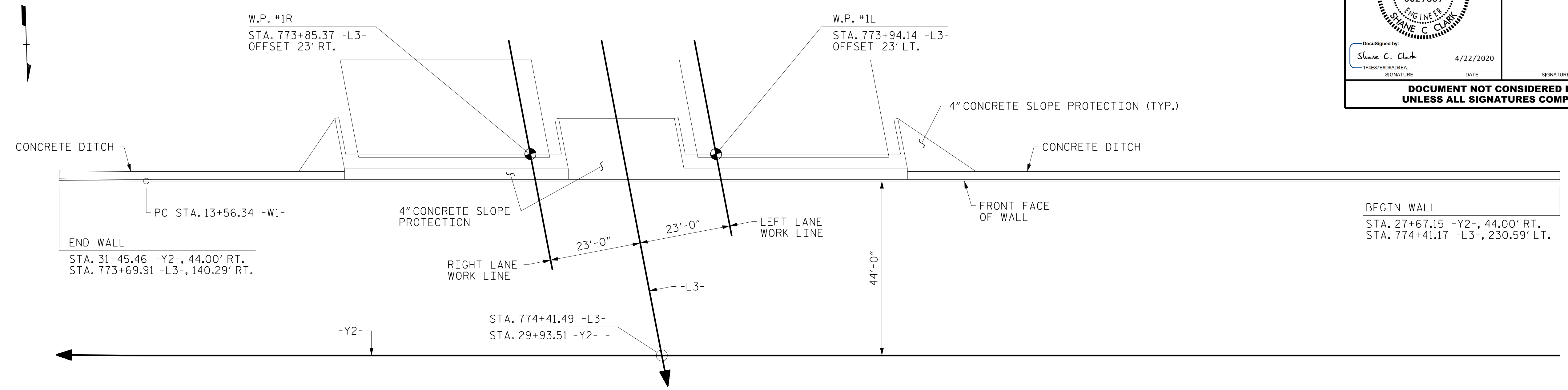
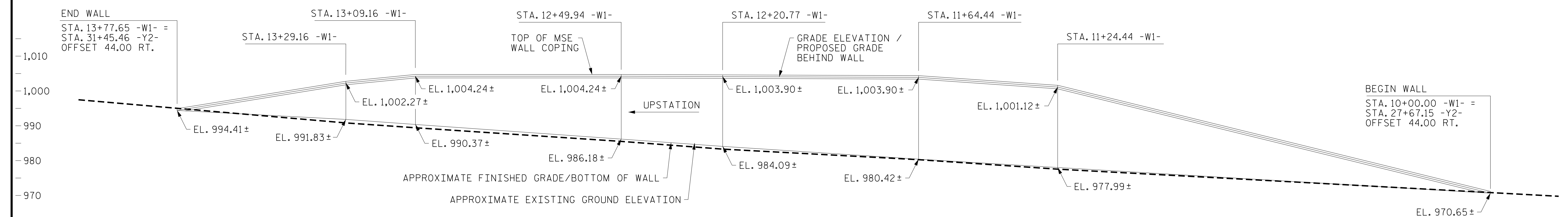


GEOTECHNICAL ENGINEER
 ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL 0029869
 SHANE C. CLARK
 4/22/2020
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PLAN VIEW - RETAINING WALL NO. 1



EXPOSED WALL FACE ENVELOPE - RETAINING WALL NO. 1 @ END BENT 1

(LOOKING BACKSTATION, BACKWALL AND WINGWALL NOT SHOWN FOR CLARITY)

MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO. 1	6,350 SF

* EST. QTY INCLUDES 2 FT EMBEDMENT

PROJECT NO.: 34400 (R-2233BB)
 RUTHERFORD COUNTY
 STATION: 29+93.51 -Y2-
 SHEET 1 OF 5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT

BRIDGE NOS. 660 AND 661 ON
 -L3- OVER -Y2-
 RETAINING WALL NO. 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	W-1
2	-	-	4	-	-	

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

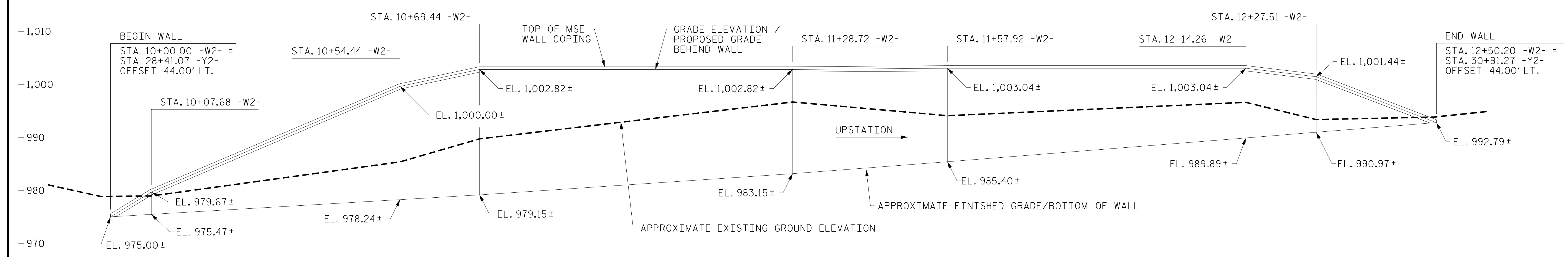
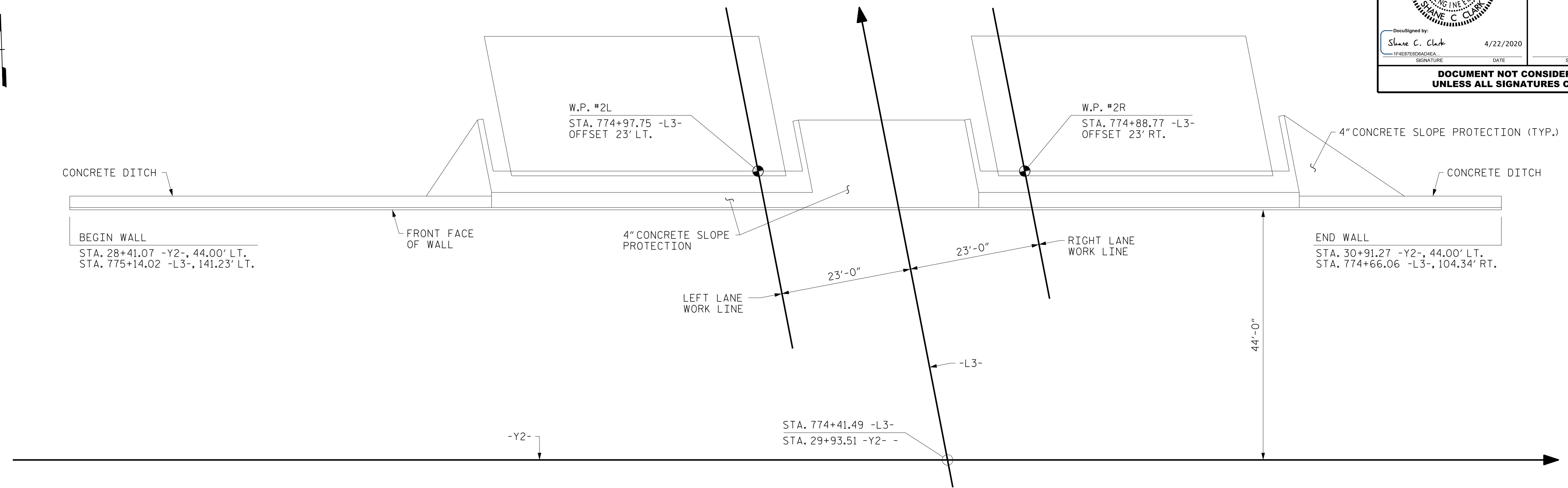
GEOTECHNICAL ENGINEER

Shane C. Clark
4/22/2020

ENGINEER

SIGNATURE DATE

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



MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO. 2	4,335 SF
* EST. QTY INCLUDES 2 FT EMBEDMENT	

**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

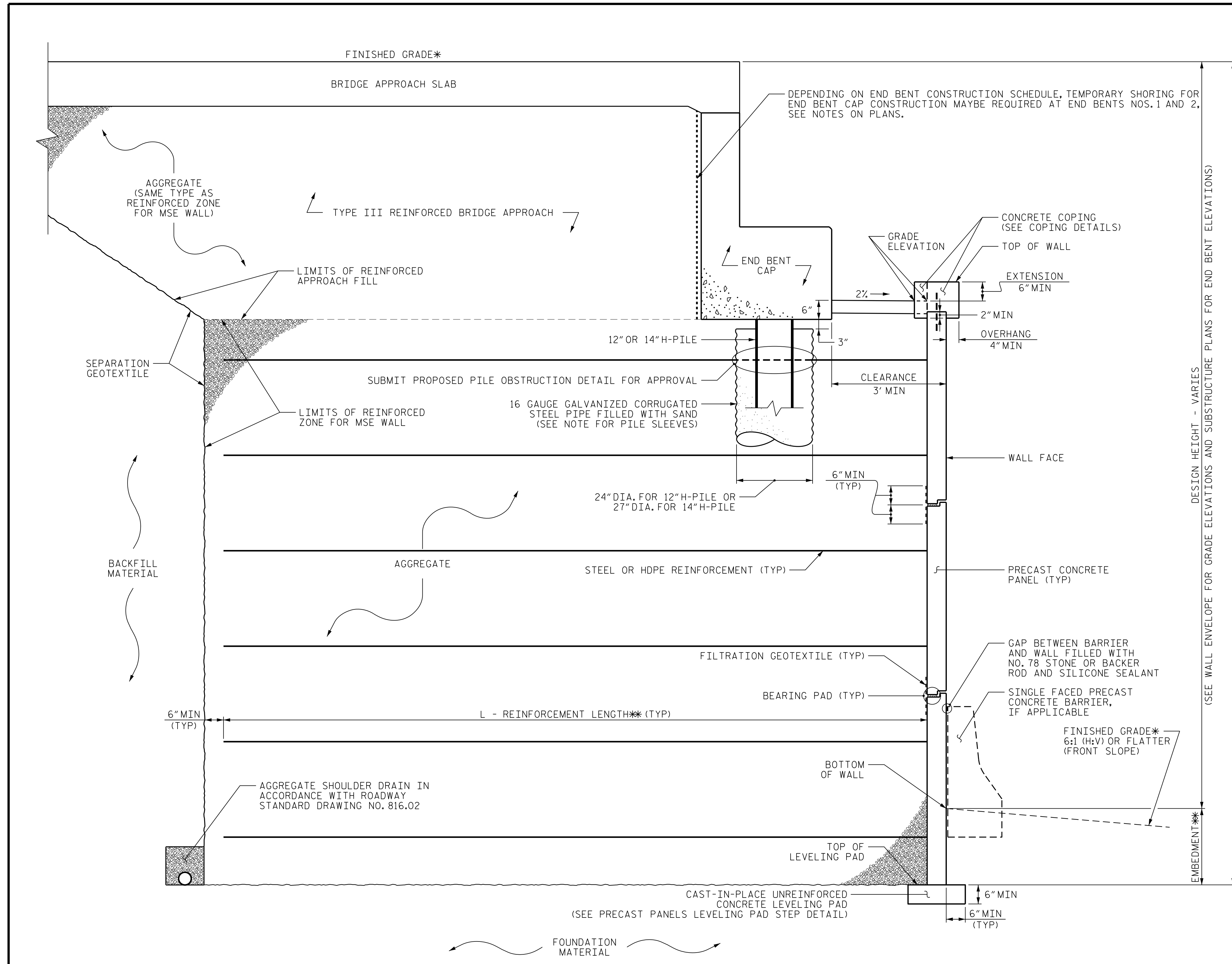
PROJECT NO.: 34400 (R-2233BB)
 RUTHERFORD COUNTY
 STATION: 29+93.51 -Y2-
 SHEET 2 OF 5

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

**BRIDGE NOS. 660 AND 661 ON
-L3- OVER -Y2-
RETAINING WALL NO. 2**

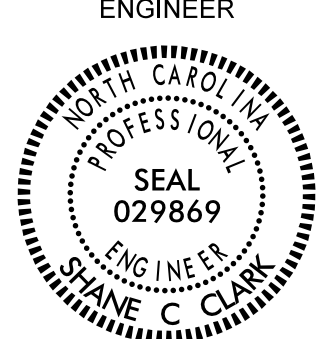
PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

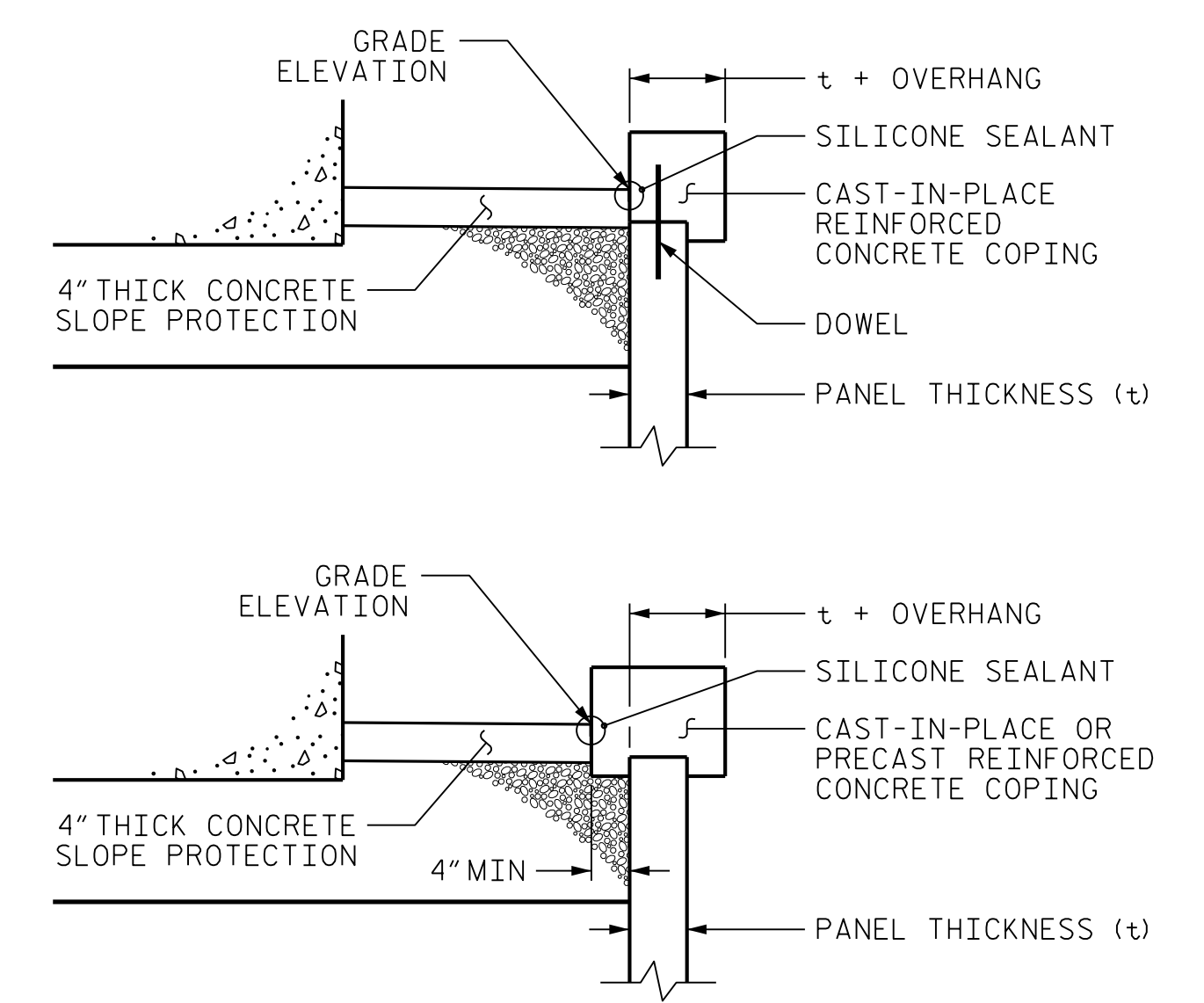
SHEET NO.
W-2



MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
 **SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE,
 MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

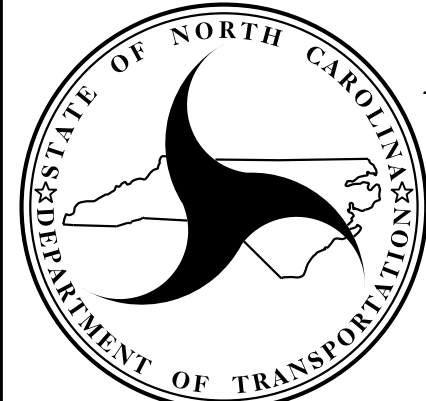
GEOTECHNICAL ENGINEER  SEAL 029869 SHANE C. CLARK	ENGINEER _____ SIGNATURE
DocuSigned by: Shane C. Clark 4/16/2020	DATE _____ DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

PROJECT NO.: 34400 (R-2233BB)
 IREDELL COUNTY
 STATION: 29+93.51 -Y2-
 SHEET 3 OF 5

	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT
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BRIDGE NOS. 660 AND 661 ON -L3- OVER -Y2- RETAINING WALL NO. 1 AND 2 ABUTMENT WALL DETAIL					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	-	-	3	-	-
2	-	-	4	-	-

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

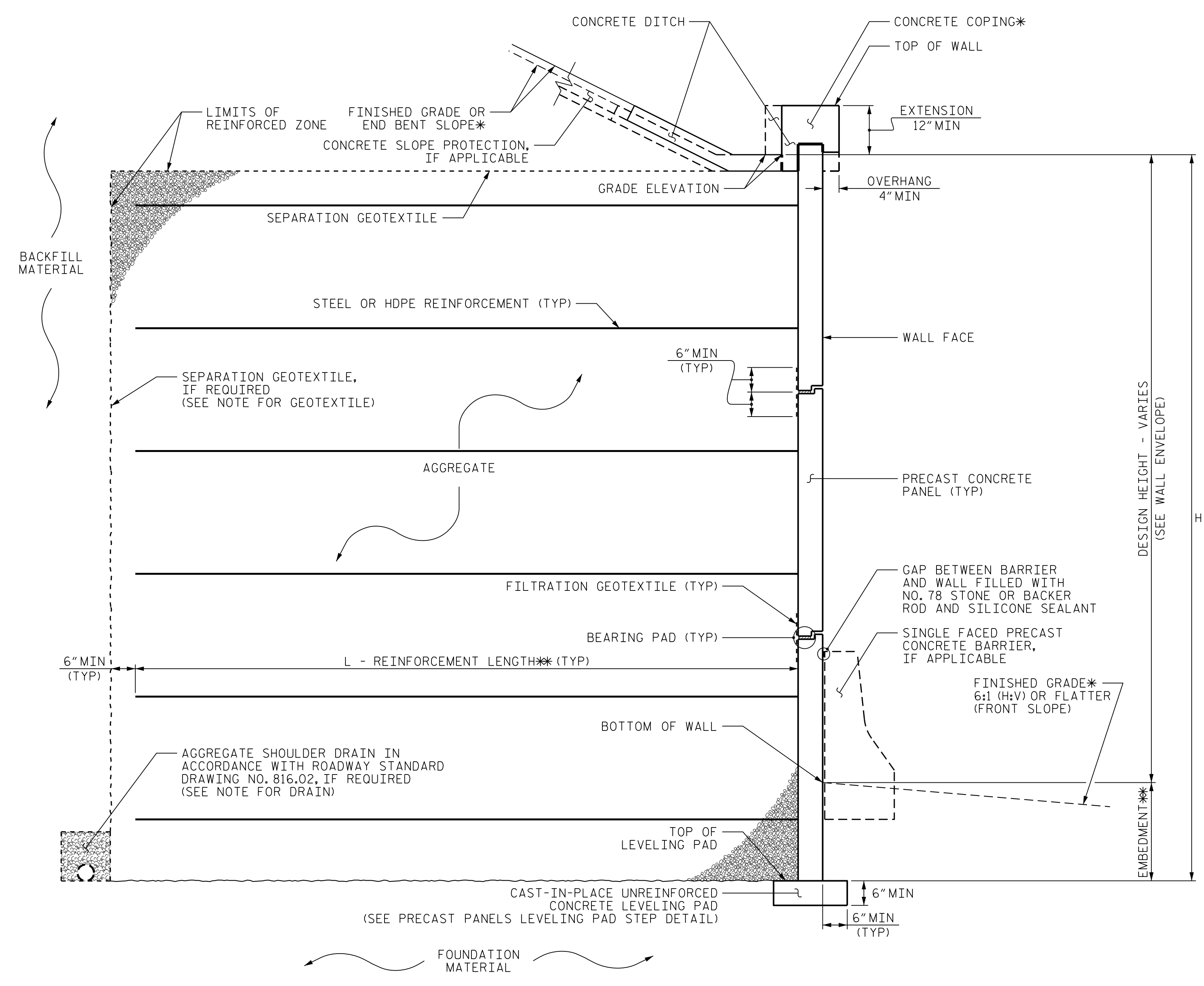
SHEET NO. W-3

GEOTECHNICAL ENGINEER

ENGINEER

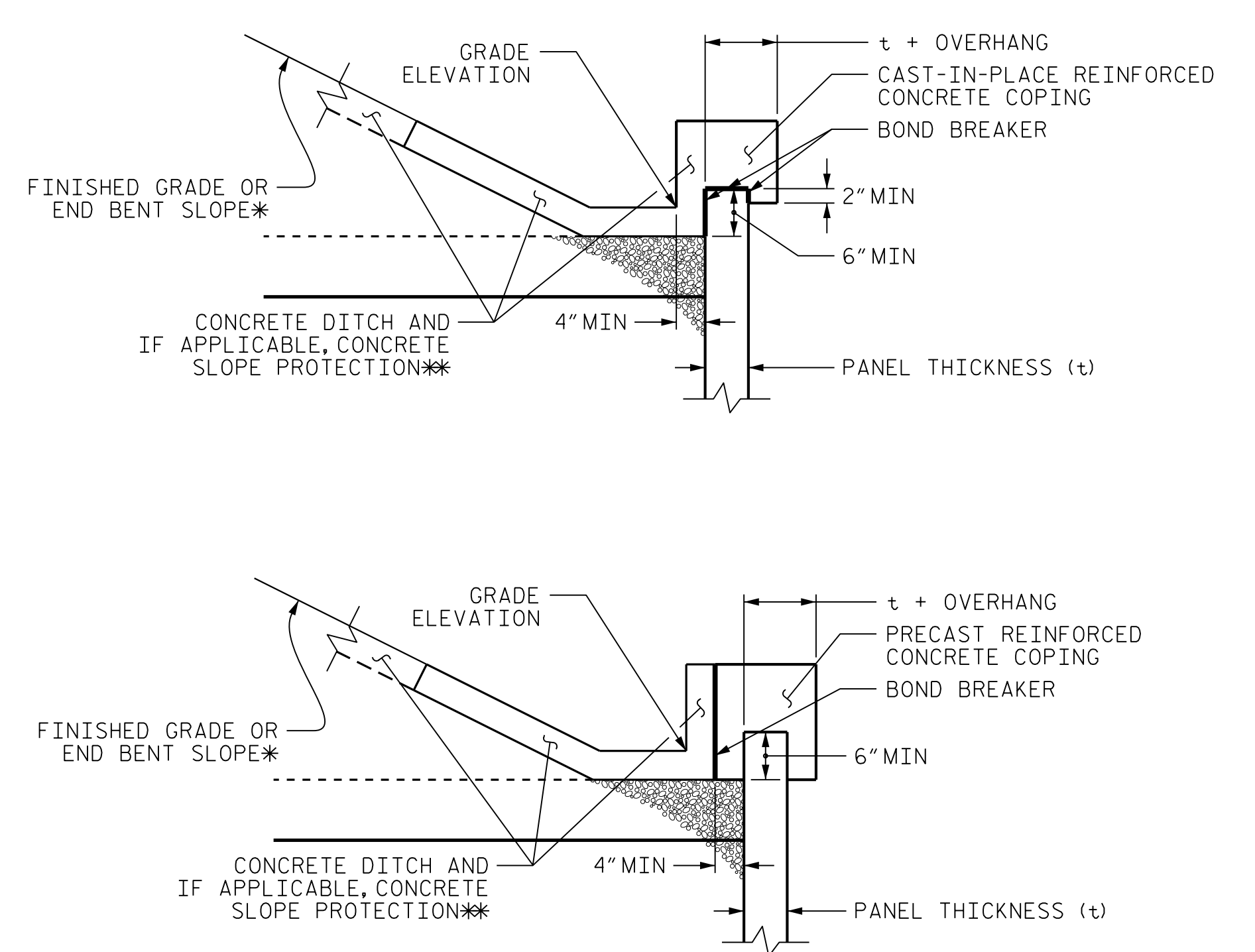
DocuSigned by:
Shane C. Clark 4/16/2020

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MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

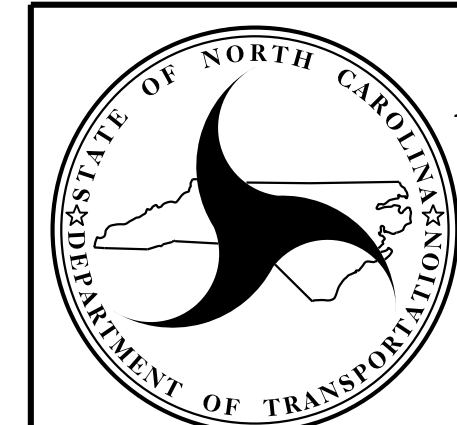
*SEE COPING DETAILS AND PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



COPING DETAILS

*SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.
**SEE CONCRETE DITCH BEHIND WALL DETAILS.

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

PROJECT NO.: 34400 (R-2233BB)
RUTHERFORD COUNTY
STATION: 29+93.51 -Y2-
SHEET 4 OF 5

BRIDGE NOS. 660 AND 661 ON -L3- OVER -Y2- RETAINING WALL NOS. 1 AND 2 WALL DETAILS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-4

GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by:
Shane C. Clark 4/22/2020

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

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR REINFORCED BRIDGE APPROACH FILL, USE TYPE III REINFORCE BRIDGE APPROACH FILL. SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422D10. OMIT MSE WALL REINFORCEMENT ON BACK OF END BENT CAPS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

MSE WALL VERTICAL SLIP JOINTS MAY BE NEEDED AND ARE TO BE INCLUDED AS REQUIRED BY THE DESIGNER.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NOS. 1 AND 2.

A DRAIN IS REQUIRED FOR RETAINING WALL NOS. 1 AND 2.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NOS. 1 AND 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NOS. 1 AND 2 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 8,000 LB/SF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT ELEVATION = H/10 OR 2 FT, WHICHEVER IS DEEPER
- 6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	115	29	0

DESIGN RETAINING WALL NOS. 1 AND 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

FOUNDATIONS FOR END BENT NOS. 1 LOCATED AT STATION 29+93.51-Y2-, 44 FT RT, AND END BENT NO. 2 LOCATED AT STATION 29+93.51-Y2-, 44 FT LT WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NOS. 1 AND 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

PRIOR TO INSTALLING MSE RETAINING WALL DRIVE END BENT FOUNDATION PILES AT END BENT NOS. 1 AND 2 TO BEARING DEPTHS.

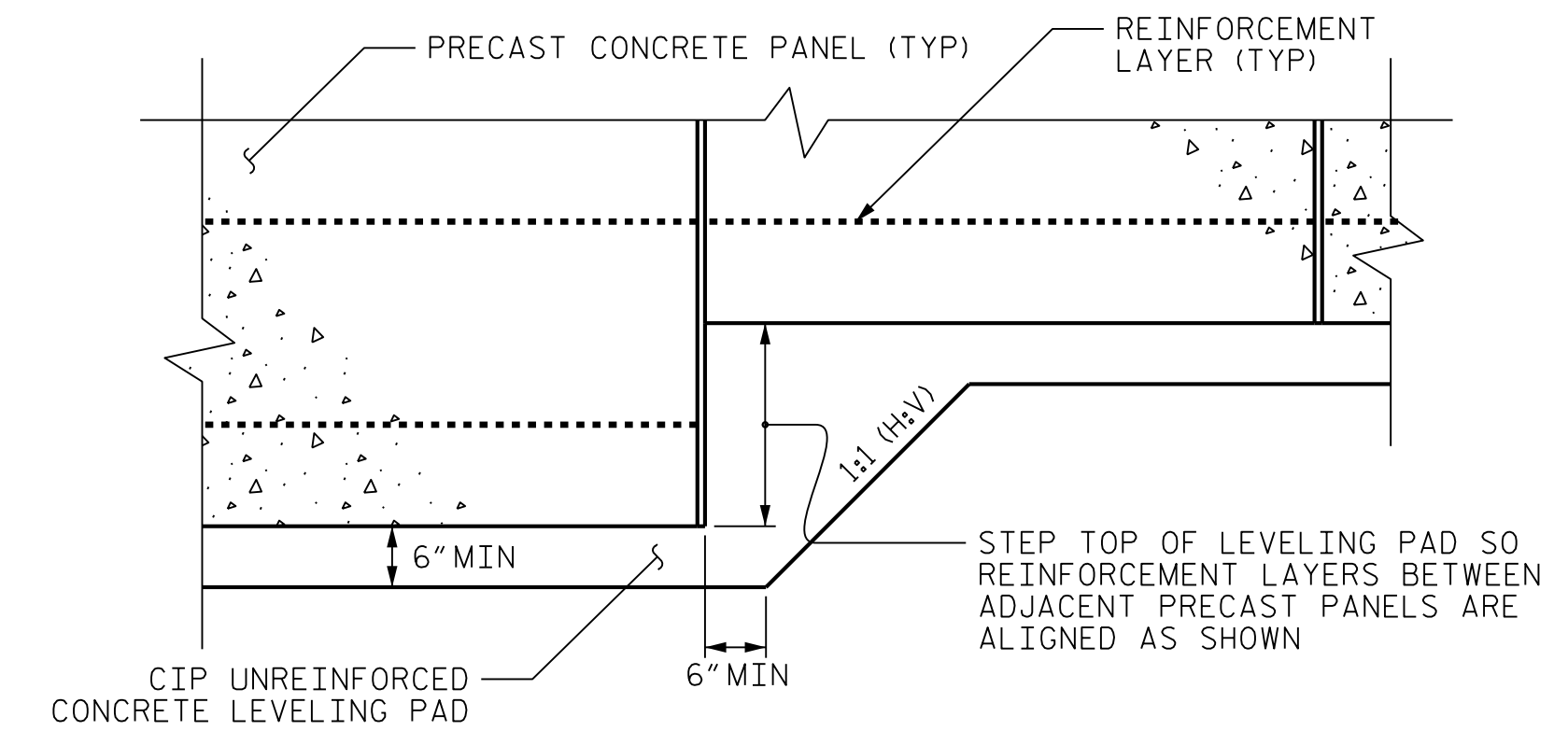
INSTALL PILE SLEEVES FOR END BENT NO. 1 LOCATED AT STATION 29+93.51-Y2-, 44 FT RT. WHILE CONSTRUCTING RETAINING WALL NO. 1. OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE ABUTMENT WALLS, APPROACH FILLS AND END BENT BACK WALLS TO GRADE AND FILL SLEEVES WITH LOOSE UNCOMPACTED MSE BACKFILL BEFORE CONSTRUCTING END BENT CAPS.

INSTALL PILE SLEEVES FOR END BENT NO. 2 LOCATED AT STATION 29+93.51-Y2-, 44 FT LT WHILE CONSTRUCTING RETAINING WALL NO. 2. OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE ABUTMENT WALLS, APPROACH FILLS AND END BENT BACK WALLS TO GRADE AND FILL SLEEVES WITH LOOSE UNCOMPACTED MSE BACKFILL BEFORE CONSTRUCTING END BENT CAPS.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NOS. 1 AND 2.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NOS. 1 AND 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

FOR SUBSURFACE INFORMATION SEE THE STRUCTURE SUBSURFACE INVENTORY FOR BRIDGE NOS. 660 AND 661.



**PRECAST PANELS
LEVELING PAD STEP DETAIL**

PROJECT NO.: 34400 (R-2233BB)
RUTHERFORD COUNTY
STATION: 733+32.53 -L-
SHEET 5 OF 5

**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

**BRIDGE NOS. 660 AND 661 ON
-L3- OVER -Y2-
RETAINING WALL NOS. 1 AND 2
NOTES**

REVISIONS						SHEET NO. W-5
NO.	BY	DATE	NO.	BY	DATE	
1	-	-	3	-	-	
2	-	-	4	-	-	

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

GEOTECHNICAL ENGINEER

ENGINEER

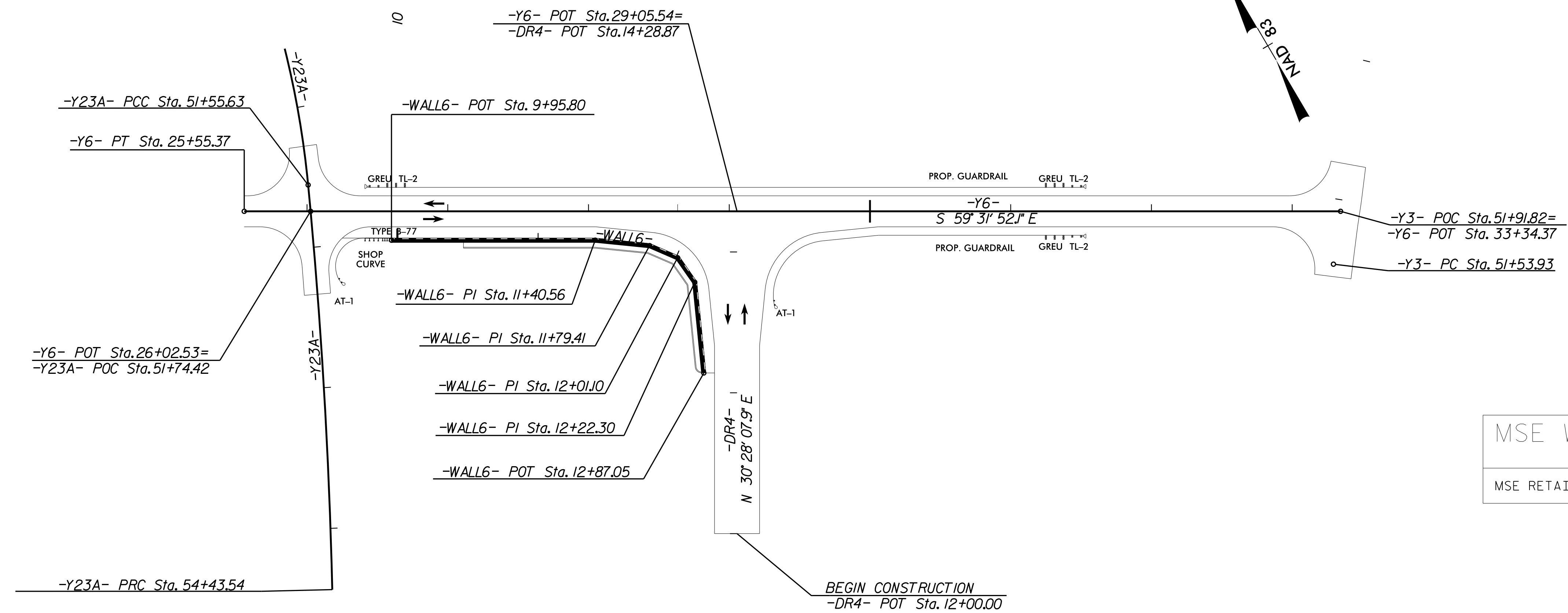
SEAL 0029869

ENGINEER

SHANE C. CLARK

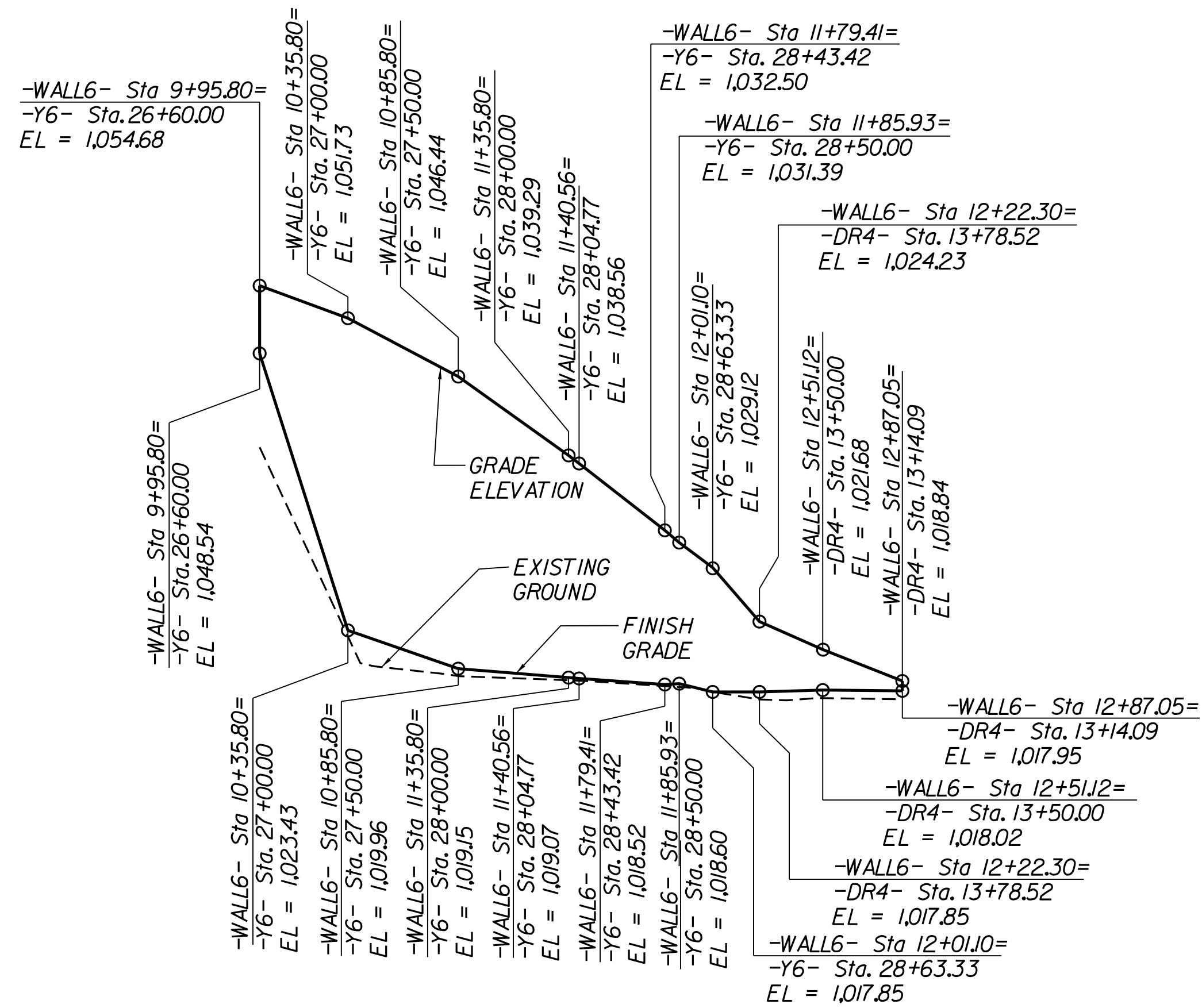
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



MSE WALL QUANTITY
(SQUARE FEET)

MSE RETAINING WALL NO. 6	4,665 SF
--------------------------	----------



STA	OFFSET	=	STA	TOP FINISH GRADE ELEV	EXISTING GROUND ELEV	BOTTOM FINISH GRADE ELEV
-Y6- 26+60.00	19' RT	=	-WALL6- 9+95.80	1054.68	1040.04	1048.54
-Y6- 27+00.00	19' RT	=	-WALL6- 10+35.80	1051.73	1022.87	1023.43
-Y6- 27+50.00	19' RT	=	-WALL6- 10+85.80	1046.44	1019.4	1019.96
-Y6- 28+00.00	19' RT	=	-WALL6- 11+35.80	1039.29	1018.53	1019.15
-Y6- 28+04.77	19' RT	=	-WALL6- 11+40.56	1038.56	1018.44	1019.07
-Y6- 28+43.42	22.90' RT	=	-WALL6- 11+79.41	1032.50	1017.78	1018.52
-Y6- 28+50.00	25.58' RT	=	-WALL6- 11+85.93	1031.39	1017.86	1018.6
-Y6- 28+63.33	31.34' RT	=	-WALL6- 12+01.10	1029.12	1017.31	1017.85
-DR4- 13+78.52	28.58' LT	=	-WALL6- 12+22.30	1024.23	1017.03	1017.85
-DR4- 13+50.00	25.70' LT	=	-WALL6- 12+51.12	1021.68	1017.28	1018.02
-DR4- 13+14.09	22.10' LT	=	-WALL6- 12+87.05	1018.84	1017.18	1017.95

Top finish grade is the elevation of the shoulder at the face of the concrete barrier.
Bottom finish grade is the elevation at the top of the berm and the face of the wall

PRELIMINARY RETAINING WALL -WALL6- ENVELOPE

THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

PROJECT NO.: 34400 (R-2233BB)
RUTHERFORD COUNTY
STATION: 26+60.00 -Y6- to 13+14.09 -DR4-
SHEET 1 OF 6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL NO. 6

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

SHEET NO. W-6

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
 A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 6. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS AS RELATED TO SELECTED WALL TYPE.
 AT THE CONTRACTOR'S OPTION, USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 6.
 WHEN USING AN MSE WALL SYSTEM WITH SRW UNITS FOR RETAINING WALL NO. 6, FREEZE-THAW DURABLE SRW UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS ARE REQUIRED.
 AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 6.
 IF SELECTED, USE SRW UNITS WITH A DARK GRAY COLOR FOR RETAINING WALL NO. 6.
 IF SELECTED, USE SRW UNITS WITH A WEATHERED FACE FOR RETAINING WALL NO. 6.
 A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 6.
 A DRAIN IS REQUIRED FOR RETAINING WALL NO. 6.
 BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 6, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
 DESIGN RETAINING WALL NO. 6 FOR THE FOLLOWING:
 1) H = DESIGN HEIGHT + EMBEDMENT
 2) DESIGN LIFE = 75 YEARS
 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 7500 PSF
 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8H OR 6 FT, WHICHEVER IS LONGER
 5) MINIMUM EMBEDMENT ELEVATION = H/10 OR 2 FT, WHICHEVER IS DEEPER
 6) REINFORCED ZONE AGGREGATE PARAMETERS:

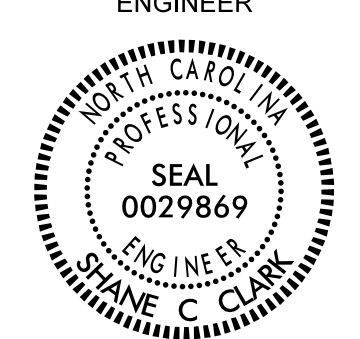
AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

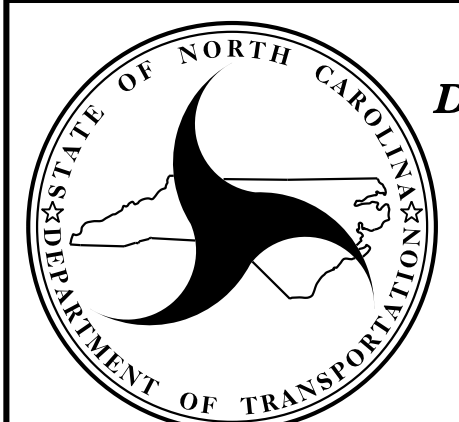
7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	115	29	0

DESIGN RETAINING WALL NO. 6 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
 FOUNDATIONS FOR SIGNS, LIGHTING OR SIGNALS MAY BE LOCATED BEHIND RETAINING WALL NO. 6 AND MAY INTERFERE WITH REINFORCEMENT. BEFORE BEGINNING MSE WALL CONSTRUCTION, SUBMIT PROPOSED CONSTRUCTION METHODS FOR THESE FOUNDATIONS FOR APPROVAL.
 DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 6 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
 TEMPORARY SHORING MAY REQUIRED FOR RETAINING WALL NO. 6 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE TRAFFIC CONTROL PLANS.
 AT THE CONTRACTOR'S OPTION, *TEMPORARY SHORING FOR WALL CONSTRUCTION* MAY BE USED TO CONSTRUCT RETAINING WALL NO. 6. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.
 A SUBSURFACE INVENTORY HAS NOT BEEN PREPARED FOR RETAINING WALL NO. 6. LIMITED INFORMATION IS AVAILABLE IN THE ROADWAY INVENTORY. IF ADDITIONAL INFORMATION IS REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR/DESIGNER TO OBTAIN IT AT NO ADDITIONAL COST TO THE DEPARTMENT.

GEOTECHNICAL ENGINEER  SEAL 0029869 ENGINEER SHANE C. CLARK	ENGINEER
Digitally signed by Shane C. Clark 148E87E060AD6A SIGNATURE	4/22/2020 DATE SIGNATURE DATE
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PROJECT NO.: 34400 (R-2233BB)
 RUTHERFORD COUNTY
 STATION: 26+60.00 -Y6- to 13+14.09 -DR4-
 SHEET 2 OF 6

 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT	MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL NO. 6 NOTES						SHEET NO. W-7
	REVISIONS						
	NO.	BY	DATE	NO.	BY	DATE	
	1	-	-	3	-	-	
	2	-	-	4	-	-	

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

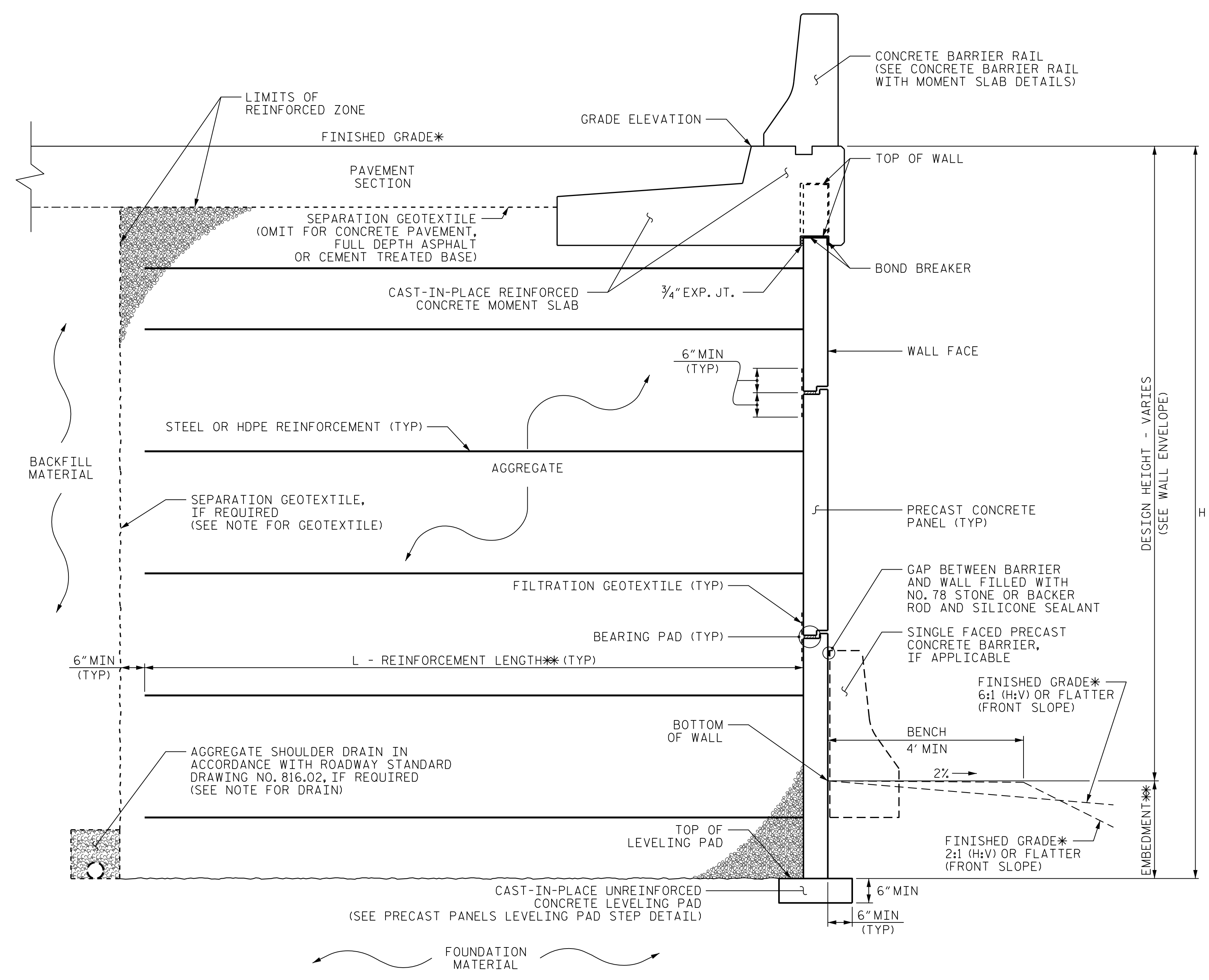
GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by:
Shane C. Clark 4/16/2020

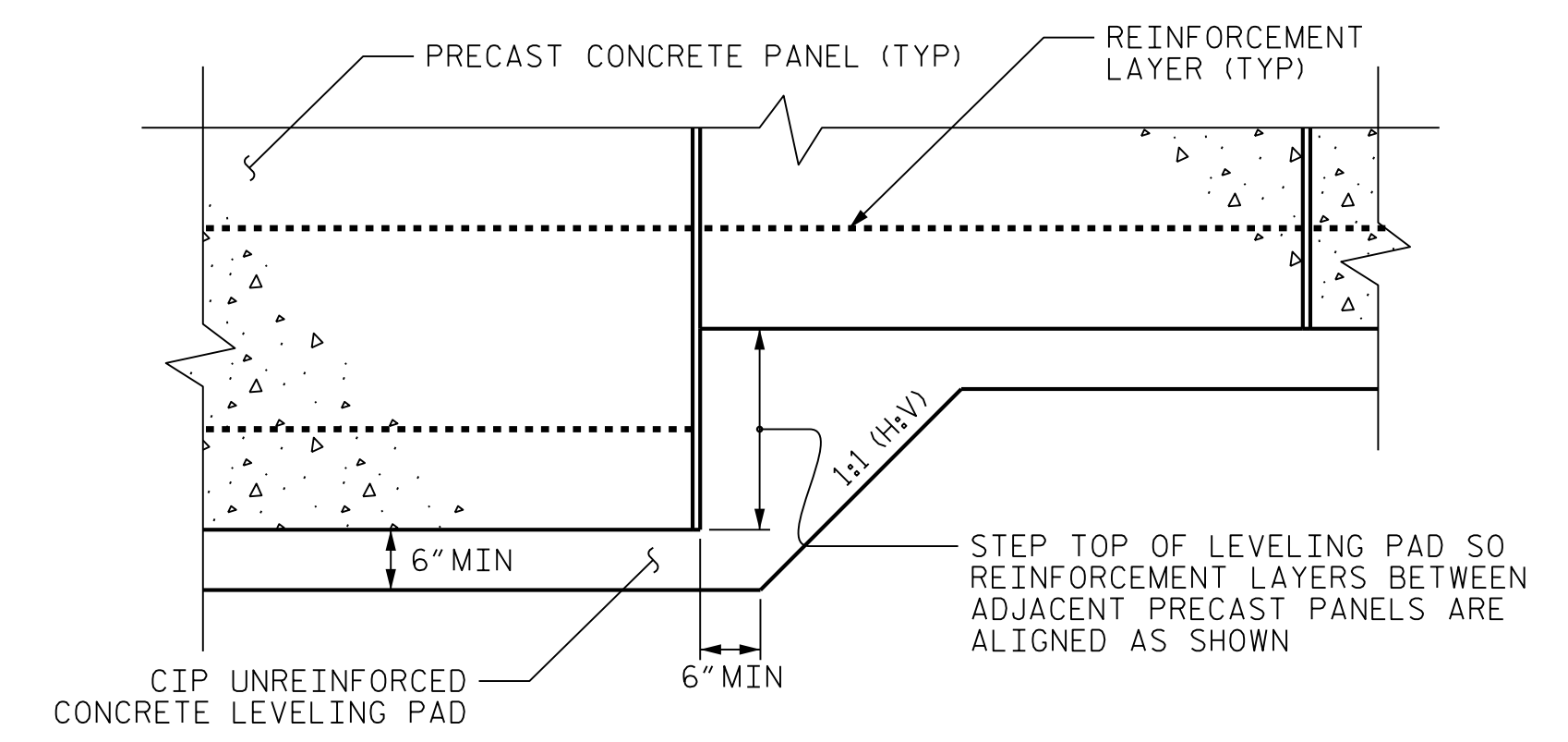
DATE: 4/16/2020 SIGNATURE: DATE:

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MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



**PRECAST PANELS
LEVELING PAD STEP DETAIL**

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20

**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

PROJECT NO.: 34400 (R-2233BB)
RUTHERFORD COUNTY
STATION: 26+60.00 -Y6- to 13+14.09 -DR4-
SHEET 3 OF 6

MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL NO. 6 TYPICAL SECTION					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	-	-	3	-	-
2	-	-	4	-	-

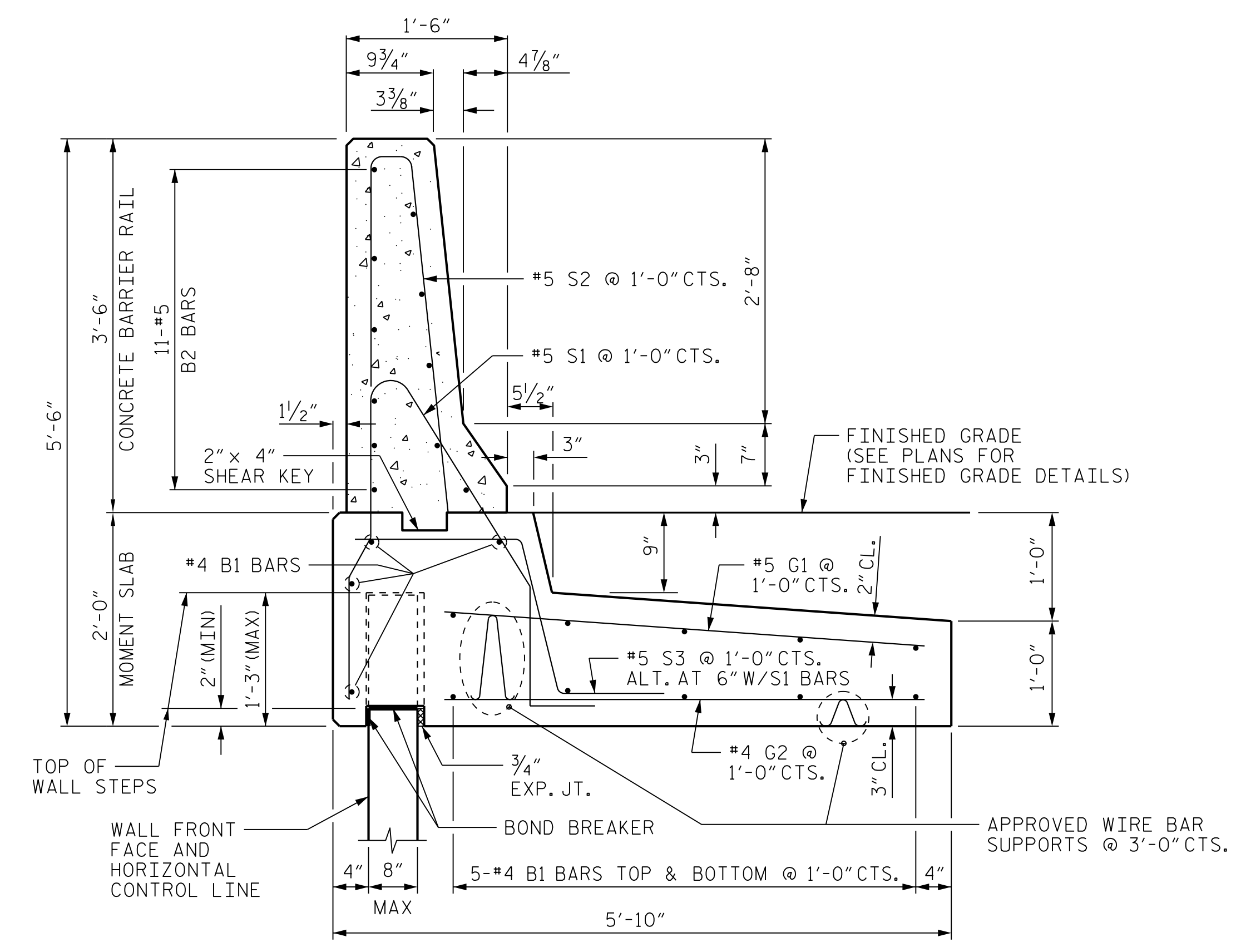
SHEET NO. W-8

STRUCTURE ENGINEER
ENGINEER

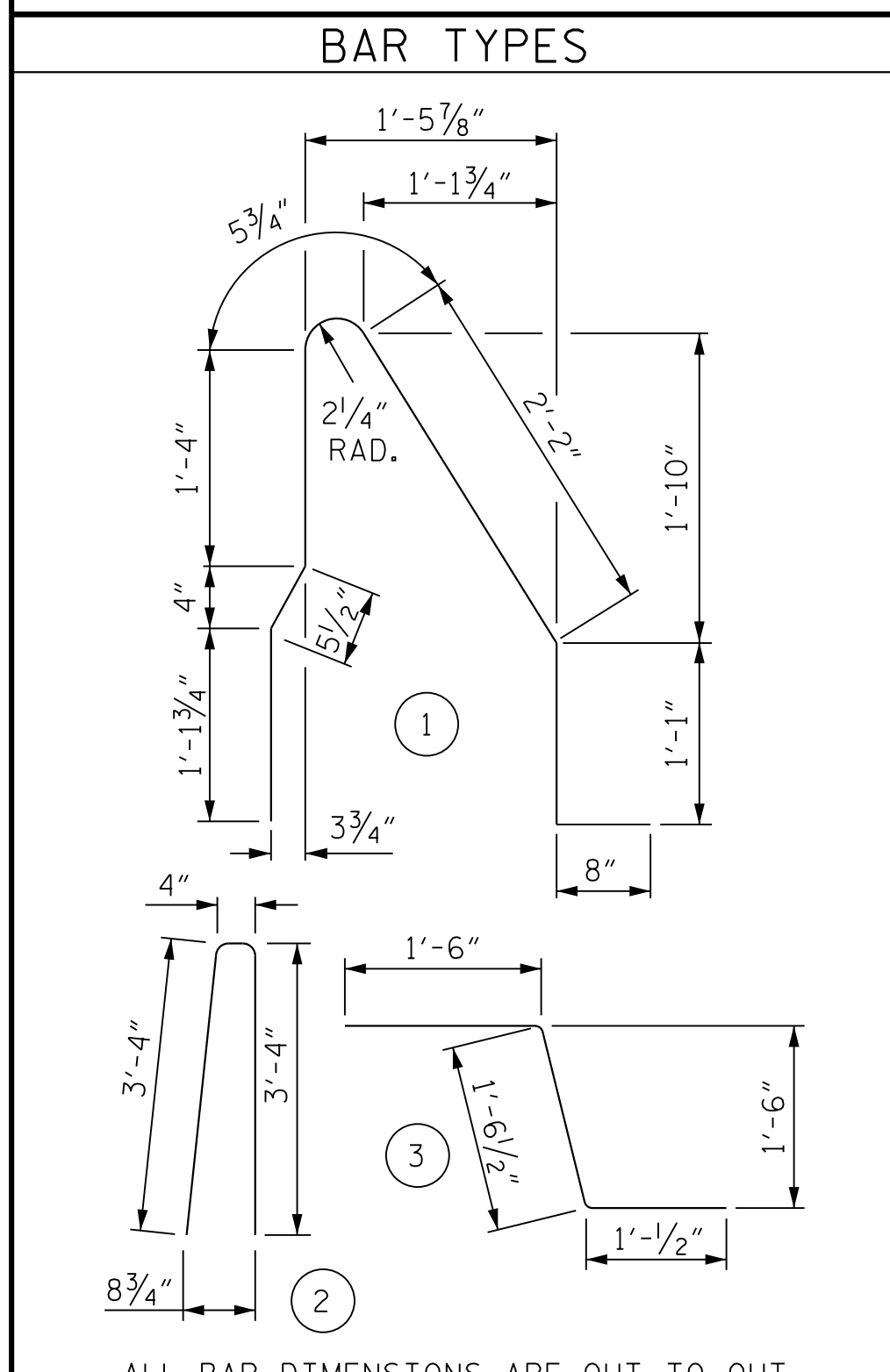
Documented by: Shane C. Clark
DATE: 4/16/2020

DATE: SIGNATURE: DATE:

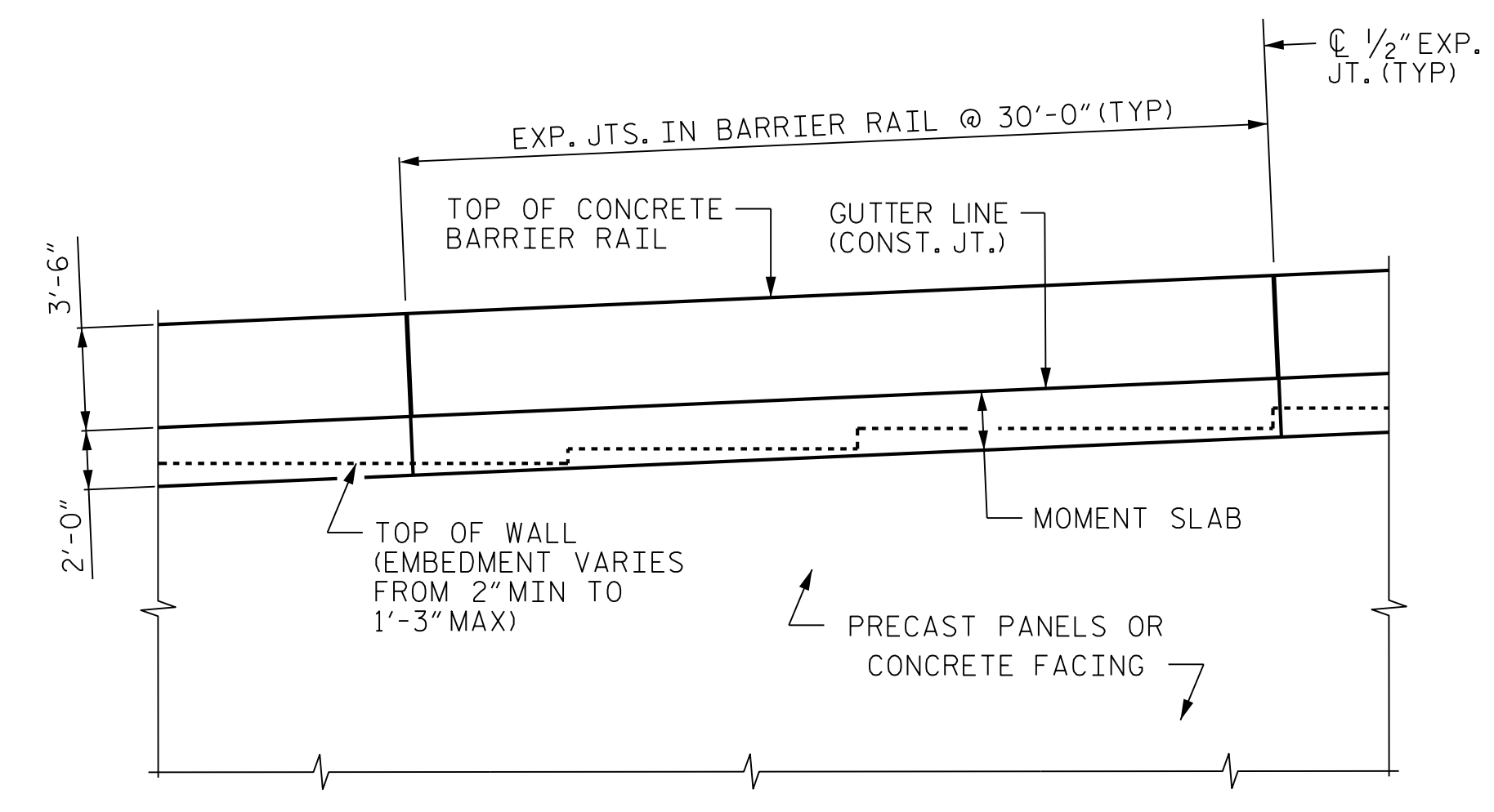
NOTES:
 FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE SECTION 460 OF THE STANDARD SPECIFICATIONS.
 CONCRETE BARRIER RAIL WITH MOMENT SLAB SHALL BE A MINIMUM OF 15' IN LENGTH.
 EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.
 THE BARRIER RAIL SHALL NOT BE CAST UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.
 ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.
 IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE BARRIER RAIL WITH MOMENT SLAB OR CONCRETE FACING FOR RETAINING WALL WILL BE THICKER THAN 8", CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.



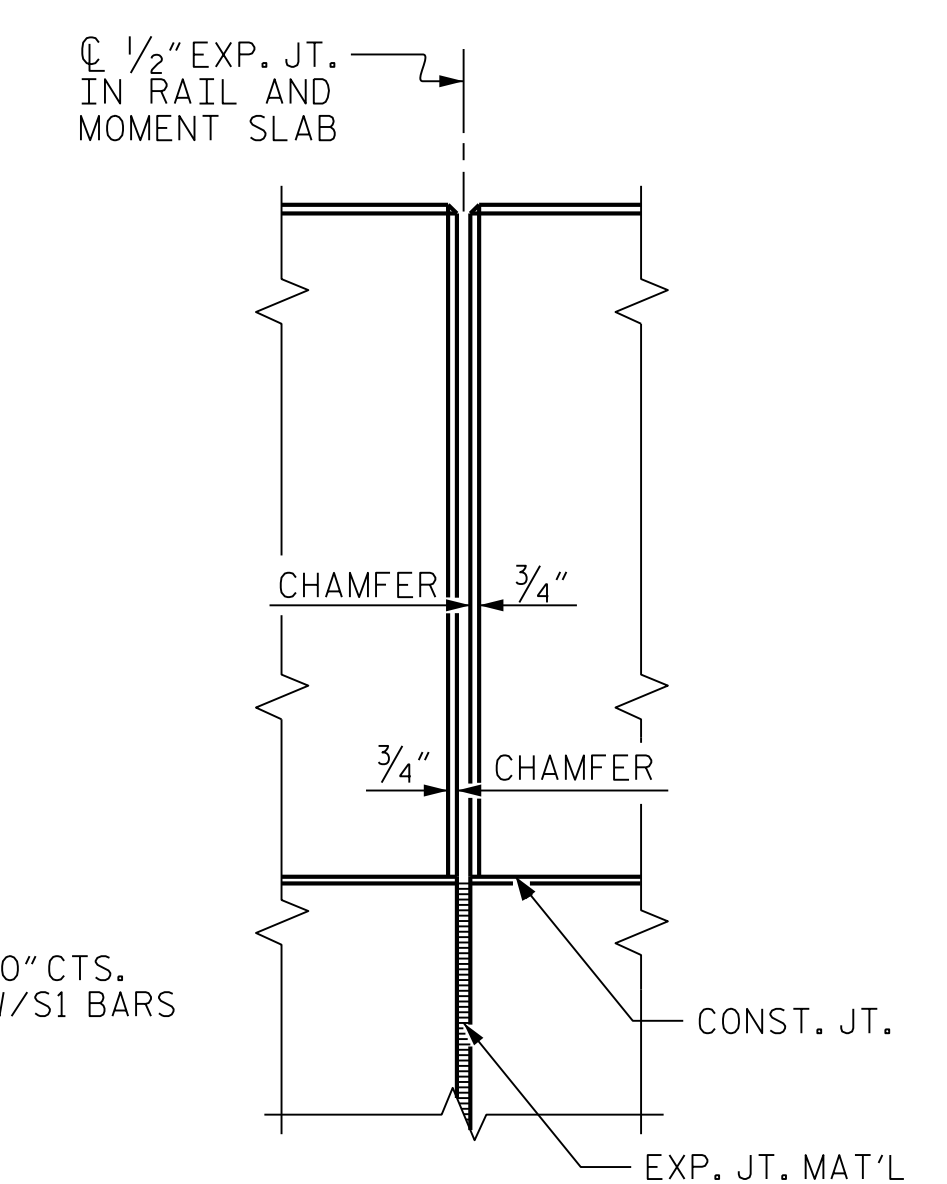
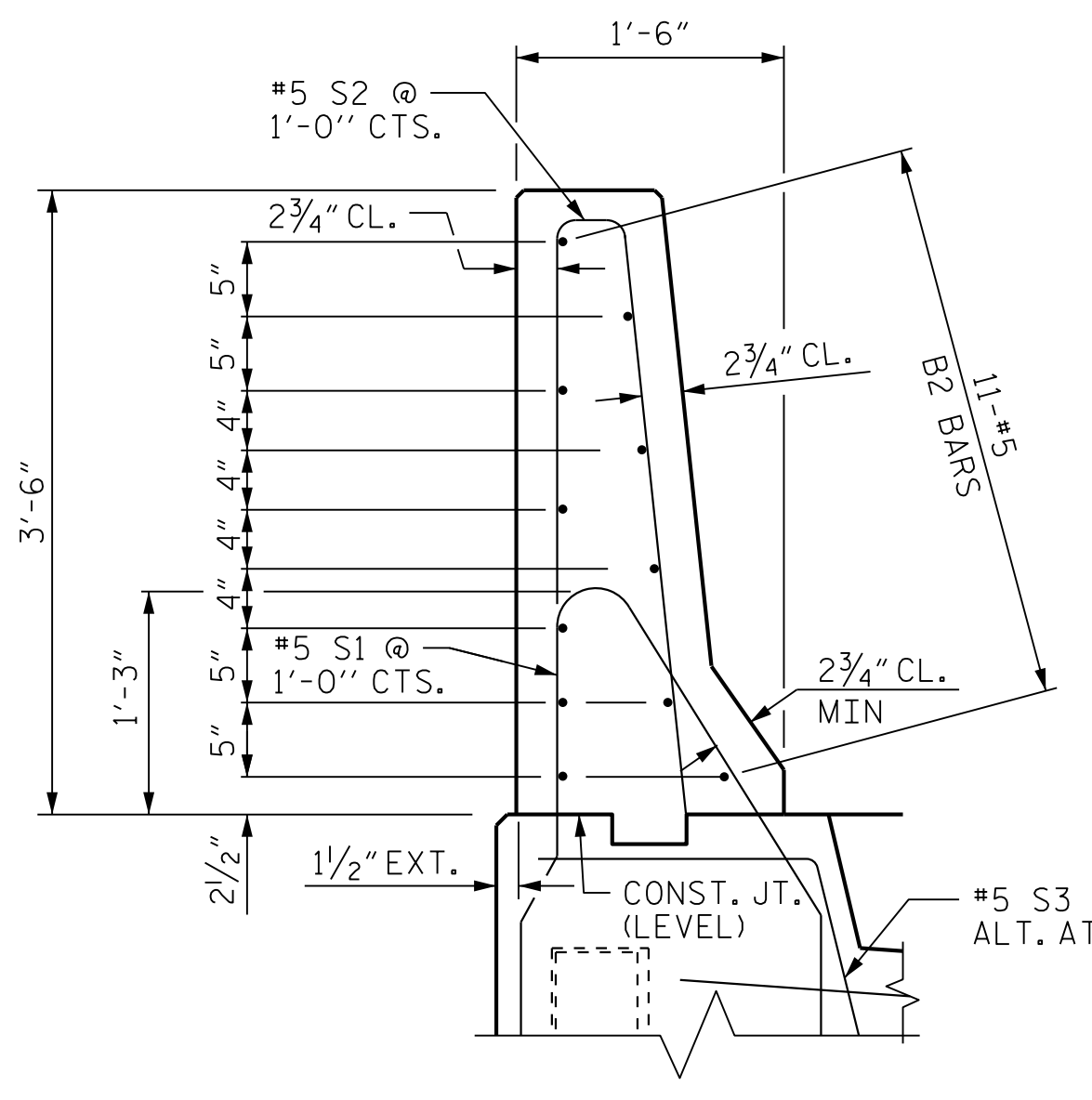
CONCRETE BARRIER RAIL WITH MOMENT SLAB
 PAY LENGTH = 268 LIN FT



CONCRETE BARRIER RAIL WITH MOMENT SLAB



CONCRETE BARRIER RAIL WITH MOMENT SLAB - PARTIAL ELEVATION



SECTION THRU RAIL ELEV. @ EXP. JOINTS
BARRIER RAIL DETAILS

BILL OF MATERIAL
 FOR ONE 30'-0" SECTION OF CONCRETE BARRIER RAIL WITH MOMENT SLAB

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#4	STR	29'-7"	277
* B2	11	#5	STR	29'-7"	339
G1	31	#5	STR	4'-4"	140
G2	31	#4	STR	4'-4"	90
* S1	31	#5	1	7'-4"	237
* S2	31	#5	2	7'-0"	226
S3	30	#5	3	4'-1"	128
REINFORCING STEEL					635 LB
* EPOXY COATED REINFORCING STEEL					802 LB
CLASS AA CONCRETE BARRIER RAIL					4.1 CY
CLASS A CONCRETE MOMENT SLAB					9.1 CY
CONCRETE BARRIER RAIL WITH MOMENT SLAB					30 LIN FT

PROJECT NO.: 34400 (R-2233BB)
 RUTHERFORD COUNTY
 STATION: 26+60.00 -Y6- to 13+14.09 -DR4-
 SHEET 4 OF 6

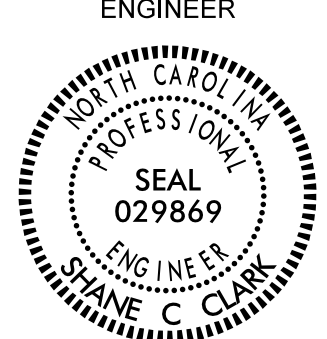
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

CONCRETE BARRIER RAIL WITH MOMENT SLAB FOR PRECAST PANELS AND CONCRETE FACING

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-9
2			4			

PREPARED BY: SCC DATE: 4/10/2020
 REVIEWED BY: ENW DATE: 4/10/2020

GEOTECHNICAL ENGINEER



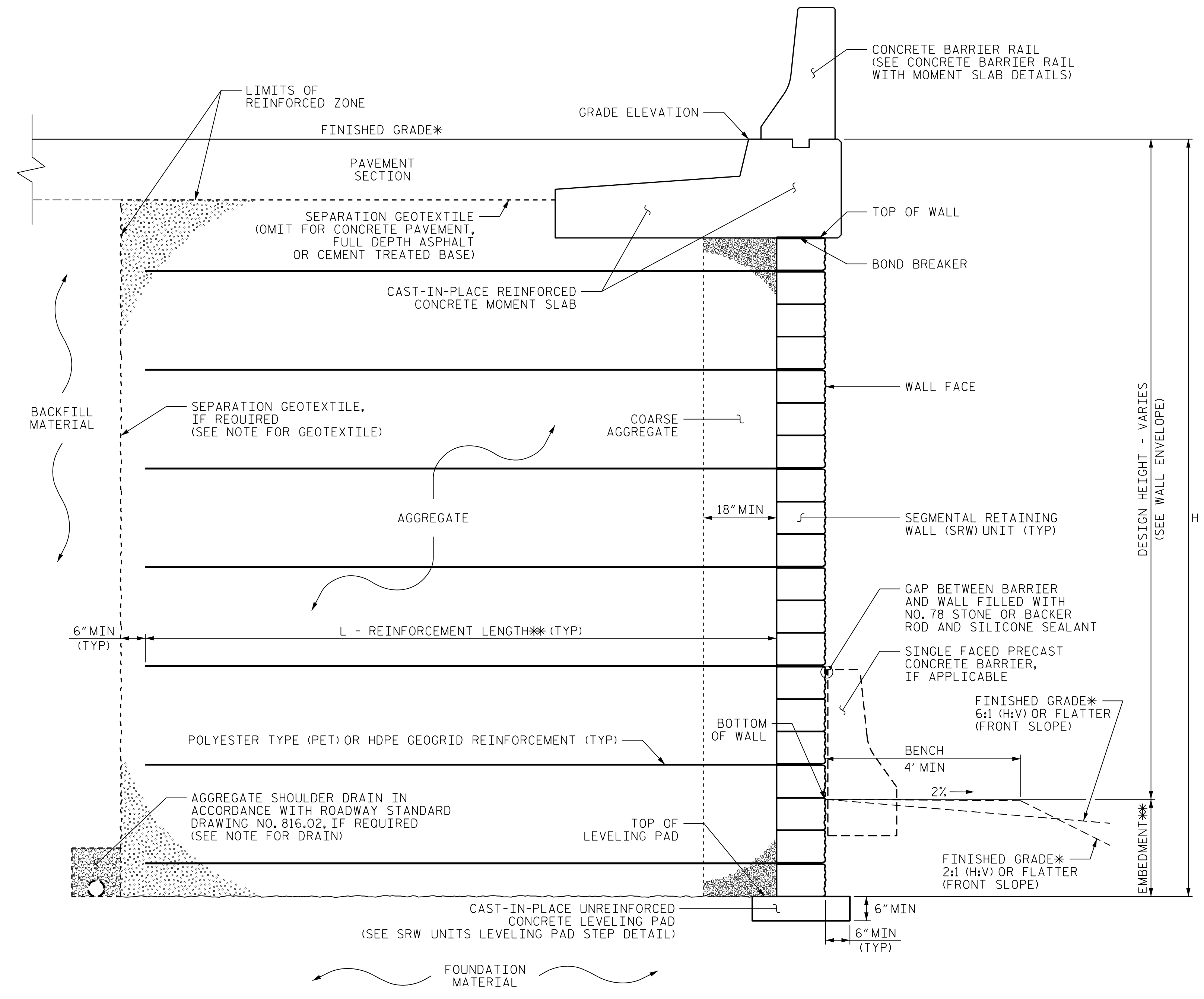
SEAL
029869
SHANE C. CLARK

DocuSigned by:
Shane C. Clark 4/16/2020

ENGINEER

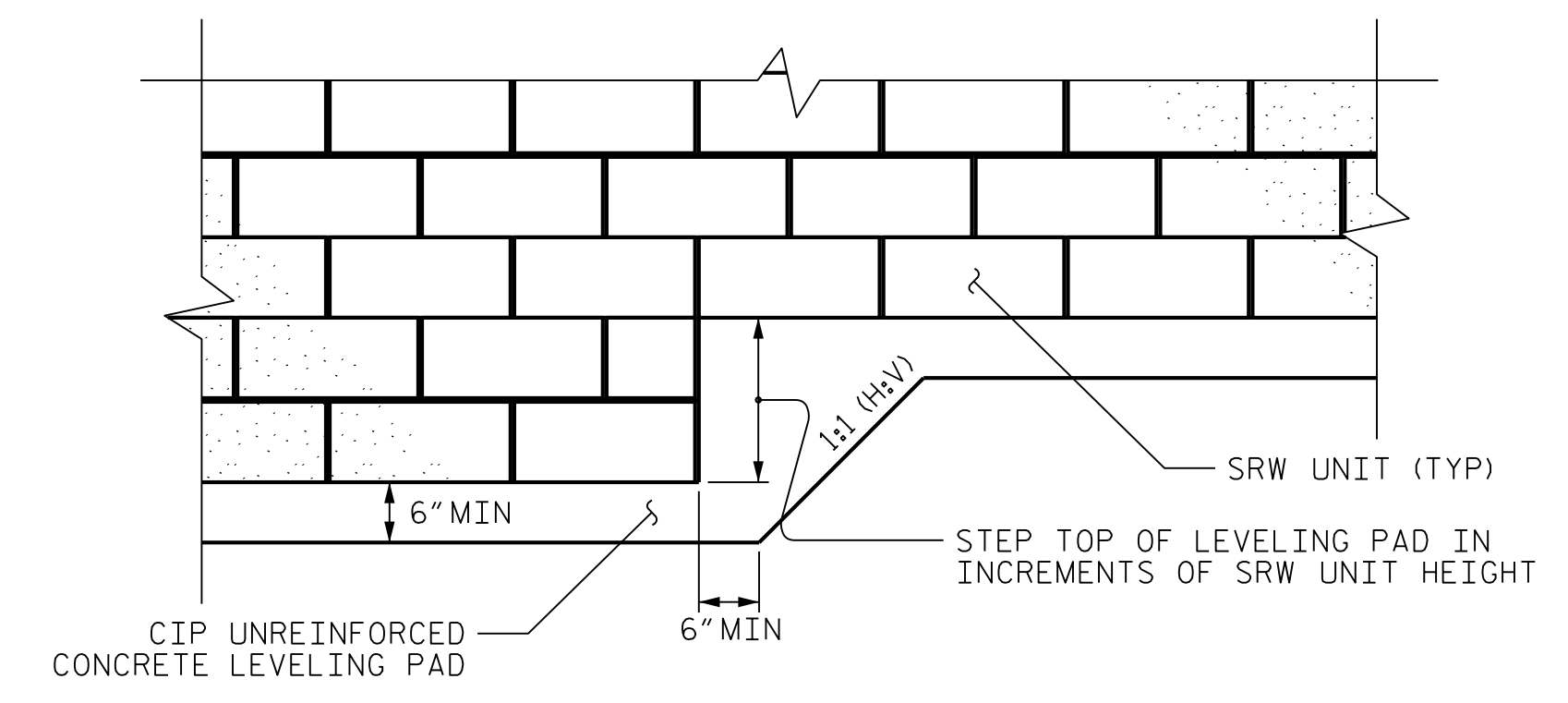
SIGNATURE DATE

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



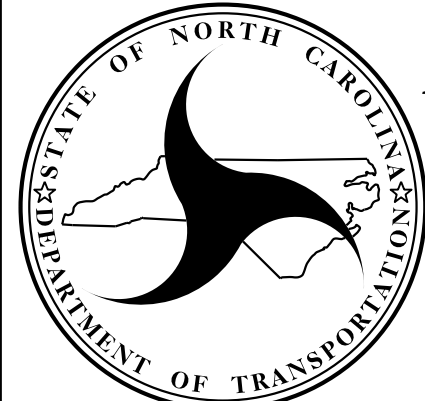
MSE WALL WITH SRW UNITS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



SRW UNITS LEVELING PAD STEP DETAIL

PREPARED BY: SCC	DATE: 4/9/20
REVIEWED BY: ENW	DATE: 4/9/20



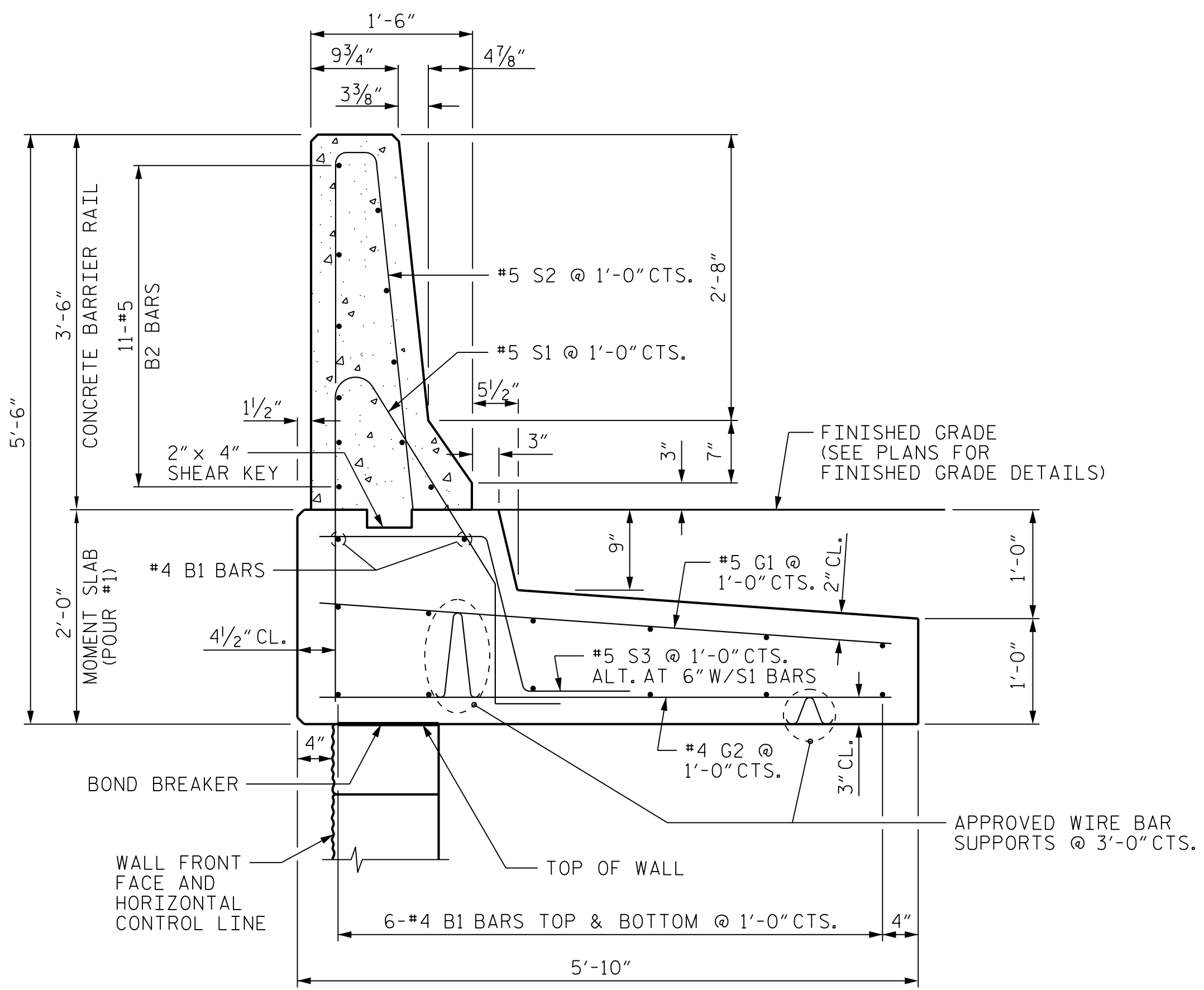
**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
ENGINEERING UNIT**

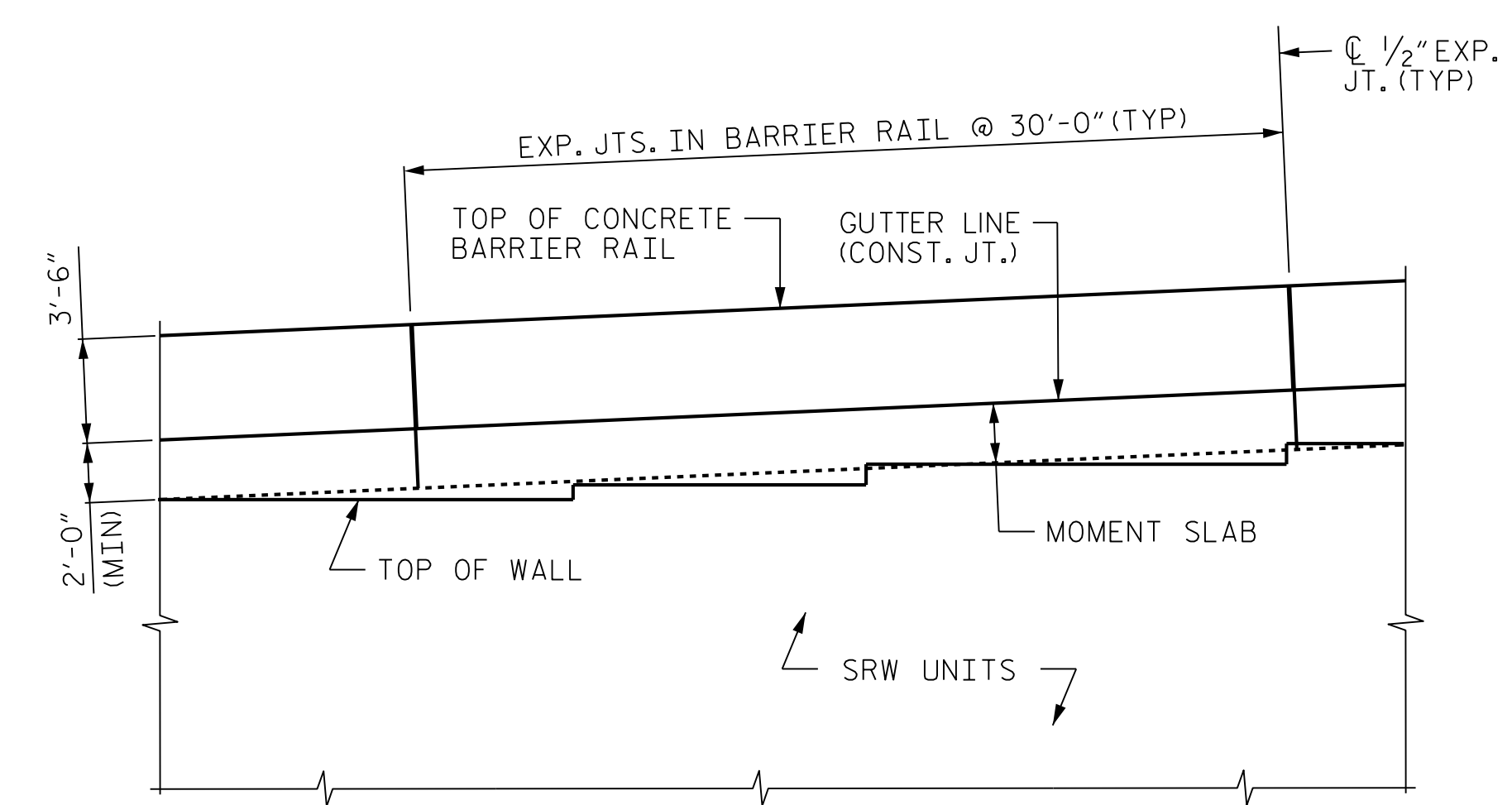
PROJECT NO.: 34400 (R-2233BB)
IREDELL COUNTY
STATION: 26+60.00 -Y6- to 13+14.09 -DR4-
SHEET 5 OF 6

MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALL NO. 6 TYPICAL SECTION					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	-	-	3	-	-
2	-	-	4	-	-

SHEET NO. W-10



CONCRETE BARRIER RAIL WITH MOMENT SLAB



CONCRETE BARRIER RAIL WITH MOMENT SLAB - PARTIAL ELEVATION

NOTES:

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB, SEE SECTION 460 OF THE STANDARD SPECIFICATIONS.

CONCRETE BARRIER RAIL WITH MOMENT SLAB SHALL BE A MINIMUM OF 15' IN LENGTH.

EXPANSION JOINTS SHALL BE PLACED IN THE BARRIER RAIL AND MOMENT SLAB AT A MAXIMUM SPACING OF 30'.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED SURFACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MID-POINT OF BARRIER RAIL SEGMENTS LESS THAN 20' IN LENGTH.

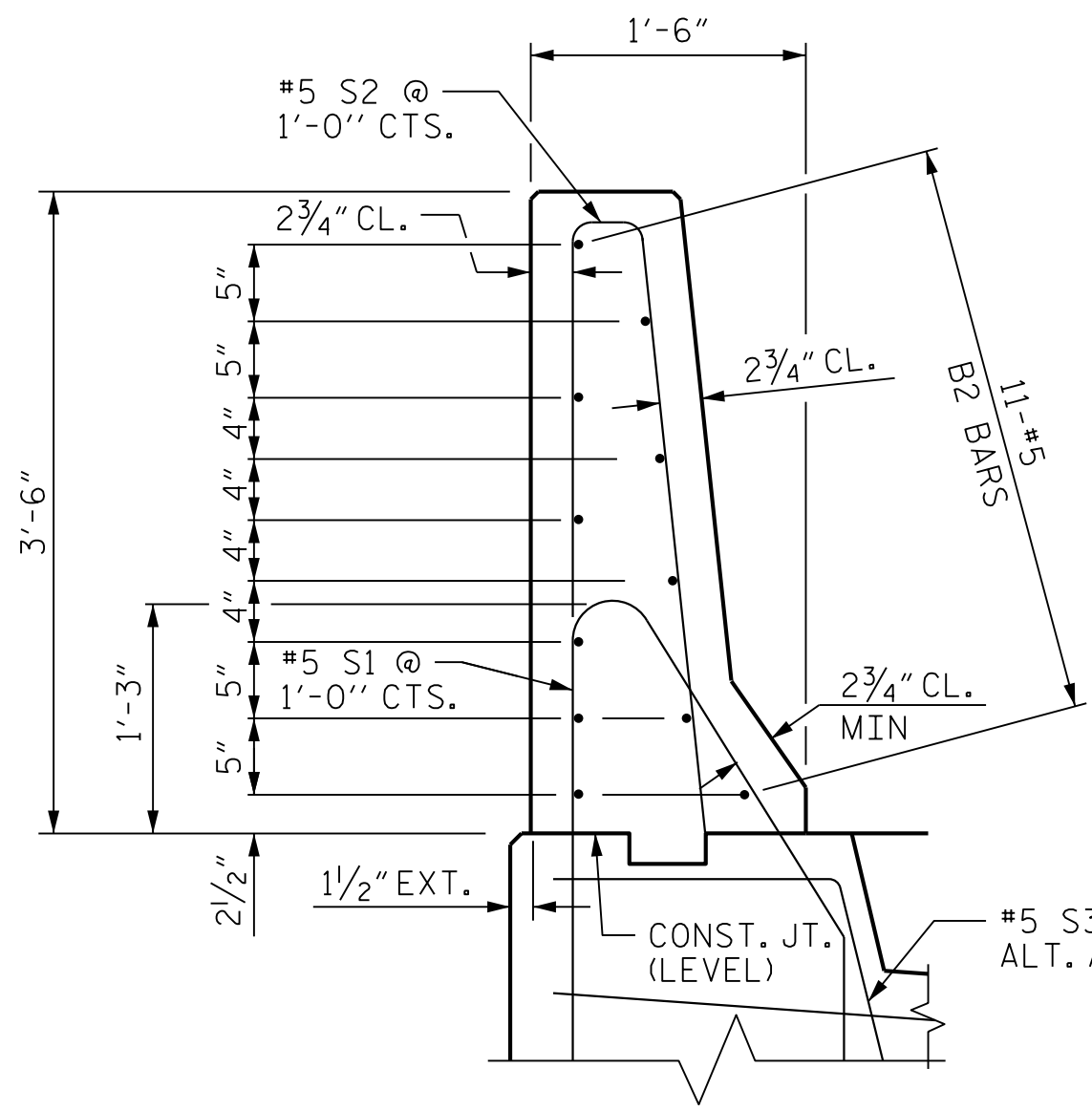
THE BARRIER RAIL SHALL NOT BE CAST UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THE MINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

ALL REINFORCING STEEL IN THE BARRIER RAIL SHALL BE EPOXY COATED.

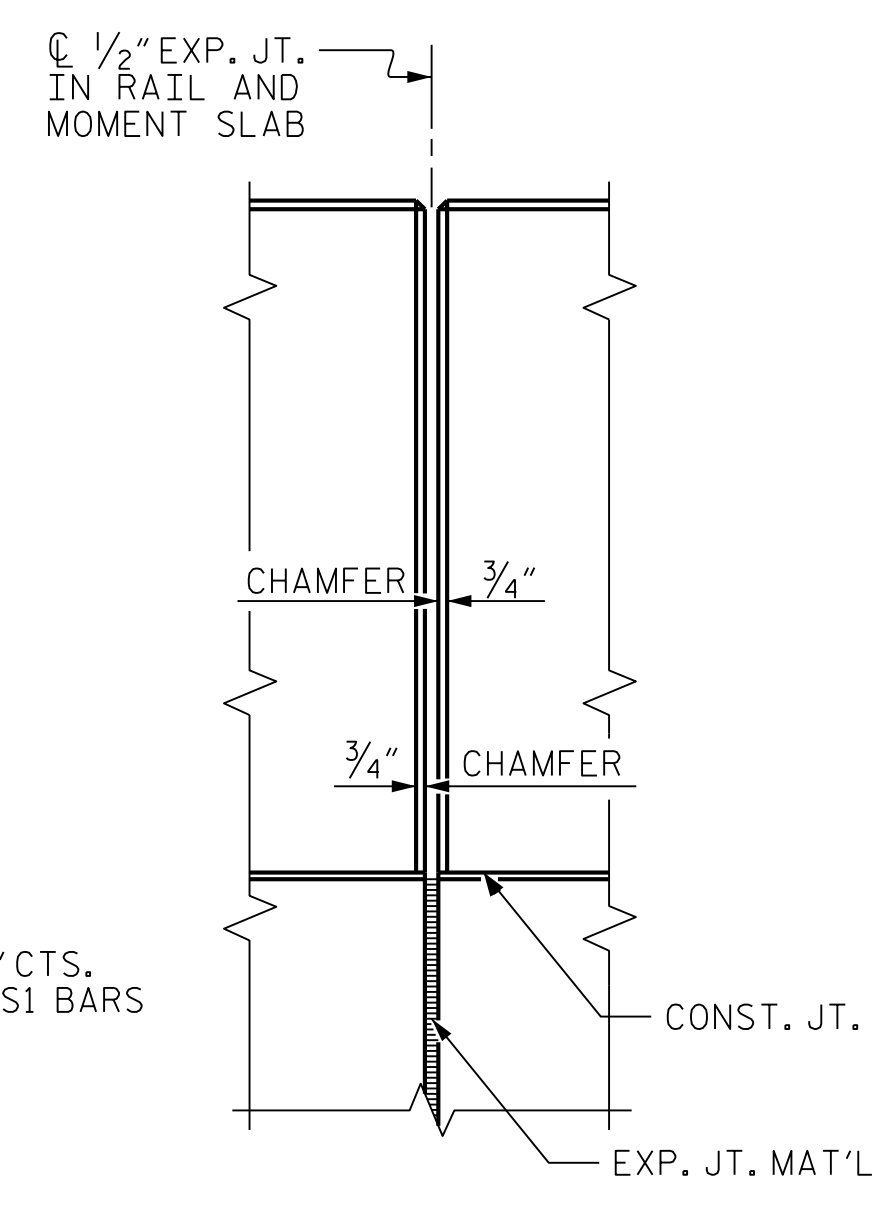
IF STEPS ARE REQUIRED AT TOP OF WALL, DETAILS SHOWING INTERFACE BETWEEN BOTTOM OF MOMENT SLAB AND STEPS SHALL BE SUBMITTED FOR APPROVAL.

IF EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, BARRIERS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH CONCRETE BARRIER RAIL WITH MOMENT SLAB, CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS SHALL BE REVISED AND SUBMITTED FOR APPROVAL.

CONCRETE BARRIER RAIL WITH MOMENT SLAB
PAY LENGTH = 268 LIN FT



SECTION THRU RAIL



ELEV. @ EXP. JOINTS

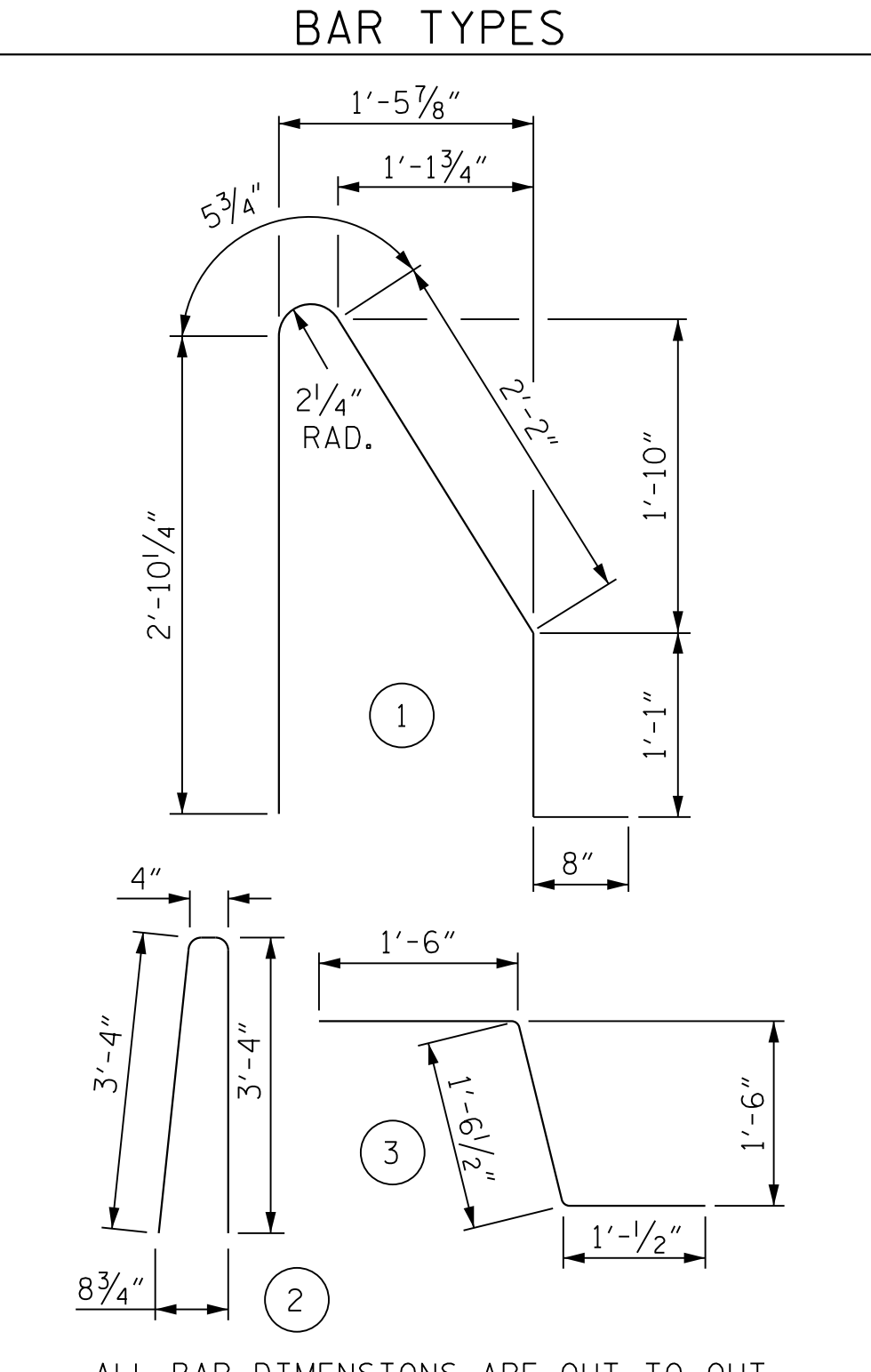
BARRIER RAIL DETAILS

STRUCTURE ENGINEER
ENGINEER

SEAL 29869
ENGINEER
SHANE C. CLARK

Designed by: Shane C. Clark
DATE: 4/16/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BILL OF MATERIAL

FOR ONE 30'-0" SECTION OF CONCRETE BARRIER RAIL WITH MOMENT SLAB

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	14	#4	STR	29'-7"	277
* B2	11	#5	STR	29'-7"	339
G1	31	#5	STR	5'-6"	178
G2	31	#4	STR	5'-6"	114
* S1	31	#5	1	7'-3"	234
* S2	31	#5	2	7'-0"	226
S3	30	#5	3	4'-1"	128
REINFORCING STEEL					697 LB
* EPOXY COATED REINFORCING STEEL					799 LB
CLASS AA CONCRETE BARRIER RAIL					4.1 CY
CLASS A CONCRETE MOMENT SLAB					9.1 CY
CONCRETE BARRIER RAIL WITH MOMENT SLAB					30 LIN FT

PROJECT NO.: 34440 (R-2233BB)
RUTHERFORD COUNTY
STATION: 26+60.00 -Y6- to 13+14.09 -DR4-
SHEET 6 OF 6

PREPARED BY: SCC
REVIEWED BY: ENW

DATE: 4/10/2020
DATE: 4/10/2020

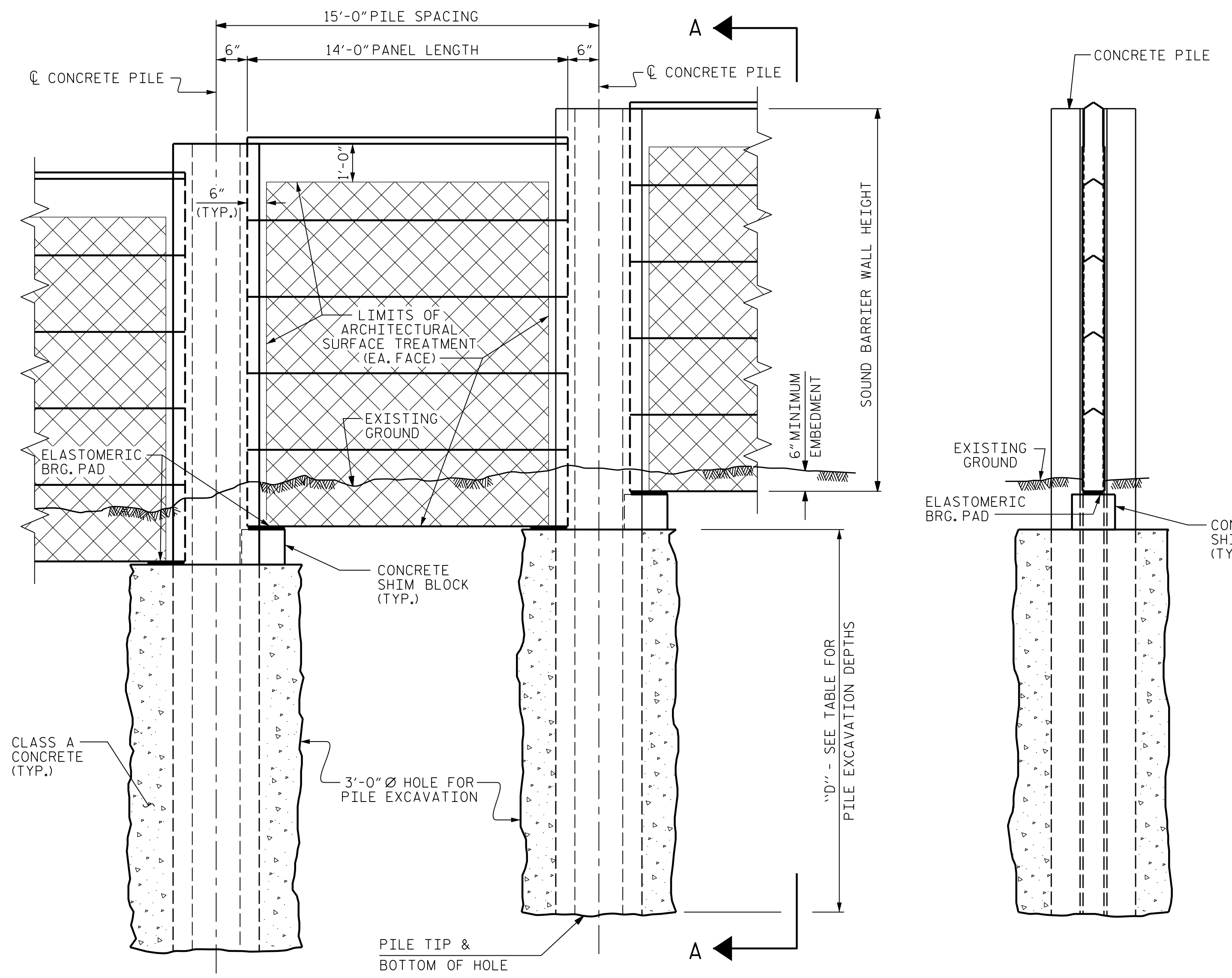
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

CONCRETE BARRIER RAIL WITH MOMENT SLAB FOR SEGMENTAL RETAINING WALL (SRW) UNITS

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

SHEET NO. W-11



ELEVATION

SECTION A-A

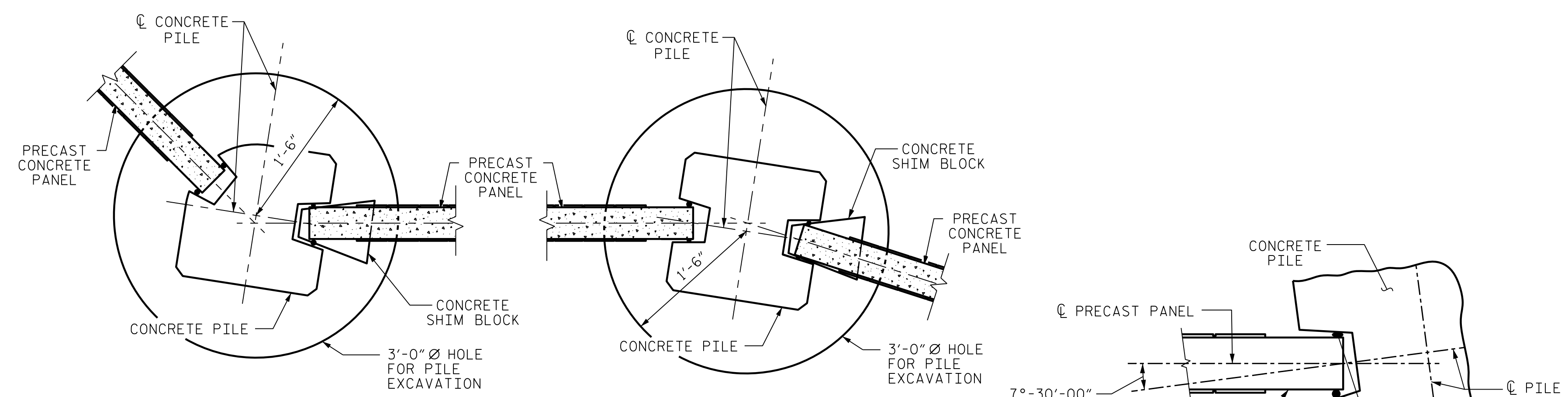
PILE EXCAVATION DEPTHS "D"				
WALL -NW5A-		FROM : STA. 10+00.00 -NW5A-	TO : STA. 19+00.00 -NW5A-	
3'-0" Ø HOLE	PILE SPACING	WALL HEIGHT		
		H ≤ 15'	15' < H ≤ 20'	20' < H ≤ 25'
	15'-0"	11'-0"	13'-0"	16'-0"

THE STANDARD SOUND BARRIER WALL FOUNDATION TABLES ARE BASED ON 36" DIA. HOLES. FOR 30" DIA. HOLES, ADD 1 FT TO PILE EXCAVATION DEPTHS (D).

NOTES

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 20'	4 - #8 EA. FACE	#3 @ 1'-4" CTS.	15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4" CTS.	15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #7 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.



15° TO 45° TURNS (PILE TYPE III)
0° TO 15° TURNS (PILE TYPE I)

TYPICAL WALL TURN DETAILS

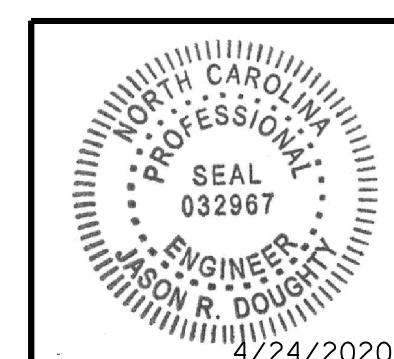
PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL	
SOUND BARRIER WALL	14,210 S.F.
ARCHITECTURAL SURFACE TREATMENT	23,036 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK STONE FORMLINER
STAIN OPTION:	DARK GRAY (FS 26008)

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: 793+98.23 -L3- =
10+00 -NW5A-
 SHEET 1 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 No. -NW5A-



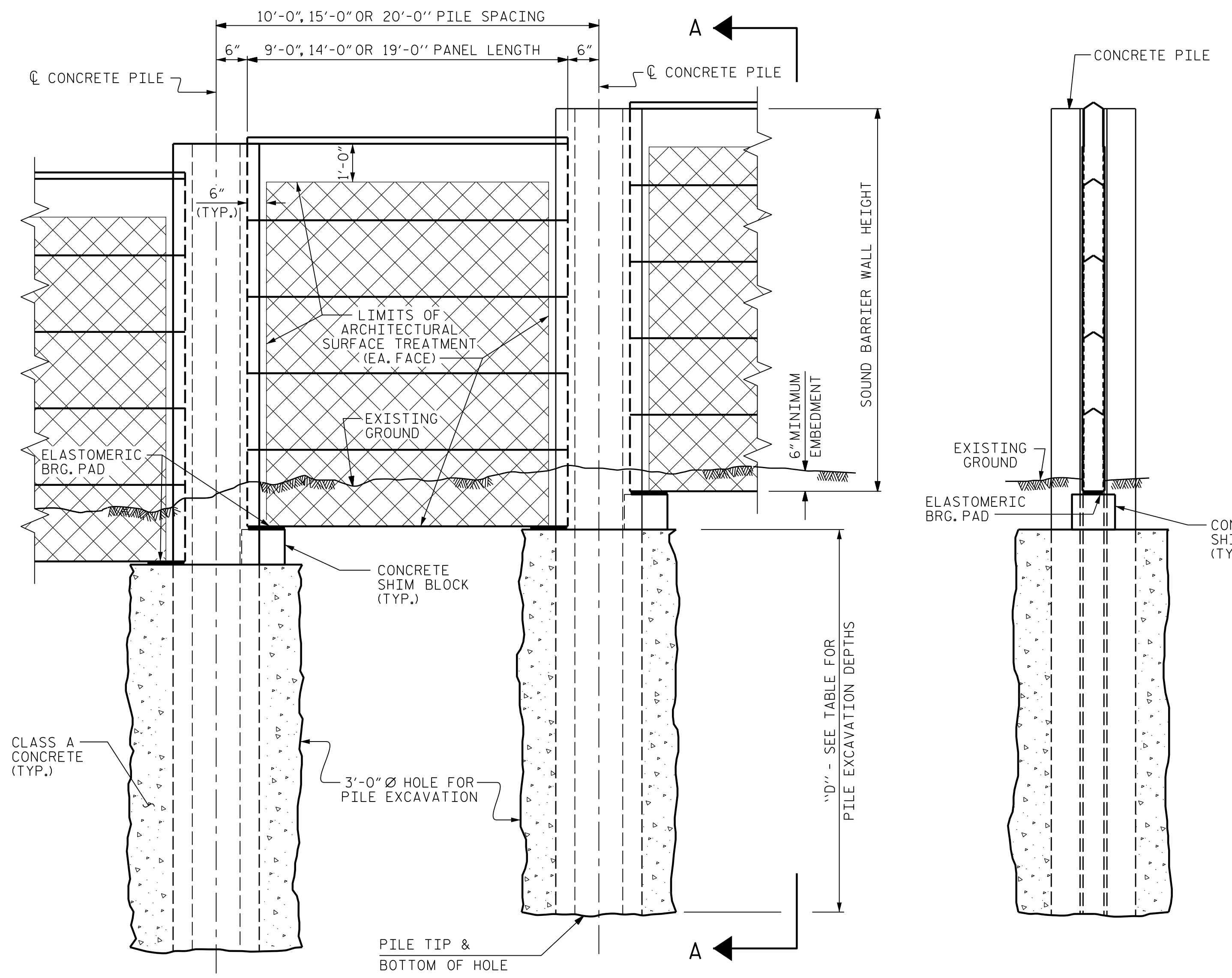
333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			SW-1
2			4			TOTAL SHEETS 8

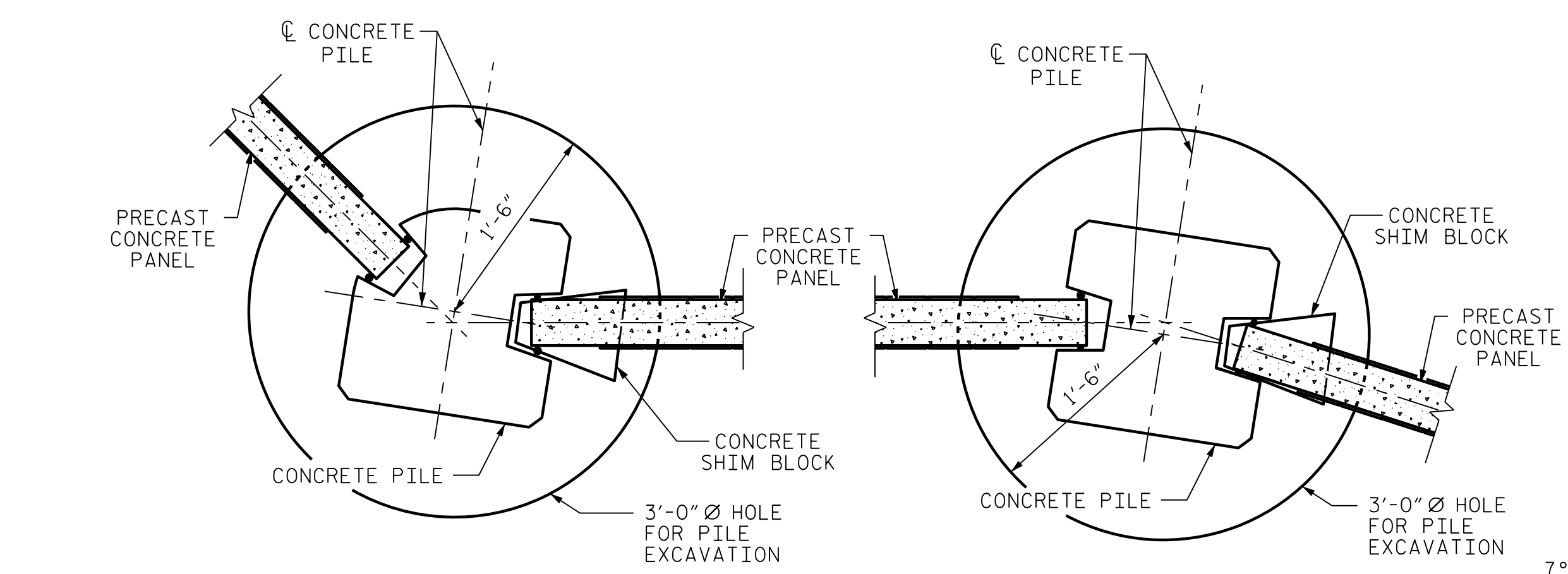
DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

DRAWN BY: MAA 6/11
 CHECKED BY: GM 6/11
 REV. 9/26/14 MAA/TMG
 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC

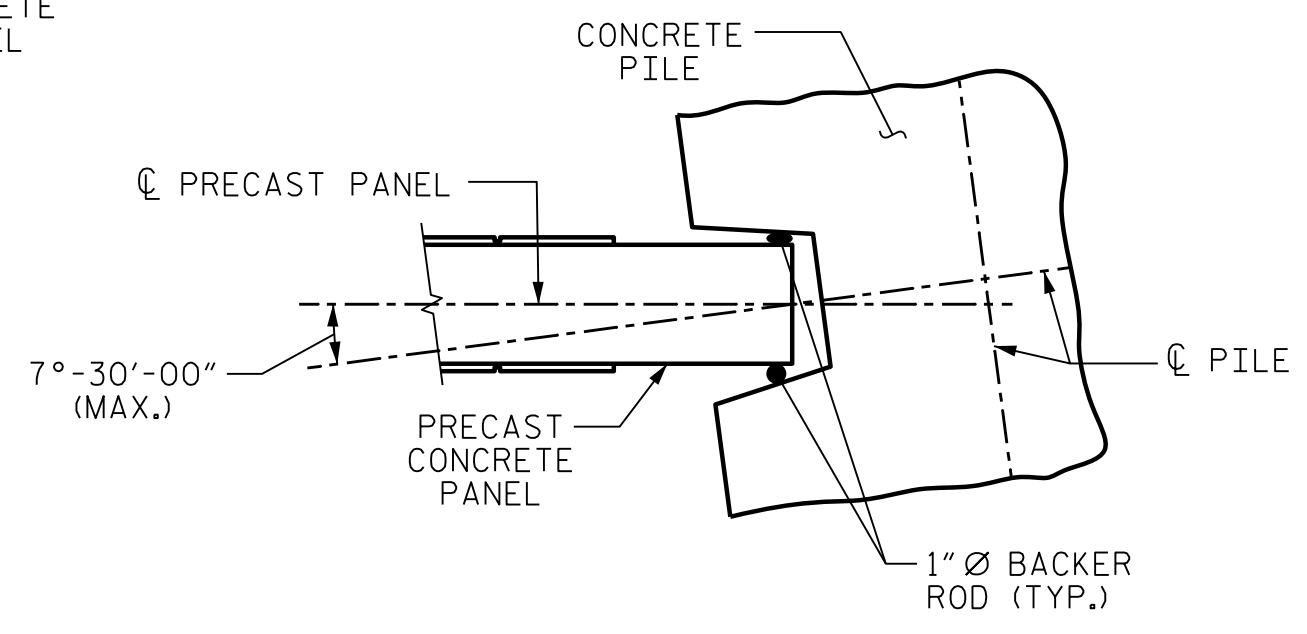


ELEVATION

SECTION A-A



TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

PILE EXCAVATION DEPTHS "D"				
WALL -NW5B-		FROM : STA. 10+00.00 -NW5B- TO : STA. 15+10.00 -NW5B-		
3'-0" Ø HOLE	PILE SPACING	WALL HEIGHT		
		H ≤ 15'	15' < H ≤ 20'	20' < H ≤ 25'
	10'-0"	10'-0"	12'-0"	13'-0"
	15'-0"	11'-0"	13'-0"	16'-0"
20'-0"	12'-0"	15'-0"	18'-0"	

THE STANDARD SOUND BARRIER WALL FOUNDATION TABLES ARE BASED ON 36" DIA. HOLES. FOR 30" DIA. HOLES, ADD 1 FT TO PILE EXCAVATION DEPTHS (D).

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	H ≤ 20'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE
	20' < H ≤ 25'	4 - #9 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
20'-0"	H ≤ 20'	4 - #11 EA. FACE	#3 @ 1'-4"CTS.	20'-0"		H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
	20' < H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.				
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	20' < H ≤ 25'	4 - #7 EA. FACE	#3 @ 1'-4"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE
	20' < H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
20'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.	20'-0"		H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
	20' < H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.				

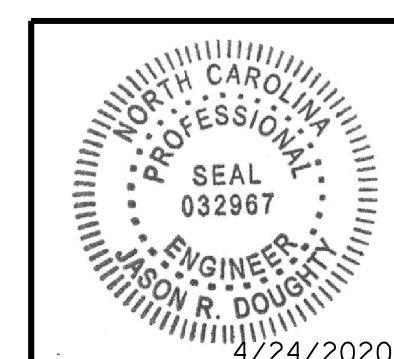
BILL OF MATERIAL	
SOUND BARRIER WALL	8,208 S.F.
ARCHITECTURAL SURFACE TREATMENT	13,302 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK STONE FORMLINER
STAIN OPTION:	DARK GRAY (FS 26008)

NOTES

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: 813+78.54 -L3- =
10+00 -NW5B-
 SHEET 2 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 No. -NW5B-



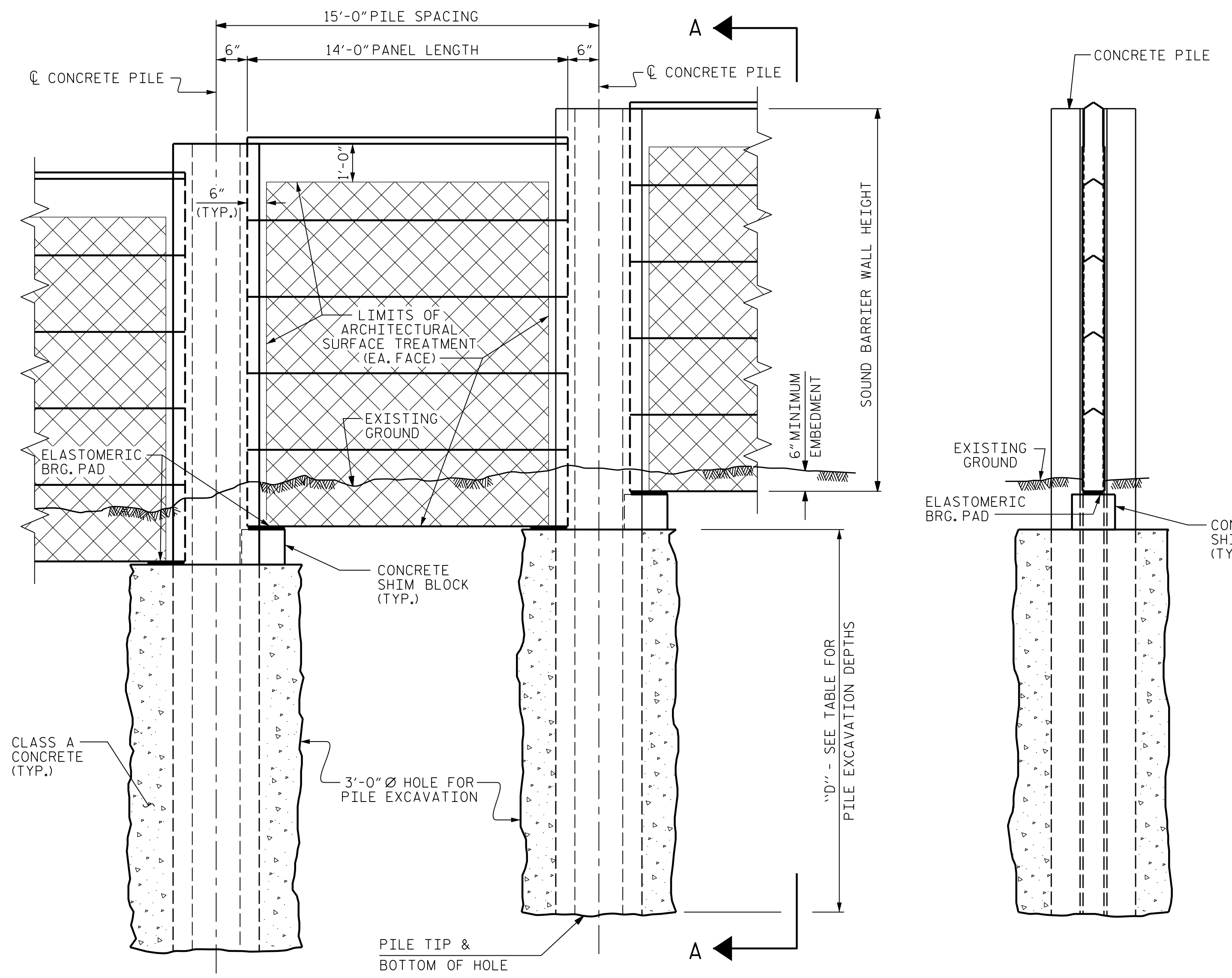
333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW-2
1			3			TOTAL SHEETS 8
2			4			

DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

DRAWN BY: MAA 6/11 REV. 9/26/14 MAA/TMG
 CHECKED BY: GM 6/11 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC



ELEVATION

SECTION A-A

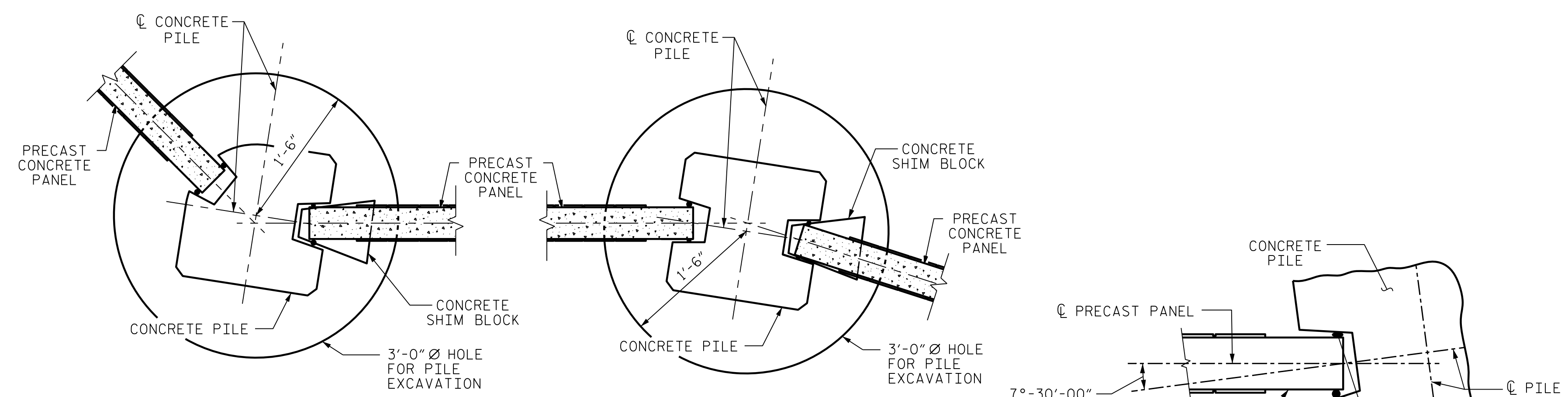
PILE EXCAVATION DEPTHS "D"			
WALL -NW8-		FROM : STA. 10+00.00 -NW8- TO : STA. 20+80.00 -NW8-	
3'-0" Ø HOLE	PILE SPACING	WALL HEIGHT	
		H ≤ 15'	15' < H ≤ 20'
	15'-0"	11'-0"	13'-0"
			16'-0"

THE STANDARD SOUND BARRIER WALL FOUNDATION TABLES ARE BASED ON 36" DIA. HOLES. FOR 30" DIA. HOLES, ADD 1 FT TO PILE EXCAVATION DEPTHS (D).

NOTES

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 20'	4 - #8 EA. FACE	#3 @ 1'-4" CTS.	15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4" CTS.	15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4" CTS.
	20' < H ≤ 25'	4 - #7 EA. FACE	#3 @ 1'-4" CTS.		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 1'-4" CTS.



TYPICAL WALL TURN DETAILS

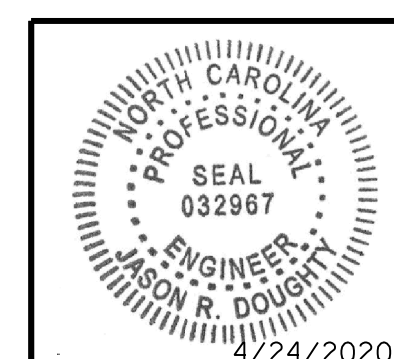
PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL	
SOUND BARRIER WALL	18,010 S.F.
ARCHITECTURAL SURFACE TREATMENT	29,302 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK STONE FORMLINER
STAIN OPTION:	DARK GRAY (FS 26008)

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: 826+63.46 -L3- =
10+00 -NW8-
 SHEET 3 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 No. -NW8-



DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

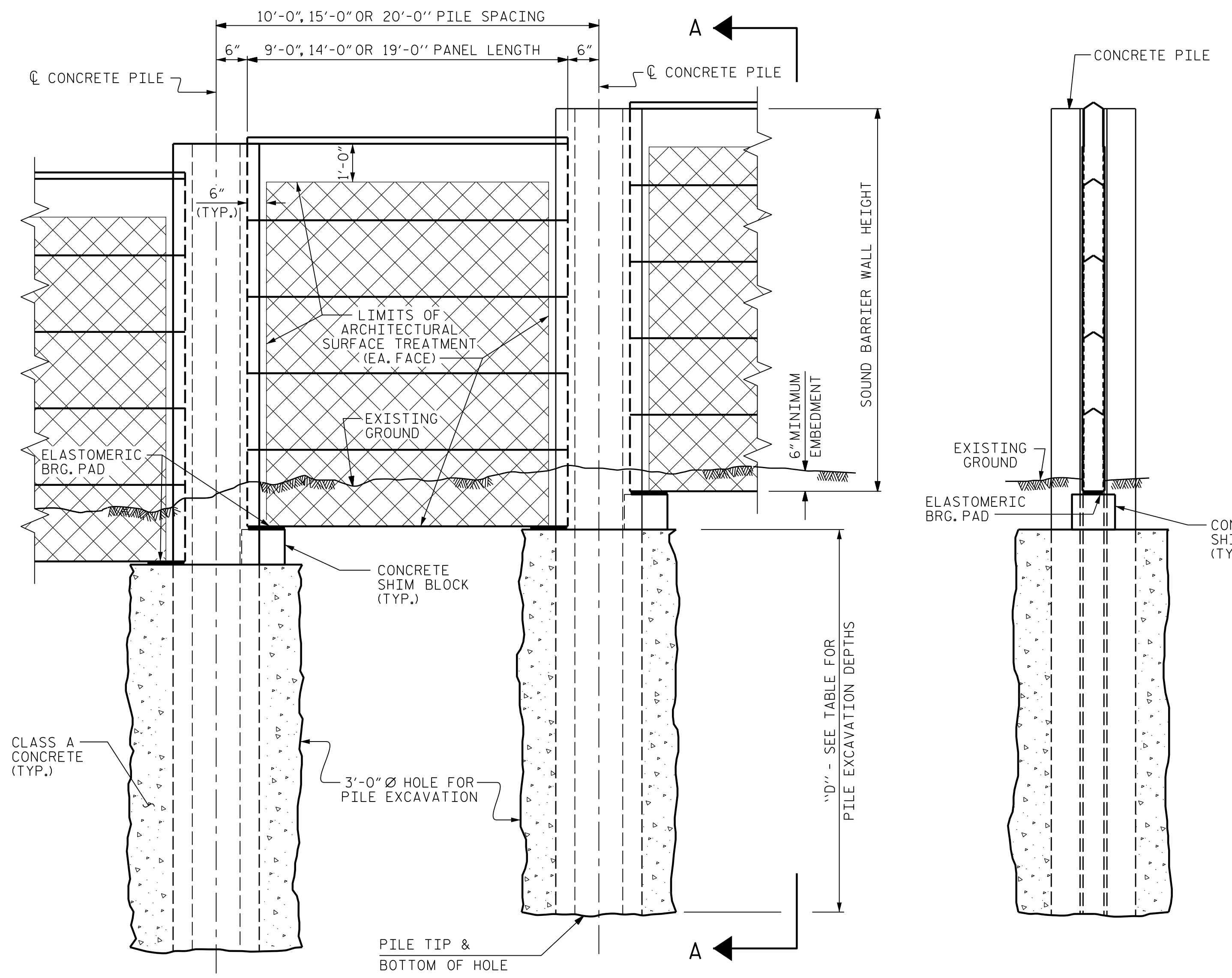
DocuSigned by:
 Jason R. Doughty
 SFT3FA2DEA974EB...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			SW-3
2			4			TOTAL SHEETS 8

4/24/2020 420.005.R2233BB.SML.SWB.dgn

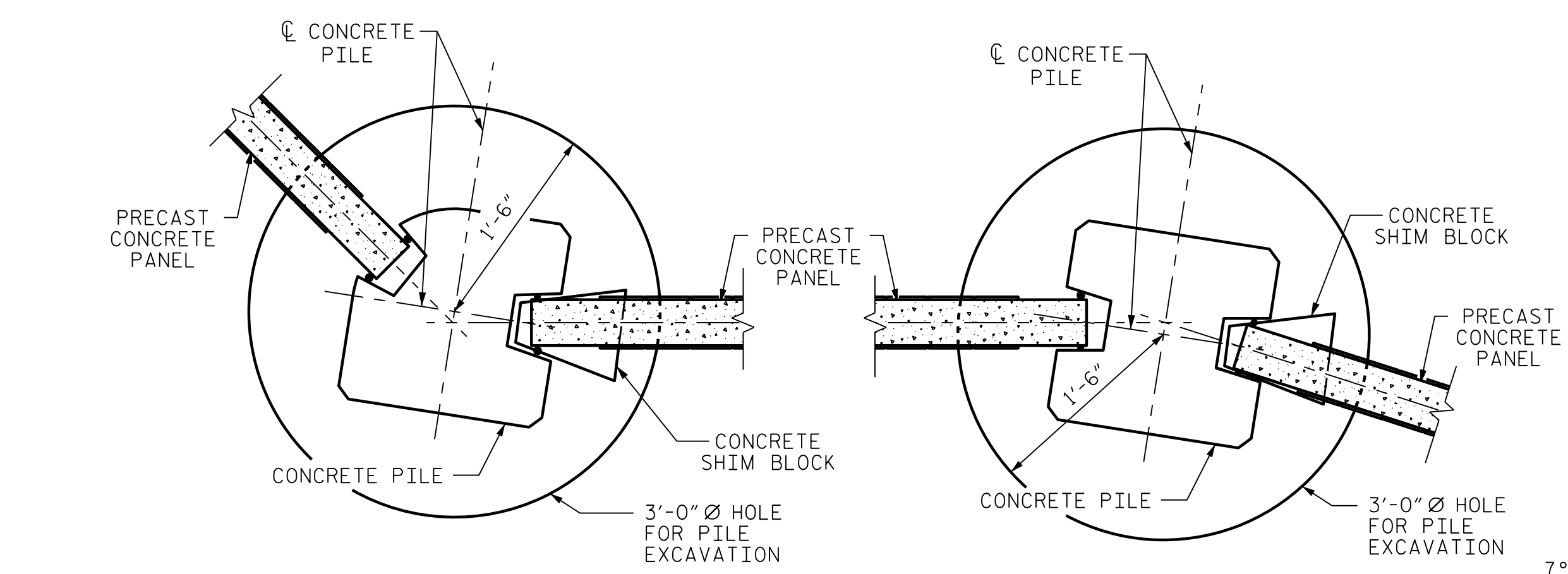
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 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

DRAWN BY: MAA 6/11
 CHECKED BY: GM 6/11
 REV. 9/26/14 MAA/TMG
 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC

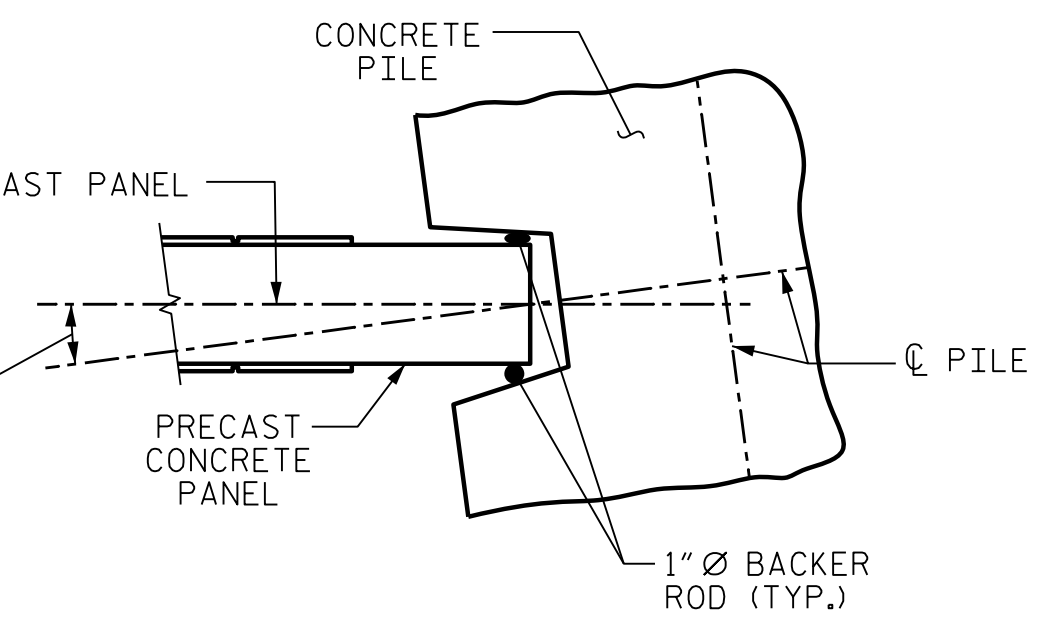


ELEVATION

SECTION A-A



TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN
(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

PILE EXCAVATION DEPTHS "D"				
WALL -NW11-		FROM : STA. 10+00.00 -NW11-	TO : STA. 23+20.00 -NW11-	
3'-0" Ø HOLE	PILE SPACING	WALL HEIGHT		
		H ≤ 15'	15' < H ≤ 20'	20' < H ≤ 25'
	10'-0"	10'-0"	12'-0"	13'-0"
	15'-0"	11'-0"	13'-0"	16'-0"
20'-0"	12'-0"	15'-0"	18'-0"	

THE STANDARD SOUND BARRIER WALL FOUNDATION TABLES ARE BASED ON 36" DIA. HOLES. FOR 30" DIA. HOLES, ADD 1 FT TO PILE EXCAVATION DEPTHS (D).

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	H ≤ 20'	4 - #9 EA. FACE	#3 @ 1'-4"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE
	20' < H ≤ 25'	4 - #11 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	15'-0"	H ≤ 20'	4 - #6 EA. FACE		#3 @ 1'-4"CTS.	15'-0"	H ≤ 20'
20' < H ≤ 25'		4 - #7 EA. FACE	#3 @ 1'-4"CTS.	20'-0"	20' < H ≤ 25'		3 - #11 SHORT FACE 4 - #11 LONG FACE
20'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
	20' < H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.				

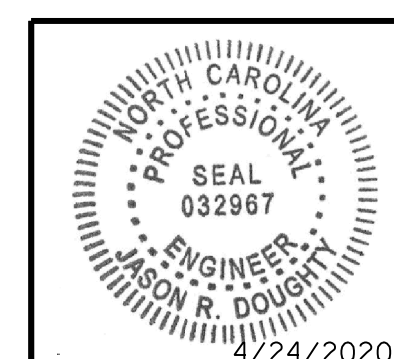
BILL OF MATERIAL	
SOUND BARRIER WALL	18,303 S.F.
ARCHITECTURAL SURFACE TREATMENT	29,462 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK STONE FORMLINER
STAIN OPTION:	DARK GRAY (FS 26008)

NOTES

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: 860+65.54 -L3- =
10+00 -NW11-
 SHEET 4 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 No. -NW11-



333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

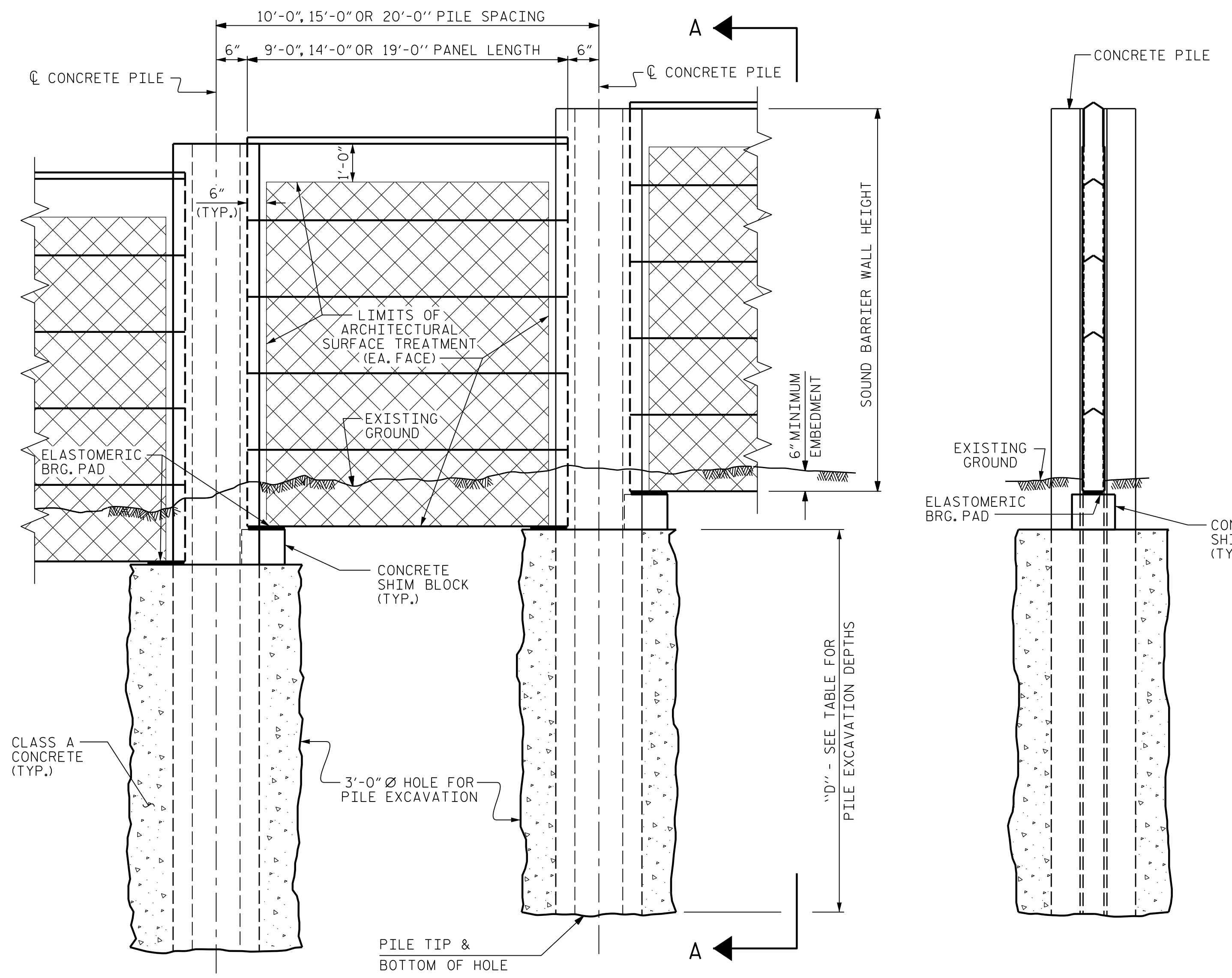
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW-4
1			3			TOTAL SHEETS 8
2			4			

DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

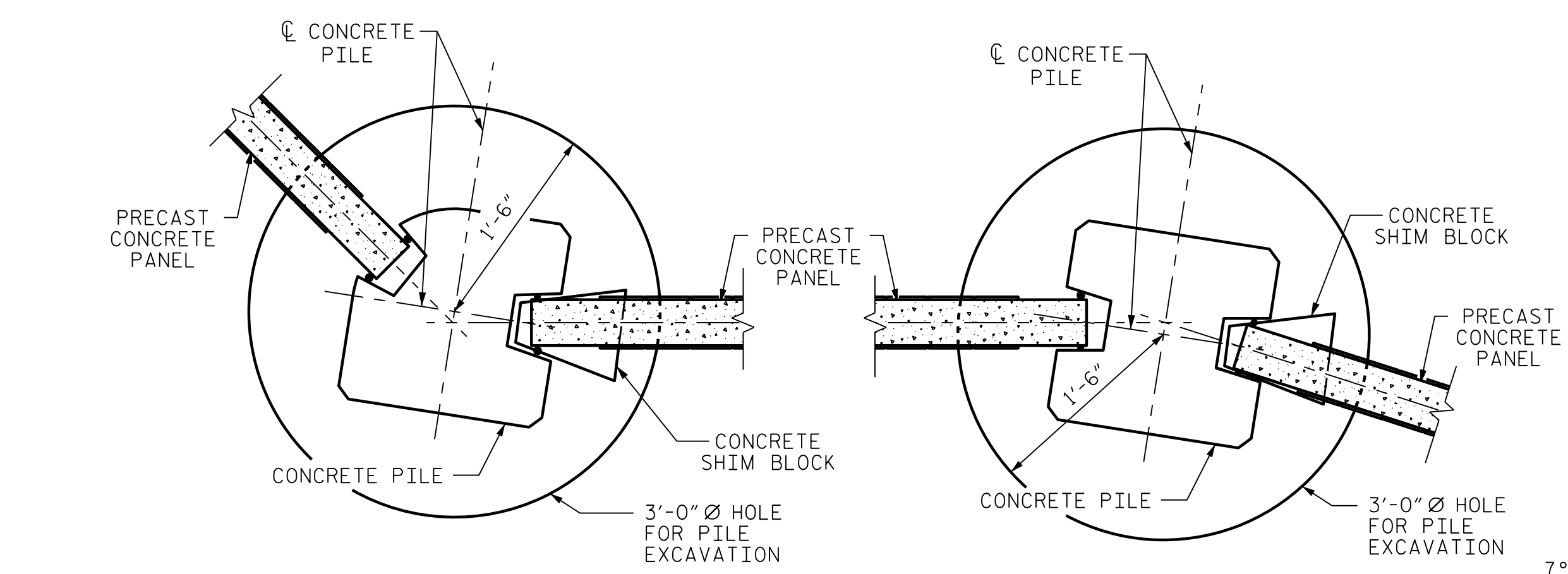
DRAWN BY: MAA 6/11
 CHECKED BY: GM 6/11
 REV. 9/26/14 MAA/TMG
 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC

4/24/2020 420.007.R2233BB.SW4.dgn

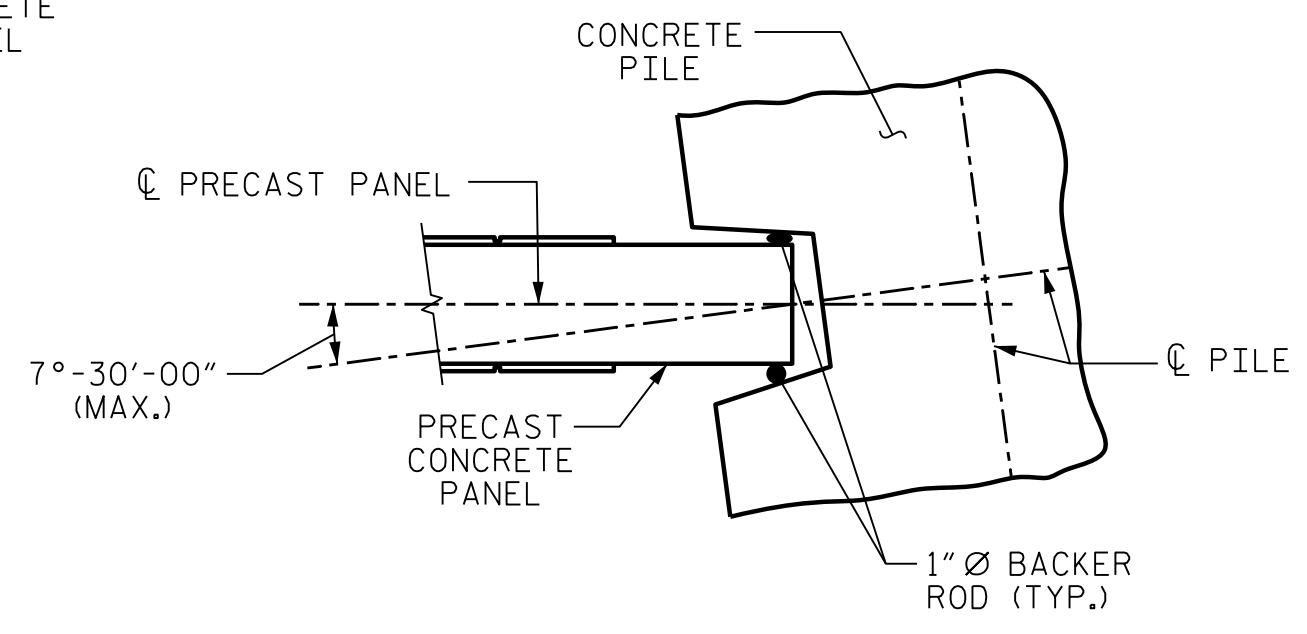


ELEVATION

SECTION A-A



TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

PILE EXCAVATION DEPTHS "D"				
WALL -NW13-		FROM : STA. 10+00.00 -NW13-	TO : STA. 25+90.00 -NW13-	
3'-0" Ø HOLE	PILE SPACING	WALL HEIGHT		
		H ≤ 15'	15' < H ≤ 20'	20' < H ≤ 25'
	10'-0"	10'-0"	12'-0"	13'-0"
	15'-0"	11'-0"	13'-0"	16'-0"
20'-0"	12'-0"	15'-0"	18'-0"	

THE STANDARD SOUND BARRIER WALL FOUNDATION TABLES ARE BASED ON 36" DIA. HOLES. FOR 30" DIA. HOLES, ADD 1 FT TO PILE EXCAVATION DEPTHS (D).

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	H ≤ 20'	4 - #9 EA. FACE	#3 @ 1'-4"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE
	20' < H ≤ 25'	4 - #11 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	15'-0"	H ≤ 20'	4 - #6 EA. FACE		#3 @ 1'-4"CTS.	15'-0"	H ≤ 20'
20' < H ≤ 25'		4 - #7 EA. FACE	#3 @ 1'-4"CTS.	20'-0"	20' < H ≤ 25'		3 - #11 SHORT FACE 4 - #11 LONG FACE
20'-0"	H ≤ 20'	4 - #6 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
	20' < H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.				

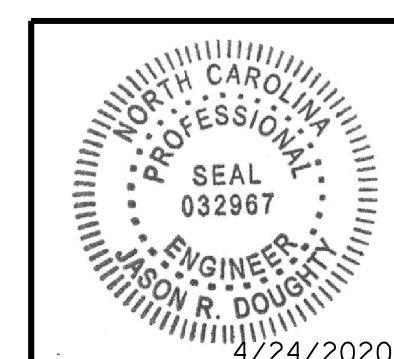
BILL OF MATERIAL	
SOUND BARRIER WALL	26,005 S.F.
ARCHITECTURAL SURFACE TREATMENT	42,276 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK STONE FORMLINER
STAIN OPTION:	DARK GRAY (FS 26008)

NOTES

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: 881+73.56 -L3- =
10+00 -NW13-
 SHEET 5 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 No. -NW13-



333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

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

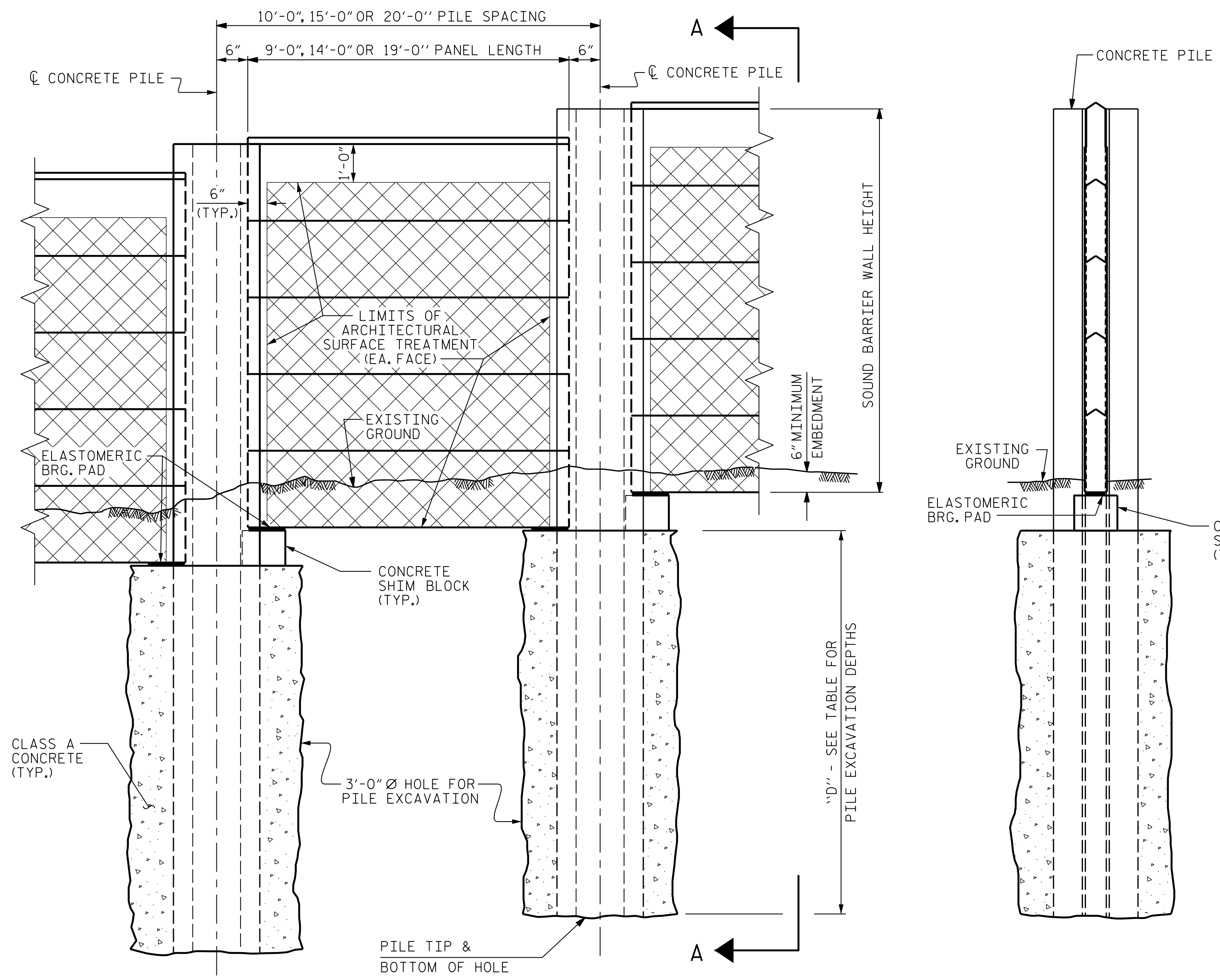
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

TOTAL SHEETS: 8

DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

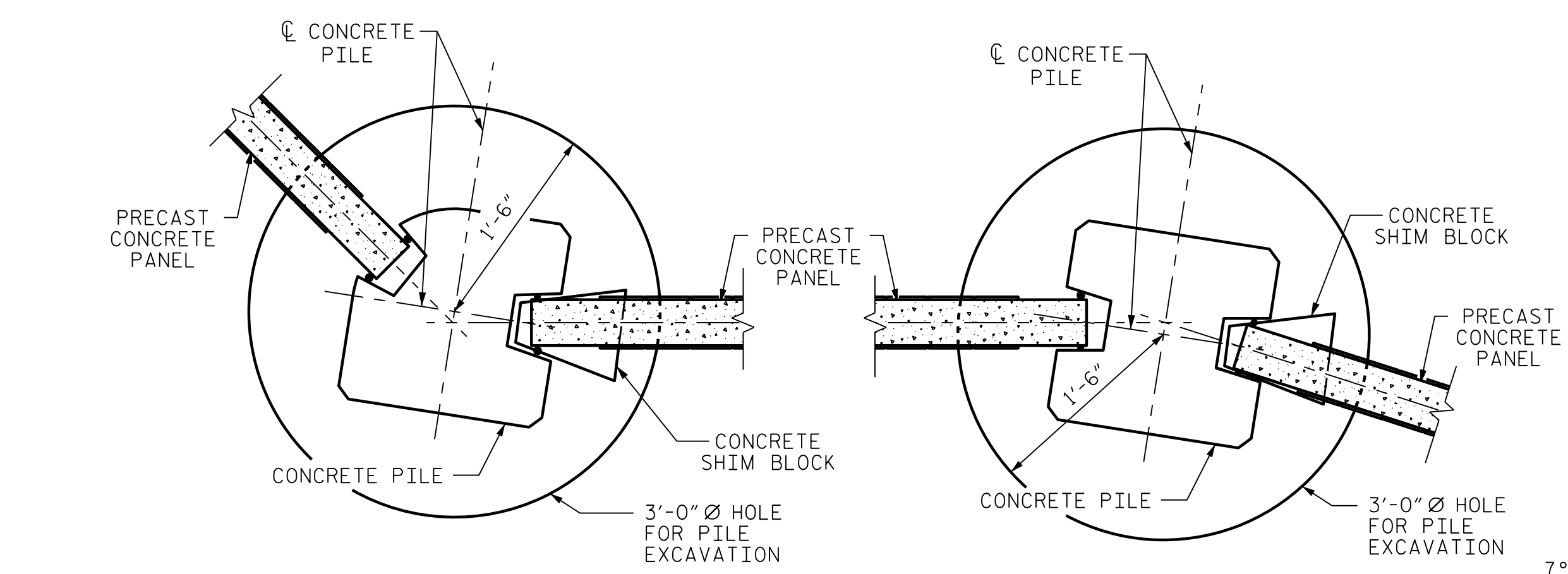
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 CHECKED BY: GM 6/11
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 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC

4/24/2020 420.009.R2233BB.SMALL.SW13.dgn

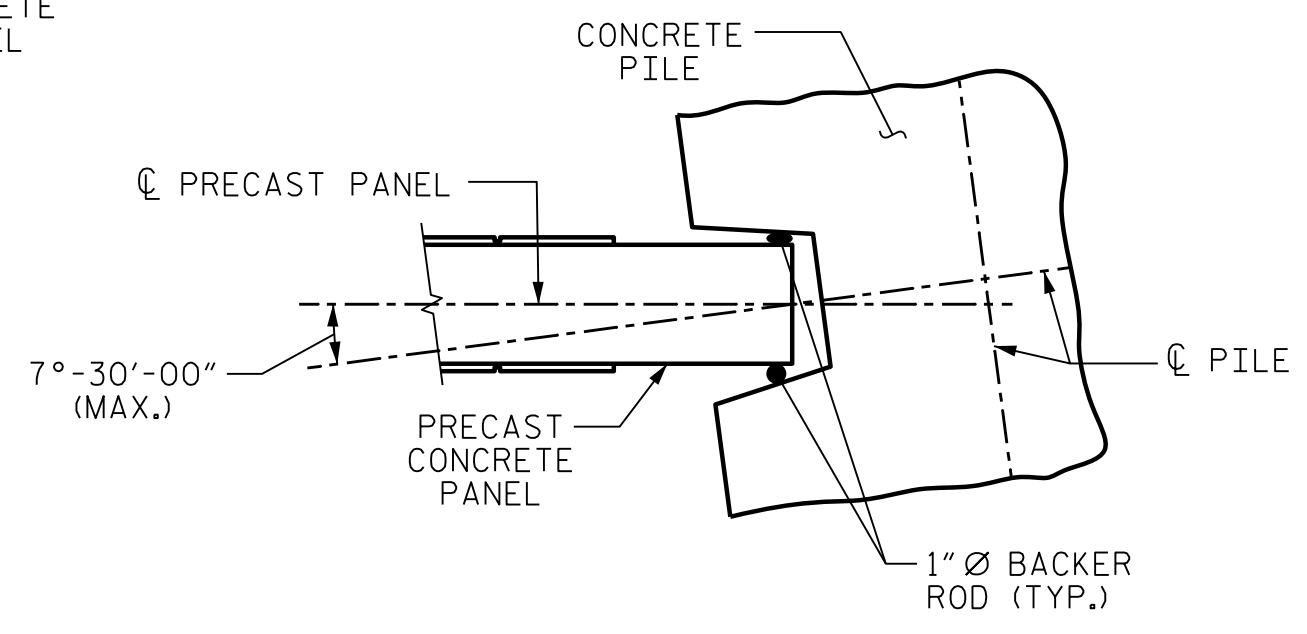


ELEVATION

SECTION A-A



TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" TO ACCOMMODATE WALL TURN.)

PILE EXCAVATION DEPTHS "D"				
WALL -NW15-		FROM : STA. 10+00.00 -NW15- TO : STA. 15+70.00 -NW15-		
3'-0" Ø HOLE	PILE SPACING	WALL HEIGHT		
		H ≤ 15'	15' < H ≤ 20'	20' < H ≤ 25'
	10'-0"	10'-0"	12'-0"	13'-0"
	15'-0"	11'-0"	13'-0"	16'-0"
20'-0"	12'-0"	15'-0"	18'-0"	

THE STANDARD SOUND BARRIER WALL FOUNDATION TABLES ARE BASED ON 36" DIA. HOLES. FOR 30" DIA. HOLES, ADD 1 FT TO PILE EXCAVATION DEPTHS (D).

PILE REINFORCING STEEL DESIGN WIND PRESSURE = 40 PSF							
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 25'	4 - #8 EA. FACE	#3 @ 1'-4"CTS.	10'-0"	H ≤ 25'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 1'-4"CTS.
	20' < H ≤ 25'	4 - #10 EA. FACE	#3 @ 1'-4"CTS.		15'-0"	H ≤ 20'	3 - #9 SHORT FACE 4 - #9 LONG FACE
15'-0"	H ≤ 20'	4 - #9 EA. FACE	#3 @ 1'-4"CTS.	15'-0"		20' < H ≤ 25'	3 - #11 SHORT FACE 4 - #11 LONG FACE
	20' < H ≤ 25'	4 - #11 EA. FACE	#3 @ 1'-4"CTS.		20'-0"	H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
20'-0"	H ≤ 20'	4 - #9 EA. FACE	#3 @ 1'-4"CTS.	20'-0"		H ≤ 20'	3 - #10 SHORT FACE 4 - #10 LONG FACE
	20' < H ≤ 25'	4 - #11 EA. FACE	#3 @ 1'-4"CTS.				

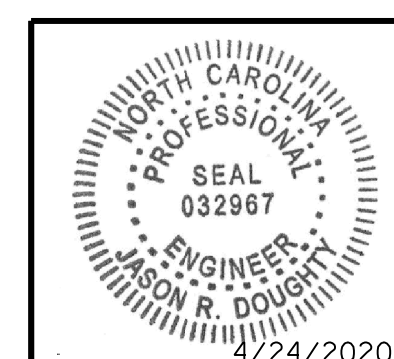
BILL OF MATERIAL	
SOUND BARRIER WALL	7,308 S.F.
ARCHITECTURAL SURFACE TREATMENT	11,648 S.F.
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	
ARCHITECTURAL SURFACE TREATMENT	
TEXTURE OPTION:	DRY STACK STONE FORMLINER
STAIN OPTION:	DARK GRAY (FS 26008)

NOTES

- FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.
- CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.
- PROVIDE PANELS WITH A FLAT BOTTOM.
- VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.
- ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.
- USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, USE 10'-0", 15'-0", OR 20'-0" PILE SPACINGS. STANDARD PRECAST CONCRETE PANELS MAY BE USED WITH THE 10'-0" AND 15'-0" PILE SPACING. FOR 20'-0" PILE SPACING, PANELS DESIGNED AND MANUFACTURED BY A THIRD PARTY VENDOR SHALL BE USED.
- FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.
- PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: 916+96.43 -L3- =
10+00 -NW15-
 SHEET 6 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 No. -NW15-



333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

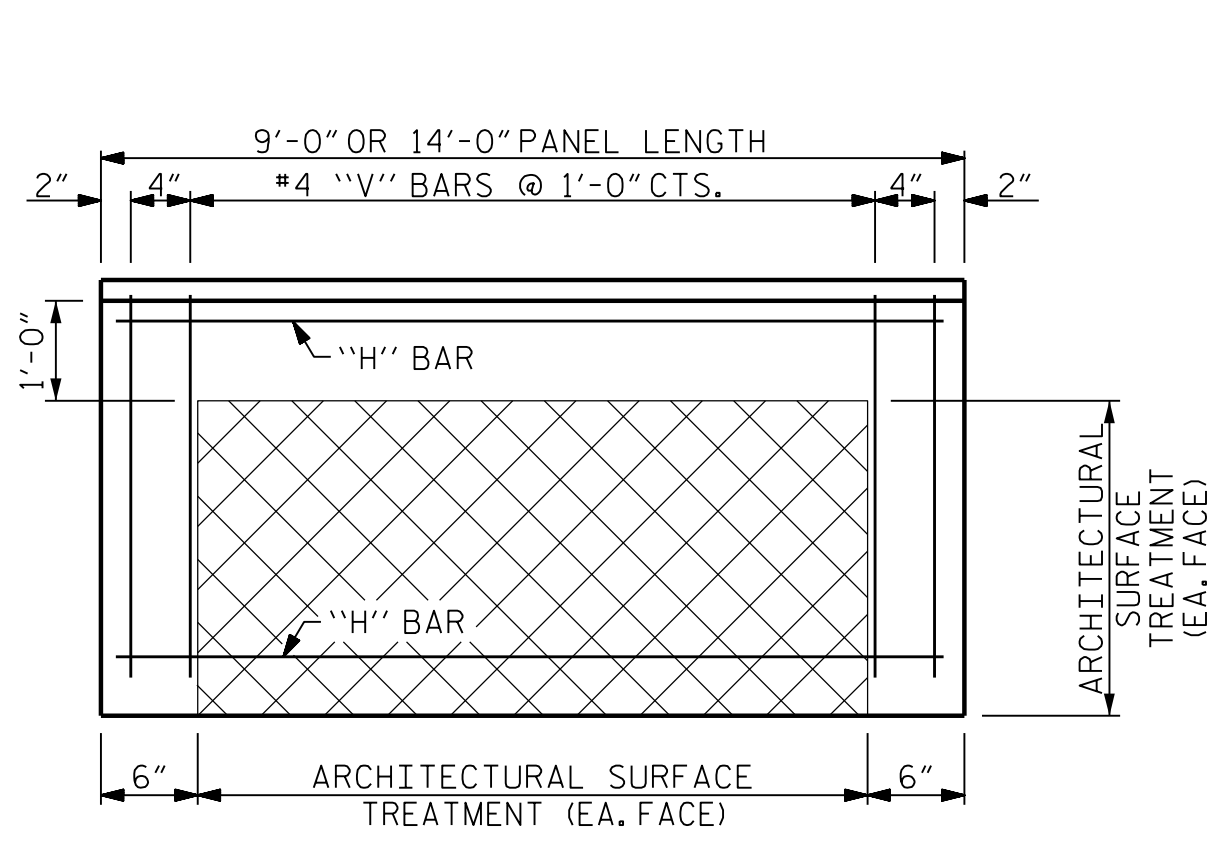
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SW-6
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2			4			

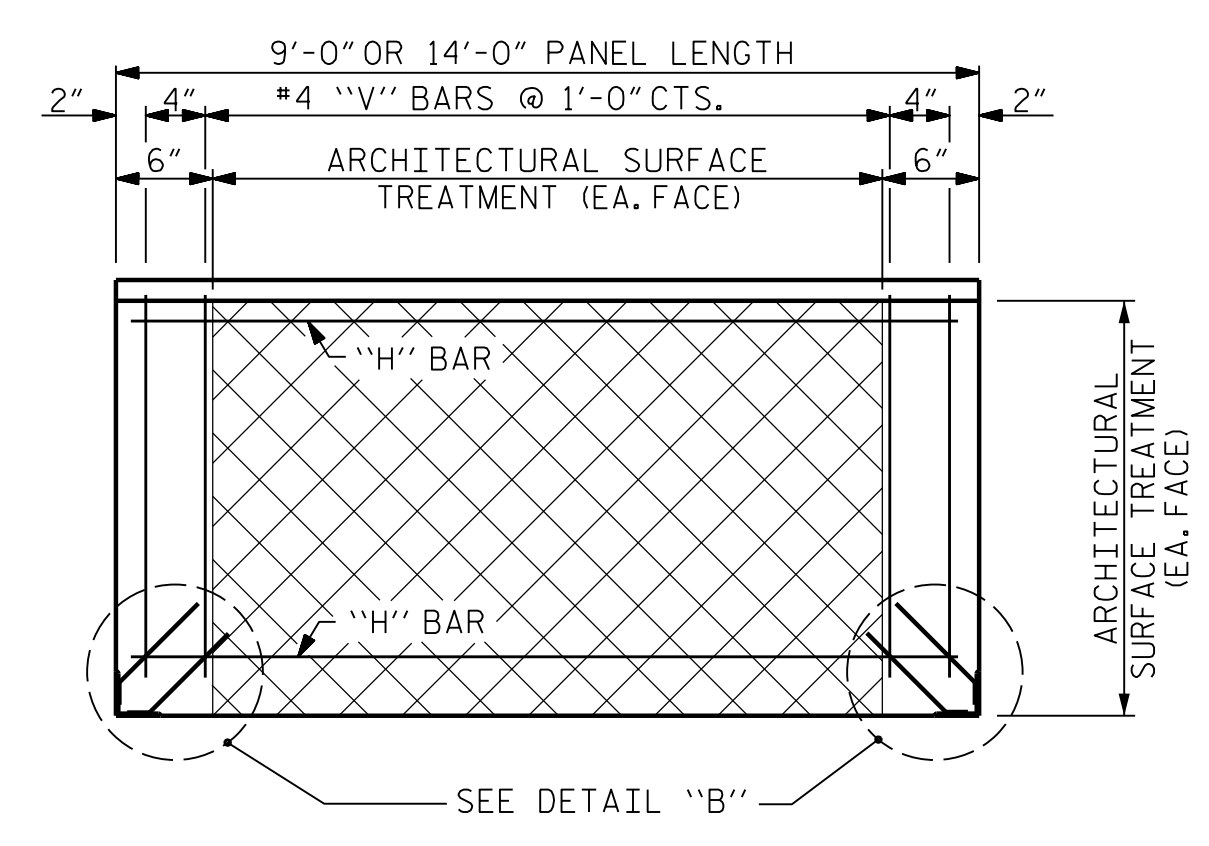
DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

DRAWN BY: MAA 6/11
 CHECKED BY: GM 6/11
 REV. 9/26/14 MAA/TMG
 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC

4/24/2020 420.011.R2233BB_SW15.dgn



FRONT ELEVATION OF UPPER PRECAST PANEL



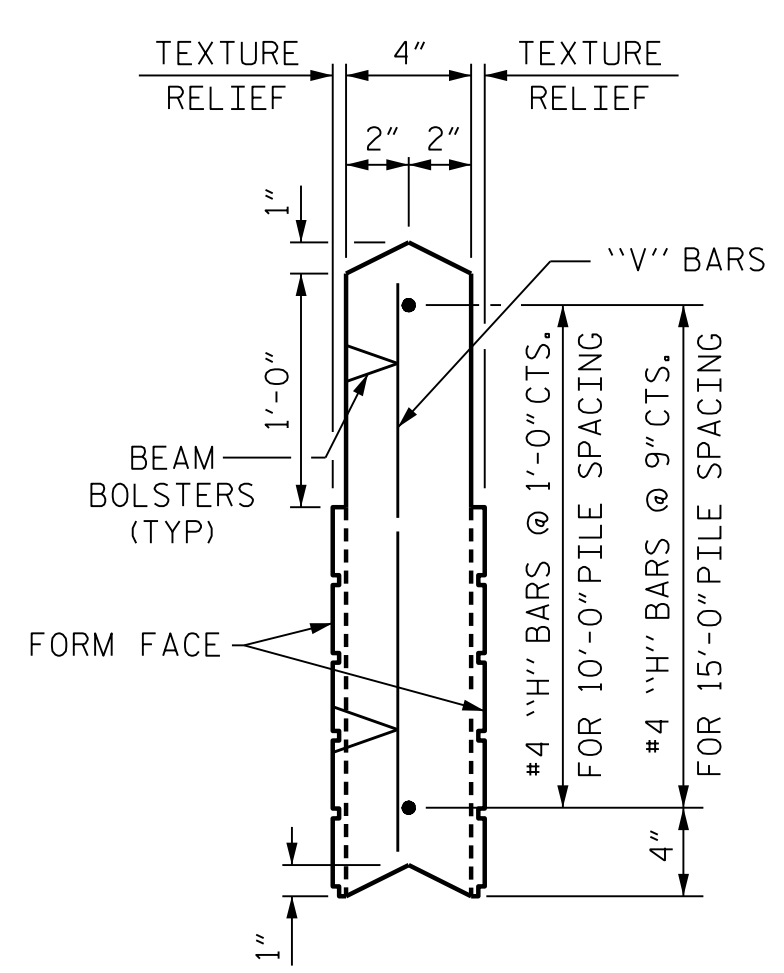
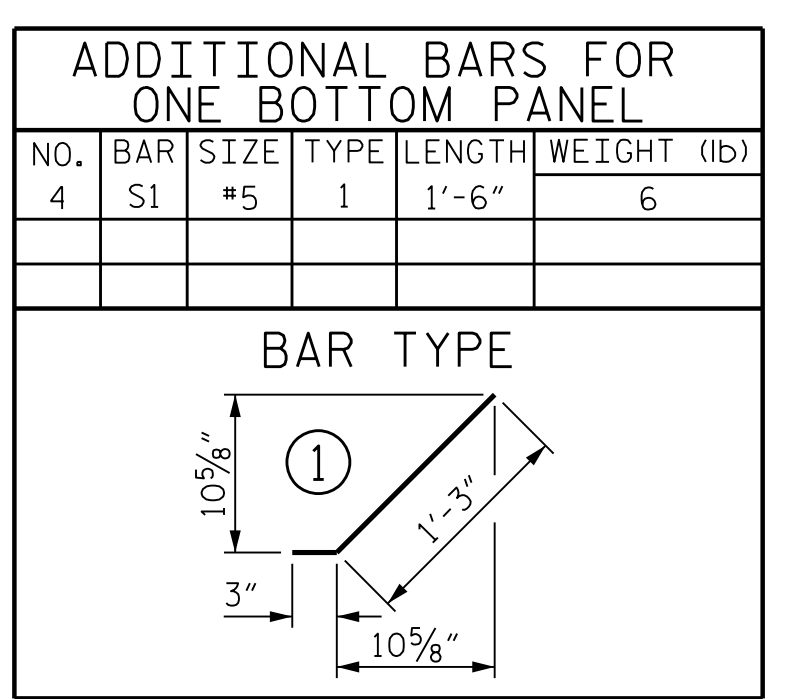
FRONT ELEVATION OF BOTTOM PRECAST PANEL

QUANTITIES FOR ONE PRECAST PANEL (FOR 10'-0" PILE SPACING)

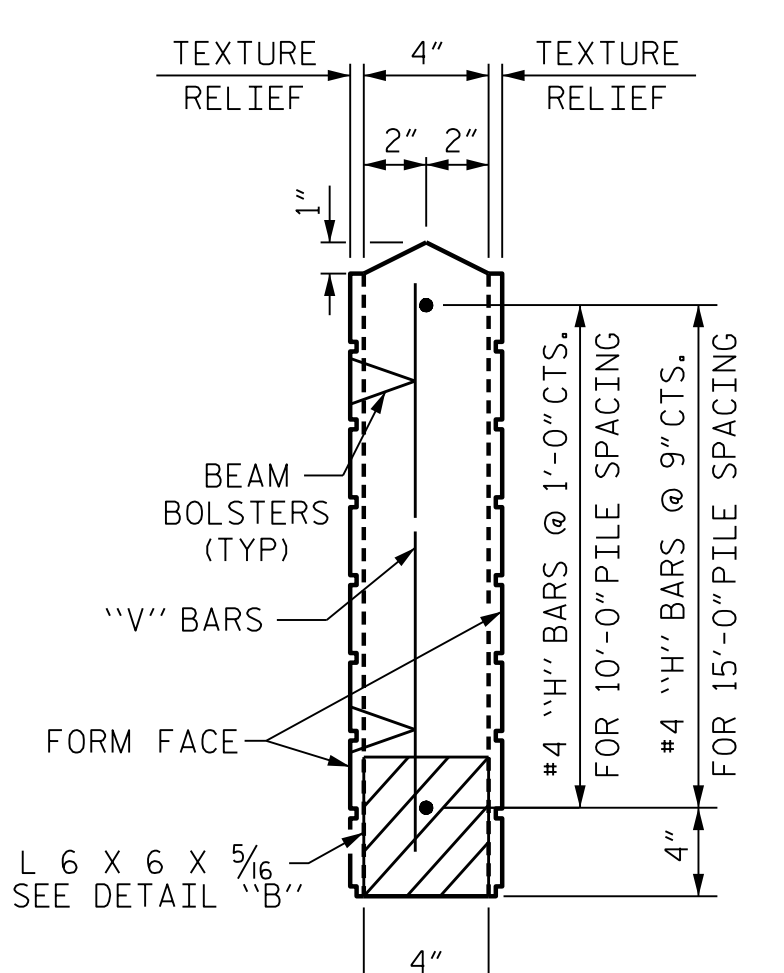
PANEL HEIGHT	CLASS AA CONCRETE	C.Y.	BAR TYPES											
			HORIZONTAL					VERTICAL						
			NO.	BAR SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR SIZE	TYPE	LENGTH	WEIGHT (lb)		
2'-0"		0.22	3	H1	#4	STR	8'-8"	17	11	V1	#4	STR	1'-8"	12
3'-0"		0.33	4	H2	#4	STR	8'-8"	23	11	V2	#4	STR	2'-8"	20
4'-0"		0.44	5	H3	#4	STR	8'-8"	29	11	V3	#4	STR	3'-8"	27

QUANTITIES FOR ONE PRECAST PANEL (FOR 15'-0" PILE SPACING)

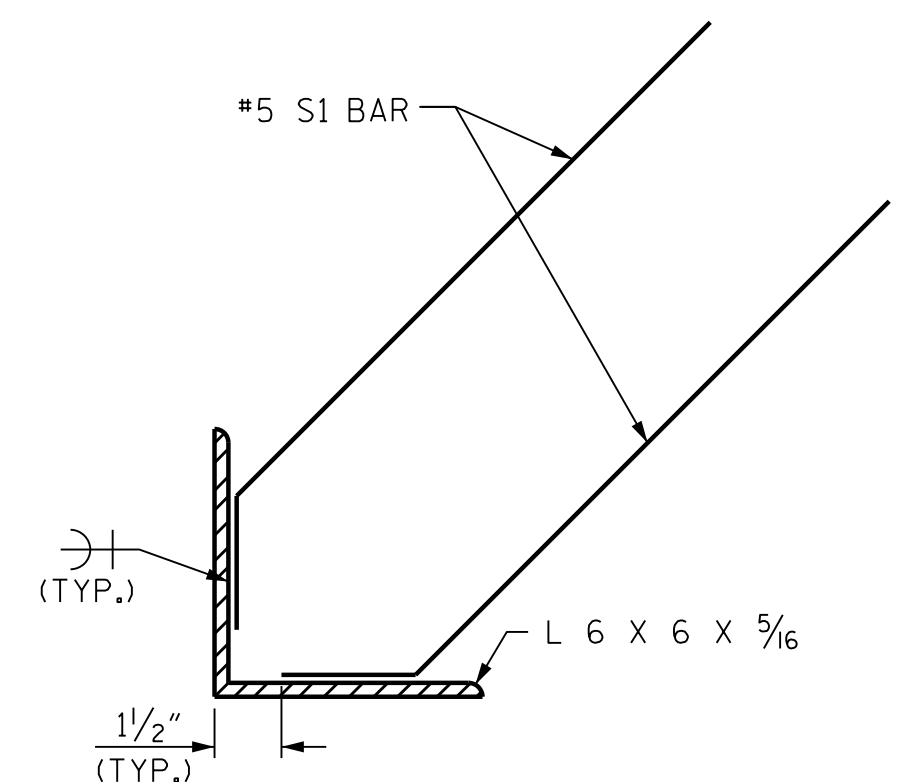
PANEL HEIGHT	CLASS AA CONCRETE	C.Y.	BAR TYPES											
			HORIZONTAL					VERTICAL						
			NO.	BAR SIZE	TYPE	LENGTH	WEIGHT (lb)	NO.	BAR SIZE	TYPE	LENGTH	WEIGHT (lb)		
3'-0"		0.52	5	H1	#4	STR	13'-8"	46	16	V1	#4	STR	2'-8"	29
4'-0"		0.69	6	H2	#4	STR	13'-8"	55	16	V2	#4	STR	3'-8"	39
5'-0"		0.86	7	H3	#4	STR	13'-8"	64	16	V3	#4	STR	4'-8"	50
6'-0"		1.04	8	H4	#4	STR	13'-8"	73	16	V4	#4	STR	5'-8"	61



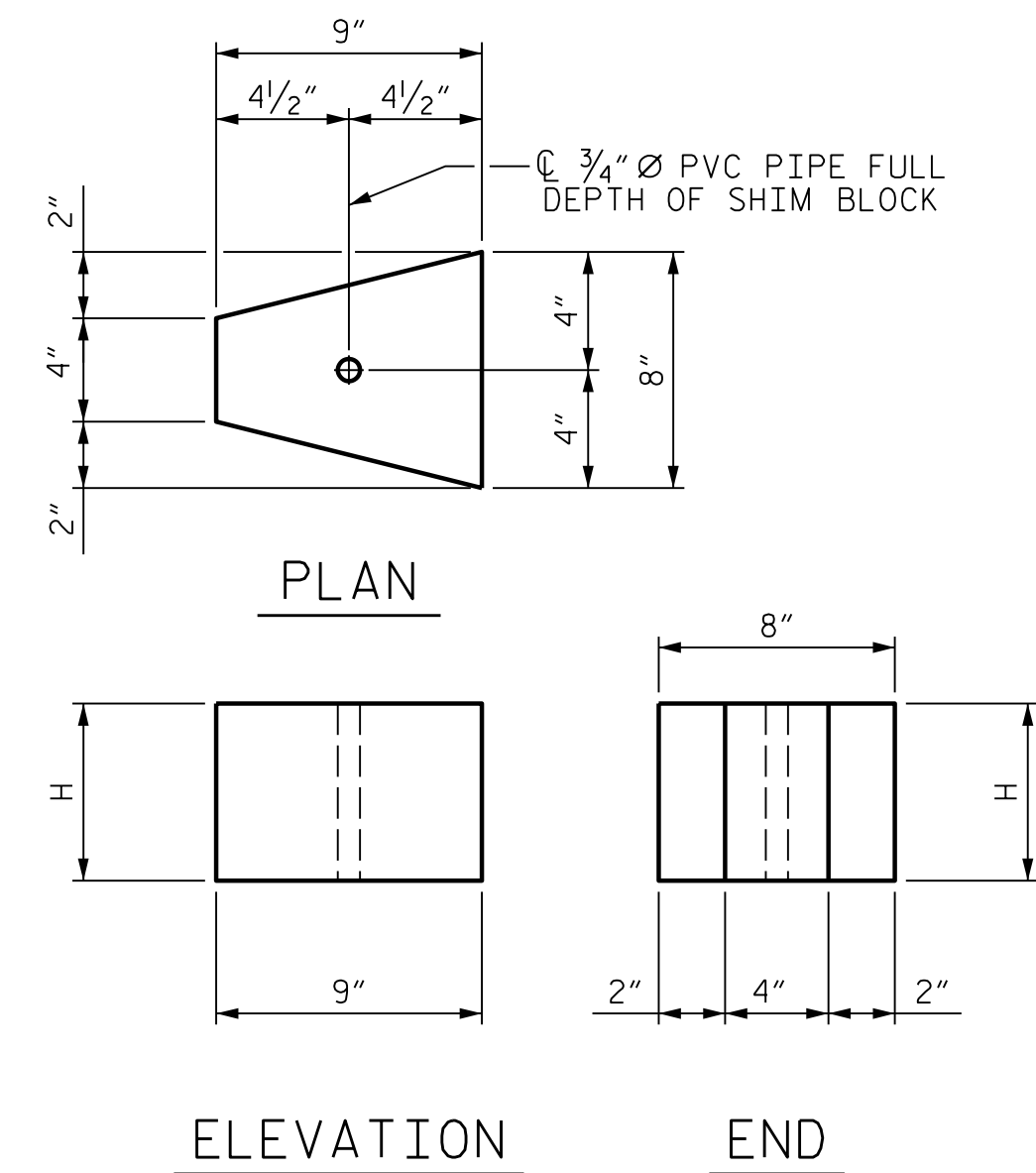
UPPER PANEL



BOTTOM PANEL

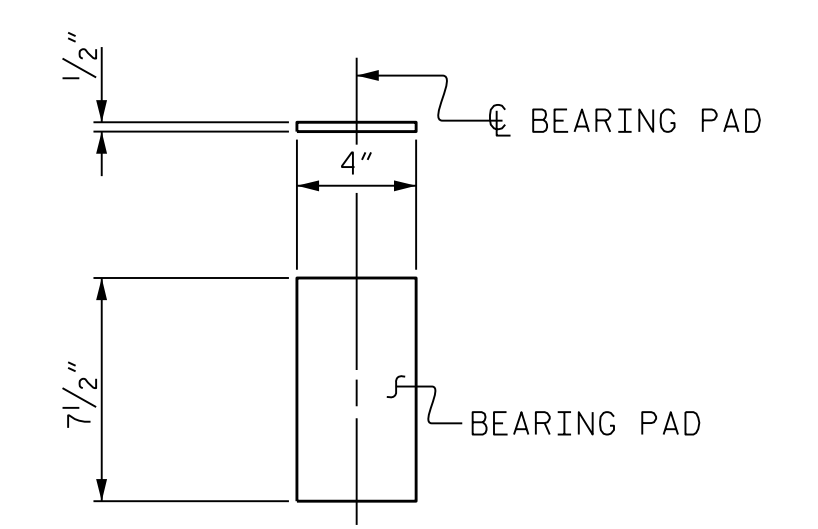


DETAIL "B"



CONCRETE SHIM BLOCK

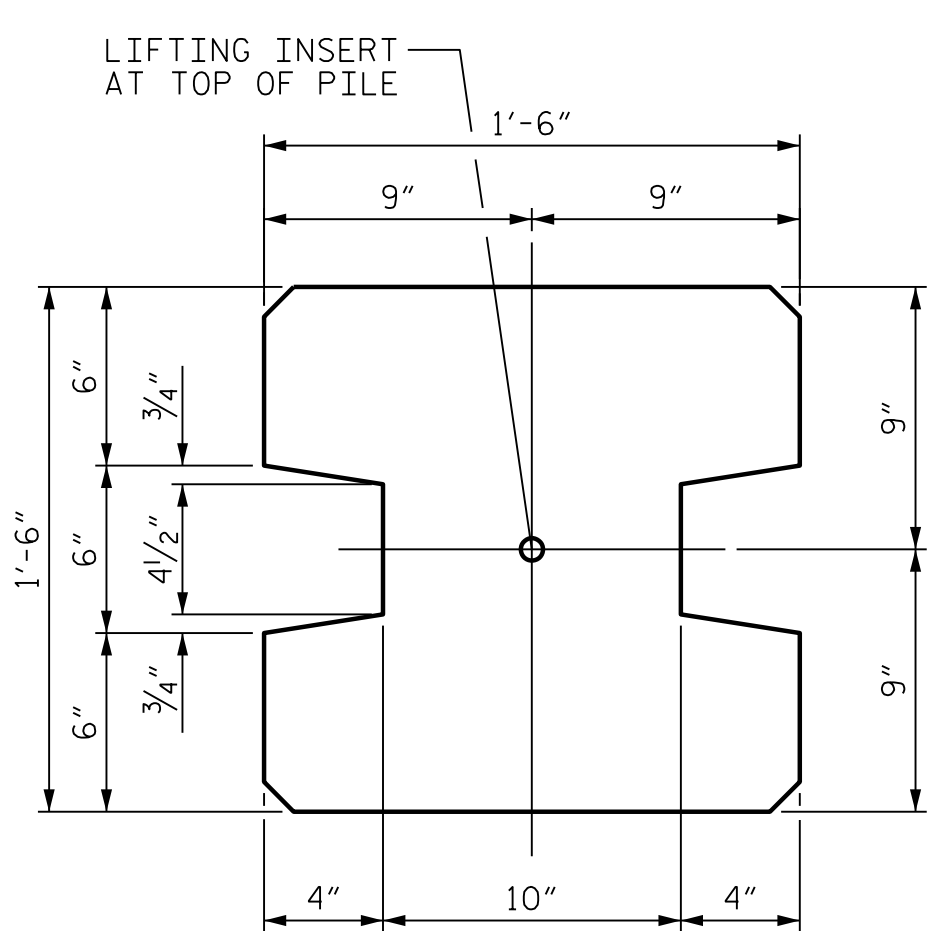
H = 3", 6" or 1'-0"



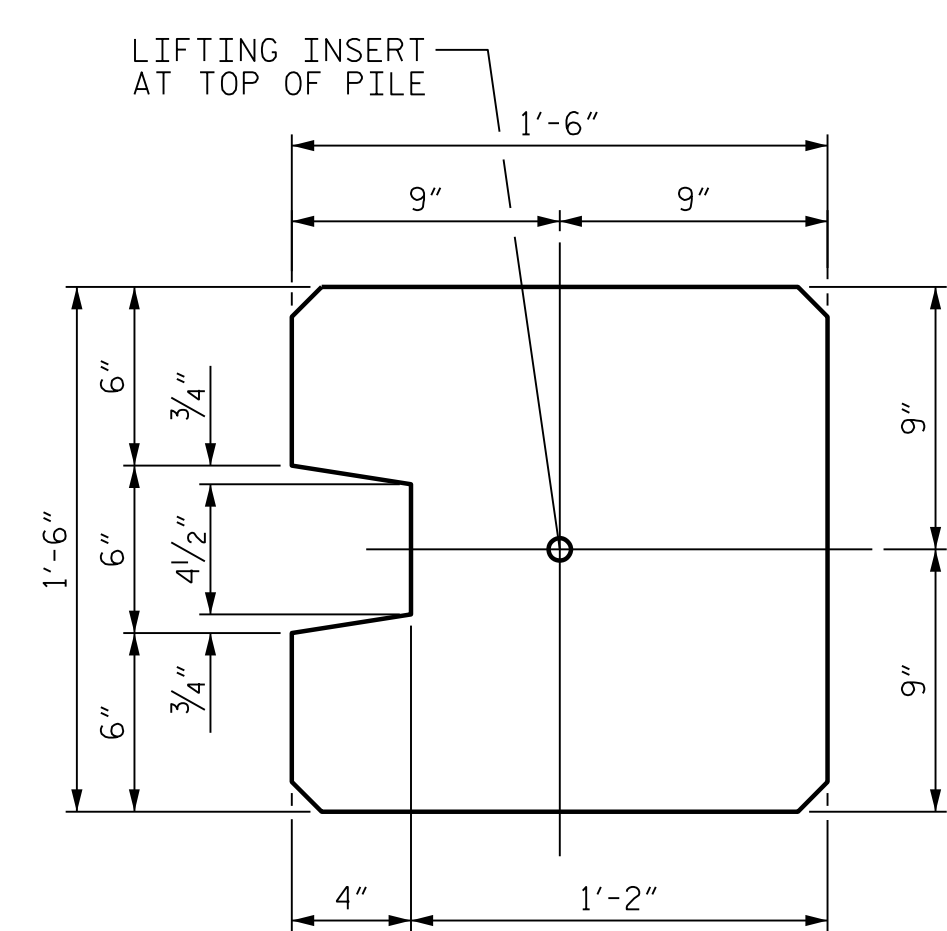
ELASTOMERIC BEARING DETAILS

ELASTOMER IN BEARINGS SHALL BE 50 DUROMETER HARDNESS.

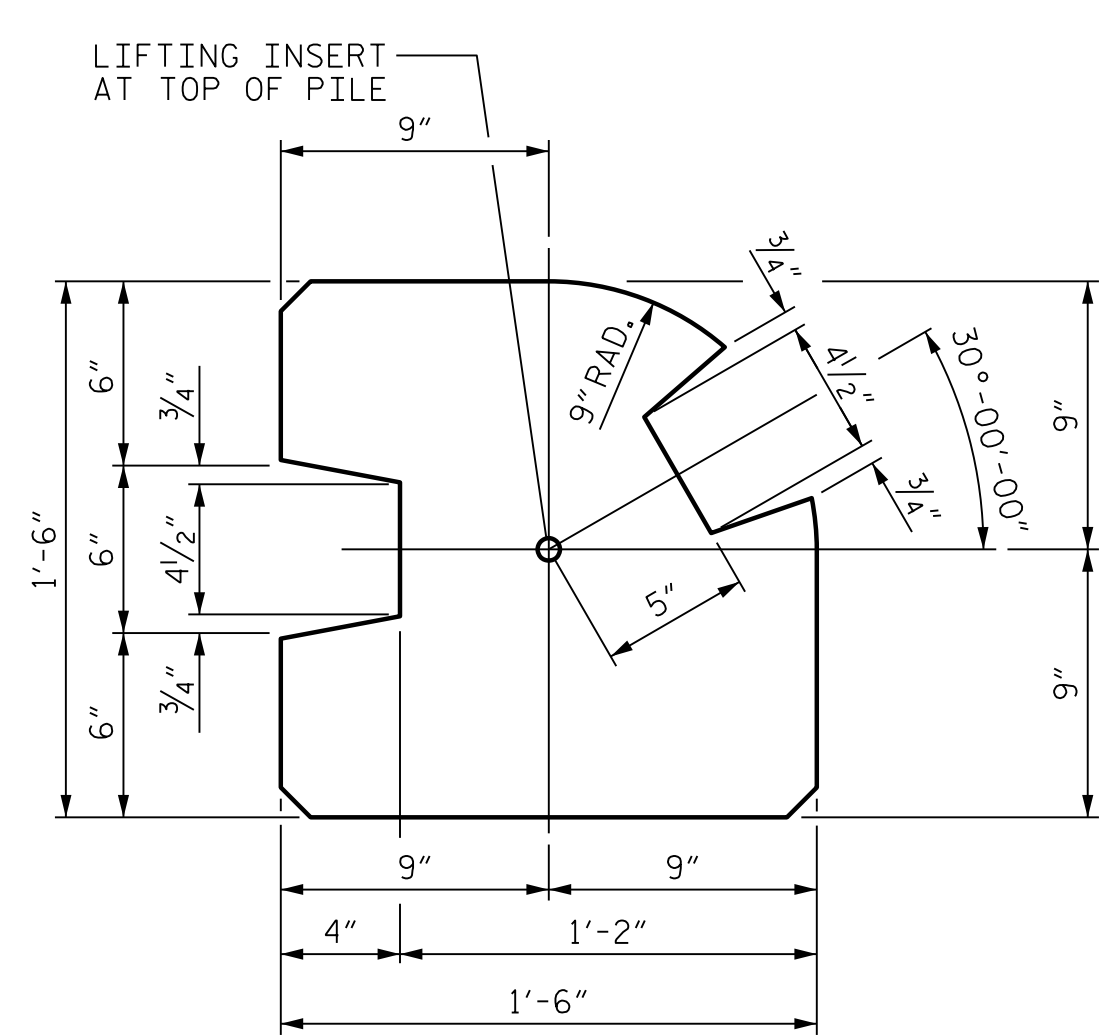
SECTION THROUGH PRECAST PANELS



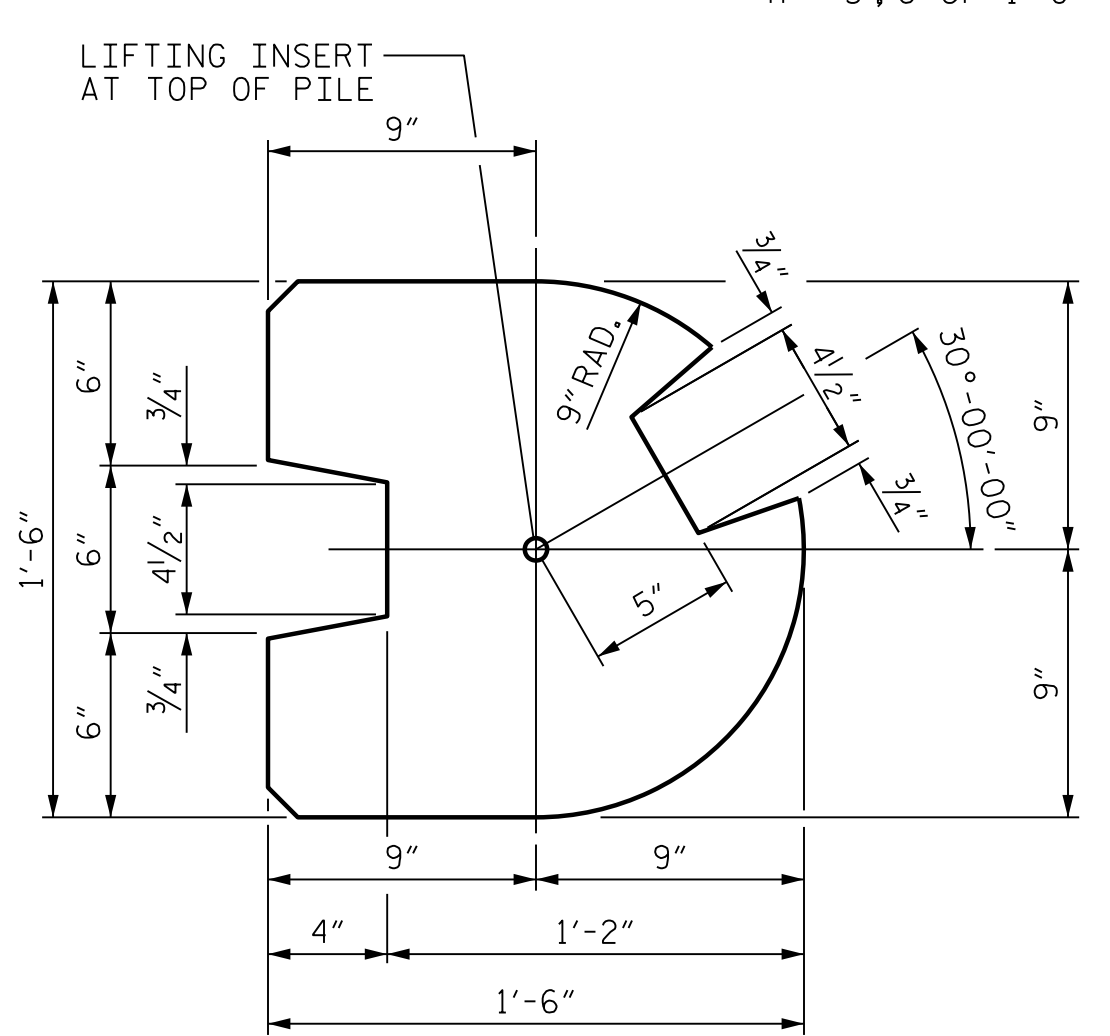
TYPE - I
(AREA = 1.9444 SQ. FT.)



TYPE - II
(AREA = 2.0903 SQ. FT.)



TYPE - III
(AREA = 1.8336 SQ. FT.)



TYPE - III (ALT.)
(AREA = 1.7163 SQ. FT.)

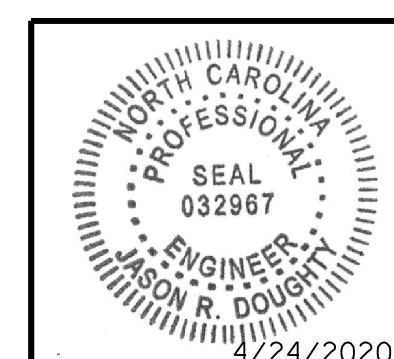
PILE DETAIL

(ALL CORNERS TO BE CHAMFERED 1")

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: VARIES

SHEET 7 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 DETAILS



333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

REVISIONS

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

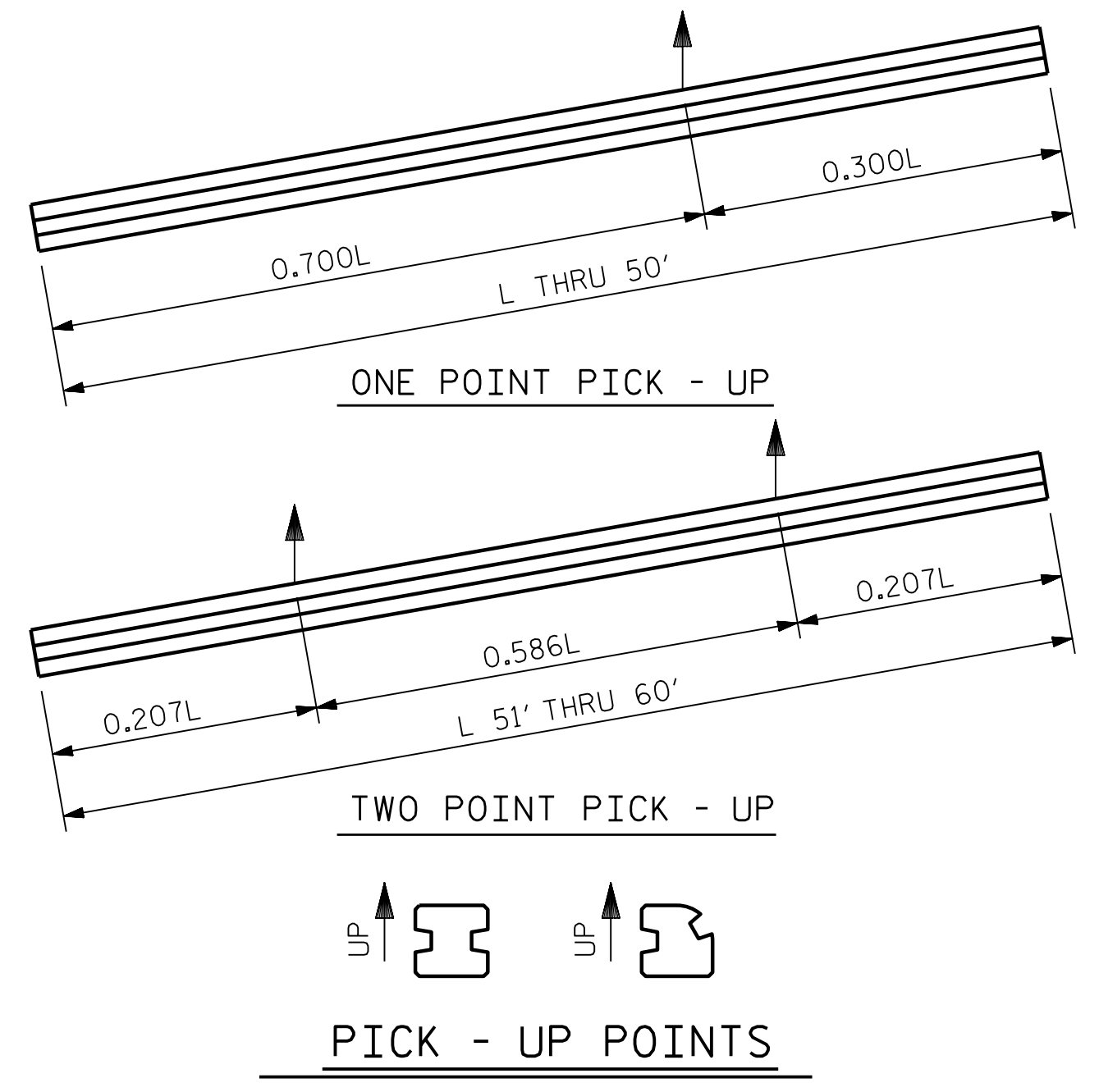
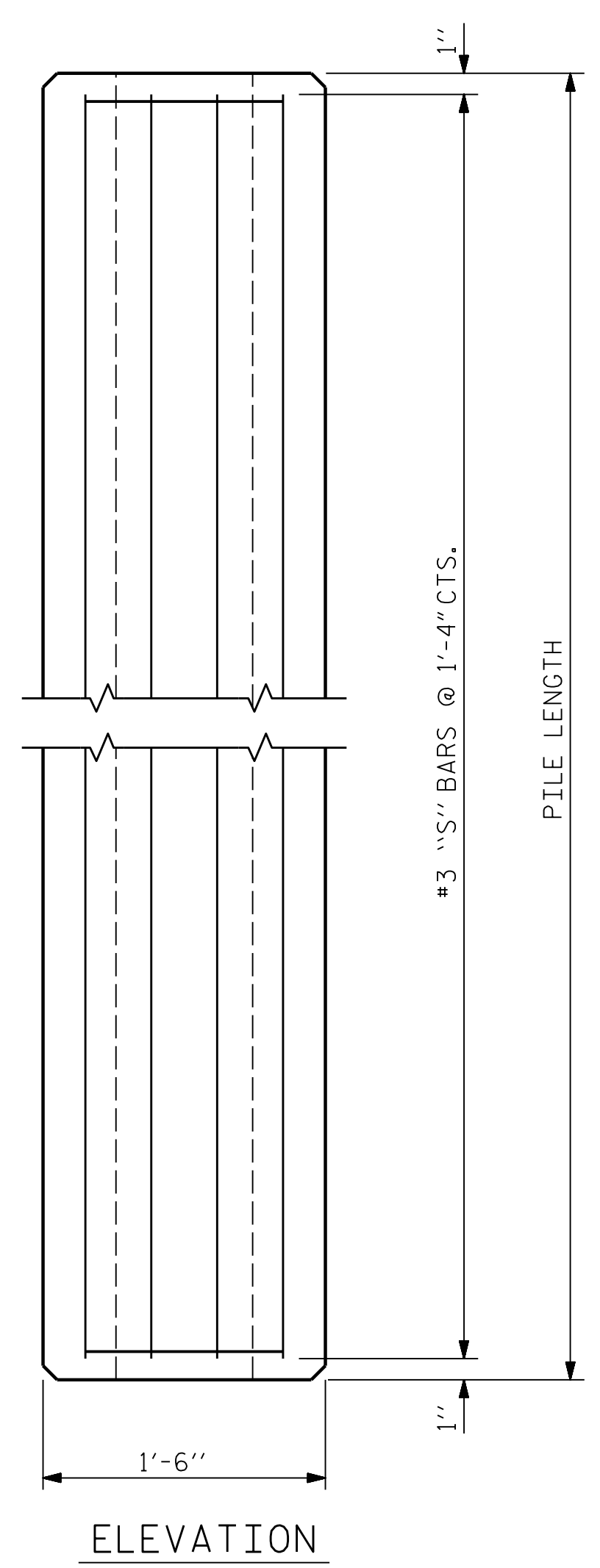
SHEET NO. SW-7
 TOTAL SHEETS 8

STD. NO. SBW2

4/24/2020 420-113-R2233BB-SMU-WDI.dgn

DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: APR 2020

DRAWN BY: MAA 6/11
 CHECKED BY: GM 6/11
 REV. 1/15/14 RWW/TMG
 REV. 10/17 MAA/THC
 REV. 5/18 MAA/THC



QUANTITIES FOR ONE PRECAST CONCRETE PILE

LENGTH	APPROX. PILE WT. TONS	ONE PICK-UP POINT		TWO PICK-UP POINT	
		0.300L	0.700L	0.207L	0.586L
10'-0"	1.56	3'-0"	7'-0"		
15'-0"	2.35	4'-6"	10'-6"		
20'-0"	3.14	6'-0"	14'-0"		
25'-0"	3.93	7'-6"	17'-6"		
30'-0"	4.70	9'-0"	21'-0"		
35'-0"	5.49	10'-6"	24'-6"		
40'-0"	6.28	12'-0"	28'-0"		
45'-0"	7.05	13'-6"	31'-6"		
50'-0"	7.84	15'-0"	35'-0"		
55'-0"	8.63			11'-4 1/2"	32'-3"
60'-0"	9.42			12'-5"	35'-2"

NOTES

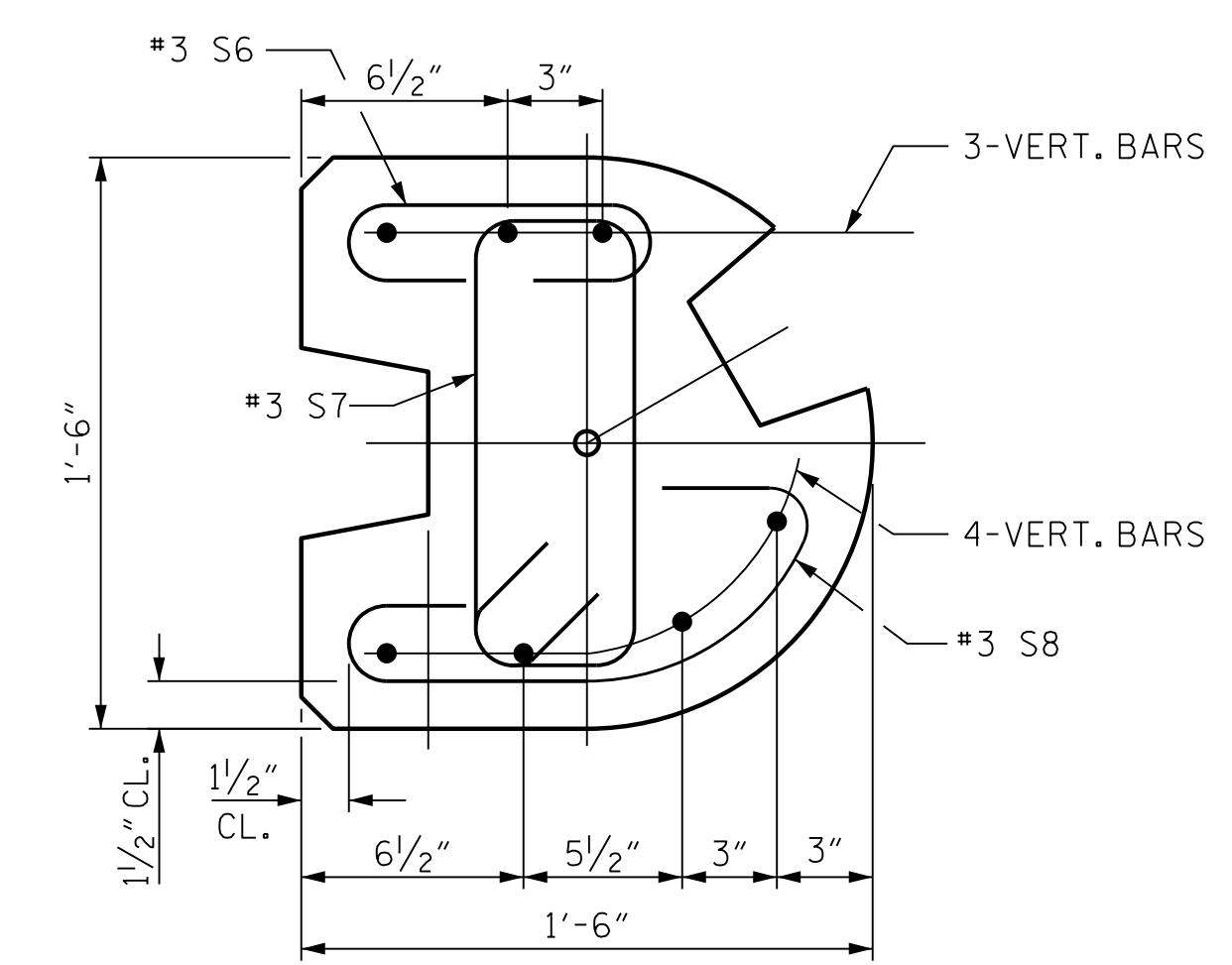
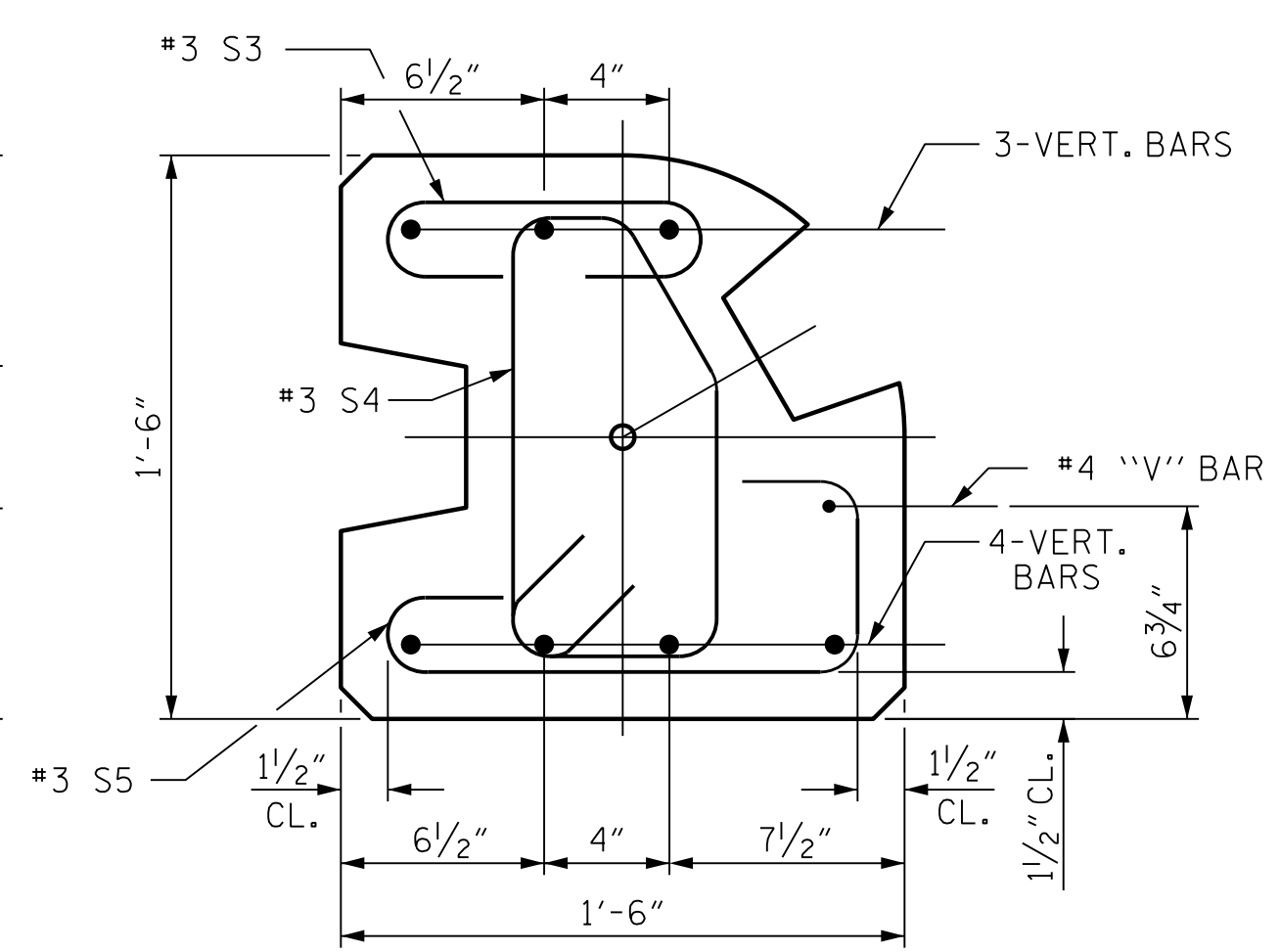
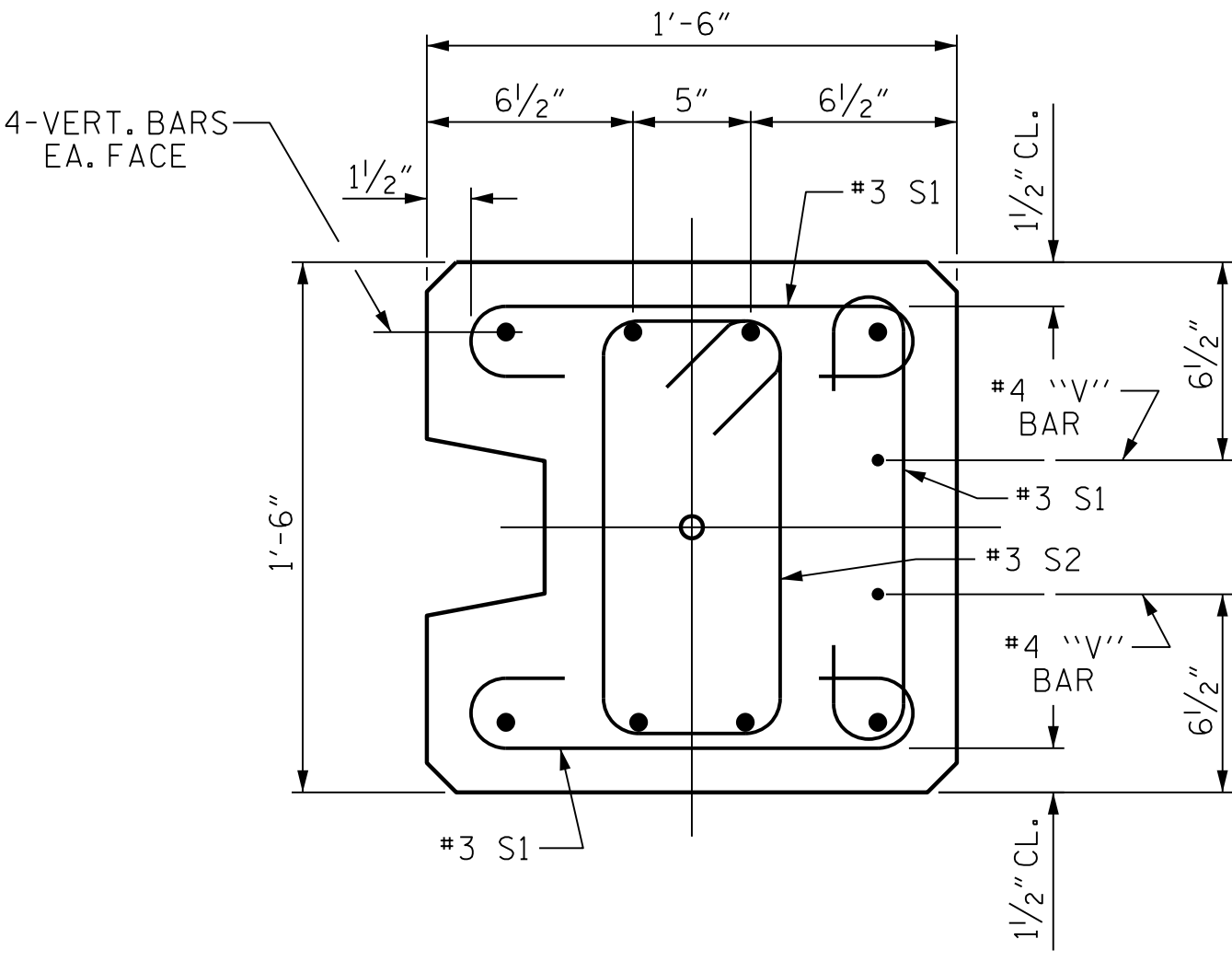
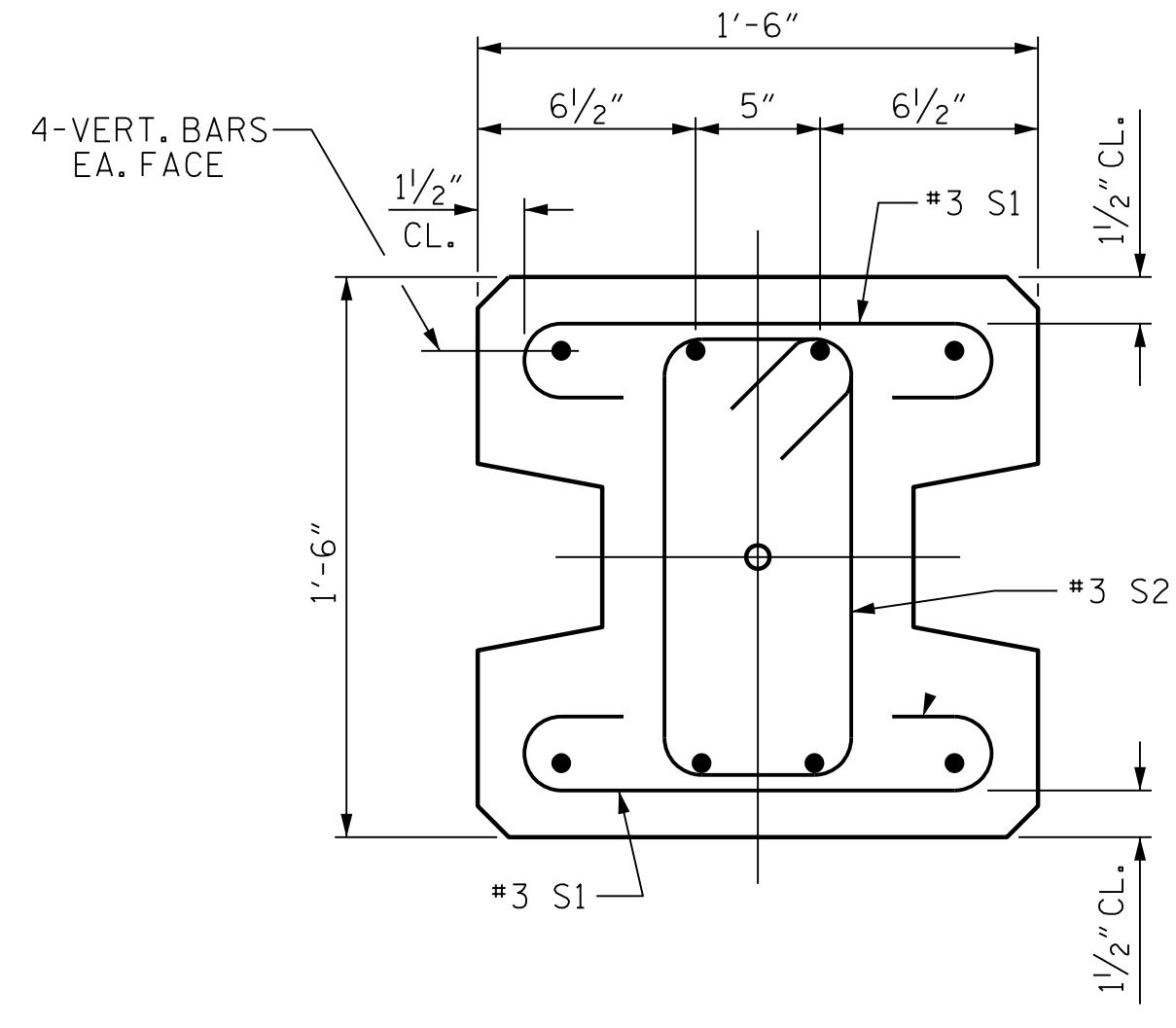
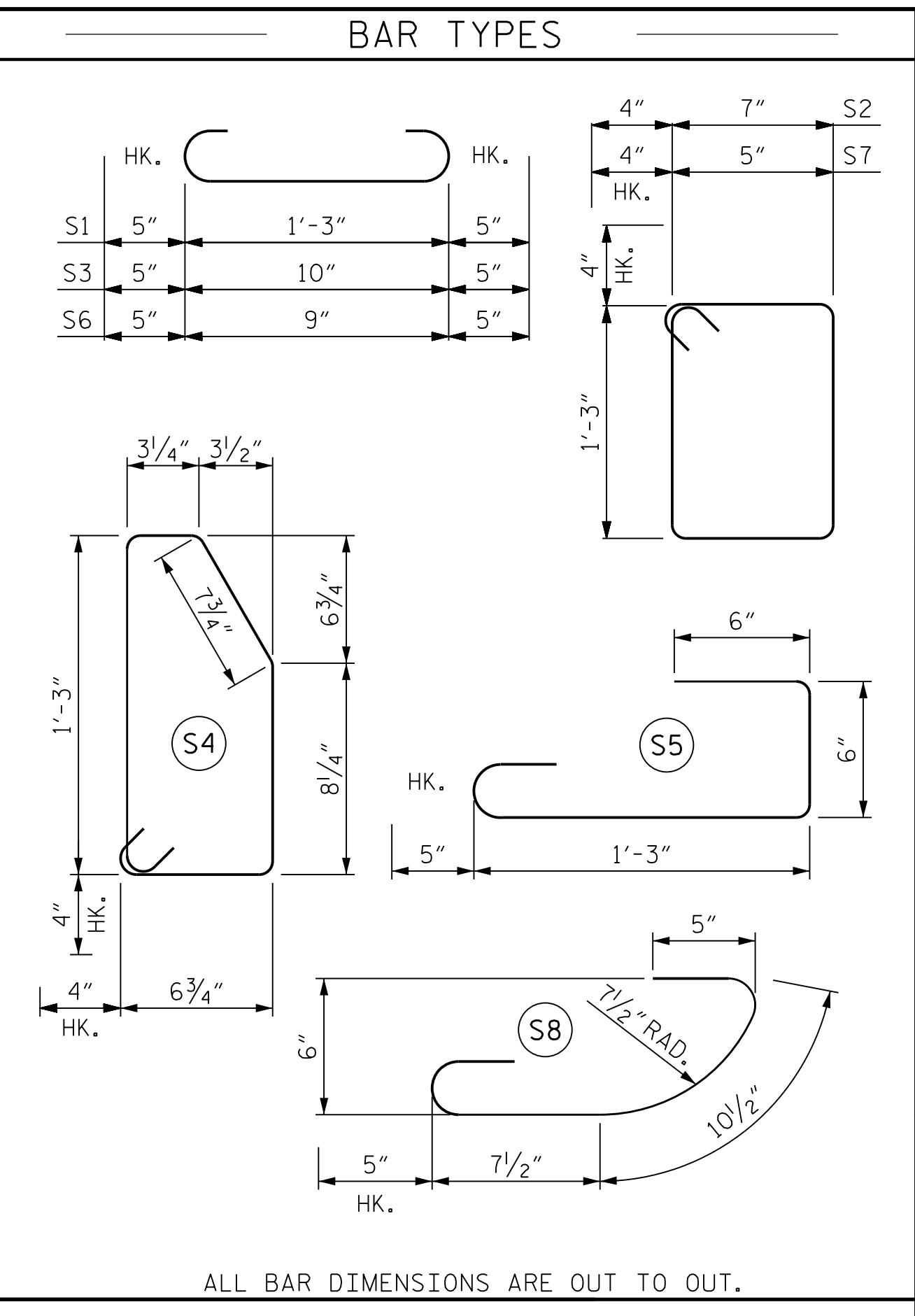
CONCRETE DESIGN DATA : $f'_c = 5,000$ PSI

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

ALL CORNERS TO BE CHAMFERED 1".

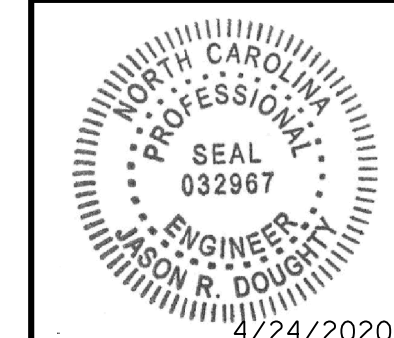


PILE DETAIL

FOR VERTICAL BAR PILE REINFORCING, SEE SHEET 1 OF 3

PROJECT NO. R-2233BB
RUTHERFORD COUNTY
 STATION: VARIES
 SHEET 8 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SOUND BARRIER WALL
 DETAILS



333 FAYETTEVILLE STREET, SUITE 500
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

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

DocuSigned by:
 Jason R. Dougherty
 SF73FA2DEA974E8...

REVISIONS

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

SHEET NO. SW-8
 TOTAL SHEETS 8

DESIGNED BY: C. CORMAN DATE: APR 2020
 DRAWN BY: K. WHITE DATE: APR 2020
 CHECKED BY: M. NIFONG DATE: APR 2020
 DESIGN ENGINEER: J. DOUGHTY DATE: APR 2020

DRAWN BY: MAA 6/II REV. 1/15/14 RWW/TMG
 CHECKED BY: GM 6/II REV. 12/17 MAA/THC