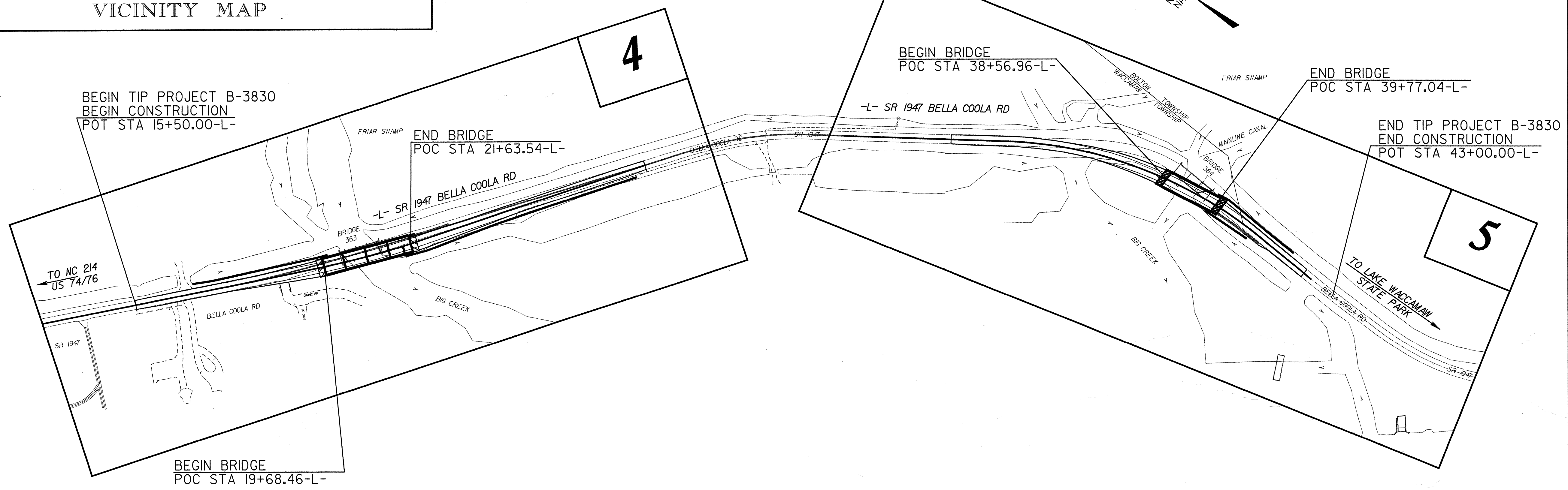
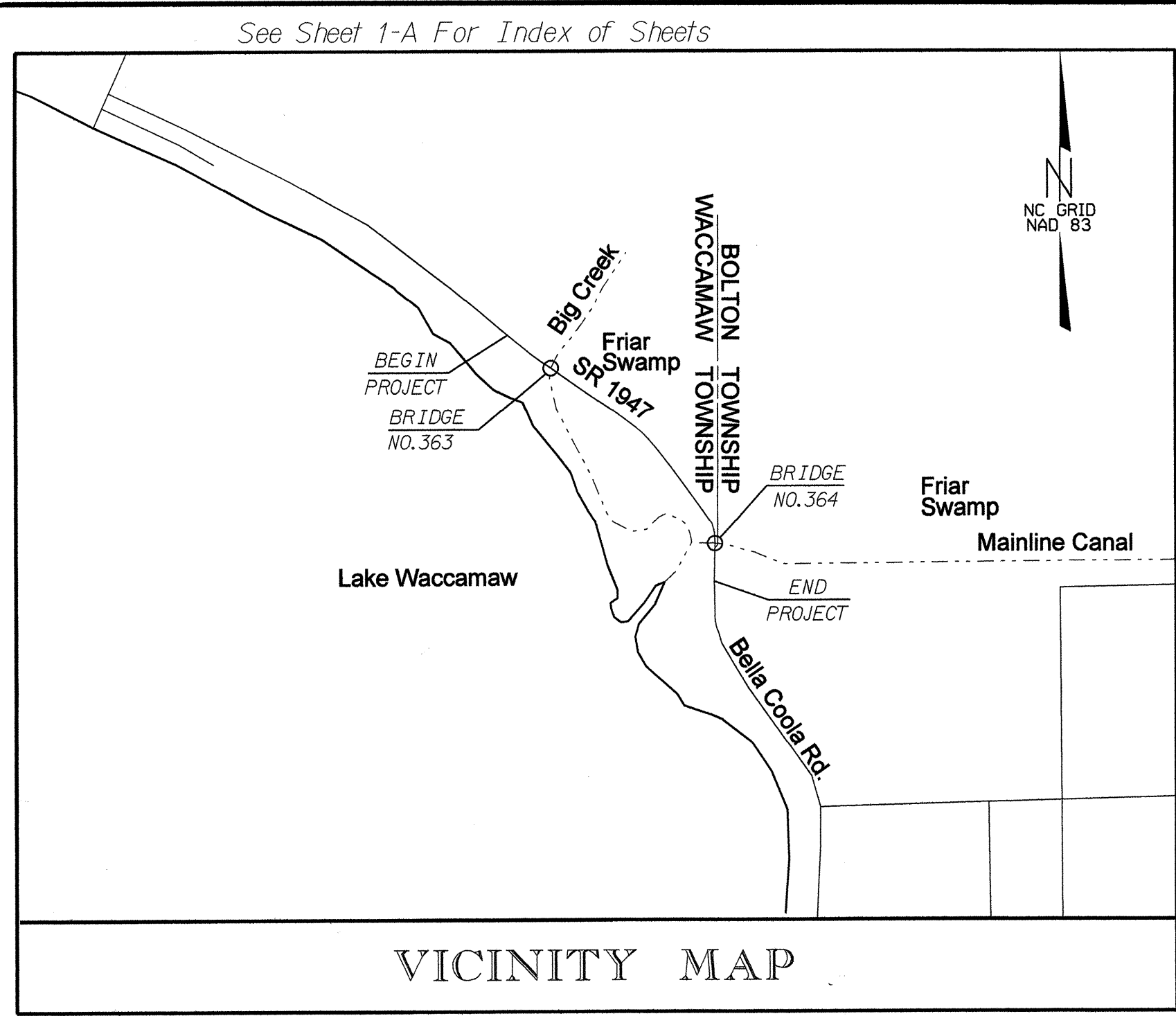


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3830	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33281.1.1	BRZ-1947(1)	P.E.	
33281.2.2	BRZ-1947(1)	ROW / UTILITIES	
33281.3.1	BRZ-1947(2)	CONSTRUCTION	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

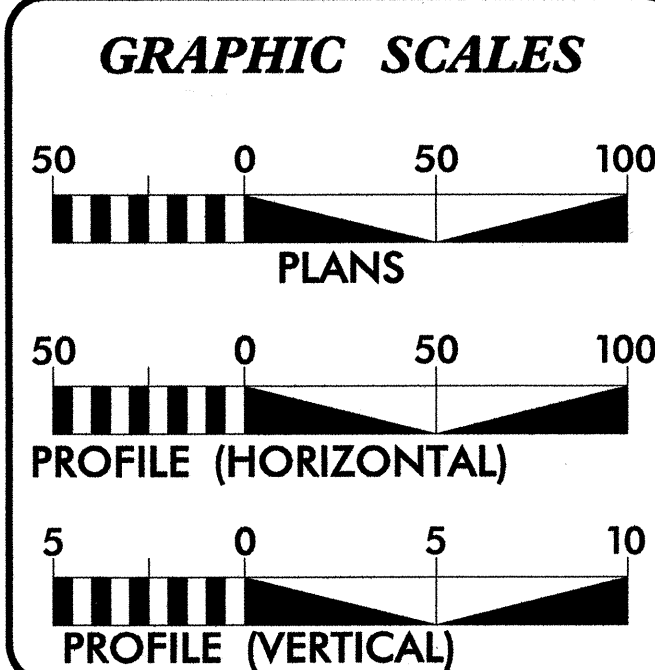
LOCATION: BRIDGE NO. 363 AND NO. 364 OVER FRIAR SWAMP AND BIG CREEK ON SR 1947 (BELLA COOLA RD)
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, PAVING, RETAINING WALL AND TEMPORARY SIGNAL.



NCDOT CONTACT: DOUG TAYLOR, P.E.

TIP PROJECT: B-3830

CONTRACT: C201923



DESIGN DATA

ADT 2007 =	800
ADT 2027 =	1470
DHV =	14 %
D =	65 %
T =	3 % *
V =	50 MPH
* (TTST 1% + DUAL 2%)	
FUNC. CLASS. = RURAL LOCAL	

PROJECT LENGTH

LENGTH ROADWAY		
TIP PROJECT B-3830 =	0.461	MILES
LENGTH STRUCTURE		
TIP PROJECT B-3830 =	0.060	MILES
TOTAL LENGTH OF		
TIP PROJECT B-3830 =	0.521	MILES

Prepared In the Office of:
WILBUR SMITH ASSOCIATES
421 Fayetteville St, Suite 1303, Raleigh NC, 27601

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
August 17, 2007

LETTING DATE:
MARCH 17, 2009

DAVID L. WILVER, P.E.
PROJECT ENGINEER

R.D. ODELL, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

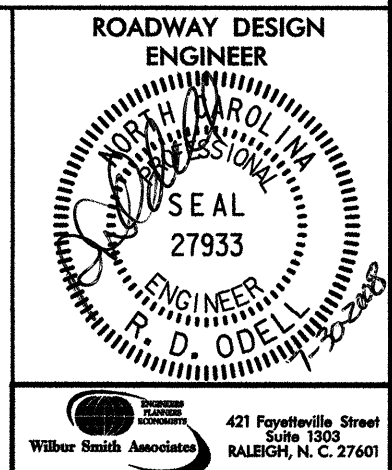
7/29/08

7-29-2008

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

09/08/09
FILE: r:\nodel\138530\roadway\proj\138530_RDY_pml1.dgn
DATE: 7/27/08 7:22:43 AM



B-3830 COLUMBUS COUNTY INDEX OF SHEETS

SHEET #	DESCRIPTION
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARDS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS
2A	ROCK EMBANKMENT / ROCK PLATING DETAIL
2B THRU 2M	STANDARD TEMPORARY SHORING DETAILS
3	SUMMARY OF QUANTITIES
3-A	PIPE SUMMARY SHEET
3-B	GUARDRAIL SUMMARY SHEET
3-C	EARTHWORK SUMMARY SHEET
3-D	PARCEL INDEX SHEET
4 AND 5	PLAN / PROFILE SHEETS
TCP-1 THRU TCP-12	TRAFFIC CONTROL PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
SIG-1 THRU SIG-10	SIGNAL PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1 THRU X-10	CROSS SECTIONS
S-1 THRU S-52	STRUCTURE PLANS
W-1 THRU W-5	RETAINING WALL PLANS

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE PROGRESS ENERGY, EMBARO.

TIME WARNER CABLE, AND LAKE WACCAMAW.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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

REVISIONS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3830	1B
RW SHEET NO.	

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	EDM
Parcel/Sequence Number	(23)
Existing Fence Line	—x—x—x—
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLB
Proposed Wetland Boundary	WLB
Existing High Quality Wetland Boundary	HO 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	W
Small Mine	✕
Foundation	▭
Area Outline	▭
Cemetery	+
Building	▭
School	▭
Church	▭
Dam	▭

HYDROLOGY:

Stream or Body of Water	_____
Hydro, Pool or Reservoir	▭
River Basin Buffer	_____
Flow Arrow	←
Disappearing Stream	→
Spring	○
Swamp Marsh	⌵
Proposed Lateral, Tail, Head Ditch	▭
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	—T—T—T—
Proposed Guardrail	—T—T—T—
Existing Cable Guiderail	—P—P—P—
Proposed Cable Guiderail	—P—P—P—
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	UTL
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.

REVISIONS

6/2/99

SURVEY CONTROL SHEET B-3830

PROJECT REFERENCE NO.	SHEET NO.
B-3830	1C
Location and Surveys	

BL POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
1	B3830 -BL1-	199693.7218	2157562.5420	43.85	11+61.52	14.96 LT
2	B3830 -BL2-	199230.8065	2158113.4225	46.11	18+81.07	14.44 LT
3	B3830 -BL3-	198840.7488	2158679.8972	44.49	25+71.42	17.01 LT

.....
 BM1 ELEVATION = 45.22
 N 199684 E 2157498
 L1 STATION 11+12.39 RIGHT
 SPIKE IN 18 INCH PINE TREE ON WEST END
 OF THE JOB SITE

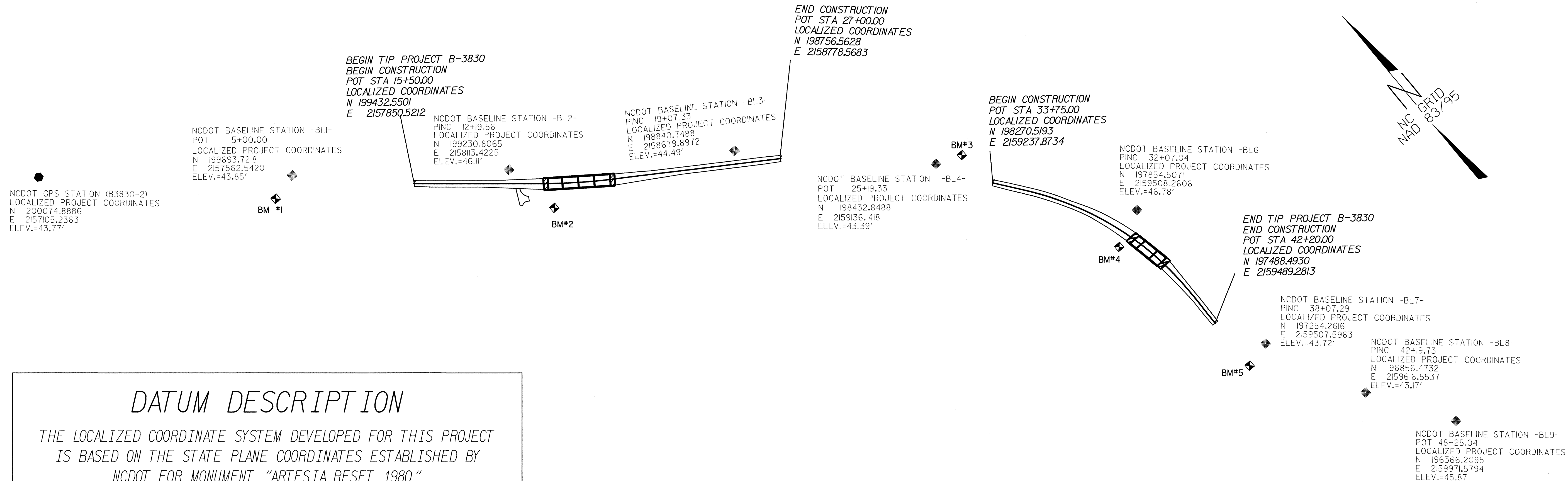
.....
 BM3 ELEVATION = 42.83
 N 198402 E 2159213
 L2 STATION 32+55.99 LEFT
 SPIKE IN TREE ON EAST END OF THE JOB
 SITE

.....
 BM5 ELEVATION = 45.38
 N 197215 E 2159397
 L2 STATION 42+40
 S 19° 58' 09.5" W DIST 269.20
 SPIKE IN 18 INCH PINE TREE NEAR BOAT
 RAMP

BL POINT	DESC.	NORTH	EAST	ELEVATION	L2 STATION	OFFSET
4	B3830 -BL4-	198432.8488	2159136.1418	43.39	31+84.05	15.46 LT
6	CAP NOT STAMPED	197854.5070	2159508.2605	46.78	38+62.50	44.79 LT
7	CAP NOT STAMPED	197254.2615	2159507.5962	43.72	OUTSIDE PROJECT LIMITS	
8	CAP NOT STAMPED	196856.4733	2159616.5538	43.17	OUTSIDE PROJECT LIMITS	
9	CAP NOT STAMPED	196366.2095	2159971.5795	45.87	OUTSIDE PROJECT LIMITS	

.....
 BM2 ELEVATION = 46.86
 N 199121 E 2158163
 L1 STATION 19+89.38 RIGHT
 SPIKE IN 24 INCH PINE TREE NEAR THE
 BRIDGE OVER BIG CREEK

.....
 BM4 ELEVATION = 43.78
 N 197860 E 2159450
 L2 STATION 38+43.10 RIGHT
 SPIKE IN 24 INCH PINE TREE NEAR BRIDGE OVER
 FRIAR SWAMP



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "ARTESIA RESET 1980" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 208421.650(ft) EASTING: 2129072.147(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000013060 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "ARTESIA RESET 1980" TO -L- STATION 15+50.00 IS S 72°39'13" E 30,149.606 FT. ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

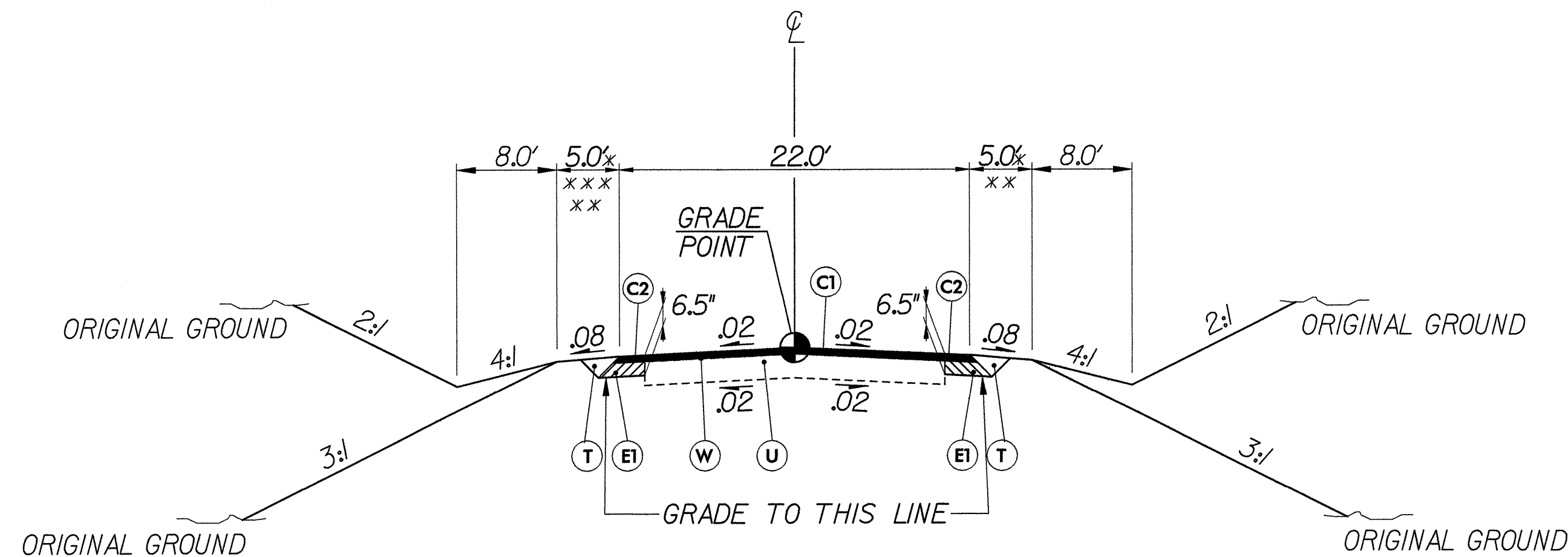
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCTHIGHWAYLOCATIONPROJECT/](http://www.doh.dot.state.nc.us/preconstructhighwaylocationproject/) THE FILES TO BE FOUND ARE AS FOLLOWS: B3830_LS_CONTROL_070509.TXT

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

© INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION. SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

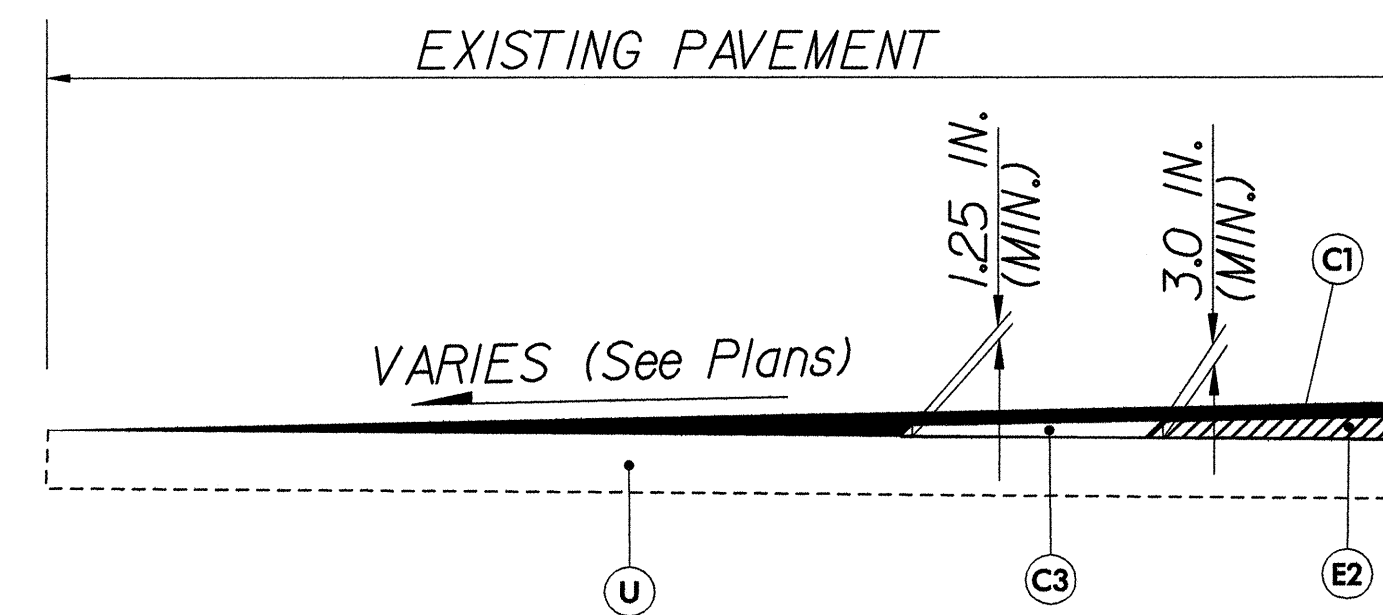
NOTE: DRAWING NOT TO SCALE

S:\TIME\CON\CON\B3830\B3830_1C.DWG



TYPICAL SECTION NO.1

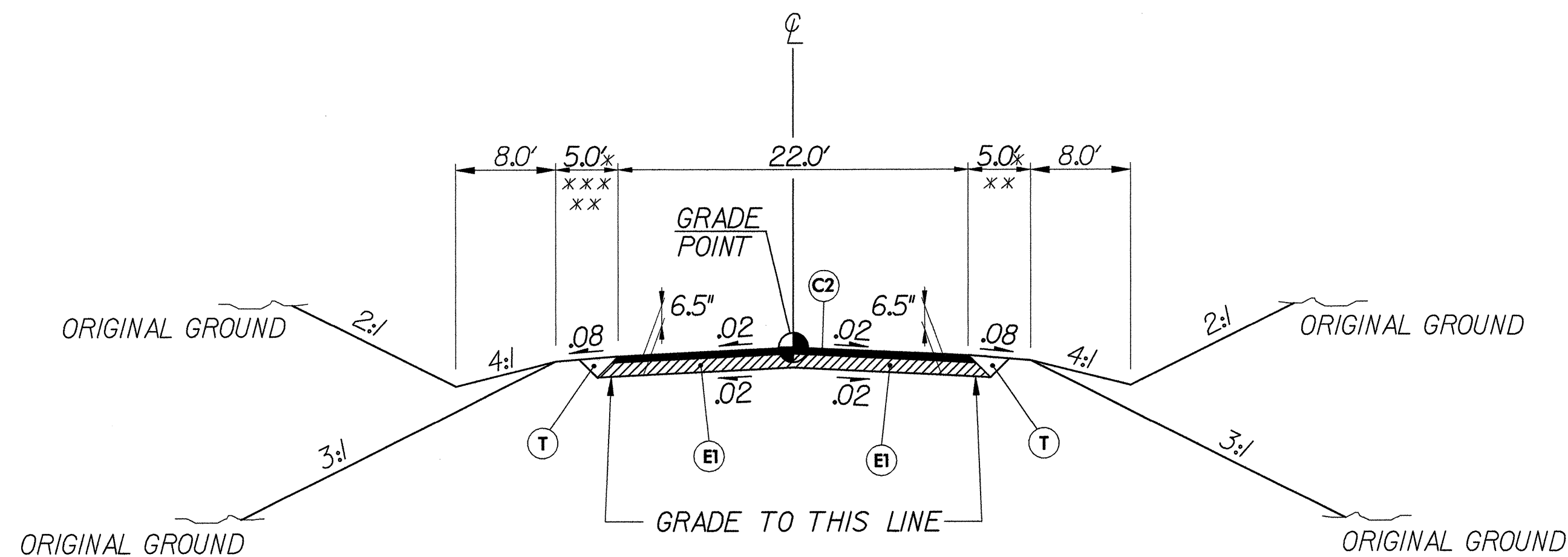
USE ON: -L- Sta. 15+50.00 to Sta. 17+00.00
 -L- Sta. 23+58.00 to Sta. 27+00.00
 -L- Sta. 33+75.00 to Sta. 36+27.86
 -L- Sta. 39+77.04 (END BRIDGE) to Sta. 42+20.00



WEDGING DETAIL

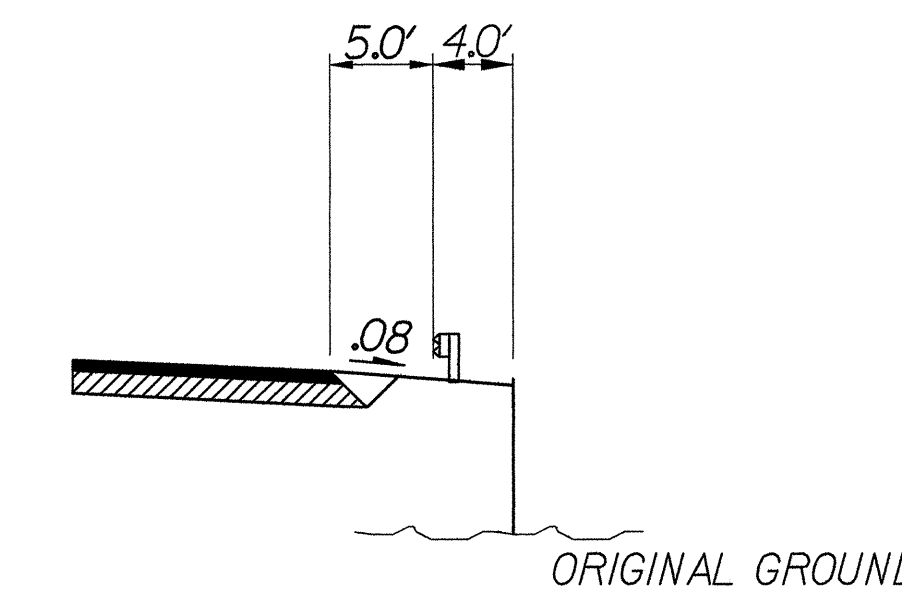
NOTES:

- * TOTAL SHOULDER WIDTH TO BE INCREASED 3' WHERE GUARDRAIL IS USED.
- ** CONSTRUCT FULL DEPTH PAVED SHOULDERS AT WIDTHS & LOCATIONS SHOWN ON PLAN SHEET 4 & 5 AS REQUIRED FOR TRAFFIC CONTROL.
- *** VARY GRADED SHOULDER WIDTH LEFT (5' MAX.) TO MATCH EXISTING SHOULDER (SEE CROSS SECTIONS)
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



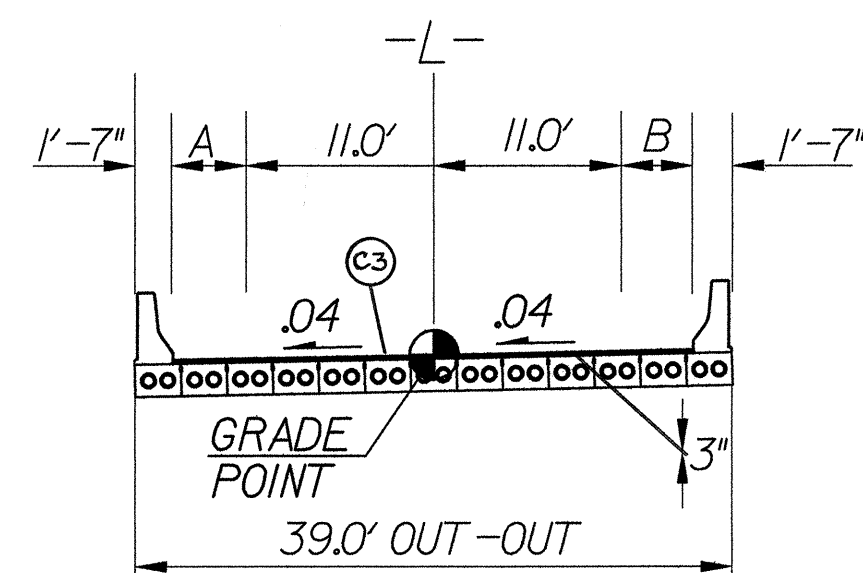
TYPICAL SECTION NO.2

USE ON: -L- Sta. 17+00.00 to Sta. 19+68.46 (BEGIN BRIDGE)
 -L- Sta. 21+63.54 (END BRIDGE) to Sta. 23+58.00
 -L- Sta. 36+27.86 to Sta. 38+56.96 (BEGIN BRIDGE)



TYPICAL RETAINING WALL DETAIL

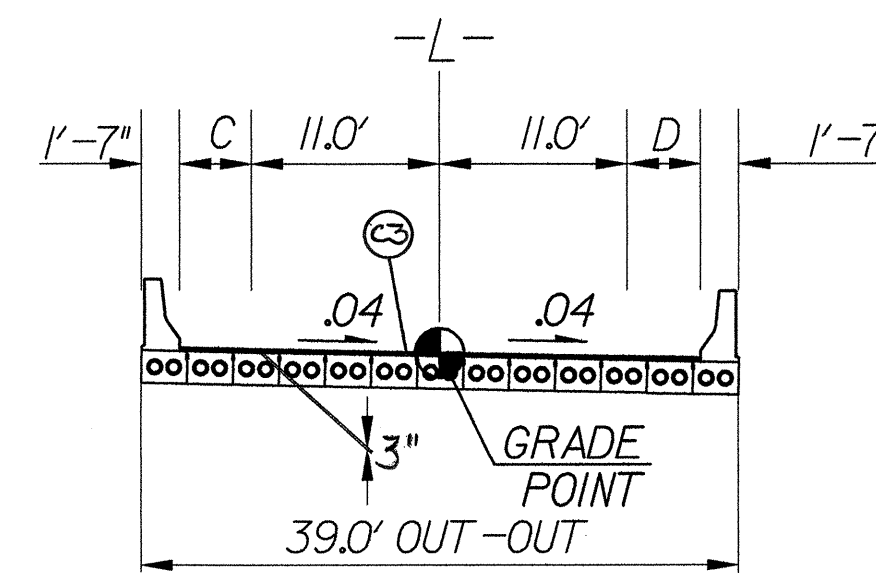
PAVEMENT SCHEDULE	
C1	PROPOSED APPROX. 1.25 IN. ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS/SY IN A SINGLE LAYER.
C2	PROPOSED APPROX. 2.50 IN. ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS/SY IN EACH OF TWO LAYERS.
C3	PROPOSED VAR. DEPTH. ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS PER SY PER 1 IN. DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.0 IN. NOR GREATER THAN 1.5 IN. IN DEPTH.
E1	PROPOSED APPROX. 4.0 IN. ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS/SY.
E2	PROPOSED VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS PER SY PER 1 IN. DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3.0 IN. NOR GREATER THAN 5.5 IN. IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING 1.25"
W	WEDGING



TYPICAL SECTION ON STRUCTURE

USE ON: -L- Sta. 19+68.46 (BEGIN BRIDGE) to Sta. 21+63.54 (END BRIDGE)

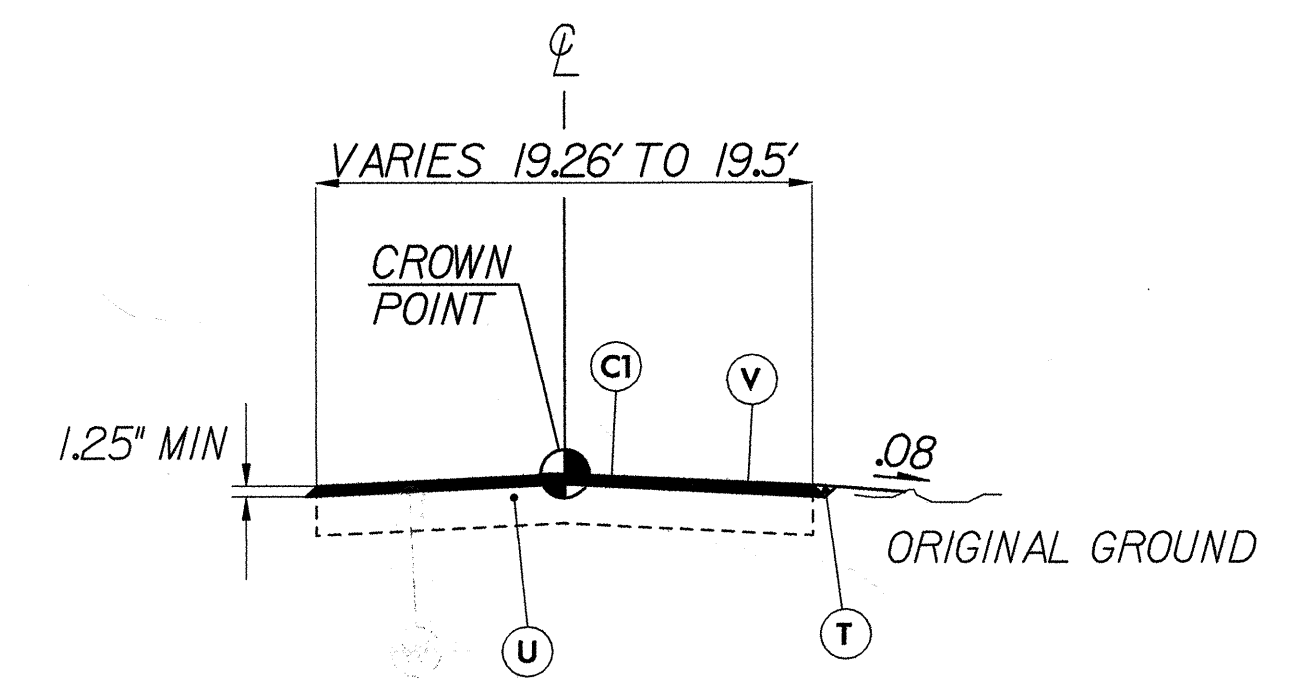
A = VARIES FROM 6.92' TO 9.41'
 B = VARIES FROM 4.43' TO 6.91'



TYPICAL SECTION ON STRUCTURE

USE ON: -L- Sta. 38+56.79 (BEGIN BRIDGE) to Sta. 39+77.33 (END BRIDGE)

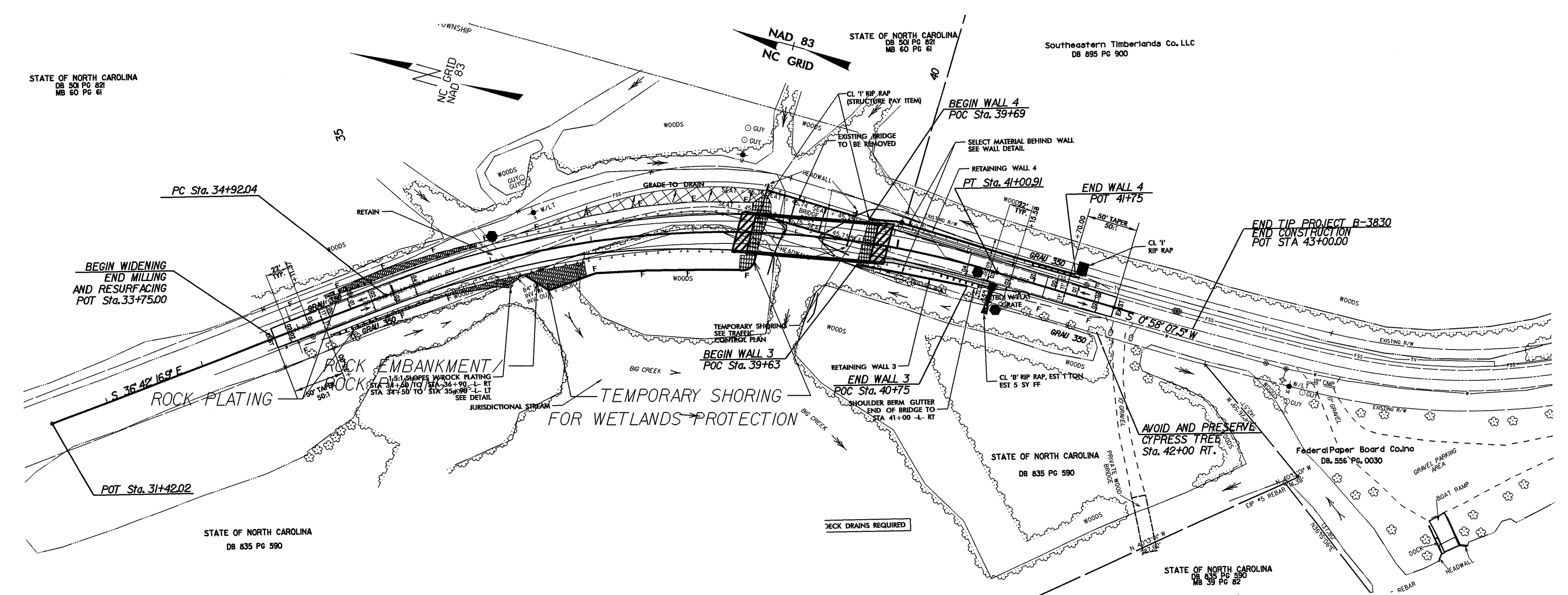
C = VARIES FROM 5.50' TO 6.92'
 D = VARIES FROM 6.92' TO 8.33'



TYPICAL SECTION NO.3

USE ON: -L- RESURFACE Sta. 27+00.00 to Sta. 33+75.00

NOTE: SHOULDER WIDTH VARIES ON BRIDGE DUE TO HORIZONTAL CURVE ON TANGENT BRIDGE.



ROCK EMBANKMENT
STA. 36+10 -L-, RT ± TO STA. 36+90 -L-, RT ±

ESTIMATED QUANTITIES

SELECT MATERIAL, CLASS VII.....	1800 TONS
SELECT MATERIAL, CLASS VI (NO. 57 STONE).....	300 TONS
FILTER FABRIC FOR DRAINAGE.....	250 SY

ROCK PLATING
STA. 17+75 -L- TO STA. 19+68 -L-, RT
STA. 34+50-L-, RT ± TO STA. 36+90 -L-, RT ±
STA. 34+50-L-, LT ± TO STA. 35+90 -L-, LT ±

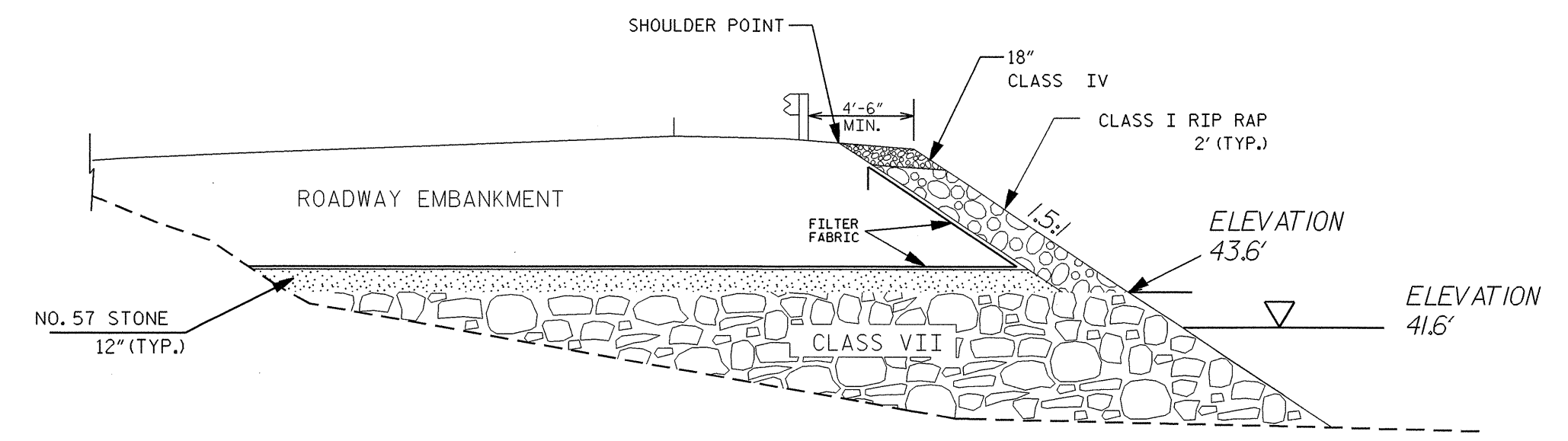
ESTIMATED QUANTITIES

ROCK PLATING.....	520 SY
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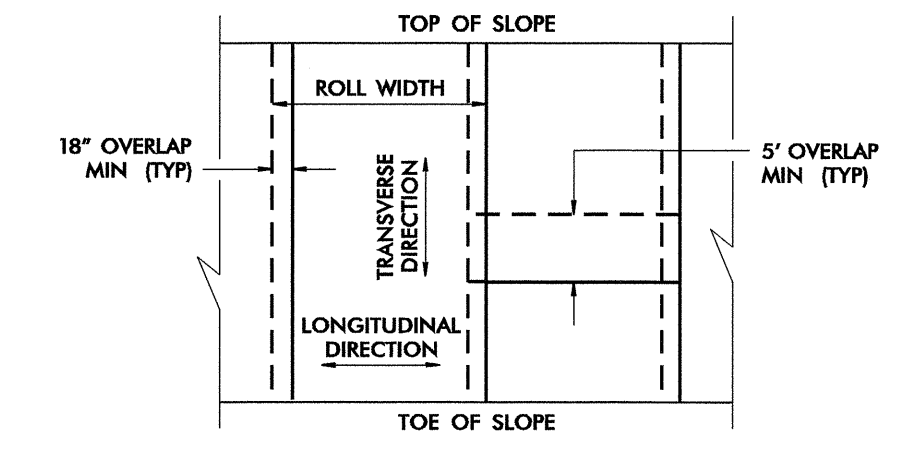
TEMPORARY SHORING FOR WETLANDS PROTECTION
STA. 36+10 -L-, 5 FT RT ± TO STA. 38+66 -L-, 0 FT RT ±

ESTIMATED QUANTITIES

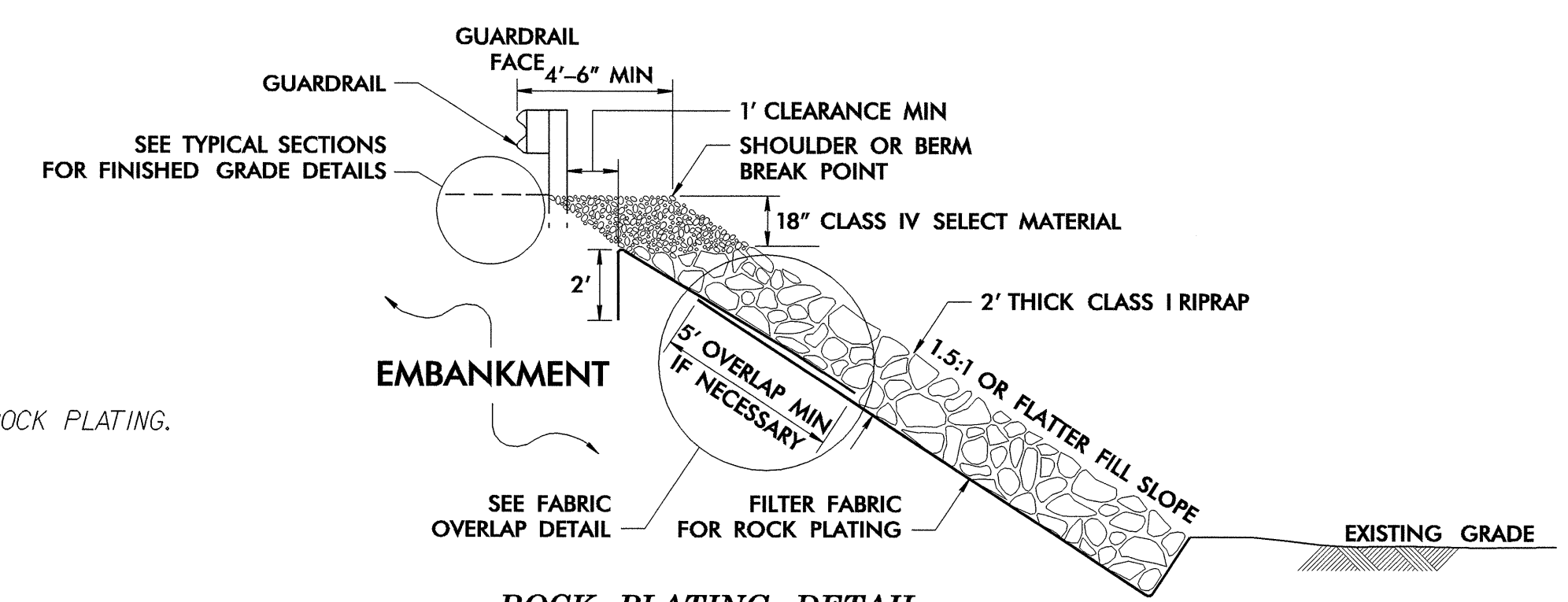
TEMPORARY SHORING.....	400 SY
------------------------	--------



ROCK EMBANKMENT /ROCK PLATING DETAIL
STATIONS 36+10 -L- RT ± TO 36+90 -L- RT ±
N.T.S



FABRIC OVERLAP DETAIL
(PLAN VIEW)
N.T.S.



ROCK PLATING DETAIL
N.T.S.

- NOTES ON PLANS**
- * USE ROCK EMBANKMENT AT STA. 36+10 -L- TO STA. 36+90 -L- (RT).
 - * CONSTRUCT ROCK EMBANKMENT TO ELEVATION 43.6 FT. AND ACCORDING TO THE ROCK EMBANKMENT SPECIAL PROVISION.
 - * USE ROCK PLATING AT STA. 17+75 ± -L- TO STA. 19+68 ± -L- (RT). DO NOT USE ROCK PLATING IN THE DRIVEWAY BETWEEN STA. 18+50 -L- TO STA. 19+00 -L- (RT).
 - * CONSTRUCT ROCK PLATING ABOVE ROCK EMBANKMENT FROM ELEVATION 43.6 FT. TO THE SHOULDER HINGE POINT AND ACCORDING TO THE SPECIAL PROVISION FOR ROCK PLATING.
 - * FOR TEMPORARY SHORING FOR WETLANDS PROTECTION, USE TEMPORARY SHORING SPECIAL PROVISION.
 - * DO NOT USE STANDARD SHORING FROM STA. 36+10 -L-, 5 FT. RT. OF CENTER LINE TO STA. 38+66 -L-, AT THE CENTER LINE. CONTRACTOR DESIGNED SHORING IS REQUIRED. SEE TEMPORARY SHORING SPECIAL PROVISION.
 - * CONTRACTOR DESIGNED SHORING IS REQUIRED FROM STA. 36+10 -L-, 5 FT. RT. OF CENTER LINE, TO STA. 38+66 -L-, AT CENTER LINE. USE FOLLOWING SOIL PARAMETERS:
UNIT WEIGHT OF SOIL ABOVE WATER TABLE, $\gamma = 120$ PCF
UNIT WEIGHT OF SOIL BELOW WATER TABLE, $\gamma = 60$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
 - * FOR CONTRACTOR DESIGNED SHORING, SURVEY THE SHORING LOCATION TO DETERMINE EXISTING ELEVATIONS AND ACTUAL DESIGN HEIGHTS BEFORE BEGINNING DESIGN.
 - * LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF THE TEMPORARY SHORING FROM STA. 36+10 -L-, 5 FT. RT. OF CENTER LINE TO STA. 38+66 -L-, AT CENTER LINE. THE INFORMATION PROVIDED FOR DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.
 - * TEMPORARY SHORING FOR WETLAND PROTECTION INSTALLED TO PERFORM UNDERCUT MUST KEEP SPOILS OUT OF WATER.

PREPARED BY: W.D. FIELDS	DATE: 07/08
REVIEWED BY: J.R. BATTS	DATE: 07/08

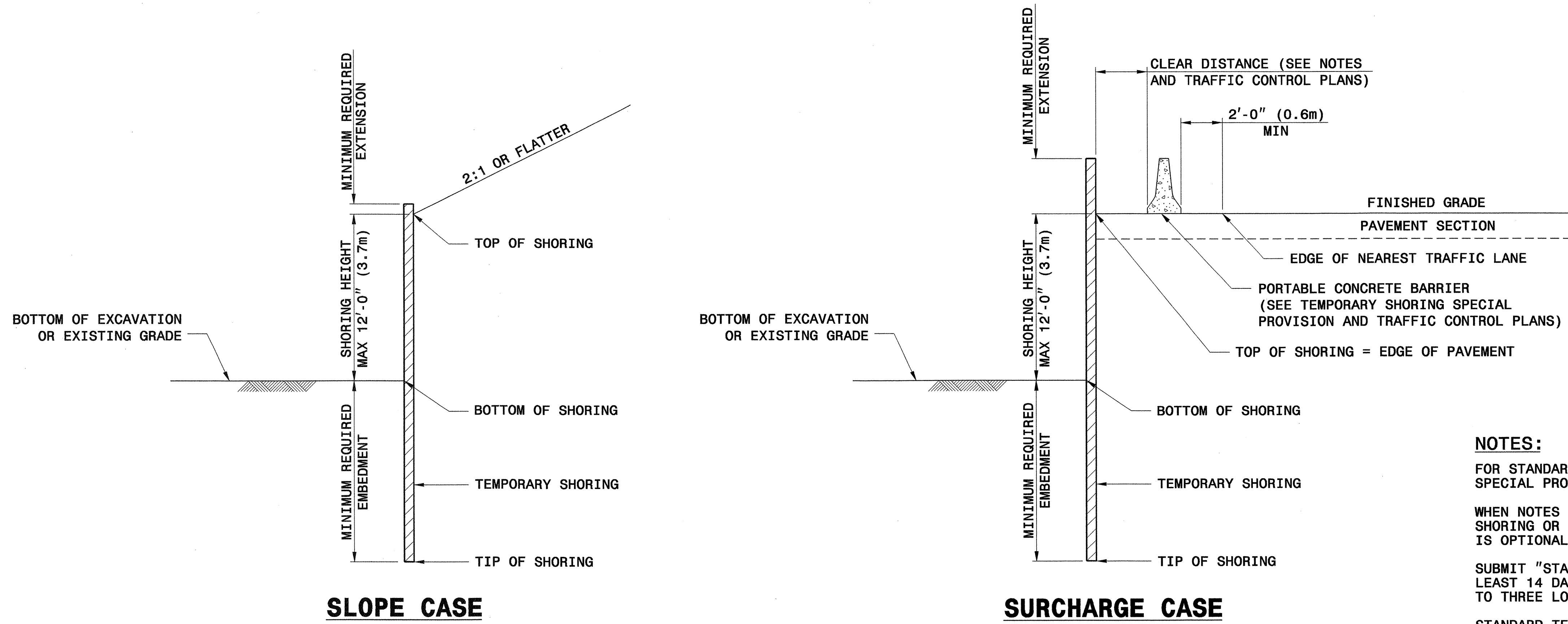
GEOTECHNICAL ENGINEERING UNIT

■ EASTERN REGIONAL OFFICE
□ WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROCK EMBANKMENT / ROCK PLATING DETAIL

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



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	SHORING HEIGHT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H PILES WITH TIMBER LAGGING			SHEET PILES		H PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT FT (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)		
		HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)				HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)	
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)
	12 (3.7)	15.0 (4.6)	21.5 (1156)	--	--	16.0 (4.9)	16.0 (4.9)	25.5 (1371)	--	--	15.5 (4.7)
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".

STANDARD TEMPORARY MSE WALL OPTIONS



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.

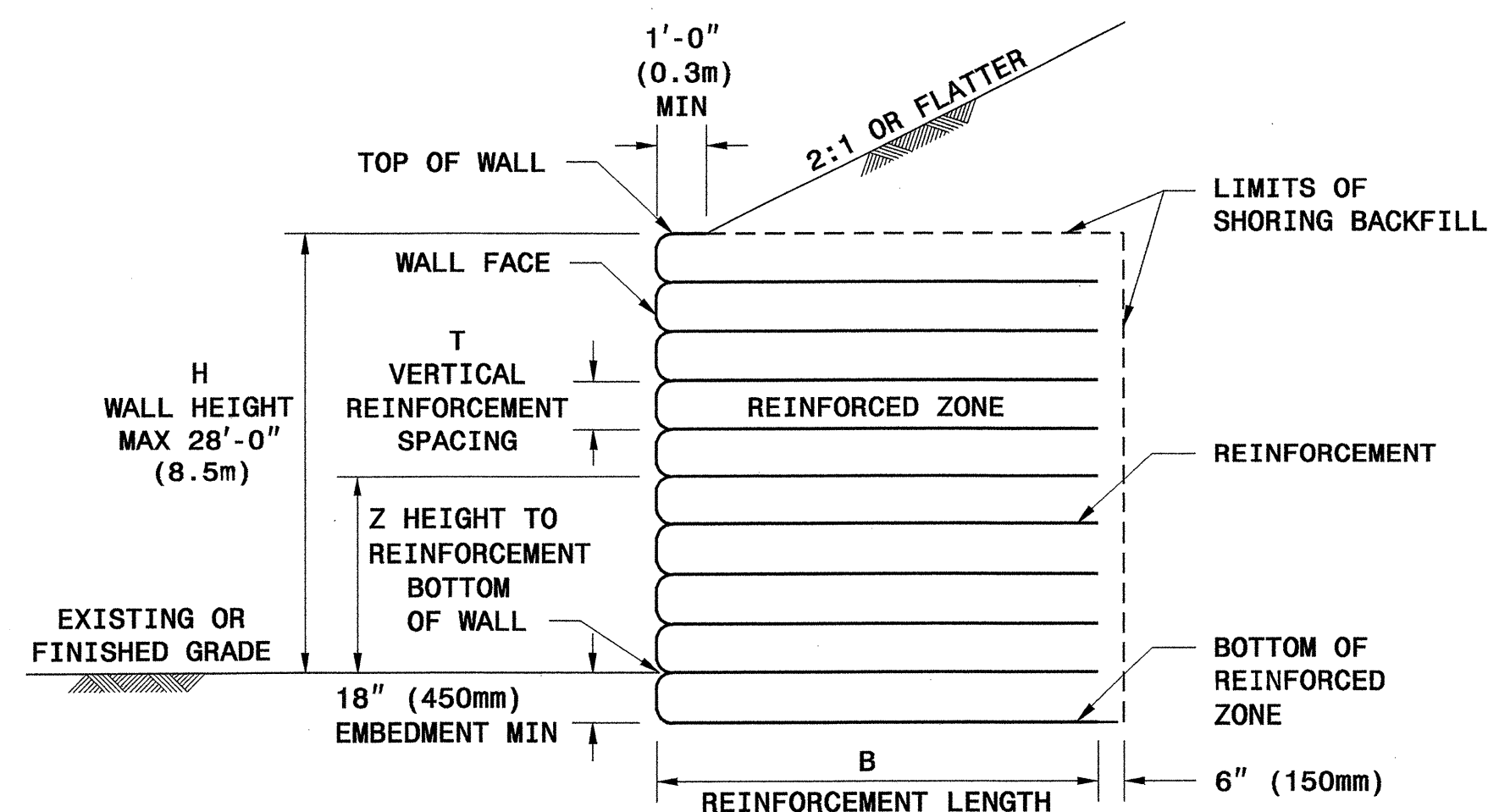
PLACE SHORING BACKFILL IN 8" TO 10" (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" (1m) OF THE WALL FACE.

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.

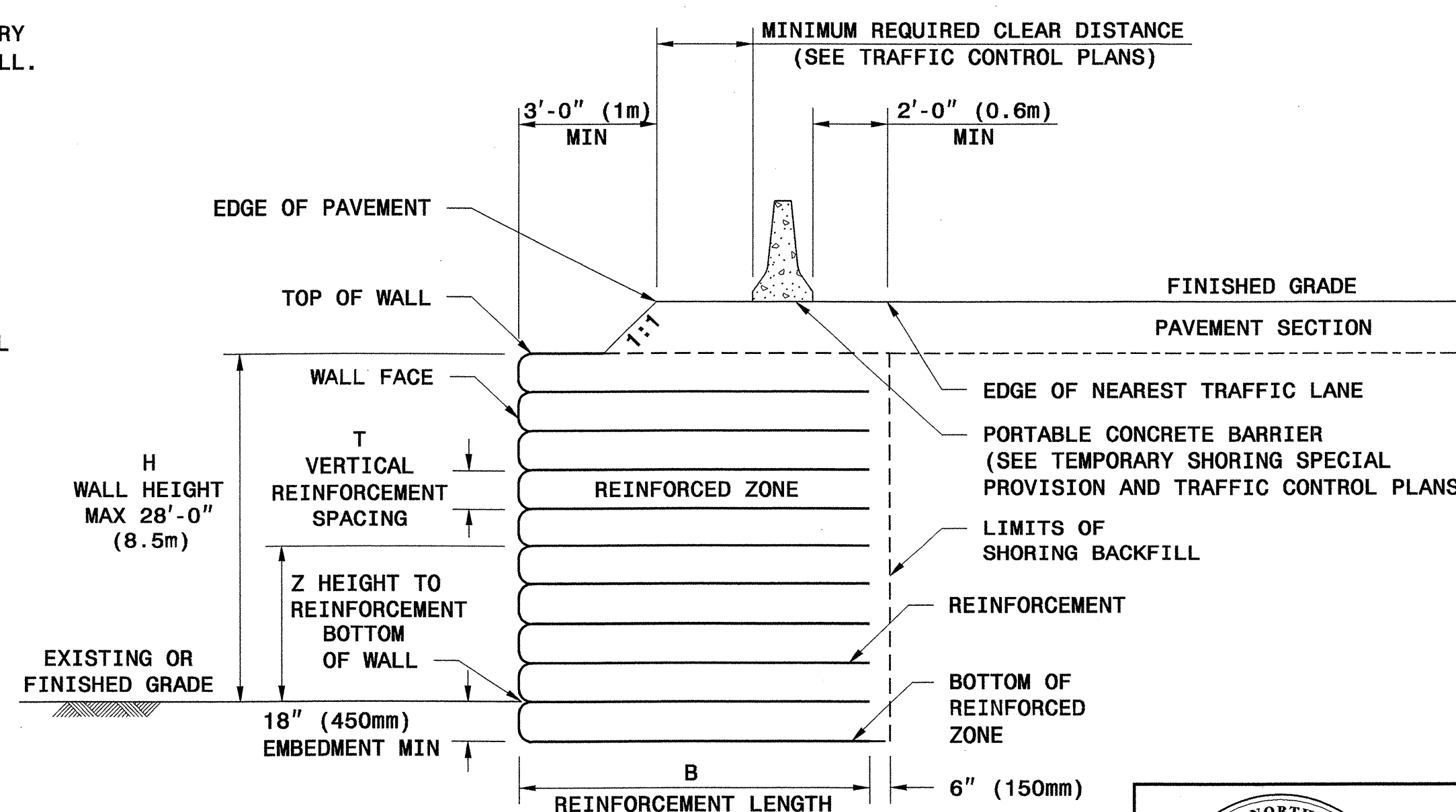
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4" AND 24" (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

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

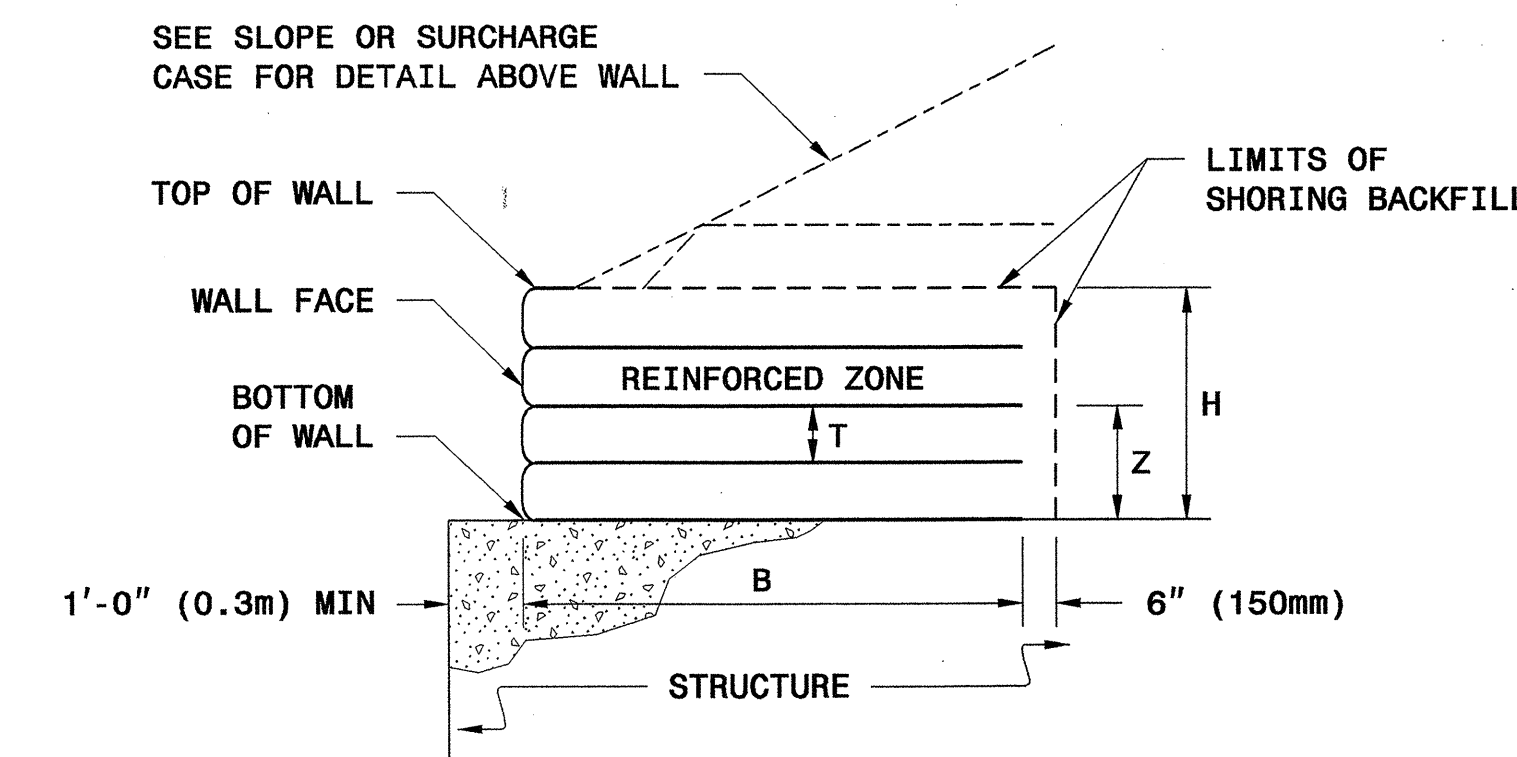
IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



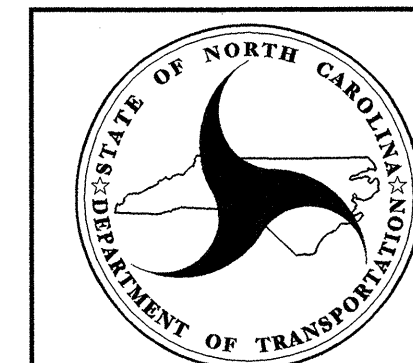
SLOPE CASE



SURCHARGE CASE



TEMPORARY MSE WALL ON STRUCTURE



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RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS

SHEET 1 OF 11

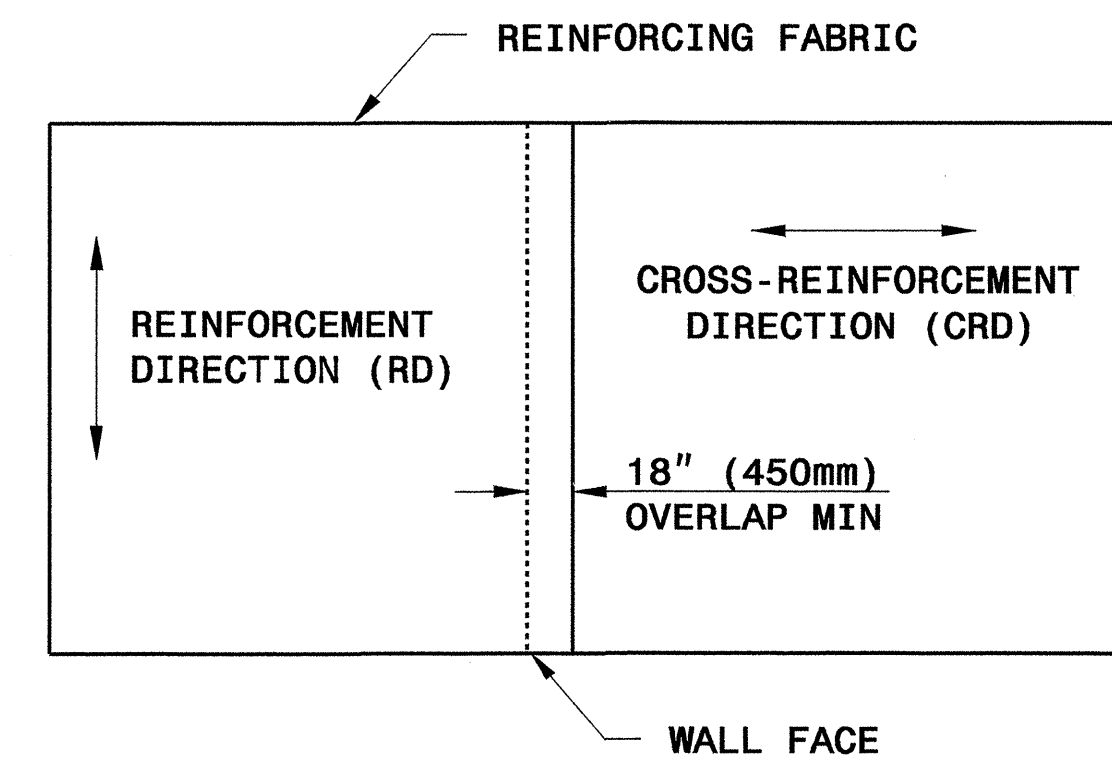
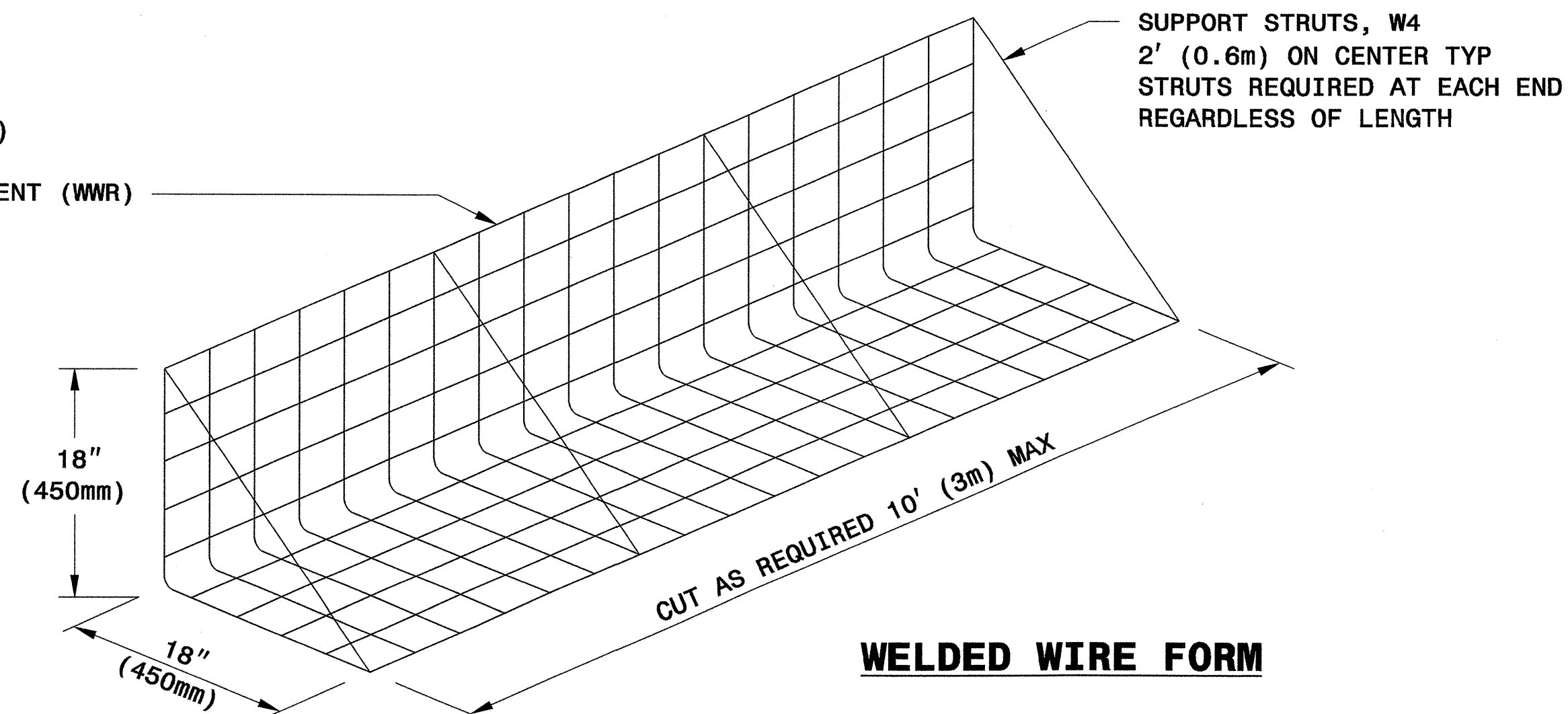
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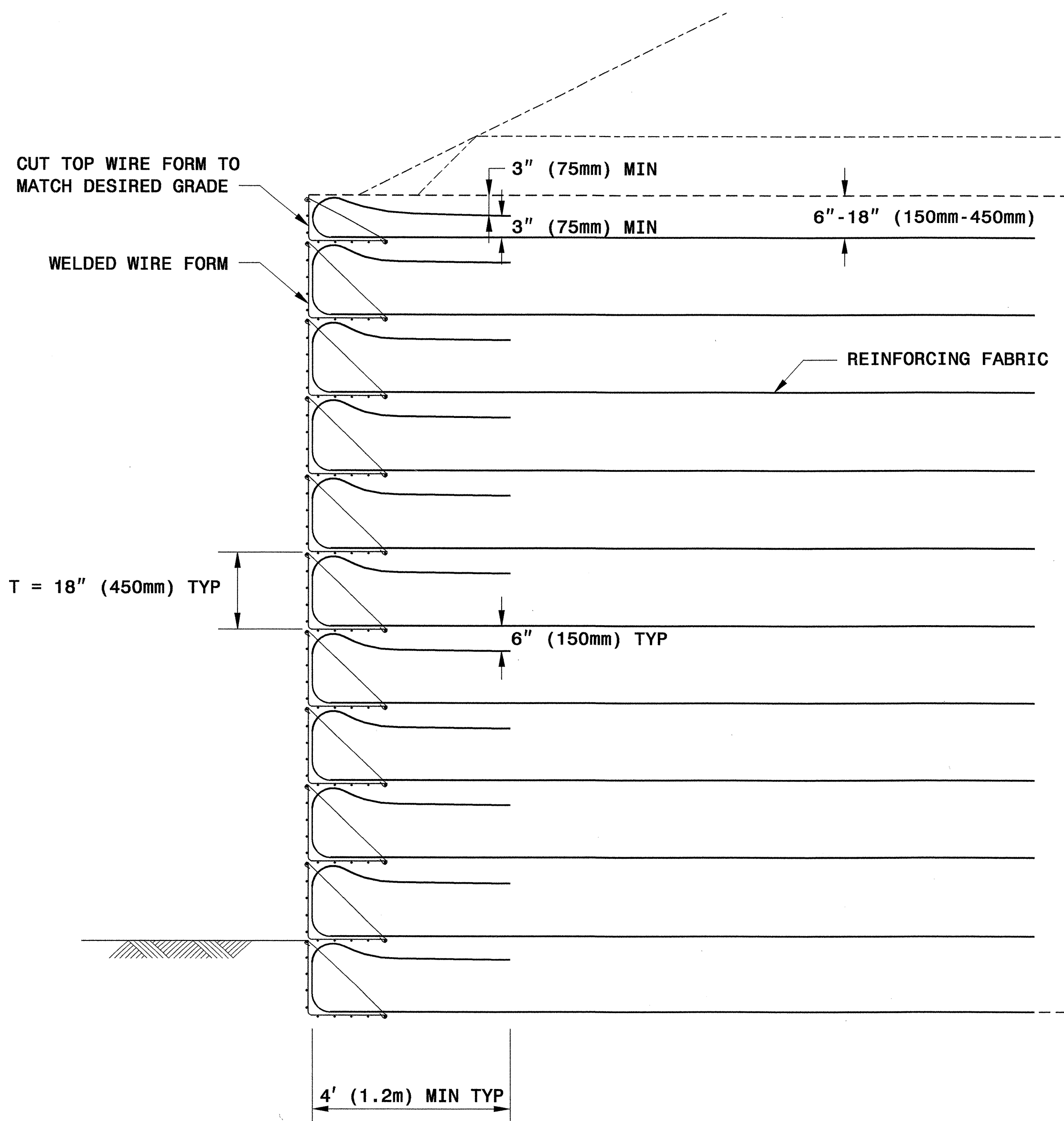
Scott A. Hadden
SIGNATURE DATE

SIGNATURE DATE

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



PLAN VIEW OF FABRIC OVERLAP

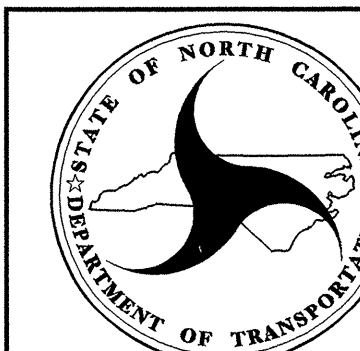


TYPICAL SECTION

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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RALEIGH

STANDARD DRAWING NO. 1801.02

TEMPORARY FABRIC WALL

SHEET 3 OF 11

DATE: 12-19-06

GEOTECHNICAL ENGINEER

ENGINEER

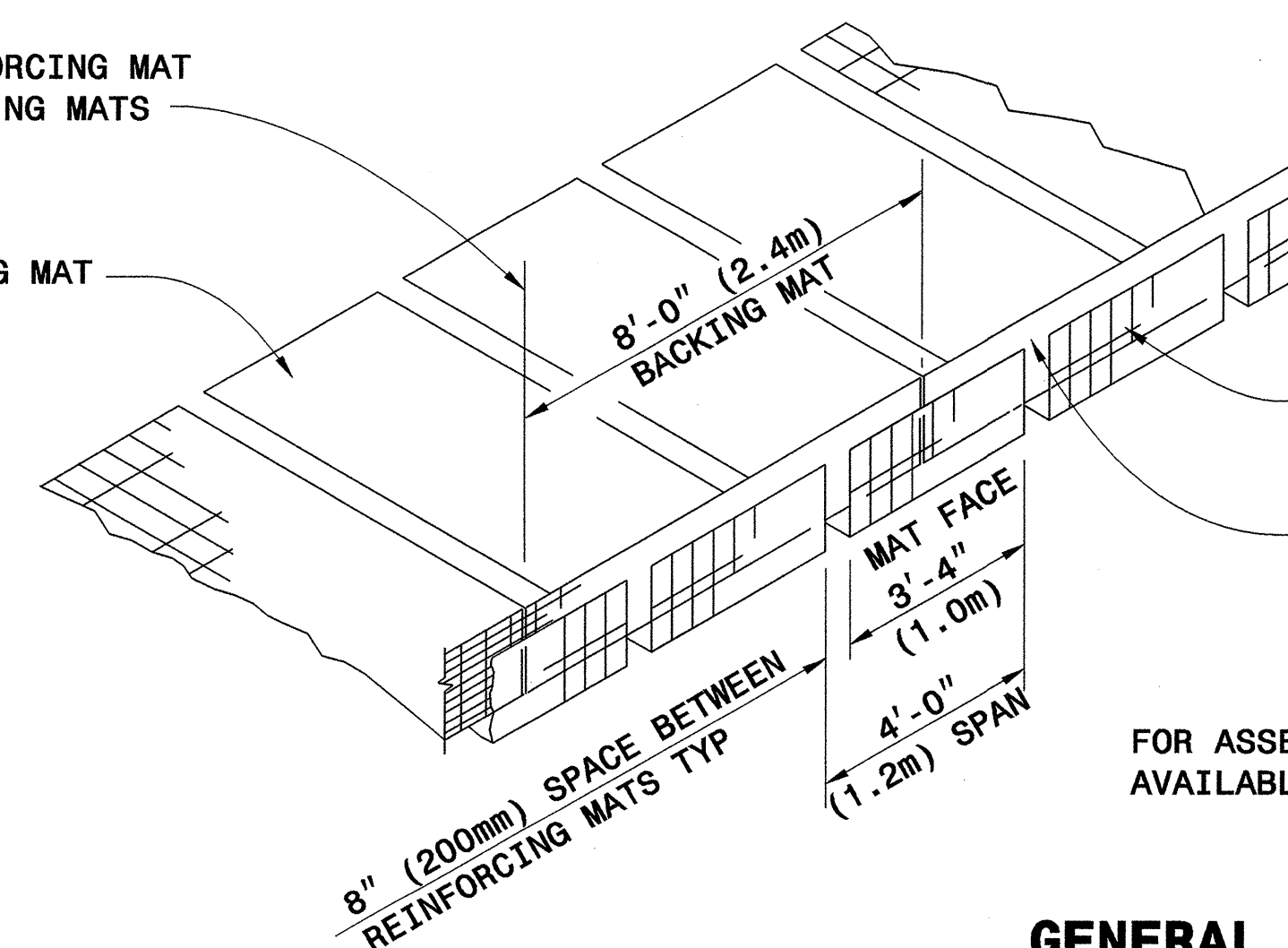


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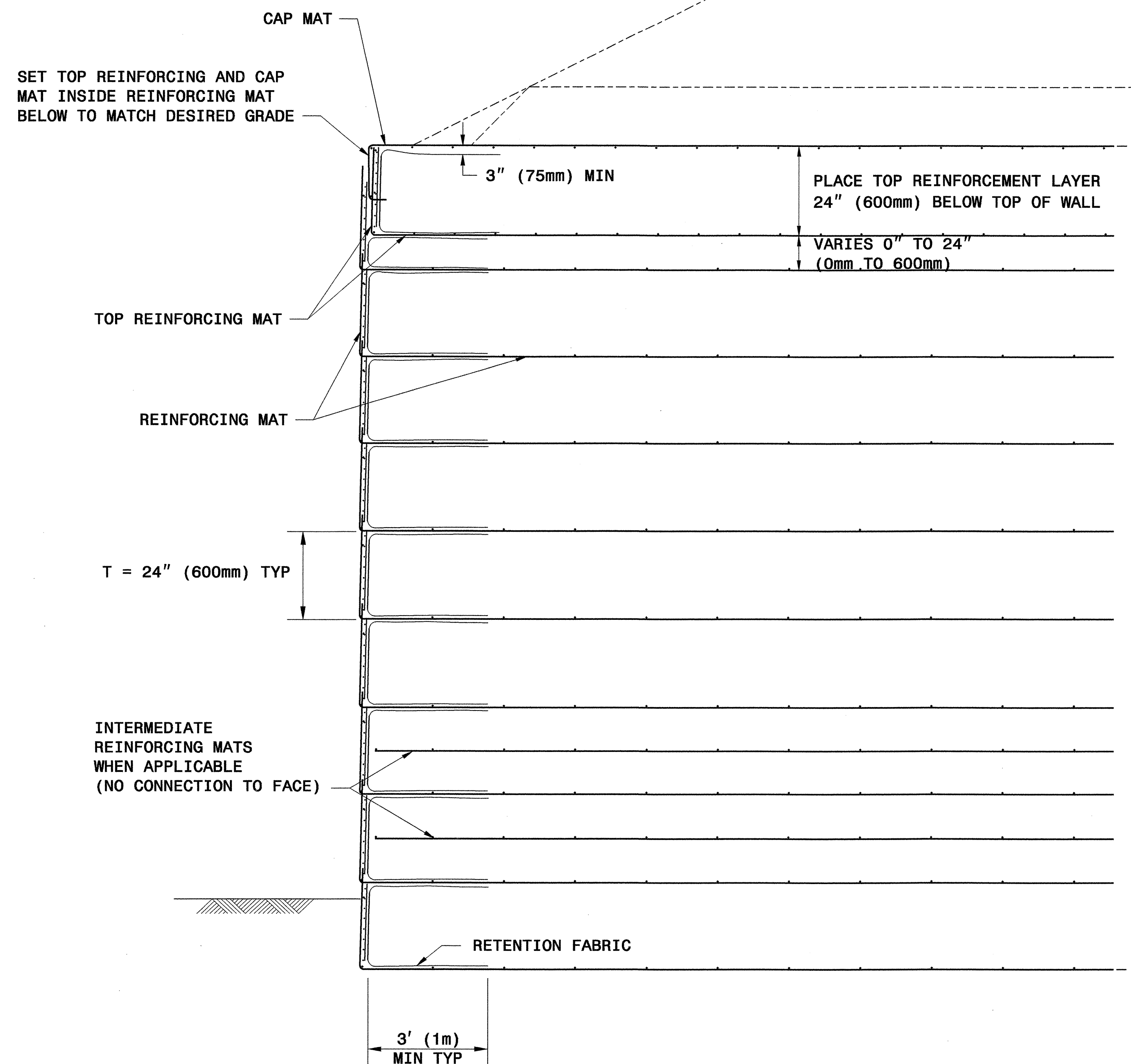
CENTERLINE OF REINFORCING MAT
FACE = EDGE OF BACKING MATS

REINFORCING MAT



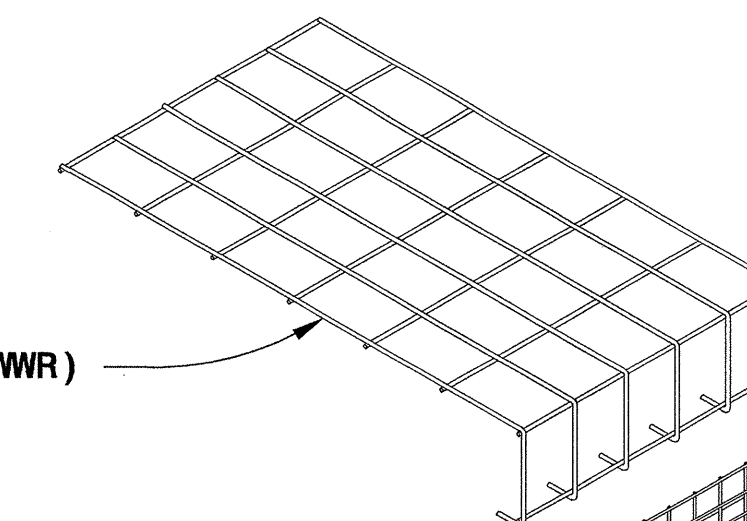
FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL

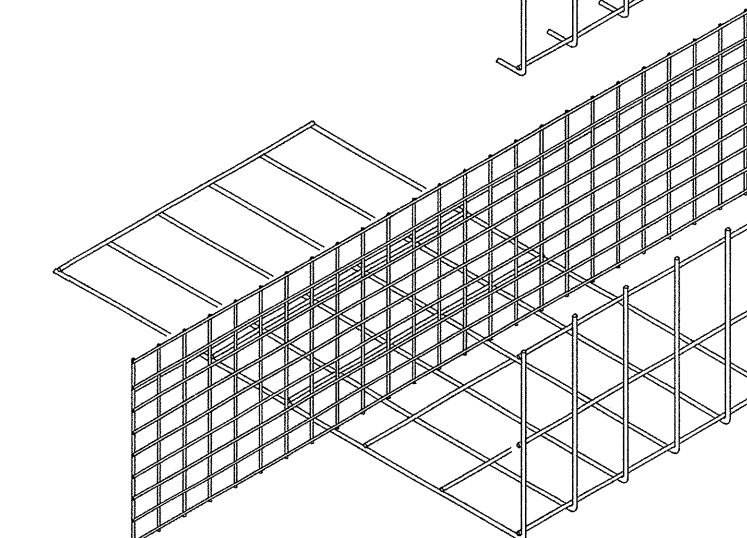


TYPICAL SECTION

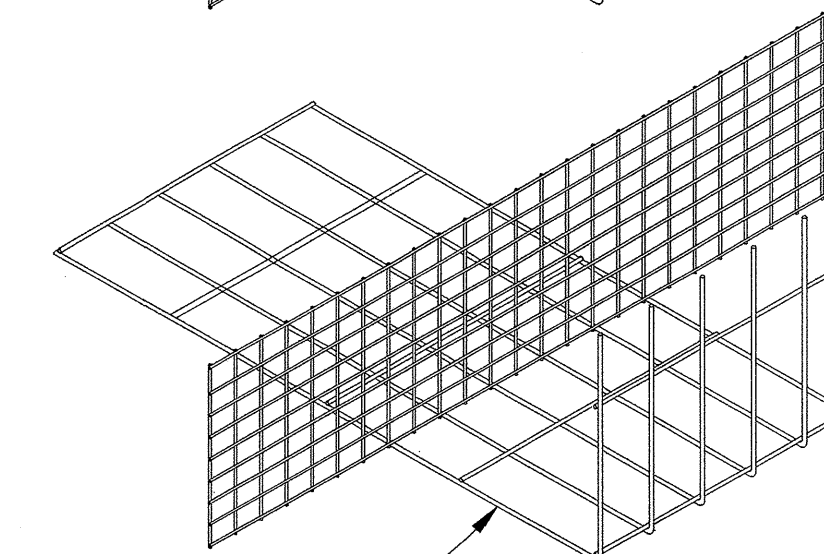
8" X 12" (203mm X 305mm)
W4.5 X W3.5 (MW29 X MW23)
CAP MAT
WELDED WIRE REINFORCEMENT (WWR)



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



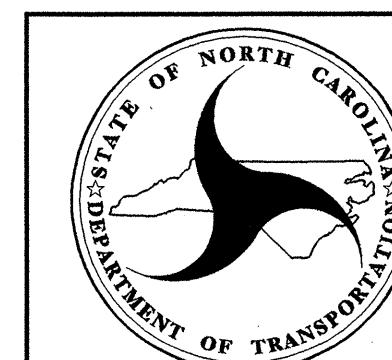
4" X 3" (102mm X 76mm)
W5 X W2.5 (MW32 X MW16) WWR
BACKING MAT
8' (2.4m) WIDE



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

WALL COMPONENTS

HILFIKER RETAINING WALLS



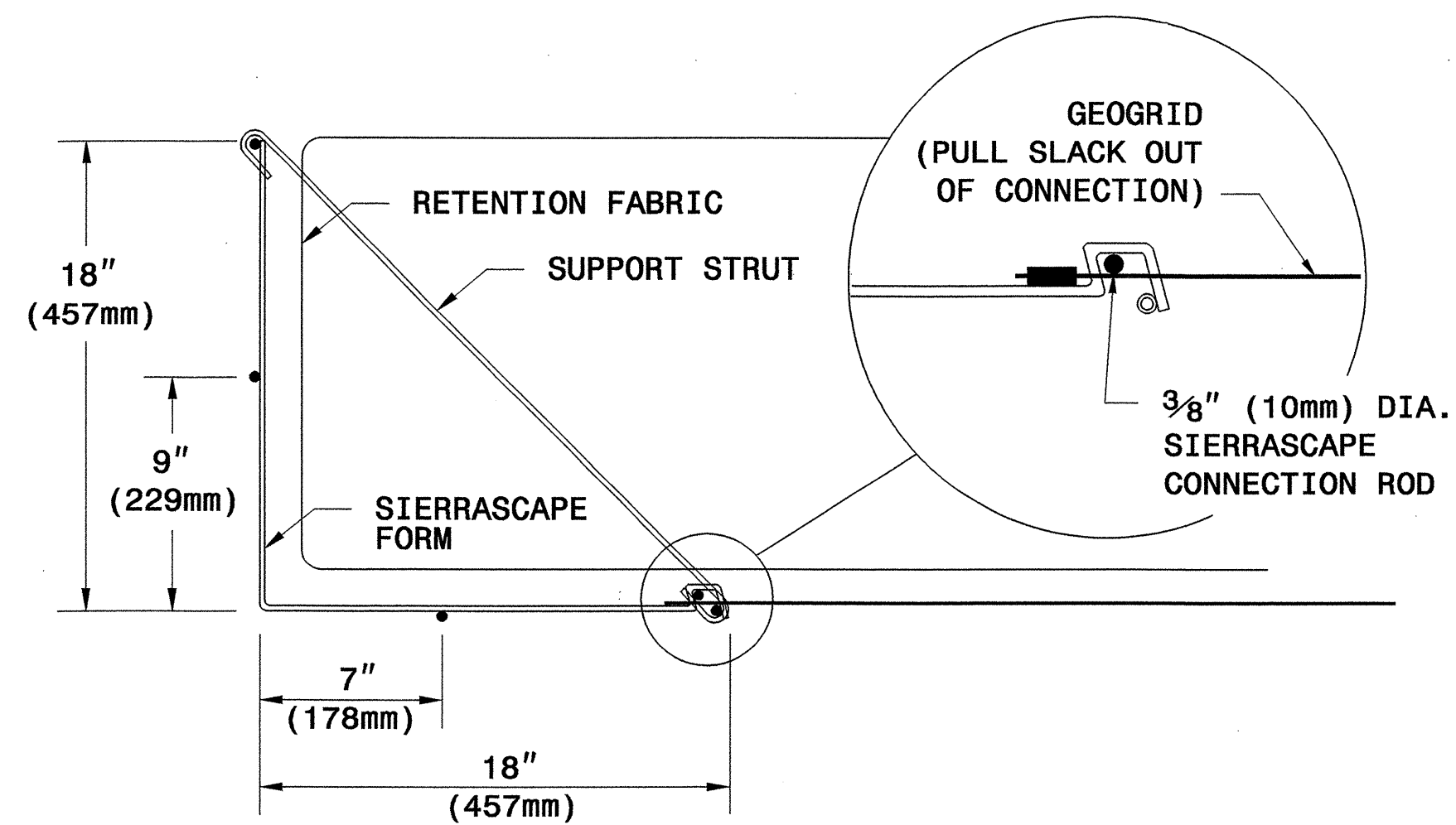
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RALEIGH

STANDARD DRAWING NO. 1801.02

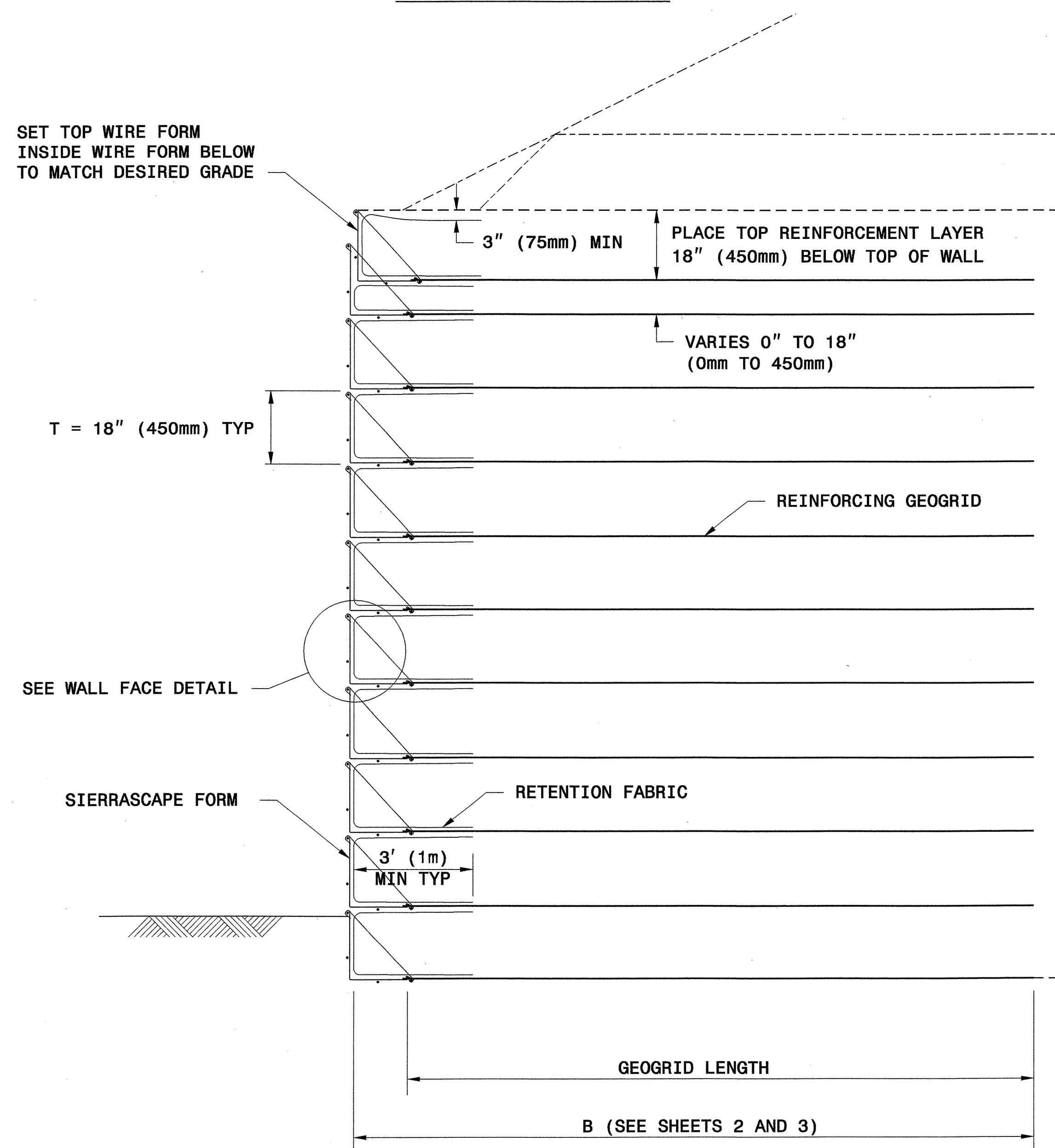
HILFIKER
TEMPORARY WALL

SHEET 4 OF 11

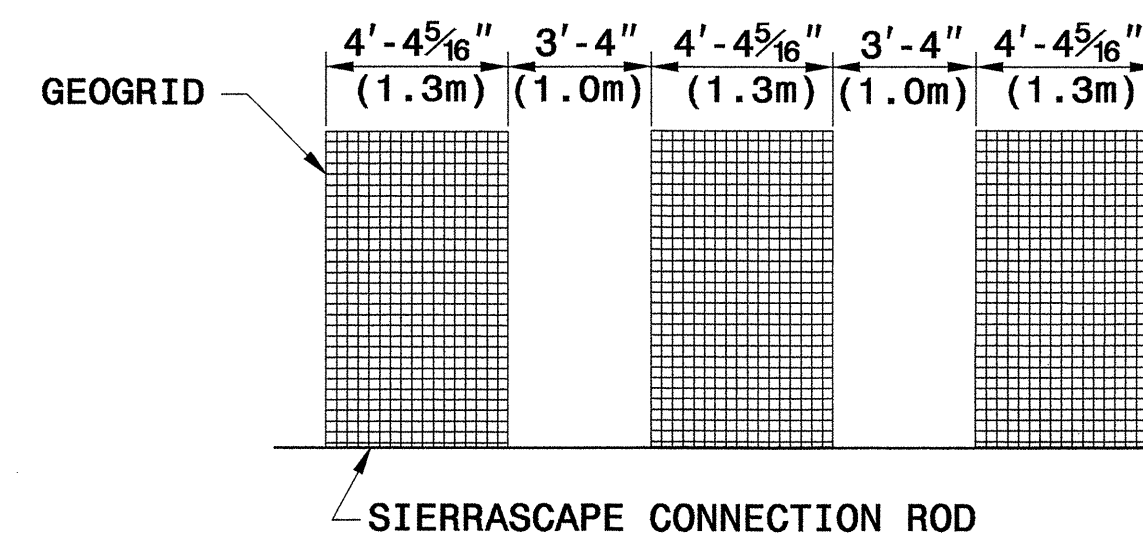
DATE: 12-19-06



WALL FACE DETAIL

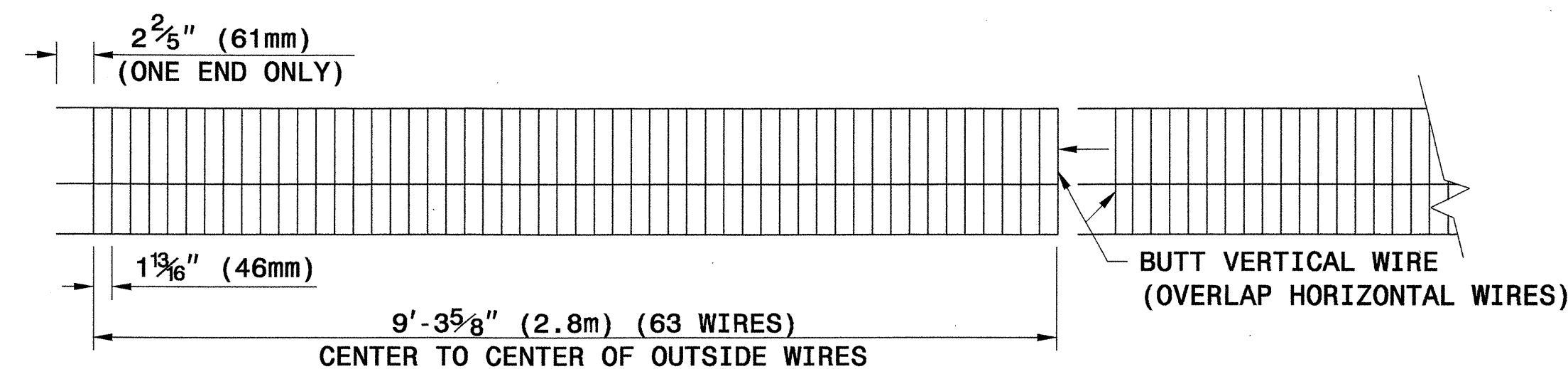


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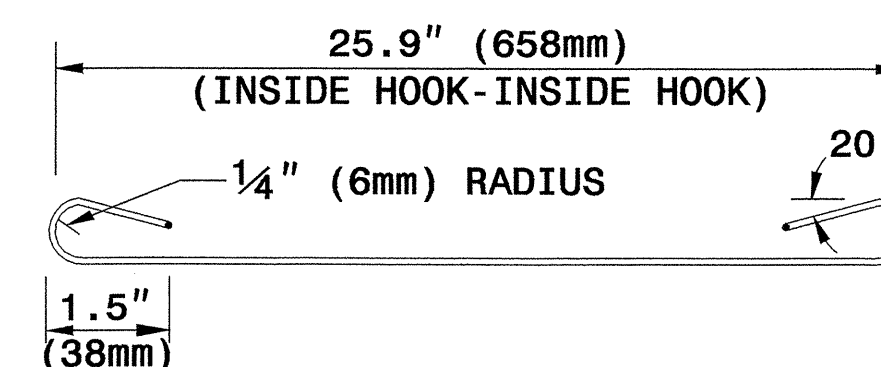


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

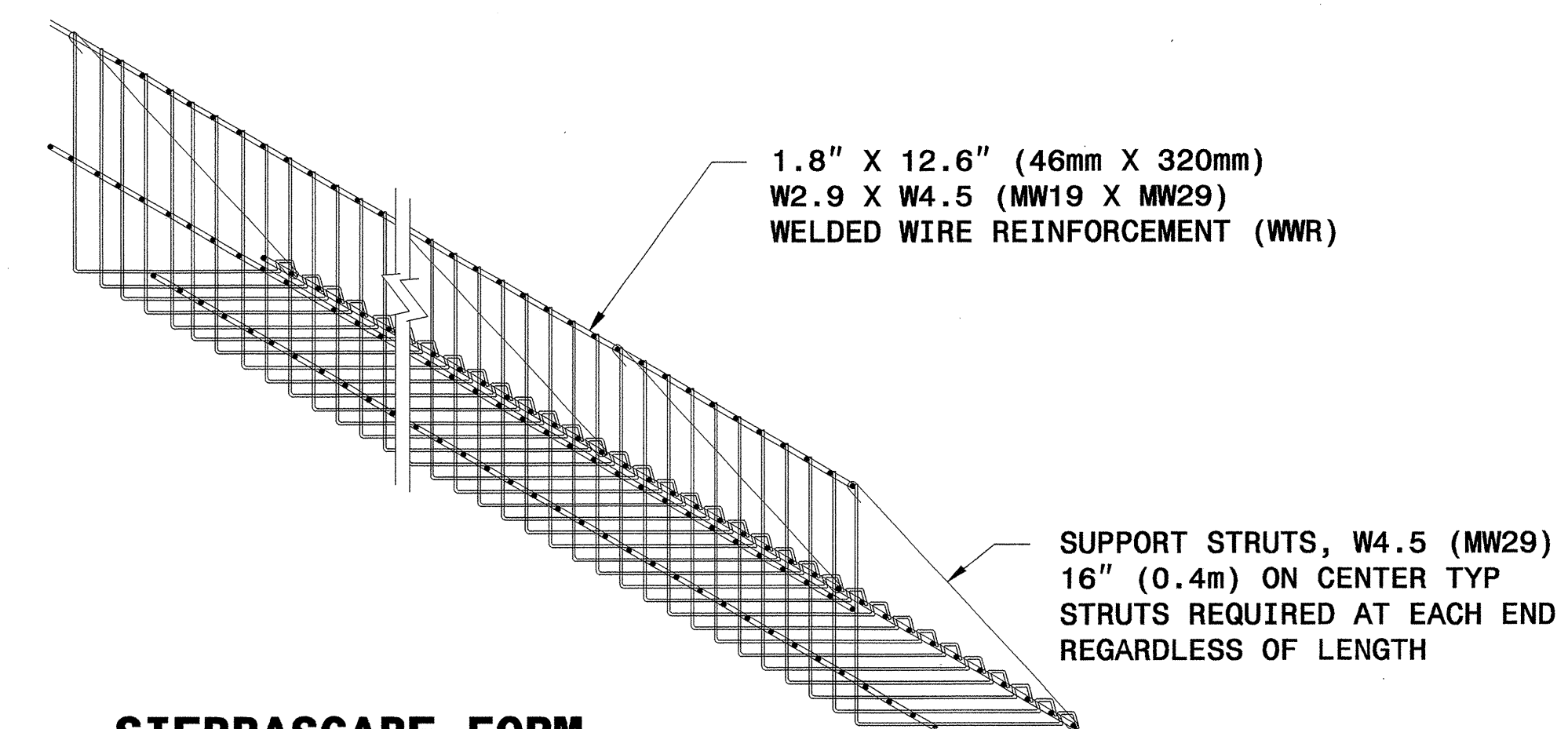
TYPICAL GEOGRID COVERAGE



ELEVATION VIEW

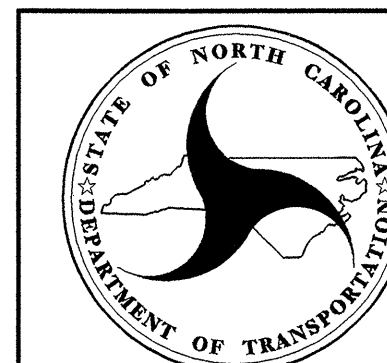
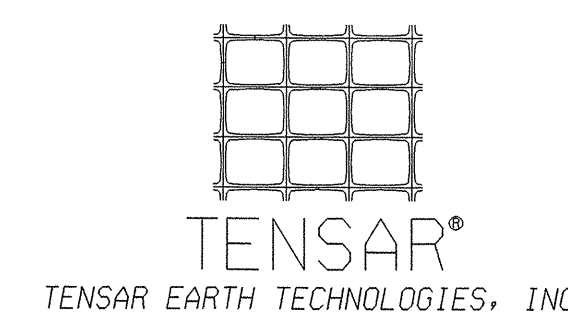


SUPPORT STRUT



SIERRASCAPE FORM

WALL COMPONENTS



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RALEIGH

STANDARD DRAWING NO. 1801.02

SIERRASCAPE TEMPORARY WALL

SHEET 5 OF 11

DATE: 12-19-06

GEOTECHNICAL ENGINEER

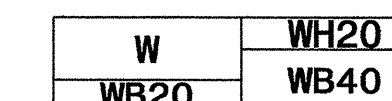
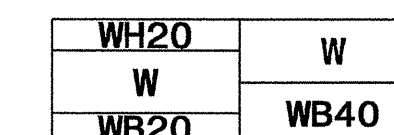
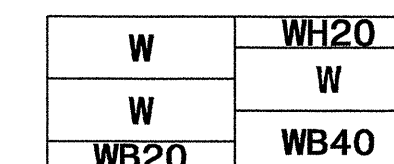
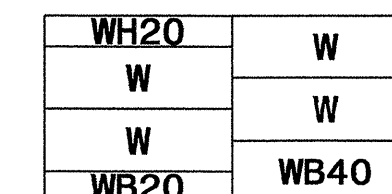
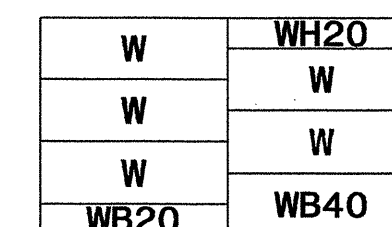
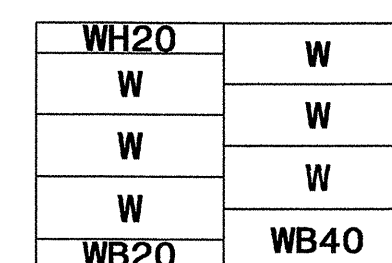
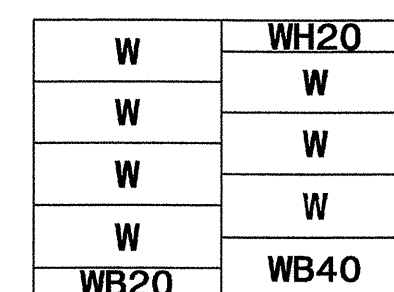
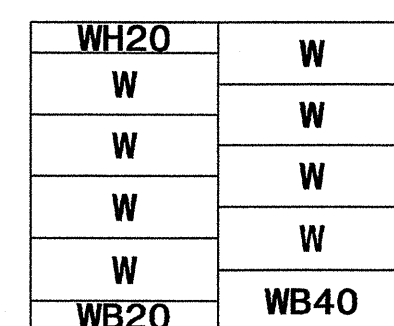
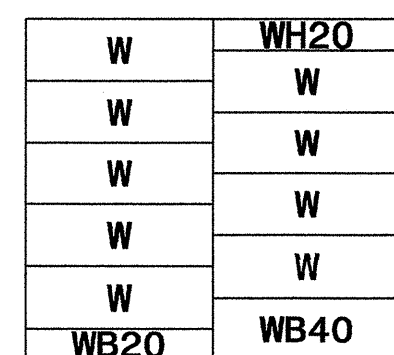
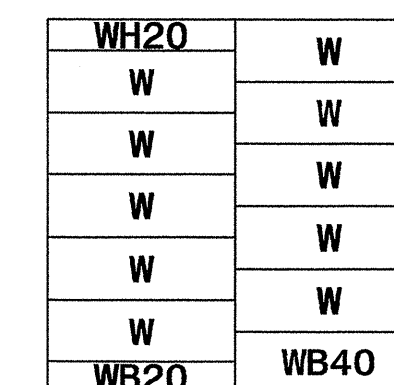
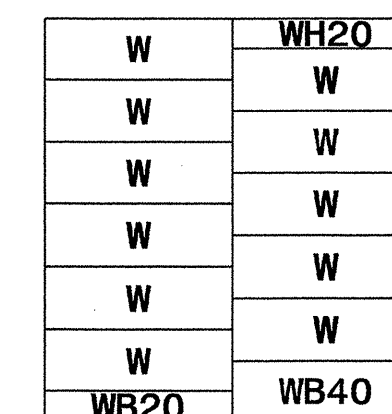
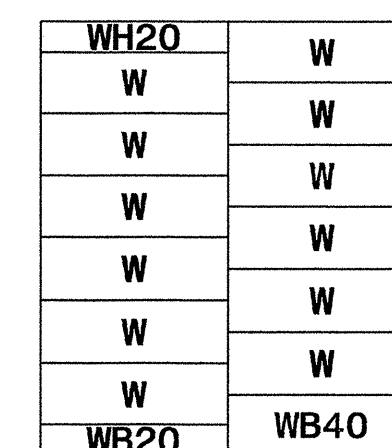
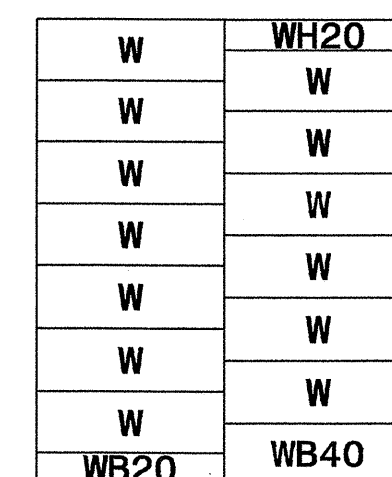
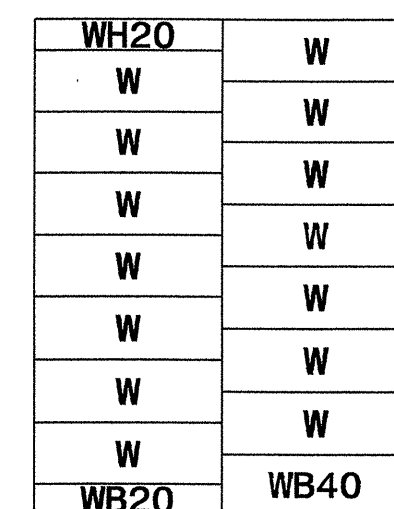
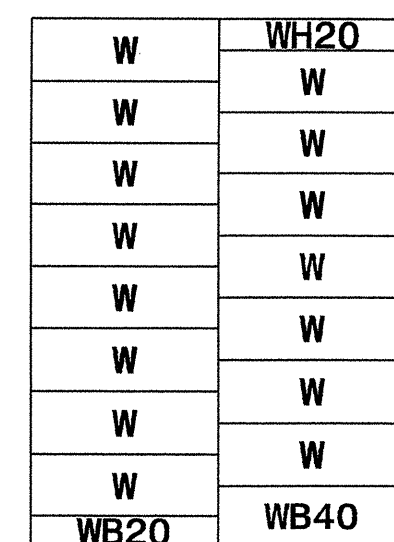
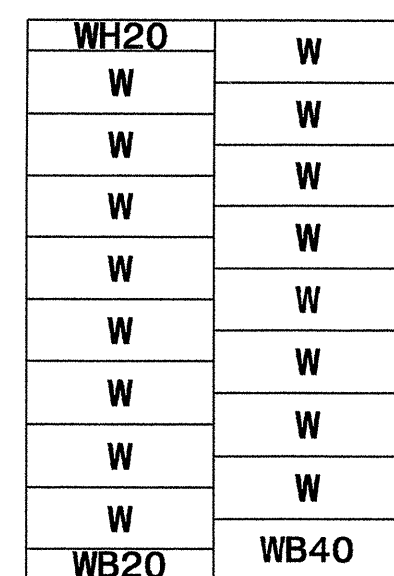
ENGINEER



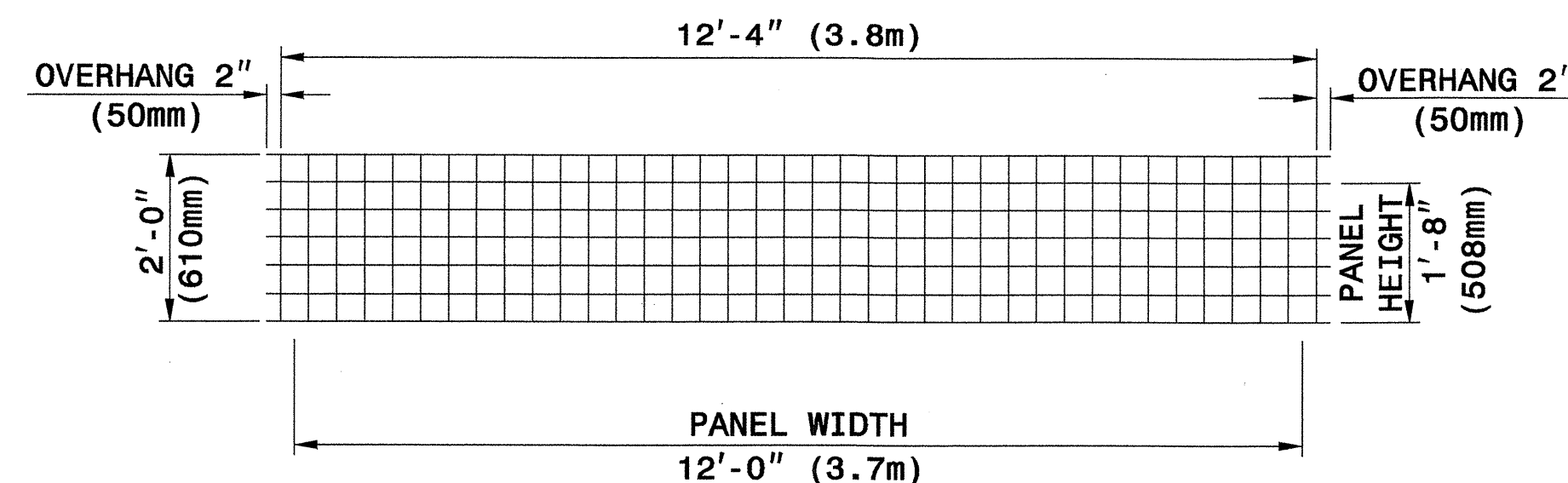
Scott A. Hidden 3/29/07

PANEL LAYOUTS

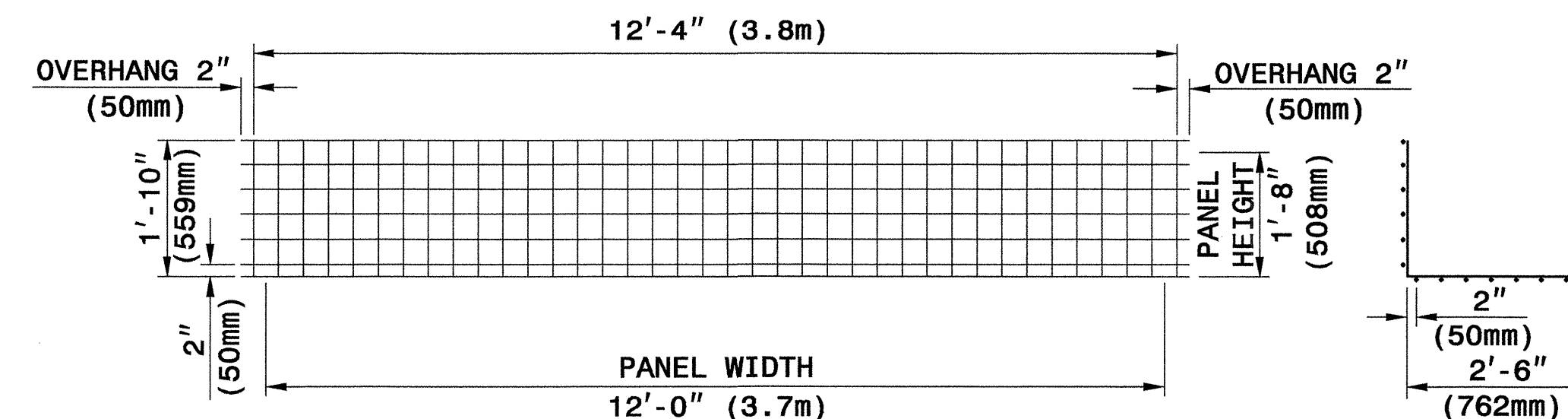
H - WALL HEIGHT
(FEET-INCHES)
(METER)



(FEET-INCHES)
(METER)

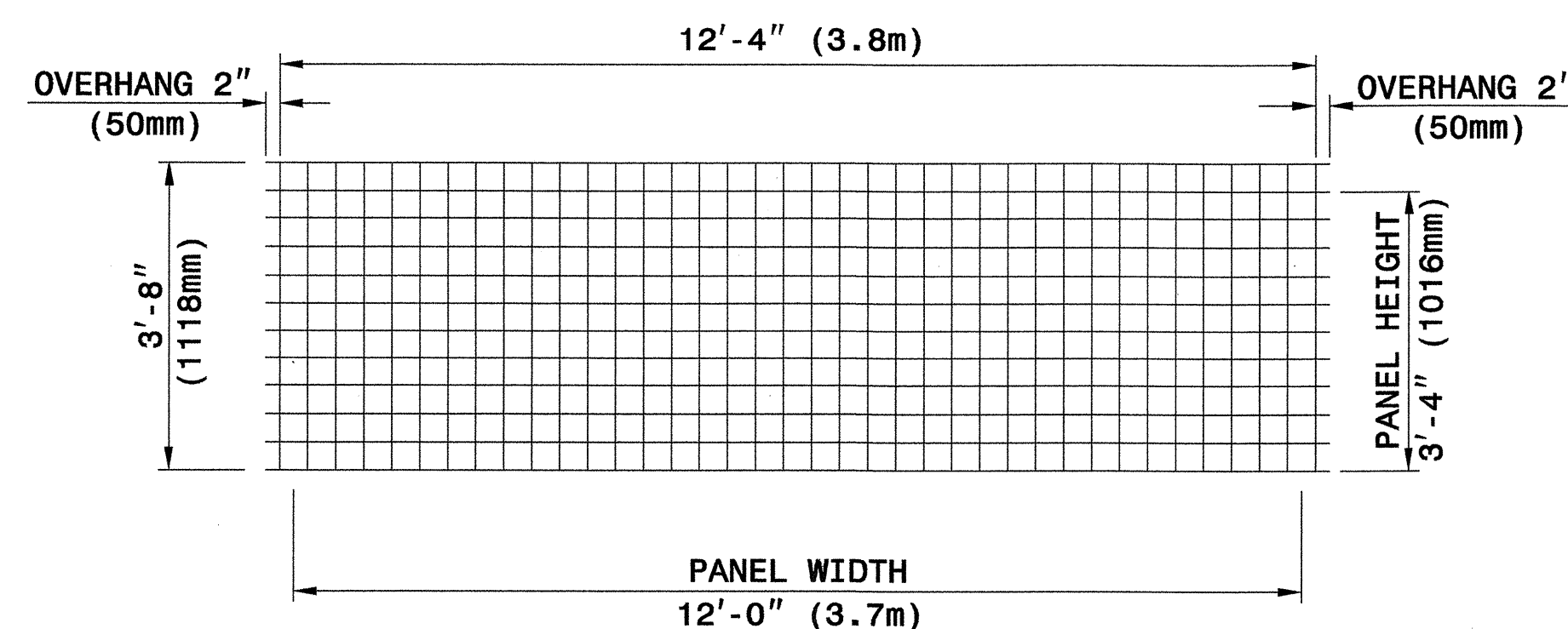


TYPE WH20

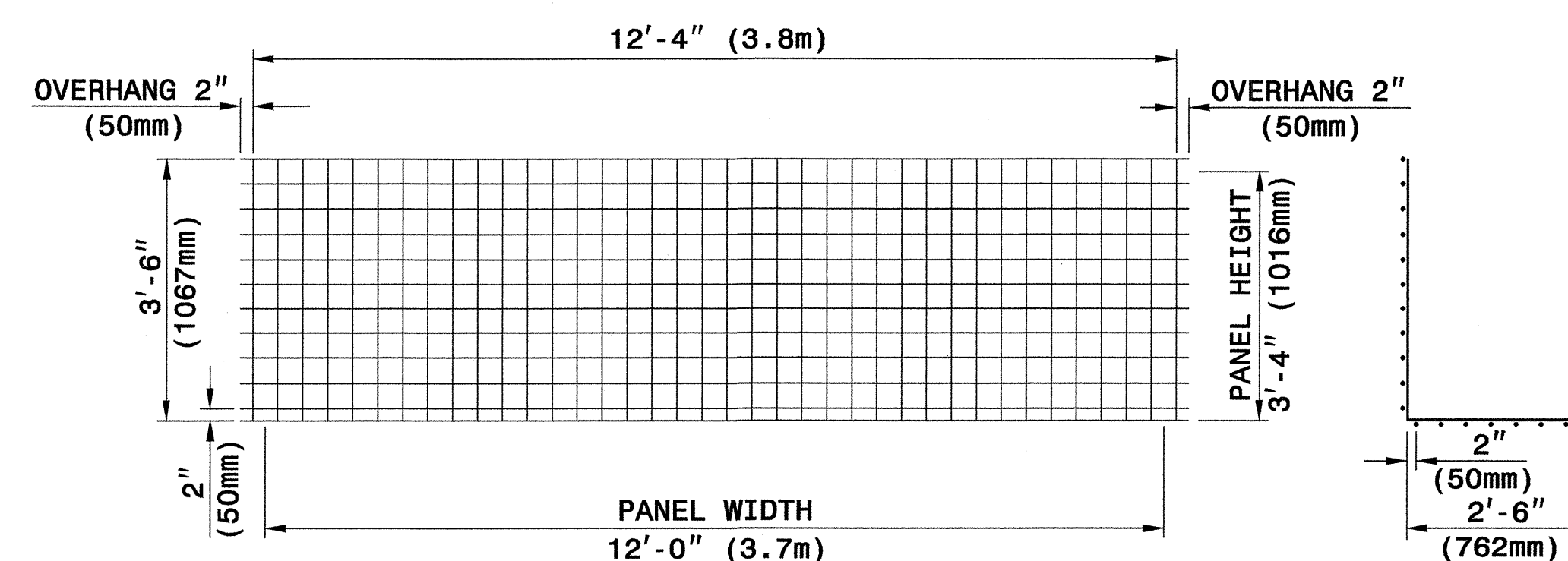


TYPE WB20

SECTION



TYPE W



TYPE WB40

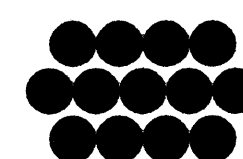
SECTION

WELDED WIRE FACINGS

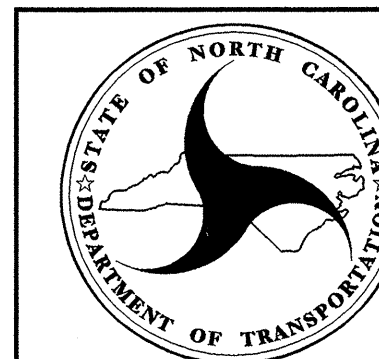
WELDED WIRE FORMS

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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RALEIGH

STANDARD DRAWING NO. 1801.02

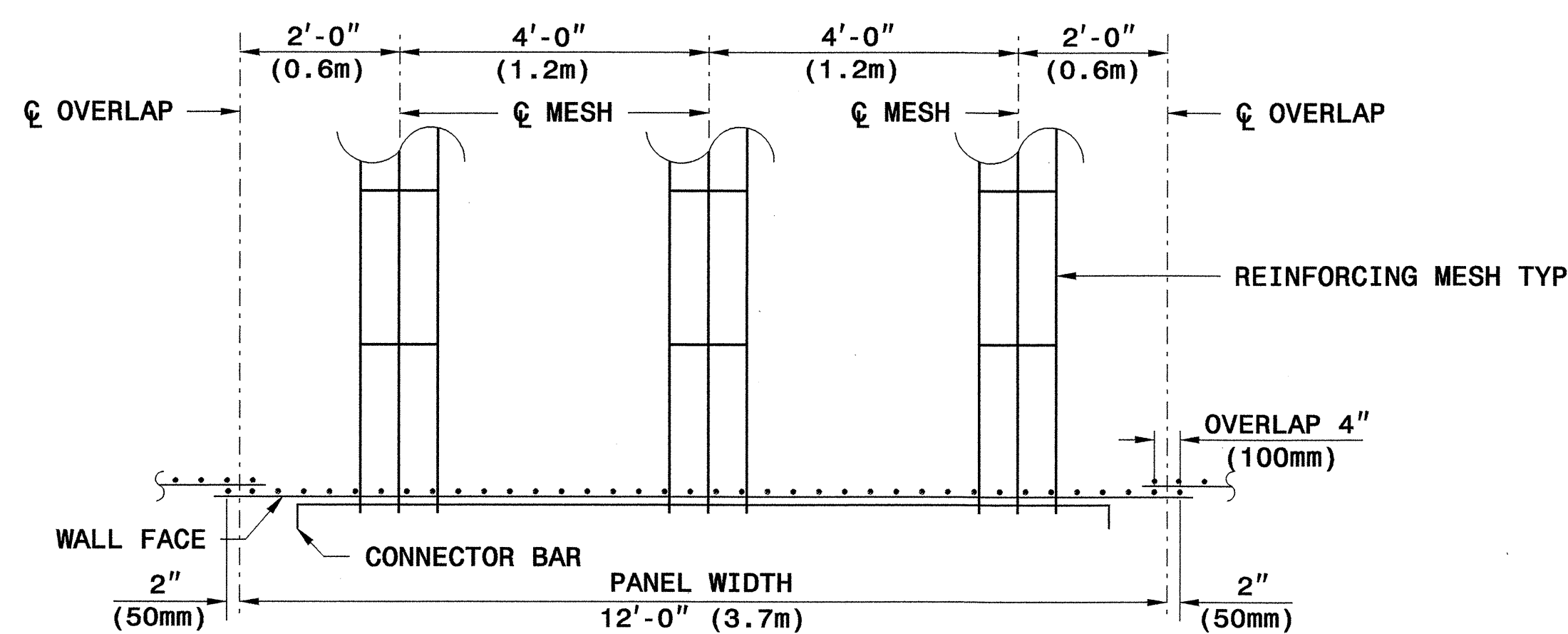
RETAINED EARTH
TEMPORARY WALL

SHEET 6 OF 11

DATE: 12-19-06



Scott A. Shidden 3/29/07
SIGNATURE DATE



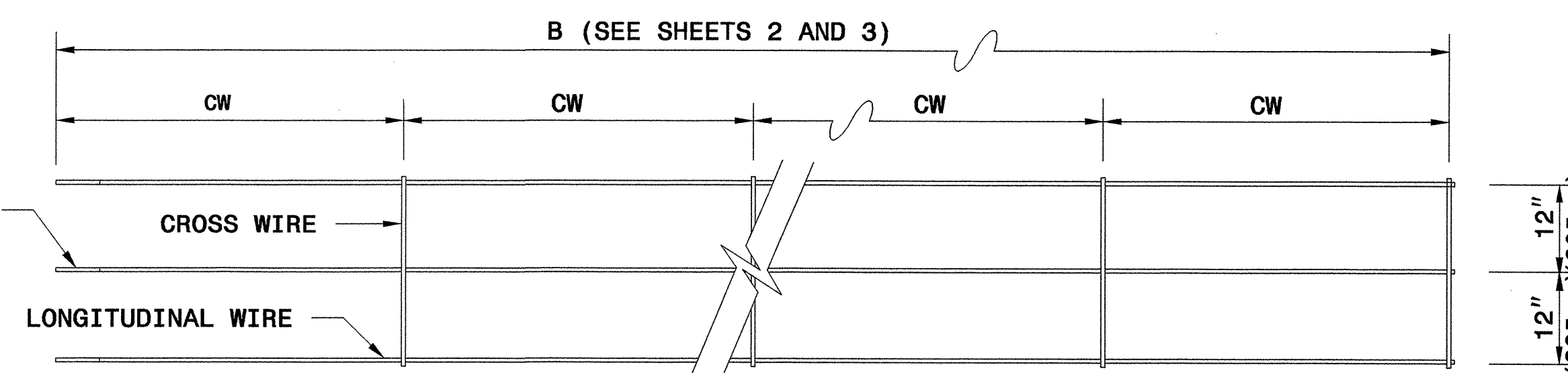
**REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)**



1/2" (13mm) DIA. BAR

CONNECTOR BAR

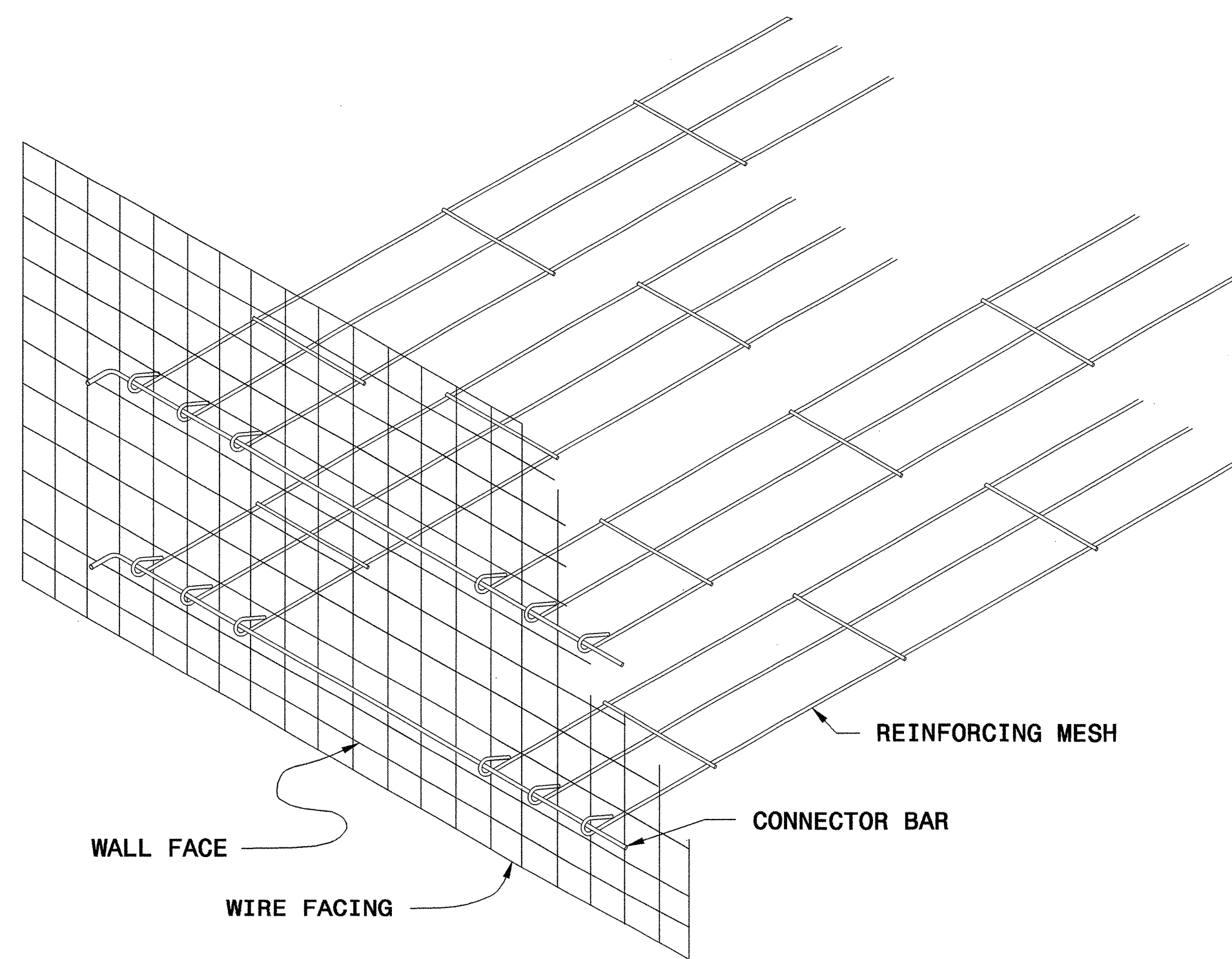
LOOPED END OF MESH
(SEE REINFORCING MESH LOOP DETAIL)



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

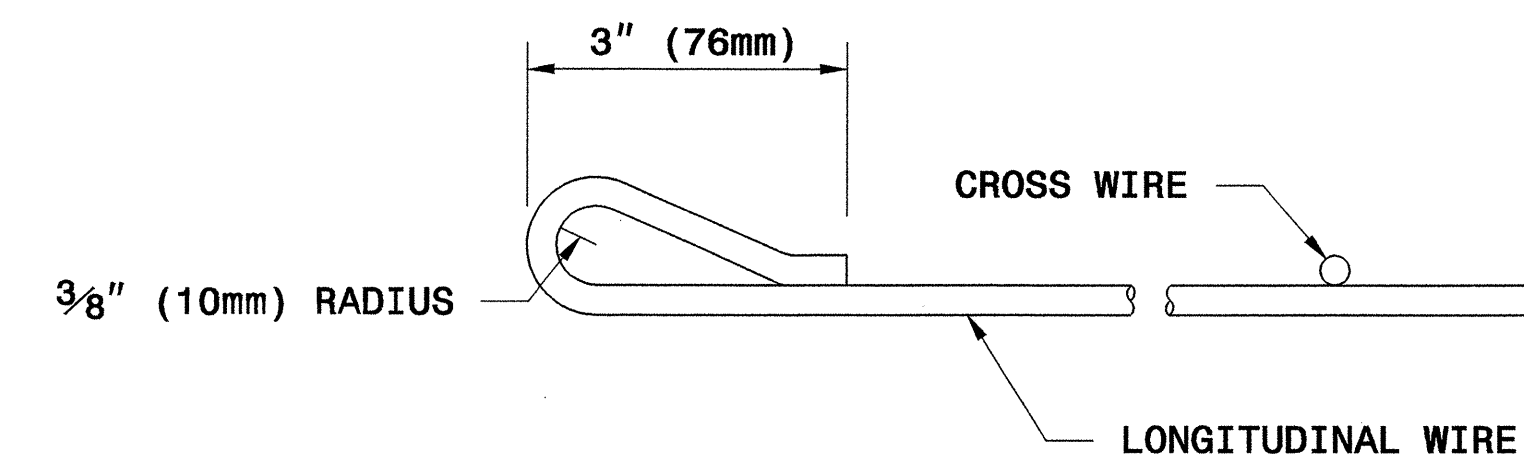
3W8 X W8 x 2.0' (3MW52 X MW52 X 610mm)
 NO. OF LONGITUDINAL WIRES
 GAUGE OF LONGITUDINAL WIRES
 GAUGE OF CROSS WIRES
 SPACING OF CROSS WIRES IN FT (mm), CW

REINFORCING MESH DESIGNATION

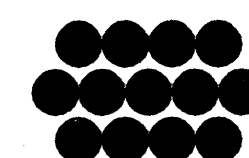


GENERAL ASSEMBLY DETAIL

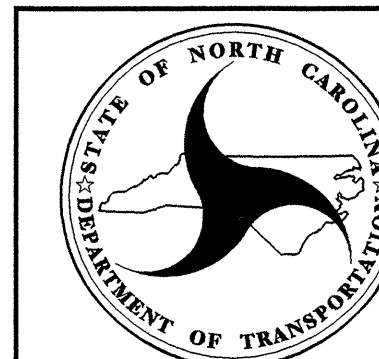
REINFORCING MESH



REINFORCING MESH LOOP DETAIL



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 RALEIGH

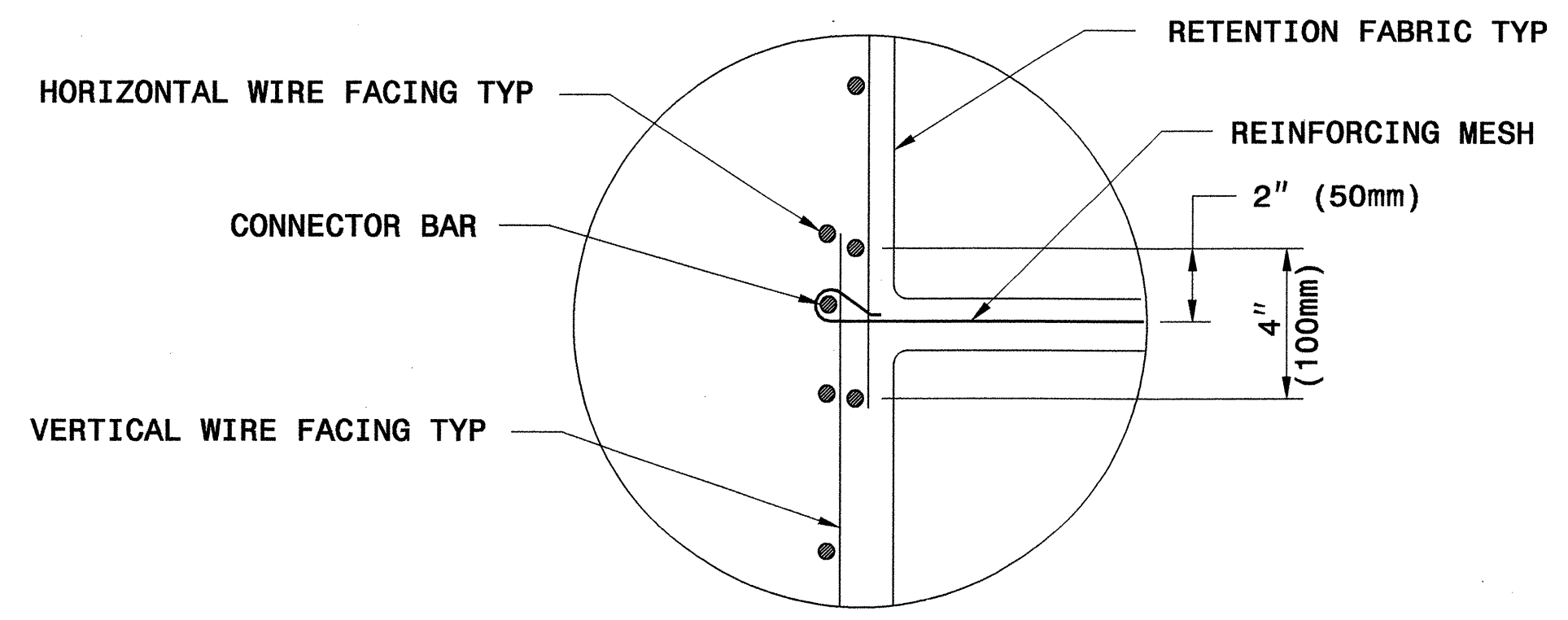
STANDARD DRAWING NO. 1801.02

RETAINED EARTH
 TEMPORARY WALL

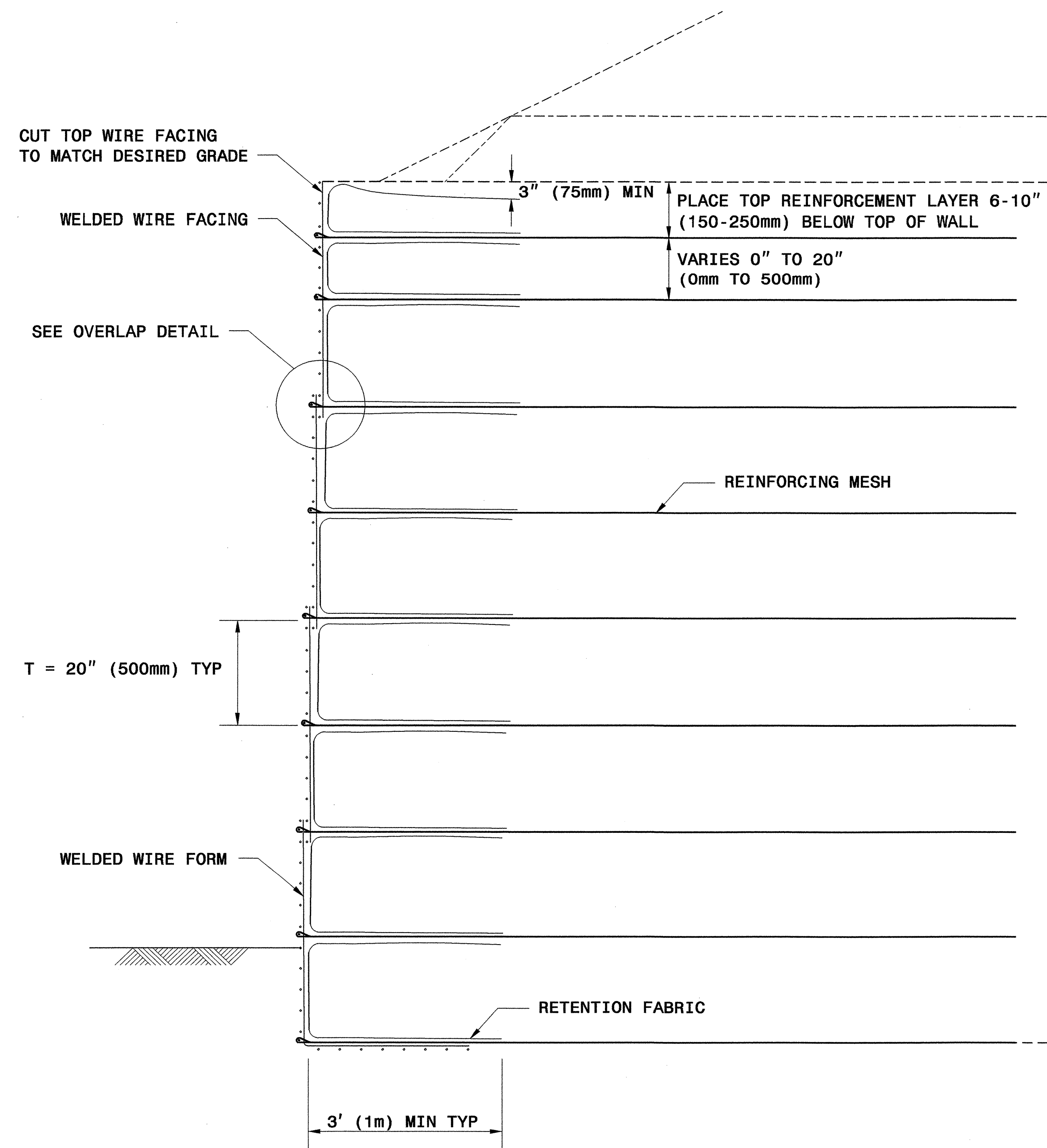
SHEET 7 OF 11

DATE: 12-19-06

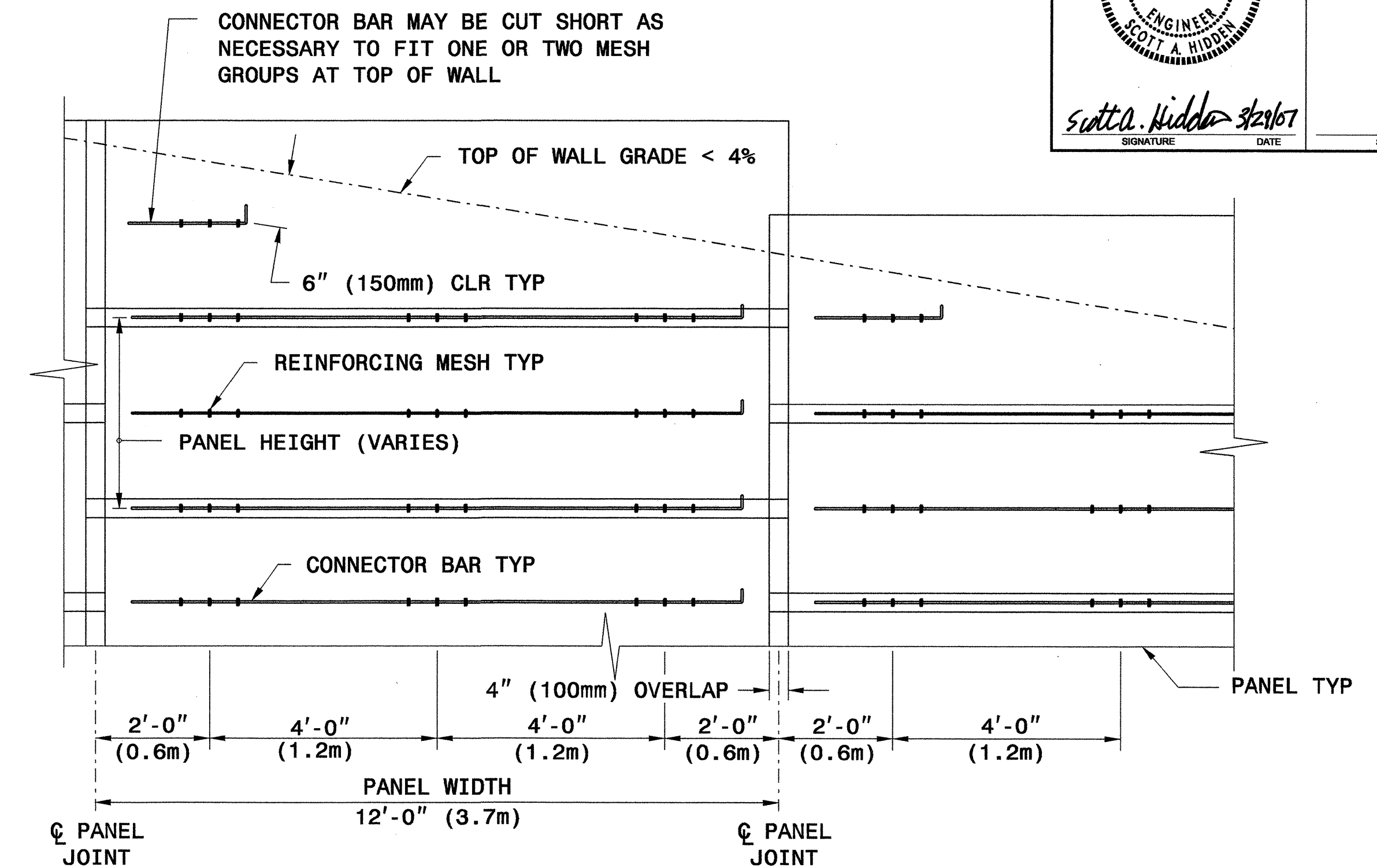
GEOTECHNICAL ENGINEER  Scott A. Hadden 3/29/07 SIGNATURE DATE	ENGINEER SIGNATURE DATE
---	----------------------------



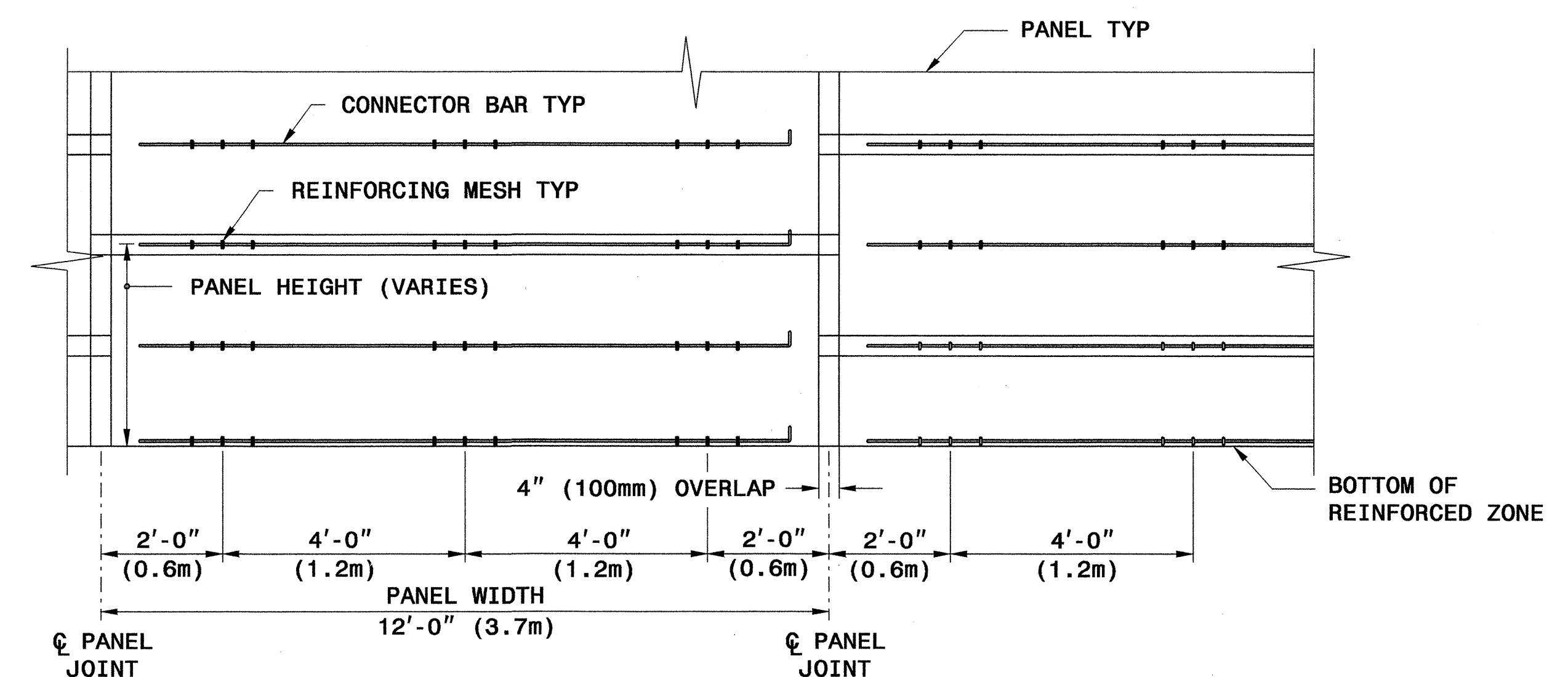
OVERLAP DETAIL



TYPICAL SECTION

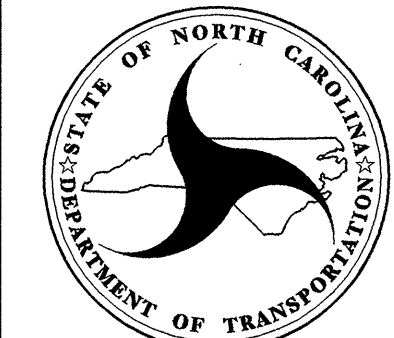


**TYPICAL ELEVATION @ TOP OF WALL
(WIRES NOT SHOWN FOR CLARITY)**



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


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 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH TEMPORARY WALL

GEOTECHNICAL ENGINEER ENGINEER

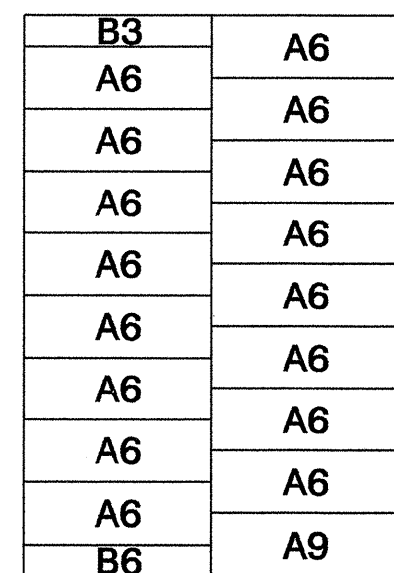


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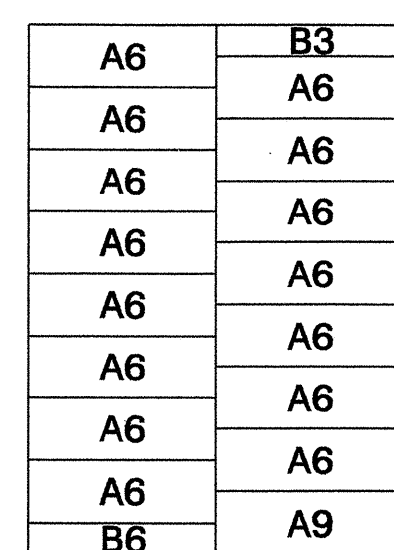
SIGNATURE DATE SIGNATURE DATE

PANEL LAYOUTS

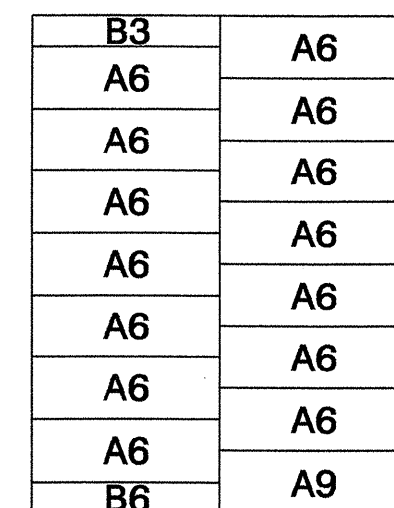
H - WALL HEIGHT
(FEET-INCHES)
(METER)



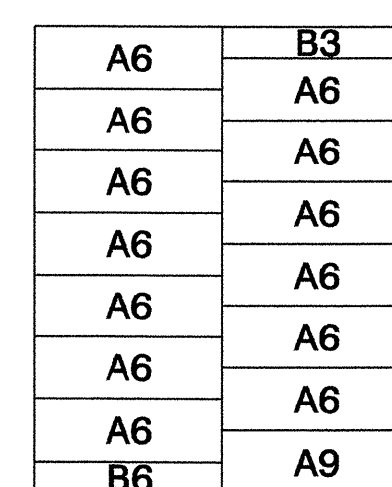
< 28 - 0
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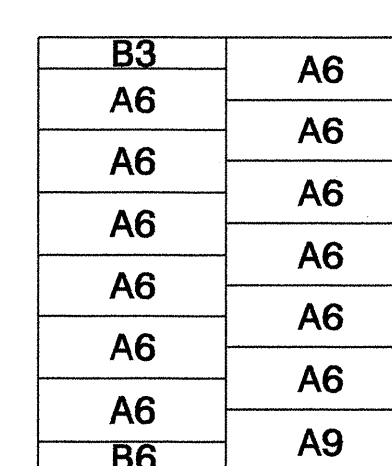
< 27 - 8
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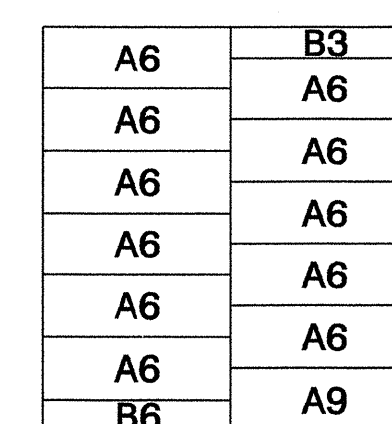
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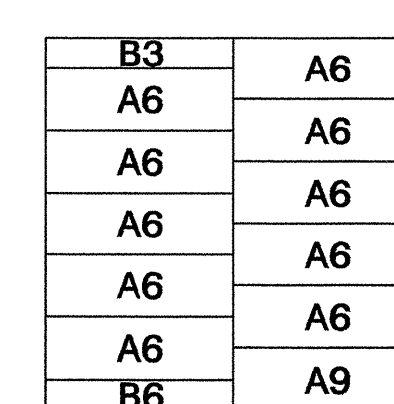
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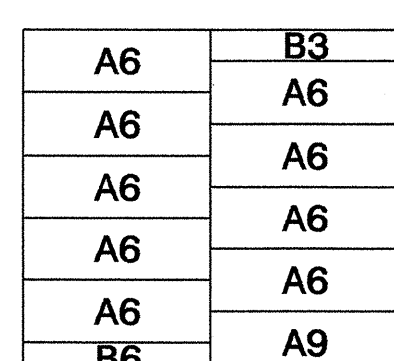
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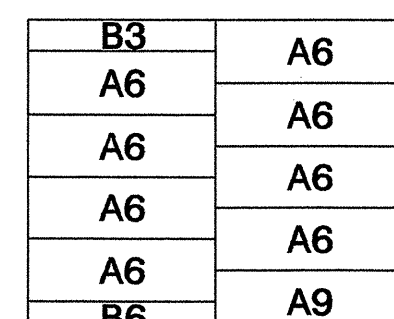
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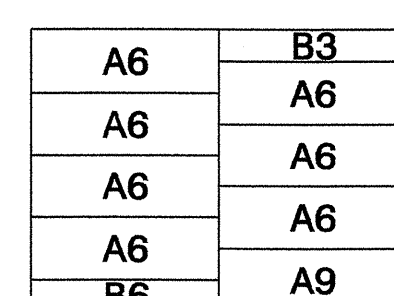
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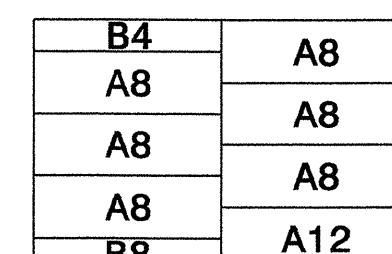
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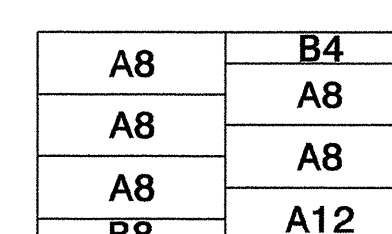
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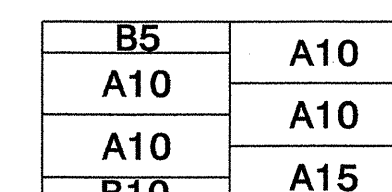
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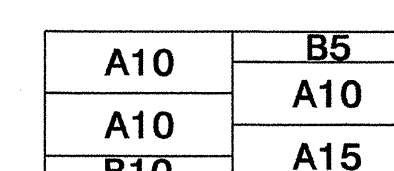
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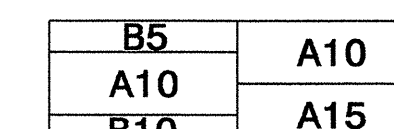
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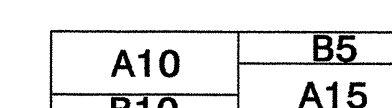
< 9 - 4
< 2.8



< 7 - 8
< 2.3

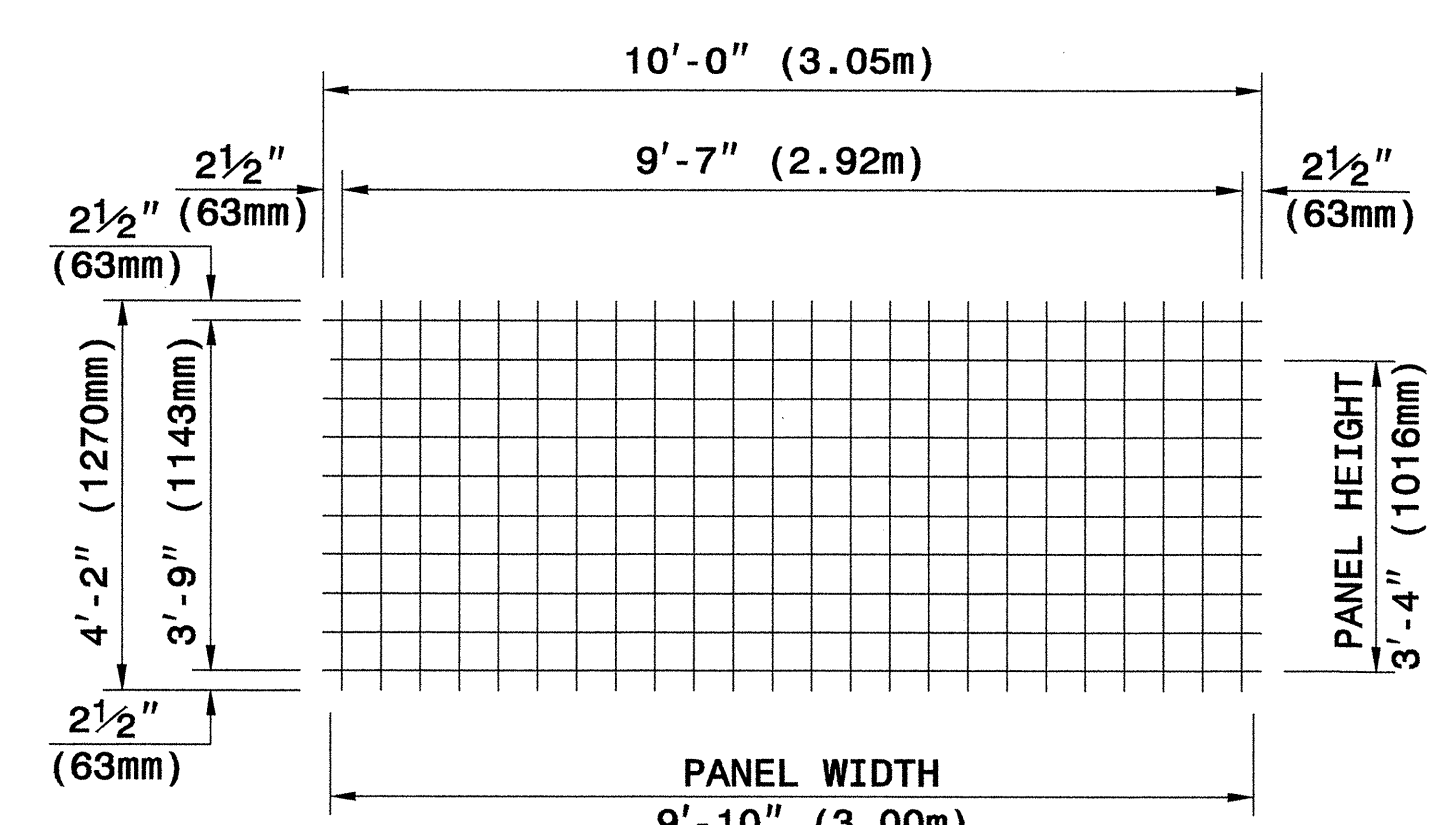


< 6 - 0
< 1.8

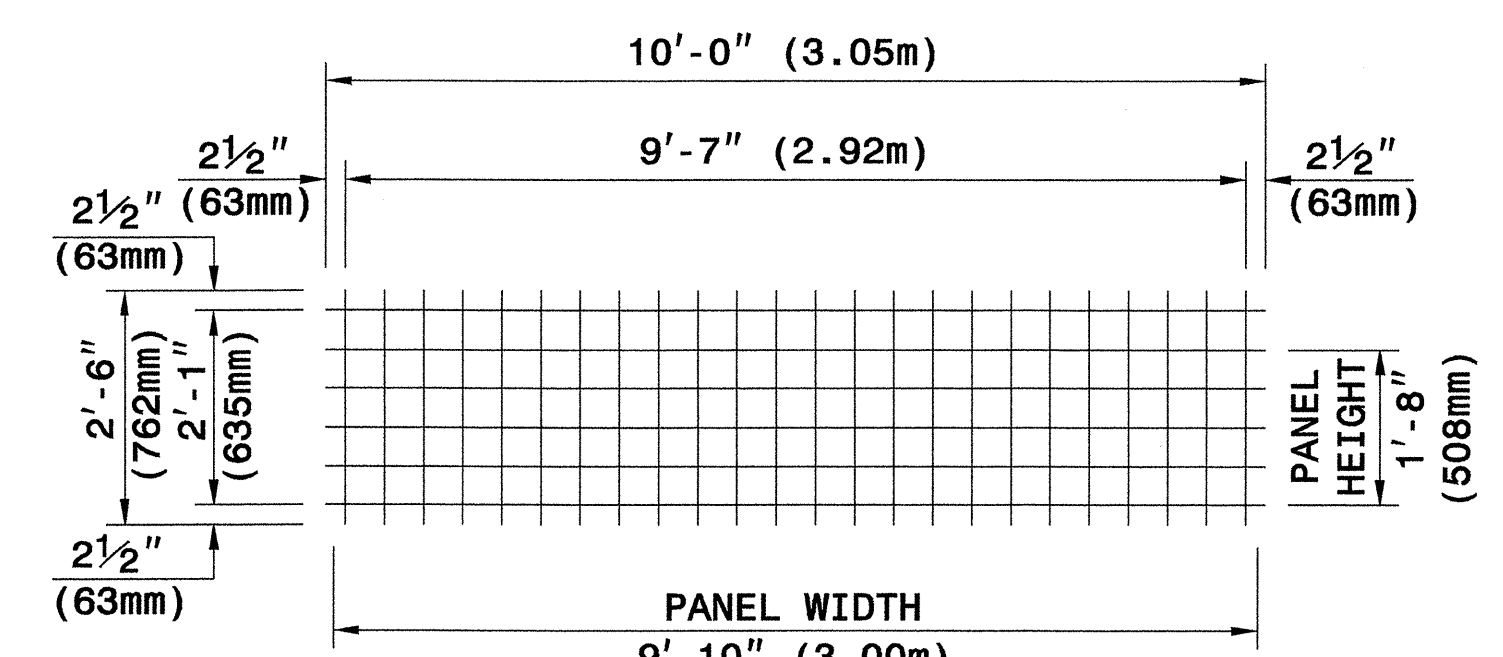


< 4 - 4
< 1.3

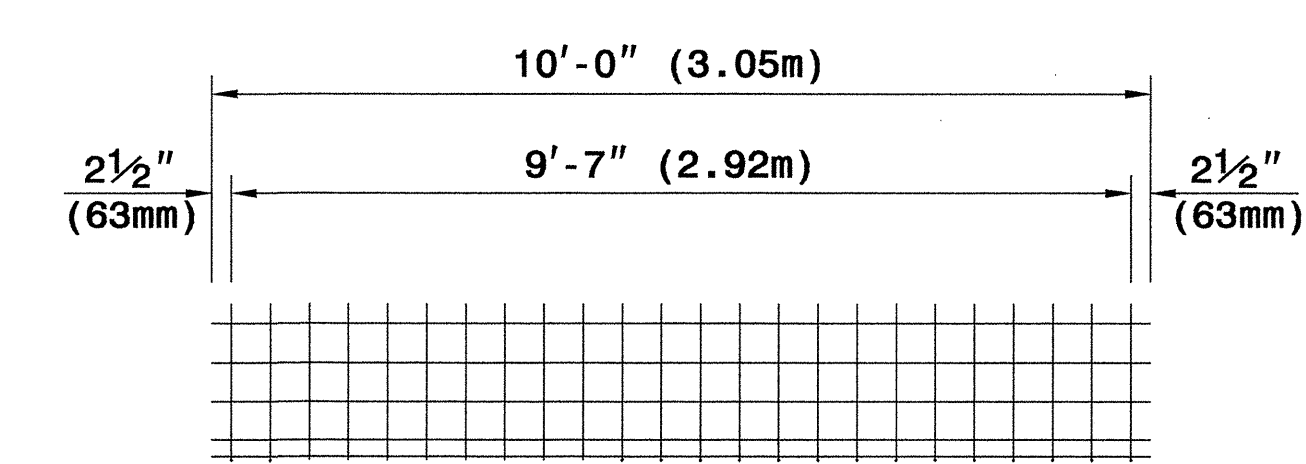
(FEET-INCHES)
(METER)



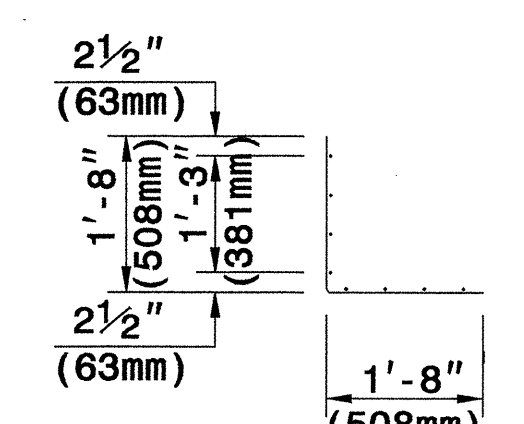
TYPE A



TYPE B



WELDED WIRE FORM



SECTION

WELDED WIRE FACINGS

PANEL TYPES (WELDED WIRE FACINGS AND FORM)

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

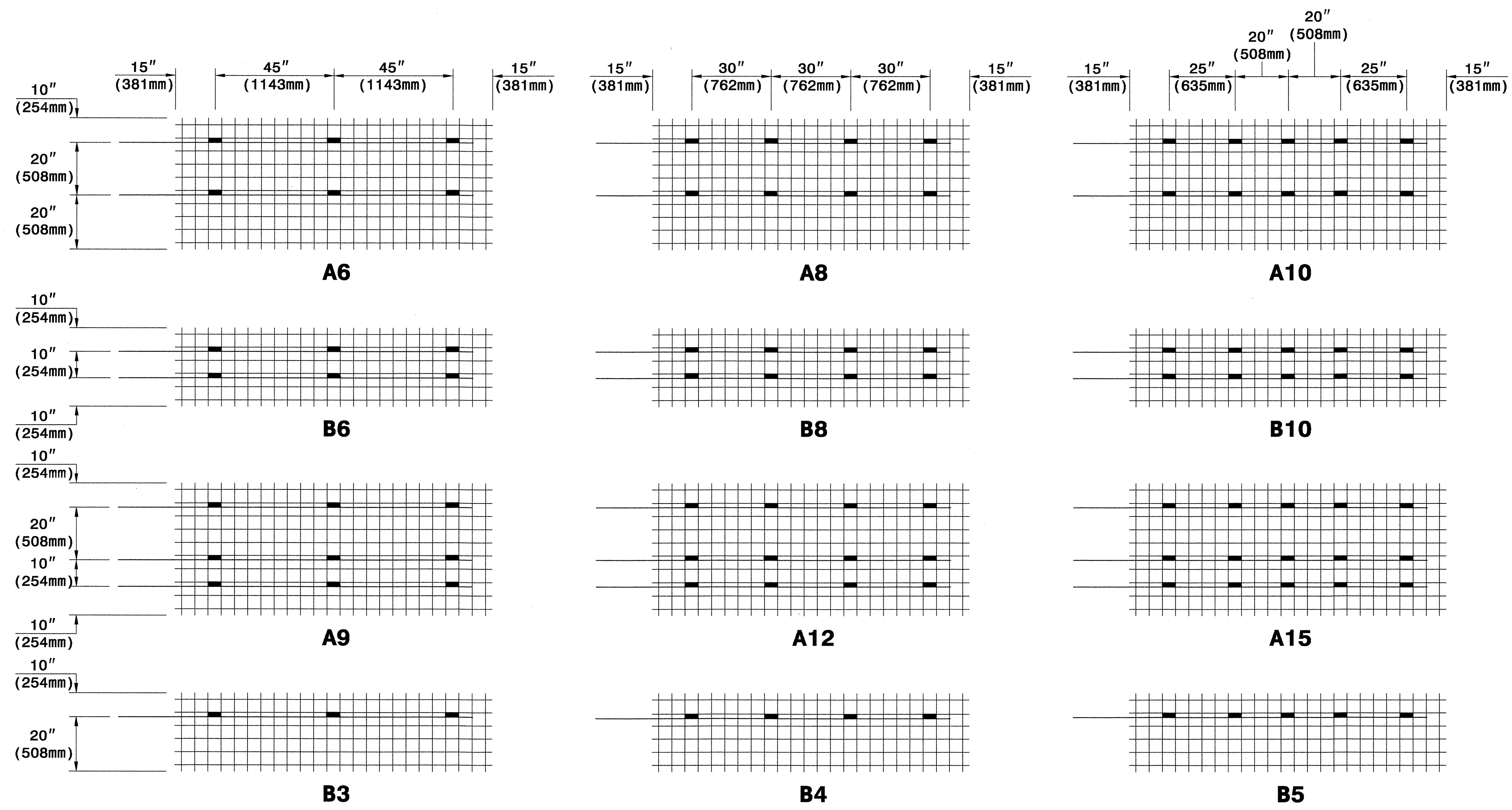


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STATE OF NORTH CAROLINA
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RALEIGH

STANDARD DRAWING NO. 1801.02
TERRATREL TEMPORARY WALL
SHEET 9 OF 11 DATE: 12-19-06

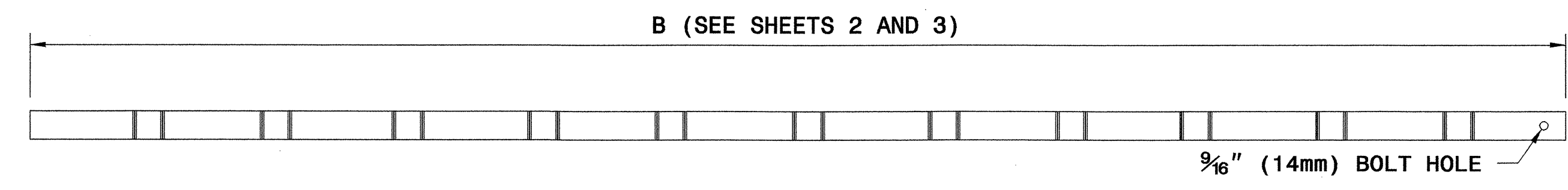


Scott A. Hadden 3/29/07
SIGNATURE DATE

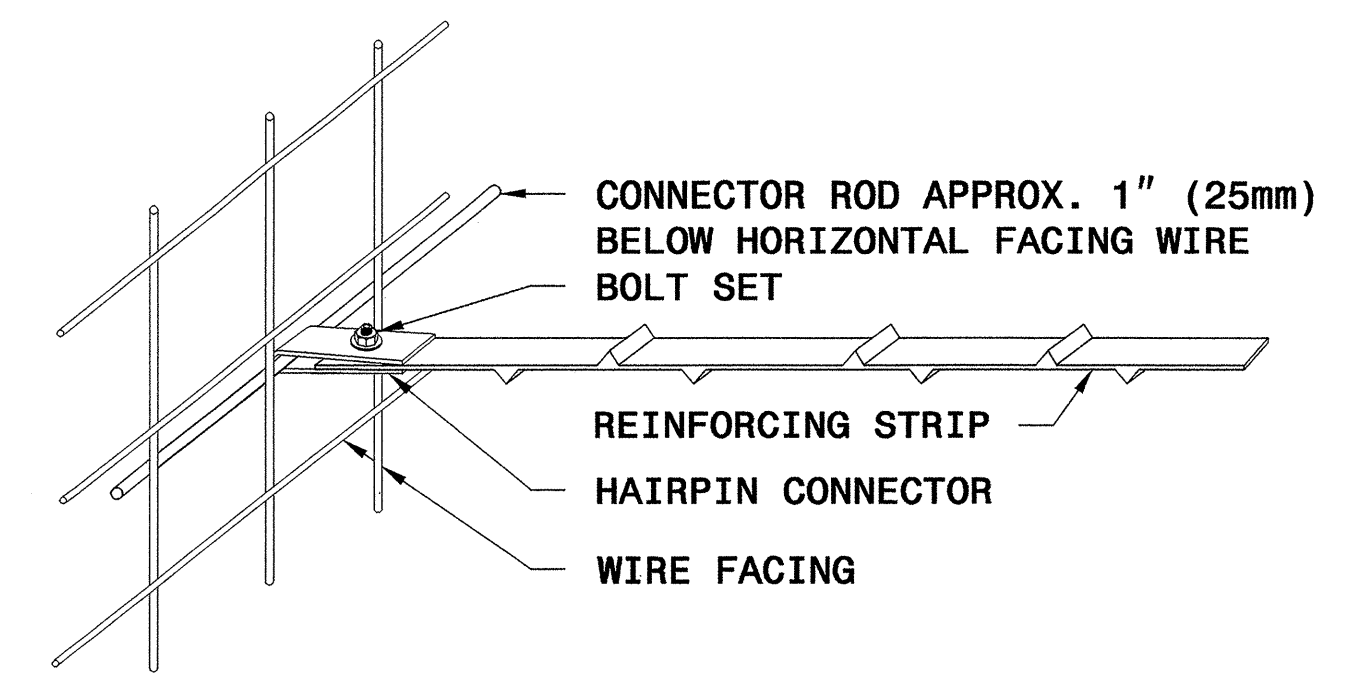


KEY: A8
NUMBER OF REINFORCING STRIPS
PANEL TYPE

CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



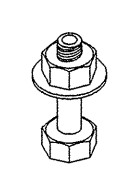
REINFORCING STRIP - 2" X 5/32" (50mm X 4mm)



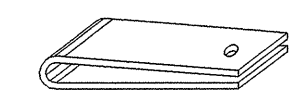
STRIP TO FACING CONNECTION



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

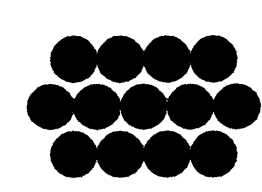


1/2" (13mm) BOLT WITH NUT AND WASHER
BOLT SET

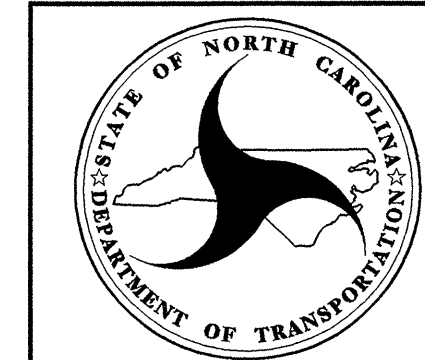


HAIRPIN CONNECTOR

WALL COMPONENTS



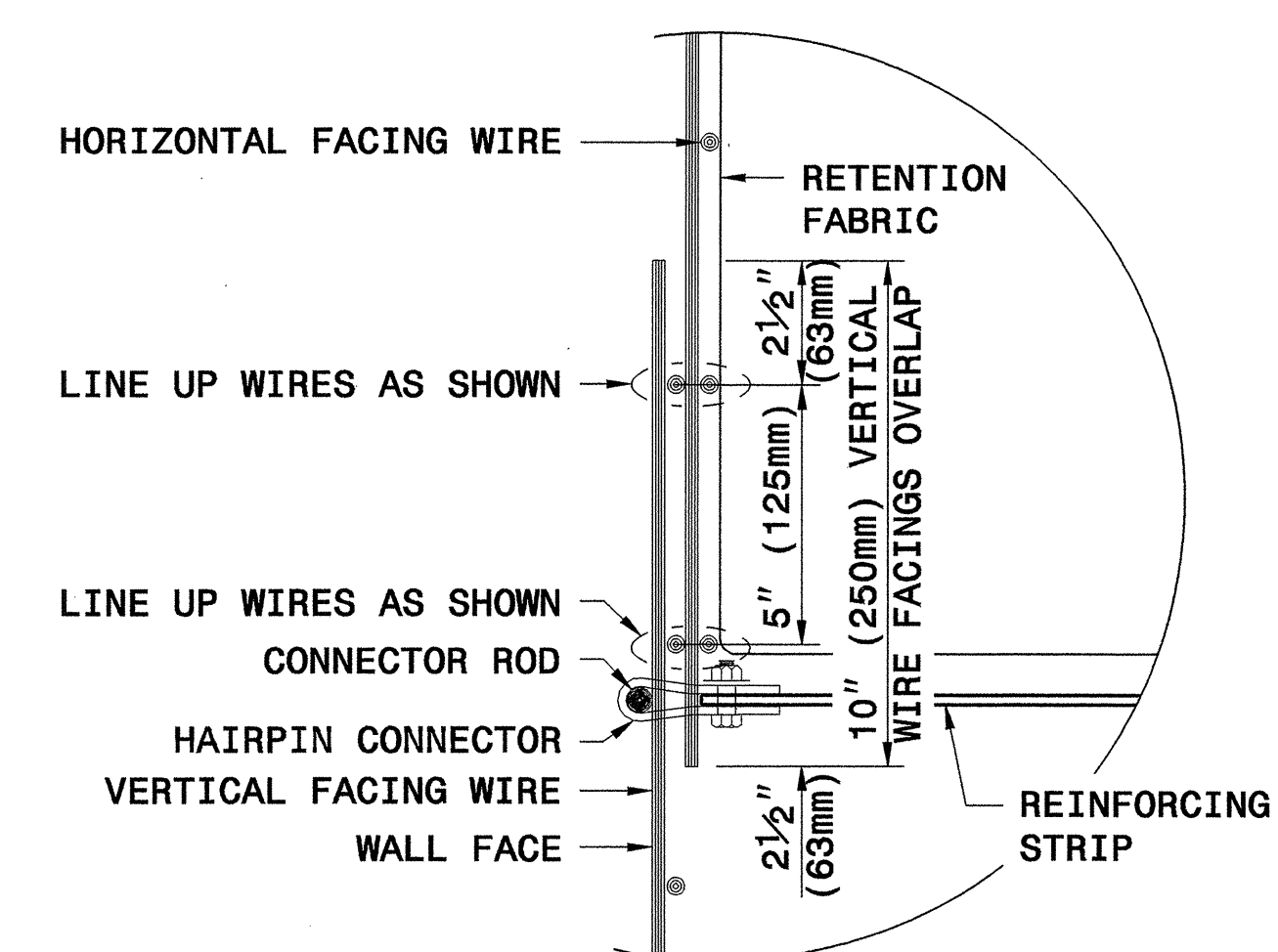
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

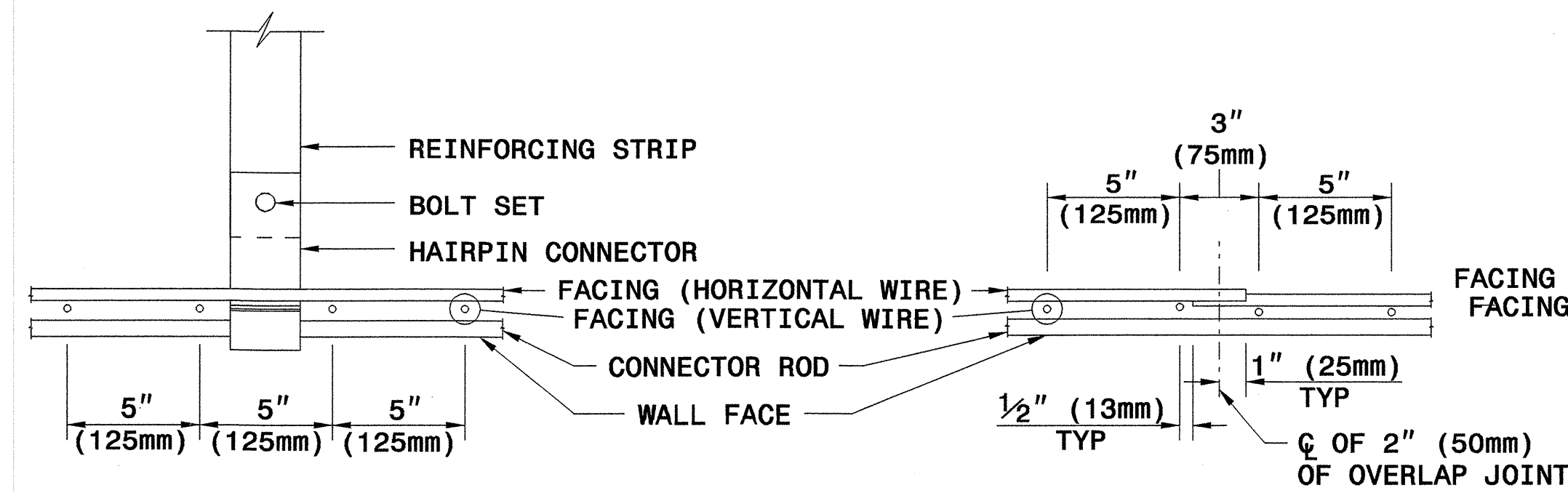
STANDARD DRAWING NO. 1801.02

TERRATREL
TEMPORARY WALL

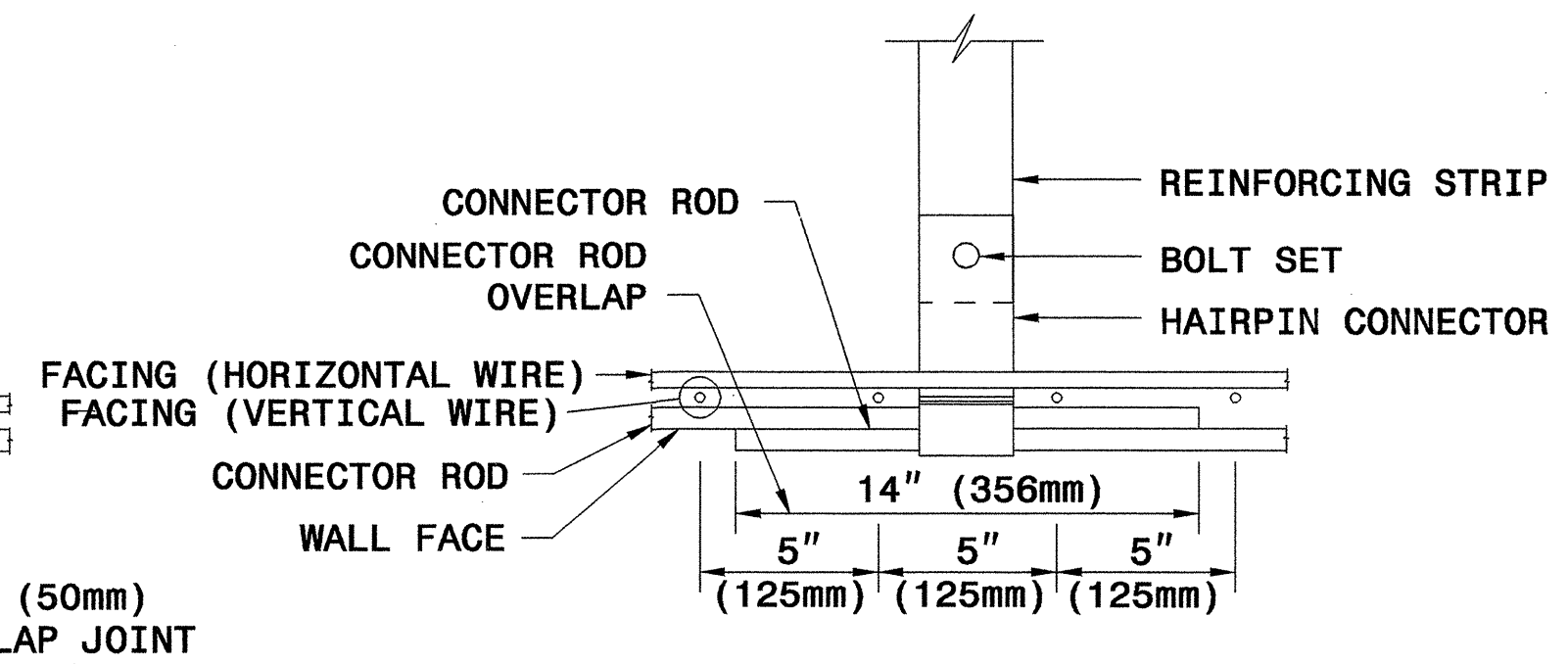


OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

VERTICAL OVERLAP DETAIL

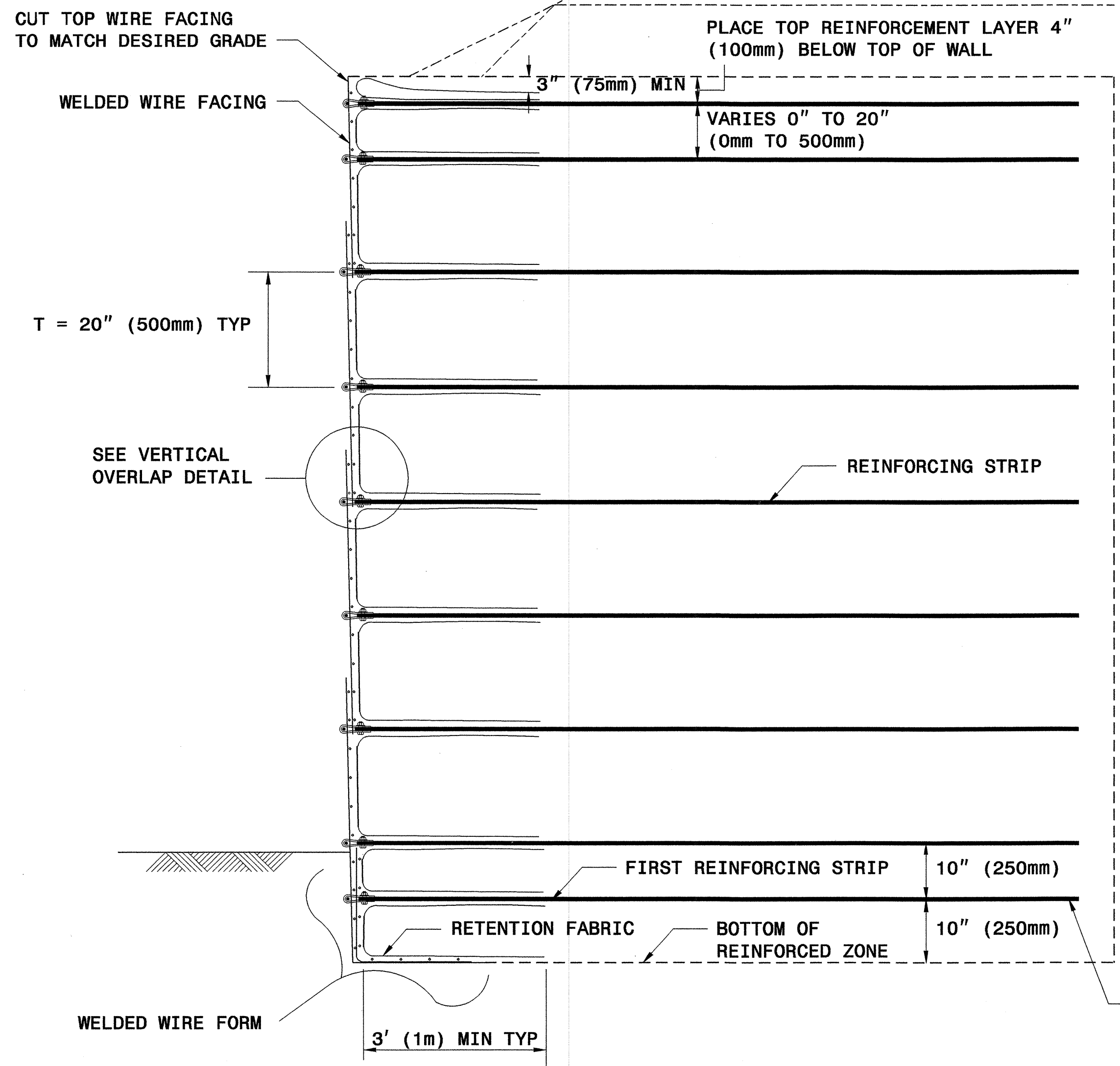


**PLAN DETAIL 'A'
STRIP CONNECTION**



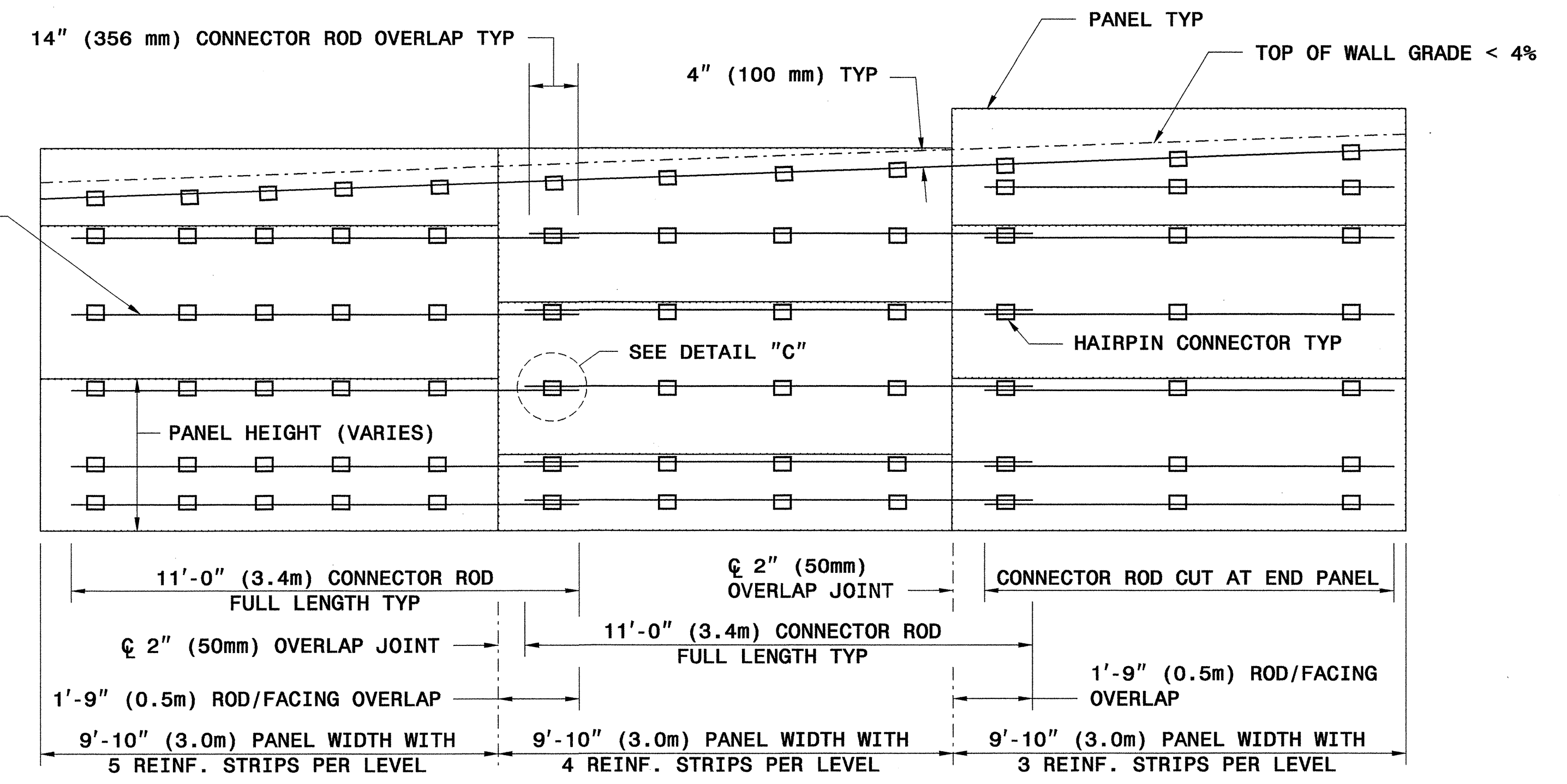
**PLAN DETAIL 'C'
STRIP CONNECTION WITH
HORIZONTAL OVERLAP DETAIL**

**PLAN DETAIL 'B'
HORIZONTAL OVERLAP DETAIL**

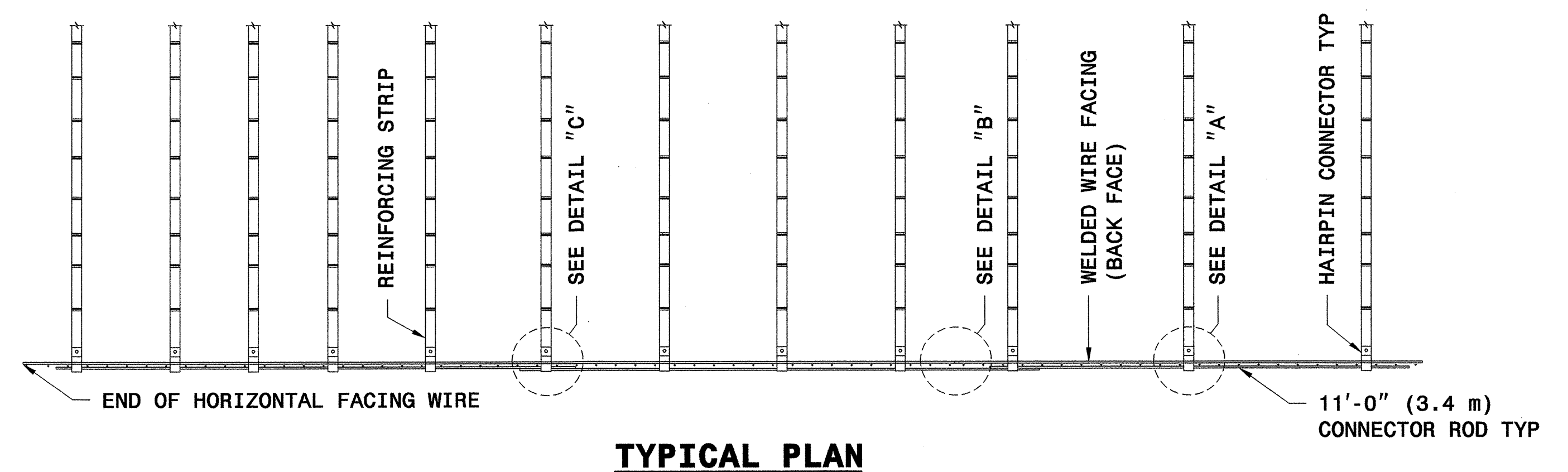


TYPICAL SECTION

The Reinforced Earth Company



**TYPICAL ELEVATION
(WIRES NOT SHOWN FOR CLARITY)**



TYPICAL PLAN

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201923

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	5,500	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	5,100	CY	BORROW EXCAVATION
0134000000-E	240	130	CY	DRAINAGE DITCH EXCAVATION
0196000000-E	270	700	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	7,000	SF	TEMPORARY SHORING
0255000000-E	SP	300	TON	GENERIC GRADING ITEM SELECT MATERIAL, CLASS VI
0255000000-E	SP	1,800	TON	GENERIC GRADING ITEM SELECT MATERIAL, CLASS VII
0318000000-E	300	21	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	112	LF	15" SIDE DRAIN PIPE
0344000000-E	310	40	LF	18" SIDE DRAIN PIPE
0366000000-E	310	16	LF	15" RC PIPE CULVERTS, CLASS III
0660000000-E	310	28	LF	****BIT COAT CS PIPE CULVERTS, TYPE A ***** THICK (15", 0.064")
1220000000-E	545	500	TON	INCIDENTAL STONE BASE
1297000000-E	607	1,500	SY	MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/4")
1489000000-E	610	640	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	870	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	85	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	400	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	33.6	CY	SUBDRAIN EXCAVATION
2033000000-E	815	16.8	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
2407000000-N	840	2	EA	STEEL FRAME WITH TWO GRATES, STD 840.37
2556000000-E	846	220	LF	SHOULDER BERM GUTTER
3030000000-E	862	2,050	LF	STEEL BM GUARDRAIL
3045000000-E	862	25	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3270000000-N	SP	7	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	8	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3380000000-E	862	250	LF	TEMPORARY STEEL BM GUARDRAIL
3389100000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3628000000-E	876	2	TON	RIP RAP, CLASS I
3649000000-E	876	2	TON	RIP RAP, CLASS B
3656000000-E	876	620	SY	FILTER FABRIC FOR DRAINAGE
3677000000-E	SP	520	SY	GENERIC EROSION CONTROL ITEM ROCK PLATING
4400000000-E	1110	220	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	52	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	80	EA	DRUMS
4435000000-N	1135	60	EA	CONES
4445000000-E	1145	48	LF	BARRICADES (TYPE III)

ItemNumber	Sec #	Quantity	Unit	Description
4450000000-N	1150	480	HR	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	4	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	1,500	LF	PORTABLE CONCRETE BARRIER
4490000000-E	1170	555	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4810000000-E	1205	51,100	LF	PAINT PAVEMENT MARKING LINES (4")
4850000000-E	1205	600	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4900000000-N	1251	40	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-E	1605	3,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	110	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	290	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	100	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	1	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	50	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	2	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	3,000	LF	SAFETY FENCE
6030000000-E	1630	490	CY	SILT EXCAVATION
6036000000-E	1631	2,200	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	60	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	250	SY	FLOATING TURBIDITY CURTAIN
6071030000-E	SP	80	LF	COIR FIBER BAFFLES
6084000000-E	1660	2.3	ACR	SEEDING & MULCHING
6087000000-E	1660	1	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	1	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL
7060000000-E	1705	2,300	LF	SIGNAL CABLE
7120000000-E	1705	8	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7252000000-E	1710	2,060	LF	MESSENGER CABLE (1/4")
7264000000-E	1710	170	LF	MESSENGER CABLE (3/8")
7360000000-N	1720	13	EA	WOOD POLE
7372000000-N	1721	8	EA	GUY ASSEMBLY
7408000000-E	1722	2	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	4	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	560	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	2,490	LF	LEAD-IN CABLE (***** (14-2)
7768000000-N	1751	2	EA	CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED)
7780000000-N	1751	4	EA	DETECTOR CARD (TYPE 2070L)

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

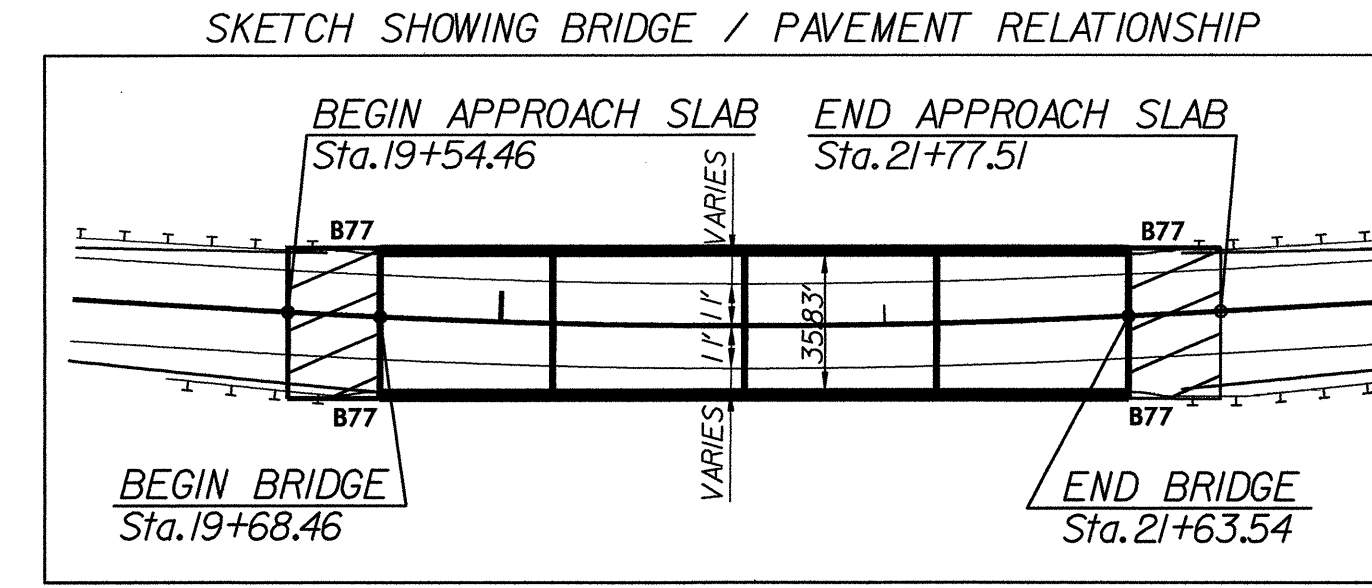
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND BREAKING AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT +%	BORROW	WASTE
SUMMARY #1					
-L- STA. 15+50.00 TO -L- STA. 19+68.46	15		1,841	1,826	
SUBTOTAL: SUMMARY #1	15		1,841	1,826	
SUMMARY #2					
-L- STA. 21+63.54 TO -L- STA. 27+00.00	108	1,200	2,566	2,278	1,020
SUBTOTAL: SUMMARY #2	108	1,200	2,566	2,278	1,020
SUMMARY #3					
-L- STA. 33+75.00 TO -L- STA. 38+56.96	36	3,600	5,763	5,187	3,060
SUBTOTAL: SUMMARY #3	36	3,600	5,763	5,187	3,060
SUMMARY #4					
-L- STA. 39+77.04 TO -L- STA. 42+20.00	50		305	255	
SUBTOTAL: SUMMARY #4	50		305	255	
SUBTOTAL (SUMMARIES 1-4)	209	4800	10,475	9,546	4080
ADDITIONAL UNDERCUT		700			700
SHOULDER MATERIAL			44	44	
SELECT GRANULAR MATERIAL, CL. III			-4,800	-4,800	
LOSS DUE TO CLEARING AND GRUBBING					
PROJECT TOTAL	209	5,500	5,719	4,790	4,780
ESTIMATE 5% TO REPLACE TOPSOIL IN BORROW PITS				240	
GRAND TOTAL	209			5,030	
SAY	250			5,100	
DRAINAGE DITCH EXCAVATION: 130 CY					
SELECT GRANULAR MATERIAL CONTINGENCY: 700 CY					

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.



CURVE DATA FOR -L-

PI Sta 20+60.32

$\Delta = 7^{\circ}03'46.5''$ (LT)

$D = 3^{\circ}00'00.0''$

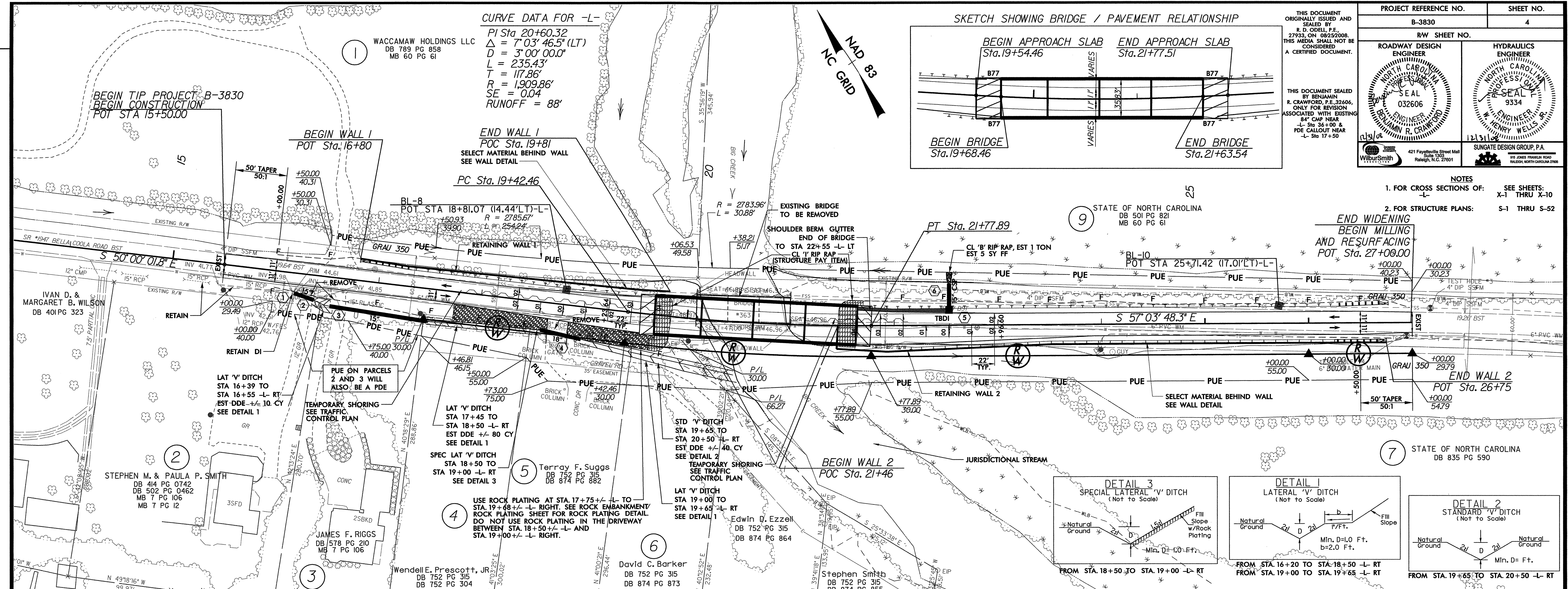
$L = 235.43'$

$T = 117.86'$

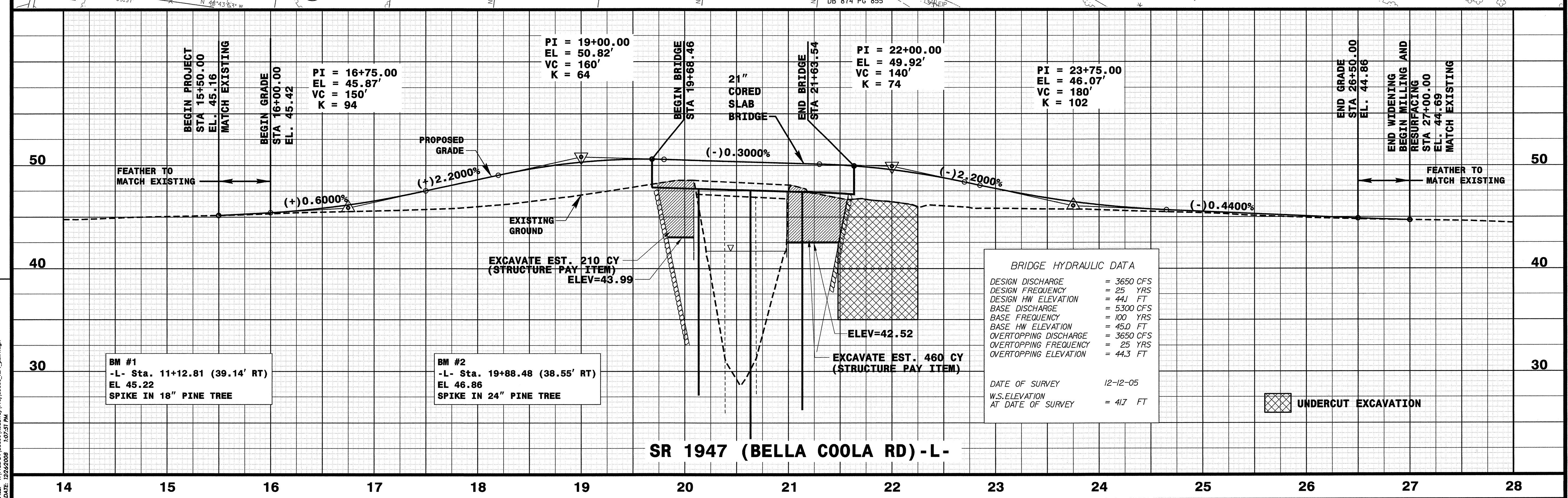
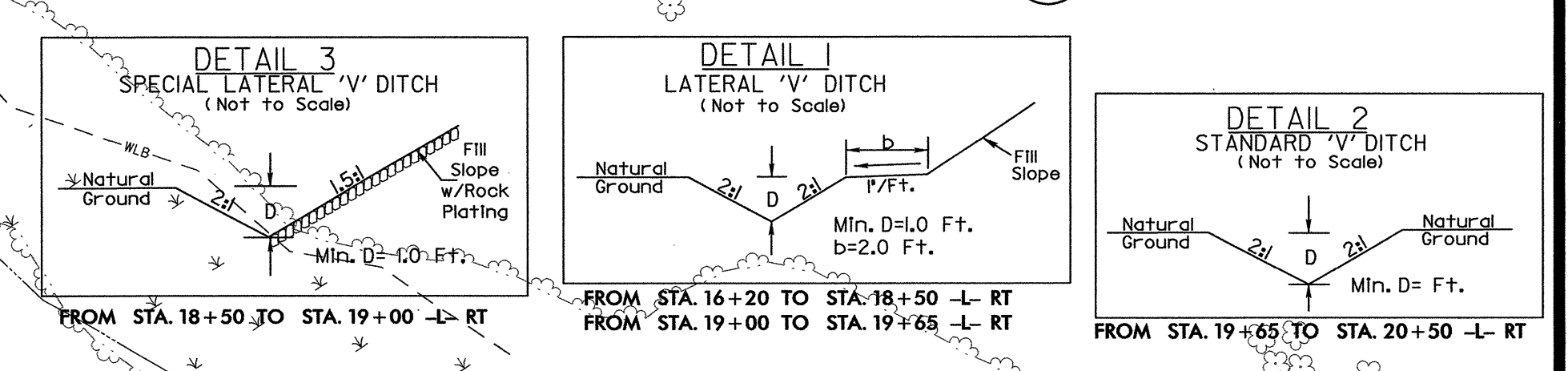
$R = 1,909.86'$

$SE = 0.04$

RUNOFF = 88'



REVISIONS

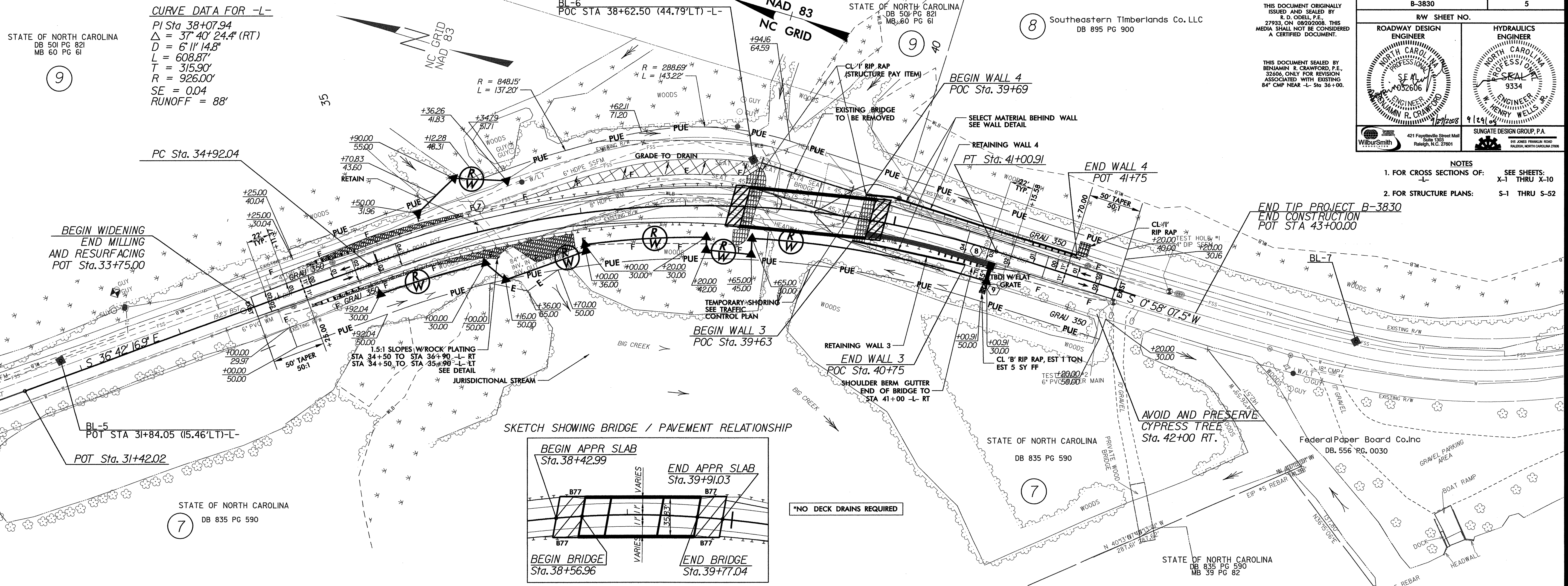


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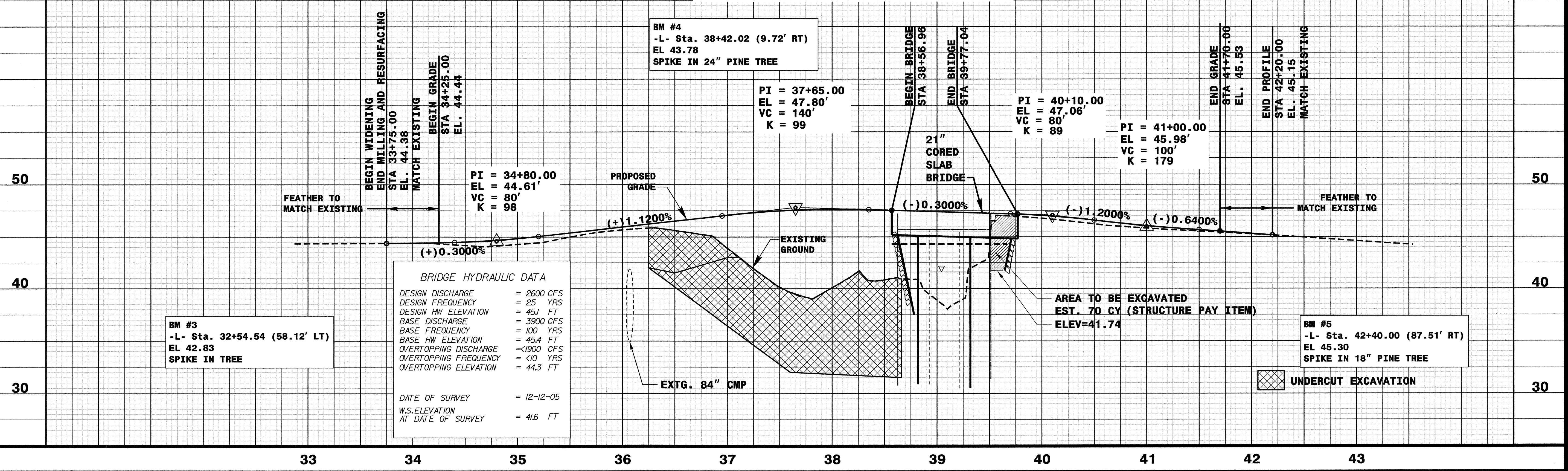
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PROJECT REFERENCE NO. B-3830	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL # 0052606 BENJAMIN R. CRANFORD	HYDRAULICS ENGINEER SEAL # 9334 HENRY WELLS
<small>THIS DOCUMENT ORIGINALLY ISSUED AND SEALED BY R. D. ODELL, P.E. 27933, ON 08/07/2008. THIS MEDIA SHALL NOT BE CONSIDERED A CERTIFIED DOCUMENT.</small> <small>THIS DOCUMENT SEALED BY BENJAMIN R. CRANFORD, P.E. 22606, ONLY FOR REVISION ASSOCIATED WITH EXISTING 84" CMP NEAR STA 36+90.</small>	
<small>421 Fayetteville Street, Suite 1300, Raleigh, N.C. 27601</small> <small>915 Jones Franklin Road, Raleigh, N.C. 27608</small>	

NOTES
 1. FOR CROSS SECTIONS OF: -L- SEE SHEETS: X-1 THRU X-10
 2. FOR STRUCTURE PLANS: S-1 THRU S-52



SR 1947 (BELLA COOLA RD) -L-



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