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

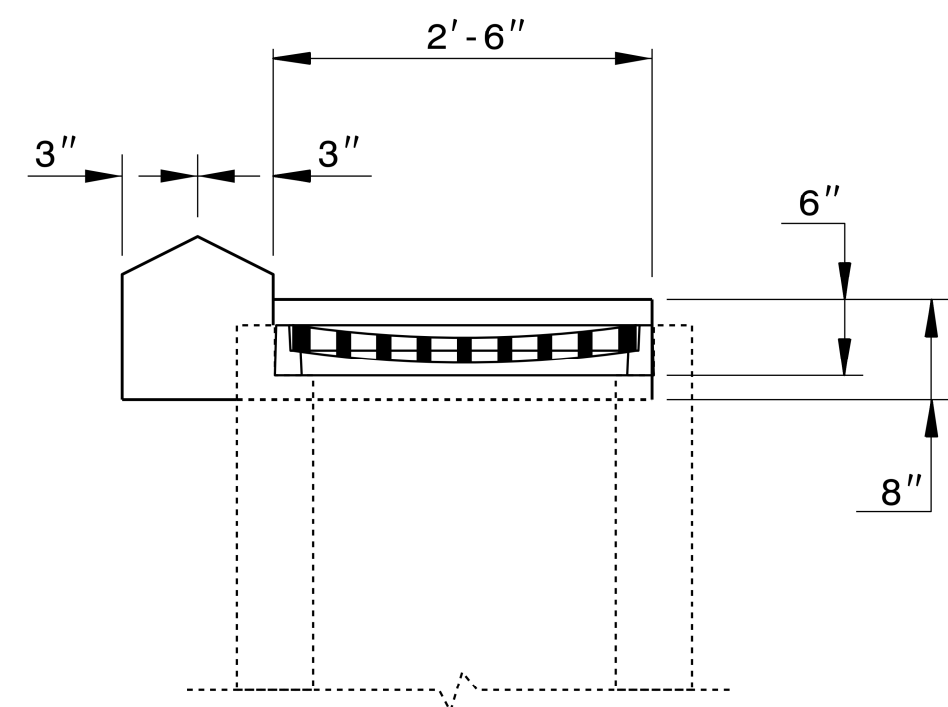
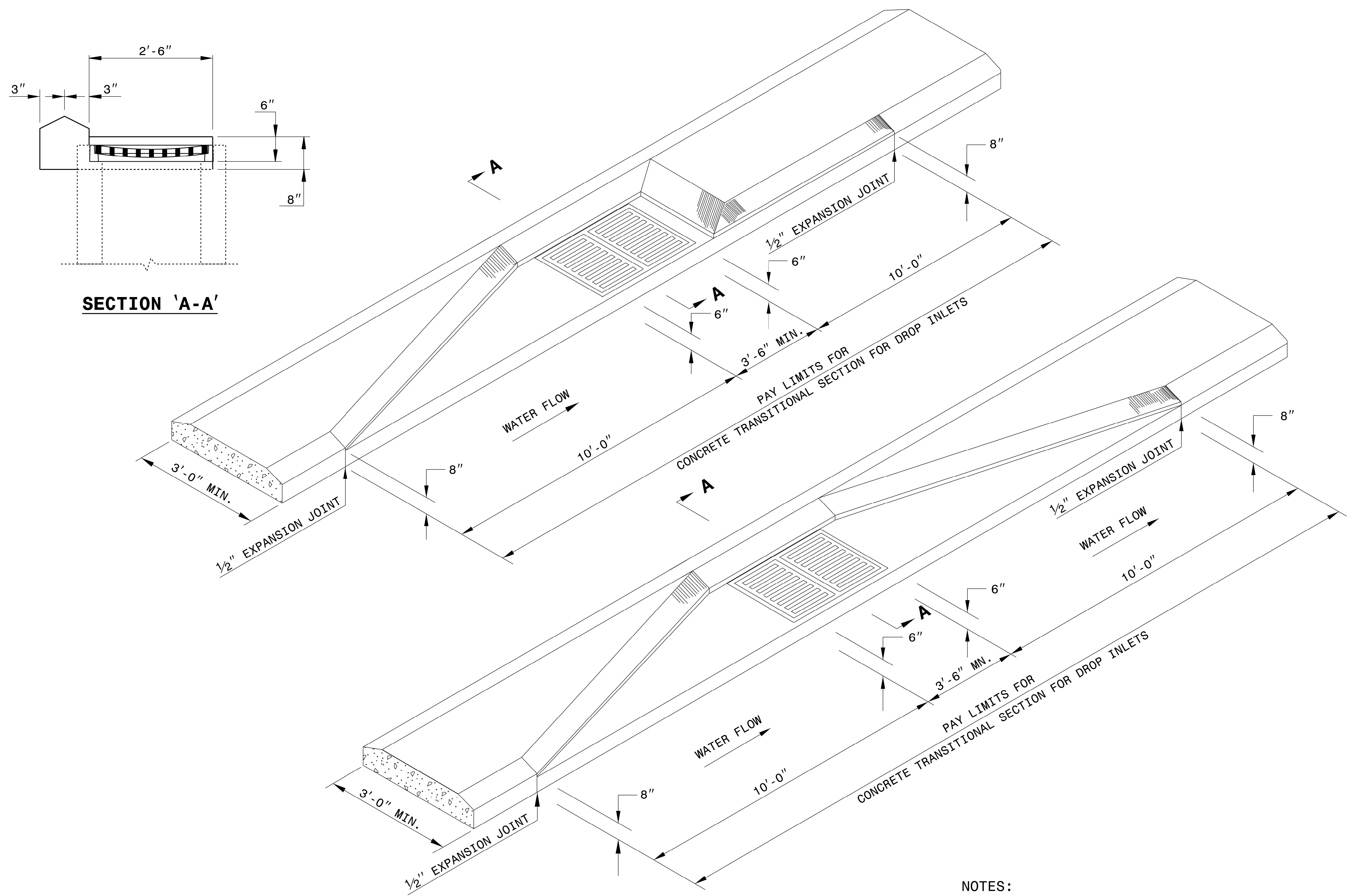
ENGLISH DETAIL DRAWING FOR
**METHOD FOR PLACEMENT OF
DROP INLETS IN CONCRETE ISLANDS**

SHEET 1 OF 1
852D06

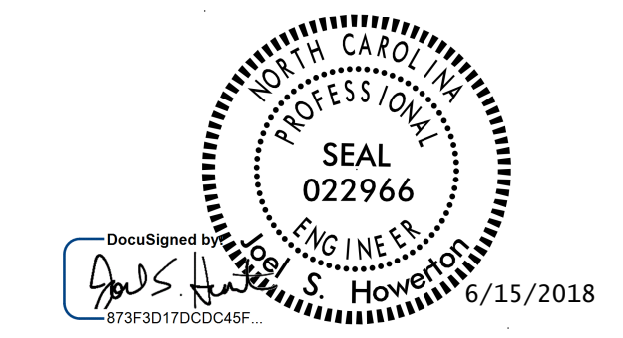
STATE OF
NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**METHOD FOR PLACEMENT OF
DROP INLETS IN CONCRETE ISLANDS**

SHEET 1 OF 1
852D06



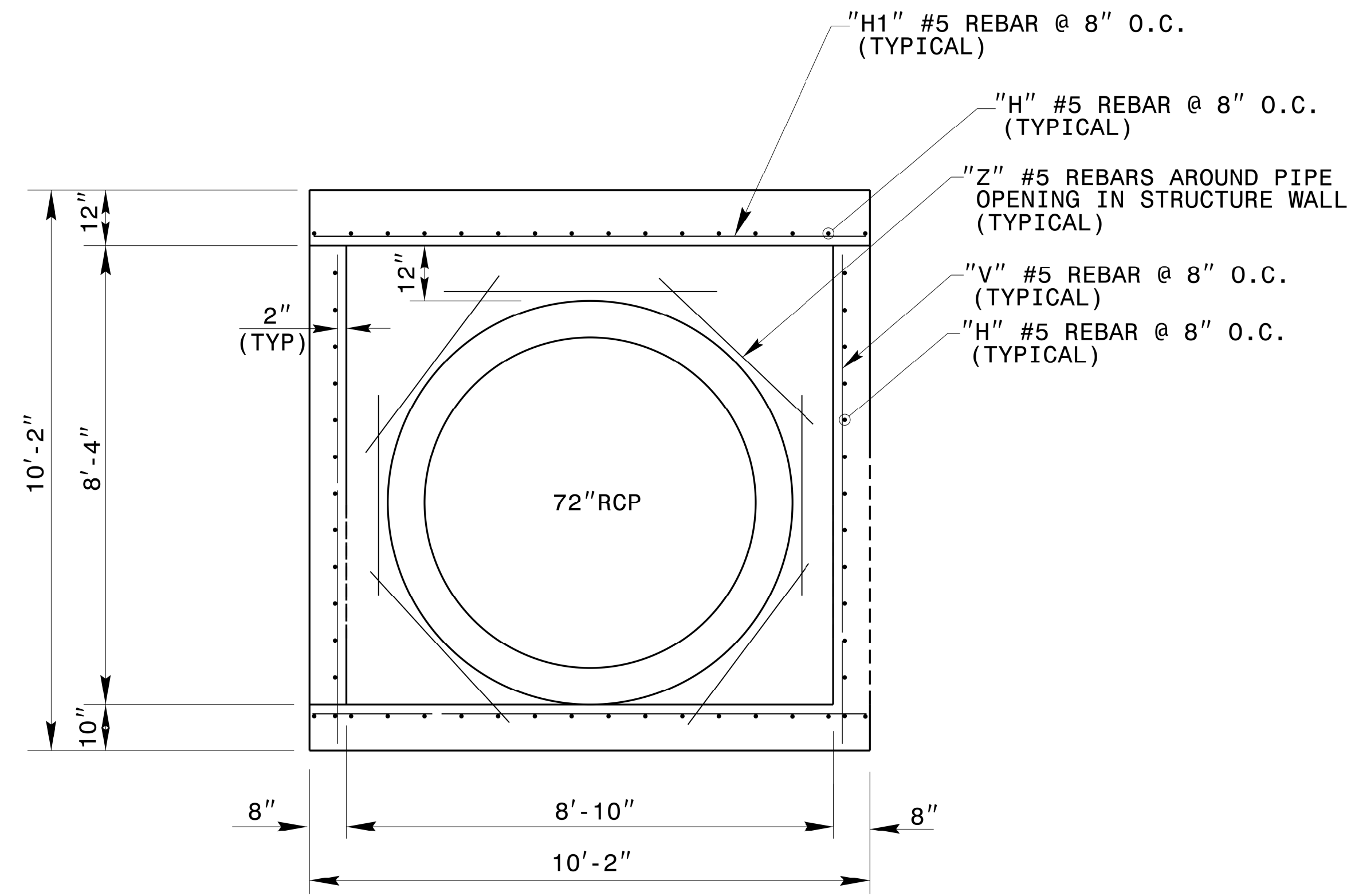
NOTES:
- REFER TO STD. NO. 840.14 AND 840.15 FOR DRAINAGE STRUCTURE.
- REFER TO STD. NO. 840.16 FOR GRATE AND FRAME.



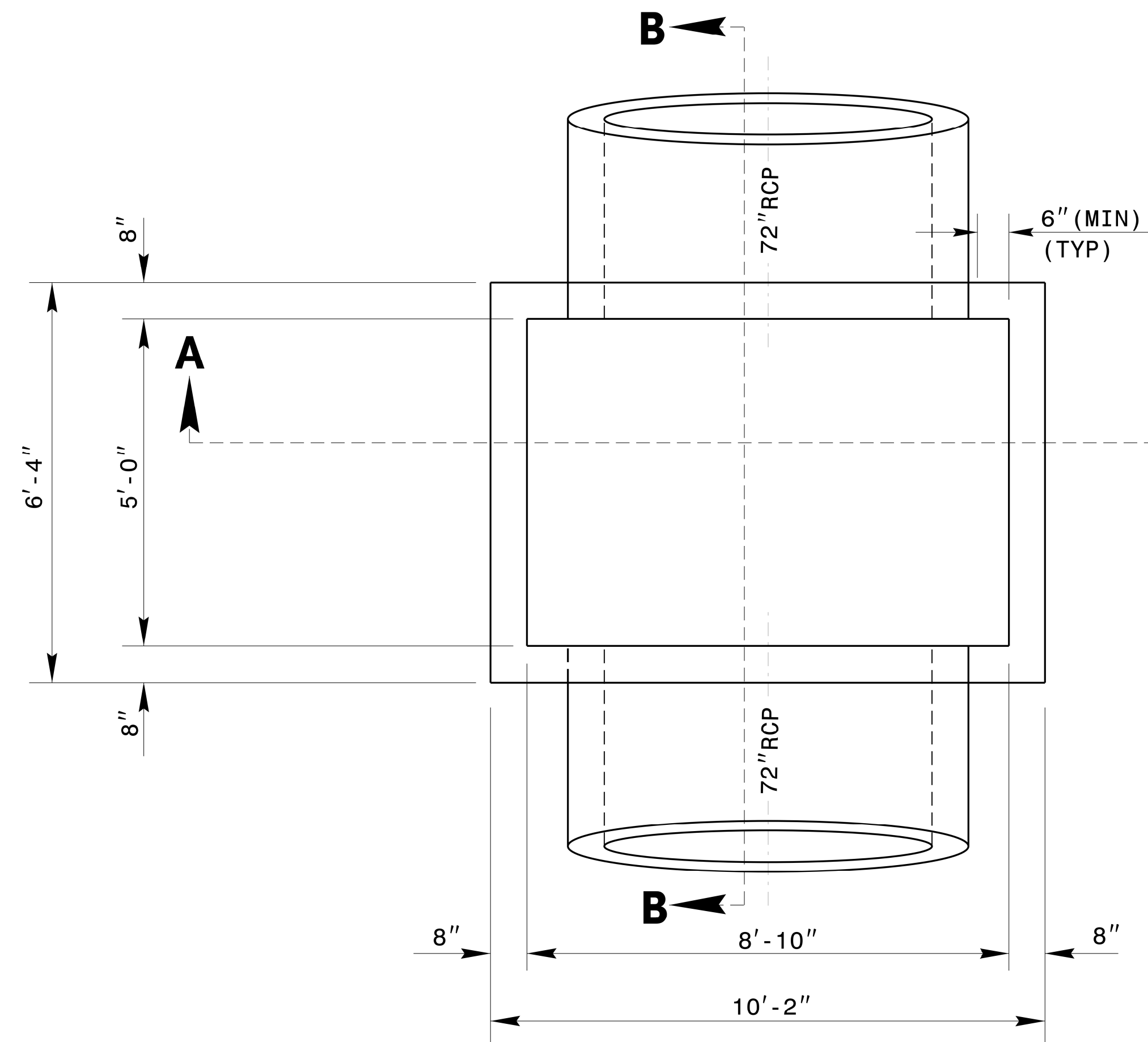
DOCUMENT NOT CONSIDERED FINAL
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CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
SEE TITLE PLATE	
ORIGINAL BY: KKEMPF	DATE: 8/2/10
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: KKEMPF\ENGLISH\852D0601.DGN	

852D06.DWG
8/15/2018 9:58:50 AM
MICHAEL S. HOWERTON
022966
6/15/2018 9:58:50 AM



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.

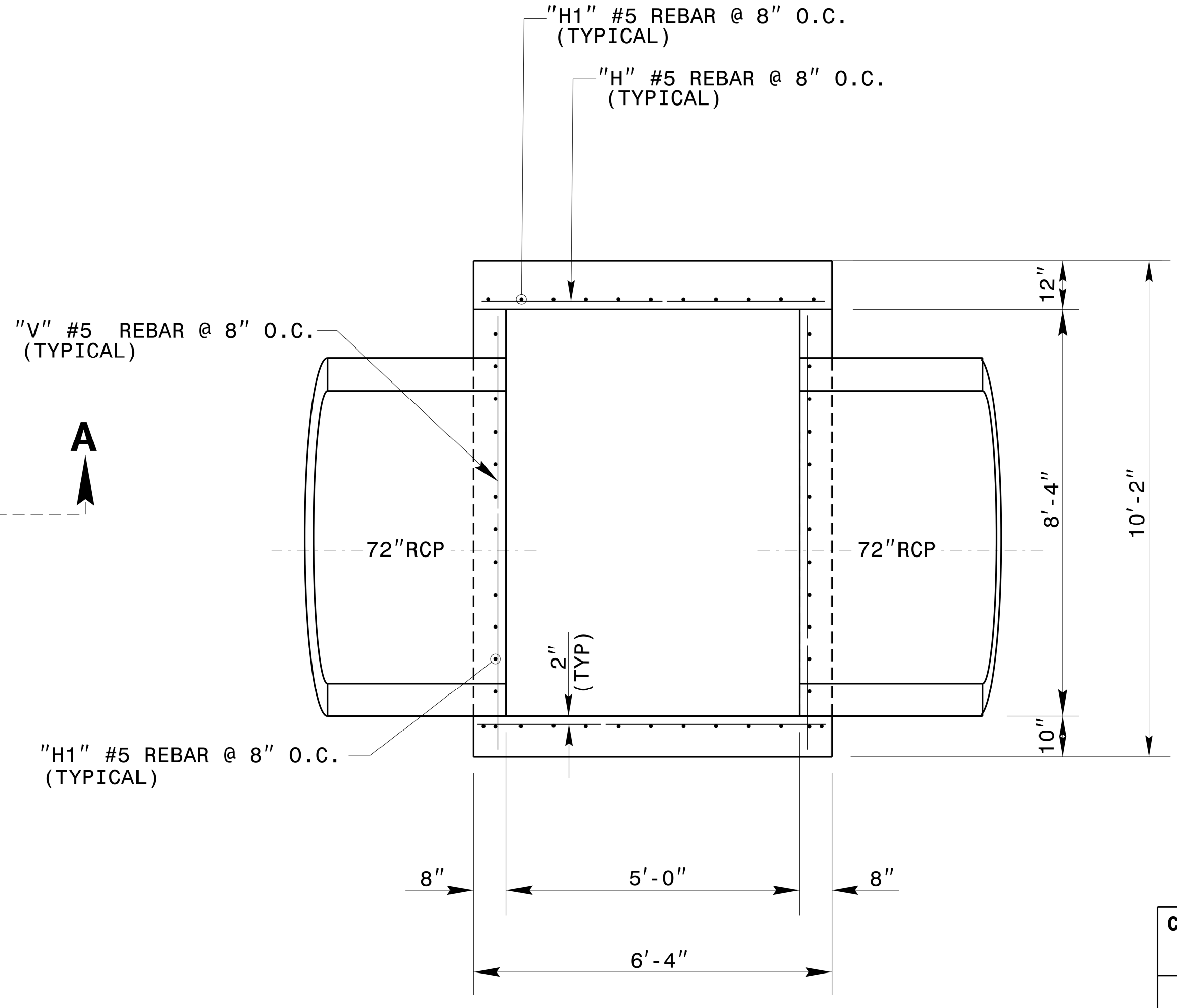
BOX DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

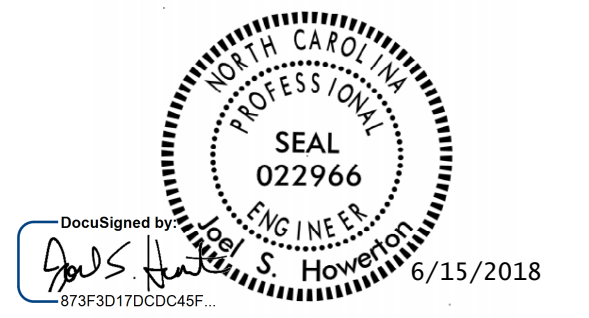
BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	42	#5	8'-10"	387
H1	48	#5	8'-6"	426
V	54	#5	7'-6"	423
Z	14	#5	5'-0"	74
TOTAL REINF. STEEL (LBS.)				1310
TOTAL CONC. (CU. YDS.)				* 11.8

* 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
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RALEIGH, N.C.

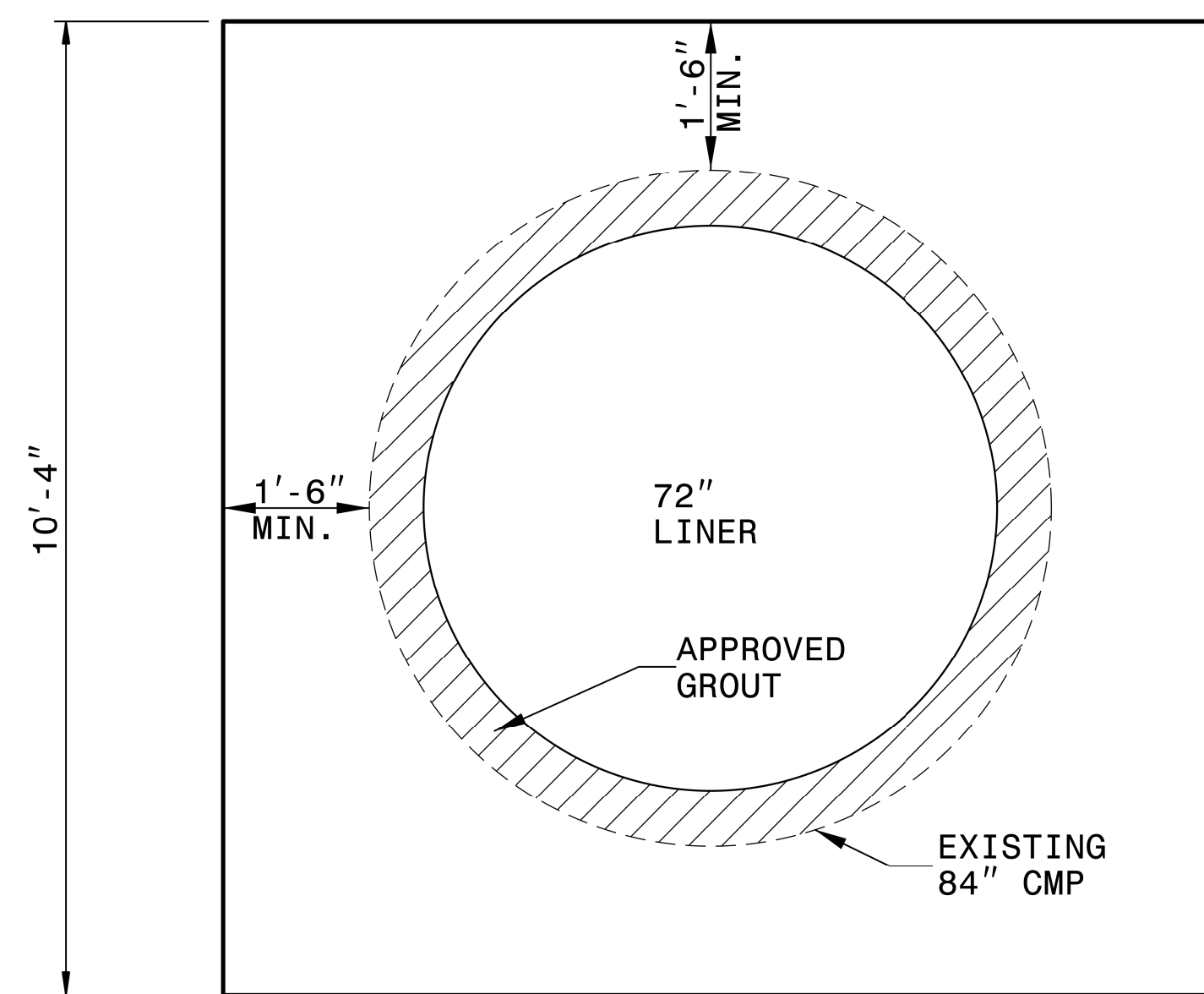
ENGLISH DETAIL DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840D72

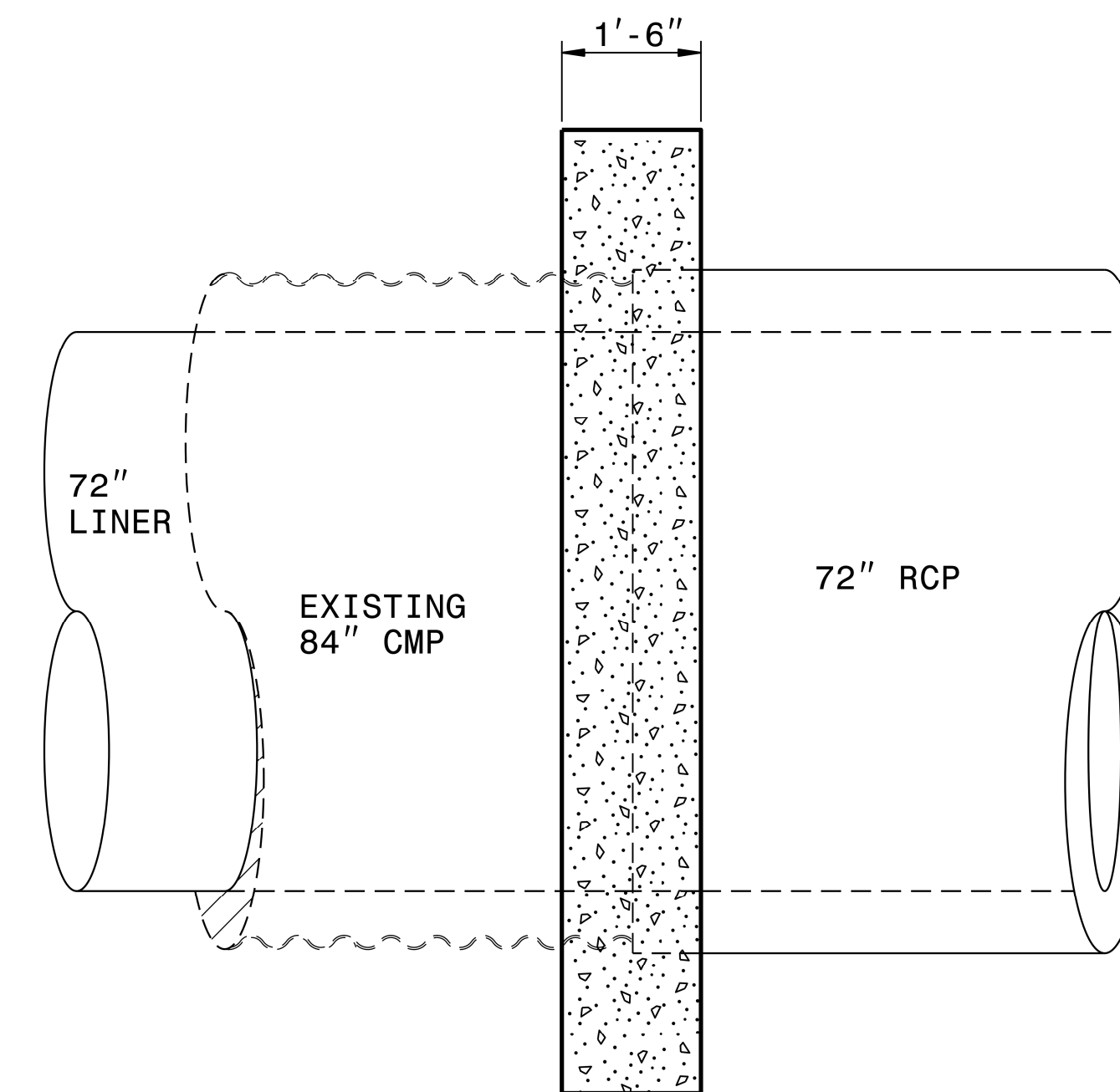
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PIPE COLLAR

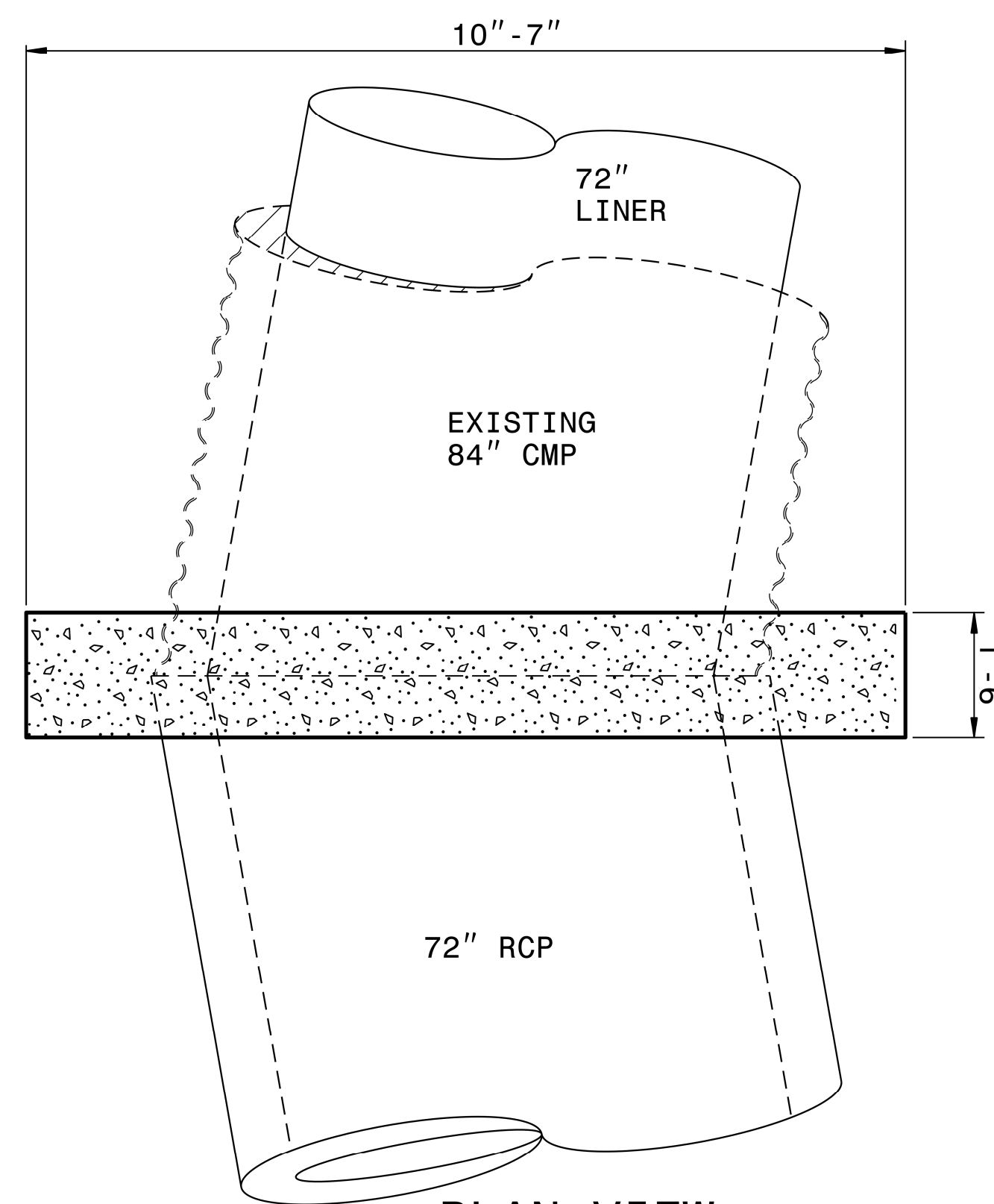
SHEET 1 OF 1
840D72



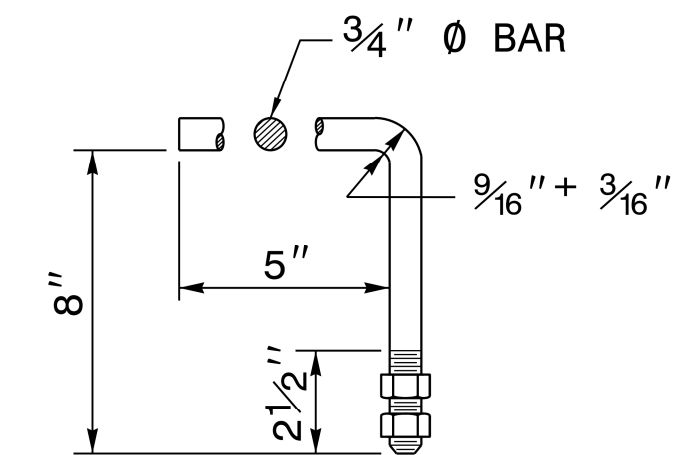
SECTION THROUGH COLLAR



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

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ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: *JAKempf* DATE: *March 23, 2018*
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: *details/kkempf/english/collar_84cmp_slipline.dgn*

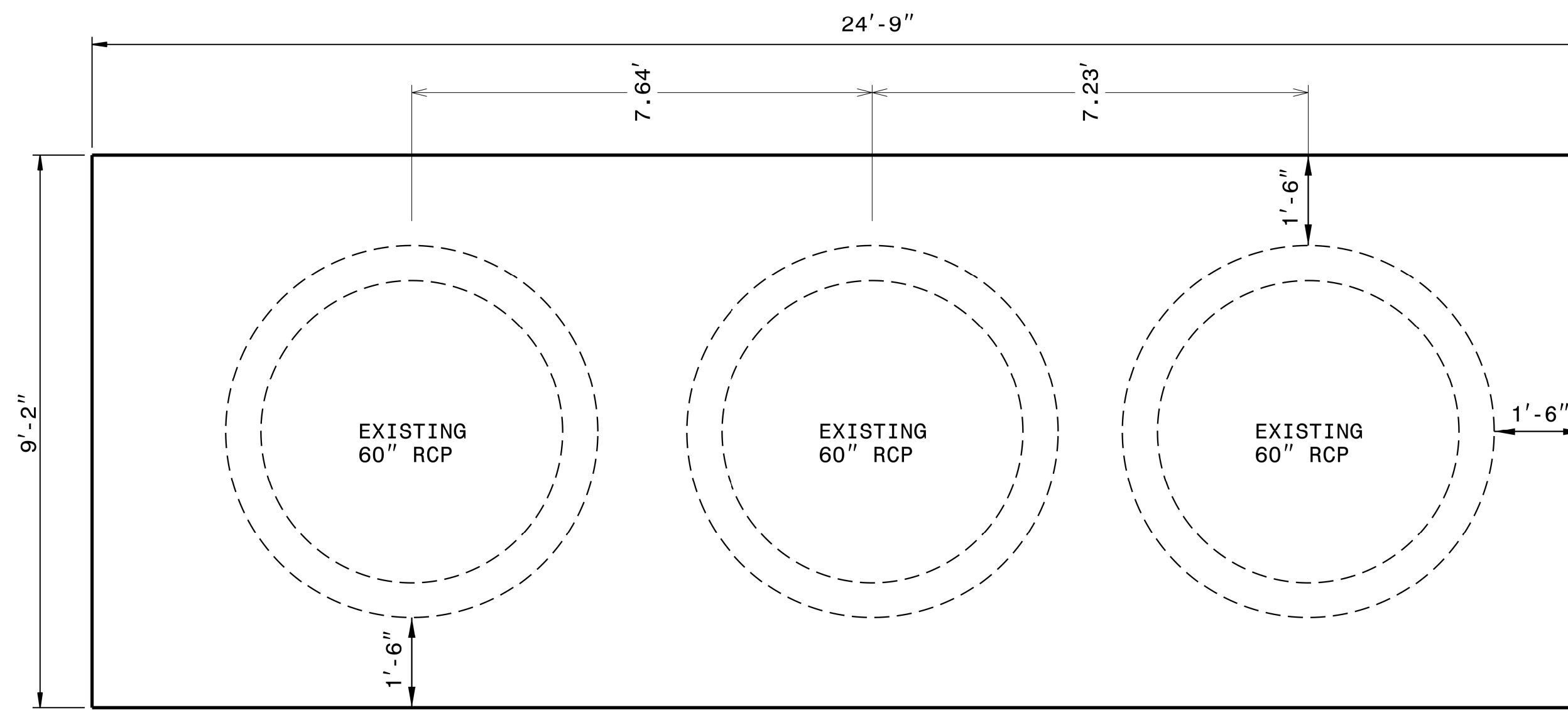
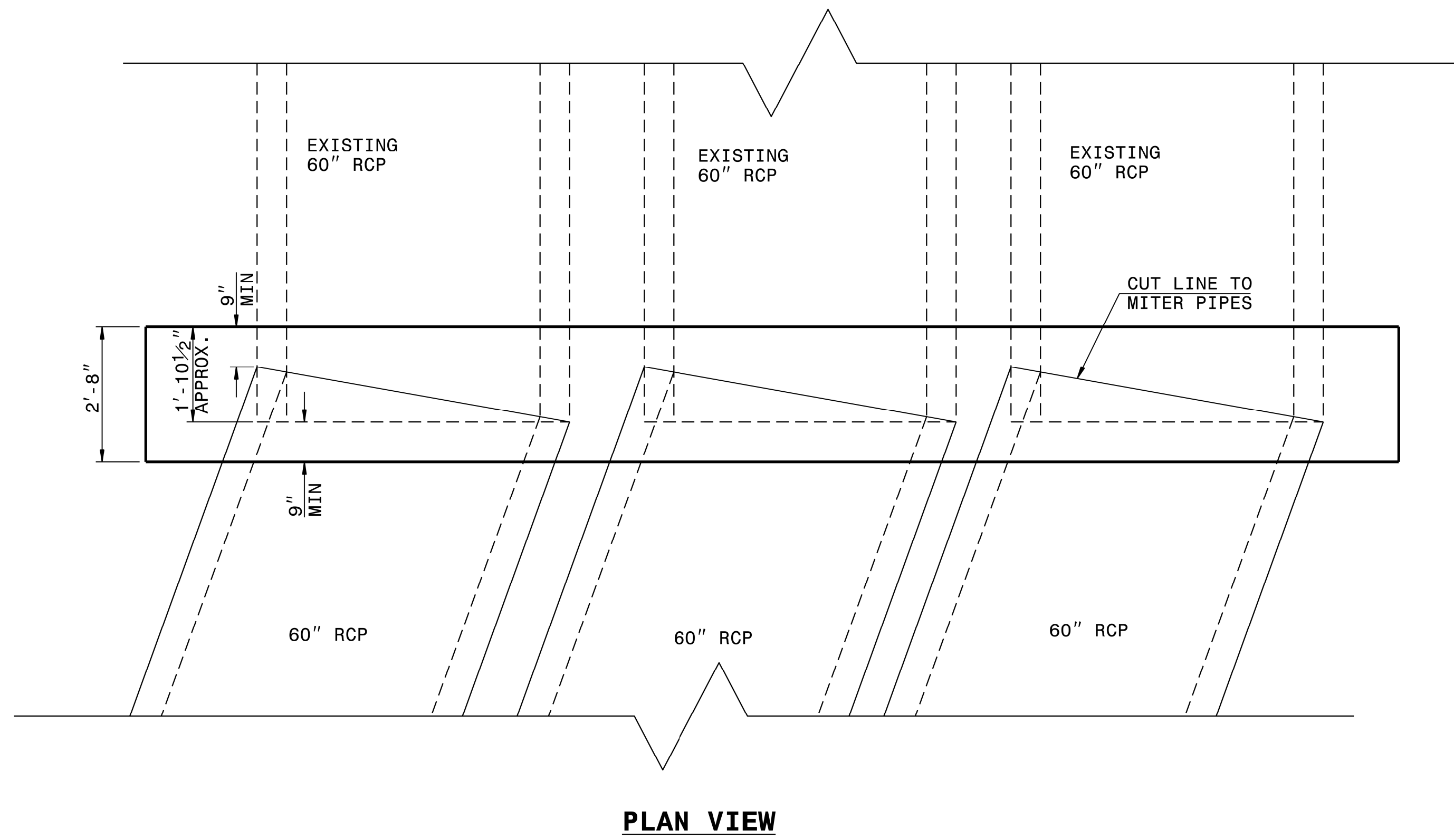


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RALEIGH, N.C.

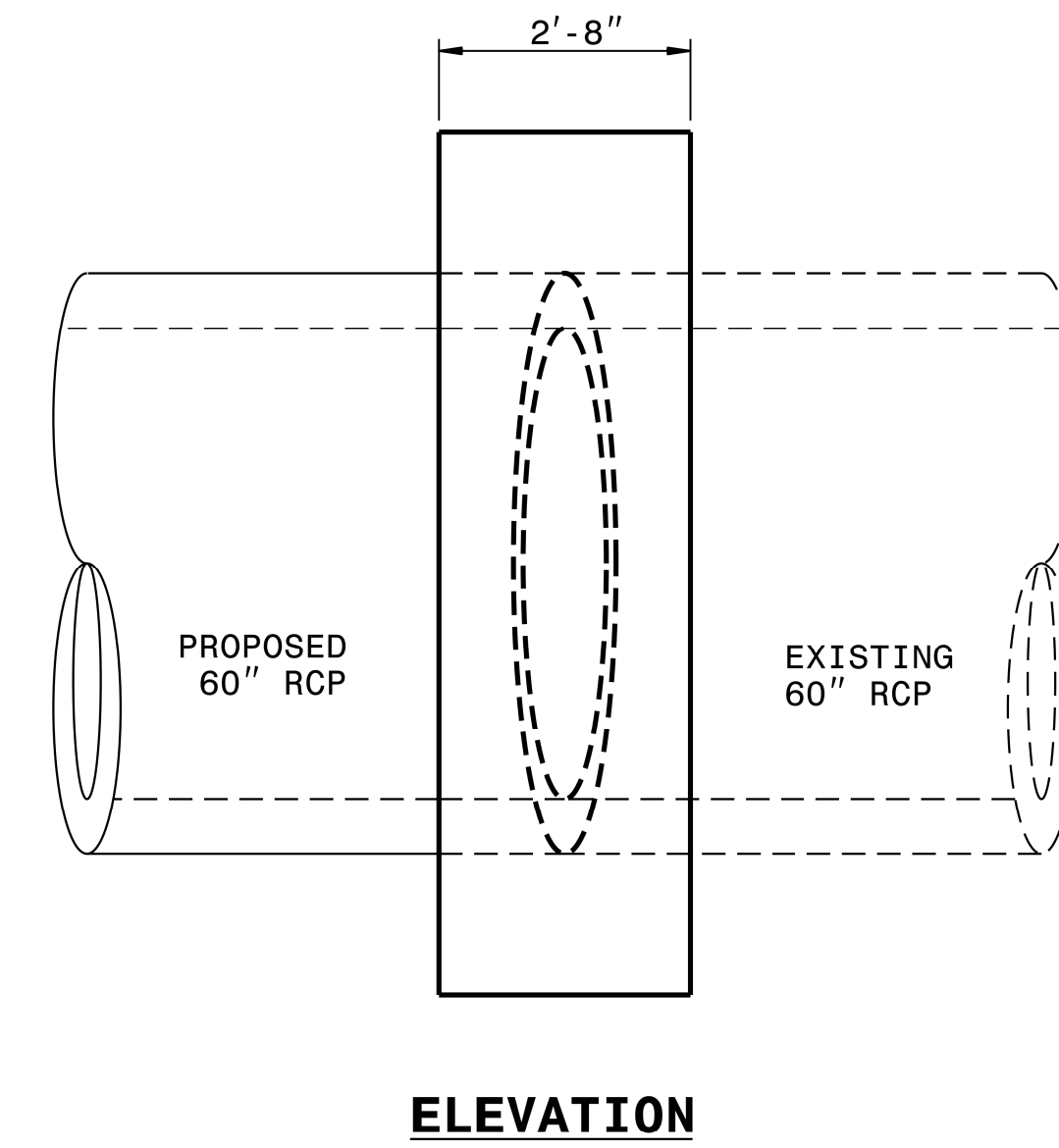
PIPE COLLAR

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
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

PIPE COLLAR

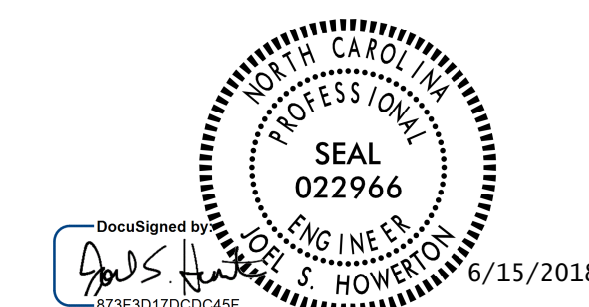
SHEET OF
840D72

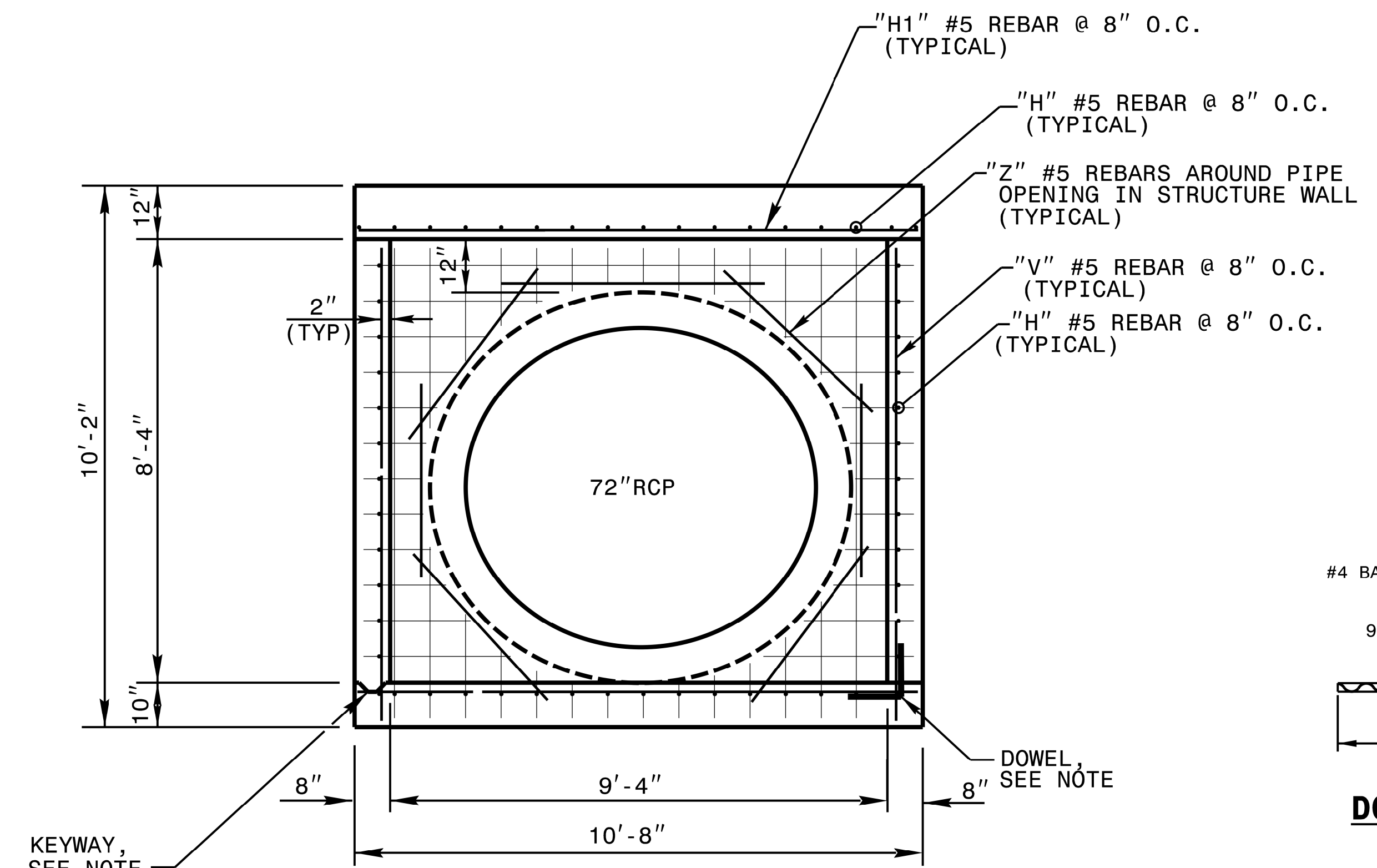
DOCUMENT NOT CONSIDERED FINAL
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AND DEVELOPMENT UNIT
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SEE PLATE FOR TITLE

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:

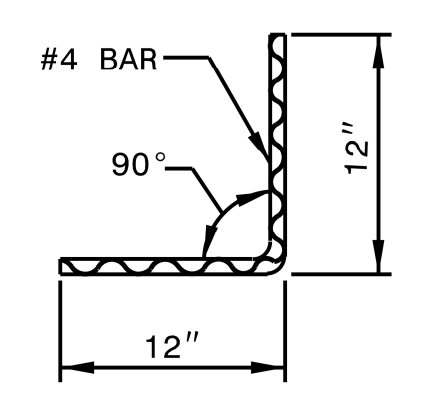
USE CLASS "B" CONCRETE THROUGHOUT.

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.

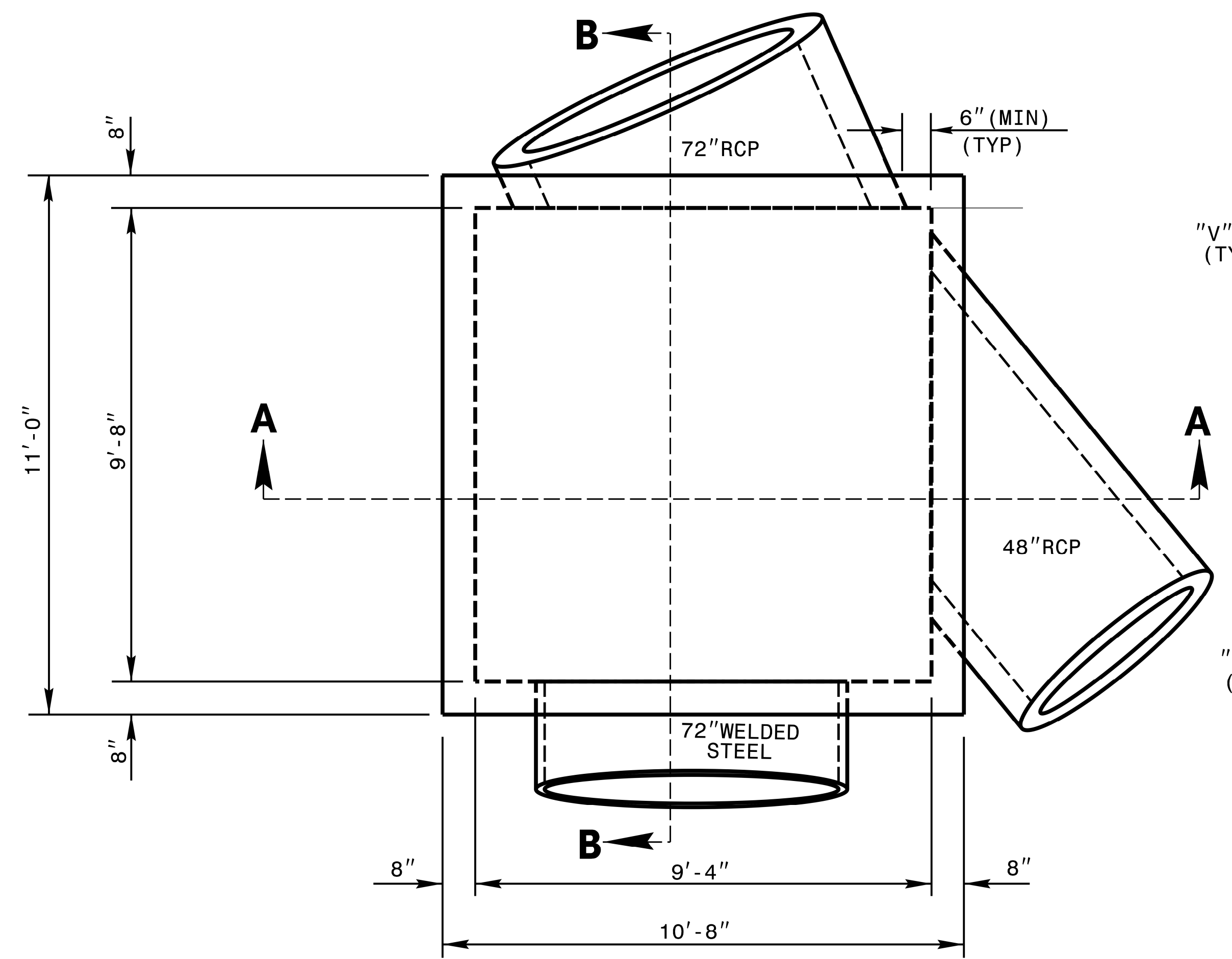


DOWEL

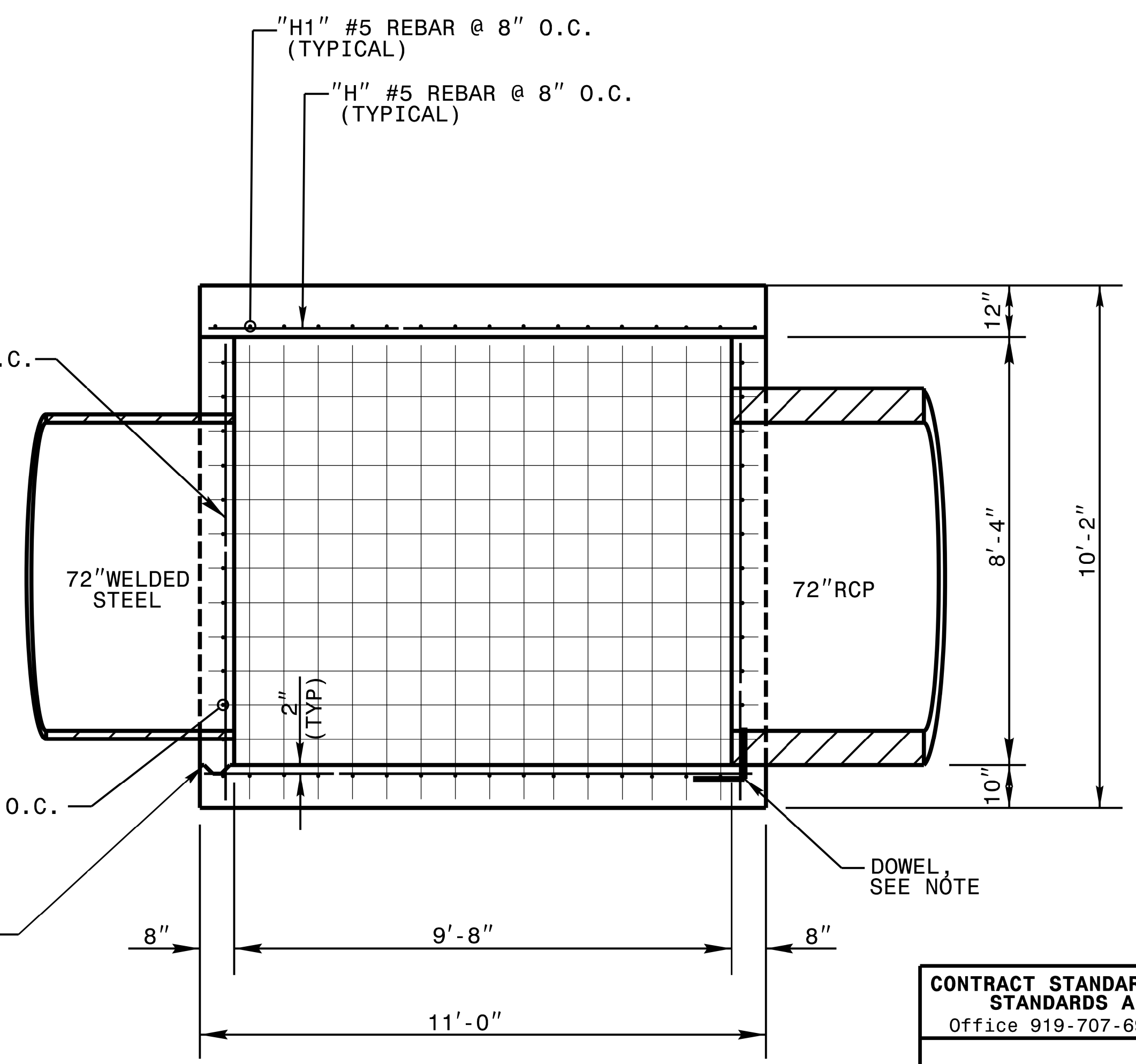
BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	42	#5	10'-8"	467
H1	48	#5	10'-4"	517
V	62	#5	8'-10"	571
Z	21	#5	5'-0"	110
TOTAL REINF. STEEL (LBS.)				1665
TOTAL CONC. (CU. YDS.)				* 16.3

* NO DEDUCTION HAS BEEN MADE FOR PIPES

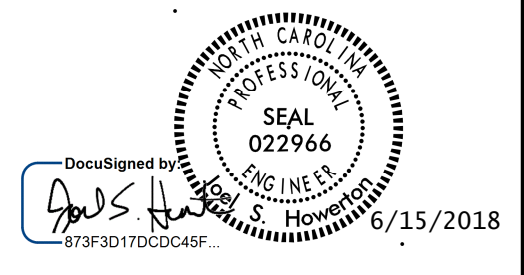
SECTION A-A



PLAN VIEW



SECTION B-B



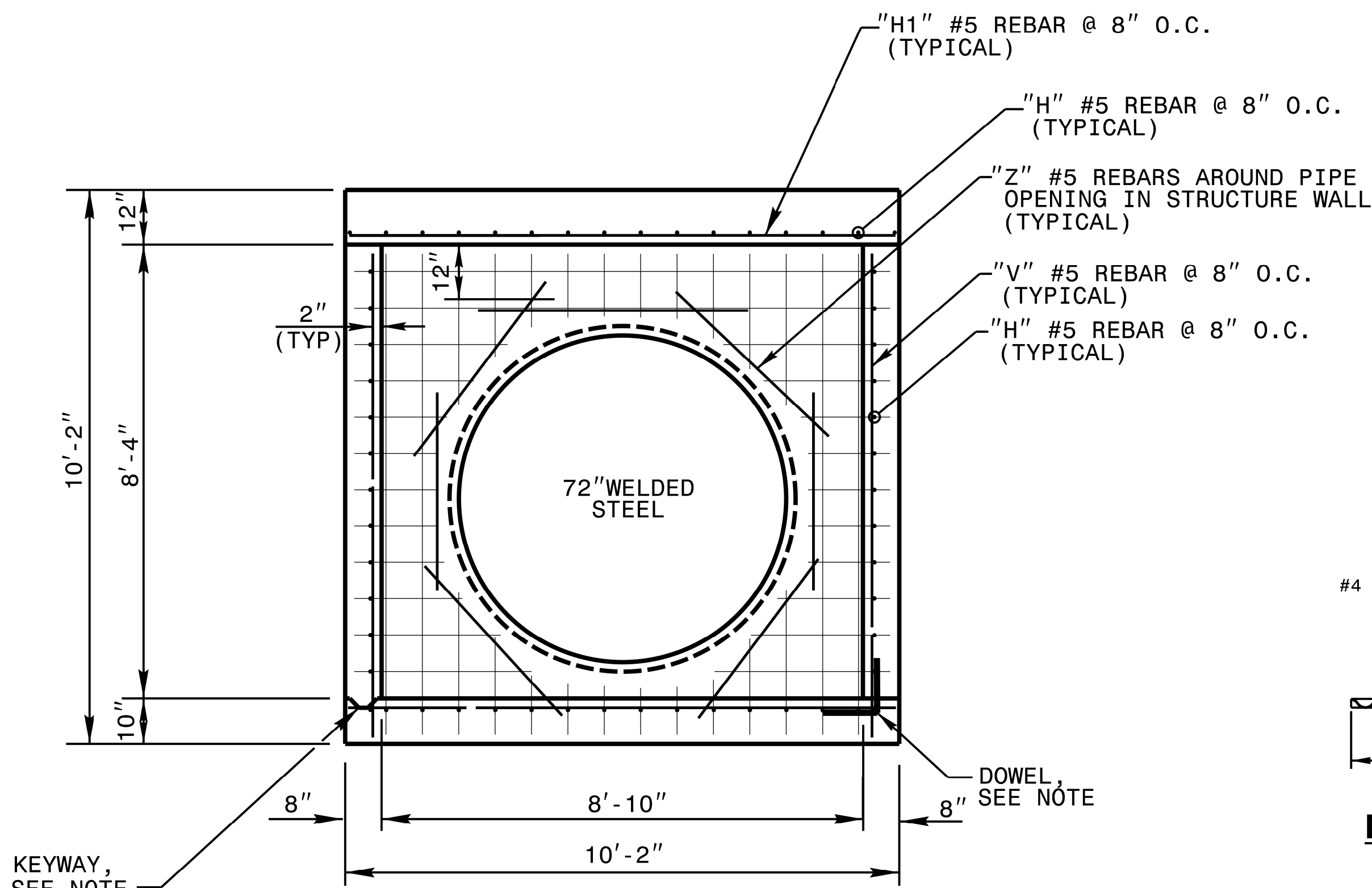
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**SPECIAL JUNCTION BOX
WITH SLAB LID**

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
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USER: kkempf



GENERAL NOTES:

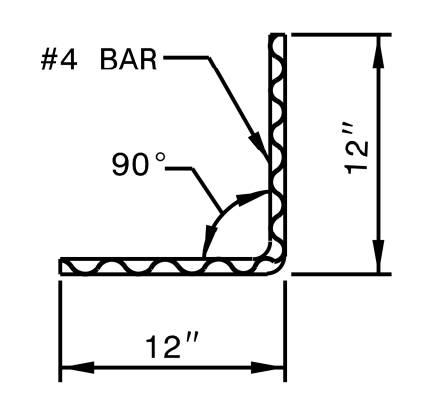
USE CLASS "B" CONCRETE THROUGHOUT.

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.

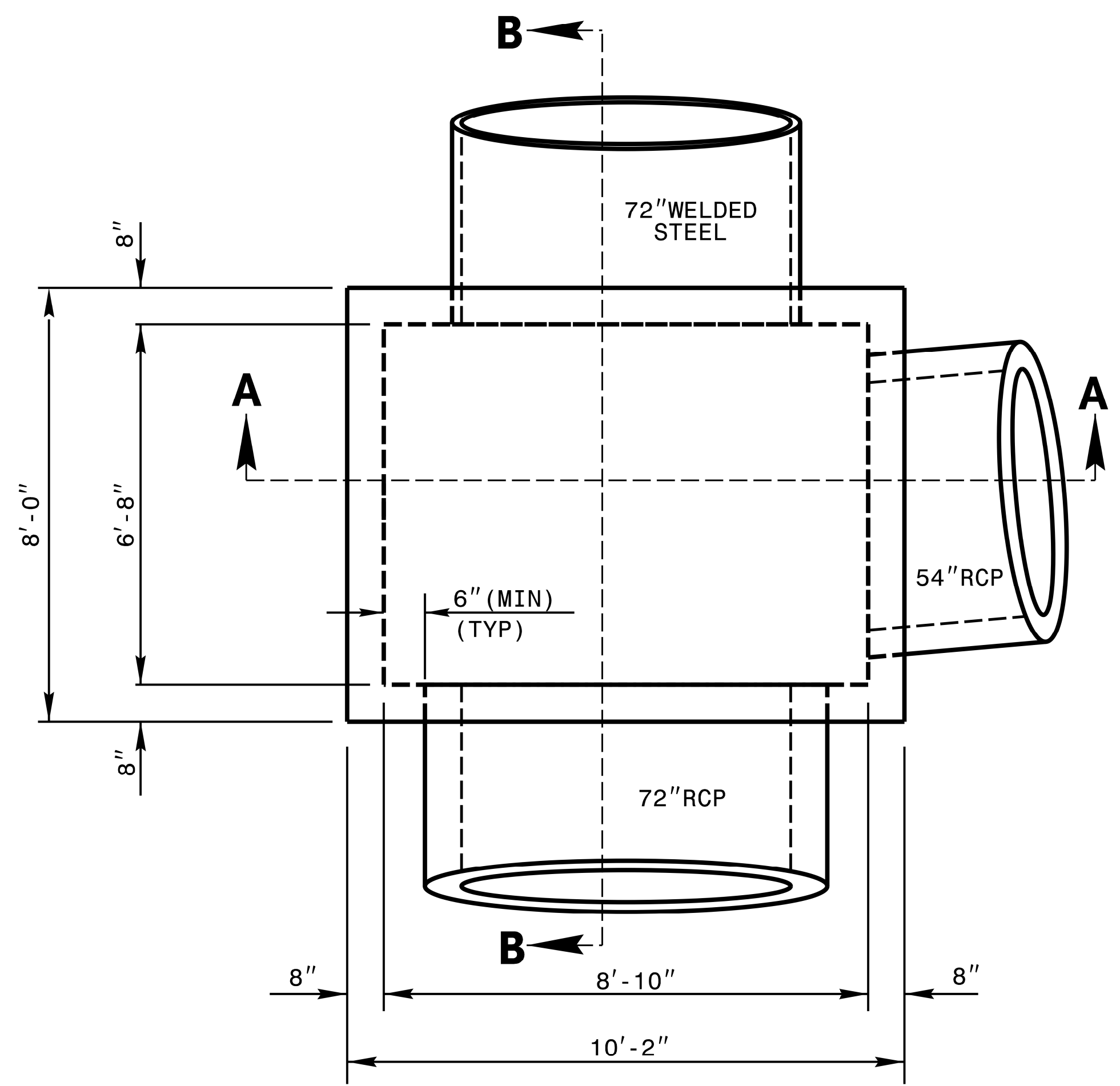


DOWEL

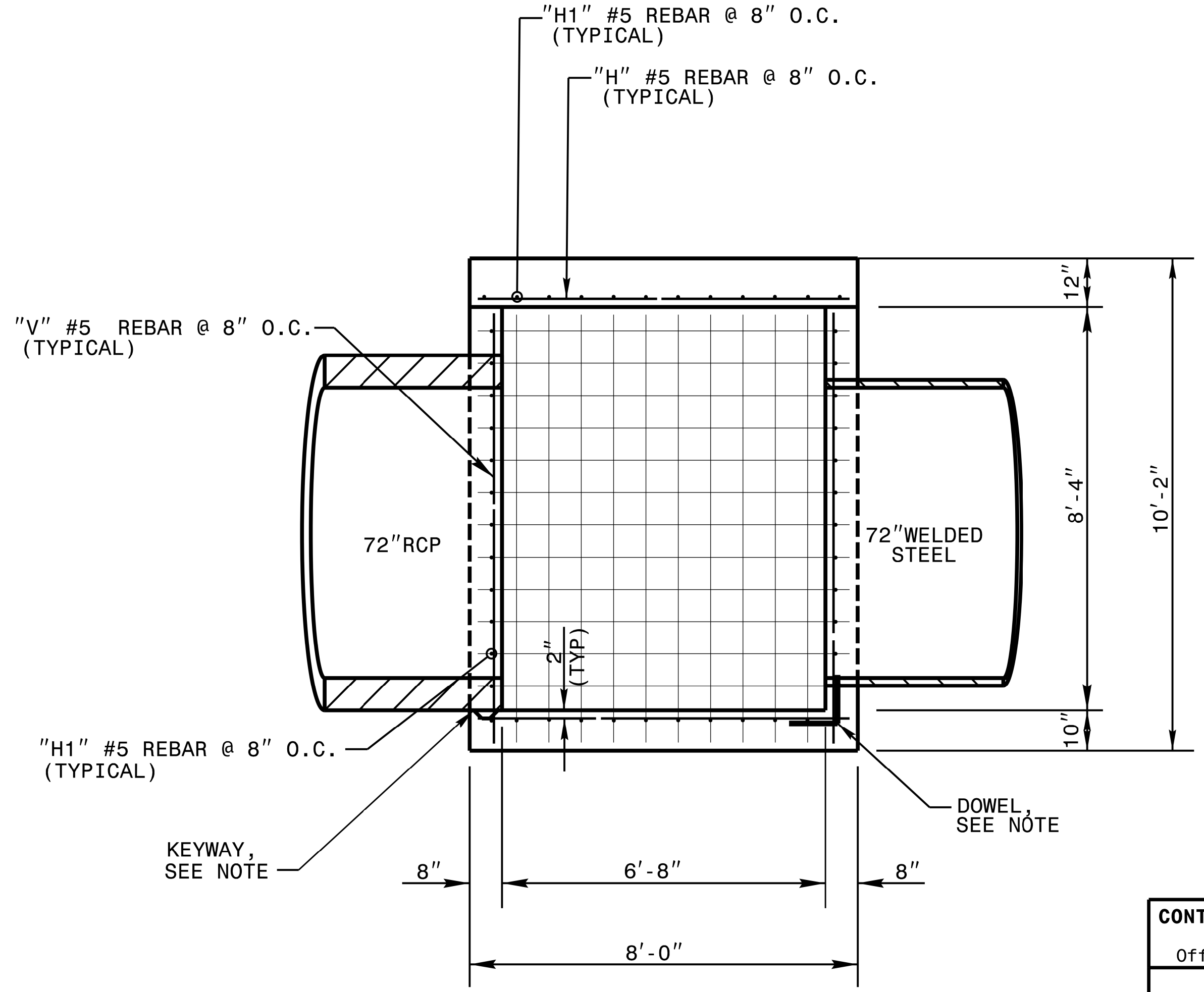
BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	42	#5	7'-8"	336
H1	48	#5	9'-10"	492
V	54	#5	8'-10"	497
Z	14	#5	5'-0"	74
TOTAL REINF. STEEL (LBS.)				1399
TOTAL CONC. (CU. YDS.)				* 12.5

* NO DEDUCTION HAS BEEN MADE FOR PIPES

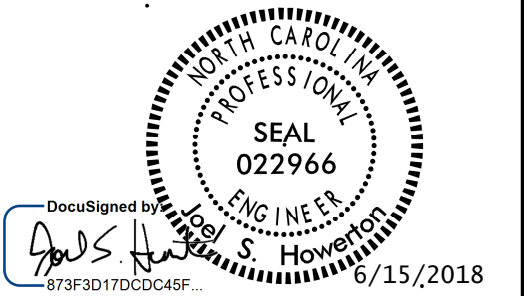
SECTION A-A



PLAN VIEW



SECTION B-B



DocuSigned by:
David S. Howard
6/15/2018

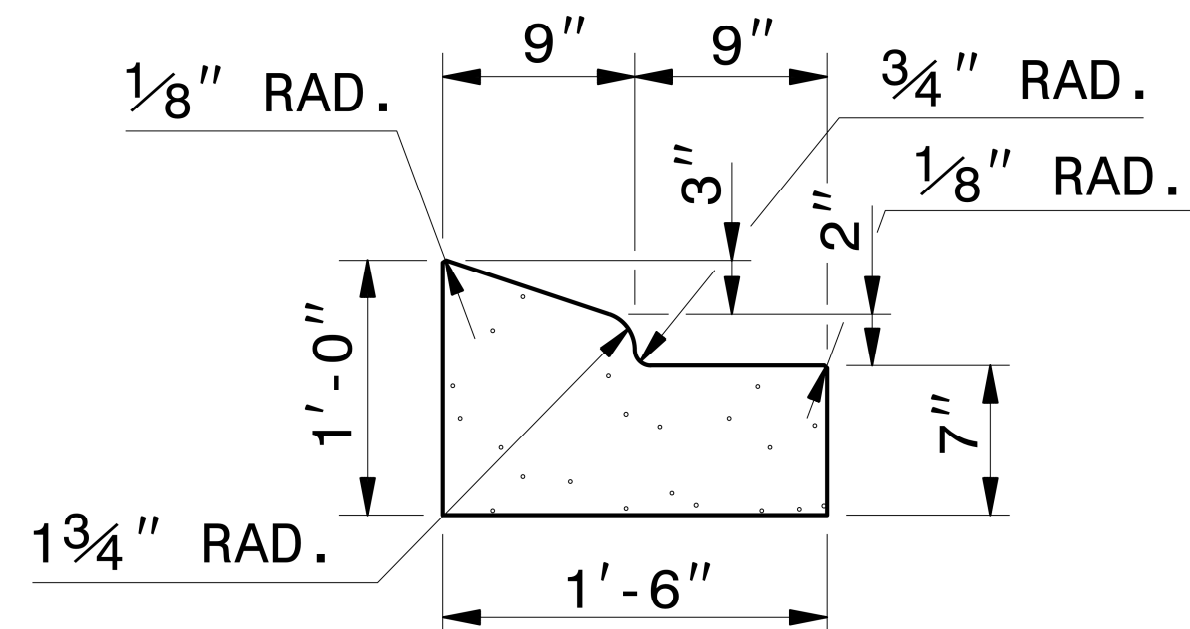
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STANDARDS AND SPECIAL DESIGN
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SPECIAL JUNCTION BOX WITH SLAB LID

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

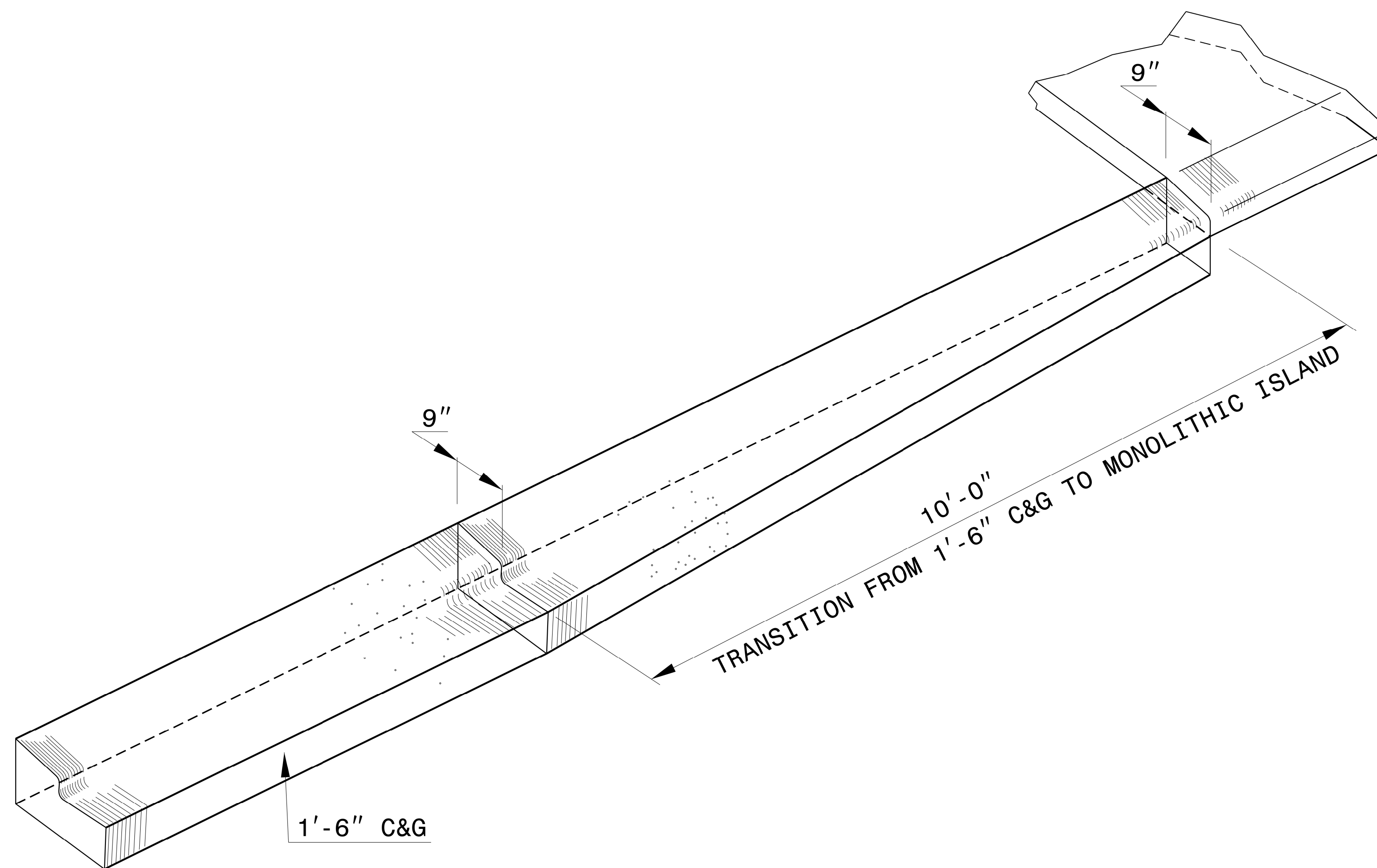
5/14/99
 \$\$\$\$SYTIME\$\$\$\$
 \$\$\$\$VTIME\$\$\$\$
 \$\$\$\$DGN\$\$\$\$
 \$\$\$\$USERNAME\$\$\$\$
 \$\$\$\$DU\$\$\$\$



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**



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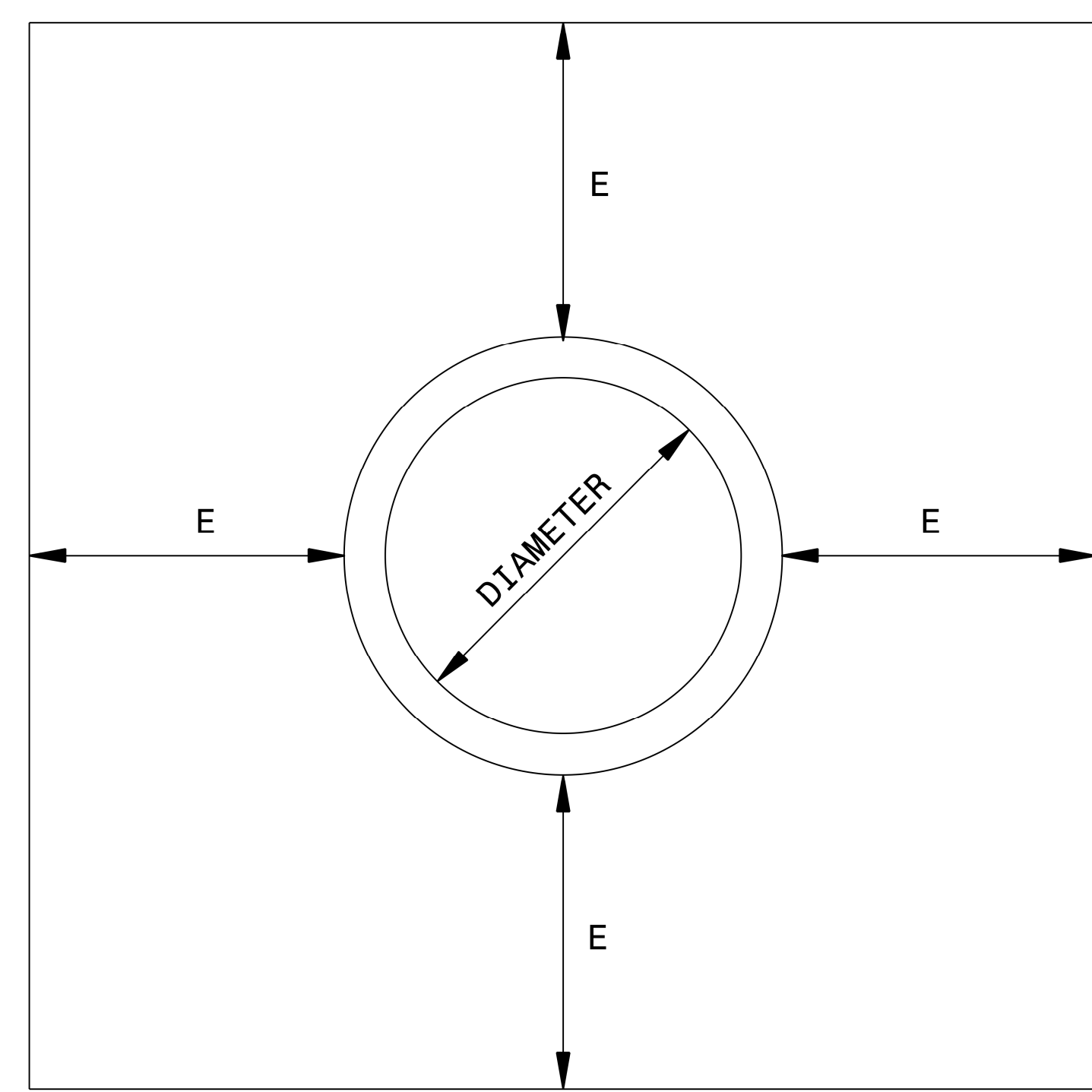
**DETAIL OF 1'-6"
CURB & GUTTER
TRANSITION SECTION**

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

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 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840D72



ELEVATION

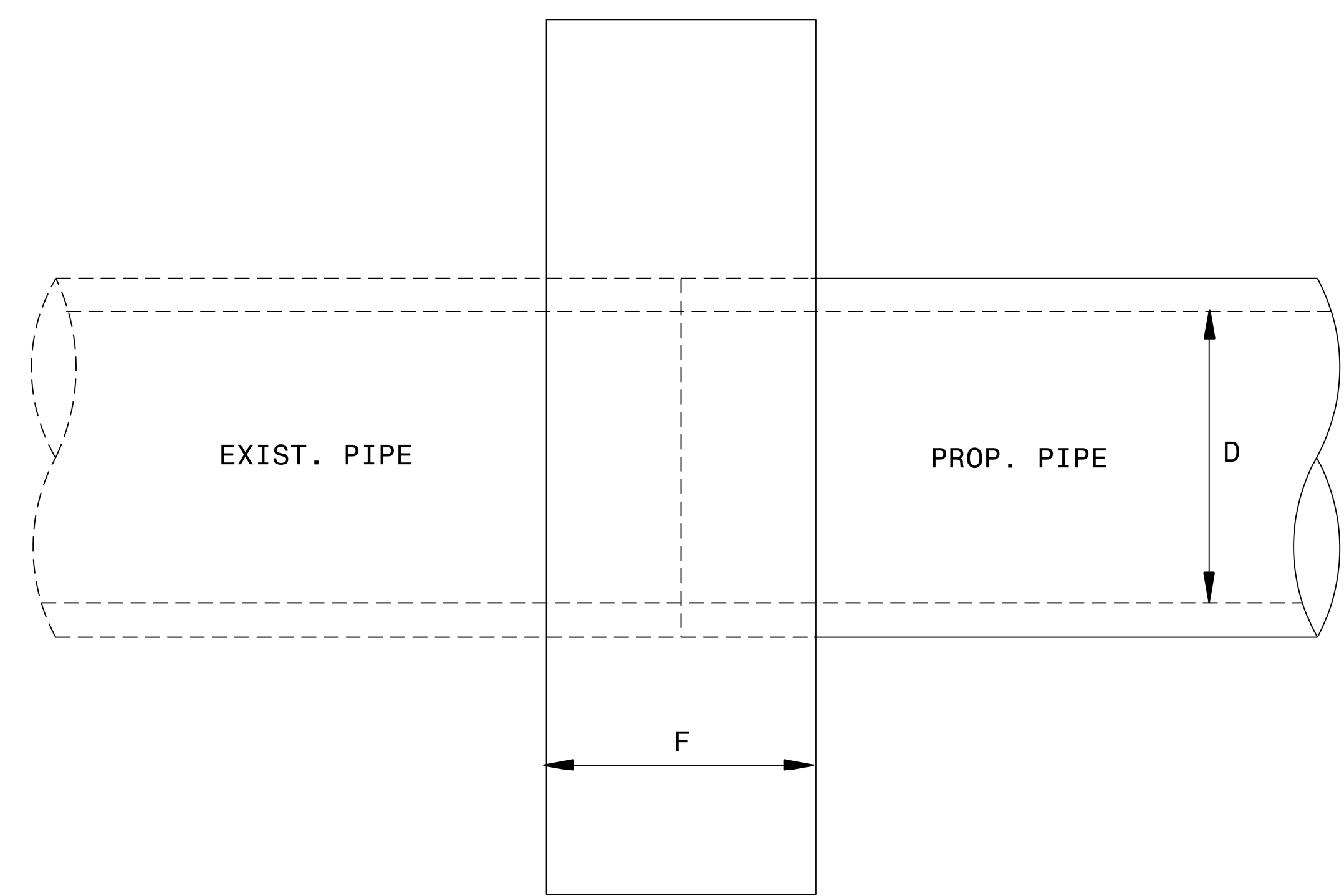
GENERAL NOTES:

 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.



SIDE ELEVATION

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

STATE OF NORTH CAROLINA
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ROADWAY DETAIL DRAWING FOR
PIPE COLLAR

SHEET 1 OF 1
840D72

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CONTRACTS STANDARDS AND DEVELOPMENT UNIT
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SEE TITLE PLATE

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



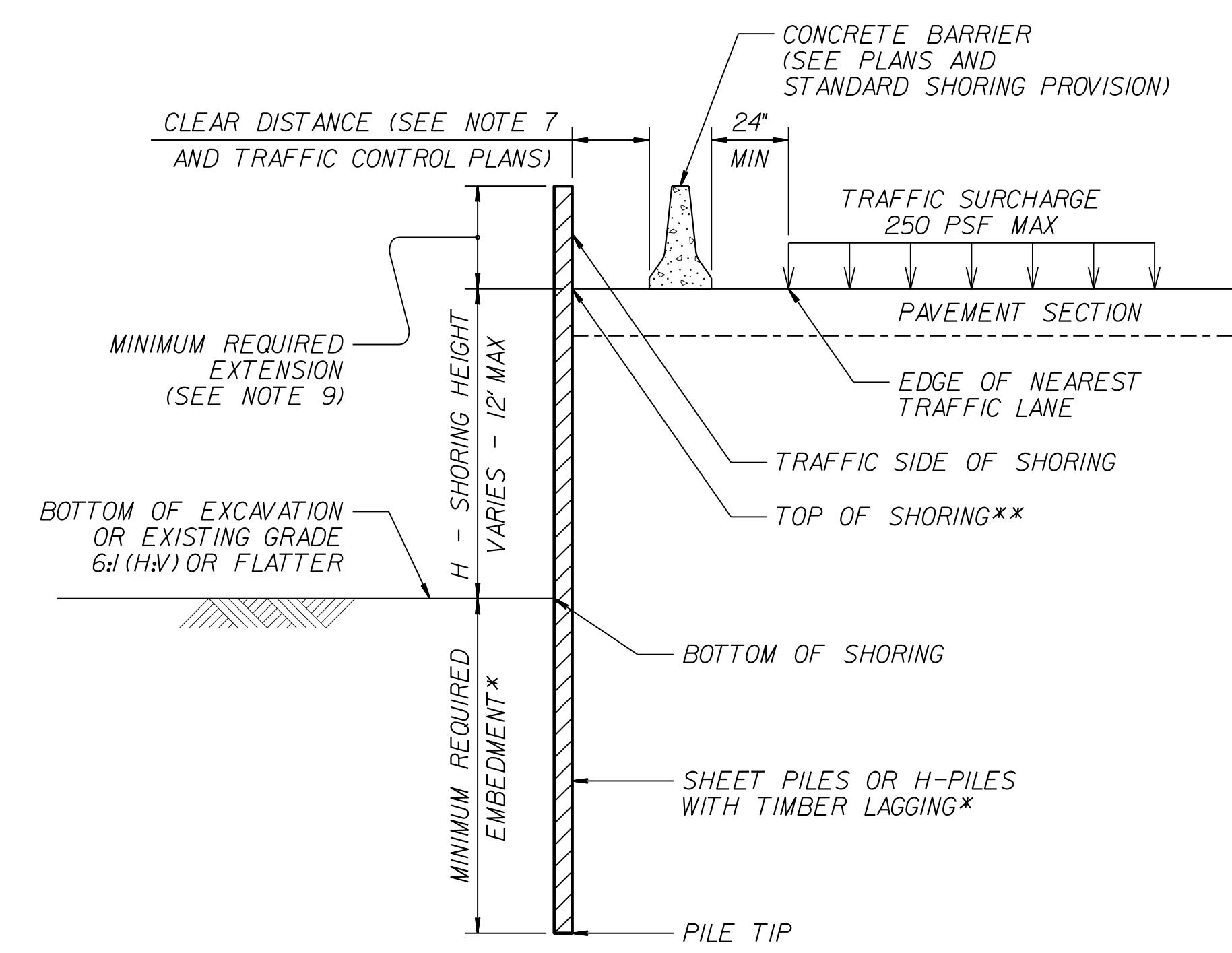
DocuSigned by:
 673F3D17DC0C45F
 6/15/2018

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	

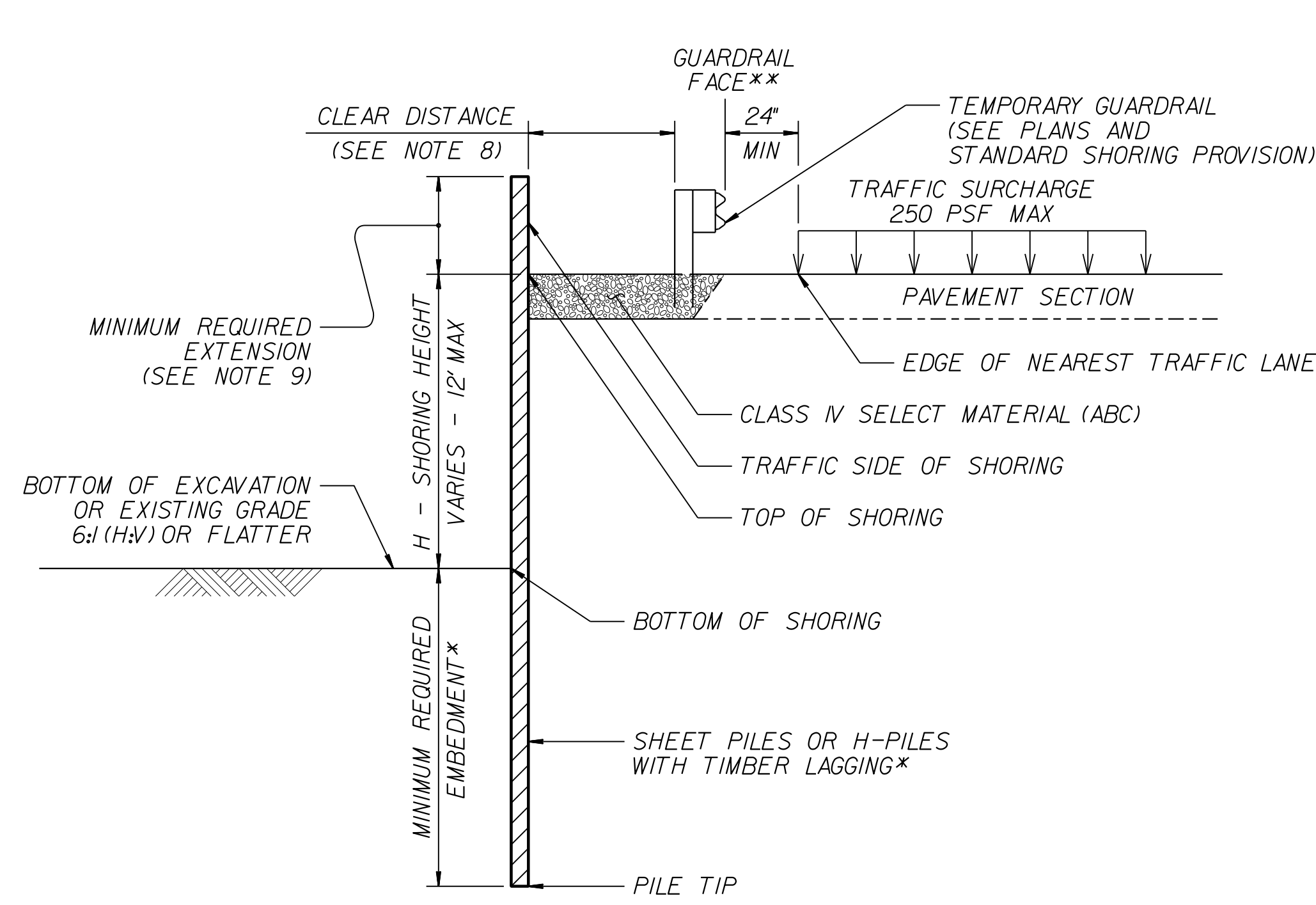
- NOTES:**
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
 - FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
 - STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ 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.

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

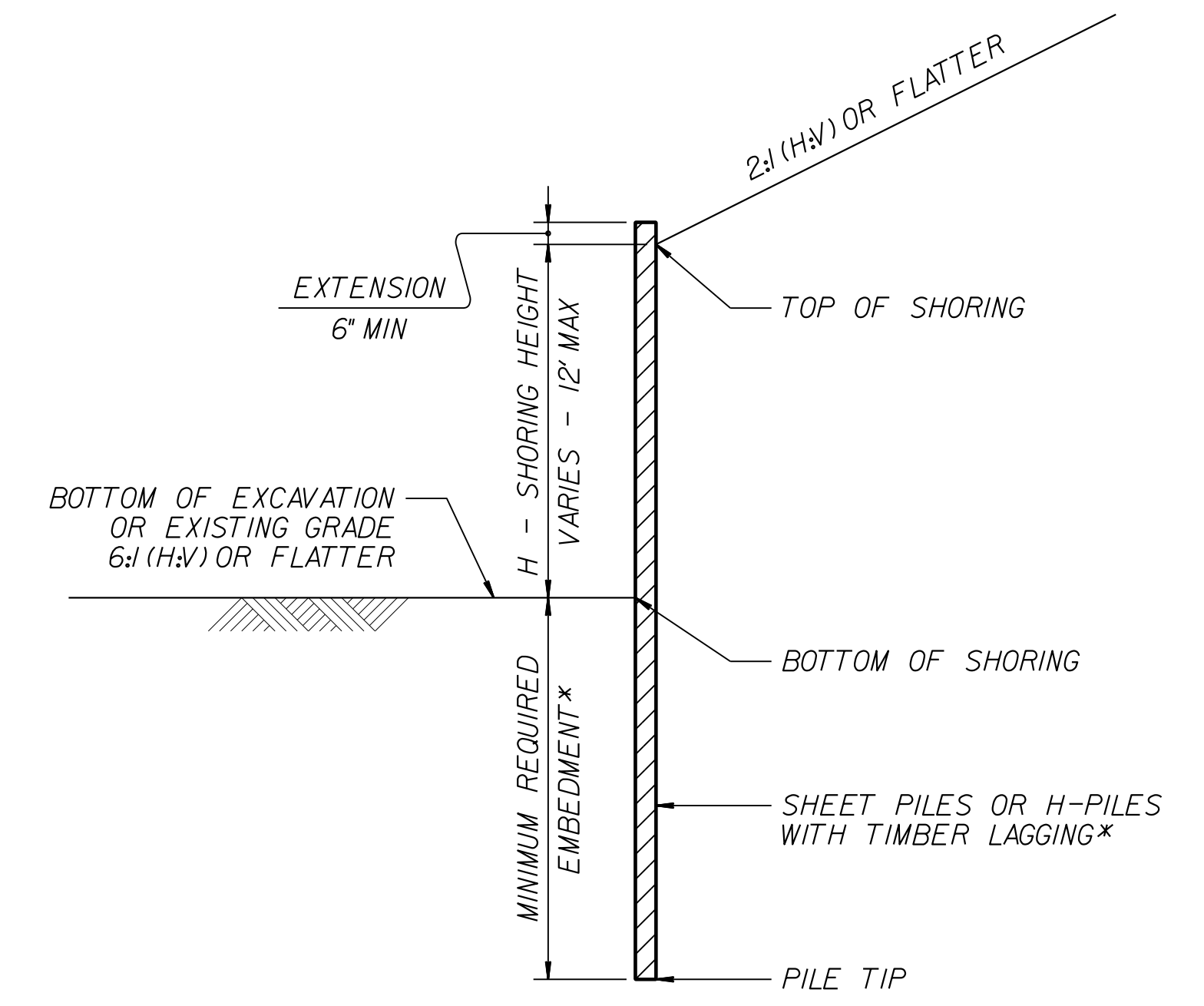
***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**



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



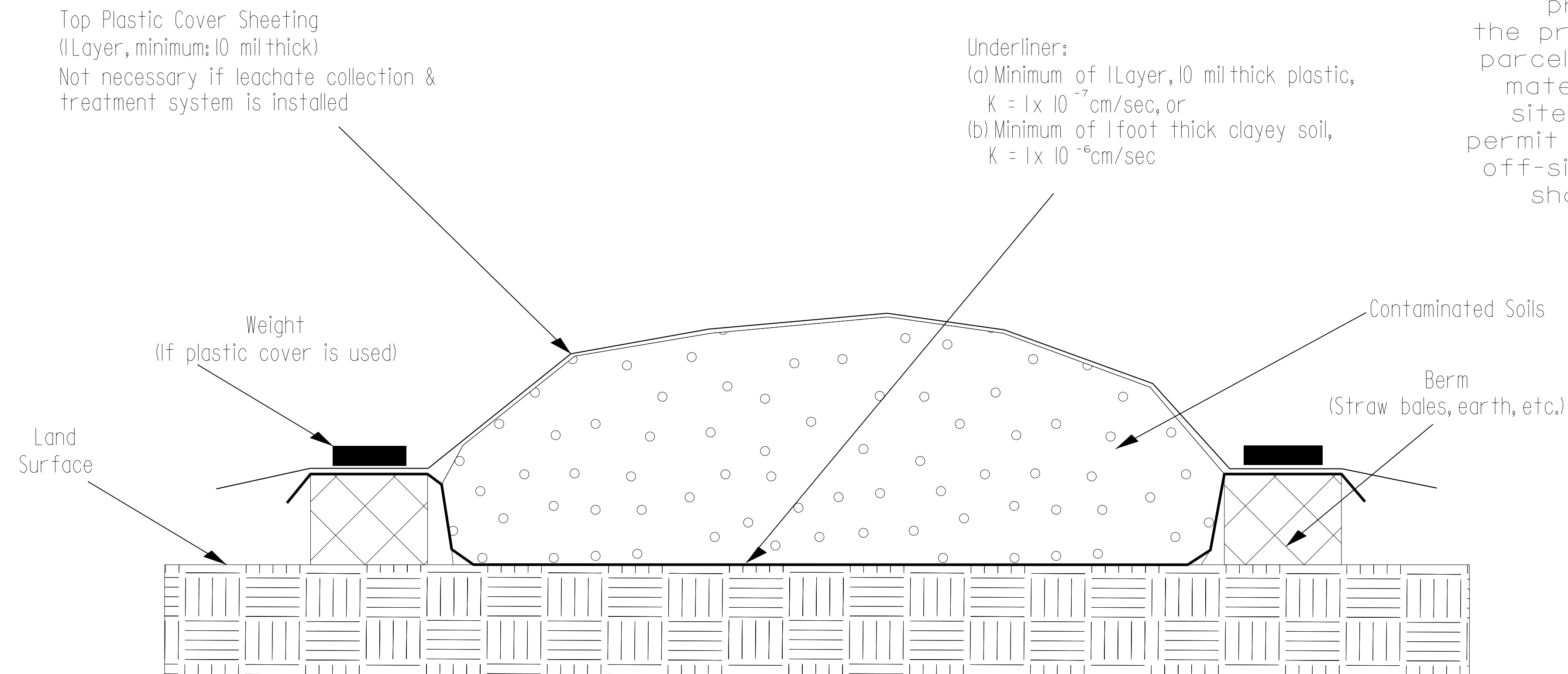
DocuSigned by:
Cyrus Parker 3/12/2018

SIGNATURE DATE

SIGNATURE DATE

Detail for Temporary Containment of Contaminated Soil

Cross-Section View

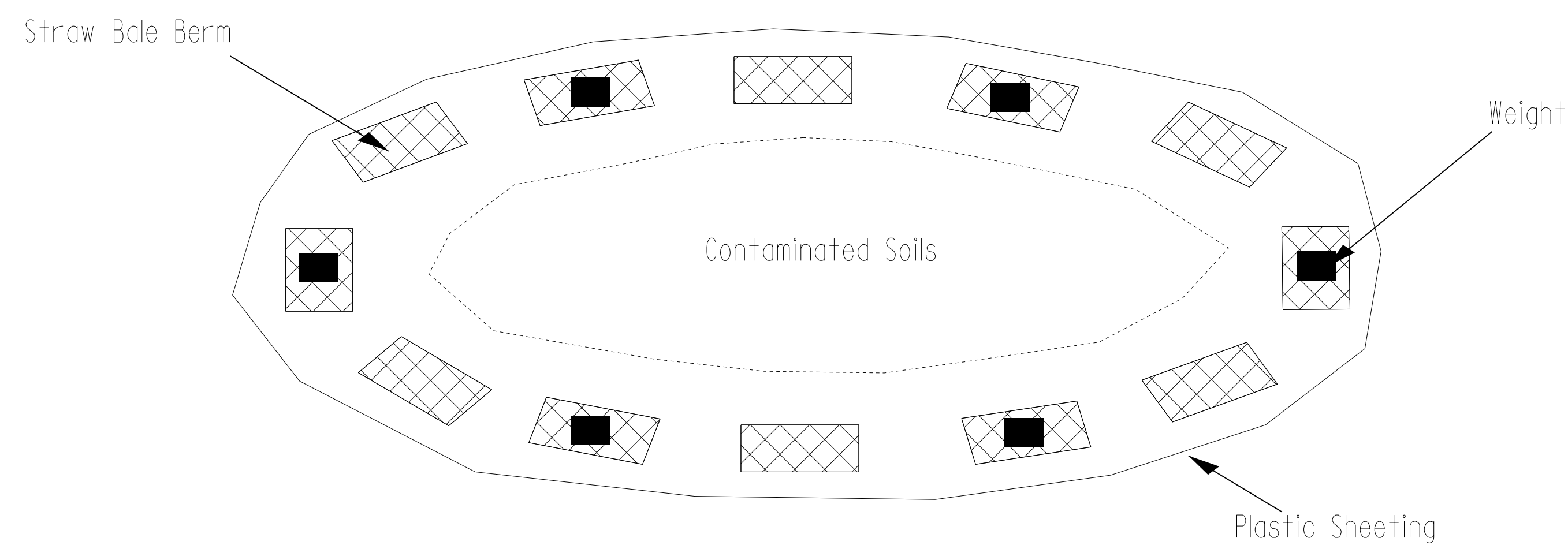


Top Plastic Cover Sheetting
(1 Layer, minimum: 10 mil thick)
Not necessary if leachate collection & treatment system is installed

Underliner:
(a) Minimum of 1 Layer, 10 mil thick plastic,
 $K = 1 \times 10^{-7}$ cm/sec, or
(b) Minimum of 1 foot thick clayey soil,
 $K = 1 \times 10^{-6}$ cm/sec

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

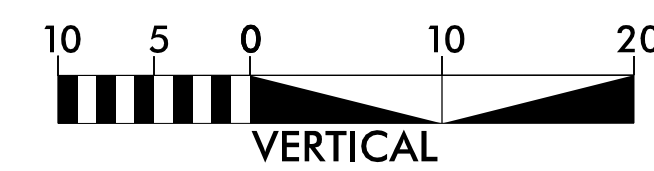
STOCKPILE CONTAINMENT DETAIL

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

PREPARED BY:	DATE:
REVIEWED BY:	DATE:

5/28/19

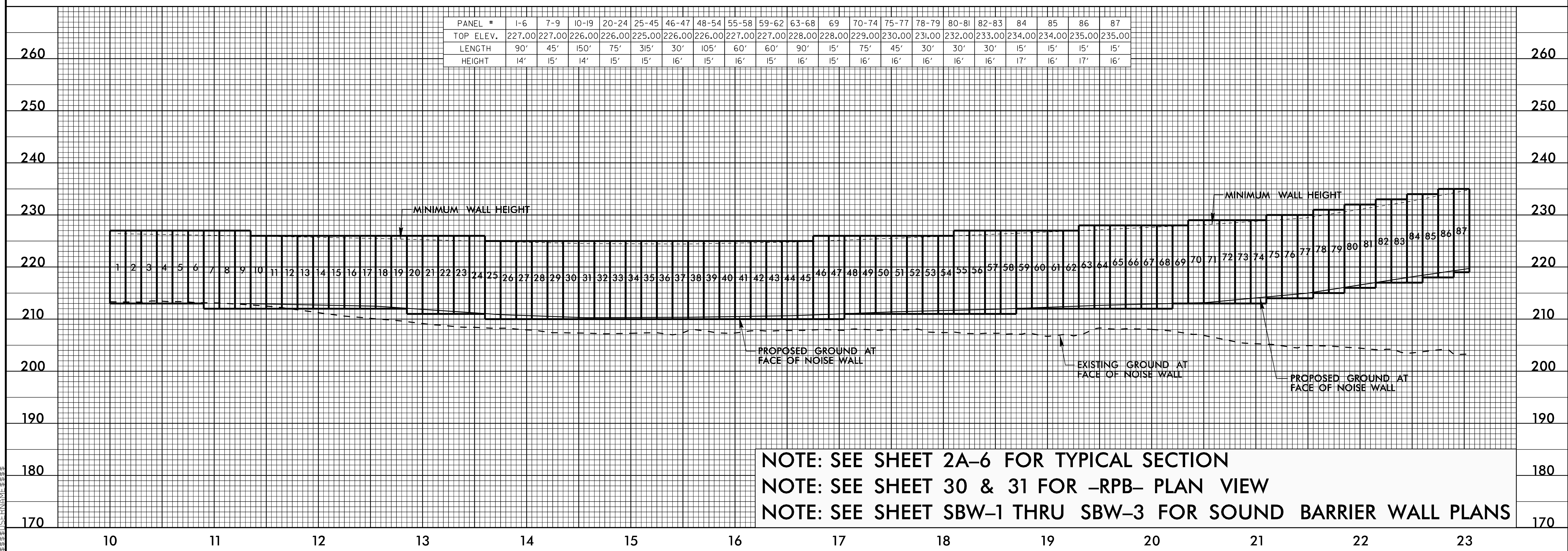
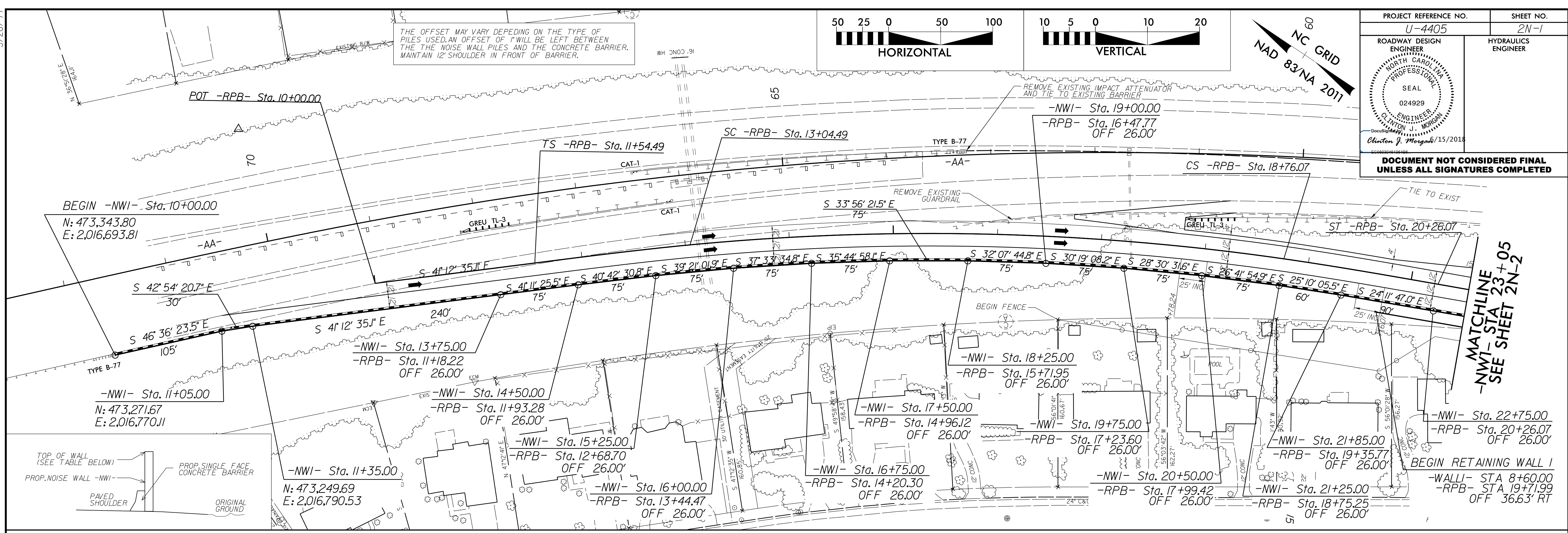
THE OFFSET MAY VARY DEPENDING ON THE TYPE OF PILES USED, AN OFFSET OF 1' WILL BE LEFT BETWEEN THE NOISE WALL PILES AND THE CONCRETE BARRIER. MAINTAIN 12" SHOULDER IN FRONT OF BARRIER.



NAD 83/NA 2011

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

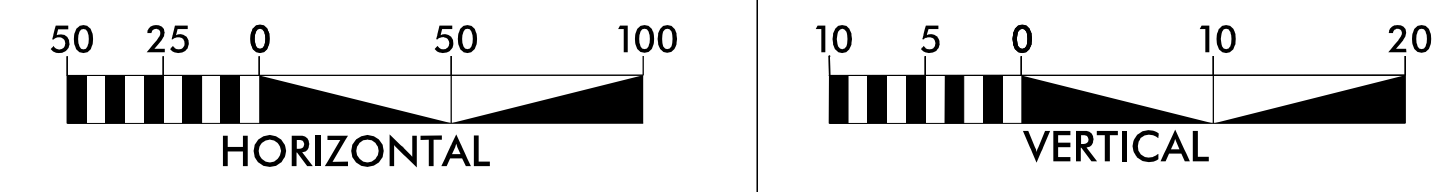
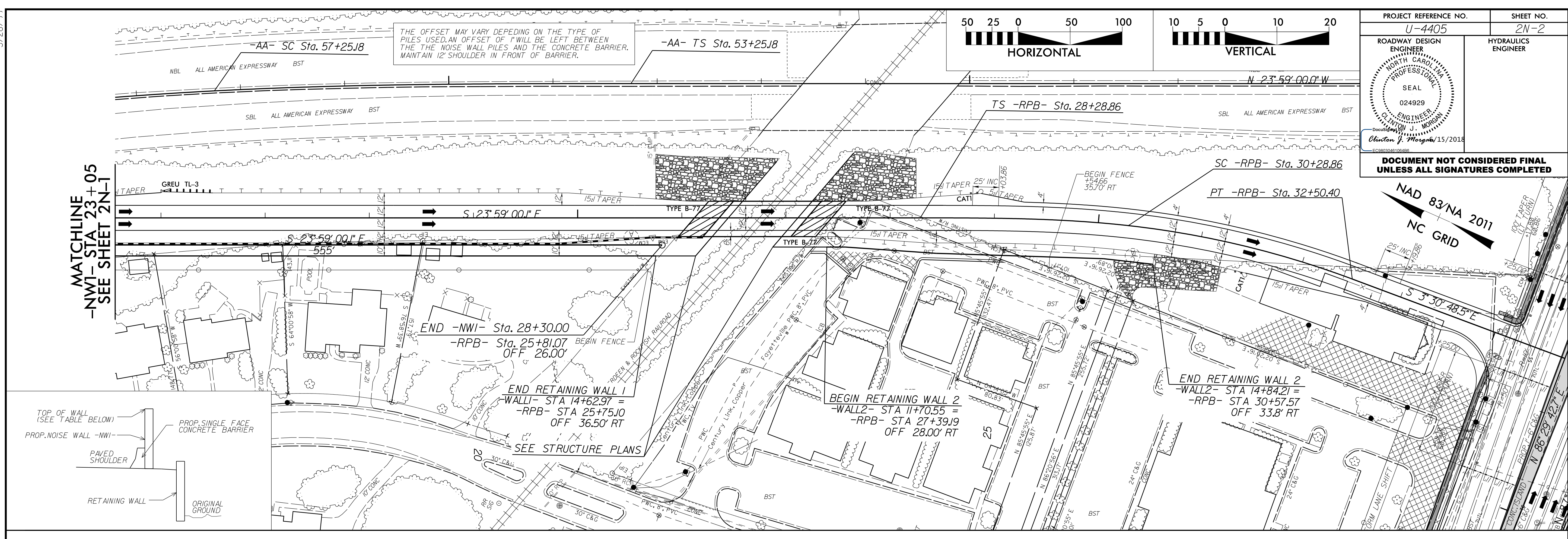


NOTE: SEE SHEET 2A-6 FOR TYPICAL SECTION
 NOTE: SEE SHEET 30 & 31 FOR -RPB- PLAN VIEW
 NOTE: SEE SHEET SBW-1 THRU SBW-3 FOR SOUND BARRIER WALL PLANS

15 JUN 2018 17:53
 C:\Users\jmosgale\Documents\Projects\U4405\rdy\pfl\psh_nw1-1.dgn
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5/28/2018

MATCHLINE
-NWI- STA 23+05
SEE SHEET 2N-1

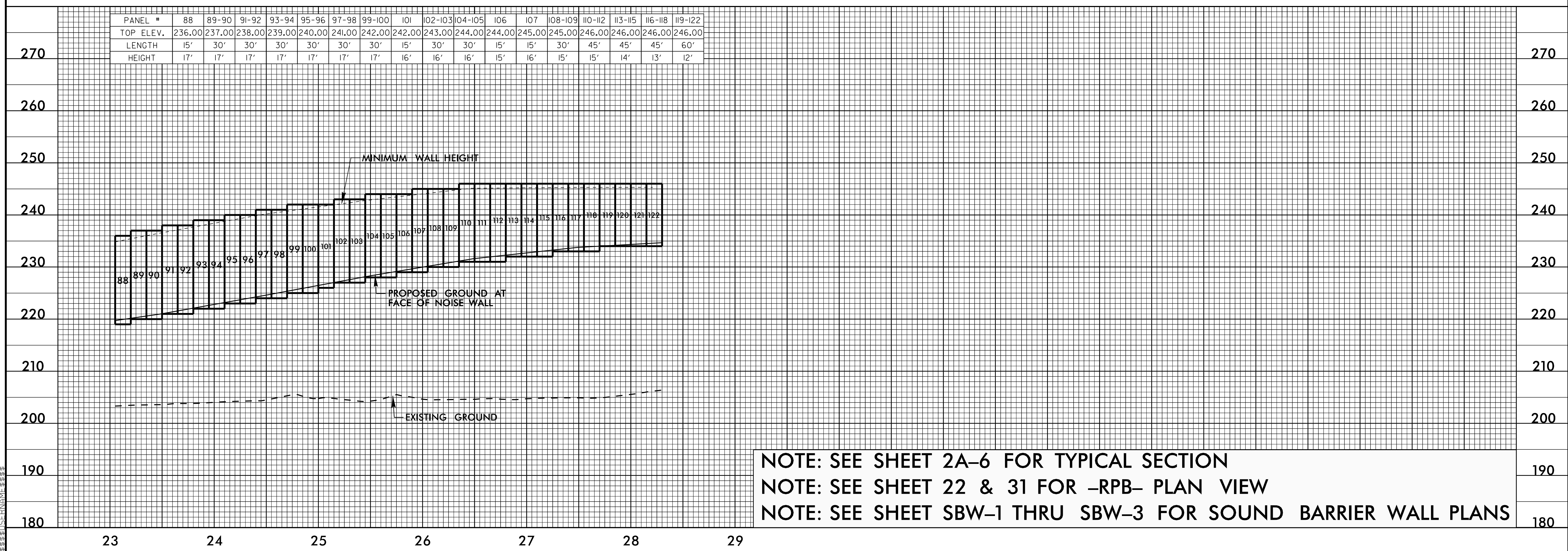
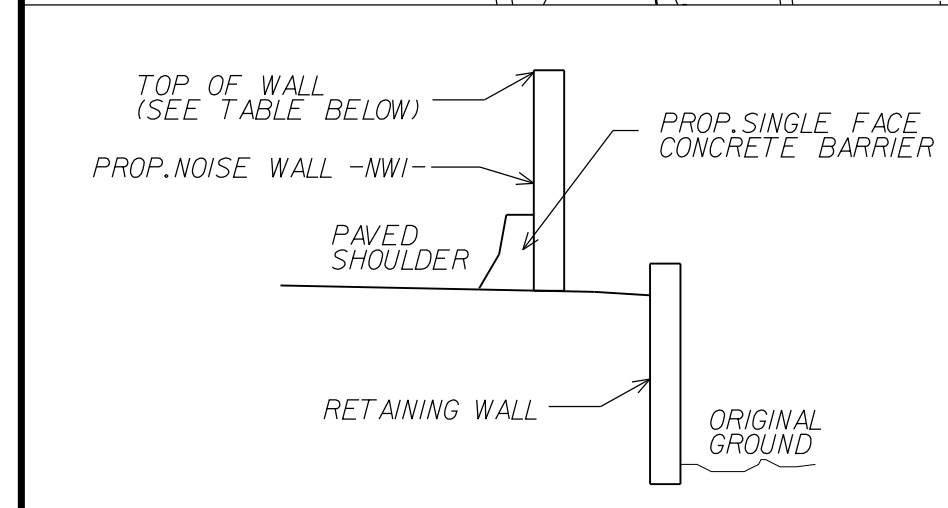


PROJECT REFERENCE NO. U-4405 SHEET NO. 2N-2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEERING SEAL
024929
Clinton J. Morgan 15/2018

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTE: SEE SHEET 2A-6 FOR TYPICAL SECTION
 NOTE: SEE SHEET 22 & 31 FOR -RPB- PLAN VIEW
 NOTE: SEE SHEET SBW-1 THRU SBW-3 FOR SOUND BARRIER WALL PLANS

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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 various materials and components such as 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.

WKST

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

PROJECT NO. U-4405 SHEET NO. 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.

COMPUTED BY: RBR DATE: 6/15/2018
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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, Pipe Material (C.S. Pipe, R.C. Pipe Class III/IV), Thickness/Gauge, Do Not Use RCP/CSP/CAAP/HDPE/PVC, Endwalls, Quantities for Drainage Structures, Frame/Grates/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. SHEET NO.
U-4405 3D-5

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, 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, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes sub-columns for various pipe sizes (12, 15, 18, 24, 30, 36, 42, 48 inches) and grate types (E, F, G).

ABBREVIATIONS table listing terms 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., and W.S. with their corresponding descriptions.

SHEET TOTALS row at the bottom of the table, summarizing quantities for various categories.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
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PROJECT NO. U-4405 SHEET NO. 3D-6

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, 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 Pipe Removal. 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 material descriptions.

REMARKS

WKST

COMPUTED BY: RBR DATE: 6/15/2018
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PROJECT NO. SHEET NO.
U-4405 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: 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, GRADE, 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-8

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-9

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, ENDWALLS, 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-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, 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.

WKST1

COMPUTED BY: RBR DATE: 6/15/2018
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PROJECT NO. U-4405 SHEET NO. 3D-12

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, 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-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 REMARKS. Includes a SHEET TOTALS row at the bottom.

ABBREVIATIONS table listing materials like CORRUGATED ALUMINIUM ALLOY, CATCH BASIN, CORRUGATED STEEL, DROP INLET, GRATED DROP INLET, HIGH DENSITY POLYETHYLENE, JUNCTION BOX, MANHOLE, NARROW SLOT, POLYVINYL CHLORIDE, REINFORCED CONCRETE, TRAFFIC BEARING DROP INLET, TRAFFIC BEARING JUNCTION BOX, WIDE SLOT.

WKST

COMPUTED BY: RBR DATE: 6/15/2018
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PROJECT NO. SHEET NO.
U-4405 3D-14

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
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PROJECT NO. U-4405 SHEET NO. 3D-16

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 summary row for SHEET TOTALS.

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

SHEET TOTALS

WKST

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

PROJECT NO. U-4405 SHEET NO. 3D-21

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 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, etc.

REMARKS

WKST

COMPUTED BY: RBR DATE: 6/15/2018
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PROJECT NO. U-4405 SHEET NO. 3D-22

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.

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 material descriptions.

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 for Line & Station, Offset, Structure Number, 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 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-30

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 Pipe Removal. 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 material descriptions.

REMARKS

WKST

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

PROJECT NO. SHEET NO.
U-4405 3D-32

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 Remarks. Includes sub-headers for pipe sizes (12-48 inches) and various material specifications.

SHEET TOTALS

720 124 140

15

13 3 10

1 1 1

1

1

9

1000

WKST

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

PROJECT NO. U-4405 SHEET NO. 3D-33

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-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: 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, and REMARKS. 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-36

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, Pipe Material (R.C. Pipe Class III/IV), Pipe Size (12-48 inches), Endwalls, Quantities for Drainage Structures (A/B), Frame/Grates, Concrete 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. SHEET NO.
U-4405 3D-37

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, C.S. Pipe, R.C. Pipe Class III/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. SHEET NO.
U-4405 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: 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, and REMARKS. Includes a SHEET TOTALS row at the bottom.

ABBREVIATIONS
C.A.A. CORRUGATED ALUMINUM 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. SHEET NO.
U-4405 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 at the bottom right.

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.