

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

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

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

GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL
 SEAL 043535
 CHRISTOPHER B. JONES

DocuSigned by:
 Christopher B. Jones 01/11/2016

DATE: 01/11/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STA. 51+49.30 -Y2- OFFSET 62'-6" RIGHT
 STA. 16+18.43 -L2- OFFSET 35'-0" RIGHT

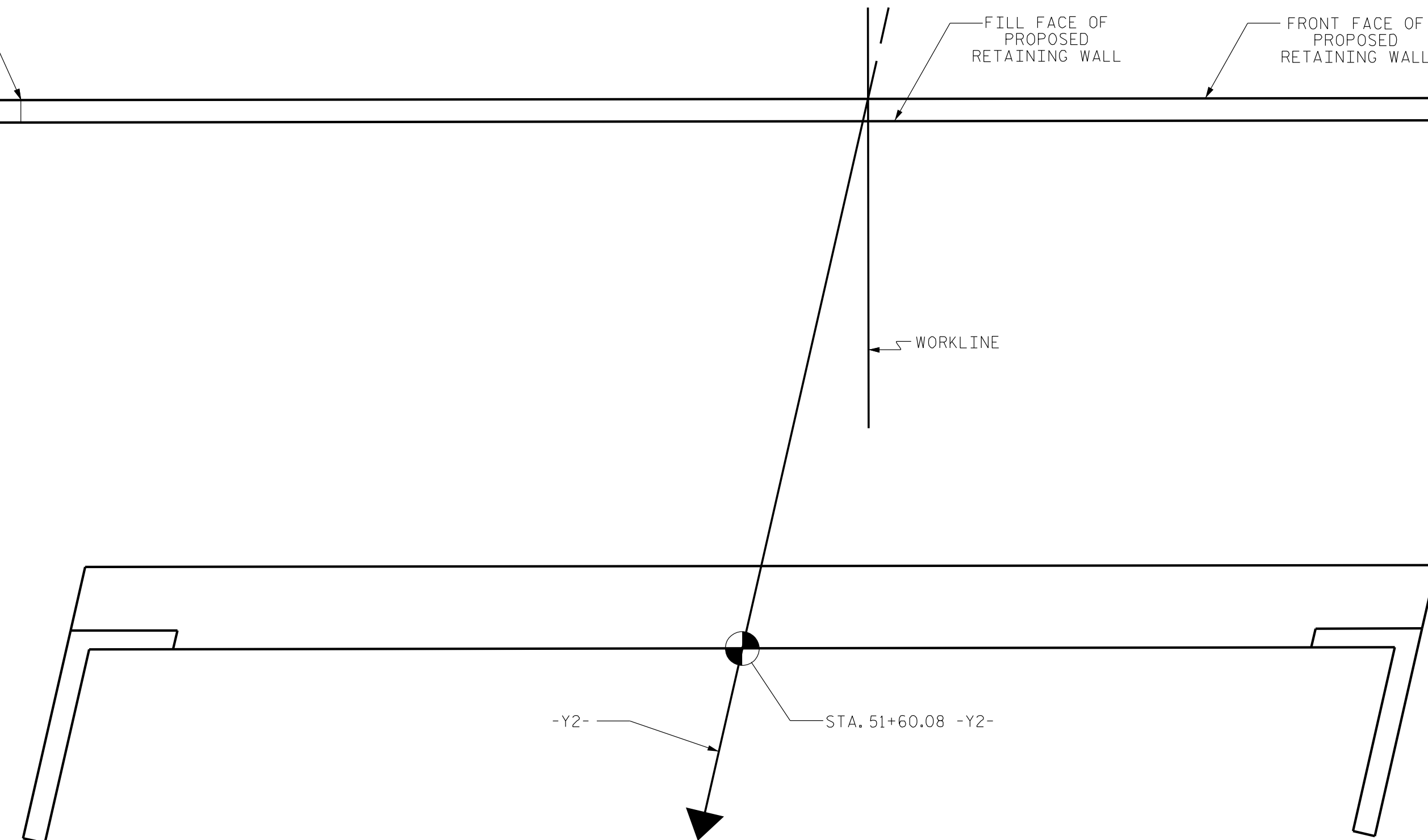
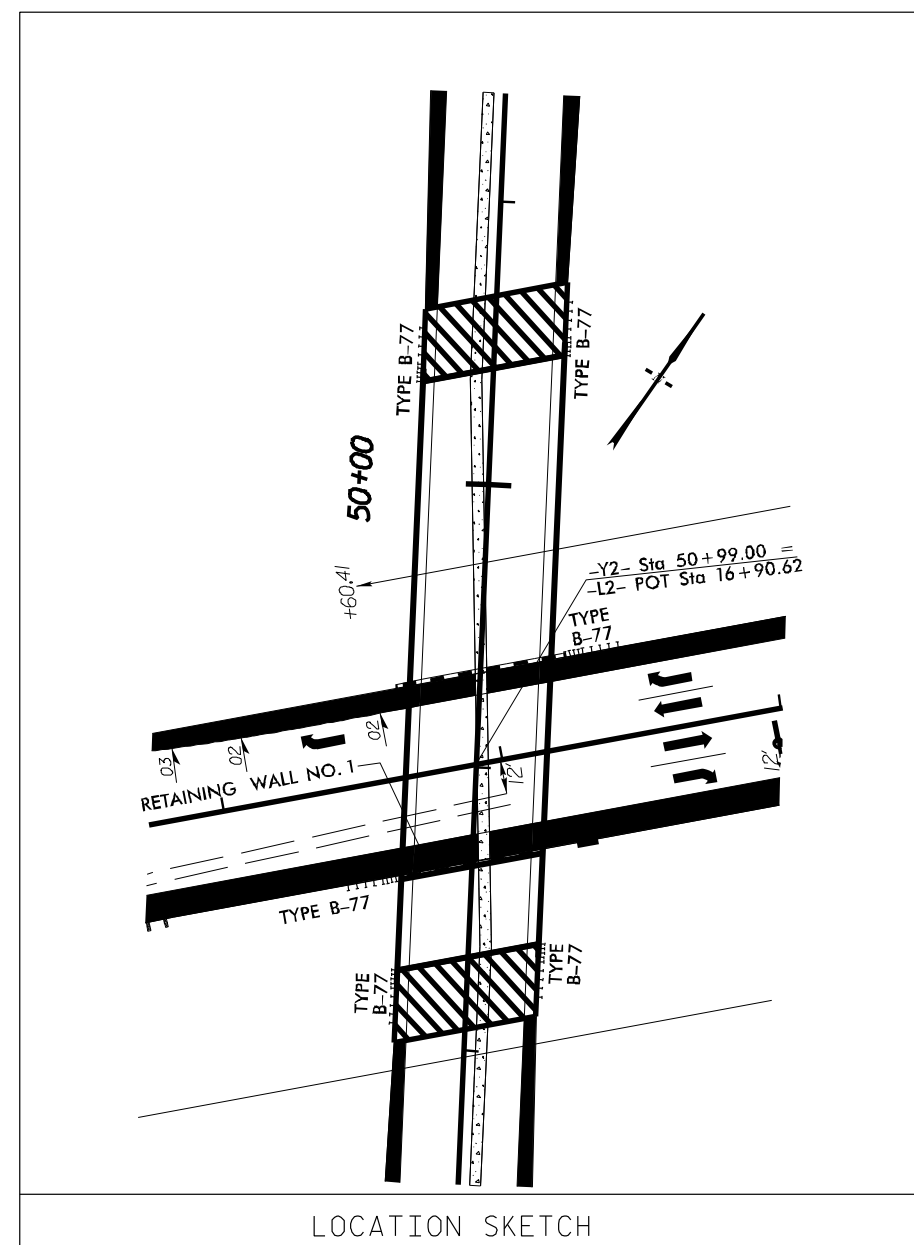
STA. 51+43.40 -Y2- OFFSET 36'-10 1/4" RIGHT
 STA. 16+44.75 -L2- OFFSET 35'-0" RIGHT

STA. 51+29.21 -Y2- OFFSET 24'-9 7/16" LEFT
 STA. 17+05.15 -L2- OFFSET 35'-0" RIGHT

STA. 51+23.41 -Y2- OFFSET 49'-11 1/8" LEFT
 STA. 17+33.86 -L2- OFFSET 35'-0" RIGHT

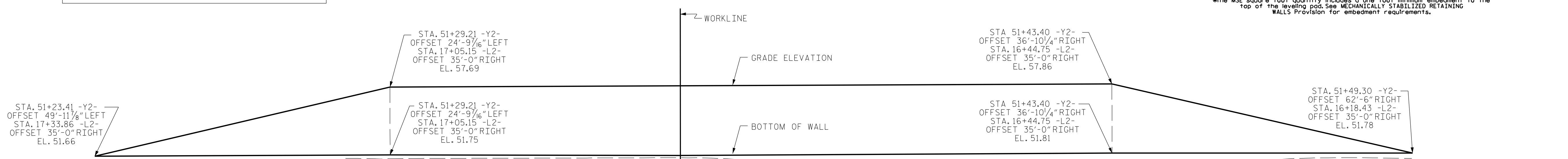
END RETAINING WALL NO. 1

BEGIN RETAINING WALL NO. 1



ESTIMATED MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO.1	720 SF

*The MSE square foot quantity includes a one foot minimum embedment to the top of the leveling pad. See MECHANICALLY STABILIZED RETAINING WALLS Provision for embedment requirements.



BEGIN RETAINING WALL NO. 1

END RETAINING WALL NO. 1

PROJECT NO.: R-5311A
 HERTFORD COUNTY
 STATION: 50+99.00 -Y2-, 16+90.62 -L-
 SHEET 1 OF 4

\$ TIME \$

PREPARED BY: CBJ DATE: 8/2016
 REVIEWED BY: ECH DATE: 8/2016

Note: Wall Envelope provided by Wetherill Engineering

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

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

GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
043535
ENGINEER
CHRIS O'NEAL B. JONES

Christopher B. Jones / 2016

DATE

NOTES:

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

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

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. 1.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 1.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BASE OF THE REINFORCED ZONE FOR RETAINING WALL NO. 1.

CONSTRUCT WALL AT -Y2- END BENT 2 BEFORE INSTALLING FOUNDATIONS FOR END BENT NO. 2 LOCATED AT STATION 51+60.08

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 1.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1, 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. 1 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL = 1,450 LB/SF

6) AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0

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

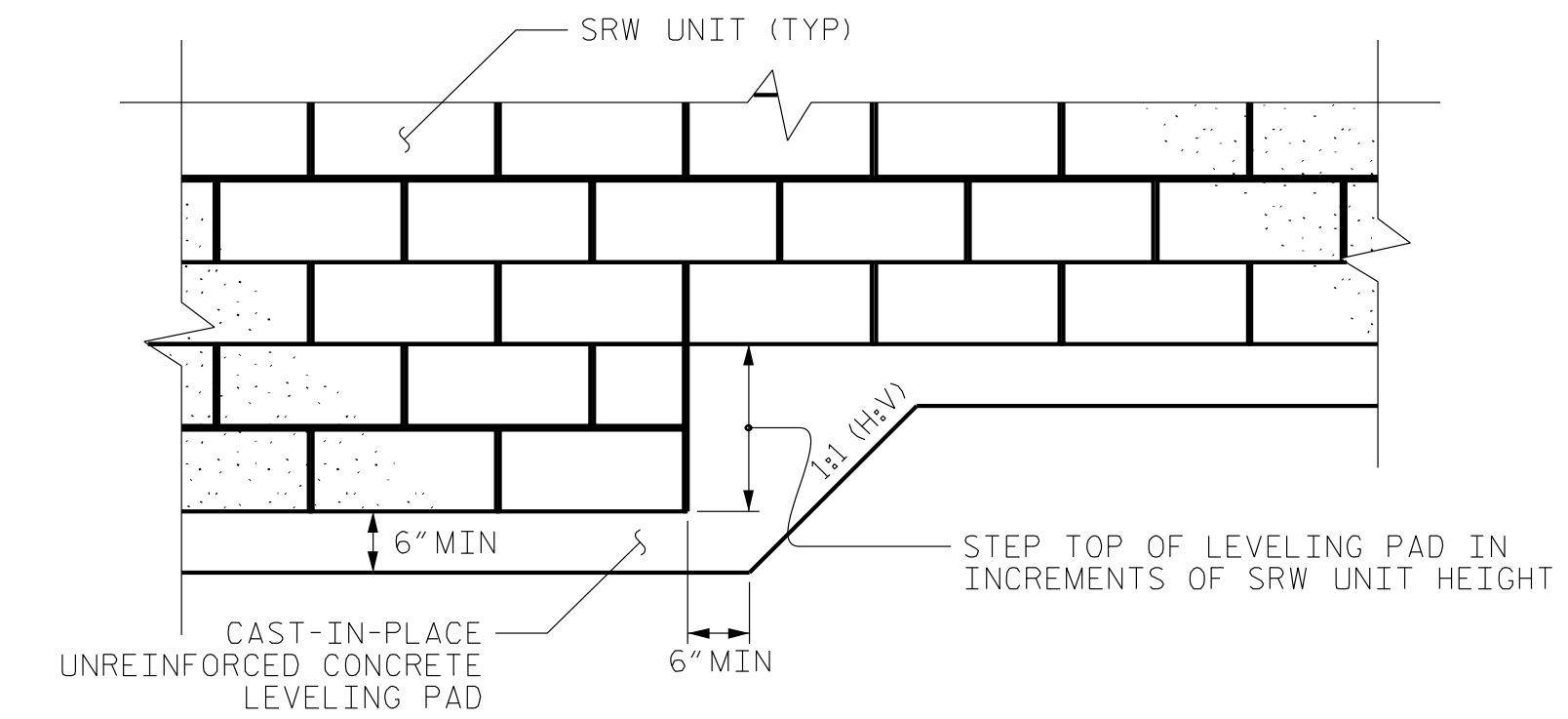
7) IN-SITU ASSUMED MATERIAL PARAMETERS:

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

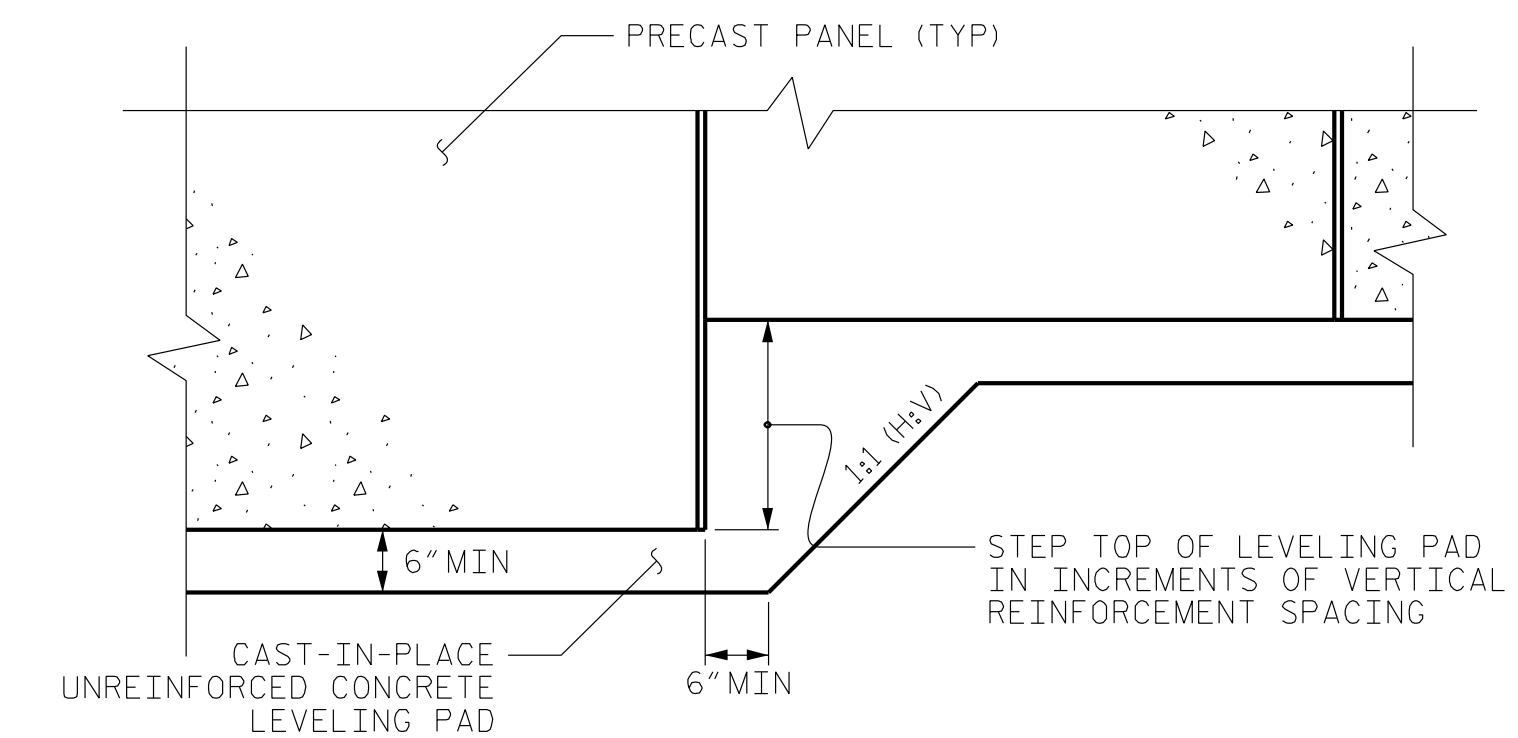
EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 1 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

CONSTRUCT COPING AFTER COMPLETION OF END BENT 2 EMBANKMENT WAITING PERIOD.



SEGMENTAL RETAINING WALL (SRW) UNITS



PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS

PROJECT NO.: R-5311A
HERTFORD COUNTY
STATION: 50+99.00 -Y2- = 16+90.62 -L2-
 SHEET 2 OF 4

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**RETAINING WALL NO. 1
NOTES & DETAIL**

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

TOTAL SHEETS
4

PREPARED BY: CBJ	DATE: 8/2016
REVIEWED BY: ECH	DATE: 8/2016

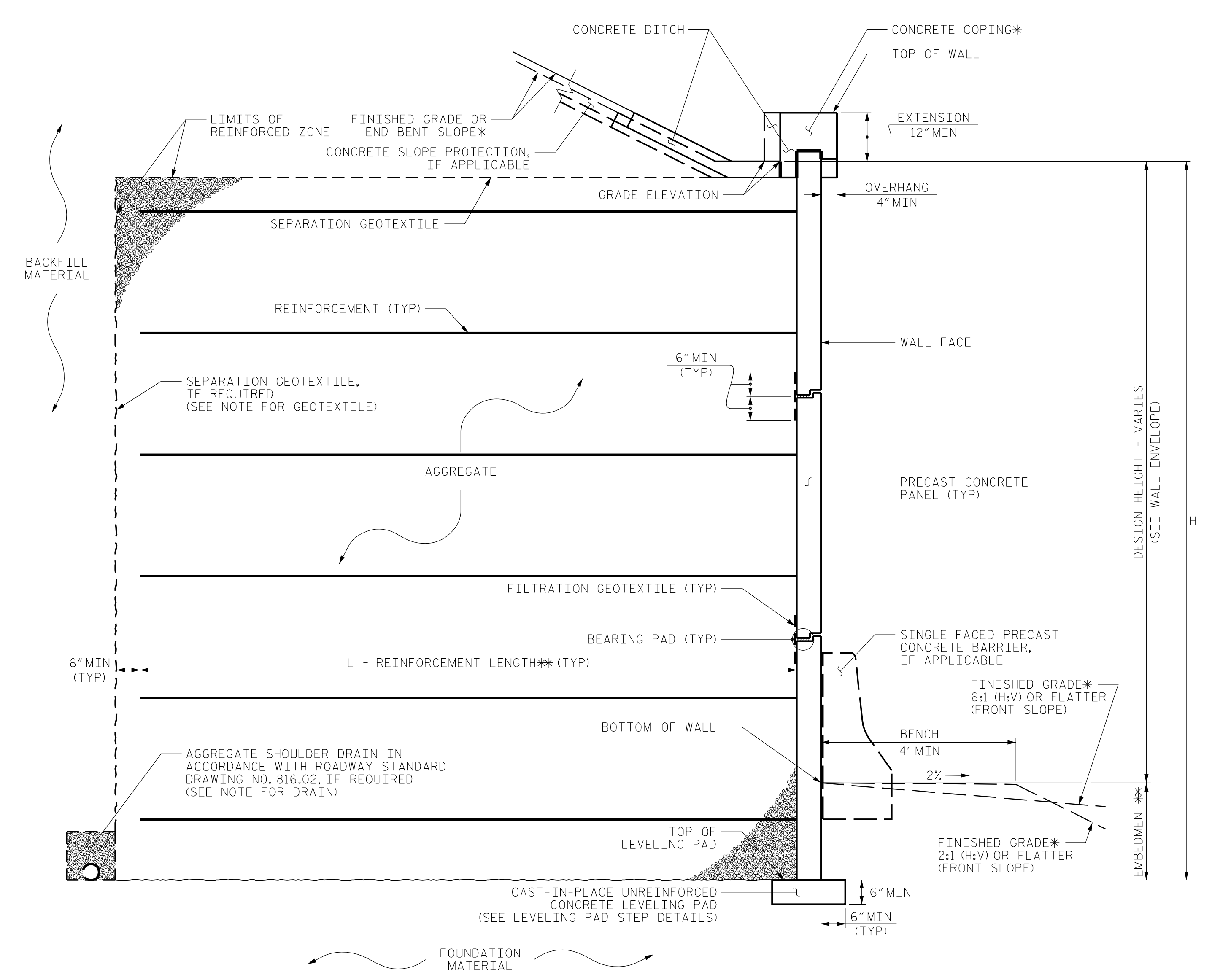
GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL
 SEAL 043535
 CHRISTOPHER B. JONES

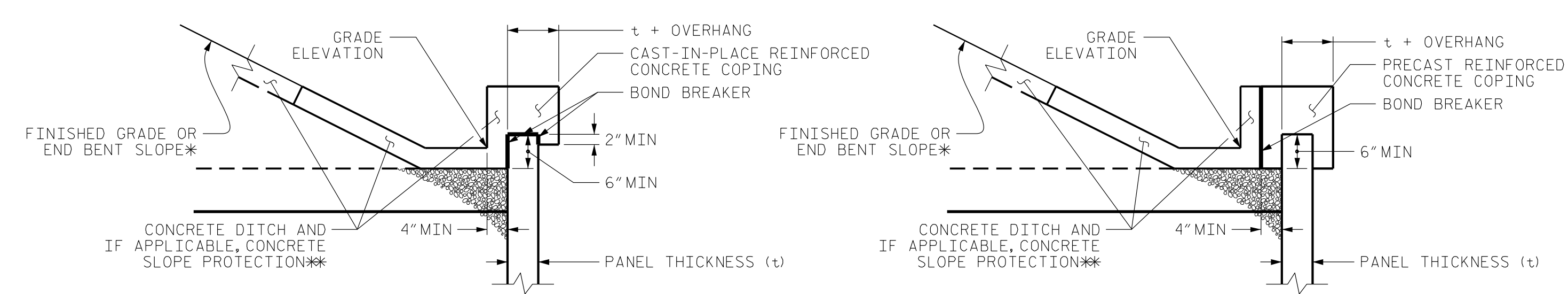
DocuSigned by:
 Christopher B. Jones 11/2016

SIGNATURE DATE



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.

PROJECT NO.: R-5311A
HERTFORD COUNTY
STATION: 50+99.00 -Y2- = 16+90.62 -L2-
 SHEET 3 OF 4

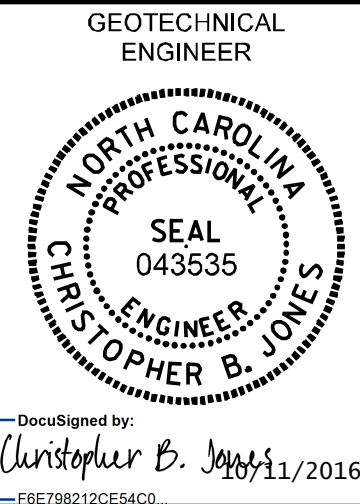
PREPARED BY: CBJ	DATE: 8/2016
REVIEWED BY: ECH	DATE: 8/2016

GEOTECHNICAL ENGINEERING UNIT

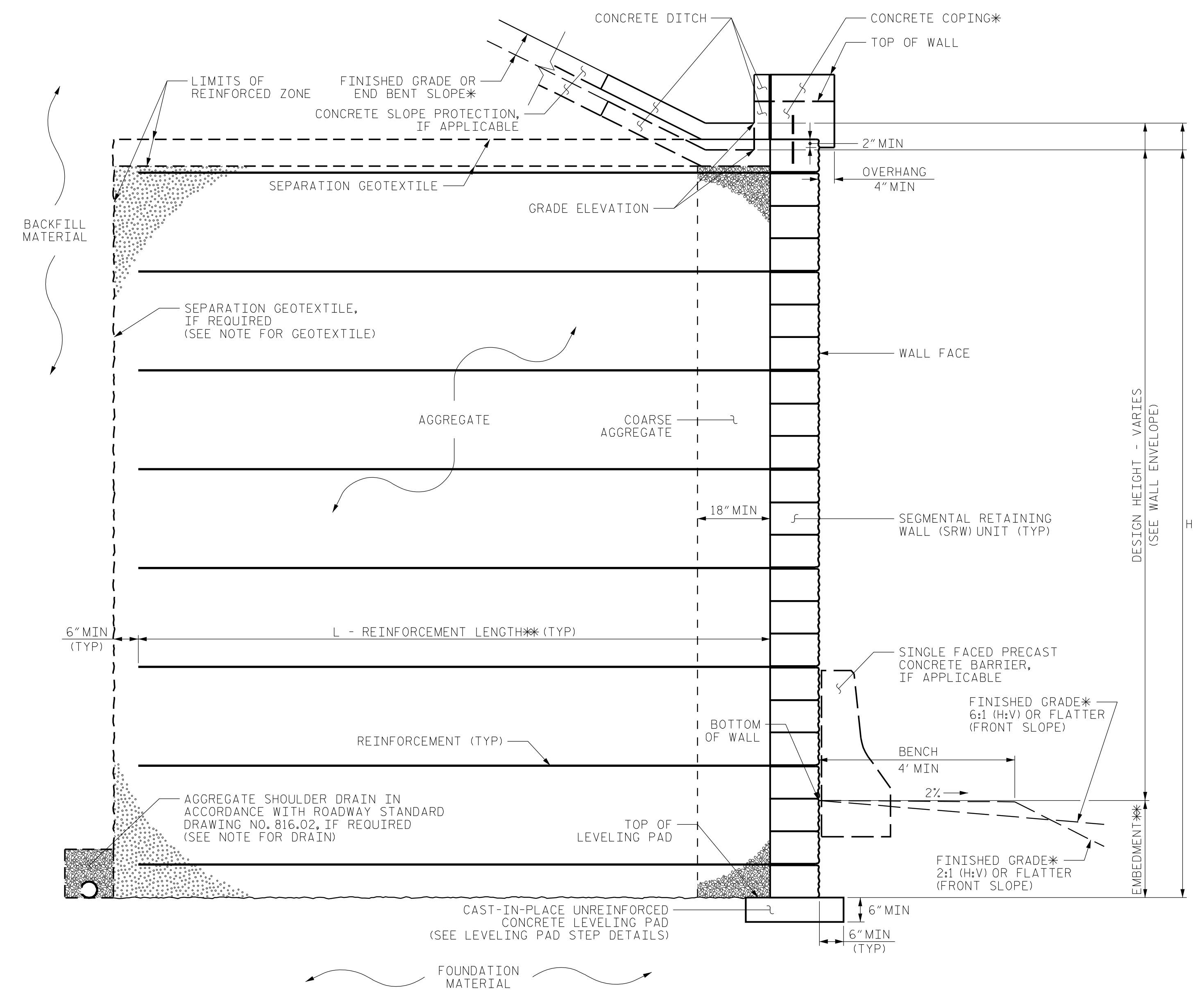
EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

**STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH**

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

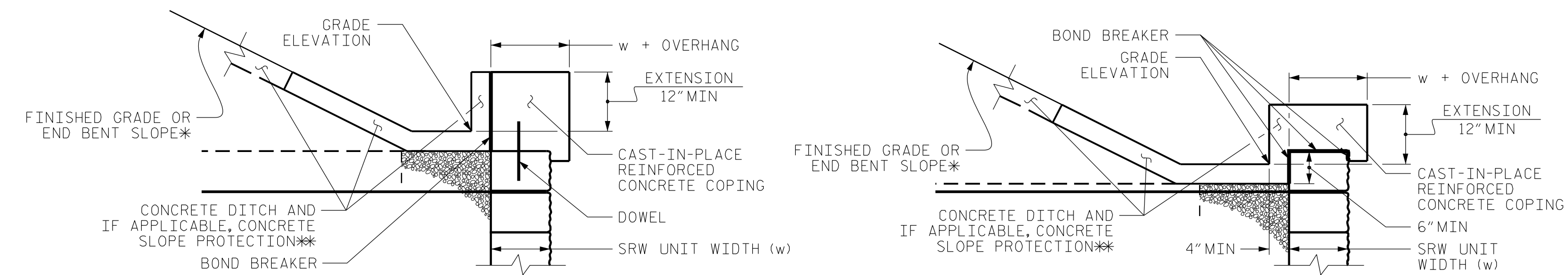


ENGINEER
 SIGNATURE _____ DATE _____



MSE WALL WITH SRW UNITS - 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

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO SRW UNITS WITH DOWELS OR EXTEND COPING DOWN BACK OF SRW UNITS.
 *SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.
 **SEE CONCRETE DITCH BEHIND WALL DETAILS.

PROJECT NO.: R-5311A
HERTFORD COUNTY
STATION: 50+99.00 -Y2- = 16+90.62 -L2-
 SHEET 4 OF 4

PREPARED BY: CBJ DATE: 8/2016
 REVIEWED BY: ECH DATE: 8/2016

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

RETAINING WALL NO. 1
 TYPICAL SECTIONS

TOTAL SHEETS: 4