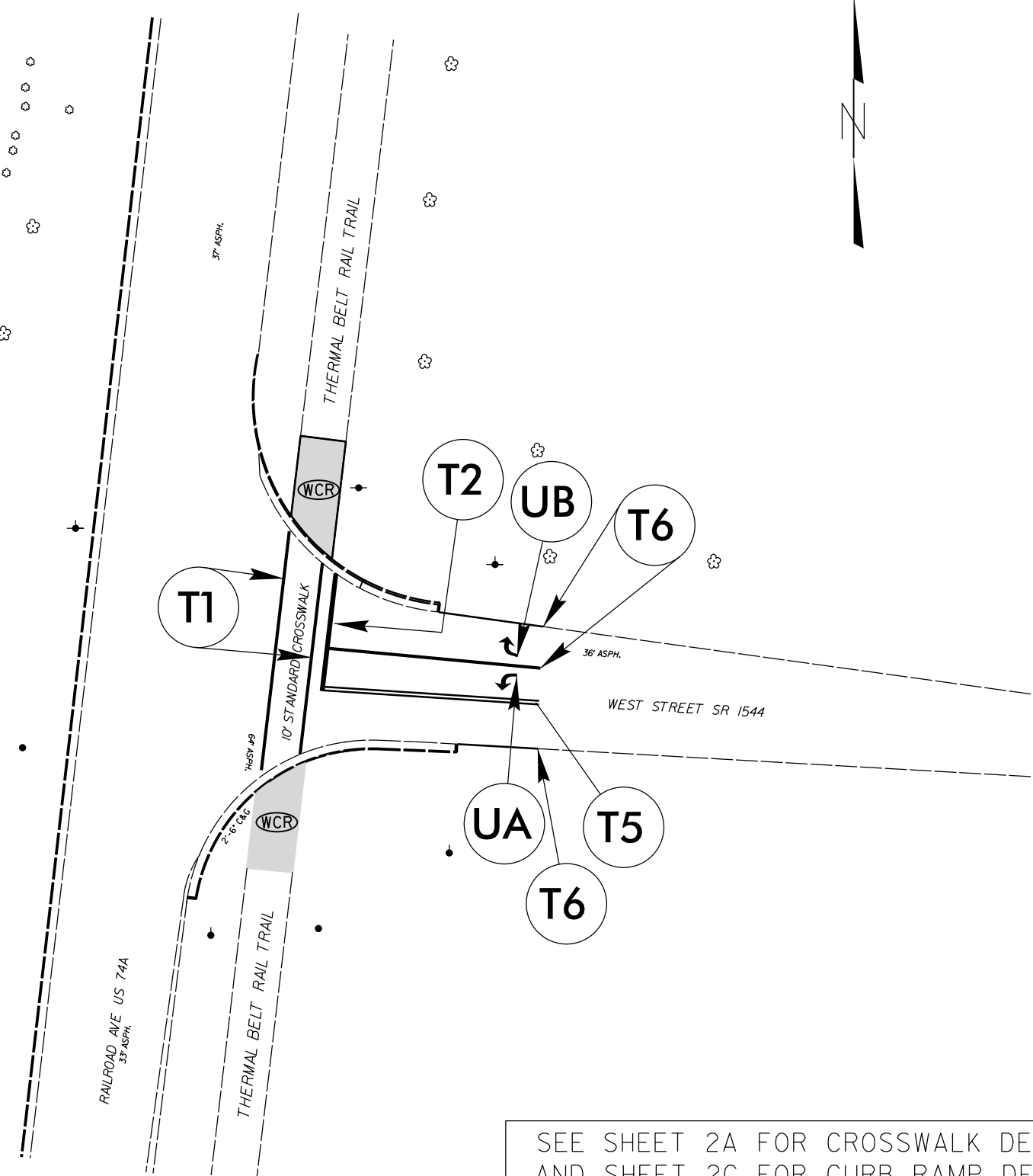
8/17/99

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PROJECT REFERENCE NO. <i>EB-5915</i>	SHEET NO. <b>6</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# SITE 3



SCAN WITH A QR READER FOR LOCATION

### PAVEMENT MARKING SCHEDULE

SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	L/RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT/STRAIGHT ARROW

SEE SHEET 2A FOR CROSSWALK DETAILS AND SHEET 2C FOR CURB RAMP DETAILS

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT. ALL INFORMATION TAKEN FROM NC ONE MAP

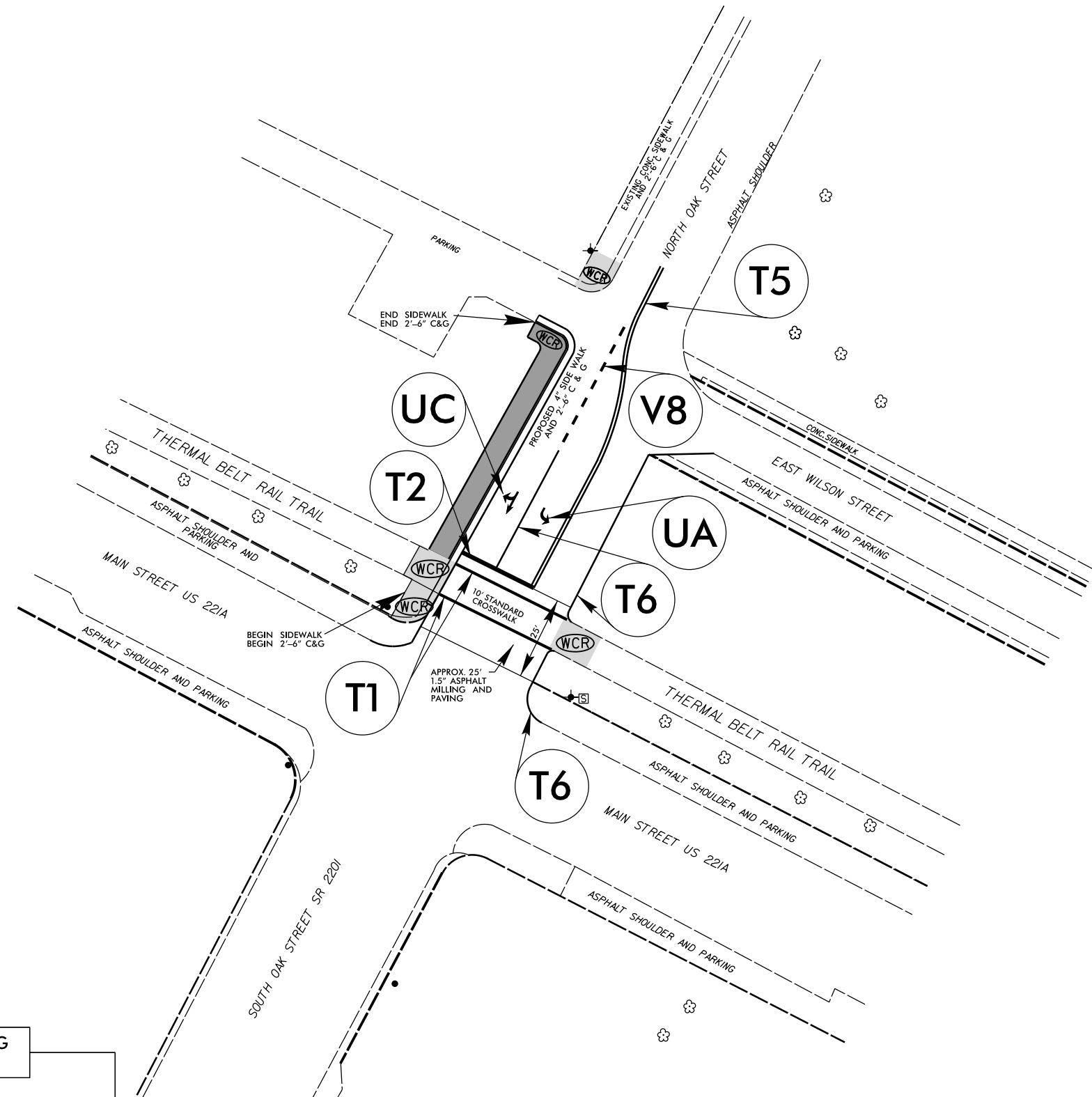
REVISIONS

8/17/99

03 REV 02

# SITE 4

PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>7</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SCAN WITH A QR READER FOR LOCATION

### PAVEMENT MARKING SCHEDULE

SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LT/RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3"/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT/STRAIGHT ARROW

SEE SHEET 2A FOR CROSSWALK DETAILS AND SHEET 2C FOR CURB RAMP DETAILS

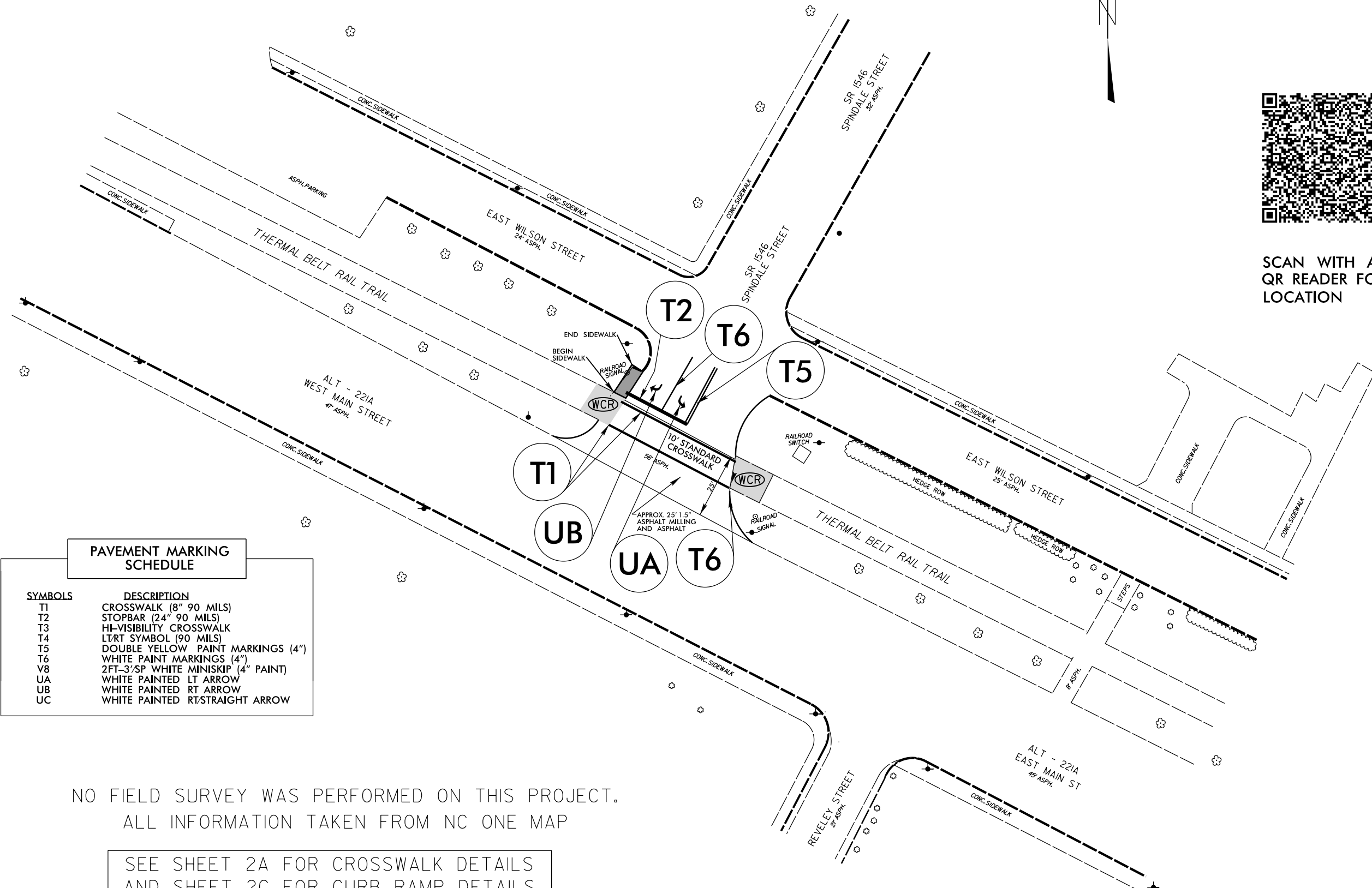
NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT. ALL INFORMATION TAKEN FROM NC ONE MAP

# SITE 5

PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>8</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



SCAN WITH A QR READER FOR LOCATION



### PAVEMENT MARKING SCHEDULE

SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LT/RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3"/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT STRAIGHT ARROW

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT.  
ALL INFORMATION TAKEN FROM NC ONE MAP

SEE SHEET 2A FOR CROSSWALK DETAILS  
AND SHEET 2C FOR CURB RAMP DETAILS

REVISIONS

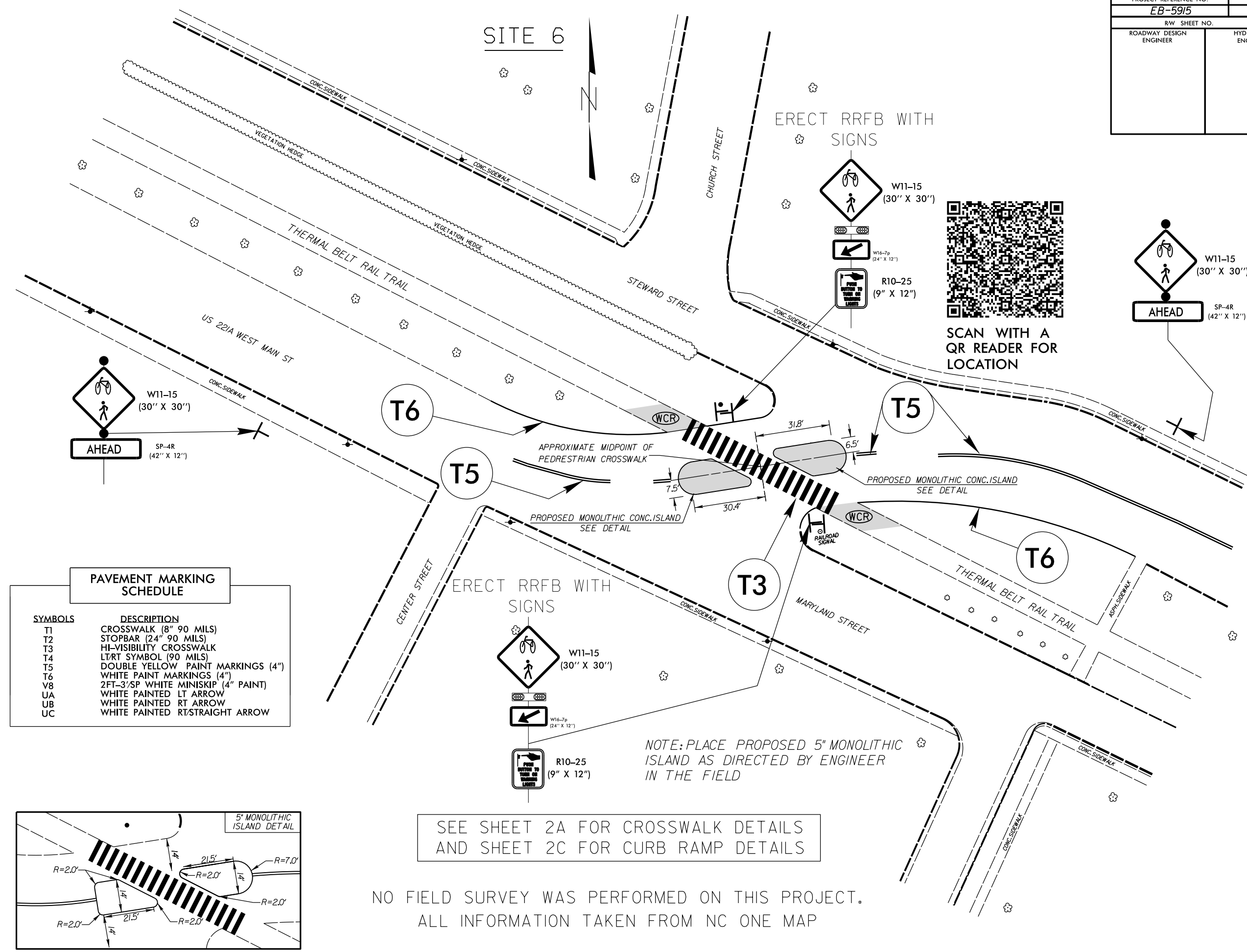
8/17/99

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PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>9</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

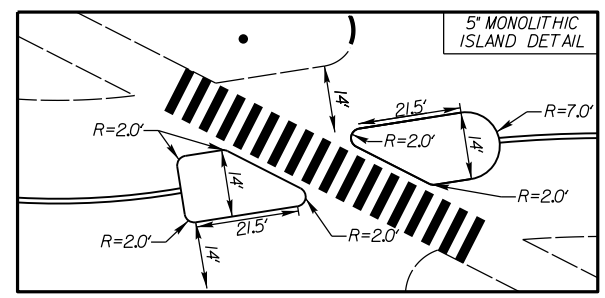
8/17/99

REVISIONS



**PAVEMENT MARKING SCHEDULE**

SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LT/RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3"/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT/STRAIGHT ARROW



SEE SHEET 2A FOR CROSSWALK DETAILS AND SHEET 2C FOR CURB RAMP DETAILS

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT. ALL INFORMATION TAKEN FROM NC ONE MAP

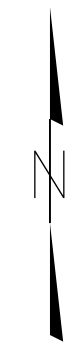
NOTE: PLACE PROPOSED 5' MONOLITHIC ISLAND AS DIRECTED BY ENGINEER IN THE FIELD



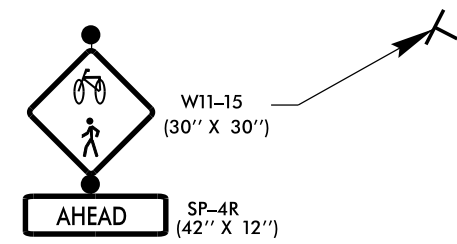
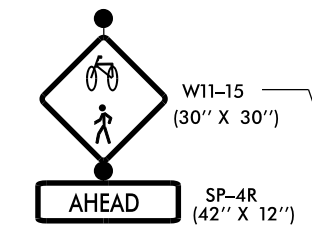
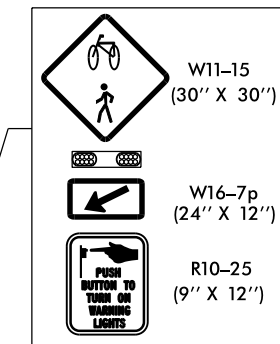
PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>9A</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

RECTANGULAR RAPID FLASHING BEACON (RRFB) INSTALLATION NOTES:

1. ALIGN THE FRONT FACE OF THE PEDESTRIAN PUSH BUTTON ASSEMBLY PARALLEL WITH THE CROSSWALK.
2. SIGN FACE AND RRFB BAR WILL BE ALIGNED PERPENDICULAR TO ONCOMING TRAFFIC.
3. THE DISTANCE OF THE PUSH BUTTON FROM THE EDGE OF THE THERMAL BELT RAIL TRAIL SHOULD BE NO GREATER THAN 1'-6".
4. THE NORMAL DUTY (TYPE II) PEDESTAL (I743.02) SHALL BE LOCATED 8' O.C. FROM THE ROADWAY EDGE OF PAVEMENT.
5. THE LUMP SUM ITEM FOR RRFB (RECTANGULAR RAPID FLASHING BEACON) SHALL INCLUDE BUT NOT LIMITED TO THE FOUNDATIONS, PEDESTALS, SIGNS, PUSH BUTTONS, FLASHING BEACONS, SOLAR PANEL, BATTERY, CONTROLLER ASSEMBLY AND ALL INCIDENTALS RELATED TO THE INSTALLATION OF THE RRFB.
6. THE RRFB AND ADVANCE WARNING FLASHING BEACONS WILL NEED TO BE SYNCHRONIZED WITH EACH OTHER.
7. THE SYSTEM IS OPERATED BY REMOTE CONTROL RADIO SIGNAL AND SOLAR POWER

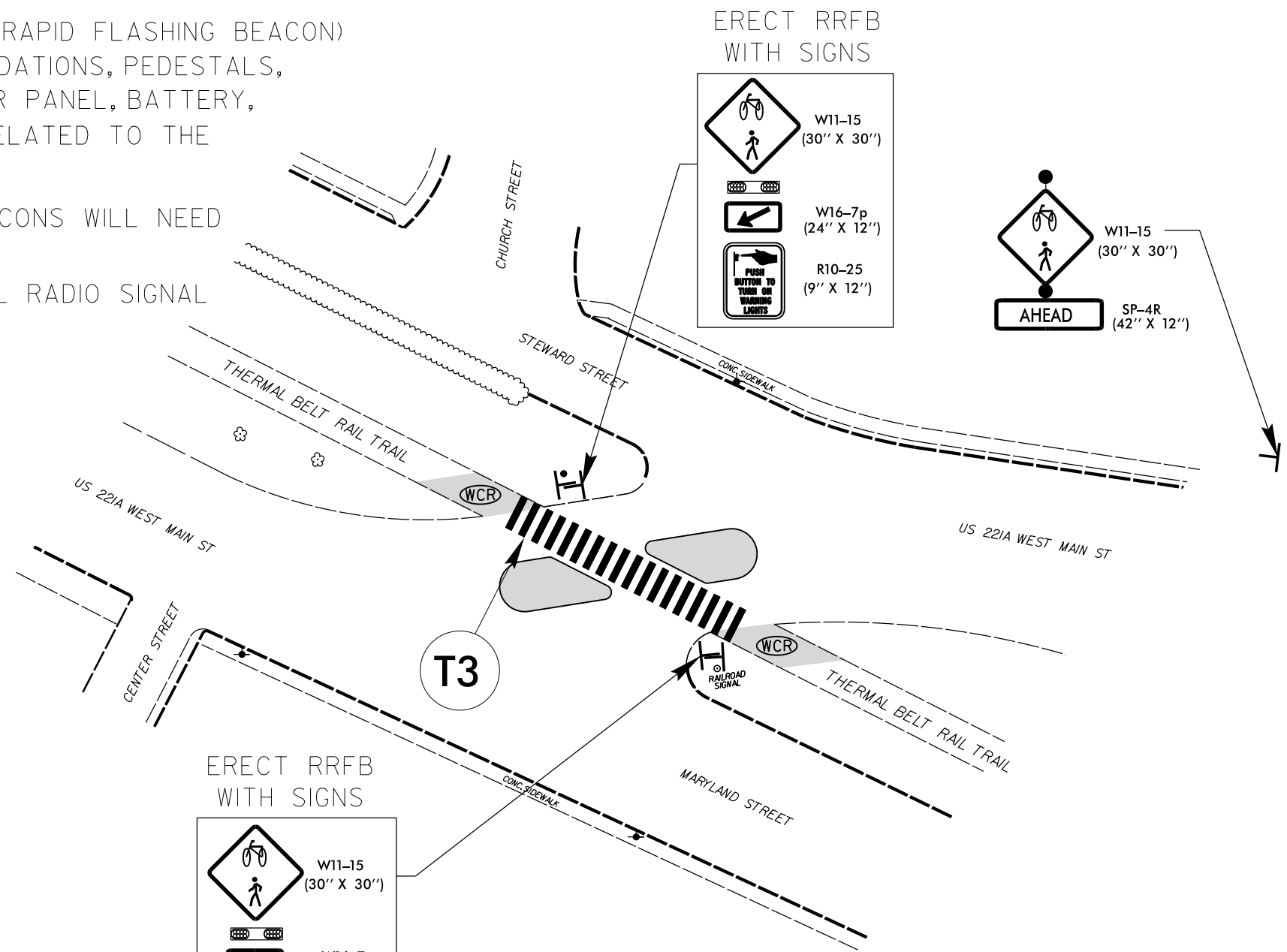
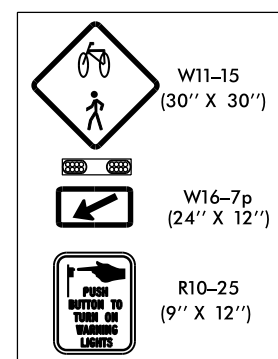


ERECT RRFB WITH SIGNS



PAVEMENT MARKING SCHEDULE	
SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LT/RT SYMBOL

ERECT RRFB WITH SIGNS



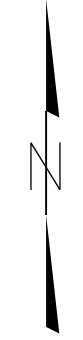
REVISIONS

8/17/99

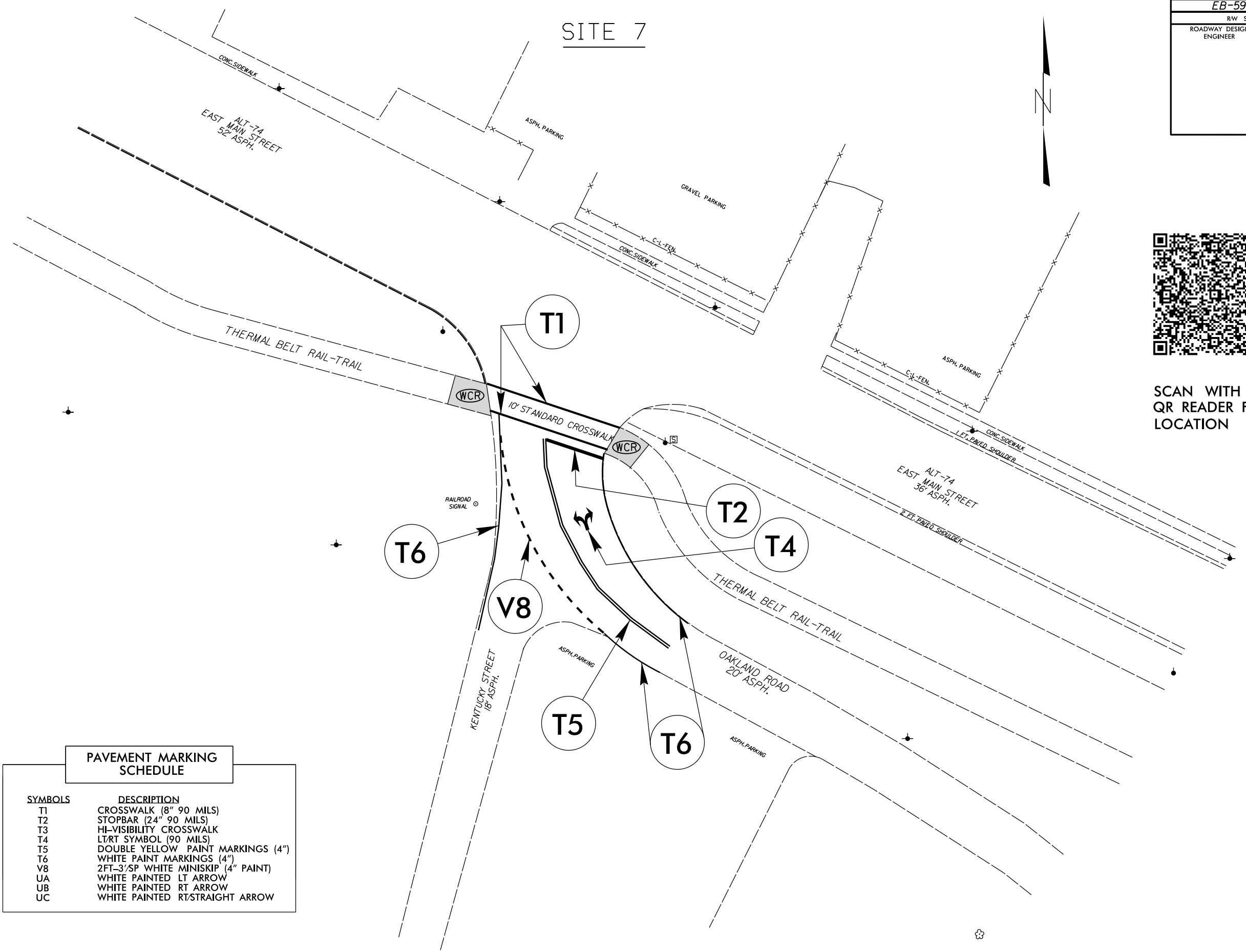
03 REV 01/21

PROJECT REFERENCE NO.	SHEET NO.
EB-5915	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# SITE 7



SCAN WITH A QR READER FOR LOCATION



### PAVEMENT MARKING SCHEDULE

SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LT/RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3"/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT/STRAIGHT ARROW

SEE SHEET 2A FOR CROSSWALK DETAILS AND SHEET 2C FOR CURB RAMP DETAILS

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT.  
ALL INFORMATION TAKEN FROM NC ONE MAP

REVISIONS

8/17/99

CU 08/21/21

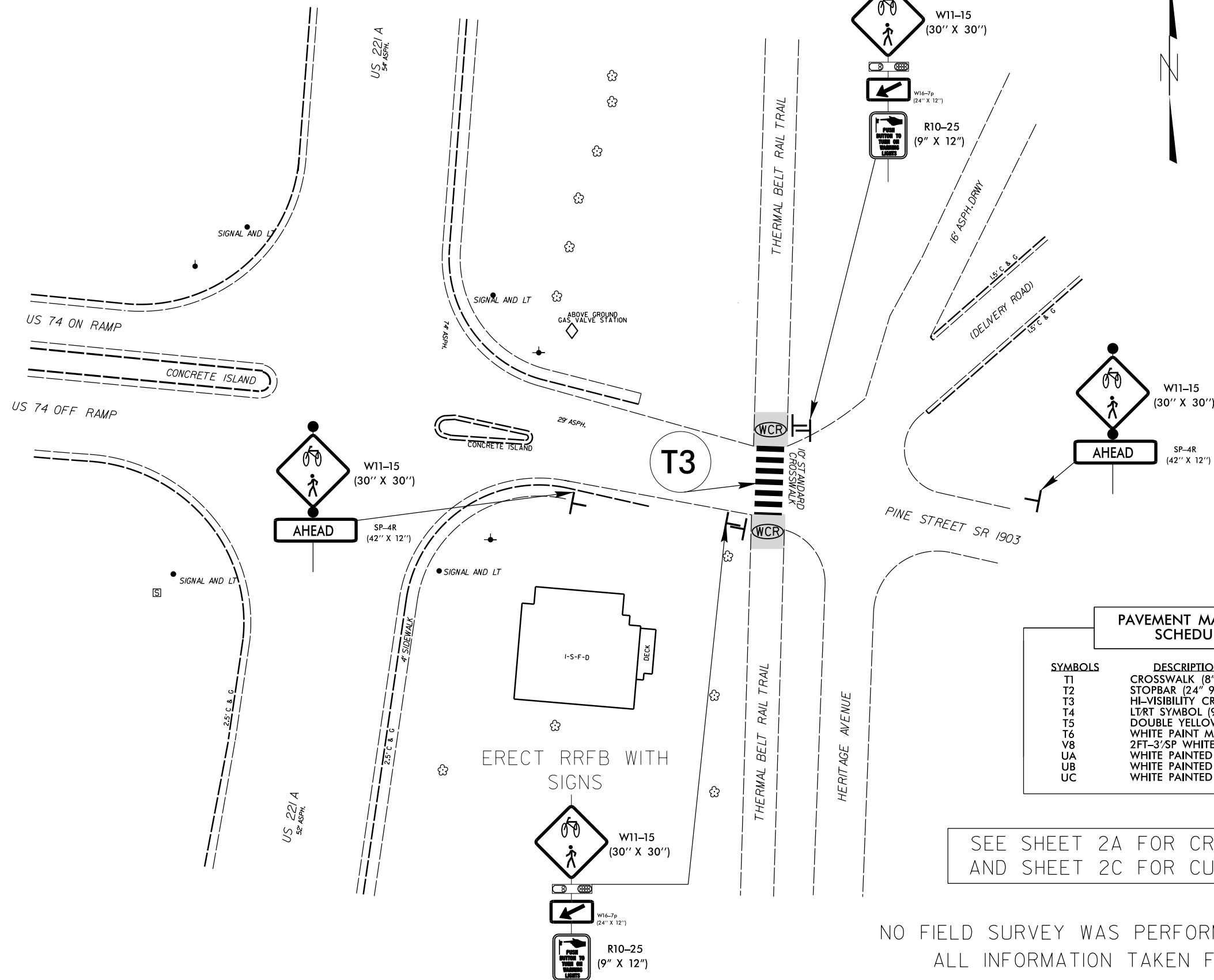
8/17/99

REVISIONS

PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>11</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# SITE 8

ERECT RRFB WITH SIGNS



SCAN WITH A QR READER FOR LOCATION

### PAVEMENT MARKING SCHEDULE

SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	LTRT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT STRAIGHT ARROW

SEE SHEET 2A FOR CROSSWALK DETAILS AND SHEET 2C FOR CURB RAMP DETAILS

NO FIELD SURVEY WAS PERFORMED ON THIS PROJECT. ALL INFORMATION TAKEN FROM NC ONE MAP

03 8/17/21

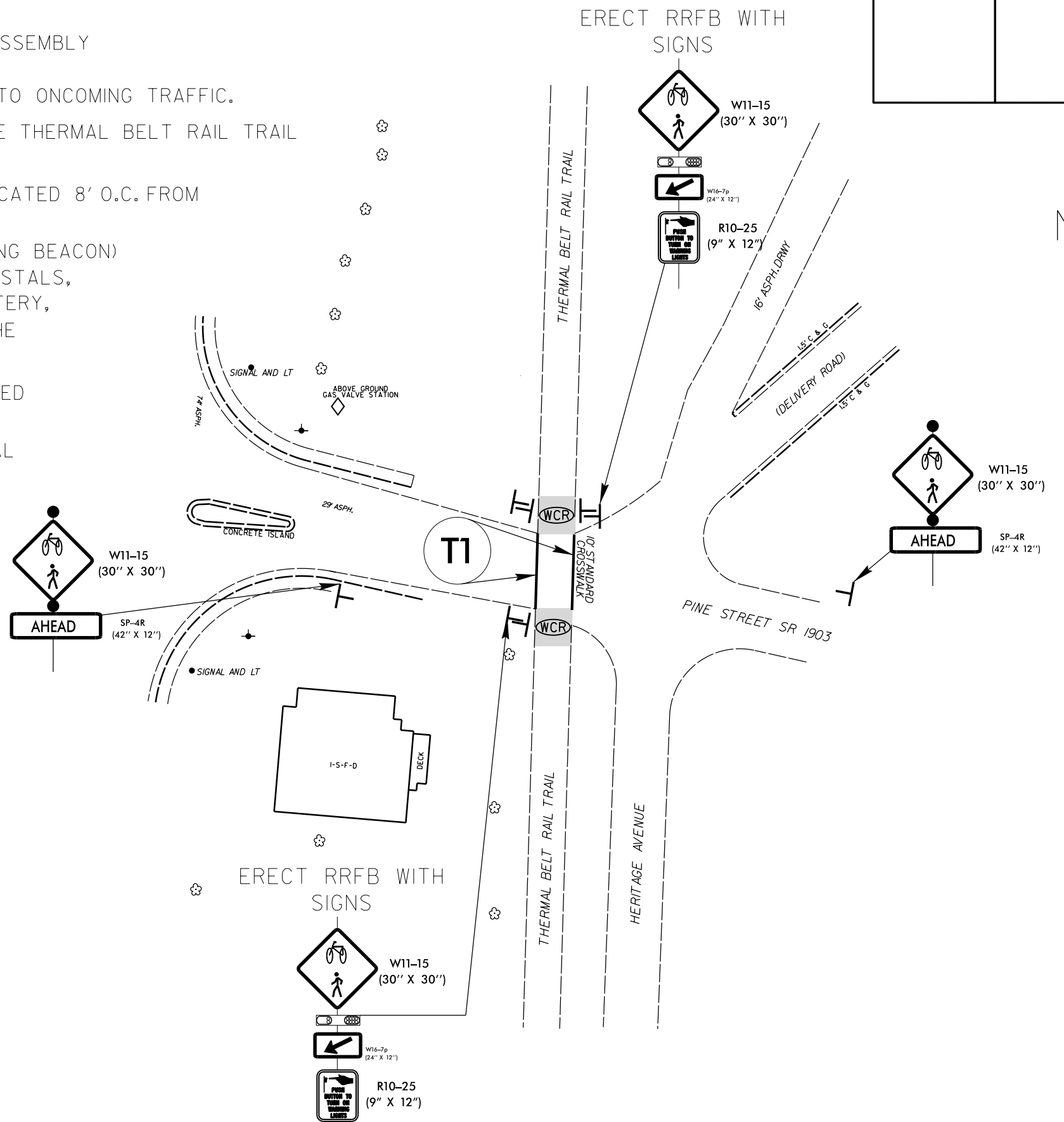
# SITE 8

## RECTANGULAR RAPID FLASHING BEACON (RRFB) INSTALLATION NOTES:

1. ALIGN THE FRONT FACE OF THE PEDESTRIAN PUSH BUTTON ASSEMBLY PARALLEL WITH THE CROSSWALK.
2. SIGN FACE AND RRFB BAR WILL BE ALIGNED PERPENDICULAR TO ONCOMING TRAFFIC.
3. THE DISTANCE OF THE PUSH BUTTON FROM THE EDGE OF THE THERMAL BELT RAIL TRAIL SHOULD BE NO GREATER THAN 1'-6".
4. THE NORMAL DUTY (TYPE II) PEDESTAL (I743.02) SHALL BE LOCATED 8' O.C. FROM THE ROADWAY EDGE OF PAVEMENT.
5. THE LUMP SUM ITEM FOR RRFB (RECTANGULAR RAPID FLASHING BEACON) SHALL INCLUDE BUT NOT LIMITED TO THE FOUNDATIONS, PEDESTALS, SIGNS, PUSH BUTTONS, FLASHING BEACONS, SOLAR PANEL, BATTERY, CONTROLLER ASSEMBLY AND ALL INCIDENTALS RELATED TO THE INSTALLATION OF THE RRFB.
6. THE RRFB AND ADVANCE WARNING FLASHING BEACONS WILL NEED TO BE SYNCHRONIZED WITH EACH OTHER.
7. THE SYSTEM IS OPERATED BY REMOTE CONTROL RADIO SIGNAL AND SOLAR POWER

PROJECT REFERENCE NO. <b>EB-5915</b>	SHEET NO. <b>11A</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS



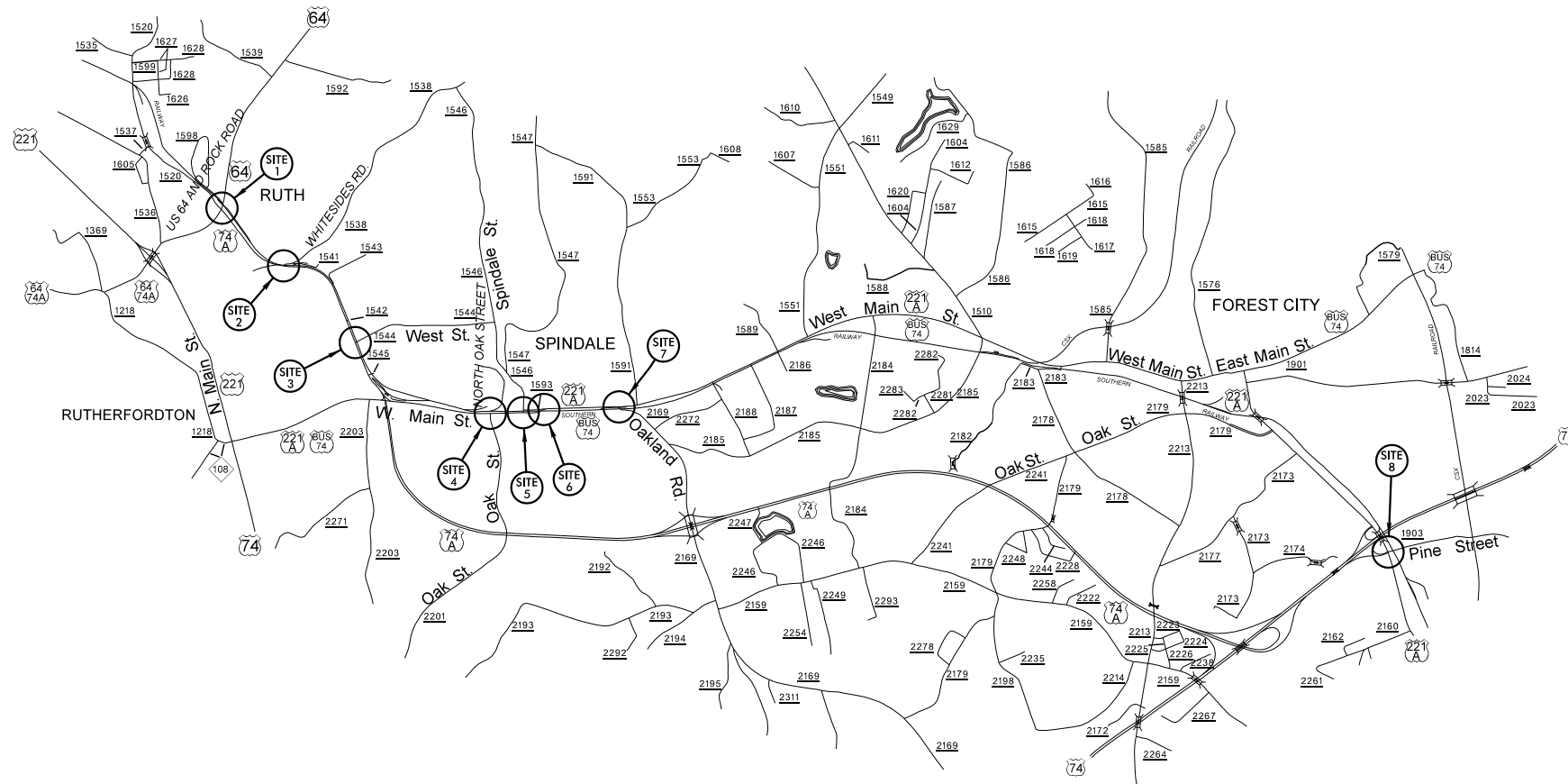
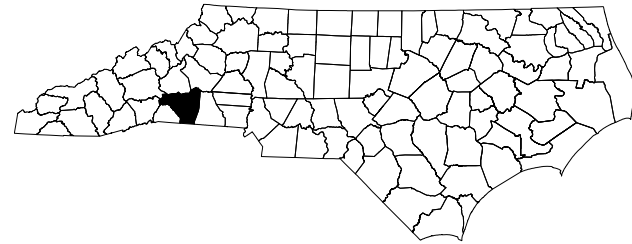
PAVEMENT MARKING SCHEDULE	
SYMBOLS	DESCRIPTION
T1	CROSSWALK (8" 90 MILS)
T2	STOPBAR (24" 90 MILS)
T3	HI-VISIBILITY CROSSWALK
T4	L&RT SYMBOL (90 MILS)
T5	DOUBLE YELLOW PAINT MARKINGS (4")
T6	WHITE PAINT MARKINGS (4")
V8	2FT-3"/SP WHITE MINISKIP (4" PAINT)
UA	WHITE PAINTED LT ARROW
UB	WHITE PAINTED RT ARROW
UC	WHITE PAINTED RT/STRAIGHT ARROW



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PEDESTRIAN TRANSPORTATION MANAGEMENT PLAN**

**RUTHERFORD COUNTY**



**INDEX OF SHEETS**

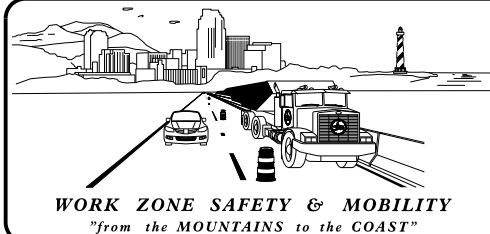
SHEET NO.	TITLE
PED-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
PED-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, GENERAL NOTES, AND LOCAL NOTES
PED-2	SITE 1 (ROCK RD & US 64)
PED-3	SITE 2 (WHITESIDES RD)
PED-4	SITE 3 (WEST ST)
PED-5	SITE 4 (NORTH OAK ST)
PED-6	SITE 5 (SPINDALE ST)
PED-7	SITE 6 (MAIN ST)
PED-8	SITE 7 (OAKLAND RD)
PED-9	SITE 8 (PINE ST)

SHEET NO.

PED-1

**TIP PROJECT: EB-5915**

**TIP PROJECT:**

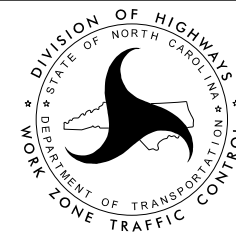


PLANS PREPARED BY:

NCDOT CONTACTS:

PROJECT ENGINEER

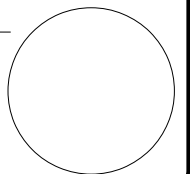
PROJECT DESIGN ENGINEER



APPROVED: \_\_\_\_\_

DATE: \_\_\_\_\_

SEAL



# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY - DRUMS

## LOCAL NOTES

- 1) NOTIFY RUTHERFORD COUNTY EMERGENCY AND PUBLIC SCHOOLS AT LEAST ONE MONTH PRIOR TO ANY ROAD CONSTRUCTION.
- 2) ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
- 3) MAINTAIN ACCESS TO EXISTING DRIVEWAYS AT ALL TIME.

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- 4" ABC

## TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- SPOTTER

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

## GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENT, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE ENGINEER.

### TIME RESTRICTIONS

- A) REFER TO CONTRACT FOR INTERMEDIATE CONTRACT TIMES

### TRAIL CLOSURE REQUIREMENTS

- B) REMOVE TRAIL CLOSURE DEVICES FROM TRAIL WHEN WORK IS NOT BEING PERFORMED BEHIND THE TRAIL CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER

### TRAFFIC PATTERN ALTERATIONS

- C) NOTIFY THE ENGINEER SEVEN (7) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATIONS

### SIGNING

- D) ALL SIGNS SHALL BE PLACED BETWEEN MONDAY THRU FRIDAY BETWEEN THE HOURS 8PM TILL 7AM.

- E) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND PEDESTRIAN TRAFFIC CONTROL PLANS

- F) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAIL PATTERN

### PEDESTRIAN TRAFFIC CONTROL DEVICES

- G) PLACE ADA COMPLIANT BARRICADES, WITH "SIDEWALK CLOSED" SIGN R9-9 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE TRAIL

- H) CONTRACTOR TO SUPPLY SPOTTER TO ASSIST PEDESTRIANS IN CROSSING TRAIL DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR FURNISHING A SPOTTER. PAYMENT AT THE CONTRACT UNIT PRICES FOR VARIOUS PAY ITEMS WILL BE FULL COMPENSATION TO COMPLETE THE WORK

### PAVEMENT MARKINGS AND MARKERS

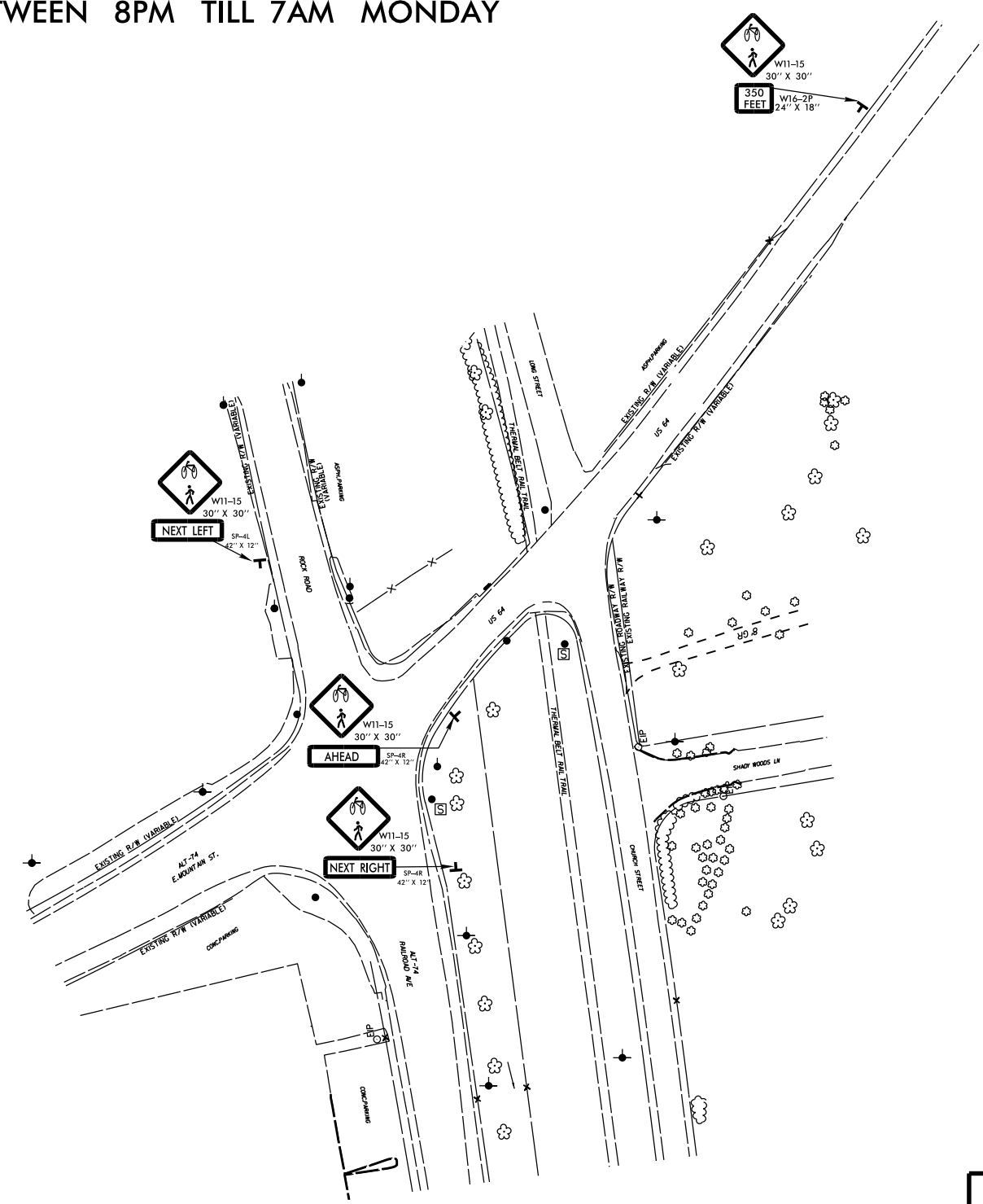
- I) PLACE TEMPORARY AND PERMANENT PAVEMENT MARKINGS BETWEEN MONDAY THRU FRIDAY BETWEEN 8PM TILL 7AM.

- J) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES

APPROVED: _____		
DATE: _____		
SEAL		

# SITE 1

**PEDESTRIAN TRAFFIC CONTROL NOTES:**  
 - ALL PAVEMENT MARKINGS AND SIGN INSTALLATION  
 TO BE PERFORMED BETWEEN 8PM TILL 7AM MONDAY  
 THRU FRIDAY



SCAN WITH A  
QR READER FOR  
LOCATION



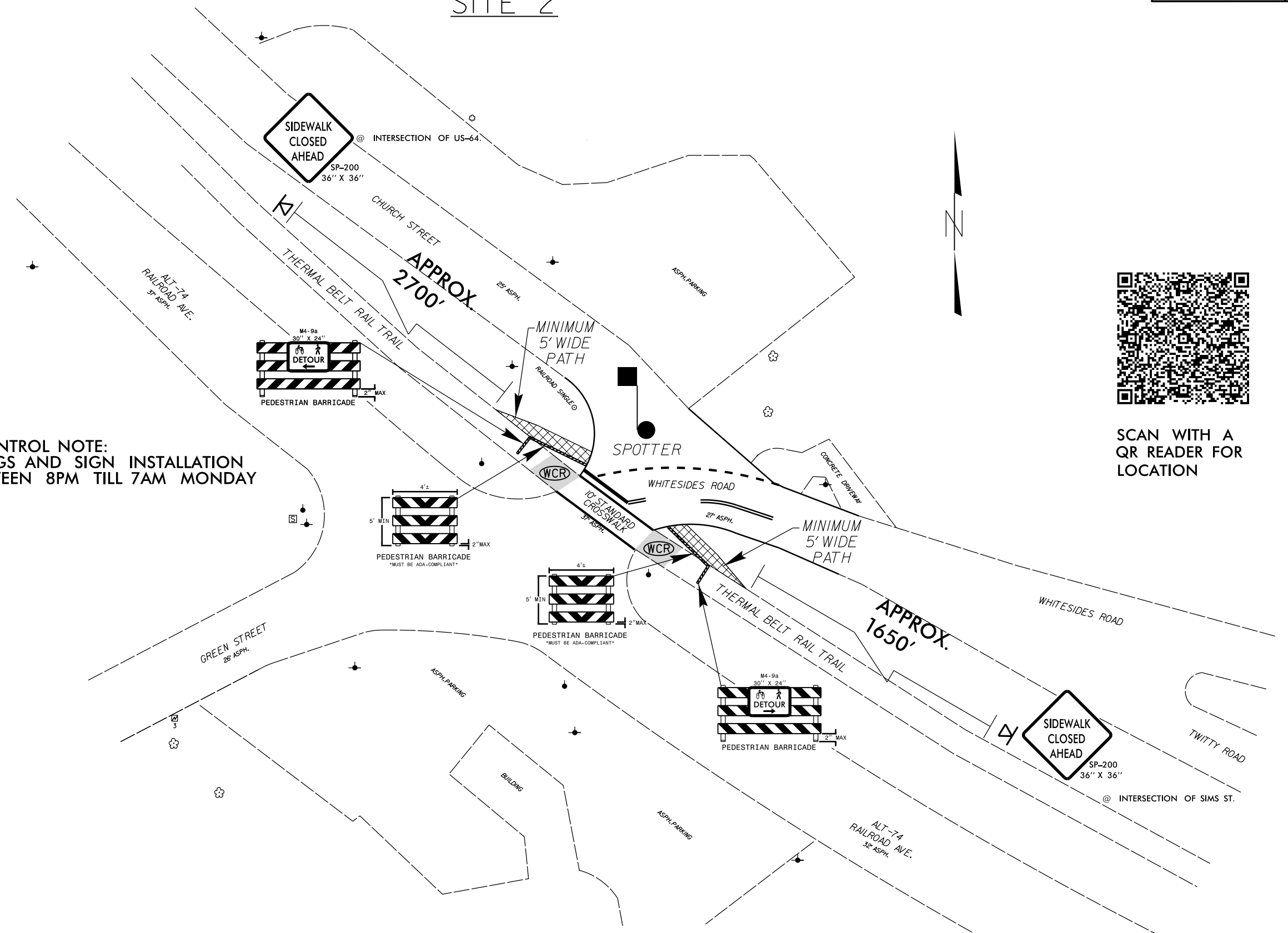
APPROVED: _____ DATE: _____ SEAL		
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# SITE 2

**PEDESTRIAN TRAFFIC CONTROL NOTE:**  
 - ALL PAVEMENT MARKINGS AND SIGN INSTALLATION  
 TO BE PERFORMED BETWEEN 8PM TILL 7AM MONDAY  
 THRU FRIDAY



SCAN WITH A QR READER FOR LOCATION

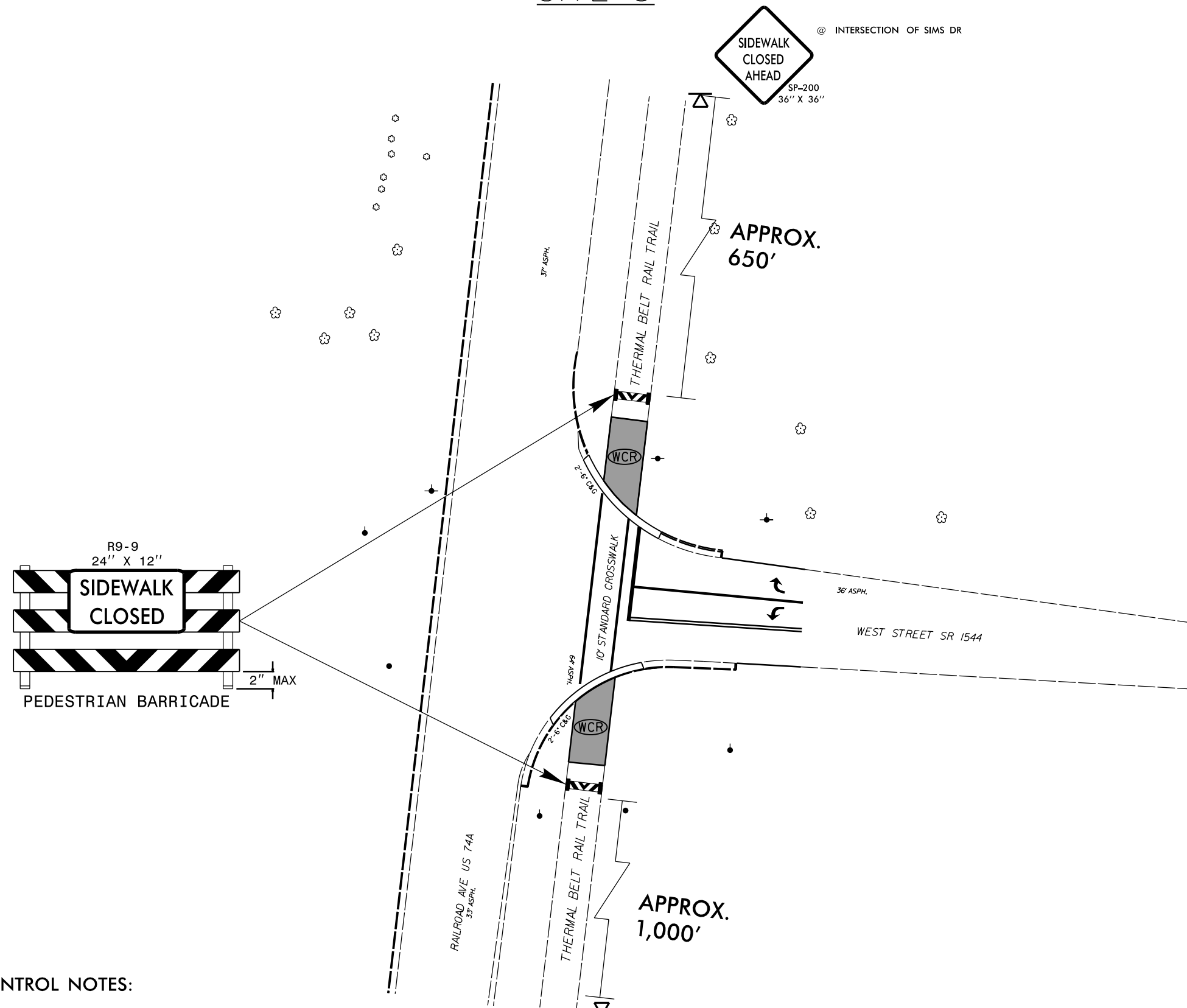


4" ABC STONE

APPROVED: _____ DATE: _____	SEAL	
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# SITE 3



SCAN WITH A QR READER FOR LOCATION

**PEDESTRIAN TRAFFIC CONTROL NOTES:**

- CONSTRUCTION REQUIRES A COMPLETE TRAIL CLOSURE.
- CONTRACTOR WILL HAVE A 5 DAY ICT ON THIS SITE.
- CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER A NOTIFICATION 7 DAYS IN ADVANCE OF CLOSURE.



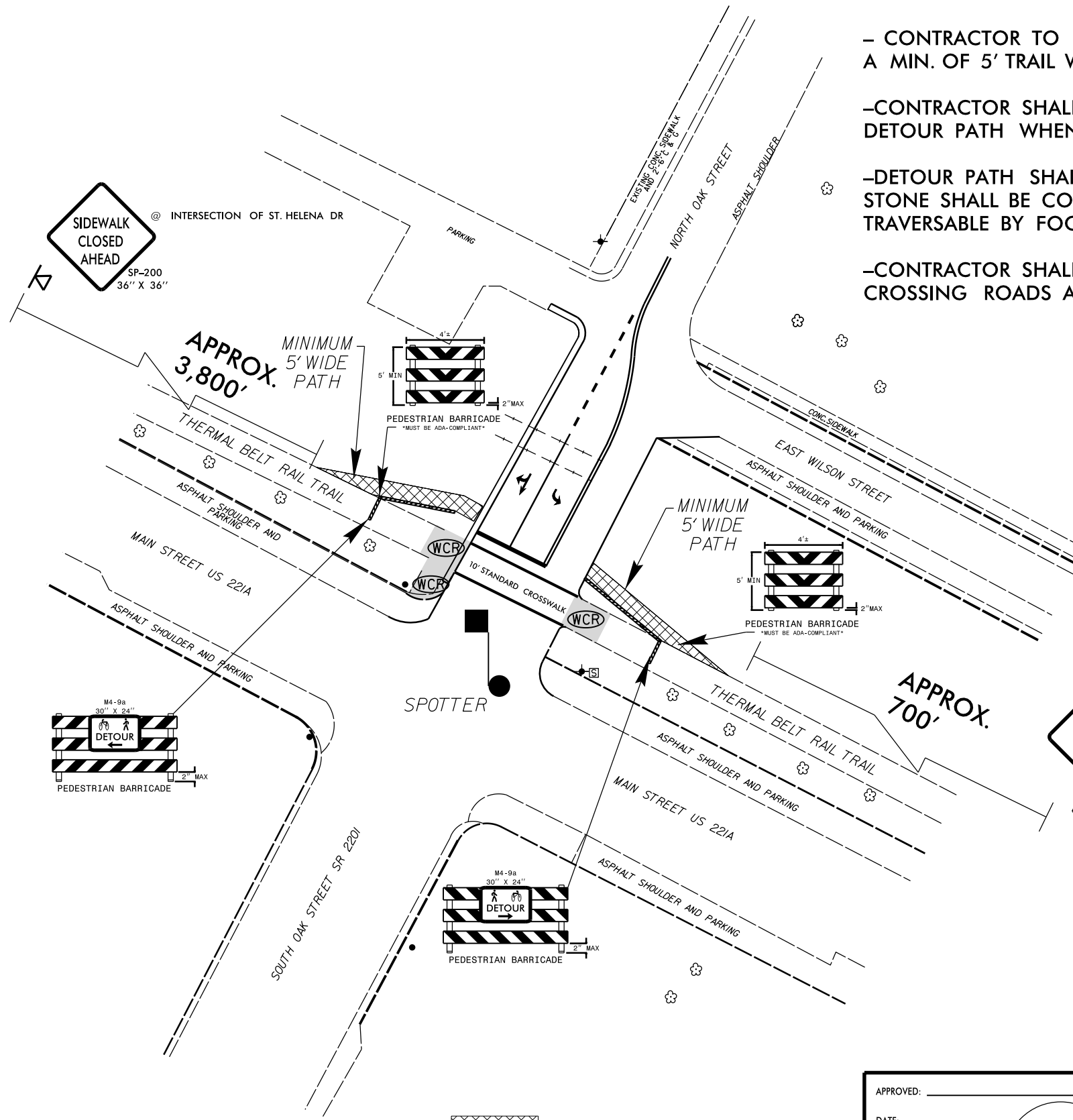
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SEAL	

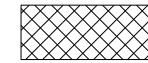
# SITE 4


## PEDESTRIAN TRAFFIC CONTROL NOTES:

- CONTRACTOR TO USE CHANNELIZATION DEVICES TO MAINTAIN A MIN. OF 5' TRAIL WIDTH DURING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN A 5' WIDE DETOUR PATH WHEN TRAIL IS UNDER CONSTRUCTION.
- DETOUR PATH SHALL BE CONSTRUCTED OF 4" ABC STONE. STONE SHALL BE COMPACTED TO BE FIRM, STABLE, AND TRAVERSABLE BY FOOT OR BIKE.
- CONTRACTOR SHALL PROVIDE SPOTTER TO ASSIST IN PEDESTRIANS CROSSING ROADS ANDS STREETS.

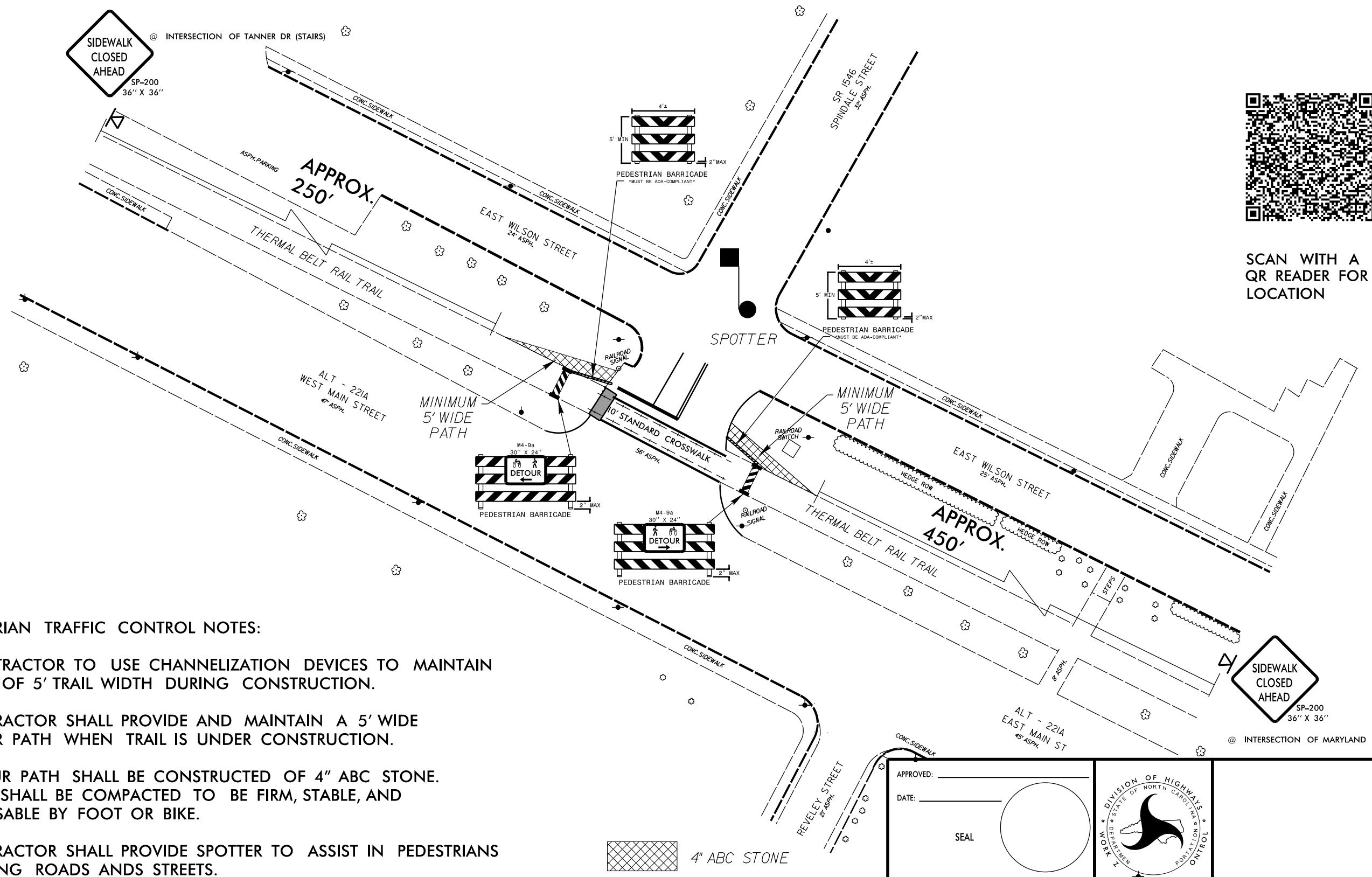


SCAN WITH A QR READER FOR LOCATION

 4" ABC STONE

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# SITE 5



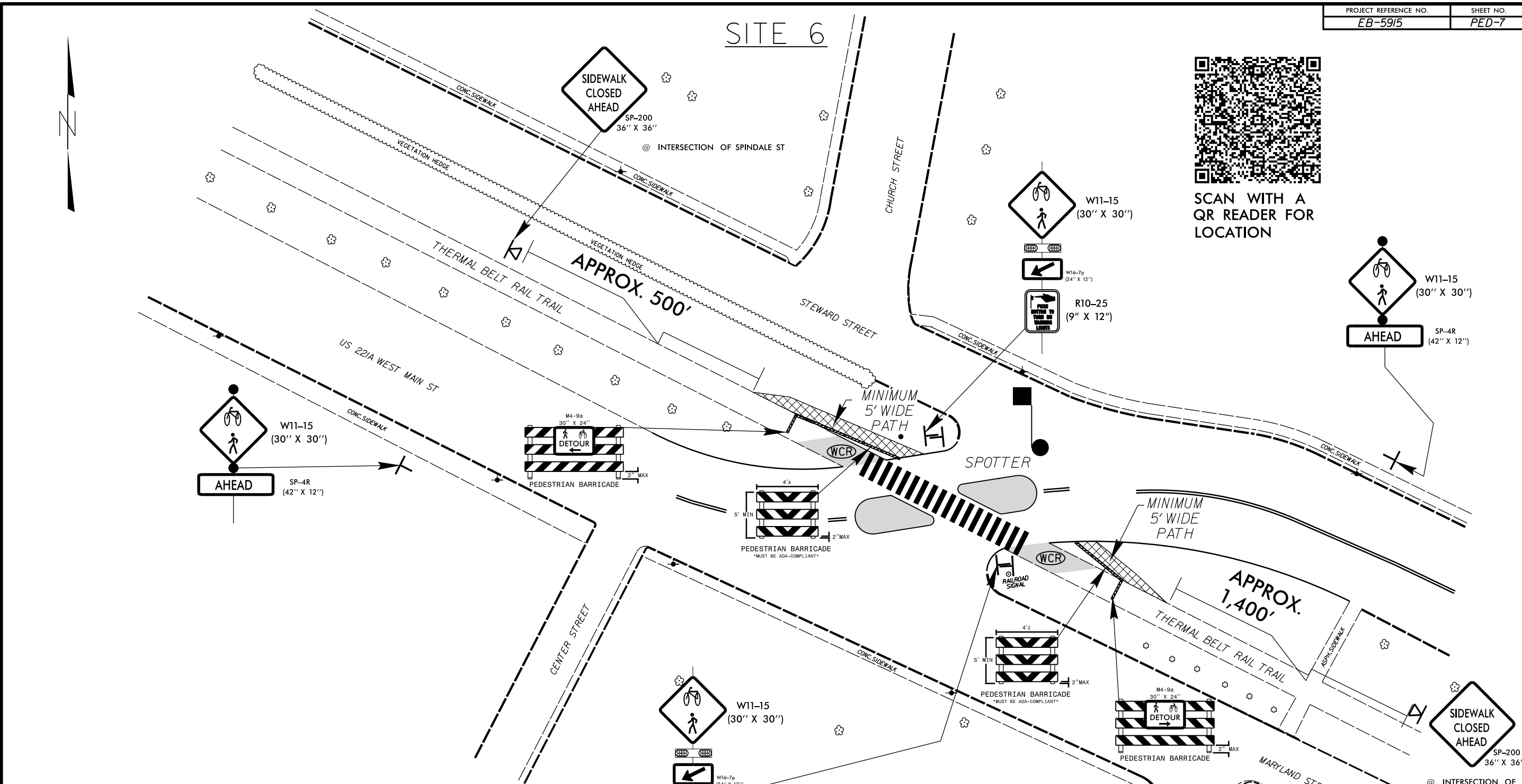
SCAN WITH A QR READER FOR LOCATION

**PEDESTRIAN TRAFFIC CONTROL NOTES:**

- CONTRACTOR TO USE CHANNELIZATION DEVICES TO MAINTAIN A MIN. OF 5' TRAIL WIDTH DURING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN A 5' WIDE DETOUR PATH WHEN TRAIL IS UNDER CONSTRUCTION.
- DETOUR PATH SHALL BE CONSTRUCTED OF 4" ABC STONE. STONE SHALL BE COMPACTED TO BE FIRM, STABLE, AND TRAVERSABLE BY FOOT OR BIKE.
- CONTRACTOR SHALL PROVIDE SPOTTER TO ASSIST IN PEDESTRIANS CROSSING ROADS ANDS STREETS.

4" ABC STONE

APPROVED: _____ DATE: _____ <div style="text-align: center; margin-top: 20px;">SEAL</div>		
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SCAN WITH A QR READER FOR LOCATION

**PEDESTRIAN TRAFFIC CONTROL NOTES:**

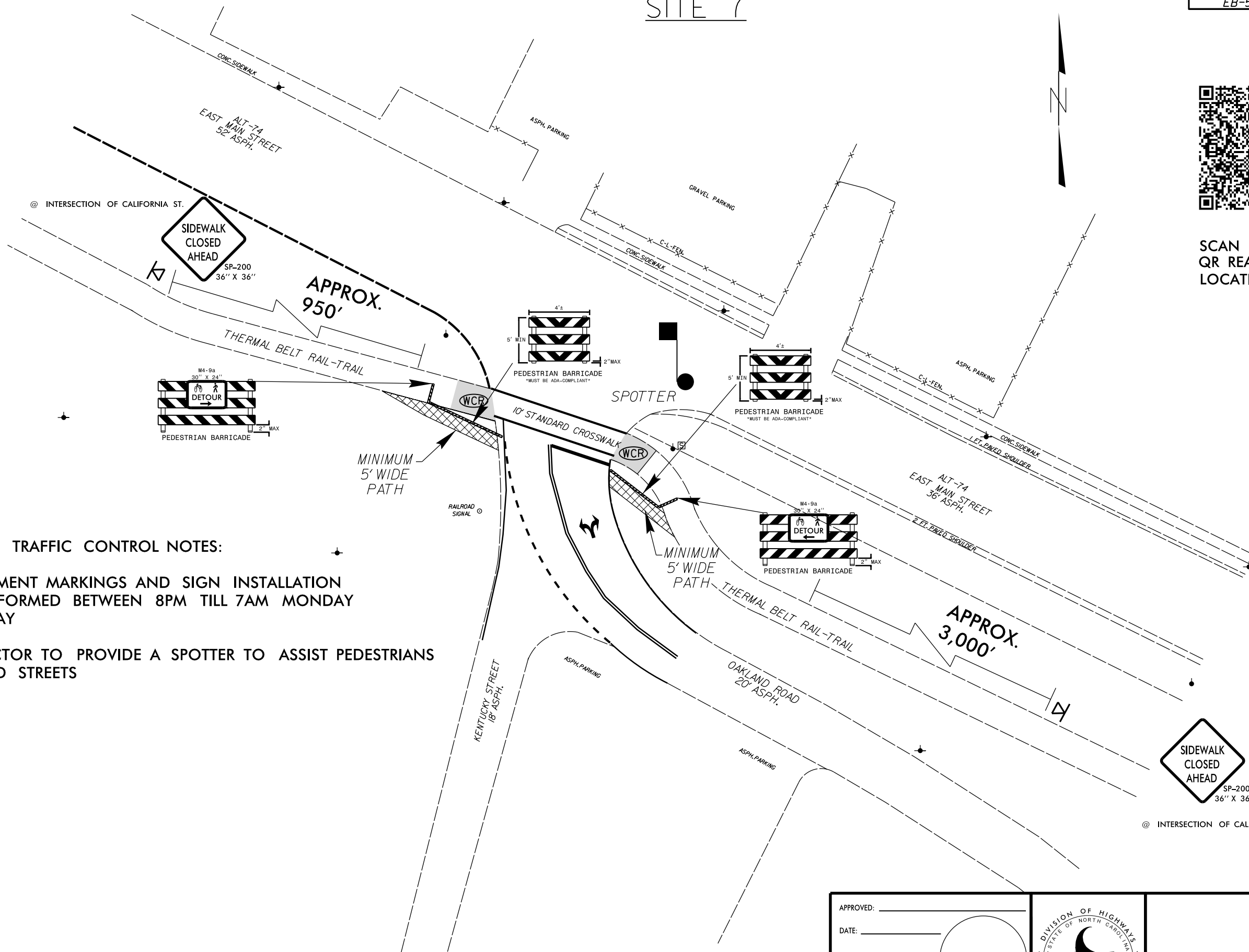
- ALL PAVEMENT MARKINGS AND SIGN INSTALLATION TO BE PERFORMED BETWEEN 8PM TILL 7AM MONDAY THRU FRIDAY
- CONTRACTOR TO PROVIDE A SPOTTER TO ASSIST PEDESTRIANS ROADS AND STREETS

APPROVED: _____	
DATE: _____	
SEAL	

# SITE 7






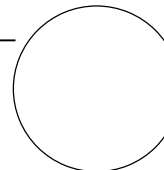
SCAN WITH A QR READER FOR LOCATION



**PEDESTRIAN TRAFFIC CONTROL NOTES:**

- ALL PAVEMENT MARKINGS AND SIGN INSTALLATION TO BE PERFORMED BETWEEN 8PM TILL 7AM MONDAY THRU FRIDAY
- CONTRACTOR TO PROVIDE A SPOTTER TO ASSIST PEDESTRIANS ROADS AND STREETS

 4" ABC STONE

APPROVED: _____		
DATE: _____		
SEAL 		

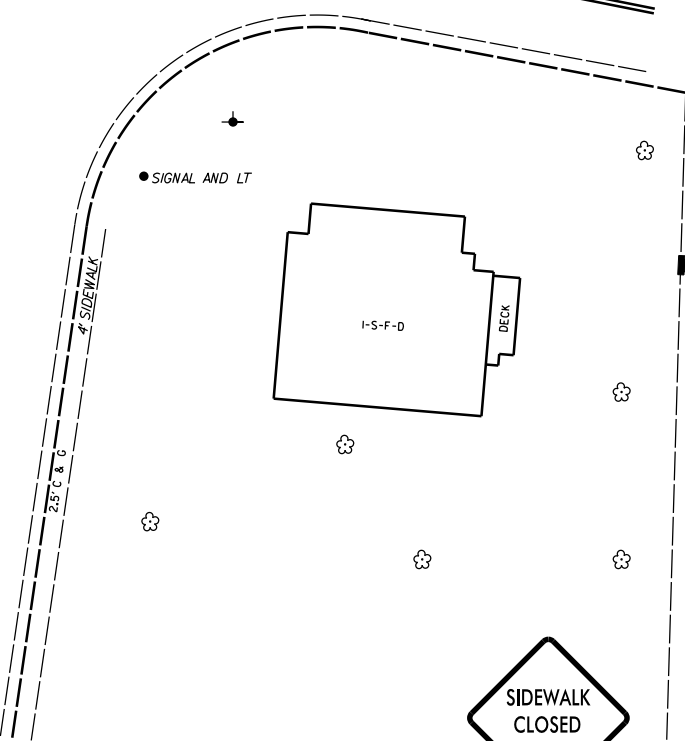
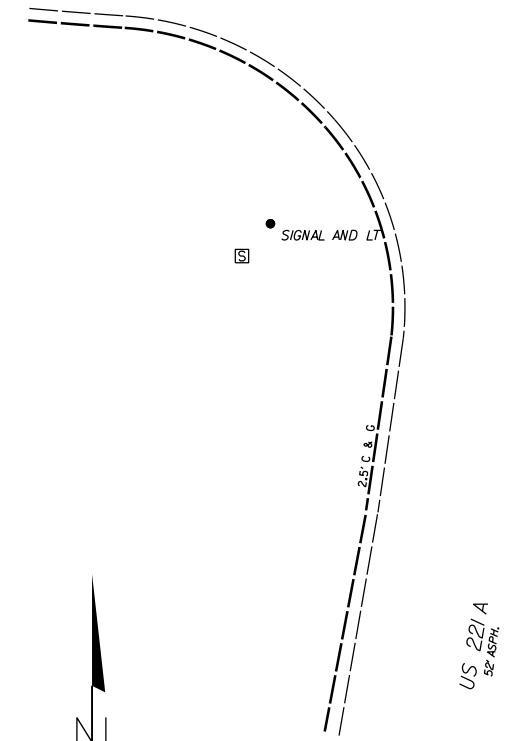
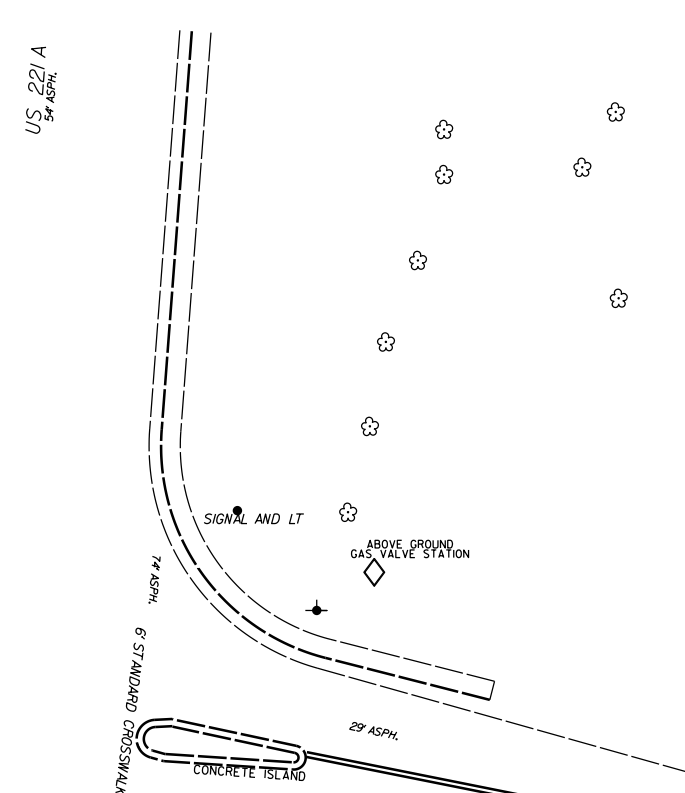
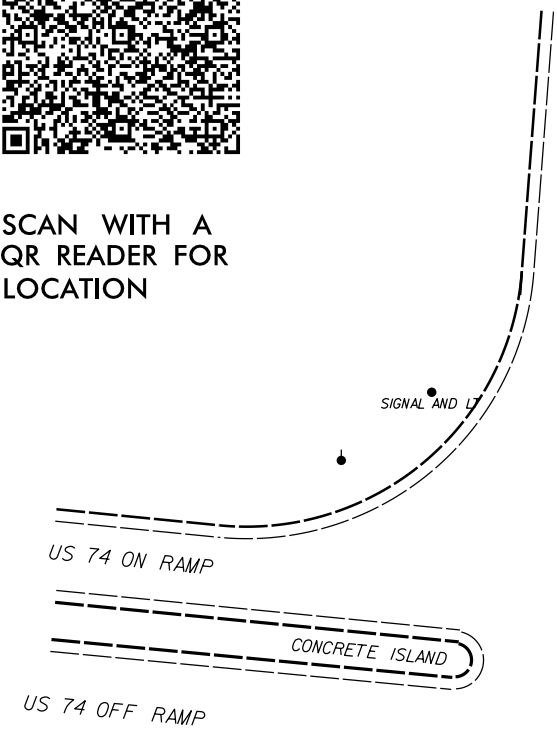
# SITE 8

AS DIRECTED BY THE ENGINEER

@ INTERSECTION OF BEAVER ST

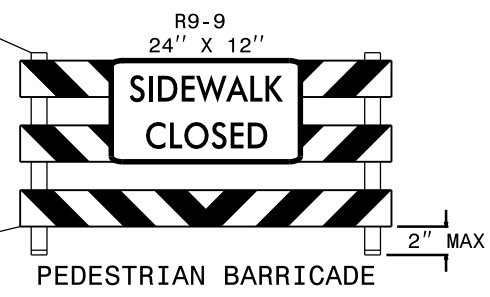


SCAN WITH A QR READER FOR LOCATION



APPROX. 708'

- PEDESTRIAN TRAFFIC CONTROL NOTES:
- CONSTRUCTION REQUIRES A COMPLETE SIDEWALK AND TRAIL CLOSURE.
  - CONTRACTOR WILL HAVE A 5 DAY ICT ON THIS SITE.
  - CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER A NOTIFICATION 7 DAYS IN ADVANCE OF CLOSURE.
  - CONTRACTOR SHALL PROVIDE SPOTTER TO ASSIST IN PEDESTRIAN CROSSING THE ROAD AND TRAIL.

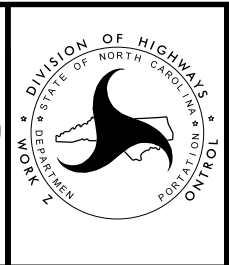


APPROX. 525'

@ INTERSECTION OF ALLEN ST



APPROVED: \_\_\_\_\_  
DATE: \_\_\_\_\_  
SEAL



S:\AUG 2019\10\F51 Signals\SIGNAL Design Section\Western Region\Div-13\EB-5915\EB-5915-sig\_tsh.dgn

**Project: EB-5915**

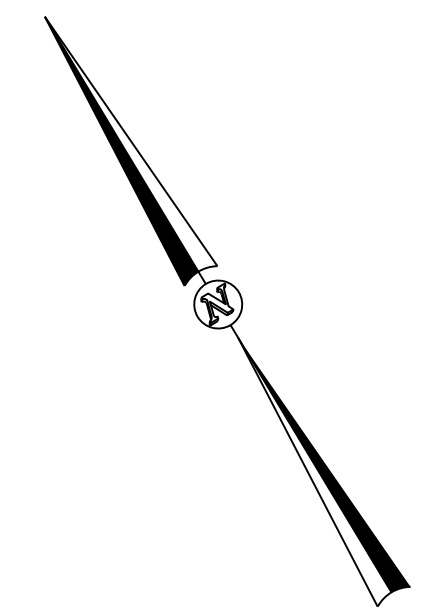
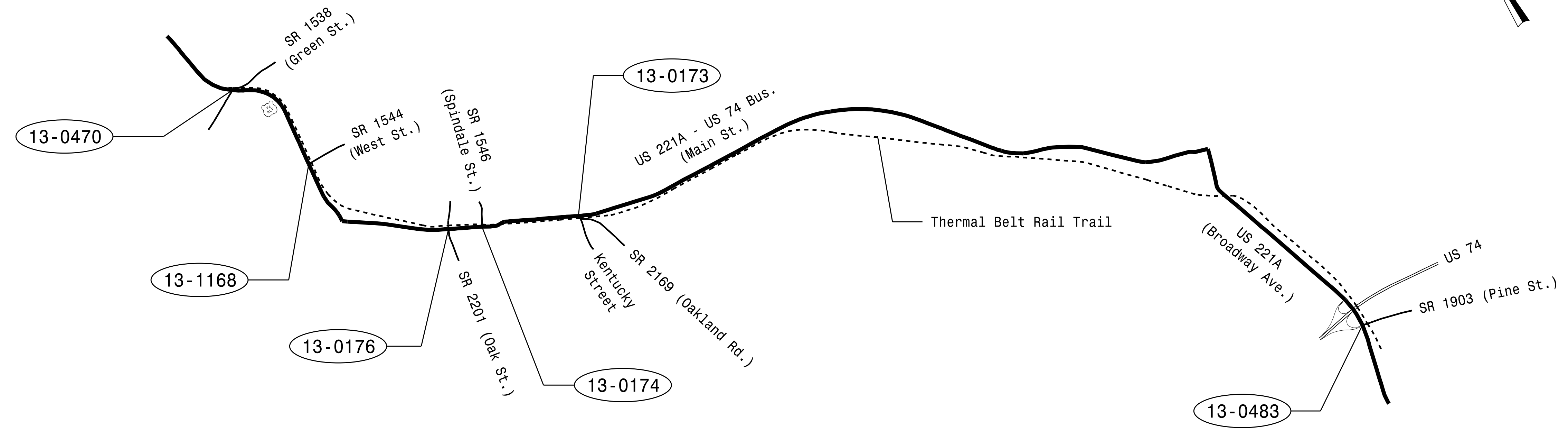
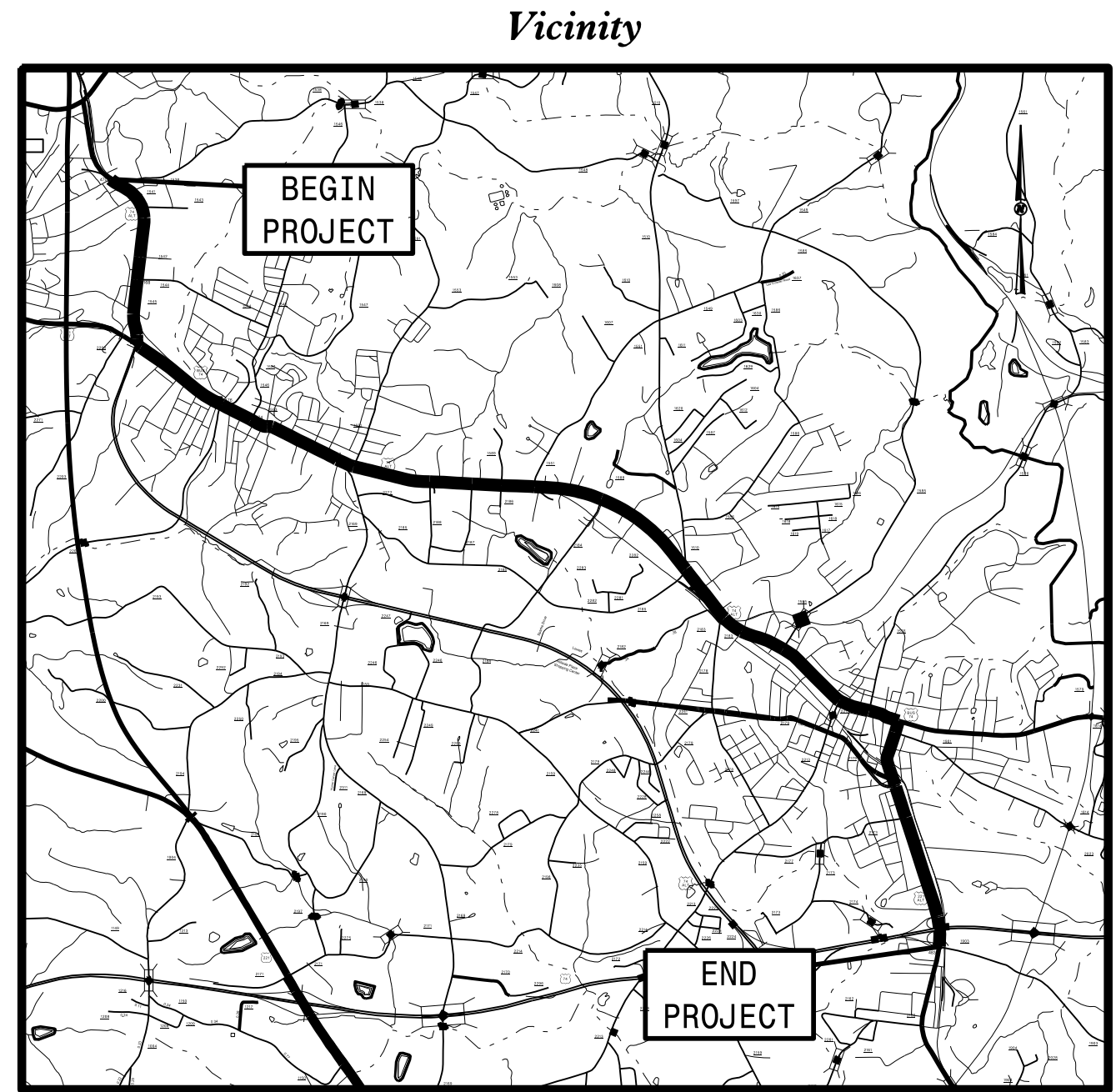
Project No. <b>EB-5915</b>	Sheet No. <b>Sig. 1.0</b>
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**RUTHERFORD COUNTY**

**LOCATION: US 221A - US 74 BUS. (MAIN ST.) FROM SR 1538 (GREEN ST.) TO SR 1903 (PINE ST.)**

**TYPE OF WORK: TRAFFIC SIGNALS**



Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.

Index of Plans		
Sheet #	Reference #	Location/Description
Sig. 1.0	-----	Title Sheet
Sig. 2.0-2.1	13-0470	US 74A (Railroad Ave.) at SR 1538 (Green St.)
Sig. 3.0-3.2	13-1168	US 74A (Railroad Ave.) at SR 1544 (West St.)
Sig. 4.0-4.1	13-0176	US 221A-US 74 Bus. (Main St.) at SR 2201 (Oak St.)
Sig. 5.0-5.2	13-0174	US 221A-US 74 Bus. (Main St.) at SR 1546 (Spindale St.)
Sig. 6.0-6.1	13-0173	US 221A-US 74 Bus. (Main St.) at SR 2169 (Oakland Rd.)
Sig. 7.0-7.2	13-0483	US 221A (Broadway Ave.) at US 74 Eastbound Ramp/SR 1903 (Pine St.)
Sig. 8.0-8.1	-----	Revised Standard Drawings

**TRANSPORTATION SYSTEMS  
MANAGEMENT & OPERATIONS**

Contacts:

**Timothy J. Williams, PE - Western Region Signals Engineer**  
**Keith Mims, PE - Signal Equipment Design Engineer**

Prepared in the Office of:  
DIVISION OF HIGHWAYS  
TRANSPORTATION MOBILITY & SAFETY DIVISION

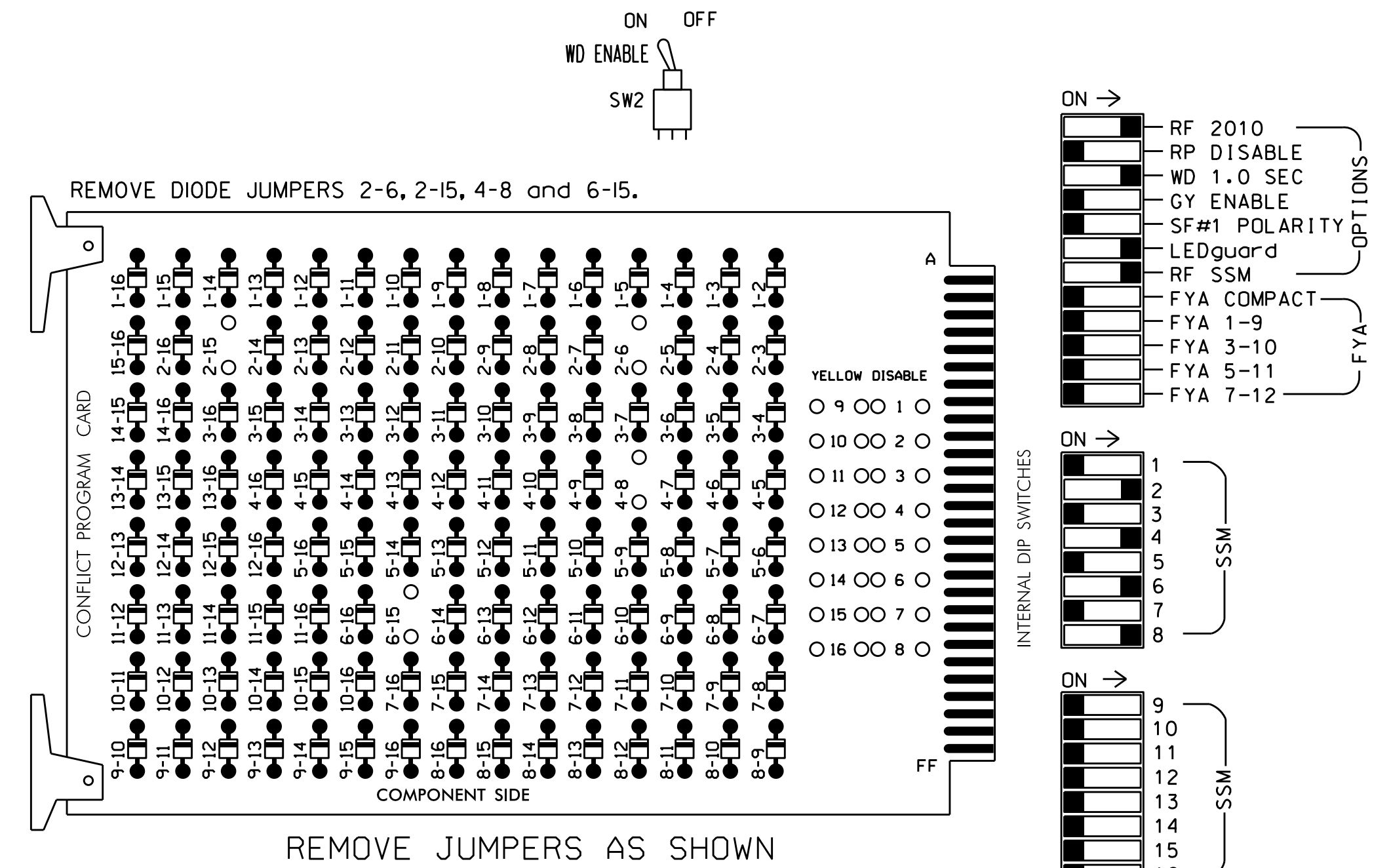
750 N. Greenfield Parkway, Garner, NC 27529





**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



- REMOVE DIODE JUMPERS 2-6, 2-15, 4-8 and 6-15.
- REMOVE JUMPERS AS SHOWN
- 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.
- = DENOTES POSITION OF SWITCH

**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 Startup In Green.
- Program phase 6 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S6,S6P,S8  
 PHASES USED.....2,4,6,6 PED,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	P61, P62	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												
Hand icon										119		
Person icon										121		

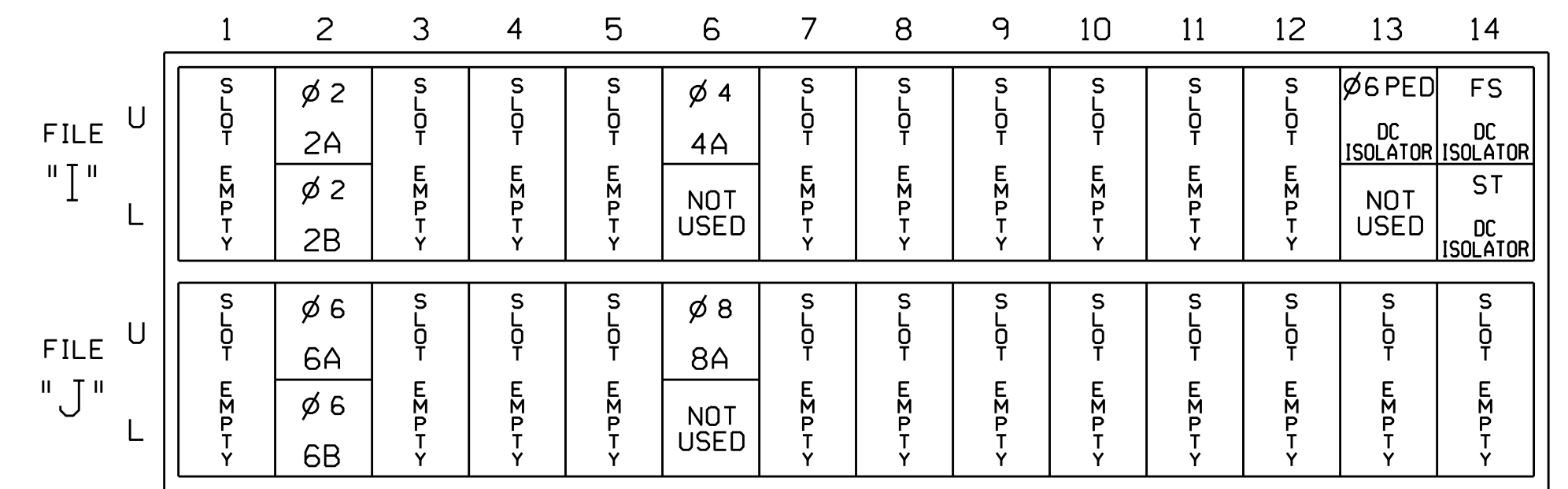
NU = Not Used

**COUNTDOWN PEDESTRIAN SIGNAL OPERATION**

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

**INPUT FILE POSITION LAYOUT**

(front view)



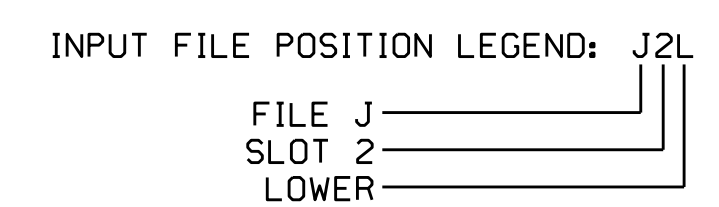
EX.: 1A, 2A, ETC. = LOOP NO.'S

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	TB2-5,6	I2U	39	1	2	2	Y	Y		2.0	
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y		2.0	
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:  
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 113.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-0470  
 DESIGNED: September 2019  
 SEALED: 9-20-19  
 REVISED: N/A

This Electrical Detail supersedes the detail sealed on 8-07-19.

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 74A (Railroad Ave.) at SR 1538 (Green St.)

Division 13 Rutherford County Ruth

PLAN DATE: September 2019 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE

DocuSigned by: Ryan W. Hough 10/1/2019

SIG. INVENTORY NO. 13-0470

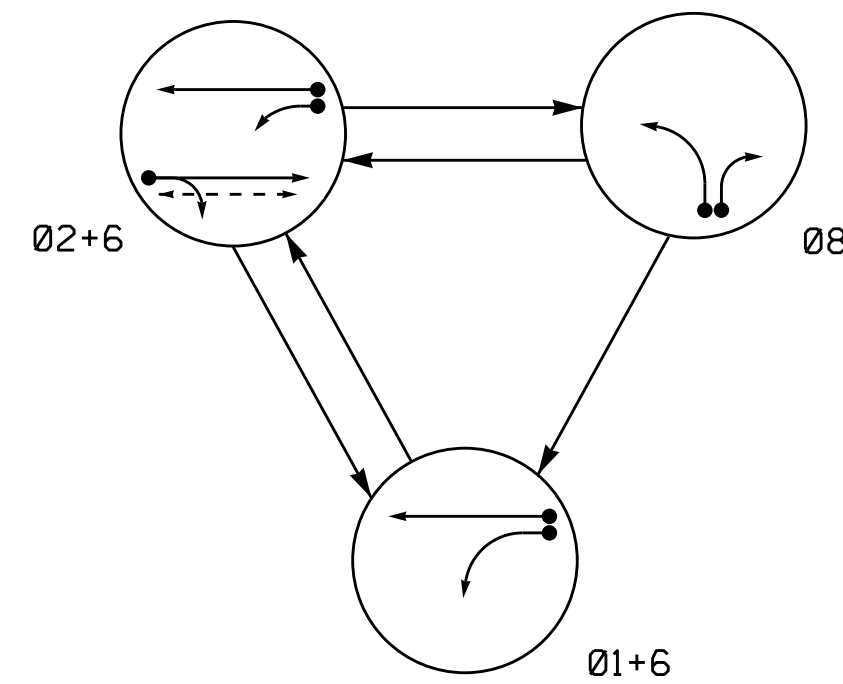
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 036833

ENGINEER RYAN W. HOUGH

PHASING DIAGRAM



SIGNAL FACE	PHASE			
	01+6	02+6	08	FLASH
21, 22	R	G	R	Y
61	G	G	R	Y
62	G	G	R	Y
81, 82	R	R	G	R
P21, P22	DW	W	DW	DRK

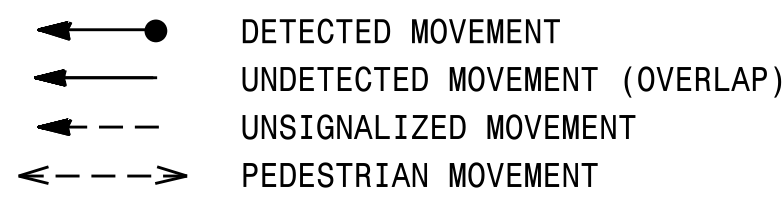
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
1A	6X40	+5	2-4-2	-	1	Y	Y	-	15	-	-	
					6	Y	Y	Y	3	-	-	
1B	6X40	+5	2-4-2	-	1	Y	Y	-	15	-	-	
2A	6X6	300	5	-	2	Y	Y	-	-	-	-	
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	
8A	6X40	+5	2-4-2	-	8	Y	Y	-	3	-	-	

3 Phase Fully Actuated Isolated

NOTES

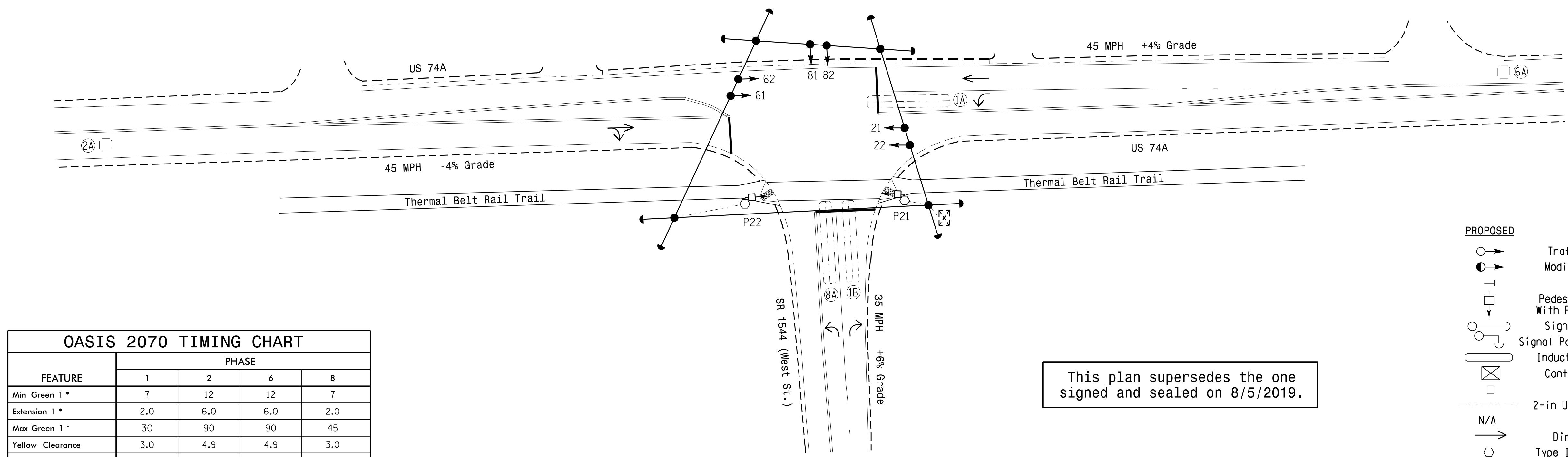
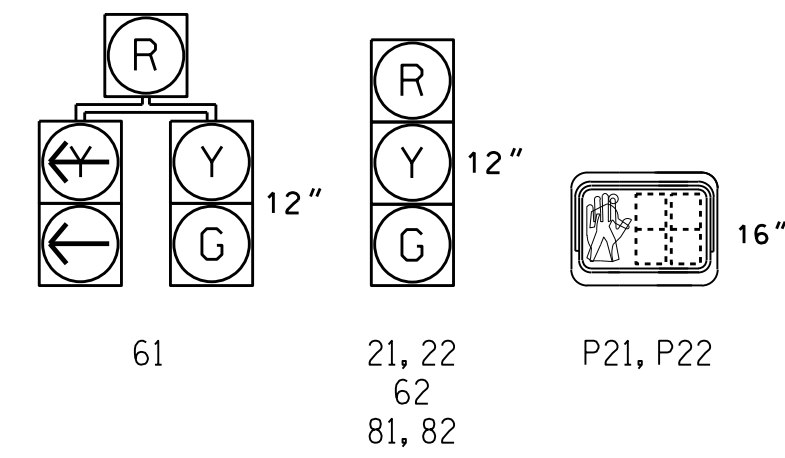
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Renumber all loops and signal heads as shown.
4. Phase 1 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

All Heads L.E.D.

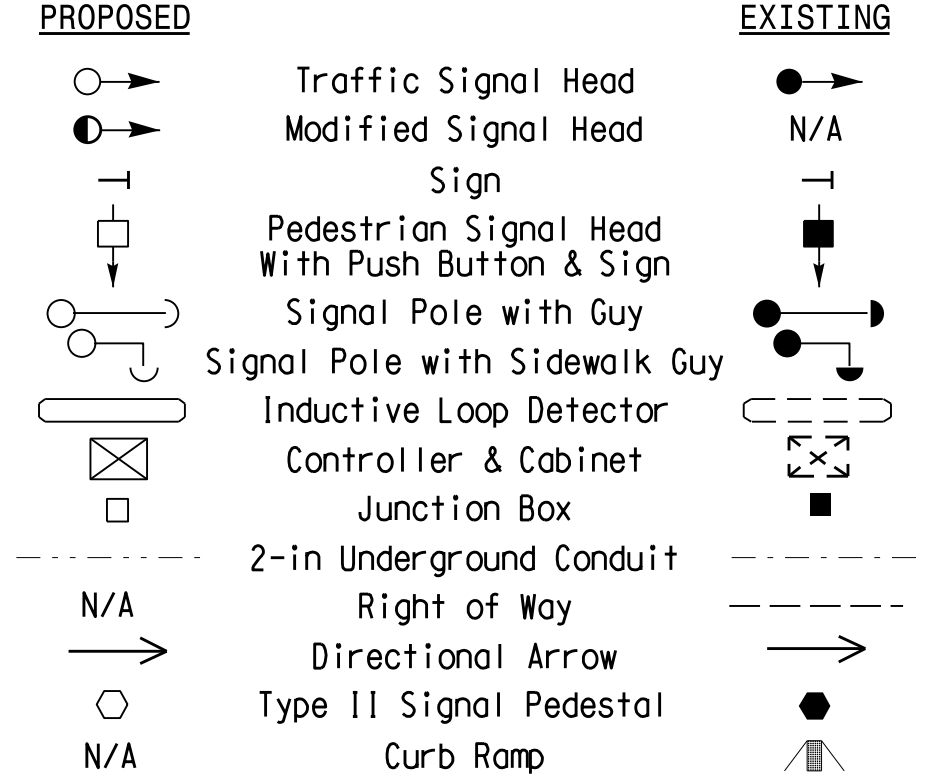


This plan supersedes the one signed and sealed on 8/5/2019.

OASIS 2070 TIMING CHART				
FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	30	90	90	45
Yellow Clearance	3.0	4.9	4.9	3.0
Red Clearance	1.9	1.0	1.0	2.3
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	-
Don't Walk 1	-	11	-	-
Seconds Per Actuation *	-	2.5	2.5	-
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



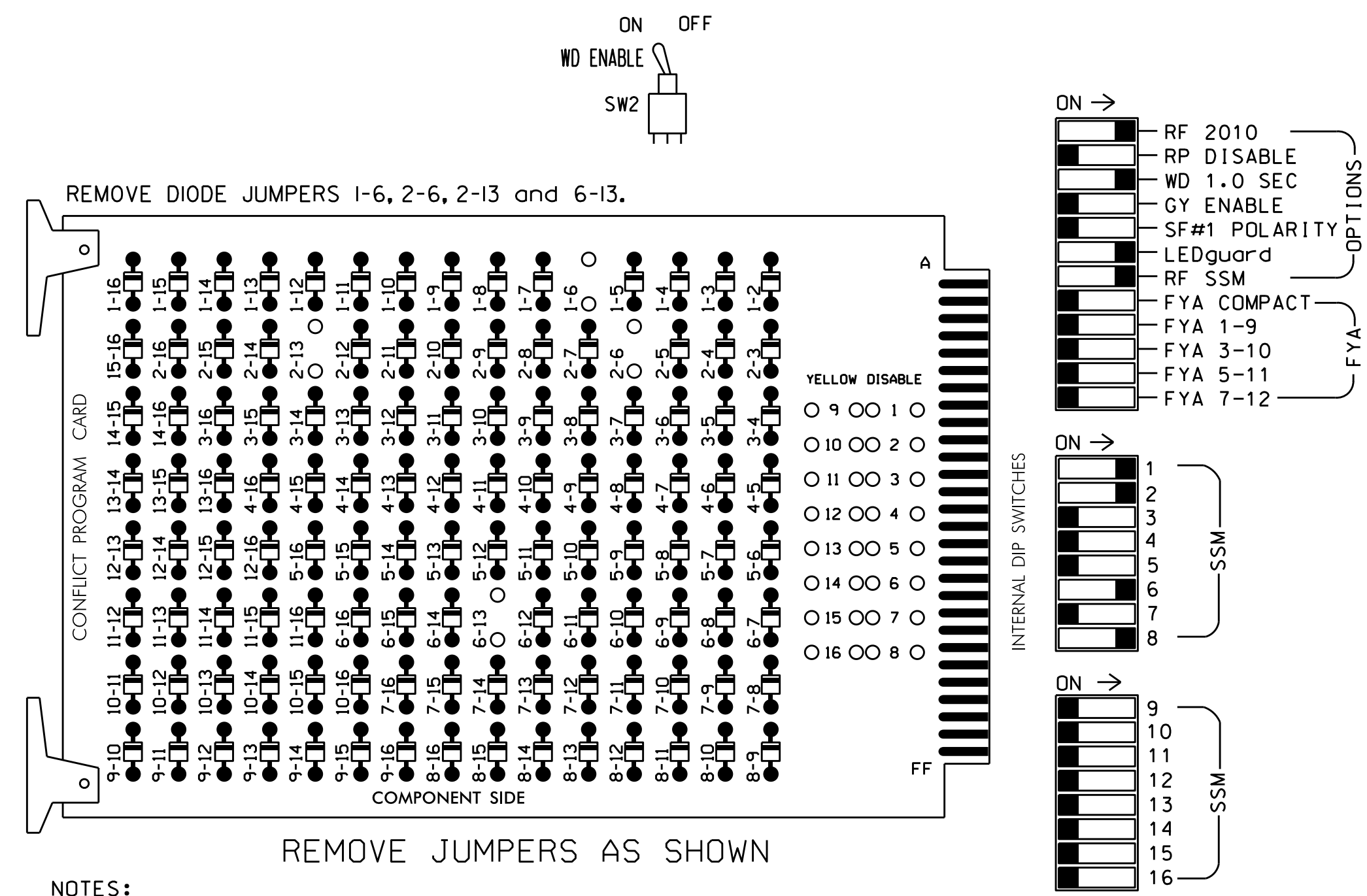
Signal Upgrade

Prepared in the Offices of:  
  
**US 74A at SR 1544 (West St.)**  
 Division 13 Rutherford County  
 PLAN DATE: September 2019 REVIEWED BY: T.J. Williams  
 PREPARED BY: R.N. Zinser REVIEWED BY:  
 SCALE: 1"=30'  
 DATE: 9/20/2019  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20-SEP-2019 10:05  
 S:\IT\5\JMK\TSS\Signal\ak5\Signal\_Design\_Sect\on\Western\_Reg\on\401v-13\EB-5915\13-1168\131168.sig.dsn,2019mdd.dgn  
 rnz:insz

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



### 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 3,4,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phase 2 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.

### 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.	61	21,22	P21, P22	NU	NU	NU	NU	61,62	NU	NU	81,82	NU
RED	*	128						134			107	
YELLOW		129						135			108	
GREEN		130						136			109	
RED ARROW												
YELLOW ARROW	126											
GREEN ARROW	127											
Hand icon			113									
Walking person icon			115									

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

### EQUIPMENT INFORMATION

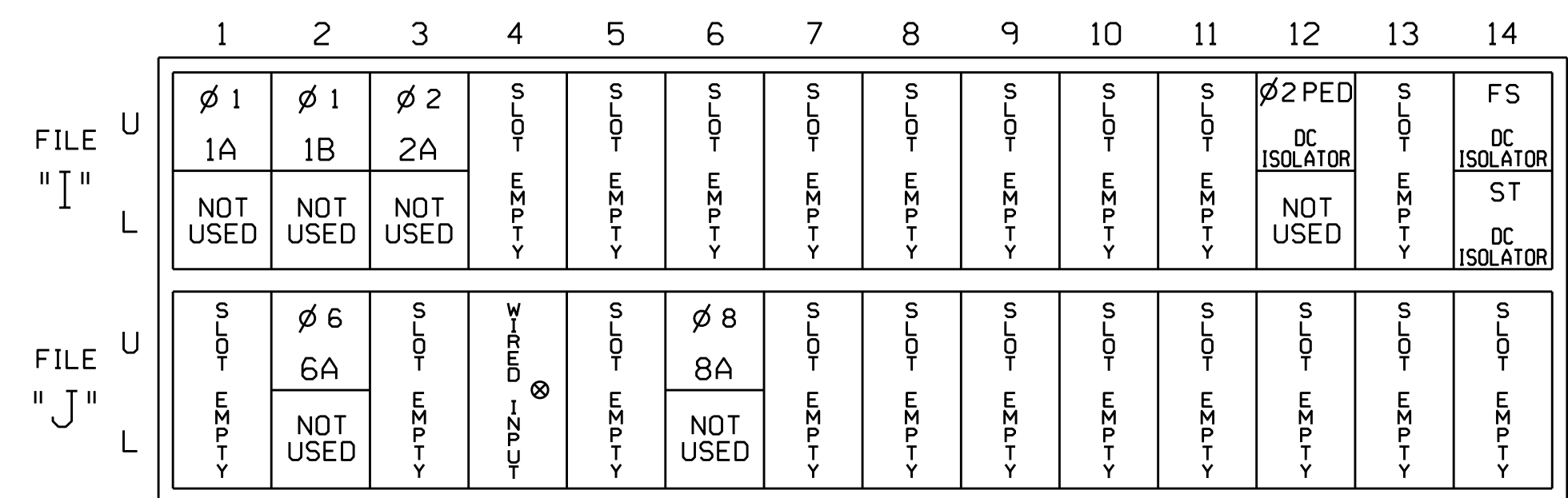
CONTROLLER.....2070  
CABINET.....332  
SOFTWARE.....ECONOLITE OASIS  
CABINET MOUNT.....BASE  
OUTPUT FILE POSITIONS...12  
LOAD SWITCHES USED.....S1,S2,S2P,S6,S8  
PHASES USED.....1,2,2 PED,6,8  
OVERLAPS.....NONE

### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

### INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S  
FS = FLASH SENSE  
ST = STOP TIME  
⊗ Wired Input - Do not populate slot with detector card

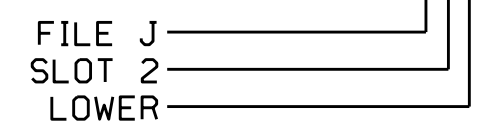
### INPUT FILE CONNECTION & PROGRAMMING CHART

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 <sup>1</sup>	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	2	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					

NOTE:  
INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

<sup>1</sup>Add jumper from I1-W to J4-W, on rear of input file.

### INPUT FILE POSITION LEGEND: J2L



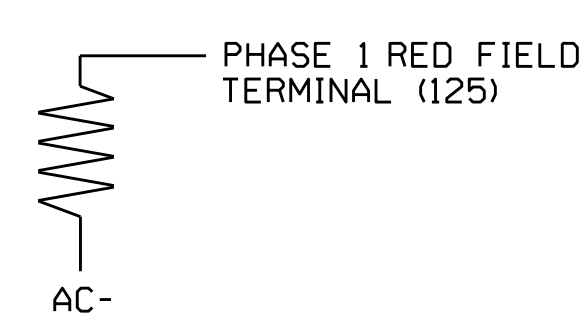
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1168  
DESIGNED: September 2019  
SEALED: 9-20-19  
REVISED: N/A

This Electrical Detail supersedes the detail sealed on 8-07-19.

### LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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



### Electrical Detail

Electrical and Programming Details For:

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 74A at SR 1544 (West St.)

Division 13 Rutherford County Ruth

PLAN DATE: September 2019 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by: Ryan W. Hough 10/1/2019

430029FA2804C3 DATE

SIG. INVENTORY NO. 13-1168

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

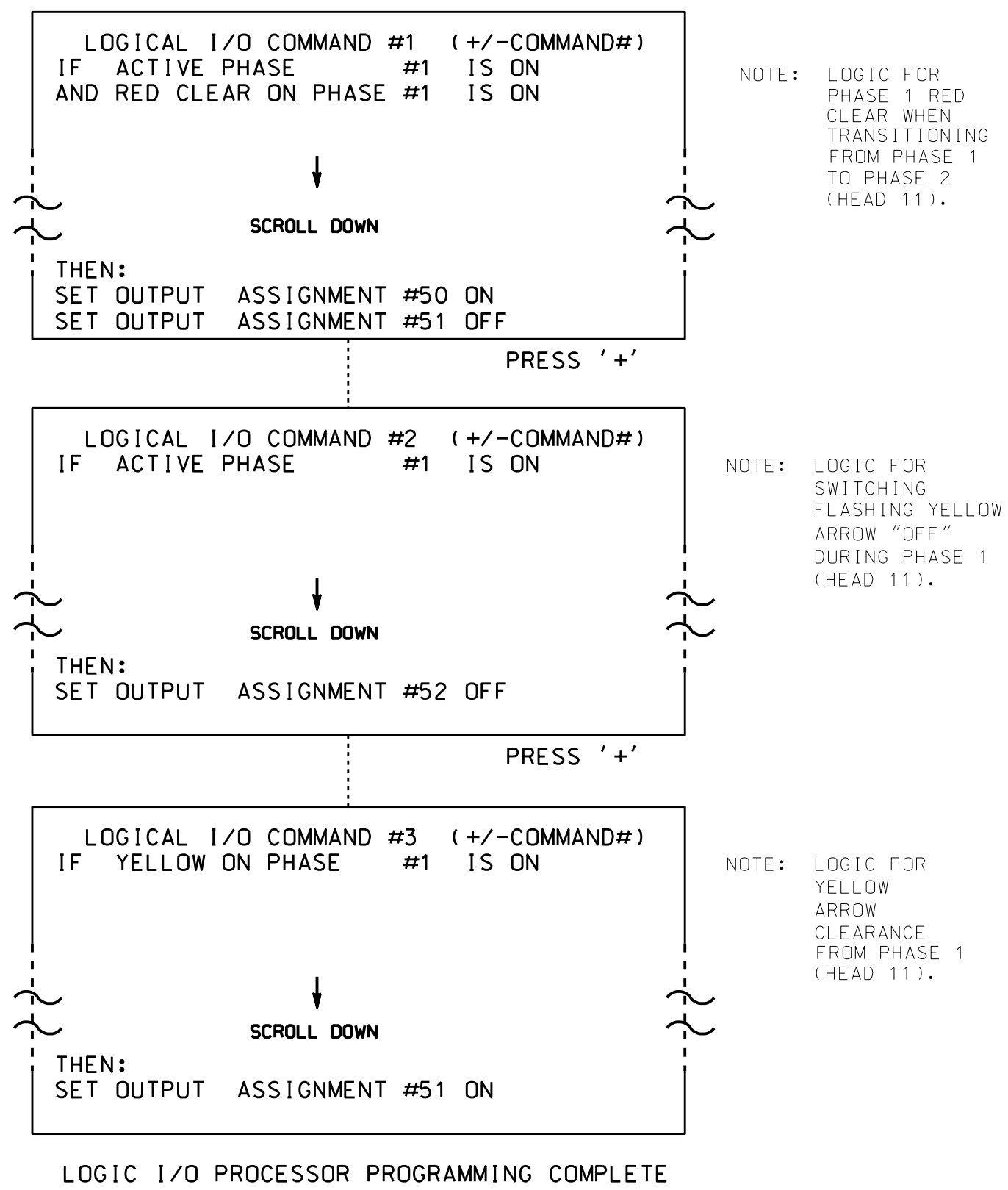
SEAL

RYAN W. HOUGH ENGINEER SEAL 036833

**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL  
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

*(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 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

**OUTPUT REFERENCE SCHEDULE**

OUTPUT 50 = Overlap A Red  
OUTPUT 51 = Overlap A Yellow  
OUTPUT 52 = Overlap A Green

**OVERLAP PROGRAMMING DETAIL**

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```

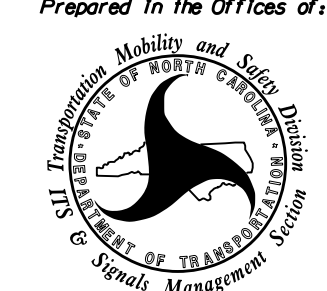
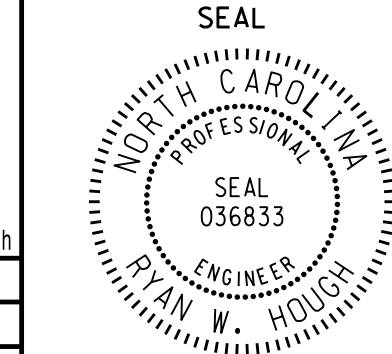
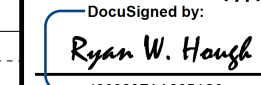
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
  
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

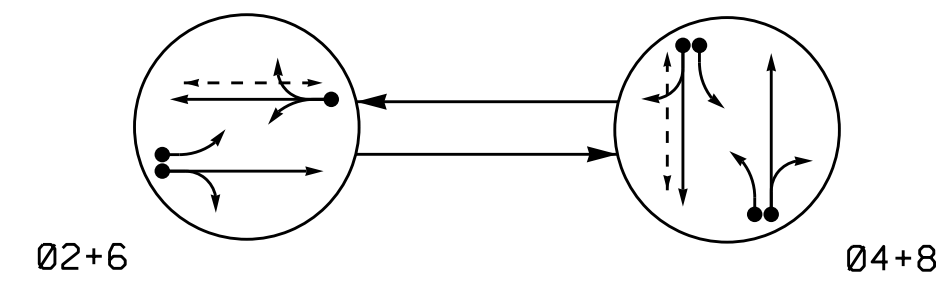
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 13-1168  
DESIGNED: July 2019  
SEALED: 8-05-19  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:  Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 74A at SR 1544 (West St.)</b>		<b>SEAL</b> 
	Division 13 Rutherford County Ruth PLAN DATE: July 2019 REVIEWED BY: PREPARED BY: James Peterson REVIEWED BY:	REVISIONS      INIT.      DATE _____ _____ _____	
DocuSigned by: 		8/7/2019 DATE	SIG. INVENTORY NO. 13-1168

07-AUG-2019 08:31  
\*11168.dwg  
j.peterson

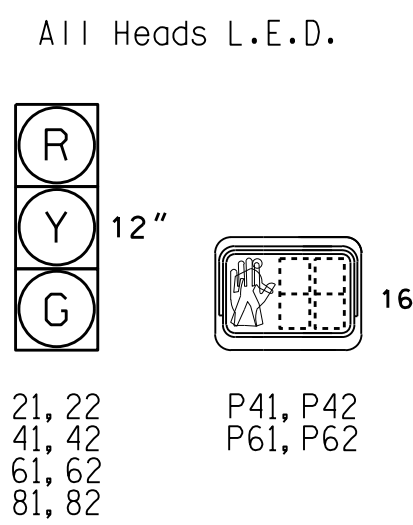
PHASING DIAGRAM



**PHASING DIAGRAM DETECTION LEGEND**  
 ● ← DETECTED MOVEMENT  
 ○ ← UNDETECTED MOVEMENT (OVERLAP)  
 - - ← UNSIGNALIZED MOVEMENT  
 - - - - ← PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK

SIGNAL FACE I.D.

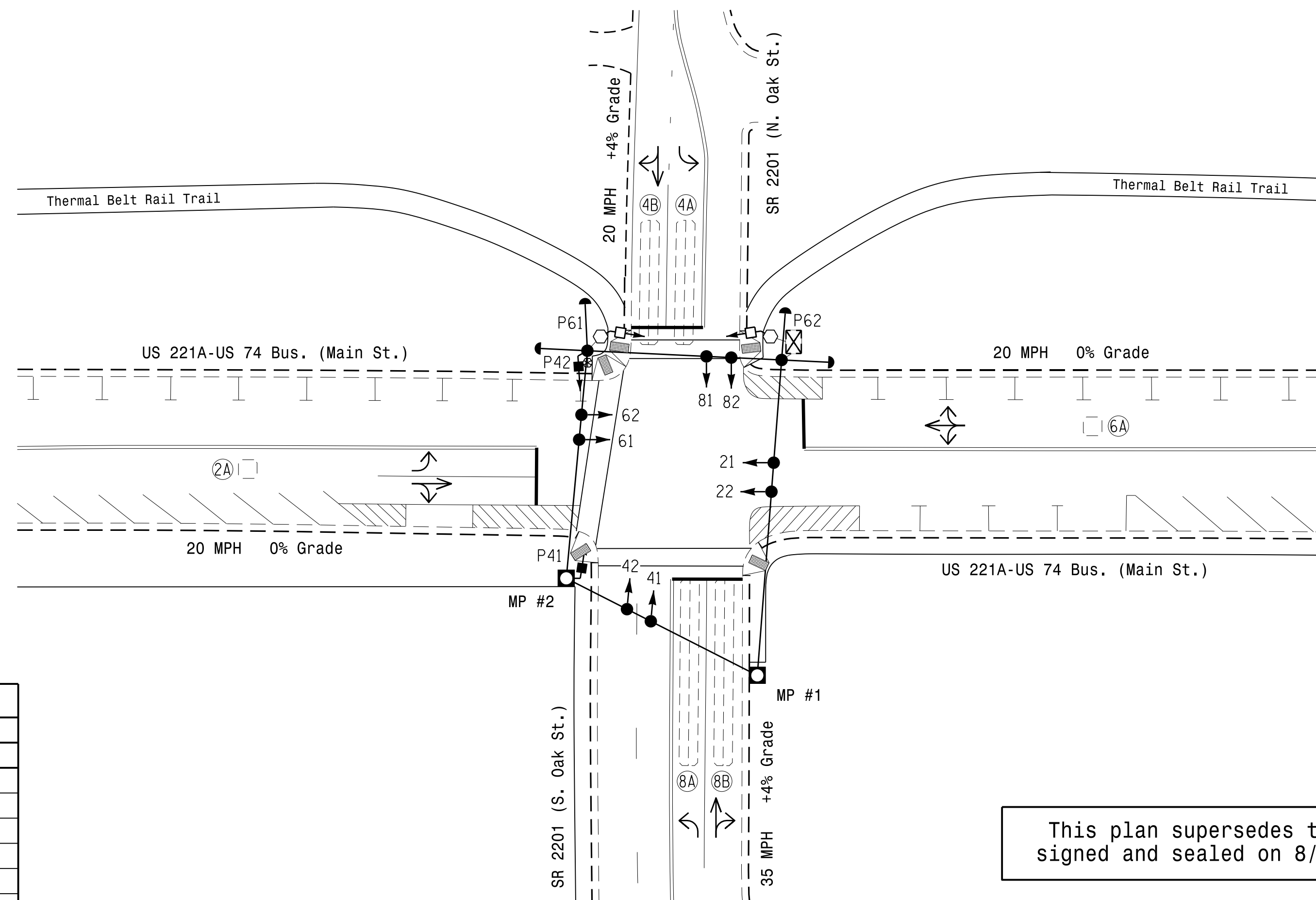
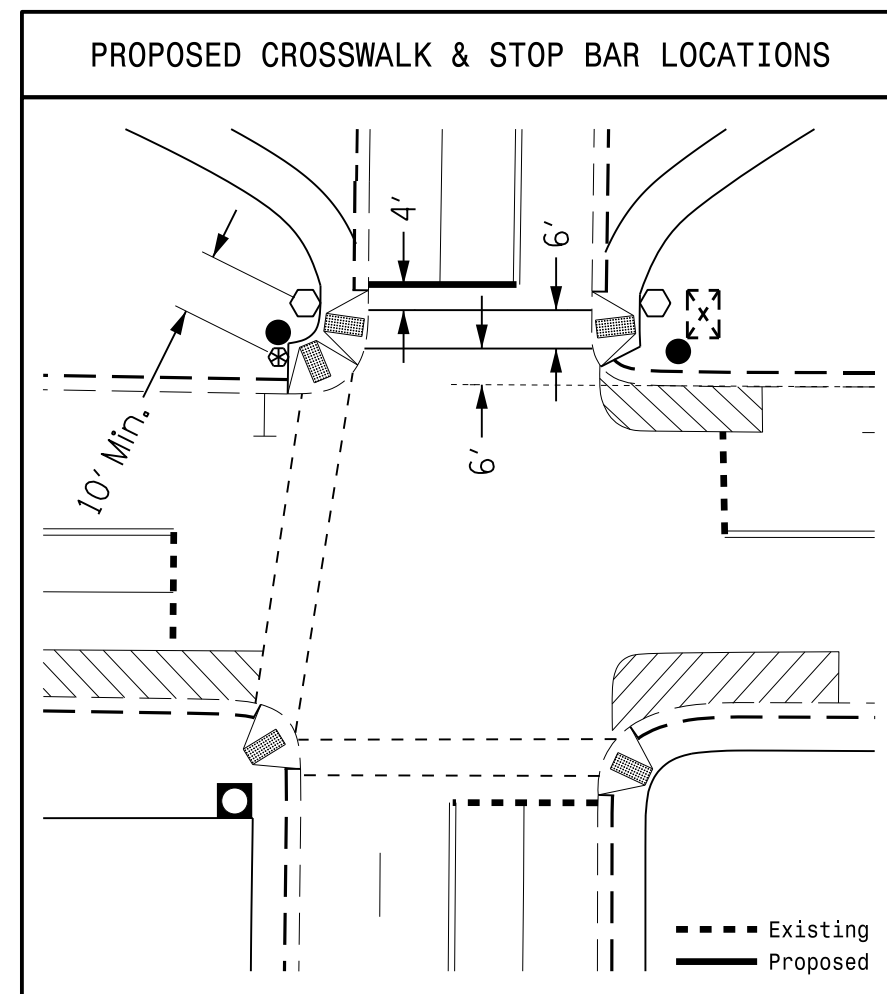


LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	90	EXIST	-	2	Y	Y	-	-	-	-	-
4A	6X40	+5	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6X40	+5	2-4-2	-	4	Y	Y	-	-	10	-	-
6A	6X6	90	EXIST	-	6	Y	Y	-	-	-	-	-
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	3	-	-
8B	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	-

2 Phase Fully Actuated Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.



FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	25	45	25
Yellow Clearance	3.0	3.6	3.0	3.6
Red Clearance	3.1	2.6	3.1	2.6
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	7	7	-
Don't Walk 1	-	12	8	-
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.

This plan supersedes the one signed and sealed on 8/5/2019.

PROPOSED	LEGEND	EXISTING
○	Traffic Signal Head	●
○	Modified Signal Head	N/A
⊥	Sign	⊥
⊥	Pedestrian Signal Head With Push Button & Sign	⊥
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
⊠	Inductive Loop Detector	⊠
⊠	Controller & Cabinet	⊠
⊠	Junction Box	⊠
- - -	2-in Underground Conduit	- - -
- - -	Right of Way	- - -
→	Directional Arrow	→
⊠	Metal Strain Pole	⊠
⊠	Type I Pushbutton Post	⊠
⊠	Type II Signal Pedestal	⊠
N/A	Curb Ramp	⊠

Signal Upgrade

Prepared in the Offices of:  
 Transportation Mobility and Safety Solutions  
 NORTH CAROLINA PROFESSIONAL ENGINEERS  
 RICHARD N. ZINSER  
 Signal Design Section  
 750 N. Greenfield Pkwy, Garner, NC 27529

US 221A-US 74 Bus. (Main St.) at SR 2201 (Oak St.)

Division 13 Rutherford County Spindale  
 PLAN DATE: February 2021 REVIEWED BY: T.J. Williams  
 PREPARED BY: R.N. Zinser REVIEWED BY:

REVISIONS: \_\_\_\_\_ INIT. DATE

SCALE: 1" = 30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

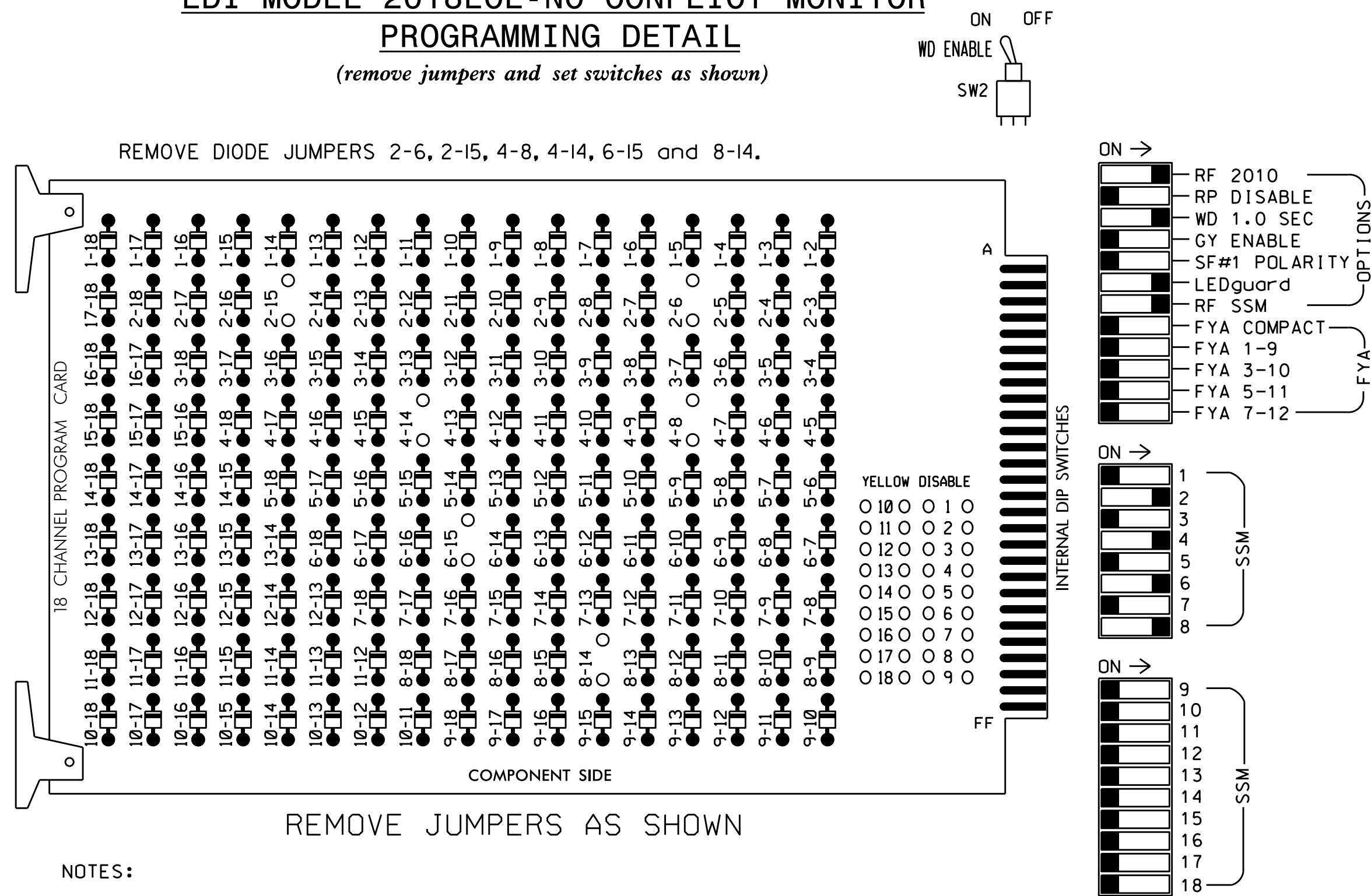
SEAL: RICHARD N. ZINSER, ENGINEER, SEAL 043914, DATE 2/19/2021

SIG. INVENTORY NO. 13-0176

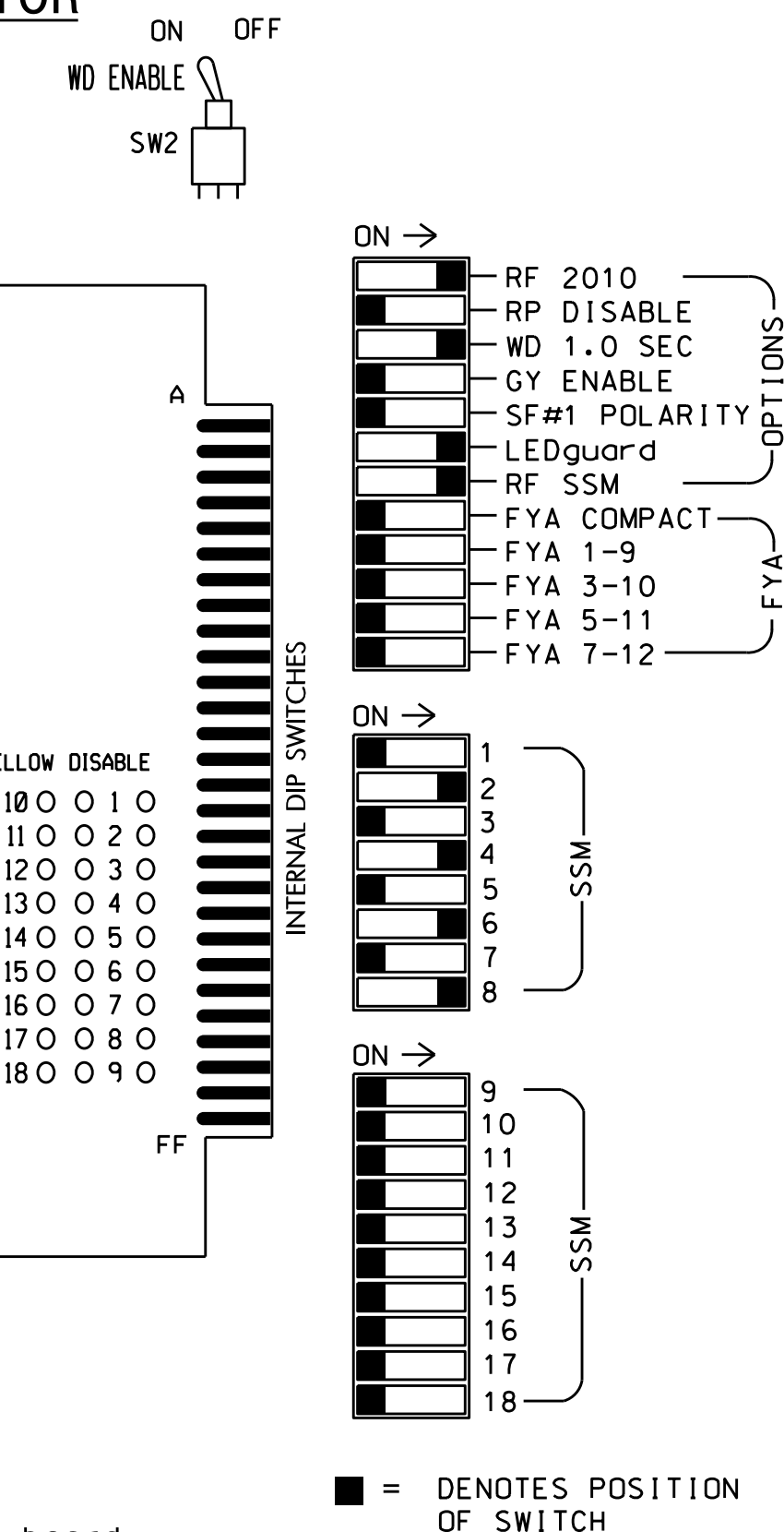
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 Rnz:lnsr

**EDI MODEL 2018ECL-NC CONFLICT MONITOR  
PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



- NOTES:**
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
  - Ensure that Red Enable is active at all times during normal operation.
  - Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.



**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.
- 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 4 and 6 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE DASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S5,S6,S8,S9,S11  
 PHASES USED.....2,4,4 PED,6,6 PED,8  
 OVERLAPS.....NONE

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
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	P41, P42	NU	61,62	P61, P62	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												
Hand icon						104			119			
Walking person icon						106			121			

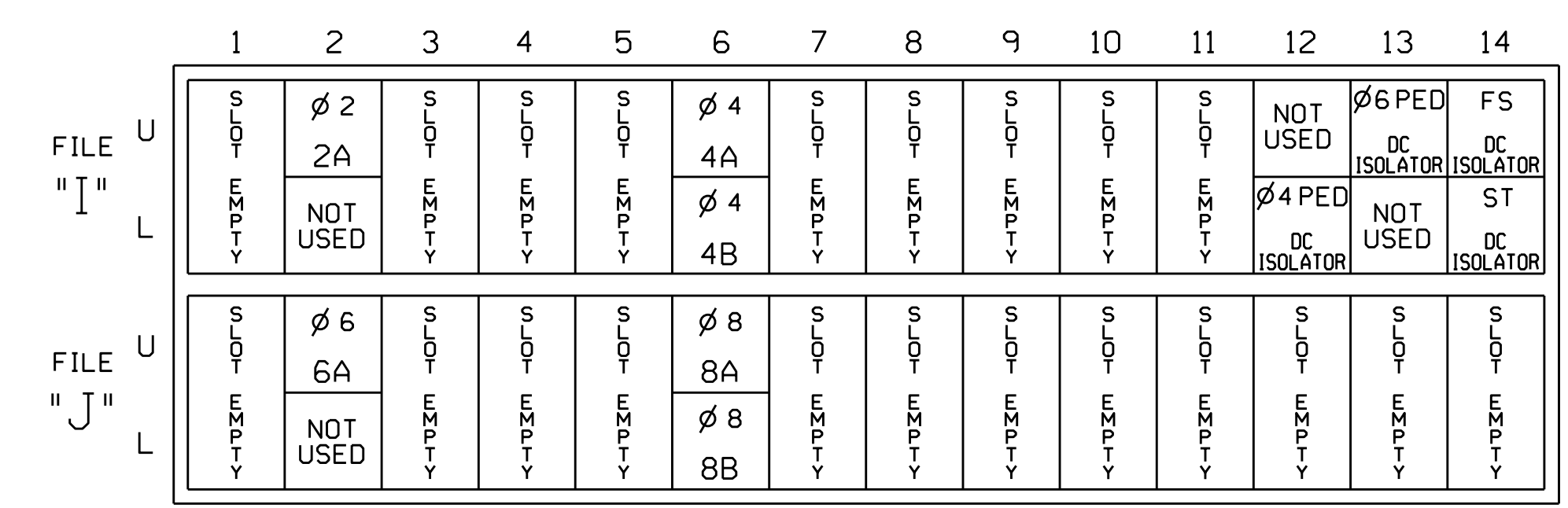
NU = Not Used

**COUNTDOWN PEDESTRIAN SIGNAL OPERATION**

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

**INPUT FILE POSITION LAYOUT**

(front view)

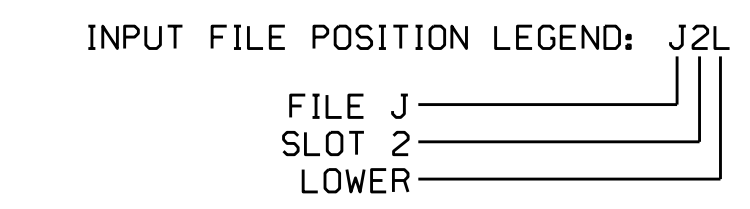


EX. : 1A, 2A, ETC. = LOOP NO.'S  
 FS = FLASH SENSE  
 ST = STOP TIME

**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	TB2-5,6	12U	39	1	2	2	Y	Y			
4A	TB4-9,10	16U	41	3	4	4	Y	Y			3
4B	TB4-11,12	16L	45	7	14	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	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
PED PUSH BUTTONS											
P41,P42	TB8-5,6	112L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	113U	68	30	PED 6	6 PED					

NOTE:  
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-0176  
 DESIGNED: February 2021  
 SEALED: 02-19-21  
 REVISED: N/A

This Electrical Detail supersedes the detail sealed on 08-07-19.

**Electrical Detail**

Electrical and Programming Details For: **US 221A-US 74 Bus. (Main St.) at SR 2201 (Oak St.)**

Division 13 Rutherford County Spindle

PLAN DATE: February 2021 REVIEWED BY: [Signature]

PREPARED BY: James Peterson REVIEWED BY: [Signature]

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

DocuSigned by: **Ryan W. Hough** 2/19/2021

750 N. Greenfield Pkwy, Garner, NC 27529

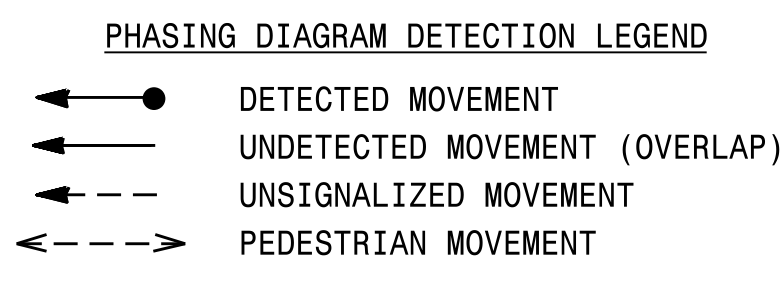
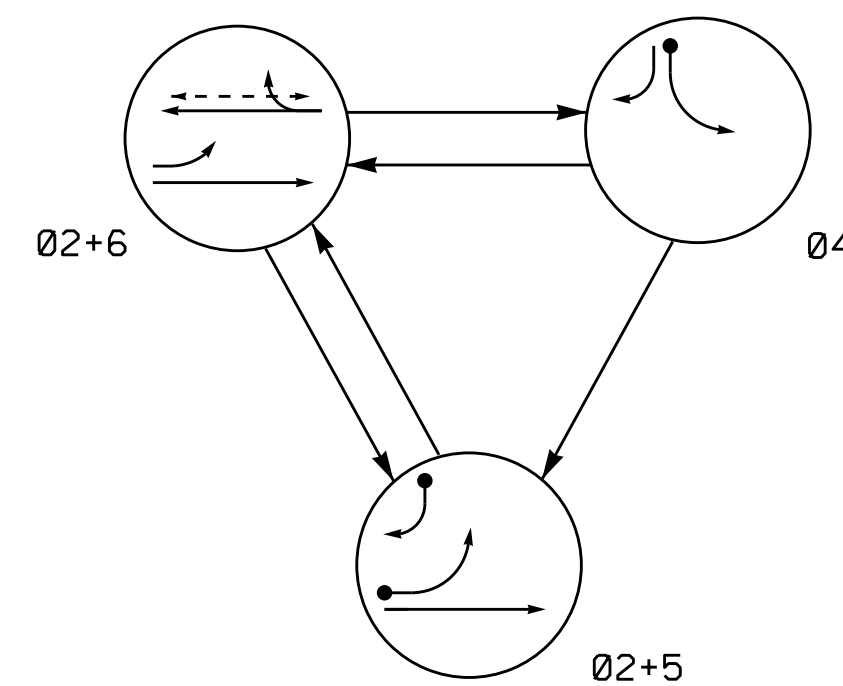
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: RUTHERFORD COUNTY PROFESSIONAL ENGINEER RYAN W. HOUGH SEAL 036833

SIG. INVENTORY NO. 13-0176

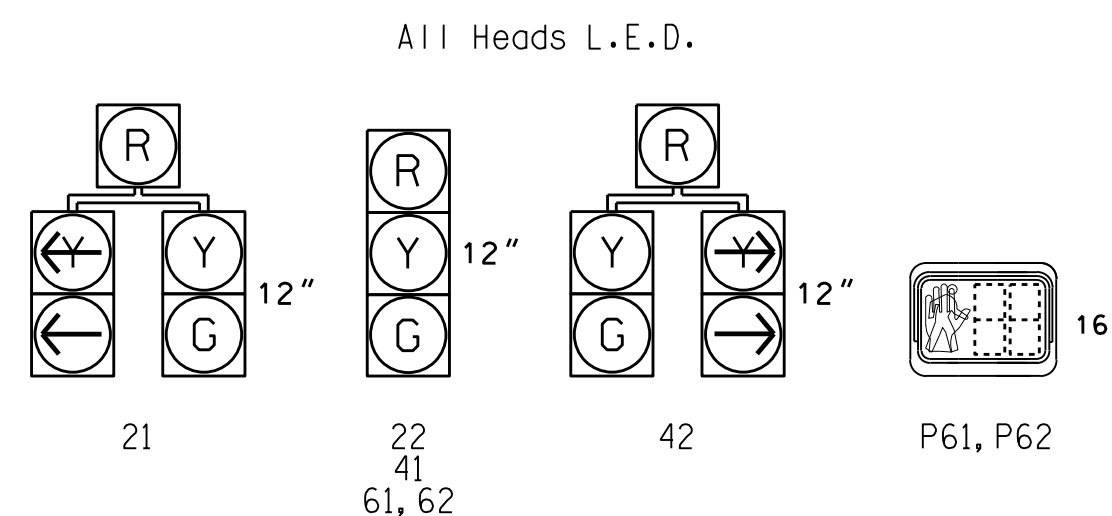
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 Jpeterson

**PHASING DIAGRAM**



SIGNAL FACE	PHASE			
	02+5	02+6	04	FLASH
21	G	G	R	Y
22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
61, 62	R	G	R	Y
P61, P62	DW	W	DW	DRK

**SIGNAL FACE I.D.**

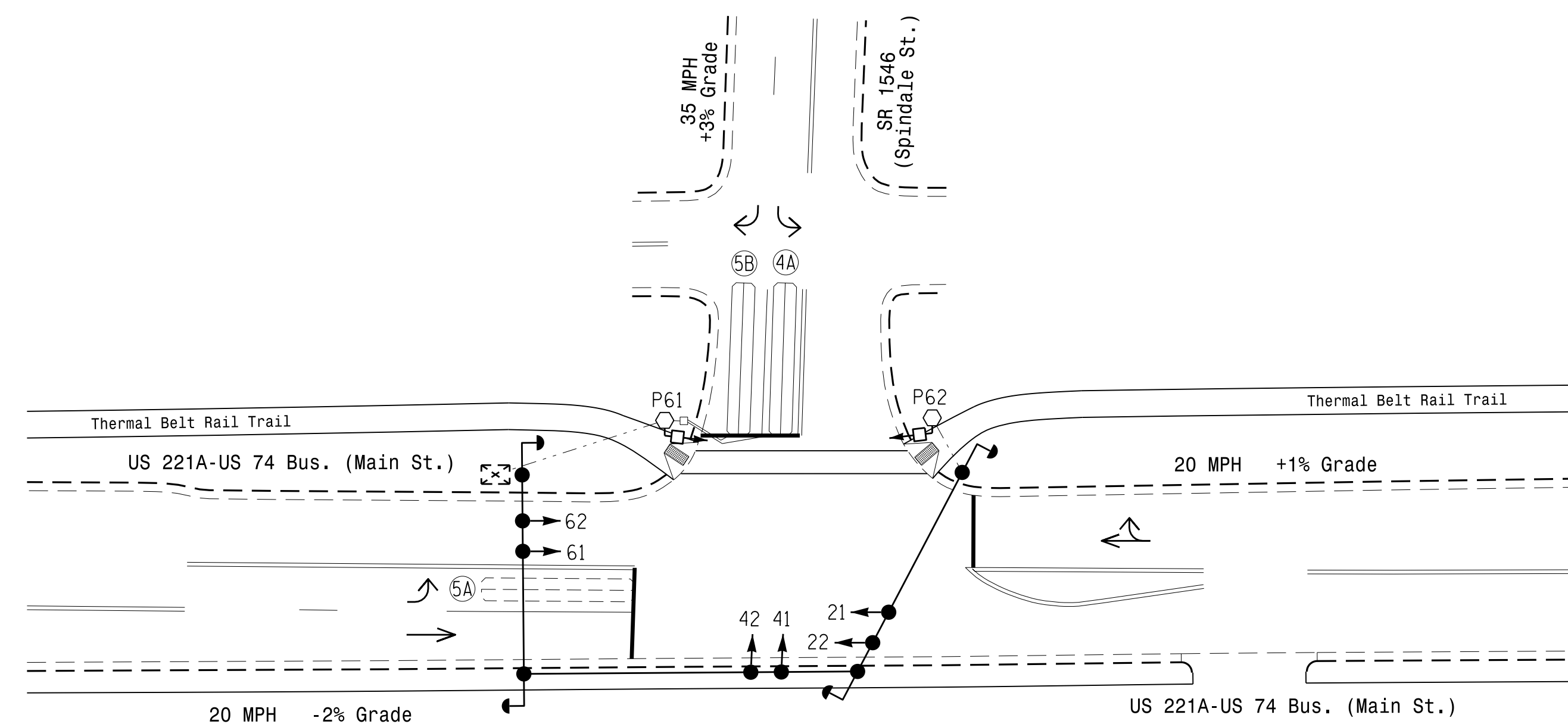


INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	-

3 Phase  
Semi-Actuated  
Isolated

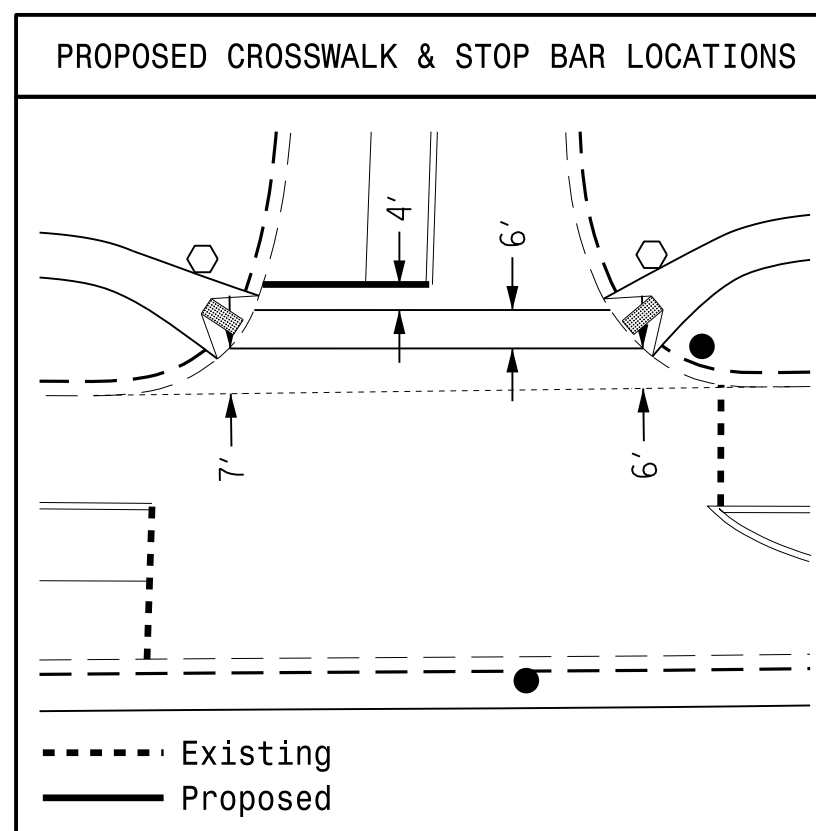
**NOTES**

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.



FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	10	7	7	10
Extension 1 *	0.0	2.0	2.0	0.0
Max Green 1 *	45	25	15	45
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	2.8	2.1	2.8	2.8
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	7
Don't Walk 1	-	-	-	15
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MAX RECALL	-	-	MAX RECALL
Vehicle Call Memory	-	-	-	-
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.



This plan supersedes the one signed and sealed on 8/5/2019.

**LEGEND**

PROPOSED	EXISTING
○	●
○ with arrow	N/A
□ with arrow	□
□ with arrow and button	□
□ with arrow and sign	□
□ with arrow and guy	□
□ with arrow and sidewalk guy	□
□ with arrow and inductive loop detector	□
□ with arrow and controller & cabinet	□
□ with arrow and junction box	□
□ with arrow and 2-in underground conduit	□
□ with arrow and right of way	□
□ with arrow and directional arrow	□
○ with arrow	○
○ with arrow	○

**Signal Upgrade**

Prepared in the Offices of:  
  
 R. N. Zinser  
 PROFESSIONAL ENGINEER  
 STATE OF NORTH CAROLINA  
 No. 13887  
 Date: 9/20/2019

**US 221A-US 74 Bus. (Main St.)  
at  
SR 1546 (Spindale St.)**

Division 13 Rutherford County Spindale  
 PLAN DATE: September 2019 REVIEWED BY: T.J. Williams  
 PREPARED BY: R.N. Zinser REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
  
 T.J. Williams  
 PROFESSIONAL ENGINEER  
 STATE OF NORTH CAROLINA  
 No. 13887  
 Date: 9/20/2019

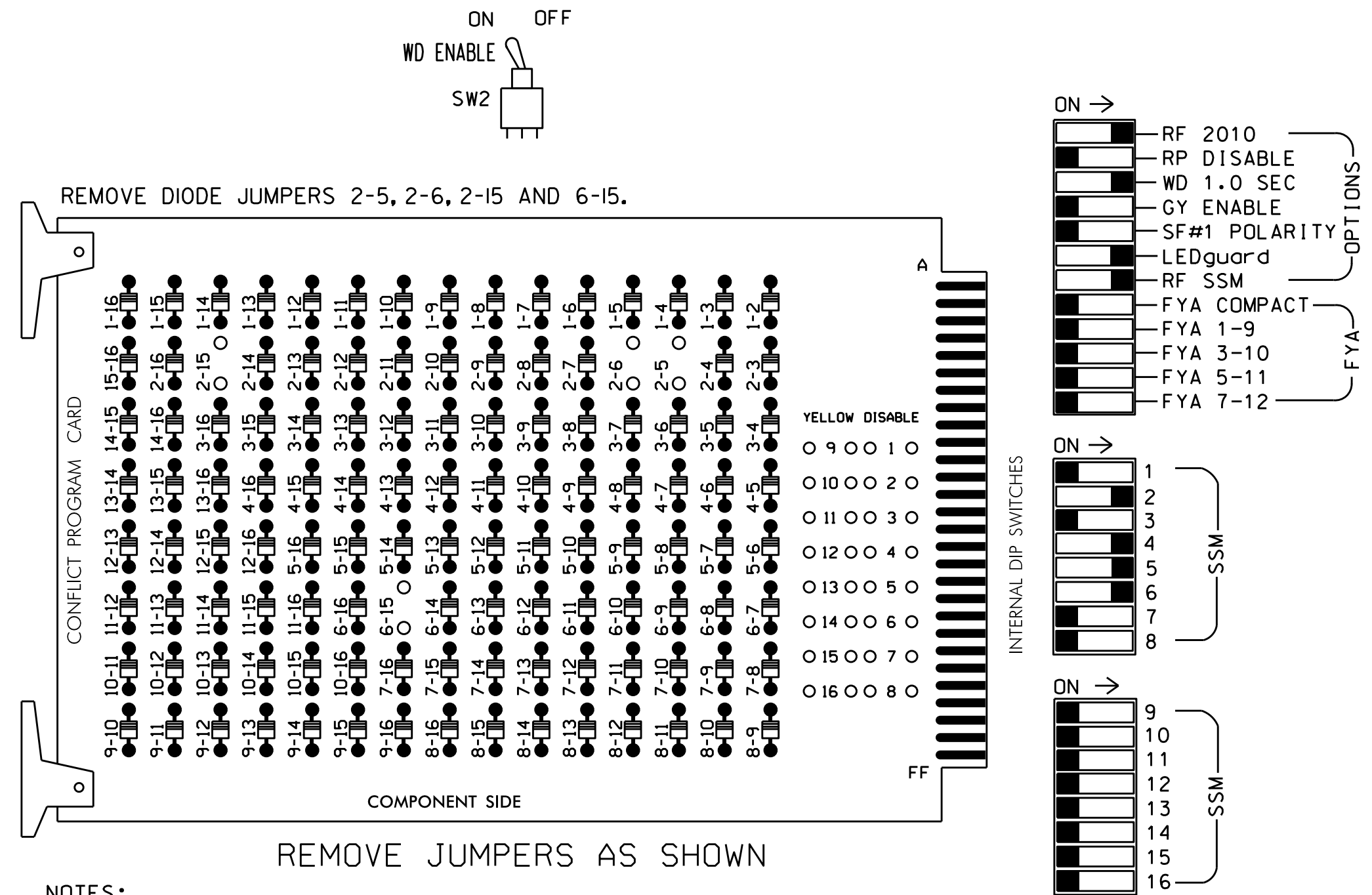
SCALE: 1"=30'

SIG. INVENTORY NO. 13-0174

20-SEP-2019 09:55 S:\IT\55\UM\15\Sig\5915\Main St-Sig.5.0.dgn

**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



**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 1,3,7, 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 Start Up In Green.
- Program phase 6 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by the ATMS software, enable controller and detector logging for all enabled detectors.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070L  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S5,S6,S6P  
 PHASES USED.....2,4,5,6,6 PED  
 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	21,42	61,62	P61, P62	NU	NU	NU
RED		128			101		*	134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW							132					
GREEN ARROW							133					
									113			
									115			

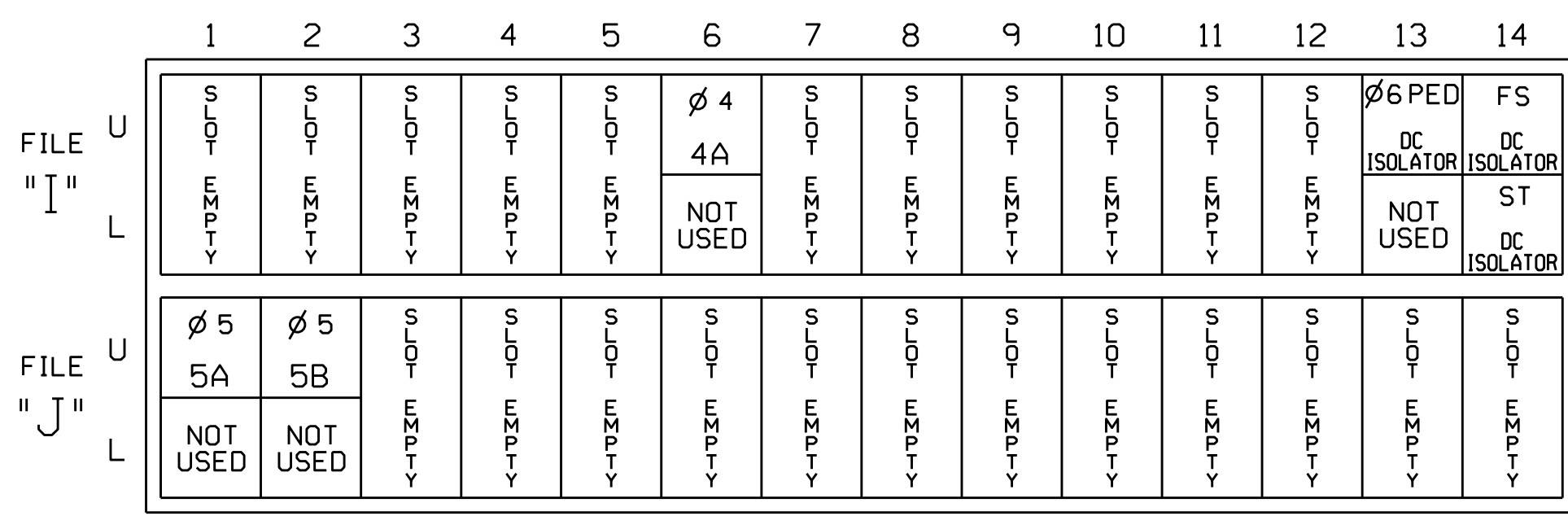
NU = Not Used  
 \* Denotes install load resistor. See load resistor installation detail this sheet.

**COUNTDOWN PEDESTRIAN SIGNAL OPERATION**

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

**INPUT FILE POSITION LAYOUT**

(front view)



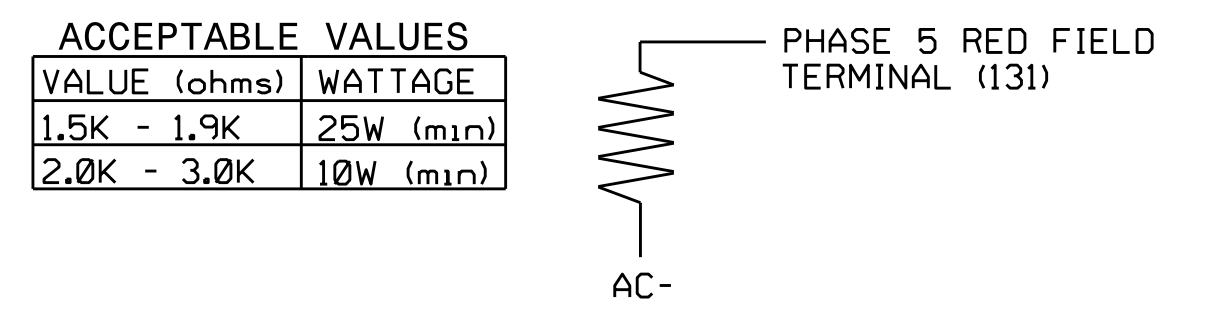
**INPUT FILE CONNECTION & PROGRAMMING CHART**

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
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			15
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
PED PUSH BUTTONS											
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:  
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS I13.

INPUT FILE POSITION LEGEND: J2L  
 FILE J  
 SLOT 2  
 LOWER

**LOAD RESISTOR INSTALLATION DETAIL**



NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on a channel that does not use the red display in the field.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-0174  
 DESIGNED: September 2019  
 SEALED: 9-20-19  
 REVISED: N/A

This Electrical Detail supersedes the detail sealed on 8-07-19.

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

US 74 Bus.-221A (Main Street) at SR 1546 (Spindale Street)

Division 13 Rutherford County Spindale

PLAN DATE: September 2019 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL

RYAN W. HOUGH

10/1/2019

SIGNATURE DATE

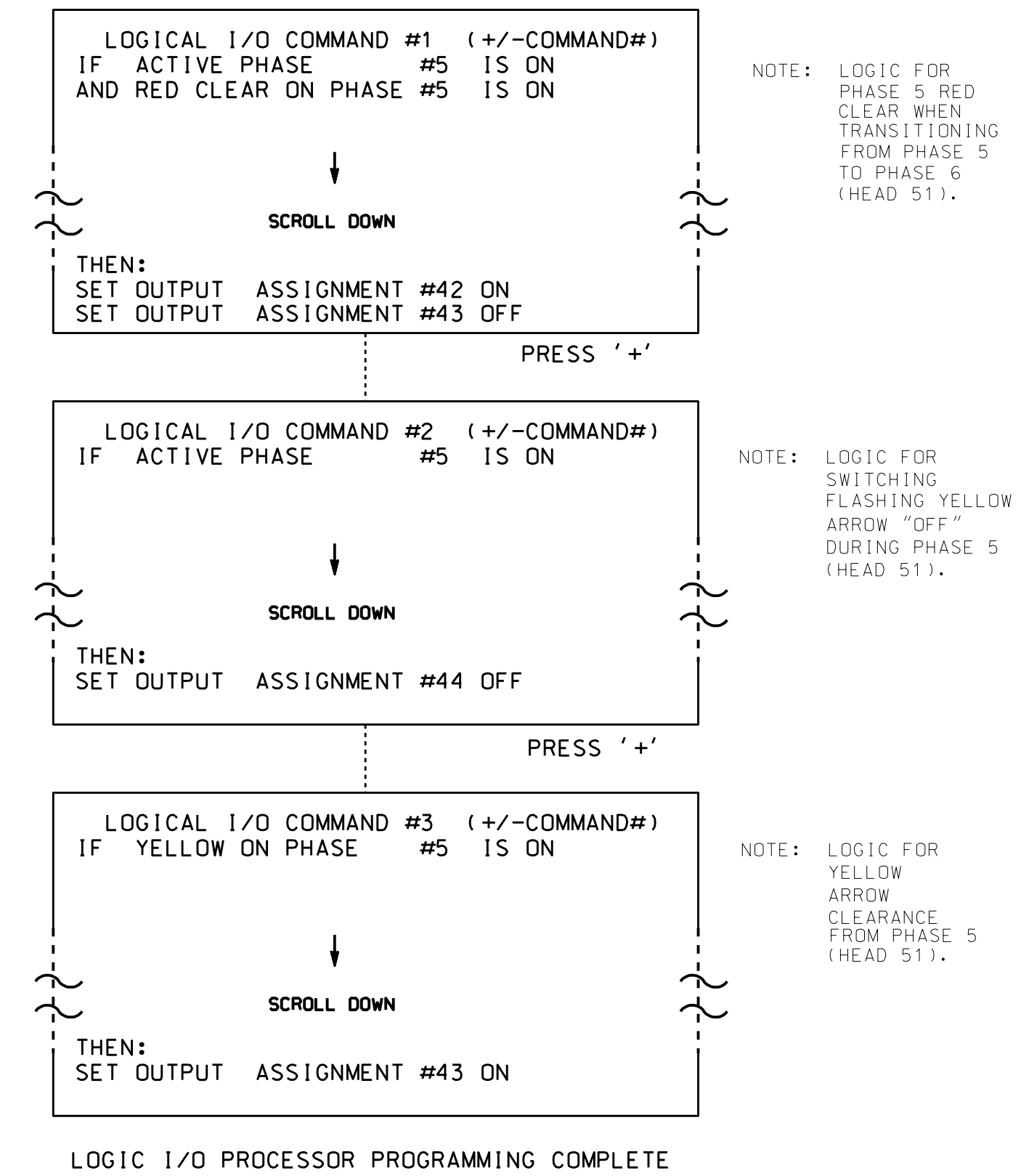
SIG. INVENTORY NO. 13-0174



**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL  
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

*(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 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



**OUTPUT REFERENCE SCHEDULE**

OUTPUT 42 = Overlap C Red  
OUTPUT 43 = Overlap C Yellow  
OUTPUT 44 = Overlap C Green

**OVERLAP PROGRAMMING DETAIL**

*(program controller as shown below)*

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PRESS '+' TWICE

```

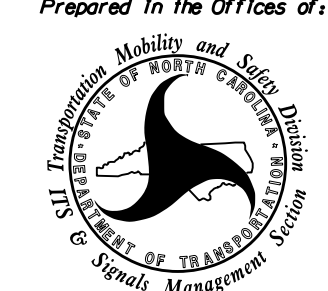
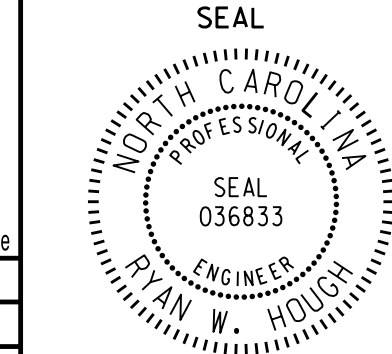
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PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)..0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
  
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

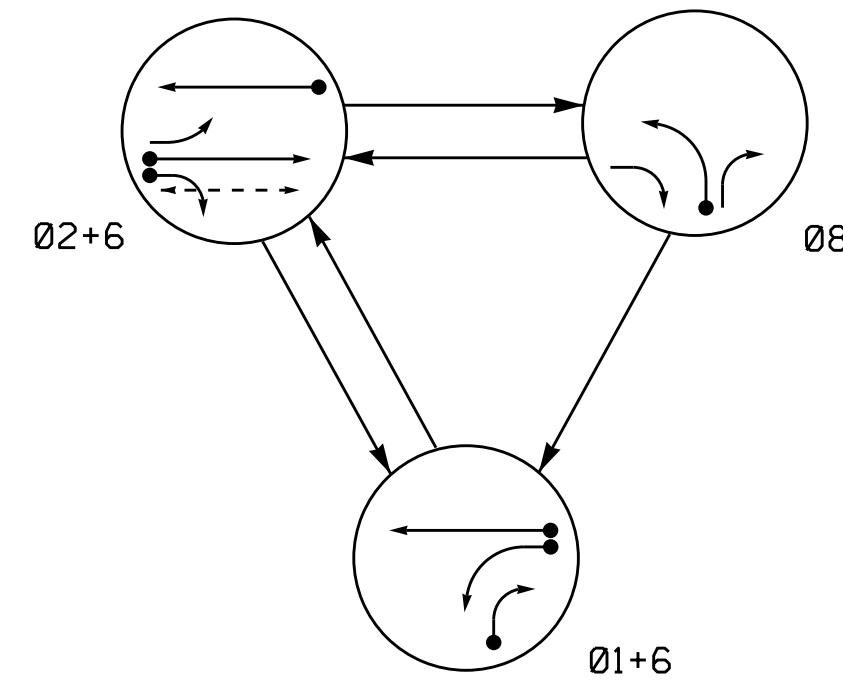
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 13-0174  
DESIGNED: May 2019  
SEALED: 8-05-19  
REVISED: N/A

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:  Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 221A-US 74 Bus. (Main St.) at SR 1546 (Spindale St.)		SEAL  ENGINEER RYAN W. HOUGH
	Division 13 Rutherford County Spindale PLAN DATE: July 2019 REVIEWED BY: PREPARED BY: James Peterson REVIEWED BY:	REVISIONS      INIT.      DATE _____ _____ _____	
Documented by: <u>Ryan W. Hough</u> 8/7/2019 430302FAA2854C3      DATE			DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SIG. INVENTORY NO. 13-0174			

07-AUG-2019 01:27  
\*130174.dwg:eric.xxk.dgn  
j.peterson

**PHASING DIAGRAM**



**PHASING DIAGRAM DETECTION LEGEND**

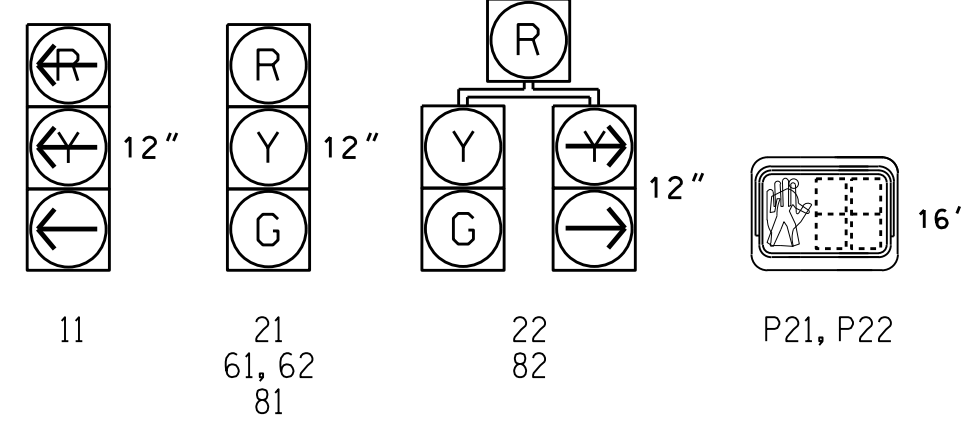
- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ←- UNSIGNALED MOVEMENT
- ←- - - PEDESTRIAN MOVEMENT

**TABLE OF OPERATION**

SIGNAL FACE	PHASE			
	01+6	02+6	08	FOOT
11	←	←	←	←
21	R	G	R	Y
22	R	G	←	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	←	R	G	R
P21, P22	DW	W	DW	DRK

**SIGNAL FACE I.D.**

All Heads L.E.D.



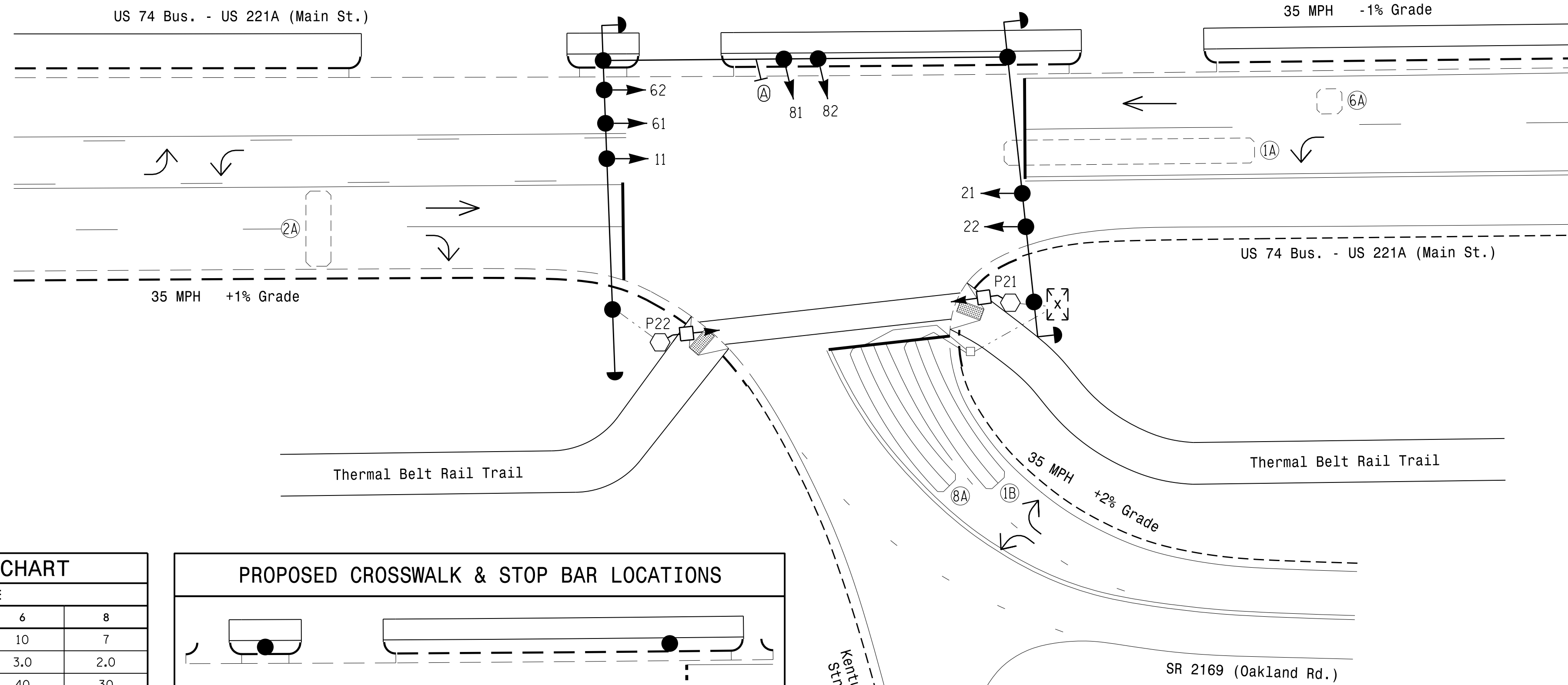
**OASIS 2070 LOOP & DETECTOR INSTALLATION CHART**

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
1A	6X60	+5	EXIST	-	1	Y	Y	-	-	-	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	-
2A	6X18	70	EXIST	-	2	Y	Y	-	-	-	-	-
6A	6X6	70	EXIST	-	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	-

3 Phase Fully Actuated Isolated

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
- 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.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.



**LEGEND**

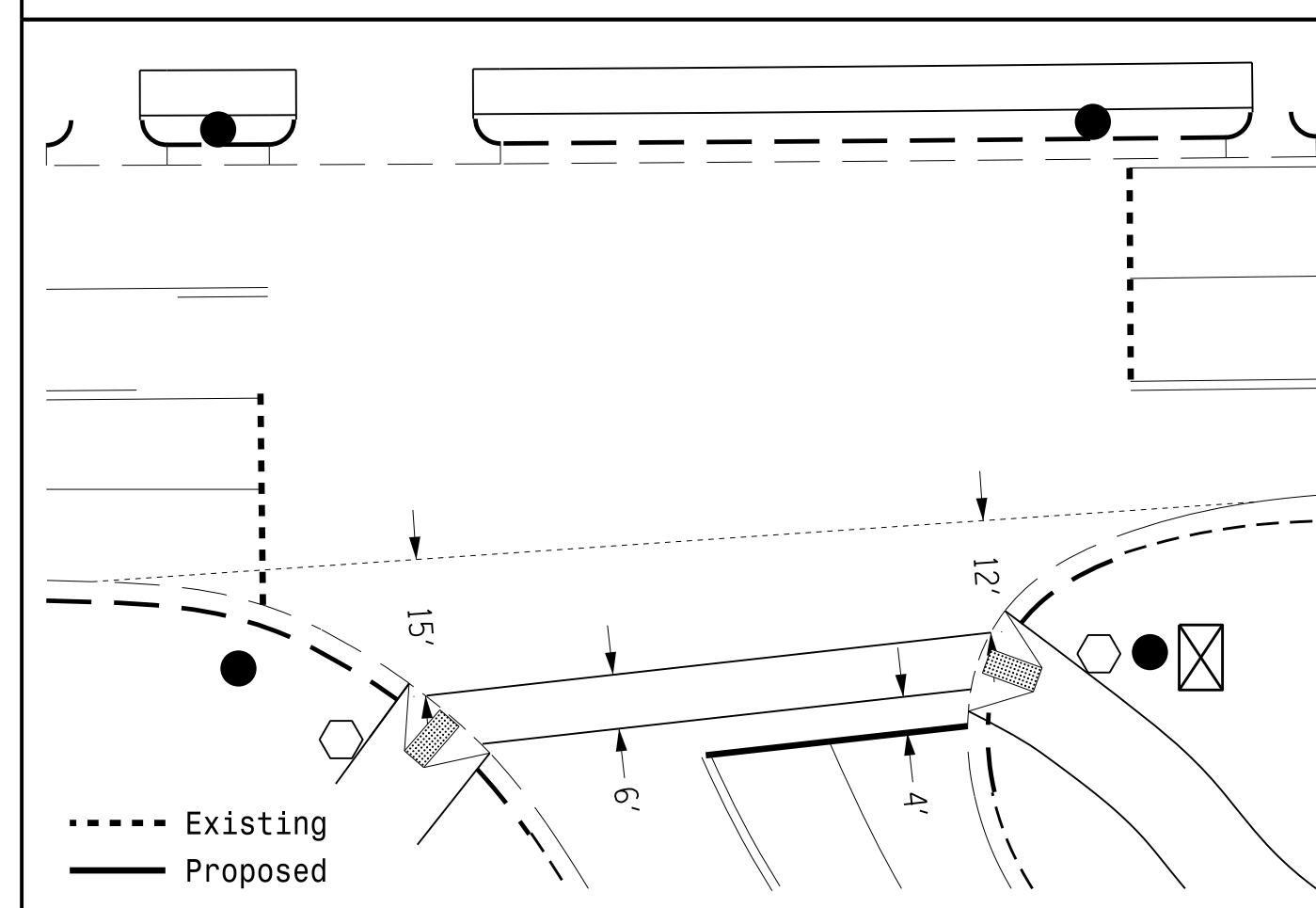
- | PROPOSED   | EXISTING   |
|--|--|
| ○ → Traffic Signal Head                          | ● → N/A  |
| ○ → Modified Signal Head                         | ○ → N/A  |
| ⊥ Sign   | ⊥ Sign   |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & Sign |
| ⊥ Signal Pole with Guy                           | ⊥ Signal Pole with Guy                           |
| ⊥ Signal Pole with Sidewalk Guy                  | ⊥ Signal Pole with Sidewalk Guy                  |
| ⊥ Inductive Loop Detector                        | ⊥ Inductive Loop Detector                        |
| ⊥ Controller & Cabinet                           | ⊥ Controller & Cabinet                           |
| ⊥ Junction Box                                   | ⊥ Junction Box                                   |
| ⊥ 2-in Underground Conduit                       | ⊥ 2-in Underground Conduit                       |
| - - - Right of Way                               | - - - Right of Way                               |
| → Directional Arrow                              | → Directional Arrow                              |
| ○ Type II Signal Pedestal                        | ● Type II Signal Pedestal                        |
| N/A Curb Ramp                                    | ▲ Curb Ramp                                      |
| ⊕ Left Arrow "ONLY" Sign (R3-5L)                 | ⊕ Left Arrow "ONLY" Sign (R3-5L)                 |

**OASIS 2070 TIMING CHART**

FEATURE	PHASE			
	1	2	6	8
Min Green 1 *	7	10	10	7
Extension 1 *	2.0	3.0	3.0	2.0
Max Green 1 *	20	40	40	30
Yellow Clearance	3.0	3.9	3.9	3.0
Red Clearance	2.4	1.8	1.8	2.6
Red Revert	2.0	2.0	5.0	2.0
Walk 1 *	-	7	-	-
Don't Walk 1	-	14	-	-
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

\* 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.

**PROPOSED CROSSWALK & STOP BAR LOCATIONS**



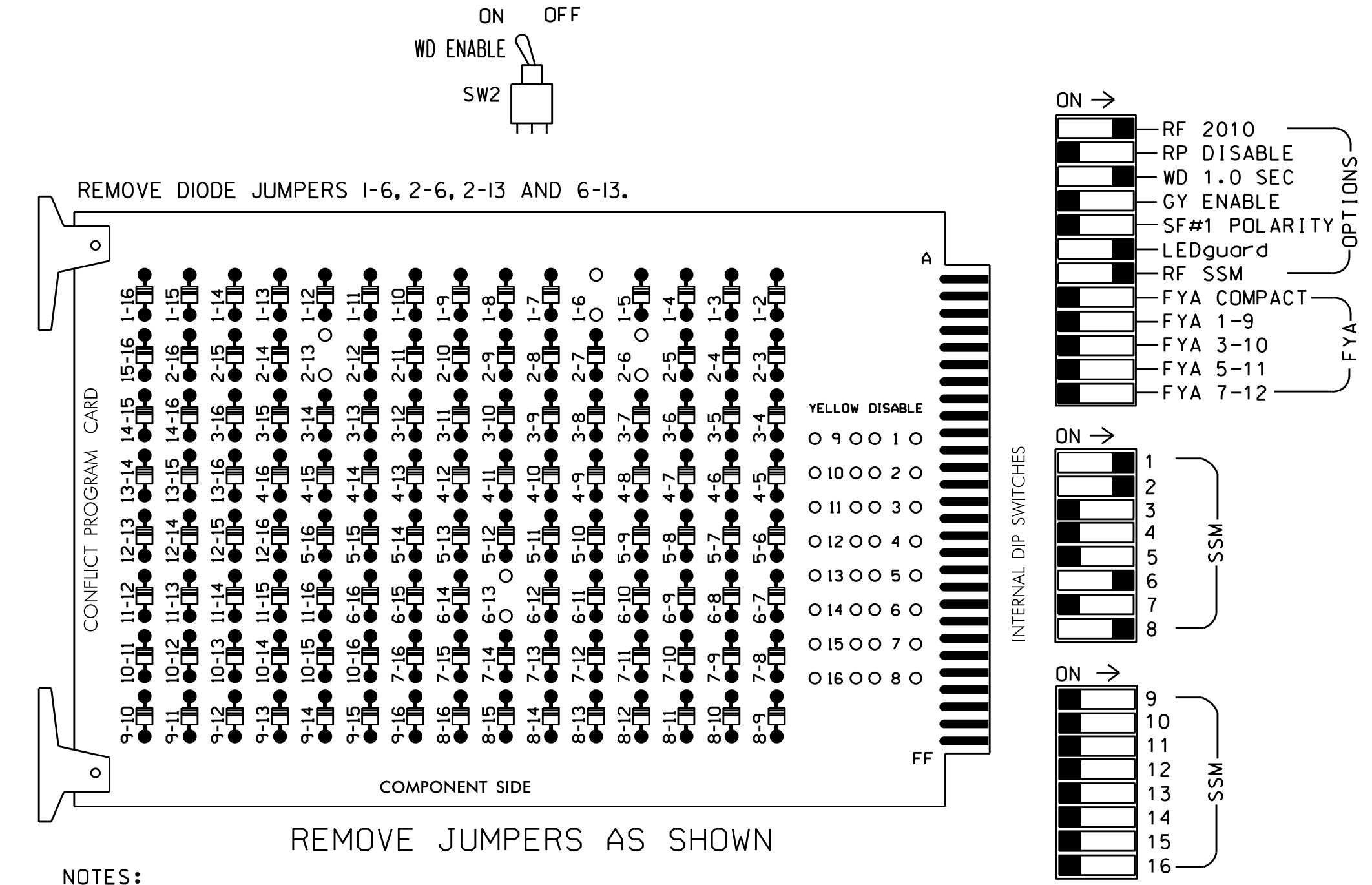
**Signal Upgrade**

	US 74 Bus.-US 221A (Main St.) at SR 2169 (Oakland Rd.)/ Kentucky Street	SEAL STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER RICHARD N. ZINER No. 043914 DATE 8/5/2019
	Division 13 Rutherford County Spindale PLAN DATE: June 2019 REVIEWED BY: T.J. Williams PREPARED BY: R.N. Zinser REVIEWED BY:	

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 S:\IT\565\0415\Sigonal\ek\Sigonal\_Design\_Sect\on\Wkstern\_Reg\on\401v-13\EB-5915\13-0173\Sig.dgn,2019madd.dgn  
 rnz:lnsr

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



- 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 3,4,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phase 6 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S2P,S6,S8  
 PHASES USED.....1,2,2 PED,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.	11	82	21,22	P21, P22	NU	NU	NU	61,62	NU	NU	81,82	22
RED			128					134			107	
YELLOW			129					135			108	
GREEN			130					136			109	
RED ARROW	125											
YELLOW ARROW	126	126										108
GREEN ARROW	127	127										109
Hand icon				113								
Walking person icon				115								

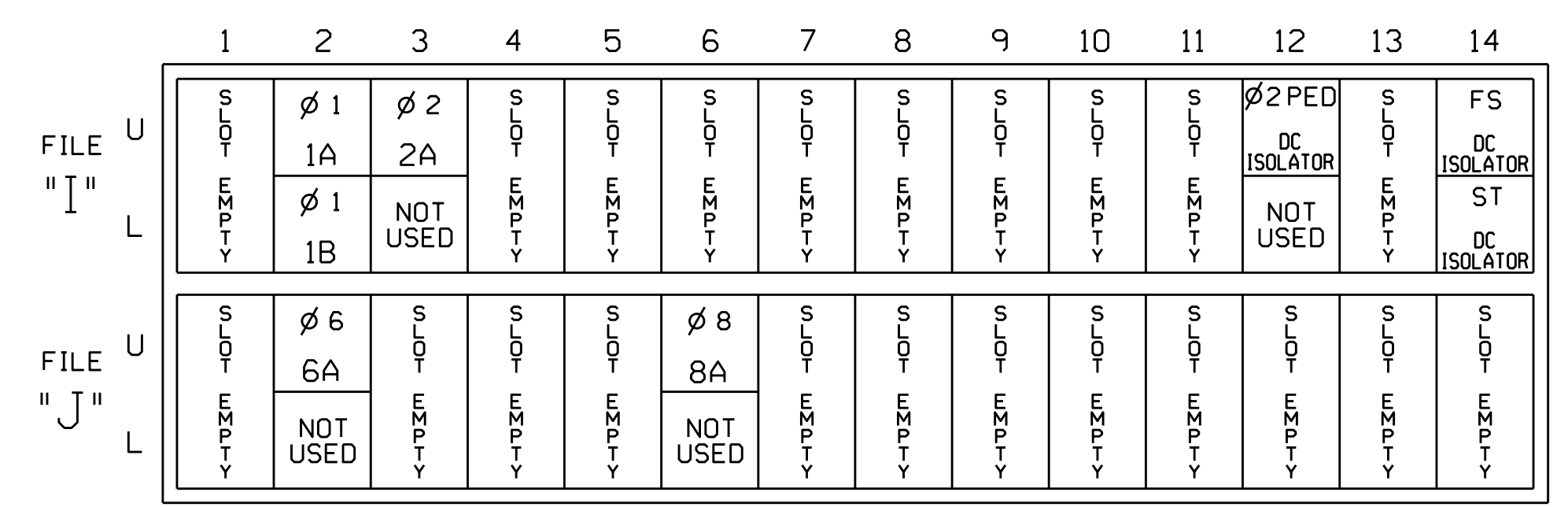
NU = Not Used

### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

### INPUT FILE POSITION LAYOUT

(front view)

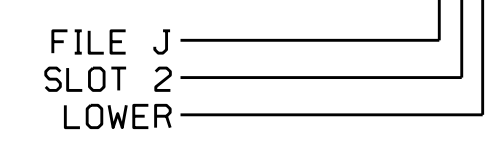


### INPUT FILE CONNECTION & PROGRAMMING CHART

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	TB2-5,6	I2U	39	1	2	1	Y	Y			
1B	TB2-7,8	I2L	43	5	12	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					

NOTE:  
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

INPUT FILE POSITION LEGEND: J2L



### BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 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: 13-0173  
 DESIGNED: June 2019  
 SEALED: 8-05-19  
 REVISED: N/A

### Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 74 Bus.- US 221A (Main St.) at SR 2169 (Oakland Rd.) / Kentucky Street

Prepared In the Offices of:

Division 13 Rutherford County Spindale

PLAN DATE: July 2019 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

RYAN W. HOUGH  
 PROFESSIONAL ENGINEER  
 SEAL 036833

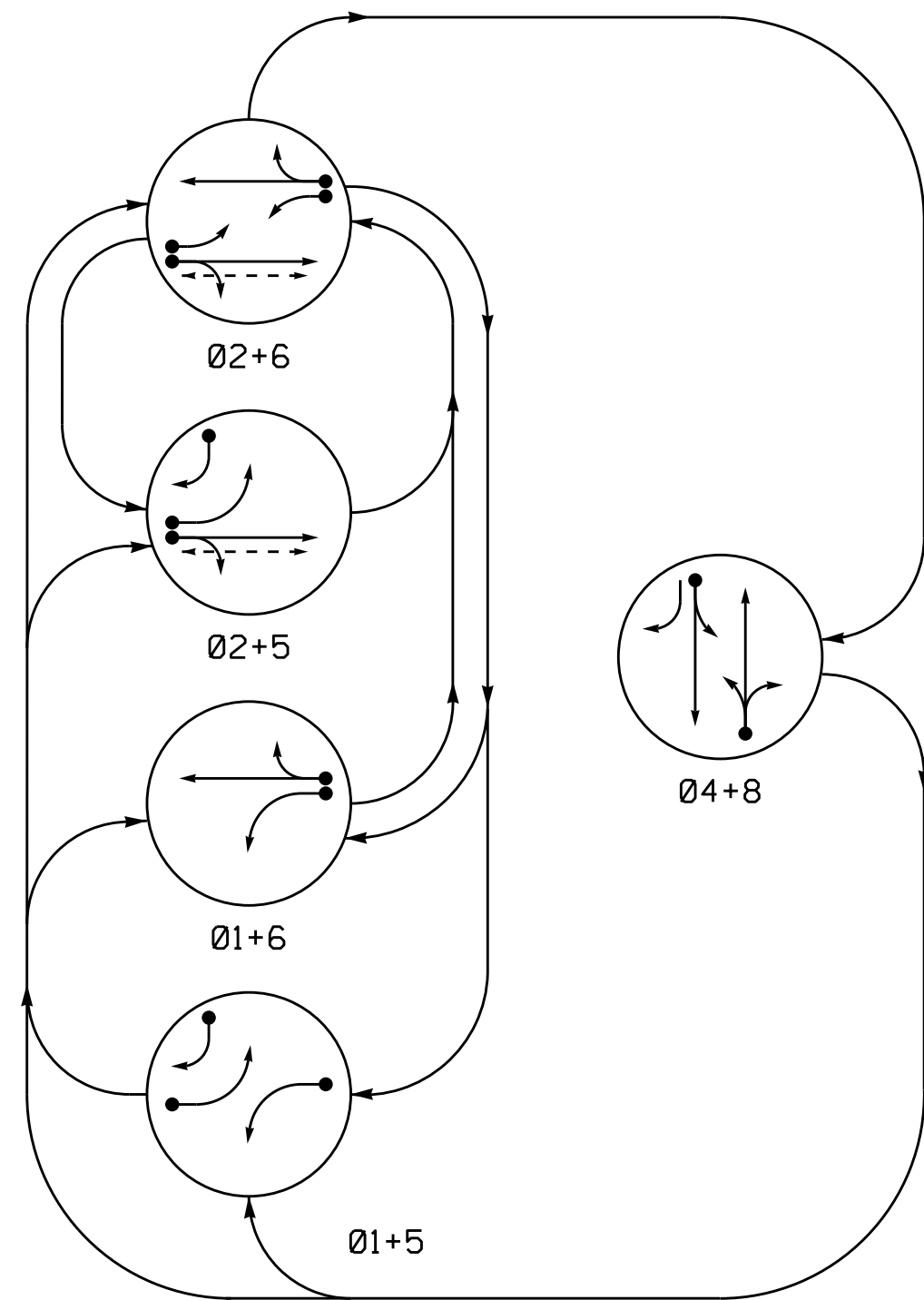
8/7/2019

SIGNATURE DATE

SIG. INVENTORY NO. 13-0173

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 ete\_20120424.dgn  
 J.peterson

PHASING DIAGRAM

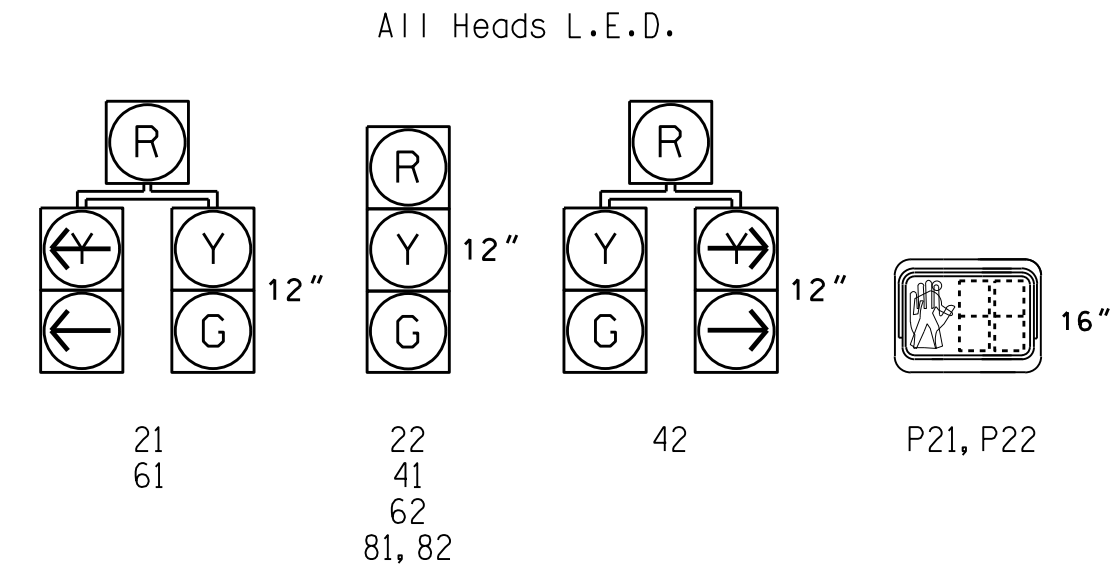


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE					FLASH
	01+5	01+6	02+5	02+6	04+8	
21	R	R	G	R	Y	
22	R	R	G	R	Y	
41	R	R	R	G	R	
42	R	R	R	G	R	
61	R	G	R	G	Y	
62	R	G	R	G	Y	
81, 82	R	R	R	G	R	
P21, P22	DW	DW	W	DW	DRK	

SIGNAL FACE I.D.

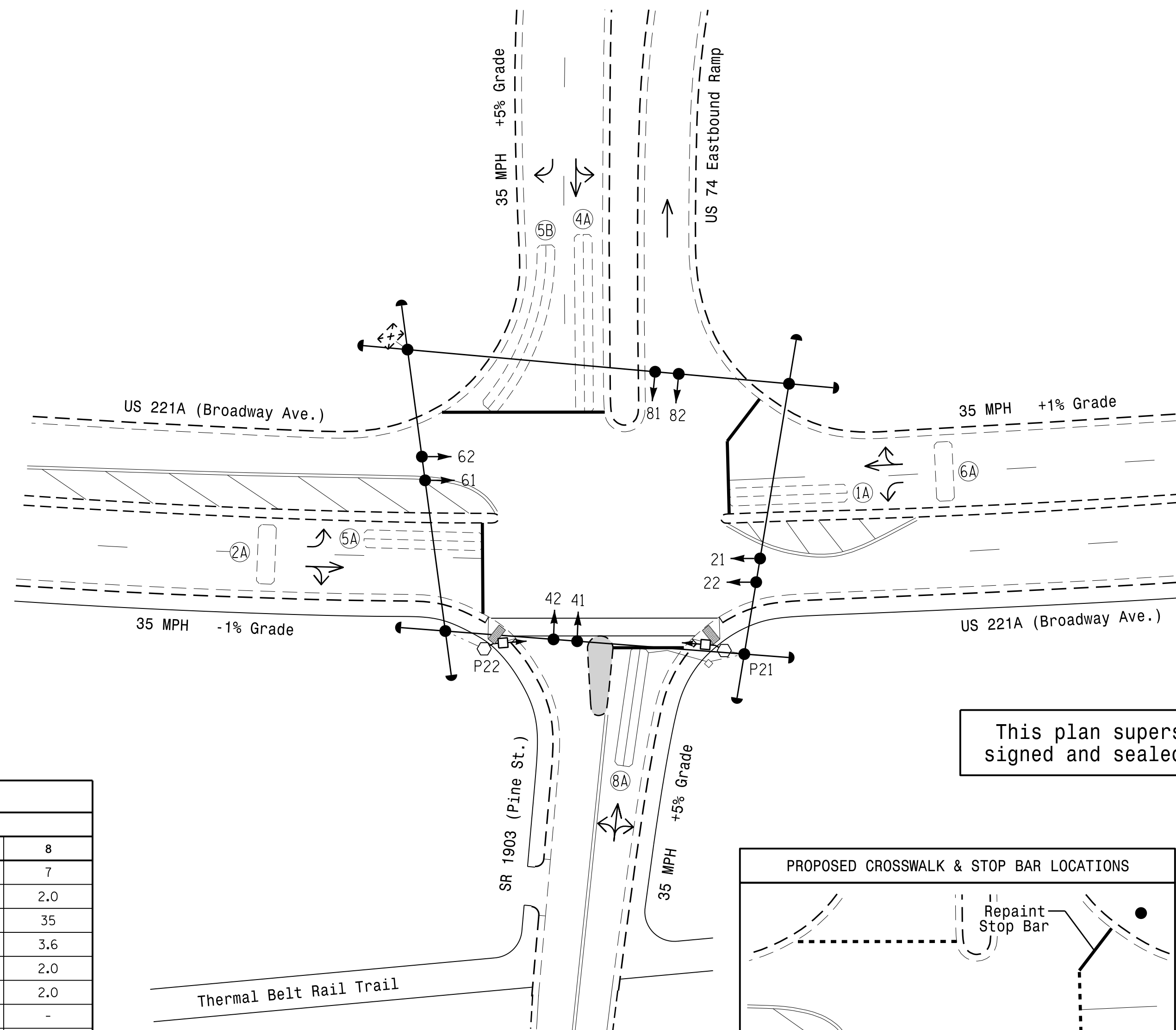


LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A	6X20	70	EXIST	-	2	Y	Y	-	-	-	-	-
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	-
5A	6X40	0	2-4-2	-	2	Y	Y	-	-	-	-	-
5B	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X20	70	EXIST	-	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	-

5 Phase Fully Actuated Isolated

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Enable Backup Protect for phases 2 and 6 to allow the controller to clear from phase 2+6 to phase 1+6 or 2+5 by progressing through an all red display.
- 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.
- Trim Westbound raised median to allow clearance for crosswalk, as shown on plan inset.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.



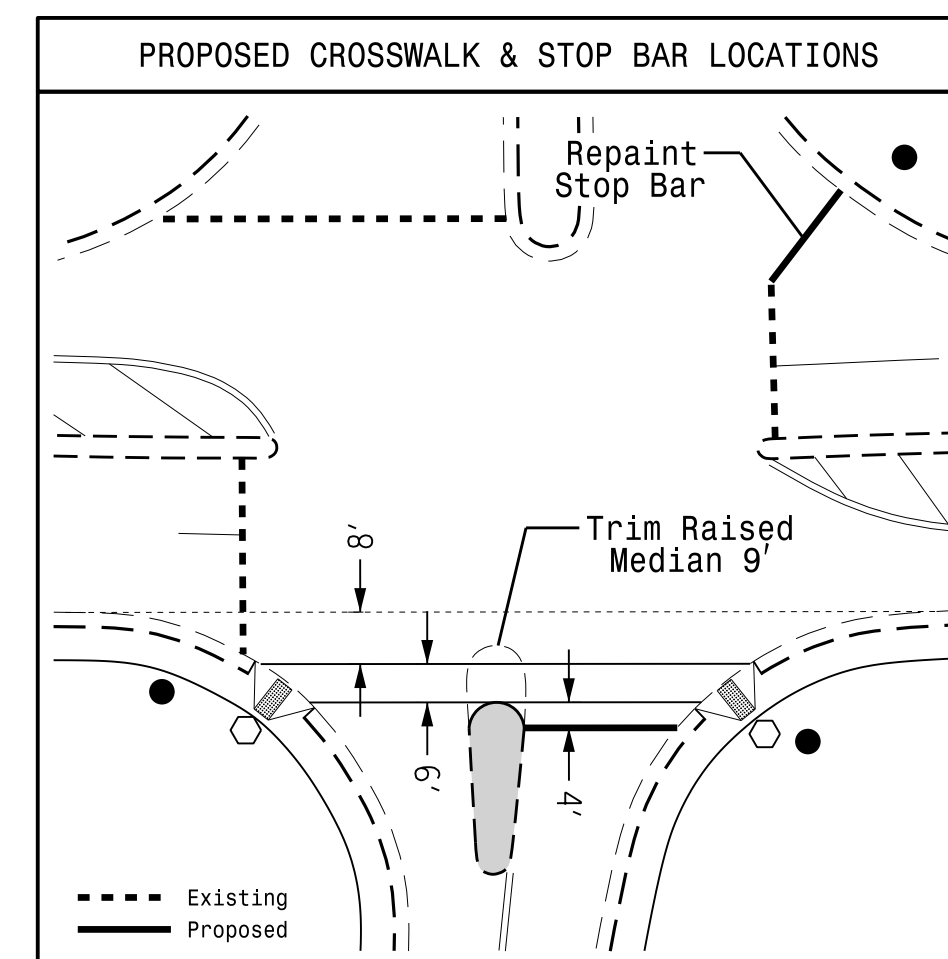
This plan supersedes the one signed and sealed on 8/5/2019.

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	10	7	7	10	7
Extension 1 *	2.0	3.0	1.0	2.0	3.0	2.0
Max Green 1 *	20	45	35	20	45	35
Yellow Clearance	3.0	3.9	3.6	3.0	3.9	3.6
Red Clearance	2.4	1.6	2.0	2.4	1.6	2.0
Red Revert	2.0	5.0	2.0	2.0	5.0	2.0
Walk 1 *	-	7	-	-	-	-
Don't Walk 1	-	16	-	-	-	-
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

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

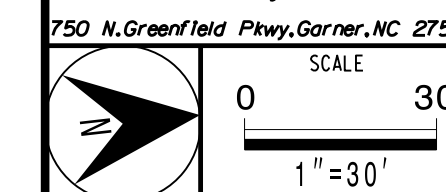
LEGEND

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



Signal Upgrade

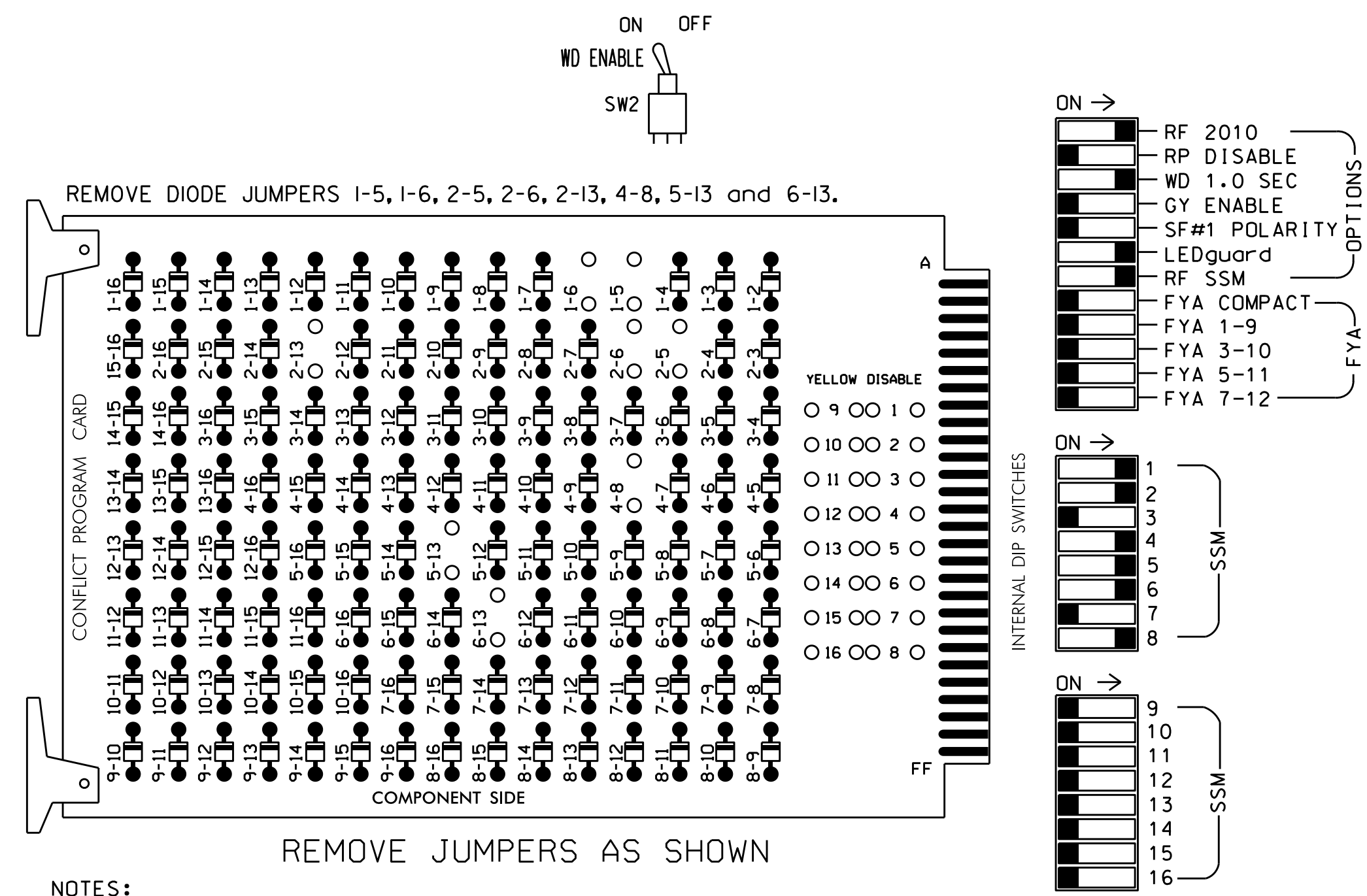
	US 221A (Broadway Ave.) at US 74 Eastbound Ramp/ SR 1903 (Pine St.)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043914 RICHARD N. ZINZER
	Division 13 Rutherford County Alexander Mills PLAN DATE: September 2019 REVIEWED BY: T.J. Williams PREPARED BY: R.N. Zinzer REVIEWED BY:	REVISIONS INIT. DATE	



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### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



### 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 3,7,9, 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 Startup In Green.
- Program phase 2 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.

### 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.	61	21,22	P21, P22	NU	41,42	NU	21,42	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	126						132					
GREEN ARROW	127						133					
Hand			113									
Walker			115									

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

### EQUIPMENT INFORMATION

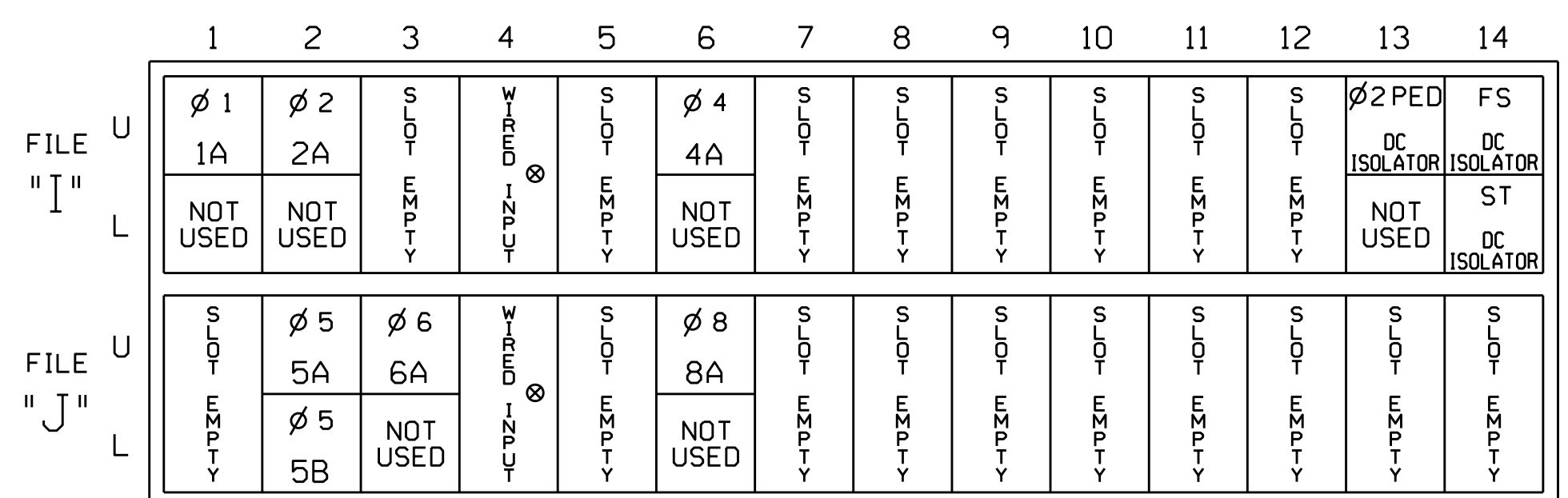
CONTROLLER.....2070  
CABINET.....332  
SOFTWARE.....ECONOLITE OASIS  
CABINET MOUNT.....BASE  
OUTPUT FILE POSITIONS...12  
LOAD SWITCHES USED.....S1,S2,S2P,S4,S5,S6,S8  
PHASES USED.....1,2,2 PED,4,5,6,8  
OVERLAPS.....NONE

### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

### INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S  
FS = FLASH SENSE  
ST = STOP TIME  
⊗ Wired Input - Do not populate slot with detector card

### 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 <sup>1</sup>	TB2-1,2	I1U	56	18	1	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A <sup>2</sup>	TB3-5,6	J2U	40	2	6	5	Y	Y			15
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					

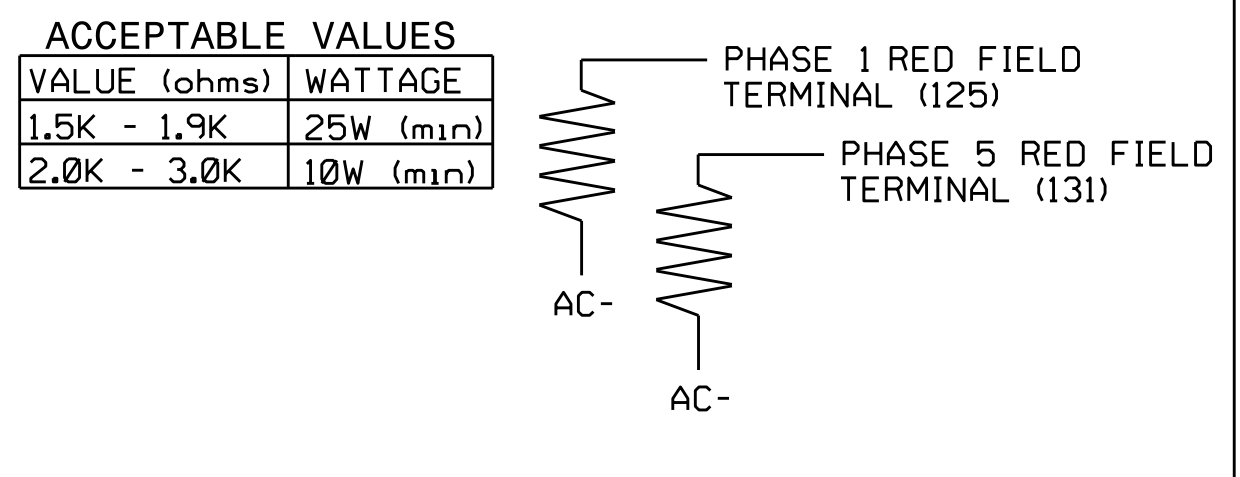
<sup>1</sup>Add jumper from I1-W to J4-W, on rear of input file.  
<sup>2</sup>Add jumper from J2-F to I4-W, on rear of input file.

NOTE:  
INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

### INPUT FILE POSITION LEGEND: J2L



### LOAD RESISTOR INSTALLATION DETAIL



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-0483  
DESIGNED: September 2019  
SEALED: 9-20-19  
REVISED: N/A

This Electrical Detail supersedes the detail sealed on 8-07-19.

### Electrical Detail

Electrical and Programming Details for: US 221A (Broadway Avenue) at US 74 Eastbound Ramp/ SR 1903 (Pine St.)

Prepared In the Offices of: Rutherford County Alexander Mills

PLAN DATE: September 2019 REVIEWED BY: Ryan W. Hough

PREPARED BY: James Peterson REVIEWED BY: Ryan W. Hough

REVISIONS: \_\_\_\_\_ INIT: \_\_\_\_\_ DATE: \_\_\_\_\_

750 N. Greenfield Pkwy, Garner, NC 27529

Division 13 Rutherford County Alexander Mills

SEAL: Ryan W. Hough, Professional Engineer, License No. 036833

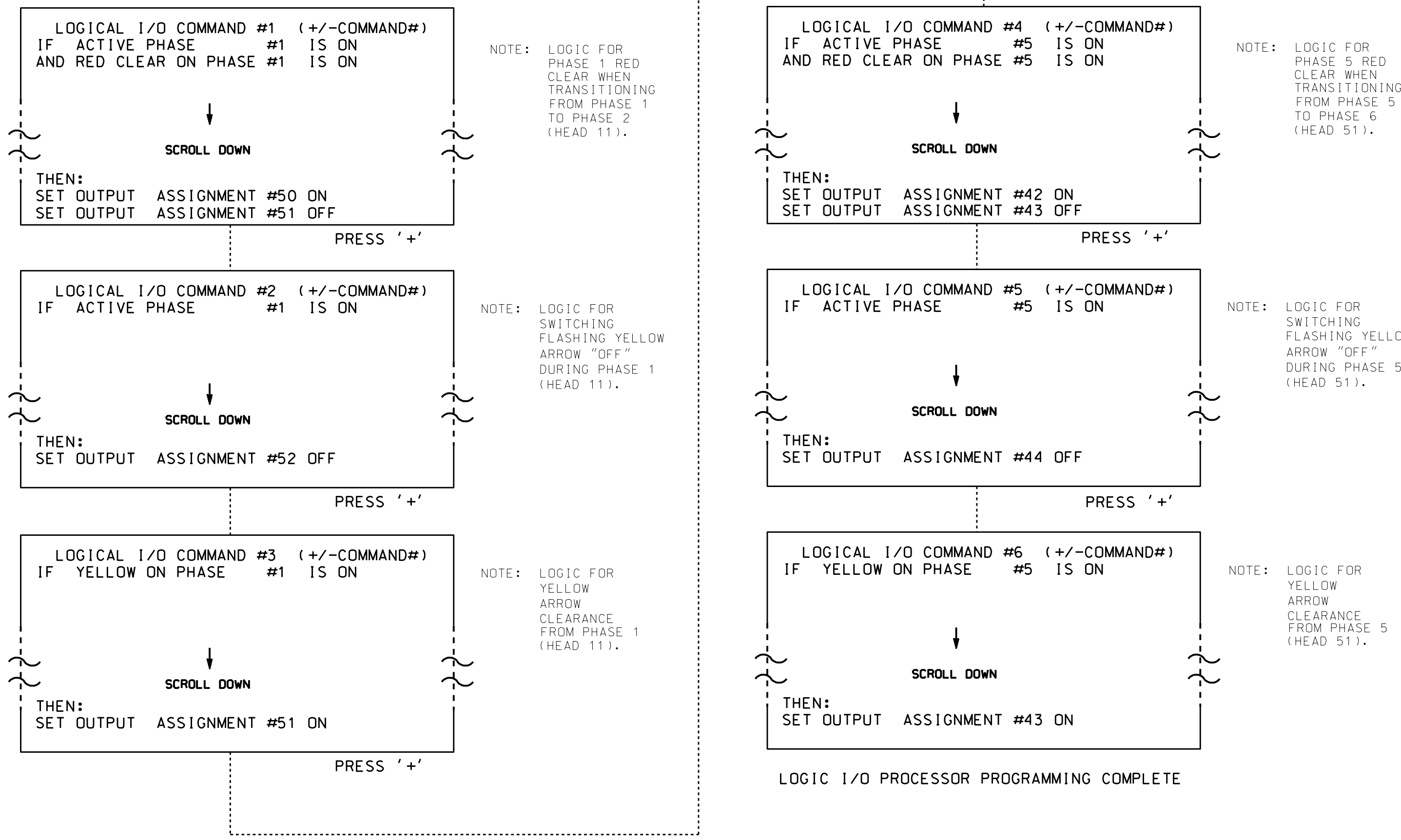
10/2/2019

SIG. INVENTORY NO. 13-0483

## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(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 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



<b>OUTPUT REFERENCE SCHEDULE</b>
OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

## 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: XX
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)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
  
```

← NOTICE GREEN FLASH

PRESS '+' TWICE

```

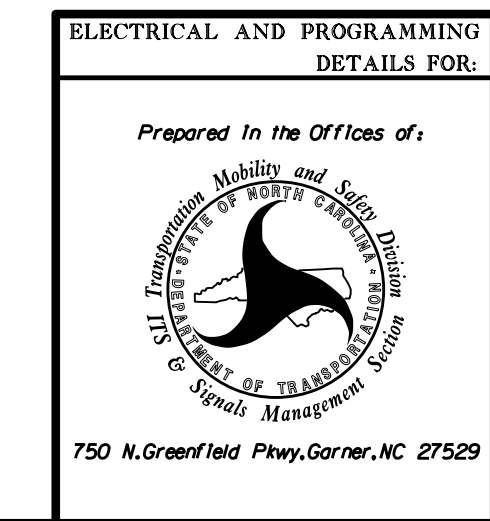
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
  
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

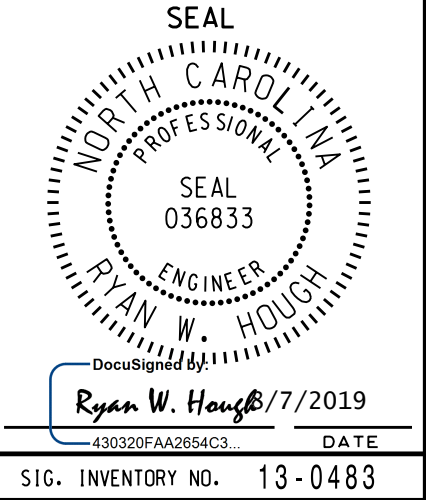
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 13-0483  
DESIGNED: July 2019  
SEALED: 8/5/2019  
REVISED:

Electrical Detail - Sheet 2 of 2

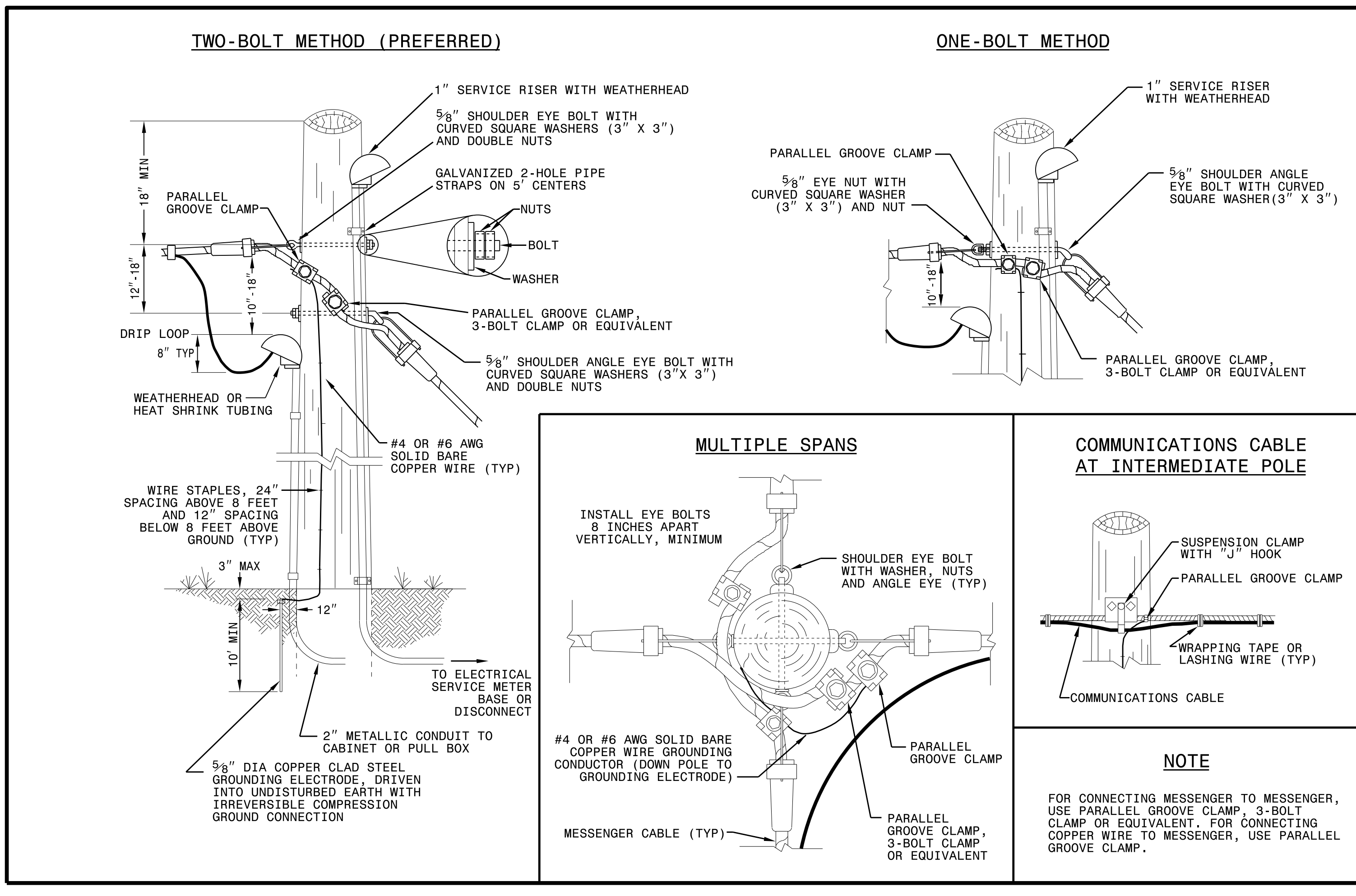
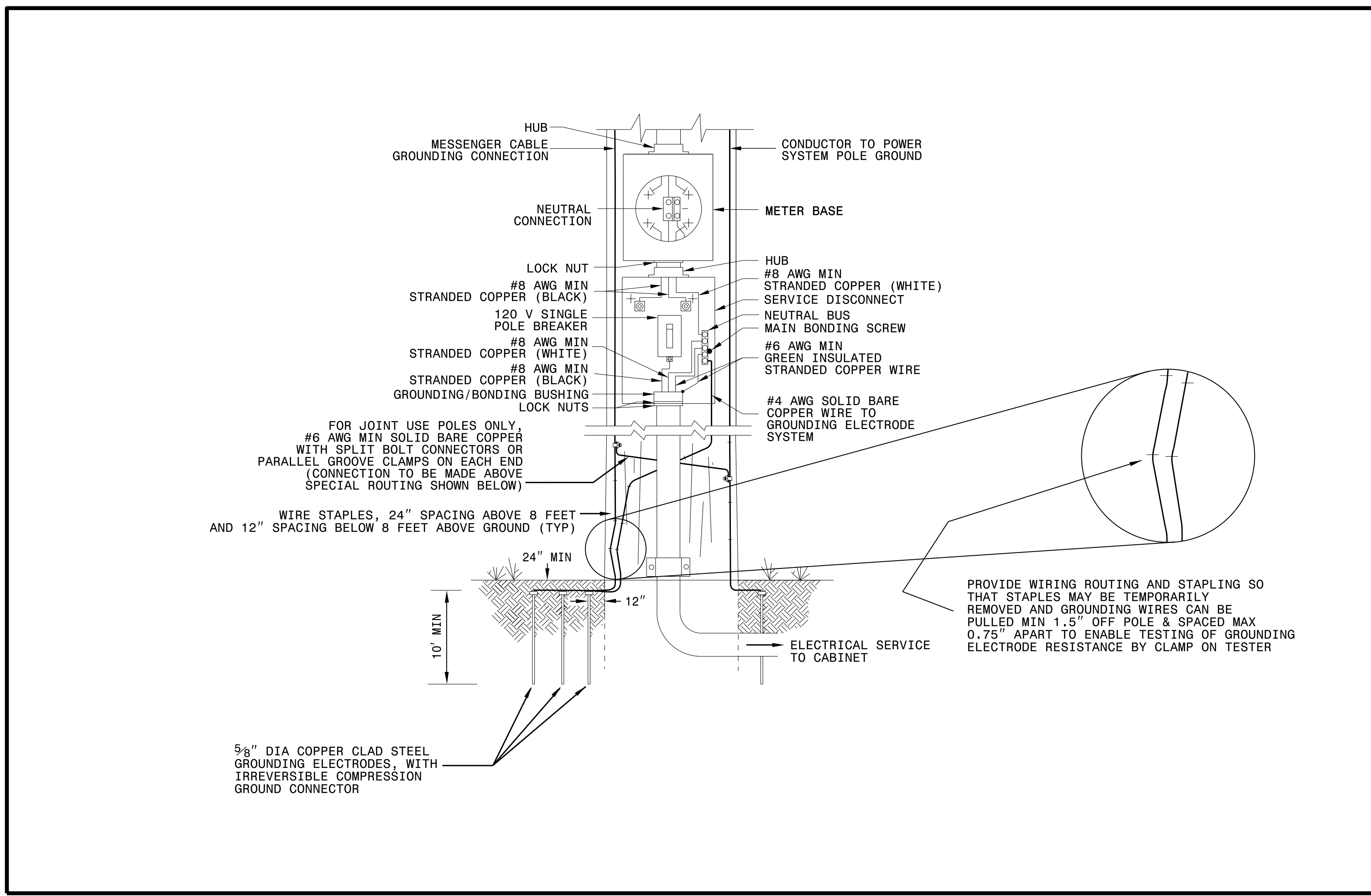


ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 221A (Broadway Avenue) at US 74 Eastbound Ramp/ SR 1903 (Pine St.)	
Division 13	Rutherford County	Alexander Mills	
PLAN DATE: July 2019	REVIEWED BY: RWH		
PREPARED BY: JPG	REVIEWED BY:		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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FINAL UNLESS ALL  
SIGNATURES COMPLETED

See Plate for Title

Prepared in the Offices of:

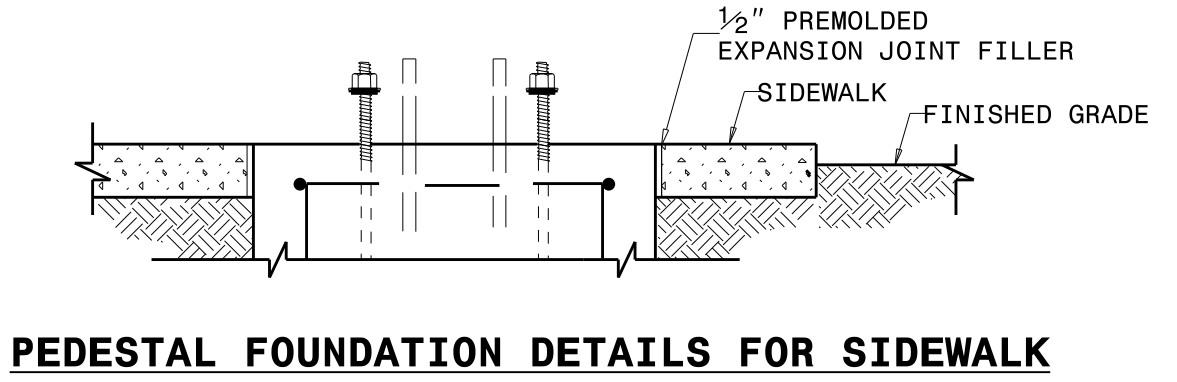
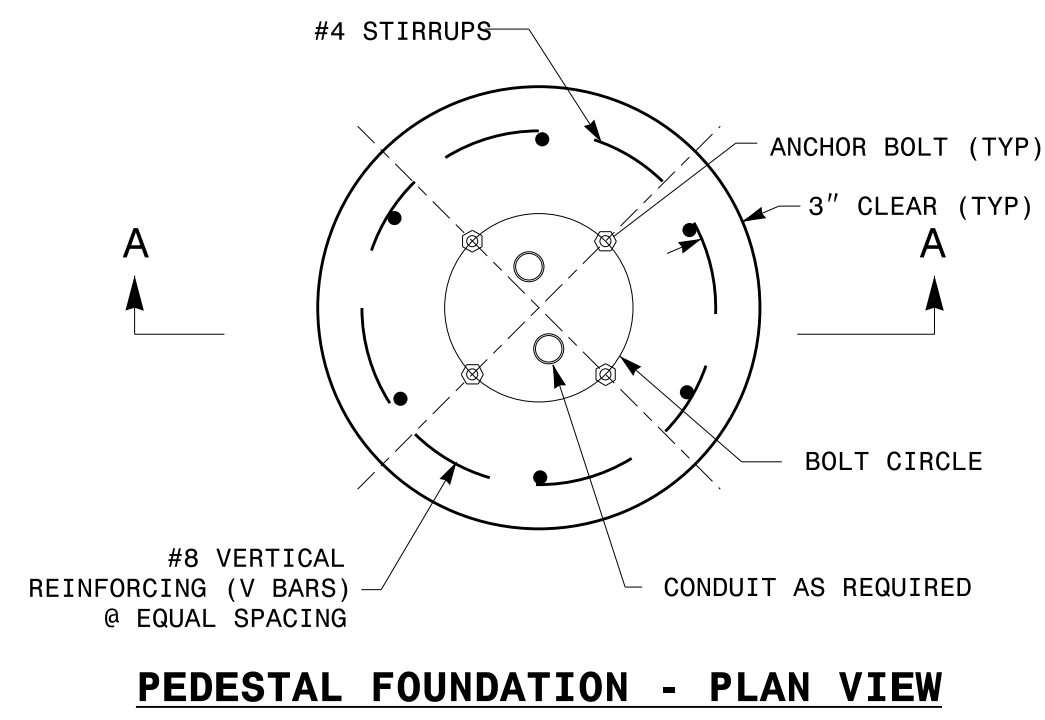
SEAL

DocuSigned by:  
Mohd. Aslami

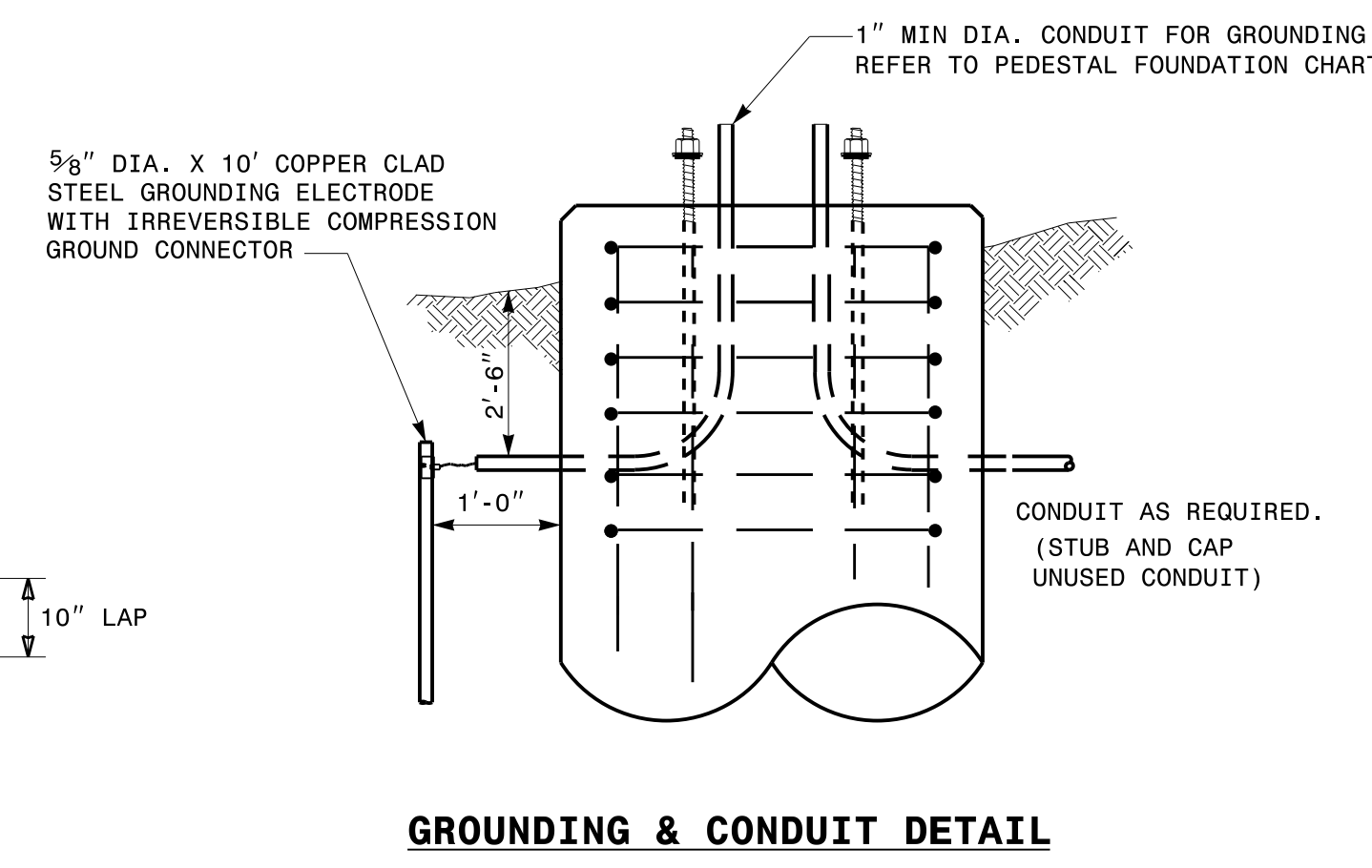
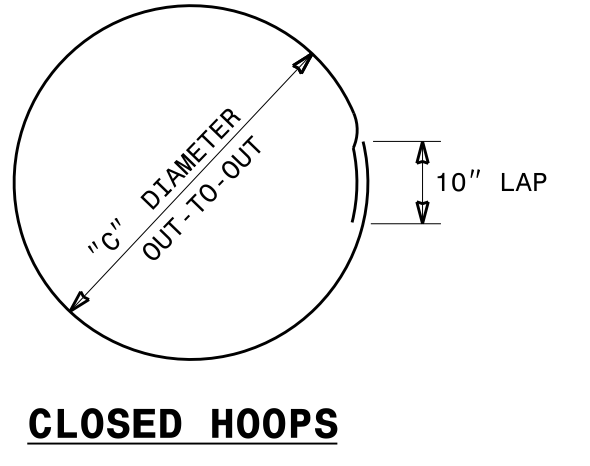
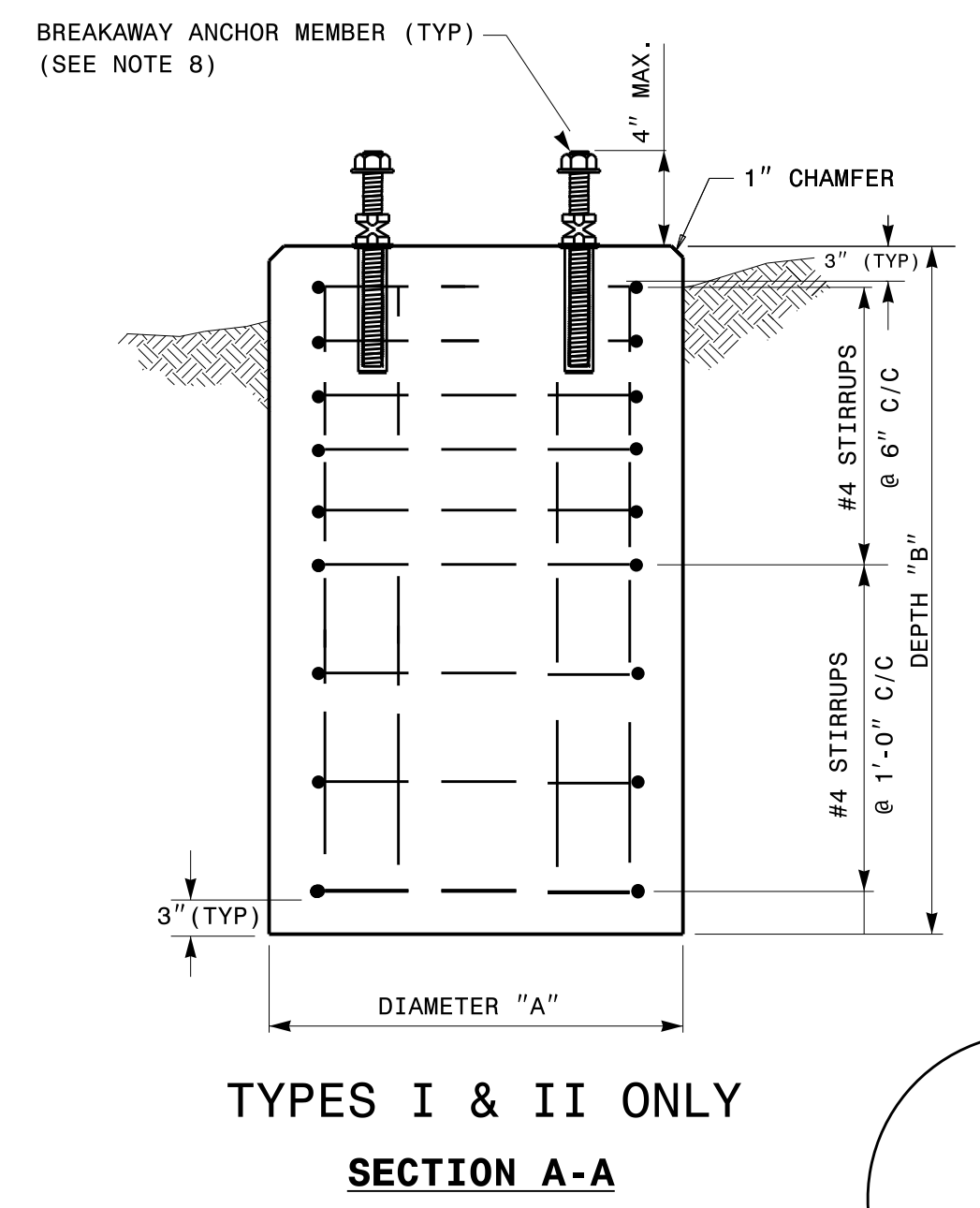
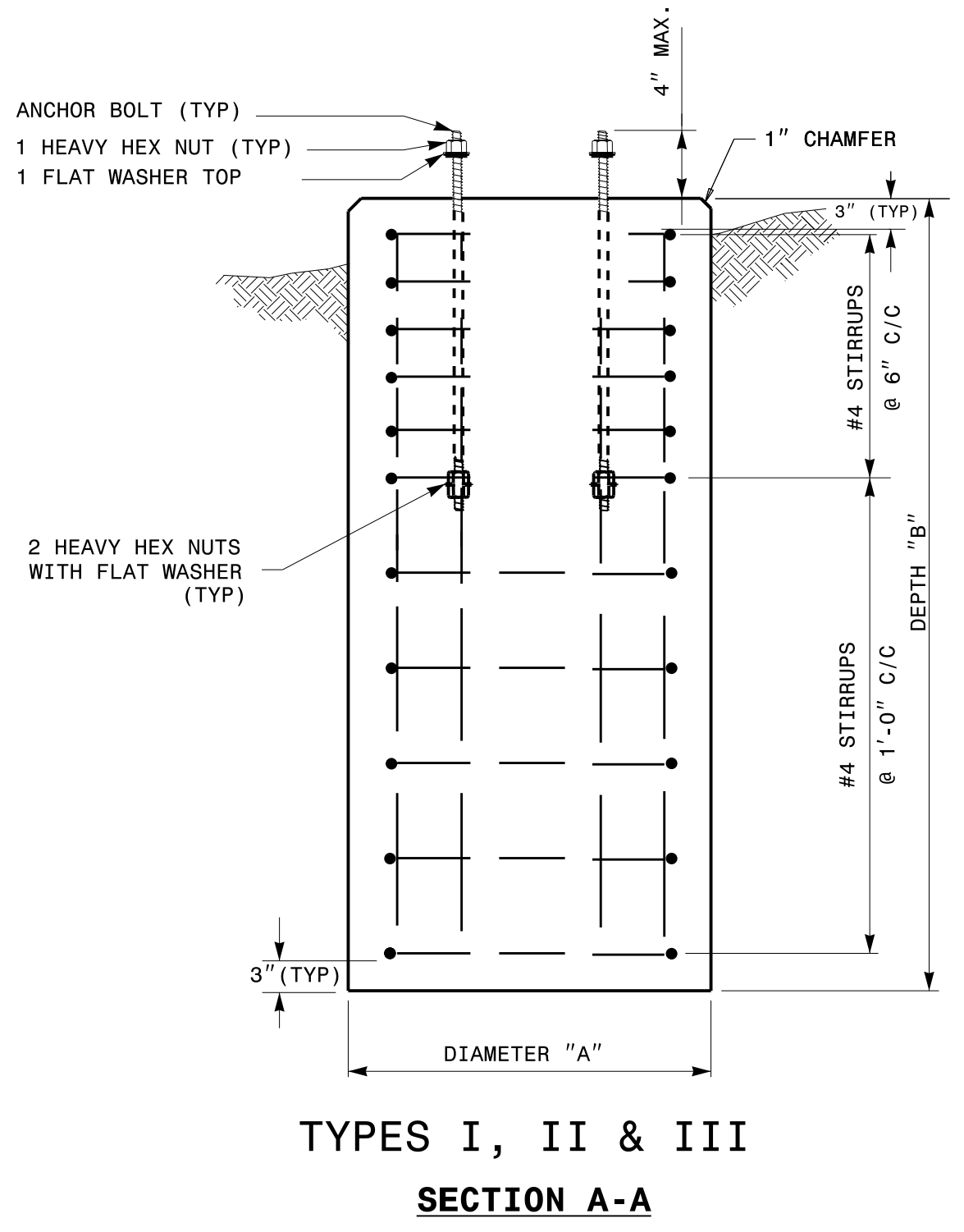
750 N. Greenfield Parkway  
Garner, NC 27529

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- NOTES:**
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
  - COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
  - USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF  $F'c = 3000$  PSI (MIN.).
  - USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
  - GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
    - SANDY TYPE SOIL
    - NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
    - WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
  - MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
  - ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
  - USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



PEDESTAL FOUNDATION TYPE AND SIZE							
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE												
TYPE	V-BAR				STIRRUP							
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
					VERTICAL ON 6" CENTERS	ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	7'-2"	2'-0"	0'-10"	53	175

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

ENGLISH STANDARD DRAWING FOR  
**PEDESTALS**  
 FOUNDATIONS

SHEET 1 OF 1  
**1743D01**

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DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

See Plate for Title

