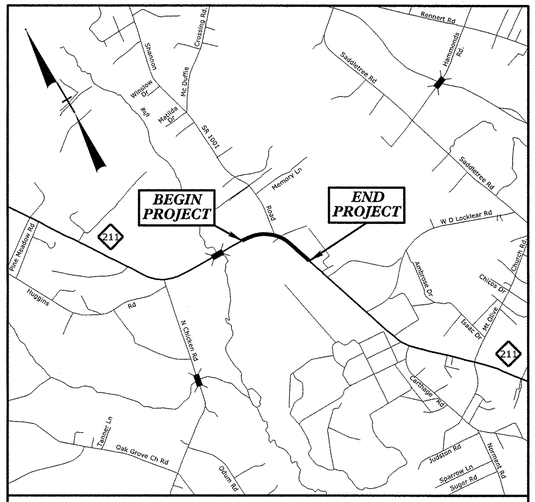
09/08/99

TIP PROJECT: W-5206N

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

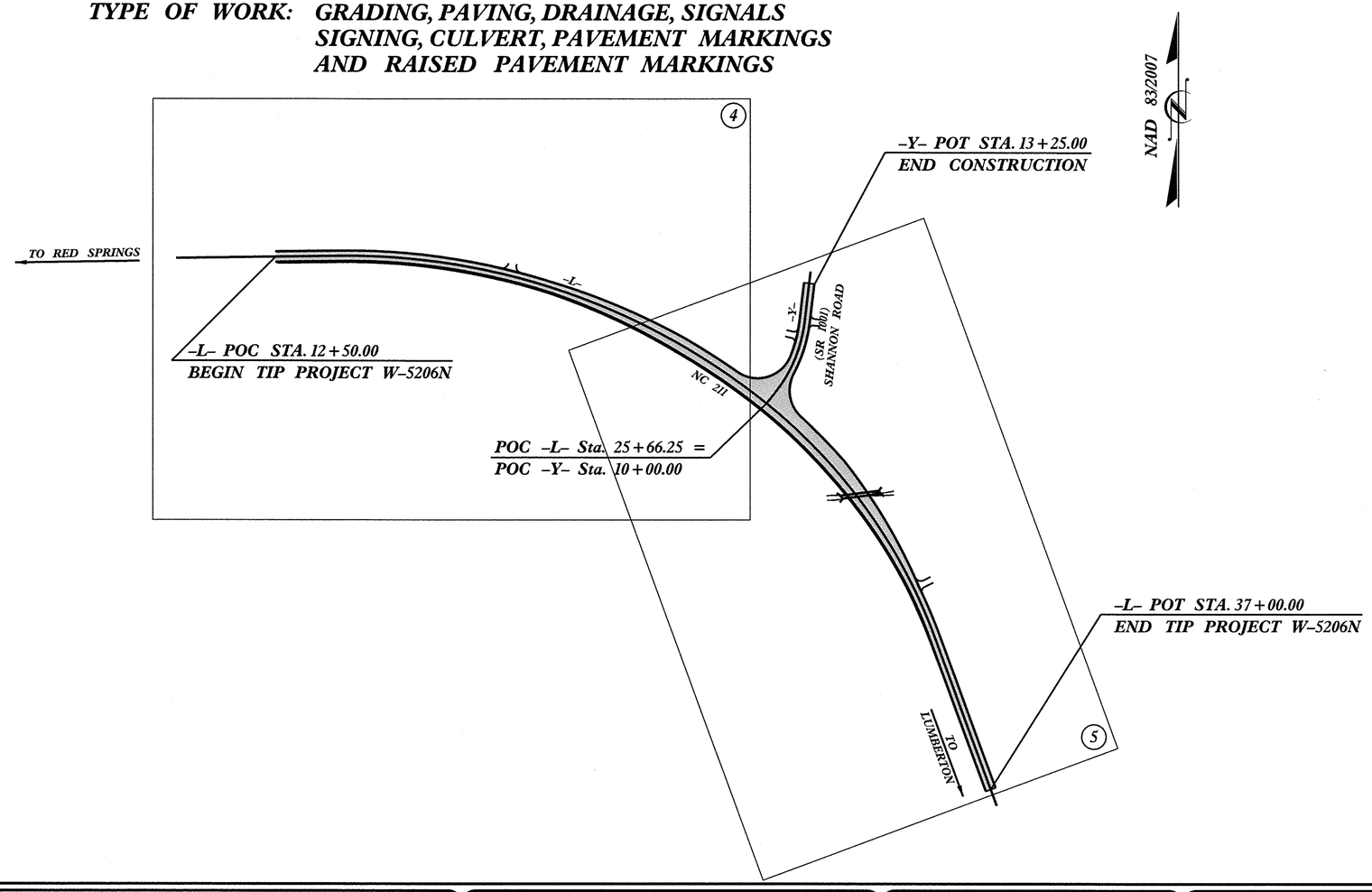
ROBESON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5206N	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
45336.1.14	NRRR-0211(31)	P.E.
45336.2.FR14	NRRR-0211(31)	R/W, UTIL.
45336.3.FR14	NRRR-0211(31)	CONST.

LOCATION: IMPROVEMENTS TO NC 211 AT THE INTERSECTION OF SHANNON ROAD (SR 1001)

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



CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 7,900
FUNC CLASS = COLLECTOR
REGIONAL TIER DESIGN

PROJECT LENGTH

TOTAL LENGTH STATE PROJECT = 0.464 MILES

Prepared In the Office of:

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-980

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for the North Carolina Department of Transportation

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 24, 2013

LETTING DATE:
JUNE 14, 2014

ARCADIS CONTACT
STEVE SMALLWOOD, P.E.
PROJECT ENGINEER

NCDOT CONTACT:
SCOTT PRIDGEN

HYDRAULICS ENGINEER
3/21/14
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
3/21/14
P.E.
SEAL NOT VALID UNLESS SIGNED AND DATED
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
P.E.
STATE HIGHWAY DESIGN ENGINEER

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$DGN$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	1-A

ROADWAY DESIGN ENGINEER

SEAL NOT VALID UNLESS SIGNED AND DATED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, & LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	PAVEMENT SCHEDULE, WEDGING DETAIL, & TYPICAL SECTIONS
2-A	SHOULDER WEDGE DETAIL
3-A	DRAINAGE SUMMARY
3-B	SUMMARY OF GUARDRAIL, PAVEMENT REMOVAL & EARTHWORK SUMMARY
4 THRU 5	PLAN SHEETS
6 THRU 7	PROFILE SHEETS
TMP-1 THRU TMP-9	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-9	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-11	CROSS SECTIONS
C-1 THRU C-6	CULVERT PLANS

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-12
REVISED: 11-01-11

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

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. 560.01.

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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: AT&T, DUKENET COMMUNICATIONS, LUMBEE RIVER EMC, TIME WARNER CABLE, & ROBESON COUNTY WATER DEPARTMENT

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

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	
200.03	Method of Clearing – Method III
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- 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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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
- Existing Control of Access — CA
- Proposed Control of Access Line with Concrete C/A Marker — 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
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth — $
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (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
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?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 (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

5/14/99

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ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

MILLING AT PAVEMENT TIE-INS

FOR SURFACE MIXES OVER 1" IN THICKNESS, MILL THE EXISTING PAVEMENT IN ACCORDANCE WITH THE FOLLOWING SKETCH AS DIRECTED BY THE ENGINEER. LOCATIONS SHALL INCLUDE TIES TO EXISTING PAVEMENT AT THE BEGINNING AND END OF RESURFACING LOCATIONS.
PERFORM THE WORK IN ACCORDANCE WITH SECTION 607 OF THE JANUARY 2012 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. RESURFACING WILL BE ACCOMPLISHED AT THE SAME TIME AS THE MILLING OPERATION.

NO PAYMENT WILL BE MADE FOR THIS WORK AS IT WILL BE CONSIDERED INCIDENTAL TO THE VARIOUS PAVEMENT ITEMS.

* 11' WHERE WIDENED FOR GUARDRAIL

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 12+50.00 TO -L- STA. 37+00.00
** USE 4' PAVED SHOULDER FROM -L- STA. 12+60.00 RT. TO 32+21.84 RT.

TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-Y- STA. 10+00.00 TO -Y- STA. 13+25.00

	PAVEMENT SCHEDULE
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 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. 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 TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	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 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING)

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

TYPICAL SECTION NO.

USE TYPICAL SECTION FOR PLACEMENT OF TEMPORARY GUARDRAIL DURING TRAFFIC PHASING
SEE TEMPORARY GUARDRAIL SUMMARY AND TRAFFIC CONTROL PLANS

Detail Showing Method of Wedging

$$$$$SYSTIME$$$$$ $$$$$DGN$$$$$ $$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	2-A

NOTES:
1) DETAIL DOES NOT APPLY TO OGAFC AND ULTRA-THIN BONDED WEARING COURSE.
2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.

SHOULDER WEDGE DETAIL

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

SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening)

SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

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

SHOULDER WEDGE DETAILS

ORIGINAL BY: T.SPELL DATE: 7-19-11
MODIFIED BY: DATE: 10/16/12
CHECKED BY: DATE:
FILE SPEC.: s:usr/details/stand/shoulderwedgedetail.dgn

$$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

COMPUTED BY: Doug Petry DATE: 6/17/2013

CHECKED BY: Justin Beard DATE: 8/23/2013

PROJECT NO.	SHEET NO.
W-5206N	3-A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES FOR CONTRACT

RD244218

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)

STATION	LOCATION (LT., RT., OR CL.)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
								THICKNESS OR GAUGE												
-L- 18+40	LT.	401															0	0	0	0
-L- 19+80	LT.	402															0	0	0	0
-L- 24+95	LT.	501															0	0	0	0
-Y- 11+90	LT.	502															0	0	0	0
-Y- 12+25	RT.	503															0	0	0	0
-L- 27+00	LT.	504															0	0	0	0
-L- 31+60	LT.	505															0	0	0	0
SHEET TOTALS									0	0	0	0	0	0	0	0	0	0	0	0
SAY																				

STATION	C.S. PIPE SIZE	12"	15"	18"	24"	30"	36"	42"	48"
	THICKNESS OR GAUGE								
-L- 18+40									
-L- 19+80									
-L- 24+95									
-Y- 11+90									
-Y- 12+25									
-L- 27+00									
-L- 31+60									
SHEET TOTALS		0	0	0	0	0	0	0	0
SAY									

STATION	R.C. PIPE CLASS III SIZE	12"	15"	18"	24"	30"	36"	42"	48"
	THICKNESS OR GAUGE								
-L- 18+40									
-L- 19+80									
-L- 24+95									
-Y- 11+90									
-Y- 12+25									
-L- 27+00									
-L- 31+60									
SHEET TOTALS		0	0	0	0	0	0	0	0
SAY									

STATION	R.C. PIPE CLASS IV SIZE	12"	15"	18"	24"	30"	36"	42"	48"
	THICKNESS OR GAUGE								
-L- 18+40									
-L- 19+80									
-L- 24+95									
-Y- 11+90									
-Y- 12+25									
-L- 27+00									
-L- 31+60									
SHEET TOTALS		0	0	0	0	0	0	0	0
SAY									

STATION	## " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
-L- 18+40						36
-L- 19+80						
-L- 24+95						
-Y- 11+90				36		
-Y- 12+25				108		
-L- 27+00						
-L- 31+60				36		
SHEET TOTALS	0	0	0	180	0	36
SAY						

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.
-L- 18+40		
-L- 19+80		
-L- 24+95		
-Y- 11+90		
-Y- 12+25		
-L- 27+00		
-L- 31+60		
SHEET TOTALS	0	0
SAY		

STATION	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE
-L- 18+40			
-L- 19+80			
-L- 24+95			
-Y- 11+90			
-Y- 12+25			
-L- 27+00			
-L- 31+60			
SHEET TOTALS	0	0	0
SAY			

STATION	C.B. STD. 840.01 OR STD. 840.02
-L- 18+40	
-L- 19+80	
-L- 24+95	
-Y- 11+90	
-Y- 12+25	
-L- 27+00	
-L- 31+60	
SHEET TOTALS	0
SAY	

STATION	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
-L- 18+40			
-L- 19+80			
-L- 24+95			
-Y- 11+90			
-Y- 12+25			
-L- 27+00			
-L- 31+60			
SHEET TOTALS	0	0	0
SAY			

STATION	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-L- 18+40		
-L- 19+80		
-L- 24+95		
-Y- 11+90		
-Y- 12+25		
-L- 27+00		
-L- 31+60		
SHEET TOTALS	0	0
SAY		

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	FLOWABLE FILL (CY)	TRAFFIC BEARING GRATE DROP INLET STD. 840.35
-L- 18+40												
-L- 19+80												
-L- 24+95												
-Y- 11+90												
-Y- 12+25												
-L- 27+00												
-L- 31+60												
SHEET TOTALS	0	0	0	0	0	0	0	0	0	0	0	0
SAY												

STATION	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 18+40				33	REMOVE 15" RCP
-L- 19+80				24	REMOVE 15" RCP
-L- 24+95				35	REMOVE 12" RCP
-Y- 11+90					
-Y- 12+25					
-L- 27+00				28	REMOVE 18" RCP
-L- 31+60				20	REMOVE 15" RCP
SHEET TOTALS	0	0	0	140	
SAY					

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: DAP	DATE: 8/26/2013
CHECKED BY: JRB	DATE:

PROJECT NO.	SHEET NO.
W-5206N	3-B

RD244542

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
SUMMARY #1					
-L- LT.					
12+50.00	37+00.00	2,331	3,091	761	0
TOTAL SUMMARY #1		2,331	3,091	761	0
SUMMARY #2					
-L- RT.					
12+50.00	37+00.00	1,252	1,471	219	0
-Y-					
10+00.00	13+25.00	277	455	178	0
TOTAL SUMMARY #2		1529	1926	397	0
TOTAL SUMMARY #1 & #2		3,859	5,017	1,158	0
PROJECT TOTALS:		3,859	5,017	1,158	0
REPLACE TOPSOIL FOR BORROW PIT				58	
GRAND TOTALS:		3,859	5,017	1,216	0
SAY:		4,200		1,300	

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

Note: Earthwork quantities are calculated by the Roadway Design.

EST. DDE 20 CY

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	YD²
-Y-	10+45	11+30	RT.	140.00
			TOTAL:	140.00
			SAY:	150

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

TEMPORARY GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS GRAU 350	ANCHORS M-350	ANCHORS XIII	ANCHORS CAT-1	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL	ADDITIONAL GUARDRAL POSTS	REMARKS
-L-	27+53.11	30+15.61	LT	250.0			Culvert		4.0	6	50	50			2									
-L-	27+63.29	30+13.29	RT	250.0				Culvert	2.0	6	50	50			2									
SUBTOTAL				500.0											4									
LESS ANCHOR DEDUCTIONS																								
GRAU-350	4 @ 50.00			-200																				
ANCHOR DEDUCTION TOTAL				-200																				
GRAND TOTAL				300.0											4									
SAY				312.5 LF											4 EA									

"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

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS GRAU 350	ANCHORS M-350	ANCHORS XIII	ANCHORS CAT-1	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL	ADDITIONAL GUARDRAL POSTS	REMARKS
-L-	27+53.11	30+15.61	LT	262.5			Culvert		8.0	11	50	50			2									
-L-	27+63.29	30+13.29	RT	250.0				Culvert	8.0	11	50	50			2									
SUBTOTAL				512.5											4								5	
LESS ANCHOR DEDUCTIONS																								
GRAU-350	4 @ 50.00			-200																				
ANCHOR DEDUCTION TOTAL				-200																				
GRAND TOTAL				312.5											4								5	
SAY				325 LF											4 EA								5 EA	

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEAL NOT VALID UNLESS SIGNED AND DATED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022037 STEPHEN T. SMALLWOOD 3/21/14

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON 3/21/14

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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

5/14/99

SEVEN STATES TIMBERLANDS LLC.
D.B. 1784-327

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "W5206N-3"
WITH NAD 83/2007 STATE PLANE GRID COORDINATES OF
NORTHING: 348461.603(ft) EASTING: 1979716.550(ft)
ELEVATION: 146.40(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999156471
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "W5206N-3" TO -L- STA. 12+50.00 IS
N 70°46'58.75" W 1,383.400'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

-L- CURVE DATA

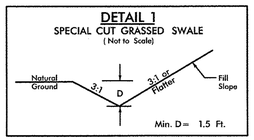
PI Sta 20+15.10
Δ = 39° 37' 08.5" (RT)
D = 3° 24' 52.3"
L = 1,160.31'
T = 604.43'
R = 1,678.00'
DS = 65 MPH

FOR -L- PROFILE SEE SHEET 6

$$$$SYSTIME$$$$ $$$$USERNAME$$$$ $$$$DGN$$$$

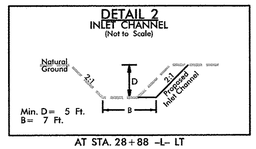
5/14/99

DETAIL 1
SPECIAL CUT GRASSED SWALE
(Not to Scale)



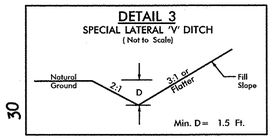
FROM STA. 28+70 TO STA. 36+50 -L- RT
FROM STA. 10+34 TO STA. 13+00 -Y- LT
FROM STA. 26+50 TO STA. 28+30 -L- LT
FROM STA. 11+50 TO STA. 13+00 -Y- RT

DETAIL 2
INLET CHANNEL
(Not to Scale)



AT STA. 28+88 -L- LT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 26+50 TO STA. 28+30 -L- LT
FROM STA. 29+35 TO STA. 36+50 -L- LT

30

35

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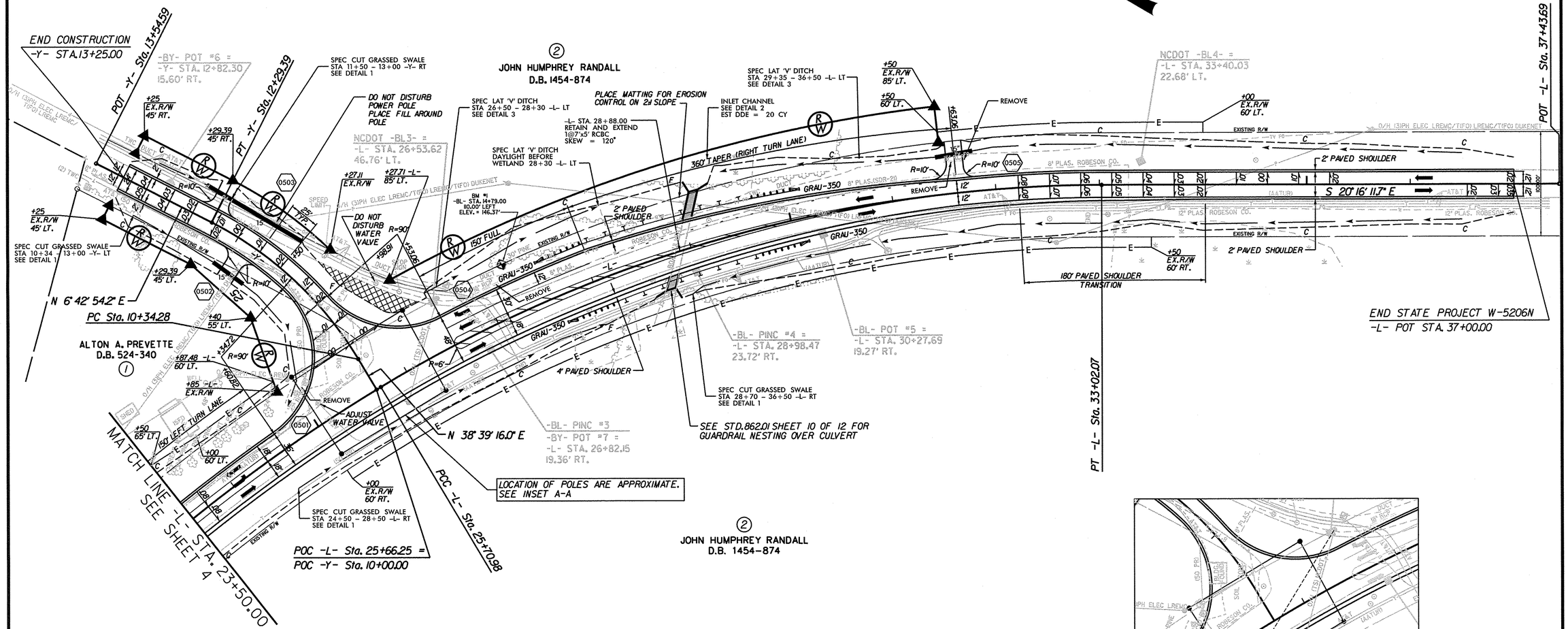
PROJECT REFERENCE NO.	SHEET NO.
W-5206N	5
R/W SHEET NO.	

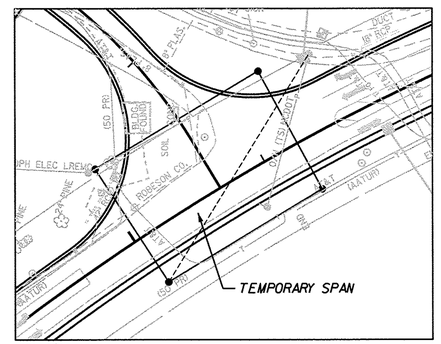
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022837 ENGINEER STEPHEN T. SMITH, PE
3/21/14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
3/21/14

SEAL NOT VALID UNLESS SIGNED AND DATED

NAD 83/2007





INSET A-A

APPROXIMATE SIGNAL FLASHER POLE LOCATIONS.

CONTACT DIVISION TRAFFIC ENGINEER FRANK WEST (910) 486-1452 FOR TEMPORARY AND FINAL LOCATION OF SIGNAL POLES AND COORDINATION OF ELECTRICAL SERVICE CONNECTION.

-L- CURVE DATA

PI Sta 20+15.10	PI Sta 29+45.66
Δ = 39° 37' 08.5" (RT)	Δ = 30° 54' 50.7" (RT)
D = 3° 24' 52.3"	D = 4° 13' 42.5"
L = 1,160.31'	L = 731.09'
T = 604.43'	T = 374.68'
R = 1,678.00'	R = 1,355.00'
DS = 65 MPH	DS = 60 MPH

-Y- CURVE DATA

PI Sta 11+34.45
Δ = 31° 56' 21.8" (LT)
D = 16° 22' 12.8"
L = 195.11'
T = 100.16'
R = 350.00'
DS = < 15 MPH

SEE TYPICAL SECTION, SUMMARY SHEET FOR TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL.
FOR -L- PROFILE SEE SHEET 6
FOR -Y- PROFILE SEE SHEET 7
FOR CULVERT PLANS SEE C-1 THRU C-6

PAVEMENT REMOVAL

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$FILENAME$$$$

5/28/99

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ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	6

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 3/21/14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 3/21/14

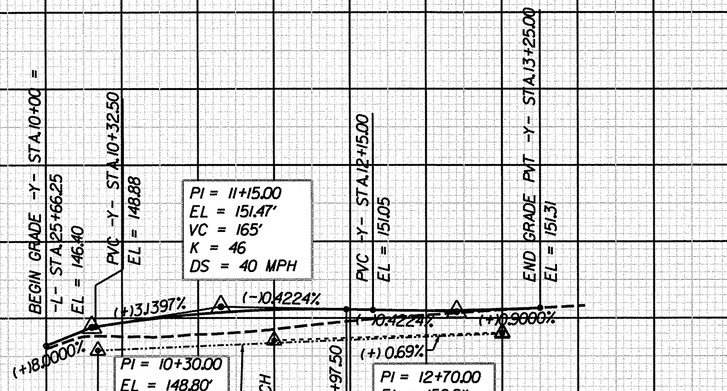
SEAL NOT VALID UNLESS SIGNED AND DATED

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 120	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 142.5	FT
BASE DISCHARGE	= 150	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 143.3	FT
OVERTOPPING DISCHARGE	= 220+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 149.6	FT

$$$$$$$SYSTIME$$$$$ $$$$$$$$DGN$$$$$$$$$$$$$$$$$$ $$$$USERNAME$$$$

5/28/99



-Y-

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TEL (919) 859-2243 FAX (919) 859-8258
ENG FIRM LICENSE NO. C-2490

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	7

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 31022037 ENGINEER STEPHEN T. SMITH
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
3/21/14

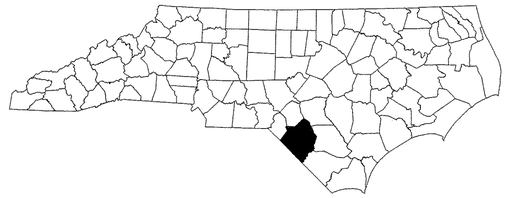
FOR -Y- PLAN SEE SHEET 5

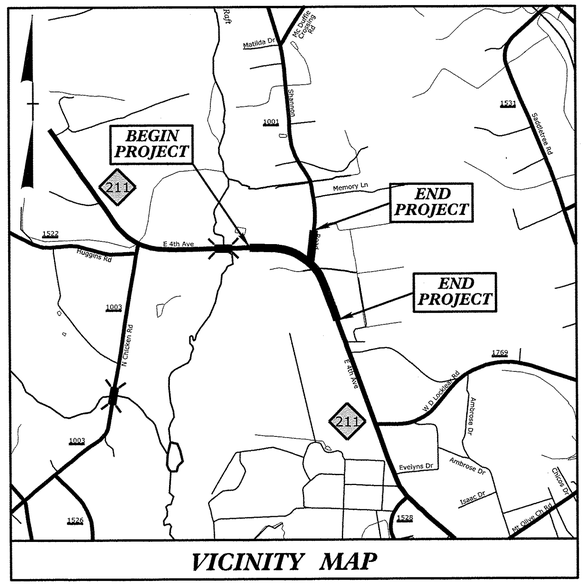
$$$$SYSTIME$$$$ $$$$ENGINE$$$$ $$$$DGN$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ROBESON COUNTY



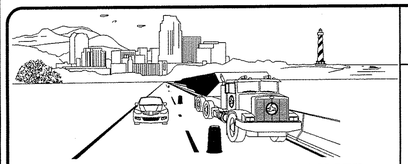


VICINITY MAP

LOCATION: IMPROVEMENTS TO NC 211 AT THE INTERSECTION OF SHANNON ROAD (SR 1001)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNING, FLASHER SIGNAL AND PAVEMENT MARKINGS

02/25/14 DATE SUBMITTED
SUBMITTAL:
- [ ] STAGING CONCEPT
- [ ] MIDPOINT
- [ ] PRE-FINAL
- [X] FINAL



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

PREPARED FOR: 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*
G.L. GETTIER, P.E. — *TRAFFIC CONTROL PROJECT ENGINEER*
J.W.WOOLARD JR.,P.E. — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-01	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-02A	RESURFACING ADVANCE WARNING SIGNS DETAIL
TMP-02B	SP 13107 SPECIAL SIGN DETAIL
TMP-03	PHASING
TMP-04 - TMP-05	TEMPORARY TRAFFIC CONTROL PHASE I DETAILS
TMP-06	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL

SHEET NO.
TMP-1

TIP PROJECT: W-5206N

STEVE SMALLWOOD, P.E. — *PROJECT ENGINEER*
JUSTIN BEARD, P.E. — *TRAFFIC CONTROL DESIGN ENGINEER*

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Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448 NC License No. C-1869

APPROVED: _____
DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD
3-21-14

SEAL NOT VALID UNLESS SIGNED AND DATED

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$

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Raleigh, NC 27607-5073
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PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-1A

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 ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE 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
1130.01	DRUM
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
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
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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
- CONTINUED WORK AREA
- WEDGING WORK AREA

SIGNALS

EXISTING PROPOSED TEMPORARY (TEMP)

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

SECTION NAME — XX — SECTION CALLOUT
XX SECTION SHEET | XX REFERENCE SHEET

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
PA	WHITE EDGELINE	PAINT (4")
PI	YELLOW DOUBLE CENTER	PAINT (4")
P8	2' - 6'/SP WHITE MINISKIP	PAINT (4")

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025954 3-21-14 JUSTIN R. BEARD

SEAL NOT VALID UNLESS SIGNED AND DATED

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

ROADWAY STANDARD DRAWINGS & LEGEND

2/5/2014
R:\Traffic\TrafficControl\TCP\W5206N_TC_TMP_01A-STDS-LEG.dgn
ARCADIS G&M of NC,Inc:dperry

ARCADIS
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Raleigh, NC 27607-5073
Tele 919/854-1282 Faxx 919/854-5448 NC License No. C-1869

PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-1B

GENERAL NOTES / LOCAL 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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) 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.

B) 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.

C) 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.

D) 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 REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) 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.

F) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

G) 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.

H) 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) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

J) 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.

K) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

SIGNING REQUIRED FOR
THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

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

M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

N) 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 OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

O) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES DRUMS PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
NC 211	PAINT	TEMPORARY RAISED
SR 1001	PAINT	TEMPORARY RAISED

Q) 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.

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

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

MISCELLANEOUS

T) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

U) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 200 AND 100 RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025954 3-21-14 ENGINEER JUSTIN R. BEARD

SEAL NOT VALID UNLESS SIGNED AND DATED

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

TRANSPORTATION OPERATIONS PLAN

2/5/2014
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PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-03

PHASING

NOTE: MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES WITHIN THE PROJECT LIMITS FOR THE DURATION OF THE PROJECT.

PHASE I

STEP 1

USING DRAWING 1101.01, INSTALL ADVANCE WORK ZONE WARNING SIGNS AS SHOWN ON TMP-07.

STEP 2

USING RSD 1101.02 SHEET 1 OF 15 AND FLAGGERS AS NEEDED, PROCEED WITH THE FOLLOWING:

CONSTRUCT DRIVEWAY TIE-INS AND BOTH RIGHT AND LEFT SIDES OF -L- NC 211 FROM -L- STA. 12+50 TO -L- STA. 24+50 TO EDGE OF EXISTING -L-, UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE USING WEDGING AS NEEDED TO MAINTAIN EXISTING TRAFFIC AS SHOWN ON TMP-04 THROUGH TMP-05.

BEGIN CONSTRUCTION OF -Y- AND CONSTRUCT DRIVEWAY TIE-IN AND LEFT SIDE OF -Y-, INCLUDING DRAINAGE AND SIGNAL POLE, FROM -L- STA. 24+50 TO -Y- STA. 13+25, UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE USING WEDGING AS NEEDED TO MAINTAIN EXISTING TRAFFIC AS SHOWN ON TMP-05.

CONSTRUCT TWO OF THE FOUR SIGNAL POLES AND DRAINAGE IMPROVEMENTS ALONG RIGHT SIDE OF -L- NC 211 FROM -L- STA. 24+50 TO -L- STA. 28+00. INSTALL TEMPORARY SIGNAL SPAN WIRE AS SHOWN ON TMP-05.

INSTALL TEMPORARY GUARDRAIL AS SHOWN ON TMP-05 AND THEN CONSTRUCT BOTH RIGHT AND LEFT CULVERT EXTENSIONS AT APPROX. STA 29+00. BEGIN CONSTRUCTION OF AREAS BEHIND TEMPORARY GUARDRAIL FROM -L- NC 211 FROM -L- STA. 28+00 TO -L- STA. 30+00 RIGHT, AND FROM -L- NC 211 FROM -L- STA. 26+50 TO -L- STA. 30+00.

PHASE II

STEP 1

USING RSD 1101.02 SHEET 1 OF 15 AND FLAGGERS AS NEEDED, PROCEED WITH THE FOLLOWING:

RELOCATE/INSTALL TEMPORARY FLASHER SIGNAL AND PLACE TEMPORARY PAVEMENT MARKINGS AND SIGNAGE AS SHOWN ON TMP-06 AND PLACE TRAFFIC INTO NEW TRAFFIC PATTERN.

REMOVE TEMPORARY GUARDRAIL.

STEP 2

USING RSD 1101.02 SHEET 1 OF 15 AND FLAGGERS AS NEEDED, PROCEED WITH THE FOLLOWING:

CONSTRUCT BOTH RIGHT AND LEFT SIDES OF -L- NC 211 FROM -L- STA. 24+50 TO -L- STA. 37+00 TO EDGE OF EXISTING -L-, UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE USING WEDGING AS NEEDED TO MAINTAIN EXISTING TRAFFIC AS SHOWN ON TMP-06.

COMPLETE CONSTRUCTION OF -Y- AND DRIVEWAY TIE-IN ON RIGHT SIDE OF -Y-, INCLUDING FINAL SIGNAL POLE AND APPURTENANCES, FROM -L- STA. 24+50 TO -Y- STA. 13+25, UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE USING WEDGING AS NEEDED TO MAINTAIN EXISTING TRAFFIC AS SHOWN ON TMP-06.

PHASE III

STEP 1

USING RSD 1101.02 SHEETS 1 & 2 OF 15 AND FLAGGERS AS NEEDED, PLACE WEDGING AND FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT MARKINGS AS SHOWN IN THE FINAL PAVEMENT MARKING PLANS AND PLACE TRAFFIC INTO FINAL TRAFFIC PLAN. REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD 2-21-14

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

PHASING

2/5/2014
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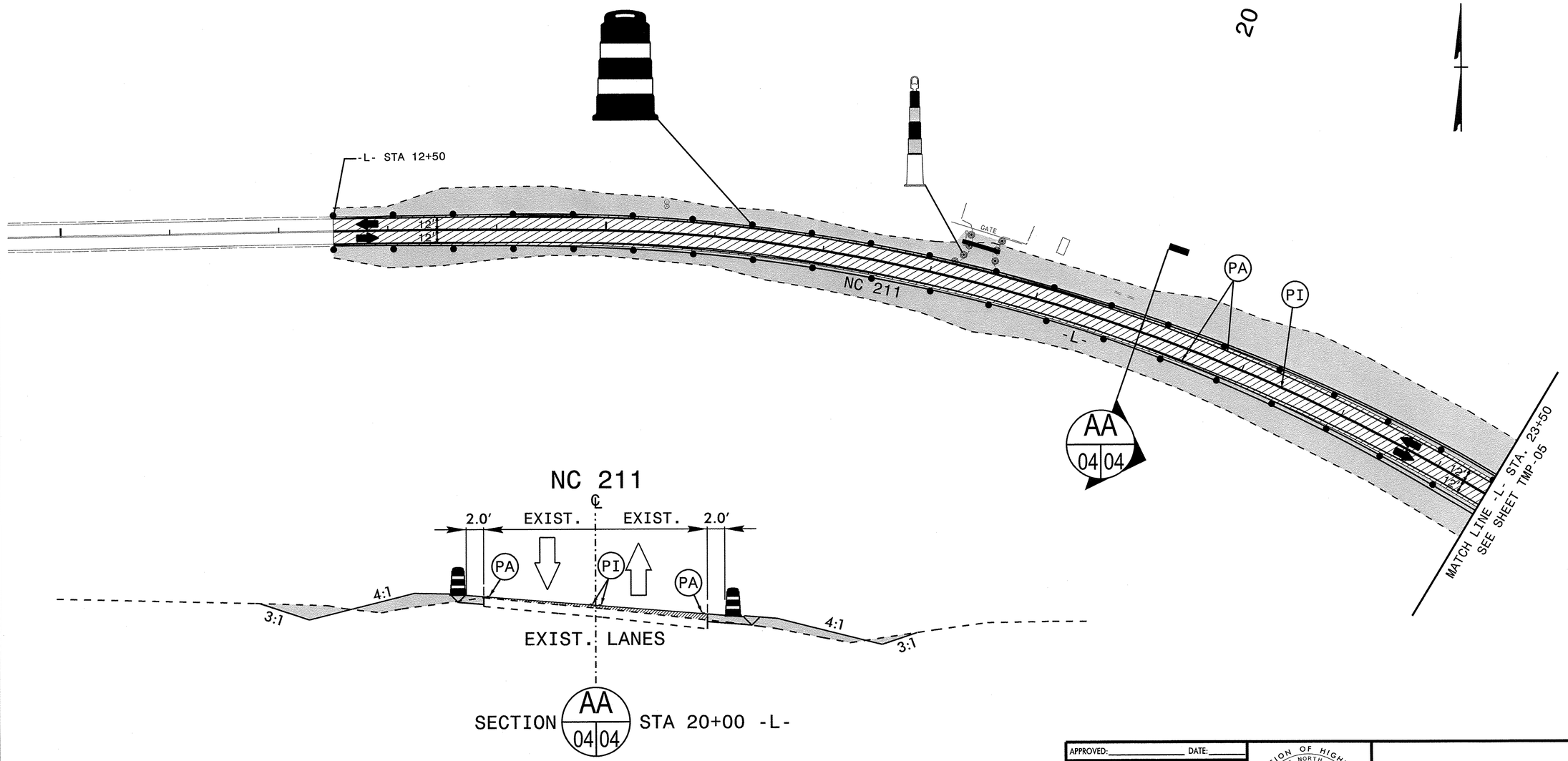
PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-04

10

15

20



APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025954 3-21-14 AUSTIN R. BEARD

SEAL NOT VALID UNLESS SIGNED AND DATED

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

PHASE 1 DETAIL
STA 12+50 –L– TO STA 23+50 –L–

2/5/2014
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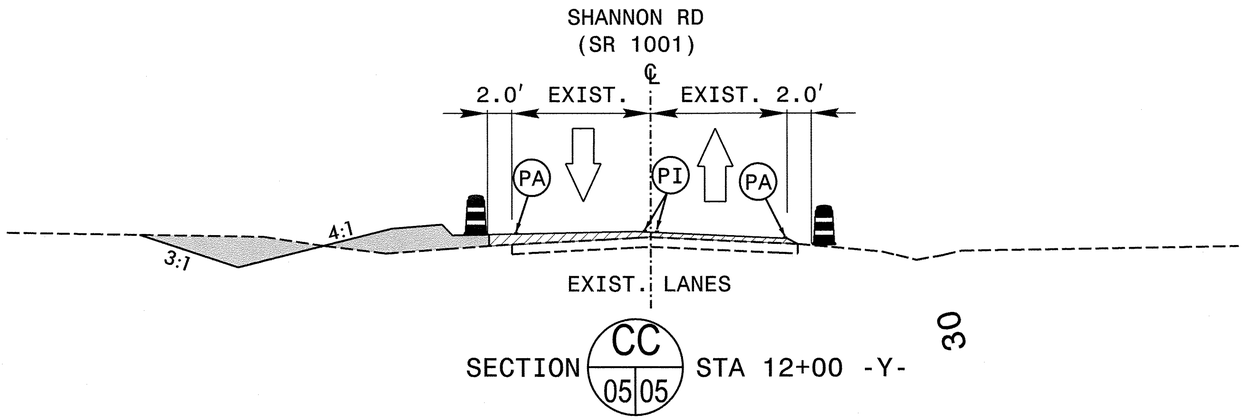
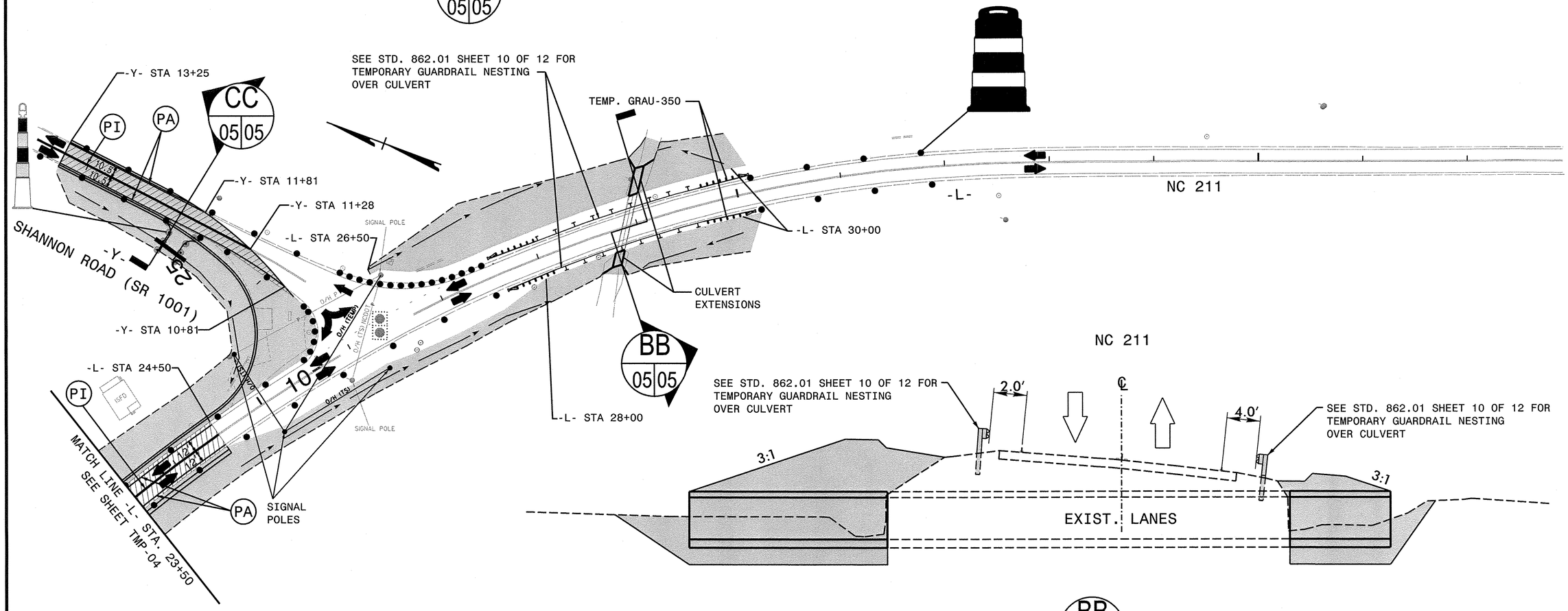
PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-05





APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD 3-21-14

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

PHASE 1 DETAIL
STA 23+50 –L– TO STA 37+00 –L–

$$$$SYSTIME$$$$
$$$$SERNAME$$$$

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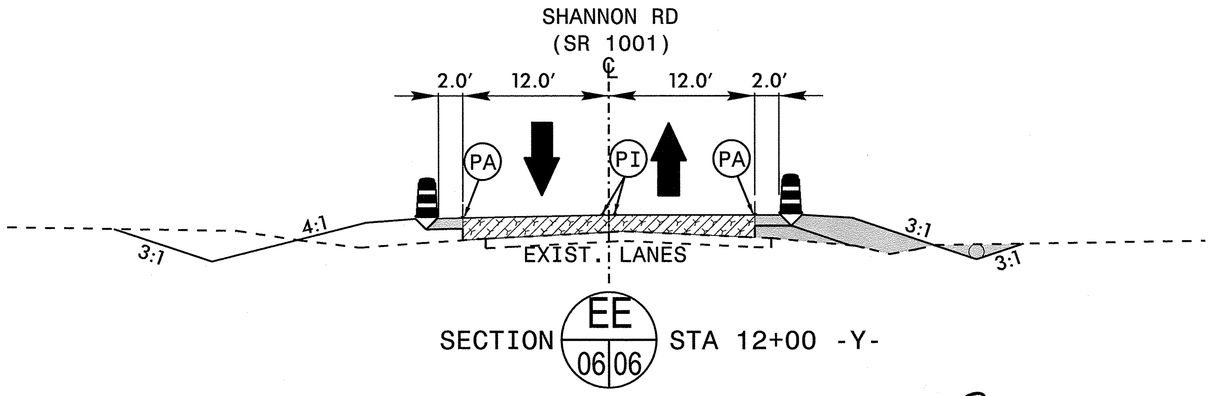
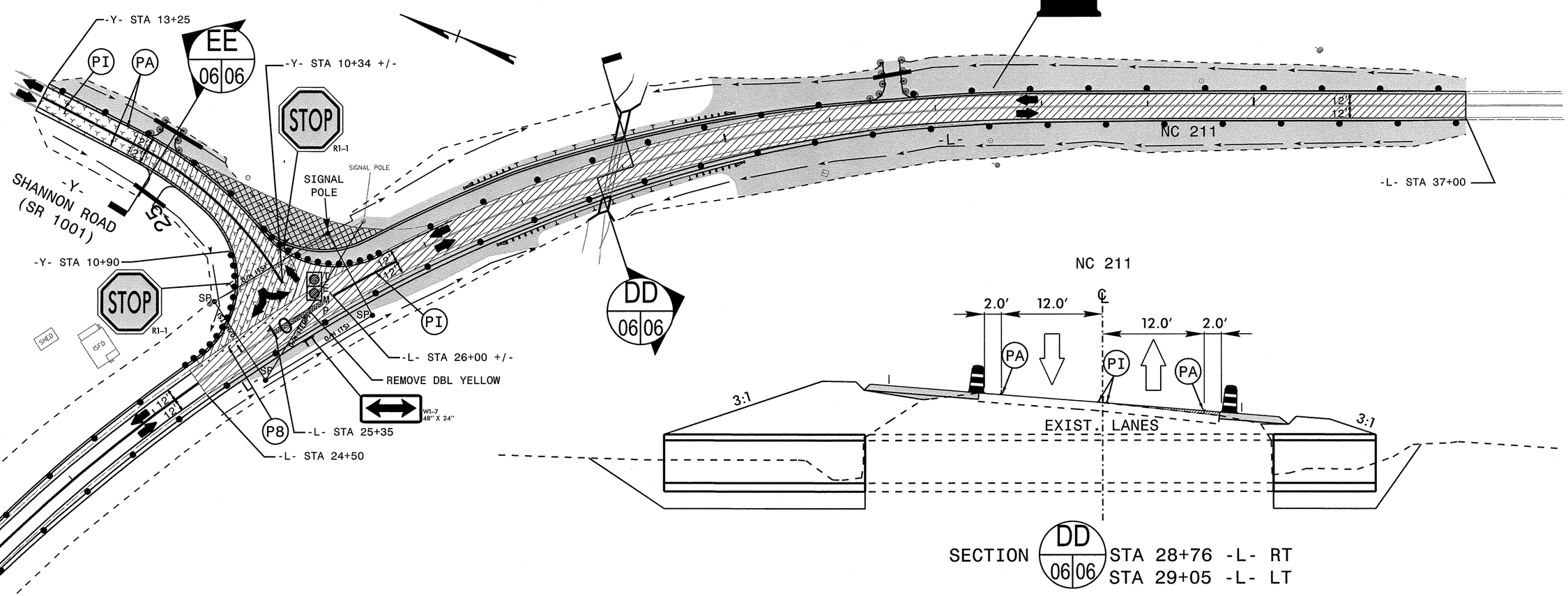
PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-06



SECTION EE 06|06 STA 12+00 -Y-



SECTION DD 06|06 STA 28+76 -L- RT
STA 29+05 -L- LT

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD 2-21-14

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

PHASE 2 DETAIL

2/5/2014
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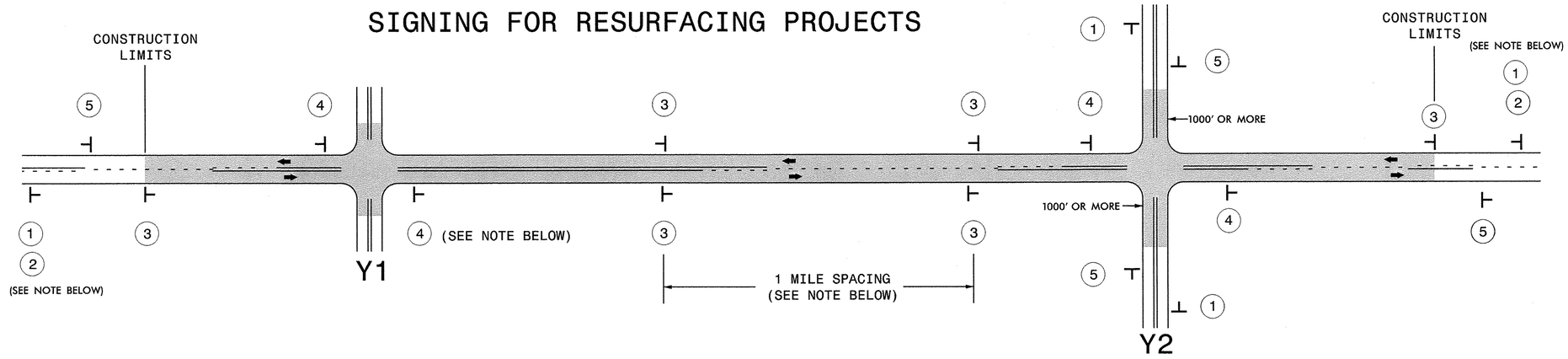
PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-07

SIGNING FOR RESURFACING PROJECTS



LEGEND
⊢ STATIONARY SIGN
⬅ DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION

1	ROAD WORK AHEAD W20-1 48" X 48"	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.
2	NEXT XX MILES W7-3aP 24" X 18"	#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER.(NO FRACTIONAL OR DECIMAL NUMBERS)
3	LOW/SOFT SHOULDER SP 13107 48" X 48"	PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET ½ MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.
4	ROAD UNDER CONST. SP 13106 48" X 48"	THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.
5	END ROAD WORK G20-2 A 48" X 24"	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.

-Y- LINE SIGNING

NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:

1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE
2) SUBDIVISION ROADS
3) DEAD END ROADS

WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.

ROAD WORK AHEAD W20-1 48" X 48" — PLACED 500' IN ADVANCE OF FLAGGER.

W20-7 A 48" X 48" — PLACED 250' IN ADVANCE OF FLAGGER.

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

RESURFACING
ADVANCE WARNING SIGNS
FOR
RURAL AND SUBURBAN
2 LANE ROADWAYS

8/8/2013
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User:rmgarrett

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PROJ. REFERENCE NO.	SHEET NO.
W-5206N	TMP-08

SIGN NUMBER: SP13107
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 4′-0″
HEIGHT: 4′-0″
TOTAL AREA: 16.00 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.75″
WIDTH: 1.25″
RADII: 3″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080″ (2.0 mm) ALUMINUM

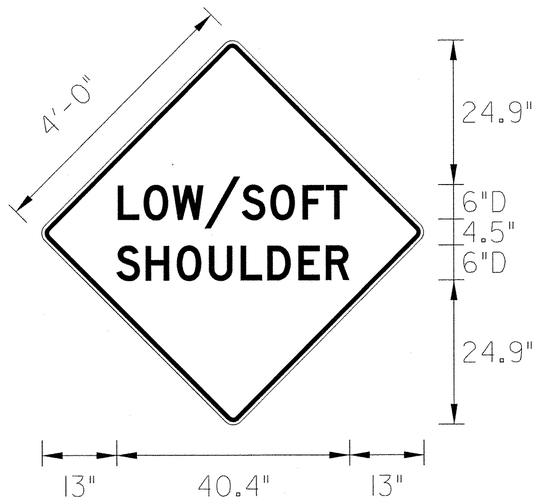
DESIGN BY: B. RASHID
PROJECT ID:

CHECKED BY: AIA
DIV:

DATE: Apr 26, 2013

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoresent orange retroreflective sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

Series/Size
Text Length

		L	O	W	/	S	O	F	T																		D 2000
	13.2	4.5	5	5.5	6.5	5	5.6	4.1	3.7	13.2																	39.9
		S	H	O	U	L	D	E	R																		D 2000
	13	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	13																	40.4

FILENAME: SP130XX_Sgn_SGN_special

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED:_____ DATE:_____

SEAL

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

SIGN DETAIL
SP 13107

$$$$SYSTIME$$$$
$$$$SCENAME$$$$
$$$$CONFIG$$$$

T.I.P.: W-5206N

CONTRACT:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

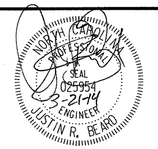
PAVEMENT MARKING PLAN
ROBESON COUNTY

TIP NO.	SHEET NO.
W-5206N	PMP-1

APPROVED: _____

DATE: _____

SEAL



SEAL NOT VALID UNLESS SIGNED AND DATED

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
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
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
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

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
SR 1001 (SHANNON ROAD)	THERMOPLASTIC	RAISED
NC 211	THERMOPLASTIC	RAISED

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

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

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

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN COVER SHEET AND PAVEMENT MARKING SCHEDULE
PMP-2 THRU 3	PAVEMENT MARKING DETAIL SHEETS

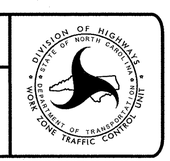
FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM	
TV	YELLOW DIAGONAL	(12", 90 MILS)	THERMOPLASTIC
T8	2 FT. - 6 FT./SP WHITE MINISKIP	(4", 120 MILS)	THERMOPLASTIC
TD	3 FT. - 9 FT./SP WHITE MINISKIP	(4", 120 MILS)	THERMOPLASTIC
TE	WHITE SOLID LANE LINE	(4", 120 MILS)	THERMOPLASTIC
TH	YELLOW SINGLE CENTER	(4", 120 MILS)	THERMOPLASTIC
TI	YELLOW DOUBLE CENTER	(4", 120 MILS)	THERMOPLASTIC
TA	WHITE EDGELINE	(4", 90 MILS)	THERMOPLASTIC
UA	LEFT TURN ARROW	(90 MILS)	THERMOPLASTIC
UB	RIGHT TURN ARROW	(90 MILS)	THERMOPLASTIC
UC	STRAIGHT ARROW	(90 MILS)	THERMOPLASTIC

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

_____ SIGNING & DELINEATION STANDARDS ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER



PLAN PREPARED BY: ARCADIS

STEVE SMALLWOOD, P.E. PROJECT MANAGER

JUSTIN BEARD, P.E. PROJECT ENGINEER

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2/5/2014
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TIP NO.	SHEET NO.
W-5206N	PMP-2

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD 3-21-14

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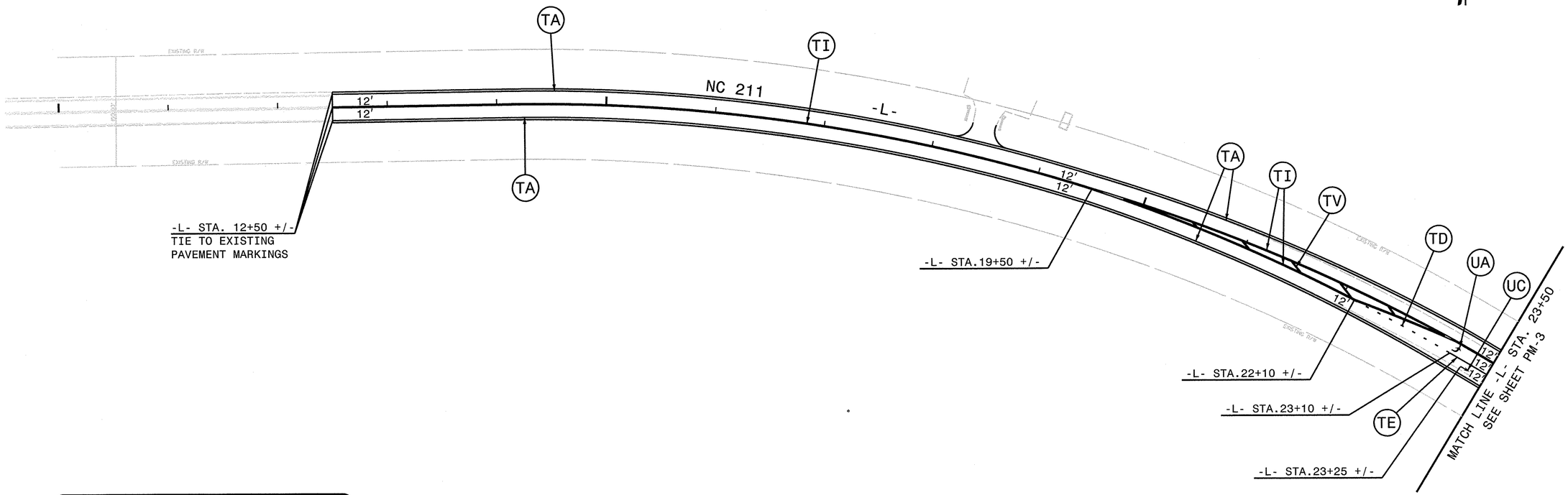

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
TV	YELLOW DIAGONAL
T8	2 FT. - 6 FT./SP WHITE MINISKIP
TD	3 FT. - 9 FT./SP WHITE MINISKIP
TE	WHITE SOLID LANE LINE
TH	YELLOW SINGLE CENTER
TI	YELLOW DOUBLE CENTER
TA	WHITE EDGELINE
UA	LEFT TURN ARROW
UB	RIGHT TURN ARROW
UC	STRAIGHT ARROW

PAVEMENT MARKINGS
STA.12+50 TO STA.23+50
NC 211 -L-

2/5/2014
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TIP NO.	SHEET NO.
W-5206N	PMP-3

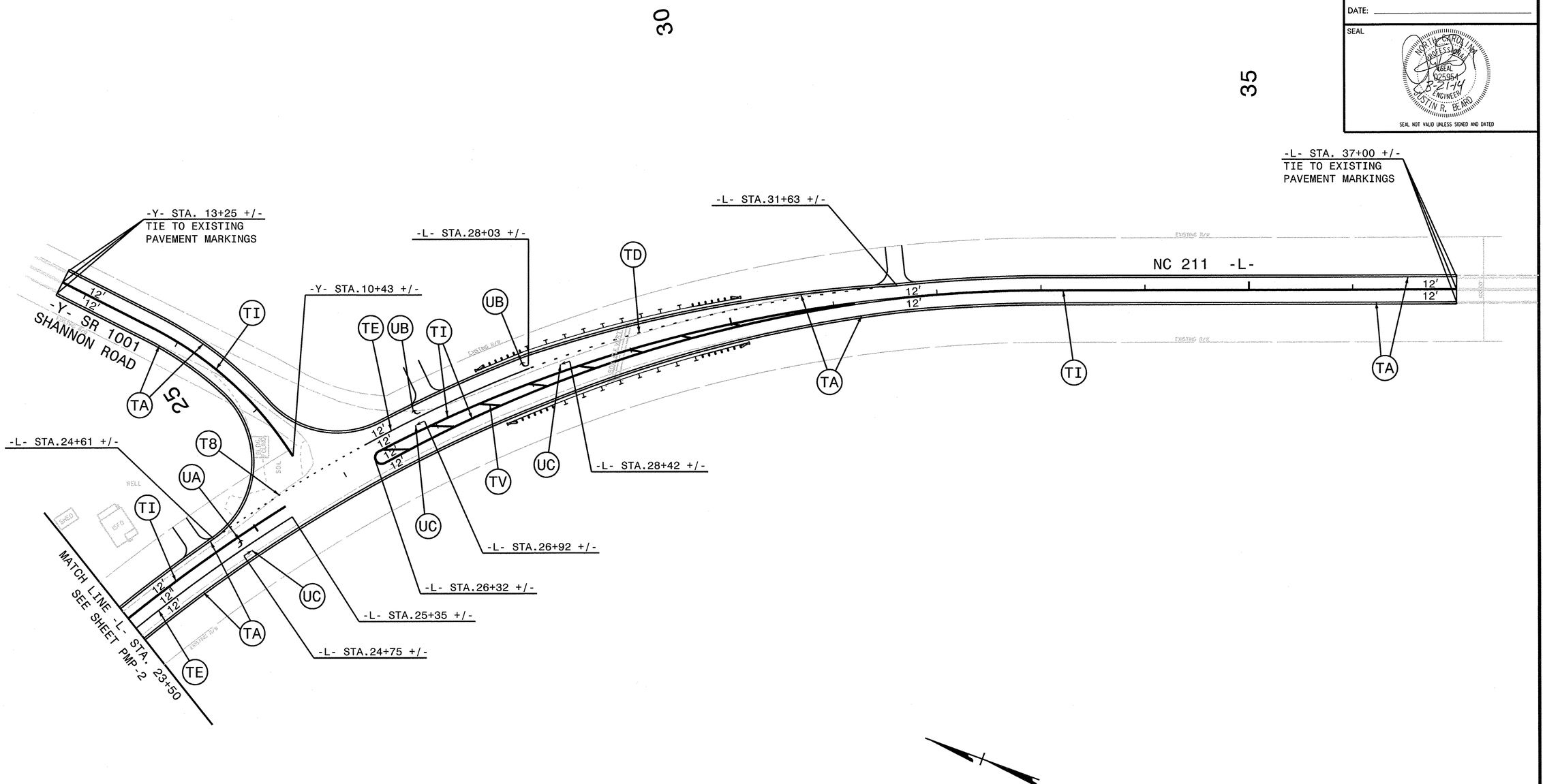
APPROVED:

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD
8-21-14

SEAL NOT VALID UNLESS SIGNED AND DATED



PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
TV	YELLOW DIAGONAL
T8	2 FT. - 6 FT./SP WHITE MINISKIP
TD	3 FT. - 9 FT./SP WHITE MINISKIP
TE	WHITE SOLID LANE LINE
TH	YELLOW SINGLE CENTER
TI	YELLOW DOUBLE CENTER
TA	WHITE EDGELINE
UA	LEFT TURN ARROW
UB	RIGHT TURN ARROW
UC	STRAIGHT ARROW

PAVEMENT MARKINGS
STA.23+50 TO STA.37+00
NC 211 -L-

2/5/2014
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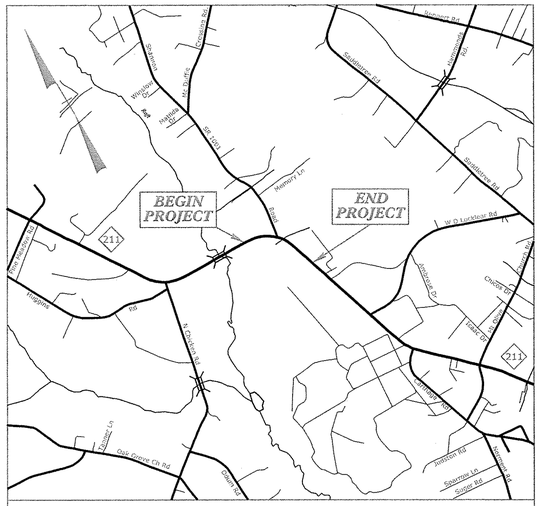
TIP PROJECT: W-5206N

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5206N	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45336.1.14	NRRR-0211(31)	P.E.
45336.2.FR14	NRRR-0211(31)	R/W, UTIL.
45336.3.FR14	NRRR-0211(31)	CONST.



VICINITY MAP

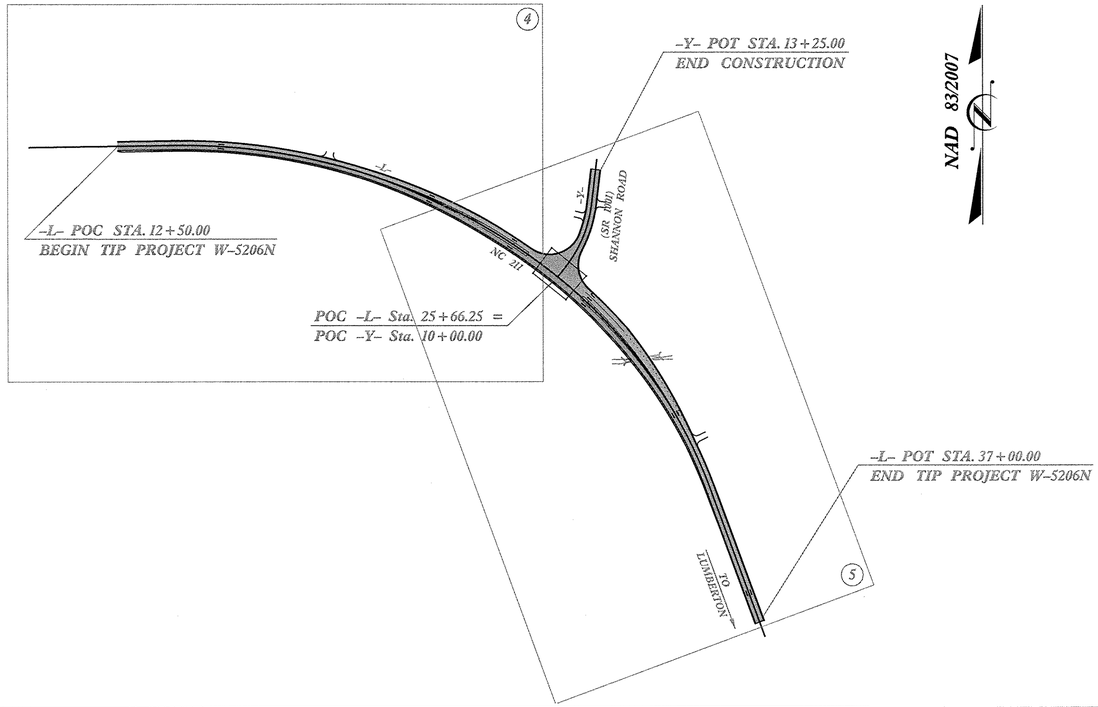
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ROBESON COUNTY

LOCATION: IMPROVEMENTS TO NC 211 AT THE INTERSECTION OF SHANNON ROAD (SR 1001)

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



NAD 83/2007

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	RW 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.

Joshua G. Dalton, PE, CPESC
LEVEL IIIA NAME

307
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALE

50 25 0 50 100
PLANS

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

Prepared In the Office of:

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

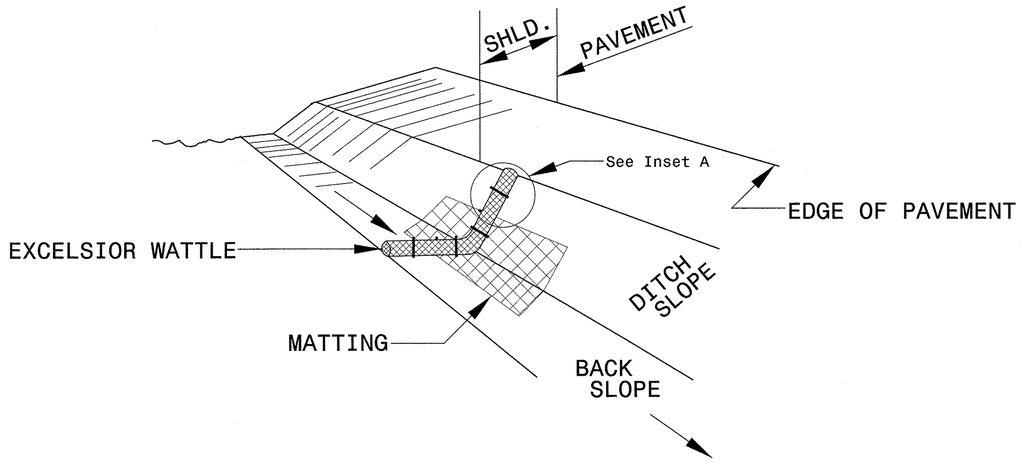
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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		

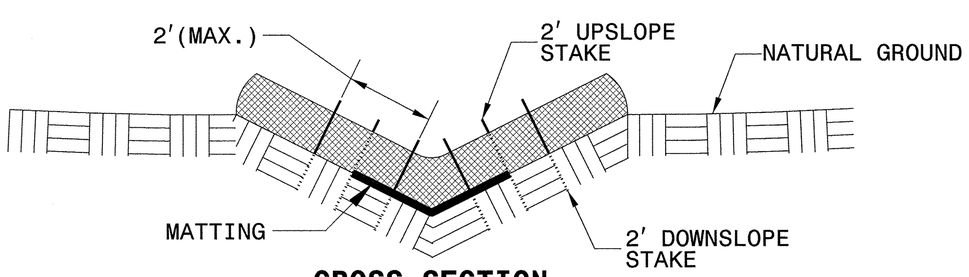
2/26/2014
W-5206N_EC.dgn_tsh
elsonh-PC

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-02
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

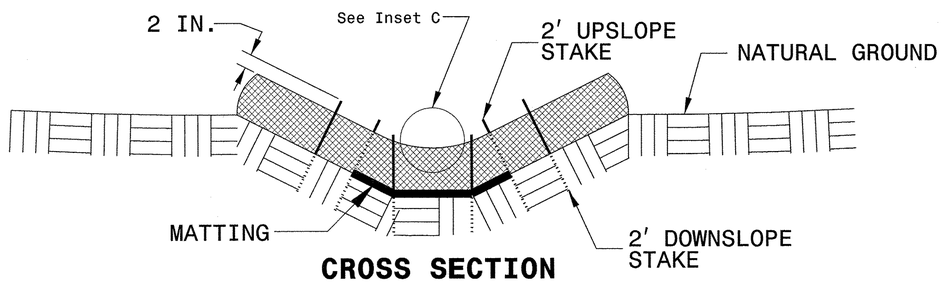
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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.

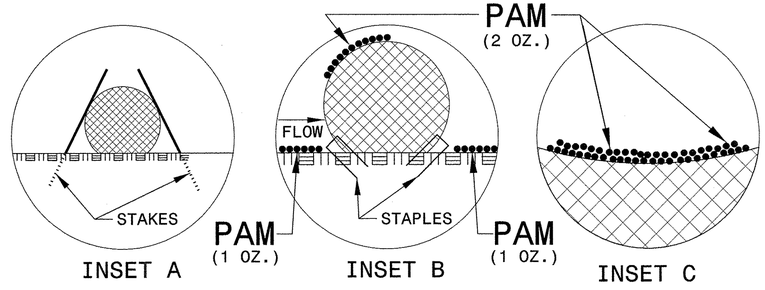
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

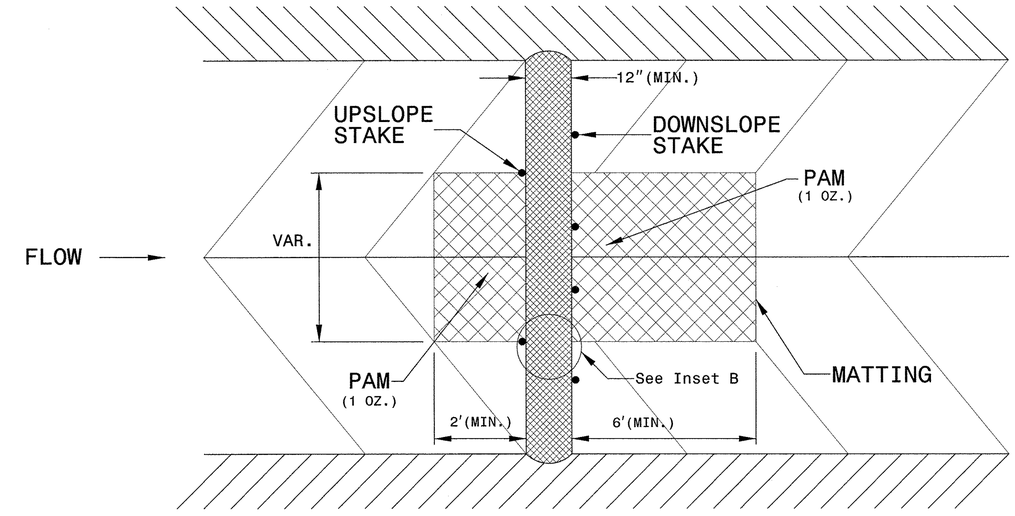
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-03
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.
W-5206N	EC-03A
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)
5	-L-	26+50	28+00	LT	70
5	-L-	24+50	28+00	RT	150
5	-L-	30+00	36+50	LT	320
5	-L-	28+70	36+50	RT	320
5	-Y-	10+34	13+00	LT	90
5	-Y-	11+50	13+00	RT	40
				SUBTOTAL	990
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					27220
				TOTAL	28210

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

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

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

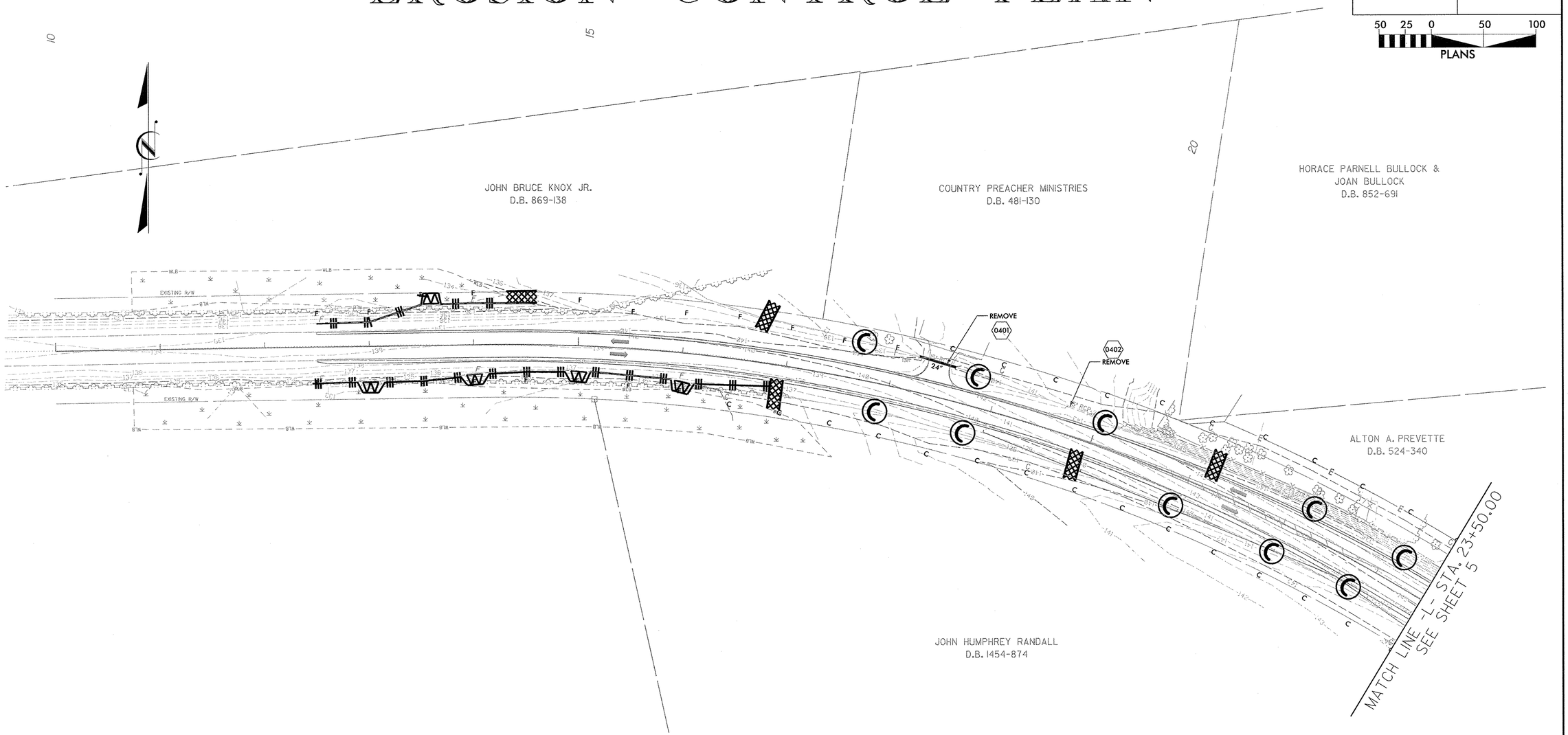
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

50 25 0 50 100

PLANS

EROSION CONTROL PLAN



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

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

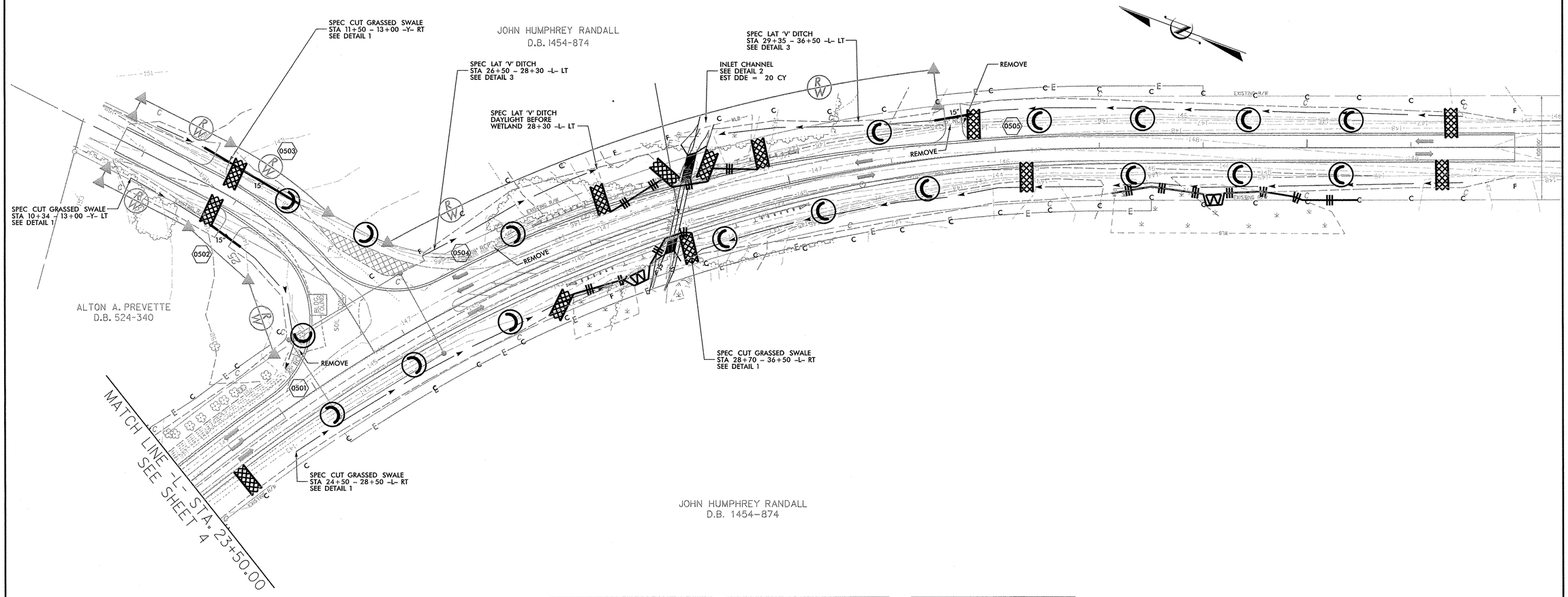
PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-05/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 05

EROSION CONTROL PLAN

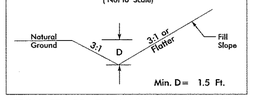
30

35



JOHN HUMPHREY RANDALL
D.B. 1454-874

DETAIL 1
SPECIAL CUT GRASSED SWALE
(Not to Scale)

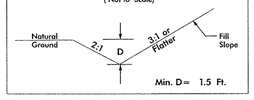


FROM STA. 28+70 TO STA. 36+50 –L– RT
FROM STA. 10+34 TO STA. 13+00 –Y– LT
FROM STA. 26+50 TO STA. 28+30 –L– LT
FROM STA. 11+50 TO STA. 13+00 –Y– RT

DETAIL 2
INLET CHANNEL
(Not to Scale)

AT STA. 28+88 –L– LT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 26+50 TO STA. 28+30 –L– LT
FROM STA. 29+35 TO STA. 36+50 –L– LT

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

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

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

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

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

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

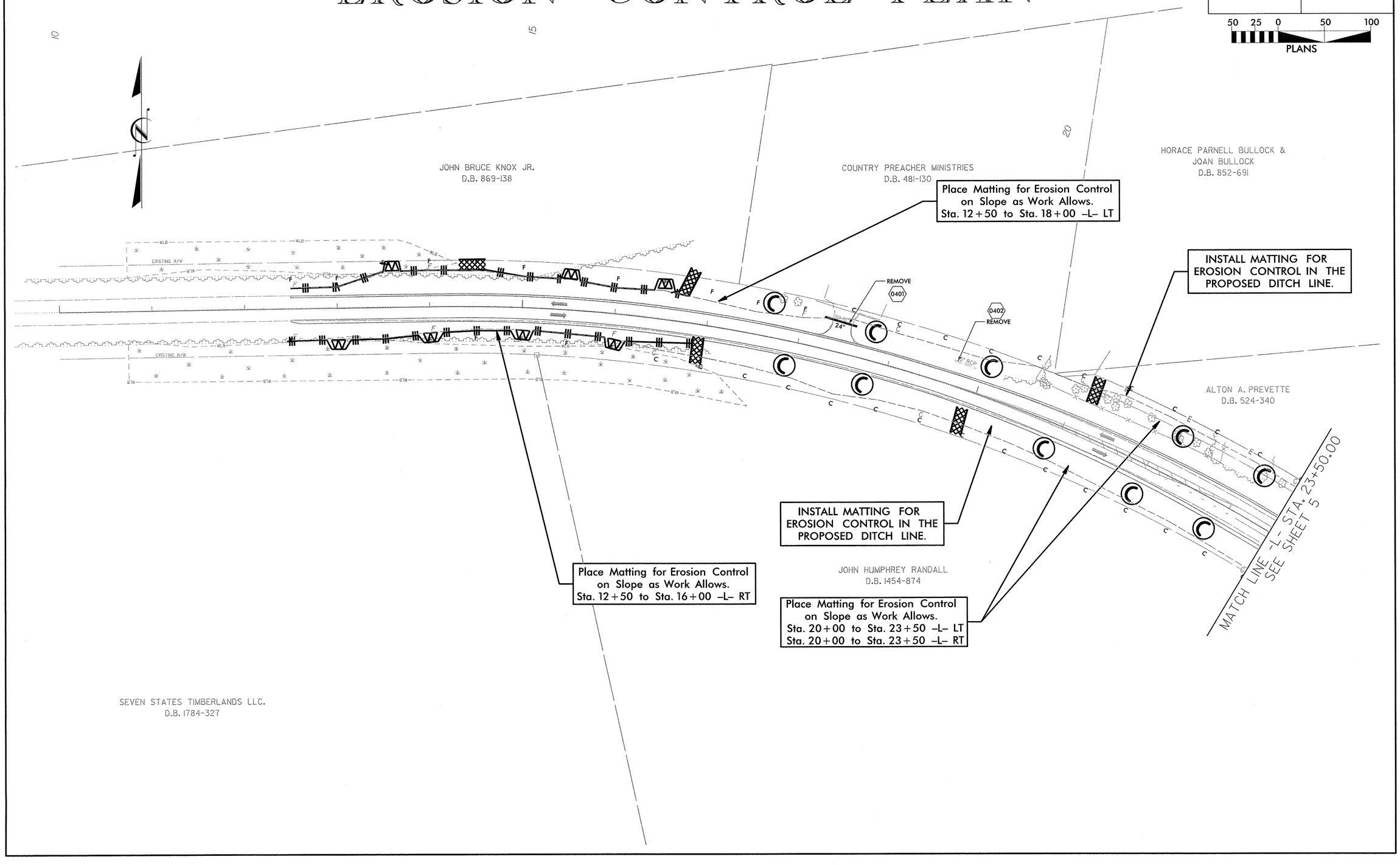
FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 04

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-06/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

50 25 0 50 100

PLANS

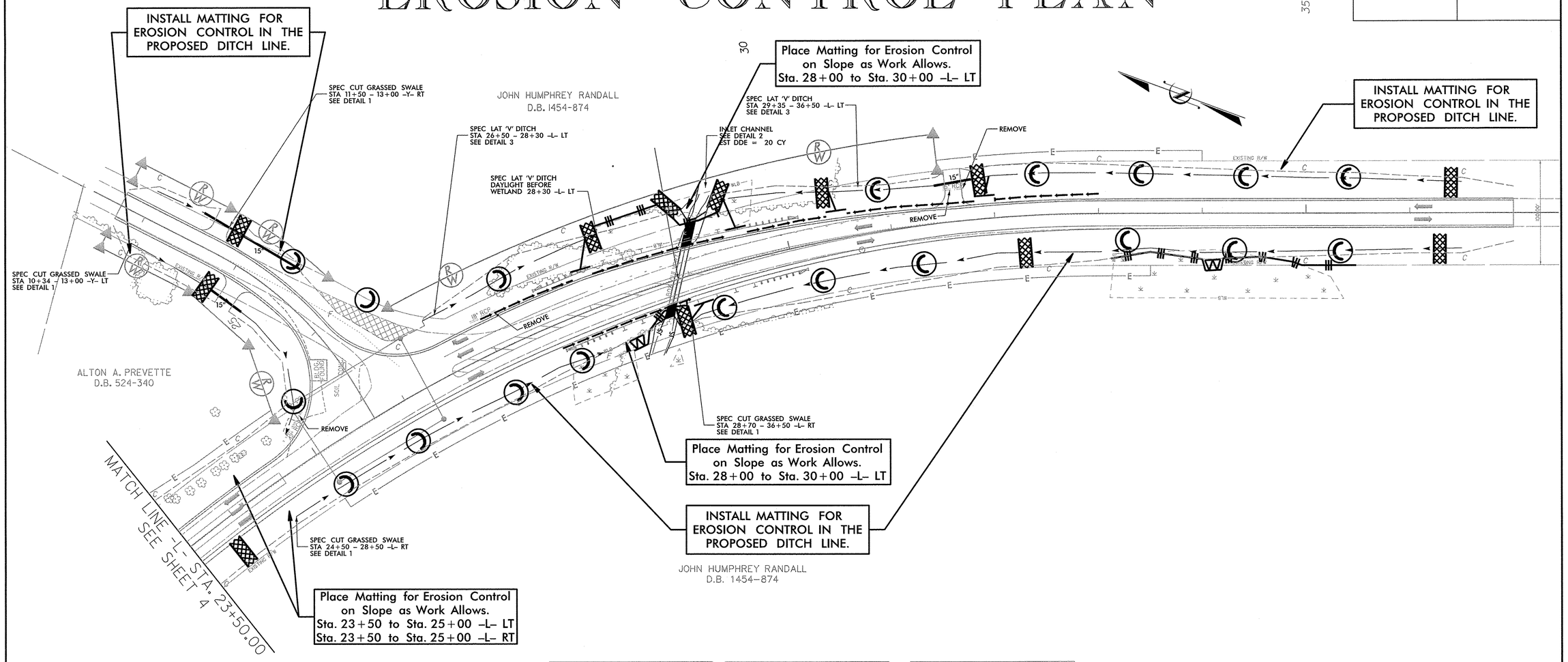
EROSION CONTROL PLAN



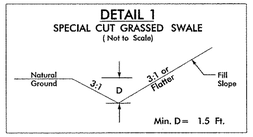
PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-07/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FINAL GRADE
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

EROSION CONTROL PLAN

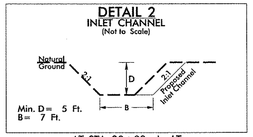


DETAIL 1
SPECIAL CUT GRASSED SWALE
(Not to Scale)



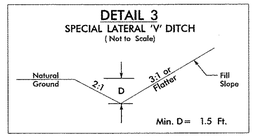
FROM STA. 28+70 TO STA. 36+50 –L– RT
FROM STA. 10+34 TO STA. 13+00 –Y– LT
FROM STA. 26+50 TO STA. 28+30 –L– LT
FROM STA. 11+50 TO STA. 13+00 –Y– RT

DETAIL 2
INLET CHANNEL
(Not to Scale)



AT STA. 28+88 –L– LT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 26+50 TO STA. 28+30 –L– LT
FROM STA. 29+35 TO STA. 36+50 –L– LT

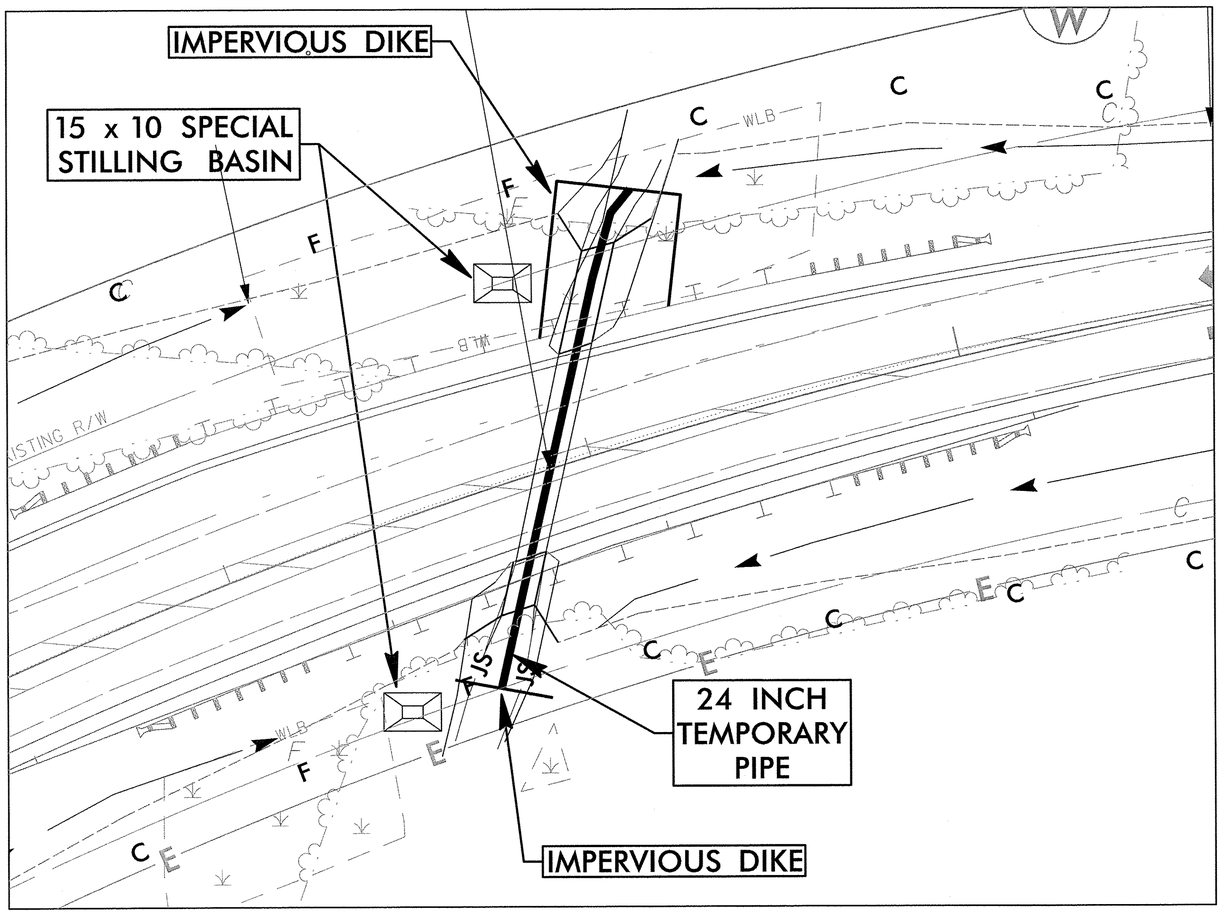
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

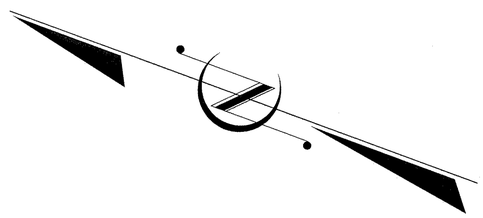
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	EC-08/CONST.05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

20 10 0 20 40
PLANS

CULVERT INSTALLATION PHASING





CONSTRUCTION SEQUENCE:

1) INSTALL SPECIAL STILLING BASINS
2) INSTALL TEMP. PIPE
3) INSTALL TEMPORARY IMPERVIOUS DIKES
4) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING SPECIAL STILLING BASIN
5) EXTEND EXISTING 7'x5' RCBC
6) REMOVE SPECIAL STILLING BASINS, TEMPORARY PIPE AND IMPERVIOUS DIKES

T.I.P.: W-5206N

CONTRACT:

TIP NO.	SHEET NO.
W-5206N	SIGN-01

APPROVED: _____

DATE: _____

SEAL

SEAL NOT VALID UNLESS SIGNED AND DATED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
ROBESON COUNTY

LOCATION: IMPROVEMENTS TO NC 211 AT THE INTERSECTION OF SHANNON ROAD (SR 1001)

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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

- SIGNS FURNISHED BY STATE.
- ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- 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 'E' & 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.
- ALL EXISTING SIGNS ON 'U' CHANNEL POSTS WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE 'E' & 'F' SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- SEE ROADWAY PLANS FOR GUARDRAIL DETAILS.
- SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING OR PAVEMENT MARKINGS. SEE TRAFFIC MANAGEMENT PLAN AND PROVISIONS.

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	SEC. NO.		QUANTITY	UNIT
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	95	LF.
4102000000	904	SIGN ERECTION, TYPE E	5	EA.
4108000000	904	SIGN ERECTION, TYPE F	2	EA.
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE D	1	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	9	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	E & F SIGNS
SIGN-3 THRU 4	SIGNING PLAN SHEETS

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

_____ SIGNING & DELINEATION STANDARDS ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

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

PLAN PREPARED BY: ARCADIS

STEVE SMALLWOOD, P.E. PROJECT MANAGER

JUSTIN BEARD, P.E. PROJECT ENGINEER

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448 NC License No. C-1869

2/5/2014
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ARCADIS G&M of NC,Inc.:dpeters

(401) QUANTITY REQ'D _2_

36" X 36"
R1-1

ONE "U" POST PER SIGN

(501) QUANTITY REQ'D _1_

24" X 12"

24" X 24"

ONE "U" POST PER SIGN

(402) QUANTITY REQ'D _1_

30" x 36"
R2-1

ONE "U" POST PER SIGN

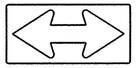
(502) QUANTITY REQ'D _1_

24" X 12"

24" x 24"

ONE "U" POST PER SIGN

(403) QUANTITY REQ'D _1_



24" x 12"
W1-7

ONE "U" POST PER SIGN

(404) QUANTITY REQ'D _1_

36" X 36"
W1-10L

ONE "U" POST PER SIGN

TIP NO.	SHEET NO.
W-5206N	SIGN-02

APPROVED: _____

DATE: _____

SEAL

SEAL NOT VALID UNLESS SIGNED AND DATED

TYPE "E" & "F" SIGNS

2/5/2014
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ARCADIS G&M of NC, Inc.:dpeary

TIP NO.	SHEET NO.
W-5206N	SIGN-03

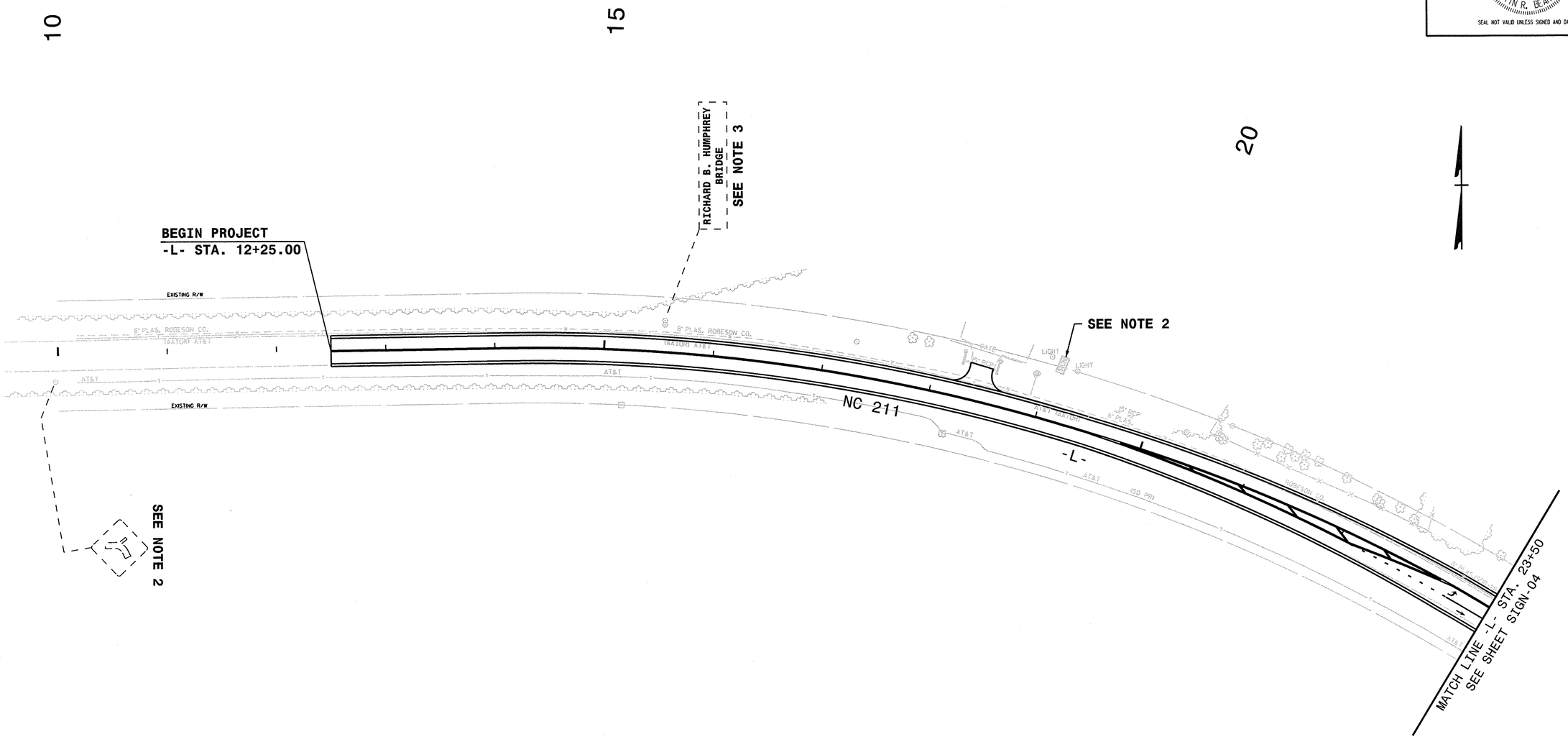
APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD 3-21-14

SEAL NOT VALID UNLESS SIGNED AND DATED



PROJECT NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL.
2. SIGN SYSTEM TO REMAIN.
3. RELOCATE SIGN, TYPE 'D'.

SIGNING
STA.12+50 TO STA.23+50
NC 211 -L-

2/5/2014
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ARCADIS G&M of NC,Inc:dpetry

TIP NO.	SHEET NO.
W-5206N	SIGN-04

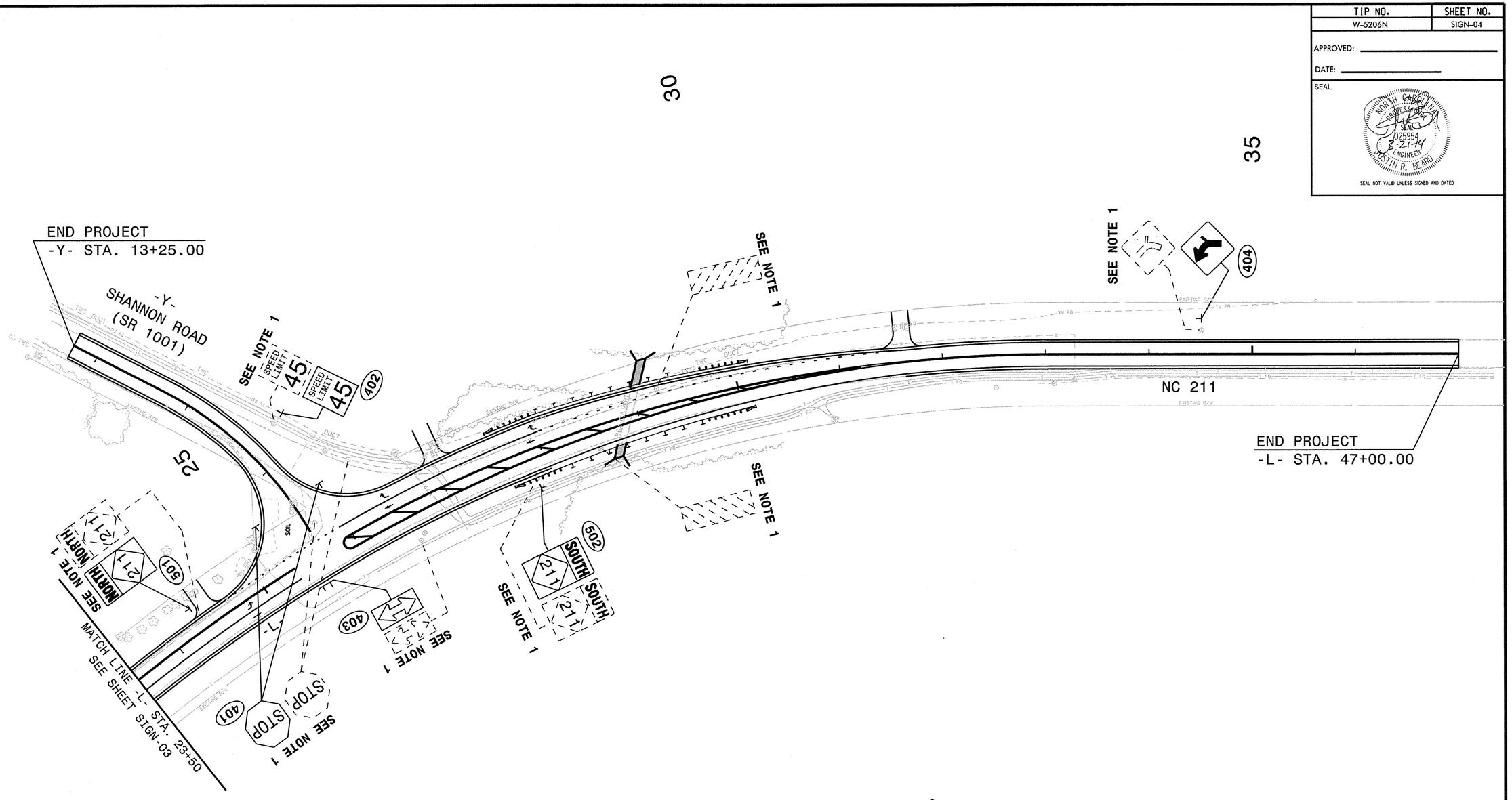
APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025954 ENGINEER JUSTIN R. BEARD 2-21-14

SEAL NOT VALID UNLESS SIGNED AND DATED



PROJECT NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL.

SIGNING
STA.23+50 TO STA.37+00
NC 211 -L-

2/5/2014
R:\Traffic\Signing\CADD\Signing Layout Plans\W5206N_SGN_SIGN_04.dgn
ARCADIS G&M of NC,Inc:dpeary

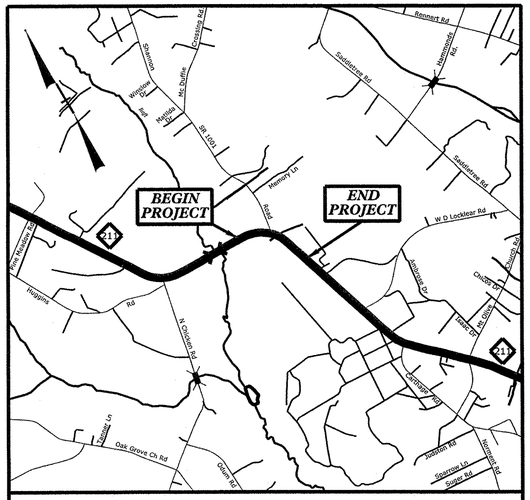
09/08/99

TIP PROJECT: W-5206N

CONTRACT:

$$$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$
$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

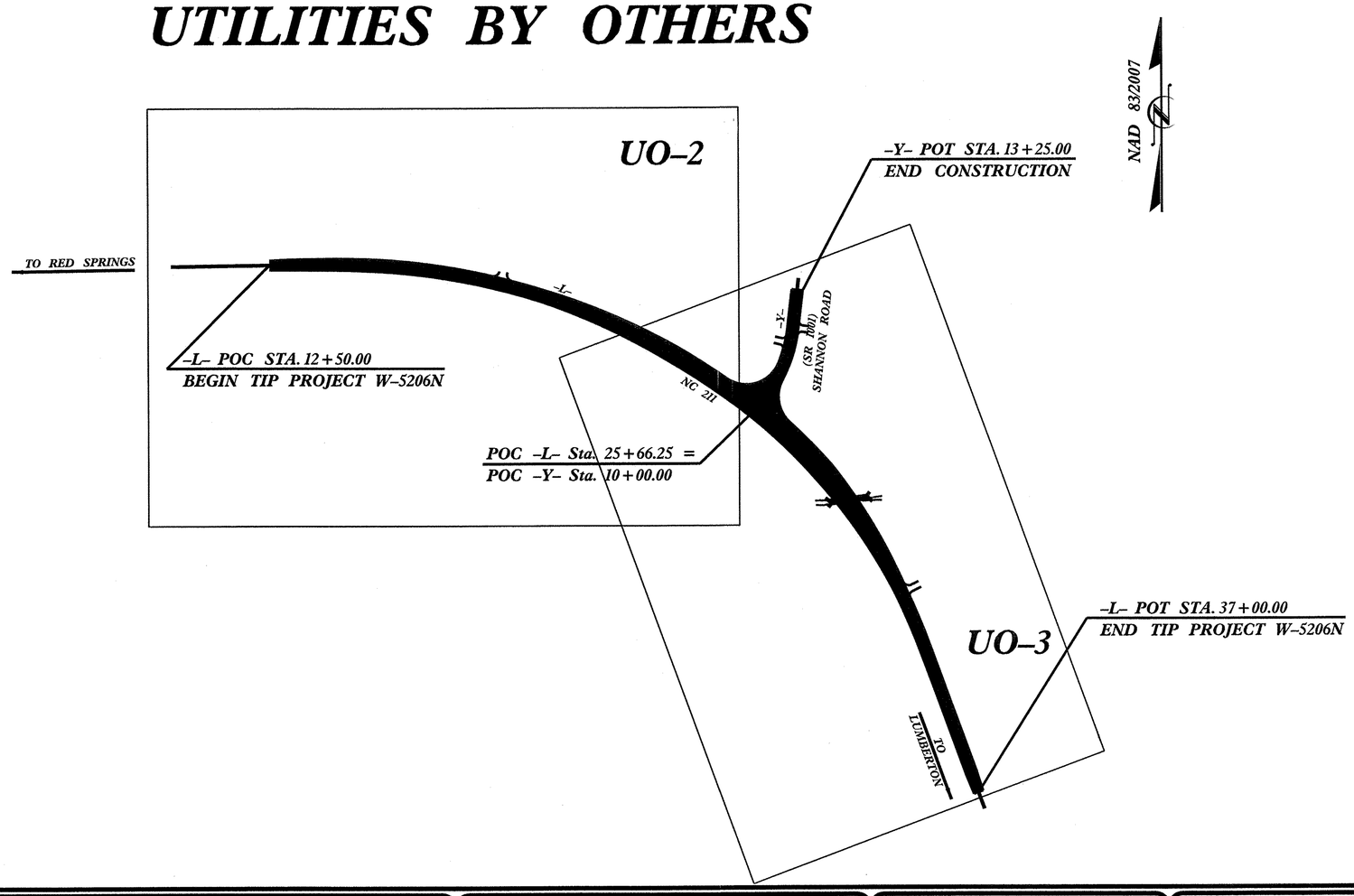
ROBESON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	W-5206N	UO-1	3

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
45336.1.14	NRRR-0211(31)	P.E.
45336.2.14	NRRR-0211(31)	R/W, UTIL.
45336.3.14	NRRR-0211(31)	CONST.

LOCATION: IMPROVEMENTS TO NC 211 AT THE INTERSECTION OF SHANNON ROAD (SR 1001)

UTILITIES BY OTHERS



SO-DEEP US, P.C.
The Subsurface Utility Engineering Company
4650 Paragon Park Road, Raleigh, NC 27616 (919) 878-7466

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 7,900
FUNC CLASS = COLLECTOR
REGIONAL TIER DESIGN

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-3	UBO PLAN SHEETS

Prepared In the Office of:

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 859-2243 FAX: (919) 859-6258
ENG FIRM LICENSE NO. C-890

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448 NC License No. C-1869

for the North Carolina Department of Transportation

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
JUNE 14, 2014

ARCADIS CONTACT
STEVE SMALLWOOD, P.E.
PROJECT ENGINEER

NCDOT CONTACT:
SCOTT PRIDGEN

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SEAL NOT VALID UNLESS SIGNED AND DATED P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
P.E.
STATE HIGHWAY DESIGN ENGINEER

ARCADIS
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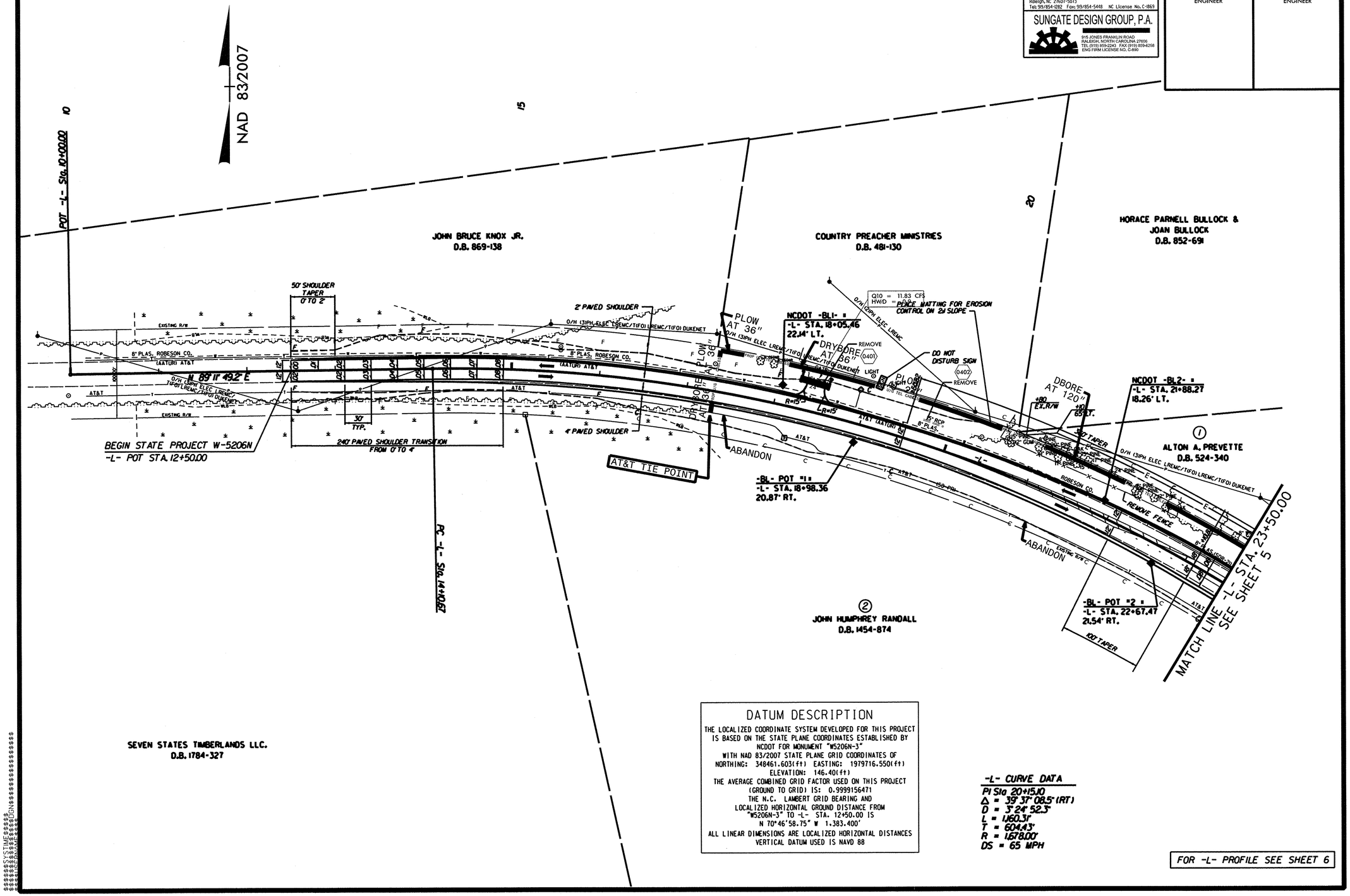
SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6268
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	U0-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "W5206N-3"
WITH NAD 83/2007 STATE PLANE GRID COORDINATES OF
NORTHING: 348461.603(ft) EASTING: 1979716.550(ft)
ELEVATION: 146.40(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999156471
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "W5206N-3" TO -L- STA. 12+50.00 IS
N 70°46'58.75" W 1,383.400'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

-L- CURVE DATA

PI Sta 20+15.10
Δ = 39° 37' 08.5" (RT)
D = 3° 24' 52.3"
L = 1,160.31'
T = 604.43'
R = 1,678.00'
DS = 65 MPH

FOR -L- PROFILE SEE SHEET 6

PROJECT REFERENCE NO.	SHEET NO.
W-5206N	UO-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
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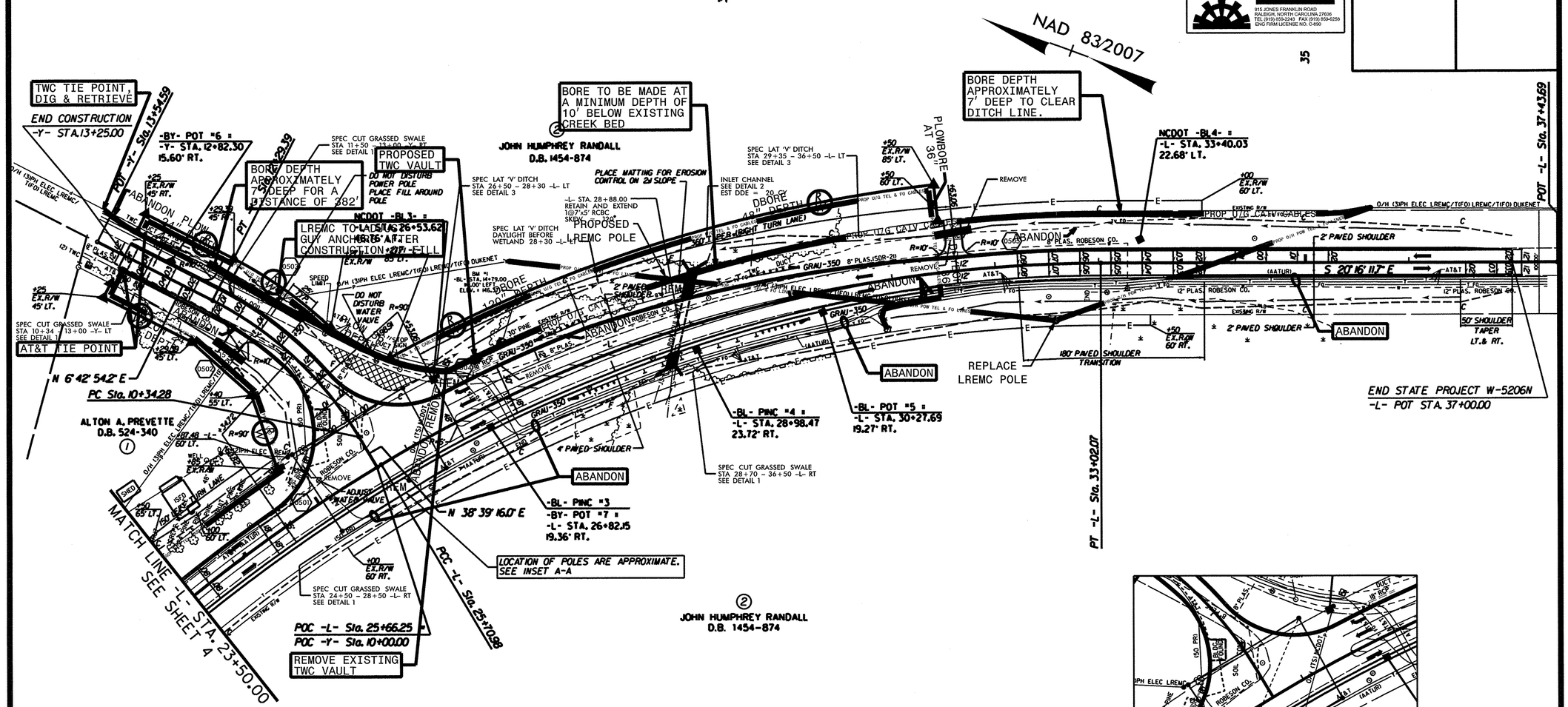
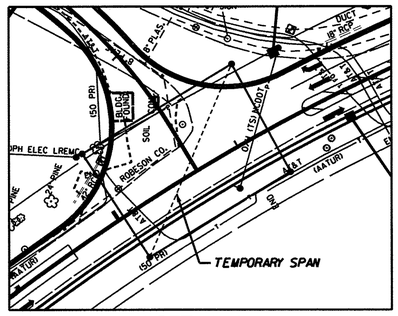
SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890





INSET A-A

APPROXIMATE SIGNAL FLASHER POLE LOCATIONS.

CONTACT DIVISION ENGINEER FOR TEMPORARY AND FINAL LOCATION OF SIGNAL POLES.

-L- CURVE DATA	
PI Sta 20+15.10	PI Sta 29+45.66
Δ = 39° 37' 08.5" (RT)	Δ = 30° 54' 50.7" (RT)
D = 3° 24' 52.3"	D = 4° 13' 42.5"
L = 1,160.31'	L = 731.09'
T = 604.43'	T = 374.68'
R = 1,678.00'	R = 1,355.00'
DS = 65 MPH	DS = 60 MPH

-Y- CURVE DATA
PI Sta 11+34.45
Δ = 31° 56' 21.8" (LT)
D = 16° 22' 12.8"
L = 195.11'
T = 100.16'
R = 350.00'
DS = < 15 MPH

FOR -L- PROFILE SEE SHEET 6
FOR -Y- PROFILE SEE SHEET 7

PAVEMENT REMOVAL

R:\Roadway\Estimate\Earthwork\xsc_ew_volumes.xls

PROJ. REFERENCE NO.	SHEET NO.
W-5206N	X-1A

STATE OF NORTH CAROLINA

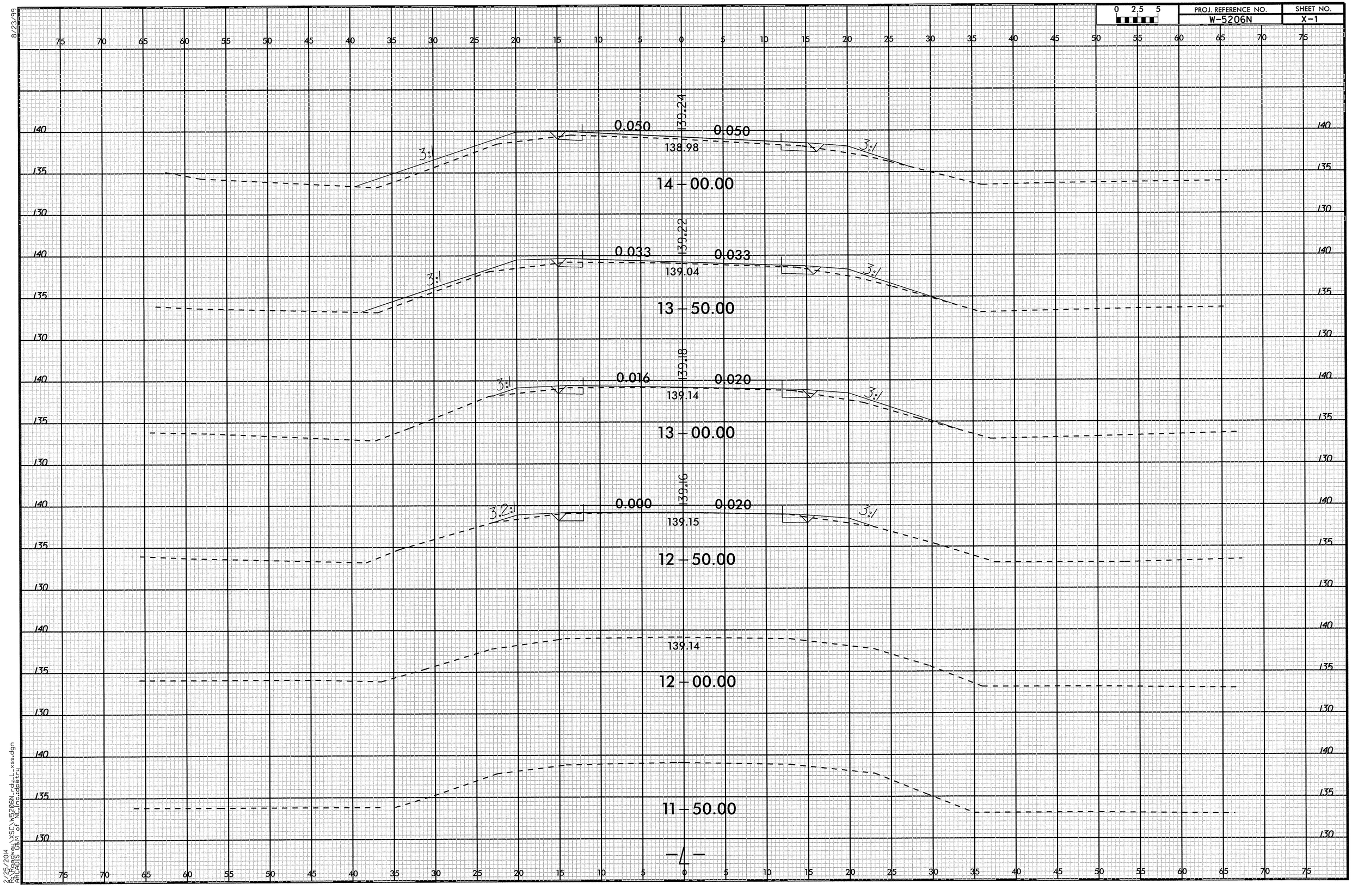
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDES BACKFILL FOR UNDERCUT

Station -LLT-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station -LRT-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station -Y-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+00.00000	0	0	12+00.00000	0	0	10+00.00000	0	0			
12+50.00000	3	2	12+50.00000	3	3	10+50.00000	18	31			
13+00.00000	5	5	13+00.00000	5	9	11+00.00000	27	74			
13+50.00000	4	15	13+50.00000	5	13	11+50.00000	22	94			
14+00.00000	3	31	14+00.00000	5	10	12+00.00000	35	91			
14+50.00000	3	39	14+50.00000	5	7	12+50.00000	60	54			
15+00.00000	3	28	15+00.00000	7	5	13+00.00000	89	18			
15+50.00000	4	13	15+50.00000	7	5	13+25.00000	26	2			
16+00.00000	4	8	16+00.00000	4	7						
16+50.00000	4	10	16+50.00000	3	12						
17+00.00000	5	10	17+00.00000	4	12						
17+50.00000	4	9	17+50.00000	9	9						
18+00.00000	4	10	18+00.00000	18	9						
18+50.00000	21	9	18+50.00000	29	8						
19+00.00000	23	10	19+00.00000	26	7						
19+50.00000	12	17	19+50.00000	12	11						
20+00.00000	17	22	20+00.00000	7	17						
20+50.00000	100	22	20+50.00000	4	23						
21+00.00000	178	20	21+00.00000	4	28						
21+50.00000	200	20	21+50.00000	9	34						
22+00.00000	213	23	22+00.00000	13	39						
22+50.00000	182	28	22+50.00000	16	40						
23+00.00000	166	29	23+00.00000	23	38						
23+50.00000	159	27	23+50.00000	30	30						
24+00.00000	133	31	24+00.00000	32	26						
24+50.00000	113	32	24+50.00000	28	26						
25+00.00000	74	25	25+00.00000	29	25						
25+50.00000	22	10	25+50.00000	34	23						
26+00.00000	2	53	26+00.00000	40	20						
26+50.00000	0	76	26+50.00000	46	19						
27+00.00000	28	45	27+00.00000	39	17						
27+50.00000	73	97	27+50.00000	21	21						
28+00.00000	60	201	28+00.00000	6	38						
28+50.00000	16	314	28+50.00000	0	43						
29+00.00000	3	396	29+00.00000	4	41						
29+50.00000	12	330	29+50.00000	14	42						
30+00.00000	31	175	30+00.00000	42	37						
30+50.00000	33	77	30+50.00000	82	33						
31+00.00000	21	41	31+00.00000	102	26						
31+50.00000	27	23	31+50.00000	101	24						
32+00.00000	51	18	32+00.00000	91	24						
32+50.00000	61	26	32+50.00000	82	24						
33+00.00000	53	26	33+00.00000	63	31						
33+50.00000	39	20	33+50.00000	27	38						
34+00.00000	32	14	34+00.00000	20	43						
34+50.00000	29	11	34+50.00000	25	44						
35+00.00000	26	8	35+00.00000	20	38						
35+50.00000	26	5	35+50.00000	16	33						
36+00.00000	23	3	36+00.00000	13	29						
36+50.00000	16	4	36+50.00000	15	23						
37+00.00000	10	5	37+00.00000	12	13						

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



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12 - 00.00
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2/25/2014
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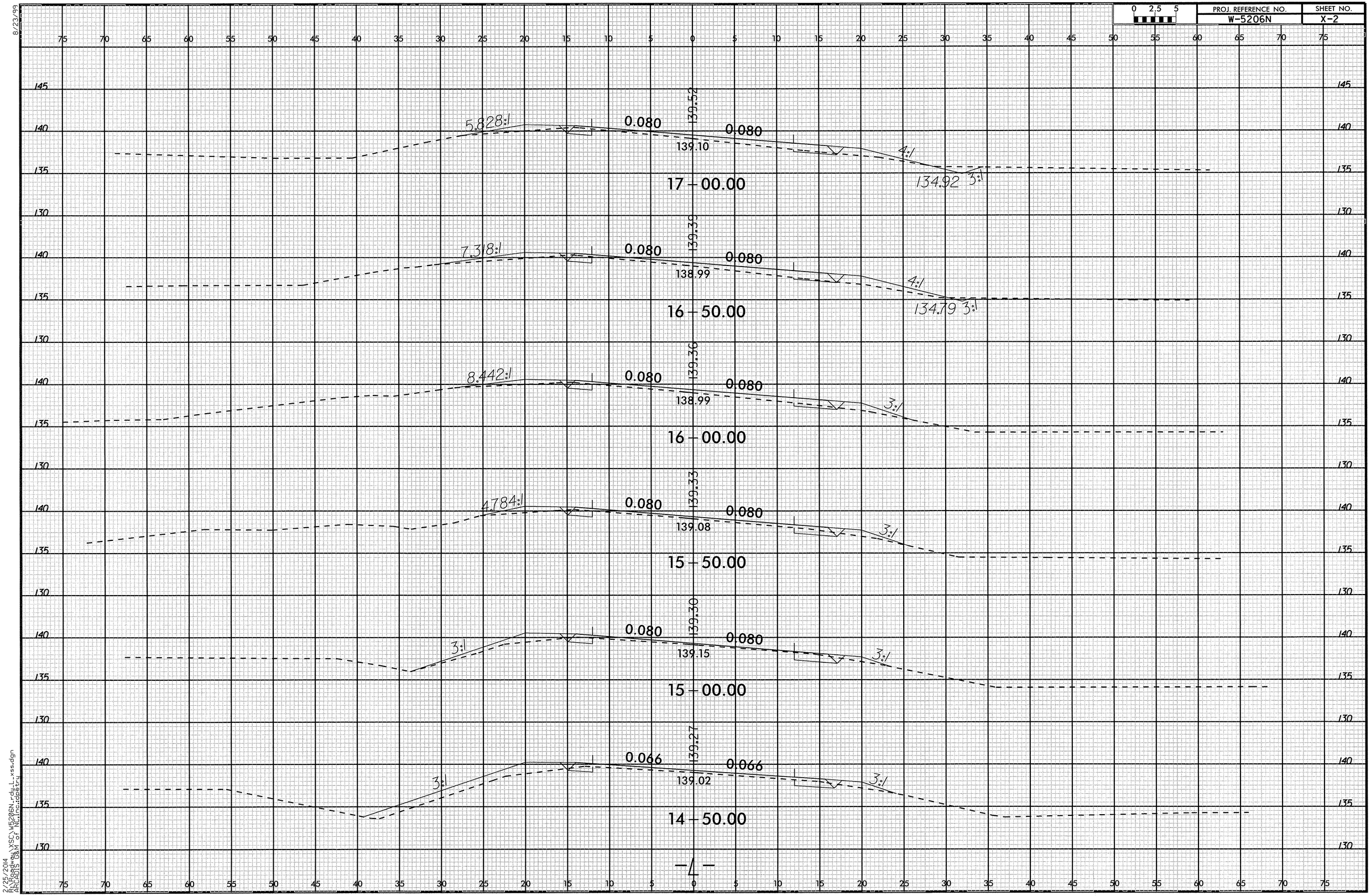

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8/23/99

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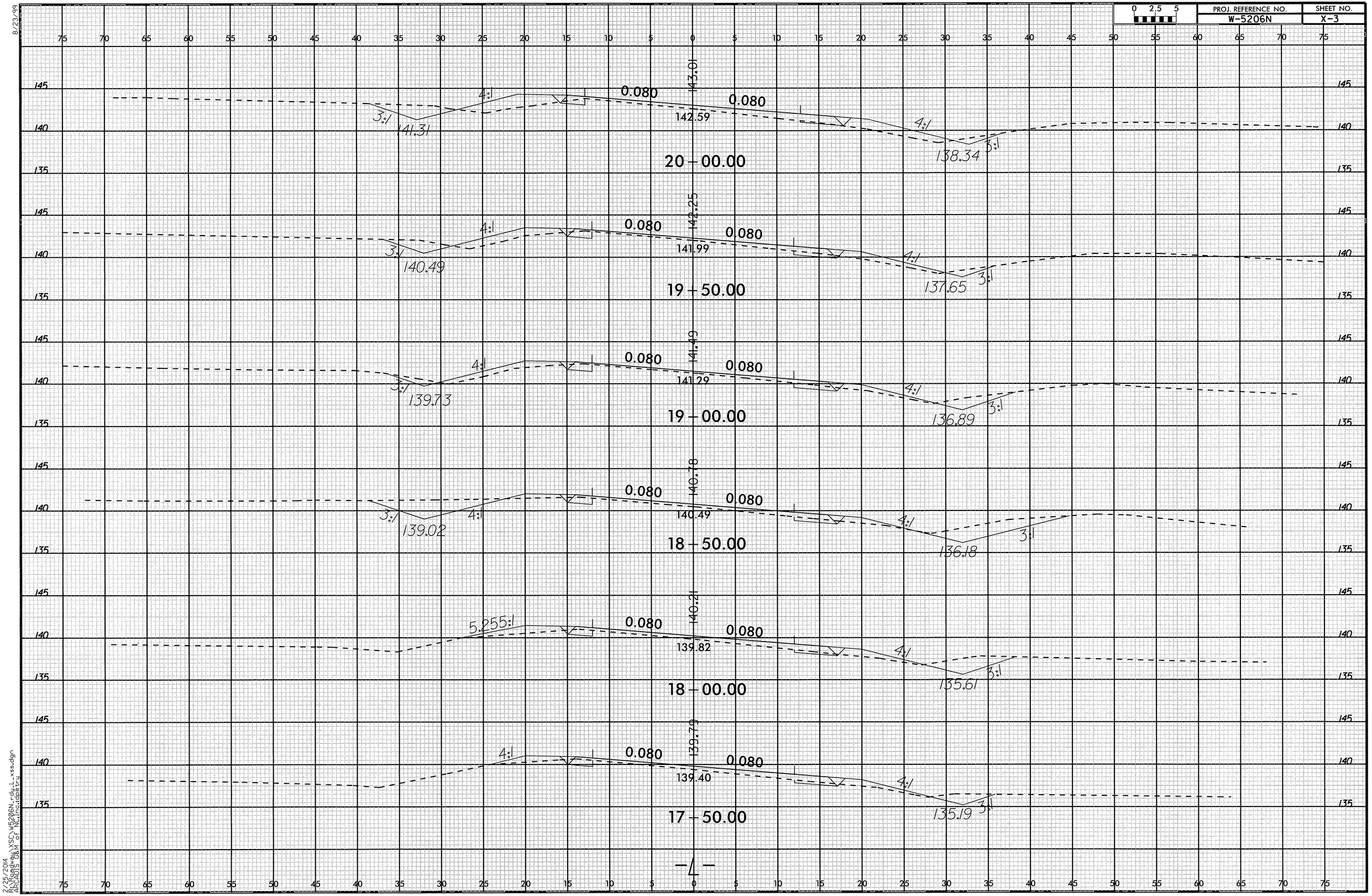

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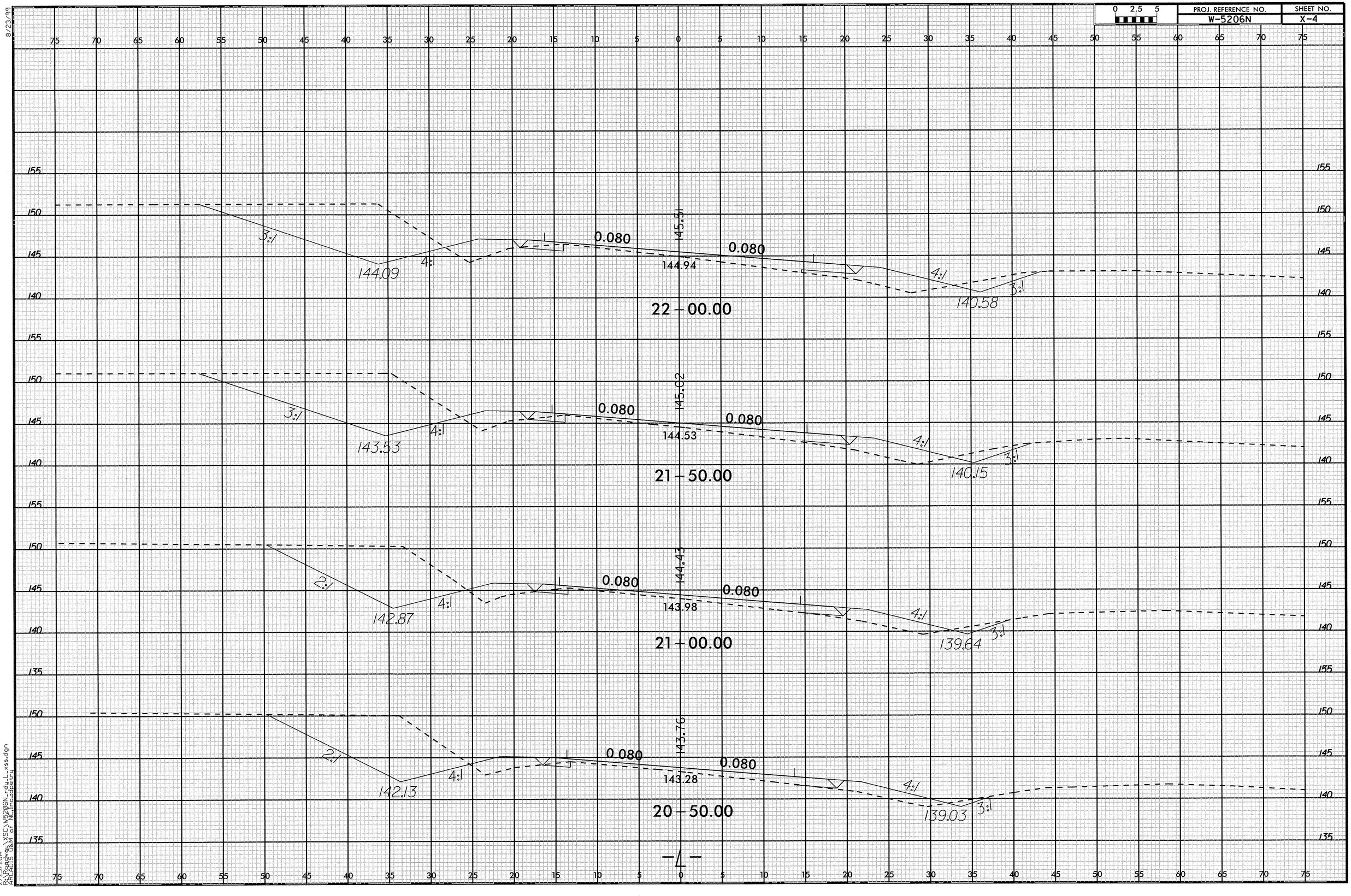

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2/25/2014
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8/23/99

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24 – 50.00

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23 – 00.00

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– 4 –

2/25/2014
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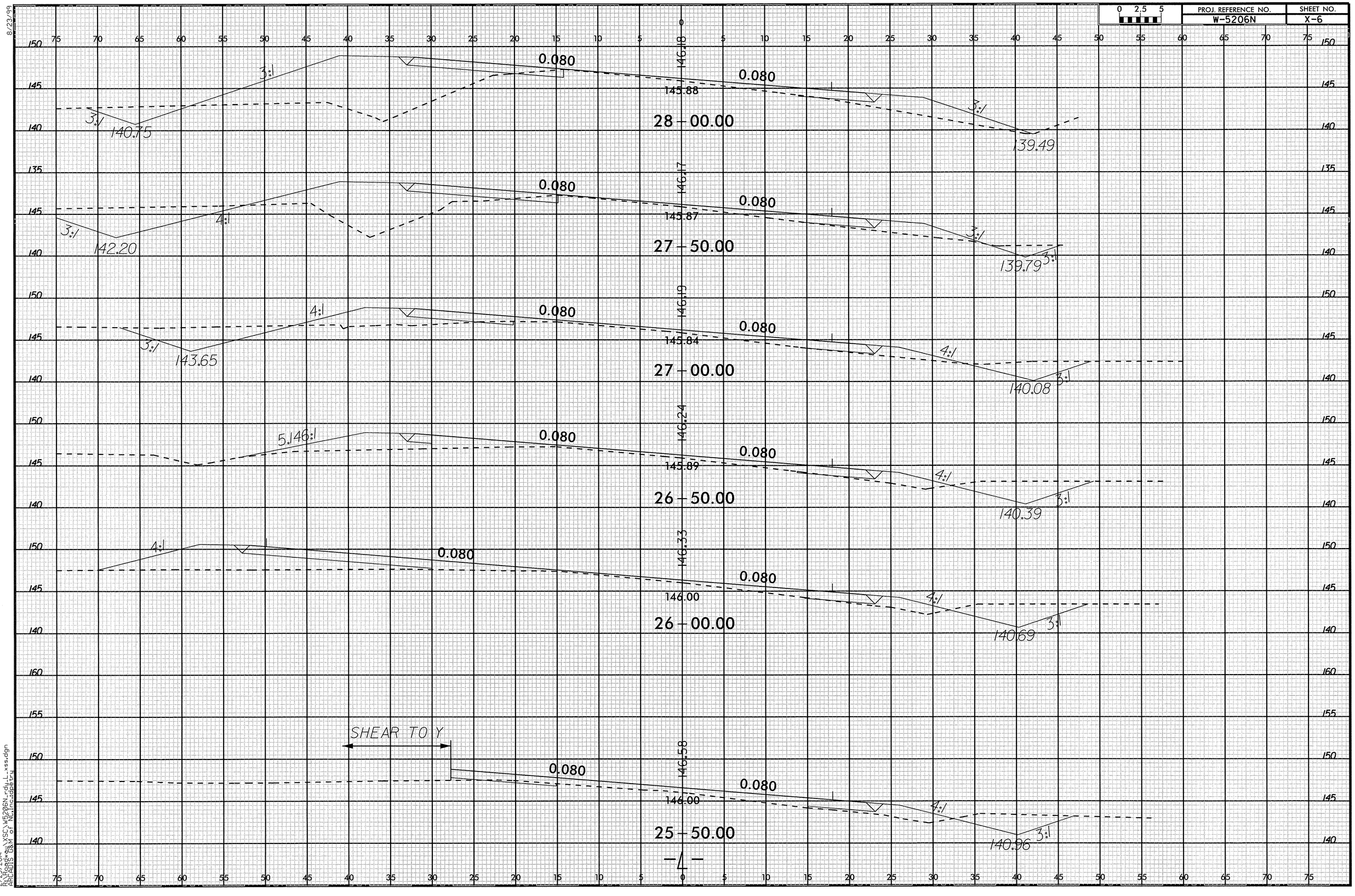

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146.00
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5.146:1
SHEAR TO Y
-L-
8/23/99
2/25/2014
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8/23/99

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146.97

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30 – 50.00

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29 – 00.00

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140.36

28 – 50.00

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0.080

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—4—

2/25/2014
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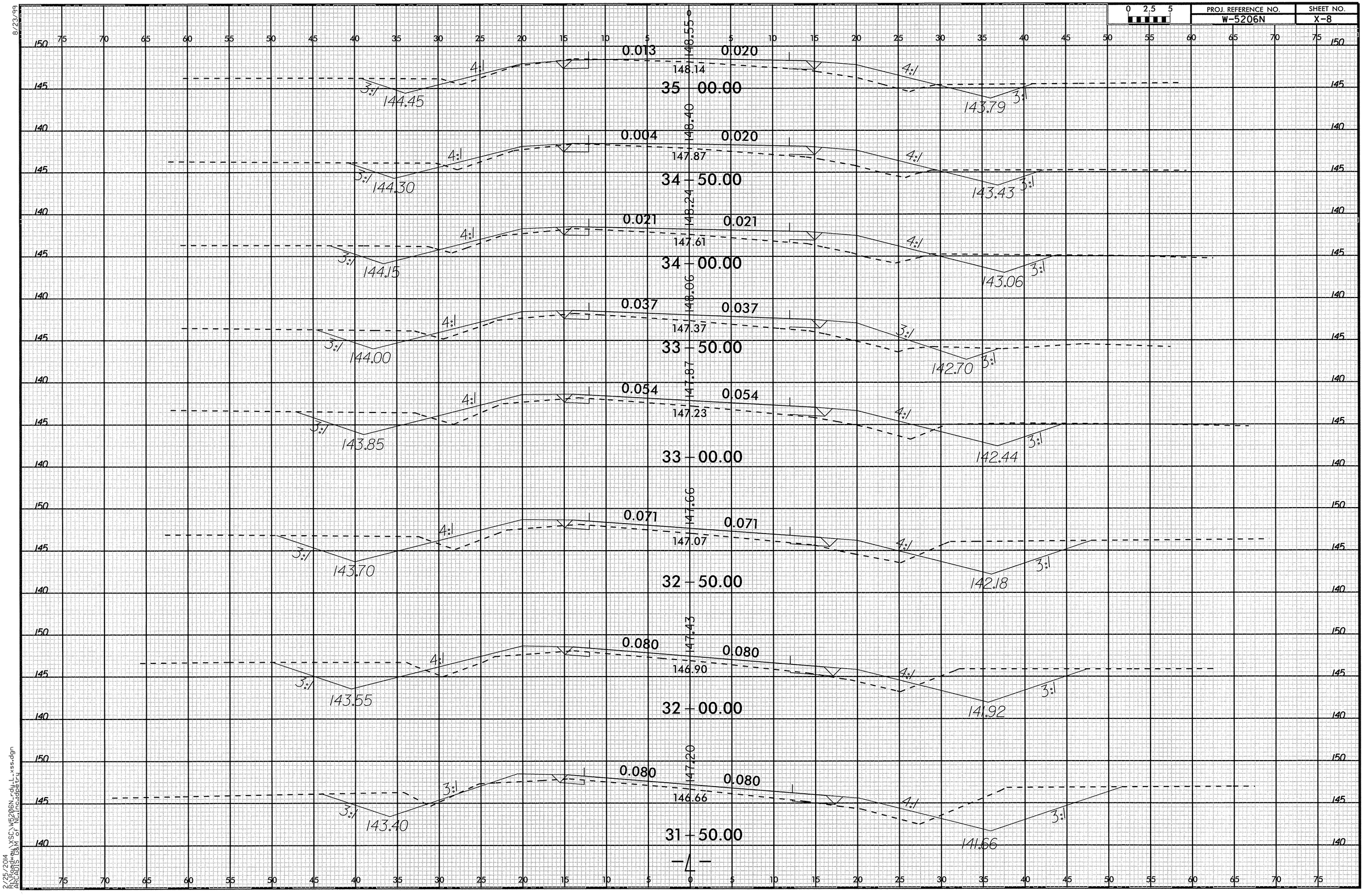

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2/25/2014
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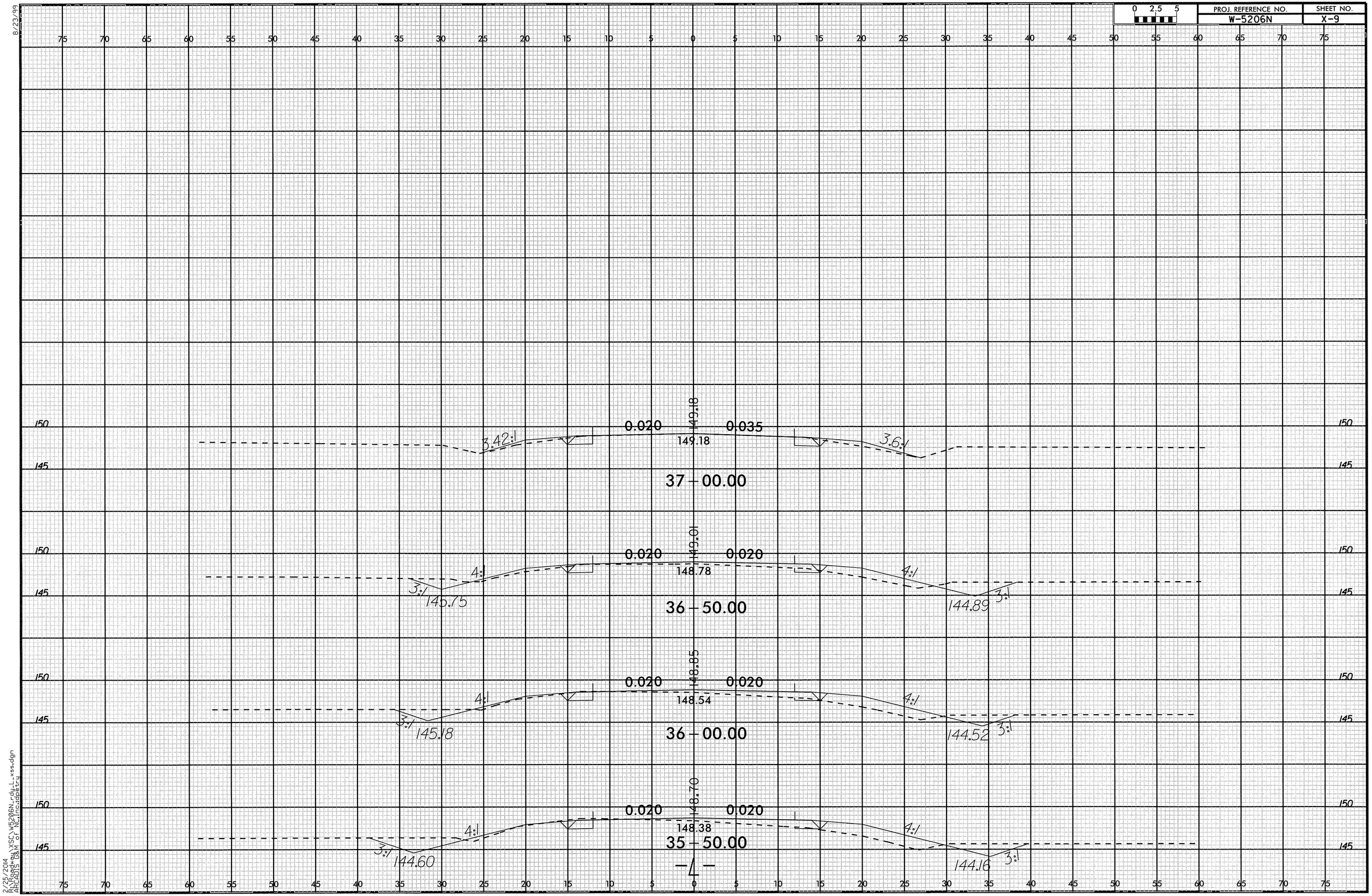

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2/25/2014
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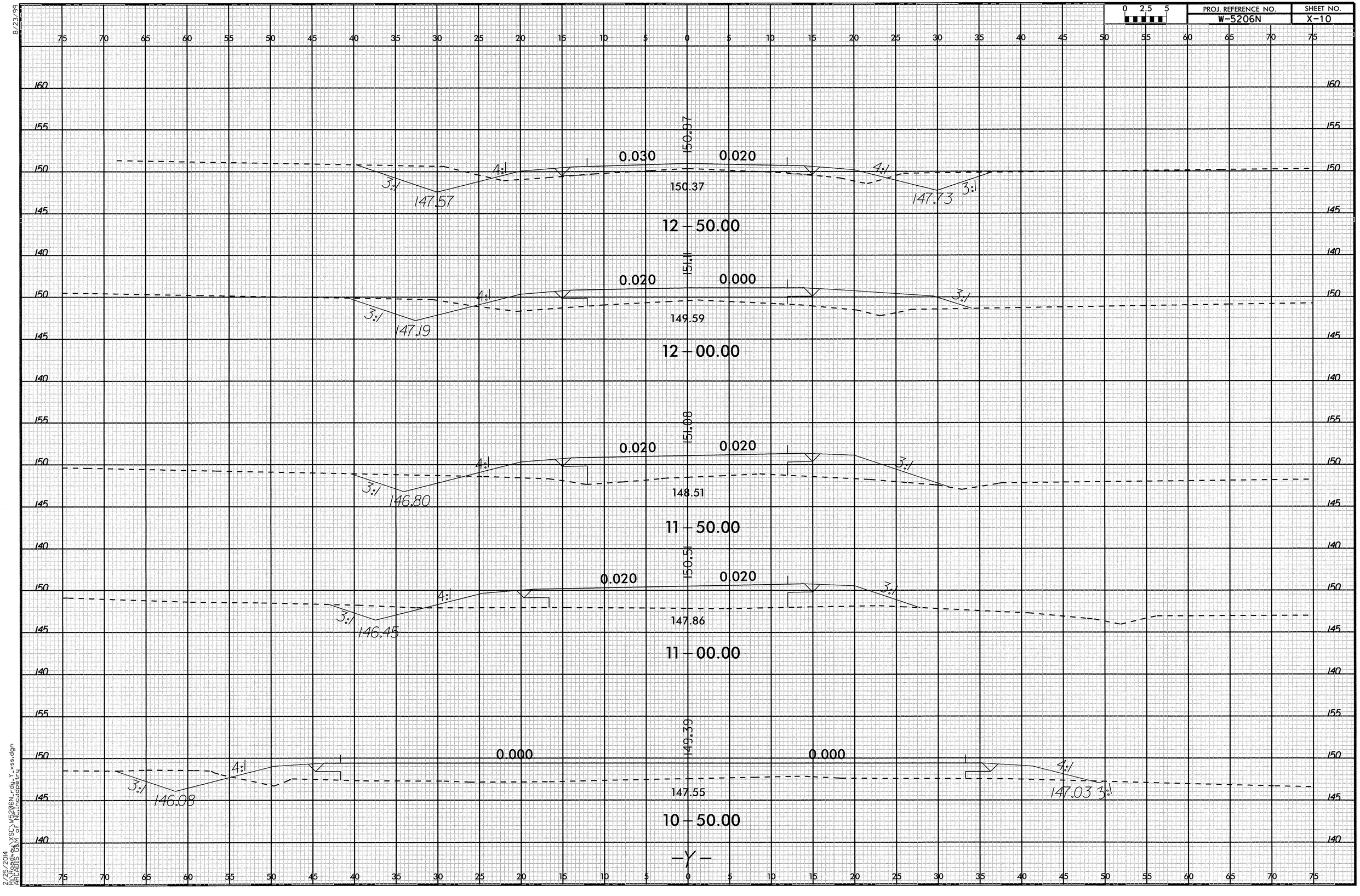

0 2.5 5
PROJ. REFERENCE NO.
W-5206N
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147.03
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2/25/2014
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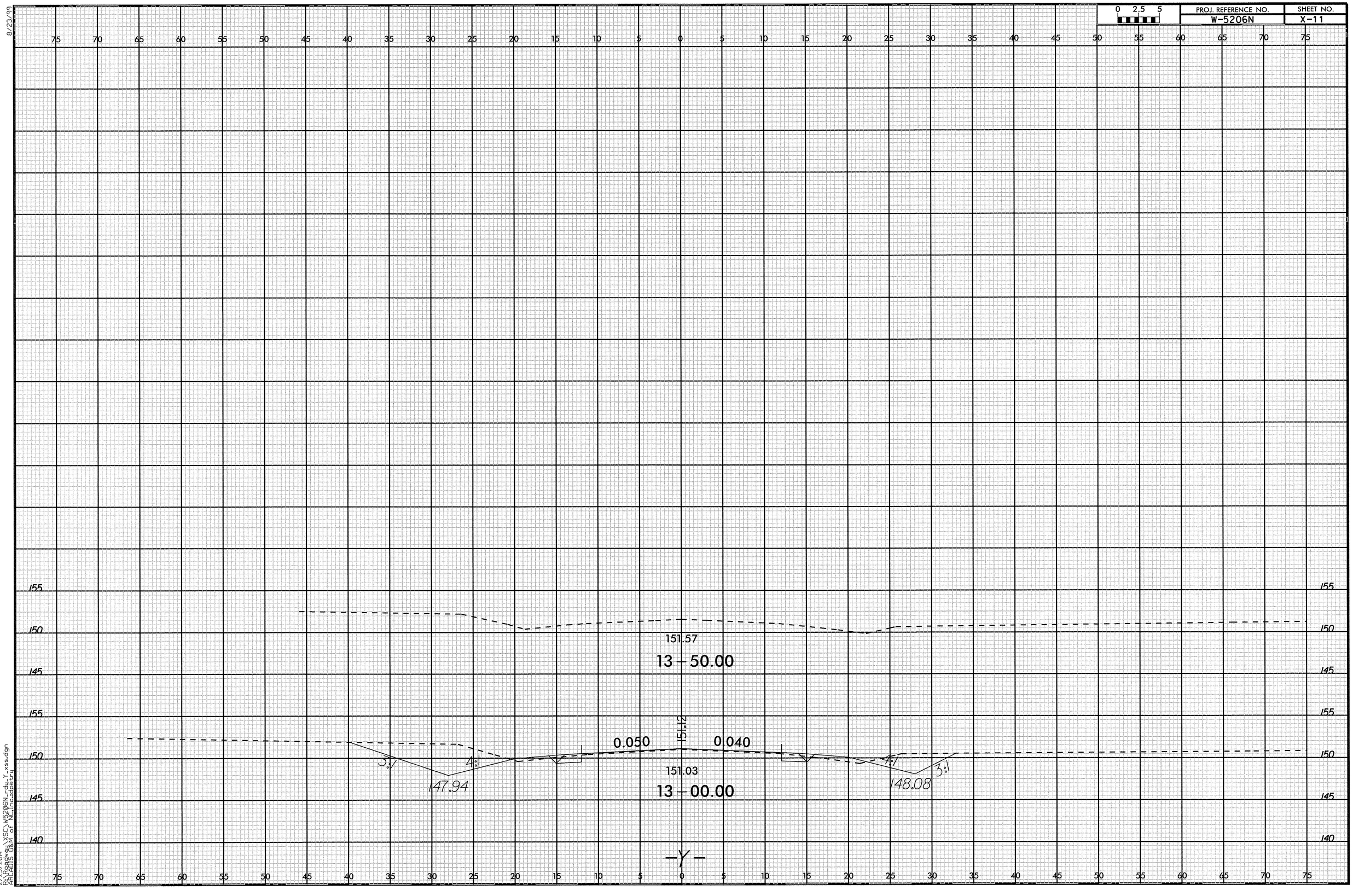
ARCADIS G&M of NC,Inc.:dpetry



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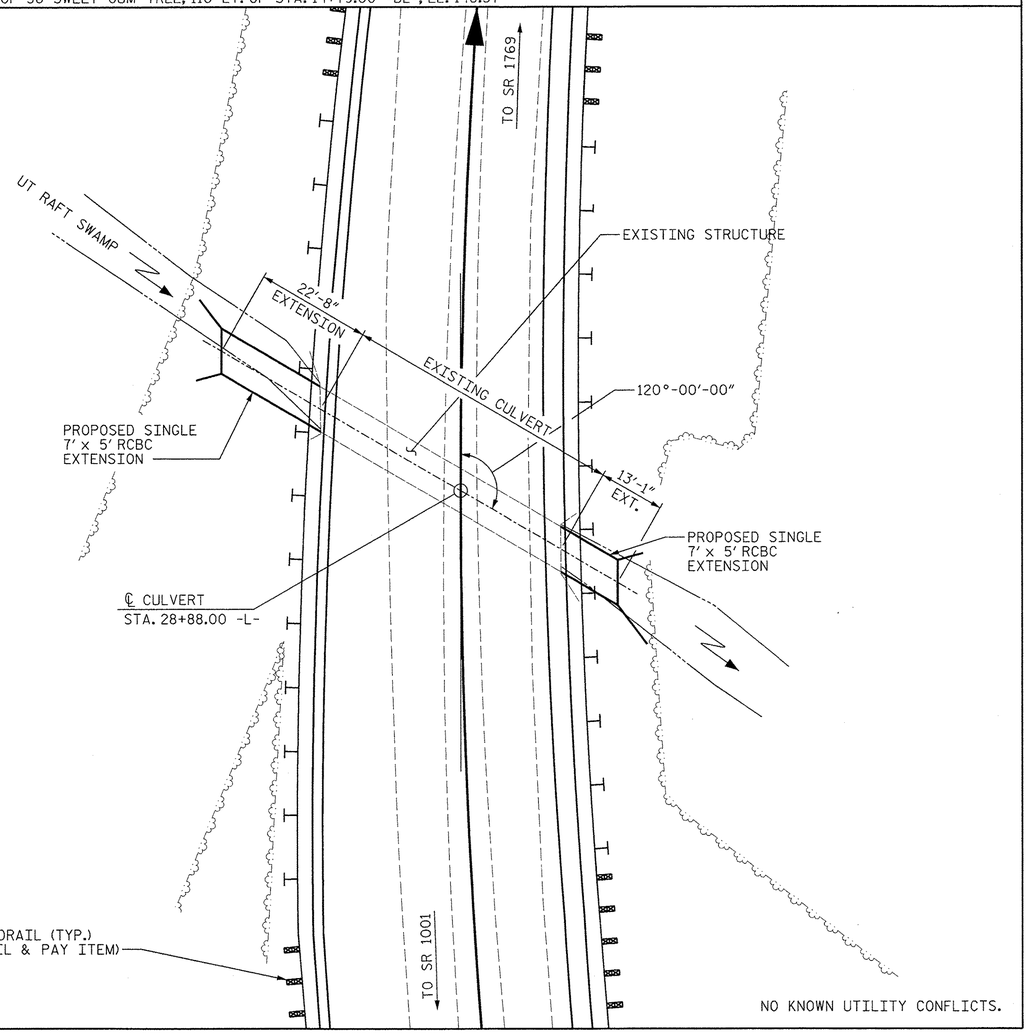
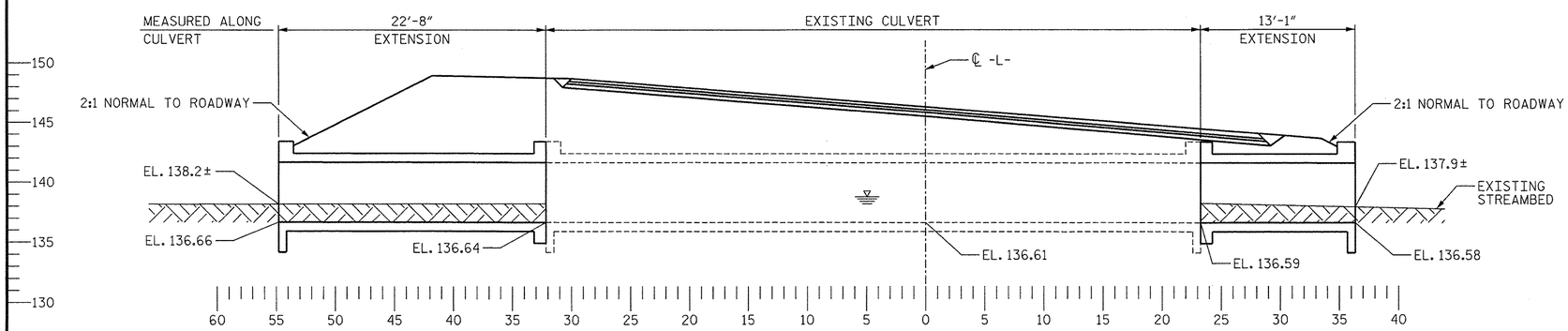
0.050
0.040
151.03
13 – 00.00
3:1
4:1
147.94
148.08
–Y–
2/25/2014
R:\Roadway\XSC\W5206N_rdy_Y_xss.dgn
ARCADIS G&M of NC,Inc.:dpetry

BM: RR SPIKE IN BASE OF 36" SWEET GUM TREE, 110' LT. OF STA. 14+79.00 -BL-, EL. 146.37



LOCATION SKETCH

GRADE POINT ELEVATION @ 28+88.00 -L- = 146.29
BED ELEVATION @ 28+88.00 -L- = 136.61
ROADWAY SLOPES = 2:1



PROFILE ALONG ℄ CULVERT

NOTES

ASSUMED LIVE LOAD ----------HL-93 OR ALTERNATE LOADING.

DESIGN FILL----------2.0 FT.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

DOWELS SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIUM COMPRESSIVE STRENGTH OF 1500 PSI.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

EXCAVATE 1 FT. BELOW CULVERT AND FOOTINGS AND REPLACE WITH FOUNDATION CONDITIIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS.

SCOUR PROTECTIONS ARE REQUIRED AT BOTH INLET AND OUTLET OF THE CULVERT. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.

THE SCOUR CRITICAL ELEVATIONS ARE THE AS-BUILT BOTTOM OF BOX CULVERT ELEVATIONS. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDROGRAPHIC DATA

DESIGN DISCHARGE ..... = 120 CFS
FREQUENCY OF DESIGN FLOOD ..... = 50 YRS.
DESIGN HIGH WATER ELEVATION ..... = 142.5 FT.
DRAINAGE AREA ..... = 0.54 SQ. MI.
BASE DISCHARGE (Q100) ..... = 150 CFS
BASE HIGH WATER ELEVATION ..... = 143.39 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE ..... = 220+ CFS
FREQUENCY OF OVERTOPPING FLOOD ..... = 500+ YRS.
OVERTOPPING FLOOD ELEVATION ..... = 149.6 FT.

-L- PROFILE DATA

PVI STA. 28+15.00 -L-
PVI EL. = 145.65
VC = 570.00
g1 = -0.2991%
g2 = +0.4615%

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE			
BARREL @ .714	CY/FT	25.5	C.Y.
EDGE BEAM		1.5	C.Y.
WING ETC.		10.6	C.Y.
TOTAL		37.6	C.Y.
REINFORCING STEEL			
BARREL		4,452	LBS.
WINGS ETC.		609	LBS.
TOTAL		5,061	LBS.
EPOXY REINFORCING STEEL			
TOTAL (BARREL)		1,107	LBS.
CULVERT EXCAVATION ----------		LUMP SUM	
FOUNDATION CONDITIONING MATERIAL		21 TONS	
REMOVAL OF EXISTING STRUCTURE ---		LUMP SUM	

PROJECT NO. W-5206N
ROBESON COUNTY
STATION: 28+88.00 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD SINGLE 7 FT. W X 5 FT. H CONCRETE BOX CULVERT 120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 027899 ENGINEER PAUL A. de PAOLI
02-11-14

DRAWN BY : J.S. ISRAELNAIM DATE : 10/13
CHECKED BY : P.A. de PAOLI DATE : 10/13
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE :

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			6

2/11/2014
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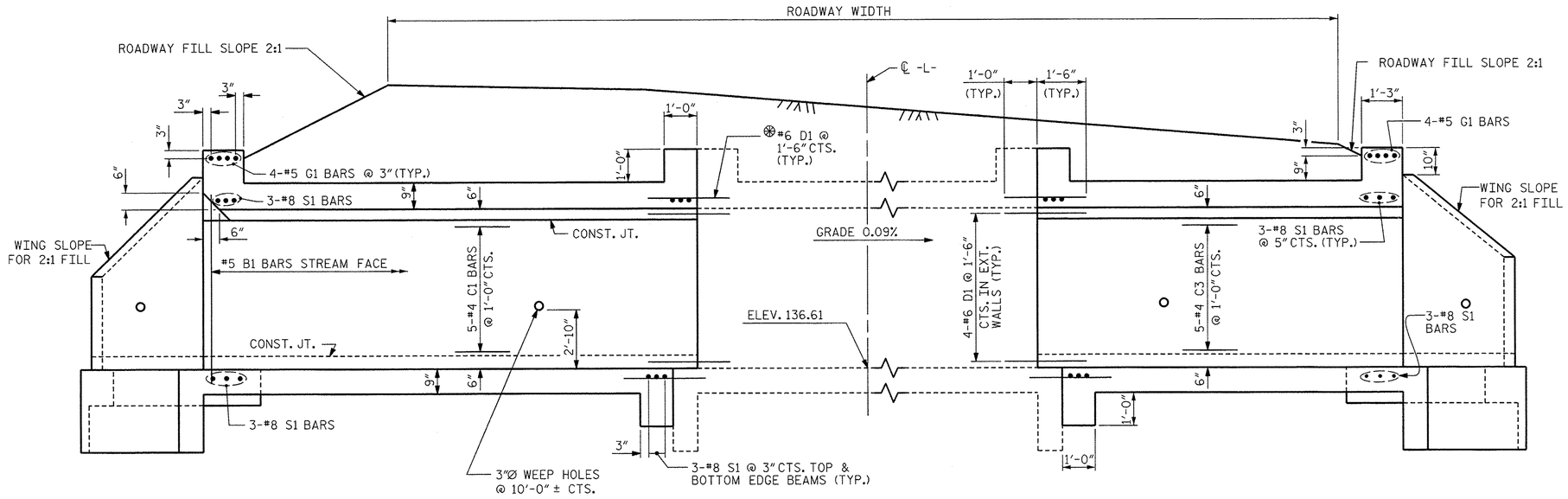
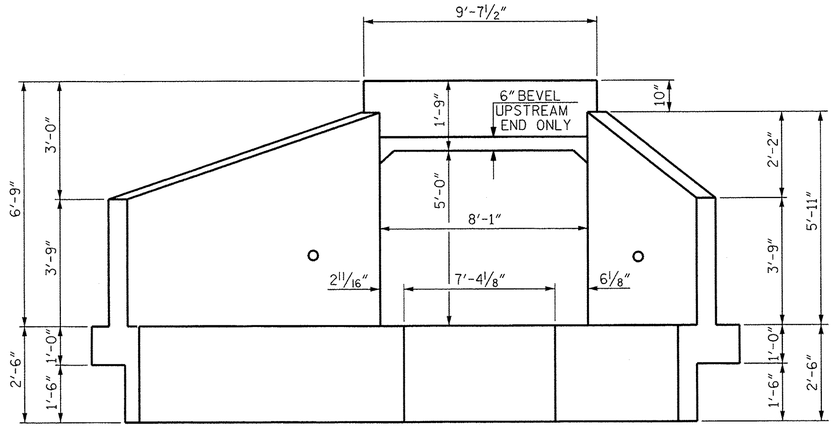
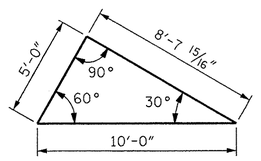


CULVERT SECTION NORMAL TO ROADWAY

⊛#6 "D" DOWELS SHALL BE PLACED @ 1'-6" CTS. IN THE ROOF SLAB, FLOOR SLAB, AND EXTERIOR WALLS TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT.



END ELEVATION NORMAL TO SKEW



SKEW TRIANGLE

PROJECT NO. W-5206N

ROBESON COUNTY

STATION: 28+88.00 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD
SINGLE 7 FT. X 5 FT. CONCRETE BOX CULVERT 120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 027759 ENGINEER PAUL A. de PAOLI
02.11.14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			6

DRAWN BY : J.S. ISRAELNAIM DATE : 10/13
CHECKED BY : P.A. de PAOLI DATE : 10/13
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE :

2/11/2014
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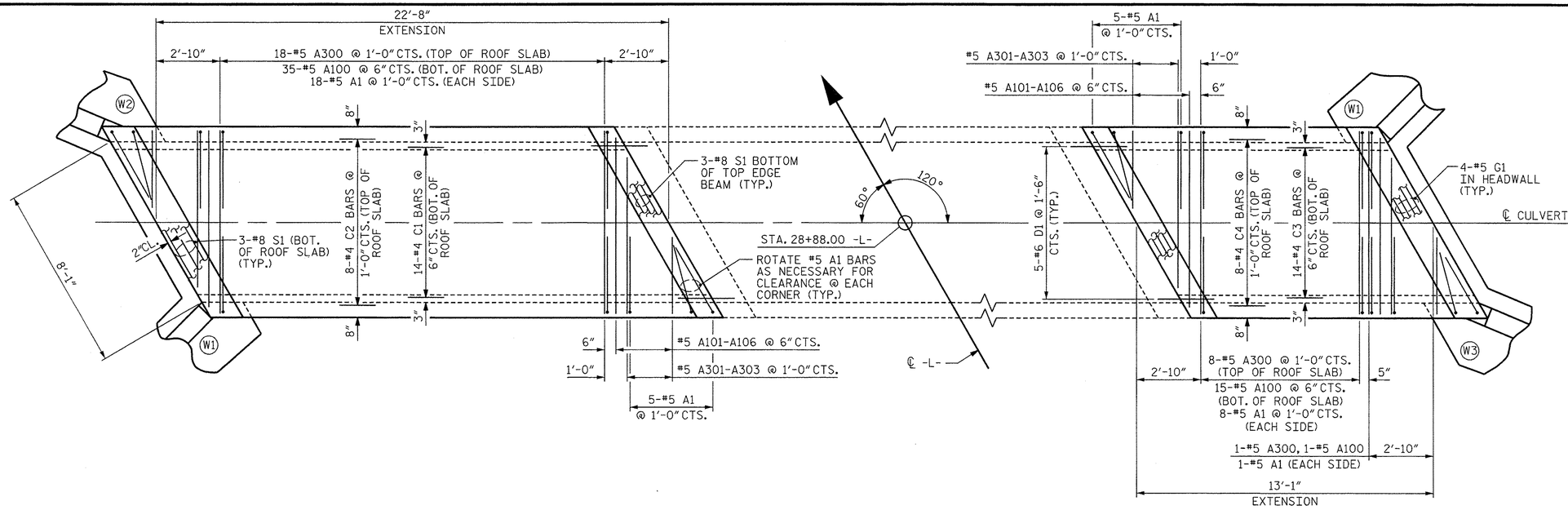
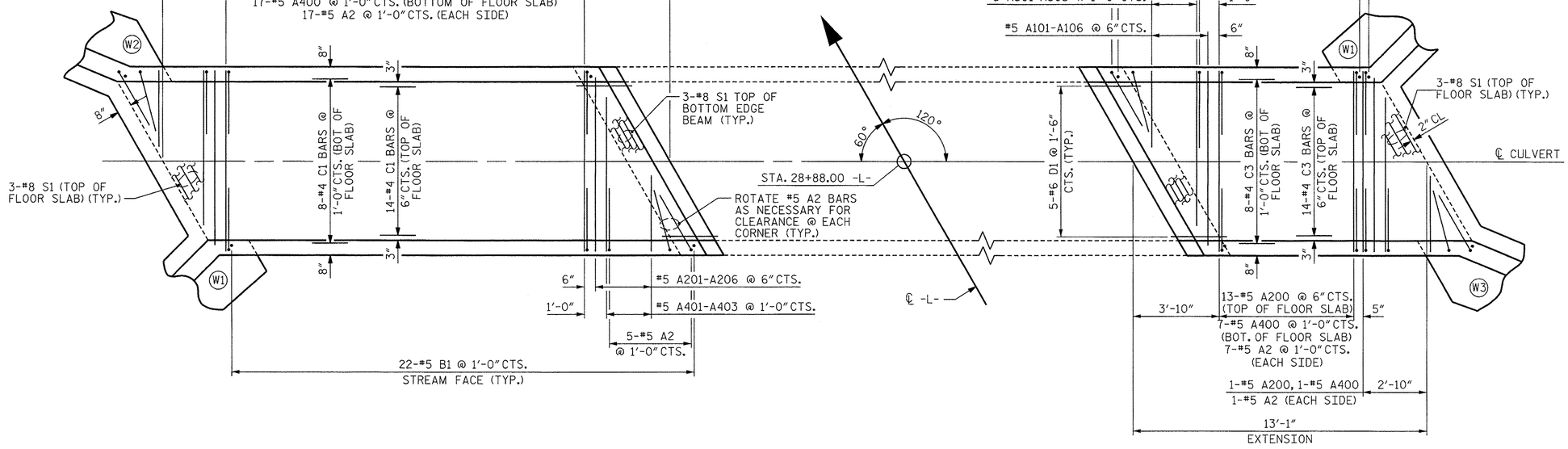


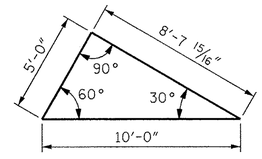
LEFT EXTENSION - PLAN OF ROOF SLAB

RIGHT EXTENSION - PLAN OF ROOF SLAB



LEFT EXTENSION - PLAN OF FLOOR SLAB

RIGHT EXTENSION - PLAN OF FLOOR SLAB



SKEW TRIANGLE

PROJECT NO. W-5206N

ROBESON COUNTY

STATION: 28+88.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD

SINGLE 7 FT. X 5 FT. CONCRETE BOX CULVERT 120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER PAUL A. de PAOLI
02-11-14

DRAWN BY : J.S. ISRAELNAIM DATE : 10/13
CHECKED BY : P.A. de PAOLI DATE : 10/13
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE : _____

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
1			3			TOTAL SHEETS
2			4			6

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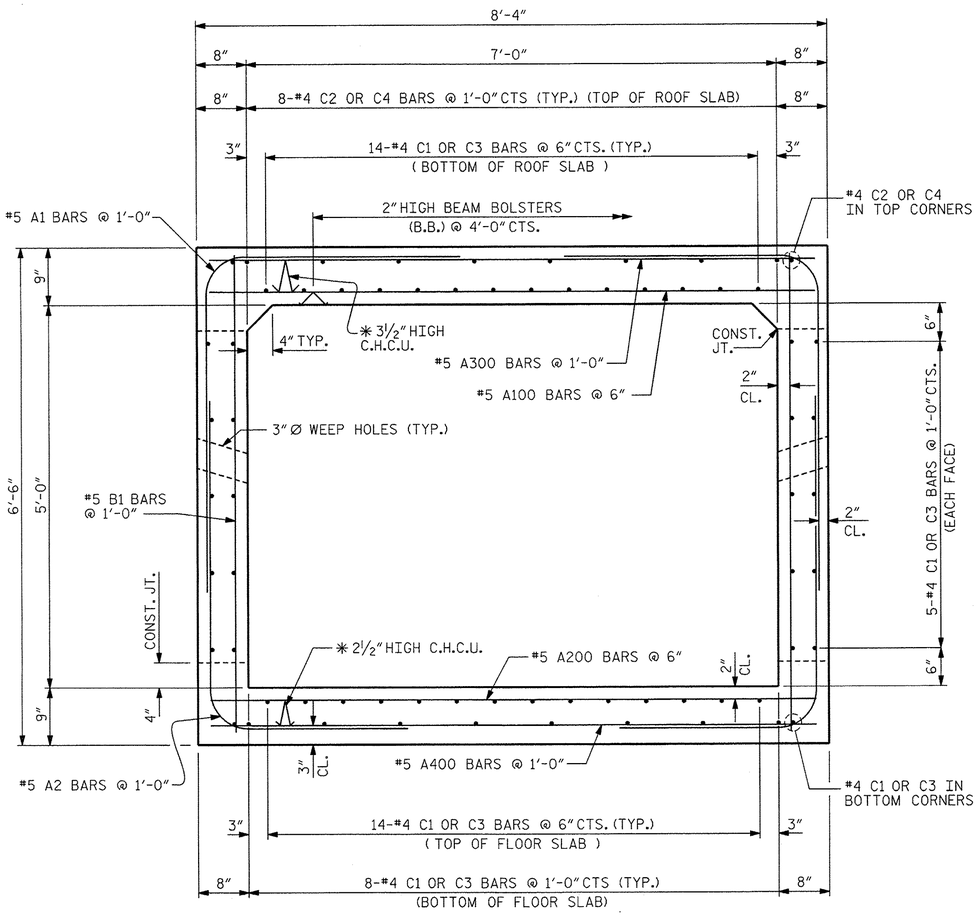
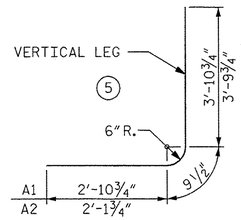


RIGHT ANGLE SECTION OF BARREL

THERE ARE 68 "C" BARS IN SECTION OF BARREL.
✳ALL CONTINUOUS HIGH CHAIR UPPERS (C.H.C.U.) @ 3′-0″CTS.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
A300	#5	2′-7″
A400	#5	2′-2″
B1	#5	2′-2″

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	74	5	5	7′-7″	585
A2	70	5	5	6′-9″	493
A100	51	5	STR	8′-0″	426
A101	4	5	STR	7′-7″	32
A102	4	5	STR	6′-9″	28
A103	4	5	STR	5′-11″	25
A104	4	5	STR	5′-0″	21
A105	4	5	STR	4′-2″	17
A106	4	5	STR	3′-3″	14
A200	47	5	STR	8′-0″	392
A201	4	5	STR	7′-7″	32
A202	4	5	STR	6′-9″	28
A203	4	5	STR	5′-11″	25
A204	4	5	STR	5′-0″	21
A205	4	5	STR	4′-2″	17
A206	4	5	STR	3′-3″	14
✳A300	27	5	STR	8′-0″	225
✳A301	4	5	STR	6′-9″	28
✳A302	4	5	STR	5′-0″	21
✳A303	4	5	STR	3′-3″	14
A400	25	5	STR	8′-0″	209
A401	4	5	STR	6′-9″	28
A402	4	5	STR	5′-0″	21
A403	4	5	STR	3′-3″	14
B1	68	5	STR	6′-1″	431
C1	58	4	STR	22′-3″	862
✳C2	10	4	STR	22′-3″	149
C3	58	4	STR	12′-8″	491
✳C4	10	4	STR	12′-8″	85
D1	36	6	STR	2′-6″	135
G1	8	5	STR	9′-2″	76
S1	24	8	STR	9′-2″	587

REINFORCING STEEL	4,452 LBS
✳EPOXY COATED REINFORCING STEEL	1,107 LBS

PROJECT NO. W-5206N
ROBESON COUNTY
STATION: 28+88.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION SINGLE 7 FT. W X 5 FT. H CONCRETE BOX CULVERT

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER PAUL A. de PAOLI
02.11.14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. C-4
TOTAL SHEETS 6

DRAWN BY : J.S. ISRAELNAIM DATE : 10/13
CHECKED BY : P.A. de PAOLI DATE : 10/13
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE :

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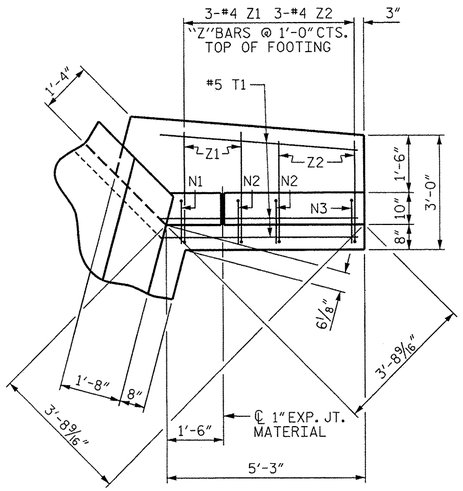
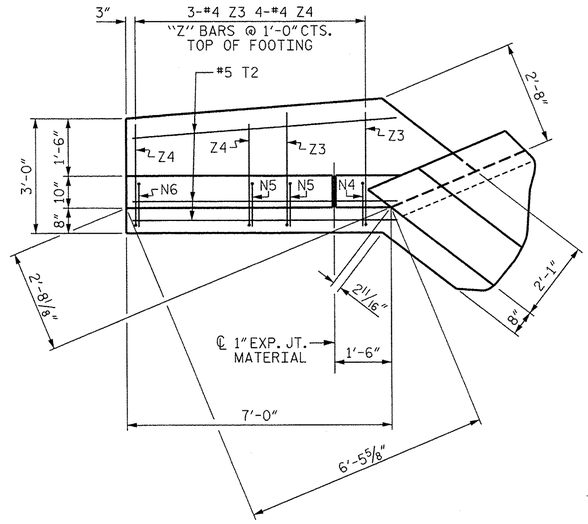
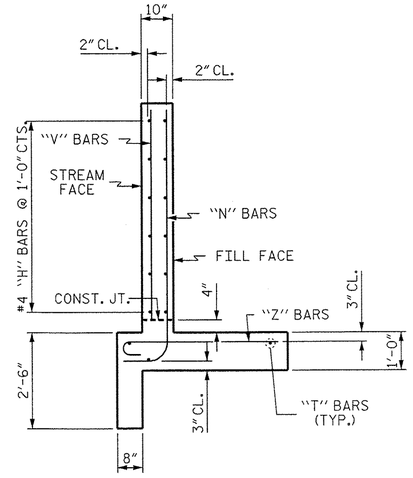


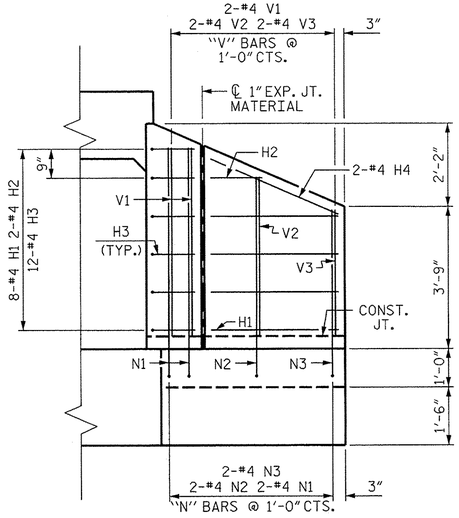
PLAN W1



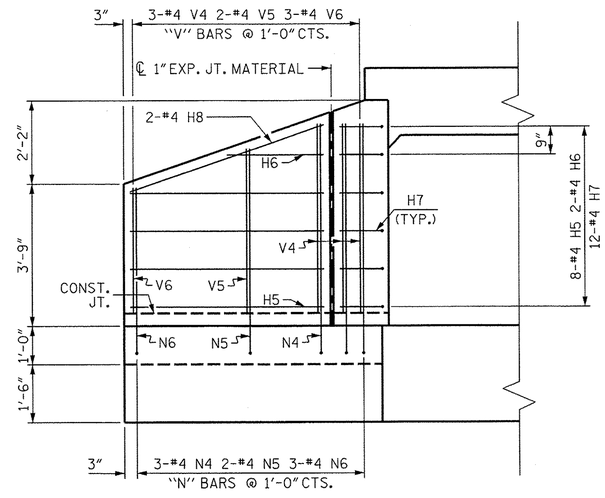
PLAN W2



TYPICAL WING SECTION



ELEVATION W1



ELEVATION W2

PROJECT NO. W-5206N

ROBESON COUNTY

STATION: 28+88.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT

H = 5'-0" SLOPE = 2:1
120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 024799 ENGINEER PAUL A. de PAOLI
02.11.14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
1			3			TOTAL SHEETS
2			4			6

STD. NO. CW6005

DRAWN BY :	J.S. ISRAELNAIM	DATE : 10/13
CHECKED BY :	P.A. de PAOLI	DATE : 10/13
DESIGN ENGINEER OF RECORD :	P.A. de PAOLI	DATE :

2/11/2014
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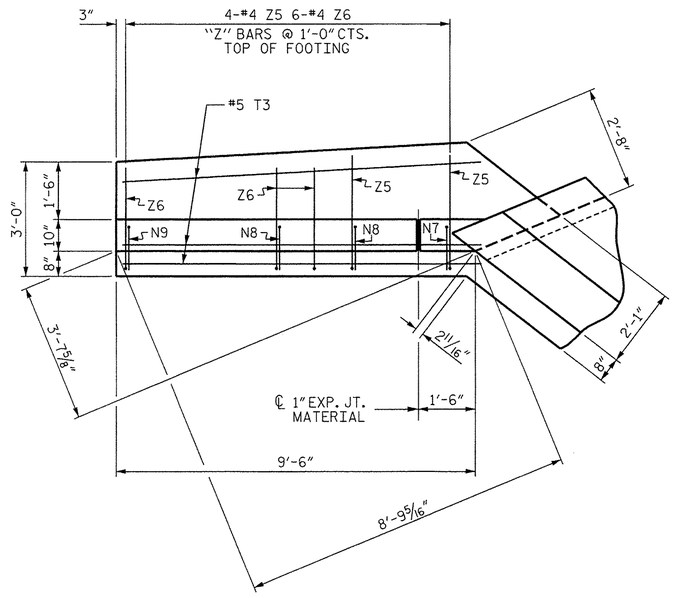
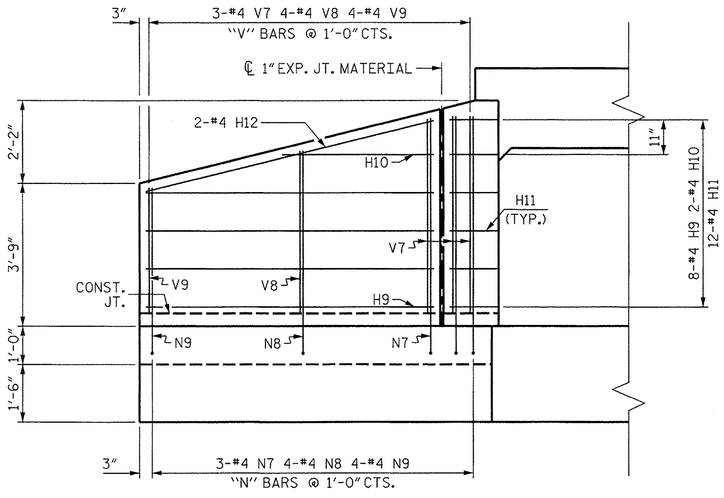


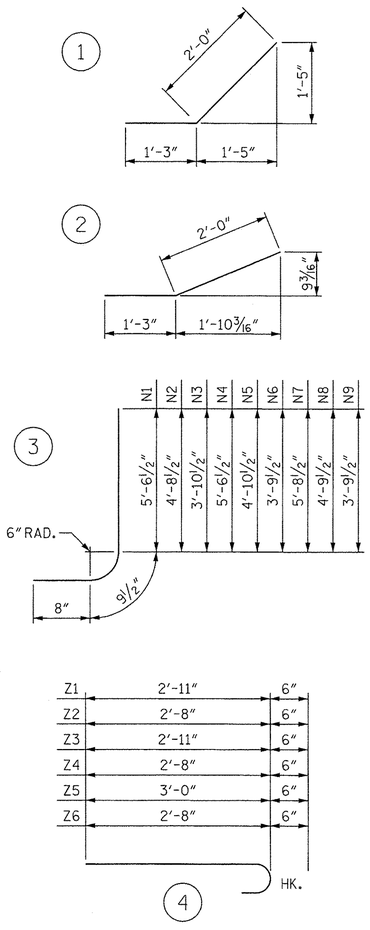
PLAN W3



ELEVATION W3

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



Z1	2'-11"	6"
Z2	2'-8"	6"
Z3	2'-11"	6"
Z4	2'-8"	6"
Z5	3'-0"	6"
Z6	2'-8"	6"

4 HK.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	16	#4	STR	3'-4"	36
H2	4	#4	STR	1'-4"	4
H3	24	#4	1	3'-3"	52
H4	4	#4	STR	3'-8"	10
H5	8	#4	STR	5'-1"	27
H6	2	#4	STR	2'-7"	3
H7	12	#4	2	3'-3"	26
H8	2	#4	STR	5'-5"	7
H9	8	#4	STR	7'-7"	41
H10	2	#4	STR	4'-0"	5
H11	12	#4	2	3'-3"	26
H12	2	#4	STR	7'-10"	10
N1	4	#4	3	7'-0"	19
N2	4	#4	3	6'-2"	16
N3	4	#4	3	5'-4"	14
N4	3	#4	3	7'-0"	14
N5	2	#4	3	6'-4"	8
N6	3	#4	3	5'-3"	11
N7	3	#4	3	7'-2"	14
N8	4	#4	3	6'-3"	17
N9	4	#4	3	5'-3"	14
T1	6	#5	STR	5'-3"	33
T2	3	#5	STR	7'-0"	22
T3	3	#5	STR	9'-6"	30
V1	4	#4	STR	5'-0"	13
V2	4	#4	STR	4'-2"	11
V3	4	#4	STR	3'-4"	9
V4	3	#4	STR	5'-0"	10
V5	2	#4	STR	4'-4"	6
V6	3	#4	STR	3'-3"	7
V7	3	#4	STR	5'-1"	10
V8	4	#4	STR	4'-3"	11
V9	4	#4	STR	3'-3"	9
Z1	6	#4	4	3'-5"	14
Z2	6	#4	4	3'-2"	13
Z3	3	#4	4	3'-5"	7
Z4	4	#4	4	3'-2"	8
Z5	4	#4	4	3'-6"	9
Z6	6	#4	4	3'-2"	13

REINFORCING STEEL
FOR 4 WINGS 609 LBS

CLASS A CONCRETE
4 WINGS 8.85 CY
2 HEADWALLS 0.89 CY
2 END CURTAIN WALLS 0.88 CY
TOTAL 10.62 CY

PROJECT NO. W-5206N
ROBESON COUNTY
STATION: 28+88.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR CONCRETE BOX CULVERT

H = 5'-0" SLOPE = 2:1
120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 027399 ENGINEER PAUL A. de PAOLI
02.11.14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-6
1			3			TOTAL SHEETS
2			4			6

DRAWN BY : J.S. ISRAELNAIM DATE : 10/13
CHECKED BY : P.A. de PAOLI DATE : 10/13
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE :

STD. NO. CW6005

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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

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