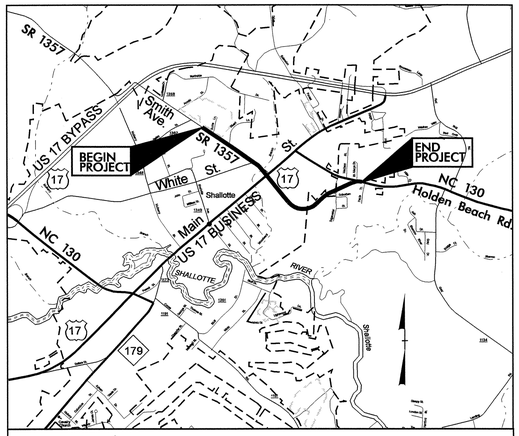
TIP PROJECT: U-3462

CONTRACT: C202027

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

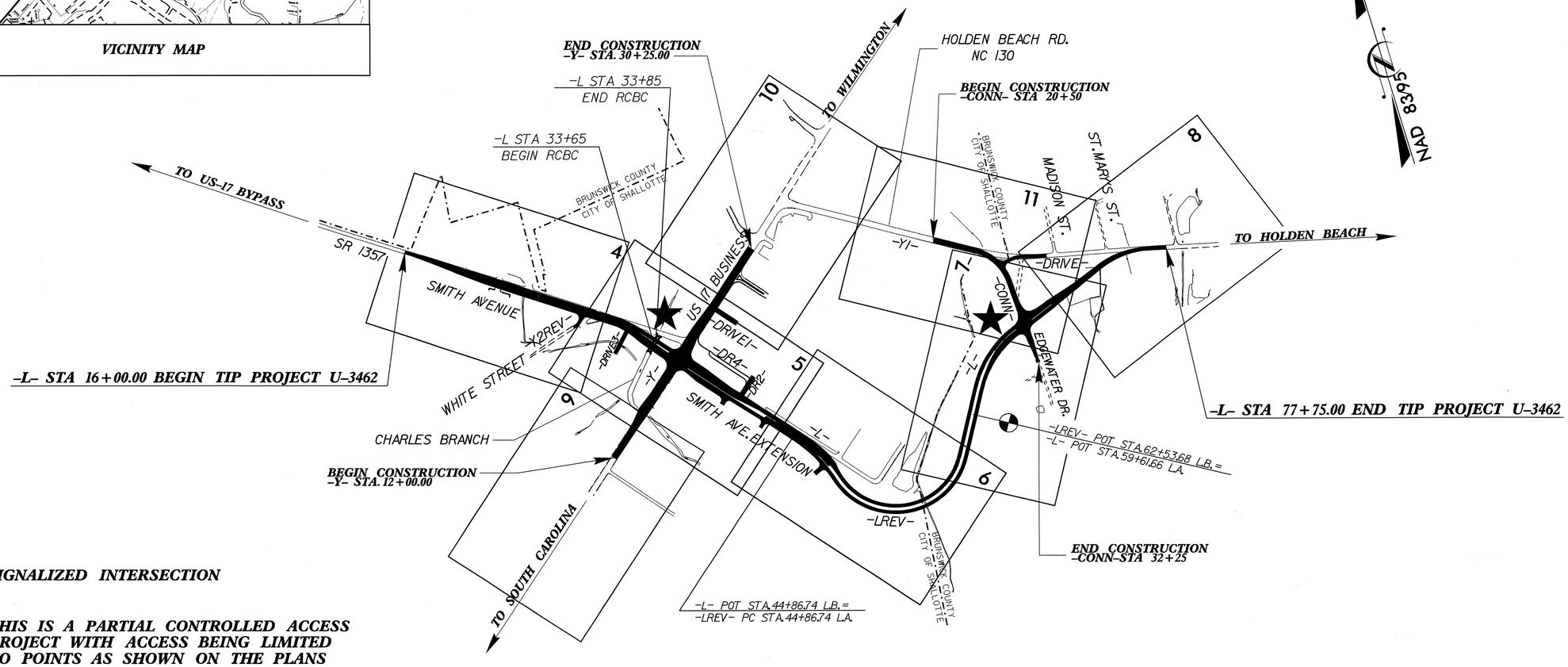
BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3462	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34953.1.1	STP-1357(2)	PE
34953.2.2	STP-1357(2)	R/W & UTIL
34953.3.2	STP-1357(4)	CONST.

LOCATION: EXTENSION OF SR 1357 FROM WEST OF US 17 BUSINESS TO NC 130 IN SHALLOTTE

TYPE OF WORK: GRADING DRAINAGE, PAVING, CULVERTS, SIGNING AND TRAFFIC SIGNALS



★ *SIGNALIZED INTERSECTION*

NOTE: THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS

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 2007= 6300 – 18,800
ADT 2035 = 16100 – 42,200
DHV = 10 %
D = 55 %
T = 3 % *
V = 40 MPH
* TTST 1% DUAL 2%

FUNCTIONAL CLASSICATION
MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3462 = 1.221 MILES
LENGTH STRUCTURE TIP PROJECT U-3462 = 0.004 MILES
TOTAL LENGTH OF TIP PROJECT U-3462 = 1.225 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 16, 2006

LETTING DATE:
March 17, 2009

G.E. BREW, PE
PROJECT ENGINEER

I.T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
SIGNATURE: 11-3-08

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW P.E.
11-3-08
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
P.E.
STATE HIGHWAY DESIGN ENGINEER

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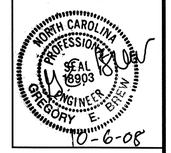
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3462	1-A

ROADWAY DESIGN ENGINEER



10-6-08

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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 THRU 1-D	SURVEY CONTROL SHEET
1-E	CENTERLINE COORDINATE LIST
2 THRU 2-F	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-G	PREFORMED SCOUR HOLE
2-H THRU 2-I	INTERSECTION & CHANNELIZATION DETAILS
2-J	DETAIL OF CONCRETE FUME INSTALLATION IN 2'-6" CURB AND GUTTER
2-K	DETAIL OF CONCONVERTING EXISTING DI TO CB
2-L	DETAIL OF CONCONVERTING EXISTING DI TO JB
2-M	DETAIL OF SPECIAL CATCH BASIN
2-N	DETAIL OF ANCHORAGE OF FRAMES - BRICK/CONCRETE/PRECAST CONCRETE
2-O THRU 2-Z	TEMPORARY SHORING DETAILS
2-AA	DETAIL OF TEMPORARY STEEL PLATES
2-AB	DETAIL OF PROPOSED PEDESTRIAN SAFETY RAIL
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-G	SUMMARY OF DRAINAGE QUANTITIES
3-H	SUMMARY OF EARTHWORK SUMMARY OF GUARDRAIL, CHAIN LINK FENCE SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
3-I	PARCEL INDEX SHEET
4 THRU 11	PLAN SHEET
12 THRU 17	PROFILE SHEET
TCP-1 THRU TCP-20	TRAFFIC CONTROL PLANS
PM-1 THRU PM-5	PAVEMENT MARKING PLANS
EC-1 THRU EC-24	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION DETAIL
SIGN-1 THRU SIGN-10	SIGNING PLANS
SIG-1 THRU SIG-30	SIGNAL PLANS
UC-1 THRU UC-11	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-9	UTILITY BY OTHERS PLANS
X-1A THRU X-1B	CROSS-SECTIONS SUMMARY SHEET
X-1 THRU X-37	CROSS-SECTIONS
C-1 THRU C-	CULVERT PLANS
W-1 THRU W-	RETAINING WALL PLANS

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
300.01	Method of Pipe Installation - Method 'A'
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
310.03	Cross Pipe End Section - Precast Concrete Section for 18" to 30" Pipe
310.04	Parallel Pipe End Section - Prefabricated Steel Section for 15" to 24" Pipe
310.05	Cross Pipe End Section - Prefabricated Steel Section for 18" to 30" Pipe
310.10	Driveway Pipe Construction
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
654.01	Pavement Repairs
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
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
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
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
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
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES:

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

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

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

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

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.

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS 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".

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE BRUNSWICK EMC
ATLANTIC TMC & TOWN OF SHALLOTTE
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. 848.06

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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
U-3462	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
- 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
- Proposed Wheel Chair Ramp Curb Cut — WCC
- 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 — ?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.

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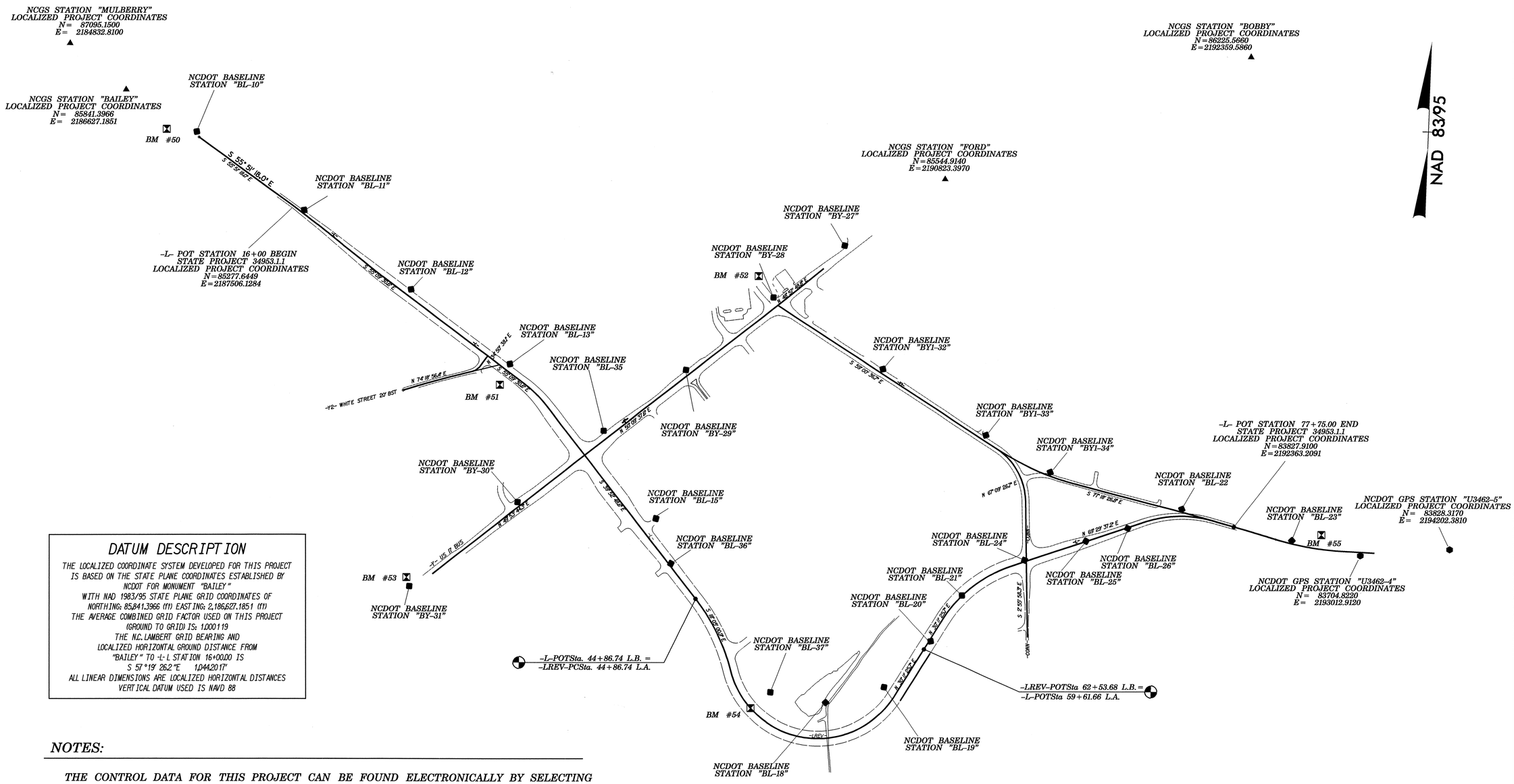
PROJECT REFERENCE NO.	SHEET NO.
U–3462	1–C
Location and Surveys	

SURVEY CONTROL SHEET



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BAILEY" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 85,841.3966 (ft) EASTING: 2,186,627.1851 (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000119
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BAILEY" TO –L– STATION 16+00.00 IS S 57°19' 26.2"E 1,044.2017'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

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

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT
FILE NAME: U3462_LS_CONTROL_050506.DGN

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

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTS NAD 83'95

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	I-D
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
10	BL-10	85641.5046	2186996.8620	38.27	OUTSIDE PROJECT LIMITS	
11	BL-11	85260.6929	2187559.6108	33.90	16+53.67	16.10 LT
12	BL-12	84878.6884	2188120.0447	21.02	23+32.00	35.05 LT
13	BL-13	84517.7534	2188638.8233	12.90	29+63.98	35.20 LT
35	BL-35	84197.9020	2189129.9600	9.10	35+21.11	153.58 LT
15	BL-15	83759.1050	2189413.2920	15.11	40+39.51	89.66 LT
36	BL-36	83532.5460	2189498.5630	19.99	42+68.04	9.83 LT
20	BL-20	83187.7104	2190838.4896	21.84	60+15.31	6.58 RT
21	BL-21	83426.6901	2190989.7876	21.44	62+99.06	1.77 LT
24	BL-24	83617.2574	2191302.0587	19.23	66+66.95	7.59 LT
25	BL-25	83727.3950	2191611.6216	17.23	69+95.48	2.31 LT
26	BL-26	83801.2384	2191822.4733	11.27	72+18.84	2.39 RT
22	BL-22	83907.9039	2192094.3429	10.90	75+02.58	36.53 LT
23	BL-23	83769.4039	2192661.2820	10.16	OUTSIDE PROJECT LIMITS	

BL

POINT	DESC.	NORTH	EAST	ELEVATION	LREV STATION	OFFSET
37	BL-37	82896.9290	2190030.2200	20.91	51+24.38	130.14 LT
18	BL-18	82854.4450	2190314.1290	10.96	55+69.97	180.94 LT
19	BL-19	82944.2052	2190608.9590	23.38	59+81.43	69.37 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
6	BY-6 NCGS FORD	85544.9140	2190823.3970	35.02	OUTSIDE PROJECT LIMITS	
27	BY-27	85185.8676	2190323.8997	29.73	OUTSIDE PROJECT LIMITS	
28	BY-28	84908.6821	2189970.7815	25.60	32+41.65	46.54 LT
29	BY-29	84523.1187	2189538.6343	14.87	26+61.84	27.60 LT
35	BL-35	84197.9020	2189129.9600	9.10	21+39.88	39.73 LT
30	BY-30	83816.6755	2188704.6375	6.81	15+68.99	22.13 LT
31	BY-31	83366.7304	2188167.7594	21.01	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
28	BY-28	84908.6821	2189970.7815	25.56	OUTSIDE PROJECT LIMITS	
32	BY1-32	84564.5258	2190542.3254	24.98	16+25.58	21.89 LT
33	BY1-33	84248.7834	2191080.8956	24.49	22+49.85	28.52 LT
34	BY1-34	84071.8548	2191416.2204	21.90	26+34.69	19.06 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BAILEY" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 85,841.3966 (ft) EASTING: 2,186,627.1851 (ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000119 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BAILEY" TO -L- L STATION 16+00.00 IS S 57° 19' 26.2"E 1,044.2017' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

****

BM50 ELEVATION = 42.11
N 85648 E 2186843
-L- STATION 10+00.00
N 78° 26' 16.5" W DIST 169.63'
R/R SPIKE SET IN 24" TWIN OAK

****

****

BM51 ELEVATION = 11.23
N 84411 E 2188590
-L- STATION 29+85 DIST 80' RIGHT
SQUARE CUT SET IN CONCRETE

****

****

BM54 ELEVATION = 20.23
N 82811 E 2189933
-LREV- STATION 51+17 DIST 0.54' LEFT
R/R SPIKE SET IN 12" PINE

****

****

BM55 ELEVATION = 18.28
N 83804 E 2192811
-Y1- STATION 40+65 DIST 73.41' LEFT
R/R SPIKE SET IN 30" OAK

****

****

BM52 ELEVATION = 27.83
N 85018 E 2189891
-Y- STATION 32+53 DIST 181' LEFT
R/R SPIKE SET IN 20" PINE

****

****

BM53 ELEVATION = 19.24
N 83412 E 2188152
-Y- STATION 10+00
S 80° 53' 19.0" W DIST 133.58
SQUARE CUT SET IN CONCRETE

****

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PROJ. REFERENCE NO.	SHEET NO.
U-3462	1-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	10+00.00	85614.4185	2187009.5565
2	L	11+00.00	85558.2895	2187092.3185
3	L	12+00.00	85502.1606	2187175.0805
4	L	13+00.00	85446.0317	2187257.8424
5	L	14+00.00	85389.9028	2187340.6044
6	L	15+00.00	85333.7739	2187423.3664
7	L	16+00.00	85277.6449	2187506.1284
8	L	17+00.00	85220.9912	2187588.5303
9	L	18+00.00	85162.7342	2187669.8063
10	L	19+00.00	85102.8635	2187749.9010
11	L	20+00.00	85042.1856	2187829.3871
12	L	21+00.00	84982.9679	2187909.9659
13	L	22+00.00	84925.3351	2187991.6861
14	L	23+00.00	84868.2043	2188073.7596
15	L	24+00.00	84811.0735	2188155.8332
16	L	25+00.00	84753.9427	2188237.9068
17	L	26+00.00	84696.8118	2188319.9803
18	L	27+00.00	84639.6810	2188402.0539
19	L	28+00.00	84582.5502	2188484.1274
20	L	29+00.00	84525.4194	2188566.2010
21	L	30+00.00	84468.2886	2188648.2746
22	L	31+00.00	84410.9260	2188730.1833
23	L	32+00.00	84344.8971	2188805.1303
24	L	33+00.00	84269.1046	2188870.3295
25	L	34+00.00	84192.3659	2188934.4479
26	L	35+00.00	84115.6272	2188998.5663
27	L	36+00.00	84038.8885	2189062.6847
28	L	37+00.00	83962.1498	2189126.8031
29	L	38+00.00	83885.4110	2189190.9215
30	L	39+00.00	83808.6723	2189255.0399
31	L	40+00.00	83731.9336	2189319.1583
32	L	41+00.00	83655.1949	2189383.2767
33	L	42+00.00	83578.4562	2189447.3951
34	L	43+00.00	83501.7175	2189511.5135
35	L	44+00.00	83424.9788	2189575.6319
36	L	45+00.00	83348.1840	2189639.6826
37	L	46+00.00	83267.5789	2189698.7969
38	L	47+00.00	83181.4750	2189749.5688
39	L	48+00.00	83090.7325	2189791.4910
40	L	49+00.00	82996.2627	2189824.1600
41	L	50+00.00	82904.3988	2189863.1689
42	L	51+00.00	82823.1106	2189921.0732
43	L	52+00.00	82756.2246	2189995.1471
44	L	53+00.00	82706.8894	2190081.9038
45	L	54+00.00	82677.4273	2190177.2592
46	L	55+00.00	82669.2252	2190276.7248
47	L	56+00.00	82682.6691	2190375.6184
48	L	57+00.00	82717.1264	2190469.2847
49	L	58+00.00	82770.9748	2190553.3146
50	L	59+00.00	82841.6797	2190623.7525
51	L	60+00.00	82925.3765	2190678.2556
52	L	61+00.00	83011.8123	2190728.5433
53	L	62+00.00	83098.2481	2190778.8309
54	L	60+07.98 R 2	83184.6840	2190829.1185
55	L	61+07.98 R 2	83271.1198	2190879.4061
56	L	62+07.98 R 2	83355.7731	2190932.5320
57	L	63+07.98 R 2	83431.8326	2190997.3028
58	L	64+07.98 R 2	83497.0682	2191072.9640
59	L	65+07.98 R 2	83549.9389	2191157.7282
60	L	66+07.98 R 2	83589.4893	2191249.4869
61	L	67+07.98 R 2	83624.5204	2191343.1503
62	L	68+07.98 R 2	83659.5515	2191436.8136
63	L	69+07.98 R 2	83694.5825	2191530.4770
64	L	70+07.98 R 2	83729.6136	2191624.1403
65	L	71+07.98 R 2	83764.6447	2191717.8037
66	L	72+07.98 R 2	83799.6758	2191811.4670
67	L	73+07.98 R 2	83834.6993	2191905.1332
68	L	74+07.98 R 2	83861.2814	2192001.4154
69	L	75+07.98 R 2	83871.5223	2192100.7733
70	L	76+07.98 R 2	83865.1382	2192200.4534
71	L	77+07.98 R 2	83843.9760	2192298.1433
72	L	78+07.98 R 2	83819.8895	2192395.1989
73	L	79+07.98 R 2	83795.1082	2192492.0795
74	L	79+97.64 R 2	83772.3004	2192578.7871
75	CONN	20+00.00	84352.9812	2190852.0296
76	CONN	20+50.00	84327.2369	2190894.8926
77	CONN	21+00.00	84301.4926	2190937.7555
78	CONN	21+50.00	84275.7483	2190980.6185
79	CONN	22+00.00	84250.0041	2191023.4814
80	CONN	22+50.00	84224.2598	2191066.3444
81	CONN	23+00.00	84198.5155	2191109.2073

Point #	Chain	Station	Northing (Y)	Easting (X)
82	CONN	23+50.00	84172.3565	2191151.8108
83	CONN	24+00.00	84141.2944	2191190.9307
84	CONN	24+50.00	84104.6835	2191224.9140
85	CONN	25+00.00	84063.3628	2191252.9821
86	CONN	25+50.00	84018.2789	2191274.4918
87	CONN	26+00.00	83970.4650	2191288.9504
88	CONN	26+50.00	83921.0165	2191296.0264
89	CONN	27+00.00	83871.0842	2191298.6227
90	CONN	27+50.00	83821.1497	2191301.1810
91	CONN	28+00.00	83771.2151	2191303.7393
92	CONN	28+50.00	83721.2806	2191306.2975
93	CONN	29+00.00	83671.3461	2191308.8558
94	CONN	29+50.00	83621.4116	2191311.4141
95	CONN	30+00.00	83571.4771	2191313.9724
96	CONN	30+50.00	83521.5426	2191316.5307
97	CONN	31+00.00	83471.6081	2191319.0890
98	CONN	31+50.00	83421.6736	2191321.6473
99	CONN	32+00.00	83371.7391	2191324.2056
100	CONN	32+50.00	83321.8046	2191326.7638
101	CONN	33+00.00	83271.8701	2191329.3221
102	CONN	33+46.56	83225.3730	2191331.7043

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

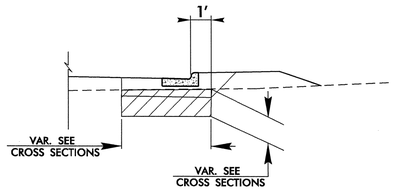
Point #	Chain	Station	Northing (Y)	Easting (X)

6/2/99

FINAL PAVEMENT SCHEDULE

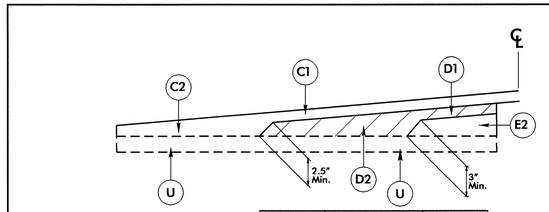
C	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	1'-6" CONCRETE CURB AND GUTTER.
C2	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 TO EXCEED 2" IN DEPTH.	R3	5" MONOLITHIC CONCRETE ISLAND
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK.
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.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
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.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)
J1	PROP. 6" AGGREGATE BASE COURSE.		

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



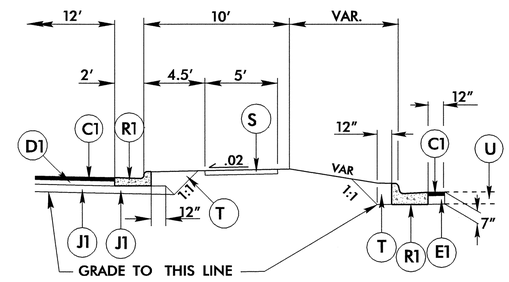
UNDERCUT DETAIL

-L- 30+50 TO 31+75
-L- 37+75 TO 39+75
-L- 49+25 TO 53+25

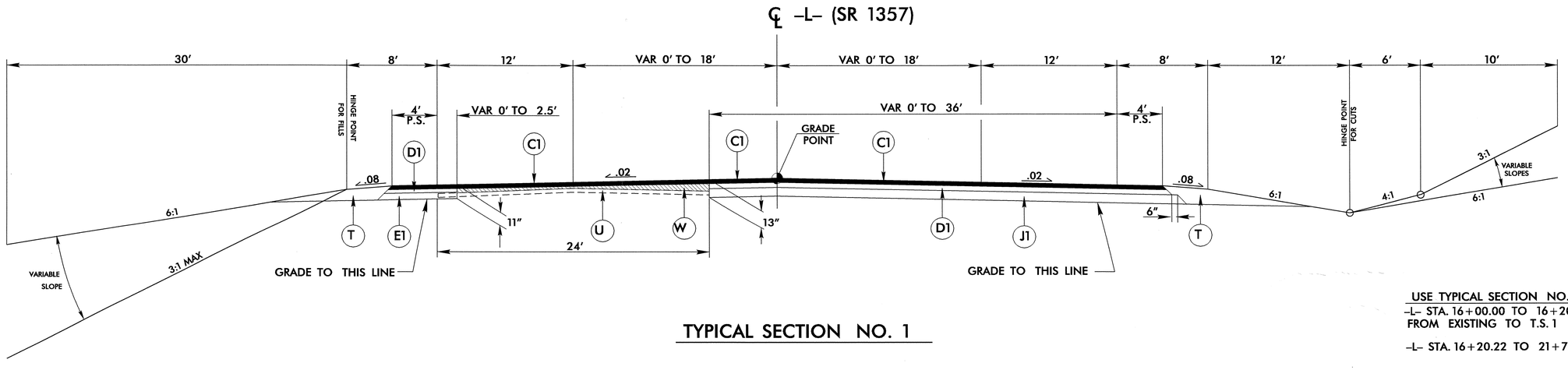


LINE	SURFACE C1	SURFACE C2	INTERMEDIATE D1	INTERMEDIATE D2	BASE	E2	
-L- (USE WITH TYP. SECTION 1, 2, 5, 8)	X	X	X	X		X	
-CONN- (USE WITH TYP. SECTION 11)	X	X				X	
-Y2REV- (USE WITH TYP. SECTION 14)	X	X				X	

DETAIL SHOWING METHOD OF WEDGING



CHANNELIZATION DETAIL "A"
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 2
(SEE PLANS FOR LOCATIONS)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 16+00.00 TO 16+20.22, TRANSITION FROM EXISTING TO T.S. 1

-L- STA. 16+20.22 TO 21+78.35

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
9-30-08

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13369 ENGINEER DONGCHI CHEN
9/30/08

30-SEP-2008 10:19
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$$$$USERNAME$$$$

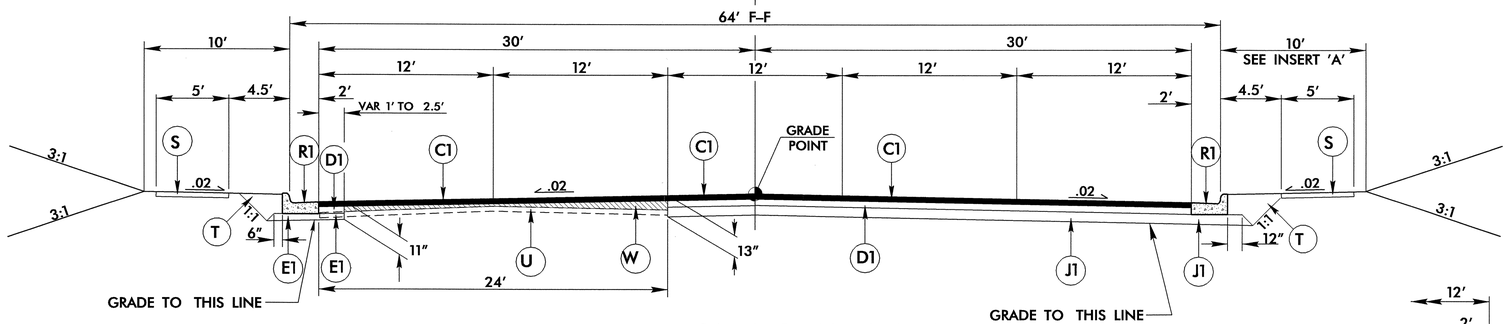
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-A

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17903 ENGINEER GREGORY E. BREW — 9-30-08

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DAVID CHI CHEN — 9/30/08

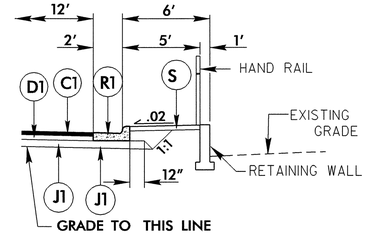
FINAL PAV'T DESIGN	
C1	3" S9.5B
D1	4" I19.0B
E1	4" B25.0B
J1	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
S	4" SIDEWWALK
T	EARTH MATERIAL
U	EXIST PAV'T
W	WEDGING

℄ –L– (SR 1357)



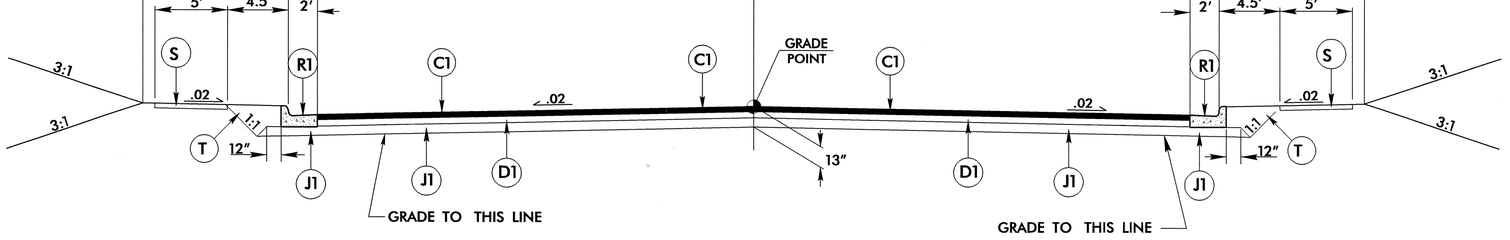
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 21+78.35 TO 30+48.00



INSERT 'A'
DETAIL SHOWING RETAINING WALL –RT– OF–L–
–L– STA. 26+30.00 TO 27+61.00 (RT.)

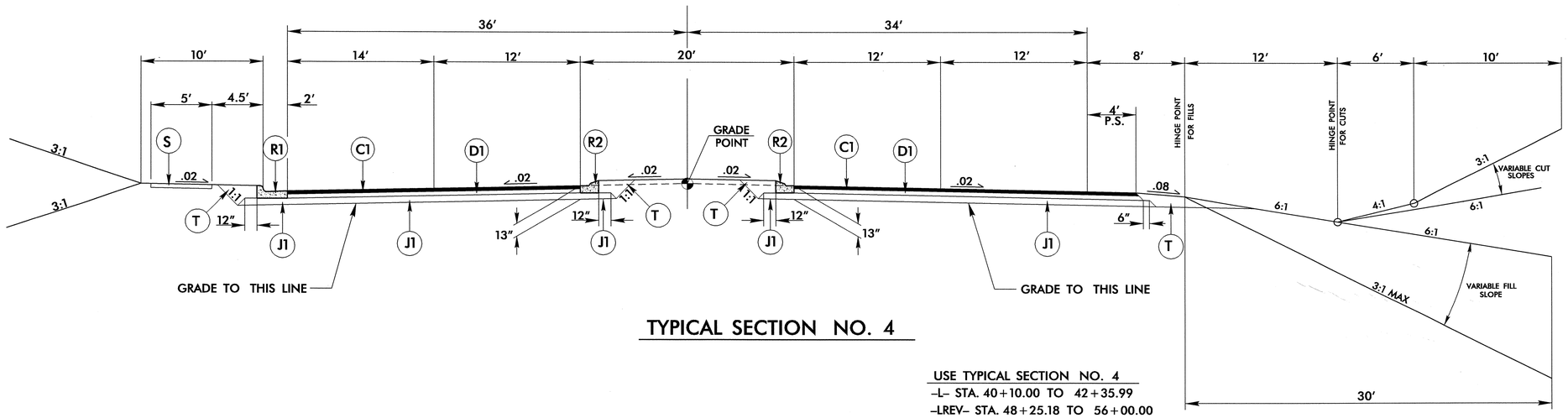
℄ –L– (SR 1357)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 30+48.00 TO 32+77.60, TRANSITION FROM T.S. 2 TO T.S. 3
–L– STA. 32+77.60 TO 35+31.95
* –L– STA. 35+95.95 TO 40+10.00

℄ –L– & –LREV– (SR 1357)



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–L– STA. 40+10.00 TO 42+35.99
–LREV– STA. 48+25.18 TO 56+00.00

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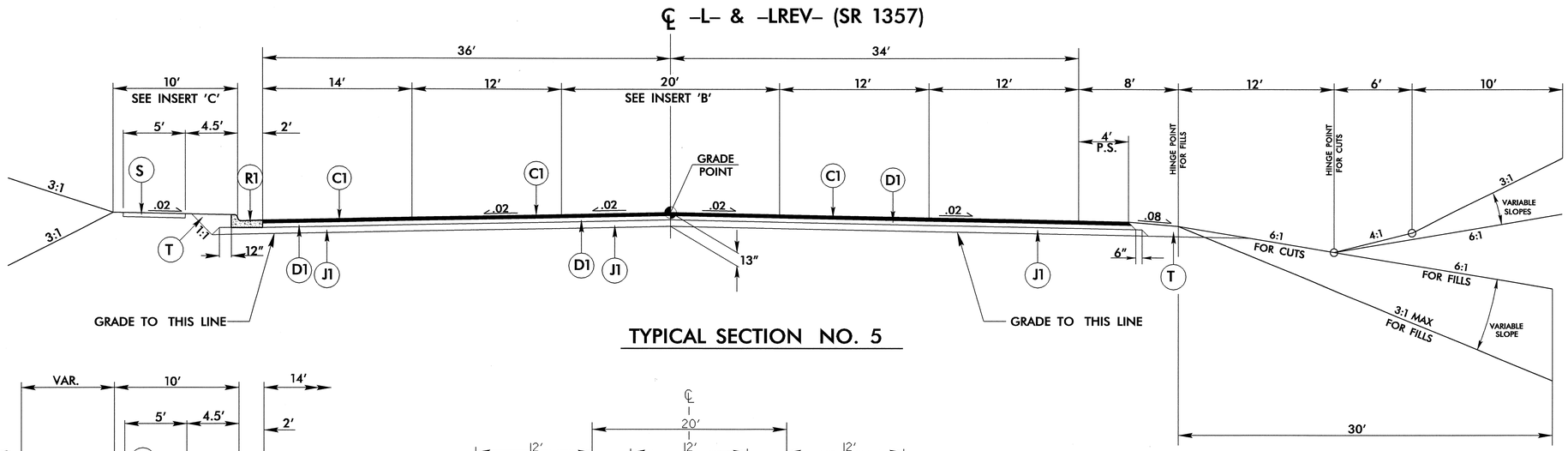
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-B

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 9-25-08

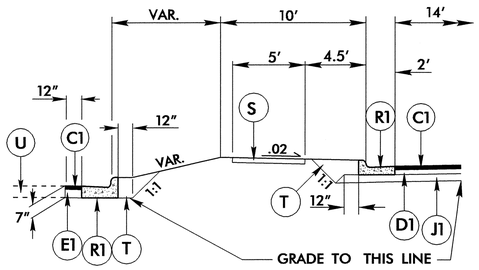
PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 9/23/08

FINAL PAV'T DESIGN	
C1	3" S9.5B
D1	4" I19.0B
E1	4" B25.0B
J1	6" ABC
R1	2'-6" C & G
R2	1'-6" C & G
R3	5" MONO. ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAV'T

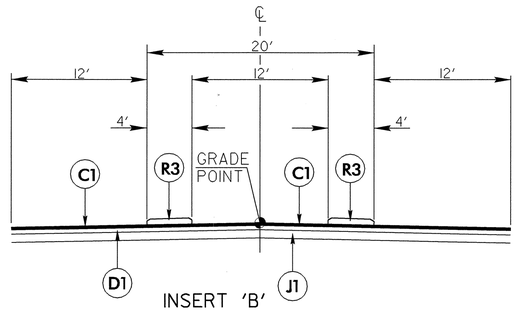


TYPICAL SECTION NO. 5

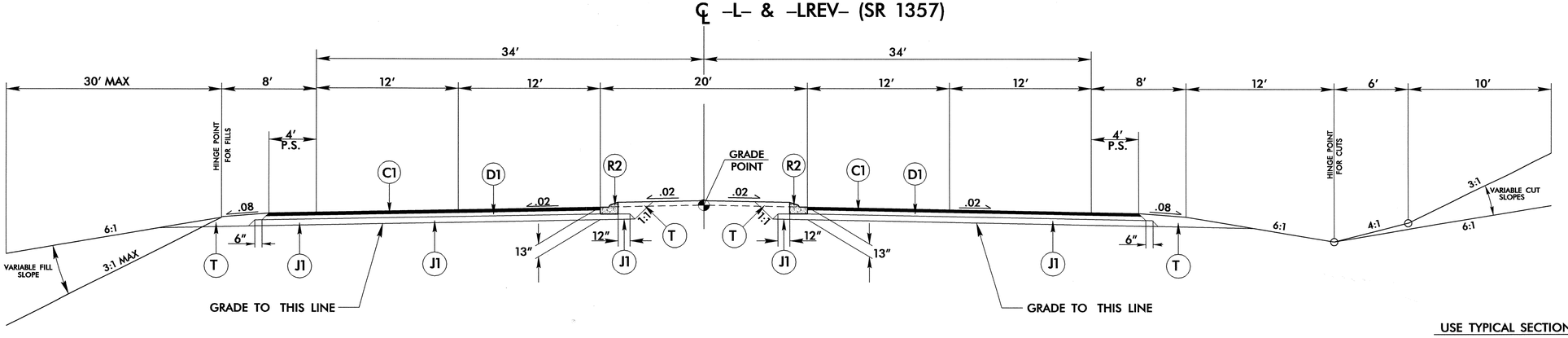
USE TYPICAL SECTION NO. 5
-L- STA. 42+35.99 TO 44+86.74 L.B.
-LREV- STA. 44+86.74 L.A. TO 46+50
-LREV- STA. 46+50.00 TO 48+25.18, TRANSITION FROM T.S. 5 TO T.S. 4



INSERT 'C'
CHANNELIZATION DETAIL
SEE PLANS FOR LOCATIONS



INSERT 'B'
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 5
SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
-LREV- STA. 56+00.00 TO 62+53.68 L.B. =
-L- STA. 59+61.66 L.A. TO 66+74.56

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-C

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

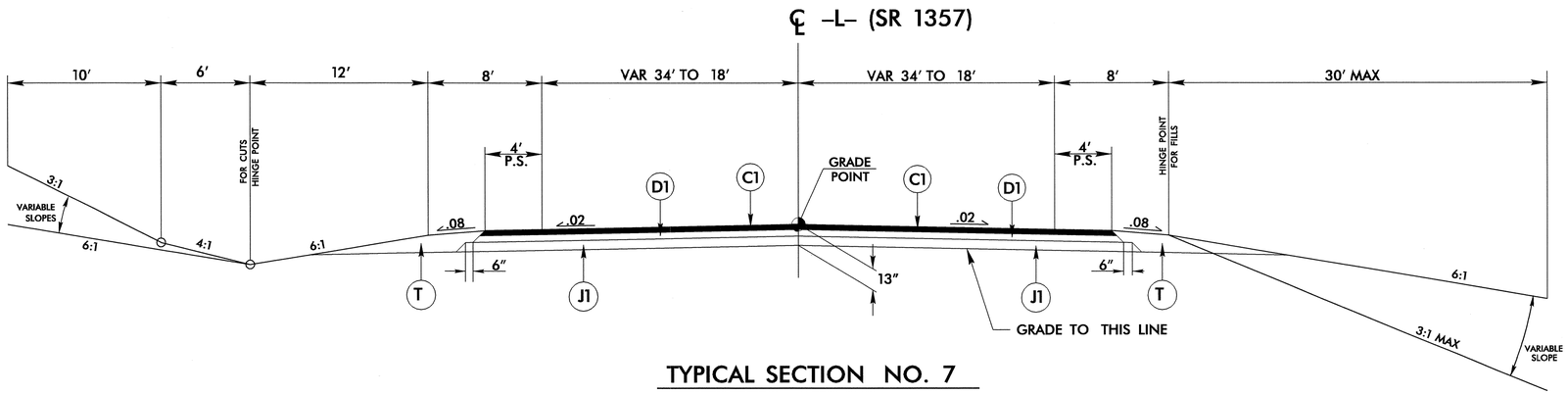
9-30-08

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13968 ENGINEER CHI CHEN

9/30/08

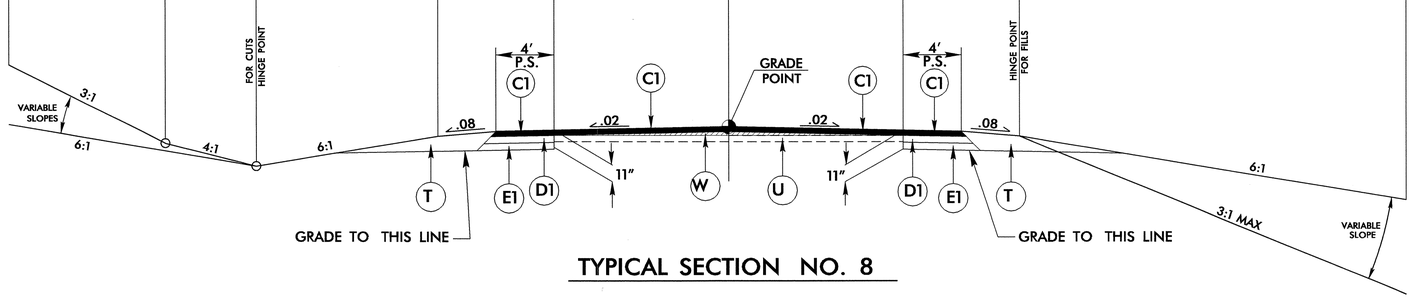
FINAL PAVEMENT DESIGN	
C1	3" S9.5B
D1	4" I19.0B
E1	4" B25.0B
J1	6" ABC
R1	2'-6" C & G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
–L– STA. 66+74.56 TO 73+04.86

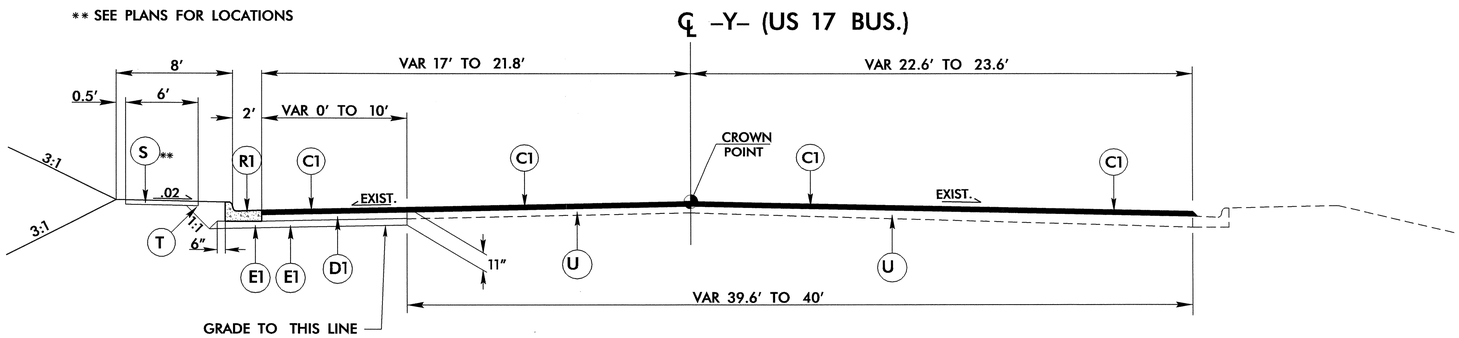
–L– STA. 73+04.86 TO 76+61.41, TRANSITION FROM T.S. 7 TO T.S. 8



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
–L– STA. 76+61.41 TO 77+75.00

** SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
–Y– STA. 12+00.00 TO 13+85.00

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-D

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREW

4-30-08

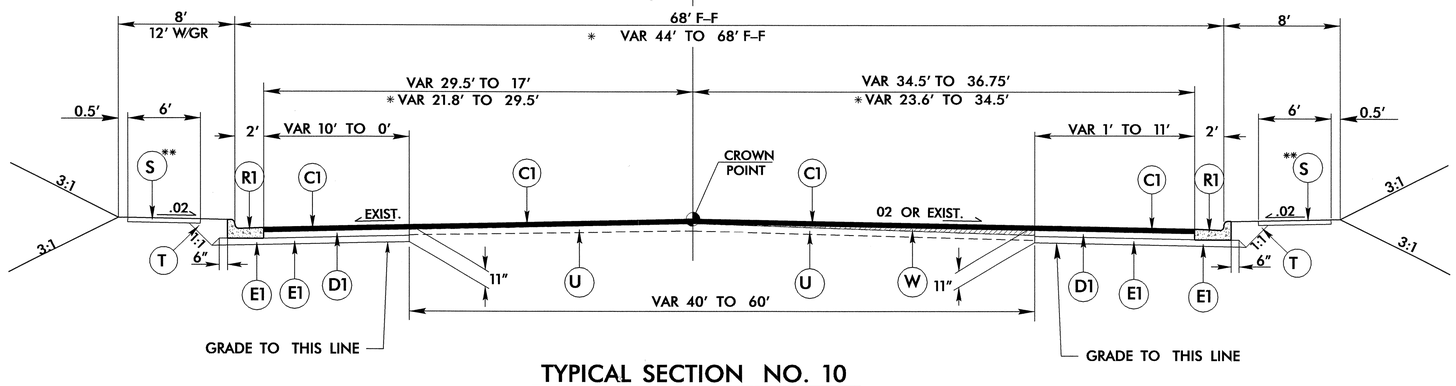
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12668 ENGINEER LEON-CHI CHEIN

9/30/08

FINAL PAV'T DESIGN	
C1	3" S9.5B
D1	4" I19.0B
E1	4" B25.0B
R1	2'-6" C & G
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAV'T
W	WEDGING

℄ –Y– (US 17 BUS.)



TYPICAL SECTION NO. 10

** SEE PLANS FOR LOCATIONS

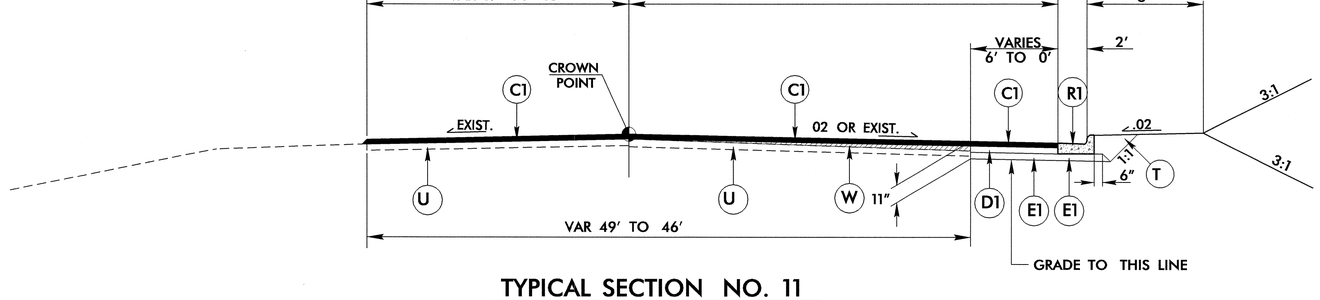
NOTE: SEE PLANS FOR CONCRETE ISLAND LOCATIONS

USE TYPICAL SECTION NO. 10

* –Y– STA. 13+85.00 TO 16+83.25

–Y– STA. 16+83.25 TO 24+17.21

℄ –Y– (US 17 BUS.)



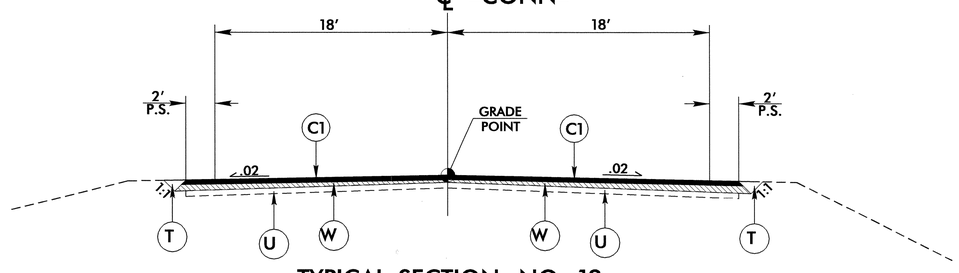
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

–Y– STA. 24+17.21 TO 30+25.00

NOTE: SEE PLANS FOR CONCRETE ISLAND LOCATIONS

℄ –CONN–



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

–CONN– STA. 20+50.00 TO 24+75, TRANSITION FROM T.S. 11 TO T.S. 12

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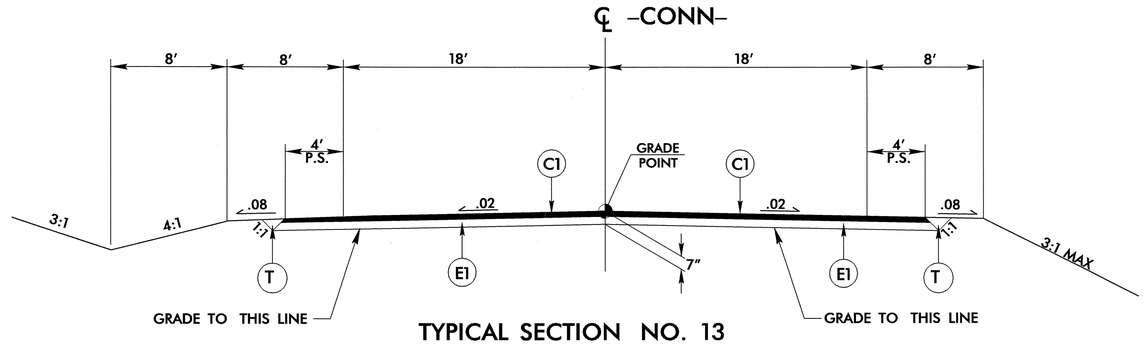
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-E

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 9-25-08

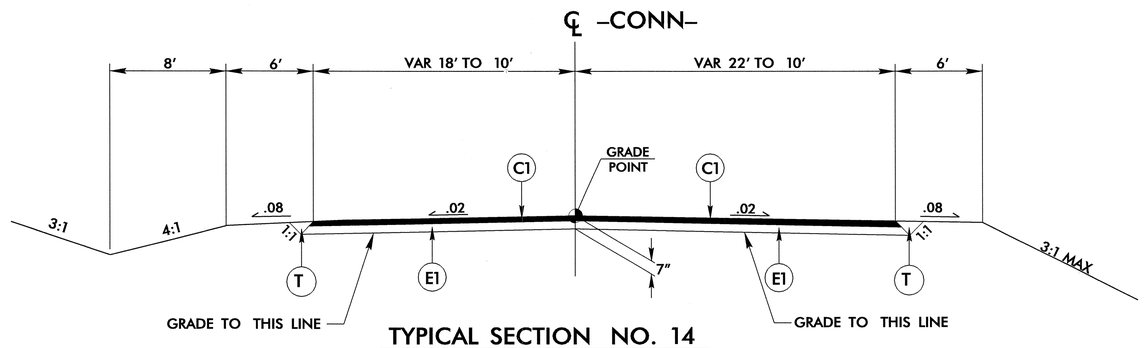
PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 9/23/08

FINAL PAV'T DESIGN	
C1	3" S9.5B
E1	4" B25.0B
T	EARTH MATERIAL
U	EXIST. PAV'T
W	WEDGING



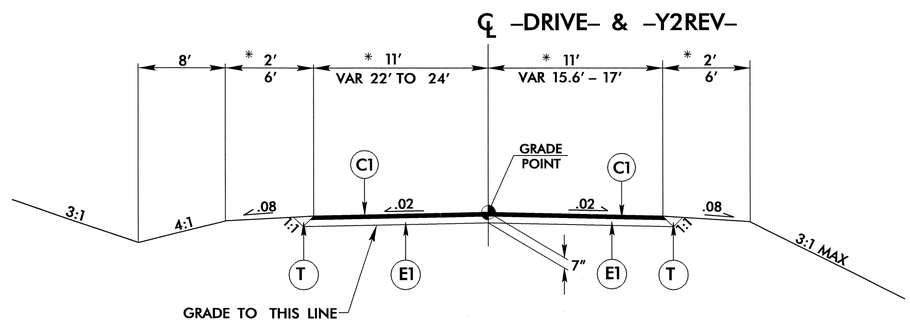
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
-CONN- STA. 24+75 TO 27+99.08



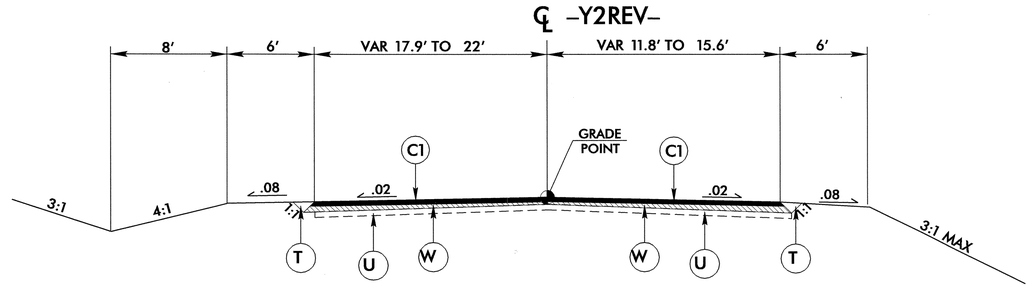
TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
-CONN- STA. 30+45.78 TO 32+25.00



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15
* -DRIVE- STA. 10+49.77 TO 12+00.00
-Y2REV- STA. 14+00.00 TO 14+18.42



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16
-Y2REV- STA. 13+00.00 TO 13+50.00, TRANSITION FROM EXISTING TO T.S. 16
-Y2REV- STA. 13+50.00 TO 14+00.00

6/2/99

19-SEP-2008 11:40
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PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-F

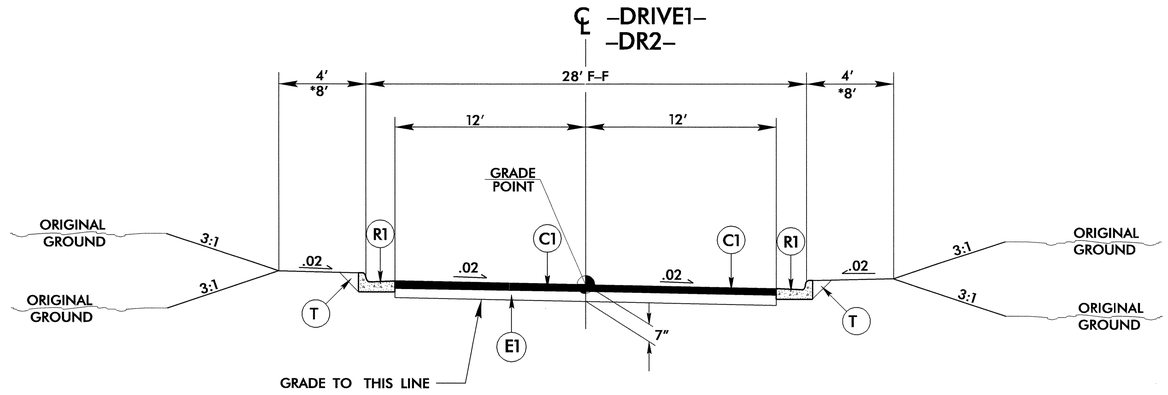
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
8-25-08

PAVEMENT DESIGN ENGINEER

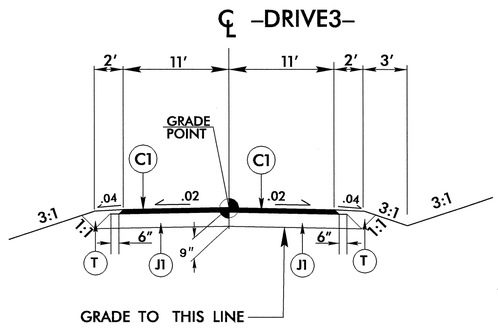
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
9/23/08

FINAL PAV'T DESIGN	
C	2" S9.5B
C1	3" S9.5B
E1	4" B25.0B
J1	6" ABC
R1	2'-6" C & G
T	EARTH MATERIAL
U	EXIST. PAV'T
W	WEDGING



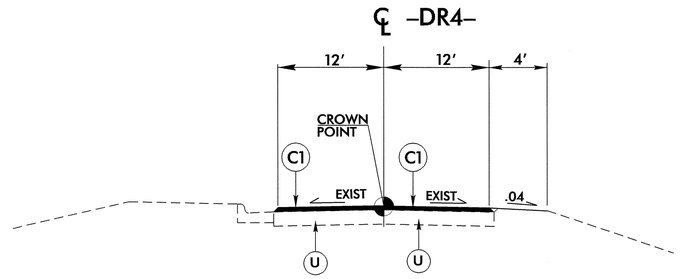
TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17
–DRIVE1– STA. 10+66.48 TO 11+98.47
*–DR2– STA. 10+63.00TO 11+75.00



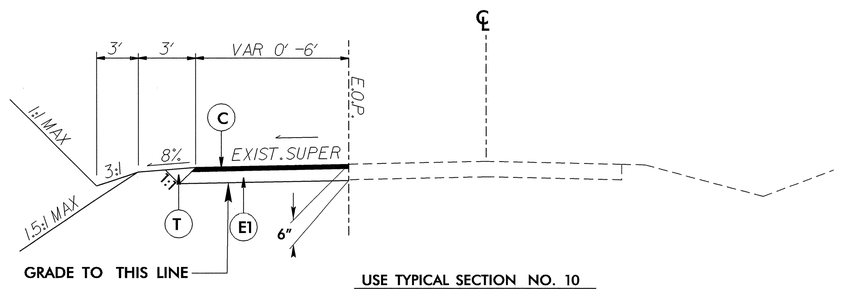
TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18
–DRIVE3– STA. 10+54.20 TO 11+94.57



TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19
–DR4– STA. 10+31.30 TO 13+50.18



USE TYPICAL SECTION NO. 10
–L– STA. 29+50 +/– TO 33+00.00 +/– LT
–Y– STA. 15+33 +/– TO 16+50.00 +/– LT

TYPICAL SECTION NO. 20

NOTE: TEMPORARY WIDENING FOR MAINTENANCE OF TRAFFIC
SEE TRAFFIC CONTROL PLANS

6/2/99

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-G

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

9-25-08

HYDRAULICS ENGINEER

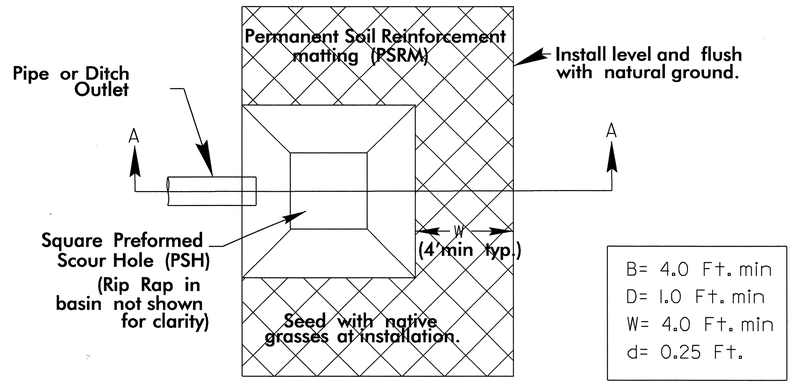
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN A. MORGAN

9/24/08

SEE PLAN SHEET 5 FOR LOCATIONS

PREFORMED SCOUR HOLE

PLAN VIEW



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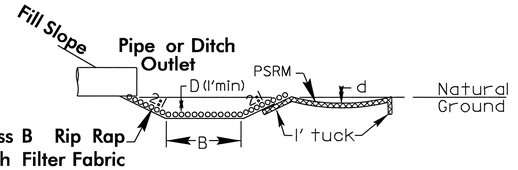
D= 1.0 Ft. min
W= 4.0 Ft. min
d= 0.25 Ft.

SECTION A-A



5/05

–L– STA. 31+13 RT.
–L– STA. 32+23 RT.
–L– STA. 34+76 RT.
–Y– STA. 17+00 LT.

22-SEP-2008 12:09
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-H
R/W SHEET NO.	

50 25 0 50 100
PLANS

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
9-25-08

INTERSECTION DETAIL
-L- & -Y-

SEE SHEET 5 FOR PLANS

NAD 83

-L-
PI Sta 31+62.00
△ = 15° 16' 42.0" (RT)
D = 9° 32' 57.5"
L = 159.99'
T = 80.47'
R = 600.00'
e = SEE PLANS

-L-PC 30+81.53

-DRIVE3-POT 10+00
-L-POC 31+76.05
232' TAPER

-DRIVE3-POT 11+94.57
END CONST.

-L-PT Sta. 32+41.52

-DRIVE1-POT 10+00.00
-Y- POT 23+95.00

S 39° 52' 48.4" E

-DRIVE1-POT 11+98.47

200' TAPER

N 50° 09' 37.6" E

392' TRANSITION RT SIDE

-DR4-POT 10+00.00

-Y-PINCSta. 21+47.97

-DR4-
PI Sta 10+47.17
△ = 89° 30' 11.4" (LT)
D = 358° 05' 55.0"
L = 24.99'
T = 15.86'
R = 16.00'

-DR4- PC 10+31.30

-DR4-PT 10+56.30

S 49° 34' 15.4" W

S 39° 55' 55.9" E
-DR4-

-DR2-POT 11+43.26
-DR4-POT 13+64.37

-DR2- POT 12+07.96
-DR2- POT 11+75
END CONSTRUCTION

TIE TO EXIST. C & G

N 50° 07' 11.4" E
-DR2-

100' TAPER

S 39° 52' 48.6" E
-L-

190' TAPER

-DR2-POT 10+00.00
-L- POT 40+46.39

4" P.S.

295' TRANSITION

-L-POT Sta. 35+61.45=
-Y-POT Sta. 19+86.14
△ = 89° 46' 32.9"

8"x12" CURB

N 49° 53' 44.3" E
-Y-

200' FULL LANE

8"x12" CONC. CURB

PROP. 5' SIDEWALK

2'-6"C & G

1'-6"C & G

5" MONOLITHIC CONCRETE ISLAND

5' SIDEWALK

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

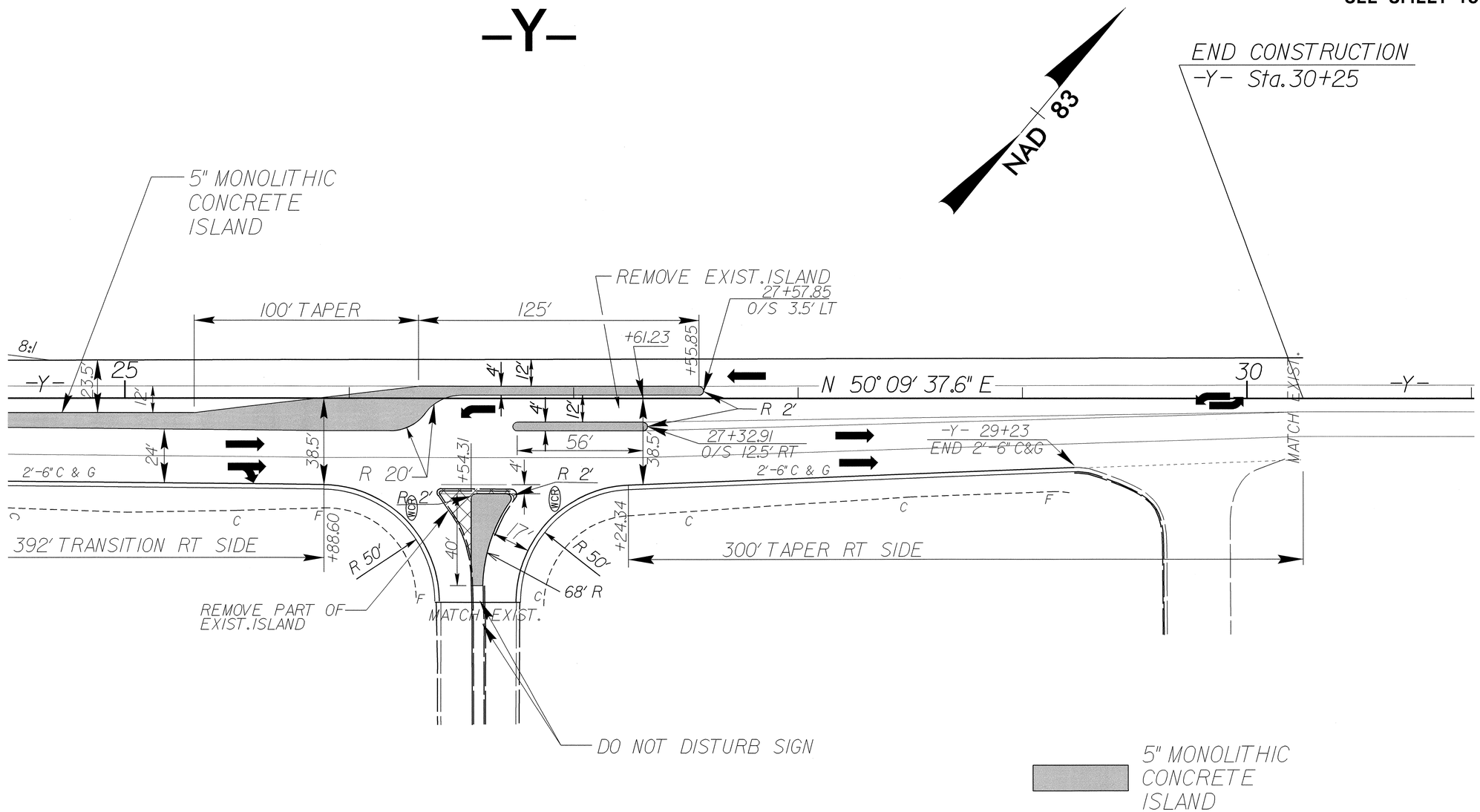
9-25-08

25 13 0 25 50

PLANS

CHANNELIZATION DETAIL
-Y-

SEE SHEET 10 FOR PLANS



5/14/99

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-J

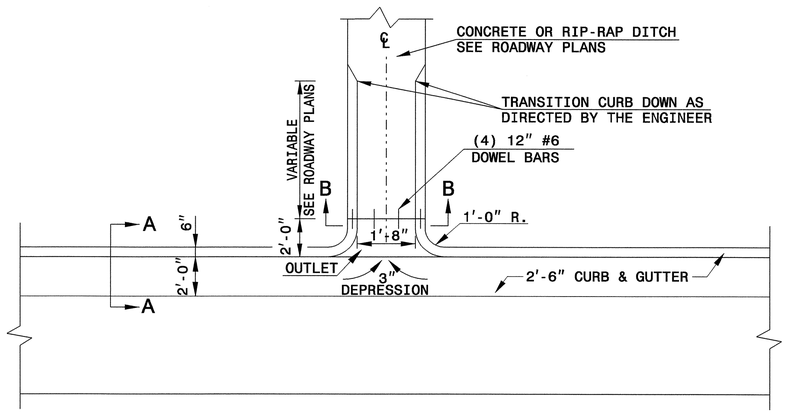
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

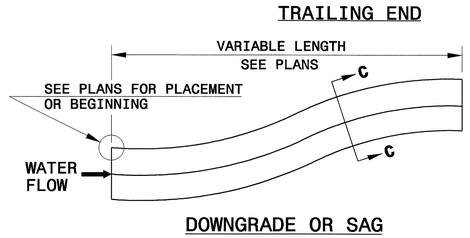
DRAINAGE INSTALLATION IN 2'-6" CURB AND GUTTER

SHEET 1 OF 1

C&GDTCH

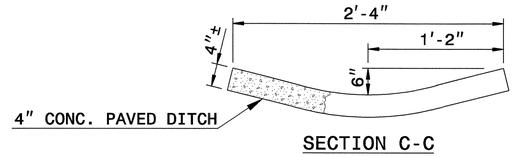


PLAN VIEW

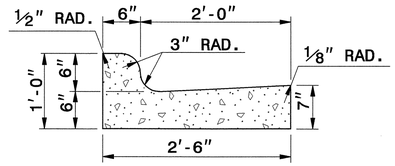


TRAILING END

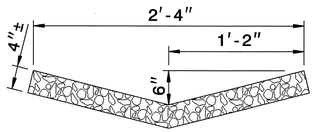
DOWNGRADE OR SAG



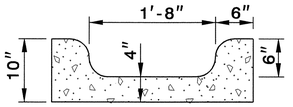
SECTION C-C



2'-6" CURB AND GUTTER
SECTION A-A



RIP-RAP LINED DITCH



SECTION B-B

NOTES:

- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR

DRAINAGE INSTALLATION IN 2'-6" CURB AND GUTTER

SHEET 1 OF 1

C&GDTCH

SEE PLAN SHEET 6

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOE S. HOWERTON 9/24/08

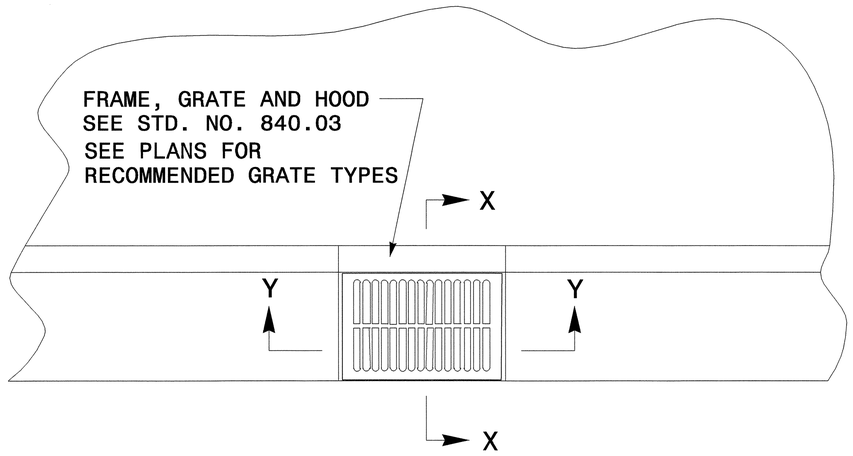
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: 3-12-02
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/25/08
FILE SPEC.: */details\stand\modifiedflume.dgn

5/14/99

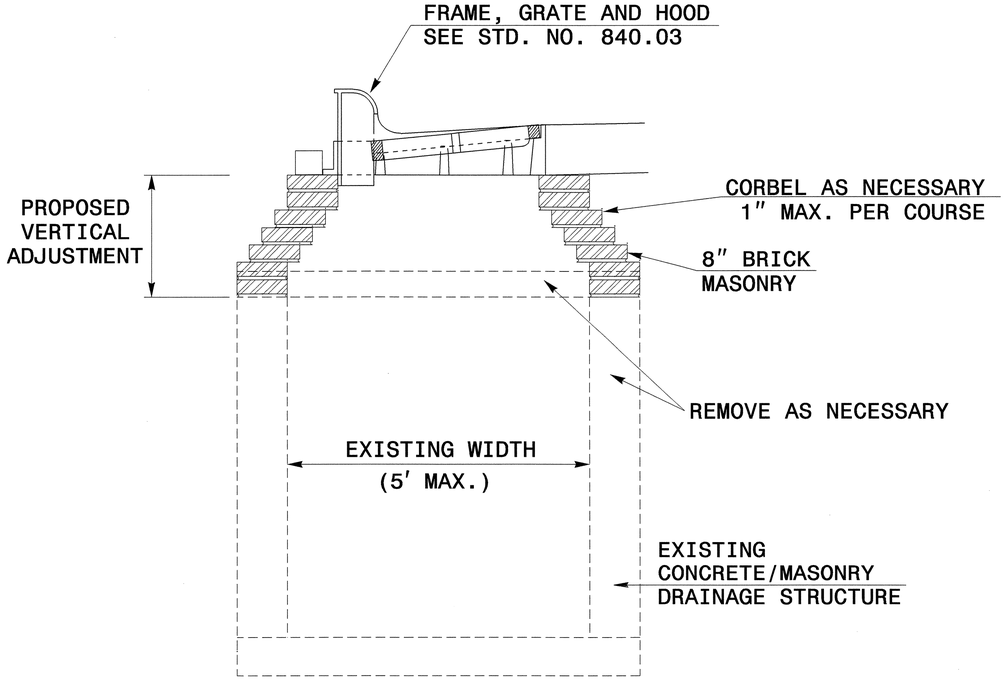
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-K



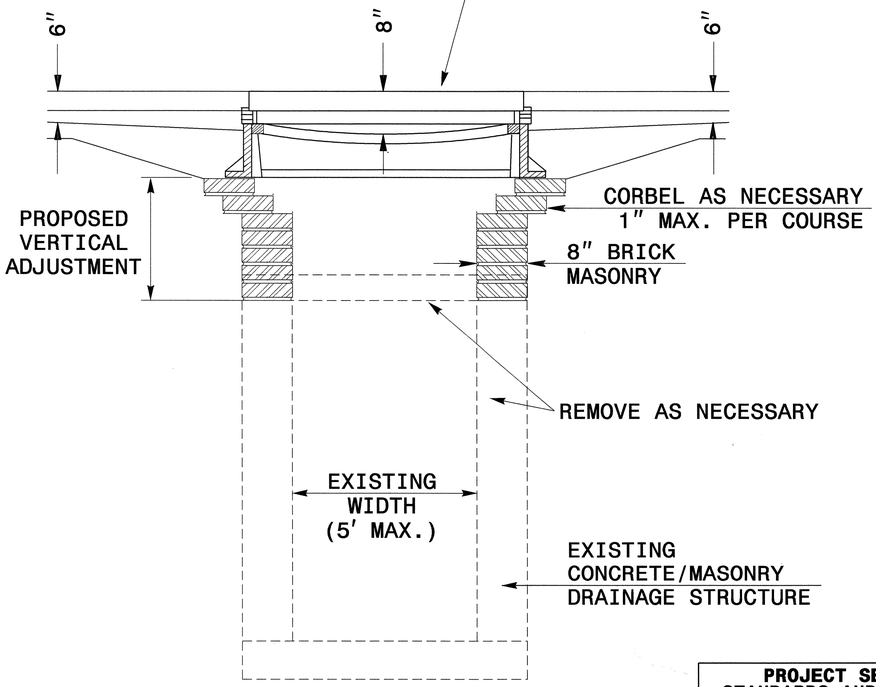
PLAN

GENERAL NOTES:

- THE ROADWAY PLANS INDICATE STRUCTURES TO BE CONVERTED.
- AFTER REMOVAL, STORE GRATES AND FRAMES AS DIRECTED BY THE ENGINEER.
- 4" SOLID CLAY BRICK, JUMBO BRICK, CONCRETE, OR 4" SOLID CONCRETE BLOCK MAY BE USED FOR VERTICAL ADJUSTMENT OF THE STRUCTURE.
- CONVERT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL E. HOOPER
9/29/08

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

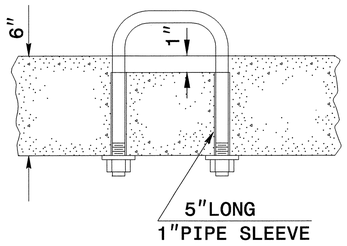
CONVERSION OF DROP INLET OR JUNCTION BOX TO CATCH BASIN

ORIGINAL BY: E.E. WARD DATE: 11-97
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: 0837:usr\details\stand\jbtocb.dgn

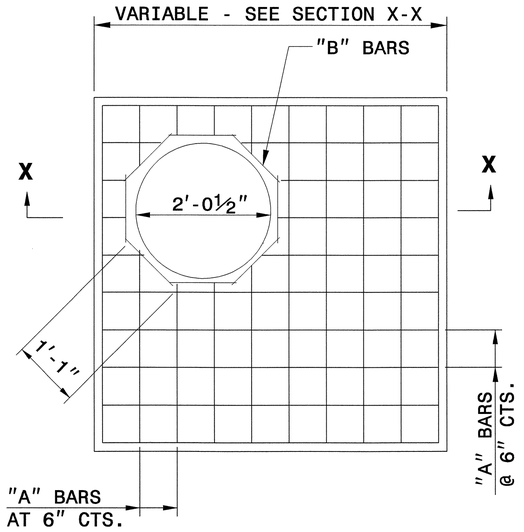
$$$$USERNAME$$$$ $$$$DATE$$$$ $$$$TIME$$$$ $$$$XREFS$$$$

5/14/99

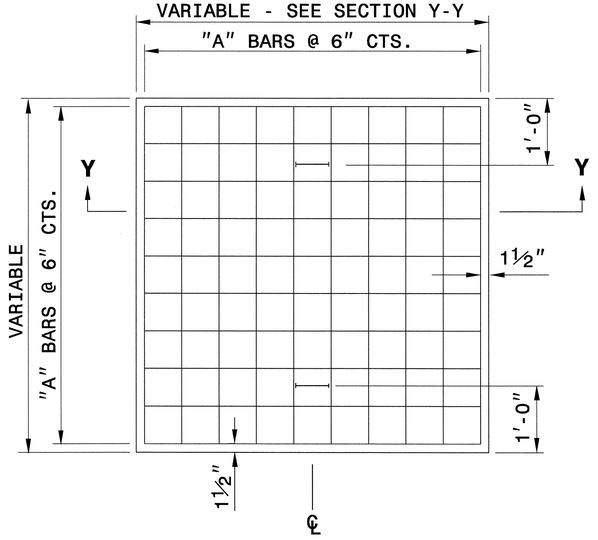
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-L



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

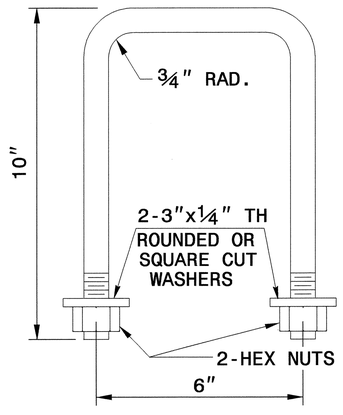
BILL OF MATERIALS

REINFORCING STEEL

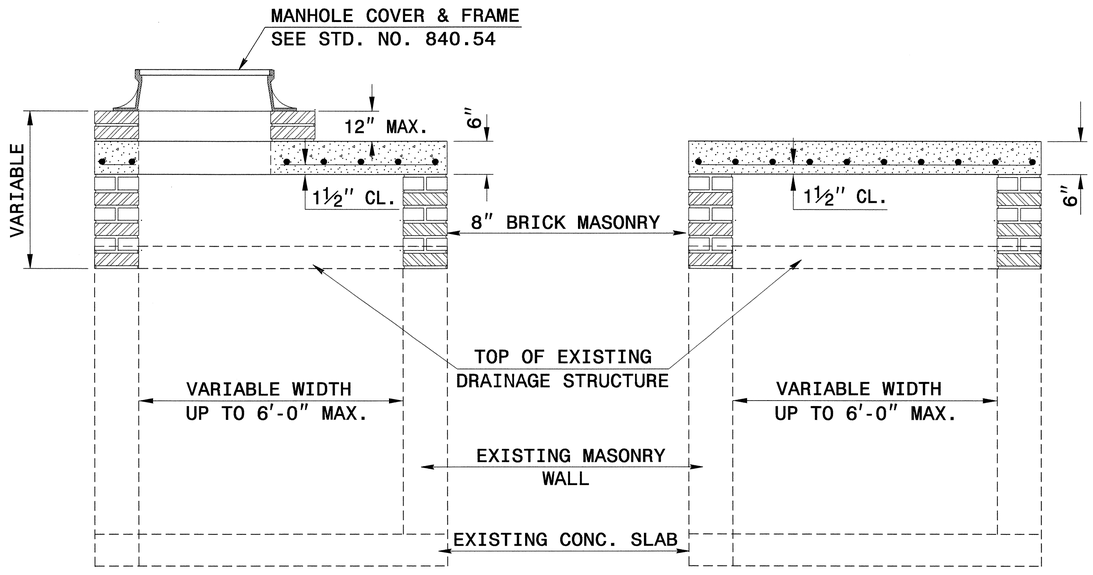
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X

SECTION Y-Y

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

DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX (MANHOLE OPTIONAL)

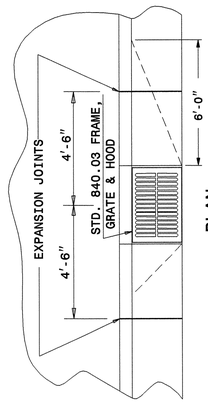
ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

USERNAME = jhommeyer
DESIGN = 9/29/2006
LAST MODIFIED = 9/29/2006
DGN FILE = boxtojbe.dgn

5/14/99

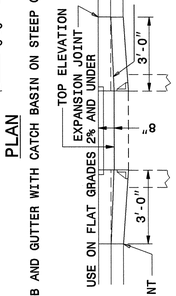
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-M

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.



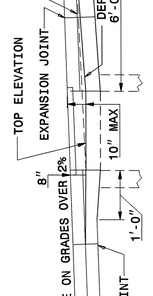
PLAN

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES



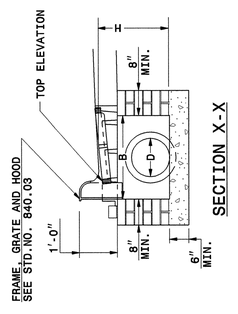
ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES

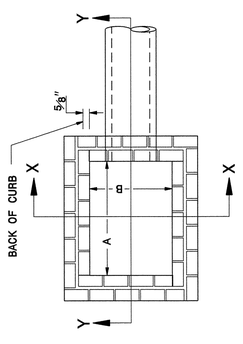


ELEVATION

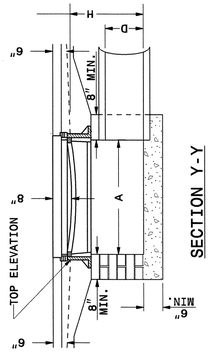
NORMAL CURB AND GUTTER ON STEEP GRADES



SECTION X-X



PLAN



SECTION Y-Y

MINIMUM DIMENSIONS AND QUANTITIES FOR BRICK CATCH BASIN

DIMENSIONS OF BOX AND PIPE				CU. YDS. CONC. IN BOX		BRICK MASONRY		DEDUCTIONS ONE PIPE	
PIPE D	SPAN A	WIDTH B	MIN. HEIGHT H	BOTTOM SLAB	TOTAL CONC.	BRICK MSNR. IN WALLS	TOTAL BRICK AND CONCRETE	C.M.	R.C.
12"	3'-0"	2'-2"	2'-0"	0.281	0.281	0.481	0.762	0.020	0.042
15"	3'-0"	2'-2"	2'-3"	0.281	0.281	0.562	0.843	0.031	0.047
18"	3'-0"	2'-2"	2'-6"	0.281	0.281	0.642	0.923	0.044	0.065
24"	3'-0"	2'-2"	3'-1"	0.281	0.281	0.828	1.109	0.078	0.121

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

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH BRICK CATCH BASIN
12" THRU 24" PIPE

SHEET 1 OF 1
840D01

GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.

PLAN

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES

ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES

ELEVATION

NORMAL CURB AND GUTTER ON STEEP GRADES

SECTION X-X

PLAN

SECTION Y-Y

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN

DIMENSIONS OF BOX AND PIPE				CU. YDS. CONC. IN BOX		DEDUCTIONS ONE PIPE	
PIPE D	SPAN A	WIDTH B	MIN. HEIGHT H	BOTTOM SLAB	CONCRETE IN WALLS	TOTAL CONC.	C.M.	R.C.
12"	3'-0"	2'-2"	2'-0"	0.235	0.343	0.578	0.015	0.026
15"	3'-0"	2'-2"	2'-3"	0.235	0.400	0.635	0.023	0.036
18"	3'-0"	2'-2"	2'-6"	0.235	0.457	0.692	0.033	0.049
24"	3'-0"	2'-2"	3'-1"	0.235	0.590	0.825	0.059	0.085

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

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 24" PIPE

SHEET 1 OF 1
840D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOSEPH E. HOVERTON
9/29/08

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE: 6/5/08
FILE SPEC.: w:\details\stand\840d01.dgn

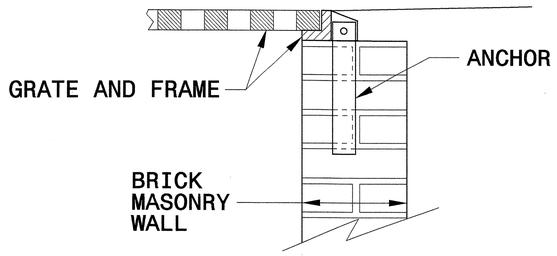
$$$$USERNAME=$$$$
$$$$TIME=$$$$
$$$$DATE=$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-N

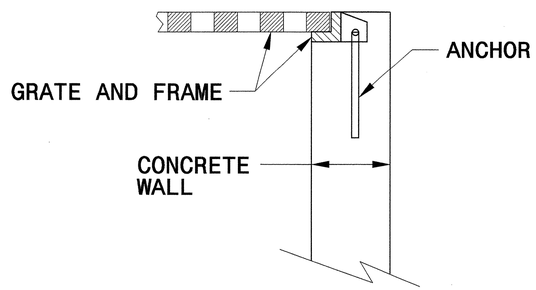
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

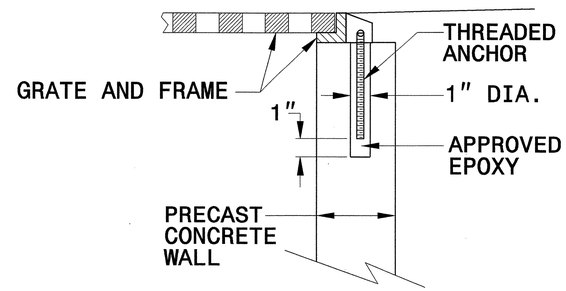
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



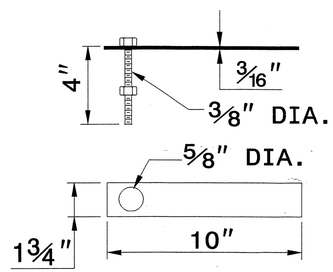
CONCRETE CONSTRUCTION



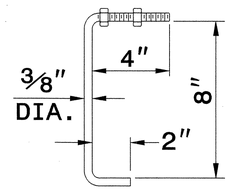
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

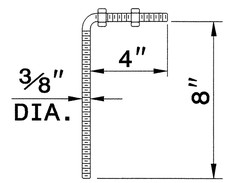
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



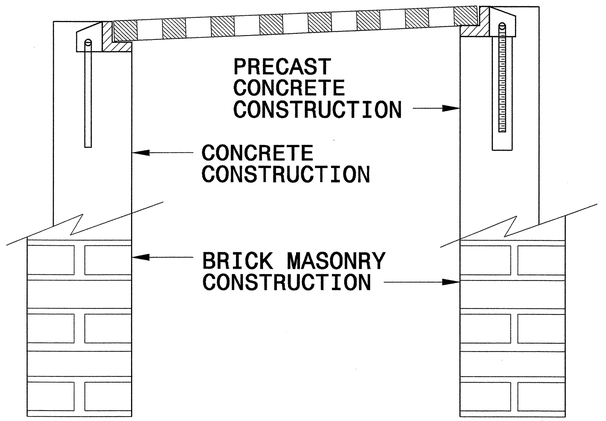
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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 022966 ENGINEER JOEL S. HOMEYER
9/29/08

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
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CHECKED BY:		DATE:	
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$$$$$$USERNAME$$$$$$

PROJECT REFERENCE NO.	SHEET
U-3462	2-0

GEOTECHNICAL ENGINEER

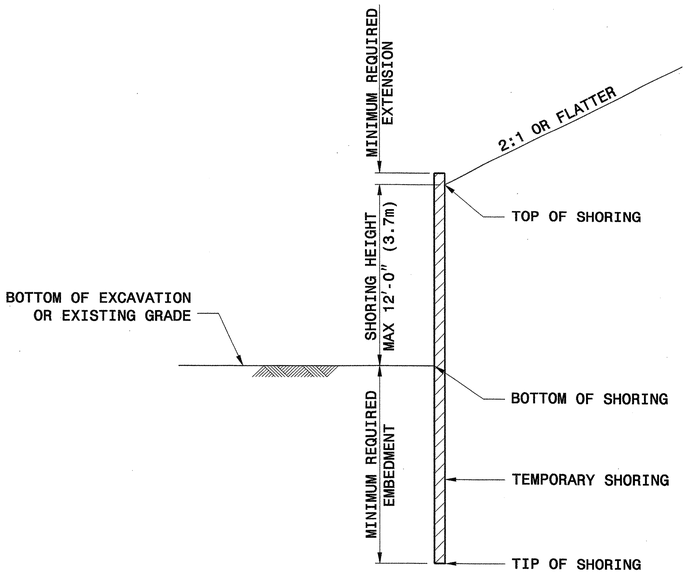
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07

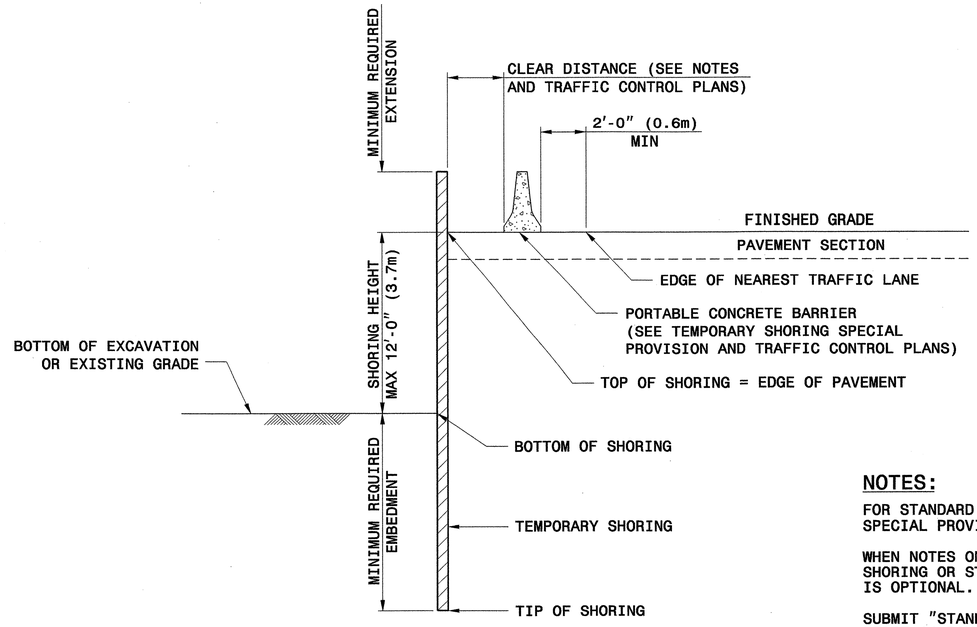
SIGNATURE DATE

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
U-3462	2-P

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.

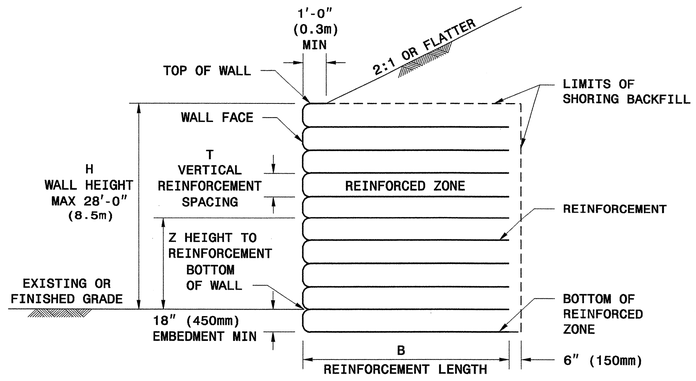
PLACE SHORING BACKFILL IN 8″ TO 10″ (200mm to 250mm) THICK LIFTS AND COMPACT IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 3′-0″ (1m) OF THE WALL FACE.

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.

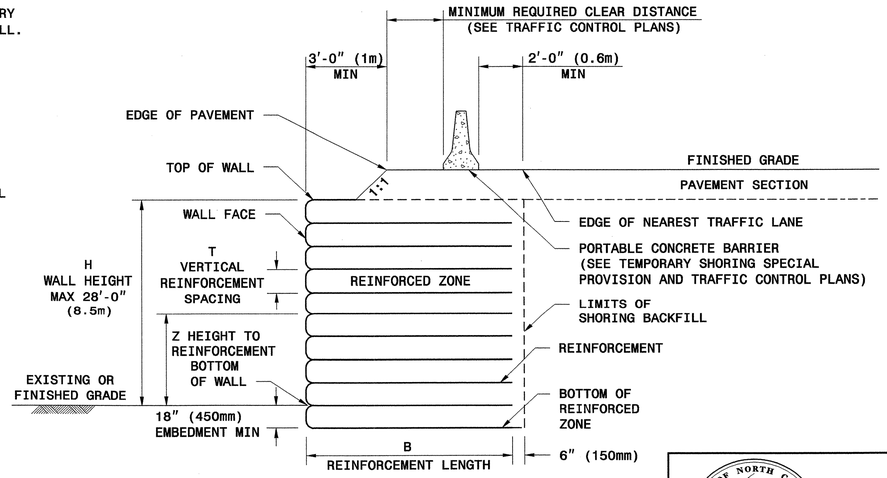
COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3″ (75mm) OF SHORING BACKFILL. PLACE TOP REINFORCEMENT LAYER BETWEEN 4″ AND 24″ (100mm and 600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

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

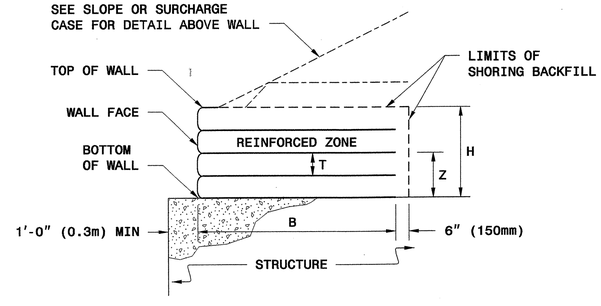
IF THE TOP OF WALL IS WITHIN 5′-0″ (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL. STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS REQUIRED OTHERWISE.



SLOPE CASE



SURCHARGE CASE



TEMPORARY MSE WALL ON STRUCTURE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

GEC221427 12/21/2007 std no 1801 shidden GE-Oce34bond

PROJECT REFERENCE NO.	SHEET
U-3462	2-Q

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

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	15	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

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	11	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	11	15	15	15	13.5
						11	11	11	15	15	15	15	12
					11	11	11	11	15	15	15	15	10.5
				11	11	11	11	15	15	15	15	15	9
			11	11	11	11	15	15	15	15	15	16	7.5
			11	11	11	11	14	15	15	15	15	16	6
		11	11	11	11	14	14	15	15	15	16	16	4.5
	11	11	11	11	14	14	15	15	15	15	16	16	3
11	11	11	11	11	14	15	15	15	15	16	16	16	1.5
11	11	11	11	15	15	15	15	15	16	16	16	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

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	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	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	7.0	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	9.5	0
7.0	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	-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	3X1	3X2	3X2	3X2	3X2	3X2	15 - 2
						3X1	3X2	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	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3 - 6
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	1 -10
3X1	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
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	

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

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
U-3462	2-R

GEOTECHNICAL ENGINEER

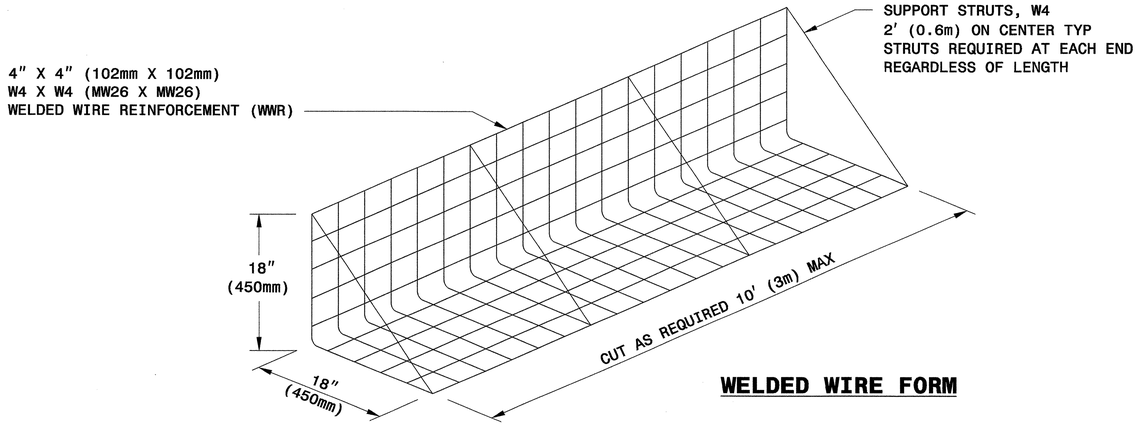
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

scott a. hidden 3/29/07

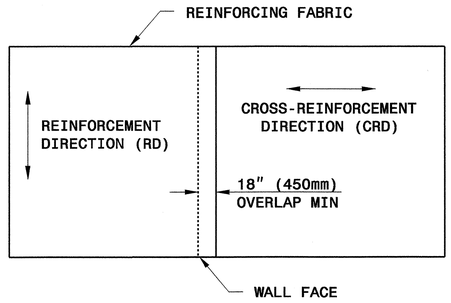
SIGNATURE DATE

ENGINEER

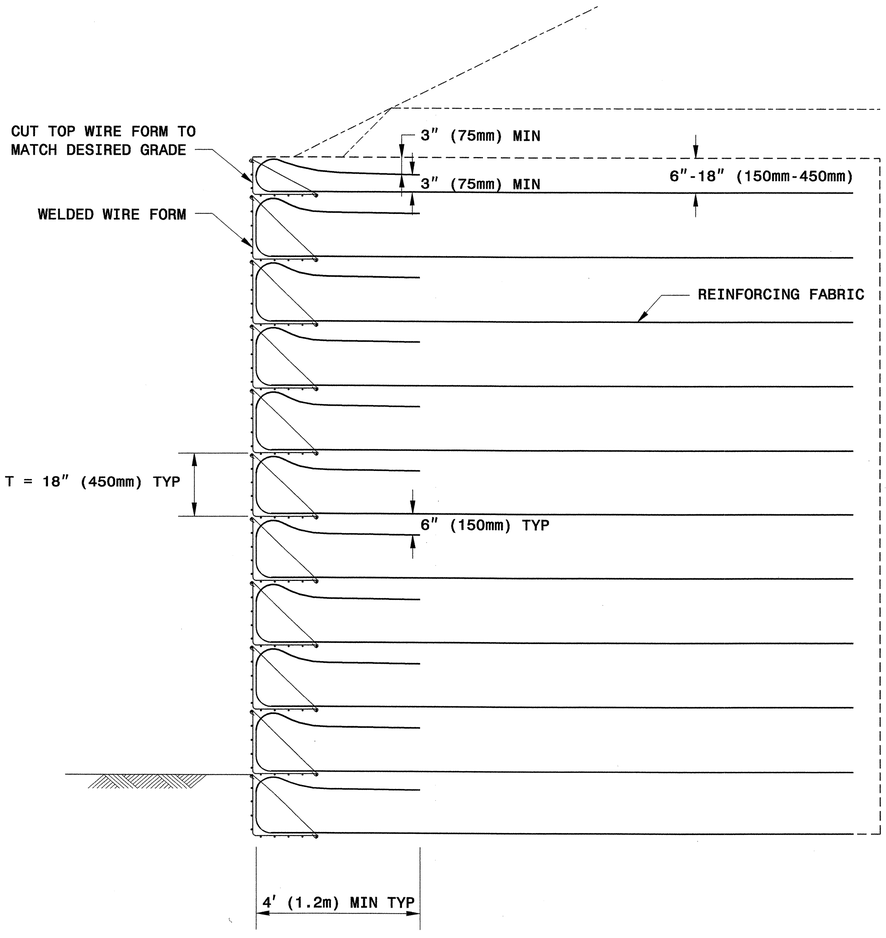
SIGNATURE DATE



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
U-3462	2-S

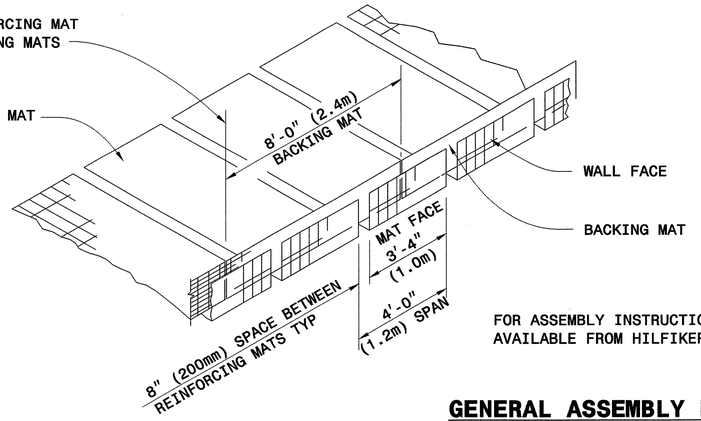
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

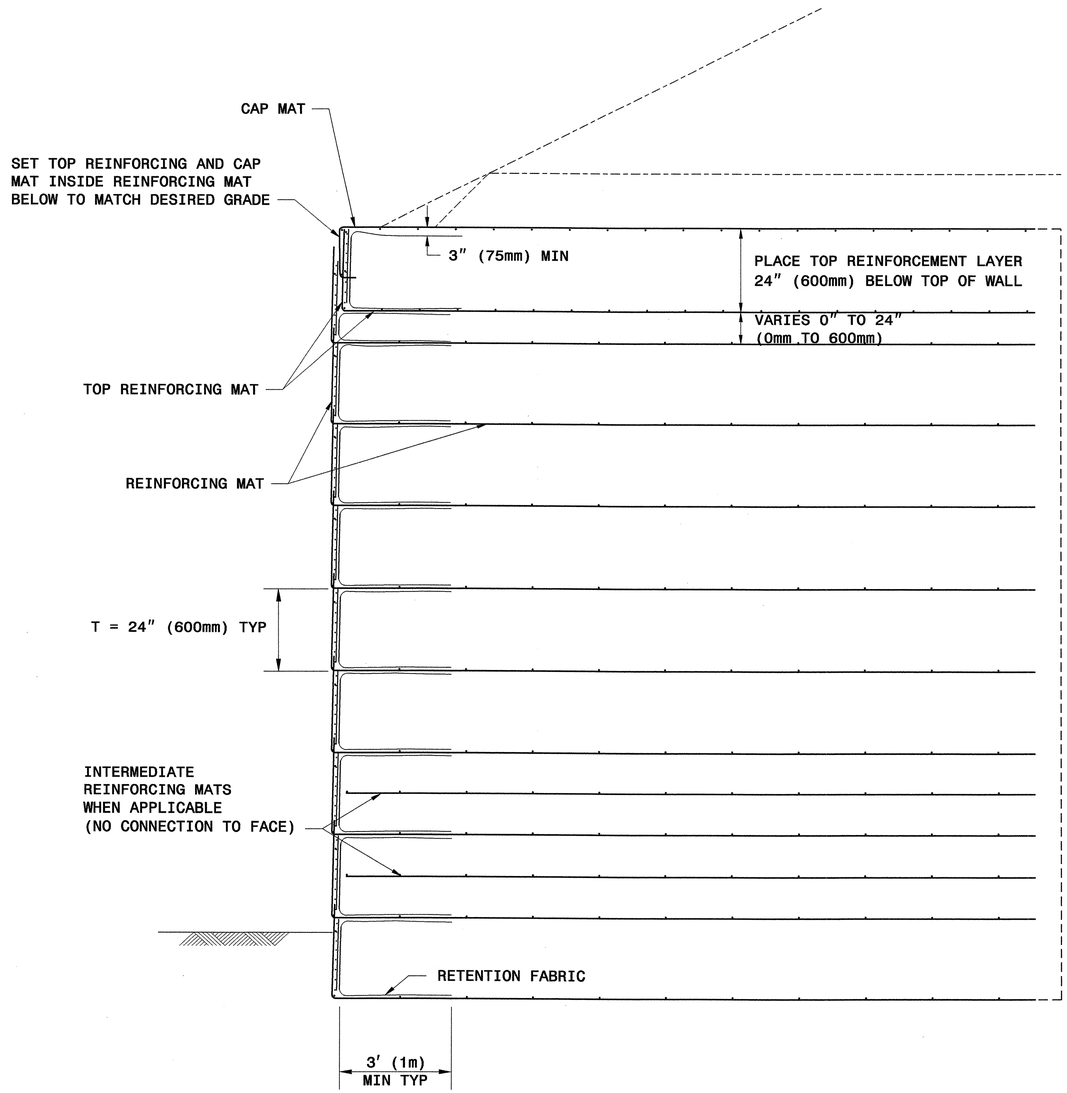
ENGINEER

SIGNATURE DATE



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

GENERAL ASSEMBLY DETAIL



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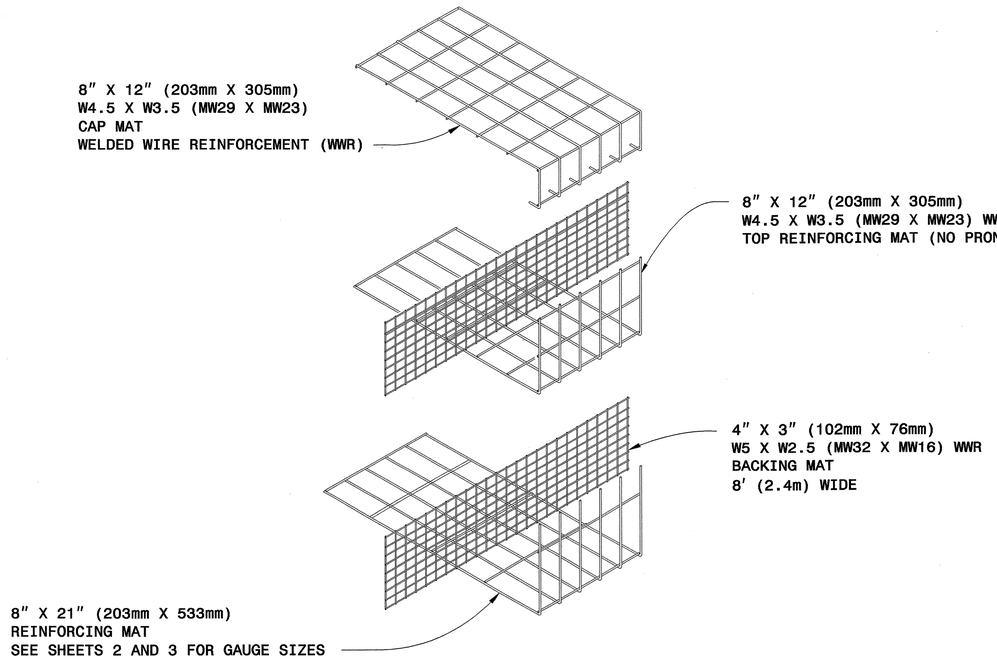

WALL COMPONENTS

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
U-3462	2-T

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 3/29/07

SIGNATURE DATE

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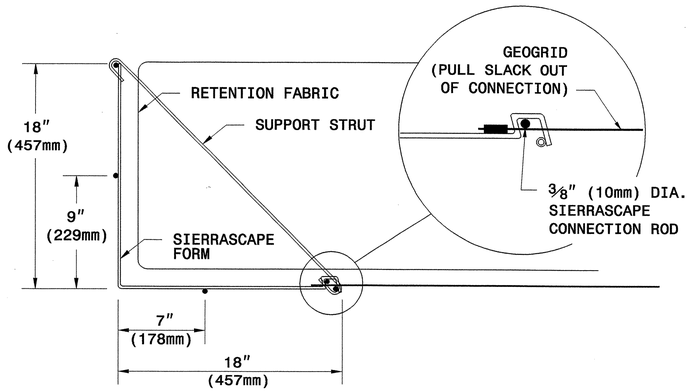
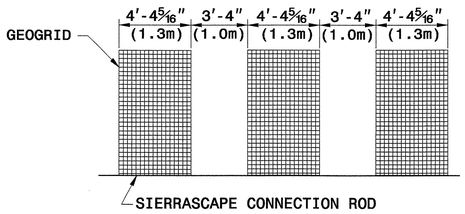
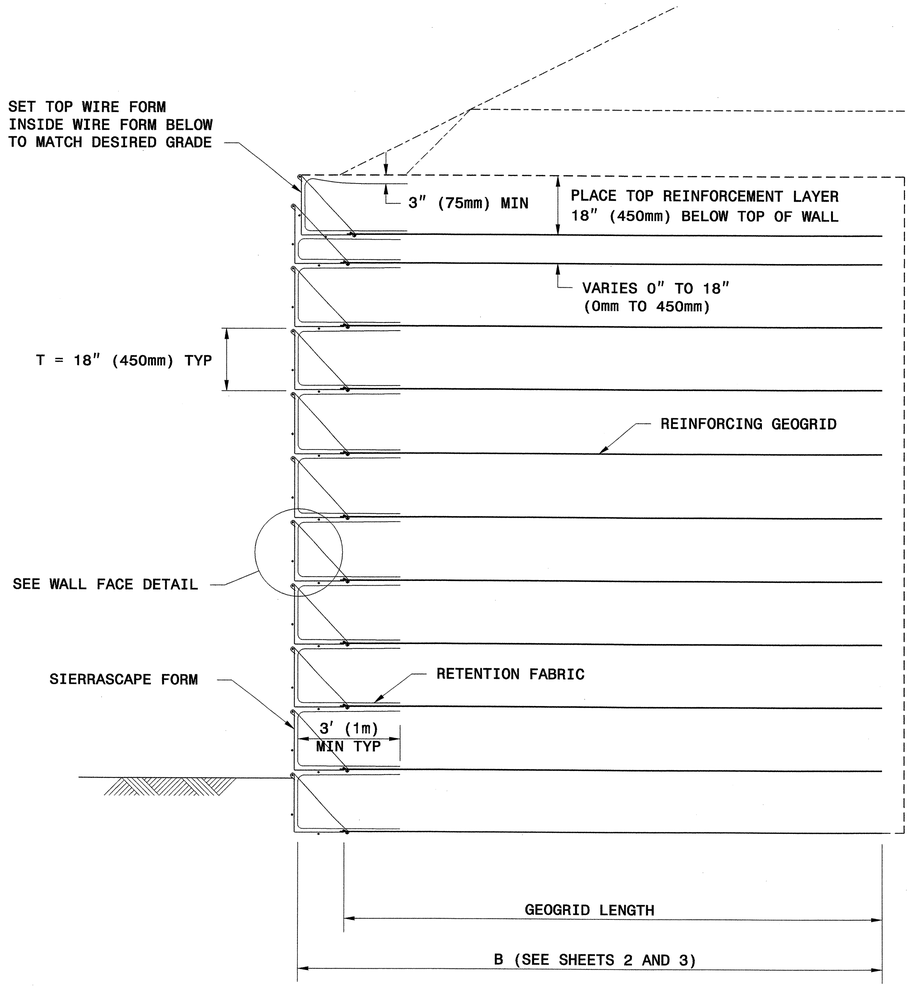


WALL FACE DETAIL

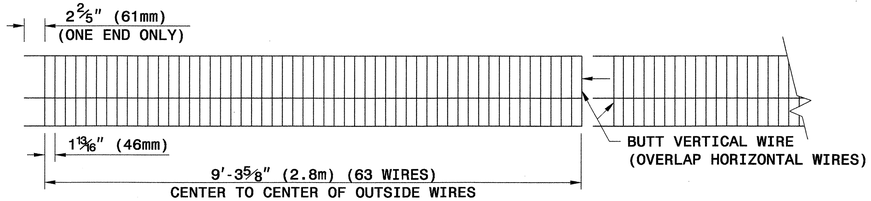


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

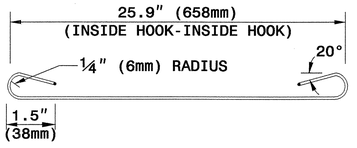
TYPICAL GEOGRID COVERAGE



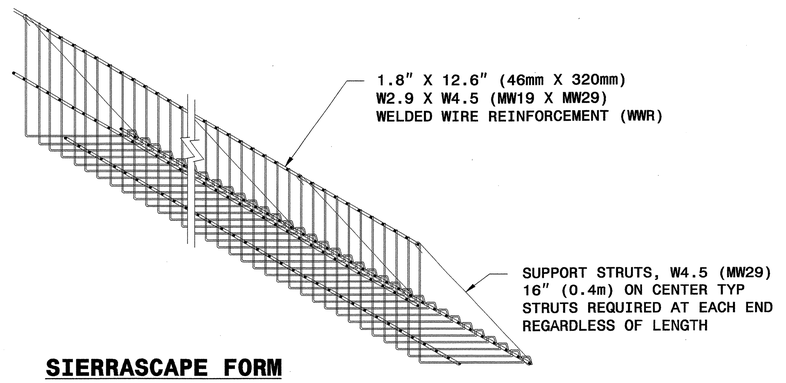
TYPICAL SECTION



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
U-3462	2-U

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

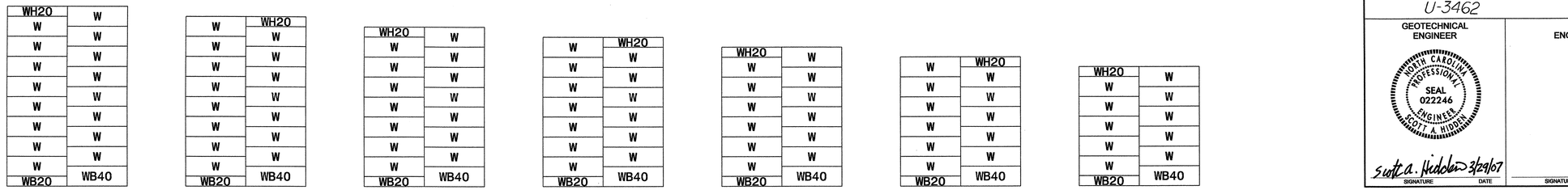
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

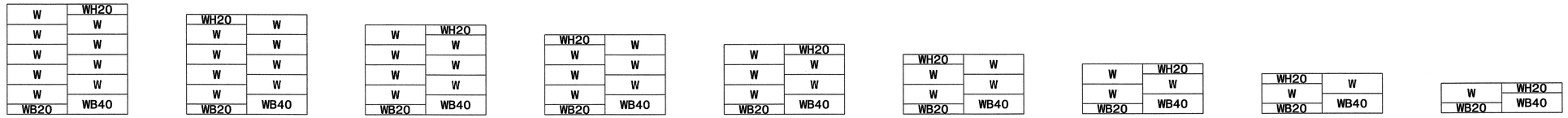
SIGNATURE DATE

PANEL LAYOUTS

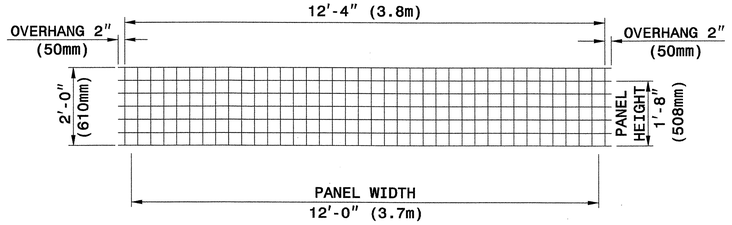
H - WALL HEIGHT



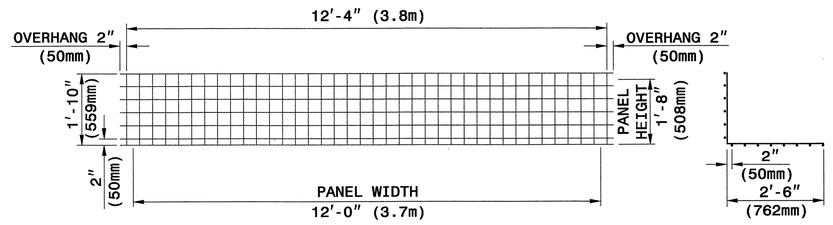
(FEET-INCHES)	< 28 - 0	< 27 - 0	< 25 - 4	< 23 - 8	< 22 - 0	< 20 - 4	< 18 - 8
(METER)	< 8.5	< 8.2	< 7.7	< 7.2	< 6.7	< 6.2	< 5.7



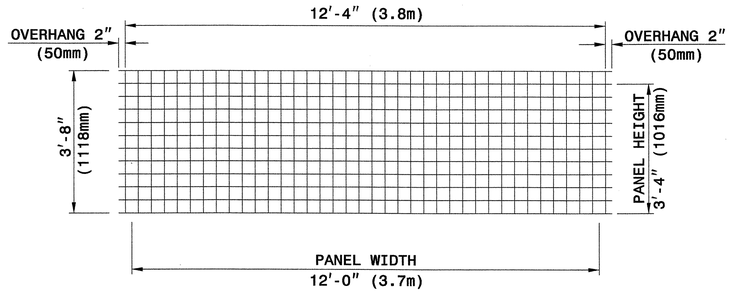
(FEET-INCHES)	< 17 - 0	< 15 - 4	< 13 - 8	< 12 - 0	< 10 - 4	< 8 - 8	< 7 - 0	< 5 - 4	< 3 - 8
(METER)	< 5.2	< 4.7	< 4.2	< 3.7	< 3.2	< 2.6	< 2.1	< 1.6	< 1.1



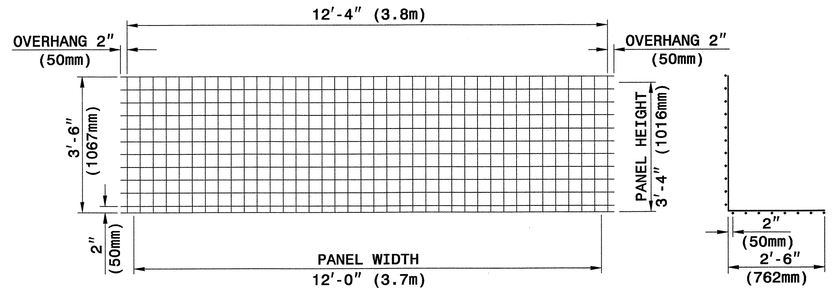
TYPE WH20



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

C221427 3/29/2007 std no 1801 shidden GE-Oce34bond

PROJECT REFERENCE NO.	SHEET
U-3462	2-V

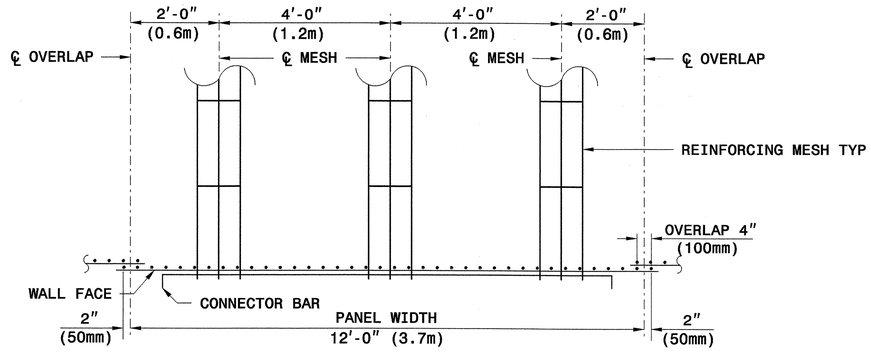
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

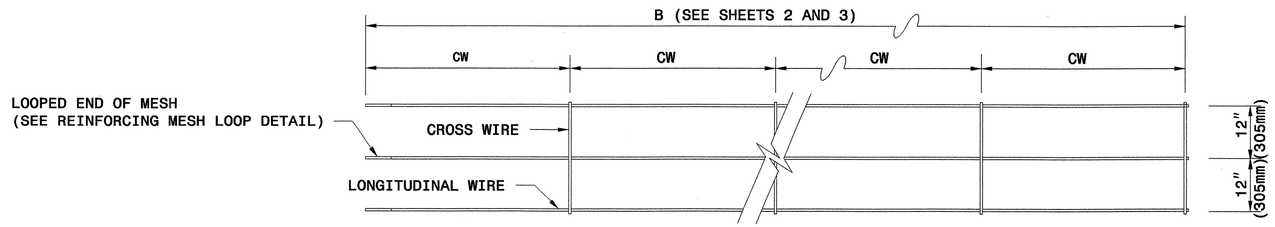
SIGNATURE DATE



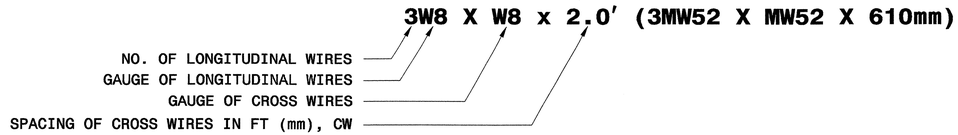
REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)

½" (13mm) DIA. BAR

CONNECTOR BAR

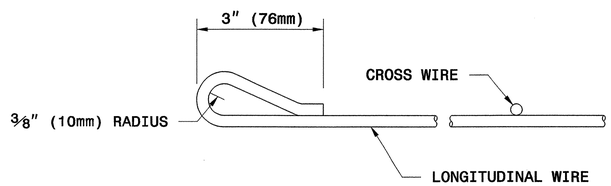


IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2'-0" (610mm) MAKE CW EQUAL TO 12" (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END

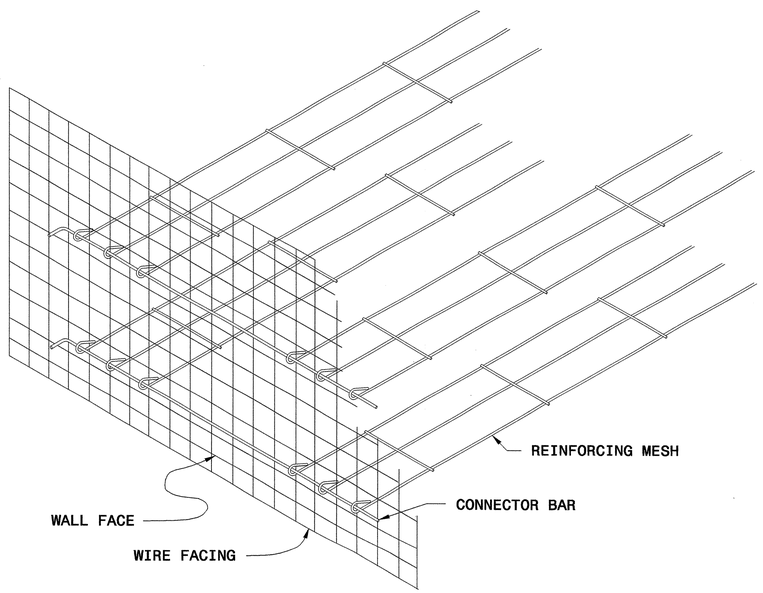


REINFORCING MESH DESIGNATION

REINFORCING MESH



REINFORCING MESH LOOP DETAIL



GENERAL ASSEMBLY DETAIL

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 7 OF 11 DATE: 12-19-06

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

PROJECT REFERENCE NO.	SHEET
U-3462	2-W

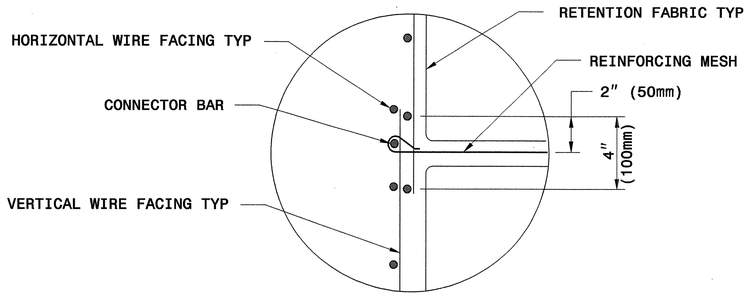
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

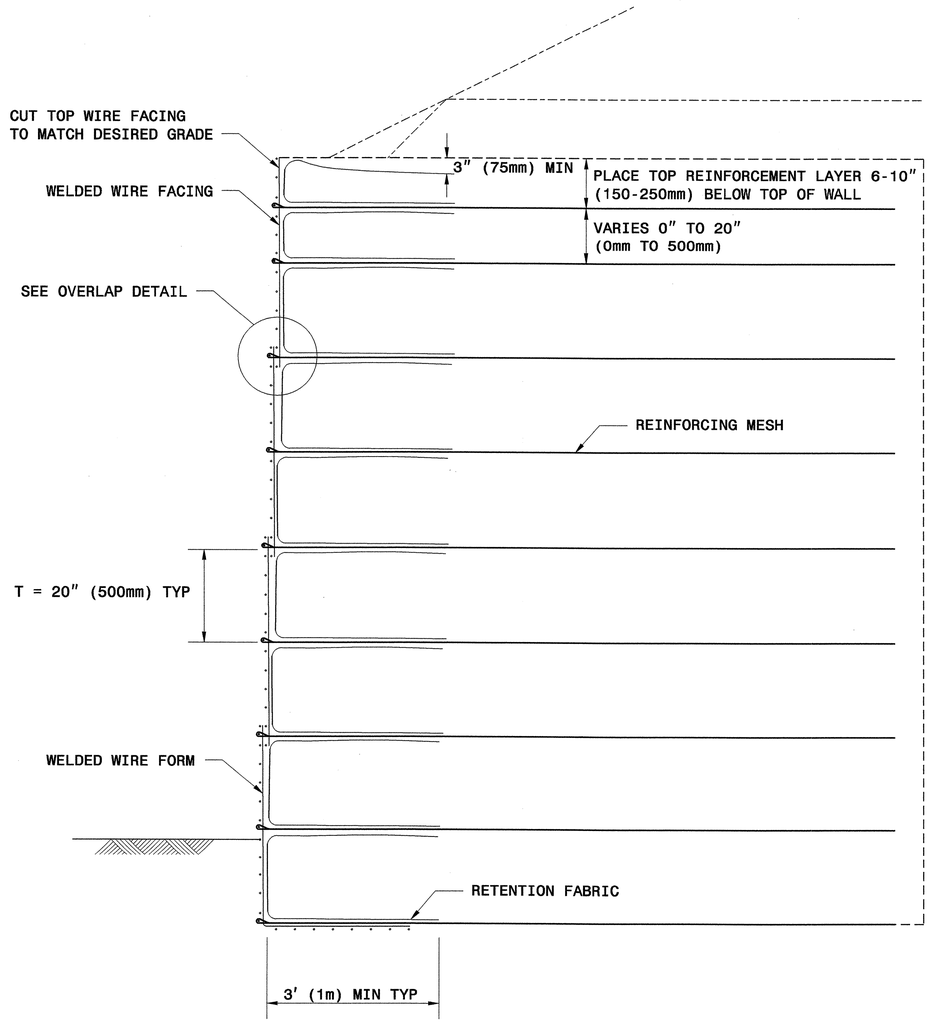
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

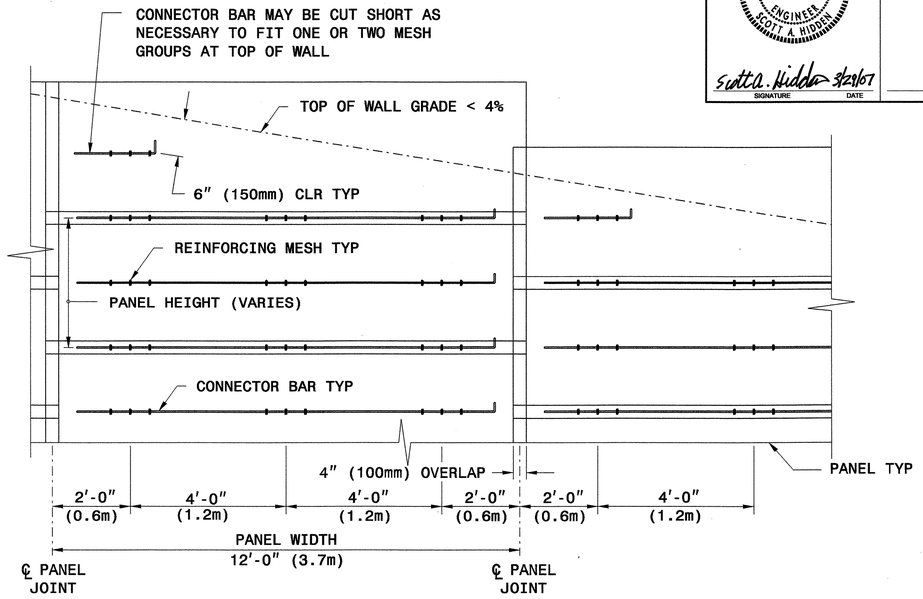
SIGNATURE DATE



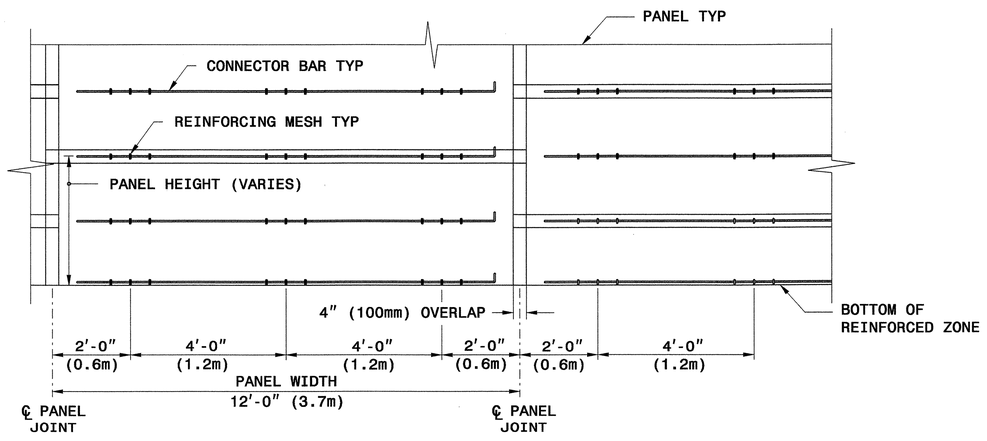
OVERLAP DETAIL



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

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 8 OF 11 DATE: 12-19-06

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

PROJECT REFERENCE NO.	SHEET
U-3462	2-X

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

scott a. hidden 3/29/07

SIGNATURE DATE

ENGINEER

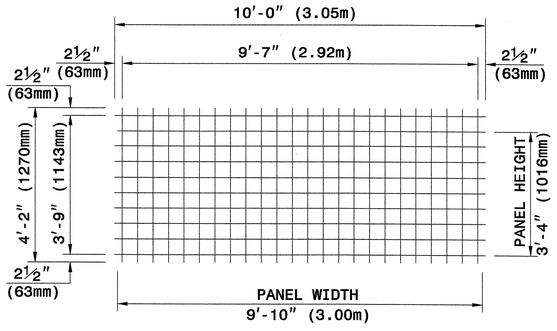
SIGNATURE DATE

PANEL LAYOUTS

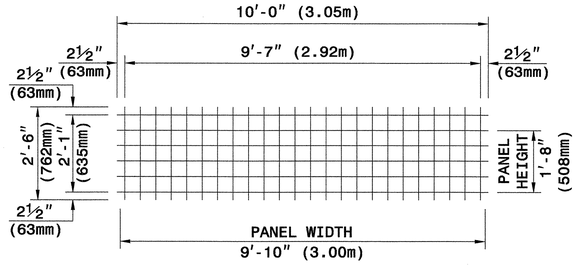
H - WALL HEIGHT

(FEET-INCHES)	< 28 - 0	< 27 - 8	< 26 - 0	< 24 - 4	< 22 - 8	< 21 - 0	< 19 - 4
(METER)	< 8.5	< 8.4	< 7.9	< 7.4	< 6.9	< 6.4	< 5.9

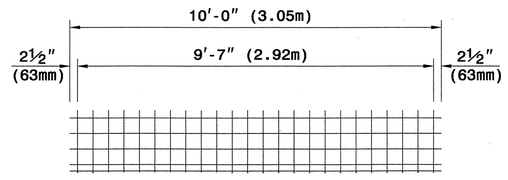
(FEET-INCHES)	< 17 - 8	< 16 - 0	< 14 - 4	< 12 - 8	< 11 - 0	< 9 - 4	< 7 - 8	< 6 - 0	< 4 - 4
(METER)	< 5.4	< 4.9	< 4.4	< 3.9	< 3.4	< 2.8	< 2.3	< 1.8	< 1.3



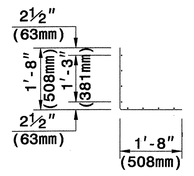
TYPE A



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

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

PROJECT REFERENCE NO.	SHEET
U-3462	2-Y

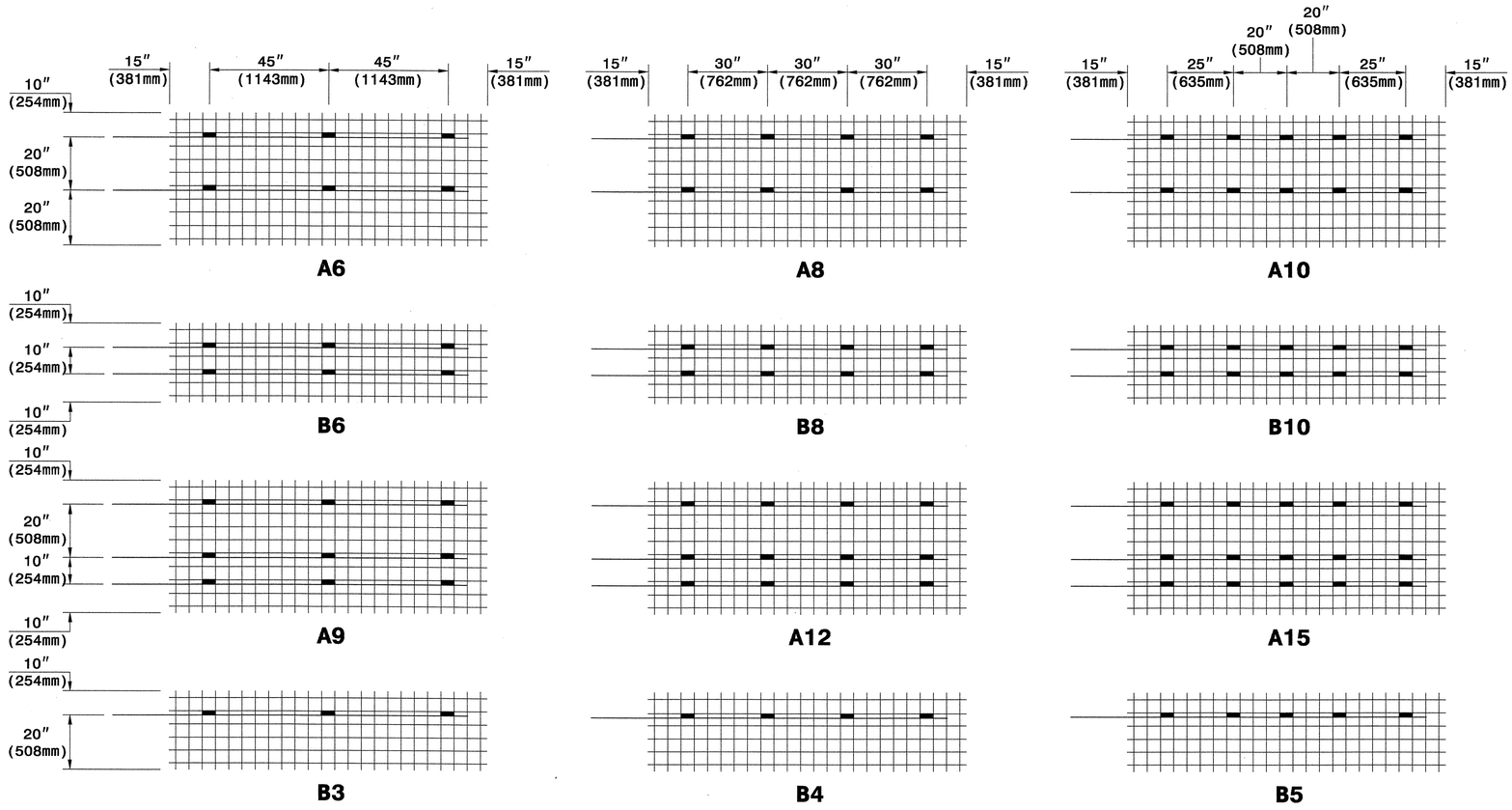
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

scott a. hidden 3/27/07
SIGNATURE DATE

ENGINEER

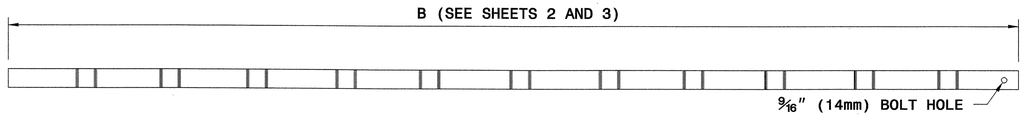
SIGNATURE DATE



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)

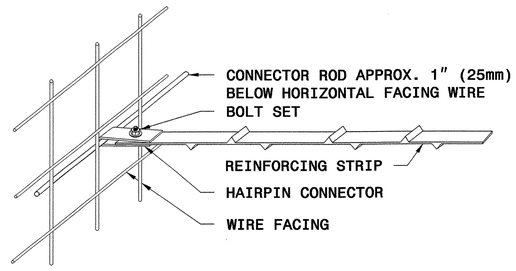
½" (13mm) DIA. ROD

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

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

PROJECT REFERENCE NO.	SHEET
U-3462	2-Z

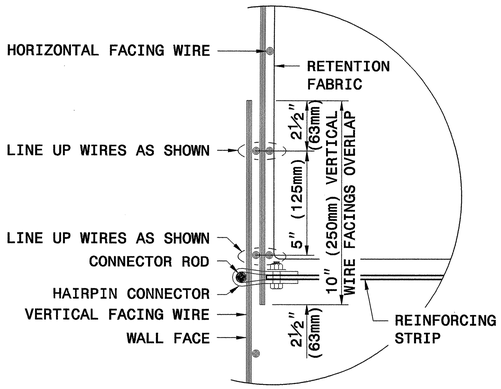
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07
SIGNATURE DATE

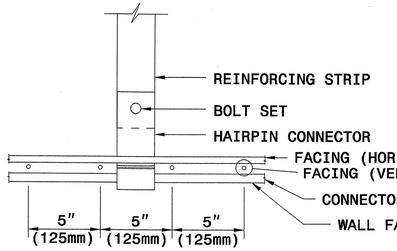
ENGINEER

SIGNATURE DATE

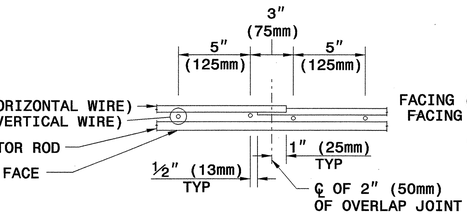


OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

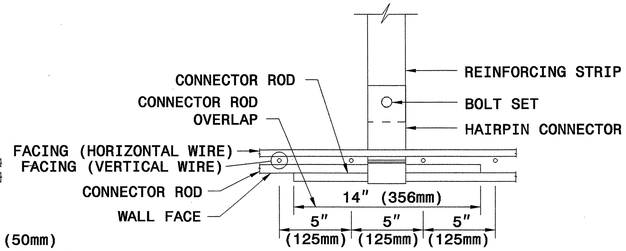
VERTICAL OVERLAP DETAIL



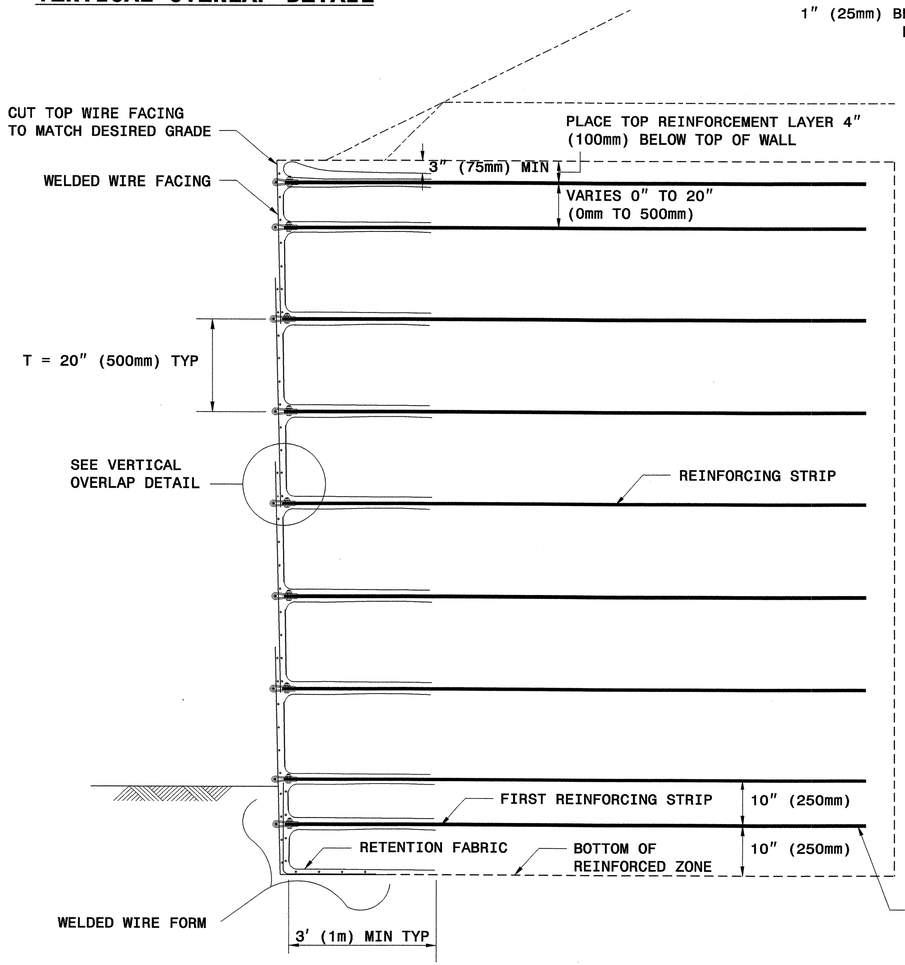
PLAN DETAIL 'A'
STRIP CONNECTION



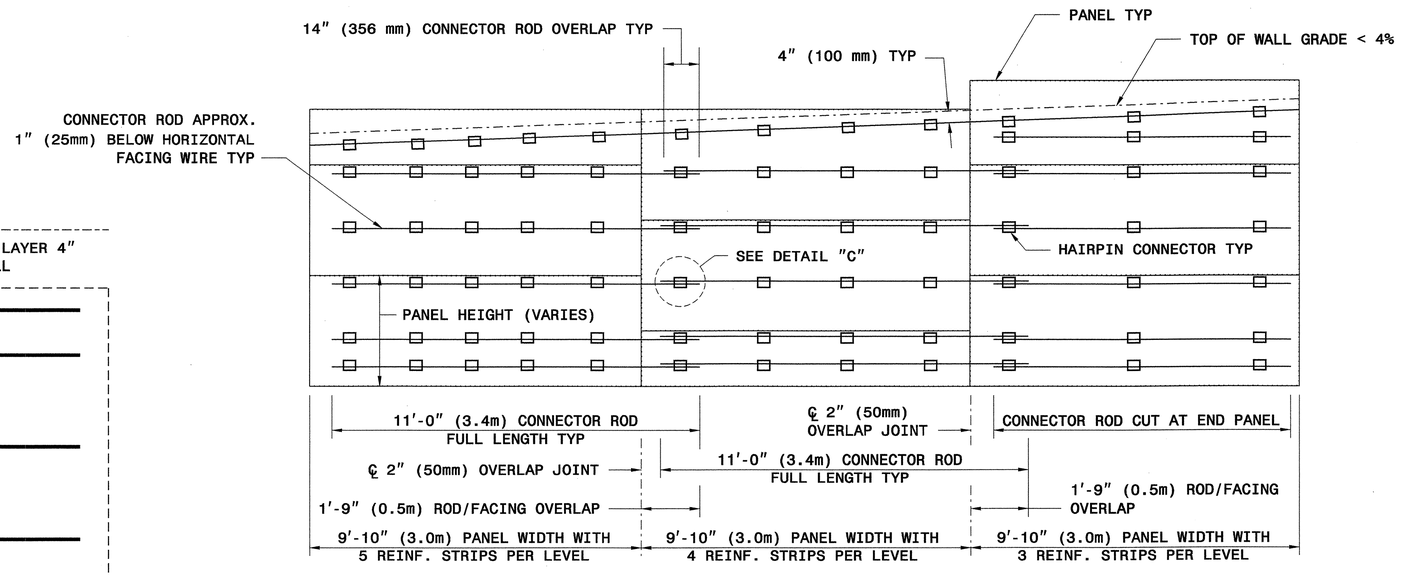
PLAN DETAIL 'B'
HORIZONTAL OVERLAP DETAIL



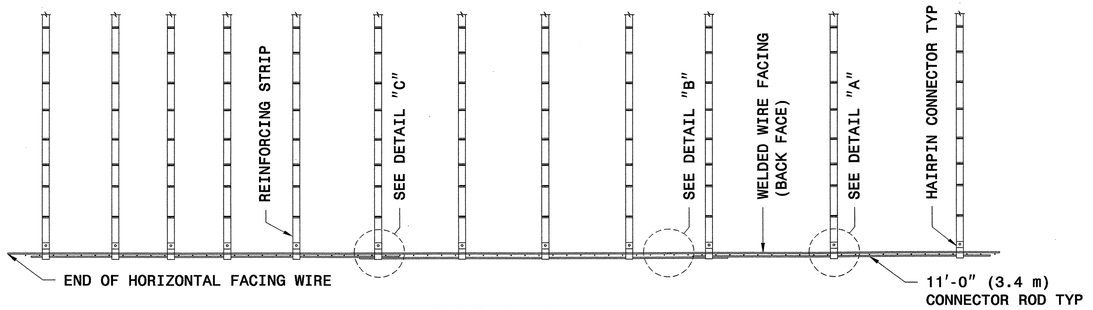
PLAN DETAIL 'C'
STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL



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

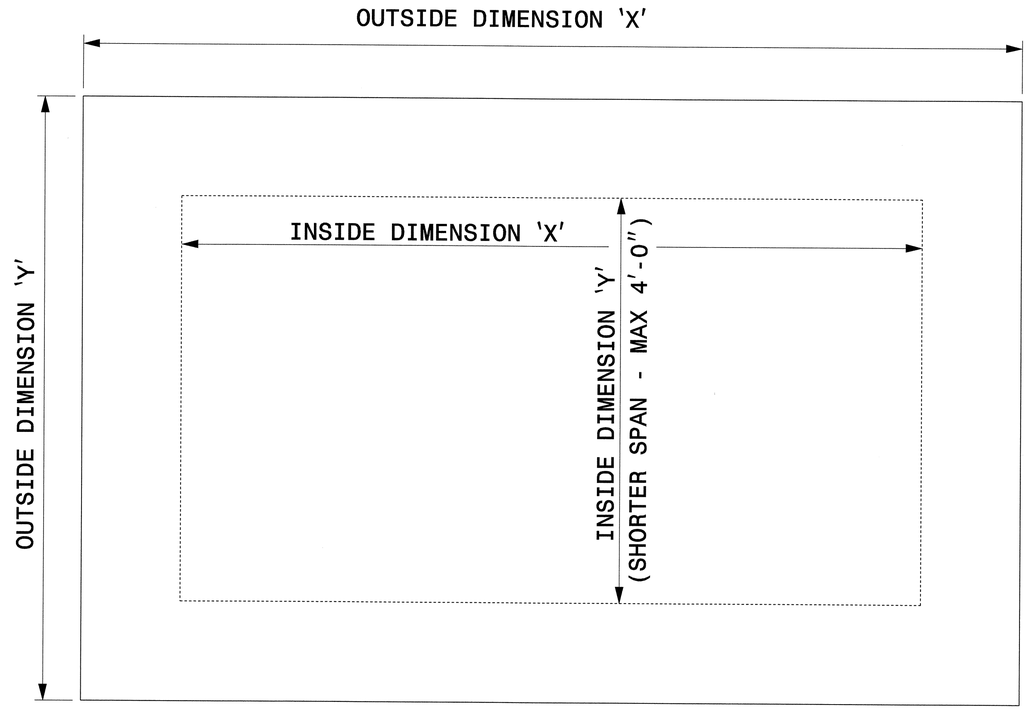
STANDARD DRAWING NO. 1801.02

TERRATREL TEMPORARY WALL

SHEET 11 OF 11 DATE: 12-19-06

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

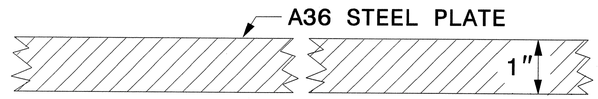
PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-AA



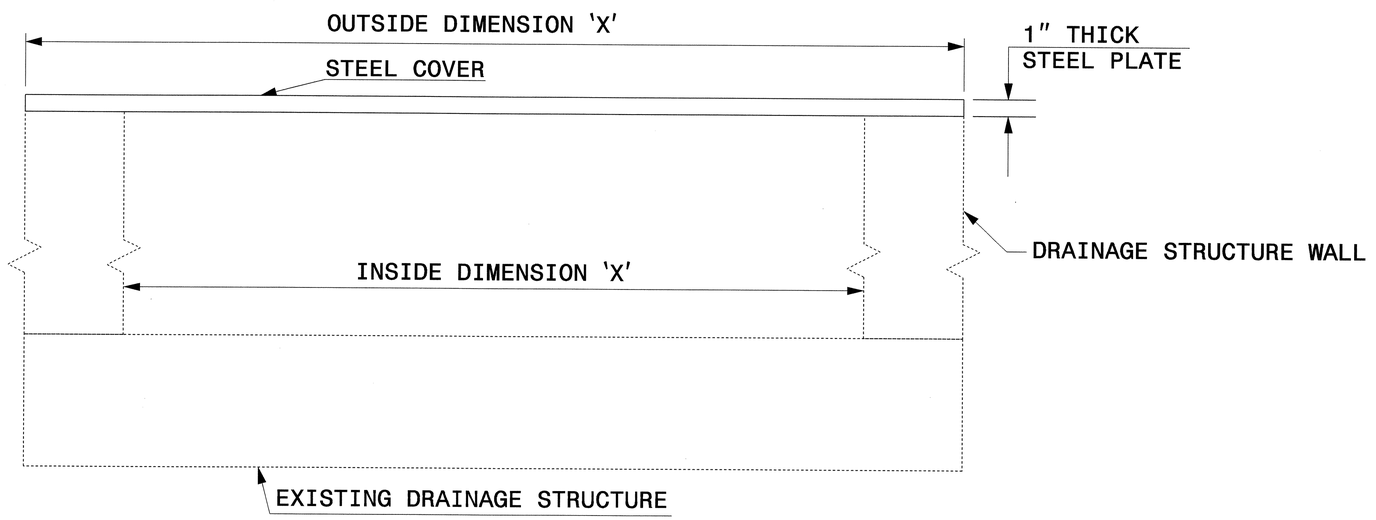
PLAN VIEWS

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
-QUANTITES 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 E. HOWERTON
9/29/08

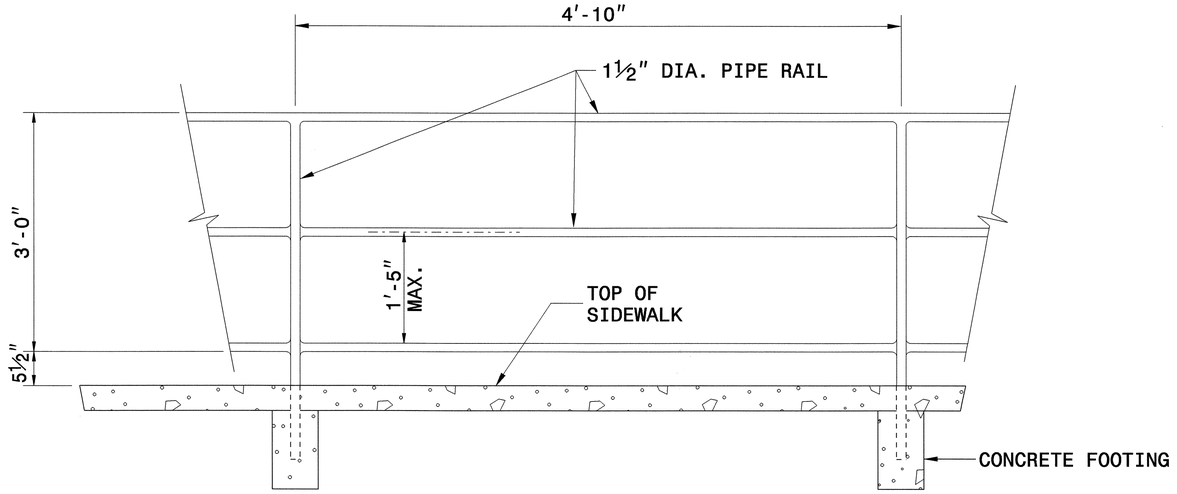
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

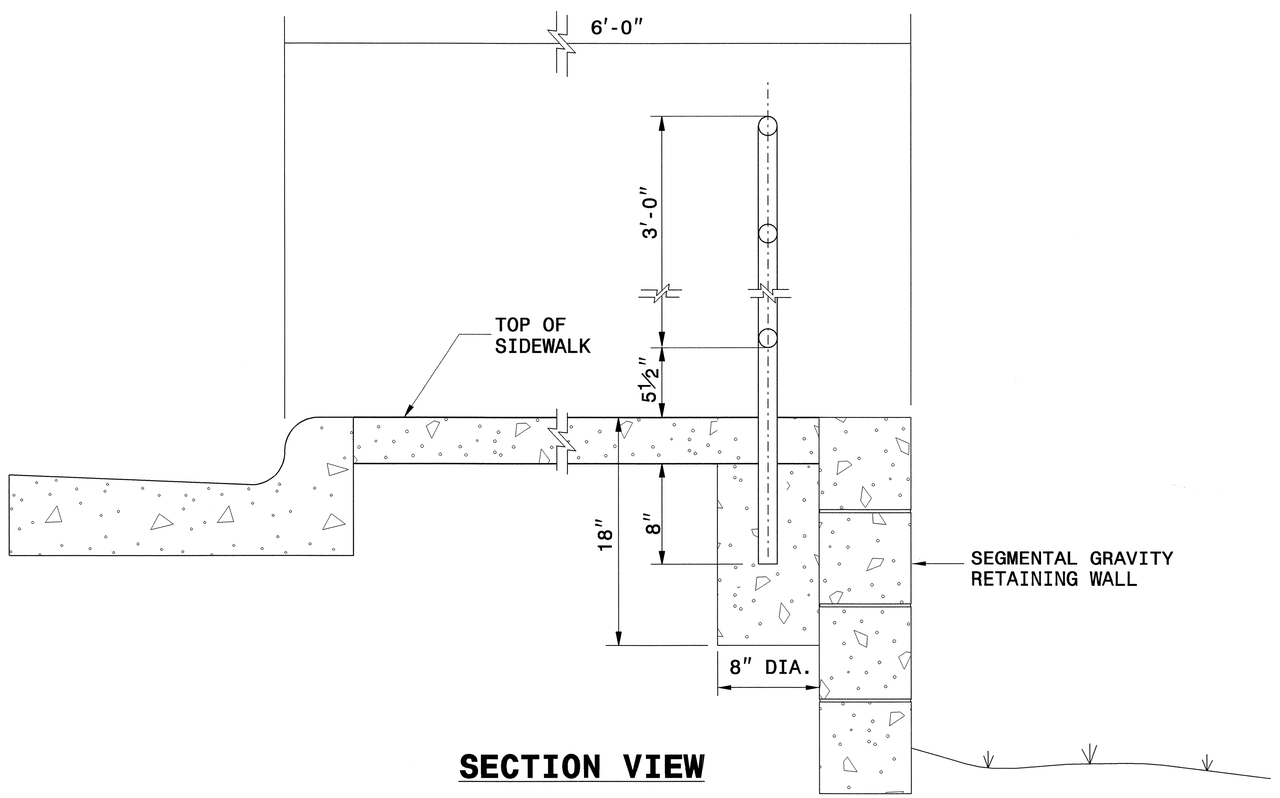
ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE: 9/2/08
FILE SPEC.: c:\usr\details\metric\stand\stlcvr2.dgn

$$$$SYSTIME$$$$
$$$$DGNs$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3462	2-AB



ELEVATION OF PROPOSED PEDESTRIAN HANDRAIL



SECTION VIEW

NOTES:

CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1½" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.

REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.

WELD IN ACCORDANCE WITH ARTICLE 1072-20 OF THE STANDARD SPECIFICATIONS.

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTING.

02-OCT-2008 10:23
s:\contracts\special details\jhowerton\handrail.dgn
kkempf AT PS237489

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON
10/2/08

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

PROPOSED PEDESTRIAN SAFETY RAIL

ORIGINAL BY: K.A.KEMPF DATE: 10-08
MODIFIED BY: DATE:
CHECKED BY: DATE: 10/2/08
FILE SPEC.: details/jhowerton/handrail.dgn

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202027

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0000930000-E	SP	131	LF	GENERIC MISCELLANEOUS ITEM STEEL PIPE HANDRAIL FOR RETAINING WALL
0036000000-E	225	6,350	CY	UNDERCUT EXCAVATION
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0063000000-N	SP	Lump Sum		GRADING
0080000000-E	SP	200	TON	CLASS IV SUBGRADE STABILIZA-TION
0106000000-E	230	24,500	CY	BORROW EXCAVATION
0134000000-E	240	875	CY	DRAINAGE DITCH EXCAVATION
0196000000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	725	SF	TEMPORARY SHORING
0234000000-E	SP	200	CY	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL
0318000000-E	300	942	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0343000000-E	310	308	LF	15" SIDE DRAIN PIPE
0345000000-E	310	212	LF	24" SIDE DRAIN PIPE
0384000000-E	310	24	LF	30" RC PIPE CULVERTS, CLASS III
0426000000-E	310	140	LF	72" RC PIPE CULVERTS, CLASS III
0453000000-E	310	2	EA	**" PIPE END SECTION (15")
0453000000-E	310	2	EA	**" PIPE END SECTION (18")
0453000000-E	310	1	EA	**" PIPE END SECTION (24")
0995000000-E	340	2,674	LF	PIPE REMOVAL
1077000000-E	SP	10	TON	#57 STONE
1110000000-E	510	2,500	TON	STABILIZER AGGREGATE
1121000000-E	520	15,000	TON	AGGREGATE BASE COURSE
1220000000-E	545	1,000	TON	INCIDENTAL STONE BASE
1489000000-E	610	2,900	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	11,000	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	11,400	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	1,326	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	314	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	1,549	CY	SUBDRAIN EXCAVATION
2033000000-E	815	774	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	4,600	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	138	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	10	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	60	LF	6" OUTLET PIPE (SUBDRAINS)
2190000000-N	828	10	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
2209000000-E	838	19	CY	ENDWALLS
2220000000-E	838	15	CY	REINFORCED ENDWALLS
2253000000-E	840	2	CY	PIPE COLLARS
2264000000-E	840	1	CY	PIPE PLUGS
2275000000-E	SP	45	CY	FLOWABLE FILL
2286000000-N	840	88	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	5	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	22	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.24
2374000000-N	840	29	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	13	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ItemNumber	Sec #	Quantity	Unit	Description
2374000000-N	840	17	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	5	EA	FRAME WITH COVER, STD 840.54
2440000000-N	840	8	EA	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN
2451000000-N	840	10	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS
2542000000-E	846	4,140	LF	1'-6" CONCRETE CURB & GUTTER
2549000000-E	846	8,600	LF	2'-6" CONCRETE CURB & GUTTER
2570000000-N	SP	2	EA	MODIFIED CONCRETE FLUME
2591000000-E	848	3,625	SY	4" CONCRETE SIDEWALK
2605000000-N	848	39	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	600	SY	6" CONCRETE DRIVEWAY
2647000000-E	852	1,650	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2800000000-N	858	2	EA	ADJUSTMENT OF CATCH BASINS
2830000000-N	858	5	EA	ADJUSTMENT OF MANHOLES
2845000000-N	858	23	EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES
2905000000-N	859	2	EA	CONVERT EXISTING DROP INLET TO JUNCTION BOX
2920000000-N	SP	1	EA	CONVERT EXISTING DROP INLET TO CATCH BASIN
3030000000-E	862	100	LF	STEEL BM GUARDRAIL
3045000000-E	862	25	LF	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	1	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3270000000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3360000000-E	863	172	LF	REMOVE EXISTING GUARDRAIL
3536000000-E	866	8,580	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	718	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	55	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3557000000-E	866	100	LF	ADDITIONAL BARBED WIRE
3628000000-E	876	83	TON	RIP RAP, CLASS I
3649000000-E	876	238	TON	RIP RAP, CLASS B
3656000000-E	876	4,488	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	4	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4057000000-E	SP	24	CY	OVERHEAD FOOTING
4072000000-E	903	984	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ****** (33+00.00-L-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ****** (36+75.00-L-)
4096000000-N	904	3	EA	SIGN ERECTION, TYPE D
4102000000-N	904	56	EA	SIGN ERECTION, TYPE E
4108000000-N	904	13	EA	SIGN ERECTION, TYPE F
4155000000-N	907	15	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	324	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	928	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	197	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	4	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	290	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	808	LF	BARRICADES (TYPE III)
4450000000-N	1150	4,590	HR	FLAGGER
4480000000-N	1165	2	EA	TMIA
4507000000-E	SP	337	LF	WATER FILLED BARRIER
4508000000-E	SP	152	LF	RESET WATER FILLED BARRIER

ItemNumber	Sec #	Quantity	Unit	Description
4510000000-N	SP	300	HR	POLICE
4516000000-N	1180	150	EA	SKINNY DRUM
4520000000-N	1266	200	EA	TUBULAR MARKERS (FIXED)
4650000000-N	1251	683	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	17,618	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	18,519	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	1,066	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4697000000-E	1205	742	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)
4710000000-E	1205	655	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4725000000-E	1205	89	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4810000000-E	1205	124,365	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	3,998	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	1,416	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	208	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	12,209	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4860000000-E	1205	300	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4870000000-E	1205	366	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	15	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	195	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	444	EA	SNOWPLOWABLE PAVEMENT MARKERS
4915000000-E	1264	5	EA	7' U-CHANNEL POSTS
4955000000-N	1264	5	EA	OBJECT MARKERS (END OF ROAD)
5255000000-N	1413	Lump Sum		PORTABLE LIGHTING
5325300000-E	1510	310	LF	3" WATER LINE
5325600000-E	1510	988	LF	6" WATER LINE
5325800000-E	1510	692	LF	8" WATER LINE
5326200000-E	1510	3,669	LF	12" WATER LINE
5534000000-E	1515	1	EA	**" VALVE (1-1/2")
5534000000-E	1515	4	EA	**" VALVE (3")
5540000000-E	1515	5	EA	6" VALVE
5546000000-E	1515	1	EA	8" VALVE
5558000000-E	1515	6	EA	12" VALVE
5606000000-E	1515	1	EA	2" BLOW OFF
5648000000-N	1515	16	EA	RELOCATE WATER METER
5649000000-N	1515	12	EA	RECONNECT WATER METER
5672000000-N	1515	4	EA	RELOCATE FIRE HYDRANT
5709000000-E	1520	284	LF	**" FORCE MAIN SEWER (1-1/2")
5709000000-E	1520	1,963	LF	**" FORCE MAIN SEWER (3")
5709100000-E	1520	1,354	LF	2" FORCE MAIN SEWER
5798000000-E	1530	262	LF	ABANDON **" UTILITY PIPE (3")
5800000000-E	1530	1,500	LF	ABANDON 6" UTILITY PIPE
5801000000-E	1530	880	LF	ABANDON 8" UTILITY PIPE
5804000000-E	1530	3,325	LF	ABANDON 12" UTILITY PIPE
5816000000-N	1530	2	EA	ABANDON UTILITY MANHOLE
5871200000-E	1550	100	LF	TRENCHLESS INSTALLATION OF 3" IN SOIL
5871210000-E	1550	100	LF	TRENCHLESS INSTALLATION OF 3" NOT IN SOIL
5871500000-E	1550	70	LF	TRENCHLESS INSTALLATION OF 8" IN SOIL
5871510000-E	1550	70	LF	TRENCHLESS INSTALLATION OF 8" NOT IN SOIL

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
U-3462	3(2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
5871700000-E	1550	77	LF	TRENCHLESS INSTALLATION OF 12" IN SOIL
5871710000-E	1550	77	LF	TRENCHLESS INSTALLATION OF 12" NOT IN SOIL
5882000000-N	SP	16	EA	GENERIC UTILITY ITEM RECONNECT SEWER FORCE MAIN SERVICE
6000000000-E	1605	6,100	LF	TEMPORARY SILT FENCE
6006000000-E	1610	1,200	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	1,400	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	1,275	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	23.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	600	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	3.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	50	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	2	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	3,500	LF	SAFETY FENCE
6030000000-E	1630	2,450	CY	SILT EXCAVATION
6036000000-E	1631	10,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	75	SY	COIR FIBER MAT
6042000000-E	1632	2,450	LF	1/4" HARDWARE CLOTH
6046000000-E	SP	20	LF	TEMPORARY PIPE FOR STREAM CROSSING
6048000000-E	SP	75	SY	FLOATING TURBIDITY CURTAIN
6070000000-N	SP	6	EA	SPECIAL STILLING BASINS
6071030000-E	SP	875	LF	COIR FIBER BAFFLES
6071050000-E	SP	7	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	27.5	ACR	SEEDING & MULCHING
6087000000-E	1660	16.5	ACR	MOWING
6090000000-E	1661	200	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.75	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	450	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	13	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	650	LF	IMPERVIOUS DIKE
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL
6120000000-E	SP	275	CY	CULVERT DIVERSION CHANNEL
6123000000-E	1670	0.5	ACR	REFORESTATION
6126000000-E	SP	0.1	ACR	STREAMBANK REFORESTATION
6135000000-E	SP	0.9	ACR	GENERIC EROSION CONTROL ITEM WETLAND GRASS PLANTING
7000000000-E	1705	8	EA	PEDESTRIAN SIGNAL HEAD (**", ** SECTION) (16", 1)
7060000000-E	1705	5,490	LF	SIGNAL CABLE
7120000000-E	1705	19	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	3	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	7	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7264000000-E	1710	615	LF	MESSENGER CABLE (3/8")
7279000000-E	1715	2,005	LF	TRACER WIRE
7300000000-E	1715	1,330	LF	UNPAVED TRENCHING (**********) (1, 2")
7301000000-E	1715	1,355	LF	DIRECTIONAL DRILL (**********) (1, 2")
7301000000-E	1715	620	LF	DIRECTIONAL DRILL (**********) (3, 2")
7324000000-N	1716	20	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	3	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	4	EA	WOOD POLE
7372000000-N	1721	8	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	5	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	4,515	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	9,180	LF	LEAD-IN CABLE (**********) (14-2)
7516000000-E	1730	2,435	LF	COMMUNICATIONS CABLE (**FIBER) (12)
7540000000-N	1731	1	EA	SPLICE ENCLOSURE
7552000000-N	1731	1	EA	INTERCONNECT CENTER
7564000000-N	1732	1	EA	FIBER-OPTIC TRANSCEIVER, DROP & REPEAT
7566000000-N	1733	1	EA	DELINEATOR MARKER
7574000000-N	SP	1	EA	FURNISH FIBER-OPTIC TRANSCEIVER
7575142000-N	SP	3	EA	900MHZ WIRELESS RADIO SYSTEM
7588000000-N	SP	8	EA	METAL POLE WITH SINGLE MAST ARM
7613000000-N	SP	8	EA	SOIL TEST
7614100000-E	SP	56	CY	DRILLED PIER FOUNDATION
7631000000-N	SP	8	EA	MAST ARM WITH METAL POLE DESIGN
7684000000-N	1750	2	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	2	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	12	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	2	EA	CABINET BASE EXTENDER
7980000000-N	SP	2	EA	GENERIC SIGNAL ITEM FURNISH WIRELESS RADIO LIGHTNING ARRESTOR
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM FURNISH WIRELESS RADIO MODEM

********* BEGIN SCHEDULE AA *********
********* (3 ALTERNATES) *********

0366000000-E AA1	310	2,700	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA1	310	2,072	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA1	310	596	LF	24" RC PIPE CULVERTS, CLASS III
0402000000-E AA1	310	200	LF	48" RC PIPE CULVERTS, CLASS III

***** OR *****

0366000000-E AA2	310	2,384	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA2	310	1,392	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA2	310	444	LF	24" RC PIPE CULVERTS, CLASS III
0402000000-E AA2	310	168	LF	48" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	316	LF	***" HDPE PIPE CULVERTS (15")
0536000000-E AA2	SP	680	LF	***" HDPE PIPE CULVERTS (18")
0536000000-E AA2	SP	152	LF	***" HDPE PIPE CULVERTS (24")
0536000000-E AA2	SP	32	LF	***" HDPE PIPE CULVERTS (48")

***** OR *****

0366000000-E AA3	310	2,384	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA3	310	1,392	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA3	310	444	LF	24" RC PIPE CULVERTS, CLASS III
0402000000-E AA3	310	168	LF	48" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	316	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (15", 0.064")
0540000000-E AA3	SP	680	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (18", 0.064")
0540000000-E AA3	SP	152	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (24", 0.064")
0540000000-E AA3	SP	32	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (48", 0.109")

********* END SCHEDULE AA *********

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RD238340

COMPUTED BY: JBT DATE: 5/28/2008

CHECKED BY: CJT / IT DATE: 5/29/2008

PROJECT NO.	SHEET NO.
U-3462	3-A

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) (FT)							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"
-L-															
17+55	RT														
17+63	RT	1													
19+35	RT														
		2	3						24						
19+85	LT	3													
		3	4						24						
19+78	RT	5													
21+00	RT	6		24.2	22.0										
21+14	RT														
		6	7		22.0	21.2			48						
21+50	RT	7		23.3	21.2										
		7	8		21.2	21.0									
21+71	RT														
21+50	RT	8		25.7	21.0										
		8	9		21.0	14.9				292					
24+42	RT	9			12.4										
		9	10		12.4	12.3									
24+50	LT														
24+80	LT	13		19.3	17.0										
		13	12		17.0	13.9			60						
24+32	CL	11			12.9	12.4									96
24+38	CL														
24+40	RT														
25+12	LT	14		19.3	17.1										
		14	15		17.1	16.2									
25+12	LT	15		19.2	16.2										
		15	16		16.2	15.6			60						
25+12	RT	16		19.2	15.6										
		16	17		15.6	15.3			40						
25+52	RT	17		18.9	15.3										
		17	17A	15.3	15.1										
27+00	LT	18		16.4	14.1										
		18	19		14.1	12.7			96						
27+05	LT														
27+58	LT														
28+00	LT	19		15.7	12.5										
		19	20		12.5	12.2				60					
28+00	RT	20		15.7	12.2										
		20	21		12.2	11.3									
28+08	LT														
28+14	RT	21		14.3	11.3										
		21	22		11.3	10.0									
SHEET TOTALS									352	352					96

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT)								CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D (FT)								15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS	
SIZE			12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"				R.C.P.	C.S.P.
THICKNESS OR GAUGE			.064	.064	.064	.064	.079	.079	.109	.109													
-L-																							
17+55																							
17+63	1																		40				
19+35																							
	2	3																					
19+85	3																						
	3	4																					
19+78	5																		52				
21+00	6																						
21+14																							
	6	7																					
21+50	7																						
	7	8											16										
21+71																							
21+50	8																						
	8	9																					
24+42	9																						
	9	10																32					
24+50																							
24+80	13																						
	13	12																					
24+32	11																					6	
24+38																							
24+40																							
25+12	14																						
	14	15										12											
25+12	15																						
	15	16																					
25+12	16																						
	16	17																					
25+52	17																						
	17	17A										24											
27+00	18																						
	18	19																					
27+05																							
27+58																							
28+00	19																						
	19	20																					
28+00	20																						
	20	21											40										
28+08																							
28+14	21																						
	21	22											60										
SHEET TOTALS												36	116					32	92			6	

STATION	FROM	TO	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. 840.20	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	T.B.J.B. STD. 840.34	MINIMUM DEPTH C.B. (SEE DETAIL SHEET 2-M)	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT EXISTING D.I. TO C.B. (SEE DETAIL SHEET 2-L)	CONVERT EXISTING D.I. TO J.B. (SEE DETAIL SHEET 2-K)	FRAME & N.S. GRATE STD. 840.29	MODIFIED CONC. FLUME (SEE DETAIL SHEET 2-J)	CONCRETE. TRANSITION SECTION FOR CB (EA.)	CONCRETE. TRANSITION SECTION FOR DI (EA.)
-L-																													
17+55																													
17+63	1																												
19+35																													
	2	3																											
19+85	3		1							1	1																		
	3	4																											
19+78	5																												
21+00	6		1											1				1											
21+14																													
	6	7																											
21+50	7		1											1				1											
	7	8																											
21+71																													
21+50	8		1																	1		1							
	8	9																											
24+42	9		1																	1		1							
	9	10																											
24+50																													
24+80	13		1							1	1																		
	13	12																											
24+32	11																												
24+38																													
24+40																													
25+12	14		1							1	1																		
	14	15																											
25+12	15		1			1			1																				
	15	16																											
25+12	16		1			1		1																					
	16	17																											
25+52	17		1			1		1																					
	17	17A																											
27+00	18		1							1	1																		
	18	19																											
27+05																													
27+58																													
28+00	19		1			1			1																				
	19	20																											
28+00	20		1			1		1																					
	20	21																											
28+08																													
28+14	21		1										1					1											
	21	22																											
SHEET TOTALS			14			5	0	3	2	4	4		1	2				3		2		2							

STATION	FROM	TO	CONCRETE COLLAR STD. 840.72	CROSS PIPE END SECTION. NO. & SIZE. STD. 310.03	PARALLEL PIPE END SECTION. NO. & SIZE. STD. 310.02	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L-								
17+55							19	REMOVE EXIST. 15" PIPE
17+63	1							
19+35							89	REMOVE EXIST. 18"PIPE & FES
	2	3						
19+85	3							REMOVE BURIED DRIVEWAY PIPE
	3	4						
19+78	5							
21+00	6							
21+14							89	REMOVE EXIST. 18" PIPE & FES
	6	7						
21+50	7							
	7	8						
21+71							262	REMOVE EXIST. 18" PIPE & ASSOC D.I.'S
21+50	8							
	8	9						
24+42	9							
	9	10						BURY 1.0'
24+50							49	REMOVE EXIST. 12" PIPE & EXIST. DI
24+80	13							
	13	12						
24+32	11							
24+38							63	REMOVE EXIST. 24" PIPE
24+40							5	REMOVE EXIST. 30" PIPE
25+12	14							
	14	15						
25+12	15							
	15	16						
25+12	16							
	16	17						
25+52	17							
	17	17A						
27+00	18							
	18	19						
27+05							23	REMOVE EXIST. 15" DRIVEWAY PIPE
27+58							13	REMOVE EXIST. 15" DRIVEWAY PIPE
28+00	19							
	19	20						
28+00	20							
	20	21						
28+08							26	REMOVE EXIST. 15" DRIVEWAY PIPE
28+14	21							
	21	22						
SHEET TOTALS							638	

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

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RD238340

COMPUTED BY:	JBT	DATE:	5/28/2008
CHECKED BY:	CJT / IT	DATE:	5/29/2008

PROJECT NO.	SHEET NO.
U-3462	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION (SIZE / THICKNESS OR GAUGE)	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) (FT) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D (FT) 12"	15"	18"	24"	30"	36"	42"	48"
-L-																															
27+93	RT	22		13.0	10.0																										
		22	23		10.0	9.0				56																					
28+37	LT	24		13.4	10.0																										
		24	25		10.0	9.5																				56					
28+98	LT	25		13.8	9.5																										
		25	26		9.5	9.0																				128					
29+07	LT																														
30+31	LT	26		13.5	9.0																										
30+33	LT																														
30+34	RT																														
		26	27		9.0	8.8			68																						
30+97	LT	27		13.5	8.8																										
		27	28		8.8	8.5																				56					
29+58	LT	29		13.1	10.1																										
		29	30		10.1	9.8			64																						
29+58	RT	30		12.8	9.8																										
		30	31		9.8	5.1			156																						
31+01	RT																														
31+18	RT	31		9.1	5.1																										
		31	33		5.1	4.7																			28						
31+42	RT	32		8.7	5.7																										
		32	31		5.7	5.1			20																						
32+66	LT																														
32+67	LT	34		9.9	6.9																										
		34	35		6.9	6.2			40																						
32+23	LT	35		10.2	6.2																										
		35	36		6.2	4.0			48																						
32+21	RT	36		8.0	4.0																										
		36	38		4.0	3.5																			28						
32+98	RT	37		8.9	5.9																										
		37	36		5.9	4.0			76																						
34+23	LT																														
33+60	RT																														
		39	40		6.0	5.9																					36				
36+16	LT	40		9.5	5.9																										
		40	40A		5.9	5.5					48																				
35+68	LT	40A		9.7	5.5																										
		40A	42		5.5	5.2					36																				
35+28	LT	41		9.5	6.0																										
		41	42		6.0	5.9				8																					
35+27	LT	42		9.4	5.2																										
		42	43		5.2	4.6																					68				
34+74	LT	43		9.1	4.6																										
SHEET TOTALS									472	64	84														56	240	104				

STATION	LOCATION	FROM	TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD. 838.80 (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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. 840.20	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	T.B.J.B. STD. 840.34	MINIMUM DEPTH C.B. (SEE DETAIL SHEET 2-M)	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT EXISTING D.I. TO C.B. (SEE DETAIL SHEET 2-L)	CONVERT EXISTING D.I. TO J.B. (SEE DETAIL SHEET 2-K)	FRAME & N.S. GRATE STD. 840.29	MODIFIED CONC. FLUME (SEE DETAIL SHEET 2-J)	CONCRETE. TRANSITION SECTION FOR CB (EA.)	CONCRETE. TRANSITION SECTION FOR DI (EA.)	CONCRETE COLLAR STD. 840.72	CROSS PIPE END SECTION. NO. & SIZE. STD. 310.03	PARALLEL PIPE END SECTION. NO. & SIZE. STD. 310.02	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L-																																									
27+93	RT	22							1										1					1																	
		22	23																																						
28+37	LT	24							1							1	1																								
		24	25																																						
28+98	LT	25							1							1	1																								
		25	26																																						
29+07	LT																																							12	REMOVE EXIST. 15" PIPE
30+31	LT	26							1							1	1																								
30+33	LT																																						0.13		PLUG & FILL EXIST. 18" PIPE
30+34	RT																																						0.13	25	REMOVE PART OF 18" CONC. PLUG & FILL EXIST. 18" PIPE & REMOVE DI
		26	27																																						
30+97	LT	27							1							1	1																								
		27	28																																						
29+58	LT	29							1			1			1																										
		29	30																																						
29+58	RT	30							1			1		1																											
		30	31																																						
31+01	RT																																							10	REMOVE EXIST 30" CMP
31+18	RT	31							1			1	1																												
		31	33																																						
31+42	RT	32							1			1	1																												
		32	31																																						
32+66	LT																																							21	REMOVE EXIST. 15" PIPE
32+67	LT	34							1							1	1																		1						
		34	35																																						
32+23	LT	35							1							1	1																		1						
		35	36																																						
32+21	RT	36							1			1	1																												
		36	38																																						
32+98	RT	37							1			1			1																										
		37	36																																						
34+23	LT																																							25	REMOVE EXIST.15" PIPE
33+60	RT																																							82	REMOVE 2@36" PIPES & REMOVE HW
		39	40																																			1 @ 24"			
36+16	LT	40							1					1													1														
		40	40A																																						
35+68	LT	40A							1							1	1																		1						
		40A	42																																						
35+28	LT	41							1			1		1																											
		41	42																																						
35+27	LT	42							1			1	1																												
		42	43																																						
34+74	LT	43							1			1	1																												
SHEET TOTALS									18			9	5	3	2	7	7		1					1			1								3			1 @ 24"	0.26	175	

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

RD238340

COMPUTED BY:	JBT	DATE:	5/28/2008
CHECKED BY:	CJT / IT	DATE:	5/29/2008

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3462	3-C

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) (FT) 12"	15"	18"	24"	30"	36"	42"	48"
-L-															
		43	44		4.2	3.5					88				
34+76	RT	44		8.5	3.5										
		44	45		3.5	2.3									
37+48	RT	46		10.1	7.1										
		46	47		7.1	6.6			60						
36+84	RT	47		8.9	6.6										
		47	48		6.6	6.4			32						
36+85	RT	48		9.7	6.4										
		48	49		6.4	6.2			64						
36+84	LT	49		8.9	6.2										
		49	50		6.2	6.2									
37+89	RT	51		12.0	8.8										
		51	52		8.8	8.3			64						
37+88	LT	52		11.3	8.3										
		52	53		8.3	7.0									
40+90	LT	54		18.3	15.3										
		54	55		15.3	12.0			92						
42+31	RT	56													
43+28	LT	57		19.8	12.5										
44+25	LT	57A		22.5	12.4										
45+22	LT	58		23.0	12.4										
		58	59		12.4	13.6									
45+22	LT	59		19.6	13.6										
46+40	LT	59A													
47+38	LT	60													
44+86	RT	60A		21.4	19.5										
		60A	61		19.5	18.2			60						
45+51	RT	61		21.4	18.2										
		61	62		18.2	17.9			48						
47+71	RT	63													
47+98	RT	64		20.3	17.1										
		64	65		17.1	17.0			48						
		66	67		17.0	15.9				52					
50+00	RT	67		20.2	15.9										
		67	68		15.9	14.4									
51+47	RT	68		19.7	14.4										
51+48	LT	69		18.1	15.1										
		69	68		15.1	14.4			40						
		68	71		14.4	14.0									
SHEET TOTALS									508	52	88				

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D (FT) 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 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L-																							
	43	44																					
34+76	44																						
	44	45												28									
37+48	46																						
	46	47																					
36+84	47																						
	47	48																					
36+85	48																						
	48	49																					
36+84	49																						
	49	50											16										
37+89	51																						
	51	52																					
37+88	52																						
	52	53											16										
40+90	54																						
	54	55																					
42+31	56																		40				
43+28	57																						
44+25	57A																						
45+22	58																						
	58	59										12											
45+22	59																						
46+40	59A																						
47+38	60																						
44+86	60A																						
	60A	61																					
45+51	61																						
	61	62																					
47+71	63																		52				
47+98	64																						
	64	65																					
	66	67																					
50+00	67																						
	67	68											144										
51+47	68																						
51+48	69																						
	69	68																					
	68	71											148										
SHEET TOTALS												12	324	28					92				

STATION	FROM	TO	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	OPEN THROAT CATCH BASIN STD. 840.04 OR STD. 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. 840.20	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	T.B.J.B. STD. 840.34	MINIMUM DEPTH C.B. (SEE DETAIL SHEET 2-M)	
-L-																							
	43	44																					
34+76	44		1			1	1																
	44	45																					
37+48	46		1			1			1														
	46	47																					
36+84	47		1				1															1	
	47	48																					
36+85	48		1								1	1											
	48	49																					
36+84	49		1				1															1	
	49	50																					
37+89	51		1								1	1											
	51	52																					
37+88	52		1			1		1															
	52	53																					
40+90	54		1			1		1															
	54	55																					
42+31	56																						
43+28	57		1	2.3		1			1														
44+25	57A																						
45+22	58																						
	58	59																					
45+22	59		1	1		1		1															
46+40	59A																						
47+38	60																						
44+86	60A		1								1	1											
	60A	61																					
45+51	61		1								1	1											
	61	62																					
47+71	63																						
47+98	64		1								1	1											
	64	65																					
	66	67																					
50+00	67		1			1	1																
	67	68																					
51+47	68		1	0.28		1	1																
51+48	69		1			1	1																
	69	68																					
	68	71																					
SHEET TOTALS			16	3.58		9	6	3	2		5	5										2	

STATION	FROM	TO	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT EXISTING D.I. TO C.B. (SEE DETAIL SHEET 2-L)	CONVERT EXISTING D.I. TO J.B. (SEE DETAIL SHEET 2-K)	FRAME & N.S. GRATE STD. 840.29	MODIFIED CONC. FLUME (SEE DETAIL SHEET 2-J)	CONCRETE. TRANSITION SECTION FOR CB (EA.)	CONCRETE. TRANSITION SECTION FOR DI (EA.)	CONCRETE COLLAR STD. 840.72	CROSS PIPE END SECTION. NO. & SIZE. STD. 310.03	PARALLEL PIPE END SECTION. NO. & SIZE. STD. 310.02	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L-																
	43	44														
34+76	44															
	44	45														
37+48	46															
	46	47														
36+84	47															
	47	48														
36+85	48									1						
	48	49														
36+84	49															
	49	50										1 @ 18"				
37+89	51															
	51	52														
37+88	52															
	52	53										1 @ 18"				
40+90	54															
	54	55											1 @ 15"			
42+31	56															
43+28	57															TIE TO EXIST. DRAINAGE
44+25	57A		1			1										
45+22	58		1			1										
	58	59														
45+22	59															
46+40	59A							1								
47+38	60							1								
44+86	60A									1						
	60A	61														
45+51	61									1						
	61	62														
47+71	63															
47+98	64									1						
	64	65														
	66	67														
50+00	67								1							
	67	68														
51+47	68								1							
51+48	69															
	69	68														
	68	71														
SHEET TOTALS			2			2		2	2	4		2 @ 18"	1 @ 15"			

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

RD238340

COMPUTED BY:	JBT	DATE:	5/28/2008
CHECKED BY:	CJT / IY	DATE:	5/29/2008

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3462	3-D

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

STATION (SIZE / THICKNESS OR GAUGE)	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) (FT) 12"	15"	18"	24"	30"	36"	42"	48"
-L-															
53+00	RT	71		19.2	14.0										
		71	70		14.0	13.5				60					
53+01	LT	72		17.2	14.2										
		72	71		14.2	14.0			40						
54+05	LT	73		17.0	14.0										
		73	74		14.0	13.9			8						
53+93	LT	74		17.0	13.9										
		74	75		13.9	13.5			40						
53+93	RT	75		18.9	13.5										
		75	76		13.5	13.0			60						
55+02	RT	77		19.4	16.4										
		77	78		16.4	15.9									
54+05	RT	78		18.9	15.9										
		78	75		15.9	13.5									
57+43	RT	80		23.0	20.0										
		80	81		20.0	16.5			60						
58+98	RT	82		25.4	22.4										
		82	83		22.4	17.9			64						
65+00	LT	84		25.3	22.1										
		84	85		22.1	20.5			96						
65+99	LT	85		23.7	20.5										
		85	86		20.5	17.4			64						
72+50	CL	87			7.6	7.4					80				
73+50	RT	87A													
73+84	LT														
74+77	LT														
74+83	RT	88													
75+26	LT	89													
75+48	RT	90													
75+51	RT														
76+60	RT	91													
76+62	RT														
77+35	RT	92													
77+36	RT														
77+69	LT														
77+70	LT	93													
SHEET TOTALS									432	60	80				

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D (FT) 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 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L-																							
53+00	71																						
	71	70																					
53+01	72																						
	72	71																					
54+05	73																						
	73	74																					
53+93	74																						
	74	75																					
53+93	75																						
	75	76																					
55+02	77																						
	77	78										92											
54+05	78																						
	78	75										8											
57+43	80																						
	80	81																					
58+98	82																						
	82	83																					
65+00	84																						
	84	85																					
65+99	85																						
	85	86																					
72+50	87																						
73+50	87A																				40		
73+84																							
74+77																							
74+83	88																				24		
75+26	89																				36		
75+48	90																				20		
75+51																							
76+60	91																				28		
76+62																							
77+35	92																				40		
77+36																							
77+69																							
77+70	93																				24		
SHEET TOTALS												100									212		

STATION	FROM	TO	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. 840.20	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	T.B.J.B. STD. 840.34	MINIMUM DEPTH C.B. (SEE DETAIL SHEET 2-M)
-L-																					
53+00	71		1	0.18		1	1														
	71	70																			
53+01	72		1			1	1														
	72	71																			
54+05	73		1			1	1														
	73	74																			
53+93	74		1			1	1														
	74	75																			
53+93	75		1	0.40		1	1														
	75	76																			
55+02	77		1			1		1													
	77	78																			
54+05	78		1			1	1														
	78	75																			
57+43	80		1			1		1													
	80	81																			
58+98	82		1			1		1													
	82	83																			
65+00	84		1							1	1										
	84	85																			
65+99	85		1							1	1										
	85	86																			
72+50	87																				
73+50	87A																				
73+84																					
74+77																					
74+83	88																				
75+26	89																				
75+48	90																				
75+51																					
76+60	91																				
76+62																					
77+35	92																				
77+36																					
77+69																					
77+70	93																				
SHEET TOTALS			11	0.58		9	6	3		2	2										

STATION	FROM	TO	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT EXISTING D.I. TO C.B. (SEE DETAIL SHEET 2-L)	CONVERT EXISTING D.I. TO J.B. (SEE DETAIL SHEET 2-K)	FRAME & N.S. GRATE STD. 840.29	MODIFIED CONC. FLUME (SEE DETAIL SHEET 2-J)	CONCRETE. TRANSITION SECTION FOR CB (EA.)	CONCRETE. TRANSITION SECTION FOR DI (EA.)	CONCRETE COLLAR STD. 840.72	CROSS PIPE END SECTION. NO. & SIZE. STD. 310.03	PARALLEL PIPE END SECTION. NO. & SIZE. STD. 310.02	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L-																
53+00	71								1							
	71	70														
53+01	72															
	72	71														
54+05	73															
	73	74														
53+93	74															
	74	75														
53+93	75								1							
	75	76														
55+02	77								1							
	77	78														
54+05	78								1							
	78	75														
57+43	80								1							
	80	81														
58+98	82								1							
	82	83														
65+00	84									1						
	84	85														
65+99	85									1						
	85	86														
72+50	87															
73+50	87A															
73+84															26	REMOVE EXIST. 24" PIPE
74+77															45	REMOVE EXIST 24" SIDE DRAIN PIPE
74+83	88															
75+26	89															REMOVE EXIST. 24" SIDE DRAIN PIPE
75+48	90															
75+51															25	REMOVE EXIST. 24" SIDE DRAIN PIPE
76+60	91															
76+62															25	REMOVE EXIST. 24" SIDE DRAIN PIPE
77+35	92															
77+36															41	REMOVE EXIST. 18" SIDE DRAIN PIPE
77+69															18	REMOVE EXIST. 24" SIDE DRAIN PIPE
77+70	93															
SHEET TOTALS									6	2					180	

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

RD238340

COMPUTED BY: JBT DATE: 5/28/2008

CHECKED BY: CJT / IY DATE: 5/29/2008

PROJECT NO.	SHEET NO.
U-3462	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

STATION (SIZE / THICKNESS OR GAUGE)	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) (FT) 12"	15"	18"	24"	30"	36"	42"	48"
-Y-															
13+41	LT	94		7.8	4.8										
		94	95		4.8	4.6			8						
13+42	RT	96													
14+98	RT	97		7.0	3.6										
		97	98		3.6	3.6			52						
14+43	RT	98		7.0	3.6										
		98	99		3.6	3.5					48				
14+43	LT	99		7.0	3.5										
		99	100		3.5	3.4					44				
14+88	LT	100		7.1	3.4										
		100	101		3.4	3.2					32				
15+04	LT	102										24			
16+00	LT	103		7.0	4.7										
		103	104		4.7	2.6			96						
16+17	RT														
17+12	RT														
19+23	RT														
17+00	LT	104		7.1	2.6										
18+00	LT	106		7.4	5.1										
		106	104		5.1	2.6			96						
		104	105		2.6	2.3									
18+83	RT	107		9.0	5.2										
		107	108		5.2	4.9									
18+83	RT	108		7.2	4.9										
		108	109		4.9	4.7			52						
18+30		109		7.1	4.7										
18+30		110		9.1	5.0										
		110	109		5.0	4.7									
		109	111		4.7	4.3			76						
17+52	RT	111		6.6	4.3										
		111	112		4.3	3.8			48						
17+01	RT	112		6.8	3.0										
16+47	RT	113		6.6	4.1										
15+80	RT	113A		6.7	4.4										
		113A	113		4.4	4.1			64						
		113	112		4.1	3.0			52						
		112	104		3.0	2.6					68				
21+97	RT	114		9.2	5.7										
	RT	114A	115						12						
22+47	RT	115		9.2	5.2										
22+57	RT	115A		9.2	4.9										
SHEET TOTALS									556		192	24			

STATION	STRUCTURE NO. FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D (FT) 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 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
15+04	102																					4.6	
	104	105												20									
	107	108										12											
	110	109										12											
SHEET TOTALS												24		20								4.6	

STATION	STRUCTURE NO. FROM	TO	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	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. 840.20	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	T.B.J.B. STD. 840.34	MINIMUM DEPTH C.B. (SEE DETAIL SHEET 2-M)	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT EXISTING D.I. TO C.B. (SEE DETAIL SHEET 2-L)	CONVERT EXISTING D.I. TO J.B. (SEE DETAIL SHEET 2-K)	FRAME & N.S. GRATE STD. 840.29	MODIFIED CONC. FLUME (SEE DETAIL SHEET 2-J)	CONCRETE. TRANSITION SECTION FOR CB (EA.)	CONCRETE. TRANSITION SECTION FOR DI (EA.)
13+41	94		1			1			1																				
13+42	96																						1						
14+98	97		1			1	1																						
14+43	98		1				1														1								
14+43	99		1				1														1								
14+88	100		1			1	1																						
16+00	103		1				1														1								
17+00	104		1			1	1																						
18+00	106		1					1													1								
18+83	107		1							1	1																		
18+83	108		1						1												1								
18+30	109		1						1												1								
18+30	110		1							1	1																		
17+52	111		1				1														1								
17+01	112		1			1	1																						
16+47	113		1				1														1								
15+80	113A		1				1														1								
21+97	114																						1						
22+47	115		1			1			1																				
22+57	115A		1																	1		1							
SHEET TOTALS			18			6	10	1	4	2	2									1	9	1	2						

STATION	STRUCTURE NO. FROM	TO	CONCRETE COLLAR STD. 840.72	CROSS PIPE END SECTION. NO. & SIZE. STD. 310.03	PARALLEL PIPE END SECTION. NO. & SIZE. STD. 310.02	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
	94	95	0.4					REMOVE EXIST. CB COLLER/EXTEND EXIST. 15" PIPE
14+98	97					0.065	110	REMOVE EXIST. 18" PIPE & PLUG AT CULVERT.
14+43	98							REMOVE CB
16+17							40	REMOVE EXIST. 24" PIPE
17+12							89	REMOVE EXIST. 24" PIPE
19+23							106	REMOVE EXIST. PIPE, SYSTEM.
	108	109					84	REMOVE EXIST. 18" PIPE & CB
	109	111					75	REMOVE EXIST. 18" PIPE & CB
	114A	115	0.4					
SHEET TOTALS			0.8			0.065	504	

RD238340

COMPUTED BY:	JBT	DATE:	5/28/2008
CHECKED BY:	CJT / IY	DATE:	7/8/2008

PROJECT NO.	SHEET NO.
U-3462	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION / SIZE / THICKNESS OR GAUGE / Y	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) (FT) 12"	15"	18"	24"	30"	36"	42"	48"
		115	115A		5.2	4.9			8						
23+62															
24+42	RT	130		11.2	7.9										
		123	130		6.9	7.9				88					
25+25	RT														
25+84		131		14.0	10.7										
		130	131		7.9	10.7				140					
26+66		132		14.0	11.0										
		133	132		12.7	11.0			28						
26+63		133		15.0	12.7										
27+28		134		16.9	13.6										
		131	134		10.7	13.6				140					
27+66	RT														
29+18		135		20.0	17.1										
		134	135		13.6	17.1				188					
		135	136		17.1	17.3				24					
-CONN-															
22+00	LT														
22+99	LT	116													
23+03	RT														
23+54	RT	117													
24+41	LT	118													
28+50	RT	119		19.4	16.5										
		119	120		16.5	16.0				84					
29+20	CL														
30+25	CL	121			17.4	16.9				108					
-DRIVE-															
11+36	RT														
11+52	RT	122													
-DRV 1-															
10+68	RT	123													
		115A	123		4.9	6.9				92					
11+33	RT	124													
-DRV 2-															
10+92	RT	125		19.1	13.5										
10+82	RT	126		16.1	13.1										
		126	127		13.1	12.5			28						
10+82	LT	127		16.1	12.5										
		127	128		12.5	12.0									
11+09	LT														
-DRV 3-															
11+31	CL	129													72
SHEET TOTALS									64	864					72
PROJECT TOTALS									2384	1392	444	24			168
SAY															

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D (FT) 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 OR STD. 838.80 (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
	115	115A																												
23+62																														
24+42	130																							1			1			1
	123	130																												
25+25																														
25+84	131																							1			1			1
	130	131																												
26+66	132																							1			1			1
	133	132																												
26+63	133																							1						
27+28	134																							1			1			1
	131	134																												
27+66																														
29+18	135																							1			1			1
	134	135																												
	135	136																												
-CONN-																														
22+00																														
22+99	116											56																		
23+03																														
23+54	117																		28											
24+41	118																		52											
28+50	119																							1						
	119	120																												
29+20																														
30+25	121																													
-DRIVE-																														
11+36																														
11+52	122																		44											
-DRV 1-																														
10+68	123																							1			1			1
	115A	123																												
11+33	124																													
-DRV 2-																														
10+92	125																							1			1			1
10+82	126																							1			1	1		
	126	127																												
10+82	127																							1			1	1		
	127	128										32																		
11+09																														
-DRV 3-																														
11+31	129																					7.5								
SHEET TOTALS												88							124			7.5		11			9	2		7
PROJECT TOTALS												316	680	152				32	308		212	18.1		88	4.16		47	29	13	17
SAY																						19			5					

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. 840.20	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	T.B.J.B. STD. 840.34	MINIMUM DEPTH C.B. (SEE DETAIL SHEET 2-M)	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT EXISTING D.I. TO C.B. (SEE DETAIL SHEET 2-L)	CONVERT EXISTING D.I. TO J.B. (SEE DETAIL SHEET 2-K)	FRAME & N.S. GRATE STD. 840.29	MODIFIED CONC. FLUME (SEE DETAIL SHEET 2-J)	CONCRETE. TRANSITION SECTION FOR CB (EA.)	CONCRETE. TRANSITION SECTION FOR DI (EA.)	CONCRETE COLLAR STD. 840.72	CROSS PIPE END SECTION. NO. & SIZE. STD. 310.03	PARALLEL PIPE END SECTION. NO. & SIZE. STD. 310.02	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
	115	115A																									24	REMOVE PART OF 15" PIPE
23+62																											209	REMOVE 24" PIPE SYSTEM
24+42	130																											
	123	130																										
25+25																										0.13		PLUG BOTH ENDS OF 18" PIPE
25+84	131																									0.09		PLUG BOTH ENDS OF 15" PIPE
	130	131																										
26+66	132																										10	REM. PART OF 15" PIPE
	133	132																					0.399				29	REM. PART OF 15" PIPE & CB
26+63	133		1	1																		1						
27+28	134																											
	131	134																										
27+66																										0.13		PLUG BOTH ENDS OF 18" PIPE
29+18	135																										25	REMOVE PART OF 18" PIPE
	134	135																										
	135	136																					0.447					TIE TO EXIST. PIPE
-CONN-																												
22+00																											254	REMOVE EXIST. 15" PIPE SYSTEM
22+99	116																											
23+03																											323	REMOVE EXIST. 15" PIPE SYSTEM
23+54	117																											
24+41	118																											
28+50	119		1	1																								CONST. OTCB WHEN INSTALLING PIPE
	119	120																										
29+20																											72	REMOVE EXIST. 15" PIPE
30+25	121																											
-DRIVE-																												
11+36																											32	REMOVE EXIST. 15" PIPE
11+52	122																											
-DRV 1-																												
10+68	123																											
	115A	123																										
11+33	124																											CONVERT DI TO CB
-DRV 2-																	1											
10+92	125																											
10+82	126																											
	126	127																										
10+82	127																											
	127	128																							1 @ 15"			
11+09																											92	REMOVE PART EXIST. 18" PLASTIC & EXIST. DI
-DRV 3-																												
11+31	129																											TWO 48" PARALLEL PIPES
SHEET TOTALS			2	2													1					1	0.846		1 @ 15"	0.35	1070	SHEET TOTAL
																									2 @ 15"			
PROJECT TOTALS			22	22		2	2				4		3	12	5	2	1	2		2	8	10	1.645	2 @ 18"	1 @ 24"	0.675	2567	PROJ. SUB -TOTAL
SAY																							2			1		SAY

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

COMPUTED BY: JBT DATE: 5/28/2008

CHECKED BY: CJT / IY DATE: 5/29/2008

PROJECT NO.	SHEET NO.
U-3462	3-G

RD238340

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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) (FT) SIZE							BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) (FT) SIZE										STRUCTURAL PLATE PIPE SIZE								REINFORCED ENDWALLS		MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03				REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72		PIPE REMOVAL LIN. FT.	REMARKS
								54"	60"	66"	72"	78"	84"		54"				60"	66"	72"			60"	66"	72"							WITH R.C. - C.Y.	WITH C.S. - C.Y.			TYPE OF GRATE E	F	G										
THICKNESS OR GAUGE															.109	.138	.168	SHOP ELON-GATED .138	.168	.138	.168	.138	.168	.139	.168	12	10		12	10		12	10																			
-L-																																															
55+56.27	CL	79			5.0	4.0					140																					14.2																TWO HEADWALLS, BURY 1.0'
33+47.36	LT																																													53	REMOVE EXIST. 72" PIPE & 12" HW
33+58.34	LT																																													54	REMOVE EXIST. 72" PIPE & 12" HW
SHEET TOTALS											140																					14.2																107	
SAY																																15																	

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

COMPUTED BY: JBT DATE: 5/21/2008
CHECKED BY: CJT/IY DATE: 9/18/2008

PROJECT NO.	SHEET NO.
U-3462	3-H

RD22311

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

CUBIC YARDS

Station to Station	Uncl. Exc. C.Y.	Undercut C.Y.	Embank. +% C.Y.	Borrow C.Y.	Waste C.Y.
SUMMARY NO. 1					
-L- 29+50 TO 33+00 LT (Temp. Widen)	92		25		67
-L- 16+00 TO 33+50 LT	819		994	257	82
-L- 16+00 TO 33+50 RT	4,916	738	3,291		2,363
-L- 33+50 TO 35+00	2,198		809		1,389
-Y2REV- 13+00 TO 14+00	131		24		107
-DRIVE3- 10+40 TO 12+00	395		204		191
SUMMARY NO. 1 TOTALS	8,551	738	5,347	257	4,199
SUMMARY NO. 2					
-L- 36+50 To LREV 62+53.68 L.B.	13,464	3,724	23,225	11,107	5,070
-Y- 11+50 TO 29+50	3,106		593		2,514
-DR2- 10+50 TO 11+75	14		126	114	1
SUMMARY NO. 2 TOTALS	16,584	3,724	23,944	11,221	7,585
SUMMARY NO. 3					
-L- 59+61.66 LA TO 77+75	3,238		11,905	8,991	324
-CONN- 20+50 TO 28+50	241		2,303	2,086	24
-CONN- 30+50 TO 32+25	163		99		64
-DRIVE- 10+50 TO 12+00	85		153	76	9
SUMMARY NO. 3 TOTALS	3,727		14,460	11,153	421
PROJECT SUB TOTAL	28,862	4,462	43,751	22,631	12,205
Waste In Lieu of Borrow				-4,857	-4,857
Additional Est Undercut		1,850	2,313	2,313	1850
Est. Shoulder Material			3,075	3,075	
PROJECT TOTAL	28,862	6,312	49,139	23,162	9,198
Est 5% To Replace Topsoil at Borrow Pit				1,158	
GRAND TOTALS	28,862	6,312	49,139	24,320	9,198
SAY	29,000	6,350		24,500	
ESTIMATED DDE = 875 CY					

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

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.

SUMMARY OF CHAIN LINK FENCE

LINE	Station to Station	LOCATION	FABRIC LIN. FT.	LINE POST (EA)	TERMINAL POST (EA)
-L-	-L- 33+85 LT TO -Y- 21+75 LT	LT	179.85	15	3
-Y-	-Y- 23+65 RT TO -L- 40+18 LT	LT	657.50	55	4
-Y-	-Y- 18+70 RT TO -L- 39+40 RT	RT	341.26	28	3
-L-	-L- 41+40 TO 47+60	LT	642.93	53	2
-L-	40+00 TO 42+00	RT	200.00	16	2
-L-	42+60 TO 47+45	RT	466.92	39	2
-L-	-L- 48+05 RT TO-CONN- 31+79 RT	RT	2,329.57	196	17
-L-	-L- 48+20 LT TO-CONN- 27+50 RT	LT	2,180.98	183	10
-CONN-	-CONN- LT 31+79 TO-L- 73+04.86 RT	RT	752.07	63	6
-CONN-	-CONN- LT 27+50 TO-L- 75+00 LT	LT	825.19	69	6
		PROJ. TOTAL	8,576.27	717	55
		SAY	8,580.00	718	55
ADDITIONAL BARBED WIRE = 100 LF					

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LINE	Station to Station	LOC LT/RT/CL	Ashalt Removal SQ. YDS.
-L-	21+78.35 TO 22+35.42	LT	5.11
-L-	22+76.42 TO 29+27.99	LT	450.64
-L-	28+77.12 TO 29+13.71	RT	191.87
-L-	29+27.99 TO 35+31.36	LT/CL/RT	1,938.21
-L-	35+95.51 TO 40+28.42	LT	2,073.92
-L-	40+60.30 TO 41+07.40	LT	90.49
-L-	41+53.48 TO 47+11.40	LT	1,543.87
-L-	48+31.46 TO 48+55.77	LT	50.26
-Y1-	23+32.03 TO 26+40.90	CL	1,282.82
-Y1-	31+76.58 TO 34+36.30	CL	509.74
	Next to 2'-6" C&G		
-Y-	14+98.81 TO 15+64.52	RT	5.51
-Y-	18+82.00 TO 19+00.00	RT	54.52
-Y-	21+74.78 TO 26+40.07	RT	188.15
-Y-	26+74.51 TO 29+23.07	RT	115.44
	TEMPORARY PAVEMENT		
-L-	29+50 TO 33+00	LT	233.33
-Y-	15+33 TO 16+50	LT	52
	PROJECT TOTAL		8,785.88
		SAY	8,800.00

GUARDRAIL SUMMARY

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

LINE	BEG. STA.	END STA.	LOC.	LENGTH (FT.) STRAIGHT	LENGTH (FT.) SHOP CURVED	LENGTH (FT.) DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH (FT.) APPR. END	FLARE LENGTH (FT.) TRAIL. END	W (FT.) APPR. END	W (FT.) TRAIL. END	ANCHORS (EA) GRAU 350	ANCHORS (EA) TYPE CAT-1	ANCHORS (EA) TES	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GUARDRAIL	REMARKS
L	33+44		LT&RT																		117	REMOVE PART OF EXIST. GUARDRAIL
Y	15+37.03	16+76.00	LT	125.00	25.00		15+65.72		10'	12' BERM	50'		1		1						20	REMOVE PART OF EXIST. GUARDRAIL
Y	15+27		LT														1				35	REMOVE PART OF EXIST. GUARDRAIL
		SUBTOTALS		125.00	25.00										1		1					
DEDUCTION FOR ANCHOR UNITS		1 GRAU 350 @50'		-50.00																		
		PROJECT TOTAL		75.00	25.00										1		1				172.00	TOTAL
			SAY	100.00																		
ADDITIONAL GUARDRAIL POSTS= 5 EA																						

PROJ. REFERENCE NO.	SHEET NO.
U-3462	3-I

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
2	4	MAURICE J. HAWES
3	4	ROBERT J. ARMOUR
4	4	JESSE GRAHAM
5	4	EDWARD M. SWEATT
6	4	FAR STAR OFFICE PARK, LLC.
7	4	MATTOX INVESTMENTS, LLC.
8	4	WACCAMAW BANK
9	4	FRED EMMERSON
10	4,5	TAYLOR & COFFEY, LLC.
13	4,5	R.D. WHITE & SONS, INC.
14	5	R.D. WHITE, III
15	5,9	WHITE INVESTMENTS
17	5,10	SJL PROPERTIES, LLC.
18	5	LMN INVESTMENTS LLC
19	5	JAMES T. STREET II, etal
22	5	HOYT W. BRINSON and wife, PAULETTE M. BRINSON
23	5,6,7	TLM INVESTMENTS, LLC. ET AL
24	5,6,10	SHALLOTTE CROSSING, LLC
25	10	REBECCA KERR
27	7	LEE A. SPINA etal.
28	7	JOYCE C. WORRELL
30	7	BONNIE S. EVANS
31	7,8,11	LENDON SPENCER JR.
32	7,11	HOLLY TREE DEVELOPMENT COMPANY,LLC
33	8	JEFFREY B. WHITFIELD
34	8	RANDALL SMITH
34A	8	ALBERT TETREAULT
35	8	RANDALL SMITH
36	8	RUTH J. POLSTON, ET AL
37	8	PAUL C. SMITH
42	11	GLADYS M. CLEMMONS
43	11	WILLIAM L. HEWETT
44	11	JOANN B. SIMMONS
46	11	RUTH J. POLSTON, ETAL
901	5	NCDOT (FORMALLY POWELL CO., LLC.)

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
U-3462	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 9-30-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN — 9/29/08

REVISIONS 8/17/99

DETAIL "A"
SPECIAL LATERAL GRASSED SWALE
(Not to Scale)

Natural Ground, 3:1, D, B, 3:1 or Flatter, Fill Slope

Min. D = 2.0Ft.
B = 2.0Ft.

-L- 21+00 TO 22+20 LT

SEE SHEET 12 FOR PROFILE OF -L-
SEE SHEET 15 FOR PROFILE OF -Y2REV-

FOR RETAINING WALL PLANS
SEE SHEET W-1 THRU W-

NAD 83

4" CONCRETE SIDEWALK

CITY OF SHALLOTTE

(2) MAURICE J. HAWES
DB 464 PG 505

(3) ROBERT J. ARMOUR
DB 1420 PG 860

(4) JESSE GRAHAM
DB 1000 PG 299

(5) EDWARD M. SWEATT
MC 21 PG 251
DB 1150 PG 921

(6) FAR STAR OFFICE PARK, LLC.
DB 2152 PG 566
MB 25 PG 135

(7) MATTOX INVESTMENTS, LLC.

(8) WACCAMAW BANK
DB 2703 PG 103

(9) FRED EMMERSON
PB 18 PG 399
DB 2025 PG 1042

(10) TAYLOR & COFFEY, LLC.
DB 1720 PG 1224
DB 1720 PG 1228
DB 1870 PG 961
DB 2060 PG 941
DB 2260 PG 396

(13) R.D. WHITE & SONS, INC.
PB 17 PG 120
DB 1067 PG 778

BRENDA HOLMES
DB 334 PG 252

-L- PT Sta. 21+78.35

SEE DETAIL 'A'
SPECIAL LAT GRASS SWALE
-L- 21+00 TO 22+20 LT

-L- STA 21+78.35 LT.
BEGIN C & G

BL-11 PINC 11+79.49=
-L- STA. 16+53.67
(16.10' RT.)

BL-12 PINC 18+57.73=
-L- STA. 23+32.00
(35.05' LT.)

CL B RIPRAP
EST 1 TON
FIL FAB=5 SQ. YD

REMOVE& REPLACE W/DI

CL B RIPRAP
EST 2 TONS
FIL FAB=7 SQ. YD

CL B RIPRAP
EST 2 TONS
FIL FAB=50 SQ. YD.

CL B RIPRAP
EST 6 TONS
FIL FAB=24 SQ. YD.

-Y2-PT Sta. 15+08.89=

-Y2REV-PT Sta. 14+79.73=
-L-PT Sta. 28+50.00

-Y2REV-PT Sta. 14+22.05

-Y2REV-PC 13+60.04

-Y2REV-PT 13+23.76

-Y2REV-POT 13+00.00

-Y2-PC Sta. 10+00.00

BEGIN TIP PROJECT U-3462
-L- STA 16+00.00

-L-PC Sta. 16+20.22
BEGIN TAPER

-L-PRC Sta. 19+29.68

-L-
PI Sta 17+75.00
Δ = 3° 32' 46.0" (RT)
D = 1° 08' 45.3"
L = 309.46'
T = 154.78'
R = 5,000.00'
e = NC

PI Sta 20+54.04
Δ = 2° 50' 58.6" (LT)
D = 1° 08' 45.3"
L = 248.68'
T = 124.36'
R = 5,000.00'
e = NC

-Y2-
PI Sta 11+61.94
Δ = 3° 50' 56.1" (RT)
D = 1° 11' 19.8"
L = 323.76'
T = 161.94'
R = 4,819.52'
e = EXIST.

PI Sta 13+92.33
Δ = 39° 28' 21.6" (LT)
D = 63° 39' 43.1"
L = 62.00'
T = 32.29'
R = 90.00'
e = SEE PLANS

DETAIL L
GRASS SWALE
(Not to Scale)

Natural Ground, 3:1, D, B, 3:1, Natural Ground
Min. D= 0.5 Ft.
Max. D= 1.5 Ft.
B= 2.0 Ft.

RT. OF 25+52
SLOPE=1.2%
DDE=52 CY

MATCHLINE -L- STA. 29+50.00 SEE SHEET 5

6,300	SMITH	-L-	8,700
16,100	AVENUE		20,400
900	WHITE STREET		3,300
1,600			5,900
4,200			2007 ADT
7,500			2035 ADT

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3462	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18003 ENGINEER GREGORY E. BREW — 9-25-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER KEVIN B. ADRIAN — 9-25-08

SEE SHEETS 12 & 13 FOR PROFILE OF -L-
SEE SHEET 16 FOR PROFILE OF -Y-
SEE SHEET 2-G FOR 'PSH' DETAIL

MATCHLINE -Y- STA. 24+50.00 SEE SHEET 10

MATCHLINE -L- STA. 29+50.00 SEE SHEET 4

MATCHLINE -L- STA. 43+50.00 SEE SHEET 6

MATCHLINE -Y- STA. 15+00.00 SEE SHEET 9

NAD 83

DETAIL "B"
LATERAL GRASSED SWALE
(Not to Scale)
Natural Ground, 3:1, D, B, Fill Slope
Min. D = 2.0 Ft.
B = 3.0 Ft.
-L- STA 31+50 TO 33+50 LT

DETAIL "A"
SPECIAL LATERAL GRASSED SWALE
(Not to Scale)
Natural Ground, 3:1 or Flatter, D, B, Fill Slope
Min. D = 2.0 Ft.
B = 2.0 Ft.
-L- 36+50 TO 39+50 LT

DETAIL BB
RIP RAP AT CULVERT OUTLET
(Not to Scale)
77.06' N40°26'18"W — 28.51' N41°07'55"W
L.5'
Type of Liner= Class 1 Rip-Rap
-L- STA 33+75 RT.

DETAIL "AA"
DETAIL OF NEW CHANNEL UPSTREAM OF CULVERT
3:1, 3:1, 6', CHANNEL INVERT 1.0
-L- STA 33+70 LT DDE = 289 CY

(10) TAYLOR & COFFEY, LLC.
DB 1720 PG 1224
DB 1720 PG 1228
DB 1870 PG 961
DB 2060 PG 941
DB 2260 PG 396

-L-
PI Sta 31+62.00
Δ = 15°16'42.0" (RT)
D = 9°32'57.5"
L = 159.99'
T = 80.47'
R = 600.00'
e = SEE PLANS

(17) - PROPERTIES, LLC.
DB 2067 PG 387
DB 2067 PG 392

(18) LMN INVESTMENT LLC
DB 2538 PG 444

(19) JAMES T. STREET II, etal
DB 1969 PG 458
DB 1969 PG 453
MB 30 PG 344

(19) JAMES T. STREET II, etal
PERMANENT EASEMENT NO. 5
DB 1969 PG 453

(22) HOYT W. BRINSON and wife, PAULETTE M. BRINSON
DB 799 PG 788

(24) SHALLOTTE CROSSING, LLC
PB 23 PG 180-181
DB 1398 PG 1348

(15) WHITE INVESTMENTS
DB 438 PG 93

(23) TLM INVESTMENTS, LLC. ET AL
DB 2538 PG 444
DB 2538 PG 453
DB 1147 PG 279

(901) NCDOT
FORMERLY POWELL CO., LLC.

(13) R.D. WHITE & SONS, INC.
PB 17 PG 120
DB 1067 PG 178

(14) R.D. WHITE II
PB 17 PG 120
DB 1063 PG 462

M. M. FOWLER, INC.
DB 1489 PG 517
MB 33 PG 222

J. LINDSEY
1014 PG 1078

-L- PC 30+81.53

BL-13 PINC 24+89.72=
-L- STA. 29+63.98
(35.20' LT.)

-DRIVE3-POT 10+00
-L-POC 31+76.05
232' TAPER

-L- STA 33+65
BEGIN RCBC

-L- STA 33+76
END RCBC

-DRIVE3-POT 11+94.57
END CONST.

-L-PT Sta. 32+41.52

-DRIVE1-POT 10+00.00
-Y- POT 23+95.00

-DRIVE1-POT 11+98.47

-Y-PINC Sta. 21+47.97

-DR4-POT 10+00.00

-DR4- PC 10+31.30

-DR4-
PI Sta 10+47.17
Δ = 89°30'11.4" (LT)
D = 358°05'55.0"
L = 24.99'
T = 15.86'
R = 16.00'

-DR4- PC 10+56.30

-DR4-
S 39°55'55.9" E

-DR2-POT 11+43.26
-DR4-POT 13+64.37

-DR2- POT 12+07.96

-DR2- POT 11+75
END CONSTRUCTION

-DR2-POT 10+00.00
-L- POT 40+46.39

-L-POT Sta. 35+61.45=
-Y-POT Sta. 19+86.14
Δ = 89°46'32.9"

BL-15 PINC 35+98.14=
-L- STA. 40+39.51
(89.66' LT.)

BL- 36 PINC 38+40.22=
-L- STA. 42+68.04
(9.83' LT.)

BY- 30 PINC 32+36.66=
-Y- STA. 15+68.99
(22.13' LT.)

BL- 35 PINC 30+75.82
BY- 35 PINC 26+65.50
-Y- STA. 21+39.88
(39.73' LT.)

-Y- STA 15+66.77
END RCBC

-Y- STA 15+52.77
BEGIN RCBC

-Y- STA 21+52.12
EXP.R/W

-Y- STA 21+41.85
EXP.R/W

-L- STA 33+85 +33.76 -Y- STA 20.24

SEE DETAIL 'A'
SPECIAL LAT. GRASS SWALE
-L- 36+50 TO 39+50 RT

SEE DETAIL 'B'
LATERAL GRASS SWALE
-L- 31+50 TO 33+50 LT

REMOVE EXISTING METAL PIPE AND CONSTRUCT NEW CHANNEL SEE DETAIL 'AA'

CL B RIPRAP
EST 3 TONS
FIL FAB=10 SQ. YD.

CL B RIPRAP
EST 4 TONS
FIL FAB=14 SQ. YD.

CL B RIPRAP
EST 5 TONS
FIL FAB=20 SQ. YD.

3' STD. BASE DITCH
-Y- STA 14+95 LT
SEE DETAIL 'G'

RETAIN EXIST CULVERT
EXTEND 19' W/2@6'X5' RCBC.

REMOVE EXIST. DRAIN. SYSTEM & ASSOCIATED DI'S & CB'S
-Y- 16+70 TO 20+20 RT

REMOVE EXIST. CONCRETE ISLAND

REMOVE EXIST. CURB

REMOVE EXIST. CHANNEL

REMOVE PARTIAL CHANNEL

REMOVE PIPE

PLUG PIPE AT CULVERT

TIE TO EXIST QUADRIFOIL

SEE DETAIL "J"
SEE X-SECTIONS
GRADE TO ELEV 4.7'

SEE DETAIL "J"
SEE X-SECTIONS
GRADE TO ELEV 2.3'

SEE DETAIL "J"
SEE X-SECTIONS
COVE TO ELEV 3.5'

STREAM CHANNEL
SEE DETAIL 'K'

CLASS 'I' RIP RAP
BANK PROTECTION
APPROX. 36 TONS
SEE DETAIL 'BB'

DETAIL "G"
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2.5:1, D, 2.5:1, Natural Ground, B
Min. D = 4.5 Ft.
B = 3.0 Ft.
SLOPE=0.005 LENGTH (APPROX.)=125'
-Y- 14+95 LT. DDE = 298 CY

DETAIL "K"
STREAM CHANNEL
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground, B
Min. D = 1.0 Ft.
B = 5.0 Ft.
DDE = 12 CY
SLOPE=0.005 LENGTH (APPROX.)=40'
-L- 33+35 TO 33+75 RT.

DETAIL "J"
FLOODPLAIN GRADING
(Not to Scale)
3:1 SIDE SLOPE, Natural Ground, GRADE PT. ELEV*, CHANNEL, Natural Ground
SEE -L- / -Y- CROSS SECTIONS
FROM -L- STA. 30+75 TO STA. 31+50 Rt., *GP EL. = 4.7'
FROM -L- STA. 31+95 TO STA. 33+75 Rt., *GP EL. = 3.5'
FROM -L- STA. 34+00 TO STA. 35+00 Rt., *GP EL. = 2.3'
FROM -Y- STA. 15+70 TO STA. 19+00 Lt., *GP EL. = 2.3'

'CPES' DENOTES CROSS PIPE END SECTION
'PPES' DENOTES PARRALLEL PIPE END SECTION

FOR TEMPORARY SHORING SEE DETAIL SHEETS 2-O THRU 2-Z

PROPOSED TEMPORARY SHORING SEE TRAFFIC CONTROL PLANS

'RCBC' DENOTES REINFORCED CONC. BOX CULVERT

FOR INTERSECTION DETAIL SEE SHEET 2-H

FOR RCBC PLANS SEE SHEET C-1 TO C-

PAVEMENT REMOVAL
5" MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK

'PSH' DENOTES PREFORMED SCOUR HOLE

NOTE: CONTRACTOR TO GRADE THIS AREA FOR TRUCK ACCESS TO UTILITY SITE

DO NOT DISTURB ELECTRICAL CABINETS

DO NOT DISTURB SIGN

ISBK BUS

BST PARKING

MTL CANOPY

GAS PUMPS CANOPY

10 INGRESS/EGRESS EASEMENTS

60' INGRESS/EGRESS EASEMENT

LIFT STATION

15,400 / 35,300		
1,100 / 5,000	US 17 BUS -Y-	1,100 / 1,600
9,800 / 23,100	SMITH AVENUE -L-	17,100 / 35,300
2,000 / 5,300	-Y-	9,300 / 20,900
24,500 / 54,900		2007 ADT / 2035 ADT

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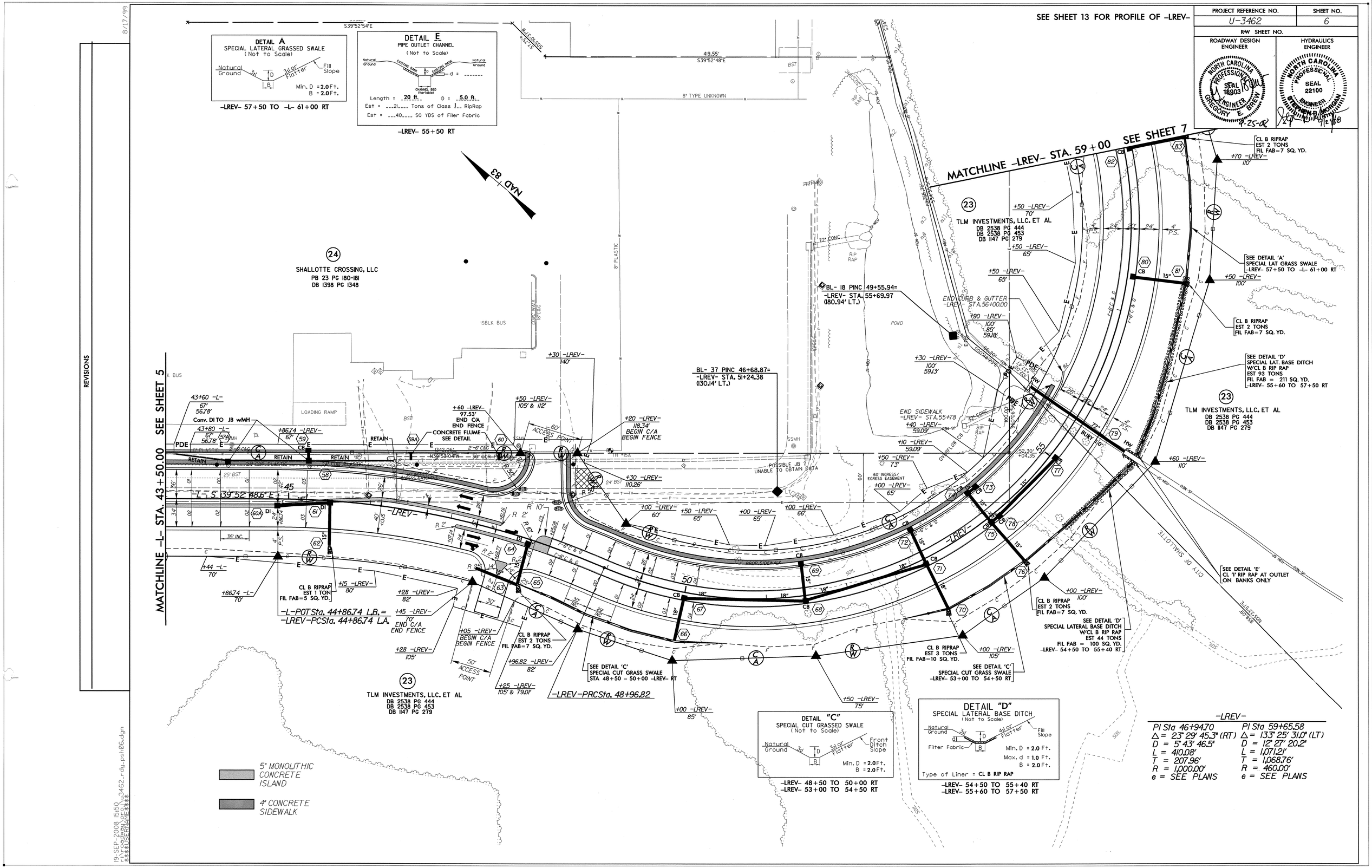

SEE SHEET 13 FOR PROFILE OF -LREV-
PROJECT REFERENCE NO.
U-3462
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN
9-25-08
9/24/08
DETAIL A
SPECIAL LATERAL GRASSED SWALE
(Not to Scale)
Natural Ground
3:1
3:1 or Flatter
Fill Slope
Min. D = 2.0 Ft.
B = 2.0 Ft.
-LREV- 57+50 TO -L- 61+00 RT
DETAIL E
PIPE OUTLET CHANNEL
(Not to Scale)
Length = 20 ft.
D = 5.0 ft.
Est = 21 Tons of Class I RipRap
Est = 40 SQ YDS of Filer Fabric
-LREV- 55+50 RT
NAD 83
MATCHLINE -LREV- STA. 59+00 SEE SHEET 7
MATCHLINE -L- STA. 43+50.00 SEE SHEET 5
24
SHALLOTTE CROSSING, LLC
PB 23 PG 180-181
DB 1398 PG 1348
23
TLM INVESTMENTS, LLC. ET AL
DB 2538 PG 444
DB 2538 PG 453
DB 1147 PG 279
BL- 18 PINC 49+55.94=
-LREV- STA. 55+69.97
(180.94' LT.)
BL- 37 PINC 46+68.87=
-LREV- STA. 51+24.38
(130.14' LT.)
END CURB & GUTTER
-LREV- STA. 56+00.00
END SIDEWALK
-LREV- STA. 55+78
POSSIBLE JB ? UNABLE TO OBTAIN DATA
CL B RIPRAP
EST 2 TONS
FIL FAB=7 SQ. YD.
SEE DETAIL 'A'
SPECIAL LAT GRASS SWALE
-LREV- 57+50 TO -L- 61+00 RT
SEE DETAIL 'D'
SPECIAL LAT. BASE DITCH
W/CL B RIP RAP
EST 93 TONS
FIL FAB = 211 SQ. YD.
-LREV- 55+60 TO 57+50 RT
SEE DETAIL 'E'
CL 'I' RIP RAP AT OUTLET
ON BANKS ONLY
CL B RIPRAP
EST 1 TON
FIL FAB=5 SQ. YD.
-L-POTSta. 44+86.74 L.B.=
-LREV-PCSta. 44+86.74 L.A.
CL B RIPRAP
EST 2 TONS
FIL FAB=7 SQ. YD.
SEE DETAIL 'C'
SPECIAL CUT GRASS SWALE
STA 48+50 - 50+00 -LREV- RT
-LREV-PRCSta. 48+96.82
CL B RIPRAP
EST 3 TONS
FIL FAB=10 SQ. YD.
SEE DETAIL 'C'
SPECIAL CUT GRASS SWALE
-LREV- 53+00 TO 54+50 RT
SEE DETAIL 'D'
SPECIAL LATERAL BASE DITCH
W/CL B RIP RAP
EST 44 TONS
FIL FAB = 100 SQ. YD.
-LREV- 54+50 TO 55+40 RT
CONCRETE FLUME
SEE DETAIL
CONC. WALK
LOADING RAMP
ISBLK BUS
POND
CITY OF SHALLOTTE
DETAIL "C"
SPECIAL CUT GRASSED SWALE
(Not to Scale)
Natural Ground
3:1
3:1 or Flatter
Front Ditch Slope
Min. D = 2.0 Ft.
B = 2.0 Ft.
-LREV- 48+50 TO 50+00 RT
-LREV- 53+00 TO 54+50 RT
DETAIL "D"
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
4:1 or Flatter
Fill Slope
Filter Fabric
Min. D = 2.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
Type of Liner = CL B RIP RAP
-LREV- 54+50 TO 55+40 RT
-LREV- 55+60 TO 57+50 RT
-LREV-
PI Sta 46+94.70
Δ = 23° 29' 45.3" (RT)
D = 5° 43' 46.5"
L = 410.08'
T = 207.96'
R = 1,000.00'
e = SEE PLANS
PI Sta 59+65.58
Δ = 133° 25' 31.0" (LT)
D = 12° 27' 20.2"
L = 1,071.21'
T = 1,068.76'
R = 460.00'
e = SEE PLANS
5" MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK
REVISIONS
8/17/99
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PROJECT REFERENCE NO.	SHEET NO.
U-3462	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 4-25-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN — 9-4-08

SEE SHEETS 13 & 14 FOR PROFILE OF -LREV-
SEE SHEETS 13 & 14 FOR PROFILE OF -L-
SEE SHEETS 15 FOR PROFILE OF -CONN-

REVISIONS 8/17/99

MATCHLINE -LREV- STA. 59+00.00 SEE SHEET 6

MATCHLINE -CONN- STA. 26+50.00 SEE SHEET 11

MATCHLINE -L- STA. 70+00.00 SEE SHEET 8

NAD 83

HOME DEPOT USA, INC
PB 23 PG 180-181
DB 1398 PG 1323

DETAIL "A"
SPECIAL LATERAL GRASSED SWALE
(Not to Scale)

Natural Ground — 3:1 — D — B — 3:1 or Flatter — Fill Slope

Min. D = 2.0 Ft.
B = 2.0 Ft.

-LREV- 57+50 TO -L- 61+00 RT
-L- 62+50 TO 66+00 RT
-L- 67+10 TO 69+95 RT

(23) TLM INVESTMENTS, LLC. ET AL
DB 2538 PG 444
DB 2538 PG 453
DB 1147 PG 279

BL- 19 PINC 52+64.13=
-LREV- STA. 59+81.43
(69.37' LT.)

-LREV-POT Sta 62+53.68 L.B.=
-L-POT Sta 59+61.66 L.A.

-LREV-PT Sta. 59+68.03

BL- 20 PINC 55+98.77=
-L- STA. 60+15.31
(6.58' RT.)

BL- 21 PINC 58+81.61=
-L- STA. 62+99.06
(1.77' LT.)

BL-24 PINC 62+47.44=
-L- STA. 66+66.95
(7.59' LT.)

CITY OF SHALLOTTE

8" TYPE UNKNOWN

CONC

BST 8" TYPE UNKNOWN

18"C&G

36" CMP

-LREV-
PI Sta 59+65.58
Δ = 133° 25' 31.0" (LT)
D = 12° 27' 20.2"
L = 1,071.21'
T = 1,068.76'
R = 460.00'
e = SEE PLANS

-L-
PI Sta 63+74.08
Δ = 39° 18' 11.5" (RT)
D = 8° 48' 53.0"
L = 445.88'
T = 232.11'
R = 650.00'
e = SEE PLANS

SEE DETAIL 'A'
SPECIAL LAT. GRASS SWALE
-LREV- 57+50 TO -L- 61+00 RT

-L-PCSta. 61+41.96

-L-PT Sta. 65+87.84

END CONSTRUCTION
-CONN- STA. 32+25

5" MONOLITHIC CONCRETE ISLAND

(27) CATHERINE J. GILMAN
DB 1293 PG 582
PB J PG 268

SEE DETAIL A
SPECIAL LATERAL GRASS SWALE
STA 62+50 - 66+00 -L- RT

(28) LEE A. SPINA etal.
PB X PG 209
DB 1350 PG 1007

JOYCE C. WORRELL
PB X PG 209
DB 1878 PG 1219

CL B RIPRAP
EST 2 TONS
FIL FAB = 7 SQ. YD.

TIE PROPOSED ROADWAY DITCH TO SPEC. LAT. GRASS SWALE

SPECIAL DITCH GRADE LT&RT SEE DETAIL 'CC'

(23) TLM INVESTMENTS, LLC. ET AL
DB 2538 PG 444
DB 2538 PG 453
DB 1147 PG 279

DENNIS FRANKLIN
PB H PG 235
DB 1992 PG 837

POND

DETAIL "C"
SPECIAL CUT GRASSED SWALE
(Not to Scale)

Natural Ground — 3:1 — D — B — 3:1 or Flatter — Front Ditch Slope

Min. D = 2.0 Ft.
B = 2.0 Ft.

-L- 67+50 TO 69+50 LT

DETAIL "CC"
SPECIAL DITCH GRADE
(Not to Scale)

Natural Ground — 3:1 — 4:1 or Flatter — Front Ditch Slope — DITCH GRADE

-CONN- 30+50 -TO 32+00 LT&RT

(32) HOLLY TREE DEVELOPMENT COMPANY, LLC
PB H PG 235
PB J PG 268
PB 26 PG 240
PB 14 PG 245
DB 1343 PG 640
DB 1427 PG 471
DB 399 PG 351

CONSTRUCT DI IN SAME OPERATION AS INSTALLING 18" CROSS PIPE

-CONN-PT Sta. 26+55.01

-CONN- 47.36' END C/A END FENCE

-CONN- 40.33' BEGIN C/A BEGIN FENCE
CL B RIPRAP
EST 3 TONS
FIL FAB = 10 SQ. YD.

SEE DETAIL 'C'
SPECIAL CUT GRASS SWALE
-L- 67+50 TO 69+50 LT

(31) LENDON SPENCER JR.
PB H PG 235
DB 2179 PG 690
DB 399 PG 351

TIE GRASS SWALE TO PROPOSED DITCH @ STA 70+00 -L-LT.

-CONN-PT Sta. 29+58.61=
-L-POT Sta. 66+74.56

(30) BONNIE S. EVANS
PB P PG 244
DB 1462 PG 50

TIE PROPOSED ROADWAY DITCH TO SPEC. LAT. V DITCH
CL 'B' RIPRAP EST. 32 TONS
FIL FAB. 77 SQ. YD.

JOYCE WORRELL
PB P PG 244
DB 723 PG 464

JOYCE C. WORRELL
PB P PG 244
DB 798 PG 534

SEE DETAIL 'A'
SPECIAL LAT. GRASS SWALE
-L- 67+00 TO 69+95 RT

TIE GRASS SWALE TO PROPOSED FILL SLOPE AT -L- 70+00 RT

BL-25 PINC 65+76.01=
-L- STA. 69+95.48
(2.31' LT.)

RICHARD D. EISENMAN
PB P PG 244
DB 802 PG 669

JOYCE WORRELL
PB 899 PG 102
DB P PG 244
DB 723 PG 464

DANNY R. DARDEN
PB P PG 244
DB 970 PG 199

LOUIS ALBERT HARMEL
PB P PG 244
DB 1210 PG 10

MISSIONARY ALLIANCE CHURCH
PB P PG 244
DB 1123 PG 382

MARVIS FREEMAN
PB P PG 244
DB 834 PG 940

GARY GORE and wife, SHIRLEY GORE
PB P PG 244
DB 1120 PG 605

EDGEWATER DR. SOIL

SUBURBAN ST. FIRST

EXISTING R/W

20' UTILITY EASEMENT

RETENTION POND EASEMENT

10' UTILITY EASEMENT

8,400 / 20,000	-CONN-	
100 / 200	8,300 / 19,600	
10,700 / 22,900	SMITH AVENUE -L-	18,800 / 42,200
200 / 300	100 / 200	
EDGEWATER DRIVE		
300 / 700	2007 ADT 2035 ADT	

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 9-25-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN — 9-24-08

SEE SHEET 14 FOR PROFILE OF -L-

REVISIONS 8/17/99

MATCHLINE -L- STA. 70+00.00 SEE SHEET 7

MATCHLINE -Y1- STA. 29+50.00 SEE SHEET 11

-L-
PI Sta 74+88.57
Δ = 34° 02' 51.0" (RT)
D = 9° 32' 57.5"
L = 356.54'
T = 183.71'
R = 600.00'
e = SEE PLANS

PI Sta 78+29.53
Δ = 1° 22' 49.0" (RT)
D = 0° 24' 37.9"
L = 336.23'
T = 168.12'
R = 13,957.00'
e = SEE PLANS

-Y1-
PI Sta 35+65.60
Δ = 2° 13' 44.0" (RT)
D = 0° 24' 37.9"
L = 542.95'
T = 271.51'
R = 13,957.00'
e = EXIST

PI Sta 40+12.32
Δ = 13° 47' 08.4" (LT)
D = 3° 57' 05.2"
L = 348.88'
T = 175.29'
R = 1,450.00'
e = EXIST

END TIP PROJECT U-3462
-L- POC 77+75.00

-Y1-PCSta. 32+94.09

BL-22 PINC 70+91.47
BY1-22 PINC 28+68.26
-L- STA. 75+02.58
(36.53' LT.)

-L-PCCSta. 76+61.41=
-Y1-POCSta. 35+00.81
END TAPER

BL-26 PINC 67+99.42=
-L- STA. 72+18.84
(2.39' RT.)

-L-PCSta. 73+04.86
BEGIN TAPER

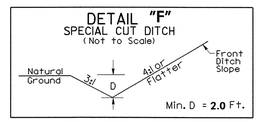
-L-PTSta. 79+97.64
-Y1-PRCSta. 38+37.04 L.A.

-Y1-PTSta. 41+85.92

-Y1-POTSta. 43+47.27

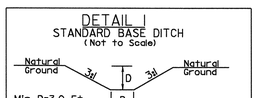
BL-23 POT 76+75.08=
-Y1- STA. 39+18.45
(16.18' LT.)

DETAIL "F"
SPECIAL CUT DITCH
(Not to Scale)



-L- 74+00 TO 74+50 LT
-L- 75+50 TO 77+00 LT

DETAIL I
STANDARD BASE DITCH
(Not to Scale)



-L- 72+50 RT. DDE = 49 CY

SEE DETAIL 'F' SPECIAL CUT DITCH -L- 74+00 TO 74+50 LT -L- 75+50 TO 77+00 LT

TIE PROPOSED DITCH TO EXISTING AT STA. 75+00 -L- LT & CHANGE THE SLOPE TO 6.1:1

SEE DETAIL 'I' STANDARD BASE DITCH -L- 72+50 RT

CL B RIPRAP EST 5 TONS FIL FAB=14 SQ. YD.

INSTALL U-CHANNEL POSTS WITH TYPE 1 RED OBJECT MARKERS

HARRY J. JABLONSKI and wife, BETTY H. JABLONSKI
DB 512 PG 933

BRENDA JABLONSKI
DB 1151 PG 230

RANDALL SMITH
DB 2553 PG 255

RUTH J. POLSTON, ET AL
DB 390 PG 598

PHYLLIS S. SMITH
PB 22 PG 489
DB 1374 PG 26

JEFFREY B. WHITFIELD
DB 1185 PG 207

ALBERT TETREAULT
PB R PG 259
DB 2582 PG 105

PAUL C. SMITH
DB 1362 PG 1316
DB 250 PG 587
DB 391 PG 13

ELRAY SMITH
DB 391 PG 13

WESLEY DUANE ASH
DB 1348 PG 905
DB 908 PG 874

BARRY C. CHEERS
PB Q PG 130
DB 686 PG 1076

WILLIAM CHEERS and wife, BETTY G. CHEERS
PB Q PG 130
DB 661 PG 696

A.J.B. TAVERNS, INC.
DB 1558 PG 102
DB 1035 PG 253
MB 975 PG 1045

DIANA S. WHITE
DB 1045 PG 39

JAMES M. DRUCKER and wife, AMIE S. DRUCKER
PB P PG 248
DB 998 PG 894

J. STEPHEN WRAY
PB P PG 244
DB 703 PG 919
DB 728 PG 568

JOSEPH E. GORE and wife, TAMMY S. GORE
PB R PG 259
DB 686 PG 333

SHIRLEY E. GORE and wife, JOSEPH E. GORE
PB P PG 244
DB 1120 PG 605

CLAUDE T. HUNT and wife, MARY C. HUNT
PB P PG 244
DB 911

HEWETT AND HEWETT
PB P PG 244

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
U-3462	9
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 2-25-08

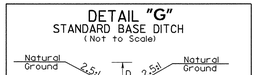
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN P. MORGAN — 9/24/08

SEE SHEET 15 FOR EXISTING -Y- PROFILE

REVISIONS 8/17/99

NAD 83

DETAIL "G"
STANDARD BASE DITCH
(Not to Scale)



Min. D = 4.5 Ft.
B = 3.0 Ft.

SLOPE = 0.2% LENGTH (APPROX.) = 120'

-Y- 14+95 LT DDE = 340 CY

-Y- POT Sta. 10+00.00

BY- 32 POT 39+37.16

WHITE INVESTMENTS
DB 438 PG 93

WESTWIND REAL ESTATE INVESTMENTS LIMITED PARTNERSHIP
DB 1216 PG 796

TWIN CREEK PLAZA LIMITED PARTNERSHIP
DB 1081 PG 221

WHITE INVESTMENTS
DB 438 PG 93

ELAINE SMITH LAWLOR and, HUBERT L. WOLFE
DB 1321 PG 522

BKL PROPERTIES, LLC
DB 1014 PG 1078

PELICAN COMPANIES, INC.
DB 946 PG 235

ROBERT FRANK CAUSEY and wife, LENA MAE CAUSEY
DB 1058 PG 403
DB 566 PG 118

T.D. LINDSEY
DB 1014 PG 1078

VERA WHITE SHAW and, LISA SHAW NEWSOME
DB 1128 PG 900

BEGIN CONSTRUCTION
-Y- Sta. 12+00.00

BEGIN C & G
-Y- STA. 13+85

3' STD. BASE DITCH
-Y- STA 14+95 LT
SEE DETAIL 'G'

REMOVE PART OF EXIST. GUARDRAIL & ADD TERMINAL SECT.

CL B RIPRAP
EST 5 TONS
FIL FAB=14 SQ. YD

REMOVE EXIST. CB
COLLAR/EXTEND 6' W/15"

483' TAPER

REMOVE CB

REMOVE PIPE

MATCHLINE -Y- STA. 15+00.00 SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
U-3462	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18003 ENGINEER GREGORY E. BREW — 9-25-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN M. MORGAN — 9-24-08

SEE SHEET 16 FOR PROFILE OF -Y-
SEE SHEET 2-I FOR CHANNELIZATION DETAIL

REVISIONS

8/17/99

MATCHLINE -Y- STA. 24+50.00 SEE SHEET 5

NAD 83

S.J.L PROPERTIES, LLC.
DB 2067 PG 387
DB 2067 PG 392

DONACIANO SANTAMARIA and wife, MARIA SANTAMARIA
PB 21PG 371
DB 1343 PG 741

J. WALTON HILL and wife, SHIRLEY N. HILL
PB 21PG 371
PB 17 PG 468
DB 1355 PG 1278
DB 1099 PG 428

WAL-MART REAL ESTATE BUSINESS TRUST
PB V PG 325
DB 1293 PG 582

CLEMIT ALLISON HOLDEN
PB V PG 325
DB UNKNOWN

HENRY C. HARRELSON
MC 22 PG 485
DB 1373 PG 1046

THE BRYAN FAMILY LIMITED PARTNERSHIP
MC O PG 128
DB 993 PG 53

WILLIAM E. BENTON and wife, GWYNELLA M. BENTON
DB 384 PG 905

BILLY B. DILLARD
DB 461 PG 735

ALISON M. BLACKMON and husband, RONNIE C. BLACKMON
PB 1PG 245
DB 1068 PG 718

CAROLINA HARDWARE PLUMBING AND ELECTRIC
PB Y PG 206
DB 398 PG 168

SOUTHERN PARTS DISTRIBUTORS, INC.
PB 1PG 245
PB K PG 52
DB 753 PG 354

SHALLOTTE CROSSING, LLC
PB 23 PG 180-181
DB 1598 PG 1348

REBECCA KERR

WILLIAM L. HEWETT and wife, YVONNE HEWETT
DB 485 PG 603

-Y-PINCSta. 32+28.65
END RESURFACING -Y- Sta. 30+25
END CONSTRUCTION -Y- Sta. 33+50
-Y-POTSta. 35+34.36
BY-PINC 21+43.2|= -Y- STA. 26+61.84 (27.60' LT.)
BY1-28 POT 5+00.00
BY-28 PINC 15+64.07
-Y- STA. 32+41.65 (46.54' LT.)
BY-27 PINC 11+15.15
-Y1-POTSta. 10+00.00
-Y-POTSta. 32+32.95

REMOVE EXIST. ISLAND
5" MONOLITHIC CONCRETE ISLAND
DO NOT DISTURB SIGN
PLUG AND FILL
REMOVE
RETAIN
300' TAPER RT SIDE
392' TRANSITION RT SIDE
100' TAPER
DESTINATION UNKNOWN
POND
SEWER VALVE
US 17 BUS 45' BST

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 9-25-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. ROBINSON — 9/19/08

SEE SHEET 14 FOR PROFILE OF -CONN-
SEE SHEET 15 FOR PROFILE OF -DRIVE-
SEE SHEET 16 FOR PROFILE OF -Y1-

REVISIONS

8/17/99

NAD 83

-CONN-
PI Sta 25+07.79
Δ = 56° 04' 39.7" (RT)
D = 17° 21' 44.5"
L = 322.98'
T = 175.75'
R = 330.00'
e = SEE PLANS

-DRIVE-
PI Sta 11+03.37
Δ = 40° 20' 11.8" (RT)
D = 28° 38' 52.4"
L = 140.80'
T = 73.46'
R = 200.00'
e = SEE PLANS

PI Sta 12+26.89
Δ = 4° 48' 05.2" (LT)
D = 4° 16' 32.9"
L = 112.29'
T = 56.18'
R = 1,340.00'
e = SEE PLANS

DETAIL "H"
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, Fill Slope, Min. D = 2.0 Ft.
-CONN- STA 23+50 TO 24+00 LT

DETAIL "F"
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground, Min. D = 1.5 Ft.
-CONN- STA 24+00 LT TO -Y1- 26+50 LT
EST DDE = 169 C.Y.

-Y1-
PI Sta 25+62.29
Δ = 18° 17' 50.1" (LT)
D = 4° 16' 32.9"
L = 427.93'
T = 215.80'
R = 1,340.00'

NOTE: REMOVE EXISTING DRAINAGE SYSTEM & ASSOCIATED DI'S FROM -CONN- 23+00 TO 25+00 RT & -DRIVE- 10+00 TO 11+70 RT.

CLARA R. MILIKAEN
PB Y PG 206
DB 826 PG 177

GROVER RANDOLPH EDGE
DB 1344 PG 921

JAMES C. SAUNDERS and wife, OGRETTA T. SAUNDERS
DB 823 PG 176

KENNETH L. HALE and wife, JUDITH W. HALE
DB 1344 PG 924

DAVID A. BECKMAN and wife, COLETTE R. BECKMAN
DB 1332 PG 397

CLARA R. MILIKAEN
PB Y PG 206
PB 826 PG 177

ALVIN E. MILLIKEN, JR.
PB 1233 PG 785

PARADISE AND SON, INC.
PB N PG 326
DB 1113 PG 194

GLADYS M. CLEMMONS
DB 168 PG 712

WILLIAM L. HEWETT and wife, YVONNE HEWETT
DB 485 PG 603

(43) WILLIAM L. HEWETT
DB 485 PG 603

(44) JOANN B. SIMMONS
PB Q PG 60
DB 441 PG 809
DB 244 PG 707
DB 196 PG 182

(46) RUTH J. POLSTON, ETAL
DB 415 PG 882

RANDY G. THOMPSON and wife, SHERIE B. THOMPSON
PB 10 PG 66
DB 884 PG 792
DB 884 PG 794

MALCOM O. GRAINGER
PB 10 PG 66
DB 874 PG 477

CARL EDWARD LARSON
PB 10 PG 66
DB 553 PG 873
DB 556 PG 678

MARSHALL HEWETT and wife, DORIS A. HEWETT
PB 10 PG 66
DB 397 PG 699
DB356 PG 737

JAMES C. THIGPEN
PB 10 PG 66
DB 600 PG 1064

LENDON SPENCER, JR
PB H PG 235
DB 2179 PG 690
DB 399 PG 351

(32) HOLLY TREE DEVELOPMENT COMPANY,LLC
PB H PG 235
PB J PG 268
PB 26 PG 240
PB 14 PG 245
DB 1343 PG 640
DB 1427 PG 471
DB 399 PG 351

BYI-32 PINC 11+67.16=
-Y1- STA. 16+25.58
(21.89' LT.)

BYI-33 PINC 17+91.46=
-CONN- STA. 22+49.85
(28.52' LT.)

BYI- 34 PINC 21+70.60=
-DRIVE- STA. 11+46.18
(21' LT.)

-Y1-PCSta. 23+46.49

-DRIVE-PCSta. 10+29.91

-DRIVE-PTSta. 12+83.01=
-Y1-PTSta. 27+74.42

MATCHLINE -Y1- STA. 29+50.00 SEE SHEET 8

MATCHLINE -CONN- STA. 26+50.00 SEE SHEET 7

BEGIN CONSTRUCTION
-CONN- Sta. 20+50.00=
-Y1-POTSta. 20+50.00

-CONN-PCSta. 23+32.03

-DRIVE-POTSta. 10+00.00=
-CONN-PCSta. 25+40.34

END CONSTRUCTION
-DRIVE- STA.12+00.00

-DRIVE-PRCSta. 11+70.71=
-Y1-POCSta. 26+62.13

SPECIAL LATERAL V DITCH STA 23+50 - 24+00 -CONN- LT

STANDARD V DITCH SEE DETAIL "F"

TIE TO EXIST. DITCH AT -DRIVE- 12+00 -LT.

GRADE TO MAIN

RETAIN

S 59° 00' 36.7" E -Y1-

S 59° 00' 36.7" E

S 77° 18' 26.8" E

S58°49'48"E 45.00' 50.00' 9.21' 55.00' 43.42' 43.41'

102.55' S56°13'44"E

102.85' S56°13'43"E

103.03' S56°13'44"E

47.00' N59°00'37"W

347.57' RBK-5

160.85' S30°59'23"W

179.00' N30°59'23"E

150.00' N30°59'23"E

48.02' S60°28'16"E

4.22' S30°59'40"W

120.66' S59°04'26"E

421.44' S59°04'26"E

40.00' S59°04'26"E

225.86' S59°04'25"E

S00°45'41"W 139.58'

N00°45'41"E 139.58'

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-3462	12

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16803 ENGINEER GREGORY E. BREW — 4-25-08

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN M. MORGAN — 4/24/08

SEE SHEET 4 FOR PLAN OF -L- LINE

DITCH LEGEND

LEFT DITCH ----------

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

-L-

BM-51 SQUARE CUT SET IN CONC
-L- STA. 29+84.68 80.18' RIGHT
ELEV. 11.23'
N 84,411.2329 E 2,188,589.8921

PI = 17+50.00
EL = 33.560'
VC = 200'
K = 306

PI = 19+50.00
EL = 29.800'
VC = 200'
K = 1481

PI = 24+90.00
EL = 20.377'
VC = 200'
K = 397

PI = 28+00.00
EL = 16.530'
VC = 200'
K = 371

(-)1.2267%

(-)1.8800%

(-)1.7450%

(-)13.0%

(-)1.0%

(-)12.5%

(-)1.2410%

16.40

BEGIN GRADE -LA-
-L- STA. 16+00.00
ELEV. 35.400

BEG. SPECIAL LAT. GRASS SWALE LT.
-L- STA. 21+00.00 EL. 23.00

PI = 21+50.00
EL = 21.50

PI = 22+00.00
EL = 21.00

END SPECIAL LAT. GRASS SWALE LT.
-L- STA. 22+20.00 EL. 20.50

48" RCP

BM-50 R/R SPIKE SET IN 24" TWIN OAK
-L- STA. 10+00.00 ELEV. 42.11'
N 78° 26' 16.5" W DIST. 169.63'
N 85,648.4180 E 2,186,843.3651

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 42	CFS
DESIGN HW ELEVATION	= 16.03	FT
100 YEAR DISCHARGE	= 45	CFS
100 YEAR HW ELEVATION	= 16.46	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 85	CFS
OVERTOPPING ELEVATION	= 19.41	FT

SEE SHEETS 4 AND 5 FOR PLAN OF -L- LINE

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 390	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 7.2	FT
BASE DISCHARGE	= 710	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 8.8	FT
OVERTOPPING DISCHARGE	= 950	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 9.6	FT

-L-

PI = 28+00.00
EL = 16.530'
VC = 200'
K = 371

PI = 32+00.00
EL = 9.410'
VC = 200'
K = 83

PI = 33+70.00
EL = 10.500'
VC = 100'
K = 55

16.40

(-)1.7800%

NATURAL GROUND

(+)0.6412%

(-)3.0000%

100YR WSEL 8.8

100yr STORM SURGE

25YR WSEL 7.2

NORMAL WSEL

-L- STA. 33+75
2@9'x7' RCBC
G.P. ELEV=10.25'
SKEW=90

(-)1.1788%

END GRADE -LA-
-L- STA. 35+31.95
ELEV. 8.59'

BEGIN GRADE -LB-
-L- STA. 35+95.95
ELEV. 7.920

(+)2.2151%

19.08

(+)2.000%

(+)11.000%

PI = 37+50.00
EL = 7.00'

BEG. SPECIAL LAT. GRASS SWALE LT.
-L- STA. 31+50.00 EL. 8.50

END SPECIAL LAT. GRASS SWALE LT.
-L- STA. 33+00.00 EL. 4.00

BEG. SPECIAL LAT. GRASS SWALE LT.
-L- STA. 36+50.00 EL. 6.00

END SPECIAL LAT. GRASS SWALE LT.
-L- STA. 39+50.00 EL. 11.00

INDICATES UNDERCUT AREAS

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRIEW

4-25-08

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN MORGAN THOMPSON

9/24/08

DITCH LEGEND	
LEFT DITCH	-----------
RIGHT DITCH	----------

-L-

-LREV-

BM-54 R/R SPIKE SET IN 12" PINE
-LREV- STA. 51+17.00 0.54' LEFT
ELEV. 20.23'
N 82,811.4102 E 2,189,932.9885

SEE SHEETS 5 & 6 FOR PLAN OF -L- LINE

SEE SHEET 6 FOR PLAN OF -LREV- LINE

PI = 42+50.00
EL = 22.408'
VC = 285'
K = 112

19.09

(+)2.215%

(−)0.3394%

(−)0.4933%

(−)0.5000%

18.60

-L- STA. 44+86.74 LB. =
-LREV- STA. 44+86.74 LA. =

BEGIN SPECIAL CUT GRASS SWALE RT.
-L- STA. 48+50.00 EL. 16.91

END SPECIAL CUT GRASS SWALE RT.
-L- STA. 50+00.00 EL. 16.17

BEGIN SPECIAL CUT GRASS SWALE RT.
-L- STA. 53+00.00 EL. 13.50

SEE SHEETS 6 & 7 FOR PLAN OF -LREV- LINE

SEE SHEET 7 FOR PLAN OF -L- LINE

-LREV-

-L-

PI = 54+75.00
EL = 18.250'
VC = 250'
K = 128

PI = 60+50.00
EL = 27.519'
VC = 200'
K = 96

18.60

(−)0.339%

(+)11.6120%

(−)0.500%

(−)2.50%

(−)3.750%

(+)4.50%

(+)4.900%

(+)3.500%

(+)1.000%

(+)1.200%

(+)0.560%

(+)0.300%

(+)11.6120%

(−)0.4821%

18.97

18.97

(+)0.300%

(+)0.280%

(−)0.4821%

24.91

(−)0.50%

18.85

END SPECIAL CUT GRASS SWALE RT.
-L- STA. 54+50.00 EL. 12.75

BEG. SPECIAL LAT. BASE DITCH RT.
-L- STA. 54+50.00 EL. 12.75

PI = 55+100.000
EL = 11.50

72" RCP

END SPECIAL LAT. BASE DITCH RT.
-L- STA. 55+40.00 EL. 10.00

BEG. SPECIAL LAT. BASE DITCH RT.
-L+ STA. 55+60.00 EL. 10.00

PI = 56+00.000
EL = 11.80

PI = 56+50.000
EL = 14.25

PI = 57+00.000
EL = 16.00

PI = 58+00.000
EL = 17.00

PI = 58+50.000
EL = 17.60

PI = 59+00.000
EL = 17.88

END SPECIAL LAT. BASE DITCH RT.
-L- STA. 57+50.00 EL. 16.50

BEG. SPECIAL LAT. GRASS SWALE RT.
-L- STA. 57+50.00 EL. 16.50

-LB- STA. 62+53.68 BK =
-LB- STA. 59+16.66 AH
ELEV. 36.57

PI = 60+50.000
EL = 19.24

END SPECIAL LAT. GRASS SWALE RT.
-L- STA. 61+00.00 EL. 19.38

BEGIN SPECIAL LAT. GRASS SWALE
-L+ STA. 62+50.000 ELEV. 19.10

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 34	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130	CFS
DESIGN HW ELEVATION	= 10.30	FT
100 YEAR DISCHARGE	= 160	CFS
100 YEAR HW ELEVATION	= 11.30	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 180	CFS
OVERTOPPING ELEVATION	= 12.00	FT

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	14

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 9-25-08

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN — 9/24/08

SEE SHEETS 7 AND 8 FOR PLAN OF -L- LINE

DITCH LEGEND

LEFT DITCH -·-·-·-·-

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

-L-

PI = 68+00.00
EL = 22.495'
VC = 200'
K = 98

PI = 72+00.00
EL = 12.368'
VC = 200'
K = 70

PI = 74+65.00
EL = 13.195'
VC = 300'
K = 146

24.91 (-)0.482% 16.85 (-)0.500% (-)1.500% (-)2.400% (-)2.660% (-)2.520% (-)1.100% (-)2.531% (+)0.312% (-)1.900% (-)1.744% 10.83 (-)2.000%

END SPECIAL LAT.GRASS SWALE RT. -L- STA.66+00.00 EL.17.35

BEG.SPECIAL LAT.GRASS SWALE RT. -L- STA.67+10.00 EL.16.85

BEG.SPECIAL CUT GRASS SWALE LT. -L- STA.67+50.00 EL.16.00

PI =67+50.000 EL = 16.25

PI =68+50.000 EL = 13.63

PI =69+00.000 EL = 12.31

PI =69+50.000 EL = 11.00

END SPECIAL LAT.GRASS SWALE RT. -L- STA.69+95.00 EL.10.50

END SPECIAL CUT GRASS SWALE LT. -L- STA.69+50.00 EL.14.80

24" RCP

BEG.END SPECIAL CUT DITCH LT. -L- STA.74+00.00 EL.10.45

END END SPECIAL CUT DITCH LT. -L- STA.74+50.00 EL.9.50

BEG.END SPECIAL CUT DITCH LT. -L- STA.75+50.00 EL.8.00

PI = 76+00.00 EL = 7.00

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 3.93	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 9.69	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 9.81	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 20	CFS
OVERTOPPING ELEVATION	= 10.50	FT

SEE SHEET 8 FOR PLAN OF -L- LINE
SEE SHEET 5 FOR PLAN OF -DRIVE3- LINE
SEE SHEET 5 FOR PLAN OF -DR2- LINE

BM-55 R/R SPIKE SET IN 30" OAK -Y1- STA. 40+65.20 ELEV.18.28'
N 76° 54' 15.1" DIST.73.41' LEFT
N 83,804.1184 E 2,192,810.5079

-L-

PI = 77+00.00
EL = 9.095'
VC = 150'
K = 13219

10.83 (-)1.744% (-)1.000% (-)0.300% (-)1.733%

PI = 76+00.00 EL = 7.00'

PI =76+59.659 EL = 7.7

END GRADE -LB- -L- STA.77+75.00 ELEV.7.795

END END SPECIAL CUT DITCH LT. -L- STA.77+00.00 EL.6.10

-DRIVE3-

BEGIN GRADE -DRIVE3- -L- STA 10+39.80 ELEV 8.604

(+)0.9693%

END GRADE -DRIVE3- -L- STA 11+94.16 ELEV 8.71

-DR2-

BEGIN GRADE -DR2- -L- STA 10+36 ELEV 7.178

PI = 10+90.00
EL = 16.550'
VC = 40'
K = 10

(-)1.630% (+)2.790%

END GRADE -DR2- -L- STA 11+11 ELEV 17.136

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PROJECT REFERENCE NO.	SHEET NO.
U-3462	15

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREW 11-25-08

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN A. MORAN 11-25-08

SEE SHEETS 7 AND 10 FOR PLAN OF -CONN- LINE

DITCH LEGEND	
LEFT DITCH	-·-·-·-
RIGHT DITCH	----------

-CONN-

PI = 22+25.00
EL = 25.180'
VC = 200'
K = 322

PI = 24+50.00
EL = 26.000'
VC = 200'
K = 157

PI = 28+50.00
EL = 22.361'
VC = 50'
K = 27

PI = 30+25.00
EL = 21.65'
VC = 50'
K = 32

PI = 31+25.00
EL = 21.310'
VC = 100'
K = 64

(−)0.2560%
(+)0.3644%
(−)0.56%
0.0%
(−)0.9097%
(+)0.9304%
(−)1.9069%
(−)0.3439%
(+)0.2%
(−)1.9100%

BEGIN LT DITCH
PI =23+50 LT
EL = 21.50

PI =23+75 LT
EL = 21.36

END LT DITCH
PI =24+00 LT
EL = 21.36

18" RCP

BEGIN GRADE -CONNA-
-CONN- STA. 21+00.00
ELEV. 25.500'

END GRADE -CONNA-
-CONN- STA. 29+22.94
ELEV. 23.040'

BEGIN GRADE -CONNB-
-CONN- STA 29+81.68
ELEV. 22.480'

END GRADE -CONNB-
-CONN- STA. 32+25.00
ELEV. 19.400'

BEGIN SPECIAL DITCH LT&RT.
-CONN- 30+50+00 ELEV 18.7'

END SPECIAL DITCH LT&RT.
-CONN- 32+00 ELEV 19.0'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1.14	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 17.70	FT
100 YEAR DISCHARGE	= 47	CFS
100 YEAR HW ELEVATION	= 17.82	FT
OVERTOPPING FREQUENCY	=	YRS
OVERTOPPING DISCHARGE	= 16	CFS
OVERTOPPING ELEVATION	= 20.59	FT

SEE SHEET 4 FOR PLAN OF -Y2REV- LINE
SEE SHEET 10 FOR PLAN OF -DRIVE- LINE

-Y2REV-

BM-51 SQUARE CUT SET IN CONC
-L- STA. 29+84.68 80.18' RIGHT
ELEV. 11.23'
N 84,411.2329 E 2,188,589.8921

PI = 14+00.00
EL = 13.780'
VC = 50'
K = 18

(−)0.3200%
(+)2.4734%

BEGIN GRADE
-Y2REV- STA. 13+50.00
ELEV. 13.940'

END GRADE
-Y2REV- STA. 14+49.73
ELEV. 15.010'

-DRIVE-

PI = 10+50.00
EL = 26.540'
VC = 50'
K = 9

PI = 11+40.00
EL = 23.330'
VC = 50'
K = 18

(+)2.0000%
(−)3.5667%
(−)0.7500%

BEGIN GRADE
-DRIVE- STA. 10+18.00
ELEV. 25.900'

END GRADE
-DRIVE- STA. 12+00.00
ELEV. 22.880'

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DITCH LEGEND	
LEFT DITCH	----------
RIGHT DITCH	----------

BM-53 SQUARE CUT SET IN CONC
-Y- STA. 10+00.00 ELEV. 19.24'
S 80° 53' 19.0 W DIST. 133.58'
N 83,412.065 E 2,188,151.7954

BM-52 R/R SPIKE SET IN 20" PINE
-Y- STA. 32+53.00 181.33' LEFT
ELEV. 27.83'
N 85,017.8096 E 2,189,890.8410

PROJECT REFERENCE NO.	SHEET NO.
U-3462	16

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREW
4-25-08

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN P. MORGAN
4/24/08

SEE SHEET 5 FOR PLAN OF -Y- LINE

-Y-

BEGIN OVERLAY
-Y- STA. 12+00.00

-Y- 15+59.77
Extend existing 2@ 6'x5' Box Culvert
with 2@ 6'x5' RCBC
Skew = 90°

50yr WSEL 7.5
100yr WSEL 7.8
100yr STORM SURGE

Natural Ground Upstream and Downstream

Upstream Natural Ground

Existing Roadway Grade (also nat. ground dnstrm)

EXTEND EXISTING BOX CULVERT WITH 2 @ 6' X 5' RCBC

24" RCP

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 450	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 6.7	FT
BASE DISCHARGE	= 810	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 7.8	FT
OVERTOPPING DISCHARGE	= 550	CFS
OVERTOPPING FREQUENCY	= 25+	YRS
OVERTOPPING ELEVATION	= 7.2	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 7.93	FT
100 YEAR DISCHARGE	= 14	CFS
100 YEAR HW ELEVATION	= 8.03	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 27	CFS
OVERTOPPING ELEVATION	= 9.75	FT

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

30 20 10 0 –10 –20 –30 –40

-Y-

END OVERLAY
-Y- STA. 30+25.00

SEE SHEET 10 FOR PLAN OF -Y- LINE

25 26 27 28 29 30 31 32 33 34 35

20 10 0 –10 –20 –30 –40

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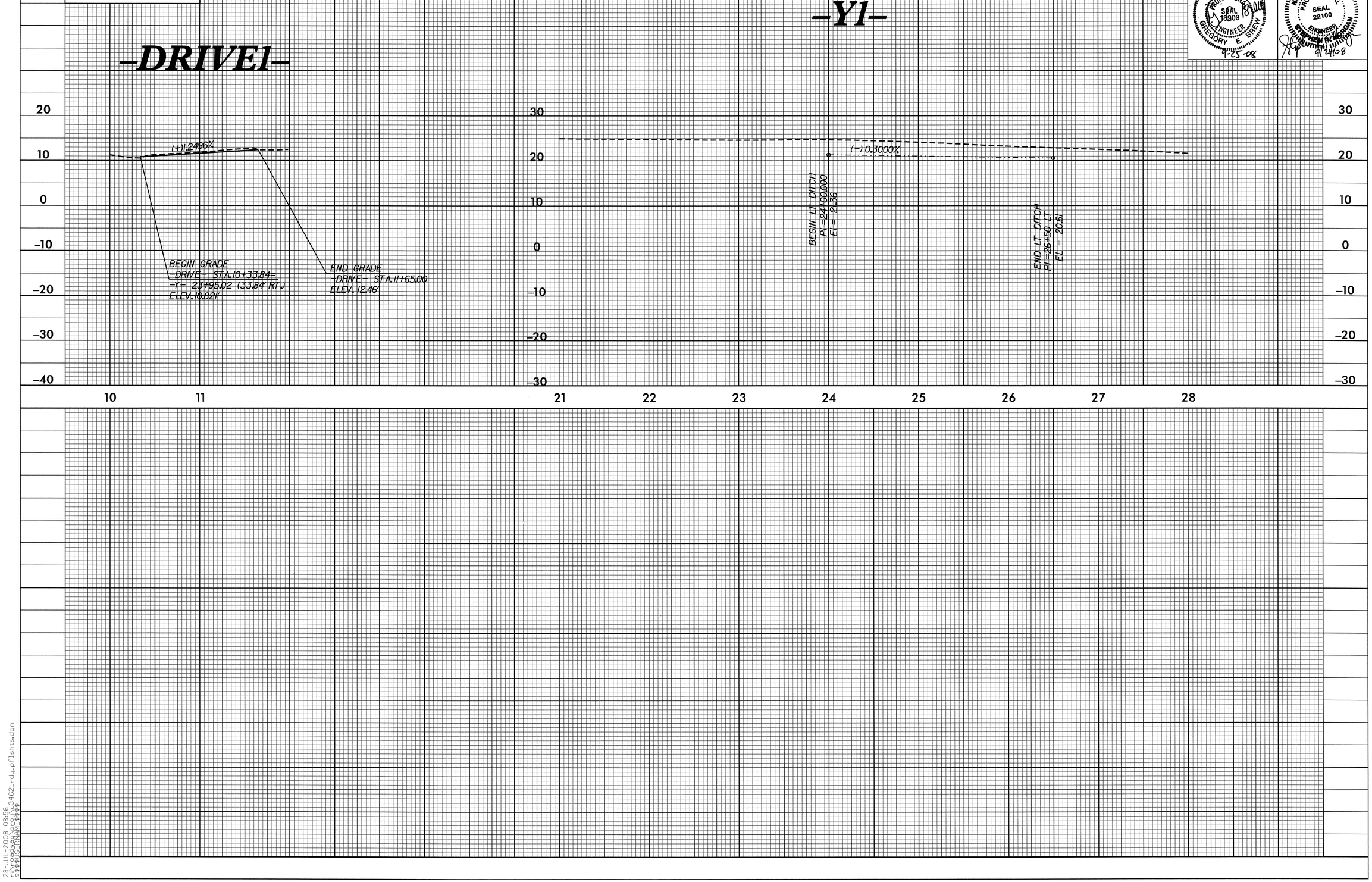
DITCH LEGEND	
LEFT DITCH	-·-·-·-
RIGHT DITCH	----------

SEE SHEET 5 FOR PLAN OF -DRIVE1- LINE
SEE SHEET 11 FOR PLAN OF -Y1- LINE

PROJECT REFERENCE NO.	SHEET NO.
U-3462	17

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
9-25-08

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
9/24/08



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