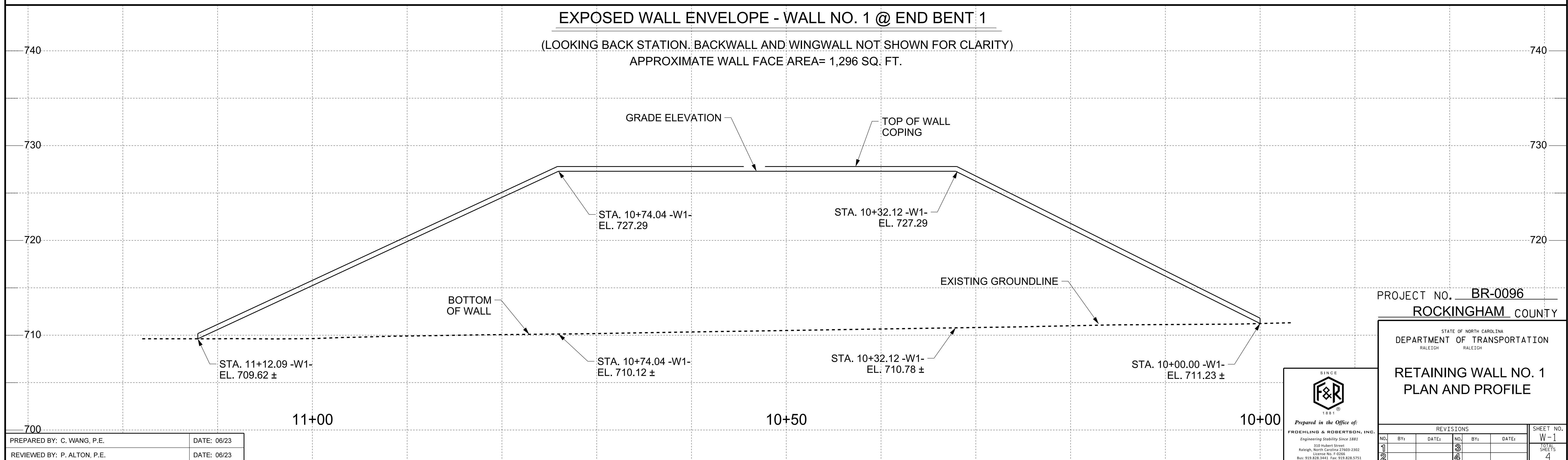


(LOOKING BACK STATION. BACKWALL AND WINGWALL NOT SHOWN FOR CLARITY)
APPROXIMATE WALL FACE AREA= 1,296 SQ. FT.



PROJECT NO. BR-0096
ROCKINGHAM COUNTY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH RALEIGH

RETAINING WALL NO. 1 PLAN AND PROFILE

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

GEOTECHNICAL
ENGINEER

SEAL
048123

CHUNG WANG
06/30/2023

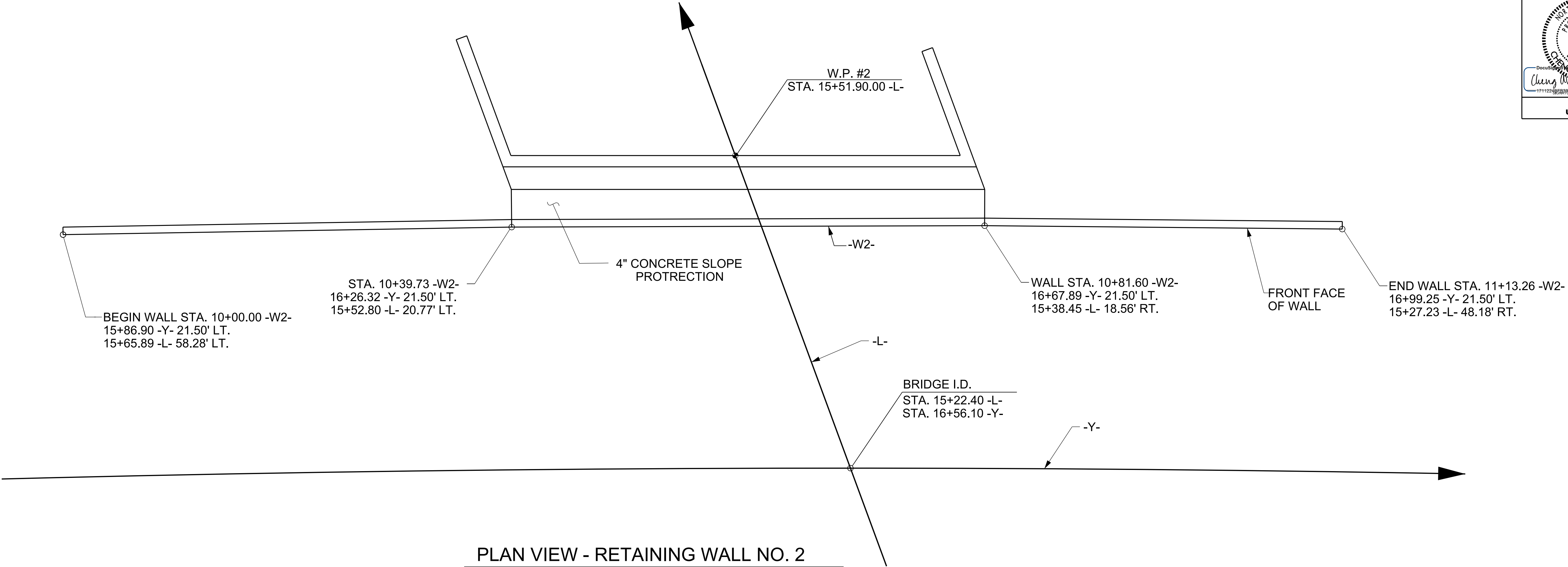
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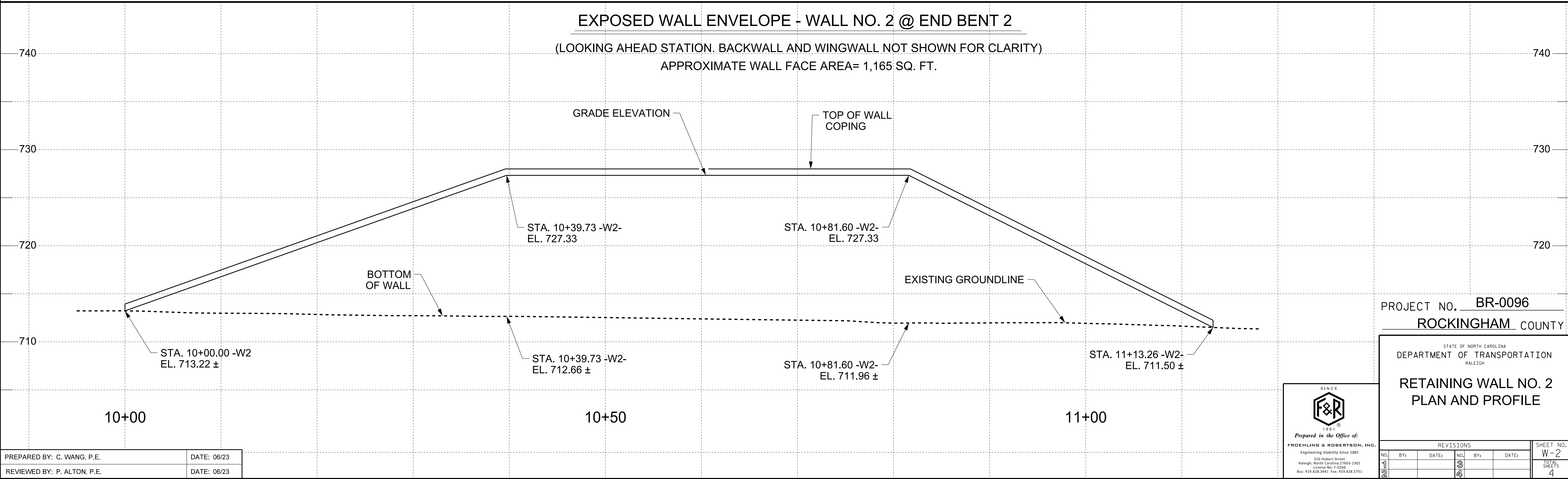
DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



EXPOSED WALL ENVELOPE - WALL NO. 2 @ END BENT 2

(LOOKING AHEAD STATION. BACKWALL AND WINGWALL NOT SHOWN FOR CLARITY)
APPROXIMATE WALL FACE AREA= 1,165 SQ. FT.



PROJECT NO. BR-0096
ROCKINGHAM COUNTY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL NO. 2
PLAN AND PROFILE

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Engineering & ROBERTSON Since 1881

310 Hubert Street

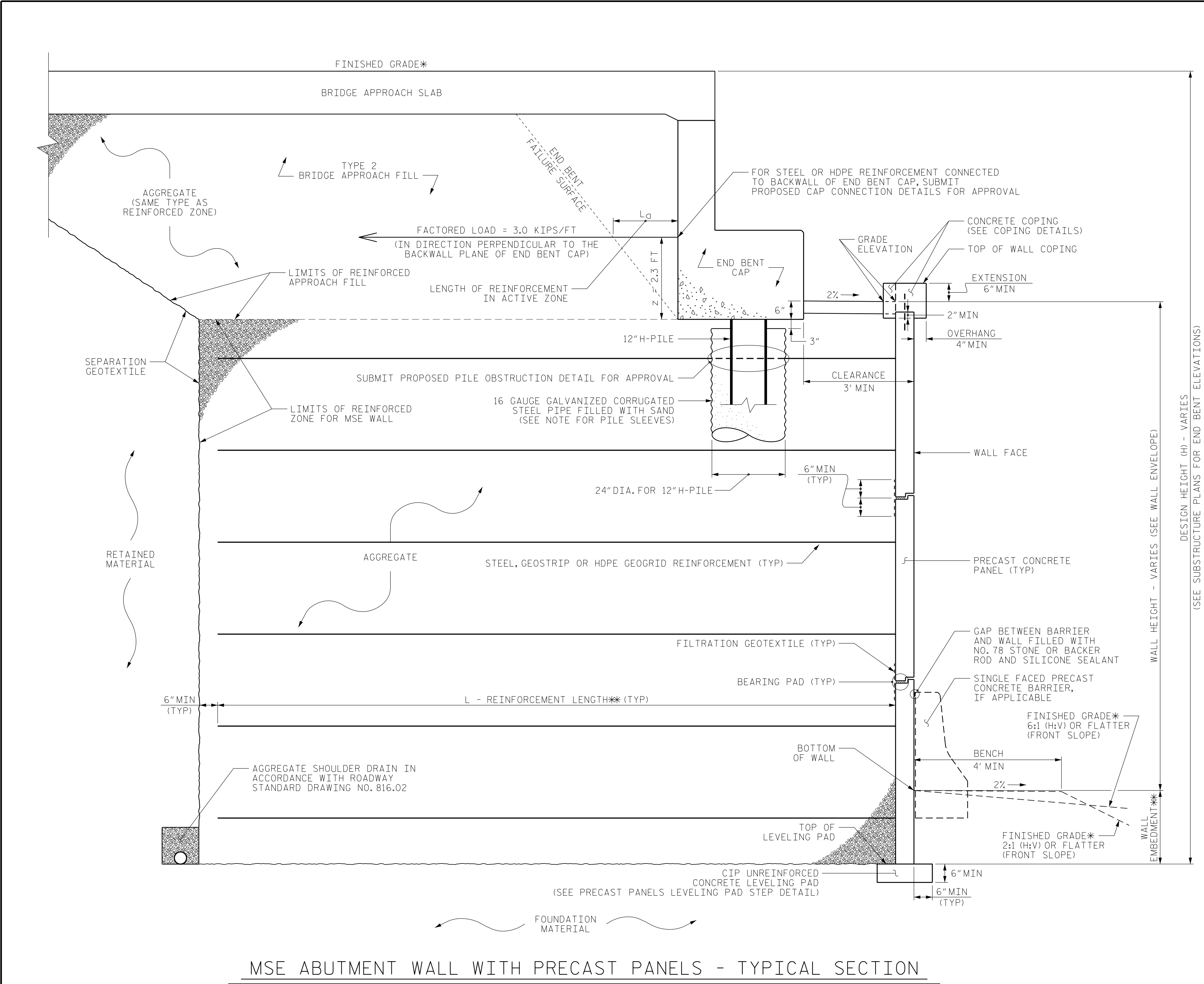
Raleigh, North Carolina 27603-2302

License No. F-0266

But: 919.828.3441 Fax: 919.828.5751

PREPARED BY: C. WANG, P.E.	DATE: 06/23
REVIEWED BY: P. ALTON, P.E.	DATE: 06/23

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



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 WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

GEOTECHNICAL
ENGINEER

DocuSigned by:
Chung Wang
17112248FB39493

ENGINEER

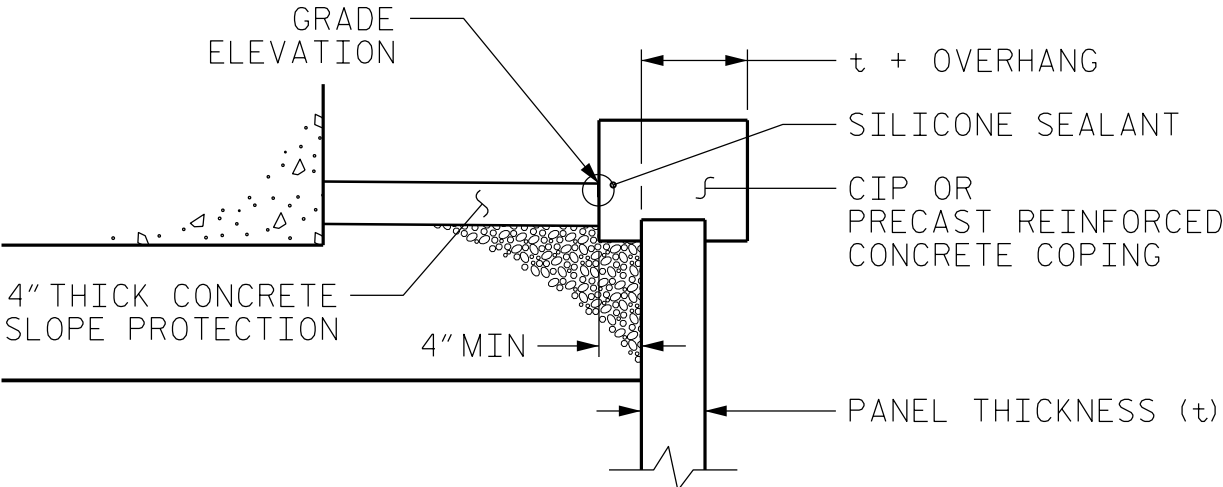
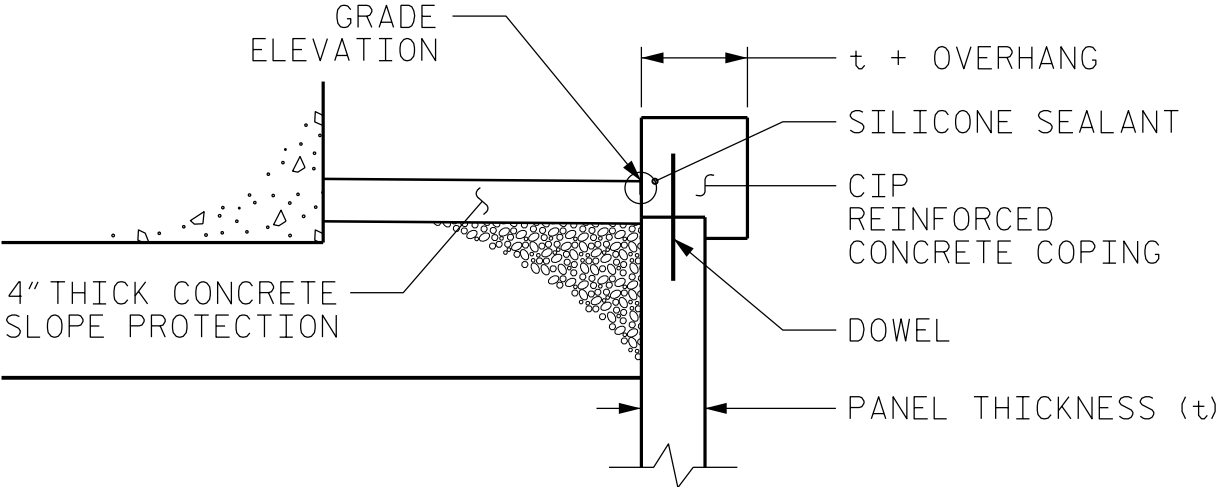
SIGNATURE

DATE

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DATE

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COPING DETAILS

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

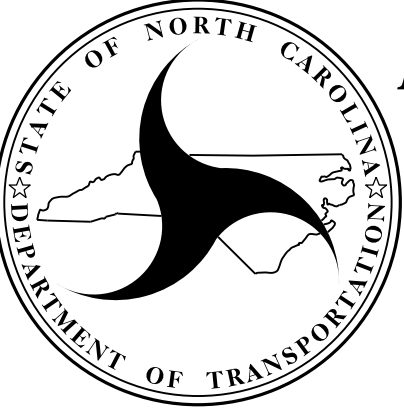
PROJECT NO.: BR-0096
ROCKINGHAM COUNTY

SHEET 3 OF 4

PREPARED BY: C. WANG, P.E.	DATE: 10/25
REVIEWED BY: P. ALTON, P.E.	DATE: 10/25

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

MSE ABUTMENT WALLS WITH PANELS, H-PILE AND PILE SLEEVES- RETAINING WALL Nos.1 AND 2 & COPING DETAILS						SHEET NO. W-3
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

GEOTECHNICAL
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
048123
ENGINEER
CHENG WANG, P.E.

DocuSigned by:
Cheng Wang
17142246783063

10/22/2025

SIGNATUREDATE

ENGINEER

SIGNATUREDATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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 FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO.1 AND 2.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO.1 AND 2.

A DRAIN IS REQUIRED FOR RETAINING WALL NO.1 AND 2.

PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO.1 LOCATED AT -L- STATION 14+92.90

PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO.2 LOCATED AT -L- STATION 15+51.90

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO.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 NO.1 AND 2 FOR THE FOLLOWING:
1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 5,100 PSF
4) 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.			

5) IN-SITU ASSUMED MATERIAL PARAMETERS:

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

DESIGN RETAINING WALL NO.1 AND 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_a) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO.1 LOCATED AT -L- STATION 14+92.90. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

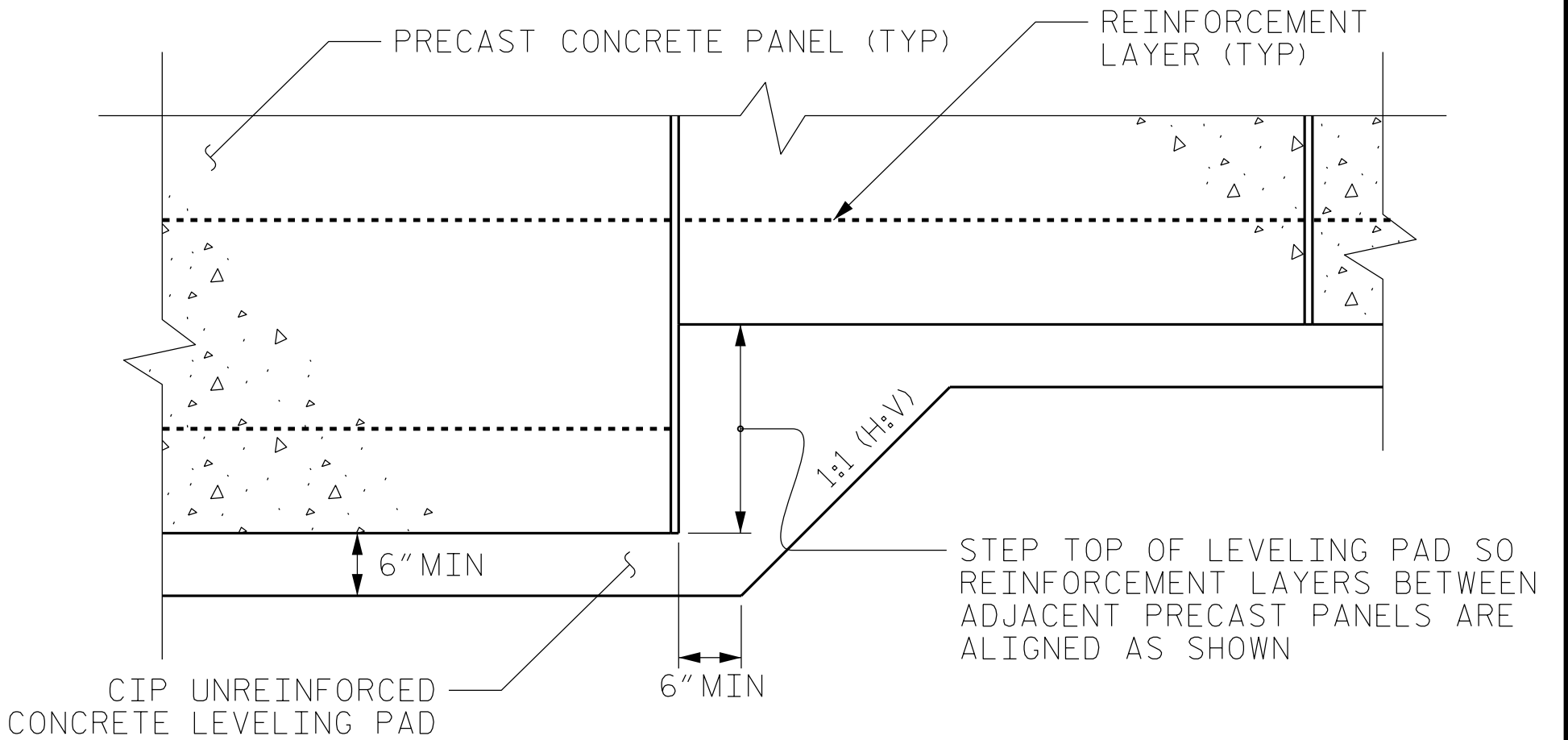
DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L_a) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO.2 LOCATED AT -L- STATION 15+51.90. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FOUNDATIONS FOR END BENT NO.1 LOCATED AT -L- STATION 14+92.90 MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

FOUNDATIONS FOR END BENT NO.2 LOCATED AT -L- STATION 15+51.90 MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.2. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO.1 AND 2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

AT THE CONTRACTOR'S OPTION, "TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE USED TO CONSTRUCT RETAINING WALL NO.1 AND 2. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.



PRECAST PANELS
LEVELING PAD STEP DETAIL

ESTIMATED MSE WALL QUANTITIES (SQUARE FEET)	
MSE RETAINING WALL NO. 1	1,576 SF
MSE RETAINING WALL NO. 2	1,448 SF

PROJECT NO.: BR-0096

ROCKINGHAM COUNTY

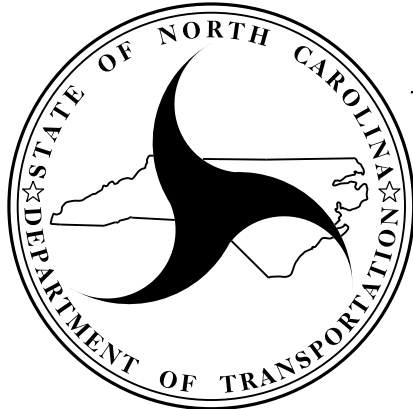
SHEET 4 OF 4

PREPARED BY: C. WANG, P.E.	DATE: 10/25
REVIEWED BY: P. ALTON, P.E.	DATE: 10/25

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DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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