

**NOTES:**

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS WITH CAST-IN-PLACE (CIP) CONCRETE FACING, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS WITH CAST-IN-PLACE CONCRETE FACING SPECIAL PROVISION.

A FENCE IS REQUIRED ON TOP OF RETAINING WALL #19C. SEE ROADWAY PLANS FOR FENCE ATTACHMENT DETAILS.

A FORM LINER ARCHITECTURAL FINISH IS REQUIRED FOR THE CIP REINFORCED CONCRETE FACE FOR RETAINING WALL #19C. 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. FORM LINER ARCHITECTURAL FINISH WILL ABUT AND BLEND INTO LAND BRIDGE FORM LINER ARCHITECTURAL FINISH. FOR FORM LINER ARCHITECTURAL FINISH, SEE THE SIMULATED STONE FORM LINER FINISH SPECIAL PROVISION.

BEFORE BEGINNING MSE RETAINING WALL WITH CIP CONCRETE FACING DESIGN FOR RETAINING WALL #19C, 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.

DO NOT USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL #19C.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL #19C.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. #19C.

DO NOT USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL UNITS FOR THIS RETAINING WALL.

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. #19C FOR THE FOLLOWING:

- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
- 2) DESIGN LIFE = 75 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 7350 PSF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7xH OR 6.0 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT DEPTH = 2.0 FT, SEE TABLE ON SHEET W19C-1 AND SPECIAL PROVISION
- 6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0

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

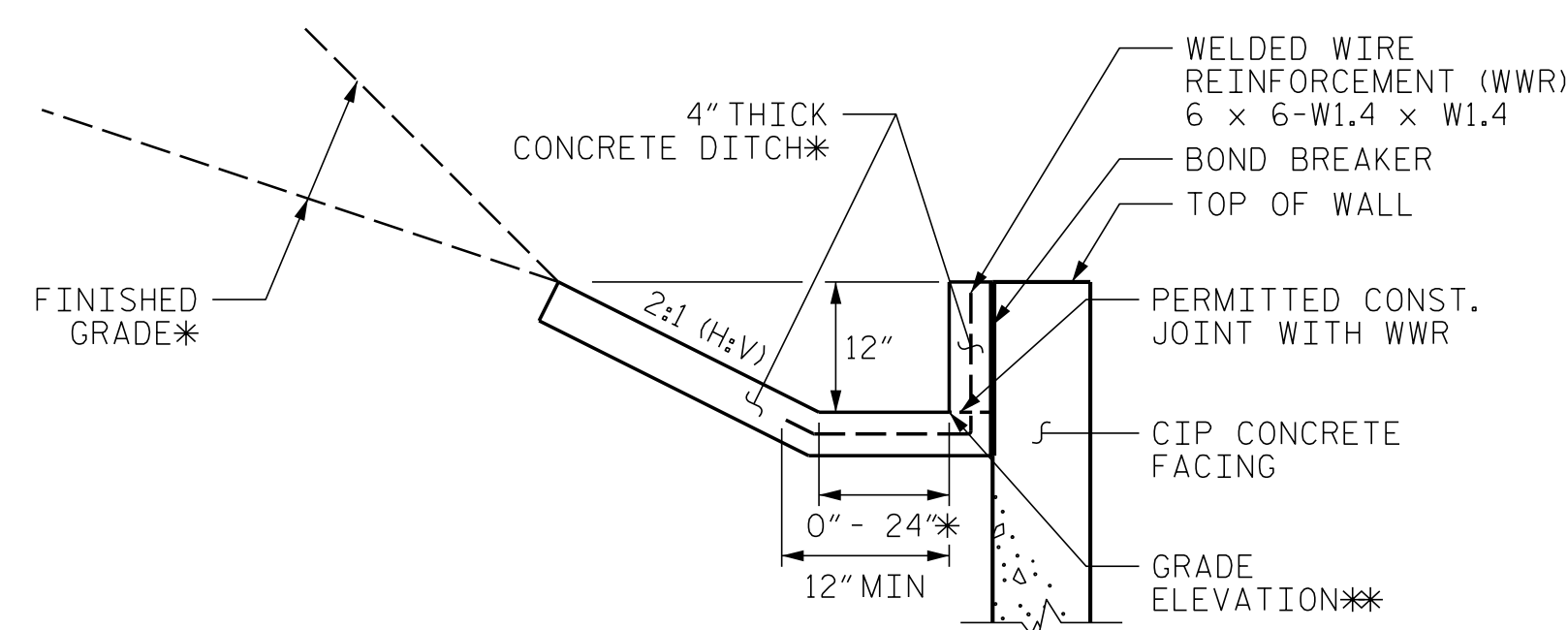
7) IN-SITU ASSUMED MATERIAL PARAMETERS:

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

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL #19C.

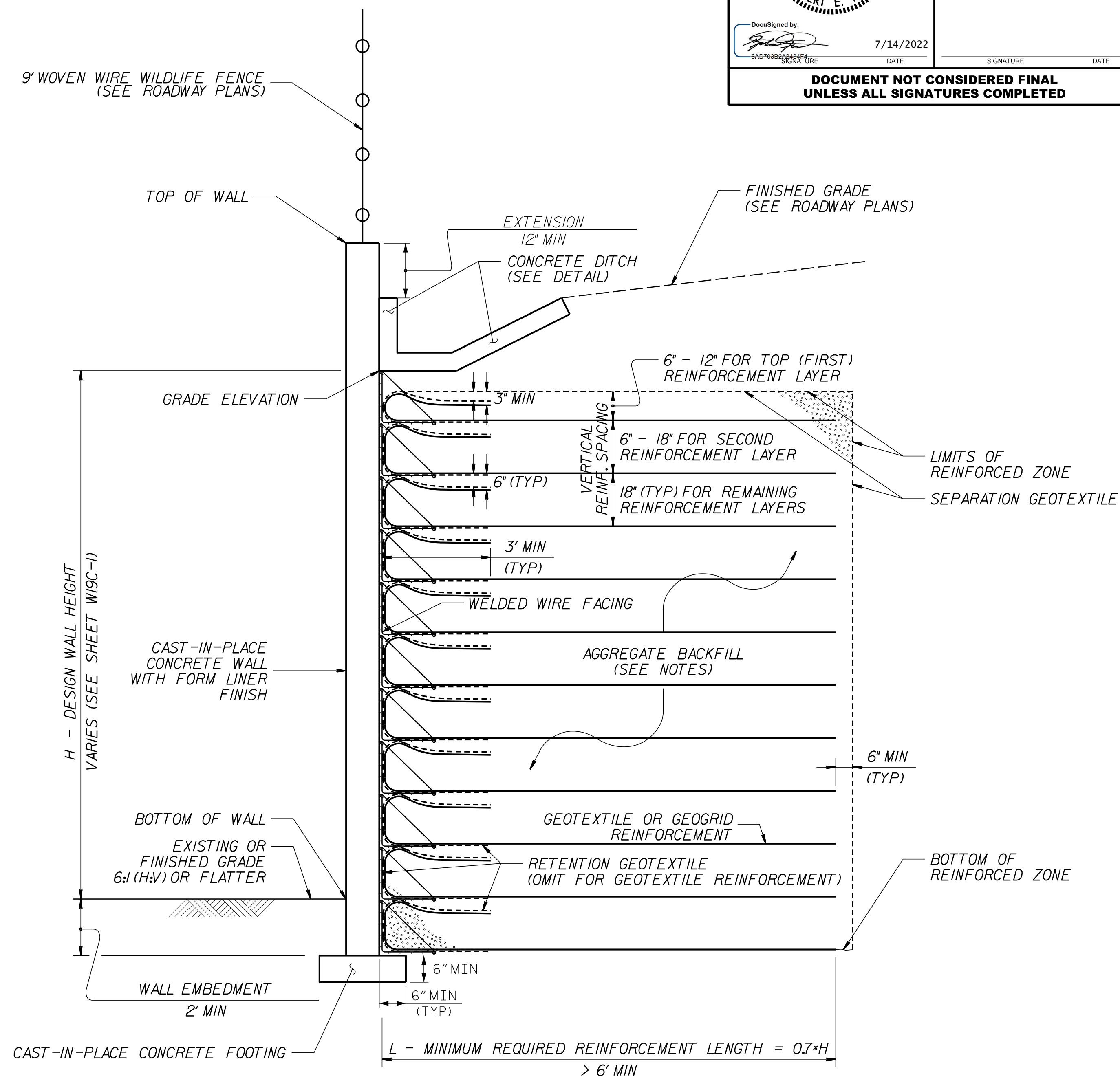
UNDERCUTTING SOFT AND/OR WET SOILS IN THE VICINITY OF THE WALL FOUNDATION MAY BE REQUIRED TO IMPROVE BEARING RESISTANCE. THE ENGINEER WILL DETERMINE THE SOILS BEARING RESISTANCE AFTER THE WALL IS EXCAVATED TO BEARING GRADE. IF REQUIRED BY THE ENGINEER, USE UNDERCUT EXCAVATION TO REMOVE SOFT AND/OR WET SOILS. UNDERCUT TO SUITABLE FOUNDATION SOILS. PLACE GEOTEXTILE FOR SOIL STABILIZATION IN THE BOTTOM OF THE EXCAVATION AND BACKFILL WITH SELECT GRANULAR MATERIAL. FOR UNDERCUT EXCAVATION AND SELECT GRANULAR MATERIAL SEE STANDARD SPECIFICATIONS. UNDERCUT EXCAVATION, SELECT GRANULAR MATERIAL, AND GEOTEXTILE FOR SOIL STABILIZATION WILL BE PAID AS SEPARATE ADDITIONAL QUANTITIES.

DO NOT PLACE CONCRETE, COARSE AGGREGATE, OR REINFORCEMENT FOR THIS RETAINING WALL UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.



**CONCRETE DITCH BEHIND WALL WITH CONCRETE FACING**

\*SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.  
\*\*SEE WALL ENVELOPE FOR GRADE ELEVATIONS.



**TYPICAL SECTION  
NOT TO SCALE**

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

PROJECT NO.: **A-0009CB**  
 GRAHAM COUNTY  
 RETAINING WALL #19C: -L- 380+50, 48.5' RT TO 380+50, 124.6' RT  
 SHEET 2 OF 2

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

Prepared in the Office of:

**CAROLINAS GEOTECHNICAL GROUP**  
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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS**

**GEOTECHNICAL ENGINEERING UNIT**

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

SHEET NO. W19C-2