

09/08/09

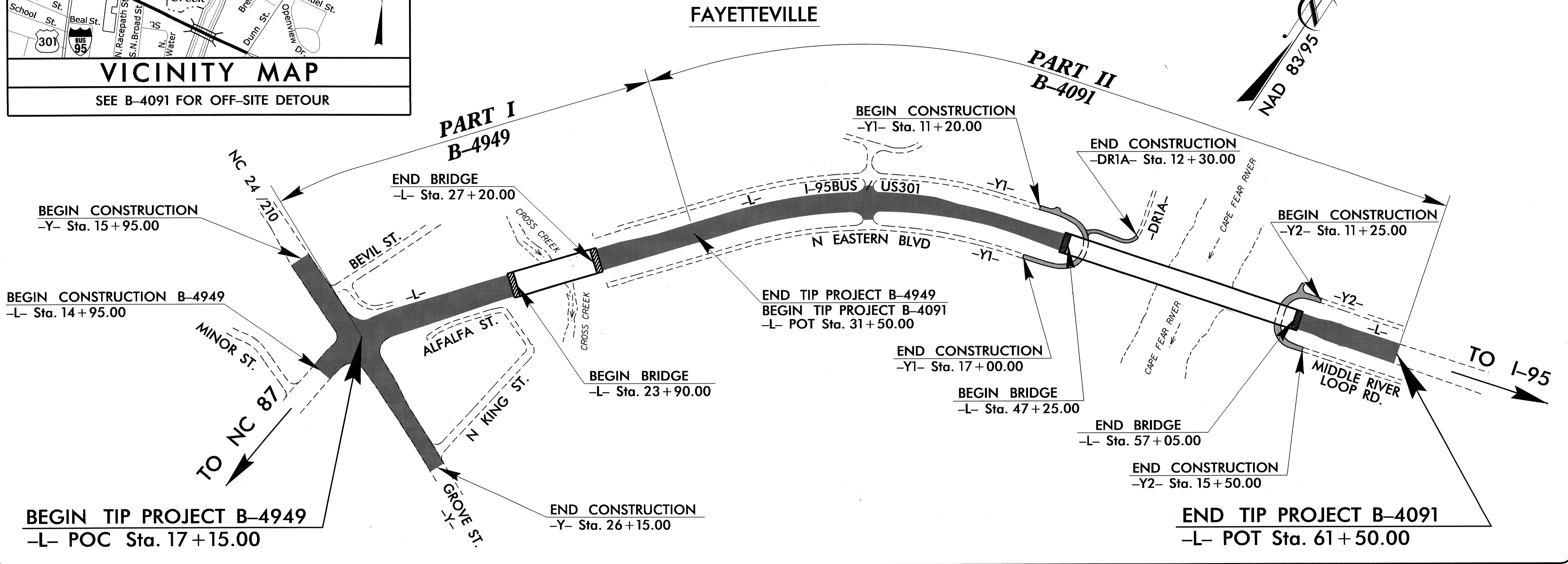
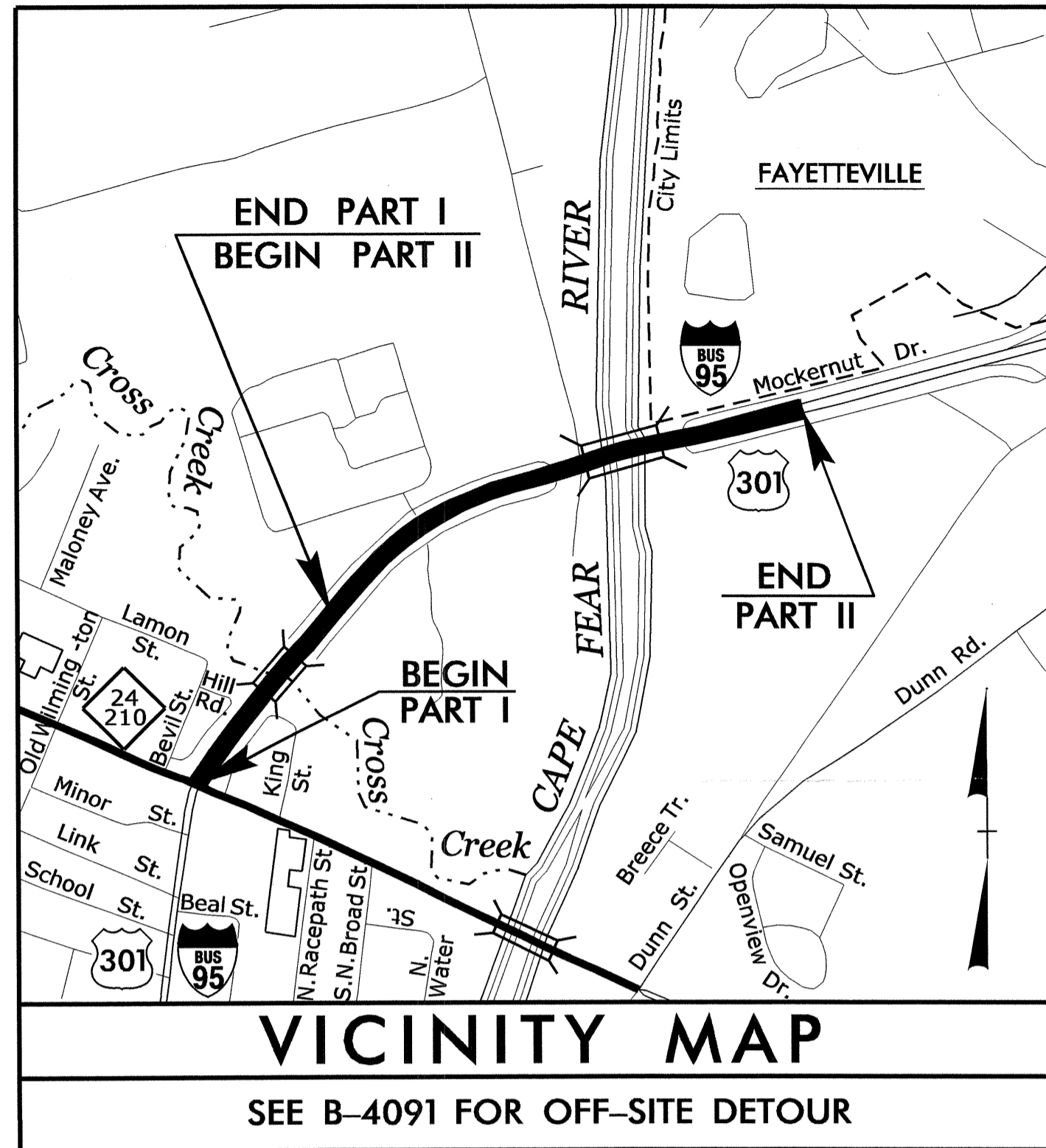
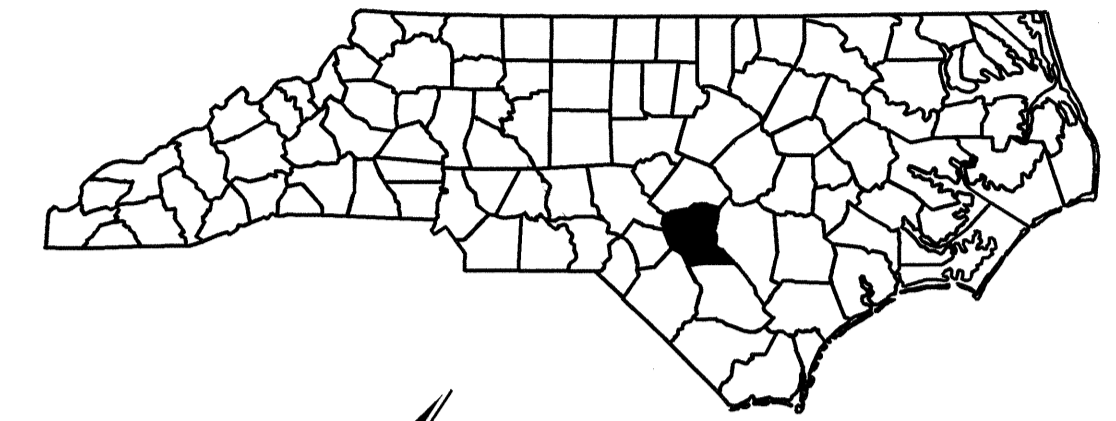
See Sheet 1-A For Index of Sheets  
See Sheet 2 For Conventional Symbols

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**CUMBERLAND COUNTY**

**LOCATION: I-95 BUS & US 301 - REPLACE BRIDGE 61 OVER CROSS CREEK, BRIDGE 85 OVER CAPE FEAR RIVER, SR 1737 & SR 1739 IN FAYETTEVILLE**  
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, RETAINING WALLS, AND SIGNALS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4949 / B-4091	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40107.1.1	BRNHS-095-2(103)40	B-4949 (P.E.)	
33449.1.1	BRSTP-301(12)	B-4091 (P.E.)	
40107.2.1	BRNHS-095-2(103)40	B-4949 (RW&UTIL)	
33449.3.1	BRSTP-301(12)	B-4091 (RW&UTIL)	
33449.2.2	BRSTP-301(12)	CONST.	



**TIP PROJECT: B-4949 / B-4091**

**CONTRACT: C202879**

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECTS B-4949 / B-4091 = 0.592 MI.  
LENGTH STRUCTURE TIP PROJECTS B-4949 / B-4091 = 0.248 MI.  
TOTAL LENGTH OF TIP PROJECTS B-4949 / B-4091 = 0.840 MI.

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**

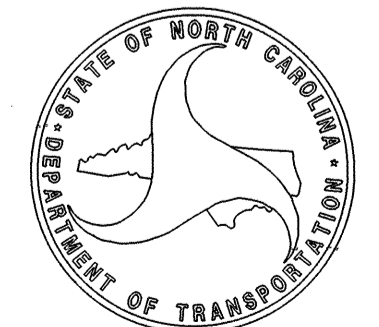
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

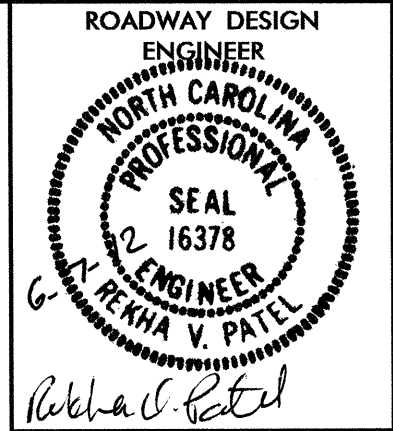
**RIGHT OF WAY DATE:** B-4091: AUGUST 19, 2011

**RIGHT OF WAY DATE:** B-4949: AUGUST 30, 2011

**LETTING DATE:** AUGUST 21, 2012



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\$\$\$USERNAME\$\$\$



# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET (B-4949/B-4091)
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
2	CONVENTIONAL SYMBOLS
3	SUMMARY OF QUANTITIES
<b>B-4949 PART 1</b>	
1	TITLE SHEET (B-4949)
1-A	SURVEY CONTROL SHEET
2 & 2-A	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, RETAINING WALL DETAIL, AND ROADWAY-BRIDGE RELATIONSHIP DETAIL
2-B THRU 2-D	STANDARD TEMPORARY WALL DETAILS
2-E	STANDARD TEMPORARY SHORING DETAIL
3-A	SUMMARY OF PIPES 48" AND UNDER
3-B	GUARDRAIL SUMMARY, SUMMARY OF EARTHWORK, AND SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL
4 & 5	PLAN SHEETS
6	PROFILE SHEET
TMP-1 THRU TMP-14	TRANSPORTATION MANAGEMENT PLANS (B-4949/B-4091)
SD-1	SPECIAL SIGN DESIGN
PMP-1 THRU PMP-5	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-9	SIGNING PLANS
SIG-1 THRU SIG-7	SIGNAL PLANS
UC-1 THRU UC-8	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION SUMMARY SHEET
X-1 THRU X-7	CROSS-SECTIONS
S-1 THRU S-52	STRUCTURE PLANS
W-1 & W-2	RETAINING WALL PLANS
<b>B-4091 PART 2</b>	
1	TITLE SHEET (B-4091)
1-A	SURVEY CONTROL SHEET
2 THRU 2-D	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, DETAIL SHOWING PAVEMENT/BRIDGE RELATIONSHIP, AND STRUCTURE TYPICAL SECTION
2-E	DETAIL OF GUARDRAIL ANCHOR UNIT NJ-25 TYING TO CONCRETE BARRIER
2-F	DETAIL OF SHOULDER BERM GUTTER TO 2'-6" CURB AND GUTTER TRANSITION SECTION
2-G	DETAIL OF CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX
2-H	DETAIL OF STANDARD REINFORCED SOIL SLOPE
3-A	SUMMARY OF EARTHWORK, SUMMARY OF ASPHALT PAVEMENT REMOVAL, GUARDRAIL SUMMARY, AND SUMMARY OF WOVEN WIRE FENCE 47" FABRIC
3-B THRU 3-C	SUMMARY OF DRAINAGE QUANTITIES
3-D	PARCEL INDEX SHEET
4 THRU 7	PLAN SHEETS
8 THRU 11	PROFILE SHEETS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-11	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-7	SIGNING PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-5	UTILITY BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-28	CROSS-SECTIONS
S-54 THRU S-131	STRUCTURE PLANS
W-1 THRU W-5	RETAINING WALL PLANS

**GENERAL NOTES:** 2012 SPECIFICATIONS EFFECTIVE: 01-17-12 REVISED: 11/01/11

**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 AND STD. NO. 560.02

**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.

**UNDERDRAINS:**  
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

**STREET TURNOUT:**  
STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIi NOTED ON PLANS.

**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". (B-4949)  
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7. (B-4091)

**SUBSURFACE PLANS:**  
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

**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.

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE Fayetteville Public Works Commision, (PWC)-Power, (PWC)-Water, and (PWC)-Sanitary Sewer, Centurylink Telephone, Time Warner Cable, and Piedmont Natural Gas.  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

**CURB RAMPS**  
CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD. 848.05.

EFF. 01-17-12

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
<b>DIVISION 2 - EARTHWORK</b>	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.10	Reinforced Bridge Approach Fills
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
<b>DIVISION 8 - INCIDENTALS</b>	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type "B" - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type "B" - 12" thru 36" 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
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
854.01	Double Faced Concrete Barrier - Types I, II, III and IV
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
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	○ EP
Property Corner	✕
Property Monument	□ ECM
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	○ W
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	↓
Proposed Lateral, Tail, Head Ditch	→ FLW
False Sump	▽

## RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ 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 R/W Marker	○ ▲
Proposed Control of Access Line with Concrete CA Marker	○ ▲
Existing Control of Access	○ ▲
Proposed Control of Access	○ ▲
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
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	○ CR
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	□ 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	○ S
Storm Sewer	-----

## UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
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	○ T
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	○
U/G Telephone Cable Hand Hole	○ PH
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	○ W
Water Meter	○
Water Valve	○ X
Water Hydrant	○ H
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	○ X
U/G TV Cable Hand Hole	○ PH
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	○ S
Sanitary Sewer Cleanout	○ S
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.	○ UST
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.





09/08/09

TIP PROJECT: B-4949

CONTRACT: C202879

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

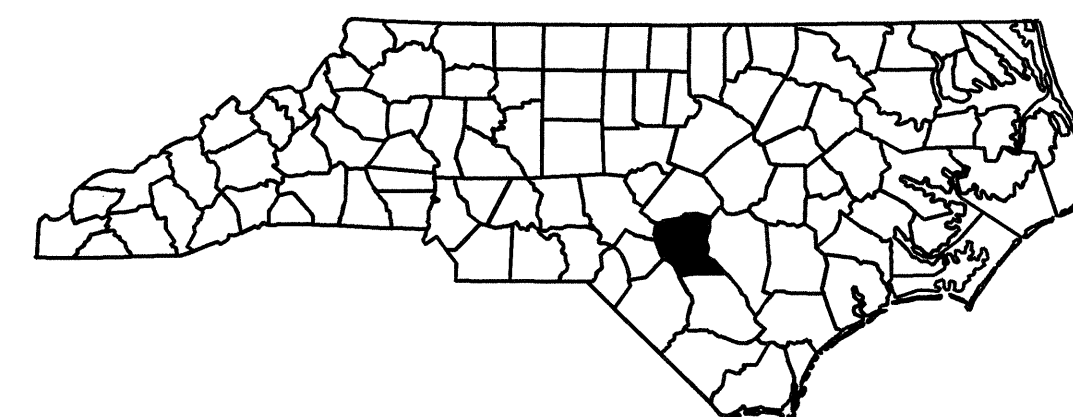
CUMBERLAND COUNTY

LOCATION: I-95 BUSINESS & US 301 - REPLACE BRIDGE 61  
OVER CROSS CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS  
AND STRUCTURE

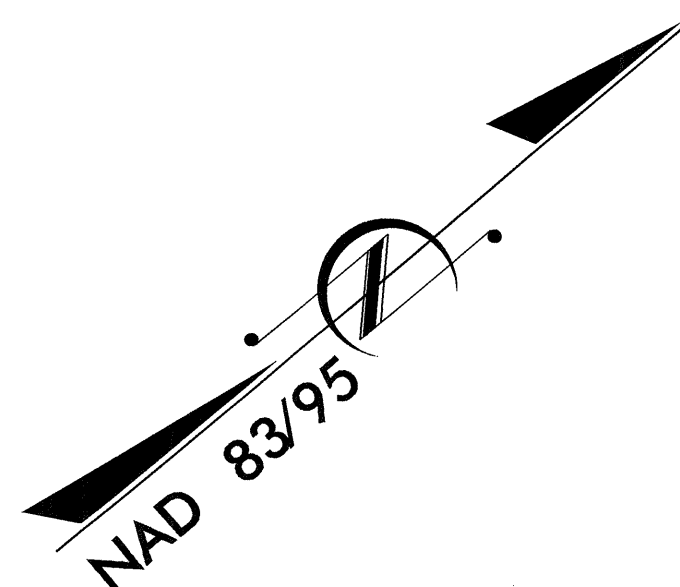
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N.C.	B-4949	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40107.1.1	BRNHS-095-2(103)40	P.E.	
40107.2.1	BRNHS-095-2(103)40	ROW & UTIL	
33449.2.2	BRNHS-095-2(103)40	CONST.	

PART 1 OF 2



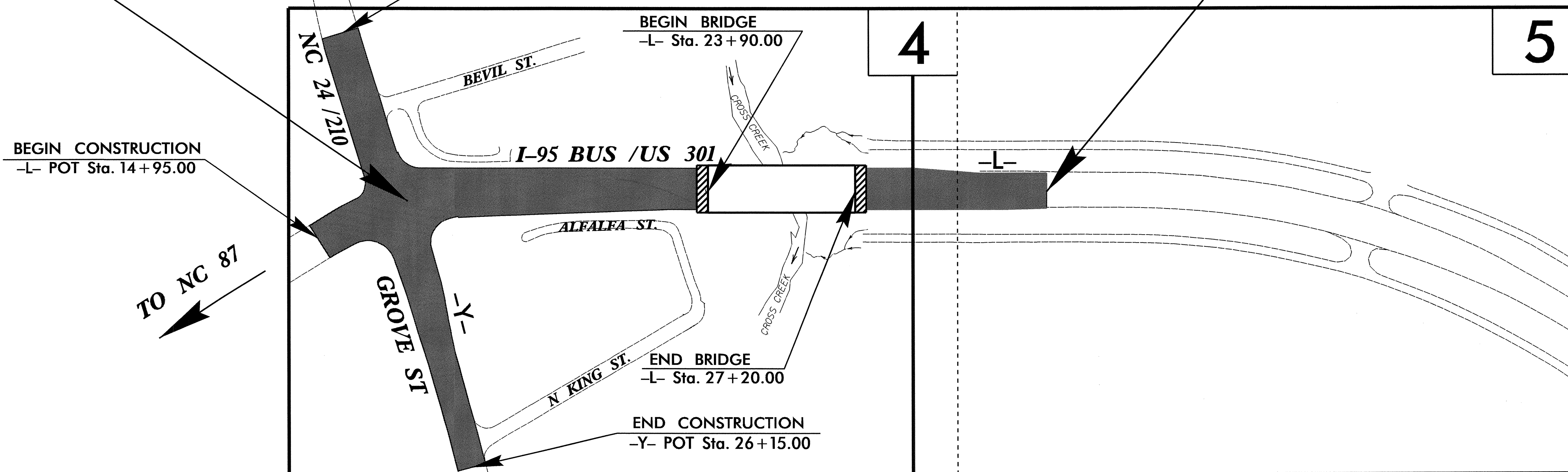
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-L- POC STA. 17+15.00

BEGIN CONSTRUCTION  
-Y- POT Sta. 15+95.00



FAYETTEVILLE

END TIP PROJECT B-4949  
-L- POT STA. 31+50.00  
BEGIN TIP PROJECT B-4091

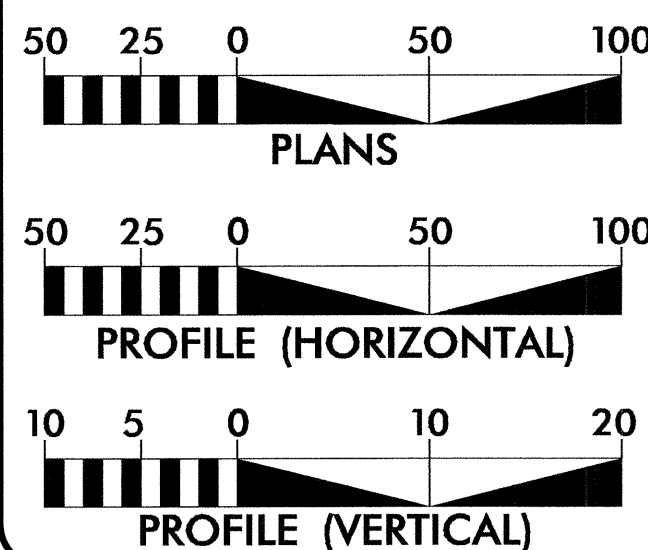


BEGIN CONSTRUCTION  
-L- POT Sta. 14+95.00

TO NC 87

TO I-95

GRAPHIC SCALES



DESIGN DATA

ADT 2012 = 24,200  
ADT 2035 = 38,000  
DHV = 10 %  
D = 60 %  
T = 8 % \*  
V = 50 MPH  
\* TTST 5 % DUAL 3 %  
FUNC. CLASS = ARTERIAL  
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4949 = 0.209 MI  
LENGTH OF STRUCTURE TIP PROJECT B-4949 = 0.063 MI  
TOTAL LENGTH TIP PROJECT B-4949 = 0.272 MI

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
AUGUST 30, 2011

LETTING DATE:  
AUGUST 21, 2012

REKHA PATEL, PE  
PROJECT ENGINEER

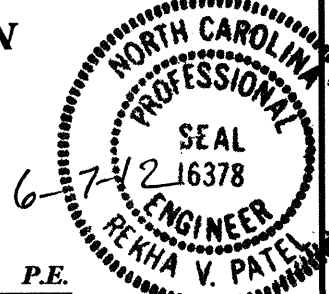
BRIAN P. ROBINSON  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER



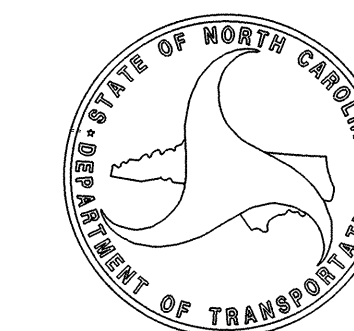
Signature of Marc T. Showry

ROADWAY DESIGN  
ENGINEER



Signature of Rekha V. Patel

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4949	I-A
Location and Surveys	

# SURVEY CONTROL SHEET B-4949

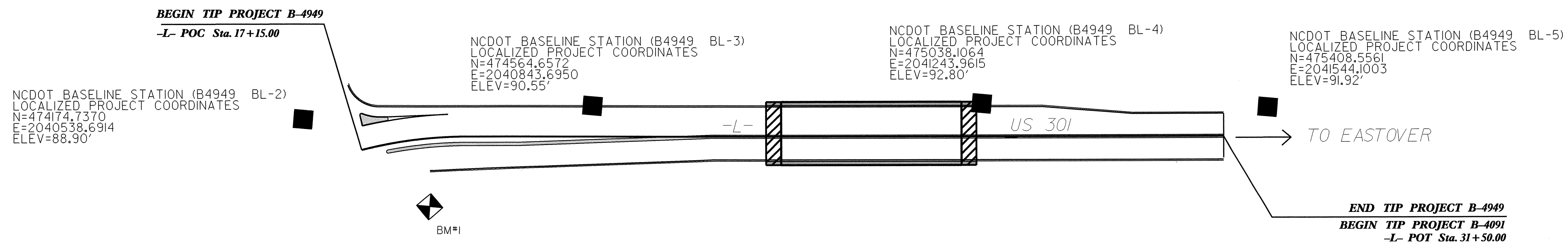


BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4949 BL-1	473681.3634	2040488.3168	88.81	11+56.56	40.73 LT
2	B4949 BL-2	474174.7370	2040538.6914	88.90	16+38.07	73.59 LT
3	B4949 BL-3	474564.6572	2040843.6950	90.55	21+12.55	41.03 LT
4	B4949 BL-4	475038.1064	2041243.9615	92.80	27+32.52	38.45 LT
5	B4949 BL-5	475408.5561	2041544.1003	91.92	32+09.23	46.44 LT

BY POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
102		474495.7430	2039810.6940	88.63	16+64.28	868.17 LT
8	B4949 BY8	474302.6500	2040239.2360	89.18	16+50.89	398.79 LT
9	B4949 BY9	474174.7370	2040538.6914	88.90	16+38.07	73.59 LT
10	B4949 BY10	473974.2050	2041005.6730	86.27	15+57.04	431.79 RT
11	B4949 BY11	473838.2340	2041320.6140	87.21	14+22.70	763.32 RT

.....  
 BM1 ELEVATION = 87.65  
 N 474255 E 2040787  
 L STATION 14+92.00 172 LEFT  
 RR SPIKE IN BASE OF 36 OAK TREE  
 .....

TYPE	STATION	NORTH	EAST
POT	10+00.00	473520.7736	2040507.8694
PC	14+88.36	474004.8012	2040572.8012
PT	18+92.53	474369.6896	2040733.7911
PC	33+17.28	475461.5286	2041649.1052
PT	44+90.61	476080.8357	2042623.9947



## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "VANDER RM3" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 464925.950(±) EASTING: 2069182.420(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999879130 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "VANDER RM3" TO -L- STATION 17+15.00 IS N 71°57'47.6" W 30019.9865' 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/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4949\_LS\_CONTROL\_101117.TXT  
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.  
 © INDICATES GODETIC 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

22-MAY-2012 14:44  
R:\Roadwork\Proj\B4949\_1s\_1c\_110524.dgn  
B4949\_LS\_CONTROL\_101117.TXT

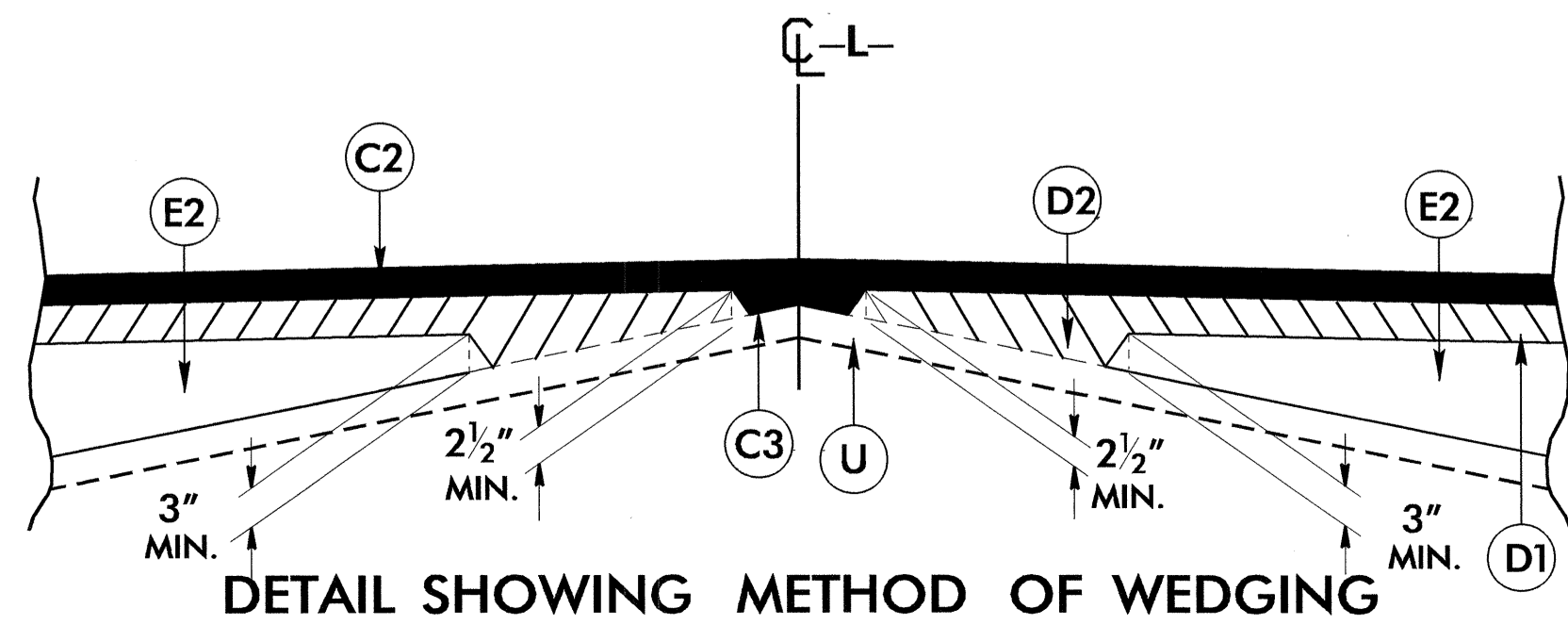
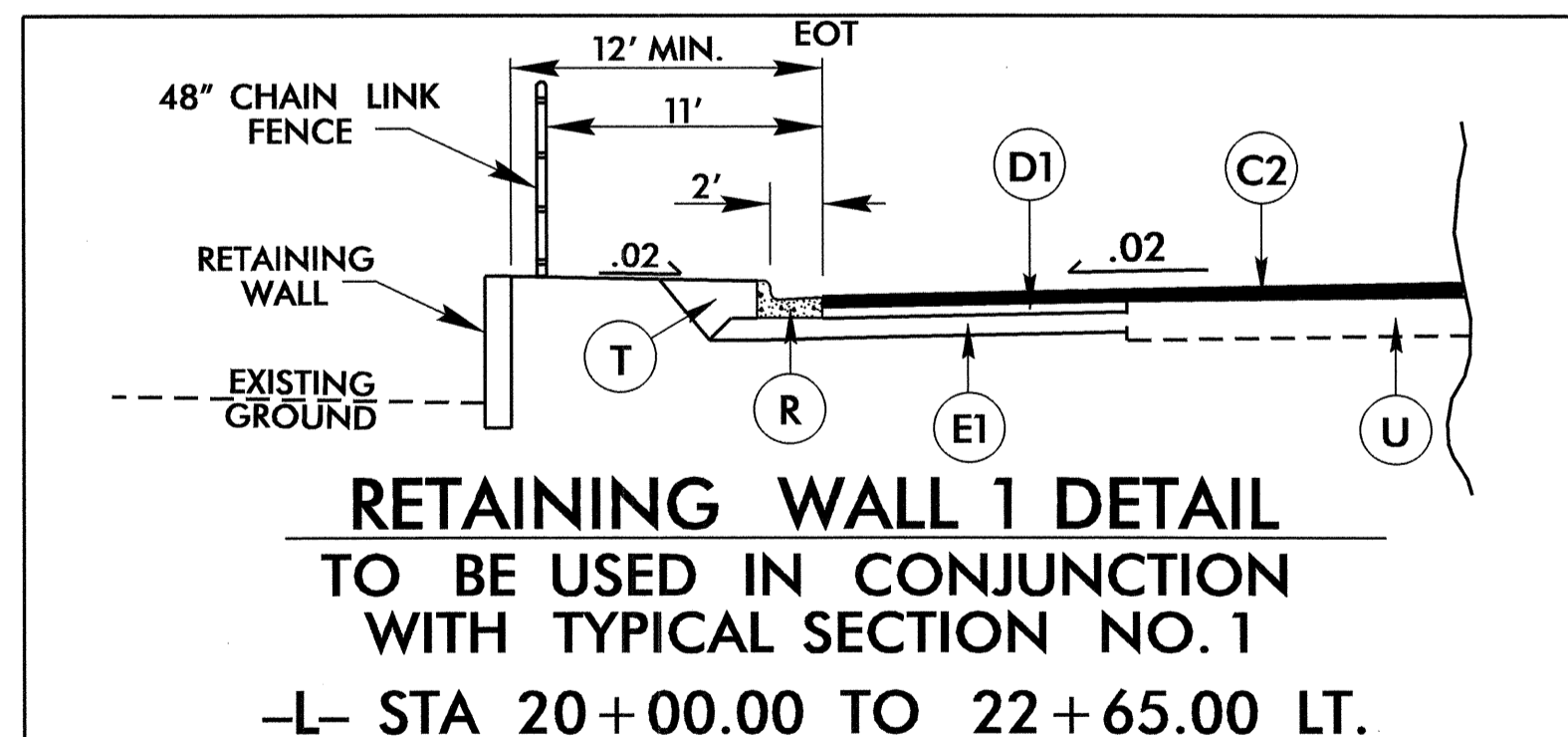


6/2/99

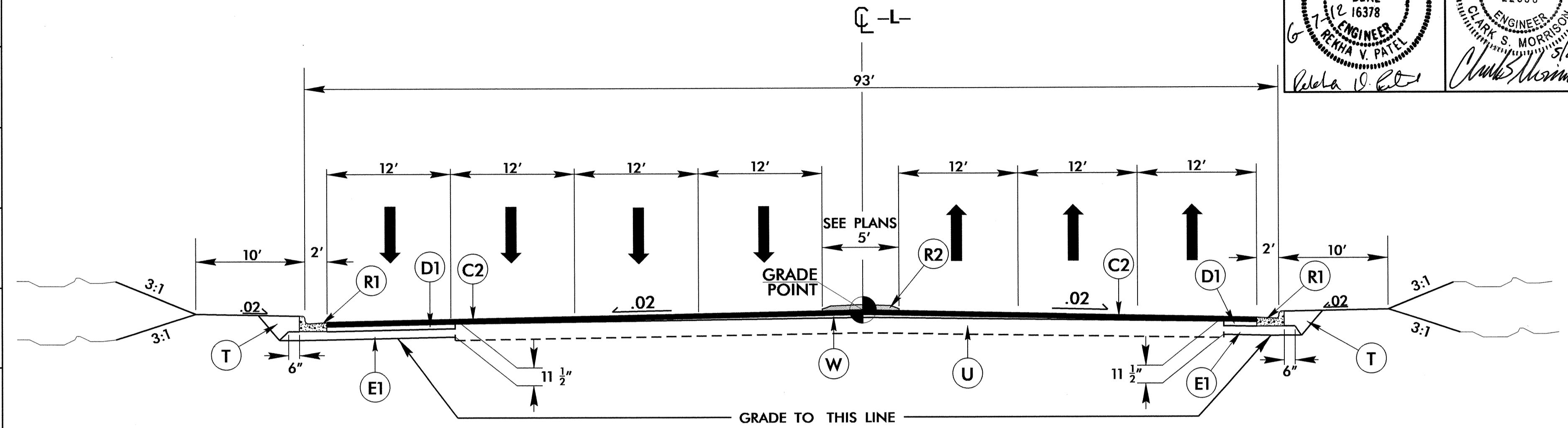
# FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1½" OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2½" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5½" IN DEPTH.
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	5" MONOLITHIC CONCRETE ISLAND.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)

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



PROJECT REFERENCE NO. B-4949	SHEET NO. 2
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 12 16378 REKHA V. PATEL	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22898 CLARK S. MORRISON



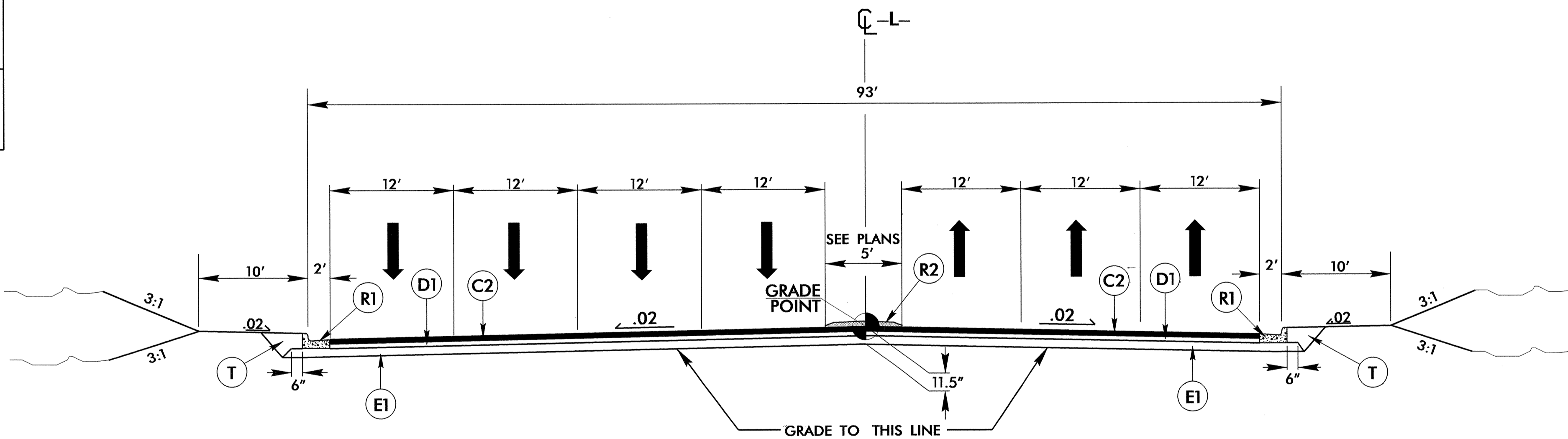
## TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA 18+25.00 TO 23+25.00  
-L- STA 27+75.00 TO 31+50.00

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1

-L- STA 14+95.00 TO 18+25.00 OVERLAY WITH (C1)  
-Y- STA 15+95.00 TO 26+15.00 OVERLAY WITH (C1)

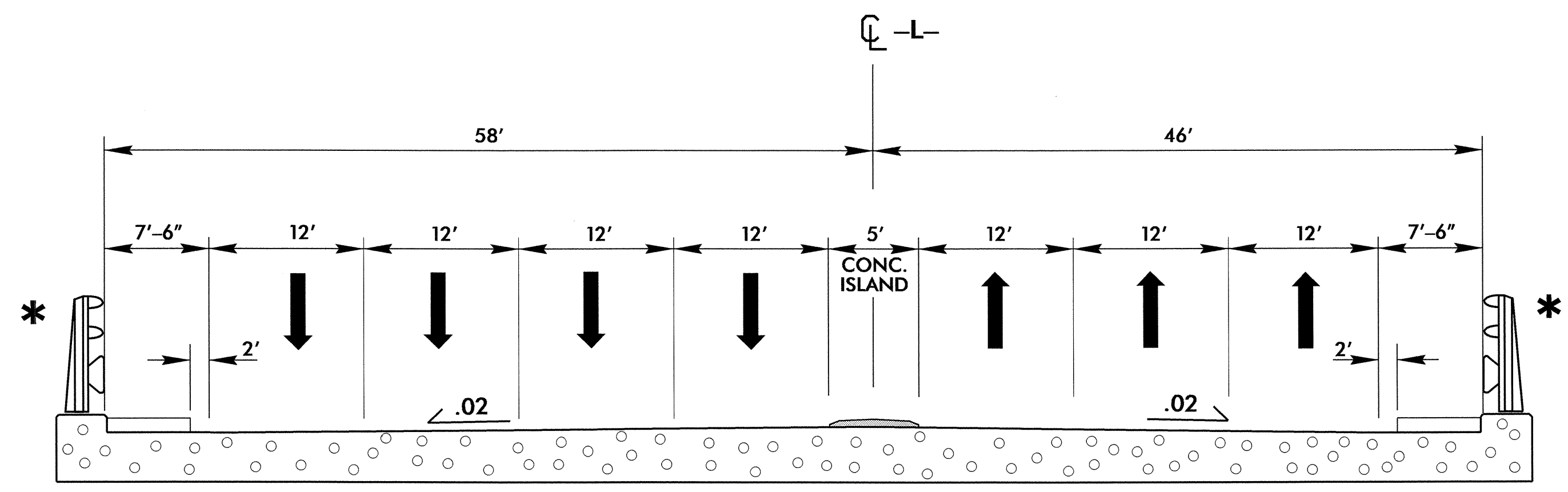


## TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA 23+25.00 TO 23+90.00 (BEGIN BRIDGE)  
-L- STA 27+20.00 (END BRIDGE) TO 27+75.00

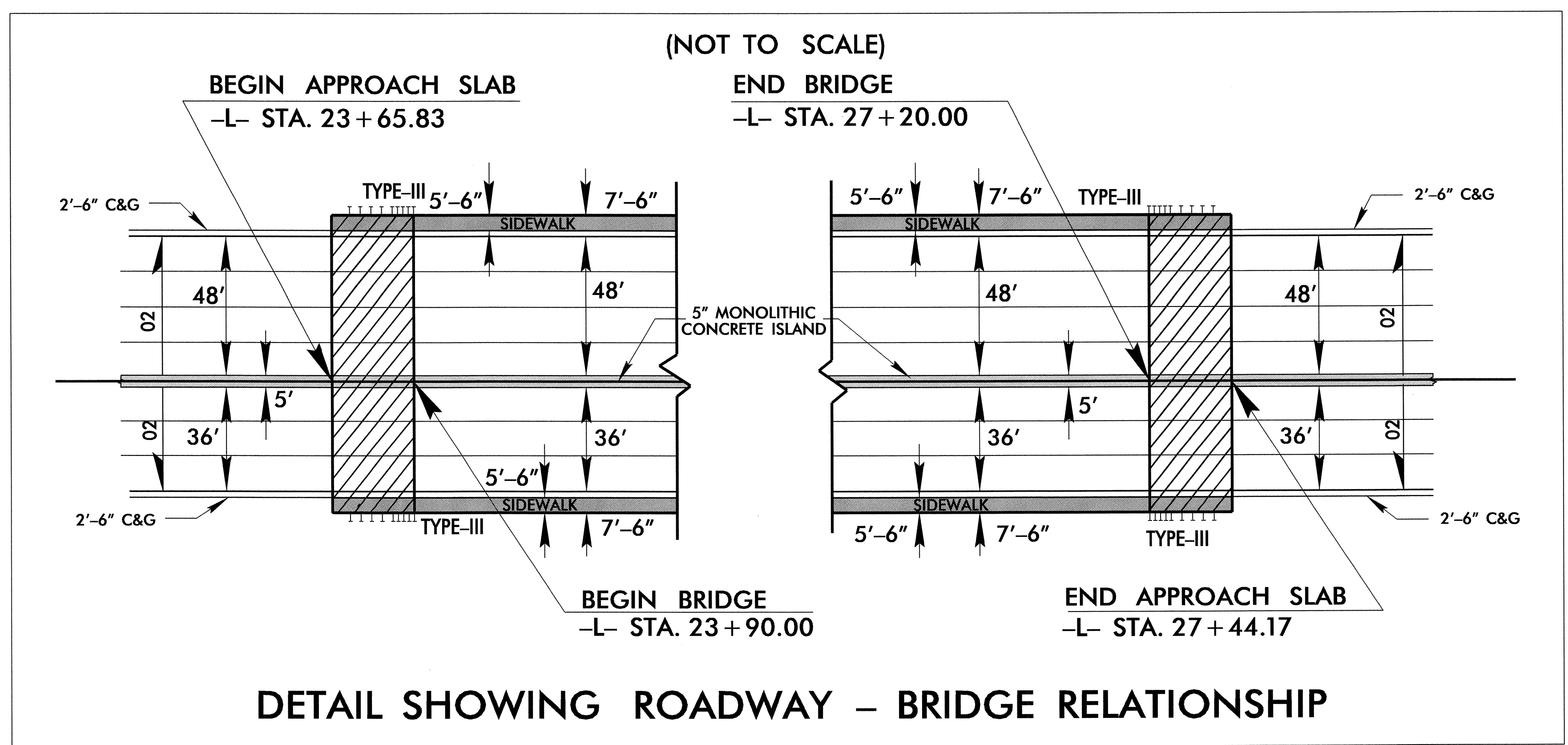
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\$\$\$\$\$USERNAME\$\$\$\$\$



**USE TYPICAL ON STRUCTURE**  
 -L- STA 23+90.00 TO 27+20.00

**TYPICAL SECTION ON STRUCTURE**  
 (SEE STRUCTURE PLANS)

\* THREE BAR METAL RAIL



**DETAIL SHOWING ROADWAY - BRIDGE RELATIONSHIP**

6/2/99  
 07-MAY-2012 08:24  
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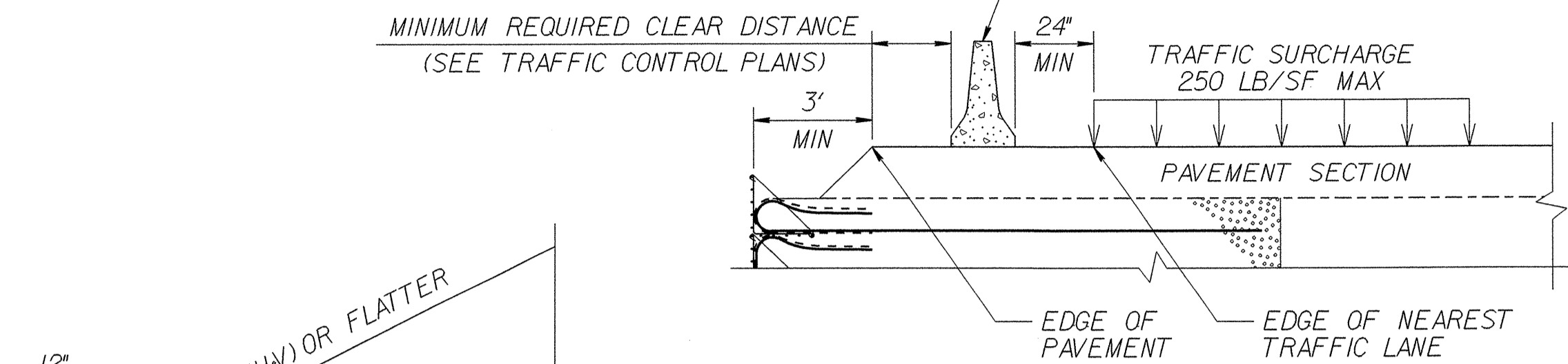
GEOTECHNICAL ENGINEER

ENGINEER

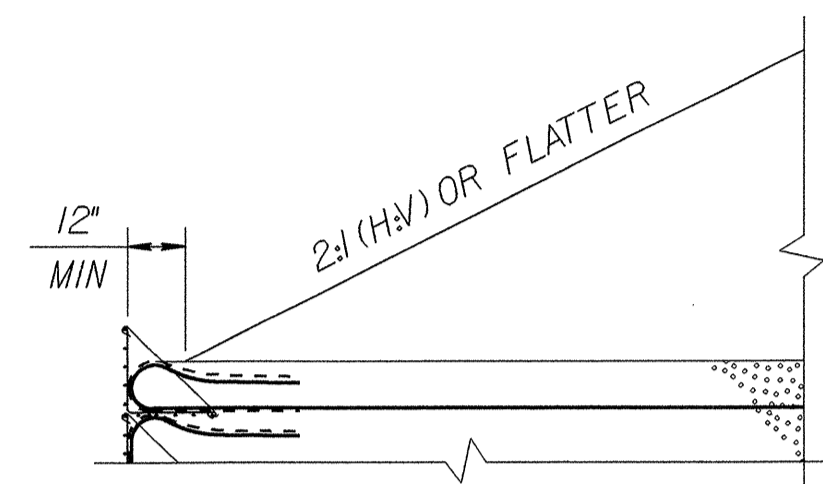


Scott A. Hilder 11/19/11  
SIGNATURE DATE

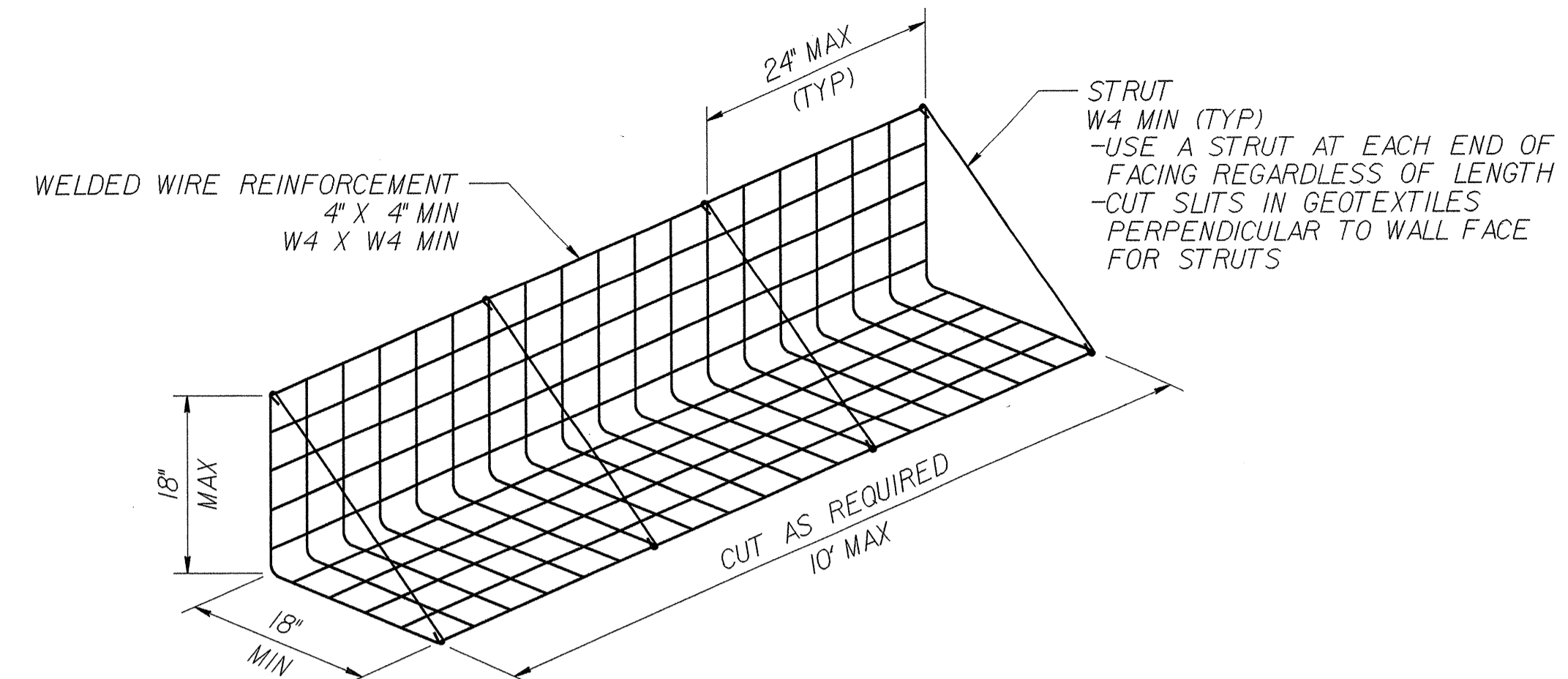
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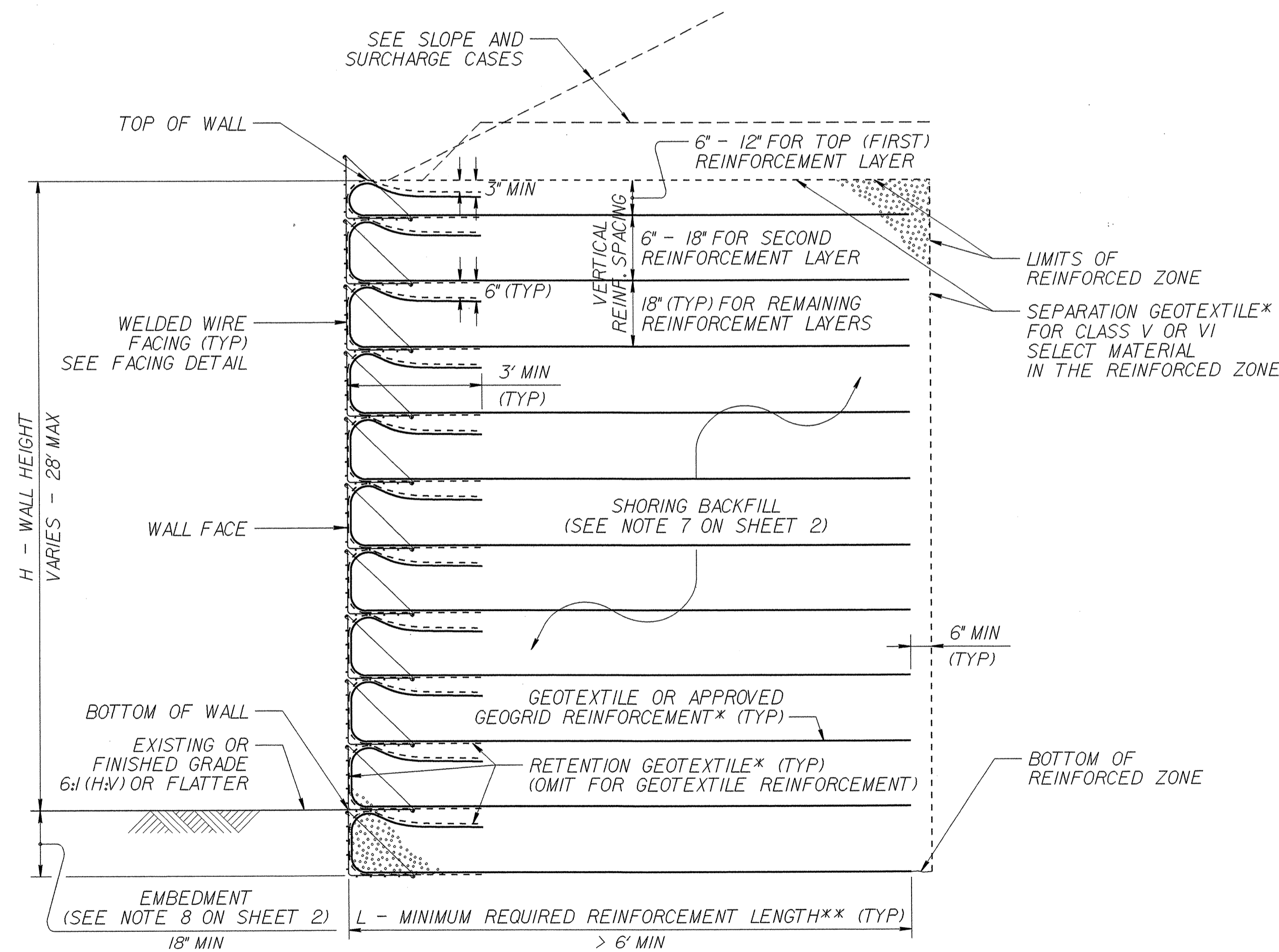
**SURCHARGE CASE**



**SLOPE CASE**



**FACING DETAIL**

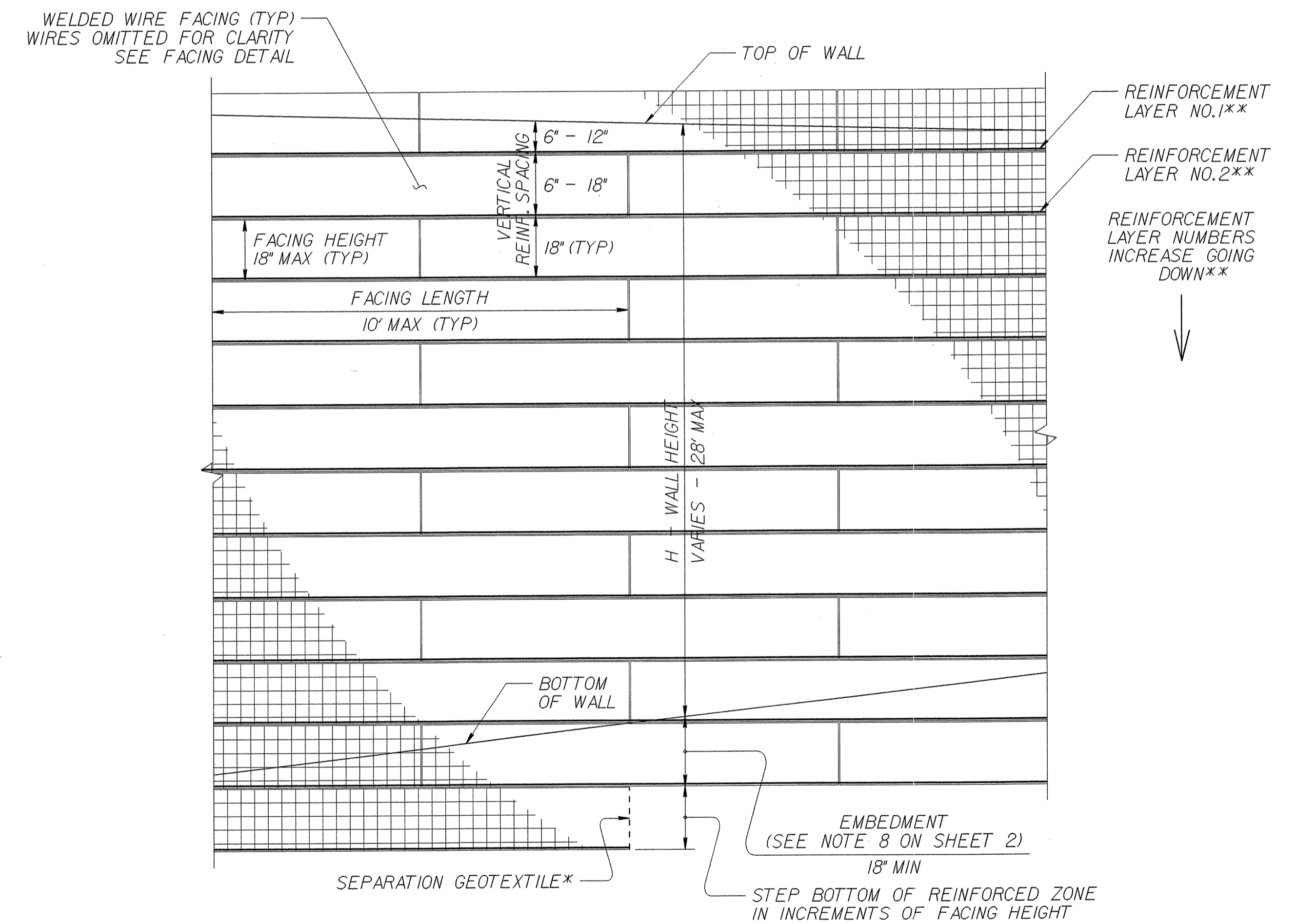


**STANDARD TEMPORARY WALL**

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

\*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.

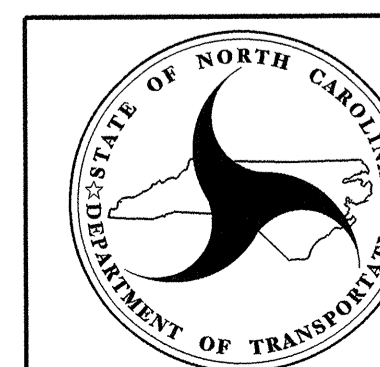
\*\*SEE REINFORCEMENT TABLES ON SHEET 3.



**STANDARD TEMPORARY WALL - PARTIAL ELEVATION**

\*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.

\*\*SEE REINFORCEMENT TABLES ON SHEET 3.



**GEOTECHNICAL ENGINEERING UNIT**

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

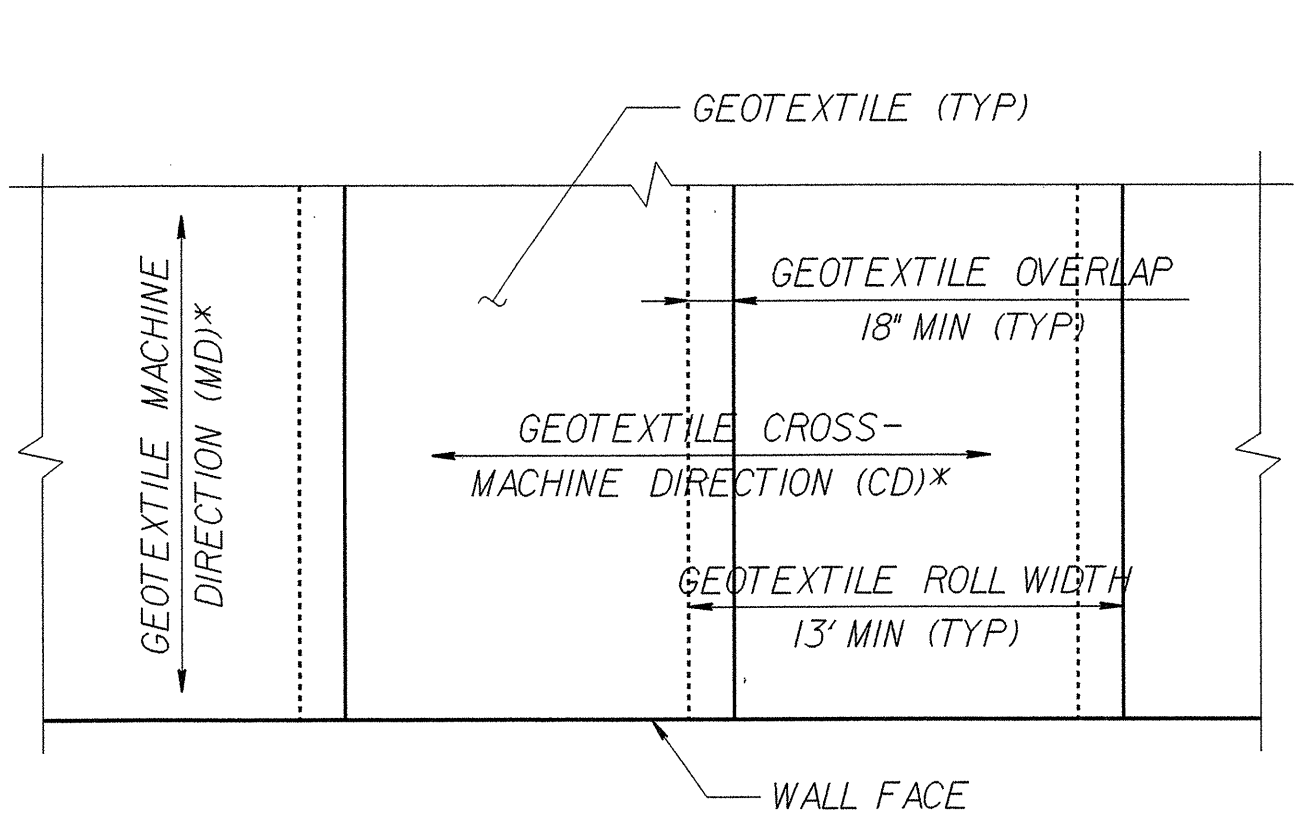
STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL  
Sheet 1 of 3

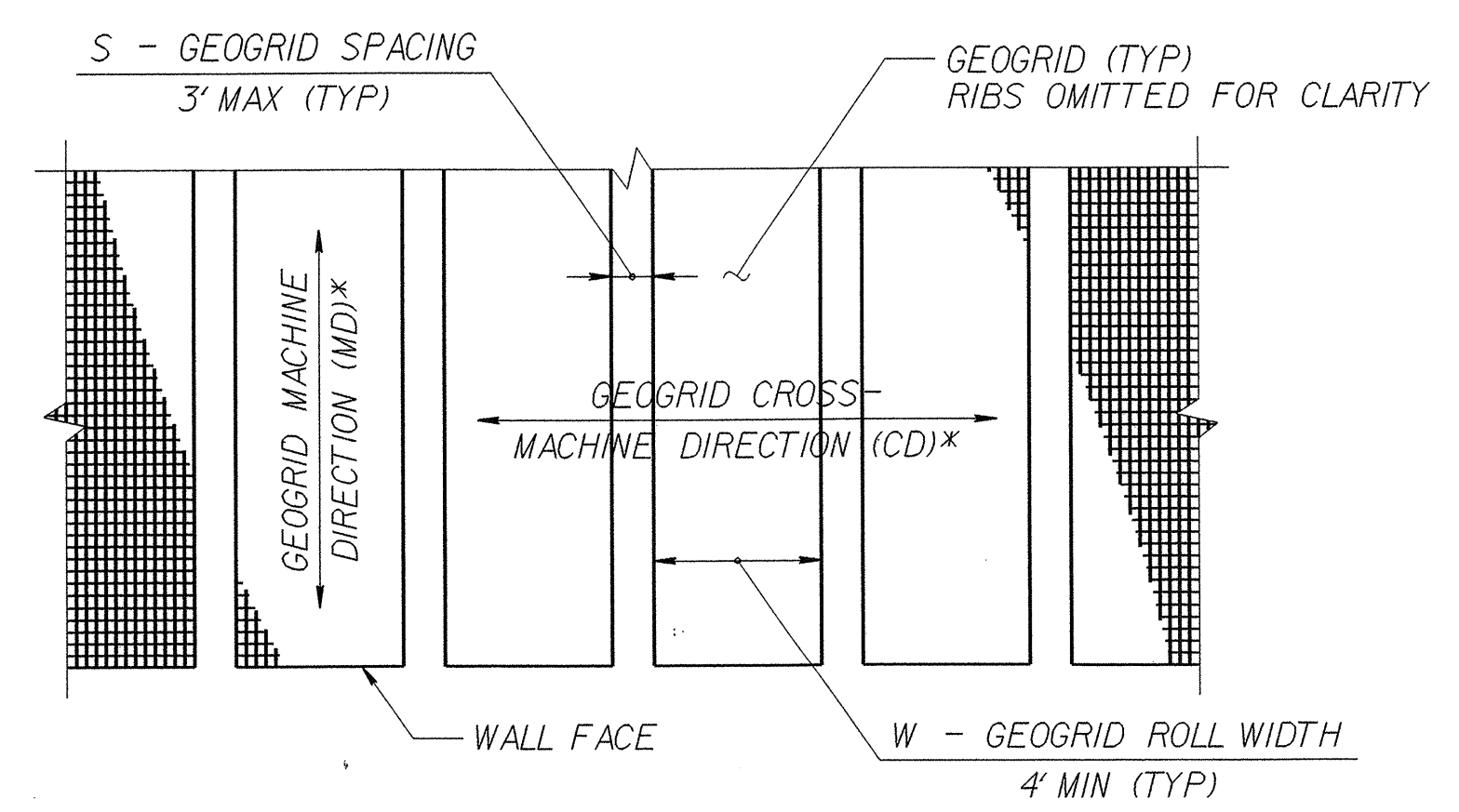
DATE: 1-17-12

GEOTECHNICAL ENGINEER ENGINEER

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

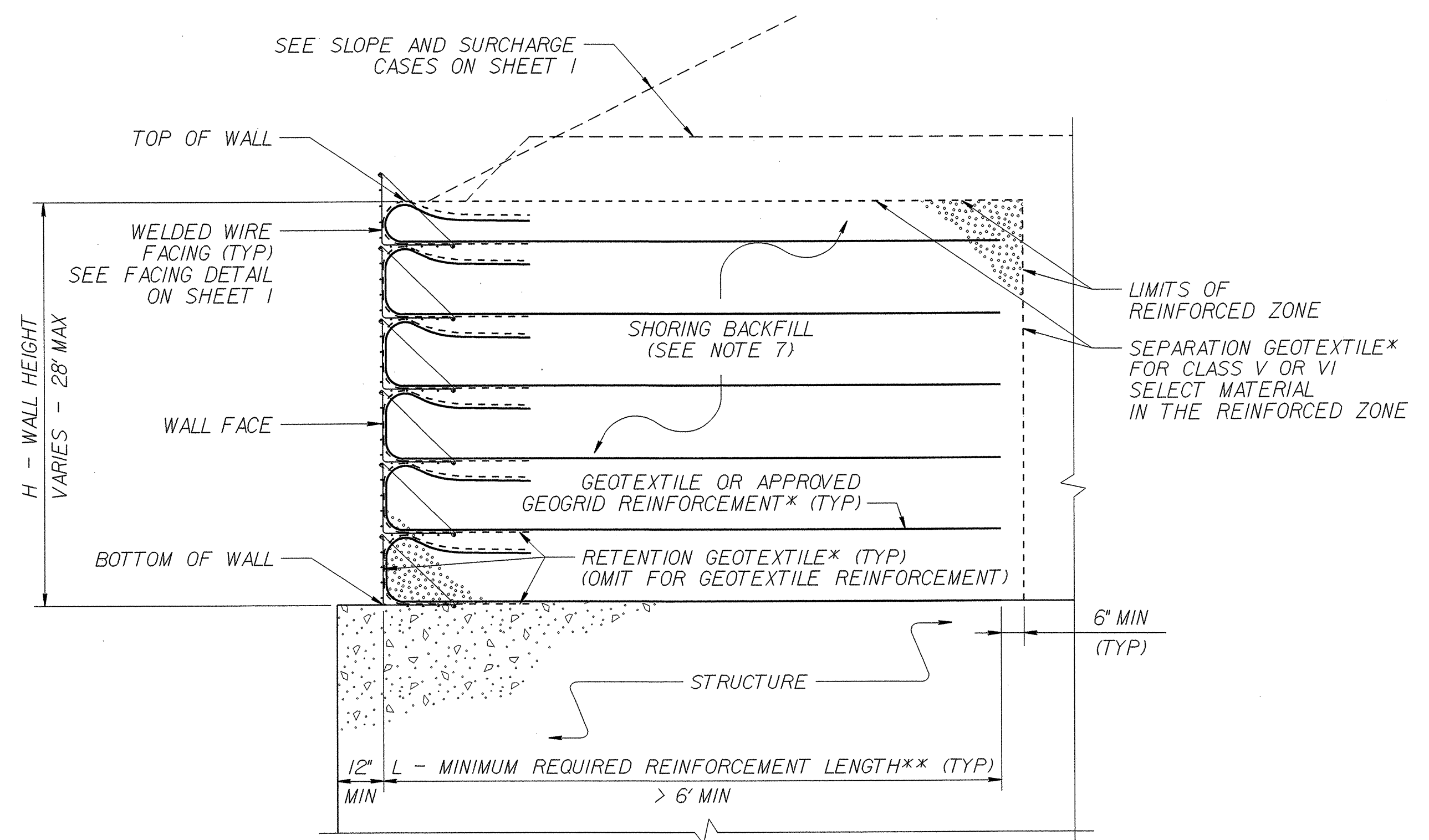


**GEOTEXTILE PLACEMENT**  
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



**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:**

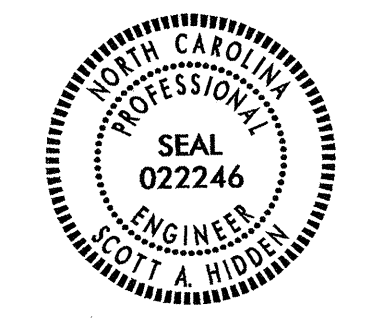
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  LB/CF  
FRICTION ANGLE,  $\phi = 30$  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 ENGINEER ENGINEER



Scott A. Hadden 1/18/11  
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
	> 7 FOR H < 20' > 10 FOR H ≥ 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
		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.

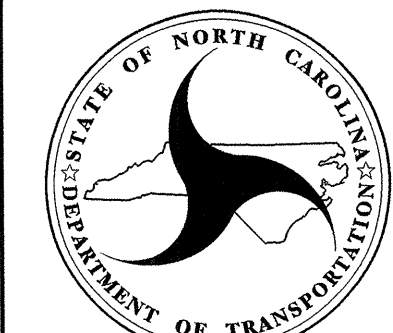
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400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

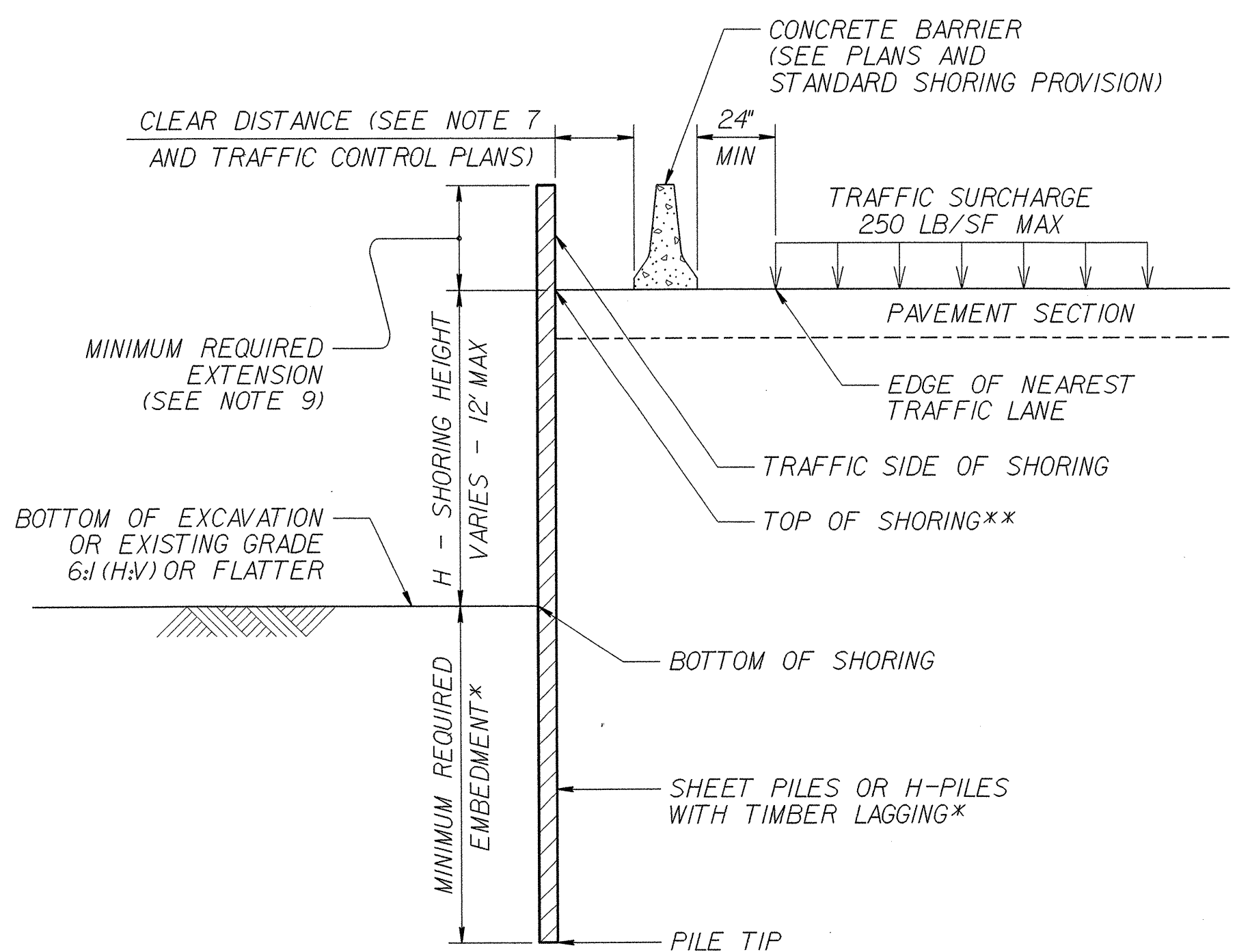
STANDARD TEMPORARY WALL  
Sheet 3 of 3

DATE: 1-17-12

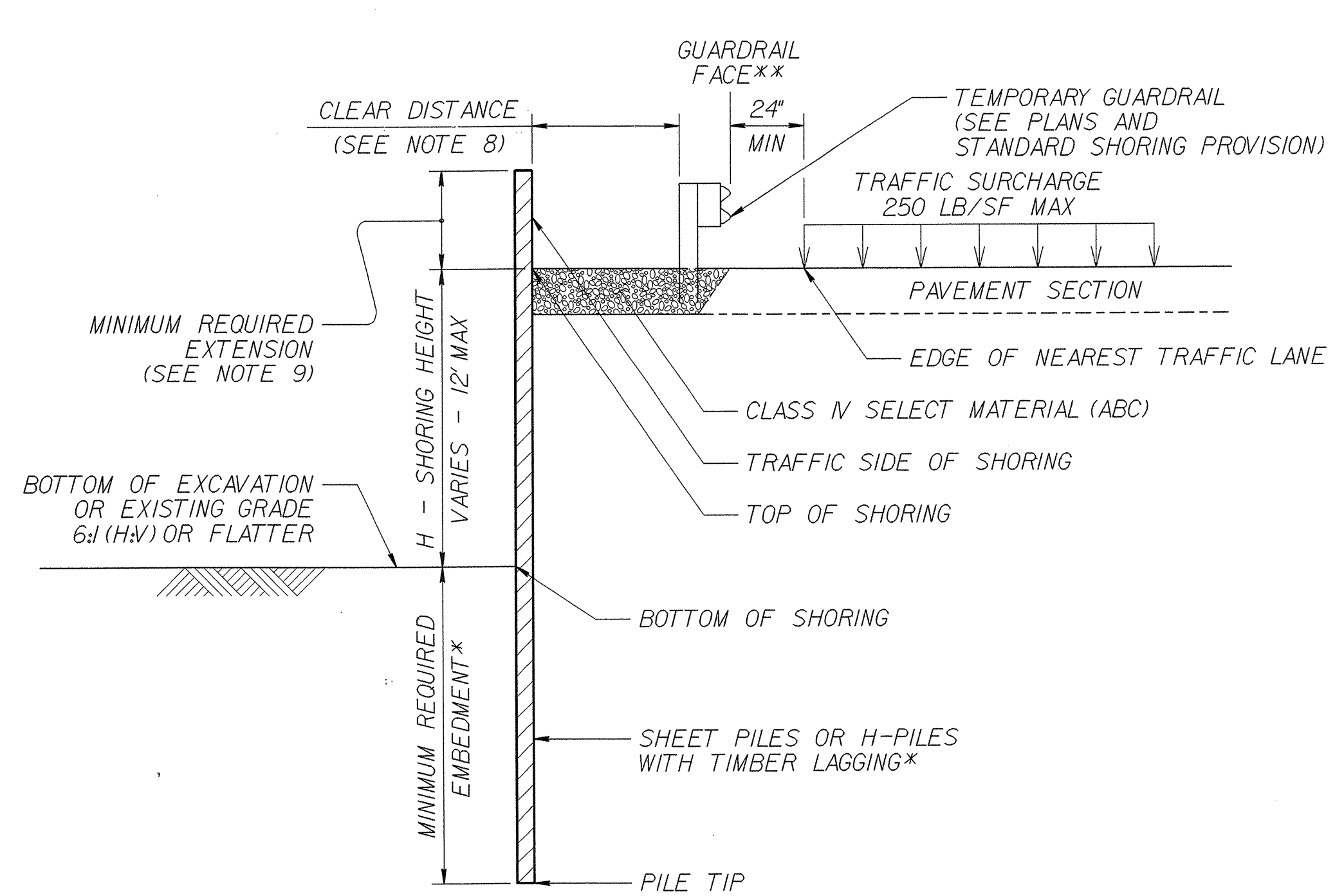
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT						SURCHARGE CASE WITH TRAFFIC IMPACT					
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING				
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /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		
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.

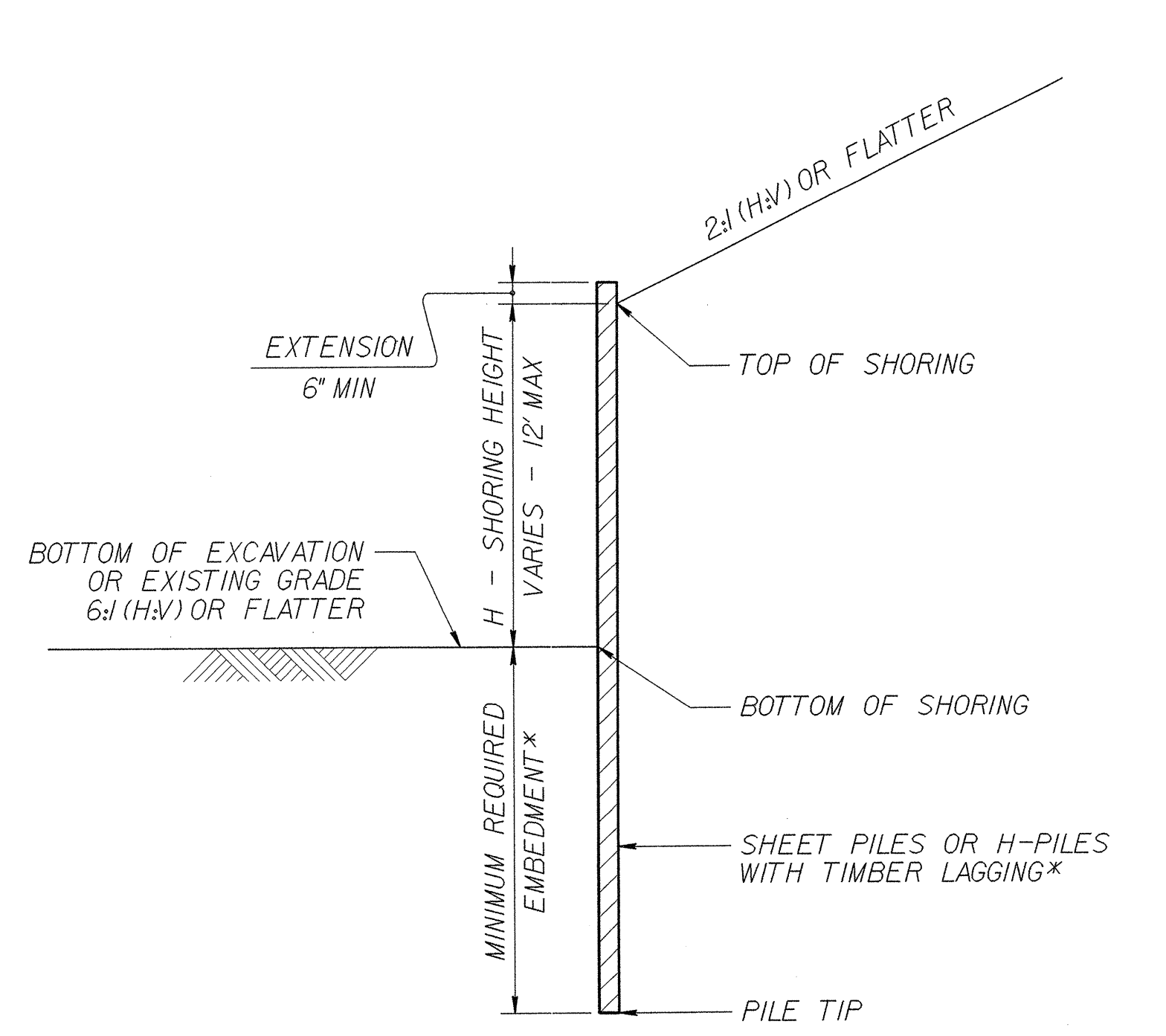
**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**  
**\*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**



**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.**









NOTE:  
 SEE SHEET 6 FOR -L- PROFILE  
 SEE SHEET 2-A FOR ROADWAY-BRIDGE SKETCH  
 SEE SHEETS S-1 THRU S-52 FOR STRUCTURE PLANS  
 SEE SHEETS W-1 & W-2 FOR RETAINING WALL PLANS

CITY OF FAYETTEVILLE  
 DEED 442 PG 287  
**1**  
**BEGIN BRIDGE**  
 -L- POT Sta. 23+90.00  
**END BRIDGE**  
 -L- POT Sta. 27+20.00

**BEGIN TIP PROJECT B-4949**  
 -L- POC Sta. 17+15.00

**BEGIN CONSTRUCTION**  
 -L- POC Sta. 14+95.00  
 -L- PC Sta. 14+88.36

-L- POC Sta. 16+90.07=  
 -Y- POT Sta. 19+98.62

FBN-F HOLDINGS LLC  
 DB 8469 PG 638  
 PB 7 PG 139

CAPE FEAR PLAZA II, LLC  
 DB 7960 PG 658  
 PB 58 PG 97

DINA GOODSON &  
 JOHN BILL KANOS  
 DB 4672 PG 168  
 PB 7 PG 98

WANNIE COGHILL  
 DB 3134 PG 233

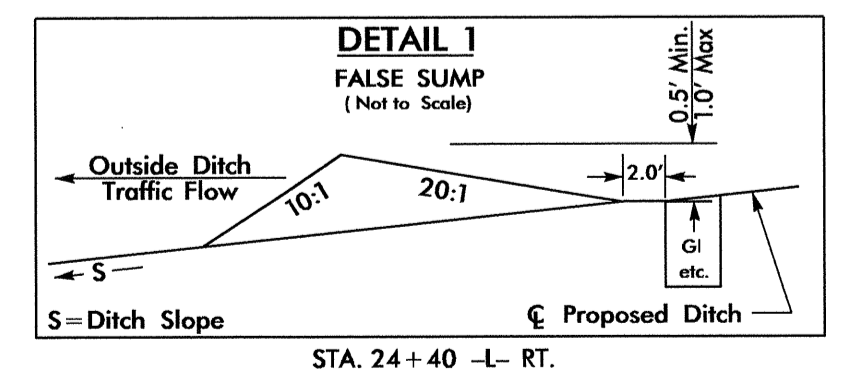
CHARLES FULLER  
 DB 2868 PG 183  
 PB 7 PG 987

CHRISTINA WASHINGTON  
 DB 5169 PG 70  
 PB 7 PG 987

CAPE FEAR BOTANICAL GARDEN  
 DB 5907 PG 892

CITY OF FAYETTEVILLE  
 DB 442 PG 287

2012 ADT	2035 ADT	37700	67800
24200	5300	7000	11000
38000	8200	10000	10000
		21400	34800
		700	1000
		31300	56600
NC 24210 GROVE STREET			



-L-  
 PI Sta 16+95.99  
 $\Delta = 32' 20'' 00.0''$  (RT)  
 $D = 8' 00'' 00.0''$   
 $L = 404.7'$   
 $T = 207.62'$   
 $R = 716.20'$   
 SE = SEE PLANS

-Y-  
 PI Sta 22+86.31  
 $\Delta = 2' 48' 53.1''$  (RT)  
 $D = 0' 45' 00.0''$   
 $L = 375.30'$   
 $T = 187.69'$   
 $R = 76.39.44'$

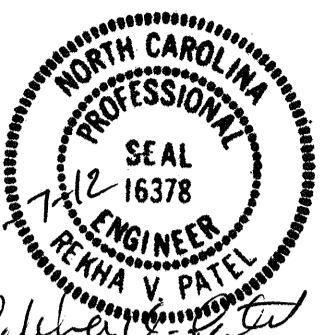
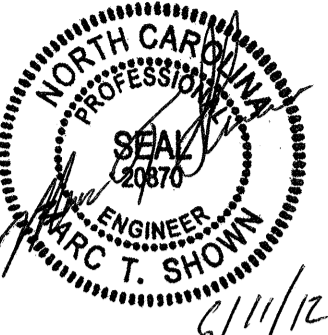
**END CONSTRUCTION**  
 -Y- POT Sta. 26+15.00

MATCH LINE SEE PLAN SHEET "5" -L- STA. 29+00

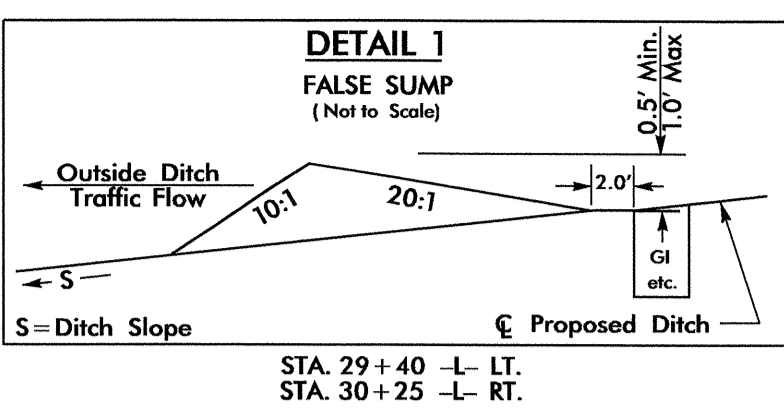
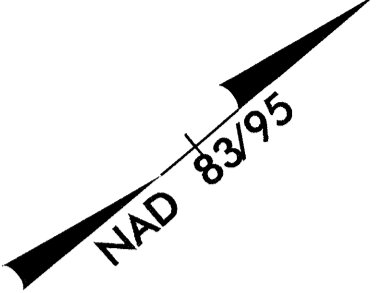
REVISIONS

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PROJECT REFERENCE NO. <b>B-4949</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 R. V. PATE	 W. T. SHOWN
NOTE: SEE SHEET 6 FOR -L- PROFILE	

-L-  
 PI Sta 39+23.12  
 $\Delta = 35^{\circ}12'00.0''$  (RT)  
 D = 3'00'00.0"  
 L = 1,173.33'  
 T = 605.84'  
 R = 1,909.86'

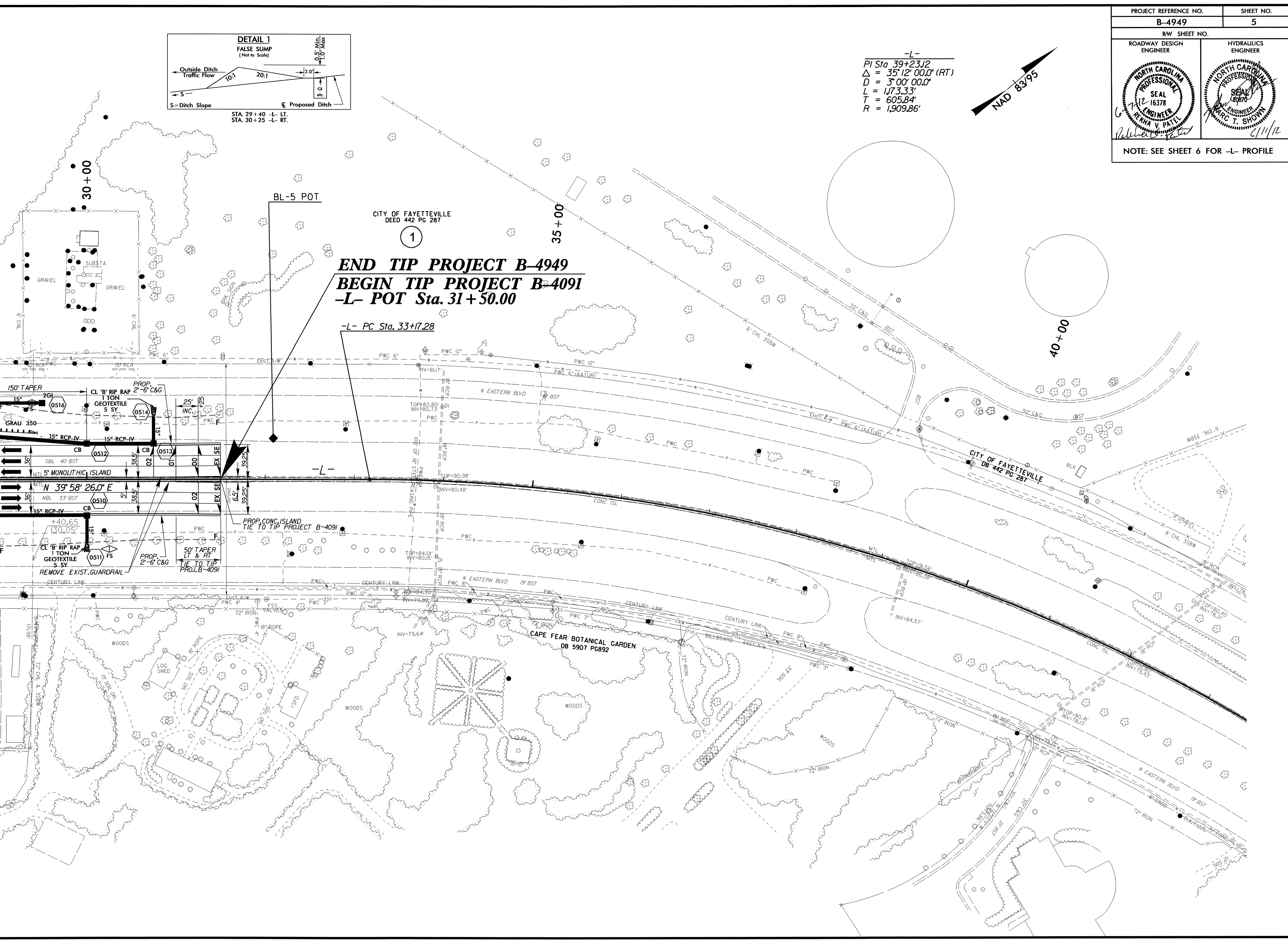


MATCH LINE SEE PLAN SHEET "4" STA. -L- STA. 29+00

8/17/99

REVISIONS

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5/14/99

PROJECT REFERENCE NO. <b>B-4949</b>	SHEET NO. <b>6</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

BM # 1  
RR SPIKE IN BASE OF 36" OAK TREE  
ELEV = 87.65'  
-BL- STA. 12+12.07 145' RT  
-L- STA. 18+28.71 111.58' RT

BEGIN RESURFACING  
-L- STA. 14+95.00

BEGIN GRADE  
-L- STA. 18+25.00  
EL = 89.60'

PI = 20+05.00  
EL = 91.03'  
VC = 100'  
K = 472

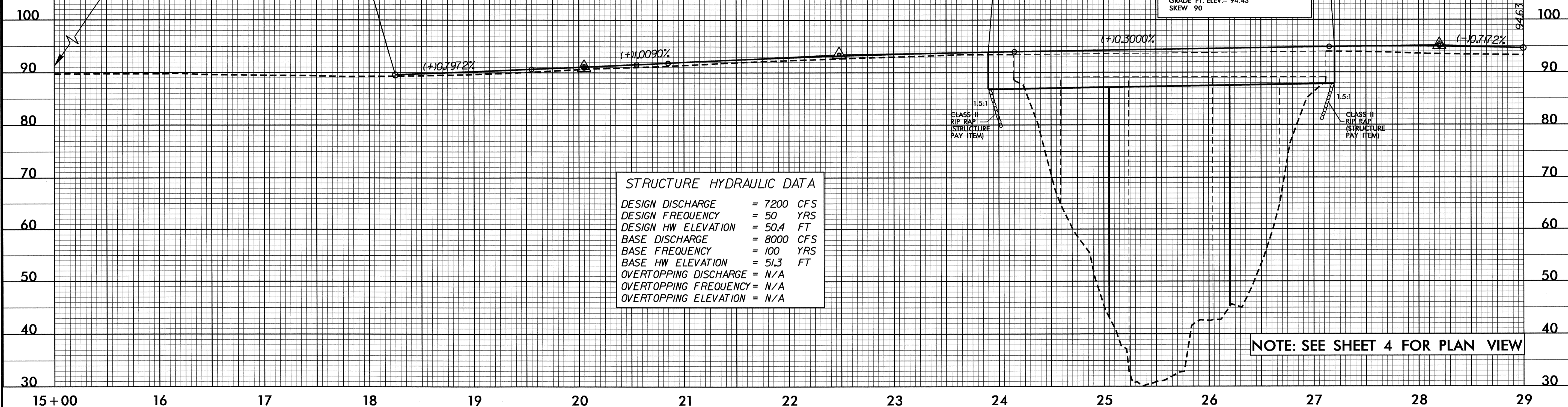
PI = 22+50.00  
EL = 93.51'  
VC = 328'  
K = 463

BEGIN BRIDGE  
-L- STA. 23+90.00

END BRIDGE  
-L- STA. 27+20.00

-L- STA. 25+55  
1@ 115', 1@ 110', 1@ 105'; O.A.L- 330'  
72" MBT PRESTRESSED GIRDER  
GRADE PT. ELEV. - 94.43'  
SKEW 90

PI = 28+20.00  
EL = 95.22'  
VC = 210'  
K = 206

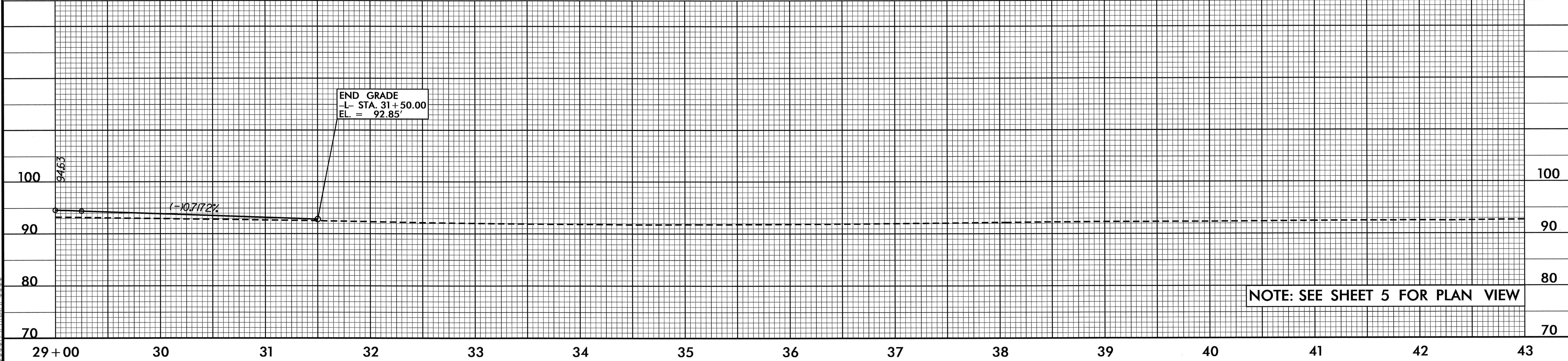


**STRUCTURE HYDRAULIC DATA**

DESIGN DISCHARGE = 7200 CFS  
DESIGN FREQUENCY = 50 YRS  
DESIGN HW ELEVATION = 50.4 FT  
BASE DISCHARGE = 8000 CFS  
BASE FREQUENCY = 100 YRS  
BASE HW ELEVATION = 51.3 FT  
OVERTOPPING DISCHARGE = N/A  
OVERTOPPING FREQUENCY = N/A  
OVERTOPPING ELEVATION = N/A

NOTE: SEE SHEET 4 FOR PLAN VIEW

END GRADE  
-L- STA. 31+50.00  
EL = 92.85'



NOTE: SEE SHEET 5 FOR PLAN VIEW

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