
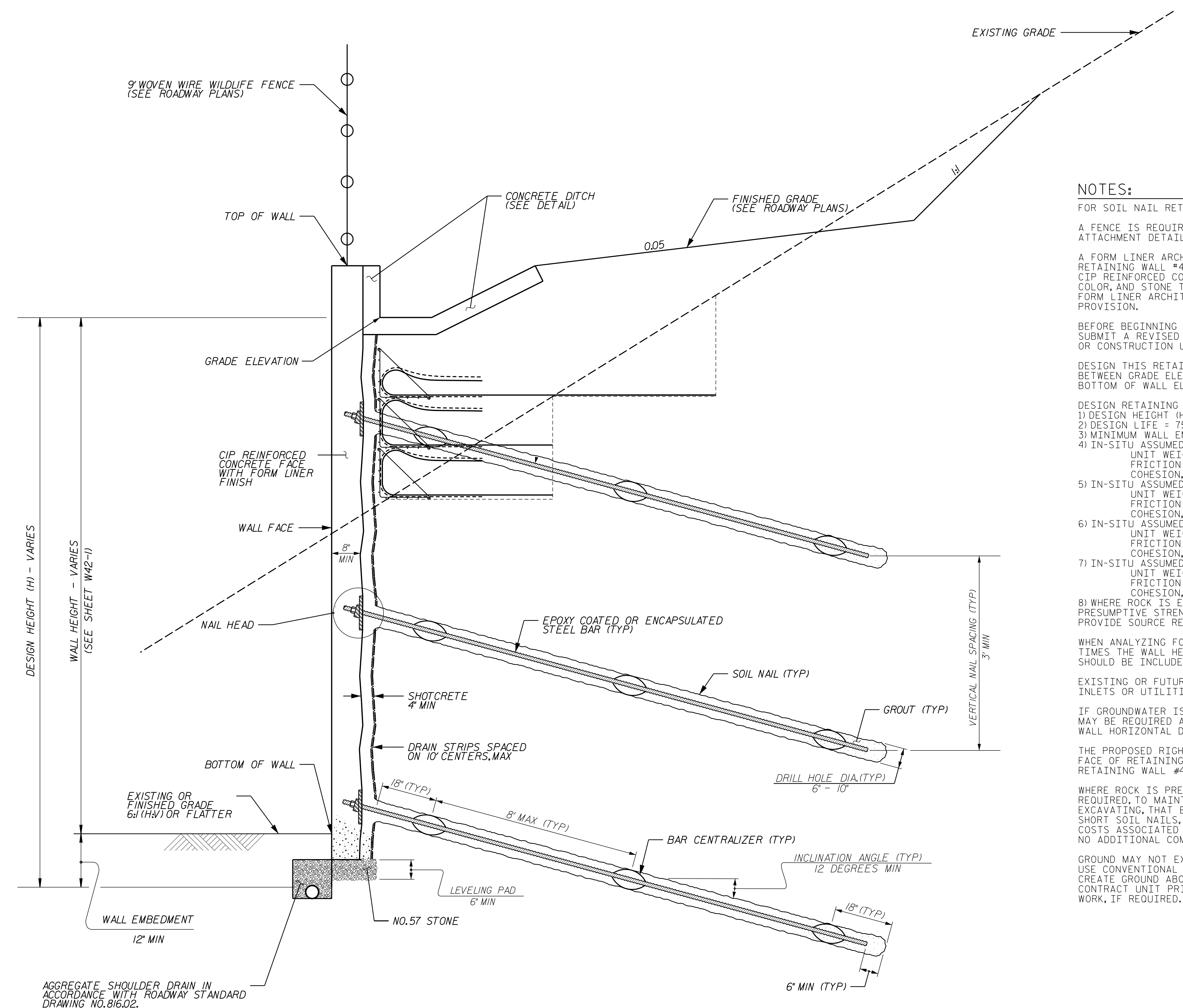


GEOTECHNICAL ENGINEER  SEAL 042642 ROBERT E. GRAHAM ENGINEER	ENGINEER SIGNATURE _____ DATE _____
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTES:

FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS PROVISION.

A FENCE IS REQUIRED ON TOP OF RETAINING WALL #42. SEE ROADWAY PLANS FOR FENCE ATTACHMENT DETAILS.

A FORM LINER ARCHITECTURAL FINISH IS REQUIRED FOR THE CIP REINFORCED CONCRETE FACE FOR RETAINING WALL #42. THE CONTRACTOR SHALL PROVIDE THE REQUESTED FINISH BEFORE BEGINNING CIP REINFORCED CONCRETE FACE CONSTRUCTION. THE APPEARANCE (STONE SIZE AND SHAPE, STONE COLOR, AND STONE TEXTURE, PATTERN, AND RELIEF) SHOULD MATCH NATURAL STONE AND ROCK. FOR FORM LINER ARCHITECTURAL FINISH, SEE THE SIMULATED STONE FORM LINER FINISH SPECIAL PROVISION.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALL #42, 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 THIS RETAINING WALL FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

DESIGN RETAINING WALL NO. #42 FOR THE FOLLOWING:
 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 2) DESIGN LIFE = 75 YEARS
 3) MINIMUM WALL EMBEDMENT ELEVATION = VARIES (MIN. 1 FT BELOW FINISHED GRADE)
 4) IN-SITU ASSUMED BACKFILL SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ PSF
 5) IN-SITU ASSUMED DENSE/VERY STIFF RESIDUAL SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 125$ PCF
 FRICTION ANGLE, $\phi = 36$ DEGREES
 COHESION, $c = 0$ PSF
 6) IN-SITU ASSUMED WEATHERED ROCK (META-SANDSTONE) PARAMETERS:
 UNIT WEIGHT, $\gamma = 135$ PCF
 FRICTION ANGLE, $\phi = 32$ DEGREES
 COHESION, $c = 500$ PSF
 7) IN-SITU ASSUMED CRYSTALLINE ROCK (META-SANDSTONE) PARAMETERS:
 UNIT WEIGHT, $\gamma = 170$ PCF
 FRICTION ANGLE, $\phi = 34$ DEGREES
 COHESION, $c = 1,000$ PSF
 8) WHERE ROCK IS ENCOUNTERED IN THE WALL ENVELOPE, DESIGNERS SHOULD REFER TO THE FHWA PRESUMPTIVE STRENGTH PARAMETERS OR OTHER REPRESENTATIVE AND REPEATABLE VALUES AND PROVIDE SOURCE REFERENCES IN THEIR DESIGN SUBMITTAL.

WHEN ANALYZING FOR INFINITE SLOPE CONDITIONS, DESIGNERS SHOULD ANALYZE UP TO TWO (2) TIMES THE WALL HEIGHT BEHIND THE WALL FACE FOR FAILURE PLANE SEARCHES. THIS INFORMATION SHOULD BE INCLUDED WITH THE DESIGN SUBMITTAL.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR THE RETAINING WALL.

IF GROUNDWATER IS ENCOUNTERED BEHIND THE FACE OF RETAINING WALL #42, HORIZONTAL DRAINS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. FOR HORIZONTAL DRAINS, SEE THE RETAINING WALL HORIZONTAL DRAIN DETAIL.

THE PROPOSED RIGHT OF WAY (ROW) AND PERMANENT EASEMENT (PE) BOUNDARY VARIES FROM THE FACE OF RETAINING WALL #42. SEE THE ROADWAY PLANS FOR OFFSET DISTANCES FROM THE FACE OF RETAINING WALL #42. SOIL NAILS MAY NOT BE INSTALLED BEYOND THE PE BOUNDARY.

WHERE ROCK IS PRESENT IN THE WALL ENVELOPE, CONTROLLED BLASTING IS RECOMMENDED, BUT NOT REQUIRED, TO MAINTAIN THE NEAT EXCAVATION LINE. VOIDS, RESULTING FROM BLASTING OR EXCAVATING, THAT EXTEND BEYOND THE NEAT LINES ARE TO BE FILLED WITH A COMBINATION OF SHORT SOIL NAILS, WELDED WIRE, AND SHOTCRETE, AT THE DISCRETION OF THE ENGINEER. THE COSTS ASSOCIATED WITH THIS WORK WILL BE CONSIDERED INCIDENTAL TO WALL CONSTRUCTION AND NO ADDITIONAL COMPENSATION WILL BE MADE. FOR BLASTING, SEE THE BLASTING PROVISION.

GROUND MAY NOT EXIST ABOVE THE BOTTOM OF THE WALL IN SOME PORTIONS OF THE WALL ENVELOPE. USE CONVENTIONAL GRADING, TEMPORARY WALL, OR OTHER METHOD ACCEPTABLE TO THE ENGINEER TO CREATE GROUND ABOVE EXISTING GRADE IN ORDER TO CONSTRUCT THE SOIL NAIL WALL. THE CONTRACT UNIT PRICE FOR SOIL NAIL RETAINING WALLS WILL BE FULL COMPENSATION FOR THIS WORK, IF REQUIRED.

AGGREGATE SHOULDER DRAIN IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 816.02.

TYPICAL SECTION

NOT TO SCALE
 STATION -L- 382+30.00 TO 383+50.00

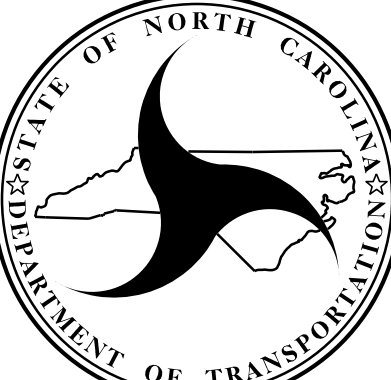
PROJECT NO.: A-0009CB
 GRAHAM COUNTY
 RETAINING WALL #42: -L- 382+30, 59.5' RT TO 383+50, 65.6' RT
 SHEET 2 OF 3

PREPARED BY: R. KRAL	DATE: 7/14/2022
REVIEWED BY: M. BREWER	DATE: 7/14/2022

Prepared in the Office of:



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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL #42 SOIL NAIL RETAINING WALL WITH CAST-IN-PLACE CONCRETE FACE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W42-2
2			4			