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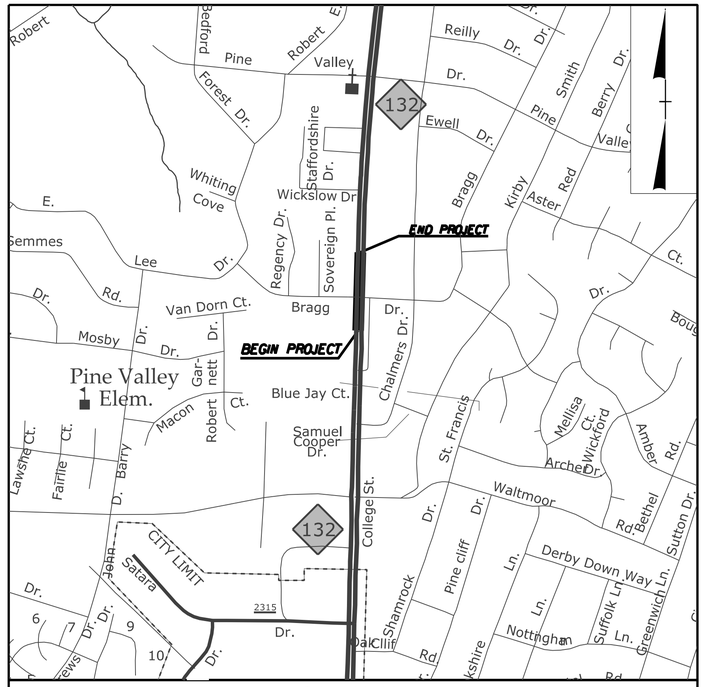
TIP PROJECT: W-5703R

CONTRACT: DC00420

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP NTS

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

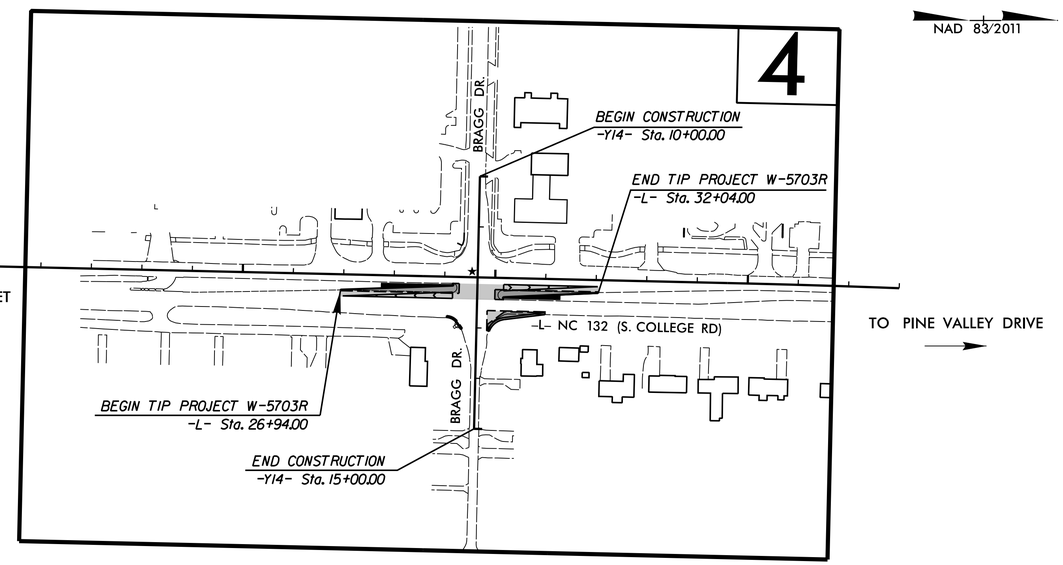
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5703R	1	38

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
44849.1.18	HSIP-0132(013)	P.E.
44849.3.18	HSIP-0132(013)	CONST.

LOCATION: INTERSECTION OF NC 132 (COLLEGE ROAD) AND BRAGG DRIVE (CITY STREET)

TYPE OF WORK: GRADING, PAVING, PAVEMENT MARKINGS, SIGNALS AND DRAINAGE

NAD 83/2011



– THIS IS A NO CONTROLLED ACCESS PROJECT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2021 = 38,000
V = 50 MPH

FUNC CLASS =
PRINCIPAL ARTERIAL

STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT = 0.097 MI
TOTAL LENGTH OF W-5703R PROJECT = 0.097 MI

NCDOT CONTACT: TRACE HOWELL, PE
DIVISION 3 DESIGN ENGINEER

We think bigger.

Prepared in the Office of:
LJB Engineering PC
1401 Aversboro Road Suite 215. Garner, NC 27529
NC LICENSE NO. C-4947

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
JANUARY 5, 2023

FARRELL NICHOLSON, PE
PROJECT ENGINEER

FARRELL NICHOLSON, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

11/16/2022
DocuSigned by: Farrell Nicholson 327F12B91530486...
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

ROADWAY DESIGN ENGINEER

11/16/2022
DocuSigned by: Farrell Nicholson 327F12B91530486...
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

11/16/2022
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8/17/99

We think bigger.
1401 Aversboro Road
Suite 215
Garner, NC 27529
(919) 594-6710
NCBELS C-4123

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DocuSigned by: 8/17/2022
Farrell Nicholson
327F1289153D486...

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-7	CURB RAMP DETAILS
2C-1	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
RW01 - RW02C-1	SURVEY CONTROL SHEETS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIG-1 THRU SIG-1.2	SIGNAL PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-9	CROSS-SECTIONS

EFF. 01-16-2018
REV.

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 2 - EARTHWORK	
200.D03	Method of Clearing - Modified Method III (Use detail in lieu of Standard)
225.02	Guide for Grading Subgrade - Secondary and Local
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY MODIFED METHOD III.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:

GAS - PIEDMONT NATURAL GAS (ROSS WILCOX 910-251-2808 HAROLD.WILCOX@PIEDMONTNG.COM),
WATER/SEWER - CAPE FEAR PUBLIC UTILITY (DAVID DAILEY 910-332-6626 DAVID.DAILEY@CFPUA.ORG),
COMMUNICATIONS - AT&T (ELIZABETH PATE 919-917-4256 ELIZABETH.PATE@ATT.COM),
COMMUNICATIONS - SPECTRUM (STEVE BARNETTE 910-772-5755 STEVE.BARNETTE@CHARTER.COM),
COMMUNICATIONS - SEGRA (MICHAEL WORNOM 803-609-1860 MICHAEL.WORNOM@SEGRA.COM),
POWER (DISTRIBUTION) - DUKE POWER (CYNTHIA ROARTY 919-327-7928 CYNTHIA.ROARTY@DUKE-ENERGY.COM)

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.

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

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

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
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- 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 — S
- 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 — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- 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.

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1401 Aversboro Road
Suite 215
Garner, NC 27529
(919) 594-6710
NCBELS C-4123

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DocuSigned by: Farrell Nicholson 8/4/2022
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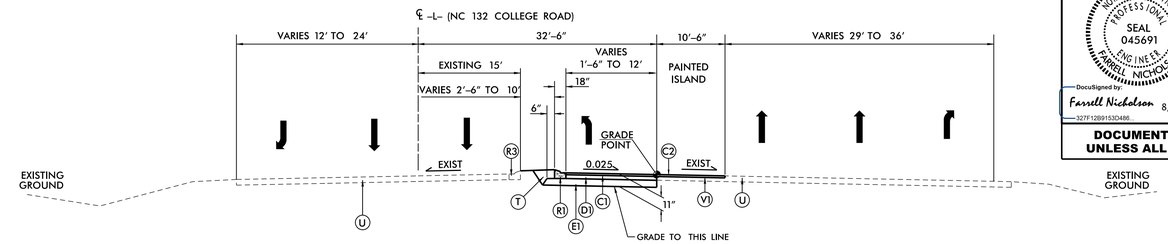
PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

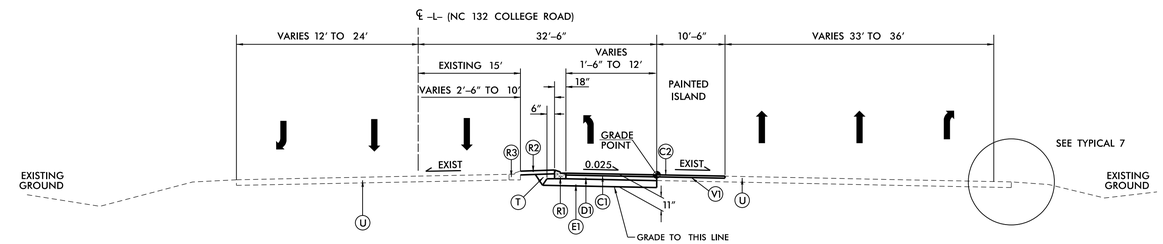
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	1'-6" CONCRETE CURB
R2	4" CONCRETE ISLAND CAP
R3	EXISTING 1'-6" CONCRETE CURB TO BE RETAINED
R4	2'-6" CONCRETE CURB & GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING EXISTING PAVEMENT, 1 1/2" DEPTH
V2	MILLING EXISTING PAVEMENT, 3" DEPTH

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



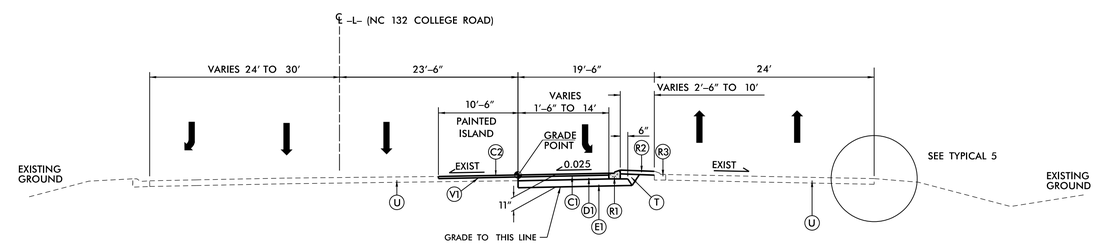
TYPICAL SECTION NO. 1

TURN LANE WIDENING FOR NORTHBOUND LANES
-L- STA. 26+94.00 TO 27+75.00



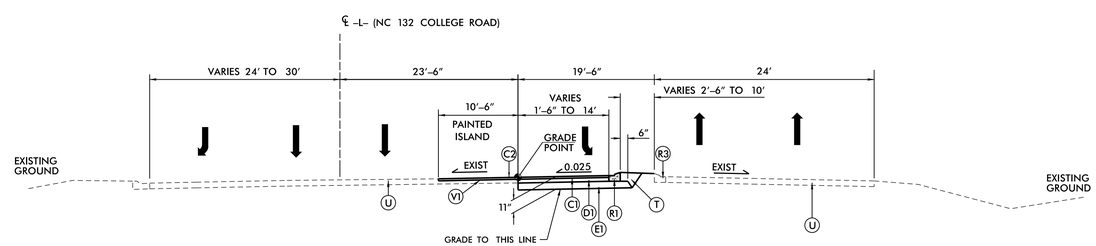
TYPICAL SECTION NO. 2

TURN LANE WIDENING FOR NORTHBOUND LANES
-L- STA. 27+75.00 TO 29+29.00



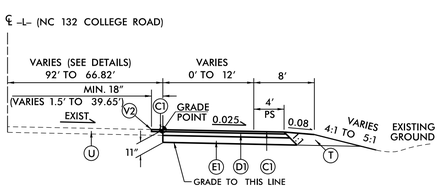
TYPICAL SECTION NO. 3

TURN LANE WIDENING FOR SOUTHBOUND LANES
-L- STA. 30+00.00 TO 31+30.00



TYPICAL SECTION NO. 4

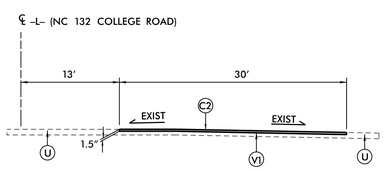
TURN LANE WIDENING FOR SOUTHBOUND LANES
-L- STA. 31+30.00 TO 32+50.00



TYPICAL SECTION NO. 5

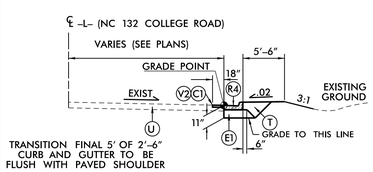
NORTHBOUND U-TURN LANE WIDENING
-L- STA. 29+85.35 TO 31+00.00

*GRADE POINT DENOTES THE TOP ELEVATION OF THE EXISTING PAVEMENT.



TYPICAL SECTION NO. 6

NORTHEAST CORNER INTERSECTION MILLING AND OVERLAY
-L- STA. 29+29.00 TO 30+00.00



TYPICAL SECTION NO. 7

SOUTHEAST CORNER INTERSECTION MILLING AND OVERLAY
-L- STA. 29+05.06 TO 29+35.84

*GRADE POINT DENOTES THE TOP ELEVATION OF THE EXISTING PAVEMENT.

**REFER TO PSH 04 AND RSD 848.05 FOR ADDITIONAL DIMENSIONS REGARDING CURB RAMP.

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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON
DocuSigned by: Farrell Nicholson 8/17/2022
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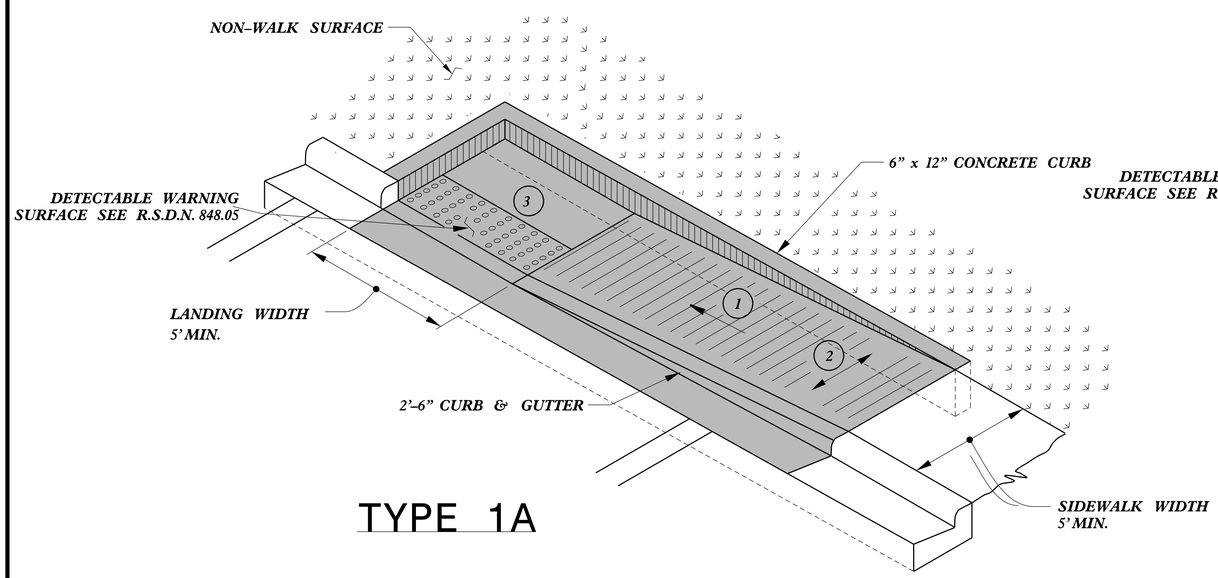

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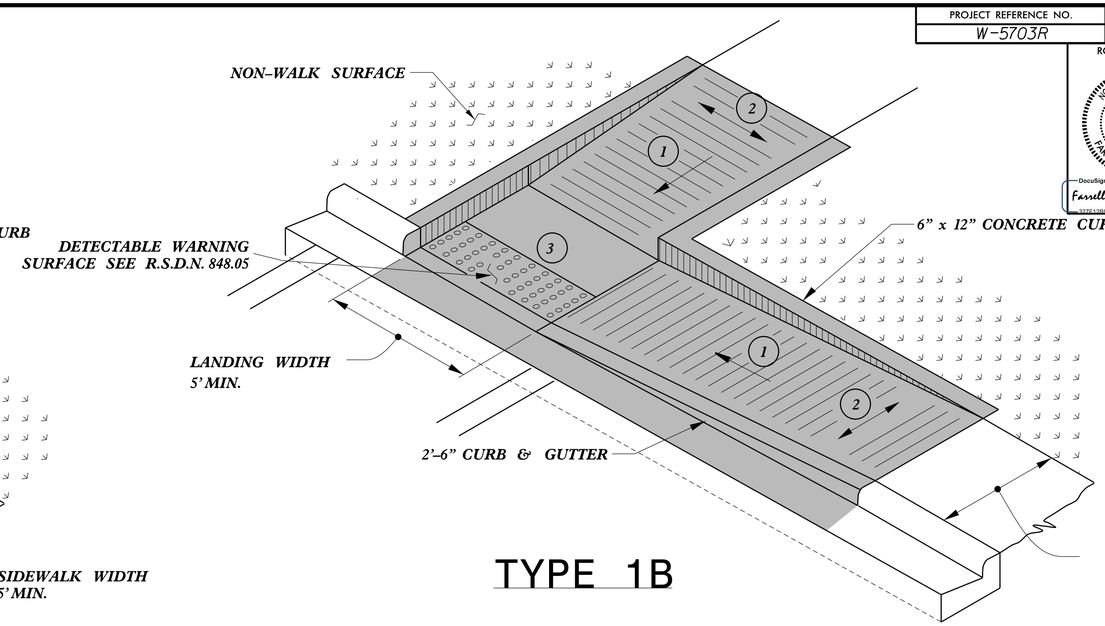

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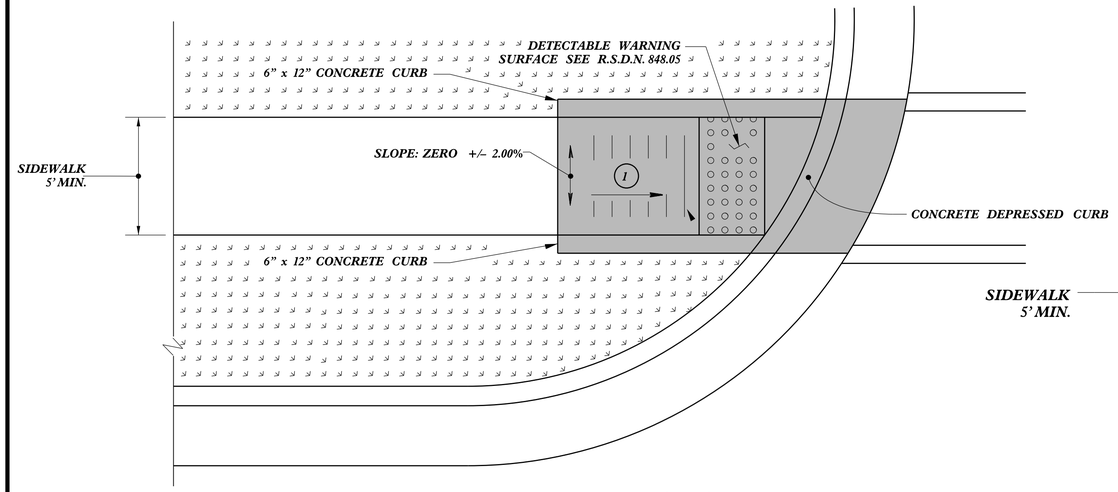

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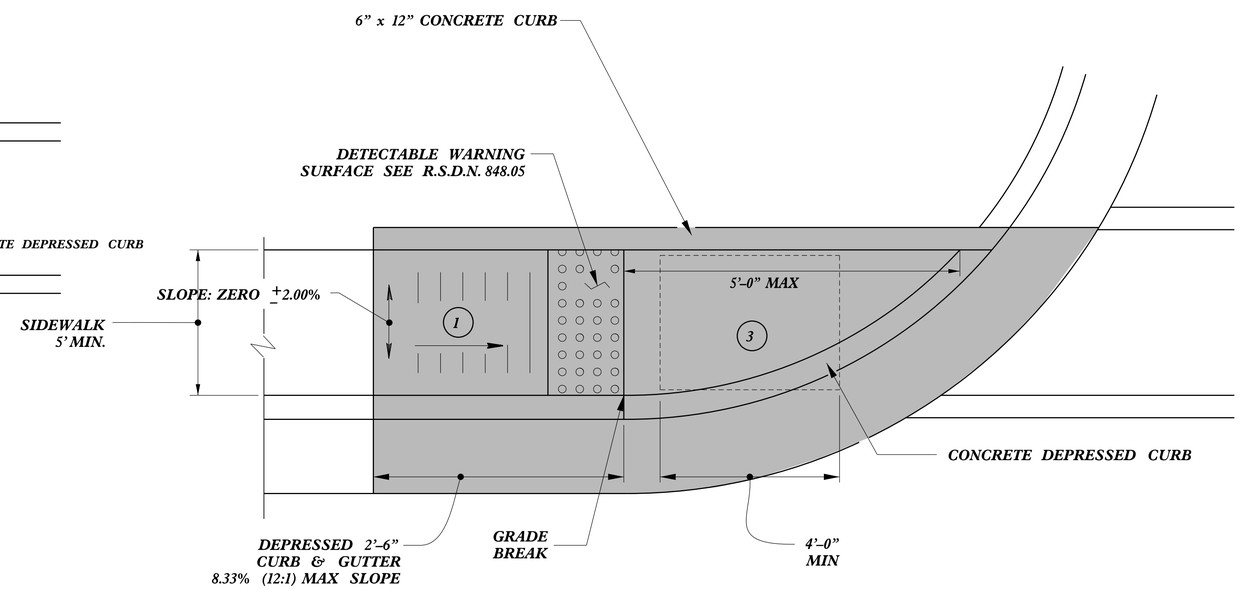

TYPE 1

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

PAY LIMITS FOR 1 CURB RAMP

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

CURB RAMPS

Directional Ramps

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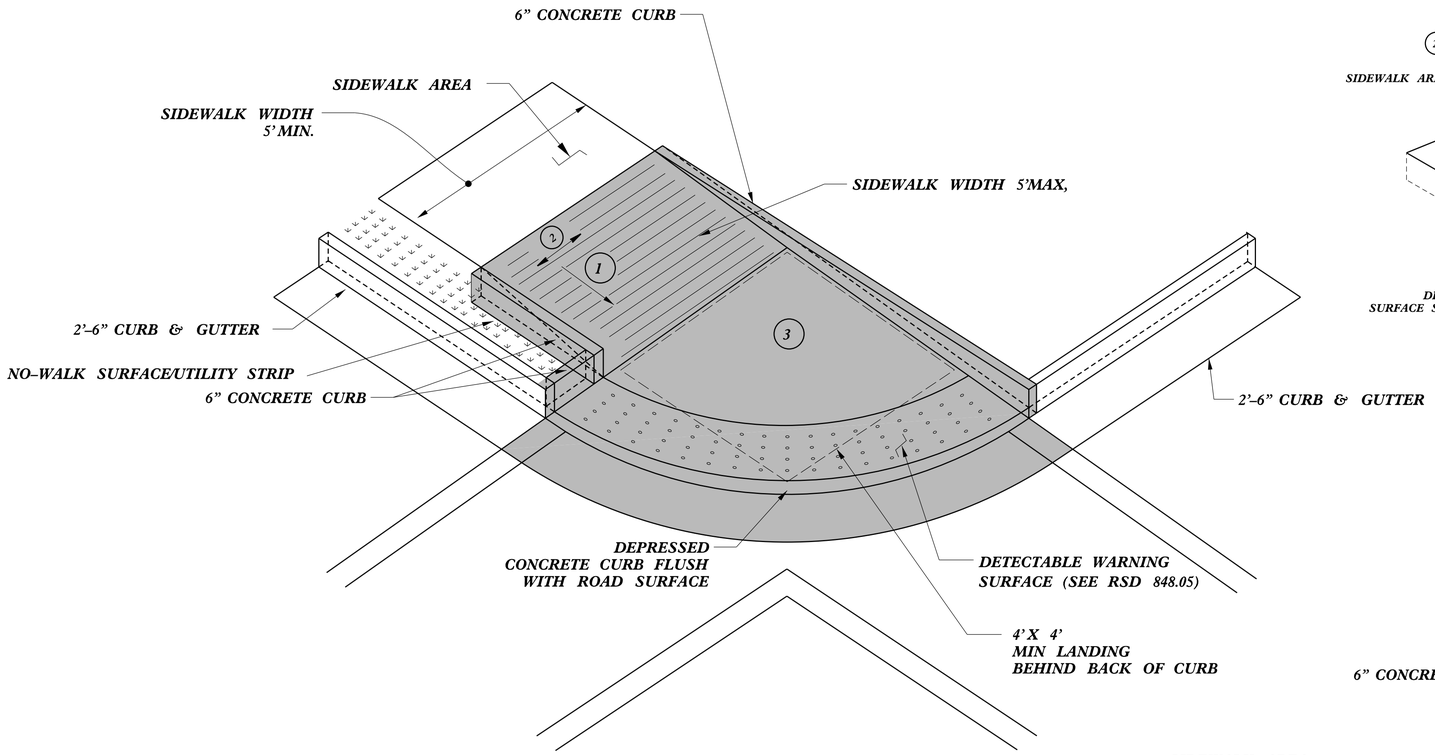
PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-2

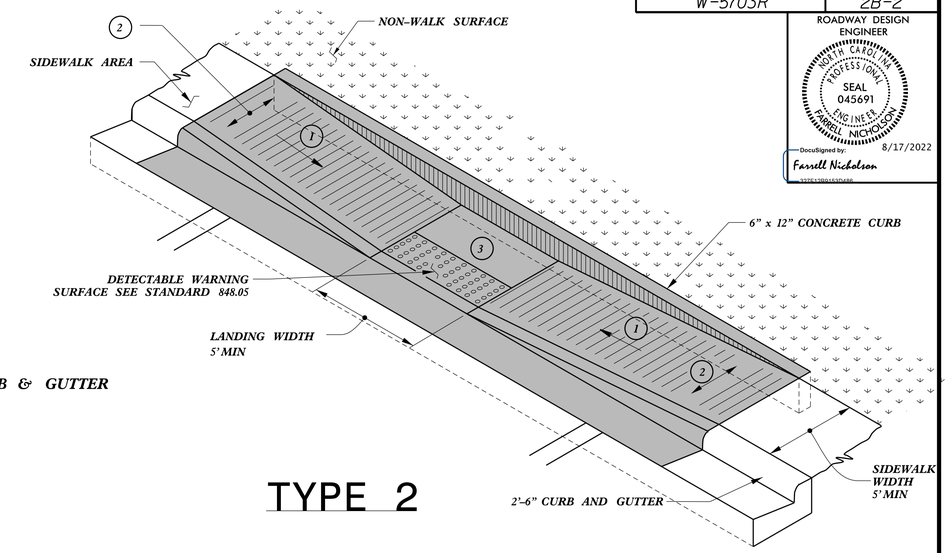
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

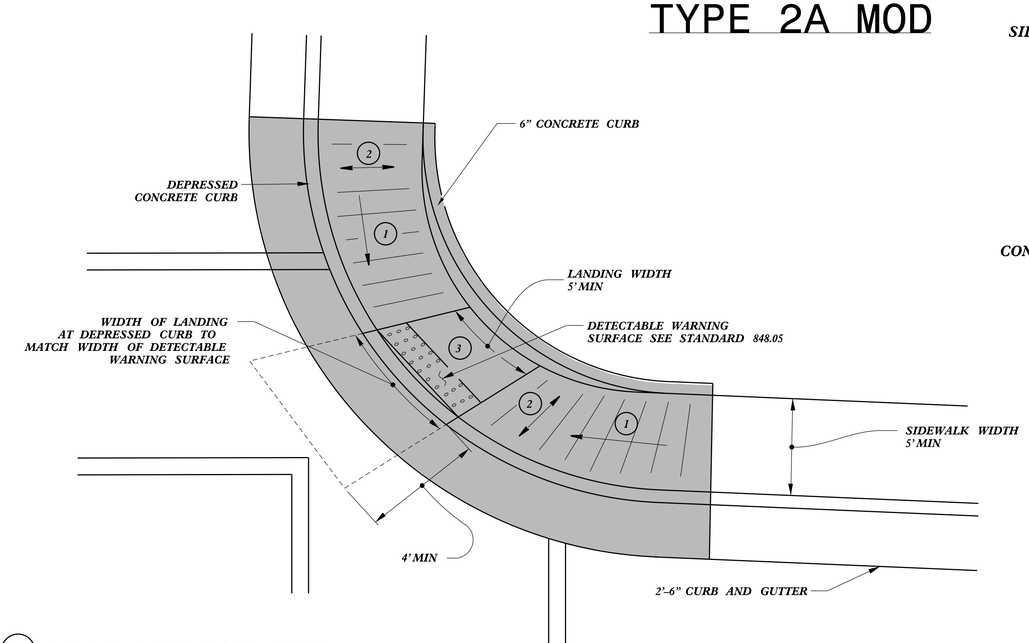
DocuSigned by: Farrell Nicholson 8/17/2022



TYPE 2A MOD



TYPE 2



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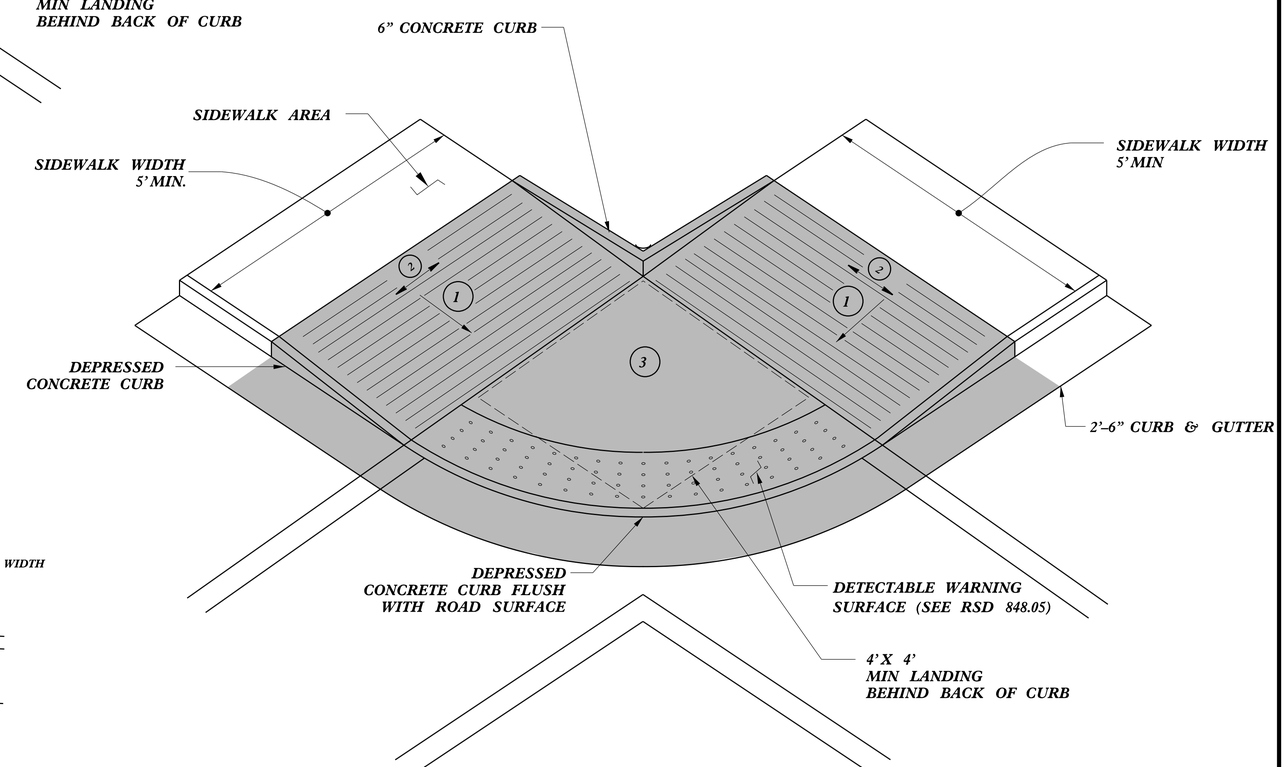

TYPE 2A

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 1 CURB RAMP

CURB RAMPS

Parallel Ramps

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Curb Ramp Sheets.dgn

DocuSign Envelope ID: 1FFEE3B5-AB19-4595-80FC-59136B5A5B52

8/17/99

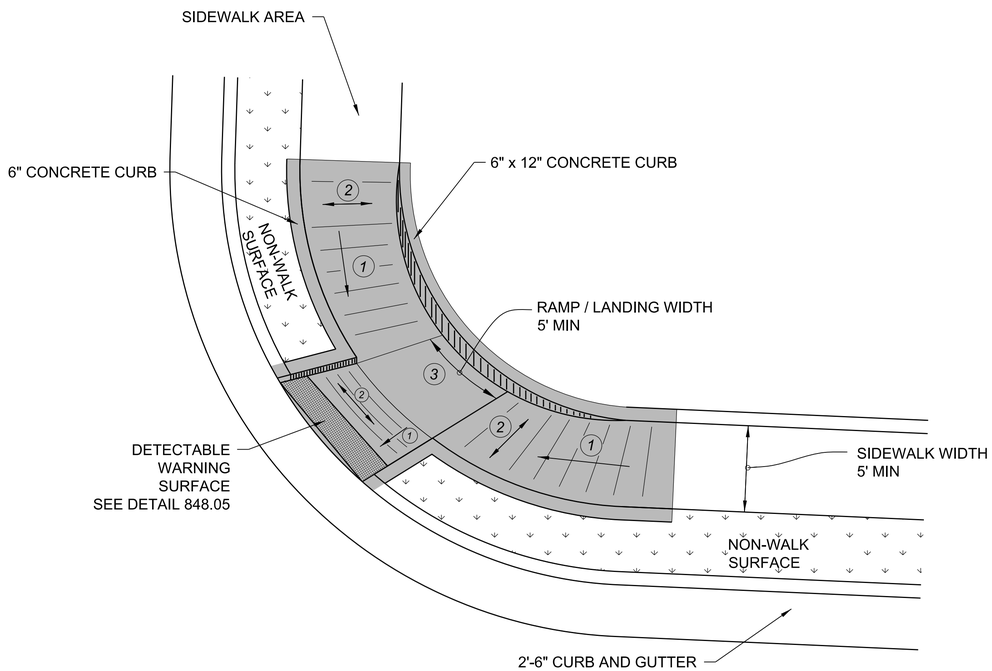
PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-3

ROADWAY DESIGN ENGINEER

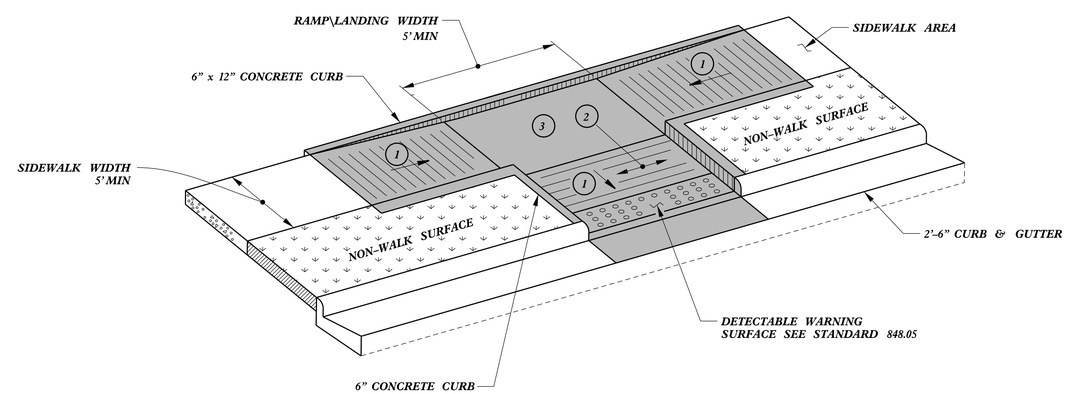
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DocuSigned by: 8/17/2022
Farrell Nicholson
327F128913D486...

PAY LIMITS FOR 1 CURB RAMP



TYPE 3 MODIFIED
INSTALLATION IN A RADIUS



TYPE 3

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.*

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CURB RAMPS

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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-4

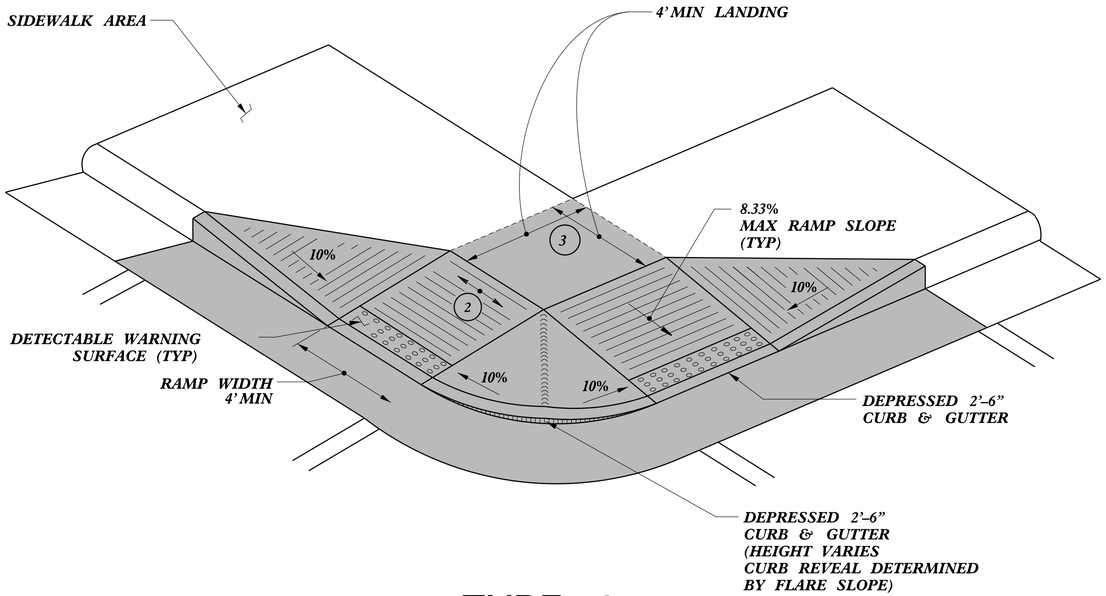
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

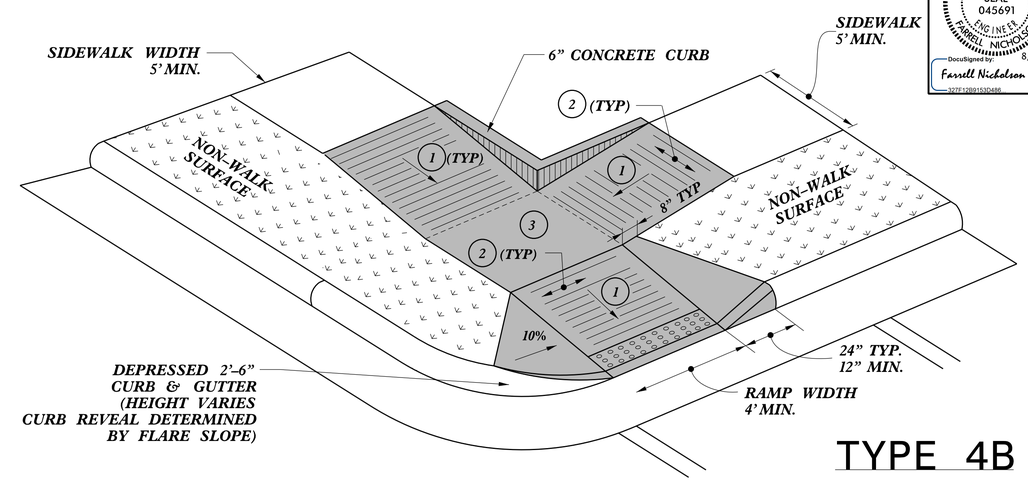
Docusigned by: Farrell Nicholson 8/17/2022

327F12091532486

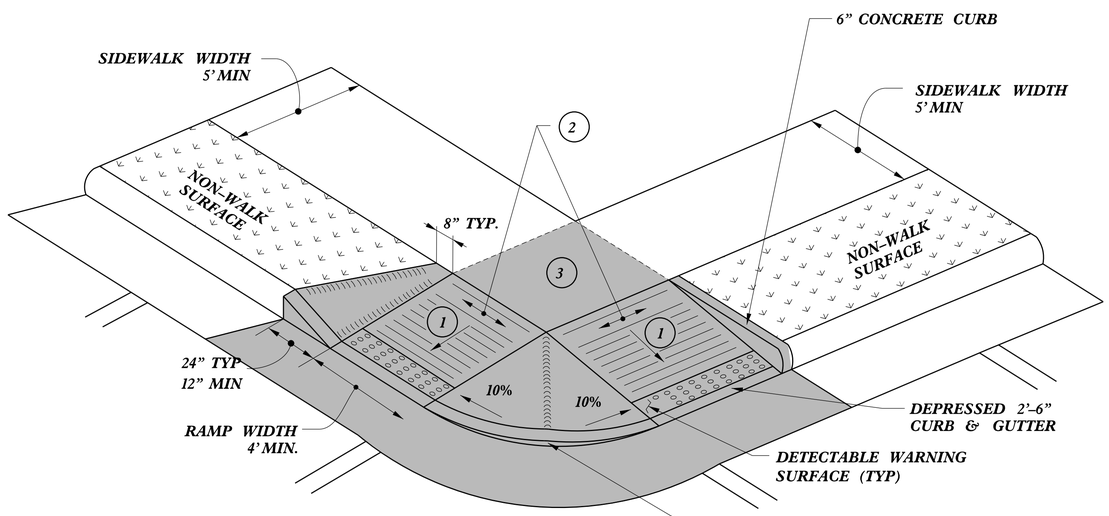
PAY LIMITS FOR 1 OR 2 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)



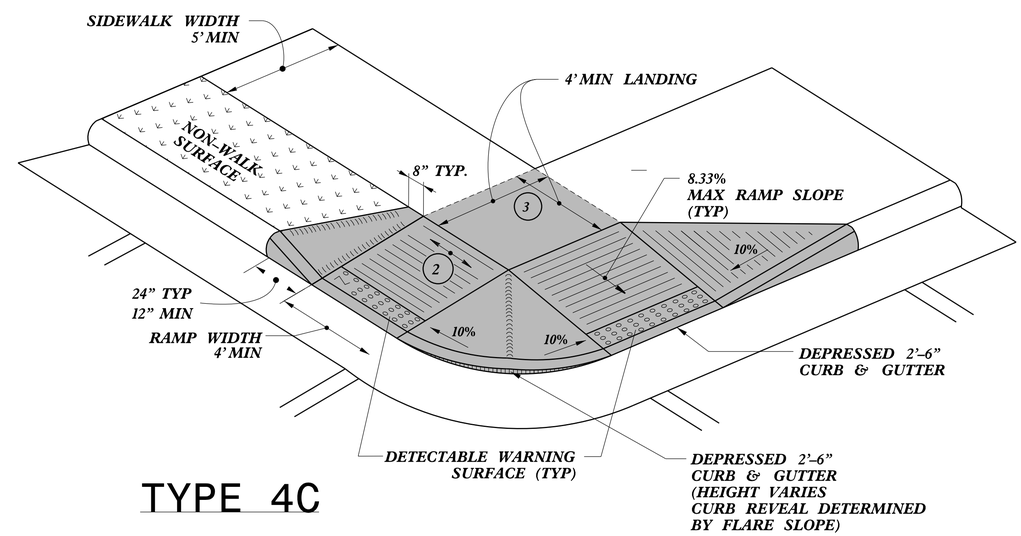
TYPE 4



TYPE 4B



TYPE 4A



TYPE 4C

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

CURB RAMPS

8/17/2022 1:16:42 PM
Curb Ramp Sheets.dgn

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-5

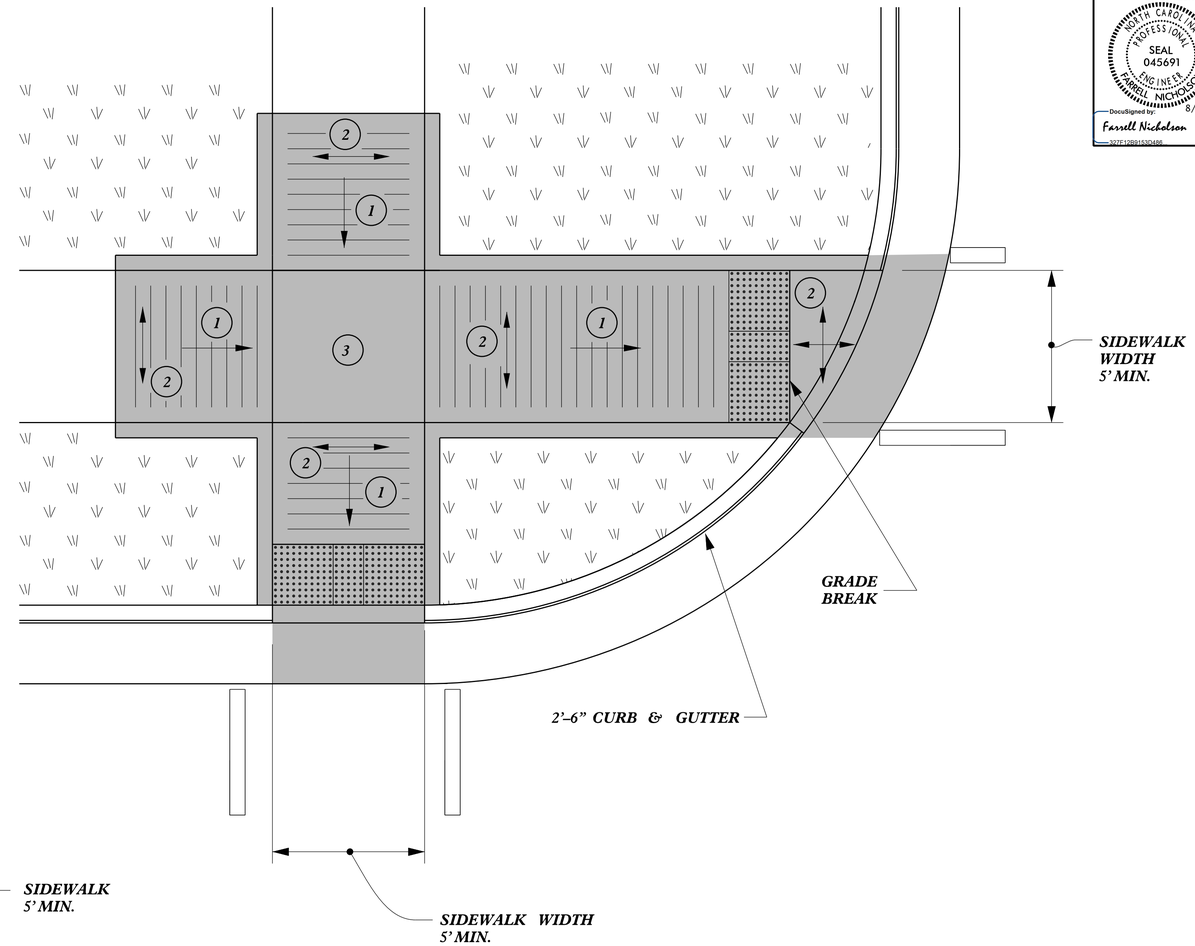
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

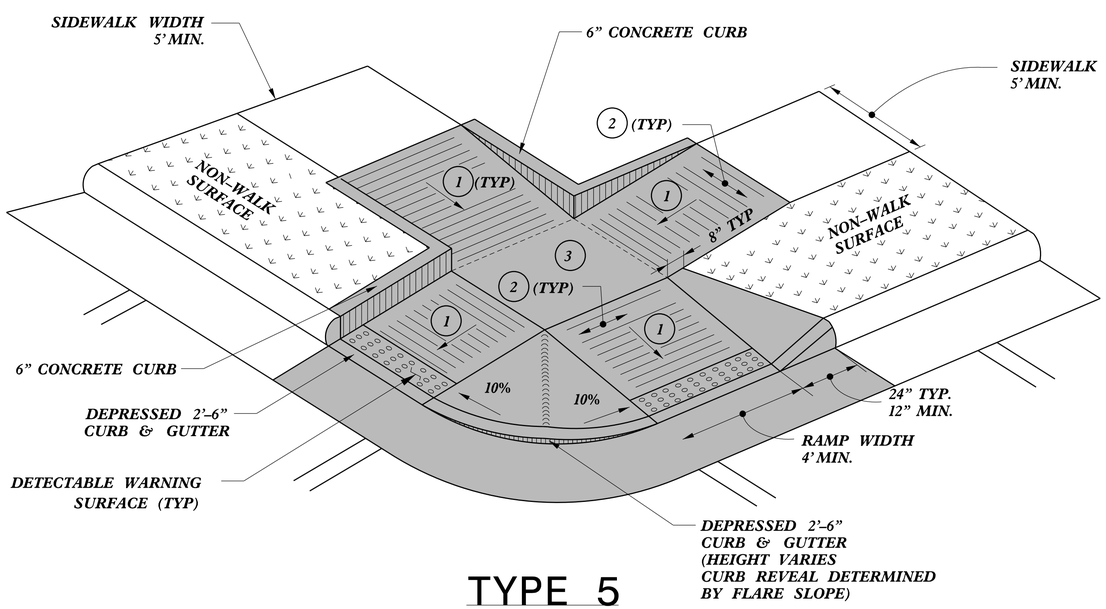
DocuSigned by: Farrell Nicholson 8/17/2022

327F12B9153D486...

PAY LIMITS FOR 1 OR 2 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)



TYPE 5A



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.

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

CURB RAMPS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-6

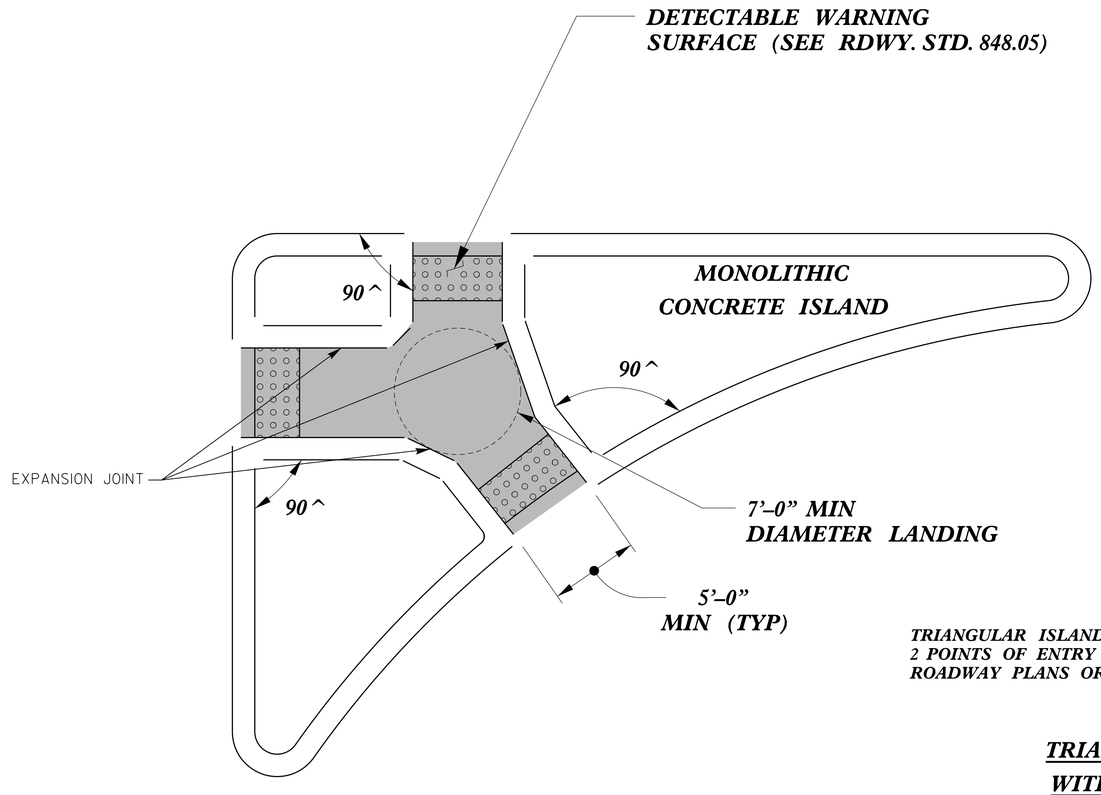
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

8/17/2022

DocuSigned by:
Farrell Nicholson
327F12B91530486...

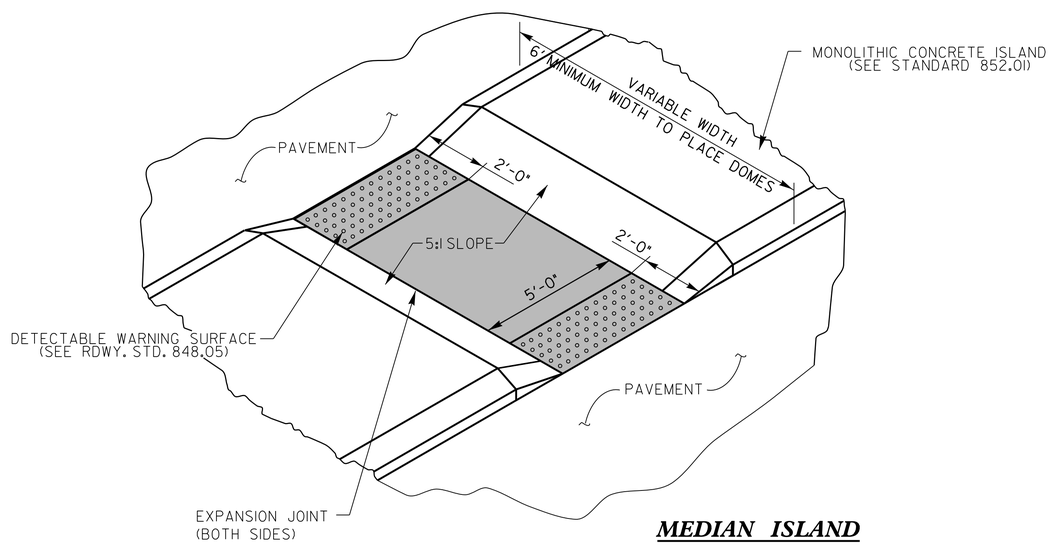
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)



TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

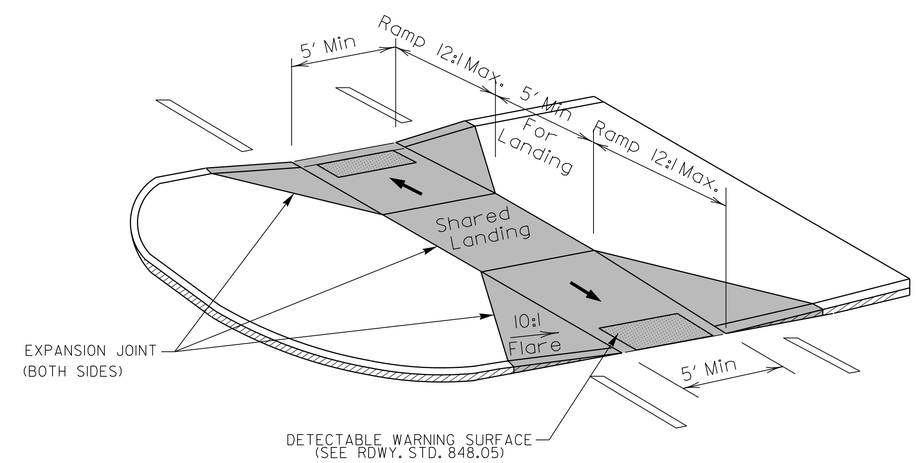
TRIANGULAR ISLAND WITH CUT THROUGH

TYPE 6



MEDIAN ISLAND WITH CUT THROUGH

TYPE 7



MEDIAN ISLAND CURB RAMPS

TYPE 8

CURB RAMPS

Median or Turn Lane Islands

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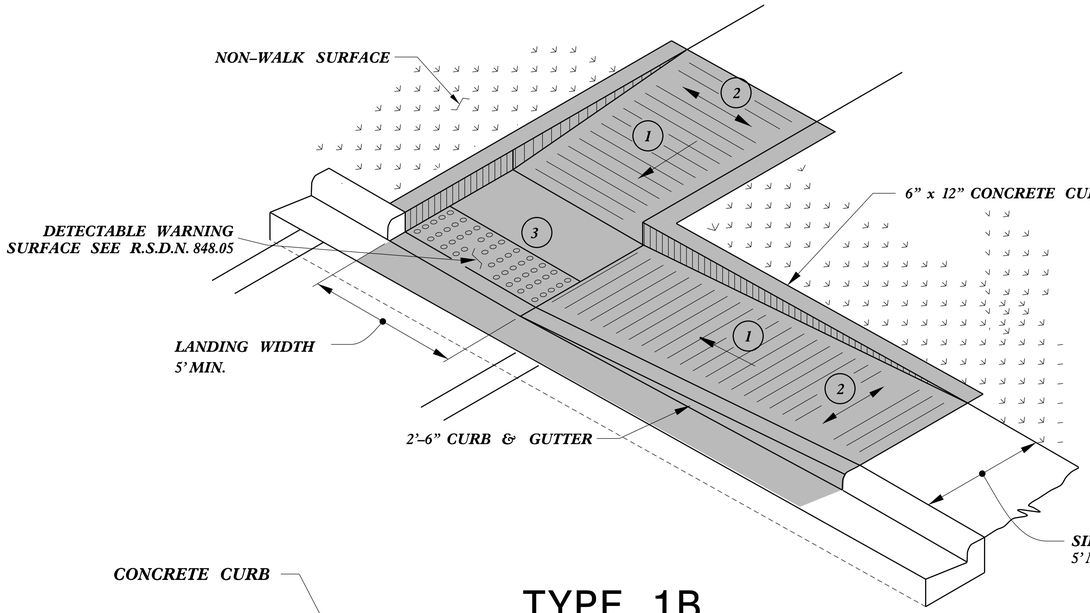
PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2B-7

ROADWAY DESIGN ENGINEER

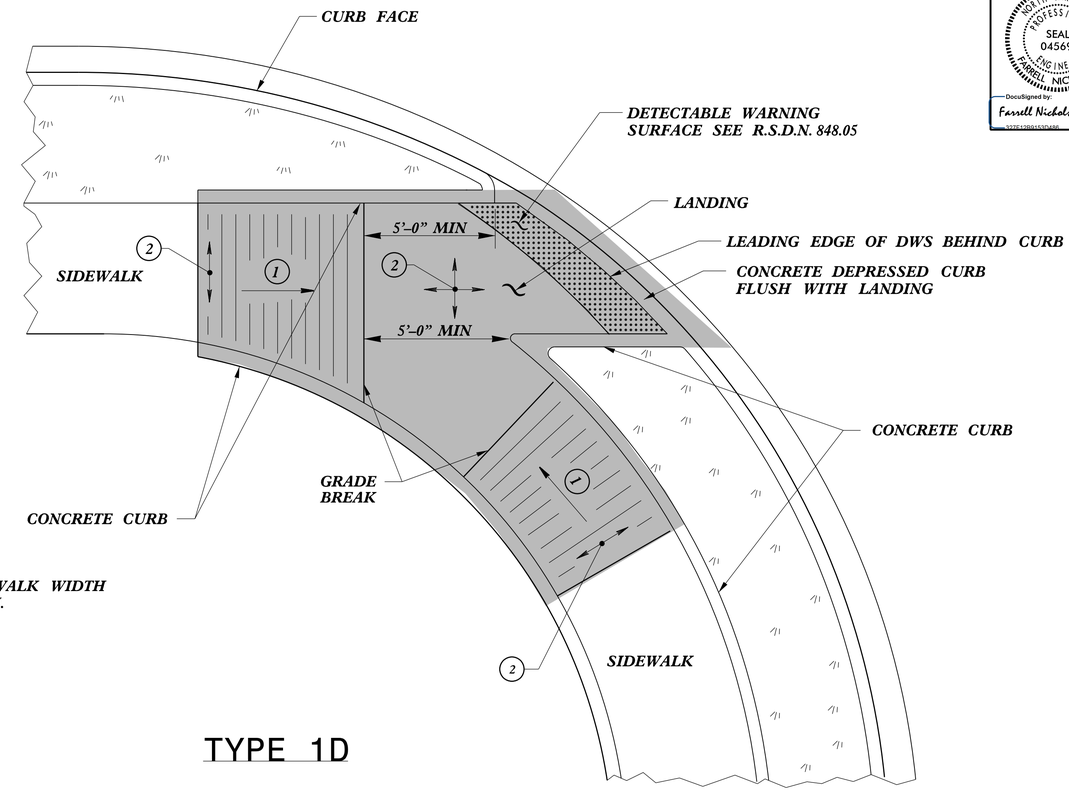
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DocuSigned by: Farrell Nicholson 8/17/2022

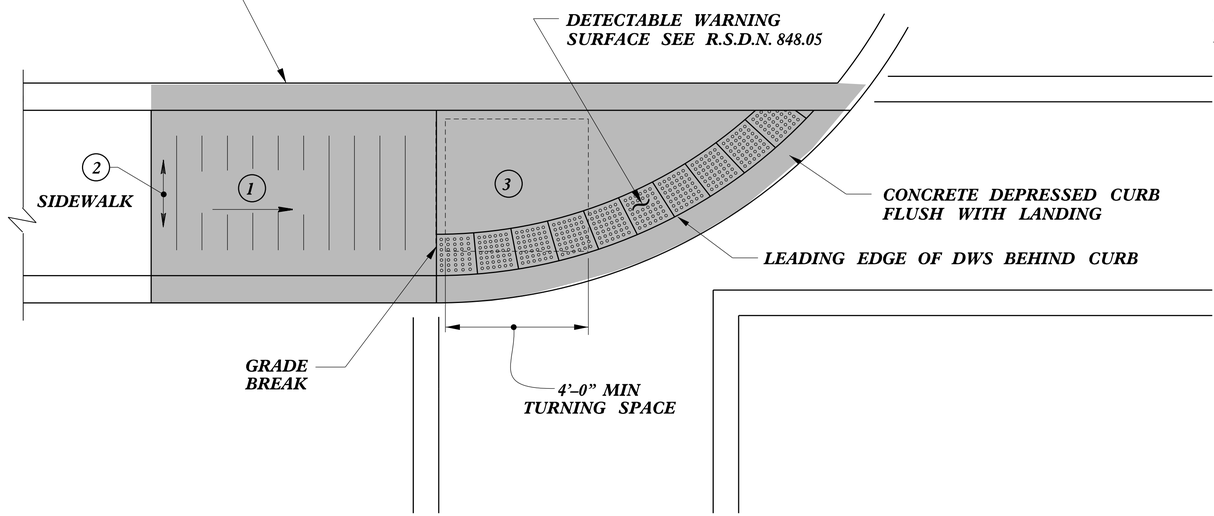
327E12B91531D456



TYPE 1B



TYPE 1D



TYPE 1C

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 1 CURB RAMP

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

CURB RAMPS

Directional Ramps

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Garner, NC 27529
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NCBELS C-4123

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	2C-1

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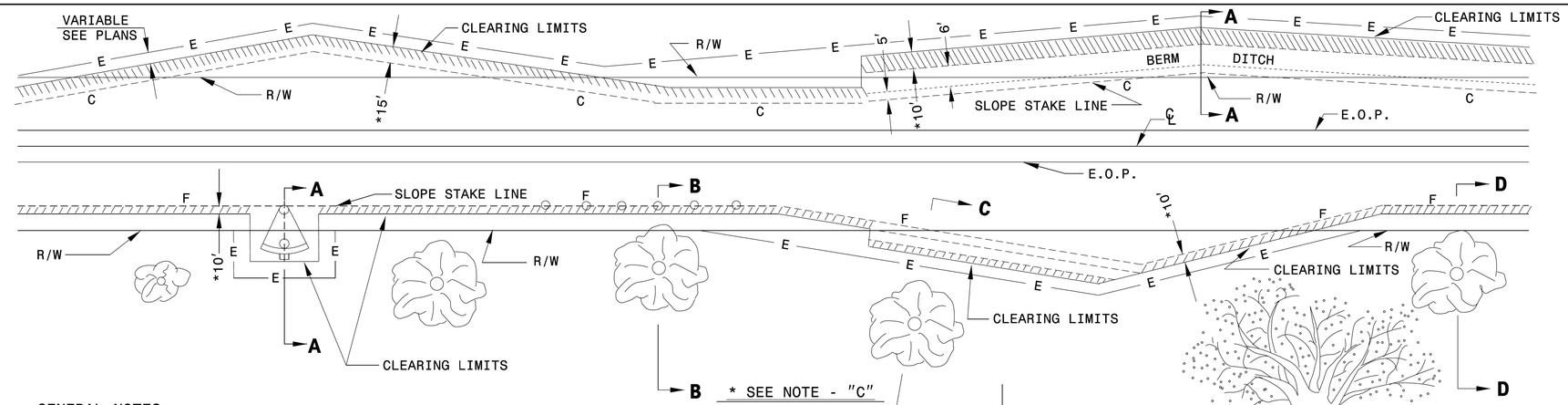
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF CLEARING
MODIFIED METHOD - III



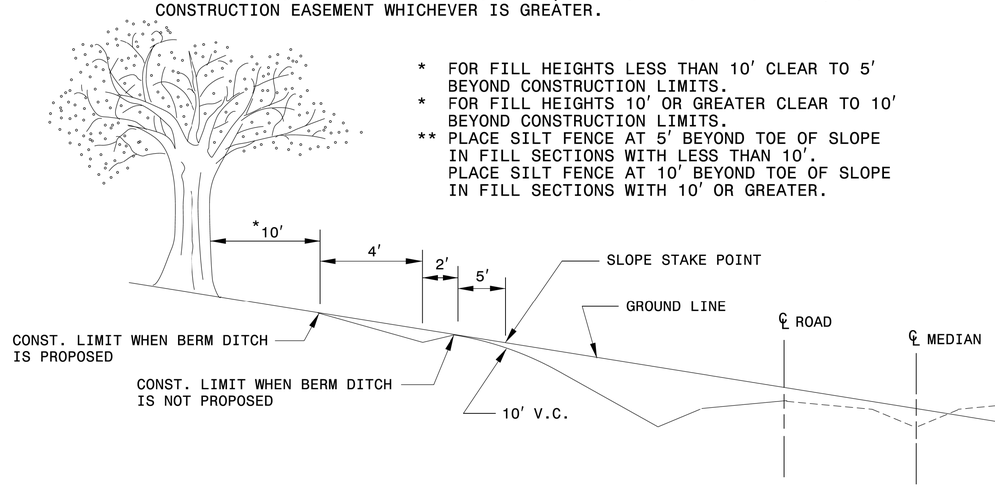
GENERAL NOTES:

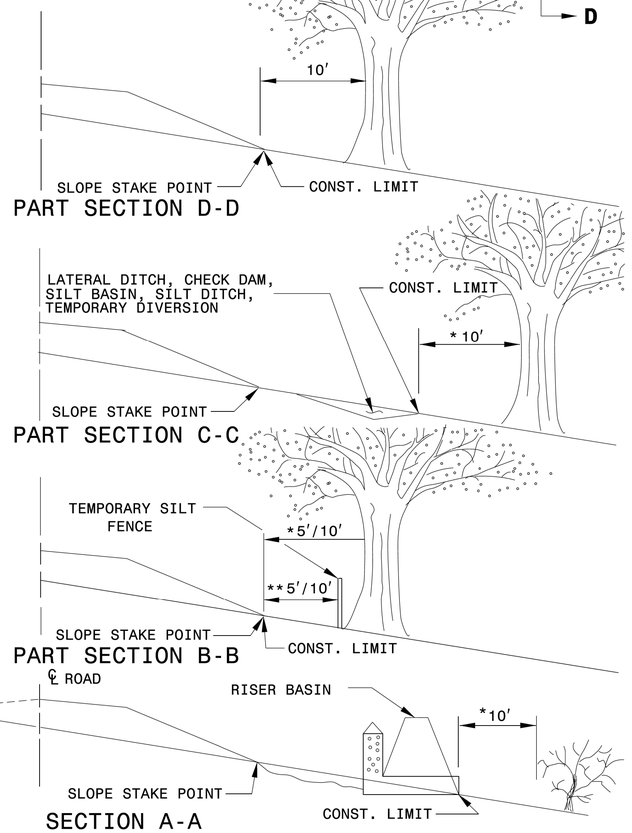
1. REMOVE TREES OUTSIDE THE CLEARING LIMIT WHEN, IN THE OPINION OF THE ENGINEER, THE UTILITY OF A TREE WILL BE DESTROYED BY THE CONSTRUCTION OR THE CLEARING OPERATION.
2. CLEAR IN ACCORDANCE WITH THIS STANDARD EXCEPT WHERE ADDITIONAL CLEARING IS REQUIRED FOR SAFETY AS SHOWN ON THE PLANS.

METHOD III CLEARING LIMITS

(A) CUTS -- CLEAR TO CONSTRUCTION LIMITS.
(B) FILLS - CLEAR TO 5'/10' * BEYOND CONSTRUCTION LIMITS, UNLESS SPECIFIED OTHERWISE BY WETLAND PERMIT.
(C) CUTS AND FILLS - WHEN THE CLEARING LIMITS (A AND B) EXCEED THE PROPOSED R/W OR PROPOSED CONSTRUCTION EASEMENTS, THEN CLEAR ONLY TO THE R/W OR CONSTRUCTION EASEMENT WHICHEVER IS GREATER.

* FOR FILL HEIGHTS LESS THAN 10' CLEAR TO 5' BEYOND CONSTRUCTION LIMITS.
* FOR FILL HEIGHTS 10' OR GREATER CLEAR TO 10' BEYOND CONSTRUCTION LIMITS.
** PLACE SILT FENCE AT 5' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH LESS THAN 10'. PLACE SILT FENCE AT 10' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH 10' OR GREATER.





SHEET 1 OF 1
200D03

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

ENGLISH DETAIL DRAWING FOR
METHOD OF CLEARING
MODIFIED METHOD - III

SHEET 1 OF 1
200D03

6/2/99
6/30/2023
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COMPUTED BY: FSN DATE: 10/18/2021
CHECKED BY: SEC DATE: 10/19/2021

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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1401 Aversboro Road
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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	3B-1

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LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. PER EACH (0' THRU 5.0') | 5.0' THRU 10.0' A | 10.0' AND ABOVE B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME & GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. FRAME WITH GRATE STD. 840.22 | G.D.I. FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

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NCBELS C-4123

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	04
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON
DocuSigned by: Farrell Nicholson 327F1289153D486... 6/30/2022

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON
DocuSigned by: Farrell Nicholson 327F1289153D486... 6/30/2022

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-L-
PI Sta 45+95.44
Δ = 5° 39' 54.2" (RT)
D = 0° 14' 58.9"
L = 2,268.69'
T = 1,135.27'
R = 22,945.31'
SE = NC
DS = 50 MPH

NAD 83/2011

BEGIN CONSTRUCTION
-Y14- POT Sta. 10+00.00
-L- POT Sta. 29+65.04=
-Y14- POT Sta. 12+00.00

BEGIN TIP PROJECT W-5703R
-L- POT STA. 26+94.00

END TIP PROJECT W-5703R
-L- POT STA. 32+04.00

END CONSTRUCTION
-Y14- POT Sta. 15+00.00

BMW5703R ELEVATION = 52.19
N 158687 E 2333361
BL STATION 22+96.88 8.70 LEFT
NORTH BOLT OF SIGNAL POLE

NOTES:

1. FOR -L- PROFILE, SEE SHEET NO. 5.
2. RADIUS MEASURED AT BACK OF CURB.
3. WARP CURB & GUTTER GRADES IN SOUTHEAST CORNER TO GRADE TO DRAIN (GTD) AS SHOWN. ENSURE POSITIVE DRAINAGE OCCURS.

★ UPGRADE EXISTING SIGNAL
PROP PAINT STRIPING
LIMITS OF VARIABLE MILLING AND RESURFACE
LIMITS OF FULL DEPTH PAVEMENT

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5/28/99

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(919) 594-6710
NCBELS C-4123

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON
DocuSigned by: Farrell Nicholson 6/30/2022
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HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON
DocuSigned by: Farrell Nicholson 6/30/2022
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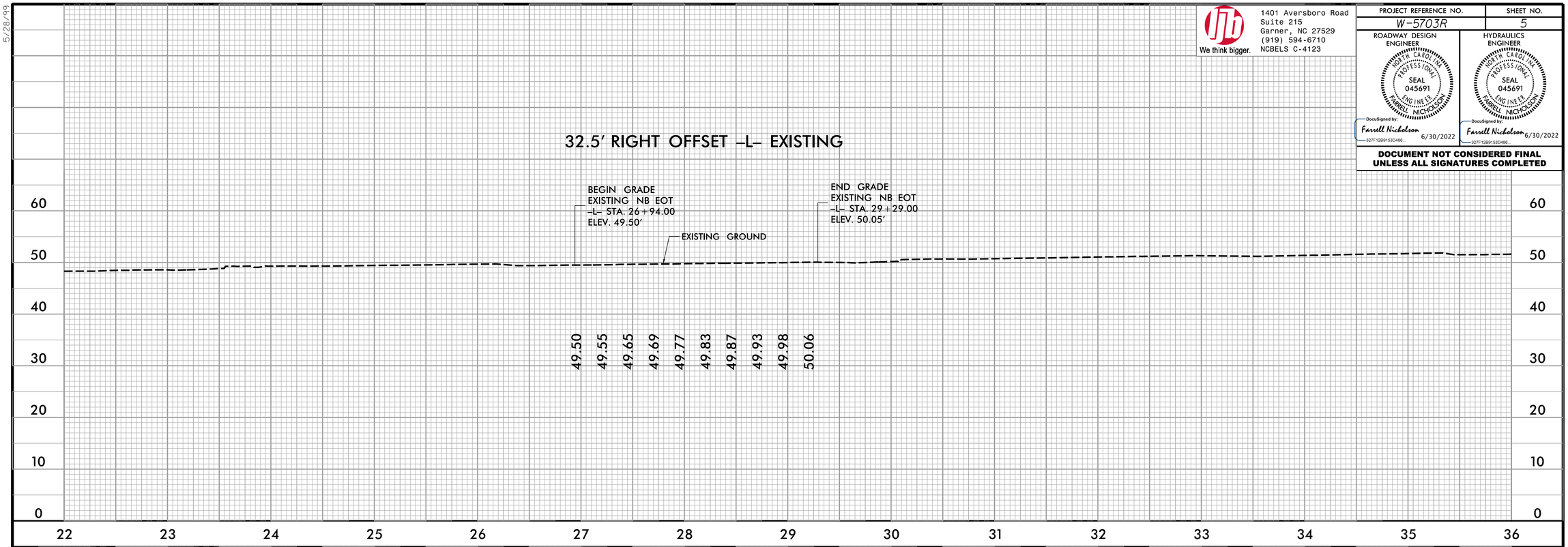
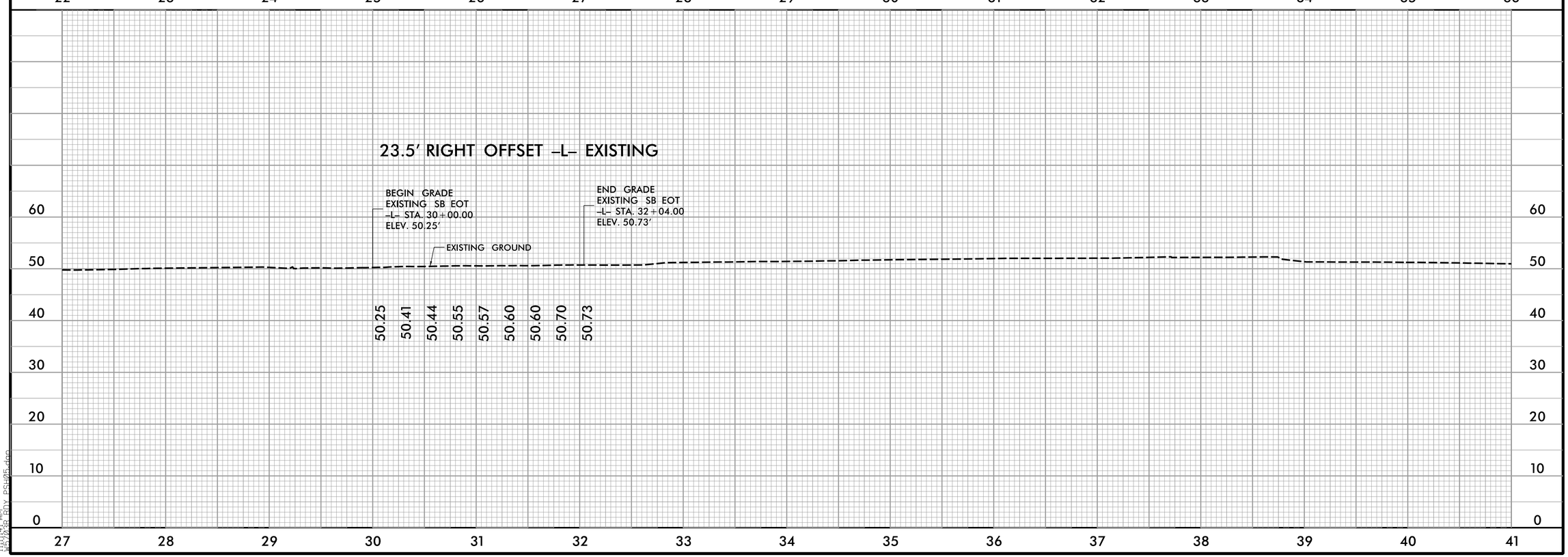
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





6/30/2022
11:17:14 AM
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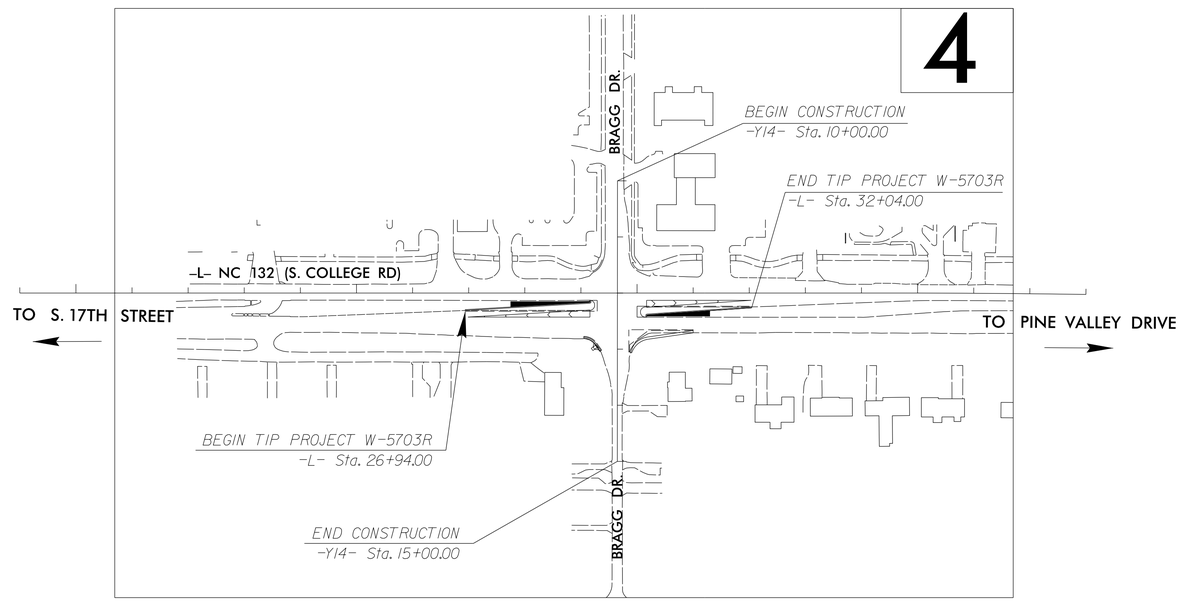
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W5703R	RW01	02

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL AND EXISTING CENTERLINES

NEW HANOVER COUNTY

NAD 83/NA 2011



TIP PROJECT: W5703R

09/08/99

15-NOV-2022 12:52
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mjduval AT LS-328729L

GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "MCDONALDS"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 162,378.787(ft) EASTING: 2,322,247.834(ft)
ELEVATION: 43.32(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 1.000046352
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"MCDONALDS" TO -L- STATION 10+00.00 IS
S 66-54'59.3" E 14,267.04(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

LOCATION AND SURVEY'S UNIT
DIVISION 3
5310 BARBADOS BLVD., SUITE 102
CASTLE HAYNE, N.C., 24289

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
N/A	*JANUARY 5, 2023*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4526 LAND SURVEYOR CHRISTOPHER J. SAWYER

DocuSigned by:
Christopher J. Sawyer
C2F2F2F2F2F2F467...
11/15/2022

SIGNATURE: ***Date:***

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	RW02C-1

Location and Surveys

LOCATION AND SURVEY'S UNIT
DIVISION 3
5310 BARBADOS BLVD., SUITE 102
CASTLE HAYNE, NORTH CAROLINA 28429

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4526 LAND SURVEYOR CHRISTOPHER J. SAWYER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

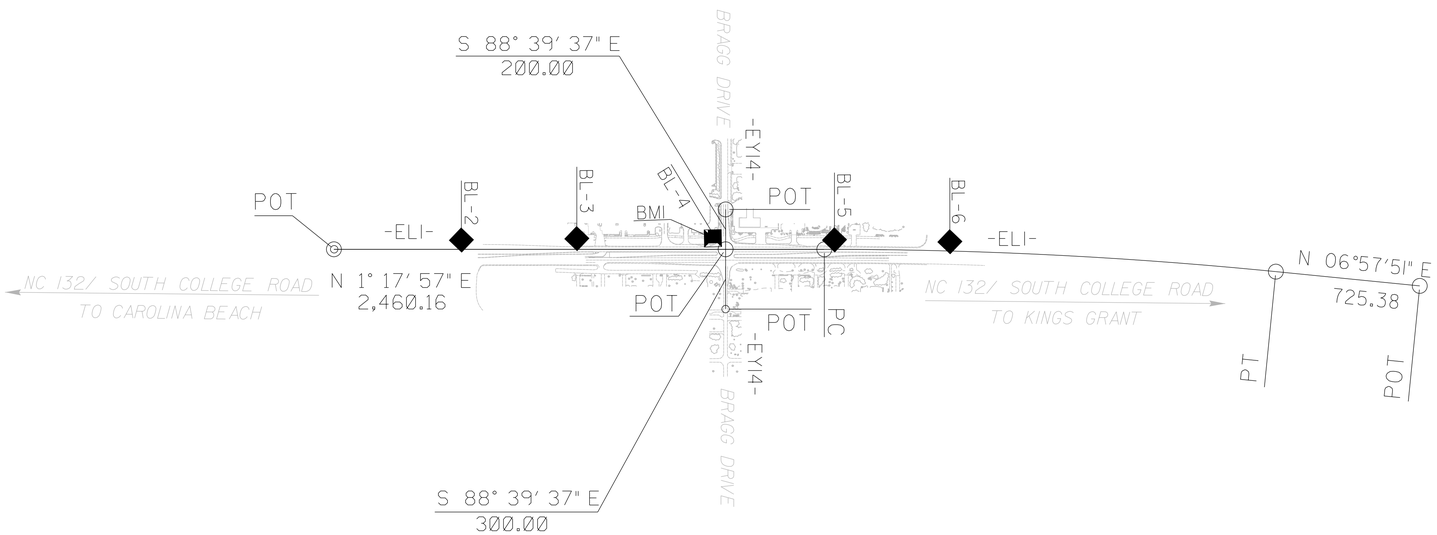
EL1

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	156785.072	2335372.573							
LINE			N 01°17'57.0" E	2460.16					
PC	159244.603	2335428.351							
CURVE			N 04°07'54.1" E	2267.77	05°39'54.2"(RT)	00°14'58.9"	2268.69	1135.27	22945.31
PT	161506.480	2335591.741							
			N 06°57'51.2" E	725.38					
POT	162226.505	2335679.693							

EY14

POINT	N	E	BEARING	DIST
POT	158754.285	2335217.180		
LINE			S 88°39'37.3" E	200.00
POT	158749.609	2335417.125		
LINE			S 88°39'37.3" E	300.00
POT	158742.595	2335717.043		

****
BM1 ELEVATION = 52.19
N 158687 E 2335361
BL STATION 40+90.00 9 RIGHT
NORTH BOLT OF SIGNAL POLE
****



BL

POINT	DESC.	NORTH	EAST	ELEVATION
BL2	BL-2 REBAR & CAP	157425.4700	2335340.3570	45.66
BL3	BL-3 REBAR & CAP	158004.5702	2335346.2990	46.01
BL4	BL-4 REBAR & CAP	158695.9399	2335351.8940	50.80
BL5	BL-5 REBAR & CAP	159296.4941	2335382.0290	51.12
BL6	BL-6 REBAR & CAP	159875.0497	2335404.4290	48.24

I, Christoper J. Sawyer, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: VRS
Dates of survey: 05/17/2021 to 07/15/2021
Datum/Epoch: NAD 83/NA 2011 NAVD88
Published/Fixed-control use: N/A
Localized around: MCDONALDS
Northing: 162378.787
Easting: 2322247.834
Combined grid factor: 1.000046352
Geoid model: 18
Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 05/17/2021 to 07/15/2021 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 6TH day of June, 2022.

DocuSigned by:
Christopher J. Sawyer
9700CB2E1D21467...

Professional Land Surveyor L-4526

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99
07-JUN-2022 12:03
S:\Unit 3 Projects\MISC-INTERSTATE\Misc\New Hanover\W5703R_College-Bragg\Working\Control Sheets\220525\w5703r_ls_rw2c-1.dgn
mjduval AT LS-299896

DocuSign Envelope ID: C076D7EC-B66B-4B26-A37C-A646D26E921F

T.I.P.: W-5703R

CONTRACT:

TIP NO.	SHEET NO.
W-5703R	PMP-1

APPROVED: DocuSigned by: Farrell Nicholson 327F12B9153D486...

DATE: 8/4/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
NEW HANOVER COUNTY

LOCATION: INTERSECTION OF NC 132 (COLLEGE ROAD) AND BRAGG DRIVE (CITY STREET)

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN COVER SHEET
PMP-1A	HI-VISIBILITY CROSSWALKS NO-TRACK MARKING GUIDANCE
PMP-1B	REVISED SIGNING RSD
PMP-2	E SIGNS
PMP-3	PAVEMENT MARKING DETAIL

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

MARKING SCHEDULE

SYMBOL	DESCRIPTION	
T1	WHITE EDGELINE	THERMOPLASTIC (4", 90 MIL)
T40	WHITE GORELINE	THERMOPLASTIC (8", 90 MIL)
T41	WHITE DIAGONAL	THERMOPLASTIC (8", 90 MIL)
T61	WHITE STOPBAR	THERMOPLASTIC (24", 90 MIL)
T62	WHITE CROSSWALK	THERMOPLASTIC (24", 90 MIL)
T70	LEFT TURN ARROW	THERMOPLASTIC (90 MIL)
T71	RIGHT TURN ARROW	THERMOPLASTIC (90 MIL)
T73	COMBO. LEFT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)
MA	YELLOW & YELLOW	PERMANENT RAISED MARKER
MF	CRYSTAL & RED	SNOWPLOWABLE MARKER

PLAN PREPARED BY: LJB Inc.

Farrell Nicholson, PE — PROJECT ENGINEER

Haley Vozzella — DESIGN ENGINEER

LJB We think bigger.

1401 Aversboro Road
Suite 215
Garner, NC 27529
(919) 594-6710
NCBELS C-4123

GENERAL NOTES

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

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- NC 132 (COLLEGE RD)	THERMO	SNOWPLOWABLE
-Y14- (BRAGG DRIVE)	THERMO	PERM. RAISED

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) REPLACE ANY PAVEMENT MARKINGS BEYOND THE PROJECT LIMITS DAMAGED BY THE CONTRACTORS' OPERATIONS DURING CONSTRUCTION.

E) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.

F) SIGNS FURNISHED BY CONTRACTOR.

G) WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.

H) THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
		PROPOSED ROADWAY IMPROVEMENTS		
4025000000-E	901	CONTRACTOR FURNISHED, TYPE E SIGN	6.25	SF
4072000000-E	903	SUPPORTS, 3 LB STEEL U-CHANNEL	13	LF
4102000000-N	904	SIGN ERECTION, TYPE E	1	EA
4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	126	LF
4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	888	LF
4709000000-E	1205	THERMOPLASTIC WHITE STOPBAR (24", 90 MIL)	290	LF
4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MIL)	8	EA
4875000000-N	1205	REMOVAL OF PAVEMENT PARKING SYMBOLS & CHARACTERS	4	EA
4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	16	EA
4895000000-N	1251	NON-CAST IRON SNOWPLOWABLE MARKER	40	EA
4915000000-E	1264	7' U-CHANEL POSTS	2	EA
4957000000-N	1264	OBJECT MARKERS (TYPE 3)	2	EA

PLAN SUBMITTED TO:

TRACE HOWELL, PE – DIVISION 3 DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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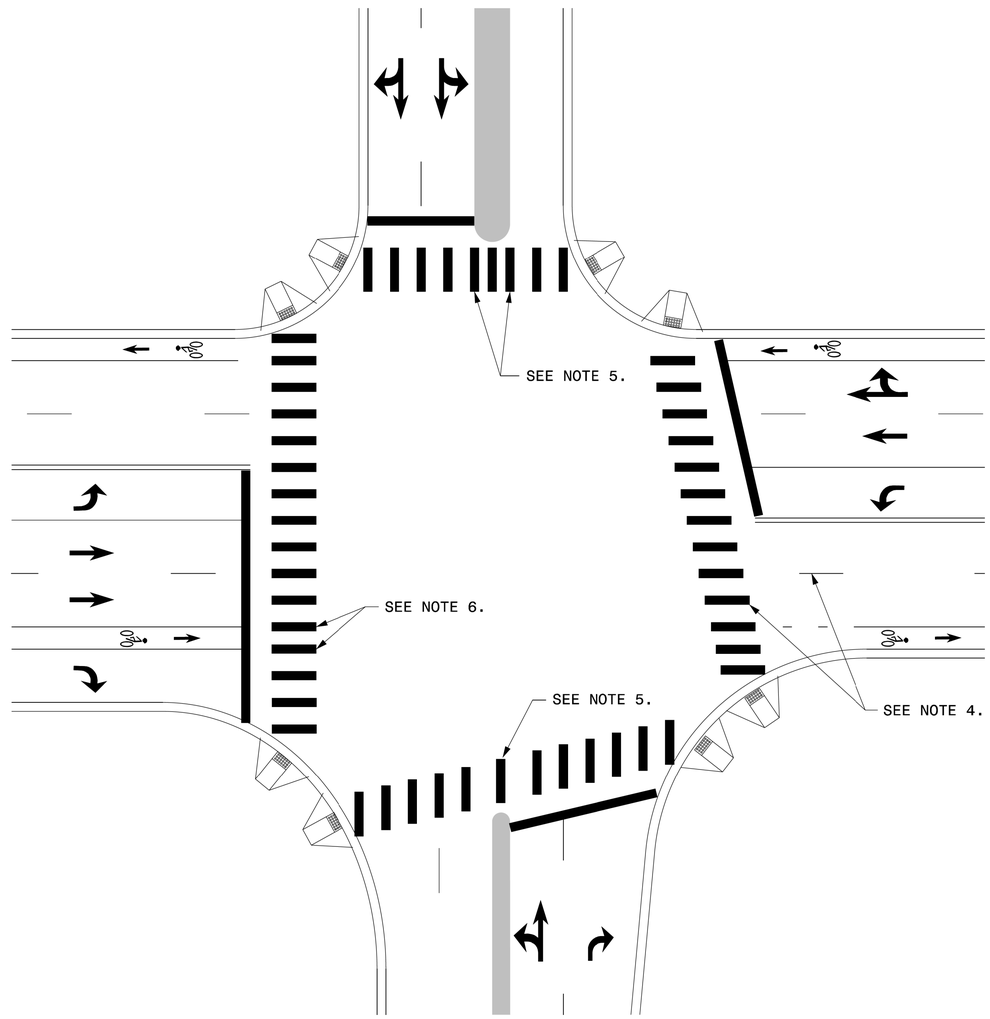
TIP NO.	SHEET NO.
W-5703R	PMP-1A

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

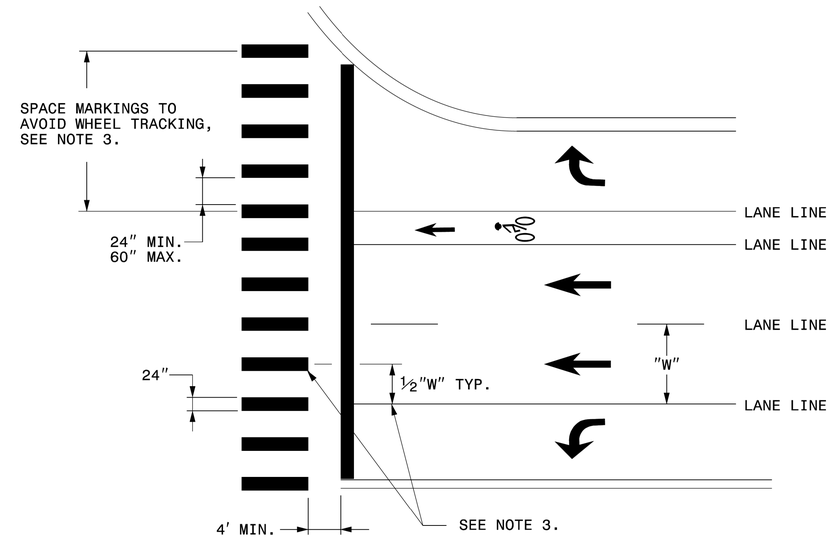
5-18

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
HI-VISIBILITY CROSSWALKS
NO-TRACK MARKING GUIDANCE

SHEET 1 OF 1



CROSSWALK INTERSECTION DETAIL



CROSSWALK MARKING DETAIL

GENERAL NOTES:

1- THE GUIDANCE IN THIS DETAIL IS TO BE USED WHEN NO-TRACK SPACING OF HI-VISIBILITY MARKINGS IS REQUESTED.

2- USE THE GUIDANCE SHOWN ON THE ABOVE DETAILS IN CONJUNCTION WITH PAVEMENT MARKING GUIDANCE SHOWN ON ROADWAY STANDARD DRAWINGS 1205.01 AND 1205.07.

3- PLACE MARKINGS TO AVOID WHEELPATH OF VEHICLES. MARKINGS TYPICALLY WILL BE LOCATED CENTERED AT THE LANE LINES AND EDGE LINES WITH ONE ADDITIONAL MARKING CENTERED IN THE MIDDLE OF THE LANE. AT WIDE LANE WIDTHS DUE TO TAPERS AND LARGE RADII, LOCATE MARKINGS AT BEST SPACING TO AVOID WHEEL TRACKING. THE SPACE BETWEEN MARKINGS SHALL NOT BE LESS THAN 24 INCHES OR GREATER THAN 60 INCHES.

4- WHERE THE CROSSWALK IS SKEWED TO THE LANE LINES, THE MARKINGS SHOULD BE PARALLEL TO THE LANE LINES.

5- PLACE MARKINGS ON BOTH EDGES OF THE NOSE OF A MEDIAN. FOR NARROW MEDIANS LESS THAN 4 FEET, A SINGLE MARKING MAY BE USED. FOR WIDE MEDIANS, INSTALL ADDITIONAL MARKINGS IN THE MEDIAN AREA. THE SPACE BETWEEN THE MARKINGS SHALL NOT TO BE LESS THAN 24 INCHES OR GREATER THAN 60 INCHES.

6- LOCATE MARKINGS CENTERED ON BICYCLE LANE LINES. MARKINGS SHALL NOT BE LOCATED IN THE CENTER OF THE BICYCLE PATH.

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

5-18

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
HI-VISIBILITY CROSSWALKS
NO-TRACK MARKING GUIDANCE

SHEET 1 OF 1

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5-7-18

TIP NO.	SHEET NO.
W-5703R	PMP-1B

DocuSigned by:

APPROVED: Matthew V. Springer

DATE: 6/22/2021

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042546 ENGINEER MATTHEW V. SPRINGER

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

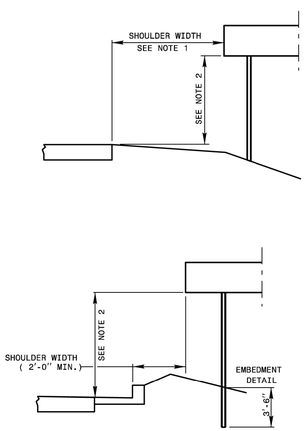
6-21

ENGLISH DETAIL DRAWING FOR

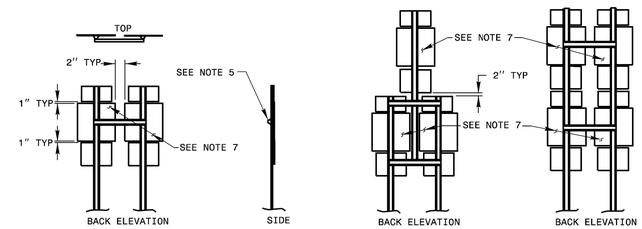
MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

SHEET 1 OF 2

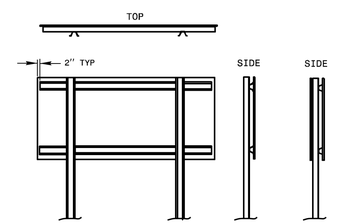
904D50



HORIZONTAL AND VERTICAL CLEARANCES



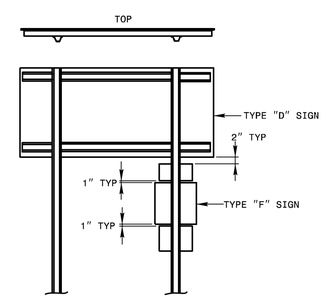
FRAMING AND CROSS-BRACING DETAILS
TYPE "F" SIGNS



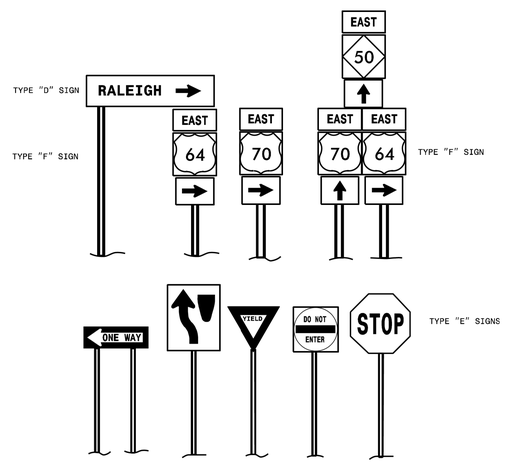
TYPE "D" & "E" SIGN
CROSS BRACING

BACK-TO-BACK
MOUNT

FRAMING AND CROSS BRACE DETAILS
FOR COMBINATION TYPE "D" & "E" SIGNS
WIDE SIDE OF CROSS BRACE GOES TO BACK OF SIGN



FRAMING AND CROSS BRACE DETAILS
FOR COMBINATION TYPE "D" & "F" SIGNS
WIDE SIDE OF FLANGE TO BACK OF "F" SIGN



TYPICAL SIGN SHAPES AND COMBINATIONS

NOTES:

1. ERECT TYPE "D", "E", AND "F" SIGNS ON FREEWAYS WITH THE NEAR EDGE OF THE SIGN 20 FT. FROM THE TRAVEL LANE. ERECT ALL OTHER "D", "E", AND "F" SIGNS WITH THE NEAR EDGE OF THE SIGN AT THE EDGE OF THE SHOULDER BREAK (6 FT. MINIMUM CLEARANCE, 12 FT. DESIRABLE, FROM THE EDGE OF TRAVEL LANE), OR AS DIMENSIONED ON PLAN SHEETS.
2. ERECT TYPE "D", "E", AND "F" SIGNS WITH THE BOTTOM OF SIGN ASSEMBLY AT LEAST 7 FT. ABOVE THE EDGE OF THE TRAVEL LANE ON ROADS WITH 2 OR MORE LANES IN THE SAME DIRECTION AND AT LEAST 5 FT. ON OTHER ROUTES. THE VERTICAL CLEARANCE IS 7 FT. WHERE REQUIRED FOR PEDESTRIAN TRAFFIC AND/OR PARKED VEHICLES.
3. THE VERTICAL DIMENSION BETWEEN MOUNTING HOLE CENTERS ON ALL TYPES "D", "E", AND "F" SIGNS IS 30" MAXIMUM. THE VERTICAL AND HORIZONTAL DIMENSIONS BETWEEN MOUNTING HOLES IS TO THE WHOLE INCH. EACH SIGN PANEL HAS A MINIMUM OF 2 BOLTS PER SUPPORT.
4. ATTACH SIGN W/ 5/16" HEX HEAD BOLT, NYLON WASHER, SHIM, FLAT WASHER, LOCK WASHER, HEX NUT
   NO BUCKLING OF THE SIGN WILL BE PERMITTED. SEE ASSEMBLY DETAIL SHEET# 2 OF 904.50.
5. FURNISH AND INSTALL CROSS-BRACING AS SHOWN IN DETAIL. PAINT ENDS OF CROSS BRACES W/ APPROVED. ZINC PAINT
6. INSTALL POST AND CROSS-BRACING WITH THE WIDE SIDE OF THE FLANGE TOWARD THE BACK OF SIGN(S) FOR COMBINATION TYPE "D" AND "F" SIGNS.
7. THE SHIELD HEIGHTS IN THESE ASSEMBLIES CAN NOT BE LARGER THAN 24".
8. IF SIGN ASSEMBLIES REQUIRE MORE THAN TWO U-CHANNEL SUPPORTS, THE SUPPORTS SHALL BE PLACED A MINIMUM OF 4 FT. BETWEEN POSTS. NO MORE THAN TWO POSTS SHALL FALL WITHIN 7 FT. PATH, OR THE SIGN ASSEMBLY MUST BE PLACED BEHIND BARRIER PROTECTION.

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

6-21

ENGLISH DETAIL DRAWING FOR

MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

SHEET 1 OF 2

904D50

REVISED SIGNING
ROADWAY STANDARD DRAWING

6/18/2021
S:\S&DU\Standards Group\Standards and Drawings\Drawings\2018 Standard Dwgs\Division 9 Final\0904.50_sgn_sht01_uchannelpost_6-21.dgn
User:dstokes

DocuSign Envelope ID: 982AC266-0BE2-4E34-B177-4070128C8703

TIP NO.	SHEET NO.
W-5703R	PMP-2

APPROVED: Farrell Nicholson (DocuSigned by: 323F12B91530486...)

DATE: 6/30/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

(401) QUANTITY REQ'D _1_

RIGHT LANE MUST TURN RIGHT

30" X 30"
R3-7

ONE "U" POST PER SIGN

TYPE "E" SIGNS

5/23/2022
10:07:41 AM
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We think bigger.
1401 Aversboro Road
Suite 215
Garner, NC 27529
(919) 594-6710
NCBELS C-4123

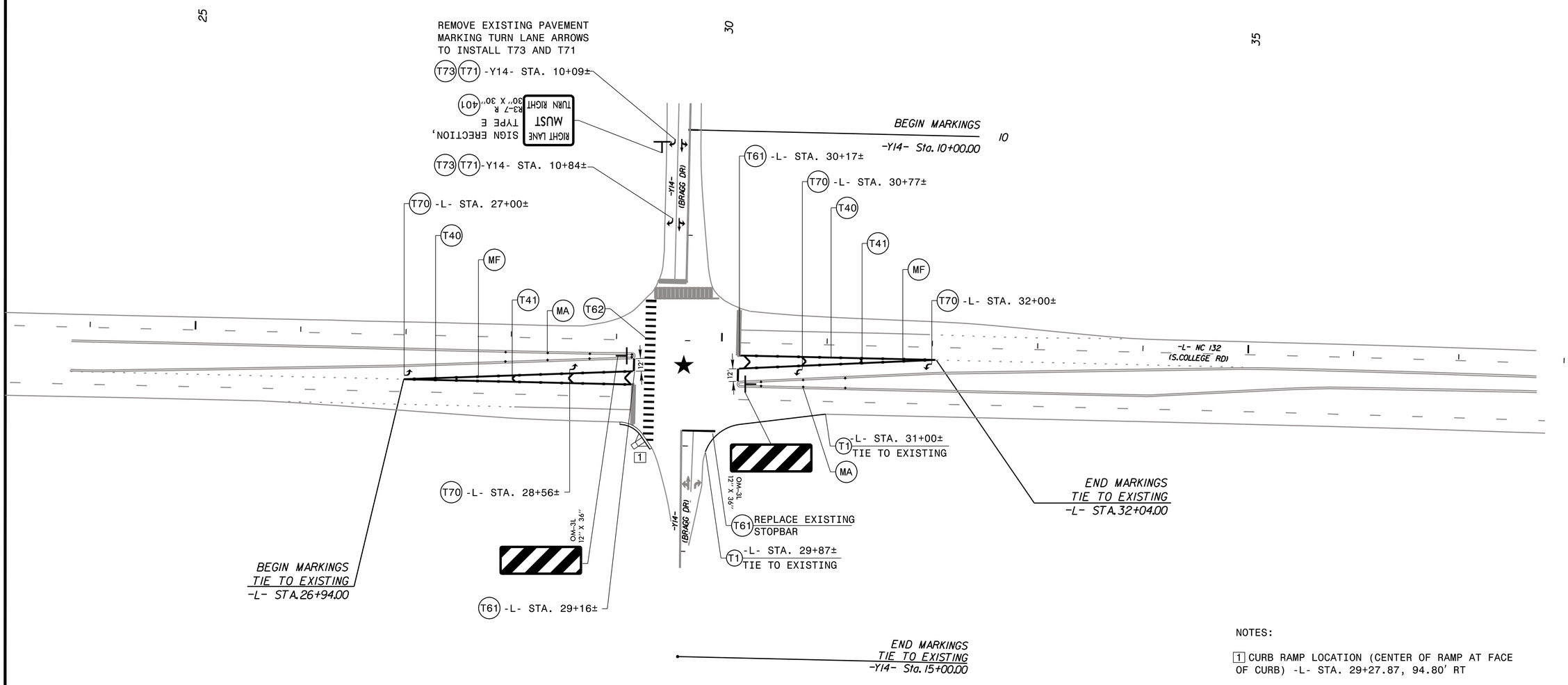
TIP NO.	SHEET NO.
W-5703R	PMP-3

APPROVED: DocuSigned by: Farrell Nicholson 327F139915D488... 8/4/2022
DATE:

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045691 ENGINEER FARRELL NICHOLSON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011



PAVEMENT MARKING SCHEDULE			
T1	-	THERMO (4", 90 MIL)	WHITE EDGELINE
T40	-	THERMO (8", 90 MIL)	WHITE GORELINE
T41	-	THERMO (8", 90 MIL)	WHITE DIAGONAL
T61	-	THERMO (24", 90 MIL)	WHITE STOPBAR
T62	-	THERMO (24", 90 MIL)	WHITE CROSSWALK LINE
T70	-	THERMO (90 MIL)	LEFT TURN ARROW
T71	-	THERMO (90 MIL)	RIGHT TURN ARROW
T73	-	THERMO (90 MIL)	COMBO. LEFT/STRAIGHT ARROW
MF	-	CRYSTAL & RED	SNOWPLOWABLE MARKER
MA	-	YELLOW & YELLOW	PERMANENT RAISED MARKER

NOTES:

1 CURB RAMP LOCATION (CENTER OF RAMP AT FACE OF CURB) -L- STA. 29+27.87, 94.80' RT

FOR CROSSWALKS, USE ROADWAY STANDARD DRAWING ON PMP-1B. ALL SPACING IS 6' ON CENTER, UNLESS SHOWN DIFFERENTLY ON THIS SHEET.

STOP BARS ARE TO BE LOCATED ACCORDING TO SIGNAL PLANS.

PAVEMENT MARKING DETAIL

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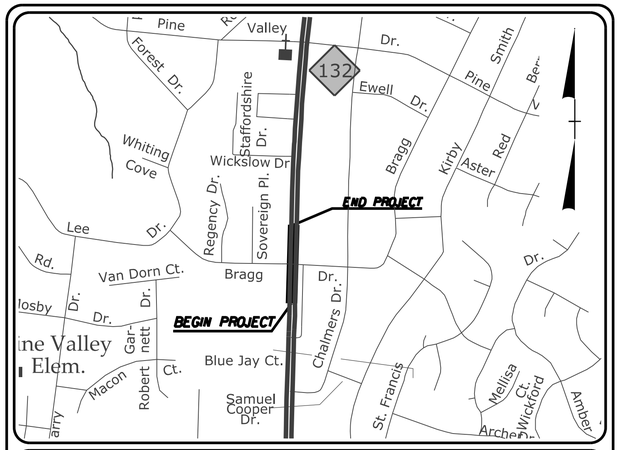
7/2/99

TIP PROJECT: W-5703R

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5703R	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
44849.1.18	HSIP-0132(013)	P.E.
44849.2.18	HSIP-0132(013)	CONST.



VICINITY MAP

NOT TO SCALE

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

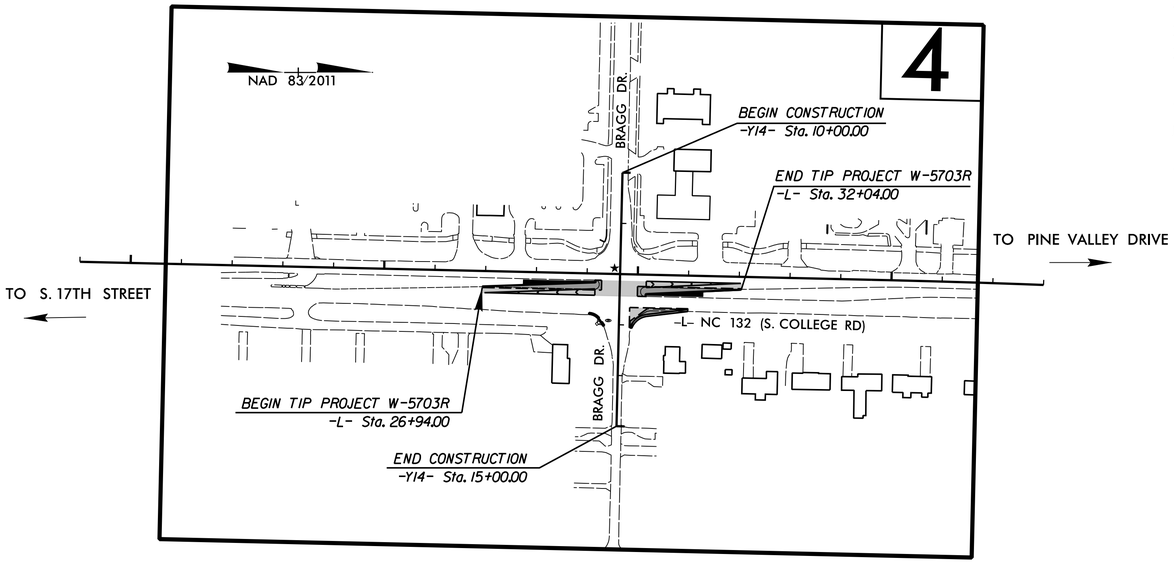
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

NEW HANOVER COUNTY

LOCATION: INTERSECTION OF NC 132 (COLLEGE ROAD) AND BRAGG DRIVE (CITY STREET)

TYPE OF WORK: GRADING, PAVING, PAVEMENT MARKINGS, SIGNALS AND DRAINAGE



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	EW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	
	Fabric Insert Inlet Protection Device	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

GRAPHIC SCALE

50 25 0 50 100

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

We think bigger.

Prepared in the Office of:

LJB, INC.

1401 Aversboro Road Suite 215.
Garner, NC 27529
NC LICENSE NO. C-4123

Designed by:

FARRELL NICHOLSON — ***3905***

NAME — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	EC-2

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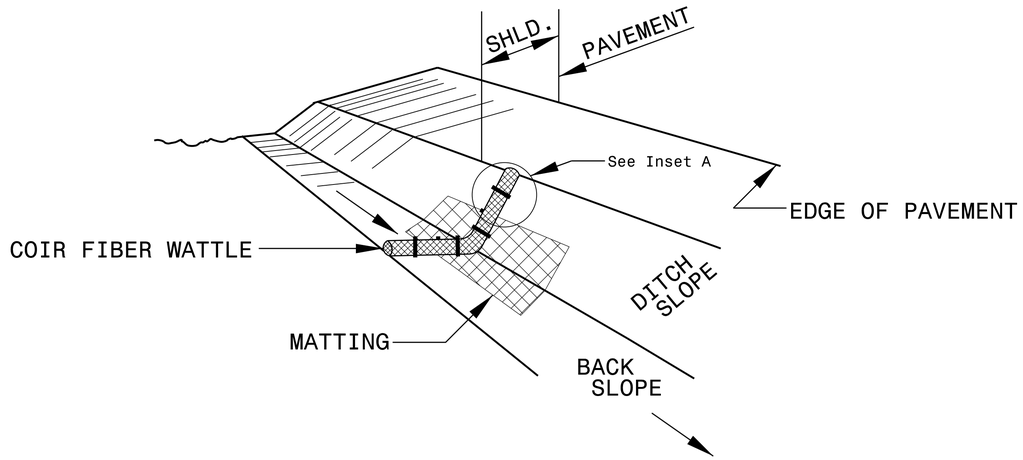
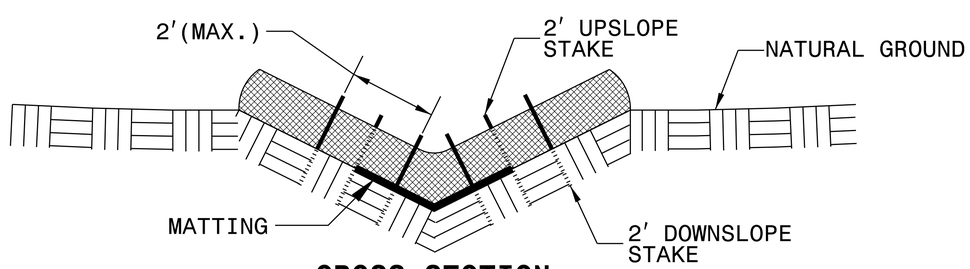
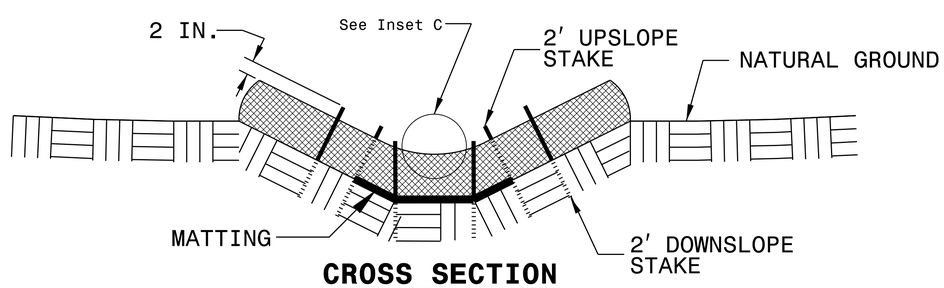
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

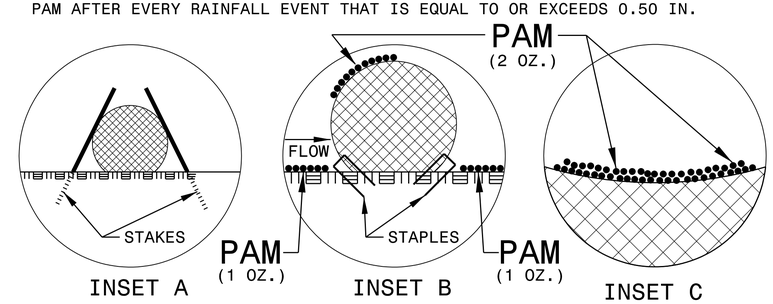
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

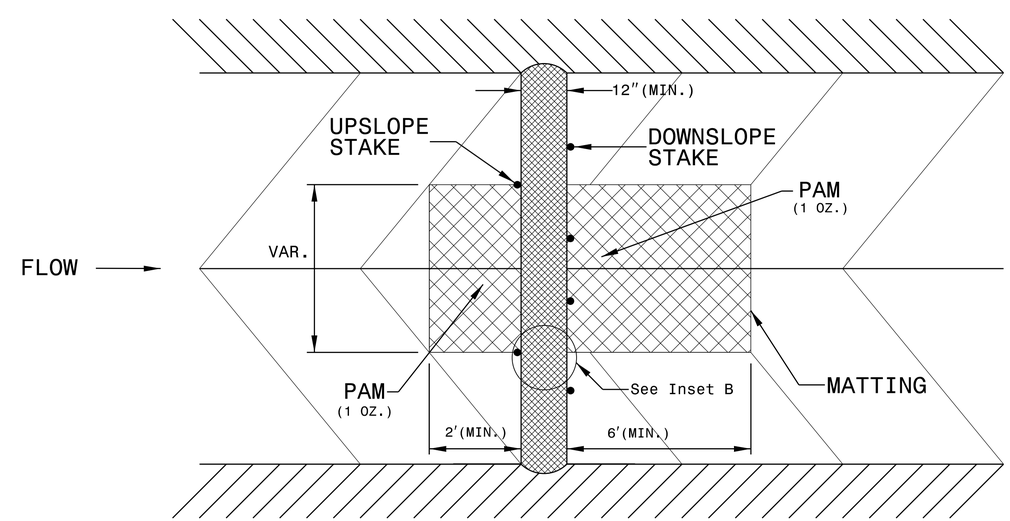
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.





TOP VIEW

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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	EC-2A

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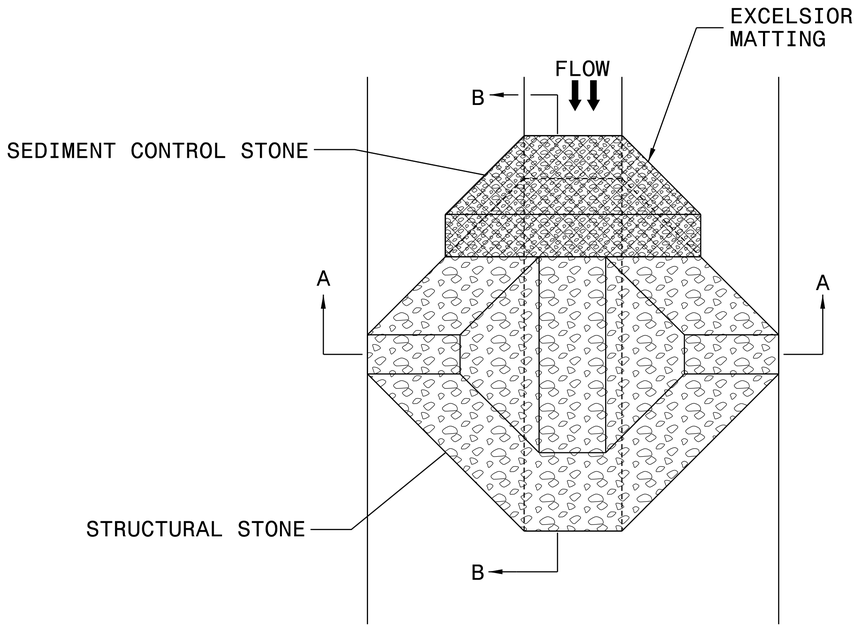
TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

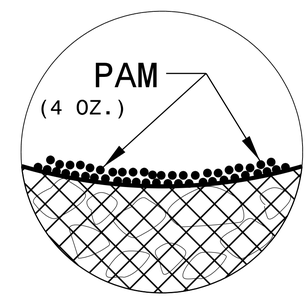
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

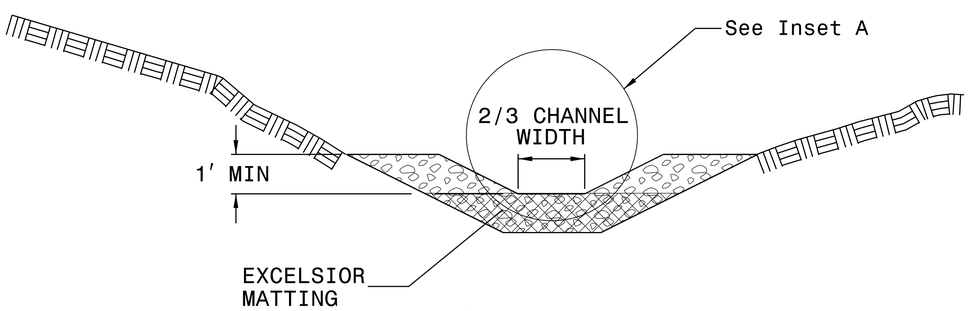
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

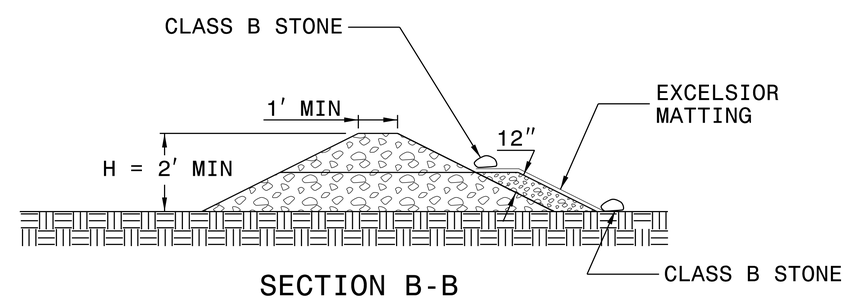
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	EC-3

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	EC-04/CONST.04

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-L-
PI Sta 45+95.44
Δ = 5° 39' 54.2" (RT)
D = 0° 14' 58.9"
L = 2,268.69'
T = 1,135.27'
R = 22,945.31'
SE = NC
DS = 50 MPH

NAD 83/2011

BEGIN CONSTRUCTION
-Y14- POT Sta. 10+00.00
-L- POT Sta. 29+65.04=
-Y14- POT Sta. 12+00.00

UTILIZE FABRIC INSERT INLET PROTECTION DEVICE. SEE SPECIAL PROVISION.

BEGIN TIP PROJECT W-5703R
-L- POT STA. 26+94.00

END CONSTRUCTION
-Y14- POT Sta. 15+00.00

END TIP PROJECT W-5703R
-L- POT STA. 32+04.00

-L- PC Sta. 34+60.16

S 88° 39' 37.3" E

N 1° 17' 57.0" E

-L- NC 132 (S.COLLEGE RD)

NC 132/ SOUTH COLLEGE ROAD SOUTH BOUND LANE

NC 132/ SOUTH COLLEGE ROAD NORTH BOUND LANE

END ISLAND CAP STA. +75.00

R 1.25' (TIE TO EX.)

3° 16' 59"

END SAW CUT STA. 29+29.00

BEGIN SAW CUT STA. 30+00.00

BEGIN WIDENING STA. 29+85.35 65.32' RT

END ISLAND CAP STA. +30.00

3° 51' 00"

END WIDENING STA. 31+00.00

R 24.5' CENTER STA. 29+04.98 105.72' RT

STA. 29+35.84 102.62' RT

R 40' CENTER STA. 30+24.68 117.97' RT

STA. 30+19.03 78.37' RT

STA. 29+86.85 92.22' RT

STA. 29+86.85 104.97' RT

BRAGG DRIVE

VARIABLE 24' BST

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04
NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.
NOTE: USE 1.0 FT WEIR HEIGH FOR TEMPORARY ROCK SILT CHECK TYPE – A THAT ARE NOT LABELED.

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PROJECT REFERENCE NO.	SHEET NO.
W-5703R	EC-05/CONST.04

We think bigger.
1401 Aversboro Road
Suite 215
Garner, NC 27529
(919) 594-6710
NCBELS C-4123

-L-
PI Sta 45+95.44
Δ = 5° 39' 54.2" (RT)
D = 0° 14' 58.9"
L = 2,268.69'
T = 1,135.27'
R = 22,945.31'
SE = NC
DS = 50 MPH

NAD 83/2011

BEGIN CONSTRUCTION
-Y14- POT Sta. 10+00.00
-L- POT Sta. 29+65.04=
-Y14- POT Sta. 12+00.00

UTILIZE FABRIC INSERT INLET PROTECTION DEVICE. SEE SPECIAL PROVISION.

BEGIN TIP PROJECT W-5703R
-L- POT STA. 26+94.00

END TIP PROJECT W-5703R
-L- POT STA. 32+04.00

END CONSTRUCTION
-Y14- POT Sta. 15+00.00

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

FINAL
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 30+00 to Sta. 31+00

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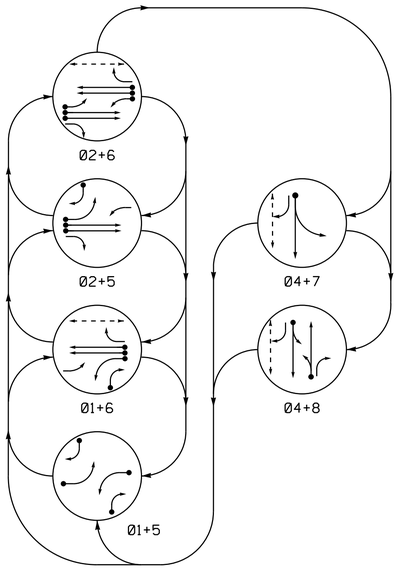
PROJECT REFERENCE NO.	SHEET NO.
W-5703R	Sig.1.0

6 Phase
Fully Actuated
Wilmington Signal System

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

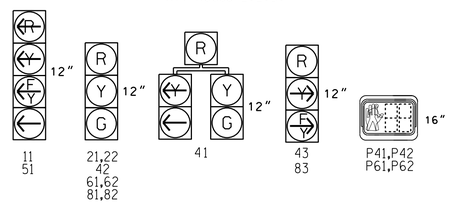
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+7	04+8	FLASH
11	←	←	F Y	F Y	R	R	Y
21,22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42	R	R	R	R	G	G	R
43	F Y	R	F Y	R	F Y	F Y	R
51	←	F Y	←	F Y	R	R	Y
61,62	R	G	R	G	R	R	Y
81,82	R	R	R	R	G	R	R
83	F Y	F Y	R	R	R	F Y	R
P41,P42	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DRK

SIGNAL FACE I.D.

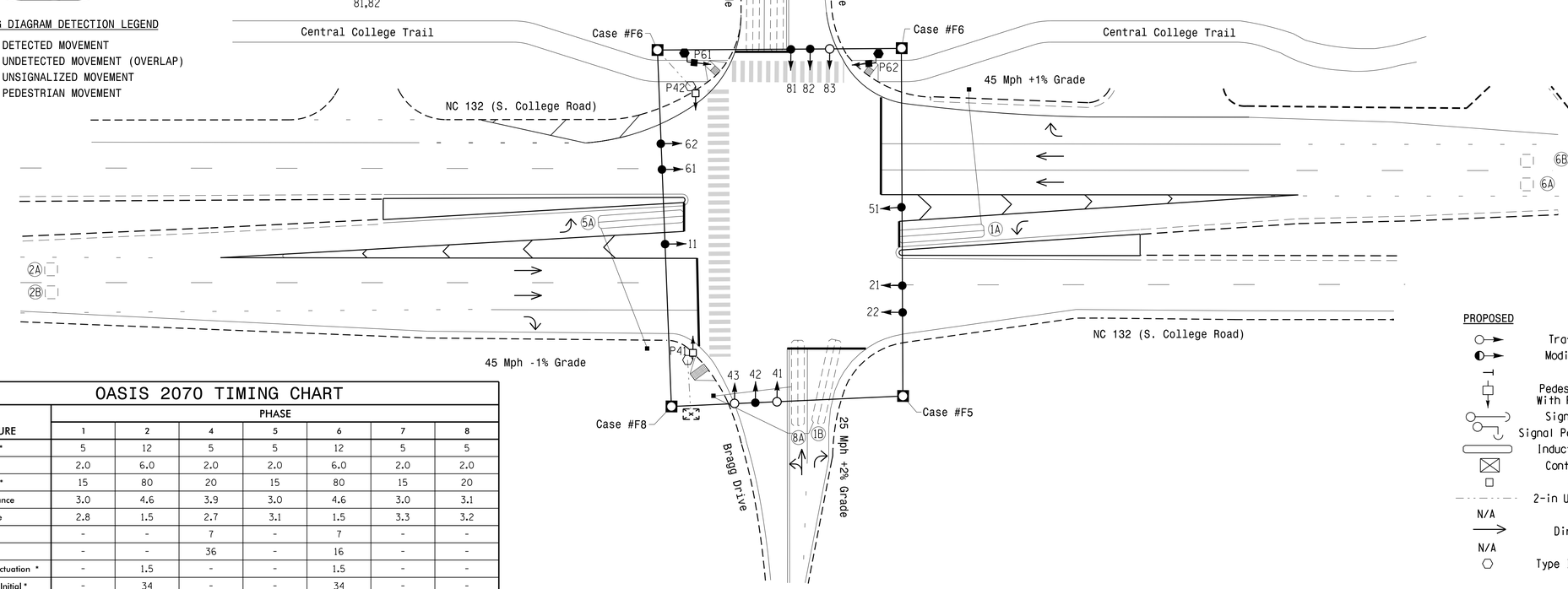
All Heads L.E.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
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
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	10	-	-
					6	Y	Y	Y	-	3	-	-
1B	6X40	+5	2-4-2	Y	8	Y	Y	-	-	15	-	-
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	10	-	-
					2	Y	Y	Y	-	3	-	-
5B	6X40	0	2-4-2	Y	4	Y	Y	-	-	15	-	-
6A	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	10	-	-
					4	Y	Y	-	-	3	-	-
8A	6X40	+5	2-4-2	Y	8	Y	Y	-	-	5	-	-

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. Omit phase 7 during phase 8 on.
4. Phase 1 and/or phase 5 may be lagged.
5. Reposition existing signal heads numbered 11,51,81,and 82.
6. Set all detector units to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Signal system data: Controller Asset #: 0924.



OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	4	5	6	7	8
Min Green 1 *	5	12	5	5	12	5	5
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	15	80	20	15	80	15	20
Yellow Clearance	3.0	4.6	3.9	3.0	4.6	3.0	3.1
Red Clearance	2.8	1.5	2.7	3.1	1.5	3.3	3.2
Walk 1 *	-	-	7	-	7	-	-
Don't Walk 1	-	-	36	-	16	-	-
Seconds Per Actuation *	-	1.5	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	34	-	-
Time Before Reduction *	-	15	-	-	15	-	-
Time To Reduce *	-	30	-	-	30	-	-
Minimum Gap	-	3.0	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	-
Dual Entry	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON

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

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	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	
N/A	Right of Way	
	Directional Arrow	
N/A	Curb Ramp	
	Type II Signal Pedestal	

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 132 (S. College Road) at Bragg Drive

Division 3 New Hanover County Wilmington

PLAN DATE:	February 2022	REVIEWED BY:	ZML
PREPARED BY:	Jeff Spence	REVIEWED BY:	

SCALE 0 30 1'=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030530 ENGINEER ZACHARY M. LITTLE
DocuSigned by: Zachary M. Little 03/17/2022
DC21EFD94F5341F...
DATE
SIG. INVENTORY NO. 03-0924

E-MAR-2022 06:58
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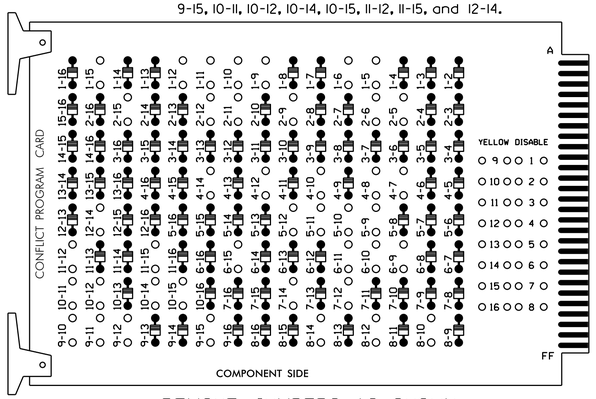
jspence

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	Sig. 1.1

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

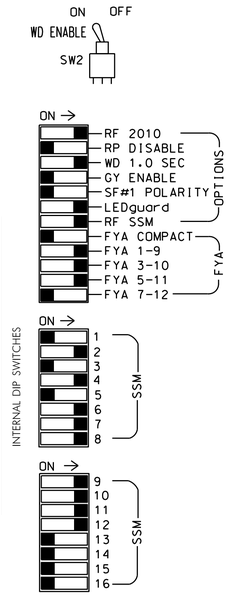
REMOVE DIODE JUMPERS I-5, I-6, I-9, I-10, I-11, I-12, I-15, 2-5, 2-6, 2-9, 2-11, 2-12, 2-15, 4-7, 4-8, 4-10, 4-12, 4-14, 5-9, 5-10, 5-11, 5-12, 6-9, 6-10, 6-11, 6-15, 7-12, 7-14, 8-10, 8-12, 8-14, 9-10, 9-11, 9-12, 9-15, 10-11, 10-12, 10-14, 10-15, 11-12, 11-15, and 12-14.



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 4 and 6 for Startup Ped Call.
7. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as WAG Overlaps.
8. The cabinet and controller are a part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S4P,S5,S6,S6P,S7,S8, S9,S12,S13
PHASES USED.....1,2,4,4PED,5,6,7,8,6PED
OVERLAP "A".....1+2
OVERLAP "B".....1+8
OVERLAP "C".....5+6
OVERLAP "D".....4+5

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	NU	41,42	P41, P42	51★	61,62	P61, P62	41	81,82	NU	11★	83★	NU	51★	43★	NU
RED		128			101			134		✳	107							
YELLOW	✳	129			102		✳	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW										123			A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127						133			124								
✋						104			119									
🚶						106			121									

NU = Not Used

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

★ See pictorial of head wiring in detail below.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1	Ø 2	SLOT	WIRED ⊗ INPUT	SLOT	SLOT	SLOT	WIRED ⊗ INPUT	Ø 1	SLOT	SLOT	NOT USED	Ø6 PED	FS
		1A	2A	EMPTY		EMPTY	EMPTY	EMPTY		1B	EMPTY	EMPTY		DC ISOLATOR	DC ISOLATOR
	L	NOT USED	Ø 2							NOT USED			Ø4 PED	NOT USED	ST
			2B										DC ISOLATOR		DC ISOLATOR
FILE "J"	U	Ø 5	Ø 6	SLOT	WIRED ⊗ INPUT	Ø 7	Ø 8	SLOT	SLOT	Ø 5	SLOT	SLOT	SLOT	SLOT	SLOT
		5A	6A	EMPTY		7A	8A	EMPTY	EMPTY	5B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
	L	NOT USED	Ø 6			NOT USED	NOT USED			NOT USED					
			6B												

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[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			10
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB6-9,10	I9U	60	22	11	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
5A[2]	TB3-1,2	J1U	55	17	5	5	Y	Y			10
	-	I4U	47	9	22	2	Y	Y	Y		3
5B	TB7-9,10	J9U	59	21	15	5	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A[3]	TB5-5,6	J5U	57	19	7	7	Y	Y			10
		I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			5
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

[1]Add jumper from I1-W to J4-W, on rear of input file
[2]Add jumper from J1-W to I4-W, on rear of input file
[3]Add jumper from J5-W to I8-W, on rear of input file

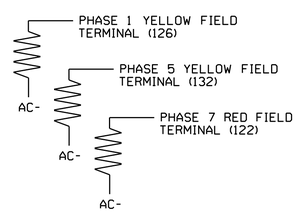
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

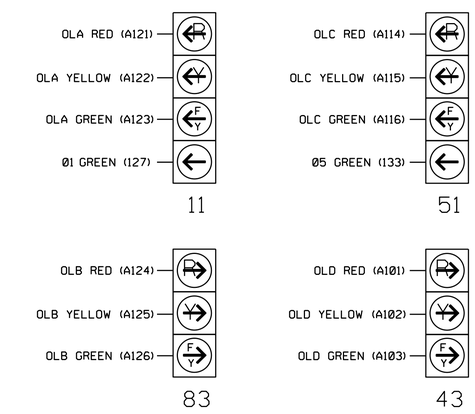
ACCEPTABLE VALUES

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0924
DESIGNED: February 2022
SEALED: 3/17/2022
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared In the Offices of:

Traffic Engineering Branch, Traffic Signal Management Section, Division of Highways, N.C. Department of Transportation

750 N.Greenfield Pkwy,Garner,NC 27529

NC 132 (S. College Road) at Bragg Drive

Division 3 New Hanover County Wilmington

PLAN DATE:	March 2022	REVIEWED BY:	
PREPARED BY:	S. Armstrong	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough A9D3D0EA8205405... 03/17/2022 DATE

SIG. INVENTORY NO. 03-0924

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armstrong

PROJECT REFERENCE NO.	SHEET NO.
W-5703R	Sig. 1.2

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

(program controller as shown below)

1. 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.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

PRESS '+'

```
LOGICAL I/O COMMAND #4  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON
AND RED CLEAR ON PHASE #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #42 ON
SET OUTPUT  ASSIGNMENT #43 OFF
```

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #5  (+/-COMMAND#)
IF  ACTIVE PHASE        #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #44 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

PRESS '+'

```
LOGICAL I/O COMMAND #6  (+/-COMMAND#)
IF  YELLOW ON PHASE     #5  IS ON

SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #43 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

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

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
                 OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR        PHASES:¦123456789101112131415 16
IF PHASES ARE ON¦        X
OMIT PHASES     ¦       X
CALL PHASES     ¦
```

BACKUP PROTECTION PROGRAMMING COMPLETE

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.

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

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:          ¦123456789101112131415 16
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

PRESS '+' ONCE

```
PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦X      X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
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

PRESS '+' ONCE

```
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE:          ¦123456789101112131415 16
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

PRESS '+' ONCE

```
PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE:          ¦123456789101112131415 16
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?...N
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

OUTPUT REFERENCE SCHEDULE

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0924
DESIGNED: February 2022
SEALED: 3/17/2022
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 132 (S. College Road)
at
Bragg Drive

Division 3 New Hanover County Wilmington

Prepared in the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

PLAN DATE: March 2022	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 03/17/2022
430320FAA2654C3 DATE

SIG. INVENTORY NO. 03-0924

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armstrong

PROJ. REFERENCE NO.	SHEET NO.
W-5703R	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L (Center)	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station L (RT)	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
26+94.00	-	-	29+00.00	-	-
27+00.00	1	0	29+25.00	4	19
27+25.00	3	0			
27+50.00	4	2			
27+75.00	5	2	30+00.00	-	-
28+00.00	7	1	30+25.00	6	12
28+25.00	8	0	30+50.00	6	20
28+50.00	10	0	30+75.00	6	8
28+75.00	11	0	31+00.00	3	1
29+00.00	12	0			
29+25.00	6	0			
30+00.00	-	-			
30+25.00	6	1			
30+50.00	12	0			
30+75.00	10	1			
31+00.00	8	0			
31+25.00	7	0			
31+50.00	6	1			
31+75.00	5	1			
32+00.00	3	1			

Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

PROJ. REFERENCE NO.	SHEET NO.
W-5703R	X-1

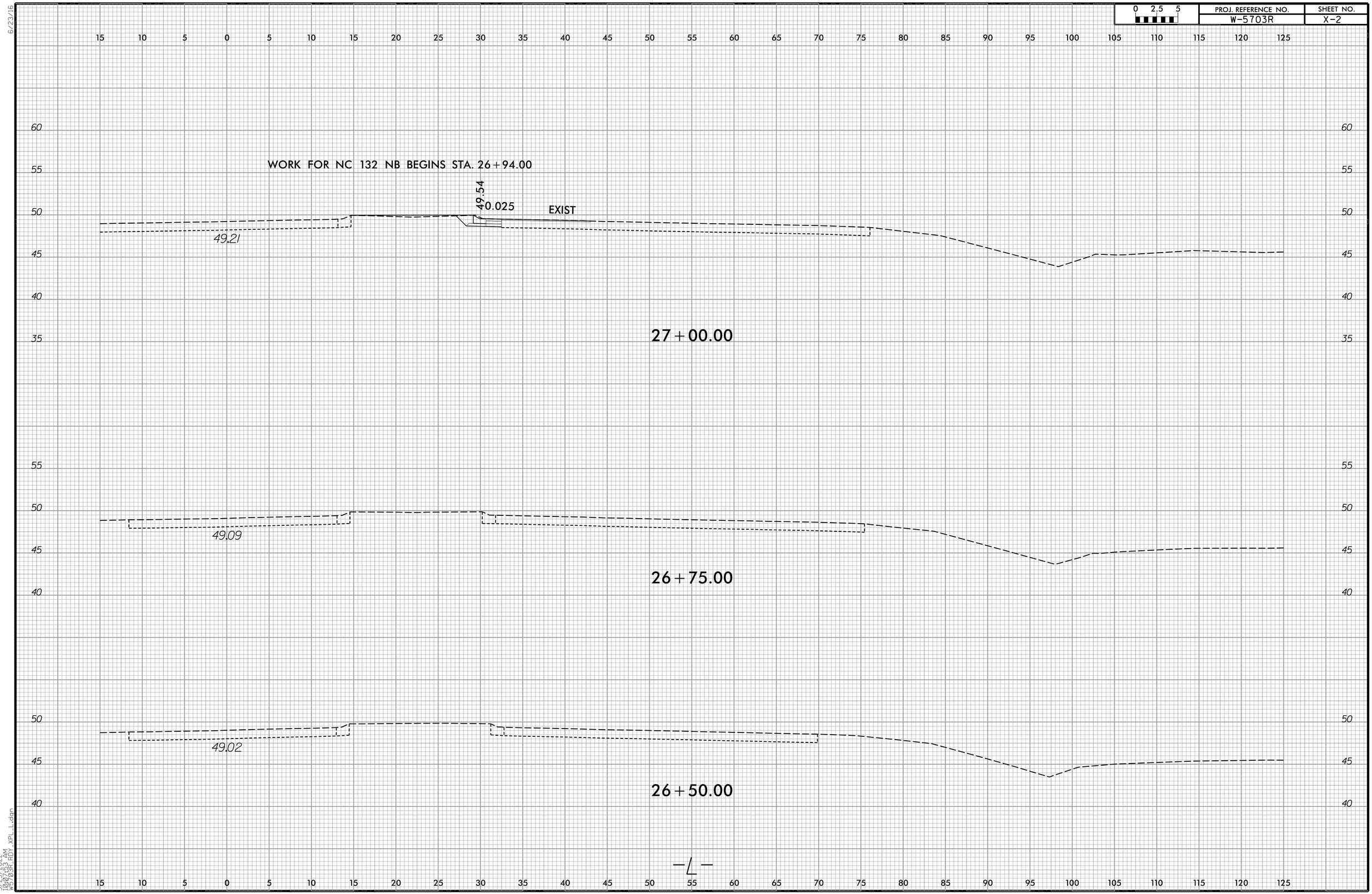
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CROSS SECTION INDEX

ROADWAY	STATION	TO	STATION	SHEET NUMBER
CROSS SECTION INDEX				X-1
-L- (NC 132 COLLEGE ROAD)	26+50.00	TO	32+50.00	X-2 TO X-9

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5703R	X-2



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6/23/16

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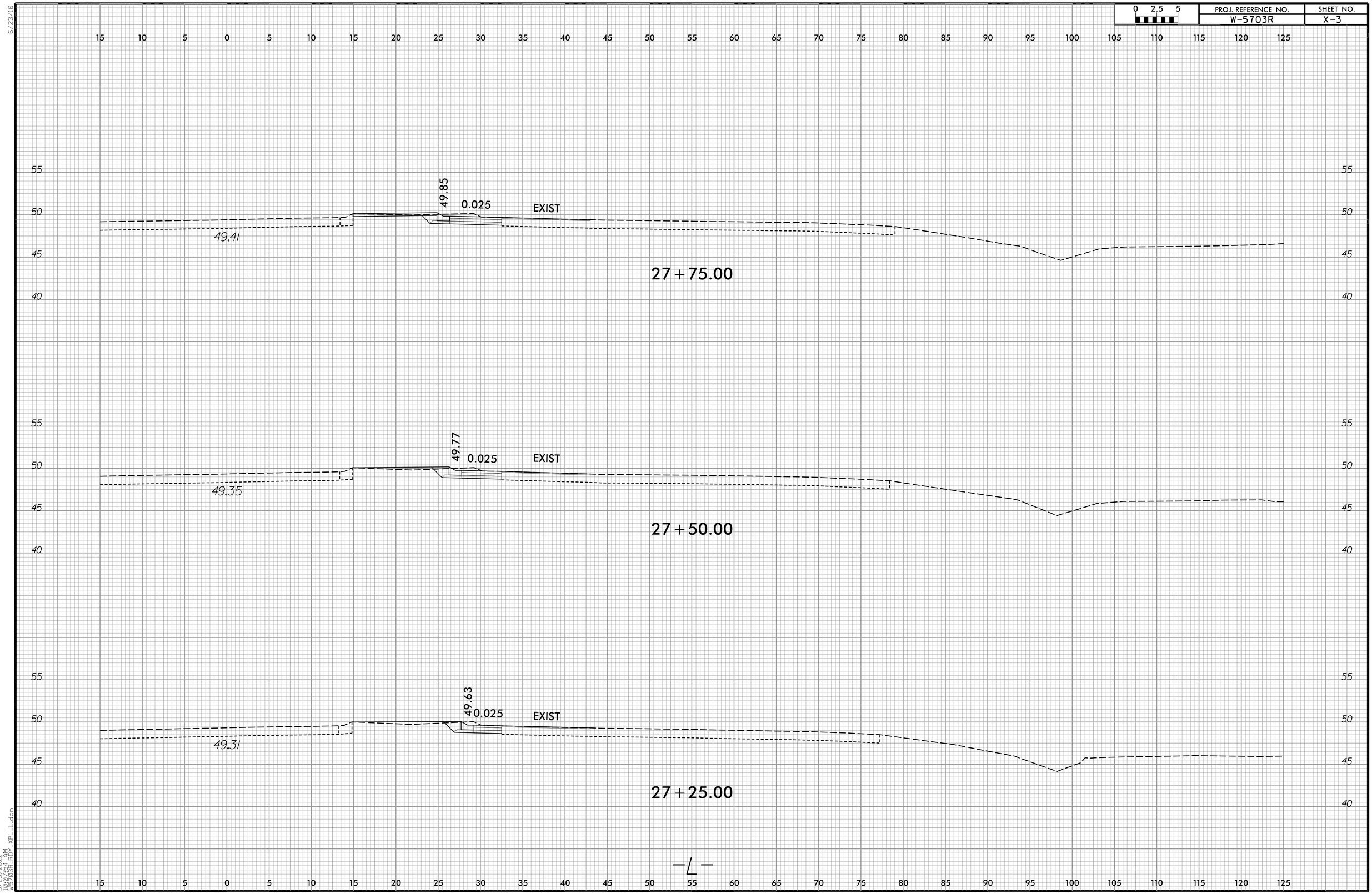

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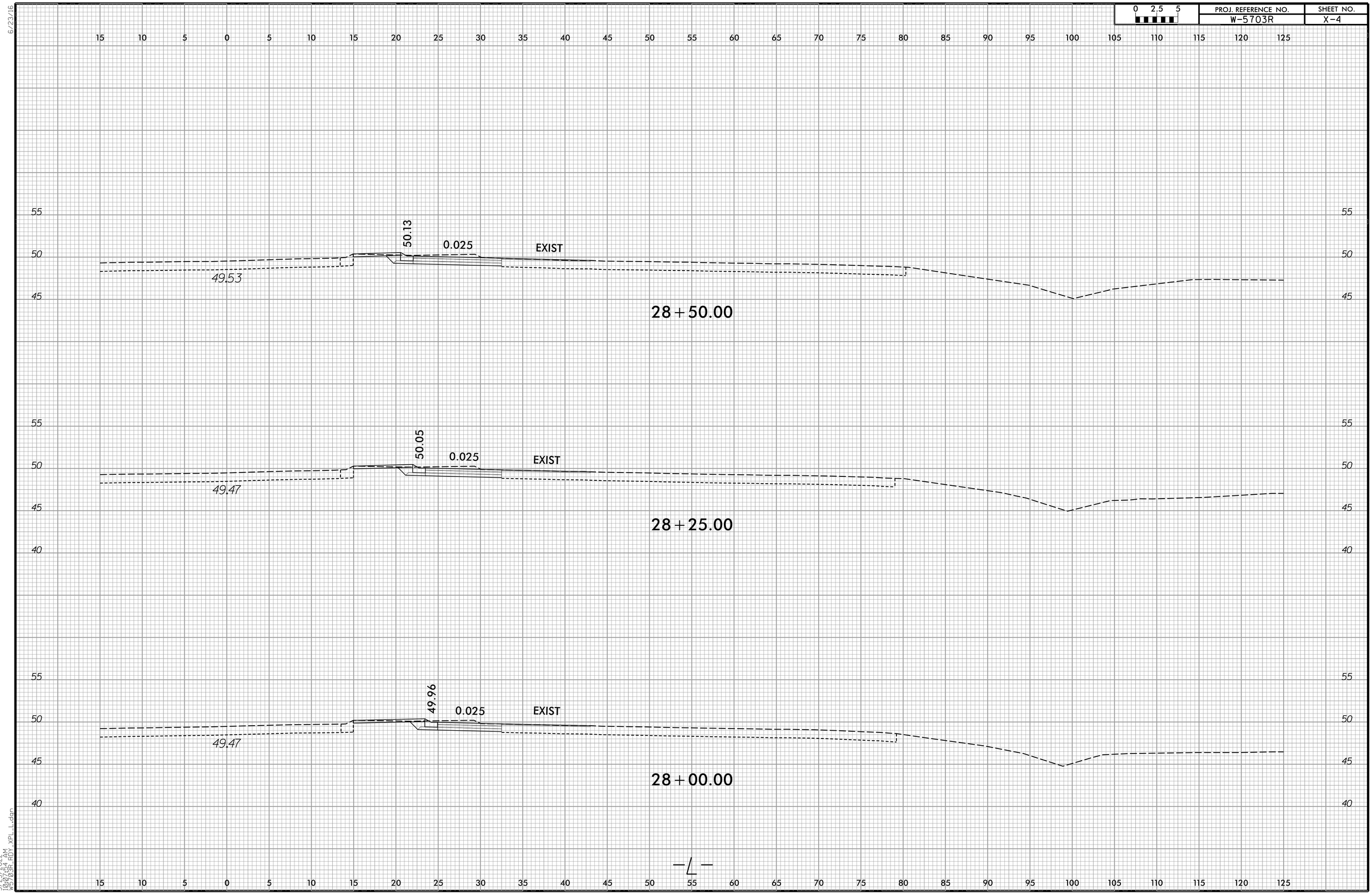

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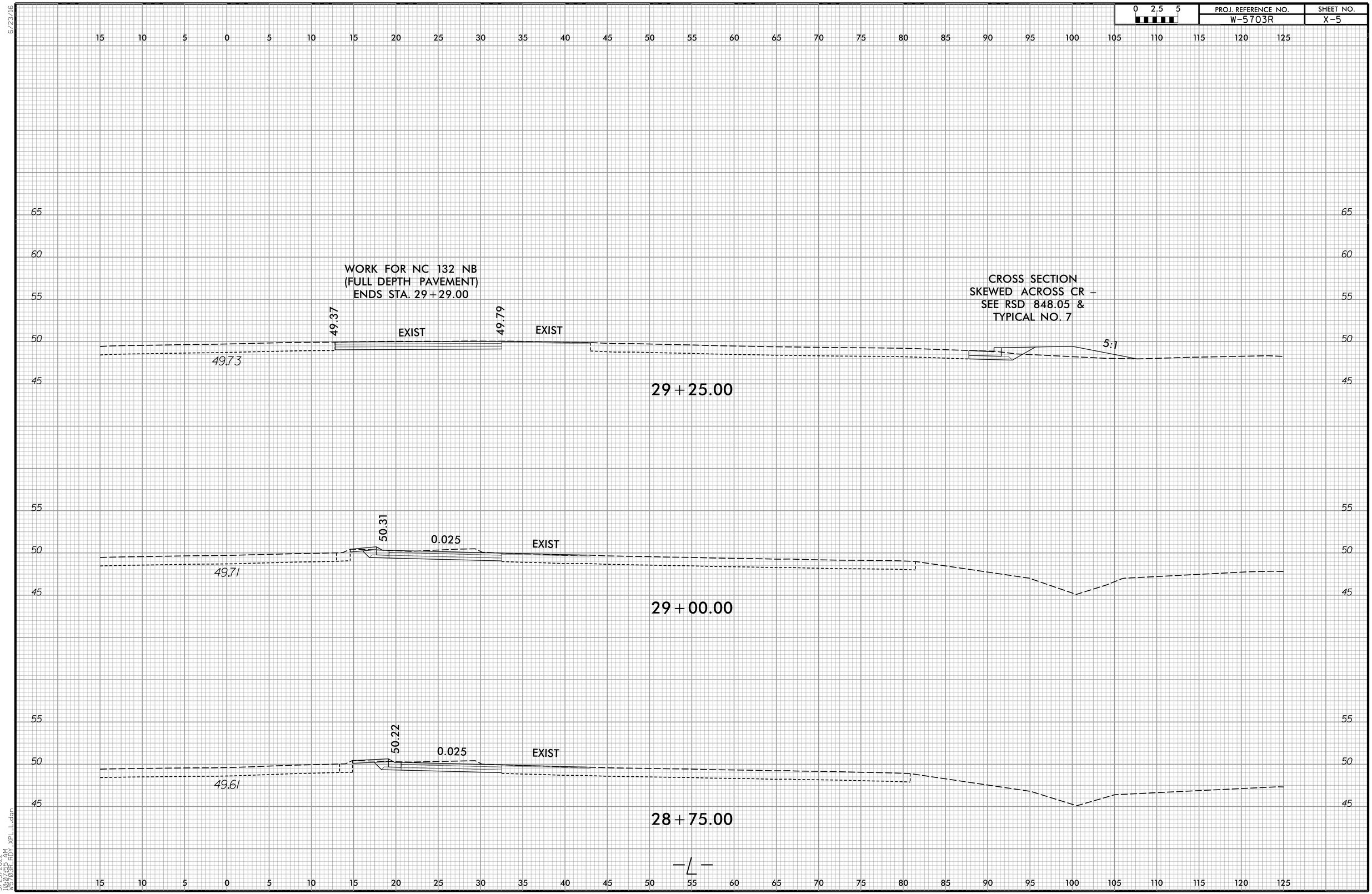

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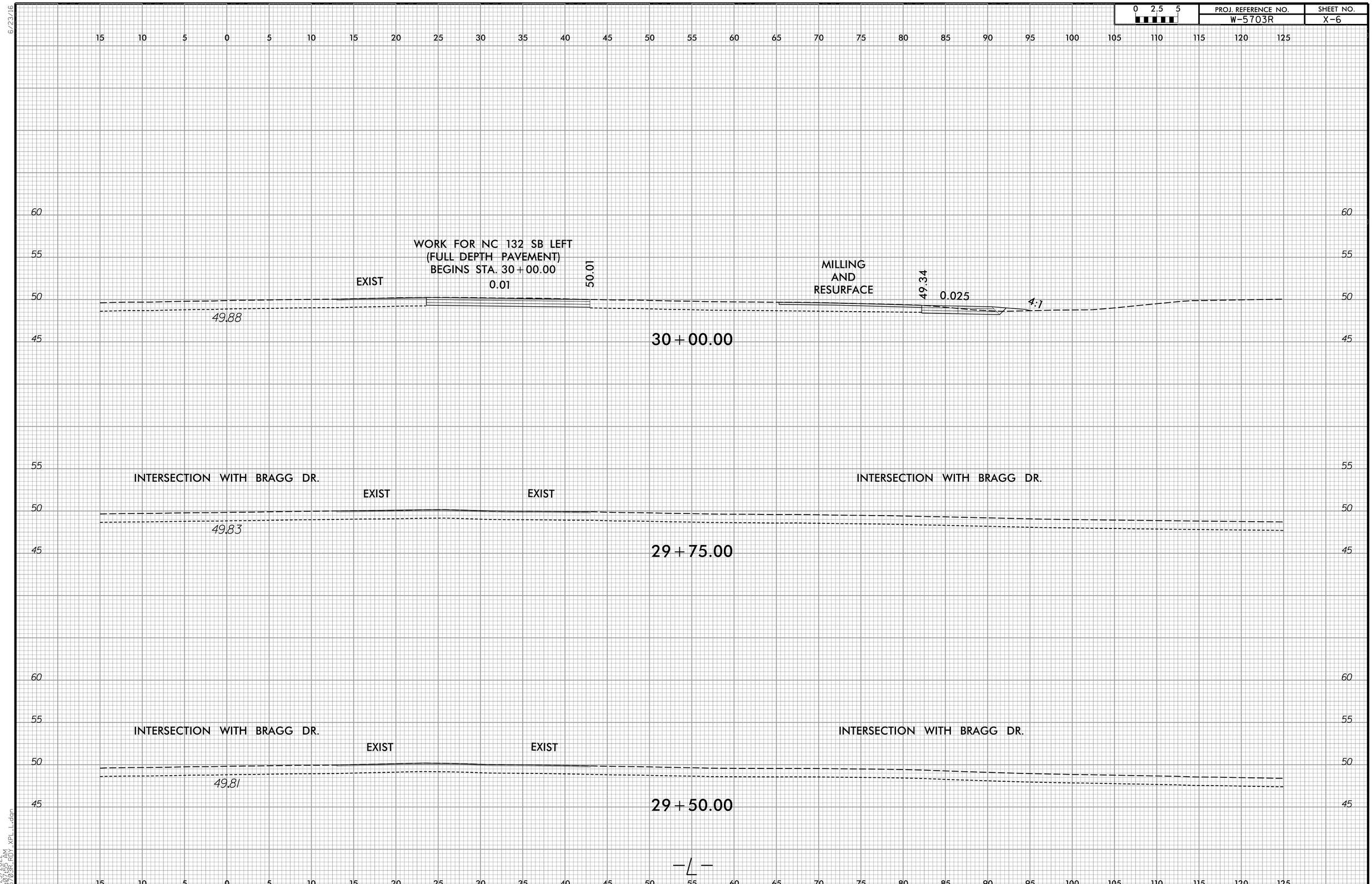

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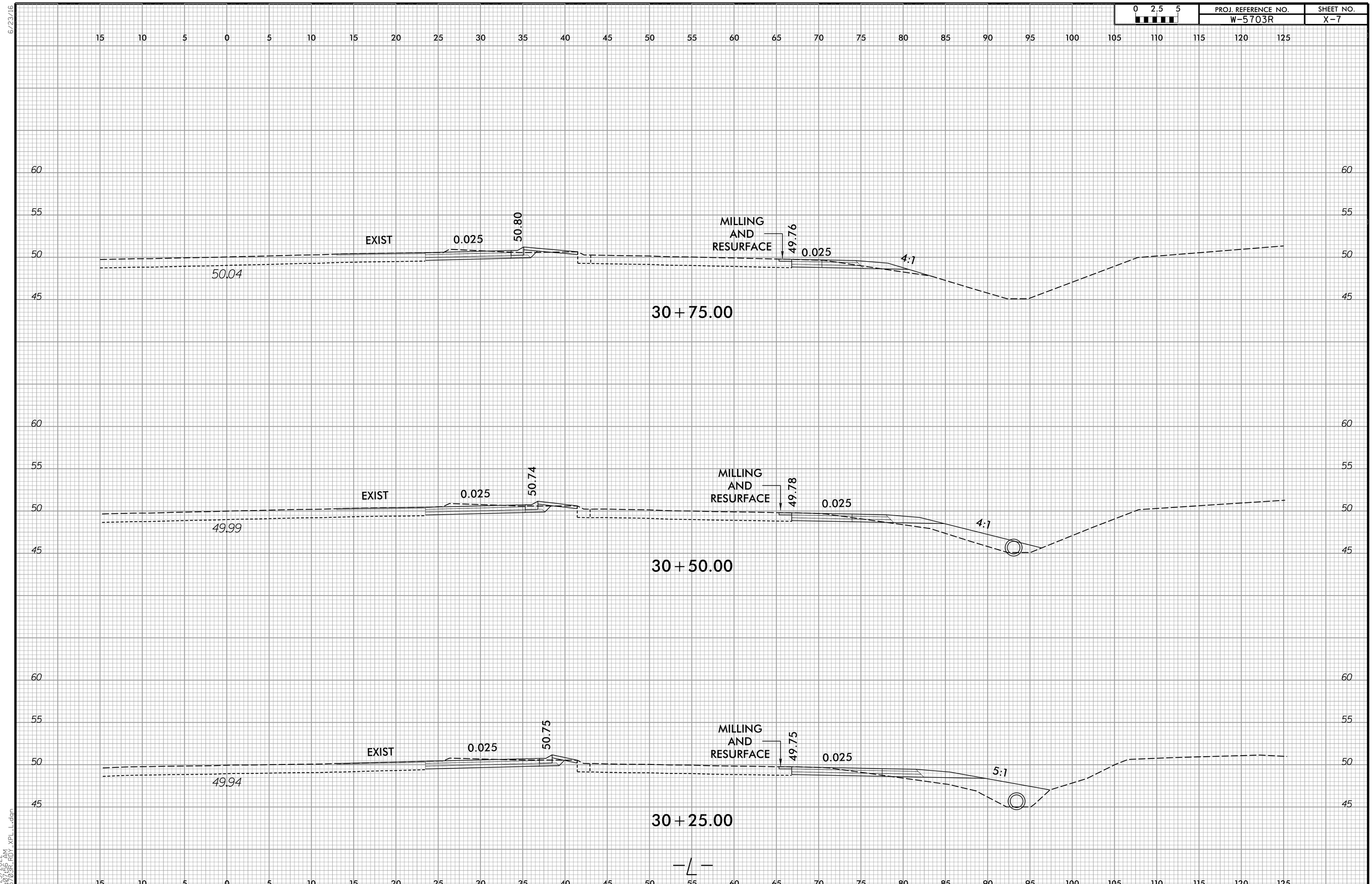

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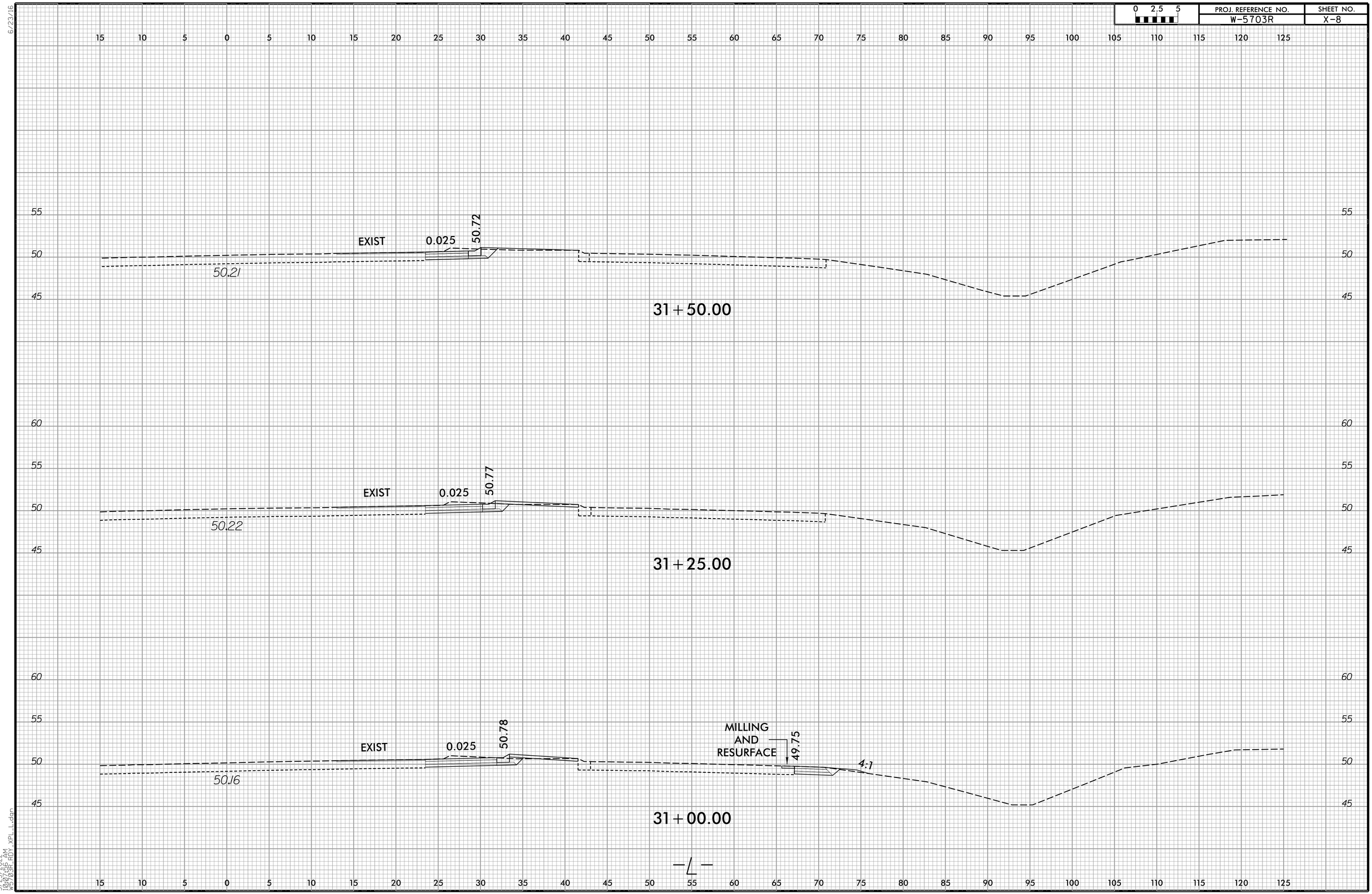

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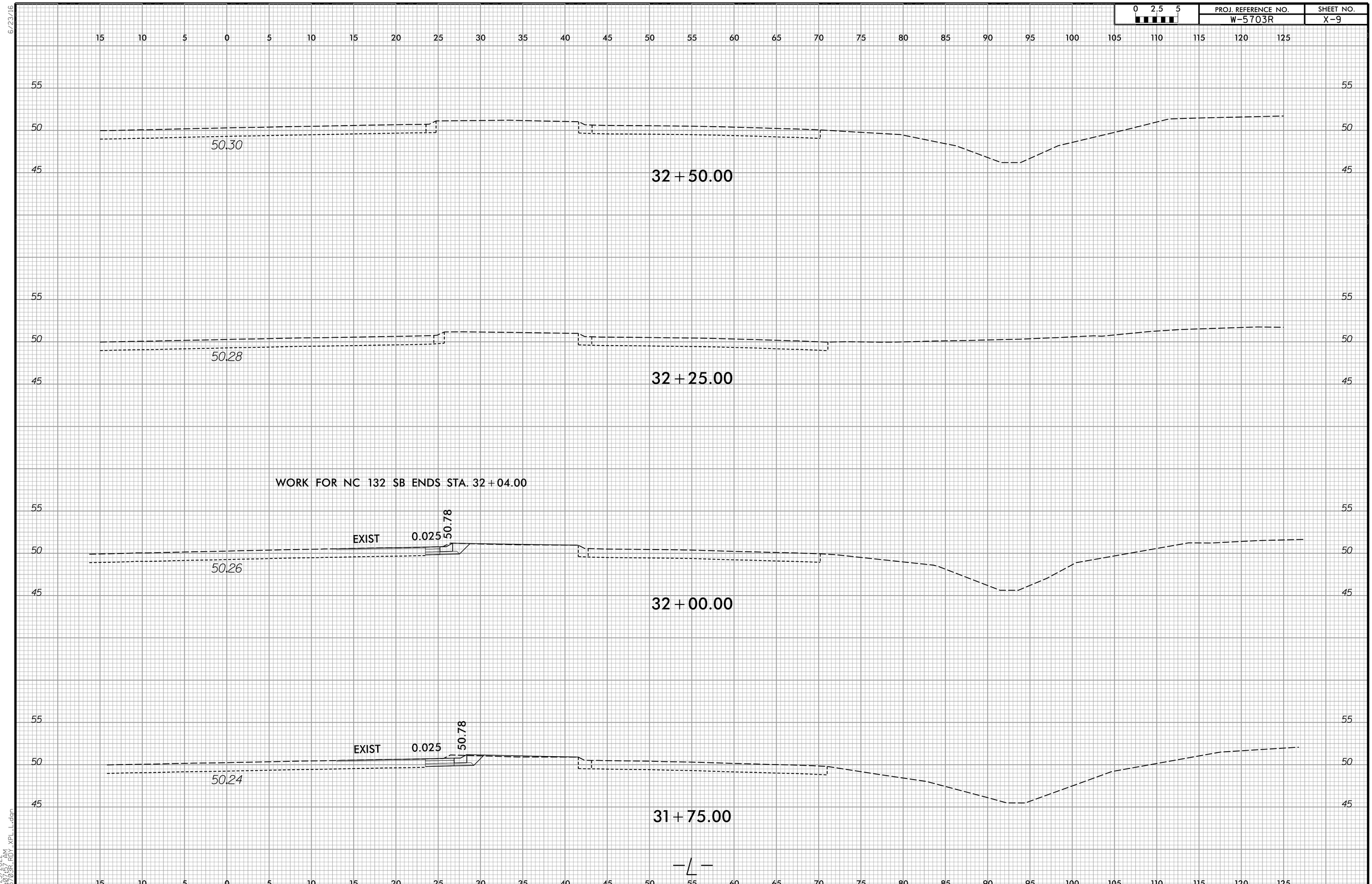

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