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GEOTECHNICAL ENGINEER

ENGINEER

SEAL 028669

SCOTT WEBB

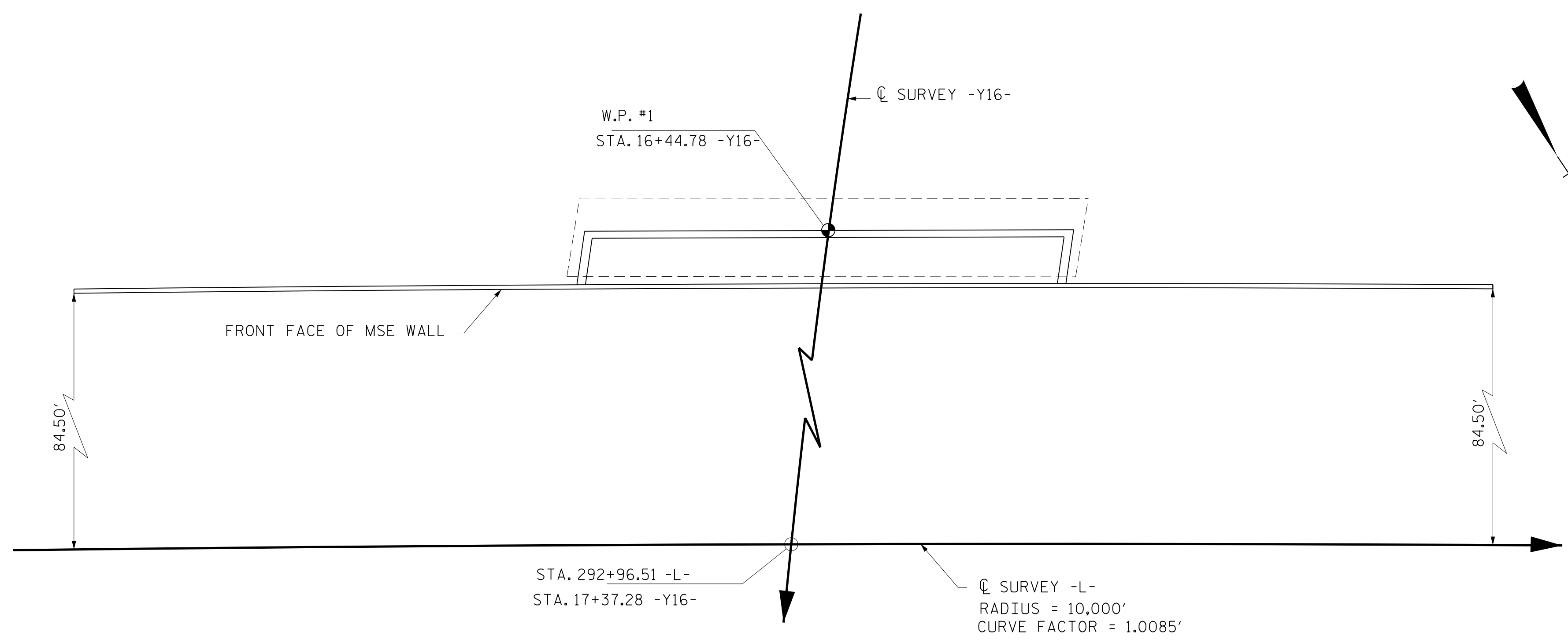
11/20/2017

DATE

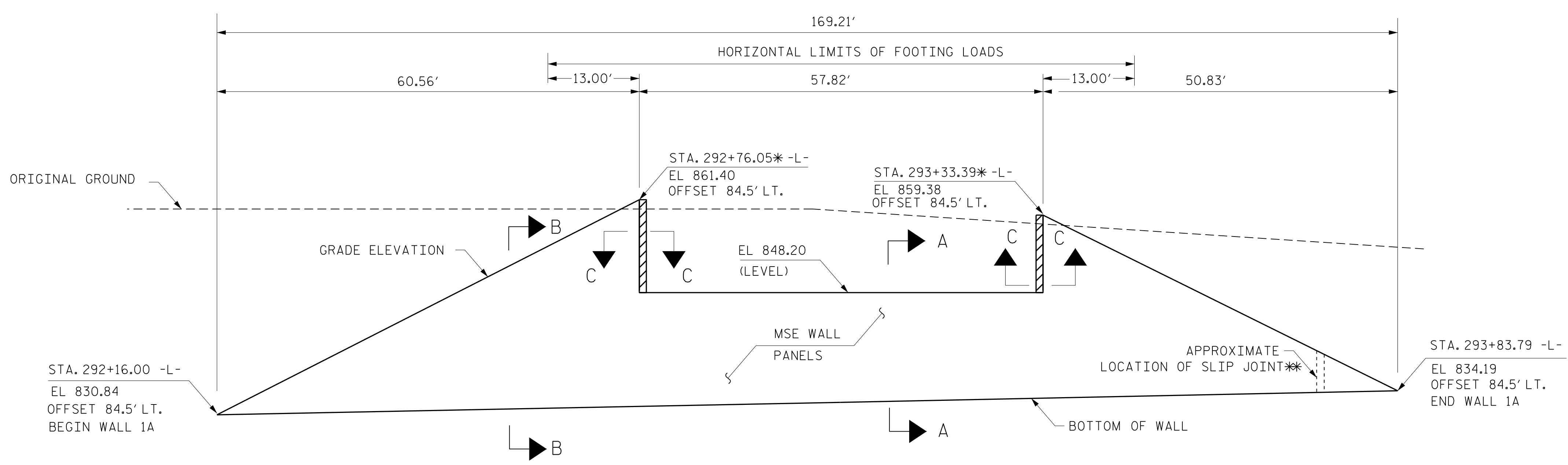
SIGNATURE

DATE

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PLAN - END BENT 1



\* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.

\*\* WALL WILL BE CONSTRUCTED IN TWO STAGES, BEFORE AND AFTER DETOUR. SEE ROADWAY PLANS FOR TEMPORARY SHORING AND COORDINATE WITH ROADWAY AND STRUCTURE CONTRACTORS.

ELEVATION - END BENT 1  
(LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

PROJECT NO.: U-2525C

GUILFORD COUNTY

STATION: 292+96.51 -L- & 17+37.28 -Y16-

SHEET 1 OF 13

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

GEOTECHNICAL  
ENGINEERING UNIT

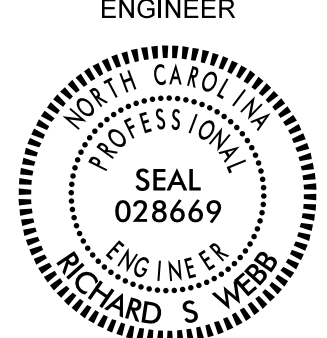
MSE ABUTMENT WALLS  
PLAN AND ELEVATION VIEW  
SITE 1 WALL 1A  
END BENT 1

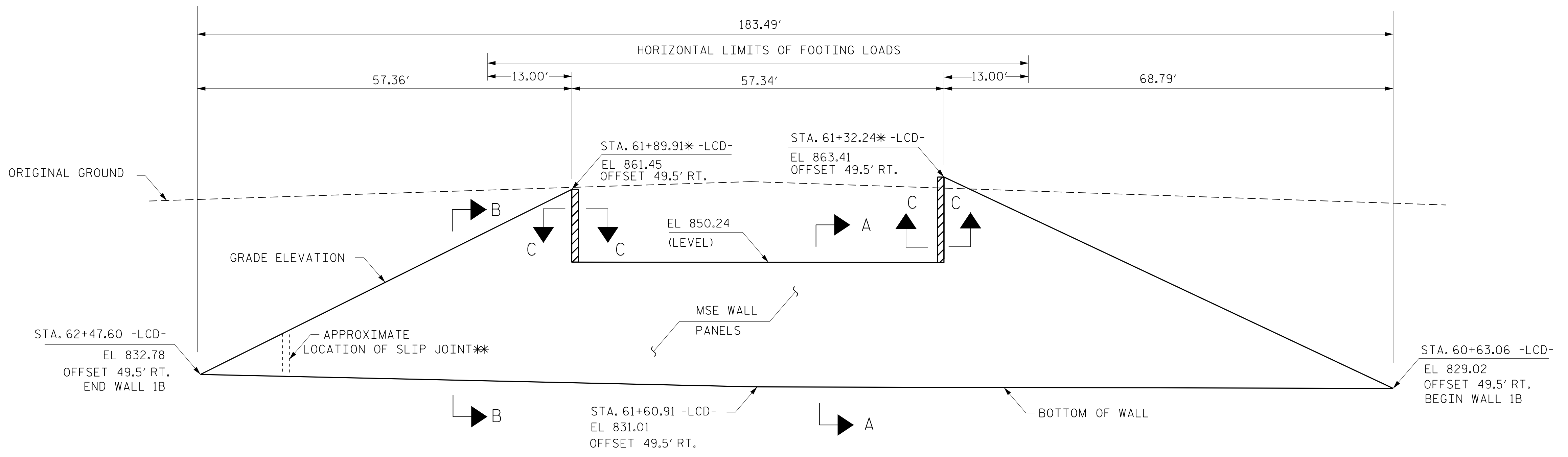
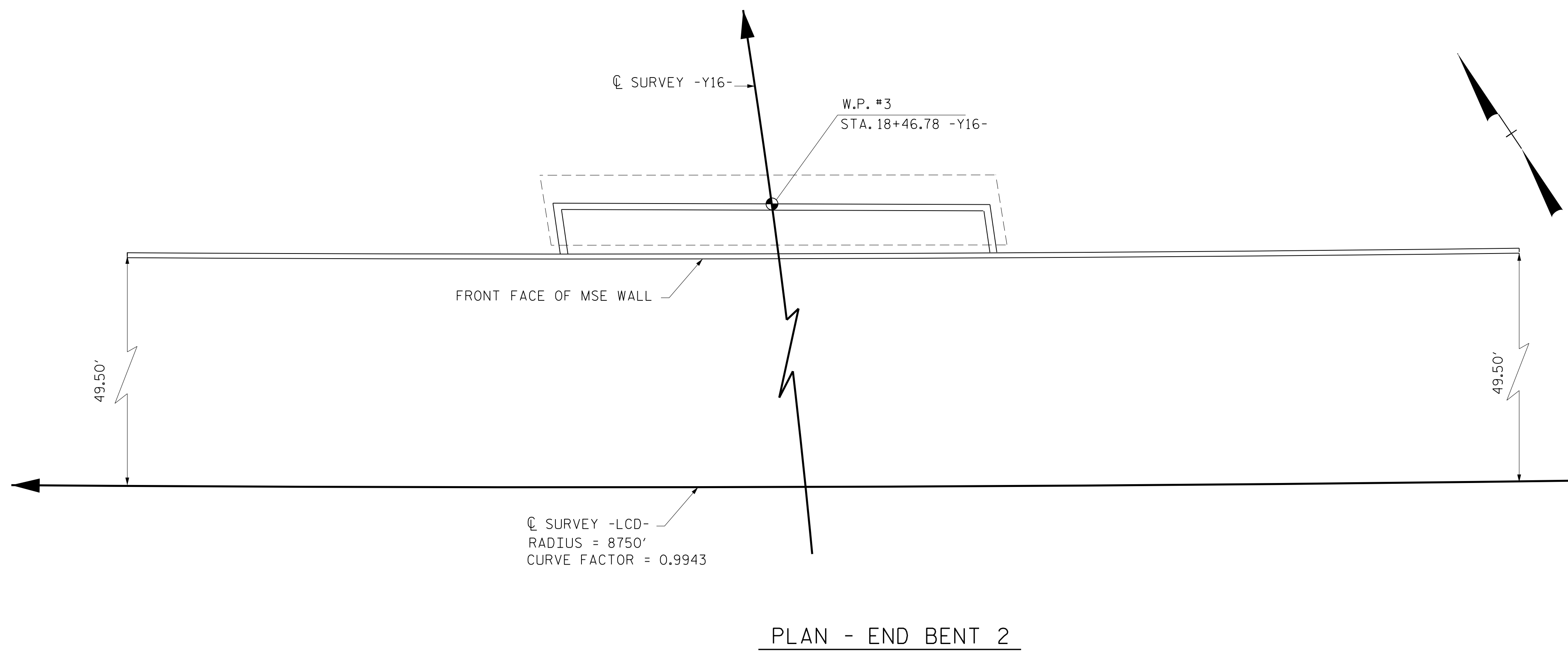
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-1
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PREPARED BY: R. WEBB  
REVIEWED BY: G. BODENHEIMER

DATE: 11-17  
DATE: 11-17

ds  
YCB

GEOTECHNICAL ENGINEER  
 ENGINEER  
  
 DocuSigned by: *Scott Webb* 11/20/2017  
 SIGNATURE DATE SIGNATURE DATE  
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 UNLESS ALL SIGNATURES COMPLETED**

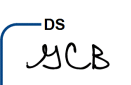


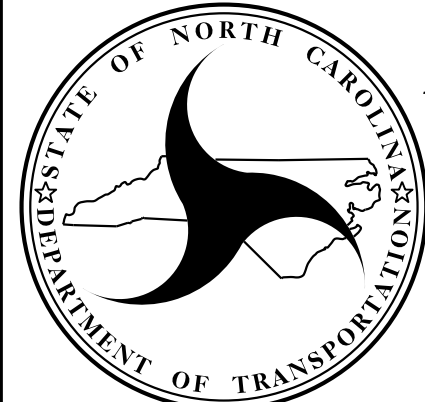
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**ELEVATION - END BENT 2**  
 (LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 292+96.51 -L- & 17+37.28 -Y16-  
 SHEET 2 OF 13

PREPARED BY: R. WEBB DATE: 11-17  
 REVIEWED BY: B. BODENHEIMER DATE: 11-17



  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL  
 ENGINEERING UNIT**

**MSE ABUTMENT WALLS  
 PLAN AND ELEVATION VIEW  
 SITE 1 WALL 1B  
 END BENT 2**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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SHEET NO. W-2

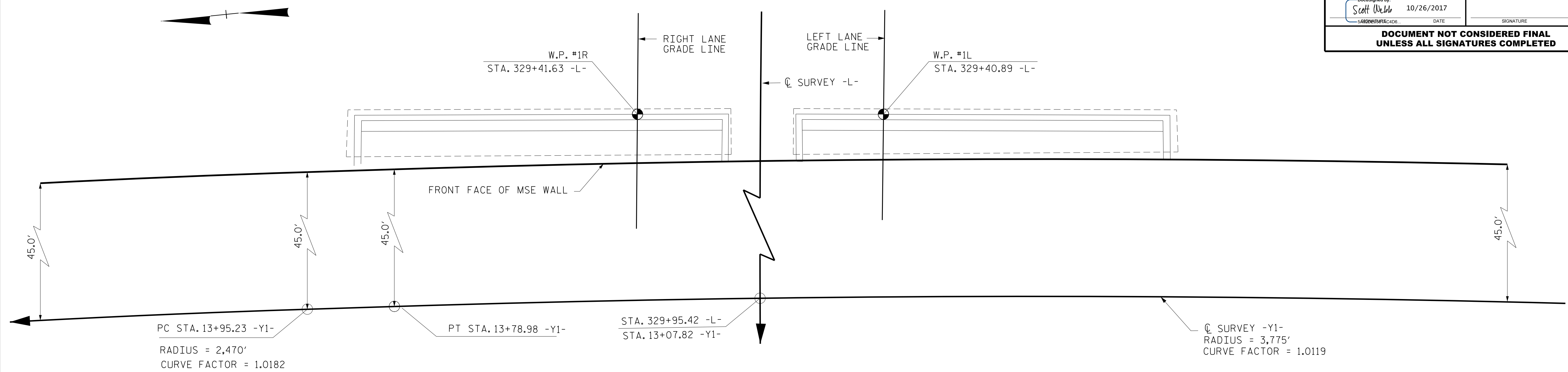
GEOTECHNICAL ENGINEER

ENGINEER

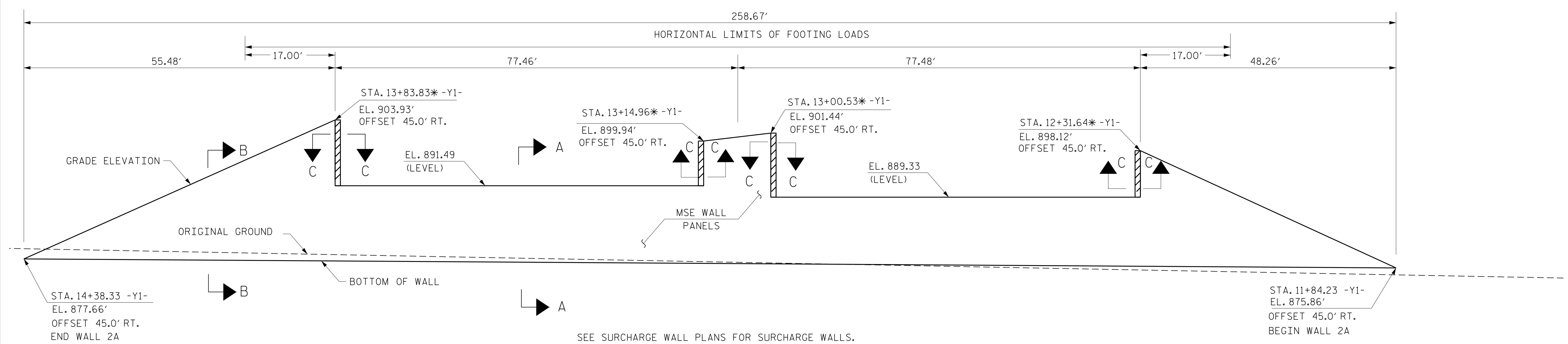
NORTH CAROLINA PROFESSIONAL SEAL 028669 ENGINEER RICHARD S. WEBB

DocuSigned by:  
*Scott Webb* 10/26/2017

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**PLAN - END BENT 1**



SEE SURCHARGE WALL PLANS FOR SURCHARGE WALLS.  
 \* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.

**ELEVATION - END BENT 1**  
 (LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 329+95.42 -L- & 13+07.82 -Y1-  
 SHEET 3 OF 13

PREPARED BY: R. WEBB      DATE: 9-17  
 REVIEWED BY: G. BODENHEIMER      DATE: 9-17

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

**GEOTECHNICAL  
ENGINEERING UNIT**

REVISIONS						SHEET NO. W-3
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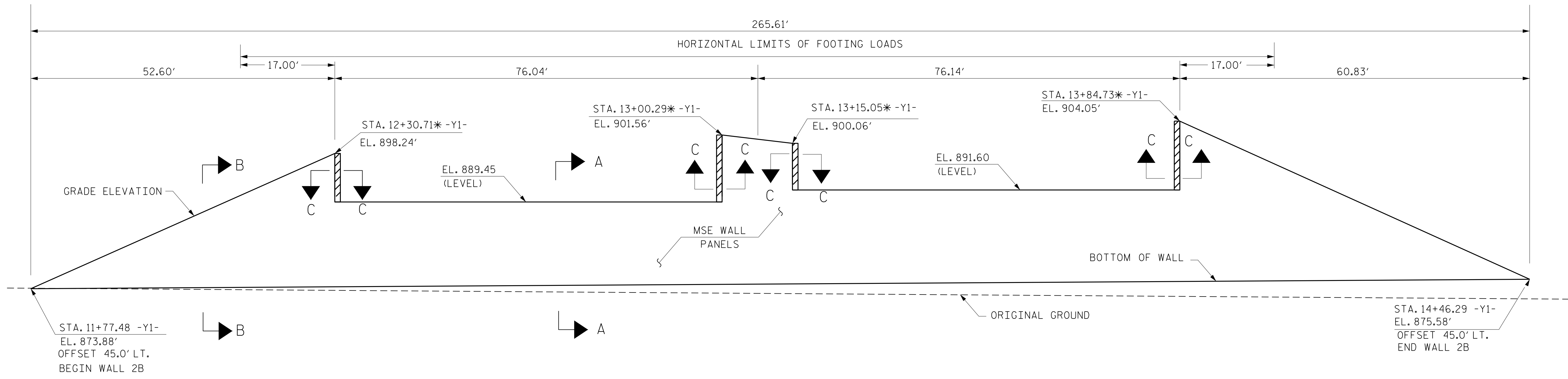
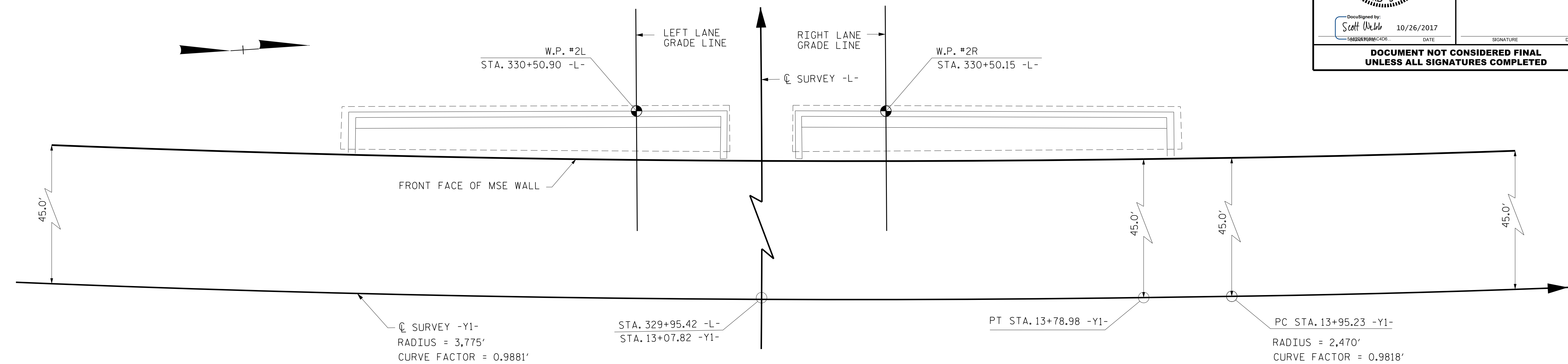
GEOTECHNICAL ENGINEER

DocuSigned by:  
*Scott Webb*  
10/26/2017

ENGINEER

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SIGNATURE      DATE

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SEE SURCHARGE WALL PLANS FOR SURCHARGE WALLS.  
\* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.

PROJECT NO.: U-2525C  
GUILFORD COUNTY  
STATION: 329+95.42 -L- & 13+07.82 -Y1-  
SHEET 4 OF 13

PREPARED BY: R. WEBB      DATE: 9-17  
REVIEWED BY: B. BODENHEIMER      DATE: 9-17

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**NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
  
**GEOTECHNICAL**  
**ENGINEERING UNIT**

REVISIONS					
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SHEET NO. W-4

GEOTECHNICAL ENGINEER

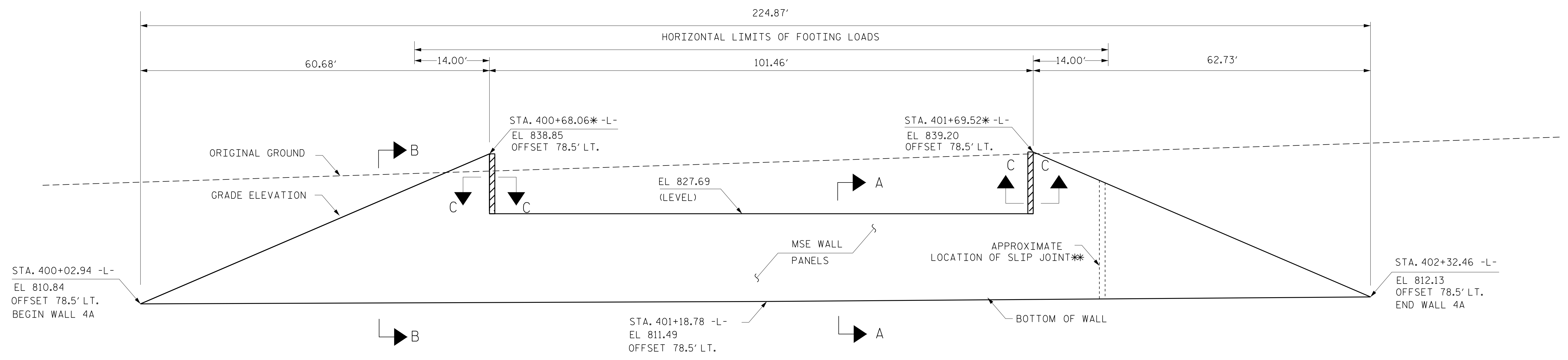
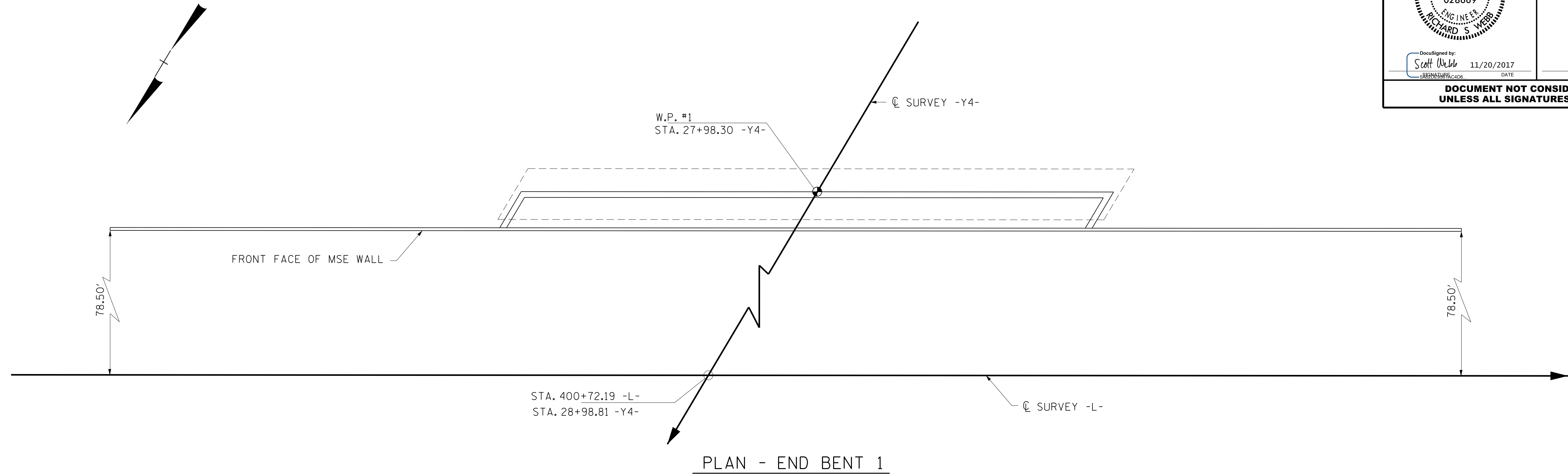
ENGINEER

NORTH CAROLINA  
PROFESSIONAL  
SEAL  
028669  
ENGINEER  
RICHARD S. WEBB

Designed by: Scott Webb DATE: 11/20/2017

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

DOCUMENT NOT CONSIDERED FINAL  
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PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 400+72.19 -L- & 28+98.81 -Y4-  
 SHEET 5 OF 13

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

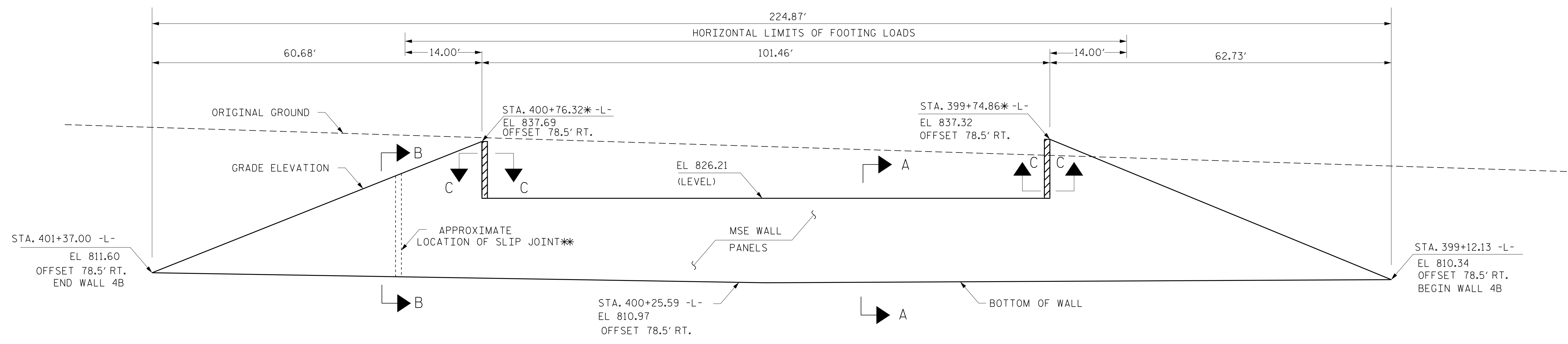
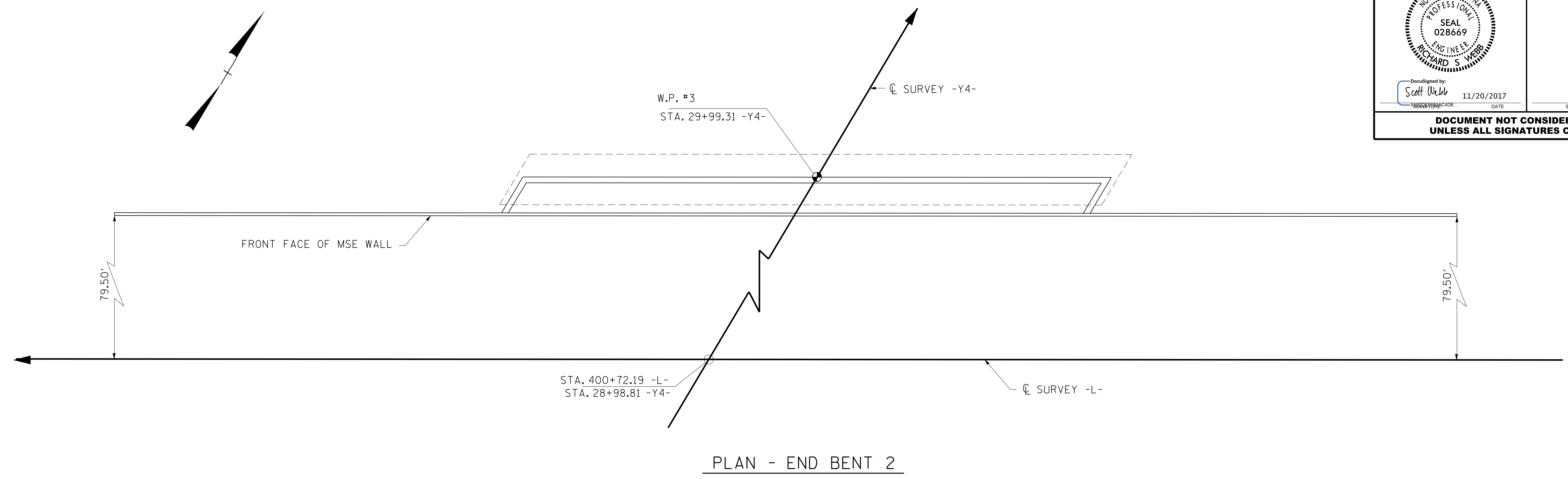
**GEOTECHNICAL  
ENGINEERING UNIT**

REVISIONS						SHEET NO. W-5
NO.	BY	DATE	NO.	BY	DATE	
1			3			
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PREPARED BY: R. WEBB      DATE: 11-17  
 REVIEWED BY: G. BODENHEIMER      DATE: 11-17

ds

GEOTECHNICAL ENGINEER  
 ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL 028669  
 RICHARD S. WEBB  
 11/20/2017  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



\* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.  
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**ELEVATION - END BENT 2**  
 (LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 400+72.19 -L- & 28+98.81 -Y4-  
 SHEET 6 OF 13

PREPARED BY: R. WEBB  
 REVIEWED BY: B. BODENHEIMER  
 DATE: 11-17  
 DATE: 11-17

ds  
 RCB

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL ENGINEERING UNIT**

**MSE ABUTMENT WALLS  
 PLAN AND ELEVATION VIEW  
 SITE 4 WALL 4B  
 END BENT 2**

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

SHEET NO. W-6

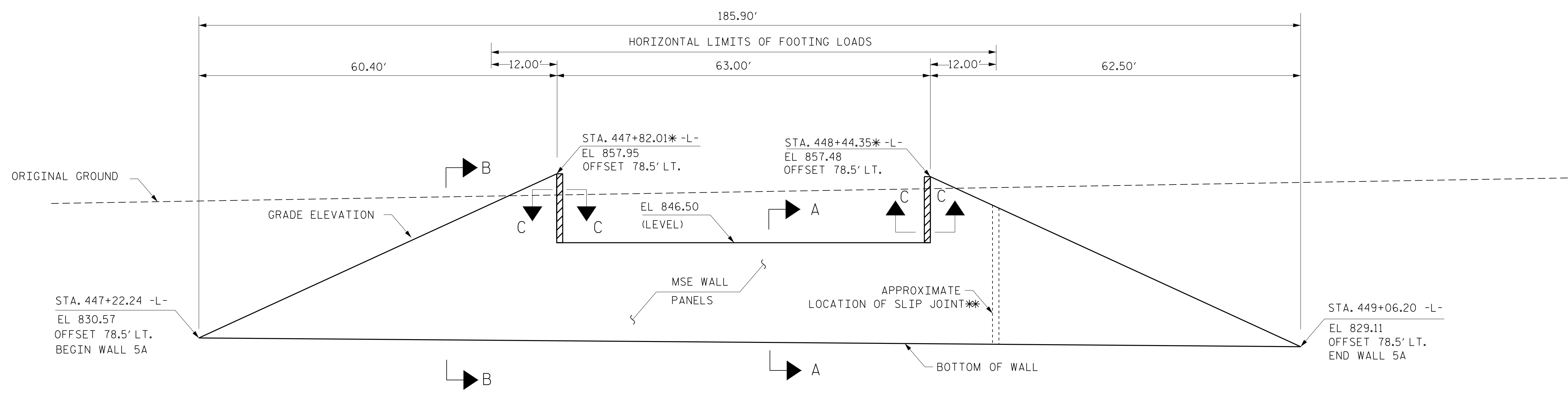
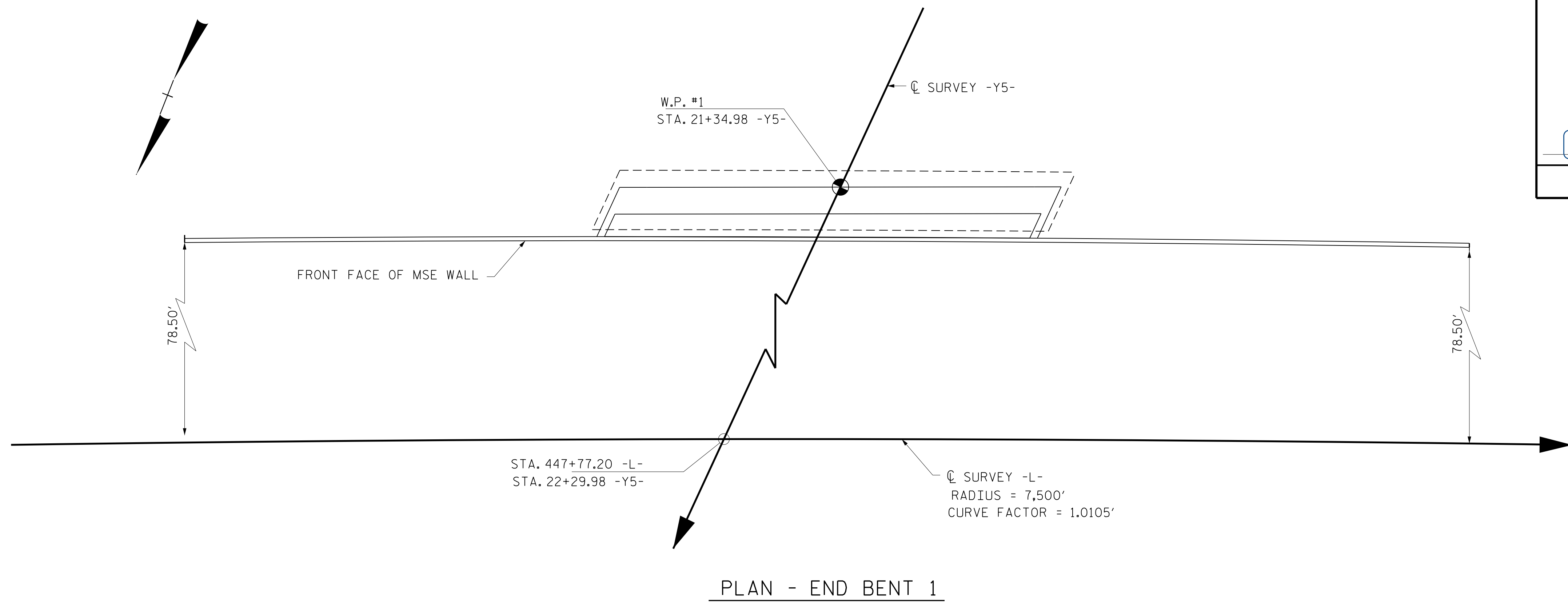
GEOTECHNICAL ENGINEER

SEAL  
028669  
RICHARD S. WEBB

ENGINEER

DocuSigned by:  
*Scott Webb* 10/26/2017

**DOCUMENT NOT CONSIDERED FINAL  
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PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 447+77.20 -L- & 22+29.98 -Y5-  
 SHEET 7 OF 13

PREPARED BY: R. WEBB      DATE: 9-17  
 REVIEWED BY: G. BODENHEIMER      DATE: 9-17

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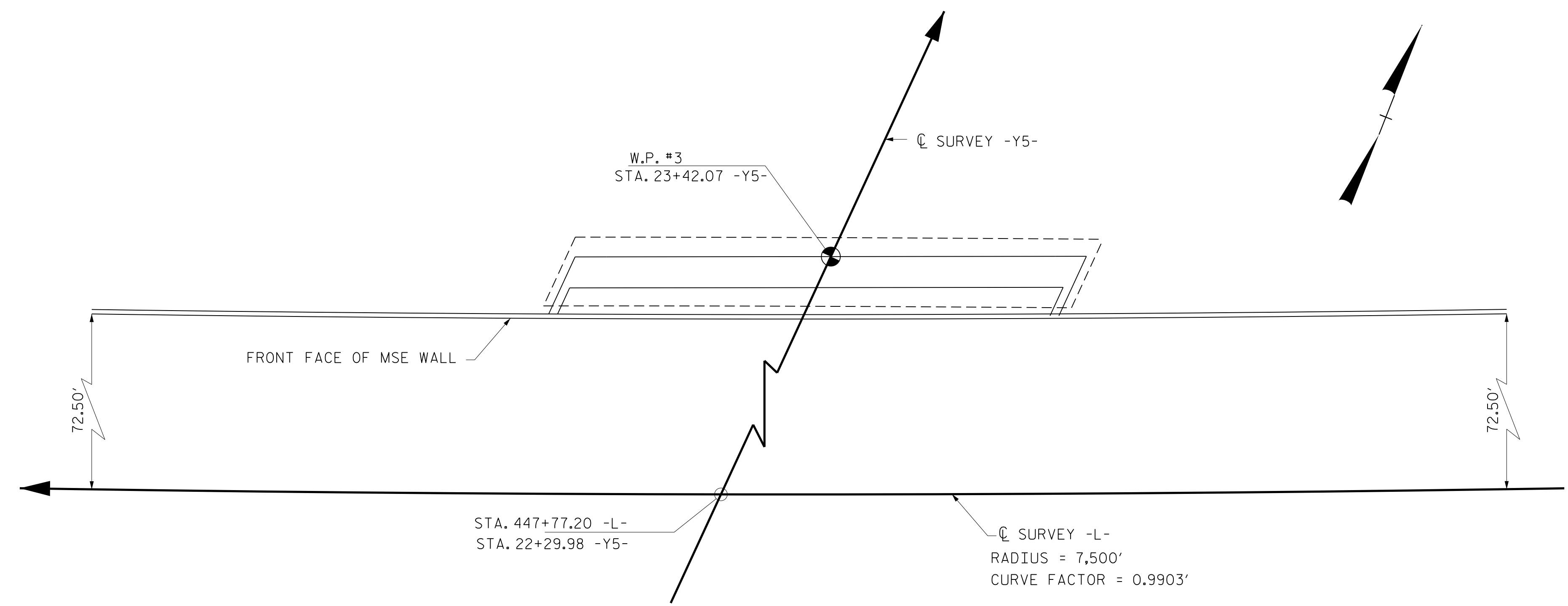
**NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS**

**GEOTECHNICAL  
ENGINEERING UNIT**

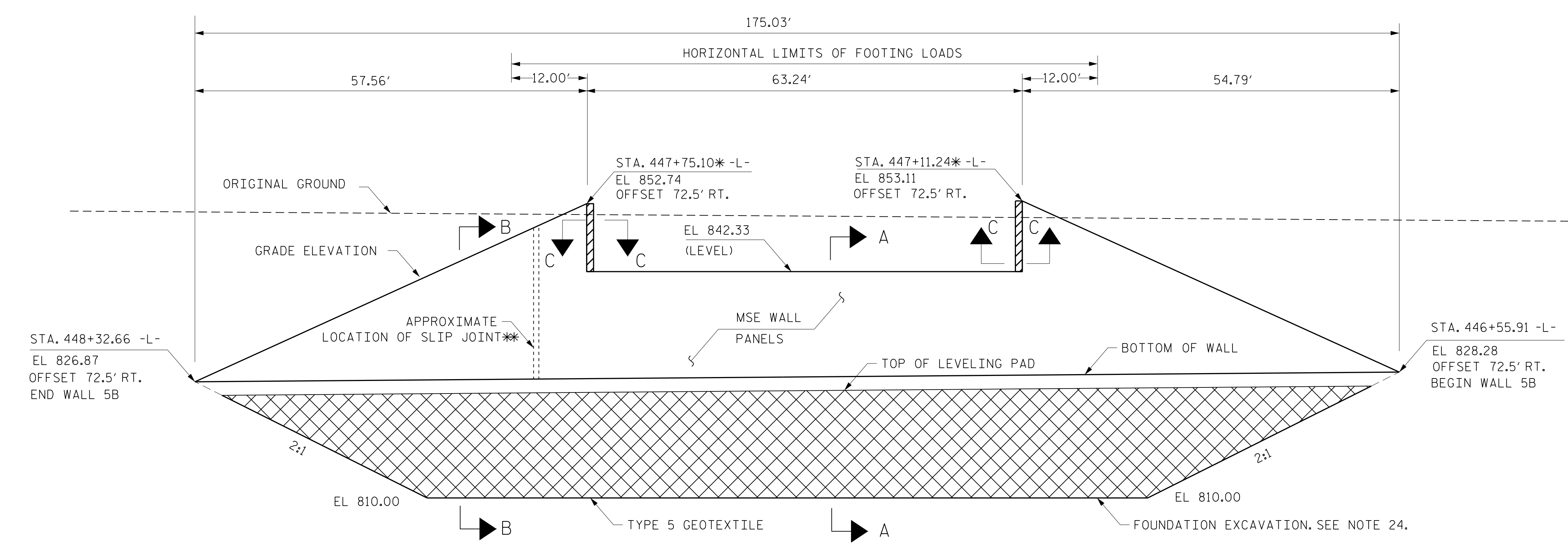
REVISIONS						SHEET NO. W-7
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



GEOTECHNICAL ENGINEER  
 ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL 028669  
 RICHARD S. WEBB  
 DocuSigned by: Scott Webb 10/26/2017  
 SIGNATURE DATE SIGNATURE DATE  
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**



PLAN - END BENT 2



\* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.  
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ELEVATION - END BENT 2  
(LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 447+77.20 -L- & 22+29.98 -Y5-  
 SHEET 8 OF 13

PREPARED BY: R. WEBB DATE: 10-17  
 REVIEWED BY: B. BODENHEIMER DATE: 10-17

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS  
**GEOTECHNICAL ENGINEERING UNIT**

MSE ABUTMENT WALLS  
PLAN AND ELEVATION VIEW  
SITE 5 WALL 5B  
END BENT 2

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

SHEET NO. W-8

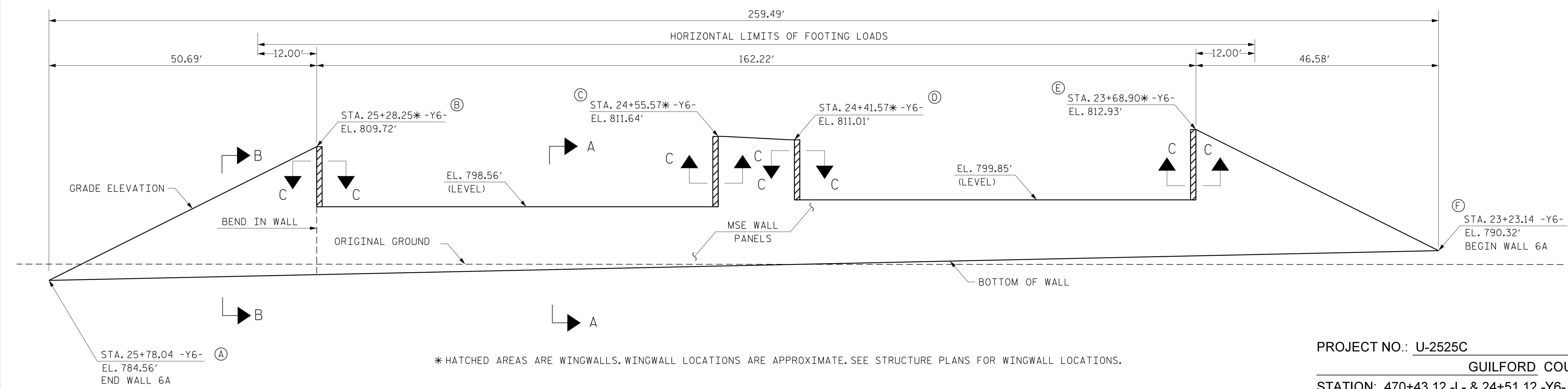
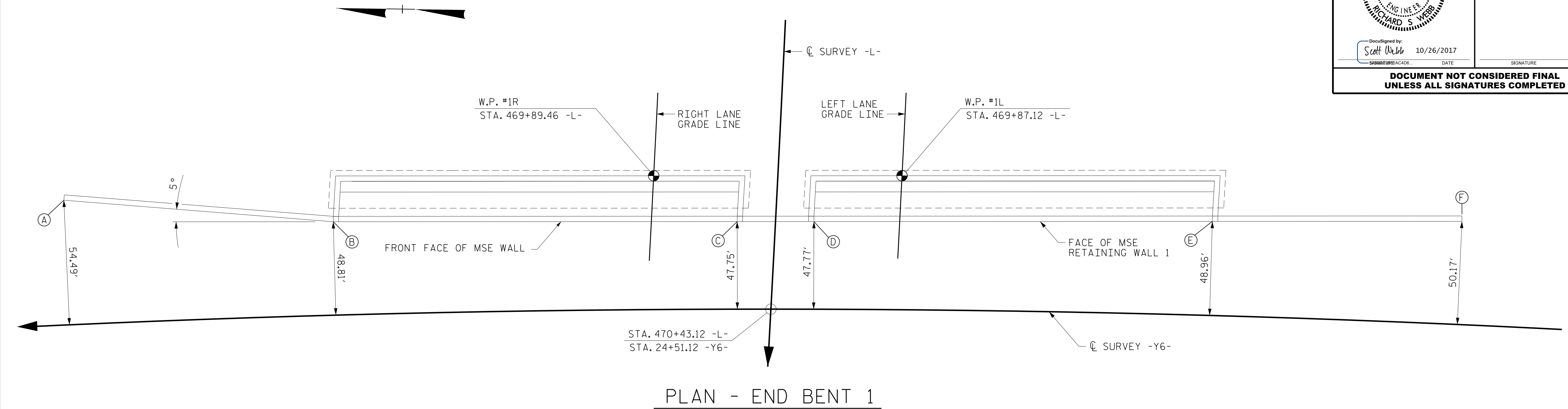
GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by: Scott Webb 10/26/2017

DATE SIGNATURE DATE

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\* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.

PROJECT NO.: U-2525C

GUILFORD COUNTY

STATION: 470+43.12 -L- & 24+51.12 -Y6-

SHEET 9 OF 13

**ELEVATION - END BENT 1**  
(LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

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

**GEOTECHNICAL**  
ENGINEERING UNIT

**MSE ABUTMENT WALLS**  
**PLAN AND ELEVATION VIEW**  
**SITE 6 WALL 6A**  
**END BENT 1**

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

SHEET NO. W-9

PREPARED BY: R. WEBB DATE: 9-17

REVIEWED BY: G. BODENHEIMER DATE: 9-17

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GEOTECHNICAL ENGINEER

ENGINEER

PROFESSIONAL SEAL

028669

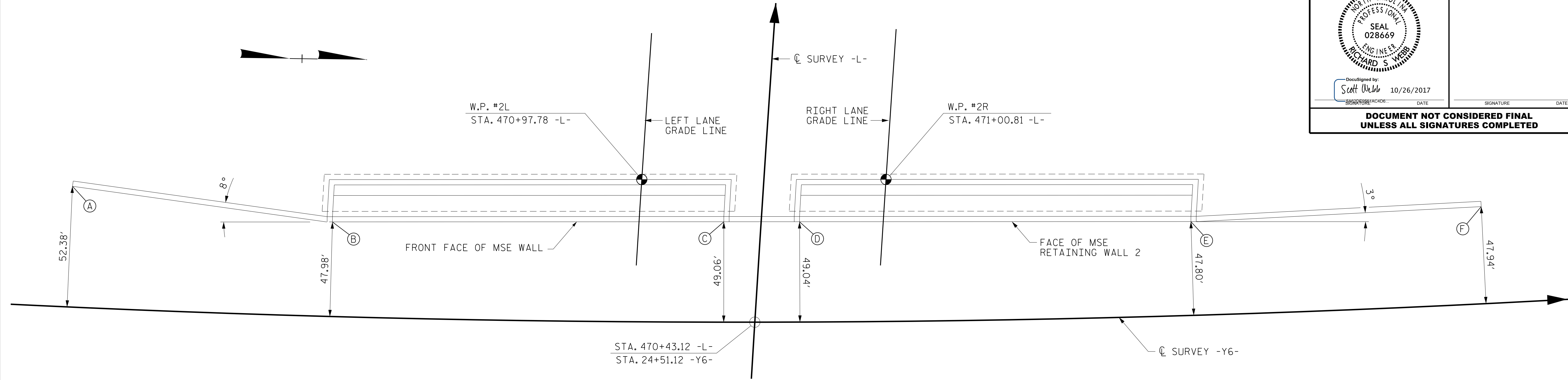
ENGINEER

RICHARD S. WEBB

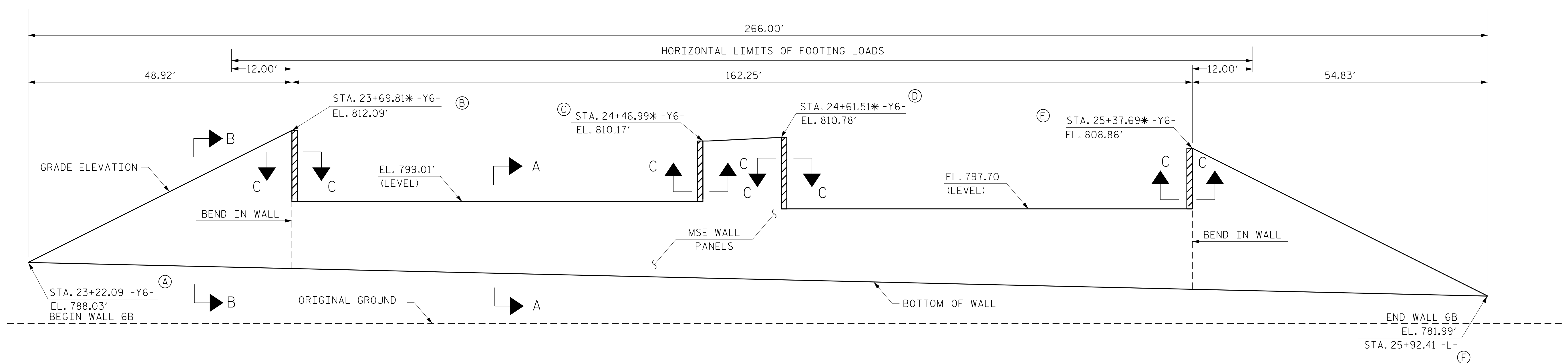
DocuSigned by:  
Scott Webb 10/26/2017

DATE: 10/26/2017

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**PLAN - END BENT 2**



\* HATCHED AREAS ARE WINGWALLS. WINGWALL LOCATIONS ARE APPROXIMATE. SEE STRUCTURE PLANS FOR WINGWALL LOCATIONS.

**ELEVATION - END BENT 2**  
(LOOKING AT EXPOSED FRONT FACE OF MSE RETAINING WALL)

PROJECT NO.: U-2525C  
GUILFORD COUNTY  
STATION: 470+43.12 -L- & 24+51.12 -Y6-  
SHEET 10 OF 13

PREPARED BY: R. WEBB DATE: 9-17  
REVIEWED BY: B. BODENHEIMER DATE: 9-17

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**GEOTECHNICAL  
ENGINEERING UNIT**

**MSE ABUTMENT WALLS  
PLAN AND ELEVATION VIEW  
SITE 6 WALL 6B  
END BENT 2**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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SHEET NO. W-10



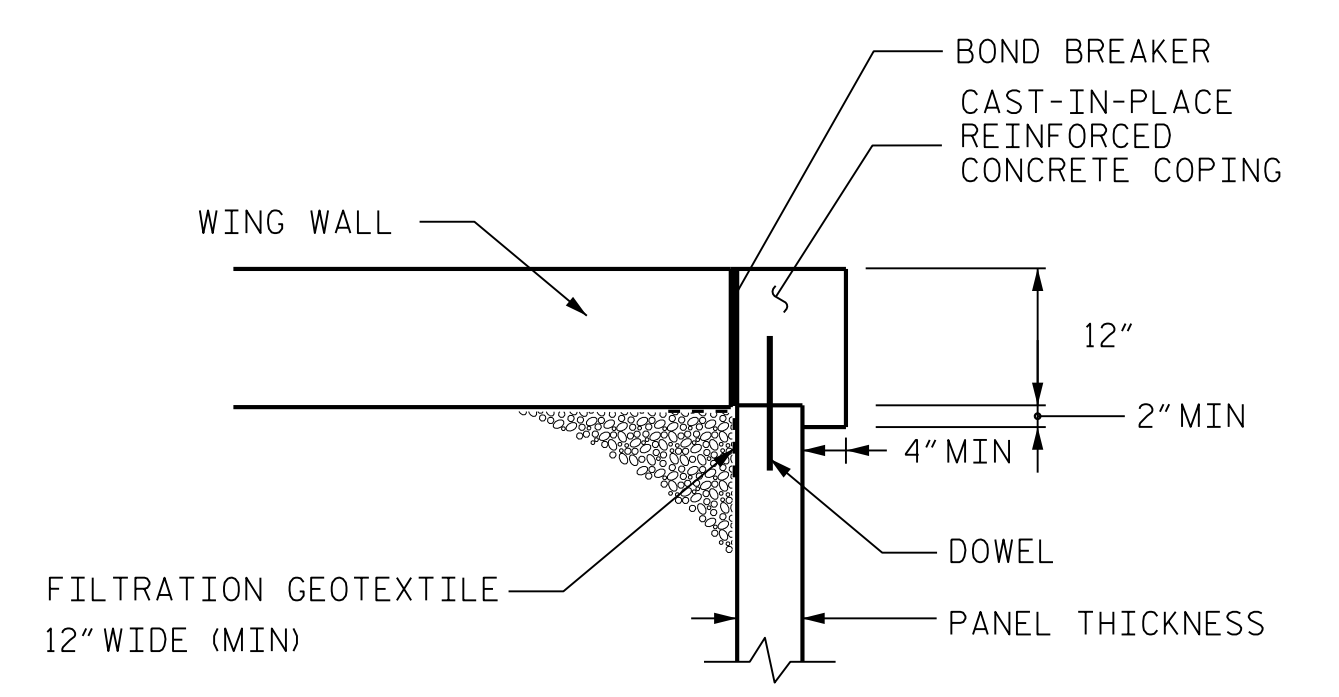
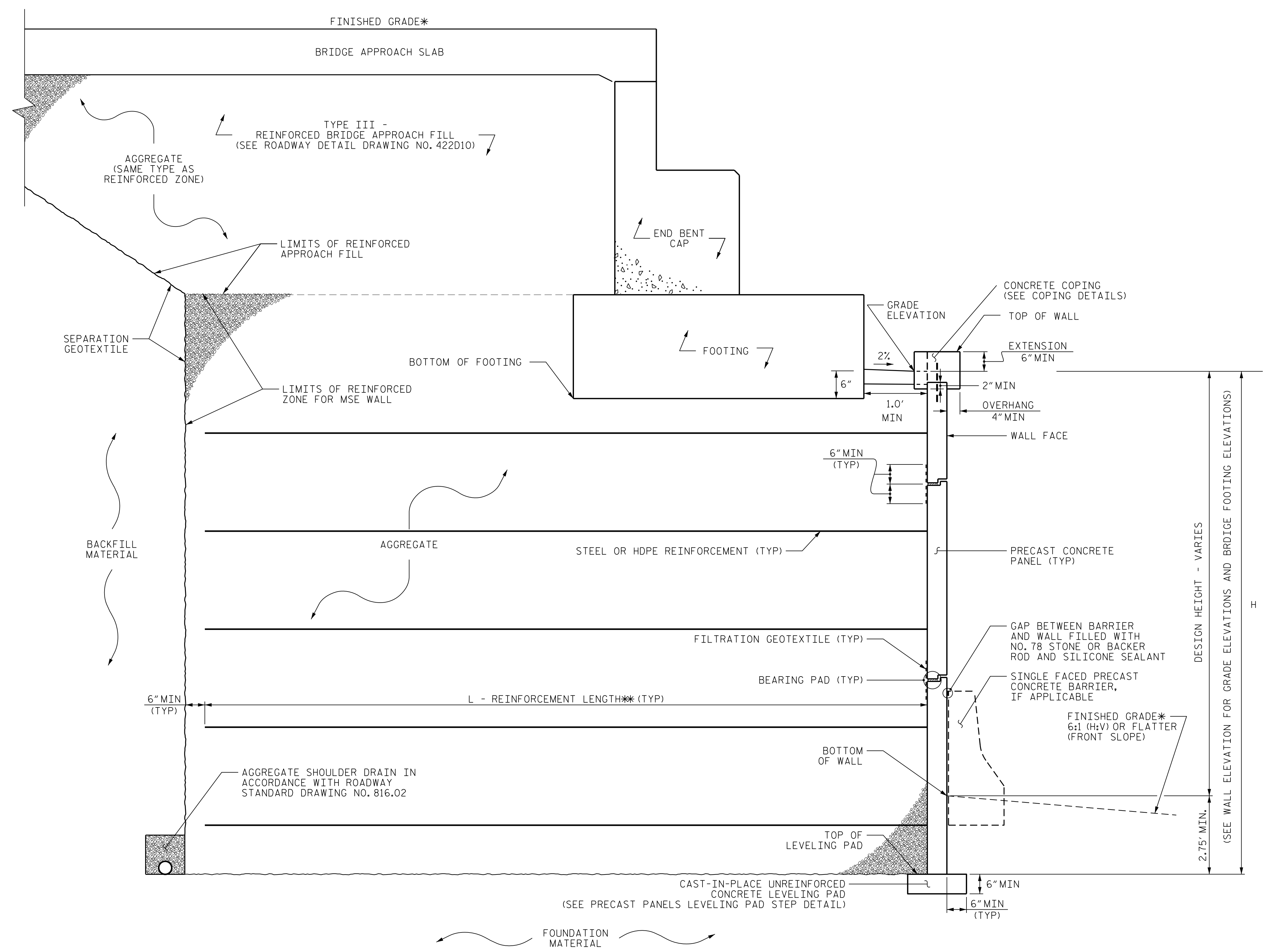
GEOTECHNICAL ENGINEER

ENGINEER

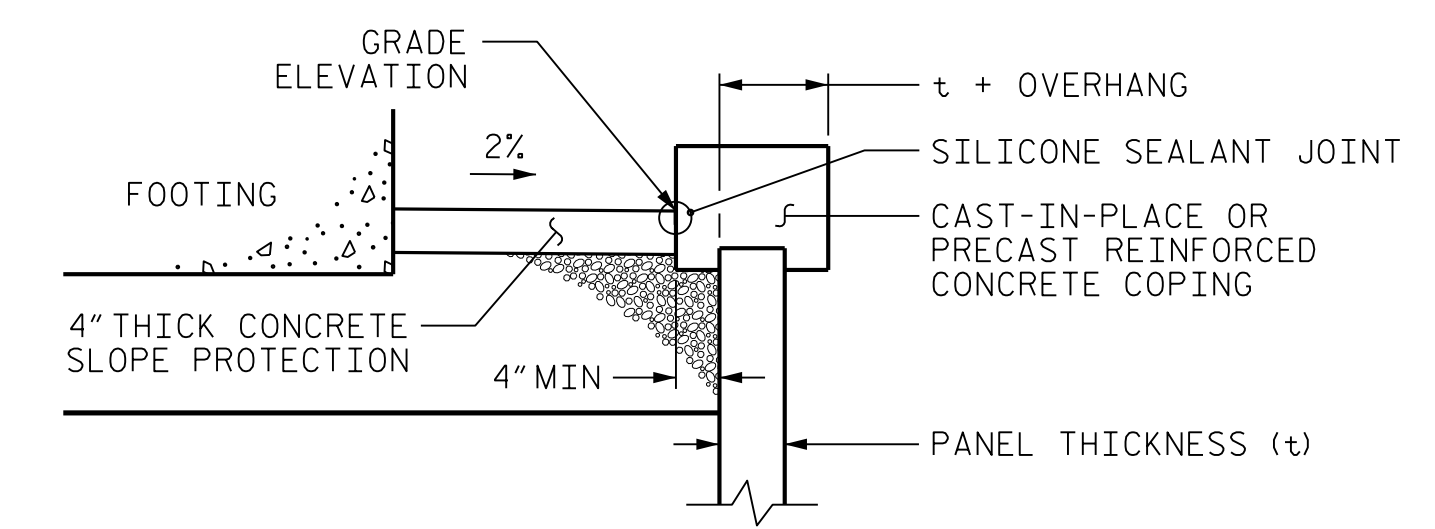
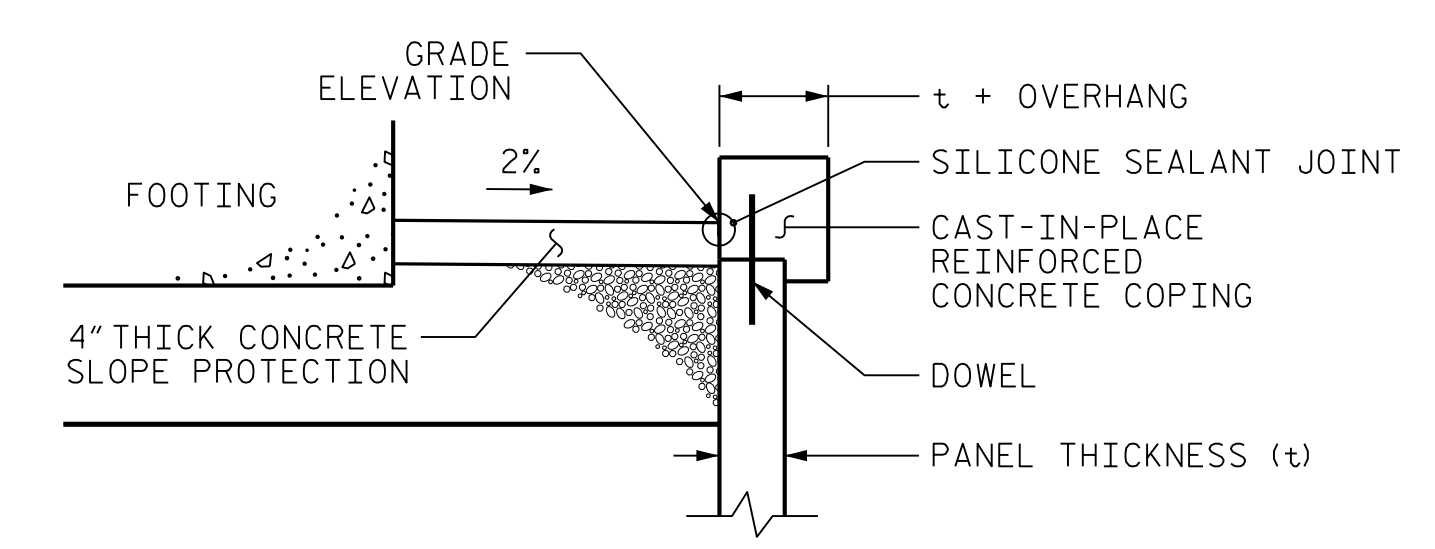
Designed by: Scott Webb DATE: 12/7/2017

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

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UNLESS ALL SIGNATURES COMPLETED**



**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.

**MSE ABUTMENT WALL WITH PRECAST PANELS - SECTION A-A**

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

PROJECT NO.: U-2525C  
GUILFORD COUNTY  
 STATION: \_\_\_\_\_  
 SHEET 11 OF 13

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

**GEOTECHNICAL  
ENGINEERING UNIT**

REVISIONS						SHEET NO. W-11
NO.	BY	DATE	NO.	BY	DATE	
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PREPARED BY: R. WEBB      DATE: 12-17  
 REVIEWED BY: G. BODENHEIMER      DATE: 12-17

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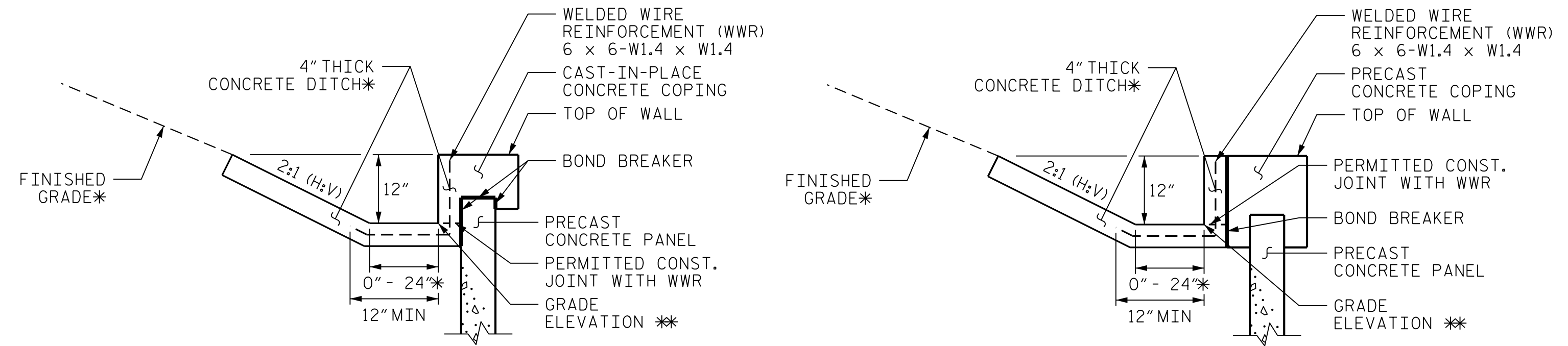
GEOTECHNICAL ENGINEER

ENGINEER

DocuSigned by: Scott Webb 10/26/2017

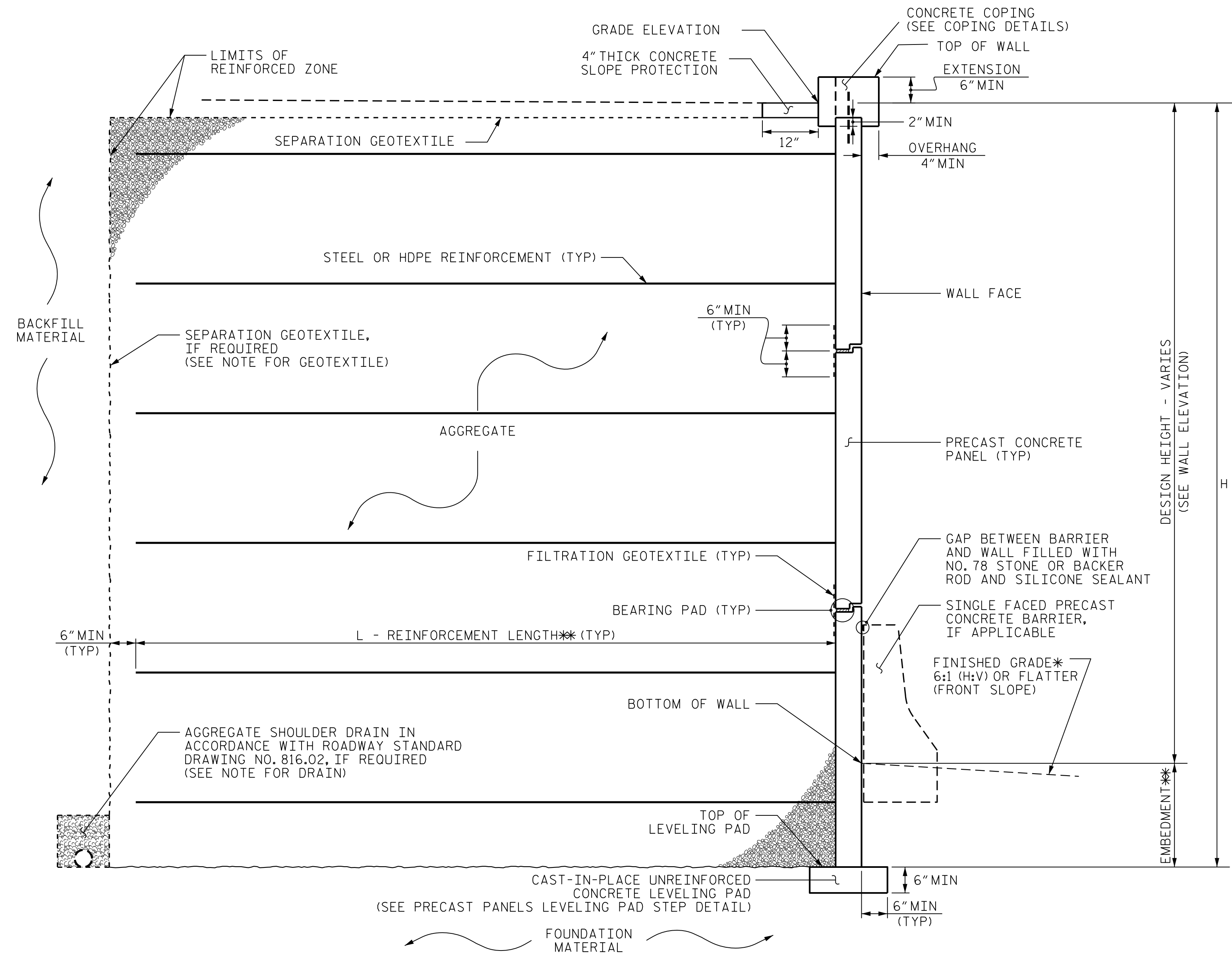
DATE SIGNATURE DATE

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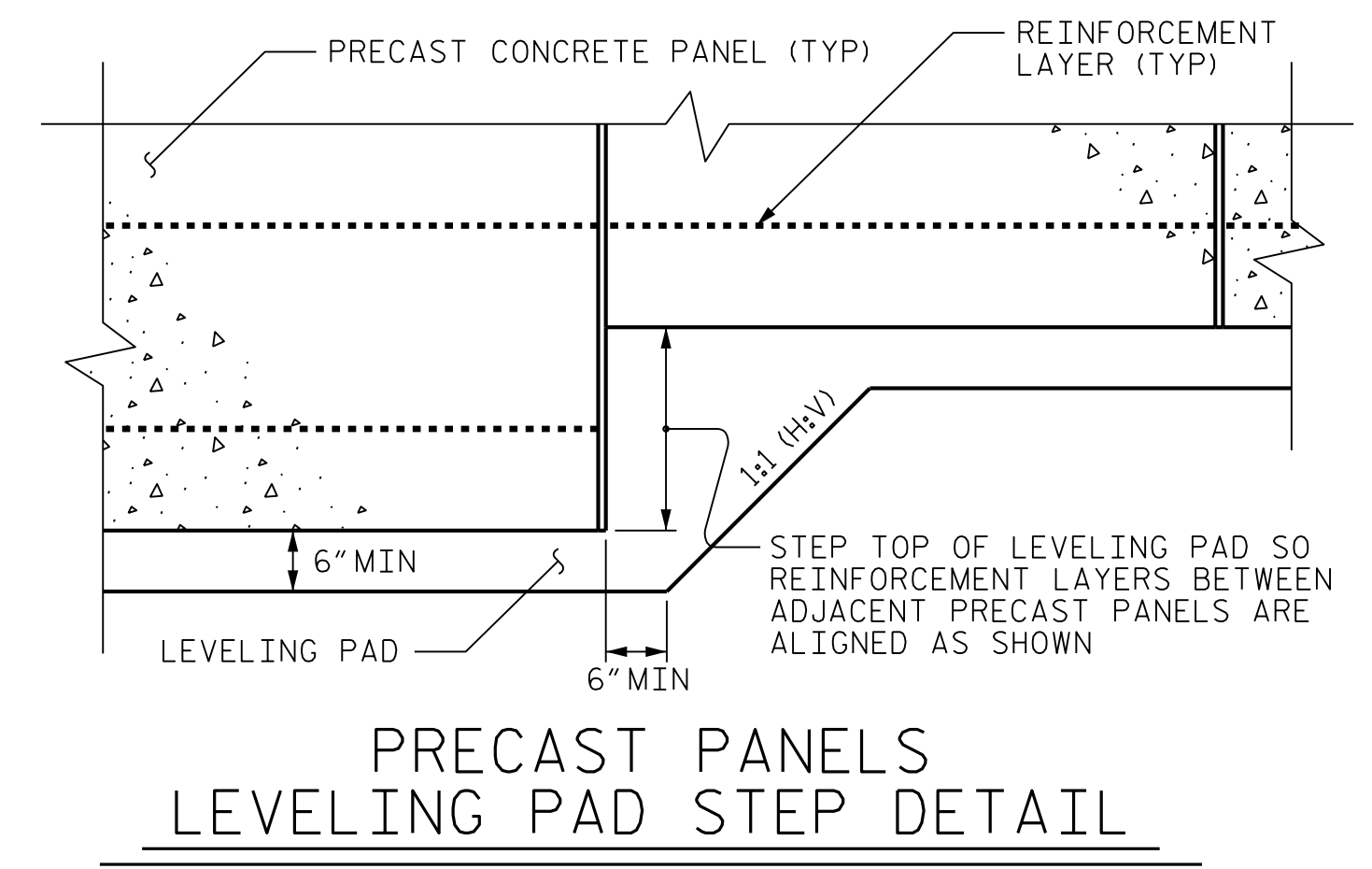
**CONCRETE DITCH FOR SLOPES ABOVE WALL**

\*SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.  
 \*\*SEE WALL ENVELOPE FOR GRADE ELEVATIONS.



**MSE WALL WITH PRECAST PANELS - TYPICAL B-B**

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



PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: \_\_\_\_\_  
 SHEET 12 OF 13

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

**GEOTECHNICAL ENGINEERING UNIT**


**MSE ABUTMENT WALLS TYPICAL SECTION AND DETAILS**

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

SHEET NO. W-12

PREPARED BY: R. WEBB DATE: 9-17  
 REVIEWED BY: G. BODENHEIMER DATE: 9-17

GEOTECHNICAL ENGINEER



ENGINEER

DocuSigned by:  
*Scott Webb* 11/15/2017

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### DESIGN TABLE

	NOMINAL FOOTING DEAD LOAD LB/SF	NOMINAL FOOTING LIVE LOAD LB/SF	FOUNDATION FRICTION ANGLE DEGREES	MINIMUM REINFORCEMENT LENGTH FEET	MAXIMUM FACTORED VERTICAL PRESSURE LB/SF
MSE WALL 1A	2600	700	30	25	8000
MSE WALL 1B	2750	700	30	28	8500
MSE WALL 2A	2500	600	30	26	7500
MSE WALL 2B	2500	600	30	27	8000
MSE WALL 4A	2300	600	32	22	8000
MSE WALL 4B	2300	600	30	24	7000
MSE WALL 5A	2300	650	28	29	7000
MSE WALL 5B	2350	700	30	23	7000
MSE WALL 6A	3100	800	31	23	7500
MSE WALL 6B	3100	800	30	24	7500

- NOTES:
- DEFINE MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALLS AS RETAINING WALLS 1A, 1B, 2A, 2B, 4A, 4B, 5A, 5B, 6A, AND 6B.
  - FOR MSE ABUTMENT WALLS, SEE MECHANICALLY STABILIZED EARTH ABUTMENT WALLS PROVISION.
  - FOR TYPE III REINFORCED BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422D10.
  - A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR MSE ABUTMENT WALLS.
  - A DRAIN IS REQUIRED FOR MSE ABUTMENT WALLS.
  - DESIGN MSE ABUTMENT WALLS FOR THE FOLLOWING:
    - H = DESIGN HEIGHT + EMBEDMENT
    - DESIGN LIFE = 100 YEARS
    - MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL ACCORDING TO THE DESIGN TABLE
    - WITHIN HORIZONTAL LIMITS OF FOOTING LOADS, MINIMUM REINFORCEMENT LENGTH (L) ACCORDING TO THE DESIGN TABLE
    - OUTSIDE HORIZONTAL LIMITS OF FOOTING LOADS, MINIMUM REINFORCEMENT LENGTH (L) = 0.7 H
    - DESIGN PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (g) LB/CF	FRICTION ANGLE (f) DEGREES	COHESION (c) LB/SF
REINFORCED ZONE	110	38	0
RETAINED ZONE	120	30	0
FOUNDATION	120	SEE DESIGN TABLE	0

- SEE THE WALL ELEVATION FOR THE HORIZONTAL LIMITS OF FOOTING LOADS ALONG THE WALL FACE.
- SEE STRUCTURES PLANS FOR FOOTING DIMENSIONS.
- SEE FIGURE 6-2 AND ASSOCIATED COMMENTARY FROM 6.1.1 FHWA-NHI-10-024 FOR DESIGN OF MSE ABUTMENT WALLS.
- WITHIN HORIZONTAL LIMITS OF FOOTING LOADS, USE ACTIVE ZONE ACCORDING TO FHWA FIGURE 6-2, AND USE "F\*" AT 20 FEET FOR ALL ELEVATIONS, AND ADJUST  $K_r/K_a$  ACCORDING TO FHWA.
- USE THE SAME SOIL REINFORCEMENT DESIGN FOR ALL AREAS SUBJECT TO FOOTING LOADS.
- USE THE CONNECTION REQUIRED AT THE TOP REINFORCEMENT LEVEL BELOW THE FOOTING FOR ALL CONNECTIONS SUBJECT TO FOOTING LOADS.
- REINFORCEMENT MUST BE MORE THAN ONE FOOT FROM THE END BENT FOOTING.
- DESIGN MSE ABUTMENT WALLS FOR A NOMINAL UNIFORM LIVE LOAD (TRAFFIC) SURCHARGE OF 240 PSF.
- DESIGN MSE ABUTMENT WALLS FOR BRIDGE FOOTING LOADS. USE THE NOMINAL FOOTING LIVE LOAD AND NOMINAL FOOTING DEAD LOAD FOUND ON THE DESIGN TABLE.
- AFTER CONSTRUCTING MSE ABUTMENT WALLS, AND BEFORE CONSTRUCTING FOOTING, OBSERVE A ONE MONTH WAITING PERIOD. SEE SURCHARGE WALL PLANS FOR ADDITIONAL WAITING PERIODS FOR WALLS 2A AND 2B.
- COORDINATE WITH BRIDGE CONTRACTOR TO CONSTRUCT VERTICAL COPING FOR MSE ABUTMENT WALLS.
- DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR MSE ABUTMENT WALLS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- DESIGN REINFORCEMENT FOR MSE ABUTMENT WALLS TO AVOID CONFLICTS WITH FOOTINGS FOR END BENTS. SEE STRUCTURES PLANS FOR FOOTING LOCATION AND ELEVATION.
- AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT MSE ABUTMENT WALLS. SEE MSE ABUTMENT WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.
- EXISTING OR FUTURE OBSTRUCTIONS SUCH AS GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR MSE ABUTMENT WALLS.
- BEFORE BEGINNING WALL DESIGN FOR MSE ABUTMENT WALLS, VERIFY WALL LOCATION INCLUDING LOCATION OF BRIDGE WINGWALLS. IF NECESSARY, SUBMIT A REVISED WALL PLAN AND PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- FOR CONCRETE DITCHES, SEE SECTION 850 OF THE STANDARD SPECIFICATIONS.
- UNDERCUT FOR MSE WALLS IS EXPECTED TO BE REQUIRED AT WALL 5B OVER THE LIMITS SHOWN ON THE ELEVATION VIEW FOR THE ENTIRE FOOTPRINT OF THE WALL. SEE MECHANICALLY STABILIZED EARTH ABUTMENT WALLS PROVISION.

### SELECT MATERIAL CLASS VI QUANTITIES (TONS)

MSE ABUTMENT WALL NO. 5B	2300 TONS
TOTAL	2300 TONS

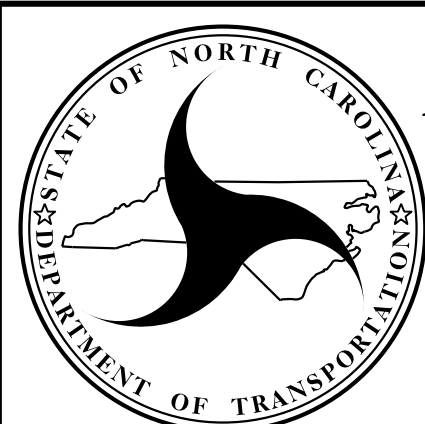
### GEOTEXTILE FOR SOIL STABILIZATION QUANTITIES (SQYD)

MSE ABUTMENT WALL NO. 5B	1000 SQYDS
TOTAL	1000 SQYDS

### ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)

MSE ABUTMENT WALL NO. 1A	3100 SF
MSE ABUTMENT WALL NO. 1B	3900 SF
MSE ABUTMENT WALL NO. 2A	4700 SF
MSE ABUTMENT WALL NO. 2B	5200 SF
MSE ABUTMENT WALL NO. 4A	4400 SF
MSE ABUTMENT WALL NO. 4B	4200 SF
MSE ABUTMENT WALL NO. 5A	3600 SF
MSE ABUTMENT WALL NO. 5B	3200 SF
MSE ABUTMENT WALL NO. 6A	4300 SF
MSE ABUTMENT WALL NO. 6B	4800 SF
TOTAL	41,400 SF

PROJECT NO.: U-2525C  
 \_\_\_\_\_  
 GUILFORD COUNTY  
 STATION: \_\_\_\_\_  
 SHEET 13 OF 13



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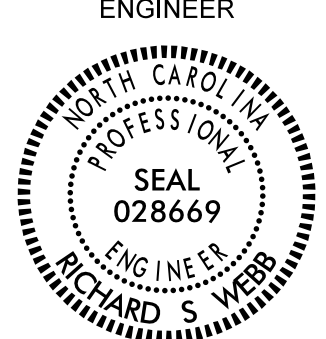
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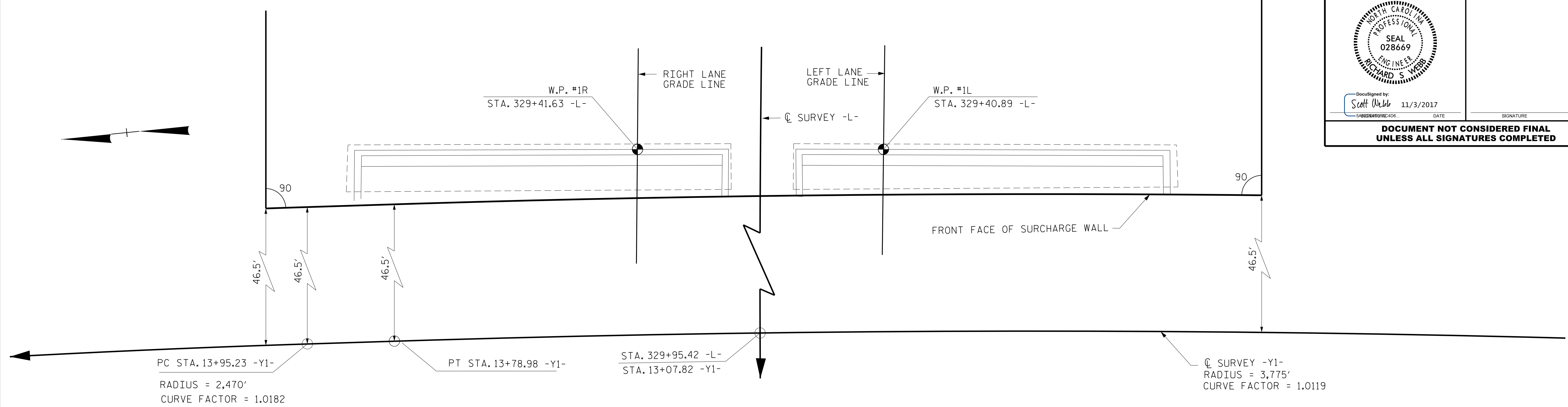
### MSE ABUTMENT WALLS NOTES

REVISIONS					
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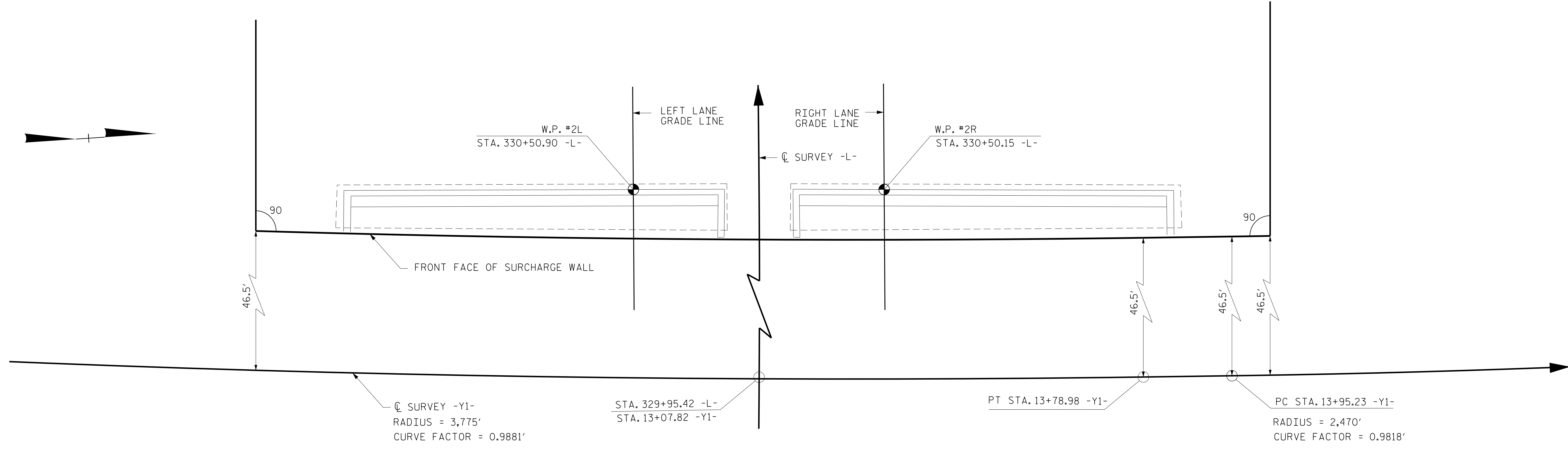
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 ENGINEER  
  
 Documented by: Scott Webb 11/3/2017  
 DATE DATE  
 SIGNATURE SIGNATURE  
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PLAN - END BENT 1

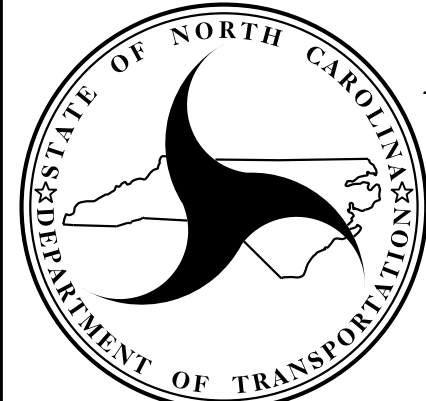


PLAN - END BENT 2

PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 329+95.42 -L- & 13+07.82 -Y1-  
 SHEET 1 OF 2

PREPARED BY: R. WEBB DATE: 10-17  
 REVIEWED BY: G. BODENHEIMER DATE: 10-17



  
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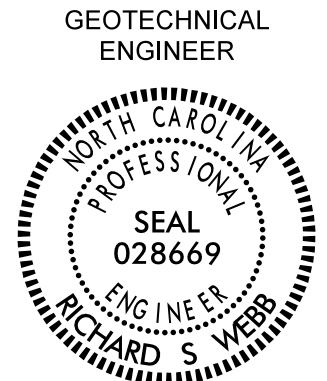
**SURCHARGE WALLS  
 PLAN VIEW  
 SITE 2 END BENT 1 & 2**

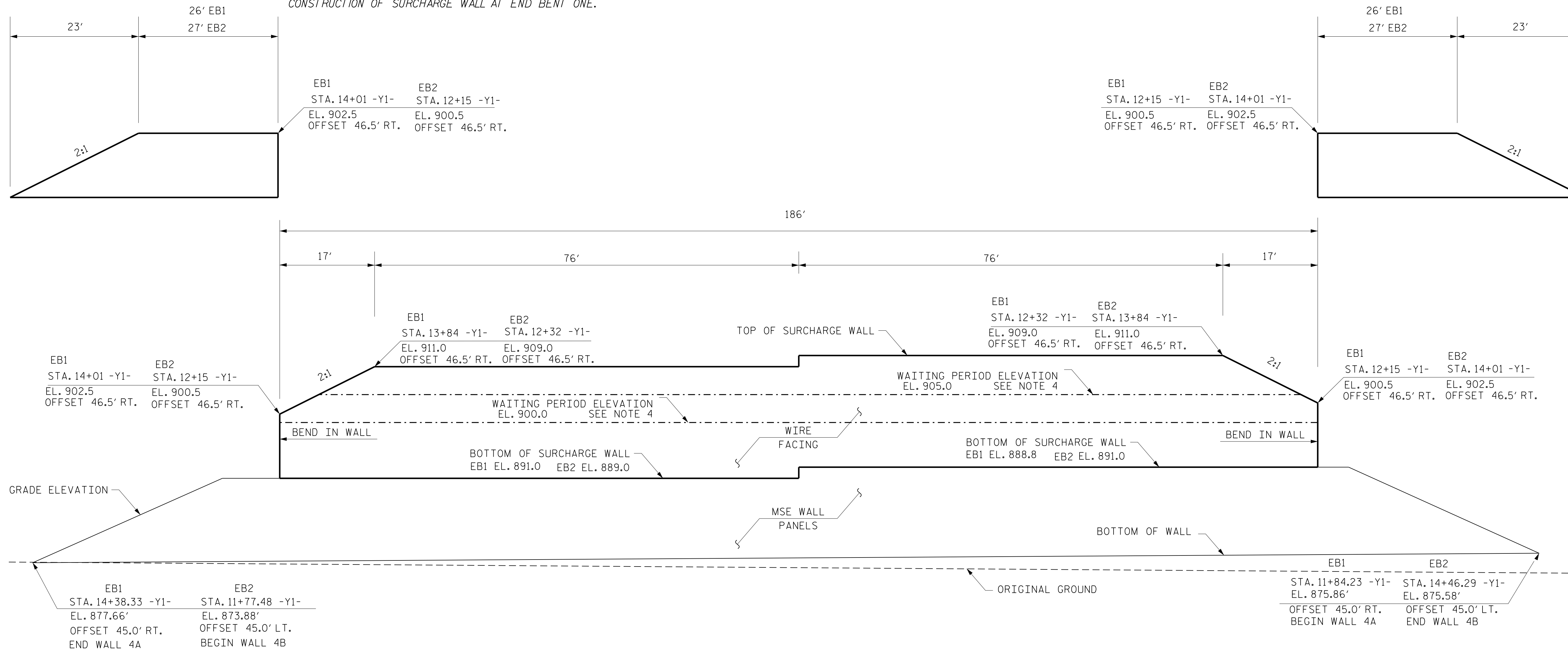
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1			3			W-14
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**NOTES:**

- FOR SURCHARGE WALLS, SEE SURCHARGE WALLS PROVISION.
- SEE STANDARD TEMPORARY WALLS FOR SURCHARGE WALL TYPICAL SECTION, DETAILS, REINFORCEMENT STRENGTH AND LENGTH, AND ADDITIONAL NOTES.
- AS AN EXCEPTION TO THE REINFORCEMENT LENGTHS FOUND IN THE STANDARD TEMPORARY WALLS PLANS, WITHIN THE LIMITS OF THE PERMANENT MSE WALL, THE REINFORCEMENT LENGTH FOR SURCHARGE WALL AT SITE 2 END BENT 1 SHALL BE 26 FEET MINIMUM AND THE REINFORCEMENT LENGTH FOR SURCHARGE WALL AT SITE 2 END BENT 2 SHALL BE 27 FEET MINIMUM.
- OBSERVE A 10 DAY WAITING PERIOD AFTER CONSTRUCTING SURCHARGE WALL TO ELEVATION 900.0. OBSERVE A 10 DAY WAITING PERIOD AFTER CONSTRUCTING SURCHARGE WALL TO ELEVATION 905.0. OBSERVE A 40 DAY WAITING PERIOD AFTER COMPLETING SURCHARGE WALLS BEFORE REMOVING THE SURCHARGE.
- THE ENGINEER MAY WAIVE CONSTRUCTION, IN WHOLE OR IN PART, OF SURCHARGE WALL AT SITE 2 END BENT ONE, BASED ON THE PERFORMANCE OF THE SURCHARGE WALL AT SITE 2 END BENT TWO. NO PAYMENT WILL BE MADE FOR SURCHARGE WALL AT END BENT ONE IF CONSTRUCTED BEFORE BEGINNING REMOVAL OF SURCHARGE AT END BENT TWO, IN OTHER WORDS, BEFORE THE ENGINEER HAS A CHANCE TO WAIVE CONSTRUCTION OF SURCHARGE WALL AT END BENT ONE.

TEMPORARY SHORING QUANTITIES (SQUARE FEET)	
SURCHARGE WALL AT SITE 2, EB1	4400 SQFT
SURCHARGE WALL AT SITE 2, EB2	4400 SQFT
TOTAL	8800 SQFT

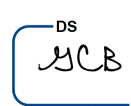
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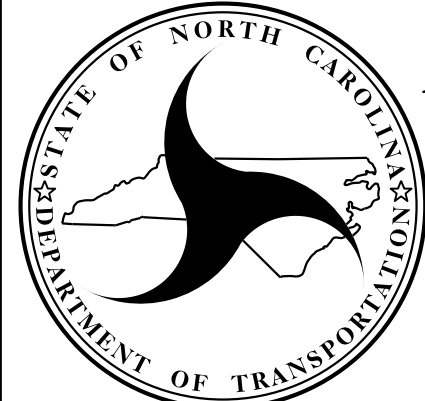


**ELEVATION - END BENT 1 & 2**  
(LOOKING AT EXPOSED FRONT FACE OF SURCHARGE WALL)

PROJECT NO.: U-2525C  
 GUILFORD COUNTY  
 STATION: 329+95.42 -L- & 13+07.82 -Y1-  
 SHEET 2 OF 2

PREPARED BY: R. WEBB  
 DATE: 11-17  
 REVIEWED BY: B. BODENHEIMER  
 DATE: 11-17



  
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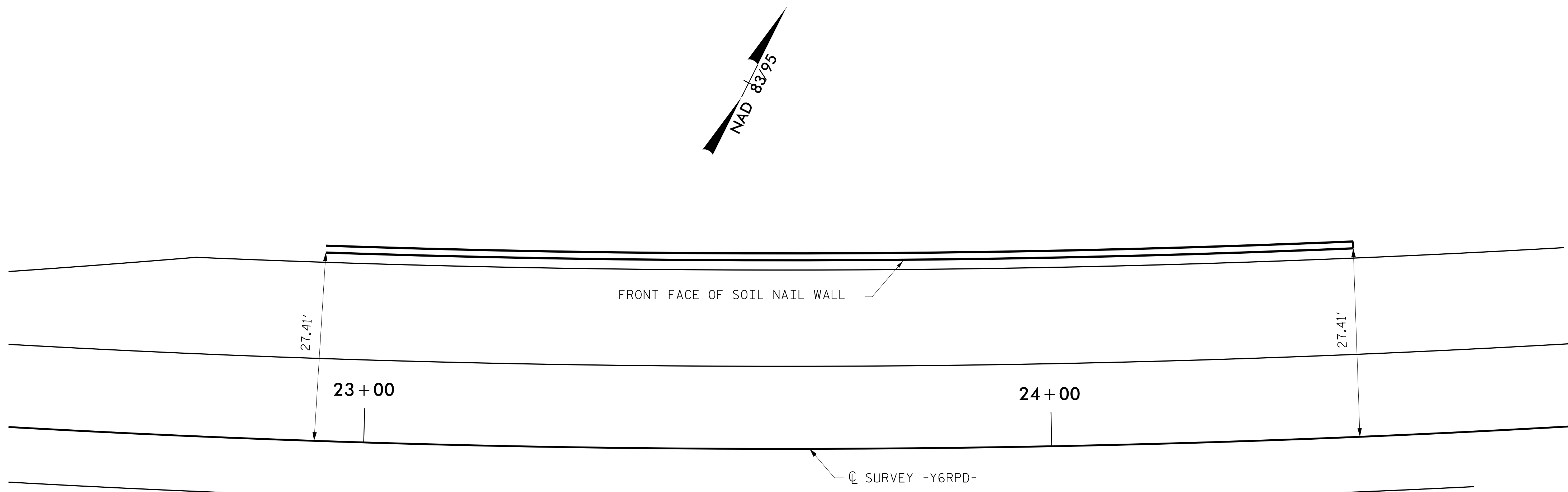
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Documented by: Scott Webb 3/12/2018

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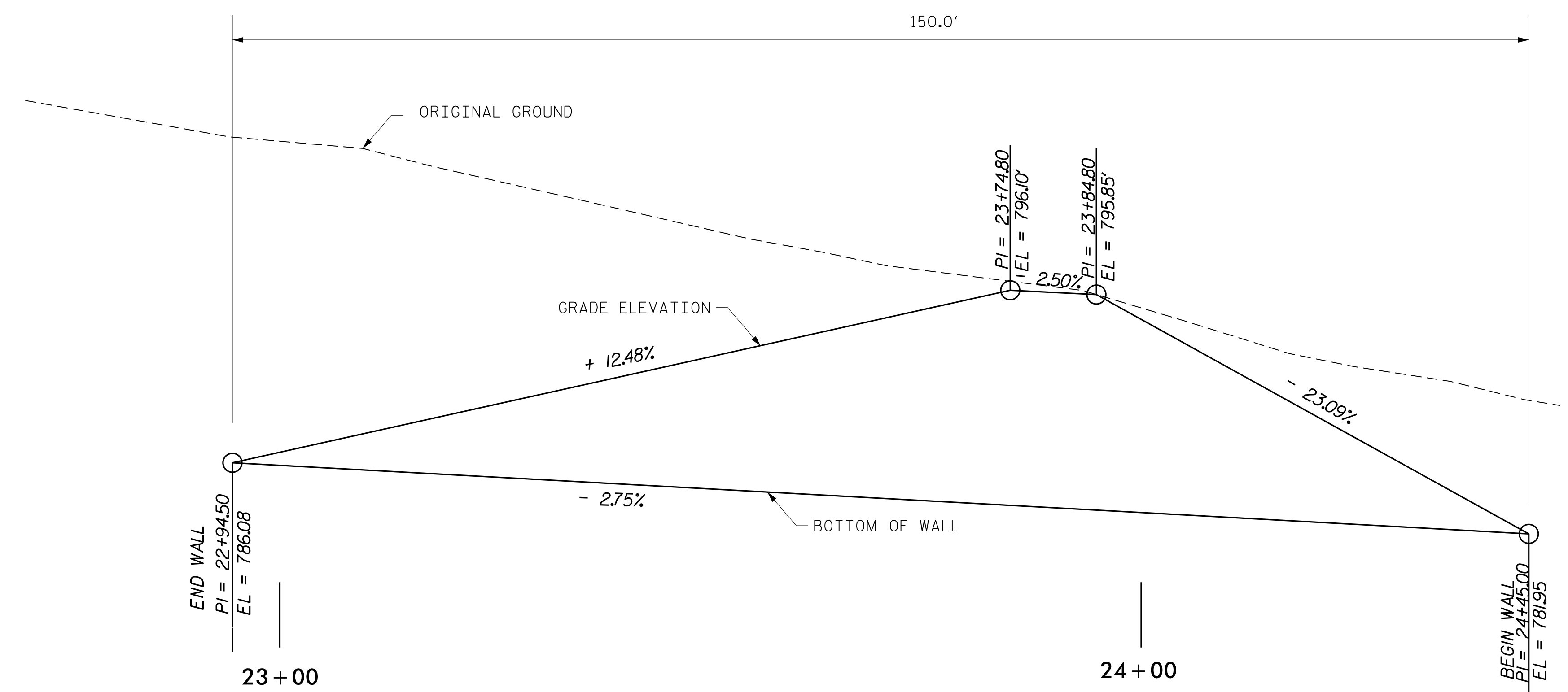
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ESTIMATED SOIL NAIL WALL QUANTITIES (SQUARE FEET)

SOIL NAIL WALL	1000 SF
TOTAL	1000 SF

PLAN CURVE FACTOR = .9973



ELEVATION (LOOKING AT EXPOSED FRONT FACE OF SOIL NAIL WALL)

PROJECT NO.: U-2525C

GUILFORD COUNTY

STATION: 22+94.5 Y6RPD TO 24+45.0 Y6RPD

SHEET 1 OF 2

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
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**GEOTECHNICAL ENGINEERING UNIT**

SOIL NAIL WALL PLAN AND ELEVATION VIEW

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SHEET NO. W-16

PREPARED BY: R. WEBB DATE: 1-18

REVIEWED BY: G. BODENHEIMER DATE: 1-18

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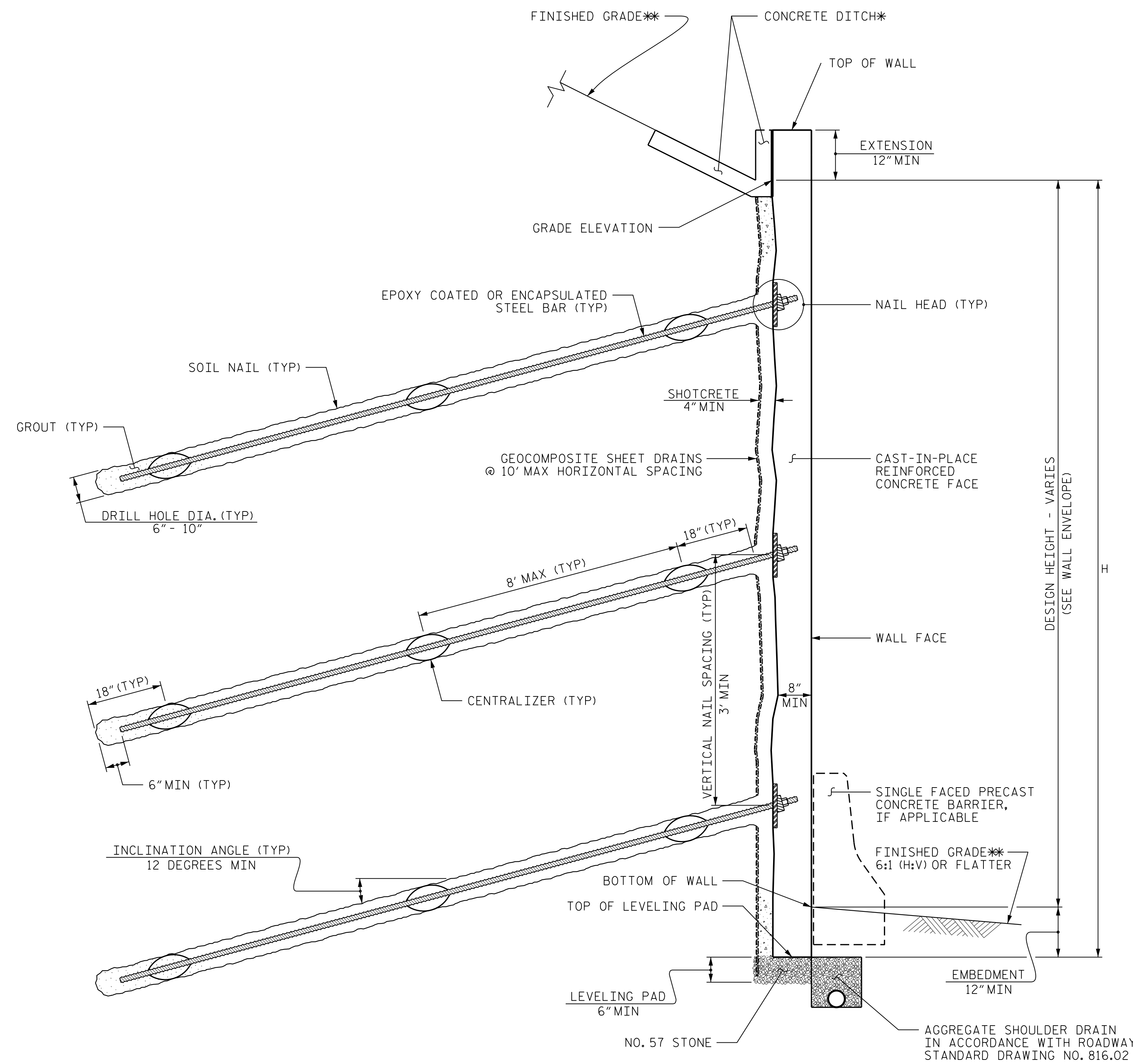
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*Scott Webb* 1/12/2018

ENGINEER

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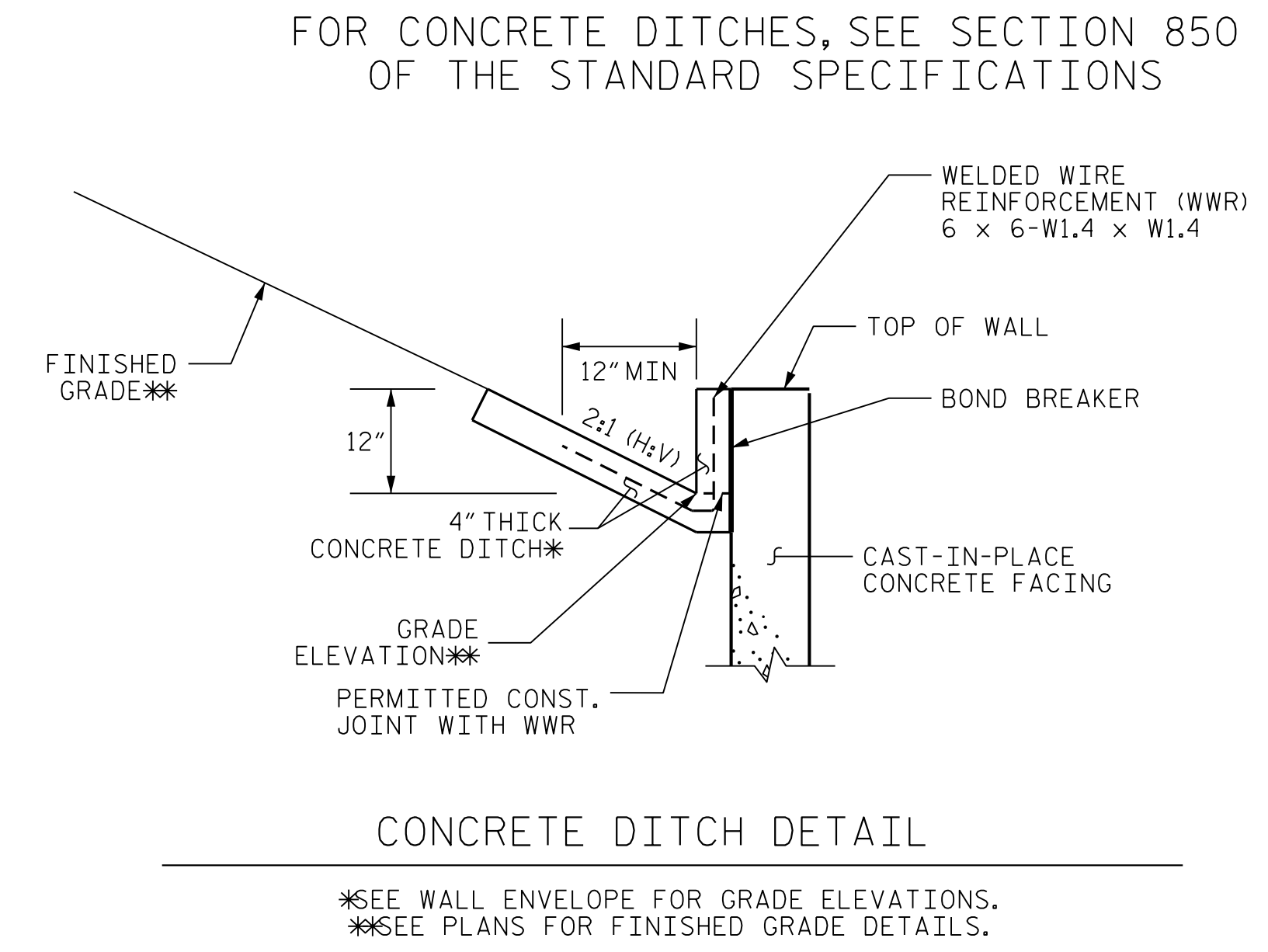


**SOIL NAIL WALL - TYPICAL SECTION**

\*SEE CONCRETE DITCH BEHIND WALL DETAILS.  
\*\*SEE PLANS FOR FINISHED GRADE DETAILS.

**NOTES:**

- FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS PROVISION.
- FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.
- BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR THE SOIL NAIL WALL, 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 THE SOIL NAIL WALL FOR THE FOLLOWING:
  - 1) H = DESIGN HEIGHT + EMBEDMENT
  - 2) DESIGN LIFE = 75 YEARS
  - 3) IN-SITU ASSUMED MATERIAL PARAMETERS:
    - UNIT WEIGHT,  $\gamma = 120$  PCF
    - FRICTION ANGLE,  $\phi = 30$  DEGREES
    - COHESION,  $c = 0$  PSF



PREPARED BY: R. WEBB      DATE: 1-18  
REVIEWED BY: G. BODENHEIMER      DATE: 1-18

-05  
*SCB*

**NORTH CAROLINA  
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DIVISION OF HIGHWAYS**

**GEOTECHNICAL  
ENGINEERING UNIT**

PROJECT NO.: U-2525C  
GUILFORD COUNTY  
STATION: 22+94.5 Y6RPD TO 24+45 Y6RPD  
SHEET 2 OF 2

REVISIONS						SHEET NO. W-17
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1			3			
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