

\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

\*\*SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: B-5716

GEOTECHNICAL **ENGINEER** 

036283

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROCKINGHAM COUNTY

WALL ID RW-1

**STATION**: -WALL1- 10+00 TO 12+55 AND 13+05 TO 16+17.68

SHEET 2 OF 6

NORTH CAROLINA

DIVISION OF HIGHWAYS

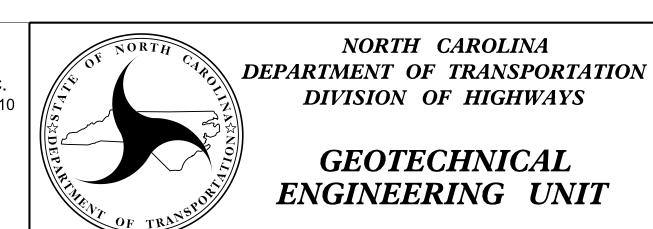
**GEOTECHNICAL** 

MSE WALL WITH PANELS AND BARRIER -

**TYPICAL** 

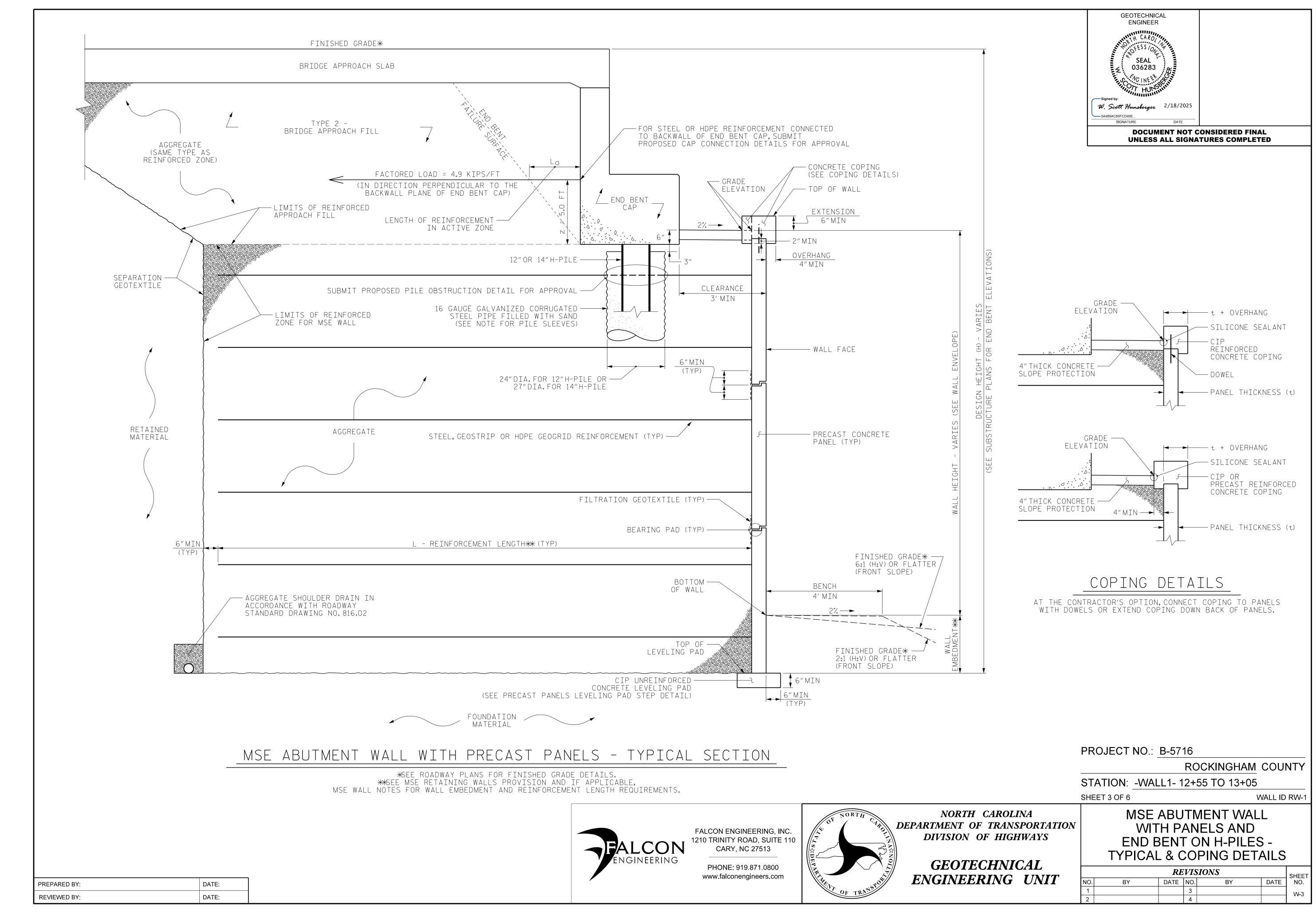
**REVISIONS** DATE NO. DATE NO. 3

FALCON ENGINEERING, INC. 1210 TRINITY ROAD, SUITE 110 FALCON CARY, NC 27513 PHONE: 919.871.0800 www.falconengineers.com



ENGINEERING UNIT

DATE: PREPARED BY: DATE: REVIEWED BY:



## NOTES:

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

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

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

A CONCRETE PARAPET WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO.1. FOR 1'-2" x 2'-6" CONCRETE PARAPET WITH MOMENT SLAB, SEE SHEET W-6 AND SPECIAL PROVISIONS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO.1.

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

A DRAIN IS REQUIRED FOR RETAINING WALL NO.1.

PILE SLEEVES ARE REQUIRED AROUND PILES FOR END BENT NO. 2 LOCATED AT STATION 21+52.00 -L-.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO.1, 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 FOR THE FOLLOWING: 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT 2) DESIGN LIFE = 100 YEARS

> DESIGN RETAINING WALL NO.1 FROM 10+00 TO 12+56.62 AND 13+04.92 TO 16+17.68 FOR THE FOLLOWING: 3B) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 7,100 PSF 4B) MINIMUM REINFORCEMENT LENGTH (L) = 0.85H

5B) MINIMUM EMBEDMENT DEPTH=2 FT

6B) REINFORCED ZONE AGGREGATE PARAMETERS:

DESIGN RETAINING WALL NO.1 FROM 12+56.62 TO 13+04.92 FOR THE FOLLOWING: 3A) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2,500 PSF 4A) MINIMUM REINFORCEMENT LENGTH (L) = 0.6H 5A) MINIMUM EMBEDMENT DEPTH =2 FT 6A) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ) Degrees	COHESION (c) PSF	
COARSE	110	110 38		
FINE	115	34	0	
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.				

7A) IN-SITU ASSUMED MATERIAL PARAMETERS :

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (p) Degrees	COHESION (c) PSF		
RETAINED	120	30	0		
FOUNDATION	130	34	0		

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.				

'B) IN-SITU ASSUMED MATERIAL PARAMETE	ERS:
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MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (\$\phi\$) DEGREES	COHESION (c) PSF			
RETAINED	120	30	0			
FOUNDATION	120	30	0			

- REINFORCEMENT - PRECAST CONCRETE PANEL (TYP) LAYER (TYP) \_\_\_\_ STEP TOP OF LEVELING PAD SO 16″MIN REINFORCEMENT LAYERS BETWEEN ADJACENT PRECAST PANELS ARE ALIGNED AS SHOWN 6″MIN CIP UNREINFORCED -

ESTIMATED MSE

WALL QUANTITIES (SQUARE FEET)

MSE RETAINING WALL NO.1

PRECAST PANELS LEVELING PAD STEP DETAIL

CONCRETE LEVELING PAD

DESIGN RETAINING WALL NO.1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L ) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO.2 LOCATED AT STATION -L- 21+52. MAINTAIN A CLEARANCE OF AT LEAST 3"BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN

FOUNDATIONS FOR SIGNS, LIGHTING OR SIGNALS WILL BE LOCATED BEHIND RETAINING WALL NO.1 AND MAY INTERFERE WITH REINFORCEMENT. BEFORE BEGINNING MSE WALL CONSTRUCTION, SUBMIT PROPOSED CONSTRUCTION METHODS FOR THESE FOUNDATIONS FOR APPROVAL.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1.

FOUNDATIONS FOR END BENT NO.2 LOCATED AT STATION 21+52.00 -L- MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO.1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

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

"TEMPORARY SHORING" IS REQUIRED FOR RETAINING WALL NO.1 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE OF TRAFFIC CONTROL PLANS.

PROJECT NO.: B-5716

GEOTECHNICAL **ENGINEER** 

036283

8,800 SF

DOCUMENT NOT CONSIDERED FINAL

UNLESS ALL SIGNATURES COMPLETED

STATION: -WALL1- 12+55 TO 13+05

SHEET 4 OF 6

ROCKINGHAM COUNTY

WALL ID RW-

**GEOTECHNICAL** ENGINEERING UNIT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

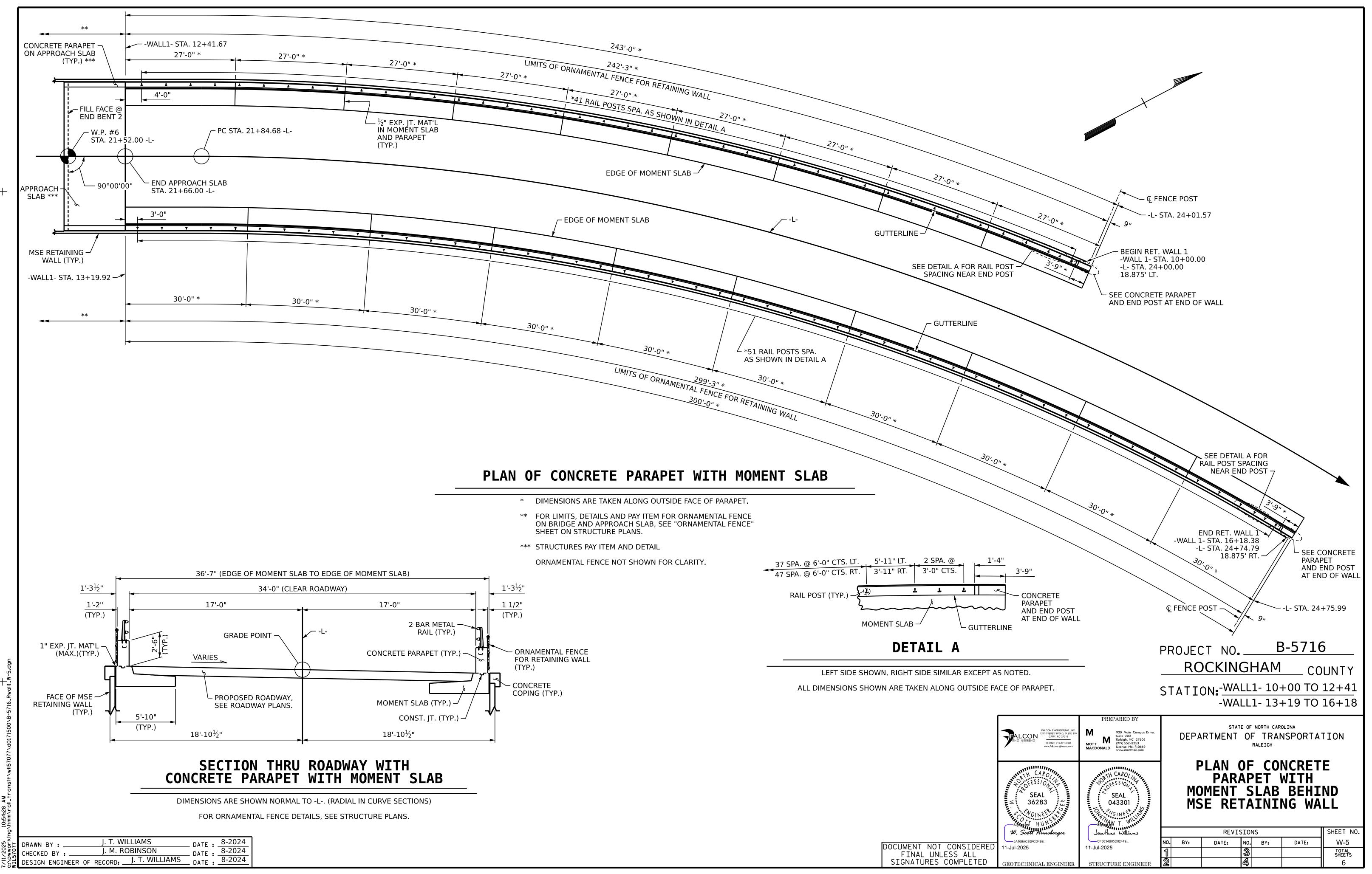
MSE RETAINING WALL NOTES AND DETAILS

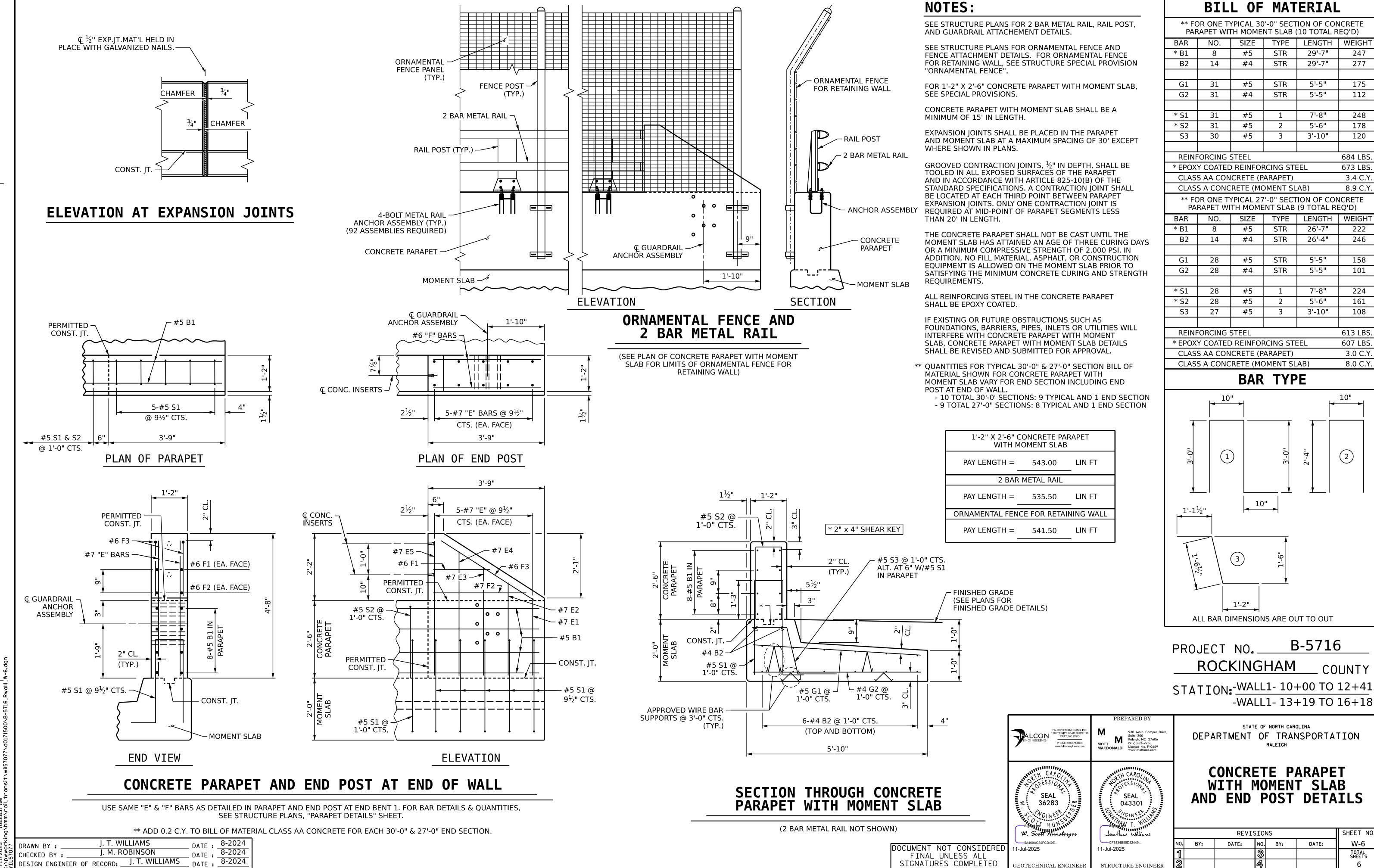
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PREPARED BY: DATE: DATE: REVIEWED BY:





FINAL UNLESS ALL SIGNATURES COMPLETED

247

277

175

112

248

178

120

684 LBS

673 LBS

3.4 C.Y.

8.9 C.Y.

222

246

158

101

224

161

108

613 LBS

607 LBS

3.0 C.Y.

8.0 C.Y.

SHEET NO

TOTAL SHEETS

10"