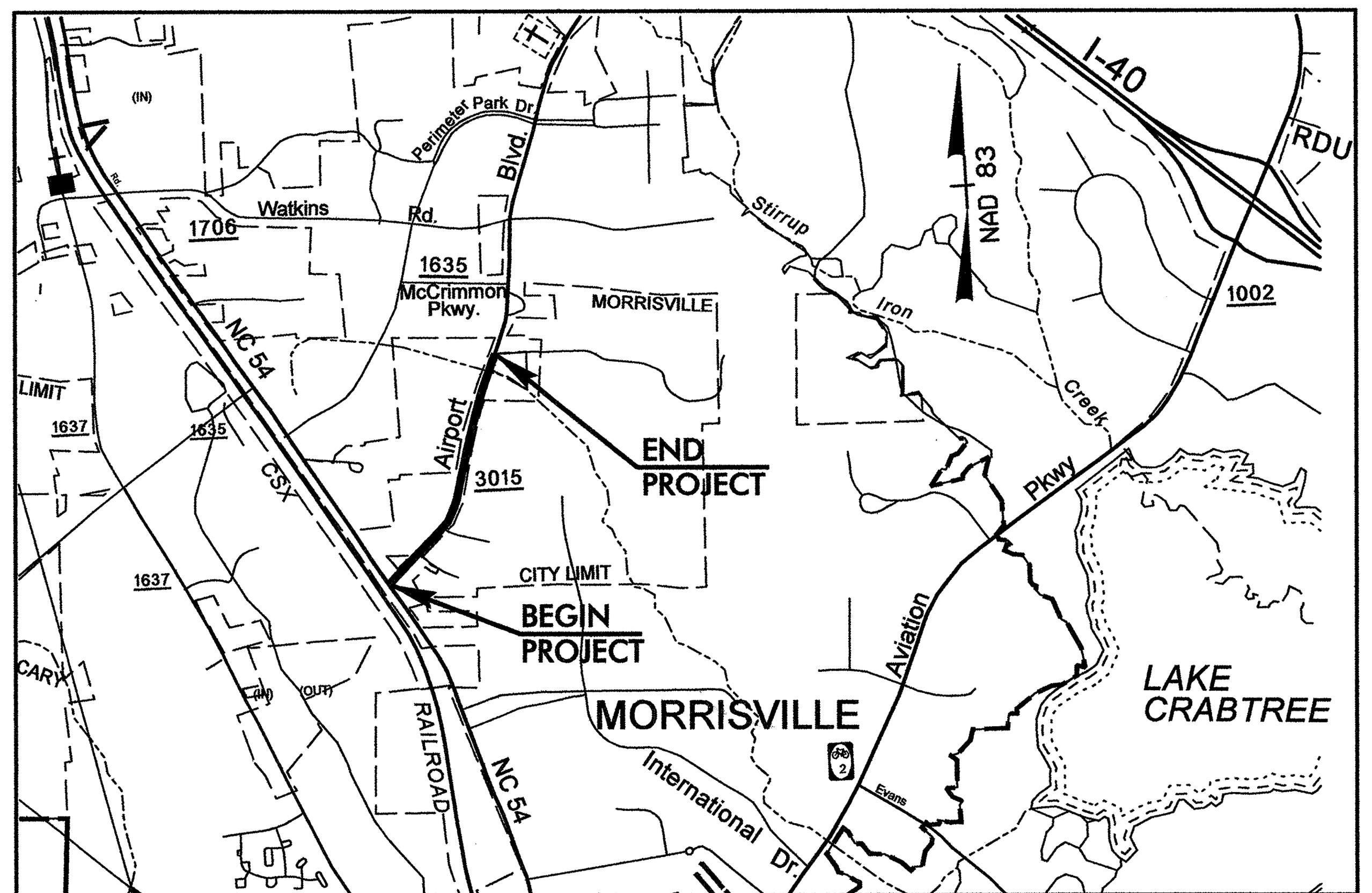
CONTRACT NO.: C201744

TIP PROJECT: U-3344A

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

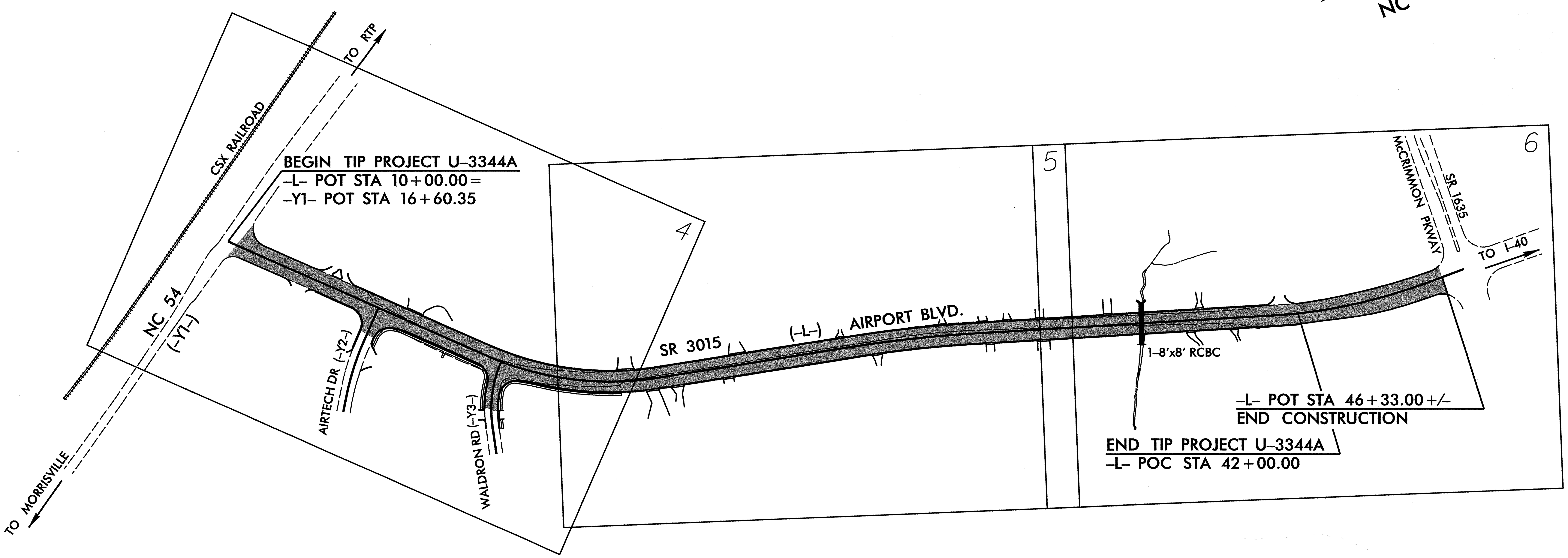
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3344A	1	

WBS NO.	F.A. PROJ. NO.	DESCRIPTION
34934.1.1		PE
34934.2.1		R/W, UTIL.
34934.3.3		CONST.

LOCATION: MORRISVILLE – SR 3015 (AIRPORT BLVD.) FROM NC 54 TO McCRIMMON PARKWAY

TYPE OF WORK: WIDENING, GRADING, DRAINAGE, PAVING, SIGNALS, AND CULVERT

NAD 83
NC GRID



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = 16,500
ADT 2026 = 37,800
DHV = 11 %
D = 55 %
*T = 7 %
V = 50 MPH
FUNC CLASS = LOCAL
*(TTST 3 % + DUAL 4 %)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3344A = 0.606 Mile
TOTAL LENGTH TIP PROJECT U-3344A = 0.606 Mile

NCDOT CONTACT: DOUG TAYLOR, PE
PROJECT ENGINEER - DESIGN SERVICES

Prepared In the Office of:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD, SUITE 475
RALEIGH, NC 27607

FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 20, 2004

LETTING DATE:
MARCH 20, 2007

CLAUDETTE M.K. ROQUE, PE
PROJECT ENGINEER

HENRY W. BARE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER
SIGNATURE: P.E. 6/08/06

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
SIGNATURE: P.E. 6/6/06

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Art McMillan P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROGUE 5/16/06

Claudette M.K. Rogue

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL DATA
2	PAVEMENT SCHEDULE AND TYPICAL DETAILS
2-A THRU 2-C	TYPICAL SECTIONS
2-D THRU 2-E	TEMPORARY PAVEMENT
2-F	SPECIAL DETAIL FOR 2GI
OMITTED → 2-G THRU 2-H	TEMPORARY FABRIC WALL DETAILS → OMITTED
2I THRU 2-T	TEMPORARY SHORING DETAILS
3	SUMMARY OF QUANTITIES
3-A THRU 3-B	SUMMARY OF DRAINAGE QUANTITIES
3-C	EARTHWORK SUMMARY AND PAVEMENT REMOVAL SUMMARY
4 THRU 6	PLAN SHEETS
7 THRU 8	PROFILES
TCP-1 THRU TCP-16	TRAFFIC CONTROL PLANS
PM-1 THRU PM-5	PAVEMENT MARKING PLANS
EC-1 THRU EC-10	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-9	SIGNING PLANS
SIG-1 THRU SIG-6	SIGNAL PLANS
UC-1 THRU UC-5	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITY BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-18	CROSS-SECTIONS
C-1 THRU C-5	CULVERT PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE 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.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING" OR "TEMPORARY SHORING-BARRIER SUPPORTED" DEPENDING UPON THE LOCATION OF THE SHORING.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Town of Morrisville,

Progress Energy, BellSouth, Progress Telecom,

Public Service of NC, Time Warner, Town of Cary

ITC/Deltacom

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 CONTRACT.

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD. NO. 848.05 OR STD. 848.06.

EFF. 07-18-06

2006 ROADWAY STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
805.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	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
840.25	Anchorage for Frames - Brick or Concrete
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.41	Spring Box - Concrete or Brick
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
848.06	Wheelchair Ramp - Retrofitting of Existing Curb
850.01	Concrete Paved Ditches
876.01	Rip Rap In Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

FILENAME: r:\U3344A\Jv7_042806\Roadway\Proj\U3344A_rdy_psh_01A.dgn
DATE: 05/25/2006

FLORENCE & HUTCHESON 08086YR6 05/25/2006 10:08:39 AM P:\U3344A\JV7_042806\Roadway\Proj\U3344A_rdy_psh_01A.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

Edge of Pavement
Curb
Prop. Slope Stakes Cut — C
Prop. Slope Stakes Fill — F
Prop. Woven Wire Fence
Prop. Chain Link Fence
Prop. Barbed Wire Fence
Prop. Wheelchair Ramp — WCR
Curb Cut for Future Wheelchair Ramp — CCFR
Exist. Guardrail
Prop. Guardrail
Equality Symbol
Pavement Removal

RIGHT OF WAY

Baseline Control Point
Existing Right of Way Marker
Exist. Right of Way Line w/Marker
Prop. Right of Way Line with Proposed
R/W Marker (Iron Pin & Cap)
Prop. Right of Way Line with Proposed
(Concrete or Granite) R/W Marker
Exist. Control of Access Line — CA
Prop. Control of Access Line — CA
Exist. Easement Line — E
Prop. Temp. Construction Easement Line — E
Prop. Temp. Drainage Easement Line — TDE
Prop. Perm. Drainage Easement Line — PDE

HYDROLOGY

Stream or Body of Water
Riparian Buffer Zone — BZ
Flow Arrow
Disappearing Stream
Spring
Swamp Marsh
Shoreline
Falls, Rapids
Prop Lateral, Tail, Head Ditches — FLOW

STRUCTURES

MAJOR
Bridge, Tunnel, or Box Culvert — CONC
Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR
Head & End Wall — CONC HW
Pipe Culvert
Footbridge
Drainage Boxes — CB
Paved Ditch Gutter

UTILITIES

Exist. Pole
Exist. Power Pole
Prop. Power Pole
Exist. Telephone Pole
Prop. Telephone Pole
Exist. Joint Use Pole
Prop. Joint Use Pole
Telephone Pedestal — T
U/G Telephone Cable Hand Hold — HH
Cable TV Pedestal — C
U/G TV Cable Hand Hold — HH
U/G Power Cable Hand Hold — HH
Hydrant
Satellite Dish
Exist. Water Valve
Sewer Clean Out
Power Manhole
Telephone Booth — T
Cellular Telephone Tower
Water Manhole — W
Light Pole
H-Frame Pole
Power Line Tower
Pole with Base
Gas Valve
Gas Meter
Telephone Manhole — T
Power Transformer
Sanitary Sewer Manhole
Storm Sewer Manhole — S
Tank; Water, Gas, Oil
Water Tank With Legs
Traffic Signal Junction Box — S
Fiber Optic Splice Box — F
Television or Radio Tower
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS TS

Recorded Water Line — W W
Designated Water Line (S.U.E.*) — W W
Sanitary Sewer — SS SS
Recorded Sanitary Sewer Force Main — FSS FSS
Designated Sanitary Sewer Force Main(S.U.E.*) — FSS FSS
Recorded Gas Line — G G
Designated Gas Line (S.U.E.*) — G G
Storm Sewer — S S
Recorded Power Line — P P
Designated Power Line (S.U.E.*) — P P
Recorded Telephone Cable — T T
Designated Telephone Cable (S.U.E.*) — T T
Recorded U/G Telephone Conduit — TC TC
Designated U/G Telephone Conduit (S.U.E.*) — TC TC
Unknown Utility (S.U.E.*) — ?UTL ?UTL
Recorded Television Cable — TV TV
Designated Television Cable (S.U.E.*) — TV TV
Recorded Fiber Optics Cable — FO FO
Designated Fiber Optics Cable (S.U.E.*) — FO FO
Exist. Water Meter — 0
U/G Test Hole (S.U.E.*)
Abandoned According to U/G Record — ATTUR
End of Information — E.O.I.

BOUNDARIES & PROPERTIES

State Line
County Line
Township Line
City Line
Reservation Line
Property Line
Property Line Symbol — PL
Exist. Iron Pin — EIP
Property Corner
Property Monument — ECM
Property Number — 123
Parcel Number — 6
Fence Line — WW & ISBW
Existing Wetland Boundaries — WLB
High Quality Wetland Boundary — HQ WLB
Medium Quality Wetland Boundaries — MQ WLB
Low Quality Wetland Boundaries — LQ WLB
Proposed Wetland Boundaries — WLB
Existing Endangered Animal Boundaries — EAB
Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

Buildings
Foundations
Area Outline
Gate
Gas Pump Vent or U/G Tank Cap
Church
School
Park
Cemetery
Dam
Sign — S
Well — W
Small Mine
Swimming Pool

TOPOGRAPHY

Loose Surface
Hard Surface
Change in Road Surface
Curb
Right of Way Symbol — R/W
Guard Post — GP
Paved Walk
Bridge
Box Culvert or Tunnel
Ferry
Culvert
Footbridge
Trail, Footpath
Light House

VEGETATION

Single Tree
Single Shrub
Hedge
Woods Line
Orchard
Vineyard — VINEYARD

RAILROADS

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

revised 02/02/00

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	1 C
Location and Surveys	

SURVEY CONTROL SHEET U-3344A

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	760367.3590	2049590.2230	345.57	OUTSIDE PROJECT LIMITS	
102	BL-102	760521.1020	2049796.6400	346.67	OUTSIDE PROJECT LIMITS	
103	BL-103	760633.4250	2049931.7830	346.68	10+35.29	48.91 RT
104	BL-104	760907.4060	2050214.5090	358.52	14+28.93	41.99 RT
105	BL-105	761218.8220	2050579.4030	351.09	19+01.63	68.45 RT
106	BL-106	761868.9760	2050782.9090	344.23	25+66.37	0.06 LT
107	BL-107	762404.5170	2050928.0050	349.59	31+21.47	3.91 RT
108	BL-108	762964.0250	2051128.6760	331.12	37+16.06	7.50 RT
109	BL-109	763526.6110	2051338.9880	342.92	43+13.59	28.68 RT

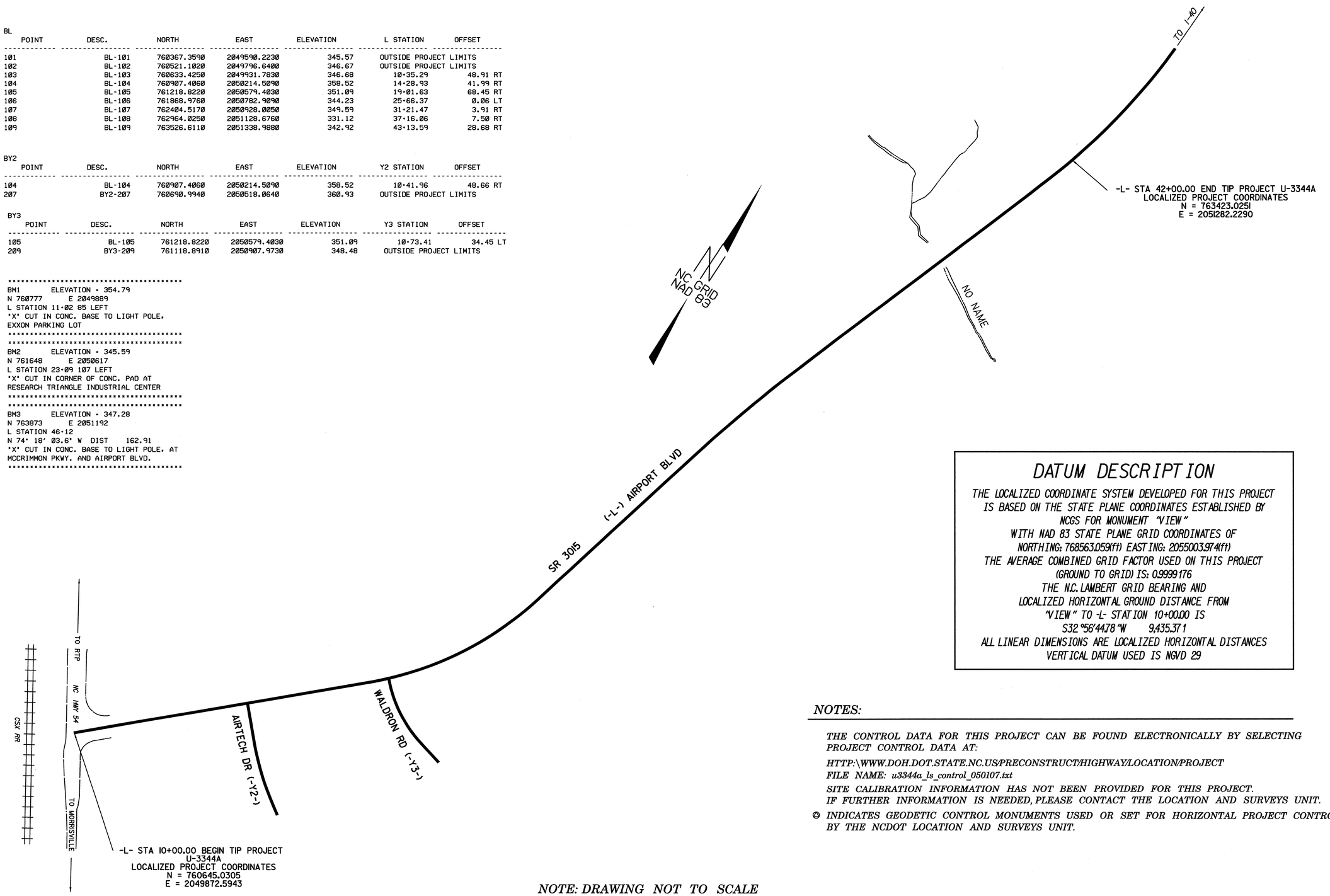
BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
104	BL-104	760907.4060	2050214.5090	358.52	10+41.96	48.66 RT
207	BY2-207	760690.9940	2050518.0640	360.93	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
105	BL-105	761218.8220	2050579.4030	351.09	10+73.41	34.45 LT
209	BY3-209	761118.8910	2050907.9730	348.48	OUTSIDE PROJECT LIMITS	

****
BM1 ELEVATION = 354.79
N 760777 E 2049889
L STATION 11+02 85 LEFT
'X' CUT IN CONC. BASE TO LIGHT POLE,
EXXON PARKING LOT
****
****
BM2 ELEVATION = 345.59
N 761648 E 2050617
L STATION 23+09 107 LEFT
'X' CUT IN CORNER OF CONC. PAD AT
RESEARCH TRIANGLE INDUSTRIAL CENTER
****
****
BM3 ELEVATION = 347.28
N 763873 E 2051192
L STATION 46+12
N 74° 18' 03.6" W DIST 162.91
'X' CUT IN CONC. BASE TO LIGHT POLE, AT
MCCRIMMON PKWY. AND AIRPORT BLVD.
****



NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "VIEW" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 768563.059(ft) EASTING: 2055003.974(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999176
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "VIEW" TO -L- STATION 10+00.00 IS
S32°56'44.78"W 9,435.371
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

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

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT
FILE NAME: u3344a_ls_control_050107.txt

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

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

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. FOGLIS

5/16/06

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

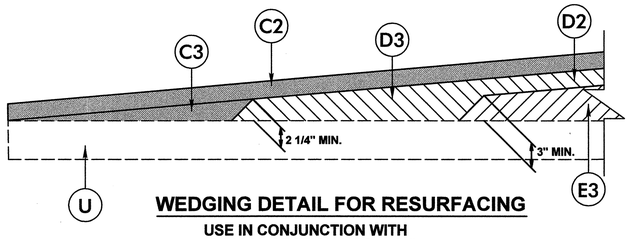
6-20-06

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

PAVEMENT SCHEDULE

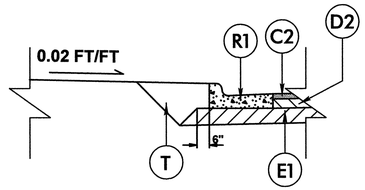
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	S	4" CONCRETE SIDEWALK.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V1	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 1½".
D3	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.	V2	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 2½".
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V3	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 4".
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON THIS SHEET).
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.		

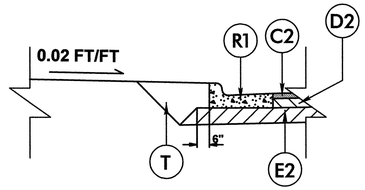
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



WEDGING DETAIL FOR RESURFACING

USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 2 & 5

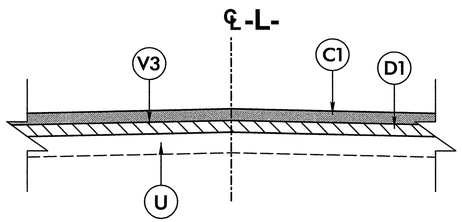


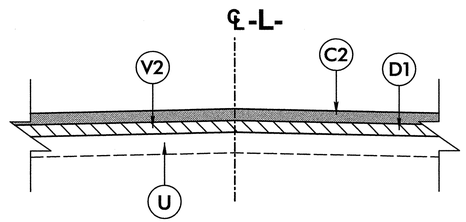


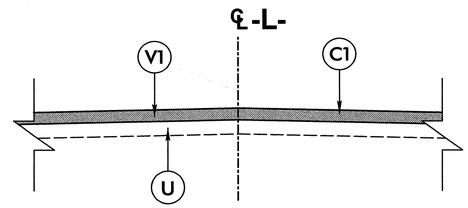
PAVEMENT EDGE CONSTRUCTION DETAILS

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 5

USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 2 & 3







MILLING DETAILS

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 4

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROGUE 5/6/06

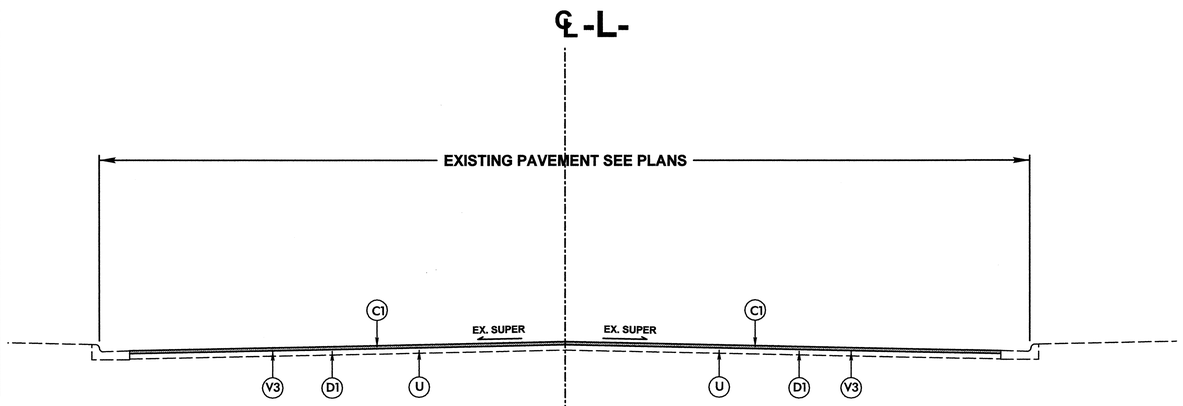
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 6-20-06

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

PAVEMENT SCHEDULE

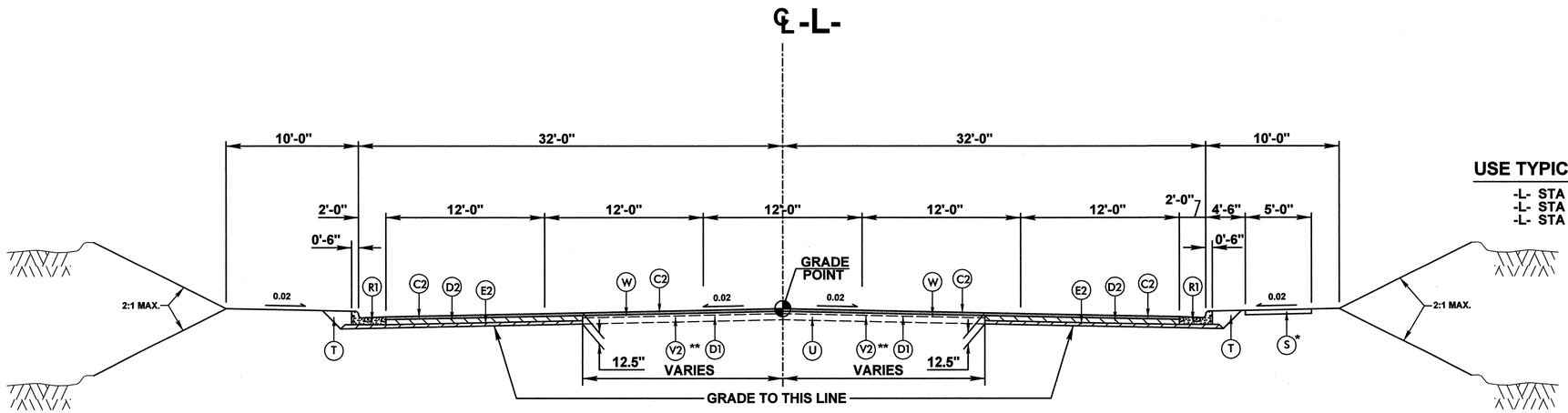
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0B
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0B
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
R1	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 1½".
V2	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 2½".
V3	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 4".
W	VARIABLE DEPTH ASPHALT PAVEMENT
	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 FOR:

-L- STA 10+36.70 TO STA 13+50
(MILLING AND RESURFACING ONLY)



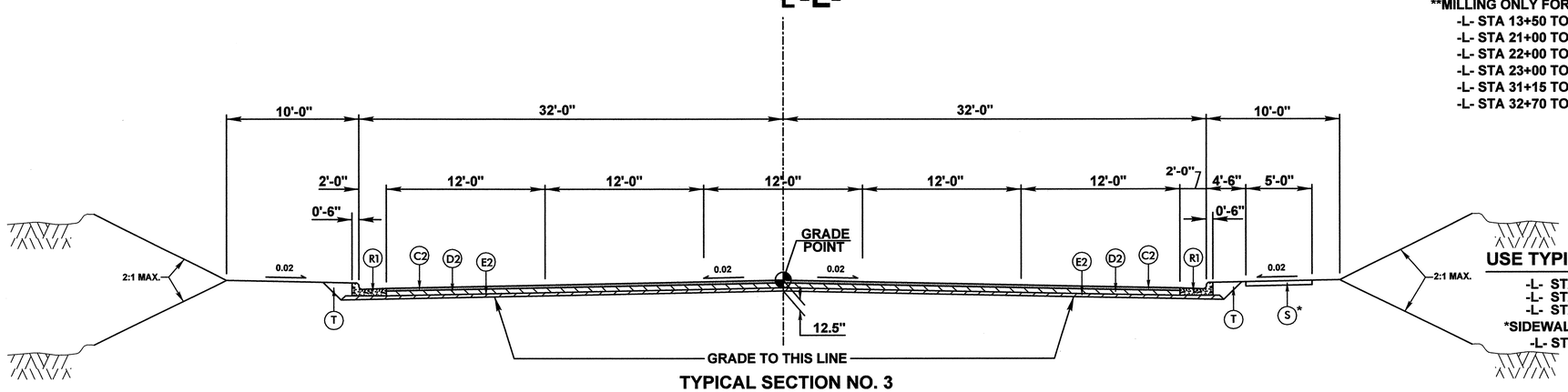
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FOR:

-L- STA 13+50 TO STA 15+00
-L- STA 21+00 TO STA 28+00
-L- STA 30+00 TO STA 33+50

*SIDEWALK TO BE REPLACED ONLY FOR:
-L- STA 21+00 TO STA 22+21

**MILLING ONLY FOR:
-L- STA 13+50 TO STA 15+00 4' OUTSIDE RT LANE
-L- STA 21+00 TO STA 21+35 12' RT LANE
-L- STA 22+00 TO STA 23+00 12' RT LANE
-L- STA 23+00 TO STA 28+00 24' RT/LT LANES
-L- STA 31+15 TO STA 32+70 4' OUTSIDE RT LANE
-L- STA 32+70 TO STA 33+50 24' RT/LT LANES



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FOR:

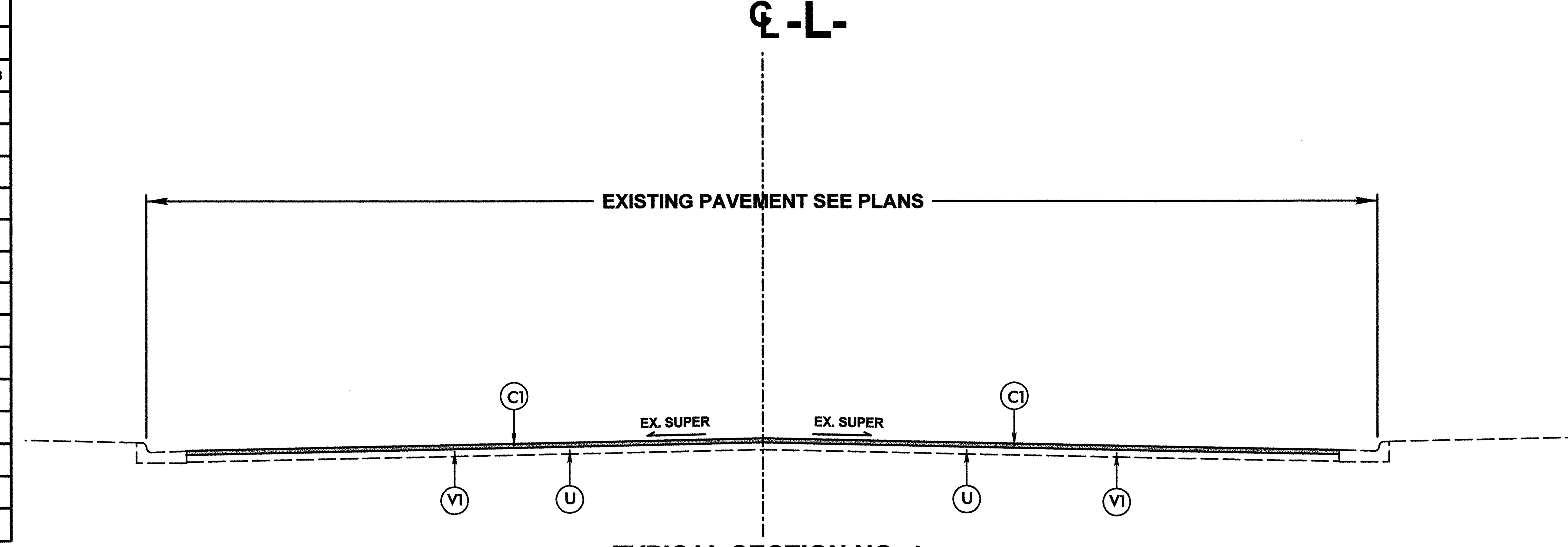
-L- STA 15+00 TO STA 21+00
-L- STA 28+00 TO STA 30+00
-L- STA 33+50 TO STA 42+00

*SIDEWALK TO BE REPLACED ONLY FOR:
-L- STA 15+00 TO STA 21+00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0B
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0B
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
R1	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 1½".
V2	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 2½".
V3	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 4".
W	VARIABLE DEPTH ASPHALT PAVEMENT
	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROGUE 6/6/06	NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 6-20-06

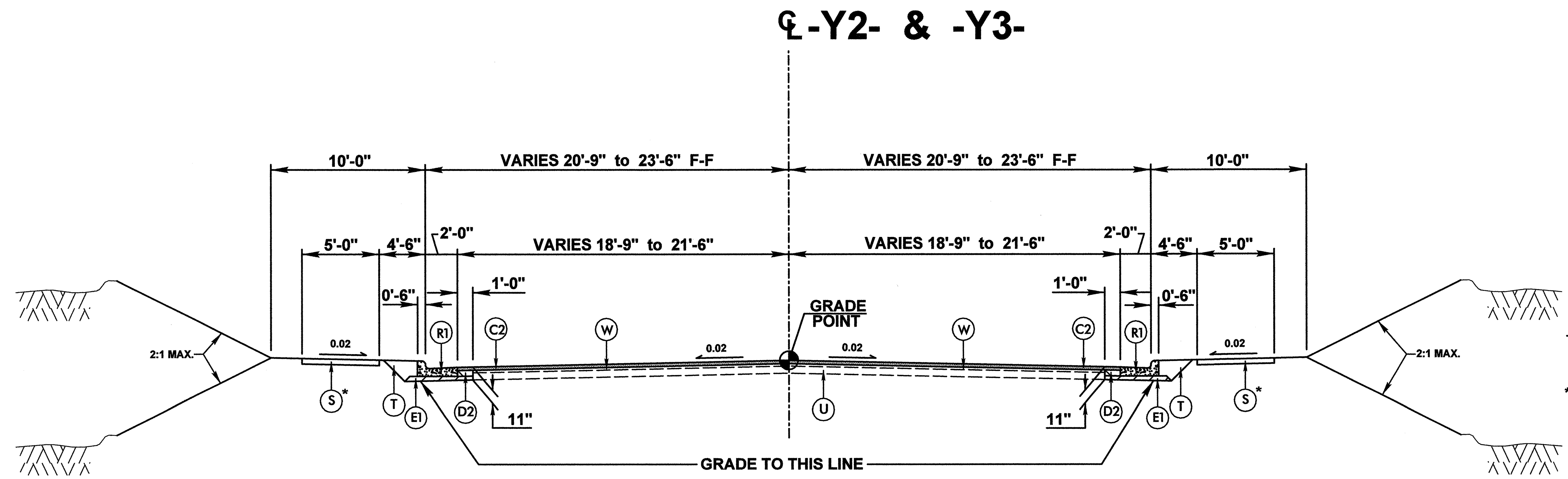
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD, SUITE 475
RALEIGH, NC 27607



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR:

-L- STA 42+00 TO STA 46+33+/-
(MILLING AND RESURFACING ONLY)

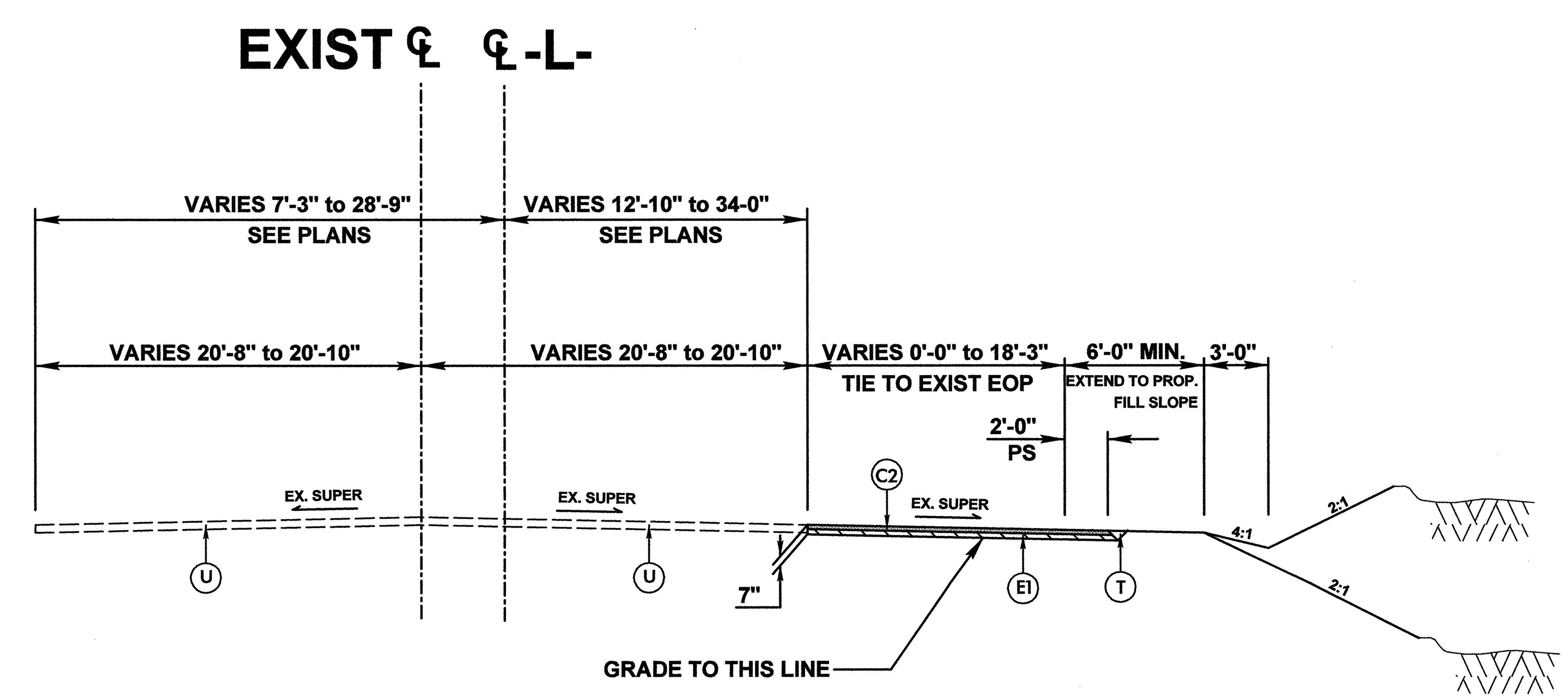


TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FOR:

-Y2- STA 10+86.20 TO STA 12+00
-Y3- STA 10+99.64 TO STA 12+00

*SIDEWALK TO BE REPLACED ONLY FOR:
-Y2- STA 10+86.20 TO STA 11+17.07 LT
-Y3- STA 10+99.64 TO STA 12+00 LT
-Y3- STA 10+99.64 TO STA 11+44.26 RT

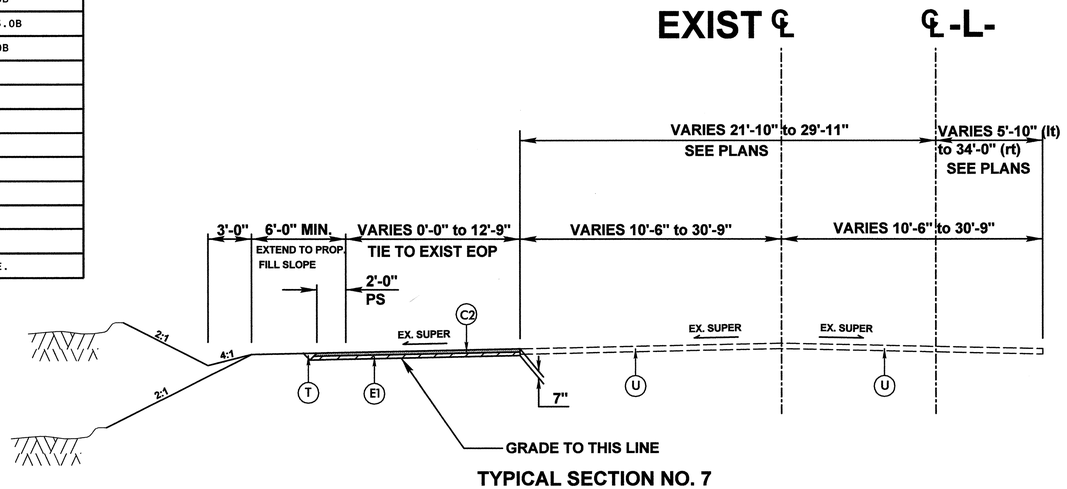


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 FOR:

-L- STA 19+00+/- TO STA 22+00+/-
TEMPORARY WIDENING
(SEE SHEET 2-D AND TRAFFIC CONTROL PLANS)

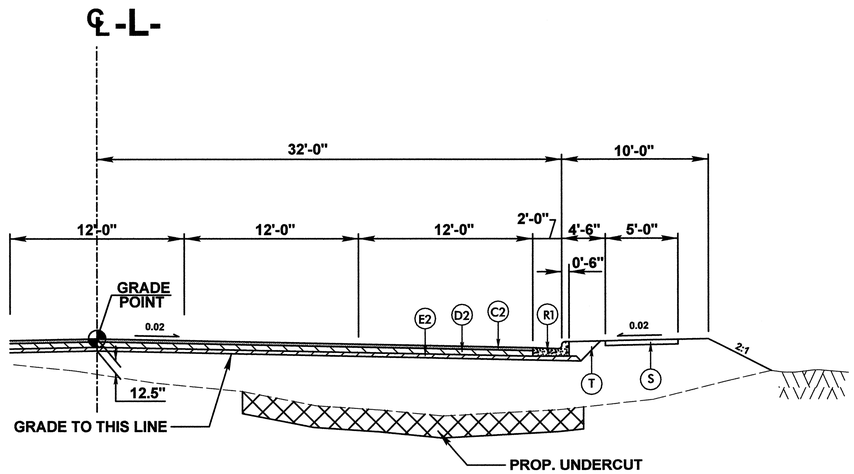
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0B
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0B
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
R1	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 1½".
V2	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 2½".
V3	MILLING BITUMINOUS PAVEMENT TO A DEPTH OF 4".
W	VARIABLE DEPTH ASPHALT PAVEMENT
	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 FOR:

-L- STA 33+94+/- TO STA 40+84+/-
TEMPORARY WIDENING
(SEE SHEET 2-E AND TRAFFIC CONTROL PLANS)



DETAIL OF UNDERCUTTING

USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 2 & 3

NOTE: UNDERCUT FROM APPROX. 10' RT OF ℄ -L- TO 1' BEYOND CURB AND GUTTER TO A MIN. DEPTH OF 4' BELOW EXISTING GROUND SURFACE. (SEE X-SECTS)

UNDERCUT EXCEPTION SHALL BE REQUIRED AT LOCATIONS NOTED ON PLANS OR AS DIRECTED BY THE ENGINEER.

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2-C

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
6/6/06

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
6-20-06

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2-D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

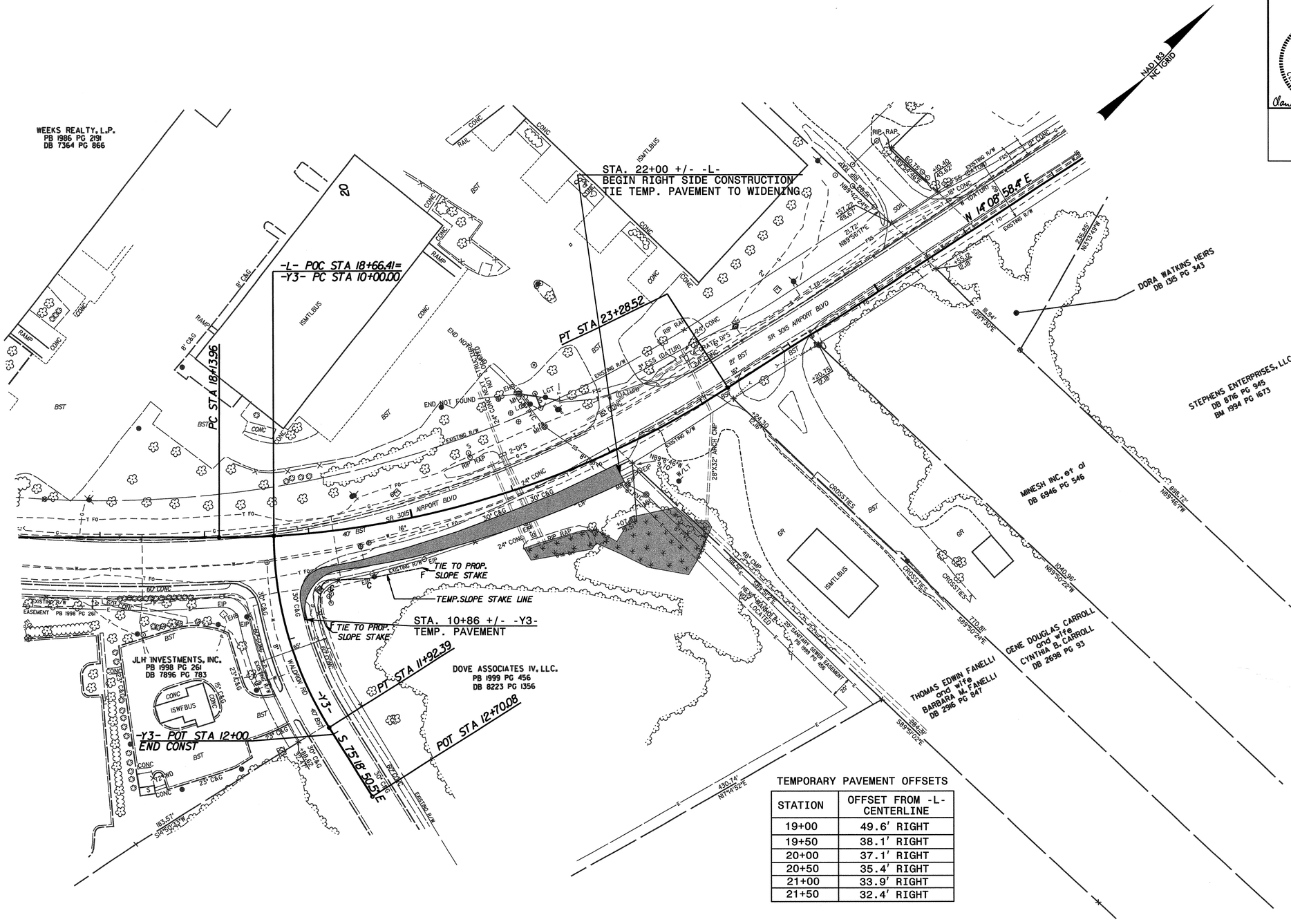
NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROOTE
6/6/06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER JONATHAN KENNING SCARCE
6/6/06

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

REVISIONS



TEMPORARY PAVEMENT OFFSETS

STATION	OFFSET FROM -L- CENTERLINE
19+00	49.6' RIGHT
19+50	38.1' RIGHT
20+00	37.1' RIGHT
20+50	35.4' RIGHT
21+00	33.9' RIGHT
21+50	32.4' RIGHT

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2-E
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE 8/1/06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER JONATHAN KENNING CRAIG 8/04

PLANS PREPARED BY:

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

REVISIONS

NAD 83
NC 1 GRID

STA. 33+94 +/- -L-
TEMP. PAVEMENT
0' OFFSET

STA. 37+00 +/- -L-
TEMP. PAVEMENT
12.75' OFFSET

STA. 38+00 +/- -L-
TEMP. PAVEMENT
12.75' OFFSET

STA. 40+84 +/- -L-
TEMP. PAVEMENT
0' OFFSET

END STATE PROJECT U-3344A
-L- POC STA 42+00.00
END GRADE/BEGIN MILLING & RESURFACING

PC STA 41+19.14

PT STA 32+54.38

RICHARD LARRY WATKINS
PB 1989 PG 1053
DB 4751PG 482

G.J.C., A NORTH CAROLINA GENERAL PARTNERSHIP
PB 1986 PG 179
DB 3899 PG 253

EDWARD E. HOLLOWELL, TRUSTEE FOR DOVE INVESTMENT ASSOCIATES, III
PB 1980 PG 753
DB 5120 PG 130

GLORIA M. MOSS
PB 1980 PG 753
DB 8593 PG 698

WEEKS REALTY, L.P.
PB 1995 PG 1159
PB 1993 PG 1425
DB 7282 PG 489

ROBERT L. FRITZ and wife JULIE T. FRITZ
DB 7663 PG 143

RUTH M. PERDUE
PB 1998 PG 2110
WB 2000-E-749

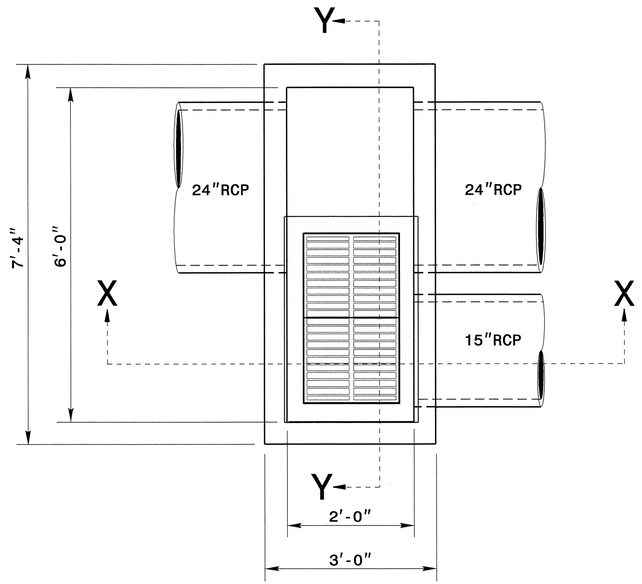
RALPH WATKINS and wife MILDRED P. WATKINS
PB 1998 PG 2110
DB 2822 PG 287

AIR PARK ASSOCIATES
DB 5438 PG 219

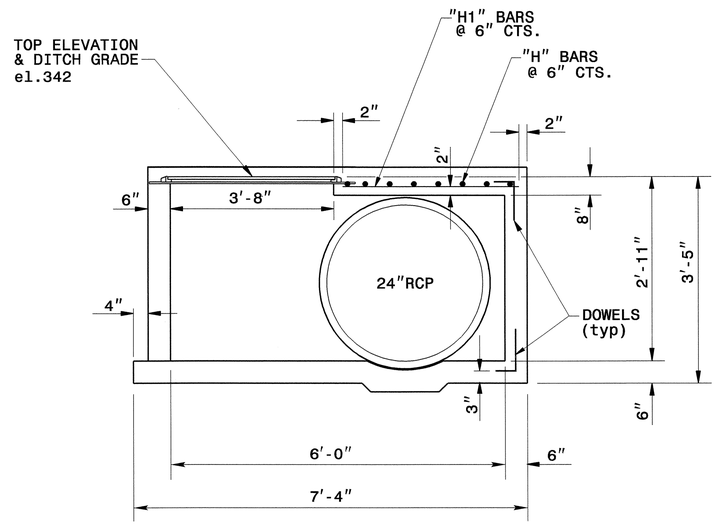
SEE TRAFFIC CONTROL PLANS FOR PHASING

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	2-F



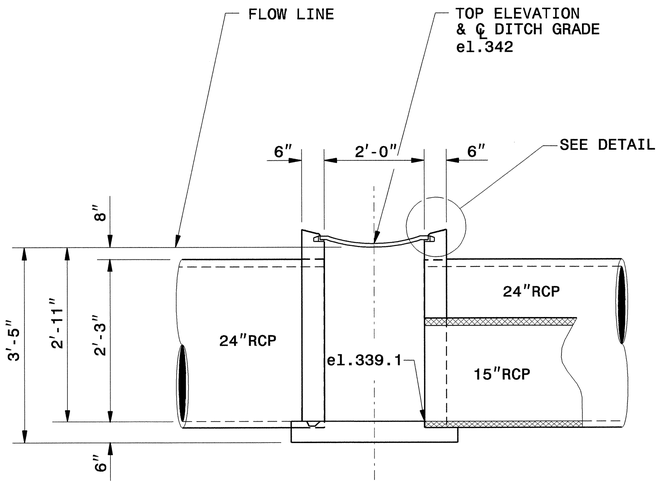
PLAN



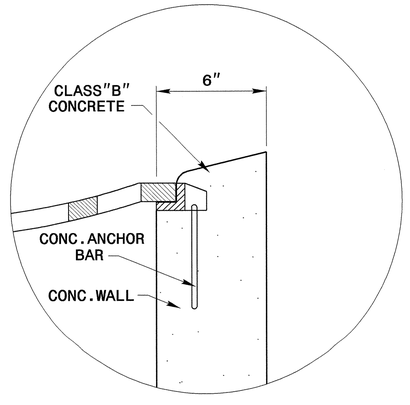
SECTION Y-Y

BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	8	#4	2'-8"	15
H1	4	#4	2'-6"	7
DOWEL	20	#4	1'-9"	24
TOTAL REINF. STEEL (LBS.)				46
TOTAL CONC. (CU. YDS.)				1.8

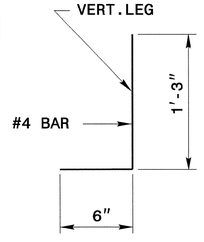
* 0.036 CY DEDUCTION FOR 15" RCP
* 0.085 CY DEDUCTION FOR 24" RCP
* NO DEDUCTIONS HAVE BEEN MADE FOR PIPES OR GRATE THROAT



SECTION X-X



DETAIL



DOWEL-A

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.

WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.

CONSTRUCT WITH PIPE CROWNS MATCHING.

USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL E. LAMBERT
10/23/06

USE FOR STRUCTURE NO.21A

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

DOUBLE GRATED INLET

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 05-23-06
CHECKED BY: _____ DATE: 5/24/06
FILE SPEC.: details/nbritt/english/urban/u3344a2gi.dgn

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR COVE

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	4
HILFIKER TEMPORARY WALL	HILFIKER RETAINING WALLS	1902 HILFIKER LANE, EUREKA, CA 95503-5711 707-443-5093 WWW.HILFIKER.COM	WELDED WIRE MAT	5
SIERRASCAPE TEMPORARY WALL	TENSAR EARTH TECHNOLOGIES, INC	5883 GLENRIDGE DRIVE, SUITE 200 ATLANTA, GA 30328-5363 404-250-1290 WWW.TENSARCORP.COM	GEOGRID	6
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	7-9
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	10-12

FOR STANDARD TEMPORARY MSE WALLS, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN THE PLANS DO NOT PROHIBIT A STANDARD TEMPORARY MSE WALL OR STANDARD SHORING, THE USE OF A TEMPORARY MSE WALL IS AN OPTION.

WHEN THE PLANS REQUIRE A TEMPORARY MSE WALL, USE ONE OF THE STANDARD TEMPORARY MSE WALL OPTIONS OR SUBMIT AN ALTERNATIVE TEMPORARY MSE WALL DESIGN FOR REVIEW AND ACCEPTANCE.

WHEN THE ALIGNMENT OF A STANDARD TEMPORARY MSE WALL 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).

THE 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 A STANDARD TEMPORARY MSE WALL WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.

DO NOT USE A STANDARD TEMPORARY MSE WALL WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT BELOW THE BOTTOM OF REINFORCED ZONE.

EXCAVATE AS NECESSARY FOR STANDARD TEMPORARY MSE WALLS IN ACCORDANCE WITH THE FOLLOWING FOR THE WALL OPTION CHOSEN:
1) MINIMUM EMBEDMENT OF 18" (450mm) UNLESS WALL BEARS ON ROCK, CONCRETE OR PAVEMENT AS DETERMINED BY THE ENGINEER
2) VERTICAL STEPS IN INCREMENT EQUAL TO THE VERTICAL REINFORCEMENT SPACING
3) WITH THE EXCEPTION OF EITHER THE FIRST OR LAST SECTION OF WALL, HORIZONTAL SECTION LENGTHS IN INCREMENTS EQUAL TO THE FOLLOWING:

STANDARD TEMPORARY MSE WALL OPTION	INCREMENT
TEMPORARY FABRIC WALL	9'-0" (2.7m) MIN (VARIES)
HILFIKER TEMPORARY WALL	10'-0" (3.0m) MIN (VARIES)
SIERRASCAPE TEMPORARY WALL	18'-7¼" (5.7m)
RETAINED EARTH TEMPORARY WALL	24'-0" (7.3m)
TERRATREL TEMPORARY WALL	19'-8" (6.0m)

DO NOT PLACE SHORING BACKFILL OR THE FIRST REINFORCEMENT LAYER UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND CHECKING FOUNDATION MATERIAL FOR IN-SITU ASSUMED SOIL PARAMETERS.

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 THE LOCATIONS AND ELEVATIONS SHOWN ON THE STANDARD TEMPORARY MSE WALL DETAILS.

CONTACT THE ENGINEER WHEN EXISTING OR FUTURE STRUCTURES SUCH AS PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH THE REINFORCEMENT.

PLACE SHORING BACKFILL IN THE REINFORCED ZONE IN 8" TO 10" (200mm to 250mm) THICK LIFTS AND COMPACT BACKFILL 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 THE REINFORCEMENT UNTIL IT IS COVERED WITH AT LEAST 10" (250mm) OF SHORING BACKFILL. DO NOT USE SHEEPFOOT, GRID ROLLERS OR OTHER TYPES OF EQUIPMENT WITH FEET.

COVER REINFORCING AND RETENTION FABRIC WITH AT LEAST 3" (75mm) OF SHORING BACKFILL.

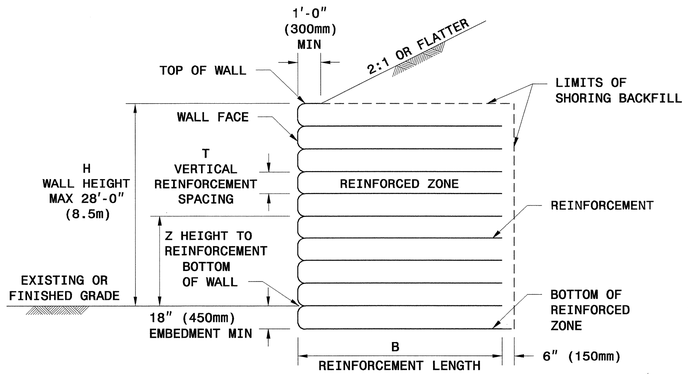
PLACE TOP REINFORCEMENT LAYER BETWEEN 4" (100mm) AND 24" (600mm) BELOW TOP OF WALL DEPENDING ON WALL OPTION.

BENCH STANDARD TEMPORARY MSE WALLS INTO THE SIDES OF THE EXCAVATIONS WHERE APPLICABLE AND AS DIRECTED BY THE ENGINEER.

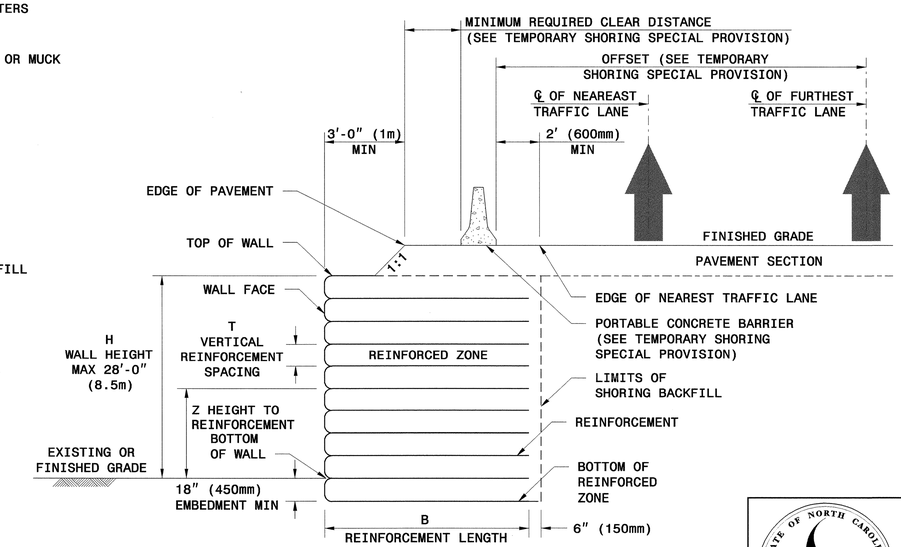
IF THE TOP OF WALL IS WITHIN 5'-0" (1.5m) OF FINISHED GRADE, REMOVE TOP FORM OR FACING AND INCORPORATE THE TOP REINFORCEMENT LAYER INTO THE FILL WHEN PLACING FILL IN FRONT OF THE WALL.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE STANDARD TEMPORARY MSE WALL. COLLECT AND DIRECT RUNOFF AWAY FROM THE WALL AND SHORING BACKFILL.

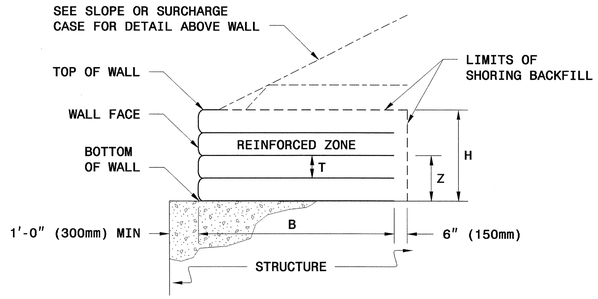
STANDARD TEMPORARY MSE WALLS REMAIN IN PLACE PERMANENTLY UNLESS DIRECTED OTHERWISE BY THE ENGINEER.



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 TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS

SHEET 1 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-J

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR COVE

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 4 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-IN)
												3	27 - 8
											3	3	26 -10
											3	3	25 - 2
										3	3	3	23 - 6
									3	3	3	3	21 -10
								3	3	3	3	3	20 - 2
							3	3	3	3	3	3	18 - 6
						3	3	3	3	3	3	3	16 -10
						3	3	3	3	3	3	3	15 - 2
					4	3	3	3	3	3	3	3	13 - 6
				4	4	3	3	3	3	3	3	3	11 -10
			5	4	4	3	3	3	3	3	3	3	10 - 2
		5	5	4	4	3	3	3	3	3	3	3	8 - 6
	5	5	5	4	4	3	3	3	3	3	3	3	6 -10
	5	5	5	4	4	3	3	3	3	3	3	3	5 - 2
5	5	5	5	4	4	3	3	3	3	3	3	3	3 - 6
5	5	5	5	4	4	3	3	3	3	3	3	3	1 -10
5	5	5	5	4	4	3	3	3	3	3	3	3	0 - 2
5	5	5	5	4	4	3	3	3	3	3	3	3	-0 - 8

SLOPE AND SURCHARGE CASES

SIERRASCAPE TEMPORARY WALL
(GEOGRID TYPE)

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

H (FT) <4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												11	26.5
											11	11	25.5
											11	11	24
										11	11	11	22.5
									11	11	11	15	21
								11	11	11	14	15	19.5
							11	11	11	14	15	15	18
						11	11	11	14	15	15	15	16.5
					11	11	11	11	14	15	15	15	15
				11	11	11	11	15	15	15	15	15	13.5
				11	11	11	15	15	15	15	15	15	12
			11	11	11	11	15	15	15	15	15	16	10.5
		11	11	11	11	15	15	15	15	15	16	16	9
	11	11	11	11	14	15	15	15	15	16	16	16	7.5
	11	11	11	11	14	15	15	15	16	16	16	16	6
11	11	11	11	11	15	15	15	15	15	16	16	17	4.5
11	11	11	11	14	15	15	15	15	16	16	16	17	3
11	11	11	11	14	15	15	15	16	16	16	17	17	1.5
11	11	11	14	15	15	15	15	16	16	17	17	17	0
11	11	11	14	15	15	15	15	16	16	17	17	17	-1.5

SLOPE CASE

H (FT) <4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												11	26.5
												11	25.5
											11	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	11	15	15	15	15	12
					11	11	11	15	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	16	6
	11	11	11	11	14	14	15	15	15	15	16	16	4.5
11	11	11	11	11	14	14	15	15	15	15	16	16	3
11	11	11	11	11	15	15	15	15	15	16	16	16	1.5
11	11	11	11	14	15	15	15	15	15	16	16	17	0
11	11	11	14	15	15	15	15	15	15	16	16	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	N/A	3
4.5	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	7.0	2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	7.0	1
7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	7.0	7.0	0
7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	-1.5

SLOPE CASE

H (FT) <4	4 TO 6	6 TO 8	8 TO 10	10 TO 12	12 TO 14	14 TO 16	16 TO 18	18 TO 20	20 TO 22	22 TO 24	24 TO 26	26 TO 28	Z (FT)
												4.5	26
											4.5	7.0	24
										4.5	7.0	7.0	22
									4.5	7.0	7.0	7.0	20
								4.5	7.0	7.0	7.0	7.0	18
							4.5	7.0	7.0	7.0	7.0	7.0	16
						4.5	7.0	7.0	7.0	7.0	7.0	7.0	14
					4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	12
				4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	10
			4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	8
		4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	6
	4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	4
4.5	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	9.5	2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0	1
7.0	7.0	7.0	7.0	7.0	7.0	7.0	9.5	9.5	9.5	9.5	9.5	7.0	0
7.0	7.0	7.0	7.0	7.0	7.0	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-IN)
												3X1	27 - 6
												3X1	26 -10
											3X1	3X2	25 - 2
										3X1	3X1	3X2	23 - 6
									3X1	3X1	3X2	3X2	21 -10
								3X1	3X1	3X2	3X2	3X2	20 - 2
							3X1	3X1	3X2	3X2	3X2	3X2	18 - 6
						3X1	3X1	3X2	3X2	3X2	3X2	3X2	16 -10
						3X1	3X2	3X2	3X2	3X2	3X2	3X2	15 - 2
					3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	13 - 6
				3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	11 -10
			3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	10 - 2
		3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	8 - 6
	3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	6 -10
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	5 - 2
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3 - 6
3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	1 -10
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	0 - 2
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	-1 - 6

SLOPE AND SURCHARGE CASES

NOTES FOR HILFIKER TEMPORARY WALL

1) CAP MAT AT TOP OF WALL IS NOT INCLUDED IN TABLES.
2) REINFORCEMENT IS NOT REQUIRED AT 1' LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 24'.
3) REINFORCEMENT IS NOT REQUIRED AT 3' LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 26'.
4) REINFORCEMENT IS NOT REQUIRED AT 1' LEVEL FOR SURCHARGE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 26'.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD TEMPORARY MSE WALL REINFORCEMENT TABLES - ENGLISH

DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-K

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR COVIL

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 4 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 (M)

(FOR ALL WALL OPTIONS)

WALL HEIGHT H (M)	<2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5
SLOPE CASE	2.4	3.4	4.0	4.3	4.9	5.5	6.1	6.7	7.3	7.6	8.2
SURCHARGE CASE	2.4	2.7	3.4	3.7	4.3	4.6	4.9	5.5	5.8	6.4	6.7

TERRATREL TEMPORARY WALL
(STRIPS PER LEVEL PER PANEL)

H (M) < 1.2	1.2 TO 1.8	1.8 TO 2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5	Z (M)
												3	8.4
											3	3	8.2
											3	3	7.7
										3	3	3	7.2
									3	3	3	3	6.7
								4	3	3	3	3	6.1
							4	4	3	3	3	3	5.6
						4	4	4	3	3	3	3	5.1
						4	4	4	3	3	3	3	4.6
					5	4	4	4	3	3	3	3	4.1
				5	5	4	4	4	3	3	3	3	3.6
			5	5	5	4	4	4	3	3	3	3	3.1
		5	5	5	5	4	4	4	3	3	3	3	2.6
	5	5	5	5	5	4	4	4	3	3	3	3	2.1
	5	5	5	5	5	4	4	4	3	3	3	3	1.6
5	5	5	5	5	5	4	4	4	3	3	3	3	1.1
5	5	5	5	5	5	4	4	4	3	3	3	3	0.6
5	5	5	5	5	5	4	4	4	3	3	3	3	0.1
5	5	5	5	5	5	4	4	4	3	3	3	3	-0.2

SLOPE AND SURCHARGE CASES

SIERRASCAPE TEMPORARY WALL
(GEOGRID TYPE)

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

SLOPE CASE

H (M) < 1.2	1.2 TO 1.8	1.8 TO 2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5	Z (M)
												11	8.1
											11	11	7.8
											11	11	7.3
										11	11	11	6.9
									11	11	11	15	6.4
								11	11	11	14	15	5.9
							11	11	11	14	15	15	5.5
						11	11	11	14	15	15	15	5.0
					11	11	11	11	14	15	15	15	4.6
				11	11	11	11	15	15	15	15	15	4.1
				11	11	11	15	15	15	15	15	15	3.7
			11	11	11	11	15	15	15	15	15	16	3.2
		11	11	11	11	15	15	15	15	15	15	16	2.7
	11	11	11	11	14	15	15	15	15	15	16	16	2.3
	11	11	11	11	14	15	15	15	15	16	16	16	1.8
11	11	11	11	11	15	15	15	15	15	16	16	17	1.4
11	11	11	11	14	15	15	15	15	16	16	16	17	0.9
11	11	11	11	14	15	15	15	16	16	16	17	17	0.5
11	11	11	14	15	15	15	15	16	16	17	17	17	0.0
11	11	11	14	15	15	15	15	16	16	17	17	17	-0.5

SURCHARGE CASE

H (M) < 1.2	1.2 TO 1.8	1.8 TO 2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5	Z (M)
												11	8.1
												11	7.8
											11	11	7.3
											11	11	6.9
									11	11	11	11	6.4
								11	11	11	11	11	5.9
							11	11	11	11	11	15	5.5
						11	11	11	11	11	15	15	5.0
					11	11	11	11	11	15	15	15	4.6
					11	11	11	11	15	15	15	15	4.1
				11	11	11	11	15	15	15	15	15	3.7
				11	11	11	11	15	15	15	15	15	3.2
			11	11	11	11	15	15	15	15	15	15	2.7
			11	11	11	11	15	15	15	15	15	16	2.3
		11	11	11	11	14	15	15	15	15	15	16	1.8
	11	11	11	11	14	14	15	15	15	15	16	16	1.4
11	11	11	11	11	14	15	15	15	15	16	16	16	0.9
11	11	11	11	11	15	15	15	15	15	16	16	16	0.5
11	11	11	11	14	15	15	15	15	15	16	16	17	0.0
11	11	11	14	15	15	15	15	15	15	16	16	17	-0.5

SURCHARGE CASE

HILFIKER TEMPORARY WALL
(WELDED WIRE MAT TYPE)

29 = MW29 x MW23
45 = MW45 x MW23
61 = MW61 x MW26

SLOPE CASE

H (M) < 1.2	1.2 TO 1.8	1.8 TO 2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5	Z (M)
												29	7.9
											29	45	7.3
										29	45	45	6.7
									29	45	45	45	6.1
								29	45	45	45	45	5.5
							29	45	45	45	45	45	4.9
						29	45	45	45	45	45	61	4.3
					29	45	45	45	45	45	61	61	3.7
				29	45	45	45	45	45	61	61	61	3.0
			29	45	45	45	45	45	61	61	61	61	2.4
		29	45	45	45	45	45	61	61	61	61	61	1.8
	29	45	45	45	45	45	61	61	61	61	61	61	1.2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45	0.9
29	45	45	45	45	45	61	61	61	61	61	61	45	0.6
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45	0.3
45	45	45	45	45	61	61	61	61	61	61	45	45	0.0
45	45	45	45	45	61	61	61	61	61	61	61	61	-0.5

SURCHARGE CASE

H (M) < 1.2	1.2 TO 1.8	1.8 TO 2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5	Z (M)
												29	7.9
											29	45	7.3
										29	45	45	6.7
									29	45	45	45	6.1
								29	45	45	45	45	5.5
							29	45	45	45	45	45	4.9
						29	45	45	45	45	45	61	4.3
					29	45	45	45	45	45	61	61	3.7
				29	45	45	45	45	45	61	61	61	3.0
			29	45	45	45	45	45	61	61	61	61	2.4
		29	45	45	45	45	45	61	61	61	61	61	1.8
	29	45	45	45	45	45	61	61	61	61	61	61	1.2
29	45	45	45	45	45	61	61	61	61	61	61	45	0.6
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45	0.3
45	45	45	45	45	45	61	61	61	61	61	61	45	0.0
45	45	45	45	45	45	61	61	61	61	61	61	61	-0.5

SURCHARGE CASE

NOTES FOR HILFIKER TEMPORARY WALL

1) CAP MAT AT TOP OF WALL IS NOT INCLUDED IN TABLES.
2) REINFORCEMENT IS NOT REQUIRED AT 0.3m LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 7.3m.
3) REINFORCEMENT IS NOT REQUIRED AT 0.9m LEVEL FOR SLOPE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 7.9m.
4) REINFORCEMENT IS NOT REQUIRED AT 0.3m LEVEL FOR SURCHARGE CASE UNTIL WALL HEIGHT (H) IS GREATER THAN 7.9m.

RETAINED EARTH TEMPORARY WALL
(WELDED WIRE MESH TYPE)

3X1 = 3MW52 x MW52 x 305mm
3X2 = 3MW52 x MW52 x 610mm

SLOPE AND SURCHARGE CASES

H (M) < 1.2	1.2 TO 1.8	1.8 TO 2.4	2.4 TO 3.0	3.0 TO 3.7	3.7 TO 4.3	4.3 TO 4.9	4.9 TO 5.5	5.5 TO 6.1	6.1 TO 6.7	6.7 TO 7.3	7.3 TO 7.9	7.9 TO 8.5	Z (M)
												3X1	8.4
												3X1	8.2
											3X1	3X2	7.7
										3X1	3X1	3X2	7.2
									3X1	3X1	3X2	3X2	6.7
								3X1	3X1	3X2	3X2	3X2	6.1
							3X1	3X1	3X2	3X2	3X2	3X2	5.6
							3X1	3X2	3X2	3X2	3X2	3X2	5.1
						3X1	3X2	3X2	3X2	3X2	3X2	3X2	4.6
					3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	4.1
				3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3.6
			3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3.1
		3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	2.6
		3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	2.1
	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	1.6
3X1	3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	1.1
3X1	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	0.6
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	0.1
3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	3X2	-0.5

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD TEMPORARY MSE WALL REINFORCEMENT TABLES - METRIC

SHEET 3 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-L

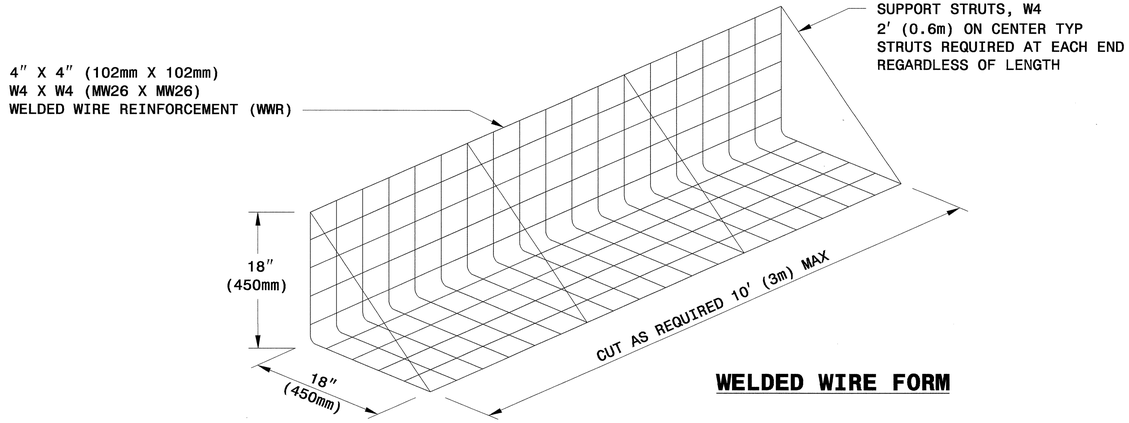
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR COVE

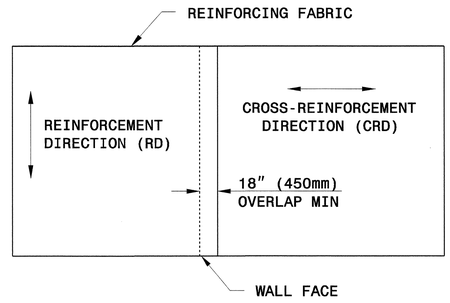
SIGNATURE DATE

ENGINEER

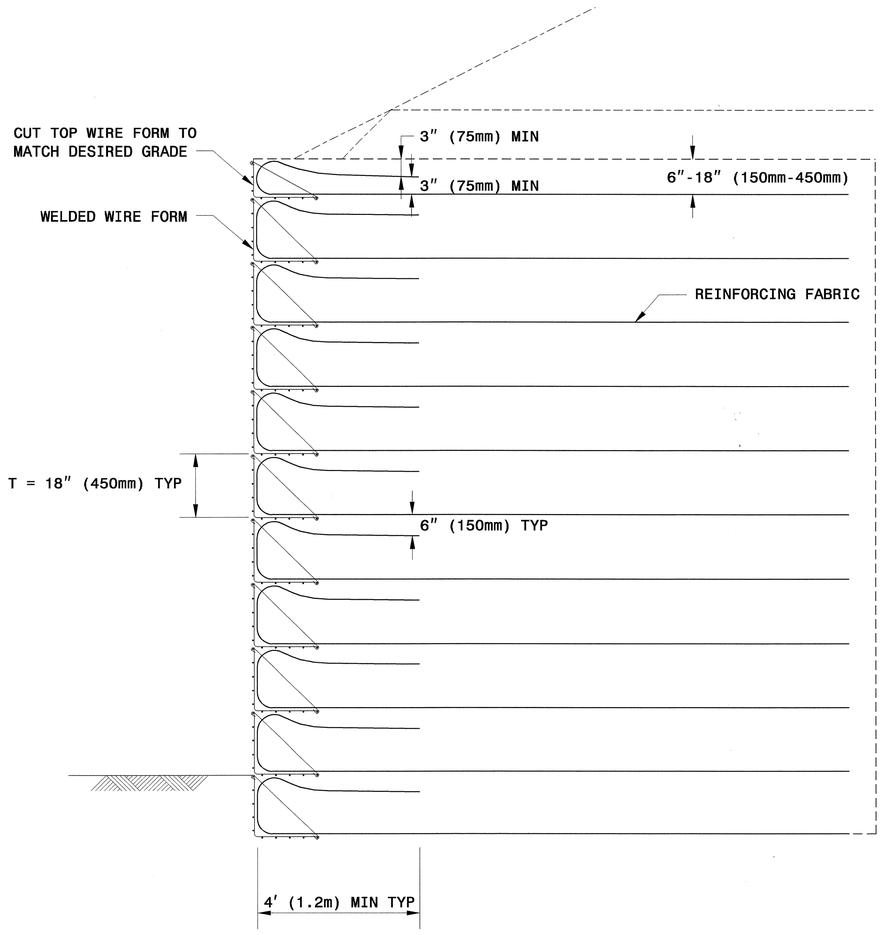
SIGNATURE DATE



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

TEMPORARY
FABRIC WALL

SHEET 4 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-M

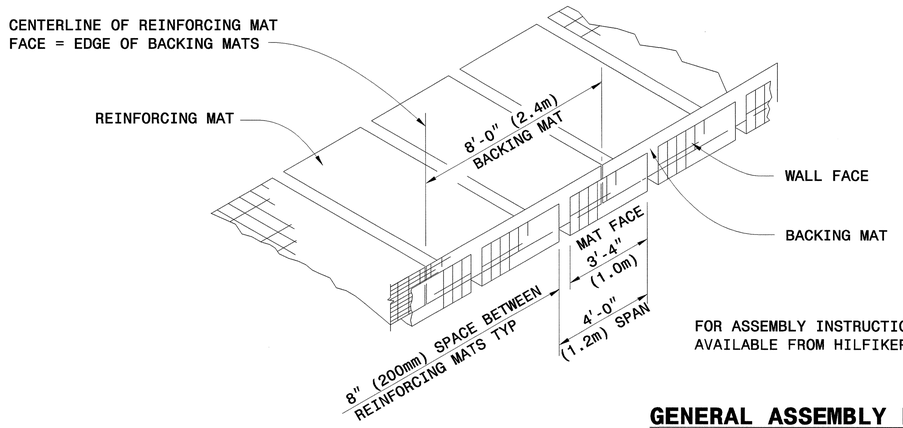
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOVE

SIGNATURE DATE

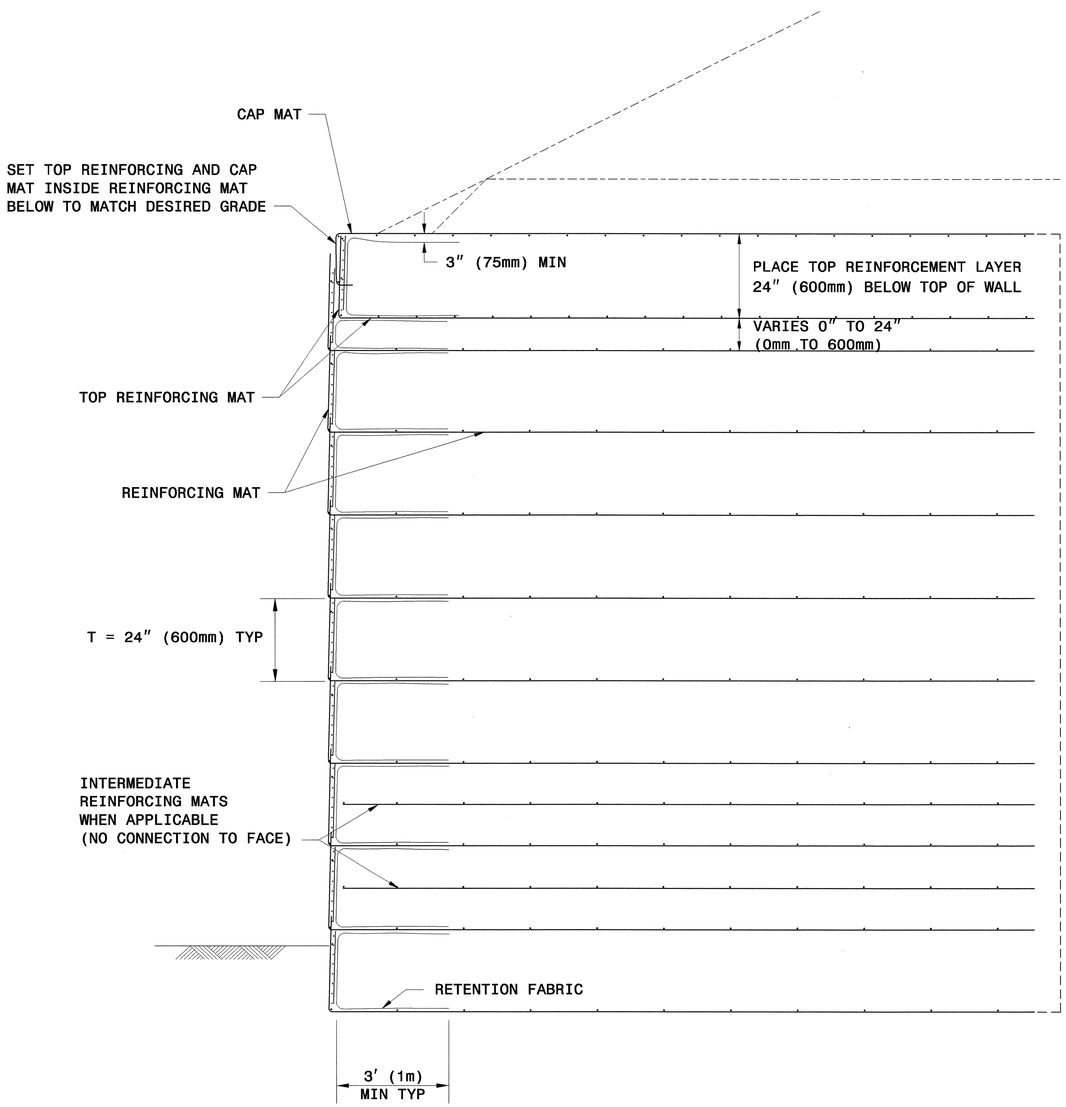
ENGINEER

SIGNATURE DATE

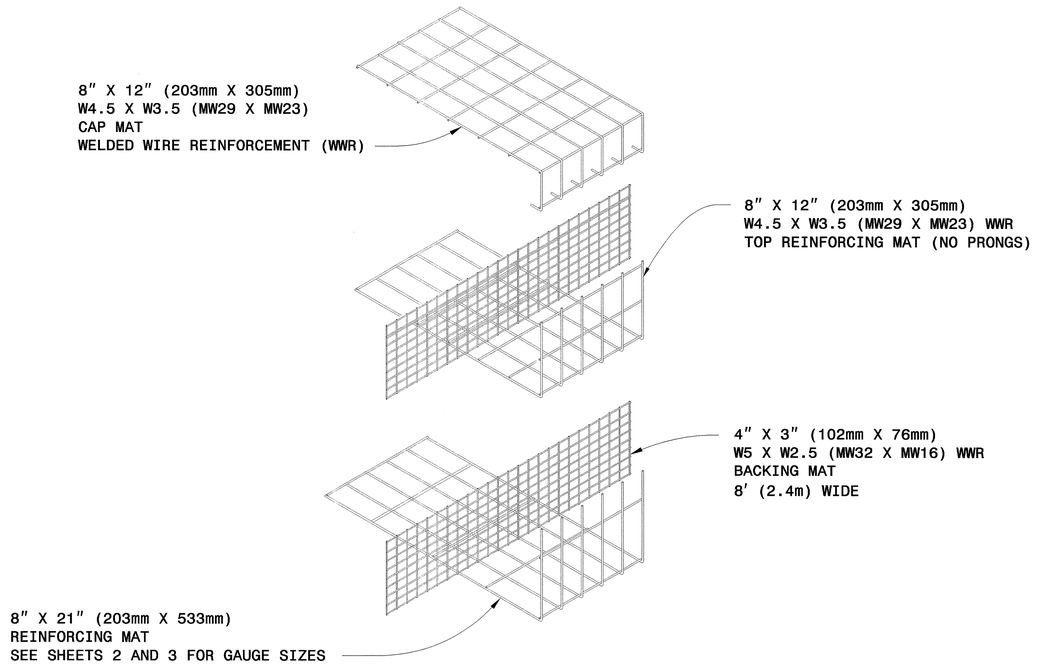


FOR ASSEMBLY INSTRUCTIONS, SEE WELDED WIRE WALL CONSTRUCTION GUIDE AVAILABLE FROM HILFIKER WEBSITE AT WWW.HILFIKER.COM/WWW

GENERAL ASSEMBLY DETAIL



TYPICAL SECTION



WALL COMPONENTS

HILFIKER RETAINING WALLS

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

HILFIKER TEMPORARY WALL

SHEET 5 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-N

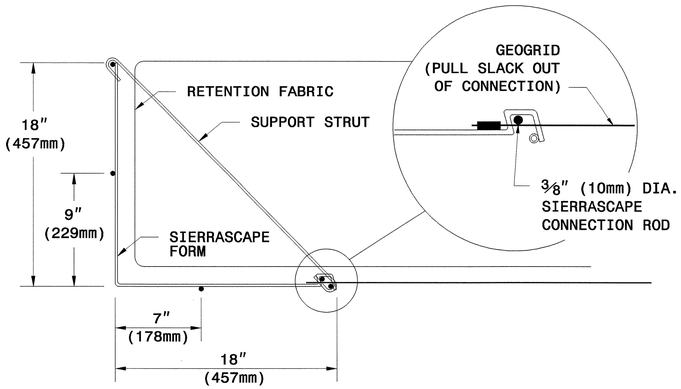
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GROVE

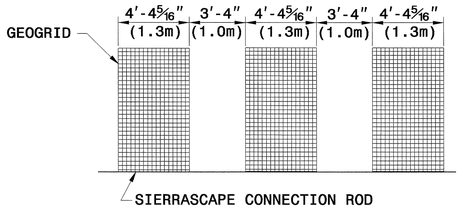
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

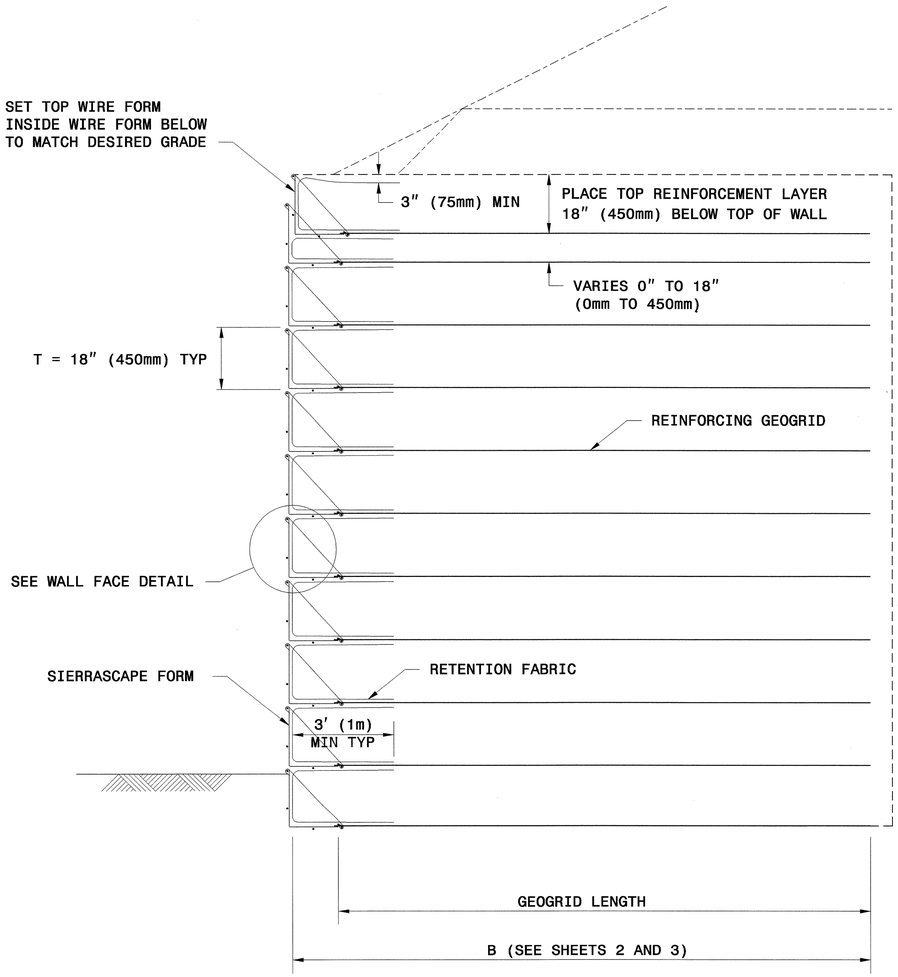


WALL FACE DETAIL

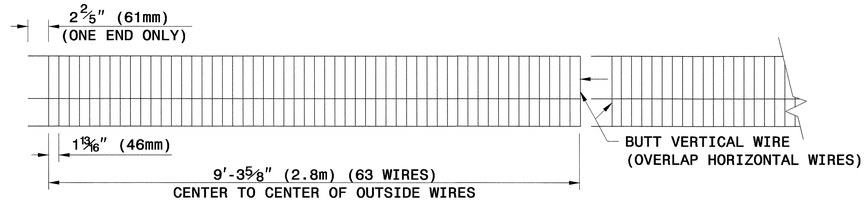


PLACE ALTERNATE LAYERS OF GEOGRID IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED OVER SPACE BELOW

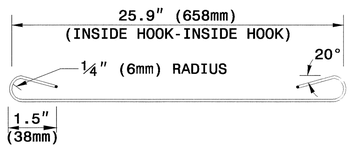
TYPICAL GEOGRID COVERAGE



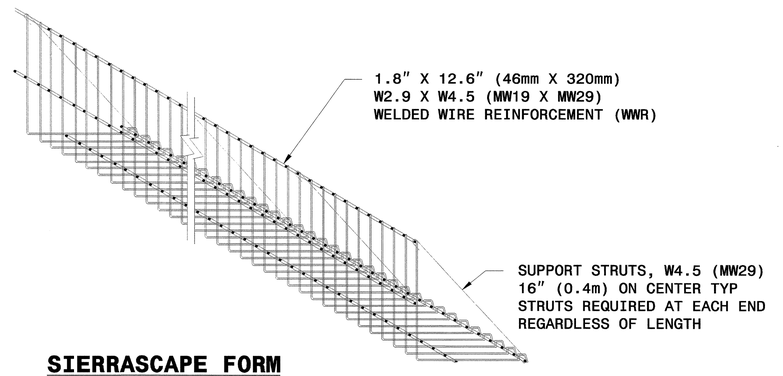
TYPICAL SECTION



ELEVATION VIEW



SUPPORT STRUT



SIERRASCAPE FORM

WALL COMPONENTS

TENSAR®
TENSAR EARTH TECHNOLOGIES, INC.

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SIERRASCAPE
TEMPORARY WALL

SHEET 6 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U3344A)	2-0

GEOTECHNICAL ENGINEER

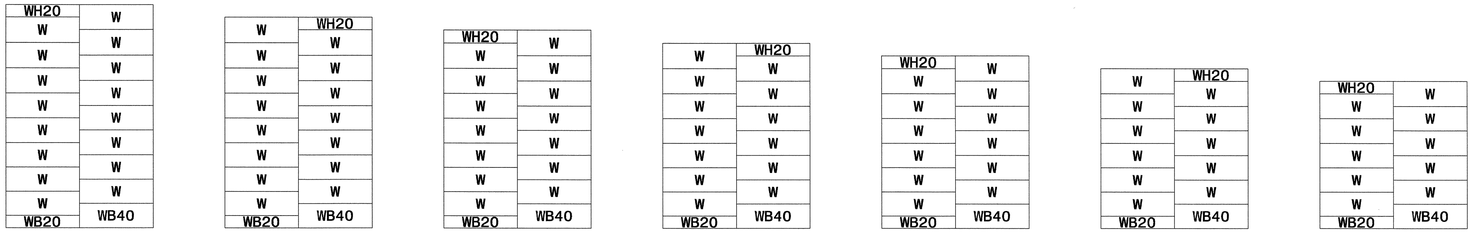
NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOVE

SIGNATURE DATE

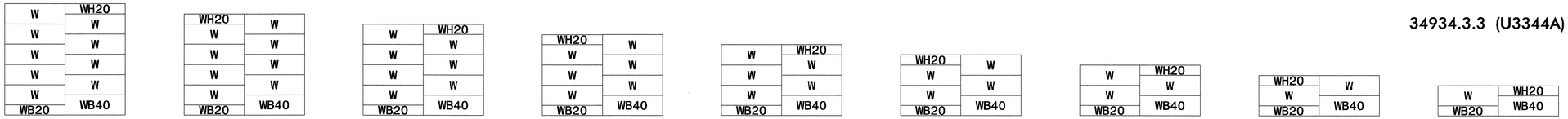
ENGINEER

SIGNATURE DATE

PANEL LAYOUTS

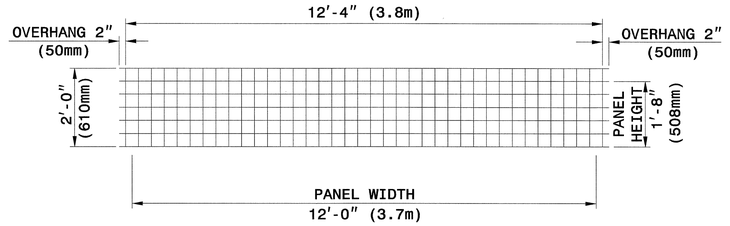


H - WALL HEIGHT							
(FEET-INCHES)	< 28 - 0	< 27 - 0	< 25 - 4	< 23 - 8	< 22 - 0	< 20 - 4	< 18 - 8
(METER)	< 8.5	< 8.2	< 7.7	< 7.2	< 6.7	< 6.2	< 5.7

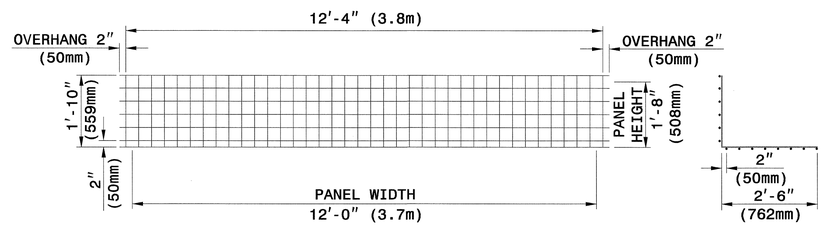


(FEET-INCHES)	< 17 - 0	< 15 - 4	< 13 - 8	< 12 - 0	< 10 - 4	< 8 - 8	< 7 - 0	< 5 - 4	< 3 - 8
(METER)	< 5.2	< 4.7	< 4.2	< 3.7	< 3.2	< 2.6	< 2.1	< 1.6	< 1.1

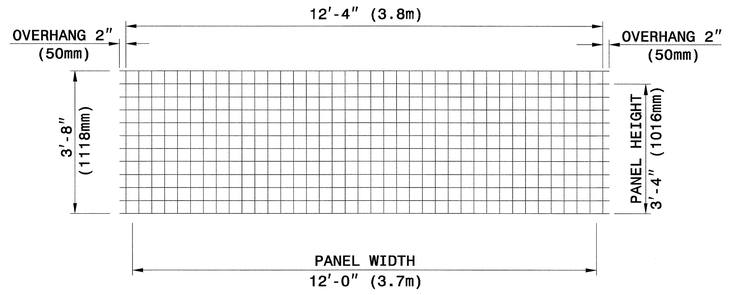
34934.3.3 (U3344A)



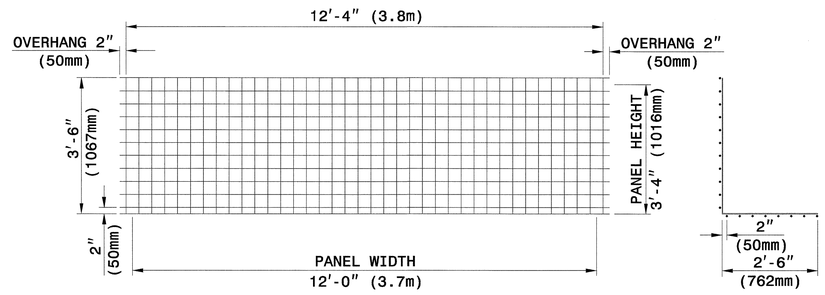
TYPE WH20



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

RETAINED EARTH TEMPORARY WALL

SHEET 7 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U3344A)	2-P

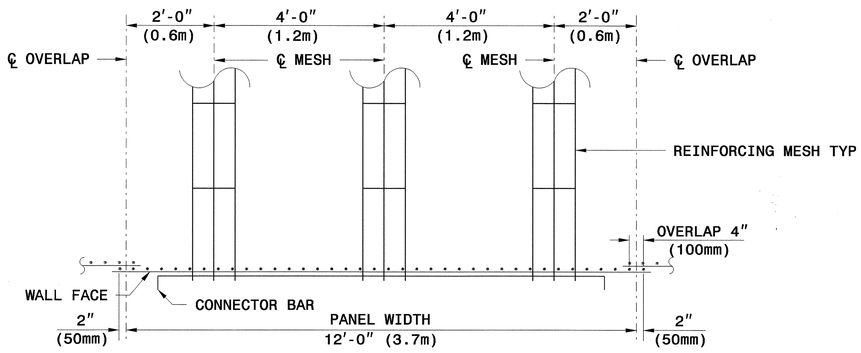
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOVE

SIGNATURE DATE

ENGINEER

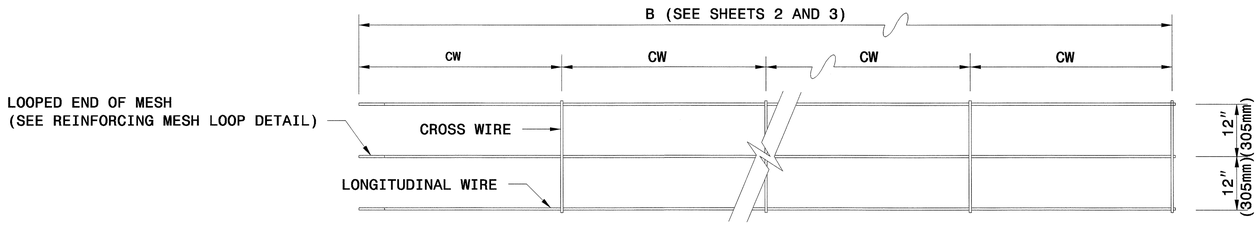
SIGNATURE DATE



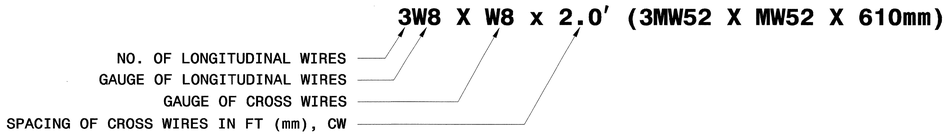
REINFORCING MESH PLACEMENT DETAIL
(PLAN VIEW)

½″ (13 mm) DIA. BAR

CONNECTOR BAR

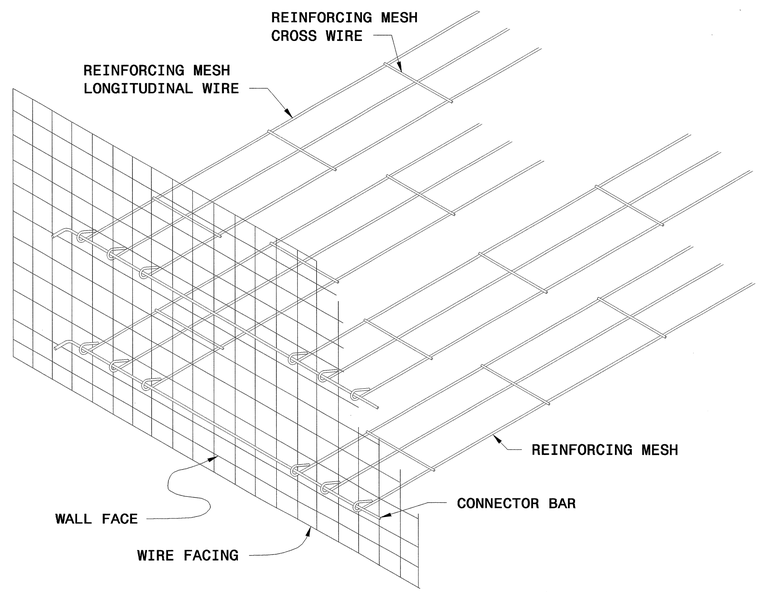


IF REINFORCEMENT LENGTH IS NOT AN INCREMENT OF 2′-0″ (610mm) MAKE CW EQUAL TO 12″ (305mm) AT THE END OF THE REINFORCING MESH OPPOSITE THE LOOPED END

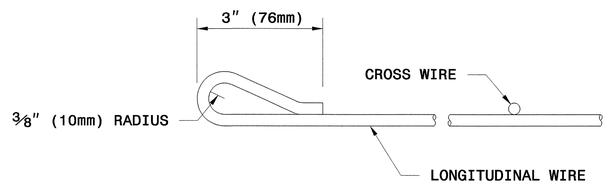


REINFORCING MESH DESIGNATION

REINFORCING MESH



GENERAL ASSEMBLY DETAIL



REINFORCING MESH LOOP DETAIL

The Reinforced Earth Company

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINED EARTH TEMPORARY WALL

SHEET 8 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U3344A)	2-Q

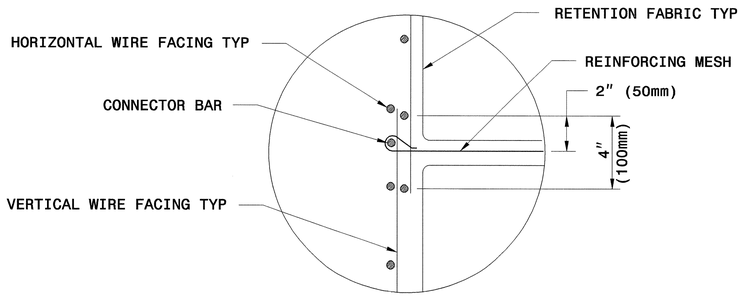
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOVE

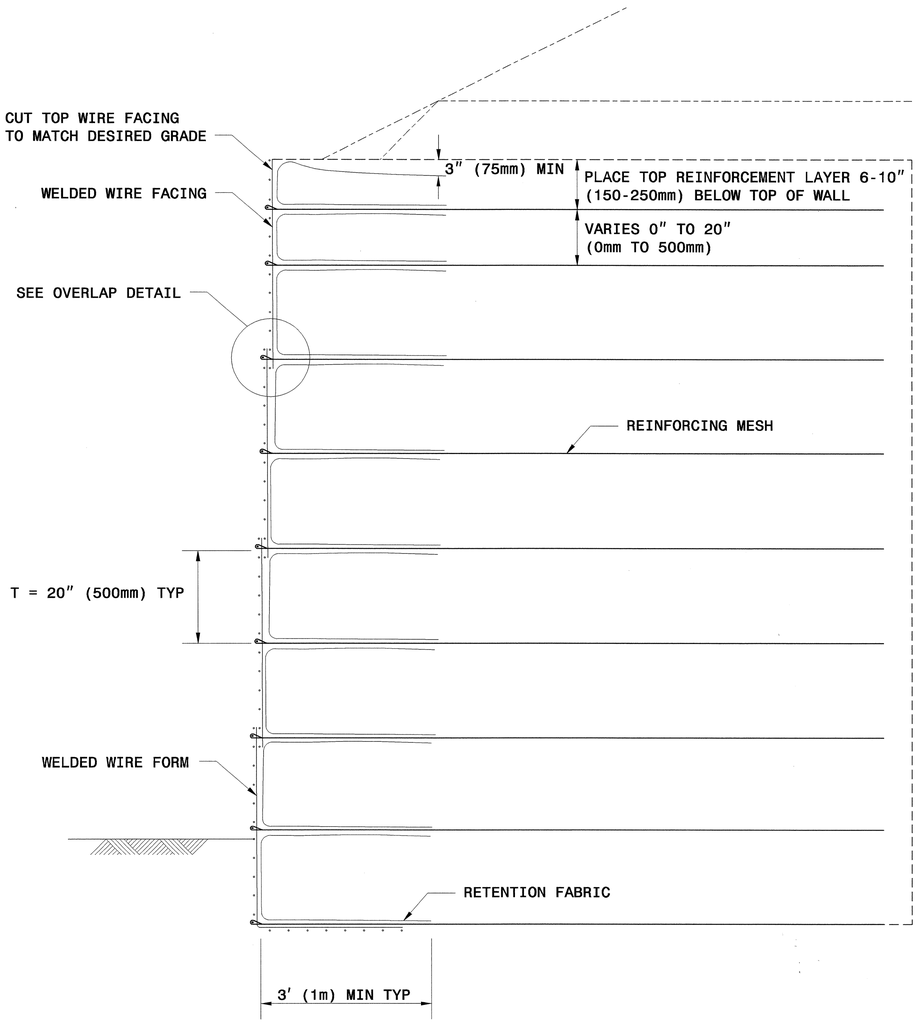
SIGNATURE DATE

ENGINEER

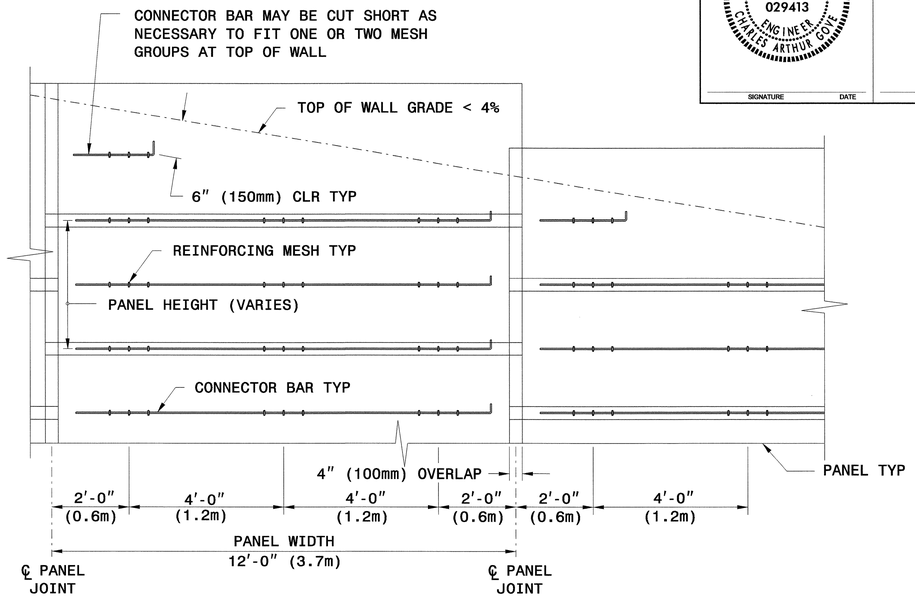
SIGNATURE DATE



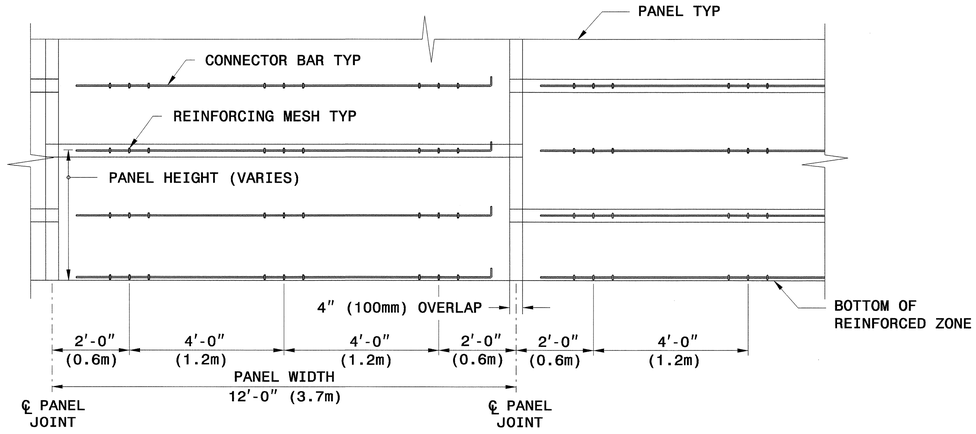
OVERLAP DETAIL



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

RETAINED EARTH TEMPORARY WALL

SHEET 9 OF 12

DATE: 10/17/06

GEJ221417 11/21/2006 u3344a retained earth temporary wall s789 irmatula RD-Oce34

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-R

GEOTECHNICAL ENGINEER

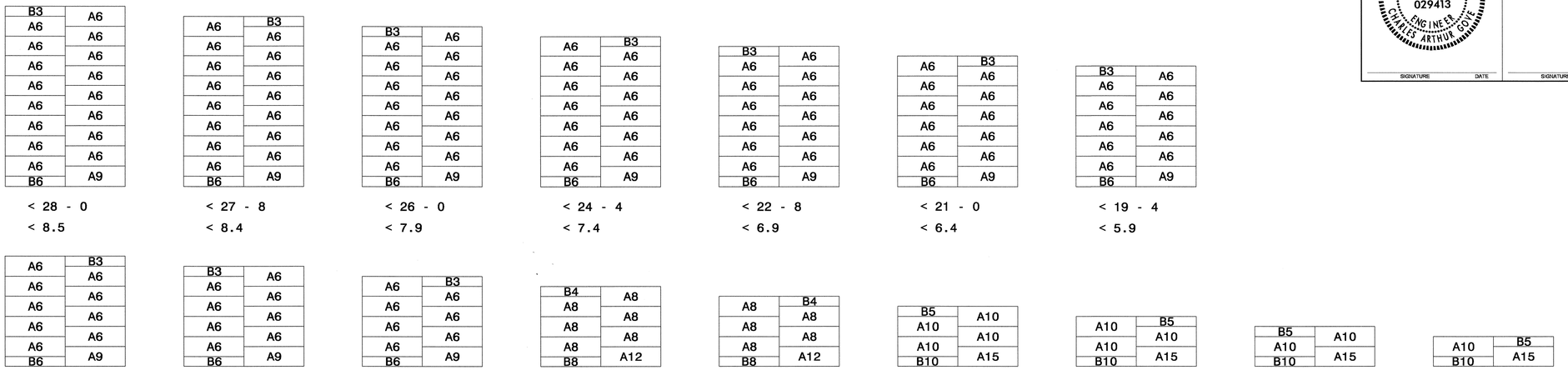
NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOLE

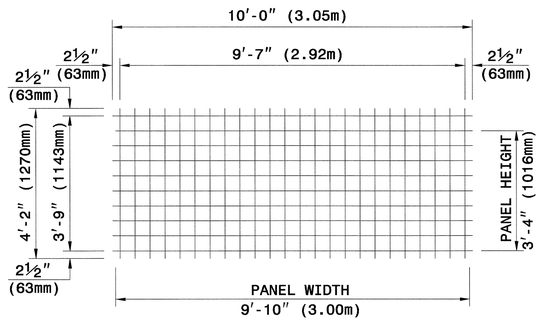
SIGNATURE DATE

ENGINEER

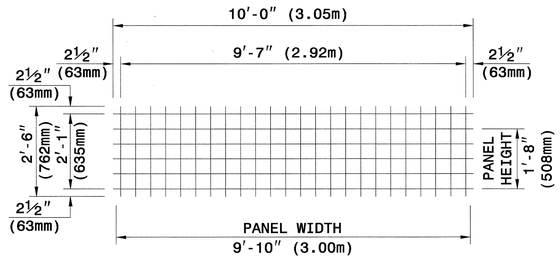
SIGNATURE DATE

PANEL LAYOUTS

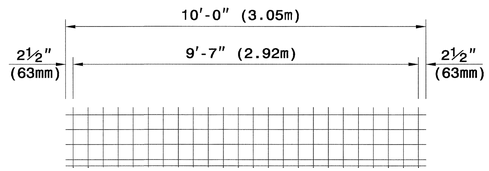




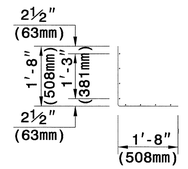
TYPE A



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

TERRATREL
TEMPORARY WALL

SHEET 10 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-5

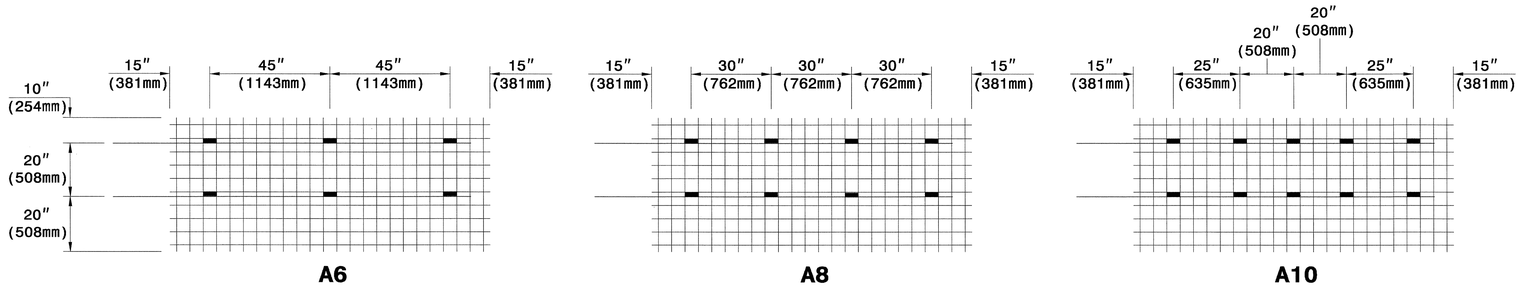
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOVE

SIGNATURE DATE

ENGINEER

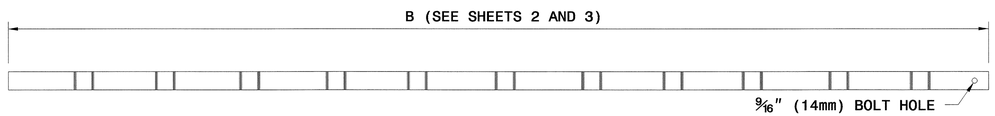
SIGNATURE DATE



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)

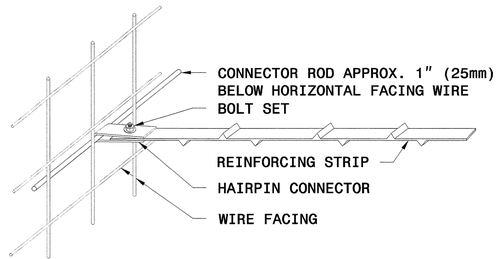
½" (13 mm) DIA. ROD

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

TERRATREL TEMPORARY WALL

SHEET 11 OF 12 DATE: 10/17/06

PROJECT REFERENCE NO.	SHEET
34934.3.3 (U-3344A)	2-T

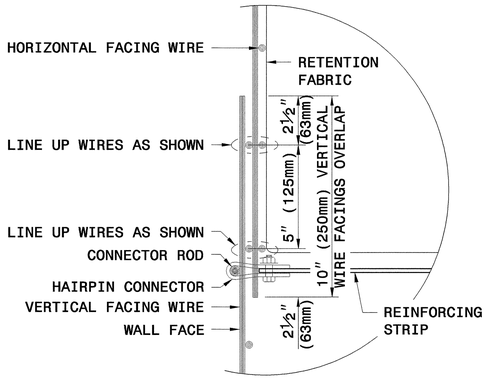
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER CHARLES ARTHUR GOVE

SIGNATURE DATE

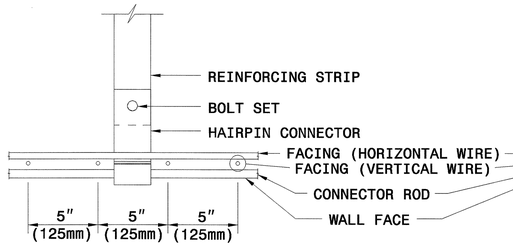
ENGINEER

SIGNATURE DATE

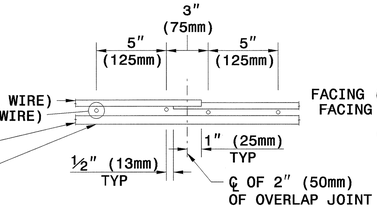


OVERLAP FACINGS VERTICALLY ONE FULL 5" (125mm) WIRE SQUARE DISREGARDING HALF SQUARES AT EDGES

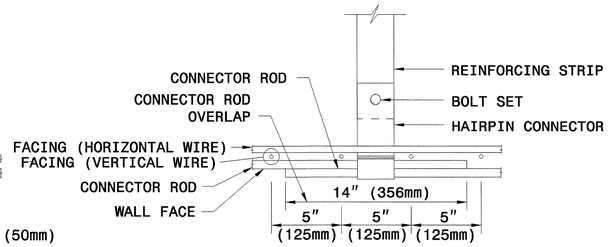
VERTICAL OVERLAP DETAIL



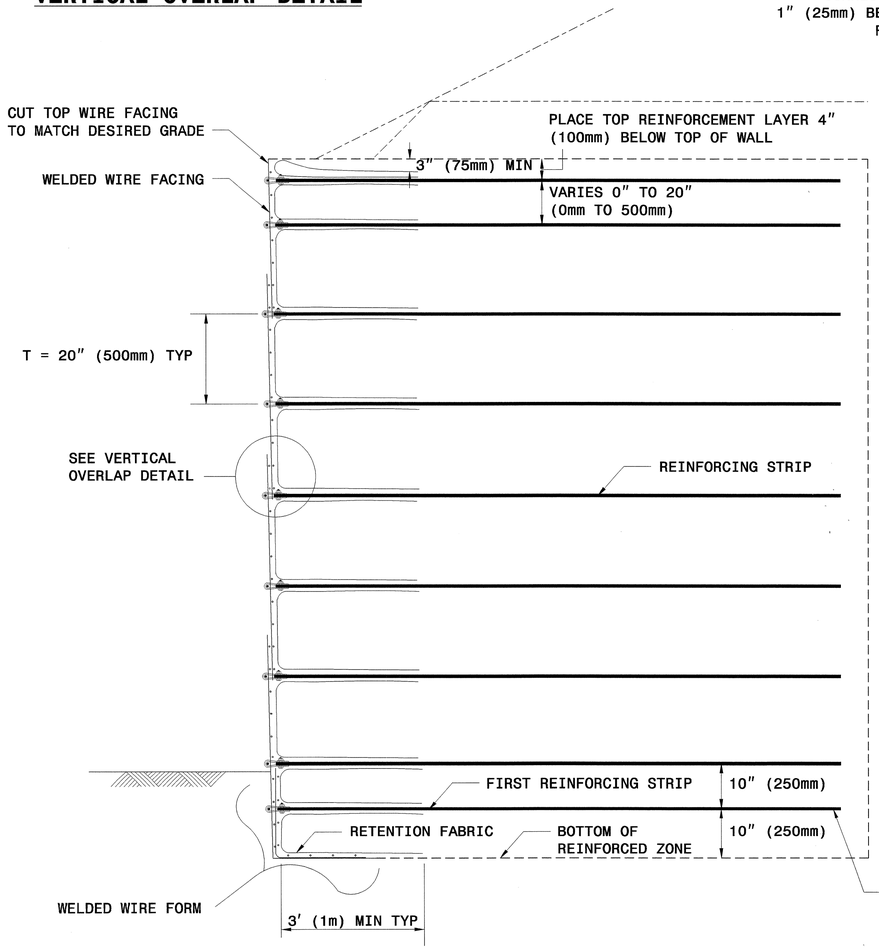
PLAN DETAIL 'A'
STRIP CONNECTION



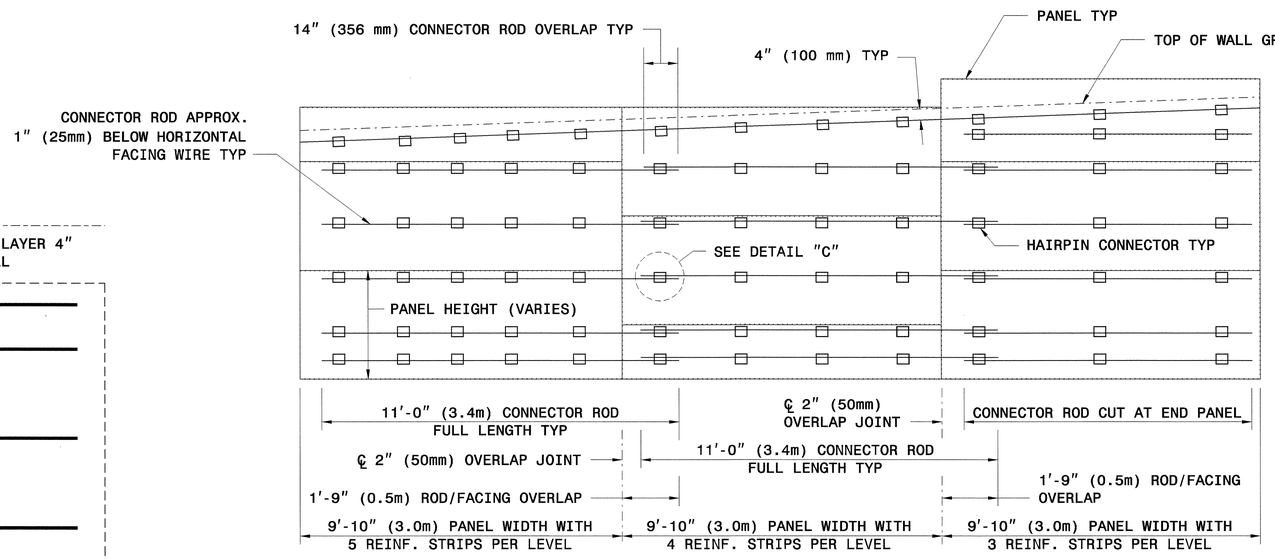
PLAN DETAIL 'B'
HORIZONTAL OVERLAP DETAIL



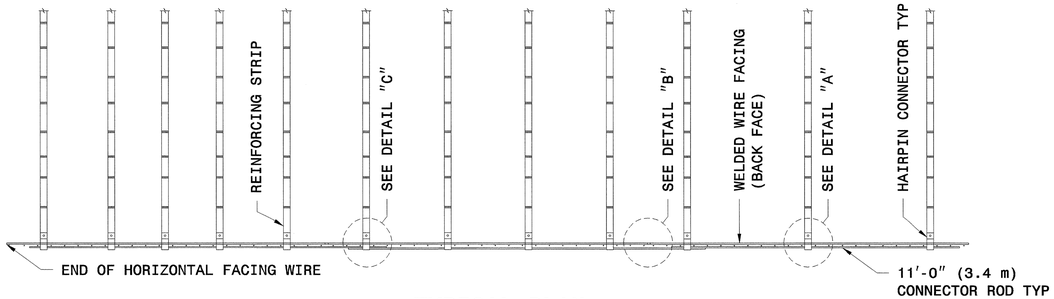
PLAN DETAIL 'C'
STRIP CONNECTION WITH HORIZONTAL OVERLAP DETAIL



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

TERRATREL
TEMPORARY WALL

SHEET 12 OF 12 DATE: 10/17/06

GEJ221417 11/21/2006 u3344a_terratrel temporary wall_s012 jrmatula RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201744

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
[redacted]				[redacted]
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0015000000-N	205	2	EA	SEALING ABANDONED WELLS
0022000000-E	225	2,700	CY	UNCLASSIFIED EXCAVATION
0036000000-E	225	1,750	CY	UNDERCUT EXCAVATION
0080000000-E	SP	325	TON	CLASS IV SUBGRADE STABILIZATION
0106000000-E	230	19,900	CY	BORROW EXCAVATION
0134000000-E	240	1,500	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	4,550	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-E	250	3,850	SY	BREAKING OF EXISTING ASPHALT PAVEMENT
0195000000-E	265	500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	500	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	1,930	SF	TEMPORARY SHORING
0318000000-E	300	425	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	24	LF	15" SIDE DRAIN PIPE
0986000000-E	SP	48	LF	GENERIC PIPE ITEM 10" PVC PIPE
0995000000-E	340	768	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1110000000-E	510	200	TON	STABILIZER AGGREGATE
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1297000000-E	607	3,300	SY	MILLING ASPHALT PAVEMENT, *** DEPTH (1-1/2")
1297000000-E	607	1,900	SY	MILLING ASPHALT PAVEMENT, *** DEPTH (2-1/2")
1297000000-E	607	2,100	SY	MILLING ASPHALT PAVEMENT, *** DEPTH (4")
1330000000-E	607	300	SY	INCIDENTAL MILLING
1489000000-E	610	6,950	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	5,475	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	4,550	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	830	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	230	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	25	EA	RIGHT OF WAY MARKERS
2022000000-E	815	112	CY	SUBDRAIN EXCAVATION
2033000000-E	815	84	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	15	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2209000000-E	838	4.5	CY	ENDWALLS
2253000000-E	840	2	CY	PIPE COLLARS
2286000000-N	840	48	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	28	LF	MASONRY DRAINAGE STRUCTURES
2352000000-N	840	9	EA	FRAME WITH GRATE, STD 840.**** (840.16)
2367000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	5	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	13	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	17	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2549000000-E	846	5,300	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	500	SY	4" CONCRETE SIDEWALK
2605000000-N	848	8	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	350	SY	6" CONCRETE DRIVEWAY
2619000000-E	850	70	SY	4" CONCRETE PAVED DITCH
2830000000-N	858	40	EA	ADJUSTMENT OF MANHOLES
2845000000-N	858	40	EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES
3628000000-E	876	115	TON	RIP RAP, CLASS I
3649000000-E	876	75	TON	RIP RAP, CLASS B
3656000000-E	876	745	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	353	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	8	EA	SIGN ERECTION, TYPE E
4108000000-N	904	3	EA	SIGN ERECTION, TYPE F
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (TYPE E)
4155000000-N	907	20	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	588	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	148	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	219	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	1	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	9	EA	CHANGEABLE MESSAGE SIGN
4445000000-E	1145	184	LF	BARRICADES (TYPE III)
4455000000-N	1150	600	MD	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4485000000-E	1170	1,000	LF	PORTABLE CONCRETE BARRIER
4507000000-E	SP	798	LF	WATER FILLED BARRIER
4508000000-E	SP	1,809	LF	RESET WATER FILLED BARRIER
4510000000-N	SP	60	HR	POLICE
4650000000-N	1251	647	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	636	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	11,290	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	315	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4710000000-E	1205	157	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	16	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	31	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4810000000-E	1205	66,251	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	2,465	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	405	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	24	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	53	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	23,390	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4855000000-E	1205	87	LF	REMOVAL OF PAVEMENT MARKING LINES (6")
4860000000-E	1205	1,794	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4870000000-E	1205	54	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	20	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	379	EA	PERMANENT RAISED PAVEMENT MARKERS
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM 6" GATE VALVE & VALVE BOX, 200# WP
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM 8" DOUBLE DETECTOR CHECK VALVE ASSEMBLY & VAULT
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM 8" WATER METER ASSEMBLY & VAULT
5882000000-N	SP	7	EA	GENERIC UTILITY ITEM RELOCATE EXISTING FIRE HYDRANT
5882000000-N	SP	2	EA	GENERIC UTILITY ITEM RELOCATE EXISTING WATER METER
5888000000-E	SP	60	LF	GENERIC UTILITY ITEM 16" DI WATER PIPE, PC 250
5888000000-E	SP	68	LF	GENERIC UTILITY ITEM 3/4" COPPER WATER PIPE, TYPE K
5888000000-E	SP	121	LF	GENERIC UTILITY ITEM 6" DI WATER PIPE, PC 350
5888000000-E	SP	60	LF	GENERIC UTILITY ITEM 8" DI WATER PIPE, PC 350
5900000000-E	SP	12	TON	GENERIC UTILITY ITEM BEDDING MATERIAL, UTILITIES CLASS VI
5900000000-E	SP	12	TON	GENERIC UTILITY ITEM FOUNDATION CONDITIONING MATERIAL, UTILITIES CLASS VI
5906000000-E	SP	1,975	LB	GENERIC UTILITY ITEM DUCTILE IRON WATER PIPE FITTINGS, 250# WP
6000000000-E	1605	5,155	LF	TEMPORARY SILT FENCE
6006000000-E	1610	495	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	1,070	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	940	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	4	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	350	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	3	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	350	LF	SAFETY FENCE
6030000000-E	1630	9,235	CY	SILT EXCAVATION
6036000000-E	1631	1,960	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	60	SY	COIR FIBER MAT
6038000000-E	SP	85	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	1,060	LF	1/4" HARDWARE CLOTH
6045000000-E	SP	235	LF	** TEMPORARY PIPE (24")
6069000000-E	1638	100	CY	STILLING BASINS
6084000000-E	1660	5	ACR	SEEDING & MULCHING
6087000000-E	1660	2.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	100	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	3.75	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	100	LF	IMPERVIOUS DIKE
6114000000-N	SP	2	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	30	EA	RESPONSE FOR EROSION CONTROL
6132000000-N	SP	2	EA	GENERIC EROSION CONTROL ITEM 3" FAIRCLOTH SKIMMER
7060000000-E	1705	685	LF	SIGNAL CABLE
7120000000-E	1705	3	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7144000000-E	1705	3	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7264000000-E	1710	325	LF	MESSENGER CABLE (3/8")
7288000000-E	1715	50	LF	PAVED TRENCHING (***********) (1, 2")
7300000000-E	1715	550	LF	UNPAVED TRENCHING (*********) (1, 2")
7324000000-N	1716	5	EA	JUNCTION BOX (STANDARD SIZE)
7360000000-N	1720	4	EA	WOOD POLE
7372000000-N	1721	6	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	4	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	605	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	1,885	LF	LEAD-IN CABLE (************) (18-2)
7552000000-N	1731	1	EA	INTERCONNECT CENTER
7684000000-N	1750	1	EA	SIGNAL CABINET FOUNDATION
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM 2070L CONTROLLER, CARY COMPATIBLE
7980000000-N	SP	8	EA	GENERIC SIGNAL ITEM NEMA TS-2 DETECTOR CARD
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM TS-2 CABINET (BASE MOUNT), CARY COMPATIBLE
				******* BEGIN SCHEDULE AA ******* ******* (3 ALTERNATES) *******
0366000000-E AA1	310	1,960	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA1	310	1,332	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA1	310	452	LF	24" RC PIPE CULVERTS, CLASS III
0396000000-E AA1	310	168	LF	42" RC PIPE CULVERTS, CLASS III
				*** OR ***
0366000000-E AA2	310	1,672	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA2	310	1,200	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA2	310	360	LF	24" RC PIPE CULVERTS, CLASS III
0396000000-E AA2	310	64	LF	42" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	288	LF	***" HDPE PIPE CULVERTS (15")
0536000000-E AA2	SP	132	LF	***" HDPE PIPE CULVERTS (18")
0536000000-E AA2	SP	92	LF	***" HDPE PIPE CULVERTS (24")
0536000000-E AA2	SP	104	LF	***" HDPE PIPE CULVERTS (42")
				*** OR ***
0366000000-E AA3	310	1,672	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA3	310	1,200	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA3	310	360	LF	24" RC PIPE CULVERTS, CLASS III
0396000000-E AA3	310	64	LF	42" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	288	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (15", 0.064" THICK)
0540000000-E AA3	SP	132	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (18", 0.064" THICK)
0540000000-E AA3	SP	92	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (24", 0.064" THICK)
0540000000-E AA3	SP	104	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (42", 0.109" THICK)
				******* END SCHEDULE AA *******

5/28/99

FILENAME: r:\U3344A\Roadway\Proj\U3344A_rdy_psh_03.dgn
DATE: 01

COMPUTED BY: CMKR DATE: 4/25/2006
CHECKED BY: CMKR and JKS DATE: 4/25/2006

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3344A	3-A

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

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.P. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	10" PVC PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 or STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
12+91	RT	1		351.17	350.92																															
12+91	RT	1	2		351.27	353.73			112																											
14+06	RT	2		359	353.73																															
14+06	RT	2	3		353.73	353.86			8																											
10+80 Y2	LT	4		358.3	354.87																															
15+20	LT	5		359.12	356.12																															
15+20	LT	5	6		356.12	356.55																			16											
15+20	LT	6		358.8	356.55																															
15+20	LT	5	8		356.12	346.1			280																											
18+02	LT	8		351.55	346.1																															
18+02	LT	8	9		346.1	346.25																			28											
17+82	LT	9		348.5	346.25																															
15+84	RT	7		358.09	355.09																															
15+84	RT	7	10		355.09	350.93			216																											
18+02	RT	10		353.93	350.93																															
18+02	RT	10	11		350.93	349.75																			16											
18+05	RT	11		352	349.75																															
10+75 Y3	RT	11	12		349.75	349.49																			52											
10+75 Y3	RT	12		352.85	349.49																															
10+75 Y3	RT	12	13		349.49	349.25			44																											
11+00 Y3	LT	13		352.52	349																															
11+00 Y3	LT	13	14		349.25	349.44			32																											
11+40 Y3	LT	14		352.44	349.44																															
11+00 Y3	LT	13	15		349	348.5																				28										
18+02	LT	8	16		346.1	343.77				116																										
19+28	LT	16		347.02	343.77																															
19+28	LT	16	17		346.3	344.46																												48			
18+80	LT	17		348.3	346.3																															
19+28	LT	16	18		343.77	338.65				148																										
20+86	LT	18		343.88	338.65																															
20+97	RT	19			338.17																						8									
20+99	LT	20	21A		339.02	339.1	X		16																											
20+03	LT	21	21A		339.02	339.1	X				16																									
20+03	LT	21A		342	339.12																															
22+00	LT	22		343.02	340.02																															
22+00	LT	22	23		340.02	339.6	X		80																											
22+85	LT	23		342.59	339.6																															
22+85	LT	23	24		339.6	335.7	X		16																											
23+05	LT	24		342.74	335.7																															
23+05	LT	24	25		335.7	336	X																							28					4.5	
23+05	LT	24	26		335.7	334.7								64																						
22+80	RT	26		346.56	334.71																															
22+80	RT	26	27		334.71	333.45																								76						
22+80	RT	26	28		338.13	338.4	X				148																									
24+28	RT	28		345.75	338.4																															
24+28	RT	28	29		341.2	341.3																				16										
24+28	RT	28	30		338.4	338.85	X				136																									
25+65	RT	30		346.54	338.85																															
25+65	RT	30	31		338.85	339	X																				48									
25+97	LT	32		345.67	342.12																															
25+97	LT	32	33		342.12	342.15	X																			16										
25+94	LT	33		344.8	342.15																															
25+94	LT	33	34		342.15	342.35	X		56																											
25+35	LT	34		344.6	342.35																															
25+97	LT	32	35		342.12	341.39				120																										
27+20	LT	35		347.18	341.39																															
27+20	LT	35	36		341.39	340.9				164																										
28+87	LT	36		350.23	340.39																															
28+87	LT	36	37		340.65	346.75																			16											
28+87	LT	37		349	346.75																															
28+87	LT	36	38		340.35	340.19	X				60																									
28+87	RT	38		349.39	340.19																															
28+87	RT	38	39		340.19	340	X																				36									
31+84	RT	40		347.89	344.89																															
31+84	RT	40	41		344.89	342.69			96																											
32+85	RT	41		345.69	342.69																															
32+85	RT	41	47		342.69	338.25			144																											
34+32	RT	47		341.27	338.25																															
33+38	LT	42		344.8	341.8																															
33+38	LT	42	43		341.8	342	X																		16											
33+43	LT	43		344.3	342																															
33+43	LT	43	44		342	343			72																											
32+67	LT	44		345.3	343																															
32+67	LT	44	45		343	347.25																			88											
31+75	LT	45		349.5	347.25																															
33+38	LT	42	46		341.8	338.28			88																											
34+32	LT	46		341.27	338.25																															
34+32	LT	46	47		338.25	347.3			60																											
SHEET TOTAL									1320	548	360			64											232	60	92			104			48		4.5	

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	*LIN. FT. A 5.0' THRU 10.0'	*LIN. FT. 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. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	SPRING BOX STD. 840.41	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	2GI SPECIAL DETAIL (SEE SHEET 2-F)	PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (SEE DETAIL ON PLAN SHEET 6)	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
12+91	RT	1		1			1			1																				
12+91	RT	1	2																											REM. 108' OF EXIST.
14+06	RT	2		1	0.27		1			1																				EXTRA DEPTH
14+06	RT	2	3																								0.399			REM. 8' OF EXIST.
10+80 Y2	LT	4		1			1	1																						
15+20	LT	5		1			1			1																				
15+20	LT	5	6																											
15+20	LT	6		1							1	1																		
15+20	LT	5	8																										84	
18+02	LT	8		1	0.45		1			1																				EXTRA DEPTH
18+02	LT	8	9																											
17+82	LT	9		1							1	1																		
15+84	RT	7		1			1		1																					
15+84	RT	7	10																											
18+02	RT	10		1			1			1																				
18+02	RT	10	11																											
18+05	RT	11		1							1	1																		
10+75 Y3	RT	11	12																											
10+75 Y3	RT	12		1			1		1																					
10+75 Y3	RT	12	13																											
11+00 Y3	LT	13		1			1		1																					
11+00 Y3	LT	13	14																											
11+40 Y3	LT	14		1			1		1																					
11+00 Y3	LT	13	15																											
18+02	LT	8	16																											
19+28	LT	16		1			1			1																				
19+28	LT	16	17																											
18+80	LT	17		1																	1									
19+28	LT	16	18																											
20+86	LT	18		1	0.23		1			1																				EXTRA DEPTH
20+97	RT	19																									0.5526			
20+99	LT	20	21A																								0.399			REMOVE 2GI
20+03	LT	21	21A																								0.5526			REMOVE 2GI
20+03	LT	21A		1																1					1					SPECIAL DETAIL (SEE SHEET 2-F)
22+00	LT	22		1			1			1																				
22+00	LT	22	23																										110	
22+85	LT	23		1			1			1																				
22+85	LT	23	24																											
23+05	LT	24		1	2.47		1	1																						EXTRA DEPTH
23+05	LT	24	25																											REMOVE 4GI, REM 20' OF EXIST.
23+05	LT	24	26																										46	
22+80	RT	26		1	5	1.9	1	1																						EXTRA DEPTH
22+80	RT	26	27																										104	REMOVE 28"X32" ARCH CMP
22+80	RT	26	28																										58	
24+28	RT	28		1	2.95		1			1																				EXTRA DEPTH
24+28	RT	28	29																											
24+28	RT	28	30																										22	
25+65	RT	30		1	2.69		1			1																				EXTRA DEPTH
25+65	RT	30	31																											
25+97	LT	32		1			1		1																					
25+97	LT	32	33																											
25+94	LT	33		1							1	1																		
25+94	LT	33	34																										72	
25+35	LT	34		1							1	1																		
25+97	LT	32	35																										20	
27+20	LT	35		1	0.79		1		1																					EXTRA DEPTH
27+20	LT	35	36																										20	
28+87	LT	36		1	4.84		1		1																					EXTRA DEPTH
28+87	LT	36	37																											
28+87	LT	37		1							1	1																		
28+87	LT	36	38																											
28+87	RT	38		1	4.2		1			1																				EXTRA DEPTH
28+87	RT	38	39																											
31+84	RT	40		1			1		1																					
31+84	RT	40	41																											
32+85	RT	41		1			1		1																					
32+85	RT	41	47																											
34+32	RT	47		1			1		1																					
33+38	LT	42		1			1			1																				
33+38	LT	42	43																											
33+43	LT	43		1							1	1																		
33+43	LT	43	44																										30	
32+67	LT	44		1							1	1																		
32+67	LT	44	45																											
31+75	LT	45		1							1	1																	20	
33+38	LT	42	46																										30	
34+32	LT	46		1			1			1																				
34+32	LT	46	47																											
SHEET TOTAL				38	23.89	1.9	27	3	10	14	9	9							1		1			1			1.904		616	

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: CMKR DATE: 4/25/2006
CHECKED BY: CMKR and JKS DATE: 4/25/2006

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3344A	3-B

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)								BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)								CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE		FROM	TO													.064	.064	.064	.064	.079	.079	.109	.109								
34+32	RT	47	48		338	339.8																				8					
34+32	RT	47	50		338	331.39				264																					
37+00	RT	50		334.64	331.39																										
37+00	RT	50	52		331.39	330.87				56																					
37+60	RT	52		334.12	330.87																										
37+60	RT	52	54		330.87	328.39				52																					
38+17	RT	54		333.95	327.89																										
38+17	RT	54	55		327.9	324																				32					
36+31	LT	49		335.71	332.71																										
36+31	LT	49	51		332.71	331.12			124																						
37+60	LT	51		334.12	331.12																										
37+60	LT	51	56		331.12	330.95			52																						
38+17	LT	56		333.95	330.95																										
38+17	LT	56	57		330.95	328.55			64																						
38+35	RT	57		334.68																											
38+35	RT	57	58		330	325																			56						
37+60	RT	53	59		318.5	328.41	X			164																					
39+10	RT	59		335.2																											
39+10	RT	59	60		328.41	328.5																				20					
39+10	RT	59	63		331.93	333.93				116																					
40+30	RT	63		337.2																											
40+30	RT	63	64		333.93	334																				12					
38+17	LT	56	61		330.95	331.64			112																						
39+35	LT	61		334.64	331.64																										
39+15	LT	62			330.83	330																									
SHEET TOTAL									352	652															56	72					
GRAND TOTAL									1672	1200	360			64											288	132	92			104	
SAY																															

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	15" SIDE DRAIN PIPE	10" PVC PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 or STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	*LIN. FT. A 5.0' THRU 10.0'	*LIN. FT. 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. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	SPRING BOX STD. 840.41	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	2GI SPECIAL DETAIL (SEE SHEET 2-F)	PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (SEE DETAIL ON PLAN SHEET 6)	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
34+32	RT	47	48																																
34+32	RT	47	50																															28	
37+00	RT	50							1			1		1																					
37+00	RT	50	52																															74	REMOVE 66" CMP
37+60	RT	52							1	1.06		1	1																						EXTRA DEPTH
37+60	RT	52	54																																
38+17	RT	54							1			1			1																				EXTRA DEPTH
38+17	RT	54	55																											1					PREFORMED SCOUR HOLE
36+31	LT	49							1			1			1																				
36+31	LT	49	51																																
37+60	LT	51							1			1	1																						
37+60	LT	51	56																																
38+17	LT	56							1			1		1																					
38+17	LT	56	57																																
38+35	RT	57							1			1			1																				
38+35	RT	57	58																											X					CONC. PAVED DITCH LEVEL SPREADER
37+60	RT	53	59																															30	
39+10	RT	59							1																1										
39+10	RT	59	60																																
39+10	RT	59	63																															20	
40+30	RT	63							1																1										
40+30	RT	63	64																																
38+17	LT	56	61																																REM. 20' OF EXIST.
39+35	LT	61							1			1		1																					
39+15	LT	62		24																															
SHEET TOTAL				24					10	1.06		8	2	3	3										2					1				152	
GRAND TOTAL				24	48		4.5		48	27.42		35	5	13	17	9	9							1	2	1			1	1		1.904		768	
SAY										28																						2			

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: cadd, CMKR DATE: 4/13/2006

CHECKED BY: CMKR DATE: 6/6/2006

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3344A	3-C

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

SUMMARY OF PAVEMENT REMOVAL

IN SQUARE YARDS						
LINE	STATION TO STATION	LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP	CONCRETE REMOVAL	CONCRETE BREAK-UP
L	15+00 to 17+00	RT	578			
L	19+50 to 21+00	RT	595			
L	28+00 to 30+00	LT	533			
L	33+50 to 36+50	LT	1060			
L	40+00 to 42+00		1111			
L	34+00 to 36+50 (temp pav't)	LT	186			
L	40+25 to 40+75 (temp pav't)	LT	14			
	CONTINGENCY		400			
L	15+50 to 20+00	RT		1650		
L	36+50 to 40+50			1258		
L	36+50 to 40+00 (temp pav't)	LT		451		
Y3	10+30 to 10+75			442		
		TOTAL	4477	3801		
		SAY	4550	3850		

Note: Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

SUMMARY OF EARTHWORK

IN CUBIC YARDS							
LINE	STATION TO STATION		UNCLASS. EXCAVATION	UNDERCUT	EMBANKMENT +%	BORROW	WASTE
L-LT	21+50.00	27+50.00	91		517	426	0
L-LT	33+94.00	40+84.00	179		674	495	0
L-RT	19+00.00	42+00.00	2663	723	10643	7980	723
Y3-LT	10+30.00	10+86.00	32		0		32
	TOTAL	PHASE 1	2965	723	11834	8901	755
L-LT	13+50.00	21+50.00	63		2472	2409	0
L-LT	27+50.00	42+00.00	256		3725	3469	0
	TOTAL	PHASE 2	319		6197	5878	0
L-RT	13+50.00	22+00.00	69		1952	1883	0
Y2	10+50.00	12+00.00	13		97	84	0
Y3	10+50.00	12+00.00	13		301	288	0
	TOTAL	PHASE 3	95		2350	2255	0
PROJECT TOTAL			3379	723	20381	17034	755
LOSS DUE TO CLEARING AND GRUBBING			-700			700	
USE WASTE TO REPLACE BORROW						-32	-32
ADDITIONAL UNDERCUT				1000	1200	1200	1000
EST. 5% TO REPLACE TOPSOIL ON BORROW PITS						945	
GRAND TOTAL			2679	1723	21581	19847	1723
SAY			2700	1750		19900	

DRAINAGE DITCH EXCAVATION 1500 CY

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAKPT.
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

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE — 6/6/06

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER JONATHAN KENNING SCARCE — 6/8/06

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD, SUITE 475
RALEIGH, NC 27607

REVISIONS

15500 / 30900 DIRECTIONAL 65% -Y1- 55% -L- DHV 10% -Y1- 11% -L-

TRAFFIC DIAGRAM — 2006 ADT 20900 / 2026 ADT 40200

NC 54 — -Y1- — 4800 / 13300 — -L- AIRPORT BLVD — 15100 / 35800 — 16300 / 37600 — 16500 / 37800

10200 / 22500 — 1000 / 1400 — -Y2- AIRTECH DR — 2300 / 3100 — 1000 / 1400 — -Y3- WALDRON RD — 1200 / 1700

3300 / 4600 — 2300 / 3100

BY-200 5+00.00 POT

BY1-203 5+00.00 POT

-L- PI Sta 20+78.49
Δ = 32° 45' 29.4" (LT)
D = 6° 21' 58.3"
L = 514.56'
T = 264.53'
R = 900.00'
e = .06
Runoff = 252
DS = 50 mph

-Y2- PI Sta 11+93.97
Δ = 12° 46' 28.3" (LT)
D = 7° 32' 20.1"
L = 169.45'
T = 85.08'
R = 760.00'
DS = 30 mph

-Y3- PI Sta 10+98.77
Δ = 31° 57' 04.5" (LT)
D = 16° 36' 26.9"
L = 192.39'
T = 98.77'
R = 345.00'
DS = 30 mph

NAD 83 NC GRID

BEGIN STATE PROJECT U-3344A
-L- POT STA 10+00.00=
-Y1- POT STA 16+60.35

S 32° 17' 49.2" E

PEARL ROAD PROPERTIES
PB 1989 PG 916
DB 8533 PG 1118

WEEKS REALTY, L.P.
PB 1986 PG 2191
DB 7364 PG 866

LEE-MOORE OIL COMPANY
PB 1998 PG 437
DB 8191 PG 174

COC PROPERTIES INC. ETAL
PB 1991 PG 1016
DB 7593 PG 232

GPI PROPERTIES 1995, LLC.
PB 1998 PG 1016
DB 6937 PG 1

PANSILEE BRANNAN ET AL
PB 1986 PG 1695
DB 3565 PG 519

DOVE ASSOCIATES I, LLC.
PB 1999 PG 456
DB 8223 PG 1359

JLH INVESTMENTS, INC.
PB 1998 PG 261
DB 7896 PG 783

DOVE ASSOCIATES IV, LLC.
PB 1999 PG 456
DB 8223 PG 1356

N. GARY BOYETTE
PB 1991 PG 1016 DB 5006 PG 805

-L- POT STA 14+77.58=
-Y2- POT STA 10+00.00

-L- POC STA 18+66.41=
-Y3- PC STA 10+00.00

-L- POT STA 14+28.93 (41.99 RT)= BY2-206 5+00.00 POT BL-104 13+26.81 PINC

-L- POT STA 10+35.29 (48.91 RT)= BY1-204 11+27.93 BL-103 9+33.11 PINC

BY-201 11+03.63 PINC BL-102 7+57.38 PINC

-L- POC STA 19+01.63 (68.45 RT)= BY3-208 5+00.00 POT BL-105 18+06.52 PINC

-L- POC STA 18+13.96 (58.45 RT)= BY3-208 4+00.00 POT BL-105 17+18.52 PINC

BEGIN MILLING & RESURFACING
-L- POT STA 10+36.70

END MILLING & RESURFACING/BEG GRADE
-L- POT STA 13+50

-Y2- POC STA 12+00
END CONST

-Y3- POT STA 12+00
END CONST

PC STA 11+08.90

PT STA 12+78.34

POT STA 13+18.34

PT STA 11+92.39

POT STA 12+70.08

MATCH LINE STA 21+50 (SEE SHT 5)

TIE TO EXIST C & G 12+92.72

TIE TO EXIST C & G 11+33.16

TIE TO EXIST C & G AND SIDEWALK 11+17.07

TIE TO EXIST C & G 11+44.26

REMOVE EXIST SIDEWALK AND C & G
TIE TO EXIST C & G AND SIDEWALK

REMOVE 20' COLLAR & EXTEND 24" RCP

REMOVE 26' COLLAR & EXTEND 15" RCP

LOCATE 8" PVC AND TIE TO SPRING BOX

PROPOSED SLOPE STAKE LINE (TYP.)

LATERAL BASE DITCH SEE DETAIL A

CLASS B RIP-RAP SEE NOTE

RETAIN

DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — b — T/Ft. — Fill Slope — B
Min. D = 1.5 Ft.
B = 3 Ft.
b = 5 Ft.

11+00 -Y3- LT TO 20+50 -L- RT
EST. 131 CY DDE

DETAIL B
LATERAL BASE DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — b — T/Ft. — Fill Slope — dl — B — Filter Fabric
Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 3.0 Ft.
b = 5-15 Ft.
Type of Liner = CLASS "B" RIP RAP

20+50 TO 21+00 -L- RT
EST. 30 TONS CLASS "B" RIP RAP
EST. 83 SY FILTER FABRIC
EST. 50 CY DDE

DRAINAGE NOTE I:
11+00 -Y3- LT
EST. 3 TONS CLASS "B" RIP RAP
EST. 10 SY FILTER FABRIC

NOTE: ALL DRIVEWAYS ARE 24' UNLESS OTHERWISE NOTED

SEE SHEET 7 FOR -L- PROFILE
SEE SHEET 8 FOR -Y2- & -Y3- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROQUE
6/6/06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER JONATHAN KENNING CARCO
6/6/06

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

REVISIONS

-L-
PI Sta 30+87.19
Δ = 5° 28' 41.3" (RT)
D = 1° 38' 13.3"
L = 334.64'
T = 167.45'
R = 3,500.00'
e = .03
Runoff = 150
DS = 50 mph

NAD 83
NC GRID

MATCH LINE STA 21+50 (SEE SHT. 4)

MATCH LINE STA 35+00 (SEE SHT.6)

WEEKS REALTY, L.P.
PB 1986 PG 2191
DB 7364 PG 866
2

DAVID E. LONG and wife
BARBARA B. LONG
PB 1986 PG 179
PB 1985 PG 675
DB 5958 PG 705
8

DORA WATKINS HEIRS
DB 1315 PG 343
9

RICHARD LARRY WATKINS
PB 1989 PG 1053
DB 4751 PG 482
13

G.J.C., A NORTH CAROLINA GENERAL PARTNERSHIP
PB 1986 PG 179
DB 3899 PG 253
14

ROBERT L. FRITZ and wife JULIE T. FRITZ
DB 7663 PG 143
15

DOVE ASSOCIATES IV, LLC.
PB 1999 PG 456
DB 8223 PG 1356
4

THOMAS EDWIN FANELLI and wife BARBARA M. FANELLI
DB 2916 PG 847
5

GENE DOUGLAS CARROLL and wife CYNTHIA B. CARROLL
DB 2698 PG 93
6

MINESH INC, et al
DB 6946 PG 546
7

STEPHENS ENTERPRISES, LLC.
DB 8716 PG 945
BM 1994 PG 1673
11

ALGIE L. STEPHENS and CLARA G. STEPHENS
DB 7428 PG 468
12

PT STA 23+28.52

PT STA 25+66.37

PC STA 29+19.74

PT STA 32+54.38

DO NOT DISTURB SIGN

END SIDEWALK 22+21.00

5' SIDEWALK

REMOVE EXIST. SIDEWALK AND C & G

LATERAL BASE DITCH SEE DETAIL C

RIP RAP BERM SEE DETAIL E

CLASS B RIP RAP OUTLET PROT. SEE NOTE 2

LATERAL BASE DITCH SEE DETAIL A

PROPOSED SLOPE STAKE LINE (TYP.)

DRAINAGE NOTE 1:
22+50 -L- RT
EST. 20 TONS CLASS "B" RIP RAP
EST. 39 SY FILTER FABRIC

DRAINAGE NOTE 2:
28+87 -L- RT
EST. 5 TONS CLASS "B" RIP RAP
EST. 14 SY FILTER FABRIC

DETAIL E
RIP RAP BERM
(Not to Scale)
CLASS "B" RIP RAP W/ FILTER FABRIC
B = 2.0 Ft.

22+05 -L- RT
EST. 25 TONS CLASS "B" RIP RAP
EST. 50 SY FILTER FABRIC

DETAIL C
STANDARD BASE DITCH
(Not to Scale)
Min. D = 1.0 Ft.
B = 5.0-15.0 Ft.

21+00 TO 21+82 -L- RT
EST. 57 CY DDE

DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 3 Ft.
b = 5 Ft.

26+00 TO 29+00 -L- RT
EST. 954 CY DDE

NOTE: ALL DRIVEWAYS ARE 24' UNLESS OTHERWISE NOTED

SEE SHEET 7 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 17306 CLAUDETTE M.K. ROQUE 6/6/06 Claudette M.K. Roque	SEAL 20737 JONATHAN KENNING SCARCE 6/8/06 Jonathan K. Scarce

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

DETAIL D
CONCRETE PAVED DITCH LEVEL SPREADER
(Not to Scale)

Min. D = 1.0 Ft.
B = 3.0 Ft.

LEVEL SPREADER
Q = 6.7 cfs
6.7x 13=87.1'=> 88' (TOTAL LENGTH)
INV.= 323.0

NOTE:
STAGGER 2" WEEP HOLES @ 6' OC

EST. 20 SY PSRM
EST. 25 CY DDE

-L-
PI Sta 43+58.83
Δ = 17° 06' 29.6" (LT)
D = 3° 35' 44.3"
L = 475.80'
T = 239.69'
R = 1,593.48'
e = varies
DS = 50 mph

DETAIL F
PREFORMED SCOUR HOLE
(NOT TO SCALE)

STATION	B FT.	D FT.	W FT.	d FT.	CLASS 1 RIP RAP TONS	DDE FT³	FILTER FABRIC FT²	PSRM FT²
38+19 RT.	5.0	1.0	4.0	0.5	7.1	48.6	90	185.4

CULVERT CHANNEL DETAILS
37+40.42

INLET TYPICAL
NOT TO SCALE
EST. 200 CY DDE
EST. 150 CY FILL
EST. 30 TONS CLASS "I" RIP RAP
EST. 50 SY FILTER FABRIC

OUTLET TYPICAL
NOT TO SCALE
EST. 55 TONS CLASS "I" RIP RAP
EST. 100 SY FILTER FABRIC

SEE SHEET C-1 thru C-5 FOR CULVERT PLANS

NOTE: ALL DRIVEWAYS ARE 24' UNLESS OTHERWISE NOTED

SEE SHEET 8 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROGUE 4/6/06

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER JONATHAN KENNING SCARCE 4/6/06

PLANS PREPARED BY:

FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD. SUITE 475
RALEIGH, NC 27607

BM 1: "X" CUT IN CONC BASE TO LIGHT POLE
IN EXXON PARKING LOT
85.1633 FEET LEFT OF -L- STA 11+02.14
(45 FEET LEFT OF BY1 STA 9+85 NEAREST FT)
(132.8782 FEET LEFT OF BL STA 10+02.30)
EL = 354.79'

-L-

BEGIN MILLING & RESURFACING -L- STA 10+36.70

MILL & RESURFACE ONLY

END MILLING & RESURFACING
BEGIN GRADE -L- STA 13+50
EL = 355.44' (INCLUDES 2.5" RESURF)

-L- PC STA 14+00
EL = 359.70'

-L- STA 14+77.58 =
-Y2- STA 10+00

PI = 15+50.00
EL = 360.49'
VC = 300'
K = 84
DS = 50 mph

+0.5250%

-3.0421%

-L- PT STA 17+00
EL = 355.93'

PROP. GRADE LINE

EXIST. GROUND LINE

-L- STA 18+66.41 =
-Y3- STA 10+00

-L- PC STA 19+00
EL = 349.84

PI = 20+25.00
EL = 346.04'
VC = 250'
K = 102
DS = 50 mph

-L- PT STA 21+50
EL = 345.31'

-3.0421%

-3.87%

-0.5840%

-1.00%

0.0%

PROP. LAT. DITCH

-Y3- STA 10+67 LT =
-L- STA 19+50 RT
EL = 345.37'

PI = 20+50
EL = 341.50'

PI = 21+00
EL = 338.00'

338.00'

SEE SHEET 4 FOR -L- PLAN VIEW

BM 2: "X" CUT IN CORNER OF CONC PAD
AT RESEARCH TRIANGLE INDUSTRIAL CENTER
106.7387 FEET LEFT OF -L- STA 23+09.26
(92 FEET LEFT OF BL STA 22+27 NEAREST FT)
EL = 345.59'

-L-

-L- PT STA 21+50
EL = 345.31'

-L- PC STA 21+90
EL = 345.08'

PI = 24+00.00
EL = 343.85'
VC = 420
K = 227
DS = 75 mph

-L- PT STA 26+10
EL = 346.51'

PROP. GRADE LINE

-L- PC STA 28+25
EL = 349.24'

PI = 31+00.00
EL = 352.72'
VC = 550'
K = 122
DS = 55 mph

-L- PT STA 33+75
EL = 343.83'

-L- PC STA 35+00
EL = 339.79'

+1.2671%

-3.2314%

-0.5840%

+1.2671%

UNDERCUT

EXIST. GROUND LINE

338.00'

0.0%

PROP. LAT. DITCH

42" RCP

END DITCH GRADE
-L- STA 21+82
EL = 338.00'

BEG DITCH GRADE
-L- STA 26+00 RT
EL = 339.00'

+0.3333%

PROP. LAT. DITCH

END DITCH GRADE
-L- STA 29+00 RT
EL = 340.00'

PIPE HYDRAULIC DATA

DRAINAGE STRUCT. NO 24 to NO.26

DRAINAGE AREA	= 166	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 65	CFS
DESIGN HW ELEVATION	= 340.9	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 341.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 128+	CFS
OVERTOPPING ELEVATION	= 347.19	FT

SEE SHEET 5 FOR -L- PLAN VIEW

PROJECT REFERENCE NO.	SHEET NO.
U-3344A	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17306 ENGINEER CLAUDETTE M.K. ROGUE
6/6/06
Claudette M.K. Rogue

HYDRAULICS ENGINEER

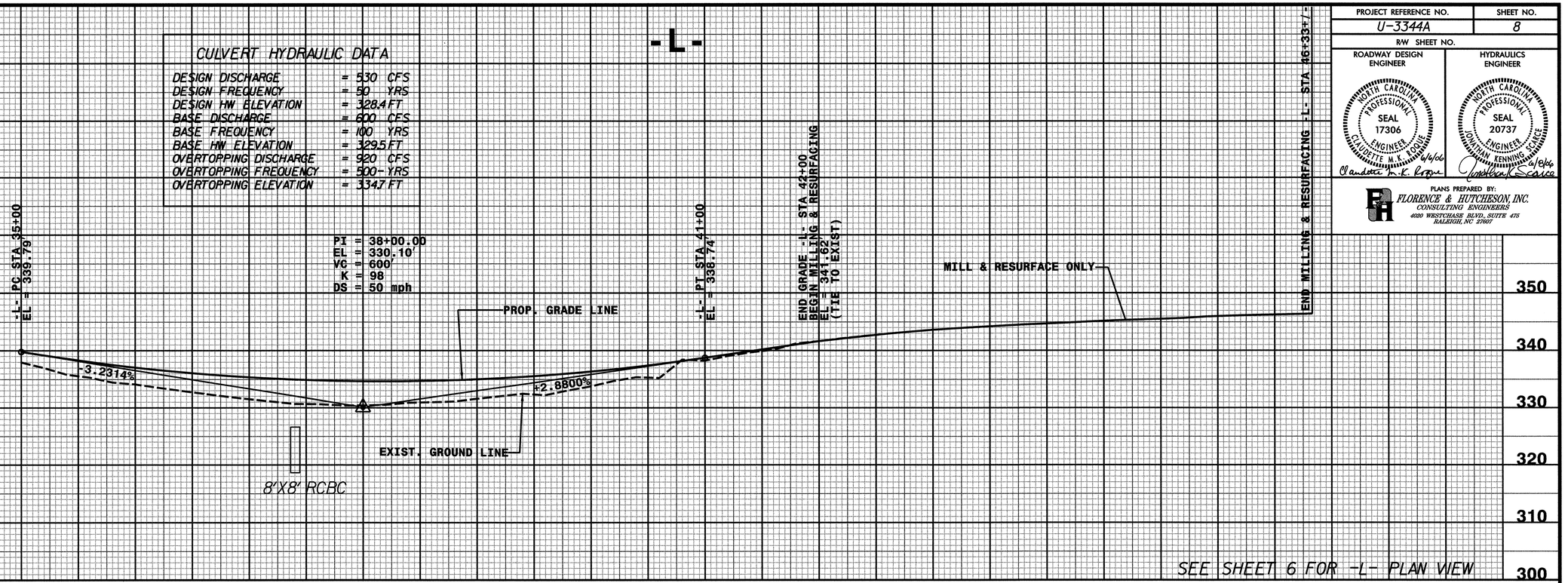
NORTH CAROLINA PROFESSIONAL SEAL 20737 ENGINEER JONATHAN KENNING SCARCE
6/6/06
Jonathan Scarce

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD, SUITE 475
RALEIGH, NC 27607

-L-

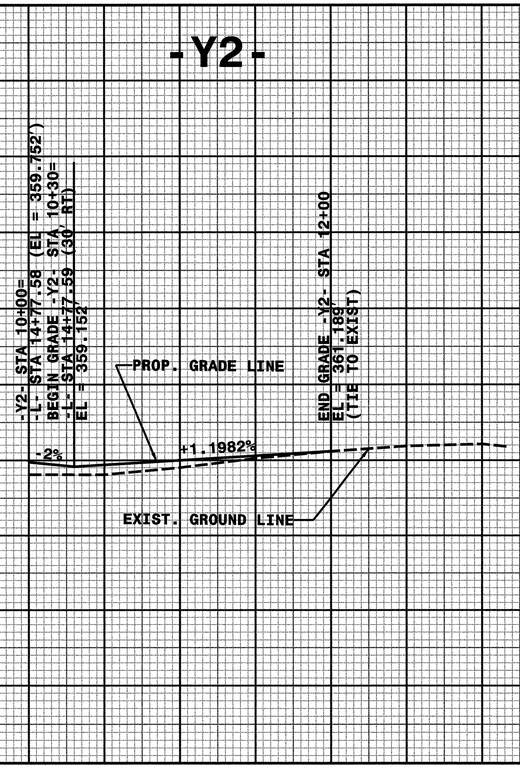
CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 530 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 328.4 FT
BASE DISCHARGE	= 600 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 329.5 FT
OVERTOPPING DISCHARGE	= 920 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 334.7 FT

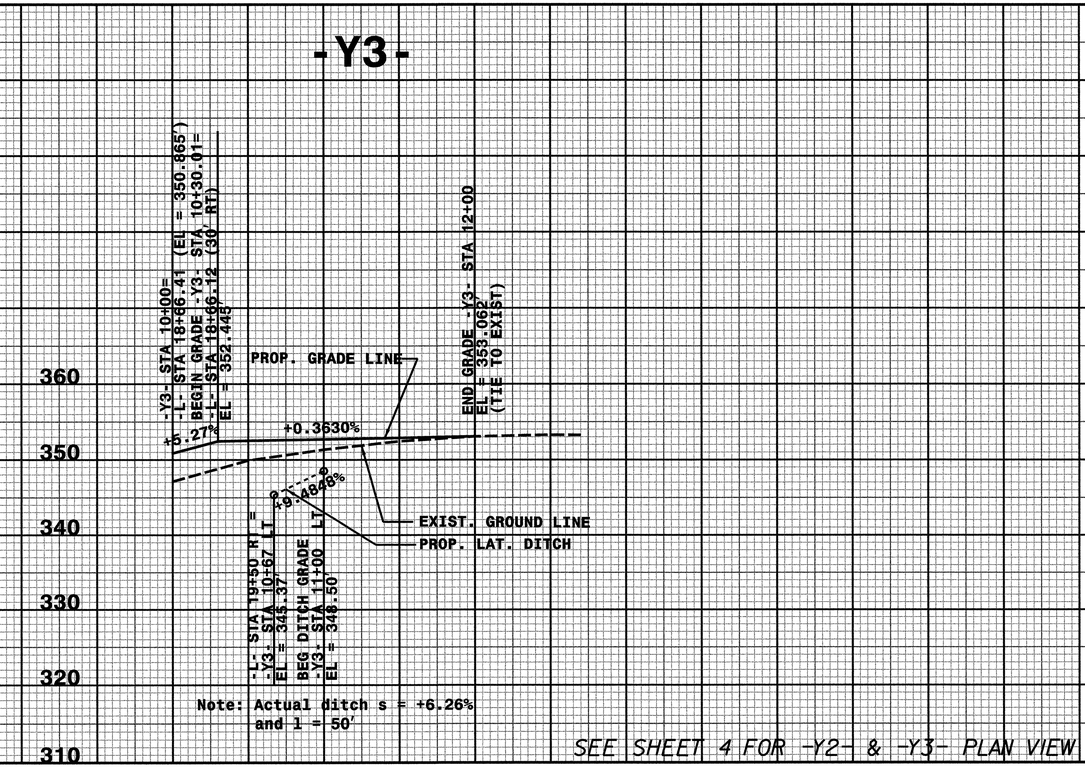


SEE SHEET 6 FOR -L- PLAN VIEW

-Y2-



-Y3-



SEE SHEET 4 FOR -Y2- & -Y3- PLAN VIEW