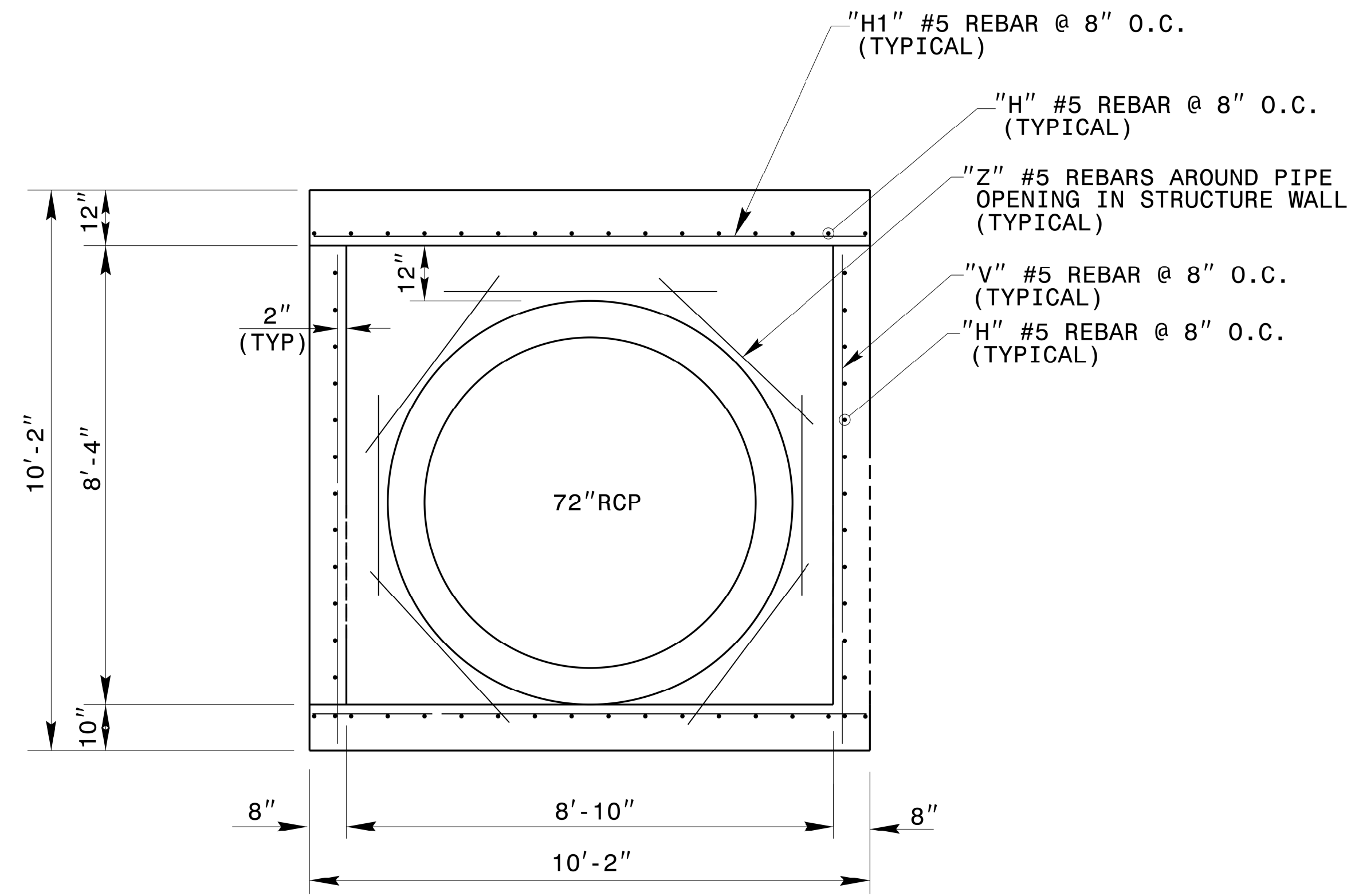


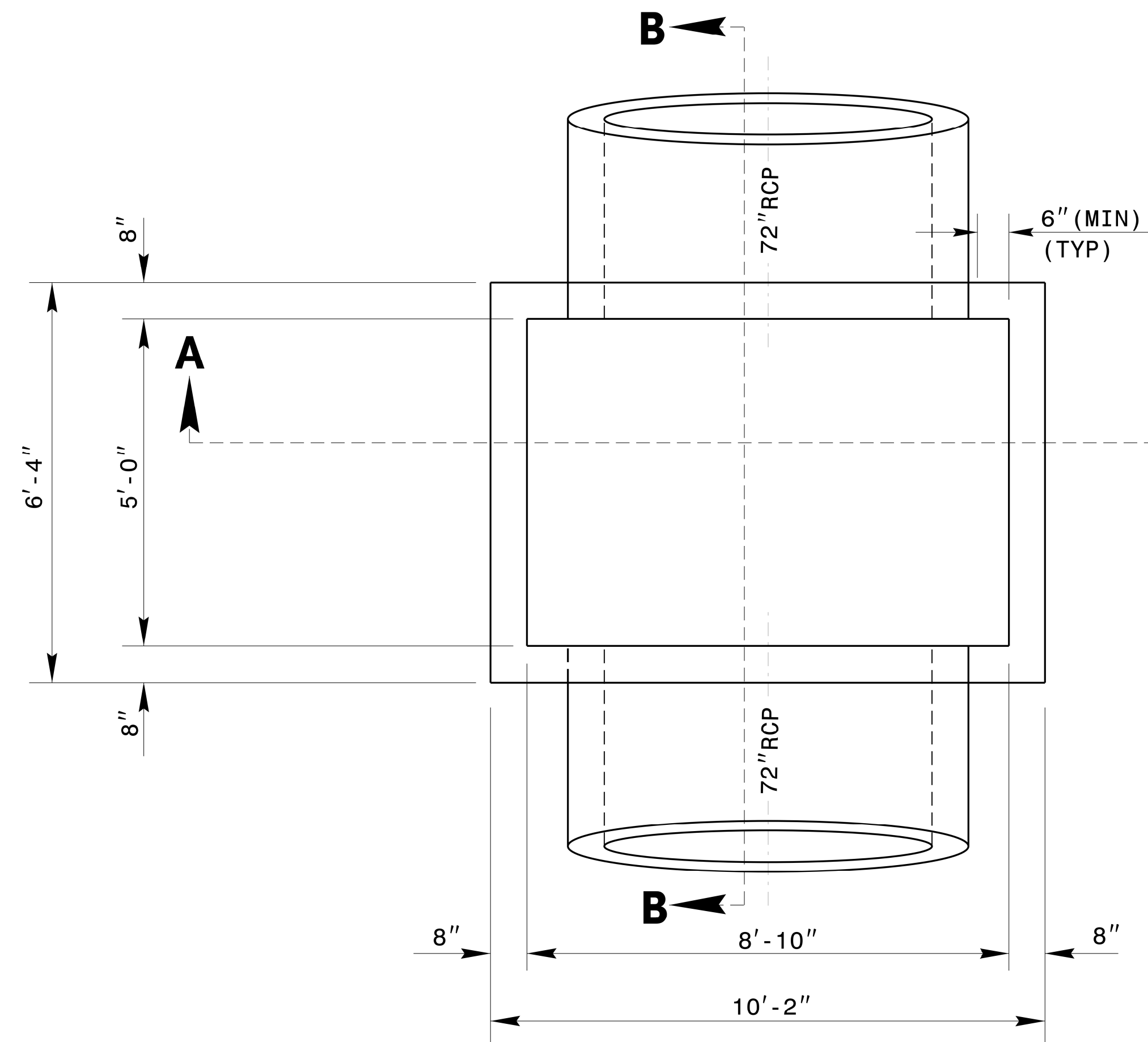
**This electronic collection of documents is provided
for the convenience of the user
and is Not a Certified Document –**

**The documents contained herein were originally issued
and sealed by the individuals whose names and license
numbers appear on each page, on the dates appearing
with their signature on that page.**

**This file or an individual page
shall not be considered a certified document.**



SECTION A-A



PLAN VIEW

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS OR BRICK/BLOCK WALLS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

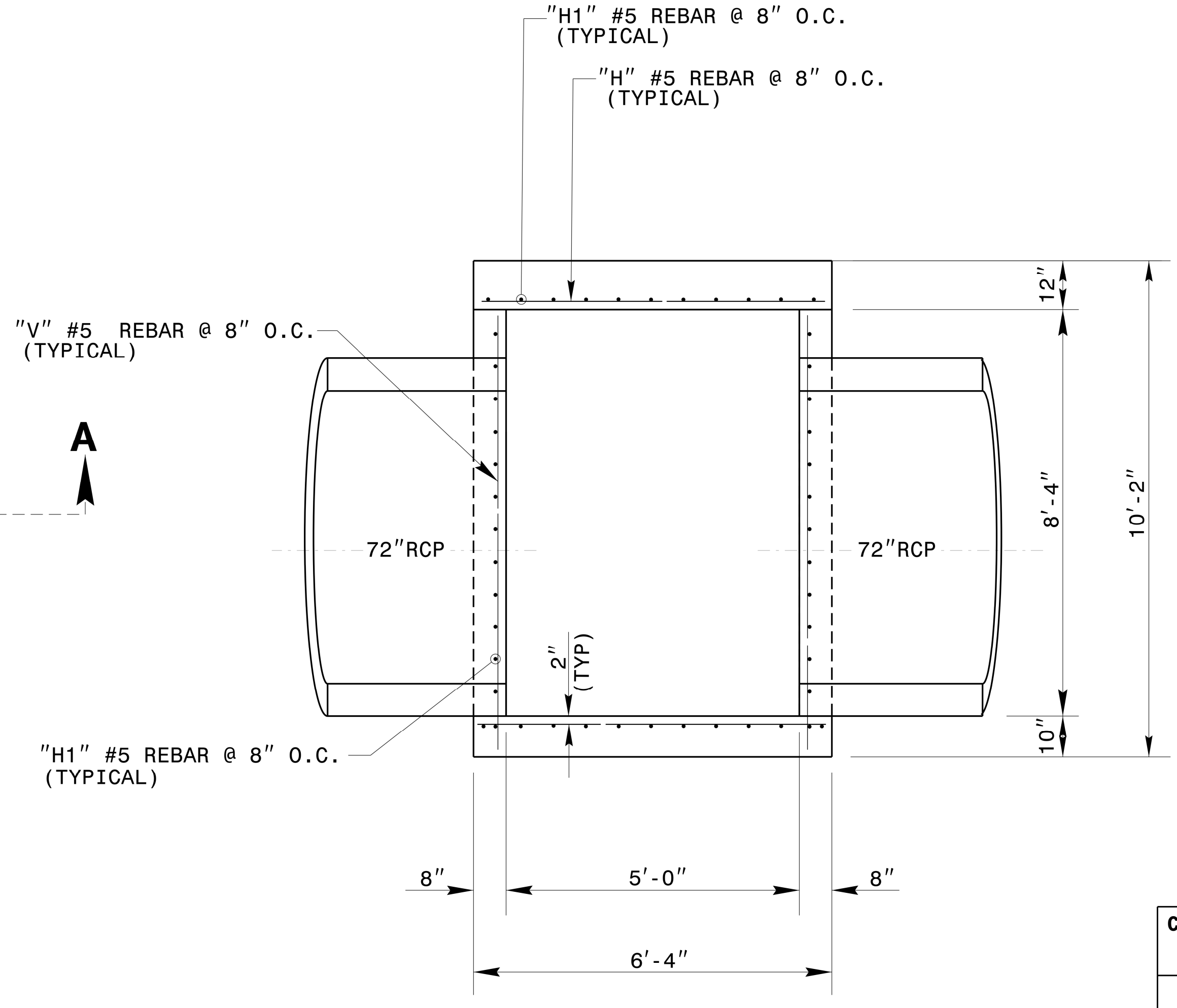
BOX DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

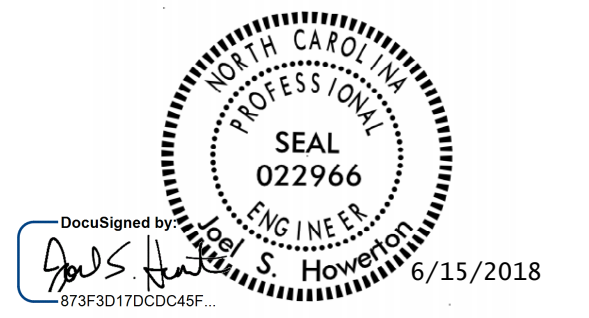
BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	42	#5	8'-10"	387
H1	48	#5	8'-6"	426
V	54	#5	7'-6"	423
Z	14	#5	5'-0"	74
TOTAL REINF. STEEL (LBS.)				1310
TOTAL CONC. (CU. YDS.)			*	11.8

* NO DEDUCTION HAS BEEN MADE FOR PIPES

* 2.00 CU. YD. DEDUCTION FOR 2-72" RC PIPE



SECTION B-B



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

**SPECIAL JUNCTION BOX
WITH SLAB LID**

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: nbritt DATE: 04/17/09
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: detail/nbritt/english/rural/r2417c72jb.dgn

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

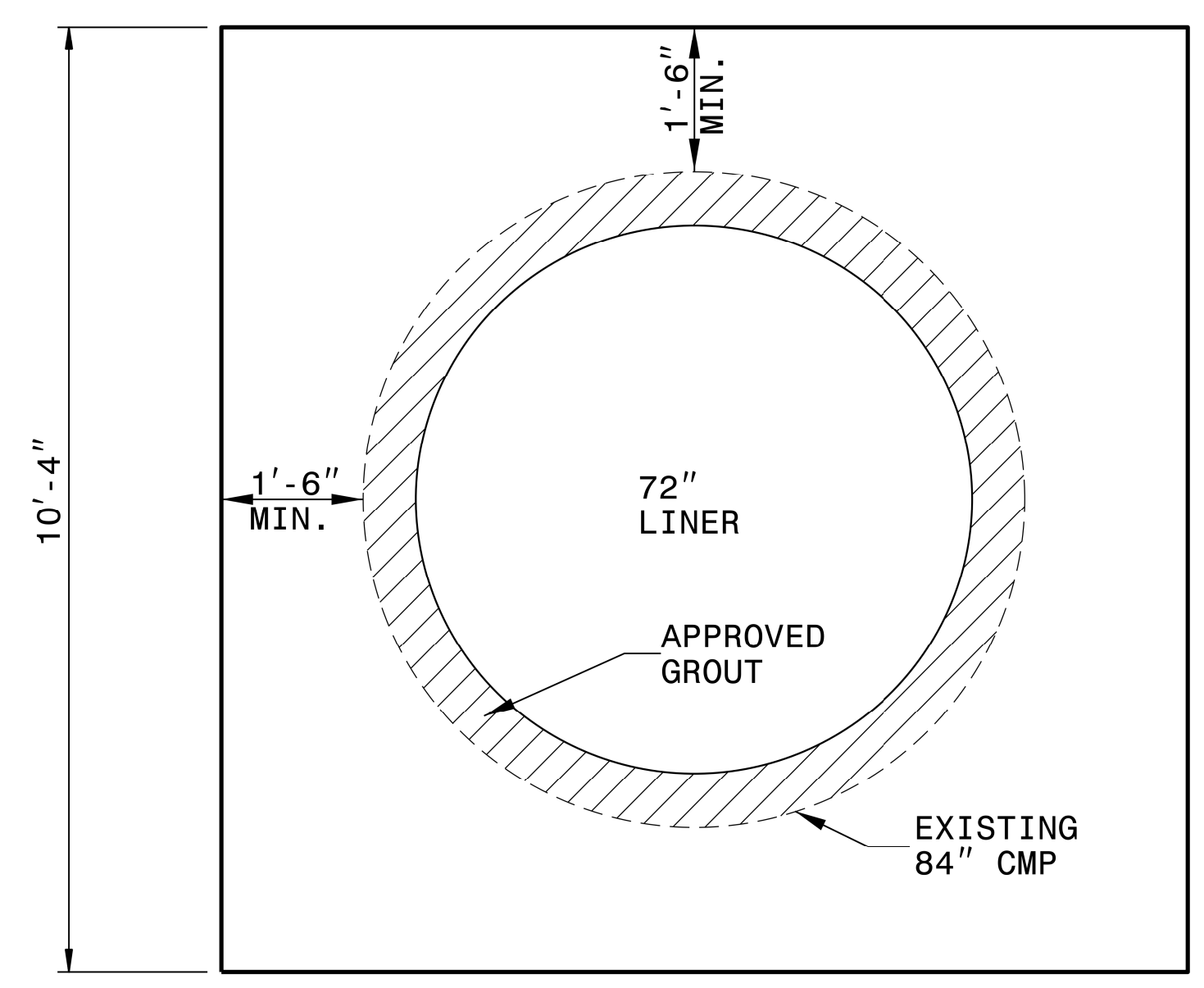
ENGLISH DETAIL DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840D72

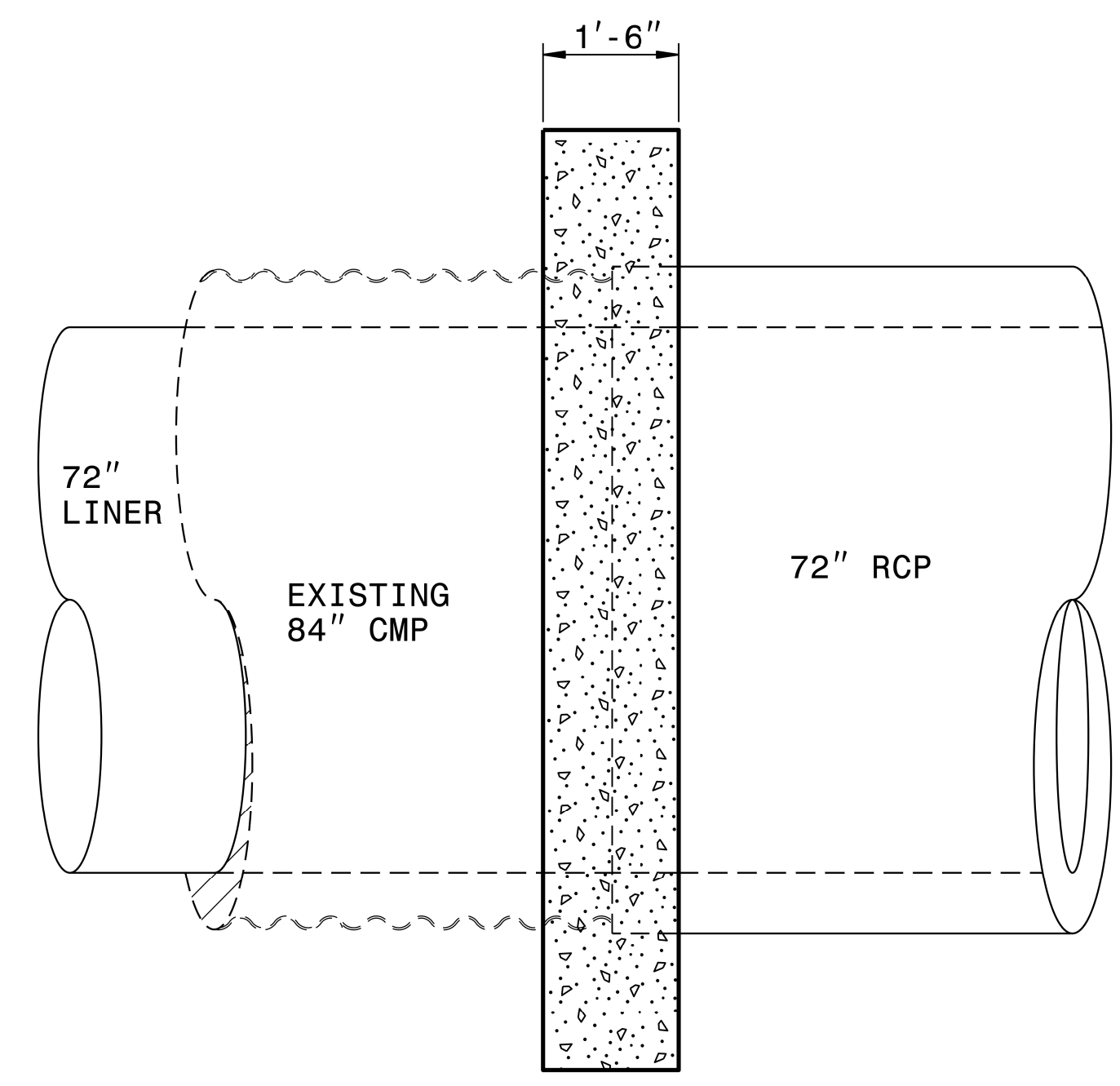
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PIPE COLLAR

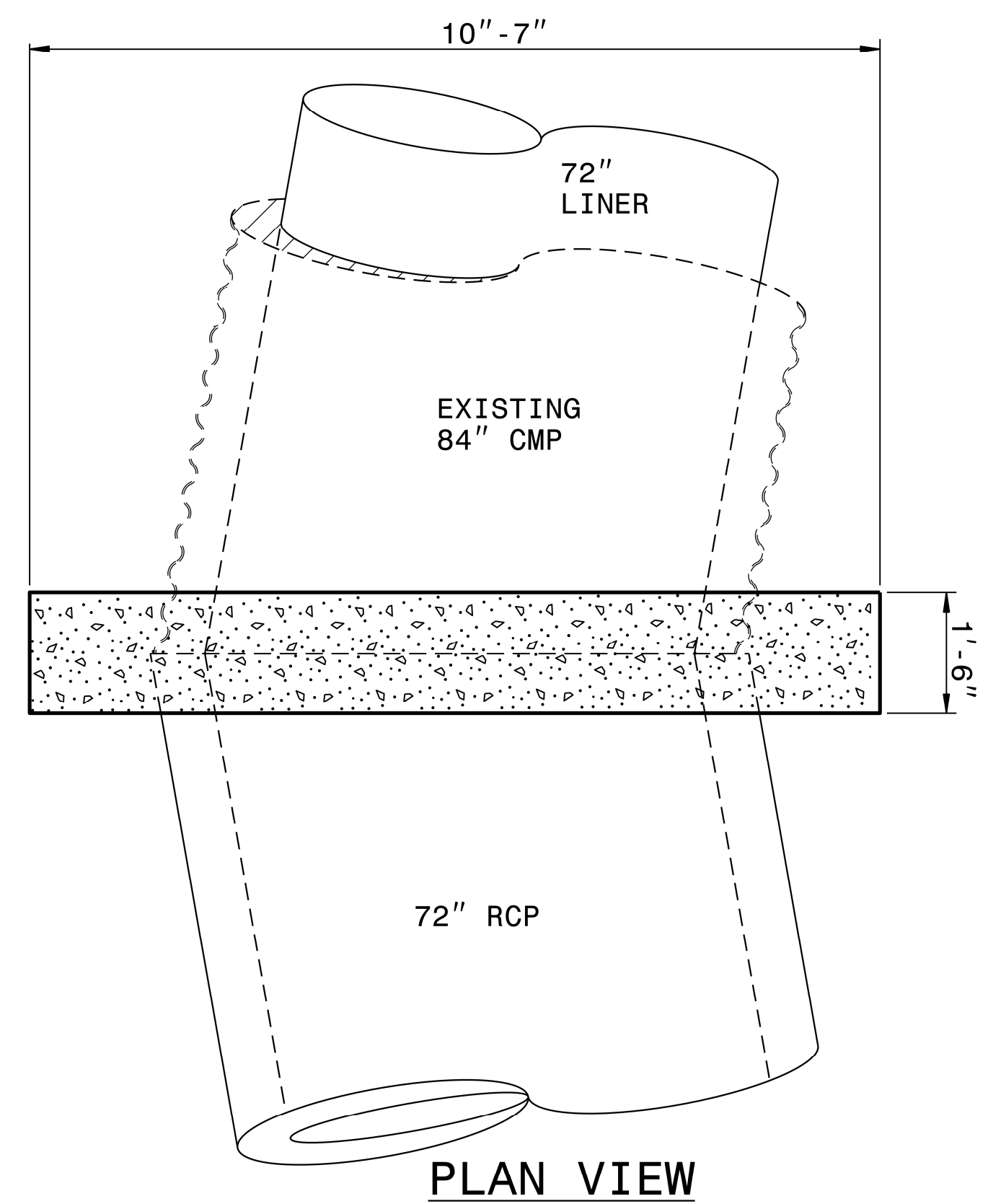
SHEET 1 OF 1
840D72



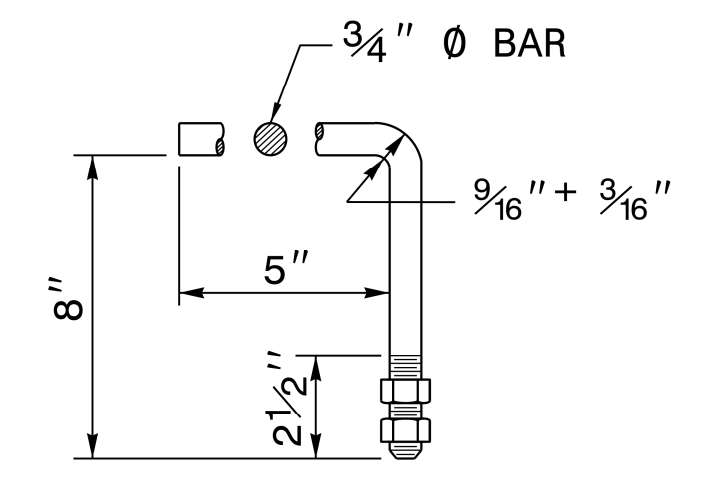
SECTION THROUGH COLLAR



ELEVATION



PLAN VIEW



HOOK BOLT

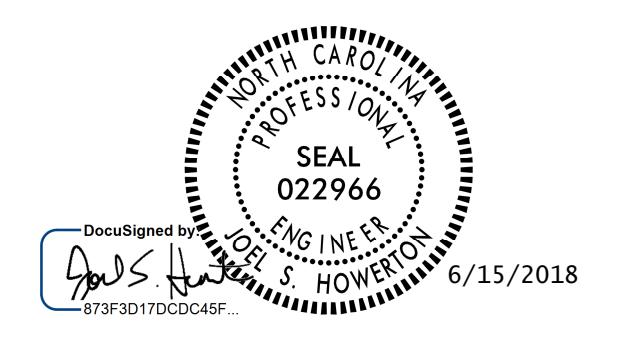
HOOK BOLTS (CONSTRUCT ANCHORS AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 84" CMP. EMBED THE HOOK BOLTS IN THE CONCRETE ENDWALL 8" IN DEPTH. THE GALVANIZED 3/4" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.

GENERAL NOTES:

- USE PIPE COLLAR FOR EXTENDING EXISTING PIPE CULVERTS, AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.
- CUT PIPES AS DIRECTED BY THE ENGINEER TO INSURE TIGHT FIT.
- CONSTRUCT THE PIPE COLLAR OF CLASS "B" OR BETTER CONCRETE.
- DIMENSIONS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

BILL OF MATERIAL
CLASS "B" CONC. (Cu.Yds.) = 3.7

20-APR-2018 16:55
S:\Contract\003\CD\2018\Special Details\kempf\english\collar_84cmp_slipline.dgn
kempf - AT - CSD-202596



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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

SEE PLATE FOR TITLE

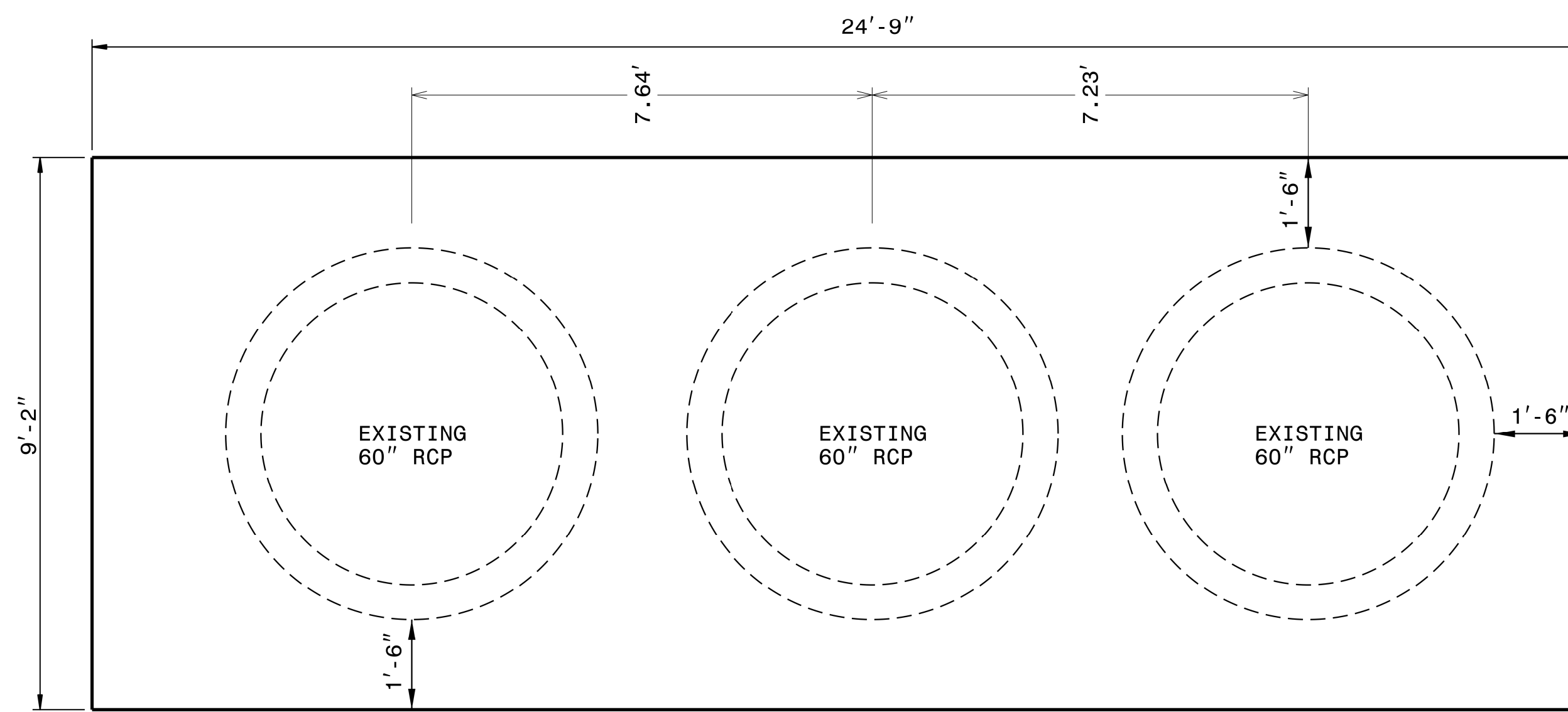
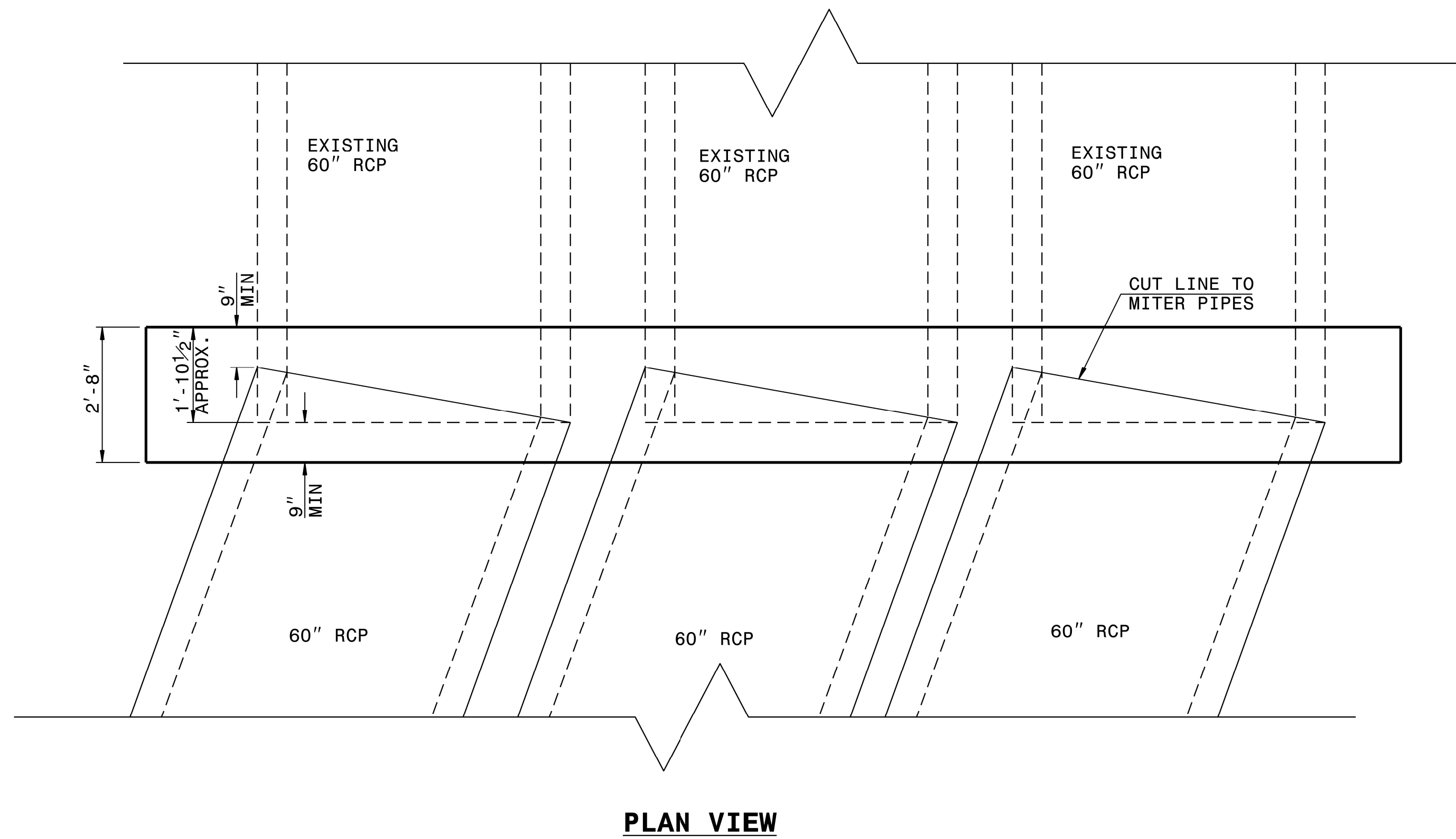
ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: *J.A. Kempf* DATE: *March 23, 2018*
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: details/kempf/english/collar_84cmp_slipline.dgn

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

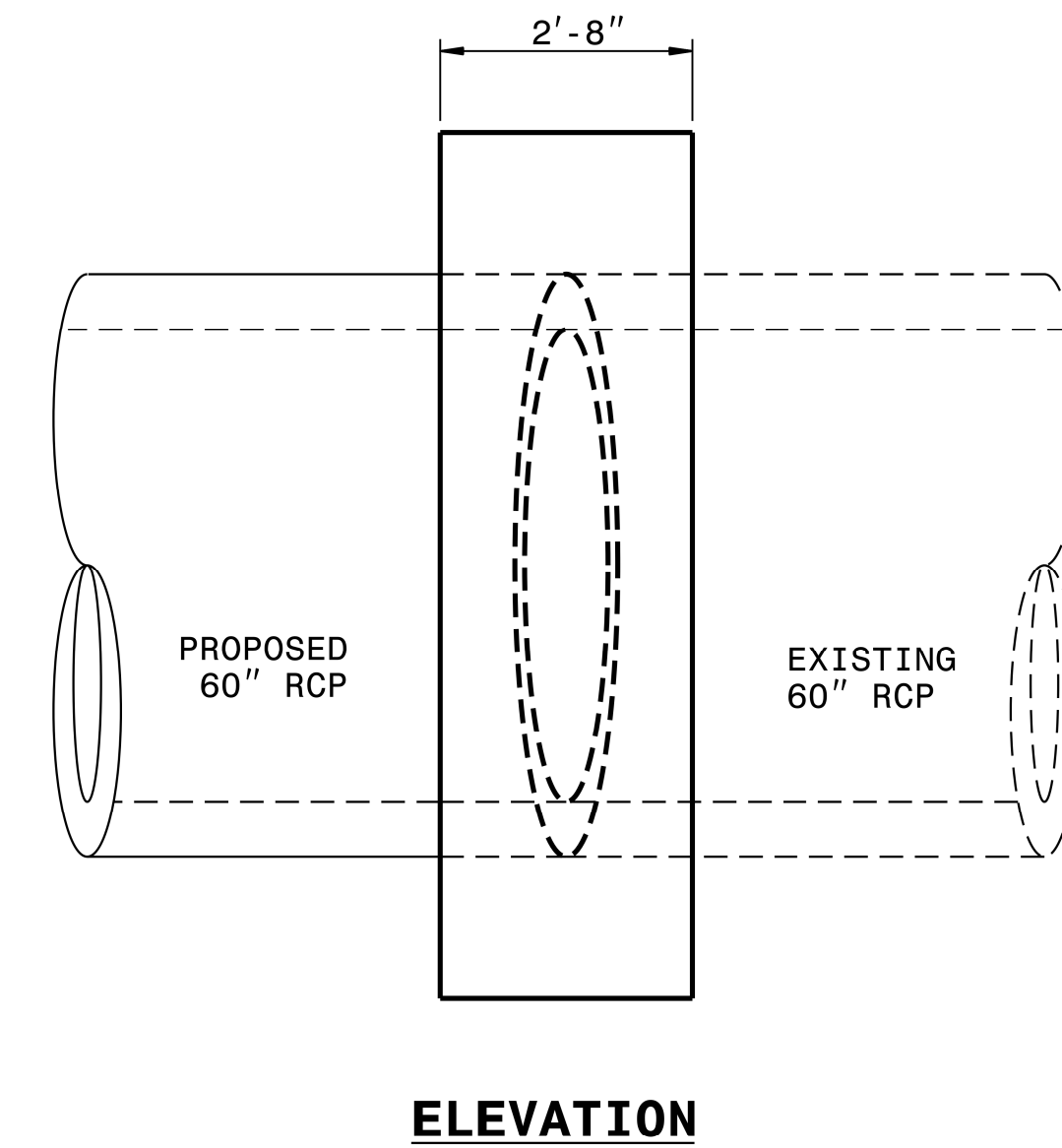
PIPE COLLAR

ENGLISH DETAIL DRAWING FOR

SHEET OF
840D72



SECTION THROUGH COLLAR



GENERAL NOTES:

USE PIPE COLLAR FOR EXTENDING EXISTING PIPE CULVERTS, AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.

CUT PIPES AS DIRECTED BY THE ENGINEER TO INSURE TIGHT FIT.

CONSTRUCT THE PIPE COLLAR OF CLASS "B" OR BETTER CONCRETE.

DIMENSIONS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

BILL OF MATERIAL
CLASS "B" CONC. (Cu.Yds.) = 19.5

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

ENGLISH DETAIL DRAWING FOR

PIPE COLLAR

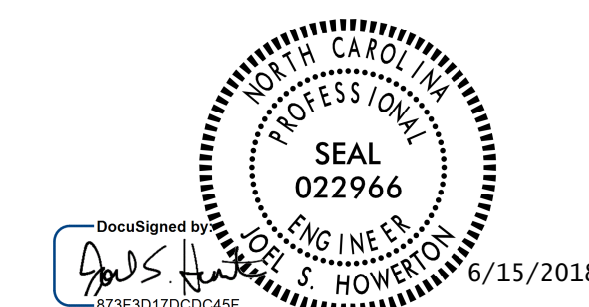
SHEET OF
840D72

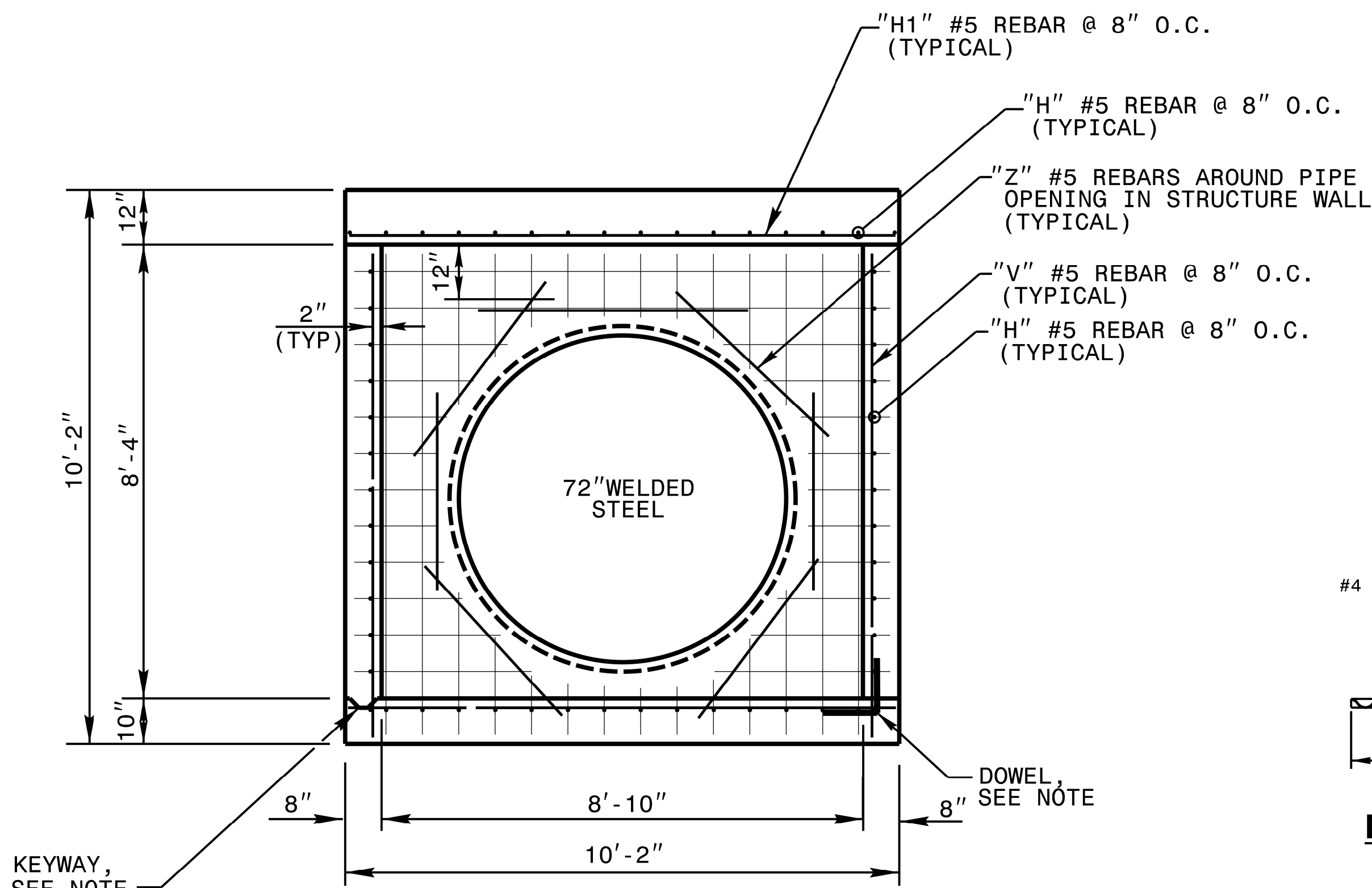
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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

SEE PLATE FOR TITLE

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: *K.A. Kempf* DATE: *March 23, 2018*
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: *details/kkempf/english/collar3@60.dgn*





GENERAL NOTES:

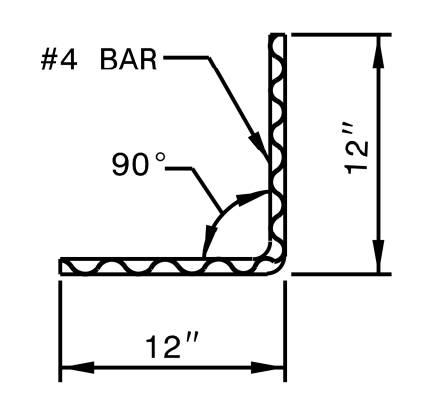
USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS OR BRICK/BLOCK WALLS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

BOX DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.

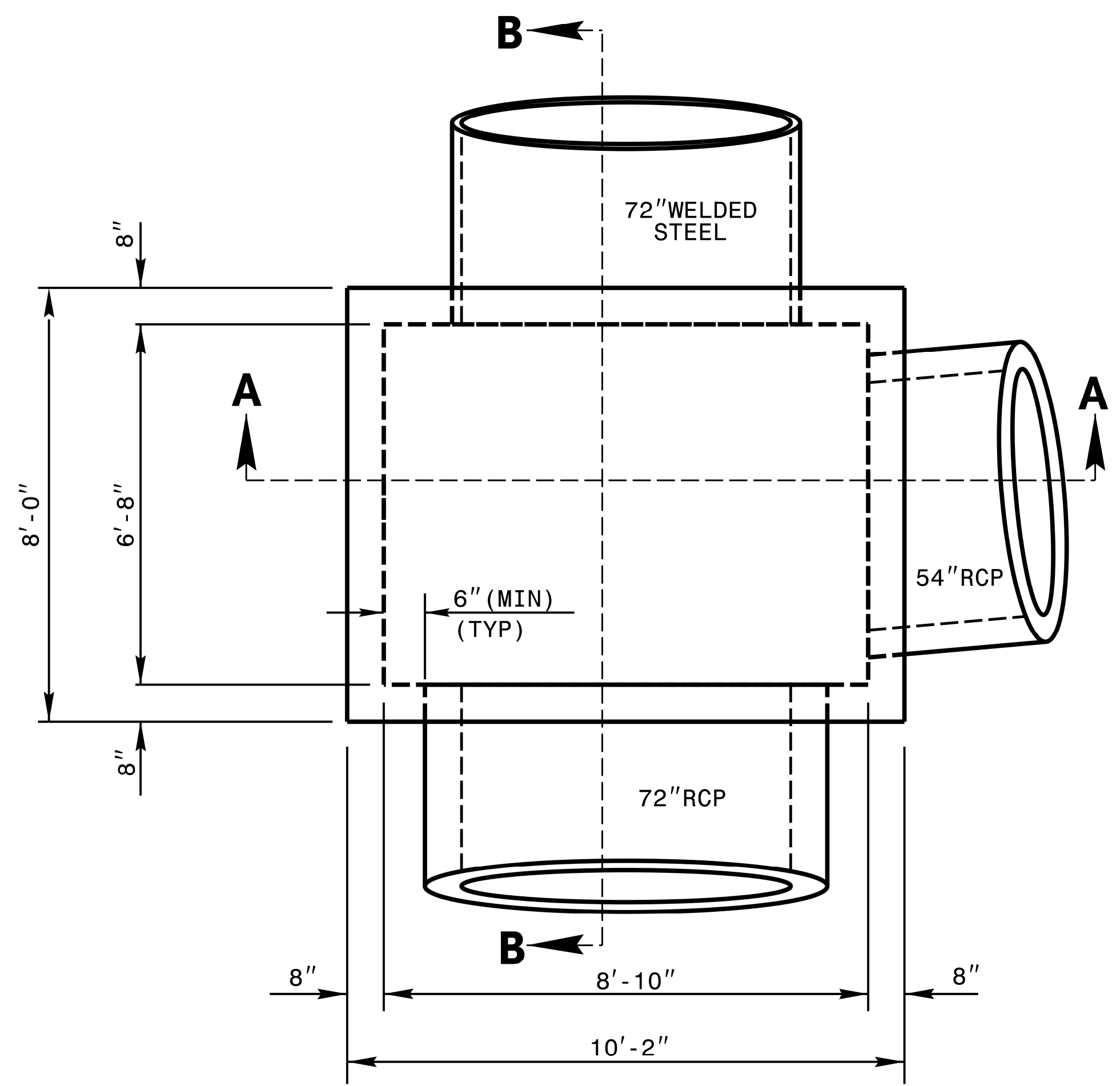
2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.



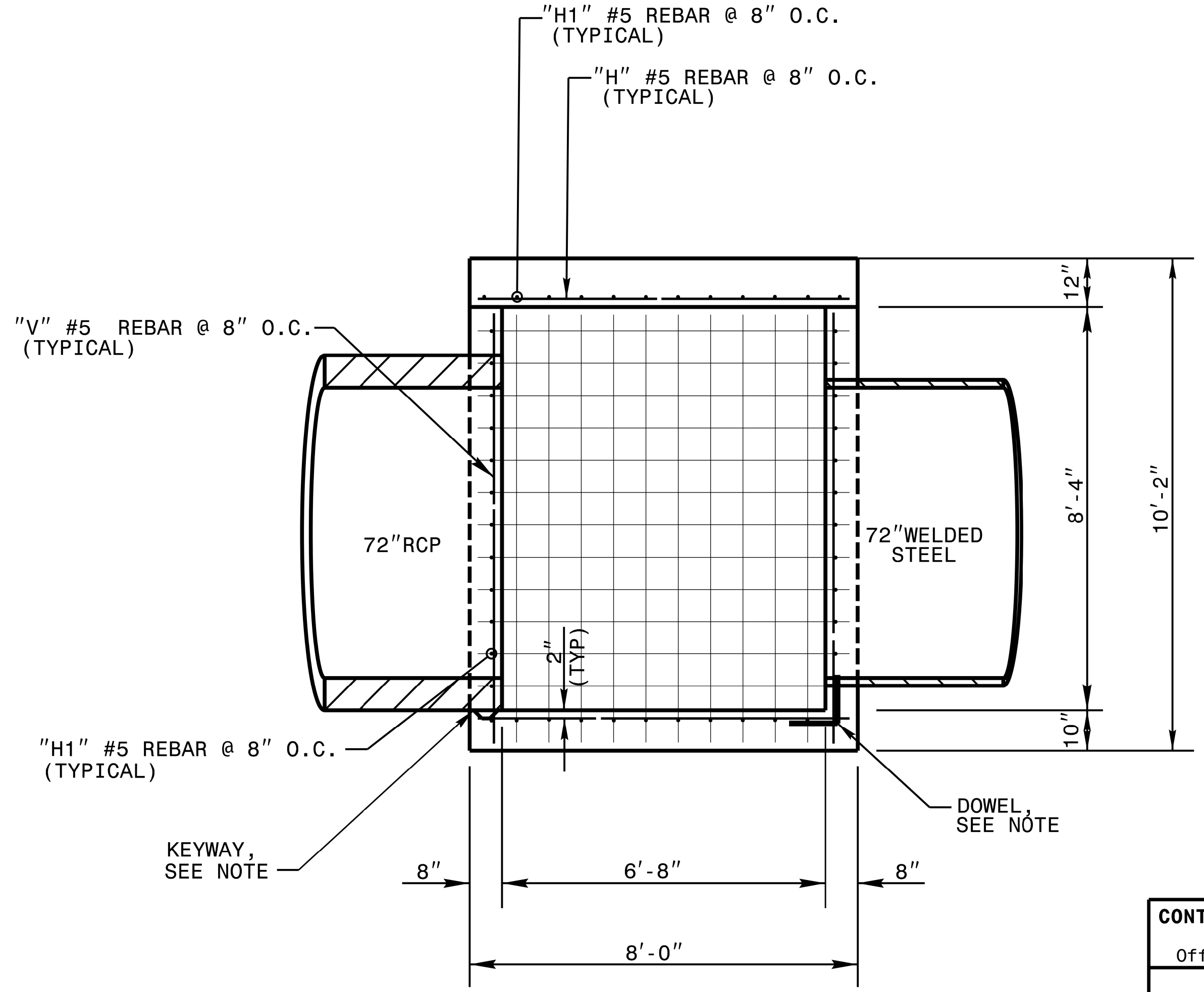
BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	42	#5	7'-8"	336
H1	48	#5	9'-10"	492
V	54	#5	8'-10"	497
Z	14	#5	5'-0"	74
TOTAL REINF. STEEL (LBS.)				1399
TOTAL CONC. (CU. YDS.)				* 12.5

* NO DEDUCTION HAS BEEN MADE FOR PIPES

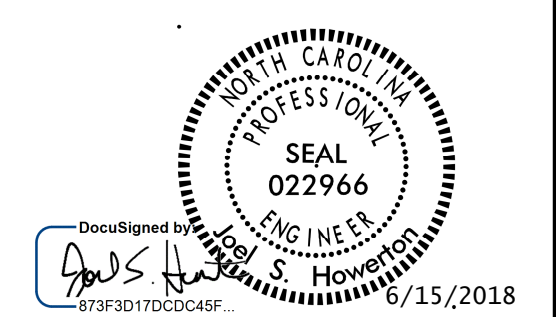
SECTION A-A



PLAN VIEW



SECTION B-B



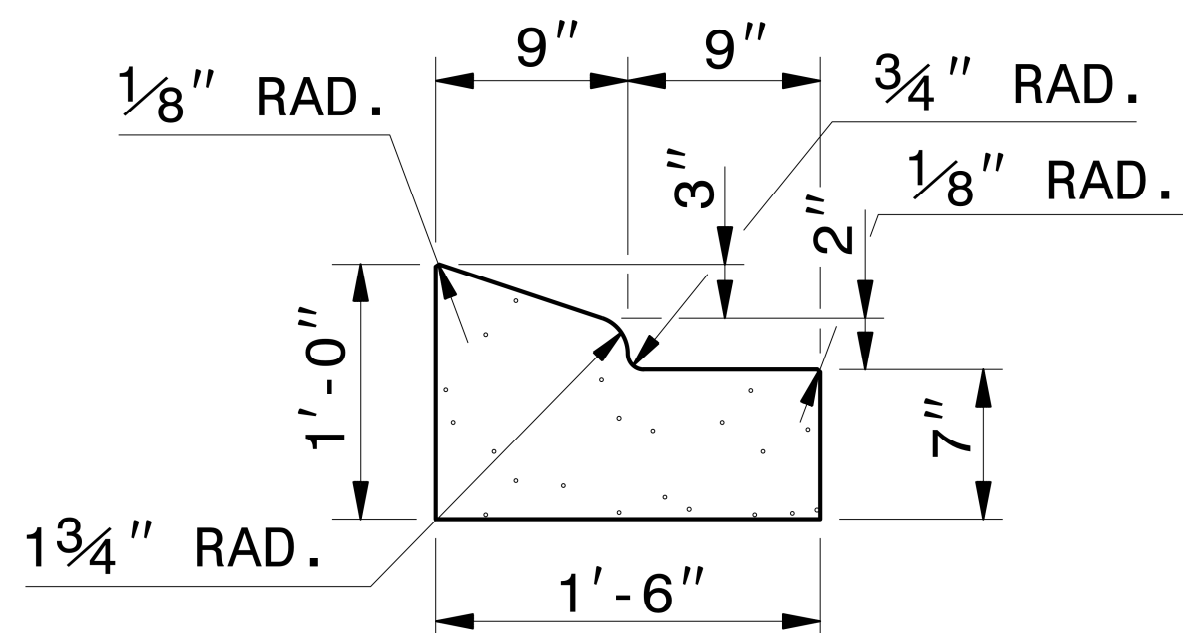
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SPECIAL JUNCTION BOX WITH SLAB LID

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: kkempf DATE: 02/23/18
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: detail/kkempf/english/u4405 72jb.dgn

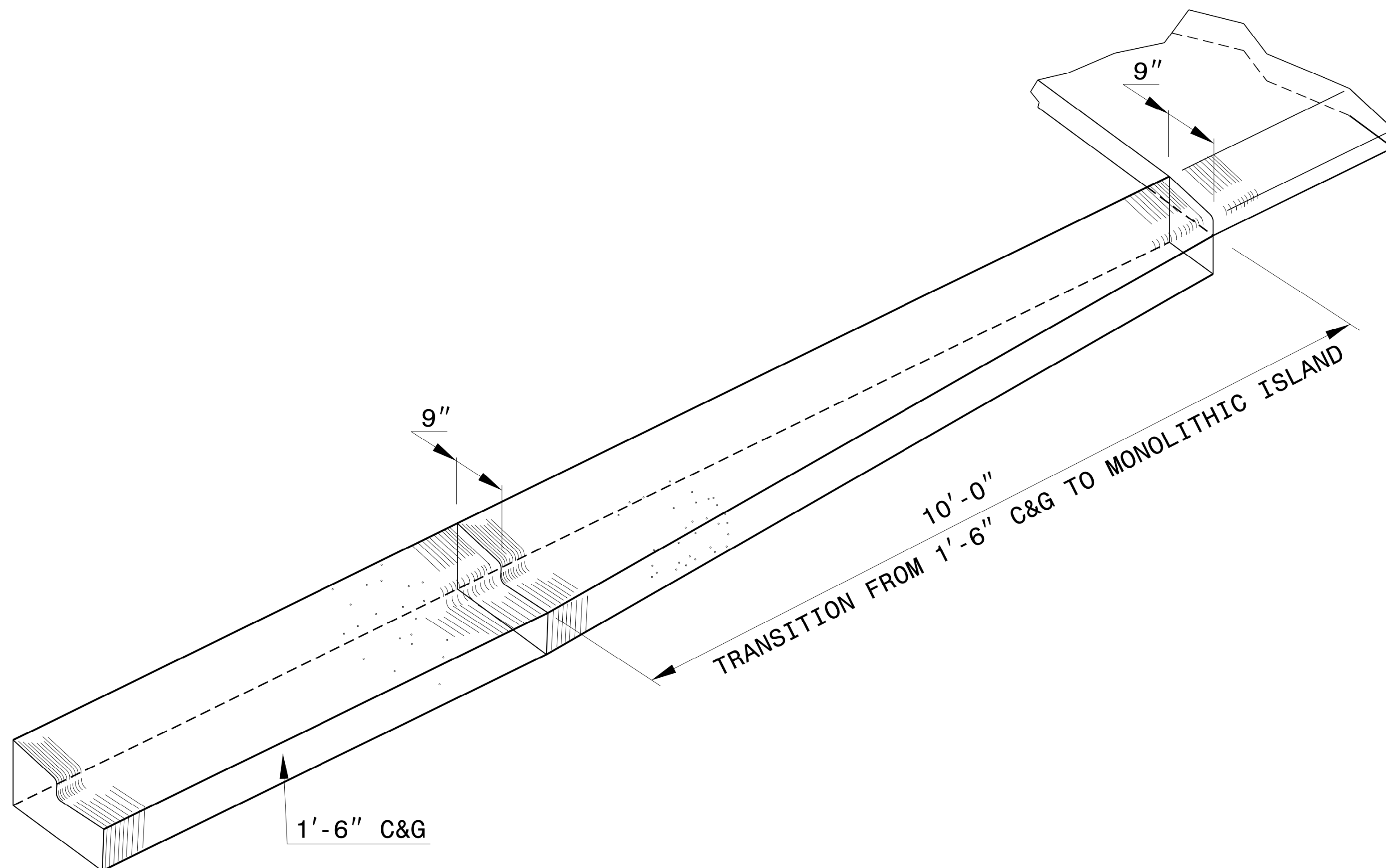
5/14/99
 \$\$\$\$SYTIME\$\$\$\$
 \$\$\$\$VTIME\$\$\$\$
 \$\$\$\$DATE\$\$\$\$
 \$\$\$\$USER\$\$\$\$
 \$\$\$\$JOBNO\$\$\$\$
 \$\$\$\$JOBNAME\$\$\$\$
 \$\$\$\$JOBDESC\$\$\$\$
 \$\$\$\$JOBLOC\$\$\$\$
 \$\$\$\$JOBUNIT\$\$\$\$
 \$\$\$\$JOBSTATUS\$\$\$\$
 \$\$\$\$JOBTYPE\$\$\$\$
 \$\$\$\$JOBCLASS\$\$\$\$
 \$\$\$\$JOBGROUP\$\$\$\$
 \$\$\$\$JOBPROJECT\$\$\$\$
 \$\$\$\$JOBCLIENT\$\$\$\$
 \$\$\$\$JOBOWNER\$\$\$\$
 \$\$\$\$JOBMANAGER\$\$\$\$
 \$\$\$\$JOBDESIGNER\$\$\$\$
 \$\$\$\$JOBCHECKER\$\$\$\$
 \$\$\$\$JOBAPPROVER\$\$\$\$
 \$\$\$\$JOBDATE\$\$\$\$
 \$\$\$\$JOBTIME\$\$\$\$
 \$\$\$\$JOBSTATUS\$\$\$\$
 \$\$\$\$JOBTYPE\$\$\$\$
 \$\$\$\$JOBCLASS\$\$\$\$
 \$\$\$\$JOBGROUP\$\$\$\$
 \$\$\$\$JOBPROJECT\$\$\$\$
 \$\$\$\$JOBCLIENT\$\$\$\$
 \$\$\$\$JOBOWNER\$\$\$\$
 \$\$\$\$JOBMANAGER\$\$\$\$
 \$\$\$\$JOBDESIGNER\$\$\$\$
 \$\$\$\$JOBCHECKER\$\$\$\$
 \$\$\$\$JOBAPPROVER\$\$\$\$
 \$\$\$\$JOBDATE\$\$\$\$
 \$\$\$\$JOBTIME\$\$\$\$



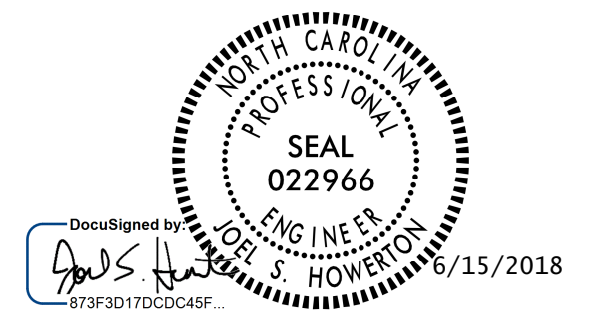
1'-6" CURB AND GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



**ISOMETRIC VIEW OF
TRANSITIONING CURB & GUTTER**



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

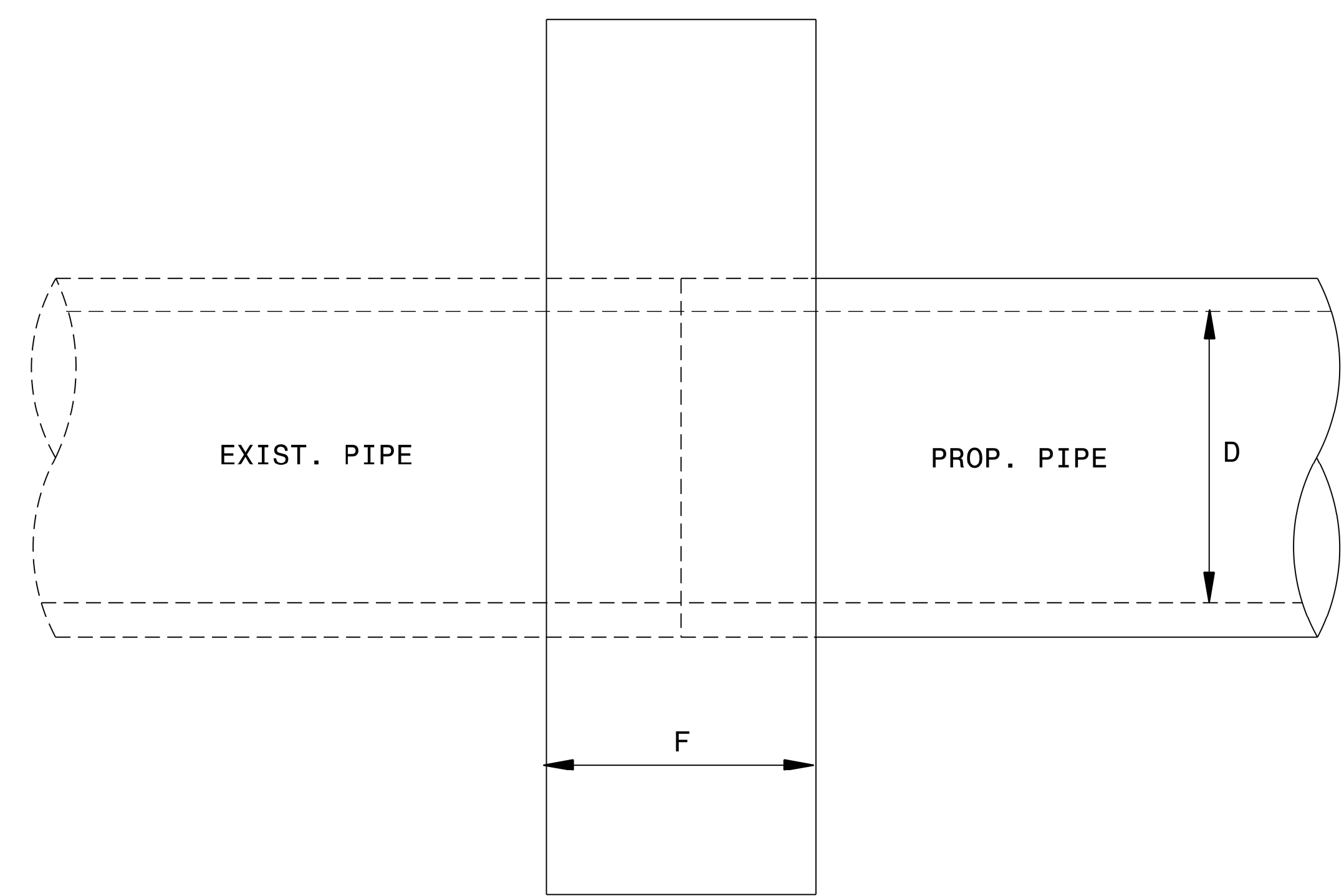
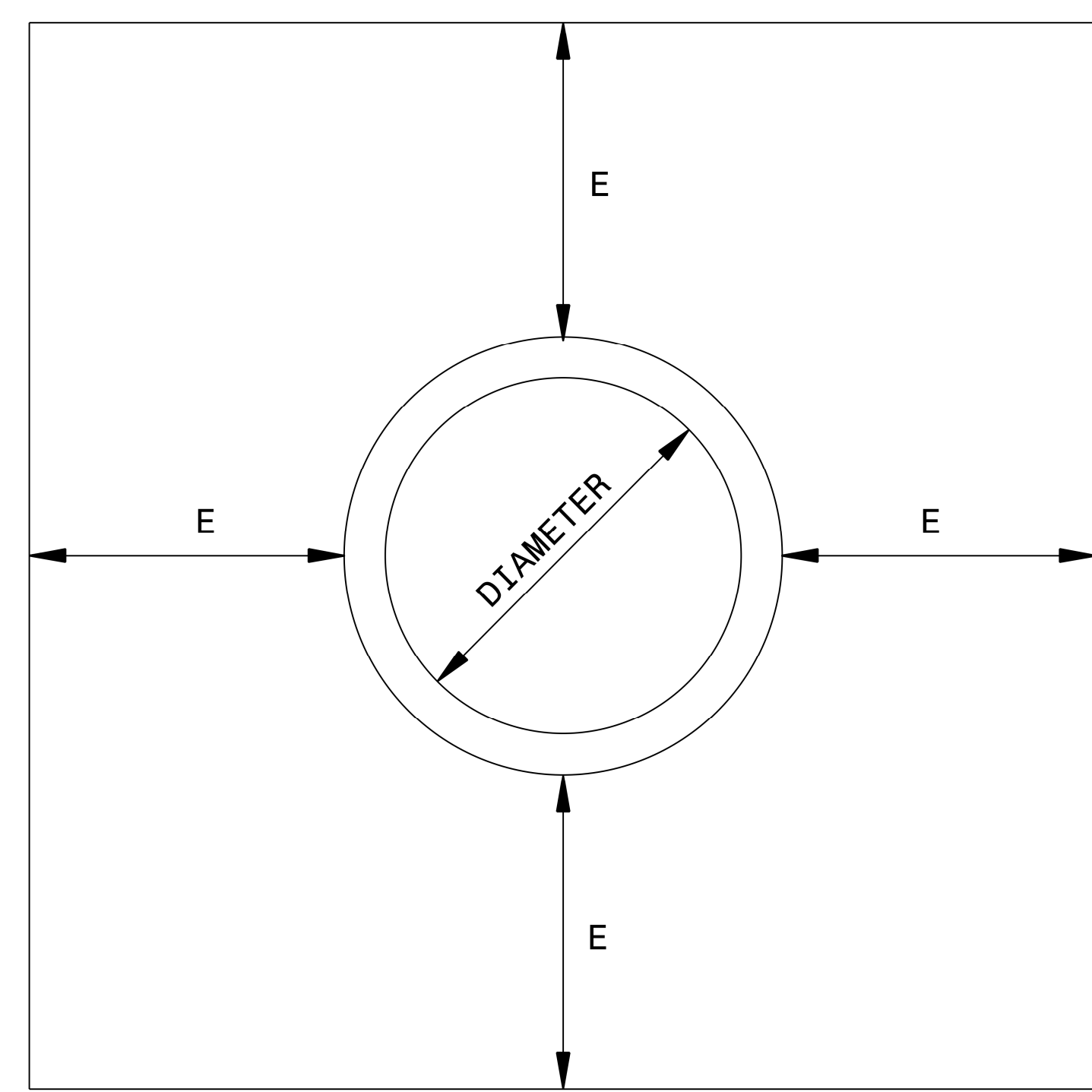
**DETAIL OF 1'-6"
CURB & GUTTER
TRANSITION SECTION**

ORIGINAL BY:	DATE:
MODIFIED BY: KKEMPF	DATE: 09-24-14
CHECKED BY:	DATE:
FILE SPEC.: kkempf/english/curb_gutter_tansion.dgn	

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

ROADWAY DETAIL DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840D72



D	E	F	CU. YD.
12"	12"	24"	0.7056
15"	12"	24"	0.7980
18"	12"	24"	0.8930
24"	12"	24"	0.5526
30"	12"	24"	1.1052
36"	12"	24"	1.5280
42"	12"	24"	1.7712
48"	12"	24"	2.0252
54"	18"	30"	4.2988
60"	18"	30"	4.7520
66"	18"	30"	5.2189
72"	18"	30"	5.6971

GENERAL NOTES:
 USE PIPE COLLAR FOR EXTENDING EXISTING CONCRETE PIPE CULVERTS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.
 CONSTRUCT THE PIPE COLLAR WITH CLASS "B" OR BETTER CONCRETE.
 OBSERVE ALL REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
 * USE 12 INCH DIAMETER VALUES FOR PIPE DIAMETERS LESS THAN 12 INCH.

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

ROADWAY DETAIL DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840D72

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**



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

SEE TITLE PLATE

ORIGINAL BY:	DATE:
MODIFIED BY: K.KEMPF	DATE: 4/23/2018
CHECKED BY:	DATE:
FILE SPEC.: kkempf\english\840D72.dgn	

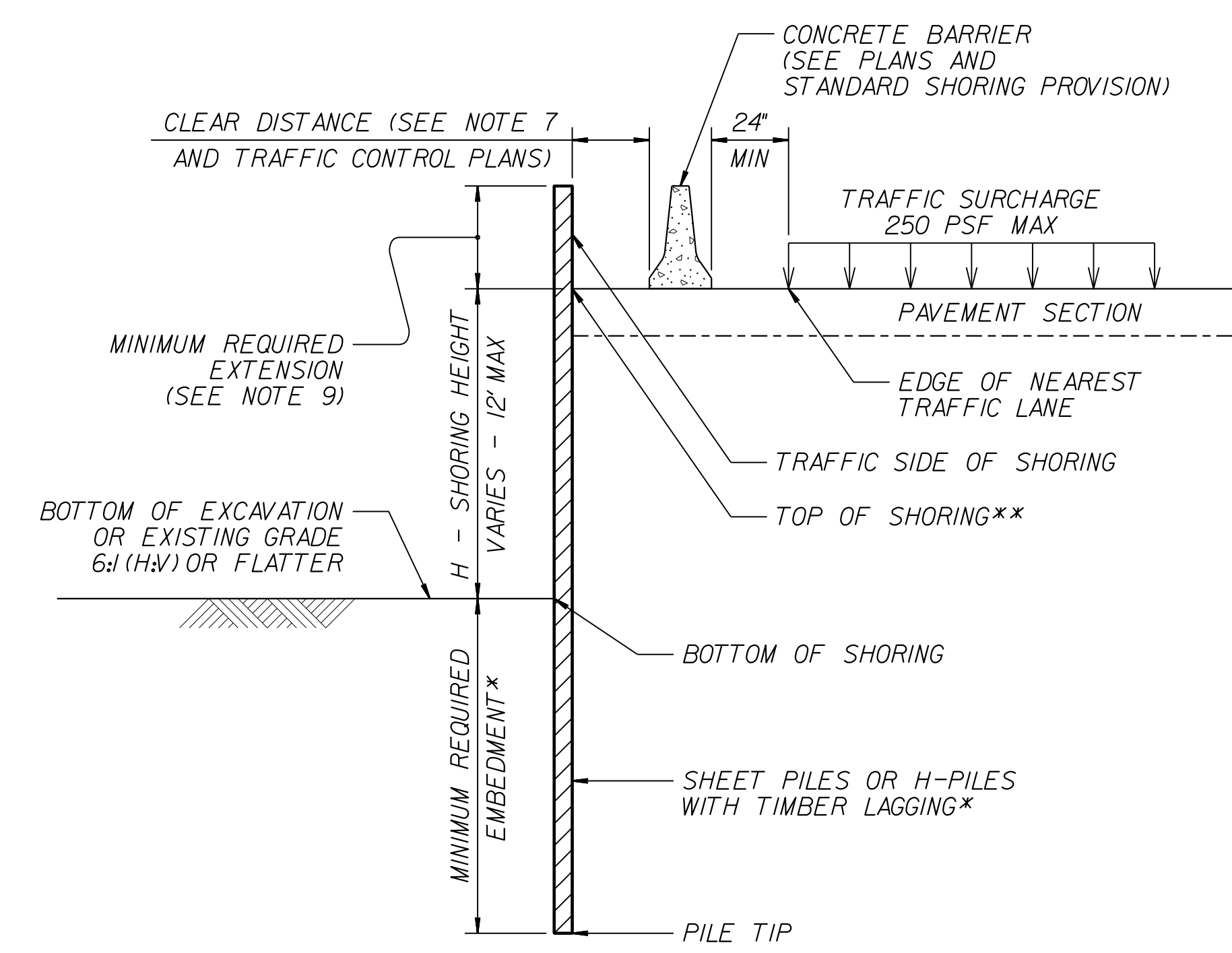
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

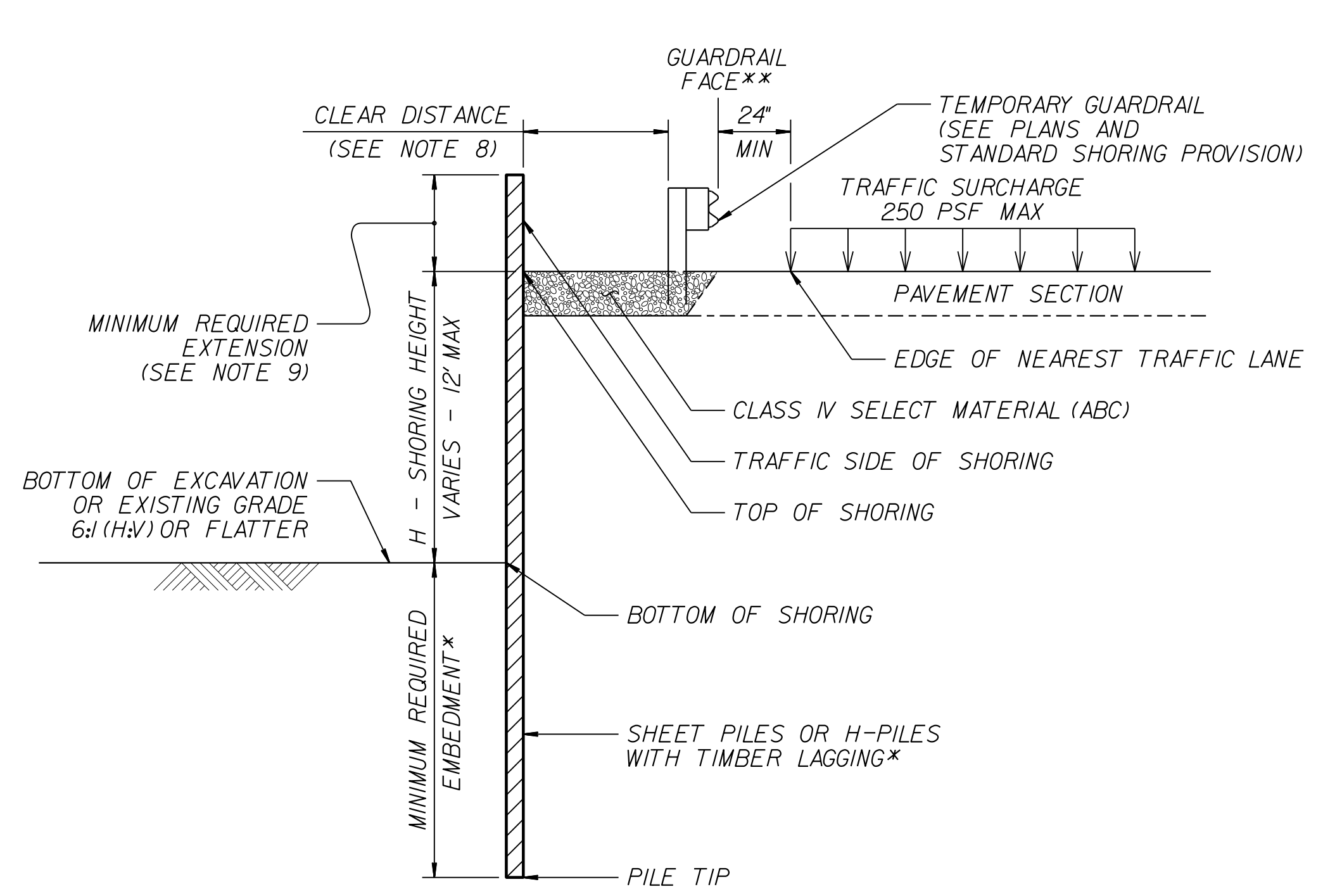
*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

NOTES:

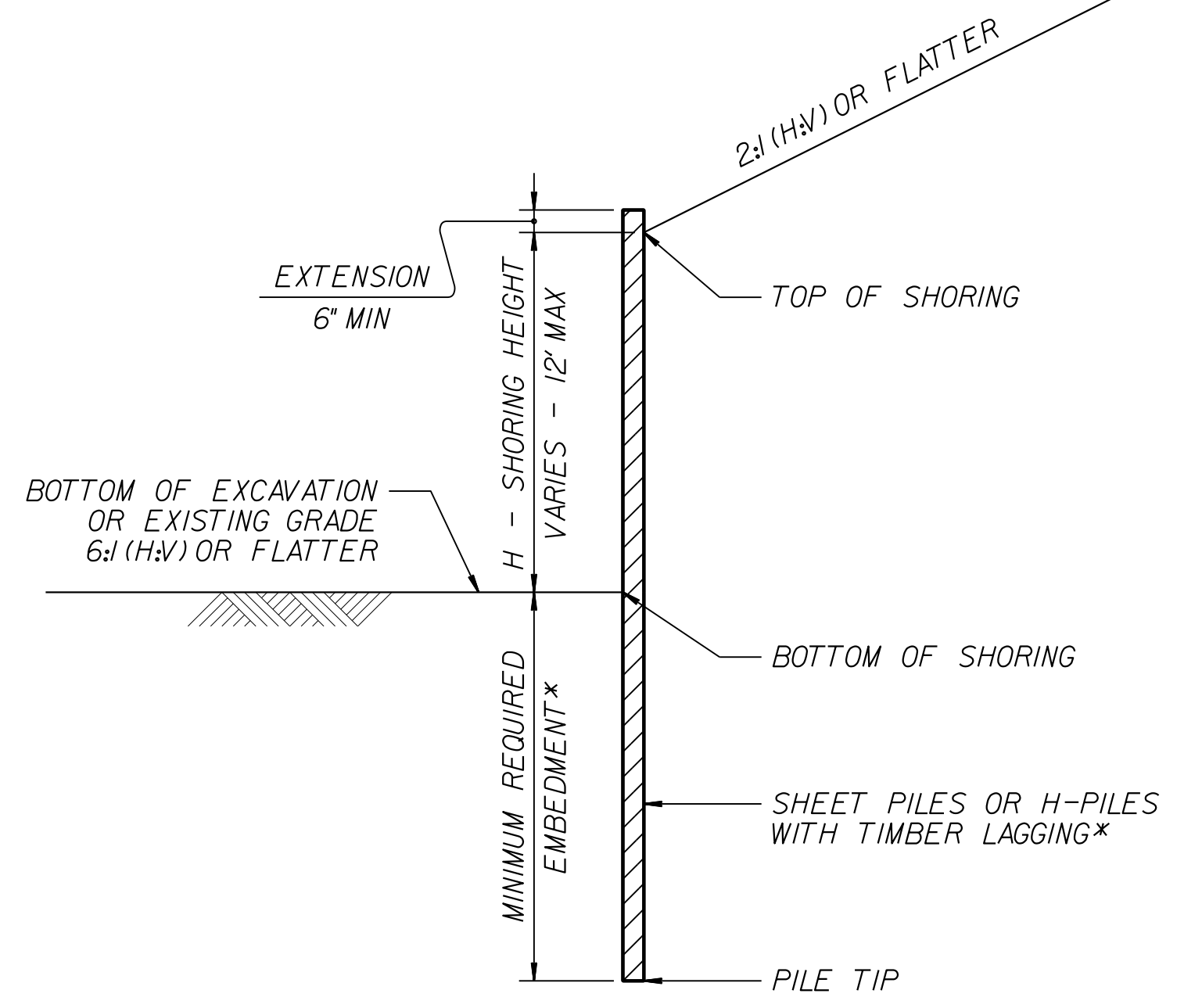
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES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



CONCRETE BARRIER
**TOP OF SHORING =
EDGE OF PAVEMENT

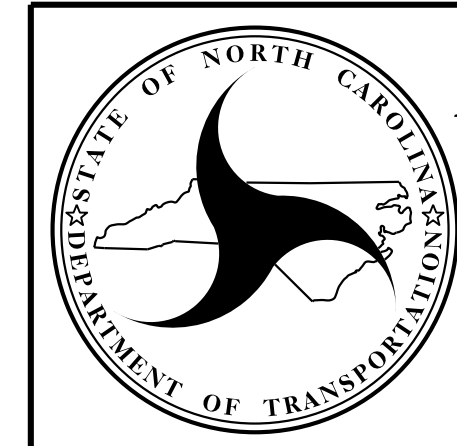


TEMPORARY GUARDRAIL
**GUARDRAIL FACE =
EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING
(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING
(SURCHARGE CASE)
*SEE TABLE ABOVE.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

STANDARD
TEMPORARY SHORING

GEOENVIRONMENTAL ENGINEER

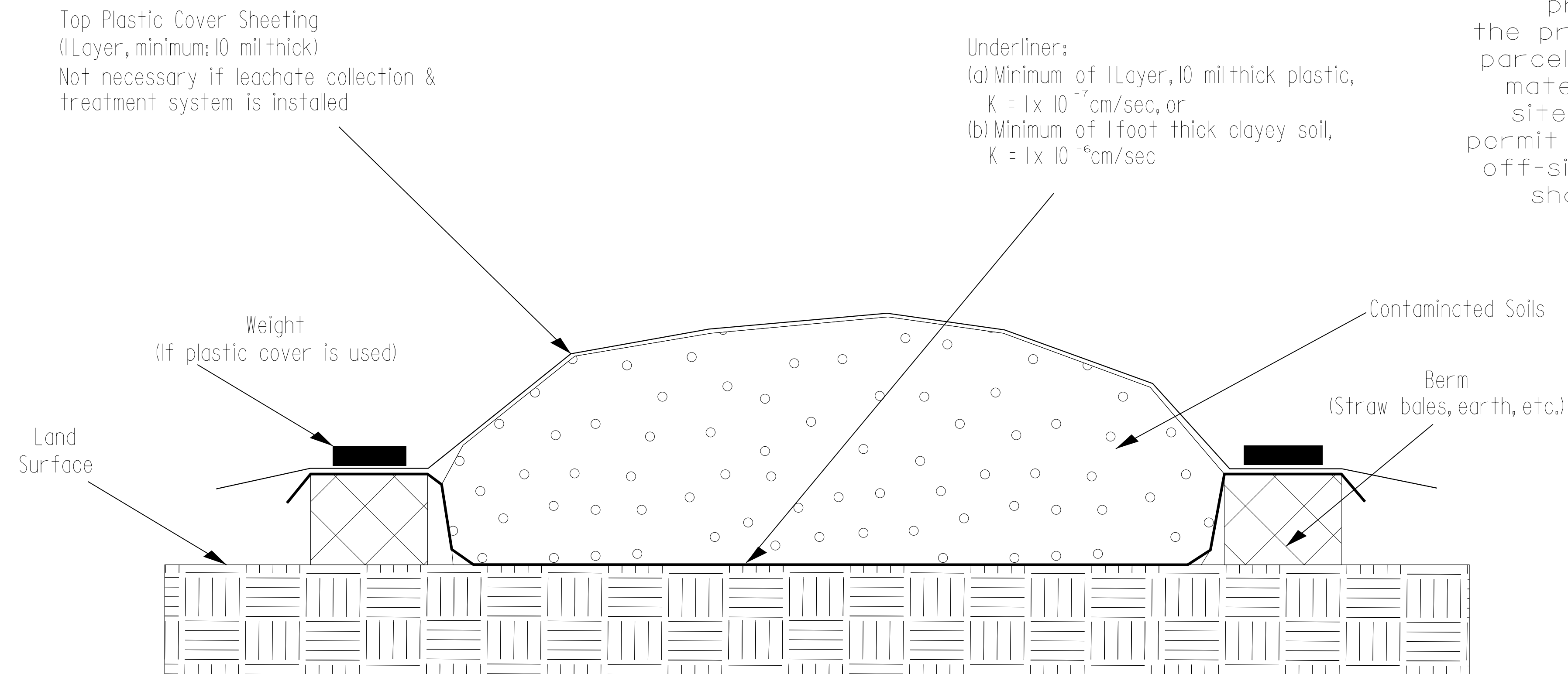
ENGINEER



DocuSigned by:
Cyrus Parker 3/12/2018

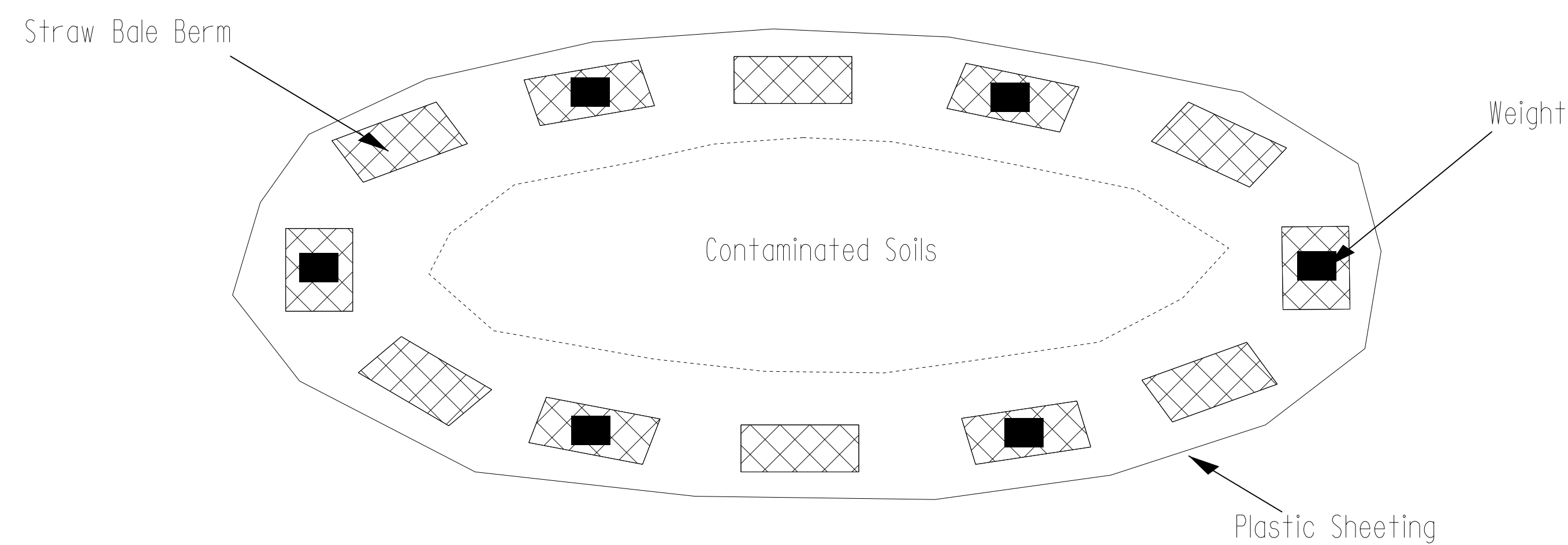
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDEQ UST Section for off-site temporary storage. Stockpile shall be removed within 45 days.

Map View



GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

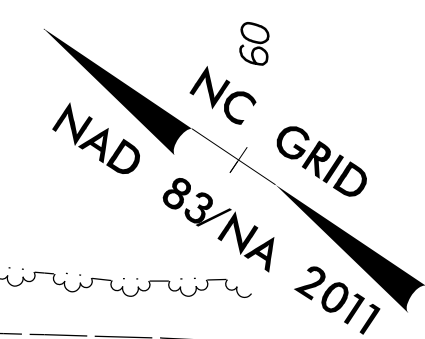
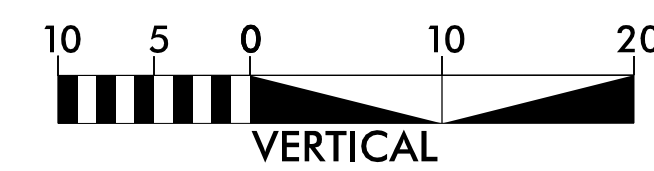
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PREPARED BY:	DATE:
REVIEWED BY:	DATE:

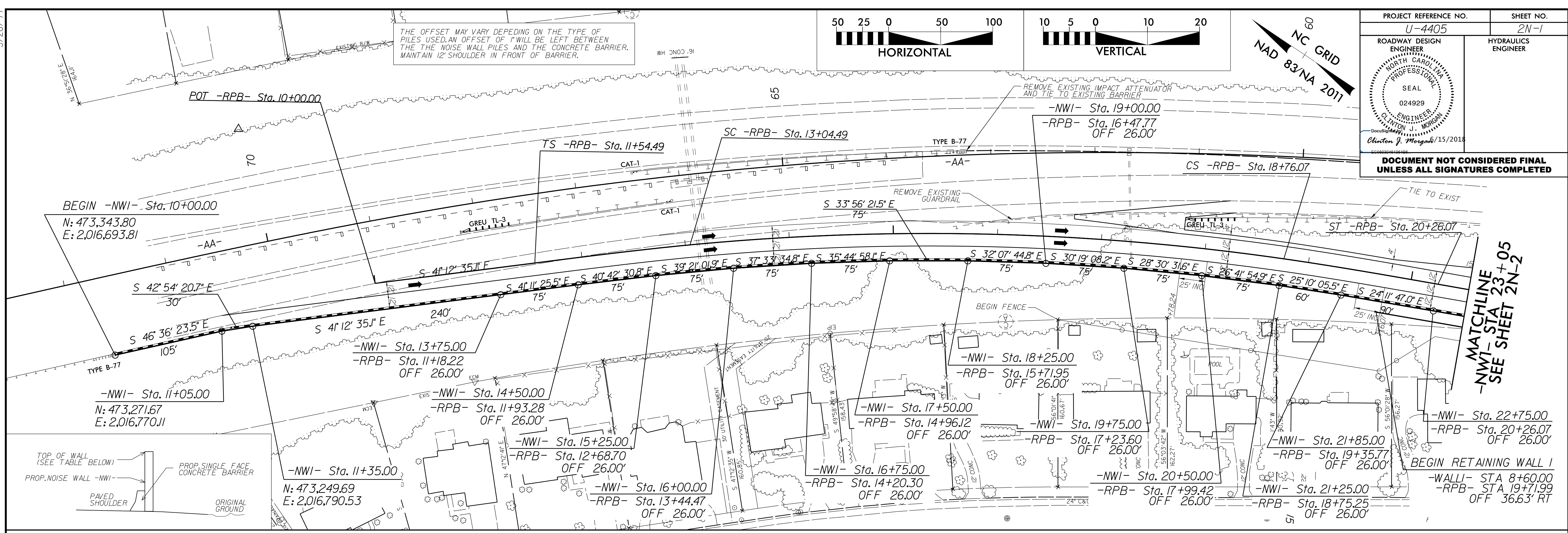
5/28/19

THE OFFSET MAY VARY DEPENDING ON THE TYPE OF PILES USED. AN OFFSET OF 1' WILL BE LEFT BETWEEN THE NOISE WALL PILES AND THE CONCRETE BARRIER. MAINTAIN 12" SHOULDER IN FRONT OF BARRIER.

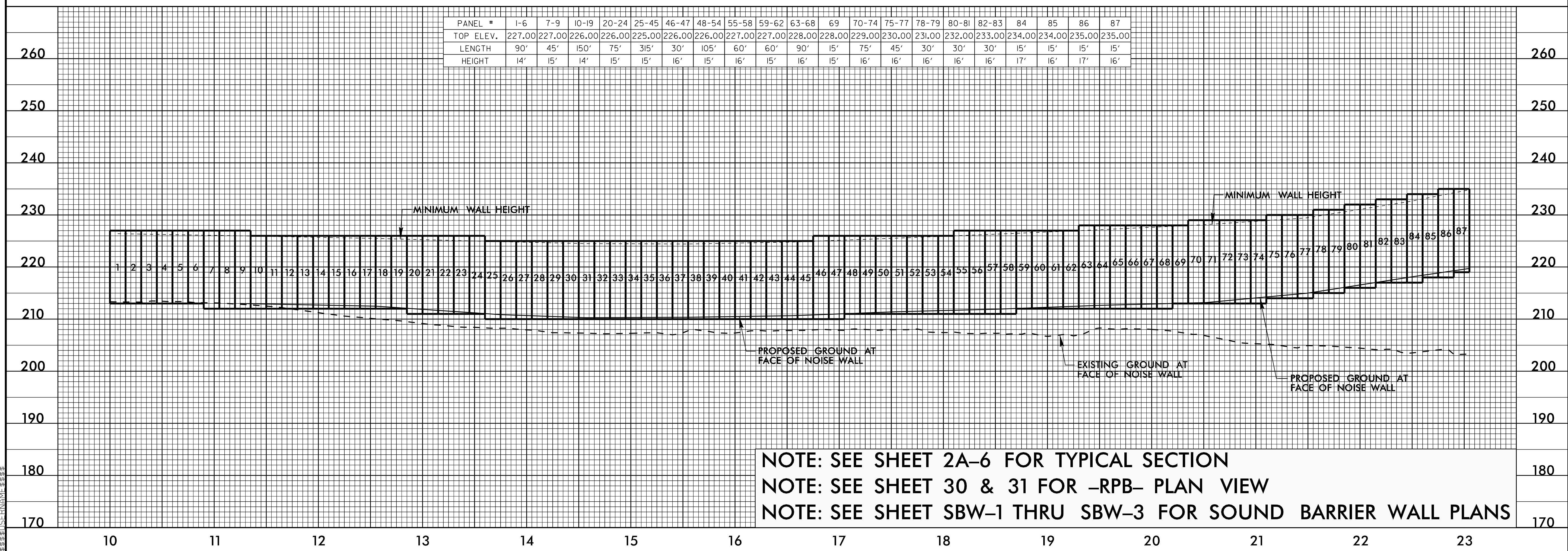


PROJECT REFERENCE NO. U-4405	SHEET NO. 2N-1
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024929 Clinton J. Morganti/15/2018	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

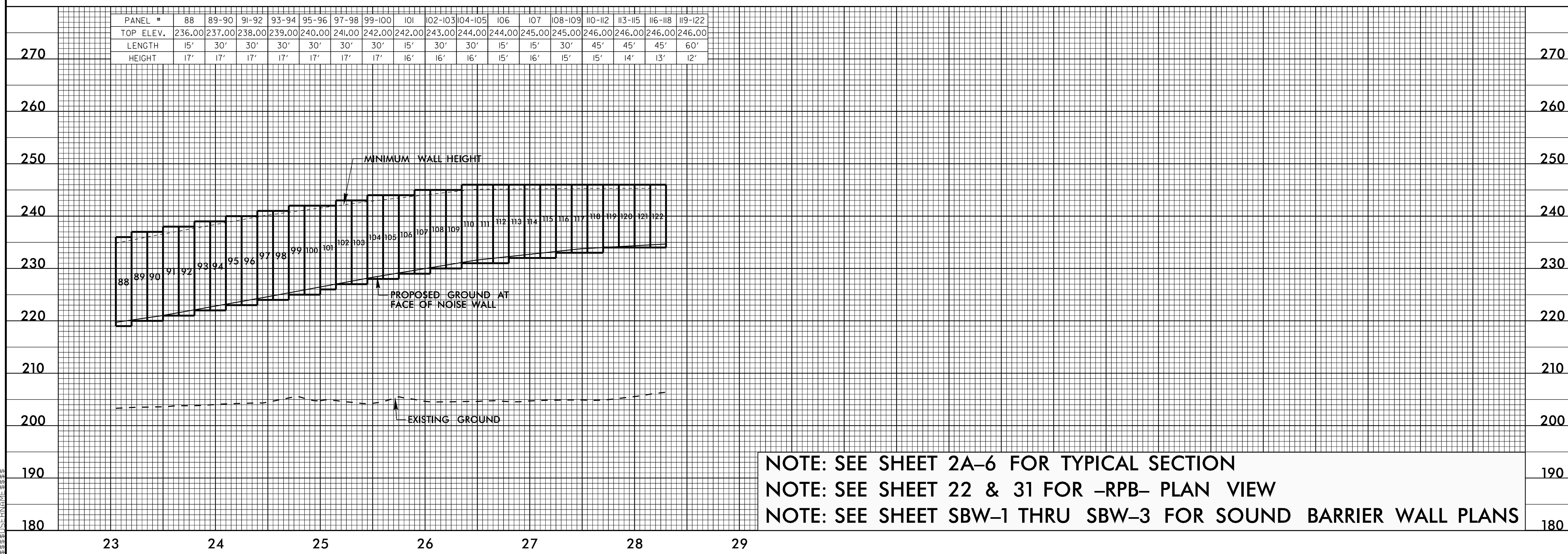
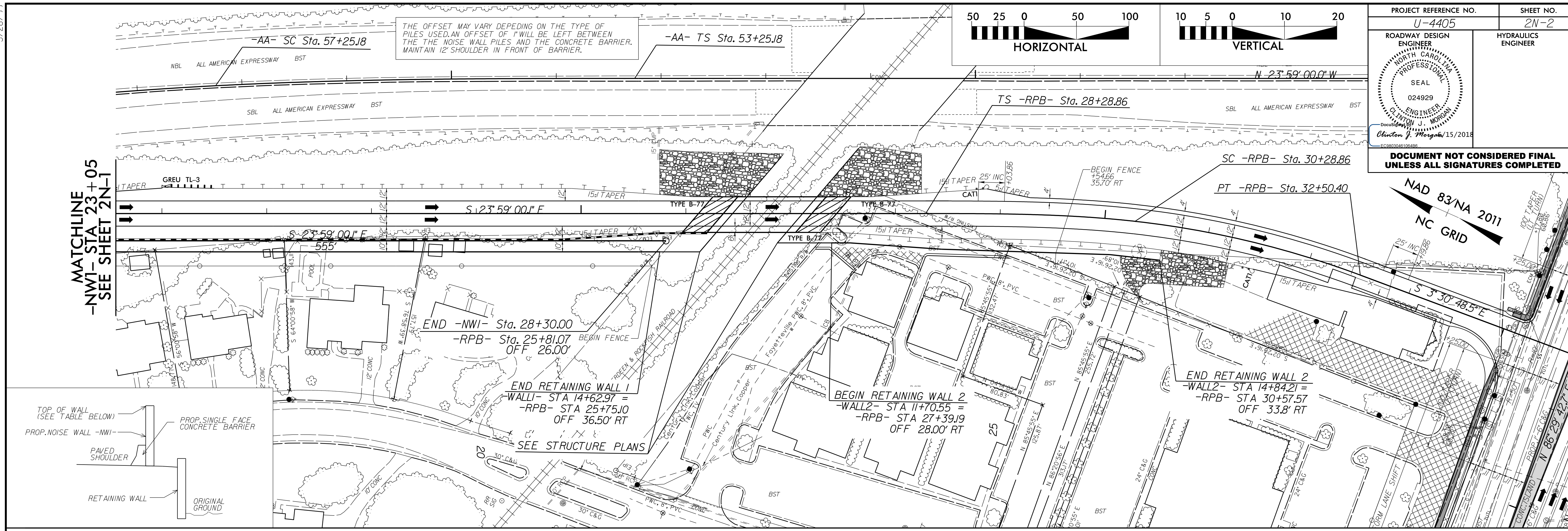


MATCHLINE
-NWI- STA 23+05
SEE SHEET 2N-2



NOTE: SEE SHEET 2A-6 FOR TYPICAL SECTION
 NOTE: SEE SHEET 30 & 31 FOR -RWB- PLAN VIEW
 NOTE: SEE SHEET SBW-1 THRU SBW-3 FOR SOUND BARRIER WALL PLANS

15 JUN 2018 17:53
 I:\Projects\2018\15 JUN 2018\17:53\U4405_rdy_pfl_psh_nwi-1.dgn



15 JUN 2018 17:53 P:\N\4405\4405_rdy.pfl_psh_nw1-2.dgn

12/06/07

COMPUTED BY: IWB DATE: 08/22/2017
 CHECKED BY: CJM DATE: 08/22/2017

PROJECT REFERENCE NO. U-4405
 SHEET NO. 3B-2

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
EARTHWORK SUMMARY

SUMMARY OF EARTHWORK

LINE	STATION	STATION	UNCL. EXCAV. (CY)	EMB. +% (CY)	BORROW (CY)	WASTE (CY)
-L1-LT	96+00.00	115+65.00	849	3,153	2,304	0
-L-LT	15+65.00	25+00.00	68	1,440	1,372	0
-Y1-	14+20.00	14+76.00	5	51	46	0
BREAK 1 LEFT TOTAL			922	4,644	3,722	0
-L-CL	15+65.00	25+00.00	0	775	775	0
BREAK 1 CENTER TOTAL			0	775	775	0
-L-RT	15+65.00	25+00.00	56	1,274	1,218	0
-Y2-	10+38.50	11+00.00	9	23	14	0
BREAK 1 RIGHT TOTAL			65	1,296	1,231	0
-L-LT	25+50.00	55+00.00	110	4,585	4,475	0
-SR1-	10+95.00	18+64.00	292	620	328	0
-SR2-	10+12.00	12+12.00	12	55	43	0
-SR3-	10+02.00	13+19.00	79	464	385	0
-Y4-LT	17+00.00	18+00.00	72	30	0	42
BREAK 2 LEFT TOTAL			565	5,754	5,231	42
-L-CL	25+50.00	55+00.00	8	4,241	4,233	0
BREAK 2 CENTER TOTAL			8	4,241	4,233	0
-L-RT	25+50.00	55+00.00	186	3,291	3,105	0
-Y4-RT	18+50.00	19+70.00	27	76	49	0
BREAK 2 RIGHT TOTAL			213	3,368	3,155	0
-L-LT	55+50.00	85+00.00	130	13,504	13,374	0
-Y5-LT	19+60.00	21+50.00	43	113	70	0
BREAK 3 LEFT TOTAL			173	13,616	13,443	0
-L-CL	55+50.00	85+00.00	27	5,109	5,082	0
BREAK 3 CENTER TOTAL			27	5,109	5,082	0
-L-RT	55+50.00	85+00.00	374	5,321	4,947	0
-Y5-RT	22+00.00	28+00.00	305	660	355	0
BREAK 3 RIGHT TOTAL			679	5,981	5,302	0
-L-LT	85+50.00	115+00.00	669	2,351	1,682	0
-Y7-	13+20.00	14+18.00	121	23	0	99
-Y9-	12+15.00	13+05.00	12	11	0	1
BREAK 4 LEFT TOTAL			802	2,385	1,682	99
-L-CL	85+50.00	115+00.00	10	1,025	1,015	0
BREAK 4 CENTER TOTAL			10	1,025	1,015	0
-L-RT	85+50.00	115+00.00	133	3,966	3,833	0
-Y6-	10+42.00	11+20.00	0	63	63	0
-Y7-	15+36.00	16+45.00	197	61	0	136
-Y10-	10+54.00	11+45.00	12	10	0	2
BREAK 4 RIGHT TOTAL			342	4,100	3,896	138

PER GEOTECH RECOMENDATIONS DATED : 01-29-16
 PER PAVEMENT DESIGN RECOMENDATIONS DATED : 07-14-15
 UNDERCUT = 3,200 CY
 SHALLOW UNDERCUT = 4,300 CY
 SELECT GRANULAR MATERIAL = 3,200 CY
 CLASS IV SUBGRADE STABILIZATION = 9,800 TONS

SUMMARY OF EARTHWORK

LINE	STATION	STATION	UNCL. EXCAV. (CY)	EMB. +% (CY)	BORROW (CY)	WASTE (CY)
-L-LT	115+50.00	145+00.00	707	5,419	4,712	0
-Y13-	16+50.00	19+68.00	133	944	811	0
BREAK 5 LEFT TOTAL			840	6,363	5,523	0
-L-CL	115+50.00	145+00.00	42	0	0	42
BREAK 5 CENTER TOTAL			42	0	0	42
-L-RT	115+50.00	145+00.00	1,085	3,481	2,396	0
-Y11-	10+43.00	11+60.00	210	19	0	191
-Y12-	10+42.00	11+50.00	158	33	0	126
BREAK 5 RIGHT TOTAL			1,453	3,533	2,396	317
-L-LT	145+50.00	175+00.00	513	1,115	602	0
-Y15-	11+40.00	11+83.00	33	0	0	33
BREAK 6 LEFT TOTAL			546	1,115	602	33
-L-CL	145+50.00	175+00.00	72	564	492	0
BREAK 6 CENTER TOTAL			72	564	492	0
-L-RT	145+50.00	175+00.00	1,185	2,141	1,556	600
-Y14-	10+45.00	11+45.00	162	5	0	157
-Y16-	10+42.00	11+70.00	3	55	52	0
BREAK 6 RIGHT TOTAL			1,350	2,201	1,608	757
-L-LT	175+50.00	205+00.00	498	564	66	0
BREAK 7 LEFT TOTAL			498	564	66	0
-L-CL	175+50.00	205+00.00	222	3	0	220
BREAK 7 CENTER TOTAL			222	3	0	220
-L-RT	175+50.00	205+00.00	610	1,114	504	0
-Y18-	10+47.00	11+50.00	4	4	0	0
-Y21-	10+43.00	11+10.00	26	11	0	15
BREAK 7 RIGHT TOTAL			640	1,129	504	15
-L-LT	205+50.00	235+00.00	943	3,293	2,350	0
BREAK 8 LEFT TOTAL			943	3,293	2,350	0
-L-CL	205+50.00	235+00.00	37	81	44	0
BREAK 8 CENTER TOTAL			37	81	44	0
-L-RT	205+50.00	235+00.00	769	4,526	3,757	0
-Y23-	10+42.00	11+50.00	37	5	0	32
-Y25-	10+53.00	11+75.00	400	4	0	396
BREAK 8 RIGHT TOTAL			1,206	4,535	3,757	428
-L-LT	235+50.00	265+00.00	1,083	471	0	612
BREAK 9 LEFT TOTAL			1,083	471	0	612

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 EARTHWORK

LINE	STATION	STATION	UNCL. EXCAV. (CY)	EMB. +% (CY)	BORROW (CY)	WASTE (CY)
-L-CL	235+50.00	265+00.00	96	919	823	0
BREAK 9 CENTER TOTAL			96	919	823	0
-L-RT	235+50.00	265+00.00	472	1,305	833	0
-Y26-	10+42.00	11+60.00	1	80	79	0
-Y28-	10+54.00	11+20.00	13	3	0	11
BREAK 9 RIGHT TOTAL			486	1,388	912	11
-L-LT	265+50.00	294+00.00	716	976	260	0
-Y29-	13+50.00	14+29.00	110	14	0	96
-Y31-	10+50.00	11+57.00	148	1	0	147
-Y36-	10+60.00	11+61.00	9	43	34	0
BREAK 10 LEFT TOTAL			983	1,034	294	243
-L-CL	265+50.00	294+00.00	0	0	0	0
BREAK 10 CENTER TOTAL			0	0	0	0
-L-RT	265+50.00	294+00.00	567	694	127	0
-Y30-	10+54.00	11+15.00	10	16	6	0
-Y35-	10+39.00	11+75.00	26	43	17	0
BREAK 10 RIGHT TOTAL			603	753	150	0
-L-LT	294+50.00	324+00.00	526	434	0	92
-Y40-	12+50.00	13+64.00	27	16	0	11
BREAK 11 LEFT TOTAL			553	450	0	103
-L-CL	294+50.00	324+00.00	18	90	72	0
BREAK 11 CENTER TOTAL			18	90	72	0
-L-RT	294+50.00	324+00.00	190	805	615	0
-Y39-	10+39.00	11+50.00	13	28	15	0
-Y43-	10+25.00	18+43.00	546	133	0	414
-Y44-	10+17.00	12+00.00	15	229	214	0
BREAK 11 RIGHT TOTAL			764	1,194	843	414
-RPB-	10+00.00	34+00.00	2,497	83,293	80,796	0
BREAK 12 TOTAL			2,497	83,293	80,796	0
MATERIAL FOR SHOULDER CONSTRUCTION				8,000	8,000	
PROJECT TOTAL			18,738	165,263	157,997	3,472
WASTE IN LIEU OF BORROW (PHASE 1 AND 2)					-2,611	-2,611
LOSS DUE TO CLEARING AND GRUBBING				-1,000		1,000
REPLACE TOP SOIL ON BORROW PIT (5%)						7,819
GRAND TOTAL			17,738	165,263	164,205	862
SAY			18,000		165,000	

DC: JUN-2018 10:08
 P:\Projects\4405_rdy_psh_3B.dgn

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for LINE & STATION, OFFSET, STRUCTURE NUMBER, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS III, R. C. PIPE CLASS IV, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, and REMARKS. Includes a SHEET TOTALS row at the bottom.

ABBREVIATIONS table listing codes like C.A.A., C.B., C.S., D.I., G.D.I., H.D.P.E., J.B., M.H., N.S., P.V.C., R.C., T.B.D.I., T.B.J.B., W.S. and their corresponding descriptions.

SHEET TOTALS

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. SHEET NO.
U-4405 3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-7

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. SHEET NO.
U-4405 3D-11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. SHEET NO.
U-4405 3D-13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Main data table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks.

ABBREVIATIONS table listing codes like C.A.A., C.B., C.S., D.I., G.D.I., H.D.P.E., J.B., M.H., N.S., P.V.C., R.C., T.B.D.I., T.B.J.B., W.S. and their corresponding descriptions.

SHEET TOTALS

Summary row for SHEET TOTALS showing counts for various pipe sizes and materials.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-24

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-25

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Main data table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe, C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks.

ABBREVIATIONS table listing materials like C.A.A. CORRUGATED ALUMINIUM ALLOY, C.B. CATCH BASIN, etc.

SHEET TOTALS

Summary row for SHEET TOTALS with values for various columns: 128, 600, 52, 204, 152, 540, 22, 21.9, 14, 2, 7, 5, 3, 6, 6, 1, 1, 3, 1, 1.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-26

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes a 'SHEET TOTALS' row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-27

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Main data table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-28

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-29

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns: LINE & STATION, OFFSET, STRUCTURE NUMBER, TOP ELEVATION, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS III, R. C. PIPE CLASS IV, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, GRATE TYPE, and REMARKS. Includes a SHEET TOTALS row at the bottom.

ABBREVIATIONS table listing codes like C.A.A., C.B., C.S., D.I., G.D.I., H.D.P.E., J.B., M.H., N.S., P.V.C., R.C., T.B.D.I., T.B.J.B., W.S. and their corresponding descriptions.

WKST1

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-34

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

PROJECT NO. U-4405 SHEET NO. 3D-38

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class III, R.C. Pipe Class IV, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. U-4405 SHEET NO. 3D-39

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)

Table with columns for LINE & STATION, OFFSET, STRUCTURE NUMBER, Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE, R. C. PIPE CLASS III, R. C. PIPE CLASS IV, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, and REMARKS. Includes a SHEET TOTALS row at the bottom.

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

WKST1

COMPUTED BY: RBR DATE: 6/15/2018
CHECKED BY: ECOLOGICAL ENGINEERING, LLP DATE: 6/15/2018

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. U-4405 SHEET NO. 3D-44

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 54 INCHES & OVER)

Main data table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe, R.C. Pipe Class III, IV, V, Structural Plate Pipe, Contractor Design, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a 'REMARKS' column.

SHEET TOTALS and PROJECT TOTALS summary rows at the bottom of the page.

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
L	300+00	311+00	LT	SD	1100
CONTINGENCY					500
TOTAL LF:					1600

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
L	19+00	25+00	ASU	12	500	1700	2100		
L	70+00	74+00	ASU	12	450	1450	1800		
L	102+00	107+00	ASU	12	250	450	900		
L	146+00	153+00	ASU	12	800	1700	3400		
CONTINGENCY						2300	4500	7000	
TOTAL CY/TONS/SY:					4300	9800	15200**	0	0

*ASU = Aggregate Subgrade
 *AST = Aggregate Stabilization
 **Total square yards of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-RPB-	2.5:1 (H:V)	25+75.00	WALL	26+91.03	LT	1	*	395
-RPB-	WALL	27+25.18	2.5:1 (H:V)	28+25.00	LT	1	*	265
-RPB-	2:1 (H:V)	30+18.00	2.5:1 (H:V)	31+25.00	RT	1	*	275
TOTAL SY:								935

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.