

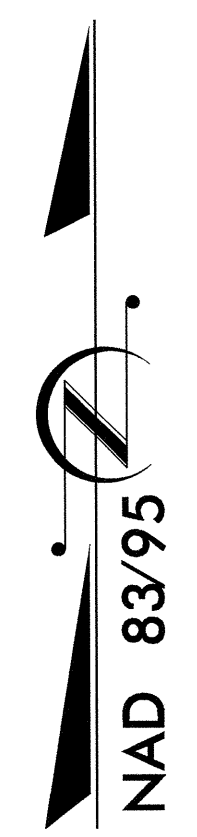
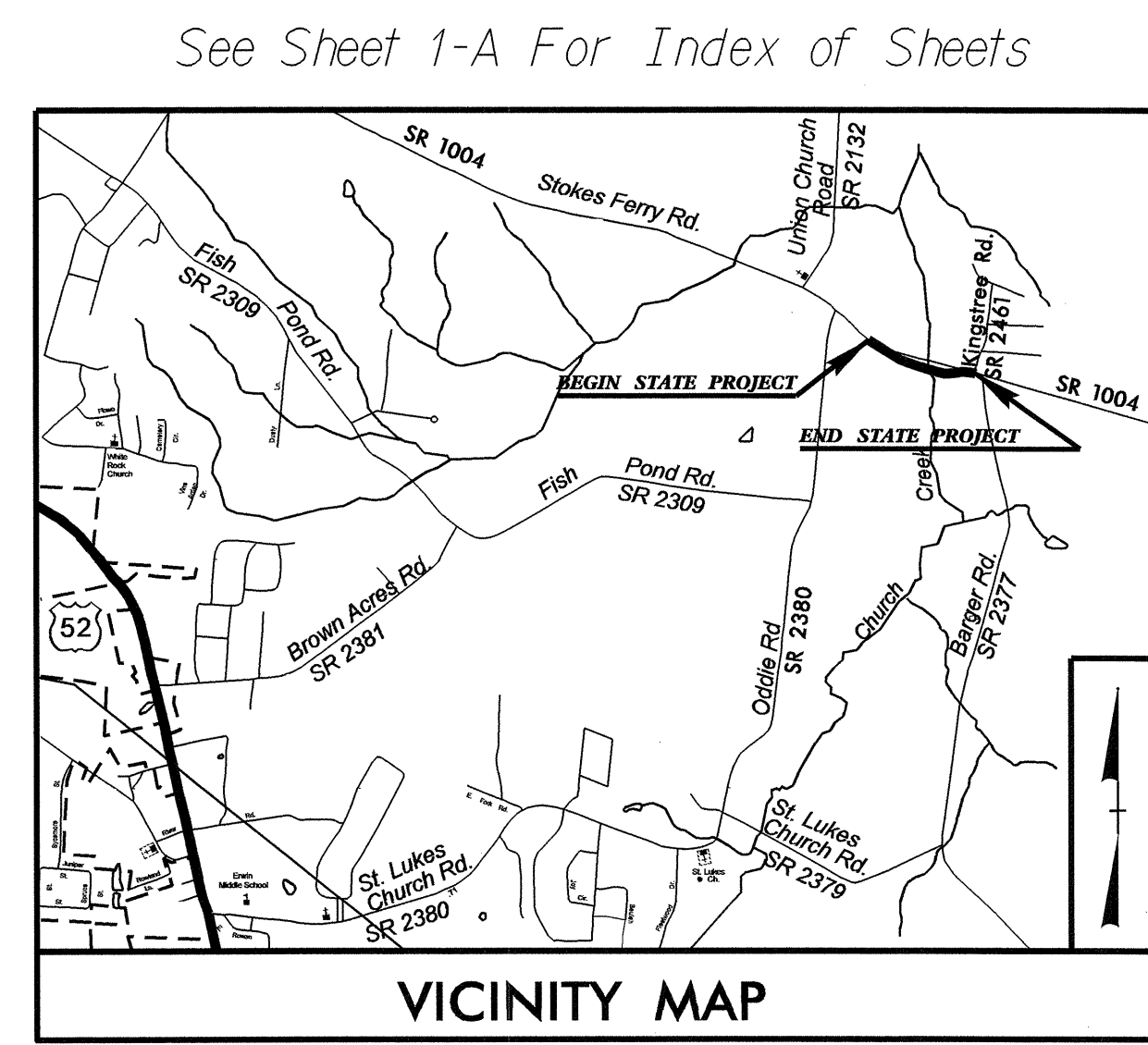
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4257	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33599.1.1	BRSTP-1004(15)	PE	
33599.2.1	BRSTP-1004(15)	RW & UTILITIES	
33599.3.1	BRSTP-1004(15)	CONSTRUCTION	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

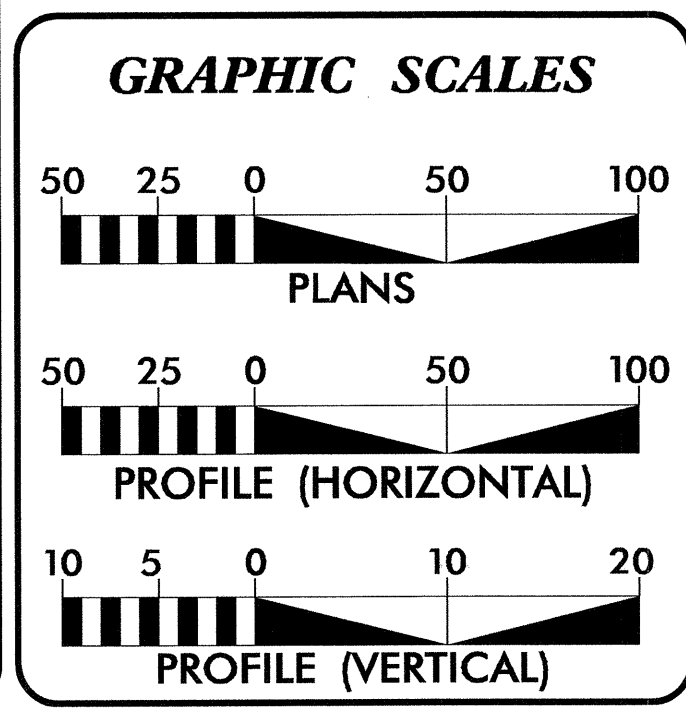
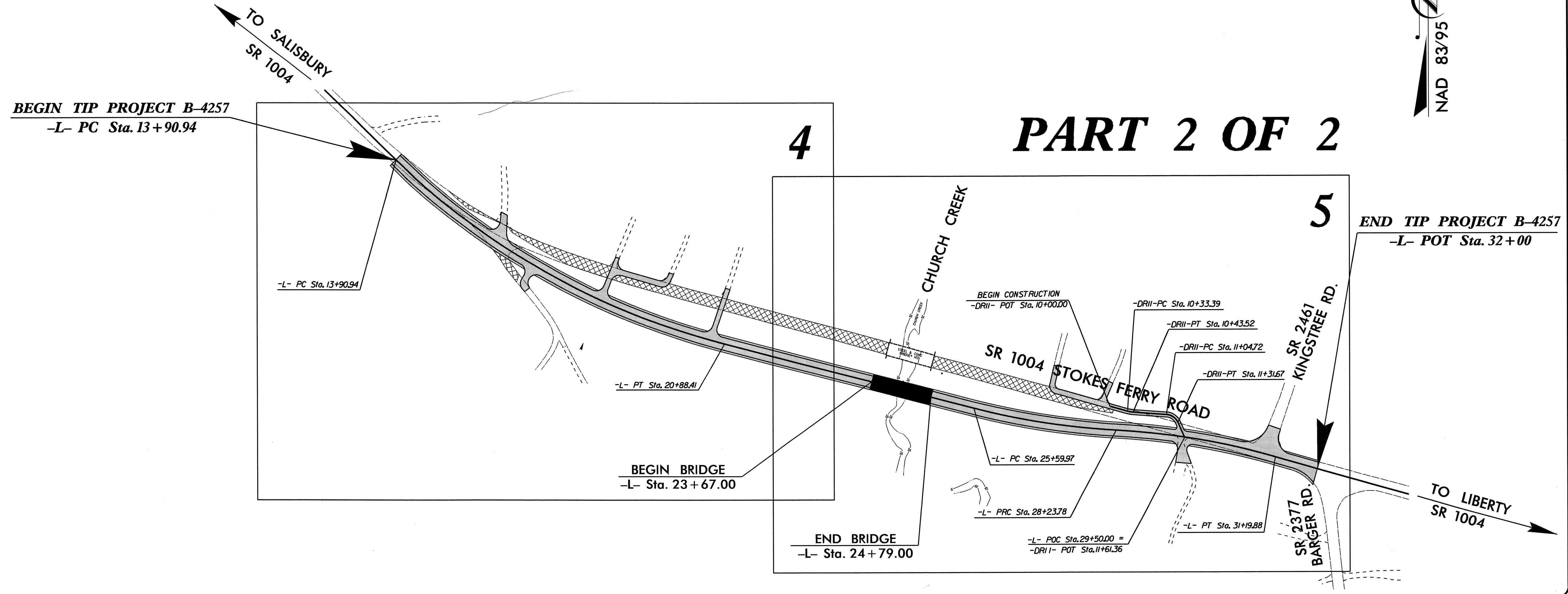
**ROWAN COUNTY**

**LOCATION: BRIDGE 143 OVER CHURCH CREEK ON SR 1004  
(STOKES FERRY ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, PAVING**



**TIP PROJECT: B-4257**  
**TIP PROJECT: C202821**



**DESIGN DATA**

ADT 2012 =	8,364
ADT 2030 =	12,291
DHV =	10 %
D =	65 %
T =	4 %
V =	55 MPH
* TTST 1%	DUAL 3%
FUNC. CLASS. =	LOCAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT No. B-4257	=	0.322 MILES.
LENGTH STRUCTURE TIP PROJECT No. B-4257	=	0.021 MILES.
TOTAL LENGTH TIP PROJECT No. B-4257	=	0.343 MILES.

SUB-TIER DESIGN GUIDELINES USED FOR DESIGN

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
MAY 19, 2011

**LETTING DATE:**  
SEPTEMBER 18, 2012

**JIMMY GOODNIGHT, P.E.**  
PROJECT ENGINEER

**STEVE KENDALL, P.E.**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

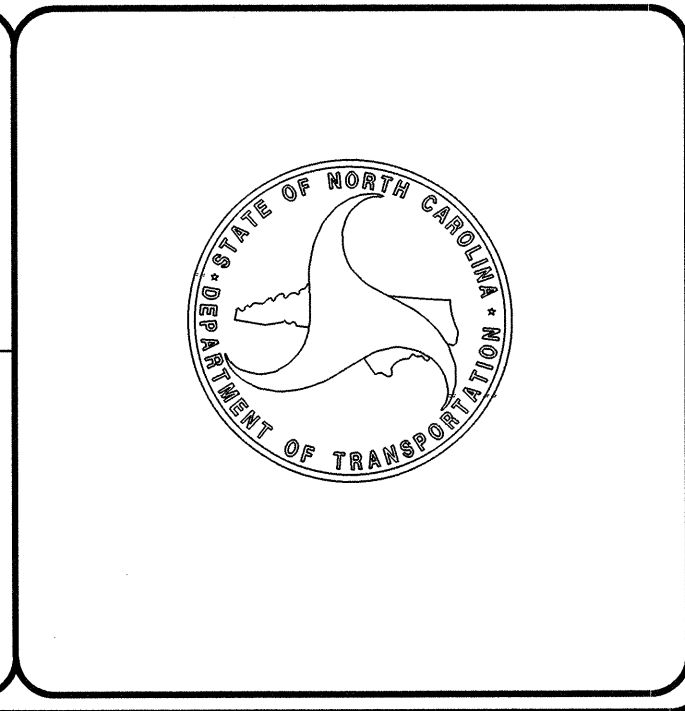
**ROADWAY DESIGN ENGINEER**

SEAL 9334  
HENRY WELLS

SEAL 33298  
STEVEN D. KENDALL

6/27/12

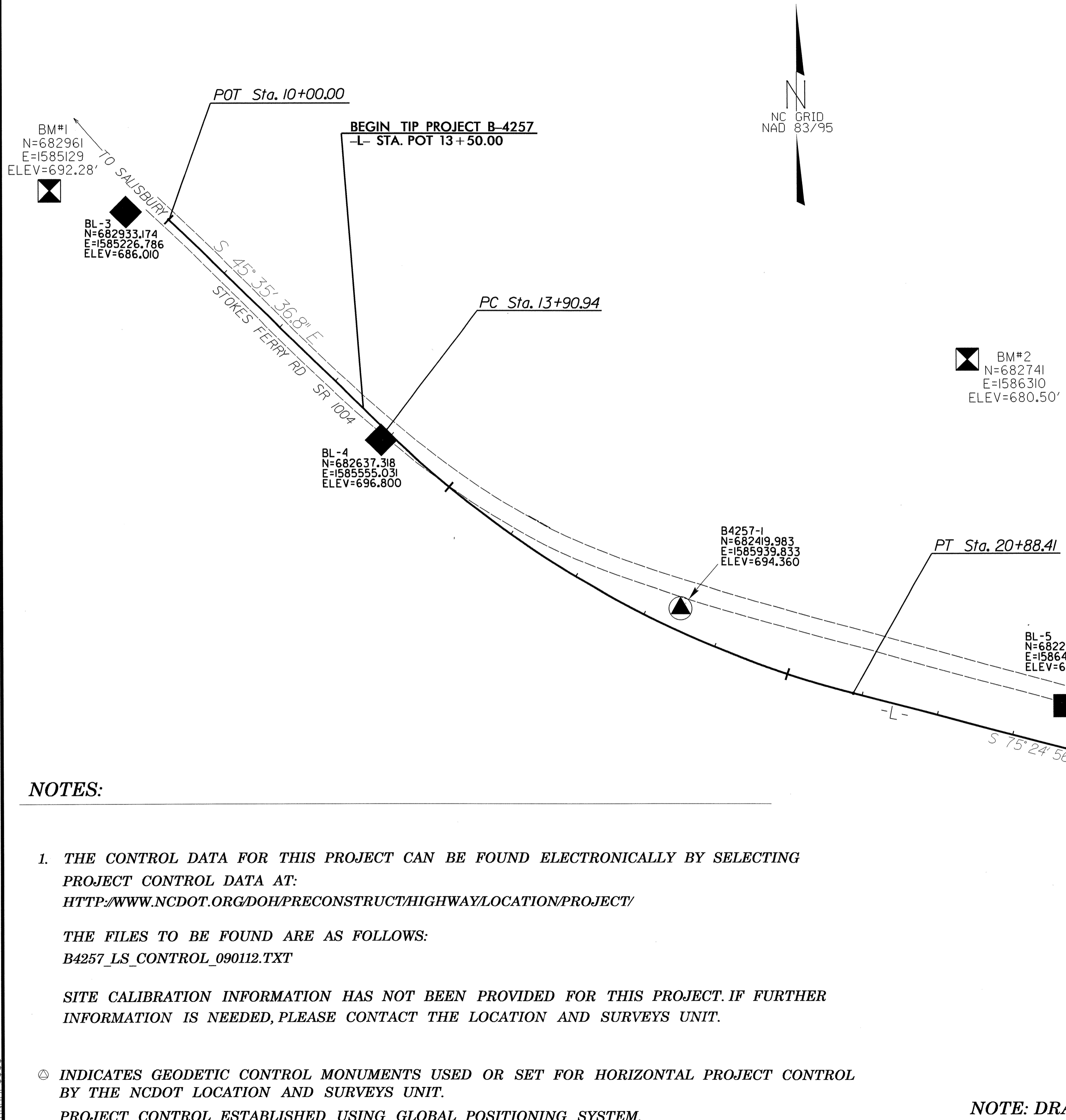
6-27-12 P.E.



09/08/09  
 25-JUN-2012 14:53  
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 \$\$\$USERNAME\$\$\$

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**SURVEY CONTROL SHEET B-4257**

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B4257-1	GPS-1	682419.9830	1585939.8330	694.36	18+39.31	27.80 LT
B4257-2	GPS-2	682059.5450	1587400.0890	709.94	33+52.97	21.27 LT
3	BL-3	682933.1743	1585226.7862	686.01		OUTSIDE OF PROJECT LIMITS
4	BL-4	682637.3180	1585555.0310	696.80	13+94.84	13.43 RT
5	BL-5	682293.7520	1586434.1130	670.22	23+56.02	52.70 LT
6	BL-6	682082.5400	1587180.5990	698.70	31+35.26	14.90 RT
7	BY1-7	682336.6880	1587217.5710	711.65	31+03.91	239.88 LT
8	BY2-8	681817.5300	1587307.9670	696.86	33+28.49	236.52 RT



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B4257 GPS-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 682419.9836(ft) EASTING: 1585939.8334(ft) ELEVATION: 694.36(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986453

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4257 GPS-1" TO -L- STATION 10+00.00 IS N 52°34'13" W 827.99'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

**BENCHMARKS:**

\*\*\*\*\*

BM#1 ELEVATION = 692.28'  
N 682961 E 1585129  
OUTSIDE PROJECT LIMITS  
R/R SPIKE IN ROOT OF DOUBLE WALNUT  
\*\*\*\*\*

\*\*\*\*\*

BM#2 ELEVATION = 680.50'  
N 682741 E 1586310  
L STATION 21+23 455' LEFT  
R/R SPIKE IN BASE OF 15" OAK  
\*\*\*\*\*

\*\*\*\*\*

BM#3 ELEVATION = 713.48'  
N 682389 E 1587271  
L STATION 31+41 304' LEFT  
"X" CUT IN SOUTH END OF 15" CONC PIPE  
\*\*\*\*\*

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
B4257\_LS\_CONTROL\_090112.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

☉ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

5/28/99  
05-APR-2012 06:49  
R:\Roadway\Projects\B4257\_1a.dgn  
\$\$\$\$\$

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

## SURVEY CONTROL SHEET B-4257

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L2	13+90.94	50.00	682613.9482	1585526.6227
L2	23+00.00	50.00	682208.4647	1586354.0364
L2	24+00.00	72.00	682161.9933	1586445.2747
L2	25+00.00	80.00	682129.0709	1586540.0381
L2	27+00.00	80.00	682084.1706	1586743.3742
L2	30+00.00	43.00	682086.5342	1587045.0694
L2	13+50.00	30.00	682656.8850	1585511.3688
L2	20+88.41	50.00	682261.7443	1586149.2608
L2	25+59.97	80.00	682113.9704	1586598.0758
L2	28+23.78	50.00	682100.5277	1586875.5221
L2	31+19.88	43.00	682059.6498	1587157.9050
L2	30+35.00	-33.55	682154.5108	1587094.6079
L2	30+83.00	-72.96	682181.3191	1587152.2688
L2	31+54.00	42.00	682051.2268	1587190.9844
L2	32+16.67	82.88	681994.6866	1587239.9937
L2	32+88.93	27.74	682027.8267	1587324.6283
L2	32+70.35	55.66	682006.0926	1587299.0900

DESIGN ALIGNMENTS

L2

TYPE	STATION	NORTH	EAST
POT	10+00.00	682923.2269	1585282.3230
PC	13+90.94	682649.6680	1585561.6099
PT	20+88.41	682310.1332	1586161.8509
PC	25+59.97	682191.3938	1586618.2157
PRC	28+23.78	682150.4446	1586878.4037
PT	31+19.88	682100.9914	1587169.7318
POT	33+95.89	682025.0766	1587435.0994

DRI1

TYPE	STATION	NORTH	EAST
POT	10+00.00	682194.1489	1586867.5326
PC	10+33.39	682185.1208	1586899.6784
PT	10+43.52	682183.3847	1586909.6462
PC	11+04.72	682179.0376	1586970.6911
PT	11+31.67	682164.3395	1586991.7225
POT	11+61.36	682137.2510	1587003.8832

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
**B4257\_LS\_CONTROL\_090112.TXT**

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⊙ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B4257 GPS-1"  
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
NORTHING: 682419.9836(ft) EASTING: 1585939.8334(ft)  
ELEVATION: 694.36(ft)  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986453  
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4257 GPS-1" TO -L2- STATION 10+00.00 IS  
N 52°34'13" W 827.99'  
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE





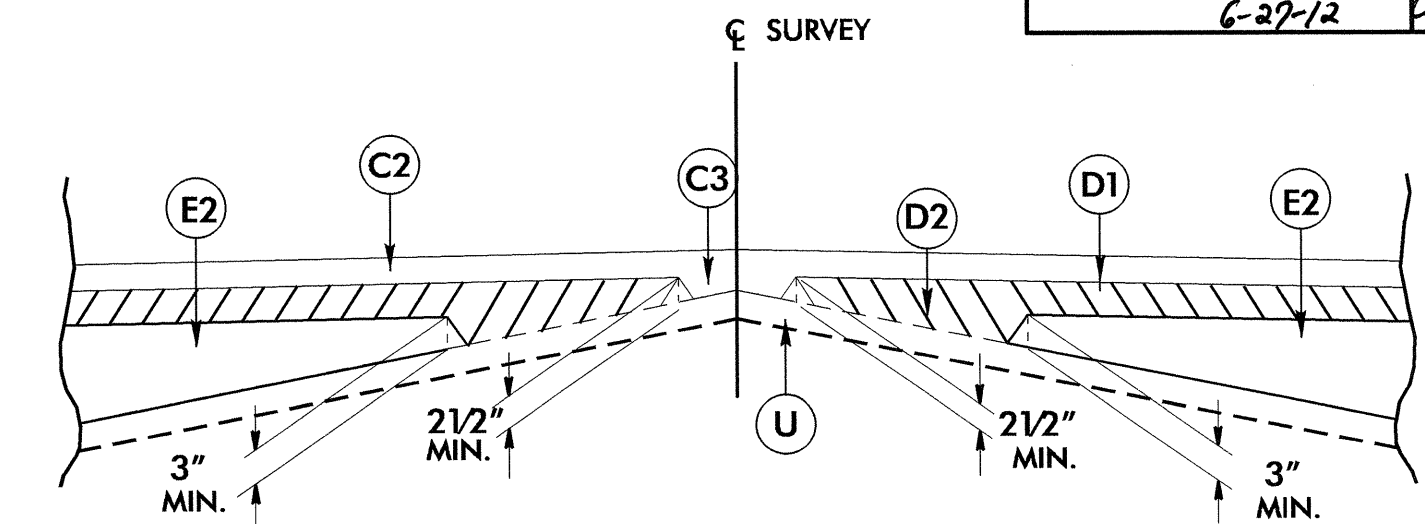
6/22/09

# PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

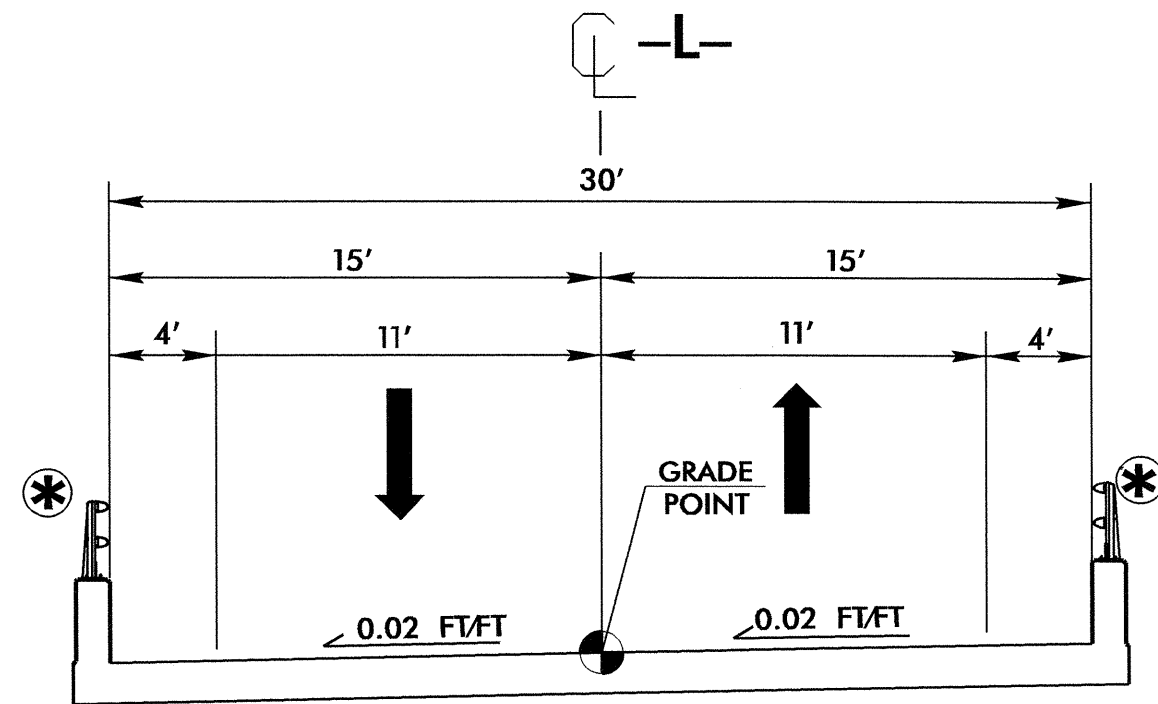
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	U	EXISTING PAVEMENT.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.	
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.		

PROJECT REFERENCE NO. B-4257	SHEET NO. 2
ROADWAY DESIGN ENGINEER SEAL 33295 STEVEN D. KENDALL 6-27-12	PAVEMENT DESIGN ENGINEER SEAL 22898 CLARK S. MORRISON 6/21/12

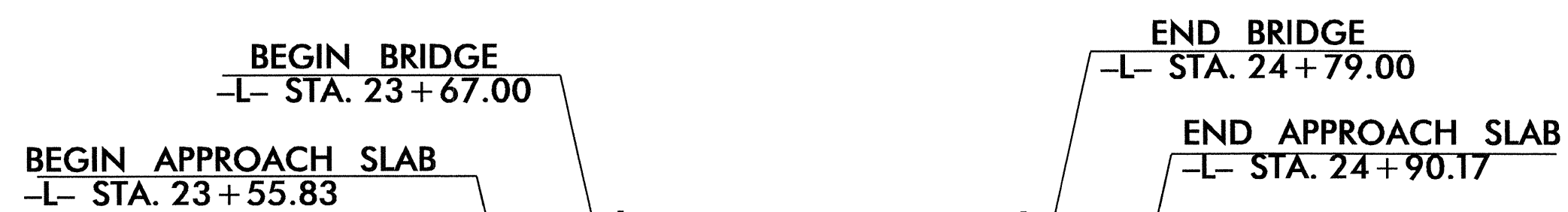


Detail Showing Method of Wedging

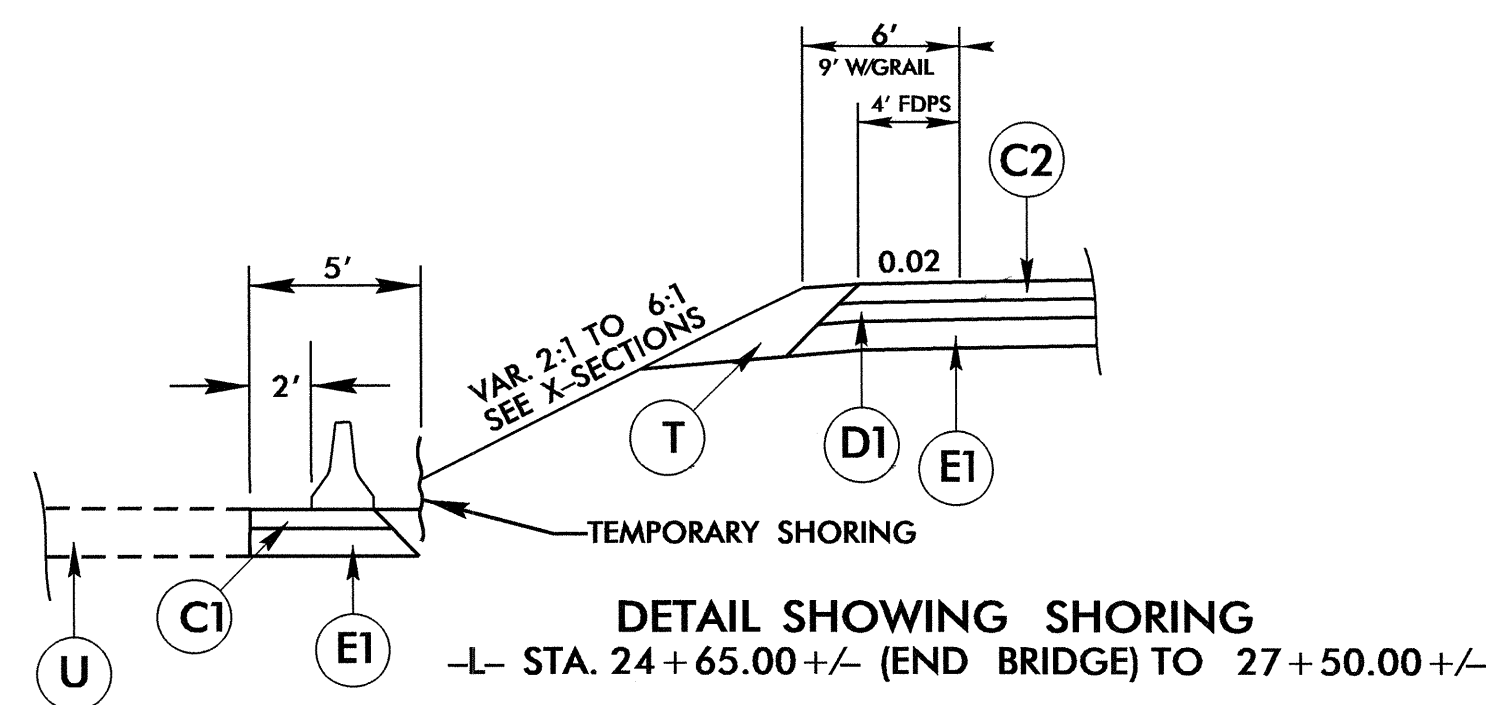
TYPICAL SECTION ON STRUCTURE



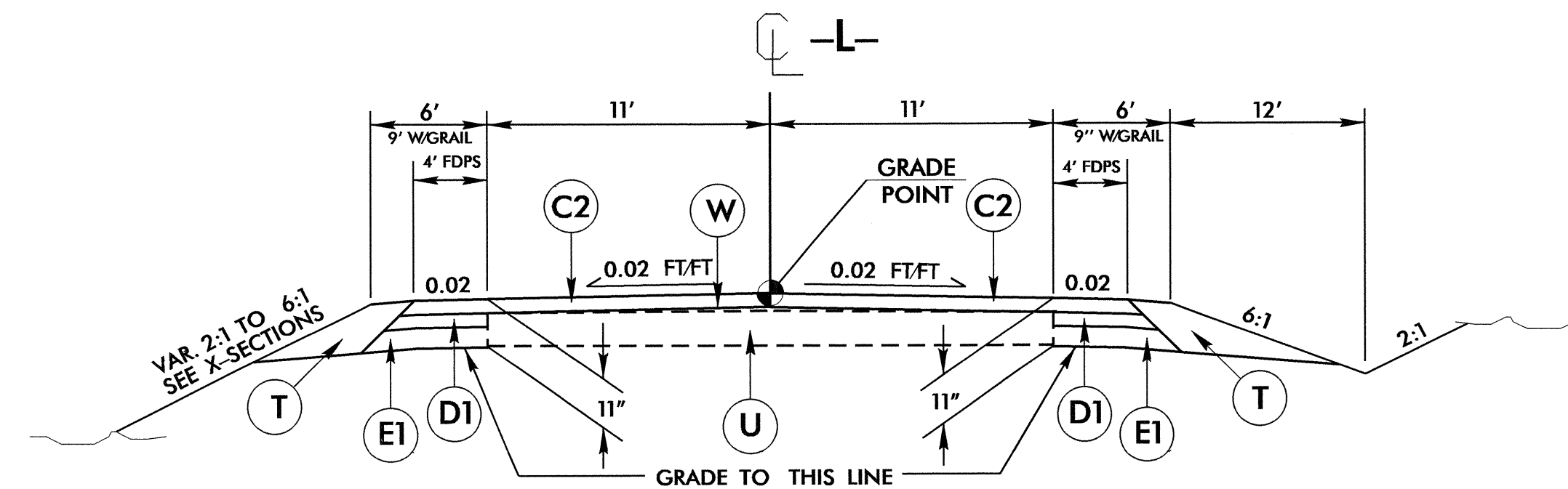
\* BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT



SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP  
\* STRUCTURE ANCHOR UNITS REQUIRED



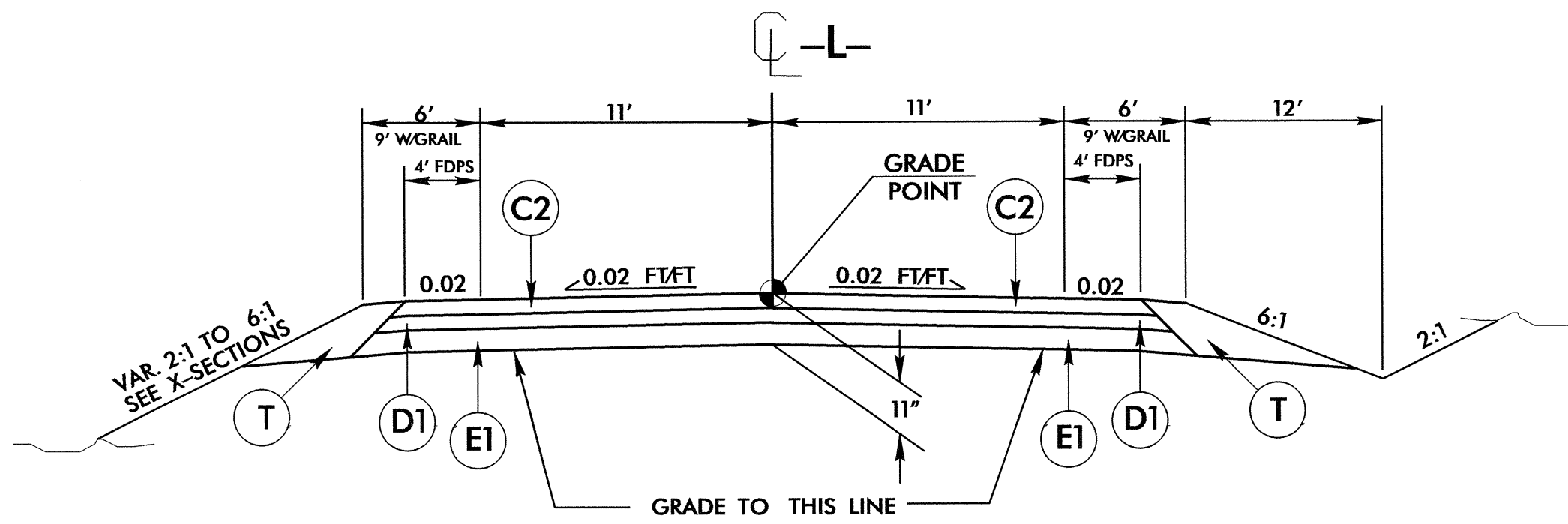
DETAIL SHOWING SHORING  
-L- STA. 24+65.00 +/- (END BRIDGE) TO 27+50.00 +/-



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

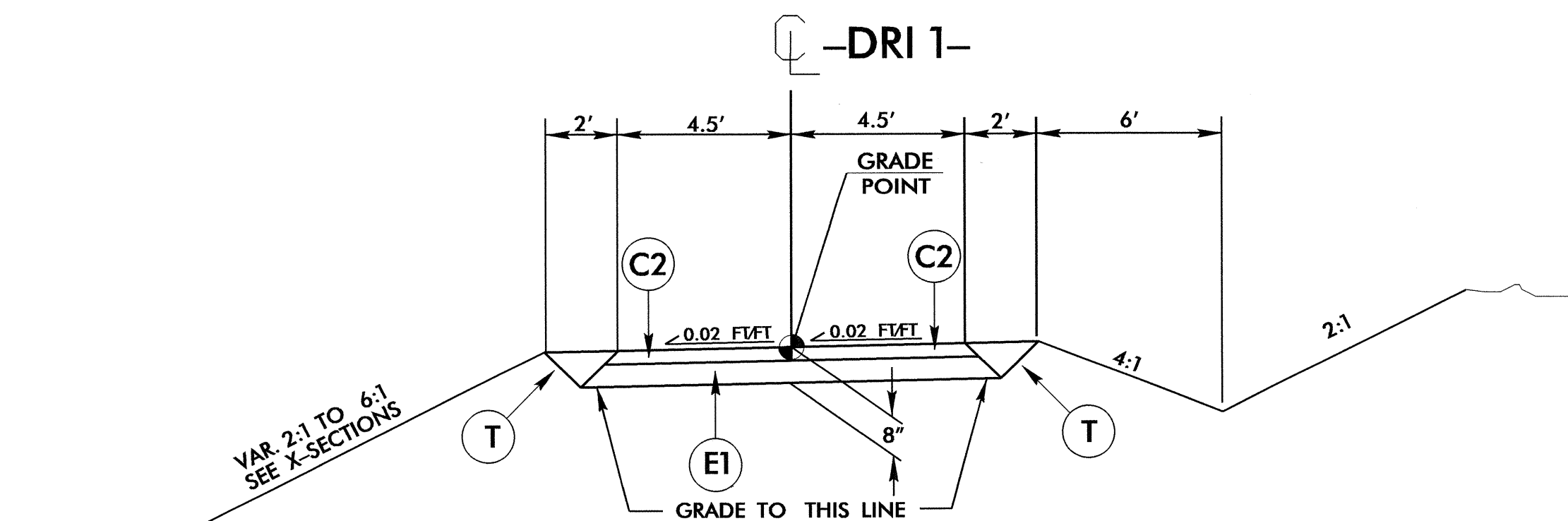
-L- STA. 13+90.94 TO 14+50.00  
-L- STA. 30+40.00 TO 32+00.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 14+50.00 TO 23+67.00 (BEG. BRIDGE)  
-L- STA. 24+79.00 (END BRIDGE) TO 30+40.00



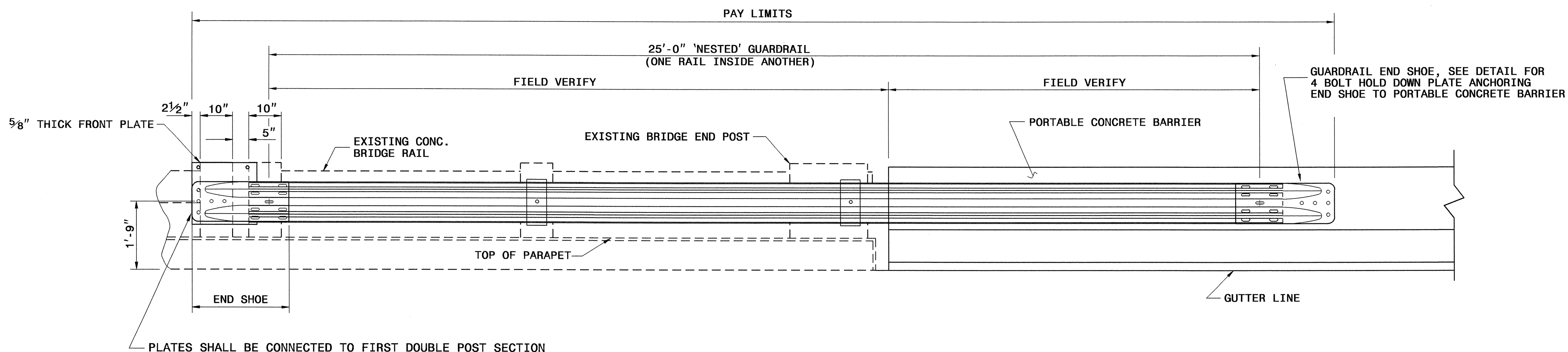
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

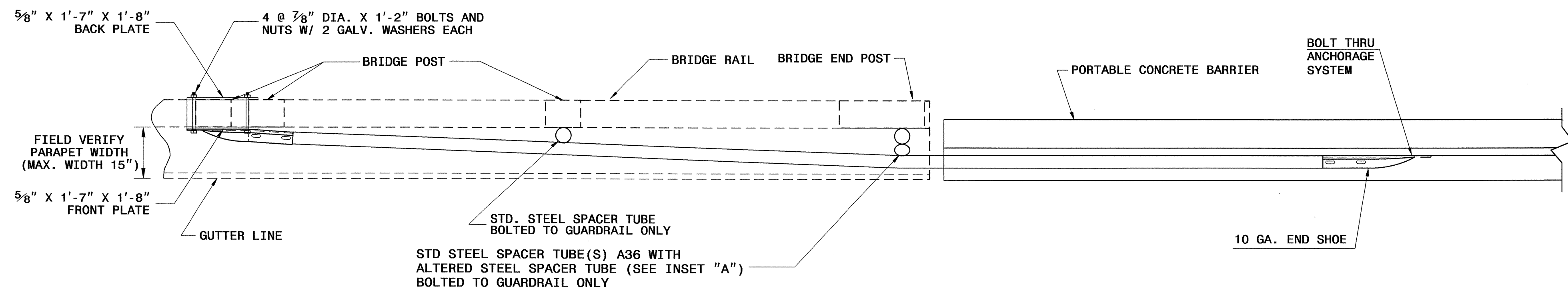
-DRI 1- STA. 10+00.00 TO 11+61.36

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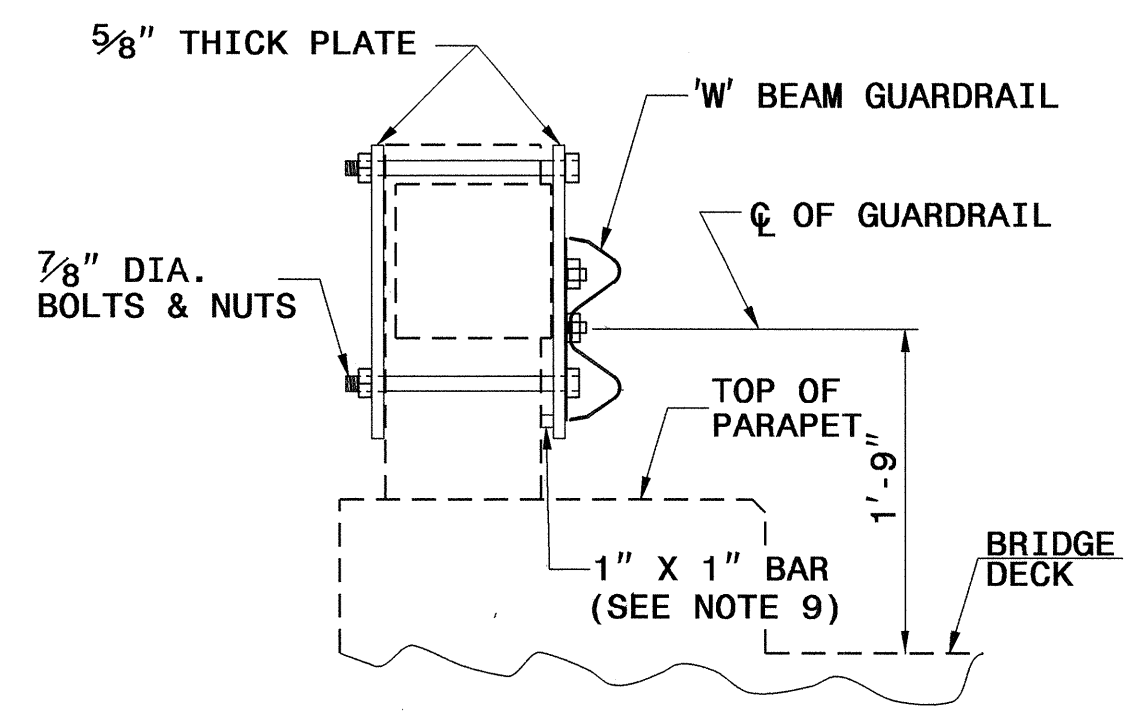




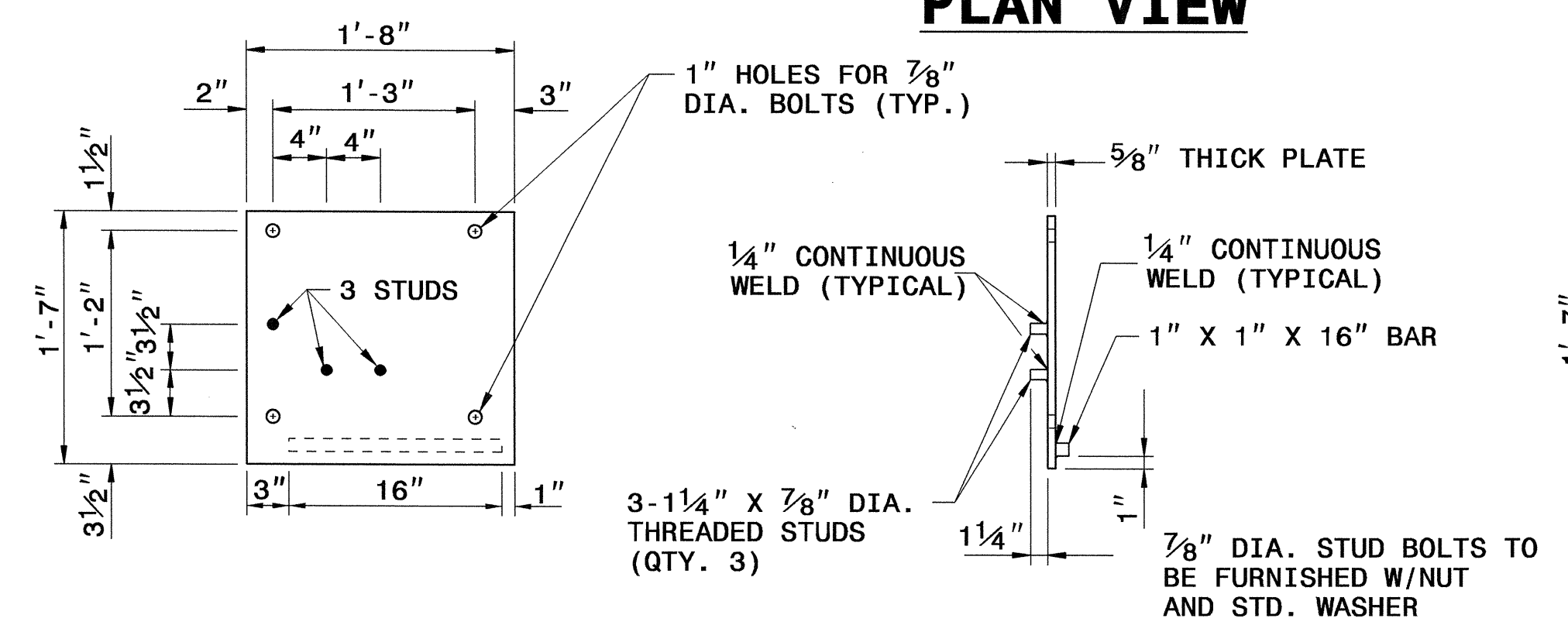
**ELEVATION VIEW**



**PLAN VIEW**



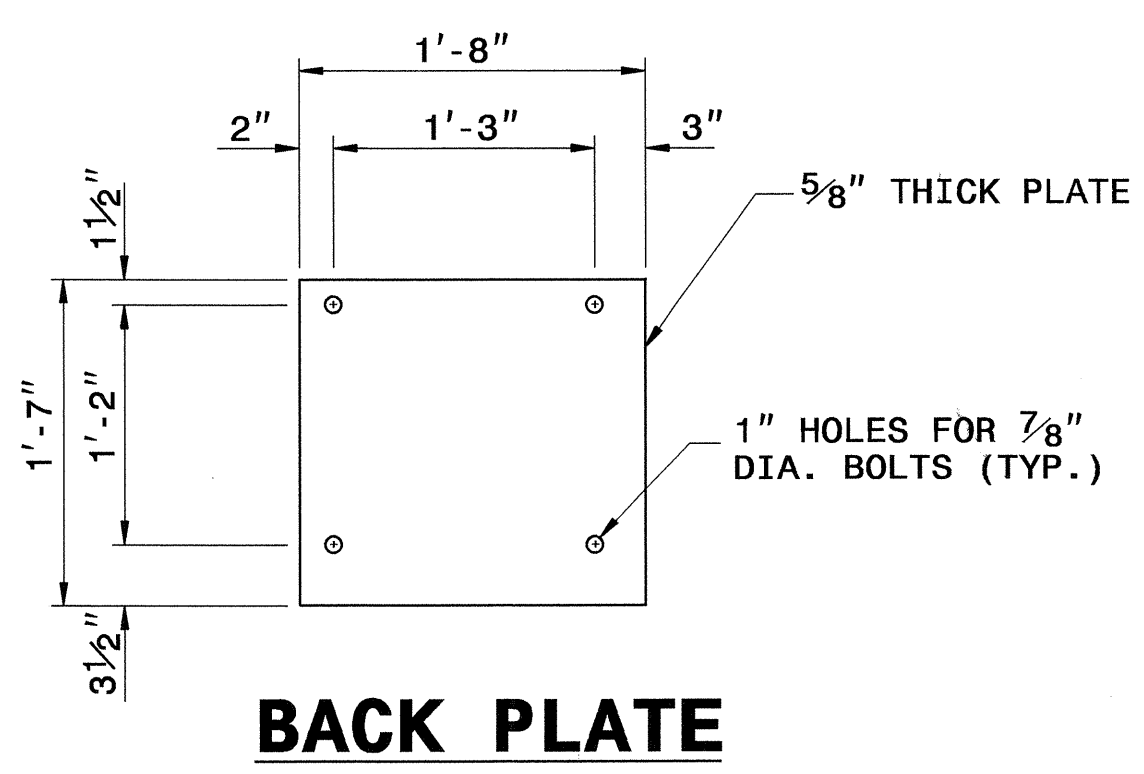
**SECTION VIEW**



STUDS MAY BE ADJUSTED TO MEET FIELD CONDITIONS

**FRONT VIEW** **SIDE VIEW**

**FRONT PLATE**



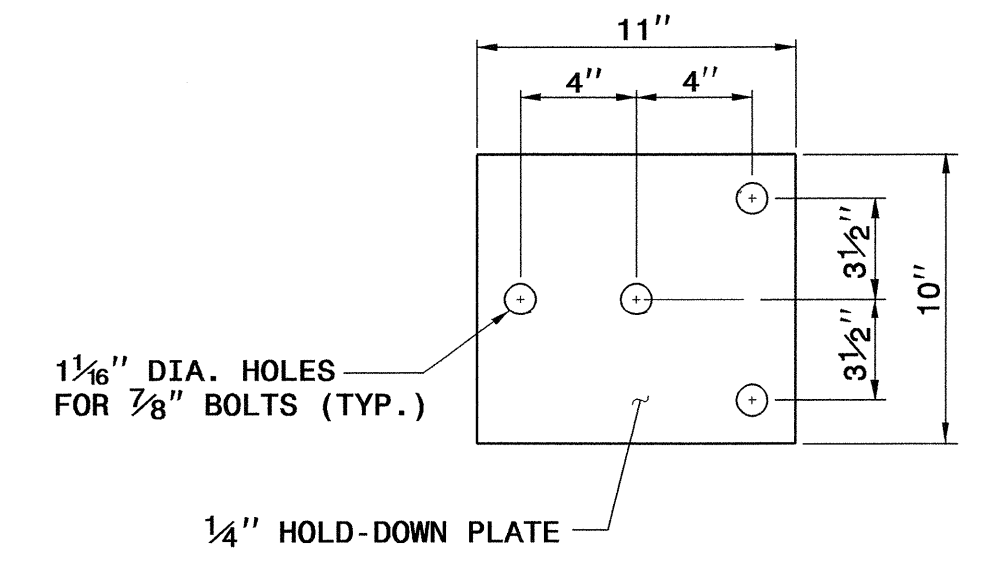
**BACK PLATE**

**NOTES FOR 4 BOLT HOLD DOWN PLATE**

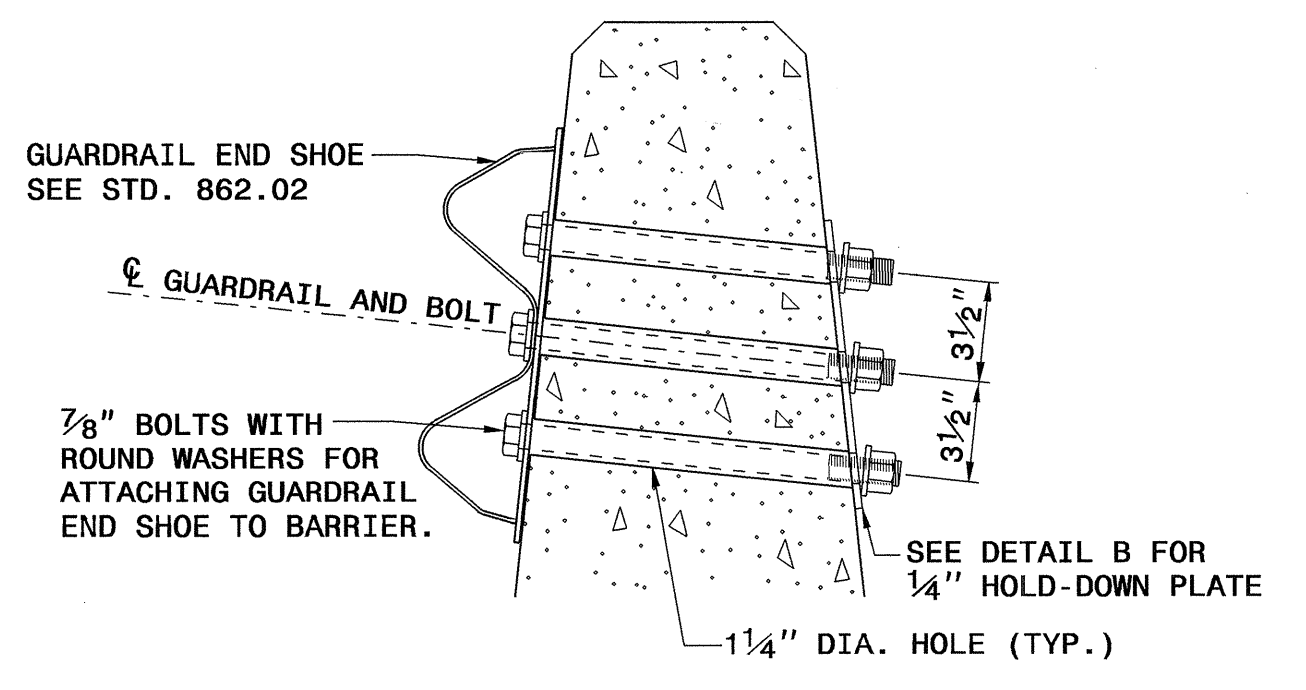
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

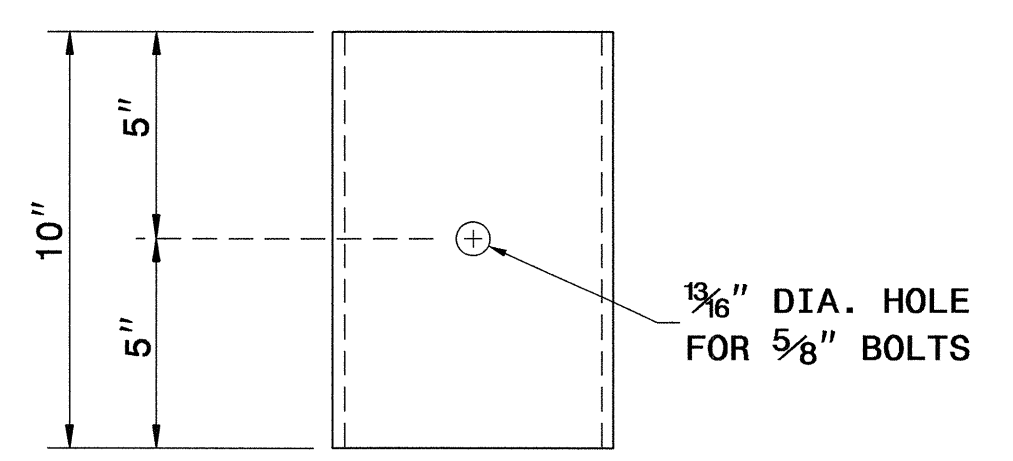
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1 1/4" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



**4 BOLT HOLD DOWN PLATE**

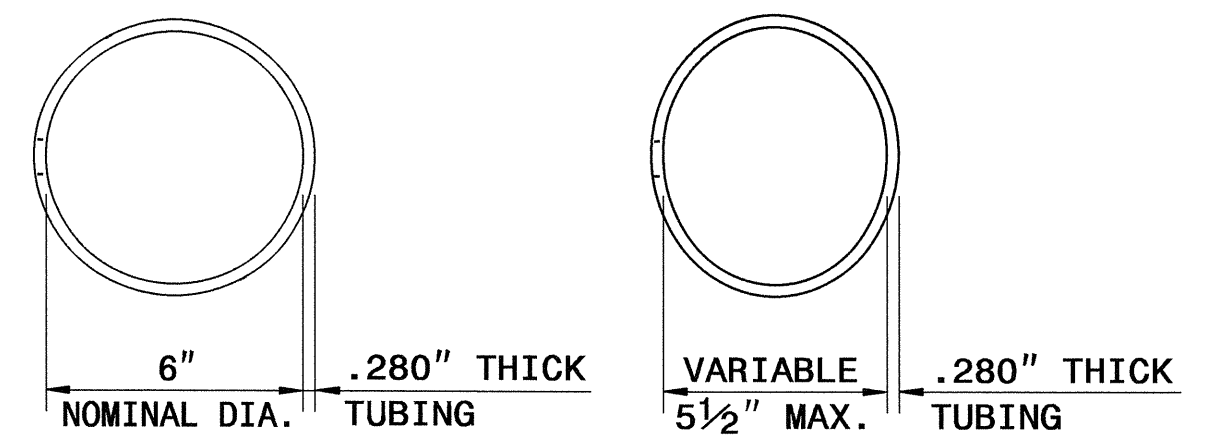


**PART SECTION OF BARRIER OR RAIL THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE**



**FRONT VIEW**

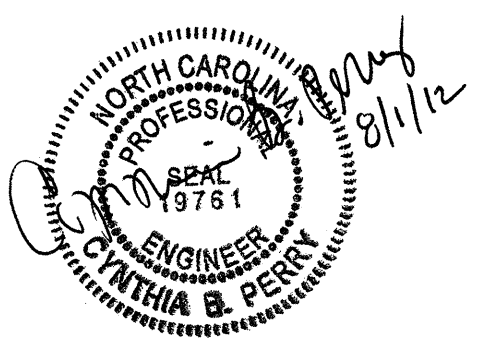
**STEEL SPACER TUBE**



**PLAN VIEW**

**PLAN VIEW INSET "A"**

- GENERAL NOTES:**
- USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  - TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
  - USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  - ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
  - INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
  - DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
  - KEEP TOE OF PORTABLE CONCRETE BARRIER FLUSH WITH FACE OF PARAPET.
  - ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
  - 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.



**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**TEMPORARY ANCHOR UNIT TYPE W-BEAM**

ORIGINAL BY: E.E. WARD	DATE: 4-03
MODIFIED BY: E.E. WARD	DATE: 6-04
CHECKED BY: <i>Jul Stank</i>	DATE: 5/29/12
FILE SPEC: \\usr\detail\stand\862stds\anc.dgn	

V:\TIME\1205\120501\120501.dwg  
 PLOT DATE: 5/29/12 10:58:11 AM  
 PLOT BY: JLD  
 PLOT SCALE: 1:1  
 PLOT SHEET: 2-A  
 PLOT TOTAL SHEETS: 2  
 PLOT DEVICE: HP DesignJet 5000

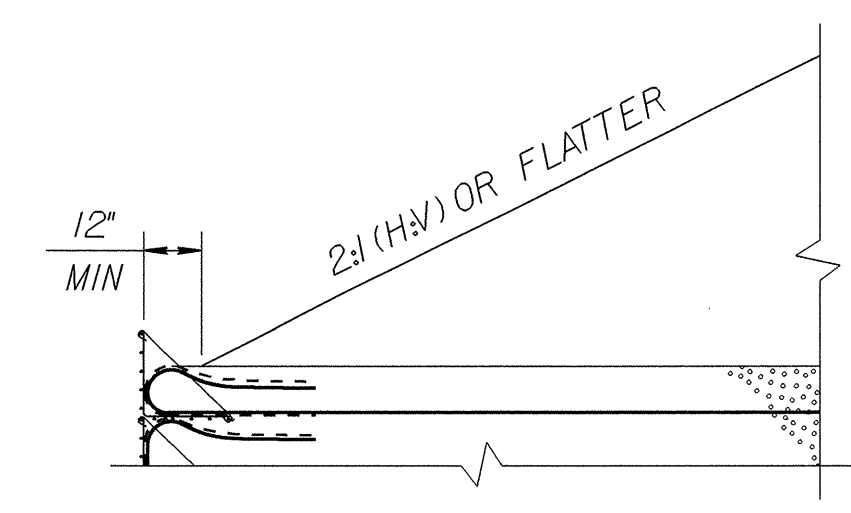
GEOTECHNICAL ENGINEER

ENGINEER

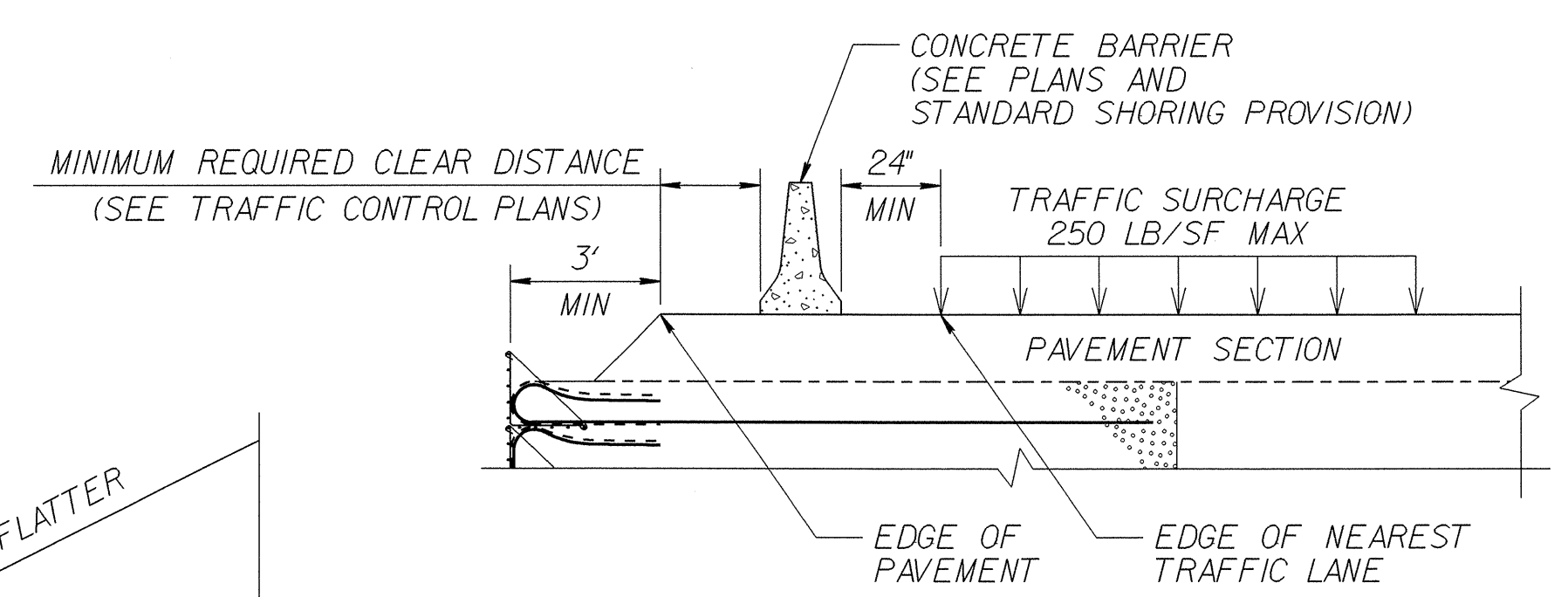


Scott A. Hadden 11/18/11  
SIGNATURE DATE

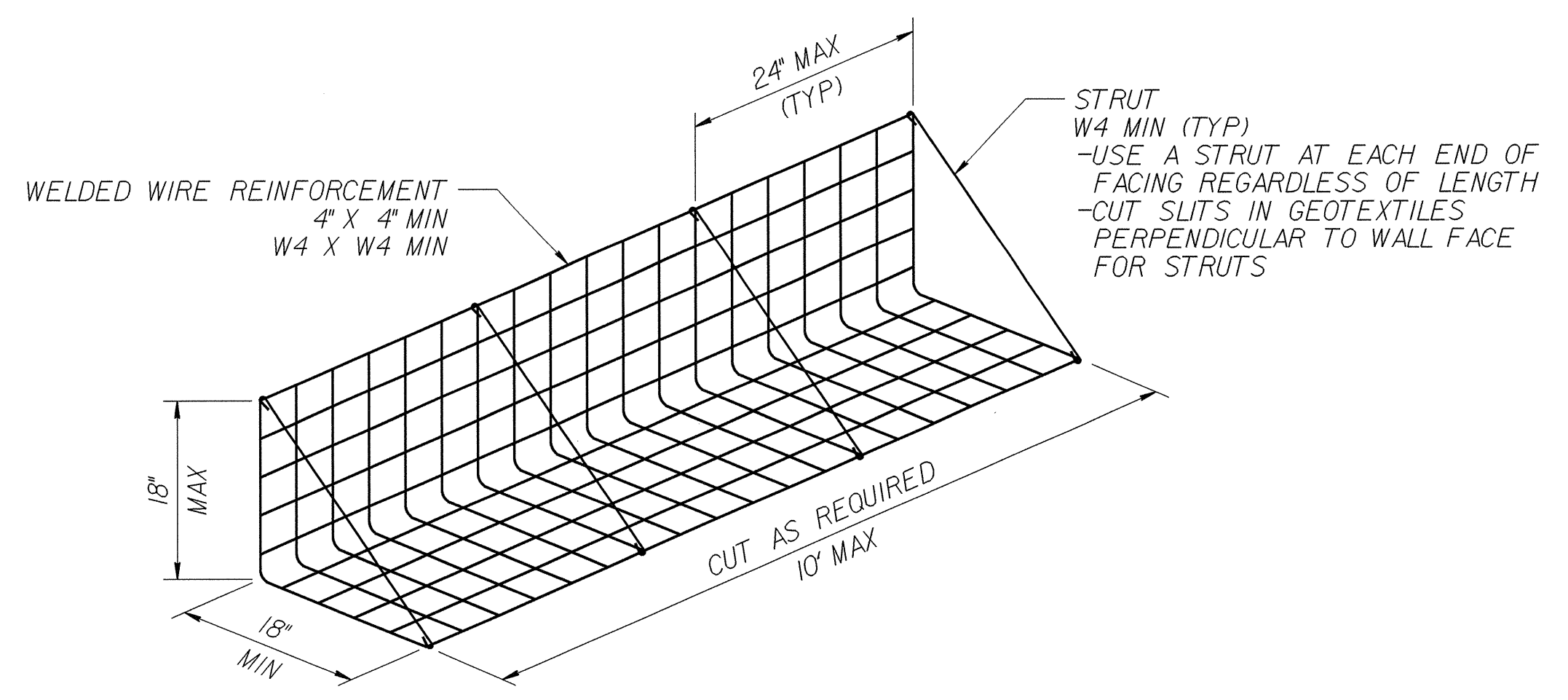
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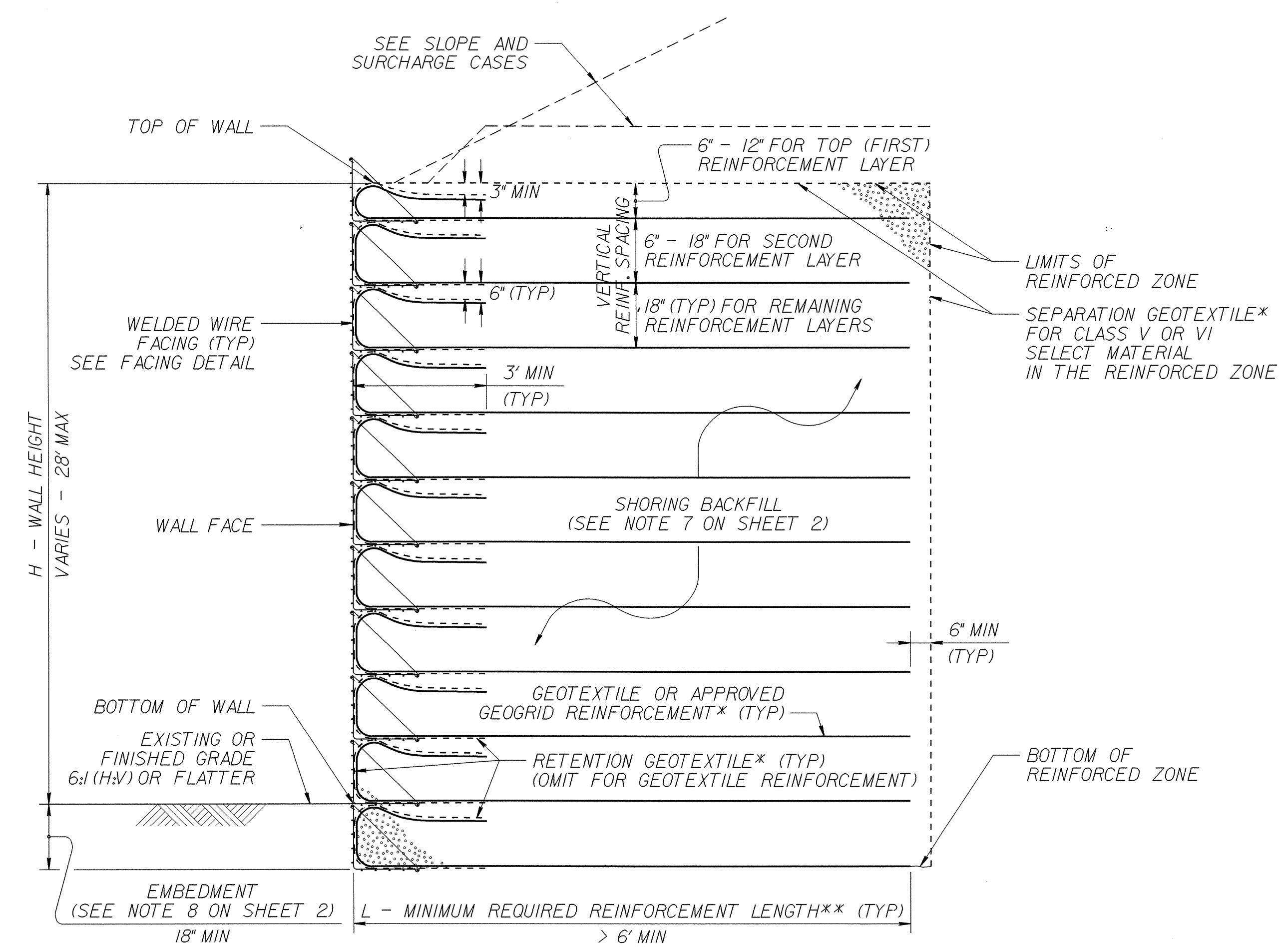
**SLOPE CASE**



**SURCHARGE CASE**

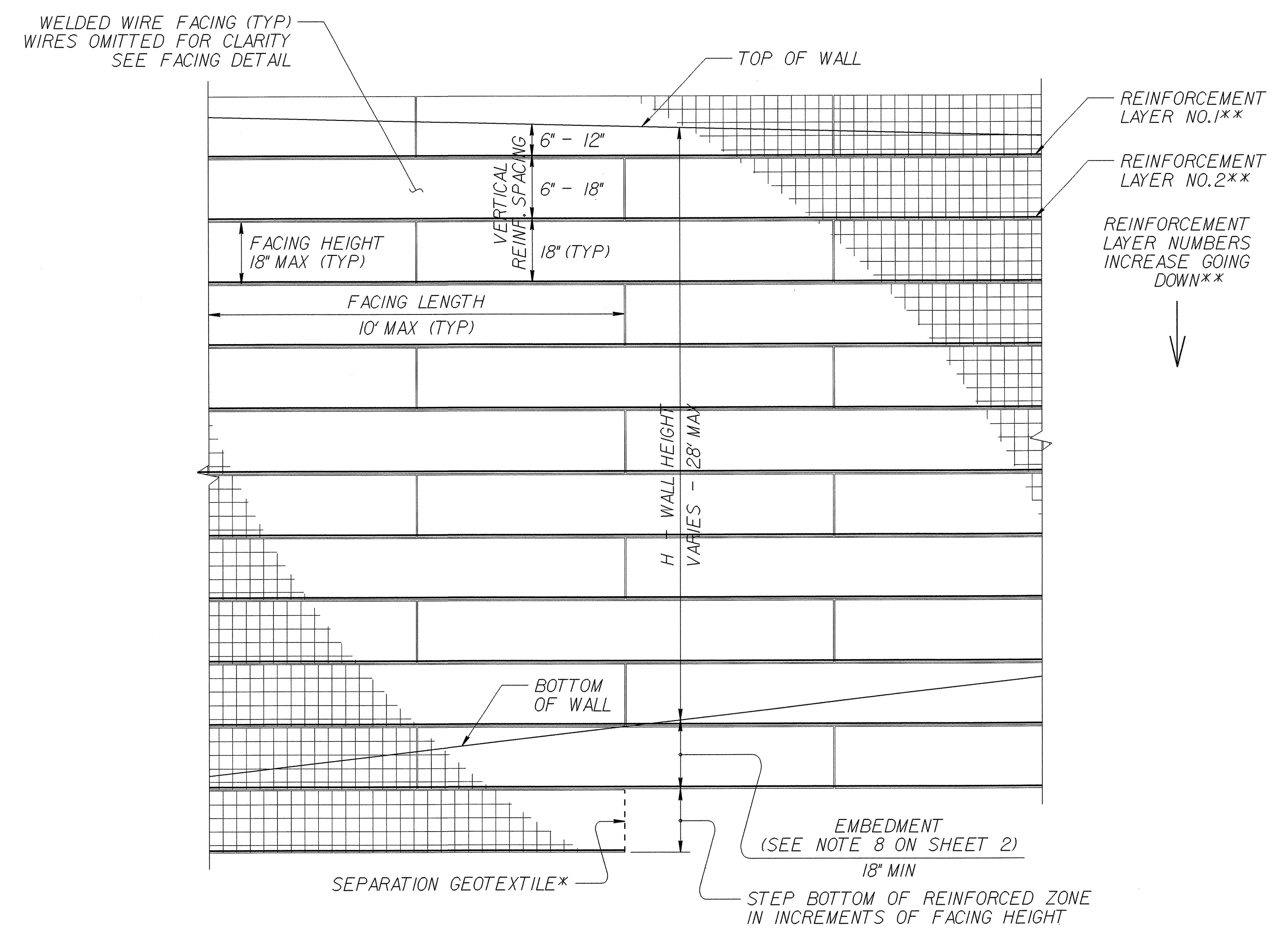


**FACING DETAIL**



**STANDARD TEMPORARY WALL**

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)  
\*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.  
\*\*SEE REINFORCEMENT TABLES ON SHEET 3.




**STANDARD TEMPORARY WALL - PARTIAL ELEVATION**

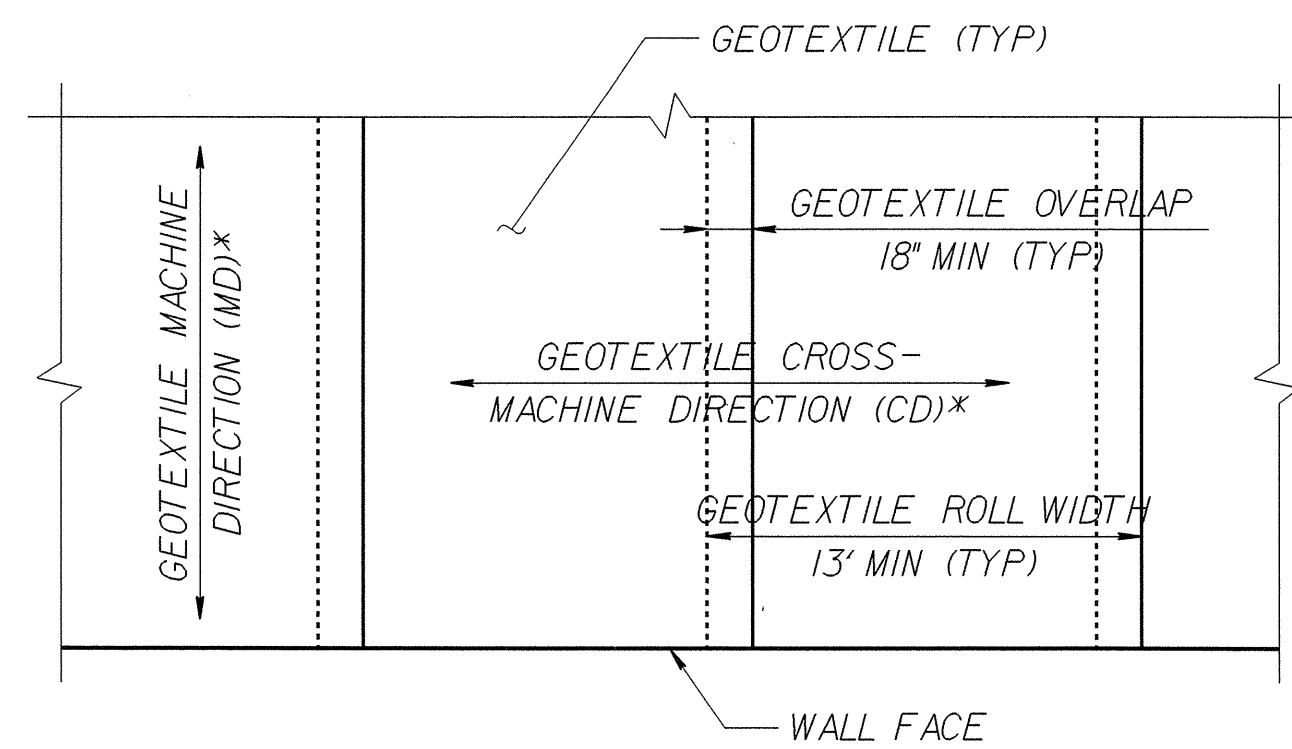
\*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.  
\*\*SEE REINFORCEMENT TABLES ON SHEET 3.

**GEOTECHNICAL ENGINEERING UNIT**  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

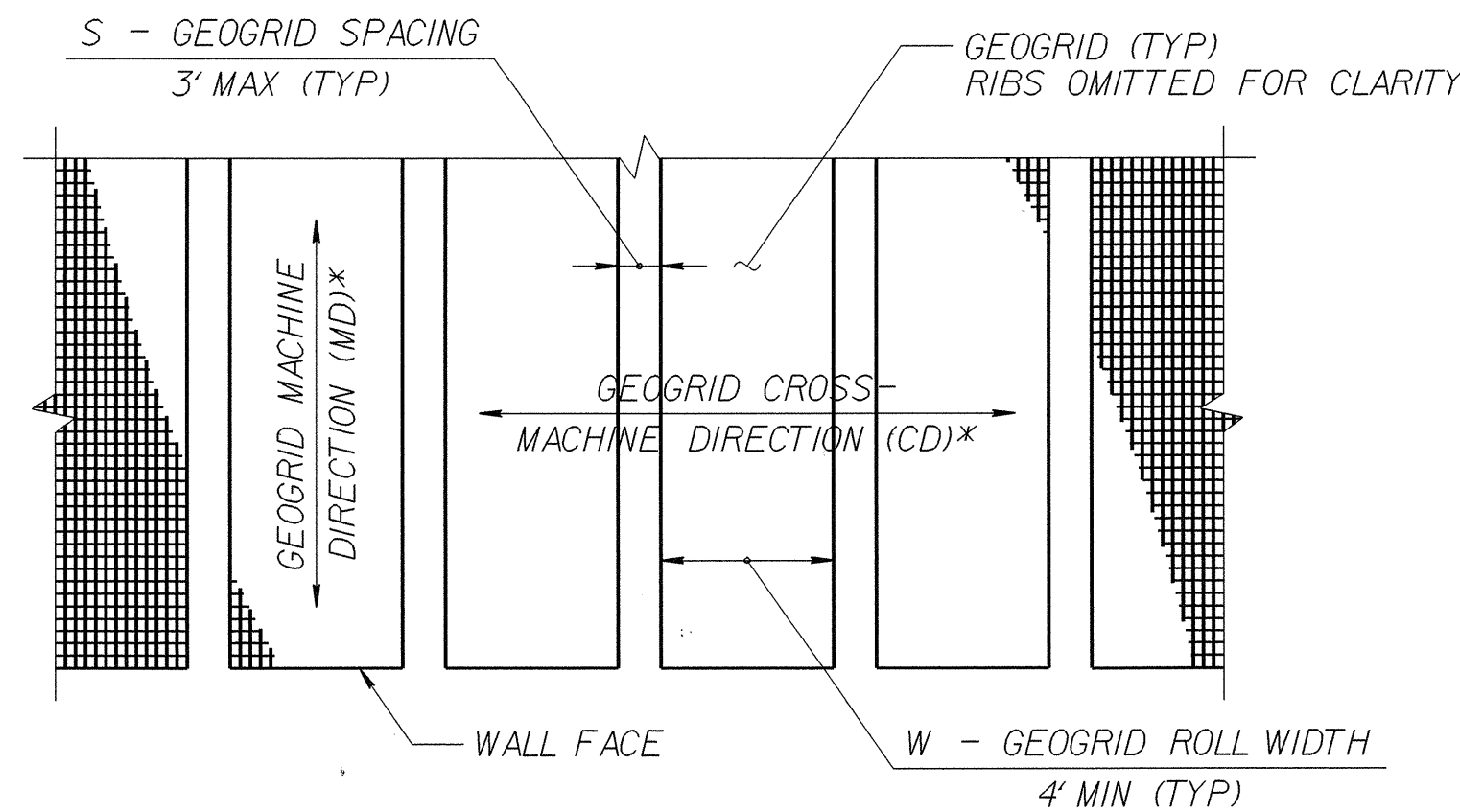
STANDARD DRAWING NO. 1801.02  
**STANDARD TEMPORARY WALL**  
Sheet 1 of 3  
DATE: 1-17-12



GEOTECHNICAL ENGINEER  
  
 ENGINEER  
 Scott A. Hadden 1/18/11  
 SIGNATURE DATE SIGNATURE DATE

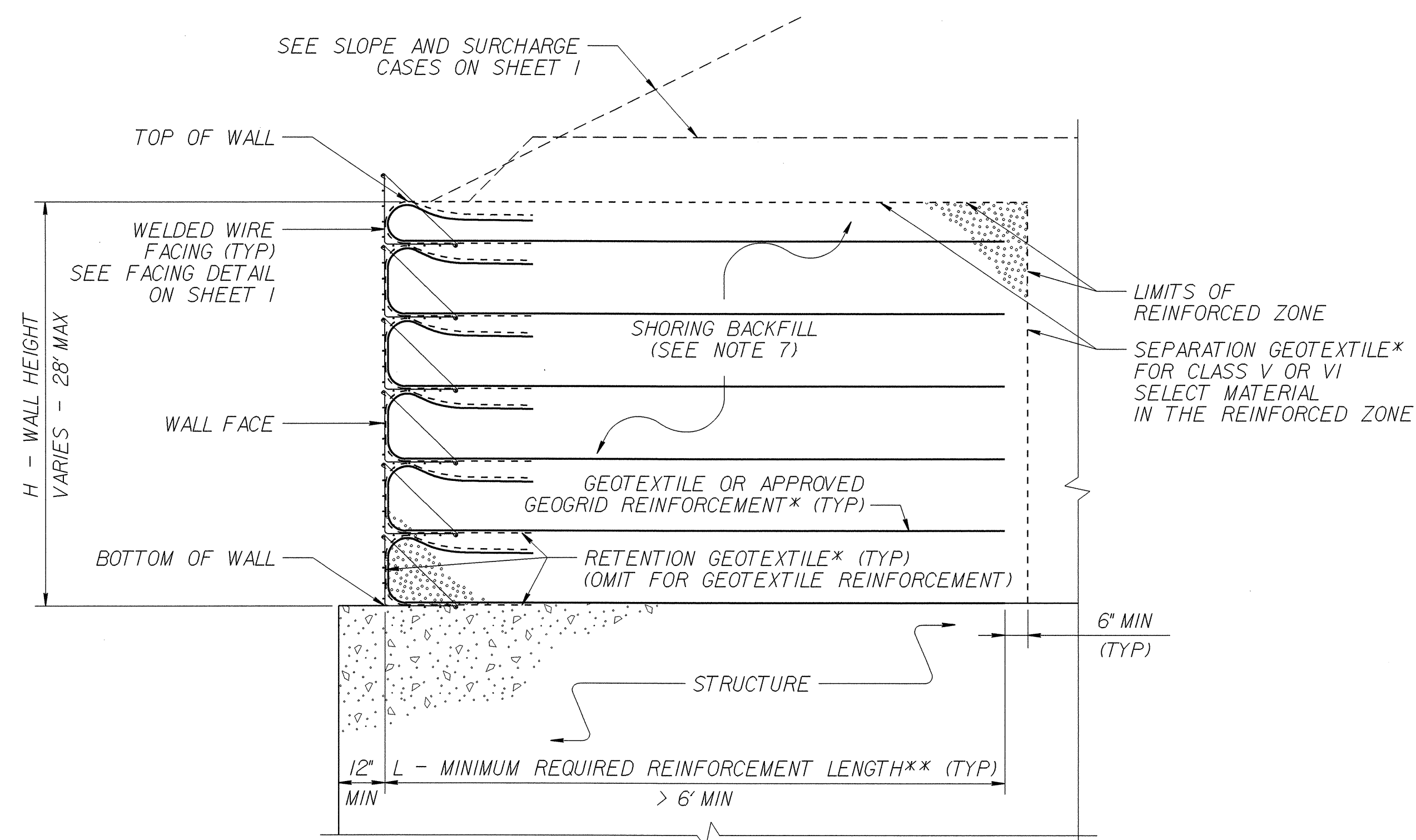


**GEOTEXTILE PLACEMENT**  
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



**GEOGRID PLACEMENT**  
(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT -  
 $\frac{W}{W+S} \times 100 \geq 80\%$ ,  
SEE NOTE 11)

**GEOSYNTHETIC PLACEMENT DETAILS**  
(PLAN VIEW)  
\*SEE NOTE 12.



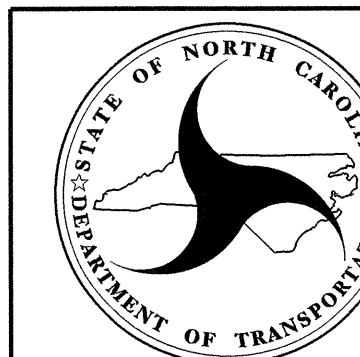
**TEMPORARY WALL ON STRUCTURE DETAIL**  
\*SEE GEOSYNTHETIC PLACEMENT DETAILS.  
\*\*SEE REINFORCEMENT TABLES ON SHEET 3.

**NOTES:**

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  LB/CF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  LB/SF
- DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
- DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
- EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
- DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
- GEOGRIDS ARE APPROVED FOR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) BASED ON MATERIAL TYPE. FOR DETAILS OF APPROVED GEOGRIDS AND SHORT-TERM DESIGN STRENGTHS, SEE [www.ncdot.org/doh/operations/materials/soils/gep.html](http://www.ncdot.org/doh/operations/materials/soils/gep.html). DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

- FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
- AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH THE FOLLOWING CONDITIONS OCCUR:  
-  $W$  (REINFORCEMENT ROLL WIDTH)  $\geq L$  (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND  
- REINFORCEMENT STRENGTH IN CD  $\geq$  MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
- SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION.
- DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
- DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
- CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
- FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
- FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.




**GEOTECHNICAL ENGINEERING UNIT**  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD DRAWING NO. 1801.02

**STANDARD TEMPORARY WALL**  
 Sheet 2 of 3

DATE: 1-17-12



GEOTECHNICAL ENGINEER  SEAL 022246 ENGINEER SCOTT A. HADDEN	ENGINEER     SIGNATURE DATE
--	--

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
SLOPE CASE	> 0	CLASS II, TYPE I, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27	
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	
		A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15	16	16	17	17	18	19	19	20	
		CLASS II, TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	19	
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	16	16	17	18	18	

**L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)**  
(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

\*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

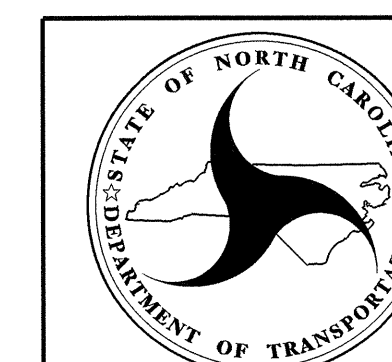
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

**GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)**

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

**GEOGRID REINFORCEMENT SHORT-TERM DESIGN STRENGTH (LB/FT)**  
(SEE NOTE 10 ON SHEET 2.)

**MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD**  
(SEE NOTE 9 ON SHEET 2.)  
\*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



**GEOTECHNICAL ENGINEERING UNIT**  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL  
Sheet 3 of 3

DATE: 1-17-12

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)**

Table with columns: STATION, LOCATION (L.R.T. OR CL), STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, INVERT ELEVATION, DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE (UNLESS NOTED OTHERWISE), CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED), 24" R.C. PIPE (CLASS IV), R.C.P. PIPE CULVERTS, CONTRACTOR DESIGN PIPE, 15" SIDE DRAIN PIPE, 18" SIDE DRAIN PIPE, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME GRATES AND HOOD STANDARD 840.03, TYPE OF GRATE, J.B. STD. 840.31 OR 840.32, G.D.I. TYPE "B" STD. 840.18 OR 840.27, G.D.I. FRAME WITH TWO GRATES STD. 840.24, T.B.D.I. STD. 840.35, G.D.I. (NS) FRAME WITH TWO GRATES STD. 840.29, REINFORCED ENDWALL EXTENSION (Cubic Yards), CORR. STEEL ELBOWS NO. & SIZE, CONC. COLLARS CL. "B" C.Y. STD. 840.72, CONC. & BRICK PIPE PLUG. C.Y. STD. 840.71, PIPE REMOVAL LIN.F., and REMARKS. Includes a list of abbreviations.





STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

# GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.  
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.  
 G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS				ANCHORS DEDUCTIONS				IMPACT ATTENUATOR TYPE 350			REMARKS
				STRAIGHT	SHOP CURVED	TEMPORARY GUARDRAIL	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350 (TL-3)	AT-1	TYPE III	TEMP. TYPE W-BEAM							PERMITTED	
B-4257																										
<b>TEMPORARY GUARDRAIL ANCHOR</b>																										
-L-	24+65.23	END BRIDGE																							SEE DETAIL 2-A	
-L-	20+23.25	23+67.00	RT.	343.75'			21+50.00		6'	9'	50'															
-L-	24+79.00	29+10.25	RT.	431.25'			28+00.00		6'	9'	50'															
-L-	24+79.00	29+10.25	LT.	431.25'			28+00.00		6'	9'	50'															
-L-	20+85.75	23+67.00	LT.	281.25'			21+50.00		6'	9'	50'															
			SUBTOTAL	1,487.5'																						
			MINUS ANCHOR DEDUCTION	-275'																						
			B-4257 PROJECT TOTAL	1,212.5'																					5 ADDITIONAL POSTS	
														TOTAL	4		4	1							B-4257 TOTAL DEDUCTION = -275'	

### BREAKING OF EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION TO STATION	LOCATION LT/RT/CL	YD <sup>2</sup>	
-L-	28+70	29+33	LT	99.33
-L-	29+45	30+22	LT	35.67
			TOTAL:	135.00
			SAY:	140

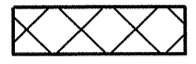
### REMOVAL OF EXISTING ASPHALT PAVEMENT

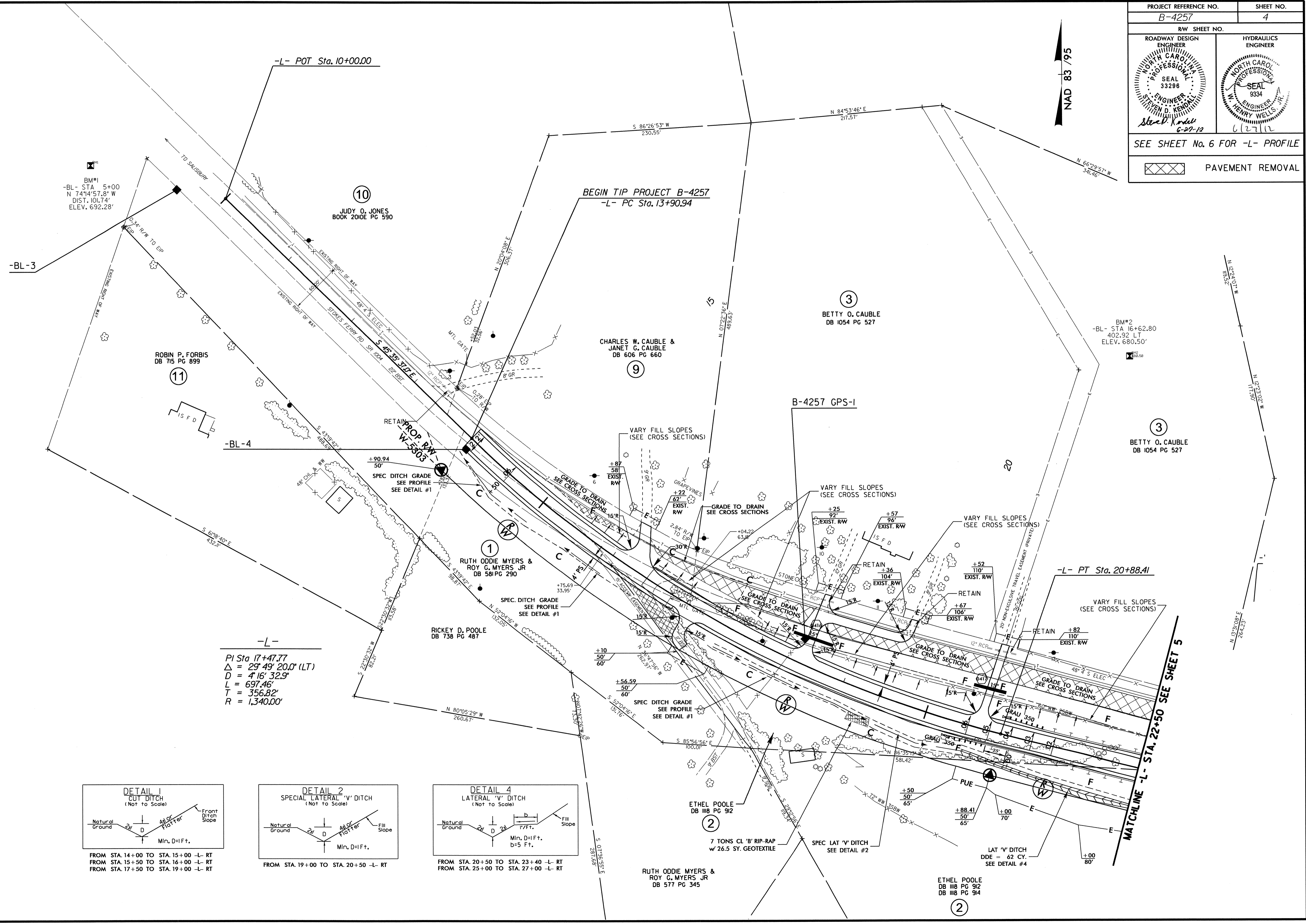
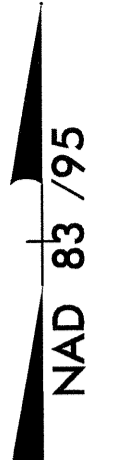
SURVEY LINE	STATION TO STATION	LOCATION LT/RT/CL	YD <sup>2</sup>	
-L-	13+50	16+14	LT	205.00
-L-	16+28	18+40	LT	485.44
-L-	18+50	20+61	LT	382.00
-L-	20+70	23+80	LT	758.78
-L-	24+66	28+70	LT	829.11
-L-	16+30	17+05	RT	88.56
			TOTAL:	2,748.89
			SAY:	2755

### PARCEL INDEX

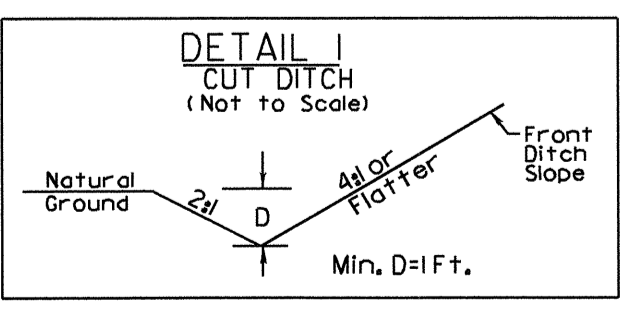
PARCEL NUMBER	SHEET NUMBER	PROPERTY OWNWR NAME
1	4	RUTH ODDIE MYERS & ROY G. MYERS JR.
2	4 & 5	ETHEL POOLE
3	4	BETTY CAUBLE
4	5	OTTIS T. POOLE & MICHELLE F. POOLE
5	5	ETHEL POOLE
6	5	DORIS ODDIE
7	5	ODDIS THEODORE POOLE JR. & MICHELLE F. POOLE
8	5	DALE D. FAIRCHILD & SHIRLEY G. HERION
9	4	CHARLES W. & JANET G. CAUBLE
10	4	JUDY O. JONES
11	4	ROBIN P. FORBIS



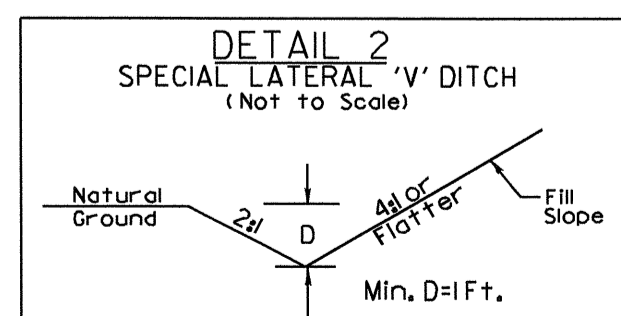
PROJECT REFERENCE NO. B-4257	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER STEVEN D. KENDALL NORTH CAROLINA PROFESSIONAL SEAL 33286 6-27-12	HYDRAULICS ENGINEER HENRY WELLS JR. NORTH CAROLINA PROFESSIONAL SEAL 9334 6/27/12
SEE SHEET No. 6 FOR -L- PROFILE	
 PAVEMENT REMOVAL	



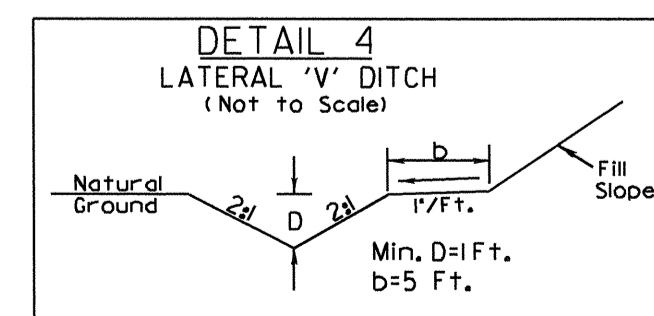
-L-  
 PI Sta 17+47.77  
 $\Delta = 29^{\circ} 49' 20.0''$  (LT)  
 $D = 4' 16'' 32.9''$   
 $L = 697.46'$   
 $T = 356.82'$   
 $R = 1,340.00'$



FROM STA. 14+00 TO STA. 15+00 -L- RT  
 FROM STA. 15+50 TO STA. 16+00 -L- RT  
 FROM STA. 17+50 TO STA. 19+00 -L- RT



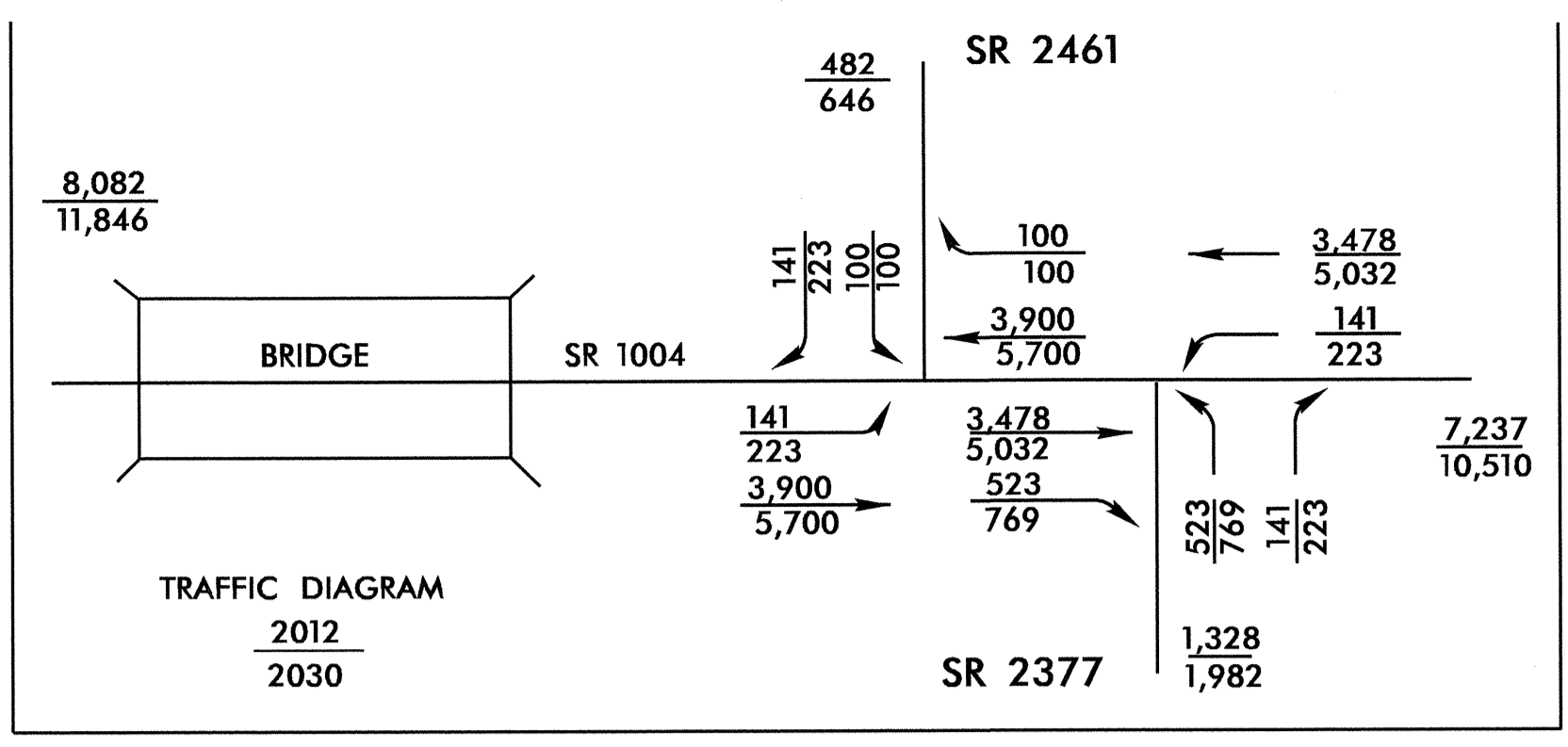
FROM STA. 19+00 TO STA. 20+50 -L- RT



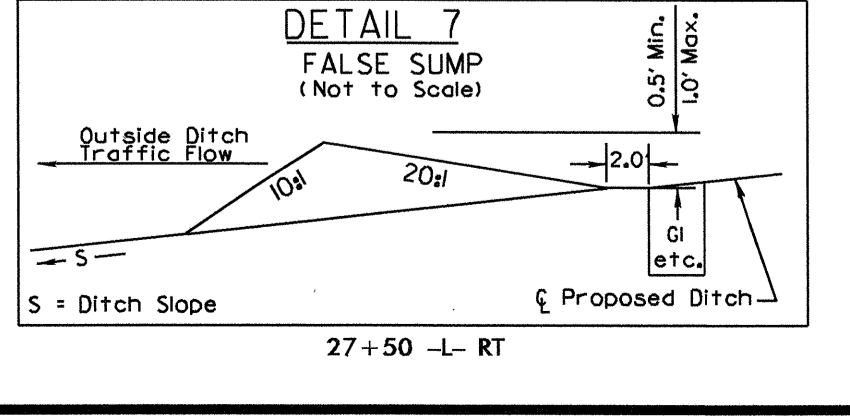
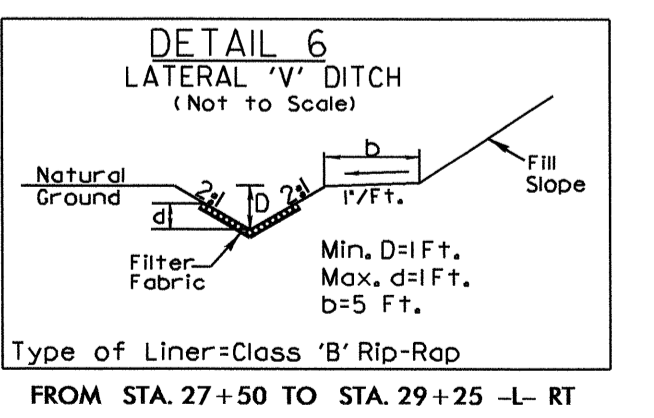
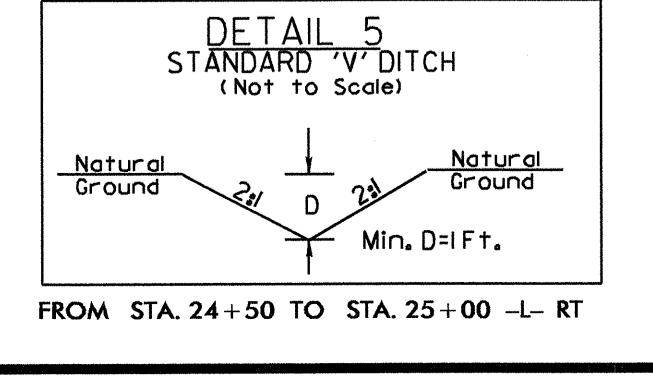
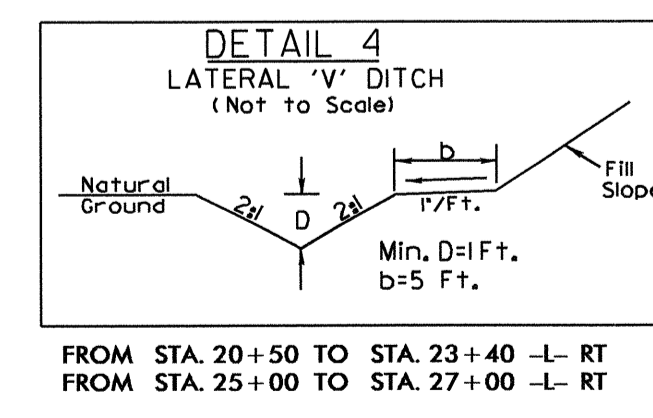
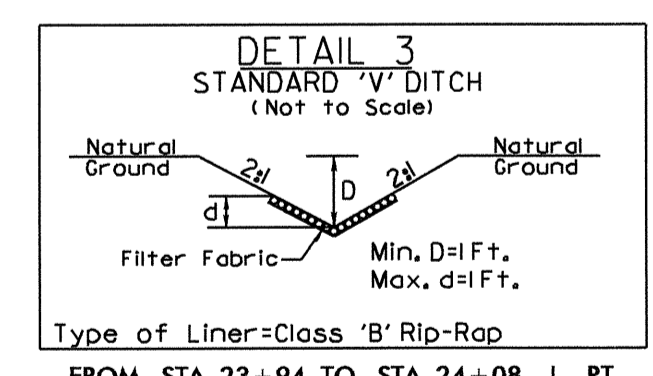
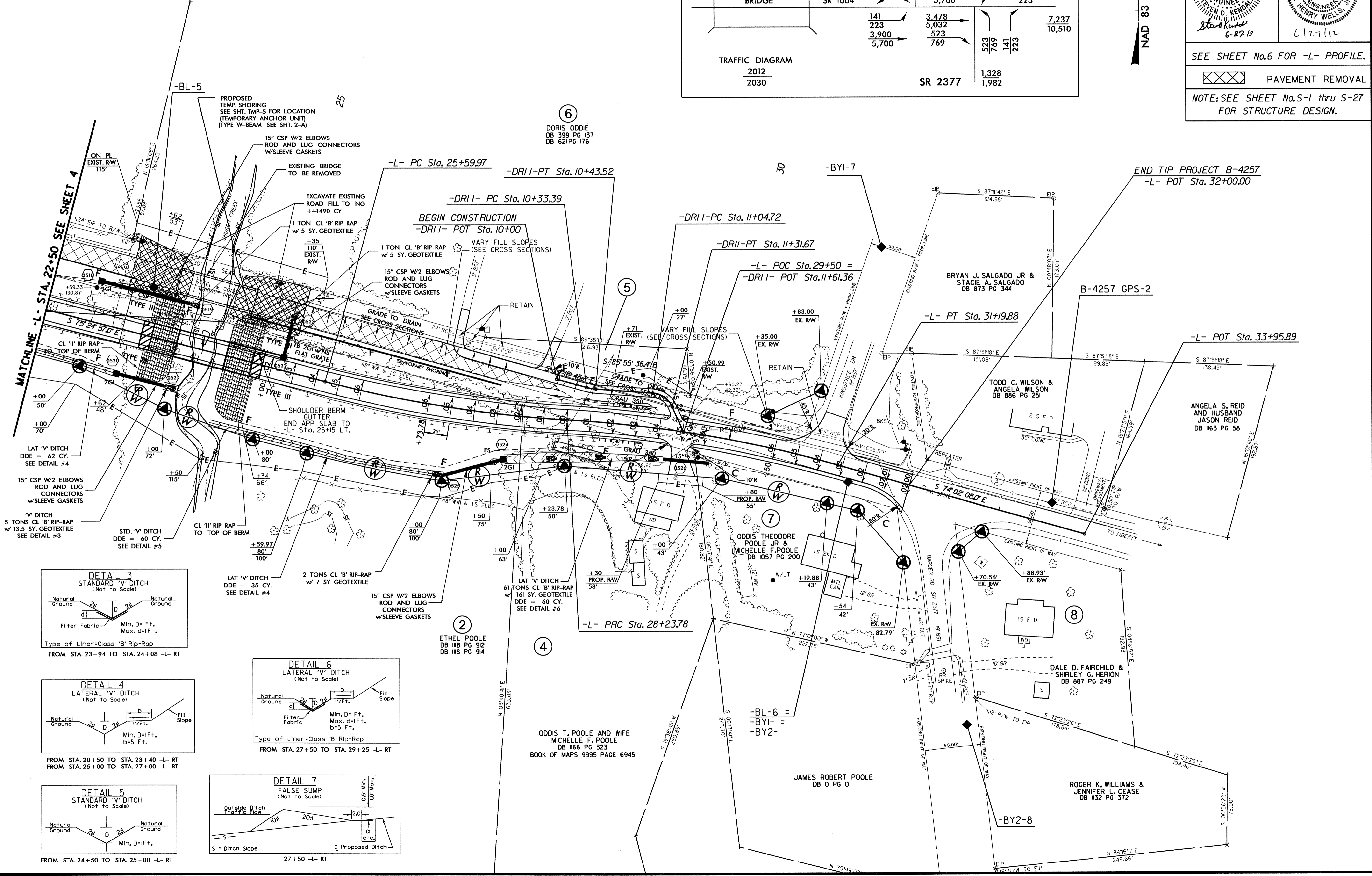
FROM STA. 20+50 TO STA. 23+40 -L- RT  
 FROM STA. 25+00 TO STA. 27+00 -L- RT

MATCHLINE -L- STA. 22+50 SEE SHEET 5

8/17/99  
 2- JUN-2012 09:25  
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 \$\$\$\$12/15/2011 11:58:33 AM



-L-		-DRI I-	
PI Sta 26+92.30 Δ = 11' 16" 49.0" (LT) D = 4' 16" 32.9" L = 263.82' T = 132.34' R = 1,340.00'	PI Sta 29+72.44 Δ = 12' 39" 38.0" (RT) D = 4' 16" 32.9" L = 296.10' T = 148.65' R = 1,340.00'	PI Sta 10+38.47 Δ = 11' 36" 50.6" (LT) D = 11' 35" 29.6" L = 10.14' T = 5.09' R = 50.00'	PI Sta 11+19.67 Δ = 6' 45" 00.6" (RT) D = 22' 10" 59.2" L = 26.94' T = 14.95' R = 25.00'



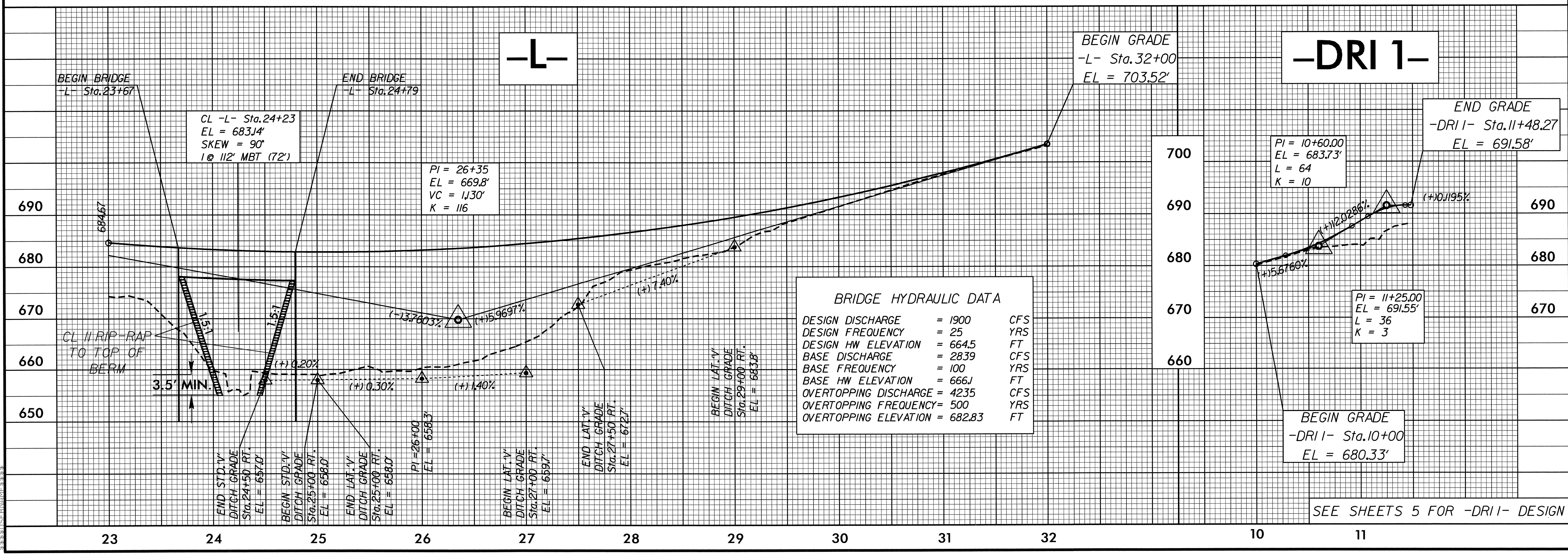
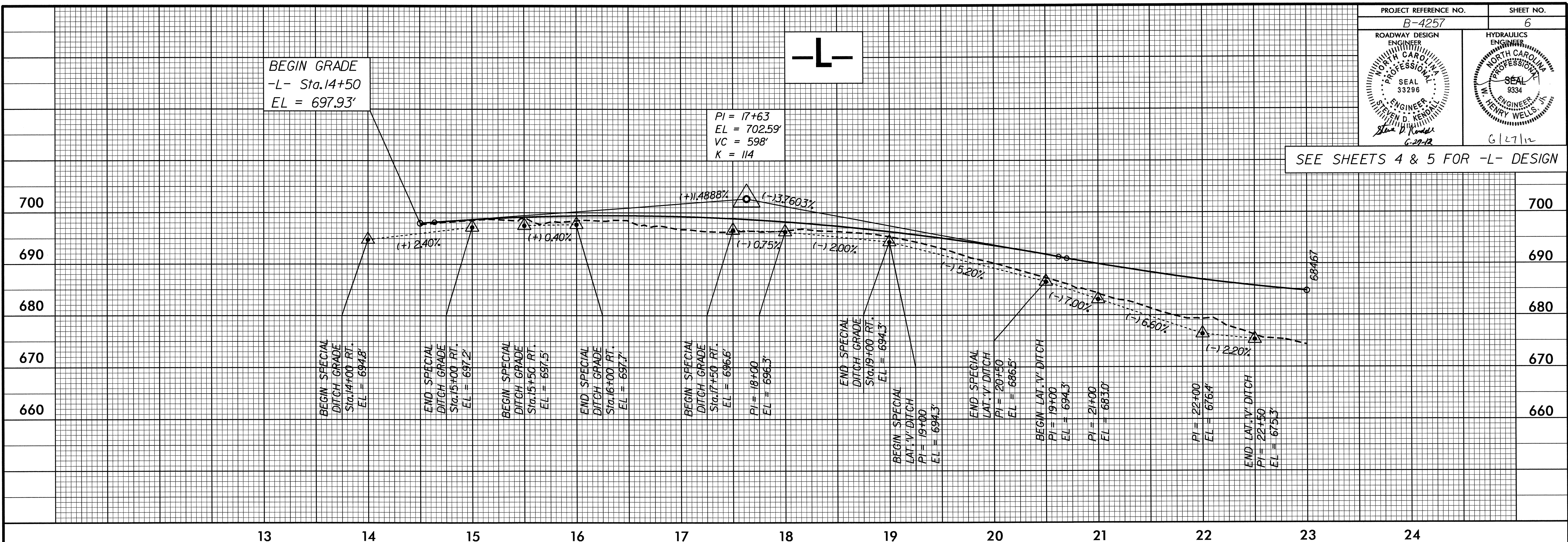
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 DB 1054 PG 527  
 DORIS ODDIE  
 DB 399 PG 137  
 DB 621 PG 176  
 ETHEL POOLE  
 DB 118 PG 912  
 DB 118 PG 914  
 ODDIS T. POOLE AND WIFE  
 MICHELLE F. POOLE  
 DB 1166 PG 323  
 BOOK OF MAPS 9995 PAGE 6945  
 JAMES ROBERT POOLE  
 DB 0 PG 0  
 ROGER K. WILLIAMS &  
 JENNIFER L. CEASE  
 DB 1132 PG 372



5/28/99

PROJECT REFERENCE NO. B-4257	SHEET NO. 6
ROADWAY DESIGN ENGINEER SEAL 33296 NORTH CAROLINA PROFESSIONAL ENGINEER STEVEN S. KENDRICK 6-27-12	HYDRAULICS ENGINEER SEAL 9334 NORTH CAROLINA PROFESSIONAL ENGINEER HENRY WELLS 6/27/12

SEE SHEETS 4 & 5 FOR -L- DESIGN



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 1900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 664.5	FT
BASE DISCHARGE	= 2839	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 666.1	FT
OVERTOPPING DISCHARGE	= 4235	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 682.83	FT

SEE SHEETS 5 FOR -DRI 1- DESIGN

05:4PR-200\_06:37(B4257-Rdy-pl1.dgn  
\$\$\$\$\$DATE\$\$\$\$\$