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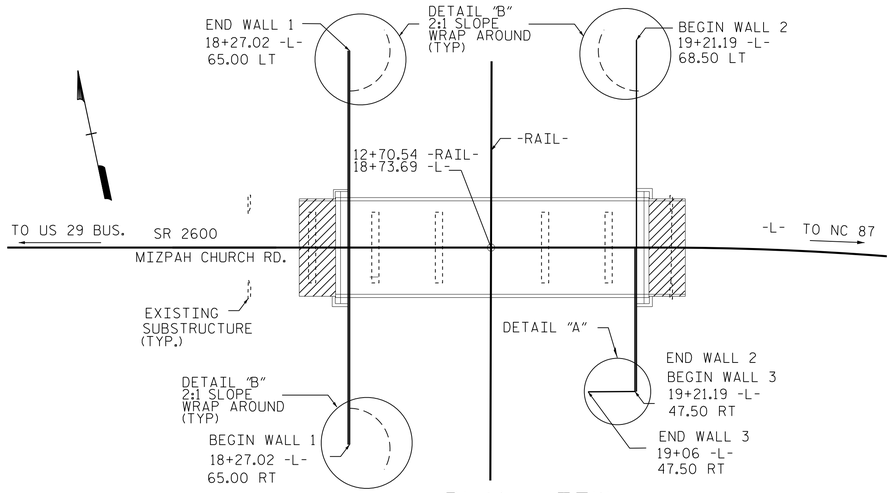
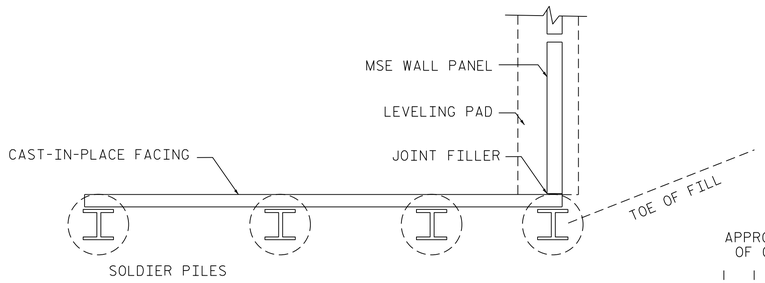
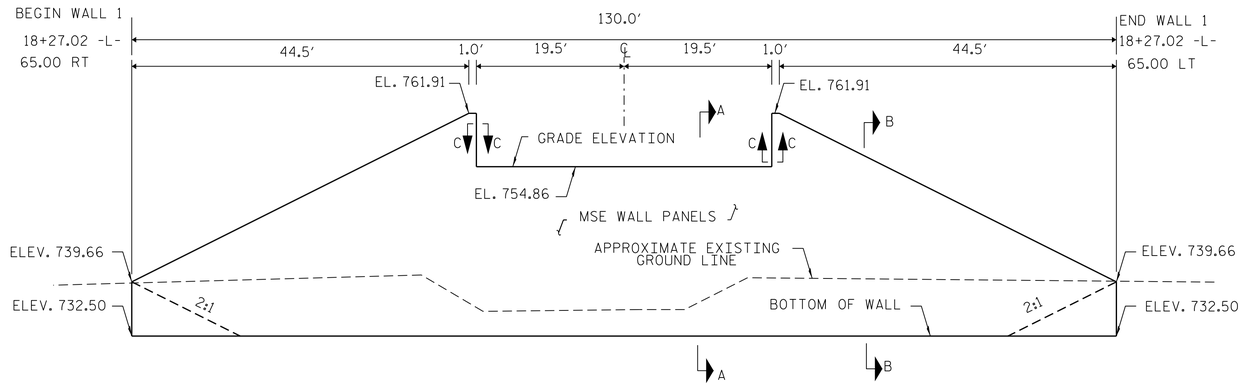


PLAN VIEW

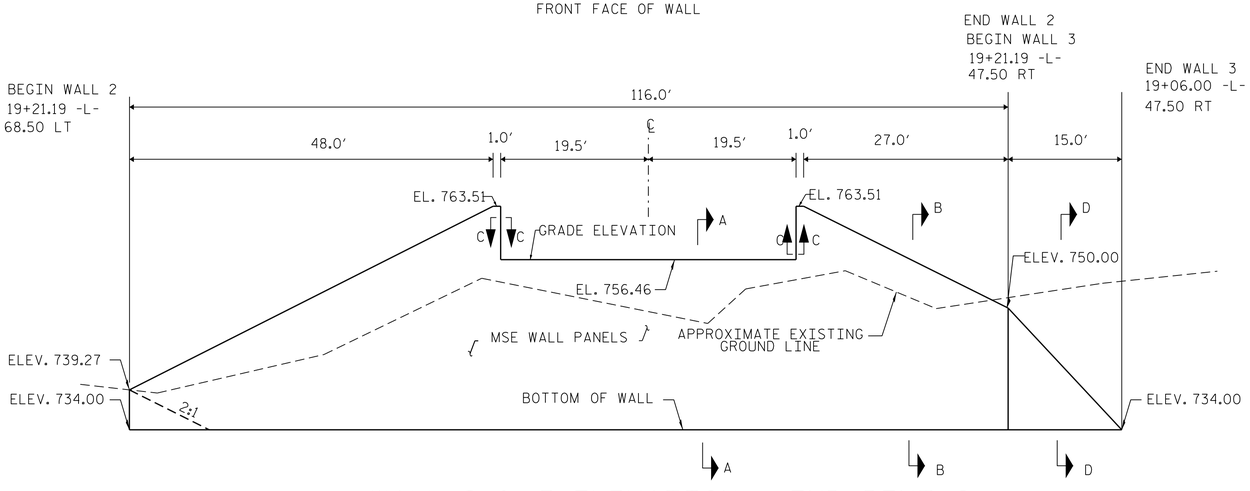


DETAIL "A"



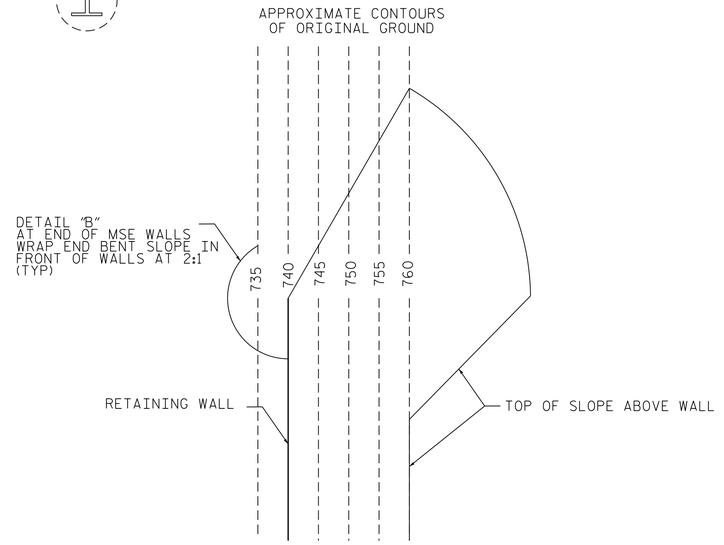
WALL 1 ELEVATION - END BENT 1

FRONT FACE OF WALL



WALL 2 & 3 ELEVATION - END BENT 2

FRONT FACE OF WALL



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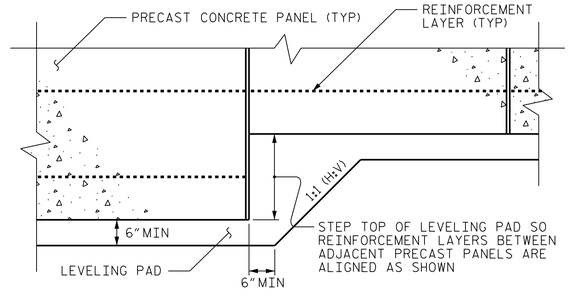

LEVELING PAD STEP DETAIL

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028669 ENGINEER RICHARD S WEBB

DocuSigned by: Scott Webb 6/6/2017

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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PROJECT NO.: B-4964

ROCKINGHAM COUNTY

STATION: 18+73.69 -L-

SHEET 1 OF 3

PREPARED BY: R. WEBB	DS	DATE: 5-17
REVIEWED BY: D. TEAGUE	DLT	DATE: 5-17

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

MSE ABUTMENT WALL PLAN AND ELEVATIONS

REVISIONS

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

SHEET NO. W-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028669 ENGINEER RICHARD S. WEBB

DocuSigned by: Scott Webb 6/6/2017
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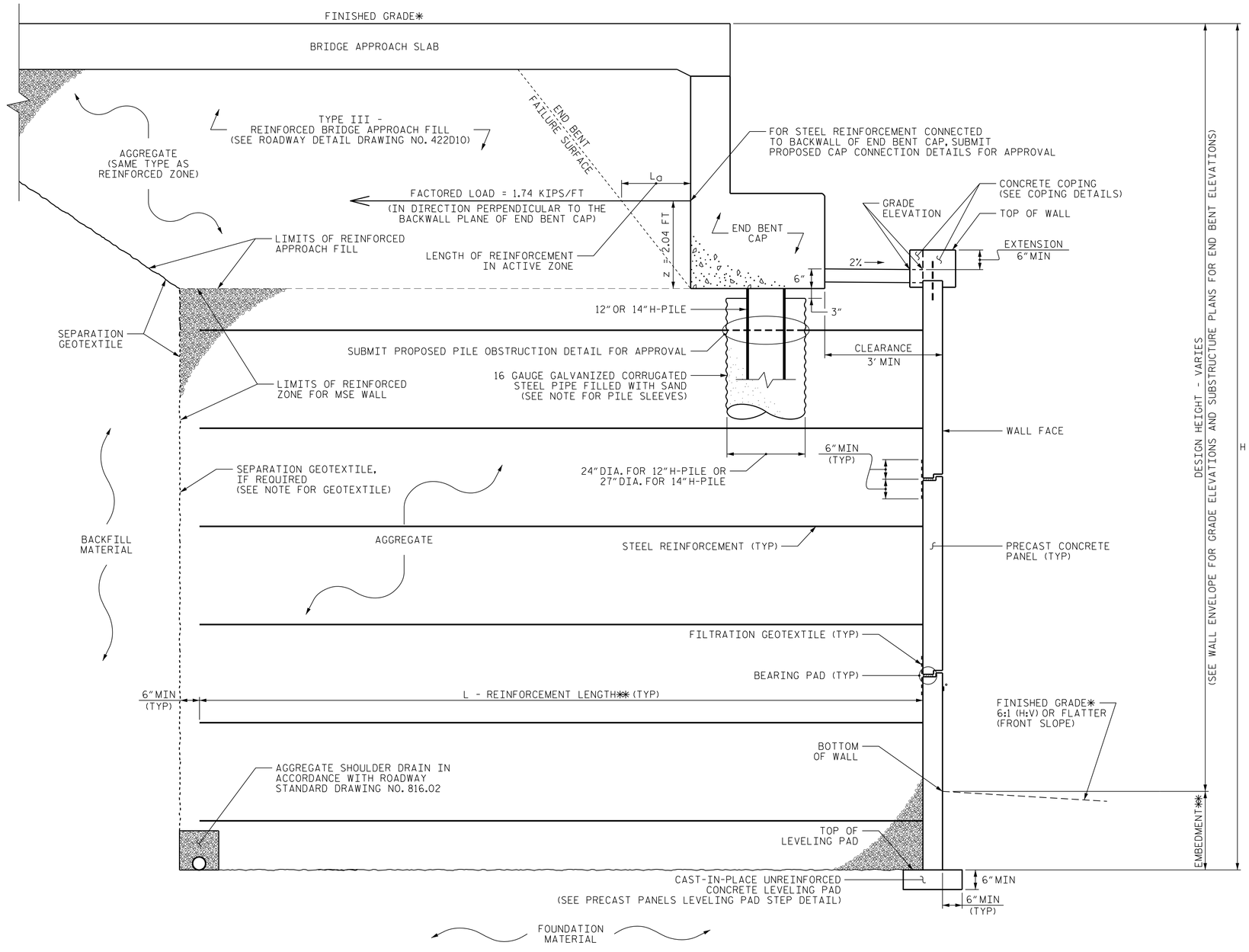
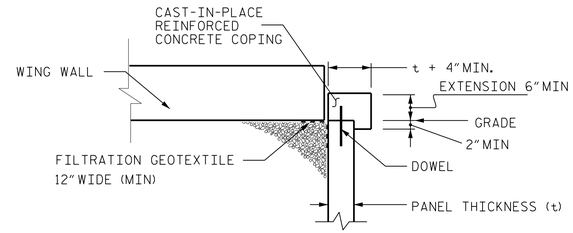
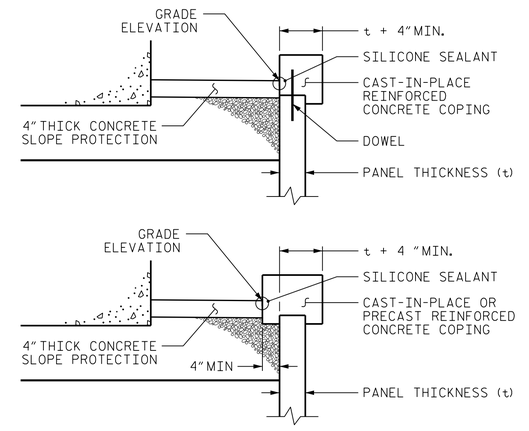


MSE ABUTMENT WALL WITH PRECAST PANELS - SECTION A-A

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



VERTICAL COPING SECTION C-C



COPING DETAILS

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

PROJECT NO.: B-4964

ROCKINGHAM COUNTY

STATION: 18+73.69 -L-

SHEET 2 OF 3

PREPARED BY: R. WEBB	DS	DATE: 5-17
REVIEWED BY: D. TEAGUE	DLT	DATE: 5-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

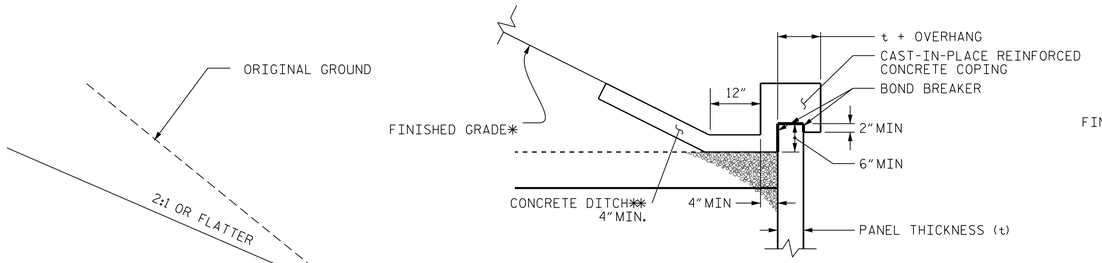
GEOTECHNICAL ENGINEERING UNIT

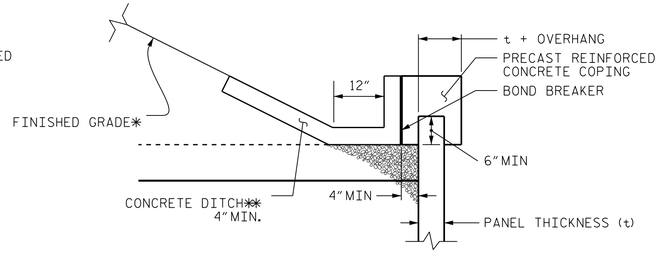
MSE ABUTMENT WALL WITH PANELS, END BENT ON H-PILES AND PILE SLEEVES TYPICAL & COPING DETAILS

REVISIONS

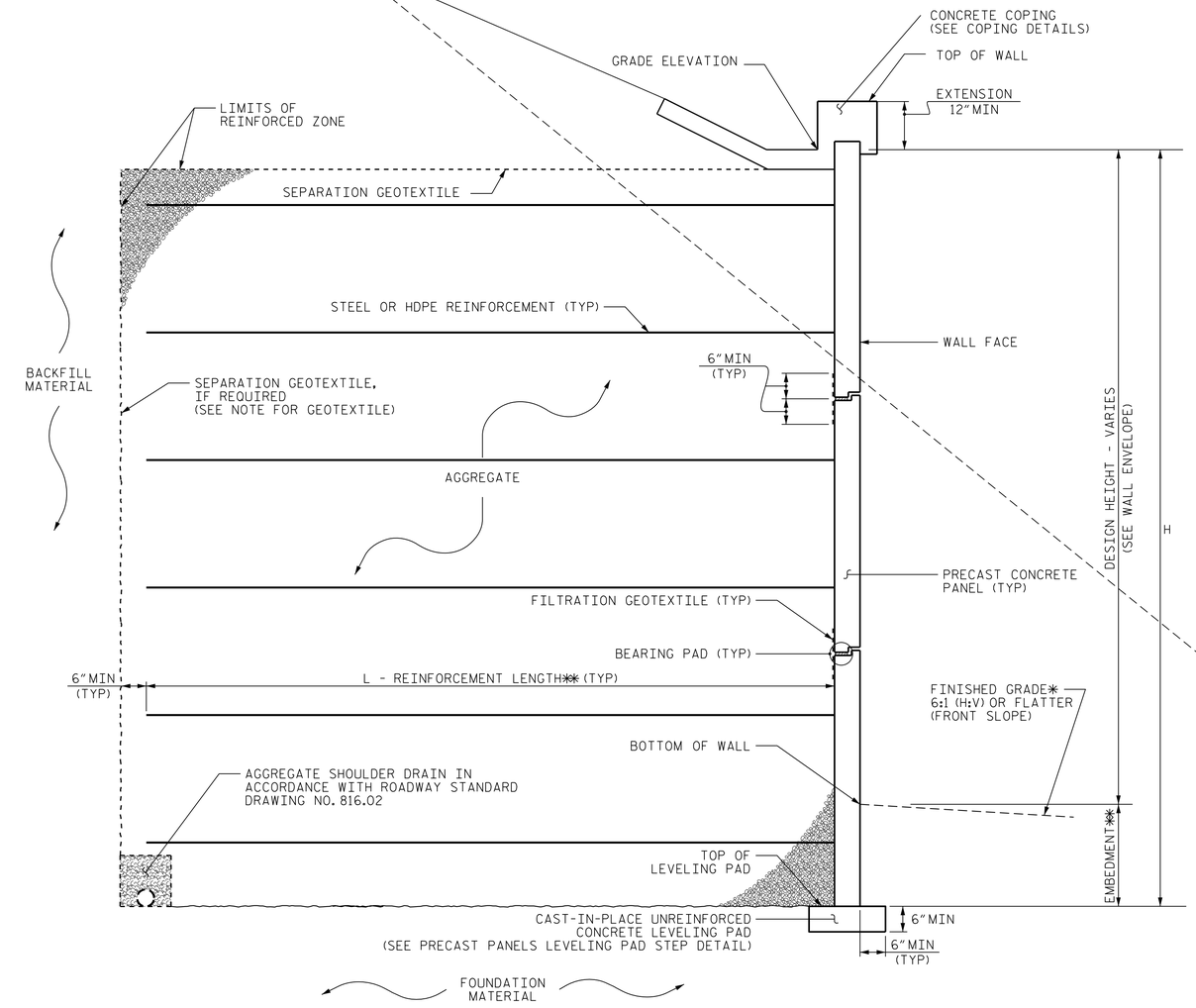
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-2





COPING DETAILS



MSE WALL WITH PRECAST PANELS - TYPICAL B-B

**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

NOTES:

1. FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
2. FOR TYPE III REINFORCED BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DRAWING NO. 422D10.
3. A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALLS NO. 1 & 2.
4. A DRAIN IS REQUIRED FOR RETAINING WALLS NO. 1 & 2.
5. WITHIN 33 FEET OF CENTERLINE DESIGN RETAINING WALLS NO. 1 & 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
6. FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STA. 18+27.02 -L- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1. FOUNDATIONS FOR END BENT NO. 2 LOCATED AT STA. 19+21.19 -L- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.
7. DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (La) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STA. 18+27.02 -L- AND END BENT NO. 2 LOCATED AT STA. 19+21.19 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.
8. DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 1 & 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
9. AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALLS NO. 1 & 2. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.
10. EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS NO. 1 & 2.
11. BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1 & 2, SURVEY WALL LOCATION AND SUBMIT REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPES ARE ACCEPTED.
12. PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO. 1 LOCATED AT STATION 18+27 -L- AND PILES FOR END BENT NO. 2 LOCATED AT STATION 19+21 -L-. AT THE CONTRACTOR'S OPTION, AND WITH THE ENGINEER'S APPROVAL, PILE SLEEVES MAY BE OMITTED IF THE NEUTRAL PLANE METHOD FHWA-NHI-16-009 SHOWS THE PILE DESIGN IS ADEQUATE FOR DOWNDRAG. USE AN UNFACTORED PERMANENT LOAD ON THE PILE OF 80 TONS, A LOAD FACTOR FOR DRAG FORCE OF 1.5, AND A SOIL ELASTIC MODULUS OF 100 KSF.
13. FOR RETAINING WALL NO. 2, SEE ROADWAY PLANS FOR DRAINAGE PIPE LOCATION BEHIND THE WALL. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING MSE WALL DESIGN OR CONSTRUCTION.

DESIGN RETAINING WALL NO. 1 & 2 FOR THE FOLLOWING:
A) H = DESIGN HEIGHT + EMBEDMENT
B) DESIGN LIFE = 100 YEARS
C) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 7000 LB/SF
D) MINIMUM REINFORCEMENT LENGTH (L) FOR WALL 1 = 22 FEET WITHIN 20 FEET OF CENTERLINE
MINIMUM REINFORCEMENT LENGTH (L) FOR WALL 2 = 20 FEET WITHIN 20 FEET OF CENTERLINE
MINIMUM REINFORCEMENT LENGTH (L) =.75 H FOR WALL 1 MORE THAN 20 FEET FROM CENTERLINE
MINIMUM REINFORCEMENT LENGTH (L) =.7 H FOR WALL 2 MORE THAN 20 FEET FROM CENTERLINE
E) REINFORCED ZONE AGGREGATE PARAMETERS:

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

F) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (g) LB/CF	FRICTION ANGLE (f) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	30	0

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028669 ENGINEER RICHARD S WEBB

DocuSigned by: Scott Webb 6/6/2017
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PROJECT NO.: B-4964

ROCKINGHAM COUNTY

STATION: 18+73.69 -L-

SHEET 3 OF 3

PREPARED BY: R. WEBB	DS	DATE: 5-17
REVIEWED BY: D. TEAGUE	DT	DATE: 5-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

MSE WALL WITH PANELS AND BACKSLOPE TYPICAL & COPING DETAILS

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

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028669 ENGINEER RICHARD S WEBB

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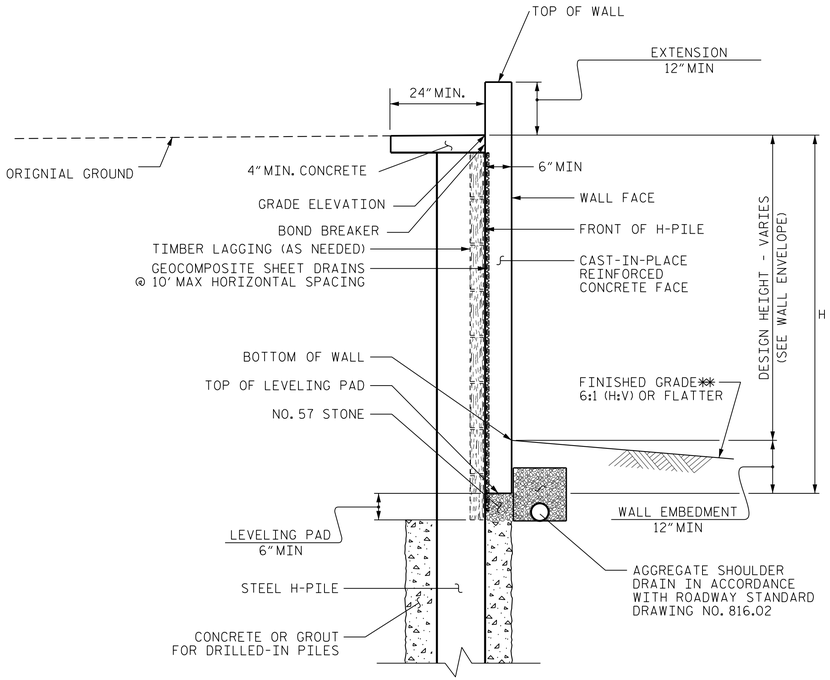

SOLDIER PILE WALL WITH CAST-IN-PLACE FACE - TYPICAL SECTION D-D

NOTES:

1. FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

2. AT THE CONTRACTOR'S OPTION, USE DRIVEN H-PILES FOR RETAINING WALL NO. 3.

3. USE A SOLDIER PILE RETAINING WALL WITH A CAST-IN-PLACE REINFORCED CONCRETE FACE FOR RETAINING WALL NO. 3.

4. BEFORE BEGINNING WALL DESIGN FOR RETAINING WALL NO. 3, SURVEY ALL LOCATION AND SUBMIT REVISED WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

5. FOR MSE WALL SECTIONS ENTIRELY IN CUT AT THE BEGINNING AND END OF THE WALLS, IF THE WALL SURVEY SHOWS THE 2:1 WRAP AROUND SLOPE INTERFERING WITH RAILROAD DRAINAGE, OR EXTENDING MORE THAN 15 FEET FROM THE WALL FACE, SUBSTITUTE SOLDIER PILES WALLS AT RIGHT ANGLES TO THE MSE WALL, AS WITH WALL 3, FOR THE PORTION OF THE MSE WALL ENTIRELY IN CUT.

DESIGN RETAINING WALL NO. 3 FOR THE FOLLOWING:
- A) H = DESIGN HEIGHT + WALL EMBEDMENT
- B) DESIGN LIFE = 100 YEARS
- C) IN-SITU ASSUMED MATERIAL PARAMETERS:
  - UNIT WEIGHT, γ = 120 LB/CF
  - FRICTION ANGLE, ϕ = 30 DEGREES
  - COHESION, c = 0 LB/SF

ESTIMATED WALL QUANTITIES
(SQUARE FEET)

MSE RETAINING WALL NO. 1	3100 SF
MSE RETAINING WALL NO. 2	2800 SF
SOLDIER PILE WALL NO. 3	120 SF

PROJECT NO.: B-4964

ROCKINGHAM COUNTY

STATION: 18+73.69 -L-

PREPARED BY: R. WEBB	DATE: 5-17
REVIEWED BY: D. TEAGUE	DATE: 5-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SOLDIER PILE WALL WITH OR WITHOUT BACKSLOPE TYPICAL & NOTES

REVISIONS

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

SHEET NO. W-4