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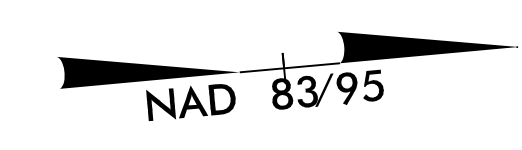
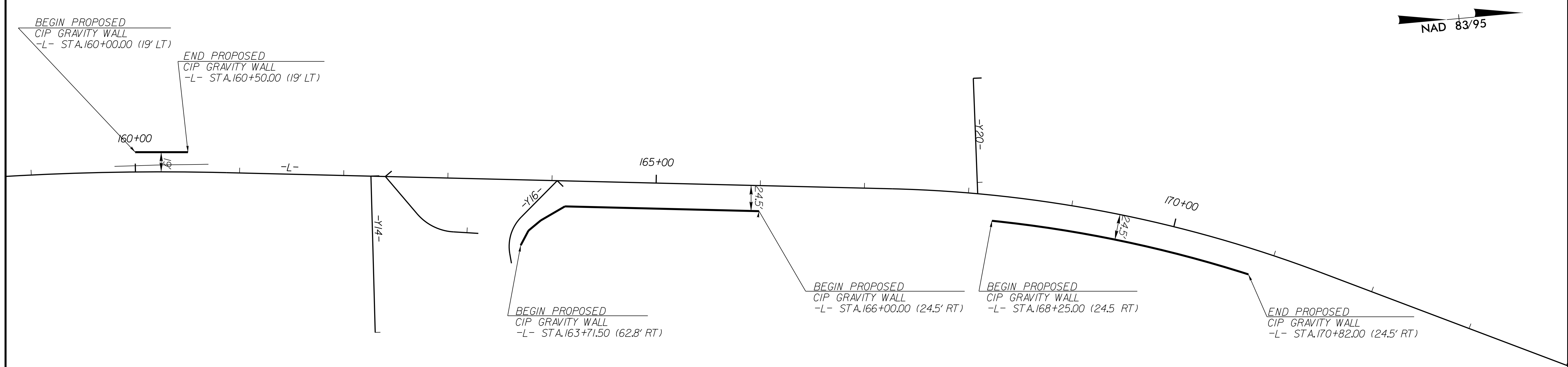
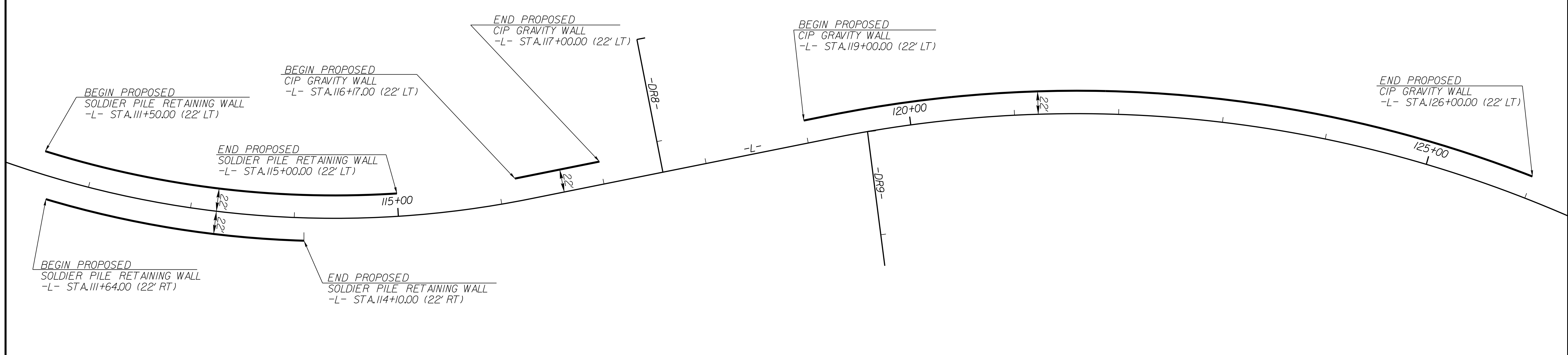
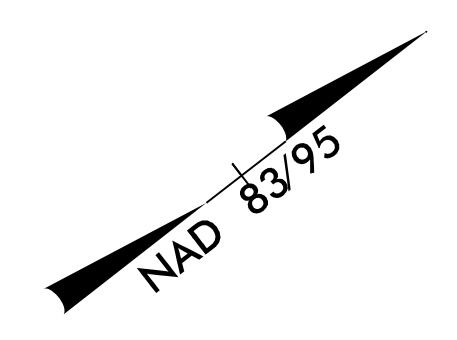
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8/17/99

RETAINING WALL LOCATION DETAILS

PROJECT REFERENCE NO. R-5742	SHEET NO. W-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	



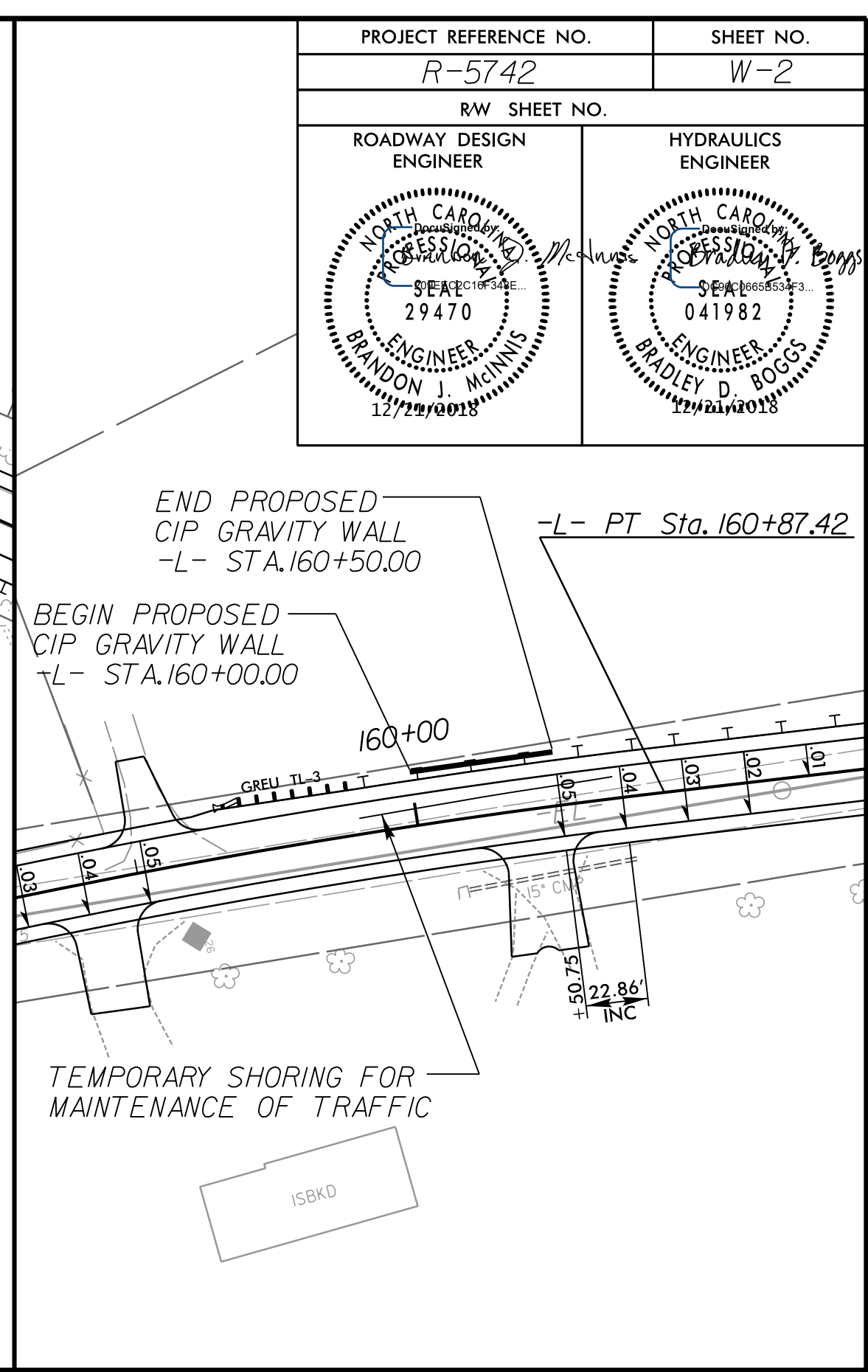
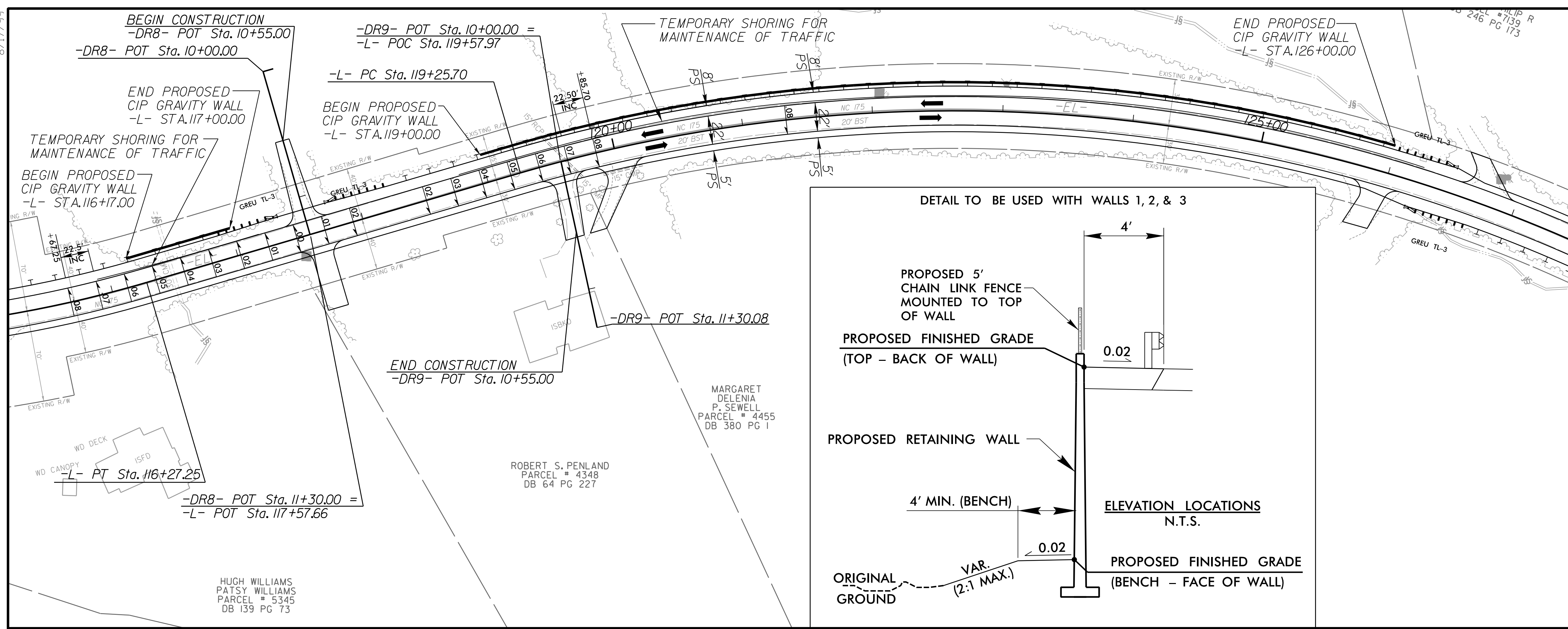
PLANS PREPARED BY :

RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

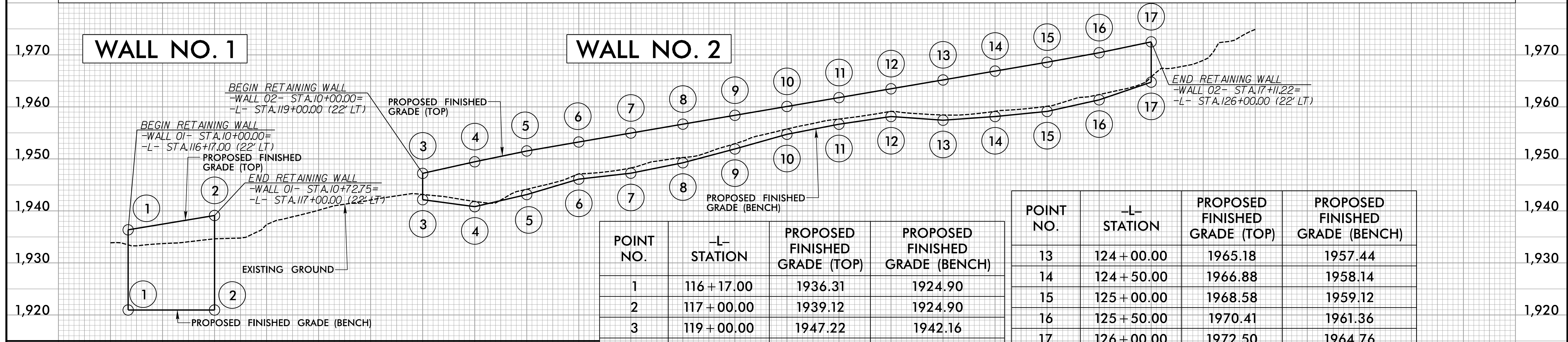
FOR PLAN SEE SHTS. 11, 12 & 14

1/8/2018
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PROJECT REFERENCE NO. R-5742	SHEET NO. W-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

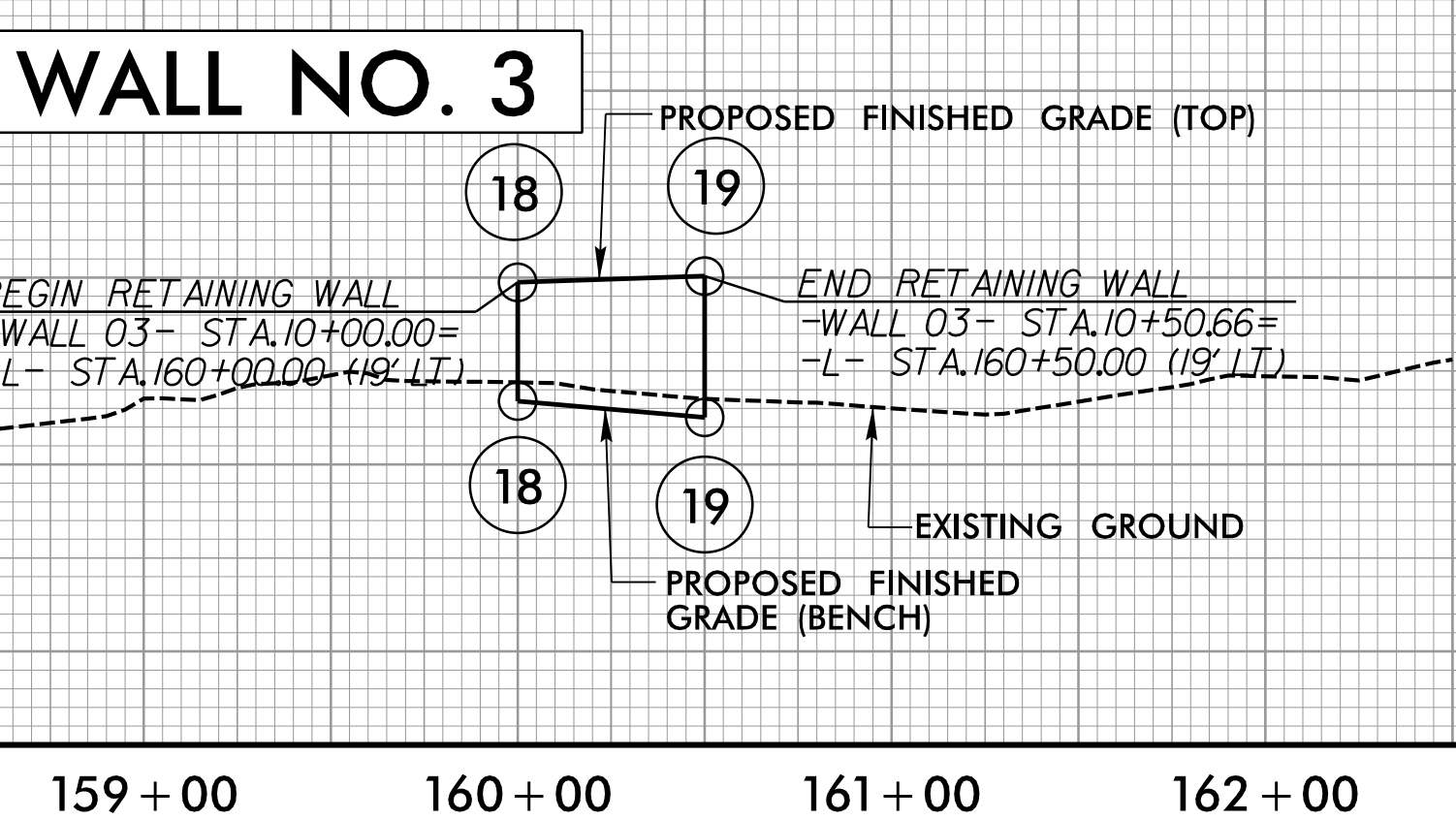


116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00



POINT NO.	-L- STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
1	116+17.00	1936.31	1924.90
2	117+00.00	1939.12	1924.90
3	119+00.00	1947.22	1942.16
4	119+50.00	1949.45	1940.81
5	120+00.00	1951.53	1943.15
6	120+50.00	1953.25	1946.11
7	121+00.00	1954.97	1947.25
8	121+50.00	1956.68	1949.25
9	122+00.00	1958.38	1951.91
10	122+50.00	1960.08	1954.74
11	123+00.00	1961.78	1956.66
12	123+50.00	1963.48	1958.15
13	124+00.00	1965.18	1957.44
14	124+50.00	1966.88	1958.14
15	125+00.00	1968.58	1959.12
16	125+50.00	1970.41	1961.36
17	126+00.00	1972.50	1964.76

POINT NO.	-L- STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
13	124+00.00	1965.18	1957.44
14	124+50.00	1966.88	1958.14
15	125+00.00	1968.58	1959.12
16	125+50.00	1970.41	1961.36
17	126+00.00	1972.50	1964.76
18	160+00.00	1939.74	1933.39
19	160+50.00	1940.08	1932.52

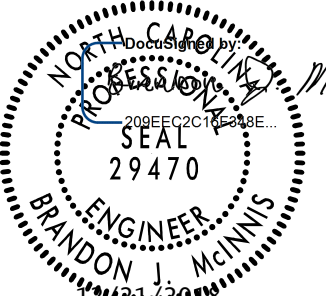
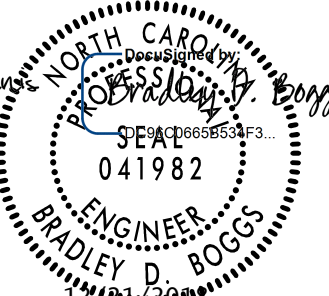


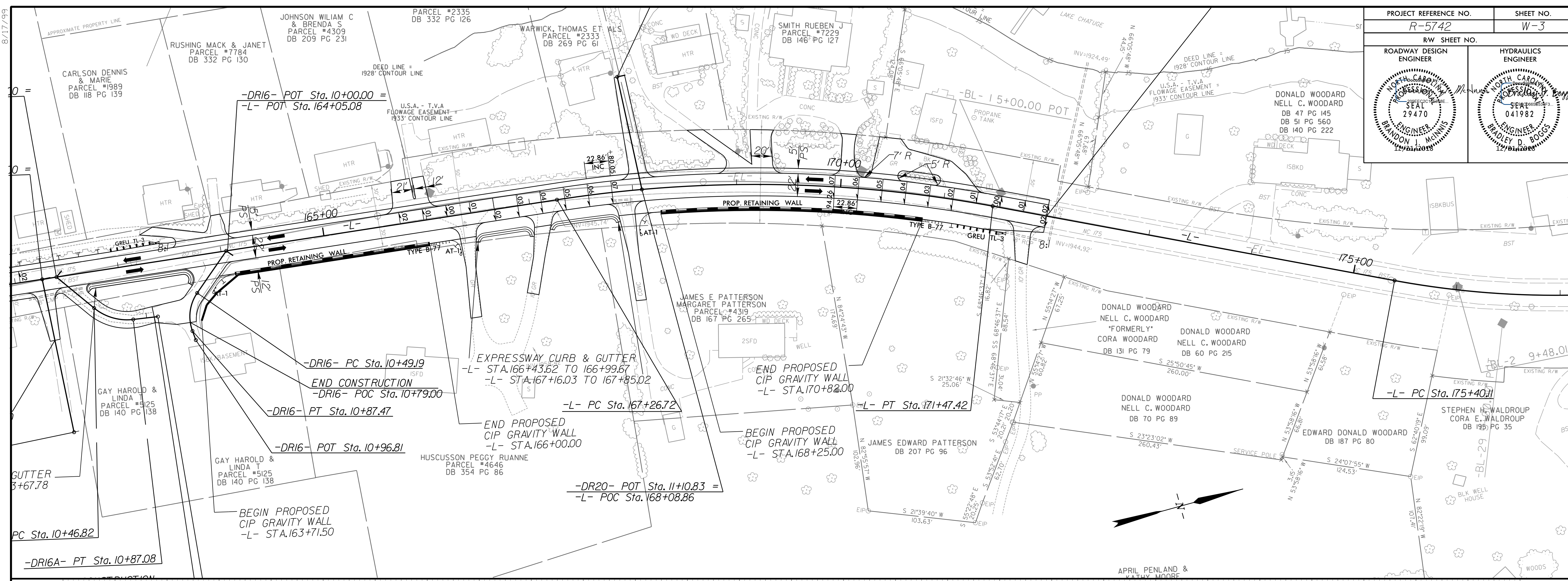
ESTIMATED QUANTITIES	
RETAINING WALL NO.	CIP GRAVITY RETAINING WALLS (SQUARE FOOT)
1	1063
2	5582
3	552

PLANS PREPARED BY :

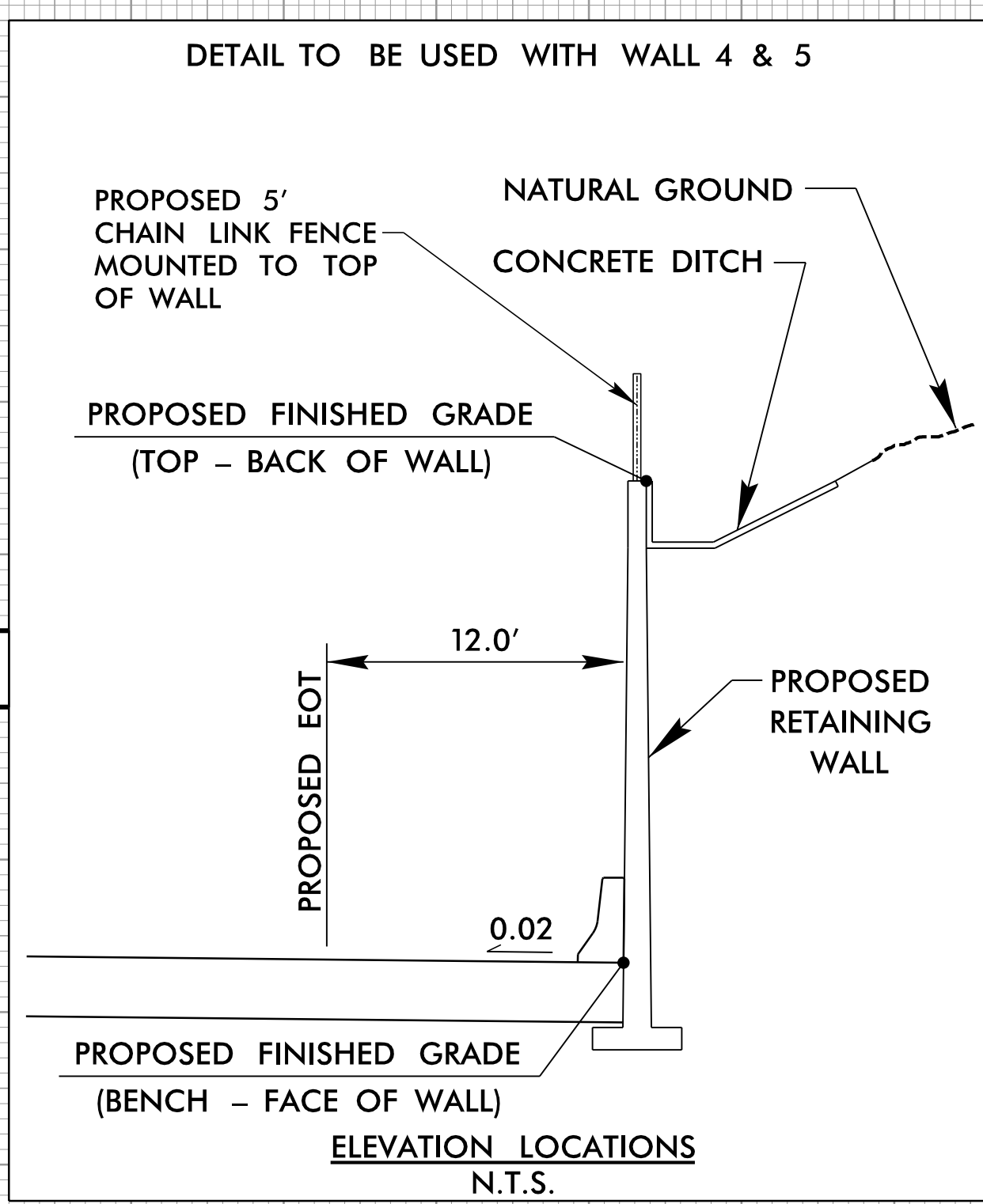
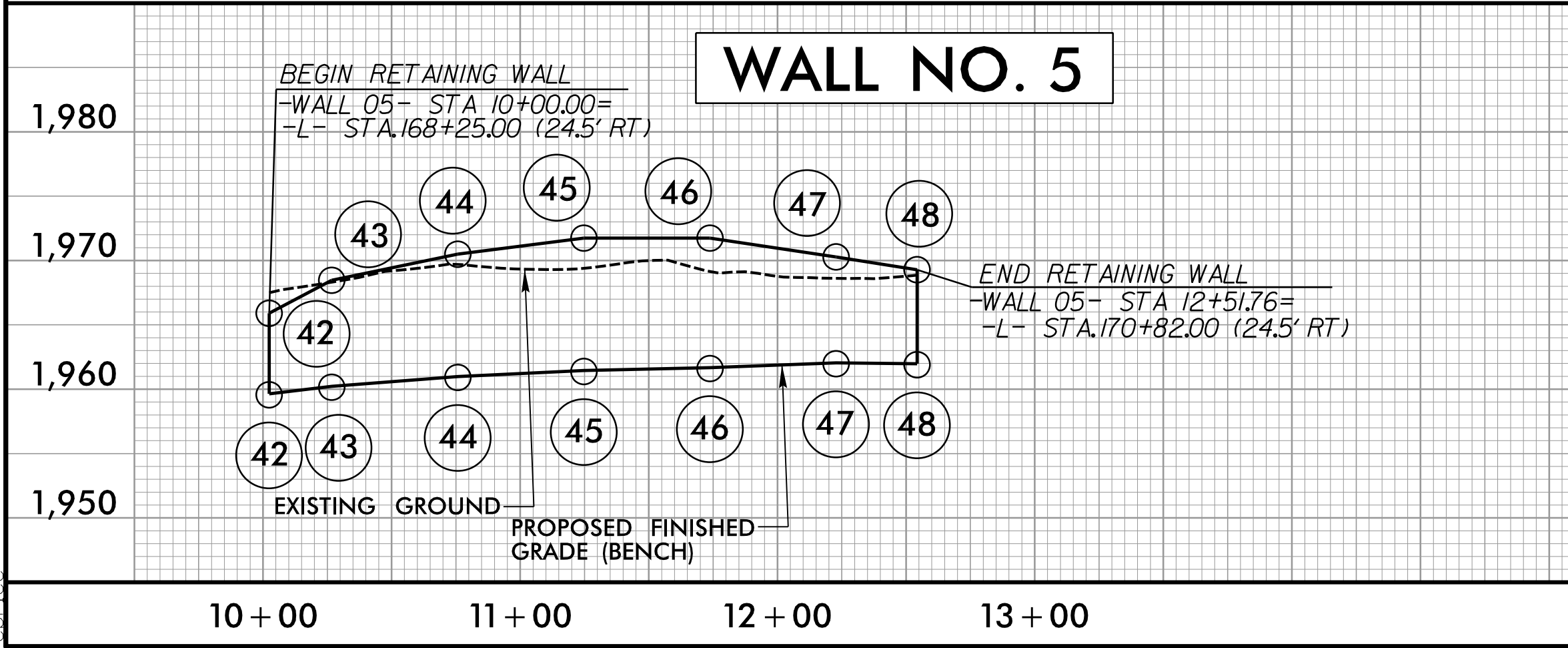
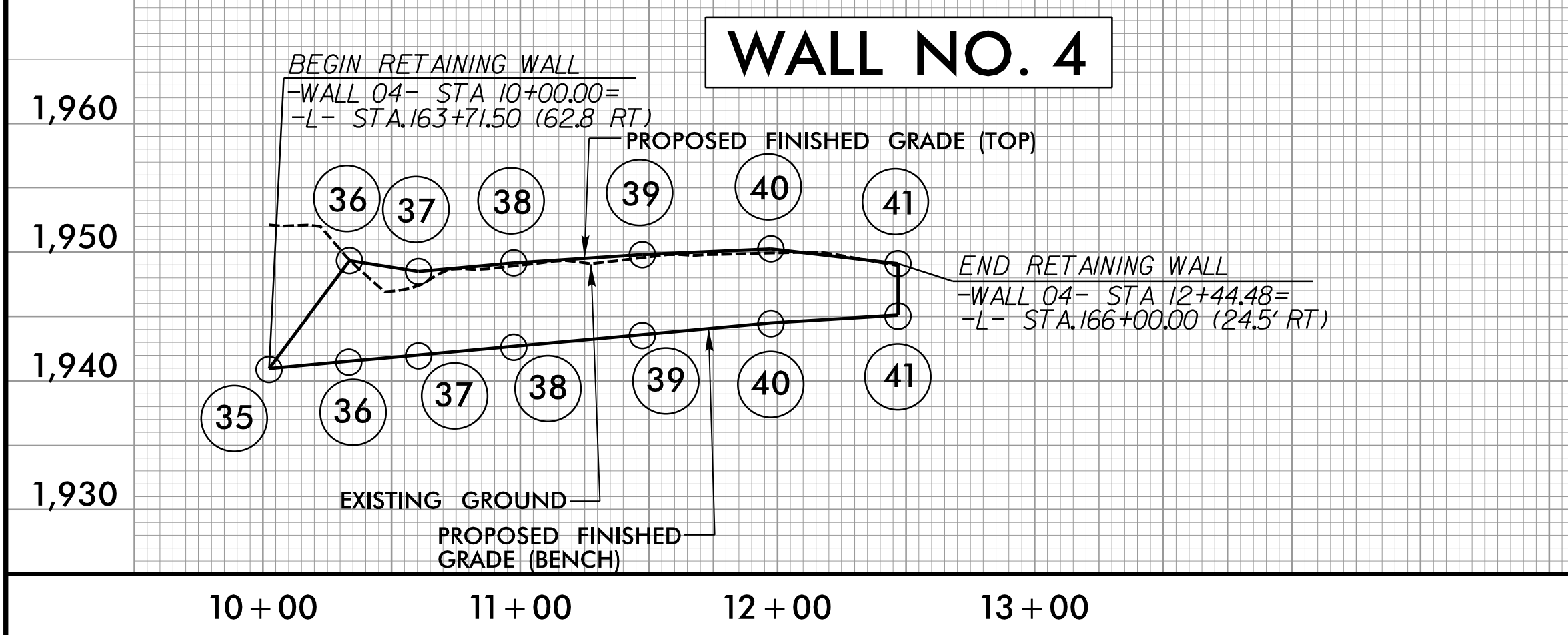
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/17/19
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PROJECT REFERENCE NO. R-5742		SHEET NO. W-3	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			



APRIL PENLAND & KATHY MOORE



POINT NO.	-L- STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)
35	163 + 71.50	1940.51	1940.51
36	163 + 90.14	1948.88	1941.07
37	164 + 00.00	1948.03	1941.56
38	164 + 50.00	1949.75	1943.23
39	165 + 00.00	1950.39	1944.14
40	165 + 50.00	1950.84	1945.05
41	166 + 00.00	1949.69	1946.00
42	168 + 25.00	1955.33	1949.10
43	168 + 50.00	1959.05	1950.64
44	169 + 00.00	1961.08	1951.40
45	169 + 50.00	1962.33	1951.86
46	170 + 00.00	1962.33	1952.09
47	170 + 50.00	1960.87	1952.52
48	170 + 82.00	1958.82	1951.51

ESTIMATED QUANTITIES


RETAINING WALL NO.	CIP GRAVITY RETAINING WALLS (SQ. FOOT)
4	1393
5	2462

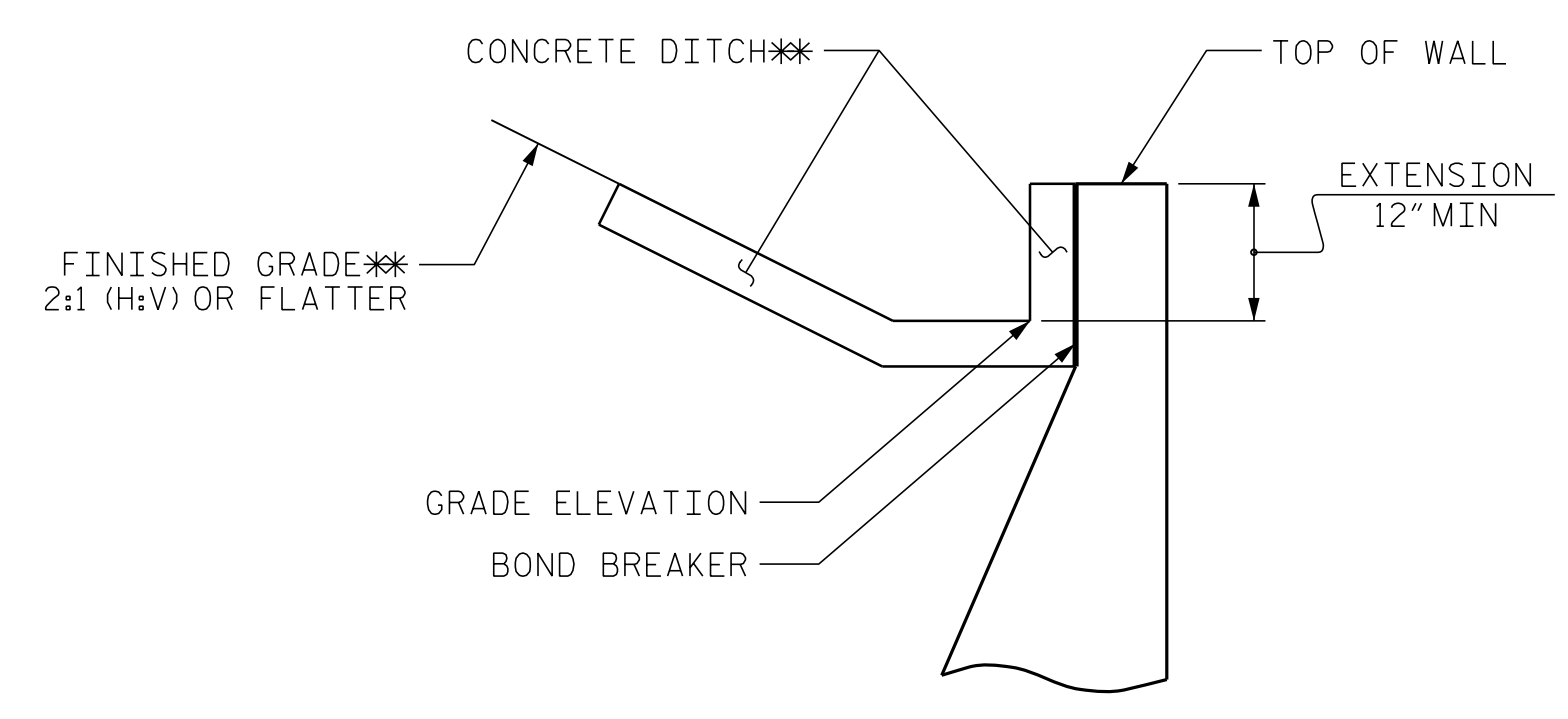
PLANS PREPARED BY:



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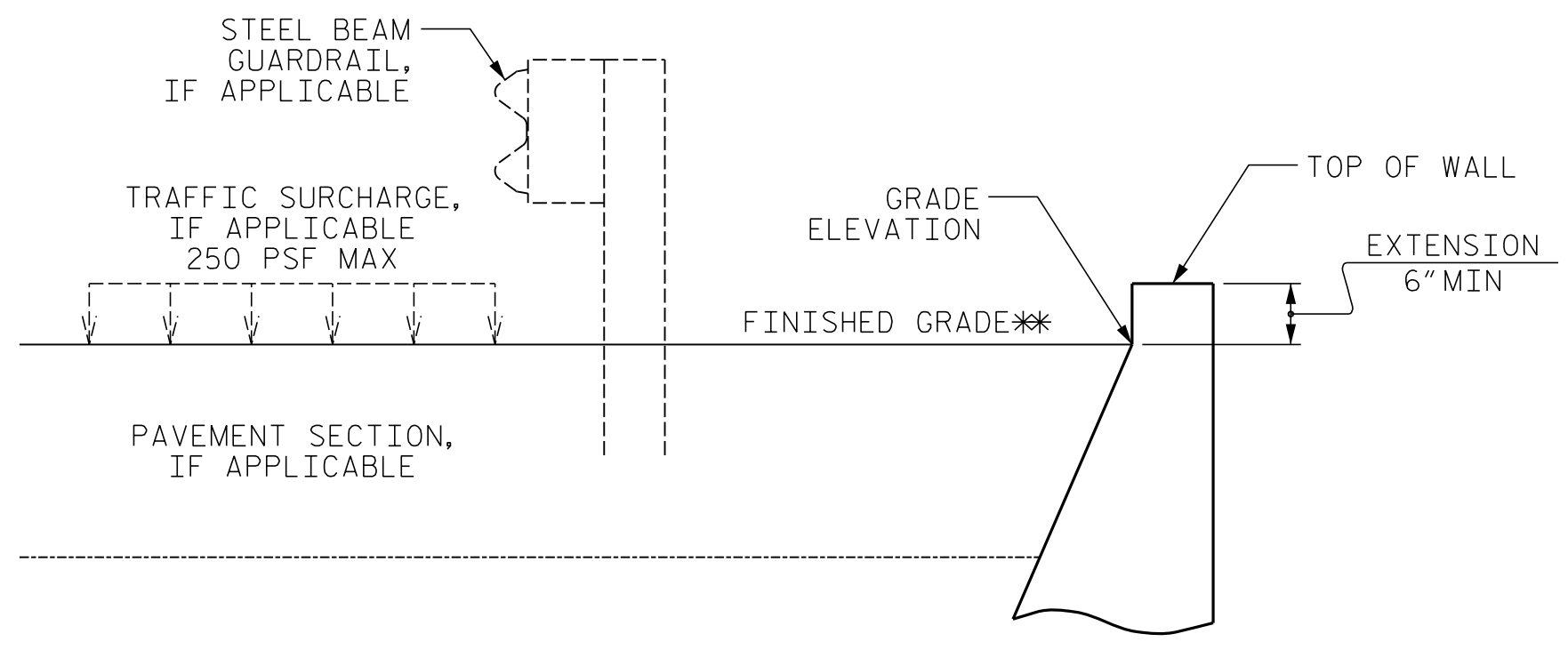
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GEOTECHNICAL ENGINEER  SEAL 044566 ENGINEER MATTHEW R. SNYDER	ENGINEER _____ SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



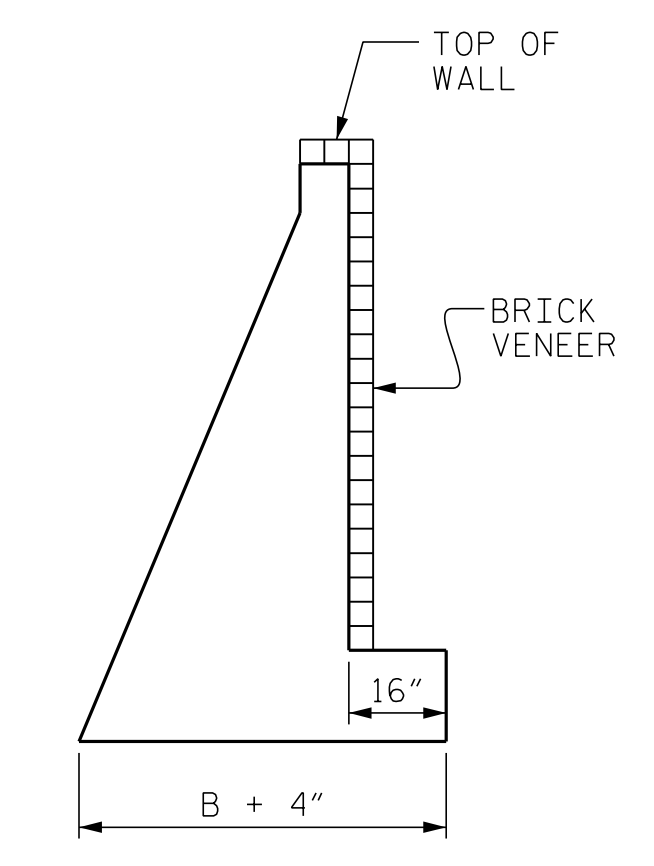
SLOPE CASE

**SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.



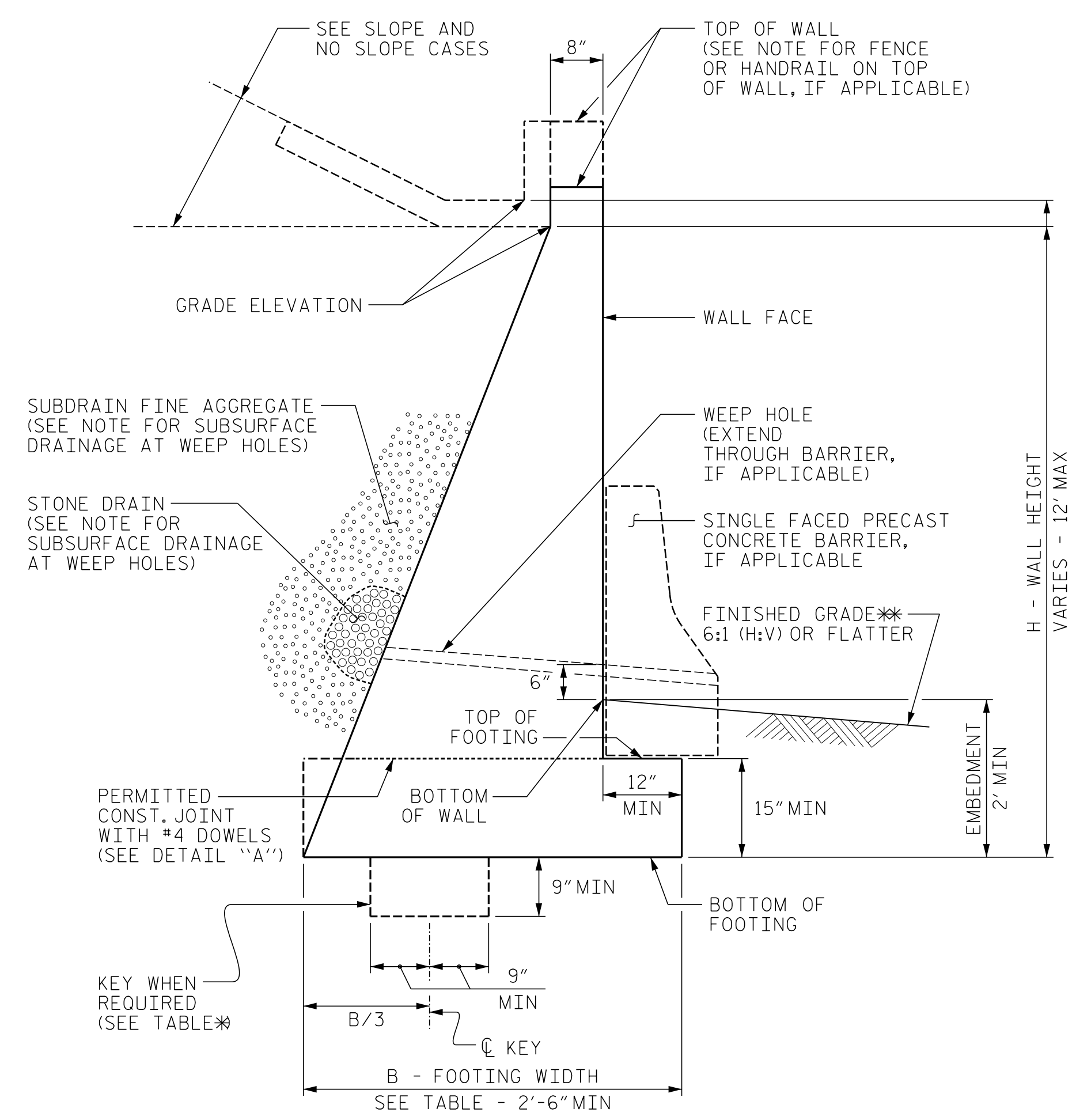
NO SLOPE CASE

**SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



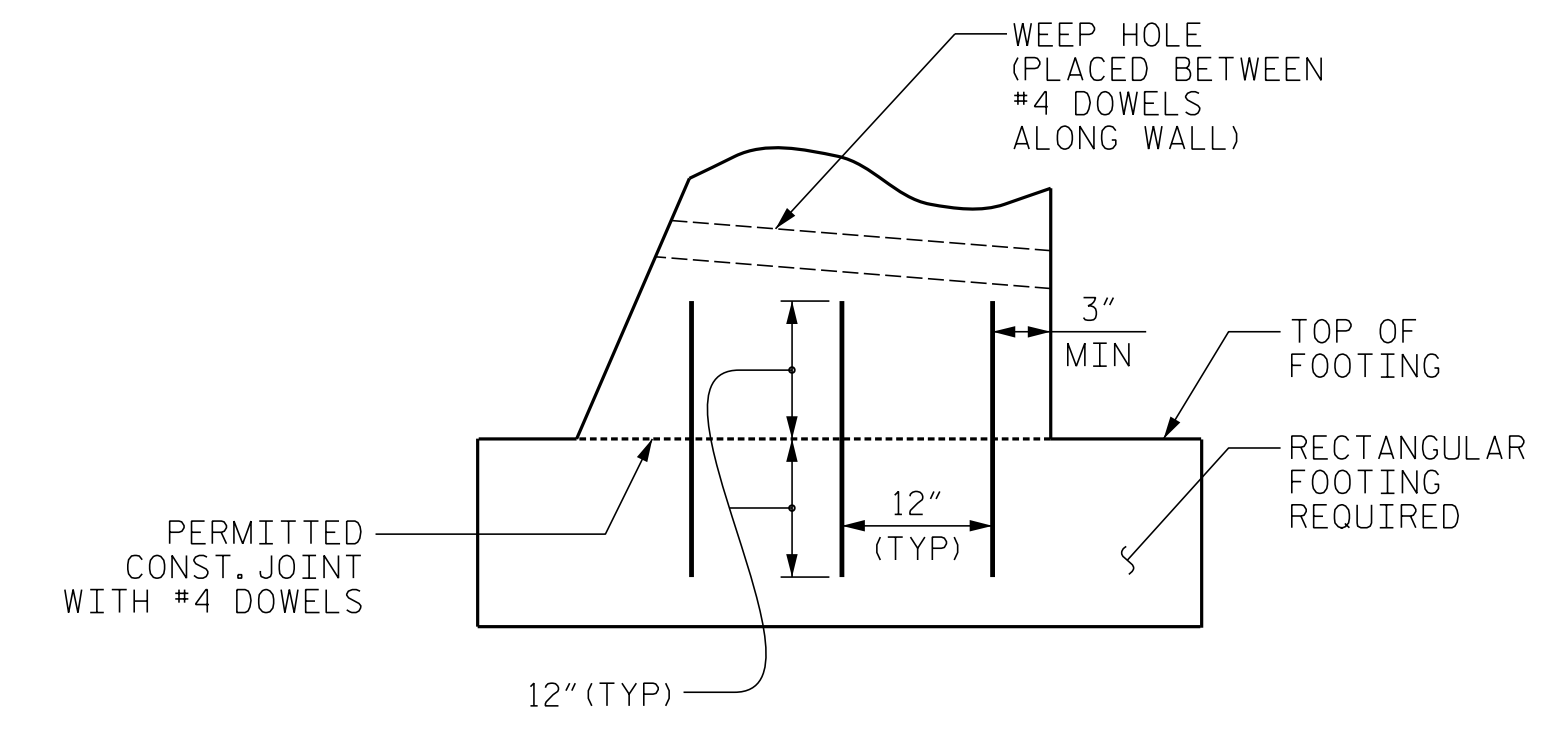
BRICK VENEER DETAIL

(WHEN APPLICABLE)



STANDARD CIP GRAVITY WALL

**SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



DETAIL "A"

H (FT)	3 - < 6	6 - 9	> 9 - 12
SLOPE CASE	.66	.70*	.75*
NO SLOPE CASE WITH TRAFFIC SURCHARGE	.80	.75*	.70*
NO SLOPE CASE WITHOUT TRAFFIC SURCHARGE	.60	.60	.60

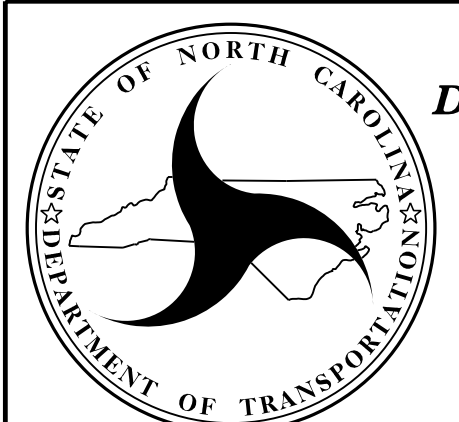
B/H RATIO (B = 2'-6" MIN)

**KEY IS REQUIRED FOR "SLOPE CASE" OR "NO SLOPE CASE WITH TRAFFIC SURCHARGE" WHEN H IS 6' OR GREATER.

NOTES:

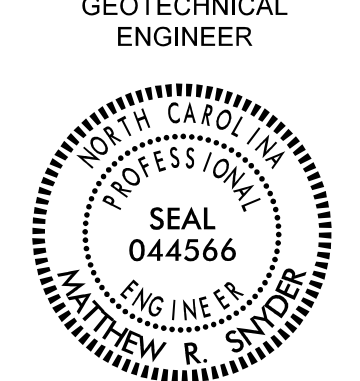
- FOR STANDARD CIP GRAVITY RETAINING WALLS, SEE SECTION 453 OF THE STANDARD SPECIFICATIONS.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.
- FOR FENCES OR HANDRAILS ON TOP OF WALLS, SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.
- FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.
- STANDARD CIP GRAVITY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 35$ DEGREES (GROUNDWATER WITHIN 7' OF BOTTOM OF FOOTING)
 FRICTION ANGLE, $\phi = 30$ DEGREES (GROUNDWATER MORE THAN 7' BELOW BOTTOM OF FOOTING)
 COHESION, $c = 0$ PSF
- DO NOT USE STANDARD CIP GRAVITY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE BOTTOM OF FOOTING.
- DO NOT USE STANDARD CIP GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.
- BEFORE BEGINNING STANDARD CIP GRAVITY WALL CONSTRUCTION, SURVEY WALL LOCATIONS AND SUBMIT WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. FOR WALL ENVELOPES, INCLUDE BOTTOM OF WALL, EXISTING GROUND AND GRADE ELEVATIONS AND OTHER ELEVATIONS AS NEEDED AT INTERVALS OF 25' OR LESS ALONG WALLS. DO NOT START WALL CONSTRUCTION UNTIL WALL ENVELOPES ARE ACCEPTED.
- FOR BRICK VENEERS, SUBMIT BRICK SAMPLES FOR APPROVAL BEFORE BEGINNING STANDARD CIP GRAVITY WALL CONSTRUCTION.
- DO NOT PLACE CONCRETE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- WHEN CONSTRUCTING STANDARD CIP GRAVITY WALLS WITH A CONSTRUCTION JOINT AS SHOWN IN DETAIL "A", PROVIDE A MINIMUM OF 3 EQUALLY SPACED #4 DOWELS AT INTERVALS OF 1'-6" ALONG WALLS.

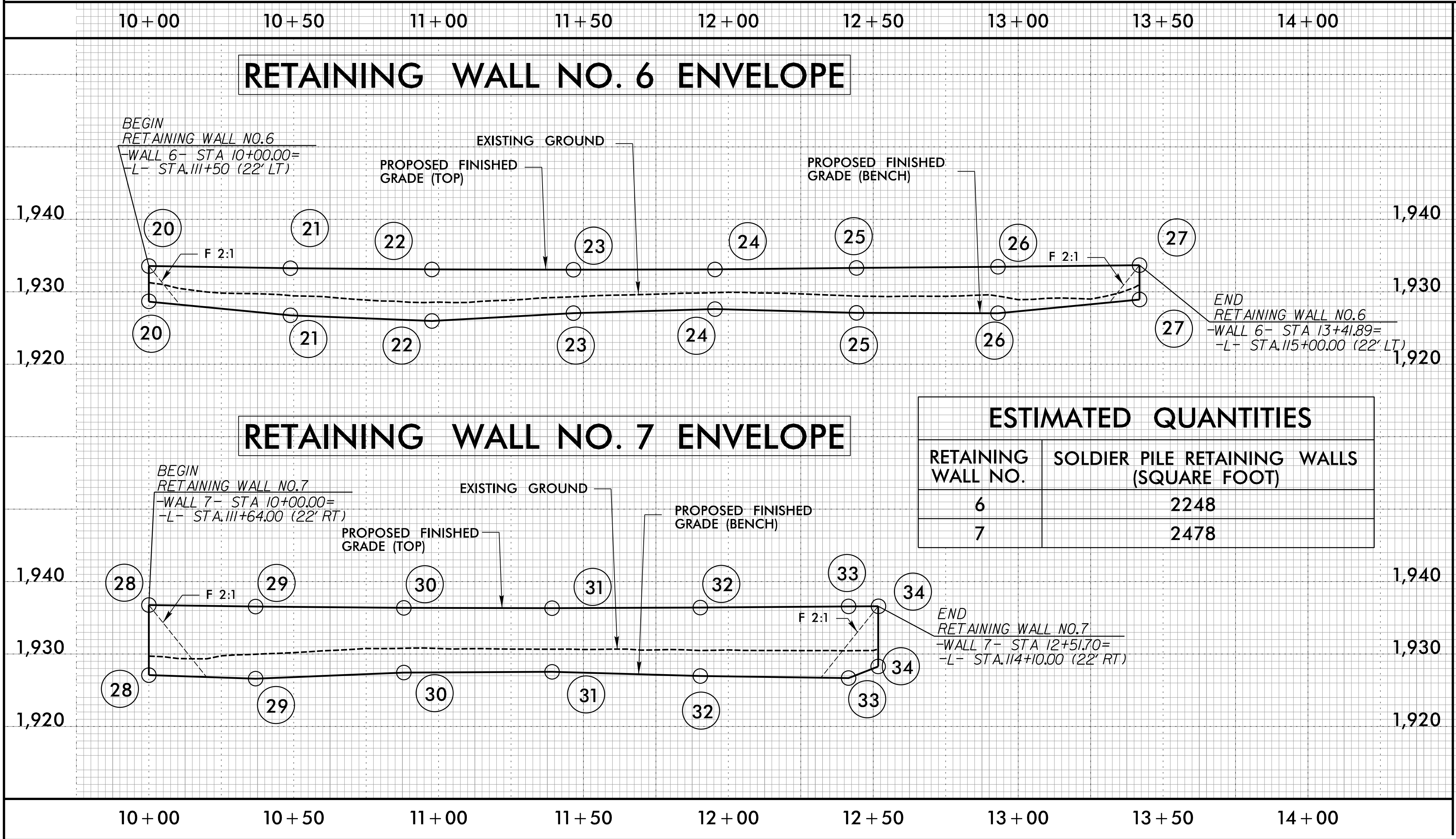
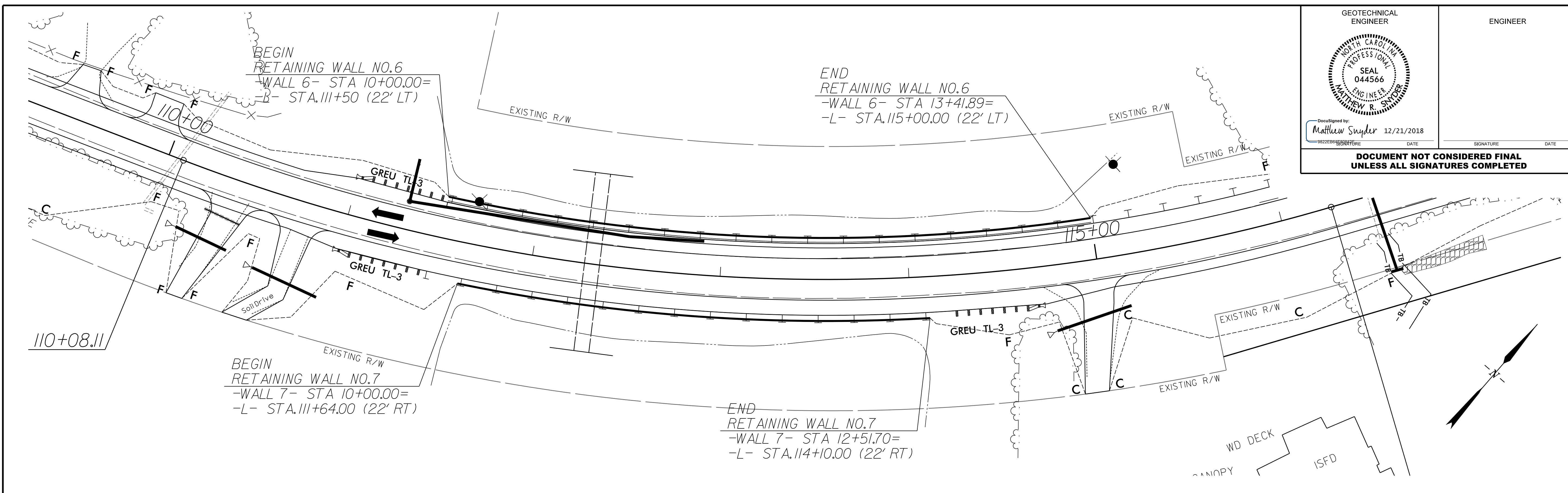
PROJECT NO.: R-5742
 CLAY COUNTY
 STATION: VARIES
 SHEET 1 OF 1


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 453.01
STANDARD
CAST-IN-PLACE (CIP)
GRAVITY RETAINING WALL

SHEET NO. W-4
 DATE: 1-16-18

GEOTECHNICAL ENGINEER  SEAL 044566 ENGINEER MATTHEW R. SNYDER	ENGINEER SIGNATURE _____ DATE _____
Documented by: Matthew Snyder 12/21/2018 DATE	
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ESTIMATED QUANTITIES	
RETAINING WALL NO.	SOLDIER PILE RETAINING WALLS (SQ. FOOT)
6	2248
7	2478

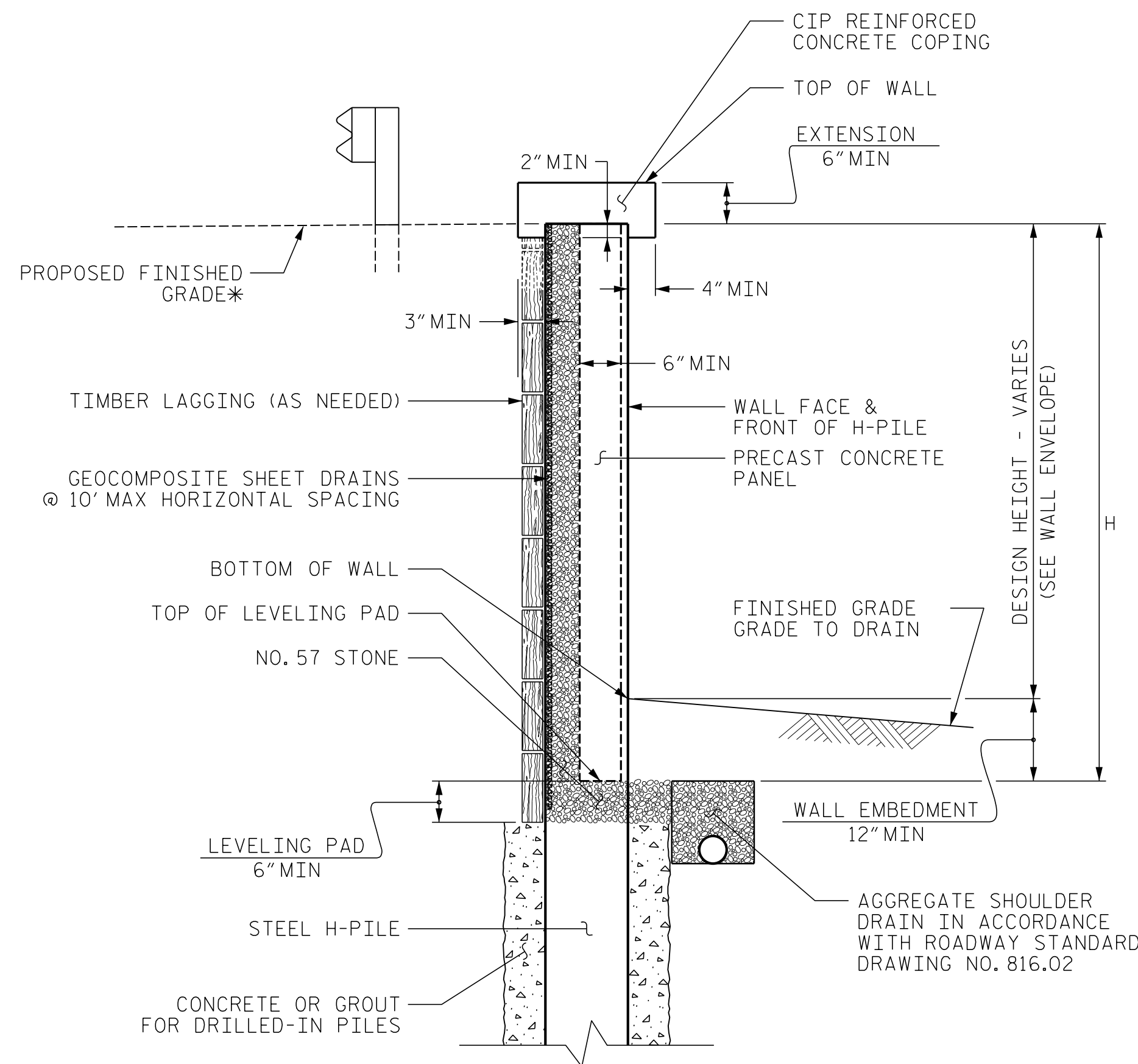
POINT NO.	-L- STATION	PROPOSED FINISHED GRADE (TOP)	PROPOSED FINISHED GRADE (BENCH)	WALL HEIGHT (FT)
20	111+50.00	1933.55	1928.64	4.91
21	112+00.00	1933.25	1926.75	6.50
22	112+50.00	1933.08	1925.97	7.11
23	113+00.00	1933.04	1927.05	5.99
24	113+50.00	1933.13	1927.61	5.52
25	114+00.00	1933.29	1927.09	6.20
26	114+50.00	1933.45	1927.04	6.41
27	115+00.00	1933.67	1928.93	4.74
28	111+64.00	1936.71	1927.09	9.62
29	112+00.00	1936.55	1926.60	9.95
30	112+50.00	1936.37	1927.44	8.93
31	113+00.00	1936.33	1927.54	8.79
32	113+50.00	1936.41	1926.96	9.45
33	114+00.00	1936.57	1926.68	9.89
34	114+10.00	1936.55	1928.28	8.27

PROJECT NO.: R-5742
 CLAY COUNTY
 STATION: VARIES
 SHEET 1 OF 2

PLANS PREPARED BY:
RK&K
 RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

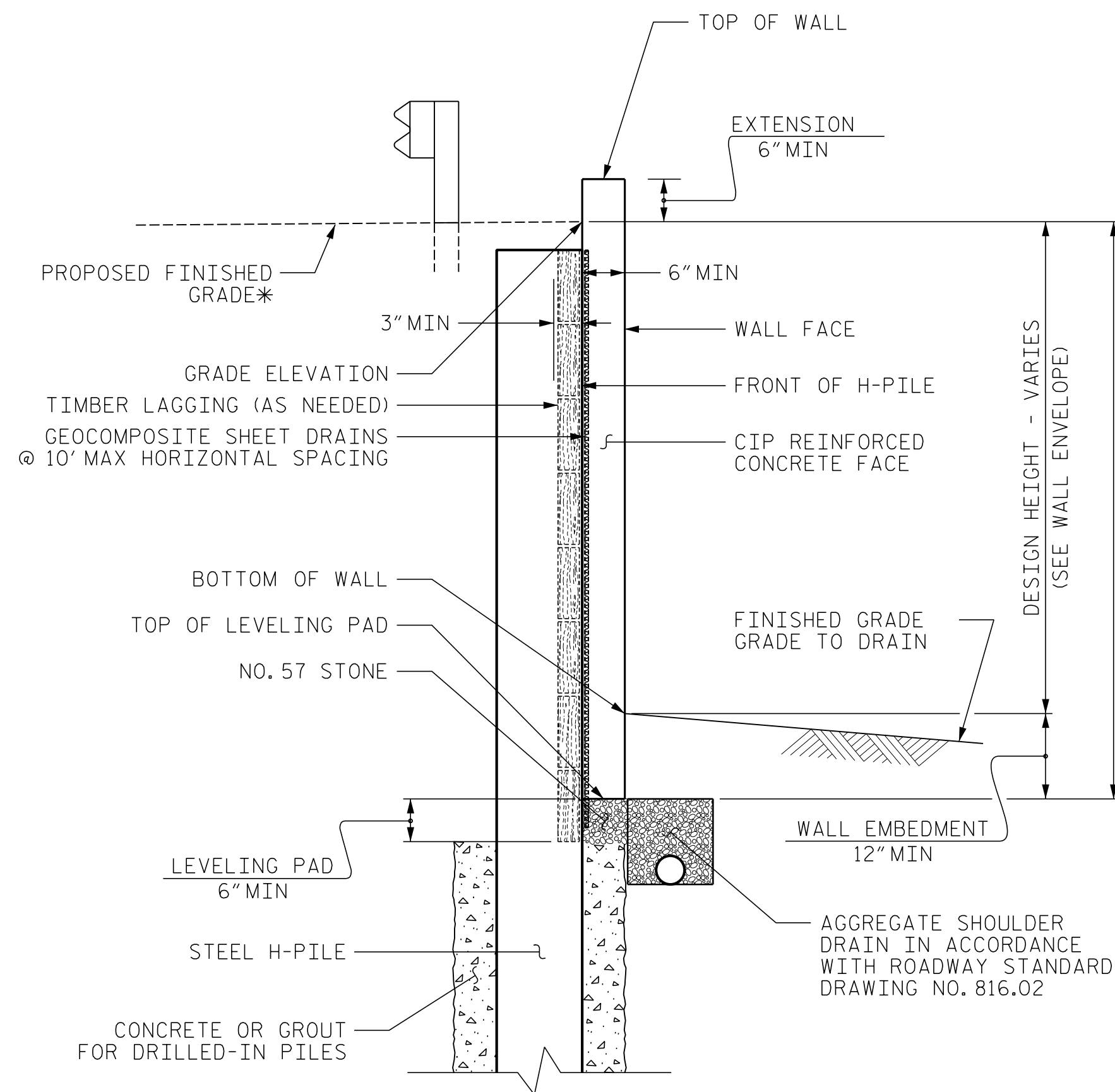
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-5
2			4			

**RETAINING WALL NO. 6 AND 7
 PLAN AND PROFILE**




SOLDIER PILE WALL WITH PRECAST PANEL - TYPICAL SECTIONS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS AND PILES.
*SEE PLANS FOR FINISHED GRADE



SOLDIER PILE WALL WITH CIP FACE - TYPICAL SECTION

*SEE PLANS FOR FINISHED GRADE

GEOTECHNICAL ENGINEER  SEAL 044566 ENGINEER MATTHEW R. SNYDER	ENGINEER SIGNATURE _____ DATE _____
Documented by: <u>Matthew Snyder</u> 12/21/2018 902288@GEMATERE DATE _____ SIGNATURE _____ DATE _____	
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NOTES:

- FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 6 AND 7.
- AT THE CONTRACTOR'S OPTION, USE A SOLDIER PILE RETAINING WALL WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS OR A CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO. 6 AND 7.
- PAINT GALVANIZED H-PILES GRAY IN ACCORDANCE WITH ARTICLE 442-13 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 6 AND 7.
- A SIMULATED STONE ARCHITECTURAL FINISH IS REQUIRED FOR PRECAST CONCRETE PANELS AND THE CIP REINFORCED CONCRETE FACE FOR RETAINING WALL NO. 6 AND 7.
- BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 6 AND 7, 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.
- SHOULDER BERM GUTTER IS REQUIRED FOR WALL NO. 6. SEE ROADWAY PLANS FOR SHOULDER BERM GUTTER ATTACHMENT DERAILS.

- DESIGN RETAINING WALL NO. FOR THE FOLLOWING:
- 1) H = DESIGN HEIGHT + WALL EMBEDMENT
 - 2) DESIGN LIFE = 75 YEARS
 - 3) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 1920.0 FT:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ PSF
 - 4) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 1920.0 FT:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ PSF
- DESIGN RETAINING WALL NO. 6 AND 7 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.
- DESIGN RETAINING WALL NO. 6 AND 7 FOR A PIPE EXTENDING UNDER THE WALL. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING SOLDIER PILE WALL DESIGN OR CONSTRUCTION.
- REMOVE RIP RAP ON FACE OF THE EXISTING SLOPE AS NEEDED TO ALLOW FOR INSTALLATION OF H-PILES.
- CONSTRUCT MINIMUM 2.0 FT BERM IN FRONT OF RETAINING WALL NO. 6 AND 7.

PROJECT NO.: R-5742
 CLAY COUNTY
 STATION: VARIES
 SHEET 2 OF 2

PLANS PREPARED BY :

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 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

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

PREPARED BY: A. Bozorgi	DATE: 11/8/18
REVIEWED BY: M. Snyder	DATE: 11/8/18

SHEET NO. W-6