

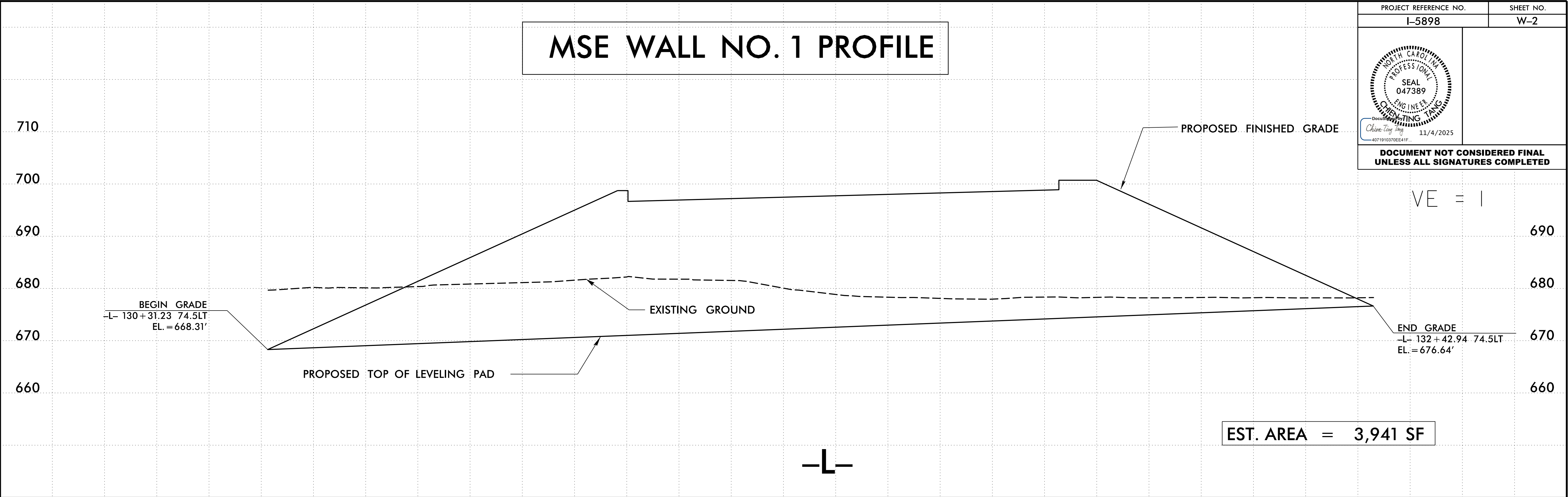
A circular professional engineer seal for the State of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "CHIENTANG TANG" at the bottom. Inside this ring, the words "PROFESSIONAL" and "ENGINEER" are written in a semi-circle. In the center of the seal, the word "SEAL" is above the number "047389". A signature, "Chien-Tang Tang", is written across the bottom of the seal.

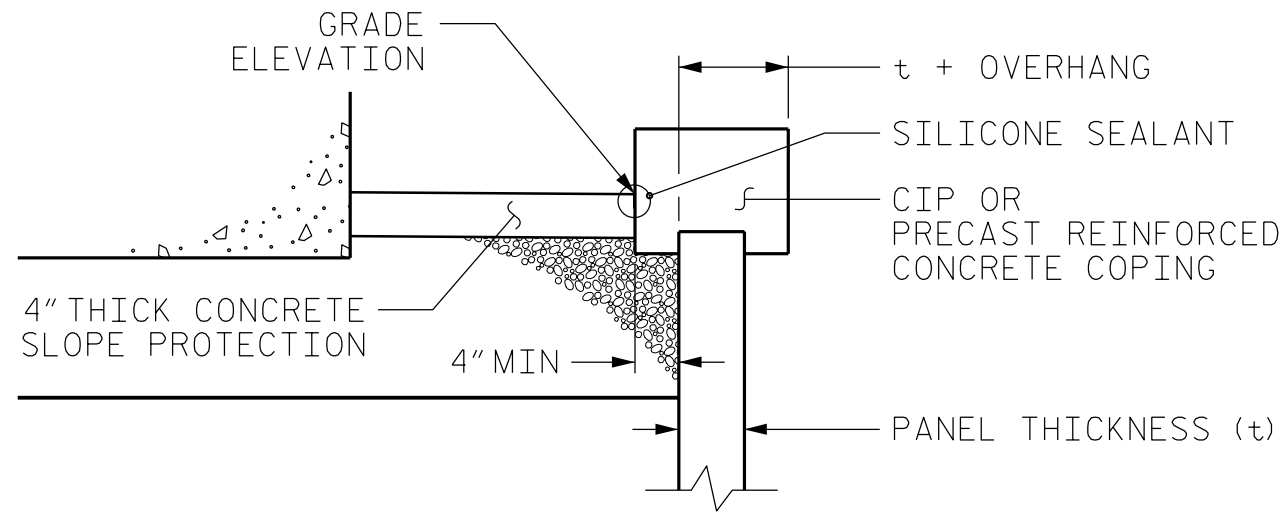
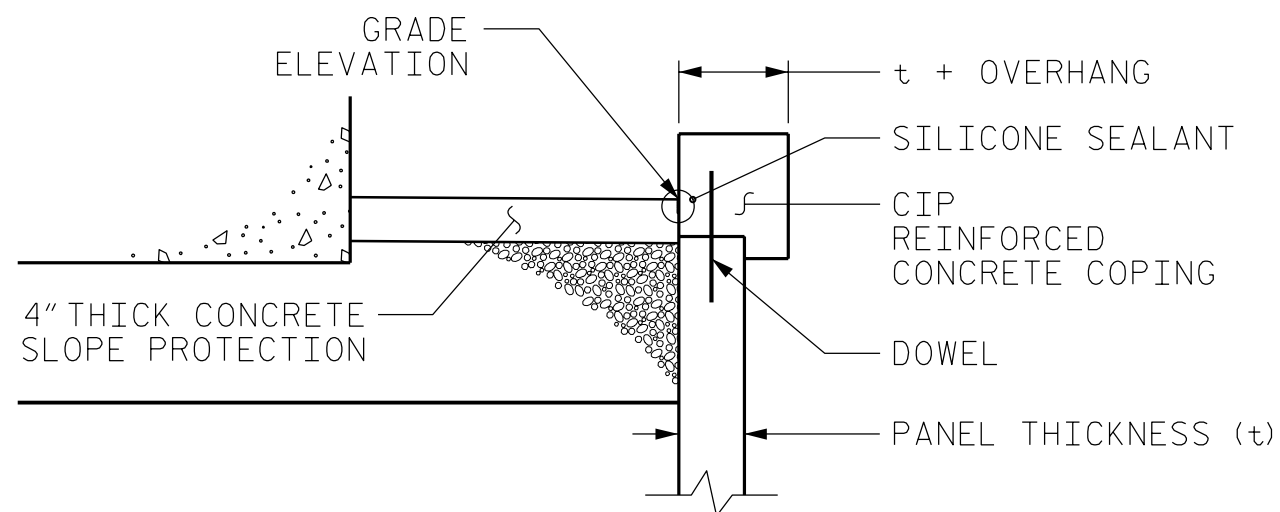


MSE ABUTMENT WALL FOR MSE WALL NO. 1 AND MSE WALL NO. 2 SITE PLAN					
REVISIONS					
NO	BY	DATE		BY	DATE
1			1		
2			2		
3			3		

5/14/99

I:\4/2025\USCT719530\OneDrive - WSP\0365\00-1\15898 - Revise\Retaining Walls\CADD\15898_GEO_MSEW_Sheet2-4.dgn
USCT719530





AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS
WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

SHEET
NO.
W-3

*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

WSP



COPING DETAILS

WSP

PROJECT NO.: I-5898
ROCKINGHAM COUNTY
STATION: MSE WALL NO. 1: 118+79.55 -Y-
MSE WALL NO. 2: 120+59.55 -Y-

STD CELL WALL_MSE_Panels_Slope

MSE ABUTMENT WALL
FOR MSE WALL NO. 1 AND MSE
WALL NO. 2
MSE WALL WITH PANELS AND
SLOPE- TYPICAL & COPING
DETAILS

SHEET
NO.
W-4

NOTES:

- FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
- FOR TYPE 2 BRIDGE APPROACH FILL WITHIN THE BRIDGE APPROACH AREA OF MSE WALL NO.1 AND MSE WALL NO.2, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY STANDARD DETAIL DRAWING NO. 423.03
- FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.
- USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS THAT MEET ARTICLE 1077 OF THE STANDARD SPECIFICATIONS FOR MSE WALL NO.1 AND MSE WALL NO.2.
- A STAINED, SIMULATED STONE MASONRY ARCHITECTURAL FINISH IS REQUIRED FOR PRECAST CONCRETE PANELS FOR MSE WALL NO.1 AND MSE WALL NO.2.
- AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF MSE WALL NO.1 AND MSE WALL NO.2.
- A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR MSE WALL NO.1 AND MSE WALL NO.2.
- CIP REINFORCED CONCRETE COPING IS REQUIRED FOR MSE WALL NO.1 AND MSE WALL NO.2.
- A DRAIN IS REQUIRED FOR MSE WALL NO.1 AND MSE WALL NO.2.

BEFORE BEGINNING MSE WALL DESIGN FOR MSE WALL NO.1 AND MSE WALL NO.2, 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 MSE WALL NO.1 AND MSE WALL NO.2 FOR THE FOLLOWING:

- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MINIMUM EMBEDMENT DEPTH FOR ABUTMENT FRONT FACE = H/10 OR 2 FEET BELOW PROPOSED GRADE, WHICHEVER IS GREATER.
- 4) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION SHALL BE AS SHOWN BELOW.
- 5) MINIMUM REINFORCEMENT LENGTH (L) SHALL BE AS SHOWN BELOW OR 6 FEET, WHICHEVER IS LONGER.

LOCATION	STATION	DESIGN SECTION	WALL HEIGHT (FT)	REINFORCEMENT LENGTH RATIO	MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL (KSF)	BACKSLOPE RATIO
END BENT NO. 1	130+31 TO 130+53 -L-	A	11.0	0.8	3.5	4:1
	130+53 TO 130+74 -L-	B	20.0	0.7	6.5	4:1
	130+74 TO 132+12 -L-	C	29.4	0.7	6.5	LEVEL
	132+12 TO 132+43 -L-	D	17.0	0.7	4.0	LEVEL
END BENT NO. 2	130+31 TO 130+53 -L-	A	14.5	0.8	4.5	4:1
	130+31 TO 130+53 -L-	B	27.7	0.7	6.0	LEVEL
	130+31 TO 130+53 -L-	C	19.0	0.7	5.0	7:1

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	100
FOUNDATION- END BENT NO.1 (131+31 -L- TO 132+12 -L-)	135	42	0
FOUNDATION- END BENT NO.1 (132+12 -L- TO 132+43 -L-)	120	35	0
FOUNDATION- END BENT NO.2 (133+09 -L- TO 132+73 -L-)	120	31	0
FOUNDATION- END BENT NO.2 (132+73 -L- TO 132+43 -L-)	120	35	0

DESIGN MSE WALL NO.1 AND MSE WALL NO.2.FOR A LIVE LOAD (TRAFFIC) SURCHARGE FOR SECTIONS THAT EXTAND TO TOP OF PROPOSED ROADWAY.

FOUNDATIONS FOR SIGN OR LIGHTING WILL BE LOCATED BEHIND MSE WALL NO.1 AND MSE WALL NO.2 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 MSE WALL NO.1 AND MSE WALL NO.2.

FOUNDATIONS FOR END BENT NO.1 AND END BENT NO.2 LOCATED AT STATION 118+79.55 -Y- AND 120+59.55 -Y-, RESPECTIVELY, MAY INTERFERE WITH REINFORCEMENT FOR MSE WALL NO.1 AND MSE WALL NO.2 SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

INSTALL PILES AT END BENT NO.1 AND END BENT NO.2 BEFORE CONSTRUCTING MSE RETAINING WALLS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR MSE WALL NO.1 AND MSE WALL NO.2 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

"TEMPORARY SHORING" MAY BE REQUIRED FOR MSE WALL NO.1 AND MSE WALL NO.2 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE or TRAFFIC CONTROL PLANS.

GEOTECHNICAL ENGINEER

NORTH CAROLINA

PROFESSIONAL SEAL

047389

CHIN-TING TANG

ENGINEER

DocuSign

Chin-Ting Tang

4071910370EE41F...

SIGNATURE

11/4/2025

DATE

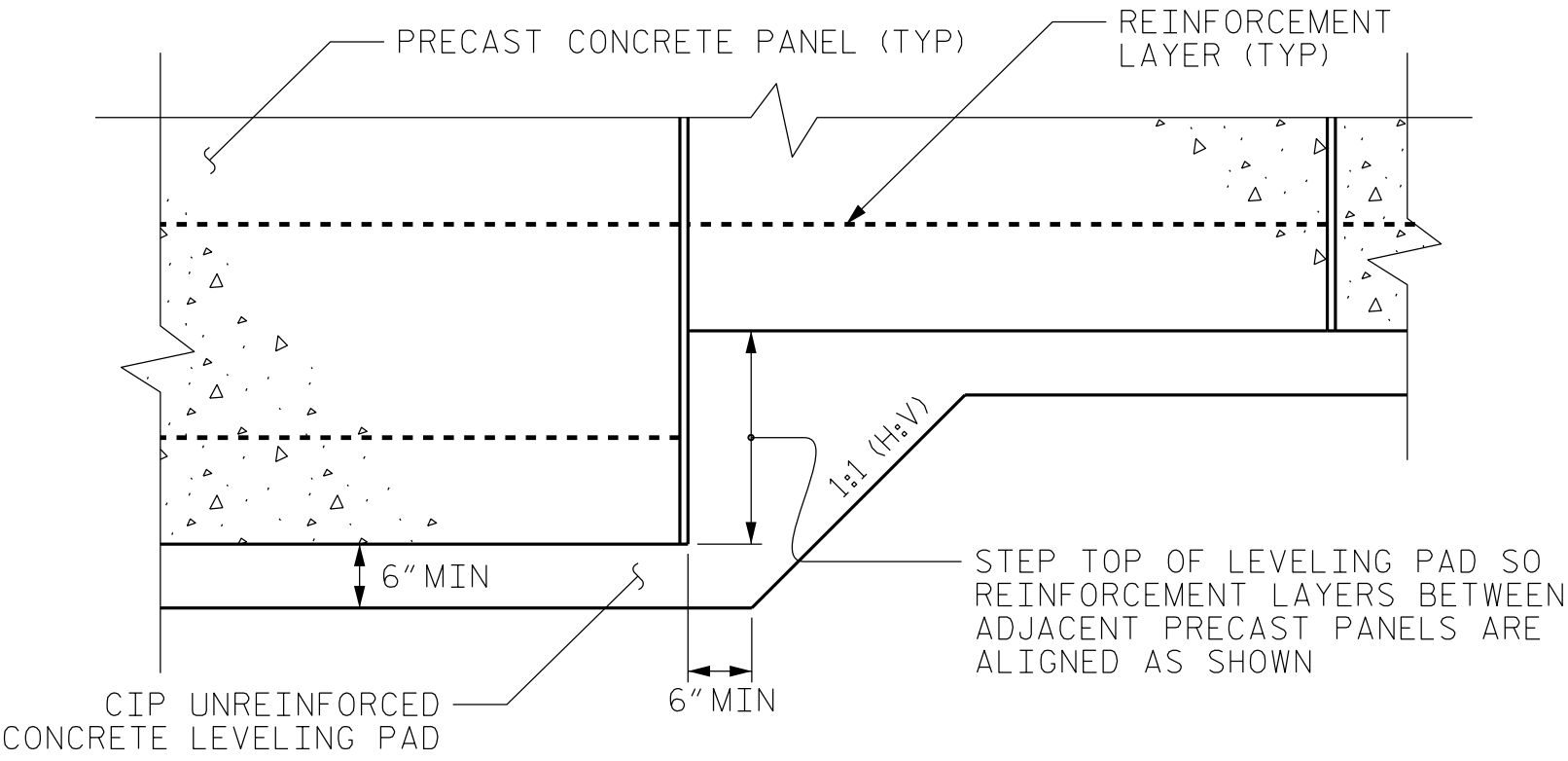
SIGNATURE

DATE

ENGINEER

DOCUMENT NOT CONSIDERED FINAL

UNLESS ALL SIGNATURES COMPLETED



PRECAST PANELS
LEVELING PAD STEP DETAIL

PROJECT NO.: I-5898

ROCKINGHAM COUNTY

STATION: MSE WALL NO. 1: 118+79.55 -Y-
MSE WALL NO. 2: 120+59.55 -Y-

WSP

STD CELL wall_MSE_Notes_Panels_LevelingPad

MSE ABUTMENT WALL
FOR MSE WALL NO. 1 AND MSE
WALL NO. 2
NOTES AND LEVELING
PAD STEP DETAIL
DATE: 1-16-18

SHEET NO. W-5