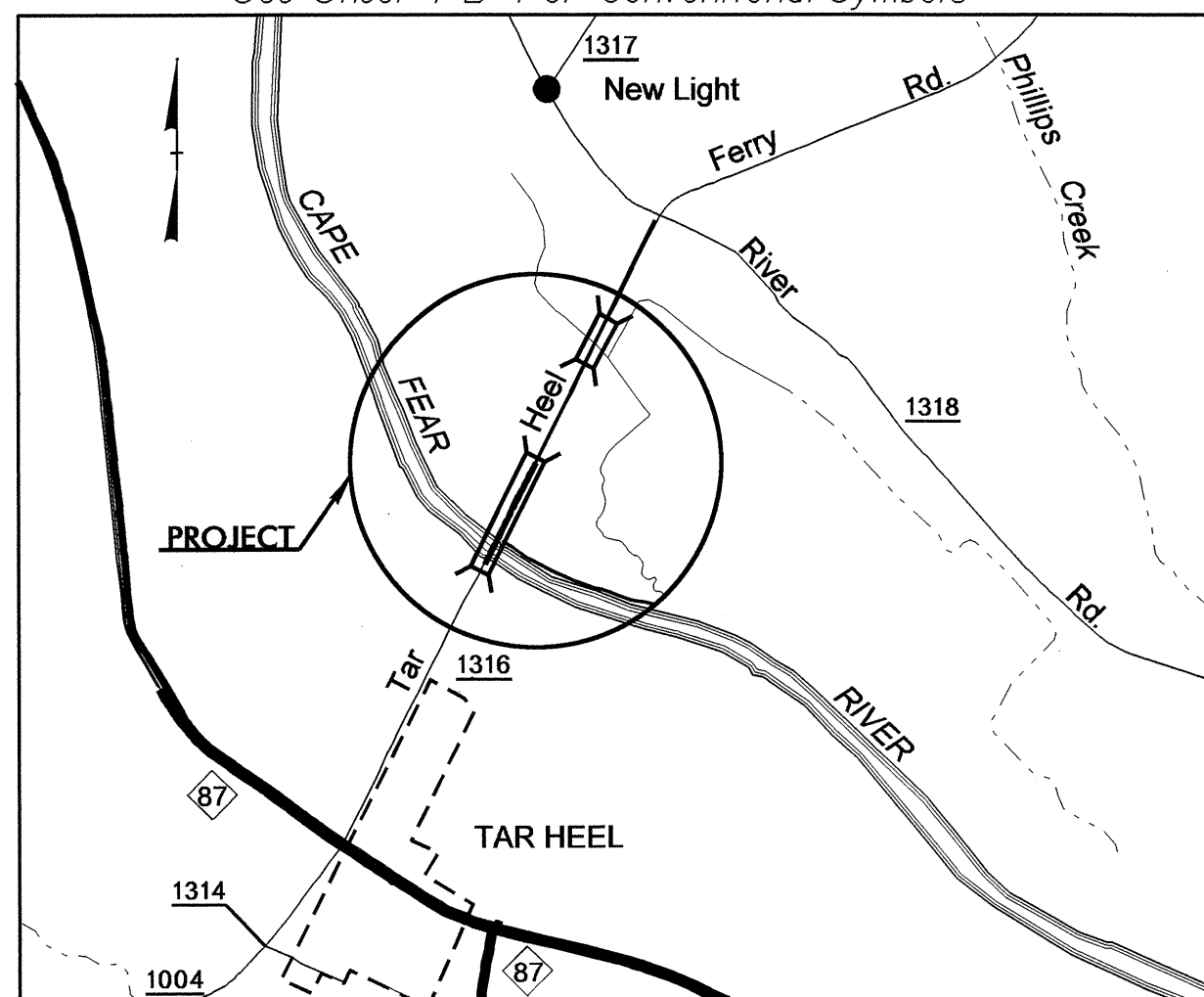


09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BLADEN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4712	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
37912.1.1	BRZ-1316(6)	P.E.	
37912.2.1	BRZ-1316(6)	RW & UTILITIES	
37912.3.1	BRZ-1316(18)	CONST.	

LOCATION: BRIDGE NO. 188 AND NO. 189 OVER THE CAPE FEAR RIVER ON SR 1316

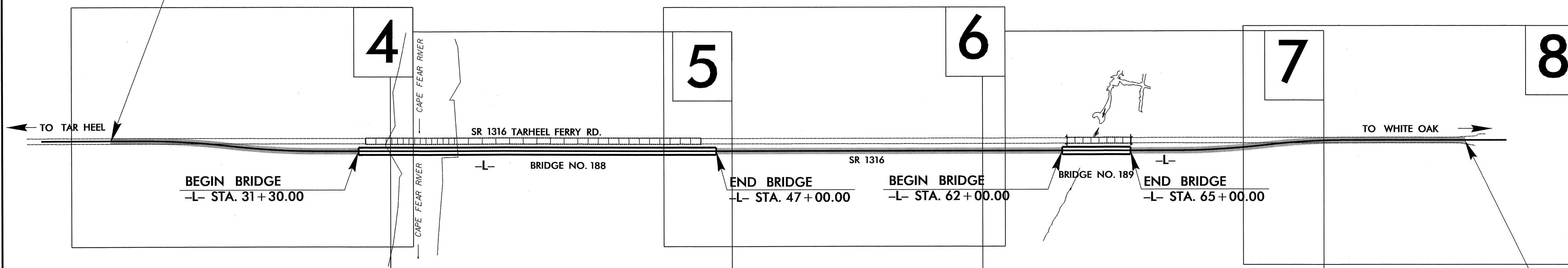
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURES



TIP PROJECT: B-4712

CONTRACT: C203038

BEGIN TIP PROJECT B-4712
-L- STA. 20+21.00



END TIP PROJECT B-4712
-L- STA. 79+70.00

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 3417
 ADT 2033 = 5584
 DHV = 13 %
 D = 55 %
 T = 18 % *
 V = 60 MPH
 * TTST = 13% DUAL = 5%
 FUNC CLASS =
 RURAL COLLECTOR
 SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4712 = 0.773 MILES
 LENGTH STRUCTURES TIP PROJECT B-4712 = 0.354 MILES
 TOTAL LENGTH TIP PROJECT B-4712 = 1.127 MILES

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

2012 STANDARD SPECIFICATIONS

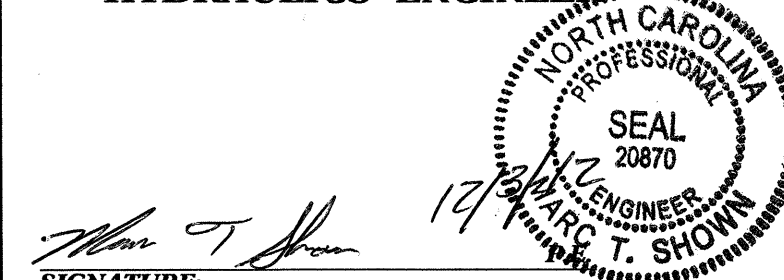
RIGHT OF WAY DATE:
FEBRUARY 17, 2012

LETTING DATE:
MARCH 19, 2013

GARY LOVERING, PE
PROJECT ENGINEER

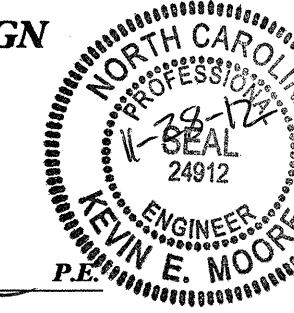
KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

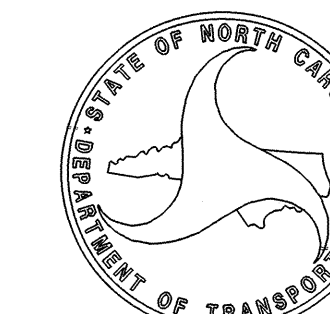


SIGNATURE: *Gary Lovering*

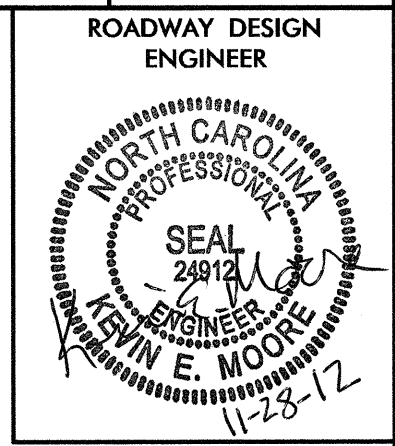
ROADWAY DESIGN ENGINEER



SIGNATURE: *Kevin E. Moore*



I:\OCT-2012\15425
R:\Roadway\Proj\B4712_rdy_tsh.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$



INDEX OF SHEETS

SHEET NUMBER	SHEET TITLE
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL PLAN SHEET SYMBOLS
1-C	SURVEY CONTROL SHEET
1-D	CENTERLINE COORDINATE LIST
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAIL
2-A	STANDARD TEMPORARY SHORING DETAIL
2-B THRU 2-D	STANDARD TEMPORARY WALL DETAILS
2-E	TEMPORARY ANCHOR UNIT TYPE W-BEAM DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE
3-B	SUMMARIES OF GUARDRAIL, EARTHWORK, EXISTING ASPHALT PAVEMENT REMOVAL, SHOULDER BERM GUTTER, AND PARCEL INDEX
4 THRU 8	PLAN SHEETS
9 THRU 13	PROFILE SHEETS
TMP-1 THRU TMP-9	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
RF-1	REFORESTATION PLANS
EC-1 THRU EC-13	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
UO-1 THRU UO-4	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-46	CROSS-SECTIONS
S-1 THRU S-108	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 07/30/12

GRADING AND SURFACING OR RESURFACING AND WIDENING:
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

SUBSURFACE DRAINS:
SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE: Four County EMC (Power) , PalmettoNet & Star Telephone Membership Corp. (Telephone)
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N.C. Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	✕
Property Monument	□
Parcel/Sequence Number	(23)
Existing Fence Line	---x---x---x---
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ? ☠

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	▬

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	---JS---
Buffer Zone 1	---BZ 1---
Buffer Zone 2	---BZ 2---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	---WLB---
Proposed Lateral, Tail, Head Ditch	---FLD---
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	△
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	---E---
Proposed Temporary Construction Easement	---E---
Proposed Temporary Drainage Easement	---TDE---
Proposed Permanent Drainage Easement	---PDE---
Proposed Permanent Drainage / Utility Easement	---DUE---
Proposed Permanent Utility Easement	---PUE---
Proposed Temporary Utility Easement	---TUE---
Proposed Aerial Utility Easement	---AUE---
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	○
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▨

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----

Orchard	○
Vineyard	□

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	□
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	□
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	☑
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	○
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

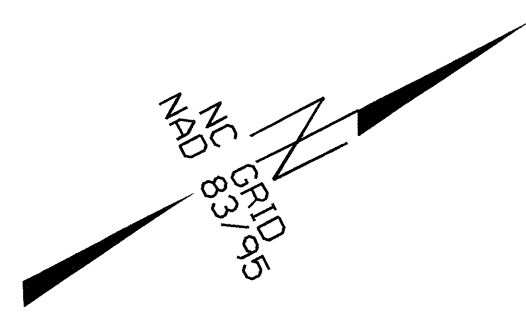
SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-4712



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4712 BL-1	360275.7854	2063443.4920	122.31	13+64.62	20.62 LT
2	B4712 BL-2	360845.7480	2063739.2977	113.29	20+06.75	15.37 LT
3	B4712 BL-3	361333.0937	2063982.7222	94.33	25+47.61	41.54 LT
4	B4712 BL-4	361841.3507	2064243.6310	83.77	31+24.50	61.73 LT
5	B4712 BL-5	362271.5964	2064455.5412	41.23	36+04.06	67.91 LT
6	B4712 BL-6	362664.0448	2064642.8876	43.31	40+38.79	78.85 LT
7	B4712 BL-7	363184.9117	2064925.7280	70.33	46+31.29	62.89 LT
8	B4712 BL-8	363725.4617	2065201.7717	67.91	52+38.24	61.92 LT
9	B4712 BL-9	364160.8863	2065422.4860	67.75	57+26.41	62.60 LT
10	B4712 BL-10	364587.4637	2065640.5837	68.28	62+05.51	61.61 LT
103	B4712-3 GPS	365020.9670	2065856.2670	67.50	66+89.68	65.90 LT
104	B4712-4 GPS	365606.7400	2066153.3780	67.61	73+49.02	24.25 LT
11	B4712 BL-11	366286.5095	2066483.5474	67.86	81+03.78	36.06 LT

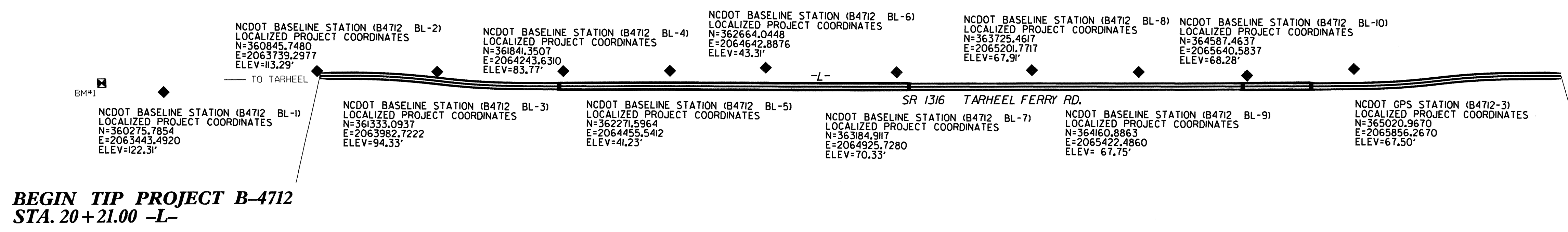
.....
 BMI ELEVATION = 123.32
 N 359961 E 2063353
 L STATION 10+43.00 41 RIGHT
 RR SPIKE IN BASE OF 24 INCK OAK TREE

.....
 BM2 ELEVATION = 44.33
 N 362457 E 2064381
 L STATION 37+36.00 219 LEFT
 RR SPIKE IN BASE OF 18 INCH CHESTNUT TREE

TYPE	STATION	NORTH	EAST
POT	10+00.00	359941.4448	2063296.5673
PC	21+61.33	360976.5605	2063823.0818
PRC	25+50.51	361312.6051	2064018.9748
PT	29+39.70	361648.6497	2064214.8677
PC	66+89.70	364991.1032	2065915.0160
PRC	70+78.88	365347.3229	2066071.2452
PT	74+68.07	365703.5425	2066227.4744
POT	81+53.21	366314.2256	2066538.1000

FINAL ROW MARKER IRON PIN AND CAP-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	66+89.70	100.00	364945.7659	2066004.1481
L	29+39.70	155.00	361578.3769	2064353.0225
L	50+00.00	125.00	363428.3678	2065260.3676
L	50+00.00	100.00	363439.7021	2065238.0846
L	32+12.20	155.00	361821.2598	2064476.5655
L	44+30.85	125.00	362921.0753	2065002.3319
L	66+89.70	75.00	364957.1003	2065981.8651
L	73+00.00	70.89	365522.9376	2066219.7077
L	70+78.88	75.00	365321.1777	2066141.5405
L	26+50.00	80.00	361354.1331	2064140.6514
L	25+50.51	52.77	361283.4670	2064062.9664
L	32+27.83	29.88	361891.9232	2064372.1315
L	44+31.60	105.49	362930.5827	2064985.2832

FINAL ROW MARKER PERMANENT EASEMENT-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	26+94.00	-185.30	361529.5846	2063936.9939
L	28+31.00	-205.50	361651.5439	2063983.9517
L	31+49.50	-207.00	361929.4982	2064125.4825
L	37+27.00	-264.50	362470.3050	2064336.0544
L	37+27.00	-294.50	362483.9062	2064309.3148
L	37+48.00	-294.50	362502.6239	2064318.8356
L	37+48.00	-264.50	362489.0227	2064345.5752
L	41+72.50	-207.00	362841.3195	2064589.2830
L	50+25.00	-207.00	363601.1706	2064975.7834
L	50+25.00	-227.00	363610.2381	2064957.9570
L	50+45.00	-227.00	363628.0645	2064967.0244
L	50+45.00	-207.00	363618.9970	2064984.8508
L	32+25.11	-215.00	362000.5144	2064152.6297
L	35+55.59	-248.00	362310.0400	2064273.0470
L	32+19.80	-192.72	361985.6806	2064170.0839
L	35+29.60	-94.50	362217.2893	2064398.0854
L	51+74.00	-192.34	363727.3317	2065056.4013



BEGIN TIP PROJECT B-4712
STA. 20+21.00 -L-

END TIP PROJECT B-4712
STA. 76+38.00 -L-

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B-4712-2" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 359570.7730(±) EASTING: 2063082.5370(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991212 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4712-2" TO -L- STATION 20+21.00 IS N 27°51'31.85" E 1448.60' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOHFPRECONSTRUCTHIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/dohfpreconstructhighway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4712_LS_CONTROL.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 EXISTING HARN MONUMENTATION
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

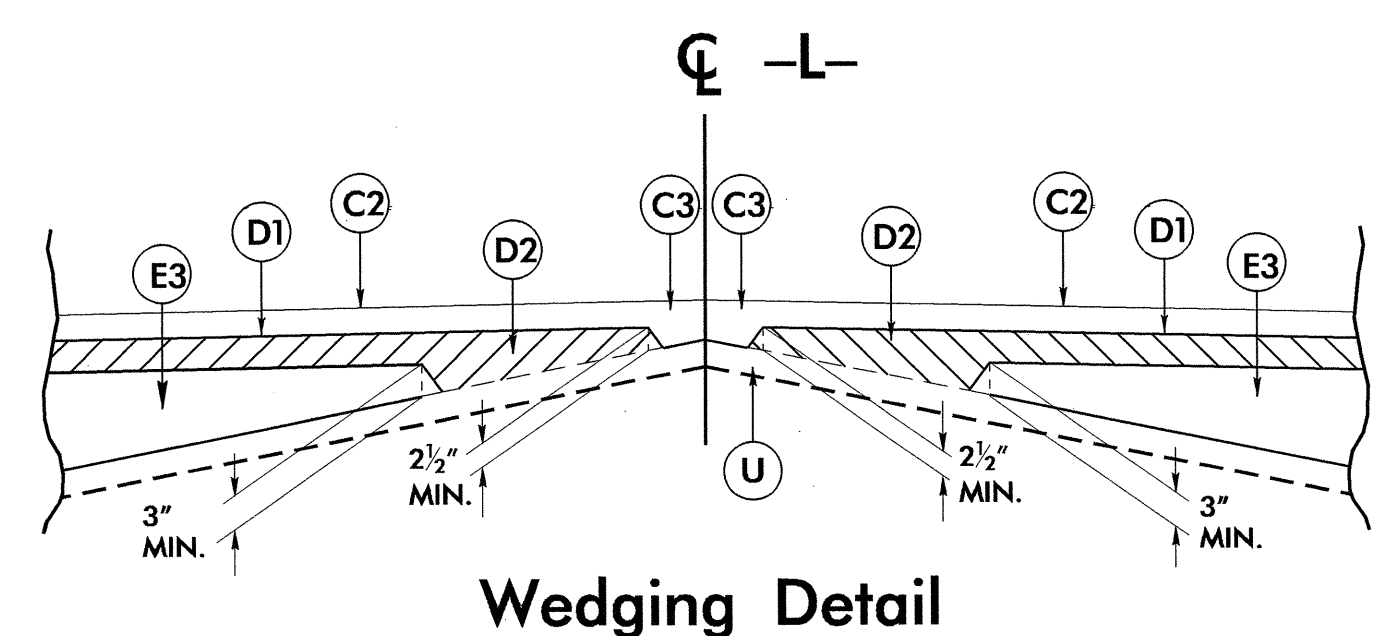
NOTE: DRAWING NOT TO SCALE

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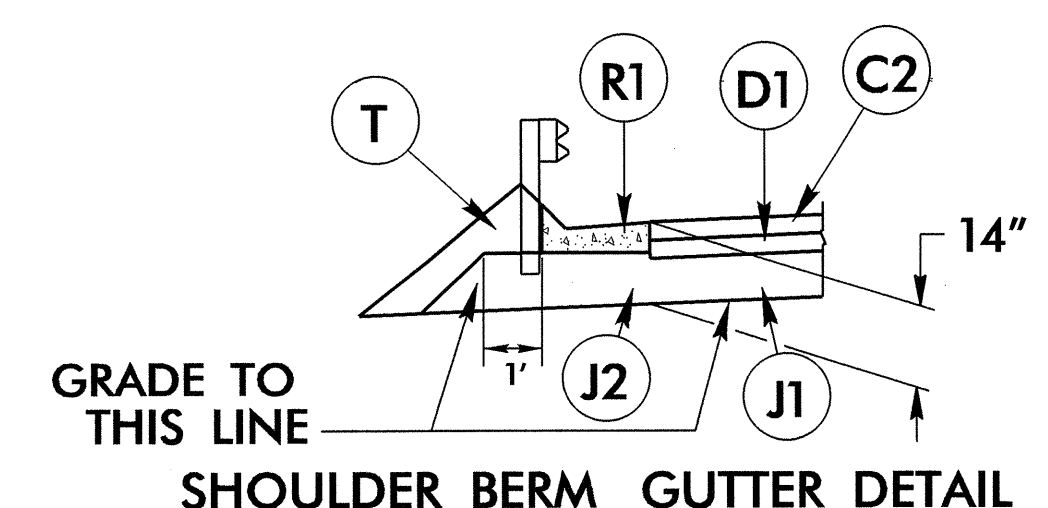
6/22/99

PAVEMENT SCHEDULE FINAL DESIGN	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
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.
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.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E3	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 GREATER THAN 5½" IN DEPTH OR LESS THAN 3" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE.
J2	VARIABLE DEPTH AGGREGATE BASE COURSE.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

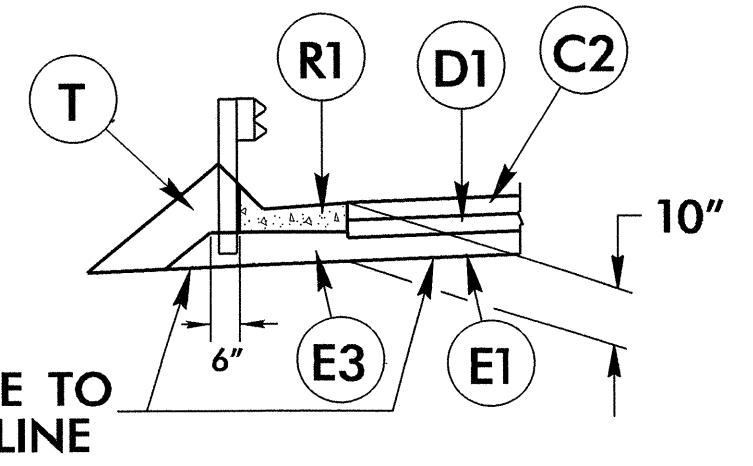


Wedging Detail



SHOULDER BERM GUTTER DETAIL

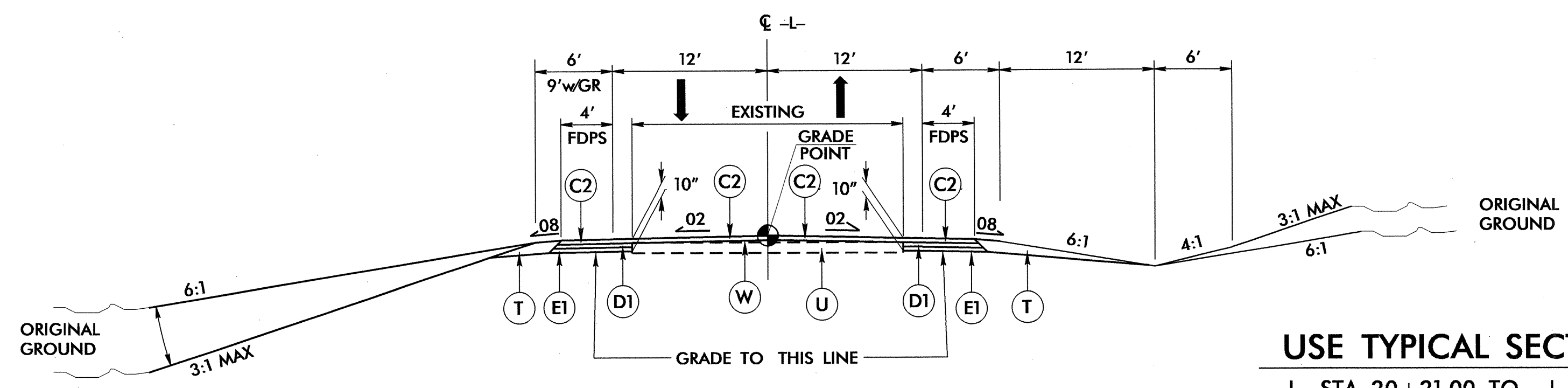
-L- STA. 30+19.00 TO -L- STA. 31+16.00 (BEGIN APPROACH SLAB) LT.
 -L- STA. 47+14.00 (END APPROACH SLAB) TO -L- STA. 47+40.00 LT.
 -L- STA. 61+24.00 TO -L- STA. 61+85.83 (BEGIN APPROACH SLAB) LT.
 -L- STA. 65+14.17 (END APPROACH SLAB) TO -L- STA. 66+08.00 LT.
 -L- STA. 30+19.00 TO -L- STA. 31+16.00 (BEGIN APPROACH SLAB) RT.
 -L- STA. 47+14.00 (END APPROACH SLAB) TO -L- STA. 61+85.83 (BEGIN APPROACH SLAB) RT.
 -L- STA. 65+14.17 (END APPROACH SLAB) TO -L- STA. 66+08.00 RT.



SHOULDER BERM GUTTER DETAIL

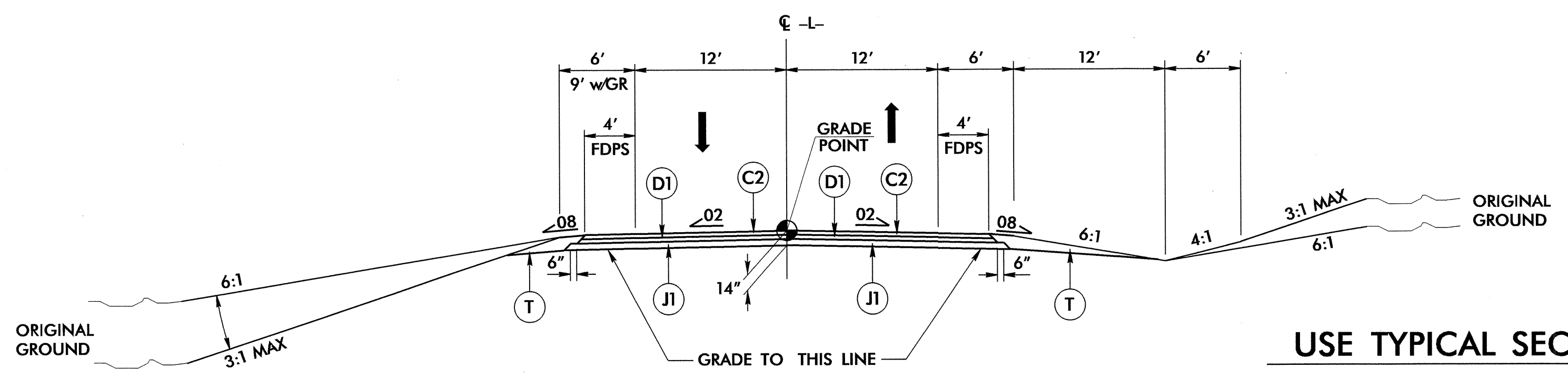
-L- STA. 70+79.00 TO -L- STA. 71+70.00 RT.

PROJECT REFERENCE NO. B-4712	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



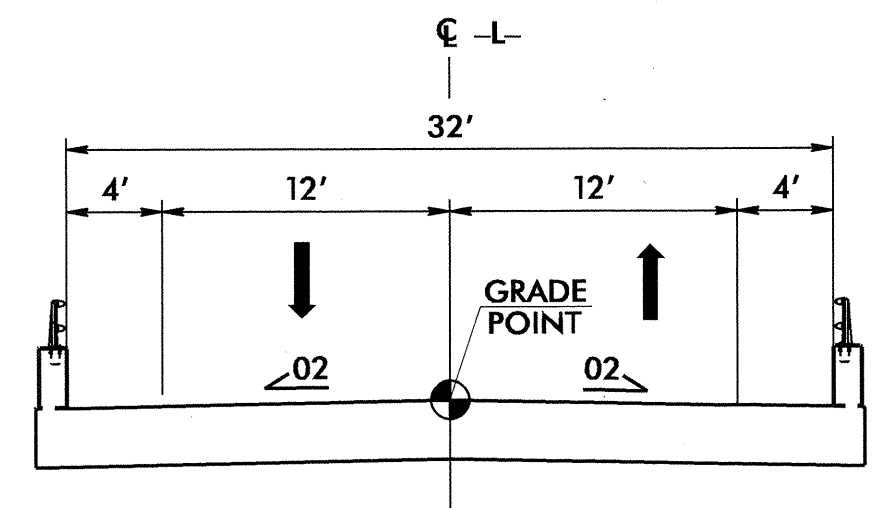
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
 -L- STA. 20+21.00 TO -L- STA. 25+65.57
 -L- STA. 70+61.85 TO -L- STA. 79+70.00



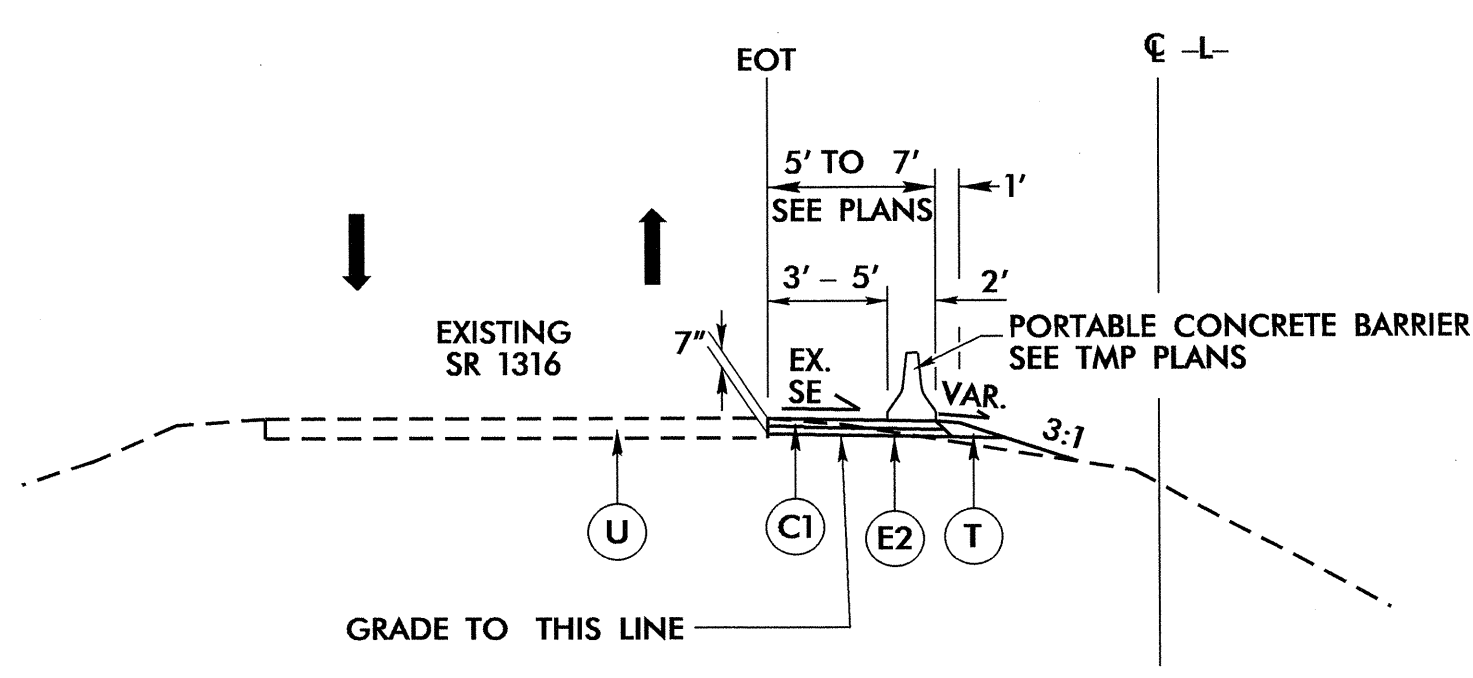
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
 -L- STA. 25+65.57 TO -L- STA. 31+30.00 (BEGIN BRIDGE)
 -L- STA. 47+00.00 (END BRIDGE) TO -L- STA. 62+00.00 (BEGIN BRIDGE)
 -L- STA. 65+00.00 (END BRIDGE) TO -L- STA. 70+61.85



TYPICAL SECTION ON STRUCTURE


USE TYPICAL SECTION ON STRUCTURE
 -L- STA. 31+30.00 (BEGIN BRIDGE) TO -L- STA. 47+00.00 (END BRIDGE)
 -L- STA. 62+00.00 (BEGIN BRIDGE) TO -L- STA. 65+00.00 (END BRIDGE)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
 -L- LT. STA. 28+94 +/- TO -L- LT. STA. 31+40 +/- (EXIST. BRDG.)
 -L- LT. STA. 46+12 +/- (EXIST. BRDG.) TO -L- LT. STA. 49+28 +/-
 -L- LT. STA. 59+78 +/- TO -L- LT. STA. 62+20 +/- (EXIST. BRDG.)
 -L- LT. STA. 65+01 +/- (EXIST. BRDG.) TO -L- LT. STA. 67+36 +/-

20-NOV-2012 09:51 R:\Roadway\PC01_B4712_Rdu-tyr.dgn

GEOTECHNICAL ENGINEER  Scott A. Shidden 8/10/12 SIGNATURE DATE	ENGINEER SIGNATURE DATE
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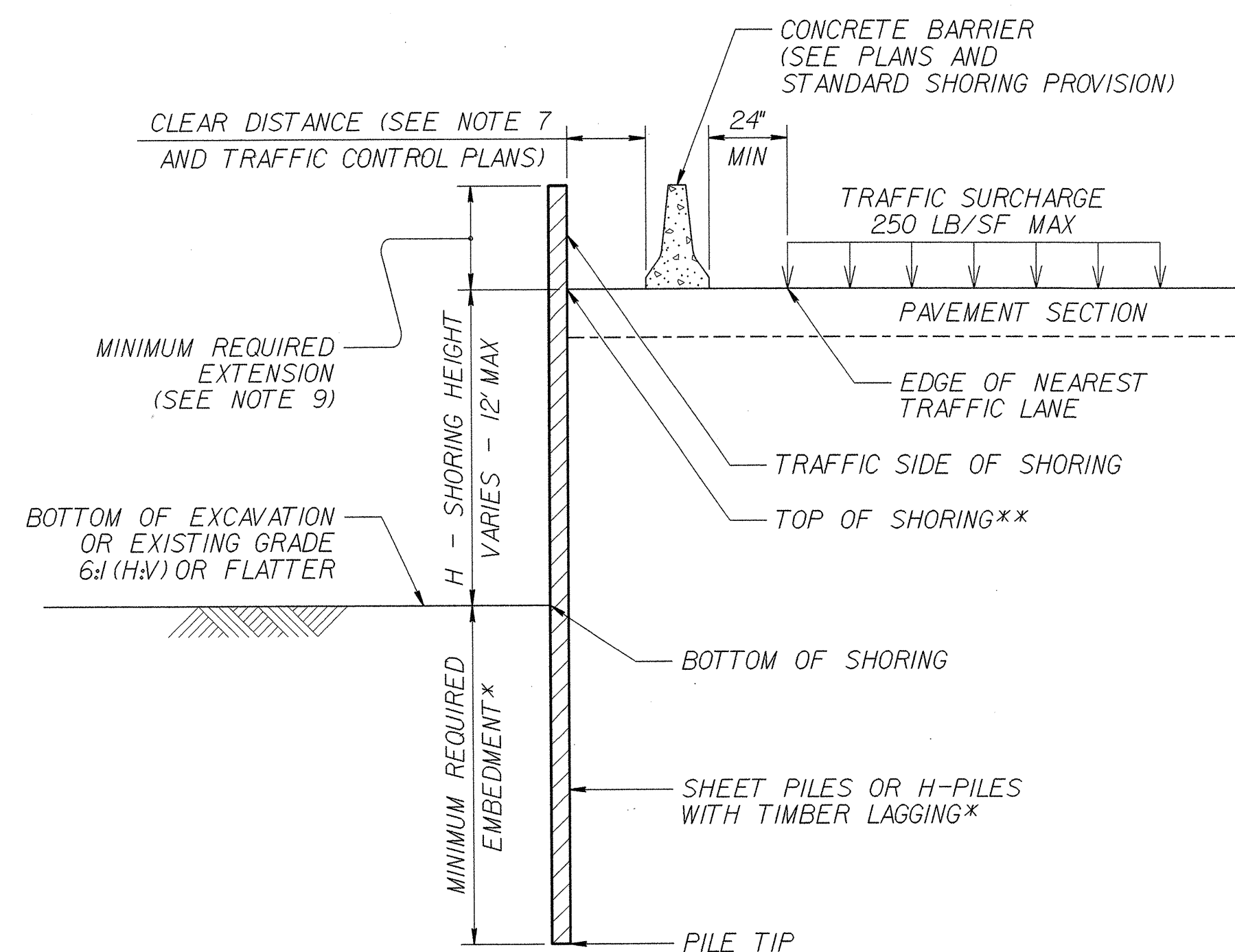
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT						SURCHARGE CASE WITH TRAFFIC IMPACT					
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING				
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)				
		HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73				
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0		
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5		
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5		
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0		
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5		
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0		
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5		
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5		
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5		
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5		
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5		
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5		
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5		
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5		

NOTES:

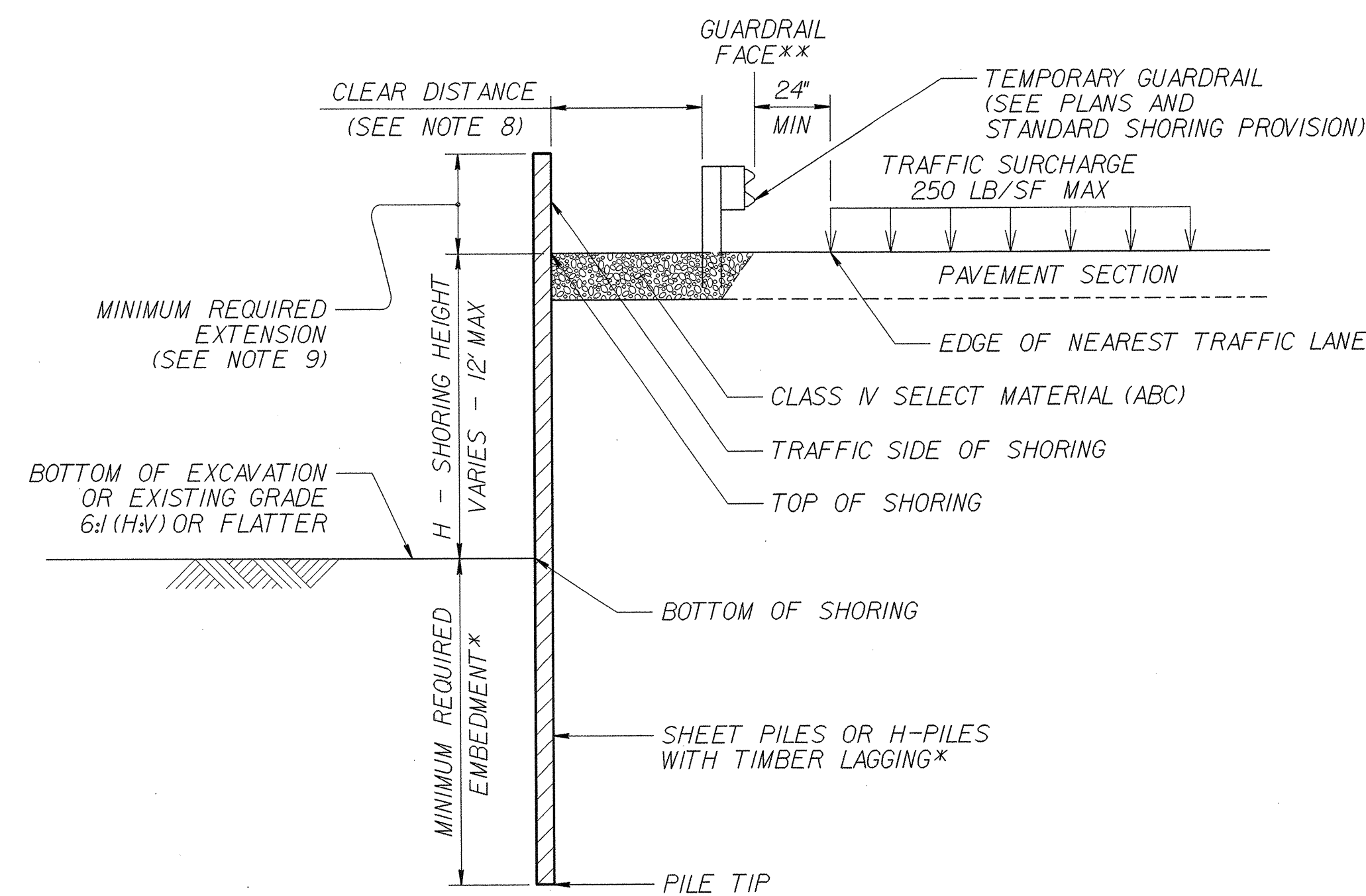
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
- SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

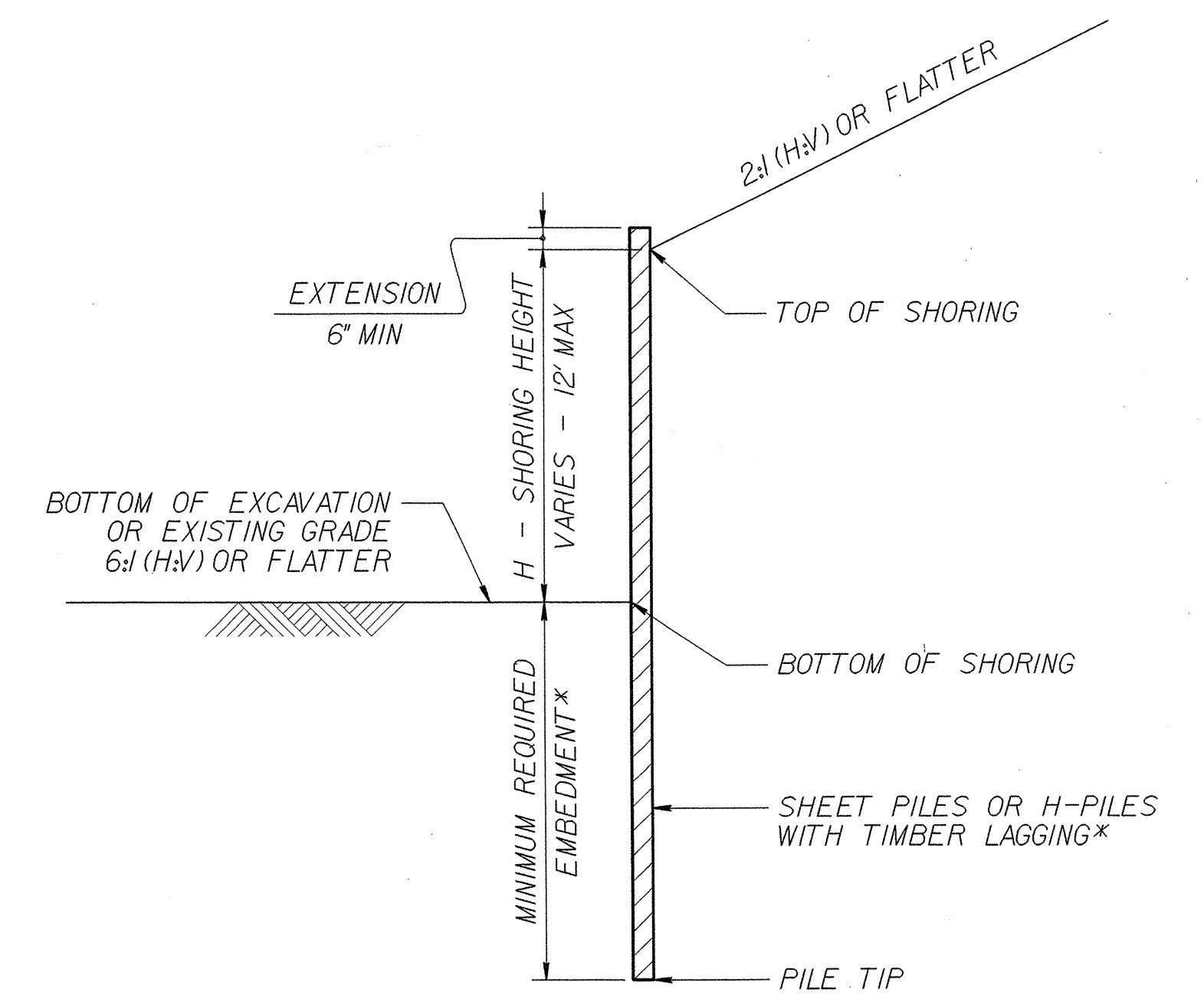
***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**



CONCRETE BARRIER
**TOP OF SHORING = EDGE OF PAVEMENT

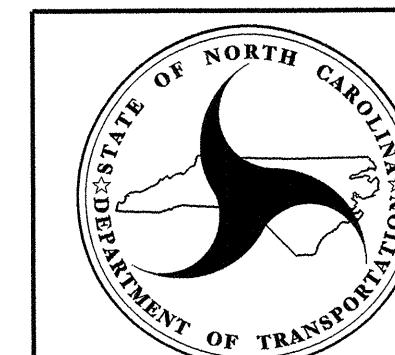


TEMPORARY GUARDRAIL
**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING (SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING (SURCHARGE CASE)
*SEE TABLE ABOVE.



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STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

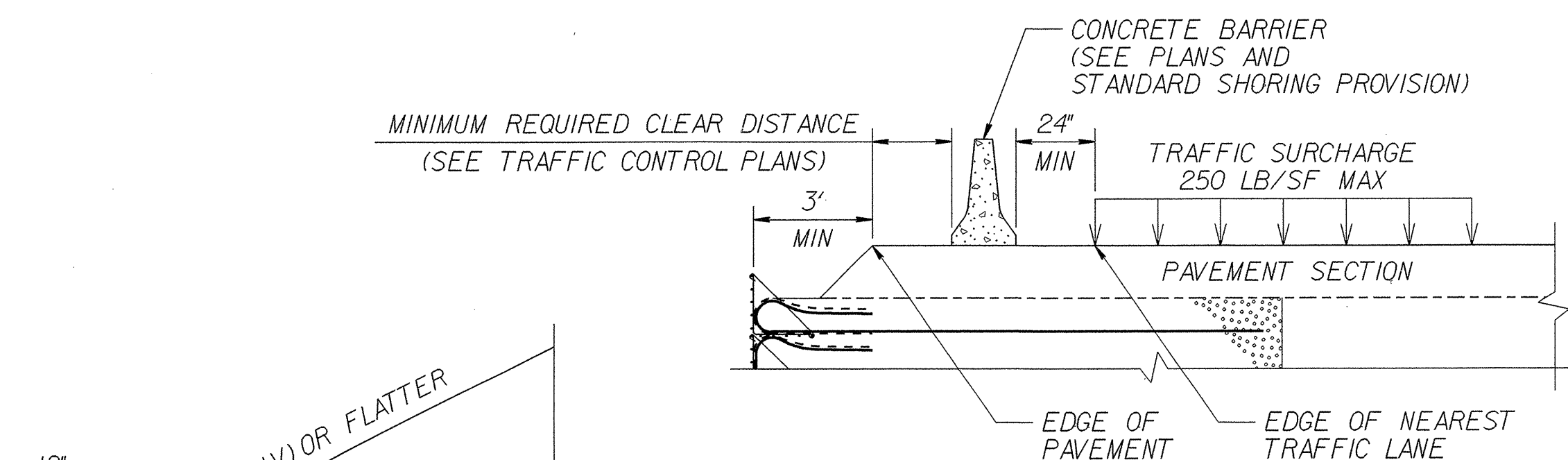
DATE: 11-20-12

GEOTECHNICAL ENGINEER

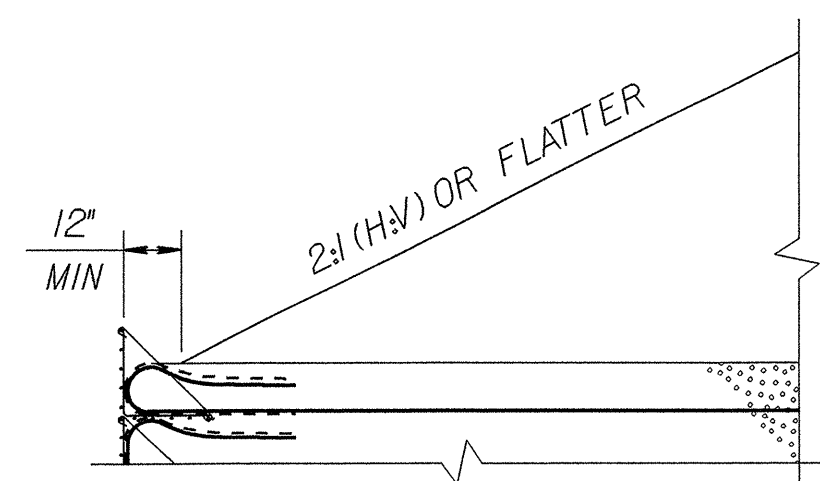
ENGINEER



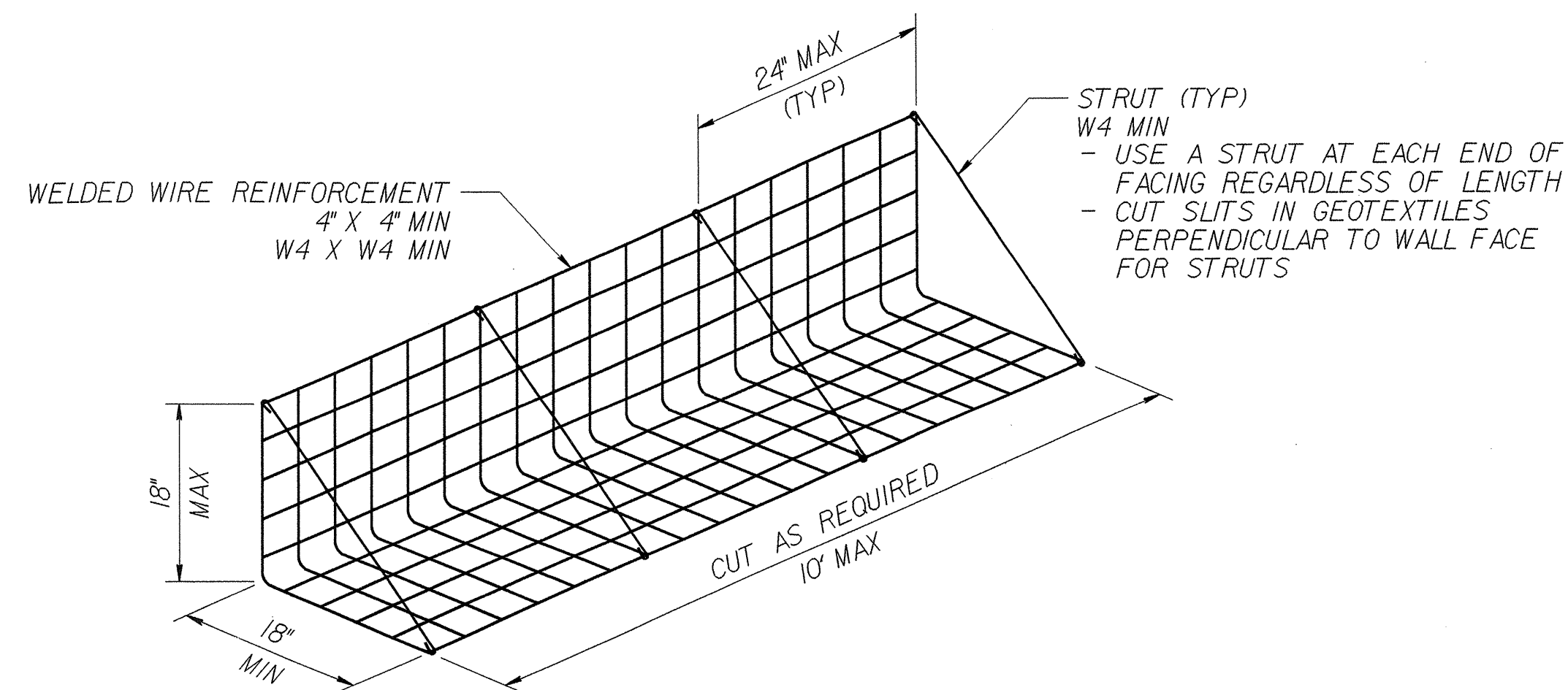
Scott A. Hadden 8/10/12



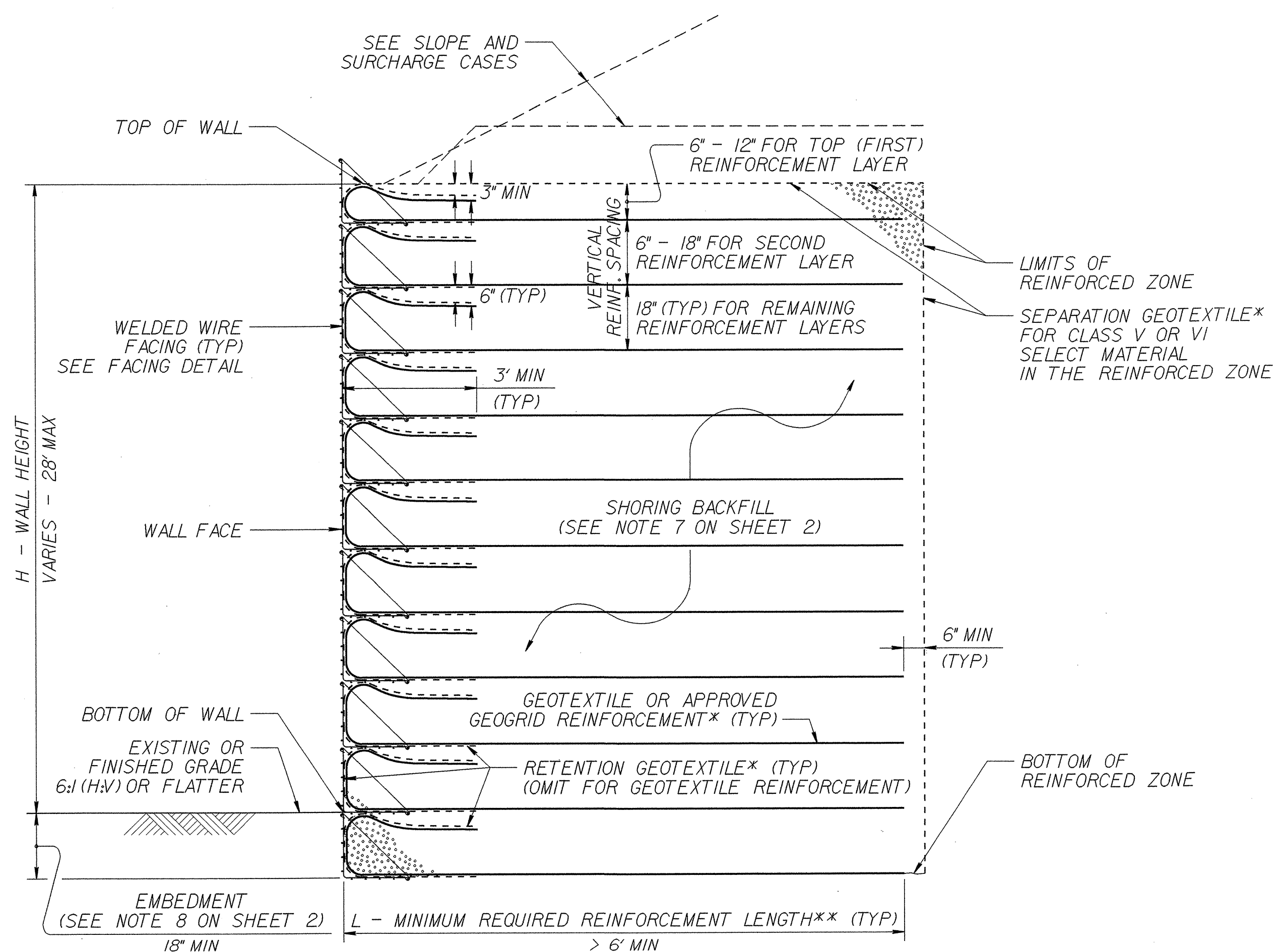
SURCHARGE CASE



SLOPE CASE



FACING DETAIL

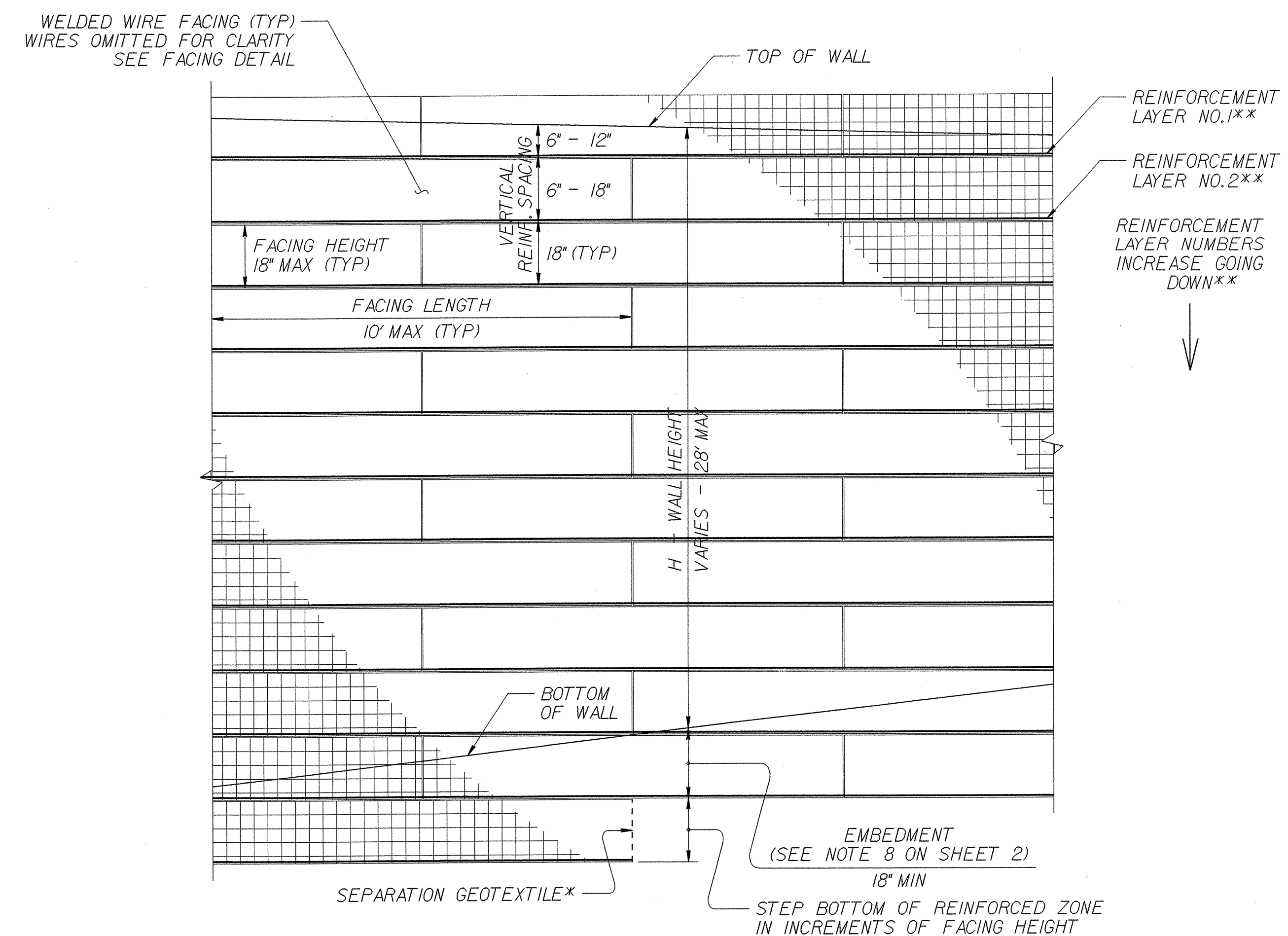


STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.

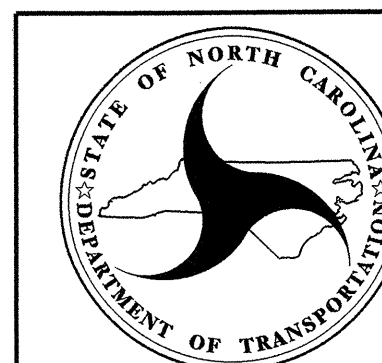
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL - PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.

**SEE REINFORCEMENT TABLES ON SHEET 3.



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RALEIGH

STANDARD DRAWING NO. 1801.02

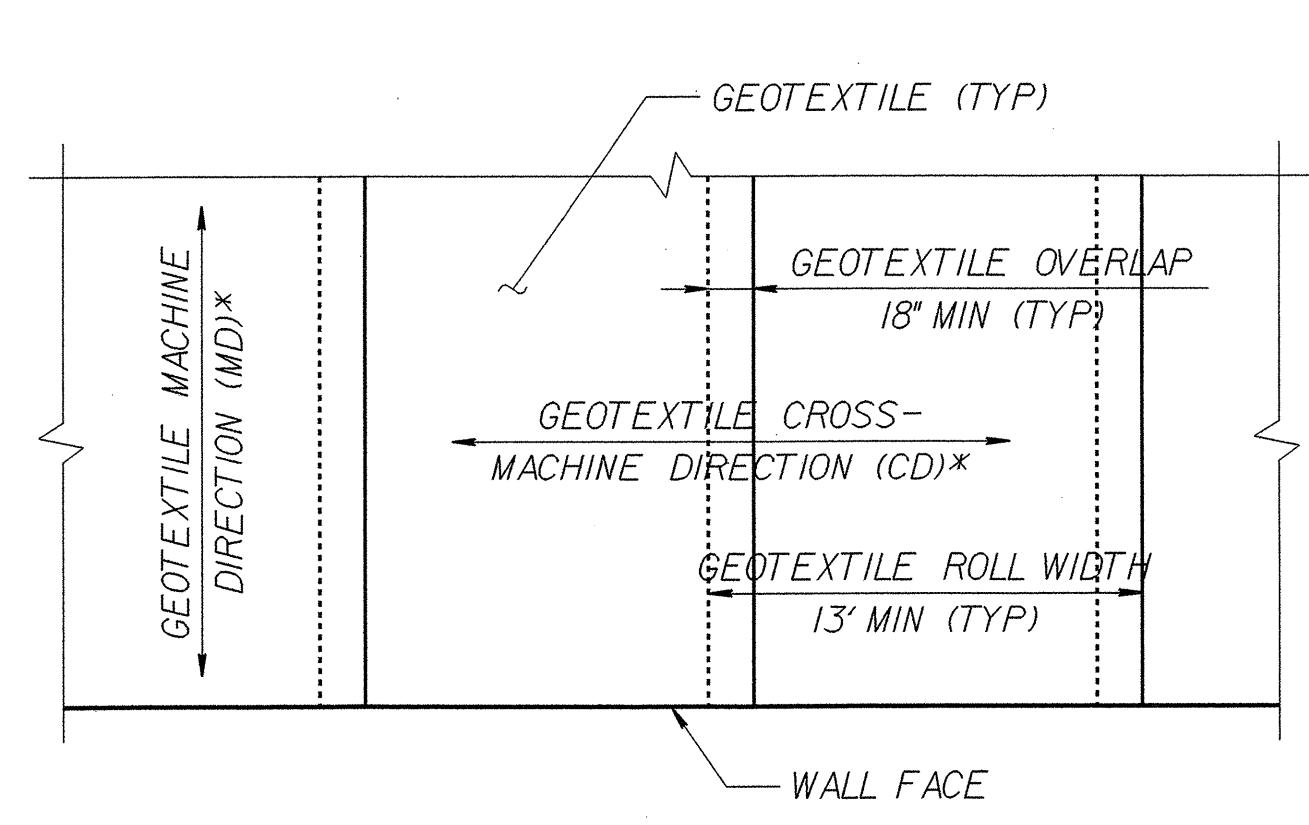
STANDARD TEMPORARY WALL
Sheet 1 of 3

DATE: 11-20-12

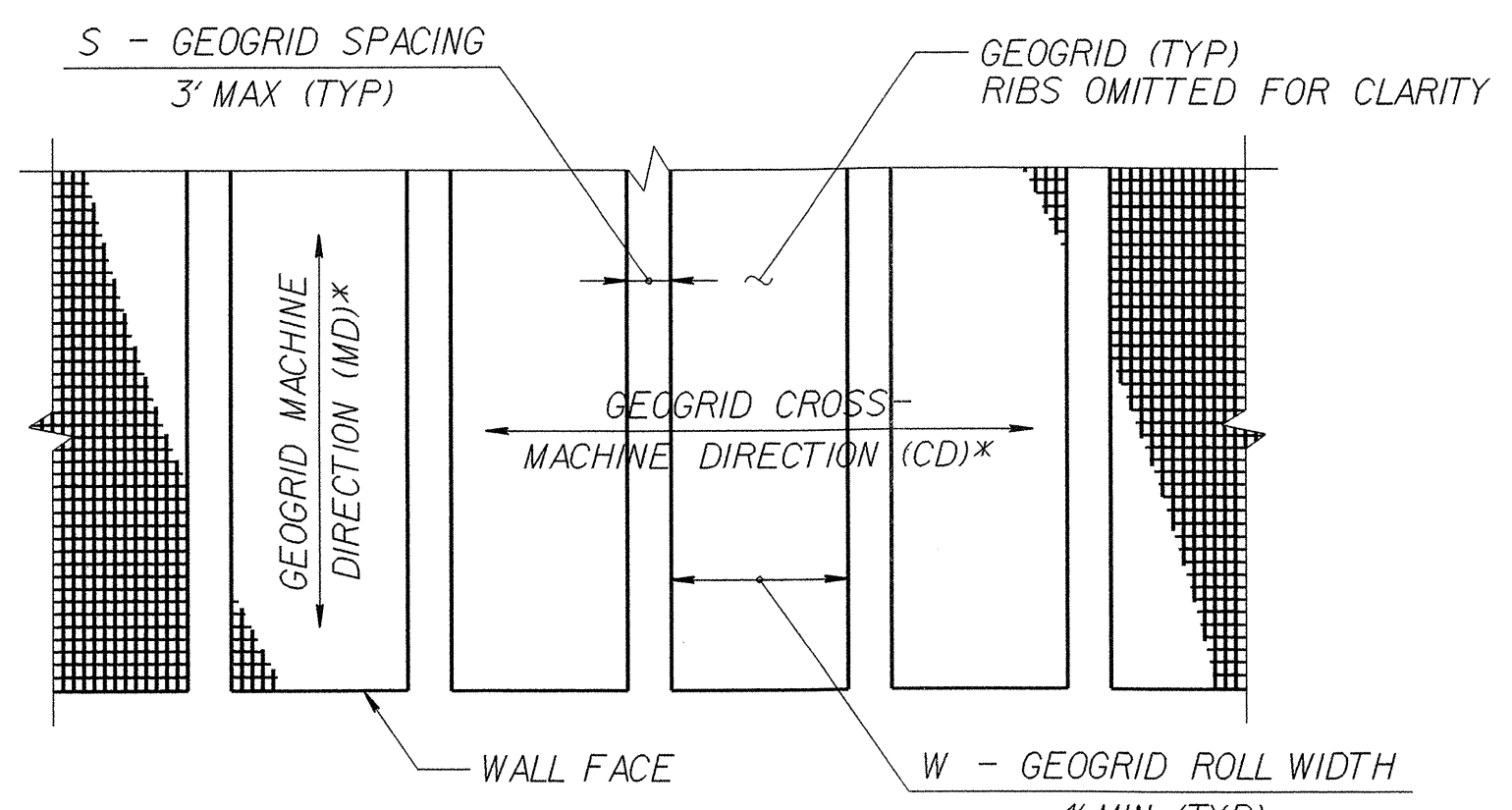


Scott A. Hadden 3/19/12
SIGNATURE DATE

SIGNATURE DATE

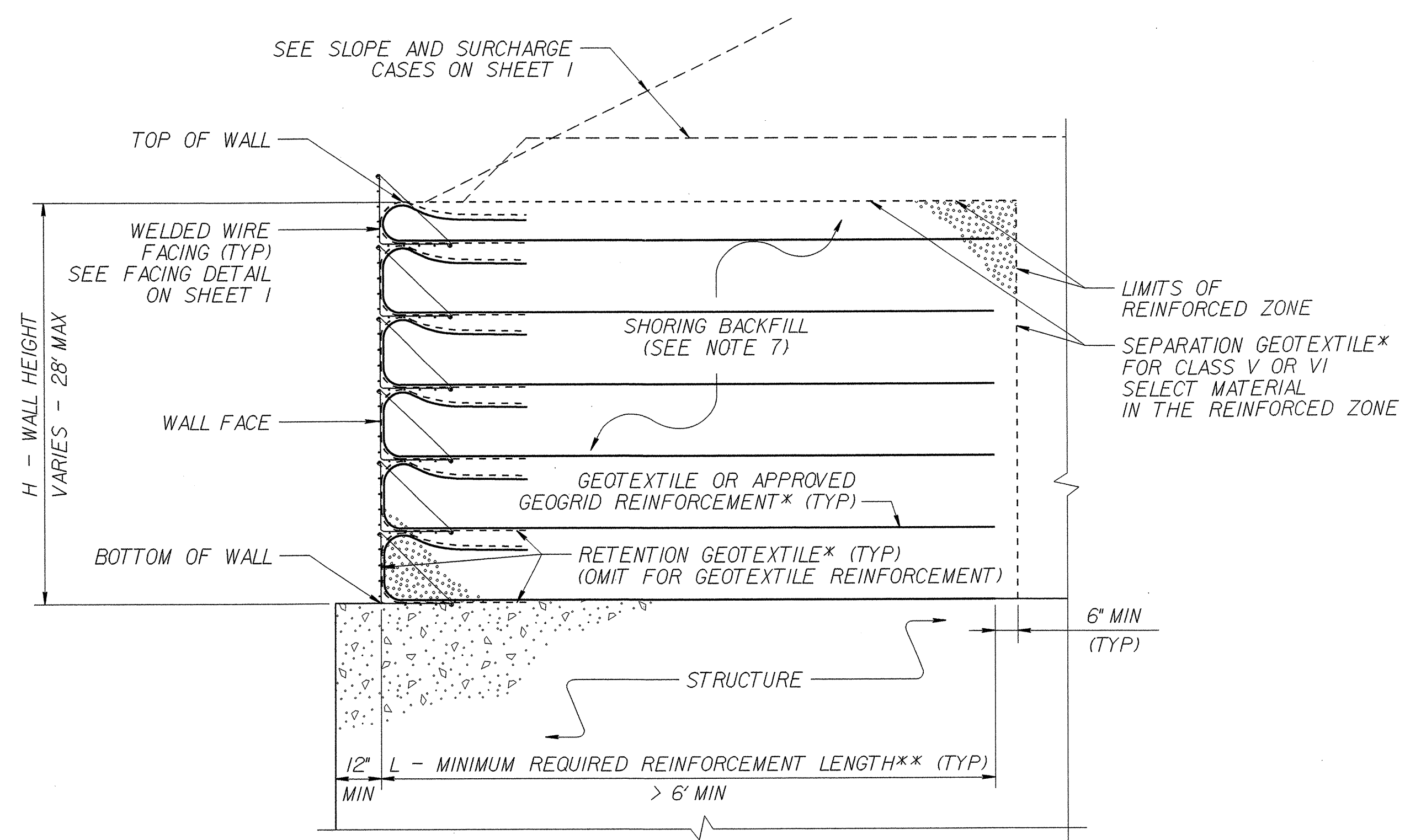


GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



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.



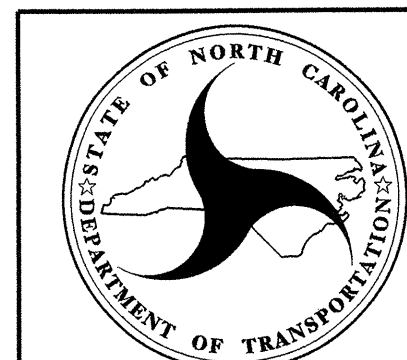
TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

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. 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.

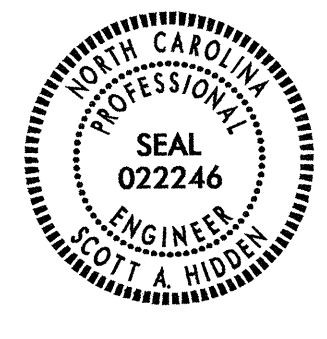


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STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 2 of 3

DATE: 11-20-12

GEOTECHNICAL ENGINEER  Scott A. Hidden 8/10/12 SIGNATURE DATE	ENGINEER _____ SIGNATURE DATE
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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	17	17	18	19	19	20	21	22	
		A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	
		CLASS II, TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20	
	> 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	12	13	13	14	14	15	15	16	17	17	18	19	19	

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.

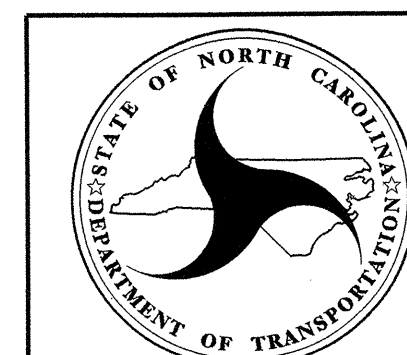
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	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.

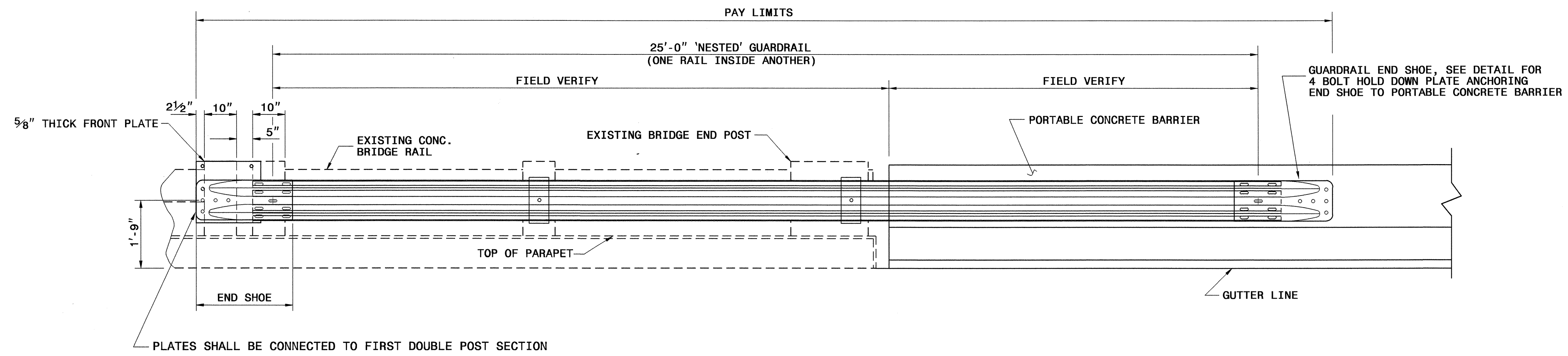


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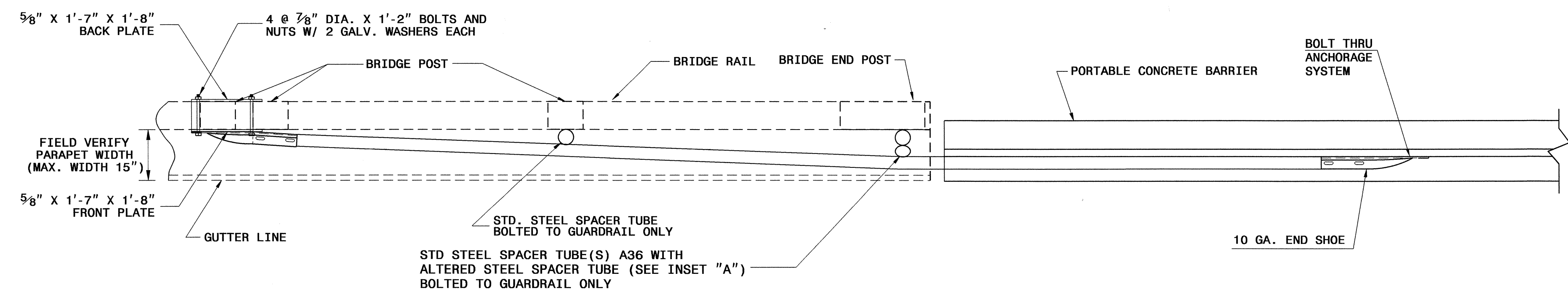
STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 3 of 3

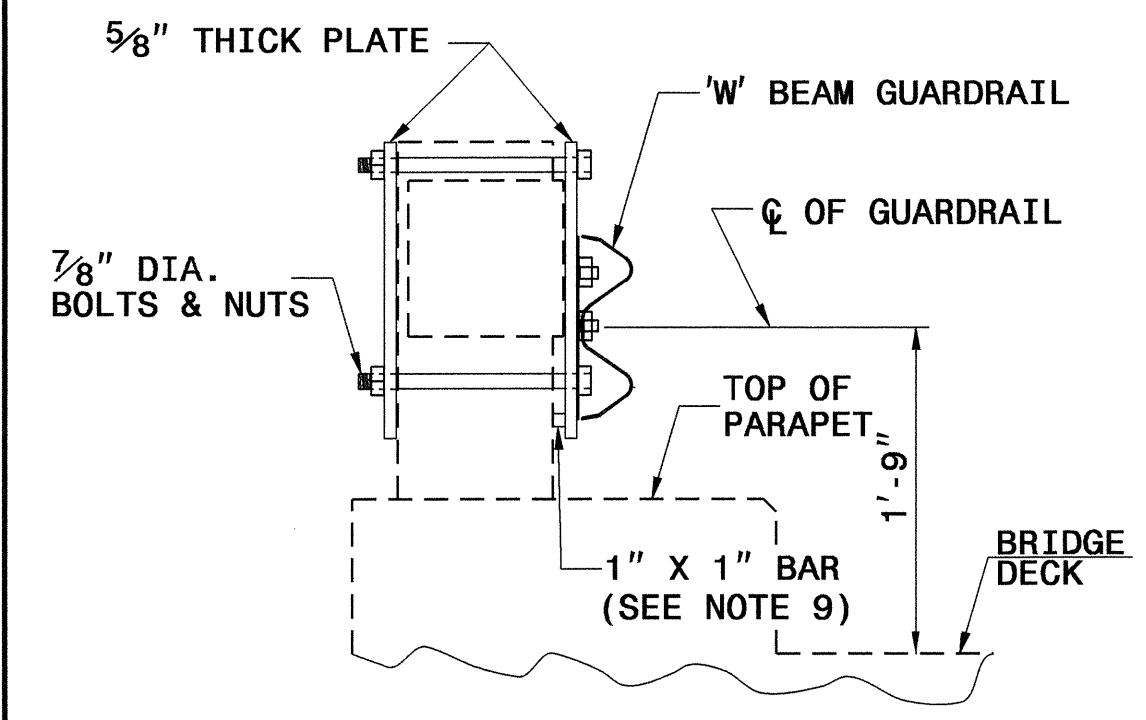
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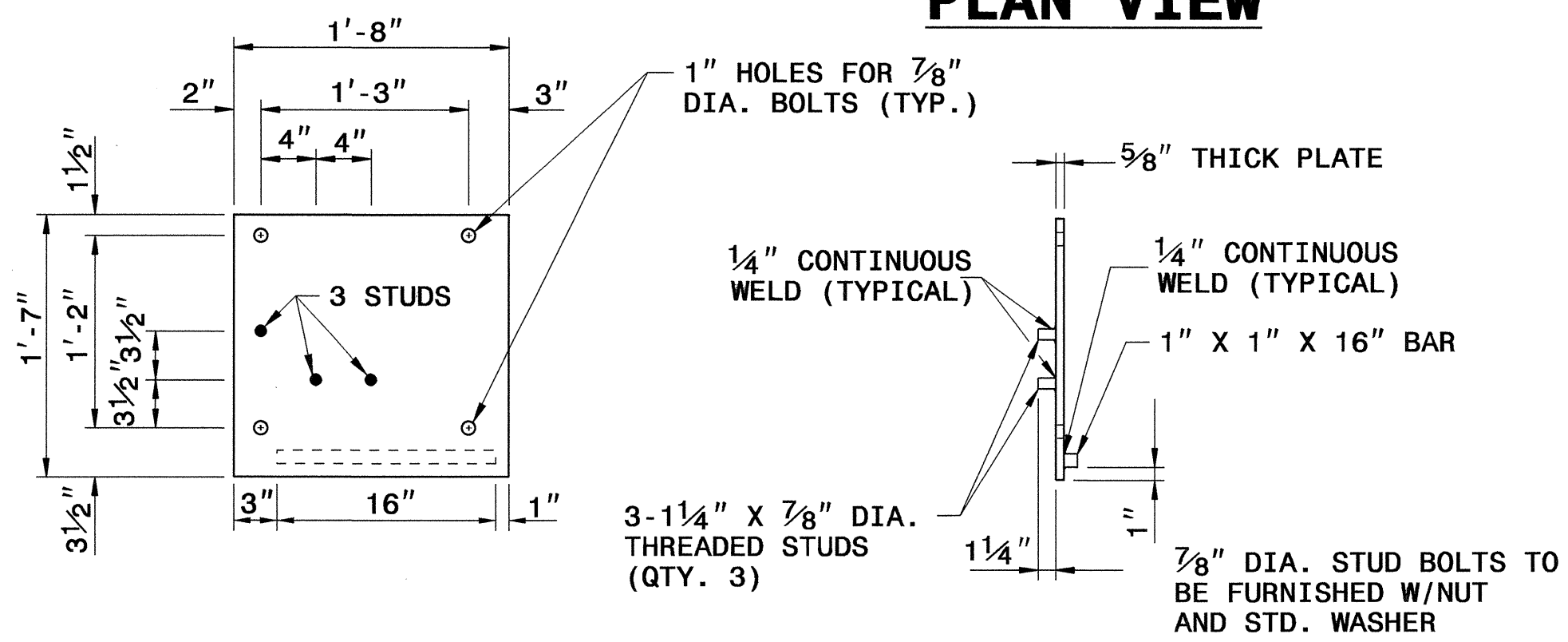
ELEVATION VIEW



PLAN VIEW



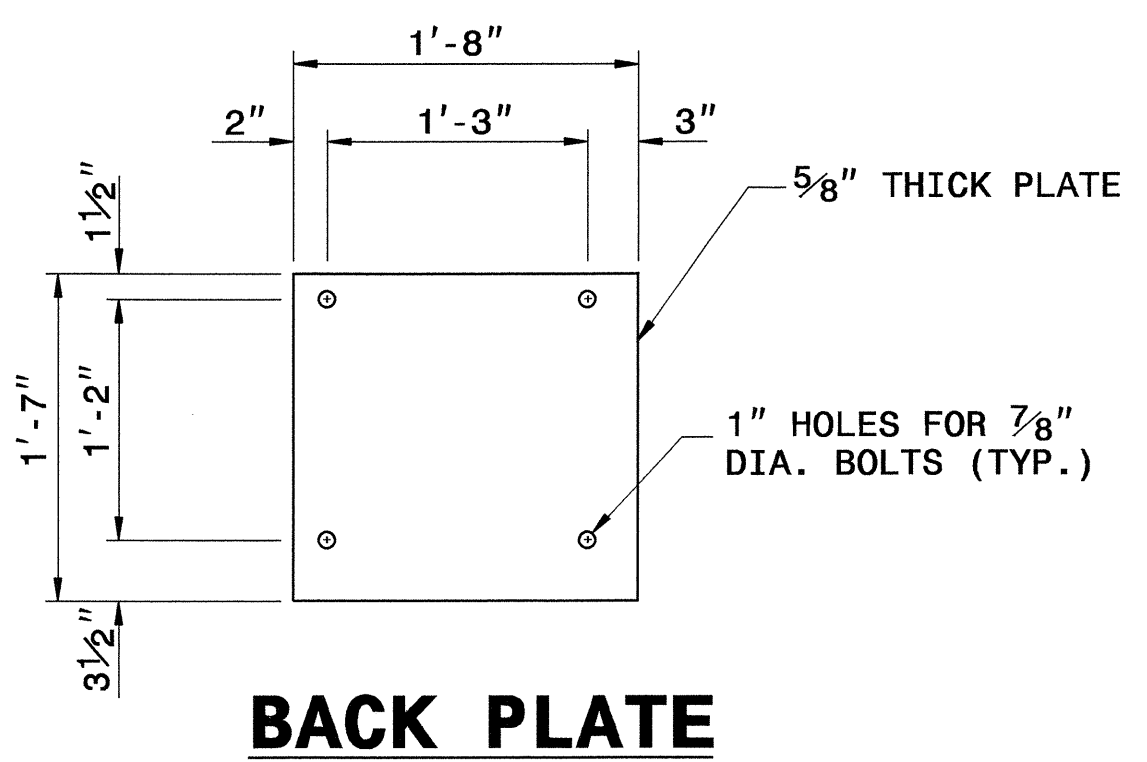
SECTION VIEW



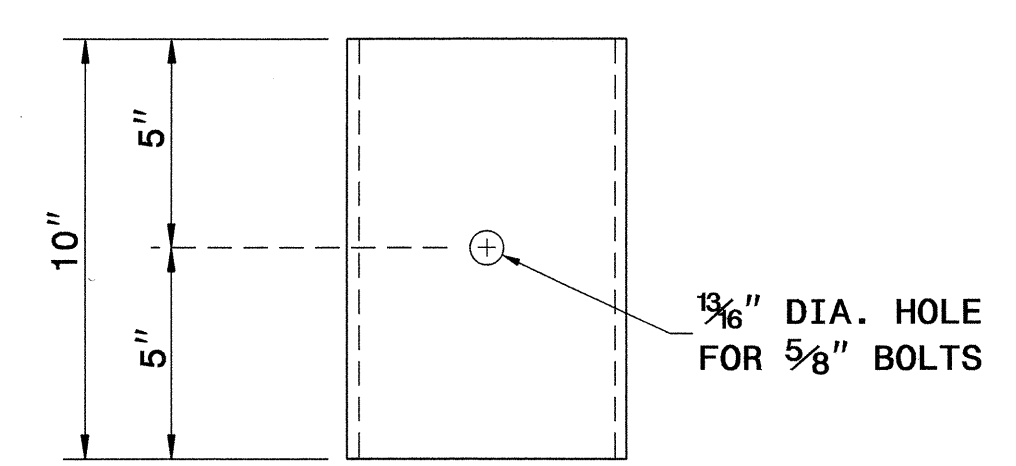
FRONT VIEW

SIDE VIEW

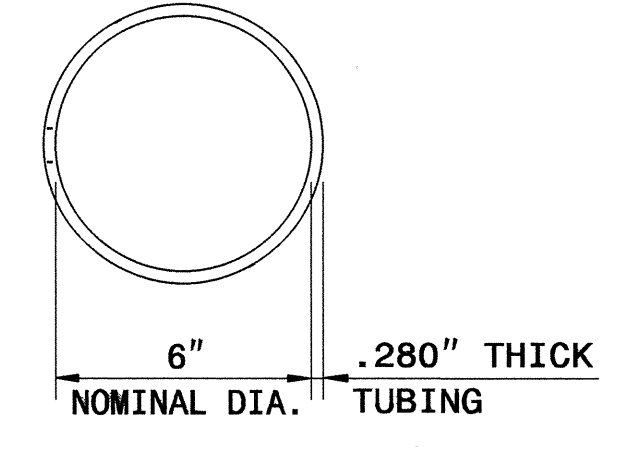
FRONT PLATE



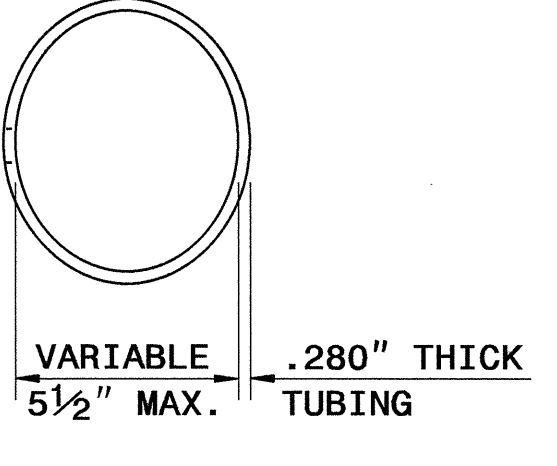
BACK PLATE



FRONT VIEW



PLAN VIEW



**PLAN VIEW
INSET 'A'**

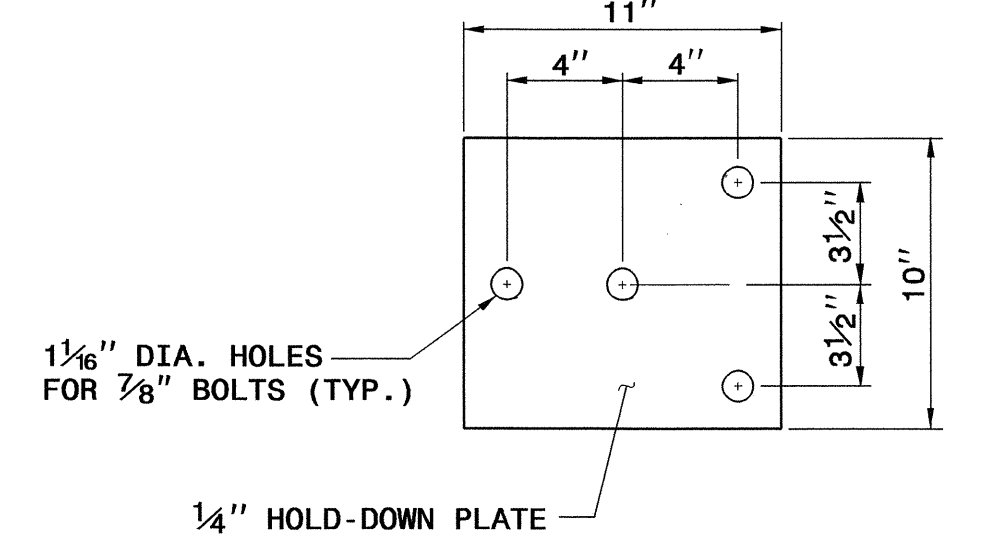
STEEL SPACER TUBE

NOTES FOR 4 BOLT HOLD DOWN PLATE

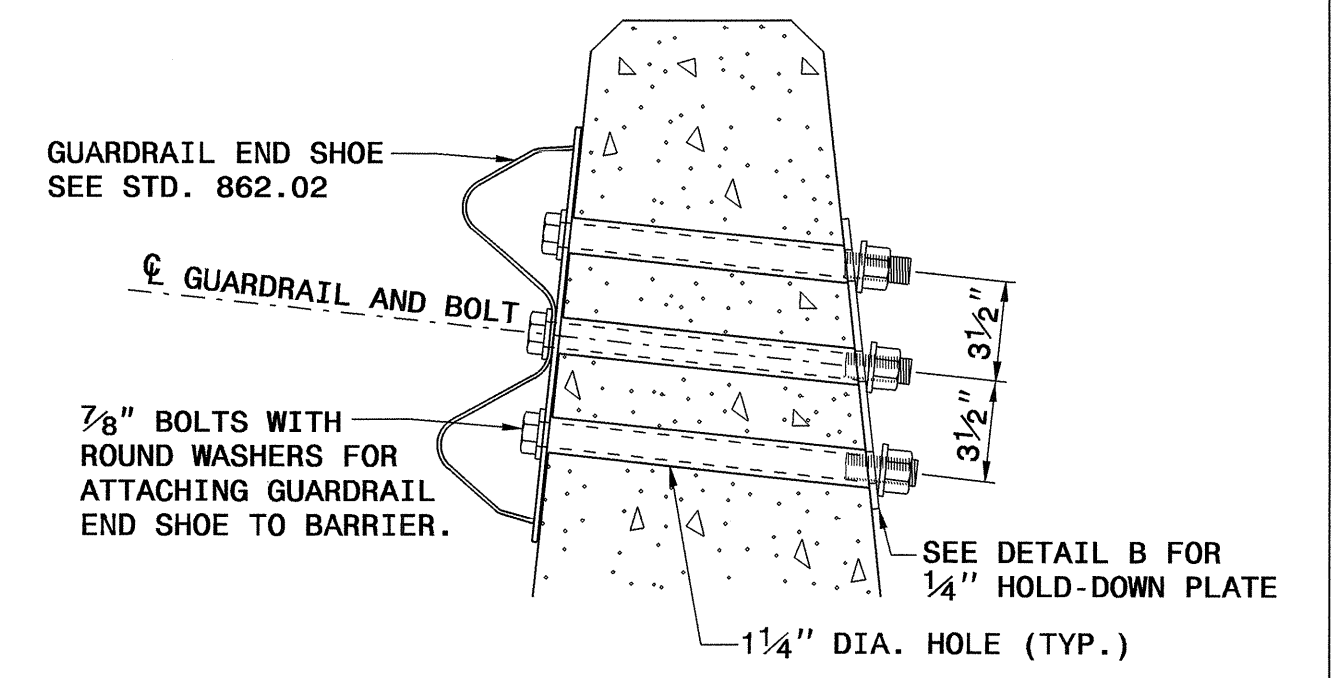
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

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 1/4" 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**

- 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: *[Signature]* DATE: 8/22/12
 FILE SPEC: *[Path]*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203038

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	30,700	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (39+15.00-L-)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (63+50.00-L-)
0036000000-E	225	400	CY	UNDERCUT EXCAVATION
0106000000-E	230	112,000	CY	BORROW EXCAVATION
0156000000-E	250	8,210	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0195000000-E	265	400	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	800	SY	GEOTEXTILE FOR SOIL STABILIZATION
0199000000-E	SP	1,250	SF	TEMPORARY SHORING
0318000000-E	300	140	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	420	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	656	LF	15" DRAINAGE PIPE
0335300000-E	305	408	LF	18" DRAINAGE PIPE
0335850000-E	305	22	EA	*** DRAINAGE PIPE ELBOWS (15")
0335850000-E	305	2	EA	*** DRAINAGE PIPE ELBOWS (18")
0448200000-E	310	172	LF	15" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	224	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1121000000-E	520	5,000	TON	AGGREGATE BASE COURSE
1220000000-E	545	400	TON	INCIDENTAL STONE BASE

SUMMARY OF QUANTITIES - B-4712

ItemNumber	Sec #	Quantity	Unit	Description
1330000000-E	607	290	SY	INCIDENTAL MILLING
1489000000-E	610	730	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	2,420	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE II19.0B
1519000000-E	610	2,590	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	620	305	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	80	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	168	CY	SUBDRAIN EXCAVATION
2026000000-E	815	750	SY	GEOTEXTILE FOR SUBSURFACE DRAINS
2036000000-E	815	126	CY	SUBDRAIN COARSE AGGREGATE
2044000000-E	815	750	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	2	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	12	LF	6" OUTLET PIPE
2286000000-N	840	20	EA	MASONRY DRAINAGE STRUCTURES
2354200000-N	840	1	EA	FRAME WITH GRATE, STD 840.24
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	17	EA	FRAME WITH TWO GRATES, STD 840.29
2396000000-N	840	2	EA	FRAME WITH COVER, STD 840.54
2556000000-E	846	2,040	LF	SHOULDER BERM GUTTER
3030000000-E	862	3,300	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	8	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3387000000-N	862	4	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (W-BEAM)
3628000000-E	876	432	TON	RIP RAP, CLASS I

ItemNumber	Sec #	Quantity	Unit	Description
3649000000-E	876	18	TON	RIP RAP, CLASS B
3656000000-E	876	2,454	SY	GEOTEXTILE FOR DRAINAGE
4072000000-E	903	30	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4158000000-N	907	12	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4400000000-E	1110	80	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	36	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	60	EA	DRUMS
4435000000-N	1135	20	EA	CONES
4445000000-E	1145	48	LF	BARRICADES (TYPE III)
4455000000-N	1150	100	DAY	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4485000000-E	1170	950	LF	PORTABLE CONCRETE BARRIER
4650000000-N	1251	75	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	8,158	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	8,158	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4770000000-E	1205	7,480	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)
4770000000-E	1205	7,480	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4810000000-E	1205	48,410	LF	PAINT PAVEMENT MARKING LINES (4")
4900000000-N	1251	74	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-E	1605	14,700	LF	TEMPORARY SILT FENCE
6006000000-E	1610	645	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	1,820	TON	STONE FOR EROSION CONTROL, CLASS B

ItemNumber	Sec #	Quantity	Unit	Description
6012000000-E	1610	1,340	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	22	ACR	TEMPORARY MULCHING
6018000000-E	1620	700	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	3.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	3,000	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	3,200	LF	SAFETY FENCE
6030000000-E	1630	3,020	CY	SILT EXCAVATION
6036000000-E	1631	40,000	SY	MATting FOR EROSION CONTROL
6037000000-E	SP	9,000	SY	COIR FIBER MAT
6038000000-E	SP	1,850	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	1,500	LF	1/4" HARDWARE CLOTH
6070000000-N	1639	8	EA	SPECIAL STILLING BASINS
6071010000-E	SP	900	LF	WATTLE
6071020000-E	SP	450	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	1,400	LF	COIR FIBER BAFFLE
6071050000-E	SP	5	EA	*** SKIMMER (1-1/2")
6084000000-E	1660	27	ACR	SEEDING & MULCHING
6087000000-E	1660	10	ACR	MOWING
6090000000-E	1661	250	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	650	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	19.5	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	75	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.25	ACR	REFORESTATION

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
TEMP. PAVEMENT AREAS					
-L- LT. 28+94	31+40	16	11	0	5
-L- LT. 46+12	49+28	21	3	0	18
-L- LT. 59+78	62+20	17	8	0	9
-L- LT. 65+01	67+36	13	148	135	0
1 SUBTOTAL		67	170	135	32
-L- RT. 20+21.00	31+30.00 (BEGIN BRIDGE)	2,203	23,973	21,770	0
-L- RT. 47+00.00 (END BRIDGE)	62+00.00 (BEGIN BRIDGE)	63	65,195	65,132	0
-L- RT. 65+00.00 (END BRIDGE)	79+70.00	203	17,970	17,767	0
2 SUBTOTAL		2,469	107,138	104,669	0
-L- LT. 26+50.00	31+30.00 (BEGIN BRIDGE)	148	0	0	148
-L- LT. 47+00.00 (END BRIDGE)	60+00.00	411	11	0	400
3 SUBTOTAL		559	11	0	548
-L- LT. 20+21.00	32+00.00	8,624	43	0	8,581
-L- LT. 46+00.00 (BEG. BRIDGE)	62+00.00	13,611	0	0	13,611
4 SUBTOTAL		22,235	43	0	22,192
-L- LT. 65+00.00	79+70.00	5,255	150	0	5,105
5 SUBTOTAL		5,255	150	0	5,105
PROJECT SUBTOTAL		30,585	107,512	104,804	27,877
MATERIAL FOR SHOULDER CONSTRUCTION			1,811	1,811	0
SUITABLE WASTE AVAILABLE IN LIEU OF BORROW		0	0	-32	-32
PROJECT SUBTOTAL		30,585	109,323	106,583	27,845
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				5,329	
GRAND TOTALS:		30,585		111,912	
SAY:		30,700		112,000	

UNDERCUT EXCAVATION (PER GEOTECH) 400 CY

REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD
-L-	23+25	31+41	LT	1,705.56
-L-	46+13	62+21	LT	4,194.11
-L-	65+03	73+03	LT	1,679.69
-L-	28+94.52	31+40.95	Temp. Pvt.	148.56
-L-	46+12.63	49+27.99	Temp. Pvt.	186.13
-L-	59+78.95	62+20.87	Temp. Pvt.	145.50
-L-	65+01.06	67+36.35	Temp. Pvt.	141.00
TOTAL:				8,200.55
SAY:				8,210

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- LT.	30+19.00	31+16.00	97.00'
-L- RT.	30+19.00	31+16.00	97.00'
-L- LT.	47+14.00	47+40.00	26.00'
-L- RT.	47+14.00	61+85.83	1,471.83'
-L- LT.	61+24.00	61+85.83	61.83'
-L- LT.	65+14.17	66+08.00	93.83'
-L- RT.	64+14.17	66+08.00	93.83'
-L- RT.	70+79.00	71+70.00	91.00'
TOTAL:			2,032.32'
SAY:			2,040.00'

SUMMARY OF SUBSURFACE DRAINAGE

LINE	STATION	STATION	LOCATION LT/RT/CL	DRAIN TYPE* UD/BD/SD	LF
-L-	20+21	26+25	RT	SD	604
CONTINGENCY:					100
TOTAL:					704
SAY:					750

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

PARCEL INDEX

PARCEL NO.	PROPERTY OWNER NAME	PLAN SHEETS
1	WILLIAM L. TRUMAN AND WIFE JANICE	4
2	BENJAMIN GRAY YOUNG AND WIFE RUBY	5, 6, 7, & 8
3	BARBARA T. MERRITT AND HUSBAND DANNY	5, 6, & 7
4	MARGARET HAMMOND	4
5	STATE OF NORTH CAROLINA	5

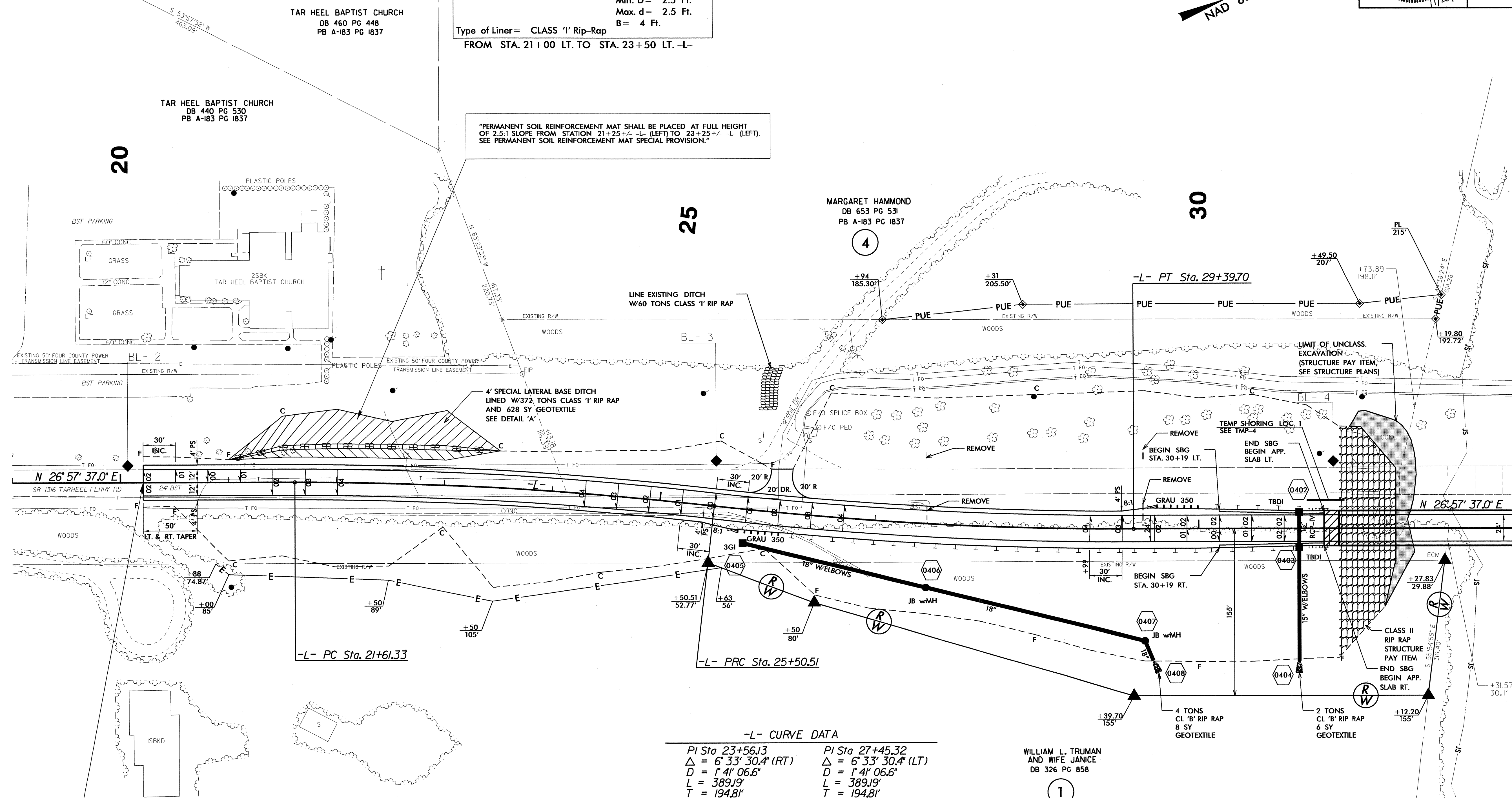
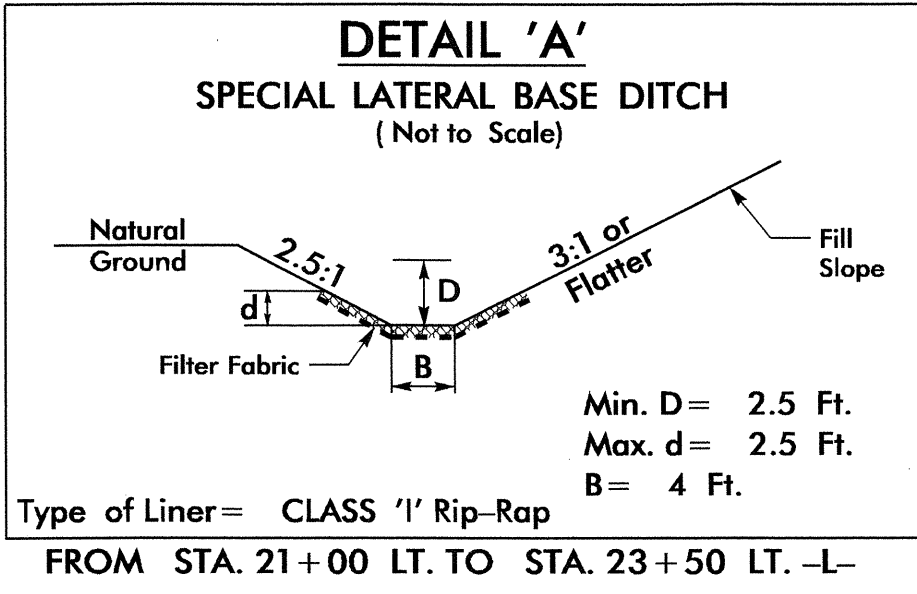
GUARDRAIL SUMMARY

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								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS				
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	XI	GRAU 350	M-350	TEMP W-BEAM	TERMINAL SECTIONS	VI MOD	BIC	AT-1	EA	G					NG			
-L-	29+52.25	31+21.00	LEFT	168.75'				31+21.00	4.00'	9.00'		150.00'		3.00'																		N=BRIDGE RAIL OFFSET	
-L-	25+64.75	31+21.00	RIGHT	556.25'			27+00.00	31+21.00	6.00'	9.00'	50.00'		1.00'																				
-L-	47+09.00	50+15.25	LEFT	306.25'			47+09.00		6.00'	9.00'	50.00'		1.00'																				
-L-	47+09.00	62+00.00	RIGHT	1,491.00'			47+09.00	62+00.00	6.00'	9.00'	100.00'	100.00'	2.00'	2.00'																			
-L-	60+56.25	62+00.00	LEFT	143.75'				62+00.00	4.00'	9.00'		125.00'		2.50'																		N=BRIDGE RAIL OFFSET	
-L-	65+00.00	68+06.25	LEFT	306.25'			65+00.00		6.00'	9.00'	50.00'		1.00'																				
-L-	65+00.00	72+31.25	RIGHT	731.25'			65+00.00	71+00.00	6.00'	9.00'	50.00'		1.00'																				
-L-	31+40 +/-		LEFT																													SEE TMP PLANS	
-L-	46+12 +/-		LEFT																													SEE TMP PLANS	
-L-	62+20 +/-		LEFT																													SEE TMP PLANS	
-L-	65+01 +/-		LEFT																													SEE TMP PLANS	
PROJECT TOTAL				3,703.50'																													
LESS ANCHOR DEDUCTIONS																																	
GRAU 350 6 @ 50.00' =				-300'																													
TYPE III 8 @ 18.75' =				-150'																													
TOTAL				3,253.50'																													
SAY				3,300.00'																													
											ADDITIONAL GUARDRAIL POSTS =		5																				

12/06/07
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FOR -L- PROFILE, SEE SHEET NO. 9



"PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED AT FULL HEIGHT OF 2.5:1 SLOPE FROM STATION 21+25+/- -L- (LEFT) TO 23+25+/- -L- (LEFT). SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION."

-L- CURVE DATA

PI Sta 23+56.13	PI Sta 27+45.32
$\Delta = 6^{\circ} 33' 30.4" (RT)$	$\Delta = 6^{\circ} 33' 30.4" (LT)$
$D = 1^{\circ} 41' 06.6"$	$D = 1^{\circ} 41' 06.6"$
$L = 389.19'$	$L = 389.19'$
$T = 194.81'$	$T = 194.81'$
$R = 3,400.00'$	$R = 3,400.00'$
SE = SEE PLANS	SE = SEE PLANS

WILLIAM L. TRUMAN
AND WIFE JANICE
DB 326 PG 858

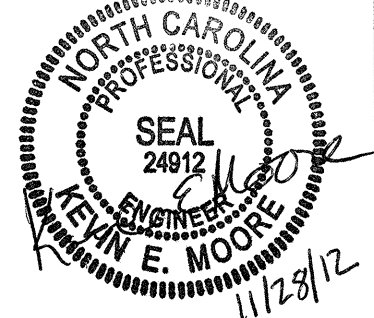

BEGIN TIP PROJECT B-4712
-L- STA. 20+21.00

MATCHLINE 33+00.00 SEE SHEET 5

8/17/99

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8/17/99

PROJECT REFERENCE NO. B-4712		SHEET NO. 5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
 BARBARA T. MERRITT AND HUSBAND DANNY DB 482 PG 661,663 DB 329 PG 771 11/23/12		 BENJAMIN GRAY YOUNG AND WIFE RUBY DB 306 PG 823-826 12/31/10	

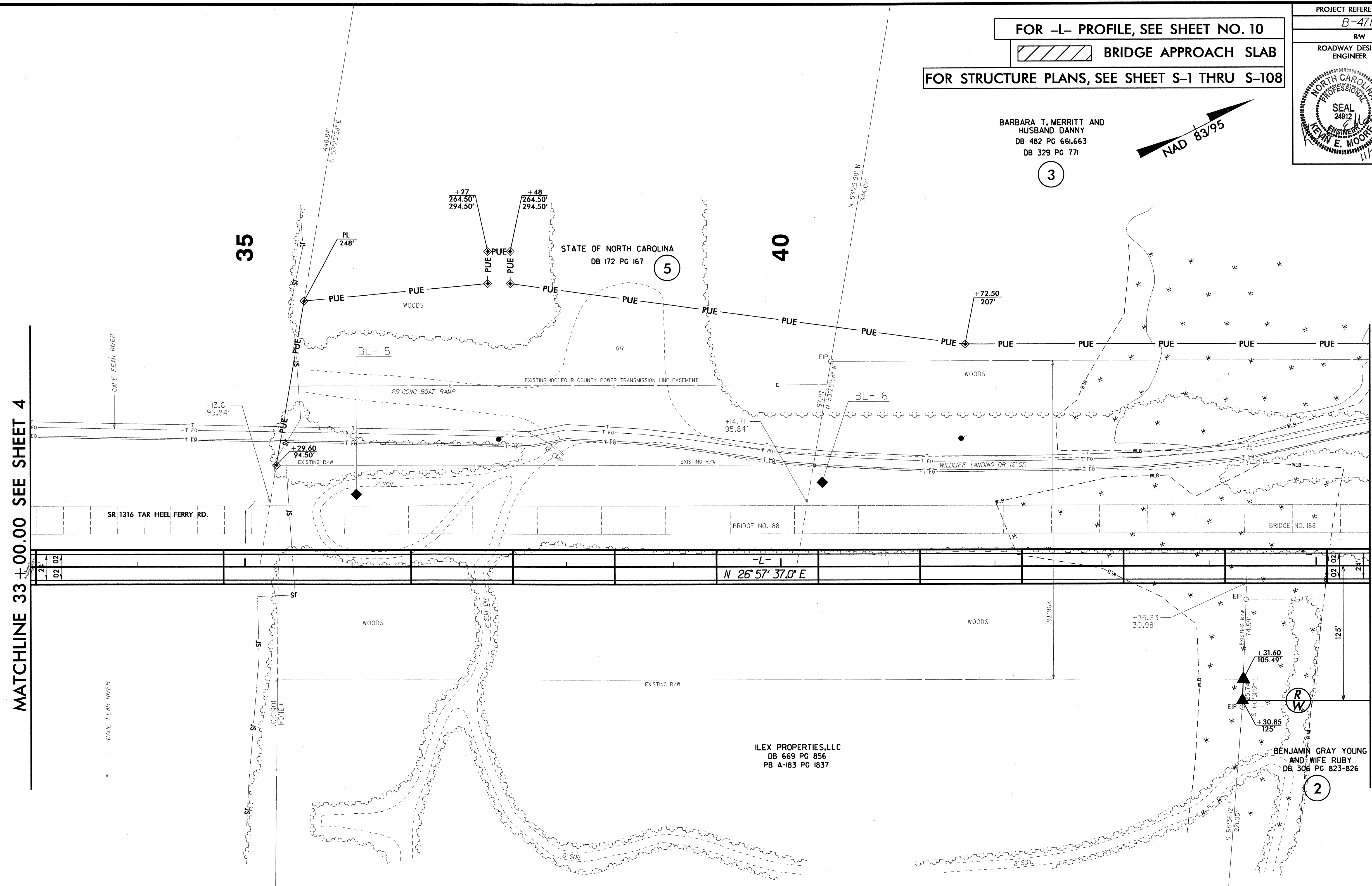
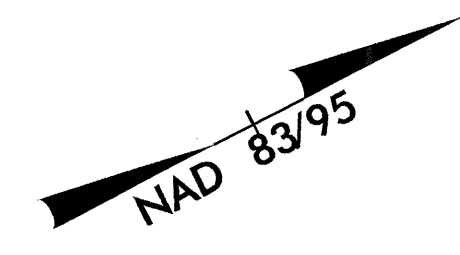
FOR -L- PROFILE, SEE SHEET NO. 10

 BRIDGE APPROACH SLAB

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-108

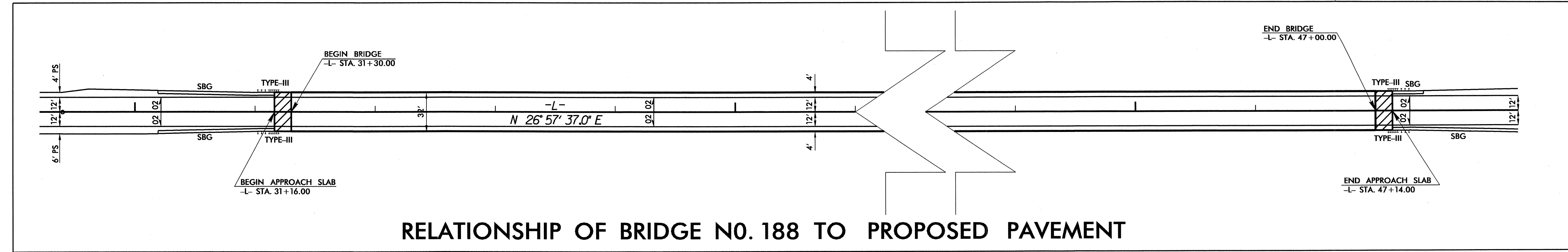
BARBARA T. MERRITT AND HUSBAND DANNY
DB 482 PG 661,663
DB 329 PG 771

3



MATCHLINE 33 + 00.00 SEE SHEET 4

MATCHLINE 45 + 50.00 SEE SHEET 6

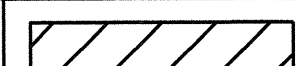


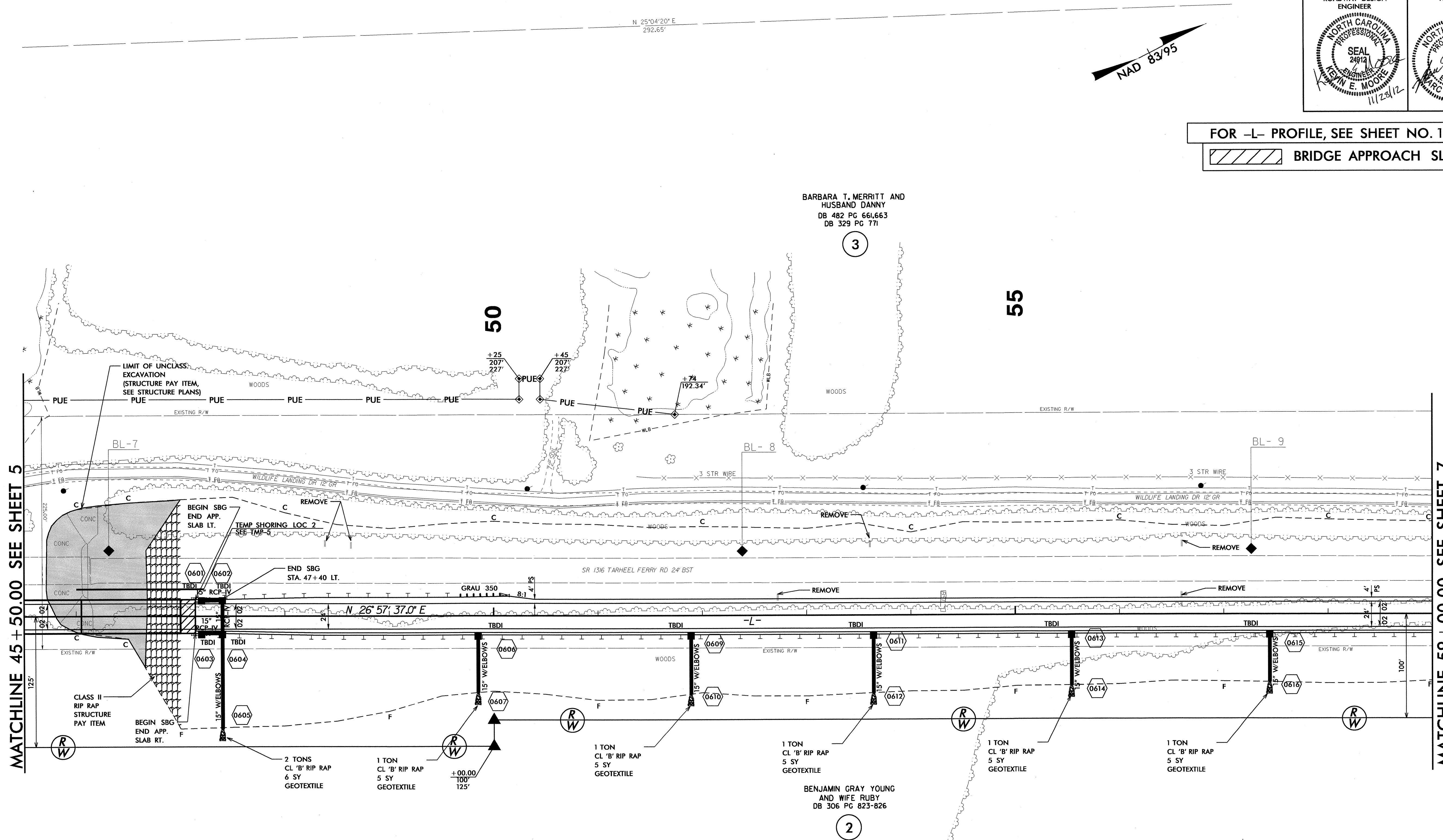
RELATIONSHIP OF BRIDGE NO. 188 TO PROPOSED PAVEMENT

REVISIONS

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BENJAMIN GRAY YOUNG

PROJECT REFERENCE NO. B-4712	SHEET NO. 6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 24912 KEVIN E. MOORE 11/28/12	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 28870 R.C. T. SHOWN 12/3/12

FOR -L- PROFILE, SEE SHEET NO. 11
 BRIDGE APPROACH SLAB



MATCHLINE 45 + 50.00 SEE SHEET 5

MATCHLINE 59 + 00.00 SEE SHEET 7

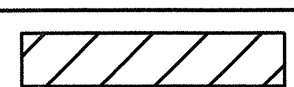
REVISIONS

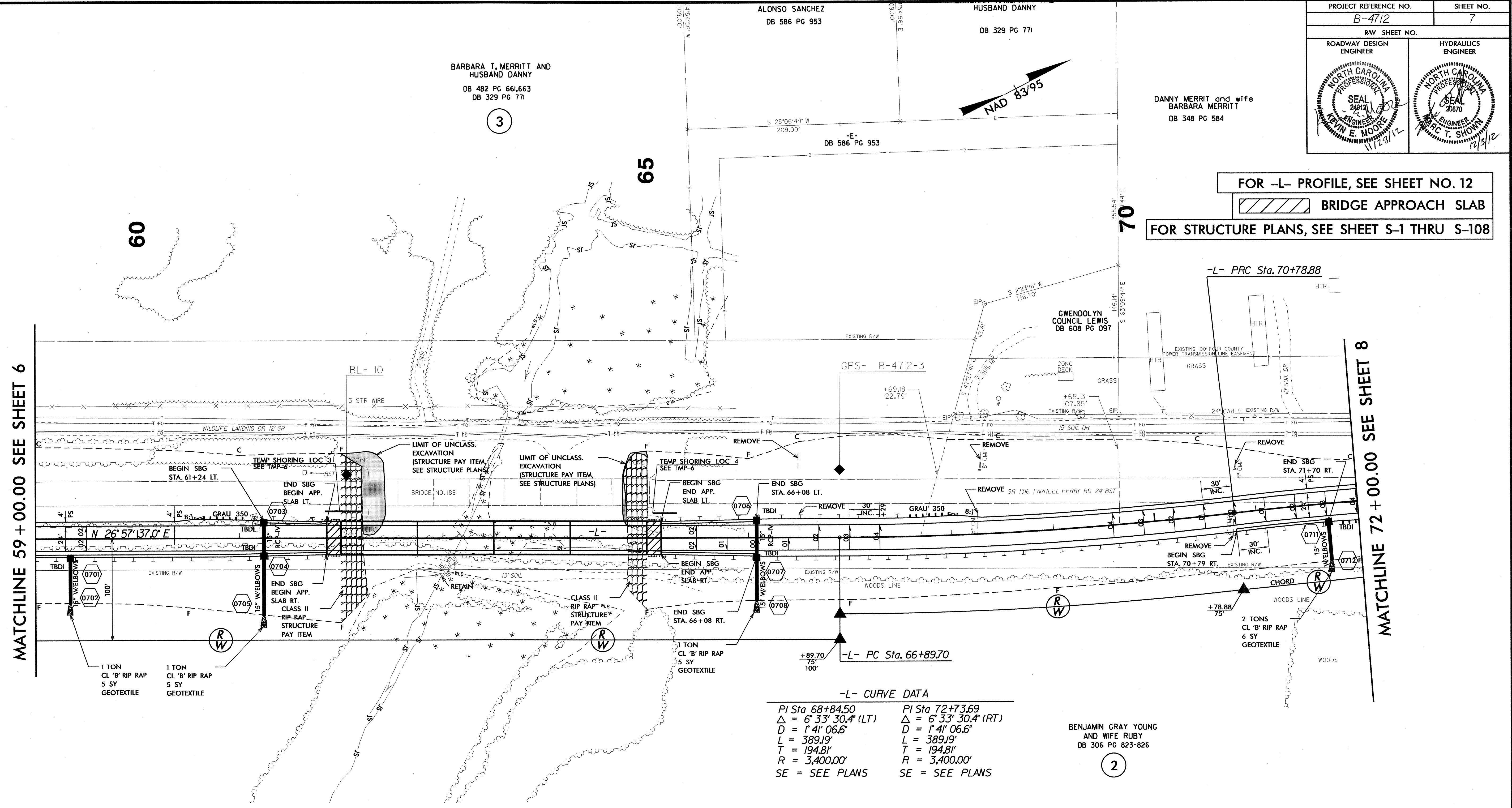
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 USER:RFRANK

8/17/99

PROJECT REFERENCE NO. B-4712	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24912 KEVIN E. MOORE 11/23/12	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28870 BARBARA T. MERRITT 11/23/12

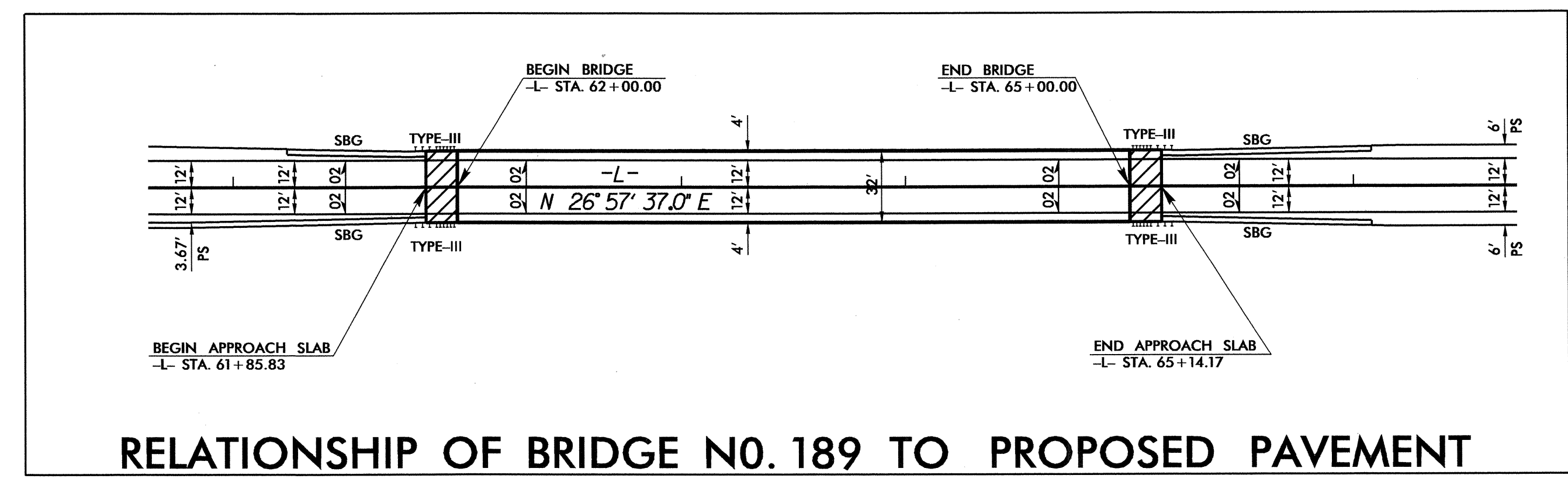
DANNY MERRITT and wife
BARBARA MERRITT
DB 348 PG 584

FOR -L- PROFILE, SEE SHEET NO. 12
 BRIDGE APPROACH SLAB
 FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-108



-L- CURVE DATA

PI Sta 68+84.50	PI Sta 72+73.69
Δ = 6° 33' 30.4\" (LT)	Δ = 6° 33' 30.4\" (RT)
D = 1' 41\" 06.6\"	D = 1' 41\" 06.6\"
L = 389.19'	L = 389.19'
T = 194.81'	T = 194.81'
R = 3,400.00'	R = 3,400.00'
SE = SEE PLANS	SE = SEE PLANS



RELATIONSHIP OF BRIDGE NO. 189 TO PROPOSED PAVEMENT

8/17/99

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 USER:RDMERRIT

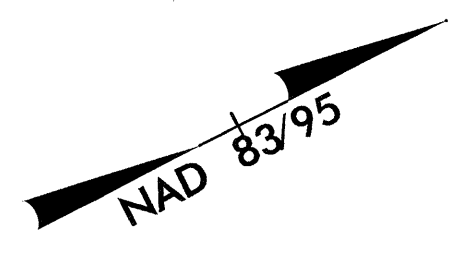
REVISIONS

MATCHLINE 59 + 00.00 SEE SHEET 6

MATCHLINE 72 + 00.00 SEE SHEET 8

PROJECT REFERENCE NO. B-4712	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 24912 KEVIN E. MOORE 11/28/12	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 20870 MARC T. SHOWN 11/28/12

FOR -L- PROFILE, SEE SHEET NO. 13



DANNY MERRIT and wife
BARBARA MERRITT
DB 348 PG 584

ALFONZA TUTT and wife
LAURA C. TUTT
DB 308 PG 581

JESSIE CAMPBELL JR
DB 409 PG 864

MARSHALL B PITTS SR.
and wife
CAROL W. PITTS
DB 278 PG 927

MARSHALL B PITTS SR.
DB 339 PG 693

BENJAMIN GRAY YOUNG
AND WIFE RUBY
DB 306 PG 823-826

MATCHLINE 72 + 00.00 SEE SHEET 7

-L- CURVE DATA
 PI Sta 72+73.69
 $\Delta = 6^{\circ} 33' 30.4" (RT)$
 $D = 1' 41" 06.6"$
 $L = 389.19'$
 $T = 194.81'$
 $R = 3,400.00'$
 SE = SEE PLANS

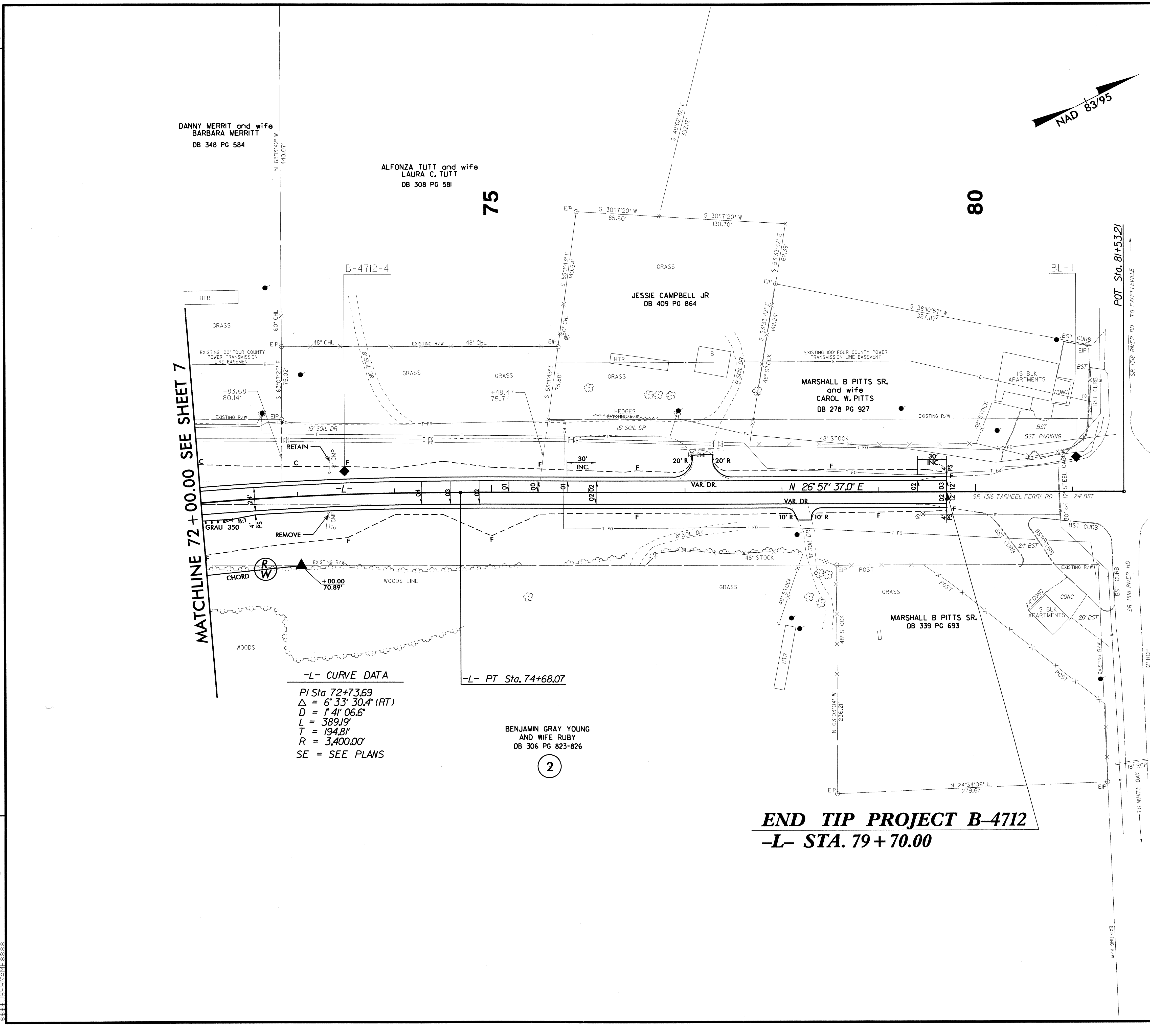
-L- PT Sta. 74+68.07

END TIP PROJECT B-4712
-L- STA. 79 + 70.00

REVISIONS

8/17/99

10 OCT 2012 08:51 \\B4712_Rdy_psh8.dgn

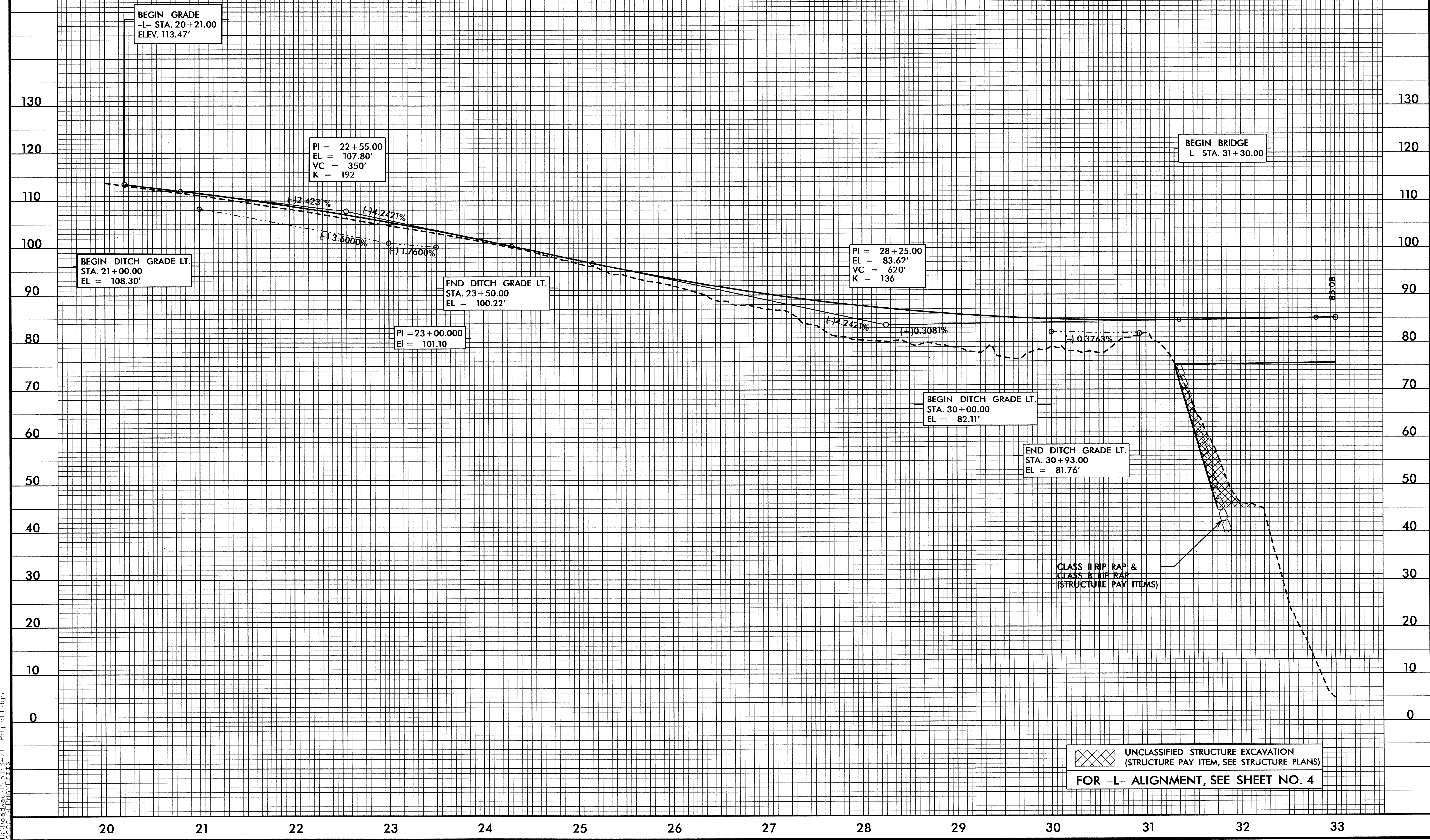


5/14/99

PROJECT REFERENCE NO. B-4712	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

LEFT DITCH - - - - -



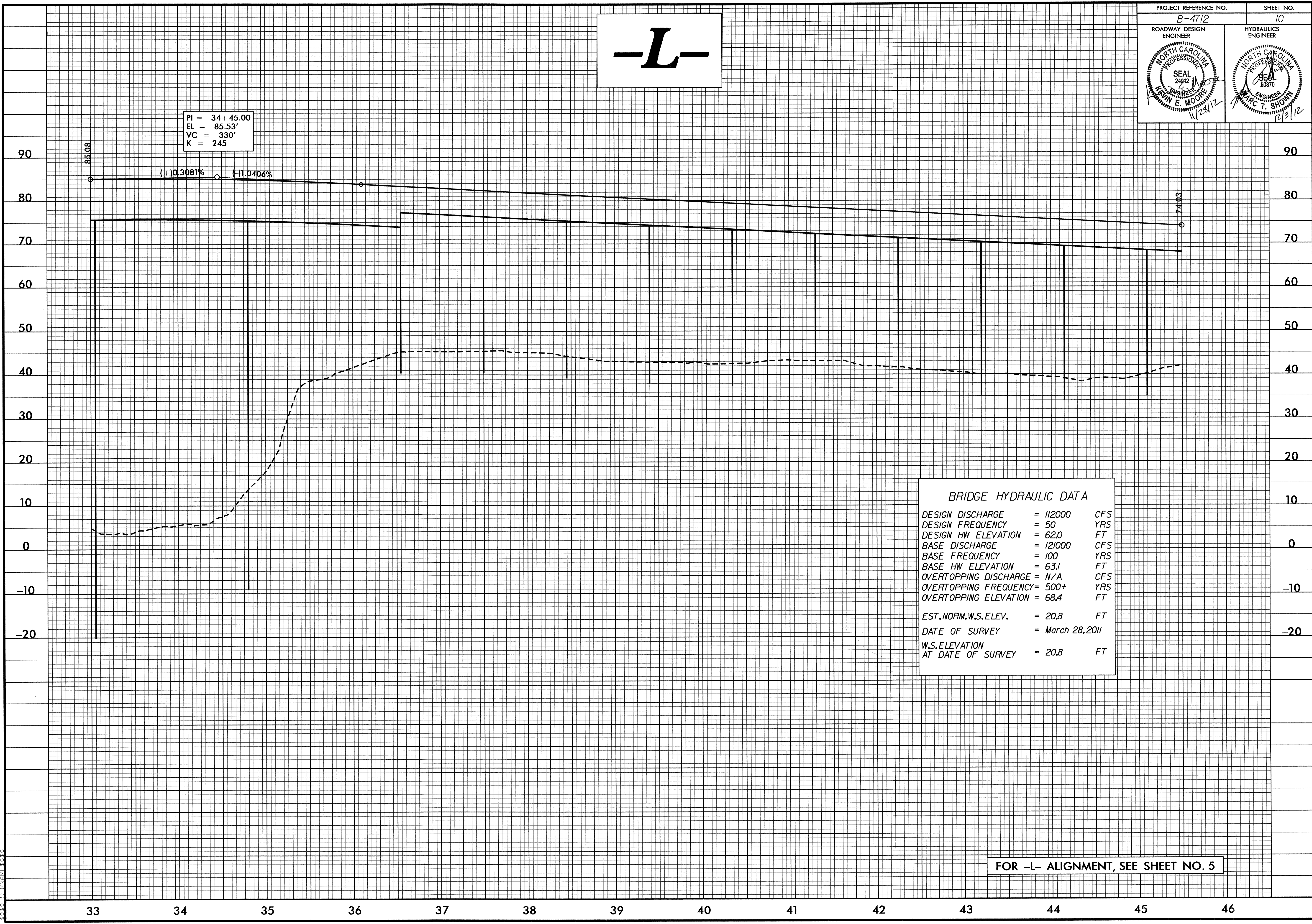
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5/14/99

-L-

PROJECT REFERENCE NO. B-4712	SHEET NO. 10
ROADWAY DESIGN ENGINEER IRVIN E. MOORE 11/28/12	HYDRAULICS ENGINEER MARC T. SHOWN 12/3/12

PI = 34+45.00
 EL = 85.53'
 VC = 330'
 K = 245



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 112000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 62.0	FT
BASE DISCHARGE	= 121000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 63J	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 68.4	FT
EST. NORM. W.S. ELEV.	= 20.8	FT
DATE OF SURVEY	= March 28, 2011	
W.S. ELEVATION AT DATE OF SURVEY	= 20.8	FT

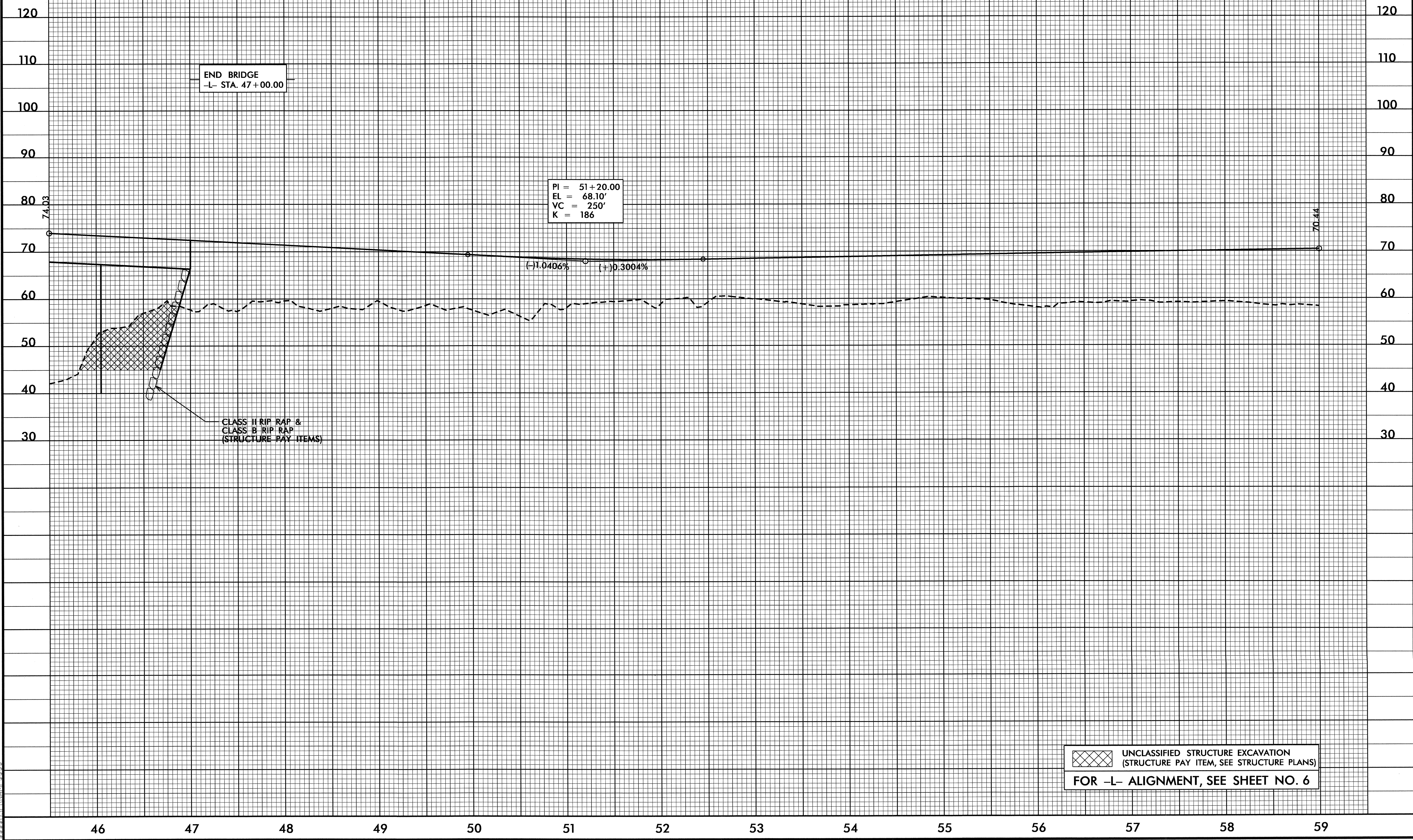
FOR -L- ALIGNMENT, SEE SHEET NO. 5

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5/14/99

-L-

PROJECT REFERENCE NO. B-4712	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



END BRIDGE
L- STA. 47+00.00

PI = 51+20.00
EL = 68.10'
VC = 250'
K = 186

(-)1.0406% (+)0.3004%

CLASS II RIP RAP &
CLASS B RIP RAP
(STRUCTURE PAY ITEMS)

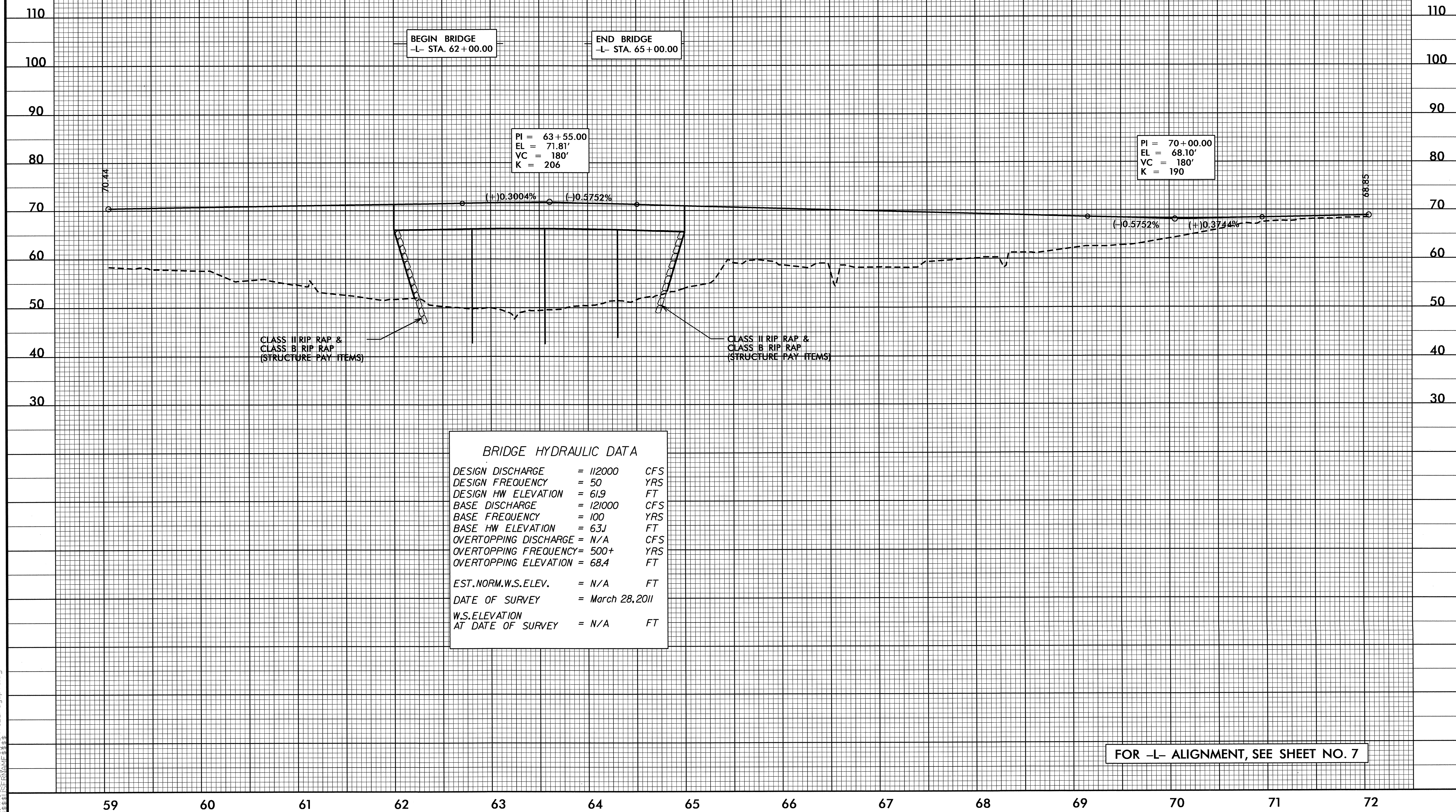
UNCLASSIFIED STRUCTURE EXCAVATION
(STRUCTURE PAY ITEM, SEE STRUCTURE PLANS)
FOR -L- ALIGNMENT, SEE SHEET NO. 6

06-NOV-2012 09:20
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5/14/99

-L-

PROJECT REFERENCE NO. B-4712	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



BEGIN BRIDGE
-L- STA. 62+00.00

END BRIDGE
-L- STA. 65+00.00

PI = 63+55.00
EL = 71.81'
VC = 180'
K = 206

PI = 70+00.00
EL = 68.10'
VC = 180'
K = 190

CLASS II RIP RAP &
CLASS B RIP RAP
(STRUCTURE PAY ITEMS)

CLASS II RIP RAP &
CLASS B RIP RAP
(STRUCTURE PAY ITEMS)

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 112000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 61.9	FT
BASE DISCHARGE	= 121000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 63J	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 68.4	FT
EST. NORM. W.S. ELEV.	= N/A	FT
DATE OF SURVEY	= March 28, 2011	
W.S. ELEVATION AT DATE OF SURVEY	= N/A	FT

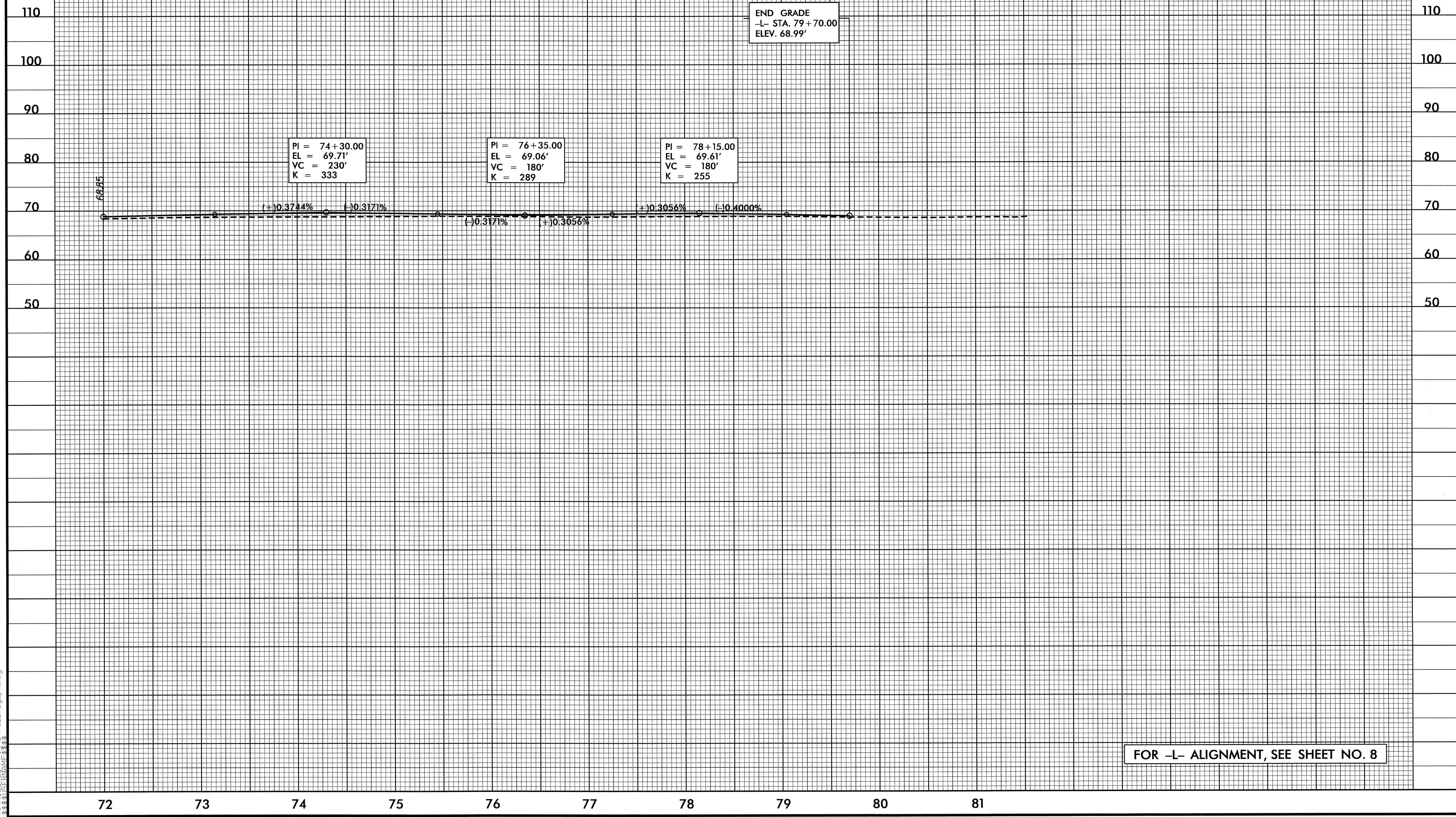
FOR -L- ALIGNMENT, SEE SHEET NO. 7

06-NOV-2012 09:20:04 04712-Rdy-pfl.dgn

5/14/09

PROJECT REFERENCE NO. B-4712	SHEET NO. 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-



FOR -L- ALIGNMENT, SEE SHEET NO. 8

16-OCT-2012 13:57 B:\4712-Rdy-p1.dgn