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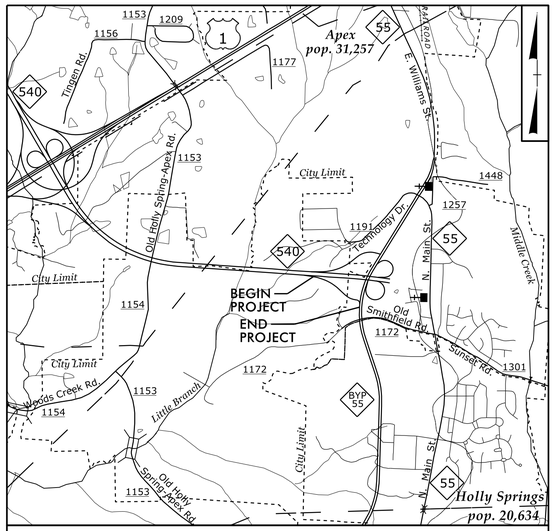
09/08/99

TIP PROJECT: R-2635DA

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

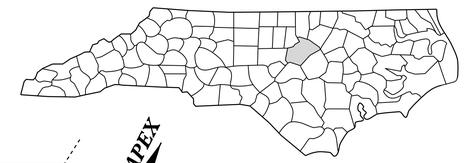
WAKE COUNTY

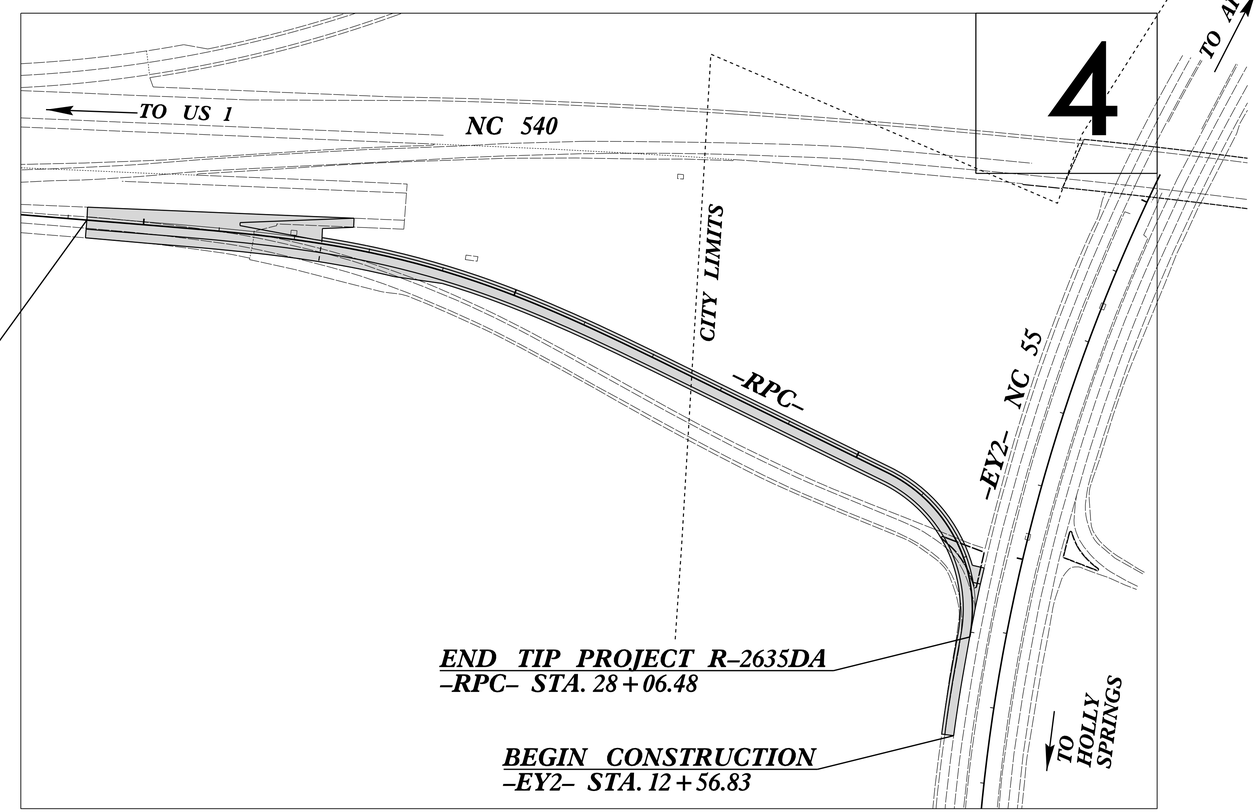
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2635DA	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
35520.1.FS3	NHPP-0540(29)	PE
35520.3.6		CONST

LOCATION: IMPROVEMENTS TO EXISTING SOUTHBOUND EXIT RAMP (RAMP C) FROM NC 540 TO NC 55

TYPE OF WORK: GRADING, DRAINAGE, & PAVING





NAD 83/
NSRS 2007

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT: DE00142

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

V = 60 MPH

FUNC CLASS =
INTERSTATE RAMP
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2365DA = 0.262 MILES

Prepared in the Office of:
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Raleigh NC, 27609

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

DAVID W. BASS, PE
PROJECT ENGINEER

W. CRAIG PARKER, PE
PROJECT DESIGN ENGINEER

BEN UPSHAW, PE
NCDOT ROADWAY PROJECT ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

DocuSigned by: James A. Byrd P.E.
SIGNATURE: 2/8/2016

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

DocuSigned by: W. Craig Parker P.E.
SIGNATURE: 2/8/2016

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

29-JAN-2016 14:59
\\rdiwo0\projects\63368-004 NCTA Operations On Call\003-R2635DA\Roadway\Proj\R-2635DA_rdy_Tsh.dgn
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG TRAVIS

697A80C1...

2/10/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES, & STANDARD DRAWINGS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND SHOULDER DRAIN DETAILS
2B-1	DETOUR ALIGNMENT DETAILS
2G-1	TEMPORARY SHORING DETAIL
3B-1	SUMMARIES OF EARTHWORK, ASPHALT PAVEMENT REMOVAL, CONCRETE PAVEMENT REMOVAL, SHOULDER DRAINS, & GUARDRAIL
3D-1	SUMMARY OF DRAINAGE
4	PLAN SHEET
5 THRU 6	PROFILE SHEETS
TMP-1 THRU TMP-12	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
ITS-1 THRU ITS-11	ITS PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-13	CROSS-SECTIONS

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY, 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	METHOD OF CLEARING - METHOD II
225.01	GUIDE FOR GRADING SUBGRADE - INTERSTATE AND FREEWAY
225.02	GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL
225.03	DECELERATION AND ACCELERATION LANES
225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT
DIVISION 3 - PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD II (SHEET 2 OF 3 IS NO LONGER APPLICABLE)
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	CONCRETE PAVEMENT JOINTS - CONSTRUCTION AND CONTRACTION JOINTS
700.03	DOWEL ASSEMBLY
700.05	TYING PROPOSED PAVEMENT TO EXISTING
720.01	CONCRETE SHOULDERS - STAMPED OR ROLLED RUMBLE STRIPS, MILLED RUMBLE STRIPS
DIVISION 8 - INCIDENTALS	
815.02	SUBSURFACE DRAIN
816.01	CONCRETE PADS - FOR SHOULDER DRAIN INSTALLATION
816.02	AGGREGATE SHOULDER DRAIN
816.04	MARKERS FOR DRAINAGE STRUCTURE AND CONCRETE PAD
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES
840.14	CONCRETE DROP INLET - 12" THRU 30" PIPE
840.15	BRICK DROP INLET - 12" THRU 30" PIPE
840.16	DROP INLET FRAME AND GRATES - FOR USE WITH STD. DWG 840.14 AND 840.15
840.17	CONCRETE GRATED DROP INLET TYPE 'A' - 12" THRU 72" PIPE
840.18	CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.22	FRAMES AND WIDE SLOT SAG GRATES
840.26	BRICK GRATED DROP INLET TYPE 'A' - 12" THRU 72" PIPE
840.27	BRICK GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.34	TRAFFIC BEARING JUNCTION BOX - FOR USE WITH PIPES 42" AND UNDER
840.35	TRAFFIC BEARING GRATED DROP INLET - FOR CAST IRON DOUBLE FRAME AND GRATES
840.54	MANHOLE FRAME AND COVER
840.66	DRAINAGE STRUCTURE STEPS
840.72	PIPE COLLAR
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
876.01	RIP RAP IN CHANNELS
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: DUKE ENERGY

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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$$$$USERNAME$$$$

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	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
- 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
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- 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:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

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:

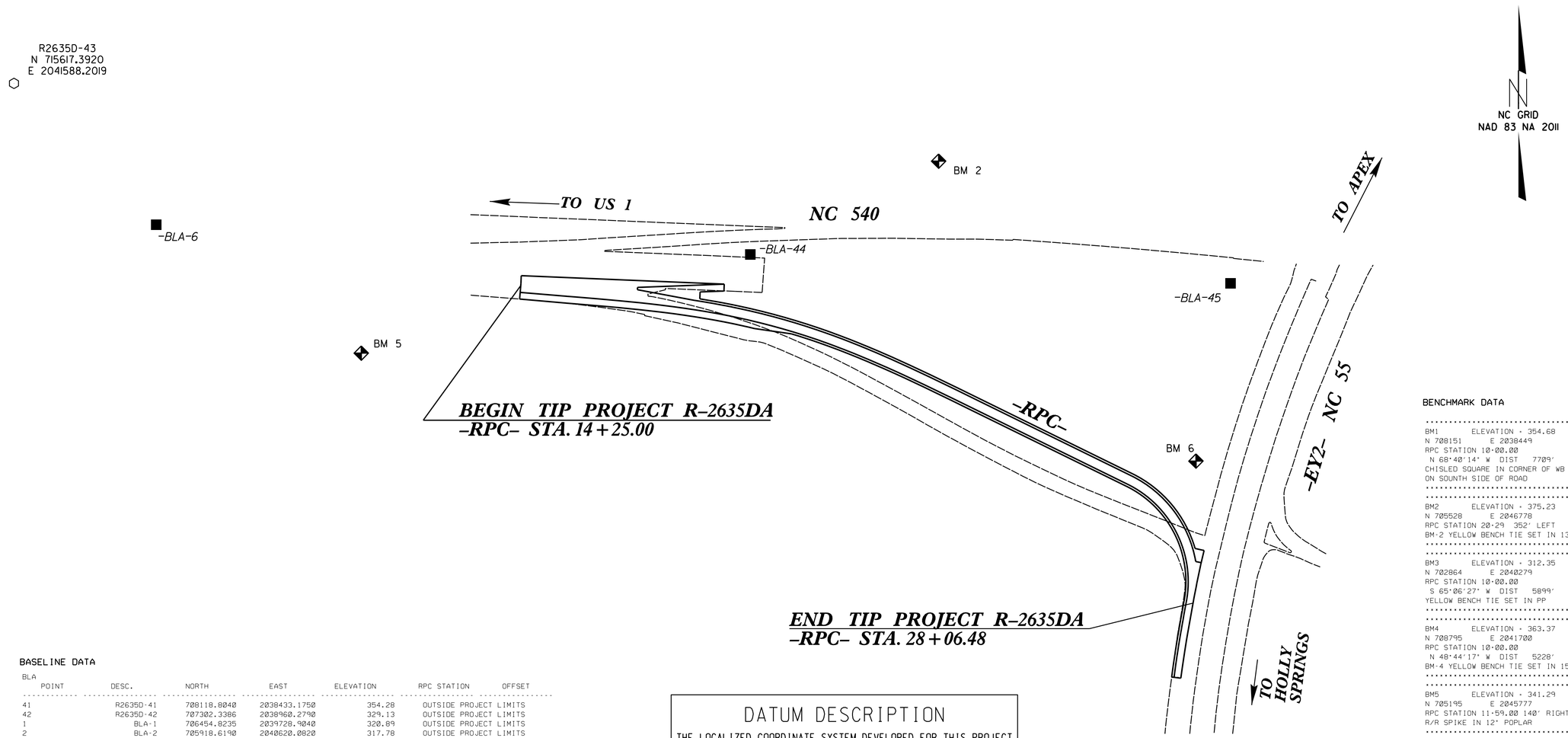
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	1C-1
Location and Surveys	

SURVEY CONTROL SHEET R2635DA



BASELINE DATA

BLA

POINT	DESC.	NORTH	EAST	ELEVATION	RPC STATION	OFFSET
41	R2635D-41	708118.8040	2038433.1750	354.28	OUTSIDE PROJECT LIMITS	
42	R2635D-42	707302.3386	2038960.2790	329.13	OUTSIDE PROJECT LIMITS	
1	BLA-1	706454.8235	2039728.9040	320.89	OUTSIDE PROJECT LIMITS	
2	BLA-2	705918.6190	2040620.0820	317.78	OUTSIDE PROJECT LIMITS	
43	R2635D-43	705617.3920	2041588.2020	320.64	OUTSIDE PROJECT LIMITS	
3	BLA-3	705536.5822	2042466.7690	326.64	OUTSIDE PROJECT LIMITS	
4	BLA-4	705492.5025	2043494.2490	302.88	OUTSIDE PROJECT LIMITS	
5	BLA-5	705481.9096	2044347.9860	297.69	OUTSIDE PROJECT LIMITS	
6	BLA-6	705417.6810	2045421.7950	325.16	OUTSIDE PROJECT LIMITS	
44	R2635D-44	705366.2487	2046451.4620	362.92	18+04.88	99.58 LT
45	R2635D-45	705316.0481	2047283.9400	389.92	25+48.53	379.06 LT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	RPC STATION	OFFSET
101	BY3-101	703146.8788	2040671.0610	333.41	OUTSIDE PROJECT LIMITS	
102	BY3-102	704085.0670	2040925.8570	327.16	OUTSIDE PROJECT LIMITS	
103	BY3-103	704727.8786	2040975.4260	335.89	OUTSIDE PROJECT LIMITS	
48	R2635D-48	705525.3008	2040980.3470	341.53	OUTSIDE PROJECT LIMITS	
143		705617.3920	2041588.2020	320.64	OUTSIDE PROJECT LIMITS	
47	R2635D-47	706693.6087	2041266.7240	339.15	OUTSIDE PROJECT LIMITS	
104	BY3-104	707470.6919	2041499.6850	348.07	OUTSIDE PROJECT LIMITS	
105	BY3-105	708698.2427	2041745.8090	357.60	OUTSIDE PROJECT LIMITS	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2635D-43"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 705617.3920(ft) EASTING: 2041588.2019(ft)
ELEVATION: 320.64(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998902757
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2635D-43" TO -L- STATION 14+25.00 IS S 86°05'33.8"E 4475.85'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GEOID G12NC

NOTE: DRAWING NOT TO SCALE

BENCHMARK DATA

BM1 ELEVATION = 354.68
N 708151 E 2038449
RPC STATION 10+00.00
N 68°40'14" W DIST 7709'
CHISLED SQUARE IN CORNER OF WB BRIDGE ON SOUNTH SIDE OF ROAD

BM2 ELEVATION = 375.23
N 705528 E 2046778
RPC STATION 20+29 352' LEFT
BM-2 YELLOW BENCH TIE SET IN 13" PINE

BM3 ELEVATION = 312.35
N 702864 E 2040279
RPC STATION 10+00.00
S 65°06'27" W DIST 5899'
YELLOW BENCH TIE SET IN PP

BM4 ELEVATION = 363.37
N 708795 E 2041700
RPC STATION 10+00.00
N 48°44'17" W DIST 5228'
BM-4 YELLOW BENCH TIE SET IN 15" PINE

BM5 ELEVATION = 341.29
N 705195 E 2045777
RPC STATION 11+59.00 140' RIGHT
R/R SPIKE IN 12" POPLAR

BM6 ELEVATION = 369.42
N 705008 E 2047224
RPC STATION 26+08.00 90' LEFT
R/R SPIKE IN 11" PINE

NOTES:

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬡ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

01/04/16

$$SYSTIME$$
$$SYSDATE$$
$$CUNS$$
$$LEFNAME$$

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6/2/99

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER WANG KWANG FANG

DocuSigned by: 697A80C15...
2/8/2016

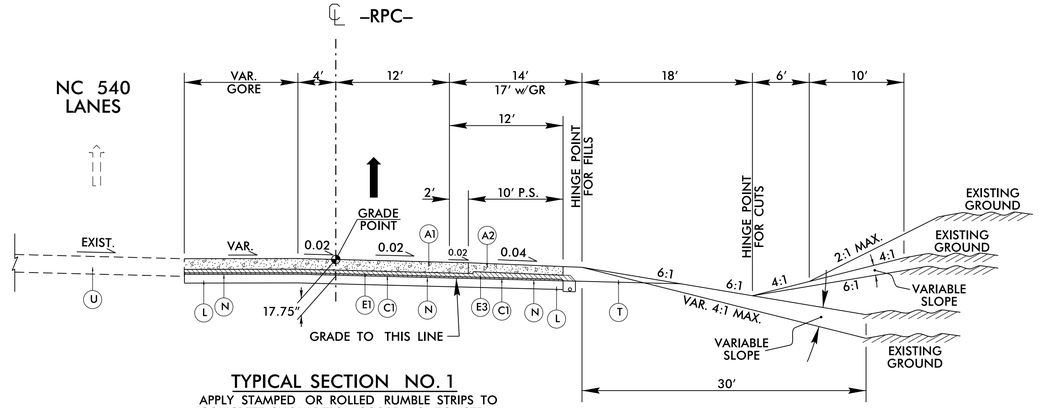
PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE
FINAL PAVEMENT DESIGN

A1	13.5" PORTLAND CEMENT CONCRETE PAVEMENT WITH DOWELS.
A2	11" PORTLAND CEMENT CONCRETE PAVEMENT.
C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
L	PROP. 8" CLASS IV AGGREGATE STABILIZATION.
N	FILTER FABRIC.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. VARIABLE DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS THIS SHEET)

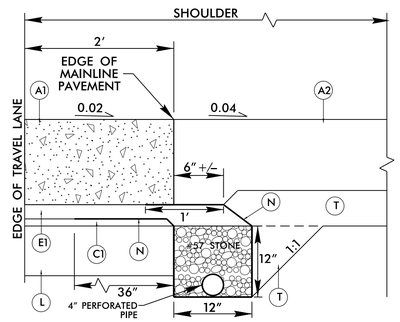
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

APPLY STAMPED OR ROLLED RUMBLE STRIPS TO CONCRETE SHOULDERS ACCORDING TO STD. DWG. 720.01 OR AS DIRECTED BY THE ENGINEER. RUMBLE STRIP INSTALLATION IS CONSIDERED INCIDENTAL TO CONCRETE SHOULDER CONSTRUCTION.

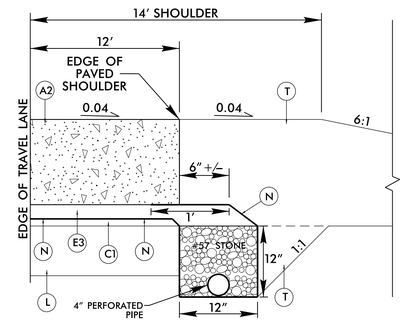
USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-RPC- STA. 14+25.00 TO STA. 17+36.29



SHOULDER DRAIN DETAIL "A"

FOR INFORMATION ONLY.
THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE EXISTING SHOULDER DRAINS UNDER THE MAINLINE SHOULDERS IN THE GORE AREA.
-RPC- STA. 16+30+/- TO 17+72+/- LT

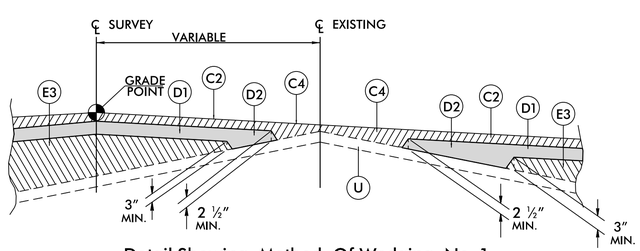
DO NOT DISTURB EXISTING SHOULDER DRAINS DURING CONSTRUCTION.



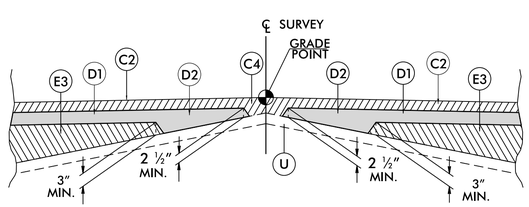
SHOULDER DRAIN DETAIL "B"

RAMP C SHOULDER DRAIN (11" PCCP SHOULDER). USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

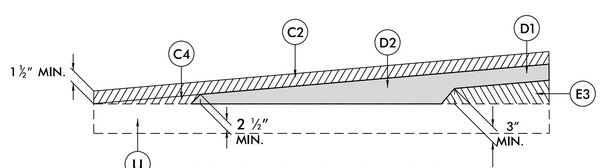
SEE SHOULDER DRAIN SUMMARY ON SHEET 3B-1



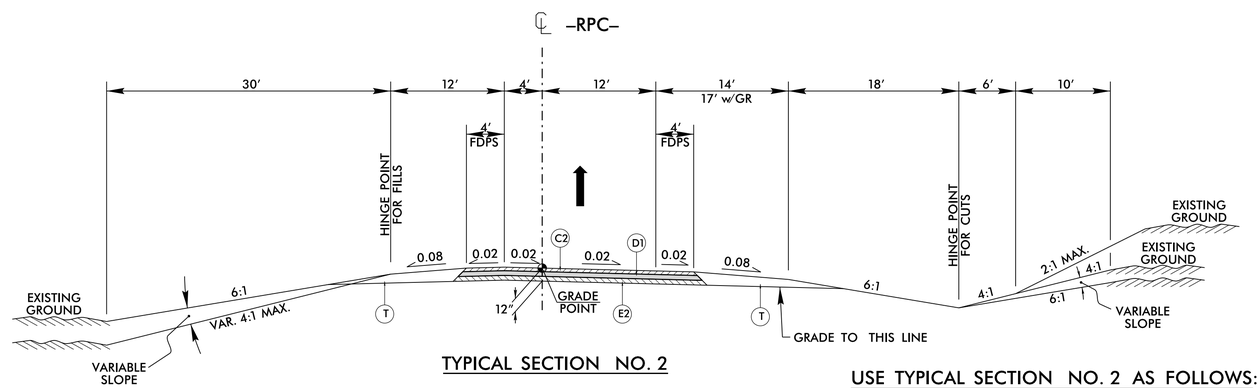
Detail Showing Method Of Wedging No. 1



Detail Showing Method of Wedging No. 2



Wedging Detail for Resurfacing



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-RPC- STA. 17+36.29 TO STA. 28+06.48

29-JAN-2016 15:00
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6/2/99

PAVEMENT SCHEDULE *FINAL PAVEMENT DESIGN*	
C2	3" S9.5B
D1	4" I19.0B
E2	5" B25.0B
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. VARIABLE DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS

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

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	2A-2

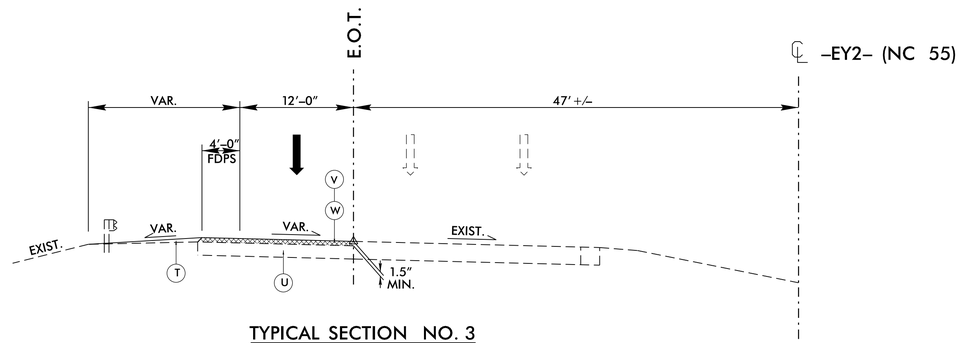
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER WILLIAM CRAIG PARKER

DocuSigned by: 607A8C4A4A4A4A4...
2/8/2016

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

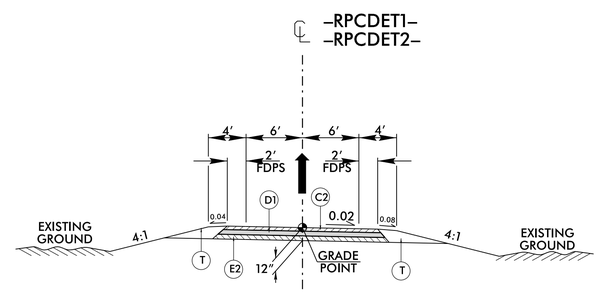


TYPICAL SECTION NO. 3

NOTE: UTILIZE EDGE AND ELEVATION OF EXISTING EDGE OF THROUGH LANE AS CONTROL FOR MILLING AND RESURFACING.

USE TYPICAL SECTION NO. 3 AS FOLLOWS:

-EY2- STA. 12+56.83 TO STA. 13+86.33



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:

-RPCDET1- STA. 12+16.79 TO STA. 16+97.13
-RPCDET2- STA 10+00.00 TO STA 12+28.06

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER
697A80C15A5A4A0...
2/8/2016

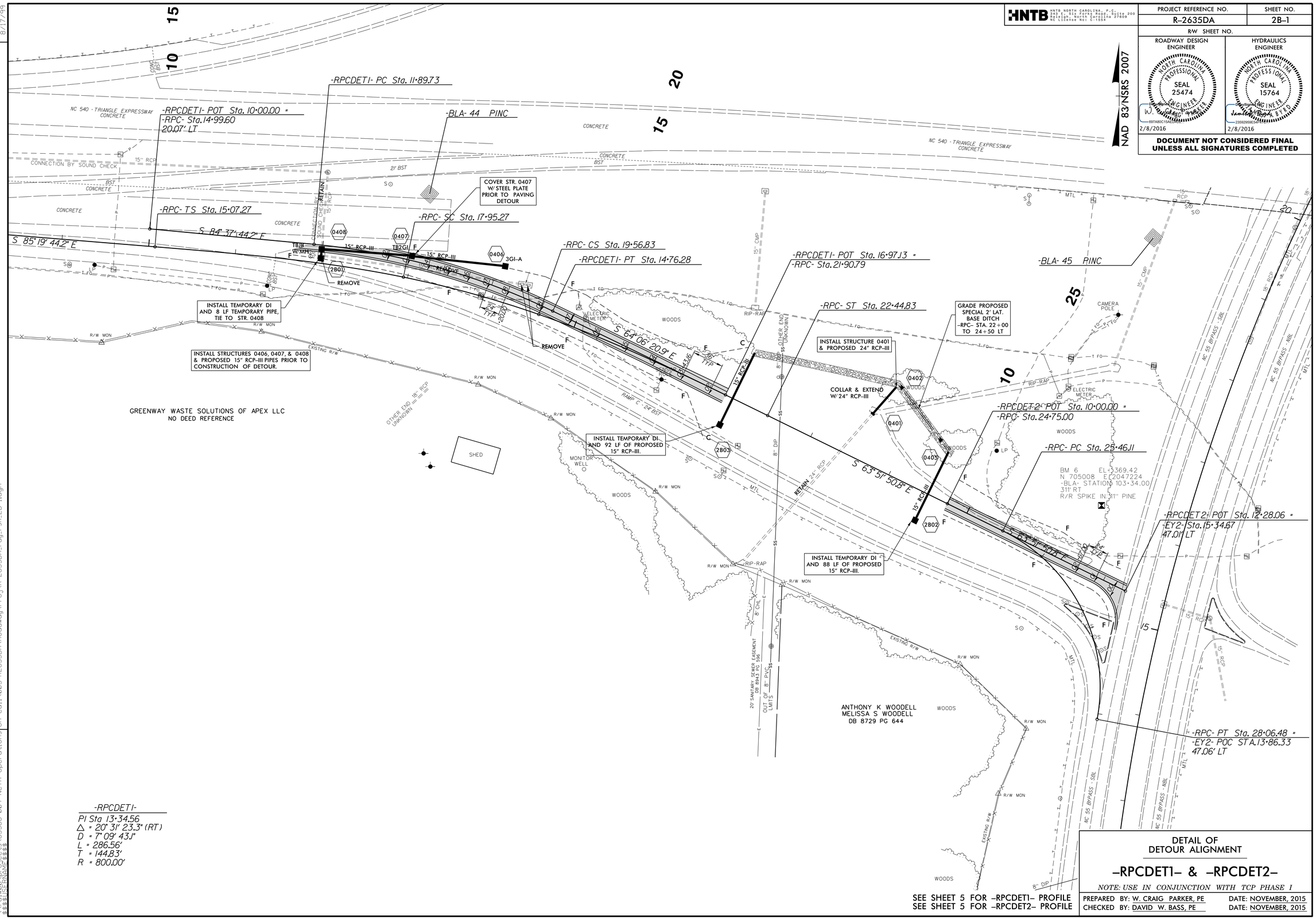
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER DAVID W. BASS
235929595E5A4F0...
2/8/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

REVISIONS

8/17/99



SEE SHEET 5 FOR -RPCDET1- PROFILE
SEE SHEET 5 FOR -RPCDET2- PROFILE

DETAIL OF DETOUR ALIGNMENT

-RPCDET1- & -RPCDET2-

NOTE: USE IN CONJUNCTION WITH TCP PHASE I

PREPARED BY: W. CRAIG PARKER, PE DATE: NOVEMBER, 2015
CHECKED BY: DAVID W. BASS, PE DATE: NOVEMBER, 2015

29-JAN-2016 15:00
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PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 2/9/2016
F760CAEB96FC4D3...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

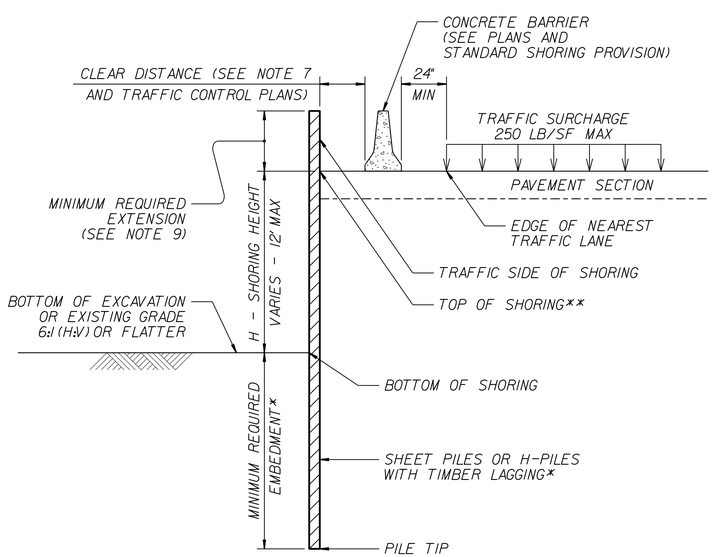
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

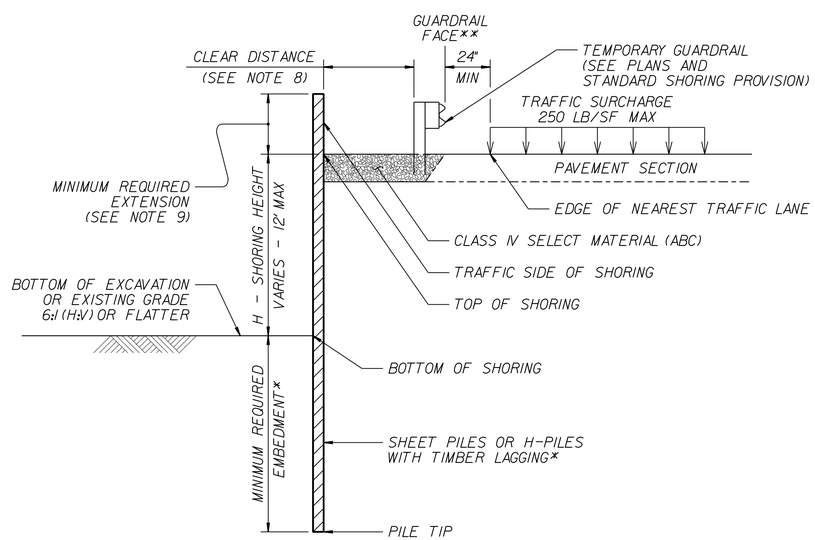
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



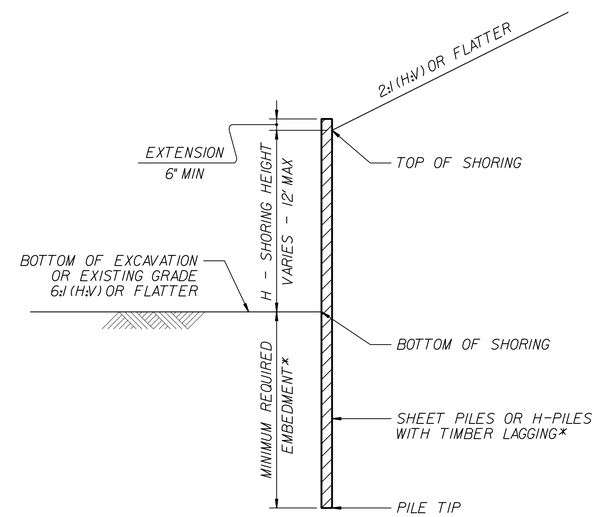
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

COMPUTED BY: Monica J. DuVal DATE: 11/18/15
CHECKED BY: W. Craig Parker, PE DATE: 11/18/15

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	3B-1

SUMMARY OF EARTHWORK

LINE	STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-RPCDET1-	12+00.00	16+97.13	6	2,444	2,438	
-RPCDET2-	10+00.00	13+58.14	0	971	971	
SUBTOTALS:			6	3,415	3,409	
-RPC-	14+25.00	28+06.48	9,415	6,137		3,278
SUBTOTALS:			9,415	6,137		3,278
DETOUR REMOVAL:						
-RPCDET1-	12+52.17	16+97.13	129	0		129
-RPCDET2-	10+25.00	12+28.06	306	0		306
SUBTOTALS:			435	0		435
PROJECT TOTALS:			9,856	9,552	3,409	3,713
USE WASTE IN LIEU OF BORROW					-3,409	-3,409
GRAND TOTALS:			9,856	9,552	0	304
SAY:			10,000		0	310

TOTAL SHALLOW UNDERCUT = 350 CY
CLASS IV SUBGRADE STABILIZATION = 700 TONS
SHOULDER BORROW = 780 CY

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, CLEARING AND GRUBBING, SHOULDER BORROW, FINE GRADING, REMOVAL OF EXISTING ASPHALT PAVEMENT AND REMOVAL OF EXISTING CONCRETE PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-RPC-/-EY2-	16+46.00	12+57.00	RT/LT	3,145.27
-RPCDET1-	11+67.00	16+26.00	RT/LT	493.20
-RPCDET2-	10+71.00	12+28.00	RT/LT	201.50
TOTAL:				3,839.97
SAY:				3,920

SUMMARY OF EXISTING CONCRETE PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-RPC-	14+24.00	17+72.00	RT/LT	1,354.43
TOTAL:				1,354.43
SAY:				1,380

SHOULDER DRAIN SUMMARY

LINE	STATION	STATION	DETAIL[4]	LOCATION	OUTLET LOCATIONS
-RPC-	14+25	17+36	B	OUTSIDE SHOULDER	14+25(CP)

CP = CONCRETE PAD

GENERAL NOTES:

1. SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STD. 816.02 ALONG WITH THE SHOULDER DRAIN DETAILS INCLUDED IN THESE PLANS. LIMITS OF SHOULD DRAIN CONSTRUCTION ARE LISTED IN THE SHOULDER DRAIN SUMMARY ABOVE. SOME LOCATIONS MAY REQUIRE THE USE OF FLATTER OUTLET PIPE SLOPE THAN SHOWN IN NCDOT STD. 816.02. POSITIVE DRAINAGE SHALL BE MAINTAINED.

2. SHOULDER DRAIN OUTLETS SHALL BE PLACED IN DRAINAGE STRUCTURES WHERE POSSIBLE. IF NOT CONNECTED TO DRAINAGE STRUCTURES, OUTLET PIPES SHALL BE PROTECTED USING A CONCRETE OUTLET PAD. SEE NCDOT STD. 816.01 FOR DETAIL. SHOULDER DRAIN OUTLETS SHALL BE LOCATED AS SHOWN IN THE SHOULDER DRAIN SUMMARY ABOVE OR AS DETERMINED BY THE ENGINEER.

3. 90 DEGREE BENDS SHOULD BE USED TO OUTLET FROM THE SHOULDER DRAINS WHERE POSSIBLE. WHERE CONCRETE OUTLET PADS ARE USED, OUTLET END ELEVATIONS SHALL BE LOCATED 6 INCHES ABOVE DITCH GRADE WHILE PROVIDING POSITIVE DRAINAGE THROUGH THE OUTLET PIPE. THE USE OF 45 DEGREE BENDS WILL BE ALLOWED SO THAT THE APPROPRIATE OUTLET LOCATION/ELEVATION CAN BE REACHED.

4. SEE SHEET 2A-1 FOR SHOULDER DRAIN DETAILS.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPROACH END	WARRANT POINT: TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH: APPROACH END	FLARE LENGTH: TRAILING END	W: APPROACH END	W: TRAILING END	ANCHORS: XI MOD	ANCHORS: XI	ANCHORS: GRAU 350	ANCHORS: M-350	ANCHORS: XIII	ANCHORS: CAT-1	ANCHORS: VI MOD	ANCHORS: BIC	ANCHORS: AT-1	IMPACT ATTENUATOR TYPE 350: EA	IMPACT ATTENUATOR TYPE 350: G	IMPACT ATTENUATOR TYPE 350: NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-RPC-	STA 20+04.34	STA 28+06.48	RT																									746		
-RPC-/-EY2-	STA 27+42.38	STA 13+75.43	RT	75'							50'		1'				1													TIE TO EXISTING GUARDRAIL
			SUBTOTALS:	75'																										
			ANCHOR DEDUCTION:																											
			GRAU 350: 1@50'	-50'																										
			TOTAL:	25'													1											746		
			SAY:	25'													1											746		
			ADDITIONAL POST: 5																											

12/06/07
29-JAN-2016 15:00
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RALD071

COMPUTED BY:	HNTB	DATE:	11/17/15
CHECKED BY:	BJH	DATE:	1/6/16

PROJECT NO.	SHEET NO.
R-2635DA	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48	54	60	66	72	78	84	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	54	60	66	72	78	84
RPC 23+53	56 LT	0401																																						
		0402	0401		350.8	350.6																								44										
RPC 24+50	52 RT	0404		365.8																																				
		0404	0405		363.0	361.5																						108												
RPC 19+04	41 LT	0406		359.7																																				
		0406	0407		355.7	354.4	0.5																					104												
RPC 18+00	25 LT	0407		361.5																																				
		0407	0408		354.4	349.1	0.6																					104												
RPC 16+98	16 LT	0408		359.1																																				
RPC 22+00	44 RT	0410		366.8																																				
		0410	0412		360.7	360.2																						104												
RPC 20+50	44 RT	0411		364.2																																				
		0411	0410		361.4	360.7																						144												
RPC 18+65	44 RT	0413		359.1																																				
		0413	0414		356.4	353.0																						44												
RPC 18+14	13 LT																																							
RPC 19+32	27 LT																																							
RPC 16+98	6 LT	2B01		358.9																																				
		2B01	0408		355.2	355.1			8																															
RPC 18+00	25 LT	0407																																						
RPC 24+50	34 RT	2B02		368.8	362.8																																			
RPC 22+00	34 RT	2B03		368.5	360.7																																			
SHEET TOTALS									8																			608		44										
PROJECT TOTALS									8																			608		44										

LINE & STATION	FROM	TO	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
RPC 23+53	0401																										
	0402	0401																									
RPC 24+50	0404			1														1					1				
	0404	0405																									
RPC 19+04	0406			1													1					1	1				
	0406	0407																									
RPC 18+00	0407			1	2.0																		1				
	0407	0408																									
RPC 16+98	0408			1	5.0																						
RPC 22+00	0410			1	1.1													1					1				
	0410	0412																									
RPC 20+50	0411			1														1					1				
	0411	0410																									
RPC 18+65	0413			1														1					1				
	0413	0414																									
RPC 18+14																											
RPC 19+32																											
RPC 16+98	2B01			1											1	1											
	2B01	0408																									
RPC 18+00	0407																										
RPC 24+50	2B02			1	1.0										1	1											
RPC 22+00	2B03			1	2.9										1	1											
SHEET TOTALS				10	12.0										3	3	1	4				1	6				
PROJECT TOTALS				10	12.0										3	3	1	4				1	6				

LINE & STATION	FROM	TO	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
RPC 23+53	0401																0.6000			
	0402	0401																		
RPC 24+50	0404																			
	0404	0405																		
RPC 19+04	0406																			3GI-A
	0406	0407																		
RPC 18+00	0407							1												
	0407	0408																		
RPC 16+98	0408						1								1					TBJB W/ Manhole Frame and Cover
RPC 22+00	0410																			
	0410	0412																		
RPC 20+50	0411																			
	0411	0410																		
RPC 18+65	0413																			
	0413	0414																		
RPC 18+14																			230	
RPC 19+32																			4	
RPC 16+98	2B01																			Temporary DI
	2B01	0408																		Temporary Pipe
RPC 18+00	0407										1									Steel Plate to Cover Prop. Str. 0407
RPC 24+50	2B02																			Temporary DI
RPC 22+00	2B03																			Temporary DI
SHEET TOTALS							1	1			1				1		0.6000		234	
PROJECT TOTALS							1	1			1				1		0.6000		234	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER
2/8/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER
2/8/2016

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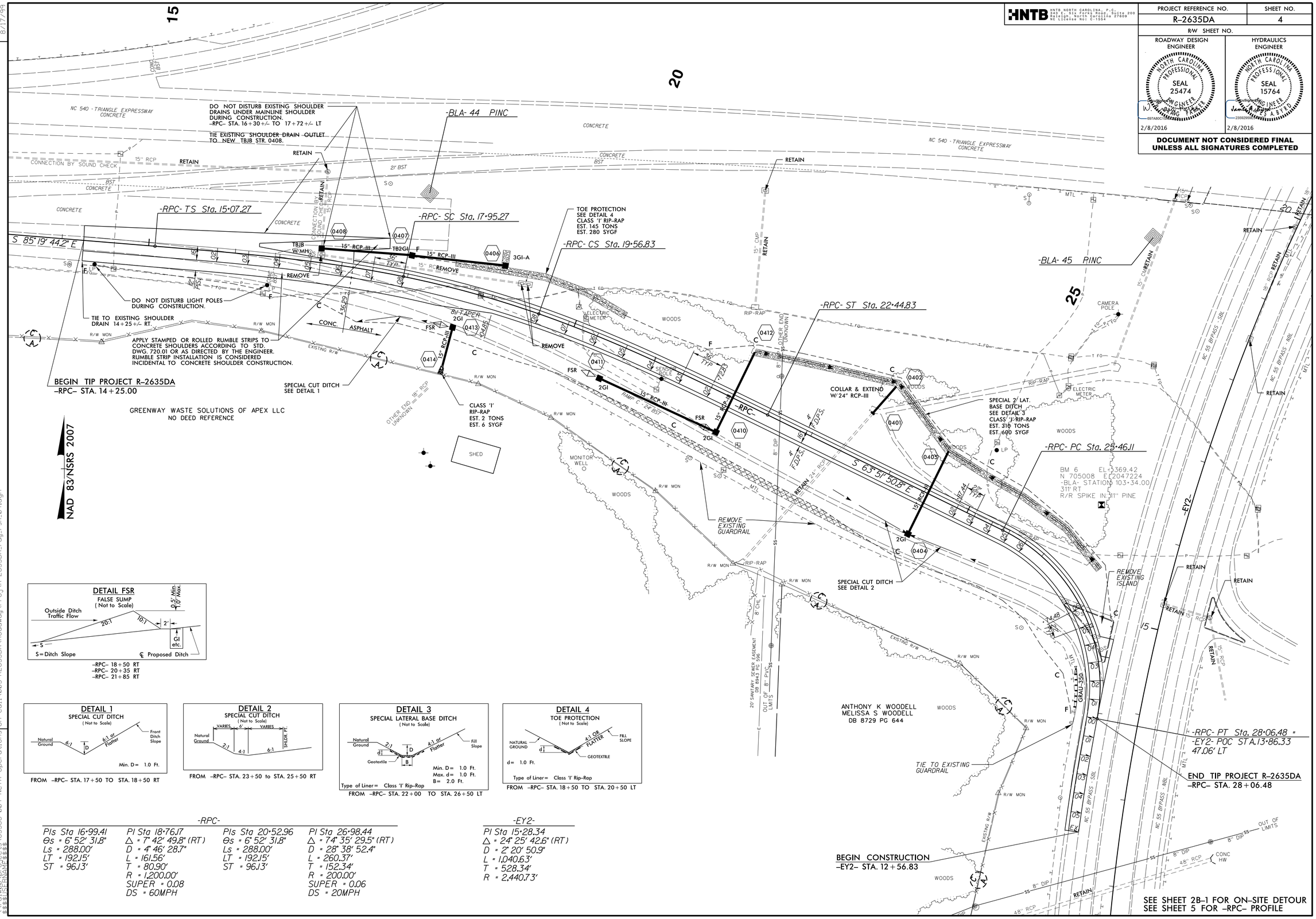

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BM 5 EL = 341.29
N 705195 E 2045777
-BLA- STATION 88+76.00
204' RT
R/R SPIKE IN 12" POPLAR

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PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER
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2/8/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER
DocuSigned by: James Robert Byrd 2359259B5AF4...
2/8/2016

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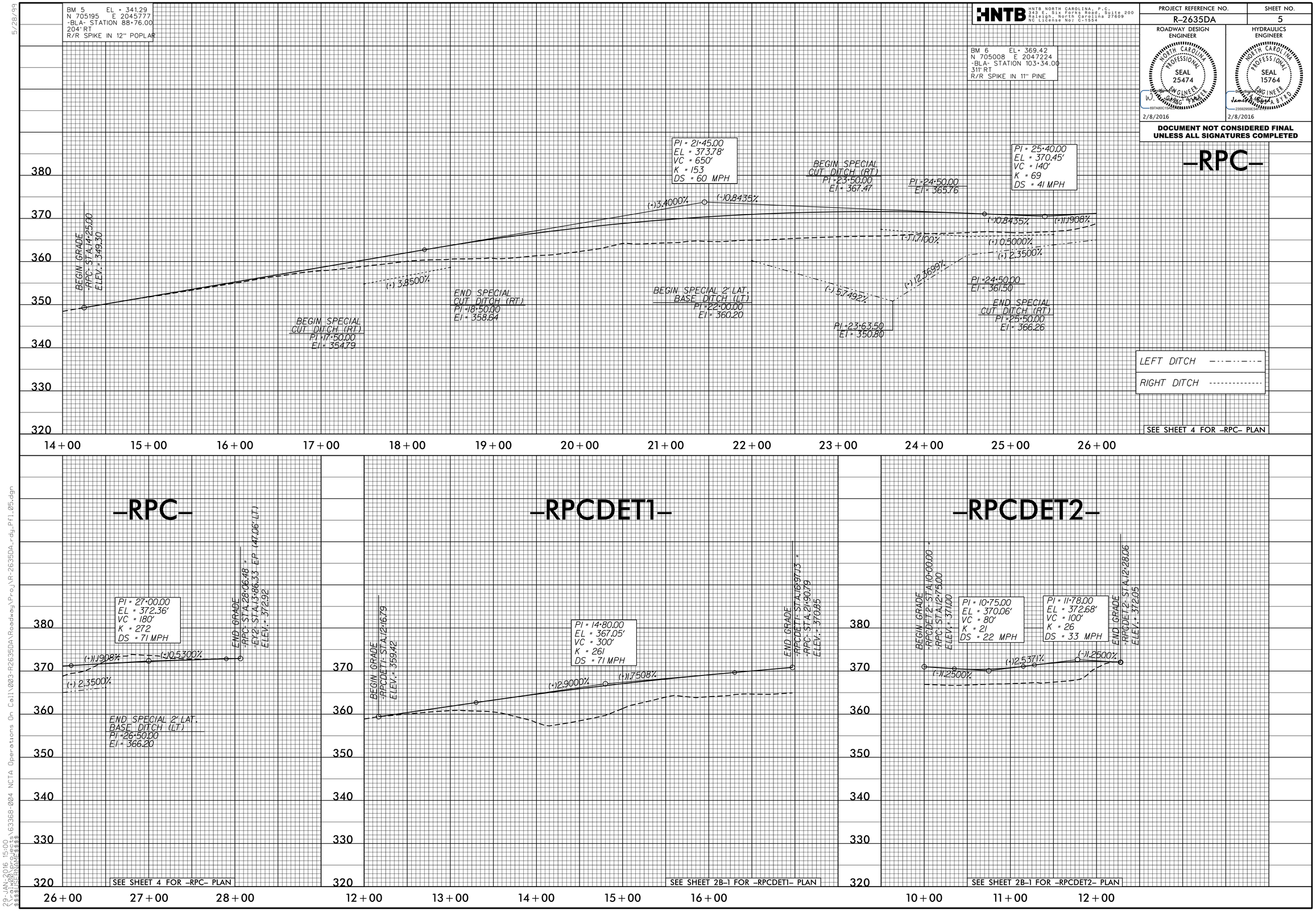
-BLA- STATION 103+34.00
311' RT
R/R SPIKE IN 11" PINE



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BM 6 EL= 369.42
N 705008 E 2047224
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PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER
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2/8/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER
DocuSigned by: James Robert Byrd
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2/8/2016

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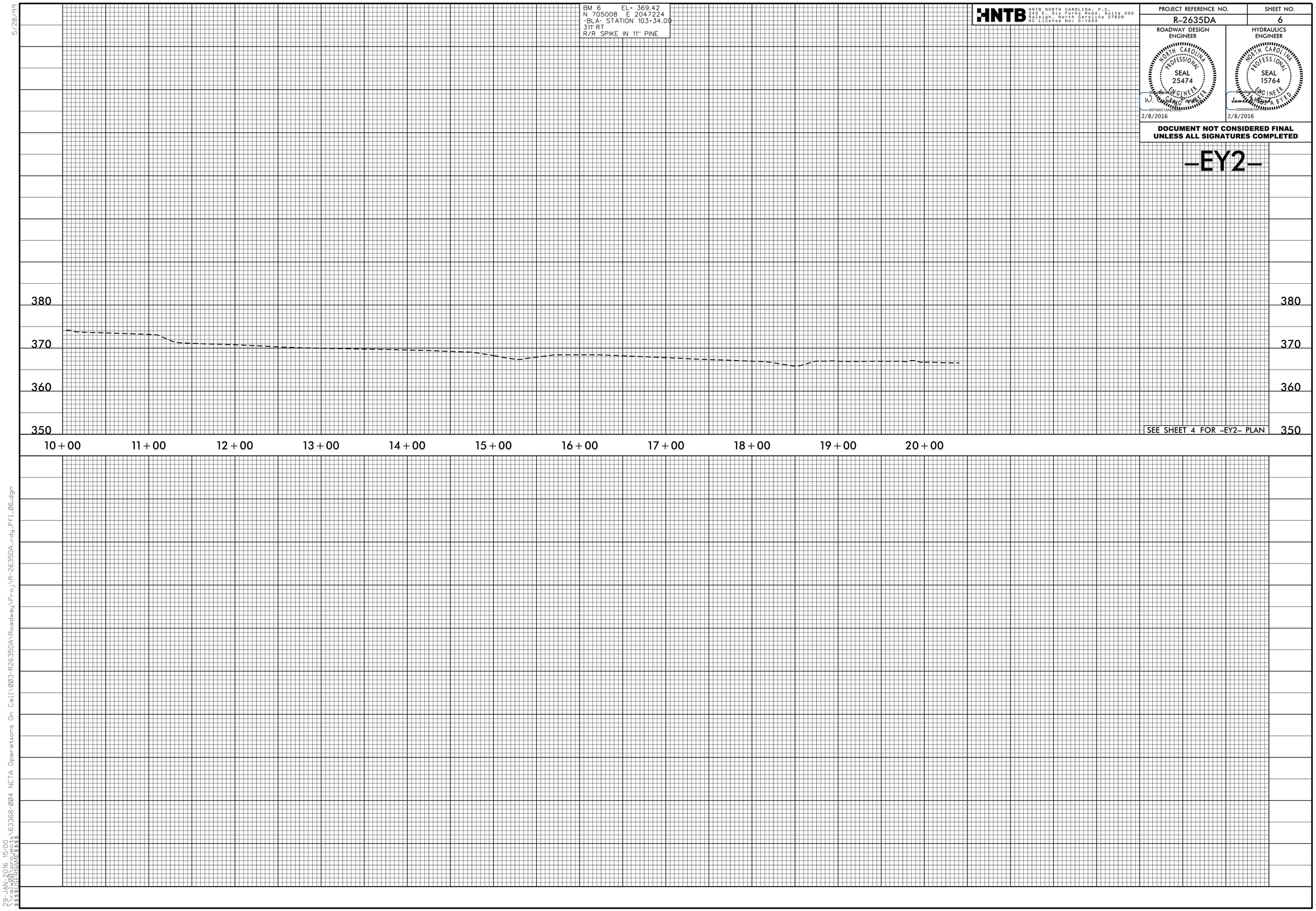

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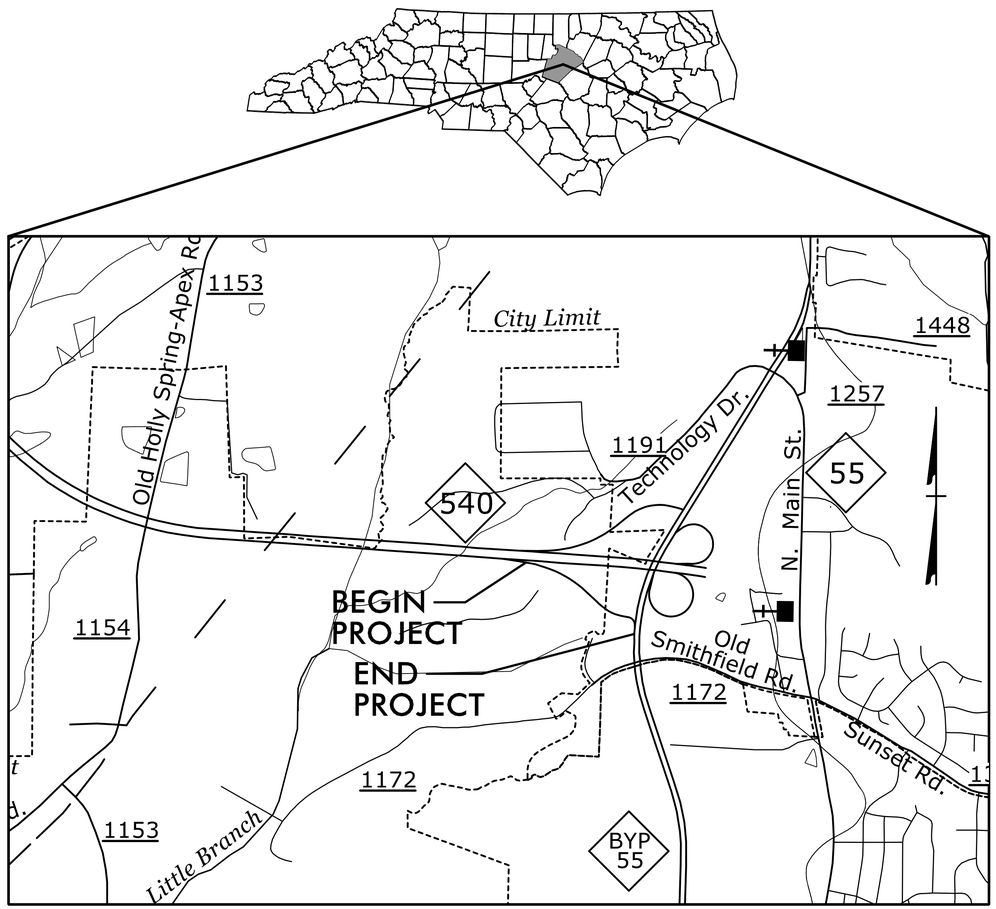
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WAKE COUNTY



LOCATION: IMPROVEMENTS TO EXISTING SOUTHBOUND EXIT RAMP (RAMP C) FROM NC 540 TO NC 55

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, TEMPORARY PAVEMENT MARKING SCHEDULE AND TRAFFIC MANAGEMENT CONCEPT PHASING
TMP-1B	GENERAL NOTES
TMP-2	SHORING NOTES
TMP-2A	PCB AT TEMPORARY SHORING LOCATIONS
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4 & 5	TEMPORARY TRAFFIC CONTROL PHASE I DETAILS
TMP-6 & 6A	TEMPORARY TRAFFIC CONTROL PHASE I CUT SECTIONS
TMP-7 & 8	TEMPORARY TRAFFIC CONTROL PHASE II DETAILS
TMP-9	TEMPORARY TRAFFIC CONTROL PHASE II CUT SECTIONS
TMP-10 & 11	TEMPORARY TRAFFIC CONTROL PHASE III DETAILS
TMP-12	TEMPORARY TRAFFIC CONTROL PHASE III CUT SECTIONS

SHEET NO.
TMP-1

R-2635DA

TIP PROJECT:

R. B. EARLY, PE — *TRAFFIC CONTROL PROJECT ENGINEER*
T. R. HOWELL, EI — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
T. R. HOWELL, EI — *TRAFFIC CONTROL DESIGN ENGINEER*

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WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. — *STATE TRAFFIC MANAGEMENT ENGINEER*
D.W. BISSETTE, P.E. — *TRAFFIC CONTROL PROJECT ENGINEER*
HELEN SHYU, P.E. — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
ALLA LYUDMIRSKAYA — *TRAFFIC CONTROL DESIGN ENGINEER*

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

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APPROVED: DocuSigned by: Rhonda B. Early F34CAF5AC6BF48A...
DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

TRAFFIC MANAGEMENT CONCEPT STAGING

THE OBJECTIVE OF THIS PROJECT IS TO REALIGN RAMP C VERTICALLY AND HORIZONTALLY WHILE MAINTAINING TRAFFIC WITH MINIMAL INTERUPTIONS.

THE PROJECT WILL BE COMPLETED IN THREE PHASES:

IN PHASE I, TEMPORARY DETOURS ARE CONSTRUCTED SHORING AND TEMPORARY DRAINAGE ARE REQUIRED.

IN PHASE II, TRAFFIC IS SHIFTED TO TEMPORARY ALIGNMENT(S), THE EXISTING PAVEMENT IS REMOVED, AND THE FINAL PAVEMENT IS CONSTRUCTED AS MUCH AS POSSIBLE.

IN PHASE III, TRAFFIC IS SHIFTED TO THE FAR RIGHT SIDE OF THE FINAL ALIGNMENT, TEMPORARY DETOURS ARE REMOVED AND THE RAMP IS COMPLETED. THE FINAL LAYER OF SURFACE COURSE IS PLACED UPON COMPLETION OF TEMPORARY PAVEMENT REMOVAL AND PROPOSED CONSTRUCTION.

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

SIGNALS

EXISTING PROPOSED TEMPORARY

PAVEMENT MARKINGS

EXISTING LINES
TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	PAY ITEM
	PAVEMENT MARKING LINES	
PA	WHITE EDGE LINE	PAINT (4")
PB	YELLOW EDGE LINE	
PC	10 FT WHITE SKIP	
PN	WHITE GORELINE	PAINT (8")
P2	STOP BAR	PAINT (24")

NOTE: FOR EACH PAINT PAVEMENT MARKING ITEM, REFER TO GENERAL NOTE (U) FOR NUMBER OF APPLICATIONS.

	PAVEMENT MARKERS	
MM	CRYSTAL & RED	TEMPORARY RAISED

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Raleigh, North Carolina 27609
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APPROVED: DocuSigned by: Rhonda B. Early F34CAF5A0A4F...
DATE: 2/8/2016
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS, LEGEND & MANAGEMENT STRATEGY

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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, SUPPLEMENTING, 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 PLAN, OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
RAMP C NC 55 BYPASS	MONDAY THRU FRIDAY 6:00 AM - 8:00 AM & 4:00 PM - 7:00 PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

RAMP C
NC 55 BYPASS

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.

2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31ST TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.

3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.

4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.

5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.

7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.

8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTION	DURATION AND OPERATION
RAMP C	MONDAY - SUNDAY 5:00AM - 10:00PM	15 MIN SHIFT TRAFFIC

D) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE CLOSURE REQUIREMENTS

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

F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

   WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

H) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAINS WITHIN THE CLOSED TRAVEL LANE.

I) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

J) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

   BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

   BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

   BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

K) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500' IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

L) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

M) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

N) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

O) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500' IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

P) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

   DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

   ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

   INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

   INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

Q) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED IMPACT ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

   PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS:

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

R) WHEN LANE CLOSURES ARE NOT IN EFFECT, SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPENED TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES), AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

S) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

T) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	TEMPORARY RAISED

U) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

W) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

GENERAL NOTES

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PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	TMP-2

TEMPORARY SHORING DATA

SHORING LOCATION NO. 1

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION -RPC- 21+79±, 36 FT RIGHT, TO STATION -RPC- 22+21±, 36 FT RIGHT FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUND-WATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = N/A

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -RPC-, STA 21+79 ±,36 FT RIGHT, TO STATION -RPC-, STA 22+21 ±, 36 FT RIGHT MAY NOT PENETRATE BELOW ELEVATION 348.3 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -RPC- 21+79 ±,36 FT RIGHT, TO STATION 22+21 ±, 36 FT RIGHT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -RPC- 21+79 ±, 36 FT RIGHT, TO STATION 22+21 ±, 36 FT RIGHT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION -RPC- 21+79 ±, 36 FT RIGHT, TO STATION 22+21 ±, 36 FT RIGHT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

SHORING LOCATION NO. 2

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING FROM STATION -RPC- 24+34±, 35 FT RIGHT, TO STATION -RPC- 24+66±, 35 FT RIGHT FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUND-WATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 363.0 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -RPC-, STA 24+34 ±,35 FT RIGHT, TO STATION -RPC-, STA 24+66 ±, 35 FT RIGHT MAY NOT PENETRATE BELOW ELEVATION 356.7 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -RPC- 24+34 ±,35 FT RIGHT, TO STATION 24+66 ±, 35 FT RIGHT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -RPC- 24+34 ±, 35 FT RIGHT, TO STATION 24+66 ±, 35 FT RIGHT. SEE STANDARD DRAWING NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION -RPC- 24+34 ±, 35 FT RIGHT, TO STATION 24+66 ±, 35 FT RIGHT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN

TEMPORARY SHORING NOTES

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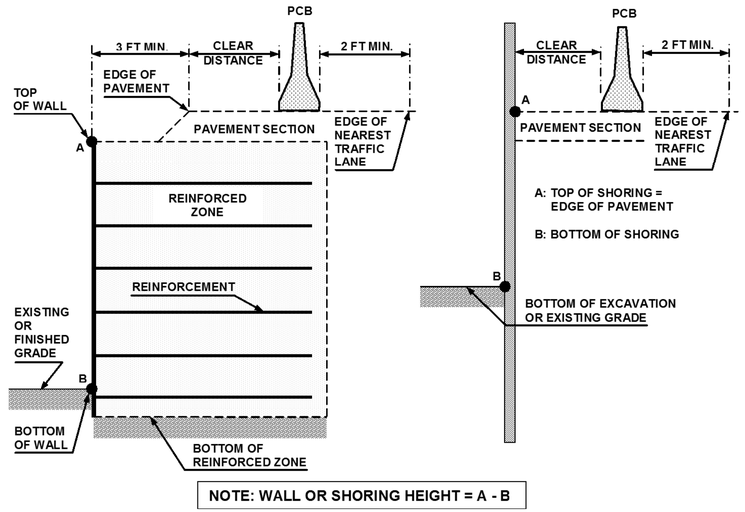

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph <30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

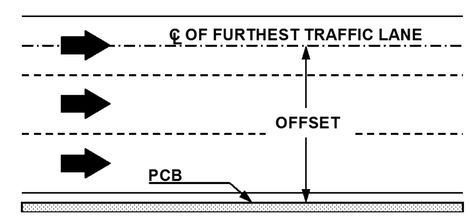

FIGURE B

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PORTABLE CONCRETE BARRIER
AT
TEMPORARY SHORING LOCATIONS

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PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	TMP-3

PHASING

NOTES:

REPLACE MARKINGS AND RETURN TRAFFIC TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

COMPLETE ANY PROPOSED WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE. THIS MAY REQUIRE A COMBINATION OF INSTALLATION OF PROPOSED PIPES, TEMPORARY PIPES, STEEL PLATES, AND TEMPORARY DITCHES.

PAVE PROPOSED CONSTRUCTION, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, IN ALL PHASES UNTIL STATED TO INSTALL FINAL LAYER IN THE PHASING.

THE TERM RSD DENOTES "ROADWAY STANDARD DRAWING".

PHASE I

STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS ON -RPC- AND NC 55 BYPASS ACCORDING TO RSD 1101.01.

STEP 2: PLACE TEMPORARY PAVEMENT MARKING ON -RPC- FROM STA 19+50+/- TO STA 25+97+/- AS SHOWN ON SHEET TMP-5.

STEP 3: PLACE PCB WITH CRASH CUSHION FROM -RPC- STA 20+12+/- TO STA 25+25+/- AS SHOWN ON SHEET TMP-5.(LN-1)

NOTE: REFER TO SHEETS TMP-4 AND TMP-5 FOR DETAILS.

STEP 4: BEHIND BARRIER, INSTALL SHORING #1, SHORING #2, INSTALL PROPOSED PIPE AND INSTALL TEMPORARY DROP INLETS AS SHOWN IN THE ROADWAY DETOUR PLANS.

STEP 5: AWAY FROM TRAFFIC, CONSTRUCT THE FOLLOWING AS SHOWN IN ROADWAY CONSTRUCTION PLANS:
* -RPCDET1- (TEMPORARY PAVEMENT)
* -RPCDET2- (TEMPORARY PAVEMENT)
* -RPC- FROM STA 21+91+/- TO STA 24+75+/-.

USING RSD 1101.02 (SHEET 3 OF 15), CONSTRUCT -RPCDET2- TIE TO NC 55 BYPASS.

PHASE II

COMPLETE THE REQUIREMENTS OF PHASE II, STEP 1 THRU STEP 3 IN ONE WEEKEND FROM 10:00 PM FRIDAY TO 6:00 AM THE FOLLOWING MONDAY. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.)

STEP 1: PLACE TEMPORARY PAVEMENT MARKING AND SHIFT -RPC- TO NEW PATTERN AS SHOWN ON TMP-7 AND TMP-8. TEMPORARY SIGNS MUST BE IN PLACE PRIOR TO SHIFTING TRAFFIC.

STEP 2: USING LANE RSD 1101.02 (SHEET 3 OF 15) FOR WIDENING ALONG -EY2- AND DRUMS TO NARROW LANE ON -RPCDET2-, CONSTRUCT PROPOSED -RPC- FROM STA 24+75+/- TO -EY2- STA 12+57+/-.

STEP 3: PLACE TEMPORARY MARKING AS SHOWN ON SHEET TMP-8 INSET AND SHIFT -RPC- TO NEW PATTERN FROM STA 24+75+/- TO -EY2-. REMOVE TEMPORARY SIGNS AND CMS BOARD.

STEP 4: PLACE PCB WITH CRASH CUSHION FROM -RPC- STA 21+00+/- TO STA 24+75+/- AS SHOWN ON SHEET TMP-8. (LN-1)

STEP 5: BEHIND BARRIER AND AWAY FROM TRAFFIC, EXCAVATE TO COMPLETE PROPOSED DRAINAGE, REMOVE TEMPORARY DI'S AND SHORING (#1 & #2), REPAIR SLOPES AND PAVEMENT.

STEP 6: PLACE PCB WITH CRASH CUSHION FROM -RPC- STA 10+83+/- TO STA 17+00+/- AS SHOWN ON SHEET TMP-7. (LN-1)

REMOVE PCB PLACED IN PHASE I, STEP 3.

STEP 7: AWAY FROM TRAFFIC, CONSTRUCT -RPC- FROM STA 14+25+/- TO STA 19+00+/-.

STEP 8: BEGIN CONSTRUCTION OF -RPC- FROM STA 19+00+/- TO STA 21+91+/- AS MUCH AS POSSIBLE WITHOUT DISTURBING TRAFFIC.

COMPLETE THE REQUIREMENTS OF PHASE II, STEP 9 IN ONE WEEKEND FROM 10:00 PM FRIDAY TO 6:00 AM THE FOLLOWING MONDAY. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.)

STEP 9: USING DRUMS TO NARROW LANES, SHIFT TRAFFIC AS NEEDED TO WEDGE, WIDEN AND COMPLETE THE TIE TO PROPOSED PAVEMENT FROM -RPC- STA 19+00+/- TO STA 21+91+/-.

STEP 10: USING DRUMS TO NARROW RAMP LANES AND RSD 1101.02 (SHEET 3 OF 15), AS NEEDED FOR -EY2-, REMOVE ABANDONED PAVEMENT AND COMPLETE CONSTRUCTION ALONG RIGHT SIDE.

STEP 11: REMOVE PCB PLACED IN PHASE II, STEP 6.

STEP 12: PLACE TEMPORARY PAVEMENT MARKING AND SHIFT -RPC- TO TEMPORARY PATTERN AS SHOWN ON SHEETS TMP-10 AND TMP-11.

PHASE III

STEP 1: PLACE PCB WITH CRASH CUSHION FROM -RPC- STA 11+78+/- TO STA 17+61+/- AS SHOWN ON SHEET TMP-10. (LN-1)

STEP 2: USING DRUMS TO NARROW LANES AS NEEDED CONSTRUCT -RPC- FROM 14+25+/- TO 19+00+/- AS SHOWN ON SHEET TMP 10.

USING DRUMS TO NARROW LANE ON RAMP AND RSD 1101.02 (SHEET 3 OF 15) AS NEEDED ON NC 55 BYPASS, REMOVE TEMPORARY PAVEMENT.

STEP 3: REMOVE PCB PLACED IN PHASE III, STEP 1.

STEP 4: PLACE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKING AND MARKERS (AS SHOWN IN FINAL PAVEMENT MARKING PLANS). REMOVE ALL TEMPORARY SIGNS AND DEVICES.

LOCAL NOTES

LN-1 PCB ALONG -RPC-:
* MUST HAVE A MINIMUM 34 INCHES BETWEEN BARRIER AND HAZARD/DROP OFF OR BE ANCHORED BARRIER;
* LENGTH OF NEED BASED ON USING A RUNOUT LENGTH OF 425 FEET;
* MINIMUM FLARE RATE OF 13:1 ON APPROACH END.

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PHASING

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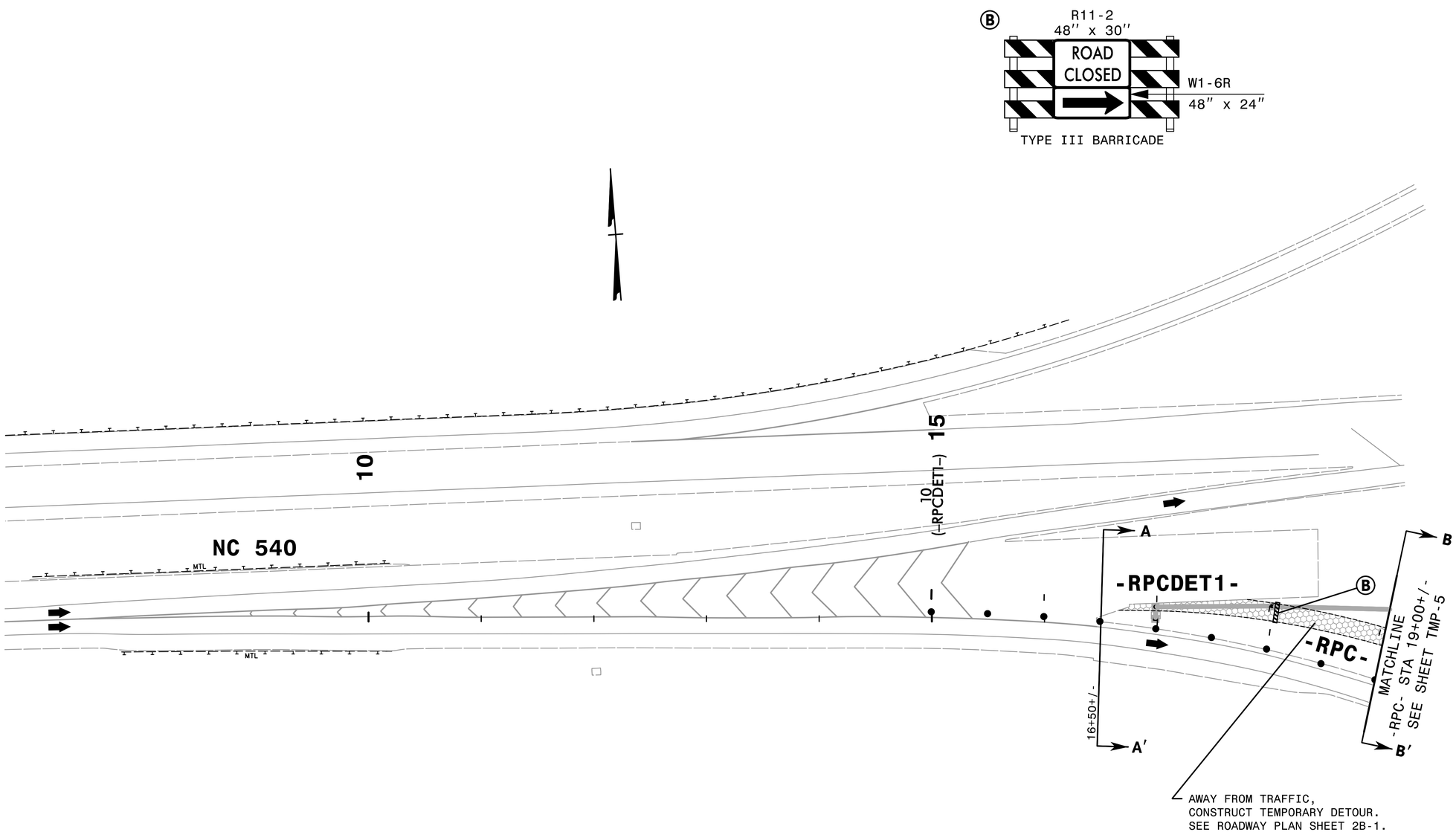

PLACE SHOULDER CLOSURE SIGNS IN ACCORDANCE WITH NCDOT STD. 1101.04

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TRANSPORTATION MANAGEMENT PLAN

PHASE I DETAIL

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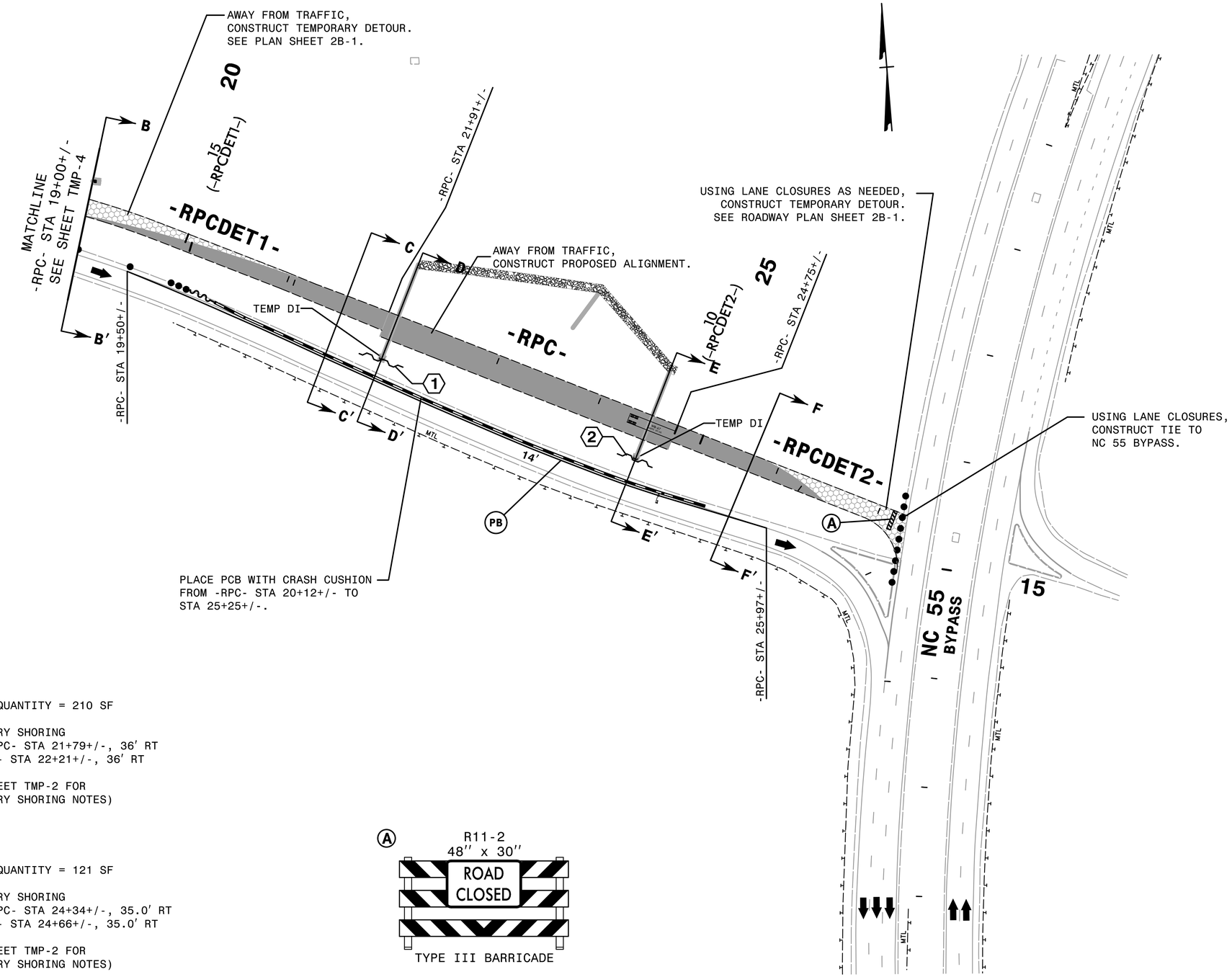
R-2635DA	TMP-5



1 EST QUANTITY = 210 SF

TEMPORARY SHORING
FROM -RPC- STA 21+79+/-, 36′ RT
TO -RPC- STA 22+21+/-, 36′ RT

(SEE SHEET TMP-2 FOR
TEMPORARY SHORING NOTES)

2 EST QUANTITY = 121 SF

TEMPORARY SHORING
FROM -RPC- STA 24+34+/-, 35.0′ RT
TO -RPC- STA 24+66+/-, 35.0′ RT

(SEE SHEET TMP-2 FOR
TEMPORARY SHORING NOTES)

A R11-2
48″ x 30″

TYPE III BARRICADE

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

TRANSPORTATION
MANAGEMENT PLAN

PHASE I
DETAIL

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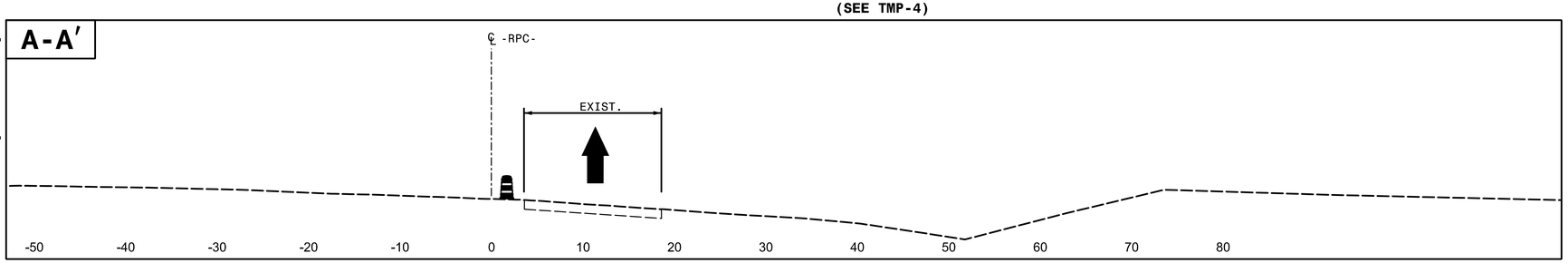
R-2635DA	TMP-6

(SEE TMP-4)

A-A′

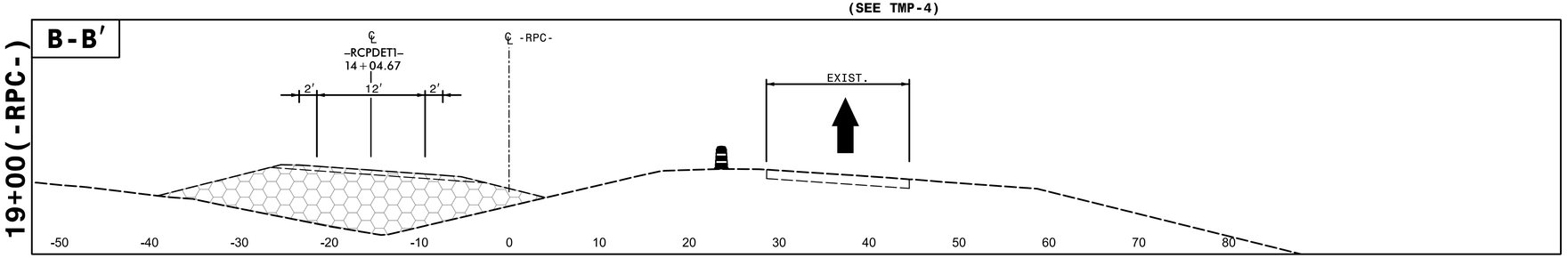
16+50 (-RPC-)



(SEE TMP-4)

B-B′

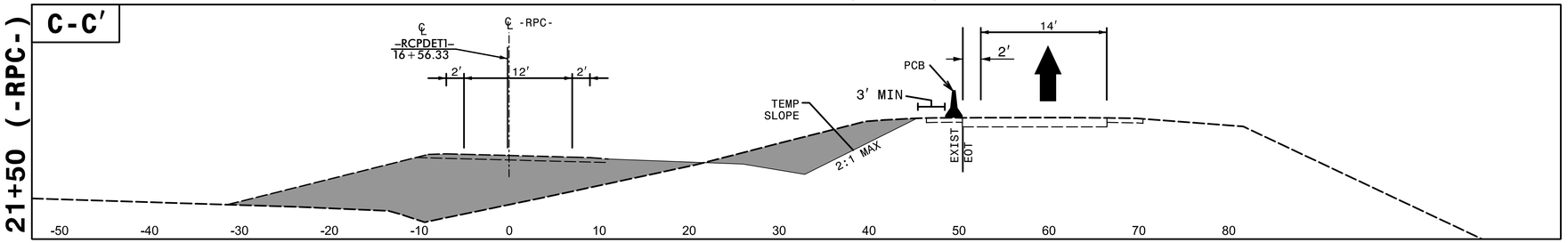
19+00(-RPC-)



(SEE TMP-5)

C-C′

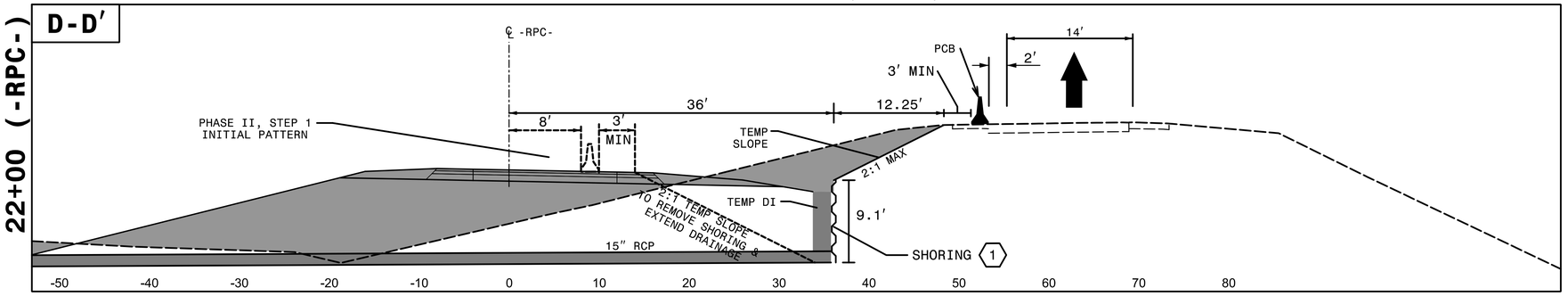
21+50 (-RPC-)



(SEE TMP-5)

D-D′

22+00 (-RPC-)



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TRANSPORTATION
MANAGEMENT PLAN

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CUT SECTIONS

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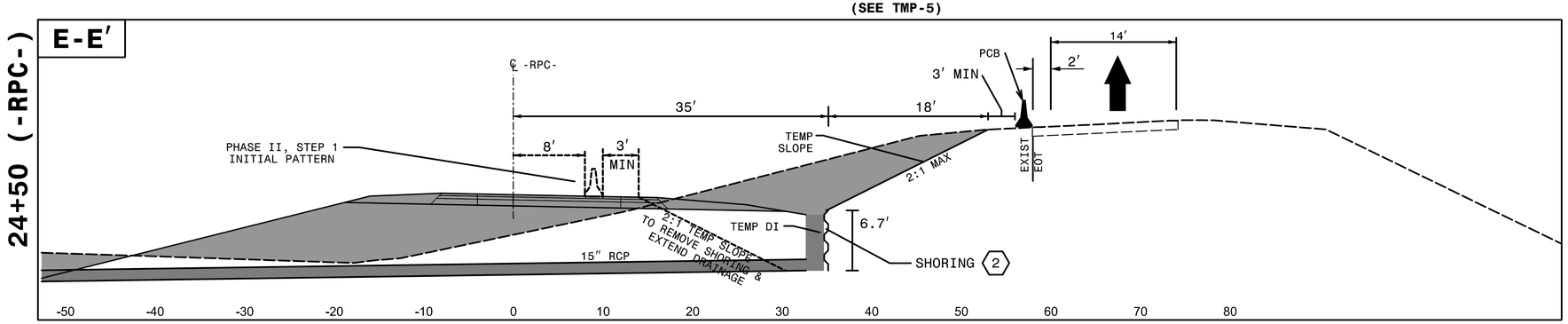
R-2635DA	TMP-6A

(SEE TMP-5)



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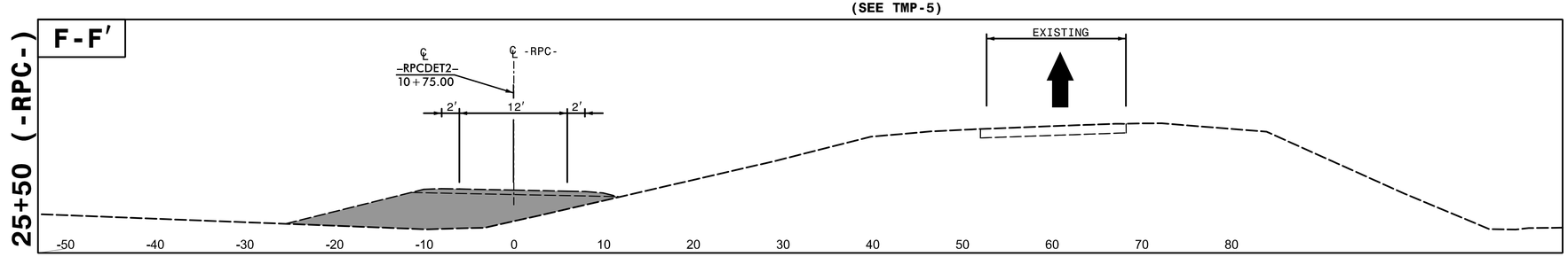

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NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

TRANSPORTATION
MANAGEMENT PLAN

PHASE I
CUT SECTIONS

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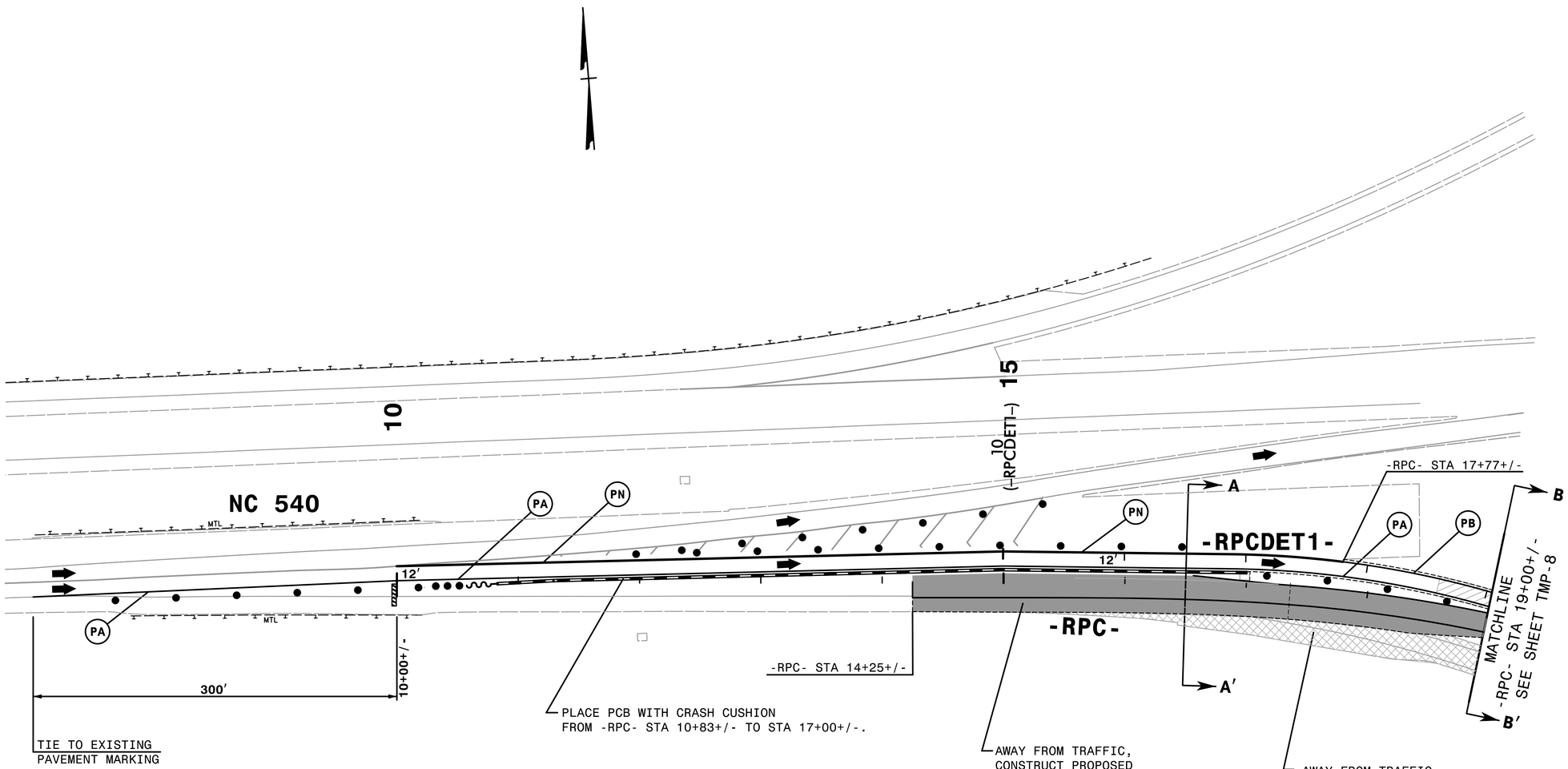
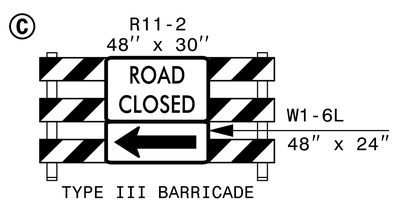
PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	TMP-7





REMOVE CONFLICTING PAVEMENT MARKING.

PLACE SHOULDER CLOSURE SIGNS IN ACCORDANCE WITH NCDOT STD. 1101.04.

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TRANSPORTATION MANAGEMENT PLAN

PHASE II DETAIL

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PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	TMP-8

Ⓓ -RPC- STA 15+50+/-

MESSAGE NO. 1	MESSAGE NO. 2
NEW TRAFFIC PATTERN	STOP AHEAD

CHANGEABLE MESSAGE SIGN

ICT (STEPS 1-3)

USING NARROW LANES, SHIFT TRAFFIC AS NEEDED TO WEDGE, WIDEN AND COMPLETE TIE TO PROPOSED PAVEMENT, CONSTRUCT -RPC- AND SHIFT TRAFFIC TO -RPC-. SEE INSET FOR MARKING.

ICT (STEP 9)

USING NARROW LANES, SHIFT TRAFFIC AS NEEDED TO WEDGE, WIDEN AND COMPLETE TIE TO PROPOSED PAVEMENT.

MATCHLINE -RPC- STA 19+00+/- SEE SHEET TMP-7

-RPCDET1- (-RPCDET1-) 15

-RPC- STA 21+91+/-

PLACE PCB WITH CRASH CUSHION FROM STA 21+00+/- TO STA 24+75+/- TO REMOVE TEMP DI'S AND EXTEND DRAINAGE. REPAIR PAVEMENT & SIDE SLOPE AND REMOVE SHORING & PCB ONCE DRAINAGE IS IN PLACE.

AWAY FROM TRAFFIC, REMOVE ABANDONED PAVEMENT.

-RPC- STA 24+75+/-

-RPCDET2- (-RPCDET2-) 10 25 15

WRONG WAY R5-1 A 36" X 24"

ONE WAY R6-1 L 54" X 18"

STOP R1-1 48" X 48"

DO NOT ENTER R5-1 36" X 36"

W3-1A 48" X 48"

ONE WAY R6-1 R 54" X 18"

STOP R1-1 36" X 36"

NC 55 BYPASS

GRAU-350

-RPCDET2- STA 12+14+/- (P2)

USING LANE CLOSURES, CONSTRUCT -RPC- & NC 55 BYPASS WIDENING.

-EY2- STA 12+57+/-

SEE INSET FOR MARKING & DEVICES PLACED IN STEP 3

REMOVE WRONG WAY

REMOVE ONE WAY

REMOVE STOP

REMOVE DO NOT ENTER

REMOVE

REMOVE ONE WAY STOP

-RPC- STA 27+11+/-

-RPC- STA 27+84+/-

-RPC- STA 28+09+/-

-EY2- STA 13+85+/-

-EY2- STA 12+57+/-

Ⓑ R11-2 48" x 30" ROAD CLOSED W1-6R 48" x 24"

TYPE III BARRICADE

Ⓒ R11-2 48" x 30" ROAD CLOSED W1-6L 48" x 24"

TYPE III BARRICADE

REMOVE CONFLICTING PAVEMENT MARKING.

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TRANSPORTATION MANAGEMENT PLAN

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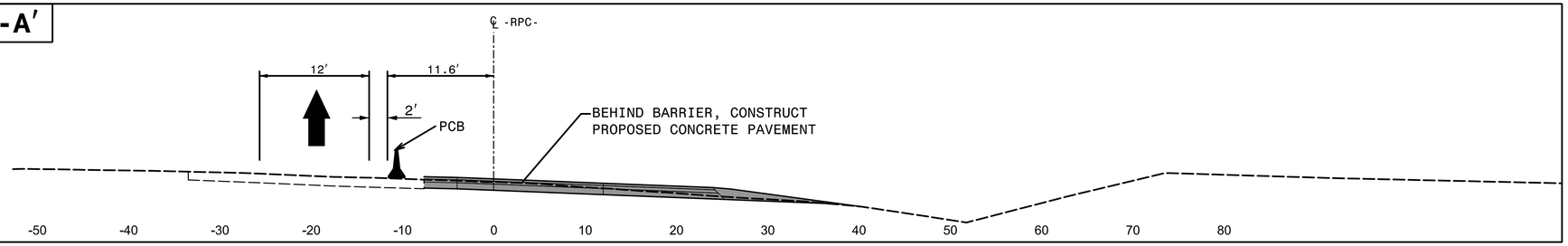
R-2635DA	TMP-9

(SEE TMP-7)

A-A′

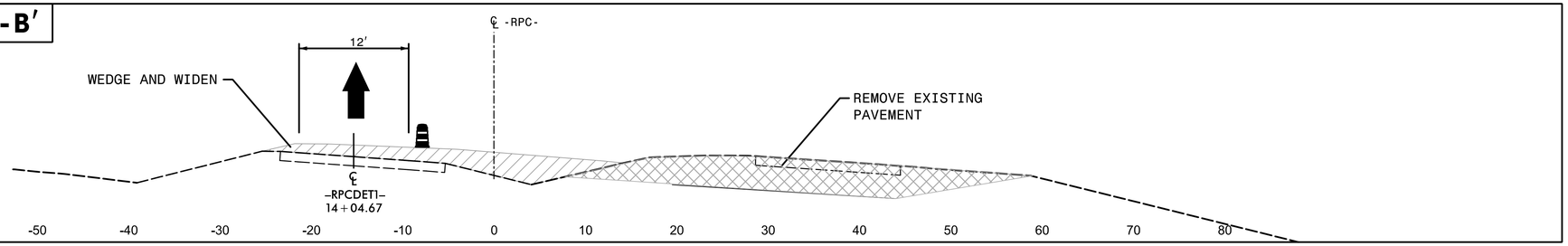
16+50 (-RPC-)



(SEE TMP-7)

B-B′

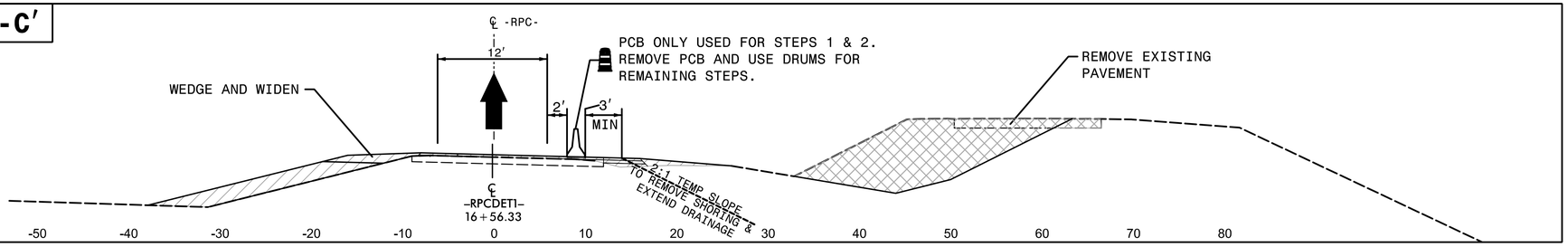
19+00(-RPC-)



(SEE TMP-8)

C-C′

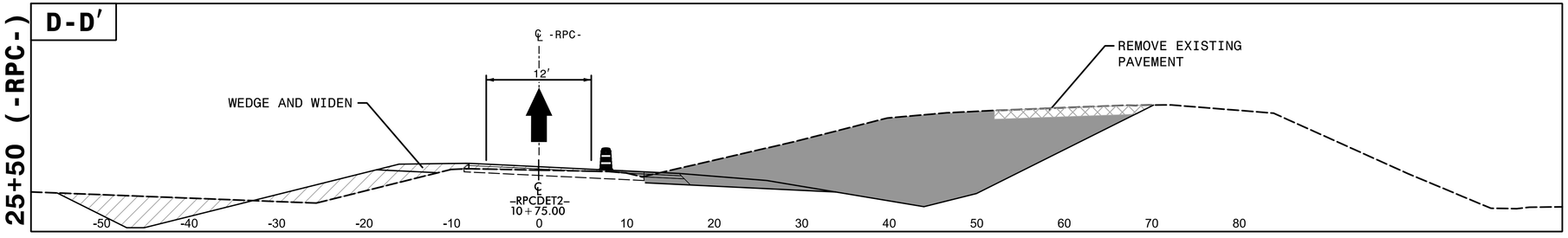
21+50 (-RPC-)



(SEE TMP-8)

D-D′

25+50 (-RPC-)



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WORK ZONE TRAFFIC CONTROL

TRANSPORTATION
MANAGEMENT PLAN

PHASE II
CUT SECTIONS

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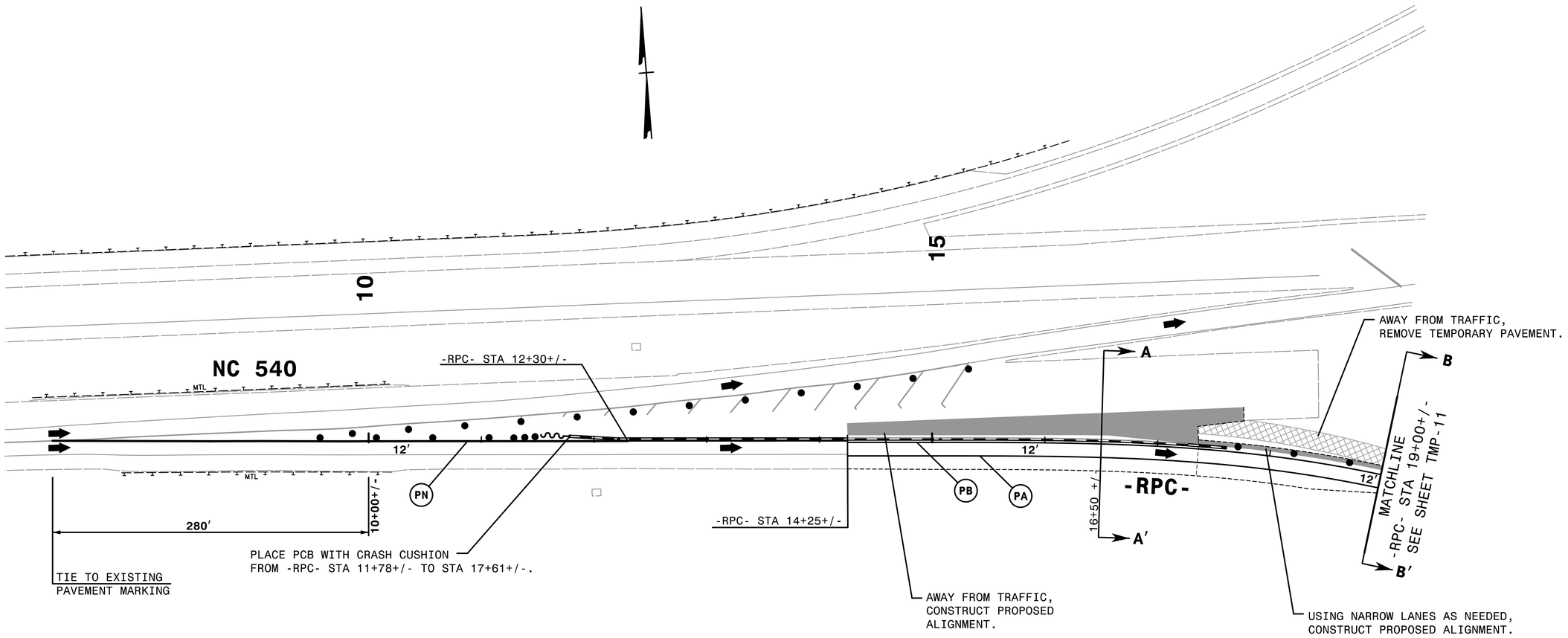
R-2635DA	TMP-10



REMOVE CONFLICTING PAVEMENT MARKING.

PLACE SHOULDER CLOSURE SIGNS IN ACCORDANCE WITH NCDOT STD. 1101.04.

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

TRANSPORTATION
MANAGEMENT PLAN

PHASE III
DETAIL

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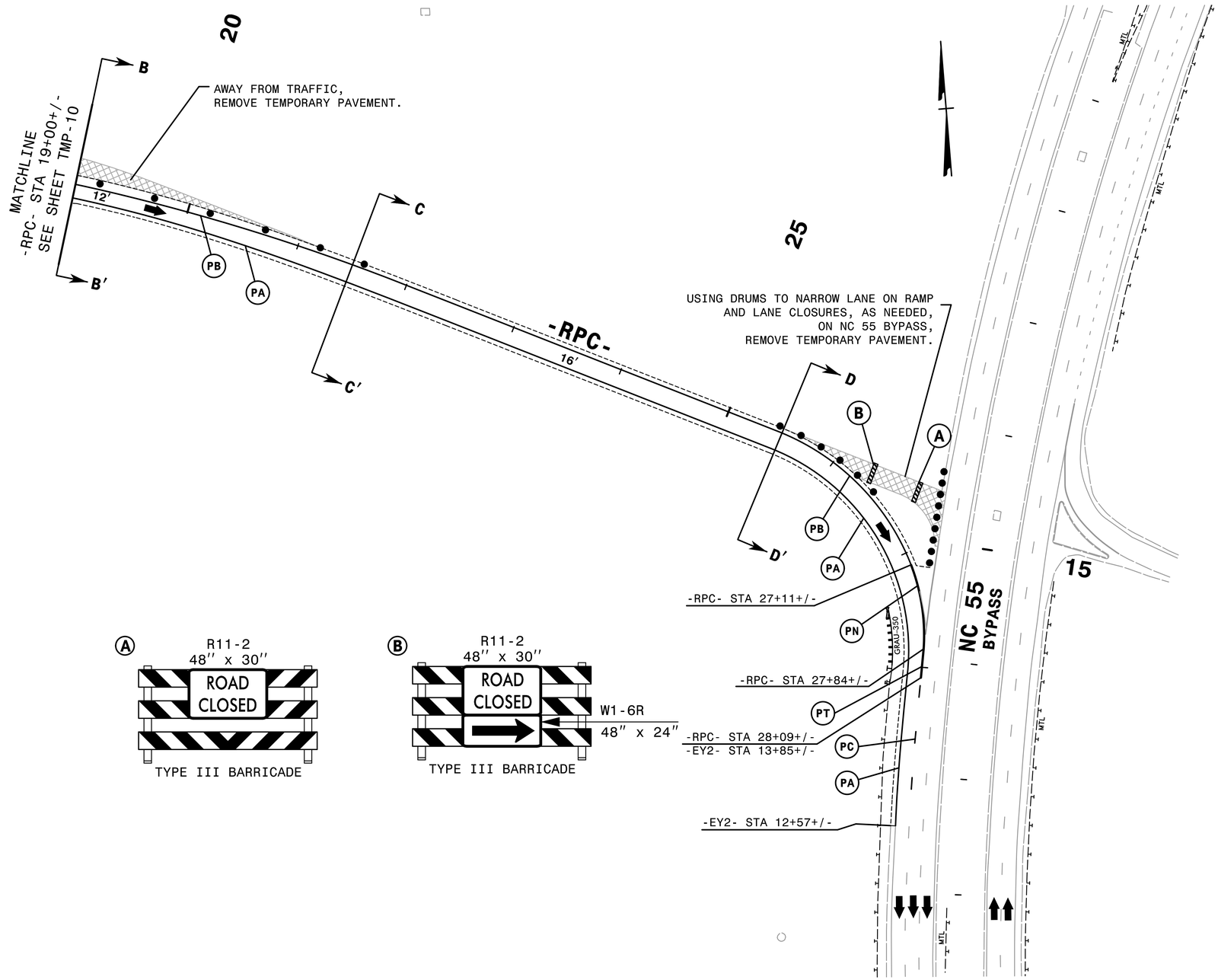
R-2635DA	TMP-11



TYPE III BARRICADE

TYPE III BARRICADE

REMOVE CONFLICTING PAVEMENT MARKING.

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TRANSPORTATION MANAGEMENT PLAN

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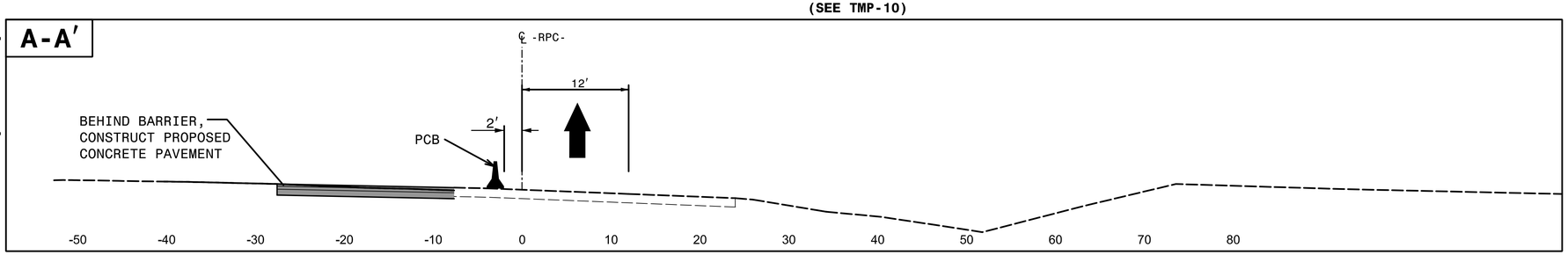
R-2635DA	TMP-12

(SEE TMP-10)

A-A′

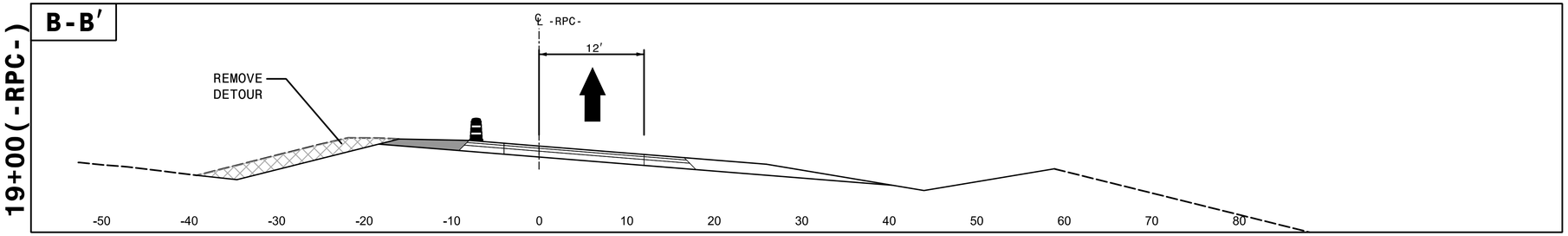
16+50 (-RPC-)



(SEE TMP-10)

B-B′

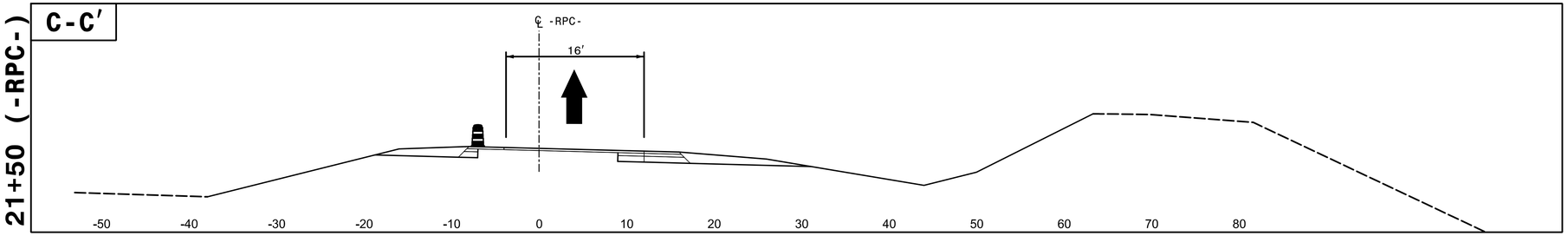
19+00(-RPC-)



(SEE TMP-11)

C-C′

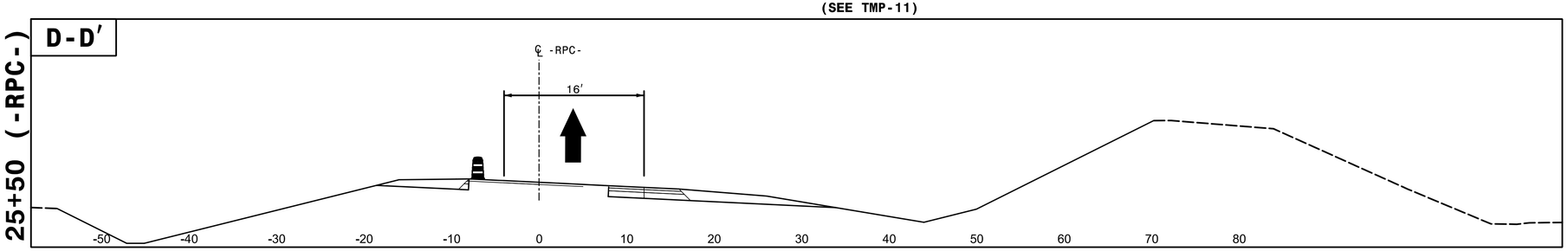
21+50 (-RPC-)



(SEE TMP-11)

D-D′

25+50 (-RPC-)



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TRANSPORTATION
MANAGEMENT PLAN

PHASE III
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T.I.P.: R-2635DA

CONTRACT: DE00142

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	PMP-1

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

WAKE COUNTY

LOCATION: IMPROVEMENTS TO EXISTING SOUTHBOUND EXIT RAMP (RAMP C) FROM NC 540 TO NC 55

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 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXIT AND ENTRANCE RAMPS
1205.06	PAVEMENT MARKINGS - LANE DROPS
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
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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
ASPHALT SURFACES	THERMOPLASTIC	SNOWPLOWABLE
CONCRETE SURFACES	POLYUREA WITH HIGHLY REFLECTIVE ELEMENTS	RAISED

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

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

D) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING POLYUREA PAVEMENT MARKING MATERIAL.

E) USE HEATED-IN-PLACE THERMOPLASTIC OR 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.

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND GENERAL NOTES
PMP-1A	FINAL PAVEMENT MARKING SCHEDULE AND LEGEND
PMP-2 THRU PMP-3	PAVEMENT MARKING DETAILS

PLAN PREPARED FOR: N.C.D.O.T. HIGHWAY DIVISION 5

Mike Kneis, PE DIVISION PROJECT MANAGER

Ben Upshaw, PE DIVISION DESIGN ENGINEER

PLAN PREPARED BY: HNTB NORTH CAROLINA, P.C.

R. B. Early, PE PROJECT ENGINEER

T. R. Howell, EI PROJECT DESIGNER

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PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	PMP-1A

FINAL PAVEMENT MARKING SCHEDULE

MATERIAL	SYMBOL	DESCRIPTION
PAVEMENT MARKING		
THERMOPLASTIC (4″, 90 MILS)		
	TA	WHITE EDGELINE
THERMOPLASTIC (4″, 120 MILS)		
	TC	10′ WHITE SKIP
THERMOPLASTIC (6″, 90 MILS)		
	T6	WHITE EDGELINE
	T7	YELLOW EDGELINE
THERMOPLASTIC (8″, 90 MILS)		
	TN	WHITE GORE LINE
	TO	WHITE DIAGONAL
THERMOPLASTIC (8″, 120 MILS)		
	TR	SOLID WHITE LANE LINE
POLYUREA (6″)		
	V6	WHITE EDGELINE
POLYUREA (12″)		
	VS	WHITE GORE LINE
THERMOPLASTIC SYMBOL (90 MILS)		
	UE	COMBO RIGHT/STRAIGHT ARROW
	UQ	RAMP ARROW
PERMANENT RAISED PAVEMENT MARKERS		
	MB	CRYSTAL & RED
SNOWPLOWABLE PAVEMENT MARKERS		
	MF	CRYSTAL & RED

LEGEND

GENERAL

DIRECTION OF TRAFFIC FLOW

NORTH ARROW

PROPOSED PVMT. ---------- EXIST. PVMT.

PAVEMENT MARKINGS

UE COMBO RIGHT/STRAIGHT ARROW

UQ RAMP ARROW

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING PLAN

FINAL PAVEMENT MARKING PLANS

REVISIONS

QA/QC STAGE:

REVIEW:
CONCUR:
REVISE:
VERIFY:

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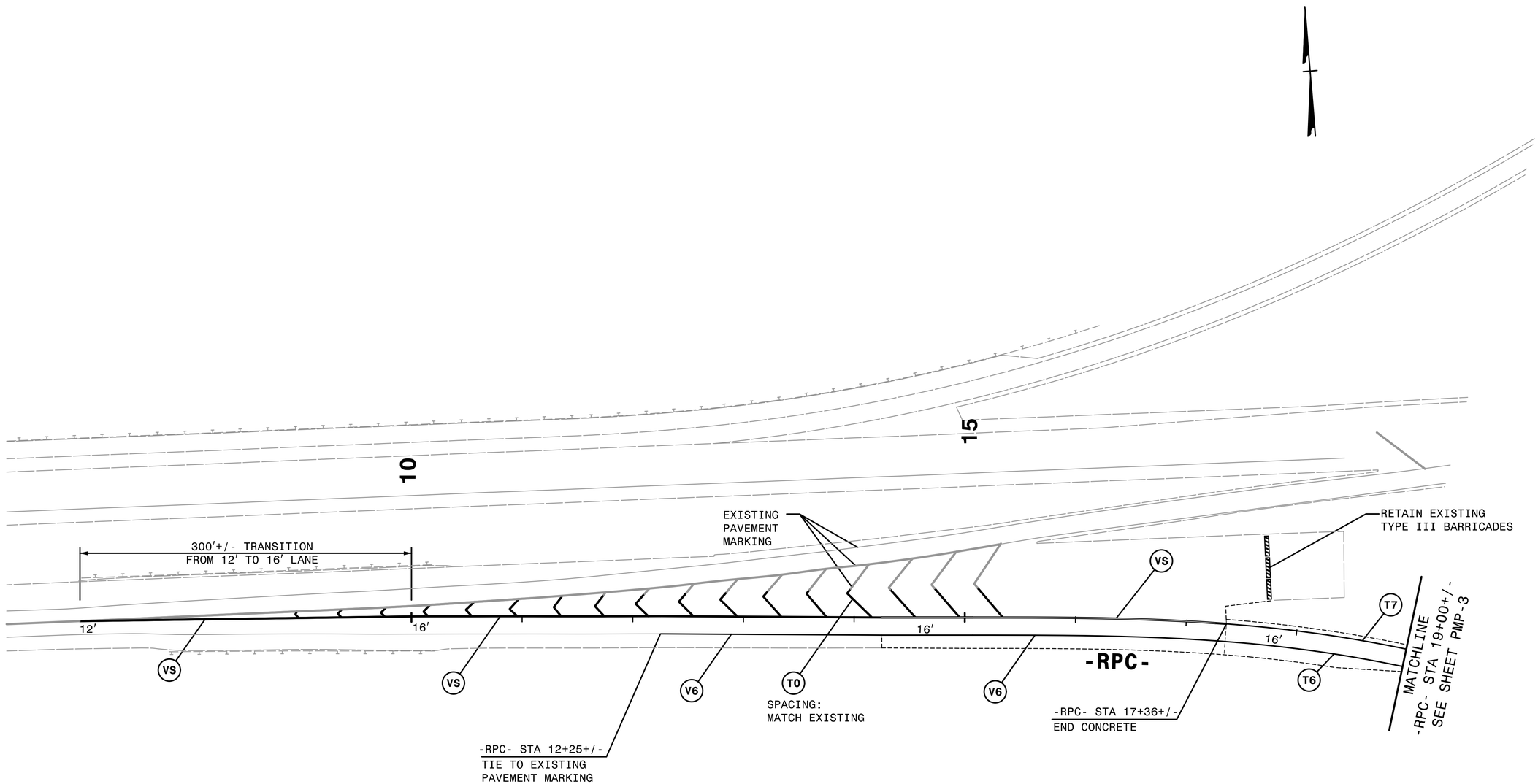

REVISIONS

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REVISE:
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DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING PLAN

FINAL PAVEMENT MARKING PLANS

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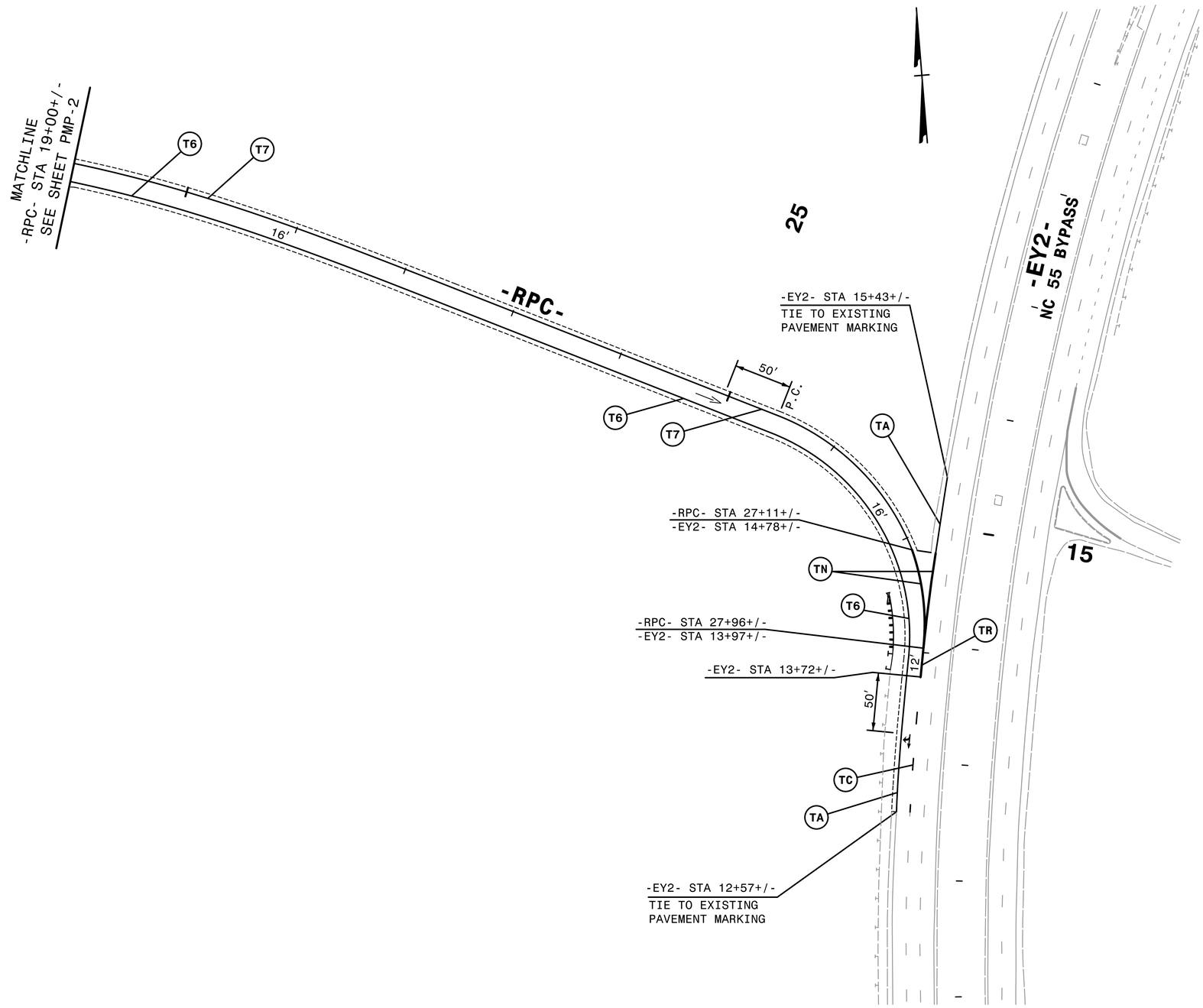
PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	PMP-3



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DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING PLAN

FINAL PAVEMENT MARKING PLANS

REVISIONS

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PROJECT: R-2635DA

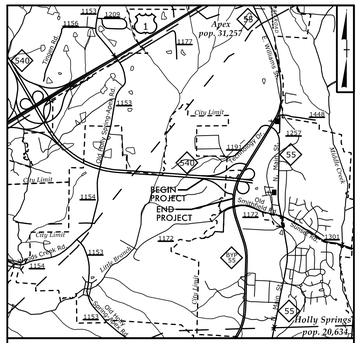
TIP R

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2635DA	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35520.1.FS3		PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL



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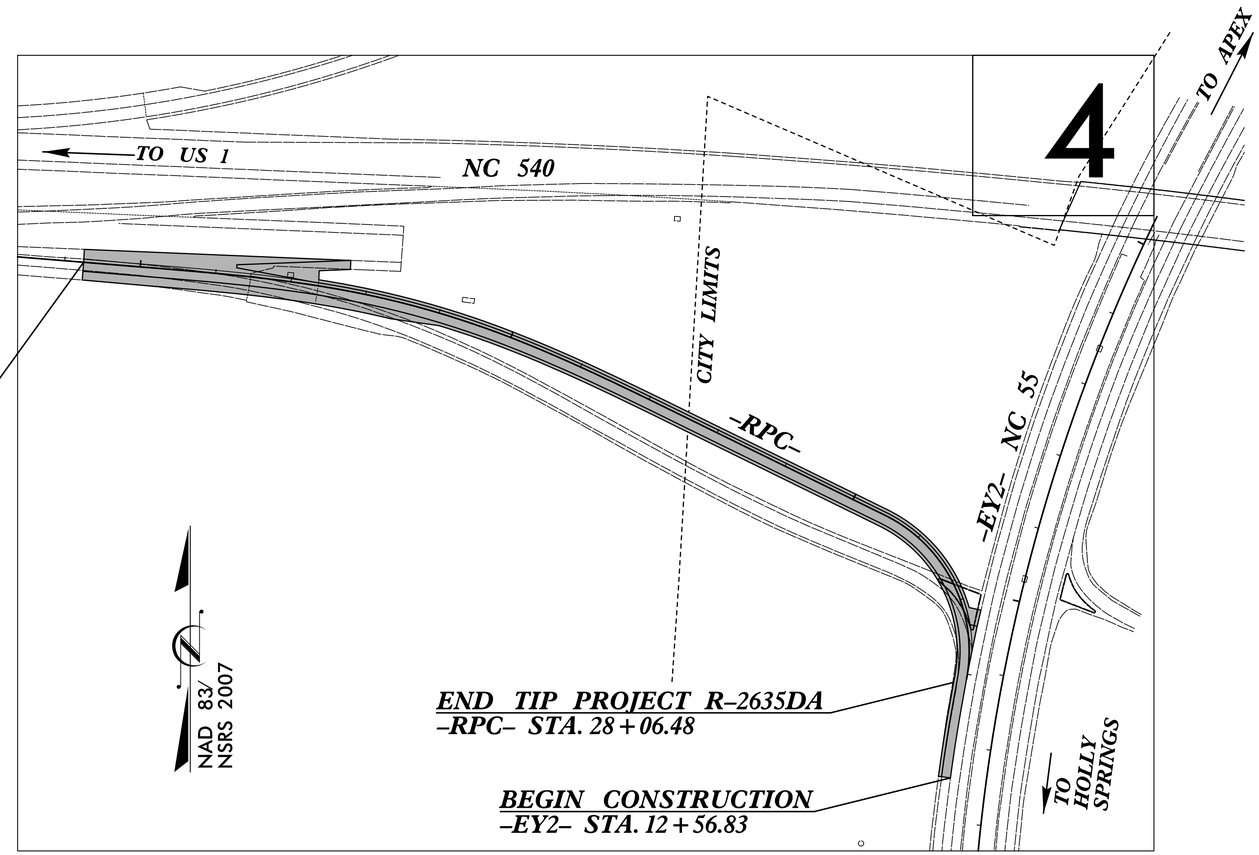

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END TIP PROJECT R-2635DA
-RPC- STA. 28+06.48

BEGIN CONSTRUCTION
-EY2- STA. 12+56.83

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	SW 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	

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

GRAPHIC SCALE

0 50
PLANS

0 50
PROFILE (HORIZONTAL)

0 10
PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared In the Office of:

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh NC, 27609

Designed by:

BEN HENEGAR, EI — NAME
3564 — LEVEL III CERTIFICATION NO.

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
FIELD OPERATIONS DIVISIONS 4 & 5
1425 Rock Quarry Rd, Suite 106
Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

Reviewed by:

AARON HARPER, EI

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 2012 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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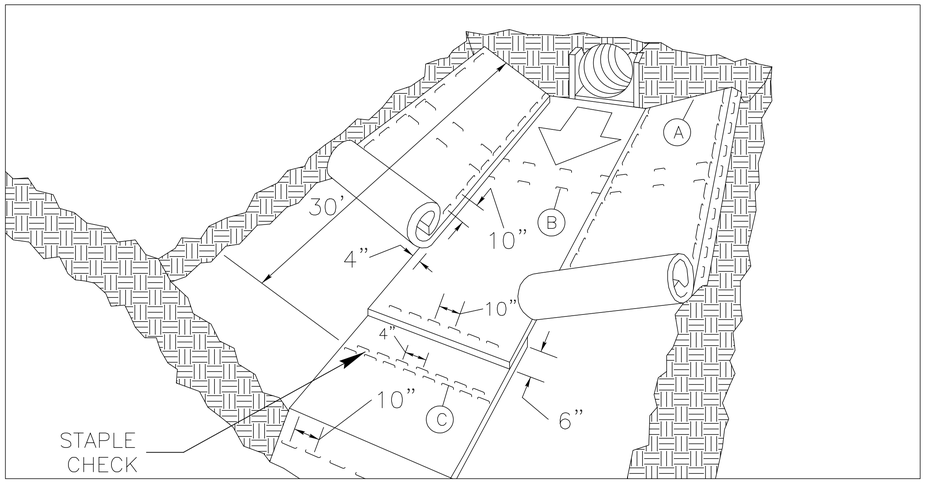
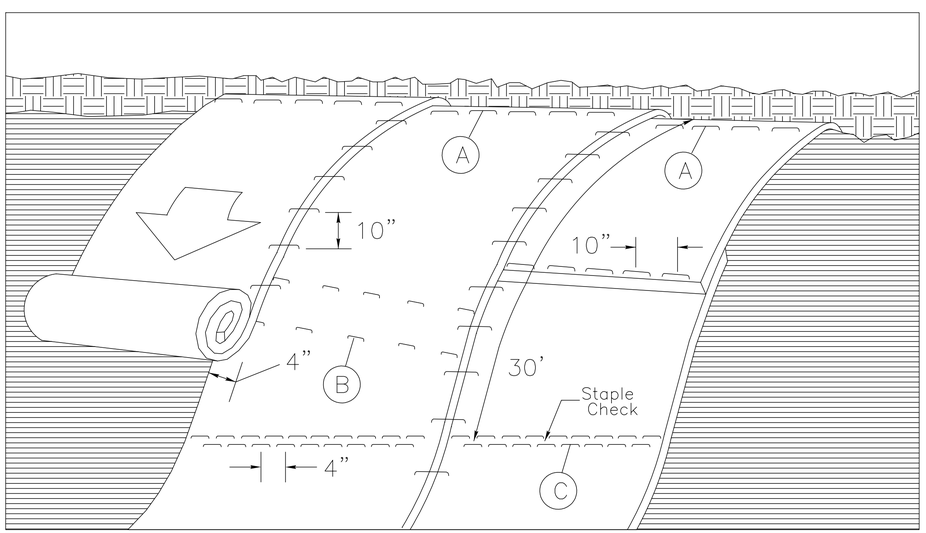
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MATTING INSTALLATION DETAIL



MATTING IN DITCHES



MATTING ON SLOPES

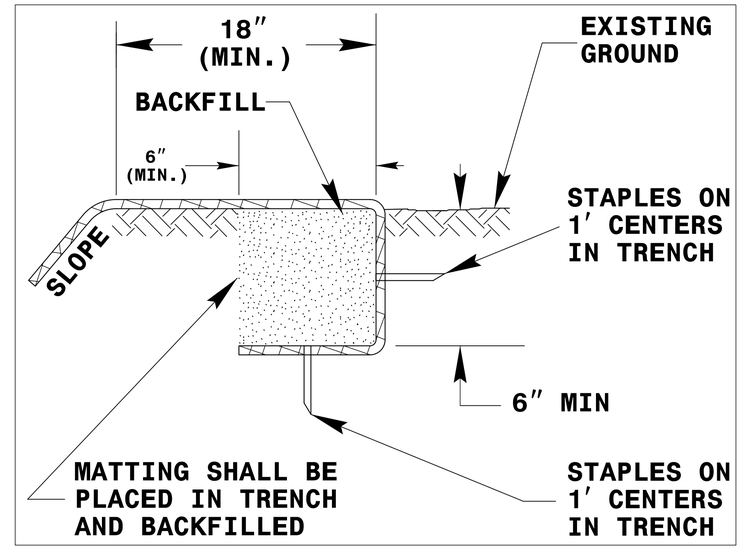


DIAGRAM (A)

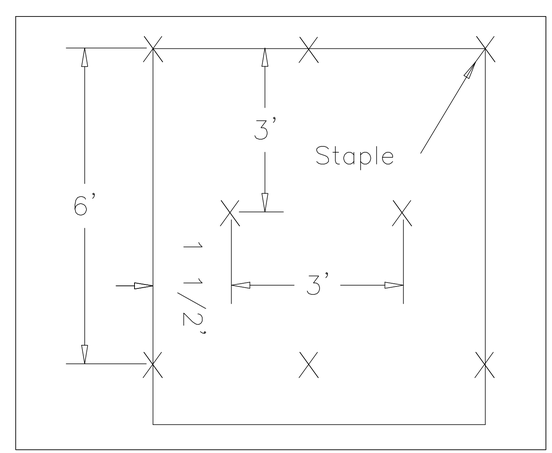


DIAGRAM (B)

Staple Check Pattern

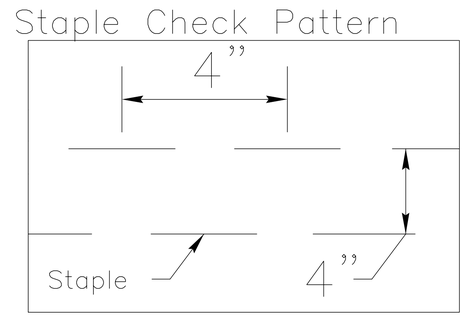


DIAGRAM (C)

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

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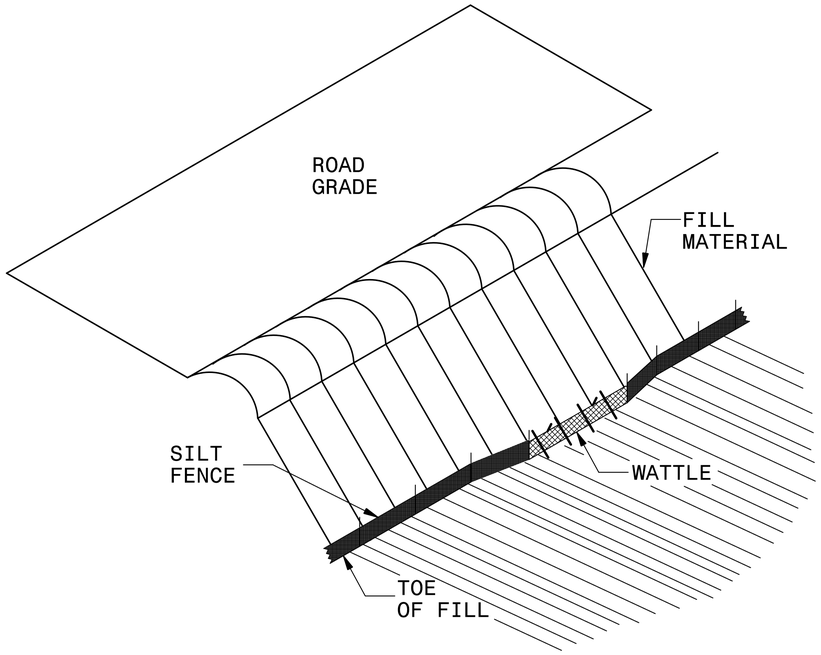
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

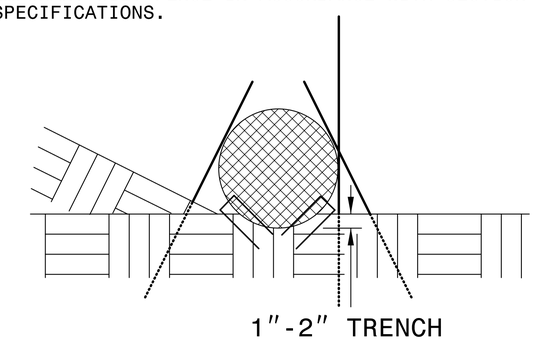
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

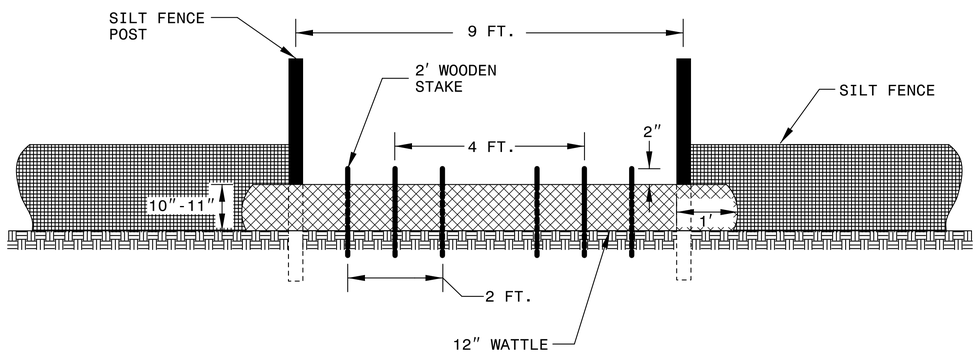
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

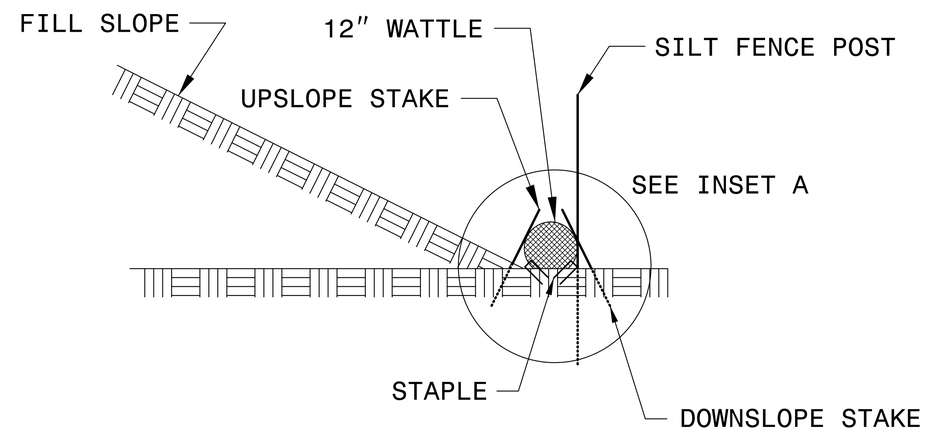
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

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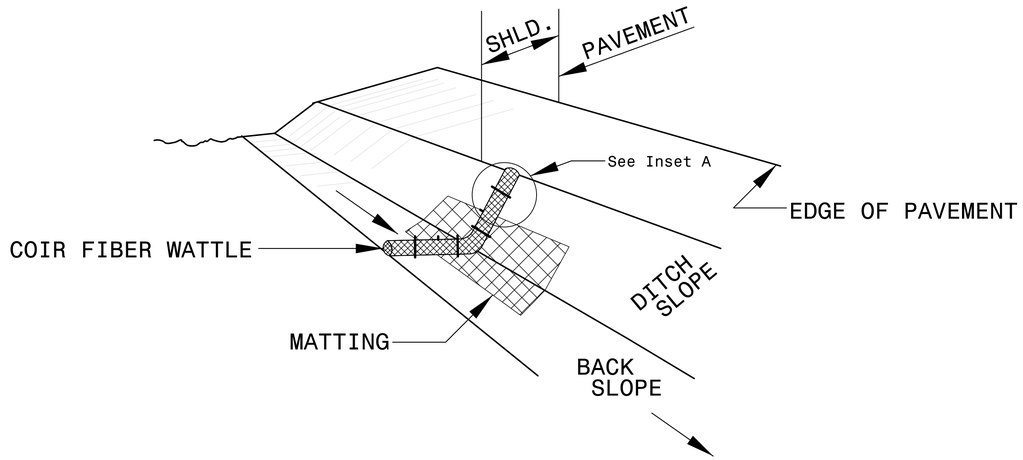
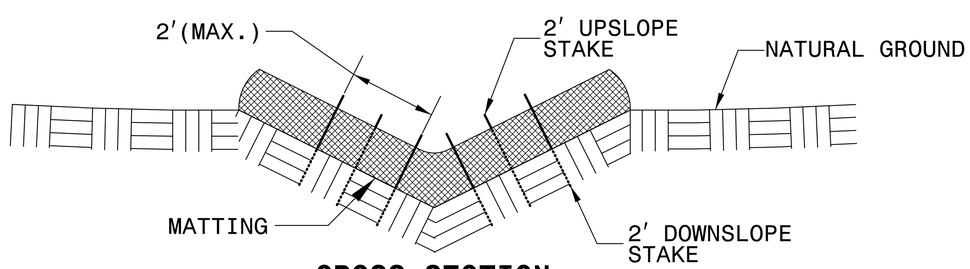
PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

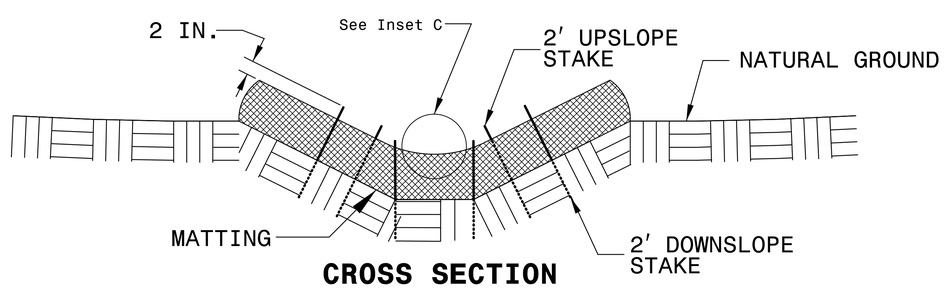
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

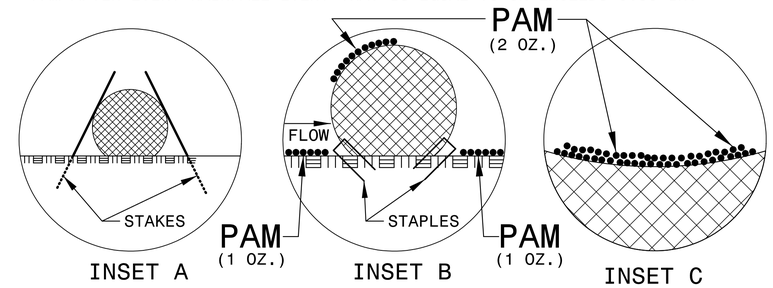
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

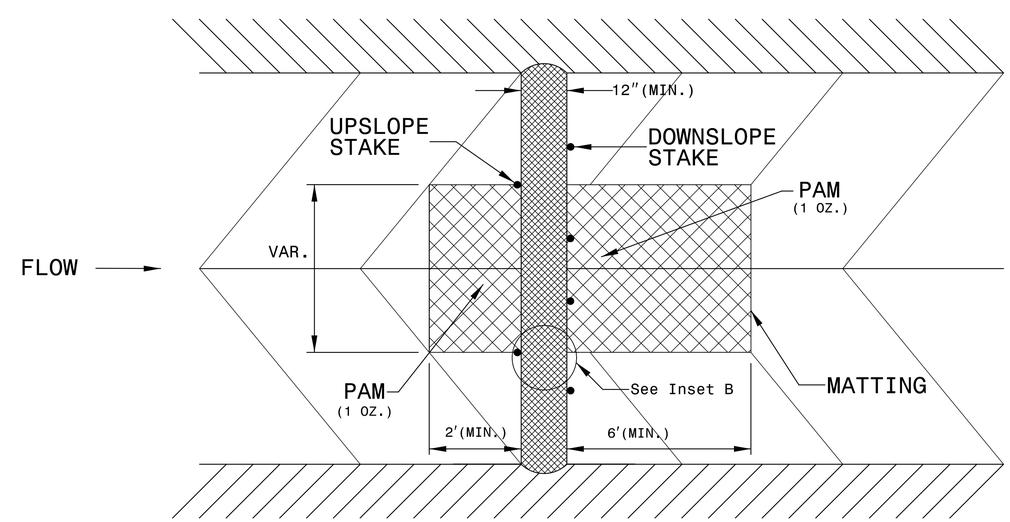
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.
R-2635DA	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.
R-2635DA	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-RPC-	17+50	18+50	RT	270
4	-RPC-	18+50	23+50	RT	1340
4	-RPC-	23+50	24+50	RT	270
				SUBTOTAL	1880
				MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	-
				TOTAL	1880
				SAY	1900

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	0
				ADDITIONAL PSRM TO BE INSTALLED	-
				TOTAL	0
				SAY	0

PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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Raleigh, North Carolina 27609
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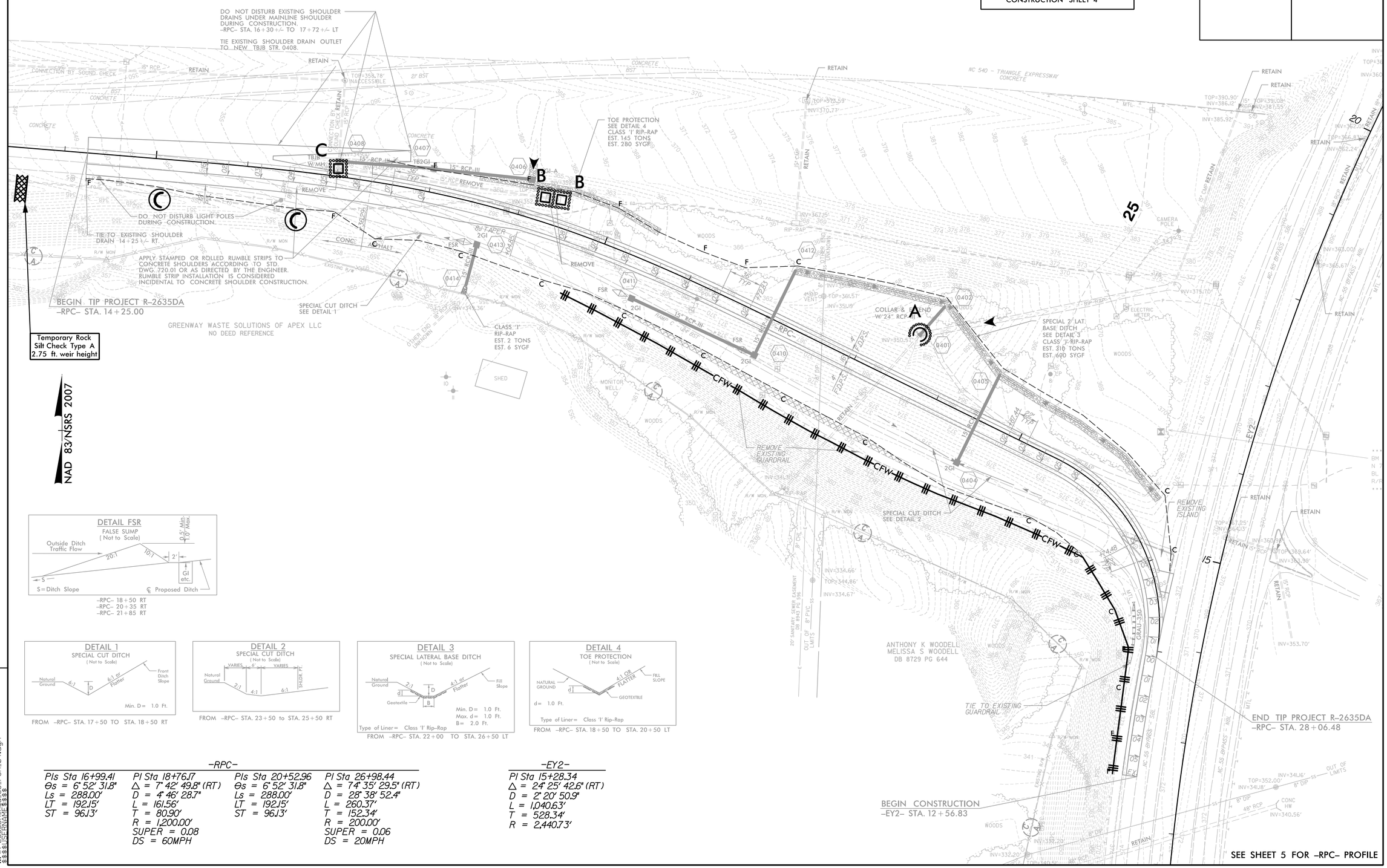
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4



-RPC- 18+50 RT
-RPC- 20+35 RT
-RPC- 21+85 RT

FROM -RPC- STA. 17+50 TO STA. 18+50 RT

FROM -RPC- STA. 23+50 to STA. 25+50 RT

FROM -RPC- STA. 22+00 TO STA. 26+50 LT

FROM -RPC- STA. 18+50 TO STA. 20+50 LT

-RPC-

PIs Sta 16+99.41	PI Sta 18+76.17	PIs Sta 20+52.96	PI Sta 26+98.44
Θs = 6° 52' 31.8"	Δ = 7° 42' 49.8" (RT)	Θs = 6° 52' 31.8"	Δ = 74° 35' 29.5" (RT)
Ls = 288.00'	D = 4° 46' 28.7"	Ls = 288.00'	D = 28° 38' 52.4"
LT = 192.15'	L = 161.56'	LT = 192.15'	L = 260.37'
ST = 96.13'	T = 80.90'	ST = 96.13'	T = 152.34'
	R = 1,200.00'		R = 200.00'
	SUPER = 0.08		SUPER = 0.06
	DS = 60MPH		DS = 20MPH

-EY2-

PI Sta 15+28.34
Δ = 24° 25' 42.6" (RT)
D = 2° 20' 50.9"
L = 1,040.63'
T = 528.34'
R = 2,440.73'

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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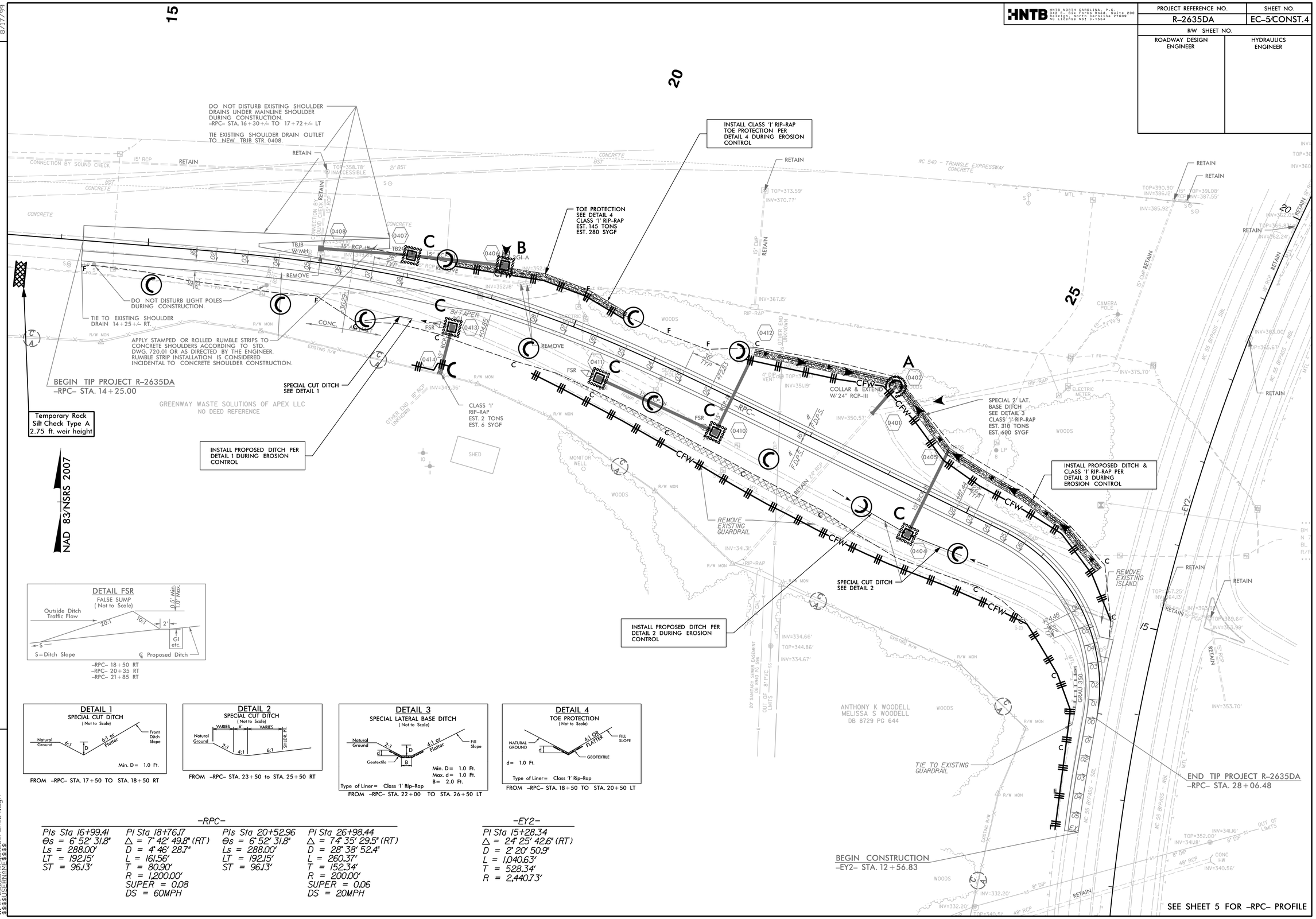
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

8/17/99

REVISIONS



-RPC-

PIs Sta 16+99.41	PI Sta 18+76.17	PIs Sta 20+52.96	PI Sta 26+98.44
Θs = 6° 52' 31.8"	Δ = 7° 42' 49.8" (RT)	Θs = 6° 52' 31.8"	Δ = 74° 35' 29.5" (RT)
Ls = 288.00'	D = 4° 46' 28.7"	Ls = 288.00'	D = 28° 38' 52.4"
LT = 192.15'	L = 161.56'	LT = 192.15'	L = 260.37'
ST = 96.13'	T = 80.90'	ST = 96.13'	T = 152.34'
	R = 1,200.00'		R = 200.00'
	SUPER = 0.08		SUPER = 0.06
	DS = 60MPH		DS = 20MPH

-EY2-

PI Sta 15+28.34
Δ = 24° 25' 42.6" (RT)
D = 2° 20' 50.9"
L = 1,040.63'
T = 528.34'
R = 2,440.73'

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T.I.P.: R-2635DA

CONTRACT: DE00142

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
R-2635DA	SIGN-1

APPROVED: DocuSigned by: Andrew D. Klinksiek E3D78FB4596E44B...

DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNING PLAN
WAKE COUNTY

LOCATION: IMPROVEMENTS TO EXISTING SOUTHBOUND EXIT RAMP (RAMP C) FROM NC-540 TO NC-55

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 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
901.10	TYPE 'A' SIGNS
901.50	ARROWS AND SHIELDS
901.70	SIGN STRINGERS AND SUPPORT SPACING
901.80	SIGN MOUNTING DETAILS - FOR TYPE A AND TYPE B SIGNS
903.10	GROUND MOUNTED SIGN SUPPORTS (EXCEPT 1 OF 3 WHICH IS REPLACED WITH SIGN-2A AND 2 OF 3 WHICH IS REPLACED WITH SIGN-2B IN PLANS)
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.40	MILEPOST AND PLACEMENT (REPLACED WITH SIGN-2C IN PLANS)
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

. SIGNS FURNISHED BY STATE.

. ALL PROPOSED SIGNS SEE PAY ITEM NOTE 1 UNLESS OTHERWISE NOTED ON PLAN SHEETS.

. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.

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

. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.

. THE BACKGROUND FOR TYPE 'E' SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

. DO NOT BEGIN FABRICATION FOR TYPE 'A' & 'B' SIGNS MOUNTED ON STEEL SUPPORTS UNTIL "S" DIMENSIONS HAVE BEEN FIELD VERIFIED.

. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

. SEE ITS PLANS AND SPECIFICATIONS FOR REMOVAL OF FLASHERS.

PAY ITEM NOTES

1 SIGN ERECTION, TYPE E
2 SIGN ERECTION, TYPE A (GROUND MOUNTED)
3 SIGN ERECTION, RELOCATE SIGN MILEMARKERS
4 DISPOSAL OF SIGN SYSTEM, STEEL BEAM
5 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
6 DISPOSAL OF SUPPORT, U-CHANNEL

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4054000000	902	PLAIN CONCRETE SIGN FOUNDATION	1	C.Y.
4060000000	903	SUPPORTS, BREAKAWAY STEEL BEAM	310	LB.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	337	LF.
4102000000	904	SIGN ERECTION, TYPE E	11	EA.
4110000000	904	SIGN ERECTION, TYPE A (GROUND MOUNTED)	1	EA.
4116100000	904	SIGN ERECTION, RELOCATE SIGN MILEMARKERS	2	EA.
4152000000	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	1	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	8	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	1	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2 - 2C	SIGN DESIGN AND SUPPORT INFORMATION
SIGN-3	E SHEET
SIGN-4	SIGNING PLAN SHEET

PLANS REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

RENEE ROACH, PE, CPM — SIGNING & DELINEATION REGIONAL ENGINEER

SAM COLEMAN, EI — SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY :

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

C.A. JOHNSON, III, PE — SIGNING PROJECT ENGINEER

A.D. KLINKSIEK, PE, PTOE — SIGNING DESIGN ENGINEER

T.R. TERRELL — SIGNING DESIGN TECHNICIAN

DocuSign Envelope ID: D317BF79-8D11-4A0D-8C6B-BC3B865B72CB

TIP NO.	SHEET NO.
R-2635DA	SIGN-2

APPROVED: DocuSigned by: Andrew D. Klinksiek E3D78F1B4598E44B...

DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGN NUMBER: 201
TYPE: A
QUANTITY: 1

SIGN WIDTH: 9′-0″
HEIGHT: 5′-0″
TOTAL AREA: 45.0 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0″
WIDTH: 1.5″
RADII: 6″

NO. Z BARS: 2
LENGTH: 100.0

BACKG COLOR: Green
COPY COLOR: White

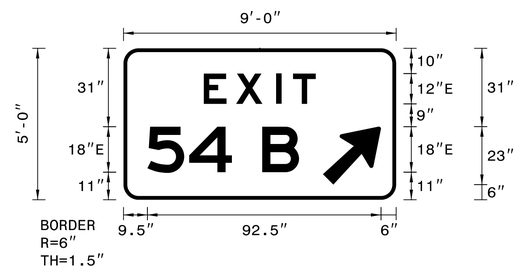
SYMBOL	X	Y	WID	HT
Type A Arrow	79	6	18.3	29.3

MAT'L: 0.125″ ALUMINUM

DESIGN BY: TRT
PROJECT ID: R-2635DA
CHECKED BY: ADK/CAJ
DIV: 05
DATE: January 2016

NOTES:

1. Legend and border shall be direct applied Grade C reflective sheeting.
2. Background shall be Grade C reflective sheeting.



Spacing Factor is 1 unless specified otherwise
Spacing Factor for "EXIT" is 2.25

LETTER POSITIONS

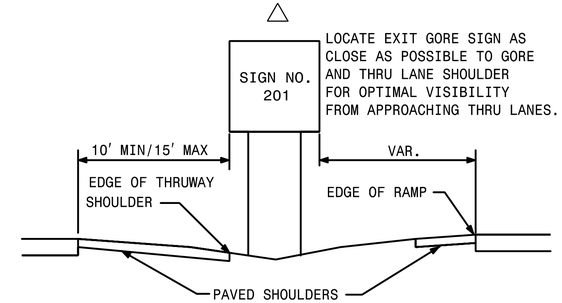
Letter spacings are to start of next letter

							Series/Size Text Length
	E	X	I	T			E 2000
31.8	12.8	15.8	6.8	9	31.8		44.4
	5	4		B			E 2000
9.5	16.6	16.9	12	14.6	38.5		60.1

SIGN NO.	SIGN TYPE	SIGN SIZE (in.) w x h	ROADWAY STATION	NO. OF SUP.	BEAM SECTION	SUPPORT TYPE BA or S	ATTACH METHOD	MOUNTING METHOD	HORIZ. CLR.* (ft.)	LENGTH (ft) SNS HT H	LENGTH (ft) MTG HT C	LENGTH (ft) EMBED-MENT	LEFT SUPPORT (ft) S	LEFT SUPPORT (ft) L	LEFT SUPPORT (ft) TOTAL LENGTH	CENTER SUPPORT (ft) S	CENTER SUPPORT (ft) L	CENTER SUPPORT (ft) TOTAL LENGTH	RIGHT SUPPORT (ft) S	RIGHT SUPPORT (ft) L	RIGHT SUPPORT (ft) TOTAL LENGTH	FOOTING DIAMETER (ft.)	FOOTING DEPTH (ft.)	B/A SUPPORT WEIGHTS (lbs.)	SIMPLE SUPPORT WEIGHTS (lbs.)	REINF. FTGS. (c.y.)	PLAIN FTGS. (c.y.)	FIELD VERIFIED SEE NOTE 2 (mm/dd/yy)
**201	A	108 X 60	-RPC- 17+75 +/- LT	2	S4x7.7	BA	N/A	N/A	△	5.00	7.00	5	0.50	12.50	17.50	0.00	0.00	0.00	0.50	12.50	17.50	1.00	5.5	309.50	0.00	0.00	0.32	
																								TOTAL 309.50	TOTAL 0.00	TOTAL 0.00	TOTAL 0.32	
																							USE:	310	0	0	1	

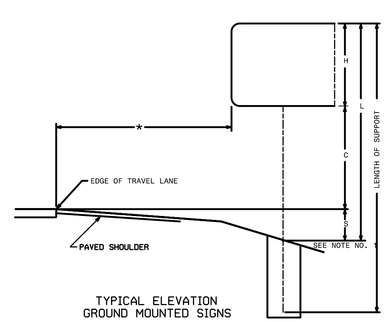
**Supports designed for a wind speed of sign size of 108" X 84".

△ LOCATE EXIT GORE SIGN AS CLOSE AS POSSIBLE TO GORE AND THRU LANE SHOULDER FOR OPTIMAL VISIBILITY FROM APPROACHING THRU LANES.



NOTES:

1. DIMENSION "S" REPRESENTS AN INCREASE (+), OR A DECREASE (-) IN POLE LENGTH, RELATIVE TO THE ELEVATION OF THE EDGE OF PAVEMENT.
2. FIELD VERIFICATIONS SHALL BE REQUIRED FOR ALL SUPPORTS, SEE (*) ARTICLE 903-3. FABRICATORS SHALL BE AISC CERTIFIED IN CATEGORY 1, SEE (*) ARTICLE 1072-1. (*) = N.C.D.O.T. STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES
3. PLAN LOCATIONS FOR EXISTING UTILITIES ARE BASED ON THE BEST AVAILABLE INFORMATION AND, THEREFORE MAY NOT BE PRECISELY ACCURATE. THEREFORE, IT IS INCUMBENT UPON THE CONTRACTOR TO DETERMINE THE EXACT LOCATION OF UTILITIES BEFORE BEGINNING WORK IN A LOCATION.



TYPICAL ELEVATION
GROUND MOUNTED SIGNS

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

TYPE 'A' SIGN DESIGN AND SUPPORT CHART

DocuSign Envelope ID: D317BF79-8D11-4A0D-8C6B-BC3B865B72CB

TIP NO.	SHEET NO.
R-2635DA	SIGN-2A

APPROVED: DocuSigned by: Ronald W. King 13E7AF7B9AA4448...

DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING

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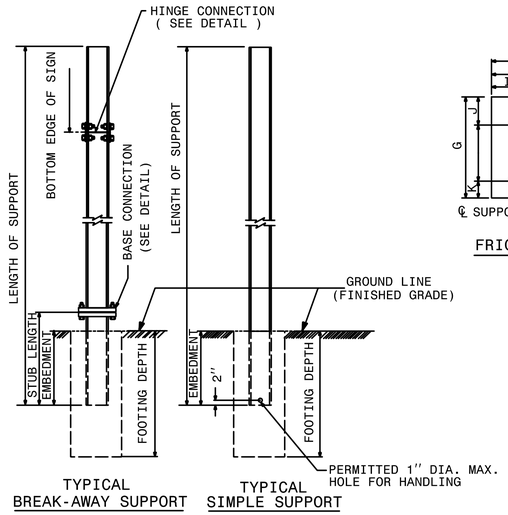
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

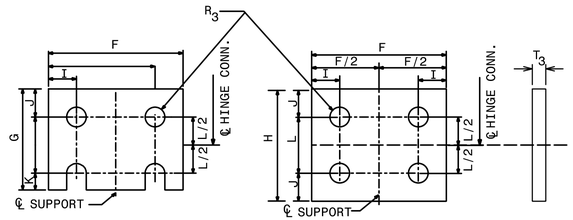
ENGLISH STANDARD DRAWING FOR

GROUND MOUNTED SIGN SUPPORTS



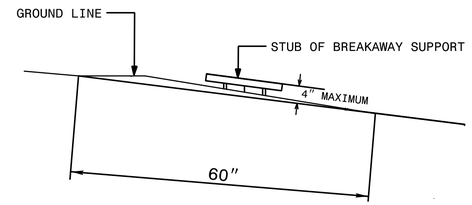
TYPICAL BREAK-AWAY SUPPORT

TYPICAL SIMPLE SUPPORT

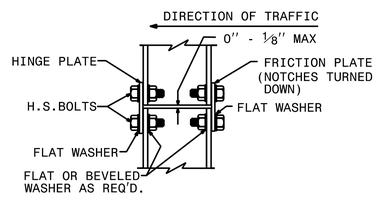


FRICTION ℙ DETAIL

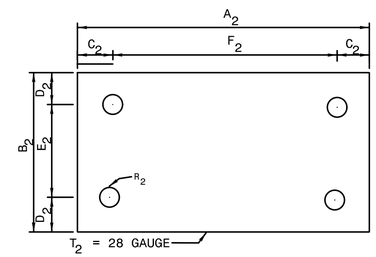
HINGE ℙ DETAIL



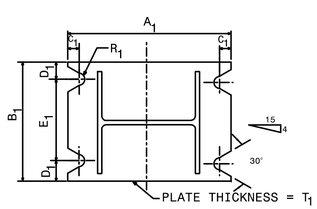
STUB HEIGHT REQUIREMENTS



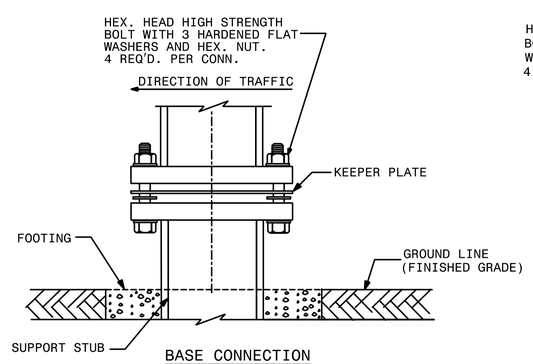
HINGE CONNECTION



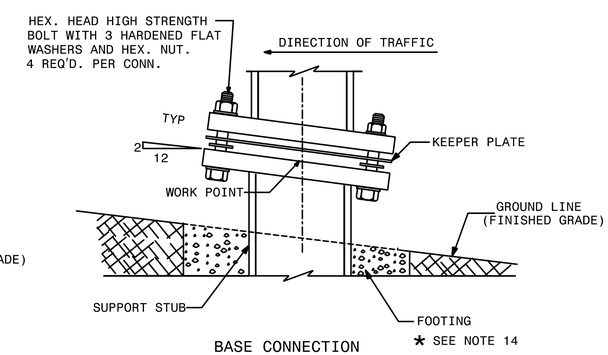
KEEPER PLATE



SLIP BASE PLATE



BASE CONNECTION



BASE CONNECTION

SEE SHEET 2 OF 3 FOR BASE CONNECTION DATA HINGE CONNECTION DATA & FOUNDATION DATA. SEE SHEET 3 OF 3 FOR GENERAL NOTES.

SHEET 1 OF 3

903D10

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

1-12

ENGLISH STANDARD DRAWING FOR

GROUND MOUNTED SIGN SUPPORTS

SHEET 1 OF 3

903D10

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Raleigh, North Carolina 27609
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REVISED SIGNING ROADWAY STANDARD DRAWING

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NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING

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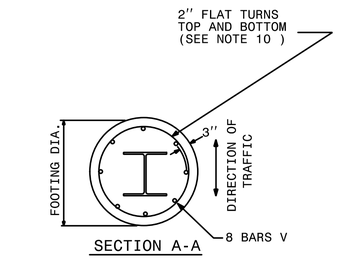
RALEIGH, N.C.

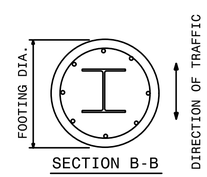
1-12

ENGLISH DETAIL DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS

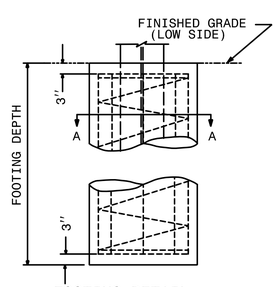
	SLIP BASE PLATE DATA								KEEPER PLATE DATA							HINGE CONNECTION DATA										BREAK AWAY SUPPORT WEIGHT CONSTANT LBS.
BEAM SHAPE	BOLT SIZE	A_1	B_1	C_1	D_1	E_1	T_1	R_1	A_2	B_2	C_2	D_2	E_2	R_2	T_2	BOLT SIZE	F	G	H	I	J	K	L	R_3	T_3	
S3X5.7	1/2"DIA.X 3 1/4"	7"	4"	1"	3/4"	2 1/2"	1"	9/32"	7"	4"	1"	3/4"	2 1/2"	9/32"	28 GAUGE	1/2"DIA.X1 3/4"	2 1/4"	3 1/2"	4"	1/2"	1"	1/2"	2"	9/32"	3/8"	18
S4X7.7	1/2"DIA.X 3 1/4"	8"	4"	1"	3/4"	2 1/2"	1"	9/32"	8"	4"	1"	3/4"	2 1/2"	9/32"	28 GAUGE	1/2"DIA.X1 3/4"	2 5/8"	3 1/2"	4"	1/2"	1"	1/2"	2"	9/32"	3/8"	20
W6X9	1/2"DIA.X 3 1/4	10"	5"	1"	3/4"	3 1/2"	1"	9/32"	10"	5"	1"	3/4"	3 1/2"	9/32"	28 GAUGE	1/2"DIA.X1 3/4"	4"	3 1/2"	4"	3/4"	1"	1/2"	2"	9/32"	3/8"	32
W6X12	5/8"DIA.X 4"	11"	5"	1 1/4"	7/8"	3 1/4"	1 1/4"	11/32"	11"	5"	1 1/4"	7/8"	3 1/4"	11/32"	28 GAUGE	5/8"DIA.X 2"	4"	4"	4 1/2"	3/4"	1 1/8"	5/8"	2 1/4"	11/32"	3/8"	39
W6X16	5/8"DIA.X 4 1/2"	12"	6"	1 1/4"	7/8"	4 1/4"	1 1/2"	11/32"	12"	6"	1 1/4"	7/8"	4 1/4"	11/32"	28 GAUGE	5/8"DIA.X2 1/4"	4"	4"	4 1/2"	3/4"	1 1/8"	5/8"	2 1/4"	11/32"	1/2"	47
W8X18	5/8"DIA.X 4 1/2"	13 1/2"	6 1/2"	1 1/4"	7/8"	4 3/4"	1 1/2"	11/32"	13 1/2"	6 1/2"	1 1/4"	7/8"	4 3/4"	11/32"	28 GAUGE	5/8"DIA.X2 1/4"	5 1/4"	4"	4 1/2"	1"	1 1/8"	5/8"	2 1/4"	11/32"	1/2"	70
W8X21	3/4"DIA.X 4 1/2"	14"	7"	1 1/2"	1"	5"	1 1/2"	13/32"	14"	7"	1 1/2"	1"	5"	13/32"	28 GAUGE	3/4"DIA.X2 1/2"	5 1/4"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	13/32"	1/2"	73
W10X22	3/4"DIA.X 4 1/2"	16"	8"	1 1/2"	1"	6"	1 1/2"	13/32"	16"	8"	1 1/2"	1"	6"	13/32"	28 GAUGE	3/4"DIA.X2 1/2"	5 3/4"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	13/32"	1/2"	119
W10X26	3/4"DIA.X 5 1/2"	16 1/2"	8"	1 1/2"	1"	6"	1 3/4"	13/32"	16 1/2"	8"	1 1/2"	1"	6"	13/32"	28 GAUGE	3/4"DIA.X2 3/4"	5 3/4"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	13/32"	5/8"	140
W12X26	3/4"DIA.X 5 1/2"	18 1/2"	9"	1 1/2"	1"	7"	1 3/4"	13/32"	18 1/2"	9"	1 1/2"	1"	7"	13/32"	28 GAUGE	3/4"DIA.X2 3/4"	6 1/2"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	13/32"	5/8"	176
W14X30	1"DIA.X 6"	22"	9"	2"	1 1/2"	6"	2"	17/32"	22"	9"	2"	1 1/2"	6"	17/32"	28 GAUGE	1"DIA.X 3"	6 3/4"	7"	8"	1 1/4"	2"	1"	4"	17/32"	5/8"	205
W16X31	1"DIA.X 6"	24"	9"	2"	1 1/2"	6"	2"	17/32"	24"	9"	2"	1 1/2"	6"	17/32"	28 GAUGE	1"DIA.X 3"	5 1/2"	7"	8"	1 1/4"	2"	1"	4"	17/32"	3/4"	223
W18X35	1"DIA.X 6"	25"	9"	2"	1 1/2"	6"	2"	17/32"	25"	9"	2"	1 1/2"	6"	17/32"	28 GAUGE	1"DIA.X 3"	6"	7"	8"	1 1/4"	2"	1"	4"	17/32"	3/4"	243
W18X40	1"DIA.X 6 1/2"	26"	9"	2"	1 1/2"	6"	2 1/4"	17/32"	26"	9"	2"	1 1/2"	6"	17/32"	28 GAUGE	1"DIA.X3 1/2"	6"	7"	8"	1 1/4"	2"	1"	4"	17/32"	7/8"	278
W21X44	1"DIA.X 7"	29"	9"	2"	1 1/2"	6"	2 1/2"	17/32"	29"	9"	2"	1 1/2"	6"	17/32"	28 GAUGE	1"DIA.X3 1/2"	6 1/2"	7"	8"	1 1/4"	2"	1"	4"	17/32"	7/8"	310



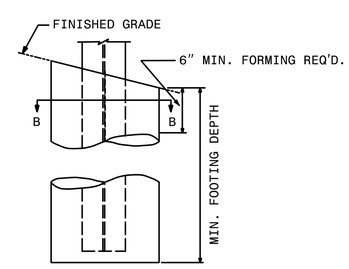
SECTION A-A



SECTION B-B



FOOTING DETAIL



FOOTING DETAIL

FOUNDATION DATA *		
FOOTING DIAMETER	REINFORCEMENT	SPIRAL BAR
1'-6"	8 # 6 BARS	#3 BAR, 6" PITCH
2'	8 # 7 BARS	#3 BAR, 6" PITCH
2'-6"	8 # 9 BARS	#3 BAR, 6" PITCH
3'	8 # 11 BARS	#3 BAR, 6" PITCH
3'-6"	8 # 12 BARS	#3 BAR, 6" PITCH
4'	8 # 14 BARS	#3 BAR, 6" PITCH

* FOUNDATION DIMENSIONS ARE SHOWN IN PLANS

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

1-12

ENGLISH DETAIL DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS

SHEET 2 OF 3

903D10

SHEET 2 OF 3

903D10

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Raleigh, North Carolina 27609
NC License No: C-1554

REVISED SIGNING ROADWAY STANDARD DRAWING

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TIP NO.	SHEET NO.
R-2635DA	SIGN-2C

APPROVED: DocuSigned by: Ronald W. King 13E7AF7B9AA4448...

DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING

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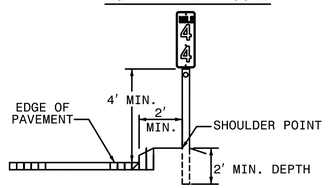
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

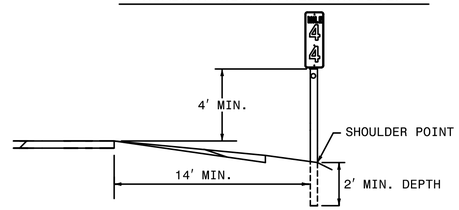
ENGLISH STANDARD DRAWING FOR
MILEPOST AND PLACEMENT

MILEPOST PLACEMENT

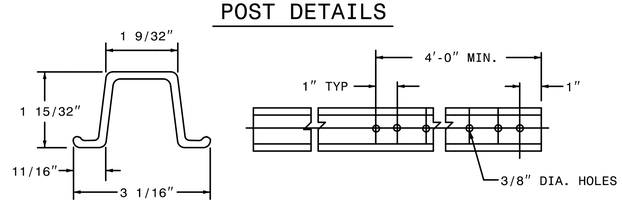
ROADWAY WITH CURB



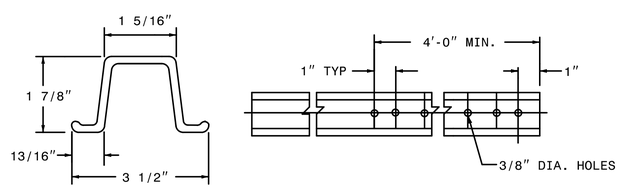
ROADWAY WITH PAVED SHOULDER



POST DETAILS



2-LB U-CHANNEL

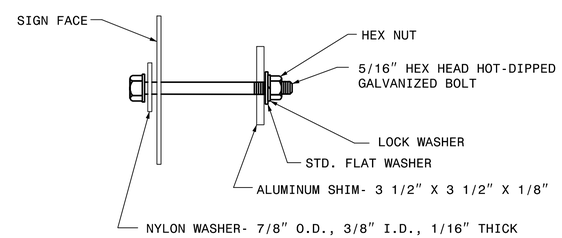


3-LB U-CHANNEL

NOTES:

1. A MILEPOST SIGN SHALL CONSIST OF ONE (1) 12" X 24", 12" X 36" OR 12" X 48" SIGN PANEL. AN ENHANCED REFERENCE LOCATION SIGN SHALL CONSIST OF ONE (1) 18" X 54" SIGN PANEL. AN INTERMEDIATE ENHANCED REFERENCE LOCATION SIGN SHALL CONSIST OF ONE (1) 18" X 60" SIGN PANEL.
2. FABRICATE SIGNS FROM .080" SHEET ALUMINUM. EACH SIGN SHALL HAVE WHITE STUCK-ON MESSAGE AND BORDER ON GREEN BACKGROUND. MESSAGE, BORDER AND BACKGROUND TO BE REFLECTORIZED.
3. MILEPOST LOCATION SIGNS REQUIRE ONE (1) 2-LB GALVANIZED STEEL U-CHANNEL POST AND ENHANCED REFERENCE LOCATION SIGNS REQUIRE ONE (1) 3-LB GALVANIZED STEEL U-CHANNEL POST. THE POST'S LENGTH MUST MEET THE REQUIREMENTS SHOWN IN THESE STANDARDS.
4. POSTS SHALL BE DRIVEN. THE TOP OF POST SHALL NOT PROJECT ABOVE THE TOP OF SIGN.
5. ATTACH EACH SIGN TO THE WIDE FACE (FLANGES) OF THE POST BY MEANS OF THE FOLLOWING COMBINATION- 5/16" HEX HEAD BOLT, NYLON WASHER, SHIM, FLAT WASHER, LOCK WASHER, HEX NUT. FULL CONTACT BETWEEN THE SIGN AND THE POST SHALL BE ACHIEVED. NO BUCKLING OF THE SIGN WILL BE PERMITTED.
6. PLACE MILEPOST SIGNS AT THE SHOULDER POINT UNLESS THE ENGINEER DIRECTS OTHERWISE.

FASTENER



SHEET 1 OF 1

904D40

STATE OF NORTH CAROLINA
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1-12

ENGLISH STANDARD DRAWING FOR
MILEPOST AND PLACEMENT

SHEET 1 OF 1

904D40

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TIP NO.	SHEET NO.
R-2635DA	SIGN-3

APPROVED: DocuSigned by: Andrew D. Klinksick E3D78FB4596E44B...

DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSICK

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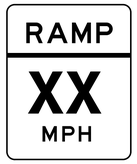
(401) QUANTITY REQ'D 2

48" X 48"
W1-1(R)

TWO "U" POSTS PER SIGN

(405) QUANTITY REQ'D 1



36" X 48"
W13-3

ADVISORY SPEED TO BE DETERMINED BY ENGINEER

TWO "U" POSTS PER SIGN

(402) QUANTITY REQ'D 2

24" X 24"
W13-1P

ADVISORY SPEED TO BE DETERMINED BY ENGINEER

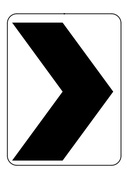
MOUNT BELOW SIGN 401 IN 2 INSTALLATIONS

(403) QUANTITY REQ'D 1

48" X 48"
W4-6(R)

TWO "U" POSTS PER SIGN

(404) QUANTITY REQ'D 5



36" X 48"
W1-8(R)

INSTALL ON TWO "U" POSTS PER SIGN SPACED APPROX 24 INCHES APART ON SUPPORT CENTERS

INSTALL 34 INCH HORIZONTAL CROSS BRACING LEAVING A 1 INCH MARGIN FROM LEFT AND RIGHT EDGES OF SIGN

INSTALLATION HEIGHT: BOTTOM OF SIGN SHALL BE 4 FEET ABOVE THE EDGE OF TRAVEL LANE ELEVATION (LEFT EDGELINE OF RAMP)

ALL OTHER PORTIONS OF ROADWAY STANDARD DRAWING 904.50 APPLY

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

TYPE 'E' SIGNS

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TIP NO.	SHEET NO.
R-2635DA	SIGN-4

APPROVED: DocuSigned by: Andrew D. Klinksiek E3D78FB4596E44B...

DATE: 2/8/2016

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK

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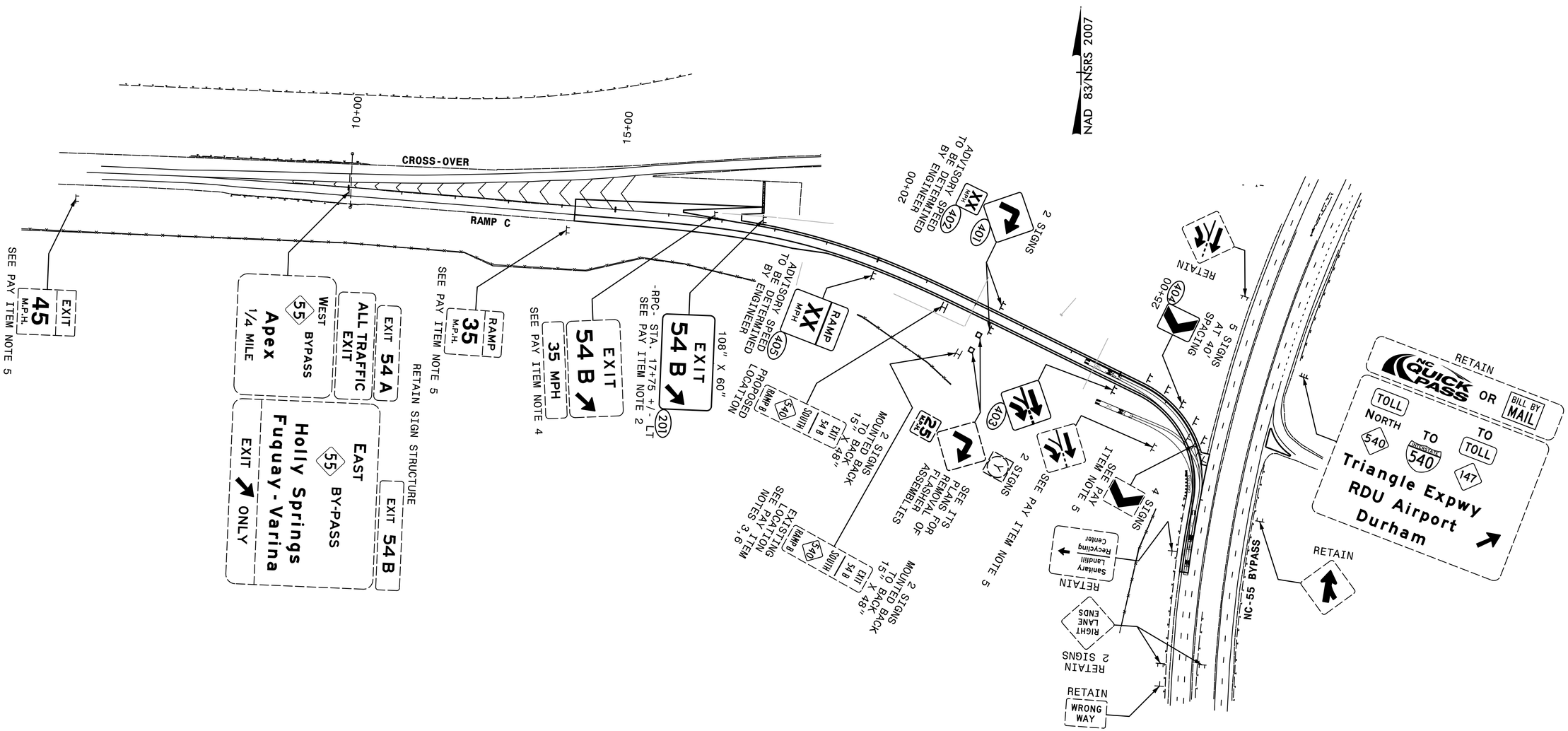

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EXISTING AND PROPOSED SIGNS
STA. 10+00 TO 25+00

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TIP PROJECT: R-2635DA

CONTRACT: DE00142

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

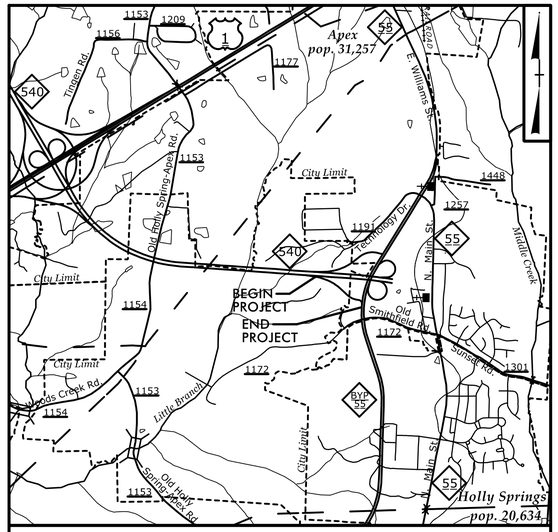
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2635DA	ITS-1	11

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34410.3.FS31	NHPP-0540(29)	PE
35520.3.6		CONST

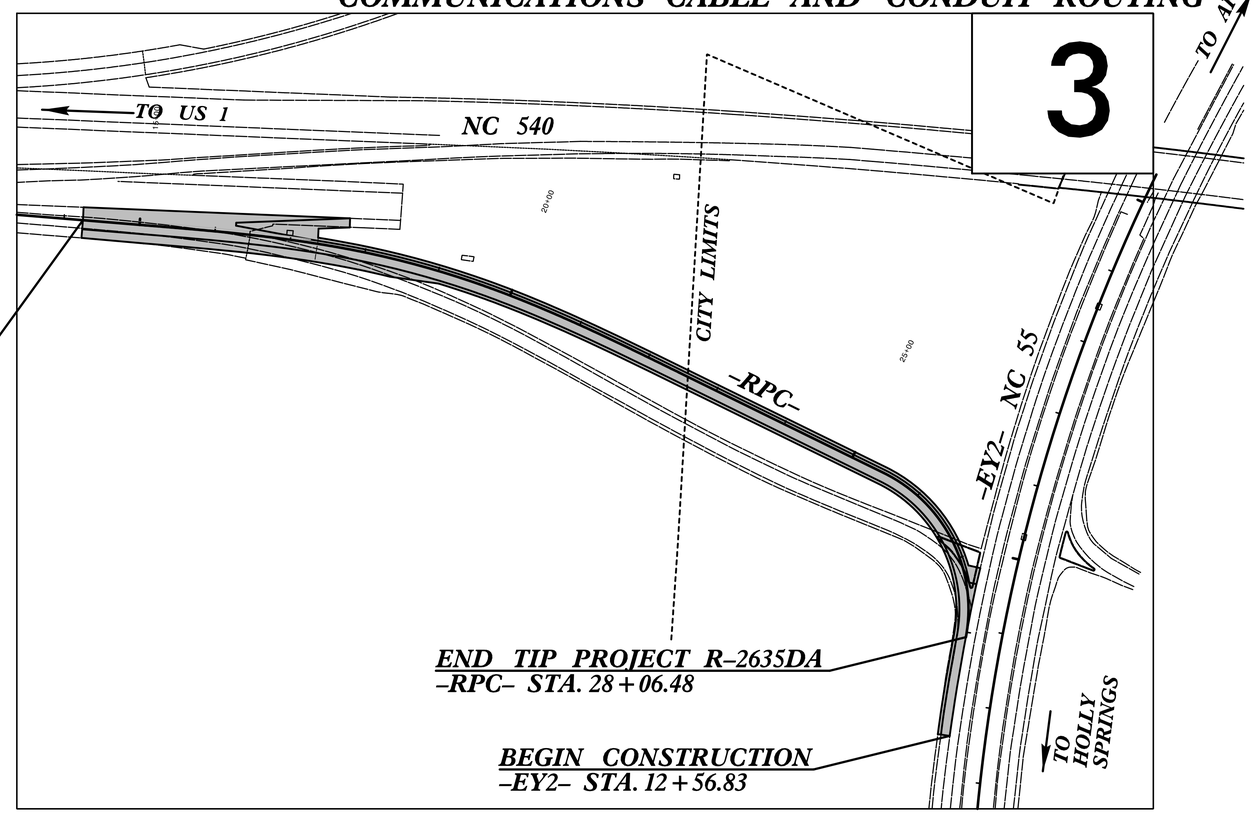
WAKE COUNTY

LOCATION: IMPROVEMENTS TO EXISTING SOUTHBOUND EXIT RAMP (RAMP C) FROM NC 540 TO NC 55

TYPE OF WORK: MICROWAVE VEHICLE DETECTOR SYSTEM, COMMUNICATIONS CABLE AND CONDUIT ROUTING



VICINITY MAP



NAD 83/
NSRS 2007

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2012 STANDARD SPECIFICATIONS

PROJECT LENGTH

PROJECT LENGTH = 0.262 MILES

LETTING DATE:

INDEX OF SHEETS

ITS-1.....TITLE SHEET
ITS-2.....CONSTRUCTION NOTES & LEGEND
ITS-3.....CABLE ROUTING PLAN
ITS-4.....FIBER-OPTIC SPLICE DETAIL
ITS-5.....MVD BLOCK DIAGRAM
ITS-6.....MVD CABINET (TYPE A) LAYOUT
ITS-7.....MVD CABINET DETAIL
ITS-8.....POWER SERVICE DETAIL POLE MOUNT CABINET
ITS-9.....MVD GROUNDING DETAILS
ITS-10.....MVD POLE PLACEMENT
ITS-11.....MVD MOUNTING

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" ROADWAY DESIGN UNIT – N.C. DEPARTMENT OF TRANSPORTATION – RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY – DRUM
1700.01	ELECTRICAL SERVICE OPTIONS
1700.02	ELECTRICAL SERVICE GROUNDING
1715.01	UNDERGROUND CONDUIT–TRENCHING
1716.01	JUNCTION BOXES
1720.01	WOOD POLES
1751.01	CONTROLLER AND CABINETS
1751.02	CONTROLLER AND CABINETS

PLANS REVIEWED BY
NCDOT TURNPIKE AUTHORITY

NCTA CONTACTS: ANDY LEWELISKI, PE - DIRECTOR OF TOLL OPERATIONS
JOHN STANSBERRY - REGIONAL TOLL ROAD MANAGER

PLANS PREPARED BY:

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
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(919) 546-8997
NC License No: C-1554

HNTB CONTACTS: HARVEY L. WINSTEAD, PE - PROJECT ENGINEER
NATASHA R. SIMMONS, PE - PROJECT ENGINEER
TRACEY R. TERRELL - PROJECT DESIGN TECHNICIAN

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R. Simmons 2/8/2016
FEDERAL SIGNATURE DATE

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PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	ITS-2

1. INSTALL 3–WIRE COPPER SERVICE ENTRANCE CONDUCTORS
2. INSTALL 4–WIRE COPPER FEEDER CONDUCTORS
3. INSTALL 3–WIRE COPPER FEEDER CONDUCTORS
4. INSTALL SMFO CABLE
5. INSTALL CAT 5e ETHERNET CABLE
6. INSTALL FIBER OPTIC DROP CABLE
7. INSTALL TRACER WIRE
8. TRENCH
9. INSTALL PVC CONDUIT
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
12. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
13. INSTALL POLYETHYLENE CONDUIT IN EXISTING OUTERDUCT
14. INSTALL POLYETHYLENE CONDUIT
15. DIRECTIONAL DRILL CONDUIT
16. BORE AND JACK CONDUIT
17. INSTALL CABLE(S) IN EXISTING CONDUIT
18. INSTALL CABLE(S) IN NEW CONDUIT
19. INSTALL CABLE(S) IN EXISTING RISER
20. INSTALL CABLE(S) IN NEW RISER
21. INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS
22. INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB–OUTS WHEN AVAILABLE)
23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB–OUTS WHEN AVAILABLE)
24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26. TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
27. INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPLICE CABLE IN CABINET
29. INSTALL UNDERGROUND SPLICE ENCLOSURE
30. MODIFY EXISTING UNDERGROUND SPLICE ENCLOSURE
31. MODIFY EXISTING BASE MOUNTED SPLICE CABINET
32. INSTALL BASE MOUNTED SPLICE CABINET
33. REMOVE EXISTING SPLICE CABINET
34. INSTALL CABINET FOUNDATION
35. REMOVE EXISTING CABINET FOUNDATION
36. INSTALL CCTV CAMERA ASSEMBLY
37. REINSTALL EXISTING MVDS ASSEMBLY
38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39. INSTALL STANDARD JUNCTION BOX
40. INSTALL OVERSIZED, HEAVY–DUTY JUNCTION BOX
41. INSTALL SPECIAL–SIZED, HEAVY–DUTY JUNCTION BOX
42. INSTALL WOOD POLE
43. INSTALL 6" x 6" WOOD PEDESTAL
44. INSTALL AERIAL GUY ASSEMBLY
45. INSTALL STANDARD GUY ASSEMBLY
46. INSTALL SIDEWALK GUY ASSEMBLY
47. INSTALL MESSENGER CABLE
48. REINSTALL EXISTING MVDS POLE
49. REMOVE EXISTING COMMUNICATIONS CABLE
50. INSTALL TELEPHONE SERVICE
51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52. INSTALL DELINEATOR MARKER
53. STORE 50 FEET OF EACH COMMUNICATIONS CABLE
54. STORE 100 FEET OF EACH COMMUNICATIONS CABLE
55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
56. INSTALL NEW EQUIPMENT CABINET DISCONNECT
57. MODIFY EXISTING ELECTRICAL SERVICE
58. INSTALL NEW ELECTRICAL SERVICE
59. INSTALL EXISTING POLE MOUNTED EQUIPMENT CABINET
60. REINSTALL EXISTING FIELD ETHERNET SWITCH
61. INSTALL SOLAR POWER ASSEMBLY
62. INSTALL DMS ASSEMBLY
63. REMOVE EXISTING JUNCTION BOX
64. INSTALL ISOLATION TRANSFORMER

CONTRACTOR UTILIZE CONDUITS INSTALLED BY OTHERS IN EXISTING INSTALLATION:

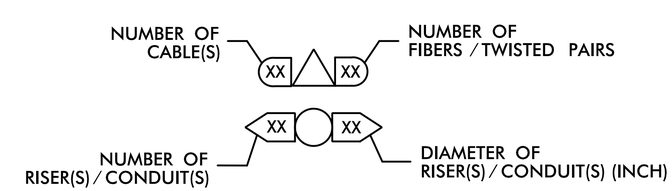
CONDUIT	USE
BLUE	TOLL FOC
WHITE	TOLL SPARE
BLACK	ITS FOC
ORANGE	ITS SPARE

LEGEND

- NEW CONDUIT
- EXISTING CONDUIT
- DD — NEW DIRECTIONAL DRILLED CONDUIT
- NEW GUARDRAIL
- EXISTING GUARDRAIL
- EXISTING CABLE GUIDERAIL
- EXISTING RIGHT OF WAY
- NEW OVERSIZED, HEAVY–DUTY JUNCTION BOX TOLLS
- EXISTING OVERSIZED, HEAVY–DUTY JUNCTION BOX TOLLS
- NEW OVERSIZED, HEAVY–DUTY JUNCTION BOX ITS
- EXISTING OVERSIZED, HEAVY–DUTY JUNCTION BOX ITS
- NEW STANDARD SIZE JUNCTION BOX
- EXISTING STANDARD SIZE JUNCTION BOX
- EXISTING MVD ASSEMBLY
- S — NEW SPECIAL–SIZED, HEAVY DUTY JUNCTION BOX WITH SPLICE ENCLOSURE TOLLS
- S — EXISTING SPECIAL–SIZED, HEAVY DUTY JUNCTION BOX WITH SPLICE ENCLOSURE TOLLS
- S — NEW SPECIAL–SIZED, HEAVY DUTY JUNCTION BOX WITH SPLICE ENCLOSURE ITS
- S — EXISTING SPECIAL–SIZED, HEAVY DUTY JUNCTION BOX WITH SPLICE ENCLOSURE ITS
- NEW METAL POLE
- EXISTING METAL POLE
- NEW FIELD EQUIPMENT CABINET
- EXISTING FIELD EQUIPMENT CABINET
- A — PAD–MOUNTED TRANSFORMER
- E — ELECTRICAL JUNCTION BOX
- E — ELECTRICAL SERVICE
- D — EQUIPMENT CABINET DISCONNECT
- A — SPLICE ID
- XX–XXXX — EXISTING ITS DEVICE NUMBER

CONSTRUCTION NOTE SYMBOLOGY KEY

- XX — INDICATES NUMBER OF CABLES, LOOPS, ETC.
- XX — INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- XX — INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- XX — INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)



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HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

Plans Prepared for:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

CONSTRUCTION NOTES AND LEGEND

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE: NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:
Natasha R. Simmons 8/8/2016
SIGNATURE DATE

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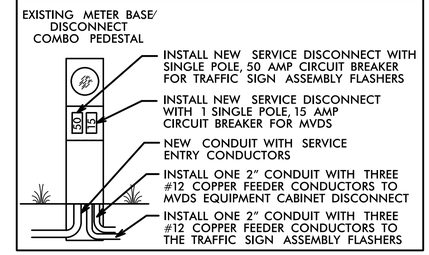
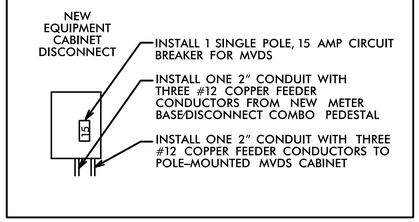
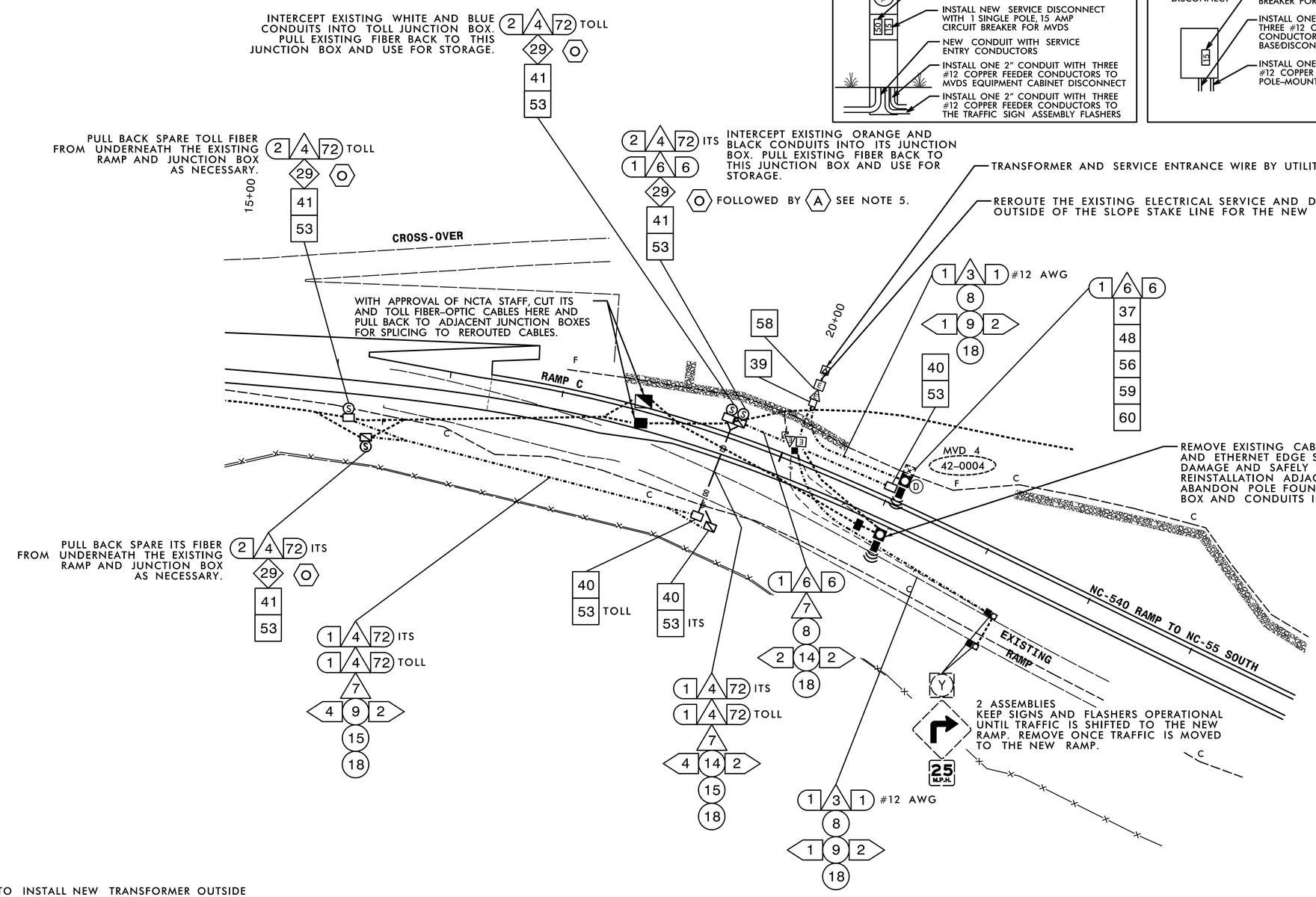
PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	ITS-3

DRAWING 1
NEW ELECTRICAL SERVICE EQUIPMENT



DRAWING 2
NEW EQUIPMENT CABINET DISCONNECT





NOTES:

1. DUKE POWER TO INSTALL NEW TRANSFORMER OUTSIDE OF THE SLOPE STAKE LINE FOR THE NEW RAMP BEFORE CONSTRUCTION BEGINS.
2. CONTRACTOR TO INSTALL NEW COMBINATION METER BASE AND DISCONNECT BEFORE CONSTRUCTION BEGINS TO SERVE FLASHERS ON THE EXISTING RAMP.
3. MAINTAIN THE TWO FLASHERS ON THE SIGN ASSEMBLIES THROUGH CONSTRUCTION. ONCE CONSTRUCTION IS COMPLETE, REMOVE AND DISPOSE THE SIGN ASSEMBLIES AND FLASHERS.
4. REROUTE THE TOLL AND ITS FIBER-OPTIC CABLES BEFORE CONSTRUCTION BEGINS ON THE NEW RAMP.
5. UPON REROUTING THE ITS CABLE, PERFORM A TYPE "O" SPLICE AT THIS LOCATION. WHEN THE MVDS IS REINSTALLED ALONG WITH THE DROP CABLE ASSEMBLY, MODIFY THIS SPLICE WITH A TYPE "A" SPLICE.

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

Plans Prepared for:
Intermodal Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 1"=50'

CABLE ROUTING PLAN

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

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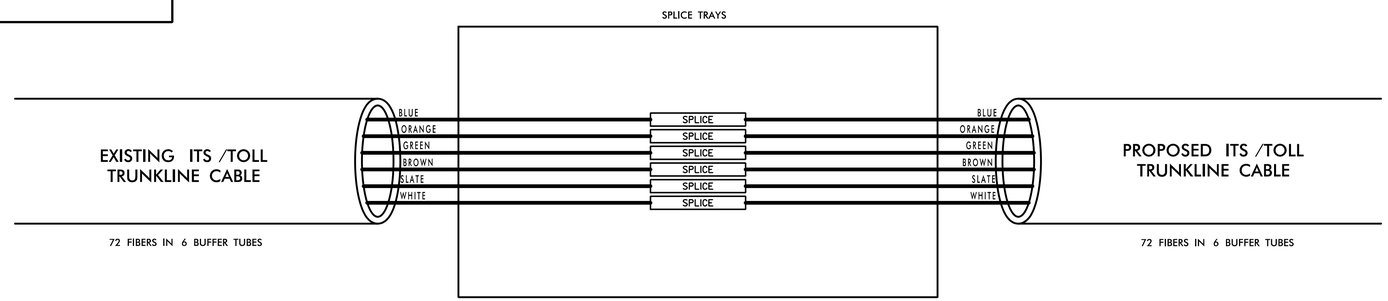
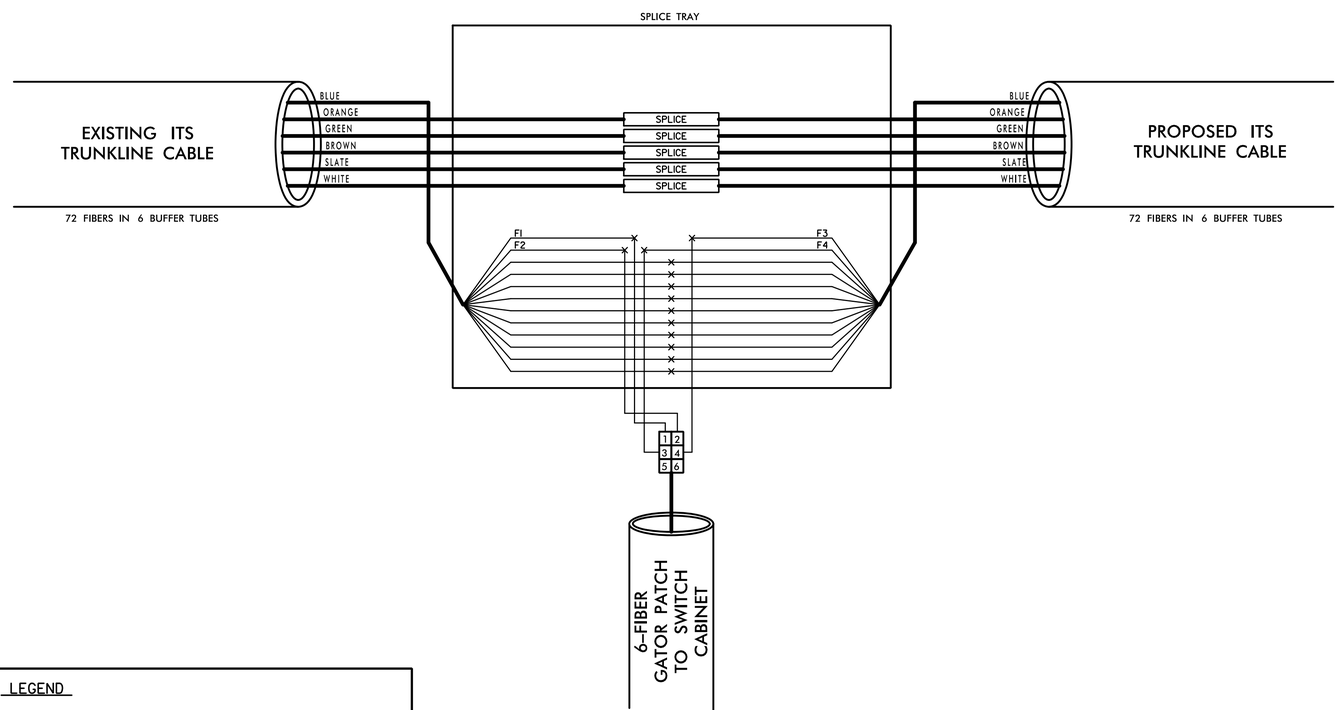
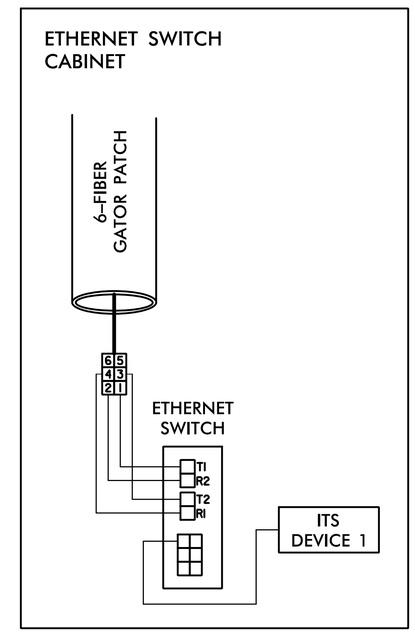
R-2635DA	ITS-4

TYPICAL SPLICE TYPE O RELOCATED PRIMARY TOLL /ITS TRUNKLINE AT NEW SPLICE ENCLOSURE



TYPICAL ITS SPLICE TYPE A MVD, DMS, AND /OR CCTV





COLOR CODE
TIA/EIA 598-C

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

LEGEND

ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING / ENSURING PROPER TERMINATION.

X - FUSION SPLICE INDIVIDUAL FIBER

EXPRESS — EXPRESS ENTIRE BUFFER TUBE

SPLICE — SPLICE ENTIRE BUFFER TUBE

○ UNUSED FIBER

● USED (LIT) FIBER

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

Plans Prepared for:
Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

FIBER-OPTIC SPLICE DETAILS

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

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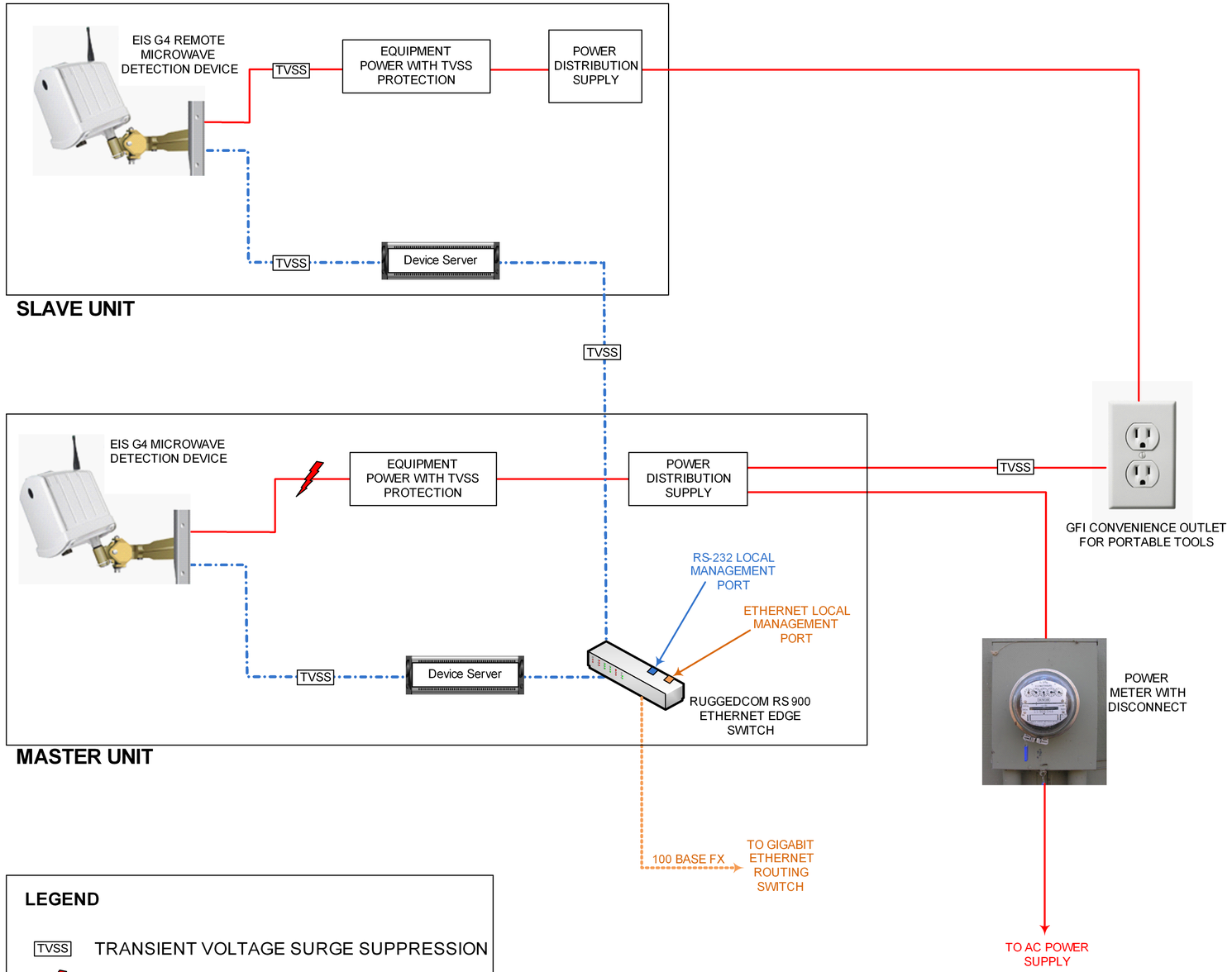
PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	ITS-5



LEGEND

- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSION
- OPTIONAL POWER SUPPLY
- POWER
- RS 232/422/485
- ETHERNET

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343 E. Six Forks Road, Suite 200
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NC License No: C-1554

Plans Prepared for:
Transportation Mobility and Safety Division
Intelligent Transportation Systems Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

ITS PLANS
MVD BLOCK DIAGRAM

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:
Natasha R. Simmons 8/2016
SIGNATURE DATE

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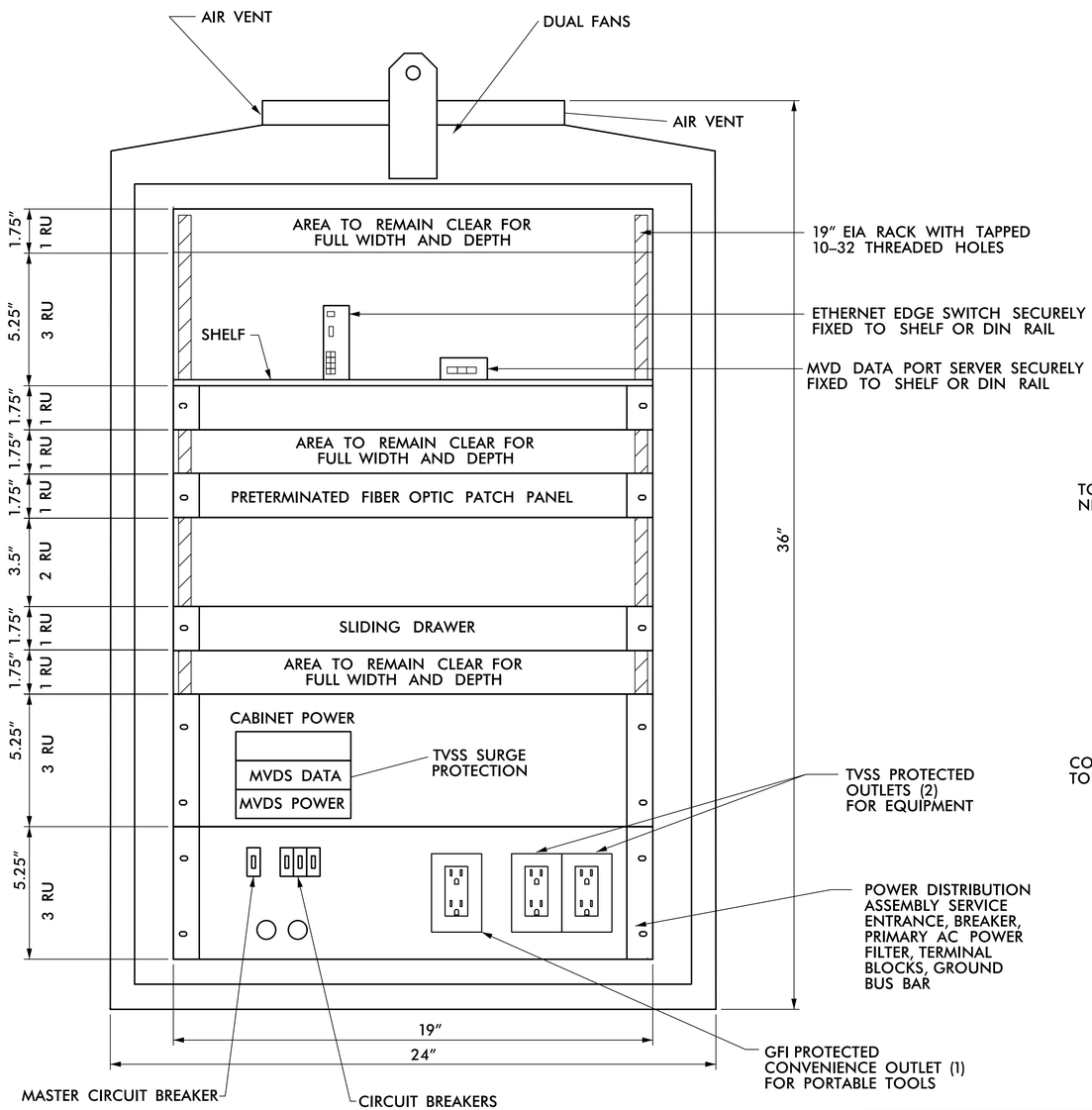
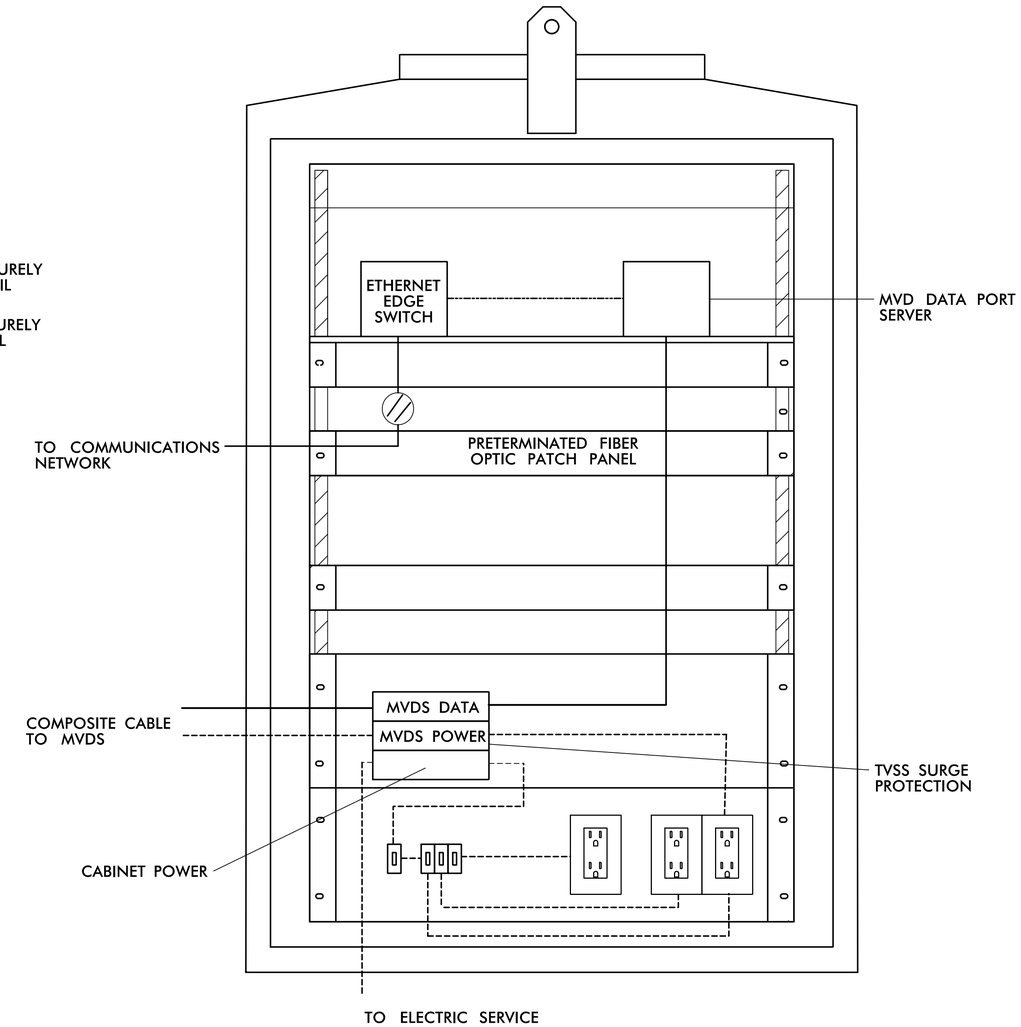
PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	ITS-6



FRONT VIEW



CABINET WIRING VIEW

CONNECTION LEGEND

- 100 BASE FX ETHERNET (FIBER)
- 100 BASE TX ETHERNET
- ANALOG VIDEO
- ELECTRICAL POWER
- RS–232/422/485

NOTES:

1. ALL DIMENSIONS AND SCALE ARE APPROXIMATE.
2. ALL EQUIPMENT RACKS SHALL HAVE A MINIMUM OF ONE RACK UNIT SPACE IN BETWEEN THEM FOR VENTILATION
3. CONDUIT ENTRANCES ARE IN BOTTOM OF CABINET.
4. MINIMUM NUMBER OF OUTLETS IS THREE, (2) TVSS PROTECTED AND (1) GFI PROTECTED.
5. TVSS PROTECTION SHALL FULLY PROTECT ALL DATA COMMUNICATIONS BETWEEN DETECTOR AND CABINET.

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Plans Prepared for:
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

ITS PLANS
MICROWAVE DETECTION CABINET (TYPE A) LAYOUT

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by: Natasha R. Simmons 1/8/2016
SIGNATURE DATE

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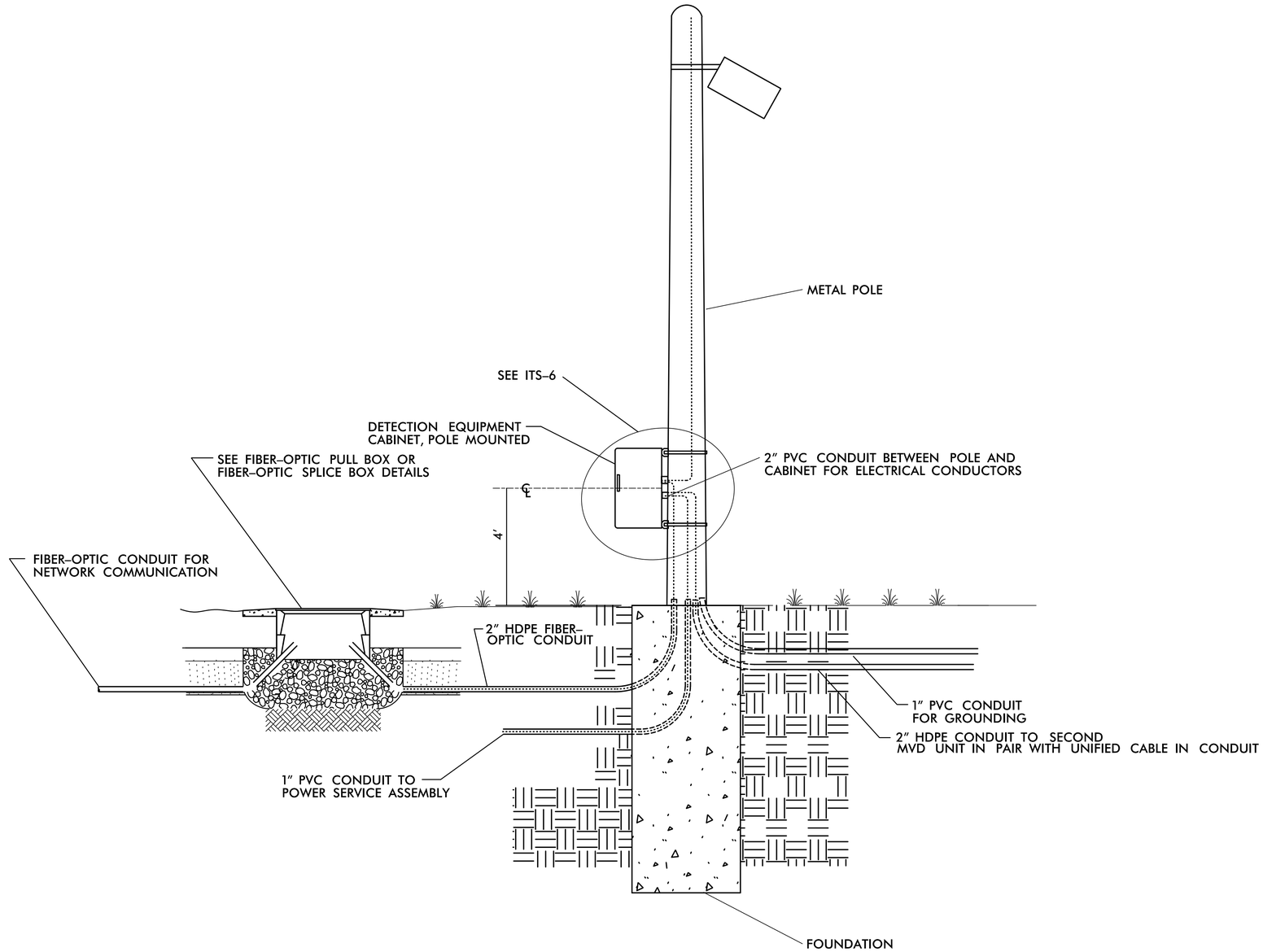
PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	ITS-7



NOTES:

1. CONTRACTOR SHALL TERMINATE FIBER–OPTIC CABLES IN CABINET WITH PRETERMINATED PATCH PANEL.
2. FURNISH AND INSTALL THE TVSS PROTECTION ON ALL DATA AND POWER CABLING INTO CABINET.
3. FURNISH AND INSTALL SECONDARY TVSS PROTECTION ON CONVENIENCE OUTLETS FOR EQUIPMENT HARDWARE IN CABINET.
4. SIZE AND TYPE OF CONDUITS FOR NETWORK COMMUNICATIONS BETWEEN THE PULL BOX AND CABINET SHALL BE SHOWN IN THE PLANS.
5. SEE ITS–9 FOR GROUNDING REQUIREMENTS.
6. ALL NETWORK COMMUNICATIONS CONDUITS AND DUCTS SHALL BE SEALED WITH APPROVED WATERPROOF DUCT PLUGS OR SEALS.

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HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

Plans Prepared for:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Intelligent Transportation Systems Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

MICROWAVE DETECTION CABINET DETAIL

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:
Natasha R. Simmons 8/8/2016
SIGNATURE DATE

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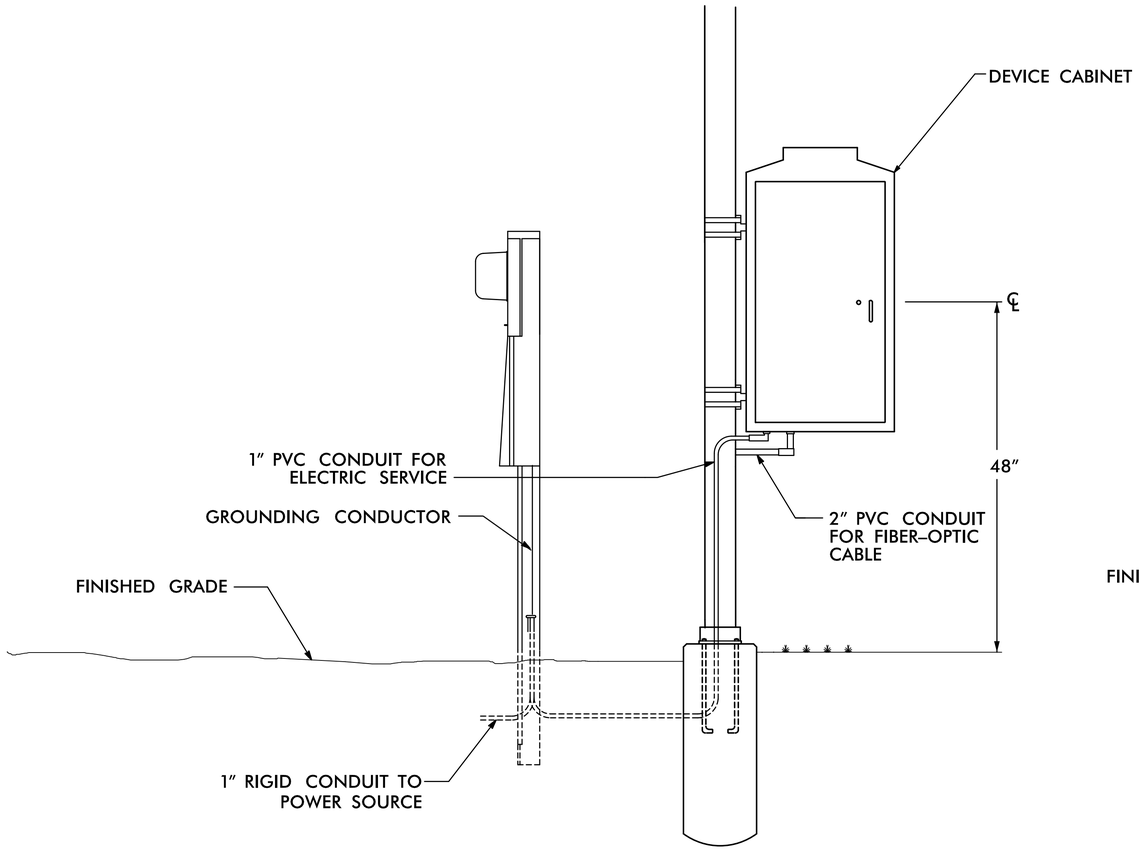
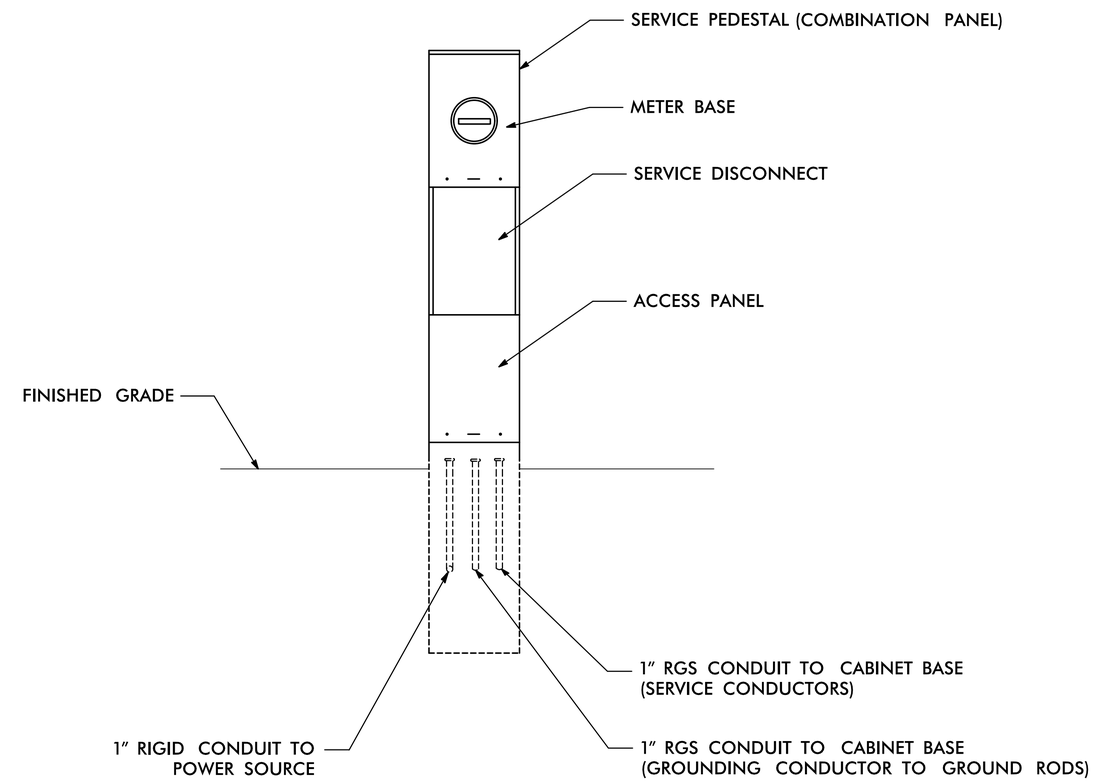
PROJECT REFERENCE NO.	SHEET NO.
R-2635DA	ITS-8





NOTES:

1. TEST GROUNDING SYSTEM USING AN APPROVED METHOD IN ACCORDANCE WITH SPECIAL PROVISIONS. INSTALL GROUND RODS AS DIRECTED BY THE ENGINEER TO MEET THIS REQUIREMENT.
2. REMOVE ANY EXISTING GROUND RODS IN CONCRETE CABINET FOUNDATION BY CUTTING OFF FLUSH WITH FOUNDATION SURFACE.
3. REMOVE BONDING JUMPER IN EQUIPMENT CABINET IF INSTALLED BETWEEN AC NEUTRAL AND EQUIPMENT GROUND.
4. BOND ALL RIGID GALVANIZED STEEL CONDUITS ENTERING THE CABINET TO "EQUIPMENT GROUND".
5. INSTALL RIGID GALVANIZED STEEL CONDUIT (MINIMUM 1") BETWEEN DISCONNECT AND CABINET.
6. SERVICE DISCONNECT GROUND BUS BAR SHALL PROVIDE FOR 2 #4 AWG CONNECTIONS.
7. IF CONDITIONS REQUIRE SERVICE PEDESTAL TO BE INSTALLED IN FRONT OR REAR OF CABINET, MAINTAIN SUFFICIENT CLEARANCE FOR DOOR TO FULLY OPEN.

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750 N. Greenfield Pkwy., Garner, NC 27529

POWER SERVICE DETAIL
POLE MOUNT CABINET
DETAILS

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

SCALE	REVISIONS	INIT.	DATE
NONE			

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:
Natasha R. Simmons 8/8/2016
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PROJECT REFERENCE NO.	SHEET NO.
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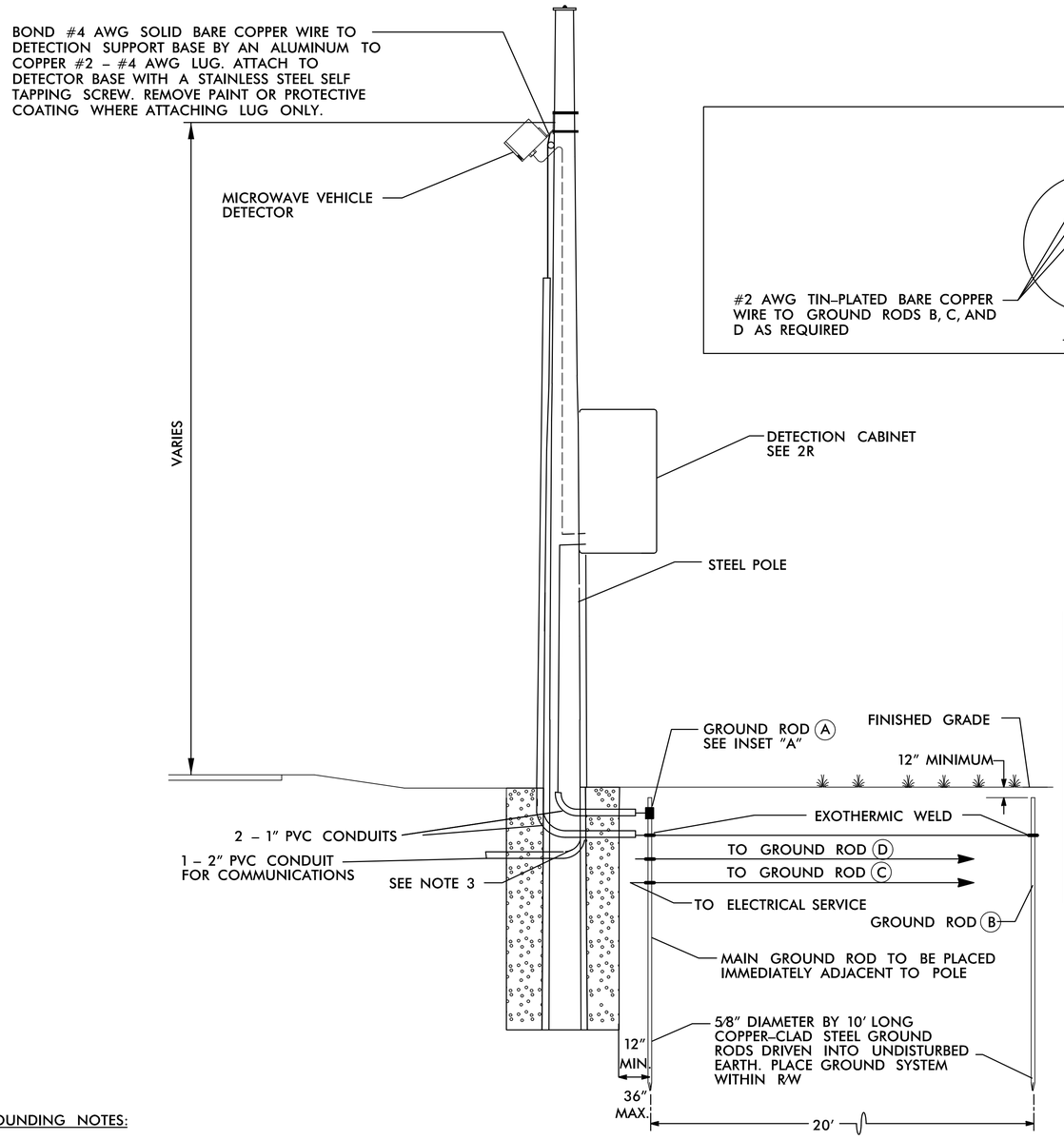

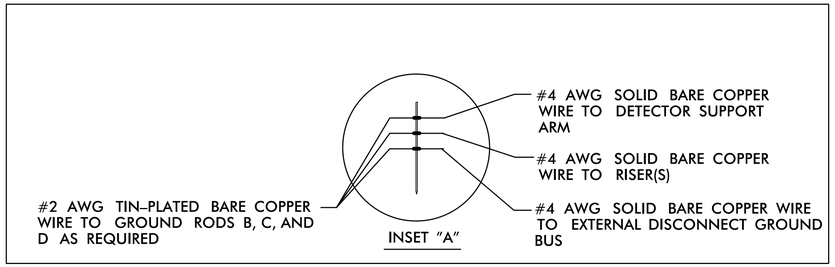

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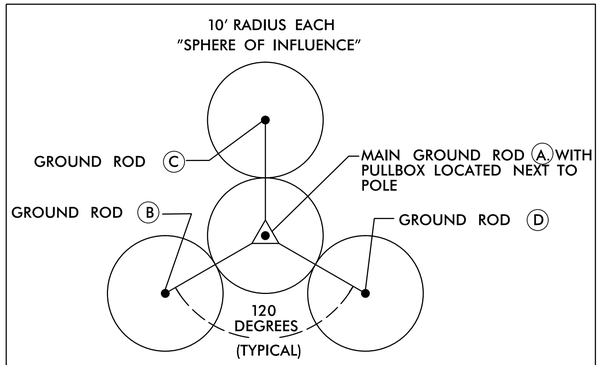
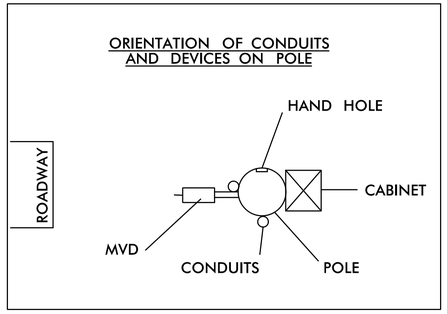


GROUND ROD PLACEMENT DETAIL
(TYPICAL EACH POLE)



GROUNDING NOTES:

1. ALL GROUNDING MATERIALS SHALL MEET THE REQUIREMENTS OF THE PROJECT SPECIAL PROVISIONS.
2. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
3. BOND #4 AWG SOLID BARE COPPER WIRE TO THE RIGID GALVANIZED STEEL RISERS.
4. INSTALL MARKER TAPE DIRECTLY ABOVE ALL GROUNDING ELECTRODES AND CONDUCTORS AT A DEPTH OF 12".
5. ALL CABLES TO THE DETECTOR SHALL BE COMPLETELY CONCEALED.
6. GROUND ROD A IS REQUIRED. GROUND RODS B, C AND D WILL BE REQUIRED AS NECESSARY TO MEET THE GROUND RESISTANCE REQUIREMENTS IN THE PROJECT SPECIAL PROVISIONS.
7. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

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750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

MICROWAVE DETECTION GROUNDING DETAILS

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

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PROJECT REFERENCE NO.	SHEET NO.
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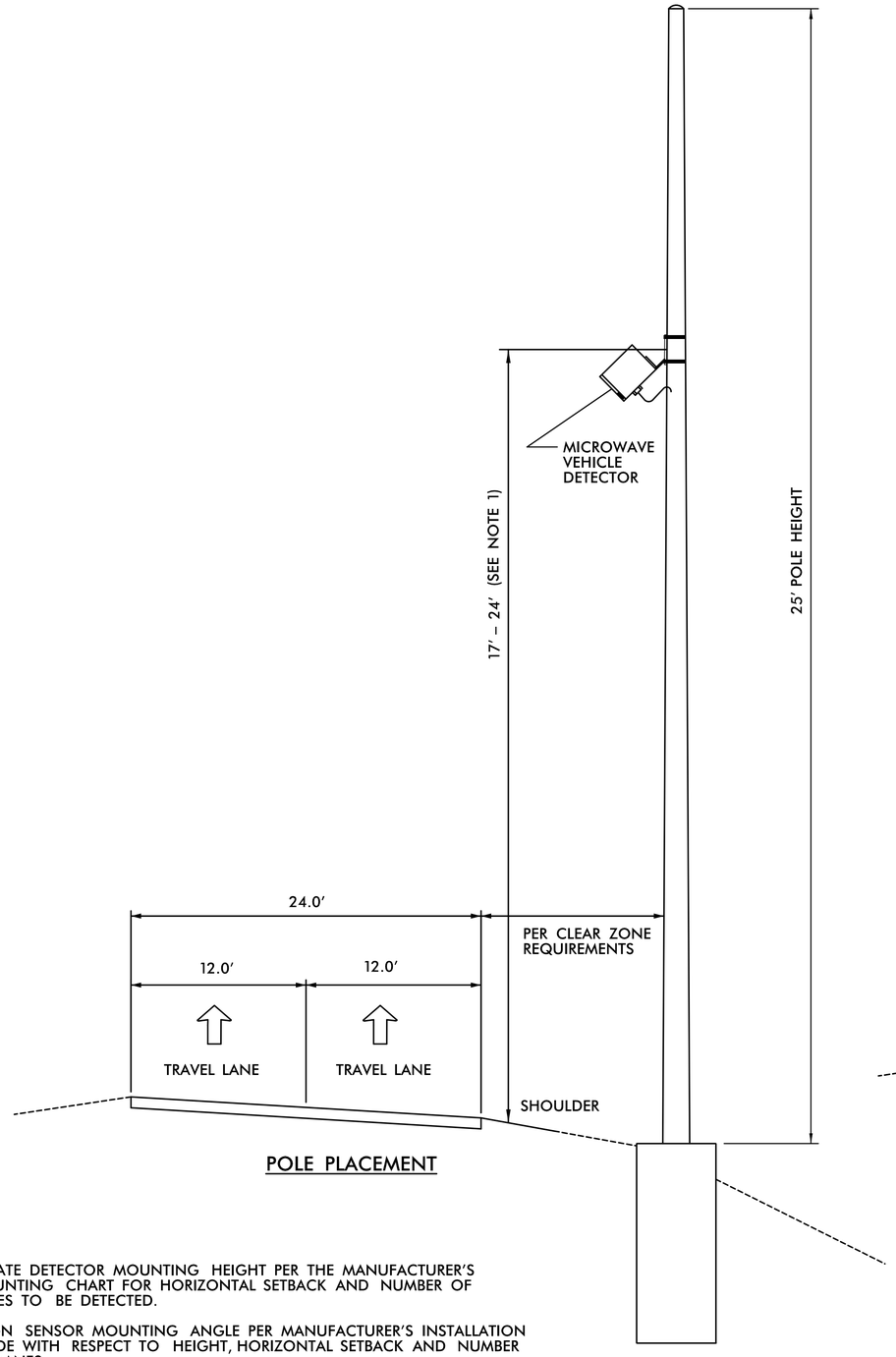
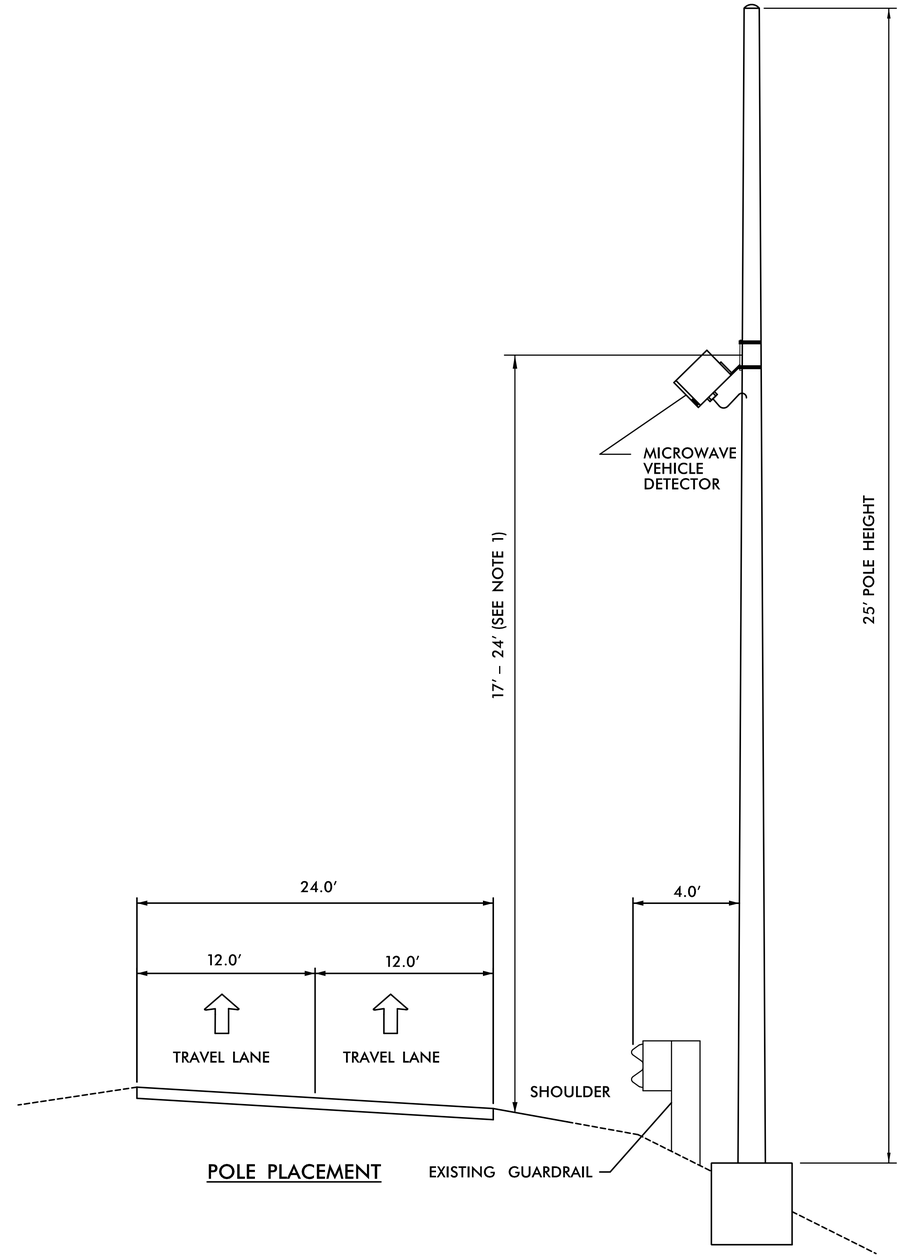
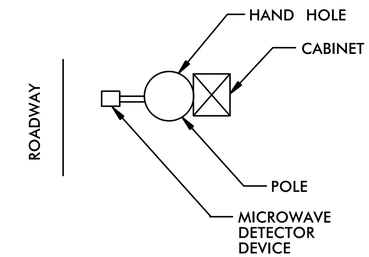


POLE PLACEMENT



POLE PLACEMENT



TOP VIEW OF
DEVICES ON POLE

NOTES:

1. LOCATE DETECTOR MOUNTING HEIGHT PER THE MANUFACTURER'S MOUNTING CHART FOR HORIZONTAL SETBACK AND NUMBER OF LANES TO BE DETECTED.
2. ALIGN SENSOR MOUNTING ANGLE PER MANUFACTURER'S INSTALLATION GUIDE WITH RESPECT TO HEIGHT, HORIZONTAL SETBACK AND NUMBER OF LANES.
3. IF PROVIDING A NEW MVDS POLE, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PROPOSED METAL POLE AND FOUNDATION SUPPORT, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, TO THE ENGINEER FOR REVIEW AND APPROVAL.
4. ALL WORK AND NEW EQUIPMENT SHALL BE DESIGNED AND INSTALLED ACCORDING TO THE REQUIREMENTS AND FUNCTIONALITY DESCRIBED IN THE PROJECT SPECIAL PROVISIONS.

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

MICROWAVE DETECTION
POLE PLACEMENT

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

DocuSigned by:
Natasha R. Simmons 8/8/2016
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PROJECT REFERENCE NO.	SHEET NO.
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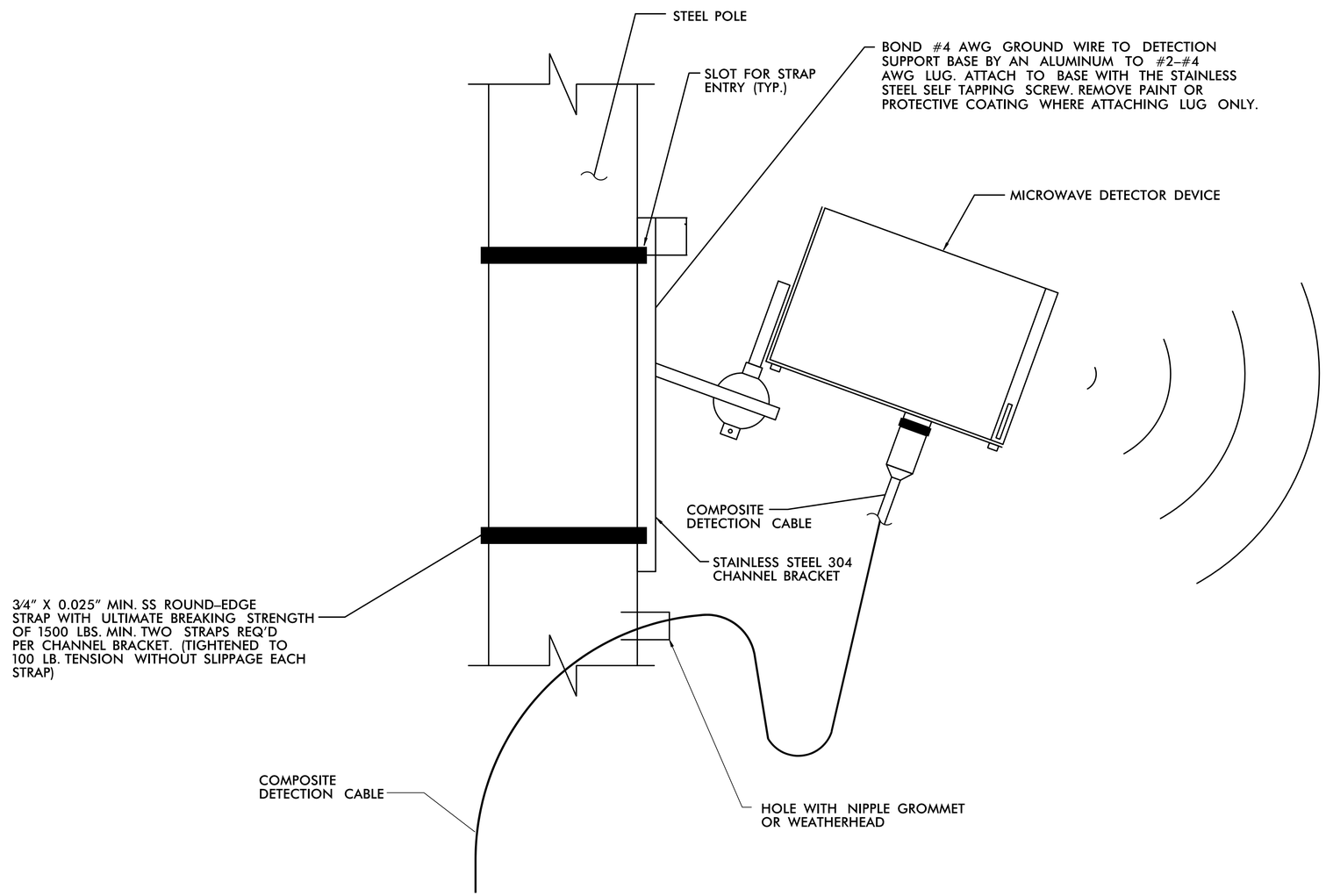

MICROWAVE DETECTOR HOUSING ELEVATION VIEW

NOTES:

1. NO FIELD WELDING SHALL BE PERMITTED.
2. IF PROVIDING A NEW MVDS POLE, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PROPOSED SUPPORT, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA, TO THE ENGINEER FOR REVIEW AND APPROVAL.
3. MOUNTING BRACKET CONNECTION TO POLE SHALL ALLOW ADJUSTMENT OF TILT ANGLE.

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750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: NONE

MICROWAVE DETECTION MOUNTING

DIVISION 05 WAKE CO. APEX

PLAN DATE:	January 2016	REVIEWED BY:	H.L. Winstead
PREPARED BY:	T.R. Terrell	REVIEWED BY:	N.R. Simmons

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 031464 ENGINEER NATASHA R. SIMMONS

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PROJ. REFERENCE NO.	SHEET NO.
R-2635DA	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station Rpcdet1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+16.79	0	0
12+50.00	2	13
13+00.00	3	31
13+50.00	1	80
14+00.00	0	207
14+50.00	0	405
15+00.00	0	431
15+50.00	0	283
16+00.00	0	231
16+50.00	0	274
16+97.13	0	82

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

Station Rpcdet2	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00	0	0
10+50.00	0	224
11+00.00	0	180
11+50.00	0	220
12+00.00	0	155
12+28.06	0	30

Station Rpc	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+25.00	0	0
14+50.00	14	0
15+00.00	29	0
15+50.00	22	0
16+00.00	16	0
16+50.00	15	0
17+00.00	38	1
17+50.00	85	6
18+00.00	131	18
18+50.00	160	32
19+00.00	190	42
19+50.00	256	34
20+00.00	282	31
20+50.00	272	38
21+00.00	295	44
21+50.00	328	57
22+00.00	399	316
22+50.00	481	679
23+00.00	527	902
23+50.00	536	1114
24+00.00	627	966
24+50.00	808	544
25+00.00	856	208
25+50.00	759	49
26+00.00	674	27
26+50.00	642	3
27+00.00	555	3
27+50.00	306	0
28+00.00	104	0
28+06.48	8	0

TIP NO. R-2635DA
CROSS SECTION INDEX

LOCATION	STATION TO STATION	SHEET NO.
-RCP-	STA. 14+25.00 TO STA. 26+50.00	X-2 THRU X-7
-EY2-	STA. 12+56.83 T0 STA. 13+50.00	X-8
-RCPDET1-	STA. 12+00.00 TO STA 16+97.13	X-9 THRU X-11
-RCPDET2-	STA. 10+00.00 TO STA. 12+28.06	X-12 THRU X-13

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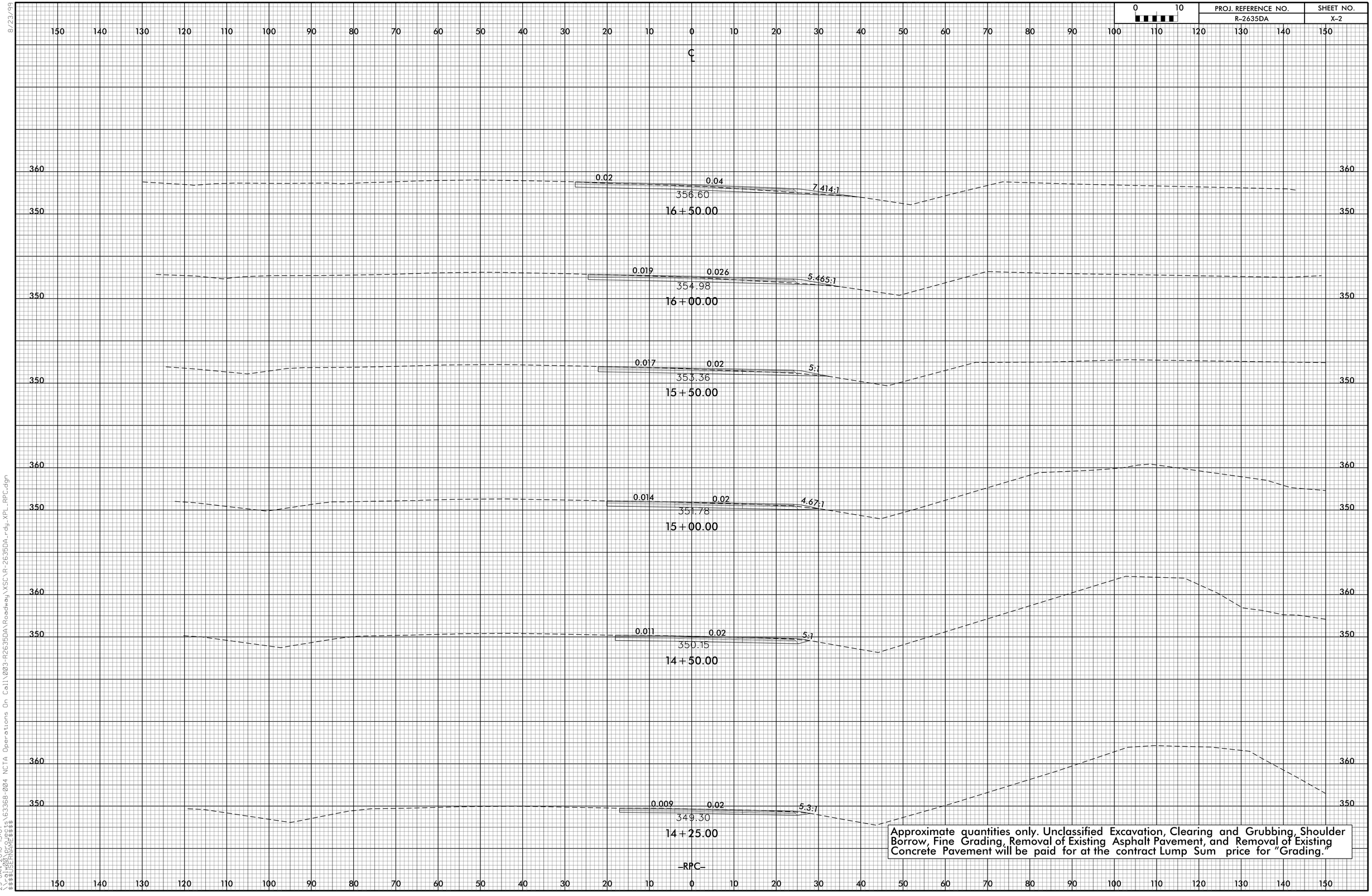

Approximate quantities only. Unclassified Excavation, Clearing and Grubbing, Shoulder Borrow, Fine Grading, Removal of Existing Asphalt Pavement, and Removal of Existing Concrete Pavement will be paid for at the contract Lump Sum price for "Grading."

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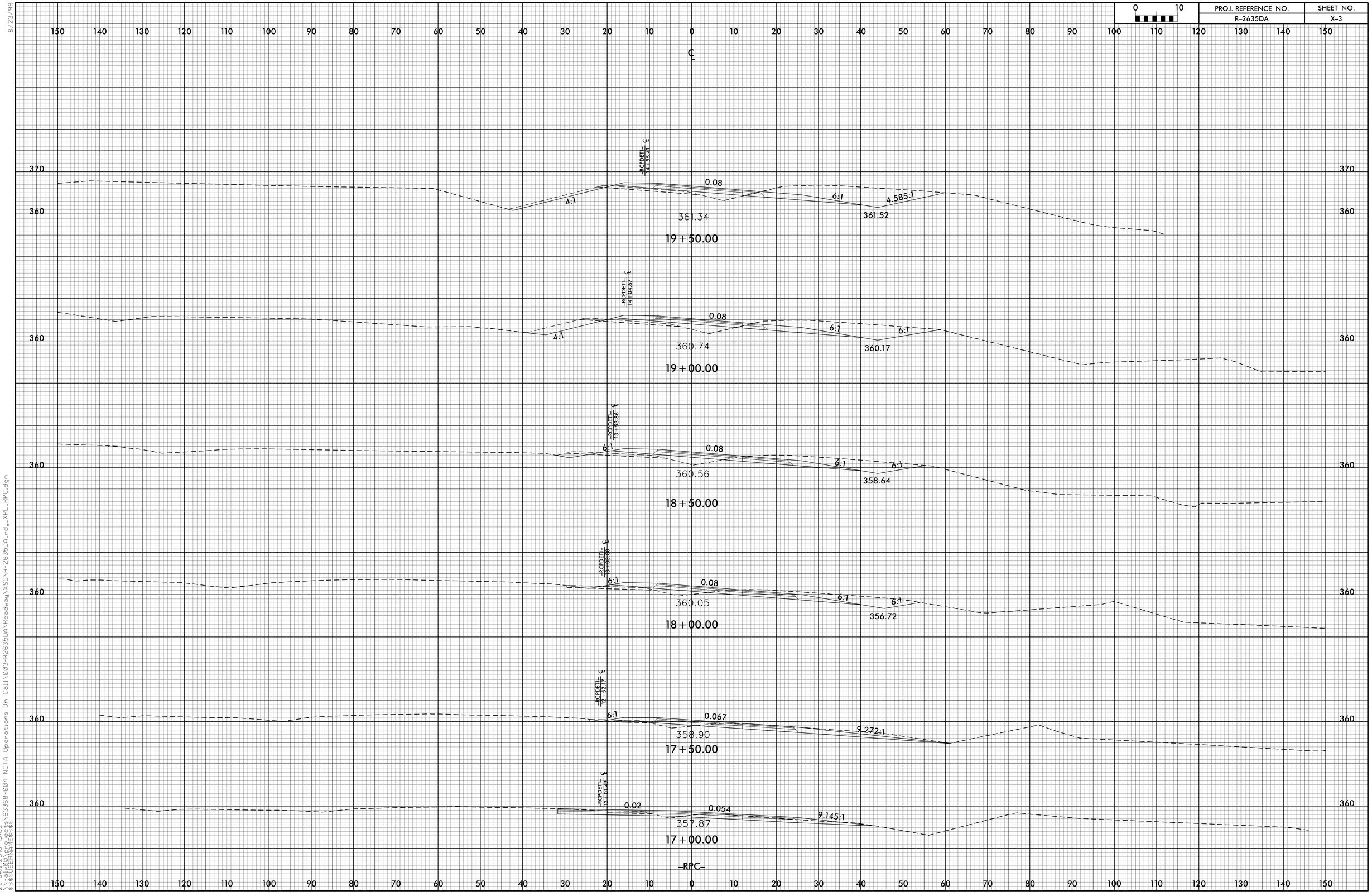

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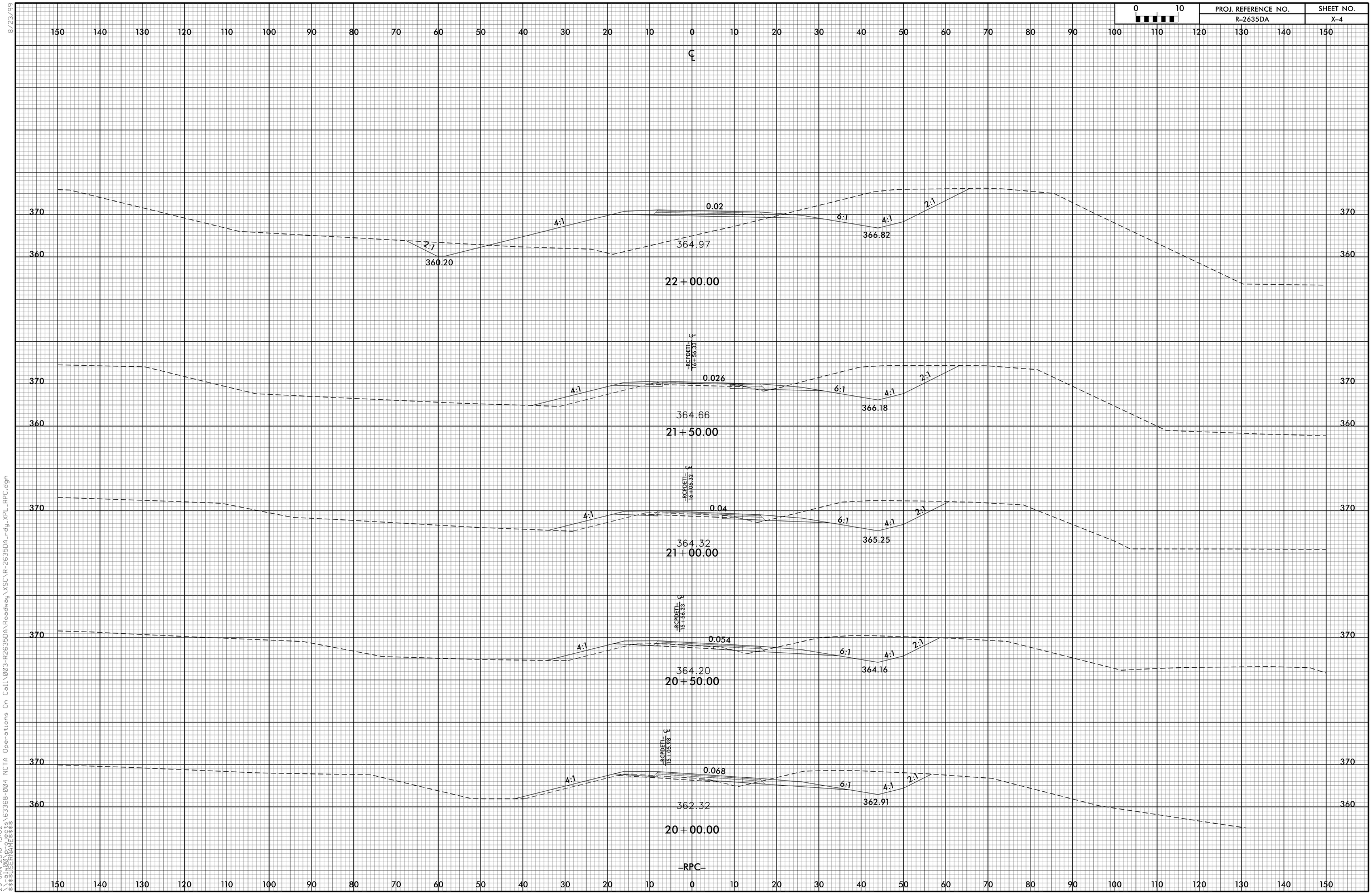

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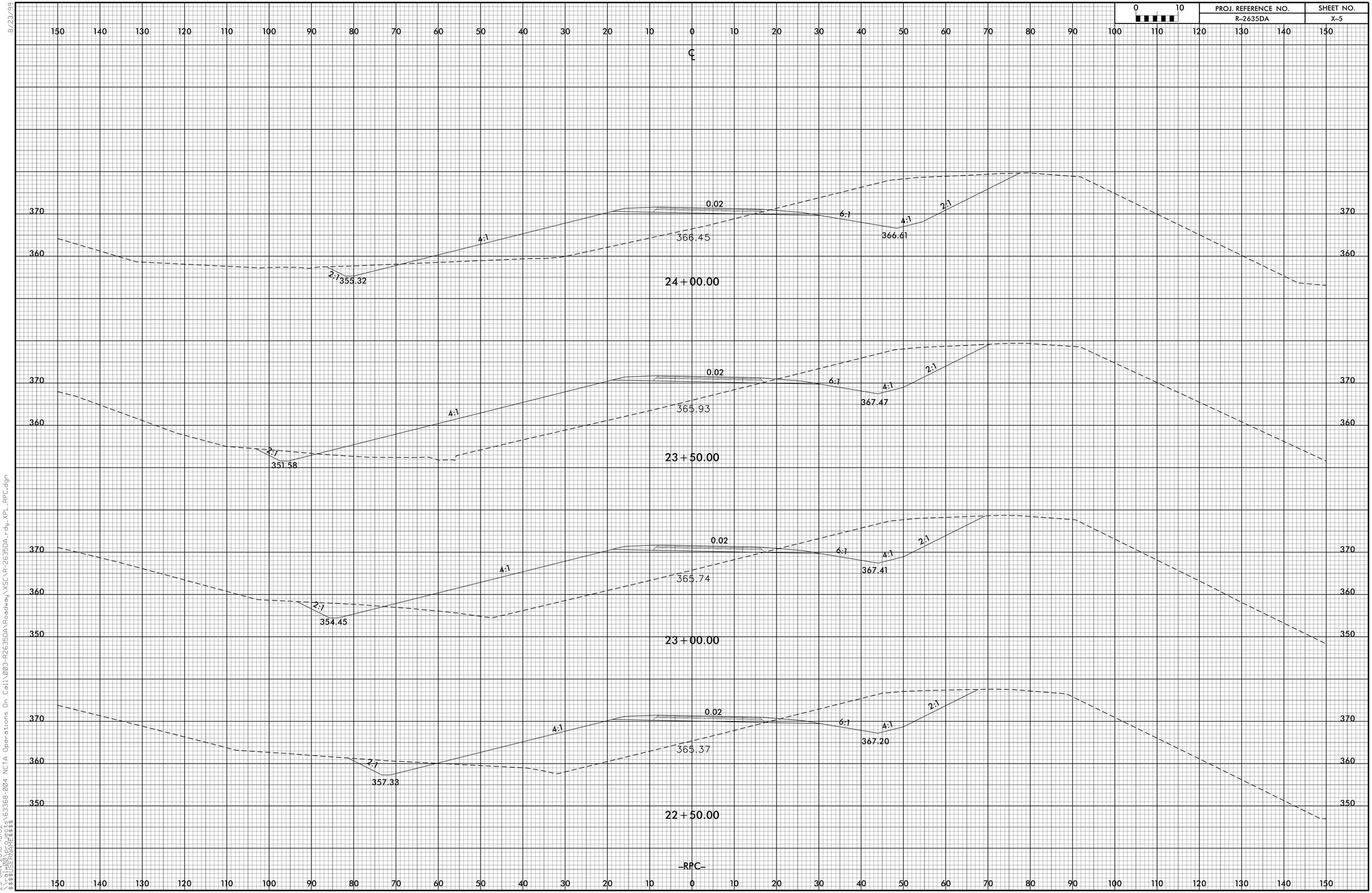

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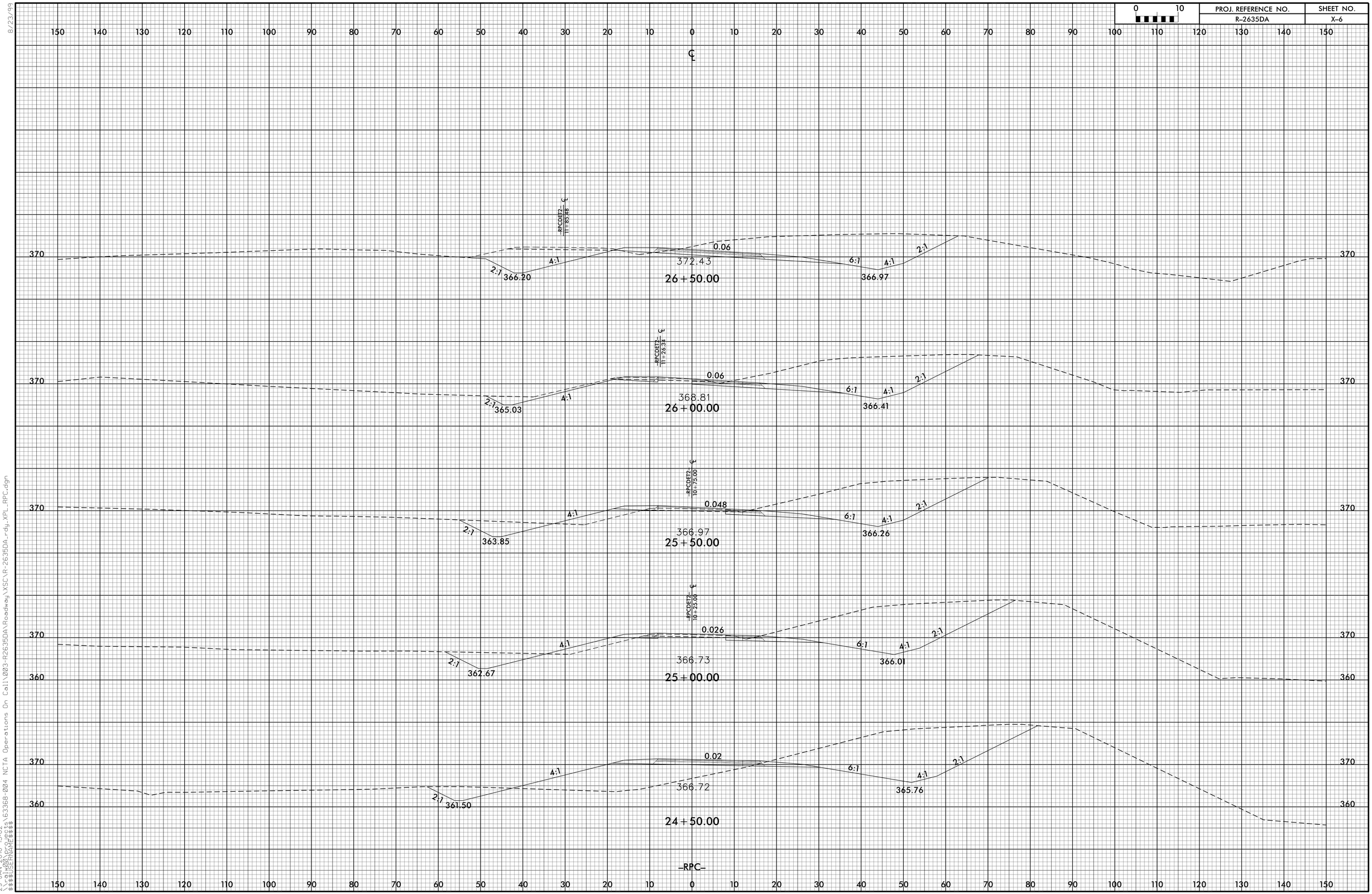

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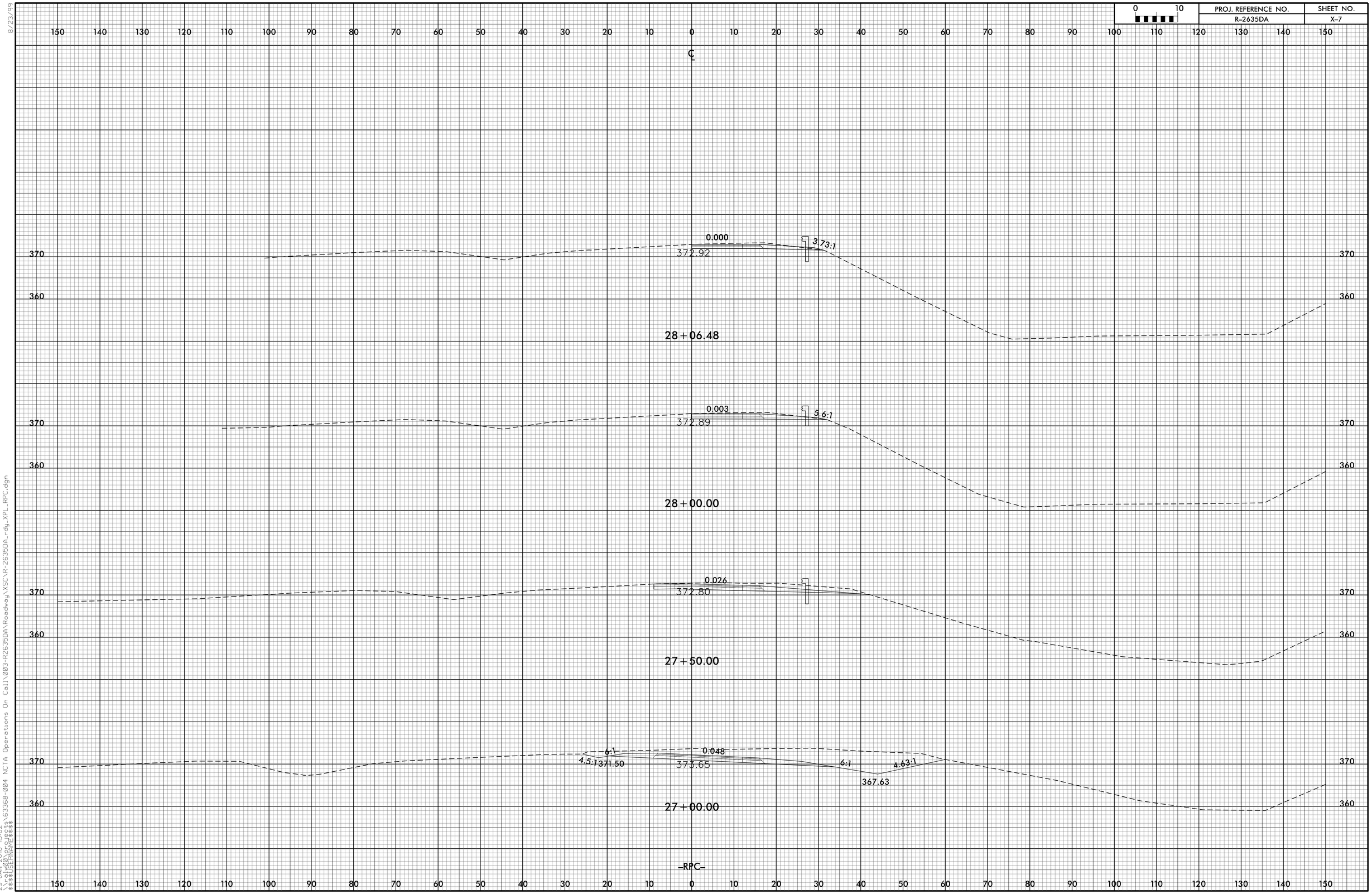

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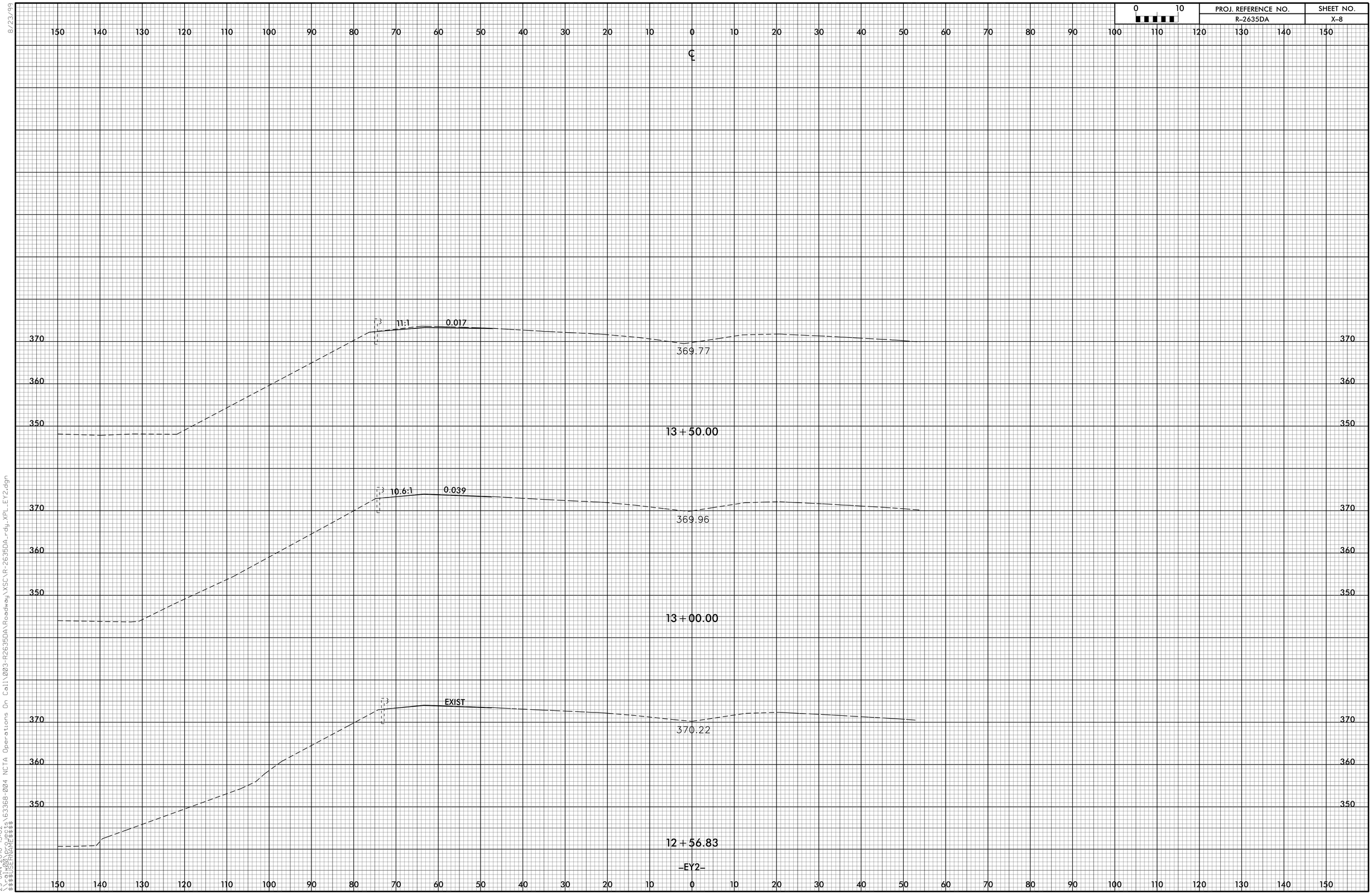

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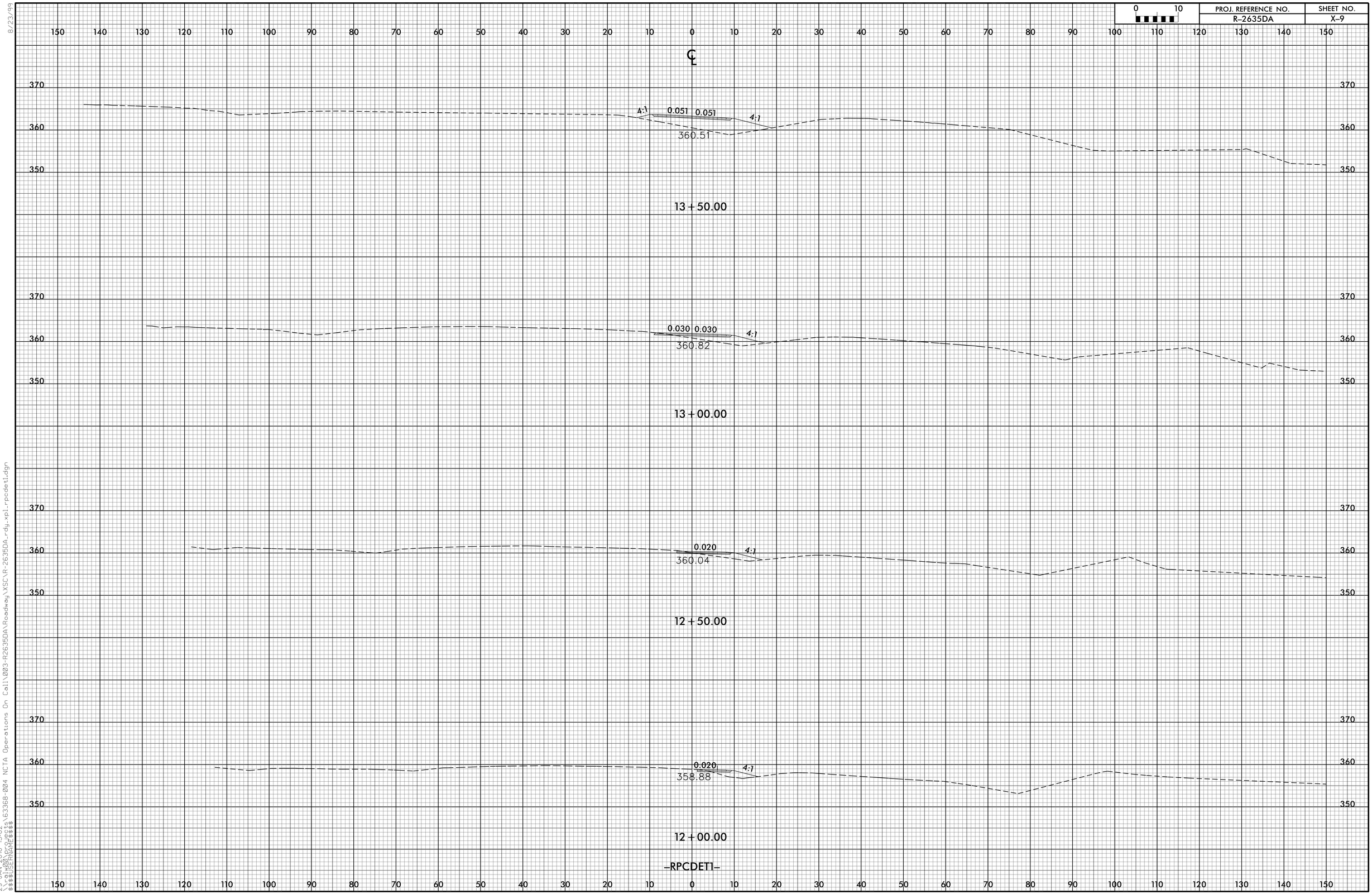

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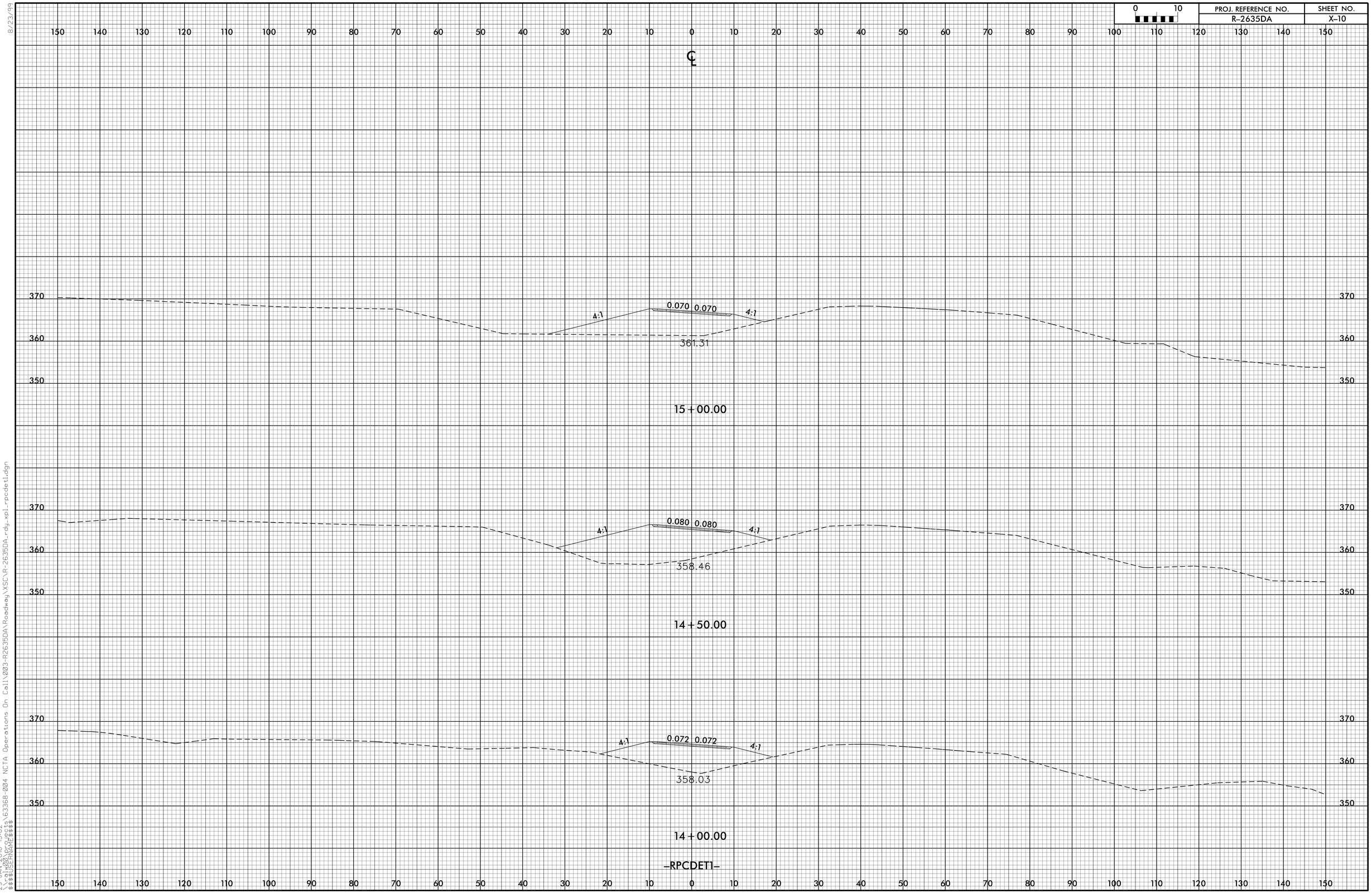

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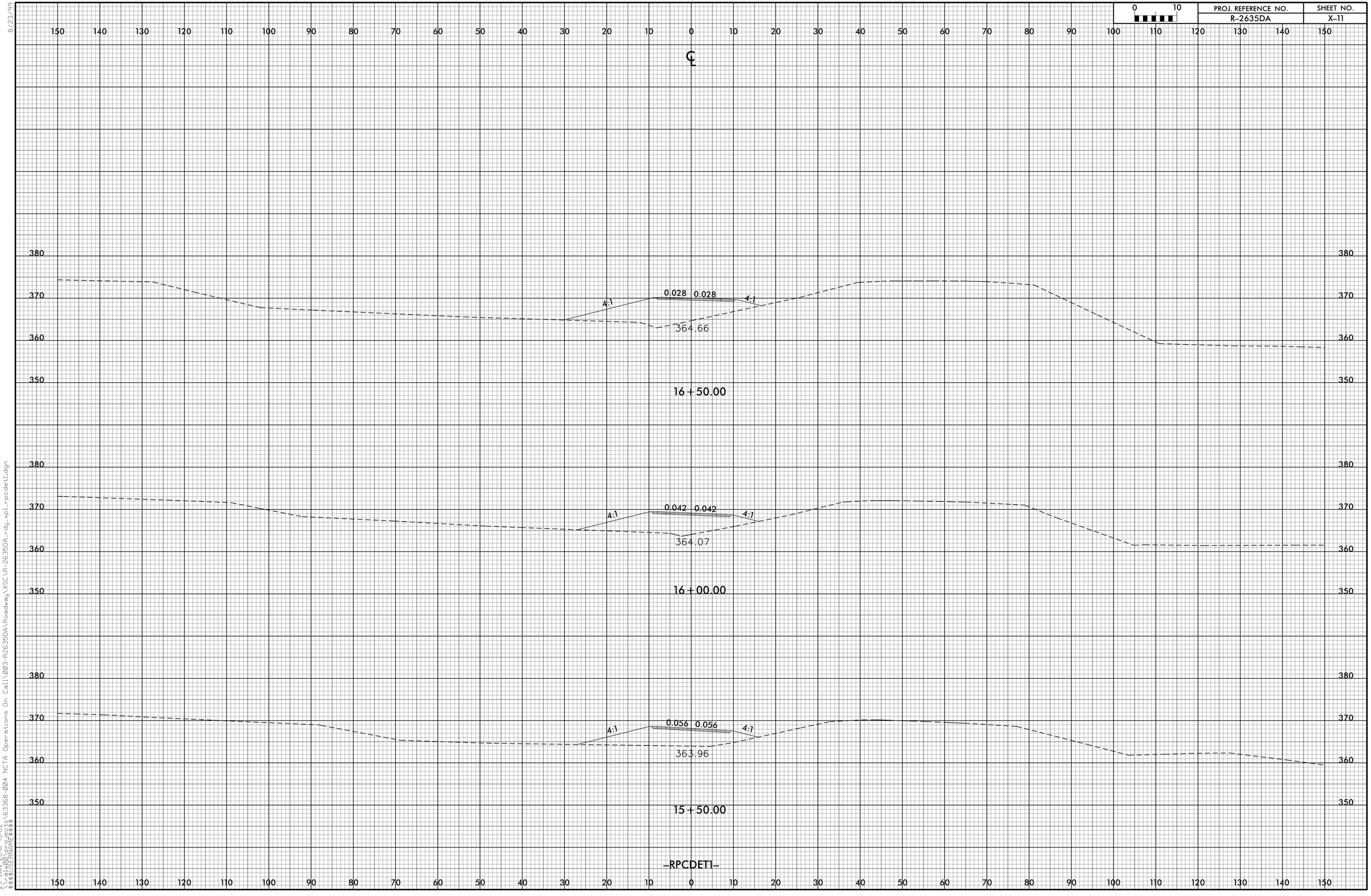

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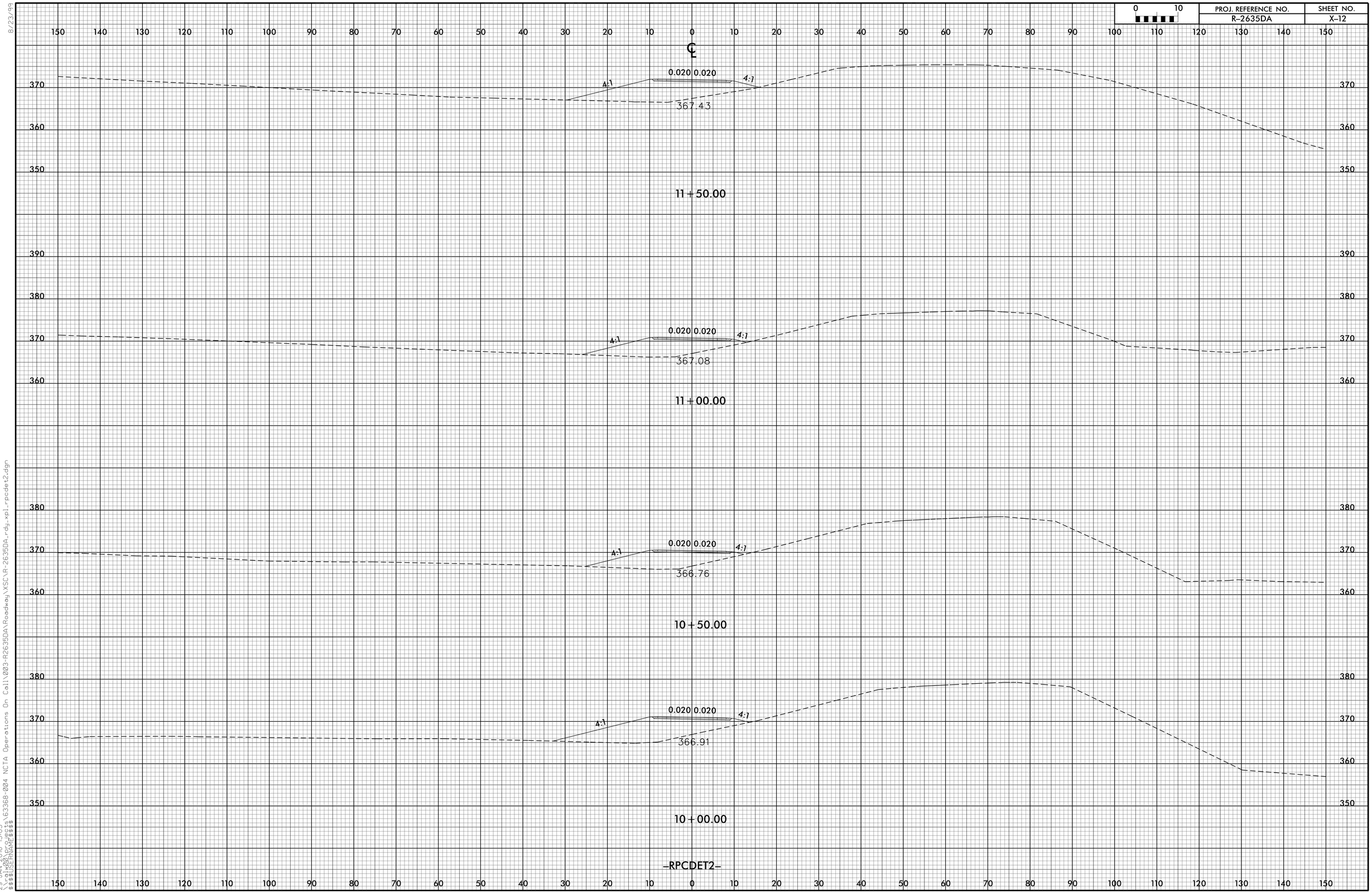

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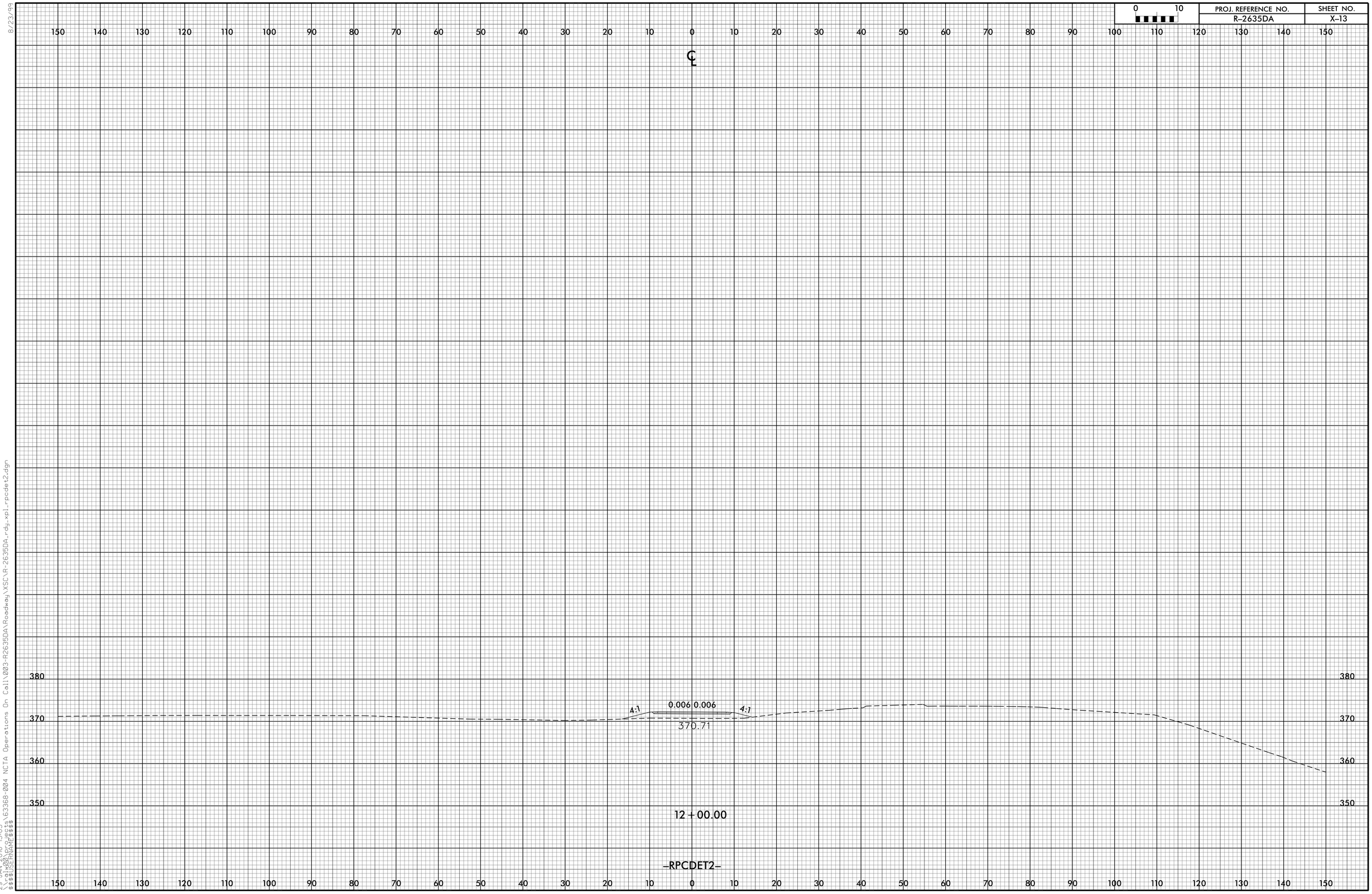

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