

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3684	1	
WAS	F.A. PROJ. NO.	DESCRIPTION	
33225.1.1	BRSTP-1565(4)	P.E.	
33225.2.2	BRSTP-1565(4)	ROW & UTL.	
33225.3.1	BRSTP-1565(7)	CONST.	

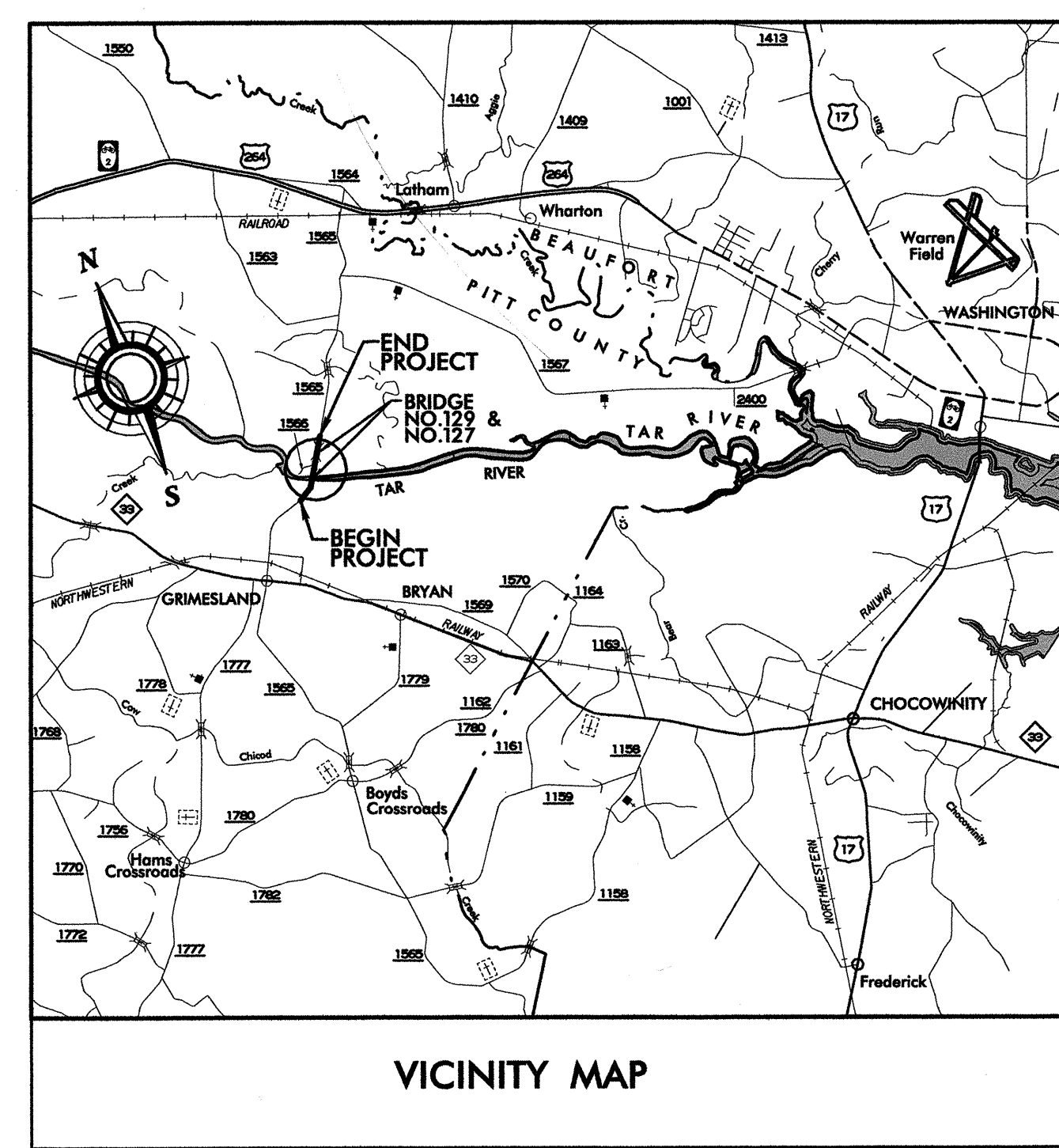
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT COUNTY

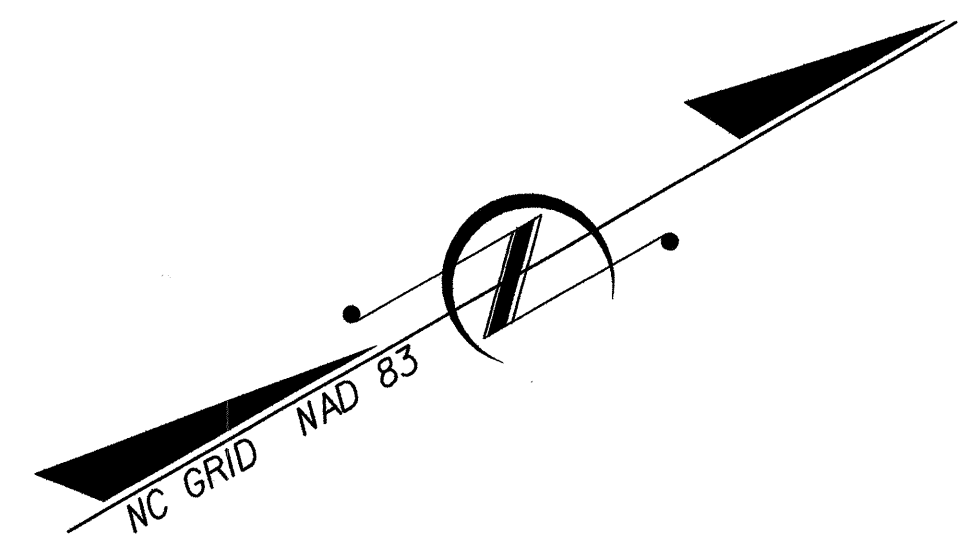
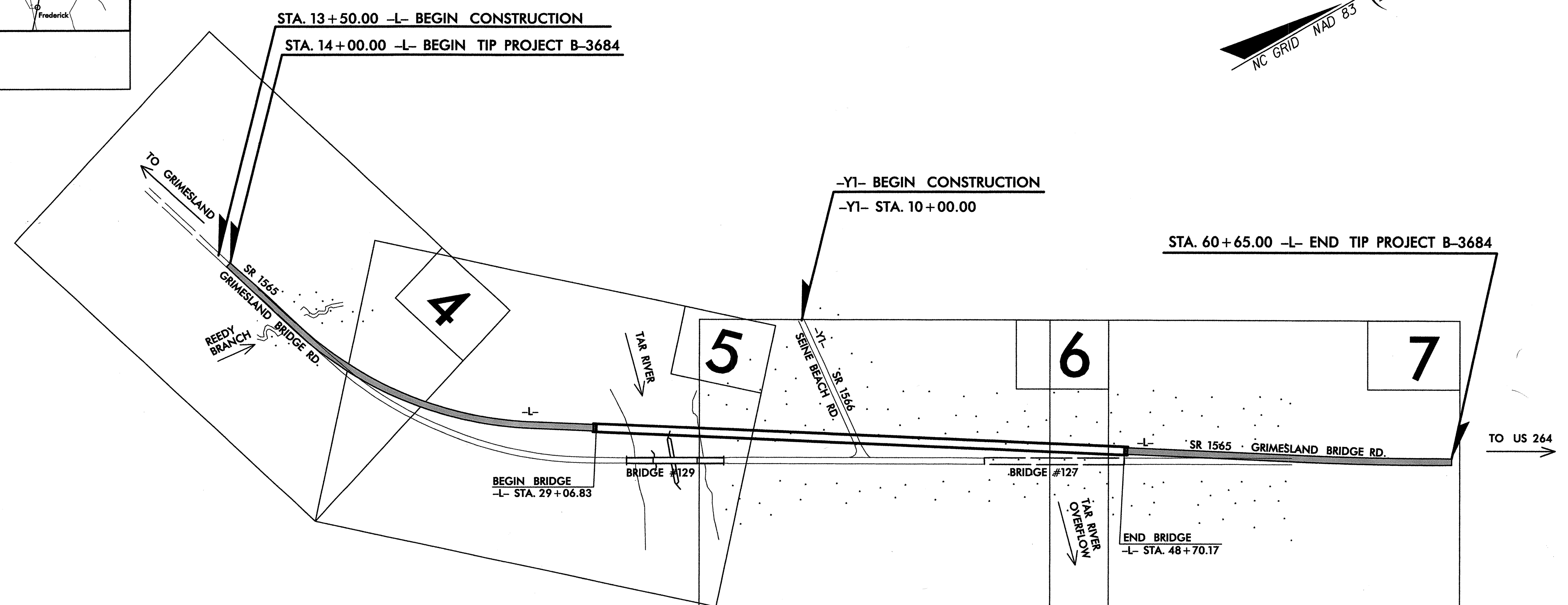
LOCATION: BRIDGE NO. 129 AND NO. 127 OVER
TAR RIVER ON SR 1565

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

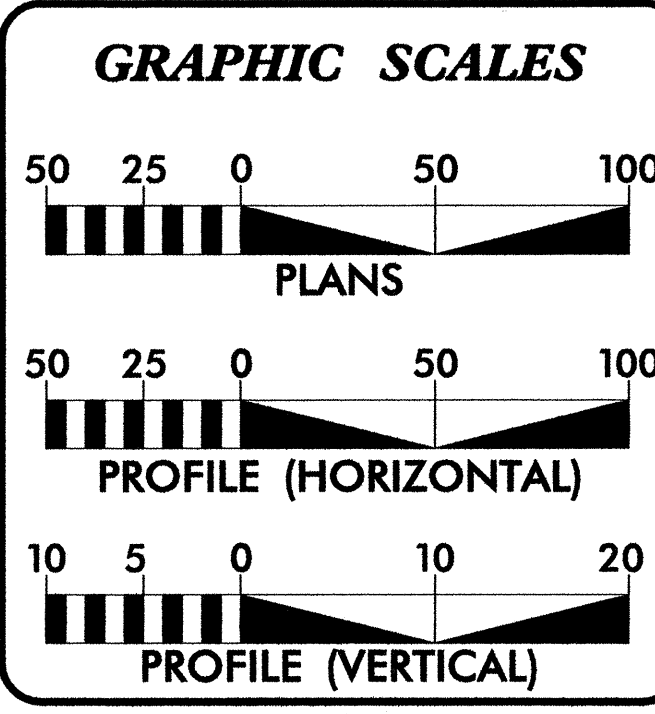
See Sheet 1-A For Index of Sheets



VICINITY MAP



CONTRACT: C201495 T.I.P. PROJECT: B-3684



DESIGN DATA

ADT 2008 =	5,000
ADT 2028 =	7,100
DHV =	13 %
D =	55 %
T =	3 % *
V =	60 MPH
* TTST 1 %	DUAL 2 %
FUNC CLASS = RURAL COLLECTOR	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3684	=	0.512 mi.
LENGTH STRUCTURE TIP PROJECT B-3684	=	0.372 mi.
TOTAL LENGTH TIP PROJECT B-3684	=	0.884 mi.

Prepared in the Office of:

MULKEY
ENGINEERS & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

MARCH 17, 2005
RIGHT OF WAY DATE:
February 17, 2009

LETTING DATE:

NCDOT CONTACT: **CATHY HOUSER, PE**

TIM HAYES, P.E.
MULKEY E & C
PROJECT MANAGER

KEVIN ALFORD, PE
MULKEY E & C
HYDRAULICS ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

4-17-08 P.E.

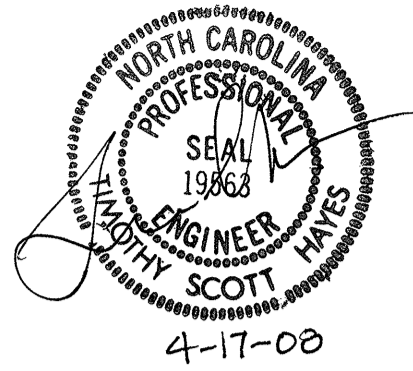
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

cat miller
STATE HIGHWAY DESIGN ENGINEER

P.E.

4/17/2008 R:\Roadway\Projects\B3684\c.dwg TSB.dwg

INDEX OF SHEETS, GENERAL NOTES & LIST OF STANDARDS



Sheet #	Description	GENERAL NOTES:	2006 SPECIFICATIONS	2006 ROADWAY STANDARD DRAWINGS	EFF. 07-18-06
1	Title Sheet		EFFECTIVE: 07-18-06 REVISED:		
1-A	Index of Sheets, General Notes, and List of Standards	GRADING AND SURFACING OR RESURFACING AND WIDENING:		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:	
1-B	Conventional Symbols		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.	STD.NO. TITLE	
1-C	Survey Control Sheet			DIVISION 2 - EARTHWORK	
2	Pavement Schedule, Wedging Detail, and Typical Sections	CLEARING:	CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.	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	
2-A	Junction Box with Manhole Frame & Cover Details Sta. -L- 17+10 LT	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.	DIVISION 3 - PIPE CULVERTS	
2-B	Junction Box with Manhole Frame & Cover Details Sta. -L- 17+10 RT	SHOULDER CONSTRUCTION:	ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.	300.01 Method of Pipe Installation - Method 'A' 310.10 Driveway Pipe Construction	
2-C	Concrete Endwall for Triple 48" RCP Culvert Details Sta. -L- 17+60 LT	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.	DIVISION 4 - MAJOR STRUCTURES	
2-D	Concrete Endwall for Triple 48" RCP Culvert Details Sta. -L- 16+85 RT	UNDERDRAINS:	UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.	422.10 Reinforced Bridge Approach Fills	
2-E	Anchorage for Frames Detail	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.	DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
2-F	Pipe Collar	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" OR "TEMPORARY SHORING-BARRIER SUPPORTED" DEPENDING UPON THE LOCATION OF THE SHORING.	560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I	
2-G	Reinforced Concrete Endwall for Single 60" Pipe, 75 Skew	UTILITIES:	UTILITY OWNERS ON THIS PROJECT ARE EMBARQ & EDGEcombe-MARTIN EMC, PROGRESS ENERGY	DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
2-H	Embankment Monitoring Detail	RIGHT-OF-WAY MARKERS:	ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.	654.01 Pavement Repairs	
2-I	Standard Temporary Shoring			DIVISION 8 - INCIDENTALS	
2-J	Standard Temporary Mechanically Stabilized Earth (MSE) Walls			815.03 Pipe Underdrain and Blind Drain 838.01 Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew 838.11 Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew 838.45 Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40 838.80 Precast Endwalls - 12" thru 72" Pipe 90 Skew 840.00 Concrete Base Pad for Drainage Structures	
2-K	Standard Temporary MSE Walls Reinforcement Tables-English Units			840.29 Frames and Narrow Slot Flat Grates 840.31 Concrete Junction Box - 12" thru 66" Pipe 840.32 Brick Junction Box - 12" thru 66" Pipe 840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates 840.45 Precast Drainage Structure 840.46 Traffic Bearing Precast Drainage Structure 840.54 Manhole Frame and Cover 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 862.04 Anchoring End of Guardrail - B-77 and B-83 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	
2-L	Temporary Fabric Wall				
2-M	Hilfiker Temporary Wall				
2-N	Sierrascape Temporary Wall				
2-O thru 2-Q	Retained Earth Temporary Wall				
2-R thru 2-T	Terratrel Temporary Wall				
3	Summary of Quantities				
3-A	List of Pipe, Endwalls, Etc. (For Pipes 48" & Under) & List of Pipe, Endwalls, Etc. (For Pipes 54" & Over)				
3-B	Summary of Earthwork in Cubic Yards, Summary of Pavement Removal & Guardrail Summary				
3-C	Parcel Index				
4-7	Plans				
8-9	Profile				
TCP-1 thru TCP-12	Traffic Control Plans				
PM-1	Pavement Marking Plans				
EC-1 thru EC-13	Erosion Control Plans				
RF-1 thru RF-2	Reforestation Plan				
SIGN-1 thru SIGN-7	Signing Plans				
UO-1 thru UO-5	Utilities by Others Plans				
X-1	Cross-Section Summary Sheet				
X-2 thru X-34	Cross-Sections				
S-1 thru S- 67	Structure Plans				

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. B-3684
SHEET NO. 1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○
Property Corner	⊗
Property Monument	□
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

Stream or Body of Water	_____
Hydro, Pool or Reservoir	_____
Jurisdictional Stream	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	←
Disappearing Stream	→
Spring	○
Swamp Marsh	*
Proposed Lateral, Tail, Head Ditch	← FLOW
False Sump	◇

RAILROADS:

Standard Gauge	_____
RR Signal Milepost	CSX TRANSPORTATION MILEPOST 35
Switch	SWITCH
RR Abandoned	_____
RR Dismantled	_____

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	_____
Proposed Right of Way Line	_____
Proposed Right of Way Line with Iron Pin and Cap Marker	_____
Proposed Right of Way Line with Concrete or Granite Marker	_____
Existing Control of Access	⊕
Proposed Control of Access	⊕
Existing Easement Line	E
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Utility Easement	PUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	F
Proposed Wheel Chair Ramp	WCR
Curb Cut for Future Wheel Chair Ramp	CCFR
Existing Metal Guardrail	_____
Proposed Guardrail	_____
Existing Cable Guiderail	_____
Proposed Cable Guiderail	_____
Equality Symbol	⊕
Pavement Removal	_____

VEGETATION:

Single Tree	⊕
Single Shrub	⊕
Hedge	_____
Woods Line	_____
Orchard	⊕
Vineyard	Vineyard

EXISTING STRUCTURES:

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

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	PH
H-Frame Pole	●
Recorded U/G Power Line	P
Designated U/G Power Line (S.U.E.*)	P

TELEPHONE:

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

WATER:

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

TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	PH
Recorded U/G TV Cable	TV
Designated U/G TV Cable (S.U.E.*)	TV
Recorded U/G Fiber Optic Cable	TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	TV FO

GAS:

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

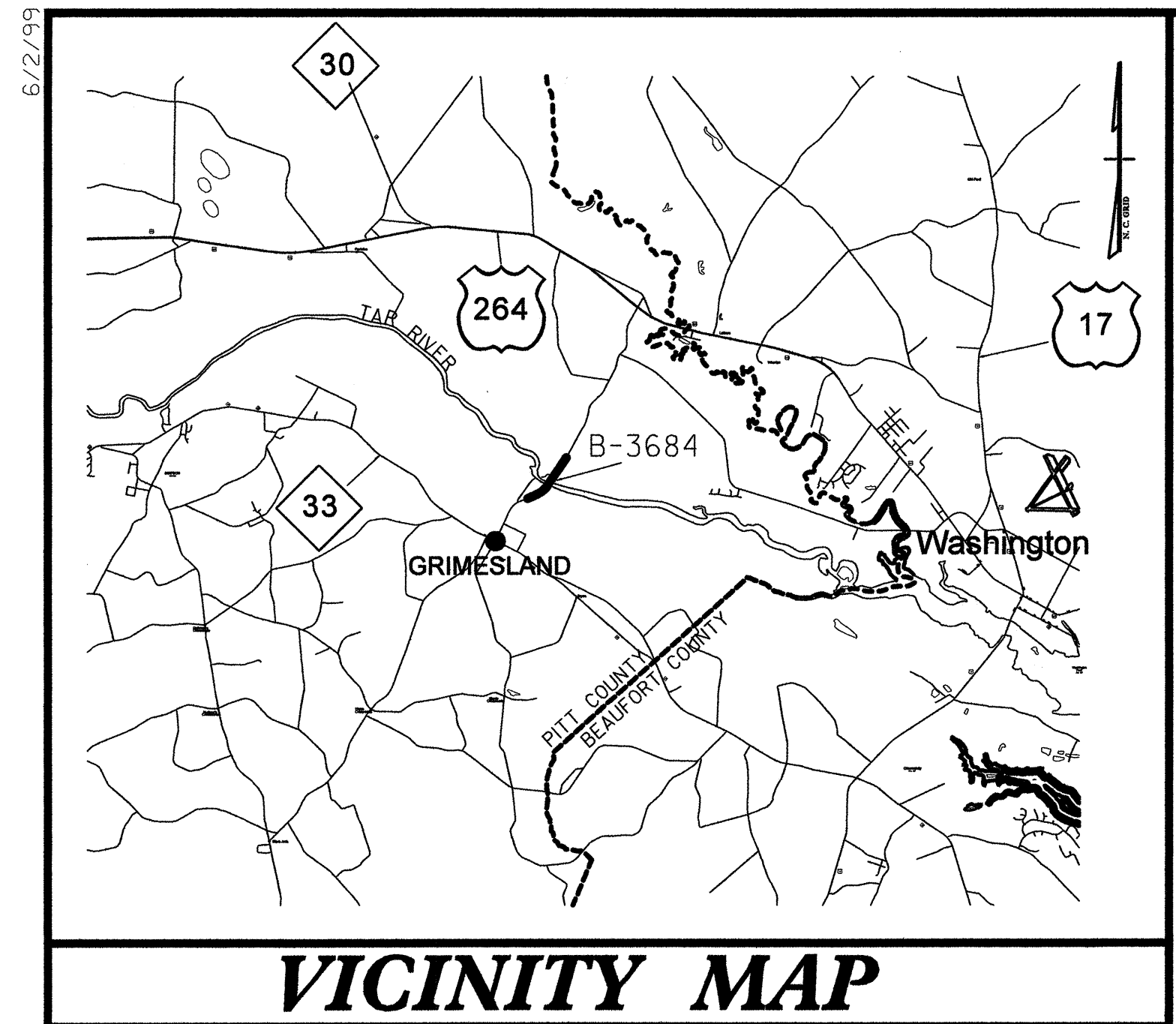
SANITARY SEWER:

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

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊕
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	U/L
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-3684

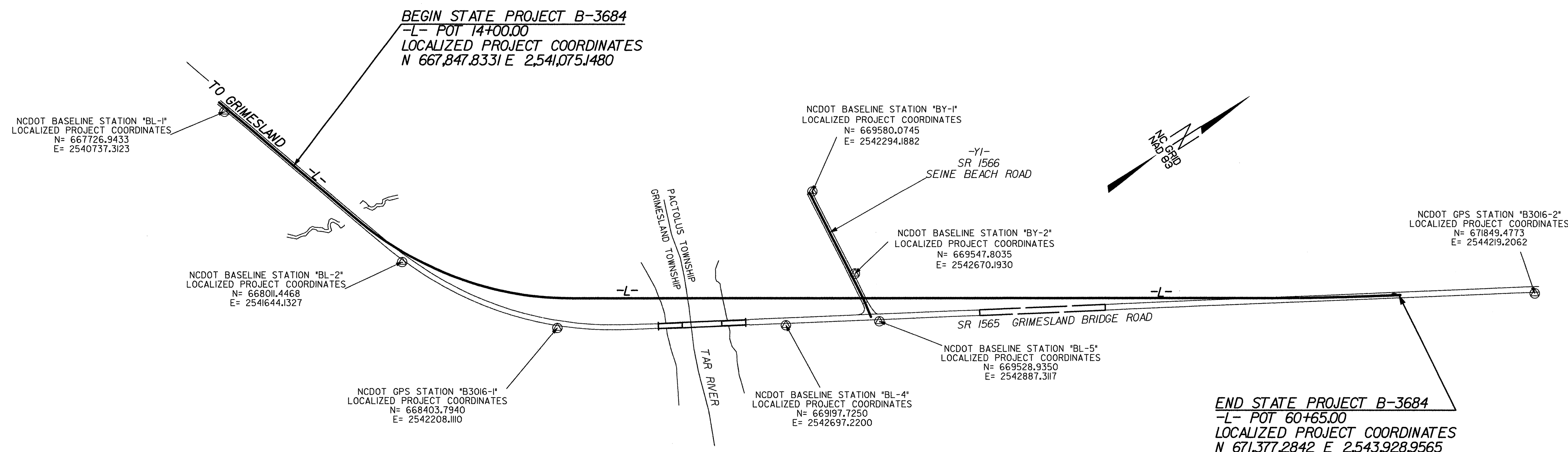


VICINITY MAP

BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	667726.9433	2540737.3123	28.61	10+41.48	14.54 RT
2	BL-2	668011.4468	2541644.1327	24.70	19+86.43	37.52 RT
3	GPS B3016-1	668403.7940	2542208.1110	18.69	26+36.54	122.87 RT
4	BL-4	669197.7250	2542697.2200	14.07	35+64.31	110.47 RT
5	BL-5 + BY-3	669528.9350	2542887.3117	11.25	39+45.85	94.21 RT
6	GPS B3016-2	671849.4773	2544219.2062	10.35	OUTSIDE PROJECT LIMITS	

BY POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
50	BY-1	669580.0745	2542294.1883	6.56	OUTSIDE PROJECT LIMITS	
51	BY-2	669547.8035	2542670.1930	5.96	13+77.24	15.17 LT
52	BY-3 + BL-5	669528.9350	2542887.3117	11.25	OUTSIDE PROJECT LIMITS	



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3016-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 668403.794(ft) EASTING: 2542208.111(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978233 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3016-1" TO L- STATION 14+00.00 IS S 63°51'43.8" W 1262.02 ft. ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT FILE: b3684_ls_control_030909.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.

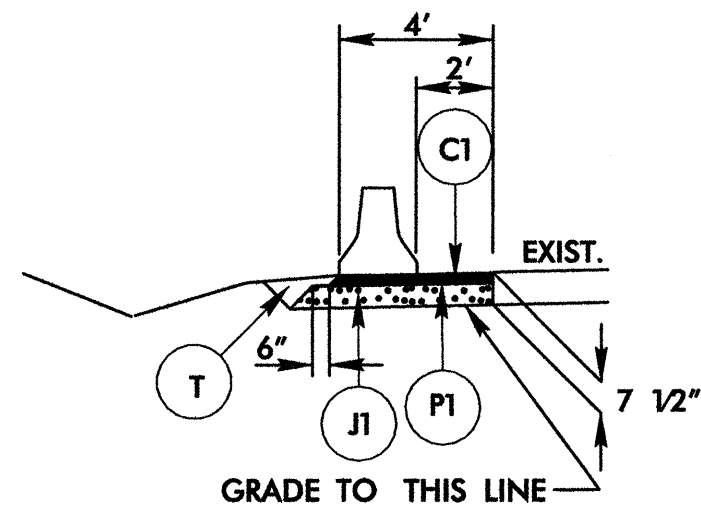
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

THE ONLY BENCHMARK INFORMATION ON THIS PROJECT IS THE BASELINE.

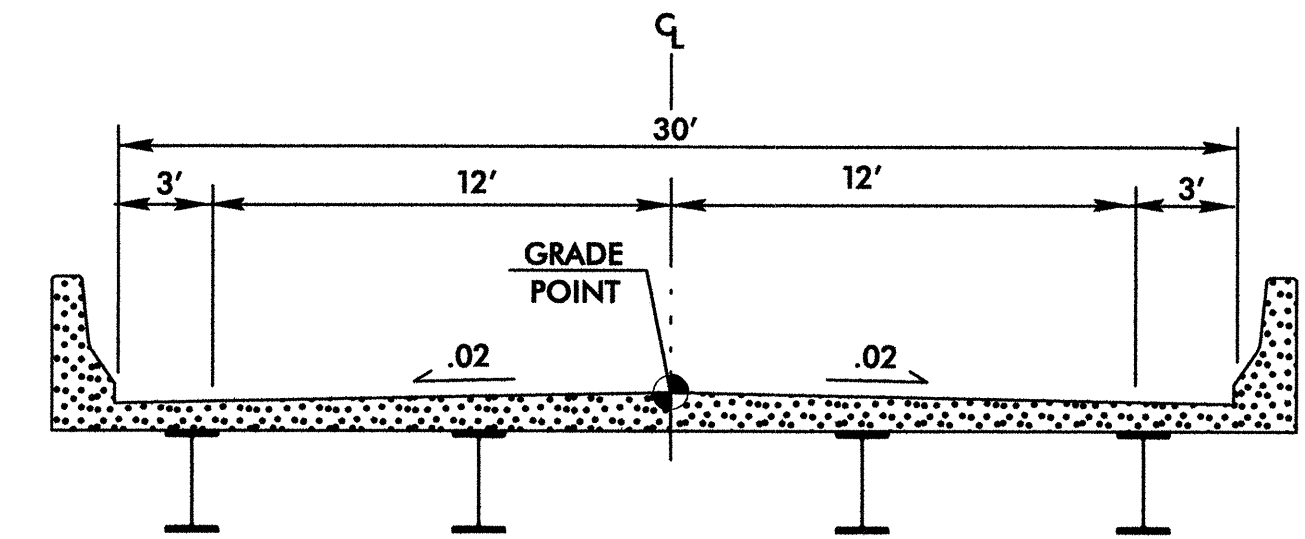
NOTE: DRAWING NOT TO SCALE

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PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 1½" 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 1½" OR GREATER THAN 2" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROPOSED 6" AGGREGATE BASE COURSE
P1	PRIME COAT AT THE RATE OF 0.35 GAL. PER. SQ. YARD
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAIL)



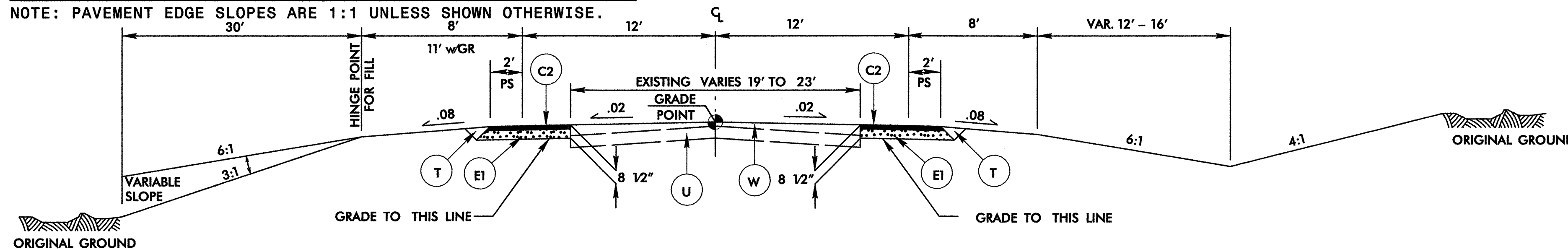
TEMPORARY PAVEMENT DETAIL



TYPICAL SECTION ON STRUCTURE

-L- STA 29+06.83 (BEGIN BRIDGE) TO 48+70.17 BRIDGE)

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

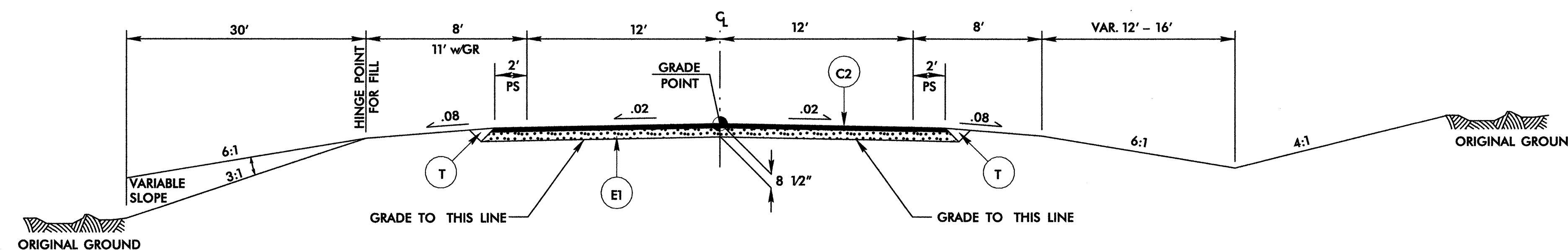


TYPICAL ROADWAY SECTION 1

-L- STA 15+50.00 TO 20+00.00
-L- STA 55+00.00 TO 60+15.00

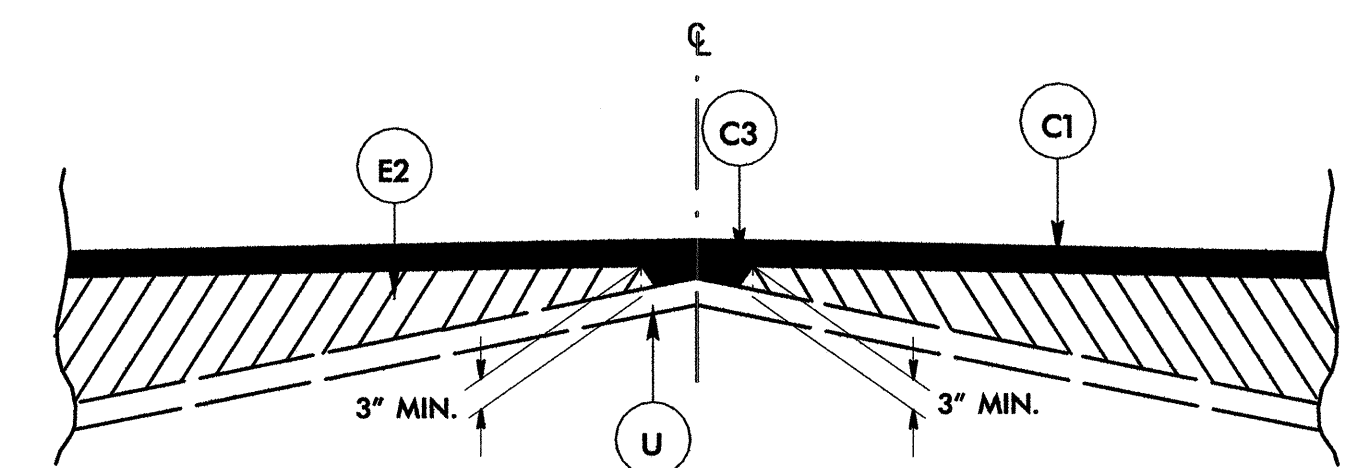
TRANSITION FROM EXISTING TO T.S. NO 1

-L- STA 14+00.00 TO 15+50.00
-L- STA 60+15.00 TO 60+65.00



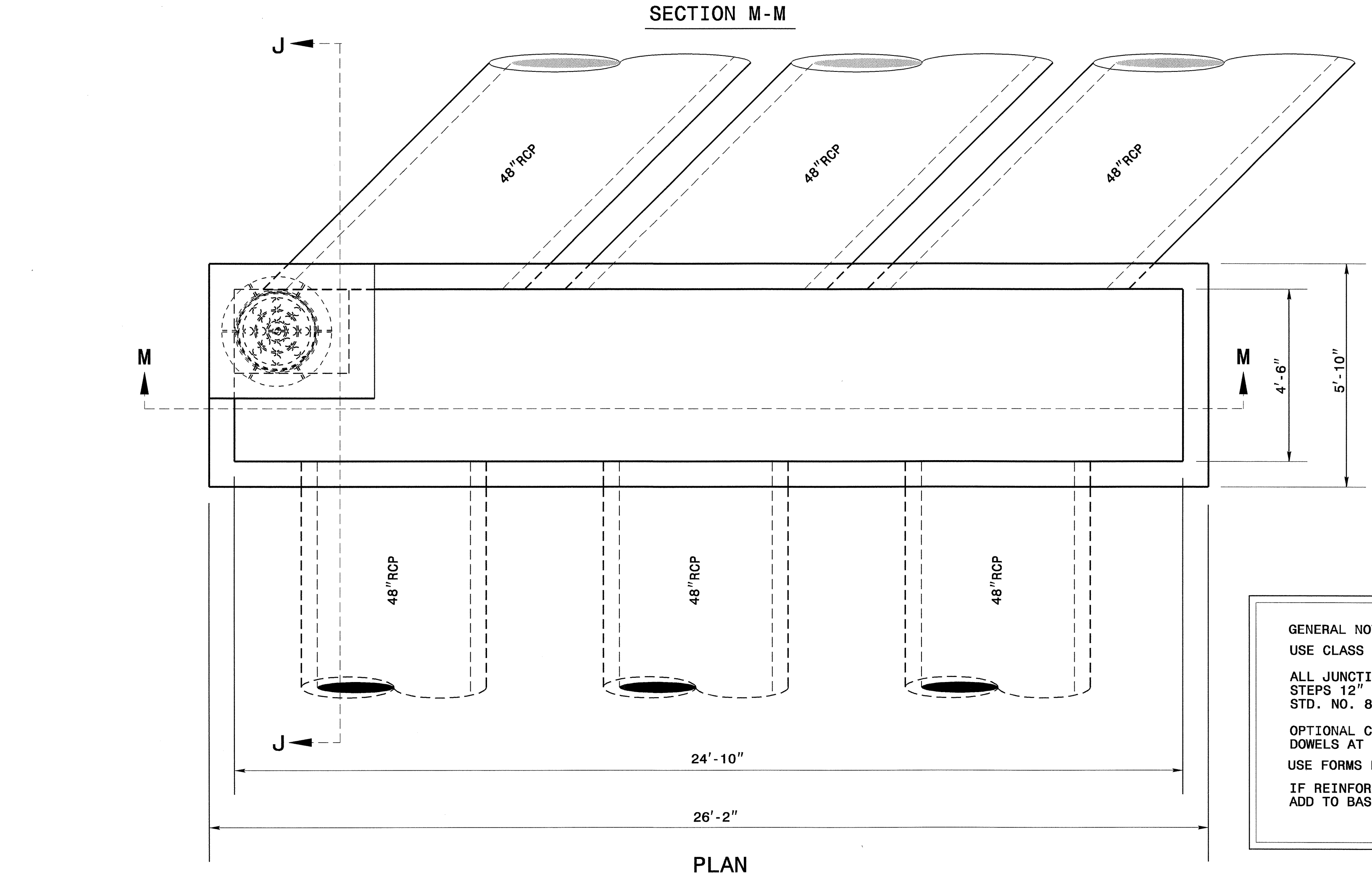
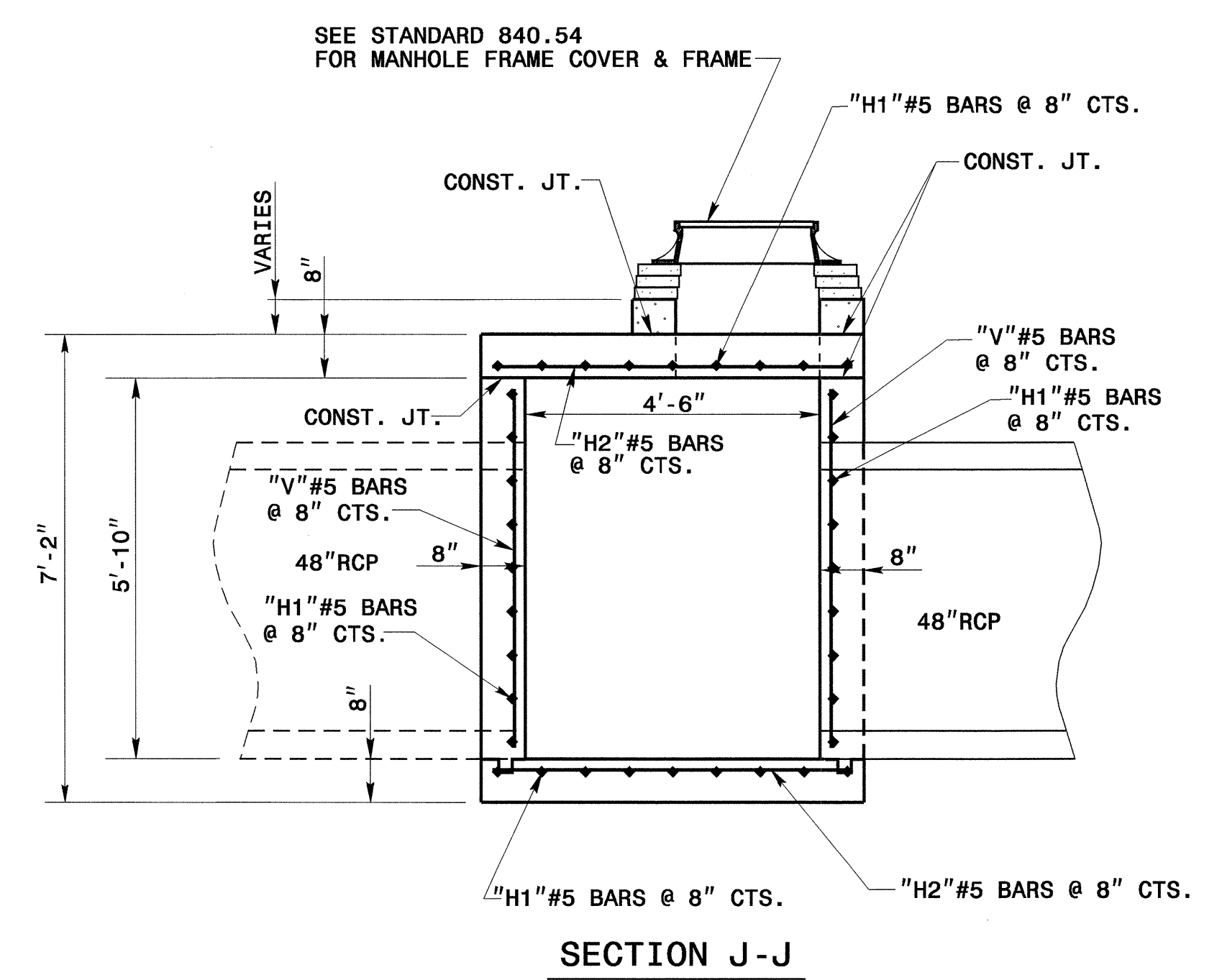
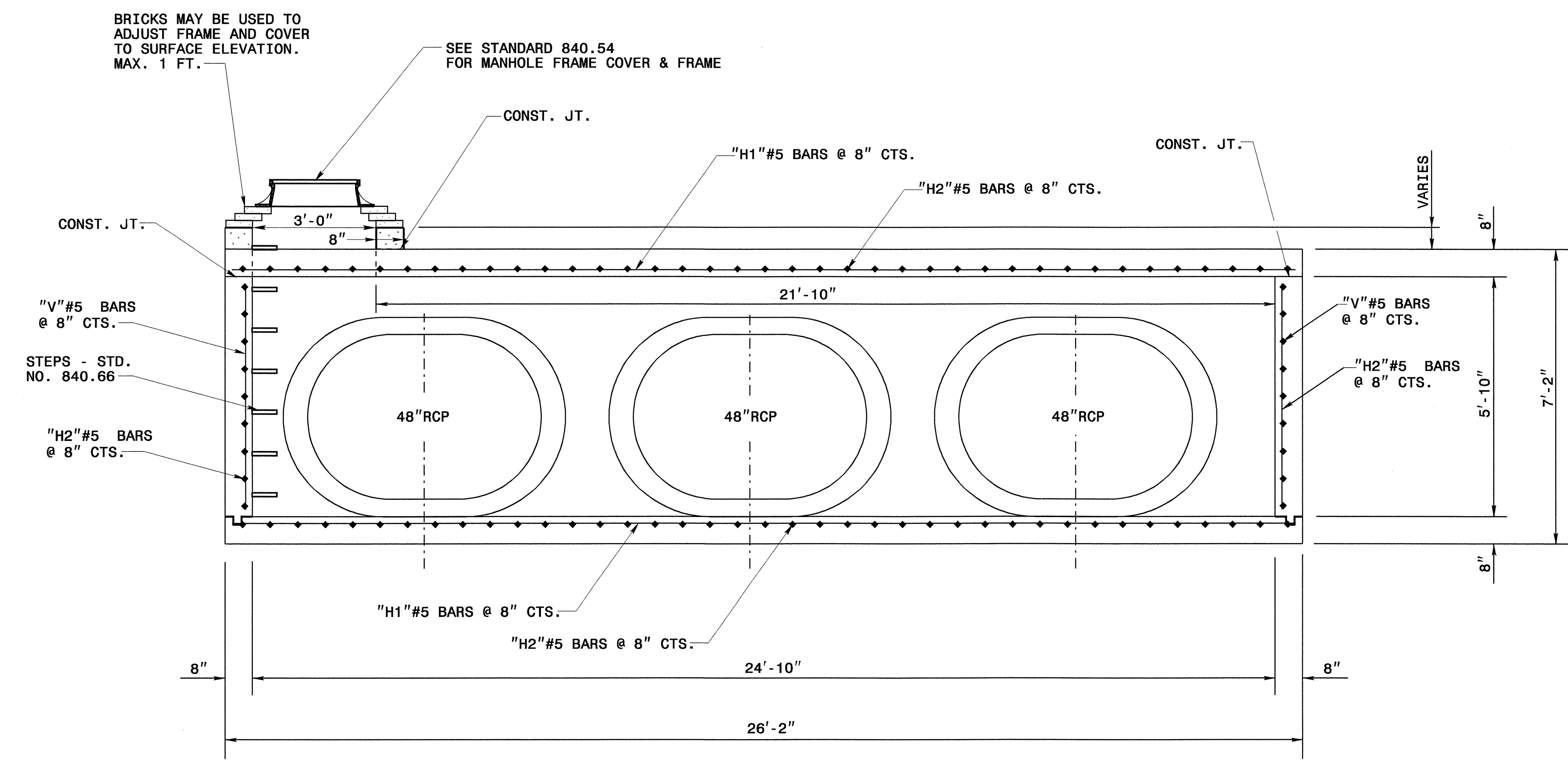
TYPICAL ROADWAY SECTION 2

-L- STA 20+00.00 TO 29+06.83 (BEGIN BRIDGE)
-L- STA 48+70.17 (END BRIDGE) TO 55+00.00



DETAIL SHOWING METHOD OF WEDGING

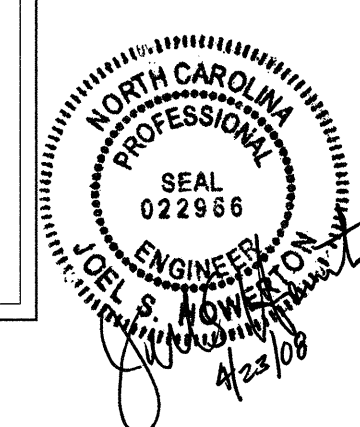
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BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H1	36	#5	25'-10"	970
H2	96	#5	5'-6"	551
V	96	#5	5'-6"	551
TOTAL REINF. STEEL (LBS.)				2072
TOTAL CONC. (CU. YDS.)				16.4
CONC. DEDUCTION (CU. YDS.)				-3.4
6 PIPES @ 48"				
TOTAL CONC. (CU. YDS.)				13

0.42 CU. YDS PER FOOT OF RISER HEIGHT

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 ALL JUNCTION BOXES OVER 3'-6" IN DEPTH TO BE PROVIDED WITH STEPS 12" ON CENTER. STEPS SHALL BE IN ACCORDANCE WITH STD. NO. 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR CONSTRUCTION OF BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OR BOX, ADD TO BASE AS SHOWN ON STD. NO. 840.00.



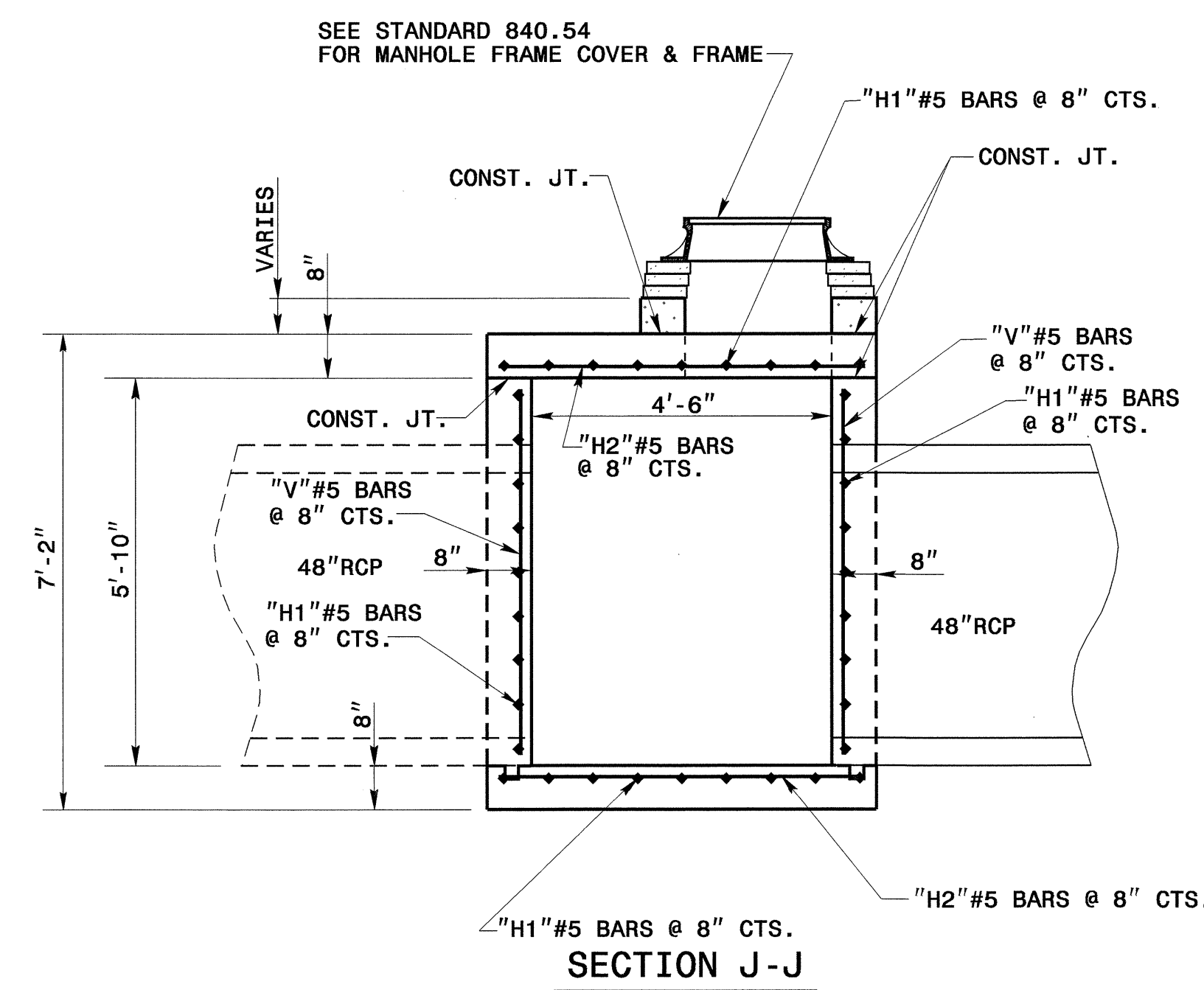
**DESIGN SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN**
 Office 919-250-4128 FAX 919-250-4119

**JUNCTION BOX W/
 MANHOLE FRAME & COVER
 STR. -L-17+10 LT.**

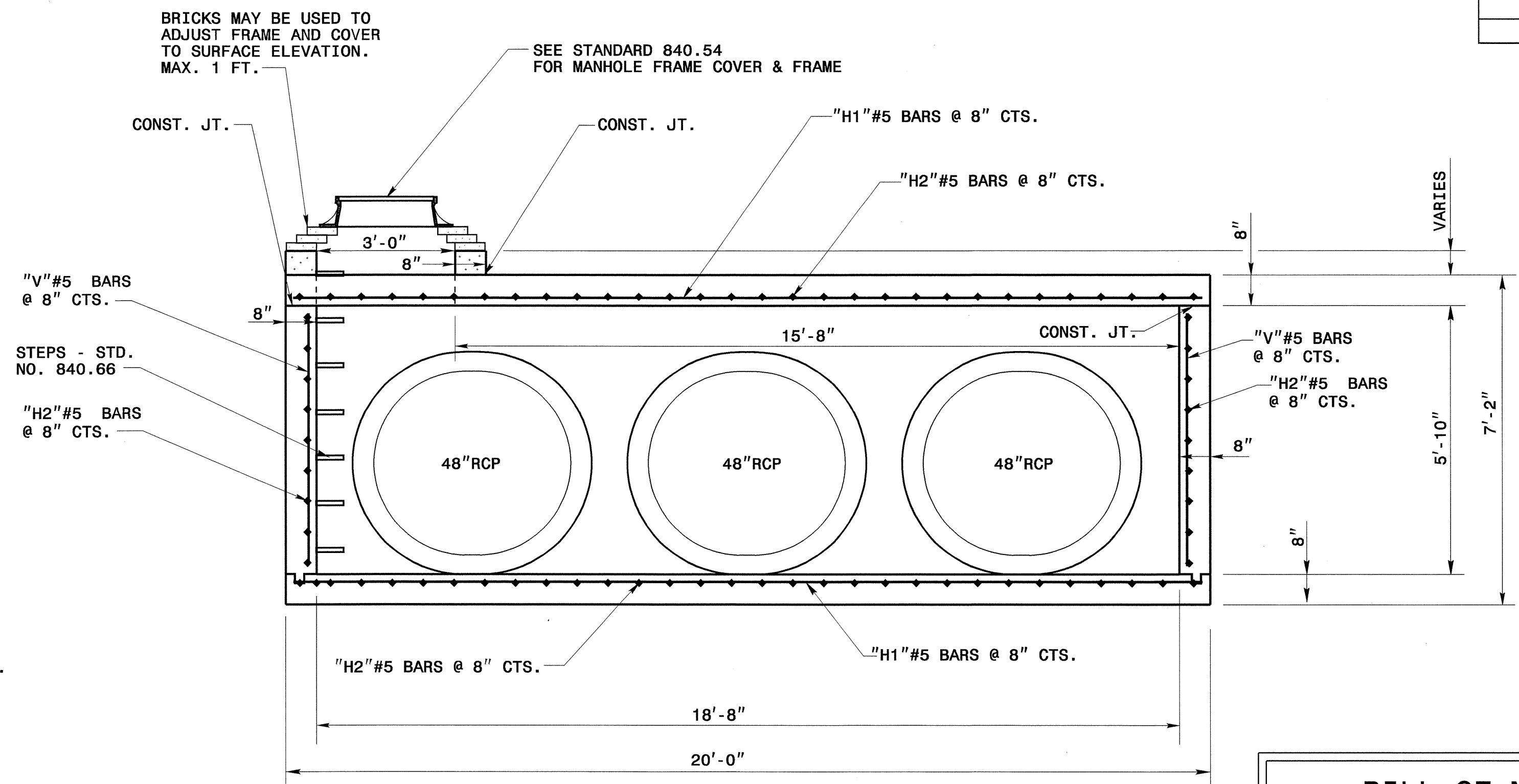
ORIGINAL BY: rnbritt DATE: 04-08-05
 MODIFIED BY: rnbritt DATE: 4/2/05
 CHECKED BY: [Signature] DATE: 4/2/05
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I:\APR-2005_01\31
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 ,rbritt

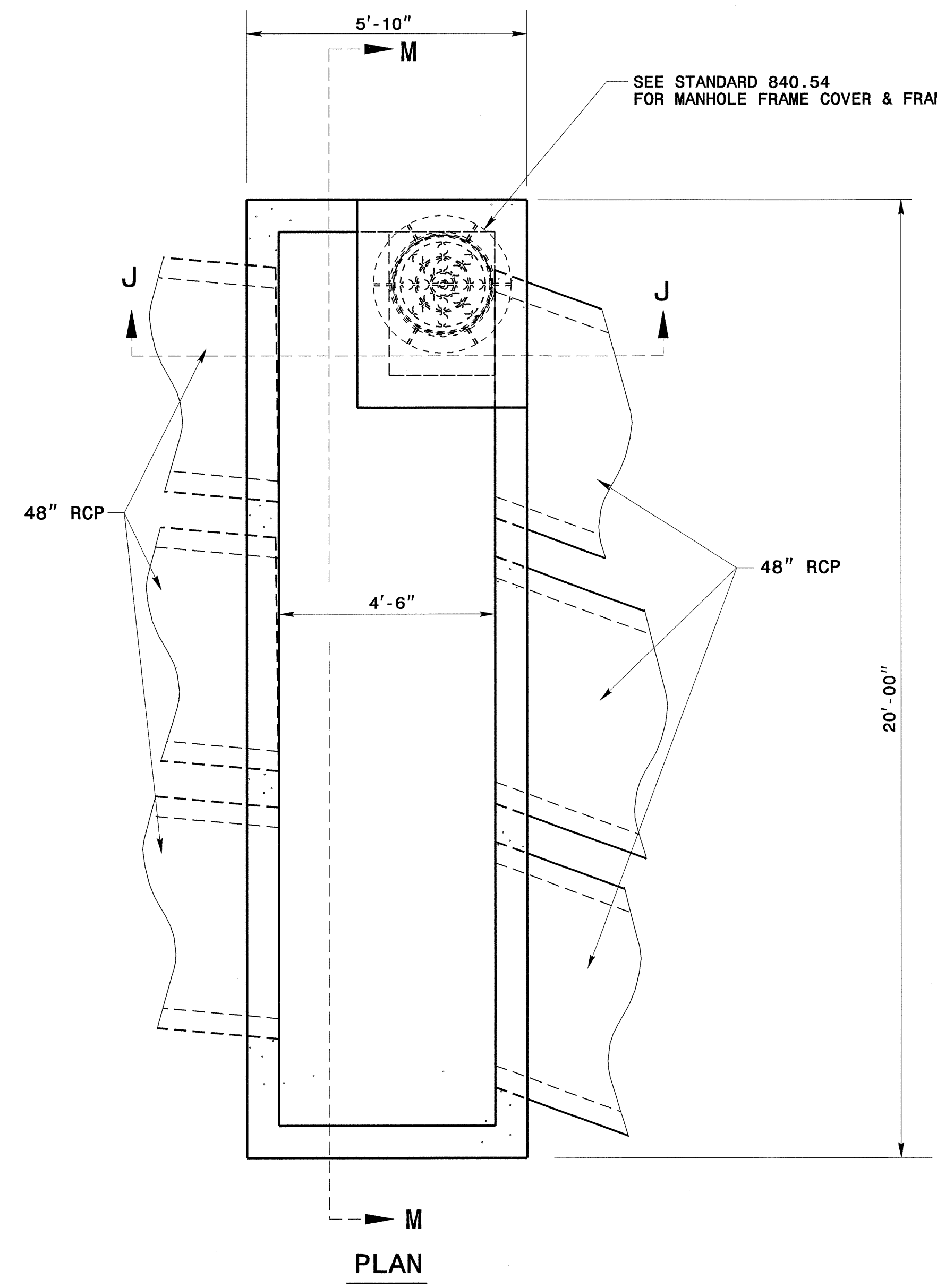
5/14/05



SECTION J-J



SECTION M-M



PLAN

BRICKS MAY BE USED TO ADJUST FRAME AND COVER TO SURFACE ELEVATION. MAX. 1 FT.

SEE STANDARD 840.54 FOR MANHOLE FRAME COVER & FRAME

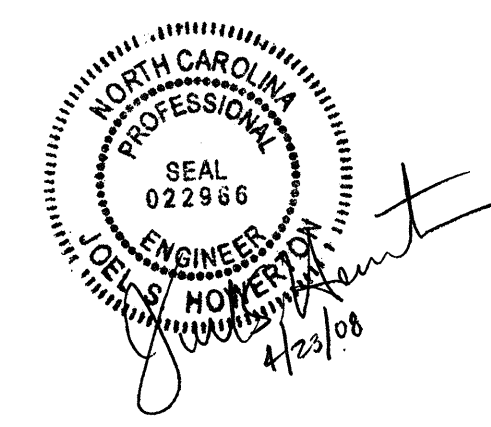
SEE STANDARD 840.54 FOR MANHOLE FRAME COVER & FRAME

STEPS - STD. NO. 840.66

GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 ALL JUNCTION BOXES OVER 3'-6" IN DEPTH TO BE PROVIDED WITH STEPS 12" ON CENTER. STEPS SHALL BE IN ACCORDANCE WITH STD. NO. 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR CONSTRUCTION OF BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OR BOX, ADD TO BASE AS SHOWN ON STD. NO. 840.00.

BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H1	36	#5	19'-8"	739
H2	78	#5	5'-6"	448
V	78	#5	5'-6"	448
TOTAL REINF. STEEL (LBS.)				1635
CONCRETE (CU. YDS.)				12.8
CONC. DEDUCTION (CU. YDS.)				-2.8
6 PIPES @ 48"				
TOTAL CONC. (CU. YDS.)				10

0.42 CU. YDS PER FOOT OF RISER HEIGHT

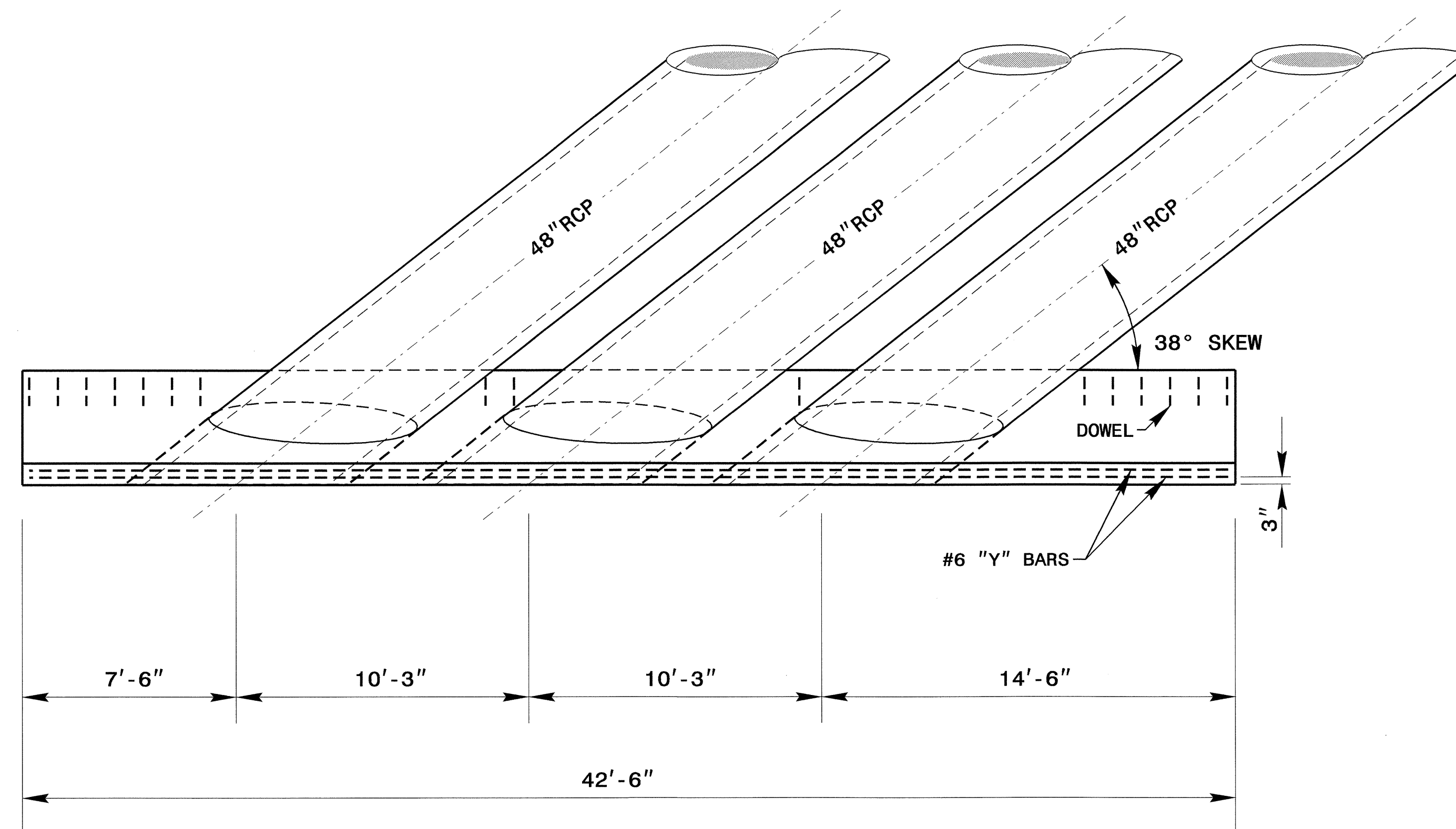


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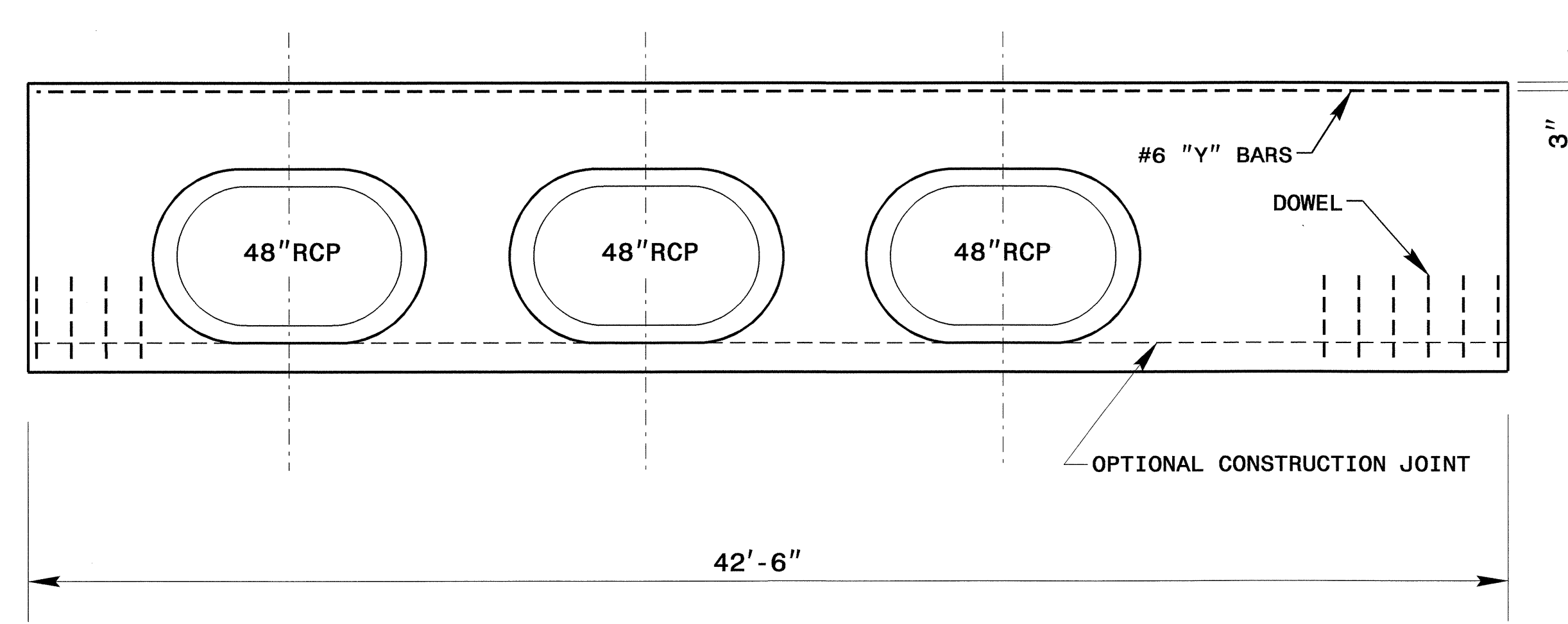
**JUNCTION BOX W/
 MANHOLE FRAME & COVER
 STR. -L-17+10 RT.**

ORIGINAL BY: rnbritt DATE: 04-08-05
 MODIFIED BY: rnbritt DATE: 04-08-05
 CHECKED BY: [Signature] DATE: 4/2/05
 FILE SPEC.: details/nbritt/english/bridge/b3684endwall.dgn

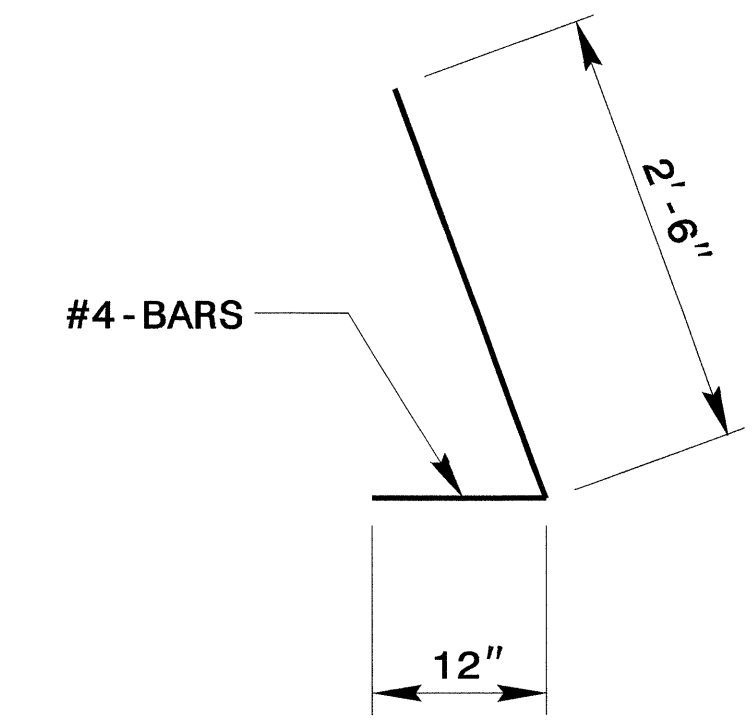
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 rnbritt



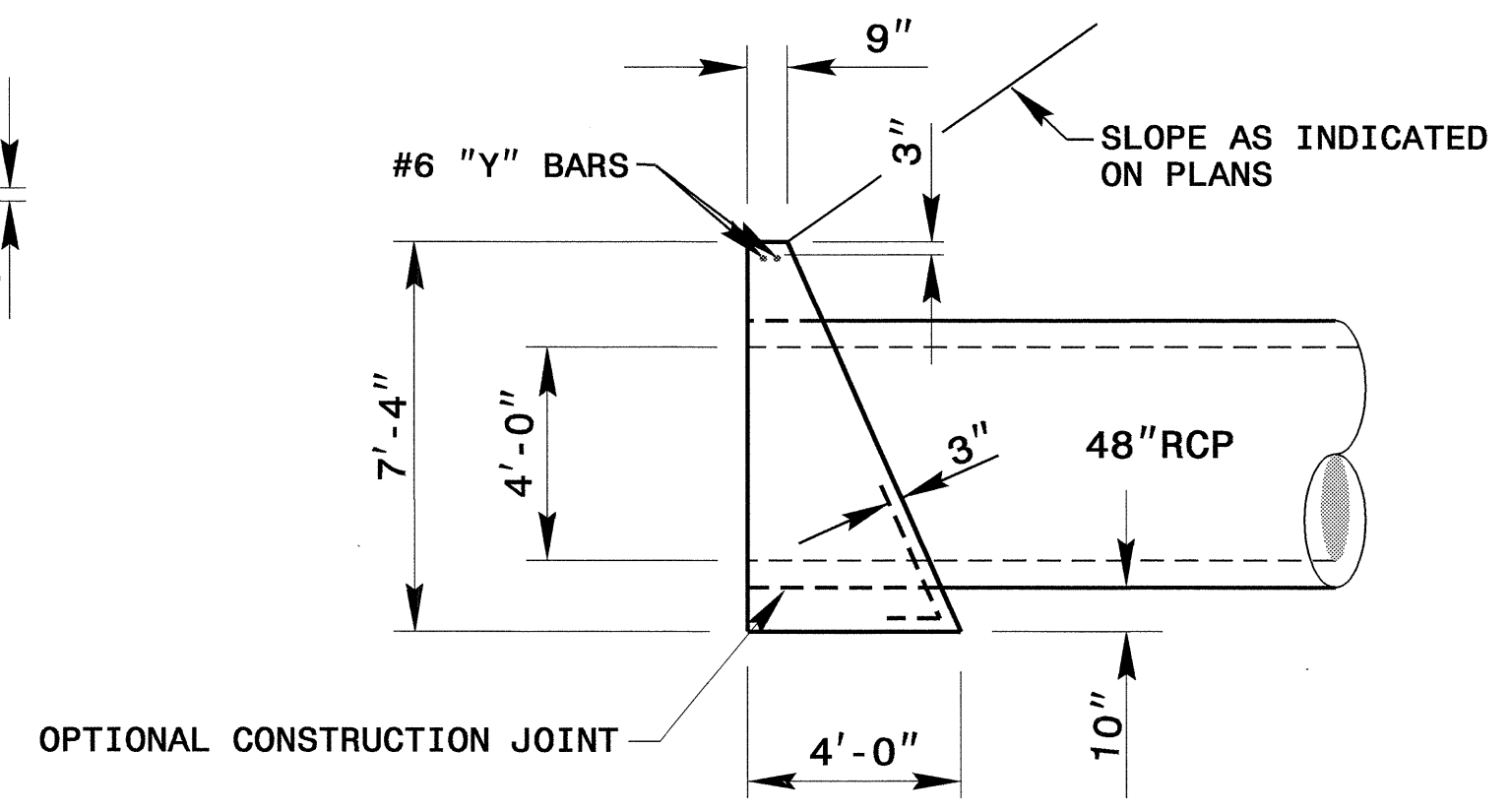
PLAN



ELEVATION



**DOWEL
BAR "X"**

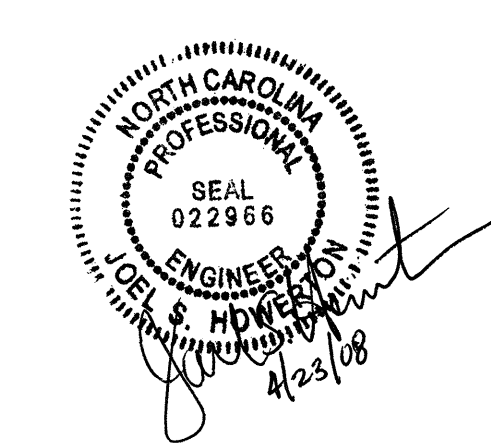


END ELEVATION

BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
X	17	#4	3'-6"	40
Y	2	#6	42'-0"	128
TOTAL REINF. STEEL (lbs.)				168
CONCRETE (CU. YDS.)				27.4
DEDUCTIONS FOR PIPES				
3 @ 48" RCP				-5.4
TOTAL CONCRETE (CU. YDS.)				22

- GENERAL NOTES:**
- CHAMFER ALL CORNERS 1".
 - THE CONTRACTOR WILL BE REQUIRED TO PLACE 2 - #6 BARS "Y" IN THE TOP OF ALL ENDWALLS FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
 - USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 - WALL THICKNESS SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT ARE USED ONLY IN COMPUTING ENDWALL QUANTITIES.
 - IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, BAR X (DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS TO BE APPROXIMATELY 12" CENTER UNLESS ENGINEER DIRECTS OTHERWISE.
 - WHEN CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE AND POURS BASE SEPERATELY, THE TOP BASE SHALL BE LEFT ROUGH.
 - USE CLASS "B" CONCRETE.

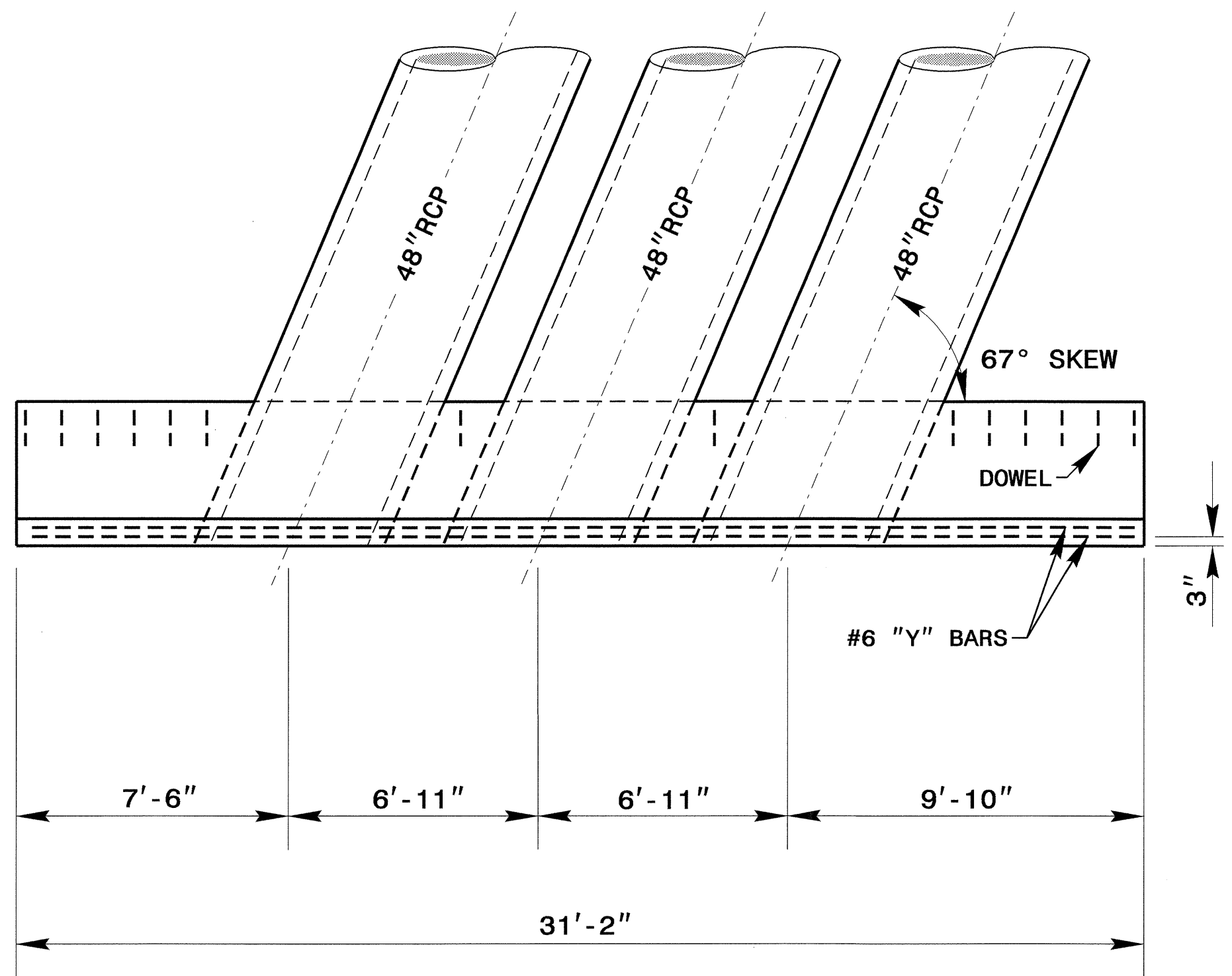


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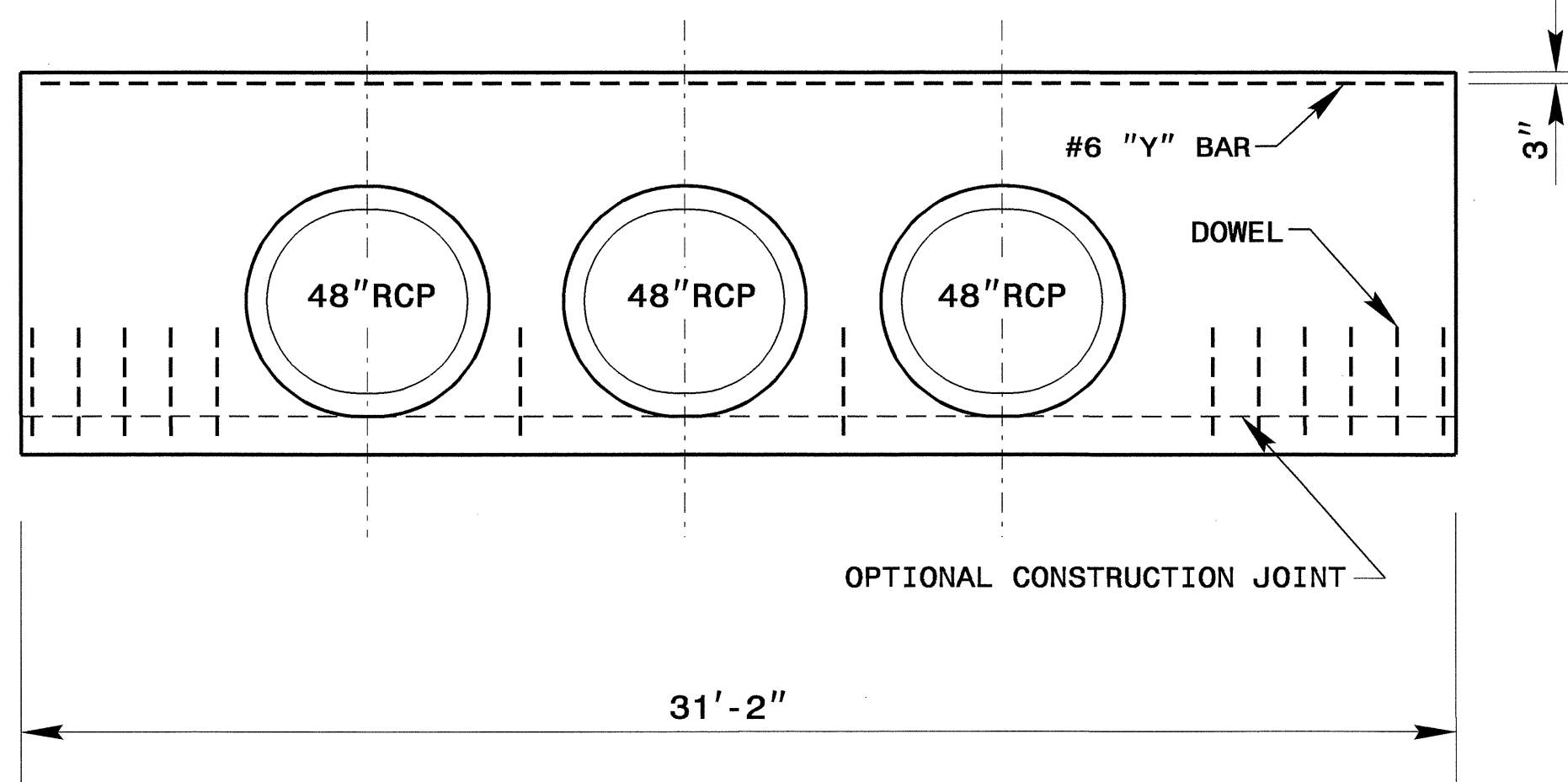
**CONCRETE ENDWALL FOR
TRIPLE 48" RCP CULVERT
STA. -L-17+60 LT.**

ORIGINAL BY: nbritt DATE: 04-06-05
 MODIFIED BY: nbritt DATE: 4/22/05
 CHECKED BY: *Joe S. Howard* DATE: 4/22/05
 FILE SPEC.: details/nbritt/english/hydro/b3684endwall

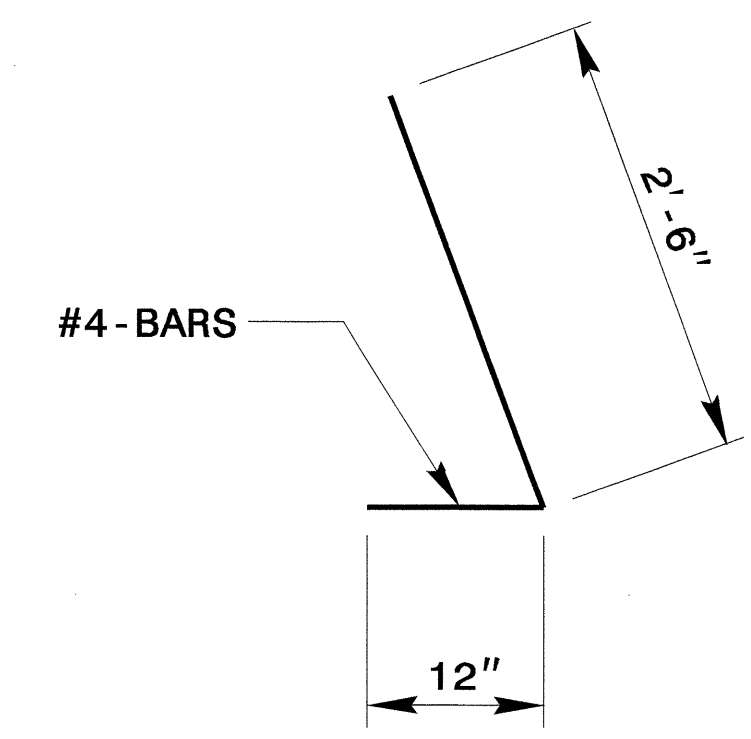
5/14/09
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S:\Contractors\Special Details\nbritt\english\hydro\b3684_endwall.dgn
nbritt -A1



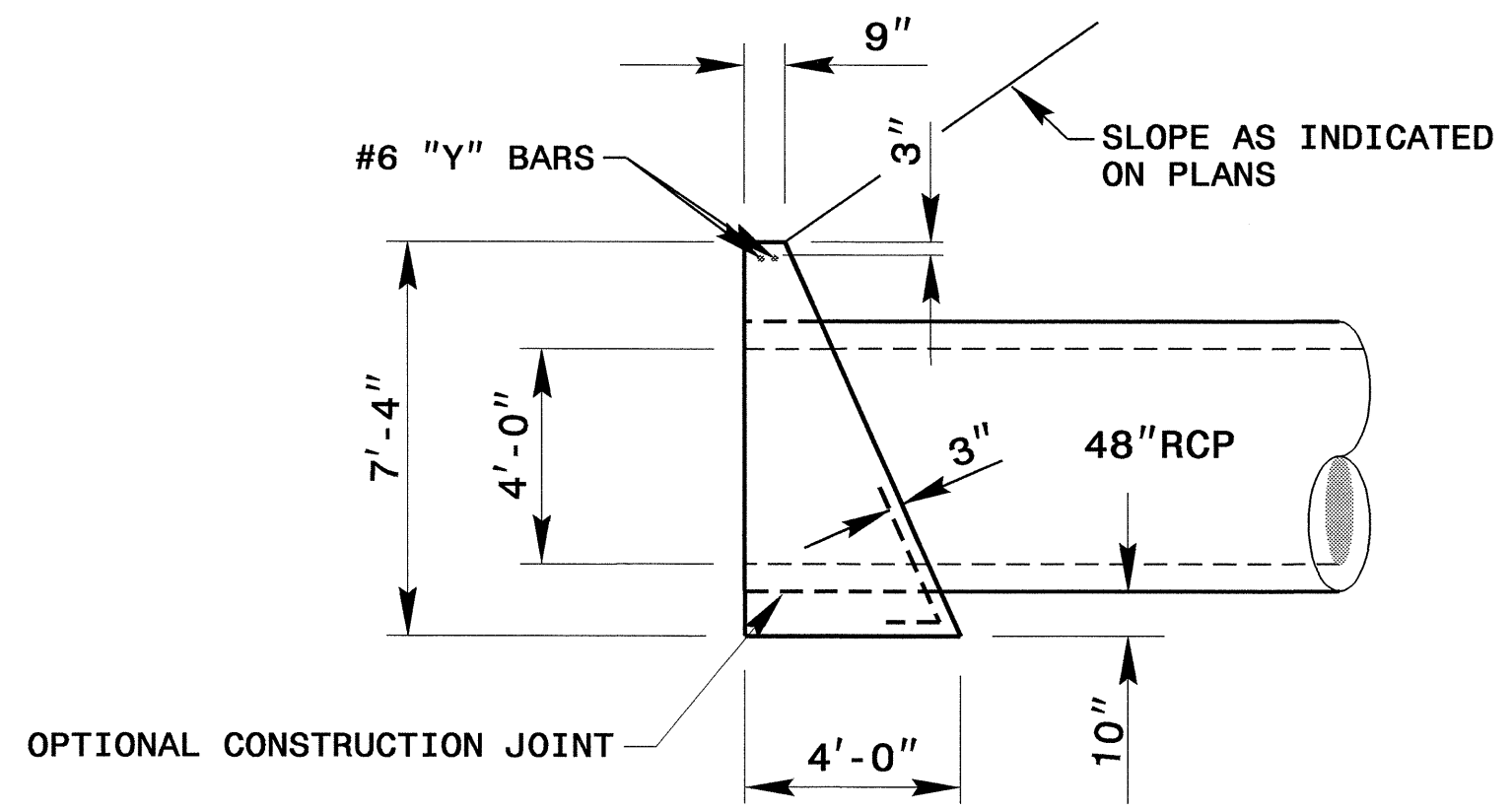
PLAN



ELEVATION



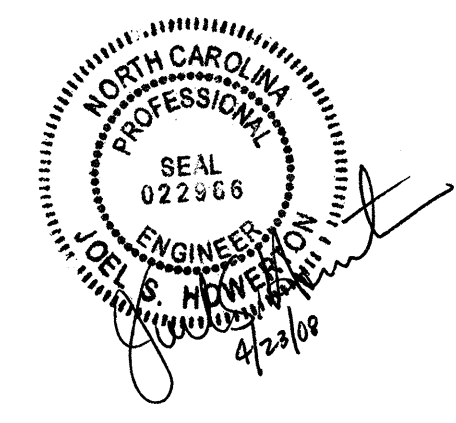
**DOWEL
BAR "X"**



END ELEVATION

BILL OF MATERIALS				
BAR	QTY	SIZE	LENGTH	WEIGHT
X	14	#4	3'-6"	33
Y	2	#6	30'-8"	93
TOTAL REINF. STEEL (lbs.)				126
CONCRETE (CU. YDS.)				20.1
DEDUCTIONS FOR PIPES				
3 @ 48" RCP				-5.4
TOTAL CONCRETE (CU. YDS.)				14.7

- GENERAL NOTES:**
- CHAMFER ALL CORNERS 1".
 - THE CONTRACTOR WILL BE REQUIRED TO PLACE 2 - #6 BARS "Y" IN THE TOP OF ALL ENDWALLS FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
 - USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 - WALL THICKNESS SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT ARE USED ONLY IN COMPUTING ENDWALL QUANTITIES.
 - IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, BAR X (DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS TO BE APPROXIMATELY 12" CENTER UNLESS ENGINEER DIRECTS OTHERWISE.
 - WHEN CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE AND POURS BASE SEPERATELY, THE TOP BASE SHALL BE LEFT ROUGH.
 - USE CLASS "B" CONCRETE.



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**CONCRETE ENDWALL FOR
TRIPLE 48"RCP CULVERT
STA. -L-16+85 RT.**

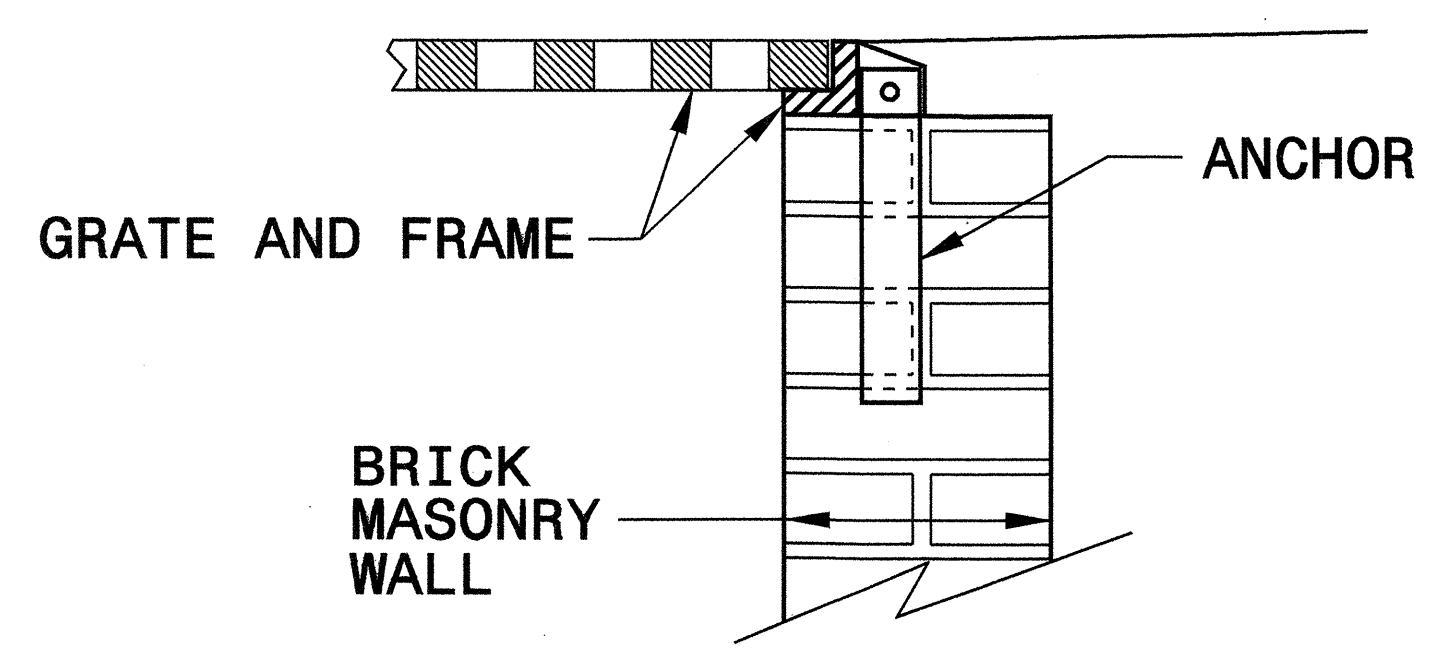
ORIGINAL BY: nbritt DATE: 04-06-05
 MODIFIED BY: DATE: 4/12/05
 CHECKED BY: DATE: 4/12/05
 FILE SPEC.: details/nbritt/english/bridge/b3684endwall

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 nbritt AH

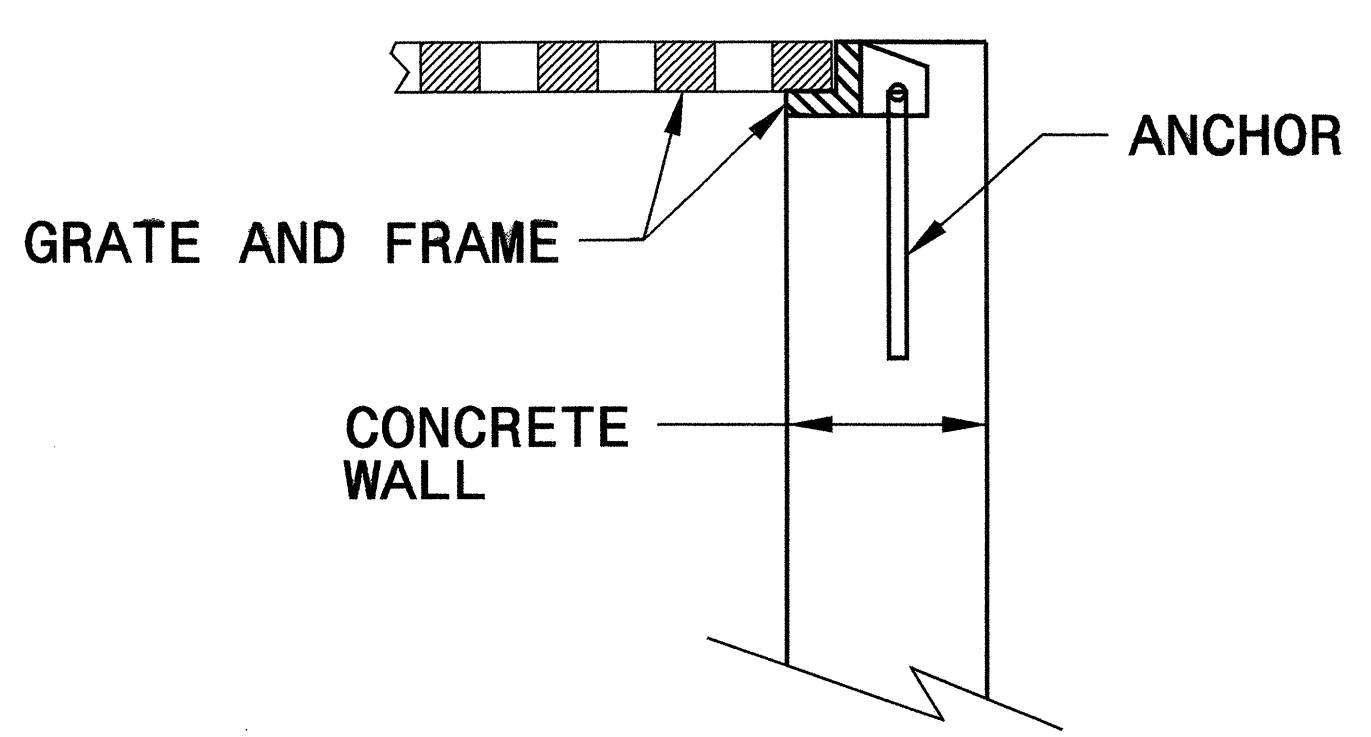
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

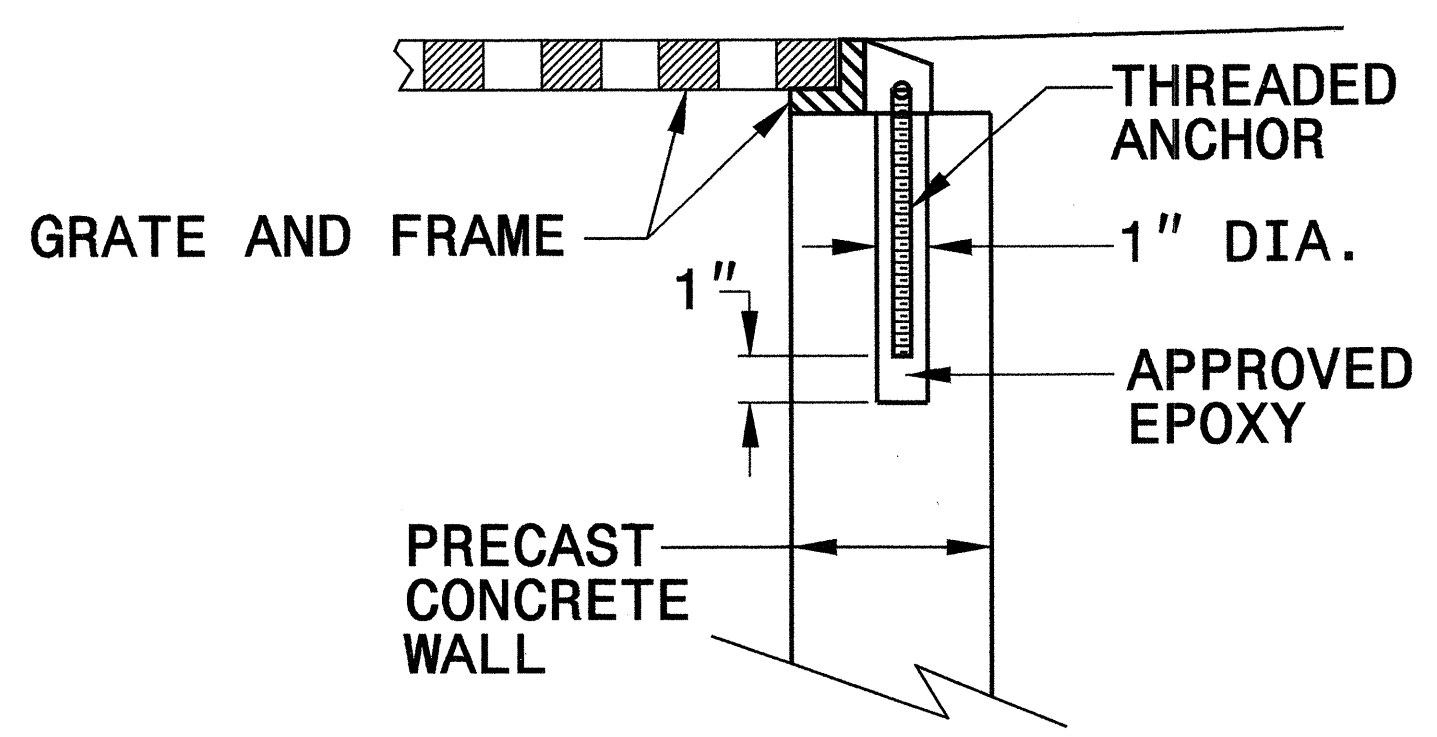
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



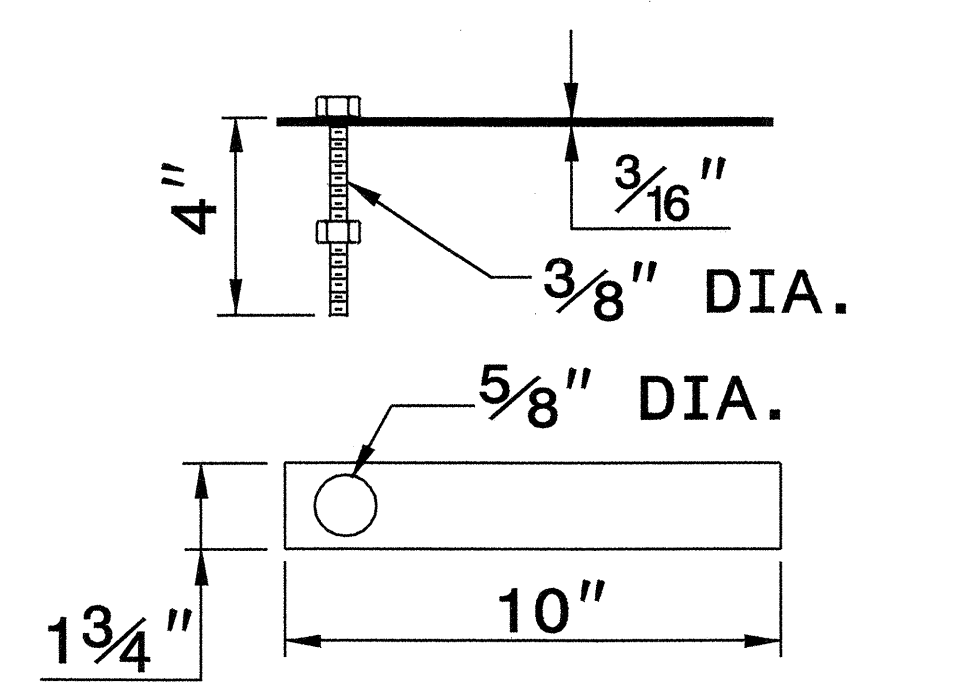
CONCRETE CONSTRUCTION



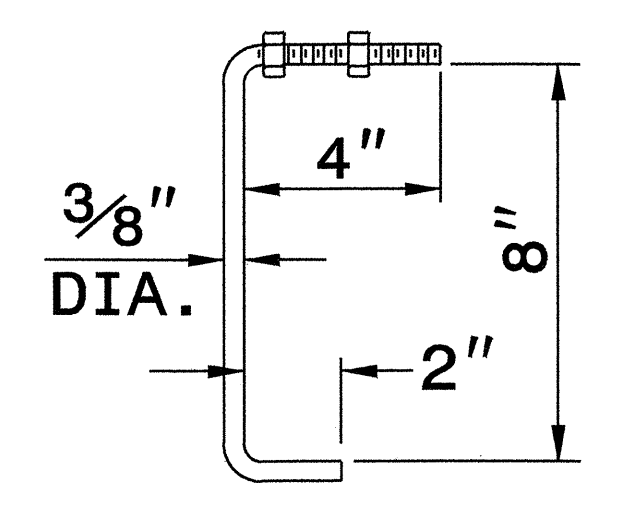
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

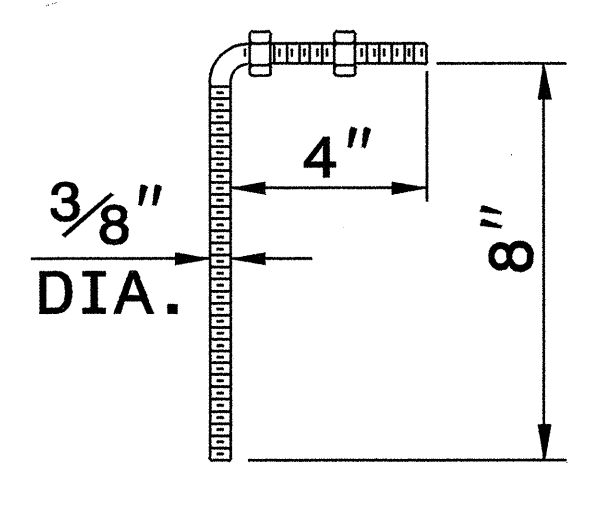
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



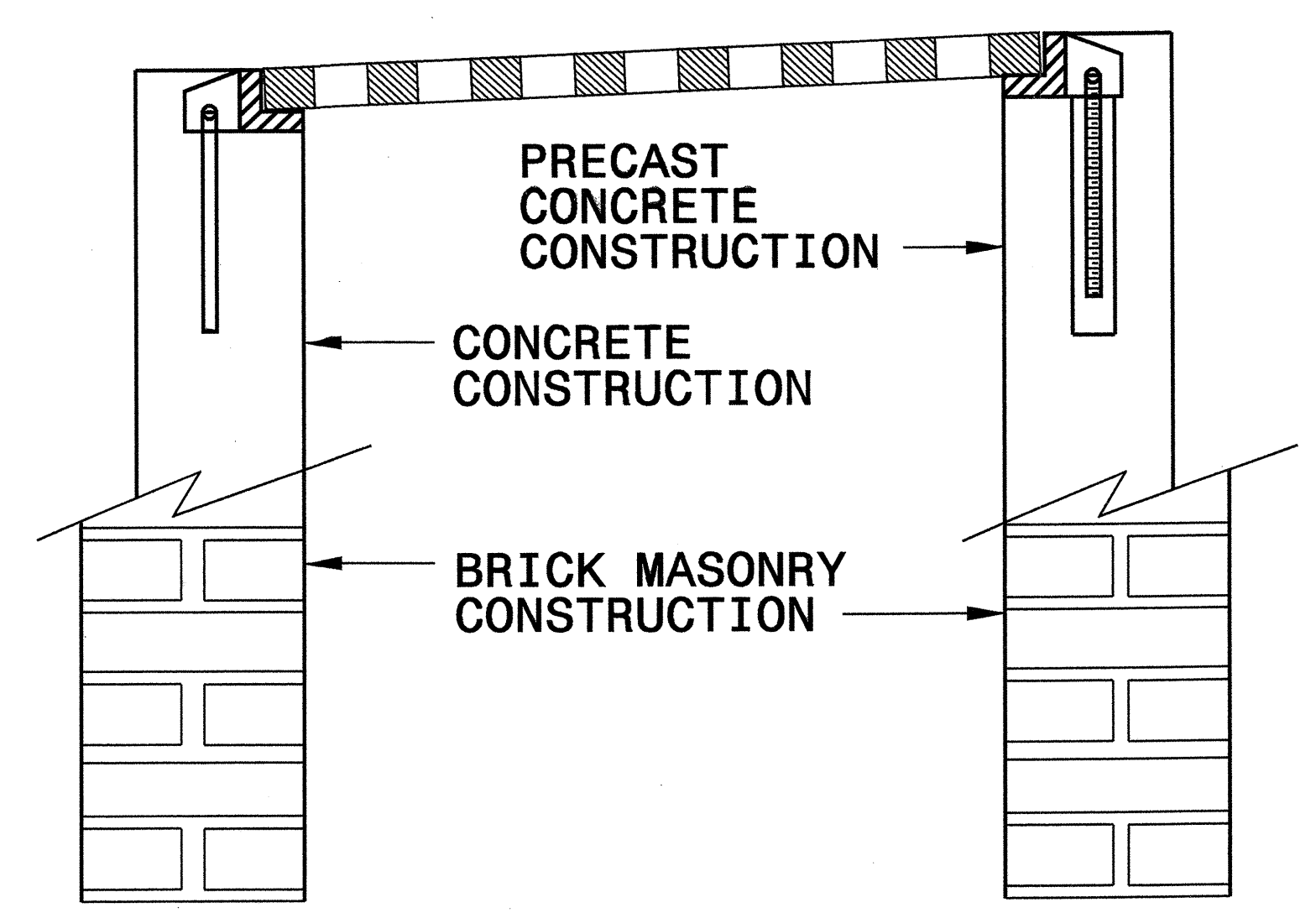
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



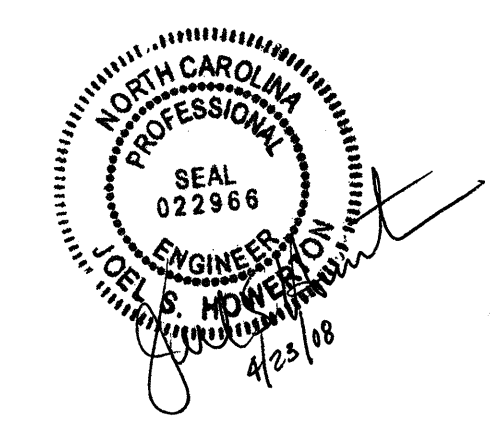
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

01-MAR-2007 09:04:51 s:\contracts\cor\p2295\special_details\forward\stds\06\stds to special_details\84025 anchorage for frames\0840d25.dgn jhowerton AT P2212260



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SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

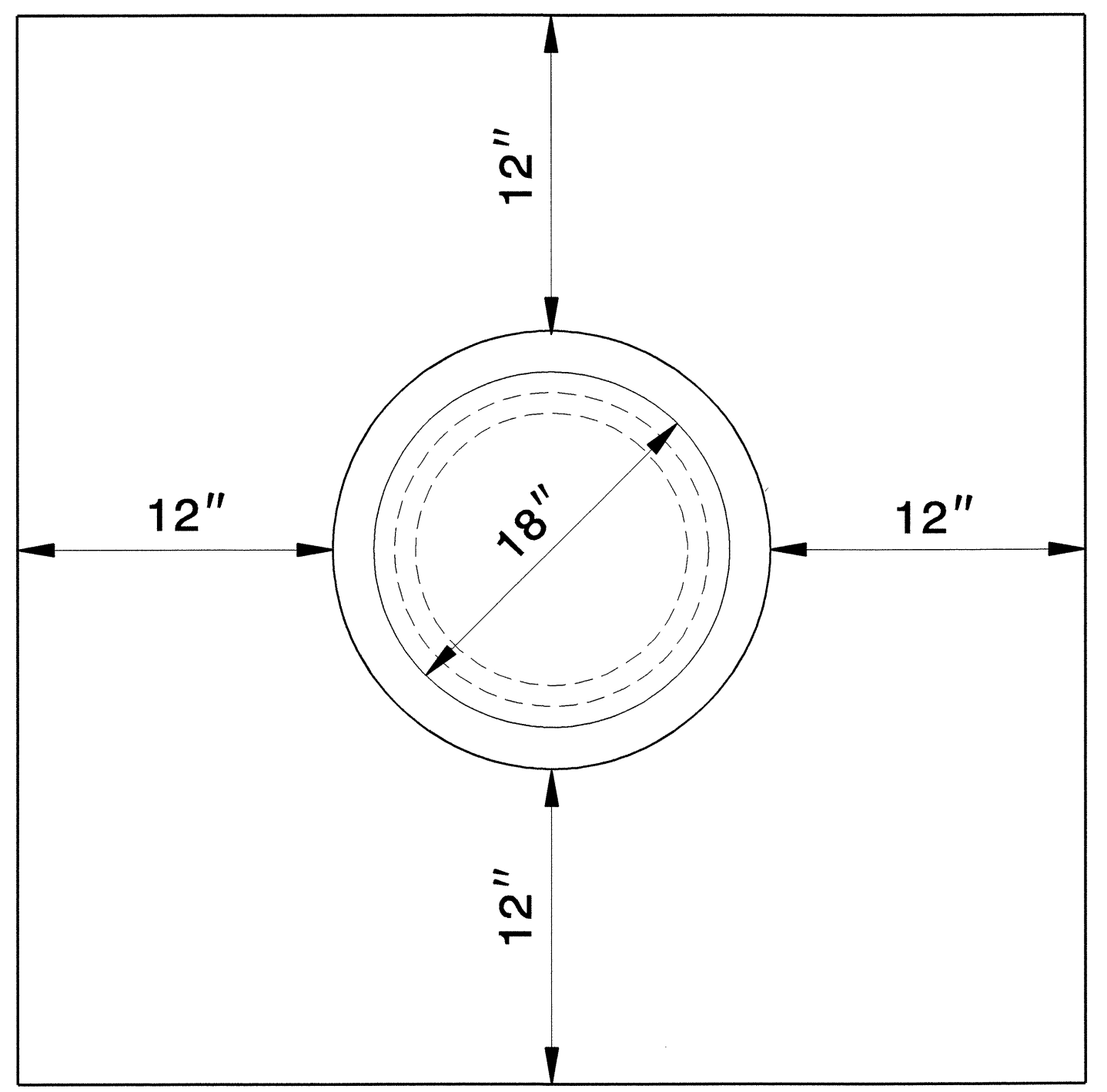
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH STANDARD DRAWING FOR

PIPE COLLAR

SHEET 1 OF 1
840D72



ELEVATION

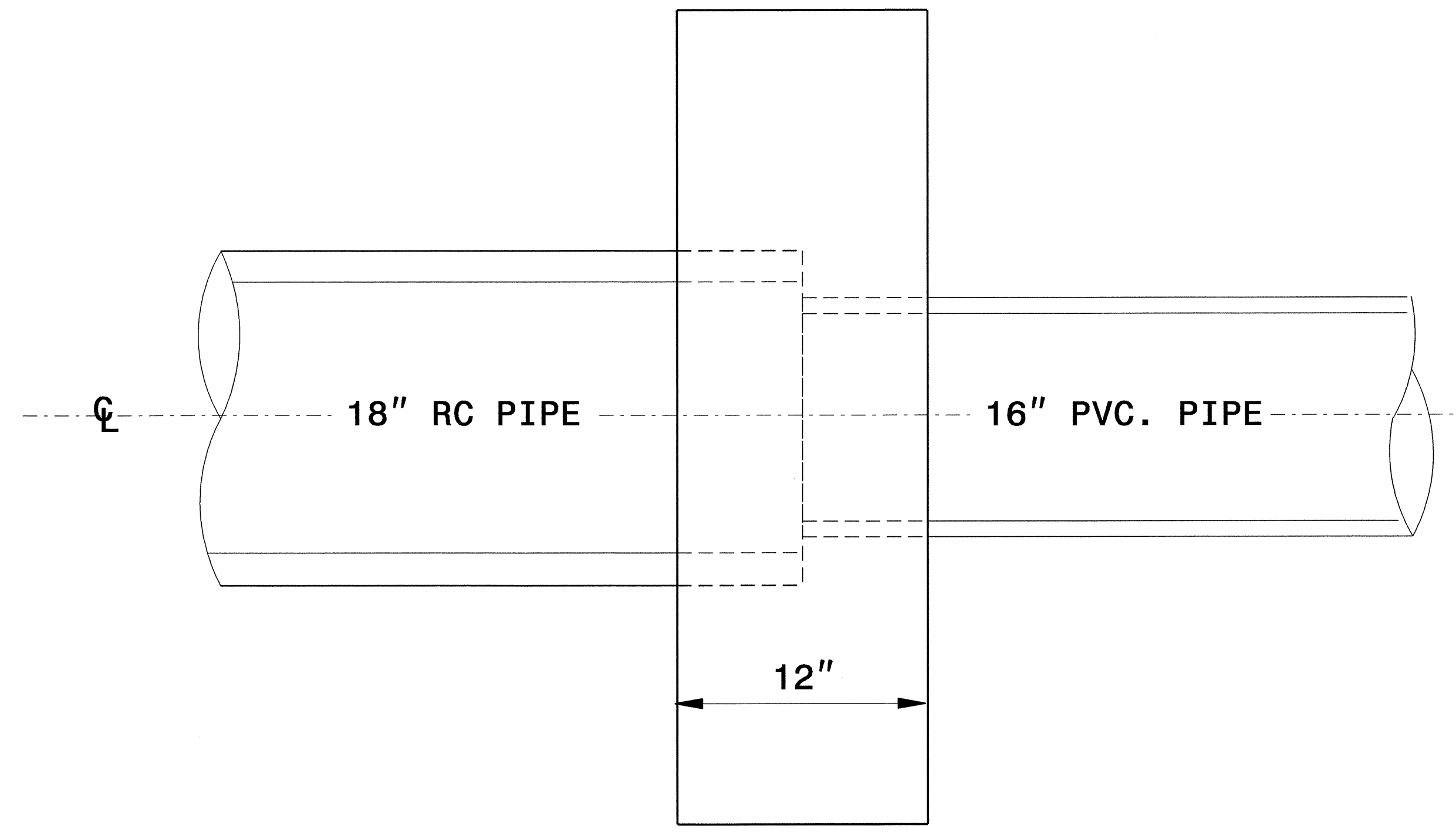
GENERAL NOTES:

USE PIPE COLLAR FOR EXTENDING EXISTING CONCRETE PIPE CULVERTS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.

CONSTRUCT THE PIPE COLLAR WITH CLASS "B" OR BETTER CONCRETE.

OBSERVE ALL REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.

* USE 12 INCH DIAMETER VALUES FOR PIPE DIAMETERS LESS THAN 12 INCH.



SIDE ELEVATION

0.4465 CU.YD. CONCRETE

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

7-06

ENGLISH STANDARD DRAWING FOR

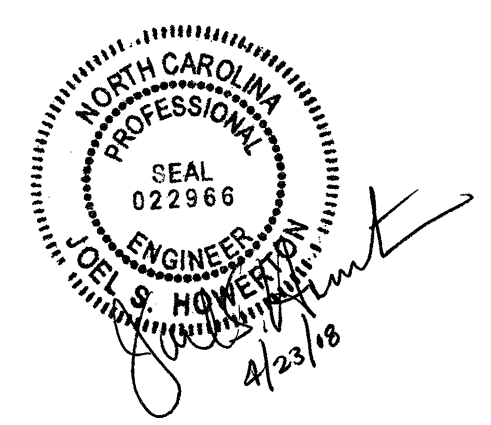
PIPE COLLAR

SHEET 1 OF 1
840D72

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Office 919-250-4128 FAX 919-250-4119

PIPE COLLAR DETAIL

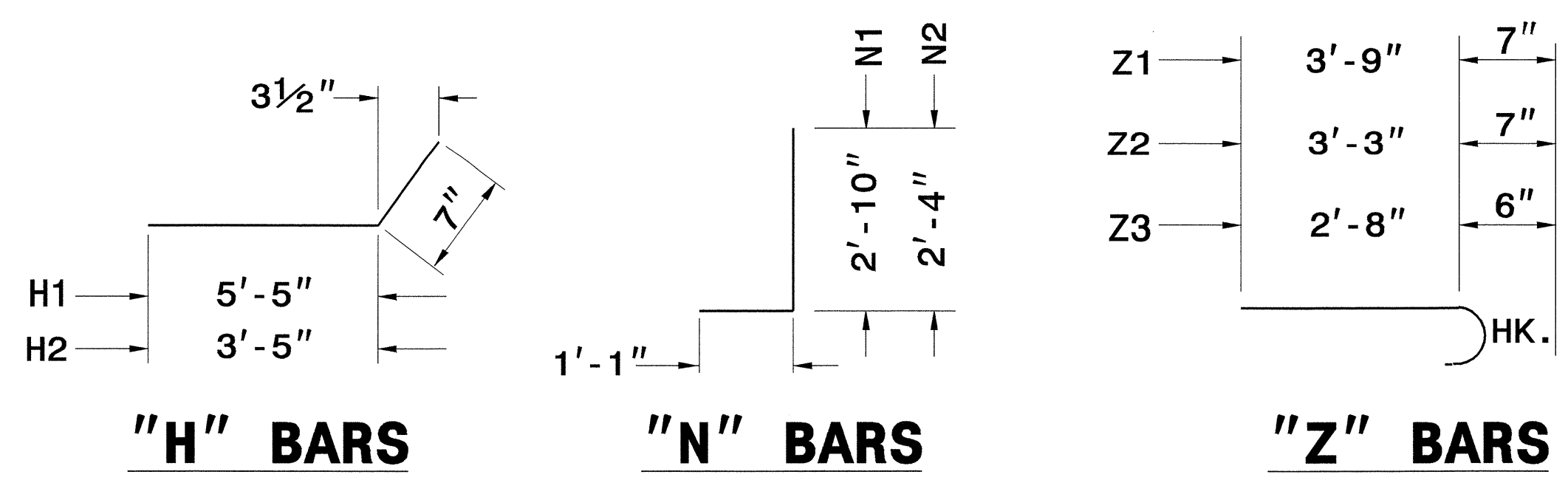
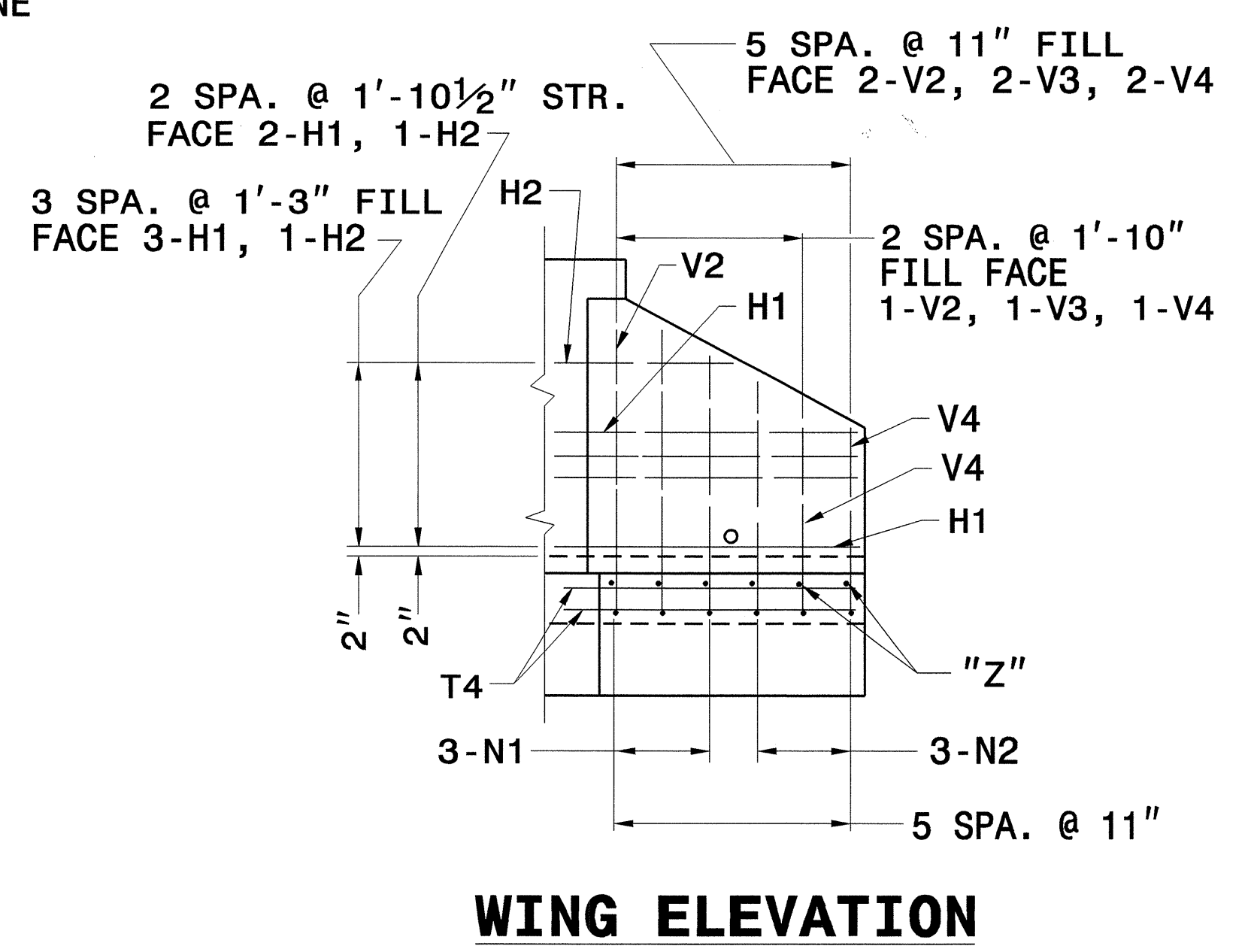
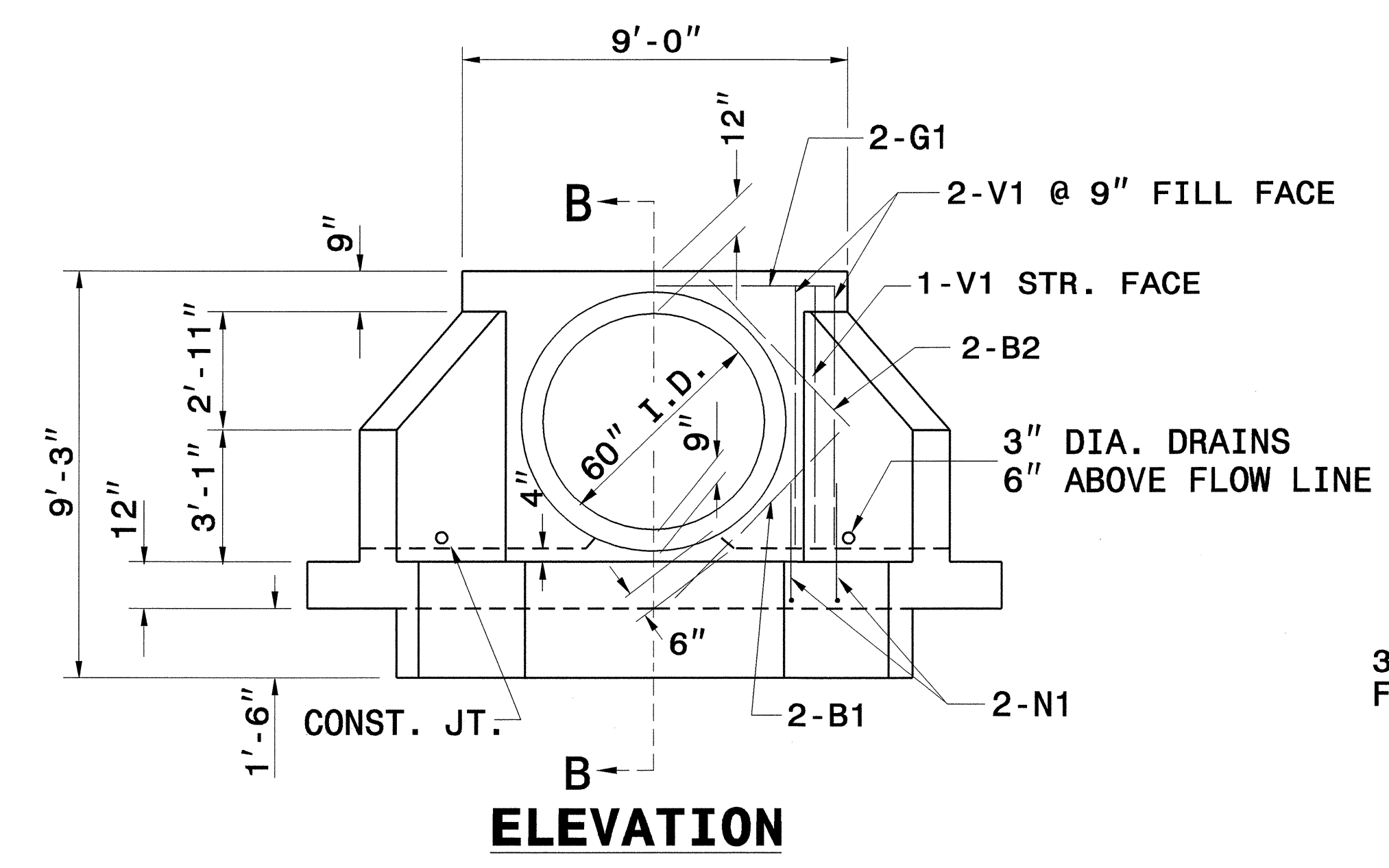
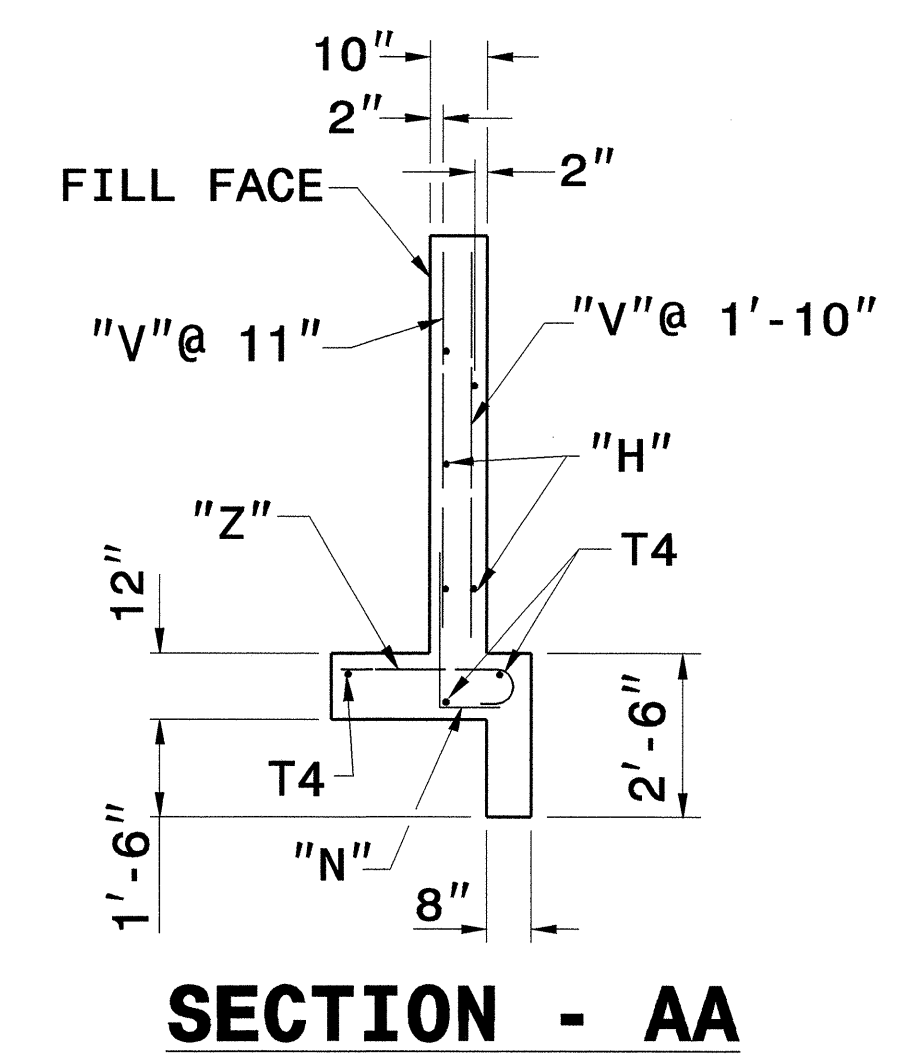
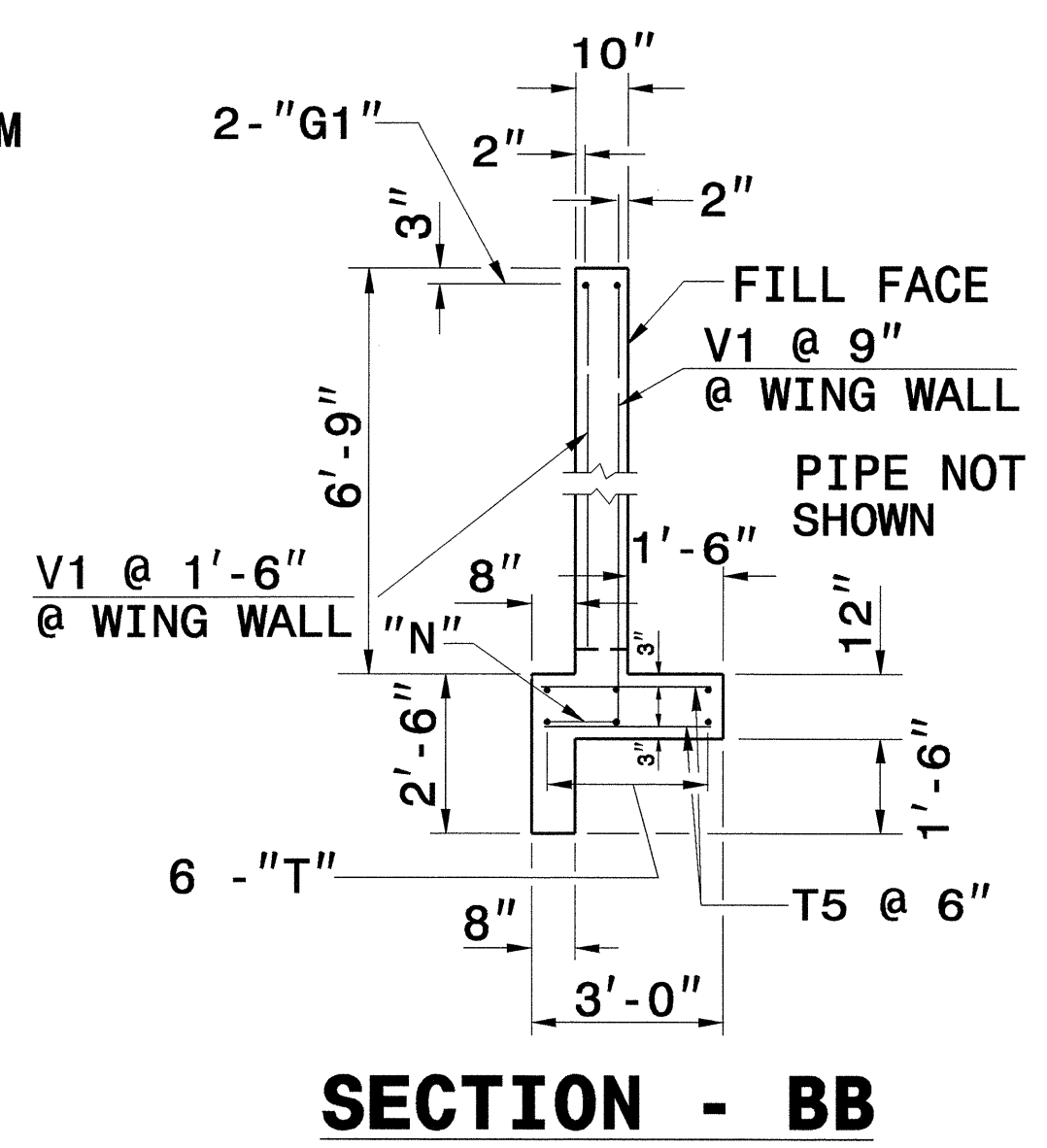
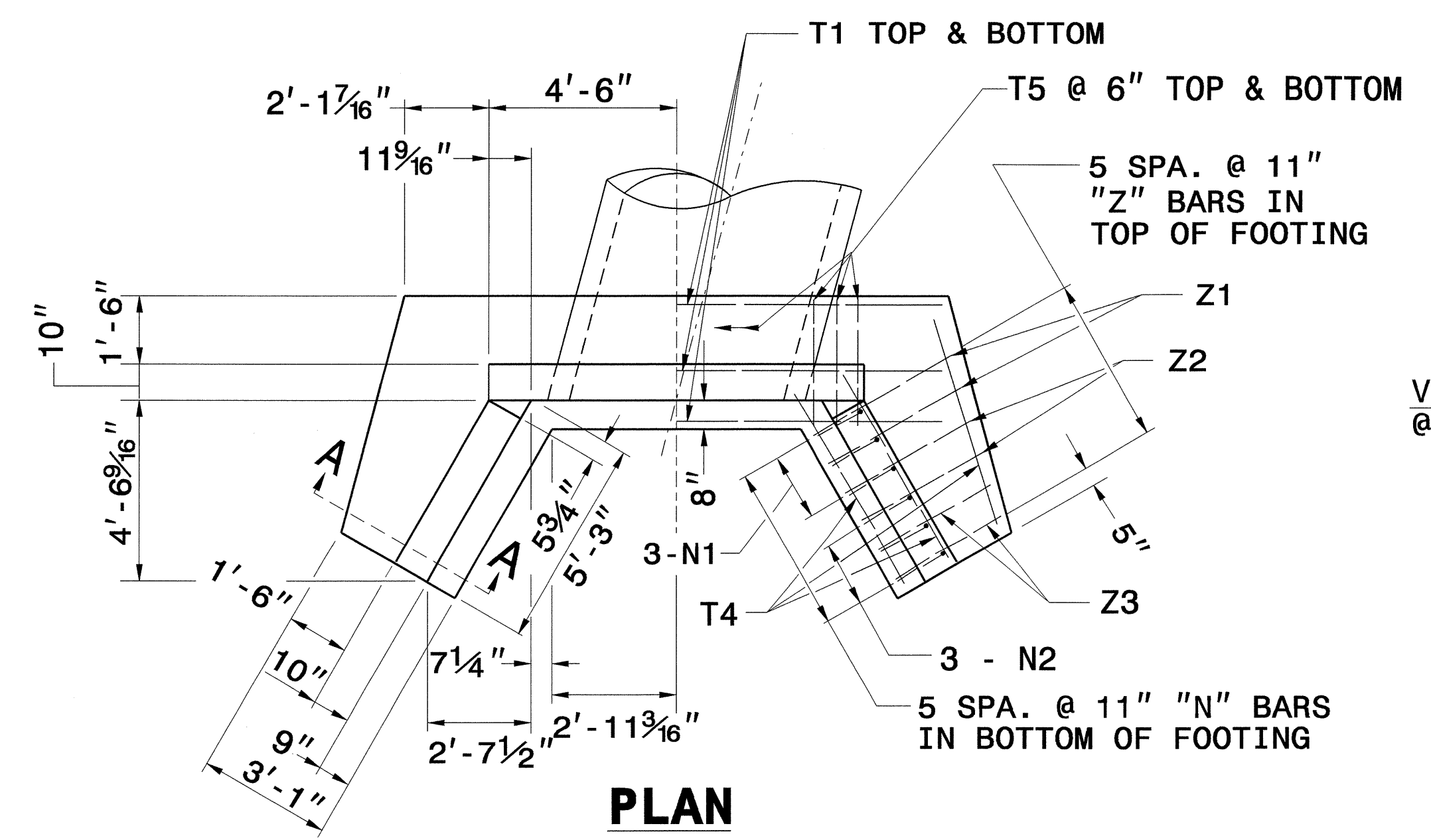
ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: rnbritt DATE: 01-31-08
 CHECKED BY: gals DATE: 3/17/09
 FILE SPEC.: details/nbritt/english/bridge/b3684endwall.dgn



5/14/99

 TIME *****
 USER *****

5/14/99



"H", "N", & "Z" BAR DIMENSIONS ARE OUT TO OUT.

SEE STD. # 838.45 FOR GENERAL NOTES.

BILL OF MATERIAL FOR ENDWALL				
REINF. STEEL			1 PIPE	
BAR	SIZE	LENGTH	NO.	WEIGHT
B1	#4	5'-6"	4	15
B2	#4	4'-6"	4	12
G1	#7	8'-8"	2	35
H1	#4	6'-0"	10	40
H2	#4	4'-0"	4	11
N1	#5	3'-11"	10	41
N2	#4	3'-5"	6	14
T1	#4	12'-8"	6	51
T4	#4	5'-6"	6	22
T5	#4	2'-6"	36	60
V1	#4	6'-3"	6	25
V2	#4	5'-1"	6	20
V3	#4	3'-11"	6	16
V4	#4	2'-9"	6	11
Z1	#5	4'-4"	4	18
Z2	#4	3'-10"	4	10
Z3	#4	3'-2"	4	8
REINF. STEEL LBS.				409
CON./R.C. CU. YDS				5.6

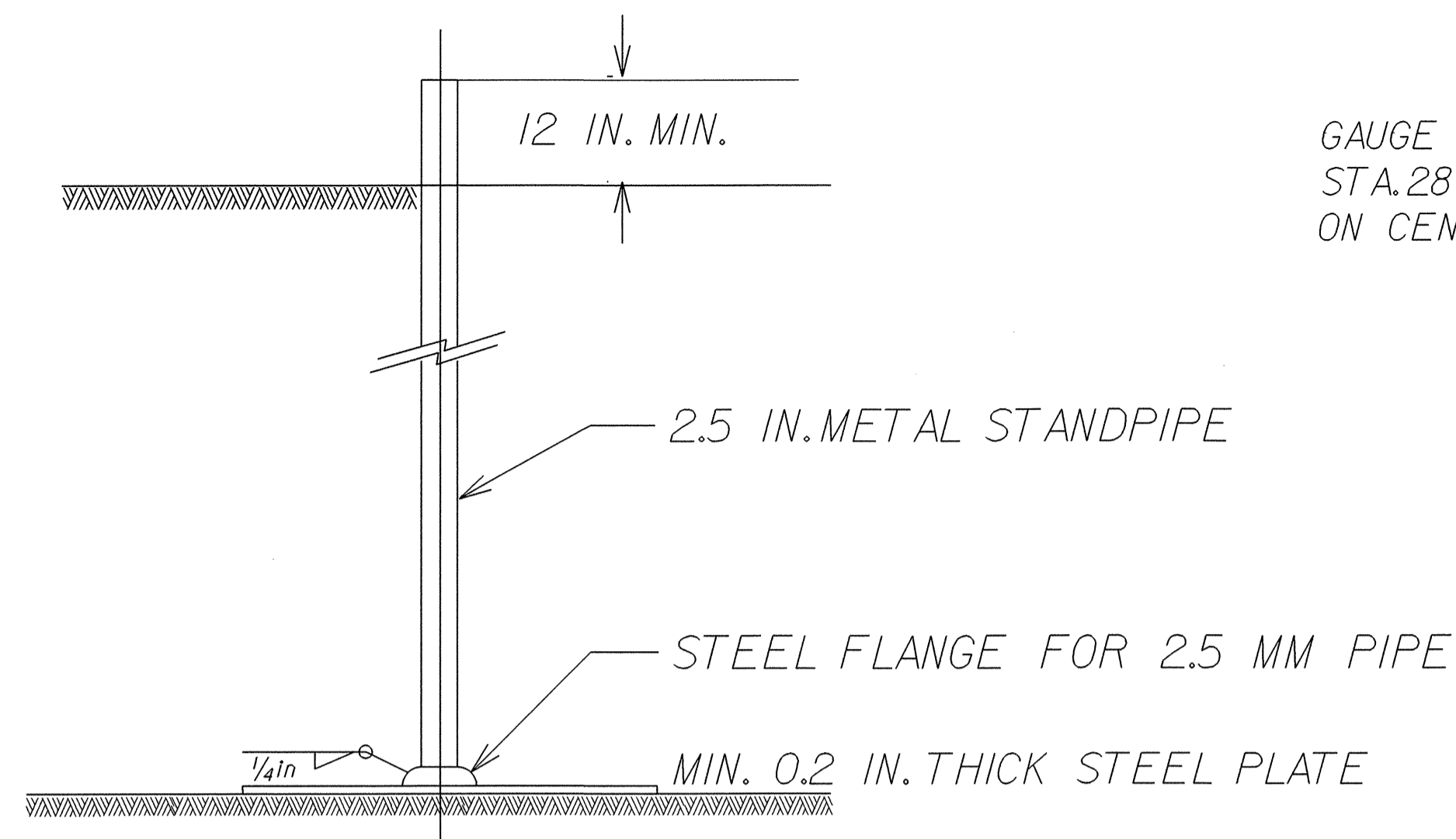


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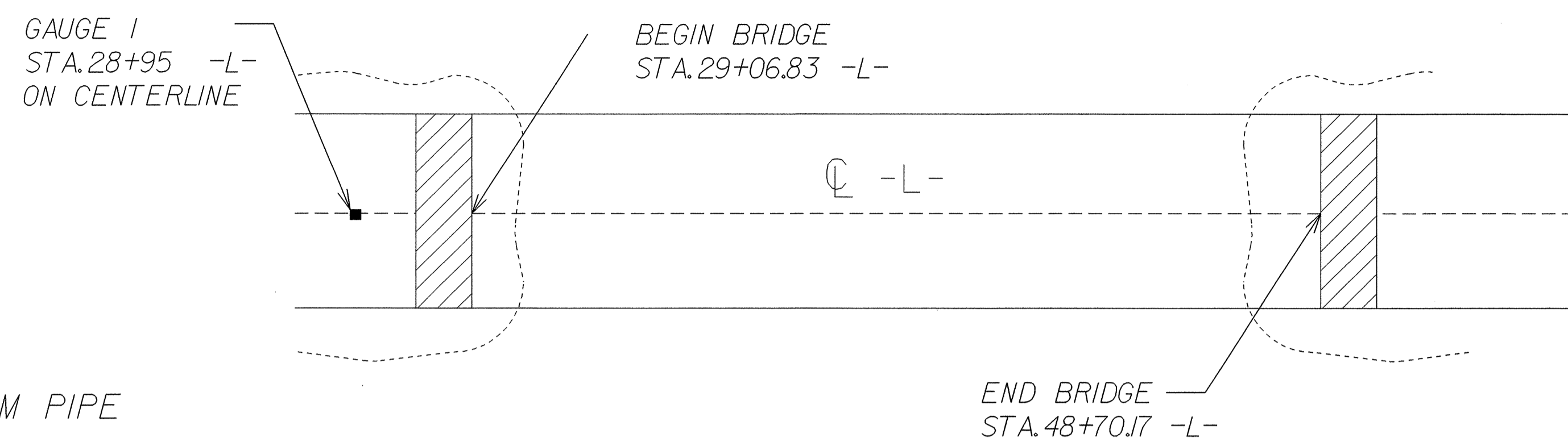
REINFORCED CONCRETE ENDWALL
FOR SINGLE 60" PIPE - 75 SKEW

ORIGINAL BY: *[Signature]* DATE: *[Blank]*
 MODIFIED BY: nbritt DATE: 01/31/08
 CHECKED BY: *[Signature]* DATE: 3/17/08
 FILE SPEC.: detail/nbritt/english/bridge/b3684 60 endwall 75sk.dgn

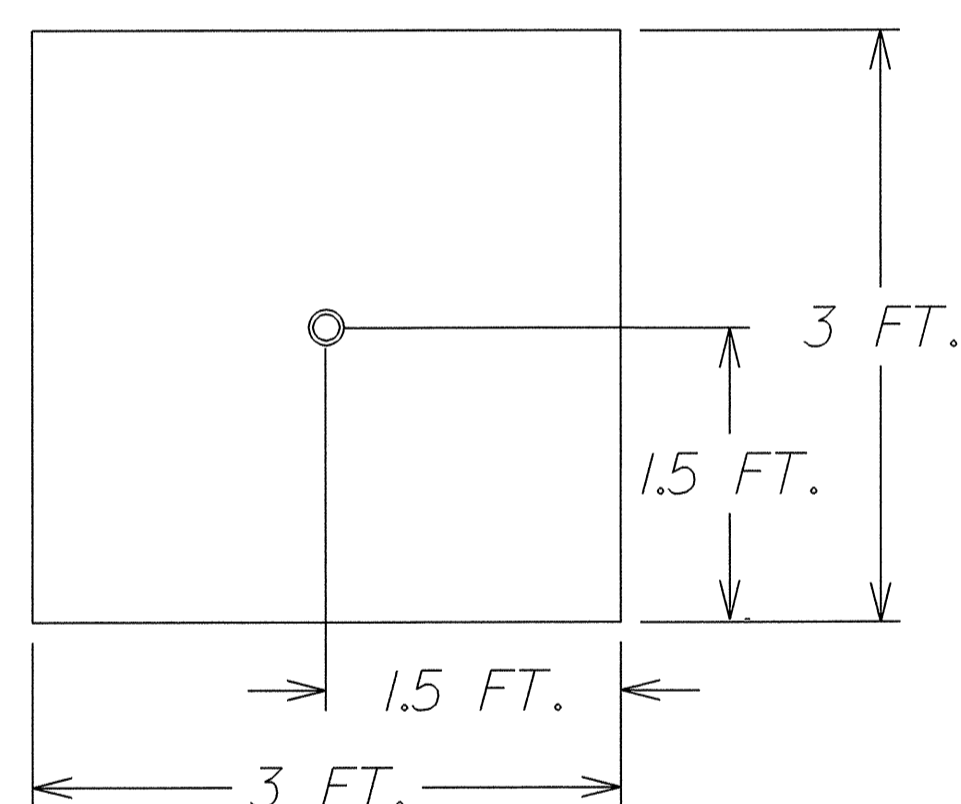
PROJ. REFERENCE NO. B-3684	SHEET NO. 2-H
STATE PROJ. NO. 33225.1.1	F.A. PROJ. NO. DESCRIPTION



SETTLEMENT GAUGE DETAIL



PLAN VIEW
N.T.S.



STEEL BASE DETAIL

NOTES

- DO NOT PLACE FILL IN THE VICINITY OF THE SETTLEMENT GAUGE UNTIL THE GAUGE IS INSTALLED.
- AT THE TIME OF GAUGE INSTALLATION, DETERMINE THE EMBANKMENT ELEVATION AND THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE). ALLOW THE RESIDENT ENGINEER TO DETERMINE AND RECORD SETTLEMENT GAUGE ELEVATIONS WEEKLY. WHEN ADDING NEW SECTIONS OF PIPE, RECORD ELEVATIONS AT BOTH THE TOP OF EXISTING PIPE AND THE TOP OF THE NEW PIPE. FORWARD RESULTS OF SETTLEMENT GAUGE READINGS TO MR. CHRIS KREIDER, EASTERN REGIONAL OPERATIONS ENGINEER, WITHIN THREE DAYS.
- THE ENGINEER WILL INSTALL A HYDRAULIC SETTLEMENT GAUGE (NOT SHOWN) WITHIN 10 FEET OF SETTLEMENT GAUGE ONE. THE INSTALLATION WILL INCLUDE DIGGING A TWO FOOT DEEP, TWO FOOT WIDE TRENCH FROM THE HYDRAULIC SETTLEMENT GAUGE TO A LOCATION NOT MORE THAN 150 FEET FROM THE HYDRAULIC SETTLEMENT GAUGE. SEE THE EMBANKMENT MONITORING SPECIAL PROVISION.

QUANTITIES

EMBANKMENT SETTLEMENT GAUGES.....1 EACH

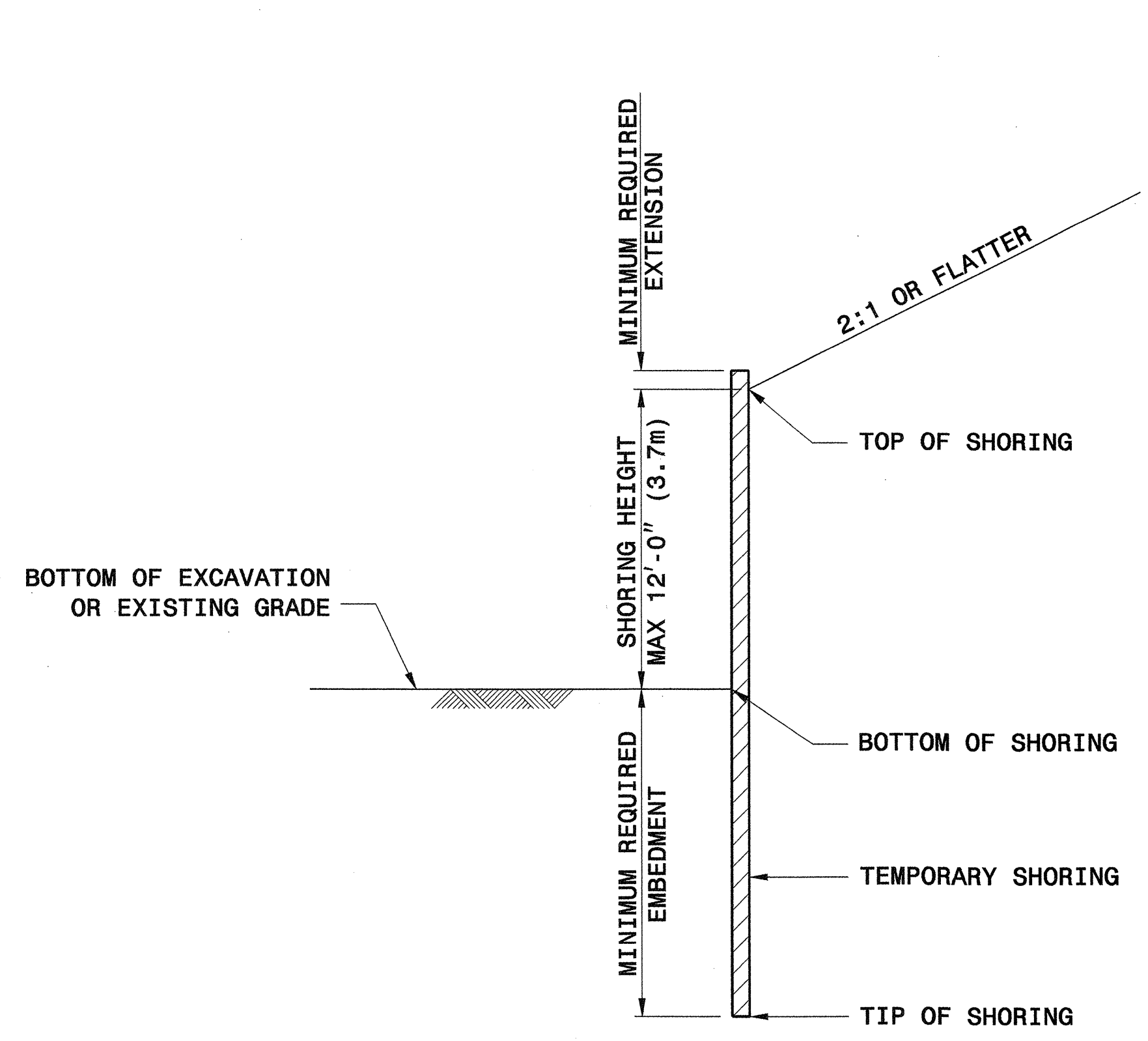
PROJECT 33225.1.1 (B-3684)
PITT COUNTY
STATION AS SHOWN



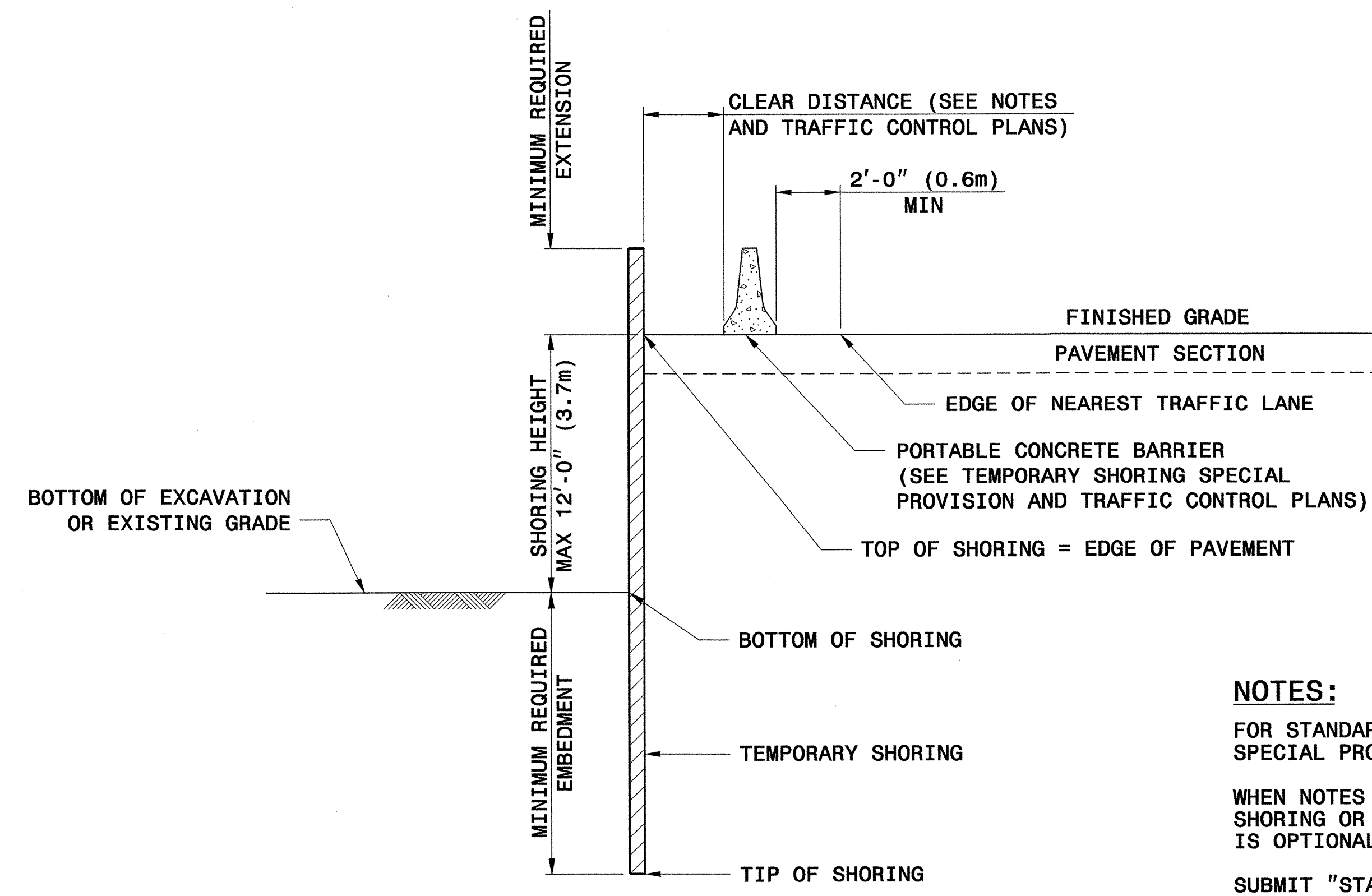
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EMBANKMENT
MONITORING

DRAWN BY RSW DATE 3 / 08
CHECKED BY MAM DATE 3 / 08



SLOPE CASE



SURCHARGE CASE

NOTES:

FOR STANDARD TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.
 WHEN NOTES ON PLANS DO NOT PROHIBIT STANDARD TEMPORARY SHORING OR STANDARD SHORING, STANDARD TEMPORARY SHORING IS OPTIONAL.
 SUBMIT "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 14 DAYS BEFORE BEGINNING SHORING CONSTRUCTION. UP TO THREE LOCATIONS MAY BE INCLUDED ON EACH SELECTION FORM.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING CONDITIONS:
 1) MAXIMUM SHORING HEIGHT IS 12'-0" (3.7m).
 2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
 3) BOTTOM OF EXCAVATION OR EXISTING GRADE IN FRONT OF SHORING IS 6:1 (H:V) SLOPE OR FLATTER.
 4) H PILE SPACING IS 6'-0" (1.8m).
 5) H PILE EMBEDMENT DEPTHS ARE FOR DRIVEN PILES.
 6) TIMBER LAGGING IS A MINIMUM OF 3" (75mm) THICK.

STANDARD TEMPORARY SHORING IS 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 SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT WITHIN THE EMBEDMENT DEPTH.

VERIFY GROUNDWATER ELEVATION BEFORE BEGINNING SHORING CONSTRUCTION.

IF THE CLEAR DISTANCE AVAILABLE IS LESS THAN THE MINIMUM REQUIRED IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS, SET THE BARRIER AGAINST THE TRAFFIC SIDE OF THE SHORING AND USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT".

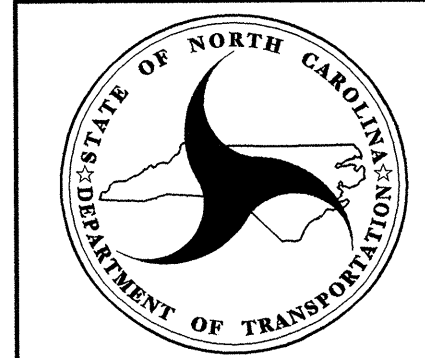
AT THE CONTRACTOR'S OPTION, H PILE EMBEDMENT DEPTHS FOR PILES SET IN DRILLED HOLES MAY BE REDUCED BY 25%. FOR PILE EXCAVATION, SEE TEMPORARY SHORING SPECIAL PROVISION.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE SHORING. COLLECT AND DIRECT RUNOFF AWAY FROM SHORING.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

GROUNDWATER CONDITION	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT						SURCHARGE CASE WITH TRAFFIC IMPACT				
	SHORING HEIGHT FT (m)	SHEET PILES		H PILES WITH TIMBER LAGGING			SHEET PILES		H PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN ³ /FT (cm ³ /m)	MINIMUM REQUIRED EMBEDMENT FT (m)			MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN ³ /FT (cm ³ /m)	MINIMUM REQUIRED EMBEDMENT FT (m)		
GROUNDWATER ELEVATION BELOW TIP OF SHORING	< 6 (1.8)	7.5 (2.3)	3.0 (161)	8.0 (2.4)	8.0 (2.4)	8.0 (2.4)	11.0 (3.4)	10.0 (538)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)
	7 (2.1)	8.5 (2.6)	4.5 (242)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)	12.0 (3.7)	12.0 (645)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)
	8 (2.4)	10.0 (3.0)	6.5 (349)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)	12.5 (3.8)	14.0 (753)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)
	9 (2.7)	11.0 (3.4)	9.5 (511)	--	12.0 (3.7)	12.0 (3.7)	13.5 (4.1)	16.5 (887)	--	12.5 (3.8)	12.5 (3.8)
	10 (3.0)	12.5 (3.8)	13.0 (699)	--	--	13.5 (4.1)	14.0 (4.3)	19.5 (1048)	--	13.5 (4.1)	13.5 (4.1)
	11 (3.4)	13.5 (4.1)	17.0 (914)	--	--	14.5 (4.4)	15.0 (4.6)	22.5 (1210)	--	--	14.5 (4.4)
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND TIP OF SHORING	< 6 (1.8)	11.5 (3.5)	4.5 (242)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)	16.0 (4.9)	12.0 (645)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)
	7 (2.1)	13.0 (4.0)	7.0 (376)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)	17.0 (5.2)	14.5 (780)	14.5 (4.4)	14.5 (4.4)	14.5 (4.4)
	8 (2.4)	15.0 (4.6)	10.0 (538)	--	15.0 (4.6)	15.0 (4.6)	18.0 (5.5)	17.0 (914)	--	15.5 (4.7)	15.5 (4.7)
	9 (2.7)	17.0 (5.2)	14.0 (753)	--	17.0 (5.2)	17.0 (5.2)	19.0 (5.8)	20.0 (1075)	--	17.0 (5.2)	17.0 (5.2)
	10 (3.0)	18.5 (5.6)	19.5 (1048)	--	--	18.5 (5.6)	20.0 (6.1)	23.5 (1263)	--	--	18.5 (5.6)
	11 (3.4)	20.5 (6.3)	26.0 (1398)	--	--	--	21.0 (6.4)	28.0 (1505)	--	--	20.0 (6.1)
12 (3.7)	22.5 (6.9)	33.0 (1774)	--	--	--	22.0 (6.7)	33.0 (1774)	--	--	21.5 (6.6)	

NOTE: MINIMUM REQUIRED EXTENSION IS 6" (150mm) FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" (800 mm) FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".



GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 2-20-07

STANDARD TEMPORARY MSE WALL OPTIONS

PROJECT REFERENCE NO. SHEET

B-3684

2-J



ENGINEER

Scott A. Hadden 3/29/07
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.

EXCAVATE AS NECESSARY FOR STANDARD TEMPORARY MSE WALLS IN ACCORDANCE WITH THE FOLLOWING FOR THE WALL OPTION CHOSEN:

- 1) MINIMUM EMBEDMENT OF 18" (450mm) UNLESS WALL BEARS ON ROCK, CONCRETE OR PAVEMENT AS DETERMINED BY THE ENGINEER
- 2) VERTICAL STEPS IN INCREMENTS EQUAL TO THE VERTICAL REINFORCEMENT SPACING
- 3) WITH THE EXCEPTION OF EITHER THE FIRST OR LAST SECTION OF WALL, HORIZONTAL SECTION LENGTHS IN INCREMENTS EQUAL TO THE FOLLOWING:

STANDARD TEMPORARY MSE WALL OPTION	INCREMENT
TEMPORARY FABRIC WALL	9'-0" (2.7m) MIN (VARIES)
HILFIKER TEMPORARY WALL	10'-0" (3.0m) MIN (VARIES)
SIERRASCAPE TEMPORARY WALL	18'-7 1/4" (5.7m)
RETAINED EARTH TEMPORARY WALL	24'-0" (7.3m)
TERRATREL TEMPORARY WALL	19'-8" (6.0m)

DO NOT PLACE SHORING BACKFILL OR FIRST REINFORCEMENT LAYER UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

IF APPLICABLE, INSTALL FOUNDATIONS LOCATED WITHIN THE REINFORCED ZONE BEFORE BEGINNING WALL CONSTRUCTION UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

ERECT AND MAINTAIN FACINGS AND FORMS AS SHOWN ON THE STANDARD TEMPORARY MSE WALL DETAILS. STAGGER VERTICAL JOINTS OF FACINGS AND FORMS TO CREATE A RUNNING BOND WHEN POSSIBLE UNLESS SHOWN OTHERWISE ON THESE DETAILS.

PLACE FACINGS AND FORMS AS NEAR TO VERTICAL AS POSSIBLE WITH NO NEGATIVE BATTER. CONSTRUCT STANDARD TEMPORARY MSE WALLS WITH A VERTICAL AND HORIZONTAL TOLERANCE OF 3" (75mm) WHEN MEASURED WITH A 10'-0" (3m) STRAIGHT EDGE AND AN OVERALL VERTICAL PLUMBNESS (BATTER) AND HORIZONTAL ALIGNMENT OF LESS THAN 6" (150mm).

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, DELFECT, SKEW AND MODIFY REINFORCEMENT.

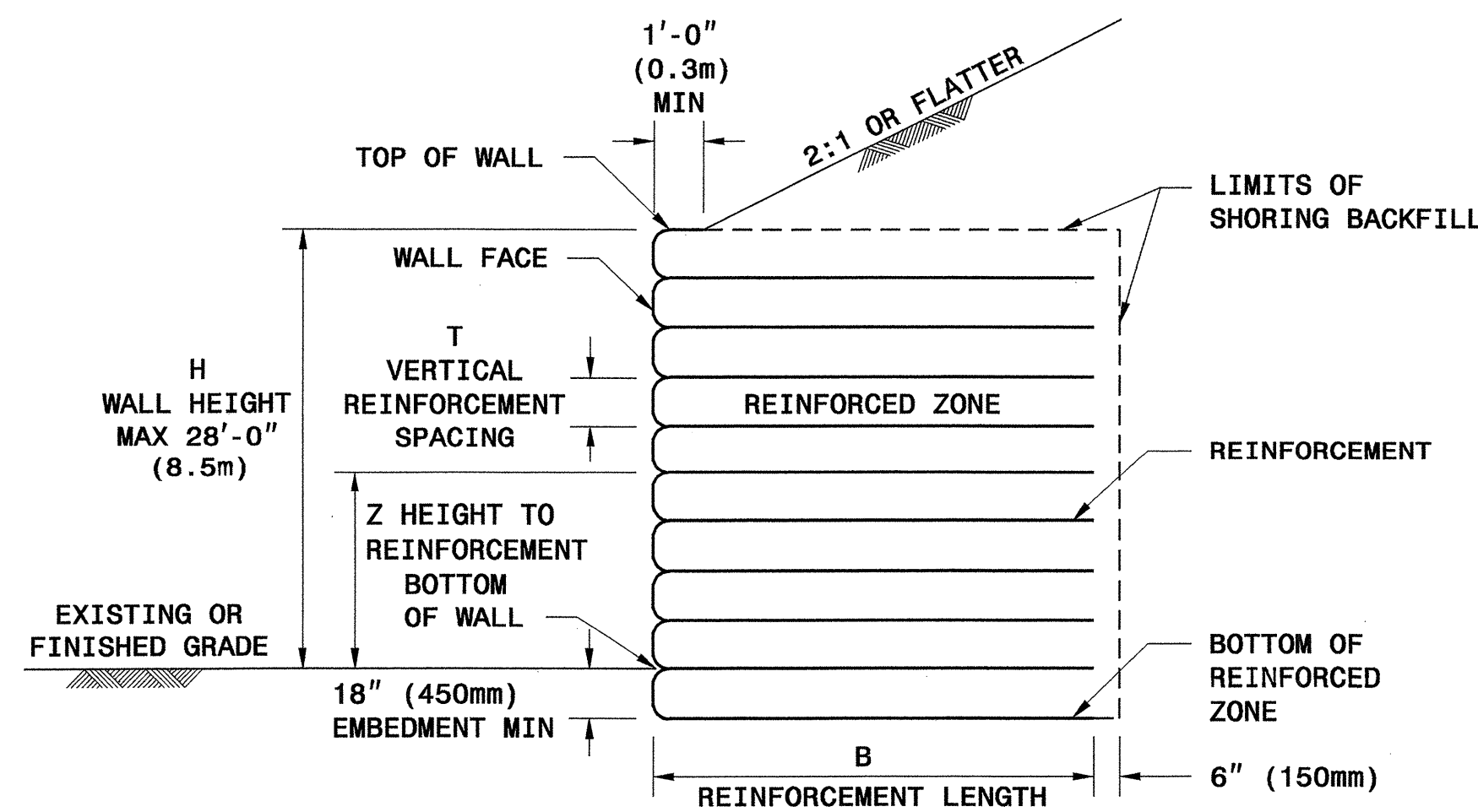
PLACE SHORING BACKFILL IN 8" TO 10" (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" (1m) OF THE WALL FACE.

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.

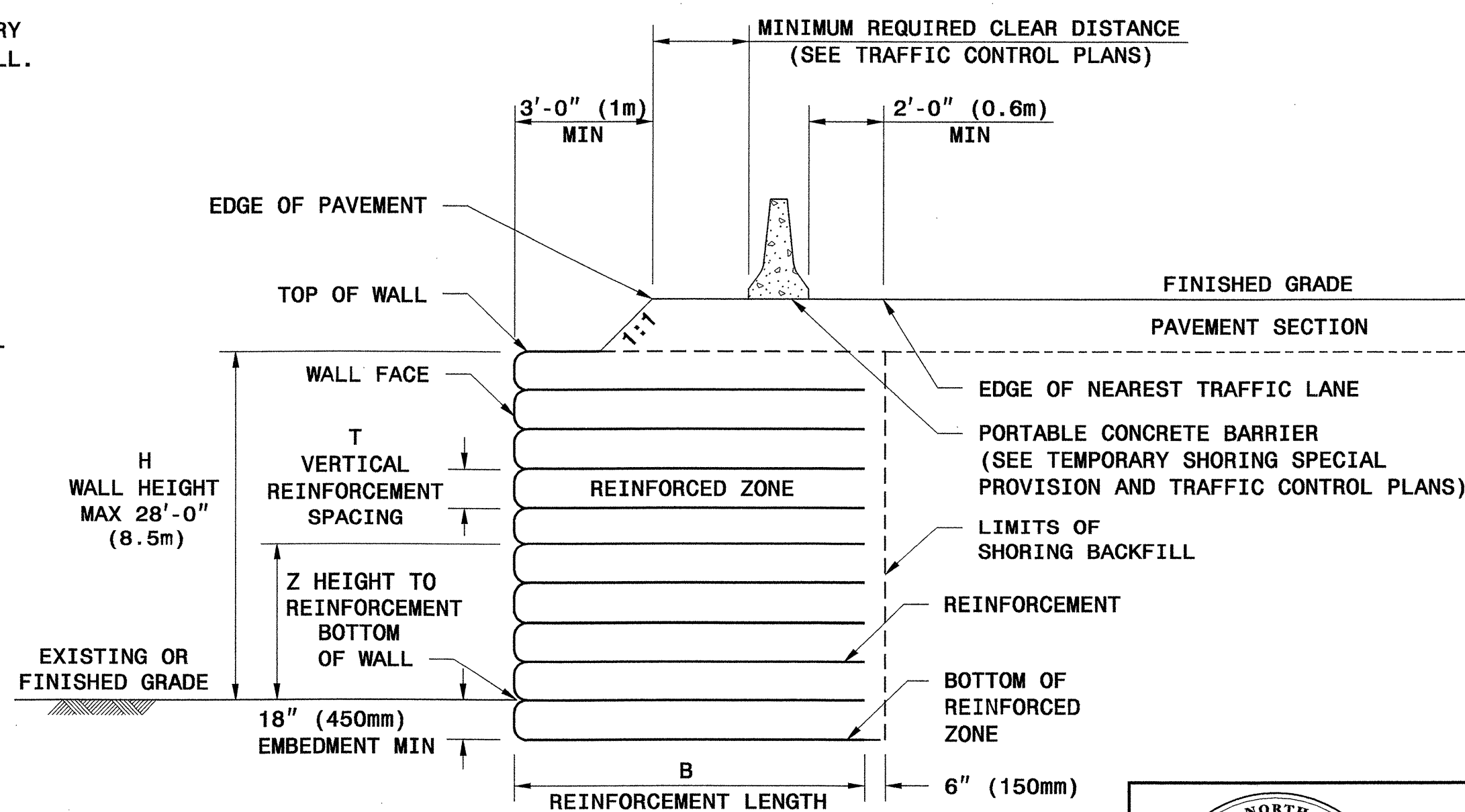
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4" AND 24" (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

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

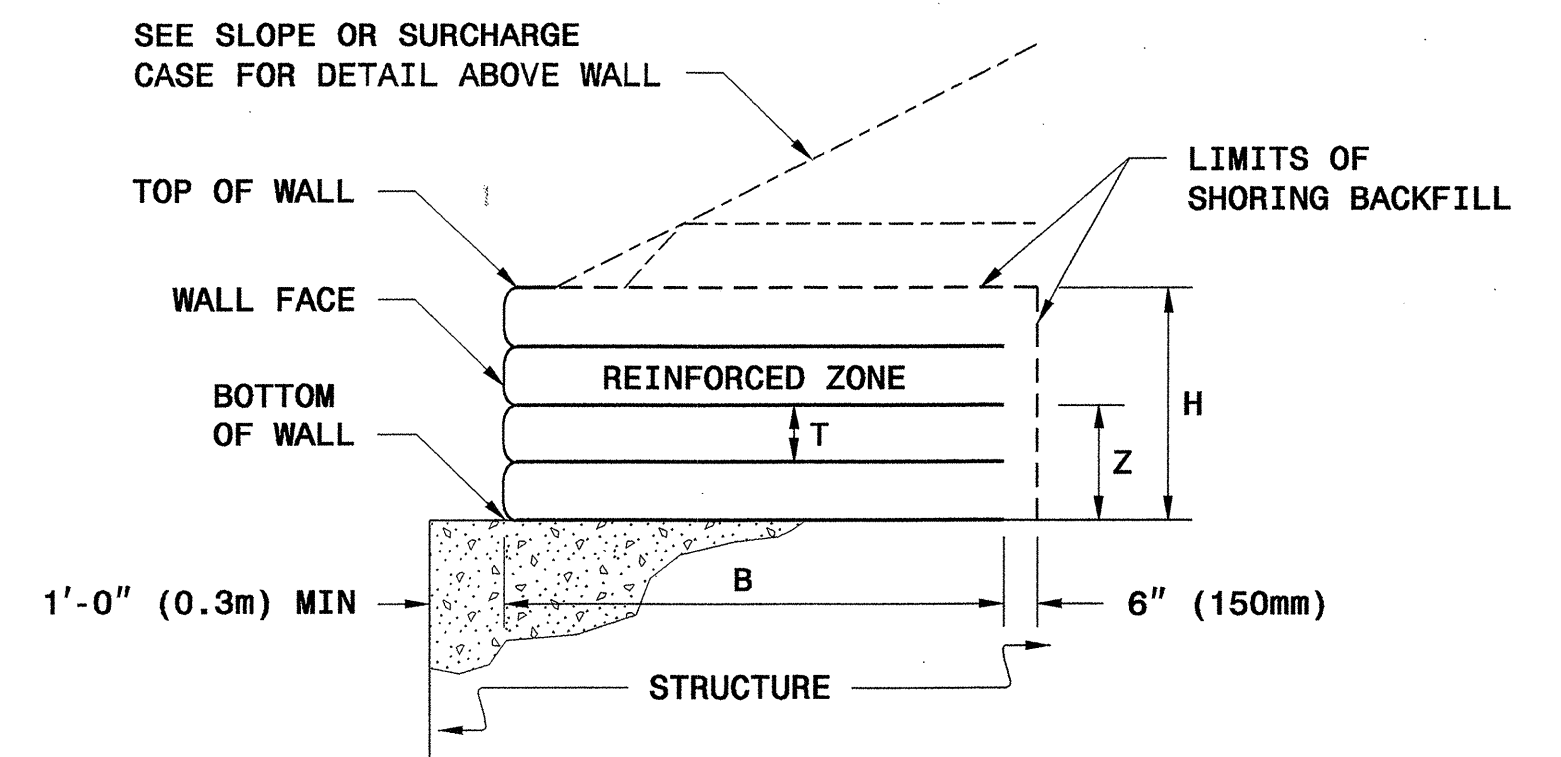
IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



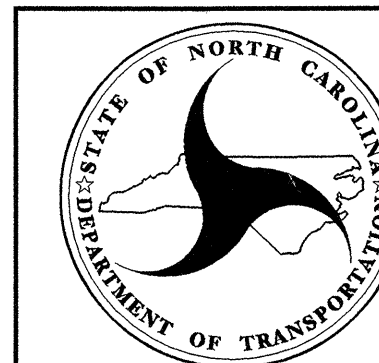
SLOPE CASE



SURCHARGE CASE



TEMPORARY MSE WALL ON STRUCTURE



GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA
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RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS

SHEET 1 OF 11 DATE: 2-20-07

GEOTECHNICAL ENGINEER ENGINEER

Signature: *Scott A. Shidden* 3/29/07
 Signature: _____
 Date: _____ Date: _____

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

MINIMUM REQUIRED REINFORCEMENT LENGTH B (FT)

(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)													

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)													

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)													

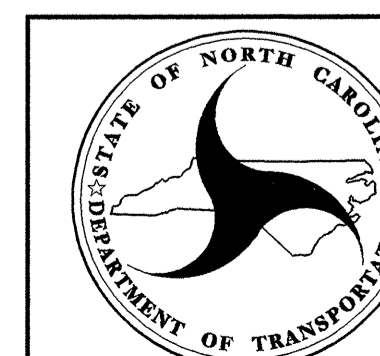
RETAINED EARTH TEMPORARY WALL (WELDED WIRE MESH TYPE)

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)													

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'.



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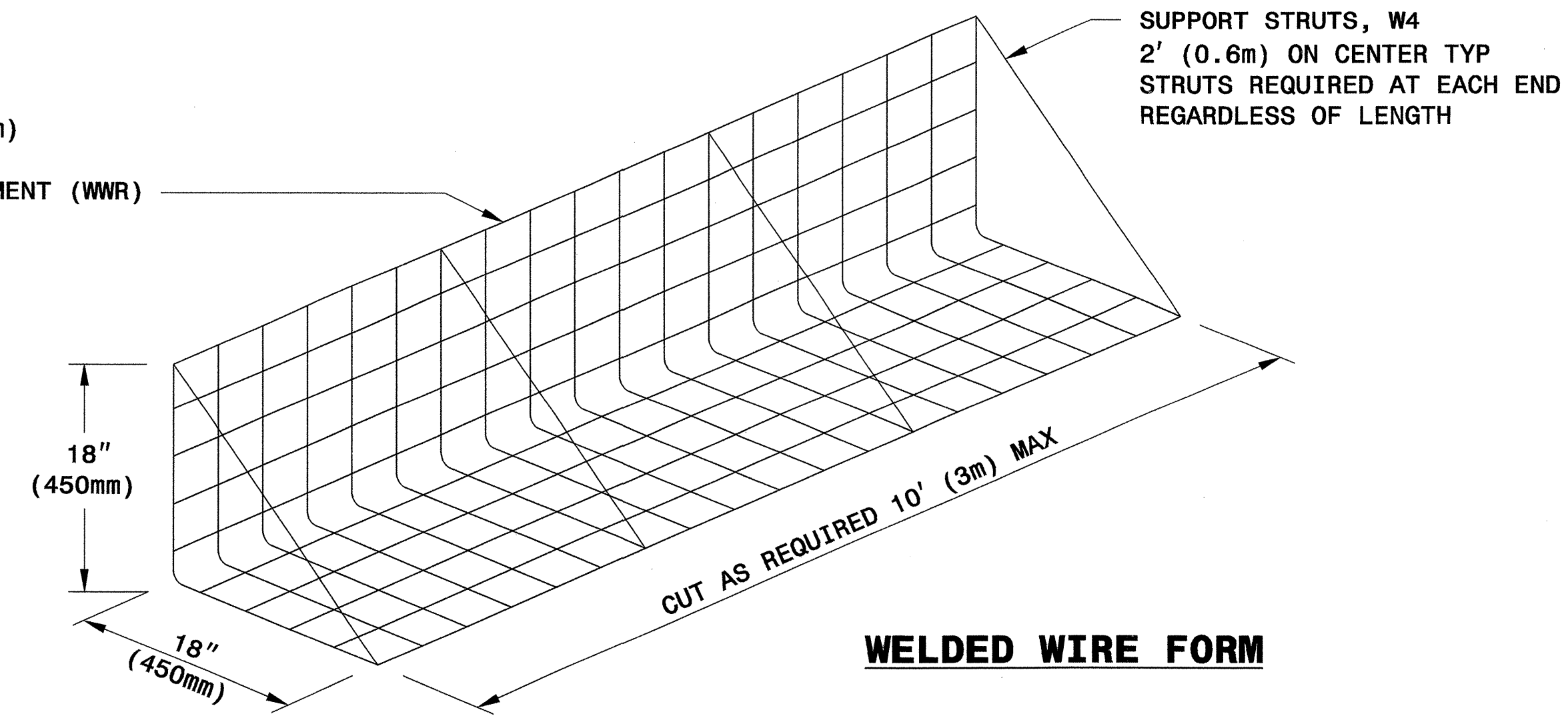
STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MSE WALL REINFORCEMENT TABLES - ENGLISH UNITS

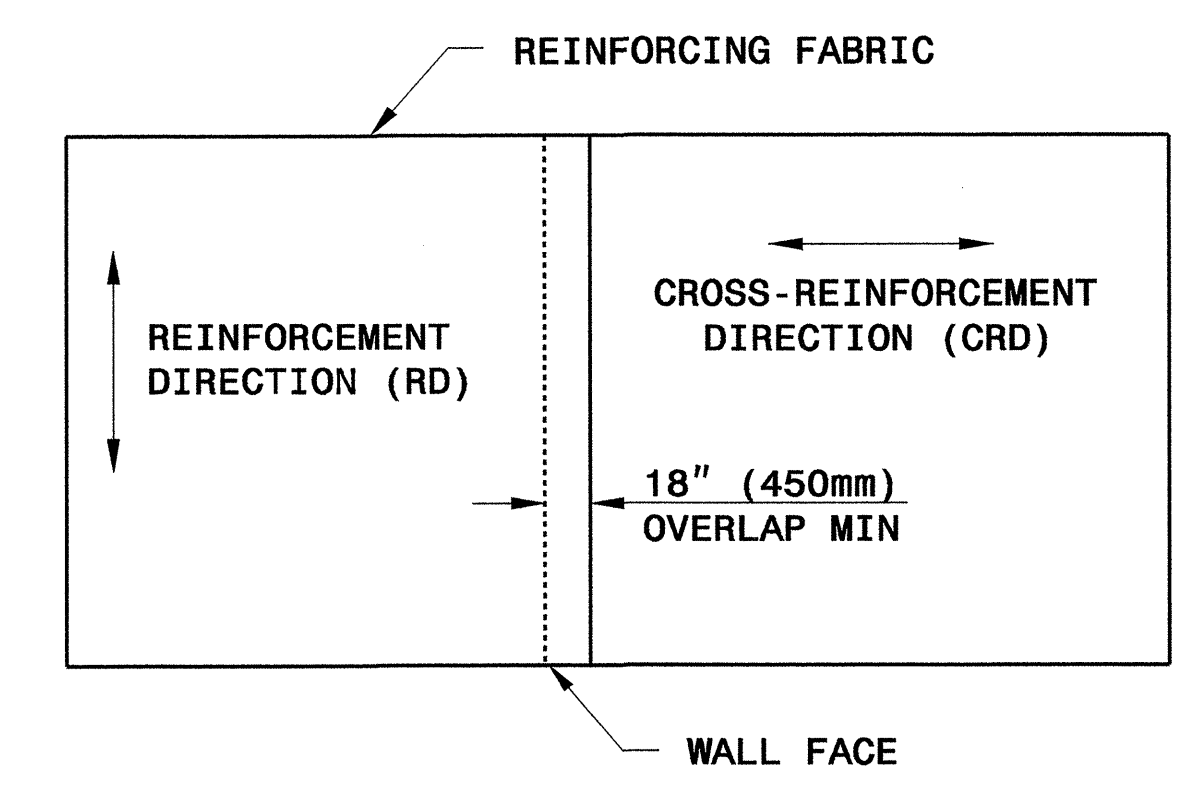
GEOTECHNICAL ENGINEER ENGINEER

Scott A. Shidden 3/29/07
SIGNATURE DATE SIGNATURE DATE

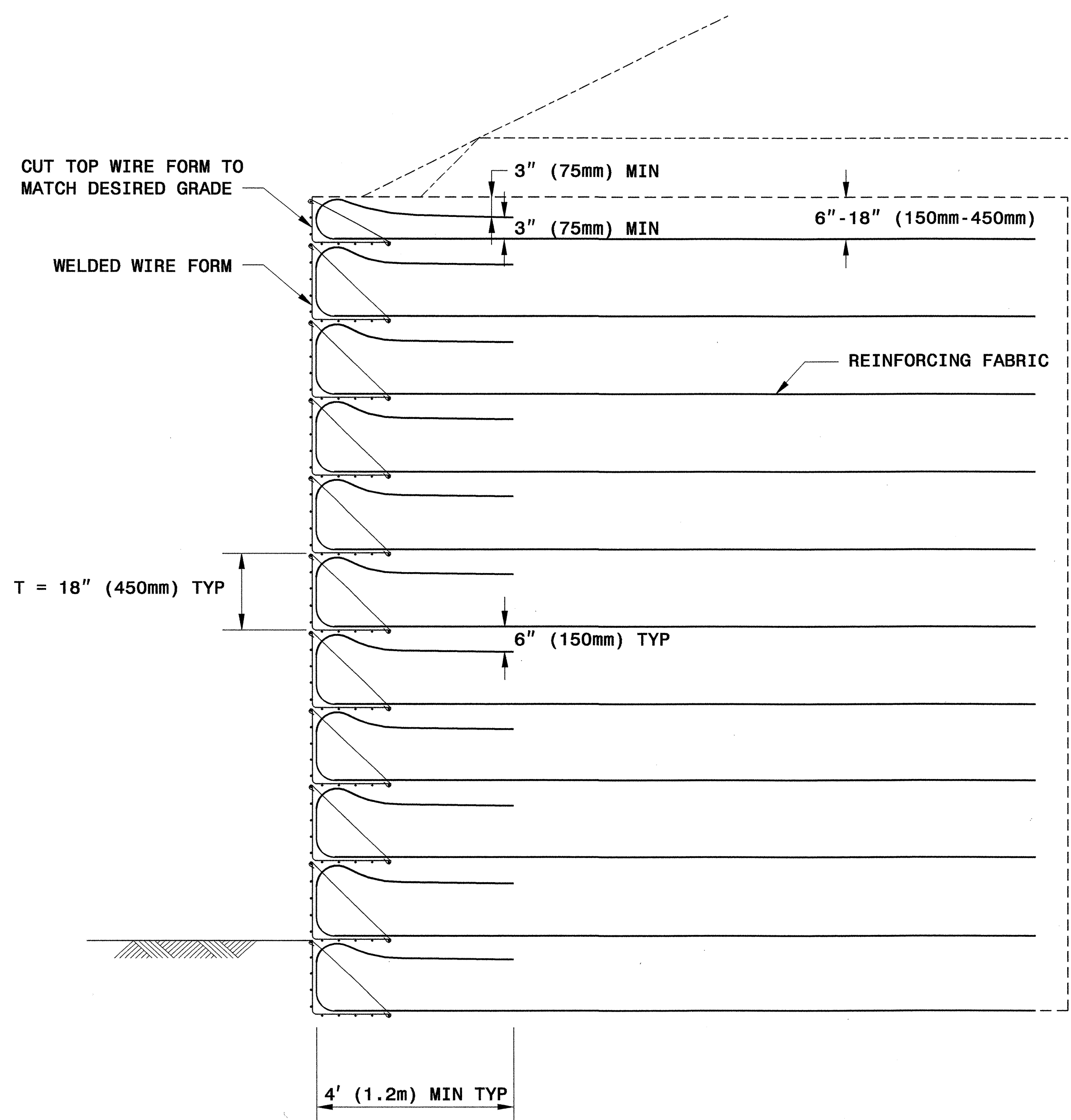
4" X 4" (102mm X 102mm)
W4 X W4 (MW26 X MW26)
WELDED WIRE REINFORCEMENT (WWR)



WELDED WIRE FORM



PLAN VIEW OF FABRIC OVERLAP



TYPICAL SECTION

**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

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STANDARD DRAWING NO. 1801.02

TEMPORARY FABRIC WALL

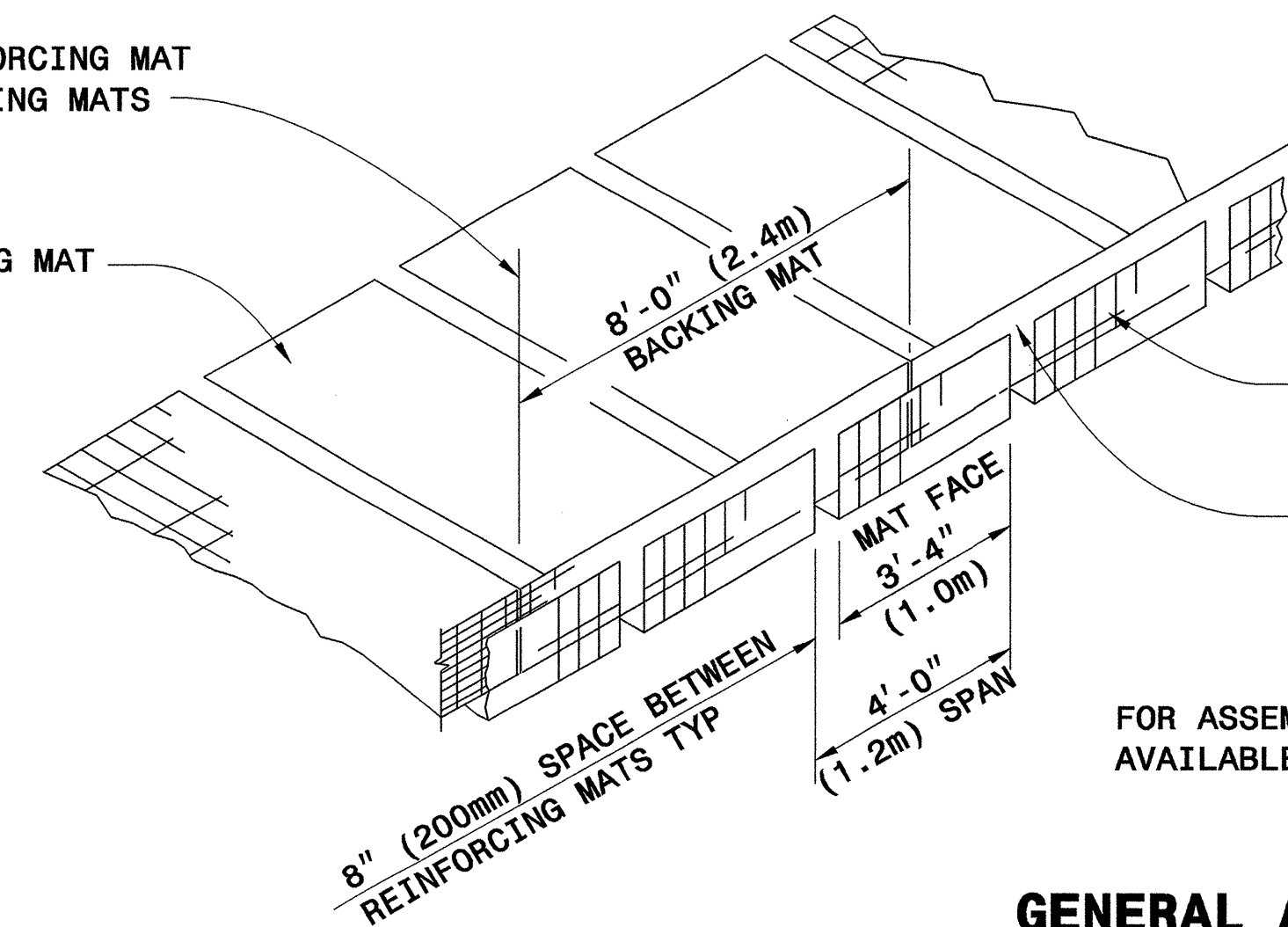
SHEET 3 OF 11 DATE: 12-19-06



Scott A. Hadden 3/29/07
SIGNATURE DATE

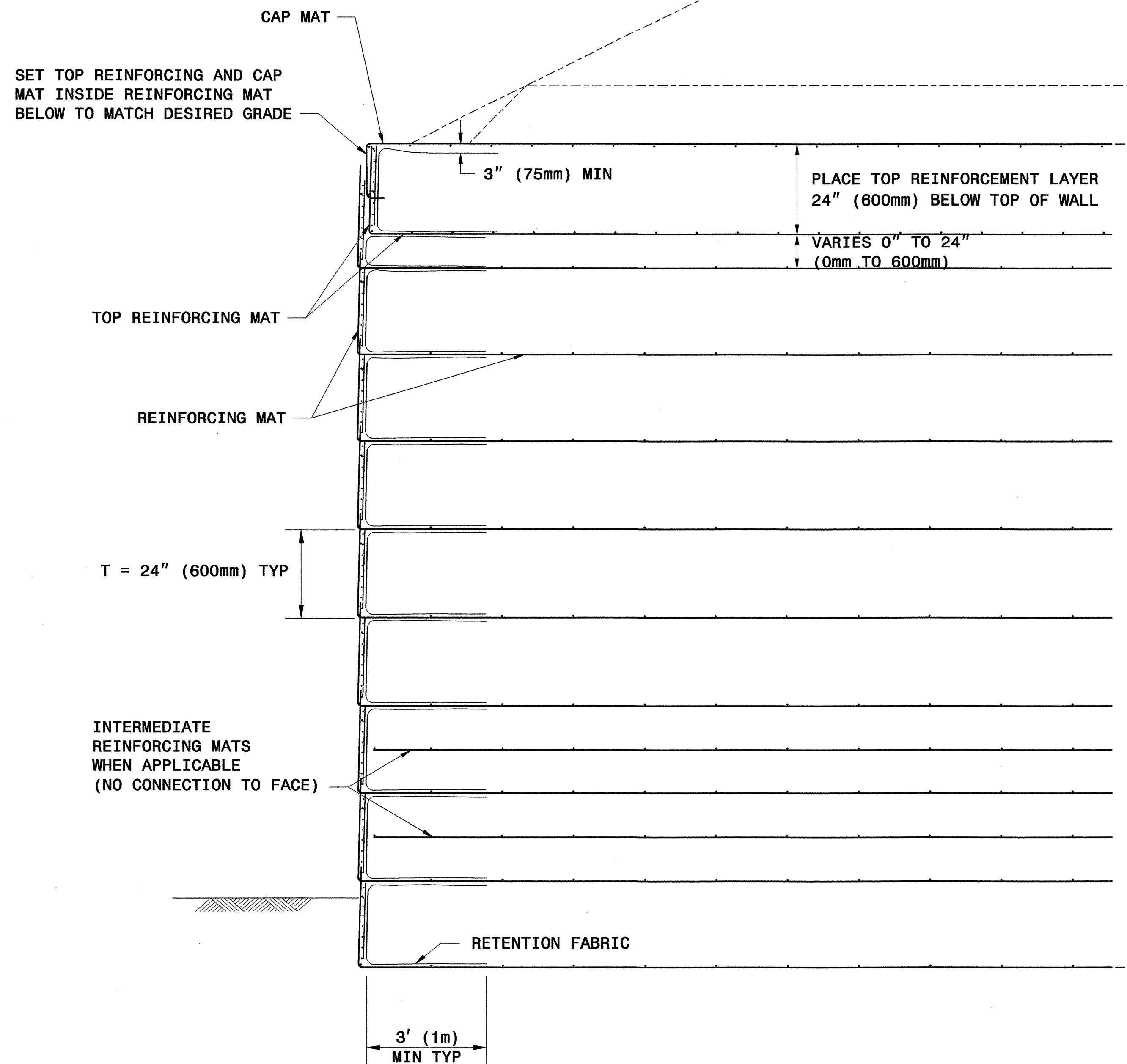
CENTERLINE OF REINFORCING MAT
FACE = EDGE OF BACKING MATS

REINFORCING MAT



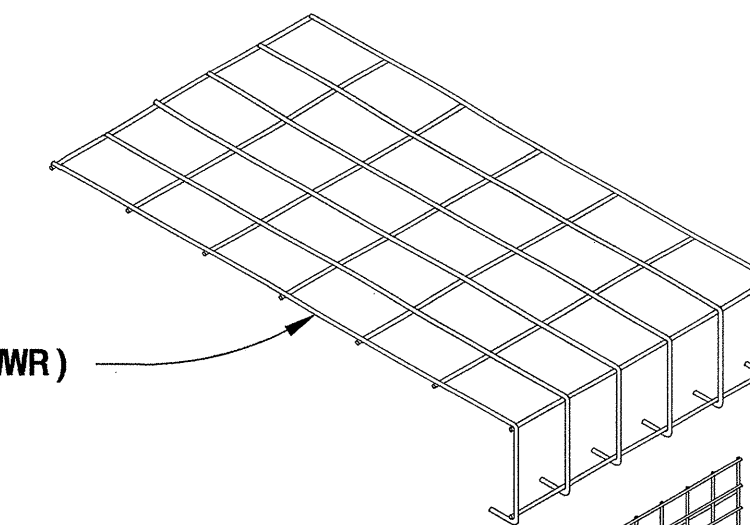
FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL

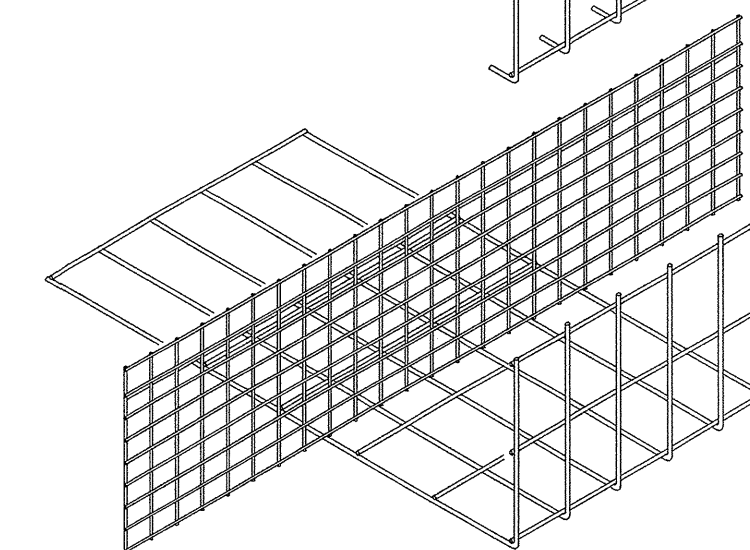


TYPICAL SECTION

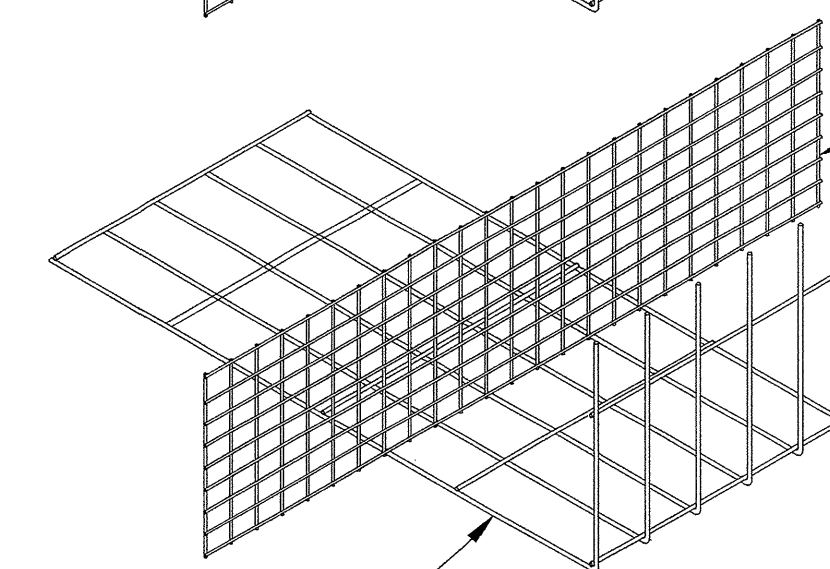
8" X 12" (203mm X 305mm)
W4.5 X W3.5 (MW29 X MW23)
CAP MAT
WELDED WIRE REINFORCEMENT (WWR)



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

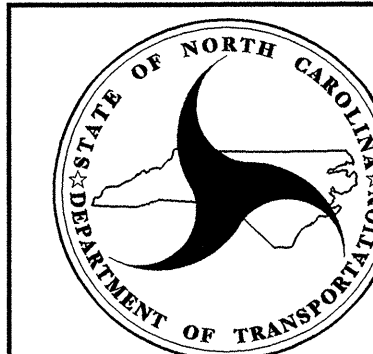


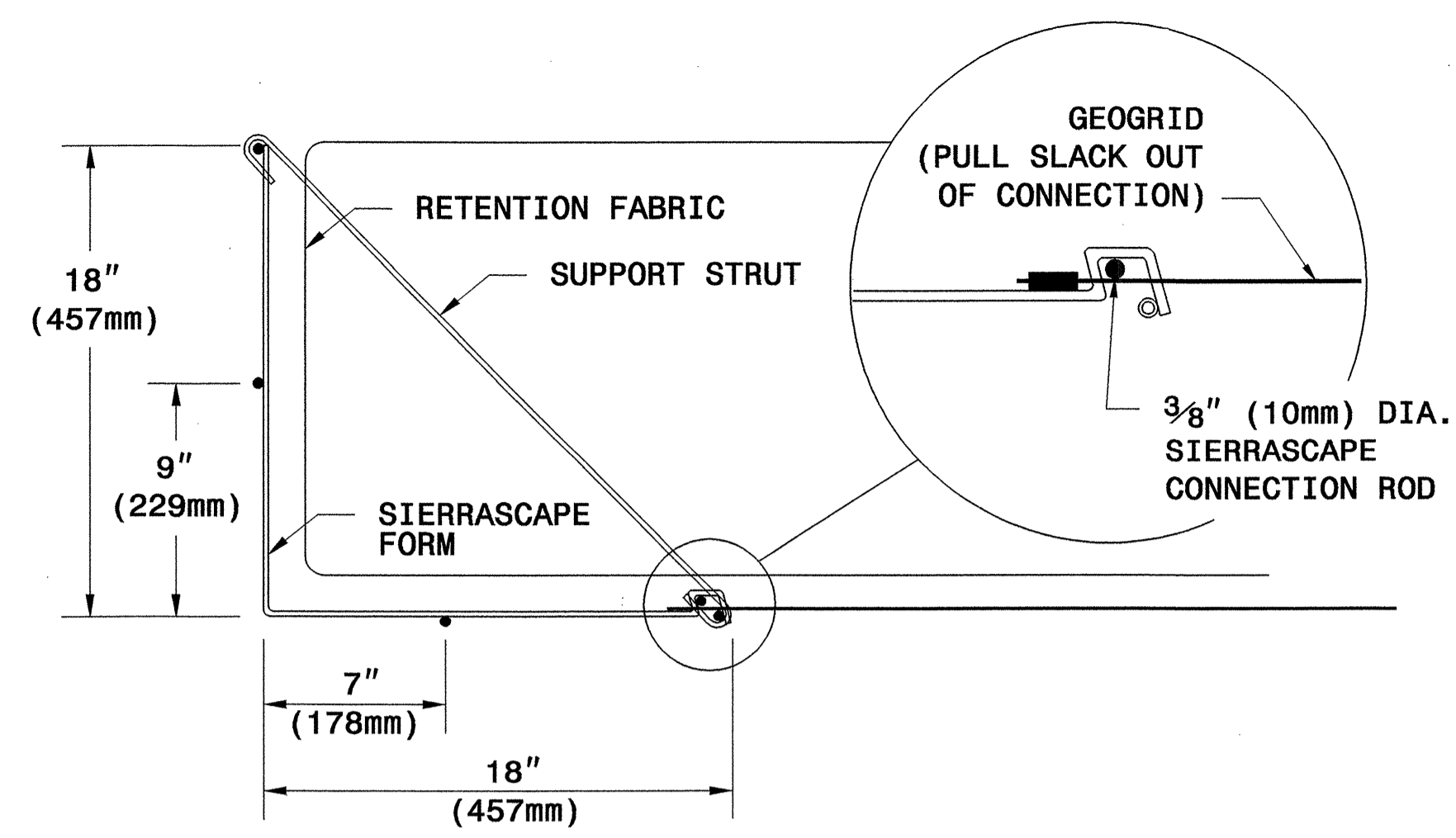
4" X 3" (102mm X 76mm)
W5 X W2.5 (MW32 X MW16) WWR
BACKING MAT
8' (2.4m) WIDE



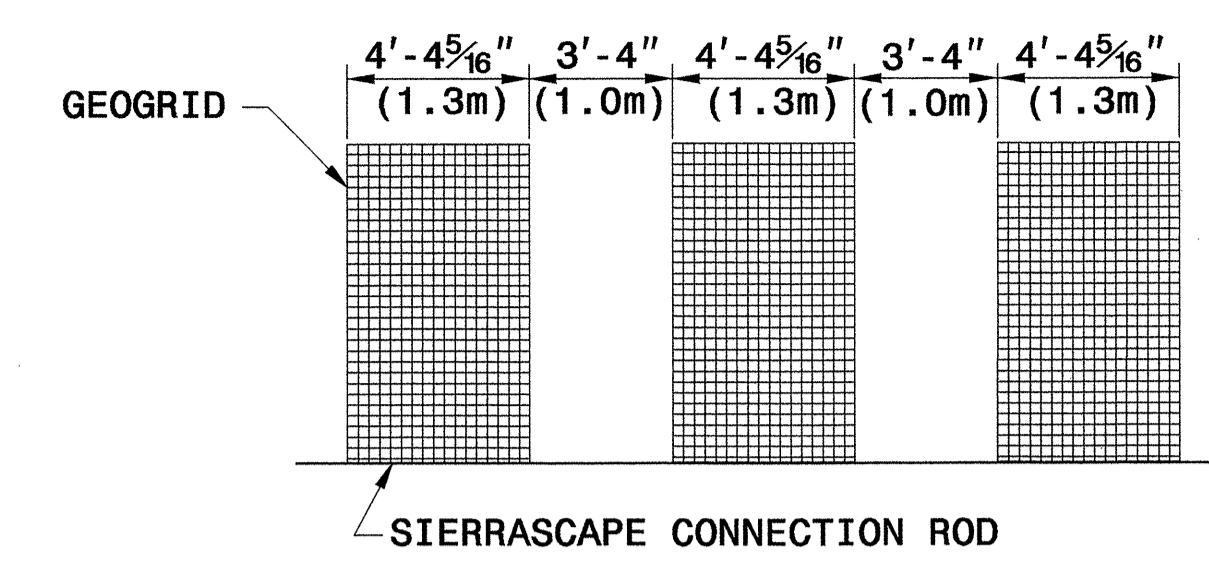
8" X 21" (203mm X 533mm)
REINFORCING MAT
SEE SHEETS 2 AND 3 FOR GAUGE SIZES

WALL COMPONENTS



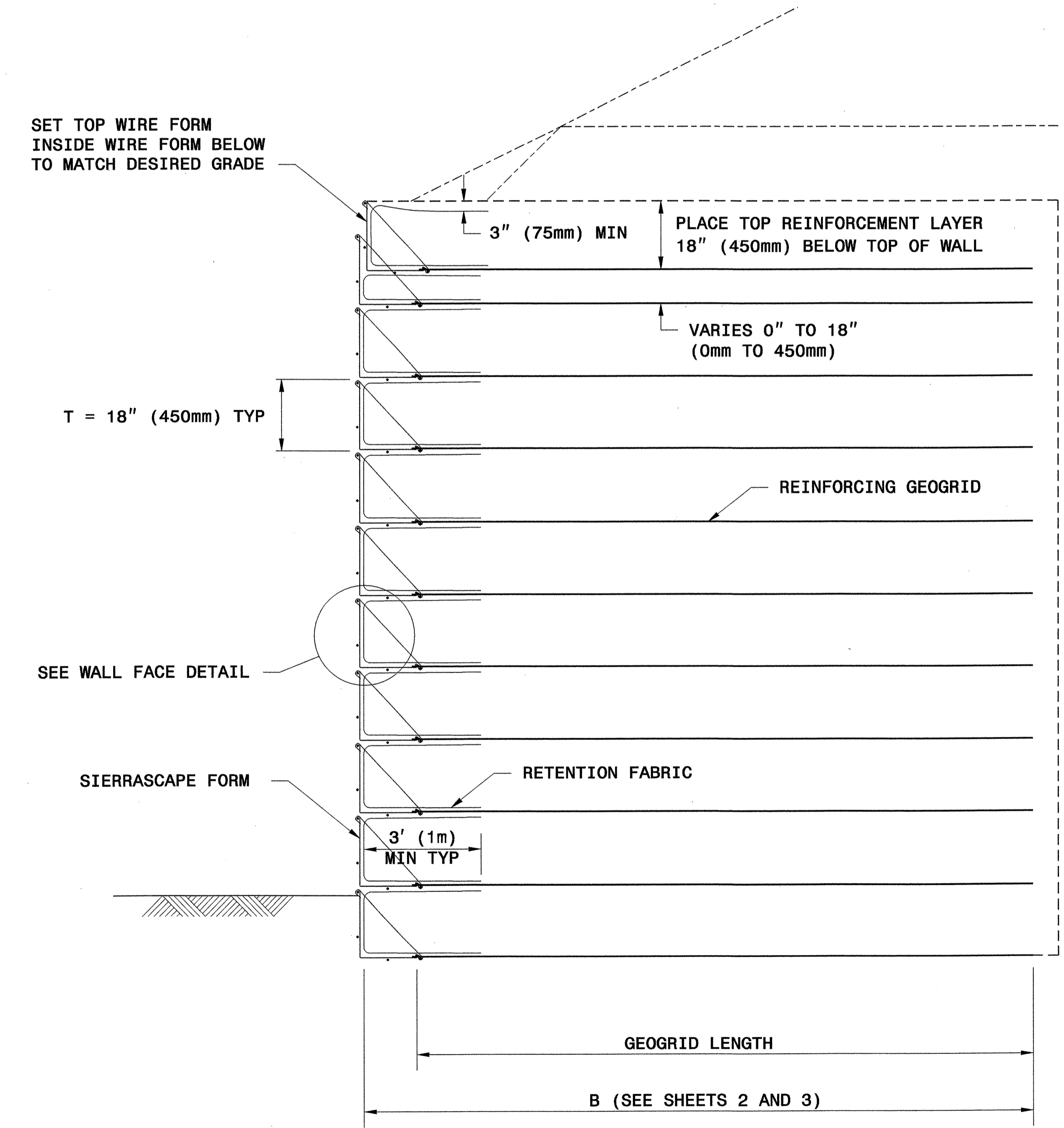


WALL FACE DETAIL

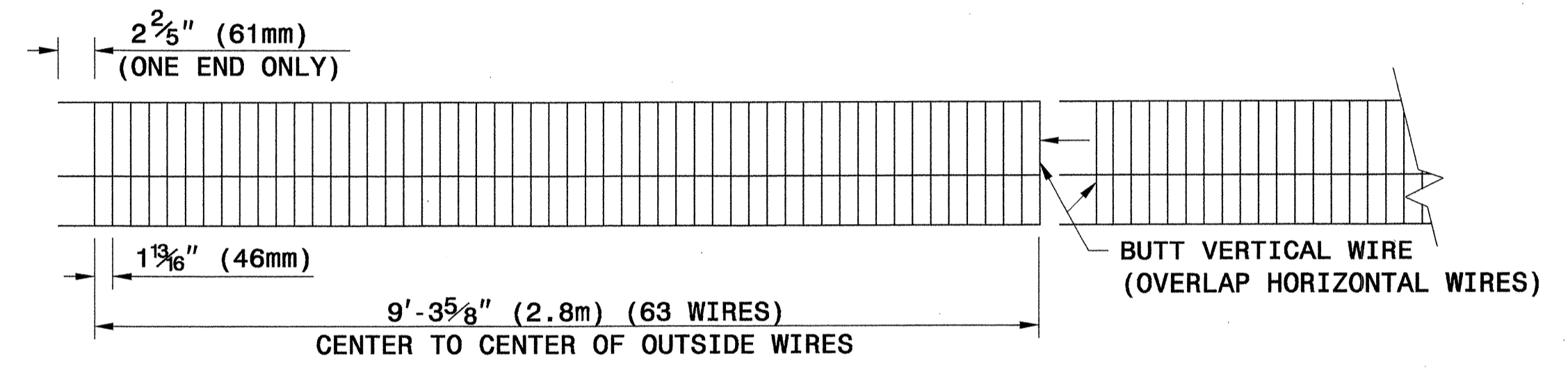


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

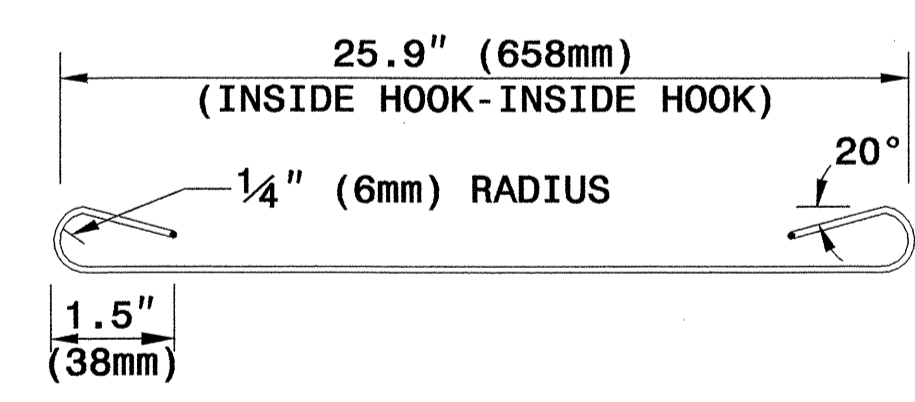
TYPICAL GEOGRID COVERAGE



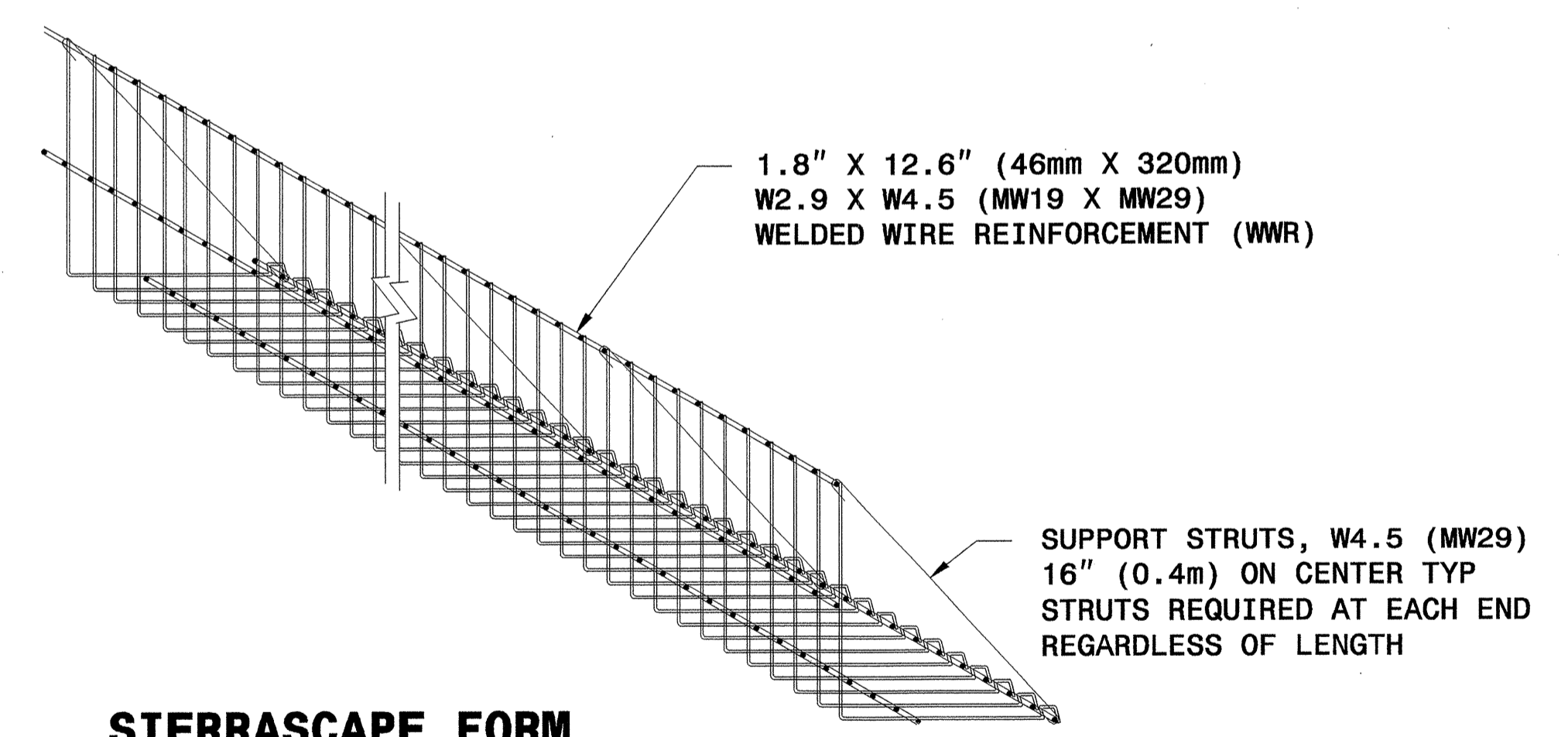
TYPICAL SECTION



ELEVATION VIEW

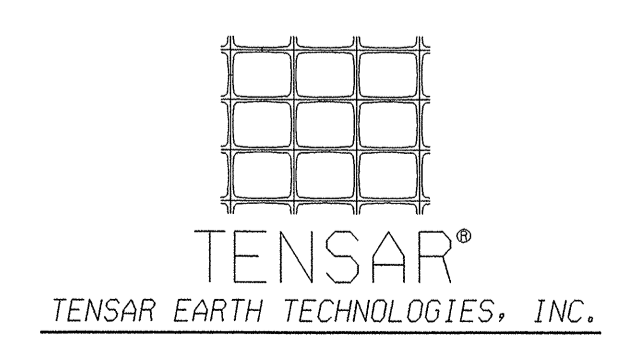


SUPPORT STRUT



SIERRASCAPE FORM

WALL COMPONENTS



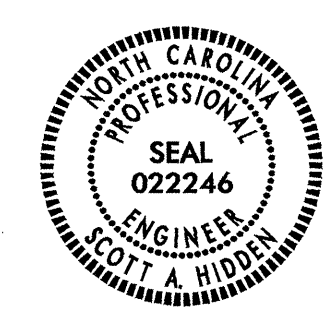
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 RALEIGH

STANDARD DRAWING NO. 1801.02

SIERRASCAPE TEMPORARY WALL

GEOTECHNICAL ENGINEER

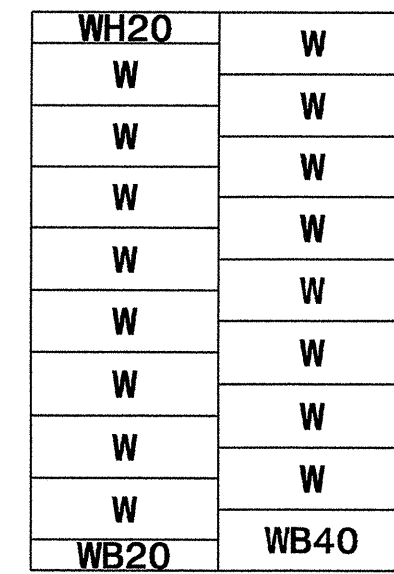
ENGINEER



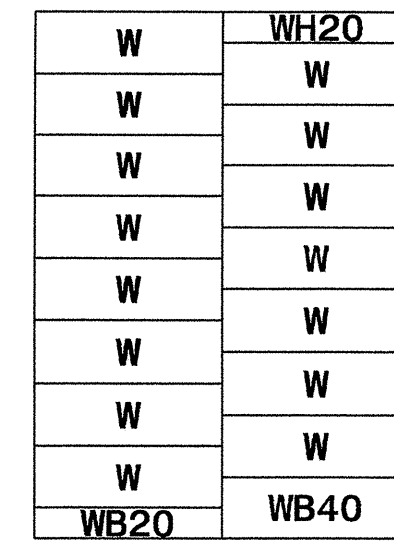
Scott A. Hadden 3/29/07
SIGNATURE DATE

PANEL LAYOUTS

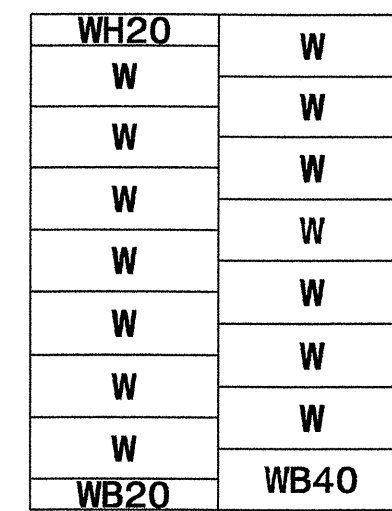
H - WALL HEIGHT
(FEET-INCHES)
(METER)



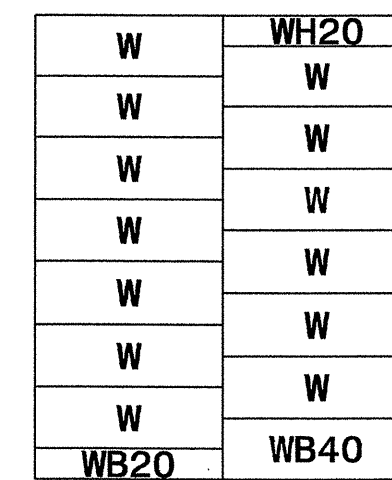
< 28 - 0
< 8.5



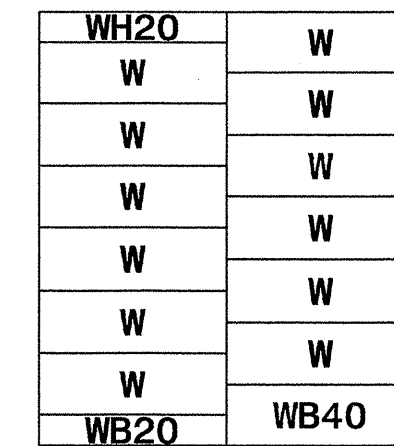
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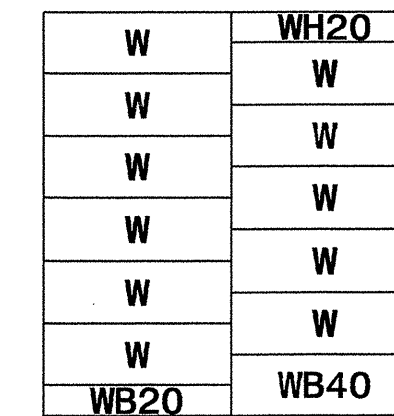
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< 7.7



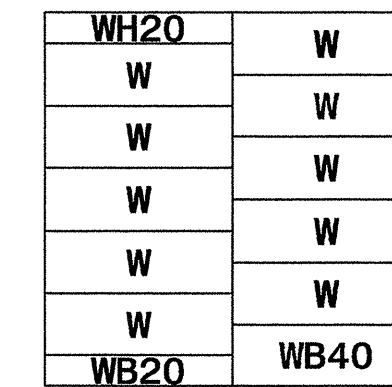
< 23 - 8
< 7.2



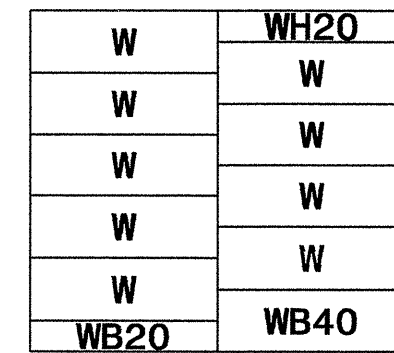
< 22 - 0
< 6.7



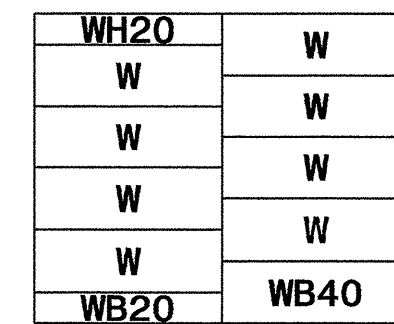
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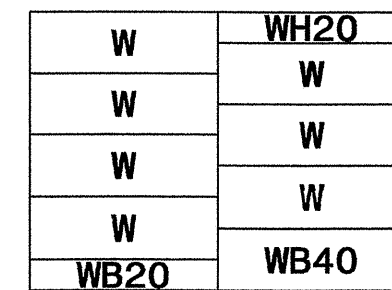
< 18 - 8
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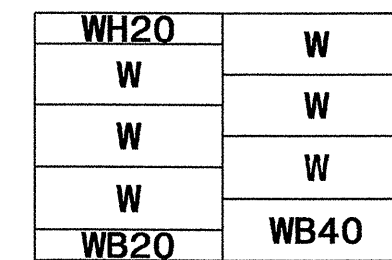
< 17 - 0
< 5.2



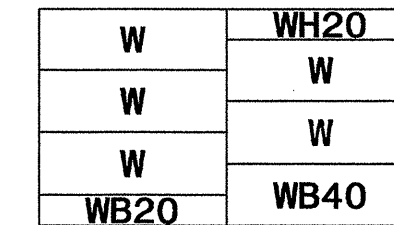
< 15 - 4
< 4.7



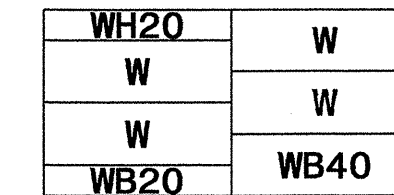
< 13 - 8
< 4.2



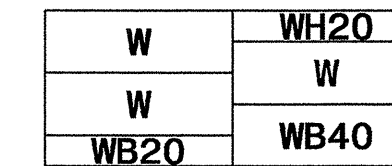
< 12 - 0
< 3.7



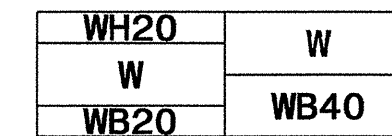
< 10 - 4
< 3.2



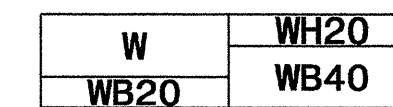
< 8 - 8
< 2.6



< 7 - 0
< 2.1

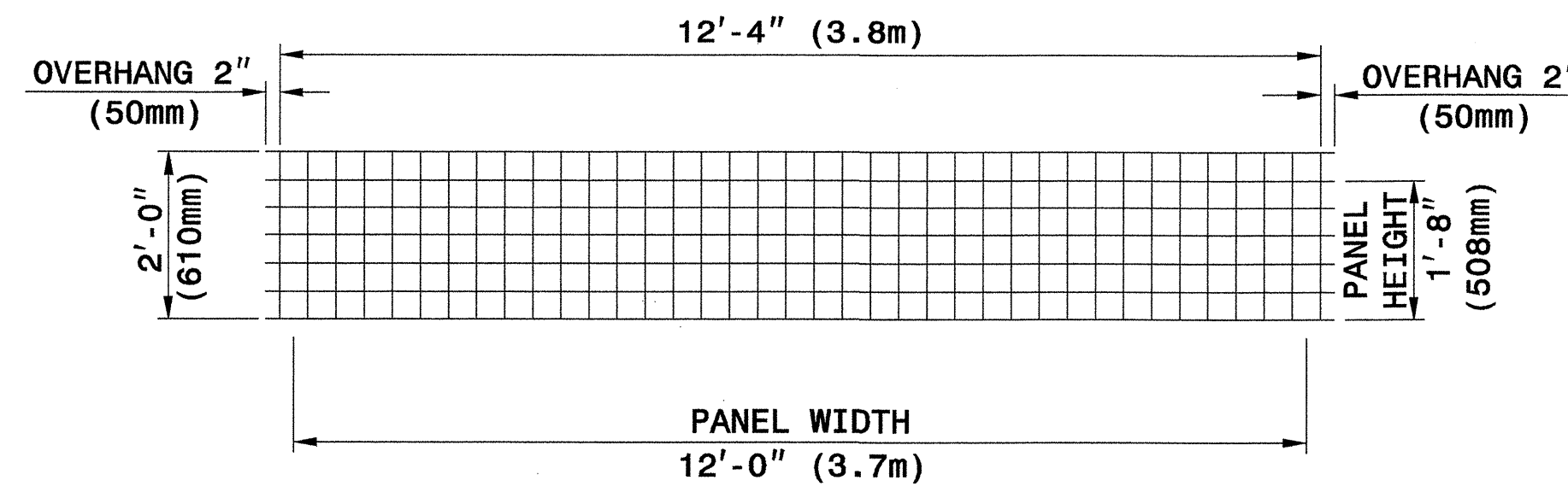


< 5 - 4
< 1.6

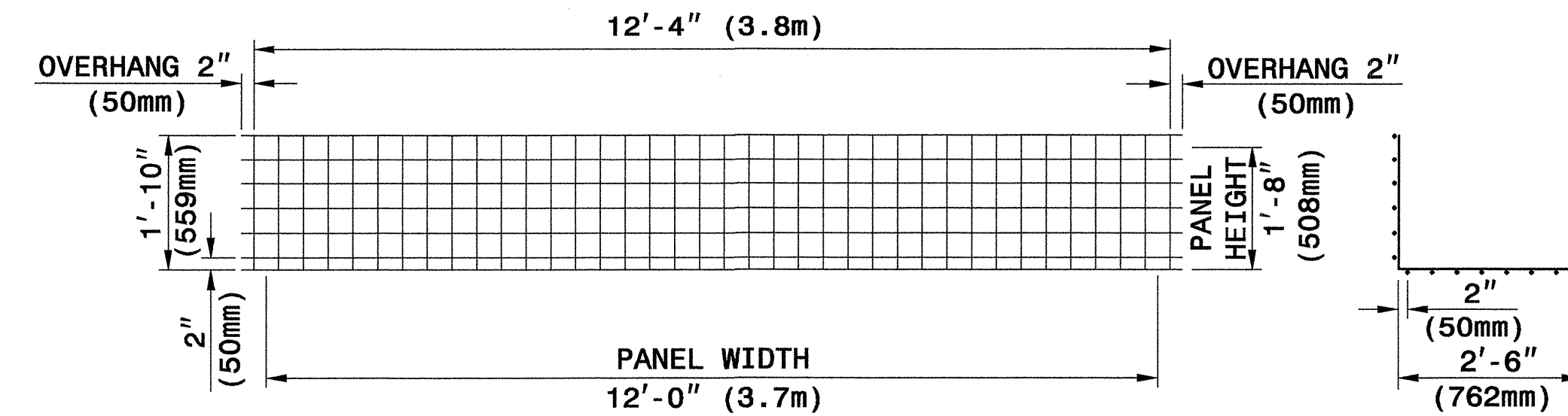


< 3 - 8
< 1.1

(FEET-INCHES)
(METER)

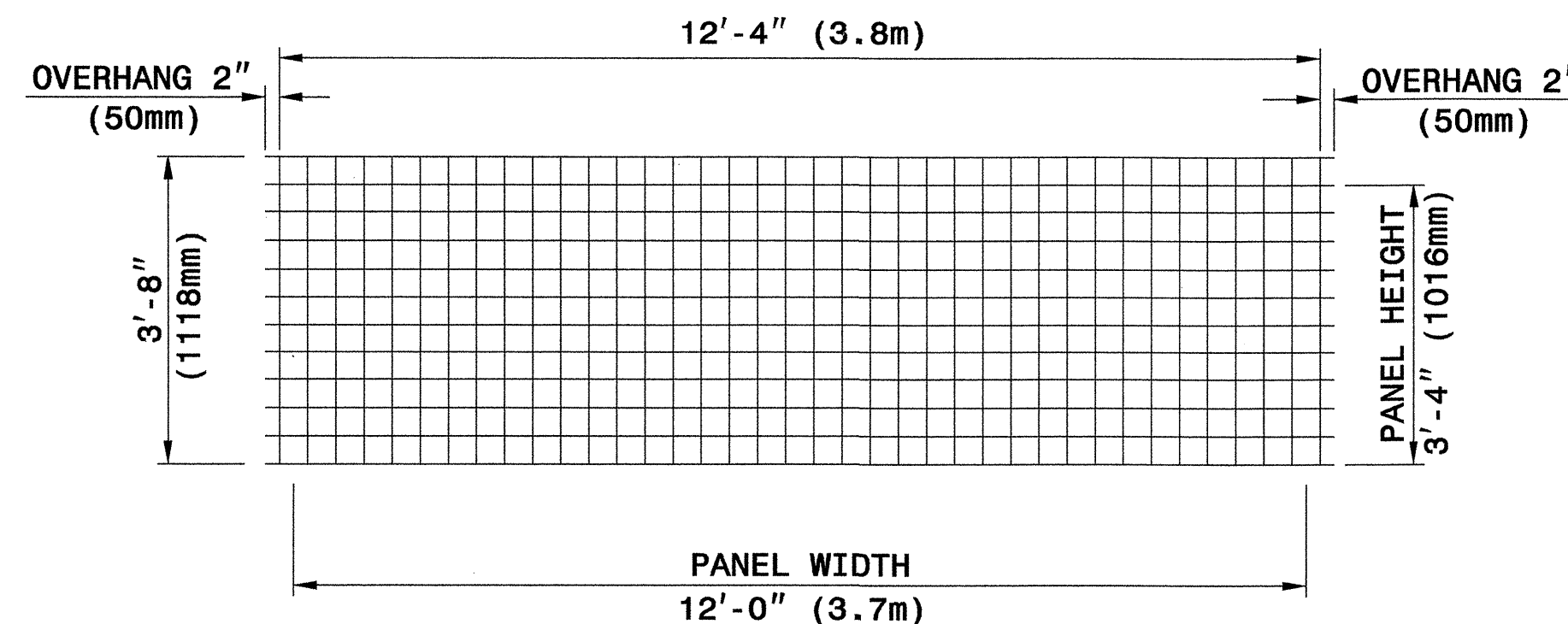


TYPE WH20

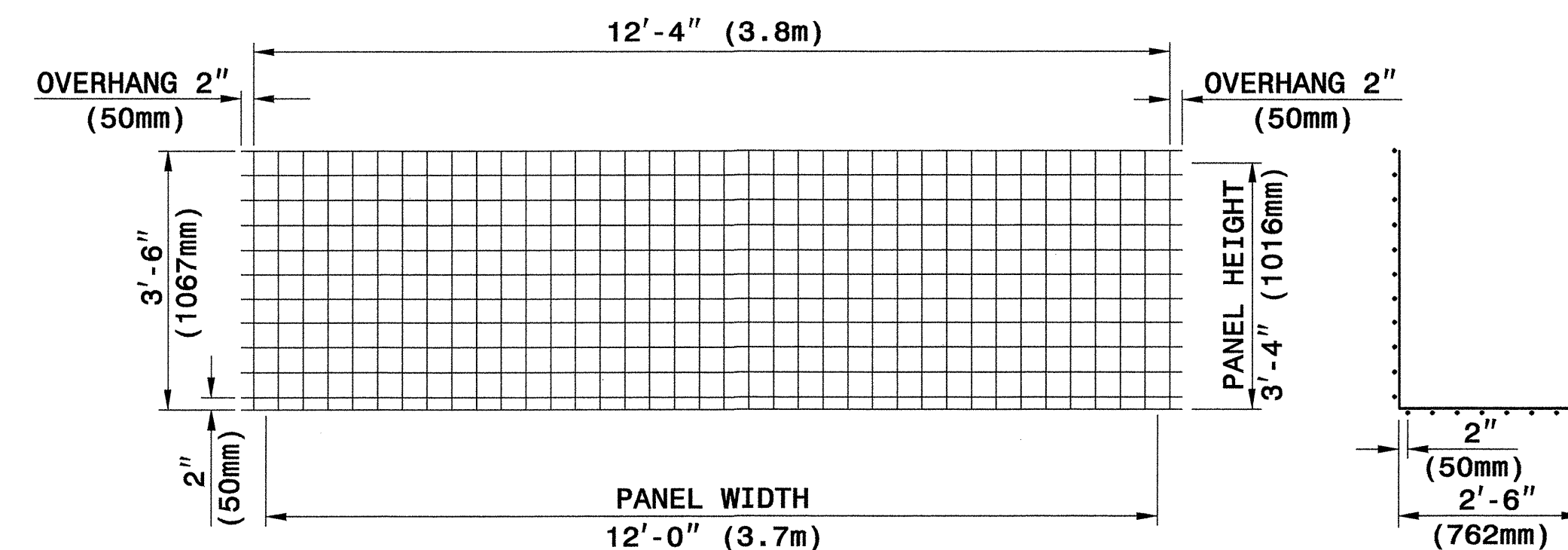


TYPE WB20

SECTION



TYPE W



TYPE WB40

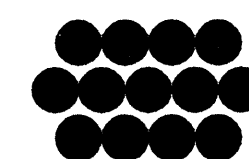
SECTION

WELDED WIRE FACINGS

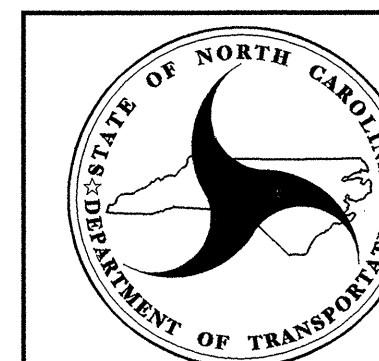
WELDED WIRE FORMS

PANEL TYPES (WELDED WIRE FACINGS AND FORMS)

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



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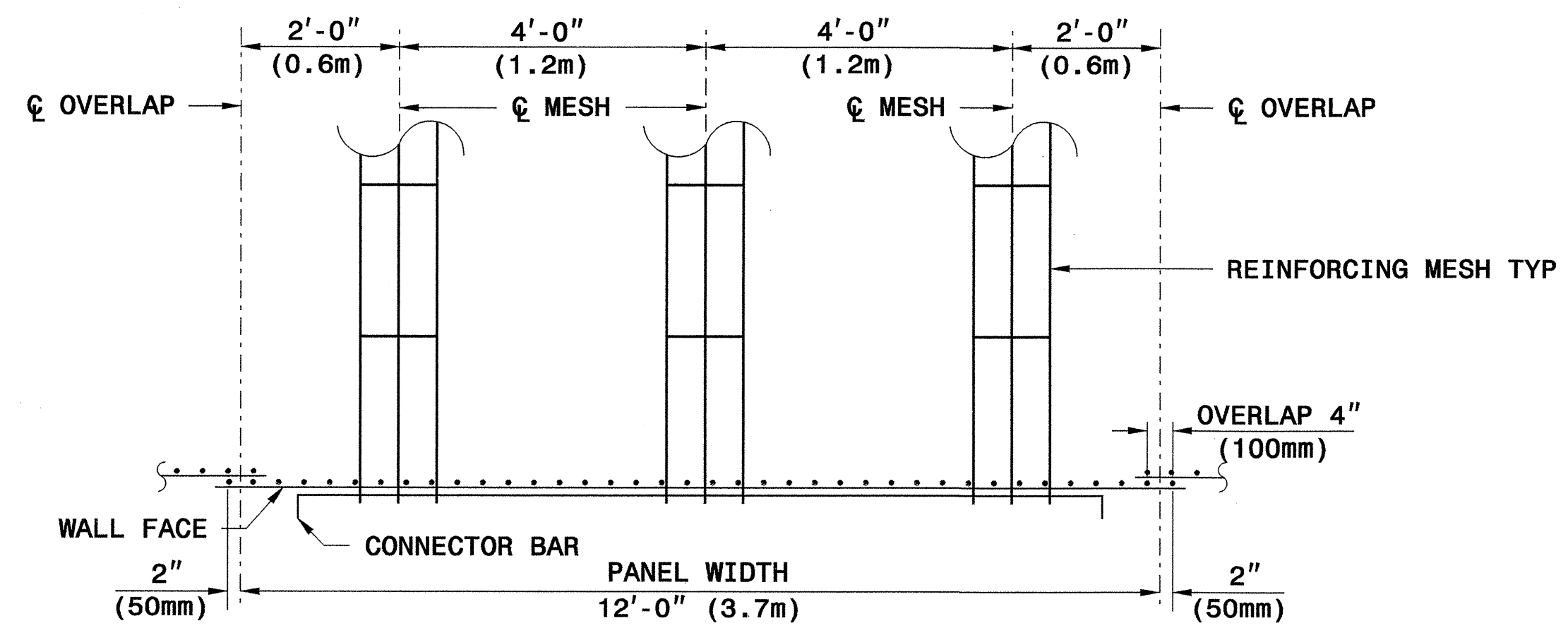
GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH
TEMPORARY WALL

SHEET 6 OF 11

DATE: 12-19-06



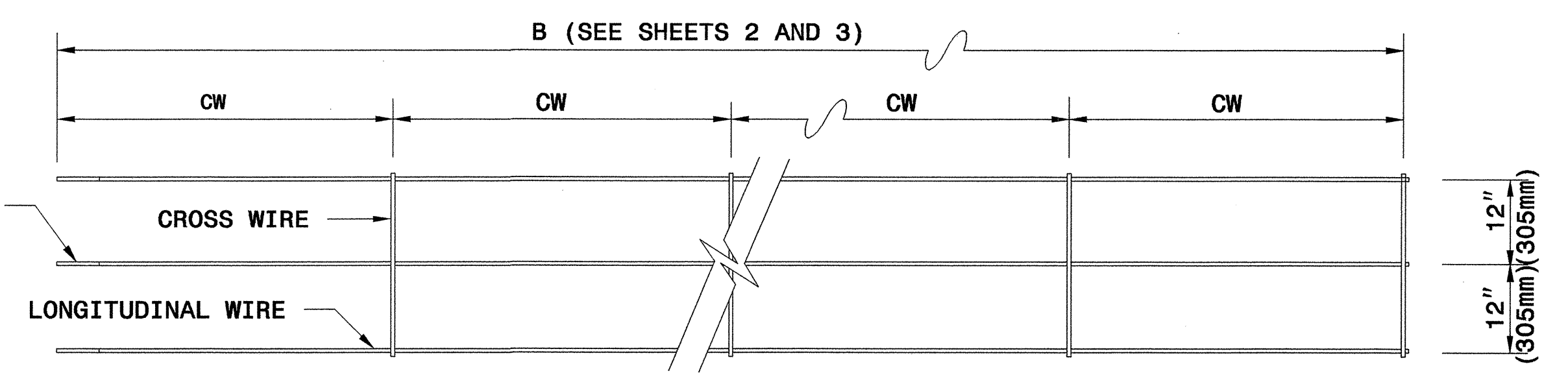
REINFORCING MESH PLACEMENT DETAIL (PLAN VIEW)



1/2" (13mm) DIA. BAR

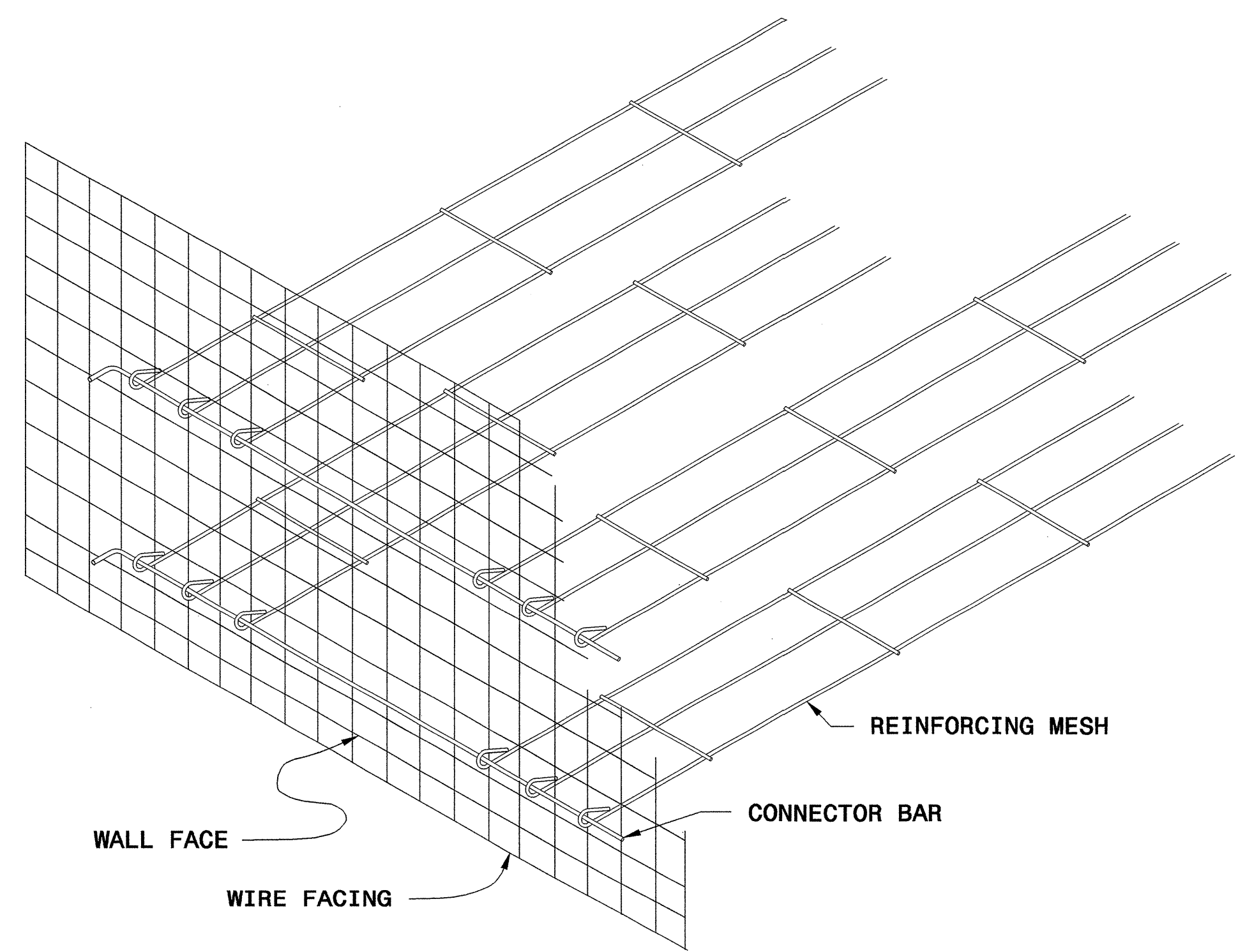
CONNECTOR BAR

LOOPED END OF MESH (SEE REINFORCING MESH LOOP DETAIL)



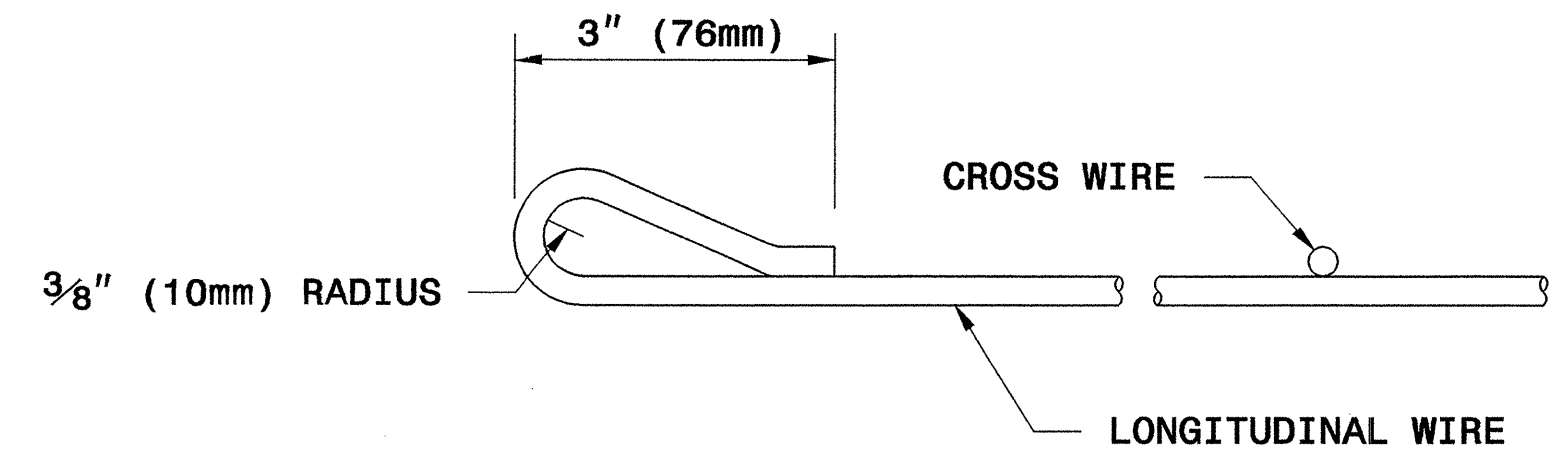
3W8 X W8 X 2.0' (3MW52 X MW52 X 610mm)
 NO. OF LONGITUDINAL WIRES
 GAUGE OF LONGITUDINAL WIRES
 GAUGE OF CROSS WIRES
 SPACING OF CROSS WIRES IN FT (mm), CW

REINFORCING MESH DESIGNATION



GENERAL ASSEMBLY DETAIL

REINFORCING MESH



REINFORCING MESH LOOP DETAIL



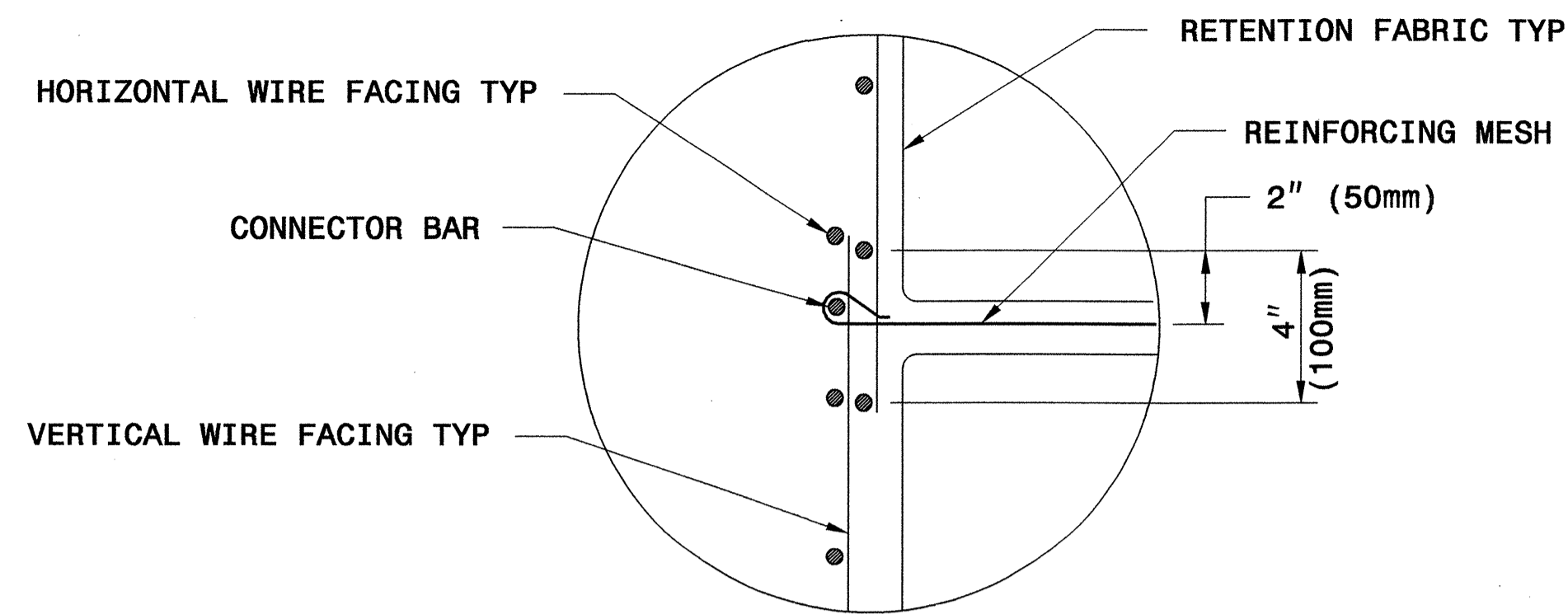
GEC221427 3/29/2007 std no 1801 shidden GE-Oce34bond

GEOTECHNICAL ENGINEER

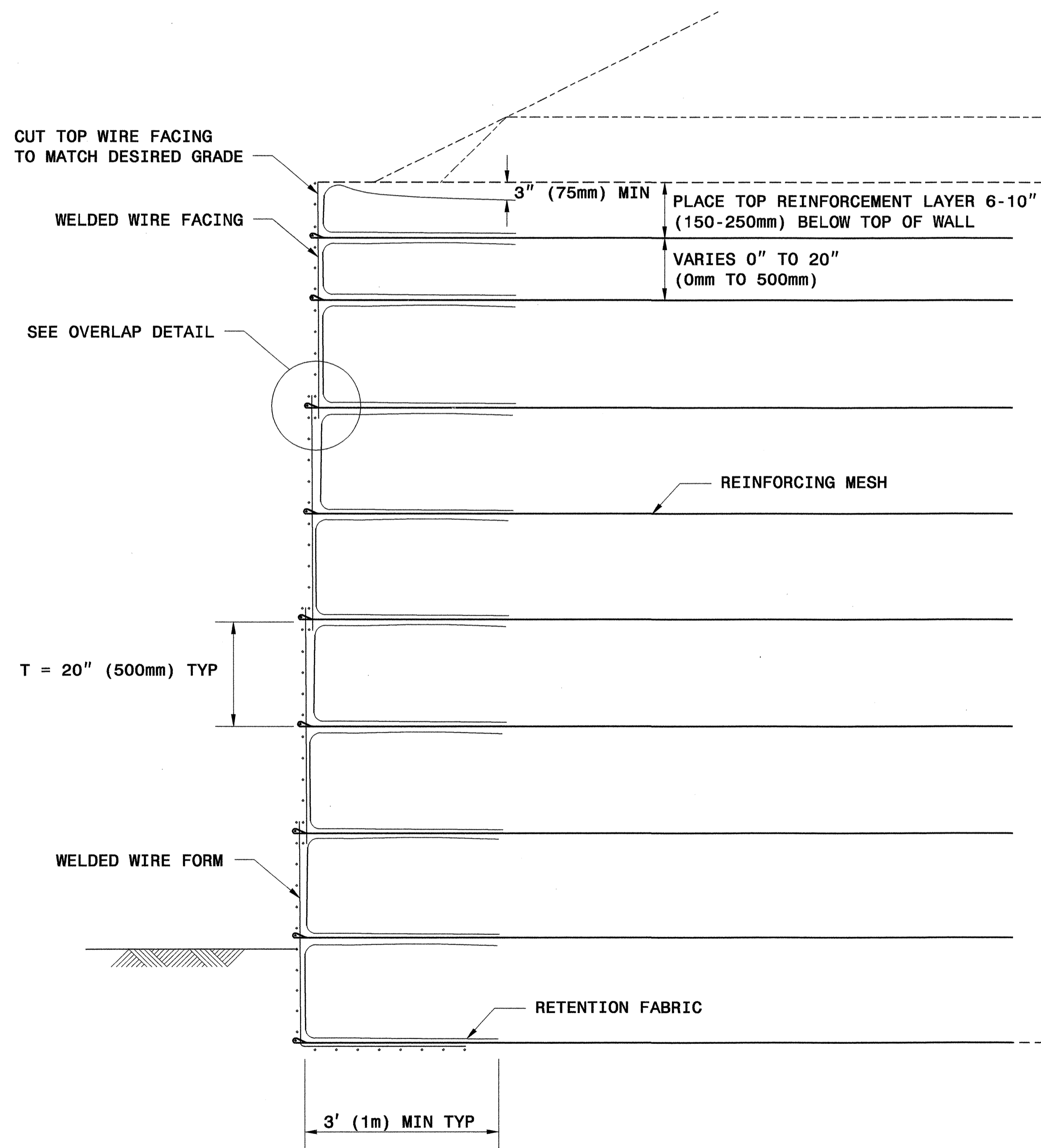
ENGINEER



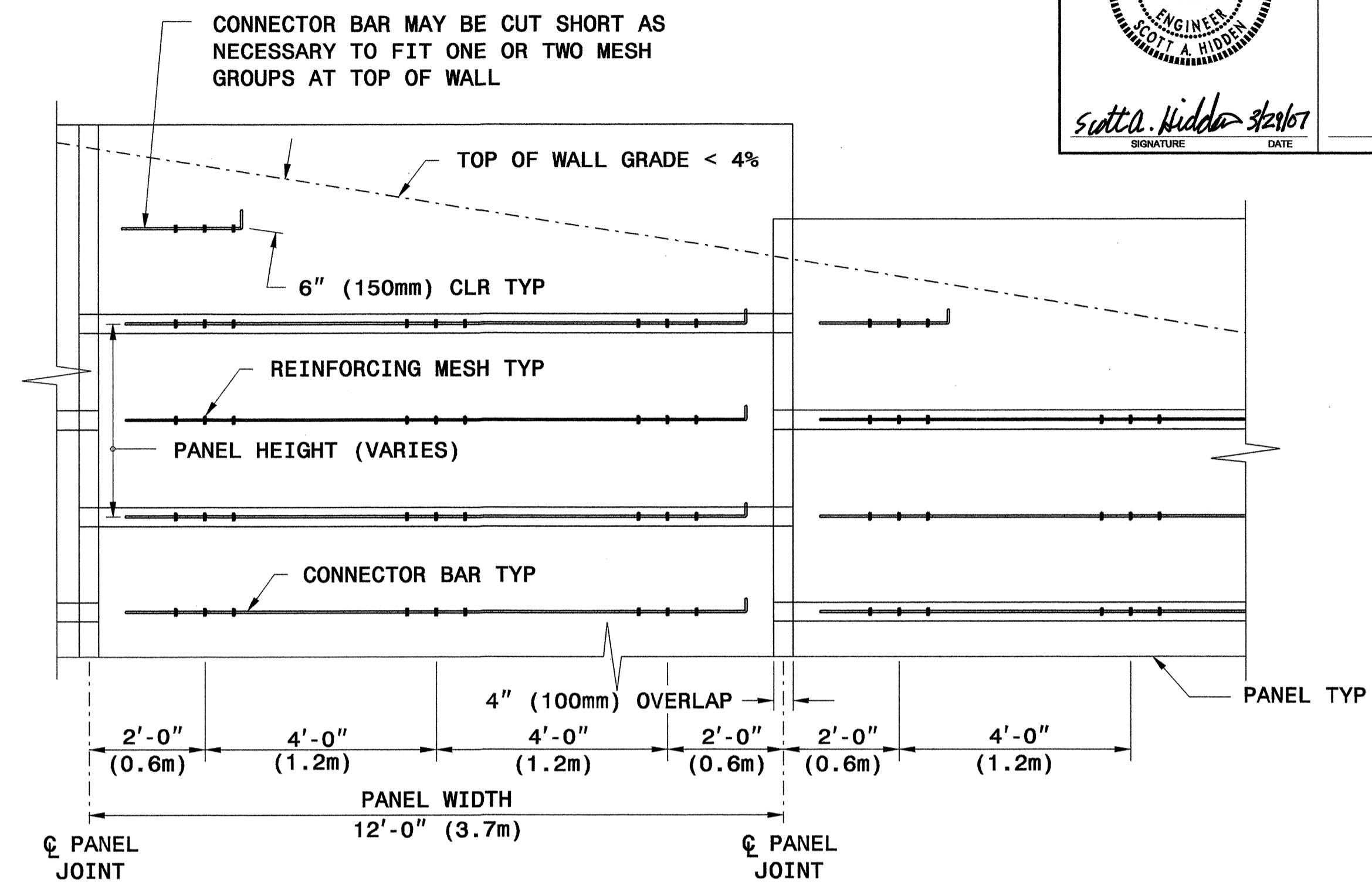
Signature: Scott A. Hadden
Date: 3/29/07



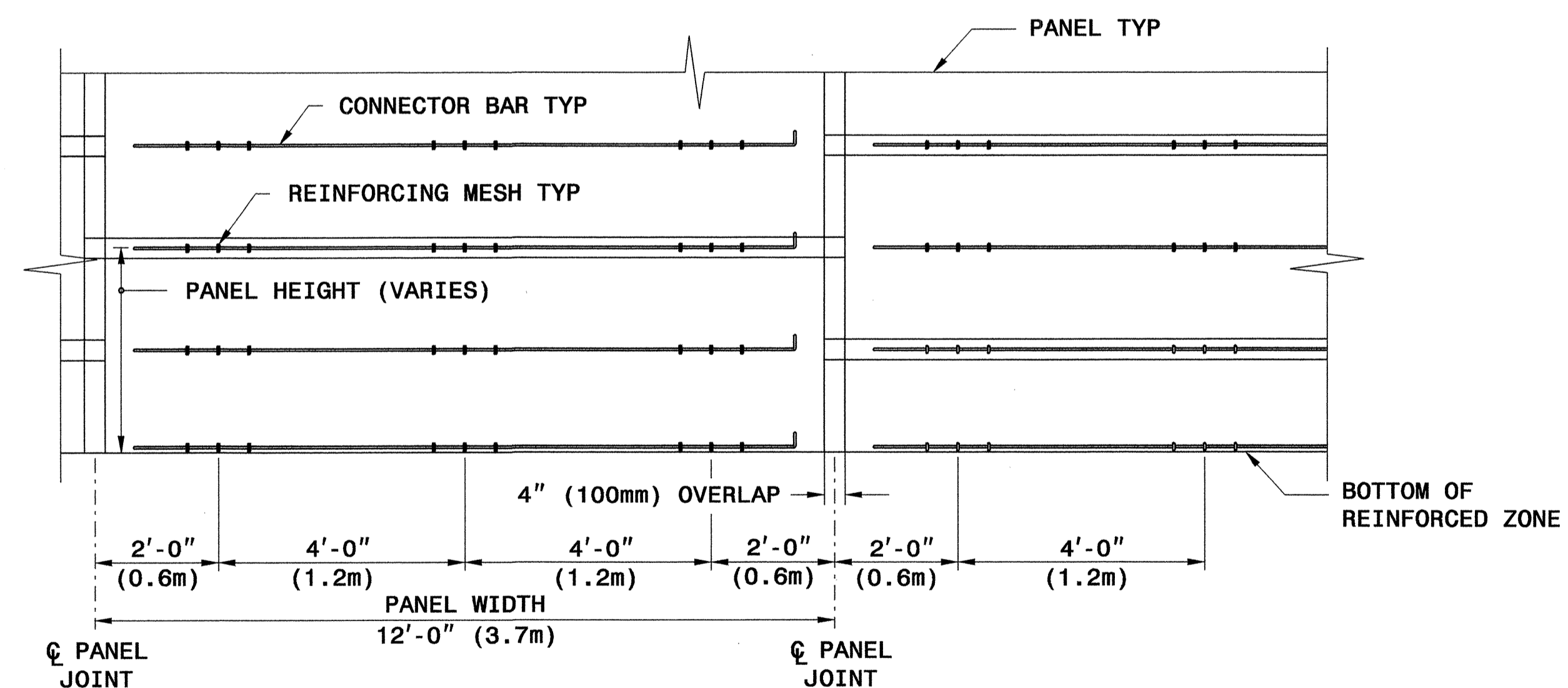
OVERLAP DETAIL



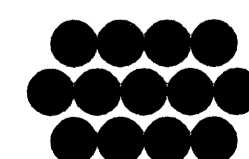
TYPICAL SECTION



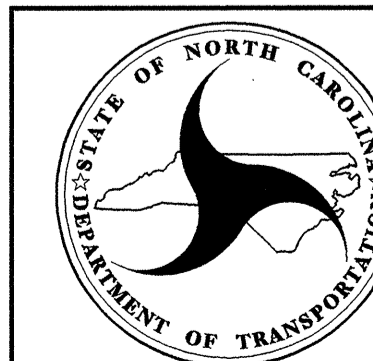
**TYPICAL ELEVATION @ TOP OF WALL
(WIRES NOT SHOWN FOR CLARITY)**



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



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH
TEMPORARY WALL

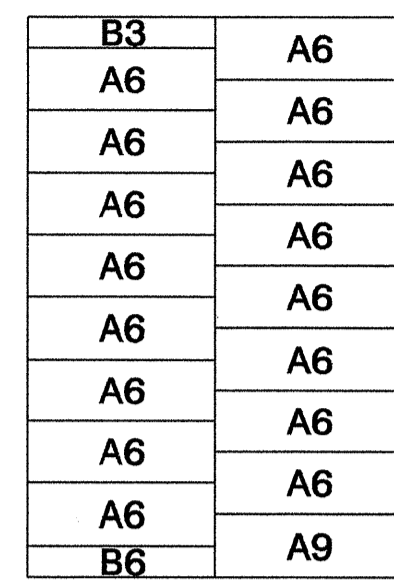
GEOTECHNICAL ENGINEER ENGINEER



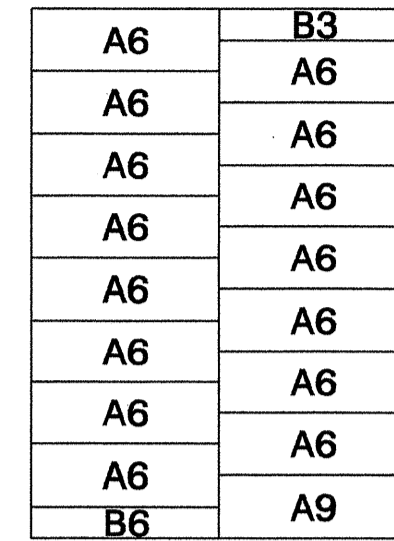
Signature: Scott A. Hadden
Date: _____

PANEL LAYOUTS

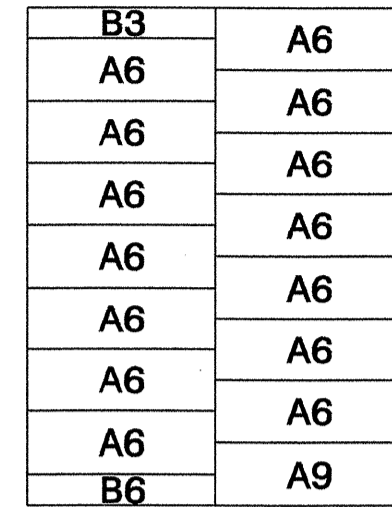
H - WALL HEIGHT
(FEET - INCHES)
(METER)



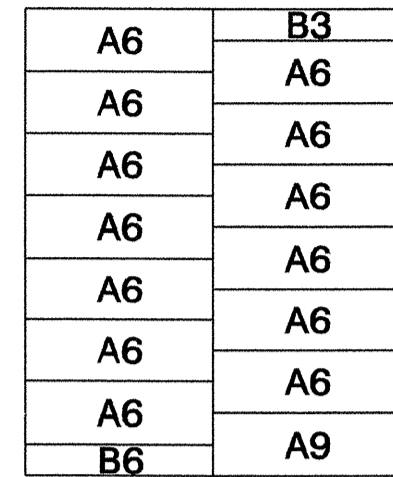
< 28 - 0
< 8.5



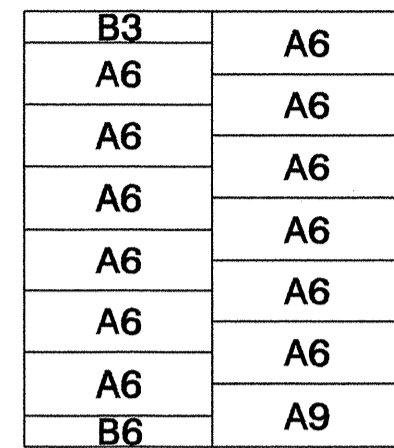
< 27 - 8
< 8.4



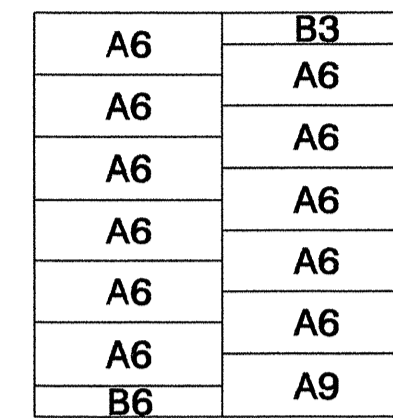
< 26 - 0
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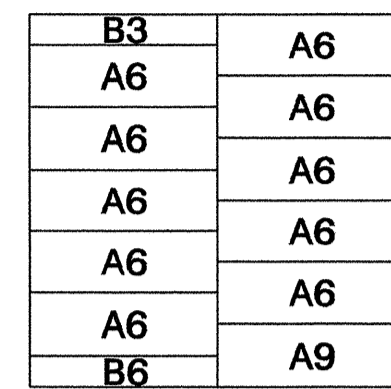
< 24 - 4
< 7.4



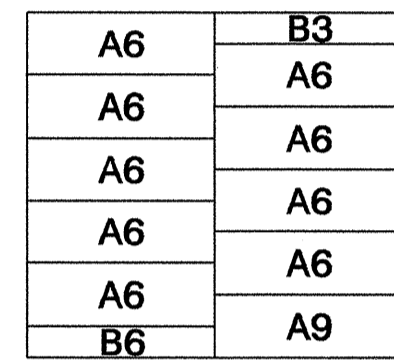
< 22 - 8
< 6.9



< 21 - 0
< 6.4

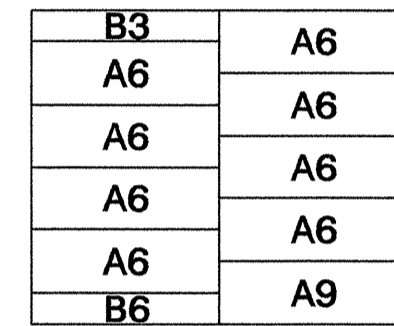


< 19 - 4
< 5.9

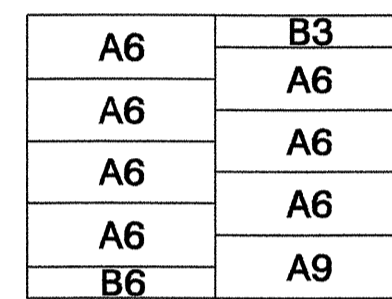


(FEET - INCHES)
(METER)

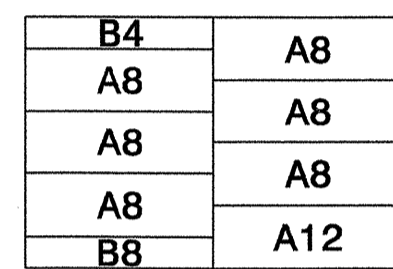
< 17 - 8
< 5.4



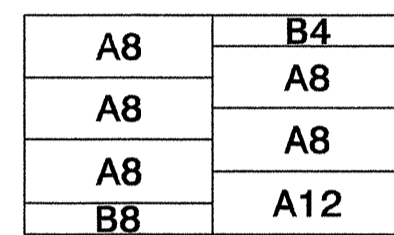
< 16 - 0
< 4.9



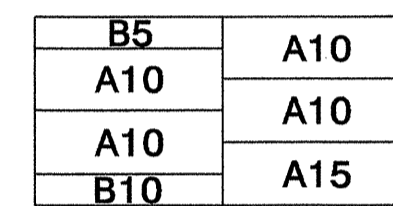
< 14 - 4
< 4.4



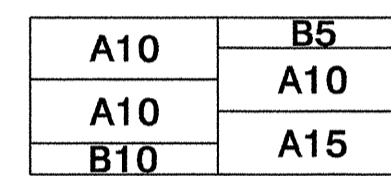
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< 3.9



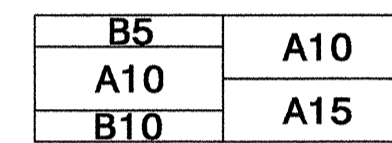
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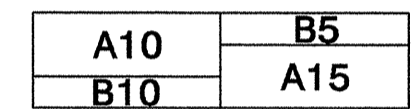
< 9 - 4
< 2.8



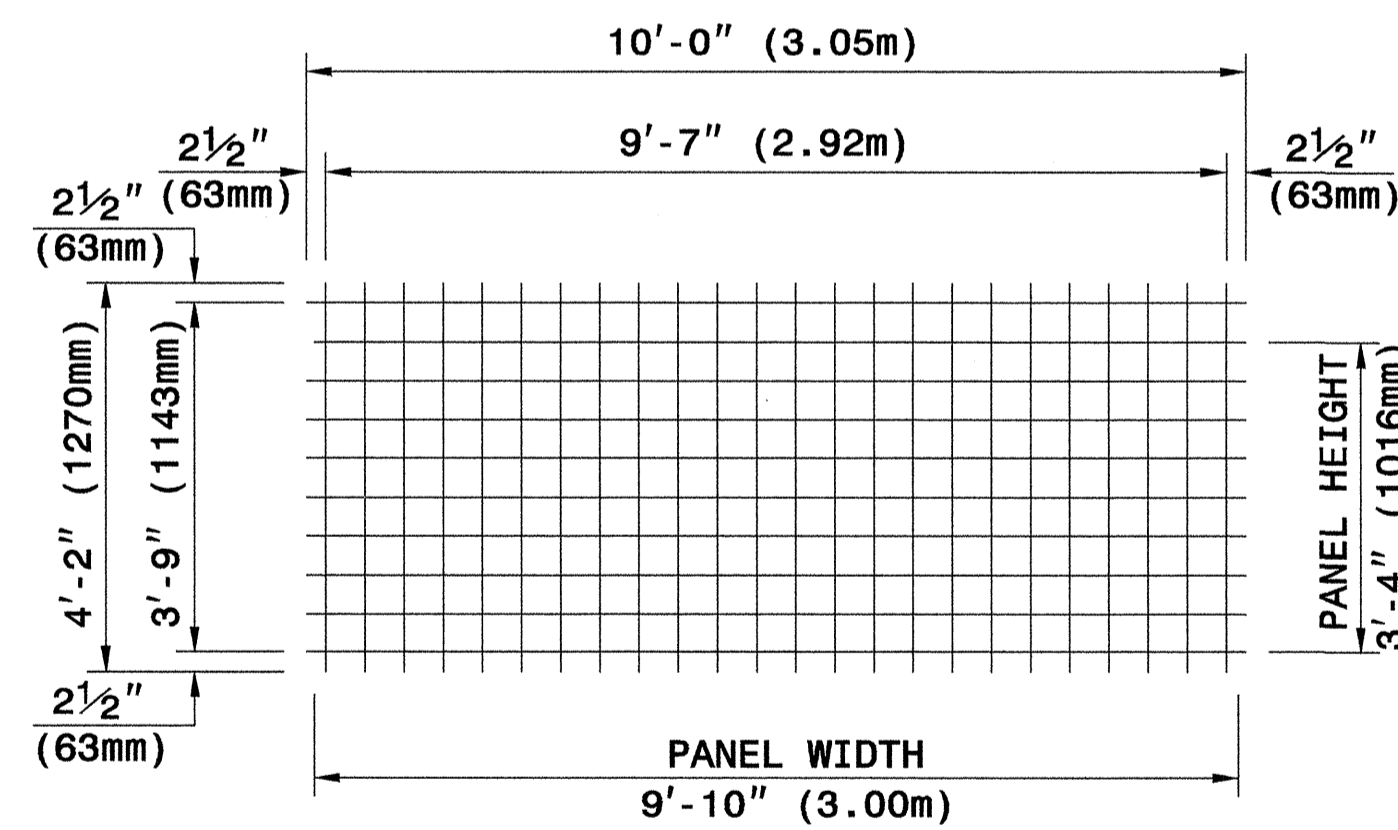
< 7 - 8
< 2.3



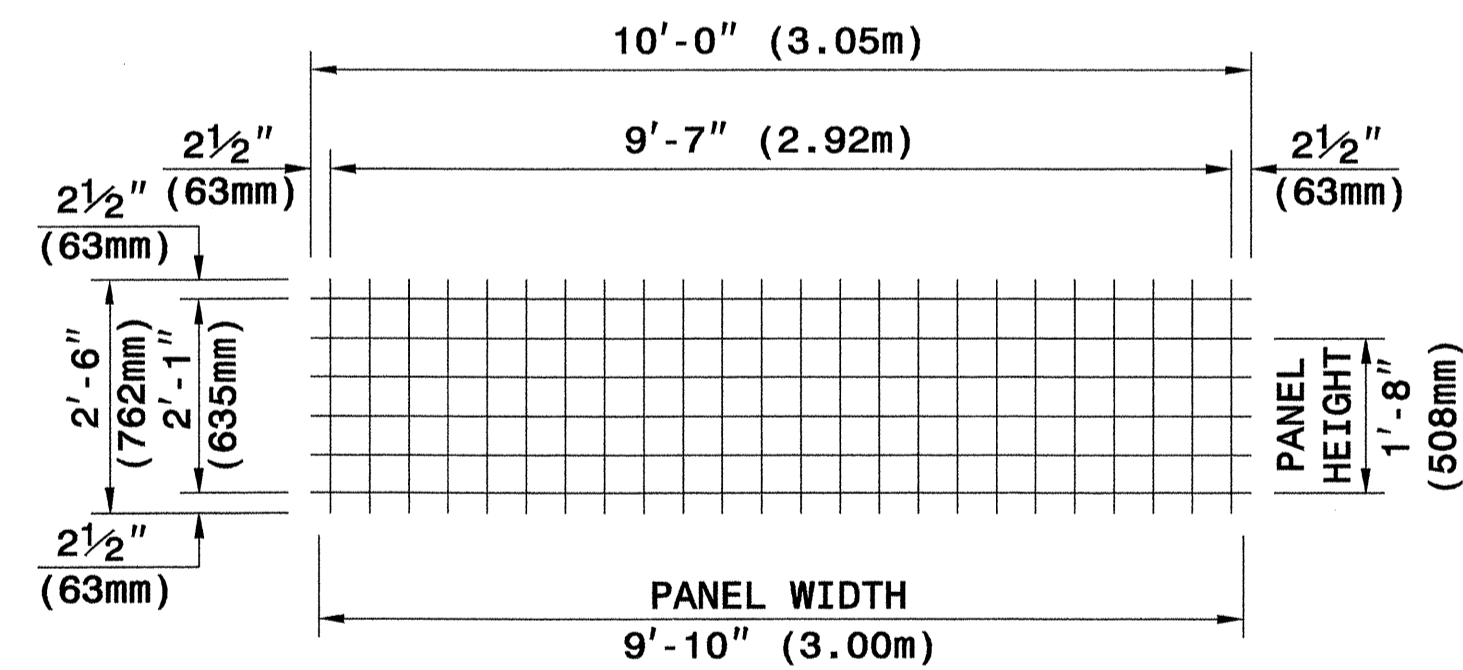
< 6 - 0
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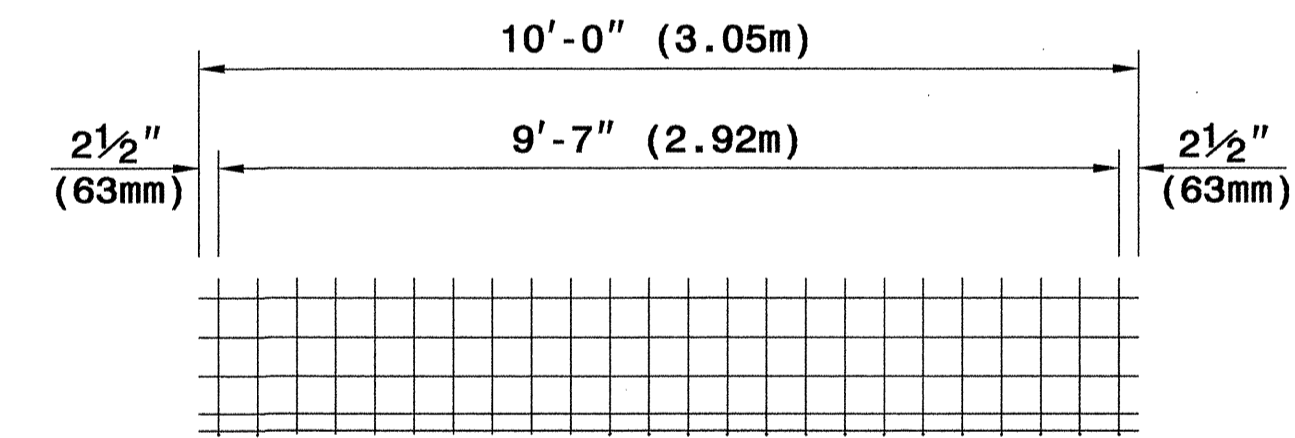
< 4 - 4
< 1.3



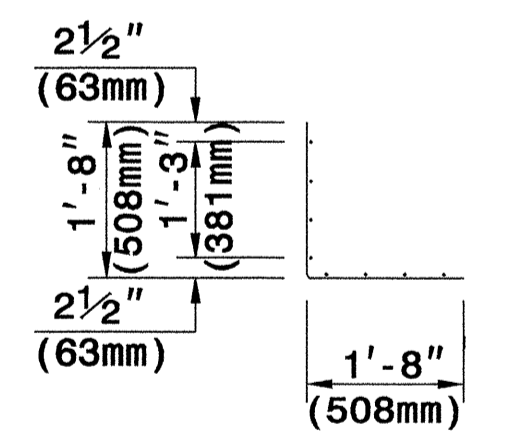
TYPE A



TYPE B



WELDED WIRE FORM

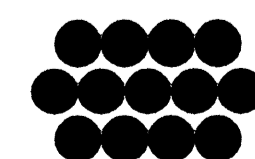


SECTION

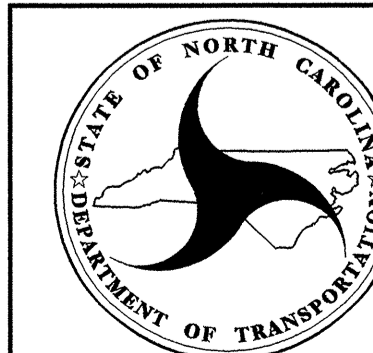
WELDED WIRE FACINGS

PANEL TYPES (WELDED WIRE FACINGS AND FORM)

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



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RALEIGH

STANDARD DRAWING NO. 1801.02

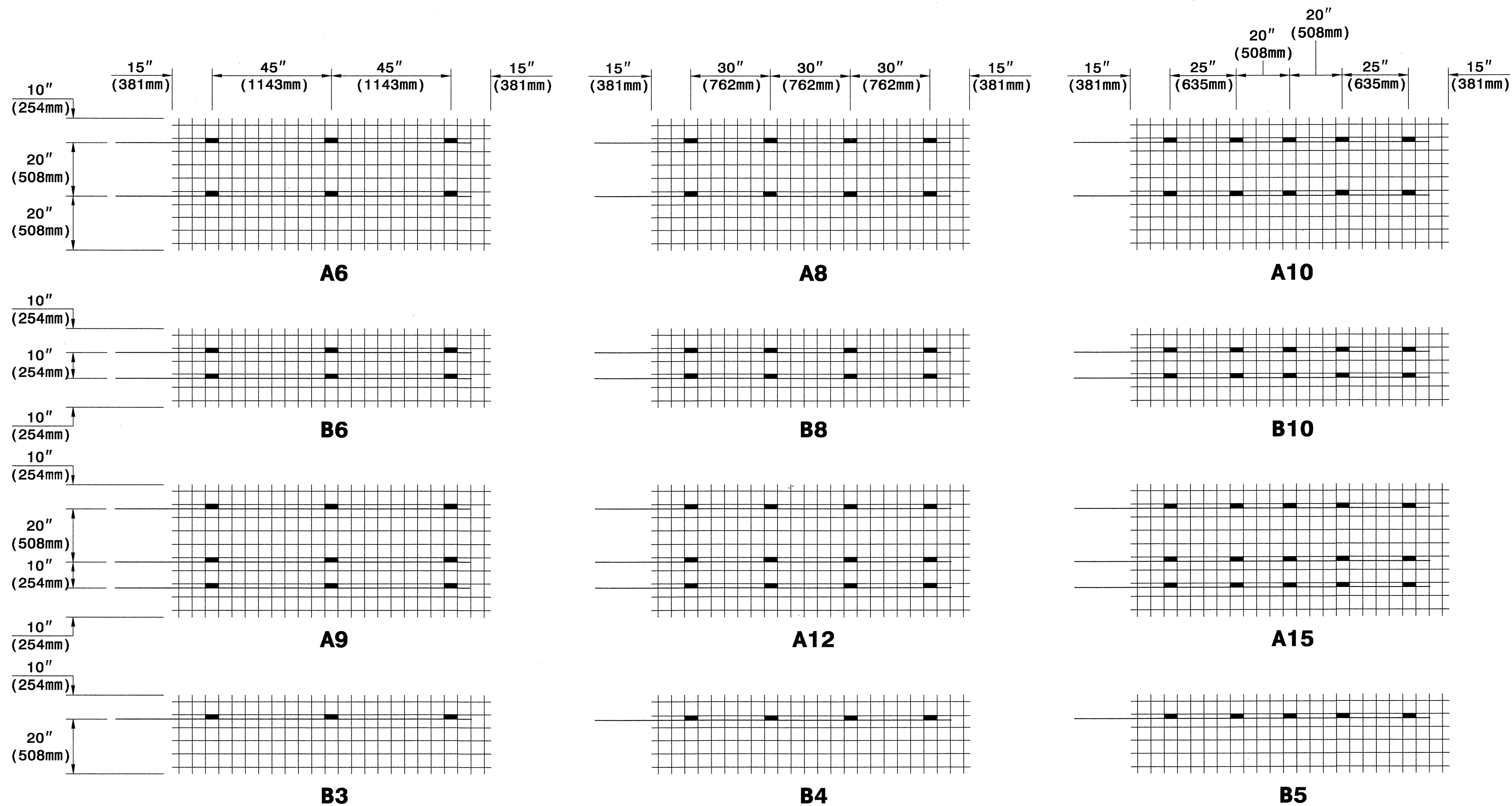
TERRATREL
TEMPORARY WALL

GEOTECHNICAL ENGINEER

ENGINEER

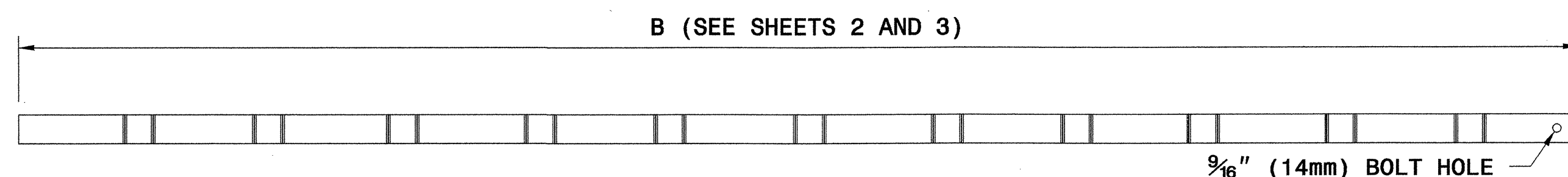


Scott A. Hadden 3/24/07
SIGNATURE DATE

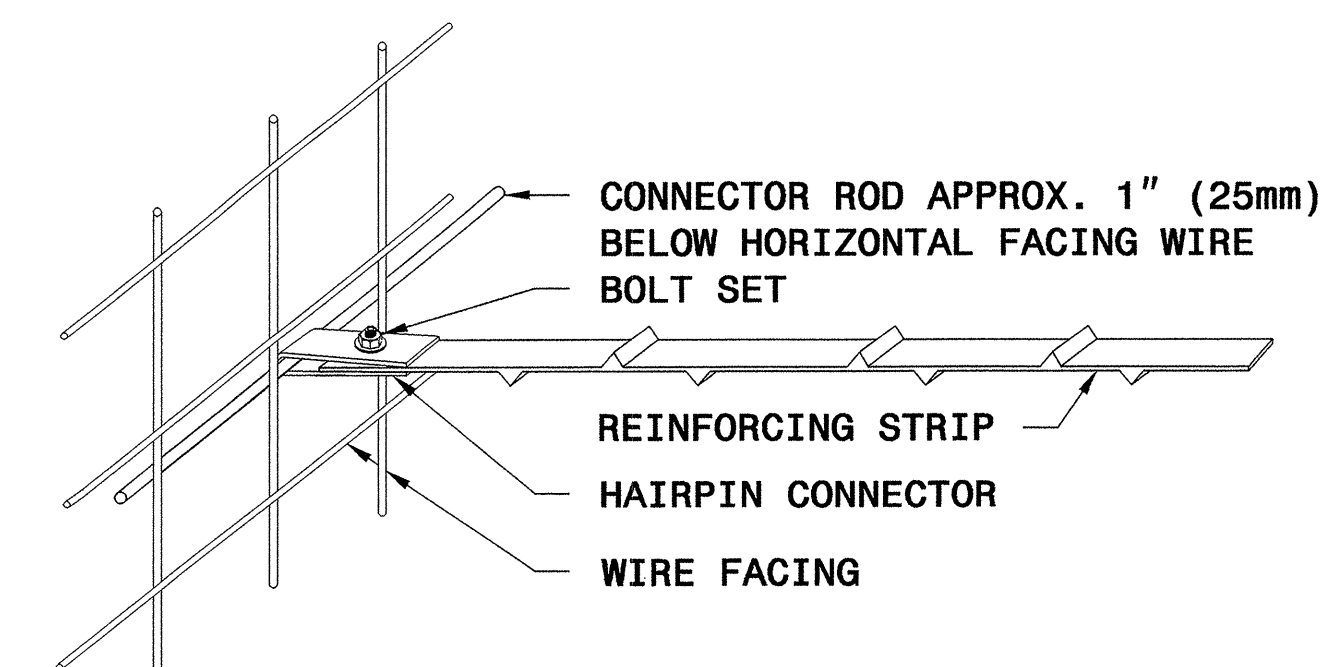


KEY: A8
NUMBER OF REINFORCING STRIPS
PANEL TYPE

CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



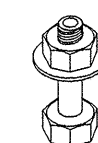
REINFORCING STRIP - 2" X 5/32" (50mm X 4mm)



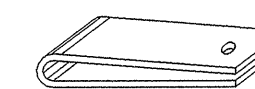
STRIP TO FACING CONNECTION



1/2" (13mm) DIA. ROD
CONNECTOR ROD

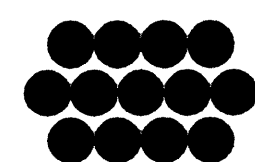


1/2" (13mm) BOLT WITH NUT AND WASHER
BOLT SET

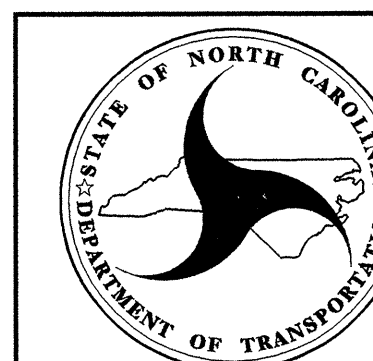


HAIRPIN CONNECTOR

WALL COMPONENTS



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DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL
TEMPORARY WALL

SHEET 10 OF 11

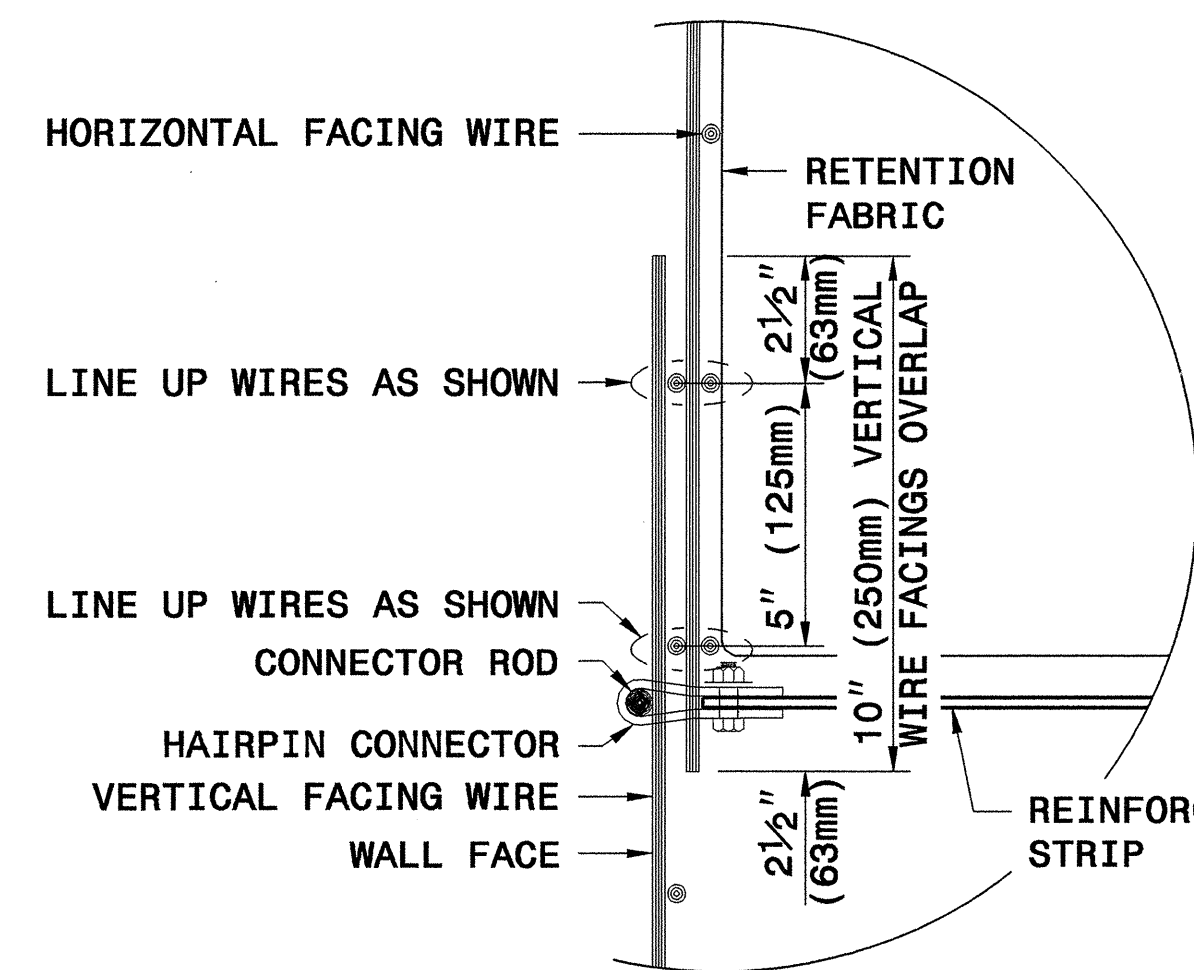
DATE: 12-19-06

GEOTECHNICAL ENGINEER

ENGINEER

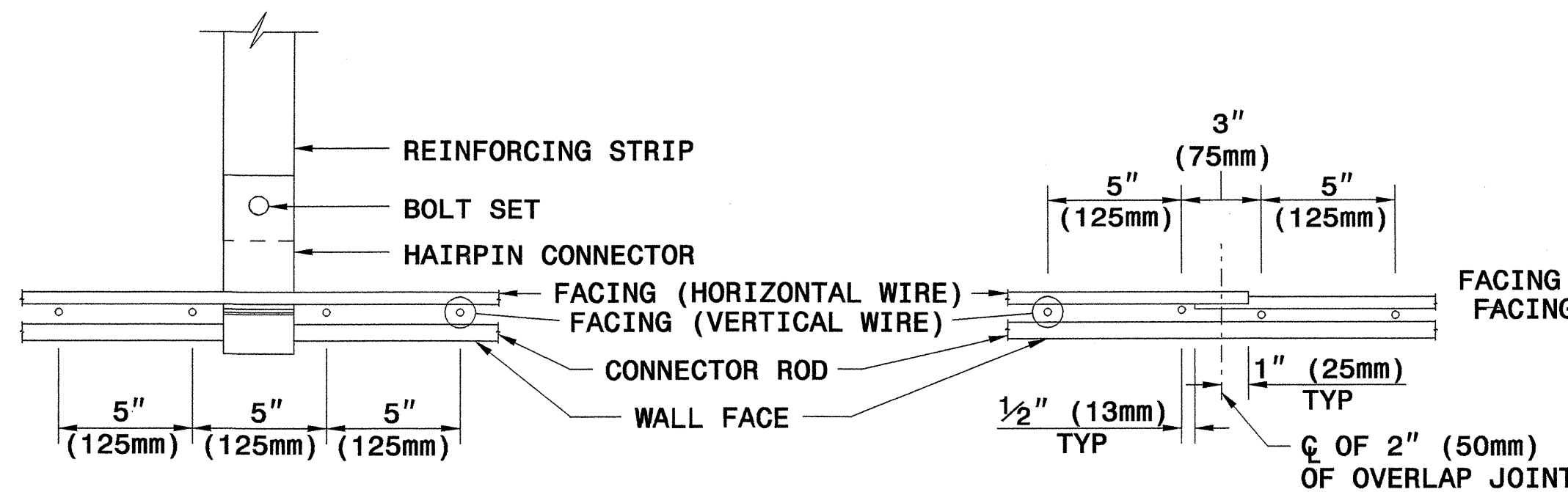


Scott A. Hadden 3/21/07
SIGNATURE DATE

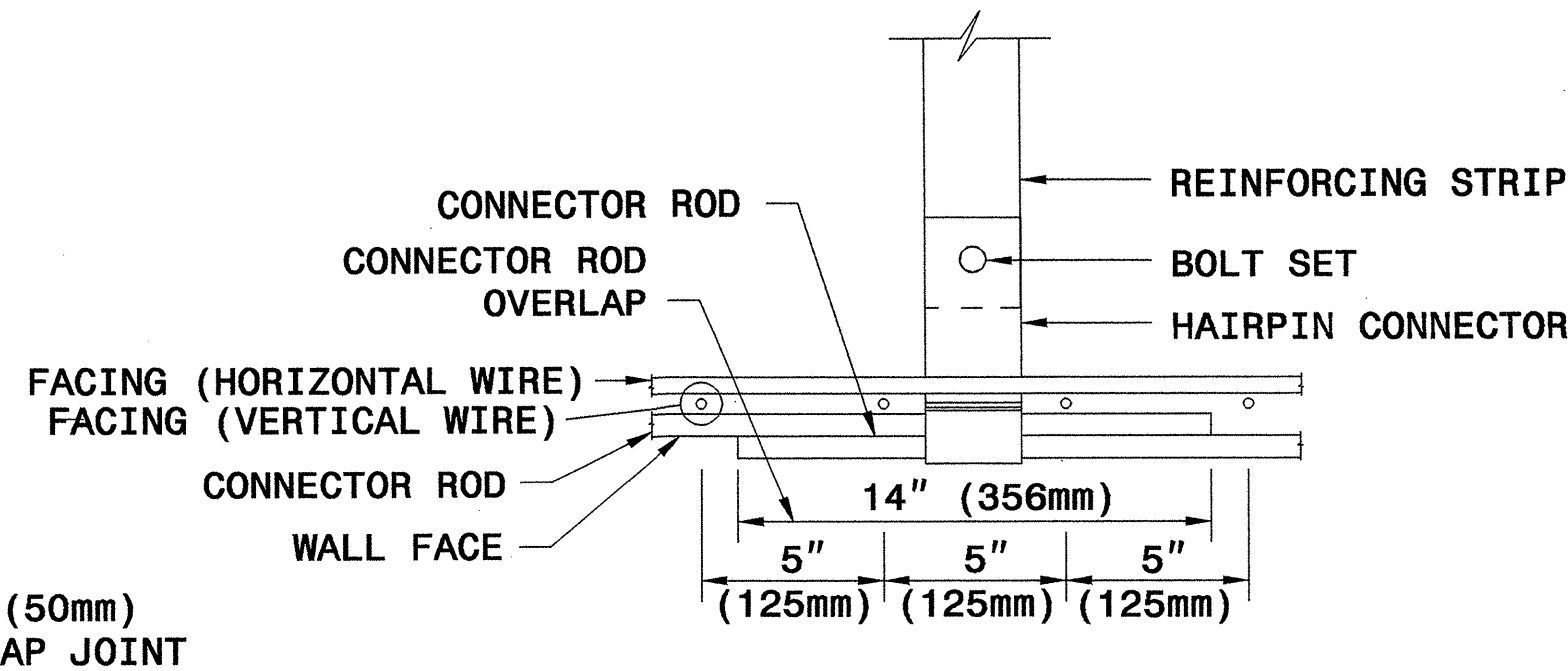


OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

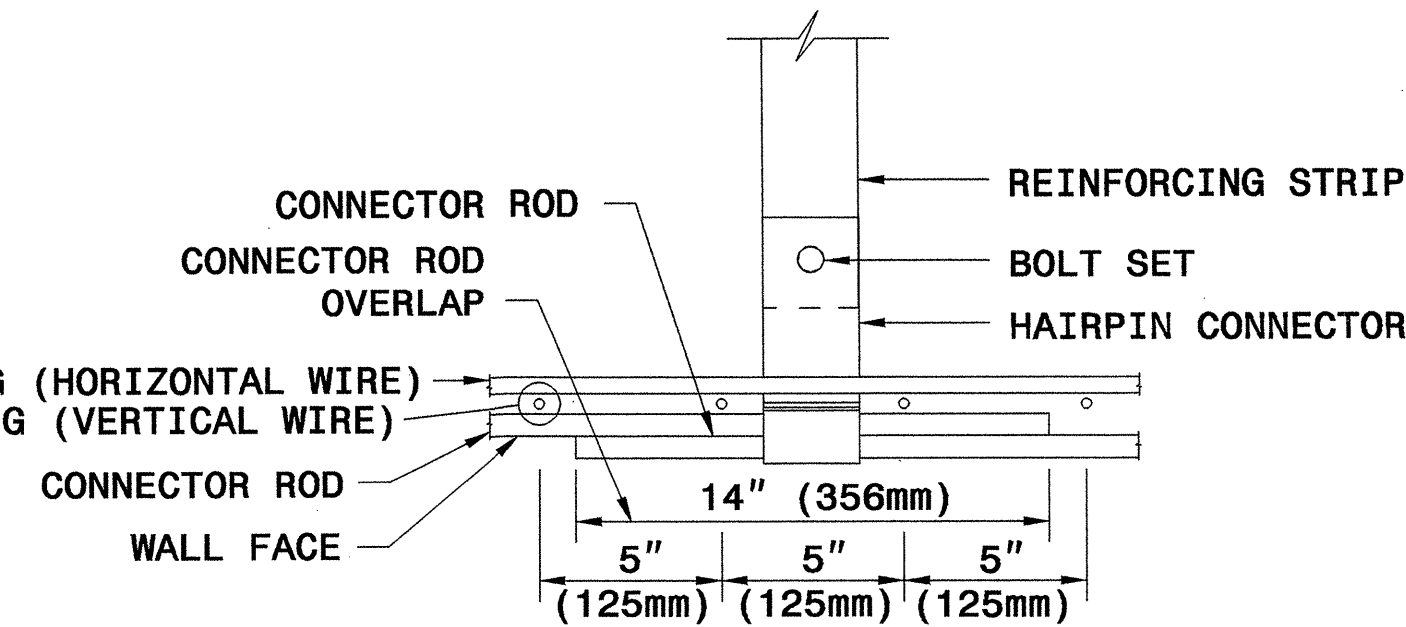
VERTICAL OVERLAP DETAIL



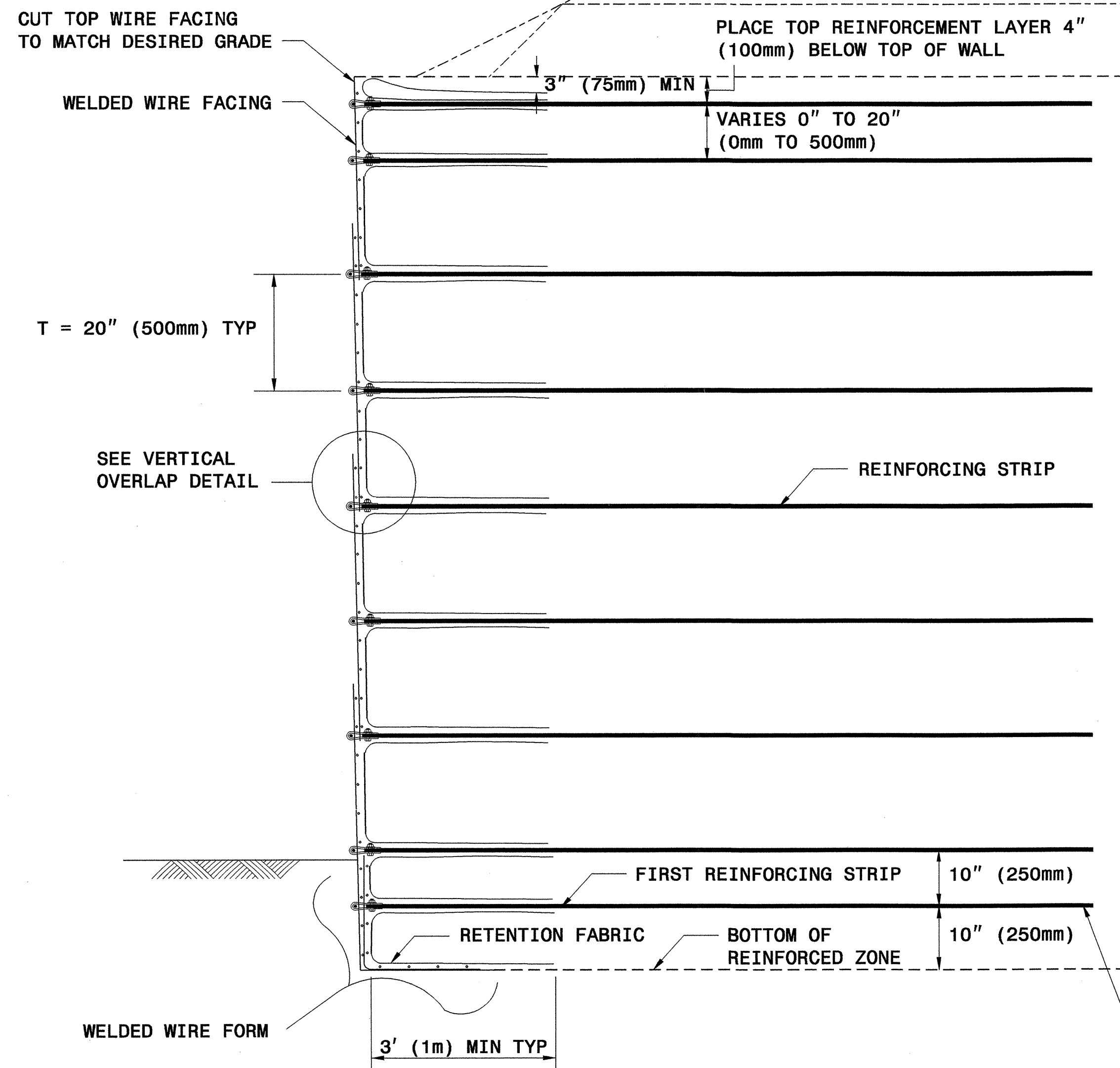
PLAN DETAIL 'A' STRIP CONNECTION



PLAN DETAIL 'B' HORIZONTAL OVERLAP DETAIL

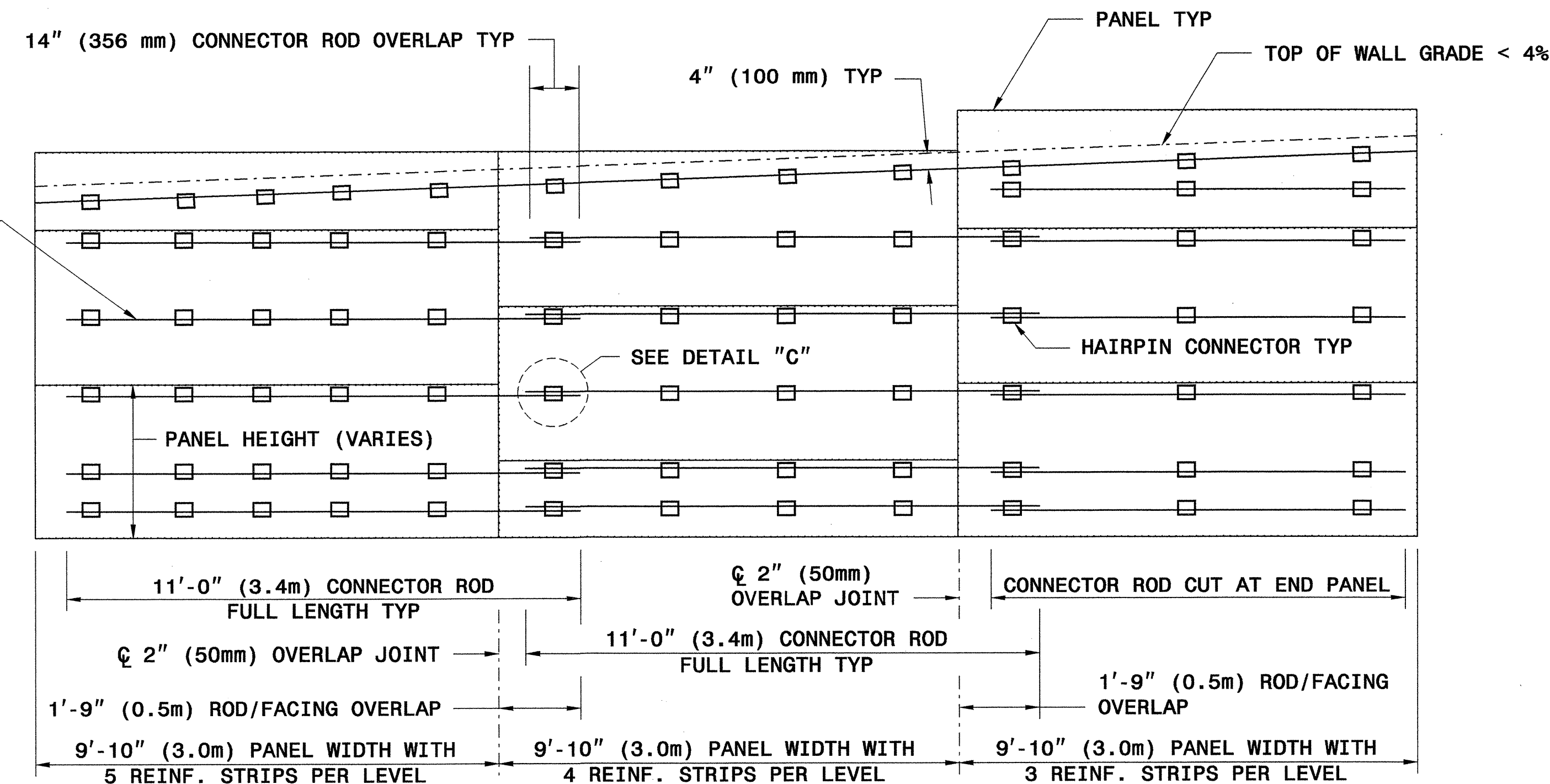


PLAN DETAIL 'C' STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL

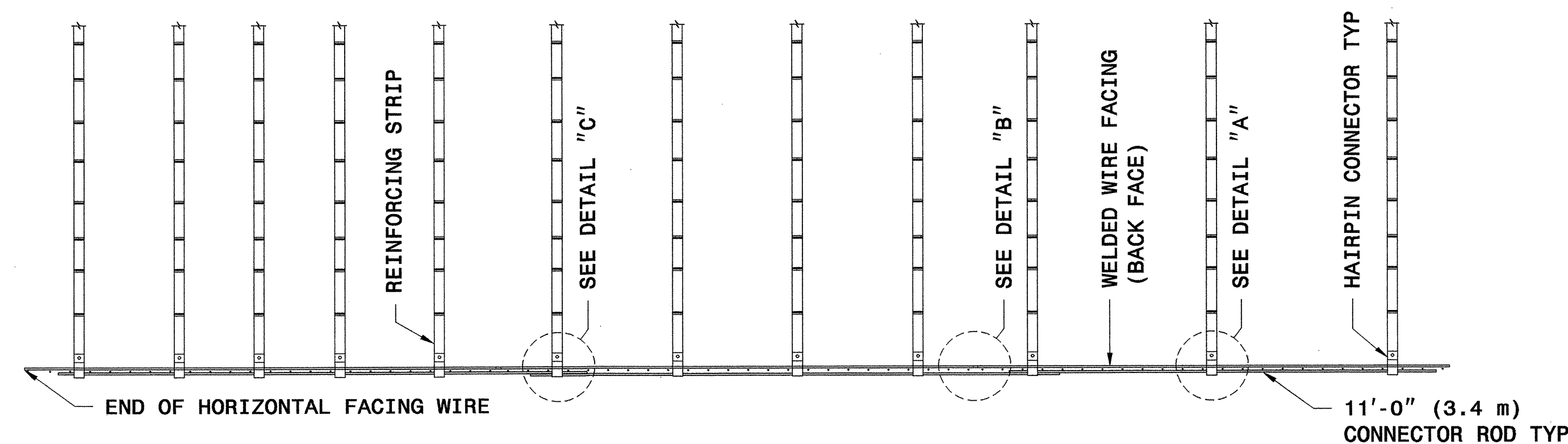


TYPICAL SECTION

CONNECTOR ROD APPROX. 1" (25mm) BELOW HORIZONTAL FACING WIRE TYP

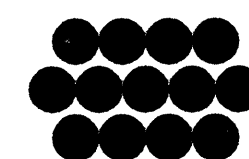


TYPICAL ELEVATION (WIRES NOT SHOWN FOR CLARITY)

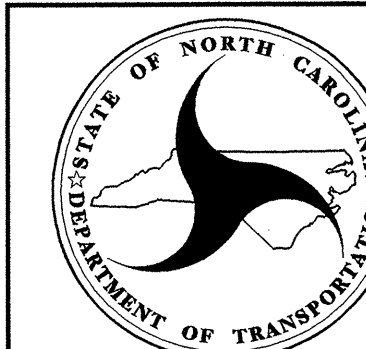


TYPICAL PLAN

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



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DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL
TEMPORARY WALL

PROJECT REFERENCE NO.		SHEET NO.	
B-3684		3	
ROADWAY DESIGN ENGINEER		PAVEMENT DESIGN ENGINEER	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201495

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION	3656000000-E	876	2,584	SY	FILTER FABRIC FOR DRAINAGE
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING	3659000000-N	SP	3	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
0000720000-N	SP	30	MO	FIELD OFFICE	4082000000-E	903	41	LF	SUPPORTS, WOOD
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (38+88.50)	4102000000-N	904	3	EA	SIGN ERECTION, TYPE E
0043000000-N	226	Lump Sum		GRADING	4158000000-N	907	11	EA	DISPOSAL OF SIGN SYSTEM, WOOD
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING	4410000000-E	1110	40	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
0057000000-E	226	8,400	CY	UNDERCUT EXCAVATION	4430000000-N	1130	30	EA	DRUMS
0127000000-N	SP	1	EA	EMBANKMENT SETTLEMENT GAUGES	4435000000-N	1135	95	EA	CONES
0134000000-E	240	335	CY	DRAINAGE DITCH EXCAVATION	4445000000-E	1145	60	LF	BARRICADES (TYPE III)
0196000000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION	4450000000-N	1150	740	HR	FLAGGER
0199000000-E	SP	4,350	SF	TEMPORARY SHORING	4465000000-N	1160	3	EA	TEMPORARY CRASH CUSHIONS
0234000000-E	SP	8,200	CY	GENERIC GRADING ITEM SELECT MATERIAL, CLASS III	4470000000-N	1160	1	EA	RESET TEMPORARY CRASH CUSHIONS
0318000000-E	300	80	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS	4480000000-N	1165	2	EA	TMIA
0343000000-E	310	20	LF	15" SIDE DRAIN PIPE	4490000000-E	1170	249	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
0344000000-E	310	24	LF	18" SIDE DRAIN PIPE	4650000000-N	1251	86	EA	TEMPORARY RAISED PAVEMENT MARKERS
0372000000-E	310	208	LF	18" RC PIPE CULVERTS, CLASS III	4685000000-E	1205	5,330	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
0402000000-E	310	300	LF	48" RC PIPE CULVERTS, CLASS III	4686000000-E	1205	5,330	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
0414000000-E	310	68	LF	60" RC PIPE CULVERTS, CLASS III	4770000000-E	1205	8,000	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (2)
0714000000-E	310	116	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK	4770000000-E	1205	6,000	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (4)
0807000000-E	310	4	EA	18" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK	4810000000-E	1205	30,332	LF	PAINT PAVEMENT MARKING LINES (4")
0973100000-E	330	120	LF	*** WELDED STEEL PIPE IN SOIL (60")	4900000000-N	1251	59	EA	PERMANENT RAISED PAVEMENT MARKERS
1121000000-E	520	60	TON	AGGREGATE BASE COURSE	6000000000-E	1605	8,100	LF	TEMPORARY SILT FENCE
1220000000-E	545	200	TON	INCIDENTAL STONE BASE	6006000000-E	1610	50	TON	STONE FOR EROSION CONTROL, CLASS A
1275000000-E	600	57	GAL	PRIME COAT	6009000000-E	1610	1,085	TON	STONE FOR EROSION CONTROL, CLASS B
1330000000-E	607	300	SY	INCIDENTAL MILLING	6012000000-E	1610	730	TON	SEDIMENT CONTROL STONE
1489000000-E	610	2,610	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	6015000000-E	1615	12	ACR	TEMPORARY MULCHING
1519000000-E	610	1,420	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	6018000000-E	1620	450	LB	SEED FOR TEMPORARY SEEDING
1560000000-E	620	205	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	6021000000-E	1620	2.75	TON	FERTILIZER FOR TEMPORARY SEEDING
1693000000-E	654	200	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	6024000000-E	1622	750	LF	TEMPORARY SLOPE DRAINS
2022000000-E	815	22.4	CY	SUBDRAIN EXCAVATION	6027000000-N	1622	16	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
2033000000-E	815	16.8	CY	SUBDRAIN FINE AGGREGATE	6029000000-E	SP	1,000	LF	SAFETY FENCE
2044000000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE	6030000000-E	1630	2,165	CY	SILT EXCAVATION
2055000000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS	6036000000-E	1631	1,380	SY	MATTING FOR EROSION CONTROL
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET	6037000000-E	SP	20	SY	COIR FIBER MAT
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)	6042000000-E	1632	80	LF	1/4" HARDWARE CLOTH
2209000000-E	838	36.7	CY	ENDWALLS	6070000000-N	SP	25	EA	SPECIAL STILLING BASINS
2220000000-E	838	5.6	CY	REINFORCED ENDWALLS	6071030000-E	SP	750	LF	COIR FIBER BAFFLES
2253000000-E	840	0.893	CY	PIPE COLLARS	6071050000-E	SP	2	EA	*** SKIMMER (1-1/2")
2286000000-N	840	7	EA	MASONRY DRAINAGE STRUCTURES	6071050000-E	SP	1	EA	*** SKIMMER (2")
2297000000-E	840	10.2	CY	MASONRY DRAINAGE STRUCTURES	6084000000-E	1660	19	ACR	SEEDING & MULCHING
2308000000-E	840	3	LF	MASONRY DRAINAGE STRUCTURES	6087000000-E	1660	11.5	ACR	MOWING
2367000000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.29	6090000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
2396000000-N	840	2	EA	FRAME WITH COVER, STD 840.54	6093000000-E	1661	0.5	TON	FERTILIZER FOR REPAIR SEEDING
2556000000-E	846	95	LF	SHOULDER BERM GUTTER	6096000000-E	1662	475	LB	SEED FOR SUPPLEMENTAL SEEDING
3030000000-E	862	2,750	LF	STEEL BM GUARDRAIL	6108000000-E	1665	13.75	TON	FERTILIZER TOPDRESSING
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS	6111000000-E	SP	430	LF	IMPERVIOUS DIKE
3270000000-N	SP	8	EA	GUARDRAIL ANCHOR UNITS, TYPE 350	6114000000-N	SP	6	HR	SPECIALIZED HAND MOWING
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77	6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL
3628000000-E	876	74	TON	RIP RAP, CLASS I	6123000000-E	1670	0.1	ACR	REFORESTATION
3649000000-E	876	242	TON	RIP RAP, CLASS B	6129000000-E	1670	3.05	ACR	WETLAND REFORESTATION

ItemNumber	Sec #	Quantity	Unit	Description
6135000000-E	SP	3.05	ACR	GENERIC EROSION CONTROL ITEM DISKING
6135000000-E	SP	3.05	ACR	GENERIC EROSION CONTROL ITEM RIPPING

**SUMMARY OF EARTHWORK
 IN CUBIC YARDS**

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L-					
14+00.00 TO 29+06.83	1268	4438	54911	53643	4438
SUBTOTAL	1268	4438	54911	53643	4438
-L-					
48+70.17 TO 60+65.00	13	2674	16257	16244	2674
SUBTOTAL	13	2674	16257	16244	2674
-L- REMOVAL OF EXIST. ROADBED					
34+00.00 TO 43+50.00	21587				21587
SUBTOTAL	21587				21587
-YI- REMOVAL OF EXIST. ROADBED					
10+00.00 TO 15+50.00	2391				2391
SUBTOTAL	2391				2391
TOTAL	25259	7112	71168	69887	31090
LOSS DUE TO CLEARING AND GRUBBING					
WASTE TO REPLACE BORROW				-2391	-2391
ADDITIONAL UNDERCUT		1200	1560	1560	1200
PROJECT TOTAL	25259	8312	72728	69056	29899
5% TO REPLACE BORROW					
GRAND TOTAL	25259	8312	72728	72516	29899
SAY	25600	8400		73300	

EST. DDE = 335 CY
 EST. SELECT GRANULAR MATERIAL = 8200 CY
 EST. FABRIC FOR SOIL STABILIZATION = 200 SY

NOTE: Embankment column includes backfill for undercut.

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

NOTE: Approximate quantities only. Unclassified excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement and Removal of Existing Pavement will be paid for at the contract Lump Sum price for "Grading".

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS									
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	B-77	XI MOD	XI	M-350	CAT-1	VI MOD	BIC	AT-1	EA						G	NG							
-L-	14+50.00	18+50.00	RT	400.00'			FILL 15+75	FILL 17+25	8'	11'	50'	50'	1'	1'	2																							
-L-	15+00.00	19+00.00	LT	400.00'			FILL 16+25	FILL 17+75	8'	11'	50'	50'	1'	1'	2																							
-L-	22+94.33	29+06.83	RT	612.5'				BRIDGE	8'	11'	50'	18.75'	1'		1	1																						
-L-	25+69.33	29+06.83	LT	337.5'				BRIDGE	8'	11'	50'	18.75'	1'		1	1																						
-L-	48+94.17	56+31.67	RT	737.5'				BRIDGE	8'	11'	18.75'	50'	1'		1	1																						
-L-	48+94.17	56+31.67	LT	737.5'				BRIDGE	8'	11'	18.75'	50'	1'		1	1																						
LESS ANCHOR DEDUCTIONS																																						
GRAU-350 8 @ 50' =				- 400.00'																																		
B-77 4 @ 18.75' =				- 75.00'																																		
TOTAL				2750.00'																																		
SAY				2750'																																		
				(5 ADDITIONAL GUARDRAIL POSTS)																																		

PAVEMENT REMOVAL SUMMARY

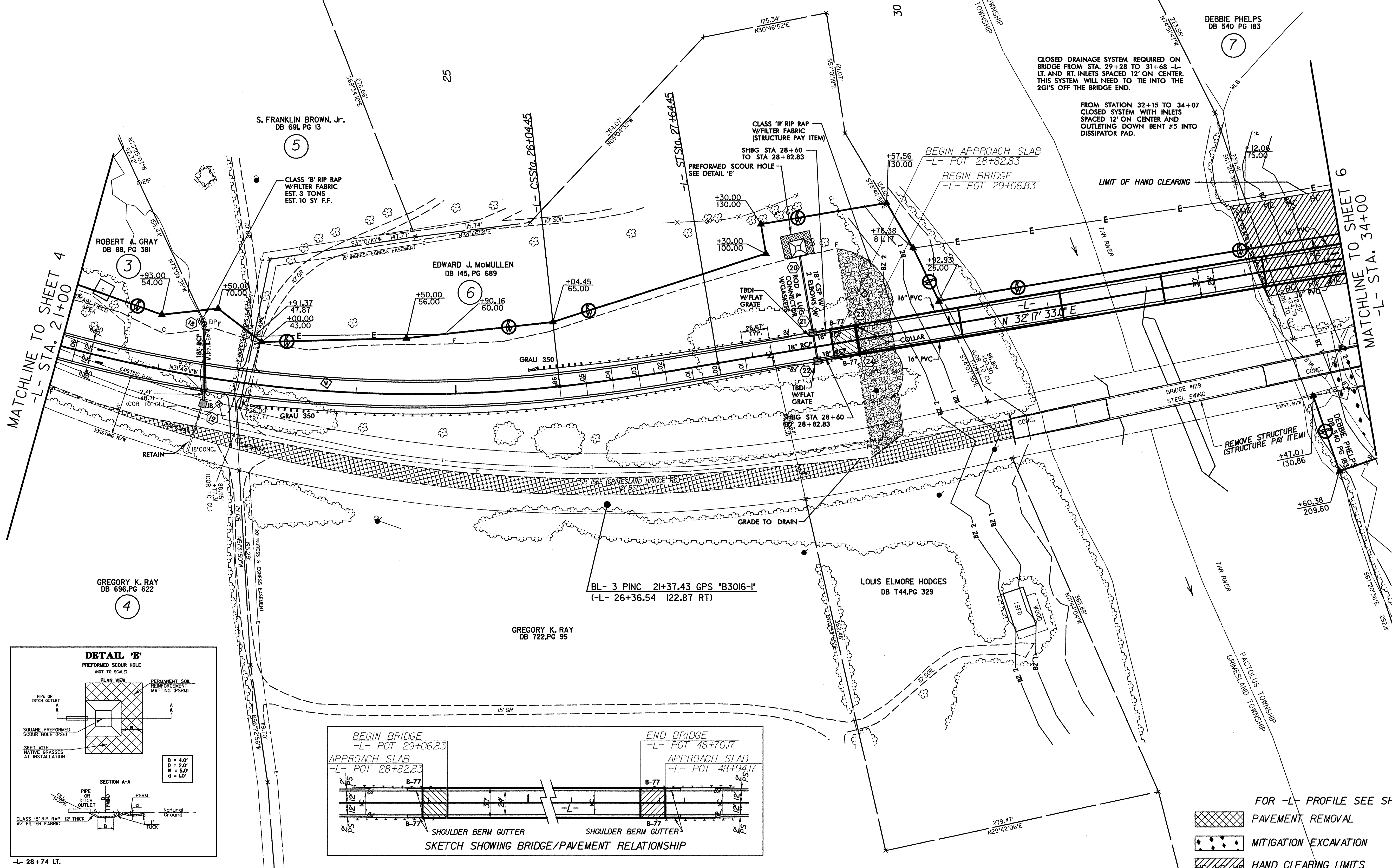
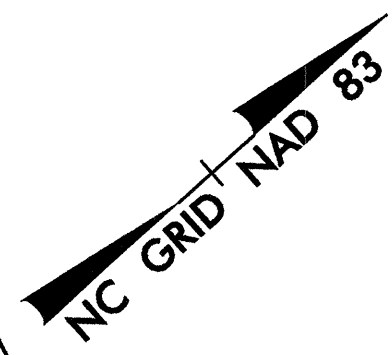
SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-L-	18+50	19+35	RT	46
-L-	19+35	30+44	RT	2064
-L-	34+00	43+55	RT	2420
-L-	48+67	55+00	RT	147
-L-	55+00	58+59	RT	113
-YI-	10+00	15+53	CL	1338
TOTAL:				6128
SAY:				6130

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-L-	19+35	23+50	RT	524
-L-	48+67	55+00	RT	1465
TOTAL:				1989
SAY:				2000

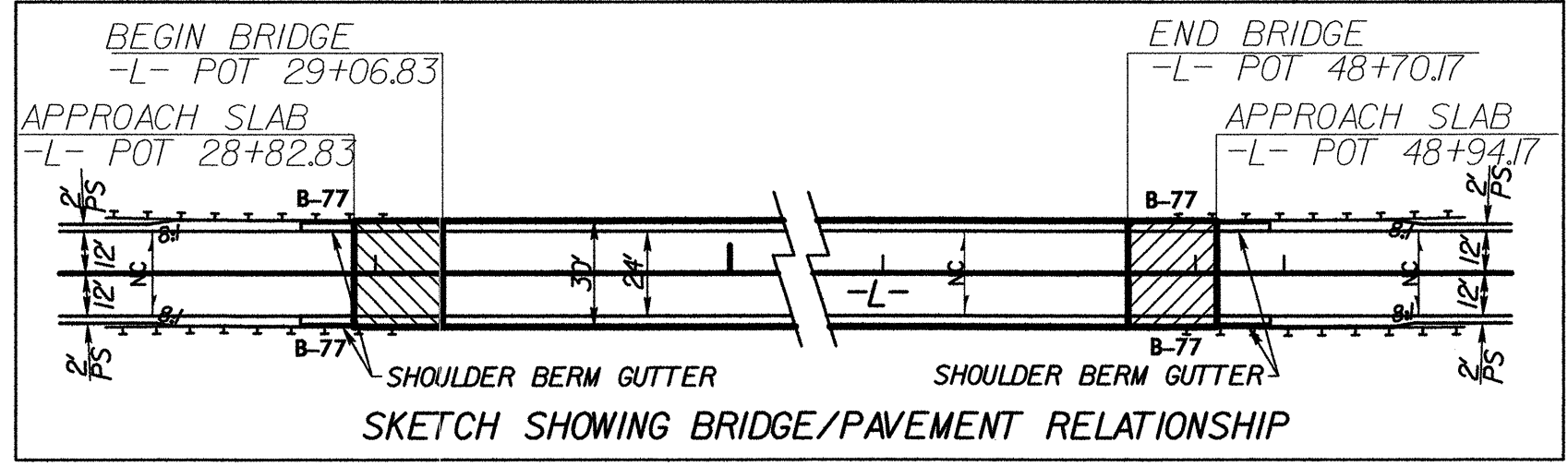
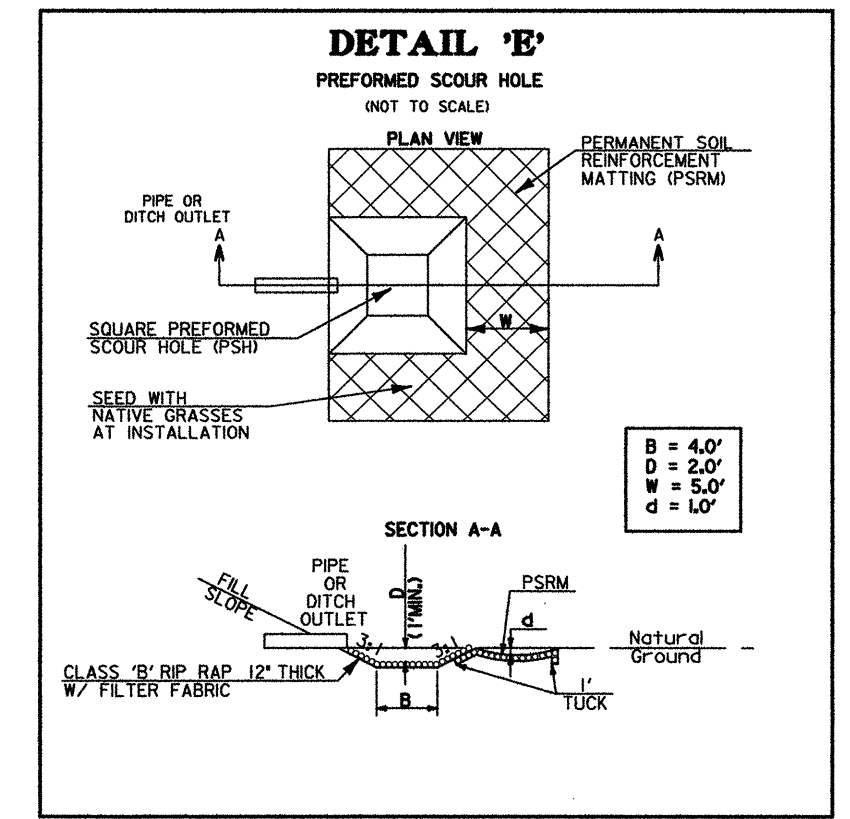
6/21/08
 4/17/2008
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-L-
 Pls Sta 17+67.66 PI Sta 22+24.27 Pls Sta 26+57.80
 $\theta_s = 3^\circ 25' 14.3''$ $\Delta = 33^\circ 29' 59.0''$ (LT) $\theta_s = 3^\circ 25' 14.3''$
 $L_s = 160.00'$ $D = 4' 16' 32.9''$ $L_s = 160.00'$
 $LT = 106.69'$ $L = 783.47'$ $LT = 106.69'$
 $ST = 53.35'$ $T = 403.29'$ $ST = 53.35'$
 $R = 1,340.00'$
 $Se = 0.06$



MATCHLINE TO SHEET 4
-L- STA. 21+00

MATCHLINE TO SHEET 6
-L- STA. 34+00

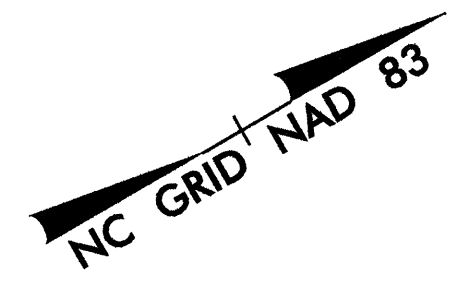


- FOR -L- PROFILE SEE SHEET 8
- PAVEMENT REMOVAL
- MITIGATION EXCAVATION
- HAND CLEARING LIMITS

REVISIONS

4/17/2008 R:\Roadway\p\proj\3684_r\dwg\sh05.dwg

PROJECT REFERENCE NO. B-3684	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19583 JOE SCOTT 4-17-08	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 31977 KEVIN B. ALFORD 4-17-08



~~-YI-~~
~~PI Sta. 14+90.39~~
 ~~$\Delta = 53' 06.0" (RT)$~~
 ~~$D = 7' 29' 14.3"$~~
 ~~$L = 68.24'$~~
 ~~$T = 32.64'$~~
 ~~$R = 765.24'$~~

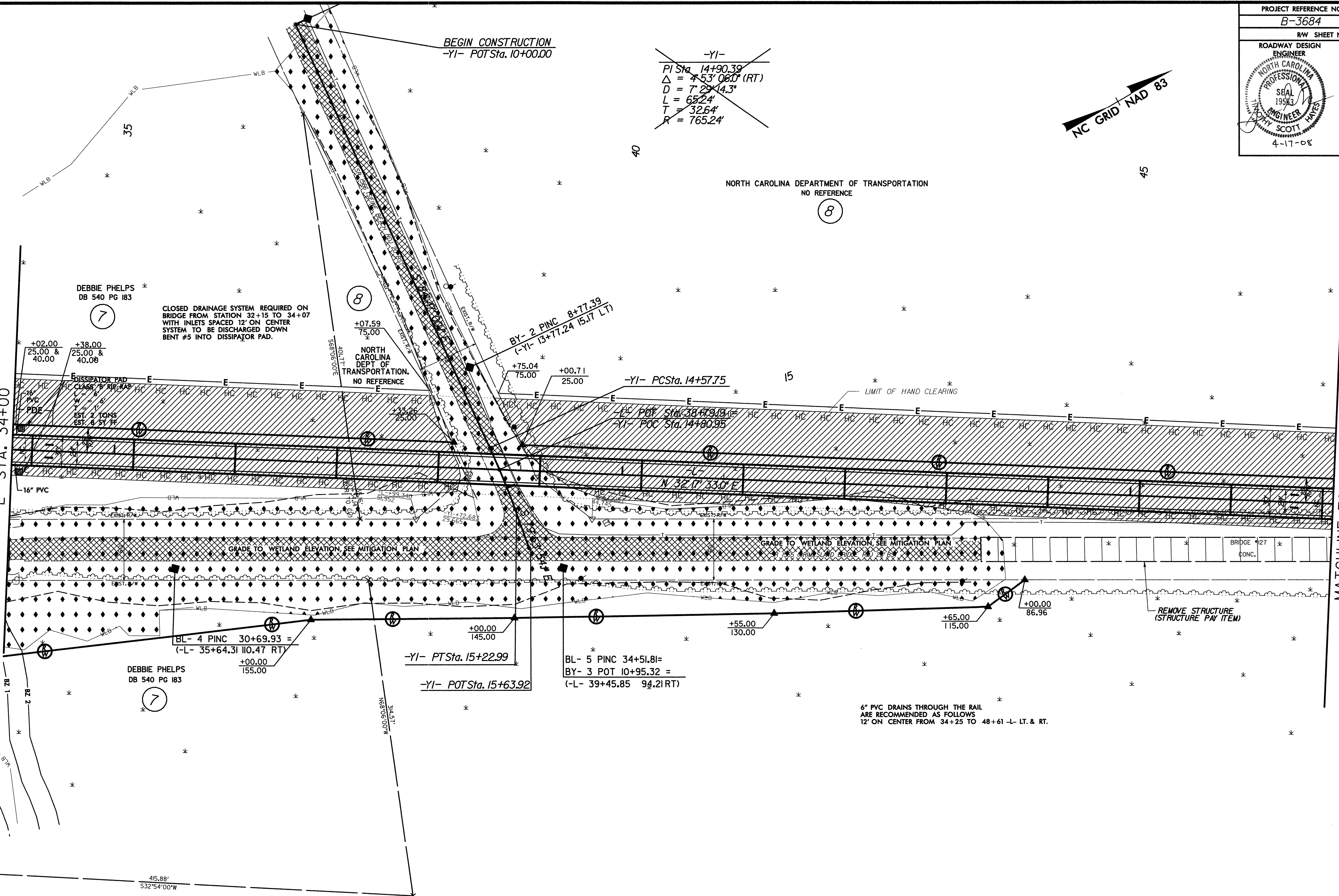
BEGIN CONSTRUCTION
 -YI- POT Sta. 10+00.00

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 NO REFERENCE

(8)

MATCHLINE TO SHEET 5
 -L- STA. 34+00

MATCHLINE TO SHEET 7
 -L- STA. 47+00



CLOSED DRAINAGE SYSTEM REQUIRED ON BRIDGE FROM STATION 32+15 TO 34+07 WITH INLETS SPACED 12' ON CENTER SYSTEM TO BE DISCHARGED DOWN BENT #5 INTO DISSIPATOR PAD.

DEBBIE PHELPS
 DB 540 PG 183

DEBBIE PHELPS
 DB 540 PG 183

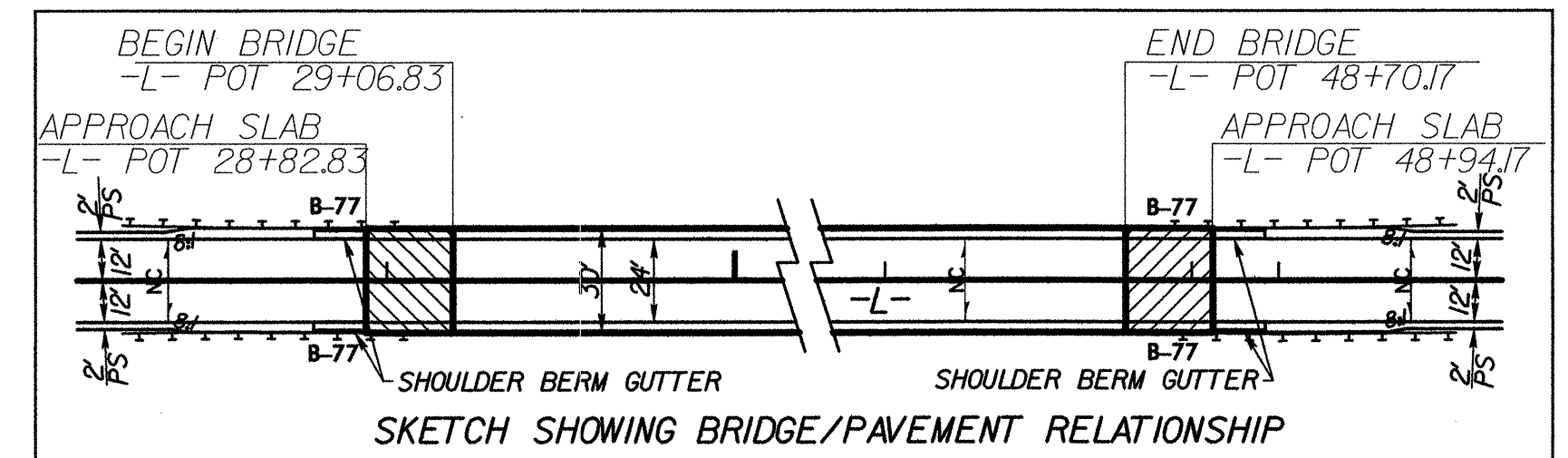
DEBBIE PHELPS
 DB 540 PG 183

NORTH CAROLINA DEPT OF TRANSPORTATION
 NO REFERENCE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 NO REFERENCE

(8)

6" PVC DRAINS THROUGH THE RAIL ARE RECOMMENDED AS FOLLOWS
 12' ON CENTER FROM 34+25 TO 48+61 -L- LT. & RT.



FOR -L- PROFILE SEE SHEET 8 & 9

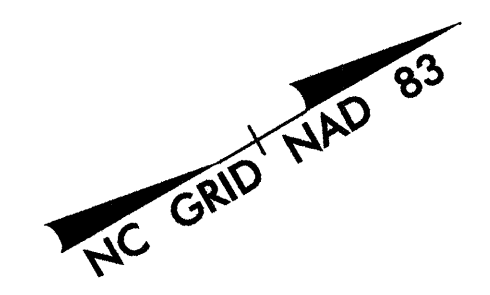
- PAVEMENT REMOVAL
- MITIGATION EXCAVATION
- HAND CLEARING LIMITS

REVISIONS

8/17/08

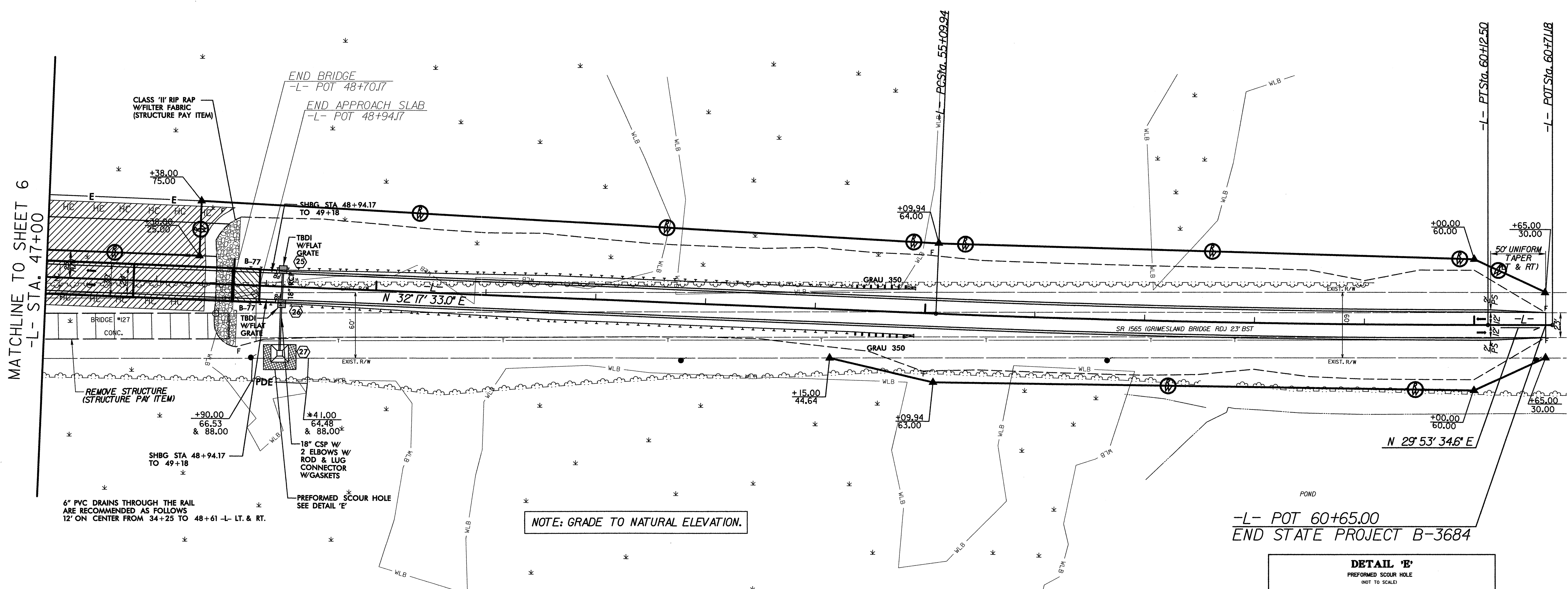
4/17/2008
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PROJECT REFERENCE NO. B-3684	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19863 SCOTT 4-17-08	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 31977 K.B. ALFORD 4-17-08



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE

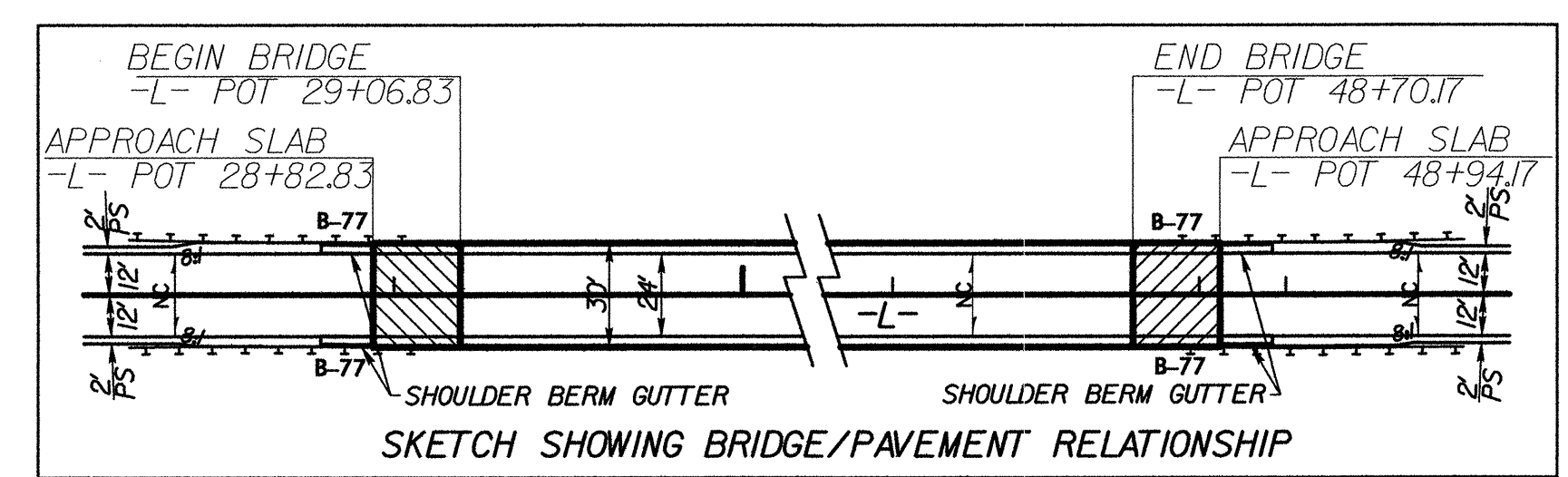
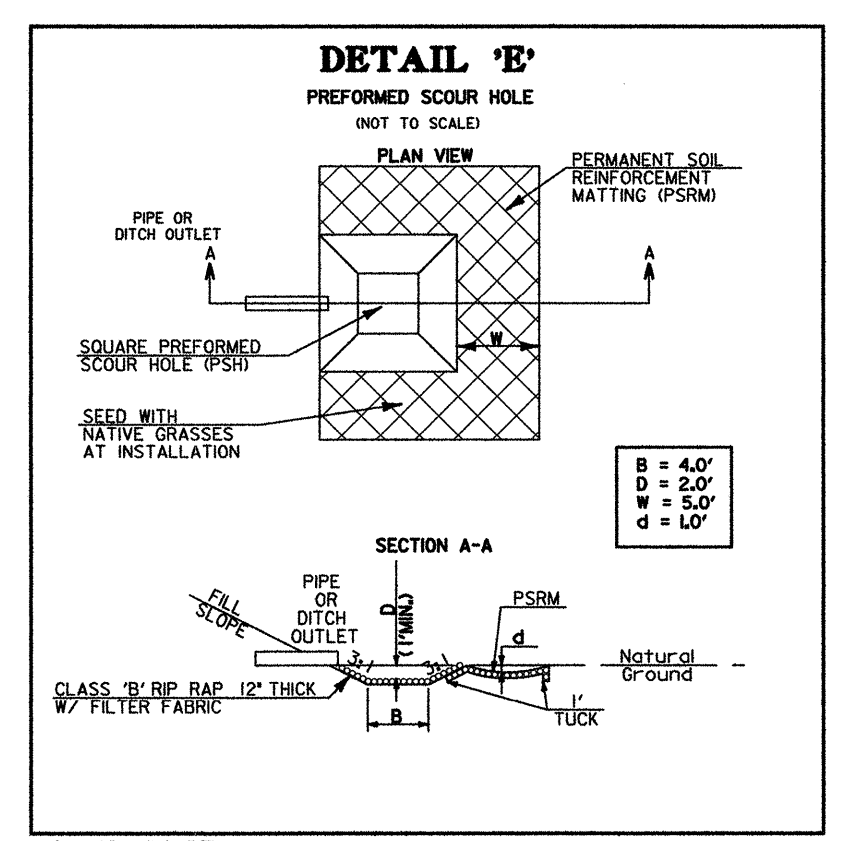
(8)



MATCHLINE TO SHEET 6
-L- STA. 47+00

-L- POT 60+65.00
END STATE PROJECT B-3684

NOTE: GRADE TO NATURAL ELEVATION.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NO REFERENCE

(8)

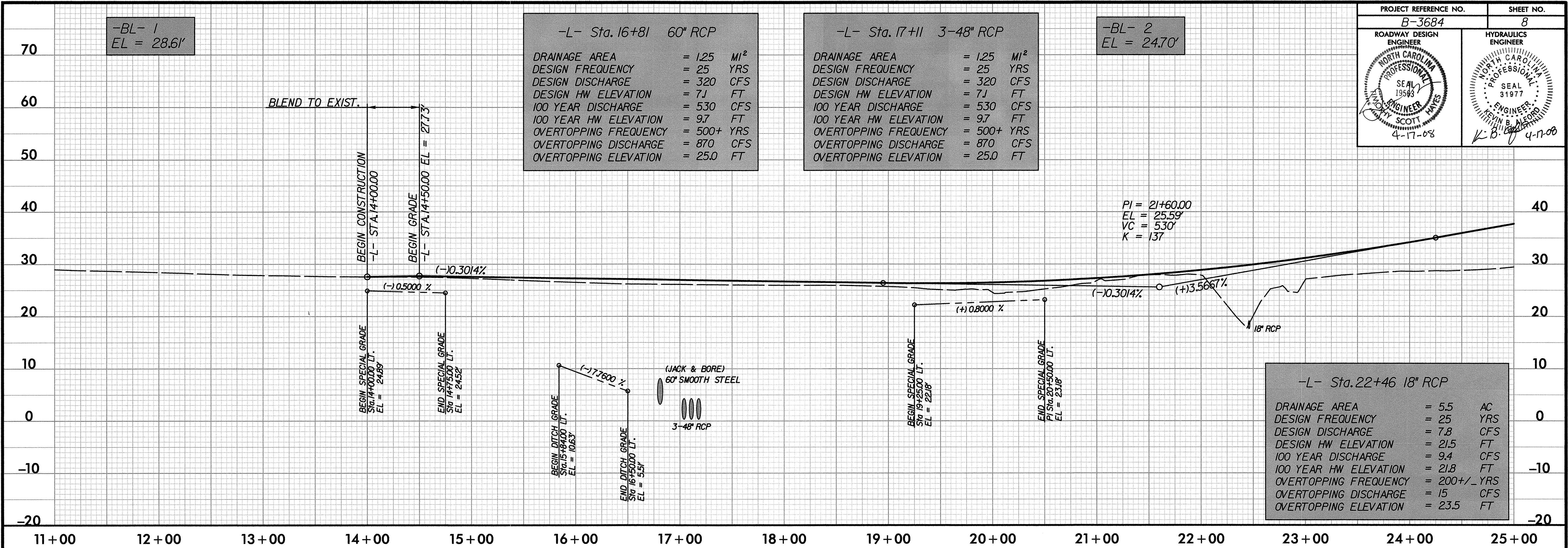
-L-
PI Sta 57+61.26
 $\Delta = 2' 23' 58.4''$ (LT)
 $D = 0' 28' 38.9''$
 $L = 502.56'$
 $T = 251.32'$
 $R = 12,000.00'$
 $Se = NC$

- FOR -L- PROFILE SEE SHEET 9
- PAVEMENT REMOVAL
 - MITIGATION EXCAVATION
 - HAND CLEARING LIMITS

REVISIONS

8/17/08

4/17/2008
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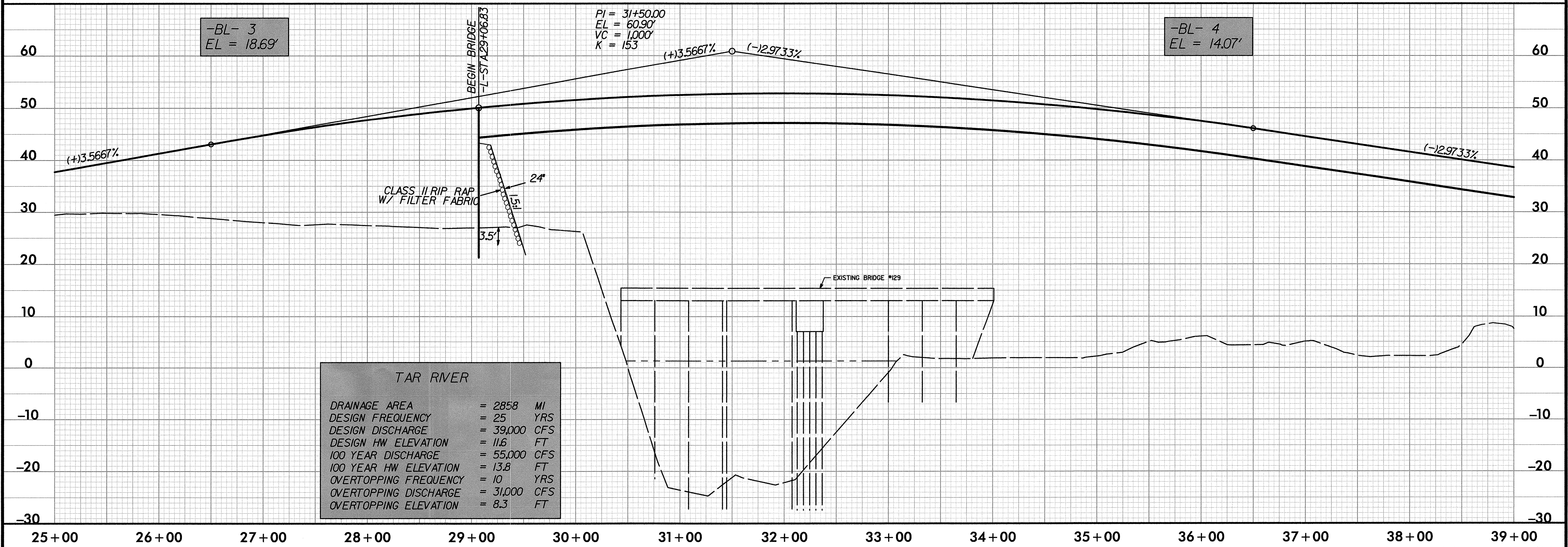
-BL- 1
EL = 28.61'

-L- Sta. 16+81 60" RCP
DRAINAGE AREA = 1.25 MI²
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 320 CFS
DESIGN HW ELEVATION = 7.1 FT
100 YEAR DISCHARGE = 530 CFS
100 YEAR HW ELEVATION = 9.7 FT
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 870 CFS
OVERTOPPING ELEVATION = 25.0 FT

-L- Sta. 17+11 3-48" RCP
DRAINAGE AREA = 1.25 MI²
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 320 CFS
DESIGN HW ELEVATION = 7.1 FT
100 YEAR DISCHARGE = 530 CFS
100 YEAR HW ELEVATION = 9.7 FT
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 870 CFS
OVERTOPPING ELEVATION = 25.0 FT

-BL- 2
EL = 24.70'

-L- Sta. 22+46 18" RCP
DRAINAGE AREA = 5.5 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 7.8 CFS
DESIGN HW ELEVATION = 21.5 FT
100 YEAR DISCHARGE = 9.4 CFS
100 YEAR HW ELEVATION = 21.8 FT
OVERTOPPING FREQUENCY = 200+/_ YRS
OVERTOPPING DISCHARGE = 15 CFS
OVERTOPPING ELEVATION = 23.5 FT



-BL- 3
EL = 18.69'

TAR RIVER
DRAINAGE AREA = 2858 MI
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 39,000 CFS
DESIGN HW ELEVATION = 11.6 FT
100 YEAR DISCHARGE = 55,000 CFS
100 YEAR HW ELEVATION = 13.8 FT
OVERTOPPING FREQUENCY = 10 YRS
OVERTOPPING DISCHARGE = 31,000 CFS
OVERTOPPING ELEVATION = 8.3 FT

-BL- 4
EL = 14.07'

