NOTES

FOR 4" CONCRETE SLOPE PROTECTION, SEE "SLOPE PROTECTION DETAILS" SHEET.

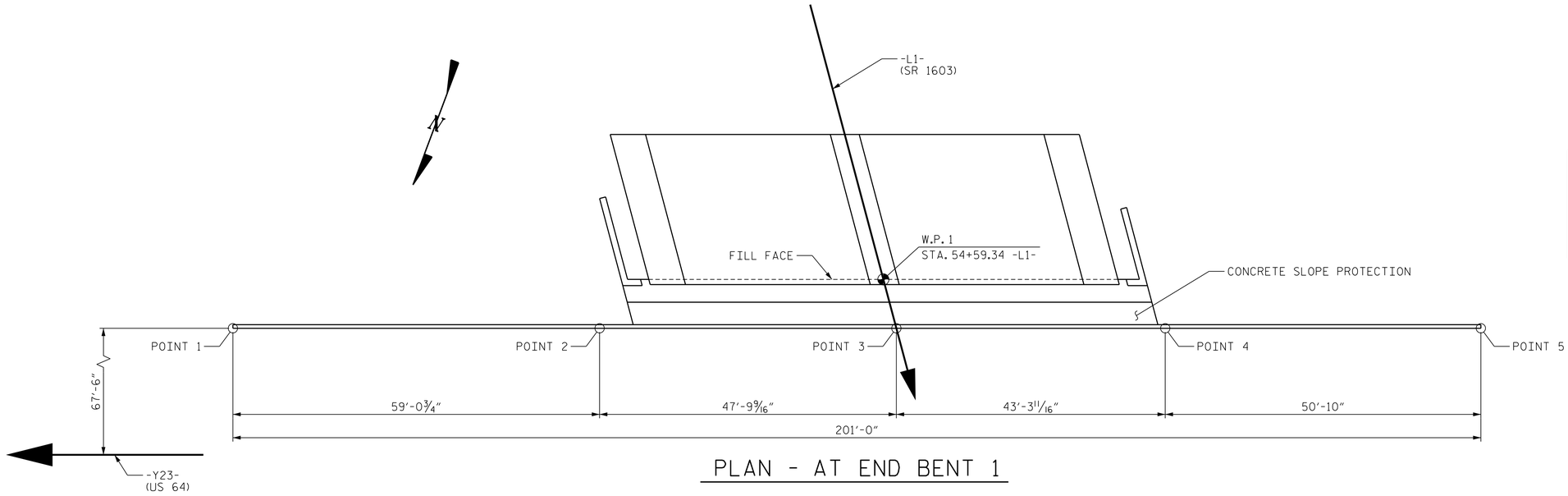
FOR ADDITIONAL NOTES, SEE SHEET 5 OF 5.

FOR SECTION A-A, SEE SHEET 3 OF 5.

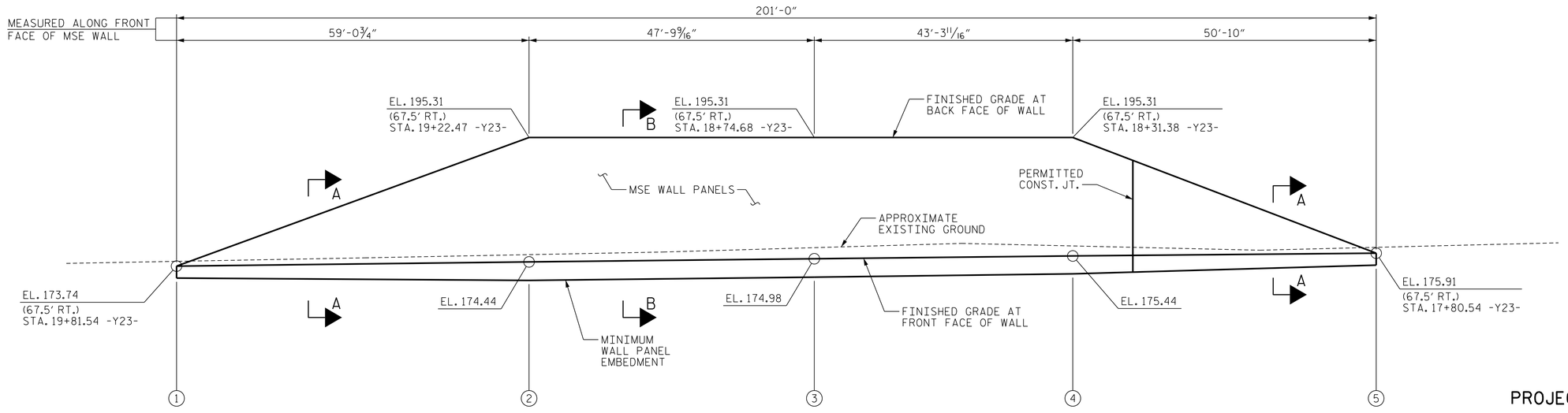
FOR SECTION B-B, SEE SHEET 4 OF 5.

ESTIMATED MSE WALL QUANTIITES *	
MSE WALL NO. 1	3750 S.F.
MSE WALL NO. 2	2500 S.F.

* WALL QUANTITIES INCLUDE EMBEDMENT AND EXTENSION



PLAN - AT END BENT 1



ELEVATION - AT END BENT 1

(LOOKING AT EXPOSED FRONT FACE OF MSE WALL

PROJECT NO. U-5996

NASH COUNTY

STATION: 55+37.34 -L1-

SHEET 1 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027799 ENGINEER: ALLYSON K. ORR

11/12/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE RETAINING WALL

PLAN AND ELEVATION
MSE WALL NO. 1
AT END BENT 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-1
1			3			TOTAL SHEETS
2			4			5

DRAWN BY :	B.E. LANNING	DATE :	02/20
CHECKED BY :	A.K. ORR	DATE :	02/20
DESIGN ENGINEER OF RECORD :	A.K. ORR	DATE :	03/20

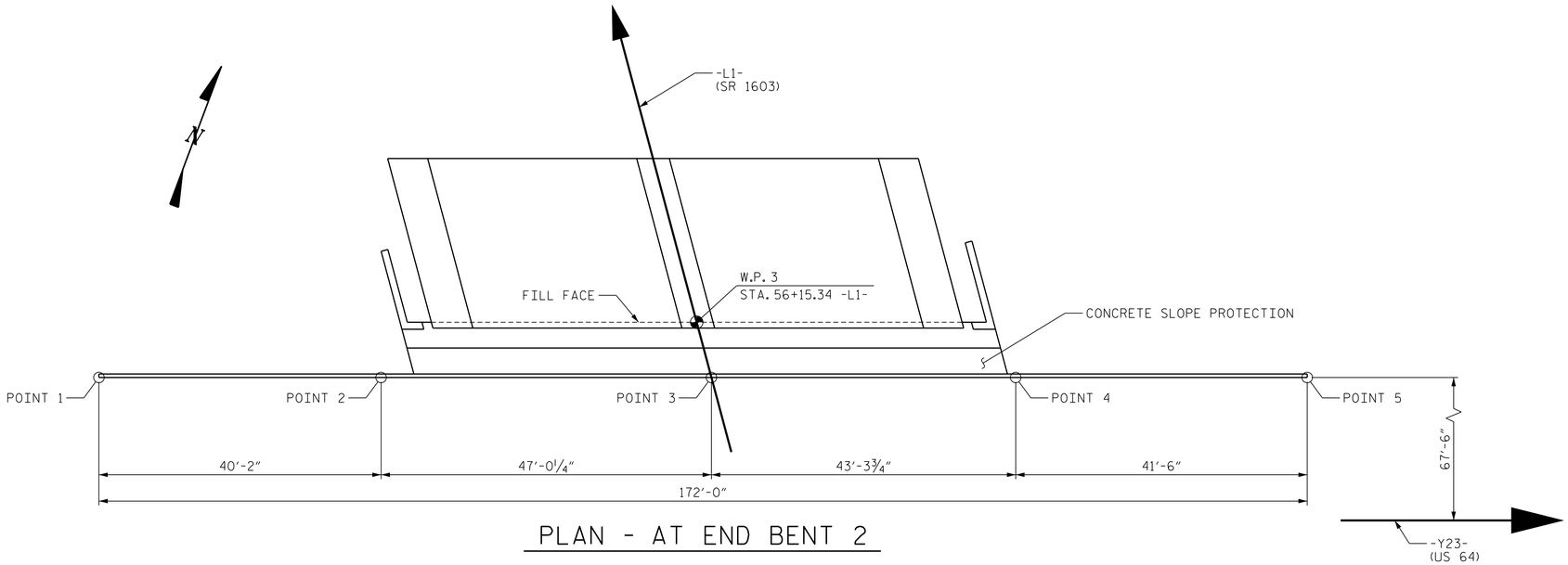
NOTES

FOR 4"CONCRETE SLOPE PROTECTION, SEE "SLOPE PROTECTION DETAILS" SHEET.

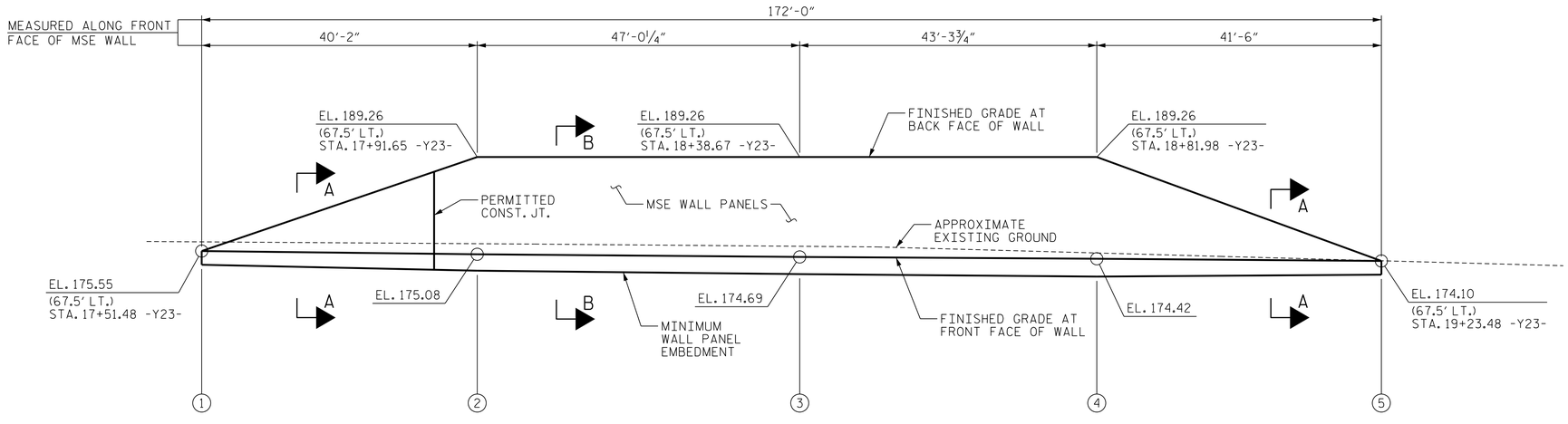
FOR ADDITIONAL NOTES, SEE SHEET 5 OF 5.

FOR SECTION A-A, SEE SHEET 3 OF 5.

FOR SECTION B-B, SEE SHEET 4 OF 5.



PLAN - AT END BENT 2



ELEVATION - AT END BENT 2

(LOOKING AT EXPOSED FRONT FACE OF MSE WALL

PROJECT NO. U-5996

NASH COUNTY

STATION: 55+37.34 -L1-

SHEET 2 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027799 ALLYSON K. ORR
11/12/2021

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE RETAINING WALL

PLAN AND ELEVATION MSE WALL NO. 2 AT END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-2
1			3			TOTAL SHEETS
2			4			5

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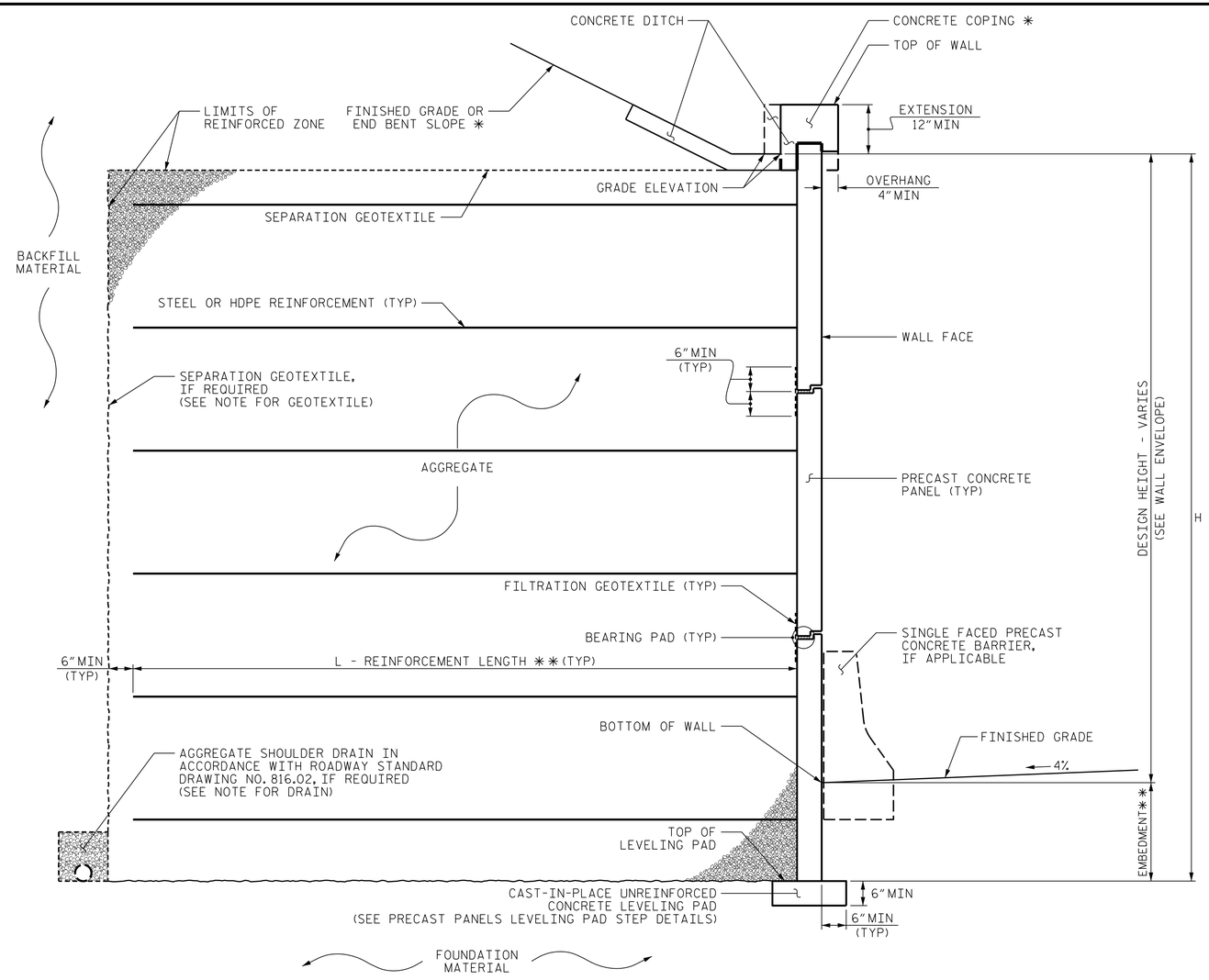
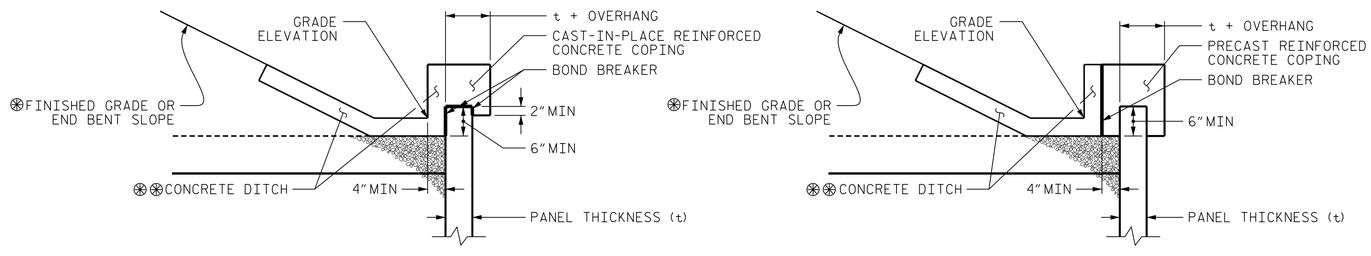


MSE WALL WITH PRECAST PANELS - SECTION A-A

✳ SEE SHEETS 1 AND 2 FOR FINISHED GRADE OR END BENT SLOPE DETAILS.
✳✳ SEE MSE RETAINING WALLS PROVISION AND 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. U-5996
NASH COUNTY
STATION: 55+37.34 -L1-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE RETAINING WALLS
SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER ALLYSON K. ORR
11/12/2021

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(919) 851-6606
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-3
1			3			TOTAL SHEETS
2			4			5

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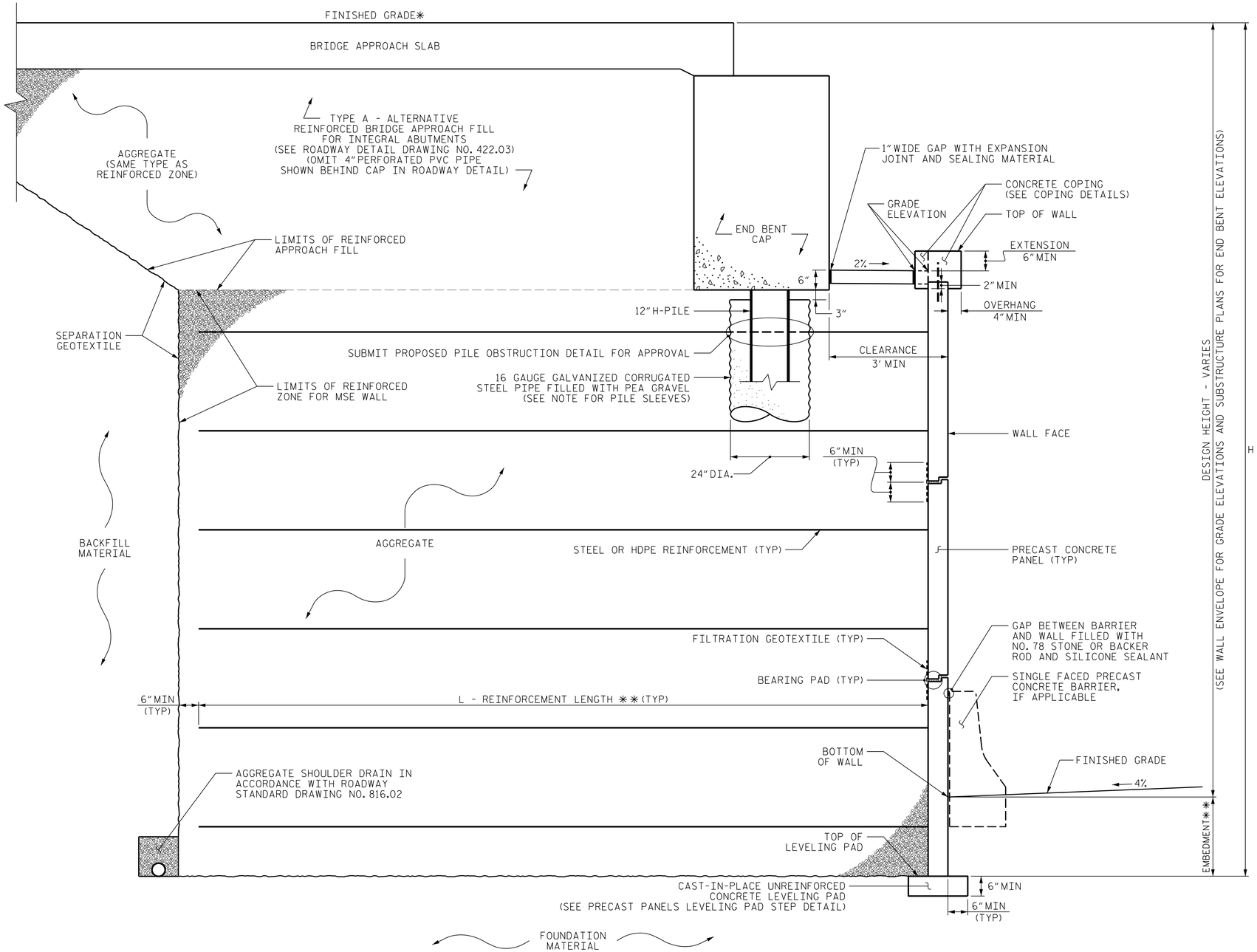
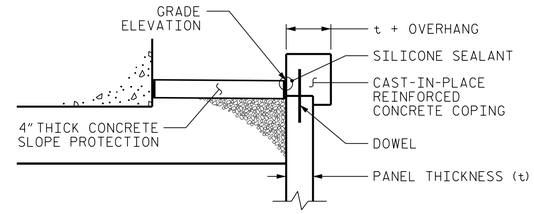
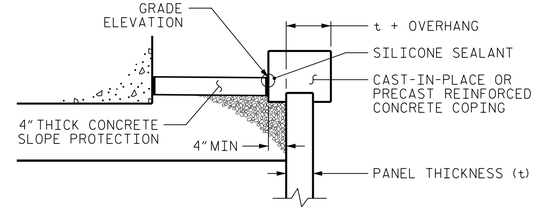


MSE ABUTMENT WALL WITH PRECAST PANELS - SECTION B-B

* SEE SHEETS 1 AND 2 FOR FINISHED GRADE DETAILS.
** SEE MSE RETAINING WALLS PROVISION AND
MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.





COPING DETAILS

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

PROJECT NO. U-5996
NASH COUNTY
STATION: 55+37.34 -L1-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE RETAINING WALLS
TYPICAL SECTION
AND COPING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER ALLYSON K. ORR
11/12/2021

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(919) 851-6606
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1			3			TOTAL SHEETS
2			4			5

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Filename: N:\NC Bridges\MI7034 - U-5996 (VHB)\Final\U-5996\Structures\Str02\MSE WALL\420.007.U5996.SMU.MSE4.630154.dgn

MSE WALL NOTES:

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

2. USE TYPE A - ALTERNATIVE REINFORCED APPOACH FILL FOR INTEGRAL ABUTMENT DETAILS WITH THE SAME COARSE AGGREGATE USED IN THE REINFORCED ZONE FOR MSE RETAINING WALL. ELIMINATE THE UNNECCESARY 4"PERFORATED PVC PIPE SHOWN IN THE DETAILS FOR TYPE-A FROM THE REINFORCED APPROACH FILLS DETAILS USED AT BOTH END BENTS. FOR TYPE A REINFORCED BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422.03.

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

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

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

6. PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO. 1 AND 2.

7. 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 NO. 2 FOR THE FOLLOWING
   1) H = DESIGN HEIGHT + EMBEDMENT
   2) DESIGN LIFE = 100 YEARS
   3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 5500 PSF
   4) MINIMUM REINFORCEMENT LENGTH (L) = 1.0(H) OR 6 FT, WHICHEVER IS LONGER
   5) MINIMUM EMBEDMENT ELEVATION = 2 FT
   6) REINFORCED ZONE AGGREGATE PARAMETERS:

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

* SEE MSE RETAINING WALLS PROVISION FOR COARSE 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	28	0

8. DESIGN RETAINING WALL NO. 1 AND 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE, AND THE TEMPORARY 2 FT SURCHARGE REQUIRED DURING THE STAGE CONSTRUCTION.

9. FOUNDATIONS FOR END BENT NO. 1 AND 2 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1 AND 2, RESPECTIVELY. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

10. DESIGN RETAINING WALL NO. 1 FOR A DIFFERENTIAL SETTLEMENT OF 6 INCHES PER 100 FT ALONG EXPOSED FACE OF THE WALL AND FOR A TOTAL DIFFERENTIAL SETTLEMENT OF 4 INCHES ALONG TRANSVERSE DIRECTION PERPENDICULAR TO THE FACE OF THE PANELS.

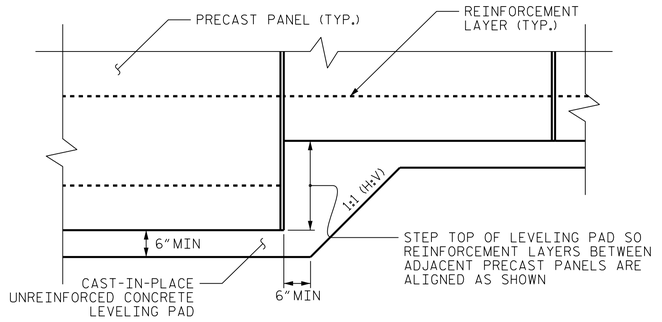
11. DESIGN RETAINING WALL NO. 2 FOR A DIFFERENTIAL SETTLEMENT OF 5 INCHES PER 100 FT ALONG EXPOSED FACE OF THE WALL AND FOR A TOTAL DIFFERENTIAL SETTLEMENT OF 3 INCHES ALONG TRANSVERSE DIRECTION PERPENDICULAR TO THE FACE OF THE PANELS.

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

13. INSTALL PILE SLEEVES FOR BOTH END BENT NO. 1 AND 2 WHILE CONSTRUCTING RETAINING WALL NO. 1 AND 2 RESPECTIVELY. OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE MSE ABUTMENT WALL TO WITHIN 1 FT OF THE BOTTOM OF CAP ELEVATION. THEN, INSTALL PILES THROUGH THE CORRUGATED STEEL PIPES AND FILL PIPES WITH DRY LOOSE UNCOMPACTED PEA GRAVEL BEFORE CONSTRUCTING END BENT CAPS. OBSERVE AN ADDITIONAL TWO MONTH WAITING PERIOD AFTER CONSTRUCTING THE END BENT CAP AND REINFORCED APPROACH FILLS OVERLAID WITH A SURCHARGE WALL TO MINIMUM HEIGHT OF 2 FT ABOVE THE FINISHED GRADE ELEVATION AT END BENT NO. 1 AND 2 APPROACH. FOR THE WAITING PERIODS STAGE DETAILS, SEE THE ROADWAY PLANS. FOR BRIDGE WAITING PERIODS, SEE SECTION 235 OF THE STANDARD SPECIFICATIONS.

14. TEMPORARY SHORING WILL BE REQUIRED TO MAINTAIN TRAFFIC ON THE EXISTING ROAD DURING THE UNDERCUT AND EXCAVATIONS REQUIRED TO INSTALL THE MSE WALL AND WICK DRAINS. SEE TEMPORARY SHORING PROVISION AND TRAFFIC CONTROL PLANS.

15. GROUND IMPROVEMENT MEASURES INCLUDING UNDERCUT, WICK DRAINS, SURCHAGE, STAGE CONSTRUCTION AND WAITING PERIODS WILL BE REQUIRED BEFORE AND AFTER CONSTRUCTING THE MSE WALLS AT THE END BENTS. SEE GROUND IMPROVEMENT SHEETS IN ROADWAY PLANS FOR THE DETAILS.



PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS

BILL OF MATERIAL	
	MSE RETAINING WALL
	SQ. FT.
MSE WALL NO. 1	3,750
MSE WALL NO. 2	2,500
TOTAL	6,250

PROJECT NO. U-5996

NASH COUNTY

STATION: 55+37.34 -L1-

SHEET 5 OF 5

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER ALLYSON K. ORR
11/12/2021

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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE RETAINING WALLS

NOTES AND LEVELING PAD DETAILS

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

SHEET NO. W-5

TOTAL SHEETS 5

DRAWN BY : B.E. LANNING DATE : 02/20
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