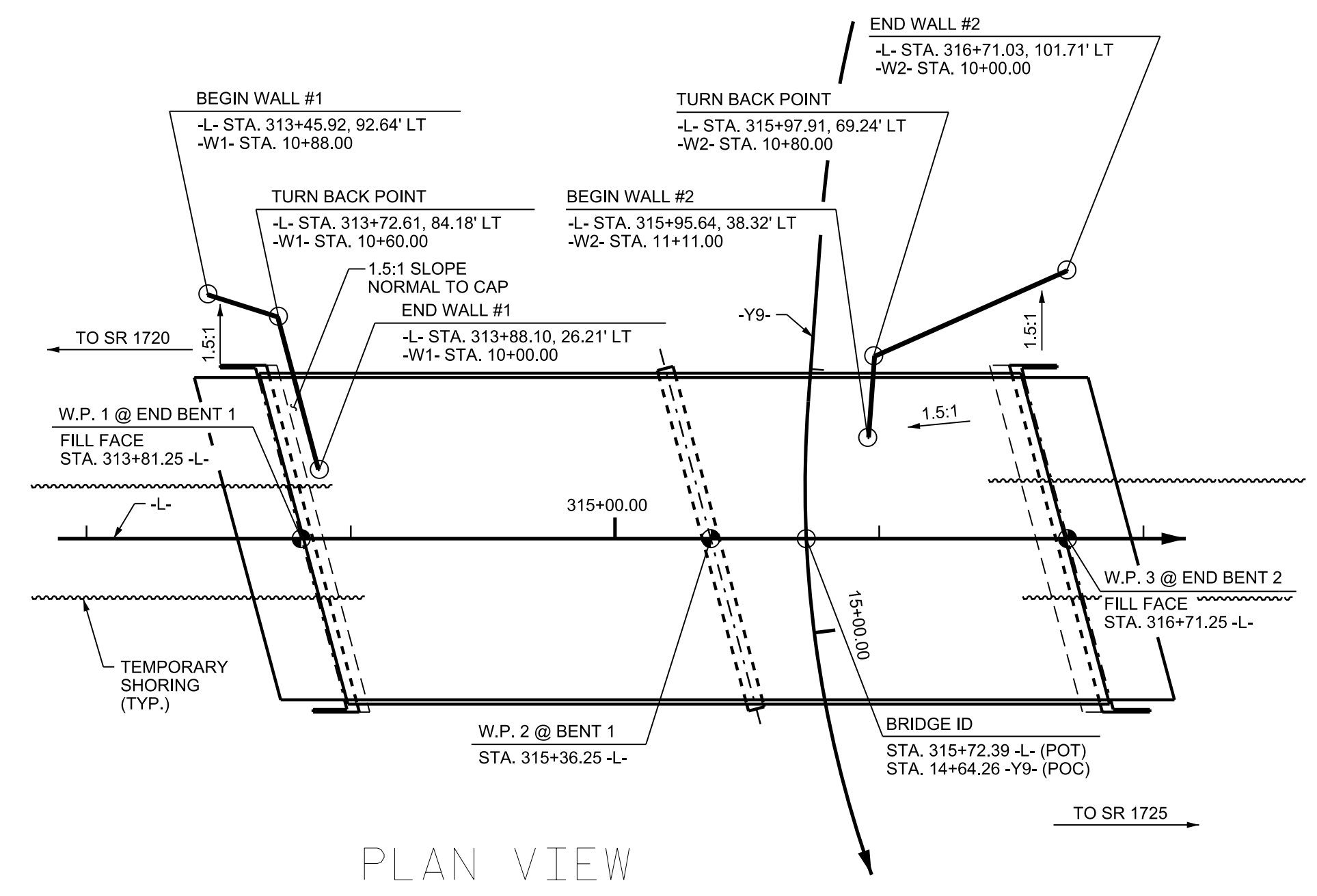


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PLAN VIEW

FRONT SLOPE WALL EMBEDMENT

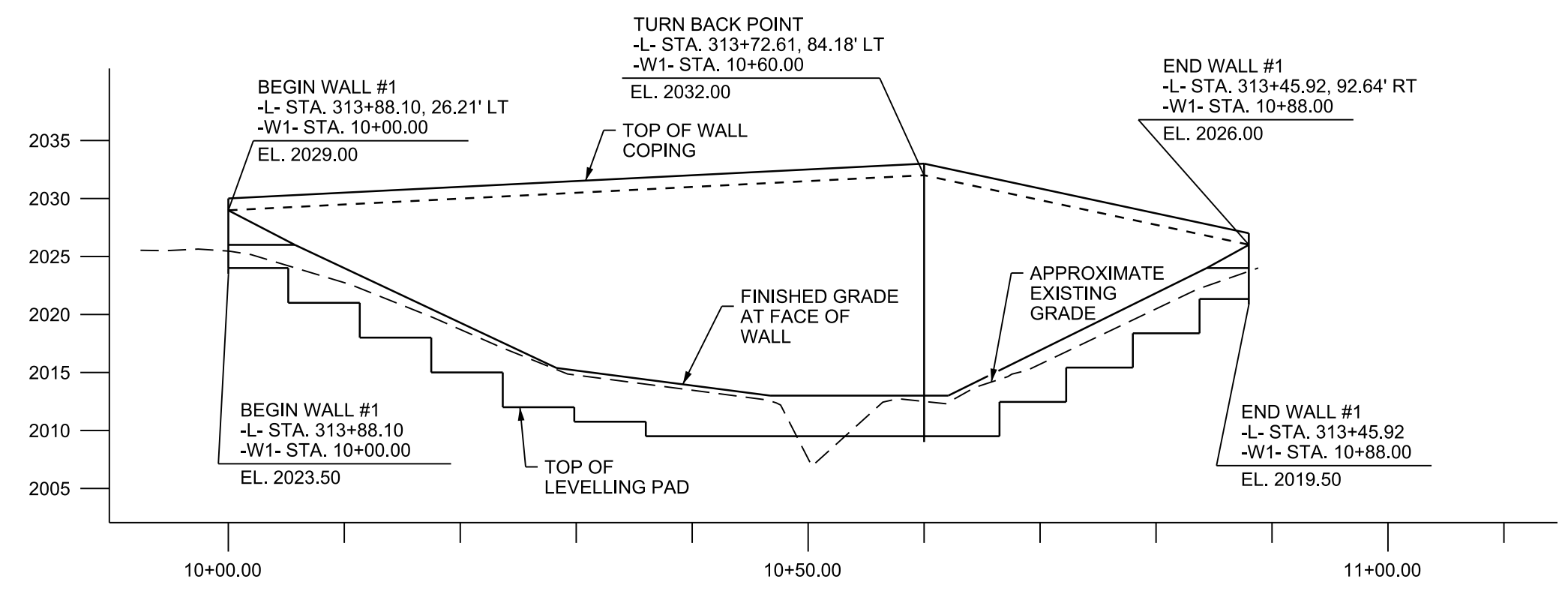
SLOPE IN FRONT OF STRUCTURES		MINIMUM EMBEDMENT DEPTH
HORIZONTAL	FOR WALLS	H/20
	FOR ABUTMENTS	H/10
3.0H:1.0V	WALLS	H/10
2.5H:1.0V	WALLS	H/8.5
2.0H:1.0V	WALLS	H/7
1.5H:1.0V	WALLS	H/5
1.25H:1.0V	WALLS	H/4
1.0H:1.0V	WALLS	H/3

NOTE:
1) MAINTAIN A MINIMUM BENCH WIDTH OF 4.0 IN FRONT OF THE WALL FOR ITS ENTIRE LENGTH.
2) MINIMUM EMBEDMENT DEPTH OF 2 FT. UNLESS LARGER DEPTHS DICTATED BY THE ABOVE TABLE.
3) MAXIMUM SLOPE OF 1H:1V WILL BE MAINTAINED ON FRONT SLOPES FOR THE ENTIRE LENGTH OF THE WALL.
4) SUBMIT WITH THE WALL DESIGN INTERNAL, EXTERNAL, AND GLOBAL STABILITY ANALYSES.

MSE RETAINING WALL QUANTITIES

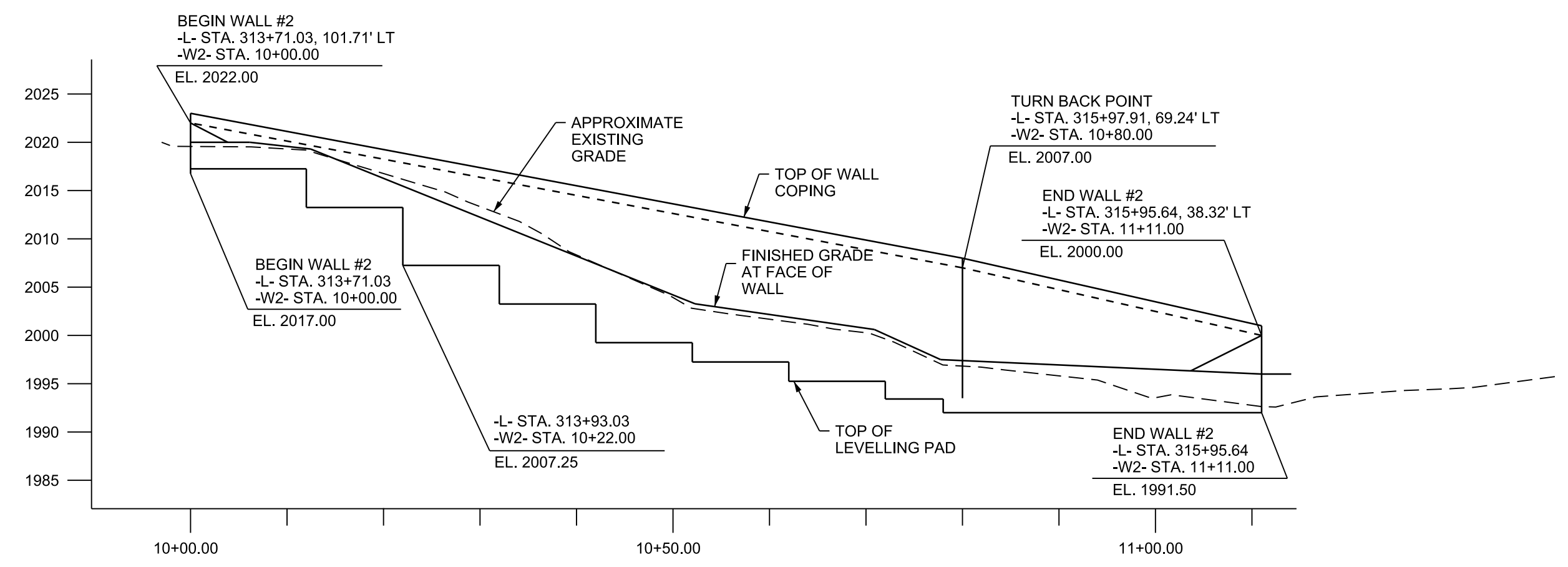
RETAINING WALL NO.	WALL ID	AREA
RETAINING WALL NO. 1	-W1-	* 1486 SQUARE FEET
RETAINING WALL NO. 2	-W2-	* 1321 SQUARE FEET

* WALL AREA IS MEASURED USING THE DESIGN HEIGHT "H"



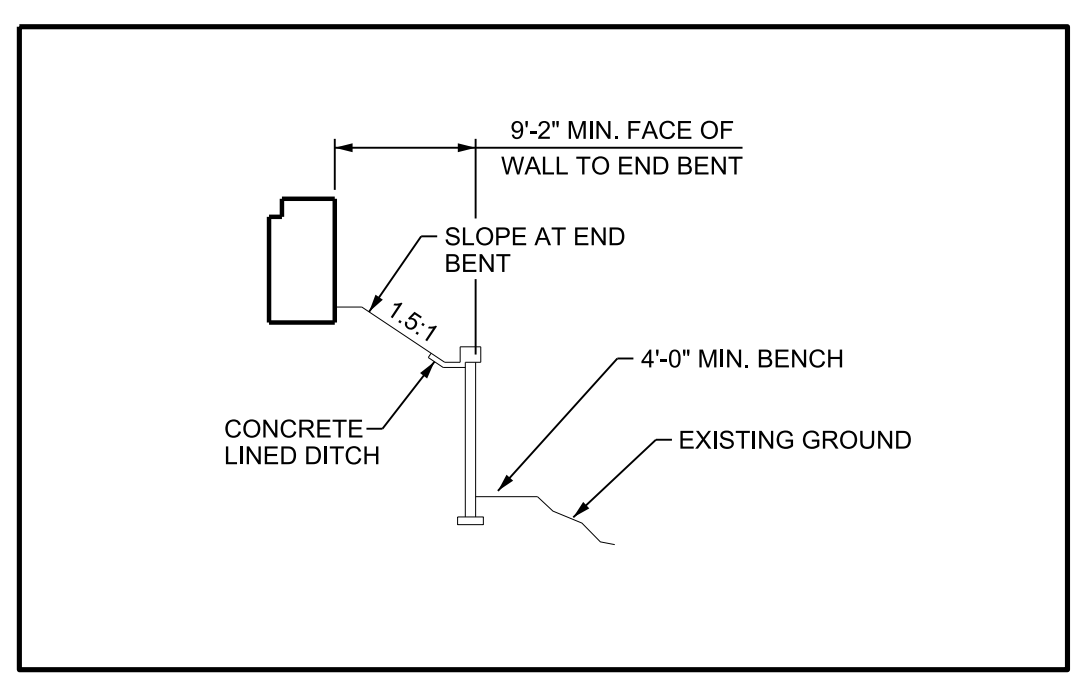
WALL ENVELOPE - RETAINING WALL NO. 1

NOTE:
1) OFFSET DIMENSIONS ARE FROM FACE OF WALL
2) THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

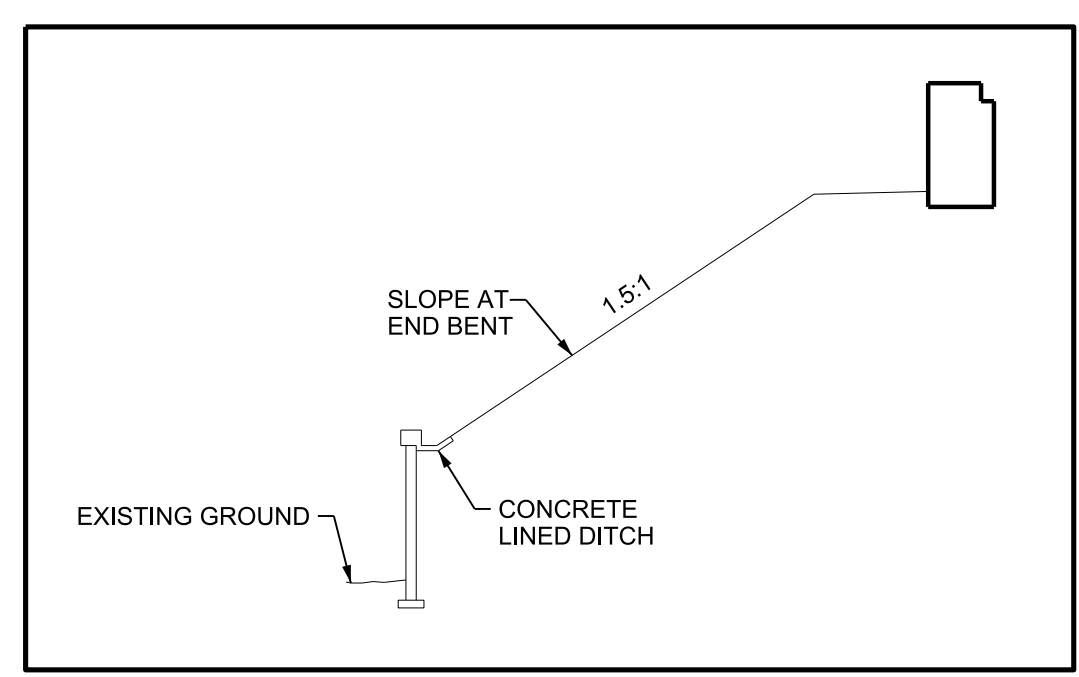


WALL ENVELOPE - RETAINING WALL NO. 2

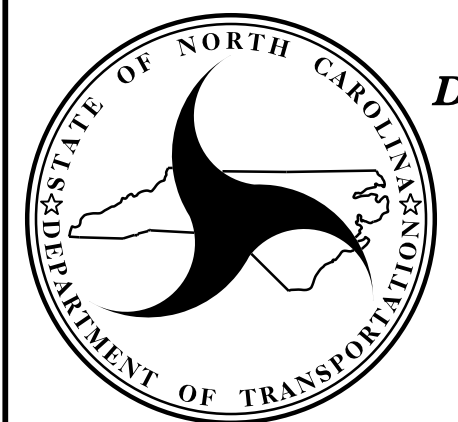
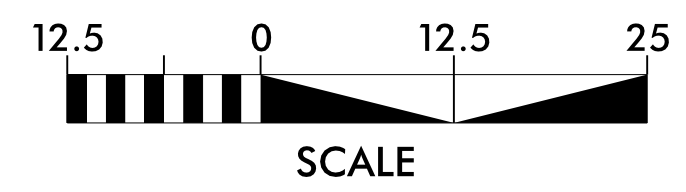
NOTE:
1) OFFSET DIMENSIONS ARE FROM FACE OF WALL
2) THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL



TYPICAL SECTION OF WALL NO. 1



TYPICAL SECTION OF WALL NO. 2



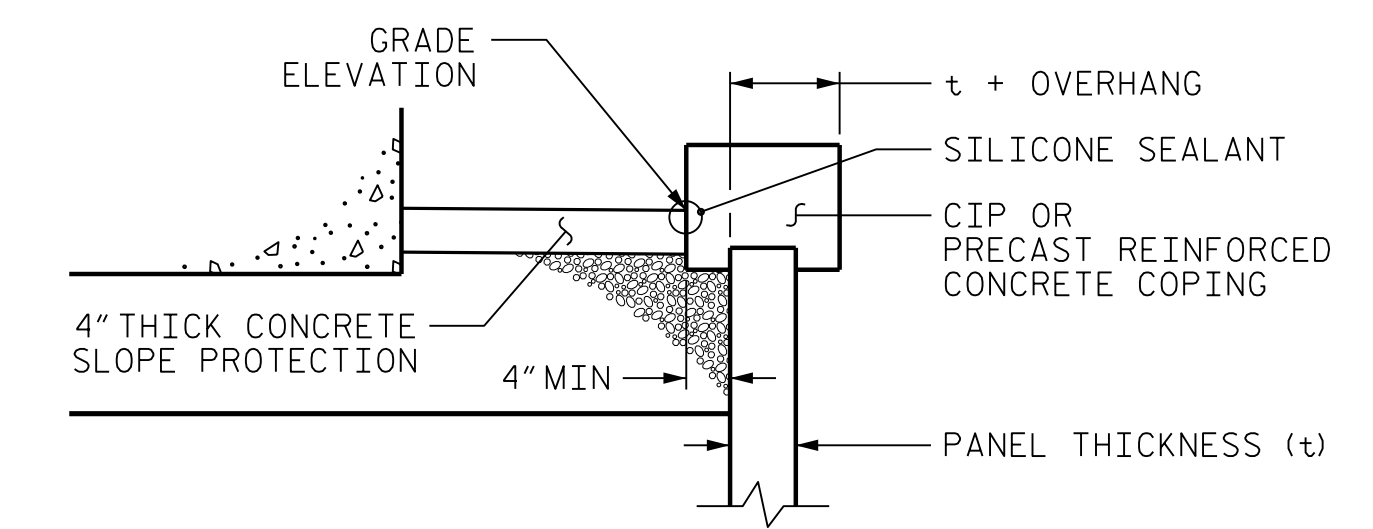
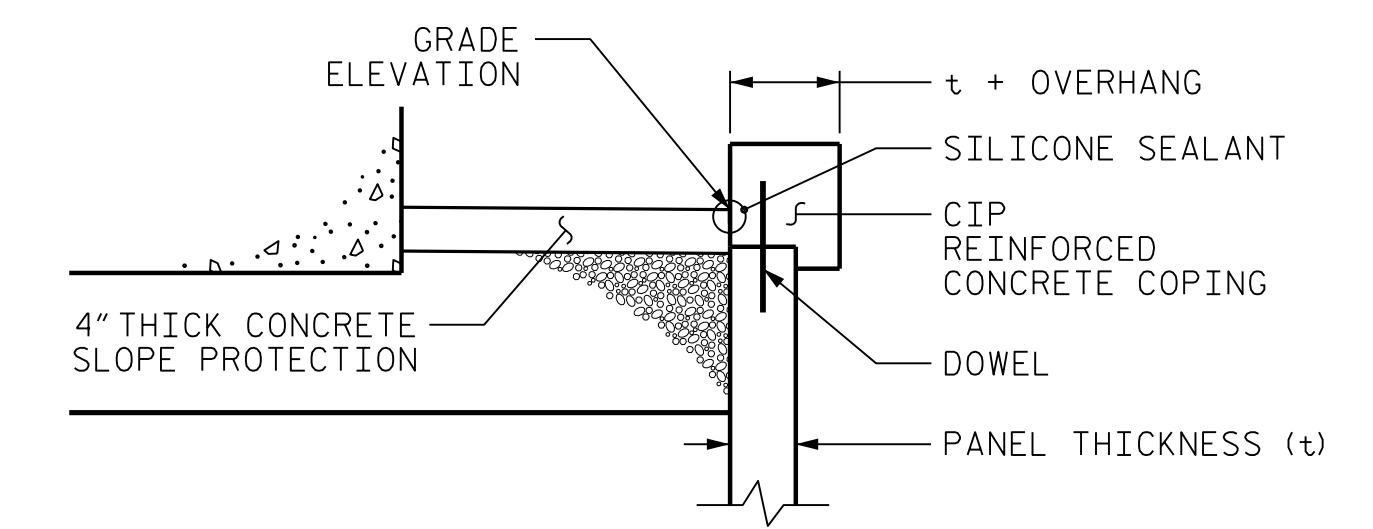
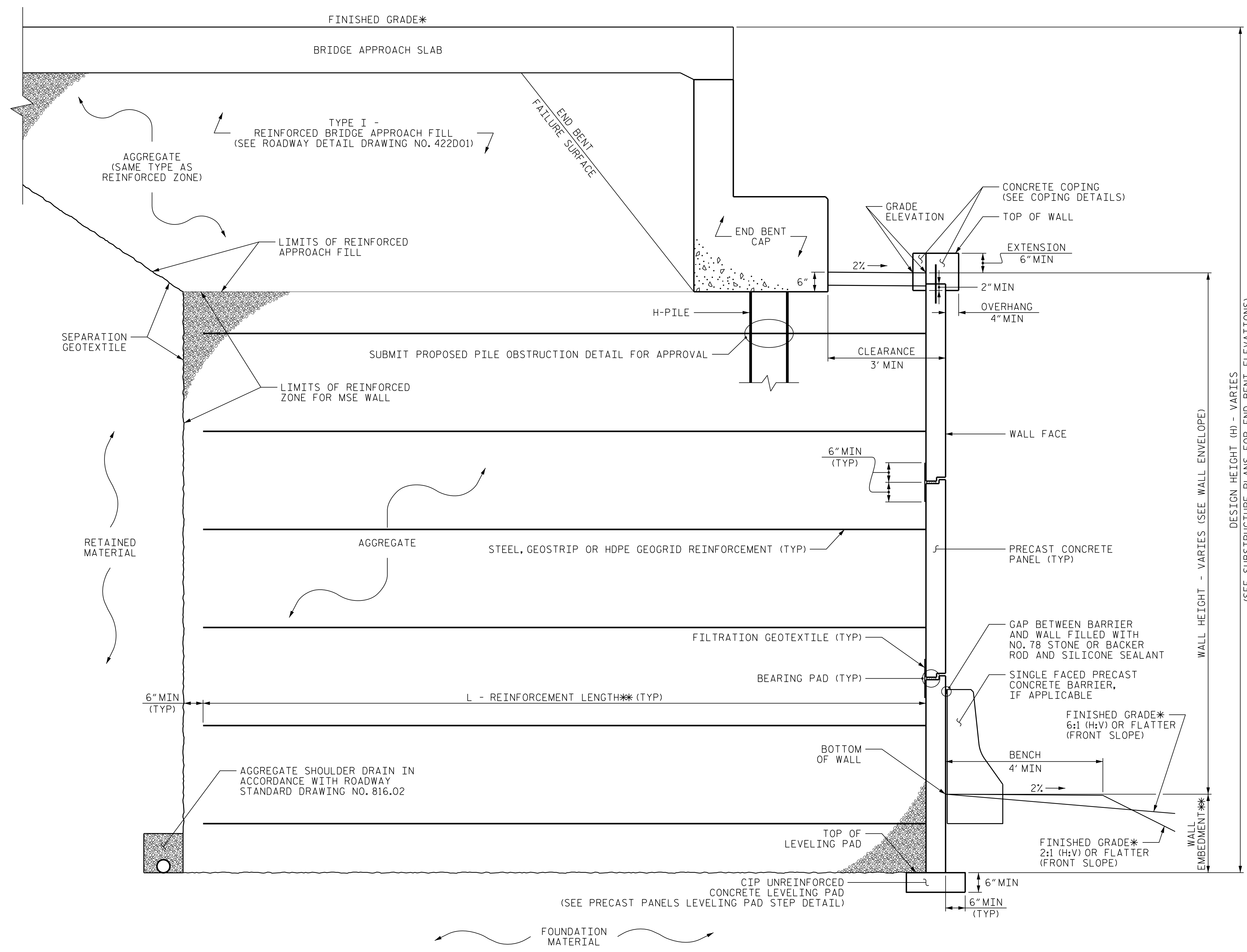
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

PROJECT NO.: B-4442
BUNCOMBE COUNTY
STATION: 315+72.39 -L-
SHEET 1 OF 4 WALL ID RW-1-2

RETAINING WALL NOS. 1 AND 2
MSE RETAINING WALL

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



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 - TYPICAL SECTION AT END BENT

*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.

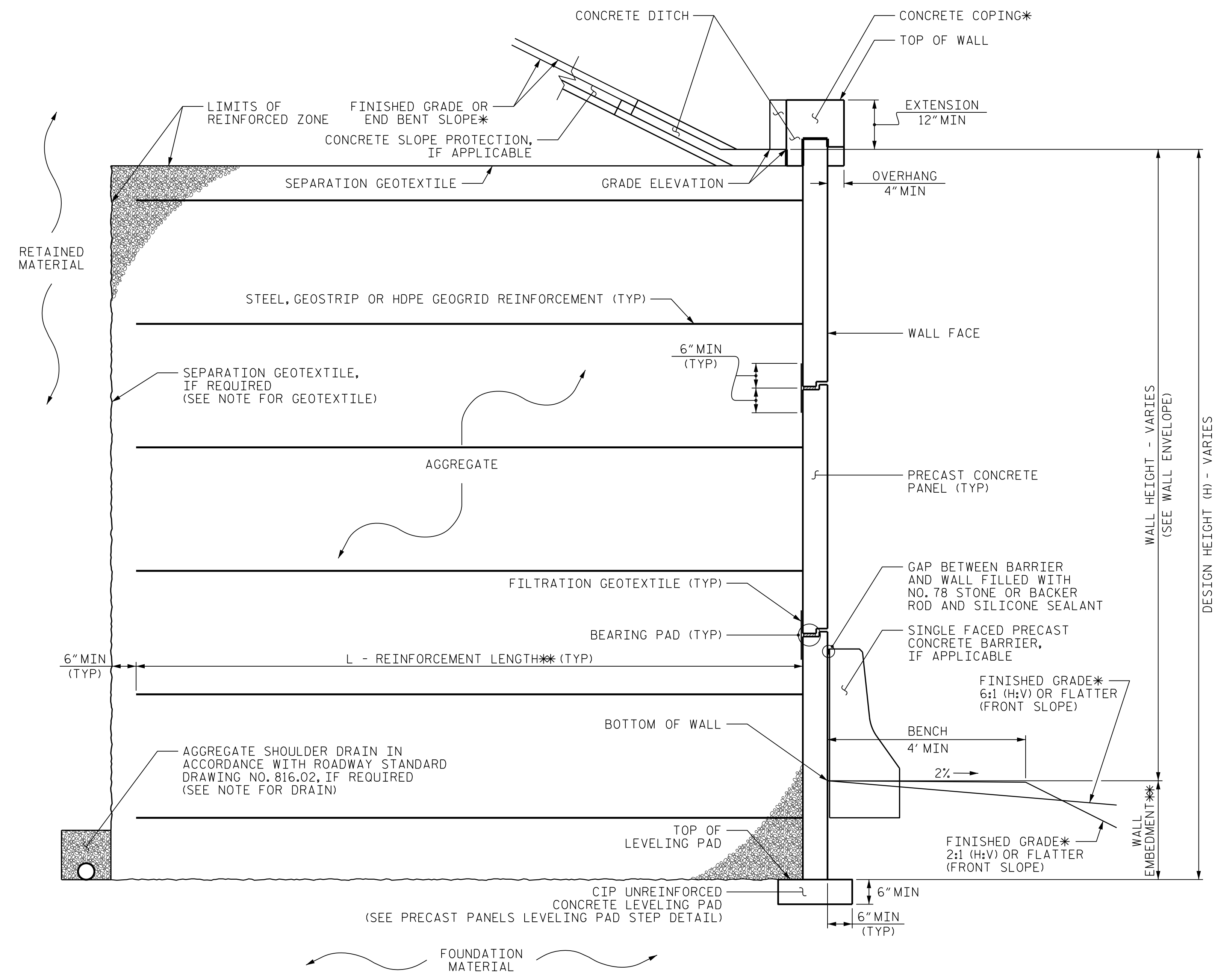
PROJECT NO.: B-4442
 BUNCOMBE COUNTY
 STATION: 315+72.39 -L-
 SHEET 2 OF 4 WALL ID RW-1-2

NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NOS. 1 AND 2 MSE RETAINING WALL

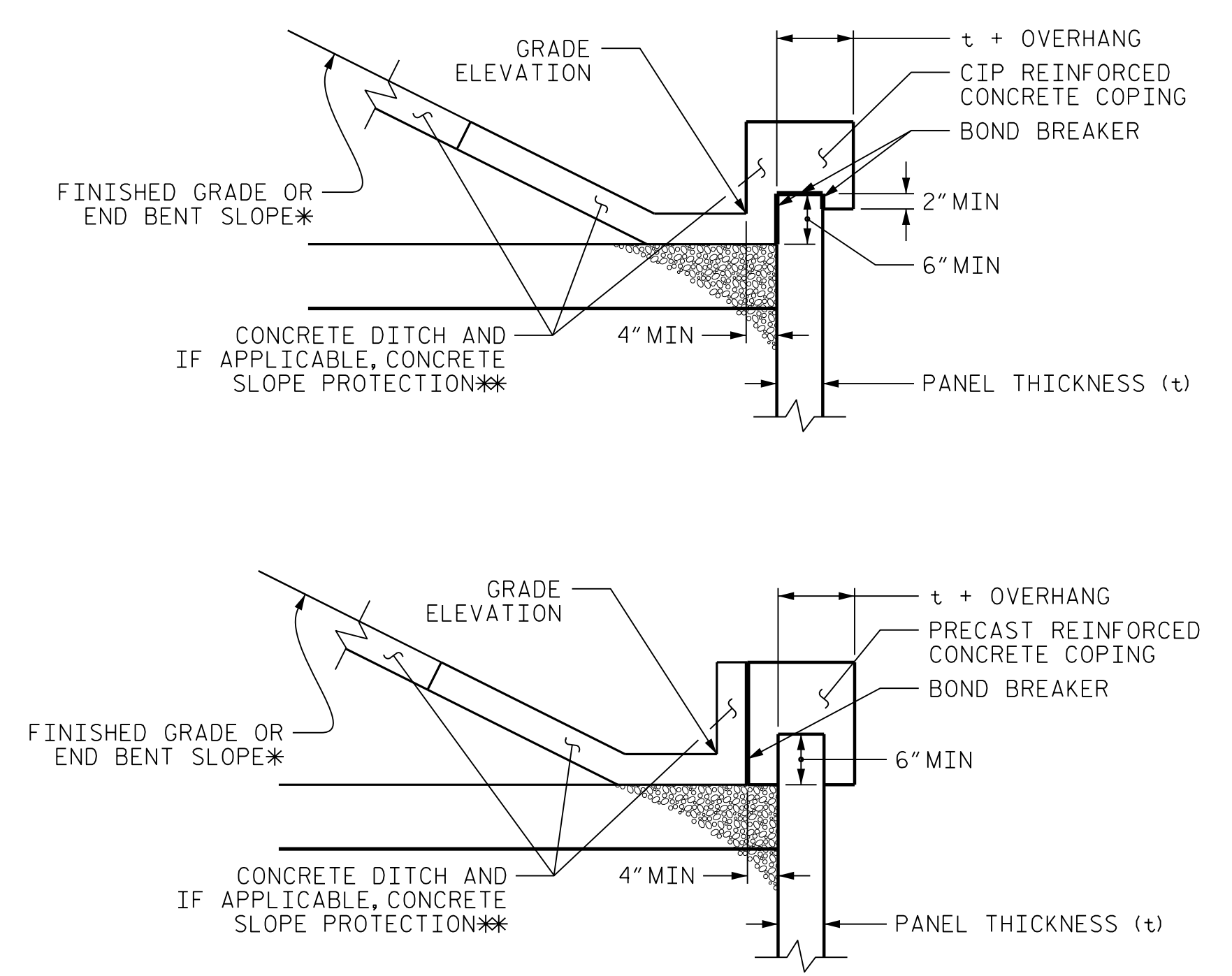
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-2
2			4			

PREPARED BY: SY	DATE: 6/2022
REVIEWED BY: SCC	DATE: 6/2022



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 WALL 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.: B-4442
 BUNCOMBE COUNTY
 STATION: 315+72.39 -L-
 SHEET 3 OF 4 WALL ID RW-1-2

NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NOS. 1 AND 2 MSE RETAINING WALL

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

GEOTECHNICAL ENGINEER  Shipping Yang 06/16/2022 DDC0CE5EAE4D4	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NOTES:

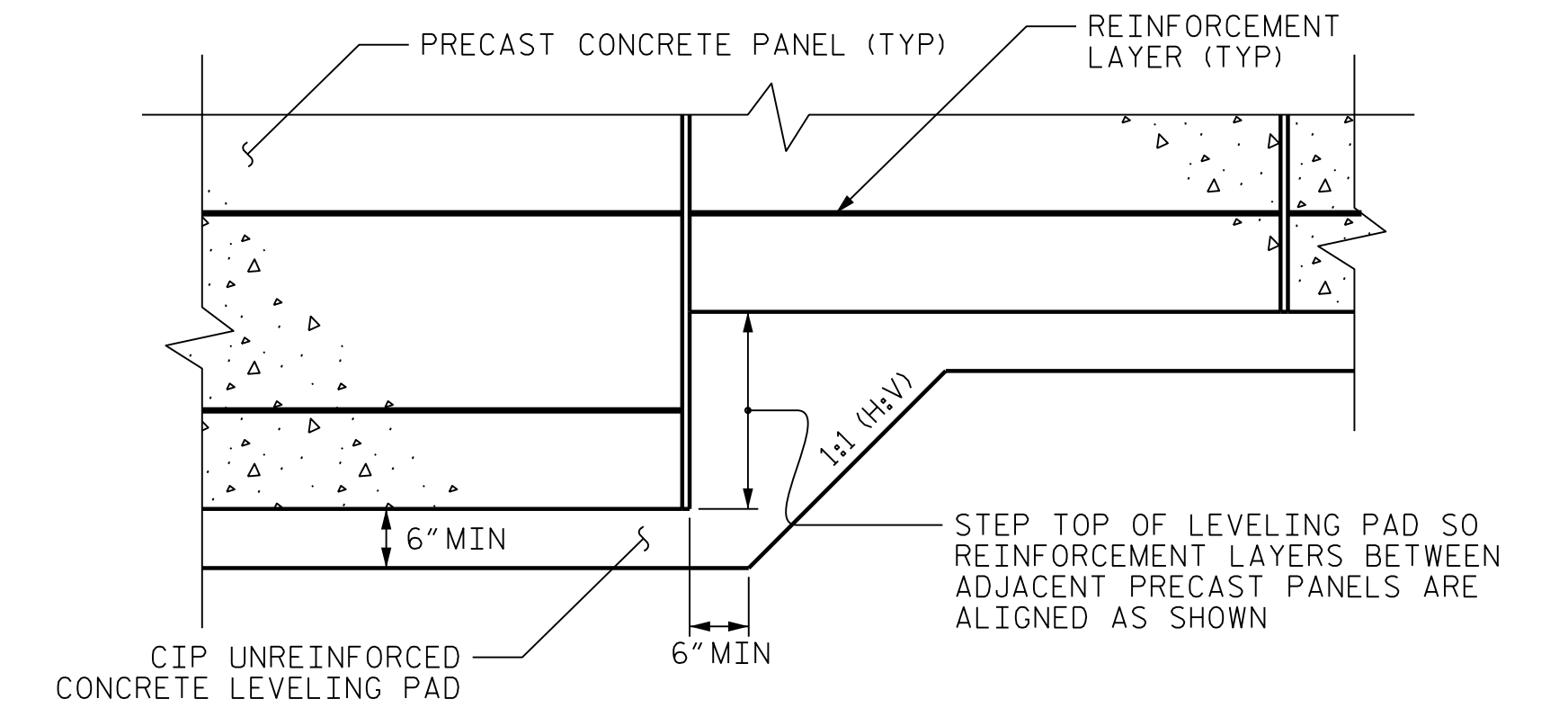
- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- FOR TYPE I REINFORCED BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422D01.
- A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED 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) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 6700 PSF AT WALL NO. 1 AND 6900 AT WALL NO. 2.
 - 4) MINIMUM REINFORCEMENT LENGTH (L) = 1.0H
 - 5) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.			

6) IN-SITU ASSUMED MATERIAL PARAMETERS:


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

- REFER TO THE TABLE ON SHEET NO. 1 FOR THE MINIMUM WALL EMBEDMENT DEPTH FOR RETAINING WALL NO. 1.
- REFER TO THE TABLE ON SHEET NO. 1 FOR THE MINIMUM WALL EMBEDMENT DEPTH FROM STATION 10+00 -W2- TO 10+22 -W2 AND INCLUDE ADDITIONAL 2 FEET EMBEDMENT FROM STATION 10+22 -W2- TO 11+11 -W2- FOR RETAINING WALL NO. 2.
- DESIGN RETAINING WALL NOS. 1 AND 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NOS. 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. 2. SEE MSE RETAINING WALLS PROVISION FOR TEMPORARY SHORING FOR WALL CONSTRUCTION.



**PRECAST PANELS
LEVELING PAD STEP DETAIL**

PROJECT NO.: B-4442
 BUNCOMBE COUNTY
 STATION: 315+72.39 -L-
 SHEET 4 OF 4 WALL ID RW-1-2


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

**RETAINING WALL NOS. 1 AND 2
MSE RETAINING WALL**

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

PREPARED BY: SY	DATE: 6/2022
REVIEWED BY: SCC	DATE: 6/2022