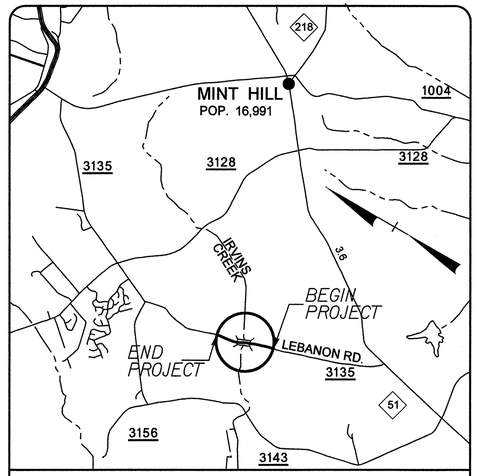
09/08/99

TIP PROJECT: B–3677

CONTRACT: C201969

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

See Sheet 1-A For Index of Sheets



VICINITY MAP

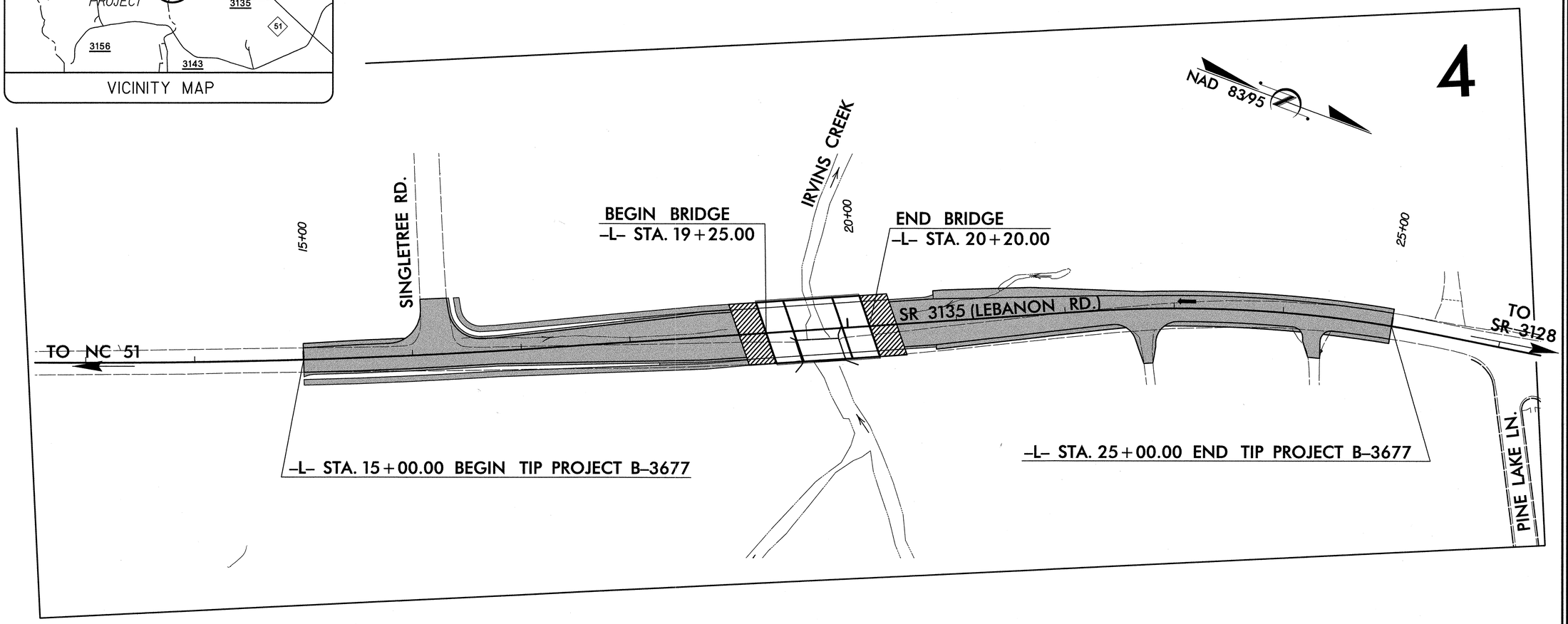
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
MECKLENBURG COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–3677	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33220.1.1	BRSTP–3135(4)	PE
33220.2.1	BRSTP–3135(4)	R/W, UTILITIES
33220.3.1	BRSTP–3135(4)	CONST.

LOCATION: BRIDGE NO. 36 OVER IRVINS CREEK ON SR 3135 (LEBANON ROAD)

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



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 2009 = 7,525
ADT 2029 = 13,025
DHV = 11 %
D = 55 %
T = 6 % *
V = 40 MPH

* (TTST 1% + DUAL 5%)

FUNCTIONAL CLASSIFICATION = URBAN COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–3677 = 0.171 MI
LENGTH STRUCTURE TIP PROJECT B–3677 = 0.018 MI

TOTAL LENGTH TIP PROJECT B–3677 = 0.189 MI

PLANS PREPARED BY:

TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 28, 2007

LETTING DATE:
AUGUST 18, 2008

NCDOT CONTACT:
B. DOUG TAYLOR, PE
PROJECT ENGINEER – ROADWAY DESIGN

PLANS PREPARED FOR:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

CHARLES L. FLOWE, PE
PROJECT ENGINEER

W. CRAIG PARKER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

SIGNATURE: P.E. 6/10/2009

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

SIGNATURE: 5/20/09 P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-3677	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER CRAIG PARKER

6/8/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NO.	SHEET
1	Title Sheet
1-A	Index of Sheets, General Notes, and List of Standards
1-B	Conventional Symbols
1-C & 1-D	Survey Control Sheets
2	Pavement Schedule, Typical Sections, Detail of Asphalt Wearing Surface on Cored Slab Bridge & Wedging Detail
2-A	Temporary Pavement Detail
2-B thru 2-M	Temporary Shoring Details
2-N	Bridge Approach Fills - Cored Slab & Box Beam Bridges
2-O	Temporary Steel Plate Cover
3	Summary of Quantities
3-A	Summary of Earthwork, Guardrail, and Asphalt Pavement Removal
3-B	Summary of Drainage
4	Plan Sheet
5	Profile Sheet
TCP-1 thru TCP-9	Traffic Control Plans
PMP-1 thru PMP-2	Pavement Marking Plans
EC-1 thru EC-5	Erosion Control Plans
SIGN-1 thru SIGN-3	Signing Plans
UC-1 thru UC-6	Utility Construction Plans
UO-1 thru UO-2	Utilities By Others Plans
X-SUM	Earthwork Volume Summary
X-1 thru X-10	Cross Sections
S-1 thru S-37	Structure Plans

GENERAL NOTES

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

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 CHARLOTTE-MECKLENBURG UTILITIES (WATER & SEWER), DUKE ENERGY, AT&T, PIEDMONT NATURAL GAS, & TIME WARNER.

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.

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD. NO. 848.05

STANDARD DRAWINGS

2006 ROADWAY ENGLISH STANDARD DRAWINGS
EFF. 07-18-06
REV. 01-02-07

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'
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
310.04	Parallel Pipe End Section - Prefabricated Steel Section for 15" to 24" Pipe
310.10	Driveway Pipe Construction
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
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-3677	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 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
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- 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
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- 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:

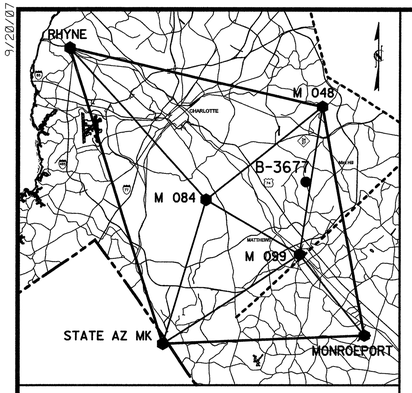
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- Temporary Shoring

B3677_rdy_ssh.dgn 5/1/2009 7:45:48 AM

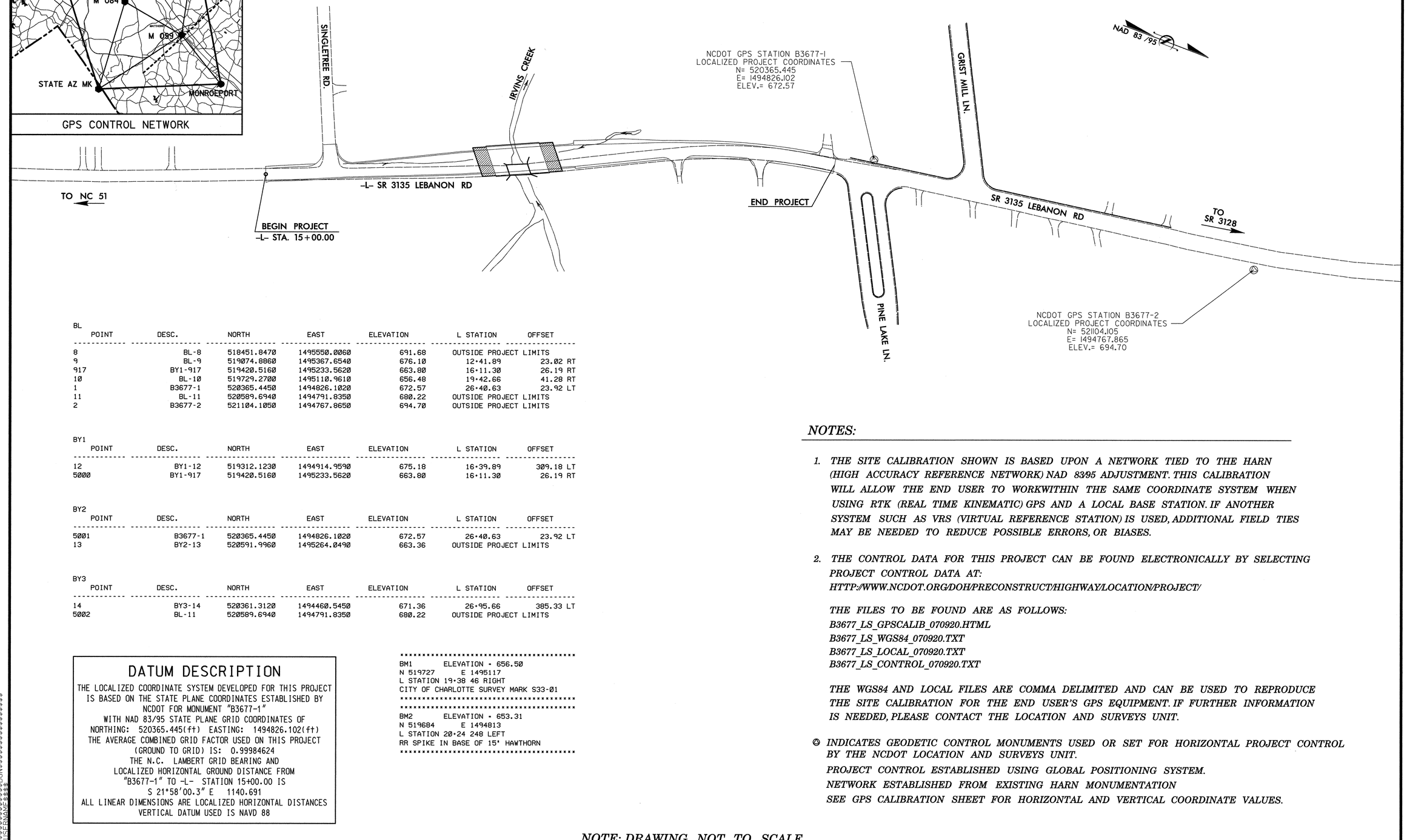
9/28/07

PROJECT REFERENCE NO.	SHEET NO.
33220.1.1	1 C
Location and Surveys	

SURVEY CONTROL SHEET B-3677



GPS CONTROL NETWORK



BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
8	BL-8	518451.8470	1495550.0060	691.68	OUTSIDE PROJECT LIMITS	
9	BL-9	519074.8860	1495367.6540	676.10	12+41.89	23.02 RT
917	BY1-917	519420.5160	1495233.5620	663.80	16+11.30	26.19 RT
10	BL-10	519729.2700	1495110.9610	656.48	19+42.66	41.28 RT
1	B3677-1	520365.4450	1494826.1020	672.57	26+40.63	23.92 LT
11	BL-11	520589.6940	1494791.8350	680.22	OUTSIDE PROJECT LIMITS	
2	B3677-2	521104.1050	1494767.8650	694.70	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
12	BY1-12	519312.1230	1494914.9590	675.18	16+39.89	309.18 LT
5000	BY1-917	519420.5160	1495233.5620	663.80	16+11.30	26.19 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5001	B3677-1	520365.4450	1494826.1020	672.57	26+40.63	23.92 LT
13	BY2-13	520591.9960	1495264.0490	663.36	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
14	BY3-14	520361.3120	1494460.5450	671.36	26+95.66	385.33 LT
5002	BL-11	520589.6940	1494791.8350	680.22	OUTSIDE PROJECT LIMITS	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3677-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 520365.445(ft) EASTING: 1494826.102(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984624 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3677-1" TO -L- STATION 15+00.00 IS S 21°58'00.3" E 1140.691 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

****
BM1 ELEVATION = 656.50
N 519727 E 1495117
L STATION 19+38 46 RIGHT
CITY OF CHARLOTTE SURVEY MARK S33-01
****
****
BM2 ELEVATION = 653.31
N 519684 E 1494813
L STATION 20+24 248 LEFT
RR SPIKE IN BASE OF 15" HAWTHORN
****

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B3677_LS_GPSCALIB_070920.HTML
   B3677_LS_WGS84_070920.TXT
   B3677_LS_LOCAL_070920.TXT
   B3677_LS_CONTROL_070920.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. 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

$$$$$SYSTEM$$$$$
$$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
33220.1.1	1 D
Location and Surveys	

SURVEY CONTROL SHEET B-3677

GPS CALIBRATION SHEET

GPS CALIBRATION REPORTGPS CALIBRATION REPORT
PROJECT : 33220.1.1
TIP NUMBER B-3677
COORDINATE SYSTEM US STATE PLANE 1983 ZONE NORTH CAROLINA 3200
HORIZONTAL DATUM NAD 1983 (CONUS)
VERTICAL DATUM NAVD 88 GEOID MODEL GEOID03 (CONUS) NC SUB GRID
COORDINATE UNITS US SURVEY FEET
DISTANCE UNITS US SURVEY FEET
HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION

LOCALIZED AROUND	B3677-1
LATITUDE	N/A
LONGITUDE	N/A
SITE SCALE FACTOR	N/A
HEIGHT	N/A

DATUM TRANSFORMATION PARAMETERS
WARNING: DATUM PARAMETER CALCULATION DID NOT CONVERGE

METHOD	THREE PARAMETER
TRANSLATION ALONG X AXIS	12.232SFT
TRANSLATION ALONG Y AXIS	-80.558SFT
TRANSLATION ALONG Z AXIS	57.146SFT

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION
UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER	519093.435SFT
EASTING COORDINATE OF ROTATION CENTER	1488753.623SFT
ROTATION ABOUT THE CENTER POINT	0*00'00"
TRANSLATION NORTH	0.000SFT
TRANSLATION EAST	0.000SFT
SCALE FACTOR	1.00015858

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	520365.445SFT
EASTING COORDINATE OF ORIGIN POINT	1494826.100SFT
VERTICAL SEPARATION AT ORIGIN	0.254SFT
SLOPE NORTH	0.209PPM
SLOPE EAST	0.210PPM

GEOID MODEL DEFINITION
GEOID03 (CONUS) NC SUB GRID

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES
SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.004SFT	0.001	M 048 GPS
VERTICAL	0.025SFT	0.004	B3677-1 GPS
THREE-DIMENSIONAL	0.025SFT	0.004	B3677-1 GPS

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	B3677-1 GPS	NORTHING	520365.445SFT	POINT	B3677-1
LATITUDE	35*10'04.73530"N	EASTING	1494826.100SFT	NORTHING	520365.446SFT
LONGITUDE	80*41'25.70548"W	ELEVATION	672.545SFT	EASTING	1494826.102SFT
HEIGHT	573.086SFT	HORZ ERROR	0.002SFT	ELEVATION	672.570SFT
		VERT ERROR	0.025SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.025SFT	QUALITY	SURVEY QUALITY
POINT	B3677-2 GPS	NORTHING	521104.104SFT	POINT	B3677-2
LATITUDE	35*10'12.02990"N	EASTING	1494767.867SFT	NORTHING	521104.105SFT
LONGITUDE	80*41'26.55828"W	ELEVATION	694.699SFT	EASTING	1494767.865SFT
HEIGHT	595.242SFT	HORZ ERROR	0.002SFT	ELEVATION	694.700SFT
		VERT ERROR	0.001SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.002SFT	QUALITY	SURVEY QUALITY
POINT	M 099 GPS	NORTHING	494554.125SFT	POINT	M 099
LATITUDE	35*05'49.18169"N	EASTING	1492981.579SFT	NORTHING	494554.127SFT
LONGITUDE	80*41'42.60983"W	ELEVATION	770.861SFT	EASTING	1492981.580SFT
HEIGHT	671.295SFT	HORZ ERROR	0.002SFT	ELEVATION	770.849SFT
		VERT ERROR	0.012SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.012SFT	QUALITY	SURVEY QUALITY
POINT	M 048 GPS	NORTHING	545831.902SFT	POINT	M 048
LATITUDE	35*14'17.58661"N	EASTING	1500922.921SFT	NORTHING	545831.899SFT
LONGITUDE	80*40'17.44825"W	ELEVATION	744.837SFT	EASTING	1500922.923SFT
HEIGHT	645.307SFT	HORZ ERROR	0.004SFT	ELEVATION	744.825SFT
		VERT ERROR	0.012SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.013SFT	QUALITY	SURVEY QUALITY
POINT	M 084 GPS	NORTHING	513611.601SFT	POINT	M 084
LATITUDE	35*08'51.93089"N	EASTING	1460269.647SFT	NORTHING	513611.599SFT
LONGITUDE	80*48'20.36612"W	ELEVATION	678.371SFT	EASTING	1460269.644SFT
HEIGHT	578.772SFT	HORZ ERROR	0.004SFT	ELEVATION	678.369SFT
		VERT ERROR	0.002SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.004SFT	QUALITY	SURVEY QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3677-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 520365.445(ft) EASTING: 1494826.102(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984624 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3677-1" TO -L- STATION 15+00.00 IS S 21°58'00.3" E 1140.691
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B3677_LS_GPSCALIB_070920.HTML
   B3677_LS_WGS84_070920.TXT
   B3677_LS_LOCAL_070920.TXT
   B3677_LS_CONTROL_070920.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3677	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER CRAIG PARKER 5/20/2009

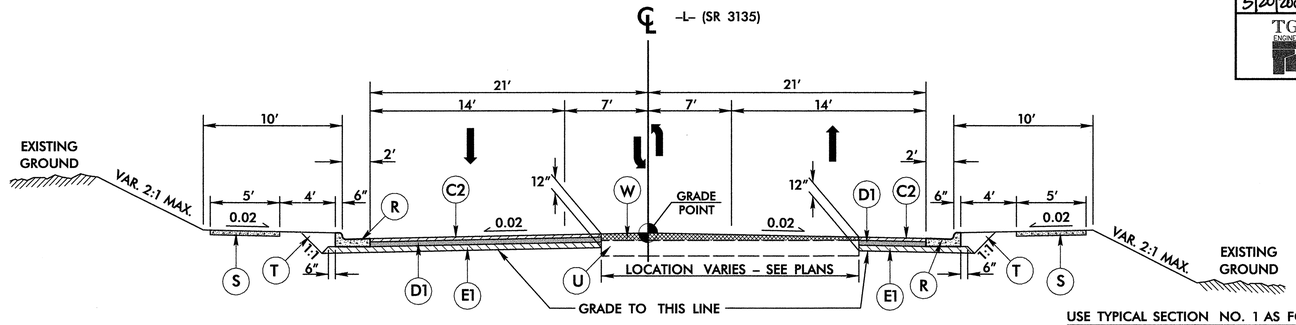
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/21/09

TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING EXISTING PAVEMENT (SEE DIAGRAMS BELOW).

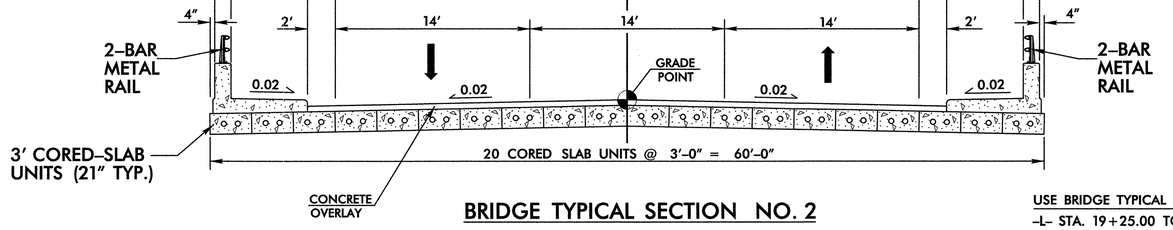
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

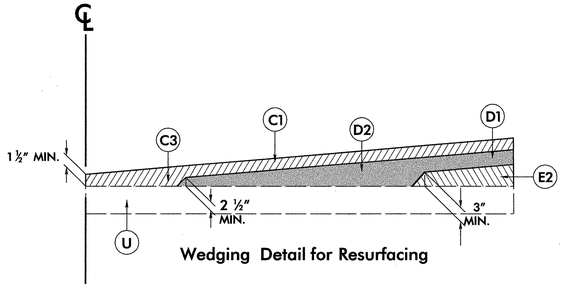
USE TYPICAL SECTION NO. 1 AS FOLLOWS:
–L– STA. 15+50.00 TO 19+25.00 (BEGIN BRIDGE) RT
–L– STA. 15+94+/– TO 19+25.00 (BEGIN BRIDGE) LT
–L– STA. 20+20.00 (END BRIDGE) TO 20+80.00

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1 FROM –L– STA. 15+00.00 TO 15+50.00 RT

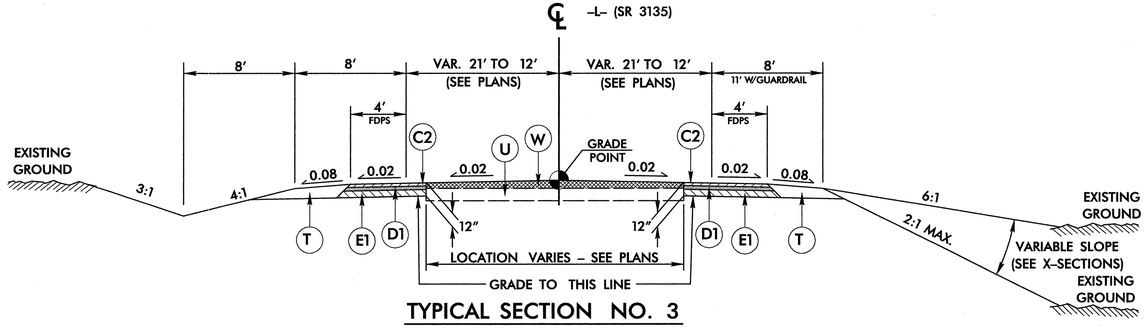


BRIDGE TYPICAL SECTION NO. 2

USE BRIDGE TYPICAL NO. 2 AS FOLLOWS:
–L– STA. 19+25.00 TO 20+20.00



Wedging Detail for Resurfacing



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
–L– STA. 15+50.00 TO 15+94+/– LT
–L– STA. 20+80.00 TO 24+50.00

NOTE: TRANSITION FROM TYPICAL SECTION NO. 3 TO EXISTING FROM –L– STA. 15+00.00 TO 15+50.00 LT AND –L– STA. 24+50.00 TO 25+00.00

TEMPORARY PAVEMENT DETAIL

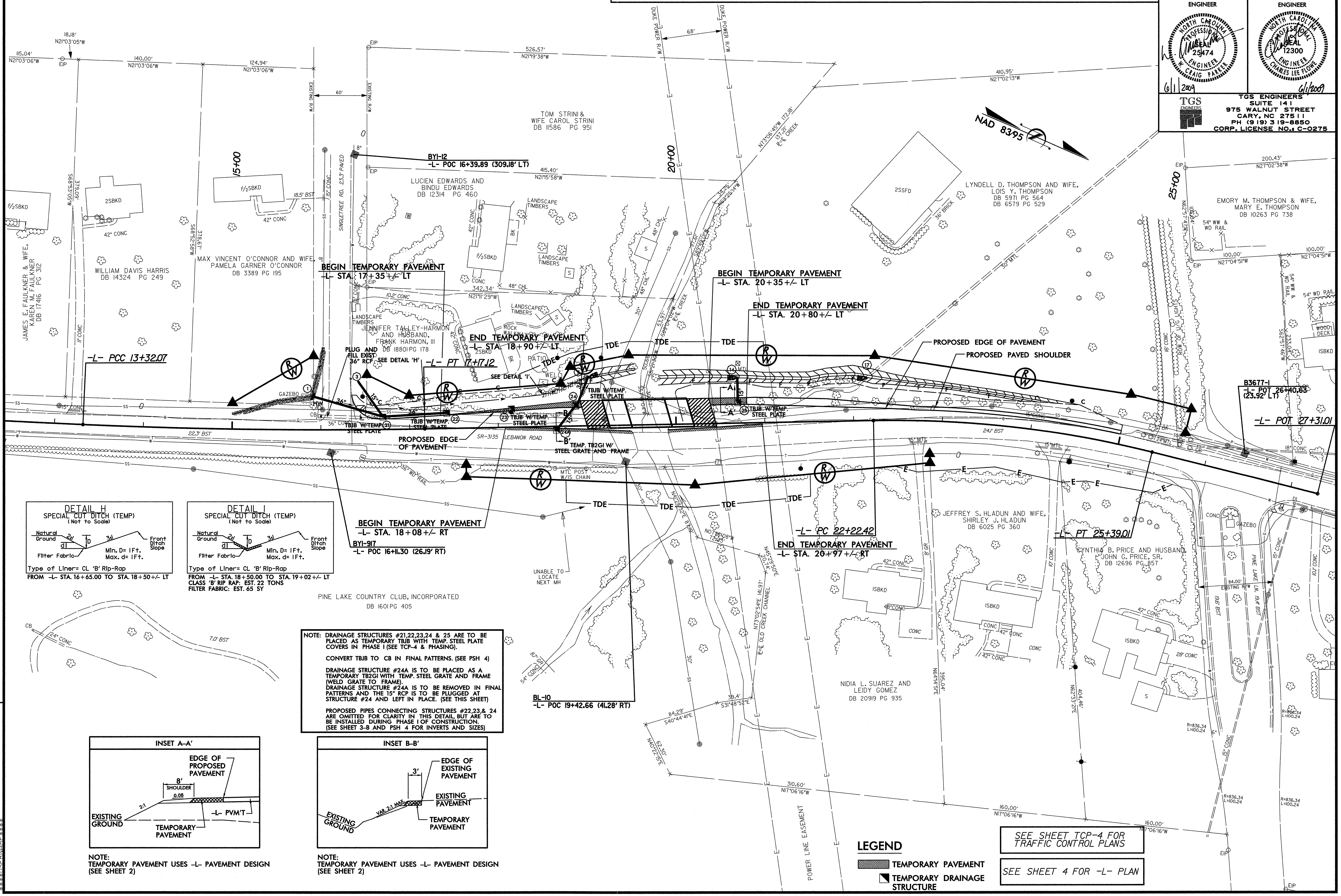
PROJECT REFERENCE NO.	SHEET NO.
B-3677	2-A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER 6/1/2009	NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE 6/1/2009

TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850
CORP. LICENSE NO.: C-0275

8/17/99

REVISIONS



DETAIL H
SPECIAL CUT DITCH (TEMP)
(Not to Scale)

Natural Ground; 2:1; 3:1; D; d; Front Ditch Slope; Filter Fabric; Min. D= 1Ft. Max. d= 1Ft.

Type of Liner= CL 'B' Rip-Rap

FROM -L- STA. 16+65.00 TO STA. 18+50+/- LT

DETAIL I
SPECIAL CUT DITCH (TEMP)
(Not to Scale)

Natural Ground; 2:1; 3:1; D; d; Front Ditch Slope; Filter Fabric; Min. D= 1Ft. Max. d= 1Ft.

Type of Liner= CL 'B' Rip-Rap

FROM -L- STA. 18+50.00 TO STA. 19+02+/- LT
CLASS 'B' RIP RAP: EST. 22 TONS
FILTER FABRIC: EST. 65 SY

NOTE: DRAINAGE STRUCTURES #21,22,23,24 & 25 ARE TO BE PLACED AS TEMPORARY TBJB WITH TEMP. STEEL PLATE COVERS IN PHASE I (SEE TCP-4 & PHASING).

CONVERT TBJB TO CB IN FINAL PATTERNS. (SEE PSH 4)

DRAINAGE STRUCTURE #24A IS TO BE PLACED AS A TEMPORARY TB2GI WITH TEMP. STEEL GRATE AND FRAME (WELD GRATE TO FRAME).
DRAINAGE STRUCTURE #24A IS TO BE REMOVED IN FINAL PATTERNS AND THE 15" RCP IS TO BE PLUGGED AT STRUCTURE #24 AND LEFT IN PLACE. (SEE THIS SHEET)

PROPOSED PIPES CONNECTING STRUCTURES #22,23,& 24 ARE OMITTED FOR CLARITY IN THIS DETAIL, BUT ARE TO BE INSTALLED DURING PHASE I OF CONSTRUCTION. (SEE SHEET 3-B AND PSH 4 FOR INVERTS AND SIZES)

INSET A-A'
EDGE OF PROPOSED PAVEMENT; 8' SHOULDER; 0.08; 2:1; EXISTING GROUND; -L- PVM'T; TEMPORARY PAVEMENT

NOTE:
TEMPORARY PAVEMENT USES -L- PAVEMENT DESIGN
(SEE SHEET 2)

INSET B-B'
EDGE OF EXISTING PAVEMENT; 3'; EXISTING PAVEMENT; VAR. 2:1 MAX.; EXISTING GROUND; TEMPORARY PAVEMENT

NOTE:
TEMPORARY PAVEMENT USES -L- PAVEMENT DESIGN
(SEE SHEET 2)

LEGEND
TEMPORARY PAVEMENT
TEMPORARY DRAINAGE STRUCTURE

SEE SHEET TCP-4 FOR TRAFFIC CONTROL PLANS

SEE SHEET 4 FOR -L- PLAN

$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
B-3677	2-B

GEOTECHNICAL ENGINEER

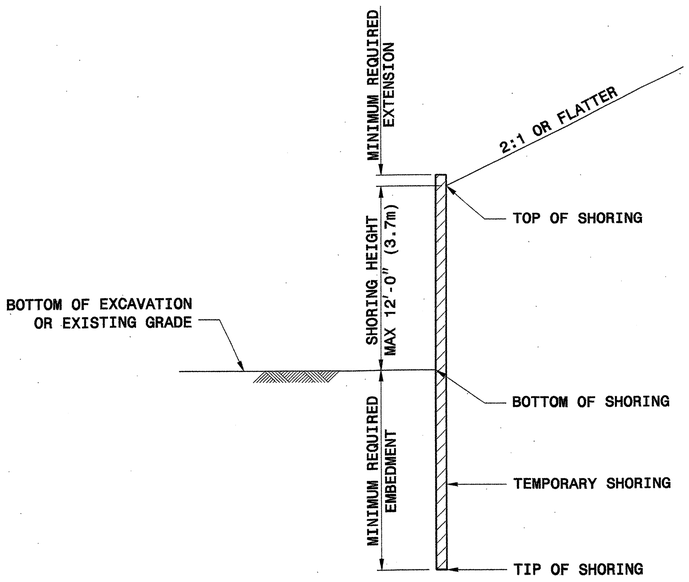
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07

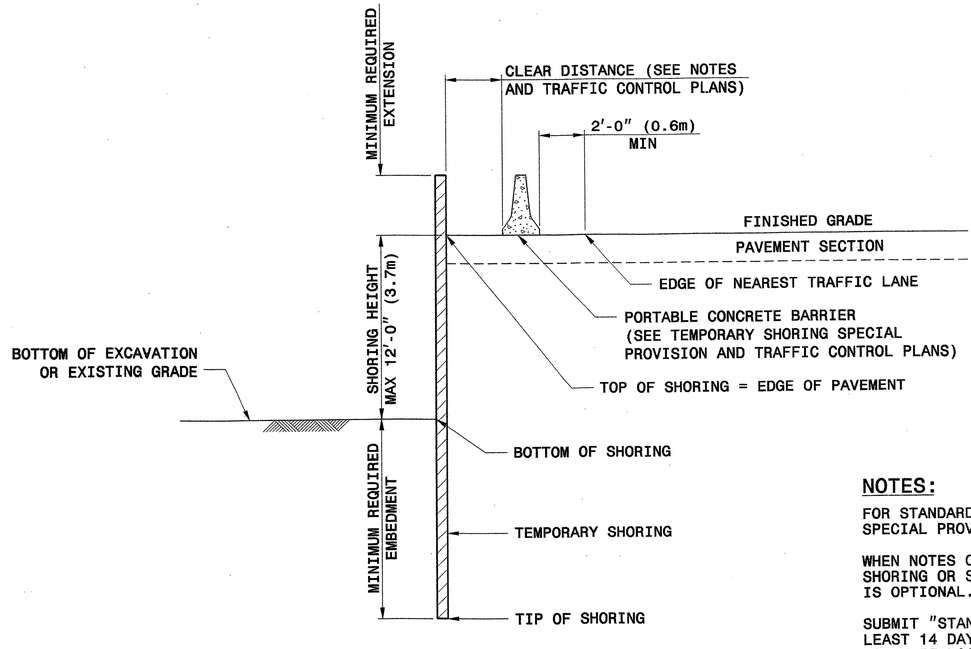
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



SLOPE CASE



SURCHARGE CASE

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 BEWTEEN 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 TRAFFFIC IMPACT".

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/M^3)
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.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 2-20-07

PROJECT REFERENCE NO.	SHEET
B-3677	2-C

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

STANDARD TEMPORARY MSE WALL OPTIONS

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 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'-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.

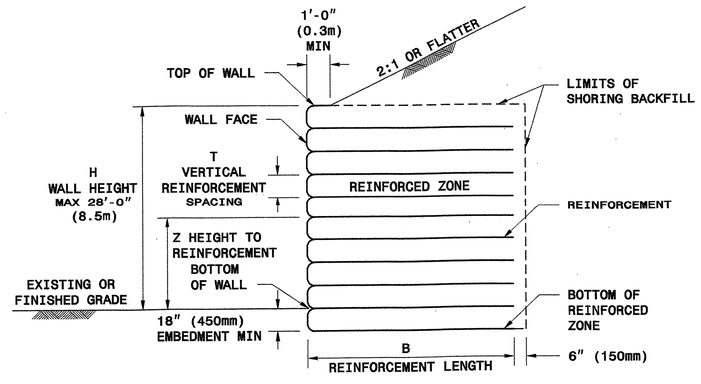
PLACE SHORING BACKFILL IN 8" TO 10" (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3'-0" (1m) OF THE WALL FACE.

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.

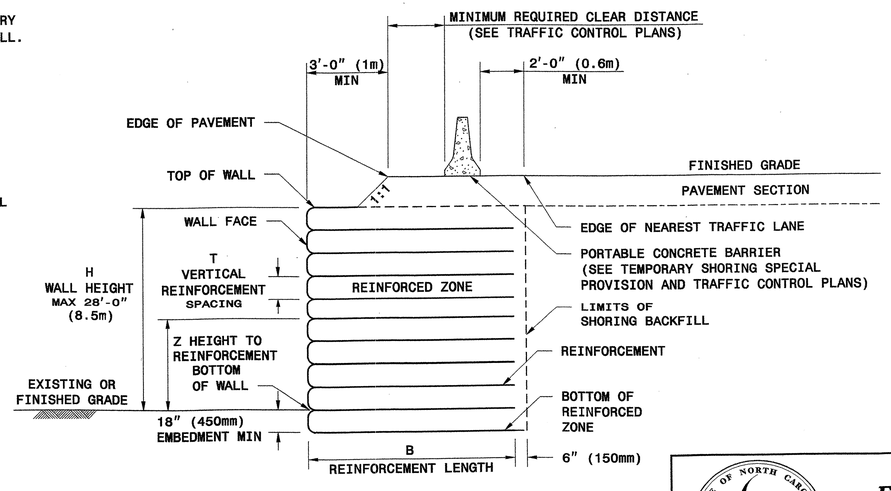
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4" AND 24" (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

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

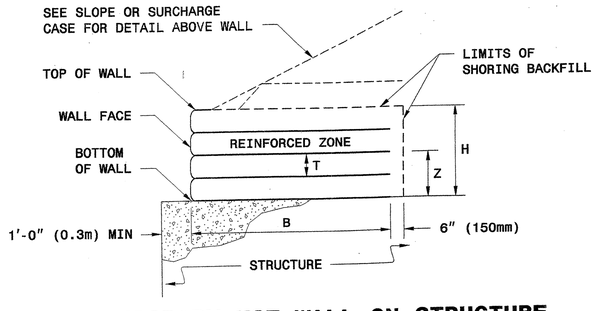
IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



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-3677	2-D

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

scott a. hidden 3/29/07

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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

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

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

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	15	18
						11	11	11	11	14	15	15	16.5
					11	11	11	11	14	15	15	15	15
					11	11	11	15	15	15	15	15	13.5
				11	11	11	15	15	15	15	15	16	12
			11	11	11	11	15	15	15	15	15	16	10.5
		11	11	11	11	15	15	15	15	15	16	16	9
	11	11	11	11	14	15	15	15	16	16	16	16	7.5
	11	11	11	11	14	15	15	15	16	16	16	16	6
11	11	11	11	15	15	15	15	16	16	16	16	17	4.5
11	11	11	11	14	15	15	15	15	16	16	16	17	3
11	11	11	11	14	15	15	15	16	16	16	17	17	1.5
11	11	11	14	15	15	15	15	16	16	17	17	17	0
11	11	11	14	15	15	15	15	16	16	17	17	17	-1.5

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

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

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	7.0	9.5	9.5	12
				4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	10
			4.5	7.0	7.0	7.0	7.0	7.0	9.5	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	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	9.5	4
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3
4.5	7.0	7.0	7.0	7.0	7.0	9.5	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	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	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	9.5	-1.5

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	7.0	9.5	9.5	12
				4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	10
			4.5	7.0	7.0	7.0	7.0	7.0	9.5	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	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	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	N/A	1
7.0	7.0	7.0	7.0	7.0	7.0	7.0	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

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'.

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	3X1	3X2	3X2	3X2	3X2	3X2	16 -10
					3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	15 - 2
				3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	13 - 6
			3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	11 -10
		3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	10 - 2
		3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	8 - 6
	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	6 -10
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	5 - 2
3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3 - 6
3X2	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

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 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-3677	2-E

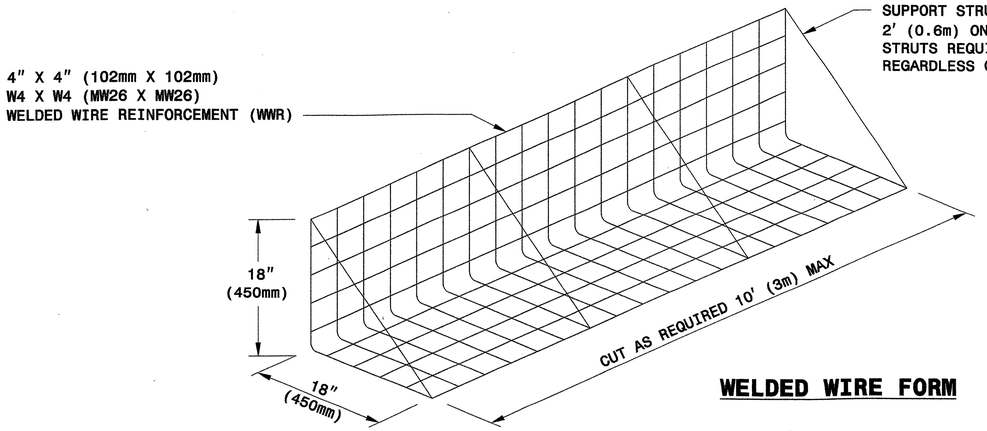
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

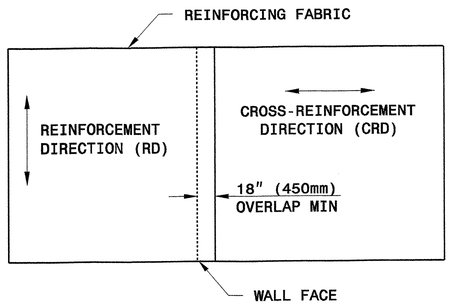
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

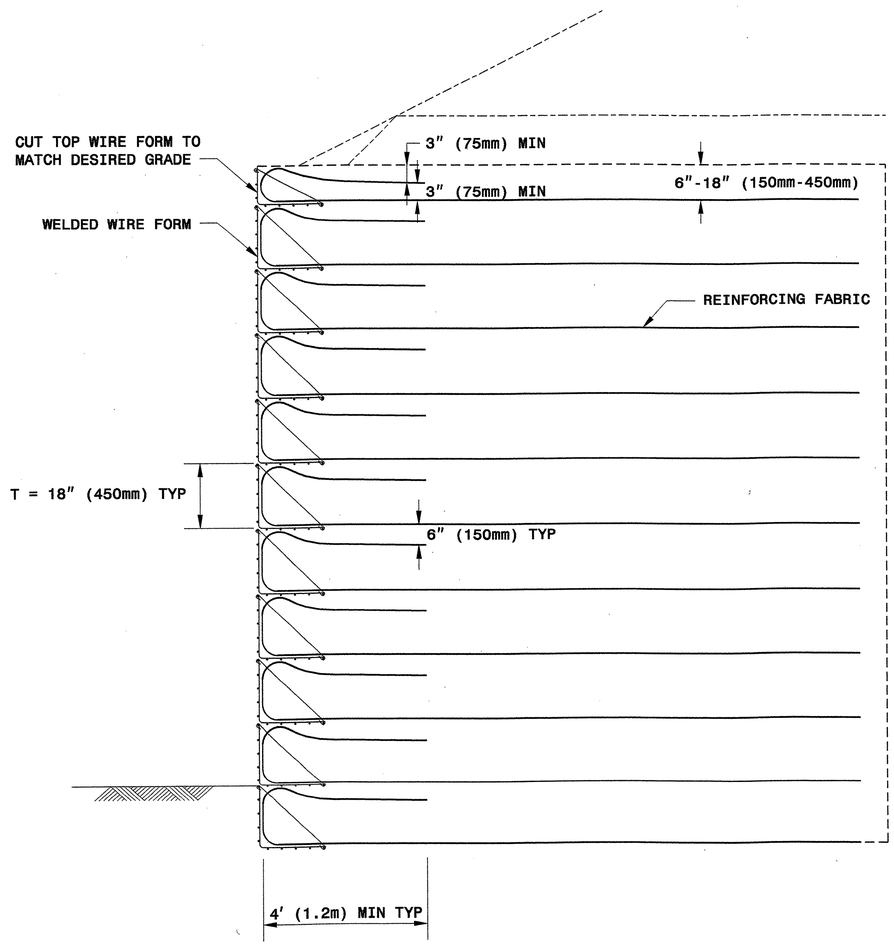
SIGNATURE DATE



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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

TEMPORARY
FABRIC WALL

SHEET 3 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET
B-3677	2-F

GEOTECHNICAL ENGINEER

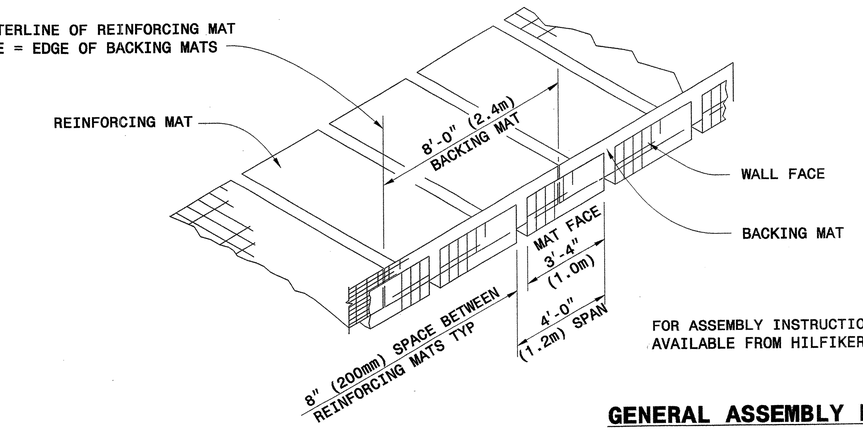
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

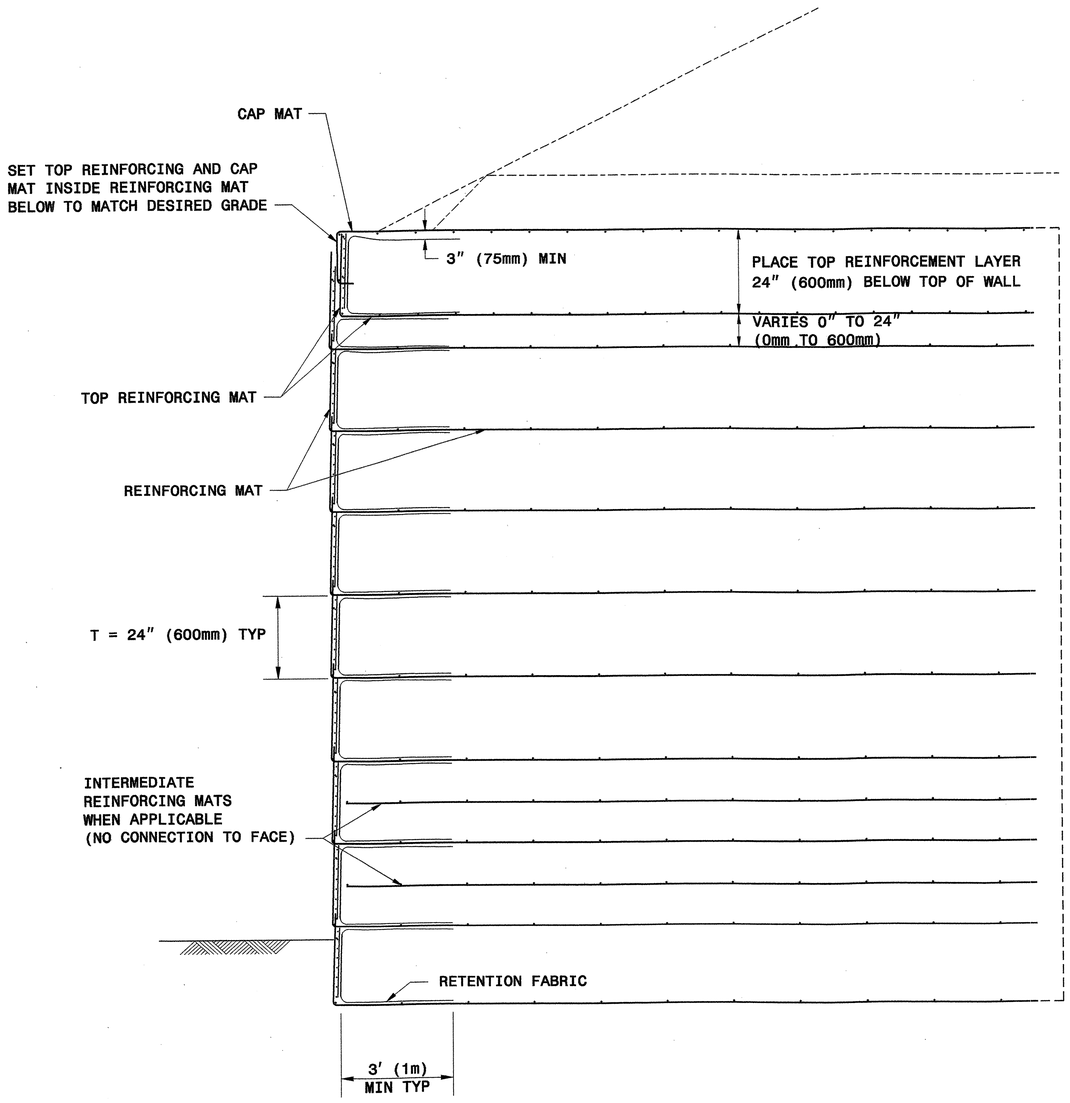
ENGINEER

SIGNATURE DATE

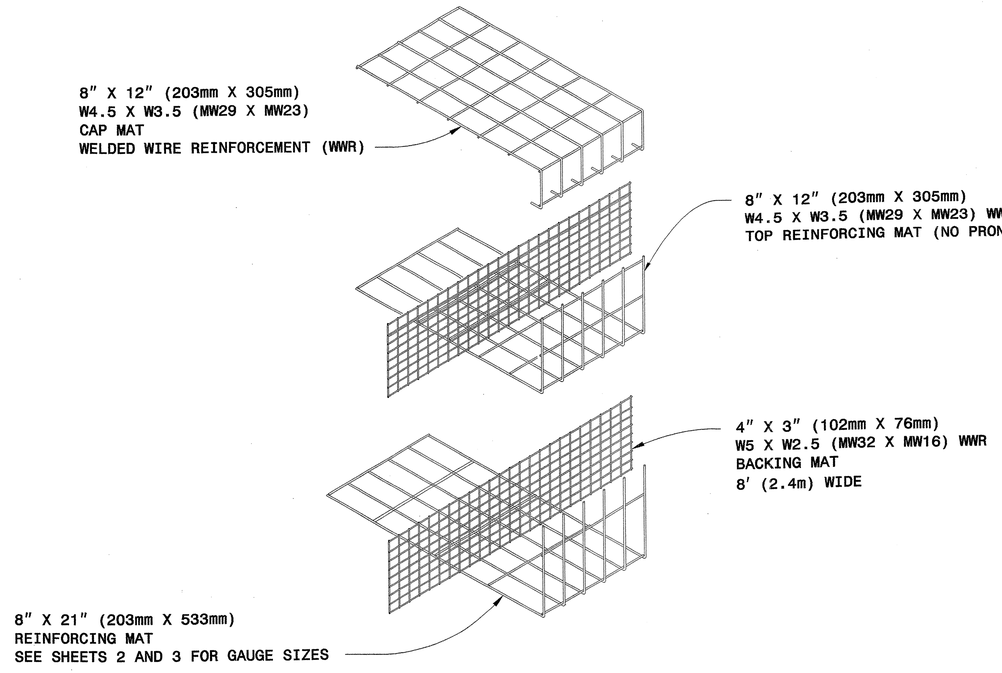


FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

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

PROJECT REFERENCE NO.	SHEET
B-3677	2-G

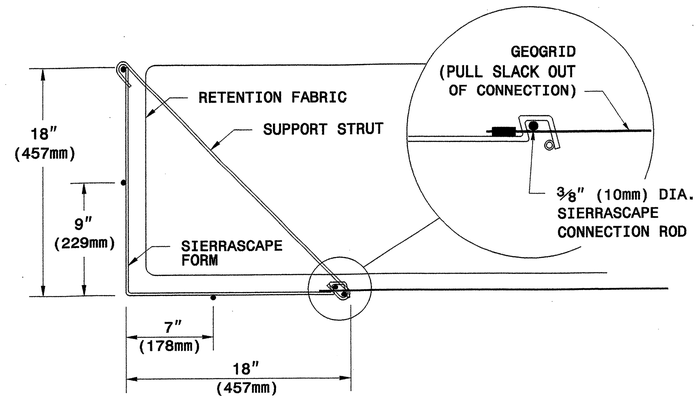
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

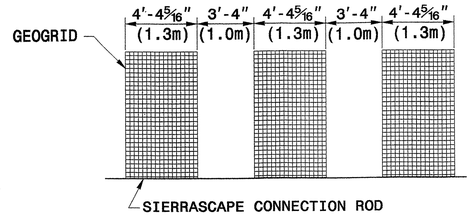
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

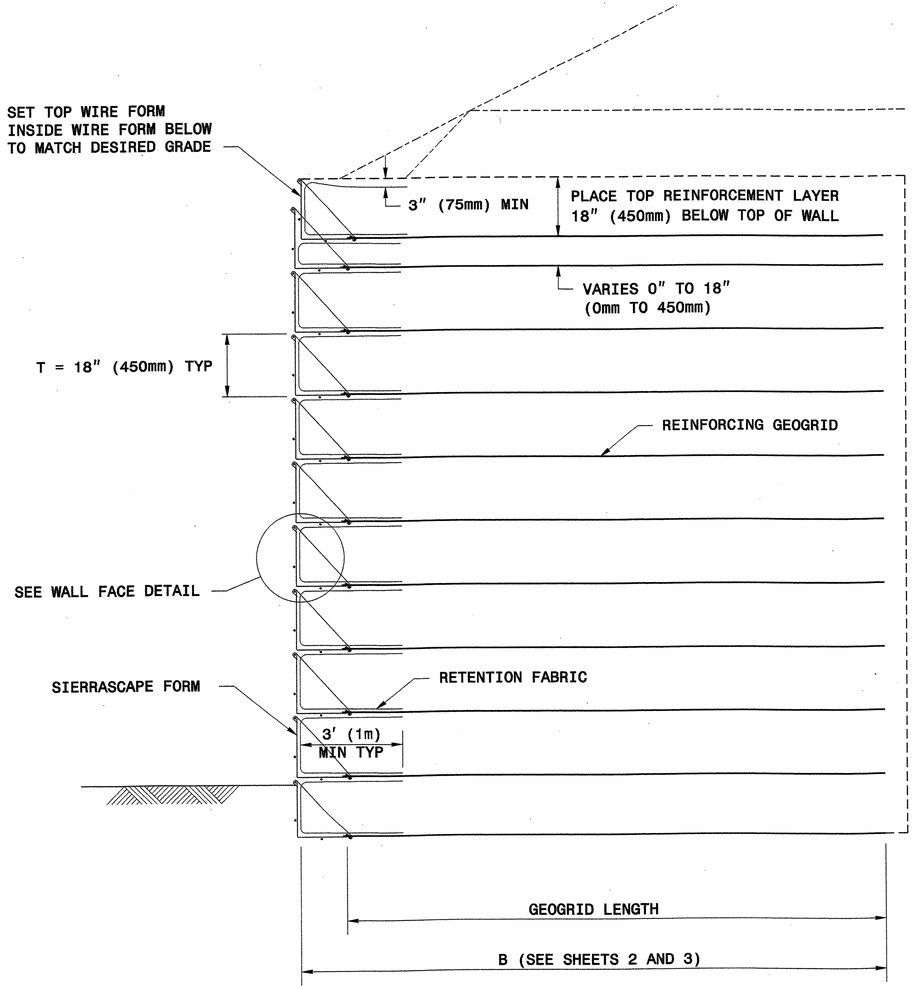


WALL FACE DETAIL

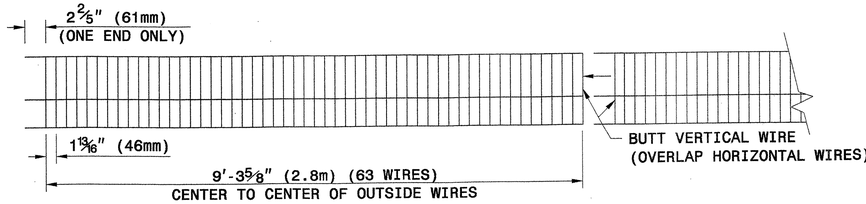


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN
SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

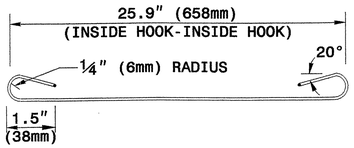
TYPICAL GEOGRID COVERAGE



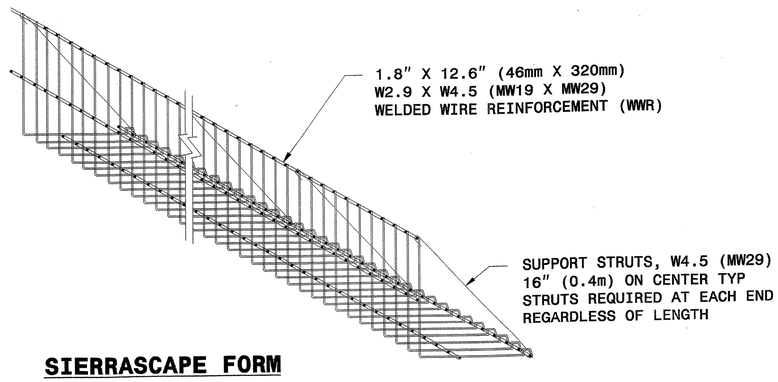
TYPICAL SECTION



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

PROJECT REFERENCE NO.	SHEET
B-3677	2-H

GEOTECHNICAL ENGINEER

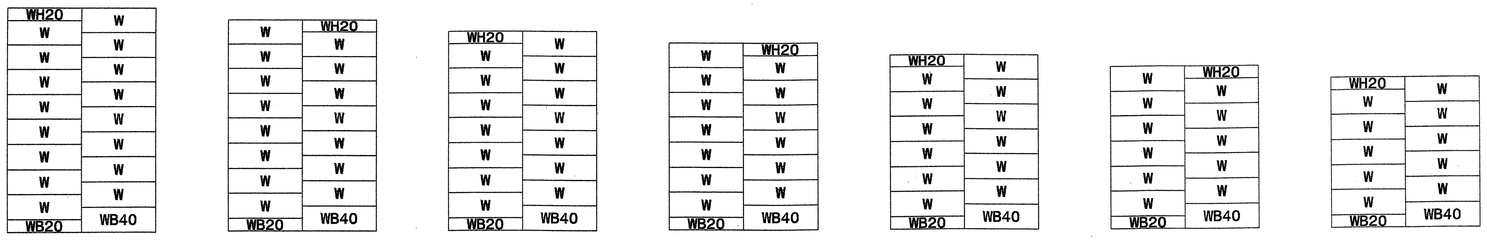
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

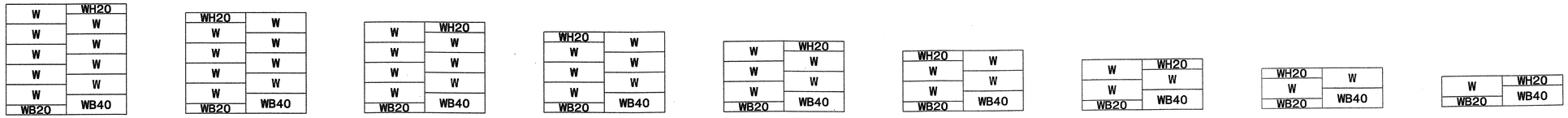
ENGINEER

SIGNATURE DATE

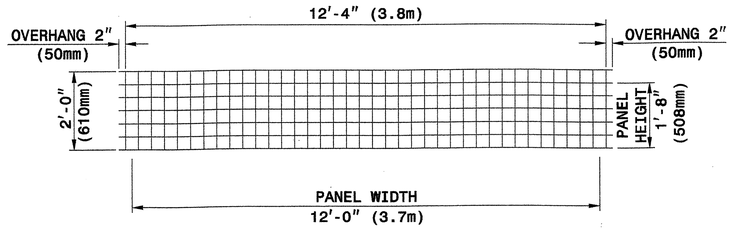
PANEL LAYOUTS



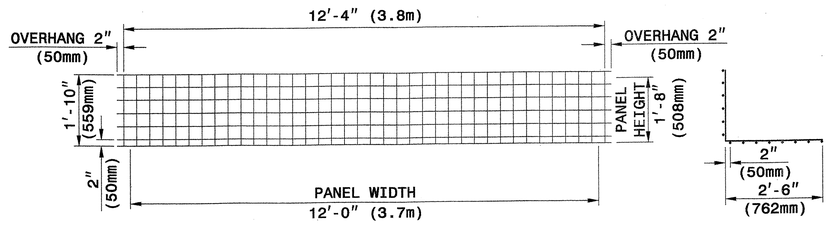
H - WALL HEIGHT							
(FEET-INCHES)	< 28 - 0	< 27 - 0	< 25 - 4	< 23 - 8	< 22 - 0	< 20 - 4	< 18 - 8
(METER)	< 8.5	< 8.2	< 7.7	< 7.2	< 6.7	< 6.2	< 5.7



(FEET-INCHES)	< 17 - 0	< 15 - 4	< 13 - 8	< 12 - 0	< 10 - 4	< 8 - 8	< 7 - 0	< 5 - 4	< 3 - 8
(METER)	< 5.2	< 4.7	< 4.2	< 3.7	< 3.2	< 2.6	< 2.1	< 1.6	< 1.1

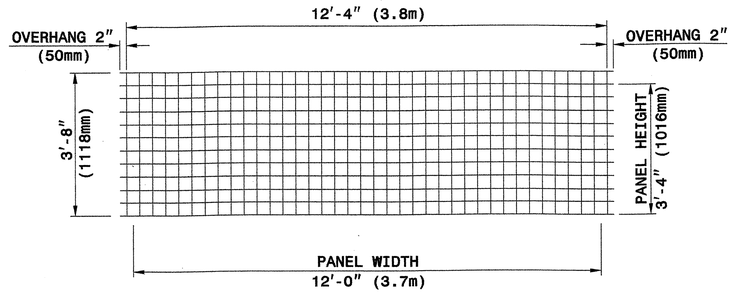


TYPE WH20

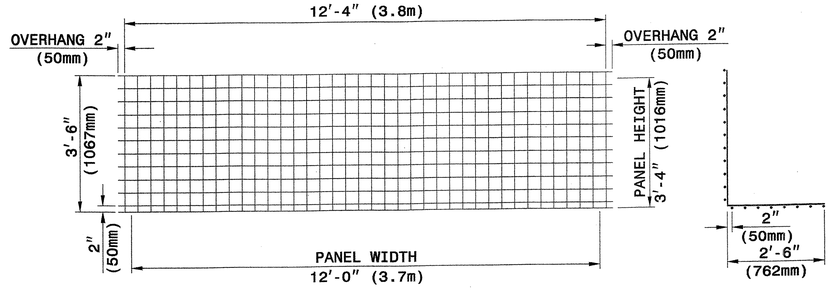


TYPE WB20

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

PROJECT REFERENCE NO.	SHEET
B-3677	2-1

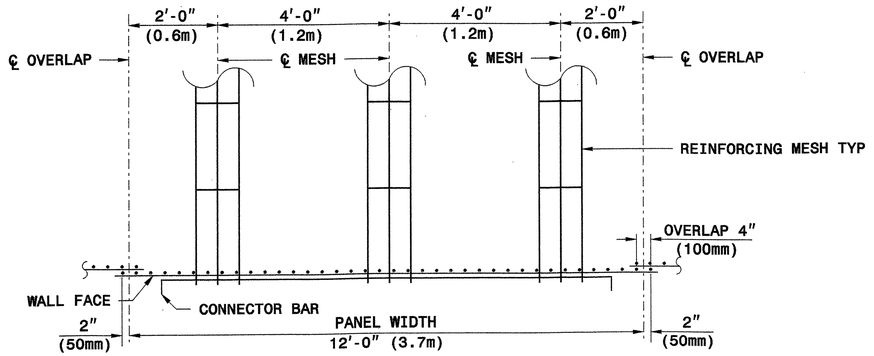
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT J. HIDDEN

Scott J. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

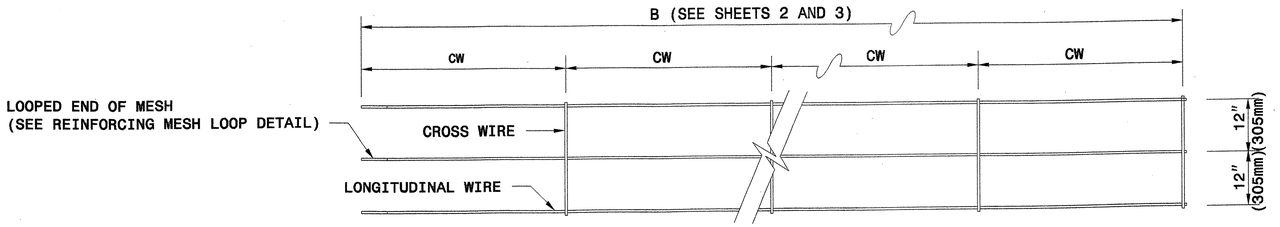
SIGNATURE DATE



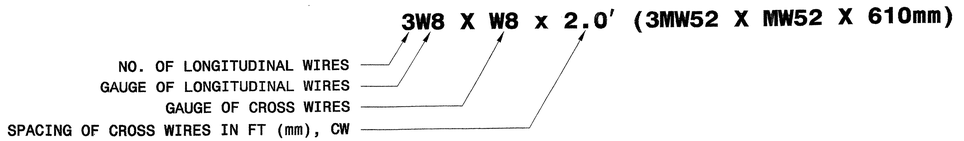
REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)

½" (13mm) DIA. BAR

CONNECTOR BAR

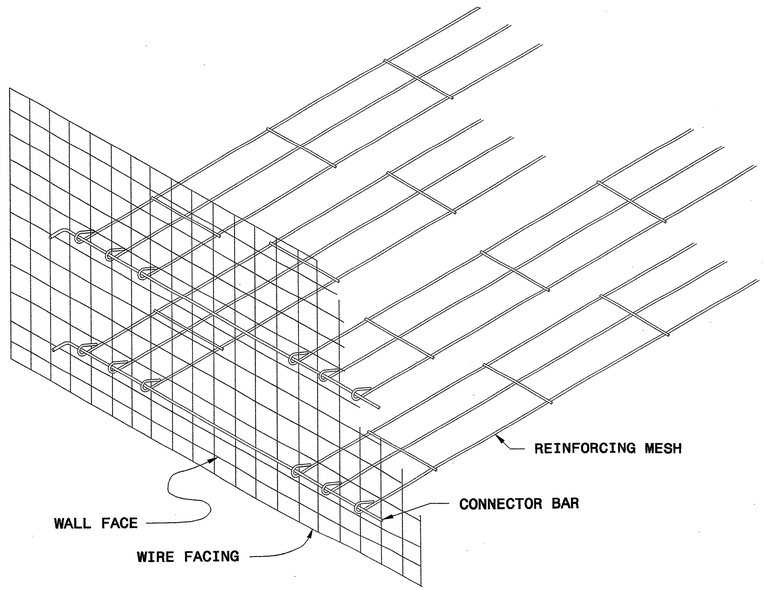


IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2'-0" (610mm) MAKE CW EQUAL TO 12" (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END

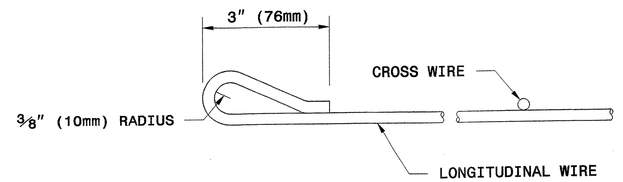


REINFORCING MESH DESIGNATION

REINFORCING MESH



GENERAL ASSEMBLY DETAIL



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-36077	2-J

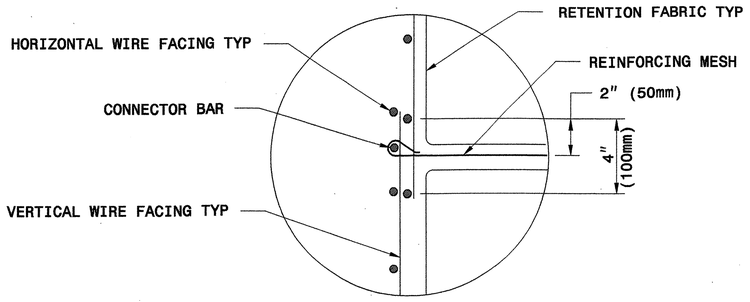
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

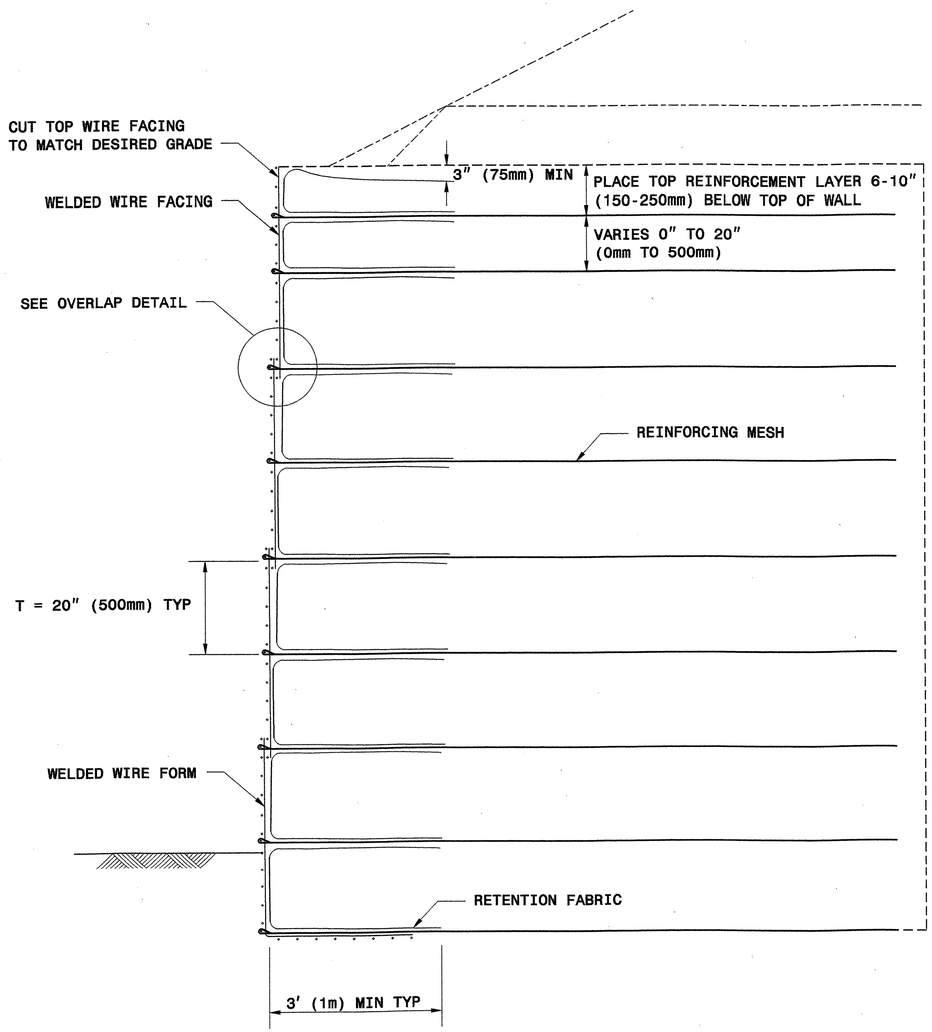
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

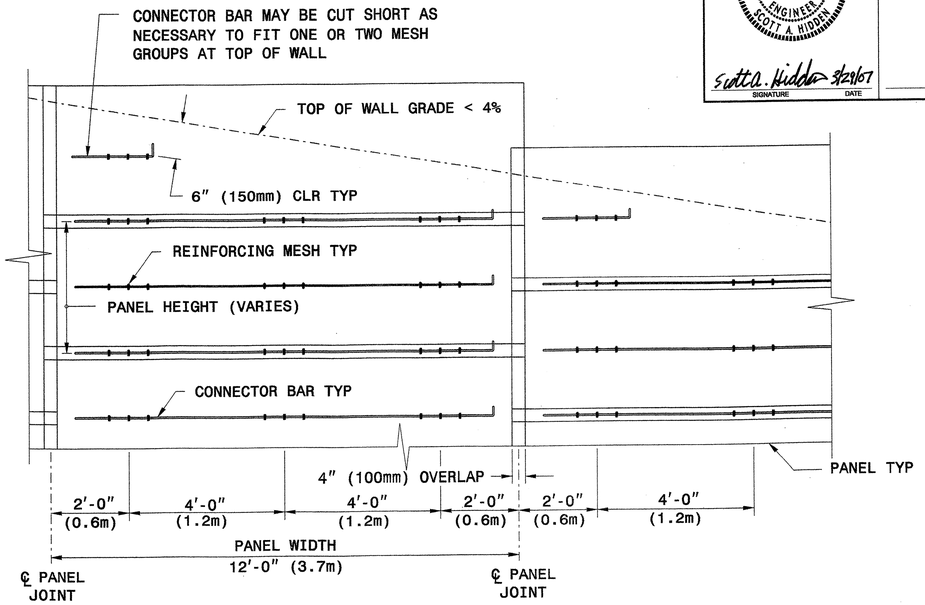
SIGNATURE DATE



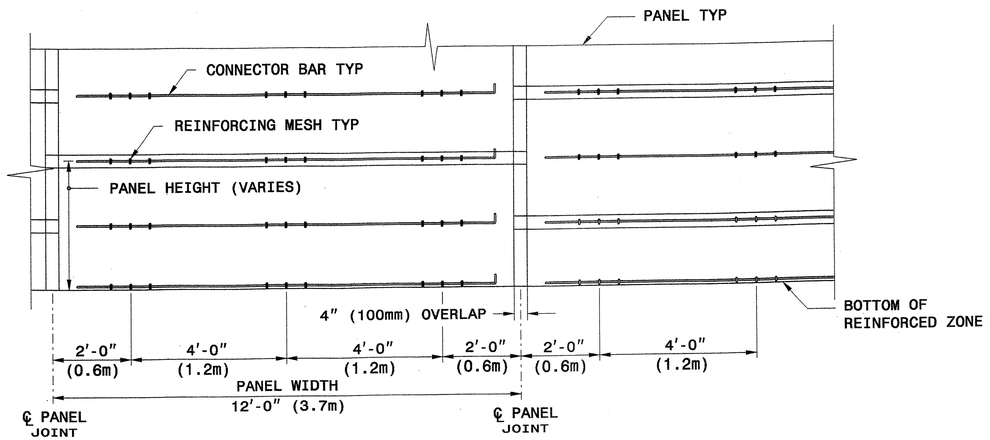
OVERLAP DETAIL



TYPICAL SECTION



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



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

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-3677	2-K

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

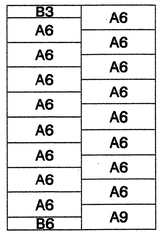
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

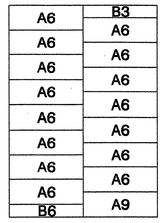
PANEL LAYOUTS

H - WALL HEIGHT



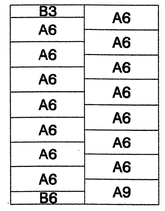
(FEET-INCHES) < 28 - 0

(METER) < 8.5



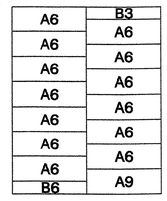
(FEET-INCHES) < 27 - 8

(METER) < 8.4



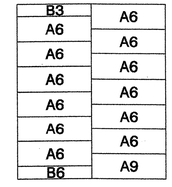
(FEET-INCHES) < 26 - 0

(METER) < 7.9



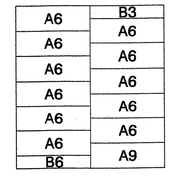
(FEET-INCHES) < 24 - 4

(METER) < 7.4



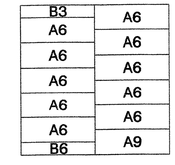
(FEET-INCHES) < 22 - 8

(METER) < 6.9



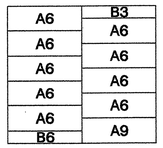
(FEET-INCHES) < 21 - 0

(METER) < 6.4



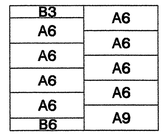
(FEET-INCHES) < 19 - 4

(METER) < 5.9



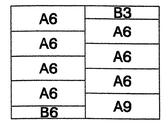
(FEET-INCHES) < 17 - 8

(METER) < 5.4



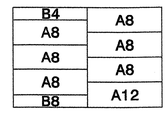
(FEET-INCHES) < 16 - 0

(METER) < 4.9



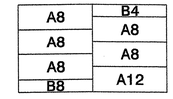
(FEET-INCHES) < 14 - 4

(METER) < 4.4



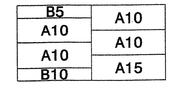
(FEET-INCHES) < 12 - 8

(METER) < 3.9



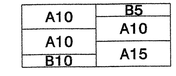
(FEET-INCHES) < 11 - 0

(METER) < 3.4



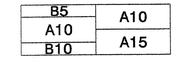
(FEET-INCHES) < 9 - 4

(METER) < 2.8



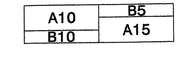
(FEET-INCHES) < 7 - 8

(METER) < 2.3



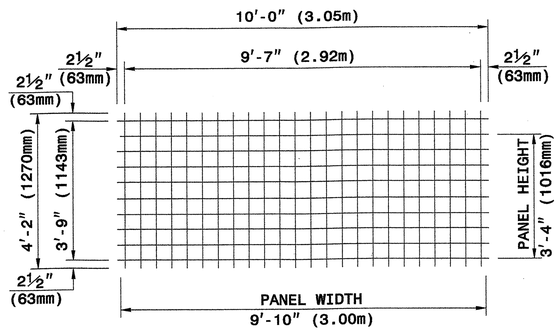
(FEET-INCHES) < 6 - 0

(METER) < 1.8

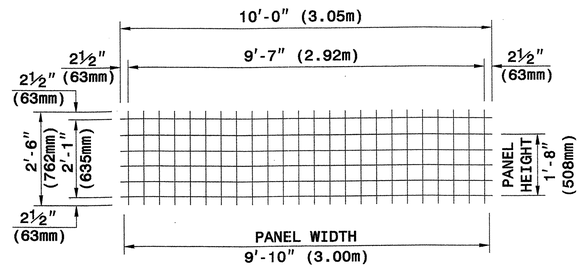


(FEET-INCHES) < 4 - 4

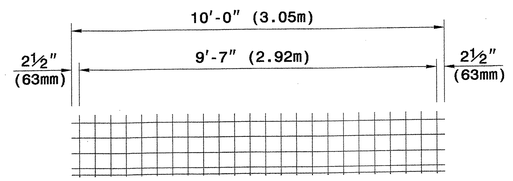
(METER) < 1.3



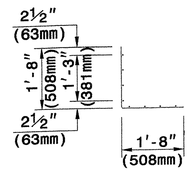
TYPE A



TYPE B



WELDED WIRE FORM



SECTION

WELDED WIRE FACINGS

PANEL TYPES (WELDED WIRE FACINGS AND FORM

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

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

PROJECT REFERENCE NO.	SHEET
B-3677	2-L

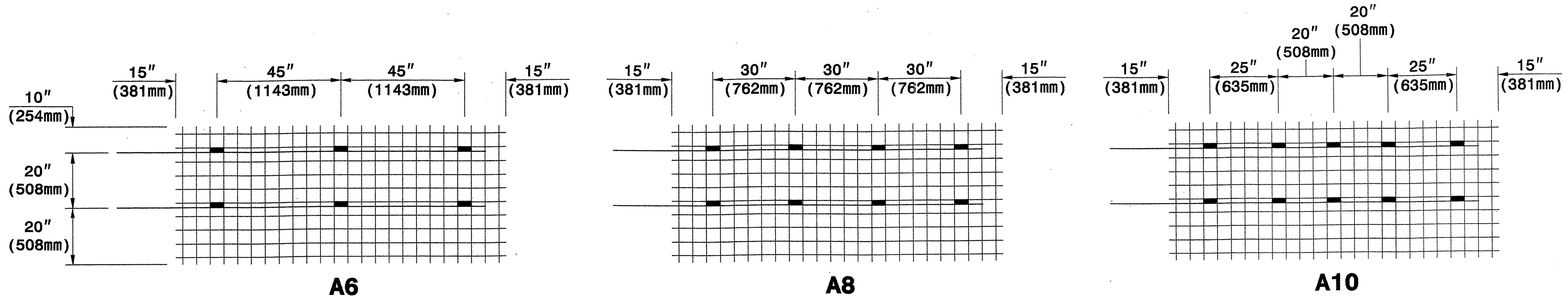
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

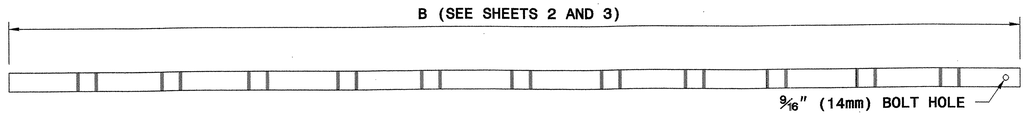
SIGNATURE DATE



KEY: A8

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

CONNECTOR ROD AND REINFORCING STRIP PLACEMENT DIAGRAMS



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

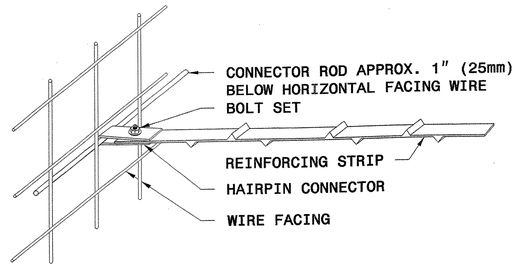
½" (13mm) DIA. ROD

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-3677	2-M

GEOTECHNICAL ENGINEER

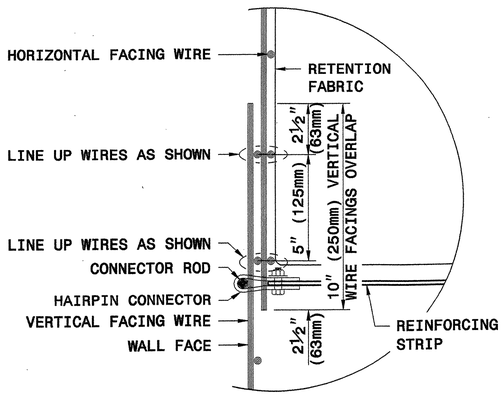
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

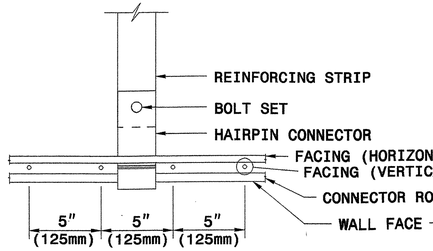
ENGINEER

SIGNATURE DATE

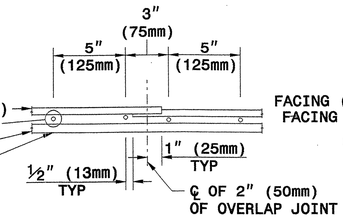


OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

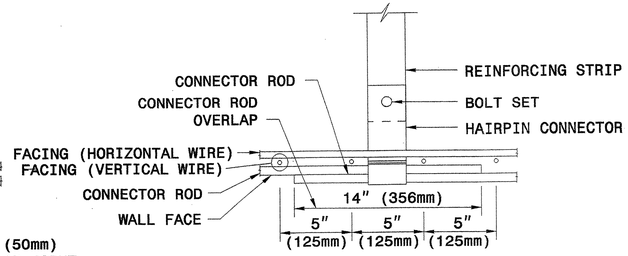
VERTICAL OVERLAP DETAIL



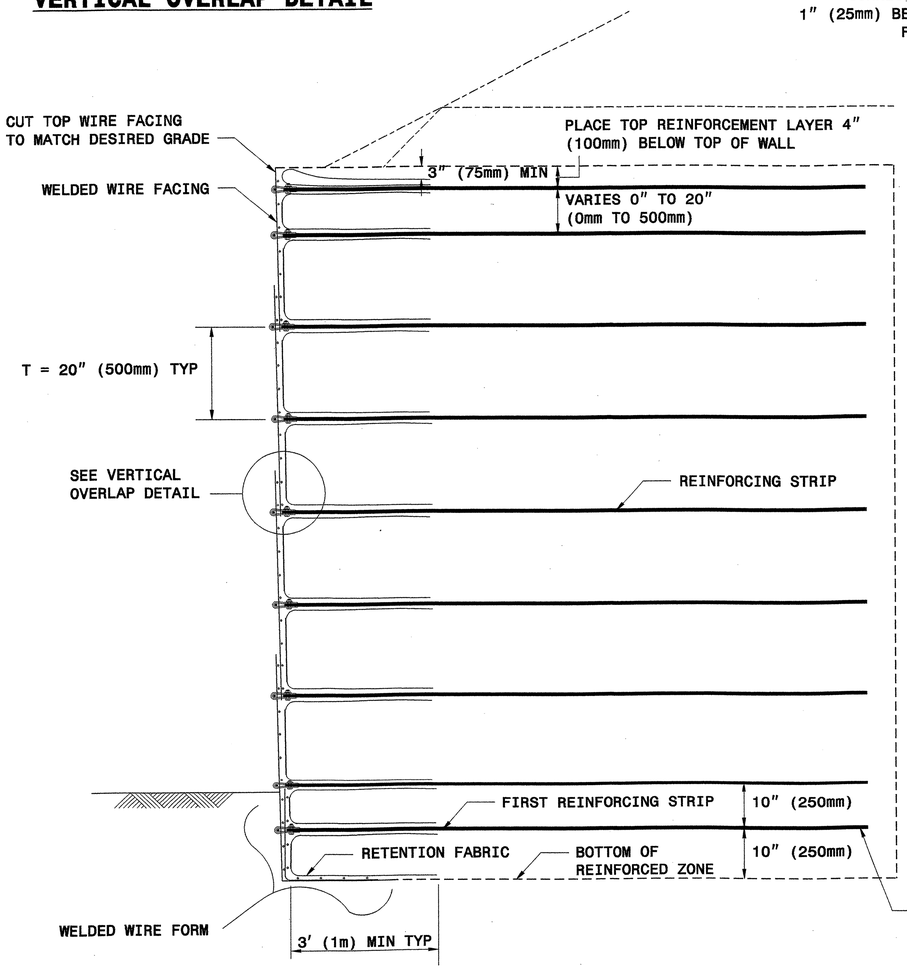
PLAN DETAIL 'A'
STRIP CONNECTION



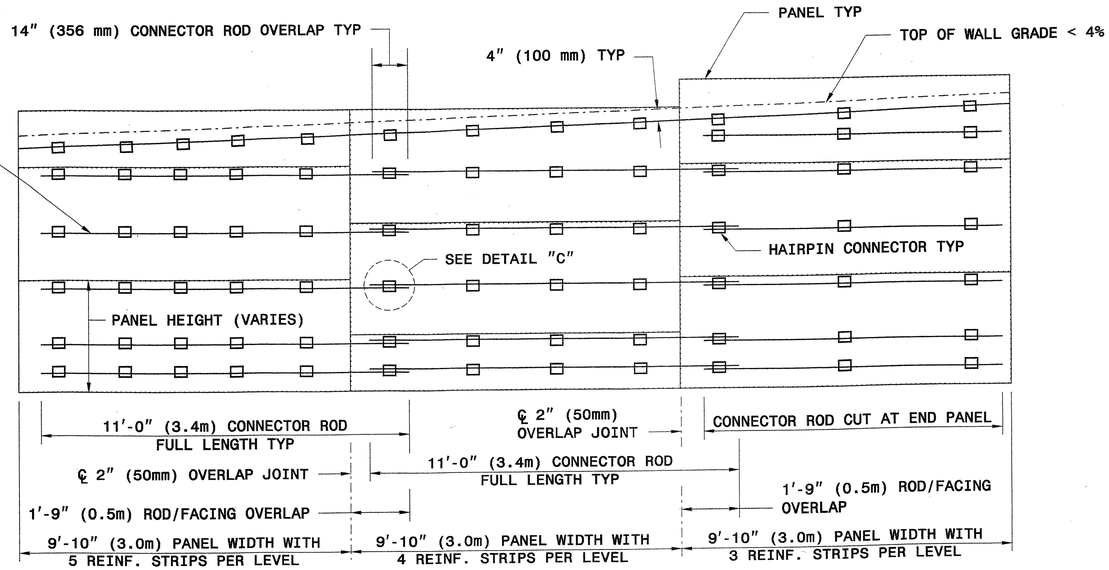
PLAN DETAIL 'B'
HORIZONTAL OVERLAP DETAIL



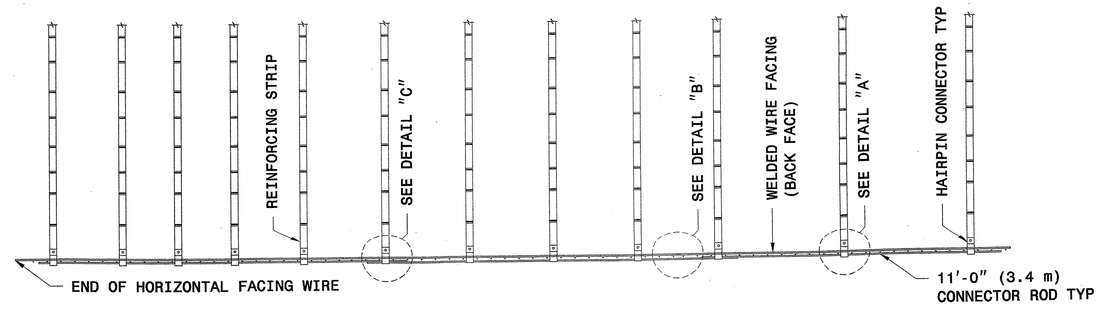
PLAN DETAIL 'C'
STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL



TYPICAL SECTION



TYPICAL ELEVATION
(WIRES NOT SHOWN FOR CLARITY)



TYPICAL PLAN

The Reinforced Earth Company

GEOTECHNICAL ENGINEERING UNIT

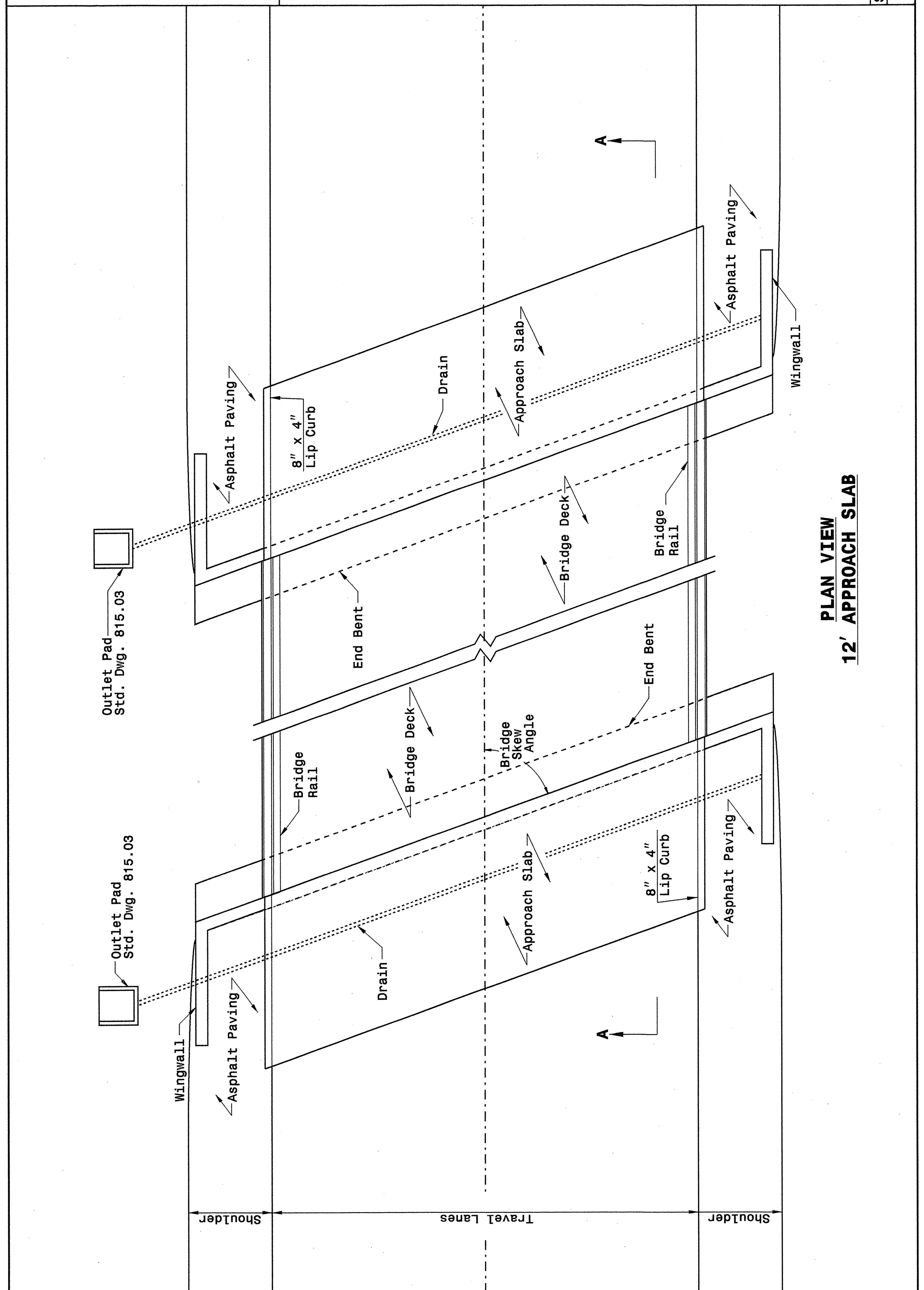
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL

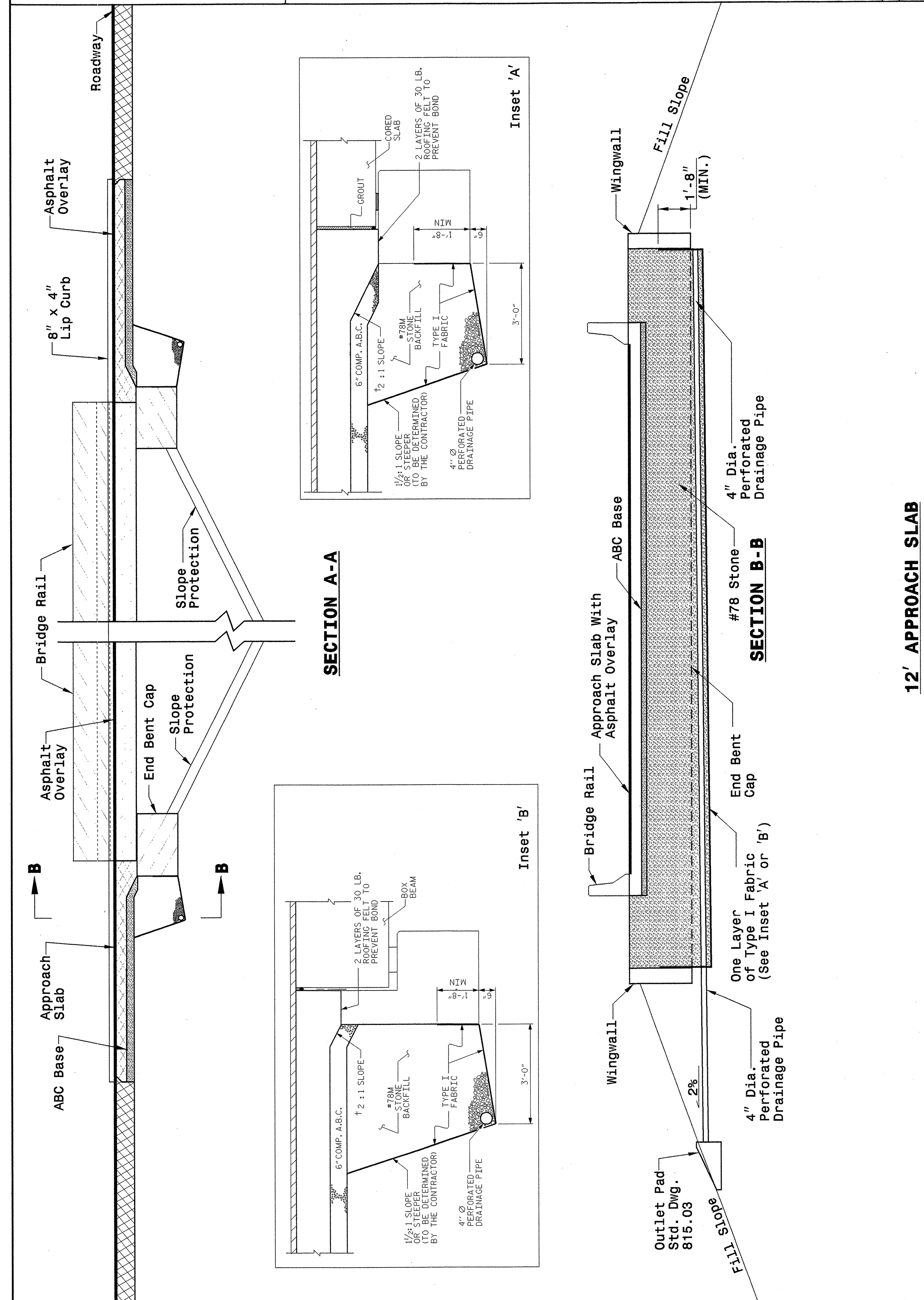
SHEET 11 OF 11 DATE: 12-19-06

PROJECT REFERENCE NO.	SHEET NO.
B-3677	2-N



STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER
SHEET 1 OF 2
422D11

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **BRIDGE APPROACH FILLS** CORED SLAB & BOX BEAM BRIDGES SUB REGIONAL TIER	SHEET 1 OF 2 **422D11**



STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER
SHEET 2 OF 2
422D11

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **BRIDGE APPROACH FILLS** CORED SLAB & BOX BEAM BRIDGES SUB REGIONAL TIER	SHEET 2 OF 2 **422D11**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 6/2/09

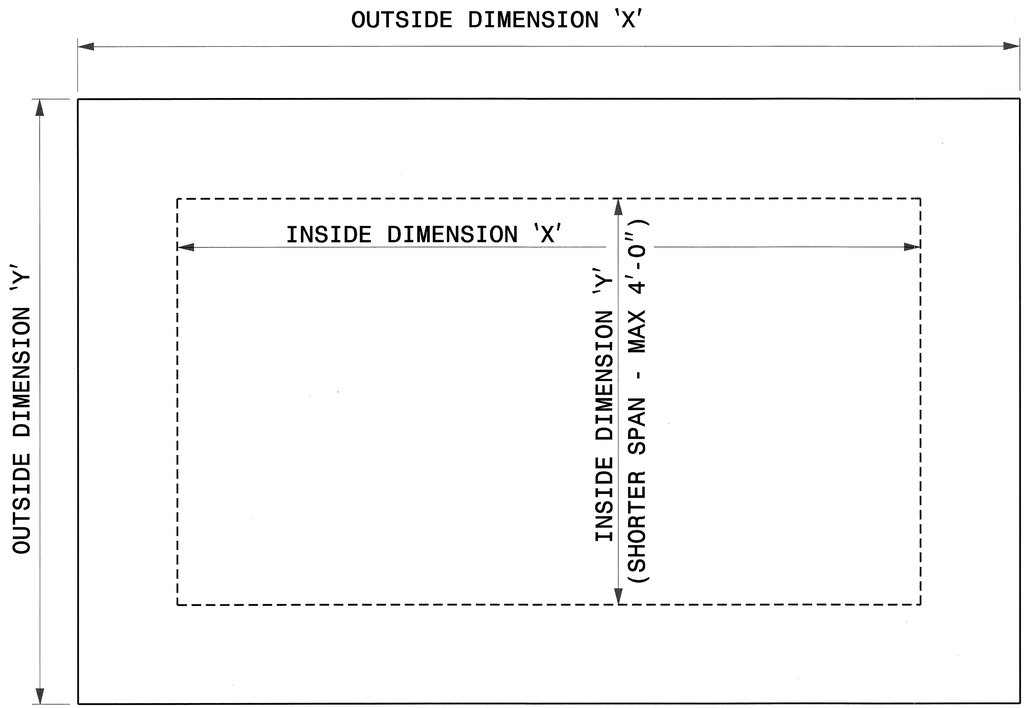
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08
MODIFIED BY: DATE:
CHECKED BY: Joel S. Hunt DATE: 2/16/09
FILE SPEC.: kkempf\english\bridge approach fills.dgn

5/14/99

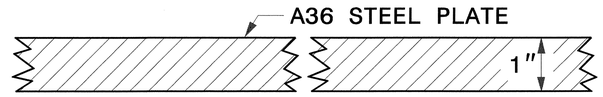
PROJECT REFERENCE NO.	SHEET NO.
B-3677	2-0



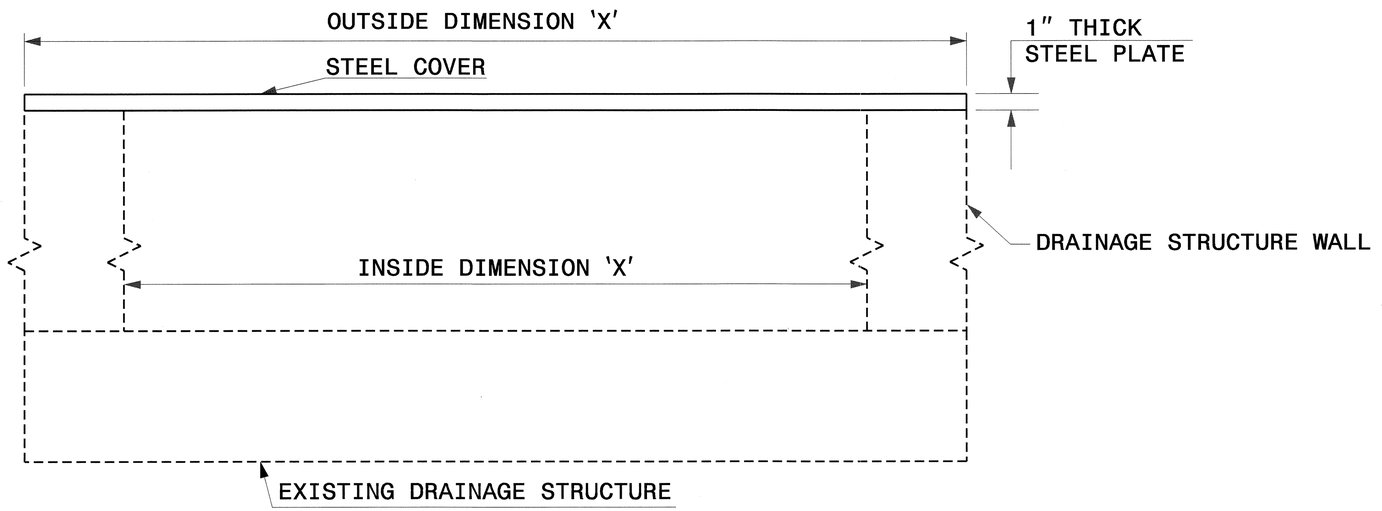
PLAN VIEWS

GENERAL NOTES:

-USE GRADE A36 STEEL
-STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
-FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
-SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
-QUANTITIES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
6/5/09

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

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 04-28-04
CHECKED BY: _____ DATE: _____
FILE SPEC.: details/nbritt/english/bridge/b3157steelcover.dgn

05-JUN-2009 10:30
s:\contracts\special details\nbritt\english\bridge\b3157 steel cover.dgn
jhowerton AT PS237601

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-3677	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201969

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0030000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ******* (19+73.00)
0043000000-N	226	Lump Sum		GRADING
0057000000-E	226	600	CY	UNDERCUT EXCAVATION
0080000000-E	SP	700	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	421	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	250	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	1,000	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	480	SF	TEMPORARY SHORING
0318000000-E	300	135	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	52	LF	15" SIDE DRAIN PIPE
0344000000-E	310	32	LF	18" SIDE DRAIN PIPE
0453000000-E	310	1	EA	**" PIPE END SECTION (15")
0995000000-E	340	100	LF	PIPE REMOVAL
1220000000-E	545	300	TON	INCIDENTAL STONE BASE
1330000000-E	607	150	SY	INCIDENTAL MILLING
1489000000-E	610	780	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	700	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	620	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	104	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	50	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	22.4	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)
2190000000-N	828	5	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
2209000000-E	838	3.4	CY	ENDWALLS
2264000000-E	840	0.569	CY	PIPE PLUGS
2275000000-E	SP	12	CY	FLOWABLE FILL
2286000000-N	840	10	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	1	LF	MASONRY DRAINAGE STRUCTURES
2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	5	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2407000000-N	840	1	EA	STEEL FRAME WITH TWO GRATES, STD 840.37
2549000000-E	846	800	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	400	SY	4" CONCRETE SIDEWALK
2605000000-N	848	1	EA	CONCRETE WHEELCHAIR RAMPS
2830000000-N	858	1	EA	ADJUSTMENT OF MANHOLES
2995000000-N	SP	5	EA	GENERIC DRAINAGE ITEM CONVERT EXT TRAFFIC BEARING JUNCTION BOX TO CATCH BASIN
3030000000-E	862	187.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3628000000-E	876	132	TON	RIP RAP, CLASS I
3649000000-E	876	106	TON	RIP RAP, CLASS B
3656000000-E	876	2,315	SY	FILTER FABRIC FOR DRAINAGE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
4072000000-E	903	127	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	7	EA	SIGN ERECTION, TYPE E
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	9	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4192000000-N	907	2	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	48	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	77	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	30	EA	DRUMS
4445000000-E	1145	96	LF	BARRICADES (TYPE III)
4450000000-N	1150	480	HR	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4485000000-E	1170	351	LF	PORTABLE CONCRETE BARRIER
4500000000-E	1170	249	LF	RESET PORTABLE CONCRETE BARRIER
4650000000-N	1251	30	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	1,915	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	3,087	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	180	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4810000000-E	1205	26,400	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	300	LF	PAINT PAVEMENT MARKING LINES (8")
4900000000-N	1251	35	EA	PERMANENT RAISED PAVEMENT MARKERS
5325800000-E	1510	61	LF	8" WATER LINE
5571800000-E	1515	1	EA	8" TAPPING VALVE
5648000000-N	1515	3	EA	RELOCATE WATER METER
5691200000-E	1520	112	LF	6" SANITARY GRAVITY SEWER
5691300000-E	1520	388	LF	8" SANITARY GRAVITY SEWER
5692000000-E	1520	131	LF	30" SANITARY GRAVITY SEWER
5775000000-E	1525	3	EA	4' DIA UTILITY MANHOLE
5777000000-E	1525	2	EA	6' DIA UTILITY MANHOLE
5781000000-E	1525	28	LF	UTILITY MANHOLE WALL, 4' DIA
5783000000-E	1525	18	LF	UTILITY MANHOLE WALL, 6' DIA
5801000000-E	1530	320	LF	ABANDON 8" UTILITY PIPE
5814000000-E	1530	136	LF	ABANDON 30" UTILITY PIPE
5828000000-N	1530	2	EA	REMOVE UTILITY MANHOLE
5835000000-E	1540	56	LF	**" ENCASEMENT PIPE (54")
5835800000-E	1540	107	LF	18" ENCASEMENT PIPE
5871000000-E	1550	28	LF	TRENCHLESS INSTALLATION OF **" IN SOIL (54")
5871010000-E	1550	28	LF	TRENCHLESS INSTALLATION OF **" NOT IN SOIL (54")
5872000000-E	1550	54	LF	TRENCHLESS INSTALLATION OF 18" IN SOIL
5872010000-E	1550	54	LF	TRENCHLESS INSTALLATION OF 18" NOT IN SOIL
6000000000-E	1605	450	LF	TEMPORARY SILT FENCE
6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	550	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	650	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	1.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	60	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	500	LF	SAFETY FENCE

ItemNumber	Sec #	Quantity	Unit	Description
6030000000-E	1630	1,600	CY	SILT EXCAVATION
6036000000-E	1631	2,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	25	SY	COIR FIBER MAT
6038000000-E	SP	1,250	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	225	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	20	EA	SPECIAL STILLING BASINS
6071010000-E	SP	160	LF	WATTLE
6071020000-E	SP	59	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	475	LF	COIR FIBER BAFFLES
6071050000-E	SP	4	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	5	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	12	EA	RESPONSE FOR EROSION CONTROL
		******* BEGIN SCHEDULE AA ******* ******* (3 ALTERNATES) *******		
0366000000-E AA1	310	564	LF	15" RC PIPE CULVERTS, CLASS III
0390000000-E AA1	310	336	LF	36" RC PIPE CULVERTS, CLASS III
		*** OR ***		
0366000000-E AA2	310	444	LF	15" RC PIPE CULVERTS, CLASS III
0390000000-E AA2	310	300	LF	36" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	120	LF	***" HDPE PIPE CULVERTS (15")
0536000000-E AA2	SP	36	LF	***" HDPE PIPE CULVERTS (36")
		*** OR ***		
0366000000-E AA3	310	444	LF	15" RC PIPE CULVERTS, CLASS III
0390000000-E AA3	310	300	LF	36" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	120	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (15", 0.064")
0540000000-E AA3	SP	36	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (36", 0.079")
		******* END SCHEDULE AA *******		

COMPUTED BY: JLT	DATE: 12/2/2008
CHECKED BY: WCP	DATE: 5/26/2009

PROJECT NO.	SHEET NO.
B-3677	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav.	Undercut Excav.	Embank. +%	Borrow	Waste
-L-	15+00.00	19+25.00	608		884	276	
BRIDGE							
-L-	20+20.00	25+00.00	414		1,494	1,080	
TOTALS			1,022		2,378	1,356	
Estimated loss due to Clear. & Grub.			-100			100	
Shoulder Material					300	300	
PROJECT TOTALS			922		2,678	1,756	
Est. 5% to replace Topsoil on Borrow Pits						88	
GRAND TOTALS			922		2,678	1,844	
SAY			970			1,900	

Pavement Structure Volume = 278 yd3 DDE = 421 yd3

Contingency Undercut = 600 yd3

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.

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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	SY
-L-	15+00	19+05	RT	239.41
-L-	19+05	19+56	CL	105.79
-L-	19+91	20+50	CL	125.54
-L-	20+50	24+95	RT	241.45
Removal of Temporary Pavement				
-L-	17+35	18+90	LT	58.00
-L-	18+08	19+52	CL	47.74
-L-	19+91	20+97	CL	35.73
-L-	20+37	20+80	LT	34.66
			TOTAL:	888.32
			SAY:	890

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

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL BERM WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS GRAU 350	ANCHORS CAT-1	ANCHORS AT-1	ANCHORS III	ANCHORS B-77	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL	REMARKS
-L-	17+82.64	19+32.64	RT	150			BRIDGE		7.5	10	131.25'		2.625'		1			1						
-L-	20+12.36	21+62.36	LT	150			BRIDGE		7.5	10	50'		1'		1			1						
		SUB-TOTALS:		300.00											2			2						
	LESS ANCHOR DEDUCTIONS																							
	GRAU-350	2 @50 ft		100																				
	TYPE III	2 @18.75 ft		37.5																				
	ANCHOR TOTALS			137.5																				
		GRAND TOTALS		162.50											2			2						
		SAY		187.50											2			2						

ADDITIONAL GUARDRAIL POSTS = 5 EA

COMPUTED BY: JLT DATE: 12/4/2008

CHECKED BY: JLT DATE: 6/1/2009

PROJECT NO.	SHEET NO.
B-3677	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

NOTE: ELEVATIONS ARE FOR INFORMATIONAL PURPOSES ONLY.

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"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANITIES 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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	PARALLEL PIPE END SECTION STD. 310.02 OR STD. 310.04	T.B.J.B., STD. 840.34	CONVERT EXISTING TBJB TO CB	TEMPORARY STEEL PLATE COVER	T.B.D.I., STD. 840.36	STEEL GRATE AND FRAME, STD. 840.37	CORR. STEEL ELBOWS NO. & SIZE	FLOWABLE FILL, C.Y.	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L-																																																													
15+91	LT	1																																					3.4																		12	0.524		
16+70	LT	2		661.30																																												1					1								
17+42	LT	4		659.86																																												1					1								
18+15	LT	5		659.17																																												1					1								
18+87	LT	6		658.88																																												1					1								
14+87	RT	8																																																1										
	RT	8	9		663.85	660.13			56																																																				
15+42	RT	9		663.03																																						1			1		1														
	RT	9	10		660.03	656.85			208																																																				
17+50	RT	10		659.75																																						1			1		1														
	RT	10	11		656.75	655.95			148																																																				
18+98	RT	11		658.85																																						1			1		1														
	RT	11	12		655.85	655.31																								20																															
20+70	LT	13		658.29																																												1					1								
20+70	RT	15		658.29																																						1			1		1														
	RT	15	16		655.29	654.32																								24																															
22+13	LT	17																																																										16	
22+74	RT	18																																			28																								20	
24+31	RT	19																																			24																								40	
24+31	LT	20																																				32																							24	
		1	21		657.60	656.65							84																																																
		3	21		663.20	658.40																								48																															
16+70		21		660.30																																						1											1		1							
		21	22		656.55	655.21							72																																																
17+42		22		658.86																																						1											1		1							
		22	23		655.11	654.52							72																																																
18+15		23		658.17																																						1											1		1							
		23	24		654.42	654.05							72																																																
18+87		24		657.88																																						1											1		1							
		24	7		653.95	653.03																												36																											
20+70		25		657.29																																																									
		25	14		653.75	651.00																								28												1											1		1							
		24A		657.80																																						1														1	1					
		24A	24		654.88	654.72			32																																																		0.045		SEE SHEET 2-A
SHEET TOTALS									444				300																	120				36			52	32		3.4		10			4		4	5			1	5	5	5	1	1		12	0.569	100	

ABBREVIATIONS

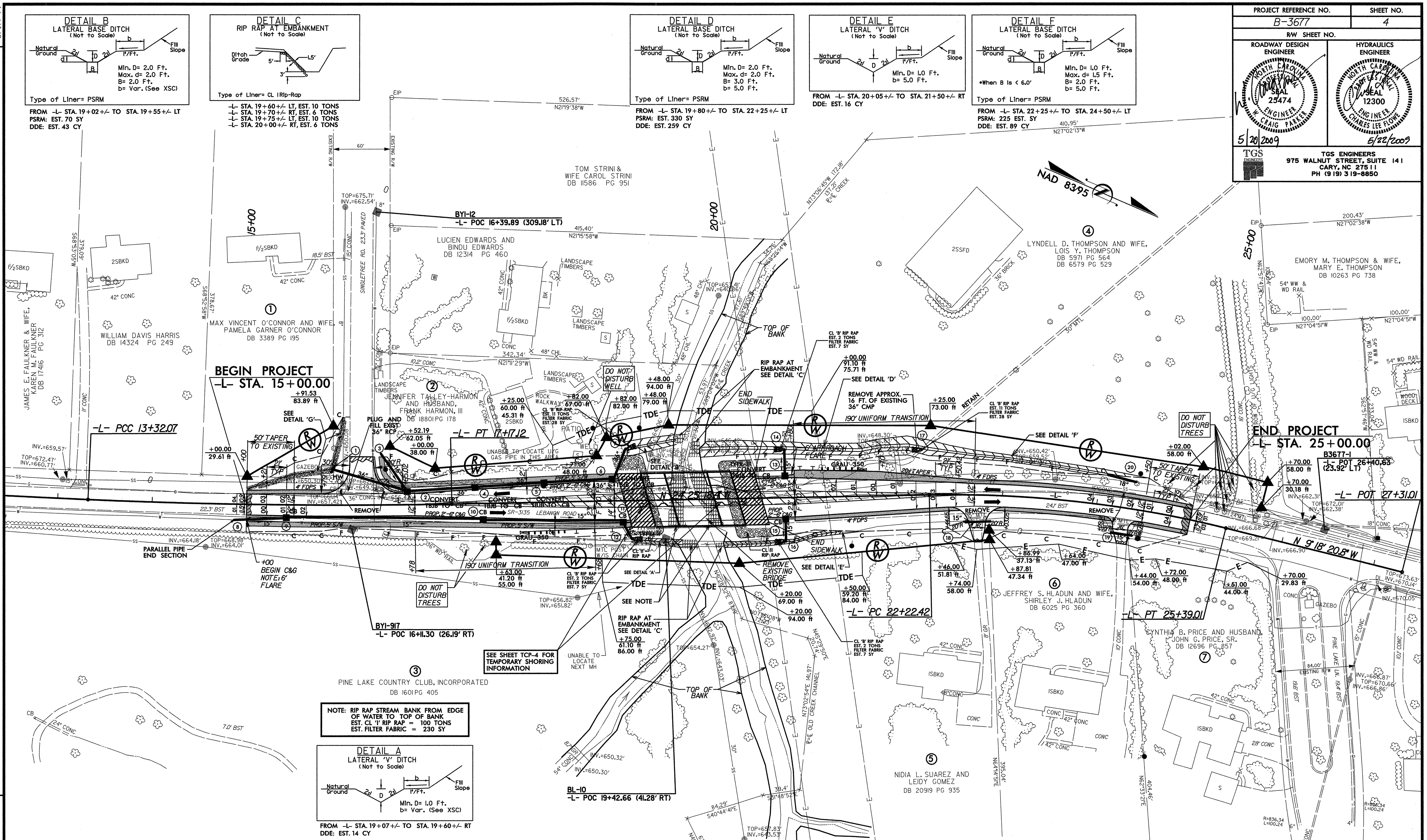
- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I.(N.S.) GRATED DROP INLET (NARROW SLOT)
- J.B. JUNCTION BOX
- M.H. MANHOLE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

PROJECT REFERENCE NO.	SHEET NO.
B-3677	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER — 5/20/2009

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE — 5/22/2009

TGS ENGINEERS
975 WALNUT STREET, SUITE 141
CARY, NC 27511
PH (919) 319-8850



DETAIL B
LATERAL BASE DITCH
(Not to Scale)
Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 2.0 Ft.
b= Var. (See XSC)
Type of Liner= PSRM
FROM -L- STA. 19+02 +/- TO STA. 19+55 +/- LT
PSRM: EST. 70 SY
DDE: EST. 43 CY
DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= CL I Rip-Rap
-L- STA. 19+60 +/- LT, EST. 10 TONS
-L- STA. 19+70 +/- RT, EST. 6 TONS
-L- STA. 19+75 +/- LT, EST. 10 TONS
-L- STA. 20+00 +/- RT, EST. 6 TONS
DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
Type of Liner= PSRM
FROM -L- STA. 19+80 +/- TO STA. 22+25 +/- LT
PSRM: EST. 330 SY
DDE: EST. 259 CY
DETAIL E
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.0 Ft.
b= 5.0 Ft.
FROM -L- STA. 20+05 +/- TO STA. 21+50 +/- RT
DDE: EST. 16 CY
DETAIL F
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.0 Ft.
Max. d= 1.5 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
•When B is < 6.0'
Type of Liner= PSRM
FROM -L- STA. 22+25 +/- TO STA. 24+50 +/- LT
PSRM: 225 SY
DDE: EST. 89 CY
NAD 83/95
BEGIN PROJECT
-L- STA. 15+00.00
END PROJECT
-L- STA. 25+00.00
-L- PCC 13+32.07
-L- PT 17+17.12
-L- PC 22+22.42
-L- PT 25+39.01
-L- POT 27+31.01
N 9°18' 20.8" W
BYI-12
-L- POC 16+39.89 (309.18' LT)
BYI-917
-L- POC 16+11.30 (26.19' RT)
BL-10
-L- POC 19+42.66 (41.28' RT)
B3677-1
-L- POT 26+40.63 (23.92' LT)
TOM STRINI & WIFE CAROL STRINI
DB 11586 PG 951
LUCIEN EDWARDS AND BINDU EDWARDS
DB 12314 PG 460
MAX VINCENT O'CONNOR AND WIFE, PAMELA GARNER O'CONNOR
DB 3389 PG 195
WILLIAM DAVIS HARRIS
DB 14324 PG 249
JAMES E. FAULKNER & WIFE, KAREN M. FAULKNER
DB 17416 PG 312
JENNIFER TALLEY-HARMON AND HUSBAND, FRANK HARMON, III
DB 18801 PG 178
LYNDELL D. THOMPSON AND WIFE, LOIS Y. THOMPSON
DB 5971 PG 564
DB 6579 PG 529
EMORY M. THOMPSON & WIFE, MARY E. THOMPSON
DB 10263 PG 738
PINE LAKE COUNTRY CLUB, INCORPORATED
DB 1601 PG 405
NIDIA L. SUAREZ AND LEIDY GOMEZ
DB 20919 PG 935
JEFFREY S. HLADUN AND WIFE, SHIRLEY J. HLADUN
DB 6025 PG 360
CYNTHIA B. PRICE AND HUSBAND, JOHN G. PRICE, SR.
DB 12696 PG 857
SR-3135 LEBANON ROAD
SINGLETREE RD. 23.3' PAVED
PINE LAKE LN.
POWER LINE EASEMENT
190' UNIFORM TRANSITION
50' TAPER TO EXISTING
DO NOT DISTURB TREES
DO NOT DISTURB WELL
UNABLE TO LOCATE U/G GAS PIPE IN THIS AREA
UNABLE TO LOCATE NEXT MH
TOP OF BANK
RIP RAP AT EMBANKMENT SEE DETAIL 'C'
REMOVE EXISTING BRIDGE
REMOVE APPROX. 16 FT. OF EXISTING 36" CMP
PLUG AND FILL EXIST. 36" RCP
PARALLEL PIPE END SECTION
BEGIN C&G NOTE: 6' FLARE
SEE SHEET TCP-4 FOR TEMPORARY SHORING INFORMATION

NOTE: RIP RAP STREAM BANK FROM EDGE OF WATER TO TOP OF BANK
EST. CL 'I' RIP RAP = 100 TONS
EST. FILTER FABRIC = 230 SY

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.0 Ft.
b= Var. (See XSC)
FROM -L- STA. 19+07 +/- TO STA. 19+60 +/- RT
DDE: EST. 14 CY

-L-

PI Sta 11+66.05	PI Sta 15+24.66	PI Sta 23+81.64
Δ = 1° 45' 42.3" (LT)	Δ = 3° 40' 37.3" (LT)	Δ = 15° 06' 57.6" (RT)
D = 0° 31' 50.0"	D = 0° 57' 17.7"	D = 4° 46' 28.7"
L = 332.07'	L = 385.06'	L = 316.59'
T = 166.05'	T = 192.59'	T = 159.22'
R = 10,799.43'	R = 6,000.00'	R = 1,200.00'
SE = EXISTING	SE = NC	SE = 0.04
Vd = 60 MPH	Vd = 45 MPH	Vd = 55 MPH

BRIDGE /ROADWAY RELATIONSHIP SKETCH
BEGIN BRIDGE -L- 19+25.00; END APPROACH SLAB -L- 20+43.96; BEGIN APPROACH SLAB -L- 19+01.04; END BRIDGE -L- 20+20.00

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1 Ft.
Type of Liner= CL 'B' Rip-Rap
FROM -L- STA. 15+00.00 TO STA. 15+90 +/- LT
CLASS 'B' RIP RAP: EST. 48 TONS
FILTER FABRIC: EST. 65 SY
SEE PLANS RT SIDE OF SR4141 (15.7 % SLOPE)
CLASS 'B' RIP RAP: EST. 30 TONS
FILTER FABRIC: EST. 43 SY

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

SEE SHEET 5 FOR -L- PROFILE

REVISIONS

8/17/99

5/28/99

TGS ENGINEERS
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PROJECT REFERENCE NO.	SHEET NO.
B-3677	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

5/20/2009

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12300 ENGINEER CHARLES LEE FLOWE

5/22/2009

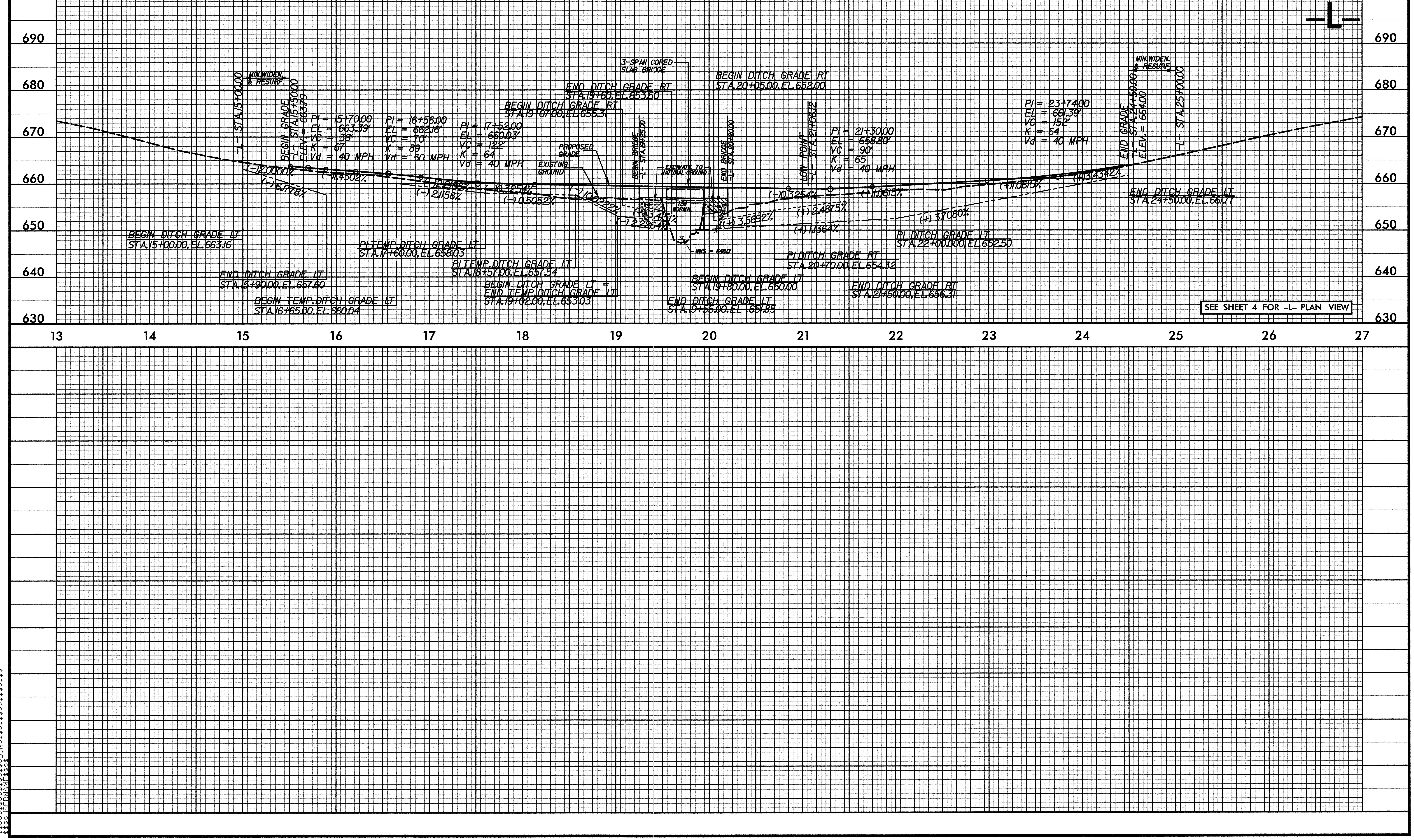
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN ELEVATION	= 658.3	FT
BASE DISCHARGE	= 3,100	CFS
BASE FREQUENCY	= 100	YRS
BASE ELEVATION	= 659.2	FT
OVERTOPPING DISCHARGE	= 3,600	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 658.9	FT

BM# S33-01
-BL- STA. 18+47.91 OFF 5.22' LT
ELEV. = 656.500
CITY OF CHARLOTTE SURVEY MARK.
(CITY OF CHARLOTTE PUBLISHED ELEV. = 656.08'.)

BM# 2
-BL- STA. 19+32.36 OFF 290.09' LT
ELEV. = 653.306
RR SPIKE IN THE BASE OF A 15" HAWTHORN.

-L-



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