

STATE	STATE P	ROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	17 B	P.10.R.30	C	1	
STATE PR	OJ. NO.	F. A. PROJ. NO.		DESCRIP	TION
17BP.10).R.30			P.E	
17BP.10).R.30		R/W	& L	JTILITIES
17BP.10).R.30			CON	IST.
			-		
1					



GENERAL NOTES:

2012 SPECIFICATIONS EFFECTIVE: 01-17-2012 REVISED: 07-30-2012

GRADE LINE: GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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:

PHONE - WINDSTREAM COMMUNICATIONS WATER - UNION COUNTY PUBLIC WORKS

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

and by reference hereby are considered a part of these plans:

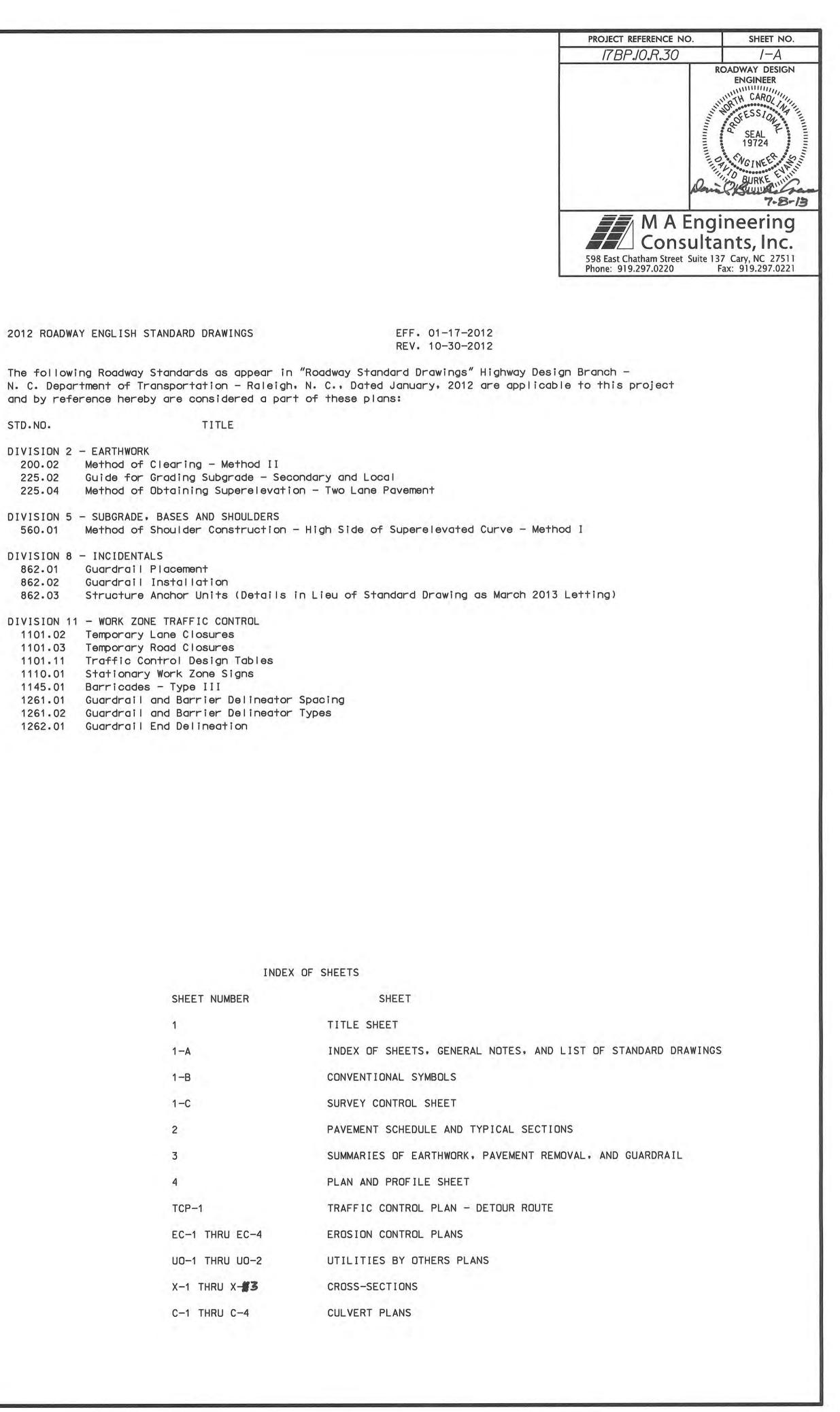
STD.NO.	TITLE
DIVISION 2	- EARTHWORK
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Sec
225.04	Method of Obtaining Superelevation
DIVISION 5	- SUBGRADE, BASES AND SHOULDERS
560.01	Method of Shoulder Construction
DIVISION 8	- INCIDENTALS
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Details
DIVISION 11	- WORK ZONE TRAFFIC CONTROL
1101.02	Temporary Lane Closures
1101.03	Temporary Road Closures
1101.11	Traffic Control Design Tables
1110.01	Stationary Work Zone Signs
1145.01	Barricades – Type III
1261.01	Guardrail and Barrier Delineator
1261.02	Guardrail and Barrier Delineator
1262.01	Guardrail End Delineation

SHEET	NUMBER	
1		

1-A		
1-B		
1-C		
2		
3		
4		
TCP-	1	
EC-1	THRU	EC-4
UO-1	THRU	U0-2

X-1 THRU X-#3

C-1 THRU C-4



Note: Not to Scale *S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing wonand boondary	
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Known Soil Contamination: Area or Site —	00
Potential Soil Contamination: Area or Site —	
BUILDINGS AND OTHER CULT	TURE:
Gas Pump Vent or U/G Tank Cap	— o
Sign	O
Well	0
Small Mine	- 🛠
Foundation	
Area Outline	_
Cemetery	- []
Cemetery	
Building	
Building School	
Building	
Building School Church Dam	
BuildingSchoolChurchDam	
Building School Church Dam <i>HYDROLOGY:</i> Stream or Body of Water	
Building	
Building School Church Dam <i>HYDROLOGY:</i> Stream or Body of Water Hydro, Pool or Reservoir Jurisdictional Stream	
Building School Church Dam HYDROLOGY: Stream or Body of Water	
Building School Church Dam <i>HYDROLOGY:</i> Stream or Body of Water Hydro, Pool or Reservoir Jurisdictional Stream Buffer Zone 1 Buffer Zone 2	
Building School Church Dam <i>HYDROLOGY:</i> Stream or Body of Water Hydro, Pool or Reservoir Jurisdictional Stream Buffer Zone 1 Buffer Zone 2 Flow Arrow	
Building School Church Dam HYDROLOGY: Stream or Body of Water Hydro, Pool or Reservoir Jurisdictional Stream Buffer Zone 1 Buffer Zone 2 Flow Arrow Disappearing Stream	
Building School Church Dam <i>HYDROLOGY:</i> Stream or Body of Water Hydro, Pool or Reservoir Jurisdictional Stream Buffer Zone 1 Buffer Zone 2 Flow Arrow Disappearing Stream Spring	
Building School Church Dam HYDROLOGY: Stream or Body of Water Hydro, Pool or Reservoir Jurisdictional Stream Buffer Zone 1 Buffer Zone 2 Flow Arrow Disappearing Stream	$- \qquad + \qquad $

Standard **RR** Signal Switch — RR Abanda **RR** Disman → **RIGHT** Baseline C **Existing** Rig Existing Rig Proposed Proposed Iron Pi Proposed Concre Proposed Concret Existing Co Proposed **Existing** Ea Proposed Proposed Proposed Proposed Proposed

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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	\bigtriangleup
Existing Right of Way Line	
Proposed Right of Way Line	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Proposed Right of Way Line with Concrete or Granite R/W Marker	
Proposed Control of Access Line with Concrete C/A Marker	
Existing Control of Access	——(<u>c</u>)——
Proposed Control of Access	
Existing Easement Line	——E——
Proposed Temporary Construction Easement –	
Proposed Temporary Drainage Easement ——	TDE
Proposed Permanent Drainage Easement ——	
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 FEATURE	× :::
Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	<u>F</u>
Proposed Curb Ramp	CR
Existing Metal Guardrail	
Proposed Guardrail —————	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
VEGETATION:	
Single Tree	යි
Single Shrub	¢
Hedge	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Orchard	ි	යි
Vineyard		Viney

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	/ CONC HW
Footbridge	
Drainage Box: Catch Basin, DI or JB ———	СВ
Paved Ditch Gutter	
Storm Sewer Manhole	S
Storm Sewer	s

UTILITIES:

POWER:	
Existing Power Pole	6
Proposed Power Pole	6
Existing Joint Use Pole	
Proposed Joint Use Pole	-0-
Power Manhole	P
Power Line Tower	\boxtimes
Power Transformer	\square
U/G Power Cable Hand Hole	
H-Frame Pole	••
Recorded U/G Power Line	P
Designated U/G Power Line (S.U.E.*)	- <u>— — </u> P — –

TELEPHONE:

Existing Telephone Pole	-•-
Proposed Telephone Pole	-0-
Telephone Manhole	\bigcirc
Telephone Booth	Э
Telephone Pedestal	
Telephone Cell Tower	, T ,
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	тс
Designated U/G Telephone Conduit (S.U.E.*)-	— — — тс—
Recorded U/G Fiber Optics Cable	
Designated U/G Fiber Optics Cable (S.U.E.*)	— — — — T FO-

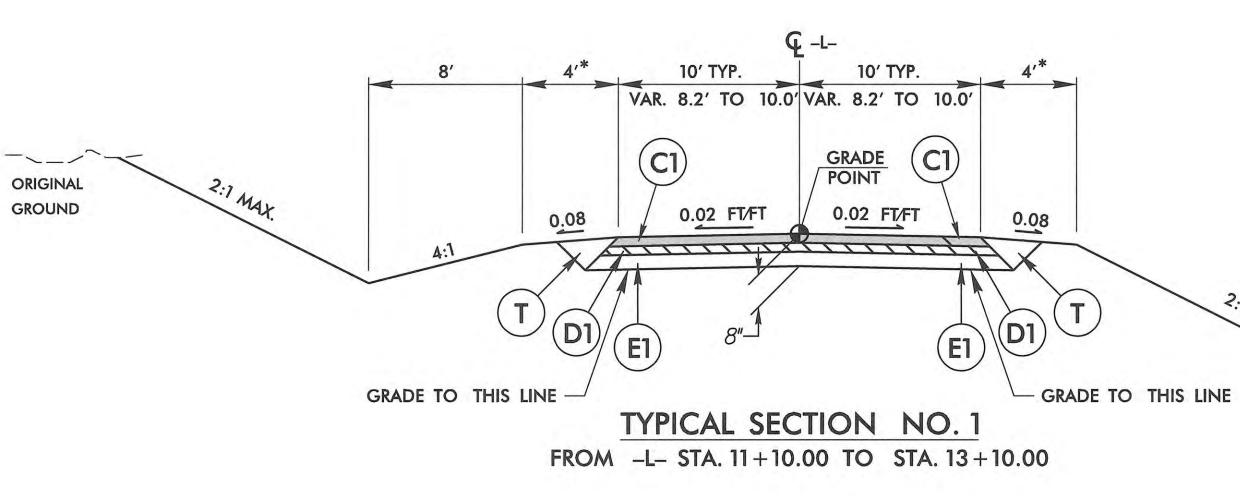
WATER:	
Water Manhole	Ŵ
Water Meter	0
Water Valve	\otimes
Water Hydrant	¢
Recorded U/G Water Line	
Designated U/G Water Line (S.U.E.*)	· w
Above Ground Water Line	A/G Water
TV:	
TV Satellite Dish	\sim
TV Pedestal TV Tower	
U/G TV Cable Hand Hole	E E
Recorded U/G TV Cable	<u>стн</u>
Designated U/G TV Cable (S.U.E.*) Recorded U/G Fiber Optic Cable	
Designated U/G Fiber Optic Cable (S.U.E.*)	
Designated 0/0 Tiber Optic Cable (5.0.L.)	
GAS:	
Gas Valve	\diamond
Gas Meter	\Diamond
Recorded U/G Gas Line	G
Designated U/G Gas Line (S.U.E.*)	
Above Ground Gas Line	A/G Gas
SANITARY SEWER:	
Sanitary Sewer Manhole	•
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
Recorded SS Forced Main Line	and the second s
Designated SS Forced Main Line (S.U.E.*) —	
MISCELLANEOUS:	
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc. —	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole (S.U.E.*)	
Abandoned According to Utility Records —	AATUR
, wanderlea / containing to entity records	AATUK

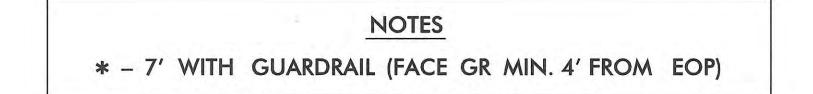
PROJECT REFERENCE NO.

SHEET NO.

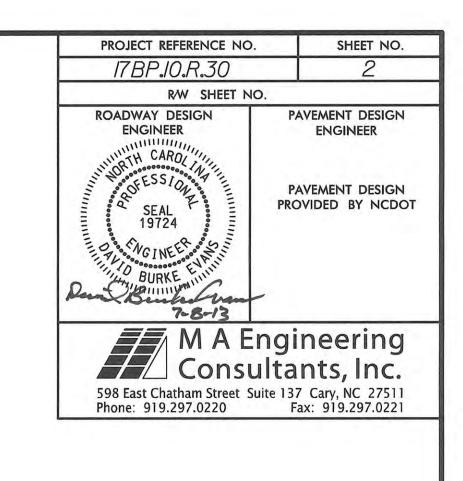
	PAVEMENT SCHEDULE
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168.0 Lbs PER SQUARE YARD.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.5B, AT AN AVERAGE RATE OF 285.0 Lbs PER SQUARE YARD.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 Lbs PER SQUARE YARD.
т	EARTH MATERIAL
U	EXISTING PAVEMENT

/2013





NOTE: INCIDENTAL MILL 1.5" IN DEPTH AT EACH TIE-IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT (AS DIRECTED BY THE ENGINEER)



2:1 Max ~___ ORIGINAL GROUND

COMPUTED BY:	DBE	DATE:	3-20-2013
CHECKED BY:	RWP	DATE:	3-27-2013

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	N-GATING IMPACT	ATTENUATOR TYPE 35	0			Active					UUII			CAVALVA									-
SURVEY					LENGTH		WARRA	NT POINT	"N" DIST.	TOTAL	FLARE L	ENGTH	N	w				1	ANCHORS				
LINE	BEG. STA.	END STA.	LOCATION	STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END	FROM E.O.L.	SHOUL. WIDTH	APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350 TL-3	M-350	TYPE III	CAT-1	VI MOD	BIC	A
-L-	11+10.00	13+10.00	LT	200.00			12+02.00	12+38.00	4	7	50.00	50.00	1	1		a no constituente, sur esta a constituente,	2						
-L-	11+10.00	13 + 10.00	RT	200.00			12+16.00	11+79.00	4	7	50.00	50.00	1	1			2						
																anna an tha ann an t-an t-an t-an t-an t-an t-an t							
			TOTAL:	400.00								Winds also she she a surger a					4						
		τοτ	AL ANCHOR LENGTH:	200.00																			
		TOTAL	GUARDRAIL LENGTH:	200.00																			
			SAY:	200.00																			

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+15%	BORROW	WASTE
-L- 11+10.00 TO 13+10.00	120		179	59	0
TOTAL	120		179	59	0
LOSS DUE TO CLEARING AND GRUBBING	-30			30	
PROJECT TOTAL	90		179	89	0
ESTIMATED 5% TO REPLACE TOPSOIL ON BORROW PIT				5	
GRAND TOTAL	90		179	94	0
SAY	100			100	and the second

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

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SUMMARY OF PAVEMENT REMOVAL IN SQUARE YARDS

LOCATION	ASPHALT REMOVAL	CONCRETE REMOVAL	
-L- STA. 11+10 TO 13+10	340		
GRAND TOTAL	340		
SAY	340		

GUARDRAIL SUMMARY

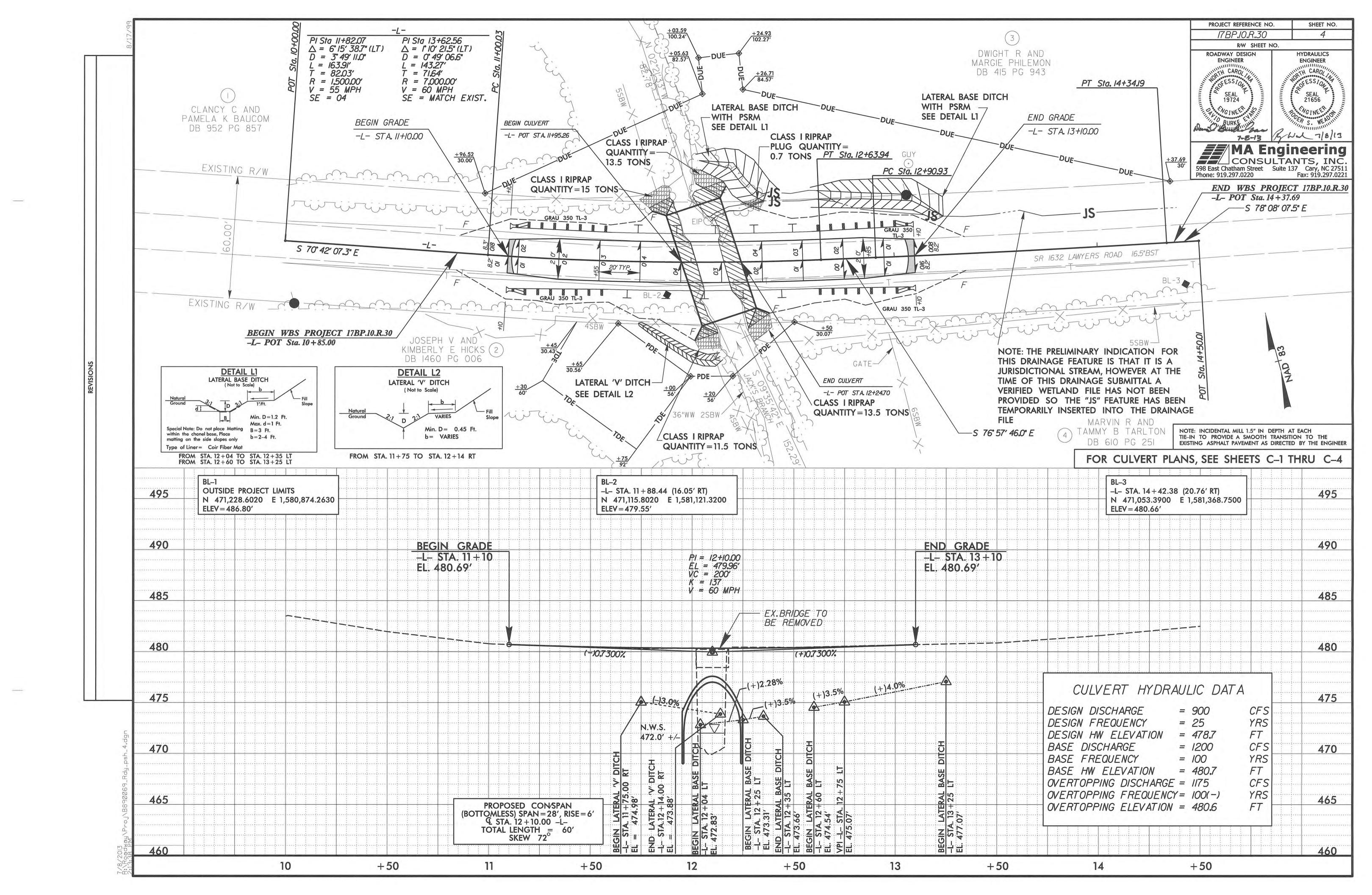
TA	IMPAC TTENUA TYPE 3	TOR	SINGLE FACED	REMOVE EXISTING	REMOVE AND STOCKPILE	REMARKS	
AT-1 EA	TYPE 3	TOR	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	AND	REMARKS	
AT-1	TYPE 3	TOR 50	FACED	EXISTING	AND STOCKPILE EXISTING	REMARKS	
AT-1	TYPE 3	TOR 50	FACED	EXISTING	AND STOCKPILE EXISTING	REMARKS	
AT-1	TYPE 3	TOR 50	FACED	EXISTING	AND STOCKPILE EXISTING	REMARKS	
AT-1	TYPE 3	TOR 50	FACED	EXISTING	AND STOCKPILE EXISTING	REMARKS	
AT-1	TYPE 3	TOR 50	FACED	EXISTING	AND STOCKPILE EXISTING	REMARKS	

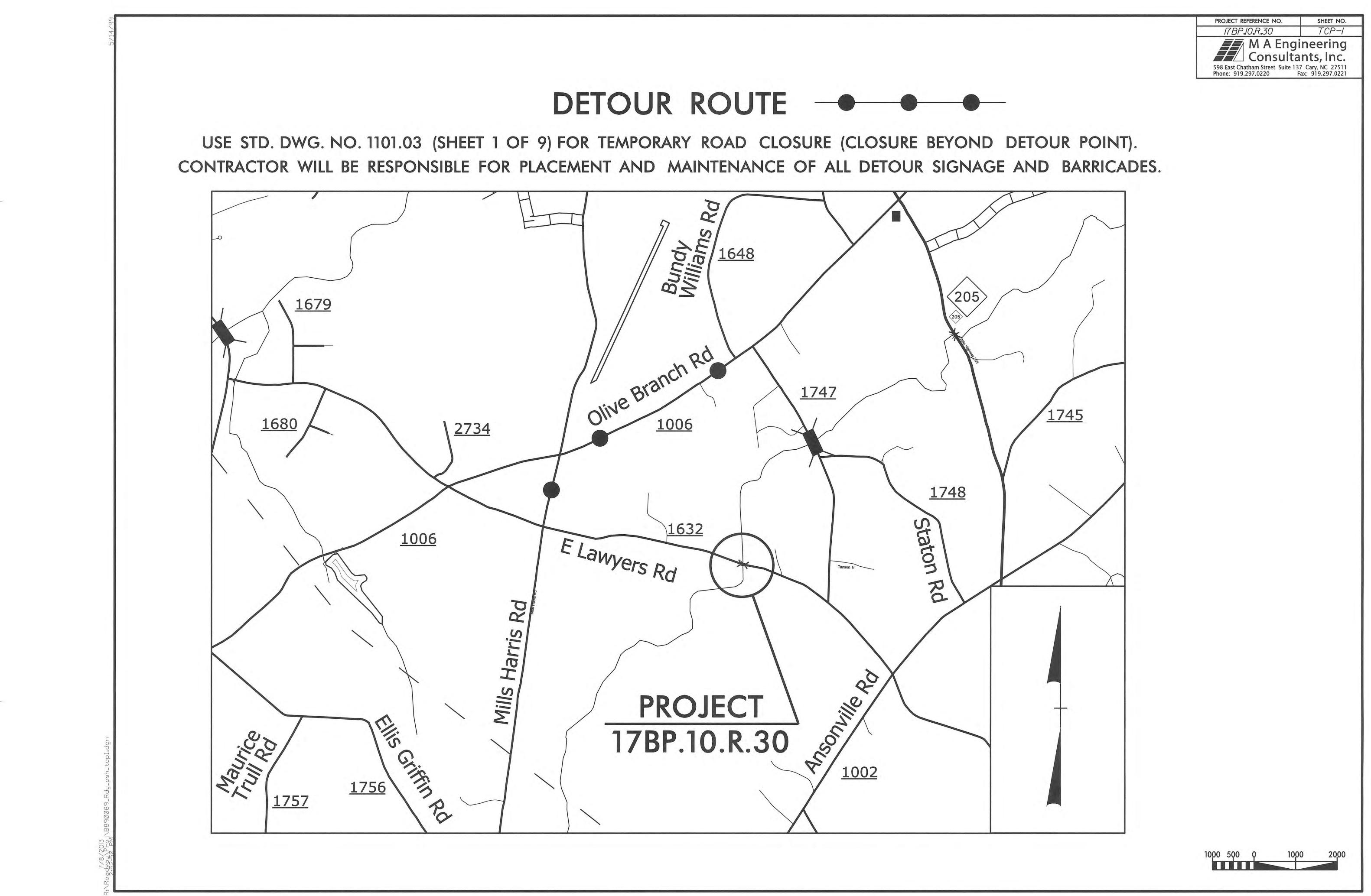
PROJECT REFERENCE NO.

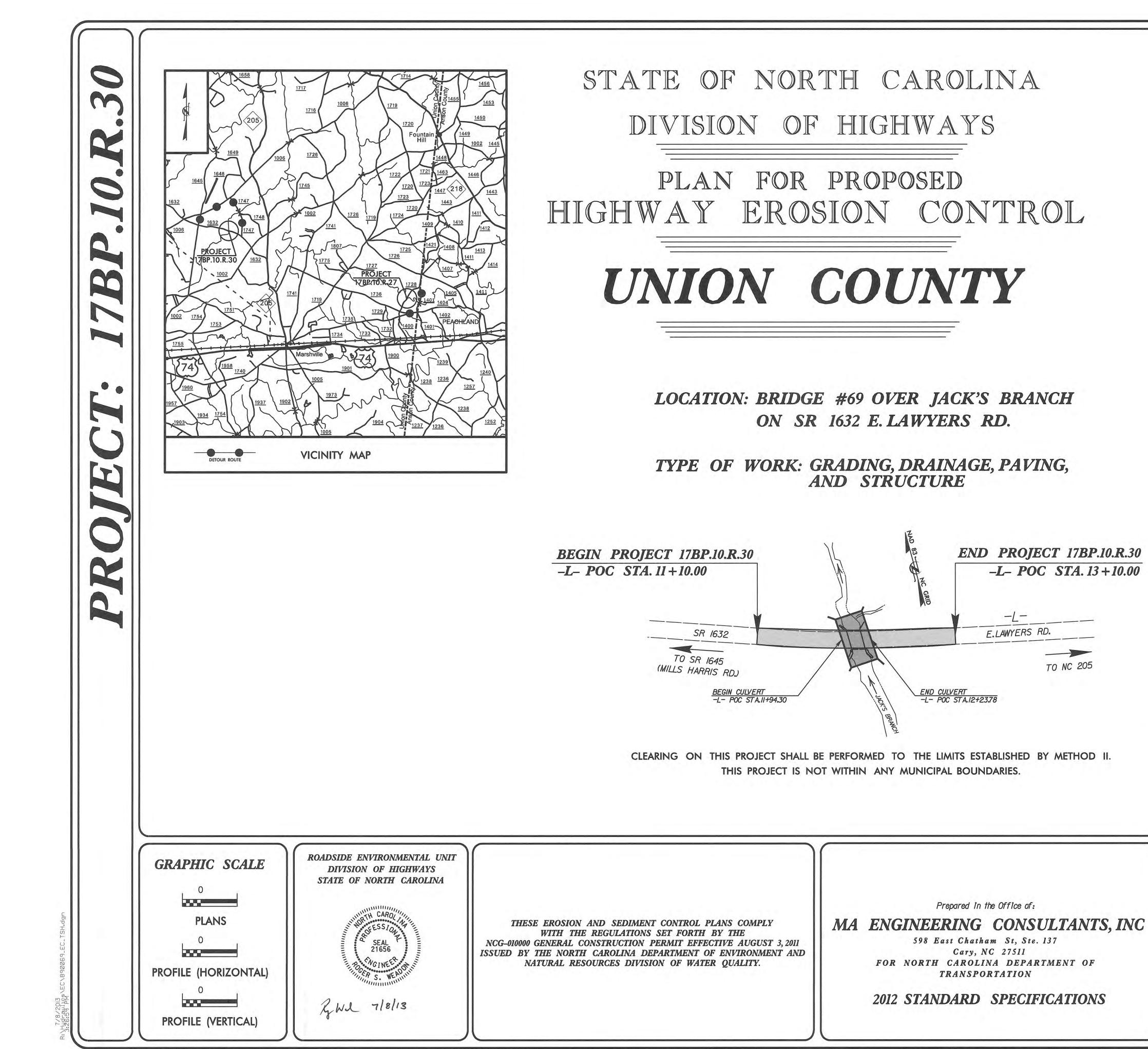
M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221

17BP.10.R.30

SHEET NO.

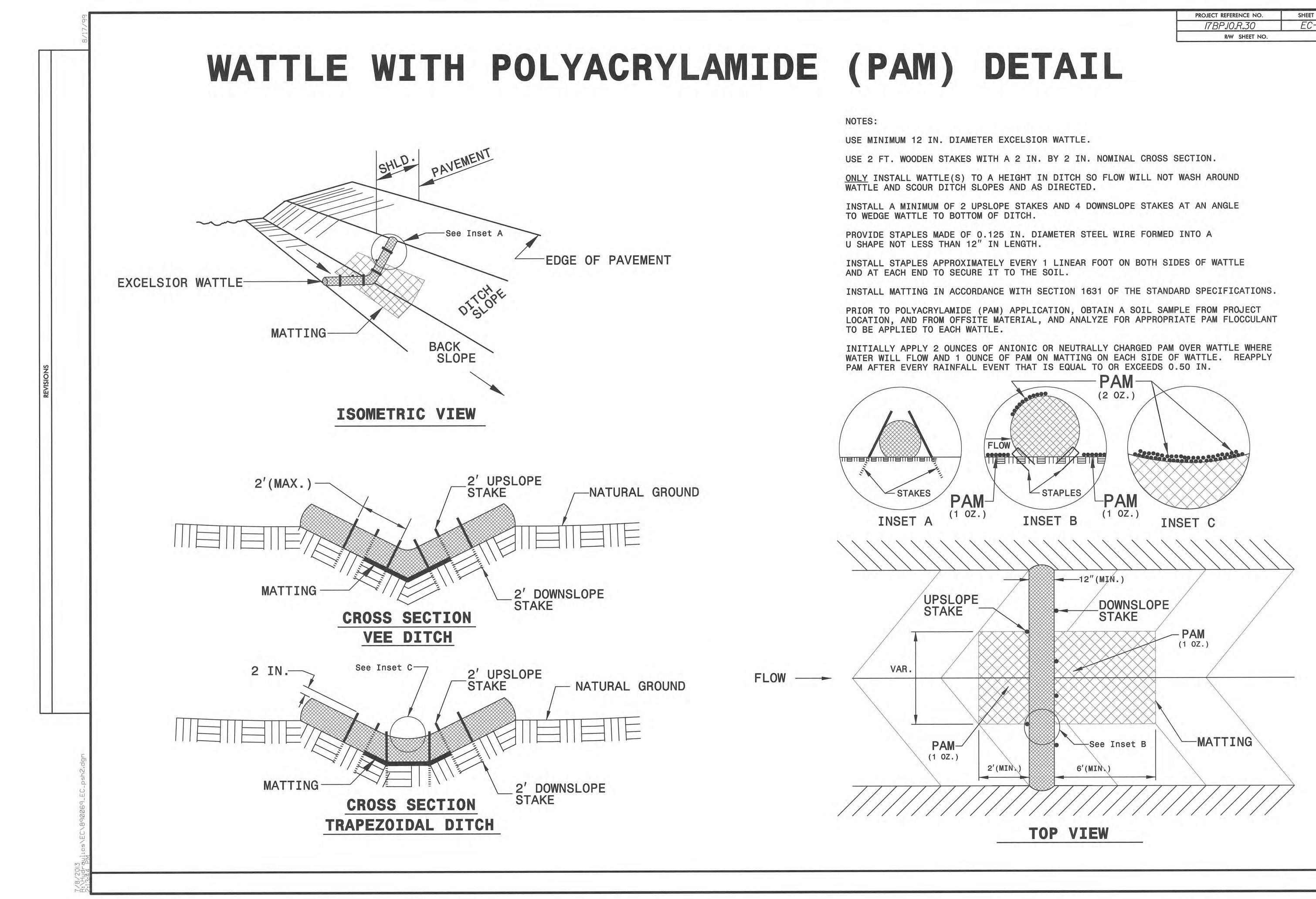




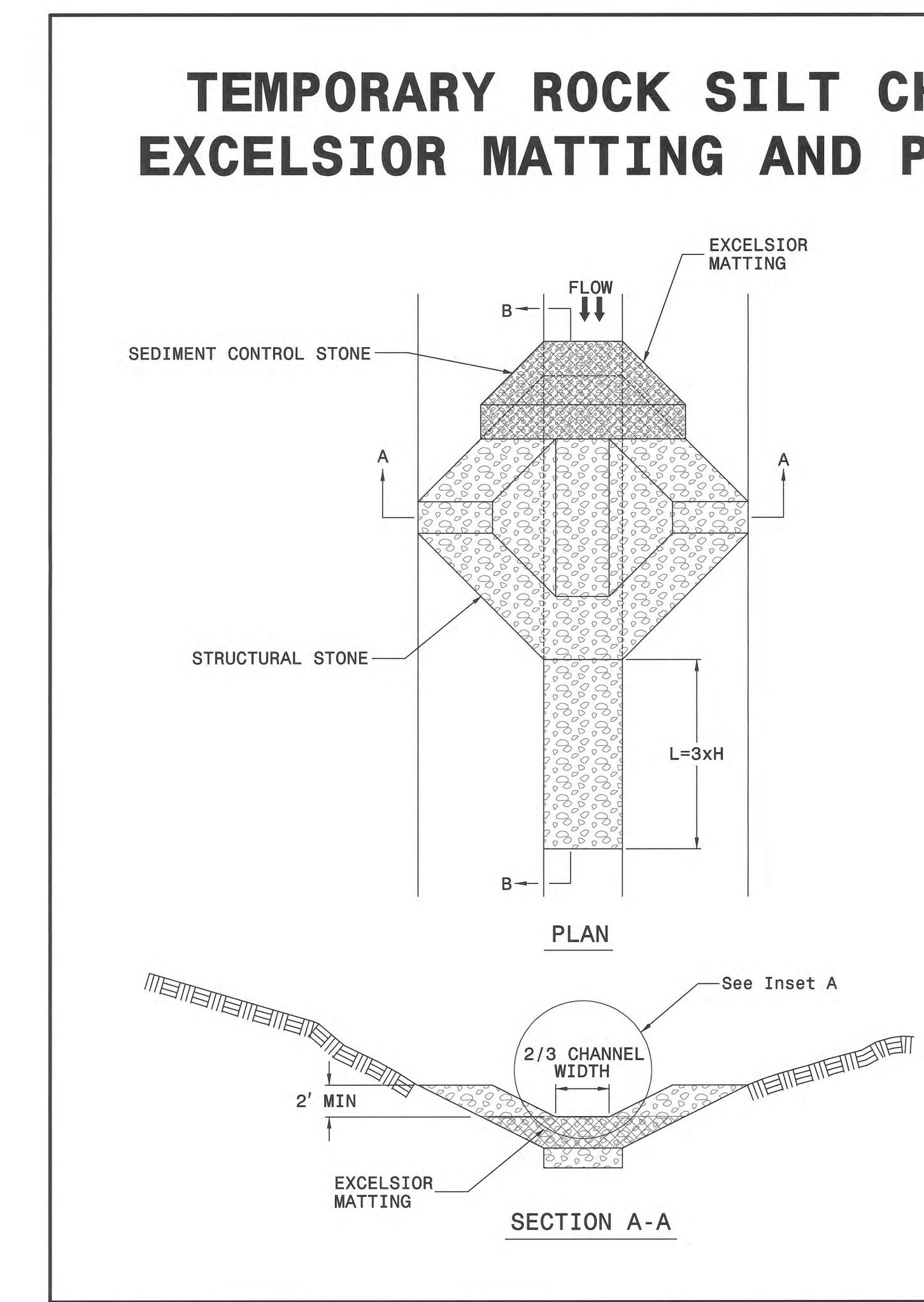


	NI AND OPDIMENTE CONTEDAL MEACUIDEC
EROSIO Std. #	집 것이 위험적 같았다. 이 전 전 전에 가격에 가지 않아? 이 것은 것이 가격에 다 가 있었다. 것이 가 가지?
<u></u>	Description Symbol Temporary Silt Ditch
1630.05	Temporary Diversion TD
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1622.01	Temporary Berms and Slope Drains
1630.02	Silt Basin Type B.
1633.01	Temporary Rock Silt Check Type"A Temporary Rock Silt Check Type"A with
1633.02	Matting and Polyacrylamide (PAM)
1099.0 <i>2</i>	Temporary Rock Silt Check Type=B
	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
1 (70 01	Rock Inlet Sediment Trap:
1632.01	
1632.02	
1632.03	Type C
	Tiered Skimmer Basin
	Infiltration Basin
	THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.
	ROGER WEADON, P.E.
	LEVEL IIIA NAME
	619
	LEVEL IIIA CERTIFICATION NO.

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	그는 것 같은 것 같은 것 같아요. 그 선생님은 영상의 관련한 강성의 위한 것 같아요. 가지는 것이 것 것 같아요. 그런
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		



PROJECT REFERENCE NO. 17BP.10.R.30	SHEET NO
RW SHEET NO.	
www.shieli No.	



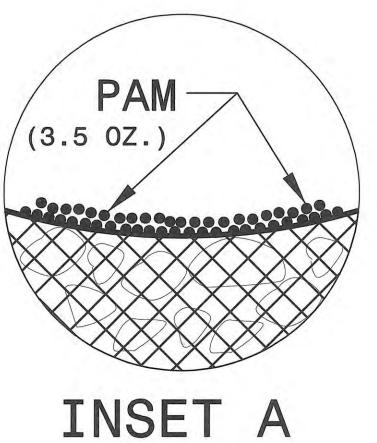
TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

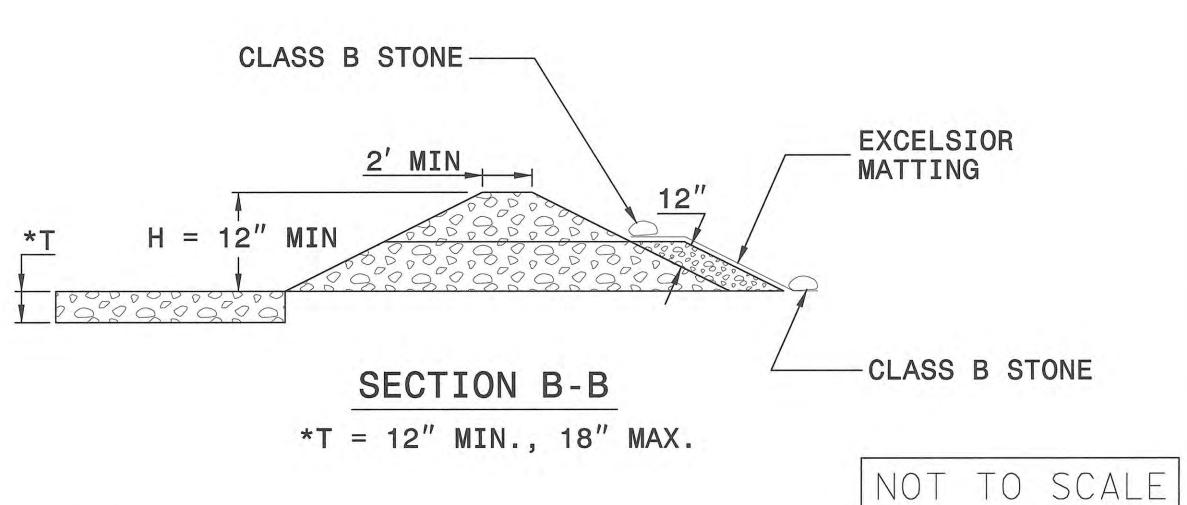
NOTES

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

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

INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.

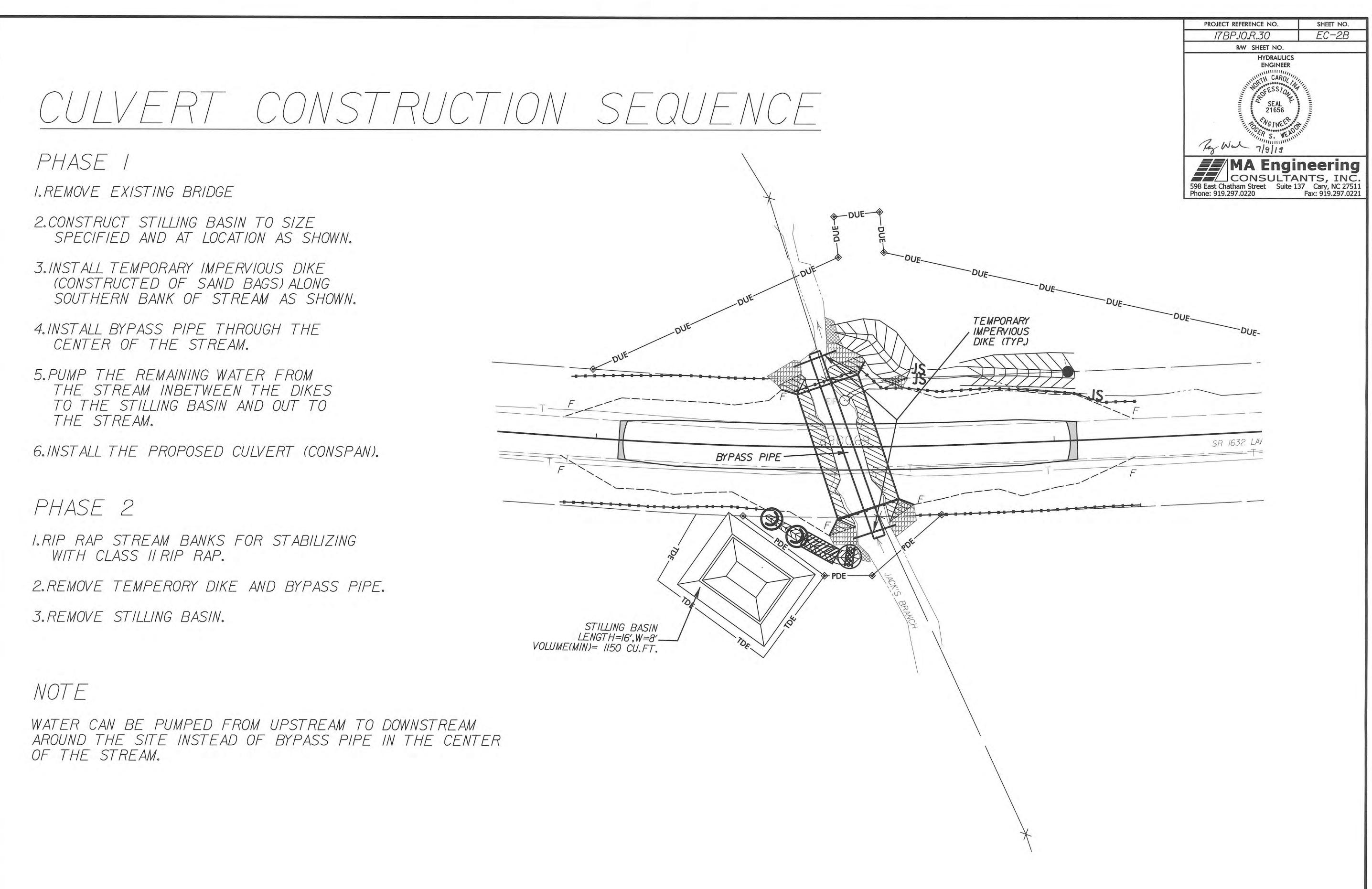




EC-2A 17BP.10.R.30 R/W SHEET NO. **EE** MA Engineering

SHEET NO.

PROJECT REFERENCE NO.



SITE DESCRIPTION

PERIMETER DIKES, SWALES, DITCHES AND

HIGH QUALITY WATER (HQW) ZONES

SLOPES STEEPER THAN 3:1

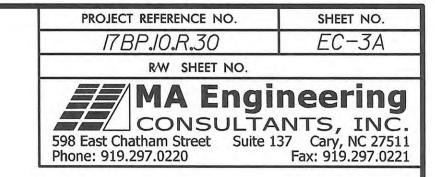
SLOPES 3:1 OR FLATTER

ALL OTHER AREAS WITH SLOPES FLATTER

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

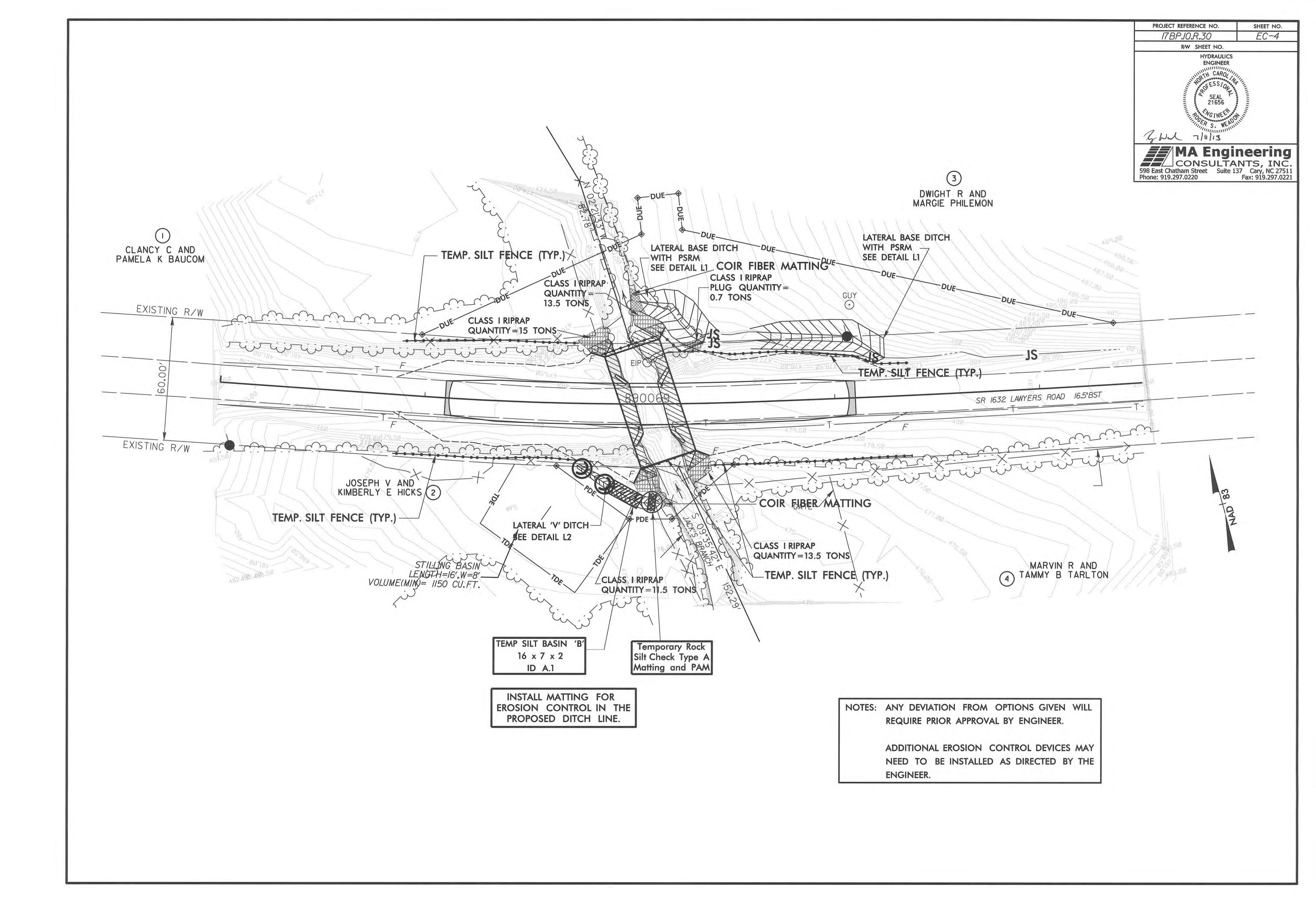
	STABILIZATION TIME	Τ1
SLOPES	7 DAYS	NONE
	7 DAYS	NONE
	7 DAYS	IF SLOPES
	14 DAYS	7 DAYS F LENGTH.
ER THAN 4:1	14 DAYS	NONE, EXC

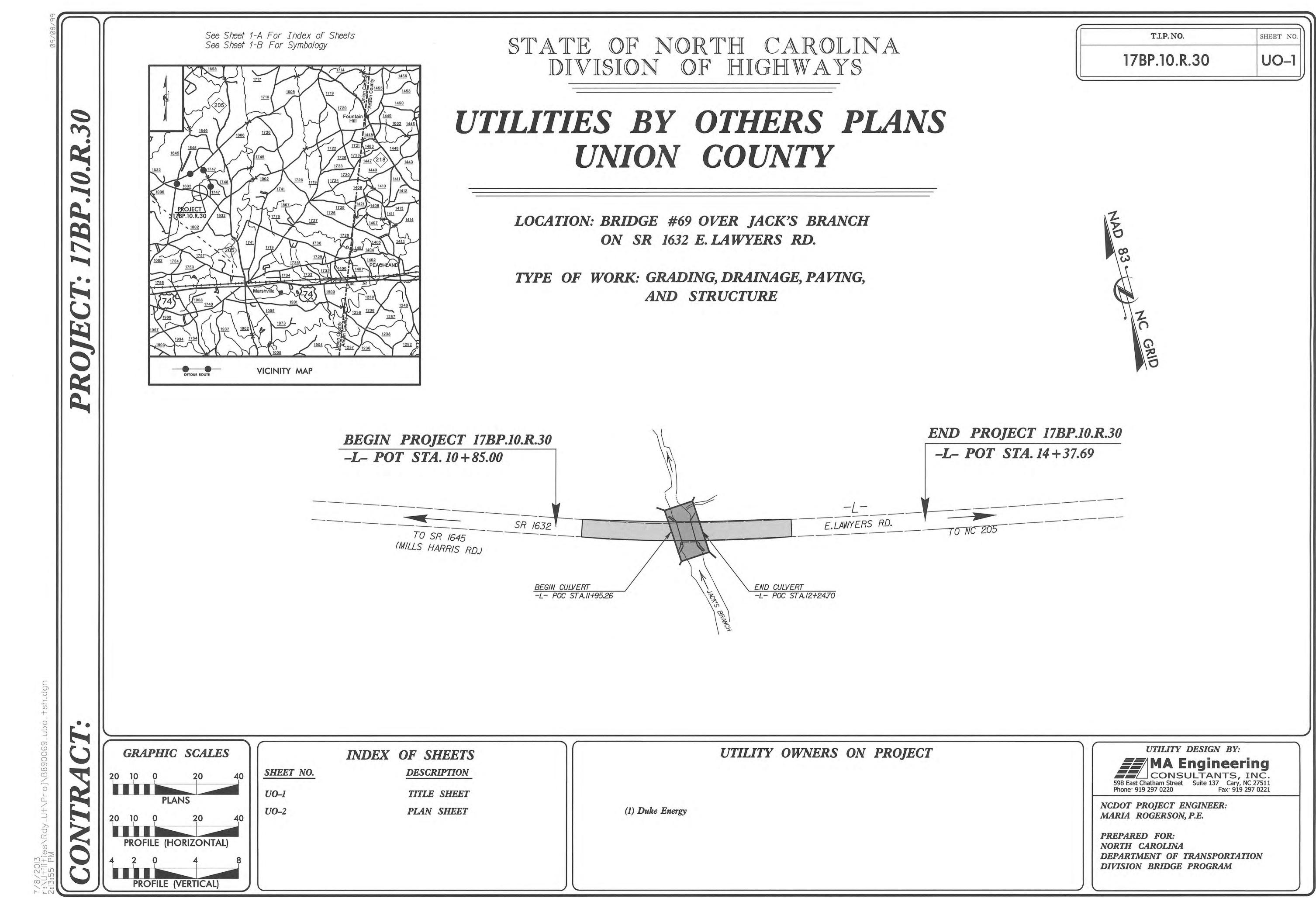


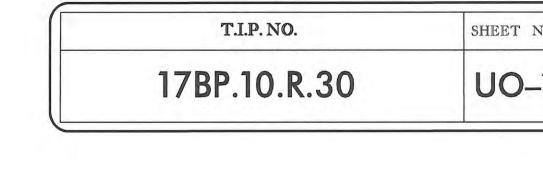
IMEFRAME EXCEPTIONS

ES ARE 10' OR LESS IN LENGTH AND ARE EEPER THAN 2:1, 14 DAYS ARE ALLOWED. FOR SLOPES GREATER THAN 50' IN

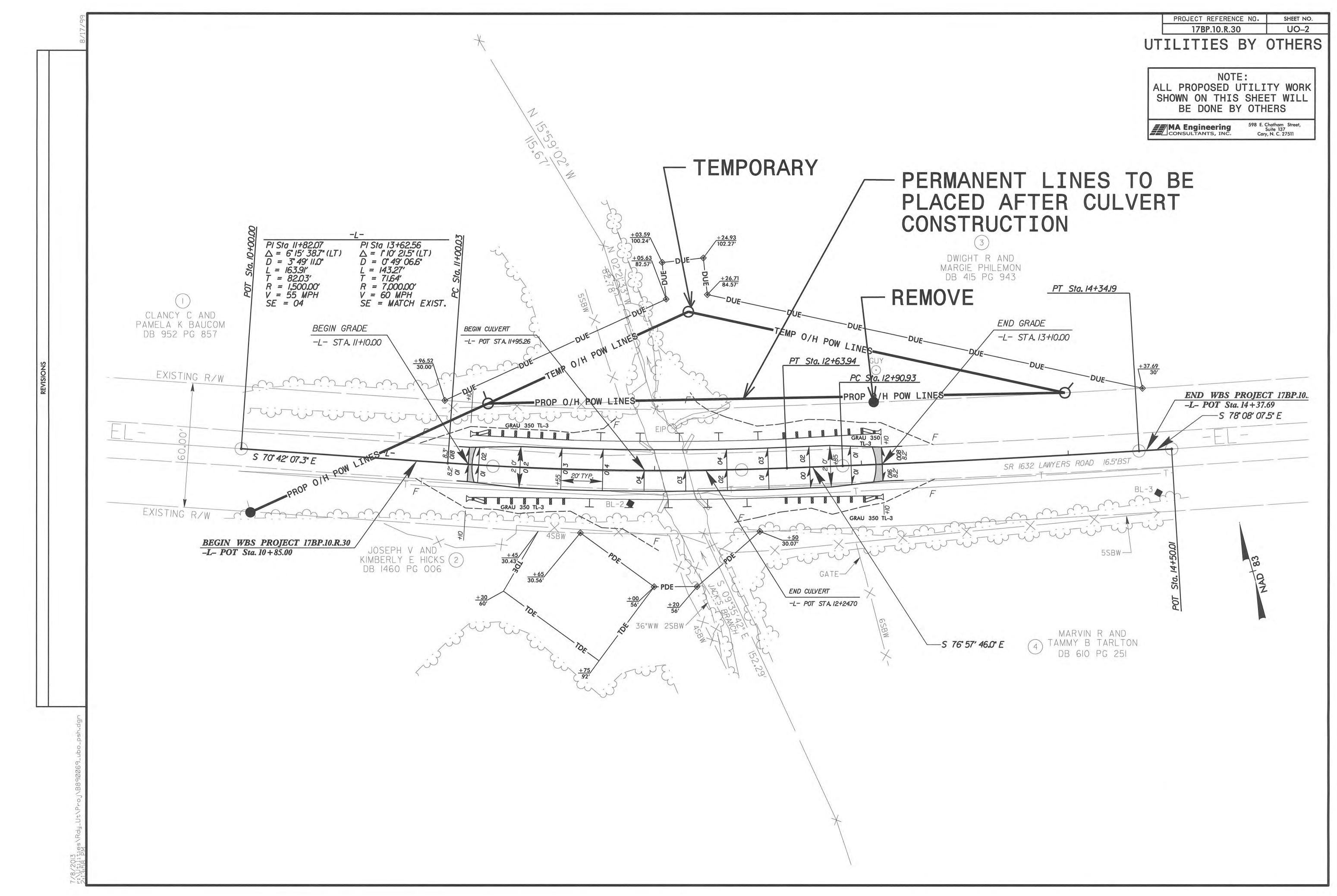
KCEPT FOR PERIMETERS AND HQW ZONES.

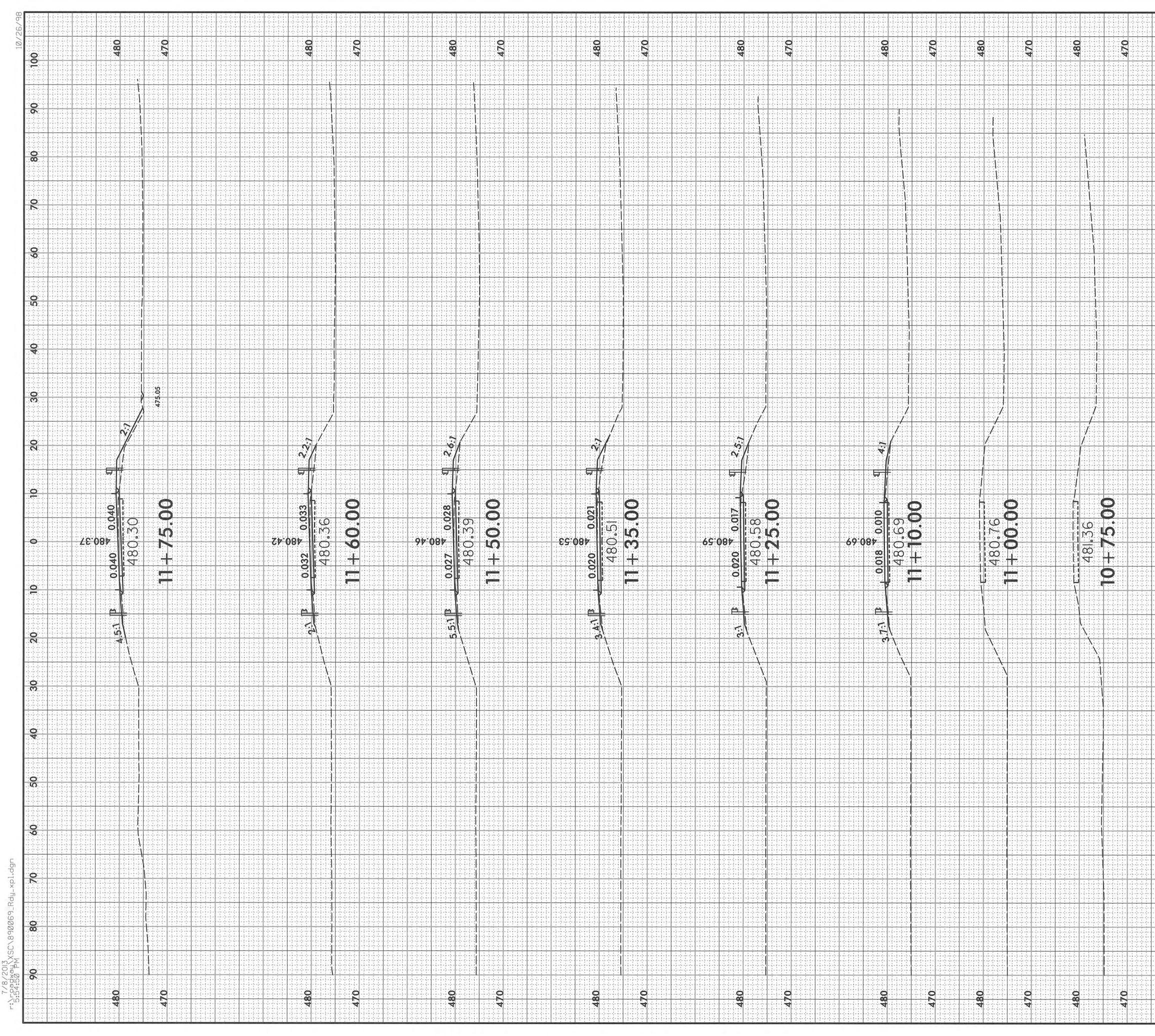




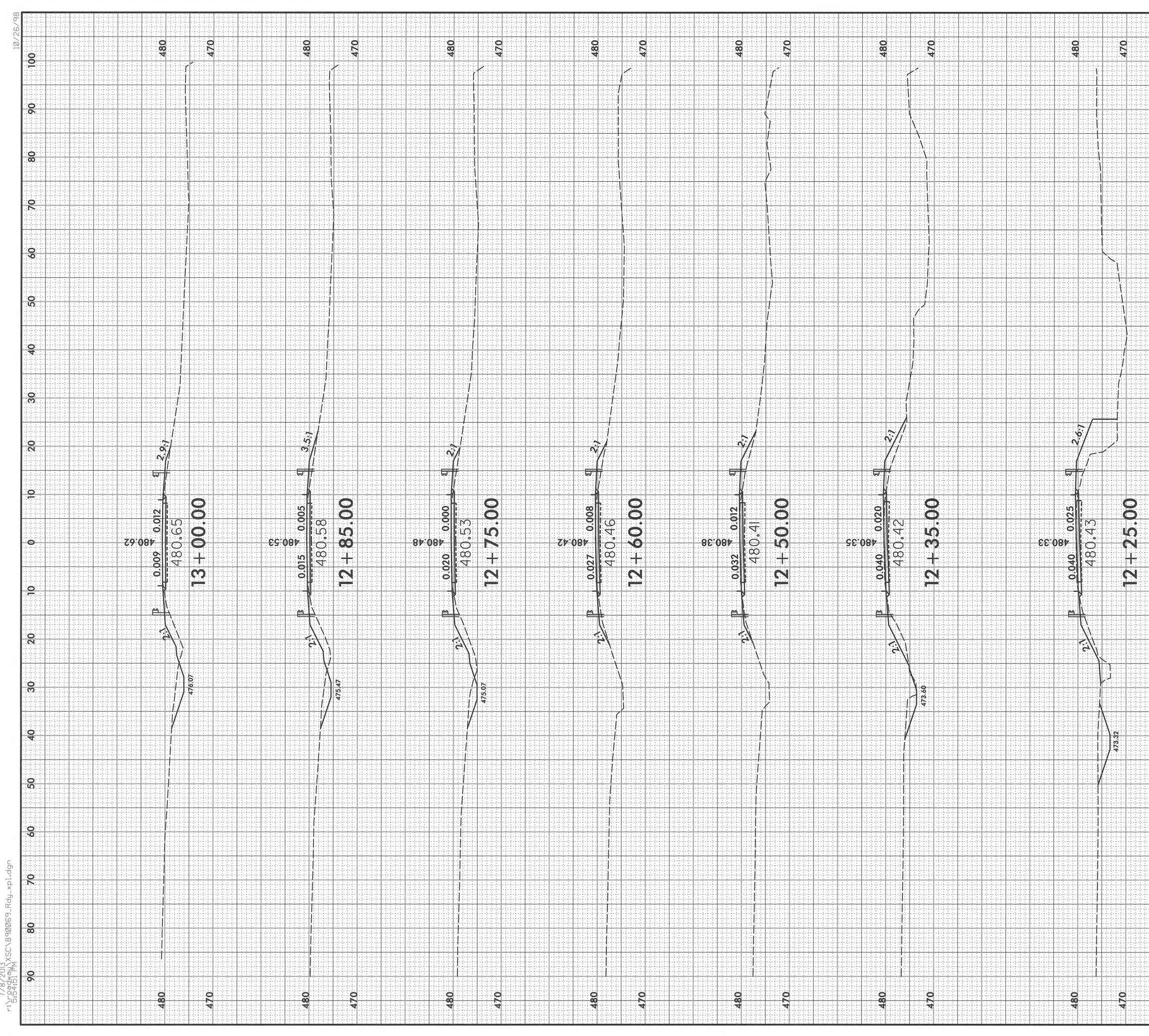






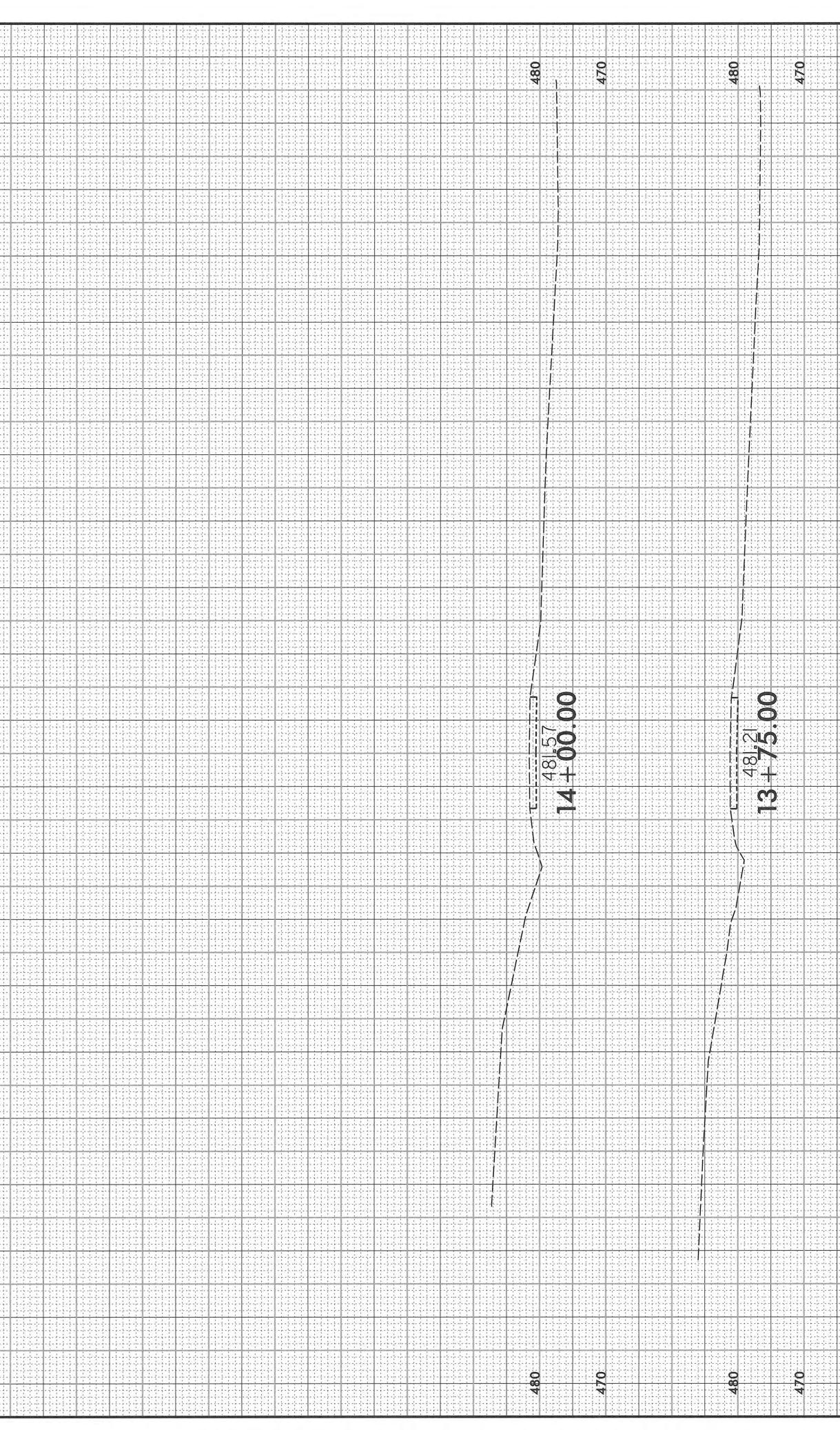


									EFEREN	ce no. R • 30	A construction of the second s	et no. (-1
480			4/0				C L R	Statistics and statistics and		480	470	0 0
									· · · · · · · · · · · · · · · · · · ·			10
/												o • %
					1							C.
												0 <u>×</u>
												09
												20
												4 0
												Ô
í	/ /					 						20
					1							10
		00			ĥ	0	00				3	ľ
	481.95	+50.00				402.10	0+25.00			483.46	3	•
	4	0				Ť	+01				2	
$\frac{1}{L}$												01
1	۱ <u>\</u>				/							20
												30
												9
												N
												20
												9
												70
												000
												60
 480			4 / V		480		04.1	2		480	470	
			.									

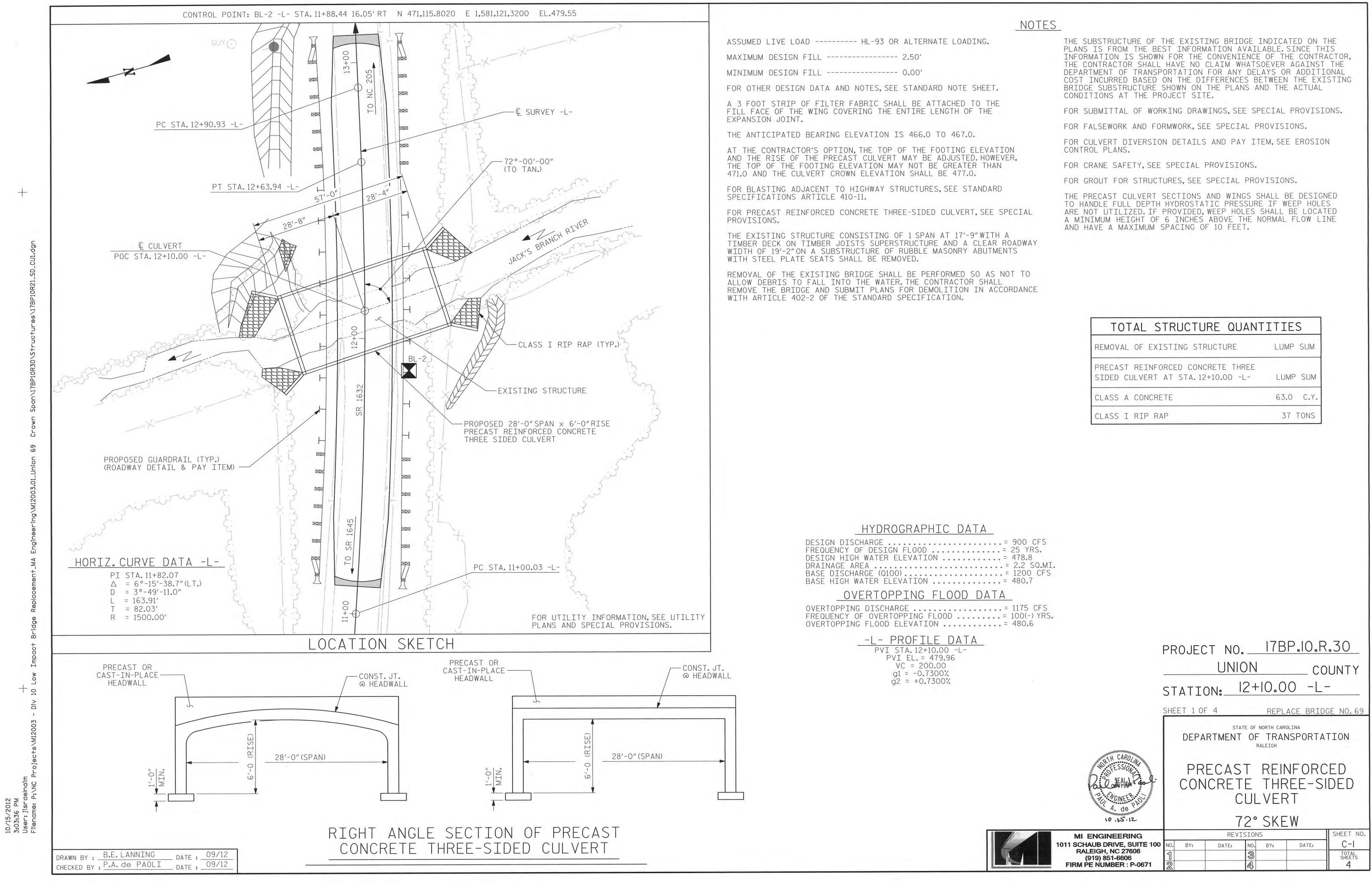


													ROJ.								IEET	the strength) .
· · · · · · · · · · · · · · · · · · ·	077	3				480			470				7BI	•	10	• K	480				X-:		
	Y					4			4,								48			470	10		100
																					5		
															(+ + + + + + + + + + + +		 						
+++++++++++++++++++++++++++++++++++++++																					0		06
+++++++++++++++++++++++++++++++++++++++									<u> - - -</u> - - -				· · · · · · ·	• • • • • •									
																							0000
	· · · · · · · · · · · · · · · · · · ·																	-+					
																							02
																							09
															• • • • • • • • • • • •					- - - -			
																							20
								474.30	·····						 								
																							40
																			17.1 75				X
																			1 5				· · · · · · ·
							/)				30
						3:1	/	<u>}</u>										~/					
						/	,1																20
						(;	/										1	1					
					, E	Ĩ											La	F					- - - - - - - - - - - -
									C)					· · · · ·			1		6	_	• • • • • •	10
					F 60 0	2	Ω		Č)					 		0.040			č			
				23	-087		480.35		00 00)					92	.08		480.30		11 + 85 00			0
						10			+									180		4			
						0.040	N		C	1							0.040						
						-\$			1						- - - - - - - - -								10
					-	34											8						
						_											1	1 H					20
4 4 4						5.173.1												1					0
						2	1		1														· · · · · · · · · · · · · · · · · · ·
									1														30
								Ì															
																							40
																			1				4
																							20
									6											- - - - - - - - -			60
								1												 			9
								1															
																							02
								1												\			
																							0
1.1.1.1					I									see all a d			2 . A . A . A						80
1																1.1.5							
	· • • • • • • • • • • • • • • • • • • •								· · · · · · · ·														06
	· · · · · · · · · ·	LA LAND	1.1.1	and the second second	and the state of the		a prate a pr	1.5-1-		ere trác	1-2-7-1	 	1 - 5 - 5 - 5			and all all and			10		a new age of		
	460	2				480			70								480			470			

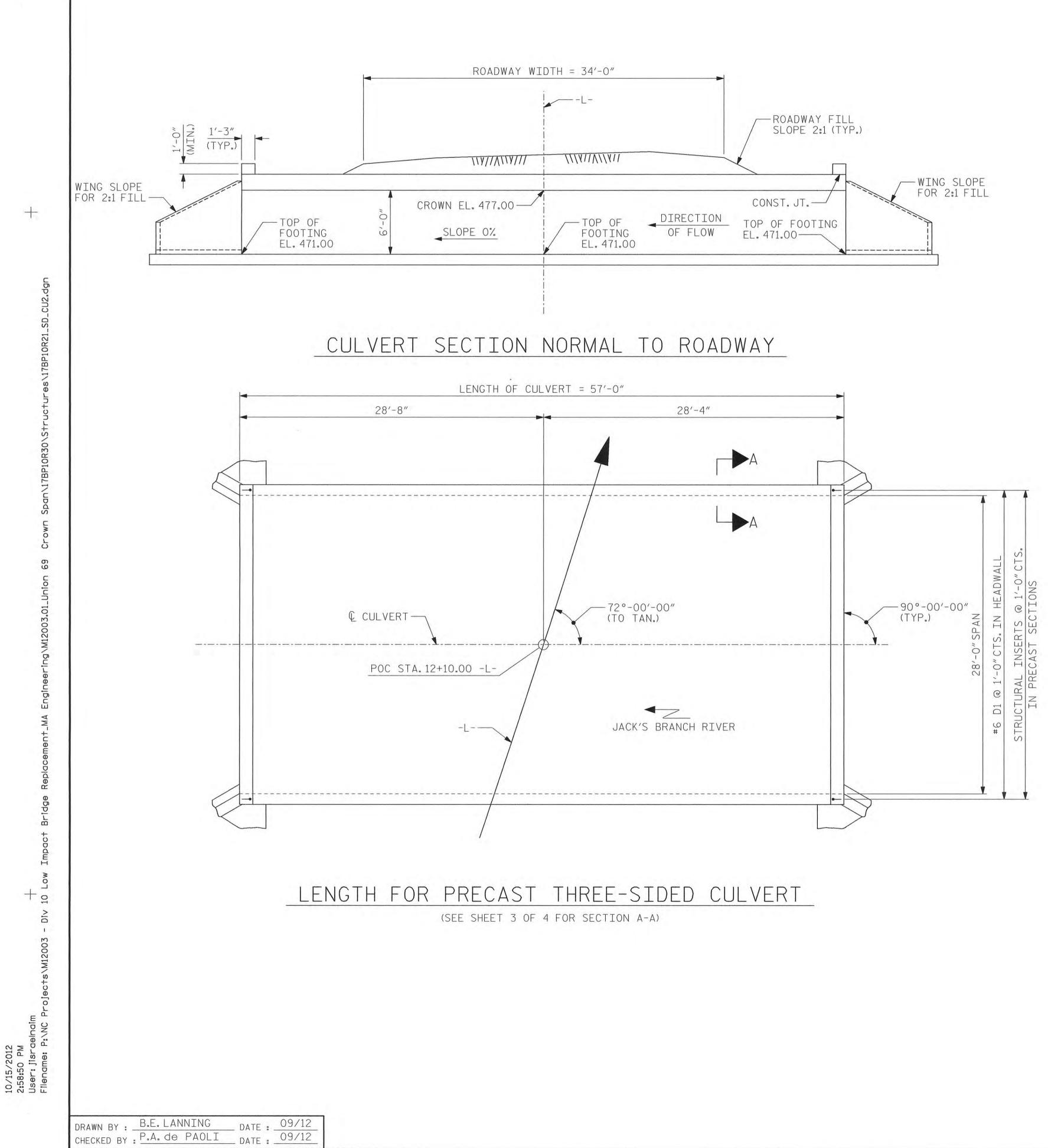
											1311			
				<u></u>										
100														
······································									· · · · · · · · · · · · · · · · · · ·					
06														
0														
80														
70														
													······	
09														
0														
Õ														
40														
30														
	· · · · · · · · · · · · · · · · · · ·													
20														
2														
10														
						· · · · · · · · · · · ·								
0														
													······	
10													·····	
•														
20														
30														
40														
50													·····	
Q														
09														
70														
080						1-1-1-1-1							1. 1. 1. 1.	1
00	1 2 4 2 4 1													
													$\frac{1}{2}$	
06		 1		 * * * * * * * *	1 1 1 1 1					1 1 1 1 1				
														1
;;;;					1444							1444		; -; ; -;

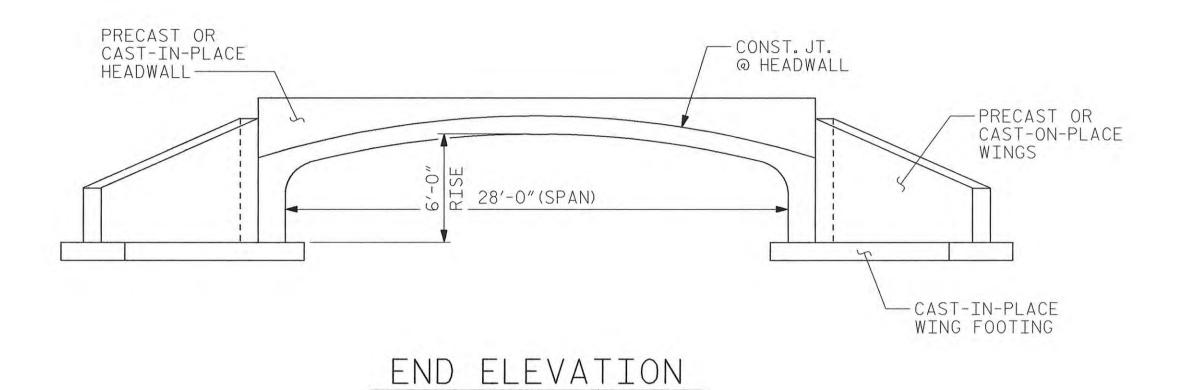


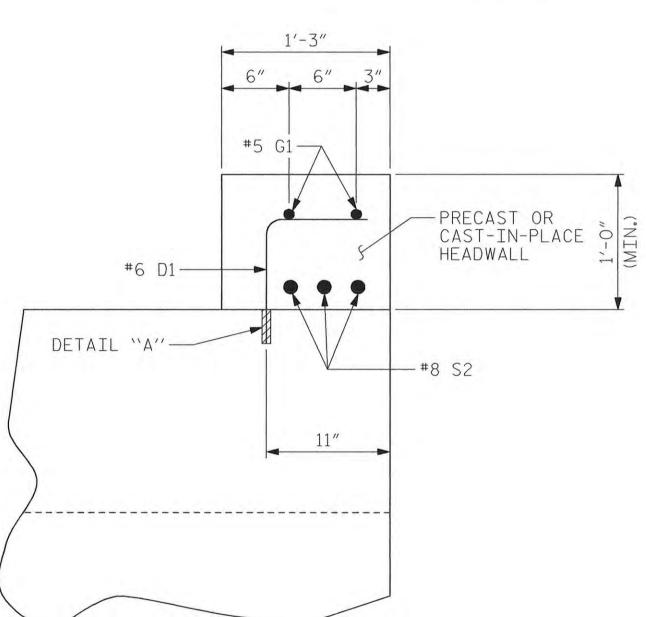
÷.									EFERENCE N		SHEET	
			C C C C C C C C C C C C C C C C C C C	3	470		480	0	.10.R.3		470 ×	
			Ĩ. ŝ	ŧ	4		4	4		4	4 0	10
												06
											J	6
												80
												0
												0 9
		·····										
												20
												40
										1		30
												20
				ļ					0			7
				1					.			
				4.0	D		4	O				10
	· · · · · · · · · · · · · ·			480.85	5		480.75	Õ.	910.0 69 [.] 08† 800.0	10	2 2 2 2 1 1 2	
					D		<u> </u>	5 2	0 69 087	480.69		0
				48(481		800	48(-	7
					2			<u>m</u>	Ö		2	
												10
	· · · · · · · · · · · · · · · · · · ·			<u> </u>					<u> </u>			
				<u>.</u>								20
				1			/ /			X		
				[1			1/1492		0
												e co
										1		
							1					40
e i		1										20
			1	ge fei ef ek								
							and the second se		 1 1 1 1 1 1 1 1 1		111111	
												09
												09
												70 60
												70
dennes 1					$1 \pm 2 \pm 31$	Achelia						80 70
dennes 1												80
aleman .												90 70
					70		30					90 80 70



TOTAL STRUCTURE QUANT	ITIES
REMOVAL OF EXISTING STRUCTURE	LUMP SUM
PRECAST REINFORCED CONCRETE THREE SIDED CULVERT AT STA. 12+10.00 -L-	LUMP SUM
CLASS A CONCRETE	63.0 C.Y.
CLASS I RIP RAP	37 TONS





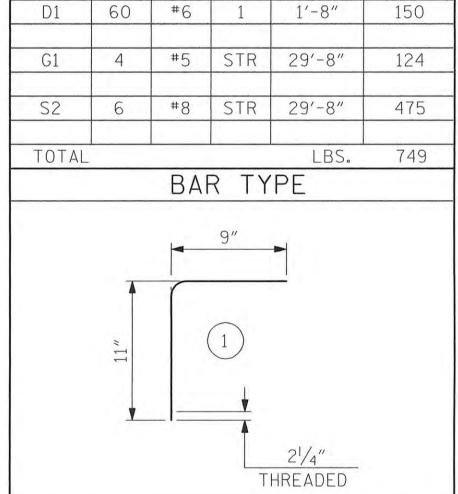


SECTION THRU HEADWALL

DETAIL ``A'' ** APPROVED GALVANIZED CONCRETE INSERTS HAVING A MINIMUM WORKING LOAD TENSION CAPACITY OF 2.5 KIPS. DIA. = ¾", NO. REQUIRED 60

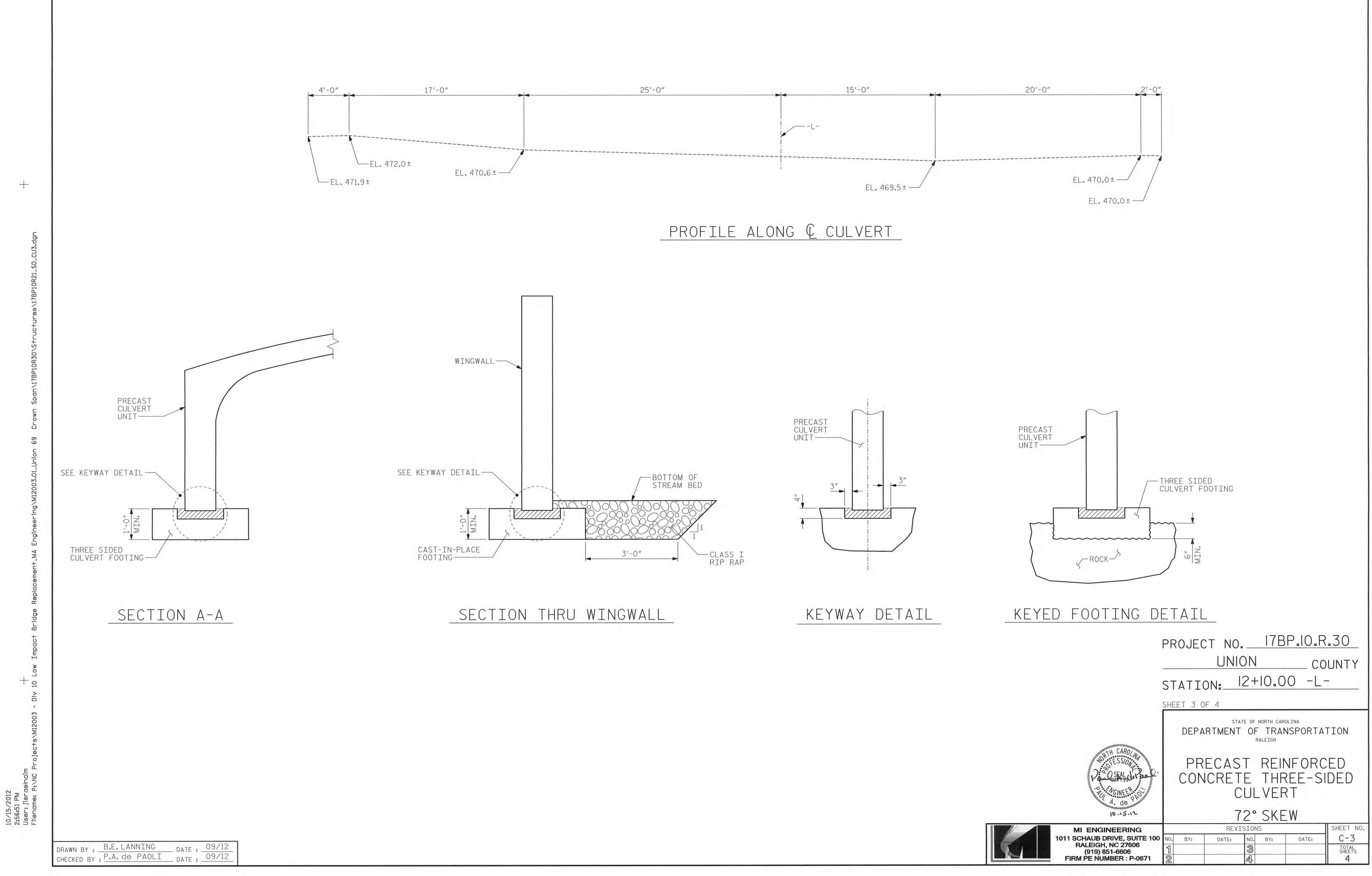


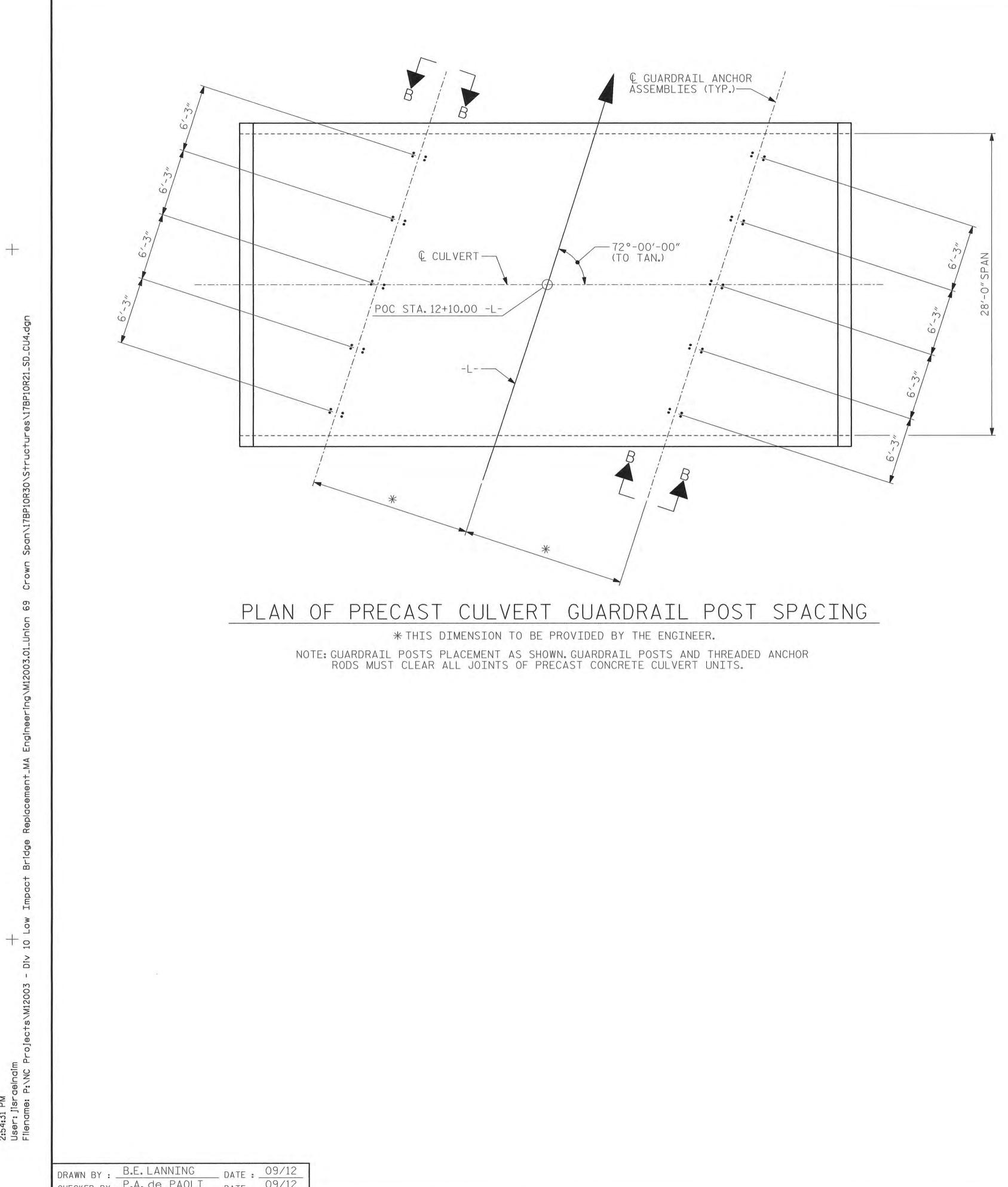
	2 ¹ / ₄ " THREADED
	PROJECT NO. 17BP.10.R.30
	UNION COUNTY
	STATION: 12+10.00 -L-
	SHEET 2 OF 4
	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH
DELASTICATION A. DE PARTINI	PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT
10.15.12	72° SKEW
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, 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 4



BAR SCHEDULE

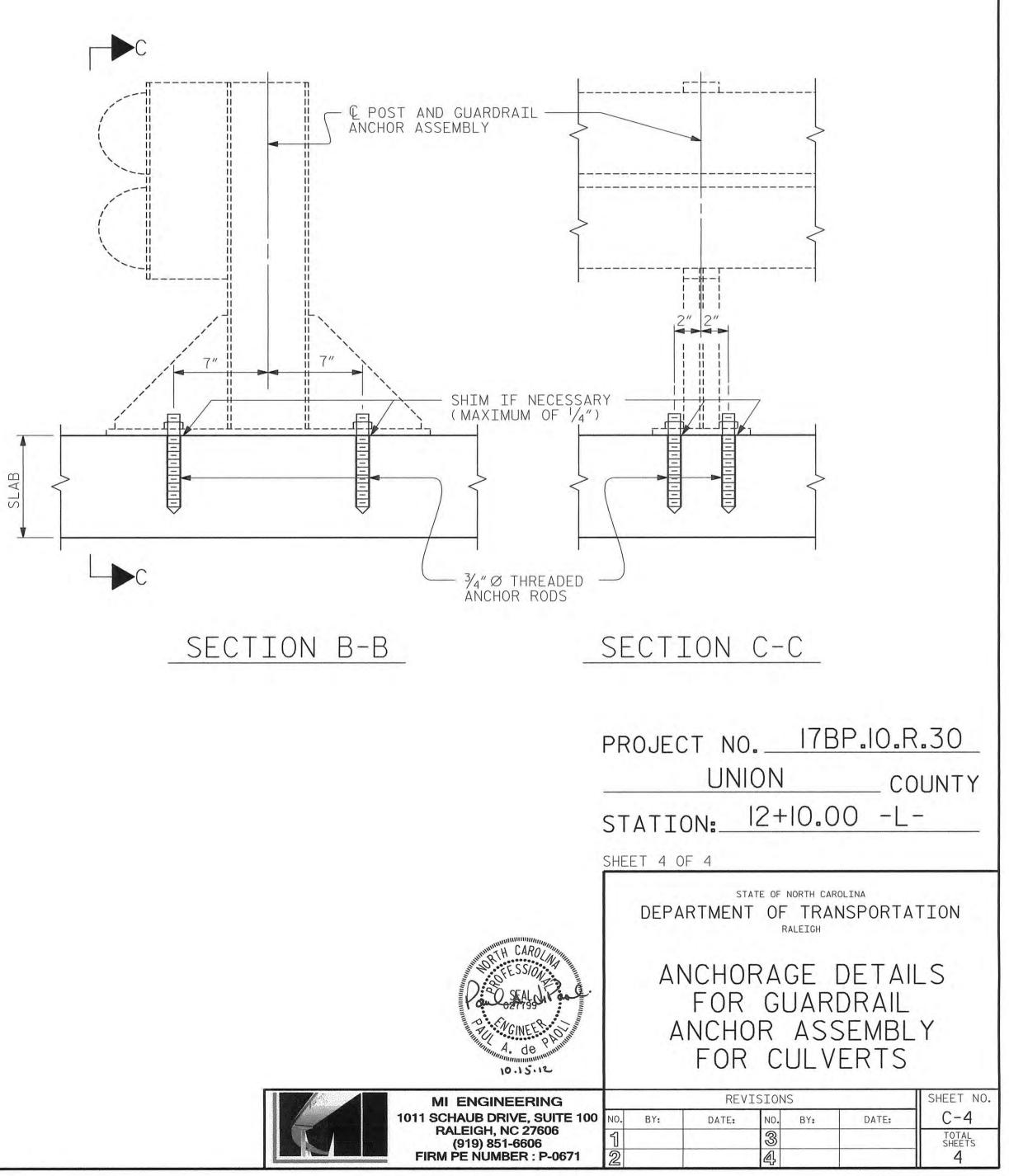
BAR NO. SIZE TYPE LENGTH WEIGHT

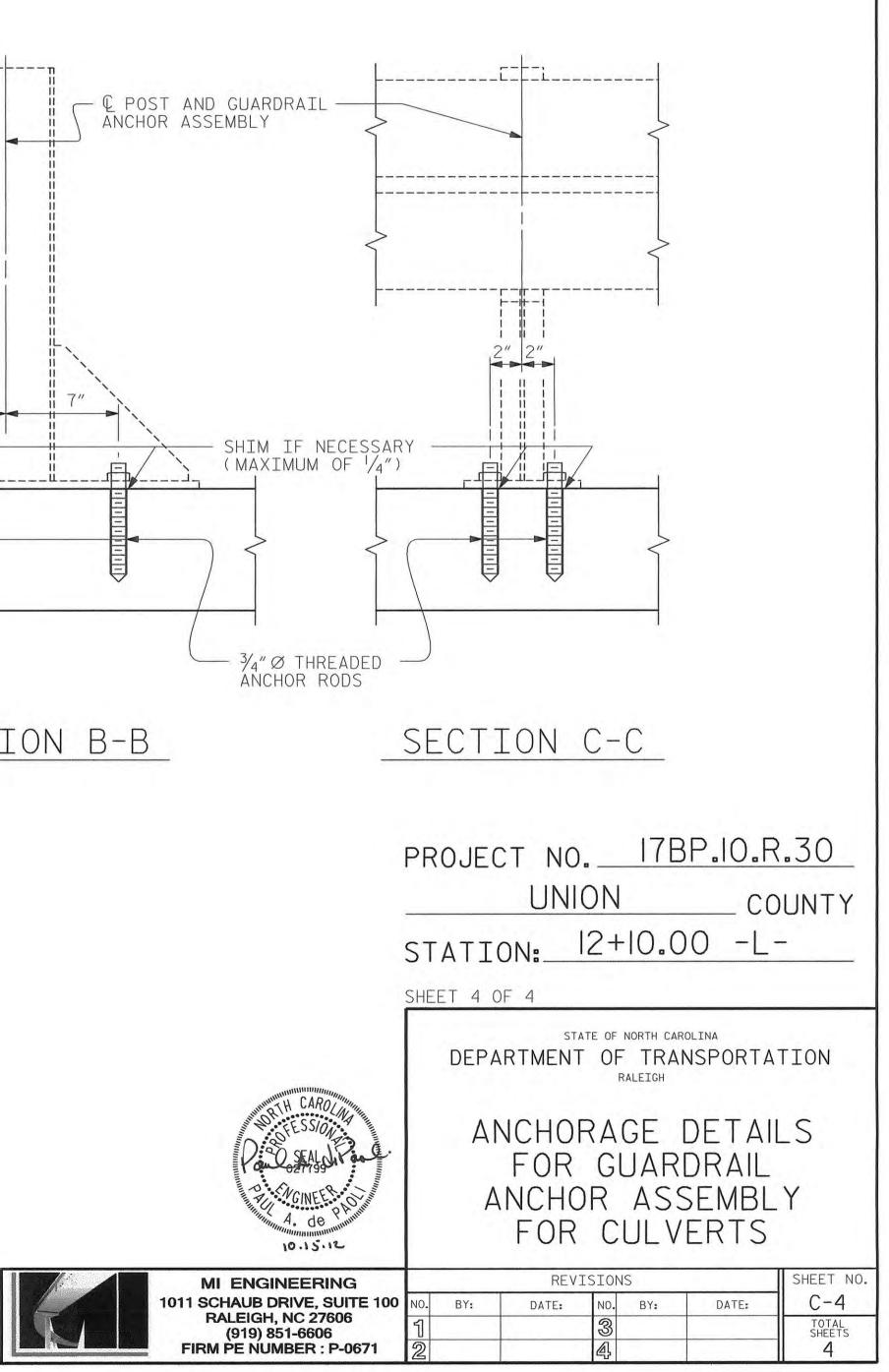




Low + 10 10/15/2012 2:54:31 PM User: jisraelnaim Filename: P:\NC Project

DRAWN BY : B.E. LANNING DATE : 09/12 CHECKED BY : P.A. de PAOLI DATE : 09/12





NOTES

ALL GUARDRAIL ATTACHMENTS SHALL BE MADE USING ADHESIVELY ANCHORED ANCHOR BOLTS. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE $\frac{3}{4}$ " Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE 3/4" Ø AND MEET THE REQUIREMENTS OF ASTM A325. BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED.

PAYMENT FOR GUARDRAIL, POST, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

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.

STANDARD NOTES

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 $\frac{y_4}{\omega}$ 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'-O".

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.

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.

HANDRAILS AND POSTS:



STD. NO. SN