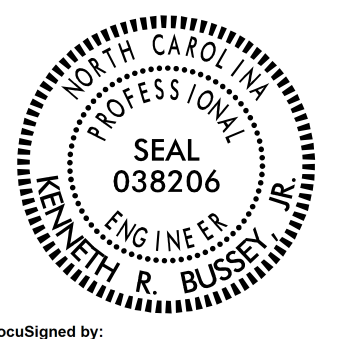
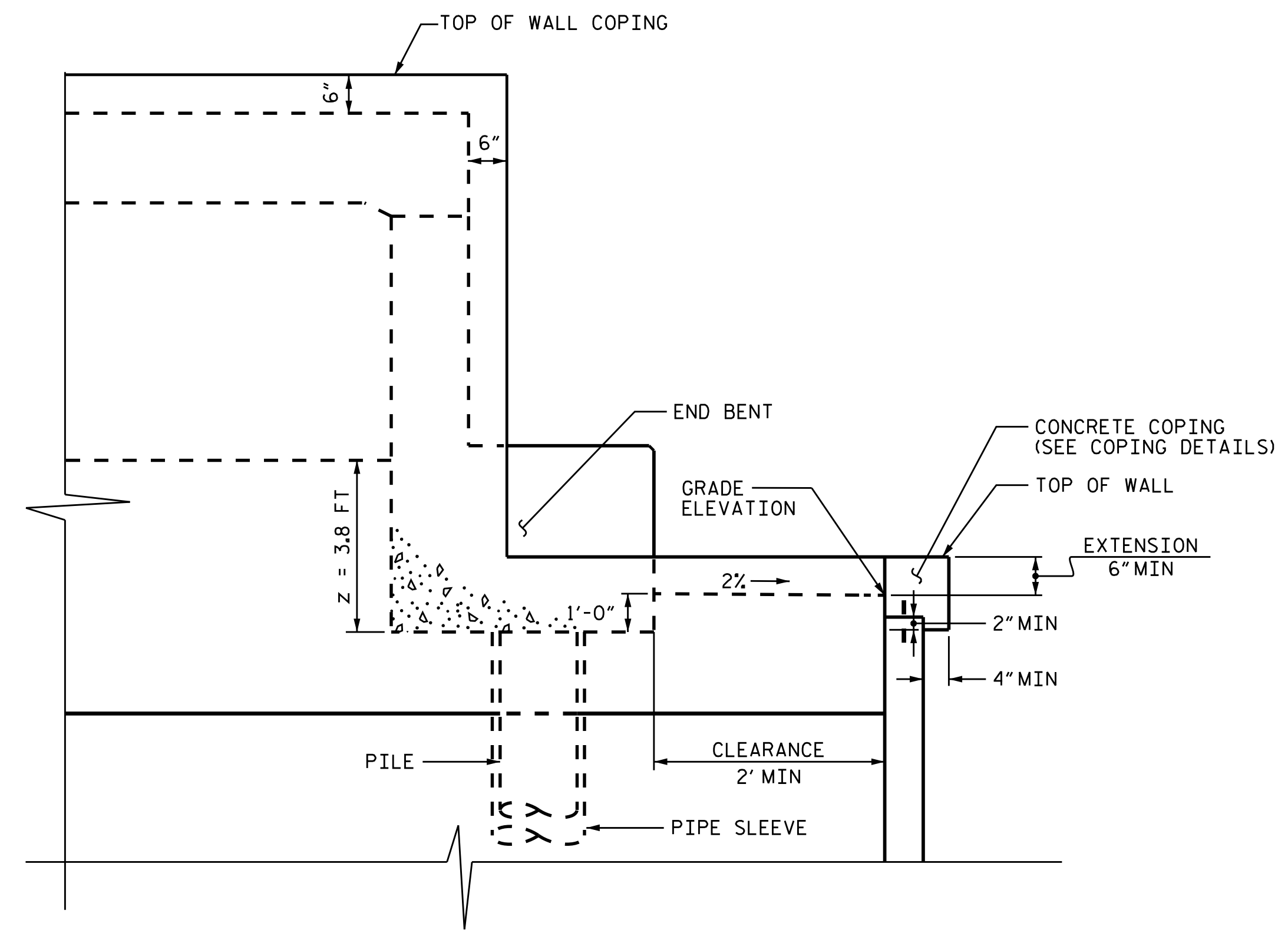
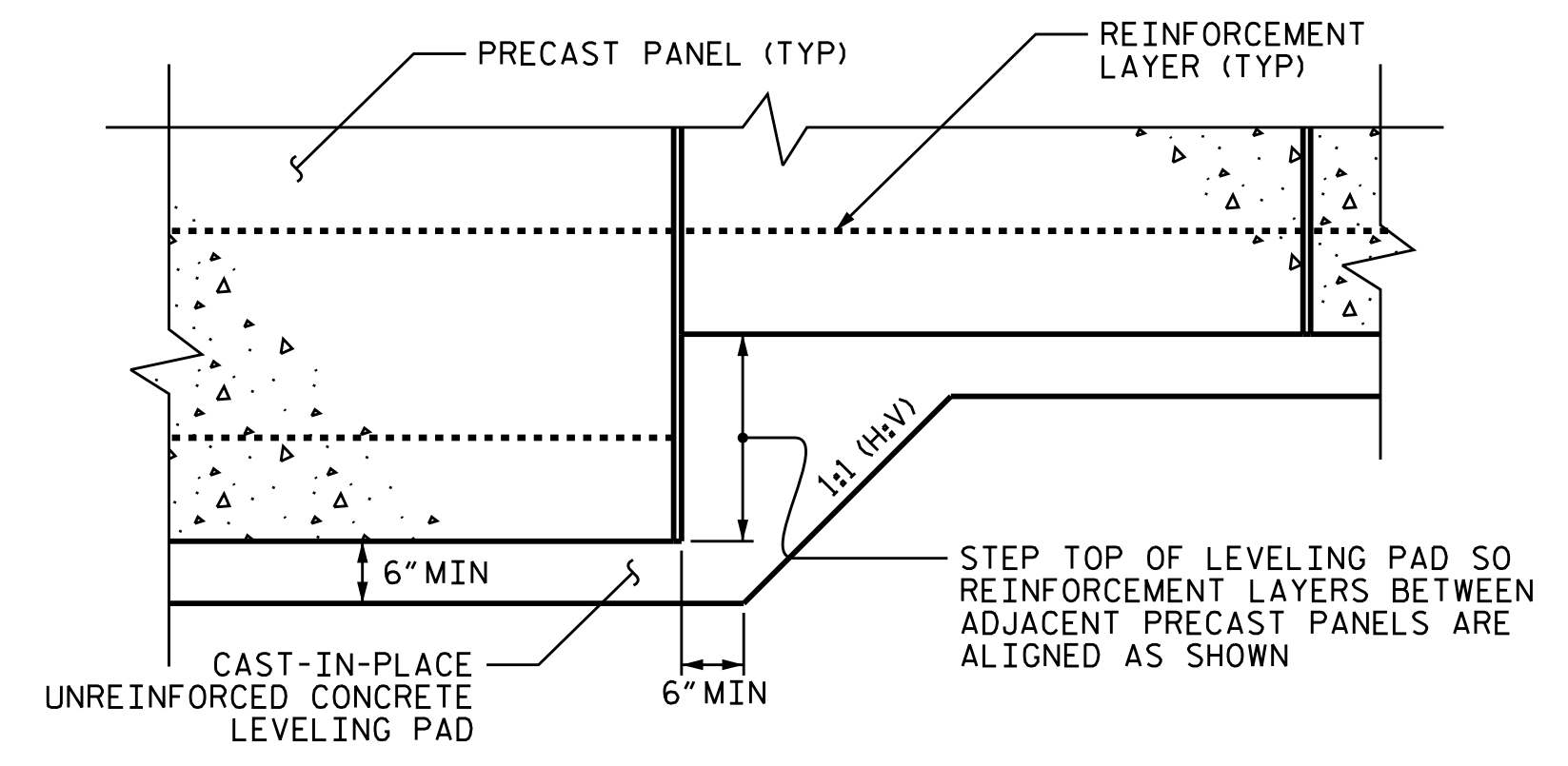


|   |   |
|---|---|
| GEOTECHNICAL<br>ENGINEER<br><br><br>SEAL<br>038206<br>K. BUSSEY, R.<br>ENGINEER<br>N.C. | ENGINEER<br><br>_____<br>SIGNATURE<br><br>_____<br>DATE |
| DocuSigned by:<br>Kenneth R. Bussey, Jr.<br>SIGNATURE<br>7/23/2015  | _____<br>DATE   |



MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION C-C



PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS

- 1) FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALL PROVISION.
- 2) USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR END BENT 2 WALL DESIGN.
- 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.
- 5) A DRAIN IS REQUIRED FOR RETAINING WALL NO. 1.
- 6) DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
  - 1) H = DESIGN HEIGHT + EMBENMENT
  - 2) MINIMUM REINFORCEMENT LENGTH (L) = 0.70 \* H
  - 3) DESIGN LIFE = 100 YEARS
  - 4) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 7,900 LB/SF
  - 5) MINIMUM EMBEDMENT DEPTH = 2 FEET
  - 6) REINFORCED AGGREGATE PARAMETERS:

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

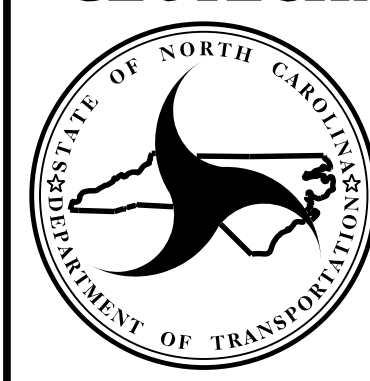
\* SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

- 7) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (γ)<br>LB/CF | FRICTION ANGLE (φ)<br>DEGREES | COHESION (c)<br>LB/SF |
|---------------|--------------------------|-------------------------------|-----------------------|
| BACKFILL      | 120                      | 30                            | 0                     |
| FOUNDATION    | 120                      | 34                            | 0                     |

- 8) DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L<sub>a</sub>) SHOWN. CAST REINFORCEMENT CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 2 LOCATED AT STATION 62+75.40. MAINTAIN CLEARANCE OF AT LEAST 3" BETWEEN CONNECTORS AND REINFORCING STEEL IN CAP.
- 9) FOUNDATIONS FOR END BENT NO. 2 LOCATED AT STATION 62+75.40 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.
- 10) DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 1 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- 11) A FENCE IS REQUIRED ON TOP OF RETAINING WALL NO. 1. SEE ROADWAY PLANS FOR FENCE ATTACHMENT DETAILS.
- 12) FOR PILE SLEEVE, SEE "GENERAL DRAWING" SHEET 2 OF 3.

|                         |              |
|-------------------------|--------------|
| PREPARED BY: T. RIDEOUT | DATE: 4-8-15 |
| REVIEWED BY: K. BUSSEY  | DATE: 4-8-15 |

|   |                                   |    |      |     |    |      |                   |
|---|-----------------------------------|----|------|-----|----|------|-------------------|
|  <p><b>GEOTECHNICAL ENGINEERING UNIT</b><br/> <input type="checkbox"/> EASTERN REGIONAL OFFICE<br/> <input type="checkbox"/> WESTERN REGIONAL OFFICE<br/> <input type="checkbox"/> CONTRACT OFFICE<br/>                 STATE OF NORTH CAROLINA<br/>                 DEPARTMENT OF TRANSPORTATION<br/>                 RALEIGH</p> | <b>MSE RETAINING WALL DETAILS</b> |    |      |     |    |      | SHEET NO.<br>W-4  |
|   | <b>REVISIONS</b>                  |    |      |     |    |      | TOTAL SHEETS<br>4 |
|   | NO.                               | BY | DATE | NO. | BY | DATE |                   |
| 1   |                                   |    | 3    |     |    |      |                   |
| 2   |                                   |    | 4    |     |    | 4    |                   |