

**ANCHORED WALL - TYPICAL SECTION**  
 (DOUBLE ROW OF GROUND ANCHORS SHOWN, AS NEEDED.)  
 \*SEE ANCHORED RETAINING WALLS PROVISION FOR BOND LENGTH REQUIREMENTS.

PREPARED BY: EJS	DATE: 8/2013
REVIEWED BY: SCC	DATE: 10/2013

**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PILE SUPPORTED ANCHORED RETAINING WALL**

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

**NOTES:**

FOR ANCHORED RETAINING WALLS, SEE ANCHORED RETAINING WALLS PROVISION.

THE PROJECT SITE HAS ACCESS LIMITATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY CONSTRUCTABILITY. THE DEPARTMENT WILL NOT BE RESPONSIBLE FOR ACCESS RELATED ISSUES ONCE THE PROJECT HAS BEEN AWARDED.

DESIGN WALL FOR AN ADDITIONAL 2 KIPS/FT LOAD APPLIED 18" ABOVE FINISHED GRADE.

THE ANCHORED RETAINING WALL TOP IS TO EXTEND A MINIMUM OF 18" ABOVE THE FINISHED GRADE AND MATCH THE EXISTING WALL. IN HEIGHT WHEN COMPLETED. FIELD ADJUSTMENTS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

A BROOMED FINISH IS REQUIRED ON ALL EXPOSED FACES OF THE ANCHORED RETAINING WALL AS DIRECTED BY THE ENGINEER.

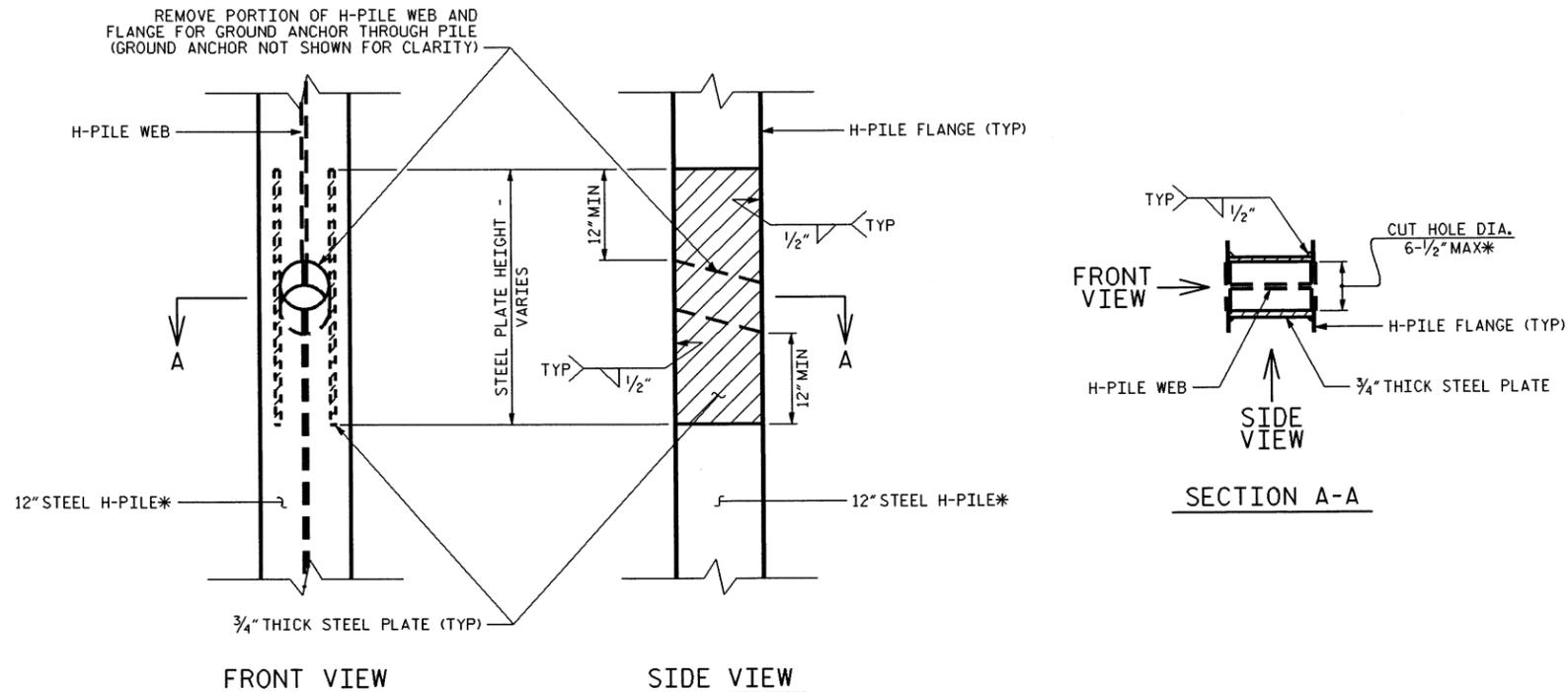
BEFORE BEGINNING ANCHORED WALL DESIGN FOR RETAINING WALL, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 75 YEARS
- 3) MINIMUM EMBEDMENT ELEVATION = 3 FT BELOW FINAL GRADE
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS:  
 UNIT WEIGHT,  $\gamma = 110$  LB/CF  
 FRICTION ANGLE,  $\phi = 30$  DEGREES  
 COHESION,  $c = 0$  LB/SF

DESIGN RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

WHERE APPLICABLE, DESIGN RETAINING WALL FOR A PIPE EXTENDING UNDER OR THROUGH THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING ANCHORED WALL DESIGN OR CONSTRUCTION. AT THE CONTRACTOR'S OPTION, TEMPORARY SHORING MAY BE USED TO CONSTRUCT THE RETAINING WALL. SEE ANCHORED RETAINING WALL SPECIAL PROVISIONS FOR TEMPORARY SHORING INFORMATION.



**REINFORCED WEB DETAILS**

\*DETAILS SHOWN ARE FOR 12" H-PILES WITH 6" DIA. GROUND ANCHORS. FOR DIFFERENT DIAMETER ANCHORS, SUBMIT ALTERNATE REINFORCED WEB DETAILS FOR ACCEPTANCE.

PREPARED BY: EJS	DATE: 8/2013
REVIEWED BY: SCC	DATE: 10/2013

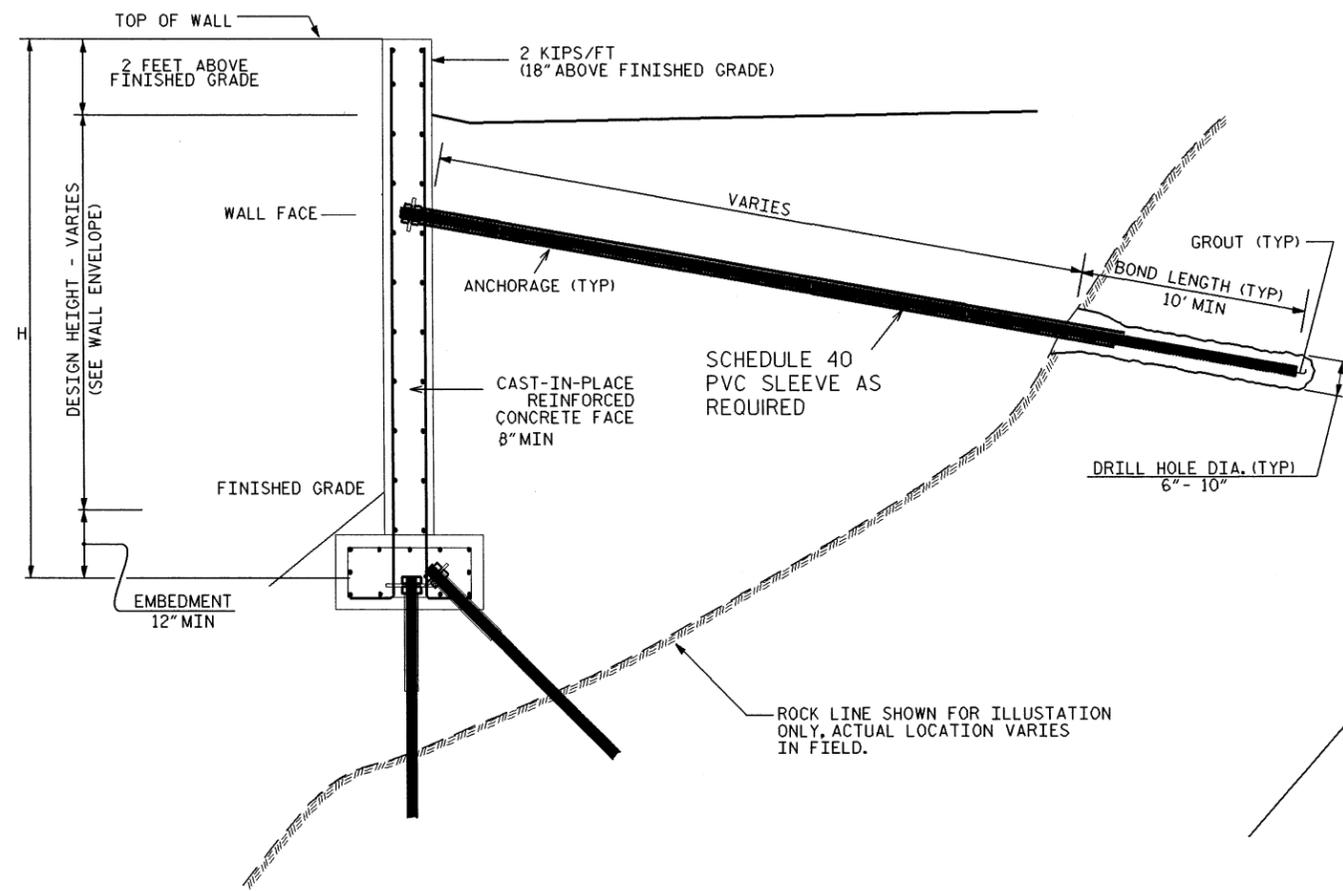
**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

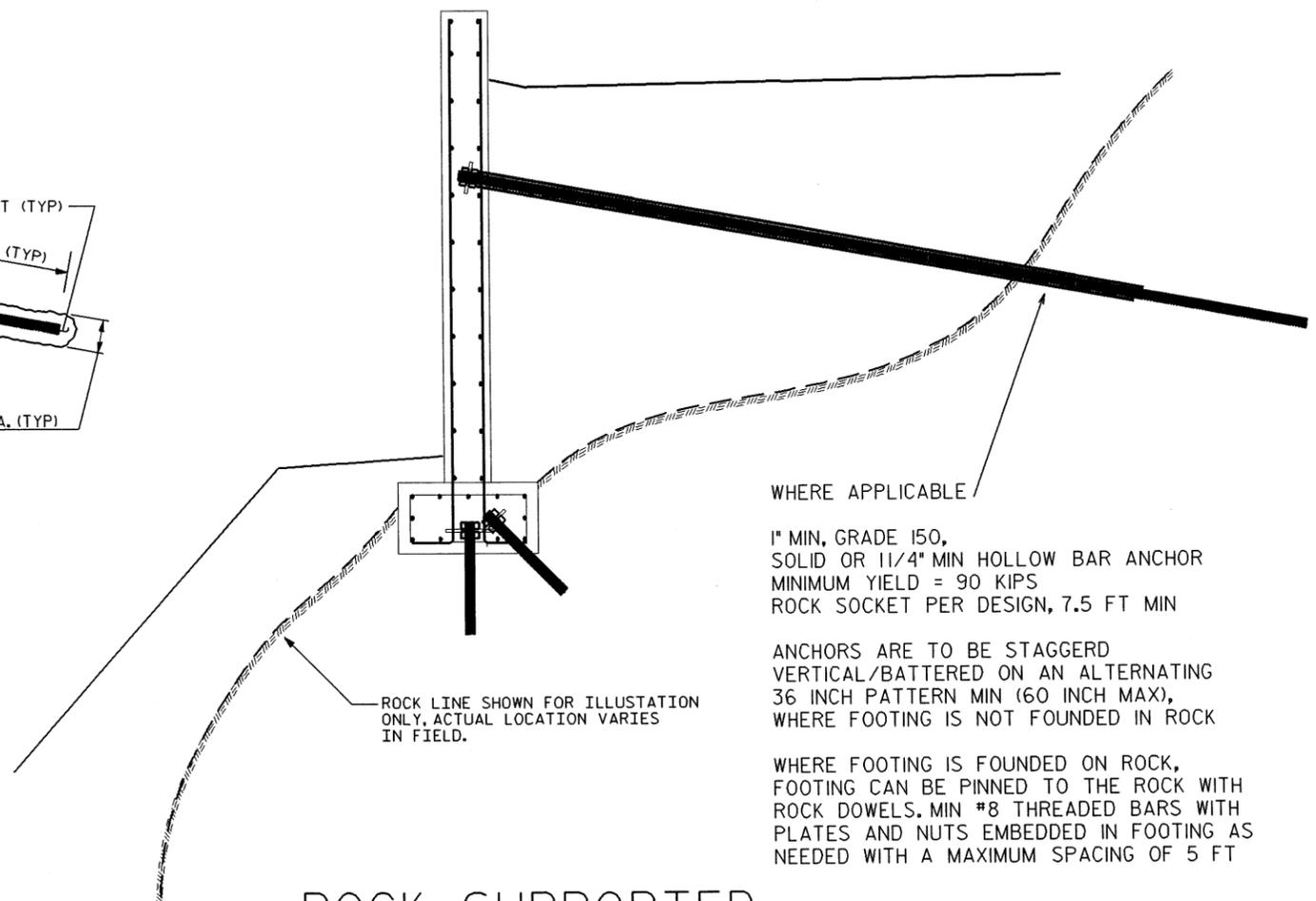
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**PILE SUPPORTED ANCHORED RETAINING WALL**

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



GROUND ANCHOR SUPPORTED RETAINING WALL



ROCK SUPPORTED WALL FOOTING

WHERE APPLICABLE  
 1" MIN, GRADE 150, SOLID OR 1 1/4" MIN HOLLOW BAR ANCHOR  
 MINIMUM YIELD = 90 KIPS  
 ROCK SOCKET PER DESIGN, 7.5 FT MIN

ANCHORS ARE TO BE STAGGERD VERTICAL/BATTERED ON AN ALTERNATING 36 INCH PATTERN MIN (60 INCH MAX), WHERE FOOTING IS NOT FOUNDED IN ROCK

WHERE FOOTING IS FOUNDED ON ROCK, FOOTING CAN BE PINNED TO THE ROCK WITH ROCK DOWELS. MIN #8 THREADED BARS WITH PLATES AND NUTS EMBEDDED IN FOOTING AS NEEDED WITH A MAXIMUM SPACING OF 5 FT

**NOTES:**

FOR GROUND ANCHOR SUPPORTED RETAINING WALL, SEE GROUND ANCHOR SUPPORTED RETAINING WALL SPECIAL PROVISION

THE PROJECT SITE HAS ACCESS LIMITATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY CONSTRUCTABILITY. THE DEPARTMENT WILL NOT BE RESPONSIBLE FOR ACCESS RELATED ISSUES ONCE THE PROJECT HAS BEEN AWARDED.

REINFORCEMENT AND ANCHOR SIZES ARE DEFINED AS MINIMUM SIZES. DESIGNER TO DESIGN ACTUAL WALL AS DIRECTED IN GROUND ANCHOR SUPPORTED RETAINING WALL SPECIAL PROVISION.

DESIGN WALL FOR AN ADDITIONAL 2 KIPS/FT LOAD APPLIED 18" ABOVE FINISHED GRADE.

THE ANCHORED RETAINING WALL TOP IS TO EXTEND A MINIMUM OF 24" ABOVE THE FINISHED GRADE AND MATCH THE EXISTING WALL, IN HEIGHT WHEN COMPLETED. FIELD ADJUSTMENTS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

A BROOMED FINISH IS REQUIRED ON ALL EXPOSED FACES OF THE ANCHORED RETAINING WALL AS DIRECTED BY THE ENGINEER.

BEFORE BEGINNING ANCHORED WALL DESIGN FOR RETAINING WALL, 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.

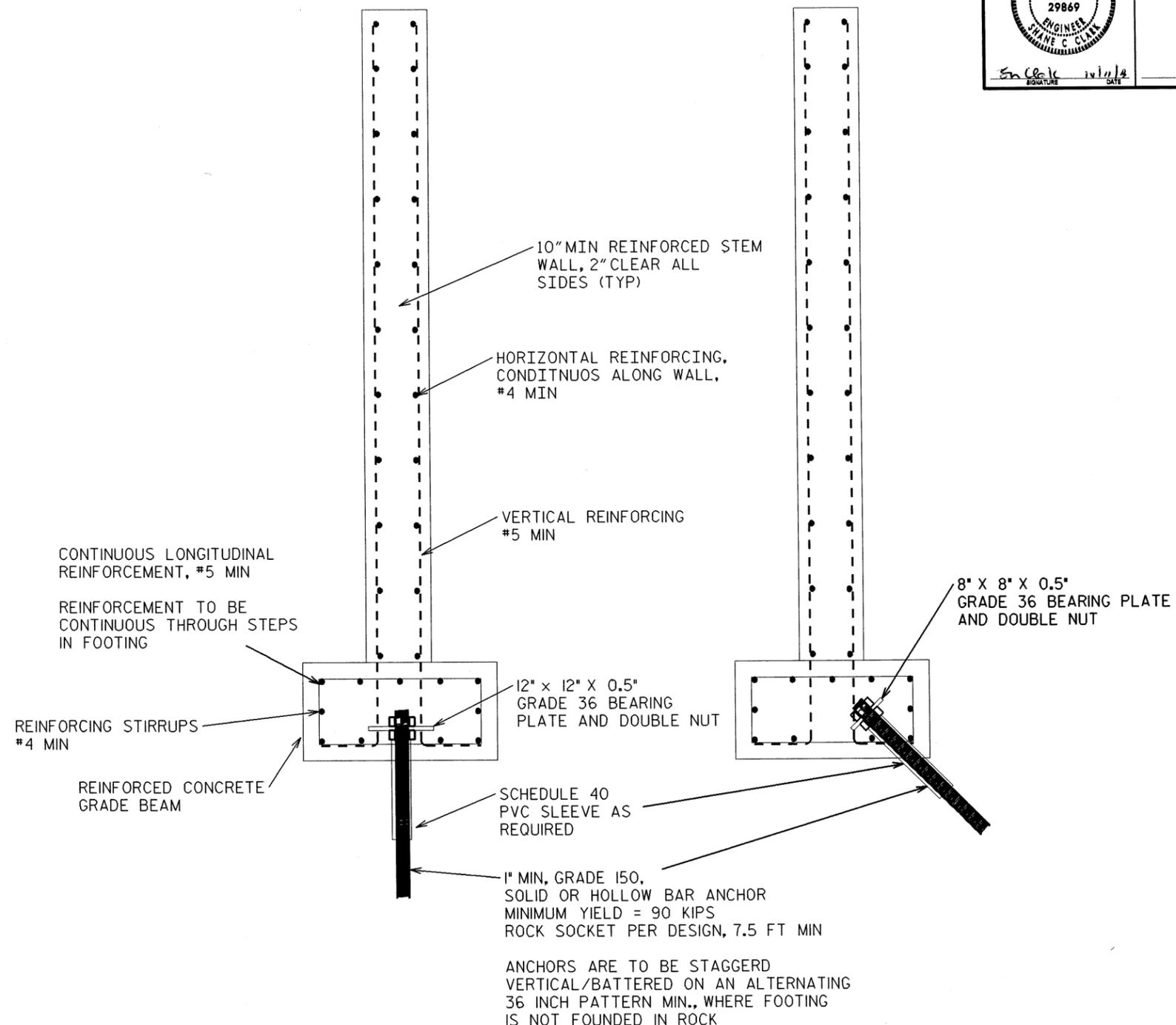
DESIGN RETAINING WALL FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 75 YEARS
- 3) MINIMUM EMBEDMENT ELEVATION = 3 FT BELOW FINAL GRADE
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS:

UNIT WEIGHT,  $\gamma = 110$  LB/CF  
 FRICTION ANGLE,  $\phi = 30$  DEGREES  
 COHESION,  $c = 0$  LB/SF

DESIGN RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

WHERE APPLICABLE, DESIGN RETAINING WALL FOR A PIPE EXTENDING UNDER OR THROUGH THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING ANCHORED WALL DESIGN OR CONSTRUCTION. AT THE CONTRACTOR'S OPTION, TEMPORARY SHORING MAY BE USED TO CONSTRUCT THE RETAINING WALL. SEE ANCHORED RETAINING WALL SPECIAL PROVISIONS FOR TEMPORARY SHORING INFORMATION.



**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GROUND ANCHOR SUPPORTED RETAINING WALL**

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

PREPARED BY: EJS	DATE: 8/2013
REVIEWED BY: SCC	DATE: 10/2013