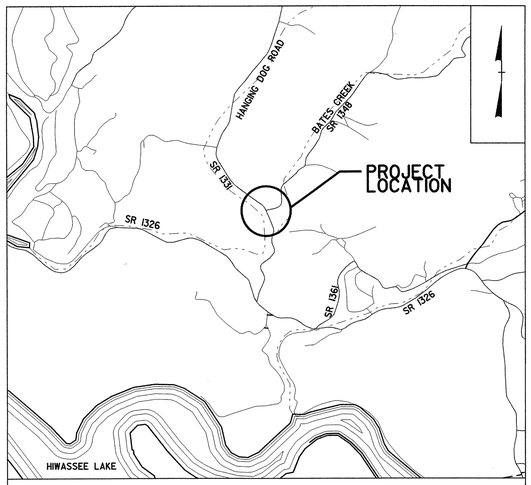
09/08/99

TIP PROJECT: B-3826

CONTRACT: C201617

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

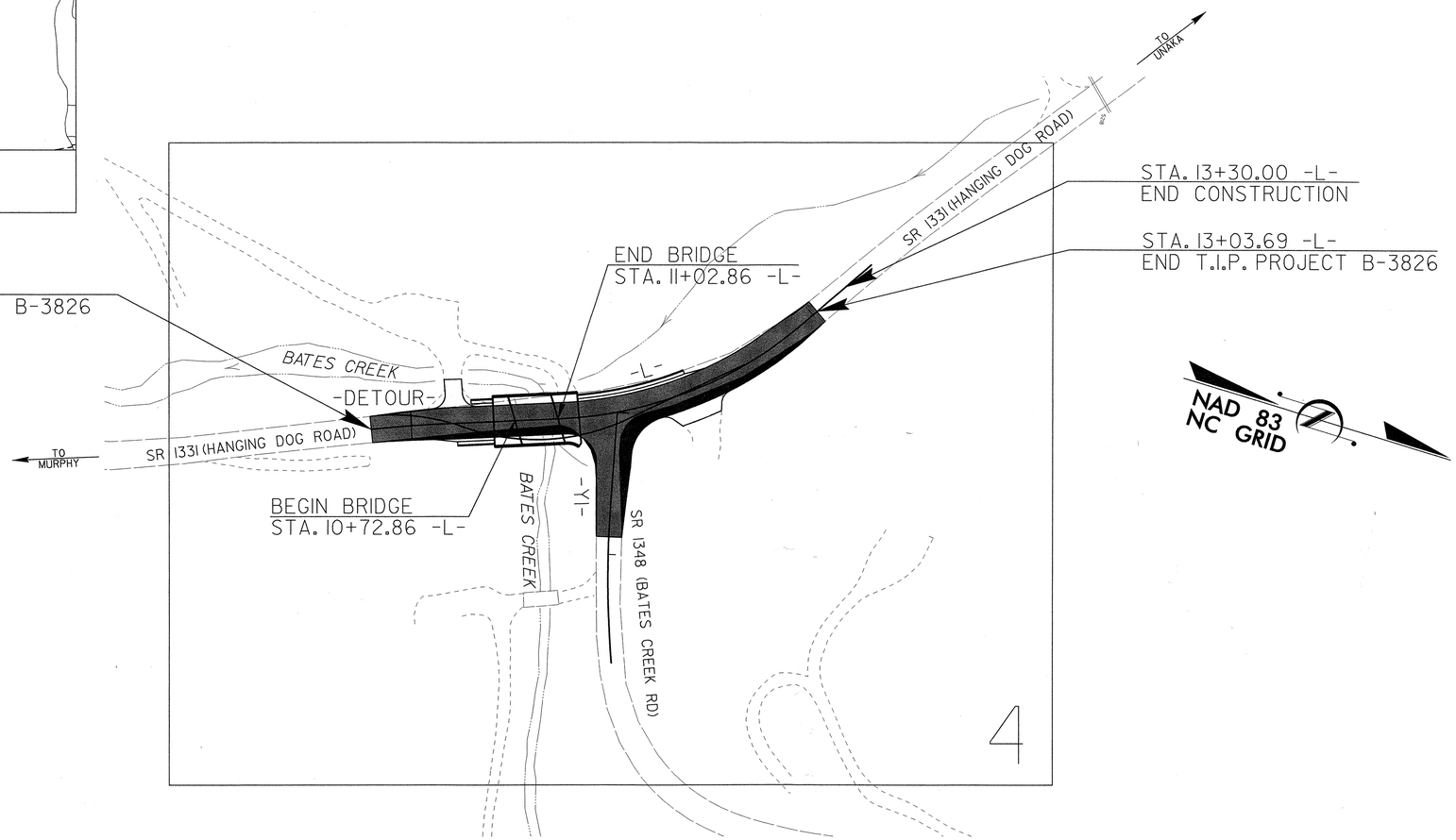
CHEROKEE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3826	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33278.1.1	BRZ-1331(5)	PE
33278.2.1	BRZ-1331(5)	R/W & UTILITIES
33278.3.1	BRZ-1331(5)	CONSTRUCTION

LOCATION: BRIDGE NO. 166 OVER BATES CREEK ON SR 1331

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



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = 2,520
ADT 2030 = 3,000
DHV = 10 %
D = 60 %
T = 4 % *
V = 30 MPH
* TTST 2% DUAL 2%
FUNC CLASS = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B-3826 = 0.057 MILES
LENGTH STRUCTURES T.I.P. PROJECT B-3826 = 0.006 MILES
TOTAL LENGTH T.I.P. PROJECT B-3826 = 0.063 MILES

* DESIGN EXCEPTION APPROVED FOR DESIGN SPEED (REDUCE FROM 45 MPH TO 30 MPH), SHOULDER WIDTH, BRIDGE WIDTH, HORIZONTAL CURVE RADIUS, AND HORIZONTAL STOPPING SIGHT DISTANCE.

Prepared In the Office of:

PBS&J
5200 77 CENTER DRIVE, SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
PHONE: (704) 522-7275

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
December 16, 2005

LETTING DATE:
FEBRUARY 19, 2008

STEVE DRUM, P.E.
PROJECT ENGINEER

CHRIS CARBUTO, P.E.
PROJECT DESIGN ENGINEER

CATHY S. HOUSER, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER
SIGNATURE: 06/06/07 *P.E.*

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26401 ENGINEER CHRISTOPHER T. CARBUTO
SIGNATURE: 06/07/2007 *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

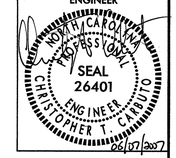
APPROVED
DIVISION ADMINISTRATOR *DATE*

06-JUN-2007 18:33
R:\Roadway\Proj\B3826_RDY_TSH.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-3826	1-A

ROADWAY DESIGN ENGINEER



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 and 2-A	TYPICAL SECTIONS, PAVEMENT SCHEDULE AND WEDGING DETAIL
2-B	DETOUR
2-C	ANCHORAGE FOR FRAMES DETAIL
2-D	STANDARD TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS
2-E	STANDARD TEMPORARY MSE WALLS REINFORCEMENT TABLES-ENGLISH UNITS
2-F	TEMPORARY FABRIC WALL
2-G	HILFIKER TEMPORARY WALL
2-H	SIERRASCAPE TEMPORARY WALL
2-I Thru 2-K	RETAINED EARTH TEMPORARY WALL
2-L Thru 2-N	TERRATREL TEMPORARY WALL
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
3B	SUMMARY OF DRAINAGE QUANTITIES
4 THRU 5	PLAN SHEET & PROFILE SHEETS
TCP-1 THRU TCP-9	TRAFFIC CONTROL PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1 THRU RF-2	REFORESTATION PLANS
SIG-1 THRU SIG-7	SIGNAL PLANS
UO-1 THRU UO-2	UTILITIES PLANS
X-0	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS-SECTIONS
S-1 THRU S-26	STRUCTURE 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" OR "TEMPORARY SHORING-BARRIER SUPPORTED" DEPENDING UPON THE LOCATION OF THE SHORING.

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE BLUE RIDGE MOUNTAIN EMC AND VERIZON

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

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

2006 ROADWAY 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 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete (Beg. January 2007 Let Use Detail in Lieu of Standard)
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

422.10 Reinforced Bridge Approach Fills

PROJECT REFERENCE NO.	SHEET NO.
B-3826	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- 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 — HQ WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- 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 — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- 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 — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — W
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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 — S
- Utility Unknown U/G Line — PUTL
- 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.

PROJECT REFERENCE NO.	SHEET NO.
B-3826	1 C
LOCATION AND SURVEYS	

NOTES

1. 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: B3826_LS_CONTROL_050720.TXT

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

B-3826 SURVEY CONTROL SHEET

NAD 83 NC GRID

BL

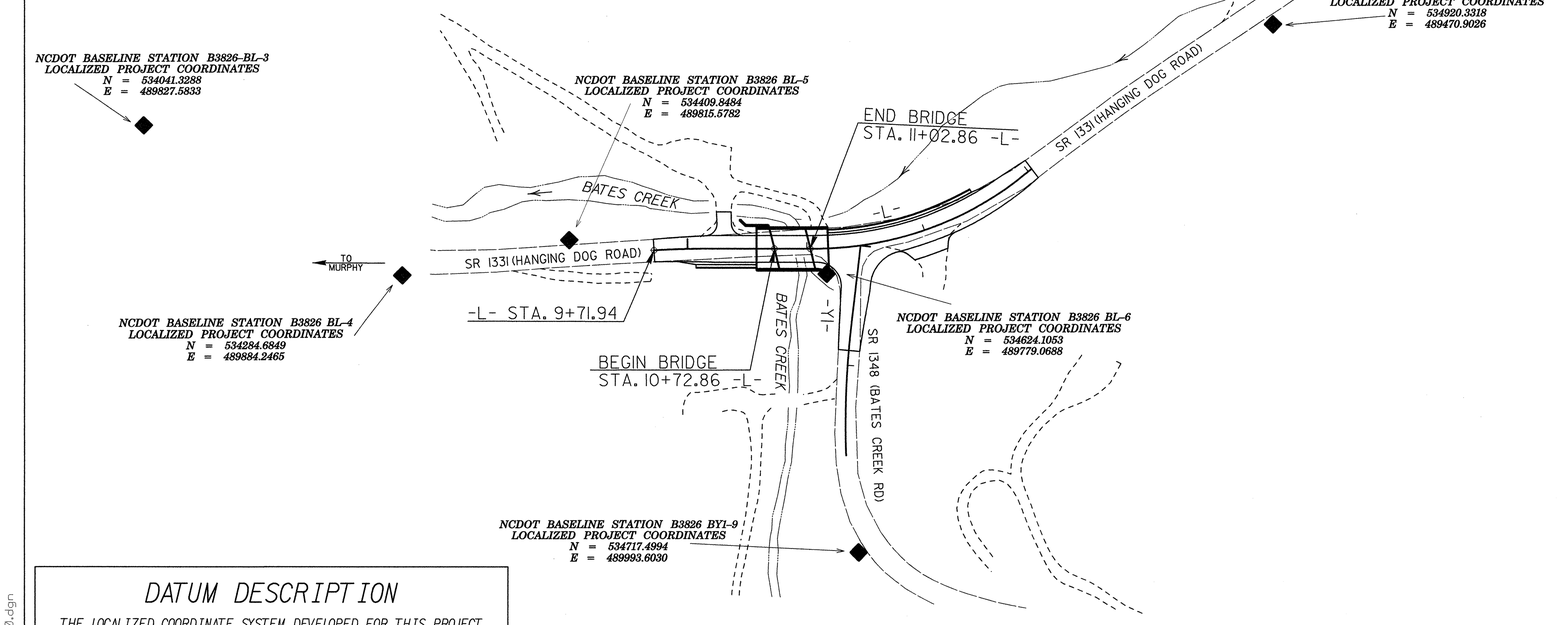
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	534041.3288	489827.5833	1699.56	OUTSIDE PROJECT LIMITS	
4	BL-4	534284.6849	489884.2465	1696.85	OUTSIDE PROJECT LIMITS	
5	BL-5	534409.8484	489815.5782	1698.00	OUTSIDE PROJECT LIMITS	
6	BL-6	534624.1053	489779.0688	1702.24	11+15.90	20.88 RT
7	BL-7	534920.3318	489470.9026	1726.54	OUTSIDE PROJECT LIMITS	
2	BL-2	535168.4870	489150.5410	1746.80	OUTSIDE PROJECT LIMITS	
1	BL-1	535582.4670	488914.2210	1757.24	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
Y6	BL-6	534624.1053	489779.0688	1702.24	10+26.46	25.39 RT
9	BY1-9	534717.4994	489993.6030	1715.27	OUTSIDE PROJECT LIMITS	

NCDOT BASELINE STATION B3826 BL-1 = GPS B3826-1
LOCALIZED PROJECT COORDINATES
N = 535582.4670
E = 488914.2210

NCDOT BASELINE STATION B3826 BL-2 = GPS B3826-2
LOCALIZED PROJECT COORDINATES
N = 535168.4870
E = 489150.5410

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**********************************************
BM1       ELEVATION = 1737.61'
N 534978       E 489238
BL STATION 17+57 97 LEFT
RR SPIKE IN BASE OF 20 INCH OAK TREE
**********************************************

**********************************************
BM2       ELEVATION = 1700.58'
N 534501       E 489775
BL STATION 9+89 25 LEFT
RR SPIKE IN BASE OF 30 INCH HEMLOCK TREE
**********************************************

**********************************************
BM3       ELEVATION = 1695.35'
N 534031       E 489816
BL STATION 5+00
S 50° 12' 06.3" W  DIST      15.63
RR SPIKE IN BASE OF 14 INCH LOCUST TREE
**********************************************
```

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B3826-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 535582.4670(ft) EASTING: 488914.2210(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999824147
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B3826-1" TO -L- STATION 9+71.94 IS 1,415.91' AT A BEARING OF S 38°52'36.17" E.
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

◆ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

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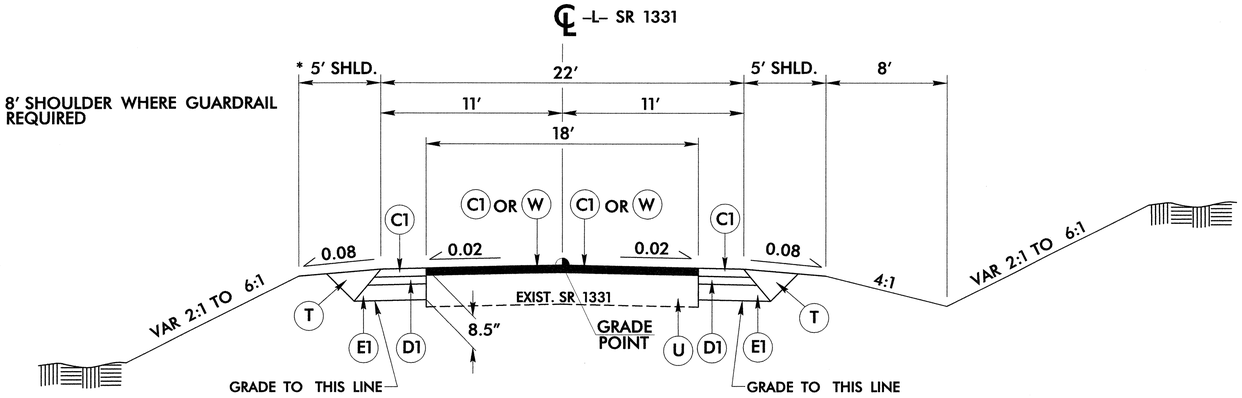


* 8′ SHOULDER WHERE GUARDRAIL IS REQUIRED

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

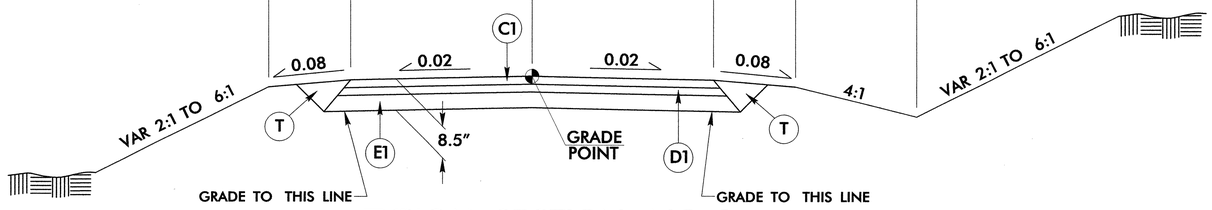
–L– STA. 10+21.94 TO STA. 10+43.43

–L– STA. 11+48.09 TO STA. 12+73.69

NOTE:

TRANSITION FROM EXIST. TO TS NO. 1
STA. 10+00.00 TO STA. 10+21.94

TRANSITION FROM TS NO. 1 TO EXIST.
STA. 12+73.69 TO STA. 13+03.69



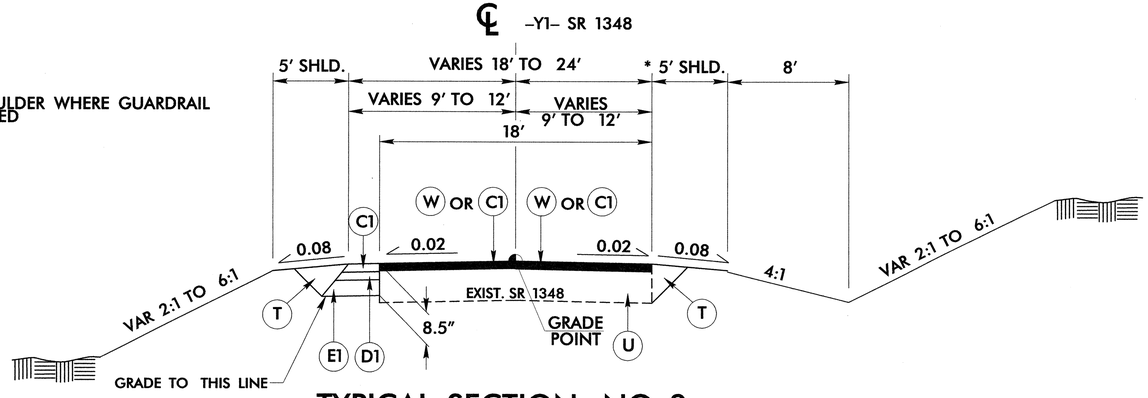
* 8′ SHOULDER WHERE GUARDRAIL IS REQUIRED

TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

–L– STA. 10+43.43 TO STA. 10+72.86 (BEGIN BRIDGE)

–L– STA. 11+02.86 (END BRIDGE) TO STA. 11+48.09

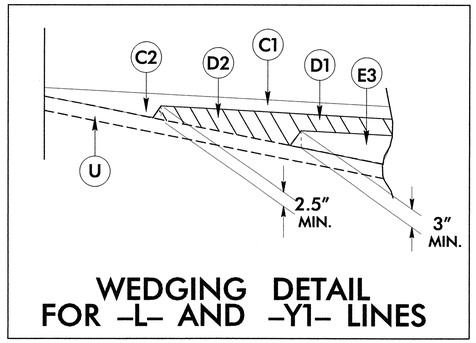


* 8′ SHOULDER WHERE GUARDRAIL IS REQUIRED

TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:

–Y1– STA. 10+11.35 TO STA. 10+87.59



WEDGING DETAIL FOR –L– AND –Y1– LINES

PROJECT REFERENCE NO.	SHEET NO.
B-3826	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28401 ENGINEER CHRISTOPHER T. CARBUTO
06/01/2007

PAVEMENT DESIGN ENGINEER

PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV
07/05/2007

PBSJ
5200 77 CENTER DRIVE, SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275

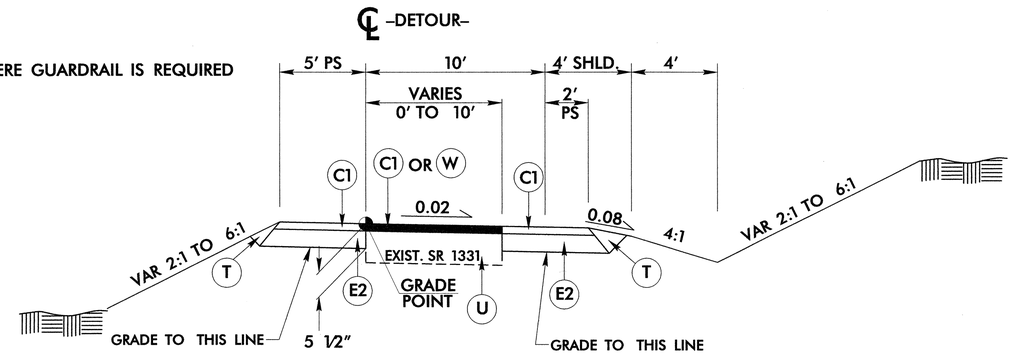
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1 1/2″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1″ OR GREATER THAN 1 1/2″ IN DEPTH.
D1	PROP. APPROX. 2 1/2″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2″ OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4 1/2″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3″ OR GREATER THAN 5 1/2″ IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

6/2/99

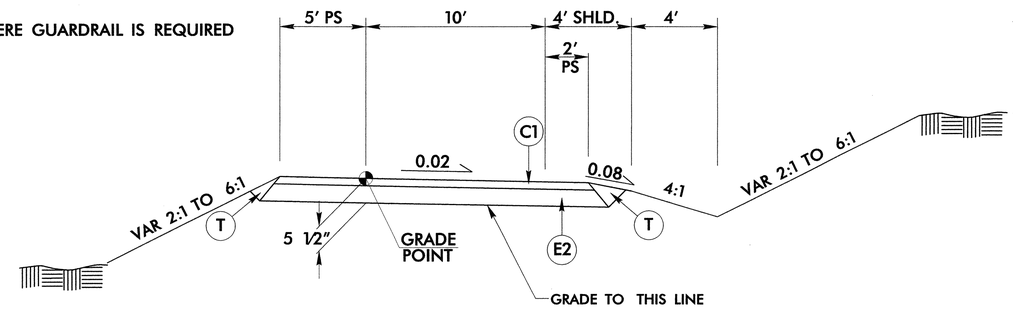
NOTE: 6' SHOULDER WHERE GUARDRAIL IS REQUIRED



TYPICAL SECTION NO. 4

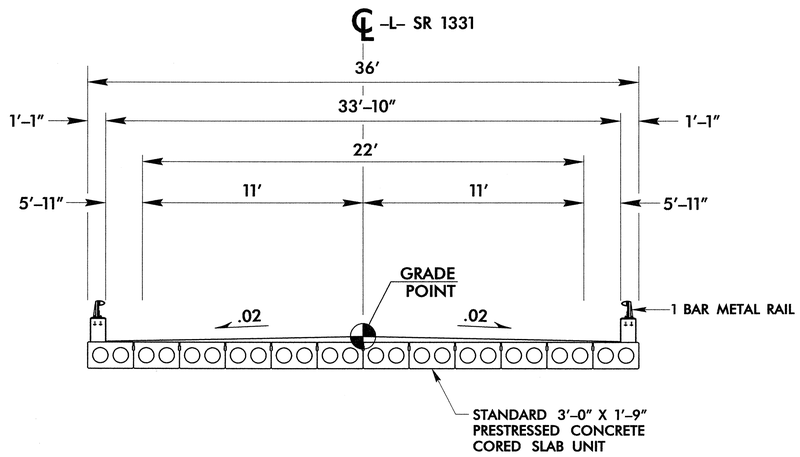
USE TYPICAL SECTION NO. 4 AS FOLLOWS:
–DETOUR– STA. 10+25.00 TO STA. 10+59.22
–DETOUR– STA. 11+39.97 TO STA. 12+42.22

NOTE: 6' SHOULDER WHERE GUARDRAIL IS REQUIRED



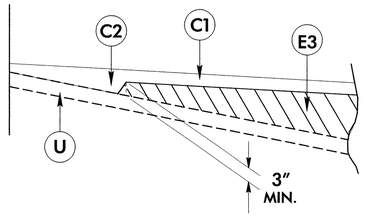
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
–DETOUR– STA. 10+59.22 TO STA. 11+39.97



TYPICAL SECTION ON STRUCTURE

–L– STA. 10+72.86 TO STA. 11+02.86



WEDGING DETAIL FOR –DETOUR–

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

PROJECT REFERENCE NO.	SHEET NO.
B-3826	2-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26401 ENGINEER CHRISTOPHER T. CIRBUSO
06/07/2007

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITOVIC
07/05/2007

PBSJ
5200 77 CENTER DRIVE, SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275

8/17/99

-DETOUR-

NAD 83 NC GRID

PROJECT REFERENCE NO.	SHEET NO.
B-3826	2-B
R/W SHEET NO.	

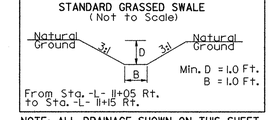
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17265 ENGINEER SIRE ANTHONY DRUM
8/24/07

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER
8/20/07

PBSJ 5200 77 CENTER DRIVE, SUITE 500 CHARLOTTE, NORTH CAROLINA 28217 (704) 522-7275

-DETOUR-	
PI Sta 10+30.00	PI Sta 11+20.65
Δ = 22° 37' 14.8" (RT)	Δ = 44° 32' 28.4" (LT)
D = 38° 11' 49.9"	D = 38° 11' 49.9"
L = 59.22'	L = 116.61'
T = 30.00'	T = 61.43'
R = 150.00'	R = 150.00'
SE = 0.02	SE = 0.02
DS = 20 MPH	DS = 20 MPH

DETAIL A
STANDARD GRASSED SWALE
(Not to Scale)



Min. D = 1.0 Ft.
B = 1.0 Ft.
From Sta. -L- 11+05 Rt. to Sta. -L- 11+15 Rt.

NOTE: ALL DRAINAGE SHOWN ON THIS SHEET, EXCEPT TEMPORARY 84" CMP WITH SOIL/FABRIC HEADWALL, TO REMAIN AFTER REMOVAL OF DETOUR.

FOR -DETOUR- PROFILE, SEE SHEET NO. 5

14-AUG-2007 09:54
G:\Projects\NCDOT\B3826\Roadway\Proj\B3826_ROY_DET_PSH.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-3826	2-C

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

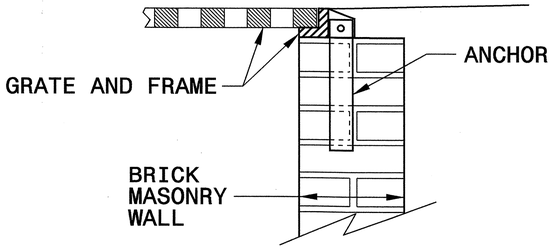
ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

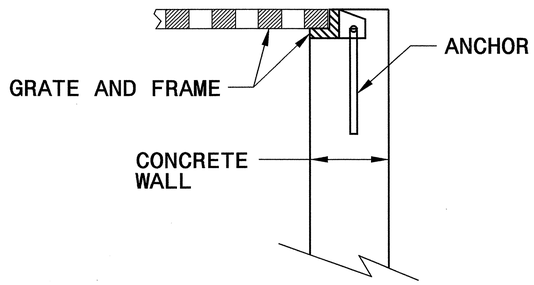
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

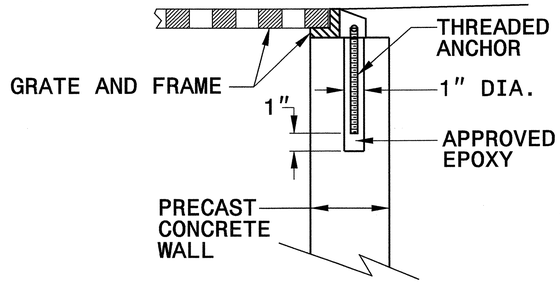
840D25



BRICK MASONRY CONSTRUCTION



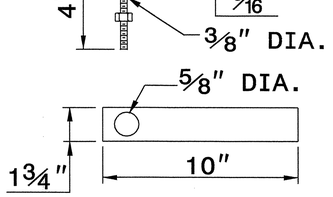
CONCRETE CONSTRUCTION



PRECAST CONCRETE CONSTRUCTION

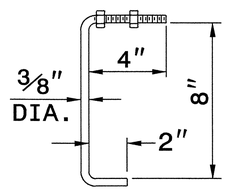
DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

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



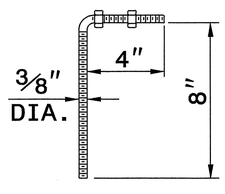
MASONRY ANCHOR

3/8" DIA. BOLT WITH PLATE



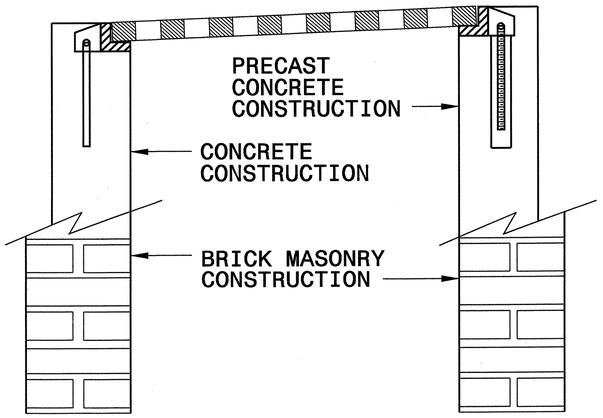
CONCRETE ANCHOR

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

NORTH CAROLINA PROFESSIONAL SEAL 022906 ENGINEER JOEL S. HOMERICK 7/11/07

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

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.:

01-MAR-2007 09:04
s:\contracts\contracts\special details\ericward\stds\06' stds to special details\840d25 anchorage for frames\0840d25.dgn
jhowerton AT PS212260

STANDARD TEMPORARY MSE WALL OPTIONS

PROJECT REFERENCE NO.	SHEET
B-3826	2-D

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. SHIDDEN

Scott A. Shidden 3/29/07
SIGNATURE DATE

ENGINEER

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 ASSUMMED SOIL PARAMETERS:
TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M^3)
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 INCREMENT 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'-7¼" (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.

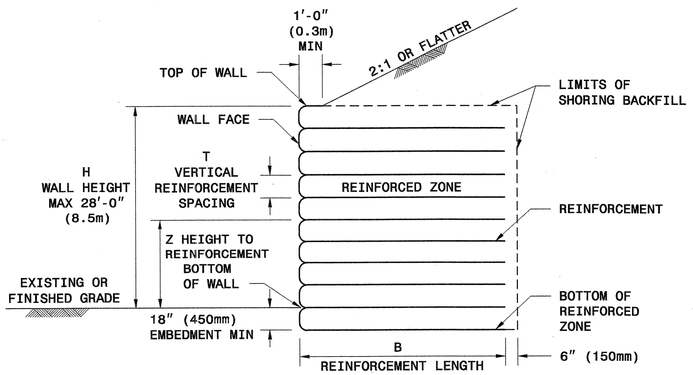
PLACE SHORING BACKFILL IN 8" TO 10" (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" (1m) OF THE WALL FACE.

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.

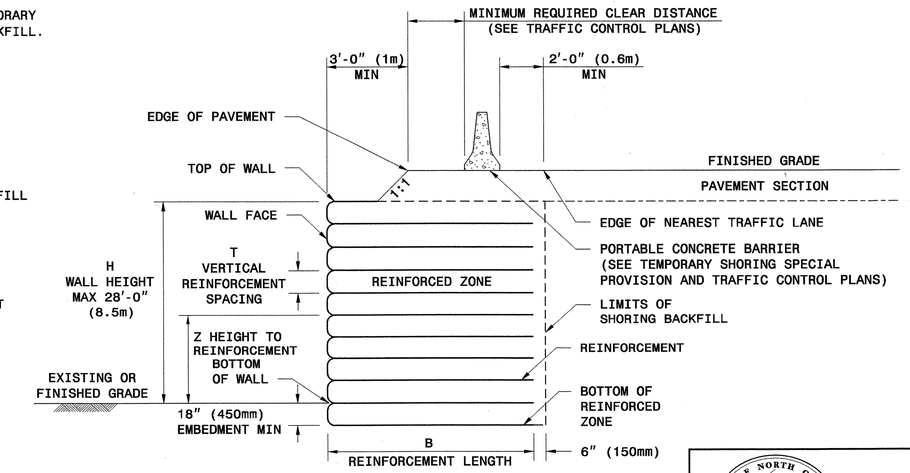
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4" AND 24" (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

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

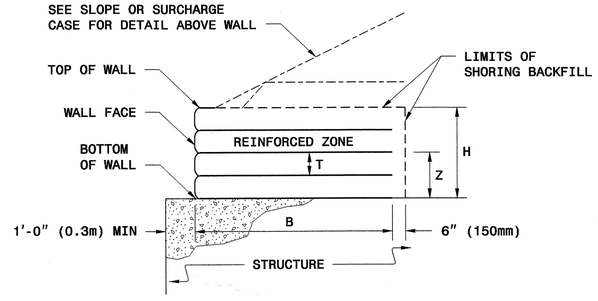
IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



SLOPE CASE



SURCHARGE CASE



TEMPORARY MSE WALL ON STRUCTURE

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS

SHEET 1 OF 11 DATE: 2-20-07

PROJECT REFERENCE NO.	SHEET
B-3826	2-E

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE 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	Z (FT-INCHES)
												3	27 - 8
											3	3	26 -10
											3	3	25 - 2
										3	3	3	23 - 6
									3	3	3	3	21 -10
								3	3	3	3	3	20 - 2
							3	3	3	3	3	3	18 - 6
						3	3	3	3	3	3	3	16 -10
						3	3	3	3	3	3	3	15 - 2
					4	3	3	3	3	3	3	3	13 - 6
				4	4	3	3	3	3	3	3	3	11 -10
			5	4	4	3	3	3	3	3	3	3	10 - 2
		5	5	4	4	3	3	3	3	3	3	3	8 - 6
	5	5	5	4	4	3	3	3	3	3	3	3	6 -10
	5	5	5	4	4	3	3	3	3	3	3	3	5 - 2
5	5	5	5	4	4	3	3	3	3	3	3	3	3 - 6
5	5	5	5	4	4	3	3	3	3	3	3	3	1 -10
5	5	5	5	4	4	3	3	3	3	3	3	3	0 - 2
5	5	5	5	4	4	3	3	3	3	3	3	3	-0 - 8

SLOPE AND SURCHARGE CASES

SIERRASCAPE TEMPORARY WALL
(GEOGRID TYPE)

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

SLOPE CASE

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	Z (FT)
												11	26.5
											11	11	25.5
											11	11	24
										11	11	11	22.5
									11	11	11	15	21
								11	11	11	14	15	19.5
								11	11	11	14	15	18
							11	11	11	14	15	15	16.5
						11	11	11	11	14	15	15	15
						11	11	11	11	15	15	15	13.5
						11	11	11	11	15	15	15	12
					11	11	11	11	15	15	15	15	10.5
				11	11	11	11	15	15	15	15	16	9
			11	11	11	11	14	15	15	15	15	16	7.5
			11	11	11	11	14	15	15	15	16	16	6
		11	11	11	11	15	15	15	15	15	16	16	4.5
	11	11	11	11	14	15	15	15	15	16	16	16	3
11	11	11	11	14	15	15	15	15	16	16	16	17	1.5
11	11	11	11	14	15	15	15	16	16	16	17	17	0
11	11	11	14	15	15	15	15	16	16	17	17	17	-1.5

SURCHARGE CASE

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	Z (FT)
												11	26.5
												11	25.5
											11	11	24
											11	11	22.5
										11	11	11	21
									11	11	11	11	19.5
									11	11	11	15	18
								11	11	11	11	15	16.5
							11	11	11	11	15	15	15
							11	11	11	11	15	15	13.5
							11	11	11	11	15	15	12
						11	11	11	11	15	15	15	10.5
						11	11	11	11	15	15	15	9
					11	11	11	11	15	15	15	15	7.5
					11	11	11	11	15	15	15	15	6
				11	11	11	11	15	15	15	15	16	4.5
			11	11	11	11	15	15	15	15	16	16	3
		11	11	11	11	14	15	15	15	15	16	16	1.5
	11	11	11	11	14	14	15	15	15	15	16	16	4.5
11	11	11	11	11	14	15	15	15	15	15	16	16	3
11	11	11	11	15	15	15	15	15	16	16	16	17	1.5
11	11	11	14	15	15	15	15	15	16	16	17	17	0
11	11	11	14	15	15	15	15	15	16	16	17	17	-1.5

SURCHARGE CASE

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

SLOPE CASE

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	Z (FT)
												4.5	26
											4.5	7.0	24
										4.5	7.0	7.0	22
									4.5	7.0	7.0	7.0	20
								4.5	7.0	7.0	7.0	7.0	18
							4.5	7.0	7.0	7.0	7.0	7.0	16
						4.5	7.0	7.0	7.0	7.0	7.0	9.5	14
						4.5	7.0	7.0	7.0	7.0	9.5	9.5	12
					4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	10
				4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	8
			4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	6
		4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	4
		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	3
	4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	7.0	2
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	7.0	1
	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	7.0	0
	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	-1.5

SURCHARGE CASE

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	Z (FT)
												4.5	26
											4.5	7.0	24
										4.5	7.0	7.0	22
									4.5	7.0	7.0	7.0	20
								4.5	7.0	7.0	7.0	7.0	18
							4.5	7.0	7.0	7.0	7.0	7.0	16
						4.5	7.0	7.0	7.0	7.0	7.0	7.0	14
					4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	12
				4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	10
			4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	8
		4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	6
	4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	4
4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	1
7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	7.0	0
7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	-1.5

SURCHARGE CASE

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	Z (FT-INCHES)
												3X1	27 - 6
												3X1	26 -10
											3X1	3X2	25 - 2
										3X1	3X1	3X2	23 - 6
									3X1	3X1	3X2	3X2	21 -10
								3X1	3X1	3X2	3X2	3X2	20 - 2
							3X1	3X1	3X2	3X2	3X2	3X2	18 - 6
							3X1	3X2	3X2	3X2	3X2	3X2	16 -10
						3X1	3X2	3X2	3X2	3X2	3X2	3X2	15 - 2
						3X1	3X1	3X2	3X2	3X2	3X2	3X2	13 - 6
					3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	11 -10
				3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	10 - 2
			3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	8 - 6
			3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	6 -10
		3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	5 - 2
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3 - 6
3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	1 -10
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	0 - 2
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	-1 - 6

SLOPE AND SURCHARGE CASES

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′.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY MSE WALL REINFORCEMENT TABLES - ENGLISH UNITS

SHEET 2 OF 11 DATE: 2-20-07

PROJECT REFERENCE NO.	SHEET
B-3826	2-F

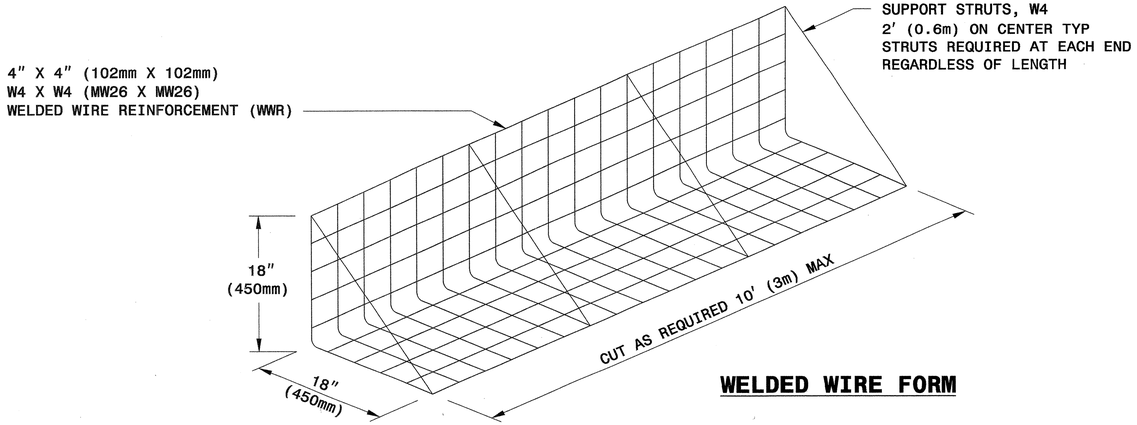
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

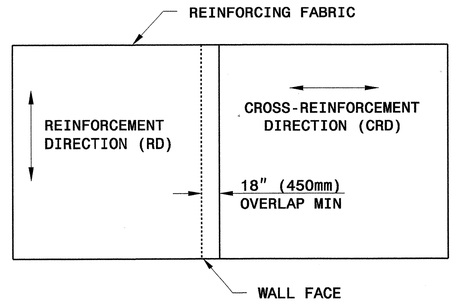
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

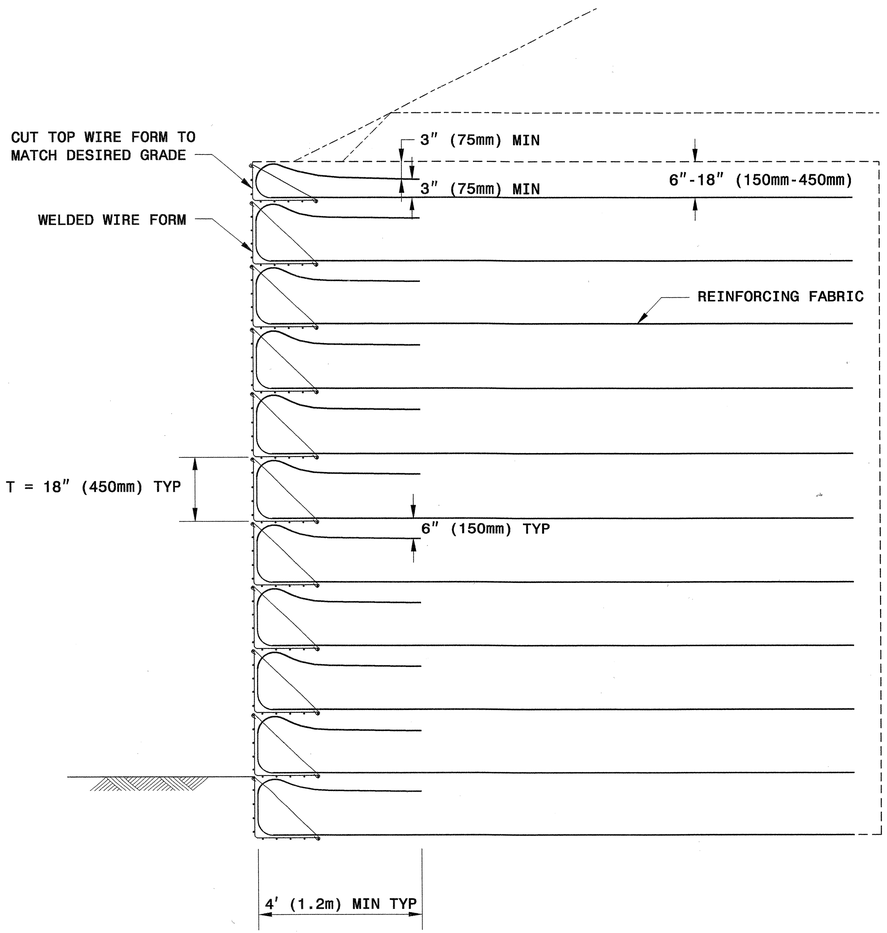
SIGNATURE DATE



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

PROJECT REFERENCE NO.	SHEET
B-3826	2-G

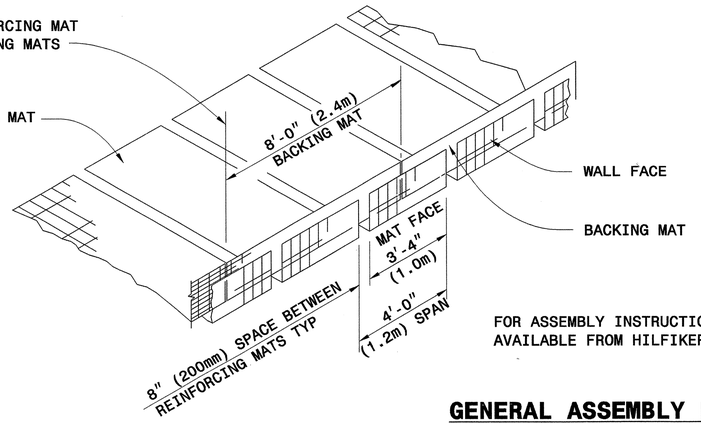
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

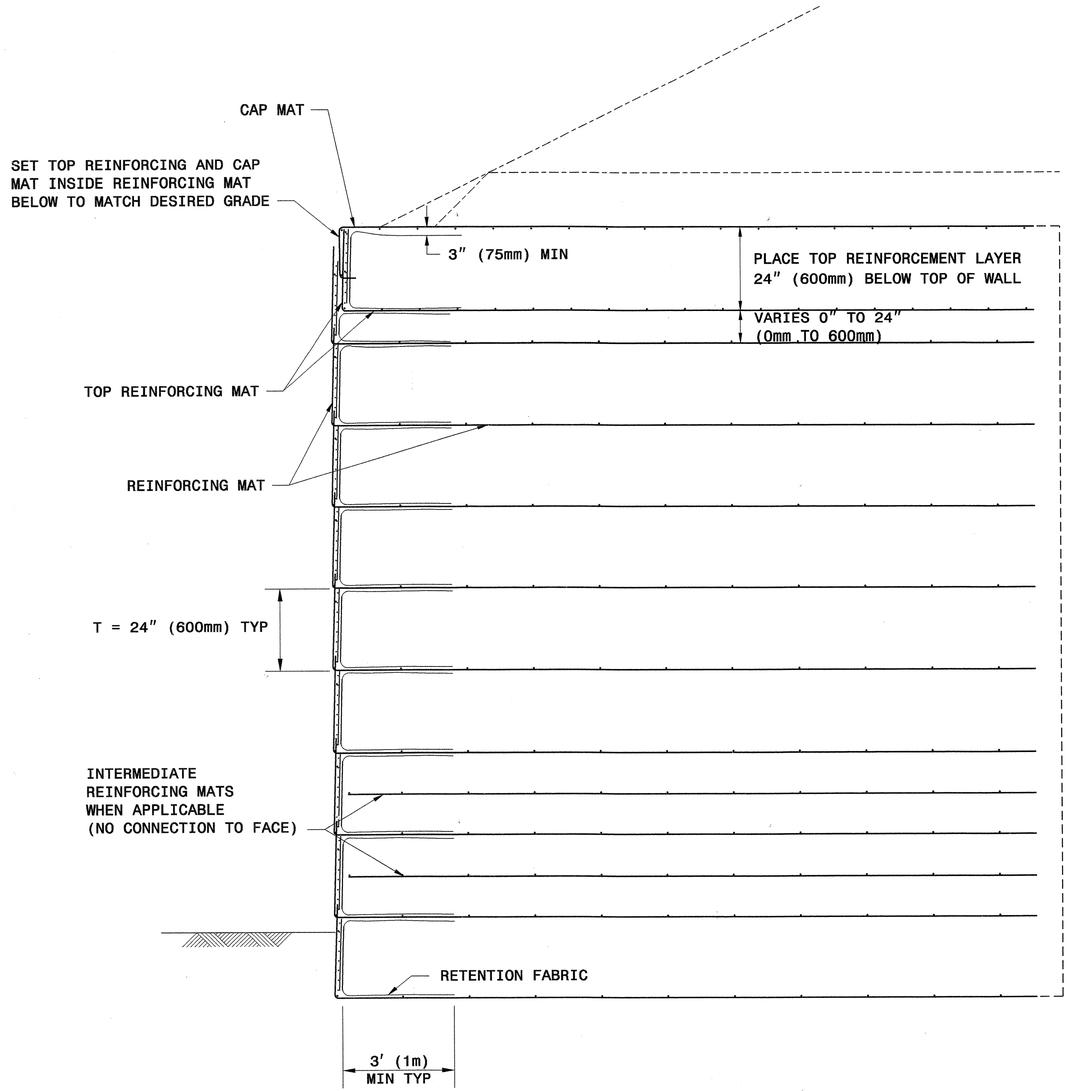
ENGINEER

SIGNATURE DATE

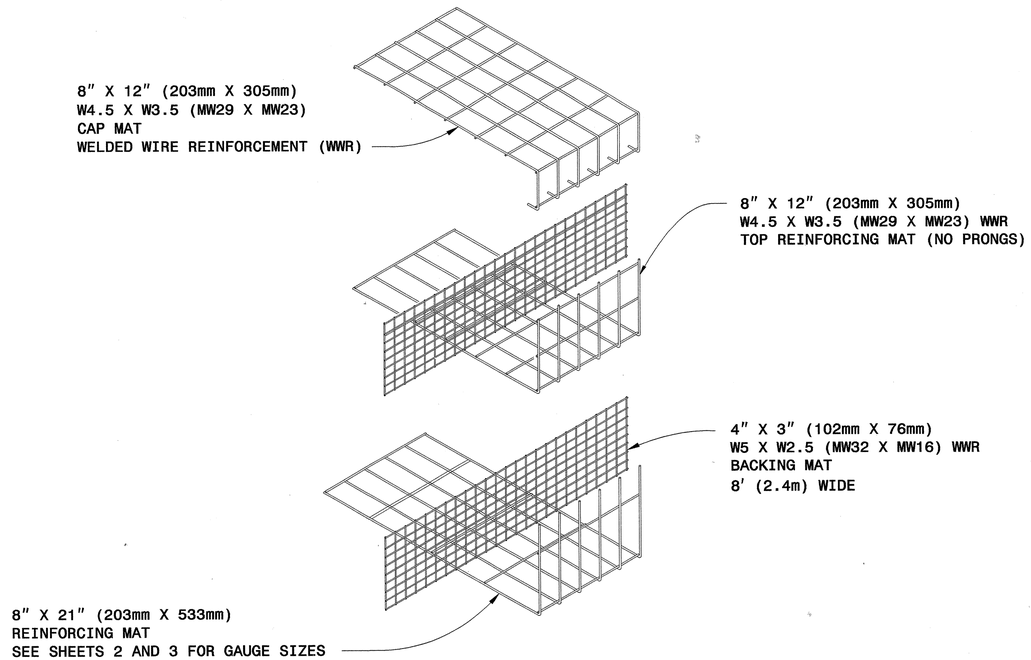


FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL



TYPICAL SECTION



WALL COMPONENTS

HILFIKER RETAINING WALLS

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

HILFIKER
TEMPORARY WALL

SHEET 4 OF 11 DATE: 12-19-06

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

PROJECT REFERENCE NO.	SHEET
B-3826	2-H

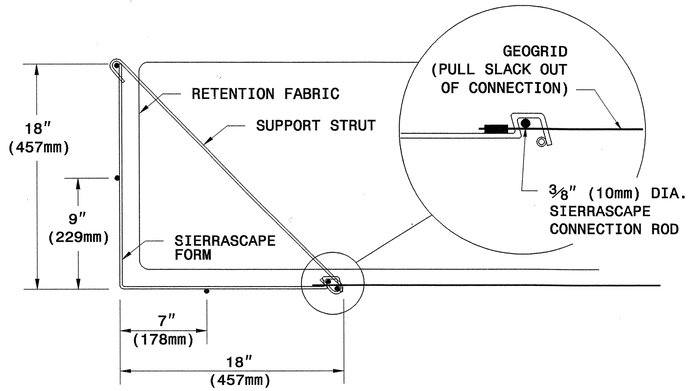
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

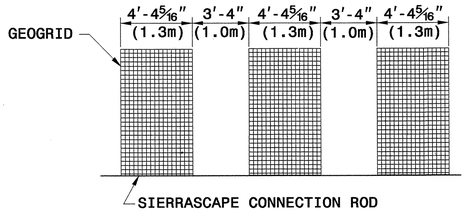
Scott A. Hidden 5/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

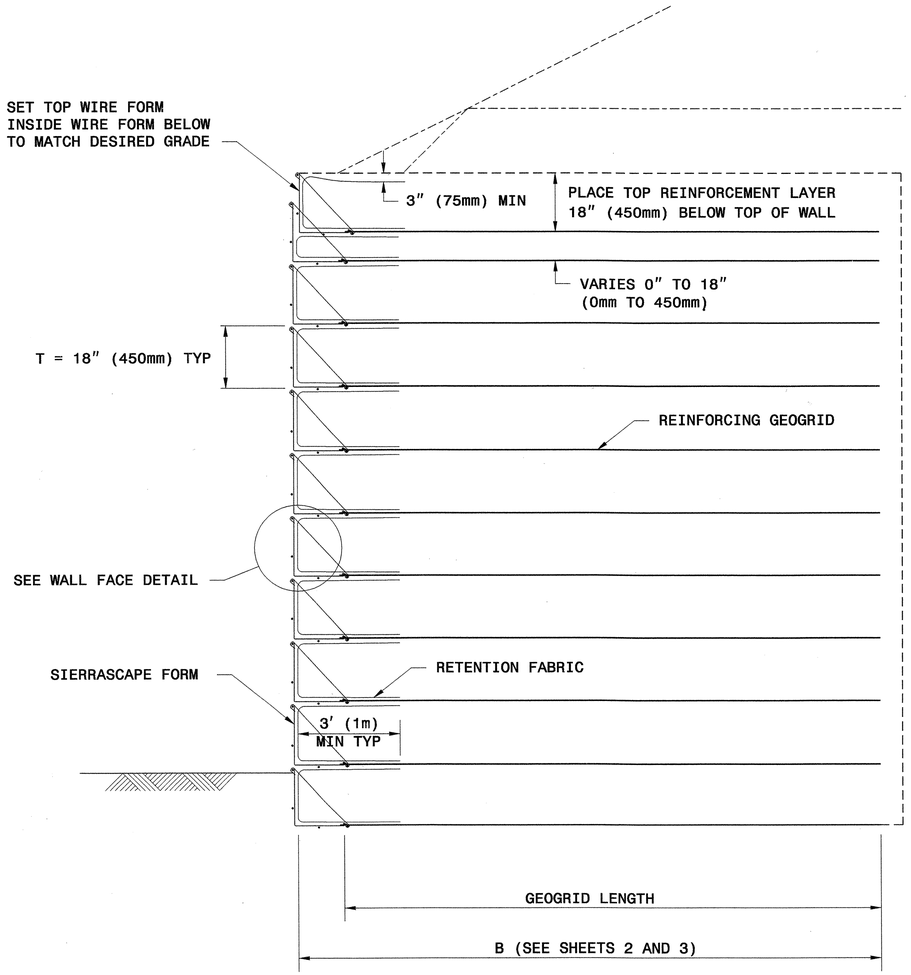


WALL FACE DETAIL



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

TYPICAL GEOGRID COVERAGE



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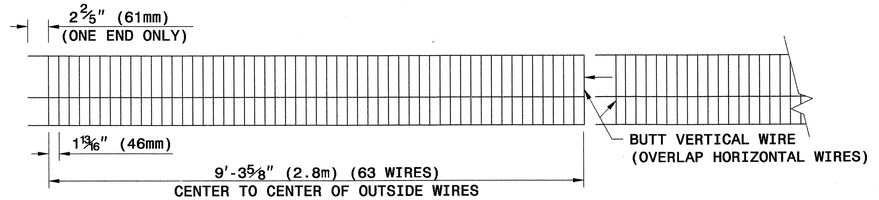
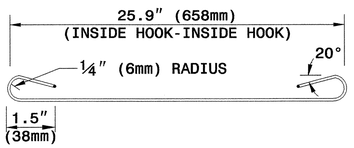
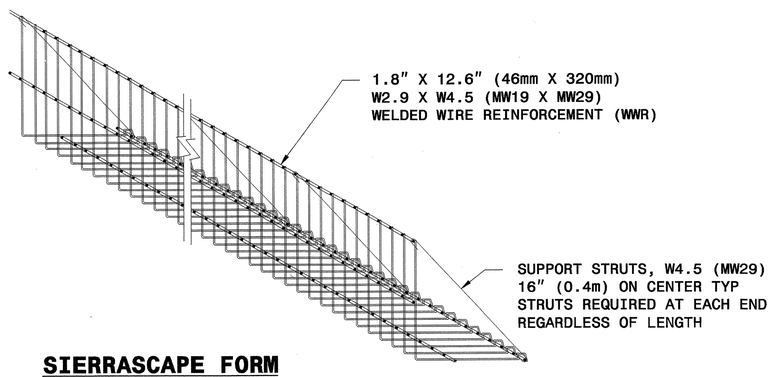


ELEVATION VIEW



SUPPORT STRUT



SIERRASCAPE FORM

WALL COMPONENTS

TENSAR®
TENSAR EARTH TECHNOLOGIES, INC.

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

SIERRASCAPE
TEMPORARY WALL

SHEET 5 OF 11 DATE: 12-19-06

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

PROJECT REFERENCE NO.	SHEET
B-3826	2-I

GEOTECHNICAL ENGINEER

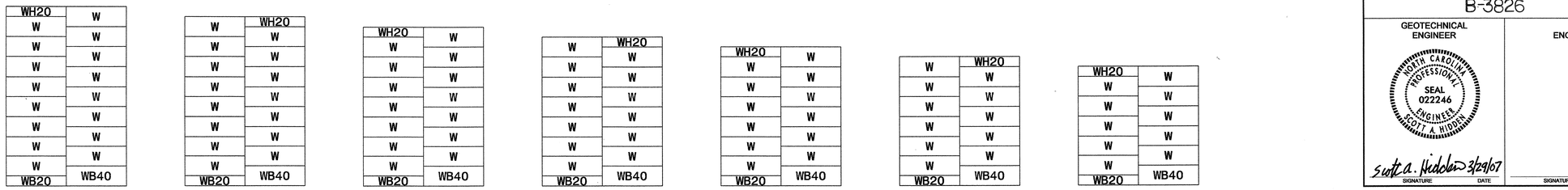
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

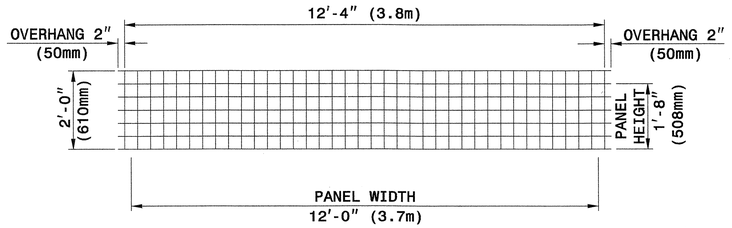
SIGNATURE Scott A. Hidden 3/29/07 DATE

ENGINEER

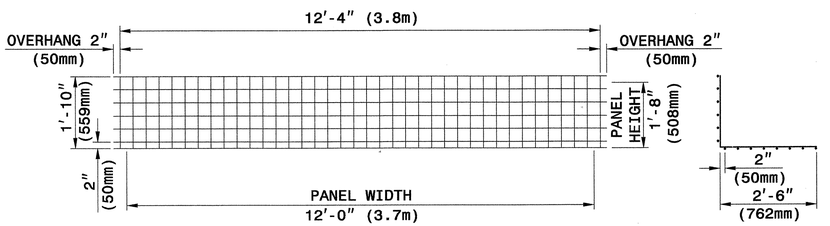
SIGNATURE DATE

PANEL LAYOUTS

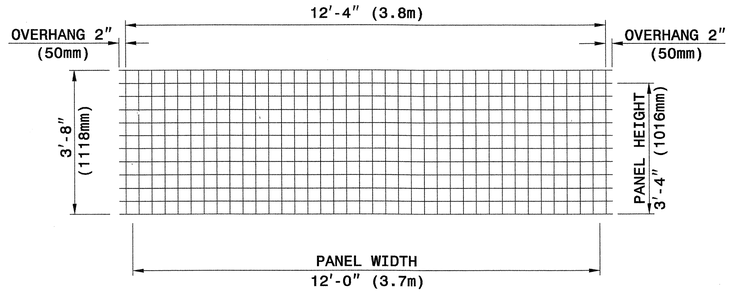




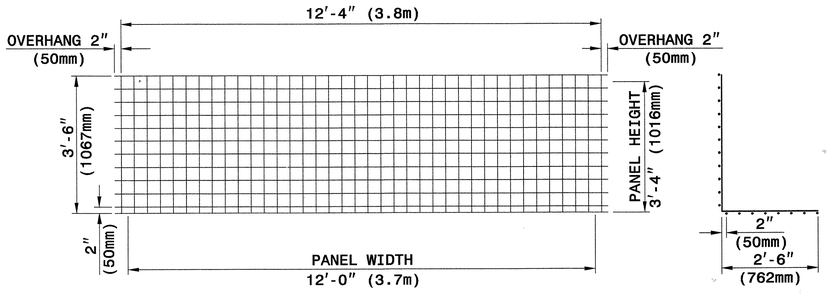
TYPE WH20



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)

The Reinforced Earth Company

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

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

PROJECT REFERENCE NO.	SHEET
B-3826	2-J

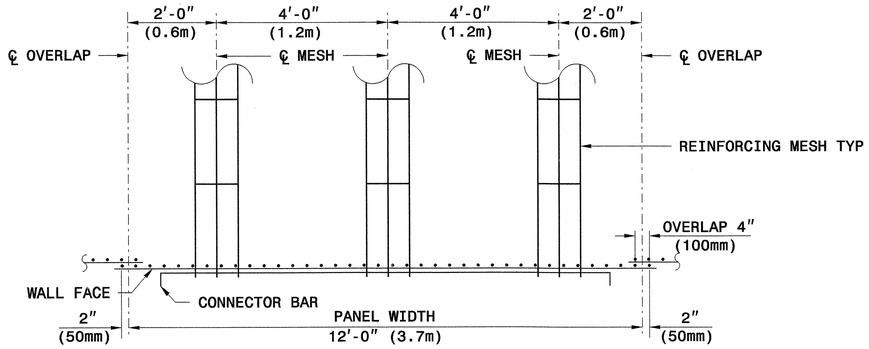
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

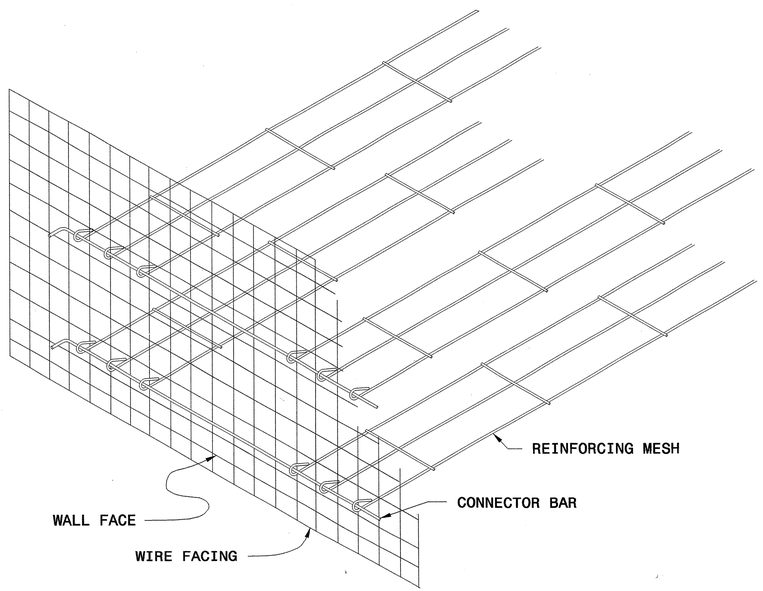
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



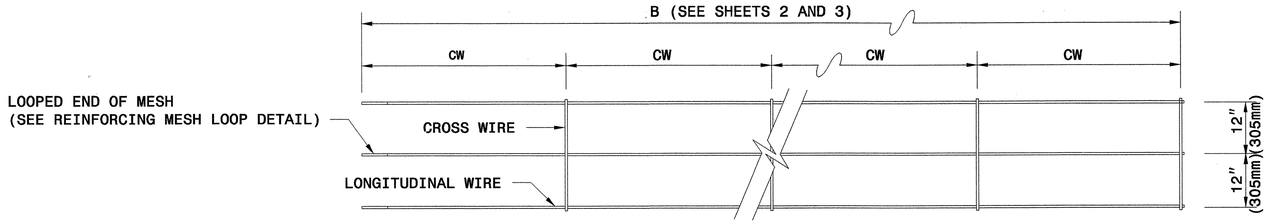
REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)



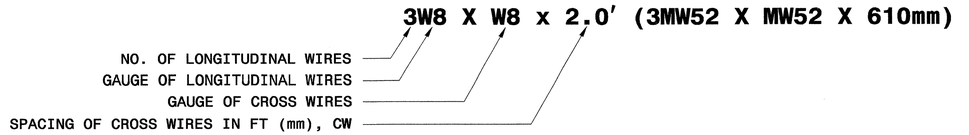
GENERAL ASSEMBLY DETAIL

½" (13mm) DIA. BAR

CONNECTOR BAR

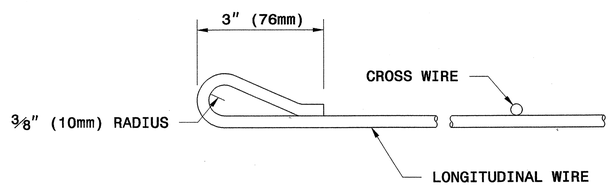


IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2'-0" (610mm) MAKE CW EQUAL TO 12" (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END



REINFORCING MESH DESIGNATION

REINFORCING MESH



REINFORCING MESH LOOP DETAIL

The Reinforced Earth Company

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH TEMPORARY WALL

SHEET 7 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
B-3826	2-K

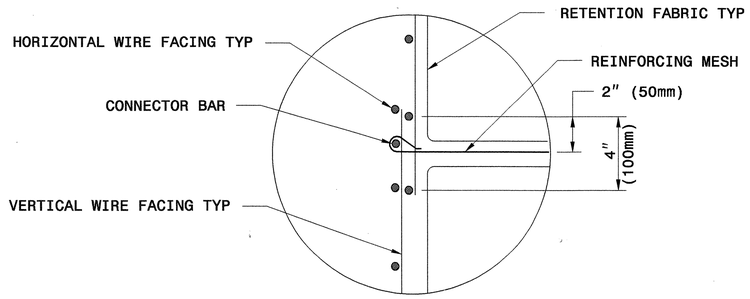
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

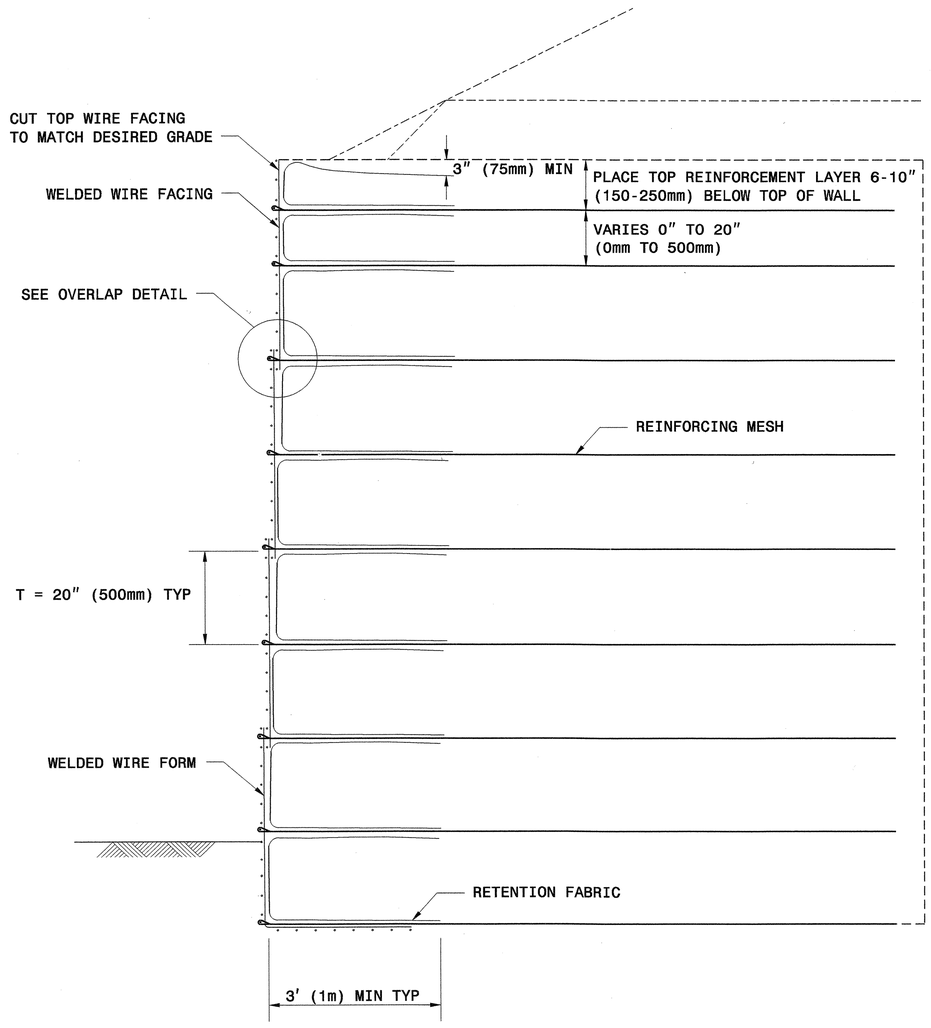
SIGNATURE scott a. hidden DATE 3/21/07

ENGINEER

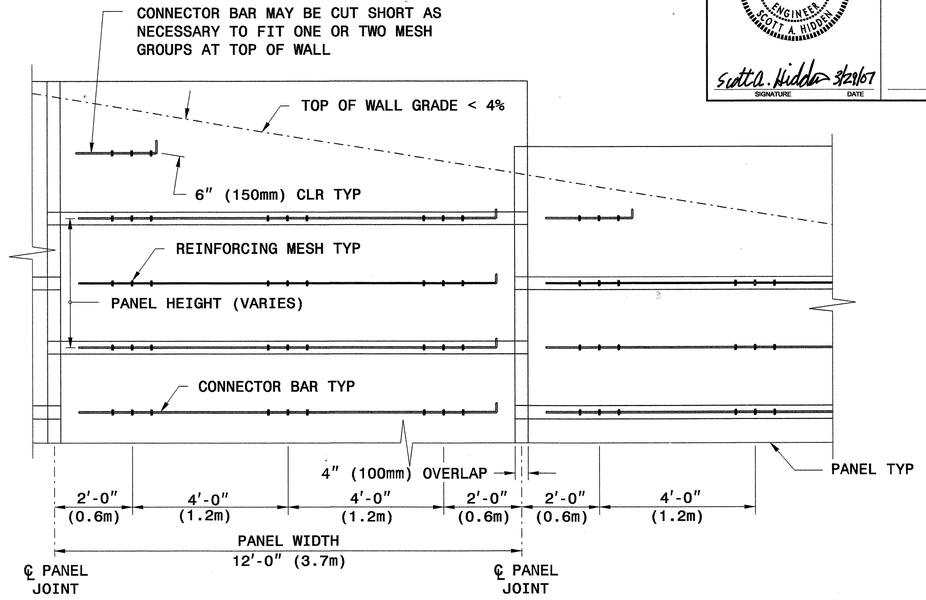
SIGNATURE DATE



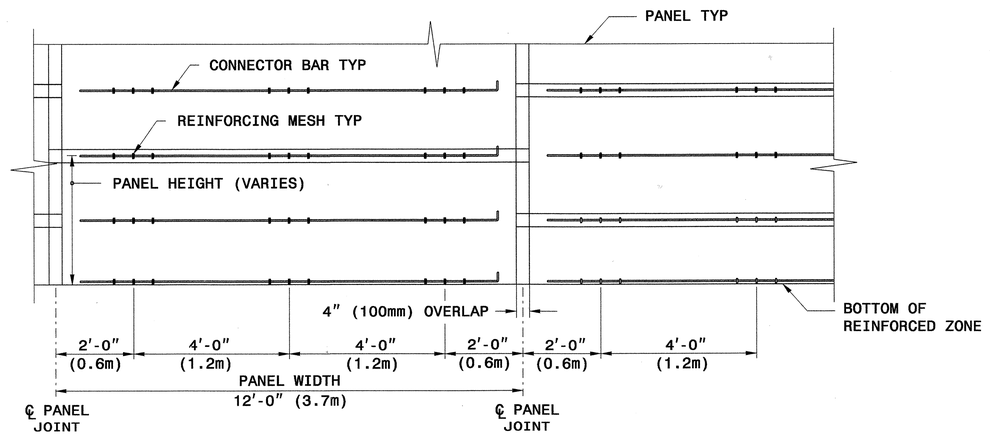
OVERLAP DETAIL



TYPICAL SECTION



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



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

The Reinforced Earth Company

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

RETAINED EARTH TEMPORARY WALL

SHEET 8 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
B-3826	2-L

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

scott a. hidden 3/29/07

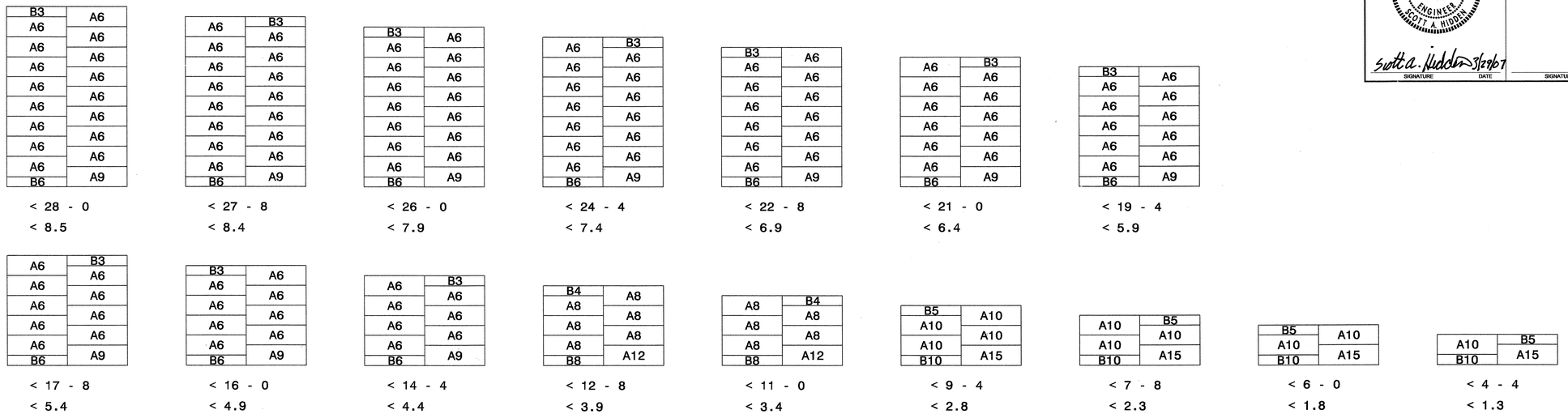
SIGNATURE DATE

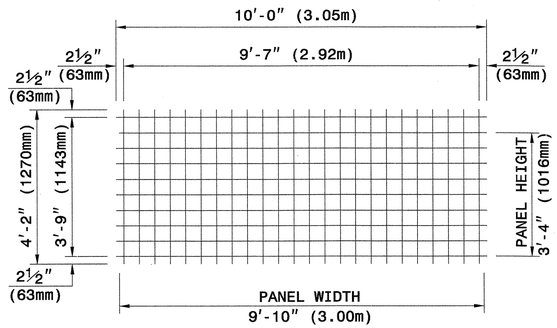
ENGINEER

SIGNATURE DATE

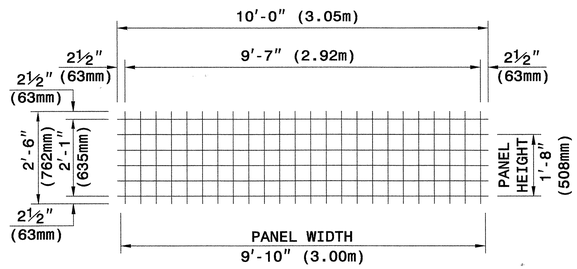
PANEL LAYOUTS

H - WALL HEIGHT





TYPE A



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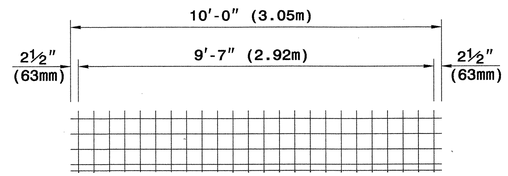
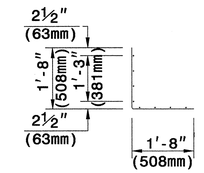


WELDED WIRE FORM



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)

The Reinforced Earth Company

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL

SHEET 9 OF 11 DATE: 12-19-06

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

PROJECT REFERENCE NO.	SHEET
B-3826	2-M

GEOTECHNICAL ENGINEER

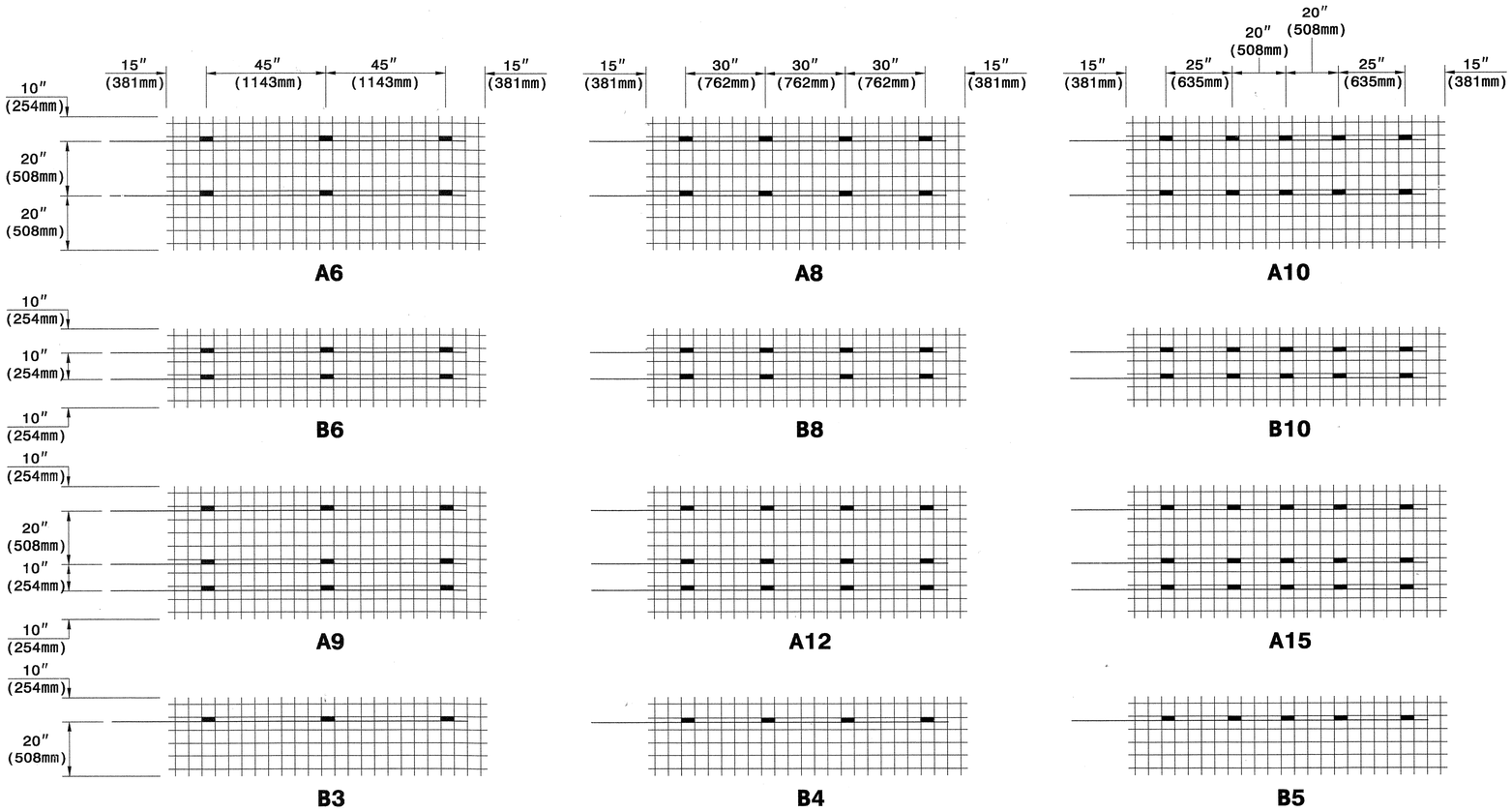
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

ENGINEER

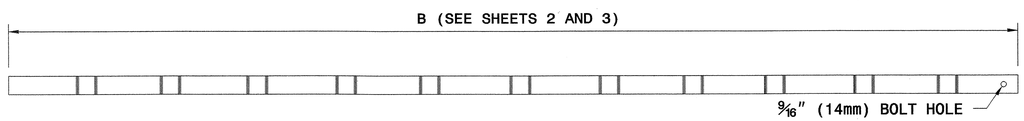
SIGNATURE DATE



KEY: A8

- A8 — PANEL TYPE
- 8 — NUMBER OF REINFORCING STRIPS

CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



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

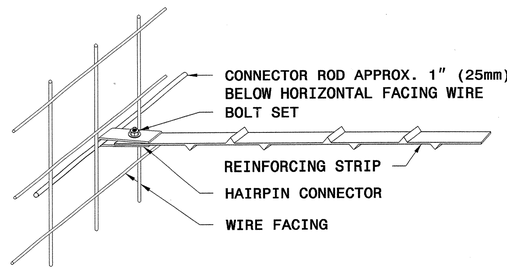
½" (13mm) DIA. ROD

CONNECTOR ROD

½" (13mm) BOLT WITH NUT AND WASHER

BOLT SET

HAIRPIN CONNECTOR



STRIP TO FACING CONNECTION

WALL COMPONENTS

The Reinforced Earth Company

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL
TEMPORARY WALL

SHEET 10 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
B-3826	2-N

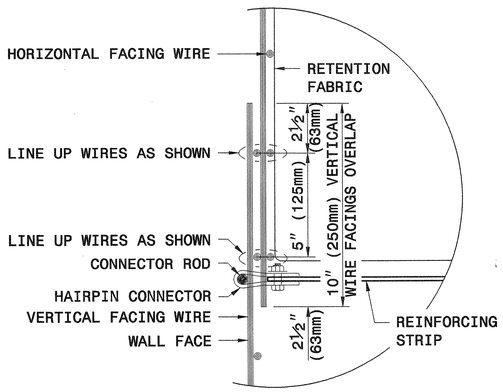
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/21/07
SIGNATURE DATE

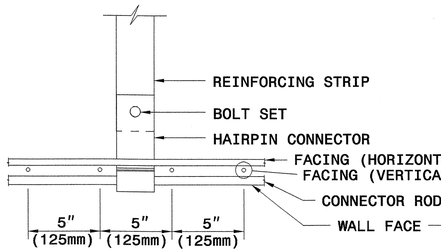
ENGINEER

SIGNATURE DATE

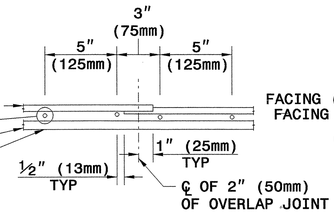


OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

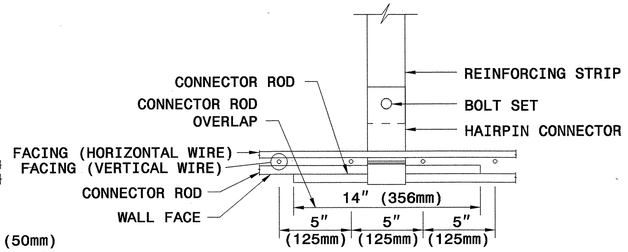
VERTICAL OVERLAP DETAIL



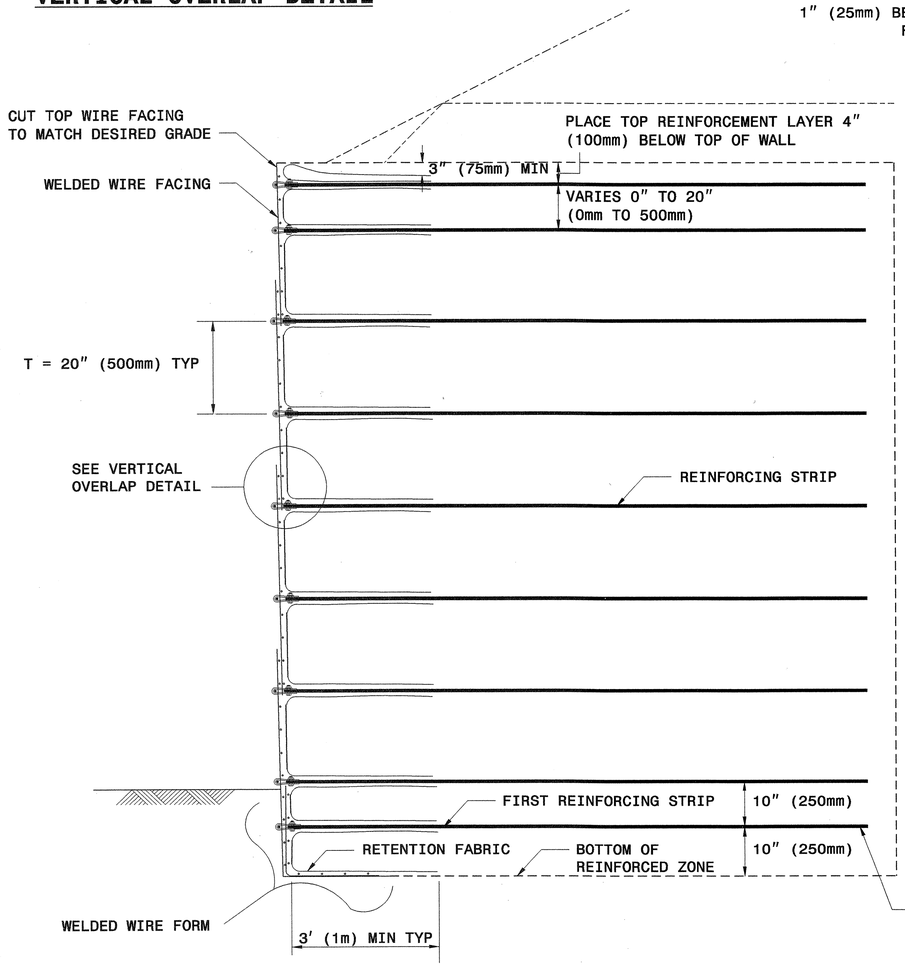
PLAN DETAIL 'A'
STRIP CONNECTION



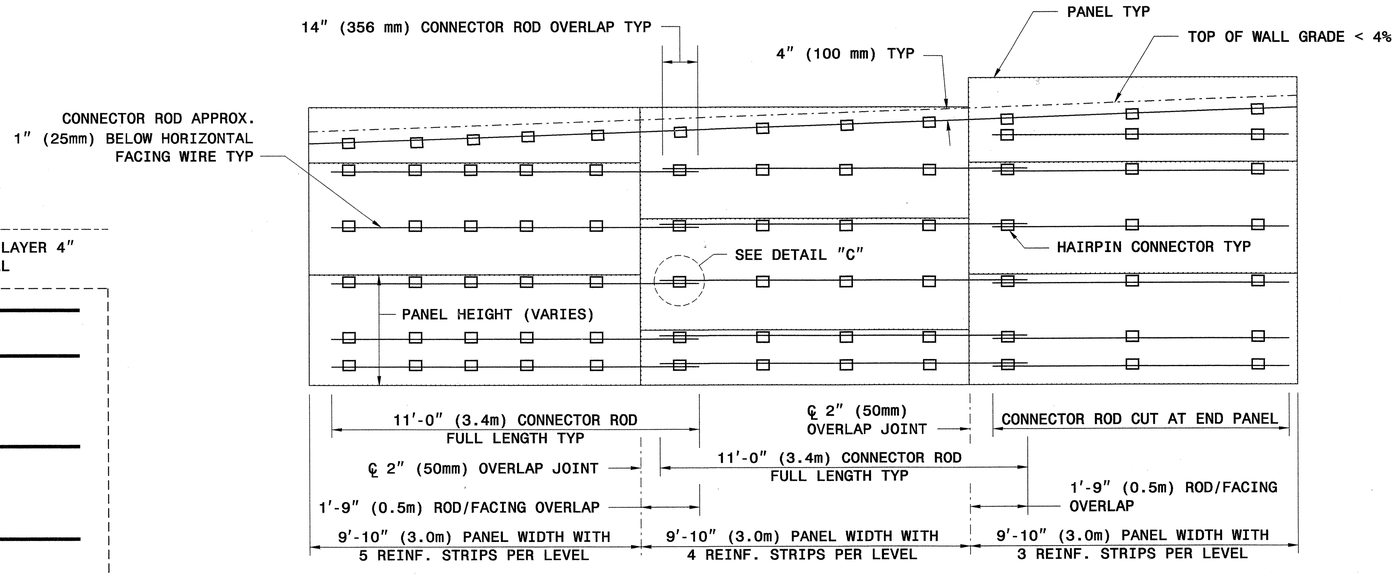
PLAN DETAIL 'B'
HORIZONTAL OVERLAP DETAIL



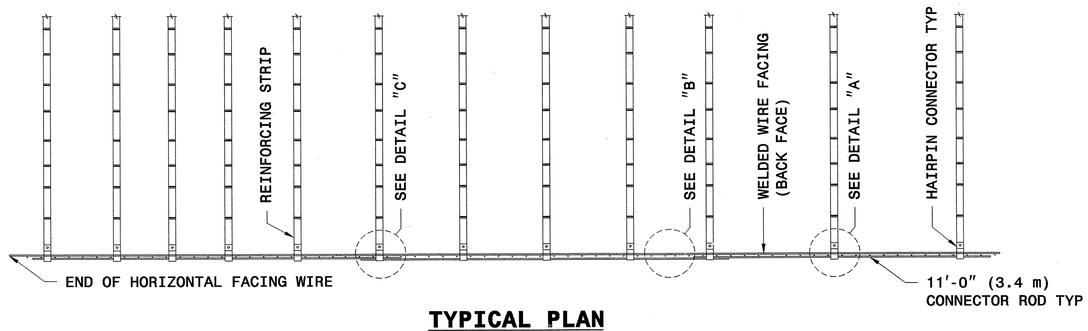
PLAN DETAIL 'C'
STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL



TYPICAL SECTION



TYPICAL ELEVATION
(WIRES NOT SHOWN FOR CLARITY)



TYPICAL PLAN

The Reinforced Earth Company

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL
TEMPORARY WALL

SHEET 11 OF 11 DATE: 12-19-06

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

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3826	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201617

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** 10+87.86
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	100	CY	UNDERCUT EXCAVATION
0080000000-E	SP	500	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	1.5	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	500	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	190	SF	TEMPORARY SHORING
0318000000-E	300	30	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0342000000-E	310	24	LF	**" SIDE DRAIN PIPE (48")
0366000000-E	310	180	LF	15" RC PIPE CULVERTS, CLASS III
0576000000-E	310	28	LF	**" CS PIPE CULVERTS, *****" THICK (84",TYPE B 0.168")
0995000000-E	340	140	LF	PIPE REMOVAL
1220000000-E	545	500	TON	INCIDENTAL STONE BASE
1489000000-E	610	135	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	95	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1525000000-E	610	140	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	20	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2022000000-E	815	20	CY	SUBDRAIN EXCAVATION
2033000000-E	815	170	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	1,000	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	30	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	2	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	12	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	3	EA	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	125	LF	SHOULDER BERM GUTTER
3030000000-E	862	37.5	LF	STEEL BM GUARDRAIL
3045000000-E	862	81.25	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3380000000-E	862	112.5	LF	TEMPORARY STEEL BM GUARDRAIL
3382000000-E	862	37.5	LF	TEMPORARY STEEL BM GUARDRAIL (SHOP CURVED)
3387000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE ********* TEMPORARY (AT-1)
3389100000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3649000000-E	876	4	TON	RIP RAP, CLASS B
3656000000-E	876	329	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	280	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	112	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	20	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4420000000-N	1120	2	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	32	EA	DRUMS
4435000000-N	1135	30	EA	CONES
4445000000-E	1145	40	LF	BARRICADES (TYPE III)
4450000000-N	1150	600	HR	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	310	LF	PORTABLE CONCRETE BARRIER
4516000000-N	1180	30	EA	SKINNY DRUM
4650000000-N	1251	104	EA	TEMPORARY RAISED PAVEMENT MARKERS
4770000000-E	1205	1,060	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4795000000-E	1205	17	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (24") (IV)
4810000000-E	1205	7,096	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	92	LF	PAINT PAVEMENT MARKING LINES (24")
6000000000-E	1605	410	LF	TEMPORARY SILT FENCE
6006000000-E	1610	160	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	175	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	0.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6029000000-E	SP	200	LF	SAFETY FENCE
6030000000-E	1630	380	CY	SILT EXCAVATION
6036000000-E	1631	240	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	80	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	2	EA	SPECIAL STILLING BASINS
6084000000-E	1660	0.65	ACR	SEEDING & MULCHING
6087000000-E	1660	0.5	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	0.25	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	2	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	8	EA	RESPONSE FOR EROSION CONTROL
6126000000-E	SP	0.02	ACR	STREAMBANK REFORESTATION
7060000000-E	1705	590	LF	SIGNAL CABLE
7120000000-E	1705	6	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7264000000-E	1710	440	LF	MESSENGER CABLE (3/8")
7360000000-N	1720	5	EA	WOOD POLE
7372000000-N	1721	7	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	3	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	420	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	840	LF	LEAD-IN CABLE (**********) (14-2)
7636000000-N	1745	4	EA	SIGN FOR SIGNALS
7768000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED)
7780000000-N	1751	2	EA	DETECTOR CARD (TYPE 2070L)

6/21/00

COMPUTED BY: CHRIS CARBUTO DATE: 06/06/2007
CHECKED BY: STEVE DRUM DATE: 06/06/2007

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3826	3-A

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
PHASE I (TEMPORARY DETOUR)					
-DETOUR- STA. 10+00.00 TO STA. 12+67.22	48		85	37	
PHASE I TOTALS	48		85	37	
PHASE II					
-L- STA. 9+71.94 TO STA. 10+72.86 (BRIDGE)	61		15		46
-L- STA. 11+02.86 (BRIDGE) TO STA. 13+03.69	43		40		3
PHASE II TOTALS	104		55		49
PHASE III (REMOVE DETOUR)					
-L- STA. 9+71.94 TO STA. 10+72.86 (BRIDGE)	17		1		16
-L- STA. 11+02.86 (BRIDGE) TO STA. 13+03.69	64		7		57
-Y1- STA. 10+00.00 TO STA. 10+87.59	39		9		30
PHASE III TOTALS	120		17		103
PROJECT SUBTOTALS	272		157	37	152
LOSS DUE TO CLEARING & GRUBBING	-14				-14
GRAND TOTALS	258		157	37	138
SAY	260			40	140

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, and removal of existing pavement will be paid for at Lump Sum price for "Grading."

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION	STATION	LOC LT/RT/CL	YD2
-L-	10+43.43	10+72.86	CL	73
-L-	11+02.86	11+48.09	CL	117
-DETOUR-	10+00.00	12+51.48	CL	420
			TOTAL:	610
			SAY:	610

"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.

GUARDRAIL SUMMARY

W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL 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	XI MOD	XI	GRAU 350	M-350	TL-2	CAT-1	VI MOD	TYPE III	AT-1	EA	G	NG				
-L-	10+36.62	10+76.83 (BRIDGE)	RT	25	12.5		BRIDGE APPROACH		5	8												1	1							
-L-	10+38.80	10+68.89 (BRIDGE)	LT	25	12.5			BRIDGE APPROACH	5	8												1	1							
-L-	10+98.89 (BRIDGE)	11+23.53	LT		37.5		BRIDGE APPROACH		5	8												1	1							TYPE III SHOP CURVED
-L-	11+41.22	12+55.27	LT	100	25		BRIDGE APPROACH		5	8	50		1				1						1							
-L- & -Y1-	-L- 11+06.83 (BRIDGE)	-Y1- 10+47.78	-L- RT & -Y1- RT		37.5			BRIDGE APPROACH	5	8												1	1							TYPE III SHOP CURVED
	LESS DEDUCTIONS FOR ANCHORS																													
	GRAU-350	1 @ 50.00	=	-50																										
	AT-1	5 @ 6.25	=	-25	-6.25																									
	TYPE III	2 @ 18.75	=	-37.5																										
	TYPE III - SHOP CURVED	2 @ 18.75	=		-37.5																									
TOTAL				37.5	81.25												1					4	5							
TEMPORARY GUARDRAIL & ANCHORS																														
-DETOUR-	10+27.83	11+41.30	RT	87.5	25		11+16.50		4	6	50		1				1						1							
-L-	9+93	11+25	RT	137.5	12.5		BRIDGE APPROACH		4	6	50		1				1						1							SEE SHEET NO. TCP-6
	LESS DEDUCTIONS FOR TEMP. ANCHORS																													
	GRAU-350 TEMP.	2 @ 50.00	=	-100.0																										
	AT-1 TEMP.	2 @ 6.25	=	-12.5																										
TOTAL				112.5	37.5												2						2							

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$$$$USERNAME$$$$

4/04/06

COMPUTED BY: CHRIS CARBUTO DATE: 06/06/2007
CHECKED BY: STEVE DRUM DATE: 06/06/2007

PROJECT REFERENCE NO.	SHEET NO.
B-3826	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 10+32	RT	1		1701.35											
-L- 10+32	RT	1	2		1698.20	1698.00			32						
-L- 10+51	LT	2		1701.50											
-L- 10+51	LT	2	3		1698.00	1694.00			32						
-L- 11+17	LT	4	OUT		1696.72	1695.33									
-L- 12+20	RT	5	6		1706.50	1700.20			64						
-L- 11+61	RT	6		1702.60											
-L- 11+61	RT	6	7		1699.60	1699.00			52						
TOTAL									180						

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	48" SIDE DRAIN PIPE
-L- 11+17																			24
TOTAL																			24

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
-L- 10+32			1						
-L- 10+51			1						
-L- 11+61			1						
TOTAL			3						

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 10+32				1							1					
-L- 10+51				1							1					
-L- 12+20															112	REMOVE 15" RCP
-L- 11+61					1				1							
TOTAL				2	1				1		2				112	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"
-DETOUR- 11+17	CL				1693.00	1692.90							
TOTAL													

STATION	C.S. PIPE TYPE B 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	84" .138	84" .168	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10	REINFORCED ENDWALLS WITH R.C. – C.Y.	WITH C.S. – C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS
-DETOUR- 11+17											28									
TOTAL											28									

STATION	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL LIN.FT.	REMARKS
-DETOUR- 11+17						28	REMOVE TEMPORARY 84" CSP THIS PIPE IS NOT BITUMINOUS COATED
TOTAL						28	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

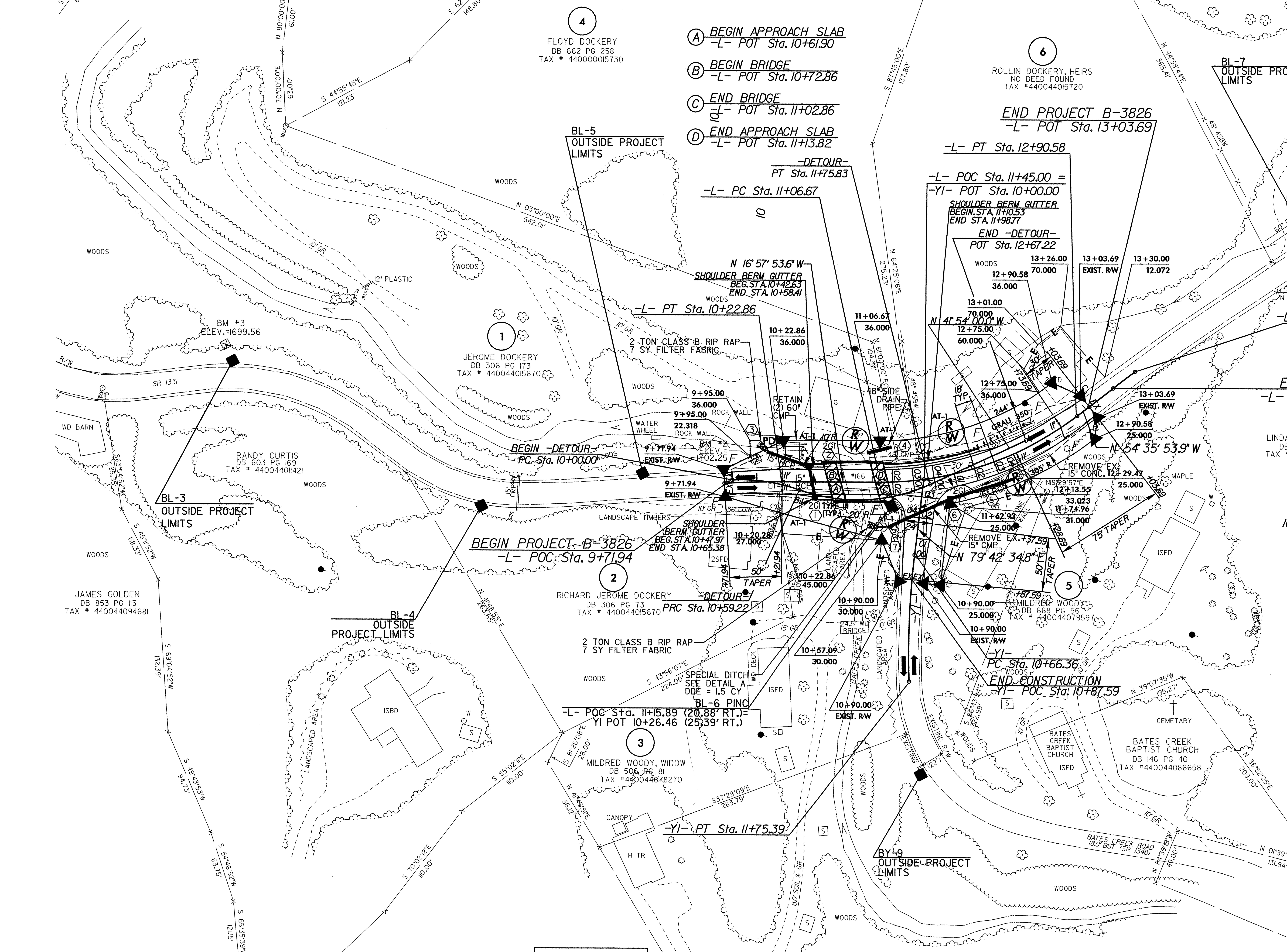
PROJECT REFERENCE NO.	SHEET NO.
B-3826	4
R/W SHEET NO.	

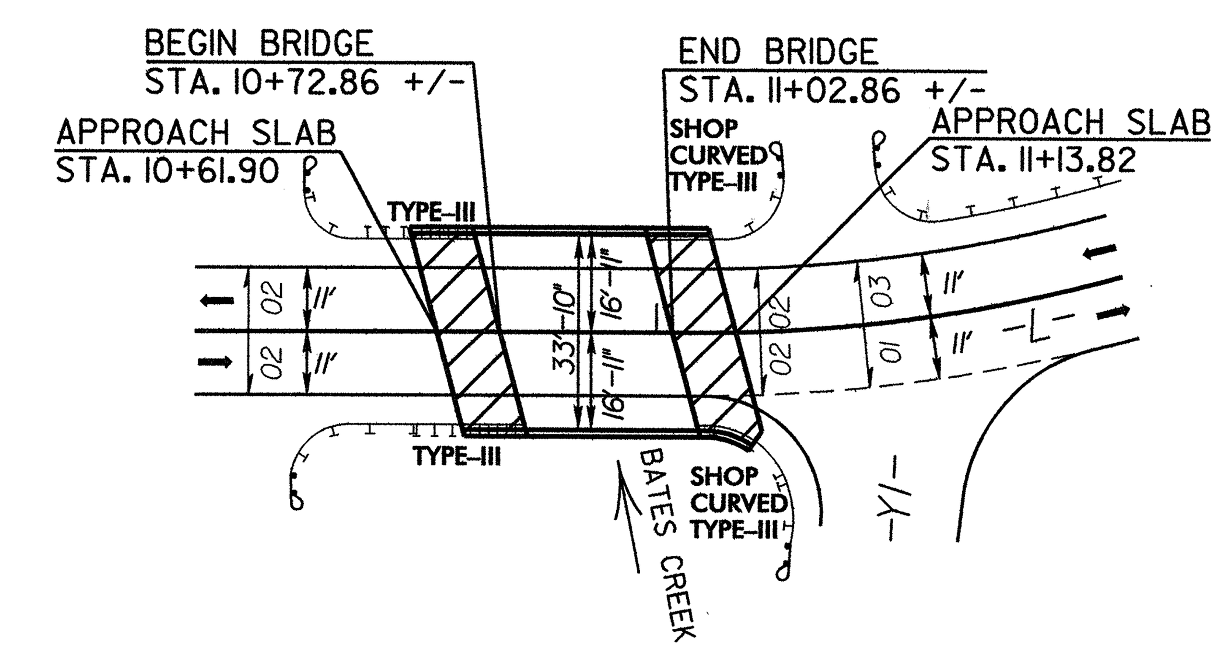
ROADWAY DESIGN ENGINEER — SEAL 17265 — STEVE ANTHONY DRUM — 12/10/07

HYDRAULICS ENGINEER — SEAL 29185 — RICHARD L. HINER — 12/10/07

PBSJ
5200 77 CENTER DRIVE, SUITE 500
CHARLOTTE, NORTH CAROLINA 28217
(704) 522-7275

-L-	
PI Sta 9+97.41	PI Sta 12+02.08
△ = 3° 25′ 56.3″ (RT)	△ = 37° 38′ 00.2″ (LT)
D = 6° 44′ 26.4″	D = 20° 27′ 46.0″
L = 50.92′	L = 183.91′
T = 25.47′	T = 95.41′
R = 850.00′	R = 280.00′
SE = MATCH EX.	SE = 0.04
DS = 25 MPH	DS = 25 MPH





SKETCH SHOWING -L- BRIDGE AND APPROACHES OVER BATES CREEK

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

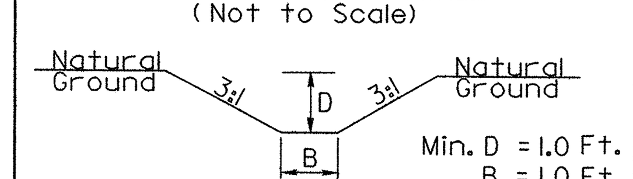
ADT	2006 / 2030
SR 1331	2520 / 3000 (west); 2060 / 2338 (east)
Turning	485 / 706; 25 / 44
BATES CREEK ROAD	510 / 750

DESIGN EXCEPTION APPROVED FOR DESIGN SPEED (REDUCE FROM 45 MPH TO 30 MPH), SHOULDER WIDTH, BRIDGE WIDTH, HORIZONTAL CURVE RADIUS, AND HORIZONTAL STOPPING SIGHT DISTANCE.

FOR -L- PROFILE, SEE SHEET NO. 5

FOR -Y1- PROFILE, SEE SHEET NO. 5

DETAIL A
STANDARD GRASSED SWALE
(Not to Scale)



Min. D = 1.0 Ft.
B = 1.0 Ft.

From Sta. -L- 11+05 Rt. to Sta. -L- 11+15 Rt.

-Y1-
PI Sta 11+20.98
△ = 8° 44′ 11.7″ (LT)
D = 8° 00′ 48.2″
L = 109.02′
T = 54.62′
R = 715.00′
SE = 0.04
DS = 30 MPH

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5/28/99

PBSJ 5200 77 CENTER DRIVE, SUITE 500 CHARLOTTE, NORTH CAROLINA 28217 (704) 522-7275

PROJECT REFERENCE NO.	SHEET NO.
B-3826	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26401 ENGINEER CHRISTOPHER T. CARBULLO 06/07/2007

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 29185 ENGINEER RICHARD L. HINER 06/06/07

-L-

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

PI = 11+71.50
EL = 1,703.30'
K = 39
VC = 204'
DS = 30 MPH

BEGIN CONSTRUCTION -L- STA. 9+71.94 FEATHER FROM EXIST.

BEGIN GRADE -L- STA. 10+21.94 EL = 1,701.50'

BEGIN BRIDGE -L- STA. 10+72.86

END BRIDGE -L- STA. 11+02.86

-L- POC STA. 11+45.00 = -Y1- POT STA. 10+68.56

PROPOSED GRADE

(+)11.2035%

(+)6.4060%

END GRADE -L- STA. 12+73.69 EL = 1,709.85'

END CONSTRUCTION -L- STA. 13+03.69 FEATHER TO EXIST.

BEGIN SPECIAL DITCH STA. 11+05.00 RT EL = 1,698.00

END SPECIAL DITCH STA. 11+15.00 RT EL = 1,699.00

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 700 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 1703.2FT
BASE DISCHARGE	= 1000 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 1704.1 FT
OVERTOPPING DISCHARGE	= 329 CFS
OVERTOPPING FREQUENCY	= 5+ YRS
OVERTOPPING ELEVATION	= 1701.2 FT

BM #2
RR SPIKE IN BASE OF 30" HEMLOCK
N 534501 E 489775
EL = 1,700.58'

BM #1
RR SPIKE IN BASE OF 20" OAK
N 534978 E 489238
EL = 1,737.61'

-Y1-

BEGIN GRADE -Y1- STA. 10+11.35 = -L- STA. 11+42.26 (11.00' RT.) EL = 1,703.55

END CONSTRUCTION END GRADE -Y1- STA. 10+87.59 EL = 1,705.24

PROPOSED GRADE

(-0.007%)

(-)1.4864%

(+)0.5808%

EXISTING GRADE

PI = 10+47.88
EL = 1,703.01'
K = 24
VC = 50'
DS = 20 MPH

FOR -L- AND -Y1- PLAN, SEE SHEET NO. 4

-DETOUR-

BEGIN CONSTRUCTION -DETOUR- STA. 10+10.00 FEATHER FROM EXIST.

BEGIN GRADE -DETOUR- STA. 10+25.00 EL = 1,701.25'

PROPOSED GRADE

(+)1.1176%

(+)3.6032%

END GRADE -DETOUR- STA. 12+42.22 EL = 1,706.92'

END CONSTRUCTION -DETOUR- STA. 12+67.22 FEATHER TO EXIST.

TEMP. 84" CMP

EXISTING GRADE

PI = 11+52.21
EL = 1,702.67'
K = 40
VC = 100'
DS = 30 MPH

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1088 AC
DESIGN FREQUENCY	= 2 YRS
DESIGN DISCHARGE	= 196 CFS
DESIGN HW ELEVATION	= 1699.61 FT
100 YEAR DISCHARGE	= 1000 CFS
100 YEAR HW ELEVATION	= 1704.21 FT
OVERTOPPING FREQUENCY	= 3.5 YRS
OVERTOPPING DISCHARGE	= 268 CFS
OVERTOPPING ELEVATION	= 1701.22 FT

DITCH LEGEND

RIGHT DITCH ----------

FOR -DETOUR- PLAN, SEE SHEET NO. 2-B

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