

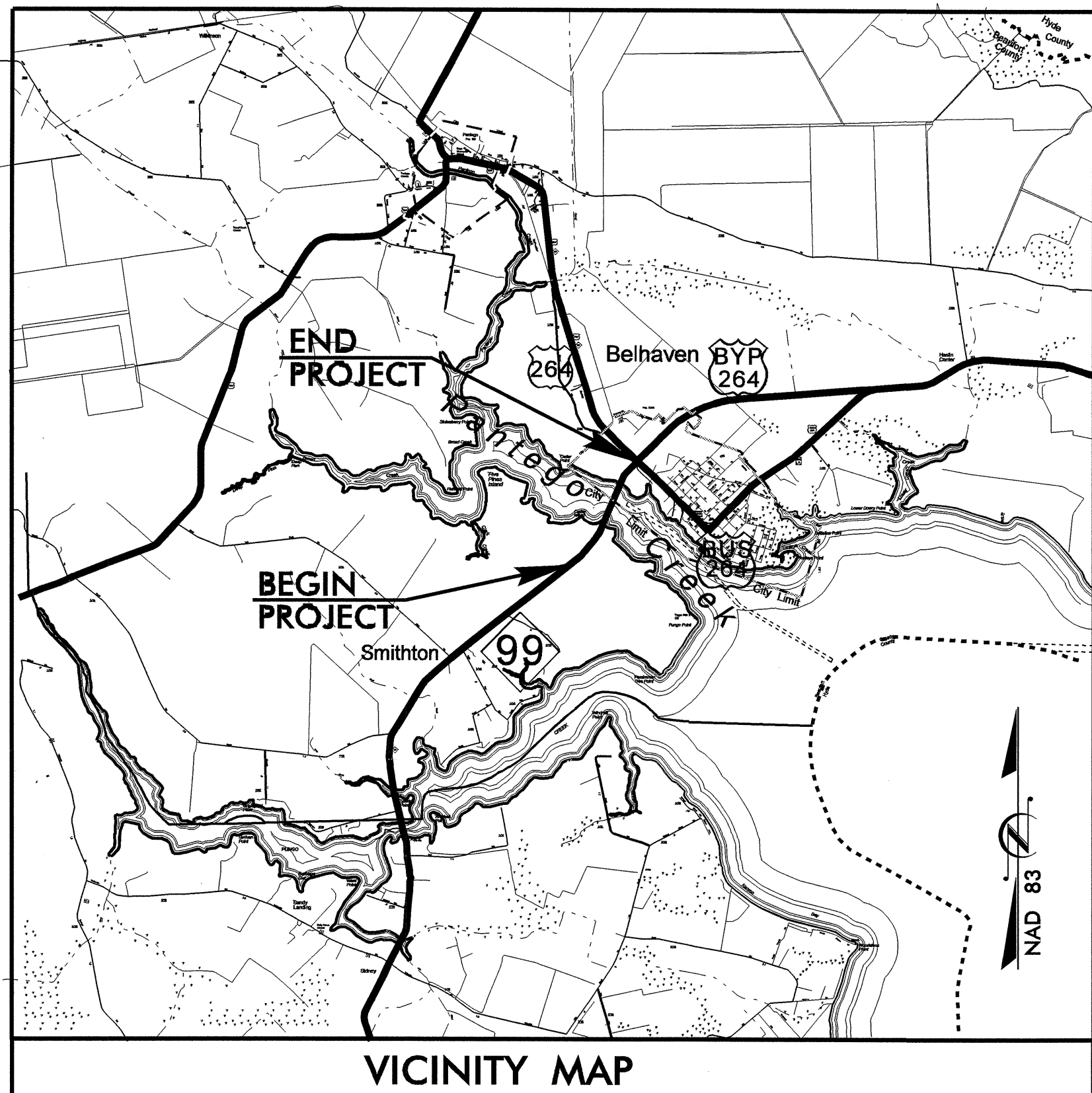
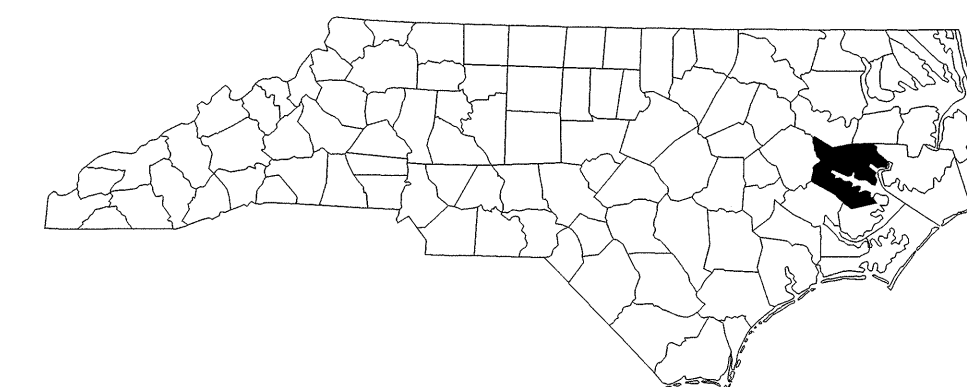
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

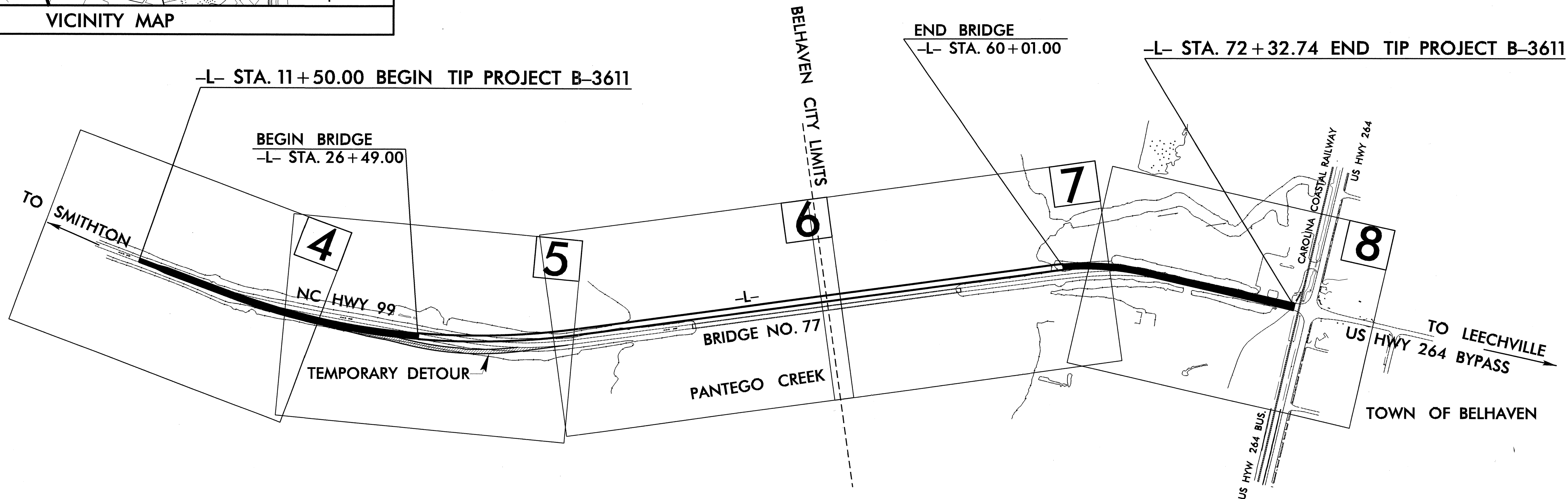
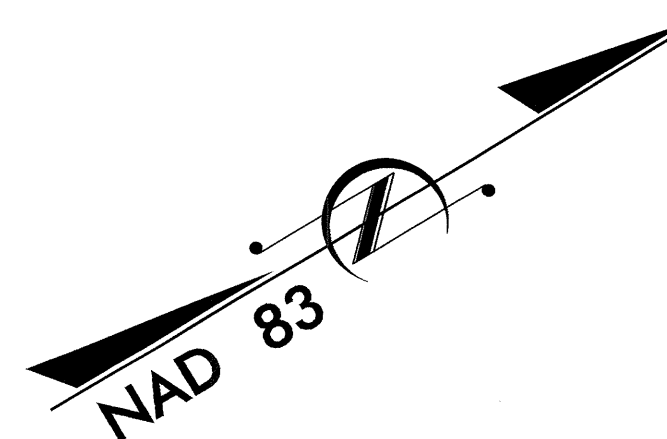
LOCATION: BRIDGE NO. 77 OVER PANTEGO CREEK ON NC 99

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE AND PAVING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3611	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33162.1.1	BRSTP-99(3)	PE	
33162.2.2	BRSTP-99(3)	RW & UTIL	
33162.3.2	BRSTP-99(7)	CONST.	



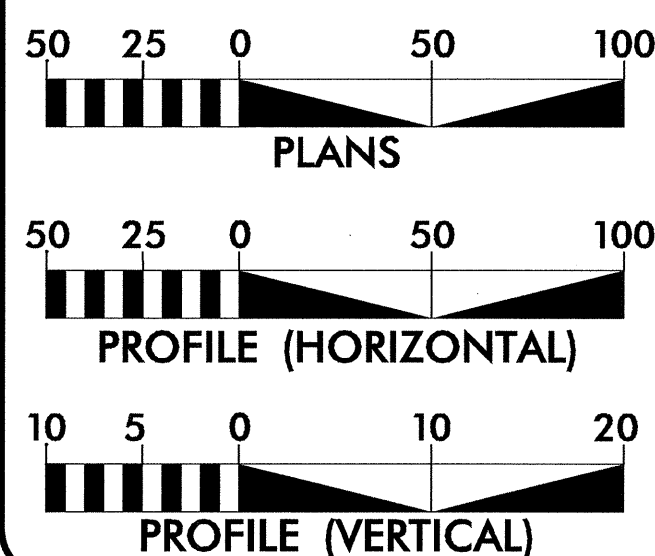
VICINITY MAP



TIP PROJECT: B-3611

CONTRACT: C202334

GRAPHIC SCALES



DESIGN DATA

ADT 2009 = 6270
ADT 2030 = 9600
DHV = 10 %
D = 60 %
T = 9 % *
V = 50/40 MPH
* TTST 6 DUAL 3
FUNC. CLASS = COLLECTOR
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3611 = 0.517 Miles
LENGTH STRUCTURE TIP PROJECT B-3611 = 0.635 Miles
TOTAL LENGTH TIP PROJECT B-3611 = 1.152 Miles

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

2006 STANDARD SPECIFICATIONS

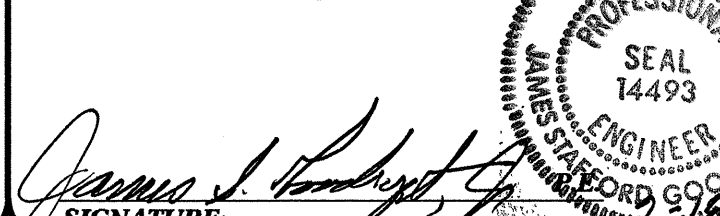
RIGHT OF WAY DATE: JIMMY GOODNIGHT, PE
MARCH 18, 2009 PROJECT ENGINEER

LETTING DATE: MARK HUSSEY
MAY 18, 2010 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

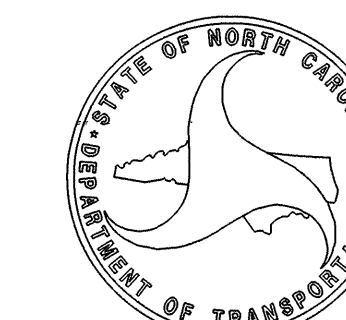


SIGNATURE:
ROADWAY DESIGN ENGINEER

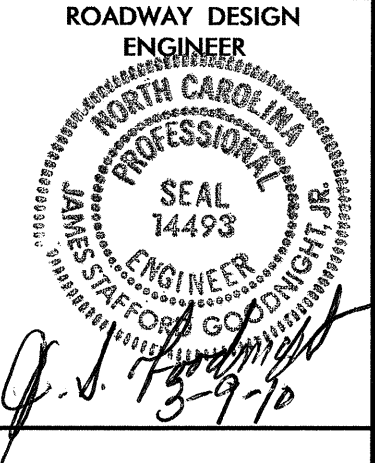


SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER



SHEET NUMBER	TITLE
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THRU 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-C	DETAIL OF DETOUR PHASING
2-D THRU 2-E	DETAIL OF METHOD OF PIPE INSTALLATION
2-F	DETAIL OF ANCHORAGE FOR FRAME
2-G	DETAIL OF SLOPE REINFORCEMENT
2-H THRU 2-R	DETAILS OF TEMPORARY WALL
2-S	ROCK EMBANKMENT DETAIL
3	SUMMARY OF QUANTITIES
3-A	DRAINAGE AND GUARDRAIL SUMMARIES
3-B	EARTHWORK, SHOULDER BERM GUTTER, AND PAVEMENT REMOVAL SUMMARIES
3-C	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
9 THRU 12	PROFILE SHEETS
TCP-1 THRU TCP-16	TRAFFIC CONTROL PLANS
PM-1 THRU PM-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-14	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS
X-1A	EARTHWORK VOLUME SUMMARY
X-1 THRU X-42	CROSS-SECTIONS
S-1 THRU S-124	STRUCTURE PLANS

GENERAL NOTES: 2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

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.

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.

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.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE Tideland EMC and Town of Belhaven
(Power)
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.

2006 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 July 18, 2006 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 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	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
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
876.04	Drainage Ditches with Class 'B' Rip Rap

EFF. 07-18-06
REV. 01-02-07

8/17/09

08-MAP-2010-1426
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\$\$\$\$\$

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-w.l.b.-
Proposed Wetland Boundary	-w.l.b.-
Existing Endangered Animal Boundary	-e.a.b.-
Existing Endangered Plant Boundary	-e.p.b.-

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	-j.s.-
Buffer Zone 1	-b.z.1-
Buffer Zone 2	-b.z.2-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⋆
Proposed Lateral, Tail, Head Ditch	▭
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	-t.d.e.-
Proposed Permanent Drainage Easement	-p.d.e.-
Proposed Permanent Drainage / Utility Easement	-d.u.e.-
Proposed Permanent Utility Easement	-p.u.e.-
Proposed Temporary Utility Easement	-t.u.e.-
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 Wheel Chair 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	▭
Bridge Wing Wall, Head Wall and End Wall	⊕
MINOR:	
Head and End Wall	▭
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	⊕
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	-----

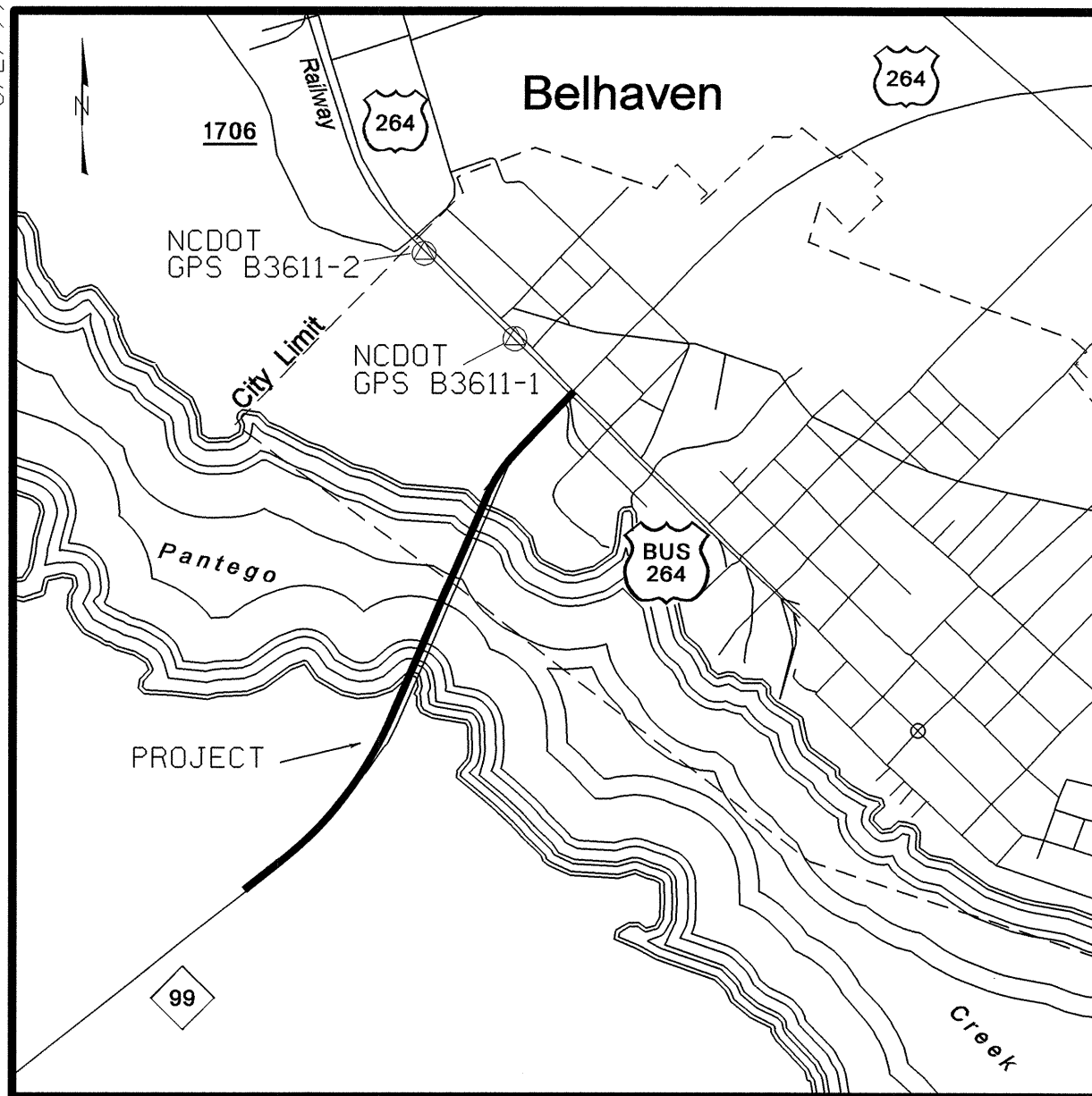
SANITARY SEWER:

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	▭
A/G Tank; Water, Gas, Oil	▭
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-3611

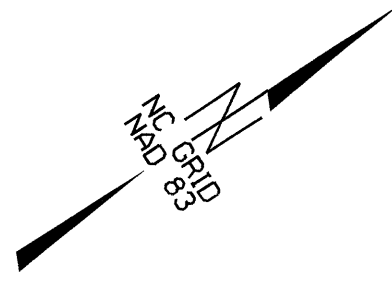


VICINITY MAP
(NOT TO SCALE)

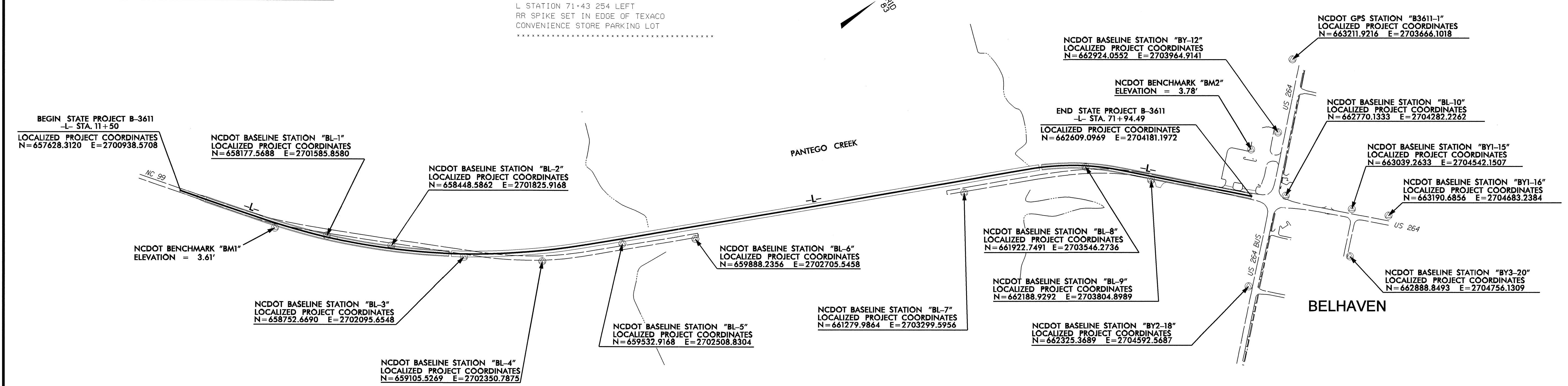
BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	658177.5688	2701585.8580	1.43	20+00.01	8.50 LT
2	BL-2	658448.5862	2701825.9168	2.25	23+63.35	16.72 LT
3	BL-3	658752.6690	2702095.6548	1.75	27+68.67	16.70 RT
4	BL-4	659105.5269	2702350.7875	5.03	31+97.98	58.37 RT
5	BL-5	659532.9168	2702508.8304	4.01	36+49.32	26.89 RT
6	BL-6	659888.2356	2702705.5458	4.91	40+53.39	67.90 RT
7	BL-7	661279.9864	2703299.5956	4.96	55+66.62	66.33 RT
8	BL-8	661922.7491	2703546.2736	2.64	62+58.42	5.22 RT
9	BL-9	662188.9292	2703804.8989	1.26	66+30.79	19.61 RT
10	BL-10	662770.1333	2704282.2262	2.00	OUTSIDE PROJECT LIMITS	

.....
 BM1 ELEVATION = 3.61
 N 657958 E 2701394
 L STATION 17+11 26 RIGHT
 RR SPIKE SET IN 24' PINE

 BM2 ELEVATION = 3.78
 N 662748 E 2703963
 L STATION 71+43 254 LEFT
 RR SPIKE SET IN EDGE OF TEXACO
 CONVENIENCE STORE PARKING LOT



NCDOT GPS STATION "B3611-2"
 LOCALIZED PROJECT COORDINATES
 N=664072.3990 E=2702747.1480



NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B3611_LS_CONTROL_071012.TXT
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- Ⓞ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3611-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 663211.9216(ft) EASTING: 2703666.1018(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988596 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3611-1" TO -L- STATION 11+50.00 IS S 26°02'06.0" W 6214.19 (ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

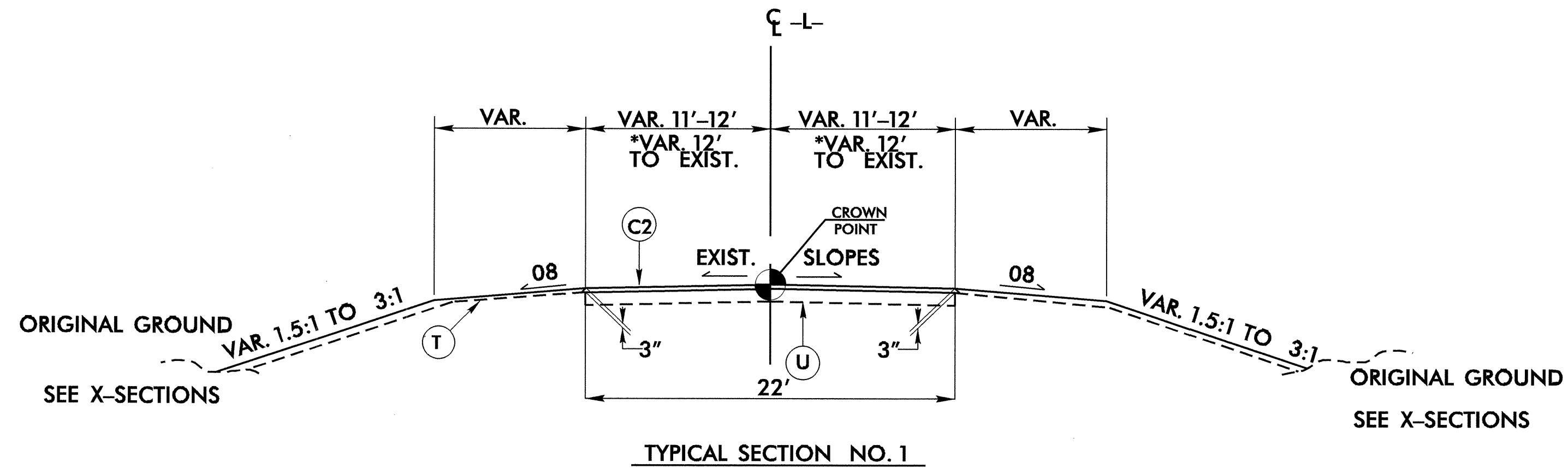
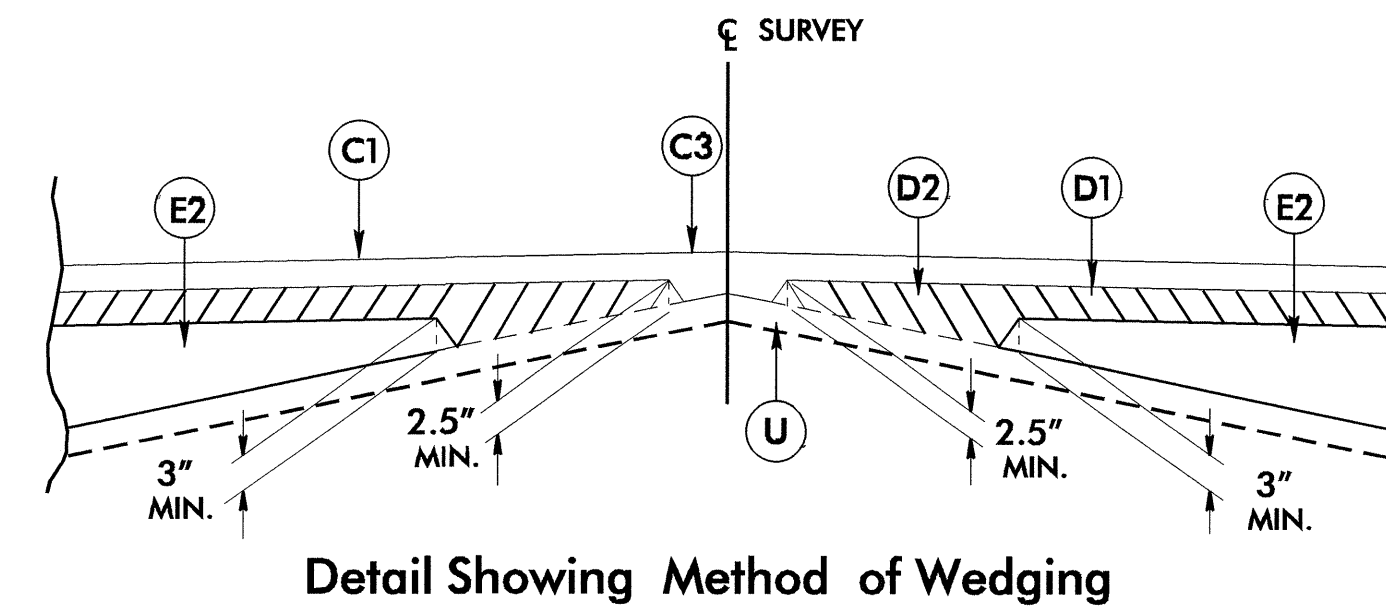
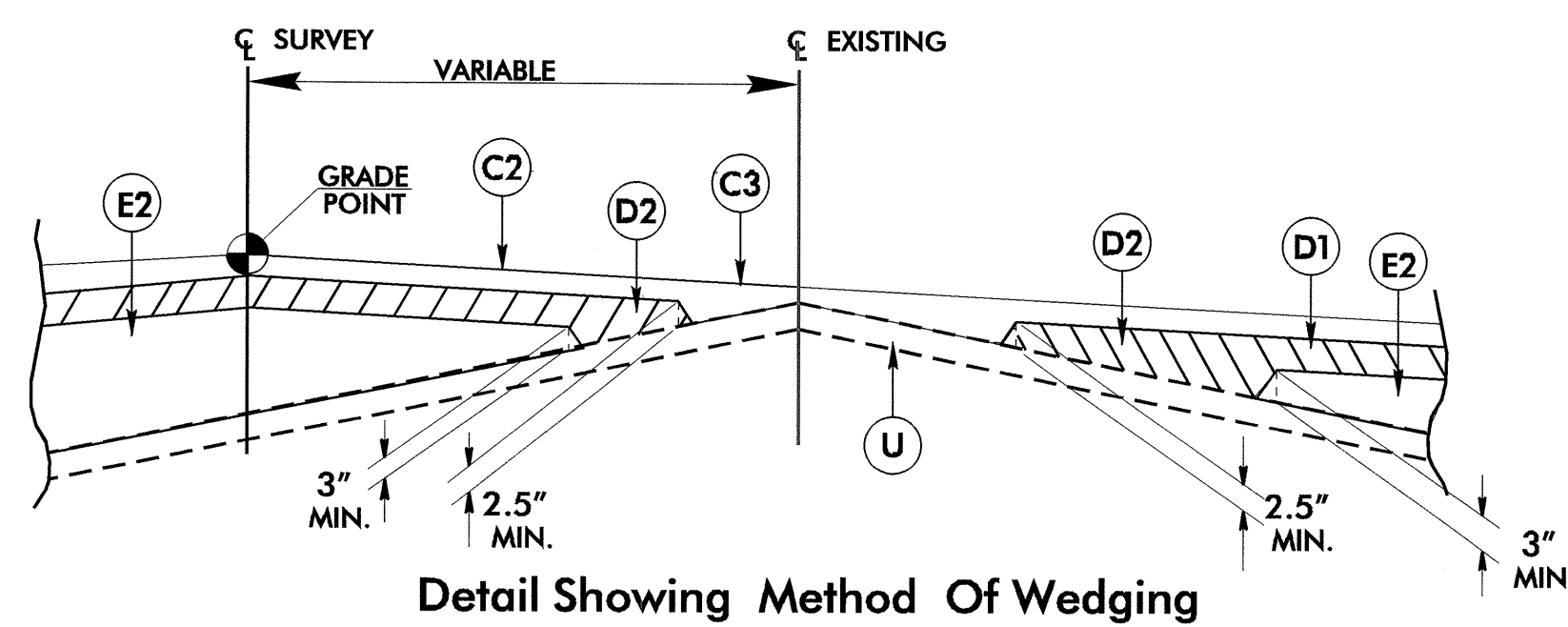
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6/2/09
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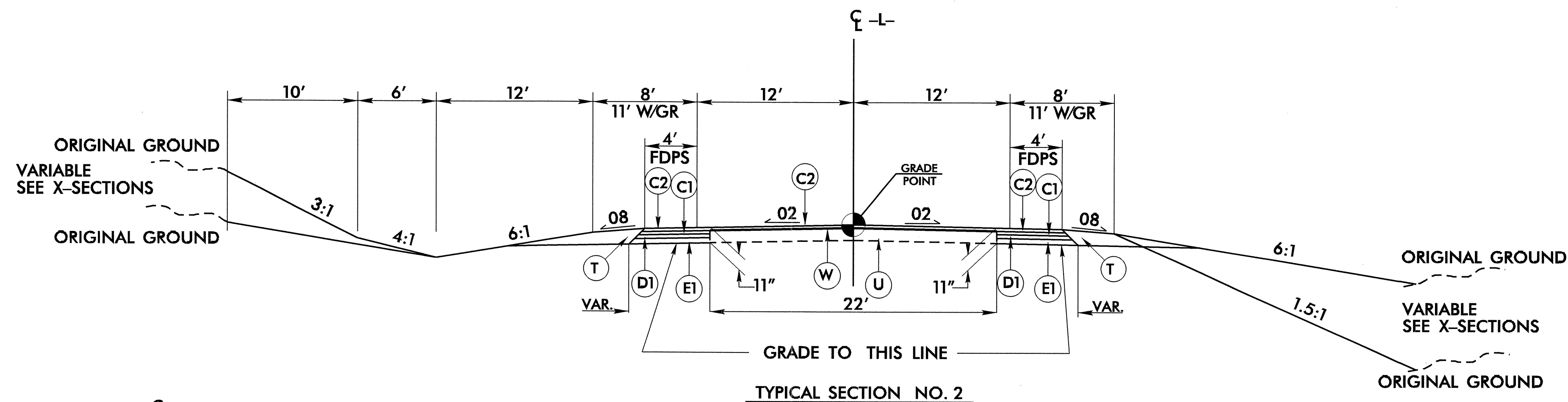
6/2/99

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
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 LESS THAN 1-1/2" OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 2-1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 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 2-1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

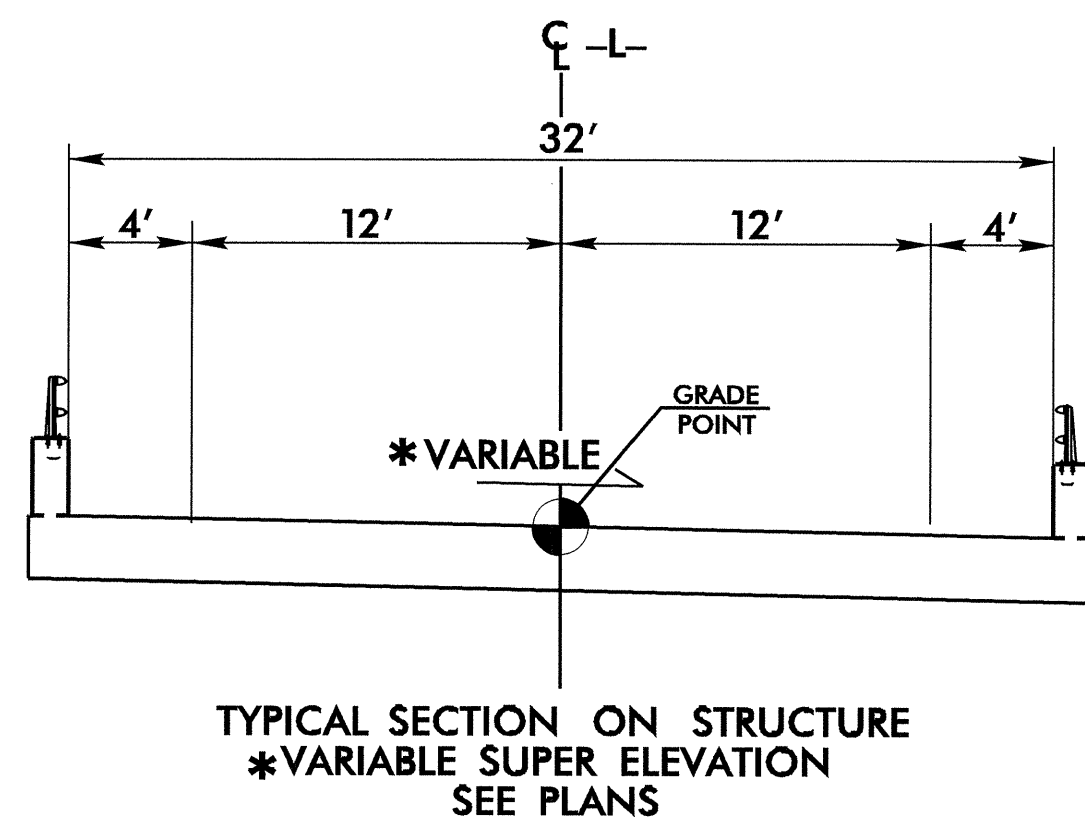
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



USE TYPICAL SECTION NO.1 AS FOLLOWS:
 -L- STA. 11+50 TO 12+50
 *-L- STA. 71+00 TO 72+32.74



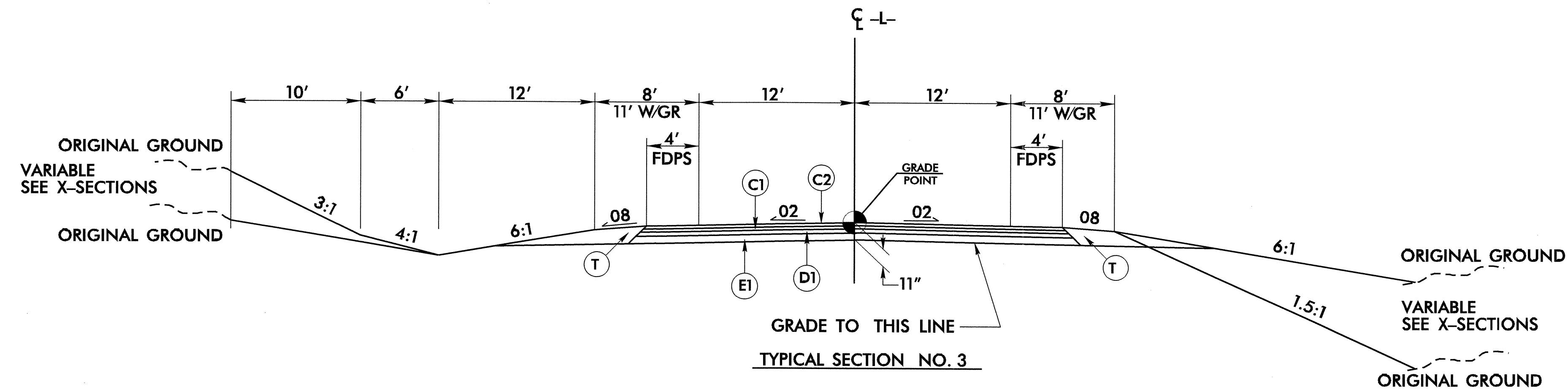
USE TYPICAL SECTION NO.2 AS FOLLOWS:
 -L- STA. 12+50 TO 19+29



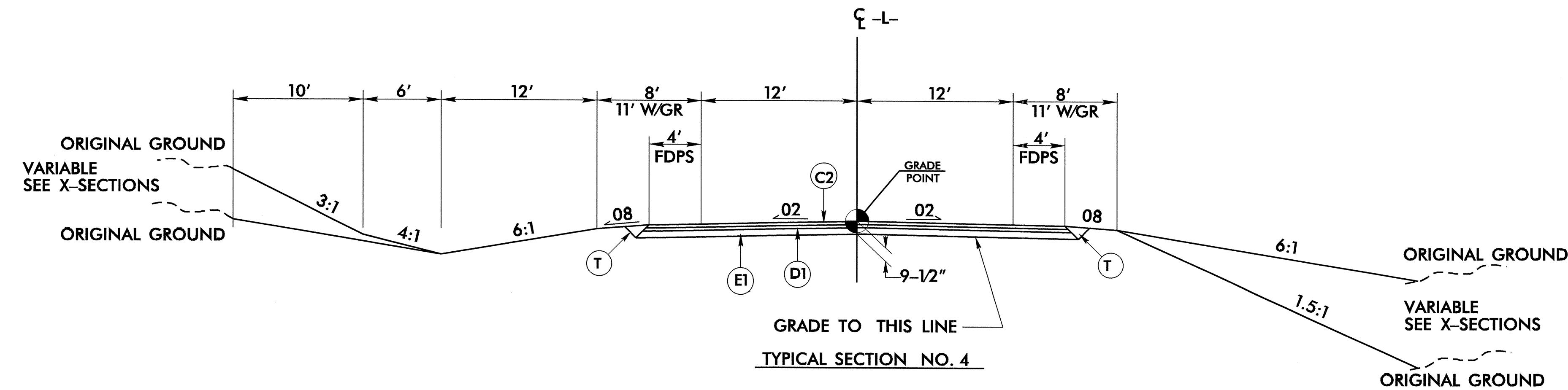
BICYCLE SAFE RAILS REQUIRED

15-FEB-2010 08:10
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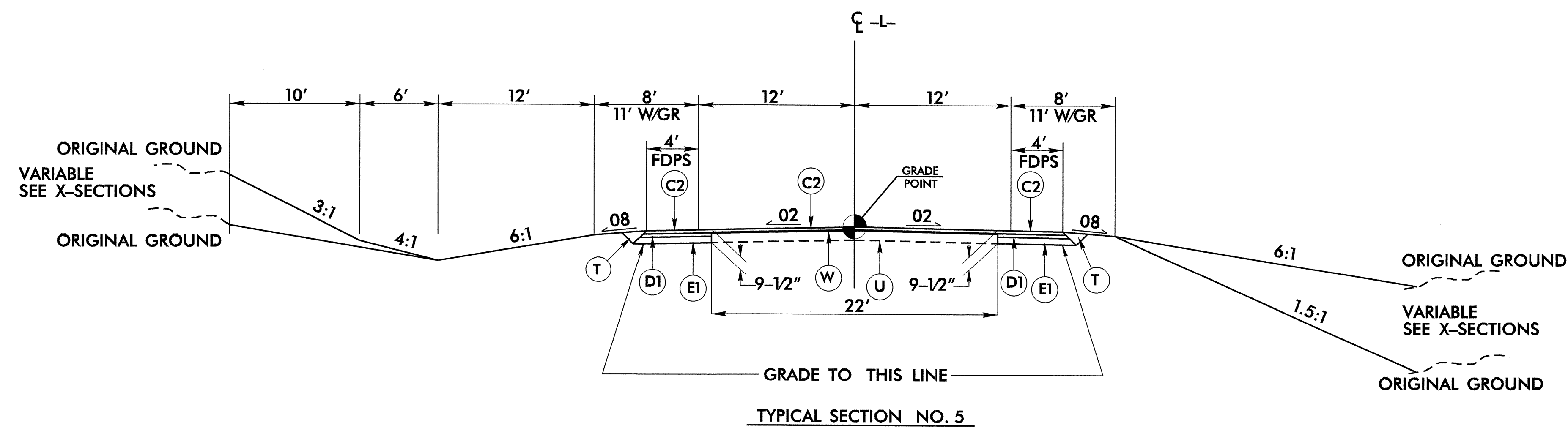
PROJECT REFERENCE NO. B-3611	SHEET NO. 2
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14493 JAMES SAFFORD BOONIGHT, JR.	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22896 CLARK S. MORRISON



USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-L- STA. 19+29+/- TO 26+49 (BEG. BRIDGE)



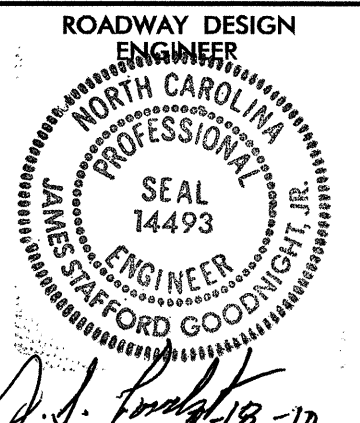
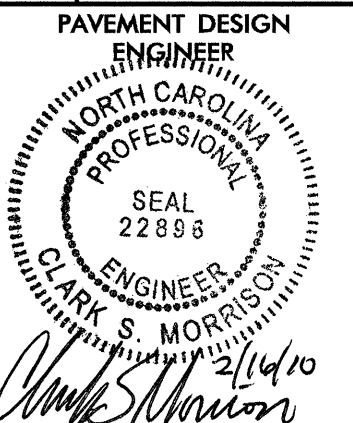
USE TYPICAL SECTION NO. 4 AS FOLLOWS:
-L- STA. 60+01 (END BRIDGE) TO 63+50

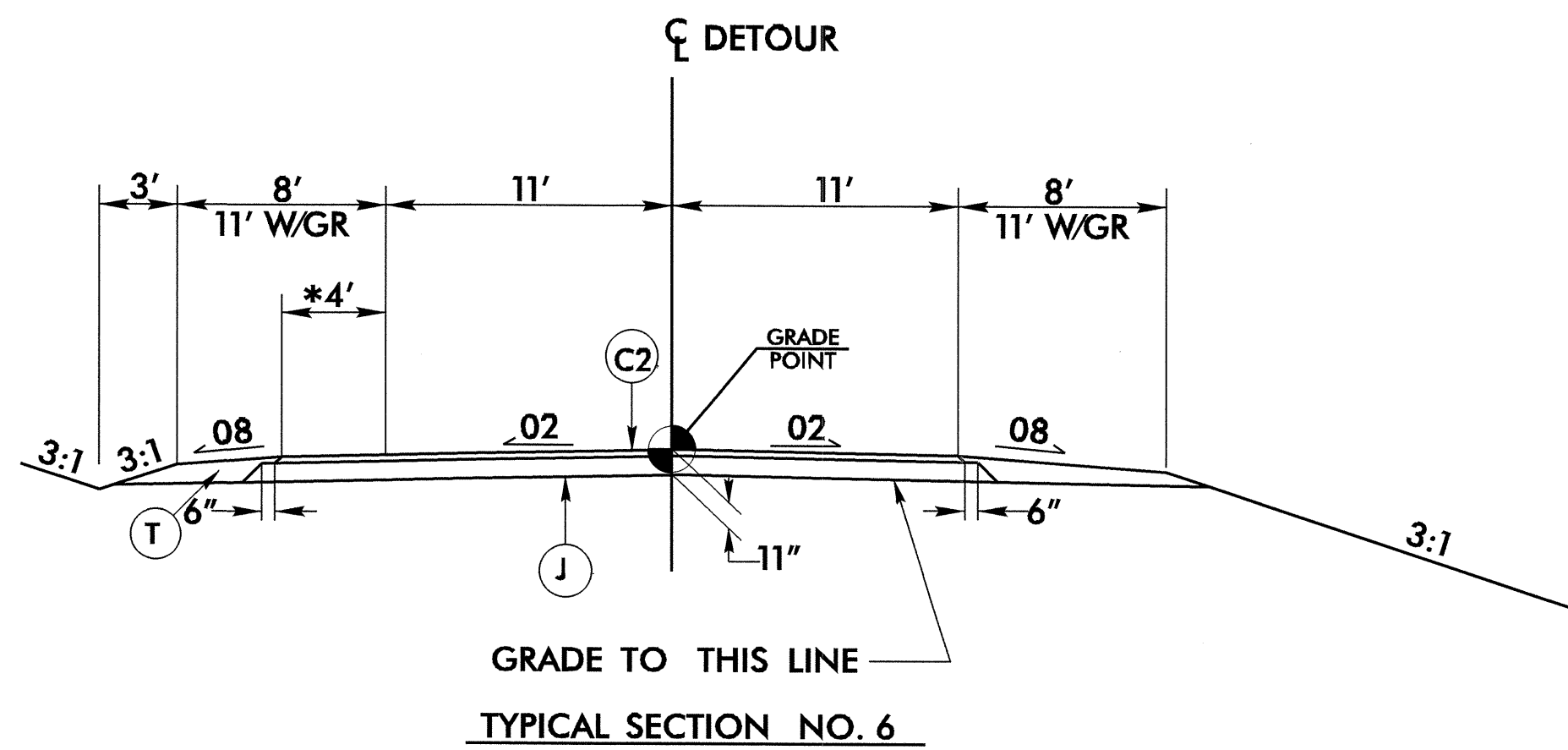


USE TYPICAL SECTION NO. 5 AS FOLLOWS:
-L- STA. 63+50.00 TO 71+00.00

PAVEMENT SCHEDULE

C1	1-1/2" S9.5B
C2	3" S9.5B
C3	VAR. DEPTH S9.5B
D1	2-1/2" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" B25.B
E2	VAR. DEPTH B25.B
J	8" ABC
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

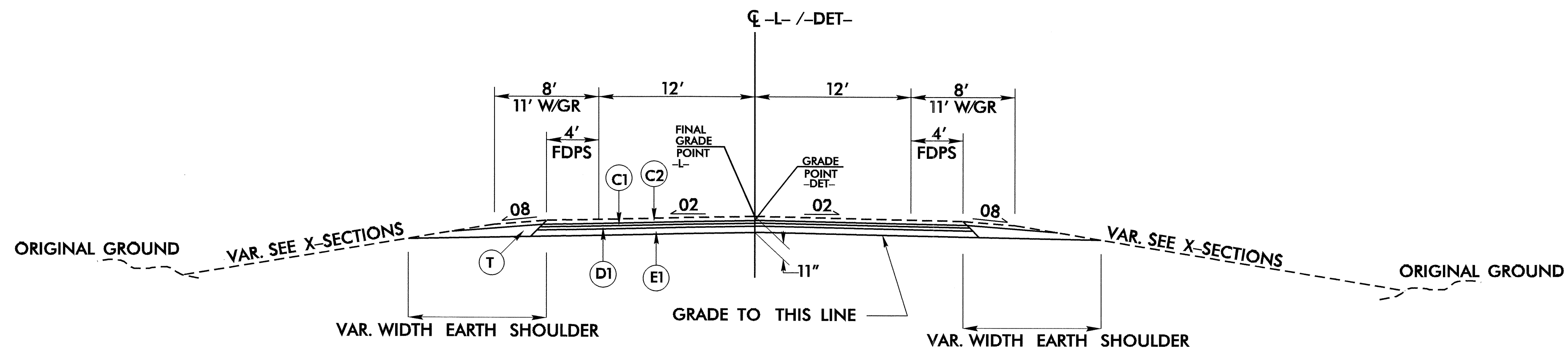
PROJECT REFERENCE NO. B-3611	SHEET NO. 2-B
	



USE TYPICAL SECTION NO. 6 AS FOLLOWS:
 -DET- STA. 20+60.00 TO 34+39.44
 *-DET- STA. 20+60.00 TO 28+84

PAVEMENT SCHEDULE

C1	1-1/2" S9.5B
C2	3" S9.5B
C3	VAR. DEPTH S9.5B
D1	2-1/2" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" B25.B
E2	VAR. DEPTH B25.B
J	8" ABC
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING



----- ULTIMATE -L- TEMPLATE
 _____ DETOUR TEMPLATE DURING PHASE CONSTRUCTION

DETAIL OF GRADING AND PAVING LIMITS OF TEMPORARY DETOUR

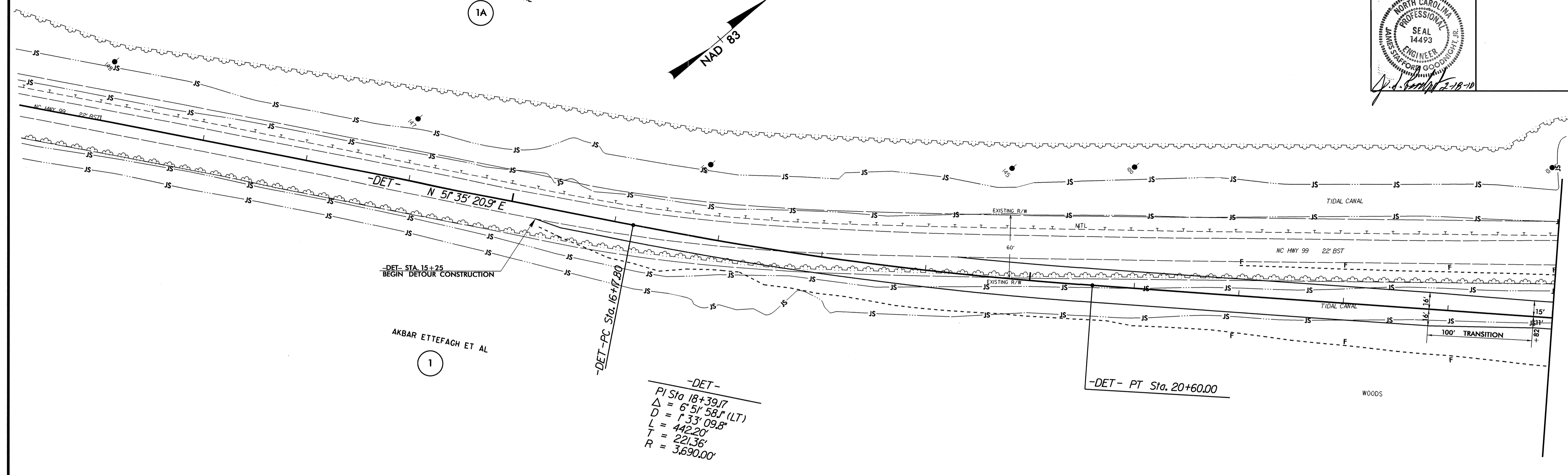
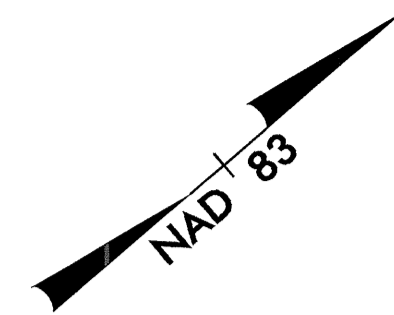
USE FROM -DET- STA. 15+25 TO 25+00 +/-

DETAIL OF DETOUR DURING PHASE CONSTRUCTION

20

PROJECT REFERENCE NO. B-3611	SHEET NO. 2-C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GENE MURRAY ET AL
1A



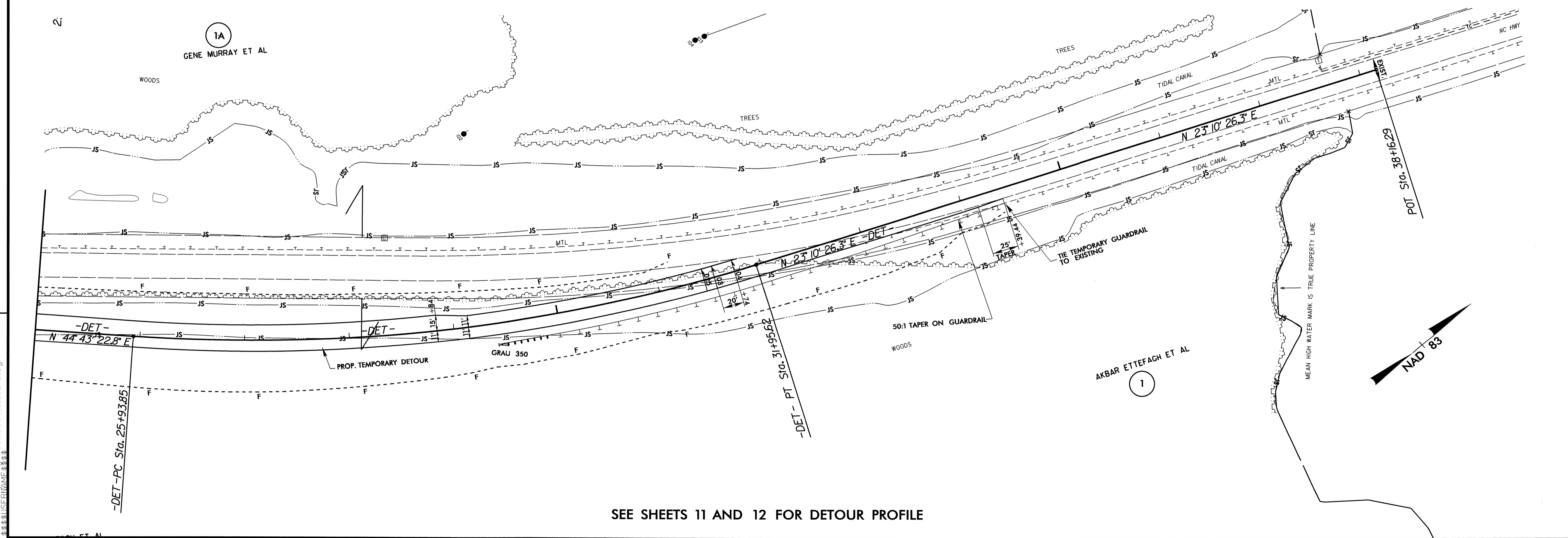
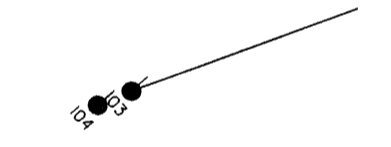
AKBAR ETTEFAGH ET AL
1

-DET-
PI Sta. 18+39.17
Δ = 6° 51' 58.1\"/>

-DET- PT Sta. 20+60.00

REVISIONS

GENE MURRAY ET AL
1A

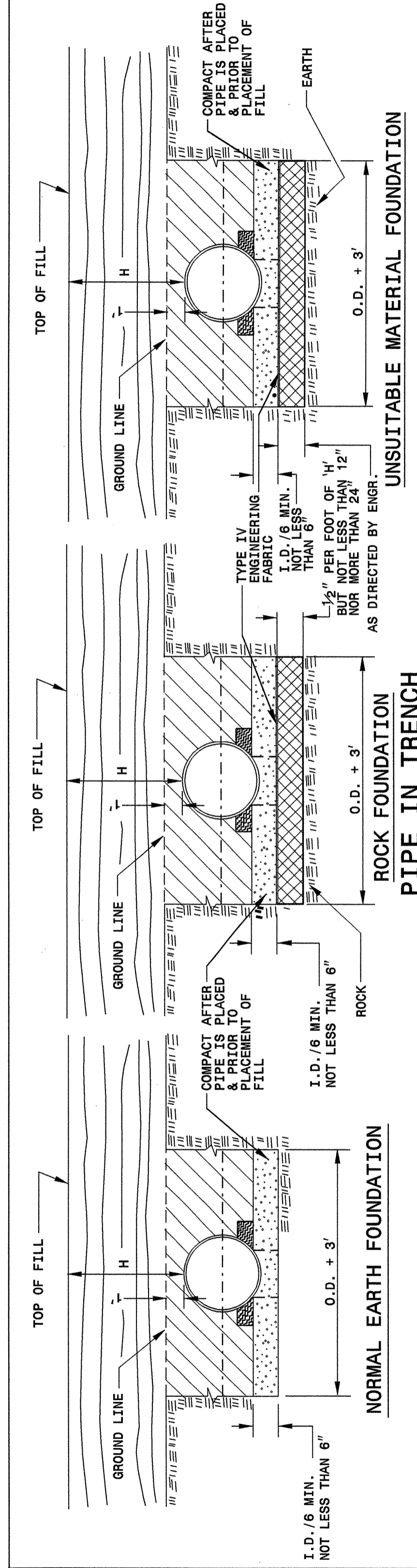


AKBAR ETTEFAGH ET AL
1

SEE SHEETS 11 AND 12 FOR DETOUR PROFILE

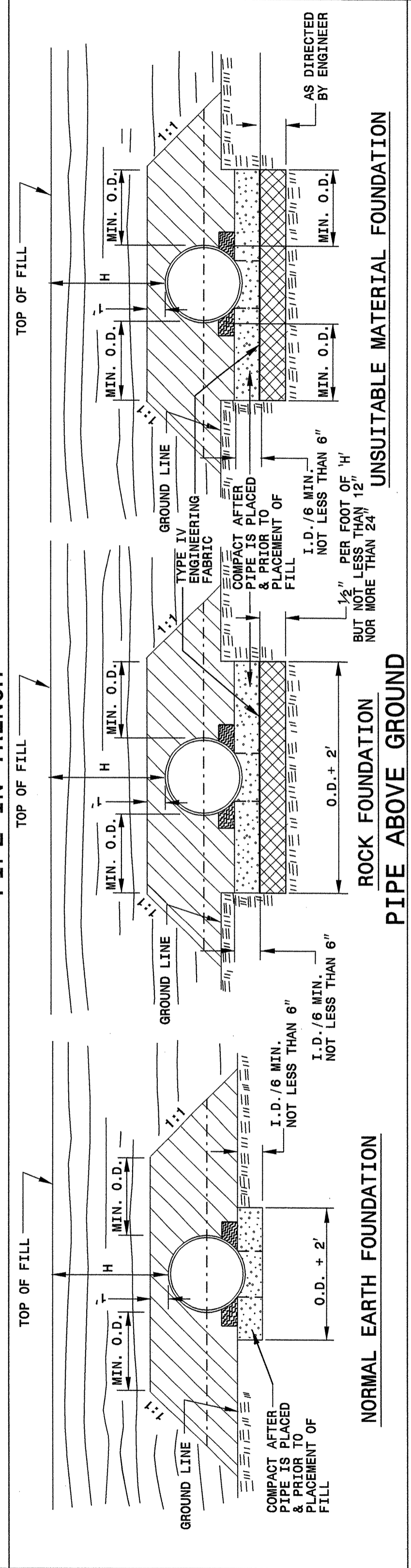
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S:\PROJECTS\B3611\detour1.s2-c.dgn

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



7-06
 ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



300D01
 SHEET 1 OF 3
 ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

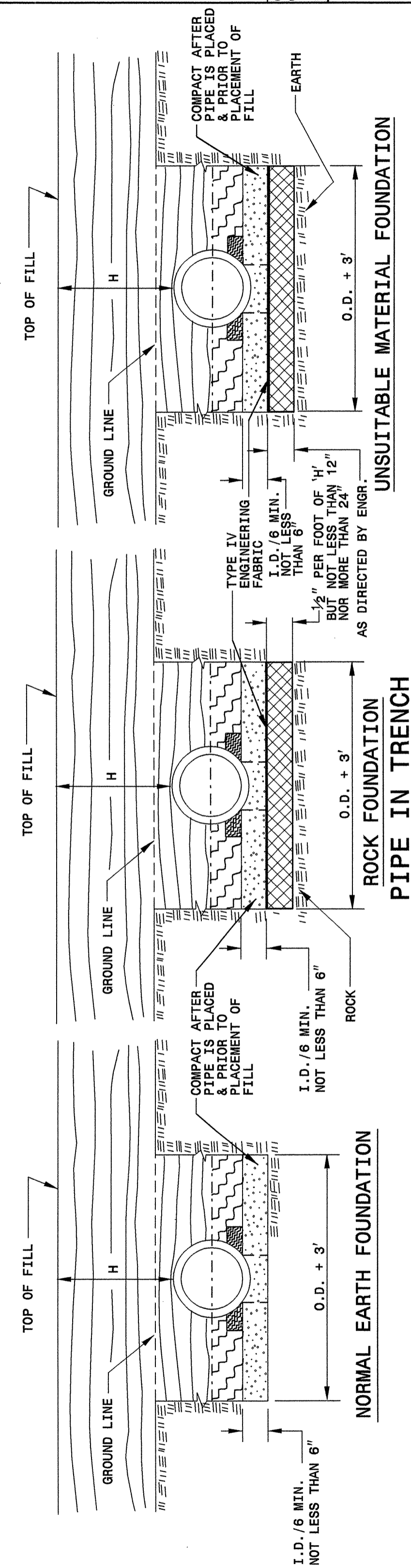
GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE ENBANKMENT AT THAT POINT.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

--- SPRINGLINE OF PIPE
 [Hatched pattern] SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
 [Dotted pattern] APPROVED SUITABLE LOCAL MATERIAL.
 [Horizontal lines] UNDISTURBED EARTH MATERIAL
 [Cross-hatched pattern] SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

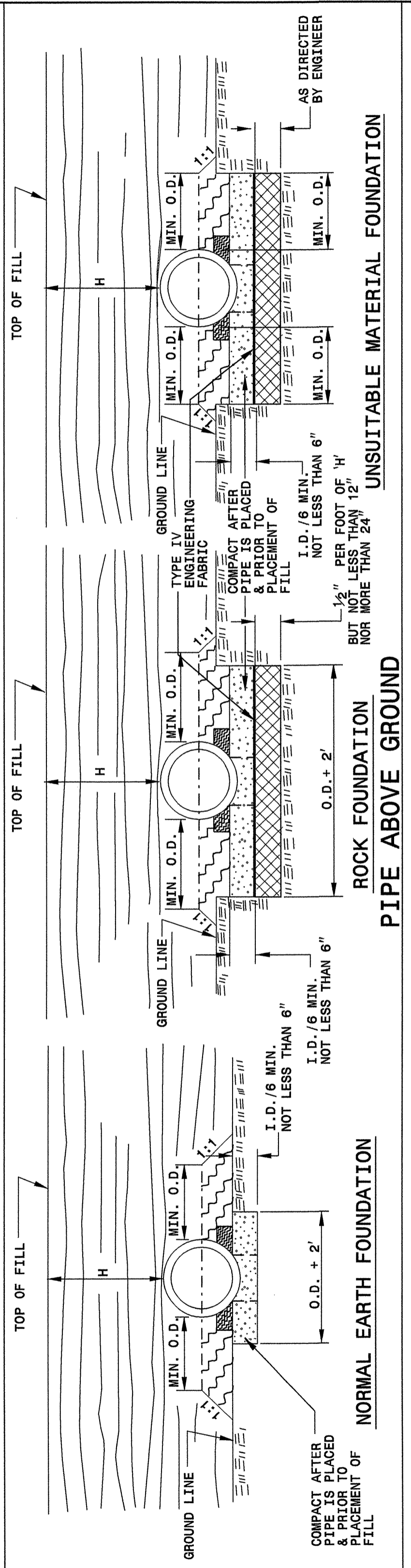
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



7-06
 ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



300D01
 SHEET 2 OF 3
 ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE

GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE ENBANKMENT AT THAT POINT.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

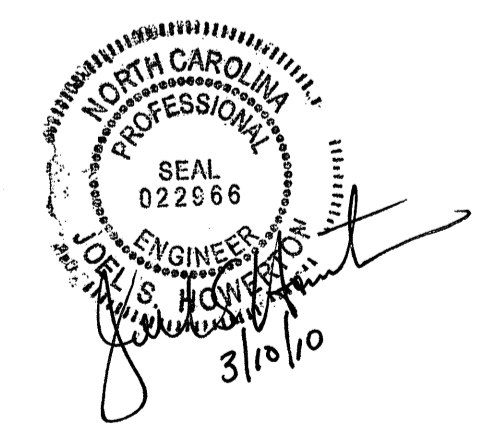
--- SPRINGLINE OF PIPE
 [Hatched pattern] SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
 [Dotted pattern] APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.
 [Horizontal lines] UNDISTURBED EARTH MATERIAL
 [Cross-hatched pattern] SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

PROJECT SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN
 Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
 MODIFIED BY: [Signature] DATE: [Blank]
 CHECKED BY: [Signature] DATE: 7/20/09
 FILE SPEC: ericward/stds/stdstodetails/30001/0300d01.dgn



STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **						
Diameter (inches)	Minimum cover (inches)	(Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12	42	54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

- HDPE * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
- * (Maximum fill) 20' for pipe diameters ≤ 24"
- 17' for pipe diameters ≥ 30" and ≤ 60"
- PVC * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
- * (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

- RCP * (Minimum fill) 1' for Class IV & CLASS V
- 2' for Class III & Class II
- * (Maximum fill) 10' - Class II pipe
- 20' - Class III pipe
- 30' - Class IV pipe
- 40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **						
Diameter (inches)	Minimum cover (inches)	(Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- CSP - AASHTO M36
- CAAP - AASHTO M196
- HDPE - AASHTO M294
- PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

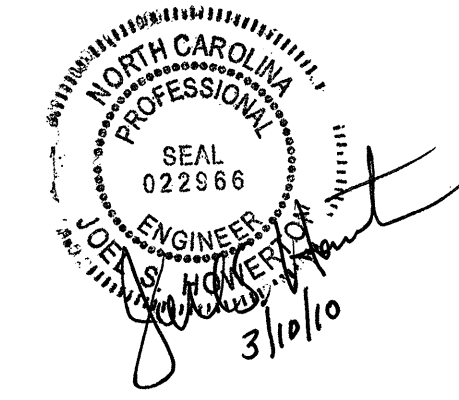
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

**PROJECT SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN**
 Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

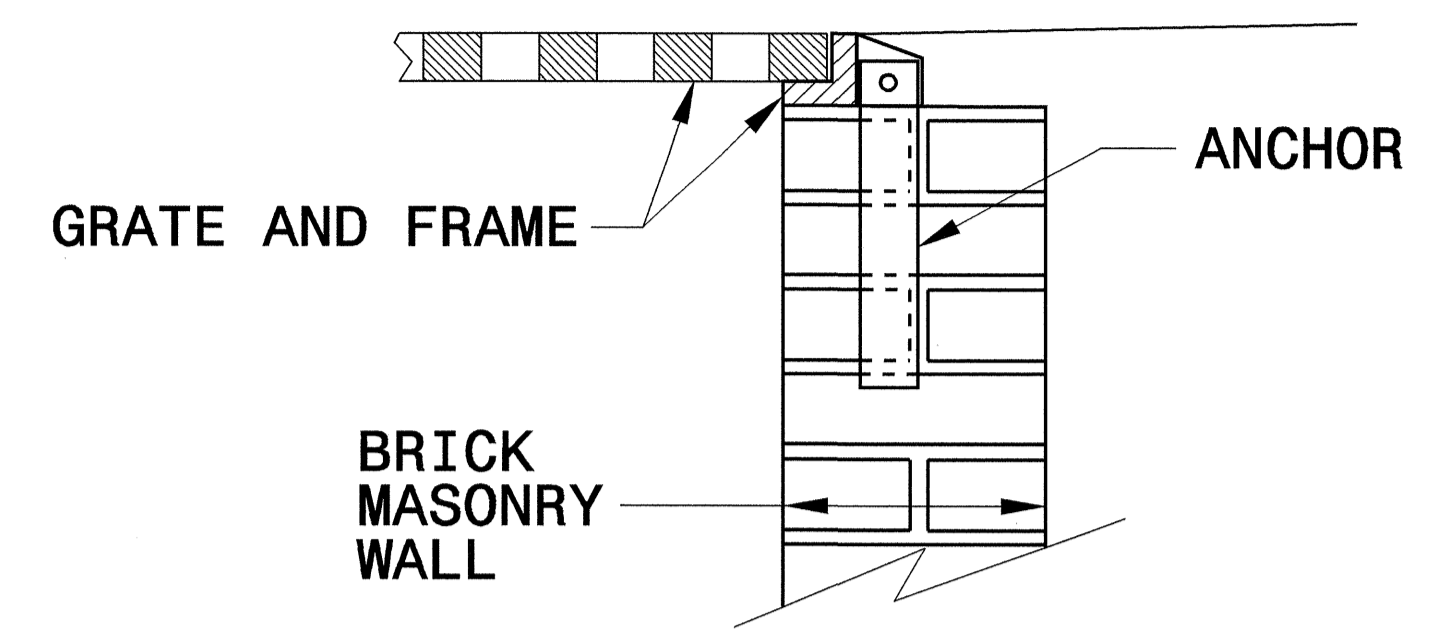
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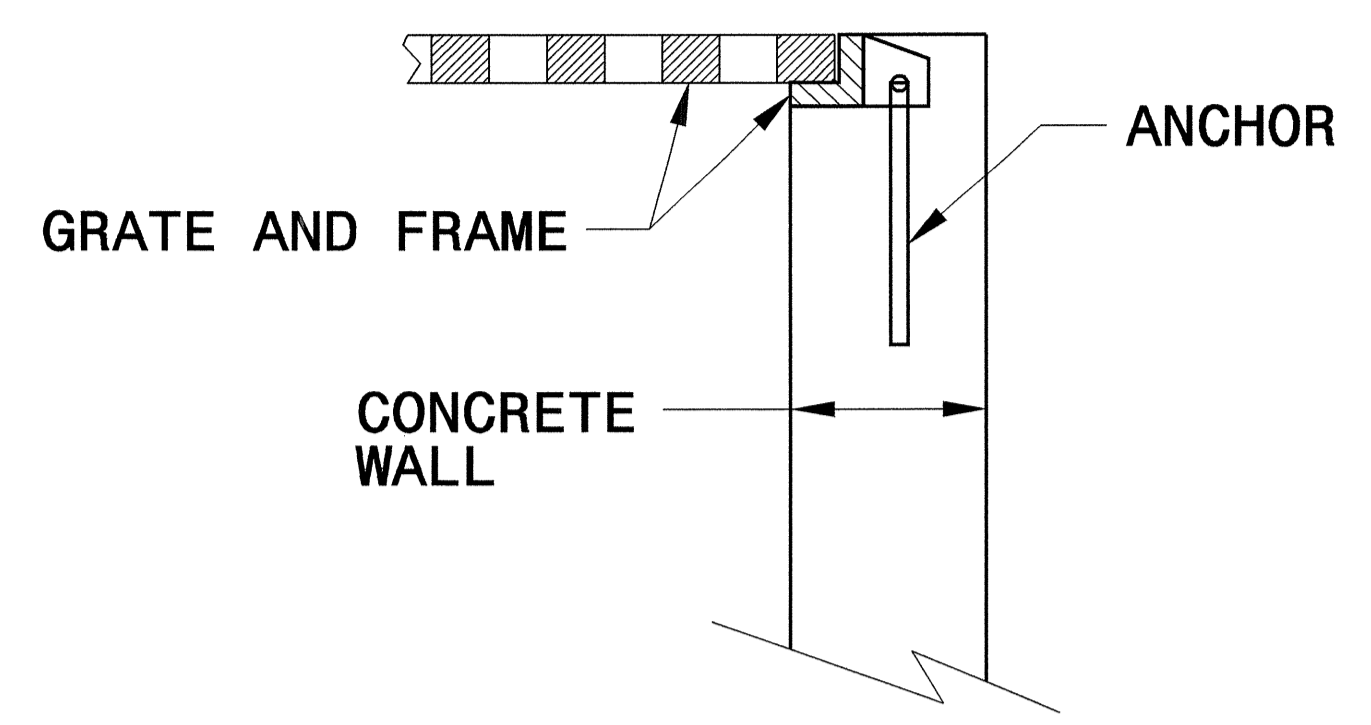
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

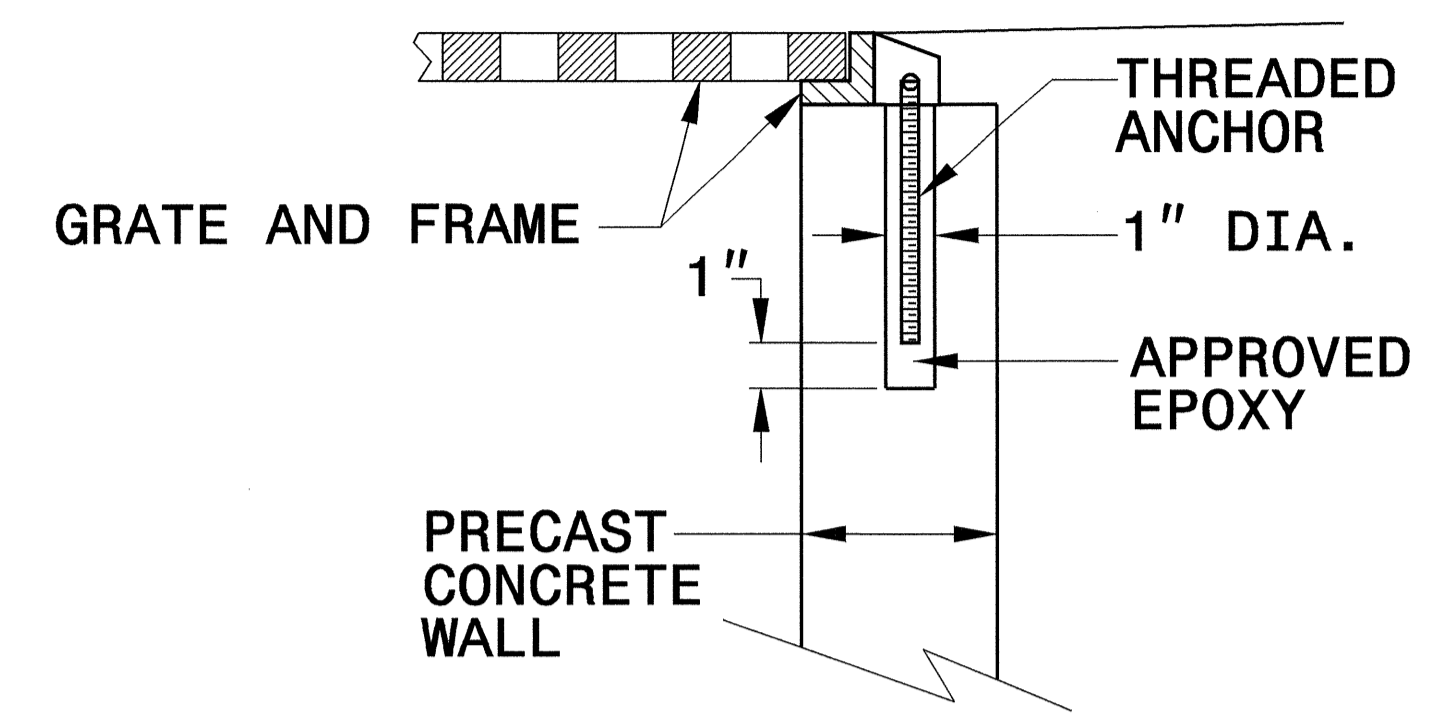
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



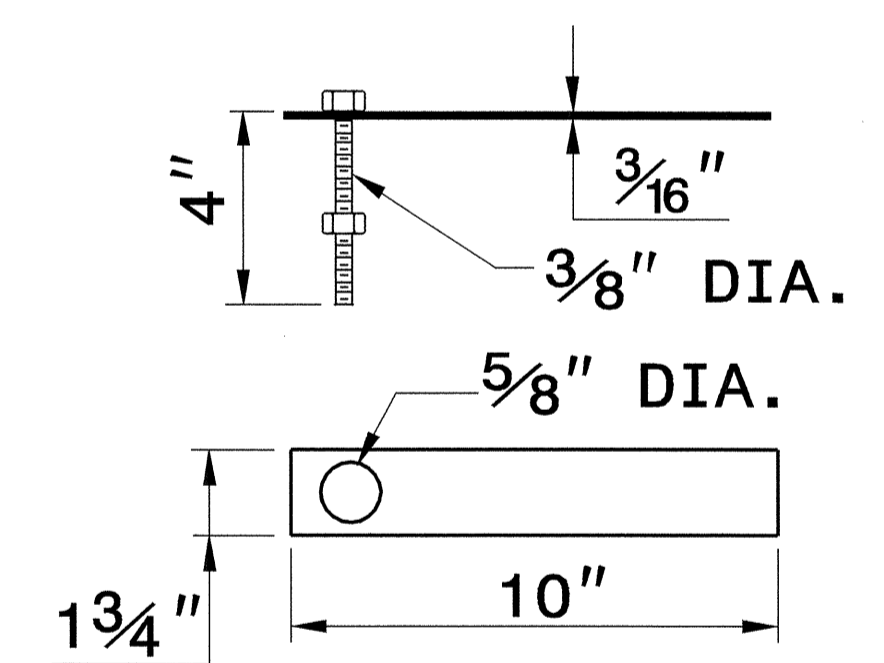
CONCRETE CONSTRUCTION



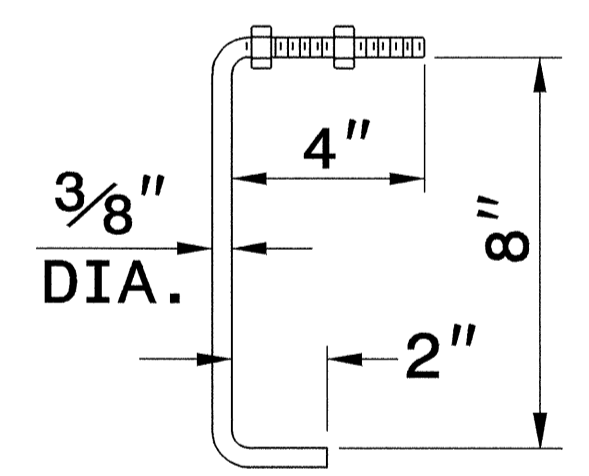
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

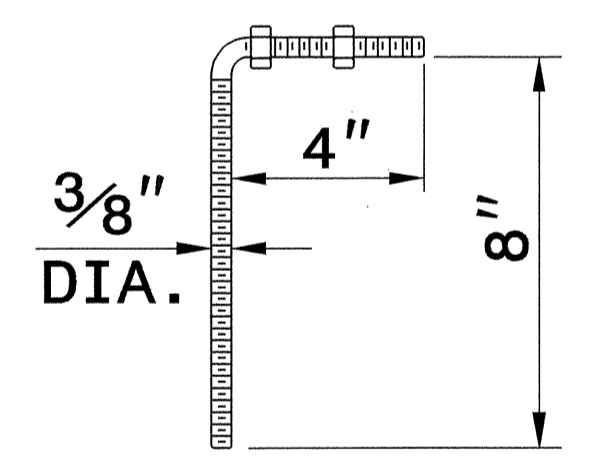
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



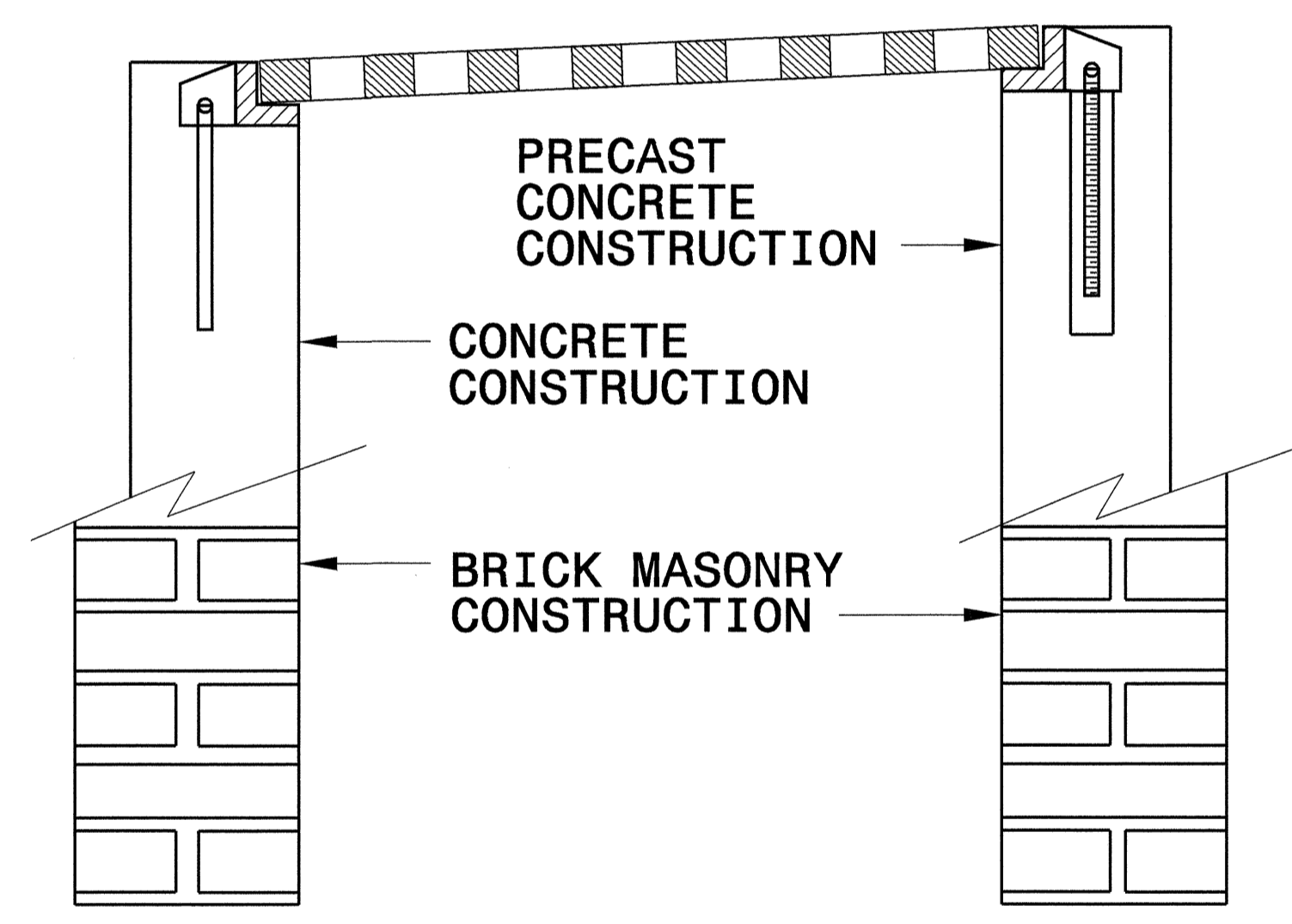
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



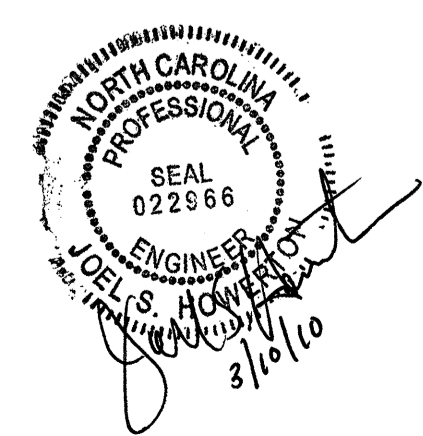
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

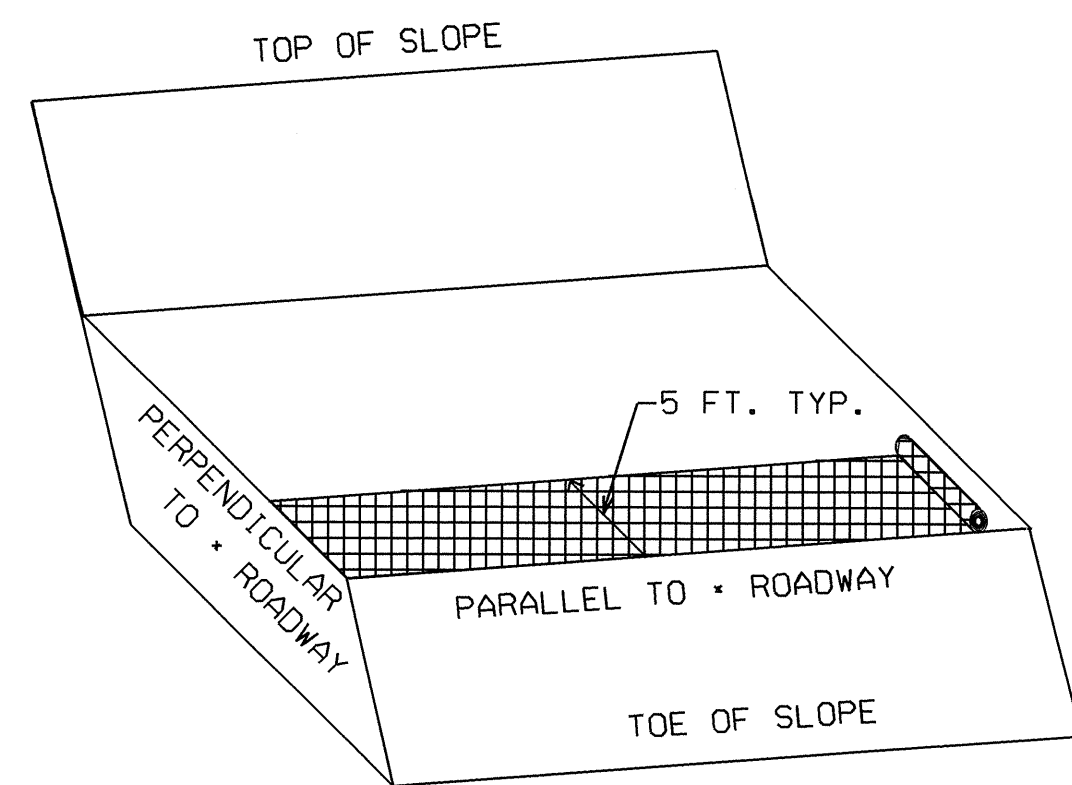
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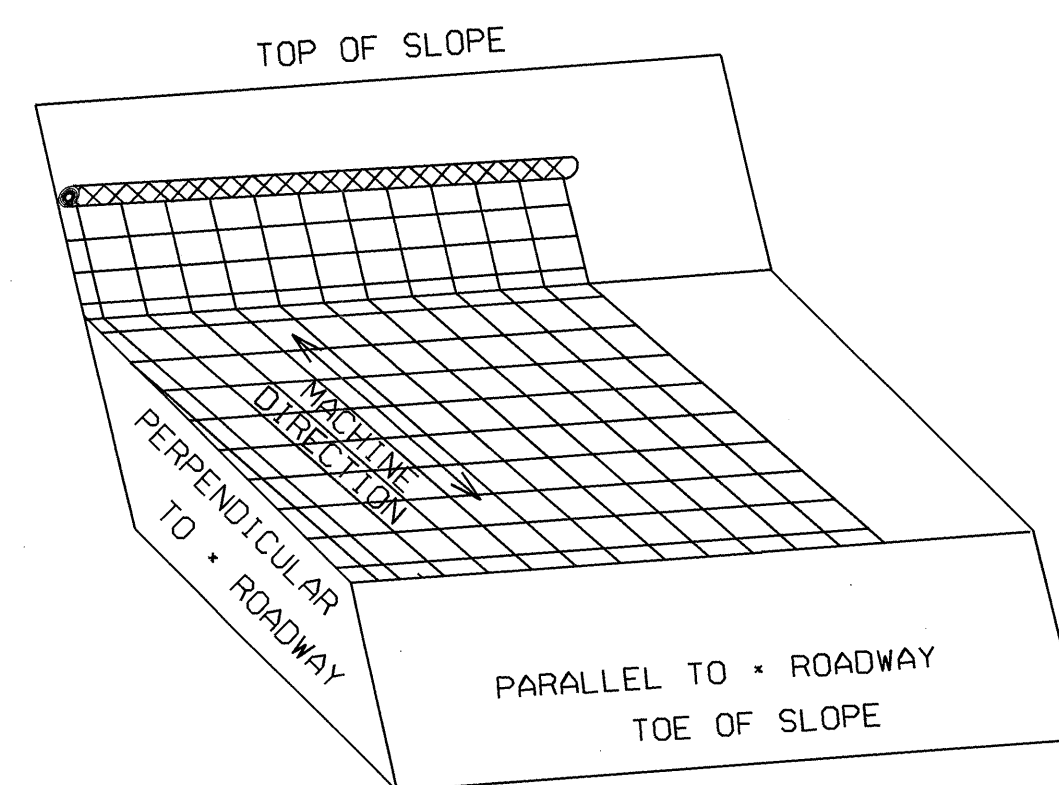
**PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

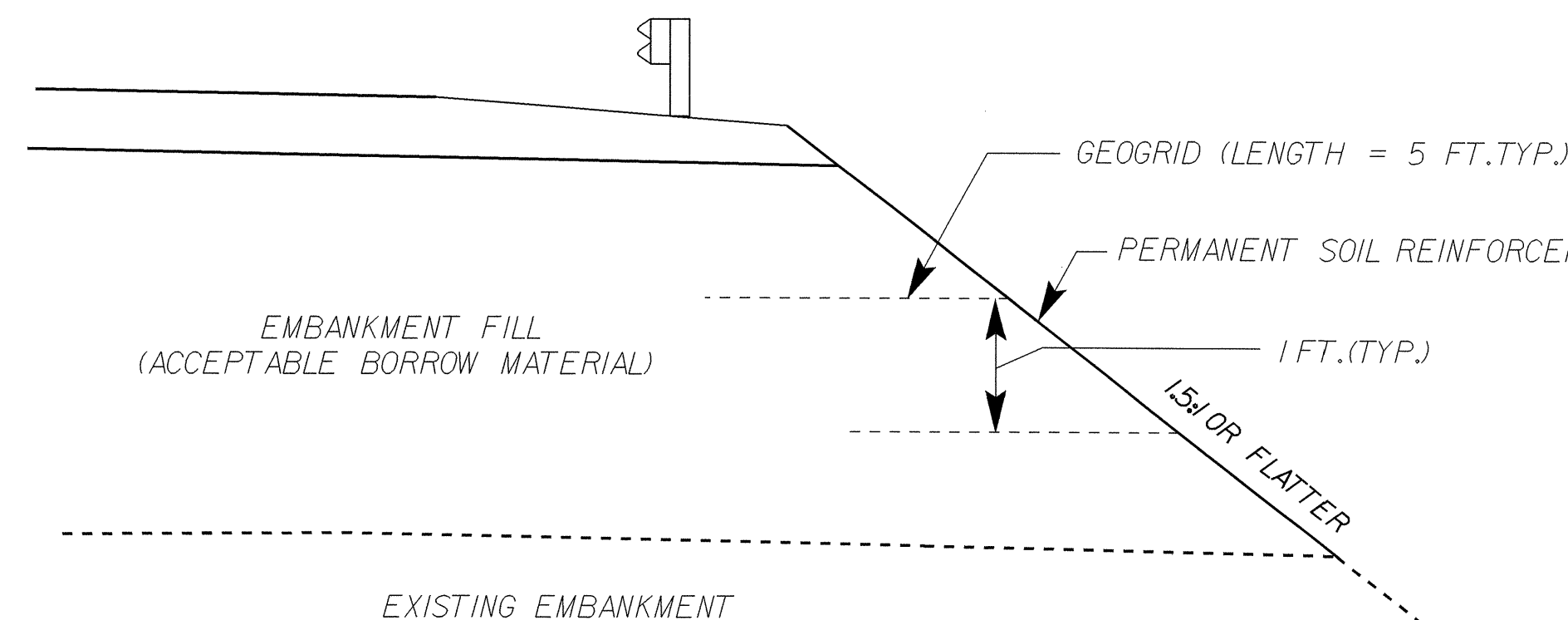
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 CHECKED BY: _____ DATE: _____
 FILE SPEC.: _____



GEOGRID REINFORCEMENT DETAIL
SEE NOTE 4 CONCERNING OVERLAPS



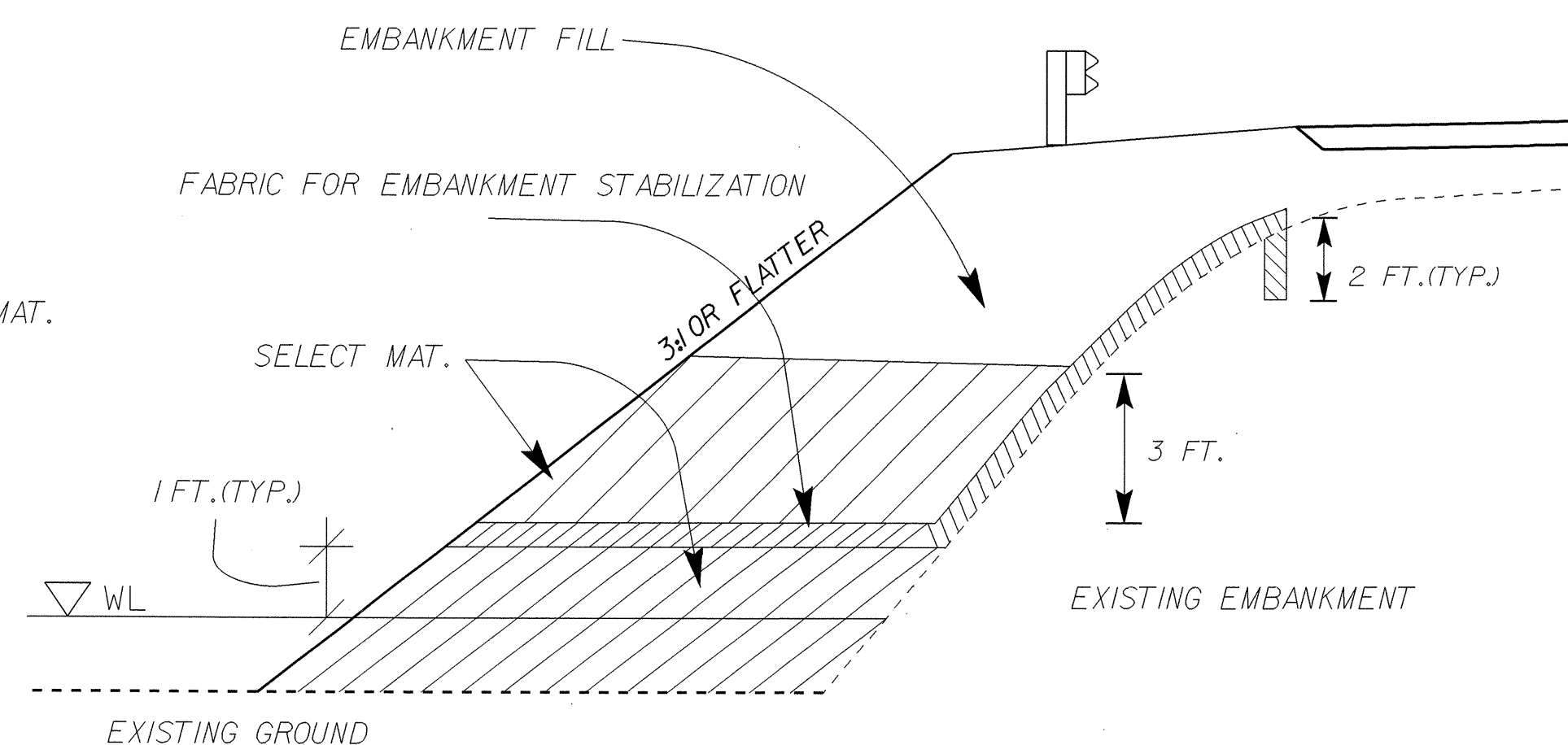
FABRIC FOR EMBANKMENT STABILIZATION DETAIL
N.T.S



TYPICAL SECTION (GEOGRID REINFORCEMENT)
N.T.S

Geogrid Reinforced Slope Table			
Alignment	Begin Station	End Station	Location
-L-	11+50 +/-	15+00 +/-	Left
-L-	15+75 +/-	16+50 +/-	Left
-L-	68+50 +/-	69+50 +/-	Right
-L-	70+00 +/-	71+00 +/-	Right

REINFORCED SLOPE ESTIMATED QUANTITIES:
SECONDARY GEOGRID REINFORCEMENT: 700 SQ. YD.
PERMANENT SOIL REINFORCEMENT MAT: 300 SQ. YD.



TYPICAL SECTION (FABRIC FOR EMB. STABILIZATION)
N.T.S

Location for Fabric for Embankment Stabilization			
Alignment	Begin Station	End Station	Location
-L-	63+25 +/-	65+50 +/-	Left

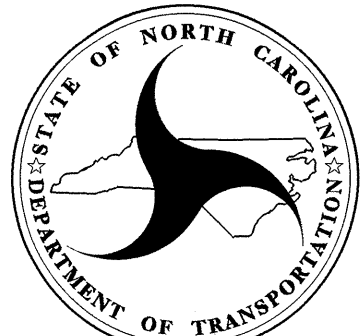
FABRIC FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITIES:
FABRIC FOR EMBANKMENT STABILIZATION: 500 SQ. YD.

NOTES:

- GEOGRID REINFORCEMENT SHALL BE PLACED AT THE LOCATIONS LISTED IN THE GEOGRID REINFORCED SLOPE TABLE WHERE SLOPS ARE 1.5:1 (H:V) OR FLATTER.
- LAYERS OF REINFORCEMENT MAY NEED TO BE ADDED OR SUBTRACTED AT THE TOP OF SLOPE AS THE EMBANKMENT HEIGHT VARIES THROUGH THE STEEPENED SECTION.
- THE TOP LAYER OF REINFORCEMENT MAY BE LOWERED SLIGHTLY IF NECESSARY TO PREVENT INTERFERENCE WITH THE SUBGRADE.
- OVERLAPS IN THE GEOGRID REINFORCEMENT SHALL BE A MINIMUM OF 1 FT.
- THE FIRST LAYER OF GEOGRID SHALL BE PLACED ON LEVEL GROUND NOT STEEPER THAN 5% GRADE.
- SEE THE SPECIAL PROVISION FOR GEOGRID REINFORCEMENT FOR DETAILED REQUIREMENTS OF MATERIALS AND CONSTRUCTION.
- PERMANENT SOIL REINFORCEMENT MAT SLOPE PROTECTION SHALL BE PLACED AT THE LOCATIONS LISTED IN THE SLOPE TABLE WHERE SLOPES ARE 1.5:1 (H:V) OR FLATTER.
- SEE THE SPECIAL PROVISION FOR PERMANENT SOIL REINFORCEMENT MAT FOR DETAIL REQUIREMENTS OF MATERIALS AND CONSTRUCTION.
- THE ENTIRE EMBANKMENT SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH THE SLOPE REINFORCEMENT.
- FABRIC FOR EMBANKMENT STABILIZATION SHALL BE PLACED FROM -L- STA. 63+25 +/- TO STA. 65+50 +/-.
- ROCK EMBANKMENT MAY BE USED IN LIEU OF SELECT MATERIAL FOR CONSTRUCTION OF PROPOSED EMBANKMENT WHERE THE FILL MATERIAL IS TO BE PLACED UNDER WATER. SEE ROCK EMBANKMENTS SPECIAL PROVISION.

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH



SLOPE REINFORCEMENT DETAILS

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

STANDARD TEMPORARY MSE WALL OPTIONS

PROJECT REFERENCE NO. B-3611		SHEET 2-H
GEOTECHNICAL ENGINEER 		ENGINEER
Sutta A. Hadden 3/29/07 SIGNATURE DATE		SIGNATURE DATE

TEMPORARY MSE WALL OPTION	VENDOR	CONTACT INFORMATION	REINFORCEMENT TYPE	SHEETS
TEMPORARY FABRIC WALL	N/A	N/A	POLYESTER OR POLYPROPYLENE FABRIC	3
HILFIKER TEMPORARY WALL	HILFIKER RETAINING WALLS	1902 HILFIKER LANE, EUREKA, CA 95503-5711 707-443-5093 WWW.HILFIKER.COM	WELDED WIRE MAT	4
SIERRASCAPE TEMPORARY WALL	TENSAR EARTH TECHNOLOGIES, INC	5883 GLENRIDGE DRIVE, SUITE 200 ATLANTA, GA 30328-5363 404-250-1290 WWW.TENSARCORP.COM	GEOGRID	5
RETAINED EARTH TEMPORARY WALL	THE REINFORCED EARTH COMPANY	8614 WESTWOOD CENTER DRIVE, SUITE 1100 VIENNA, VA 22182-2233 703-749-4325 WWW.REINFORCEDEARTH.COM	WELDED WIRE MESH	6-8
TERRATREL TEMPORARY WALL	THE REINFORCED EARTH COMPANY	8614 WESTWOOD CENTER DRIVE, SUITE 1100 VIENNA, VA 22182-2233 703-749-4325 WWW.REINFORCEDEARTH.COM	RIBBED STEEL STRIPS	9-11

FOR STANDARD TEMPORARY MSE WALLS, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT TEMPORARY MSE WALLS OR STANDARD SHORING, STANDARD TEMPORARY MSE WALLS ARE OPTIONAL.

WHEN NOTES ON PLANS REQUIRE TEMPORARY MSE WALLS, USE STANDARD TEMPORARY MSE WALLS OR CONTRACTOR DESIGNED TEMPORARY MSE WALLS.

WHEN THE ALIGNMENT OF STANDARD TEMPORARY MSE WALLS RESULTS IN AN INTERIOR ANGLE LESS THAN 90 DEGREES, SUBMIT AN ACUTE CORNER DETAIL FOR THE SPECIFIC SITUATION IN ACCORDANCE WITH THE WALL VENDOR RECOMMENDATIONS. ALSO, SUBMIT A "STANDARD TEMPORARY MSE WALL SELECTION FORM" FOR EACH TEMPORARY MSE WALL LOCATION. SUBMIT THESE ITEMS AT LEAST 14 DAYS BEFORE BEGINNING WALL CONSTRUCTION.

STANDARD TEMPORARY MSE WALLS ARE BASED ON THE FOLLOWING CONDITIONS:

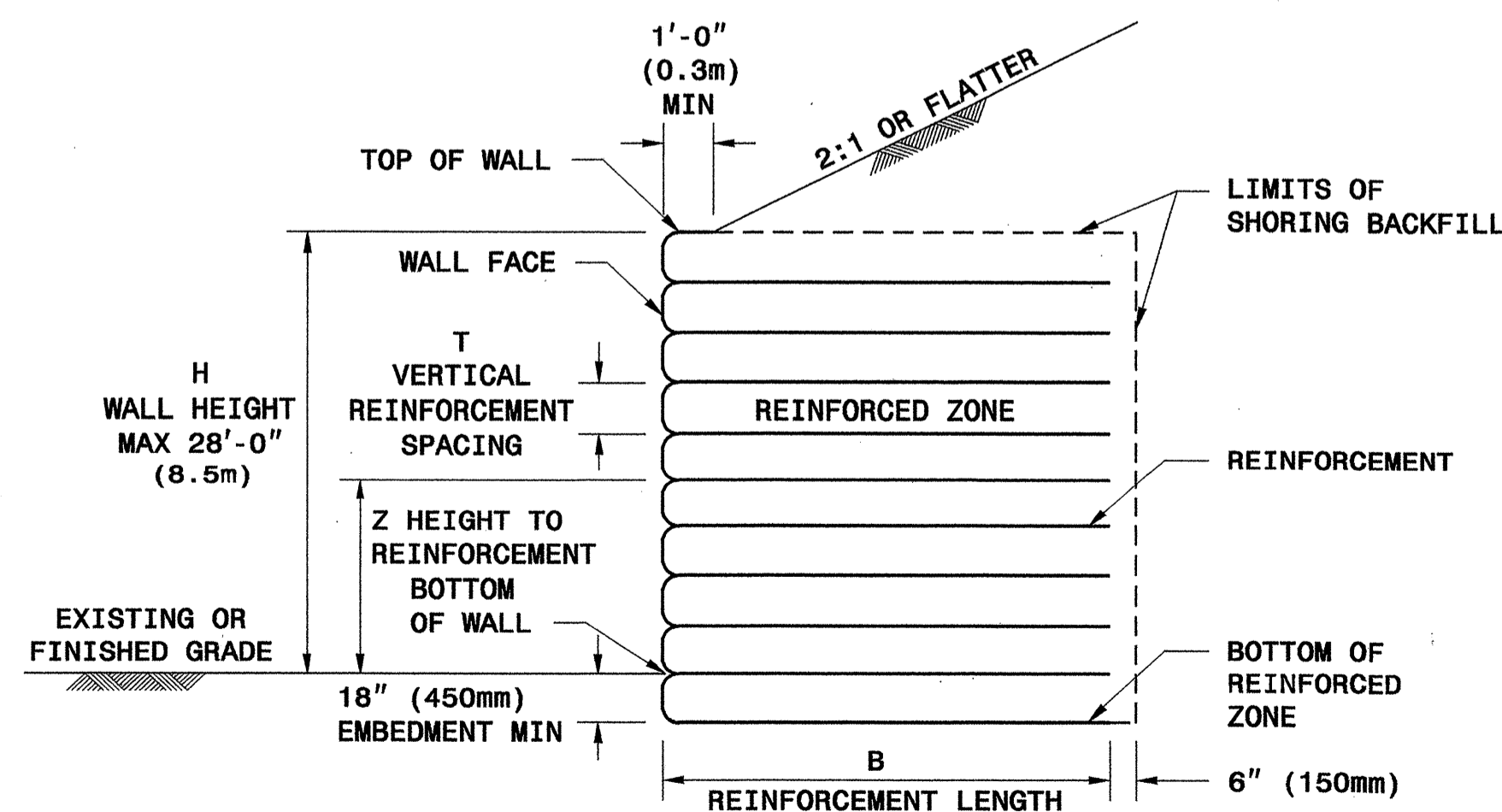
- 1) MAXIMUM WALL HEIGHT IS 28'-0" (8.5m).
- 2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
- 3) EXISTING OR FINISHED GRADE IN FRONT OF WALL IS 6:1 (H:V) SLOPE OR FLATTER.
- 4) THE GRADE OF THE TOP OF WALL IS LESS THAN 4% FOR RETAINED EARTH AND TERRATREL TEMPORARY WALLS.
- 5) DESIGN SERVICE LIFE IS 3 YEARS.
- 6) MATERIAL IN REINFORCED ZONE IS SHORING BACKFILL.
- 7) MAXIMUM APPLIED BEARING PRESSURE IS 1 TSF (100 KPA) FOR WALL HEIGHTS UP TO 8'-0" (2.4m), 2 TSF (195 KPA) FOR WALL HEIGHTS BETWEEN 8'-0" AND 18'-0" (2.4m AND 5.5m) AND 3 TSF (290 KPA) FOR WALL HEIGHTS OVER 18'-0" (5.5m).

STANDARD TEMPORARY MSE WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:

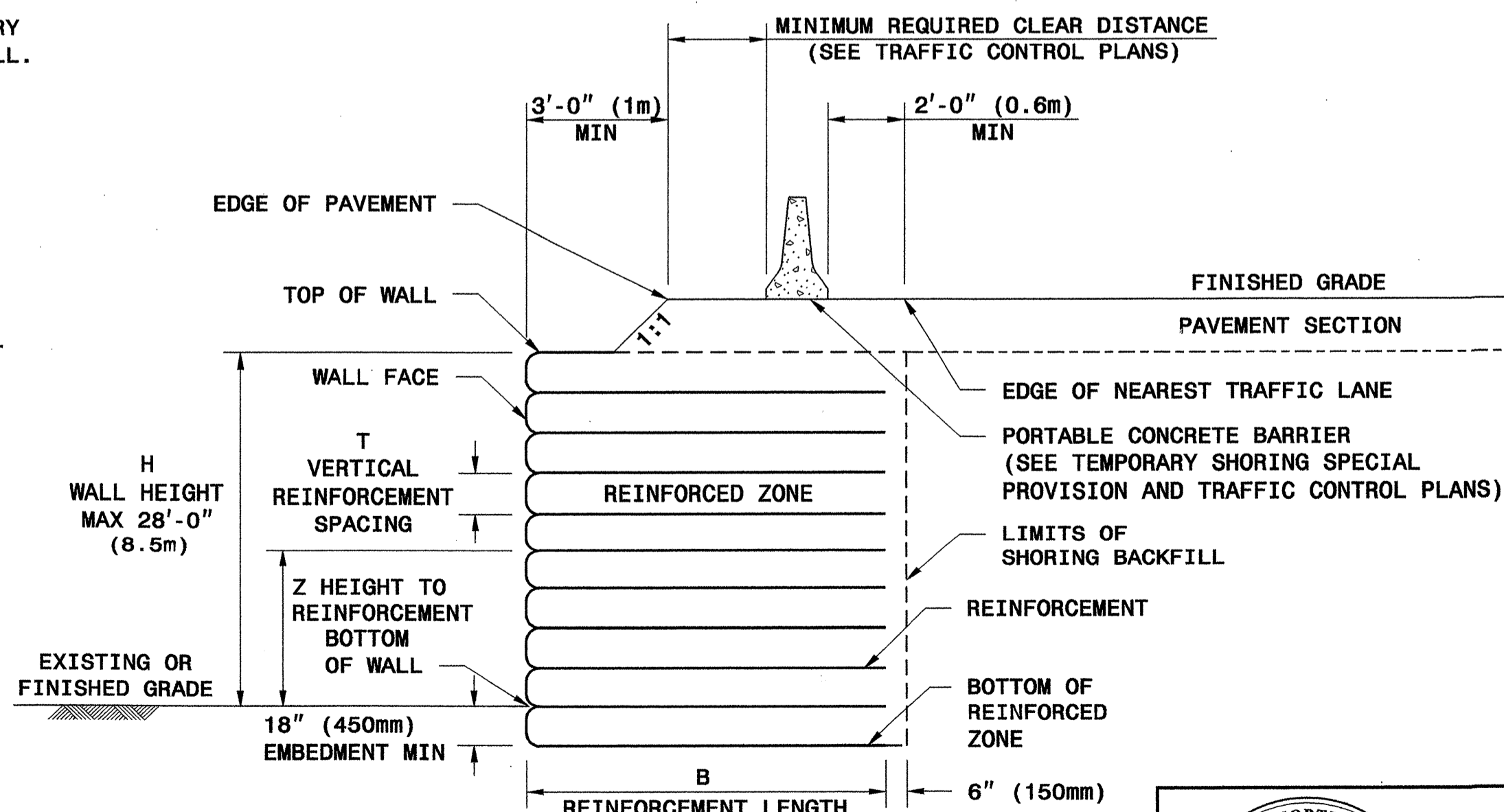
TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M³)
 FRICTION ANGLE = 30 DEGREES
 COHESION = 0 PSF (0 KPA)
 GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF REINFORCED ZONE.

DO NOT USE STANDARD TEMPORARY MSE WALLS WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT BELOW THE BOTTOM OF REINFORCED ZONE.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF STANDARD TEMPORARY MSE WALLS. COLLECT AND DIRECT RUNOFF AWAY FROM WALLS AND SHORING BACKFILL.



SLOPE CASE



SURCHARGE CASE

PLACE REINFORCEMENT AT LOCATIONS AND ELEVATIONS SHOWN ON THE STANDARD TEMPORARY MSE WALL DETAILS AND IN SLIGHT TENSION FREE OF KINKS, FOLDS, WRINKLES OR CREASES.

DO NOT SPLICE REINFORCEMENT IN THE REINFORCEMENT DIRECTION (RD), i.e., PARALLEL TO THE WALL FACE. SEAMS ARE ALLOWED IN THE CROSS-REINFORCEMENT DIRECTION (CRD).

CONTACT THE ENGINEER WHEN EXISTING OR FUTURE STRUCTURES SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT. TO AVOID STRUCTURES, DEFLECT, SKEW AND MODIFY REINFORCEMENT.

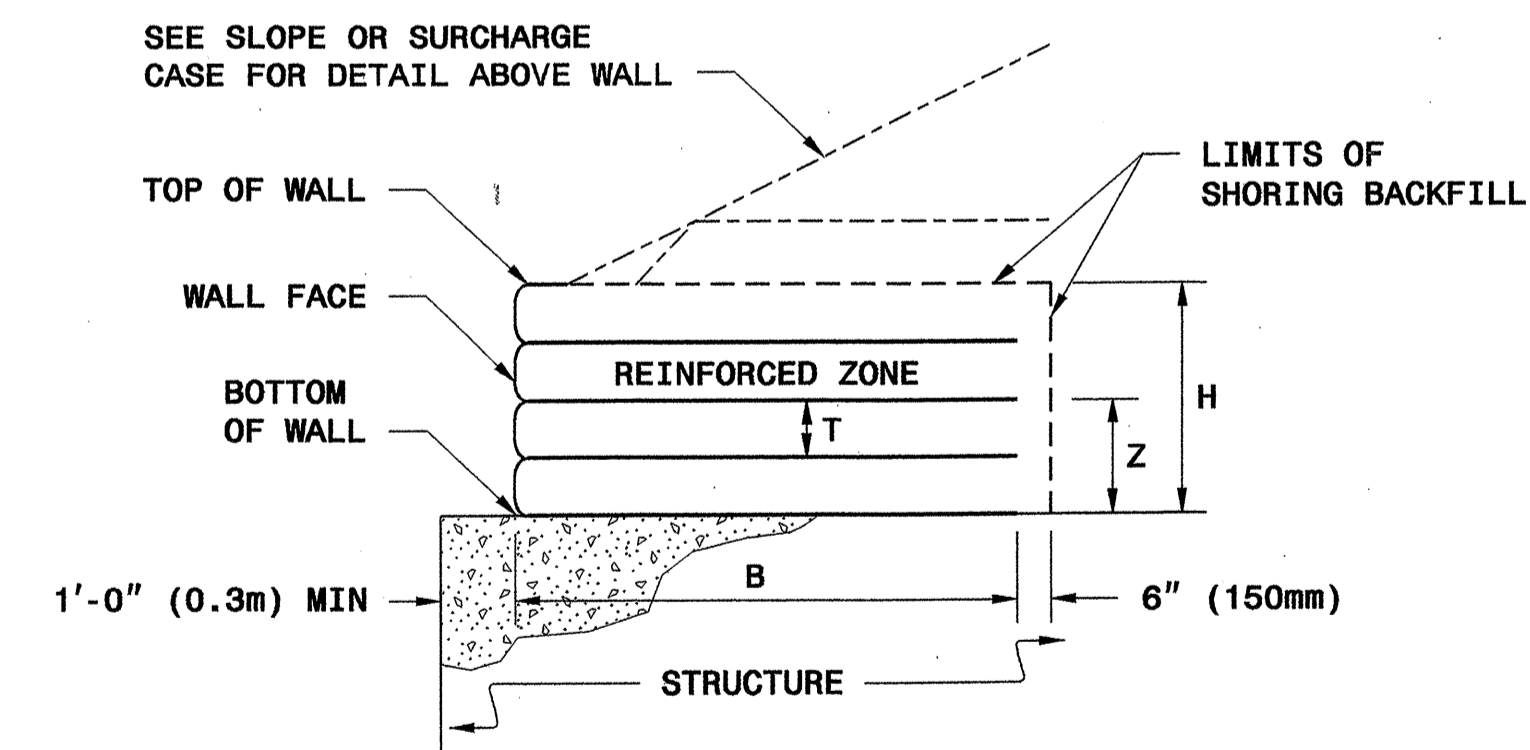
PLACE SHORING BACKFILL IN 8" TO 10" (200mm TO 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" (1m) OF THE WALL FACE.

DO NOT DAMAGE REINFORCEMENT WHEN PLACING AND COMPACTING SHORING BACKFILL. DO NOT OPERATE HEAVY EQUIPMENT ON REINFORCEMENT UNTIL IT IS COVERED WITH AT LEAST 10" (250mm) OF SHORING BACKFILL. DO NOT USE SHEEPSFOOT, GRID ROLLERS OR OTHER TYPES OF COMPACTION EQUIPMENT WITH FEET.

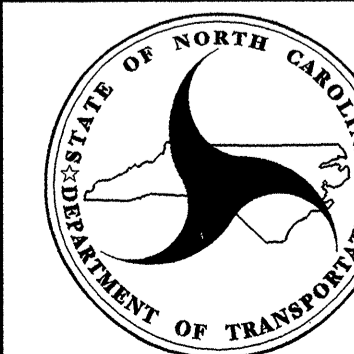
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4" AND 24" (100mm AND 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

BENCH STANDARD TEMPORARY MSE WALLS INTO THE SIDES OF EXCAVATIONS WHERE APPLICABLE.

IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



TEMPORARY MSE WALL ON STRUCTURE



GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS

SHEET 1 OF 11

DATE: 2-20-07

MINIMUM REQUIRED REINFORCEMENT LENGTH B (FT)

HOW TO USE THIS SHEET:

- FOR ALL WALL OPTIONS, DETERMINE MINIMUM REQUIRED REINFORCEMENT LENGTH (B) FROM TABLE AT RIGHT BASED ON WALL HEIGHT (H) AND SLOPE OR SURCHARGE CASE
- FOR STANDARD TEMPORARY FABRIC WALL, SEE SHEET 3 FOR FABRIC STRENGTH REQUIREMENTS BASED ON WALL HEIGHT (H)
- FOR ALL OTHER WALL OPTIONS, DETERMINE REINFORCEMENT TYPE FROM TABLES BELOW FOR EACH HEIGHT TO REINFORCEMENT (Z) BASED ON WALL HEIGHT (H) AND SLOPE OR SURCHARGE CASE

(FOR ALL WALL OPTIONS)

WALL HEIGHT H (FT)	<8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SLOPE CASE	8	11	13	14	16	18	20	22	24	25	27
SURCHARGE CASE	8	9	11	12	14	15	16	18	19	21	22

TERRATREL TEMPORARY WALL (STRIPS PER LEVEL PER PANEL)

		H (FT)												
		<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SLOPE AND SURCHARGE CASES	Z (FT-INCHES)	27-8												3
	26-10													3
	25-2													3
	23-6													3
	21-10													3
	20-2													3
	18-6													3
	16-10													3
	15-2													3
	13-6													3
	11-10													3
	10-2													3
	8-6													3
	6-10													3
5-2													3	
3-6													3	
1-10													3	
0-2													3	
-0-8													3	

SIERRASCAPE TEMPORARY WALL (GEOGRID TYPE)

11 = UX1100MSE 16 = UX1600MSE
 14 = UX1400MSE 17 = UX1700MSE
 15 = UX1500MSE

		H (FT)												
		<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SLOPE CASE	Z (FT)	26.5												11
	25.5													11
	24													11
	22.5													11
	21													11
	19.5													11
	18													11
	16.5													11
	15													11
	13.5													11
	12													11
	10.5													11
	9													11
	7.5													11
6													11	
4.5													11	
3													11	
1.5													11	
0													11	
-1.5													11	

		H (FT)												
		<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SURCHARGE CASE	Z (FT)	26.5												11
	25.5													11
	24													11
	22.5													11
	21													11
	19.5													11
	18													11
	16.5													11
	15													11
	13.5													11
	12													11
	10.5													11
	9													11
	7.5													11
6													11	
4.5													11	
3													11	
1.5													11	
0													11	
-1.5													11	

HILFIKER TEMPORARY WALL (WELDED WIRE MAT TYPE)

4.5 = W4.5 x W3.5
 7.0 = W7.0 x W3.5
 9.5 = W9.5 x W4.0

		H (FT)												
		<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SLOPE CASE	Z (FT)	26												4.5
	24													4.5
	22													4.5
	20													4.5
	18													4.5
	16													4.5
	14													4.5
	12													4.5
	10													4.5
	8													4.5
	6													4.5
	4													4.5
	2													4.5
	0													4.5
-1.5													4.5	

		H (FT)												
		<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SURCHARGE CASE	Z (FT)	26												4.5
	24													4.5
	22													4.5
	20													4.5
	18													4.5
	16													4.5
	14													4.5
	12													4.5
	10													4.5
	8													4.5
	6													4.5
	4													4.5
	2													4.5
	0													4.5
-1.5													4.5	

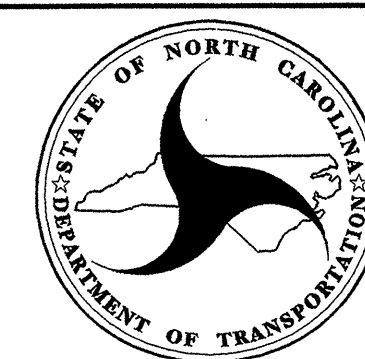
RETAINED EARTH TEMPORARY WALL (WELDED WIRE MESH TYPE)

3X1 = 3W8 x W8 x 1.0'
 3X2 = 3W8 x W8 x 2.0'

		H (FT)												
		<4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28
SLOPE AND SURCHARGE CASES	Z (FT-INCHES)	27-6												3X1
	26-10													3X1
	25-2													3X1
	23-6													3X1
	21-10													3X1
	20-2													3X1
	18-6													3X1
	16-10													3X1
	15-2													3X1
	13-6													3X1
	11-10													3X1
	10-2													3X1
	8-6													3X1
	6-10													3X1
5-2													3X1	
3-6													3X1	
1-10													3X1	
0-2													3X1	
-1-6													3X1	

NOTES FOR HILFIKER TEMPORARY WALL

- 1) CAP MAT AT TOP OF WALL IS NOT INCLUDED IN TABLES.
- 2) REINFORCEMENT IS NOT REQUIRED AT 1' LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 24'.
- 3) REINFORCEMENT IS NOT REQUIRED AT 3' LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 26'.
- 4) REINFORCEMENT IS NOT REQUIRED AT 1' LEVEL FOR SURCHARGE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 26'.

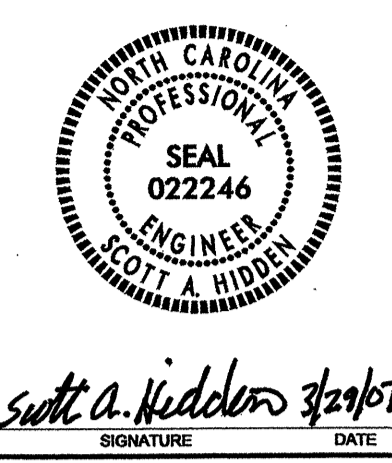


GEOTECHNICAL ENGINEERING UNIT

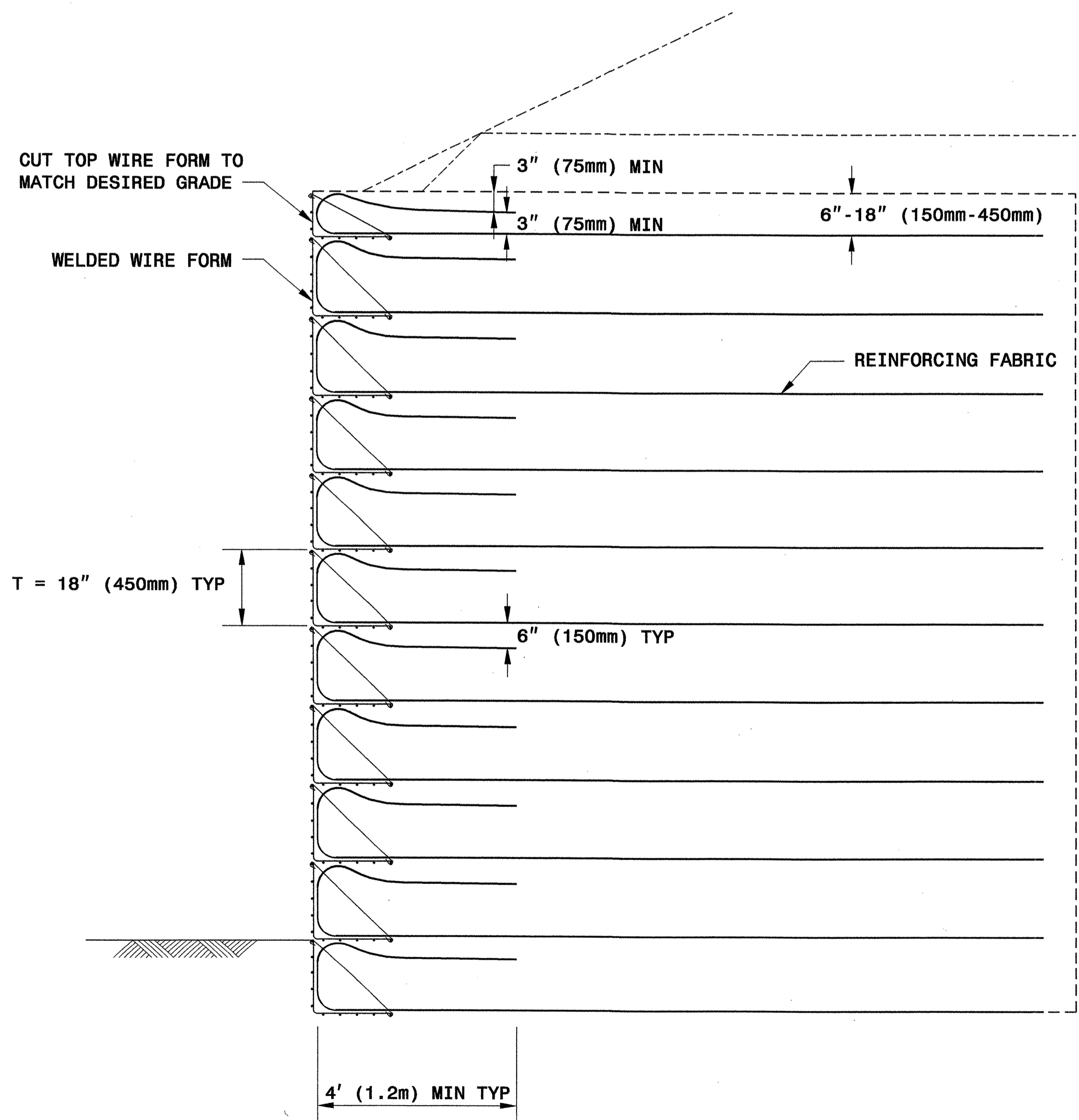
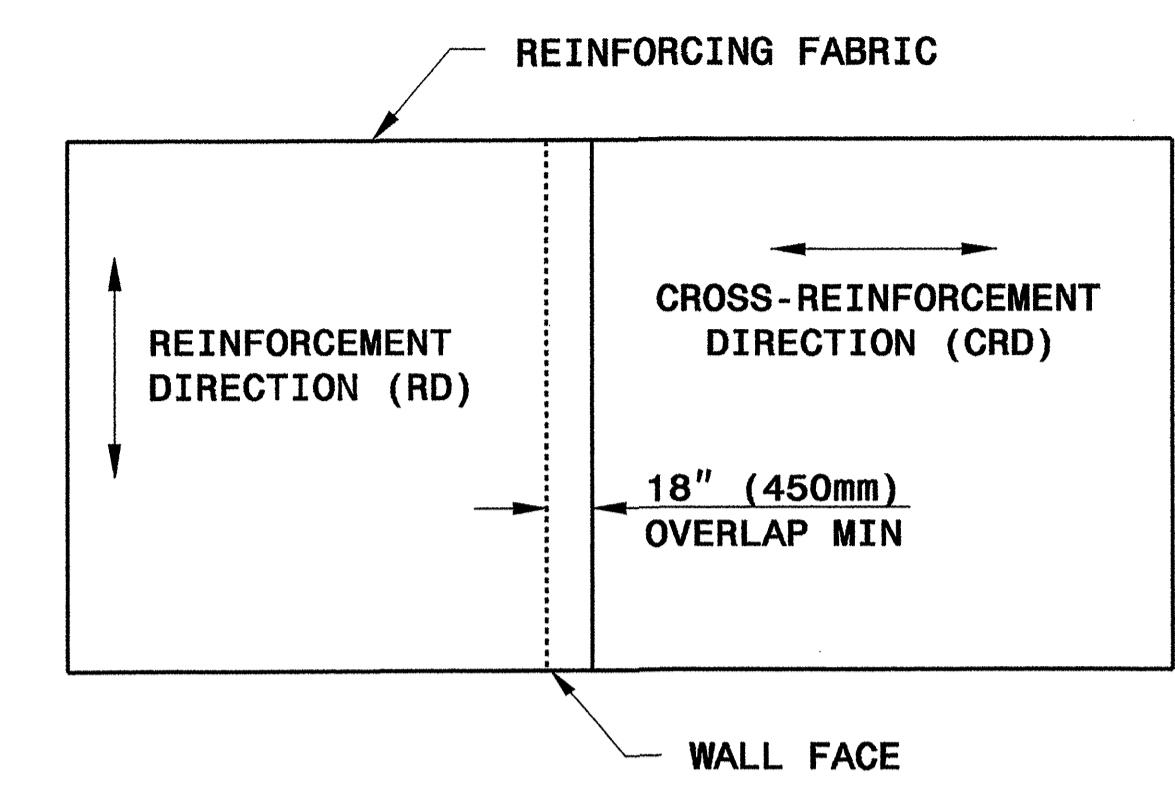
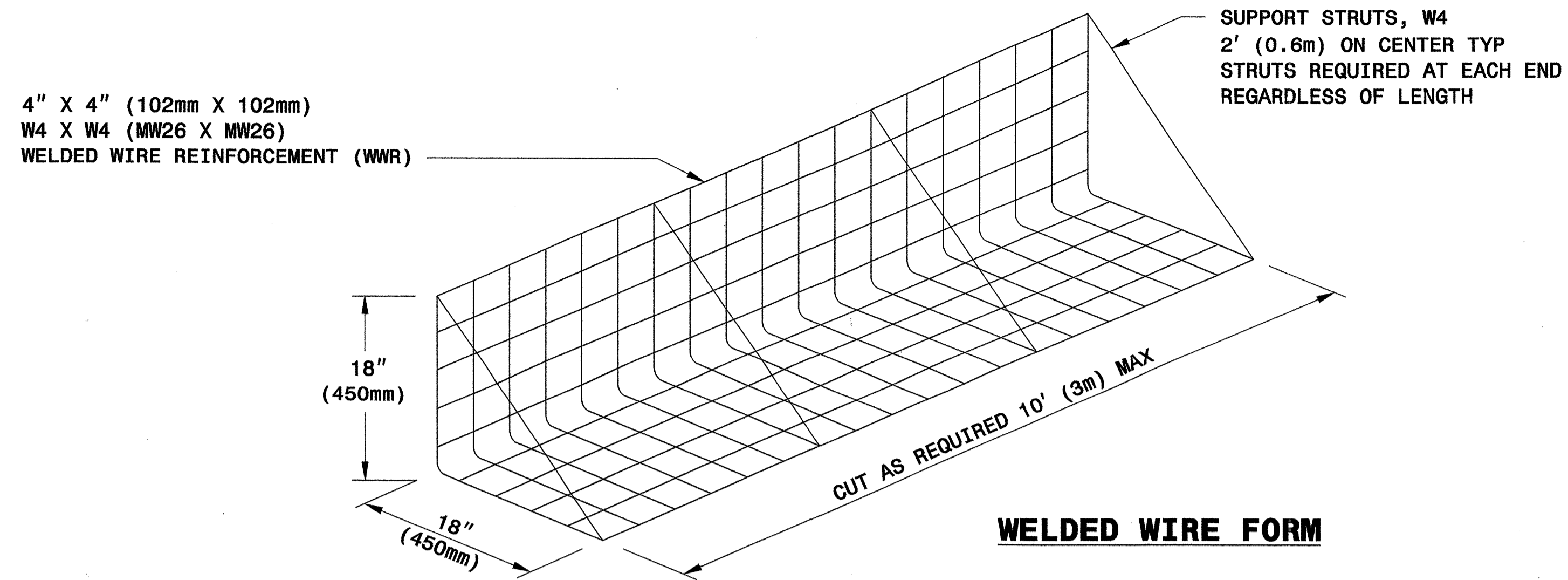
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MSE WALL REINFORCEMENT TABLES - ENGLISH UNITS



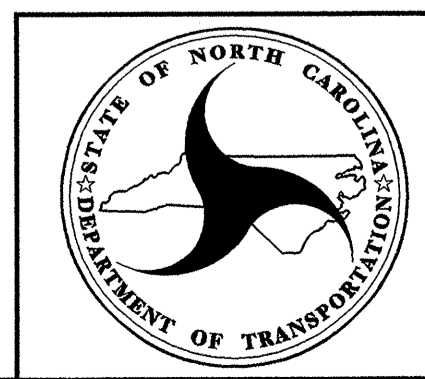
Signature: *Scott A. Hadden* Date: 3/29/07



**MINIMUM REQUIRED REINFORCING FABRIC STRENGTH FOR RD*
(SLOPE AND SURCHARGE CASES)**

WALL HEIGHT H FEET (M)	POLYESTER WIDE WIDTH TENSILE STRENGTH @ ULTIMATE LB/INCH (KN/M)	POLYPROPYLENE WIDE WIDTH TENSILE STRENGTH @ ULTIMATE LB/INCH (KN/M)
4 (1.2)	200 (35)	200 (35)
6 (1.8)	200 (35)	200 (35)
8 (2.4)	200 (35)	200 (35)
10 (3.0)	200 (35)	230 (40)
12 (3.7)	220 (39)	264 (46)
14 (4.3)	248 (43)	297 (52)
16 (4.9)	276 (48)	330 (58)
18 (5.5)	304 (53)	364 (64)
20 (6.1)	332 (58)	397 (70)
22 (6.7)	359 (63)	431 (76)
24 (7.3)	387 (68)	464 (81)
26 (7.9)	415 (73)	497 (87)
28 (8.5)	443 (78)	531 (93)

*RD = REINFORCEMENT DIRECTION



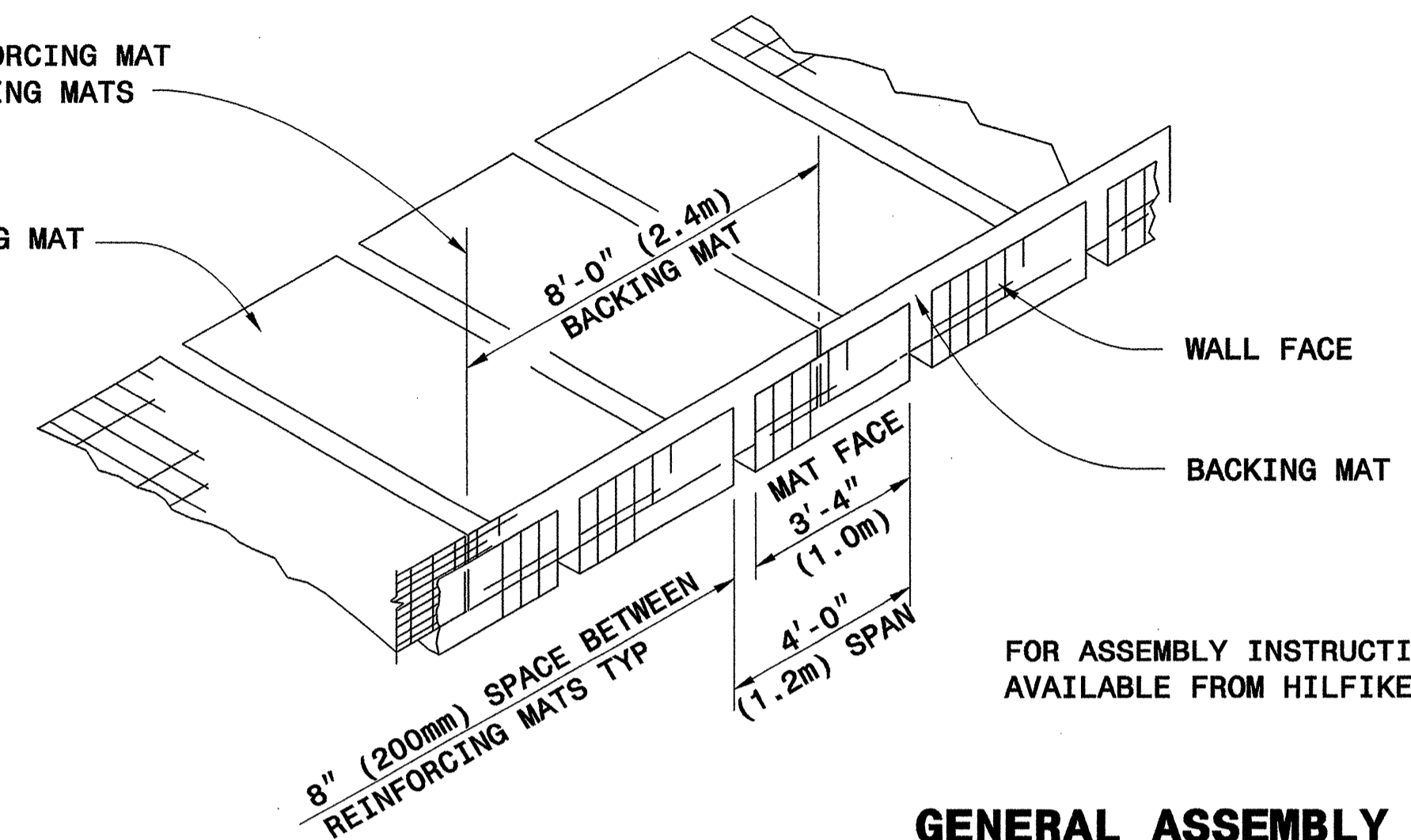
**GEOTECHNICAL
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TEMPORARY
FABRIC WALL

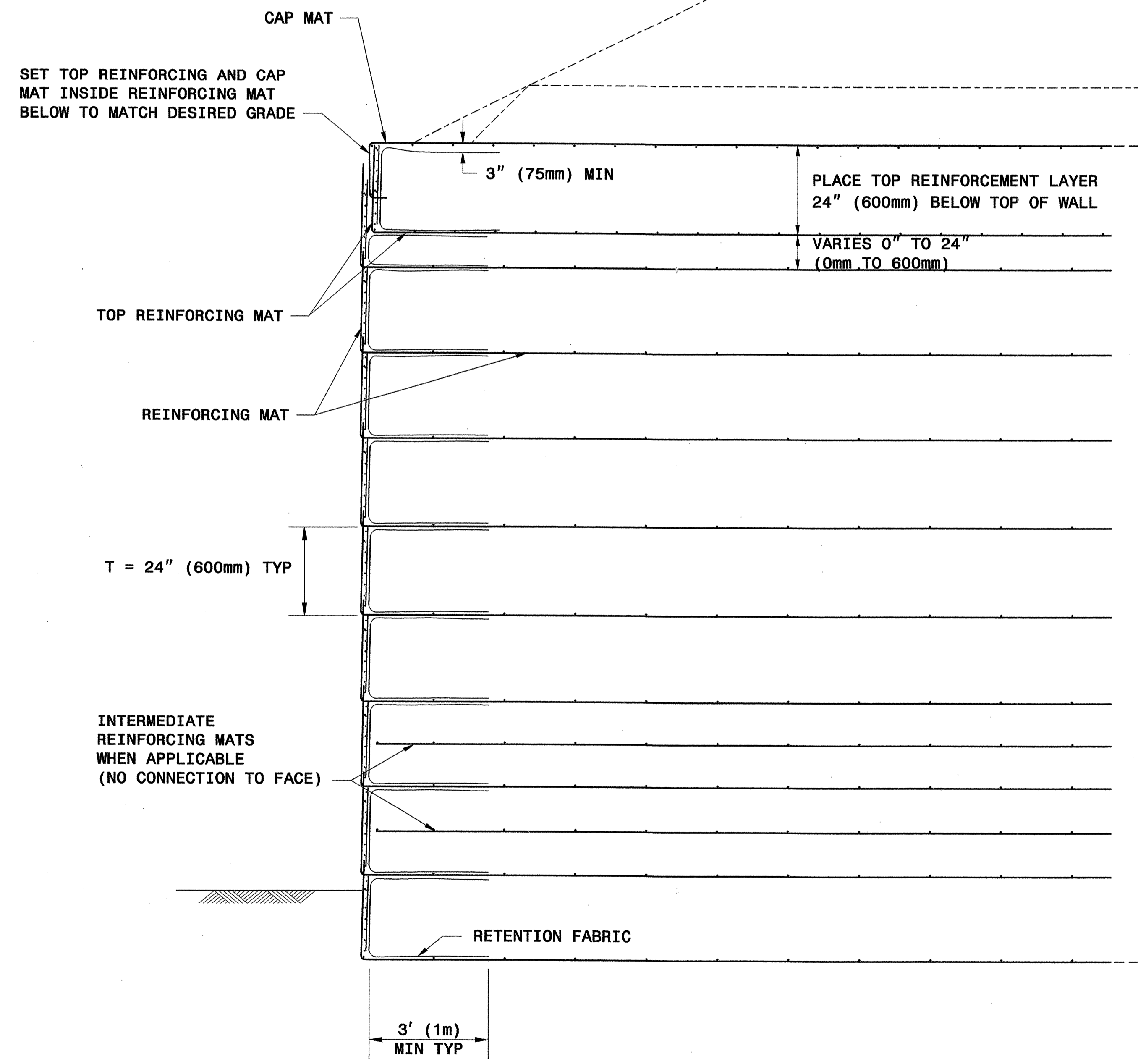
CENTERLINE OF REINFORCING MAT
FACE = EDGE OF BACKING MATS

REINFORCING MAT



FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL



TYPICAL SECTION

8" X 12" (203mm X 305mm)
W4.5 X W3.5 (MW29 X MW23)
CAP MAT
WELDED WIRE REINFORCEMENT (WWR)

8" X 12" (203mm X 305mm)
W4.5 X W3.5 (MW29 X MW23) WWR
TOP REINFORCING MAT (NO PRONGS)

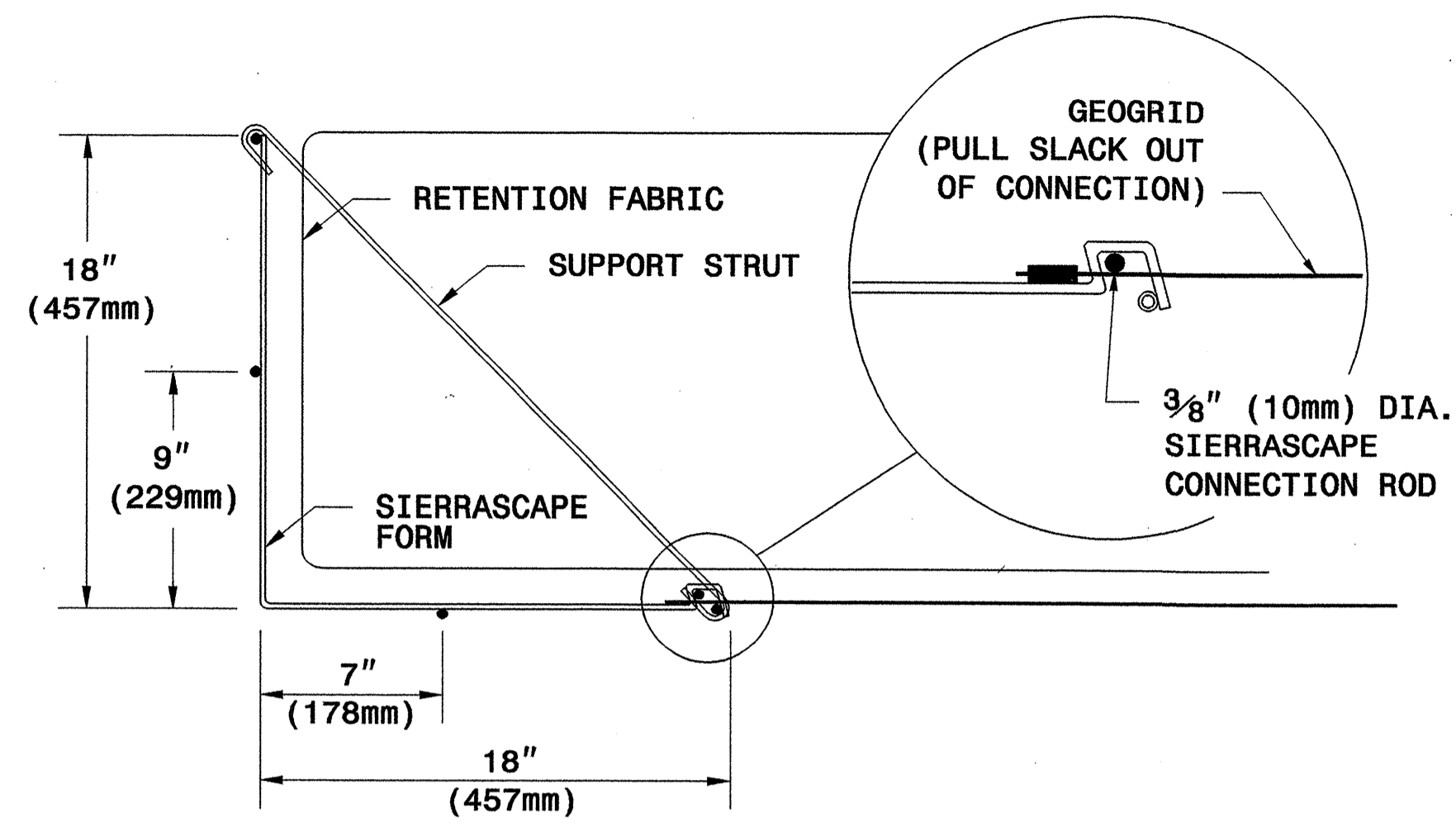
4" X 3" (102mm X 76mm)
W5 X W2.5 (MW32 X MW16) WWR
BACKING MAT
8' (2.4m) WIDE

8" X 21" (203mm X 533mm)
REINFORCING MAT
SEE SHEETS 2 AND 3 FOR GAUGE SIZES

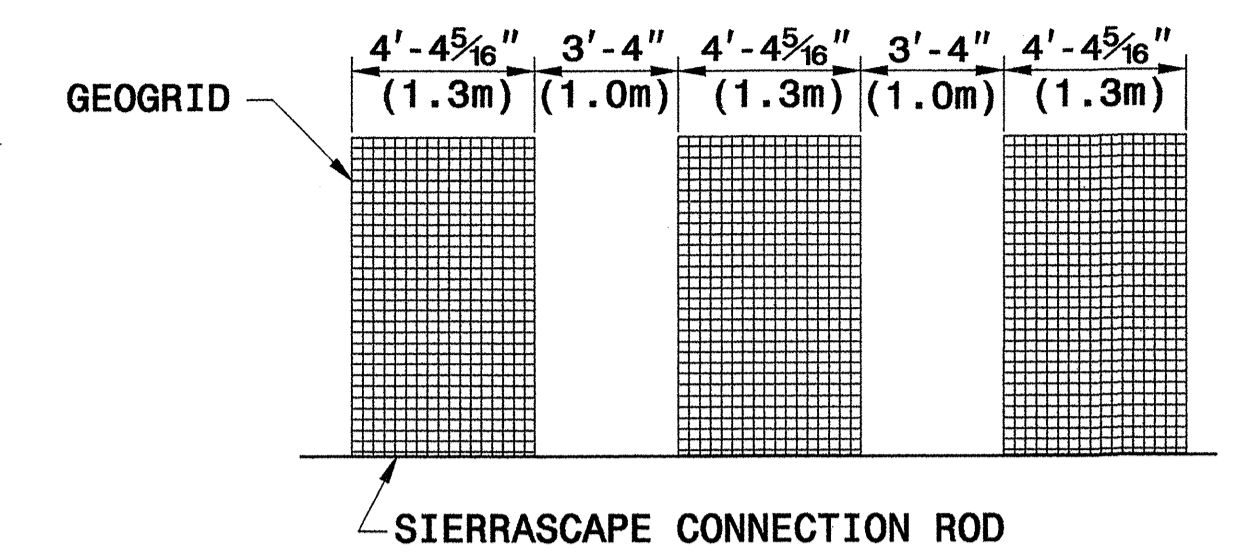
WALL COMPONENTS

GEOTECHNICAL ENGINEER ENGINEER

Scott A. Hadden 3/29/07

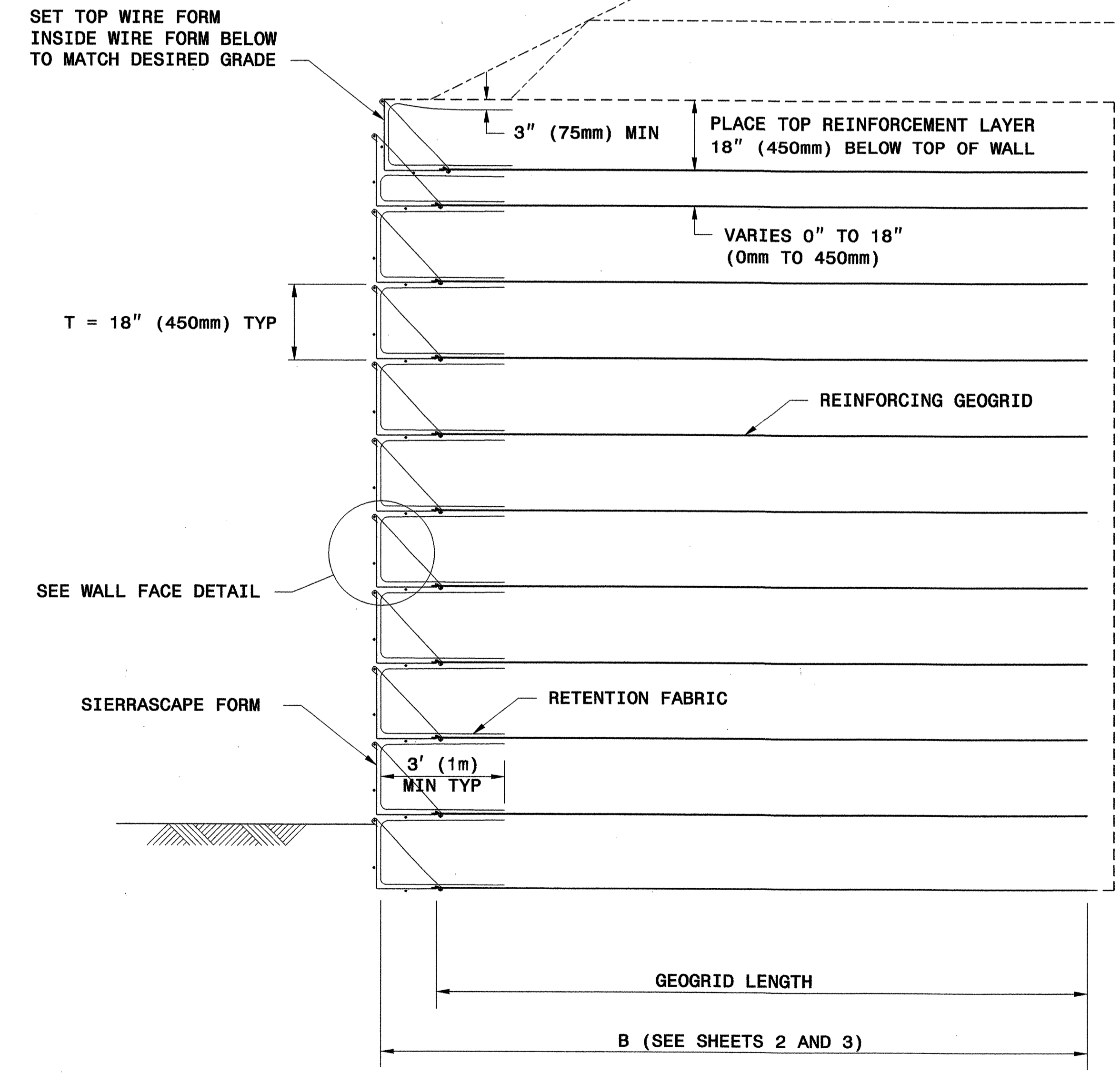


WALL FACE DETAIL

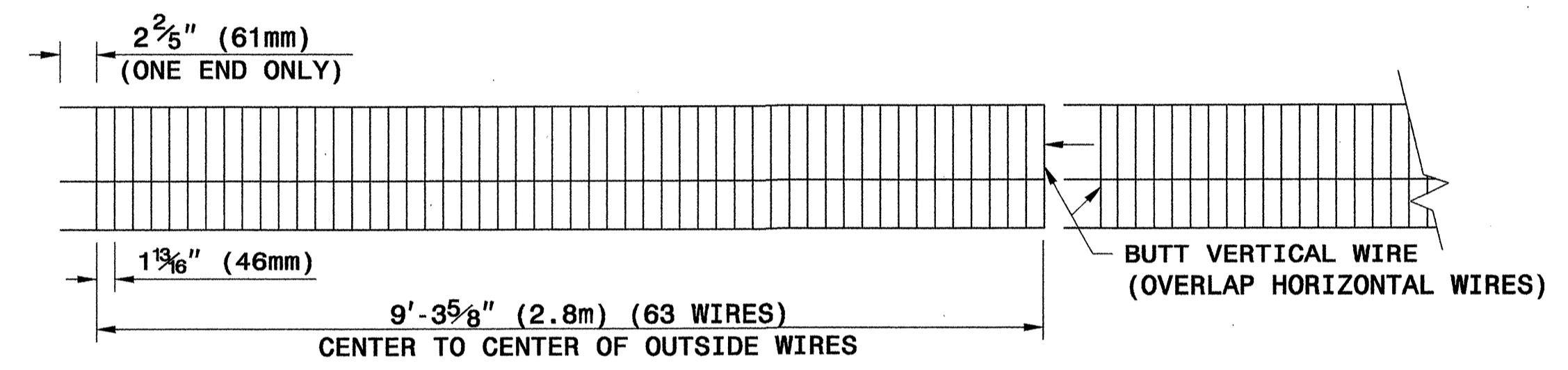


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

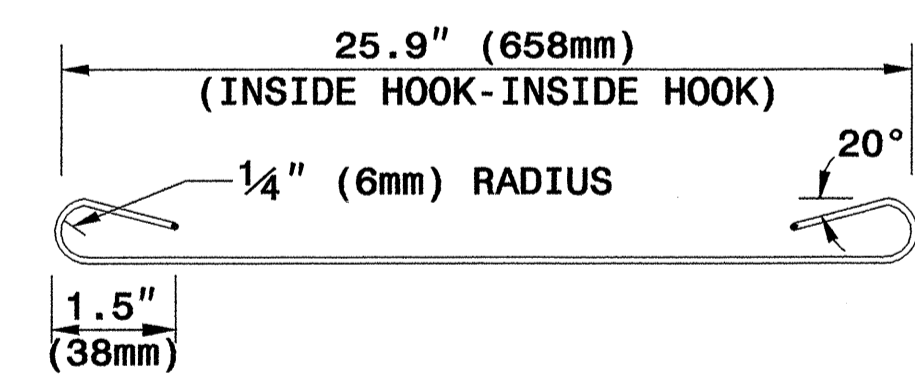
TYPICAL GEOGRID COVERAGE



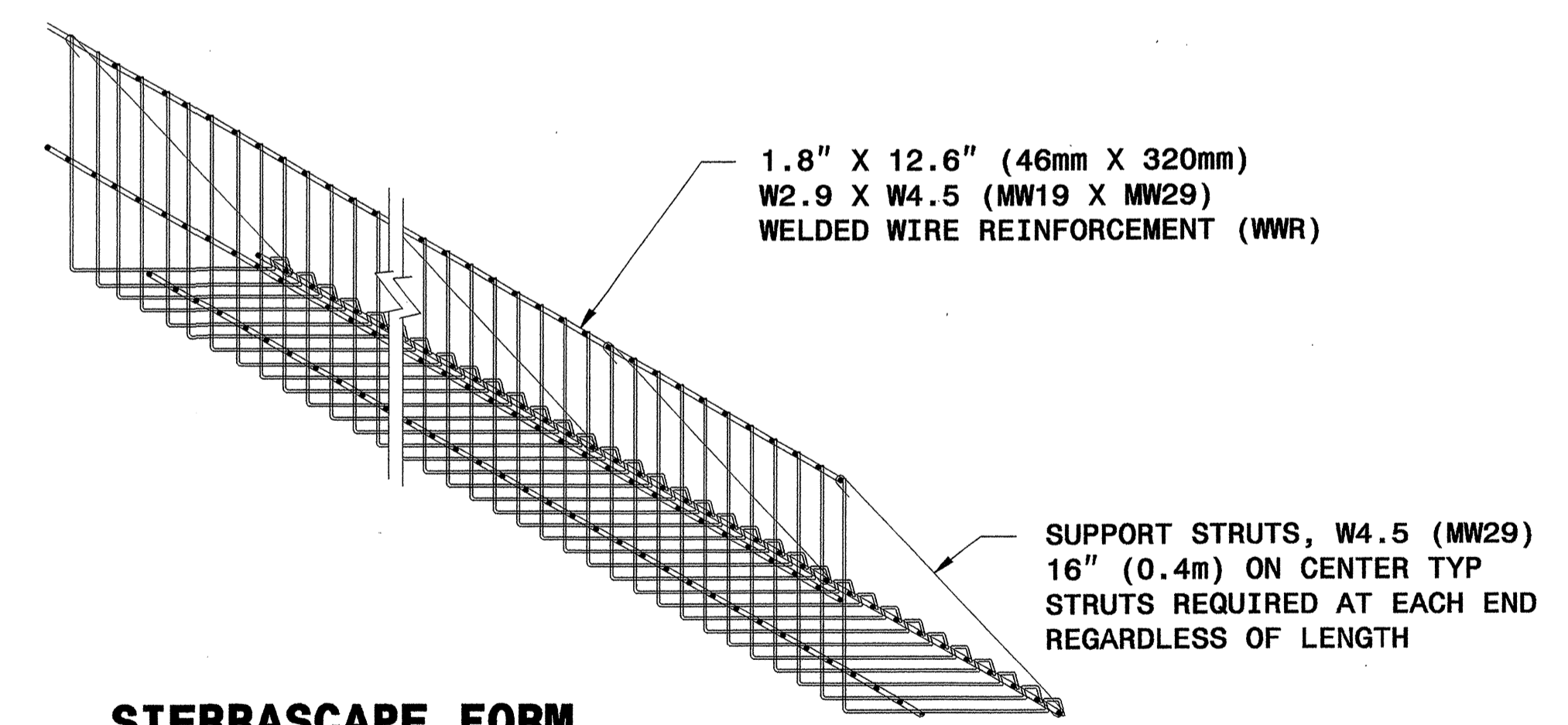
TYPICAL SECTION



ELEVATION VIEW

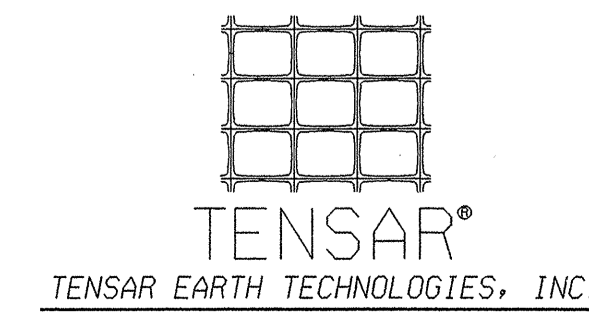


SUPPORT STRUT



SIERRASCAPE FORM

WALL COMPONENTS




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STANDARD DRAWING NO. 1801.02

SIERRASCAPE TEMPORARY WALL

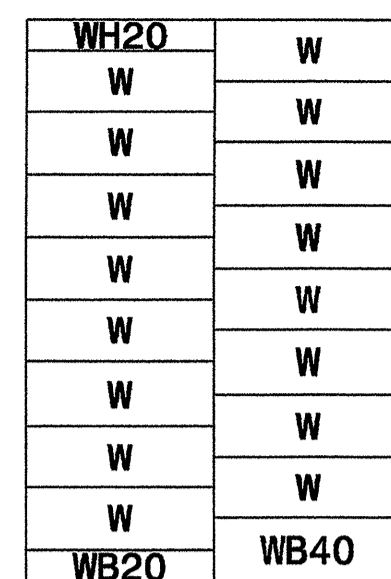
GEOTECHNICAL ENGINEER ENGINEER



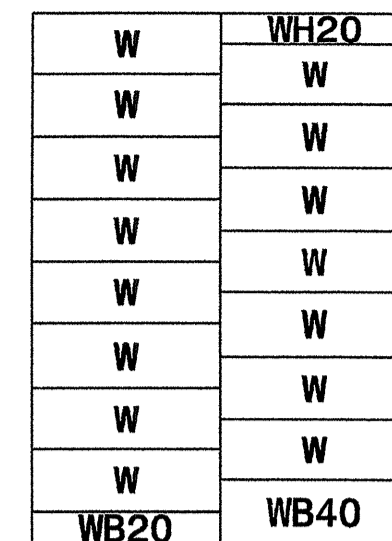
Scott A. Shidden 3/29/07

PANEL LAYOUTS

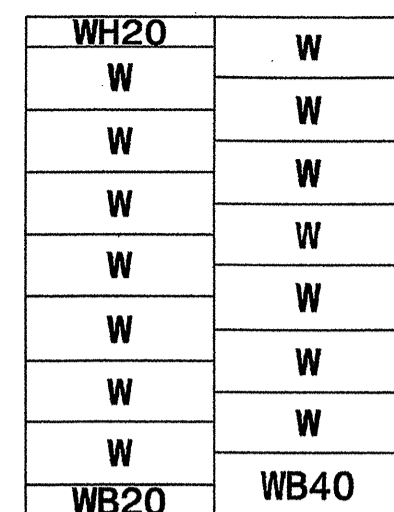
H - WALL HEIGHT
(FEET-INCHES)
(METER)



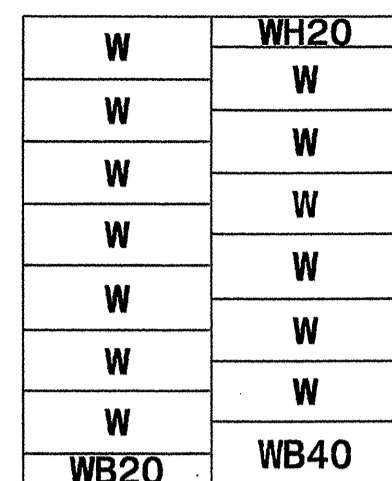
< 28 - 0
< 8.5



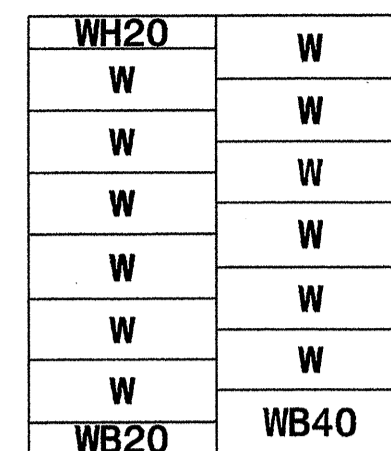
< 27 - 0
< 8.2



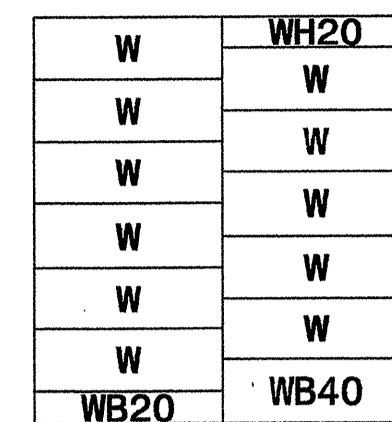
< 25 - 4
< 7.7



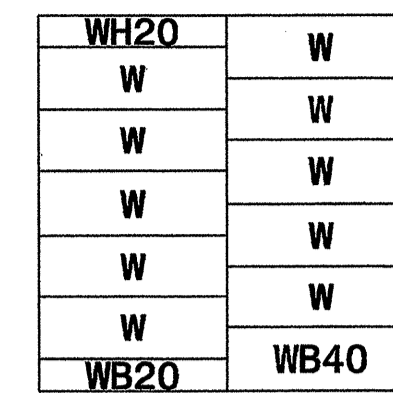
< 23 - 8
< 7.2



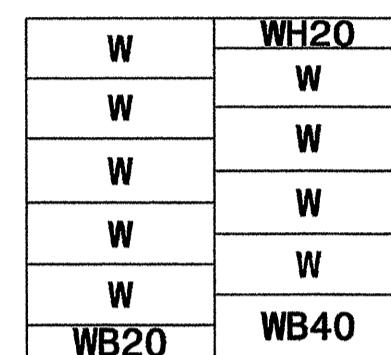
< 22 - 0
< 6.7



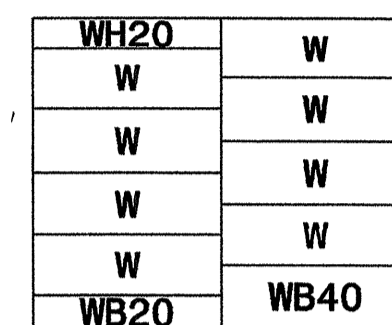
< 20 - 4
< 6.2



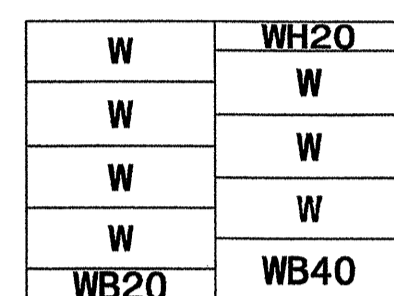
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< 5.7



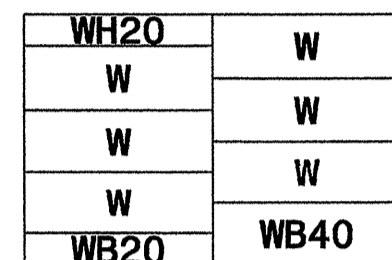
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< 5.2



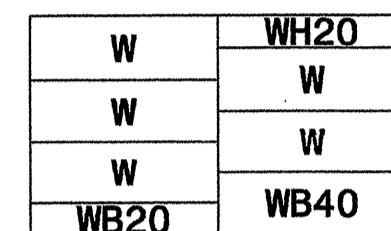
< 15 - 4
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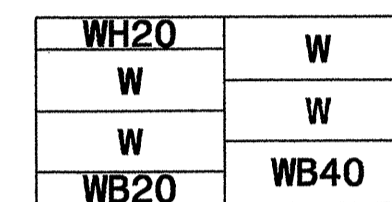
< 13 - 8
< 4.2



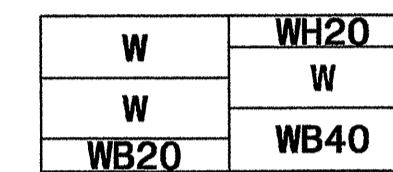
< 12 - 0
< 3.7



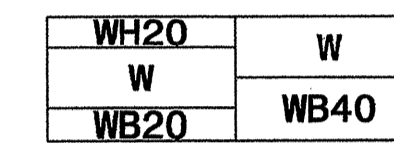
< 10 - 4
< 3.2



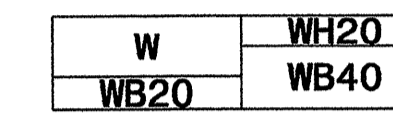
< 8 - 8
< 2.6



< 7 - 0
< 2.1

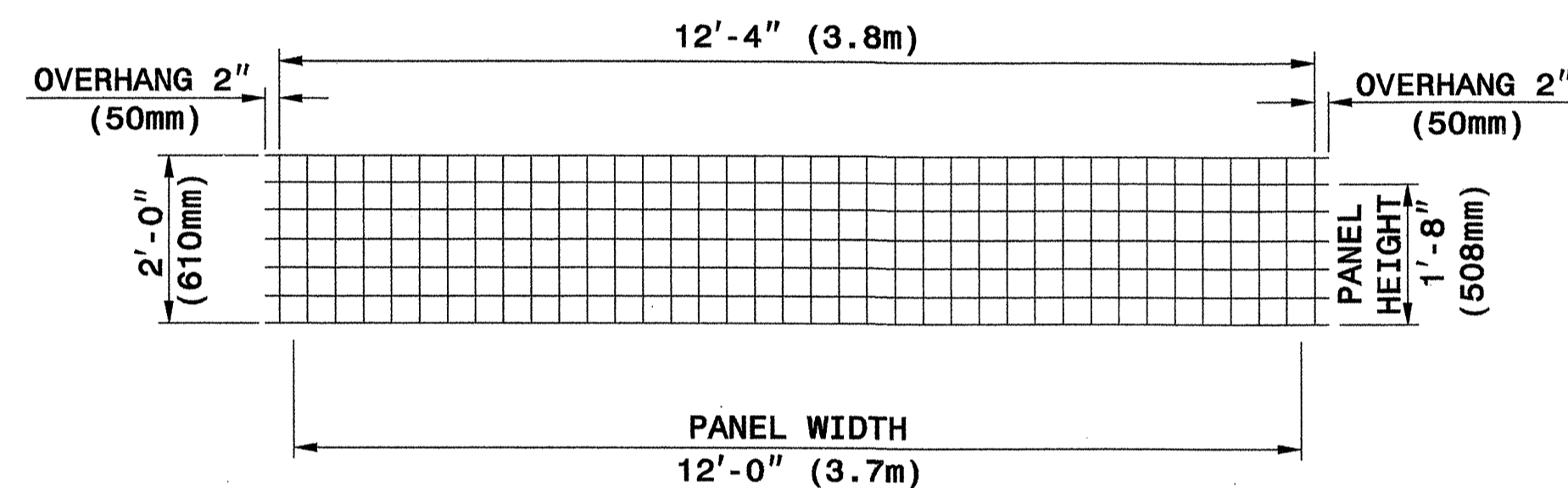


< 5 - 4
< 1.6

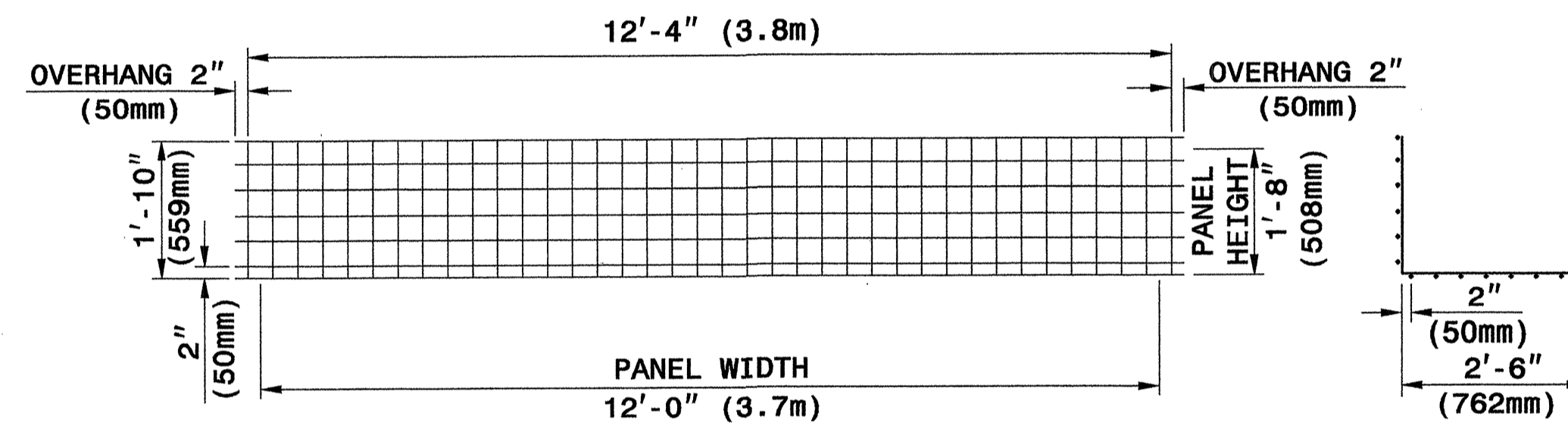


< 3 - 8
< 1.1

(FEET-INCHES)
(METER)

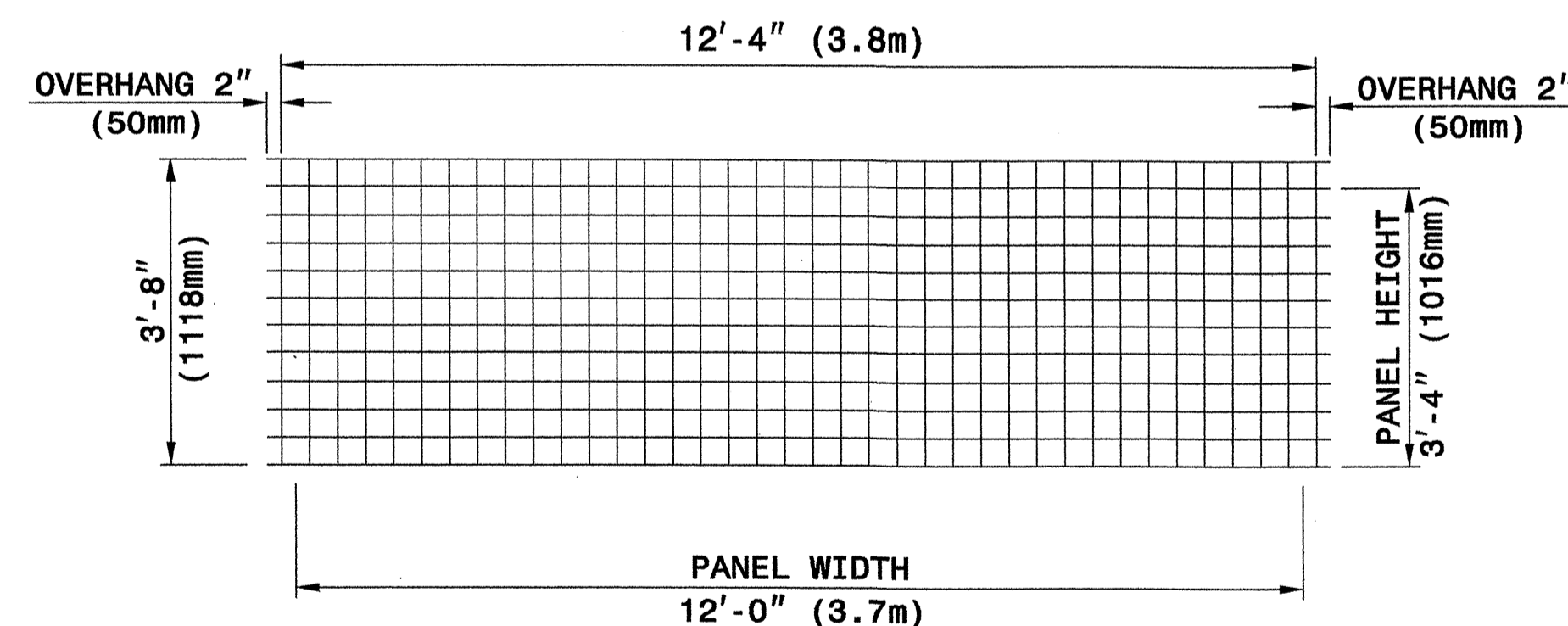


TYPE WH20

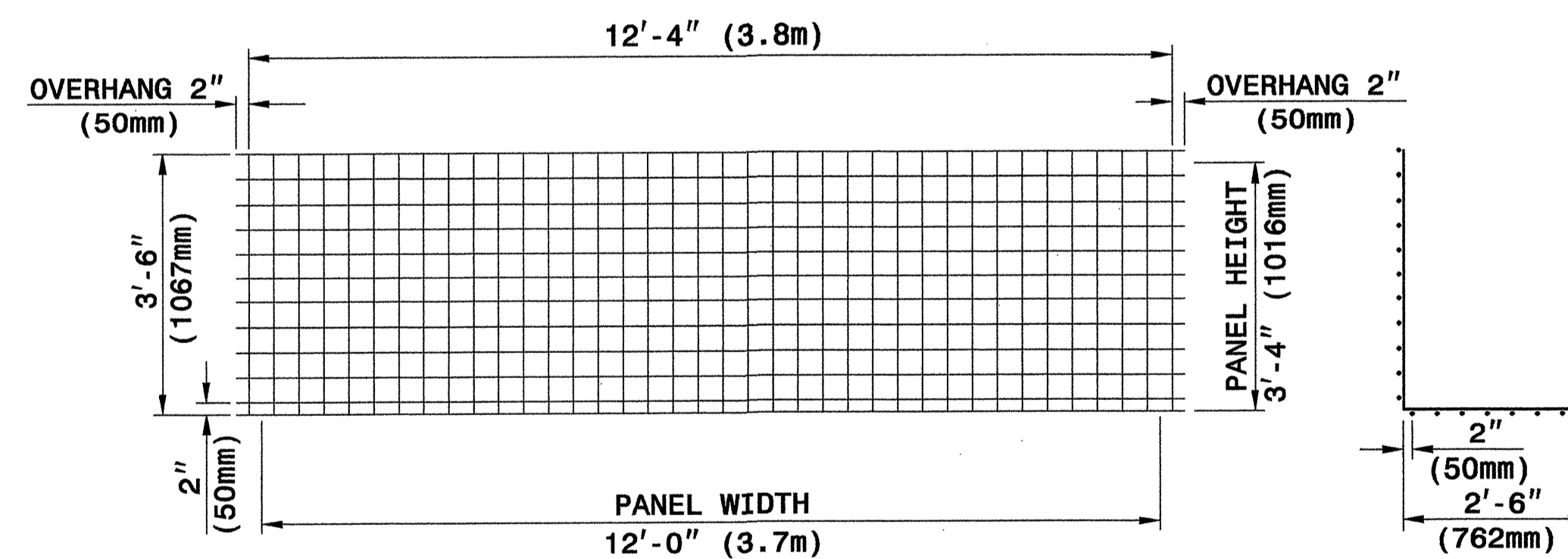


TYPE WB20

SECTION



TYPE W



TYPE WB40

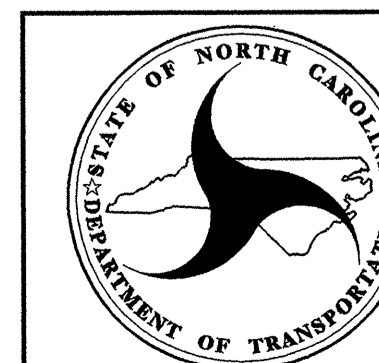
SECTION

WELDED WIRE FACINGS

WELDED WIRE FORMS

PANEL TYPES (WELDED WIRE FACINGS AND FORMS)

4" X 4" (100mm X 100mm), W8 X W8 (MW52 X MW52) WELDED WIRE REINFORCEMENT (WWR)

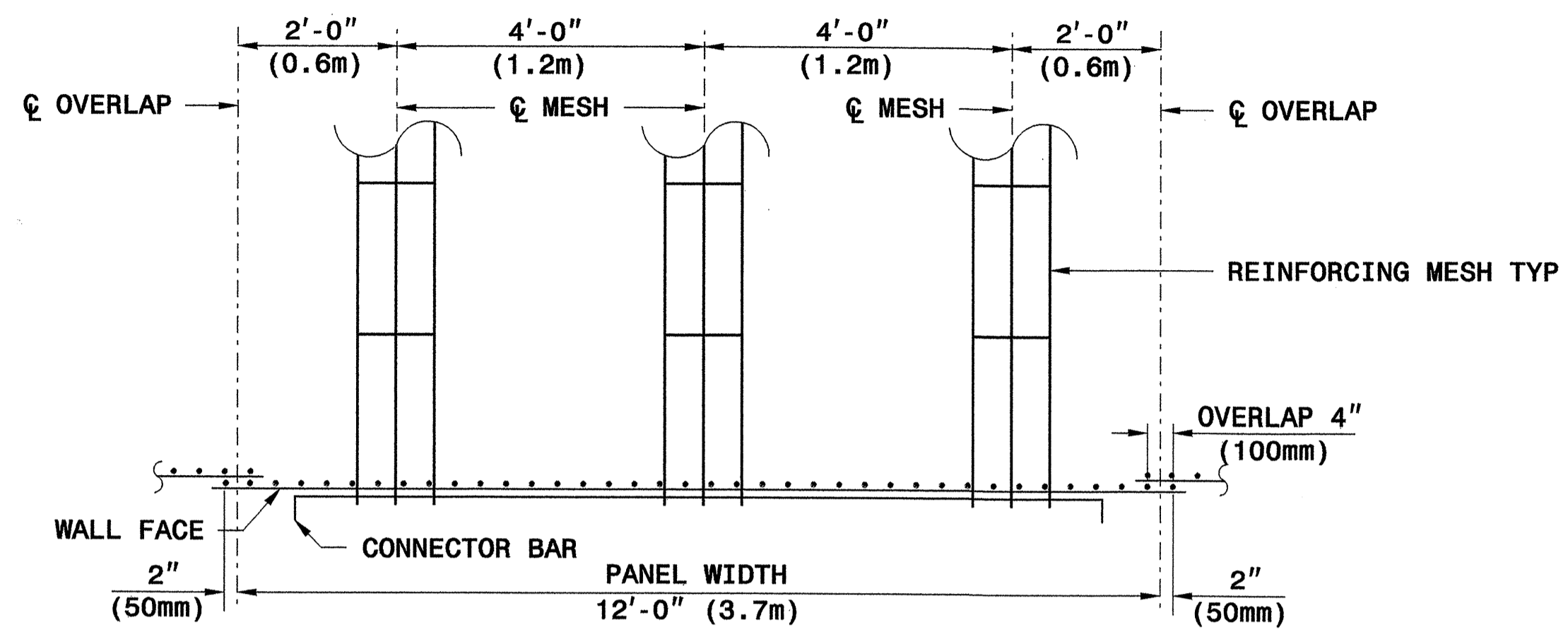


GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1301.02

RETAINED EARTH
TEMPORARY WALL

SHEET 6 OF 11 DATE: 12-19-06

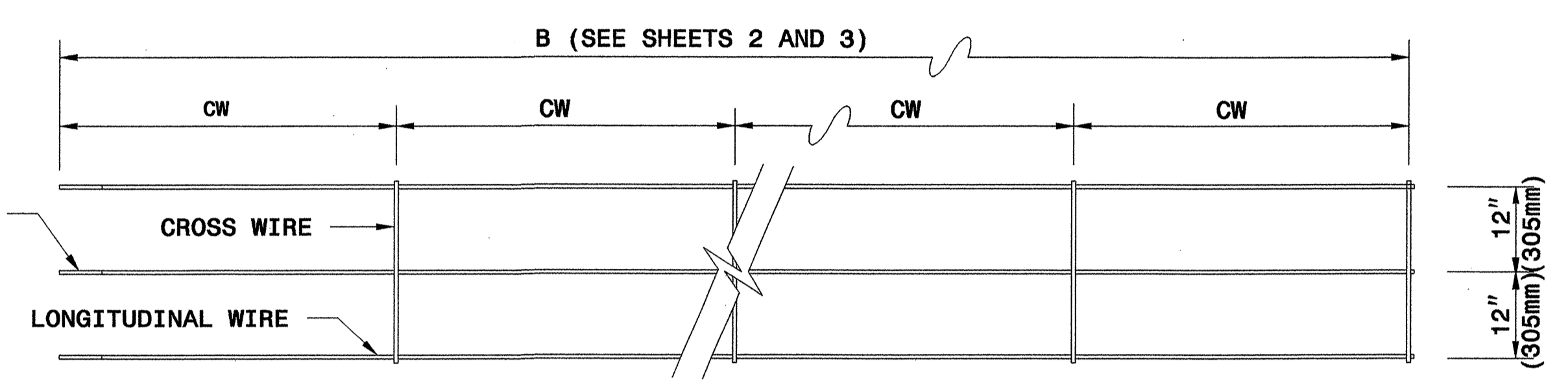


**REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)**



1/2" (13mm) DIA. BAR

CONNECTOR BAR

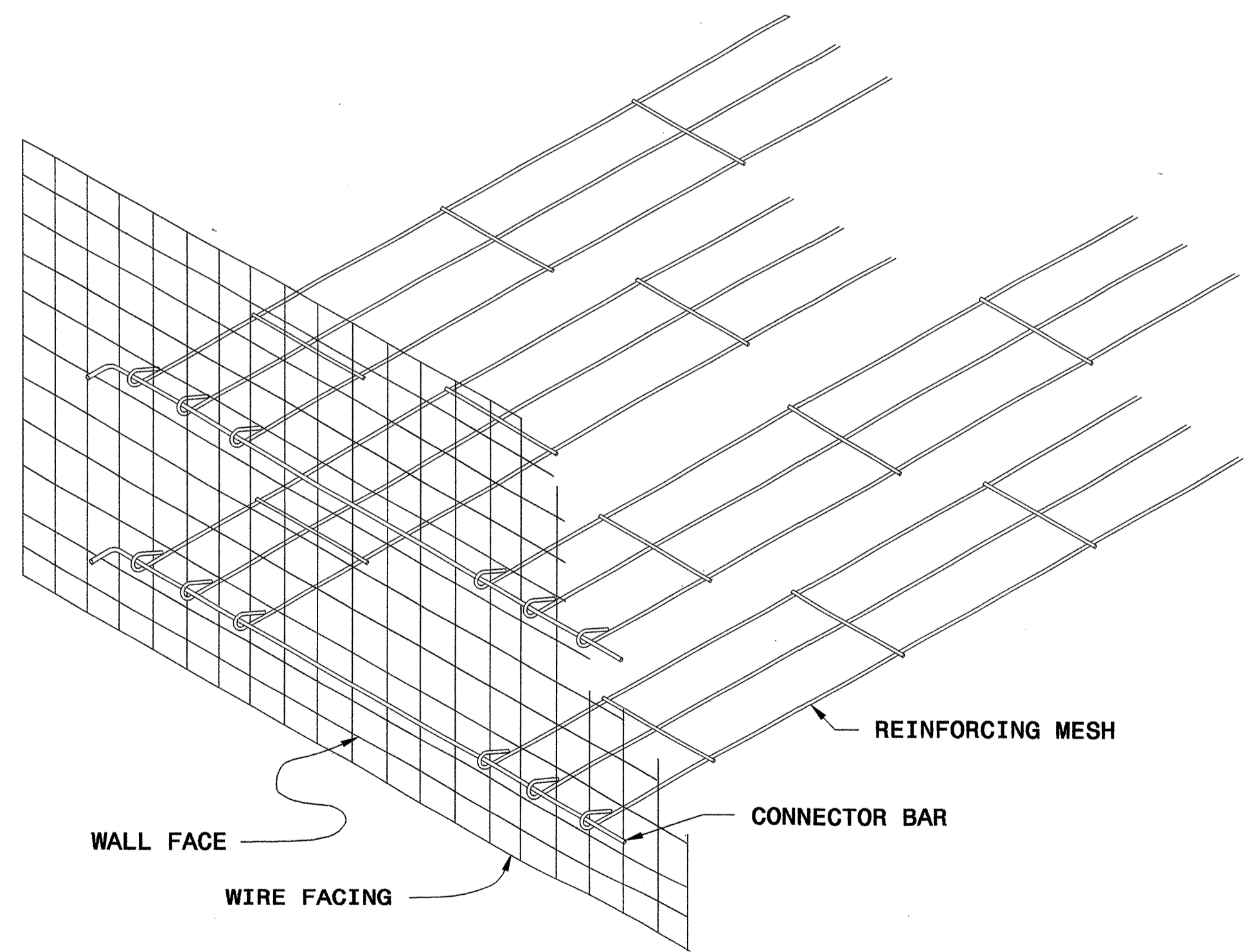


IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2'-0" (610mm) MAKE CW EQUAL TO 12" (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END

3W8 X W8 x 2.0' (3MW52 X MW52 X 610mm)

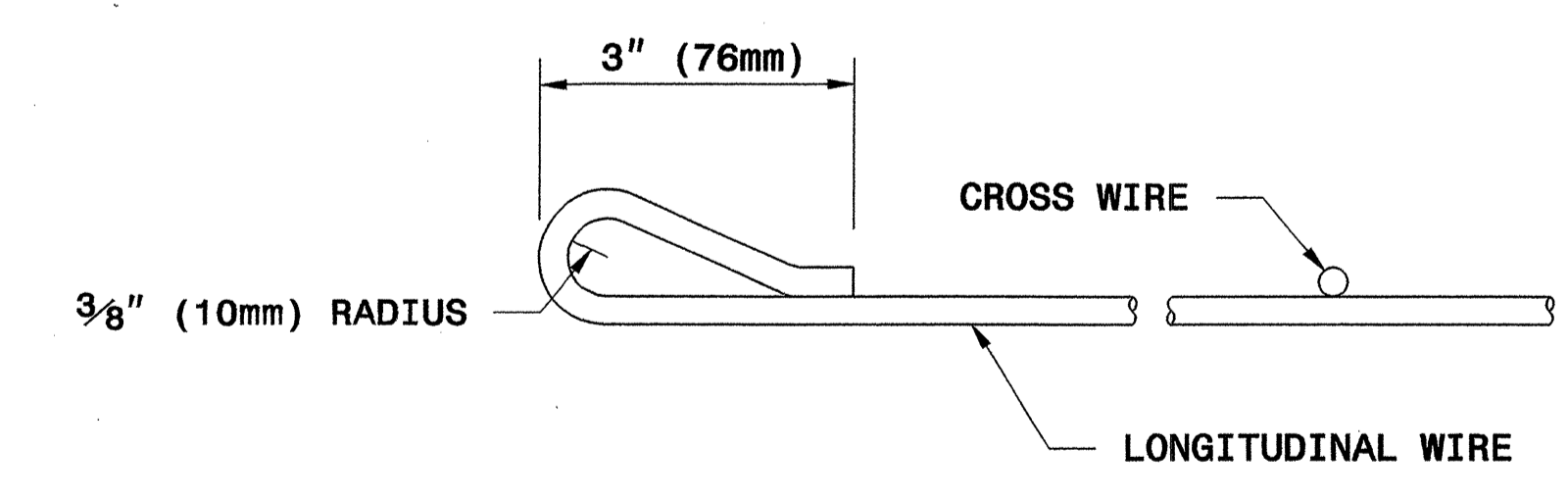
NO. OF LONGITUDINAL WIRES
 GAUGE OF LONGITUDINAL WIRES
 GAUGE OF CROSS WIRES
 SPACING OF CROSS WIRES IN FT (mm), CW

REINFORCING MESH DESIGNATION



GENERAL ASSEMBLY DETAIL

REINFORCING MESH

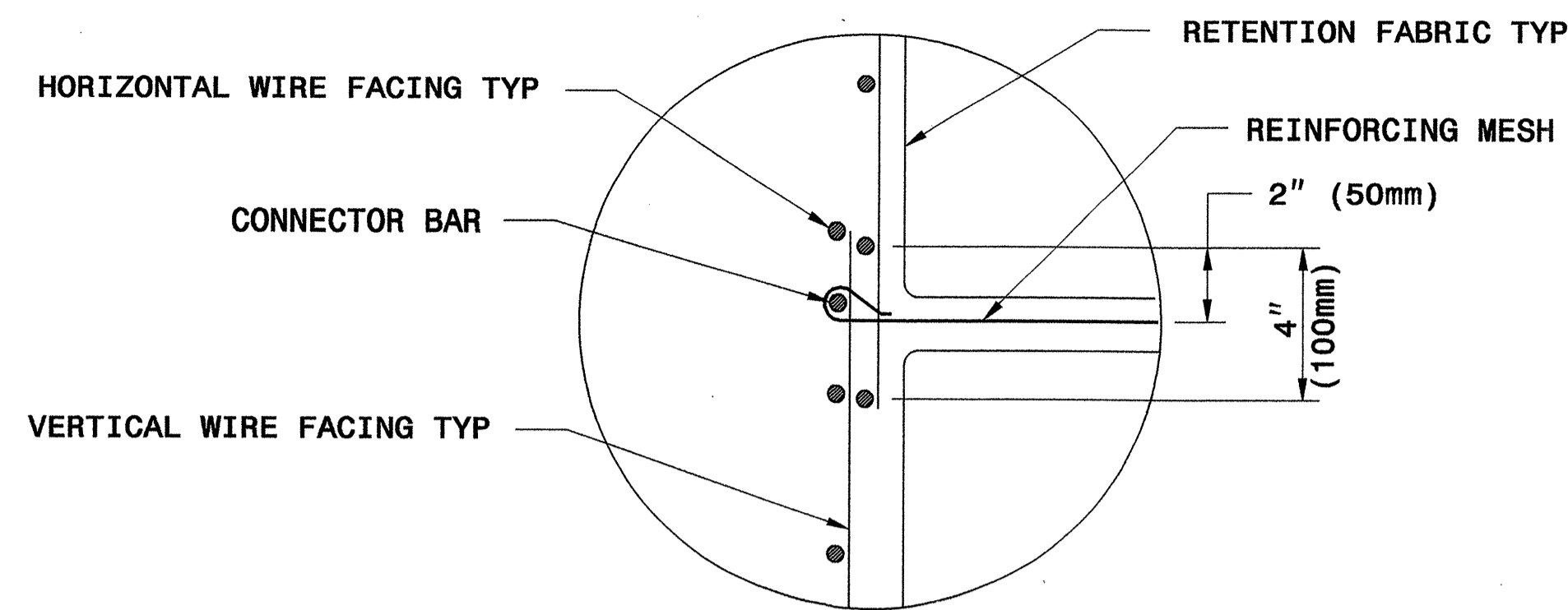


REINFORCING MESH LOOP DETAIL

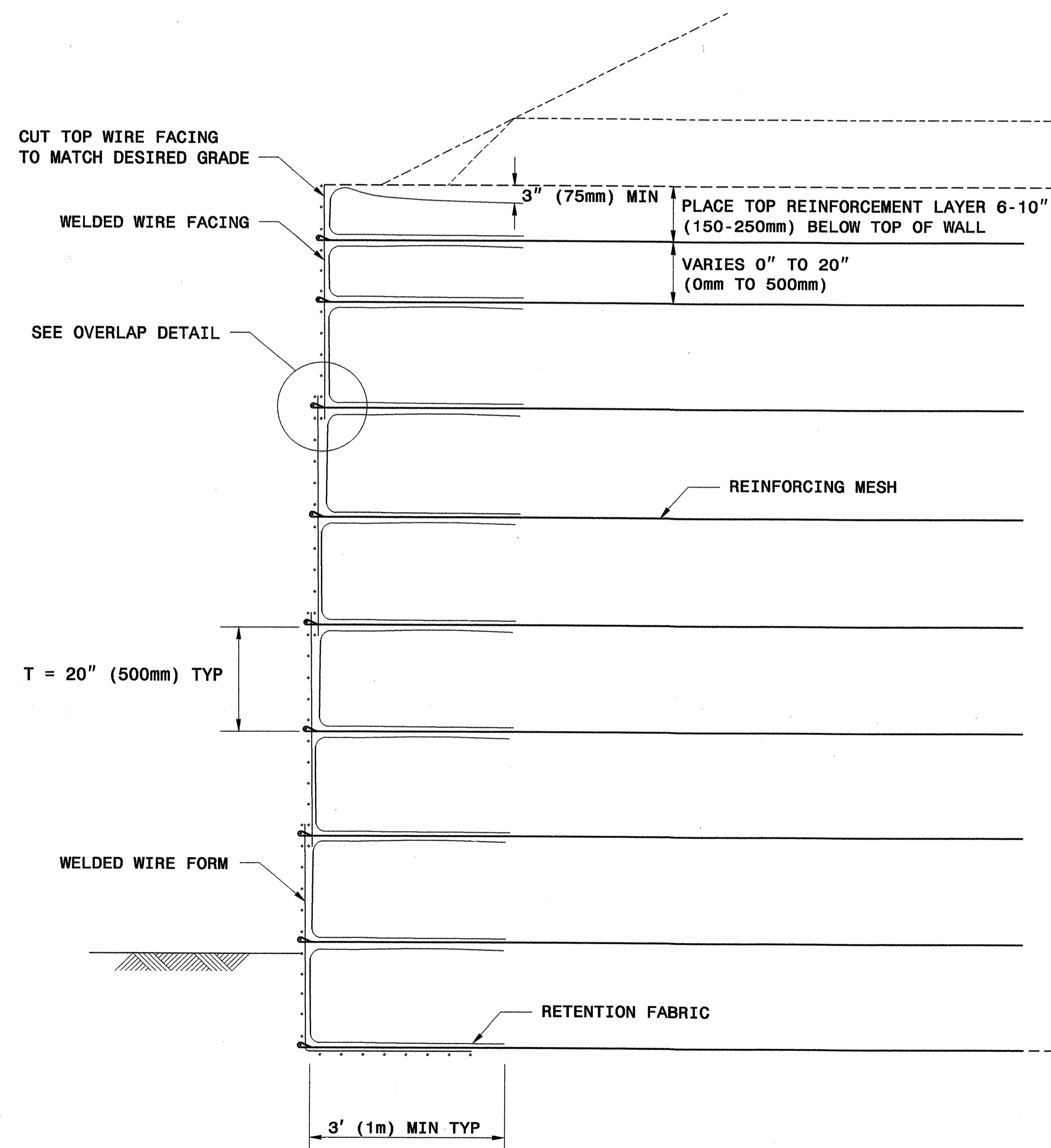




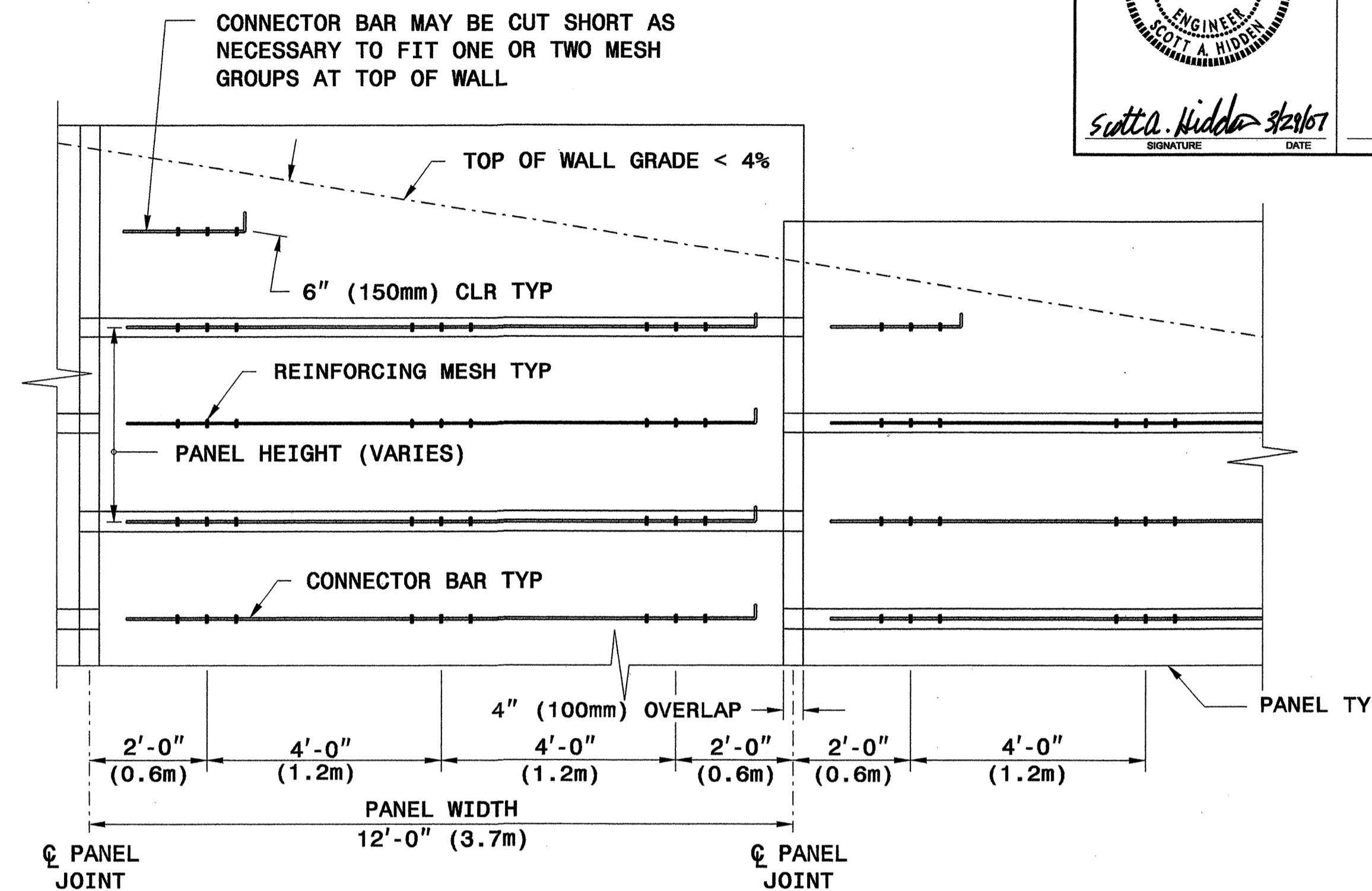
Signature: *Scott A. Hadden* 3/29/07
 DATE



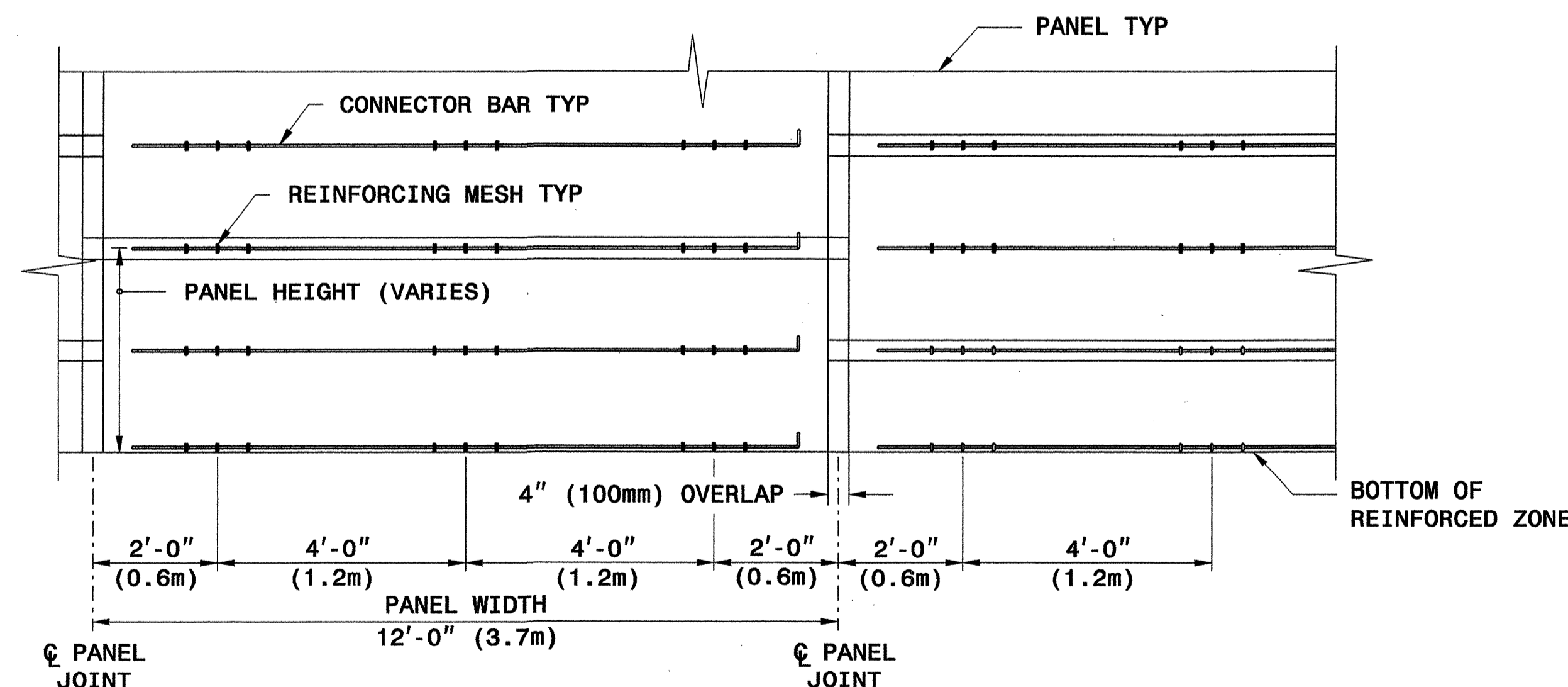
OVERLAP DETAIL



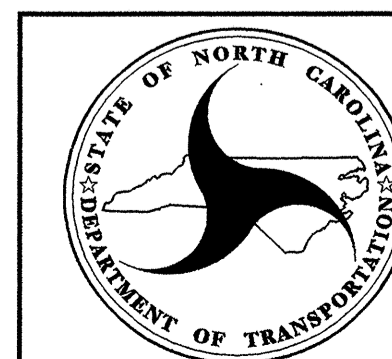
TYPICAL SECTION



**TYPICAL ELEVATION @ TOP OF WALL
(WIRES NOT SHOWN FOR CLARITY)**



**TYPICAL ELEVATION @ BOTTOM OF WALL
(WIRES NOT SHOWN FOR CLARITY)**



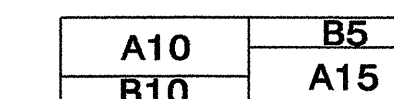
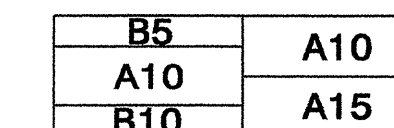
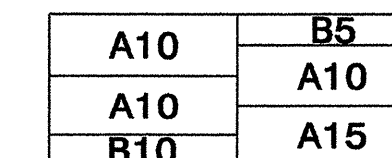
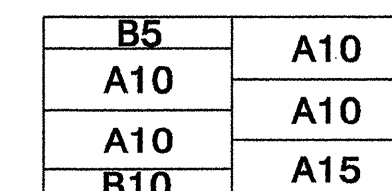
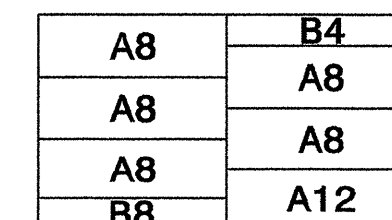
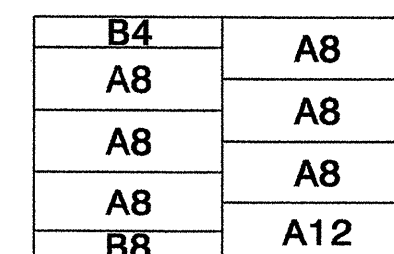
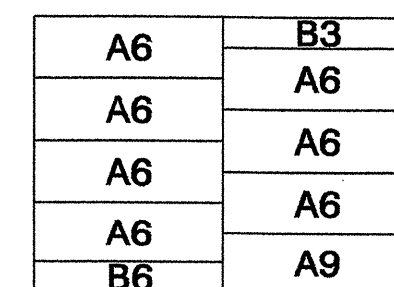
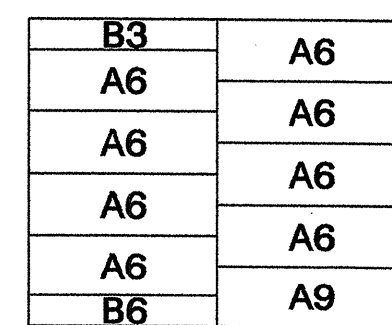
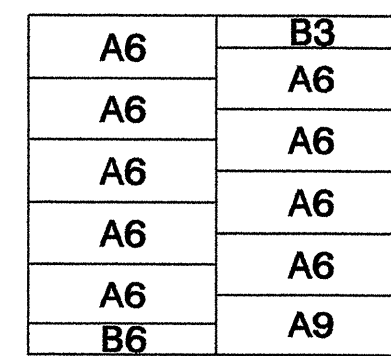
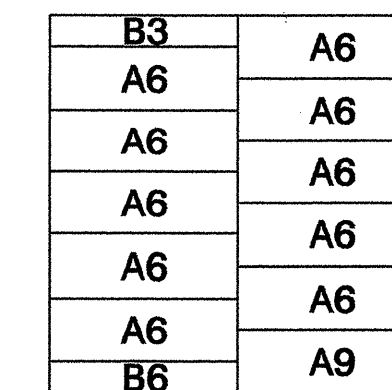
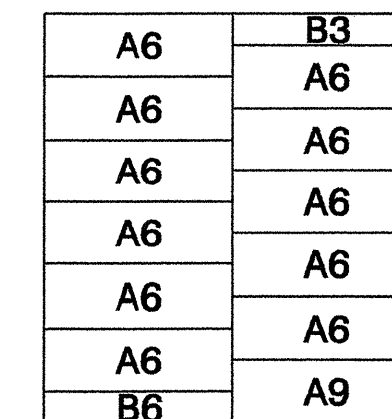
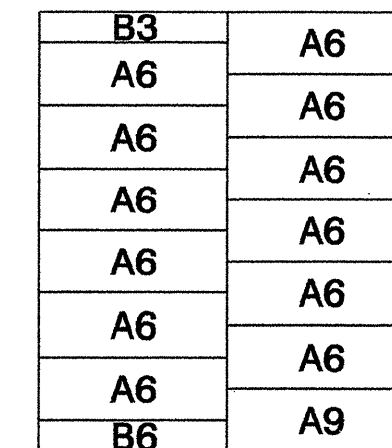
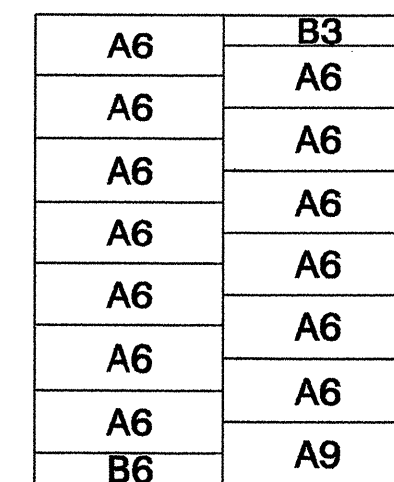
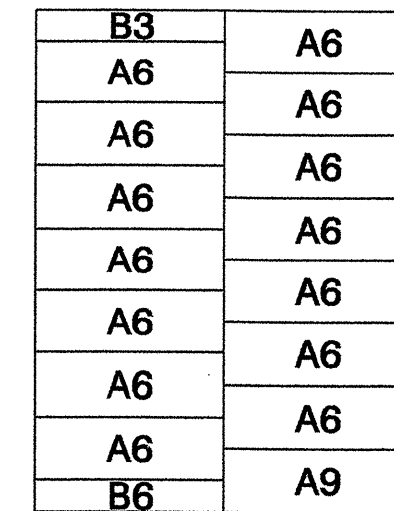
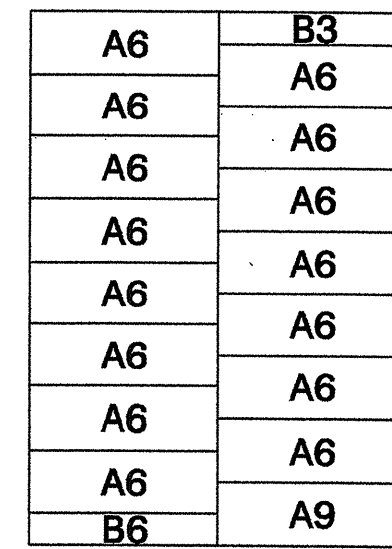
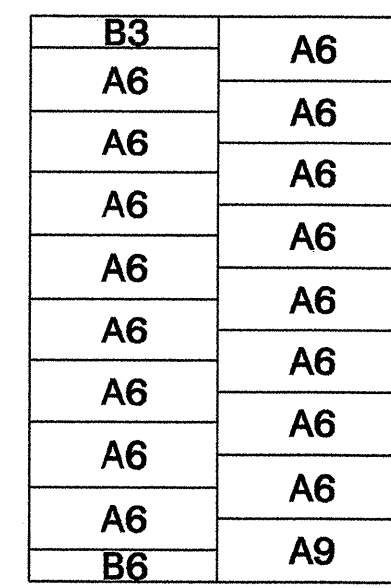
GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1801.02

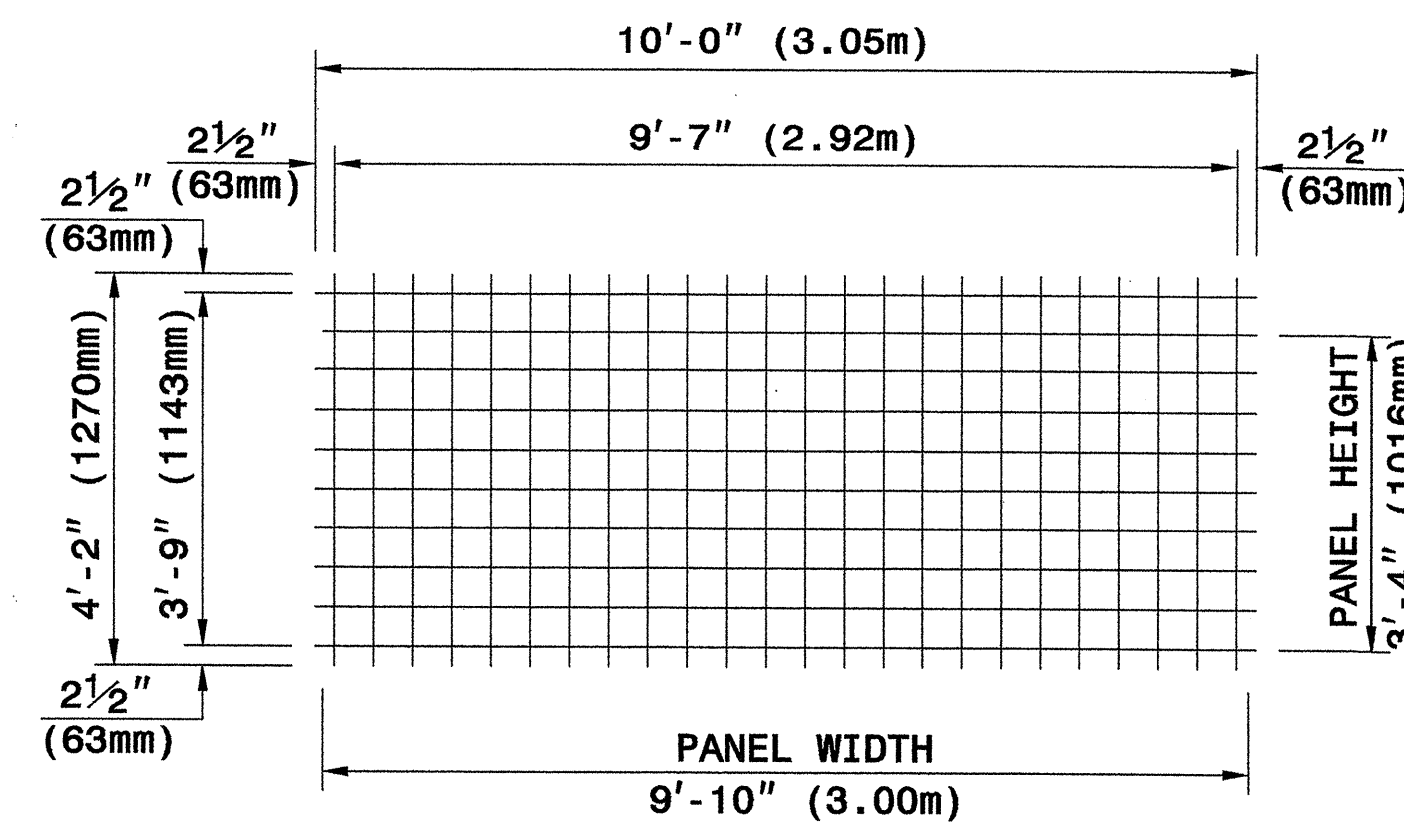
RETAINED EARTH
 TEMPORARY WALL

PANEL LAYOUTS

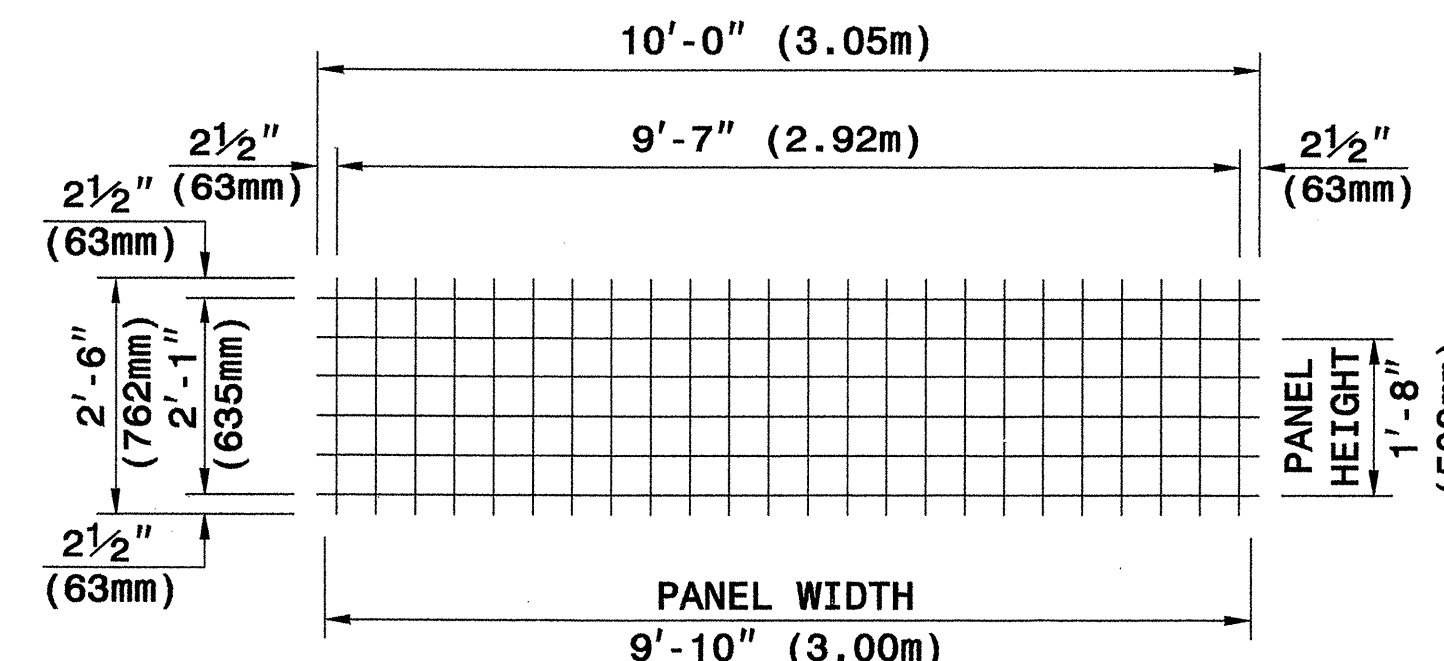
H - WALL HEIGHT
 (FEET-INCHES)
 (METER)



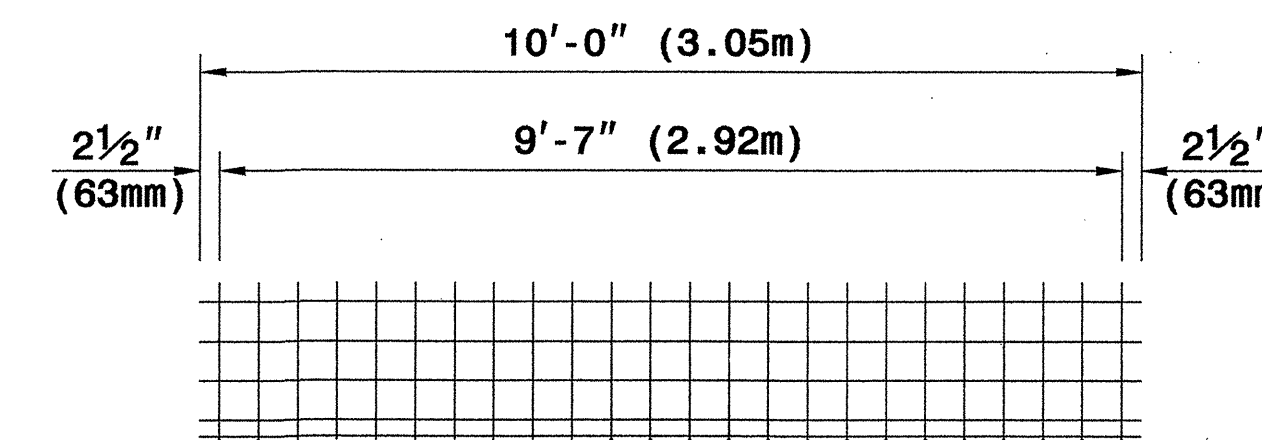
(FEET-INCHES)
 (METER)



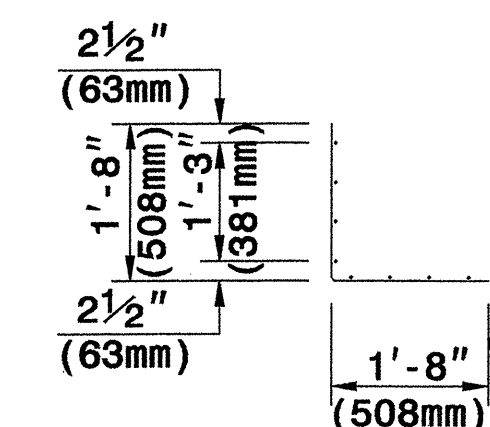
TYPE A



TYPE B



WELDED WIRE FORM

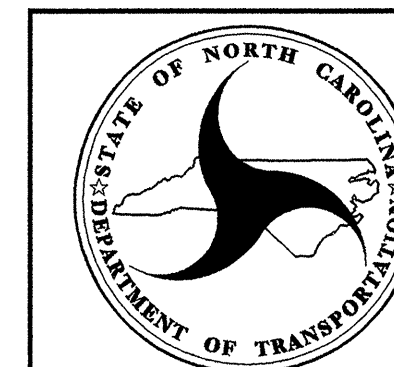


SECTION

WELDED WIRE FACINGS

PANEL TYPES (WELDED WIRE FACINGS AND FORM)

5" X 5" (125mm X 125mm), W5 X W5 (MW32 X MW32) WELDED WIRE REINFORCEMENT (WWR)



GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL
 TEMPORARY WALL

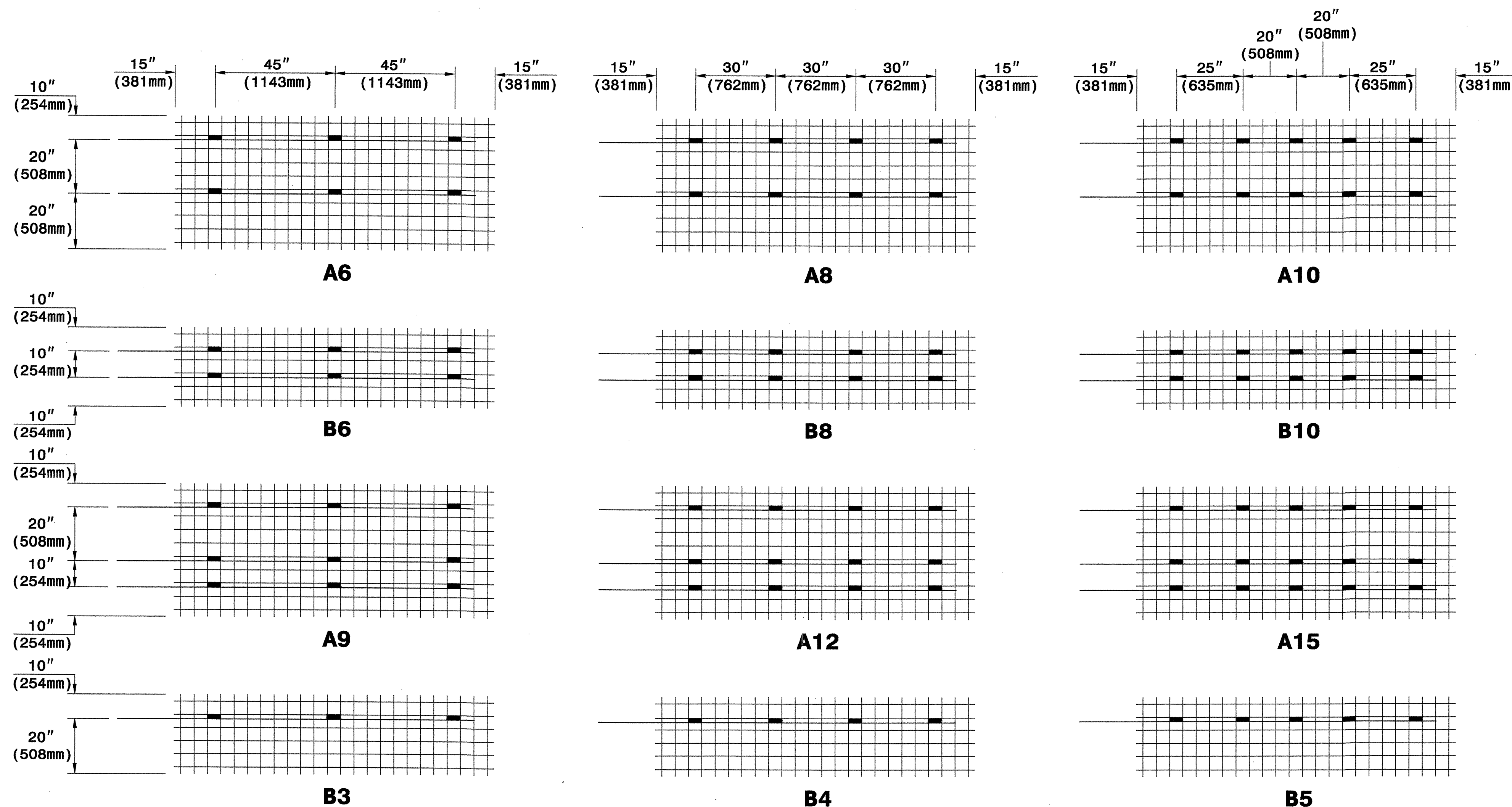
SHEET 9 OF 11 DATE: 12-19-06

GEOTECHNICAL ENGINEER

ENGINEER

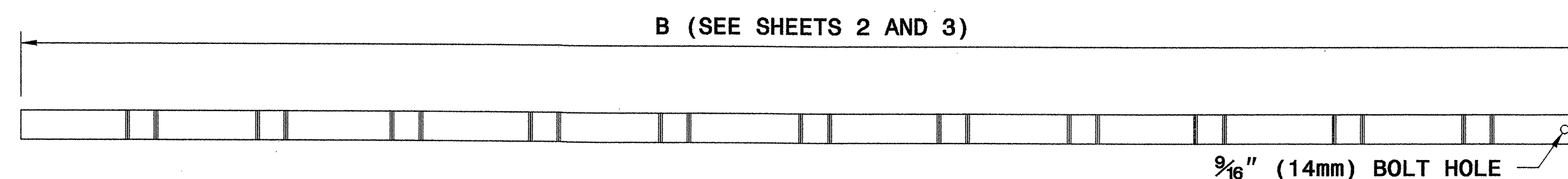


Scott A. Hadden 3/24/07
SIGNATURE DATE

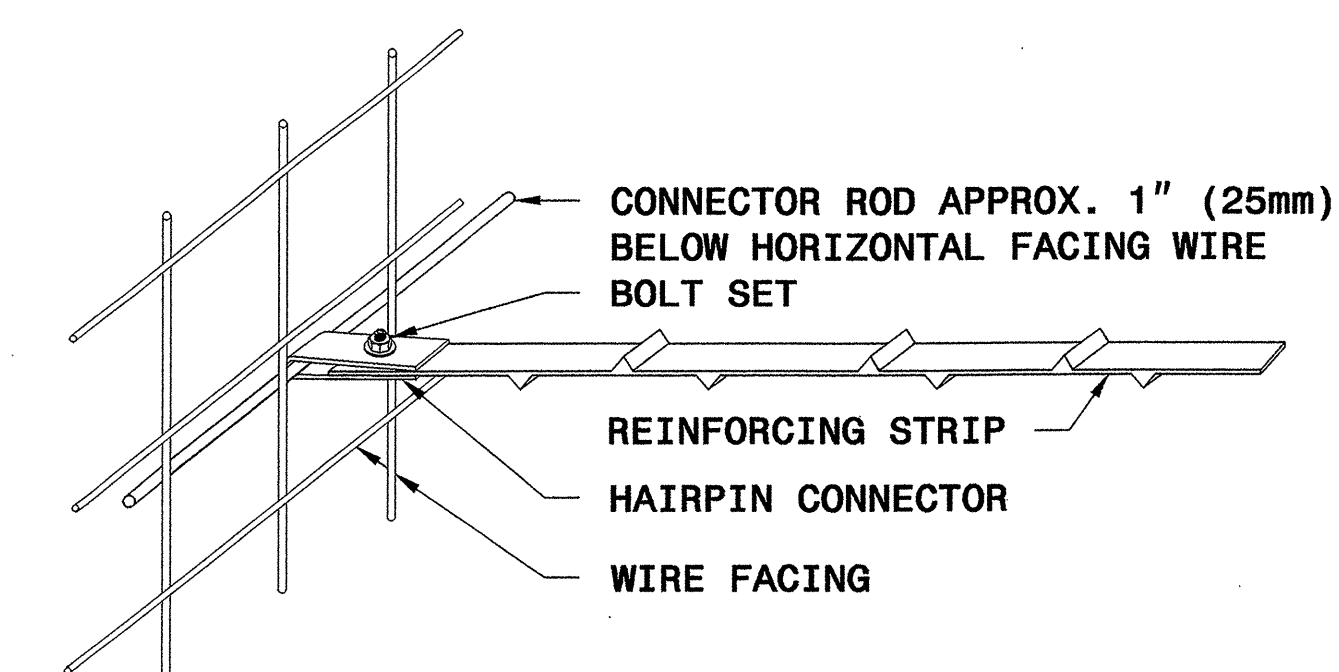


KEY: A8
NUMBER OF REINFORCING STRIPS
PANEL TYPE

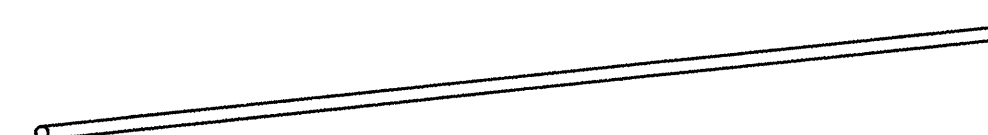
CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



REINFORCING STRIP - 2" X 5/32" (50mm X 4mm)

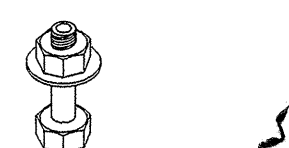


STRIP TO FACING CONNECTION



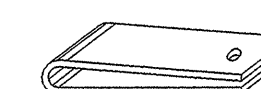
1/2" (13mm) DIA. ROD

CONNECTOR ROD



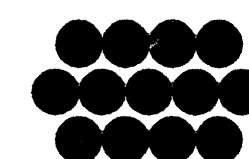
1/2" (13mm) BOLT WITH NUT AND WASHER

BOLT SET

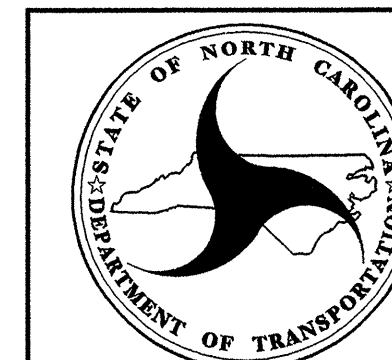


HAIRPIN CONNECTOR

WALL COMPONENTS



The Reinforced Earth Company



GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL
TEMPORARY WALL

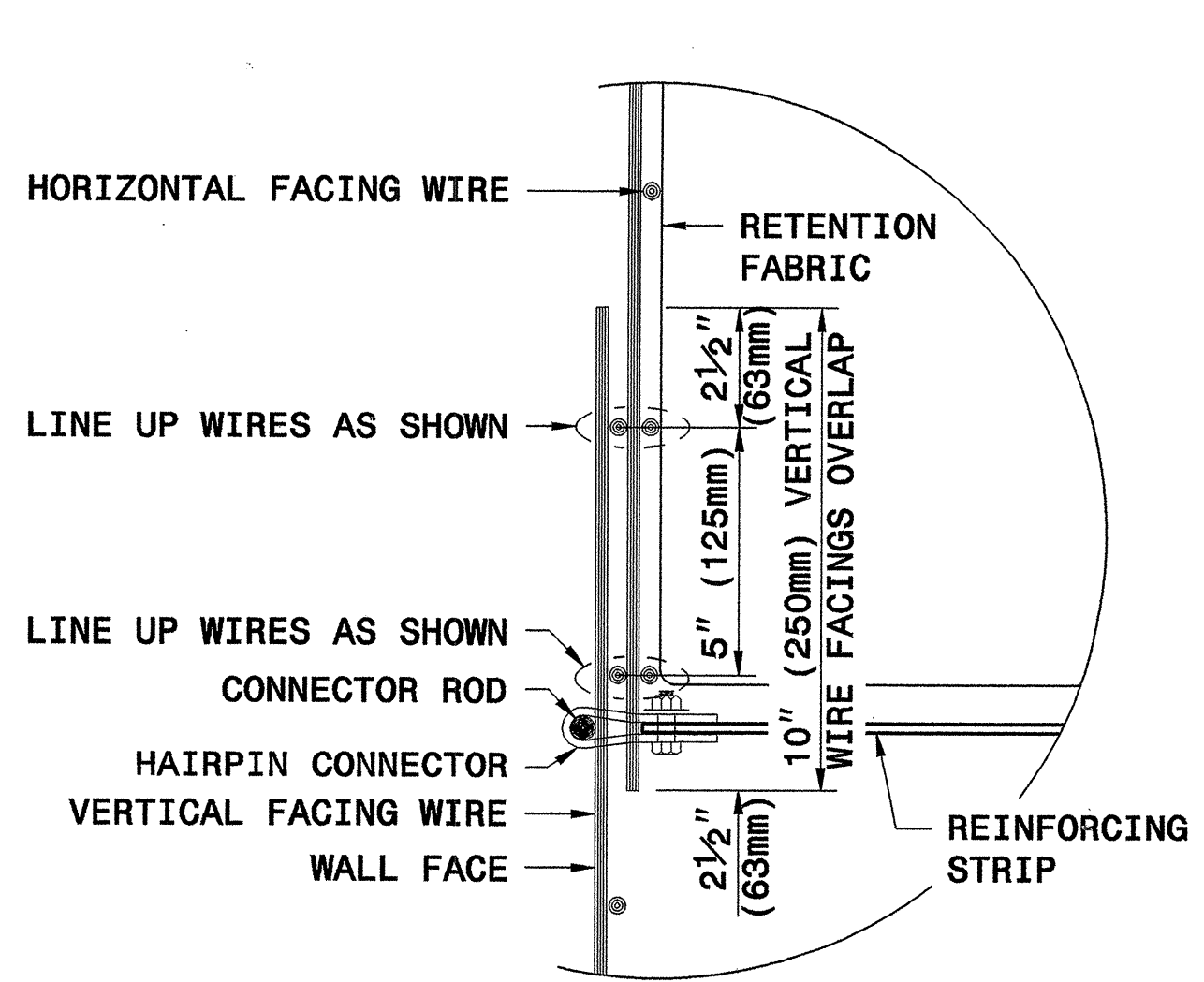
SHEET 10 OF 11 DATE: 12-19-06

GEOTECHNICAL ENGINEER ENGINEER

SEAL 022246

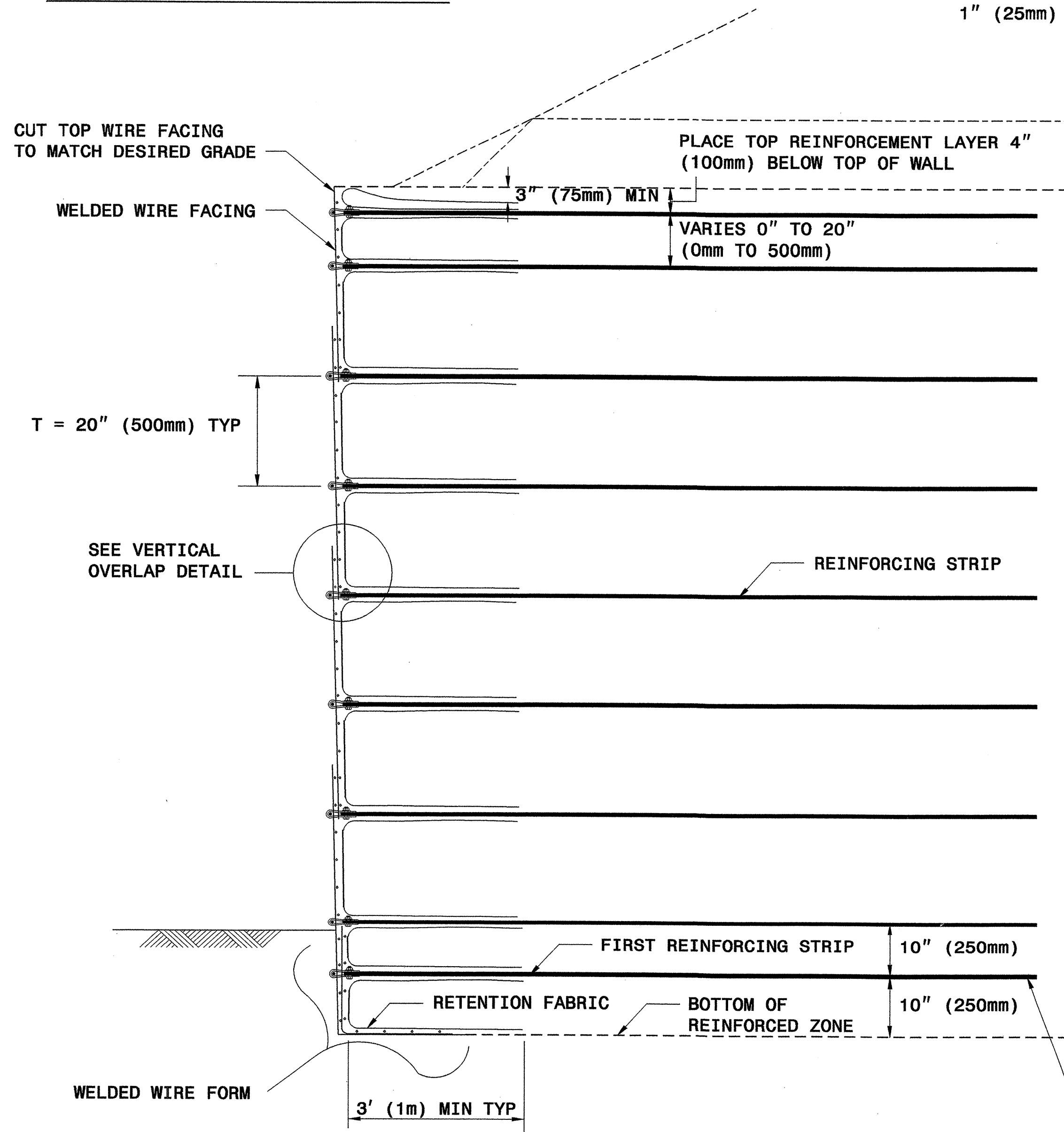
SCOTT A. HIDDEN

Signature: *Scott A. Hidden* DATE: _____



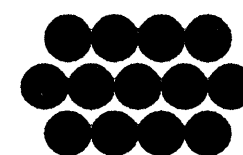
OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

VERTICAL OVERLAP DETAIL

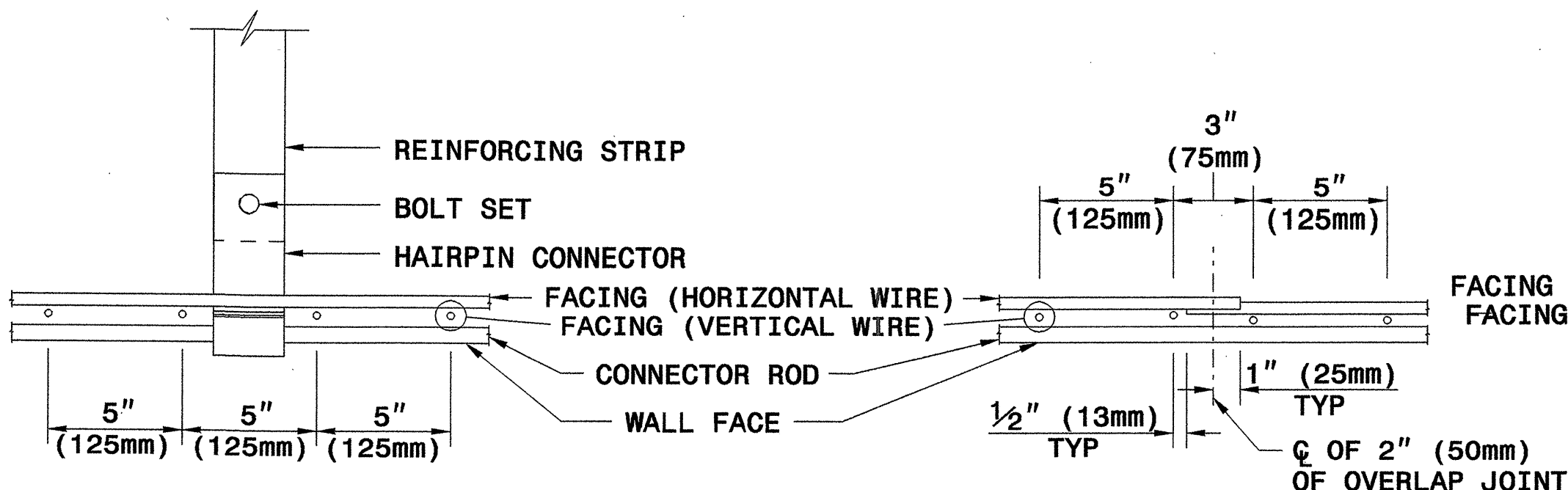


TYPICAL SECTION

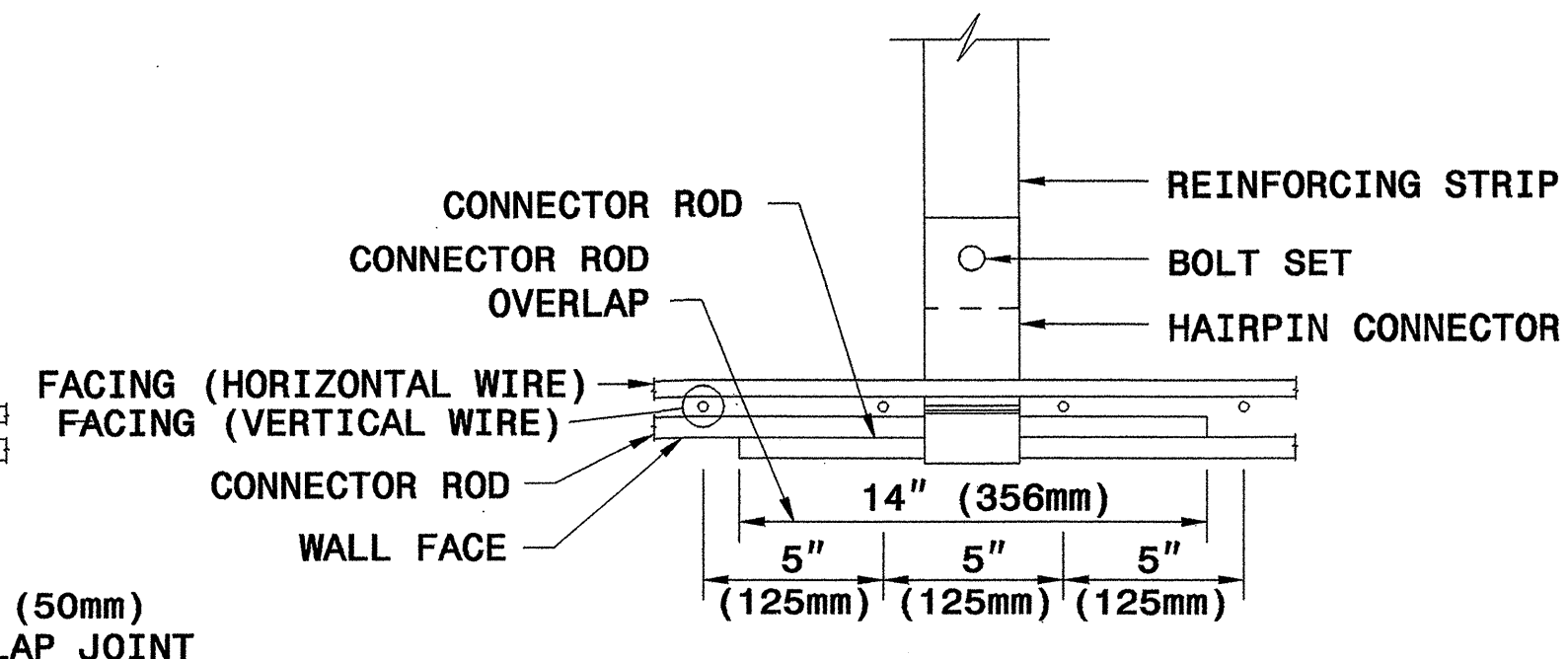
PLACE LOWEST REINFORCING STRIP 10" (250mm) FROM BOTTOM OF REINFORCED ZONE



The Reinforced Earth Company

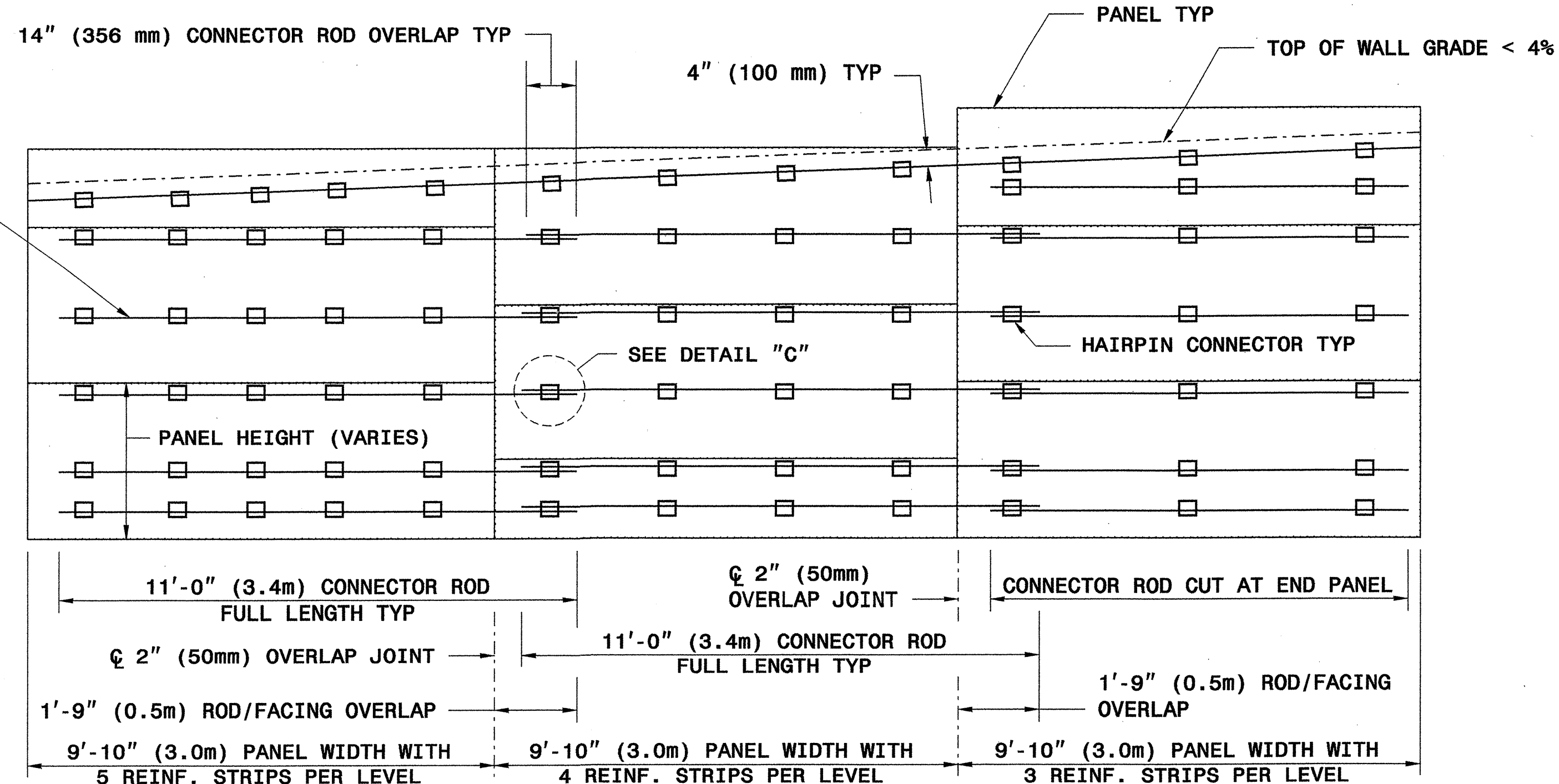


PLAN DETAIL 'A' STRIP CONNECTION

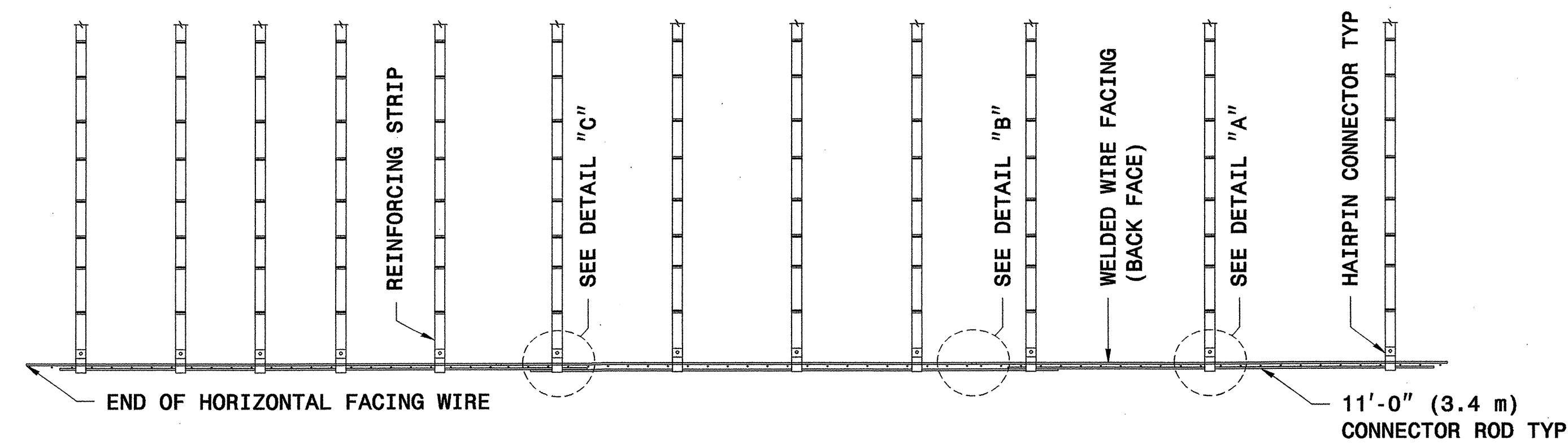


PLAN DETAIL 'B' HORIZONTAL OVERLAP DETAIL

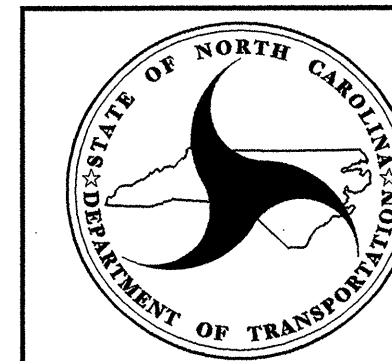
PLAN DETAIL 'C' STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL



TYPICAL ELEVATION (WIRES NOT SHOWN FOR CLARITY)



TYPICAL PLAN

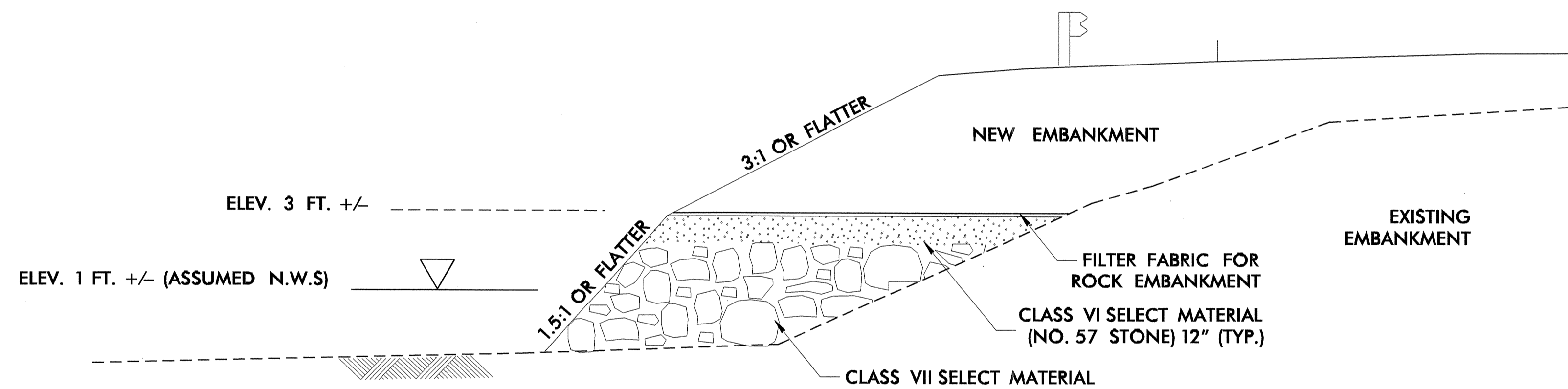


GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL



ROCK EMBANKMENT DETAIL
N.T.S.

ROCK EMBANKMENT

ROCK EMBANKMENT MAY BE USED IN LIEU OF GEOGRID REINFORCED SLOPE OR TO AVOID FILLING OF MATERIAL UNDER WATER AT FOLLOWING LOCATIONS, AS DETERMINED BY THE ENGINEER:

LOCATION NO.	APPROX. BEGIN STA.	APPROX. END STA.	OFFSET
1	11+50 +/- -L-	15+00 +/- -L-	LEFT
2	15+75 +/- -L-	16+50 +/- -L-	LEFT
3	17+50 +/- -L-	20+25 +/- -L-	RIGHT
4	62+50 +/- -L-	70+00 +/- -L-	LEFT
5	68+50 +/- -L-	71+00 +/- -L-	RIGHT

CONSTRUCT ROCK EMBANKMENT TO THE ELEVATION SHOWN IN THE ROCK EMBANKMENT DETAIL OR 2 FT. ABOVE THE NORMAL WATER SURFACE AND ACCORDING TO THE ROCK EMBANKMENT SPECIAL PROVISION.

CLASS VII SELECT MATERIAL SHALL MEET THE GRADATION REQUIREMENTS AS INDICATED IN SECTION 1016 OF THE STANDARD SPECIFICATIONS WITH THE EXCEPTION THAT THE MAXIMUM DIAMETER OF THE ROCK DOES NOT EXCEED TWO FEET.

FOR ROCK EMBANKMENT, SEE ROCK EMBANKMENTS SPECIAL PROVISION.

ESTIMATED MATERIAL QUANTITIES FOR ROCK EMBANKMENT

ROCK EMBANKMENTS = 3,400 TONS

SELECT MATERIAL, CLASS VI = 1,800 TONS

FILTER FABRIC FOR ROCK EMBANKMENT = 1,800 SY

PROJECT NO.: B-3611
BEAUFORT COUNTY
STATION: SEE TABLE
SHEET 1 OF 1

PREPARED BY: THEIN T ZAN, PE DATE: 03/2010
REVIEWED BY: JAMES R BATTS, PE DATE: 03/2010

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROCK EMBANKMENT

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202334

ItemNumber	Sec #	Quantity	Unit	Description
000010000-N	800	Lump Sum		MOBILIZATION
000040000-N	801	Lump Sum		CONSTRUCTION SURVEYING
000070000-N	SP	Lump Sum		FIELD OFFICE
000800000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (43+25.00)
003600000-E	225	5,000	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
010600000-E	230	43,700	CY	BORROW EXCAVATION
013400000-E	240	4,160	CY	DRAINAGE DITCH EXCAVATION
019400000-E	SP	5,000	CY	SELECT GRANULAR MATERIAL, CLASS III
019600000-E	270	6,500	SY	FABRIC FOR SOIL STABILIZATION
019900000-E	SP	118	SF	TEMPORARY SHORING
023400000-E	SP	3,200	CY	GENERIC GRADING ITEM SELECT MATERIAL, CLASS III
024100000-E	SP	500	SY	GENERIC GRADING ITEM FABRIC FOR EMBANKMENT STABILIZATION
024100000-E	SP	1,800	SY	GENERIC GRADING ITEM FILTER FABRIC FOR ROCK EMBANKMENTS
024100000-E	SP	700	SY	GENERIC GRADING ITEM SECONDARY GEOGRID REINFORCEMENT
025500000-E	SP	3,400	TON	GENERIC GRADING ITEM ROCK EMBANKMENTS
025500000-E	SP	1,800	TON	GENERIC GRADING ITEM SELECT MATERIAL, CLASS VI
032000000-E	SP	90	SY	FOUNDATION CONDITIONING FABRIC
033000000-E	SP	30	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
033520000-E	SP	84	LF	15" DRAINAGE PIPE
033530000-E	SP	24	LF	18" DRAINAGE PIPE
033540000-E	SP	96	LF	24" DRAINAGE PIPE
033585000-E	SP	2	EA	*** DRAINAGE PIPE ELBOWS (15")
098600000-E	SP	75	LF	GENERIC PIPE ITEM 18" DUCTILE IRON PIPE
099500000-E	340	96	LF	PIPE REMOVAL
112100000-E	520	1,377	TON	AGGREGATE BASE COURSE
122000000-E	545	1,000	TON	INCIDENTAL STONE BASE
148900000-E	610	1,530	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
149800000-E	610	1,150	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
151900000-E	610	2,510	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
156000000-E	620	275	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
169300000-E	654	500	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
202200000-E	815	44.8	CY	SUBDRAIN EXCAVATION
203300000-E	815	33.6	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
228600000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	95	LF	SHOULDER BERM GUTTER
303000000-E	862	3,312.5	LF	STEEL BM GUARDRAIL
315000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
327000000-N	SP	9	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
336000000-E	863	3,752	LF	REMOVE EXISTING GUARDRAIL

ItemNumber	Sec #	Quantity	Unit	Description
338000000-E	862	450	LF	TEMPORARY STEEL BM GUARDRAIL
338910000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
363500000-E	876	240	TON	RIP RAP, CLASS II
364900000-E	876	100	TON	RIP RAP, CLASS B
365600000-E	876	1,125	SY	FILTER FABRIC FOR DRAINAGE
407900000-N	903	1	EA	SUPPORTS, BARRIER (SMALL)
408200000-E	903	537	LF	SUPPORTS, WOOD
409600000-N	904	5	EA	SIGN ERECTION, TYPE D
410200000-N	904	14	EA	SIGN ERECTION, TYPE E
410800000-N	904	2	EA	SIGN ERECTION, TYPE F
411610000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE *** (GROUND MOUNTED) (D)
411610000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE *** (GROUND MOUNTED) (E)
414100000-N	907	1	EA	DISPOSAL OF SUPPORT, WOOD
415500000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
415800000-N	907	21	EA	DISPOSAL OF SIGN SYSTEM, WOOD
440000000-E	1110	615	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	711	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	119	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	85	EA	DRUMS
443500000-N	1135	30	EA	CONES
444500000-E	1145	112	LF	BARRICADES (TYPE III)
445000000-N	1150	4,800	HR	FLAGGER
446500000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
448000000-N	1165	2	EA	TMIA
448500000-E	1170	360	LF	PORTABLE CONCRETE BARRIER
451600000-N	1180	60	EA	SKINNY DRUM

ItemNumber	Sec #	Quantity	Unit	Description
465000000-N	1251	179	EA	TEMPORARY RAISED PAVEMENT MARKERS
470500000-E	1205	40	LF	THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)
471000000-E	1205	46	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
472100000-E	1205	2	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
472500000-E	1205	3	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
477000000-E	1205	13,408	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
481000000-E	1205	37,887	LF	PAINT PAVEMENT MARKING LINES (4")
483000000-E	1205	80	LF	PAINT PAVEMENT MARKING LINES (16")
483500000-E	1205	100	LF	PAINT PAVEMENT MARKING LINES (24")
484000000-N	1205	4	EA	PAINT PAVEMENT MARKING CHARACTER
484500000-N	1205	6	EA	PAINT PAVEMENT MARKING SYMBOL
484700000-E	1205	24,421	LF	POLYUREA PAVEMENT MARKING LINES (4", *****) (HIGHLY REFLECTIVE ELEMENTS)
485000000-E	1205	1,000	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
490000000-N	1251	76	EA	PERMANENT RAISED PAVEMENT MARKERS
600000000-E	1605	30,500	LF	TEMPORARY SILT FENCE
600600000-E	1610	310	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	965	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	835	TON	SEDIMENT CONTROL STONE
601500000-E	1615	19.5	ACR	TEMPORARY MULCHING
601800000-E	1620	400	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	2.75	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	800	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	15	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	19,000	LF	SAFETY FENCE
603000000-E	1630	620	CY	SILT EXCAVATION
603600000-E	1631	20,000	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	15	SY	COIR FIBER MAT
603800000-E	SP	330	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	1,900	LF	1/4" HARDWARE CLOTH
604800000-E	SP	4,150	SY	FLOATING TURBIDITY CURTAIN
607101000-E	SP	100	LF	WATTLE
607102000-E	SP	25	LB	POLYACRYLAMIDE (PAM)
607103000-E	SP	1,900	LF	COIR FIBER BAFFLES
607105000-E	SP	1	EA	*** SKIMMER (1-1/2")
608400000-E	1660	18	ACR	SEEDING & MULCHING
608700000-E	1660	18	ACR	MOWING
609000000-E	1661	150	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.75	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	375	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	11.25	TON	FERTILIZER TOPDRESSING
611450000-N	SP	40	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	1.6	ACR	REFORESTATION

5/9/06

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13:30:00 1/10/2010

SUMMARY OF EARTHWORK IN CUBIC YARDS

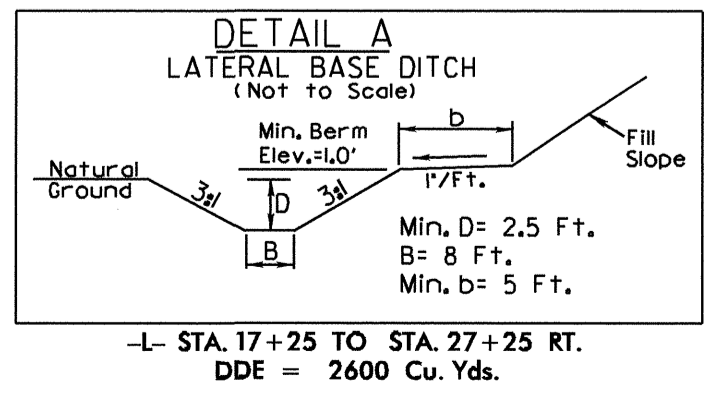
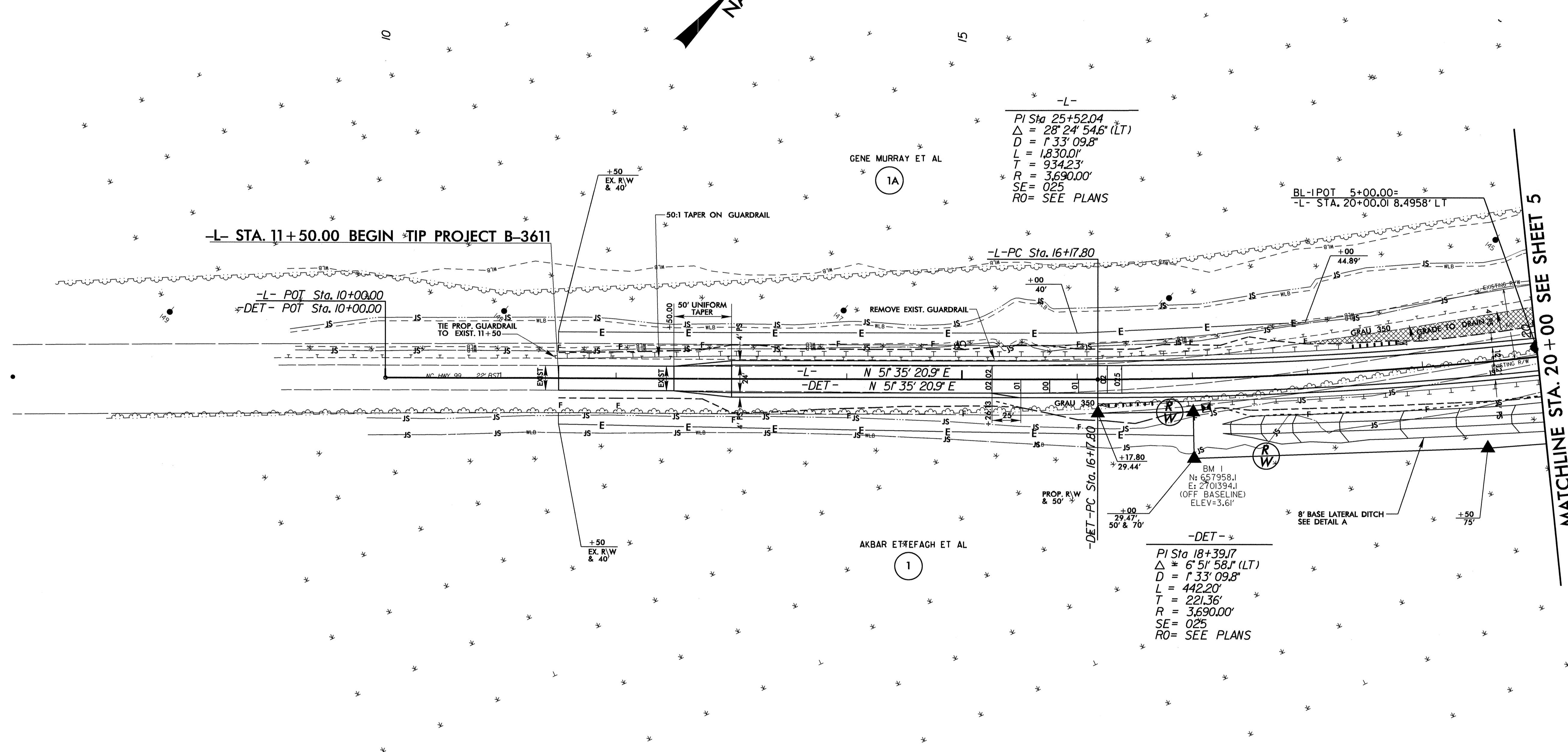
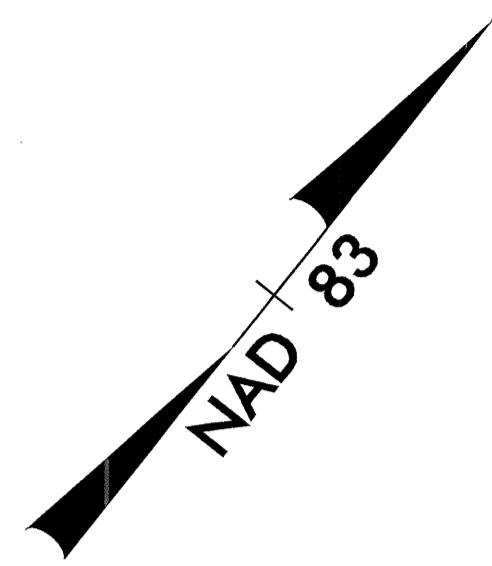
LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-DET- STA 15+25.00 TO STA 34+20.96	118	0	28,963	28,845	0
-L- STA 11+50 TO STA 26+49 (Beg. Brg.)	66	0	3,754	3,688	0
-L- STA 60+01(End Brg.) TO STA 72+32.74	56	0	8,176	8,120	0
SUBTOTAL	240	0	40,893	40,653	0
TOTAL	240	0	40,893	40,653	0
MATERIAL FOR SHOULDER CONSTRUCTION				962	
CAUSEWAY REMOVAL	5,475				5,474
EXISTING -L- GRADING	318				318
DETOUR REMOVAL	13,631				13,631
PROJECT TOTAL	19,664	0	40,893	41,615	19,664
Est. 5% for Topsoil Replacement on Borrow Pit				2,081	
GRANDTOTAL	19,664			43,696	19,664
SAY	19,700			43,700	
DDE = 4,160 Cu. Yds.					
GEOTECH REC.					
UNDERCUT = 5,000 CUBIC YARDS					
UNDERDRAINS = 200 LINEAR FEET					
SELECT MATERIAL, CL. III = 3,200 CUBIC YARDS					
SELECT GRANULAR MATERIAL, CL. III = 5,000 CUBIC YARDS					
FABRIC FOR SOIL STAB. = 6,500 SQUARE YARDS					
			"Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Unit".		
			Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."		

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- LT.	26+13.00	26+35.00	22
-L- RT.	60+15.00	60+82.00	67
		TOTAL:	89
		SAY:	95

SUMMARY OF PAVEMENT REMOVAL/BREAKING IN SQUARE YARDS

STATION TO STATION	PAVEMENT REMOVAL			PAVEMENT BREAKING		
	LENGTH	WIDTH	SQUARE YARDS	LENGTH	WIDTH	SQUARE YARDS
-L- LT. STA 16+60.00 TO 19+28.00	268.00	11.00	327.56			
-L- LT. STA 19+28.00 TO 40+71.00	2143.00	22.00	5,238.44			
-L- RT. STA 54+72.00 TO 60+10.00	538.00	22.00	1,315.11			
-L- RT. STA 61+80.00 TO 64+26.00	246.00	22.00	601.33			
-L- RT. STA 62+09.00 TO 64+26.00			285.78			
-L- RT. STA 62+95.00 TO 64+95.00	200.00	11.00	244.44			
-DET- RT. STA 22+00.00 TO 25+06.00	306.00	12.39	421.26			
-DET- RT. STA 25+06.00 TO 31+80.00	674.00	22.00	1,647.56			
-DET- RT. STA 31+80.00 TO 34+39.00	320.00	11.00	317.09			
TOTAL			10,398.57			
SAY			10,400			



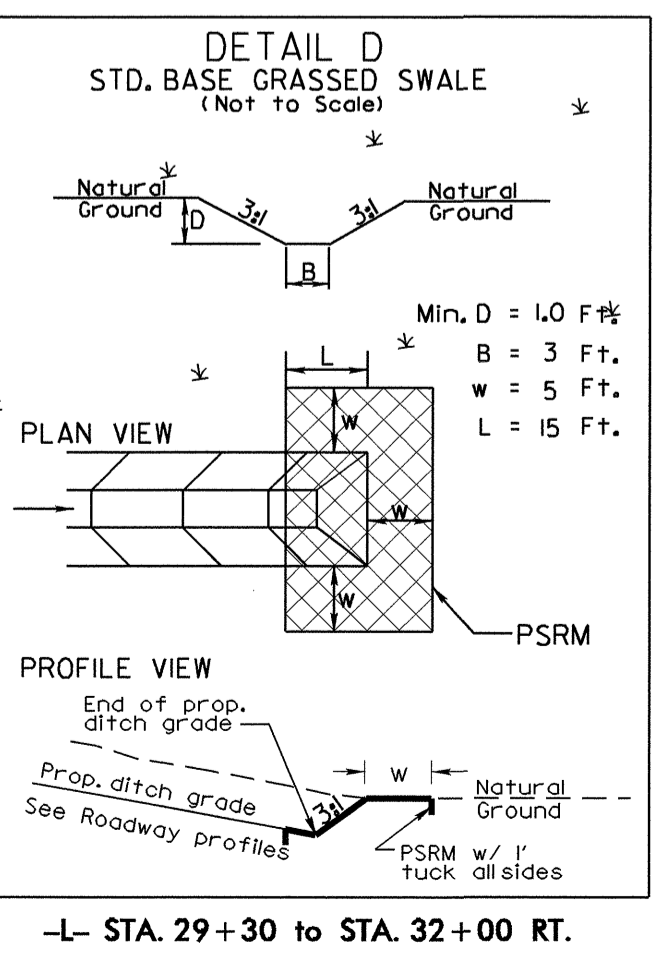
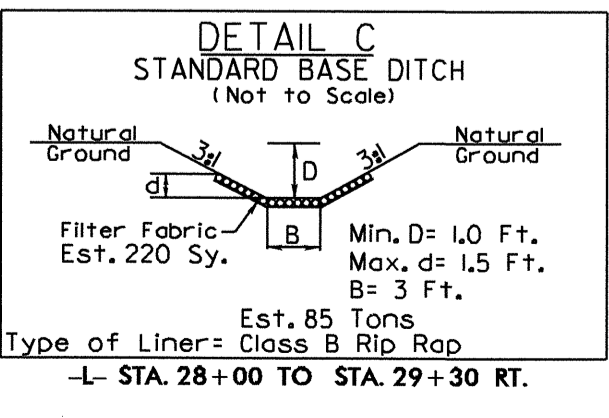
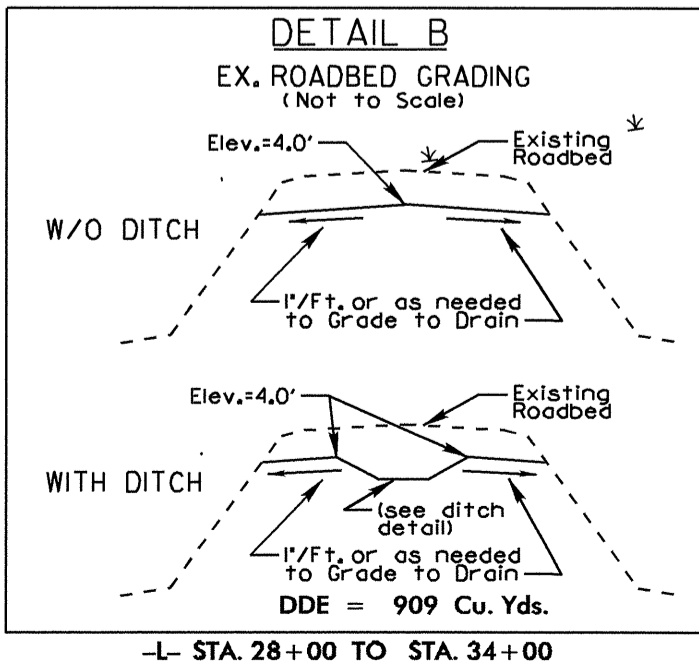
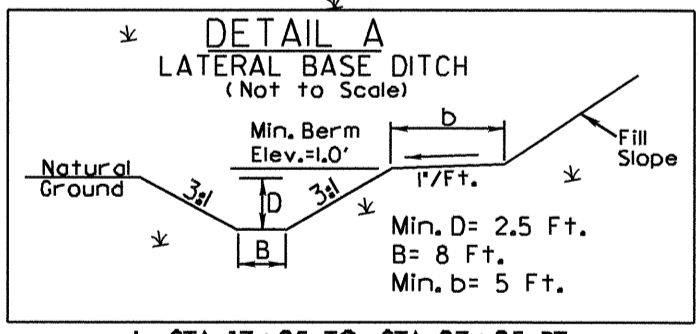
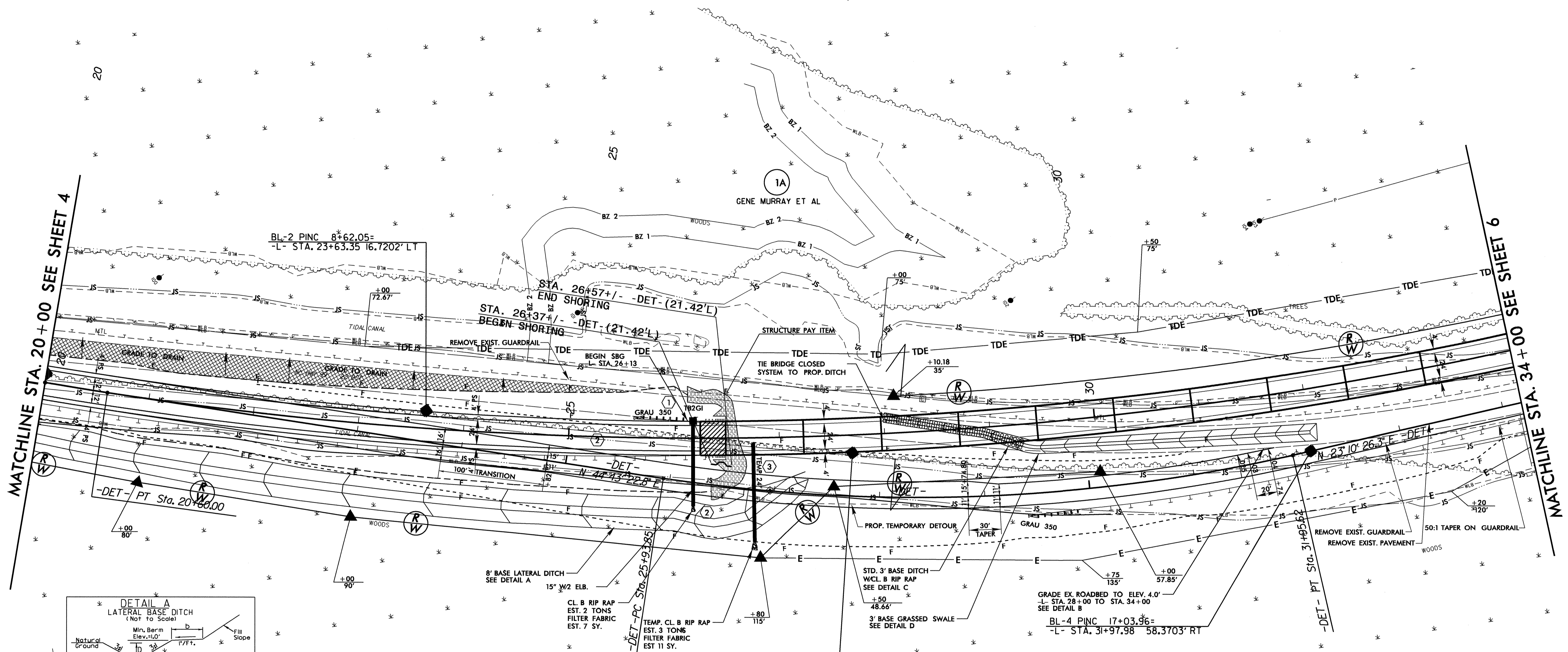
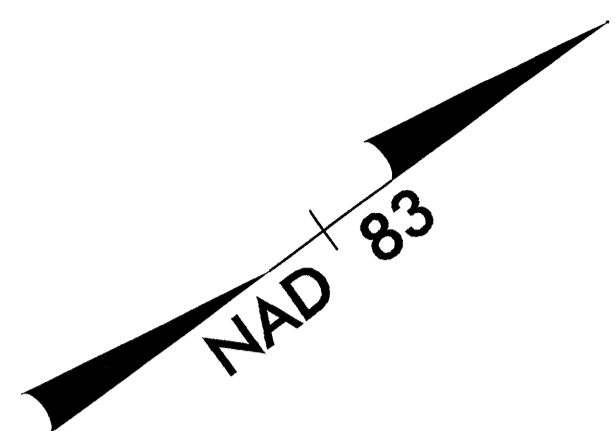
-L- SLOPE STAKE LINE = - - - - -
 -DET- SLOPE STAKE LINE =
 SEE DETAIL SHEET 2-B FOR DETOUR DESIGN
 SEE SHEET 9 FOR -L- PROFILE
 SEE SHEET 11 FOR -DET- PROFILE

REVISIONS

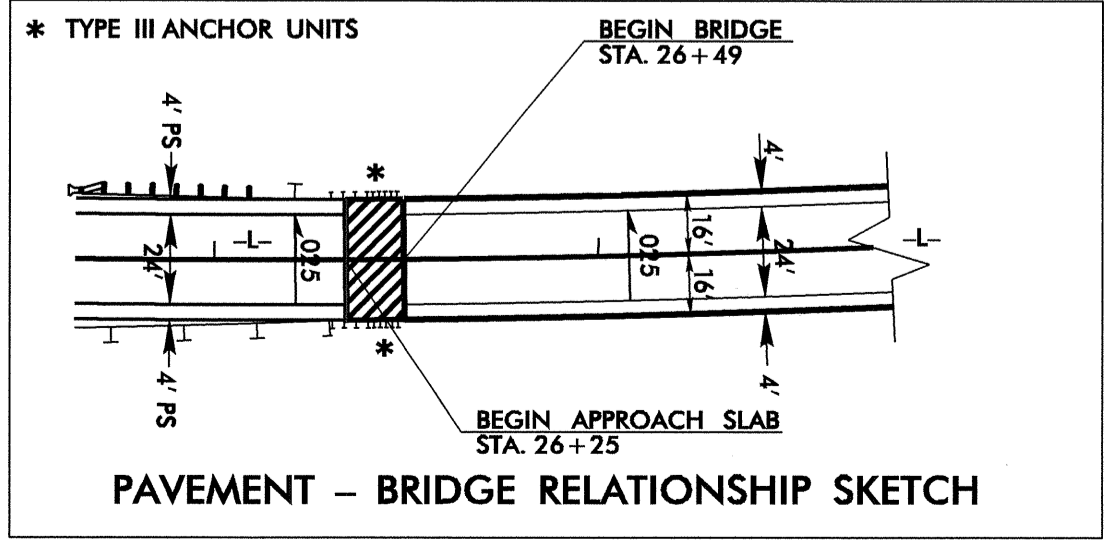
8/17/99

18-FEB-2010 06:51
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 \$\$\$LICFERNMTE\$\$\$

-L-
 PI Sta 25+52.04
 $\Delta = 28^\circ 24' 54.6''$ (LT)
 $D = 1' 33' 09.8''$
 $L = 1,830.0'$
 $T = 934.23'$
 $R = 3,690.00'$
 $SE = 025$
 $RO = \text{SEE PLANS}$



-L- SLOPE STAKE LINE = - - - -
 -DETOUR- SLOPE STAKE LINE = - - - -
 SEE SHEET 9 FOR -L- PROFILE
 SEE SHEETS 11 AND 12 FOR -DET- PROFILE
 SEE DETAIL SHEET 2-B FOR DETOUR DESIGN
 SEE SHEETS S-1 THROUGH S-124 FOR STRUCTURE PLANS



REVISIONS

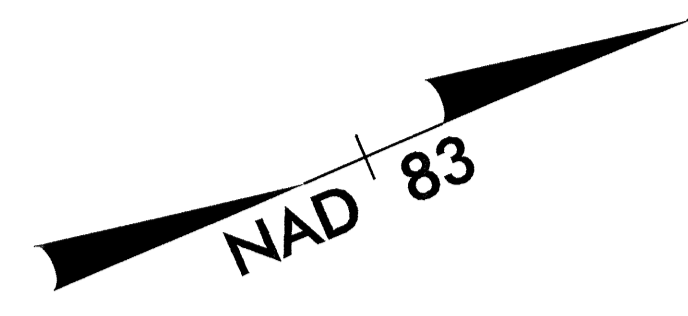
8/17/99

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PROJECT REFERENCE NO. B-3611	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 14493	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19880 2/18/10

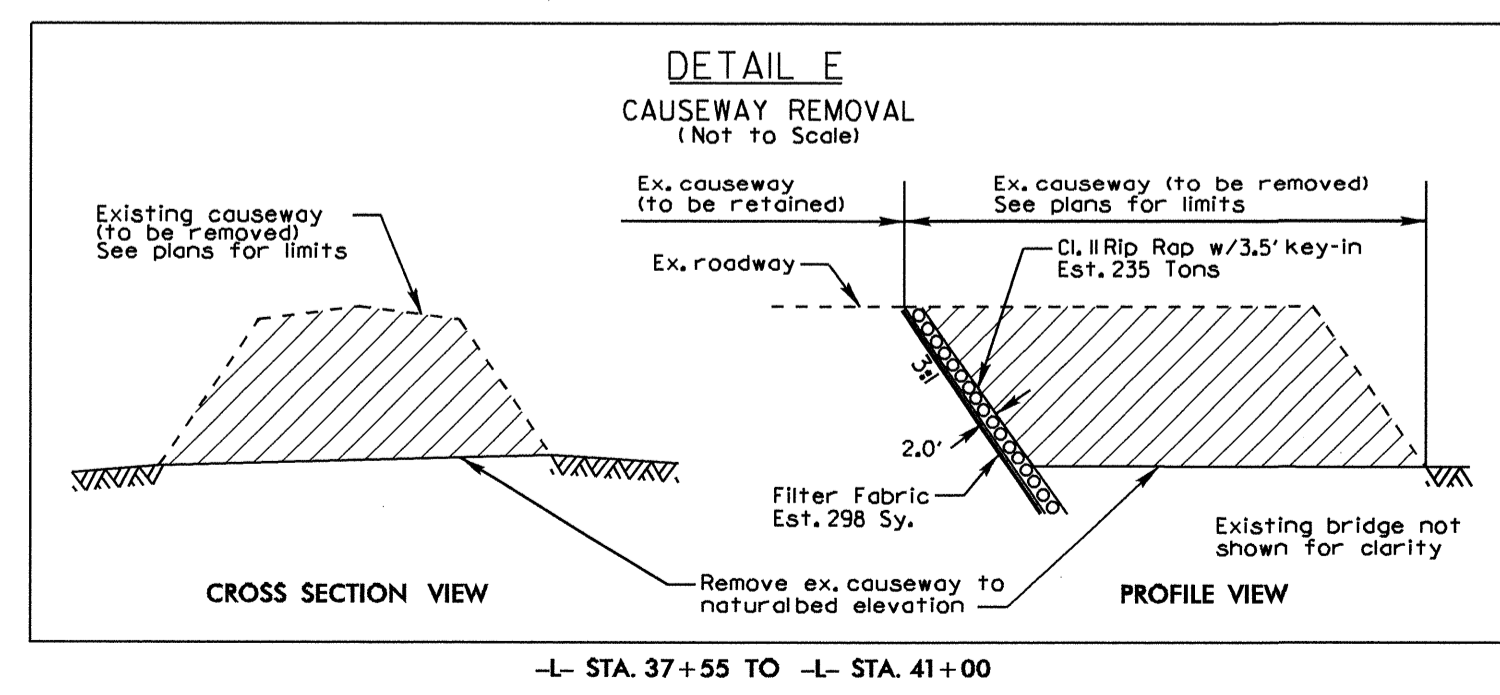
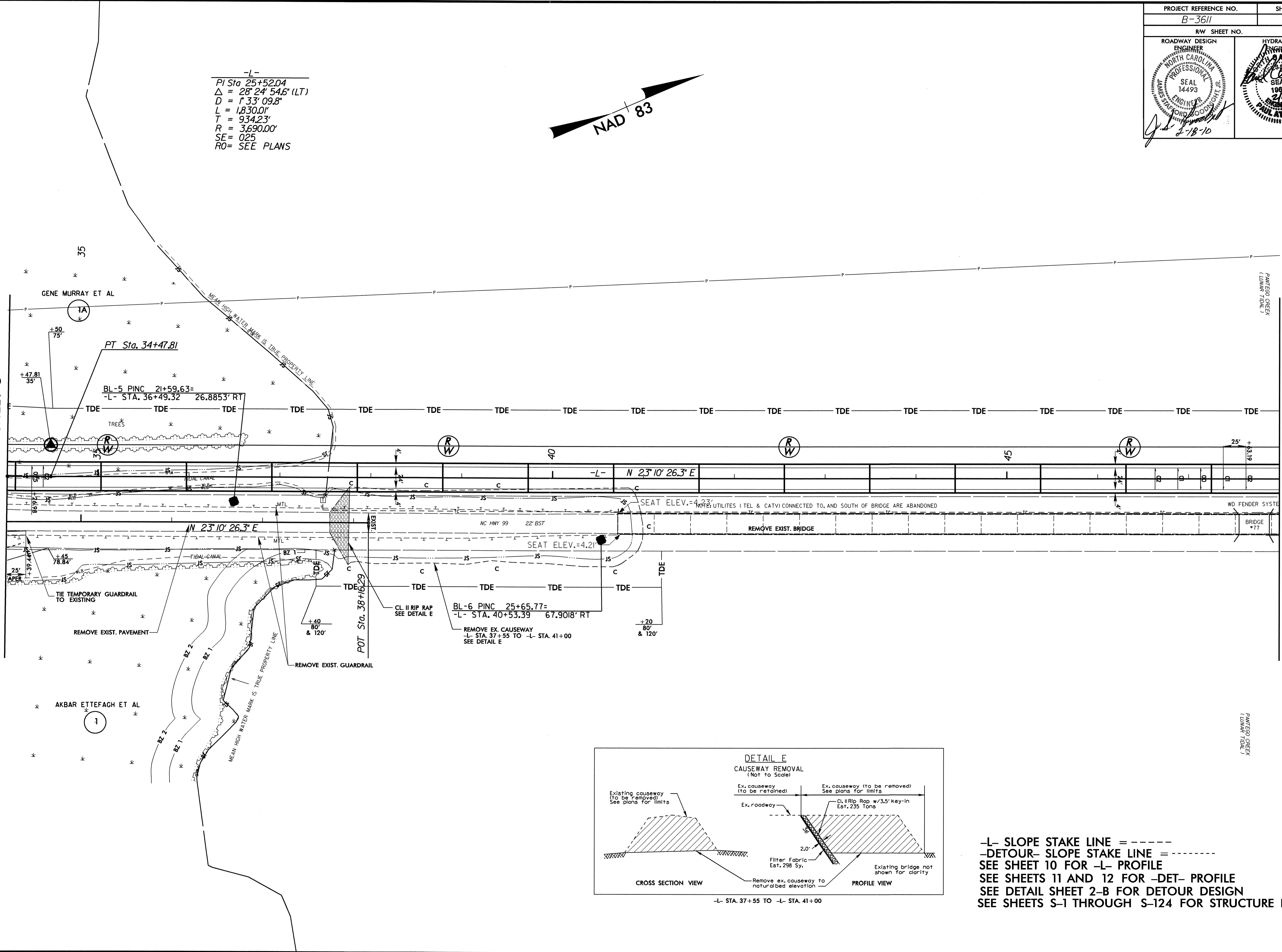
Y. J. 2-18-10

-L-
 PI Sta 25+52.04
 $\Delta = 28^{\circ} 24' 54.6" (LT)$
 $D = 1^{\circ} 33' 09.8"$
 $L = 1,830.01'$
 $T = 934.23'$
 $R = 3,690.00'$
 $SE = 025$
 $RO = SEE PLANS$



MATCHLINE STA. 34+00 SEE SHEET 5

MATCHLINE STA. 48+00 SEE SHEET 7

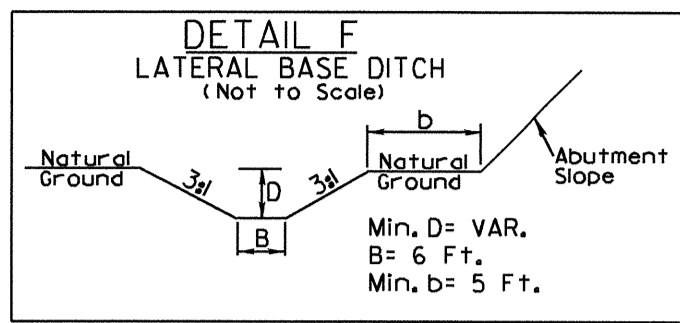


-L- SLOPE STAKE LINE = - - - -
 -DETOUR- SLOPE STAKE LINE = - - - -
 SEE SHEET 10 FOR -L- PROFILE
 SEE SHEETS 11 AND 12 FOR -DET- PROFILE
 SEE DETAIL SHEET 2-B FOR DETOUR DESIGN
 SEE SHEETS S-1 THROUGH S-124 FOR STRUCTURE PLANS

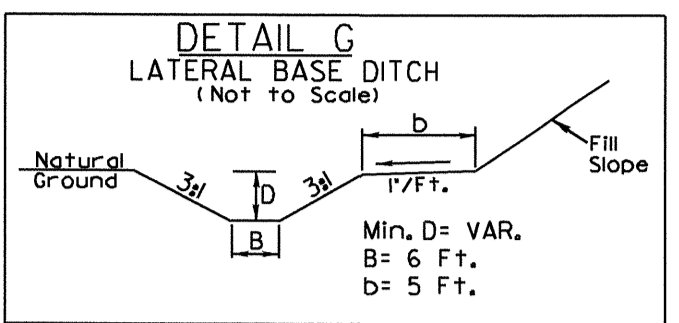
REVISIONS

8/17/99

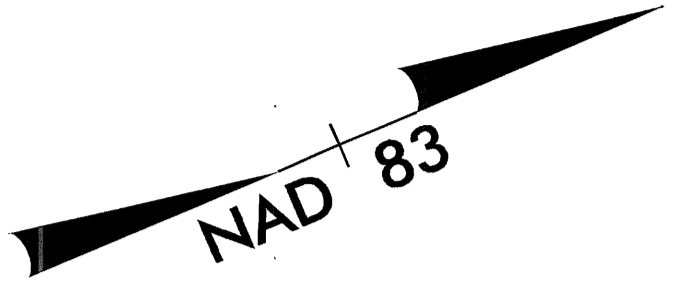
15-FEB-2010 10:06 163611.rdy_psh6.dgn



-L- STA. 59+72 TO STA. 60+00 LT.
DDE = 63 Cu. Yds.



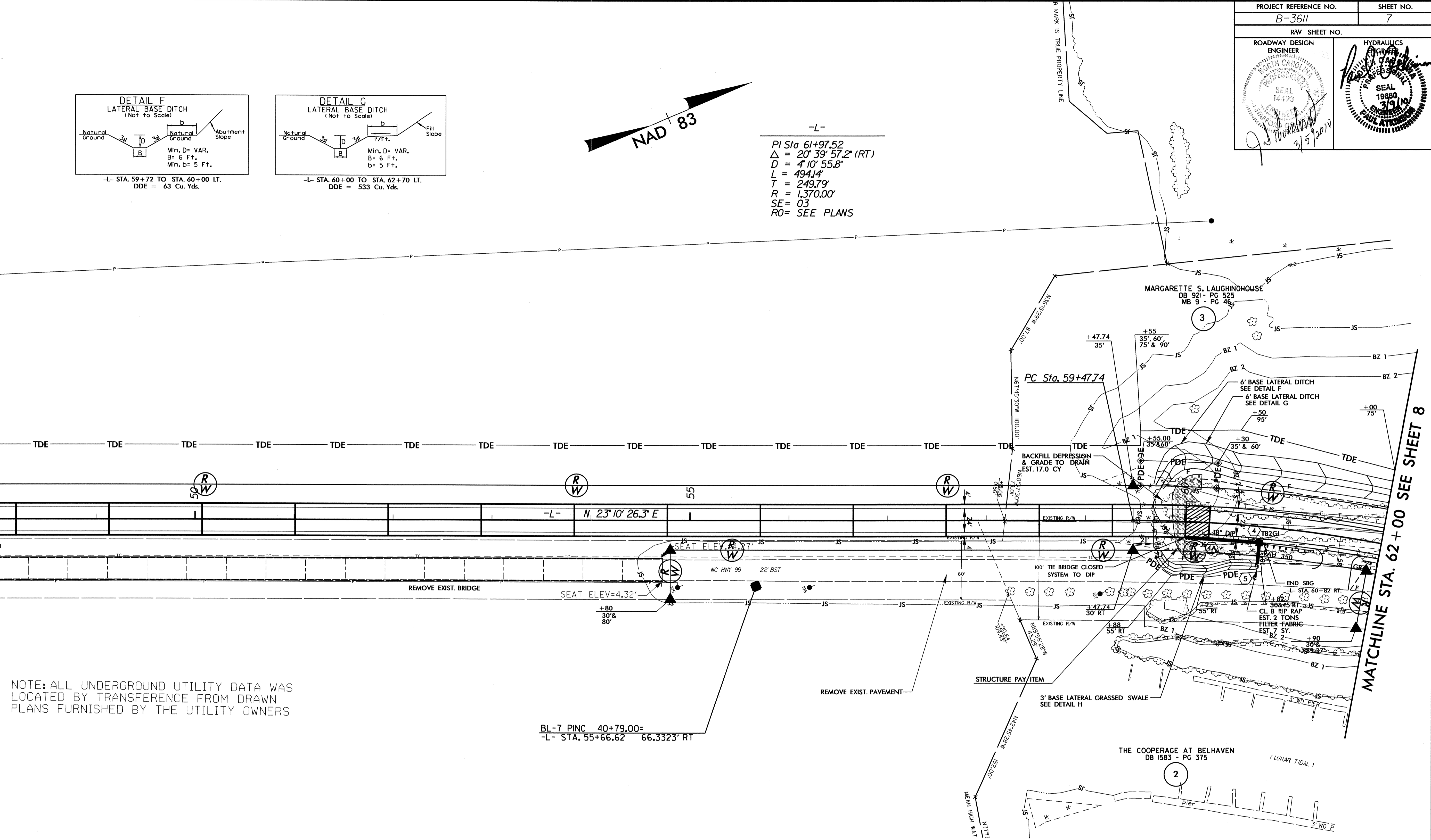
-L- STA. 60+00 TO STA. 62+70 LT.
DDE = 533 Cu. Yds.



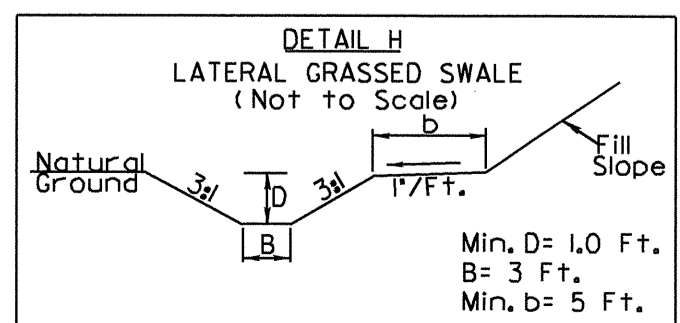
-L-
PI Sta 61+97.52
 $\Delta = 20^{\circ} 39' 57.2''$ (RT)
D = 4' 10" 55.8"
L = 494.14'
T = 249.79'
R = 1,370.00'
SE = 03
RO = SEE PLANS

MATCHLINE STA. 48+00 SEE SHEET 6

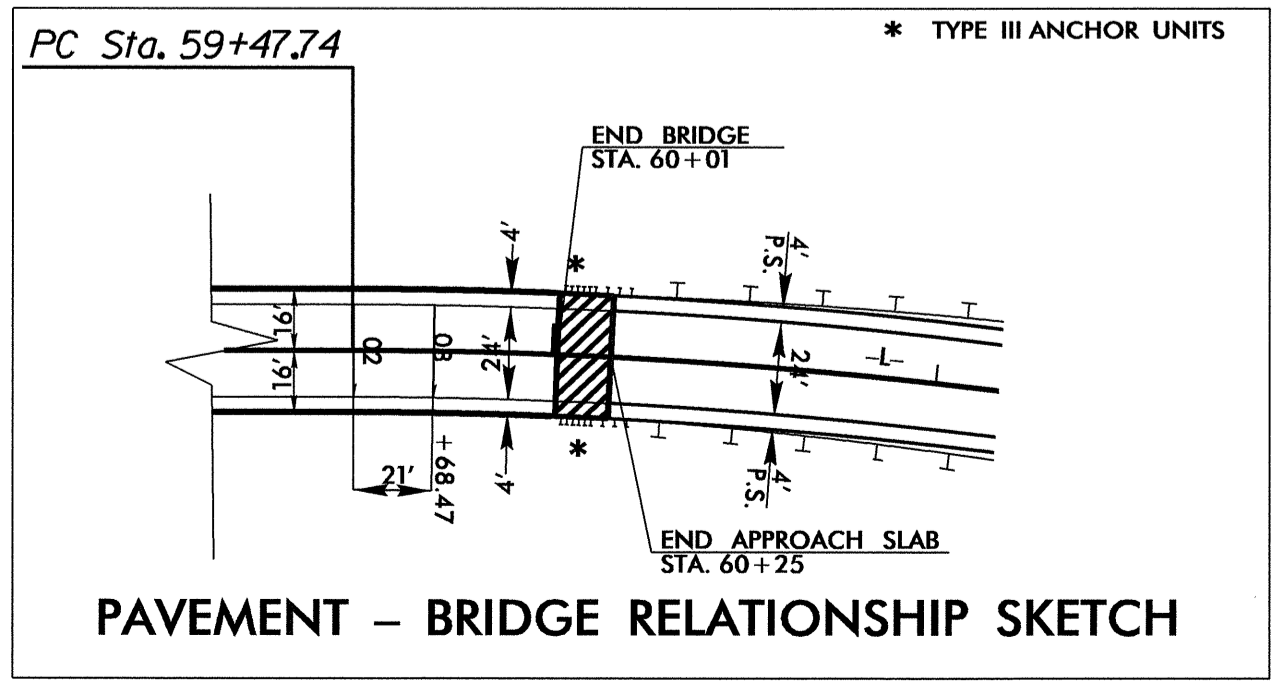
MATCHLINE STA. 62+00 SEE SHEET 8



NOTE: ALL UNDERGROUND UTILITY DATA WAS LOCATED BY TRANSFERENCE FROM DRAWN PLANS FURNISHED BY THE UTILITY OWNERS



-L- STA. 59+75 TO STA. 60+77 RT.
DDE = 46 Cu. Yds.



SEE SHEET 10 FOR -L- PROFILE
SEE SHEETS S-1 THROUGH S-124 FOR STRUCTURE PLANS

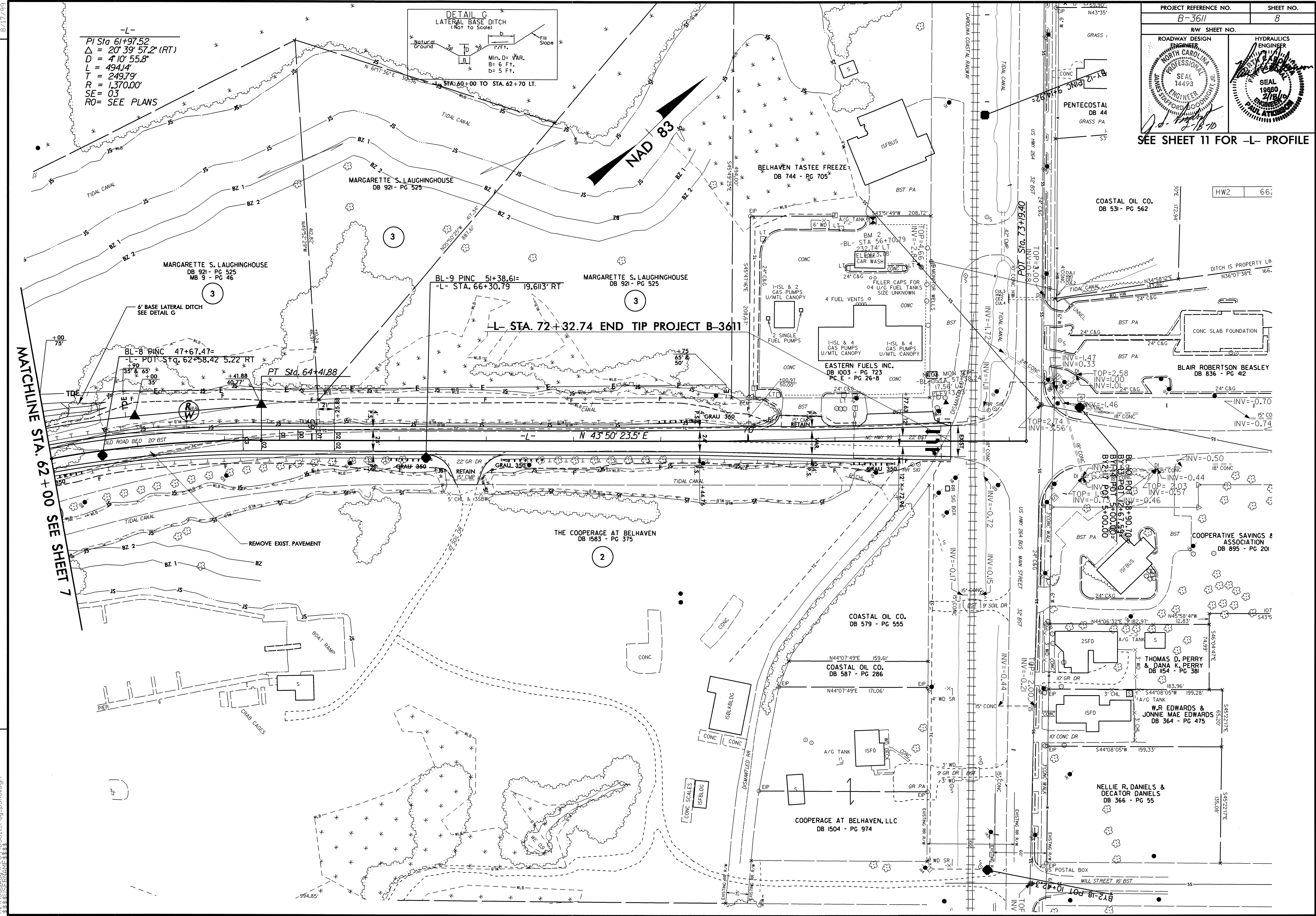
8/17/99

REVISIONS

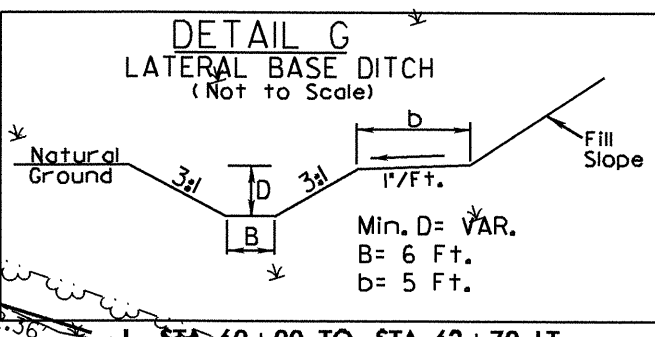
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PROJECT REFERENCE NO. B-3611	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14493 JAMES SAFFORD	HYDRAULICS ENGINEER PAUL ATWOOD SEAL 1990 2/10/10

SEE SHEET 11 FOR -L- PROFILE



-L-
PI Sta 61+97.52
Δ = 20° 39' 57.2" (RT)
D = 4' 10" 55.8"
L = 494.14'
T = 249.79'
R = 1,370.00'
SE = 03
RO = SEE PLANS



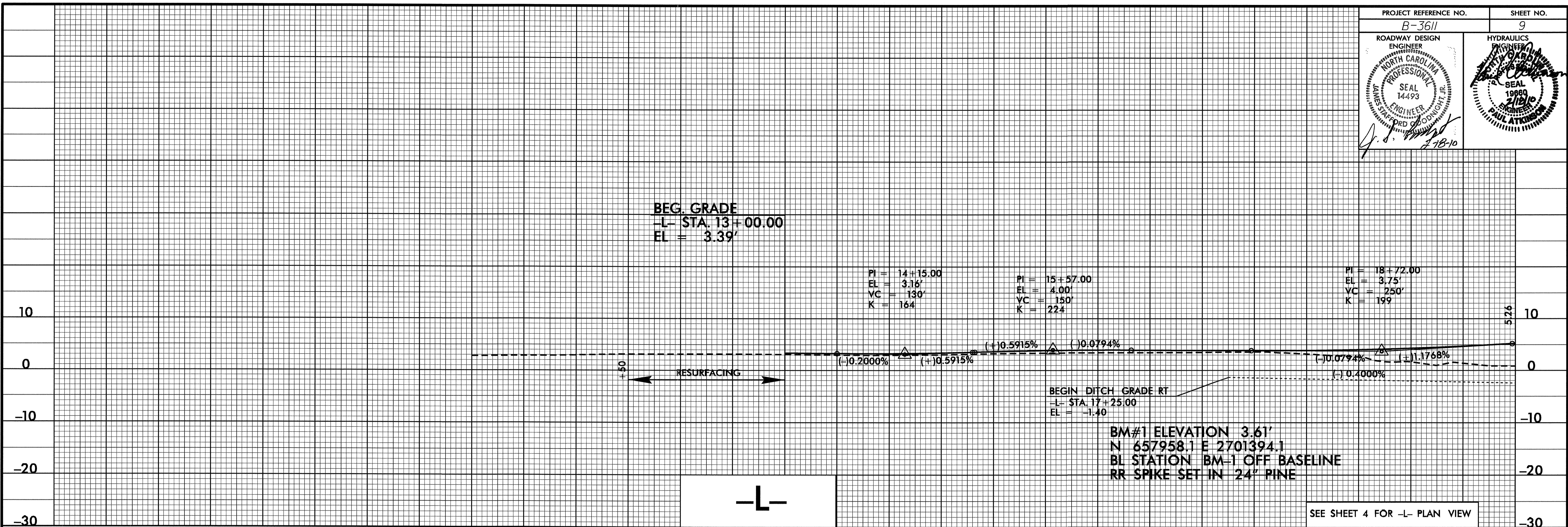
MATCHLINE STA. 62+00 SEE SHEET 7

REVISIONS

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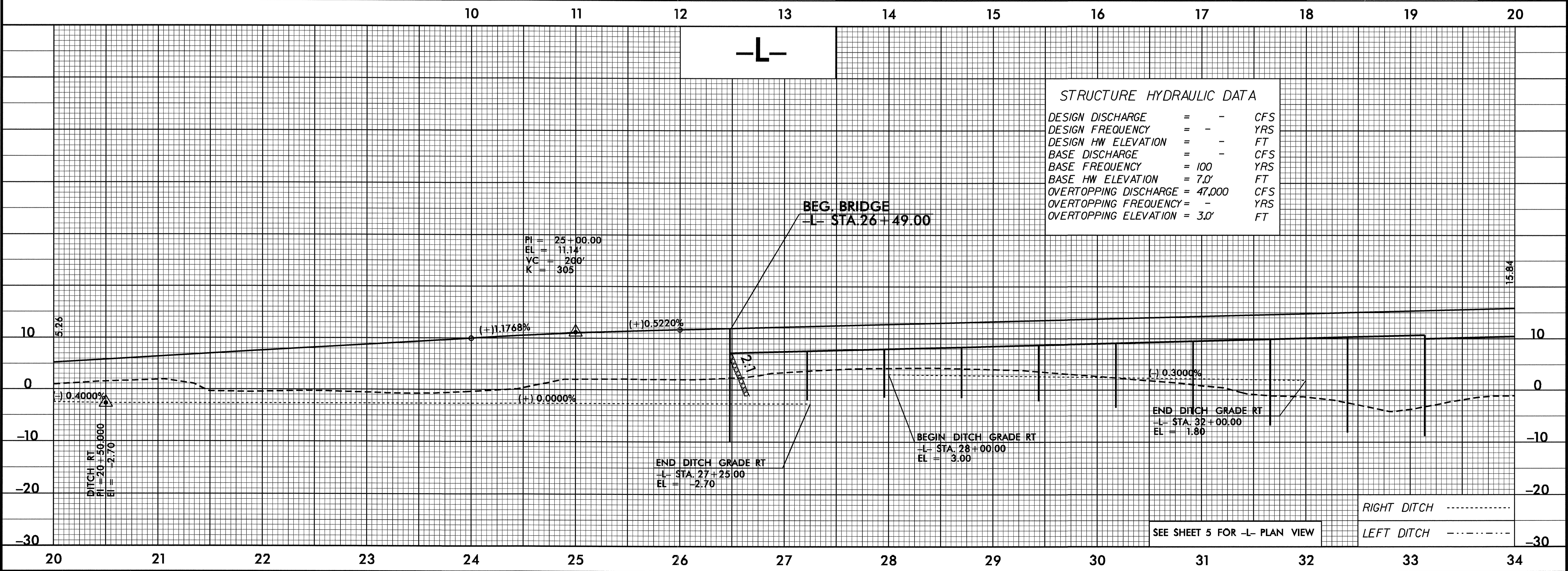
5/28/99

PROJECT REFERENCE NO. B-3611	SHEET NO. 9
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 14493	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19880 21210



-L-

SEE SHEET 4 FOR -L- PLAN VIEW



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	-	CFS
DESIGN FREQUENCY	=	-	YRS
DESIGN HW ELEVATION	=	-	FT
BASE DISCHARGE	=	-	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	7.0'	FT
OVERTOPPING DISCHARGE	=	47,000	CFS
OVERTOPPING FREQUENCY	=	-	YRS
OVERTOPPING ELEVATION	=	3.0'	FT

-L-

SEE SHEET 5 FOR -L- PLAN VIEW

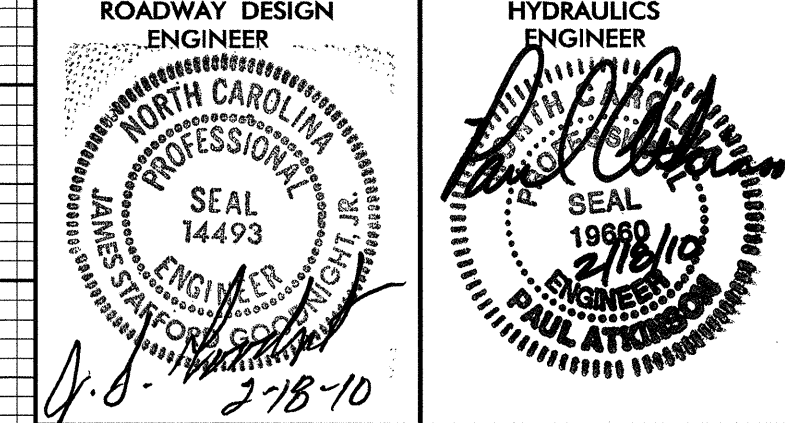
RIGHT DITCH -----

LEFT DITCH - - - - -

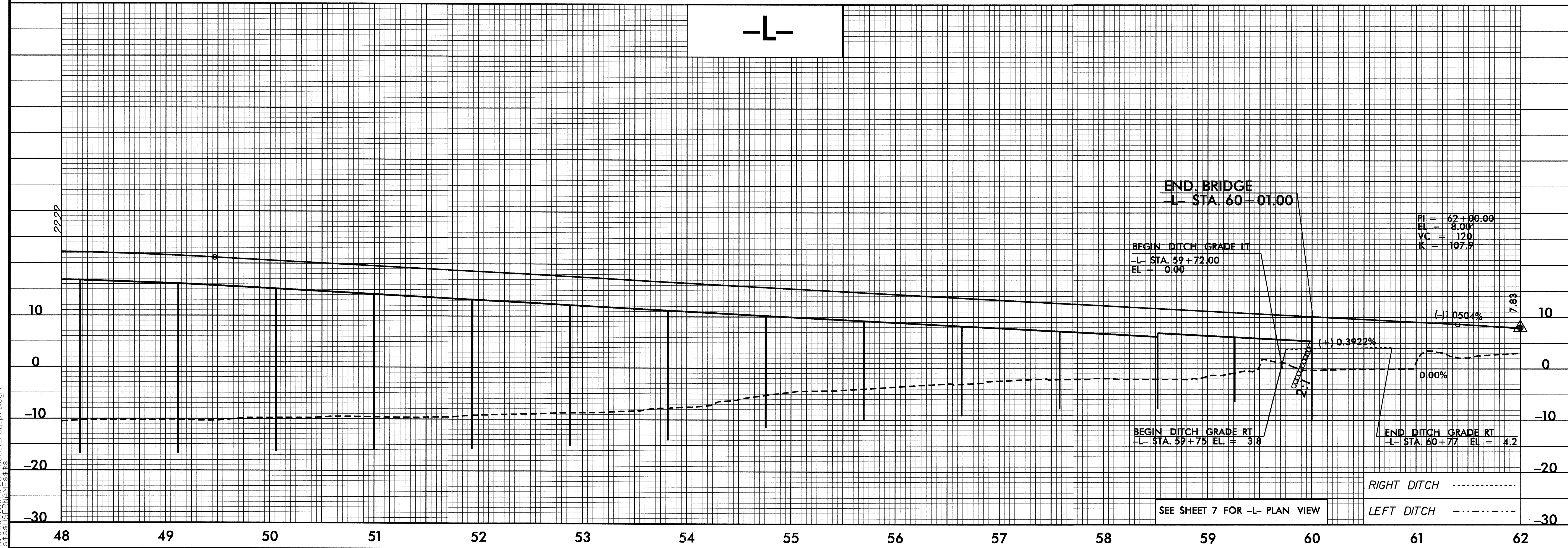
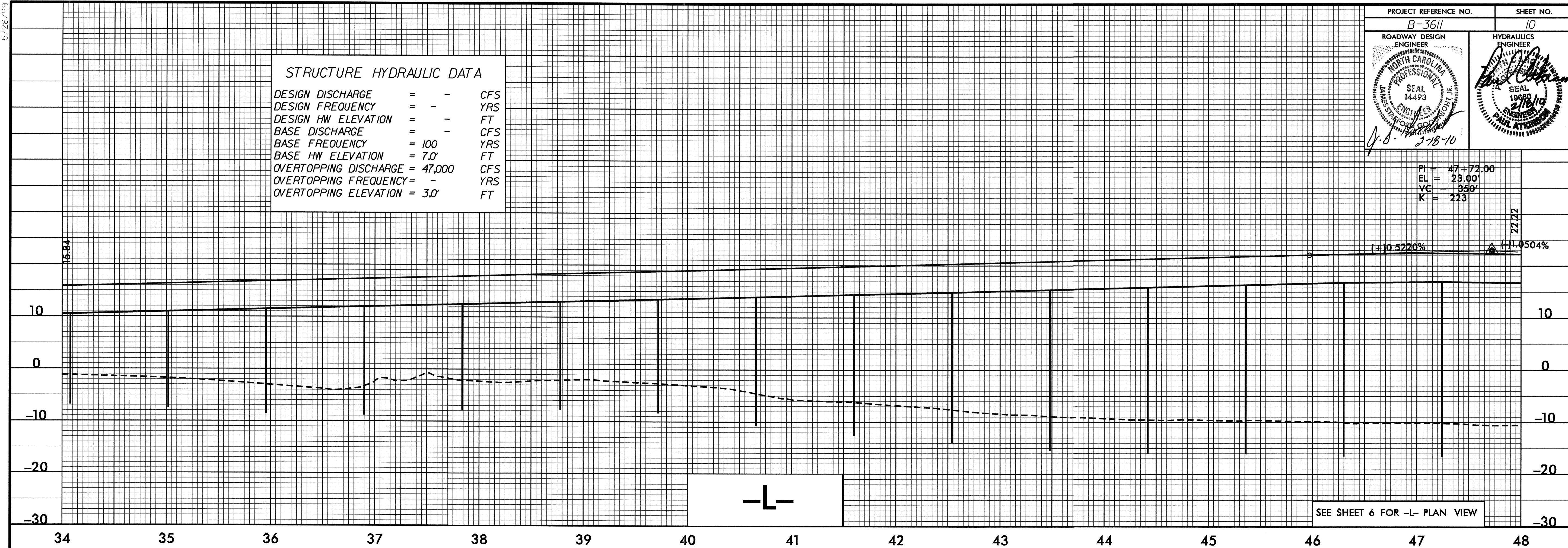
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5/28/99

STRUCTURE HYDRAULIC DATA		
DESIGN DISCHARGE	=	- CFS
DESIGN FREQUENCY	=	- YRS
DESIGN HW ELEVATION	=	- FT
BASE DISCHARGE	=	- CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	7.0 FT
OVERTOPPING DISCHARGE	=	47,000 CFS
OVERTOPPING FREQUENCY	=	- YRS
OVERTOPPING ELEVATION	=	3.0 FT



PI = 47+72.00
 EL = 23.00'
 VC = 350'
 K = 223



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RIGHT DITCH
 LEFT DITCH

5/28/99

PROJECT REFERENCE NO. B-3611	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER
PROFESSIONAL SEAL 14493	PROFESSIONAL SEAL 19890
ENGINEER STAFFORD BOONING, JR.	ENGINEER PAUL STOKER

2-18-10

BM#2 ELEVATION 3.78'
 N 662747.9 E 2703962.8
 BL STATION 56+70.79 233' LT
 RR SPIKE SET IN EDGE OF TEXACO
 CONVENIENCE STORE PARKING LOT

PI = 62+00.00
 EL = 8.00'
 VC = 120'
 K = 107.9

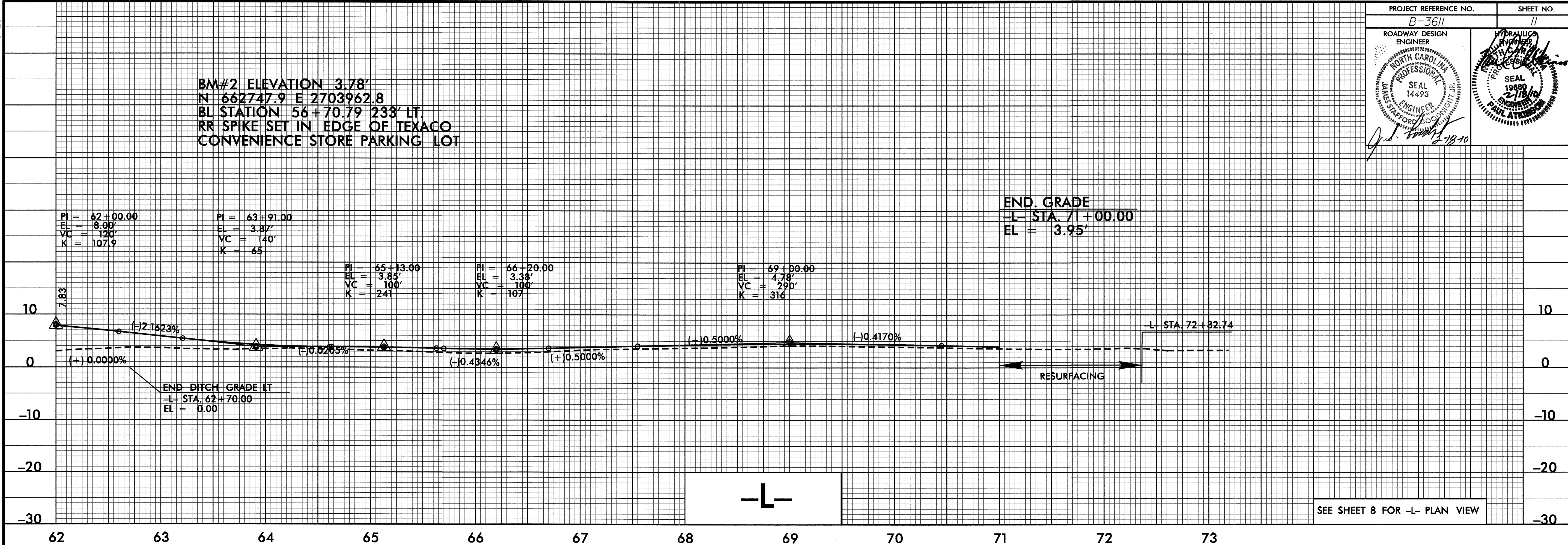
PI = 63+91.00
 EL = 3.87'
 VC = 140'
 K = 65

PI = 65+13.00
 EL = 3.85'
 VC = 100'
 K = 241

PI = 66+20.00
 EL = 3.38'
 VC = 100'
 K = 107

PI = 69+00.00
 EL = 4.78'
 VC = 290'
 K = 316

END GRADE
 -L- STA. 71+00.00
 EL = 3.95'



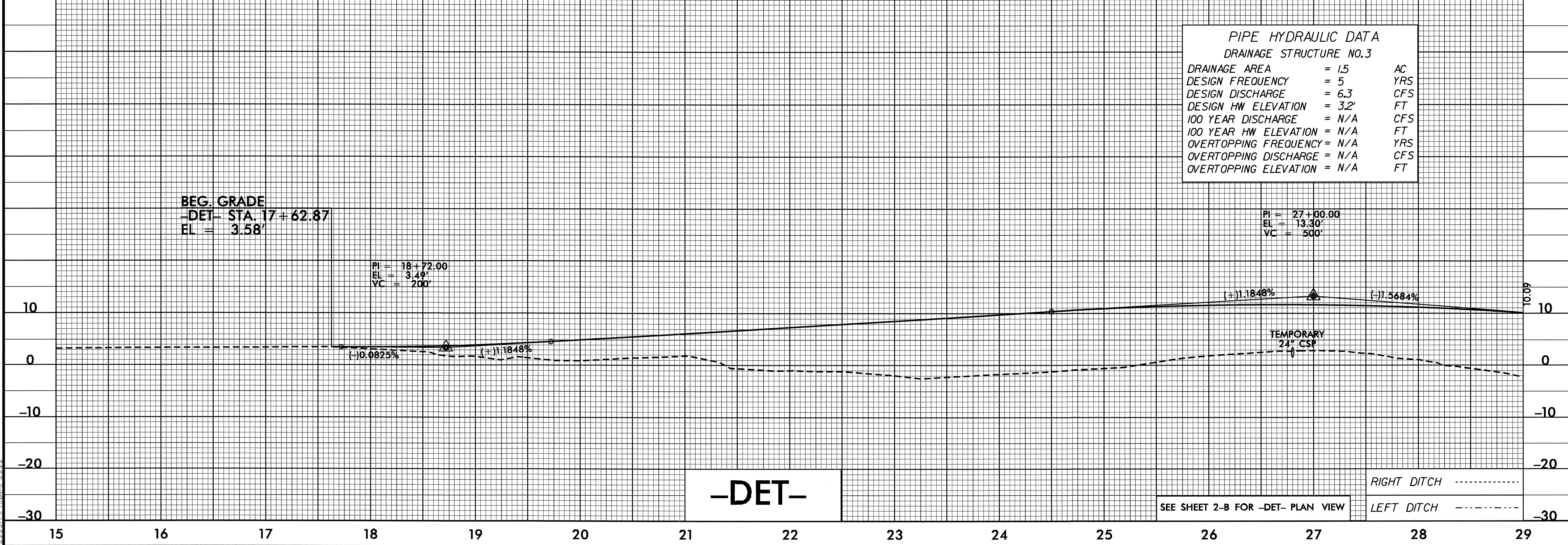
SEE SHEET 8 FOR -L- PLAN VIEW

PIPE HYDRAULIC DATA DRAINAGE STRUCTURE NO.3	
DRAINAGE AREA	= 15 AC
DESIGN FREQUENCY	= 5 YRS
DESIGN DISCHARGE	= 6.3 CFS
DESIGN HW ELEVATION	= 3.2' FT
100 YEAR DISCHARGE	= N/A CFS
100 YEAR HW ELEVATION	= N/A FT
OVERTOPPING FREQUENCY	= N/A YRS
OVERTOPPING DISCHARGE	= N/A CFS
OVERTOPPING ELEVATION	= N/A FT

BEG. GRADE
 -DET- STA. 17+62.87
 EL = 3.58'

PI = 18+72.00
 EL = 3.49'
 VC = 200'

PI = 27+00.00
 EL = 13.30'
 VC = 500'



SEE SHEET 2-B FOR -DET- PLAN VIEW

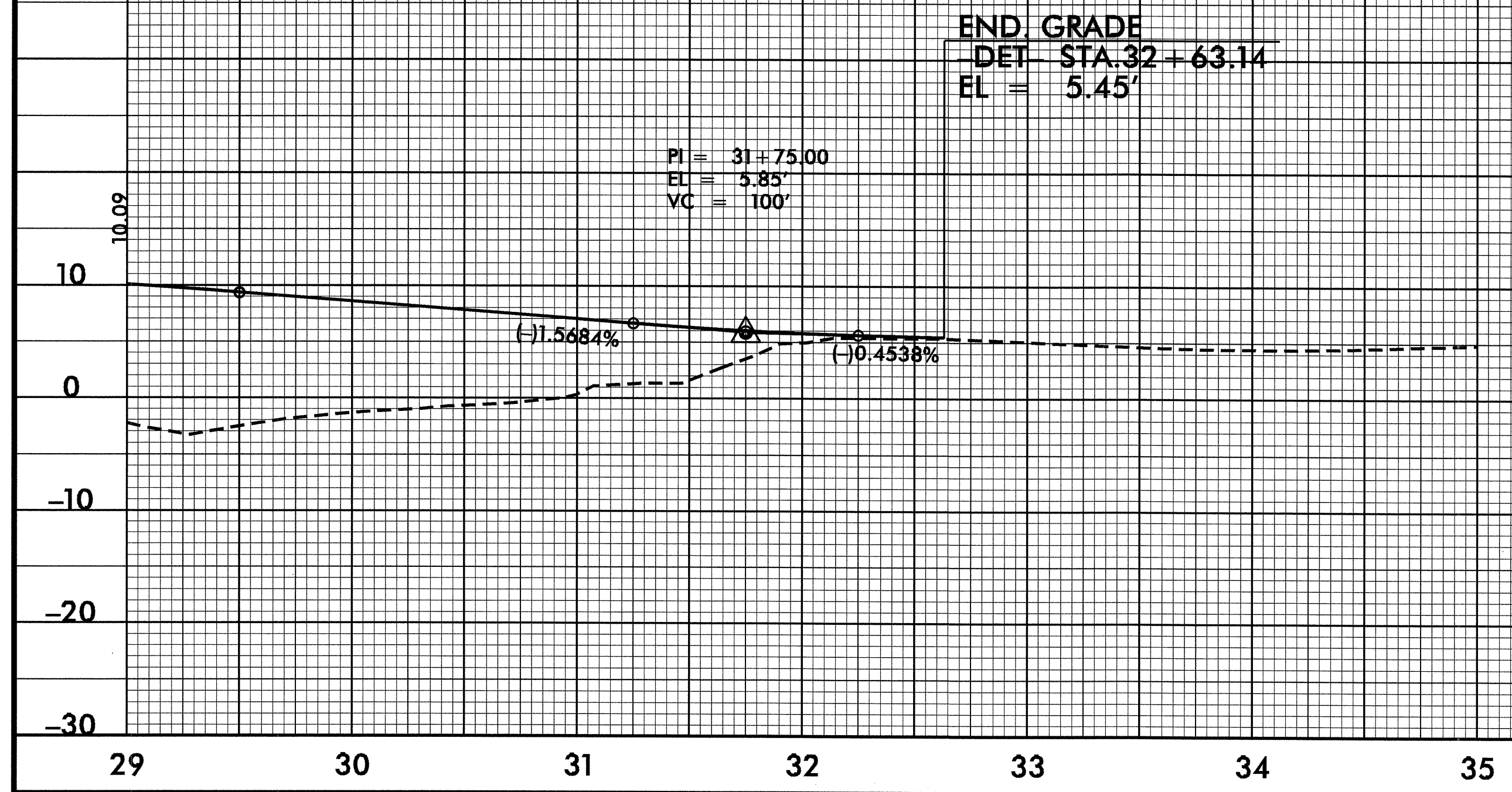
RIGHT DITCH
 LEFT DITCH

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5/28/99

-DET-

PROJECT REFERENCE NO. B-3611	SHEET NO. 12
ROADWAY DESIGN ENGINEER JAMES STURTEVANT JR. PROFESSIONAL ENGINEER SEAL 14493 2/18/10	HYDRAULICS ENGINEER PAUL ATKINSON PROFESSIONAL ENGINEER SEAL 19889 2/18/10



SEE SHEET 2-B FOR -DET- PLAN VIEW

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