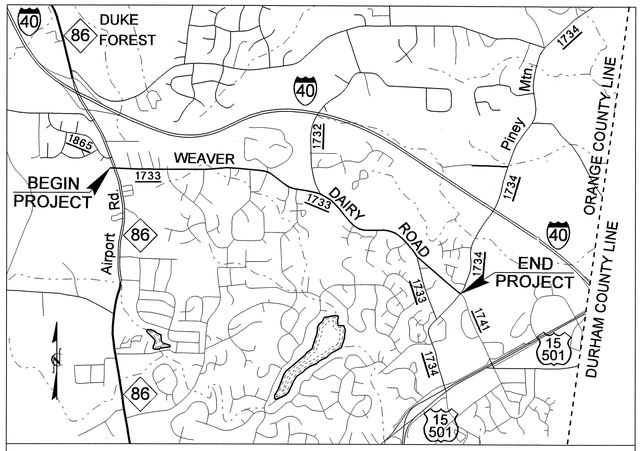
TIP PROJECT: U-3306

CONTRACT: C202266




VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

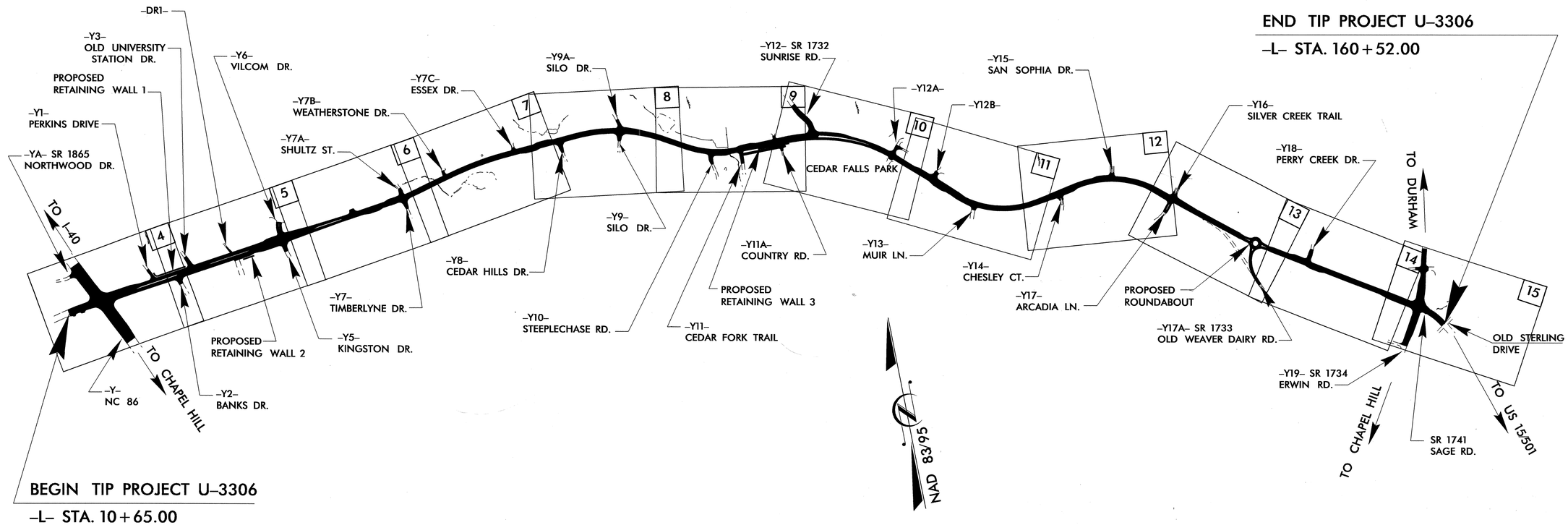
# ORANGE COUNTY

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | U-3306 | 1 | |

| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 34913.1.1 | MASTP-1733(11) | PE |
| 34913.2.2 | MASTP-1733(11) | R/W & UTILITIES |
| 34913.3.ST1 | STM-1733(16) | CONSTRUCTION |

***LOCATION: CHAPEL HILL – SR 1733 (WEAVER DAIRY RD.) FROM NC 86 TO OLD STERLING DRIVE***

***TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALLS, SIDEWALK, CURB AND GUTTER AND SIGNALS***




## GRAPHIC SCALES

50 25 0 50 100
PLANS

10 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

## DESIGN DATA

ADT 2010 = 14500 VPD
ADT 2030 = 20300 VPD
DHV = 10 %
D = 55 %
T = 4 % *
V = 40 MPH
* TTST 3% DUAL 1%
Sub Regional Tier

## PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3306 = 2.838 mi
TOTAL LENGTH TIP PROJECT U-3306 = 2.838 mi

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 20, 2006

LETTING DATE: JULY 20, 2010

JAMES A. SPEER, PE
PROJECT ENGINEER

JOHN C. LANSFORD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
SIGNATURE: 5-7-10

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD
SIGNATURE: 5/10/10

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE HIGHWAY DESIGN ENGINEER P.E.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$$$$USERNAME$$$$

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 1-A |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 6/7/10

## INDEX OF SHEETS

| SHEET # | TITLE |
|---|---|
| 1 | TITLE SHEET |
| 1-A | INDEX OF SHEETS, GENERAL NOTES, & LIST OF STANDARDS |
| 1-B | CONVENTIONAL SYMBOLS |
| 1-C THRU 1-E | SURVEY CONTROL SHEETS |
| 2 THRU 2-I | TYPICAL SECTIONS |
| 2-J THRU 2-O | BUS STOP DETAIL SHEETS |
| 2-P THRU 2-Q | METHOD OF PIPE INSTALLATION |
| 2-R | ANCHORAGE FOR FRAMES |
| 2-S | CONCRETE STEPS WITH HANDRAIL |
| 2-T | REINFORCED CONCRETE ENDWALL FOR 60" & 48" PIPE |
| 2-U | DETAIL OF TRANSITION FROM 1'6" CURB & GUTTER TO MONOLITHIC ISLAND |
| 2-V THRU 2-DD | RETAINING WALL DETAILS |
| 2-EE | SUBSURFACE DRAIN DETAIL |
| 2-FF THRU 2-GG | WHEELCHAIR RAMP DETAILS |
| 2-HH | CONVERT EXISTING CATCH BASIN OR DROP INLET TO JUNCTION BOX |
| 2-II | CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DROP INLET |
| 2-KK | DETAIL FOR TEMPORARY CONTAINMENT OF CONTAMINATED SOIL |
| 3 (2 SHEETS) | SUMMARY OF QUANTITIES |
| 3-A | SUMMARY OF EARTHWORK |
| 3-B THRU 3-M | LIST OF PIPES, ENDWALLS, ETC (FOR PIPES 48" AND UNDER) |
| 3-N | GUARDRAIL SUMMARY AND PAVEMENT REMOVAL SUMMARY |
| 3-O | PARCEL INDEX SHEET & SUBSURFACE DRAIN SUMMARY |
| 4 THRU 15 | PLAN SHEETS |
| 16 THRU 26 | PROFILE SHEETS |
| TCP-1 THRU TCP-54 | TRAFFIC CONTROL SHEETS |
| SD-1 | SPECIAL SIGN DETAIL |
| PM-1 THRU PM-13A | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-27 | EROSION CONTROL SHEETS |
| RF-1 | REFORESTATION PLANS |
| SIGN-1 THRU SIGN-11 | SIGNING PLANS |
| SIG-1 THRU SIG-68 | SIGNAL PLANS |
| UO-1 THRU UO-13 | UTILITIES BY OTHERS PLANS |
| UC-1 THRU UC-17 | UTILITY CONSTRUCTION PLANS |
| X-1 | CROSS SECTION INDEX |
| X-1A THRU X-1C | CROSS SECTION SUMMARY SHEETS |
| X-2 THRU X-89 | CROSS SECTION SHEETS |

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

GENERAL NOTES: 2006 SPECIFICATIONS

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.

BERM DITCHES:
BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

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

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

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE
OWASA, DUKE ENERGY, AT&T, TIME WARNER CABLE AND PIEDMONT NATURAL GAS

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

WHEELCHAIR RAMPS
WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD. 848.05

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

## 2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

| STD.NO. | TITLE |
|---|---|
| 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 |
| 225.05 | Method of Obtaining Superelevation - Divided Highways |
| 225.06 | Method of Grading Sight Distance at Intersections |
| 240.01 | Guide for Berm Ditch Construction |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 815.03 | Pipe Underdrain and Blind Drain |
| 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 |
| 840.18 | Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe |
| 840.24 | Frames and Narrow Slot Sag Grates |
| 840.27 | Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.31 | Concrete Junction Box - 12" thru 66" Pipe |
| 840.32 | Brick Junction Box - 12" thru 66" Pipe |
| 840.33 | Angled Vane Grates and Frames |
| 840.34 | Traffic Bearing Junction Box - for Use with Pipes 42" and Under |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 840.45 | Precast Drainage Structure |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 840.51 | Brick Manhole - 12" thru 36" Pipe |
| 840.53 | Precast Manhole with Masonry Base - 12" thru 42" Pipe |
| 840.54 | Manhole Frame and Cover |
| 840.66 | Drainage Structure Steps |
| 840.71 | Concrete and Brick Pipe Plug |
| 840.72 | Pipe Collar |
| 846.01 | Concrete Curb, Gutter and Curb & Gutter |
| 848.01 | Concrete Sidewalk |
| 848.03 | Driveway Turnout - Drop Curb Type |
| 848.04 | Street Turnout |
| 850.10 | Guide for Berm Drainage Outlet - 15" and 18" Pipe |
| 852.01 | Concrete Islands |
| 852.04 | Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter |
| 852.06 | Method for Placement of Drop Inlets in Concrete Islands |
| 862.01 | Guardrail Placement |
| 862.02 | Guardrail Installation |
| 876.01 | Rip Rap in Channels |
| 876.02 | Guide for Rip Rap at Pipe Outlets |
| 876.04 | Drainage Ditches with Class 'B' Rip Rap |

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RD238344 6/7/2010 u3306_rdy_tsh_040129 jlansford RD-Oce860-34

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 1-B |

***Note: Not to Scale***

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

## *BOUNDARIES AND PROPERTY:*

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

## *BUILDINGS AND OTHER CULTURE:*

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

## *HYDROLOGY:*

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

## *RAILROADS:*

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

## *RIGHT OF WAY:*

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

## *ROADS AND RELATED FEATURES:*

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

## *VEGETATION:*

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

## *EXISTING STRUCTURES:*

MAJOR:

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

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

## *UTILITIES:*

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 1C |
| LOCATION AND SURVEYS | |

# U–3306 SURVEY CONTROL SHEET

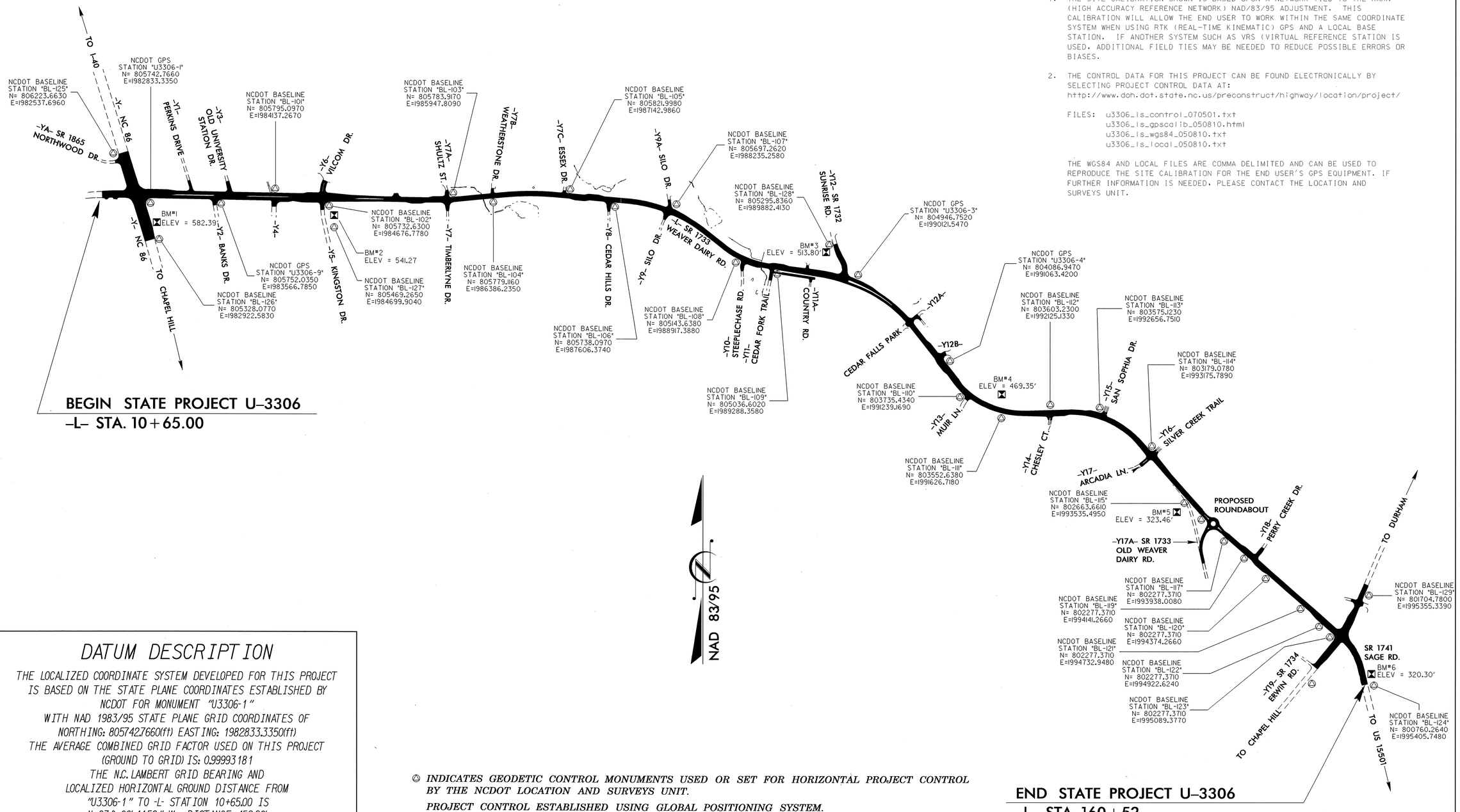
## NOTES

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

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/

FILES: u3306_ls_control_070501.txt
u3306_ls_gpscalib_050810.html
u3306_ls_wgs84_050810.txt
u3306_ls_local_050810.txt

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




**BEGIN STATE PROJECT U–3306**
**–L– STA. 10+65.00**

**END STATE PROJECT U–3306**
**–L– STA. 160+52**

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3306-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 805742.7660(ft) EASTING: 1982833.3350(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993181
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3306-1" TO -L- STATION 10+65.00 IS N 83° 06' 44.58" W DISTANCE 452.26'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET 1D FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

5/14/99

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 1D |
| LOCATION AND SURVEYS | |

# U-3306 SURVEY CONTROL SHEET

## GPS CALIBRATION REPORT

Project : U3306 LOCAL SITE CAL

| | | | |
|---|---|---|---|
| TIP Number | U-3306 | | |
| User name | khudson | Date & Time | 4:15:13 PM 8/4/2005 |
| Coordinate System | US State Plane 1983(at ground) | Zone | North Carolina 3200 |
| Horizontal Datum | NAD 1983 (Conus) | | |
| Vertical Datum | Geoid Model Geoid99 NC Sub Grid | | |
| Coordinate Units | US survey feet | | |
| Distance Units | US survey feet | | |
| Height Units | US survey feet | | |

---

LOCAL SITE INFORMATION

| | |
|---|---|
| Localized around | U3306-1 |
| Latitude | 35°57′49.84747″N |
| Longitude | 79°03′28.83171″W |
| Site Scale Factor | 1.0000681950 |
| Height | 485.112sft |

---

The North Carolina Department of Transportation uses a Localized Coordinate System which is very similar to North Carolina Zone 3200 from which it is derived. Please take care in utilizing these coordinates to eliminate confusion of the two systems. This file is to aid in the use of Real Time Kinematic (RTK) GPS during construction layout.

---

Datum Transformation Parameters

Datum Transformation computation not requested

---

Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

---

Horizontal Adjustment Parameters

| | |
|---|---|
| Northing coordinate of rotation center | 802547.713sft |
| Easting coordinate of rotation center | 1991013.380sft |
| Rotation about the center point | 0°00′00″ |
| Translation north | 0.020sft |
| Translation east | -0.002sft |
| Scale factor | 0.99999966 |

---

Vertical Adjustment Parameters

| | |
|---|---|
| Northing coordinate of origin point | 805742.756sft |
| Easting coordinate of origin point | 1982833.335sft |
| Vertical separation at origin | -0.010sft |
| Slope north | 0.029ppm |
| Slope east | -0.589ppm |

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Geoid Model Definition

Geoid99 NC Sub Grid

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Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

| | Maximum error | Root Mean Square error | Point |
|---|---|---|---|
| Horizontal | 0.015sft | 0.002 | U3306-9 - WGS84 |
| Vertical | 0.010sft | 0.001 | U3306-9 - WGS84 |
| Three-dimensional | 0.018sft | 0.003 | U3306-9 - WGS84 |

## POINT RESIDUALS

| WGS84 Coordinates | | Calculated point FOR DISPLAY ONLY | | Local Coordinates | |
|---|---|---|---|---|---|
| Point | U3306-1 - WGS84 | Northing | 805742.756sft | Point | U3306-1 - local |
| Latitude | 35°57′49.84720″N | Easting | 1982833.335sft | Northing | 805742.766sft |
| Longitude | 79°03′28.83171″W | Elevation | 586.271sft | Easting | 1982833.335sft |
| Height | 485.130sft | Horz error | 0.010sft | Elevation | 586.262sft |
| | | Vert error | 0.009sft | Utilized | Horz and Vert |
| | | 3D error | 0.013sft | Quality | Control quality |
| Point | U3306-3 - WGS84 | Northing | 804946.747sft | Point | U3306-3 - local |
| Latitude | 35°57′42.00866″N | Easting | 1990121.545sft | Northing | 804946.752sft |
| Longitude | 79°02′00.17375″W | Elevation | 507.796sft | Easting | 1990121.547sft |
| Height | 406.357sft | Horz error | 0.005sft | Elevation | 507.795sft |
| | | Vert error | 0.001sft | Utilized | Horz and Vert |
| | | 3D error | 0.005sft | Quality | Control quality |
| Point | U3306-4 - WGS84 | Northing | 804086.943sft | Point | U3306-4 - local |
| Latitude | 35°57′33.50906″N | Easting | 1991063.417sft | Northing | 804086.947sft |
| Longitude | 79°01′48.71382″W | Elevation | 493.344sft | Easting | 1991063.420sft |
| Height | 391.846sft | Horz error | 0.005sft | Elevation | 493.343sft |
| | | Vert error | 0.001sft | Utilized | Horz and Vert |
| | | 3D error | 0.005sft | Quality | Control quality |
| Point | U3306-5 - WGS84 | Northing | 801511.085sft | Point | U3306-5 - local |
| Latitude | 35°57′08.04339″N | Easting | 1993805.822sft | Northing | 801511.084sft |
| Longitude | 79°01′15.35013″W | Elevation | 336.079sft | Easting | 1993805.819sft |
| Height | 234.406sft | Horz error | 0.003sft | Elevation | 336.079sft |
| | | Vert error | 0.000sft | Utilized | Horz and Vert |
| | | 3D error | 0.003sft | Quality | Control quality |
| Point | U3306-6 - WGS84 | Northing | 800442.934sft | Point | U3306-6 - local |
| Latitude | 35°56′57.48131″N | Easting | 1994242.531sft | Northing | 800442.934sft |
| Longitude | 79°01′10.03617″W | Elevation | 356.265sft | Easting | 1994242.528sft |
| Height | 254.547sft | Horz error | 0.003sft | Elevation | 356.266sft |
| | | Vert error | 0.001sft | Utilized | Horz and Vert |
| | | 3D error | 0.003sft | Quality | Control quality |
| Point | U3306-7 - WGS84 | Northing | 799159.565sft | Point | U3306-7 - local |
| Latitude | 35°56′44.79313″N | Easting | 1996148.631sft | Northing | 799159.564sft |
| Longitude | 79°00′46.85226″W | Elevation | 345.482sft | Easting | 1996148.632sft |
| Height | 243.658sft | Horz error | 0.002sft | Elevation | 345.479sft |
| | | Vert error | 0.003sft | Utilized | Horz and Vert |
| | | 3D error | 0.003sft | Quality | Control quality |
| Point | U3306-8 - WGS84 | Northing | 798739.781sft | Point | U3306-8 - local |
| Latitude | 35°56′40.64209″N | Easting | 1996324.952sft | Northing | 798739.779sft |
| Longitude | 79°00′44.70731″W | Elevation | 333.029sft | Easting | 1996324.953sft |
| Height | 231.187sft | Horz error | 0.002sft | Elevation | 333.031sft |
| | | Vert error | 0.002sft | Utilized | Horz and Vert |
| | | 3D error | 0.002sft | Quality | Control quality |
| Point | U3306-9 - WGS84 | Northing | 805752.049sft | Point | U3306-9 - local |
| Latitude | 35°57′49.94324″N | Easting | 1983566.785sft | Northing | 805752.034sft |
| Longitude | 79°03′19.90999″W | Elevation | 570.061sft | Easting | 1983566.785sft |
| Height | 468.893sft | Horz error | 0.015sft | Elevation | 570.071sft |
| | | Vert error | 0.010sft | Utilized | Horz and Vert |
| | | 3D error | 0.018sft | Quality | Control quality |

## NOTES

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

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/

   FILES: u3306_ls_control_070501.txt
   u3306_ls_gpscalib_050810.html
   u3306_ls_wgs84_050810.txt
   u3306_ls_local_050810.txt

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

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3306-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 805742.7660(ft) EASTING: 1982833.3350(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993181
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3306-1" TO -L- STATION 10+60.00 IS
N 83° 12′ 25.34″ W DISTANCE 457.22′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 1E |
| LOCATION AND SURVEYS | |

# U-3306 SURVEY CONTROL SHEET

## NOTES

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

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/

FILES: u3306_ls_control_070501.txt
u3306_ls_gpscalib_050810.html
u3306_ls_wgs84_050810.txt
u3306_ls_local_050810.txt

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

## DATUM DESCRIPTION

*THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3306-1"*
*WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 805742.7660(ft) EASTING: 1982833.3350(ft)*
*THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993181*
*THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3306-1" TO -L- STATION 10+60.00 IS N 83° 12' 25.34" W DISTANCE 457.22'*
*ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES*
*VERTICAL DATUM USED IS NAVD 88*

## BENCHMARK DATA

```
*************************************
BM1       ELEVATION = 582.39
N 805502      E 1982897
L STATION 15+82 301 RIGHT
RR SPIKE IN BASE OF TELEPHONE POLE
*************************************
*************************************
BM2       ELEVATION = 541.27
N 805589      E 1984758
L STATION 34+42 181 RIGHT
RR SPIKE IN BASE OF 24" PINE TREE
*************************************
*************************************
BM3       ELEVATION = 513.80
N 805275      E 1989874
L STATION 86+87 289 LEFT
RR SPIKE IN BASE OF POWER POLE
*************************************
*************************************
BM4       ELEVATION = 469.35
N 803755      E 1991624
L STATION 109+85 162 LEFT
RR SPIKE IN BASE OF 18" PINE TREE
*************************************
*************************************
BM5       ELEVATION = 323.46
N 802513      E 1993448
L STATION 133+73 188 RIGHT
RR SPIKE IN BASE OF 18" TRIPLE GUM
*************************************
*************************************
BM6       ELEVATION = 320.30
N 800842      E 1995391
L STATION 159+28 44 LEFT
RR SPIKE IN BASE OF POWER POLE
*************************************
```

## BASELINE DATA

BL

| POINT | DESC. | NORTH | EAST | ELEVATION | L STATION | OFFSET |
|---|---|---|---|---|---|---|
| 1 | U3306-1 | 805742.7660 | 1982833.3350 | 586.26 | 15+14.46 | 61.25 RT |
| 9 | U3306-9 | 805752.0350 | 1983566.7850 | 570.07 | 22+48.35 | 39.54 RT |
| 101 | BL-101 | 805795.0970 | 1984137.2670 | 574.16 | 28+17.97 | 13.72 LT |
| 102 | BL-102 | 805732.6300 | 1984676.7780 | 551.49 | 33+58.51 | 39.09 RT |
| 103 | BL-103 | 805783.9170 | 1985947.8090 | 521.36 | 46+30.69 | 28.00 LT |
| 104 | BL-104 | 805779.1160 | 1986386.2350 | 512.75 | 50+67.70 | 17.85 RT |
| 105 | BL-105 | 805821.9980 | 1987142.9860 | 502.91 | 58+26.19 | 19.98 LT |
| 106 | BL-106 | 805738.0970 | 1987606.3740 | 496.54 | 62+95.01 | 24.48 RT |
| 107 | BL-107 | 805697.2620 | 1988235.2580 | 508.15 | 69+13.67 | 61.70 LT |
| 108 | BL-108 | 805143.6380 | 1988917.3880 | 476.19 | 77+76.57 | 26.57 RT |
| 109 | BL-109 | 805036.6020 | 1989288.3580 | 474.50 | 81+55.76 | 27.40 RT |
| 3 | U3306-3 | 804946.7520 | 1990121.5470 | 507.80 | 89+86.35 | 45.25 LT |
| 4 | U3306-4 | 804086.9470 | 1991063.4200 | 493.34 | 102+55.24 | 55.76 LT |
| 110 | BL-110 | 803735.4340 | 1991239.1690 | 472.57 | 106+32.18 | 44.34 RT |
| 111 | BL-111 | 803552.6380 | 1991626.7180 | 455.07 | 110+46.59 | 32.71 RT |
| 112 | BL-112 | 803603.2300 | 1992125.1330 | 419.46 | 115+40.47 | 36.21 LT |
| 113 | BL-113 | 803575.1230 | 1992656.7510 | 379.02 | 120+58.82 | 55.47 LT |
| 114 | BL-114 | 803179.0780 | 1993175.7890 | 342.75 | 126+93.75 | 48.82 LT |
| 115 | BL-115 | 802663.6610 | 1993535.4950 | 328.31 | 133+18.17 | 22.87 RT |
| 116 | BL-116 | 802490.5890 | 1993721.1690 | 321.95 | 135+70.80 | 1.09 RT |
| 117 | BL-117 | 802277.3710 | 1993938.0080 | 317.04 | 138+74.44 | 14.72 RT |
| 119 | BL-119 | 802090.4830 | 1994141.2660 | 317.24 | 141+50.50 | 20.70 RT |
| 120 | BL-120 | 801892.9080 | 1994374.2660 | 326.63 | 144+55.93 | 15.04 RT |
| 121 | BL-121 | 801583.9470 | 1994732.9480 | 329.34 | 149+29.31 | 9.95 RT |
| 122 | BL-122 | 801407.0410 | 1994922.6240 | 316.01 | 151+88.57 | 17.41 RT |
| 123 | BL-123 | 801284.6620 | 1995089.3770 | 309.60 | 153+94.60 | 0.92 LT |
| 124 | BL-124 | 800760.2640 | 1995405.7480 | 321.97 | 160+10.82 | 34.73 LT |

BY1

| POINT | DESC. | NORTH | EAST | ELEVATION | Y STATION | OFFSET |
|---|---|---|---|---|---|---|
| 125 | BL-125 | 806223.6630 | 1982537.6960 | 569.74 | 19+90.20 | 52.87 LT |
| 155 | U3306-1 | 805742.7660 | 1982833.3350 | 586.26 | 14+44.33 | 90.98 RT |
| 126 | BL-126 | 805328.0770 | 1982922.5830 | 583.95 | 10+21.56 | 56.42 RT |

BY2

| POINT | DESC. | NORTH | EAST | ELEVATION | Y5 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 152 | BL-102 | 805732.6300 | 1984676.7780 | 551.49 | 10+41.12 | 43.23 LT |
| 127 | BL-127 | 805469.2650 | 1984699.9040 | 539.21 | OUTSIDE PROJECT LIMITS | |

BY3

| POINT | DESC. | NORTH | EAST | ELEVATION | Y12 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 128 | BL-128 | 805295.8360 | 1989882.4130 | 514.07 | 13+78.63 | 19.51 LT |
| 153 | U3306-3 | 804946.7520 | 1990121.5470 | 507.80 | 10+34.10 | 127.29 RT |

BY4

| POINT | DESC. | NORTH | EAST | ELEVATION | Y19 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 129 | BL-129 | 801704.7800 | 1995355.3390 | 303.99 | 20+78.64 | 24.25 RT |
| 163 | BL-123 | 801284.6620 | 1995089.3770 | 309.60 | 15+77.17 | 34.08 LT |
| 130 | BL-130 | 800809.2750 | 1994772.4620 | 326.17 | 10+07.58 | 23.72 RT |

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

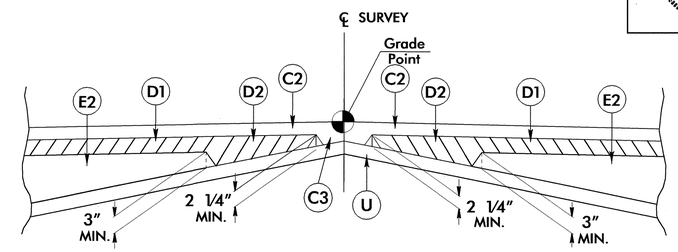
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/13/10

NORTH CAROLINA PROFESSIONAL SEAL 22886 ENGINEER CLARK S. MORRISON 5/13/10

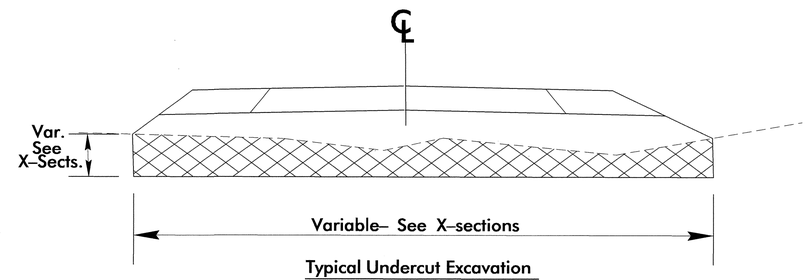
# PAVEMENT SCHEDULE

| | | | |
|---|---|---|---|
| A | 8" CONCRETE TRUCK APRON<br>NO DOWELS, RADIAL JOINTS 6.5' APART, BROOM FINISH | J2 | VARIABLE DEPTH AGGREGATE BASE COURSE |
| 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. | R2 | 1'-6" CONCRETE CURB & GUTTER |
| 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 1½" IN DEPTH. | R3 | EXISTING 2'-6" CONCRETE CURB & GUTTER |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | S | 4" CONCRETE SIDEWALK. |
| D2 | PROP. VAR DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH. | T | EARTH MATERIAL. |
| E1 | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | U | EXISTING PAVEMENT. |
| E2 | PROP. VAR DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH. | V | VARIABLE DEPTH ASPHALT MILLING 0" TO 1 1/2" IN DEPTH |
| J1 | PROP. 8" AGGREGATE BASE COURSE. | W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL) |

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

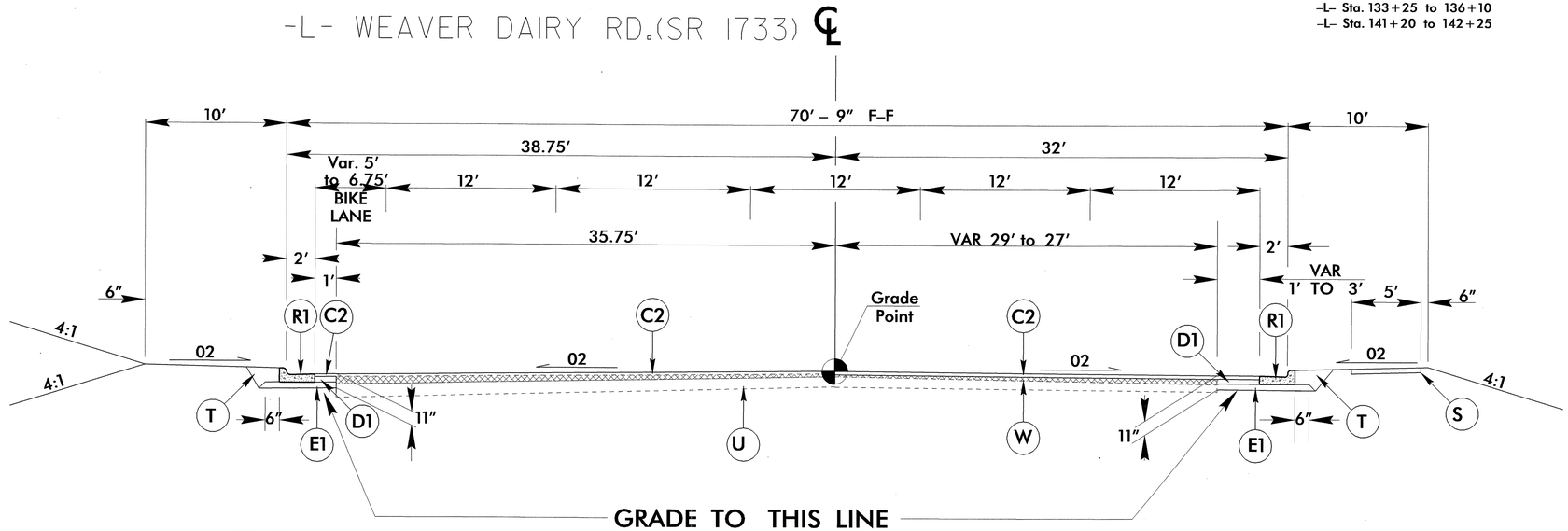



Detail Showing Method of Wedging




Typical Undercut Excavation

–L– Sta. 133+25 to 136+10
–L– Sta. 141+20 to 142+25




NOTE: NO SIDEWALK ON LEFT SIDE

TYPICAL SECTION NO. 1

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1:
–L– STA. 10+65.00 TO STA. 11+42.95

USE TYPICAL SECTION NO. 1
–L– STA. 11+42.95 TO STA. 12+62.56

TRANSITION FROM TYPICAL SECTION NO. 1 TO TYPICAL SECTION NO. 2:
–L– STA.12+62.56 TO 15+61.53

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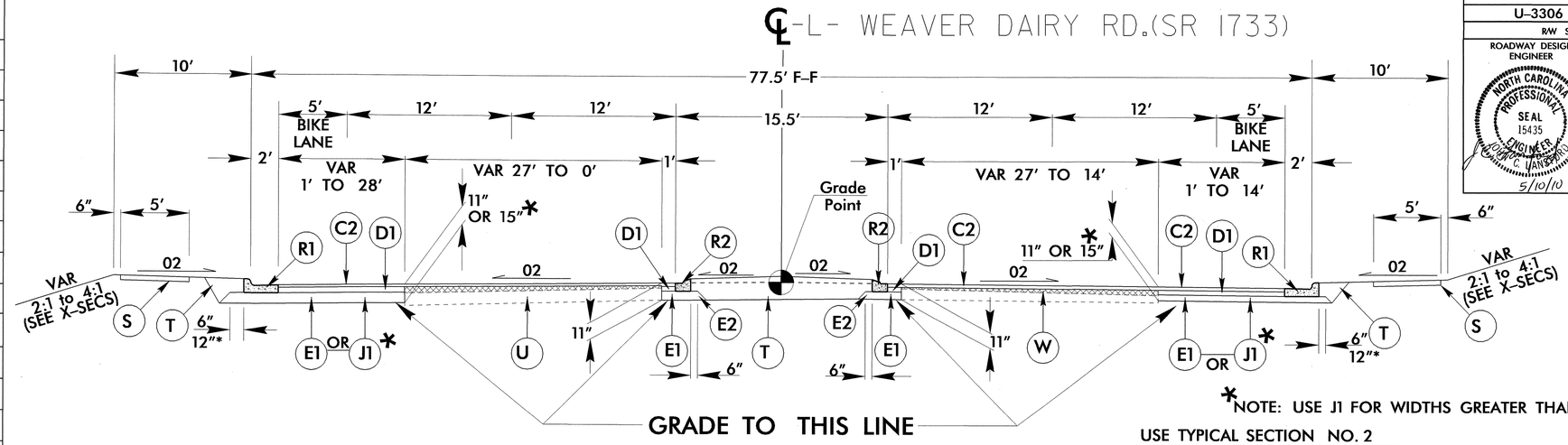
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-A |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER — 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER — CLARK S. MORRISON — 5/5/10

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |



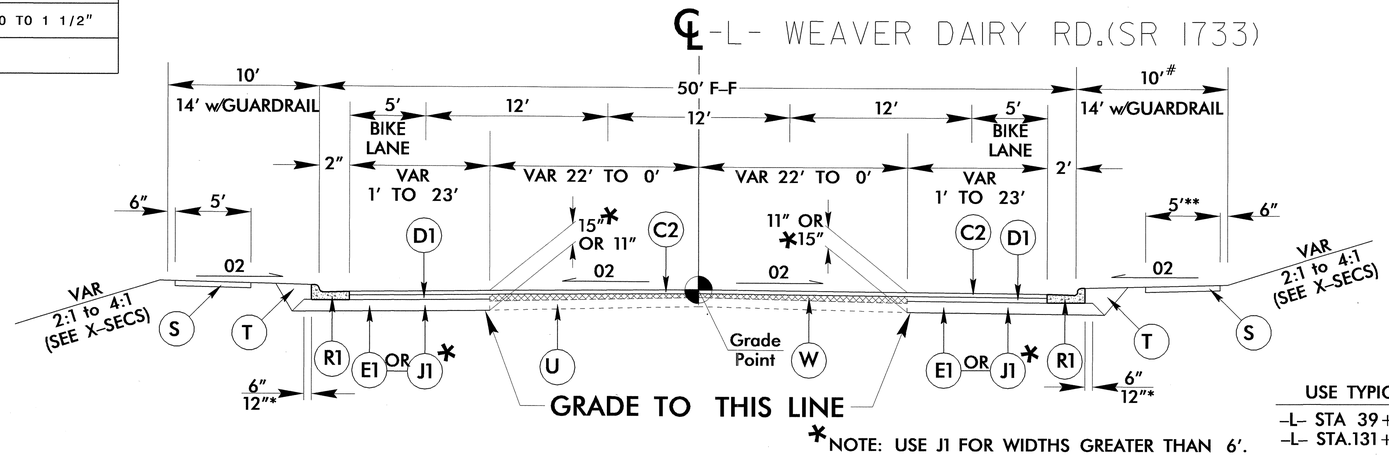

## TYPICAL SECTION NO. 2

*NOTE: USE J1 FOR WIDTHS GREATER THAN 6'.

USE TYPICAL SECTION NO. 2

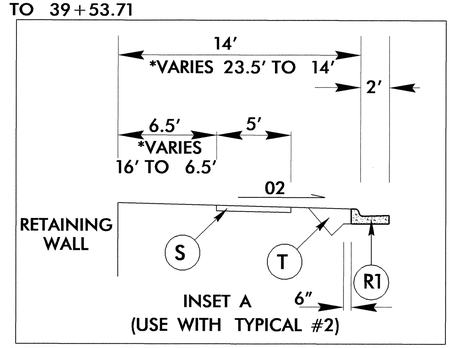
-L- STA. 15+61.53 TO STA. 33+97.71

TRANSITION FROM TYPICAL SECTION NO. 2 TO TYPICAL SECTION NO. 3:
-L- STA.33+97.71 TO 39+53.71




*NOTE: USE J1 FOR WIDTHS GREATER THAN 6'.

## TYPICAL SECTION NO. 3




INSET A
(USE WITH TYPICAL #2)

USE INSET A -L- STA 20+10.30 LT TO -L- STA 23+14.22 LT
*USE INSET A -L- STA 28+80.00 RT TO -L- STA 30+00.00 RT

USE TYPICAL SECTION NO. 3

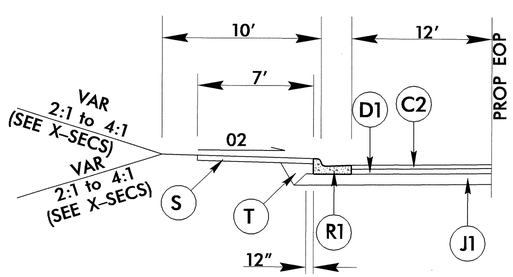
-L- STA 39+53.71 TO -L- STA 108+50.00
-L- STA.131+00.00 TO 132+94.50

TRANSITION FROM TYPICAL SECTION NO. 3 TO TYPICAL SECTION NO. 4:
-L- STA 108+50.00 TO -L- STA 109+00.00
TRANSITION FROM TYPICAL SECTION NO. 3 TO TYPICAL SECTION NO. 5:
-L- STA.132+94.50 TO 133+00.00

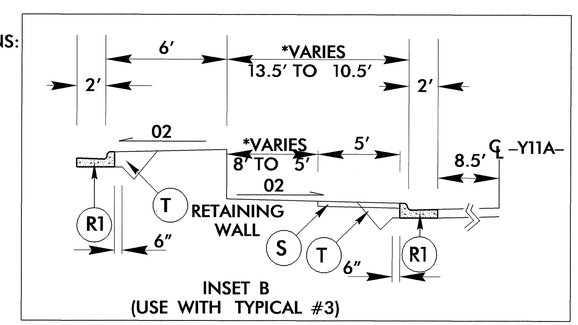
SEE X-SECS FOR EXISTING PAVEMENT REMOVAL AND FULL DEPTH REPLACEMENT AT THE FOLLOWING LOCATIONS:
-L- STA 38+00 TO 48+00:
-L- STA 70+25 TO 72+00:
-L- STA 96+50 TO 101+50:

# USE 6' BERM
-L- STA 81+57 - 86+18 RT
& 107+50.00 TO 108+50.00 RT
USE 8' BERM -L- STA
86+18.00 TO 101+50.00 RT

**USE EXISTING SIDEWALK (SEE PLANS)
-L- STA 86+00.00 TO 108+50.00 RT




DETAIL FOR BUS TURNOUTS
USE WITH TS# 1, 2, 3, 4 & 5
SEE SHEETS 2-J THRU 2-O
FOR DESIGN & LOCATION OF TURNOUTS




INSET B
(USE WITH TYPICAL #3)

*USE INSET B -L- STA 83+00.00 RT TO -L- STA 86+18.00 RT

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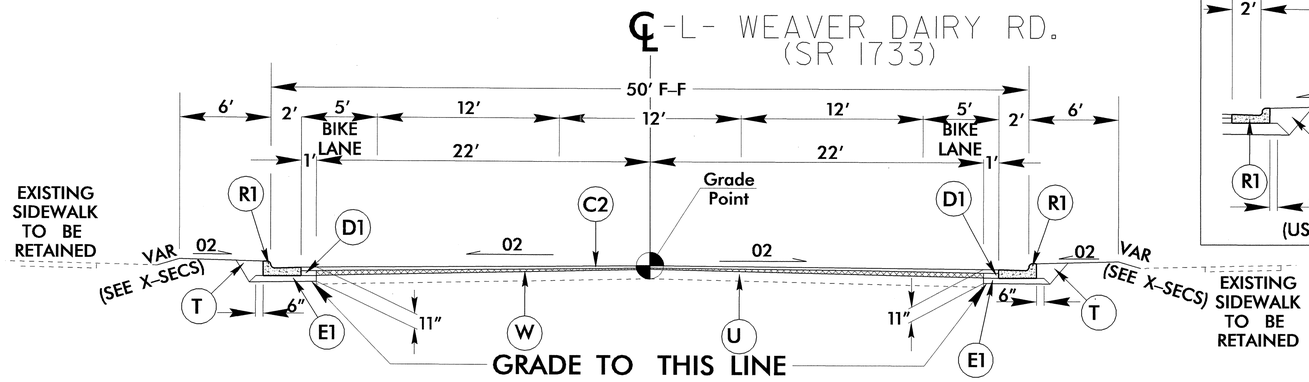
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-B |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

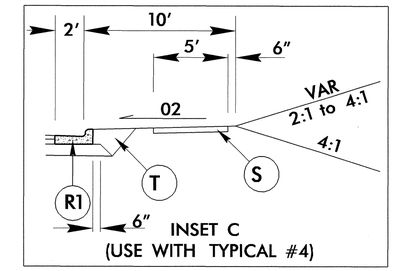
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/5/10

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |




## TYPICAL SECTION NO. 4

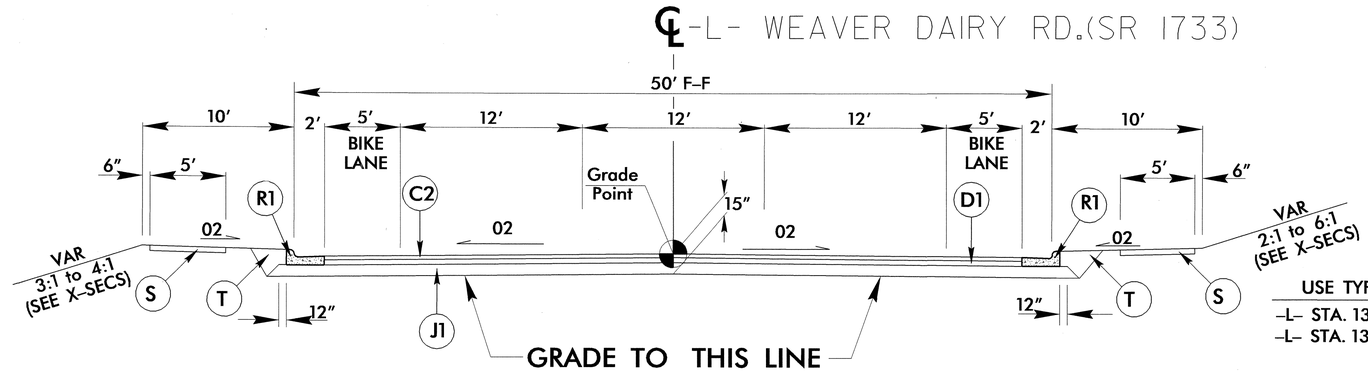



USE INSET C

-L- STA. 120+00.00 TO STA. 120+50.00 RT
-L- STA. 124+50.00 TO STA. 128+00.00 RT
-L- STA. 130+25.00 TO STA. 131+00.00 RT
-L- STA. 119+10.00 TO STA. 121+30.00 LT
-L- STA. 126+50.00 TO STA. 131+00.00 LT

USE TYPICAL SECTION NO. 4

-L- STA. 109+00.00 TO STA. 130+60.00
TRANSITION FROM TYPICAL SECTION NO. 4 TO TYPICAL SECTION NO. 3:
-L- STA.130+60.00 TO 131+00.00



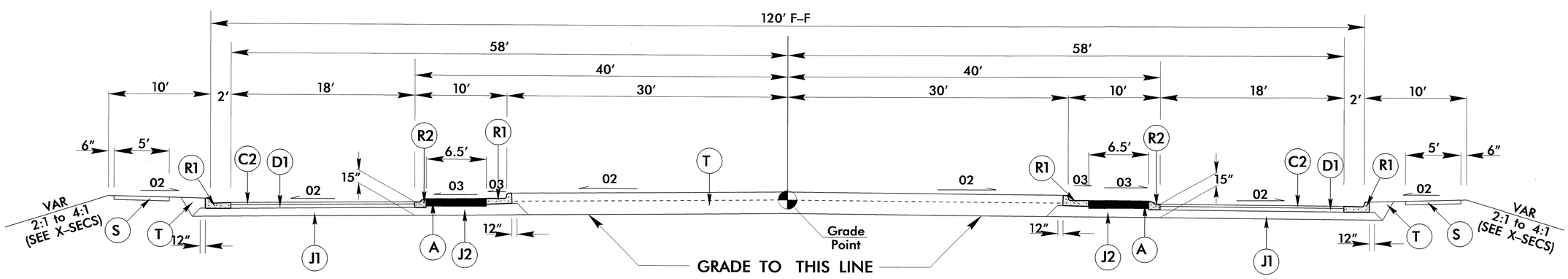

USE TYPICAL SECTION NO. 5

-L- STA. 133+00.00 TO STA. 134+89.67
-L- STA. 138+60.83 TO STA. 153+80.71

WIDEN RADII @ -L- AND -Y19- USING (C2), (D1) & (E1) AND RESURFACE
-L- STA 154+60 +/- TO STA 155+29 USING (C1)

## TYPICAL SECTION NO. 5

TRANSITION FROM TYPICAL SECTION NO. 5 TO TYPICAL SECTION NO. 6:
-L- STA. 134+89.67 TO STA. 136+08.80




## TYPICAL SECTION NO. 6

THROUGH THE CENTER OF THE ROUNDABOUT

USE TYPICAL SECTION NO. 6

-L- STA. 136+08.80 TO STA. 137+32.79
TRANSITION FROM TYPICAL SECTION NO. 6 TO TYPICAL SECTION NO. 5:
-L- STA. 137+32.79 TO STA. 138+60.83

5/14/99

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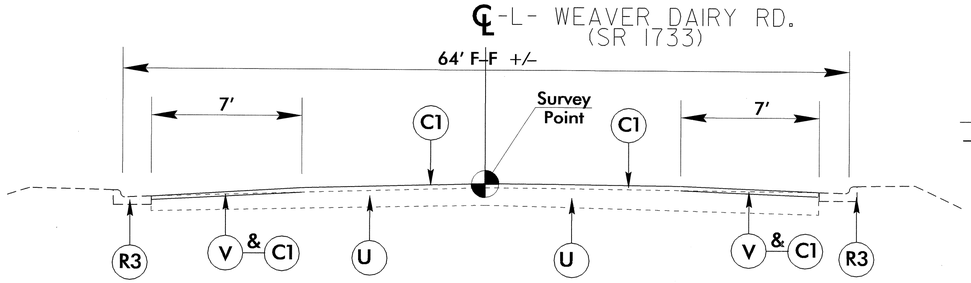
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-C |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER J. C. LANSFORD 5/10/10

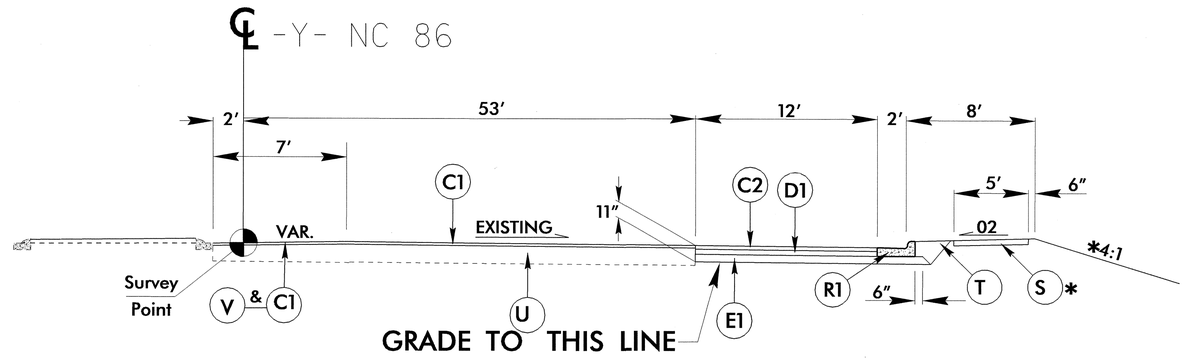
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/5/10




USE TYPICAL SECTION NO. 6A

-L- STA 155+29 +/- TO STA 160+52 +/-

## TYPICAL SECTION NO. 6A



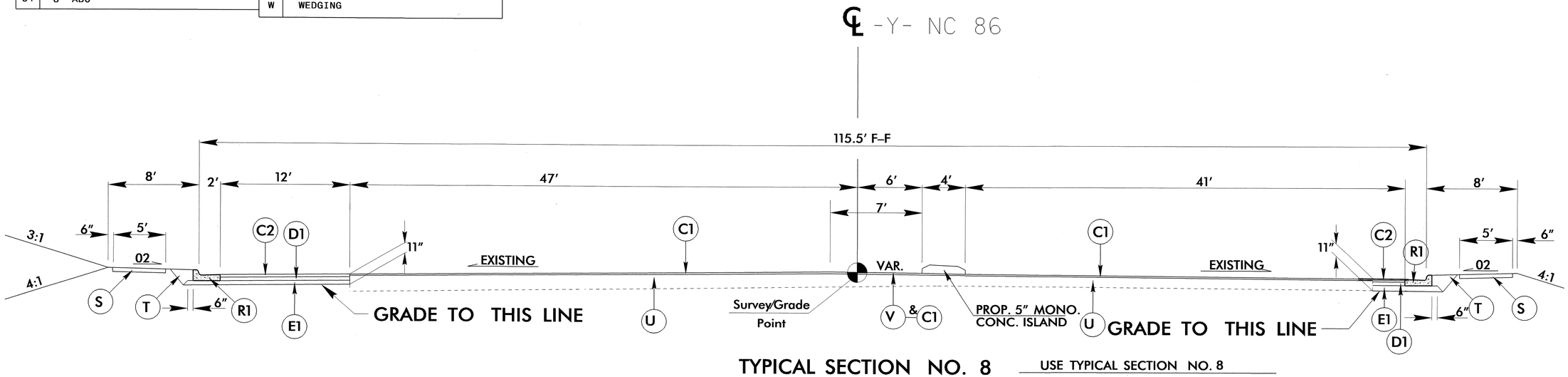

## TYPICAL SECTION NO. 7

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 7:
-Y- STA.10+40.00 TO 11+60.00

USE TYPICAL SECTION NO. 7

-Y- STA. 11+60.00 TO STA. 14+25.00

| PAVEMENT SCHEDULE | | | |
|---|---|---|---|
| A | 8" CONCRETE TRUCK APRON | J2 | VAR. DEPTH ABC |
| C1 | 1½" S9.5B | R1 | 2'-6" CONC. CURB AND GUTTER. |
| C2 | 3" S9.5B | R2 | 1'-6" CONC. CURB AND GUTTER. |
| C3 | VAR DEPTH S9.5B | R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| D1 | 4" I19.0B | S | 4" CONC. SIDEWALK. |
| D2 | VAR DEPTH I19.0B | T | EARTH MATERIAL. |
| E1 | 4" B25.0B | U | EXISTING PAVEMENT. |
| E2 | VAR DEPTH B25.0B | V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| J1 | 8" ABC | W | WEDGING |




## TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

-Y- STA. 14+25.00 TO STA. 16+19.00 Rt.

-Y- STA. 16+19.00 TO STA. 17+75.00 Lt & Rt. (See Sheet 22 for Proposed Grade)

(Widen NC 86 Left Side Only)

-Y- Sta. 17+75.00 to 19+00.00 Lt.

(End Resurfacing Sta. 19+79.51 -Y- Lt.)

5/14/99

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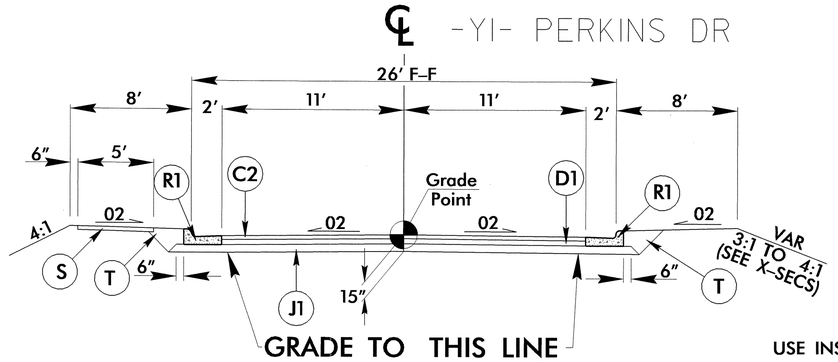
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-D |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

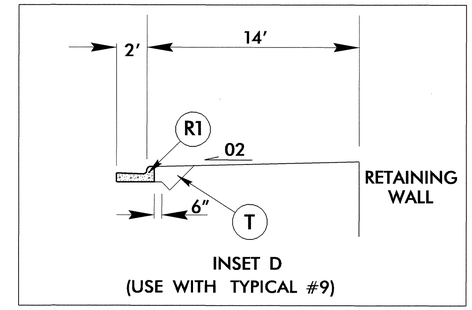
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/4/10

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/5/10

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |



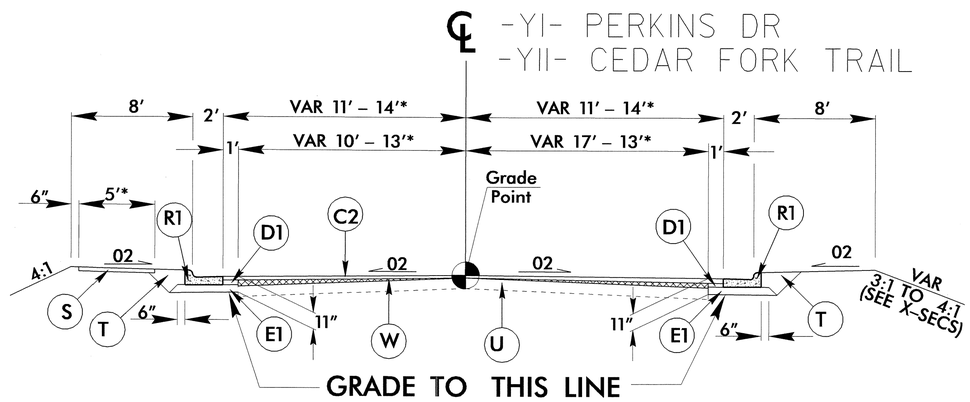

TYPICAL SECTION NO. 9




INSET D
(USE WITH TYPICAL #9)

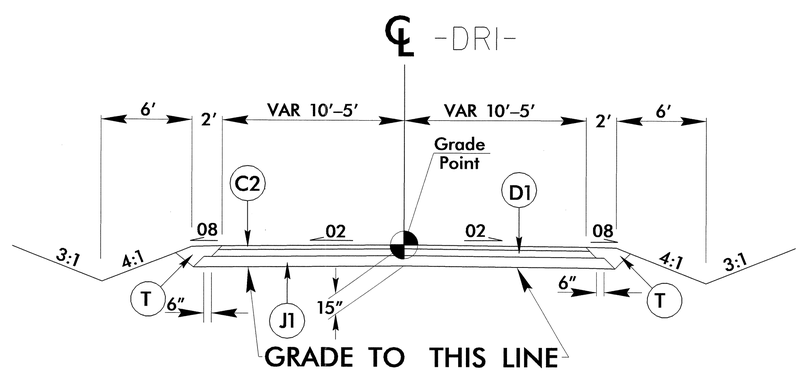
USE INSET D -Y1- STA 10+84.19 RT TO -Y1- STA 10+90.00 RT

USE TYPICAL SECTION NO. 9
-Y1- STA. 10+84.19 TO 11+00.00




TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-Y1- STA. 11+00.00 TO 11+50.00
*-Y11- STA. 10+56.02 TO 11+40.00
*NO SIDEWALK ON -Y11-




TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
-DR1- STA. 10+61.38 TO 11+20.00

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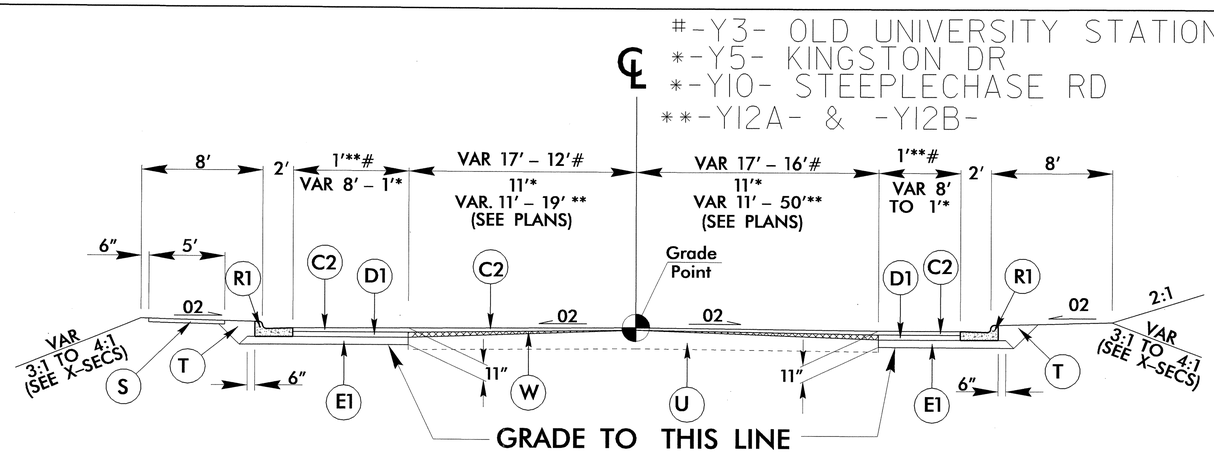
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-E |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/5/10

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |




## TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

#–Y3– STA. 10+83.75 TO 11+50.00

*–Y5– STA. 11+04.70 TO 11+25.00
(NO SIDEWALK ON LEFT OF –Y5–, RETAIN EXISTING ON RIGHT)

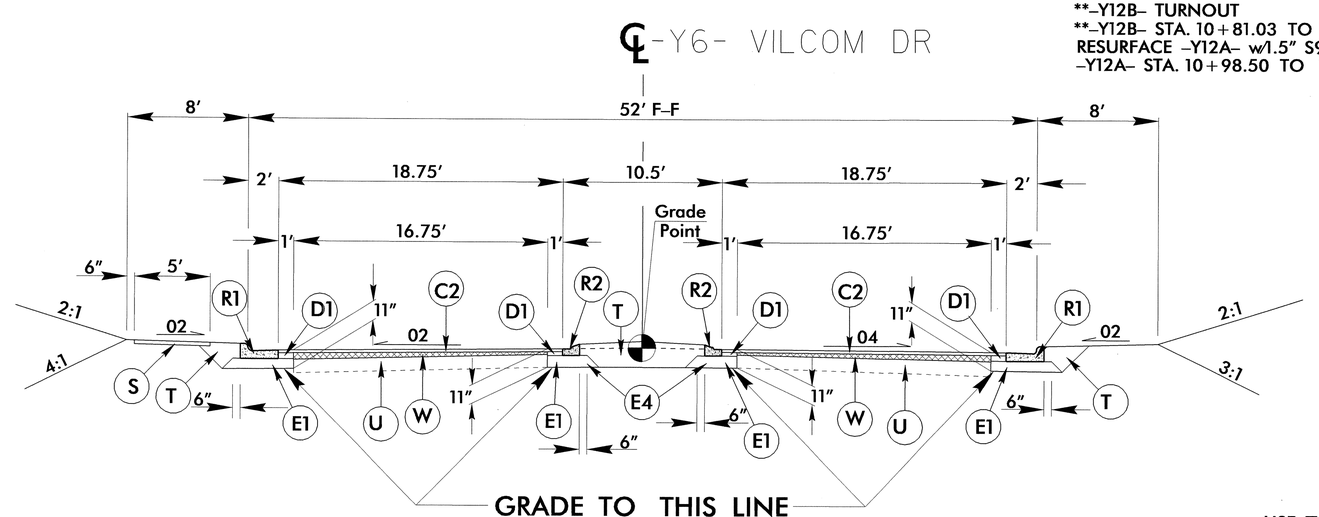
*–Y10– STA. 10+77.03 TO 11+25.00
(NO SIDEWALK ON –Y10–)

**–Y12A– STA. 10+67.79 TO 10+98.50
(NO SIDEWALK ON –Y12A–)

**–Y12B– TURNOUT

**–Y12B– STA. 10+81.03 TO 10+96.00
RESURFACE –Y12A– w/1.5" S9.5B

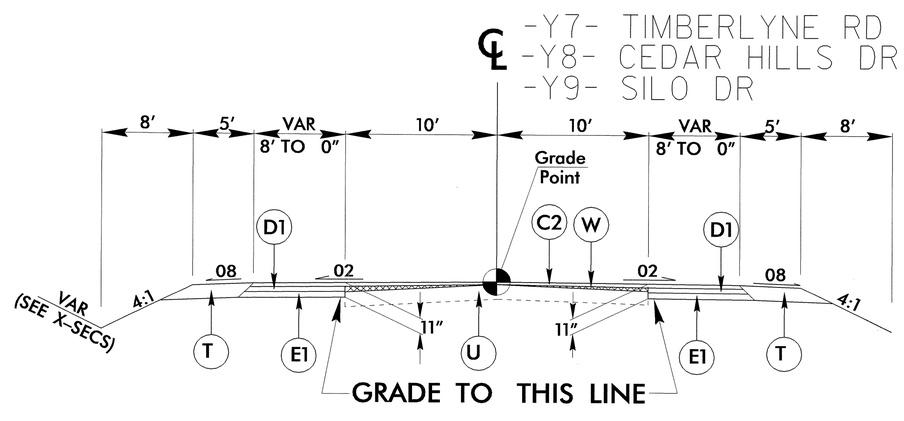
–Y12A– STA. 10+98.50 TO 11+14.74




## TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

–Y6– STA. 10+83.22 TO STA. 11+75.00




## TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14

–Y7– STA. 10+72.32 TO 11+15.00

–Y8– STA. 10+80.17 TO 11+25.00

–Y9– STA. 10+74.84 TO 11+00.00

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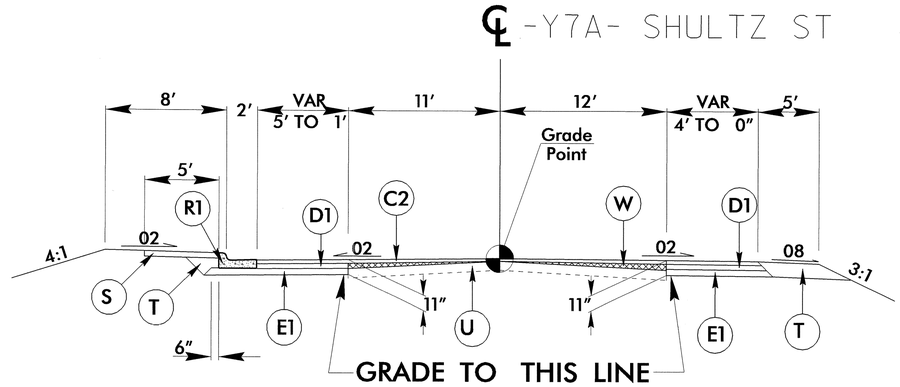
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-F |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JOHN C. LANSFORD 5/14/99

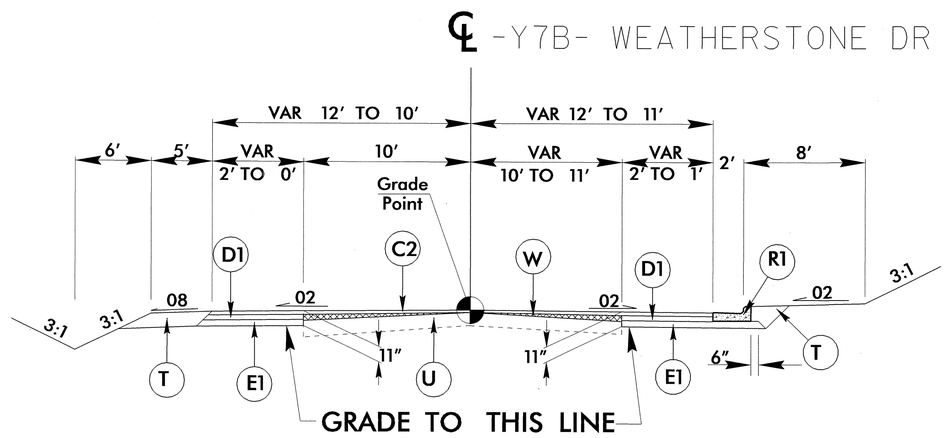
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/5/10

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |



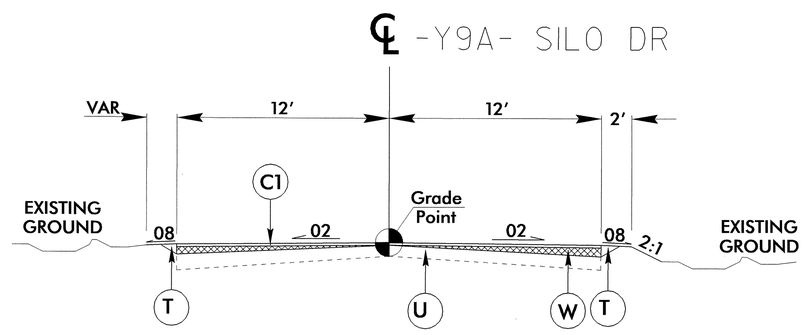

TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15
-Y7A- STA. 10+64.60 TO 11+00.00




TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16
-Y7B- STA. 10+47.30 TO 10+75.00




TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17
-Y9A- STA. 10+65.96 TO 10+80.00

RESURFACE -Y9A- W/1.5" S9.5B
-Y9A- STA. 10+80.00 TO 11+86.00

5/14/99

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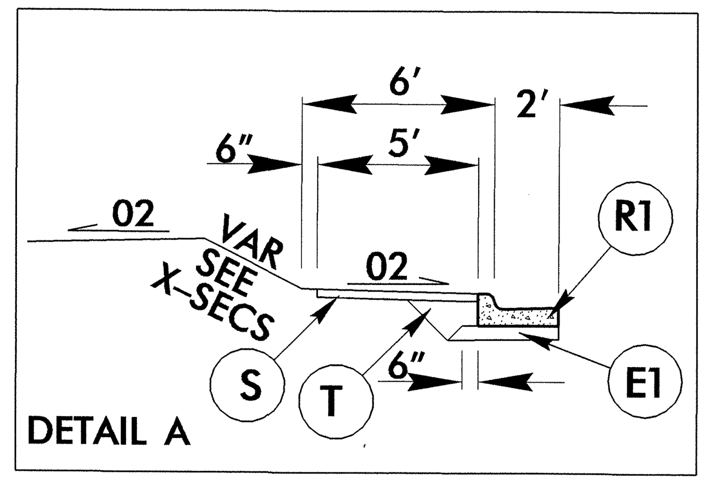
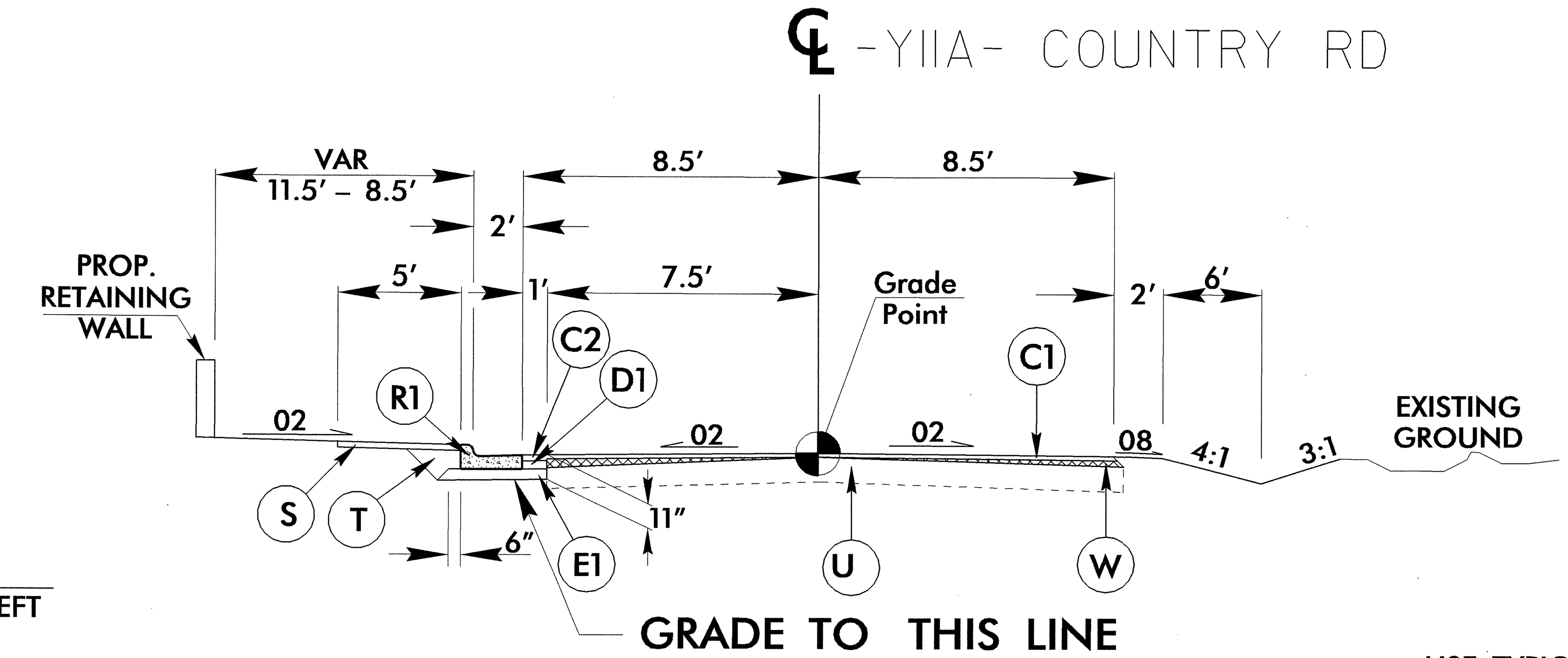
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-G |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |
| NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10 | NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/5/10 |

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |




USE DETAIL A WITH TYPICAL #18
-Y11A- STA. 10+22.93 TO 11+75.00 LEFT

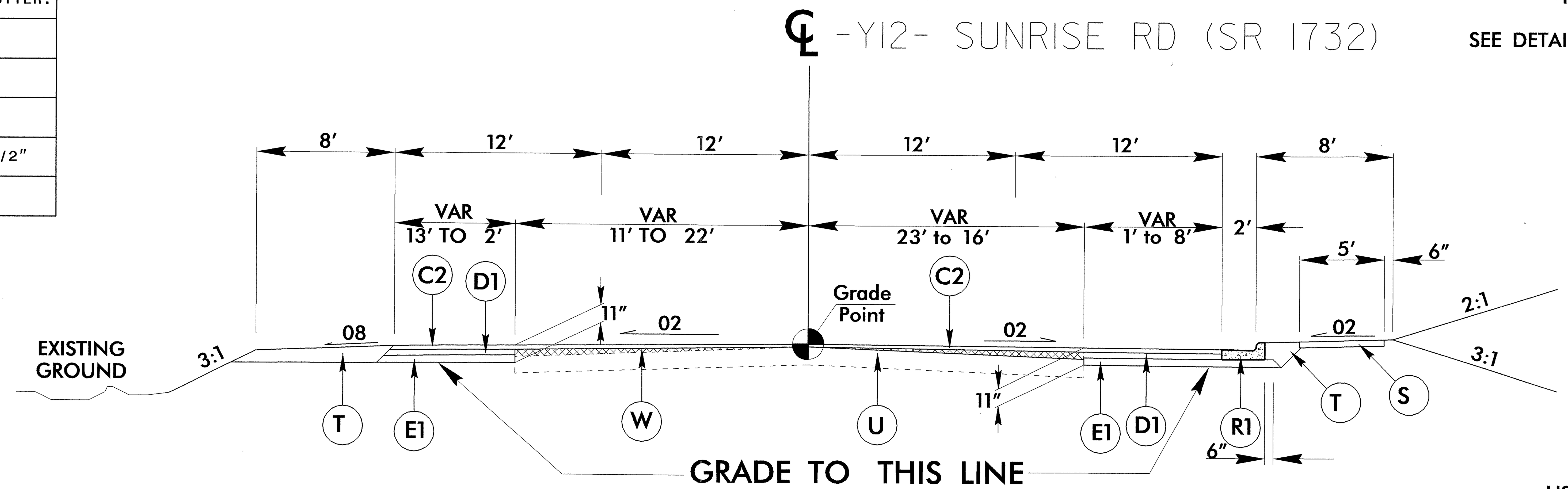



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18
-Y11A- STA. 10+22.93 TO 10+44.00

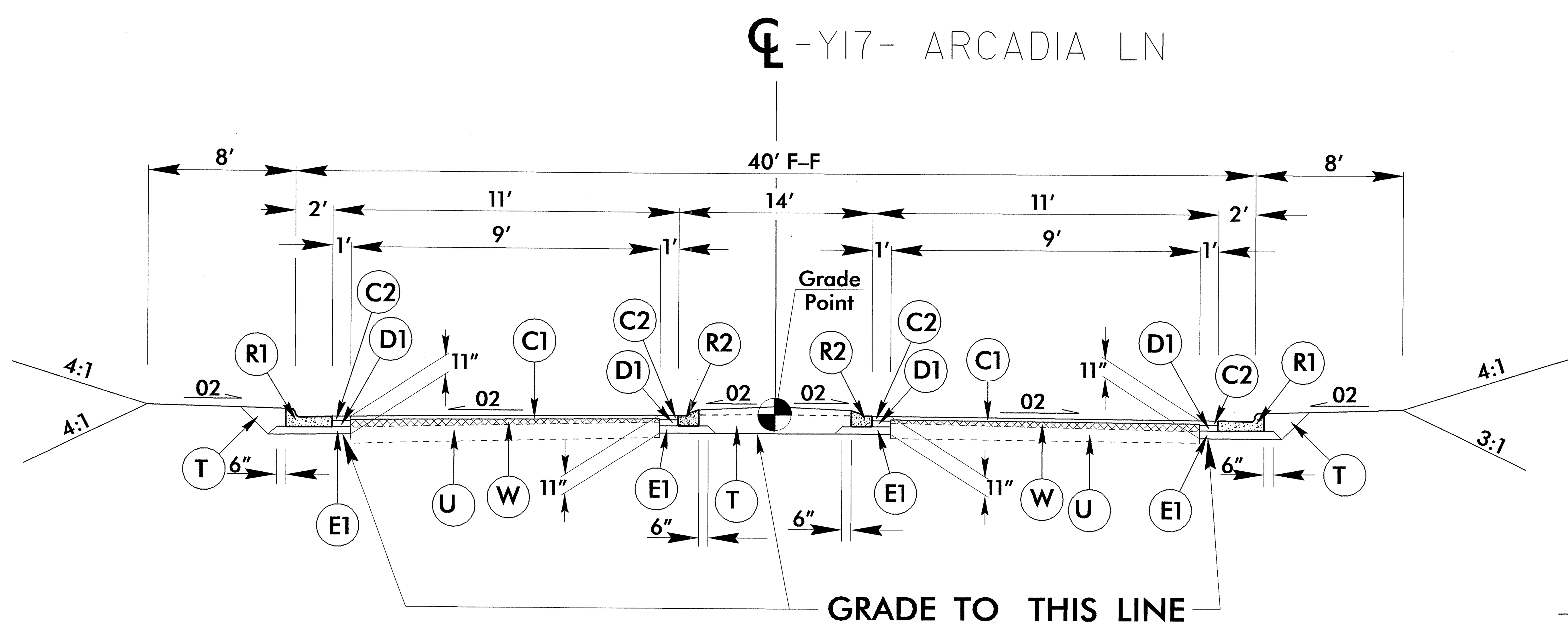
RESURFACE -Y11A- W/1.5" S9.5B
-Y11A- STA 10+44.00 TO 14+48.00

SEE DETAIL A FOR CONST. ON LT. SIDE -Y11A-




TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19
-Y12- STA. 10+99.60 TO 12+60.00
TRANSITION FROM TYPICAL SECTION NO. 19 TO EXISTING:
-Y12- STA. 12+60.00 TO 13+75.00




TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20
-Y17- STA. 10+66.32 TO STA. 11+30.06
TRANSITION FROM TYPICAL SECTION NO. 20 TO EXISTING:
-Y17- STA. 11+30.06 TO 11+50.00

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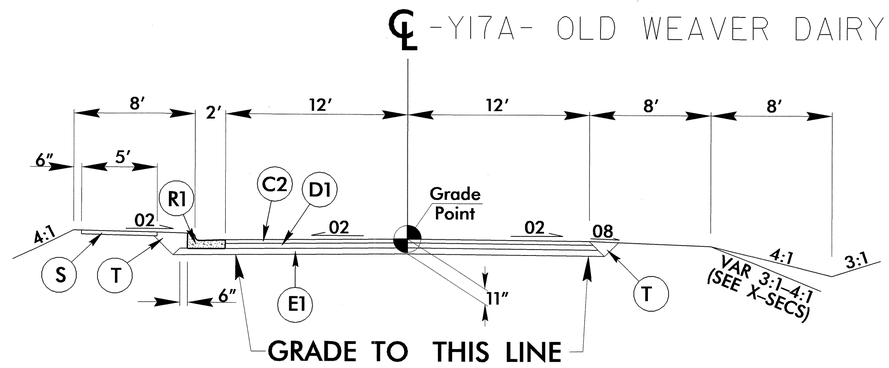
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-H |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

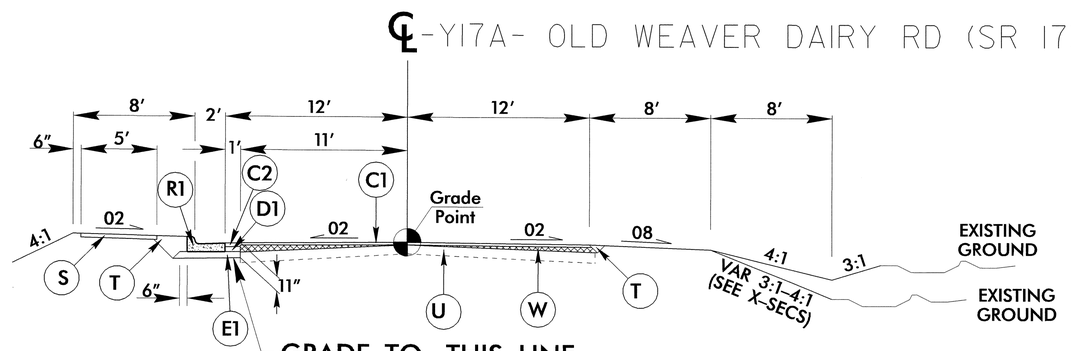
NORTH CAROLINA PROFESSIONAL SEAL 22898 ENGINEER CLARK S. MORRISON 5/5/10

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |



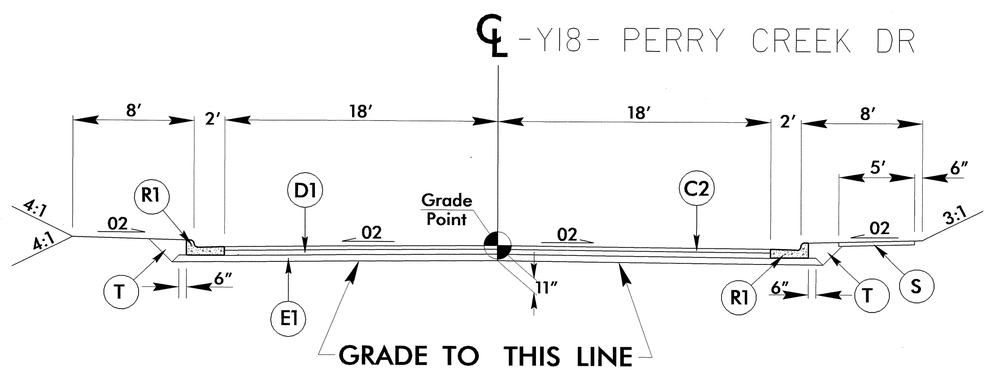

TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21
-Y17A- STA. 11+30.90 TO 12+40.32
TRANSITION FROM TYPICAL SECTION NO. 21 TO TYPICAL SECTION NO 22:
-Y17A- STA. 12+40.32 TO 13+60.02




TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22
-Y17A- STA. 13+60.02 TO 14+50.00




TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23
-Y18- STA. 10+65.67 TO 11+00.00
TRANSITION FROM TYPICAL SECTION NO. 23 TO EXISTING:
-Y18- STA. 11+00.00 TO 11+48.00

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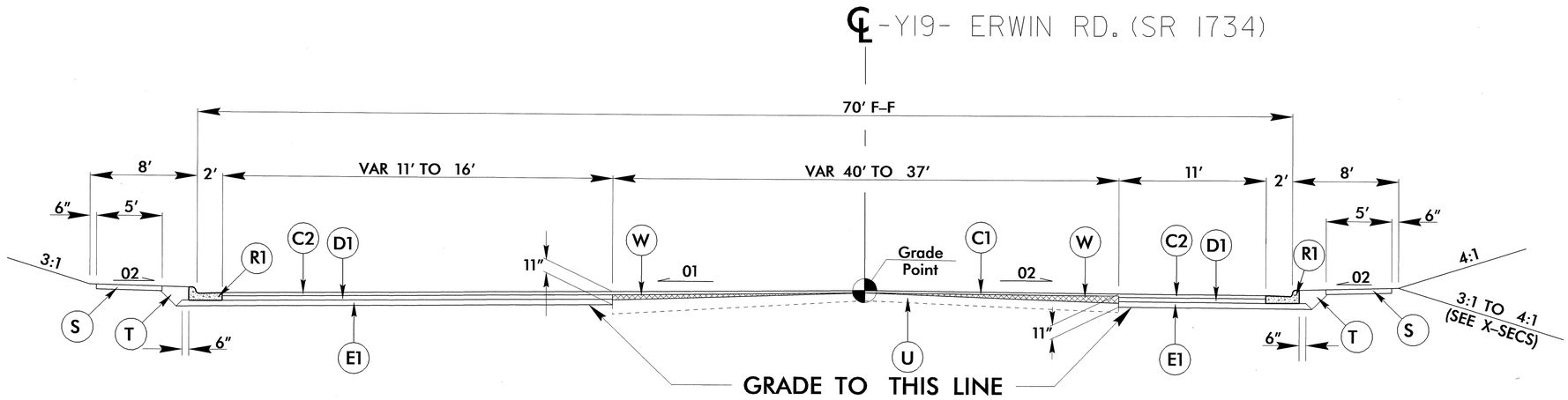
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-I |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD

NORTH CAROLINA PROFESSIONAL SEAL 22898 ENGINEER CLARK S. MORRISON 5/5/10

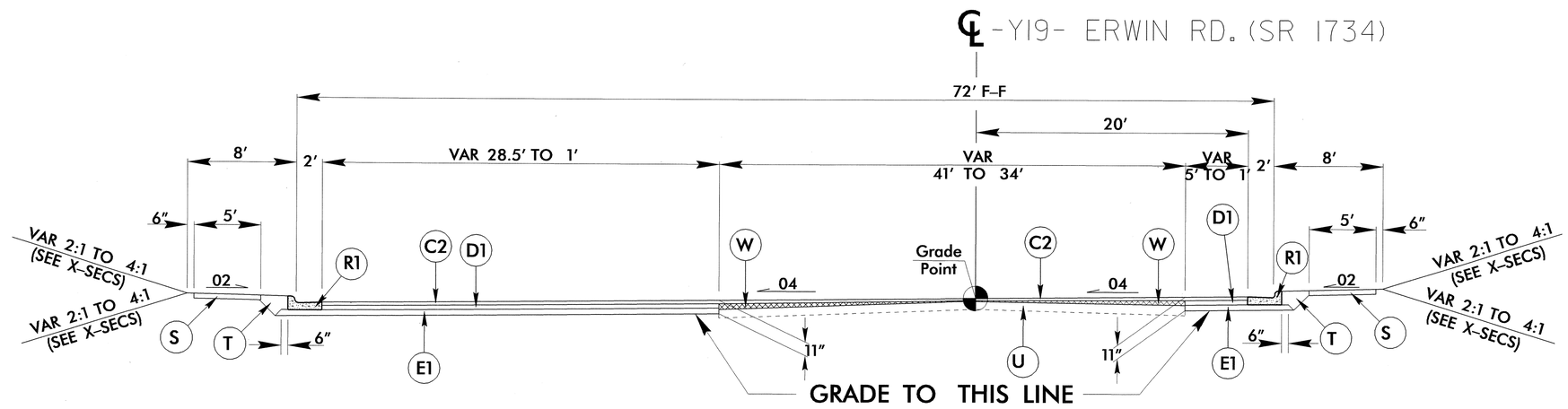



## TYPICAL SECTION NO. 24

WIDEN AND RESURFACE EXISTING ROAD FROM
-Y19- STA. 11+60.90 TO 12+00.00

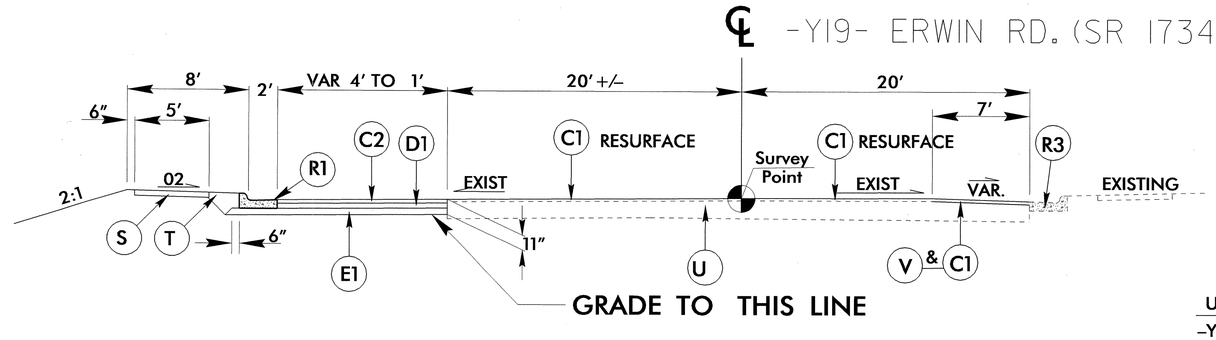
USE TYPICAL SECTION NO. 24
-Y19- STA. 12+00.00 TO 15+08.39

| PAVEMENT SCHEDULE | |
|---|---|
| A | 8" CONCRETE TRUCK APRON |
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR DEPTH S9.5B |
| D1 | 4" I19.0B |
| D2 | VAR DEPTH I19.0B |
| E1 | 4" B25.0B |
| E2 | VAR DEPTH B25.0B |
| J1 | 8" ABC |
| J2 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. CURB AND GUTTER. |
| R2 | 1'-6" CONC. CURB AND GUTTER. |
| R3 | EXIST. 2'-6" CONC. CURB & GUTTER. |
| S | 4" CONC. SIDEWALK. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | VAR. DEPTH MILLING 0 TO 1 1/2" |
| W | WEDGING |




## TYPICAL SECTION NO. 25

USE TYPICAL SECTION NO. 25
-Y19- STA. 16+62.96 TO 19+14.09




## TYPICAL SECTION NO.26

USE TYPICAL SECTION NO. 26
-Y19- STA. 19+14.09 TO 21+64.05

5/14/99

04-MAY-2010 13:48
F:\roadway\proj\u3306_rdy_typ.dgn
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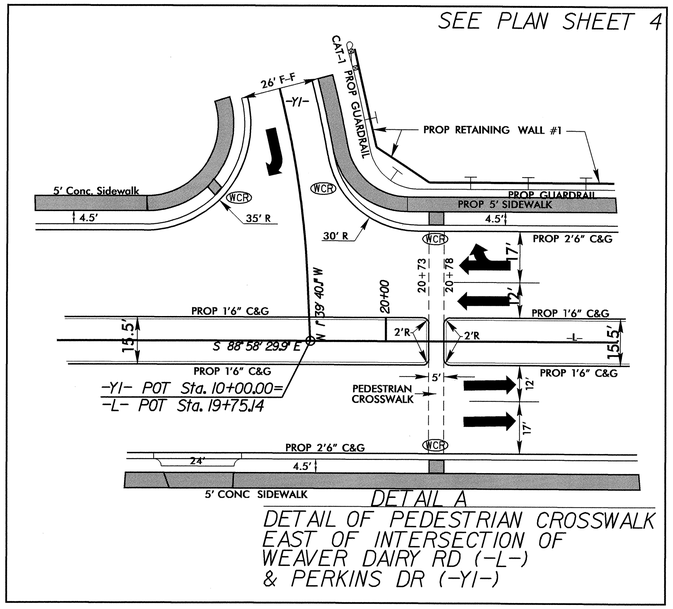
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-J |

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER
5/10/10



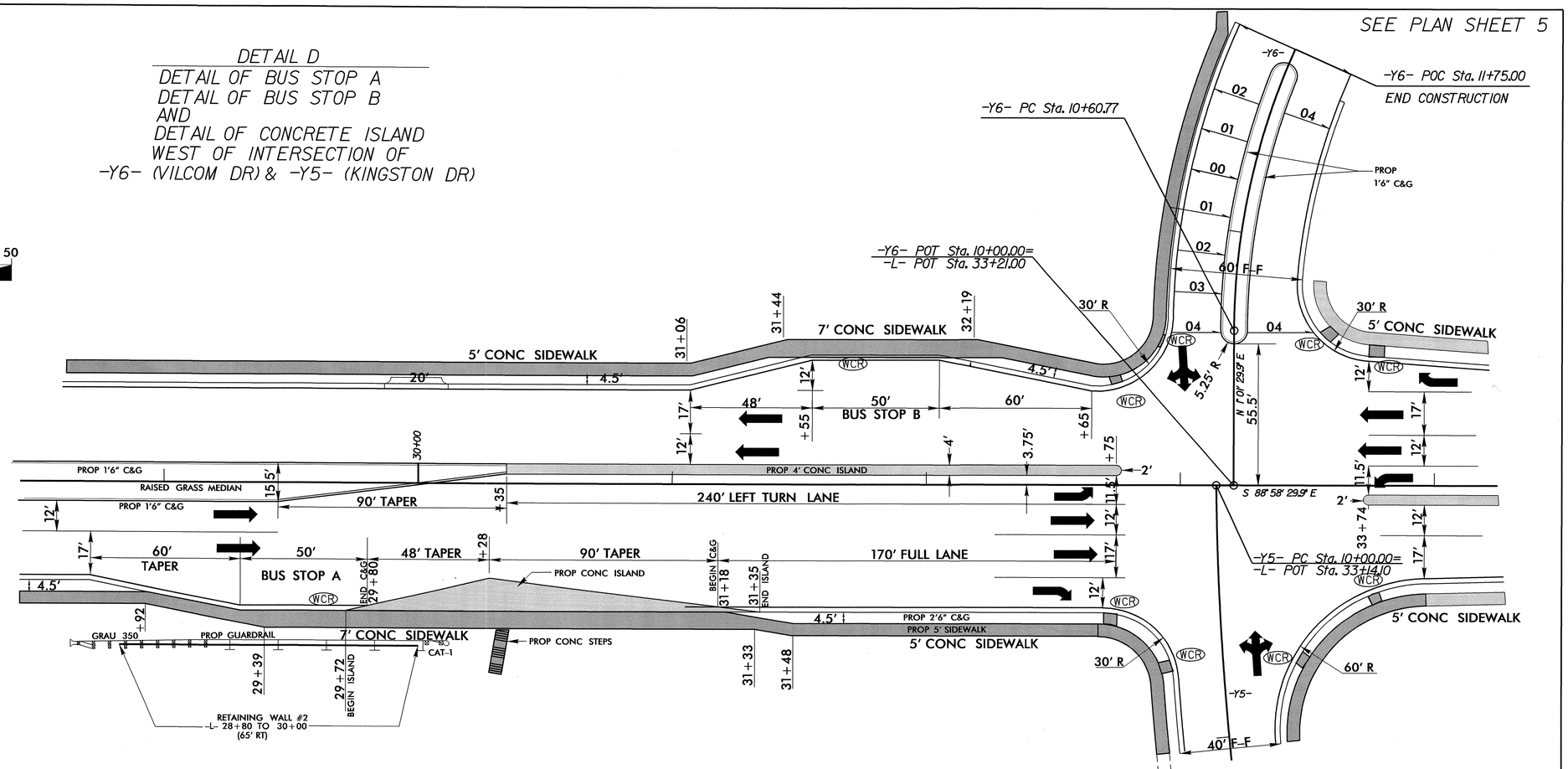

DETAIL A
DETAIL OF PEDESTRIAN CROSSWALK
EAST OF INTERSECTION OF
WEAVER DAIRY RD (-L-)
& PERKINS DR (-Y1-)

25 12.5 0 25 50
PLANS

NOTE: FOR WHEELCHAIR RAMP STATIONS SEE PAVEMENT MARKING PLANS

DETAIL D
DETAIL OF BUS STOP A
DETAIL OF BUS STOP B
AND
DETAIL OF CONCRETE ISLAND
WEST OF INTERSECTION OF
-Y6- (VILCOM DR) & -Y5- (KINGSTON DR)

25 12.5 0 25 50
PLANS

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RD238344 4/15/2010 u3306_rdy_typ jlansford RD-Oce860-34

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-K |

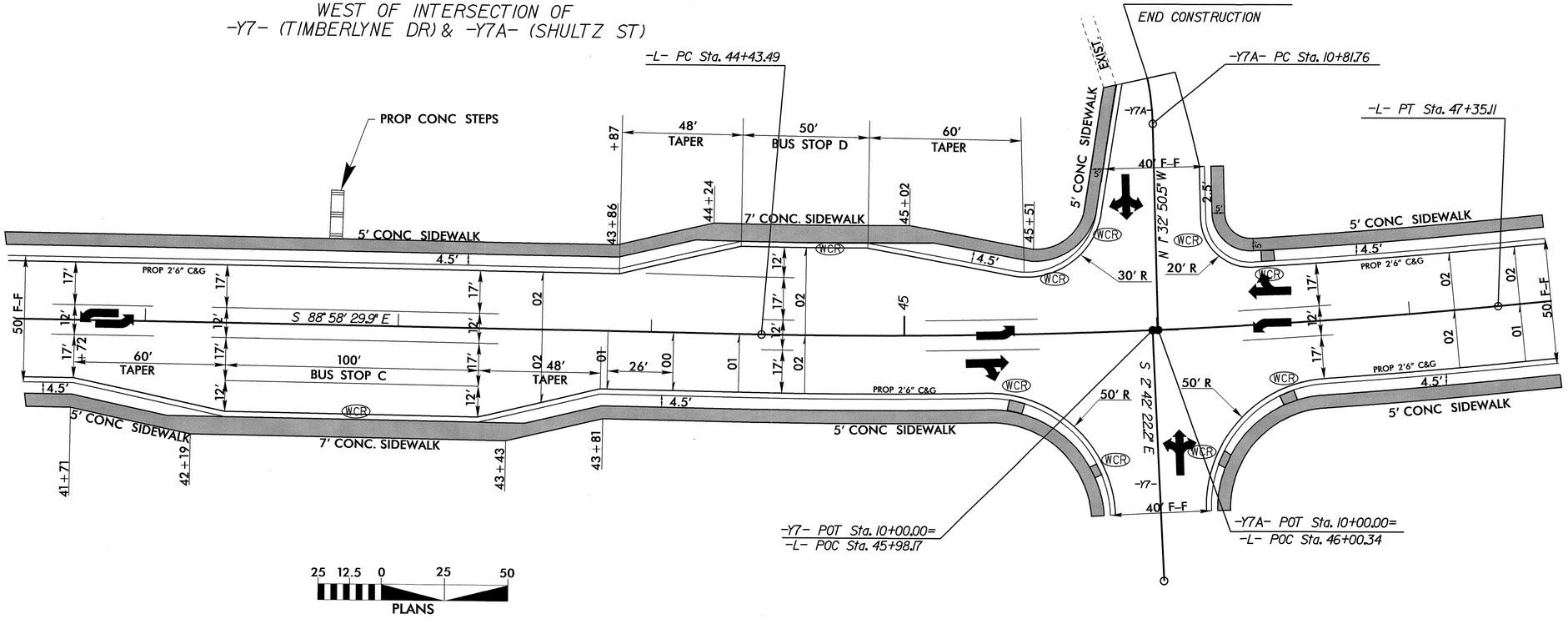
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 4/15/10

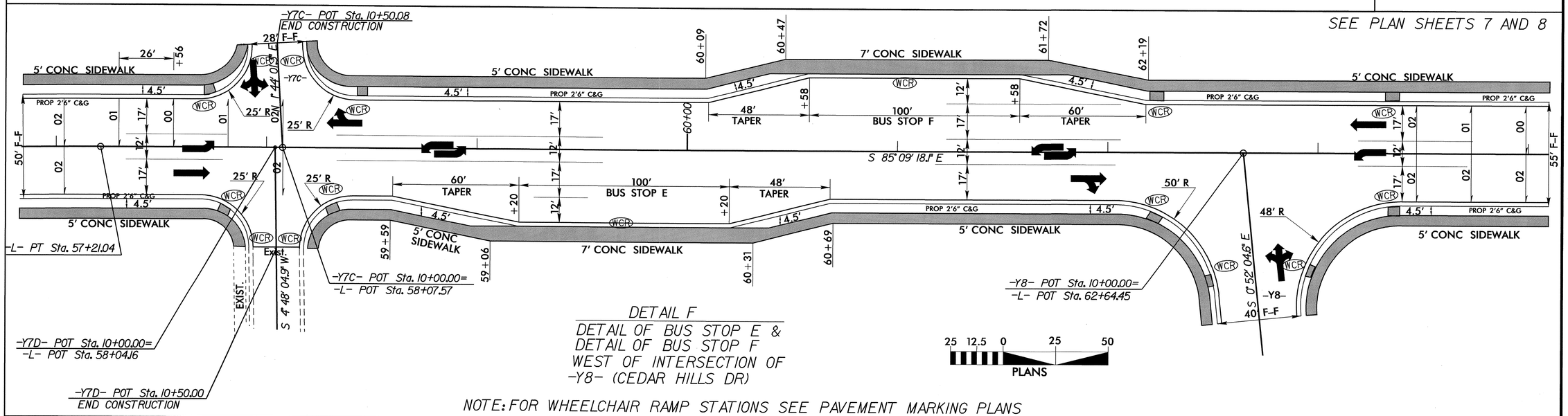
SEE PLAN SHEET 6

## DETAIL E

DETAIL OF BUS STOP C &
DETAIL OF BUS STOP D
WEST OF INTERSECTION OF
-Y7- (TIMBERLYNE DR) & -Y7A- (SHULTZ ST)




SEE PLAN SHEETS 7 AND 8




## DETAIL F

DETAIL OF BUS STOP E &
DETAIL OF BUS STOP F
WEST OF INTERSECTION OF
-Y8- (CEDAR HILLS DR)

NOTE: FOR WHEELCHAIR RAMP STATIONS SEE PAVEMENT MARKING PLANS

15-APR-2010 14:05
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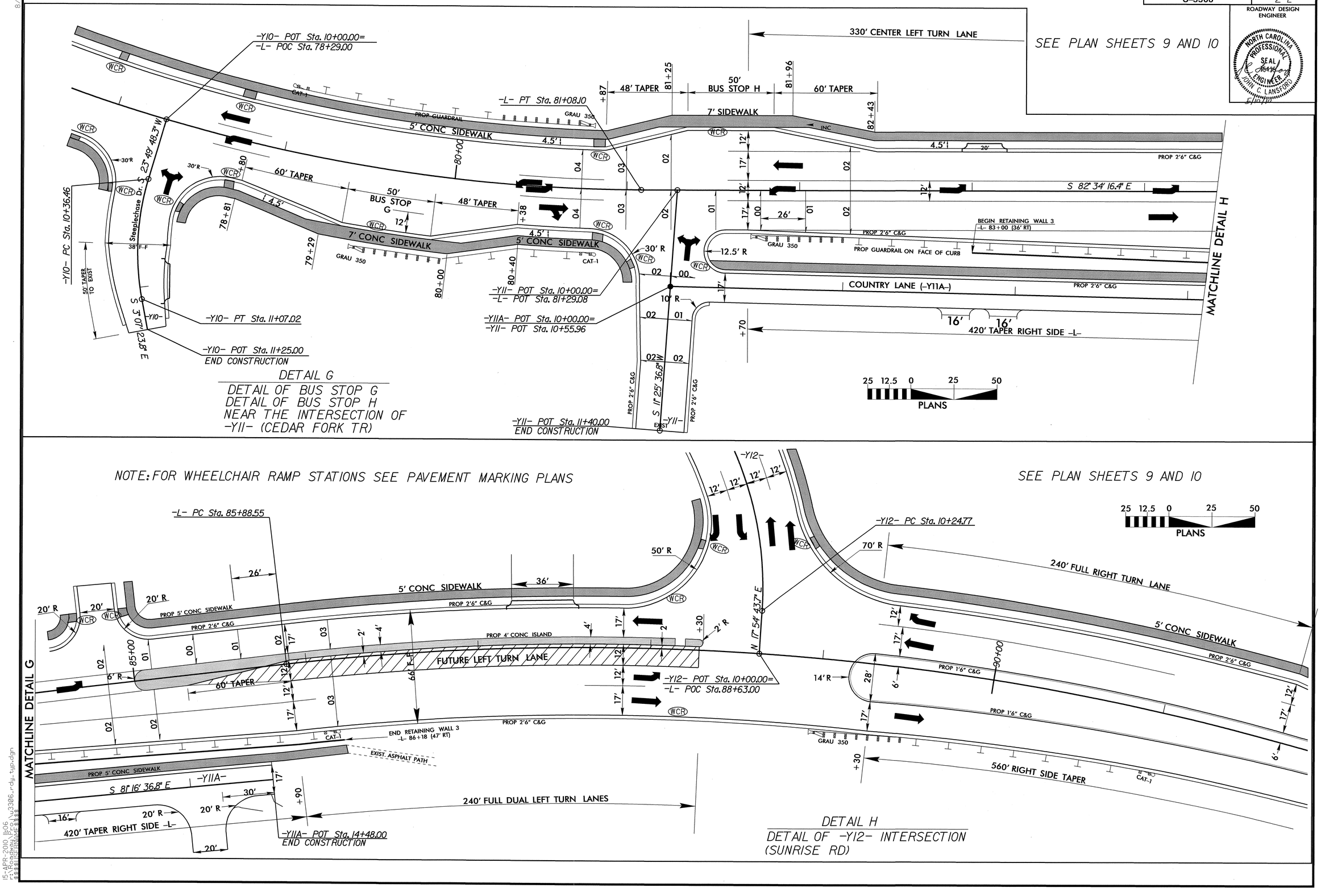
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-L |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JOHN C. LANSFORD 5/10/99

SEE PLAN SHEETS 9 AND 10




DETAIL G

DETAIL OF BUS STOP G
DETAIL OF BUS STOP H
NEAR THE INTERSECTION OF
-Y11- (CEDAR FORK TR)




DETAIL H

DETAIL OF -Y12- INTERSECTION
(SUNRISE RD)

15-APR-2010 11:06
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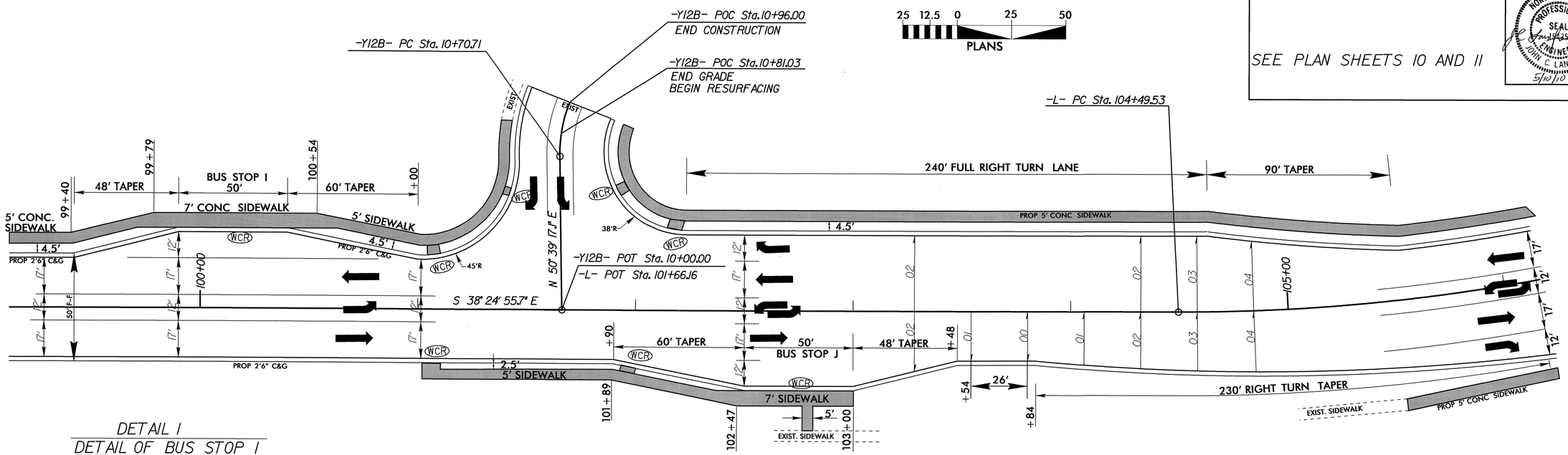
$$$$USERNAME$$$$

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-M |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JOHN C. LANSFORD 5/12/10

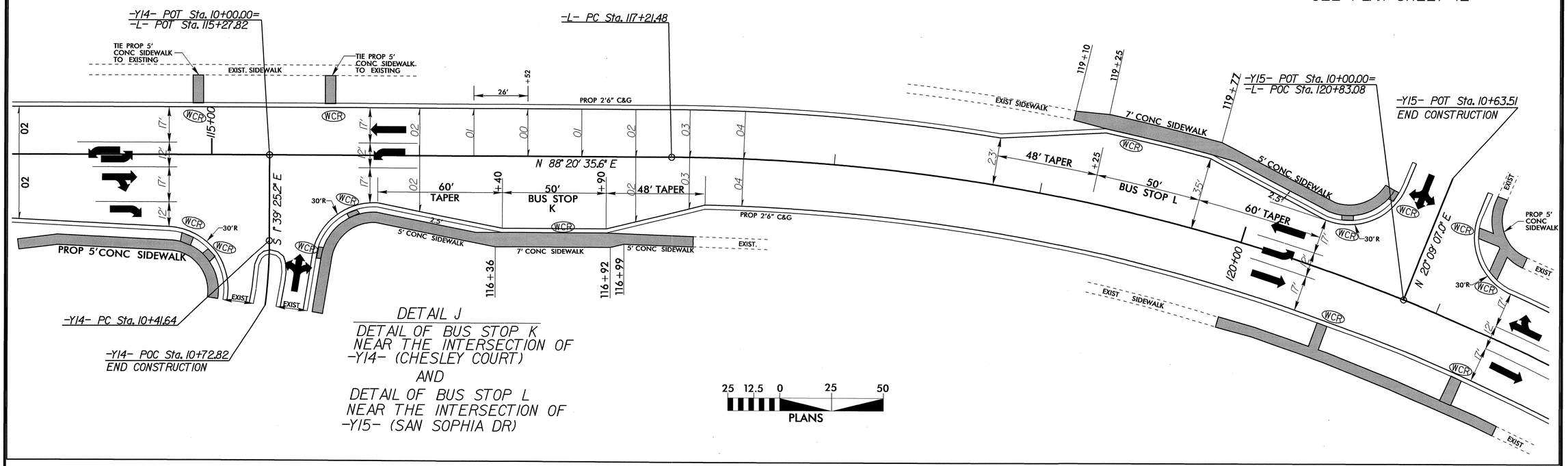
SEE PLAN SHEETS 10 AND 11




DETAIL I
DETAIL OF BUS STOP I
DETAIL OF BUS STOP J
NEAR THE INTERSECTION OF
-12B- (SCHOOL ENTRANCE)

NOTE: FOR WHEELCHAIR RAMP STATIONS SEE PAVEMENT MARKING PLANS

SEE PLAN SHEET 12




DETAIL J
DETAIL OF BUS STOP K
NEAR THE INTERSECTION OF
-Y14- (CHESLEY COURT)
AND
DETAIL OF BUS STOP L
NEAR THE INTERSECTION OF
-Y15- (SAN SOPHIA DR)

15-APR-2010 11:06
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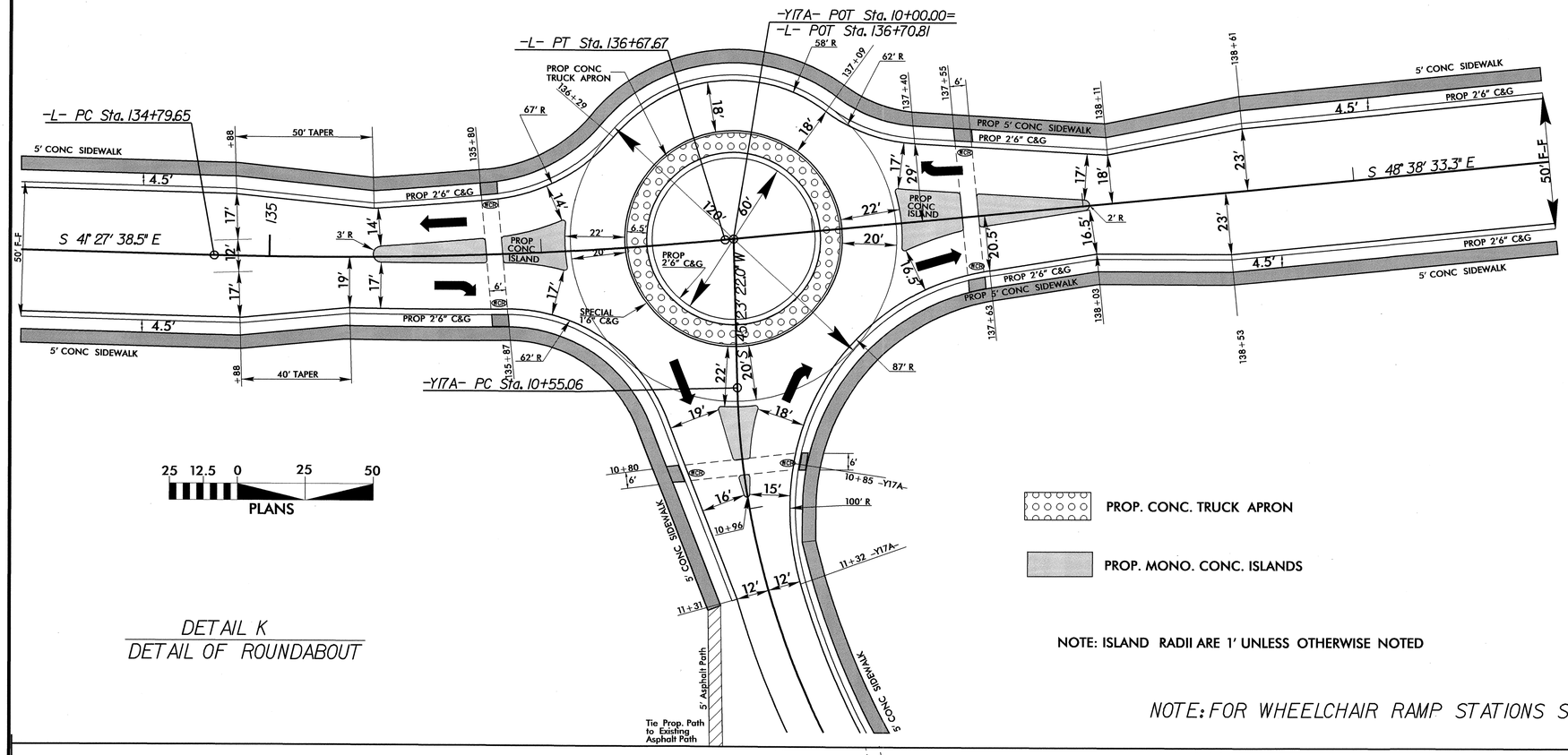
8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-N |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JOHN C. LANSFORD 5/10/10



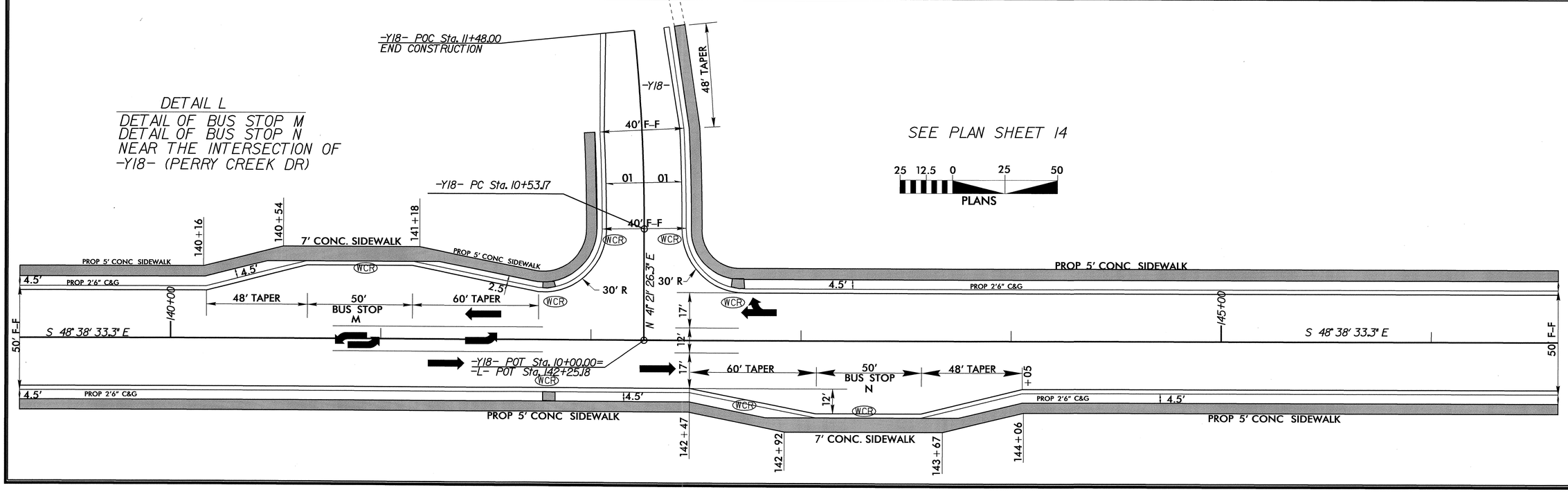

SEE PLAN SHEET 13

25 12.5 0 25 50
PLANS

DETAIL K
DETAIL OF ROUNDABOUT

NOTE: ISLAND RADII ARE 1' UNLESS OTHERWISE NOTED

NOTE: FOR WHEELCHAIR RAMP STATIONS SEE PAVEMENT MARKING PLANS




DETAIL L
DETAIL OF BUS STOP M
DETAIL OF BUS STOP N
NEAR THE INTERSECTION OF
-Y18- (PERRY CREEK DR)

SEE PLAN SHEET 14

25 12.5 0 25 50
PLANS

15-APR-2010 jb06
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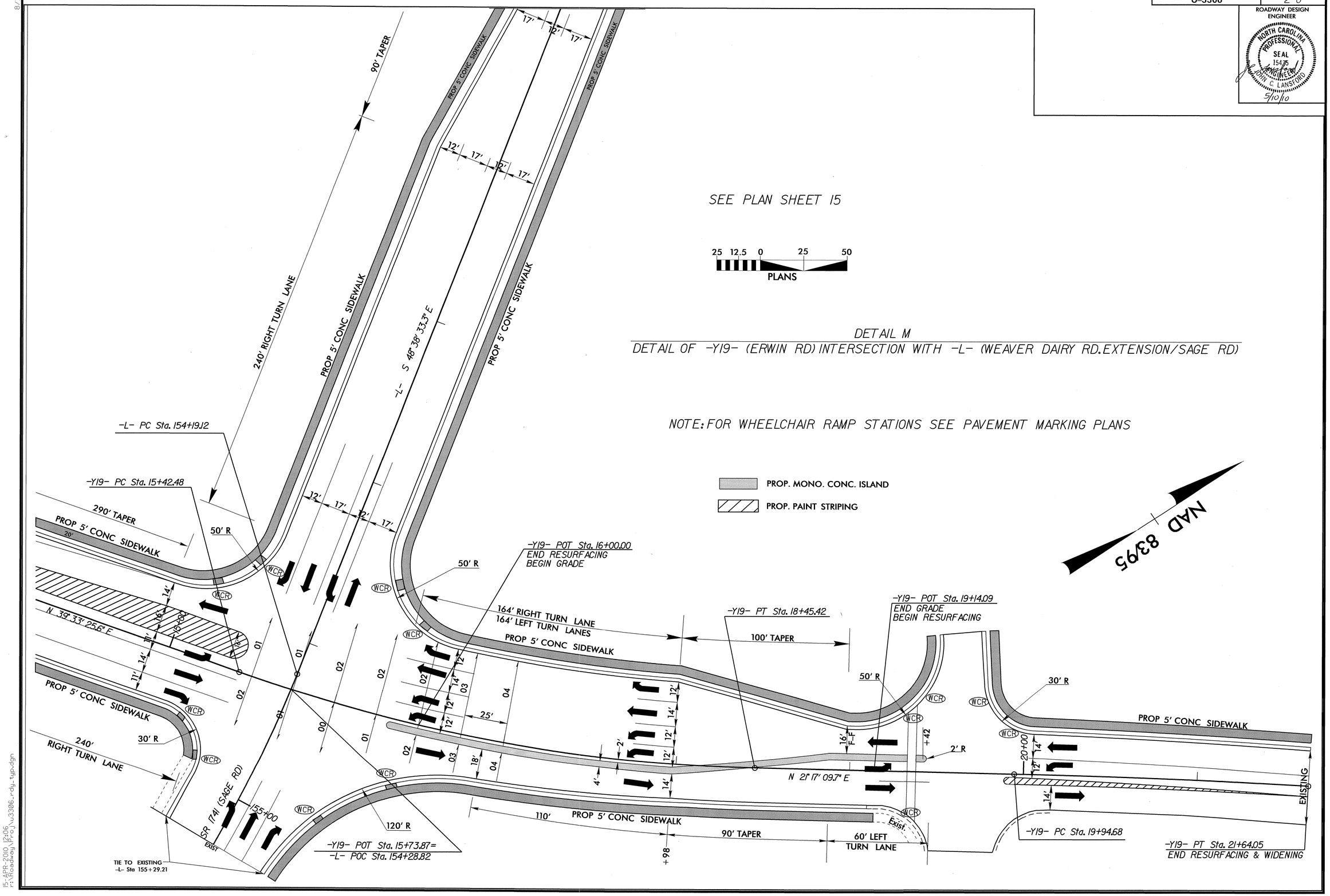
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-0 |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

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8/17/99

RD238344 4/15/2010 u3306_rdy_typ jlansford RD-Oce860-34

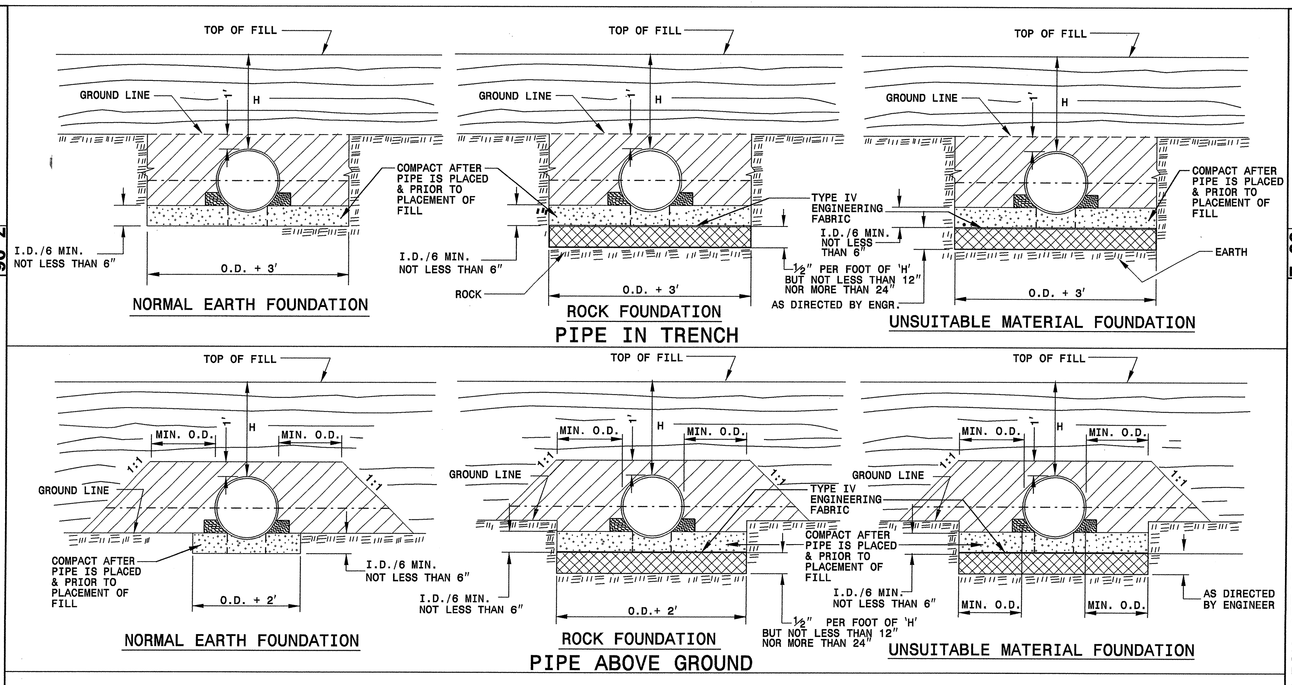
5/14/99

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

7-06

ENGLISH DETAIL DRAWING FOR
**METHOD OF PIPE INSTALLATION**

FLEXIBLE PIPE




GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

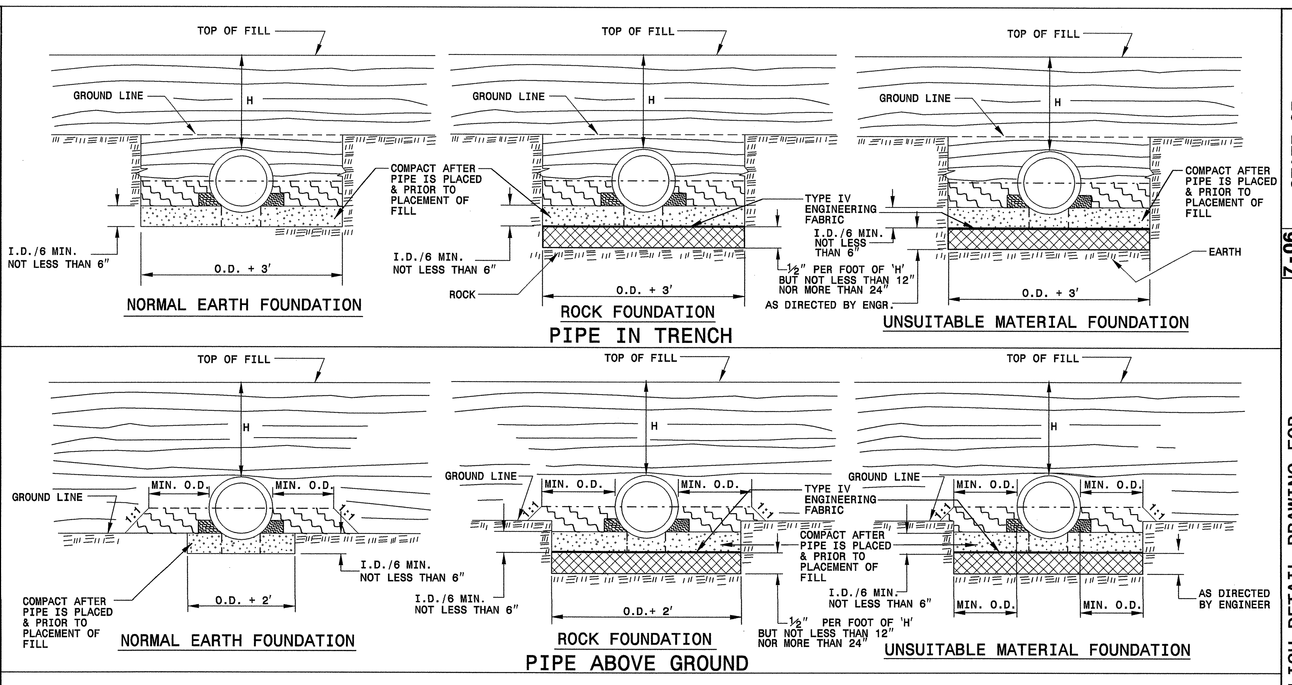
SHEET 1 OF 3
**300D01**

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

7-06

ENGLISH DETAIL DRAWING FOR
**METHOD OF PIPE INSTALLATION**

RIGID PIPE




GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 2 OF 3
**300D01**

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: Kkempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC/ericward/stds/stdsctodetails/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022596 ENGINEER

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-P |

PS237501 7/30/2009 0300d01 jhowerton PS-Oce860-34dtbond

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

7-06

ENGLISH DETAIL DRAWING FOR
**METHOD OF PIPE INSTALLATION**

FILL HEIGHT TABLES

SHEET 3 OF 3
**300D01**

# FLEXIBLE PIPE

**Round Corrugated Steel Pipe**
**2 2/3 x ½ corrugation ****

| Diameter (inches) | Minimum cover (inches) | Maximum Height of Cover (feet) (Ga) 16 | 14 | 12 | 10 | 8 |
|---|---|---|---|---|---|---|
| 12 | 12 | 204 | 256 | | | |
| 15 | 12 | 162 | 204 | | | |
| 18 | 12 | 135 | 169 | 239 | | |
| 21 | 12 | 115 | 145 | 204 | | |
| 24 | 12 | 100 | 126 | 178 | | |
| 30 | 12 | 79 | 100 | 142 | | |
| 36 | 12 | 65 | 83 | 117 | 152 | |
| 42 | 12 | 55 | 70 | 100 | 130 | 160 |
| 48 | 12 | 48 | 61 | 87 | 113 | 139 |
| 54 | 12 | | 54 | 77 | 100 | 123 |
| 60 | 12 | | | 69 | 90 | 111 |
| 66 | 12 | | | | 81 | 100 |
| 72 | 12 | | | | 74 | 91 |
| 78 | 12 | | | | | 81 |
| 84 | 12 | | | | | 69 |

**Round Corrugated Aluminum Pipe**
**2 2/3 x ½ corrugation ****

| Diameter (inches) | Minimum cover (inches) | Maximum Height of Cover (feet) (Ga) 16 | 14 | 12 | 10 | 8 |
|---|---|---|---|---|---|---|
| 12 | 12 | 123 | 155 | 218 | 281 | 344 |
| 15 | 12 | 98 | 123 | 174 | 224 | 275 |
| 18 | 12 | 81 | 102 | 144 | 187 | 228 |
| 21 | 12 | 69 | 87 | 123 | 160 | 195 |
| 24 | 12 | 60 | 76 | 108 | 139 | 171 |
| 27 | 12 | | 67 | 95 | 123 | 151 |
| 30 | 12 | | 60 | 85 | 111 | 136 |
| 36 | 12 | | 50 | 71 | 92 | 113 |
| 42 | 12 | | | 60 | 78 | 96 |
| 48 | 12 | | | 52 | 68 | 84 |
| 54 | 12 | | | 46 | 50 | 74 |
| 60 | 12 | | | | 50 | 62 |
| 66 | 12 | | | | | 51 |
| 72 | 12 | | | | | 41 |

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

HDPE - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 60″
* (Maximum fill) 20′ for pipe diameters ≤ 24″
17′ for pipe diameters ≥ 30″ and ≤ 60″

PVC - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 36″
* (Maximum fill) 30′ for pipe diameters ≥ 12″ and ≤ 36″

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

# RIGID PIPE

RCP - * (Minimum fill) 1′ for Class IV & CLASS V
2′ for Class III & Class II

* (Maximum fill) 10′ - Class II pipe
20′ - Class III pipe
30′ - Class IV pipe
40′ - Class V pipe

(For fills > 40′ & < 80′ use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR
**METHOD OF PIPE INSTALLATION**

FILL HEIGHT TABLES

SHEET 3 OF 3
**300D01**

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC: /rdi/rdi/stds/stsrdetails/300d/0300d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022586 ENGINEER

PROJECT REFERENCE NO. U-3306
SHEET NO. 2-D

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-R |

STATE OF
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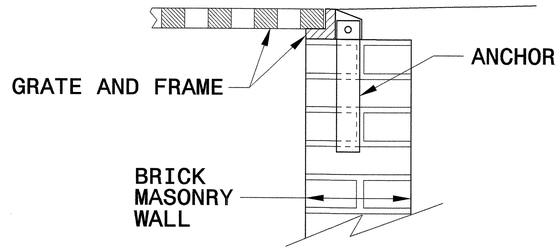
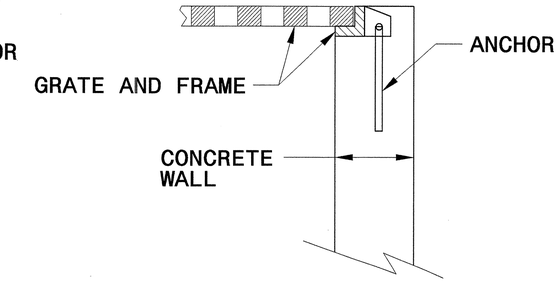
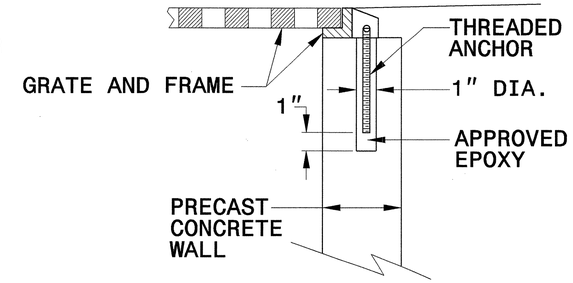
RALEIGH, N.C.




**BRICK MASONRY CONSTRUCTION**



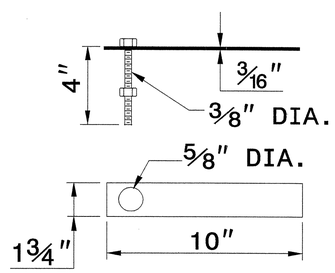

**CONCRETE CONSTRUCTION**



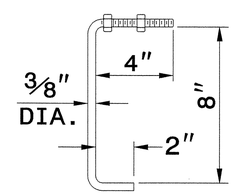

**PRECAST CONCRETE CONSTRUCTION**

## DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

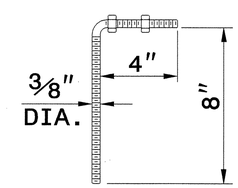
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



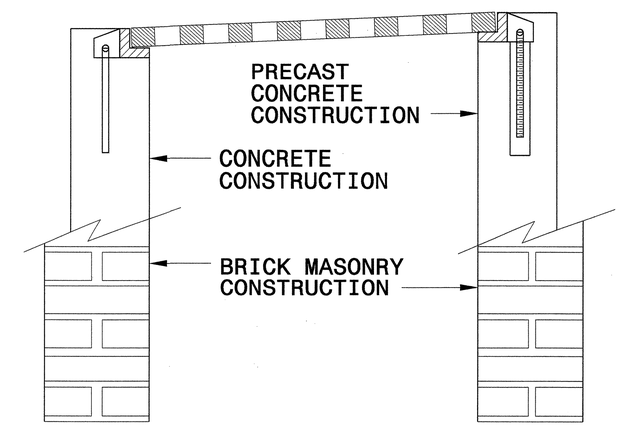

**MASONRY ANCHOR**
3/8" DIA. BOLT WITH PLATE




**CONCRETE ANCHOR**
3/8" DIA. BENT BAR




**PRECAST CONCRETE ANCHOR**
3/8" DIA. BENT BAR




**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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

SHEET 1 OF 1
**840D25**

STATE OF
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RALEIGH, N.C.

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

SHEET 1 OF 1
**840D25**

NORTH CAROLINA PROFESSIONAL SEAL 022566 ENGINEER JOHN D. HOWEVER JR.
5/11/10

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

**SEE PLATE FOR TITLE**

| | | | |
|---|---|---|---|
| ORIGINAL BY: | 2006 STD 840.25 | DATE: | 07/18/06 |
| MODIFIED BY: | E.E. WARD | DATE: | 9/25/06 |
| CHECKED BY: | | DATE: | 4/14/08 |
| FILE SPEC.: | | | |

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$$$$$$USERNAME$$$$

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-S |

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

ENGLISH DETAIL DRAWING FOR

# CONCRETE STEPS WITH HANDRAIL

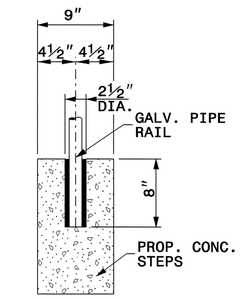
SHEET 1 OF 1

**844D01**

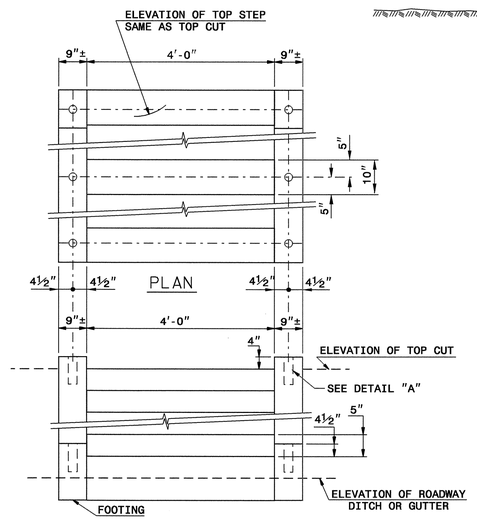
GENERAL NOTES :

1- CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1½" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53. EMBED PIPE RAIL 8" INTO PROPOSED STEPS WITH CHEMICAL OR CONCRETE GROUT ANCHORING SYSTEM AS DIRECTED BY THE ENGINEER.
2- USE A ROTARY DRILL FOR DRILLING THE HOLES FOR THE PIPE RAIL. NO IMPACT DRILLS ALLOWED.
3- USE CLASS "B" CONCRETE THROUGHOUT FOR CONCRETE STEPS.
4- LOCATION AND QUANTIES SHOWN ARE APPROXIMATE ONLY. EXACT LOCATION AND QUANTIES WILL BE DETERMINED BY THE ENGINEER.
5- ALL WORK AS DIRECTED BY THE ENGINEER.
6- REPAIR OF GALVANIZING IN ACCORDANCE WITH SCT.1076 OF THE STANDARD SPECIFICATIONS.
7- WELD IN ACCORDANCE WITH ARTICLE 1072-20 OF THE STANDARD SPECIFICATIONS.
8- 2" CLEAR SPACING ON ALL REINFORCING BARS.
9- EXTEND HORIZONTAL REINFORCING BARS UPWARD INTO SIDE WALLS.

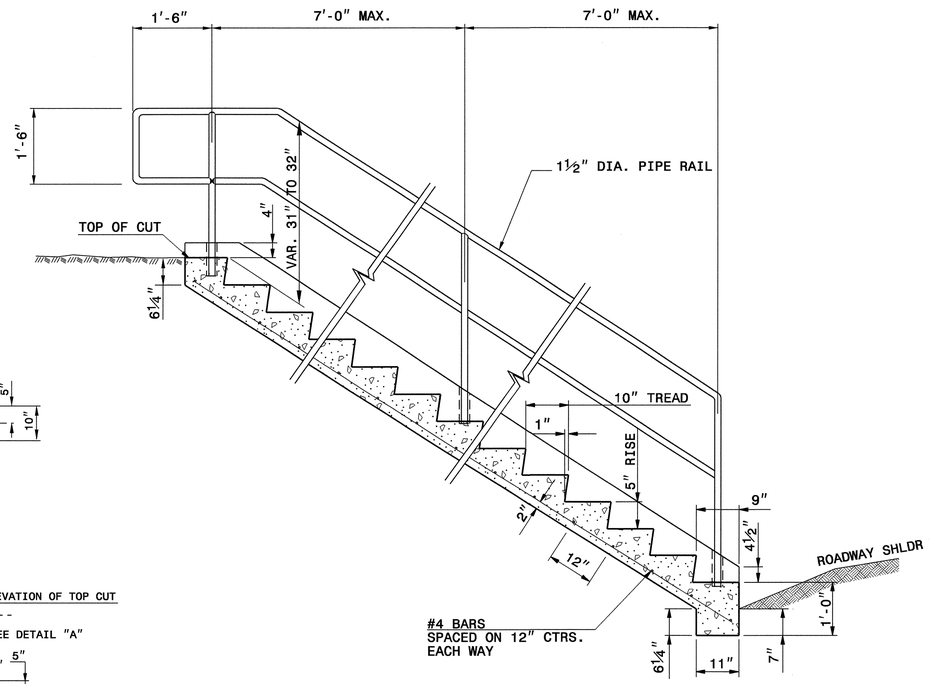
| BILL OF MATERIALS | | |
|---|---|---|
| 2 STEPS | CONCRETE (CUBIC YARDS) | .347 YDS. |
| | REINFORCING STEEL (POUNDS) | 19.4 # |
| EACH ADDITIONAL STEPS | CONCRETE (CUBIC YARDS) | .153 YDS. |
| | REINFORCING STEEL (POUNDS) | 8.85 # |




DETAIL "A"




FRONT ELEVATION




SECTION
CONCRETE STEPS

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

ENGLISH DETAIL DRAWING FOR

# CONCRETE STEPS WITH HANDRAIL

SHEET 1 OF 1

**844D01**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER LOUIS HOWERTON
5/11/10

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

**SEE PLATE FOR TITLE**

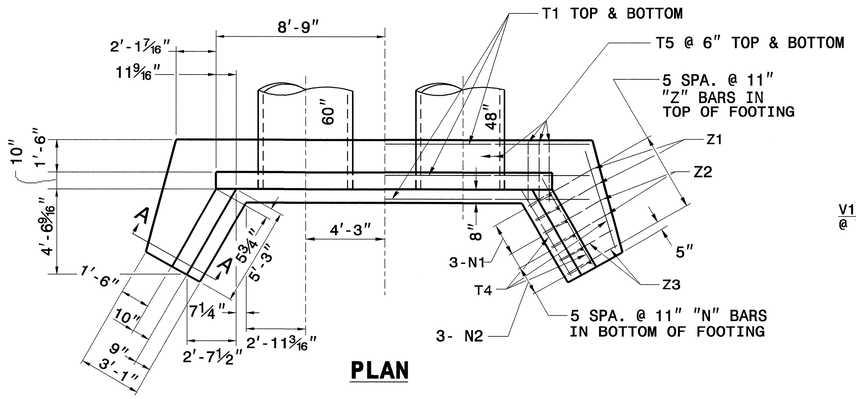
ORIGINAL BY: T.Spell DATE: Oct.7,1998
MODIFIED BY: DATE:
CHECKED BY: DATE: 2/17/10
FILE SPEC.:

12-FEB-2010 08:13
s:\contracts\contracts\special details\tspell\details\stand\844d01e.dgn
jhowerton AT PS237501

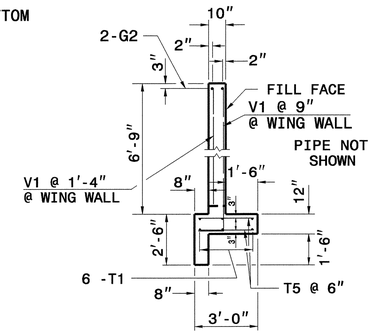
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-T |

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

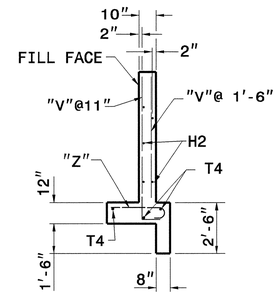
ENGLISH STANDARD DRAWING FOR
**REINFORCED CONCRETE ENDWALL**
FOR 60" & 48" PIPE - 90° SKEW



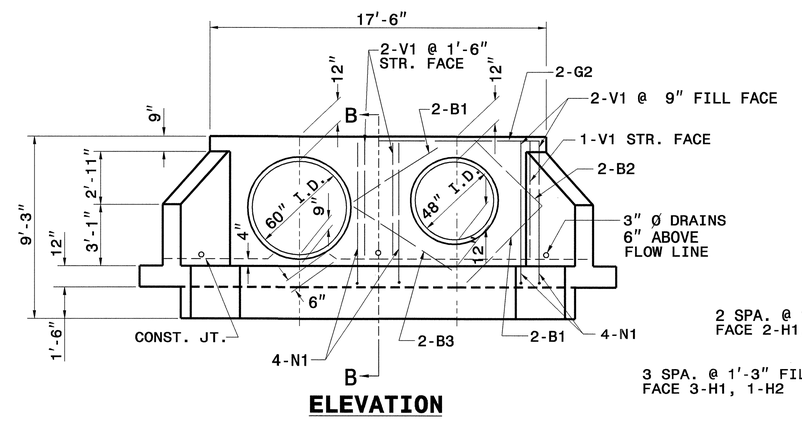

**PLAN**




**SECTION - BB**

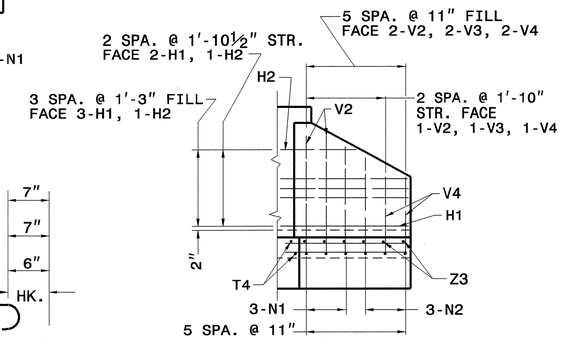



**SECTION - AA**

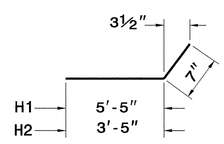



**ELEVATION**

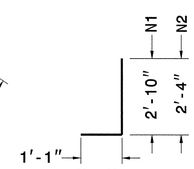
SEE STD. # 838.45 FOR GENERAL NOTES.



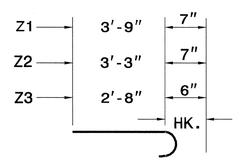

**WING ELEVATION**




**"H" BARS**




**"N" BARS**




**"Z" BARS**

"H", "N", & "Z" BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL FOR ENDWALL**

| REINF. STEEL | | | 2 PIPES | |
|---|---|---|---|---|
| BAR | SIZE | LENGTH | NO. | WEIGHT |
| B1 | #4 | 5'-6" | 8 | 29 |
| B2 | #4 | 4'-6" | 4 | 12 |
| B3 | #4 | 6'-6" | 4 | 17 |
| G2 | #7 | 17'-2" | 2 | 70 |
| H1 | #4 | 6'-0" | 10 | 40 |
| H2 | #4 | 4'-0" | 4 | 11 |
| N1 | #4 | 3'-11" | 14 | 57 |
| N2 | #4 | 3'-5" | 6 | 14 |
| T1 | #4 | 21'-2" | 6 | 85 |
| T4 | #4 | 5'-6" | 6 | 22 |
| T5 | #4 | 2'-6" | 70 | 117 |
| V1 | #4 | 6'-3" | 12 | 50 |
| V2 | #4 | 5'-1" | 6 | 20 |
| V3 | #4 | 3'-11" | 6 | 16 |
| V4 | #4 | 2'-9" | 6 | 11 |
| Z1 | #5 | 4'-4" | 4 | 18 |
| Z2 | #4 | 3'-10" | 4 | 10 |
| Z3 | #4 | 3'-2" | 4 | 8 |
| REINF. STEEL LBS. | | | | 607 |
| CON./R.C. CU. YDS | | | | 8.0 |

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

ENGLISH STANDARD DRAWING FOR
**REINFORCED CONCRETE ENDWALL**
FOR 60" & 48" PIPE - 90° SKEW

SHEET 1 OF 1
**838D28**

SHEET 1 OF 1
**838D28**

USE WITH STRUCTURE #'s 61A & 62

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWARD
5/11/10

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

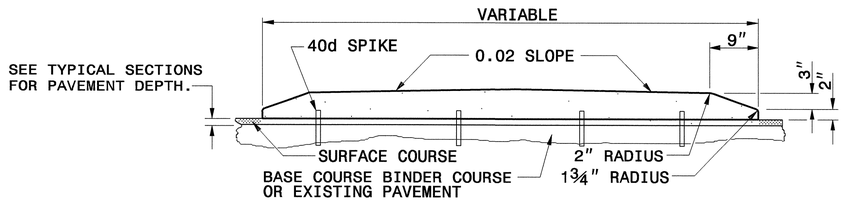
**DETAIL OF REINFORCED CONCRETE ENDWALL FOR 60"& 48" DIAMETER PIPE-90°SKEW**

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 02/12/10
CHECKED BY: [signature] DATE: 2/7/10
FILE SPEC.: details/nbritt/english/urban/u3306 60 48 endwall 90sk.dgn

16-FEB-2010 07:08
S:\Contracts\Contracts\Special Details\nbritt\english\urban\u3306 60 48 endwall.dgn
$$$$USERNAME$$$$

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-U |




## 5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED) ON ASPHALT CONCRETE PAVEMENT

(USE ON ISLAND 4' WIDE OR GREATER)

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

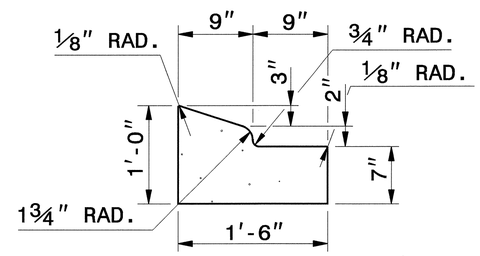
SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.

SEE STD.DWG.852.01 FOR ADDITIONAL MONOLITHIC ISLAND INFORMATION.

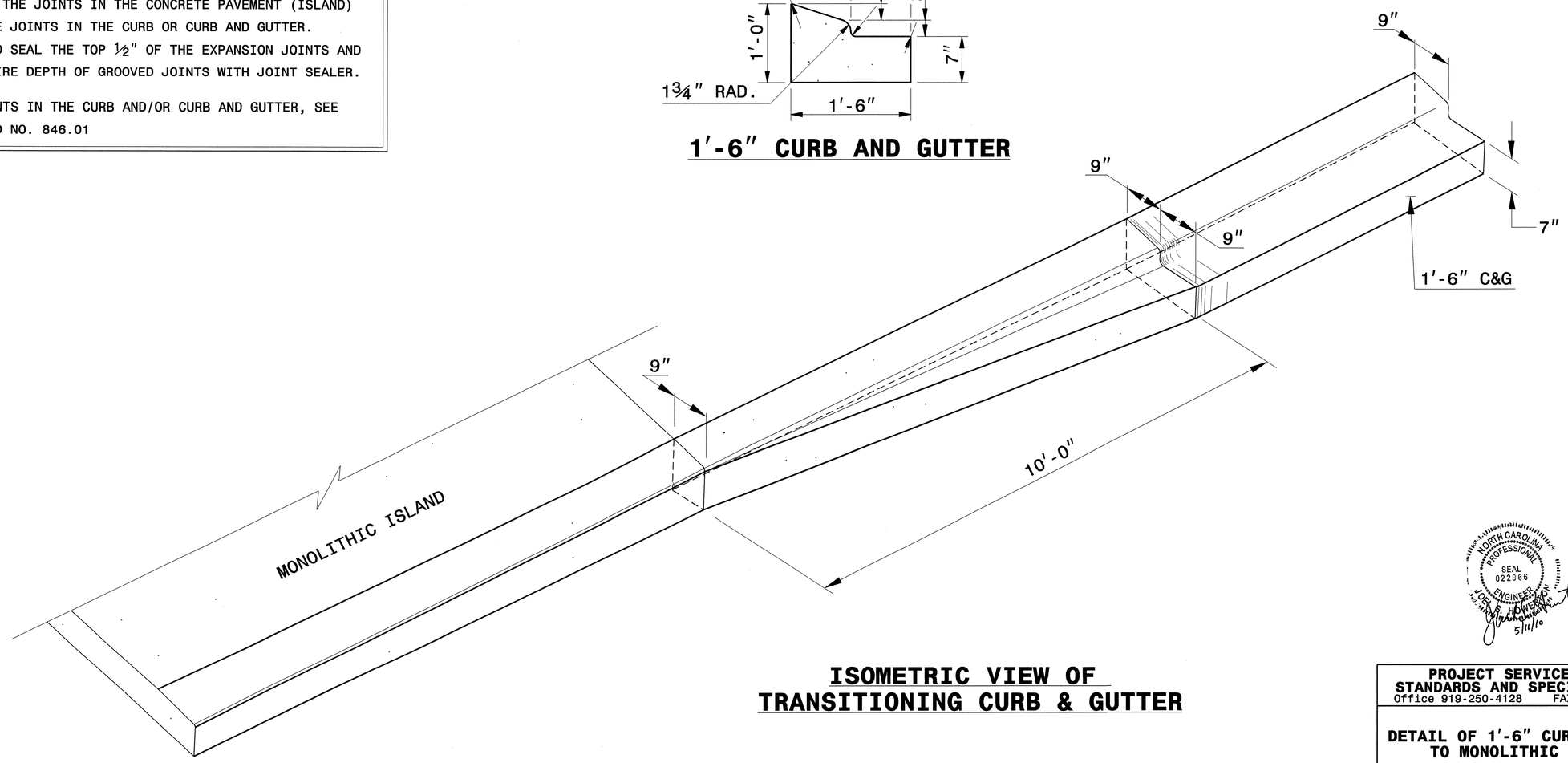
NOTE:

LINE UP THE JOINTS IN THE CONCRETE PAVEMENT (ISLAND) WITH THE JOINTS IN THE CURB OR CURB AND GUTTER.
FILL AND SEAL THE TOP ½" OF THE EXPANSION JOINTS AND THE ENTIRE DEPTH OF GROOVED JOINTS WITH JOINT SEALER.

FOR JOINTS IN THE CURB AND/OR CURB AND GUTTER, SEE STANDARD NO. 846.01




## 1'-6" CURB AND GUTTER




## ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL B. HOWARD
5/11/10

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

**DETAIL OF 1'-6" CURB & GUTTER TO MONOLITHIC ISLAND**

ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 02-12-10
CHECKED BY: DATE: 2/17/10
FILE SPEC.: details/rnbritt/english/urban/u3306 1-6curbto monoisland.dgn

PS244540 2/15/2010 u3306 1-6cg to monoisland rnbritt PS-Oce860-34dtbond

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-V |

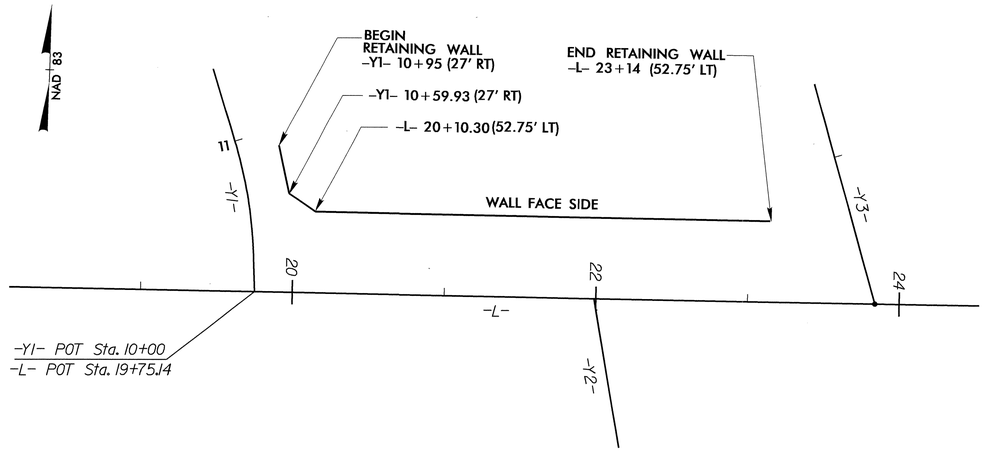
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32191 ENGINEER JINYOUNG PARK 3-9-10

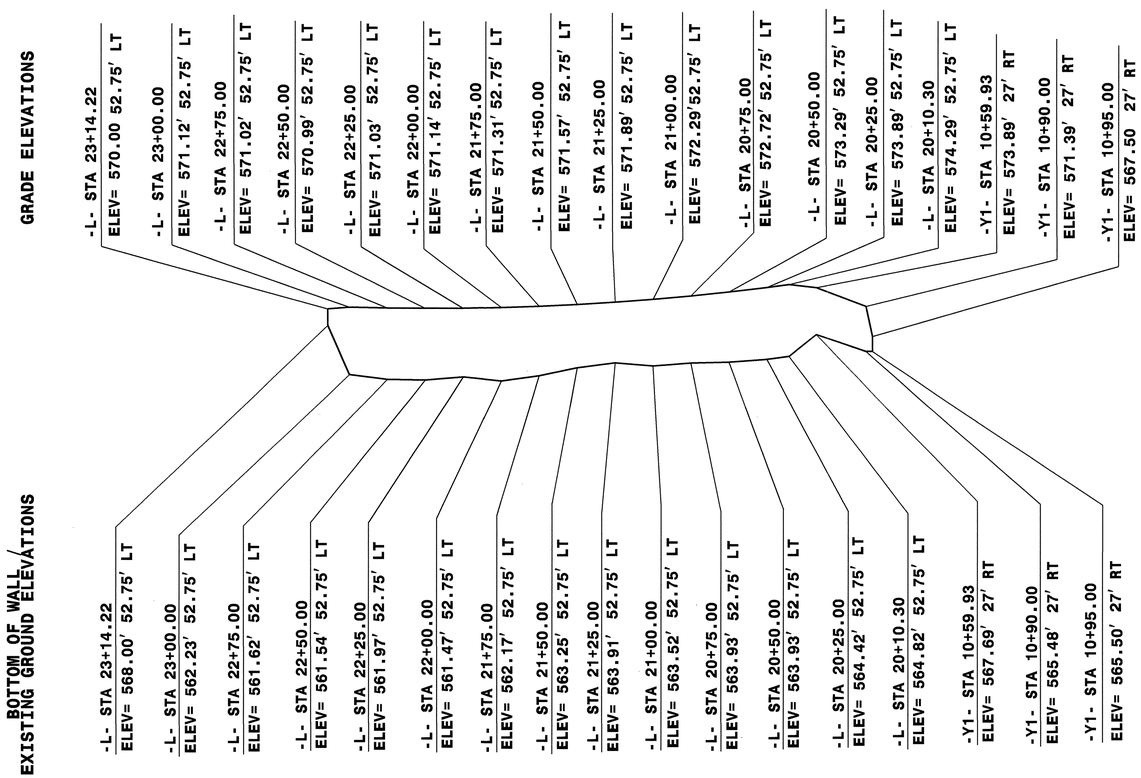
SIGNATURE DATE

ENGINEER

SIGNATURE DATE




## WALL NO. 1 PLAN VIEW, NTS




## WALL NO. 1 ENVELOPE, NTS

*– EXPOSED WALL FACE –*

### RETAINING WALL TYPICAL SECTION

| STA. | OFFSET FROM ℄ | GRADE ELEV. | ELEV. @ BOTTOM OF WALL | DESIGN HEIGHT |
|---|---|---|---|---|
| -L- 23+14.22 | 52.75' LT | 570.00 | 568.00 | 2.00' |
| -L- 23+00.00 | 52.75' LT | 571.12 | 562.23 | 8.89' |
| -L- 22+75.00 | 52.75' LT | 571.02 | 561.62 | 9.40' |
| -L- 22+50.00 | 52.75' LT | 570.99 | 561.54 | 9.45' |
| -L- 22+25.00 | 52.75' LT | 571.03 | 561.97 | 9.06' |
| -L- 22+00.00 | 52.75' LT | 571.14 | 561.47 | 9.67' |
| -L- 21+75.00 | 52.75' LT | 571.31 | 562.17 | 9.14' |
| -L- 21+50.00 | 52.75' LT | 571.57 | 563.25 | 8.32' |
| -L- 21+25.00 | 52.75' LT | 571.89 | 563.91 | 7.98' |
| -L- 21+00.00 | 52.75' LT | 572.29 | 563.52 | 8.77' |
| -L- 20+75.00 | 52.75' LT | 572.72 | 563.93 | 8.79' |
| -L- 20+50.00 | 52.75' LT | 573.29 | 563.93 | 9.36' |
| -L- 20+25.00 | 52.75' LT | 573.89 | 564.42 | 9.47' |
| -L- 20+10.30 | 52.75 LT | 574.29 | 564.82 | 9.47' |
| -Y1- 10+59.93 | 27.00' RT | 573.89 | 567.69 | 6.20' |
| -Y1- 10+90.00 | 27.00' RT | 571.39 | 565.48 | 5.91' |
| -Y1- 10+95.00 | 27.00' RT | 567.50 | 565.50 | 2.00' |

### TOTAL BILL OF MATERIAL

| | |
|---|---|
| OPTION 1 : MSE RETAINING WALLS | 3250 SQUARE FEET |
| OPTION 2 : PRECAST GRAVITY RETAINING WALLS | 3070 SQUARE FEET |

| | | | |
|---|---|---|---|
| PREPARED BY: | JINYOUNG PARK | DATE: | 02/2010 |
| REVIEWED BY: | JAMES R. BATTS | DATE: | 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

WALL NO. 1 ENVELOPE

REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | | | 3 | | |
| 2 | | | 4 | | |

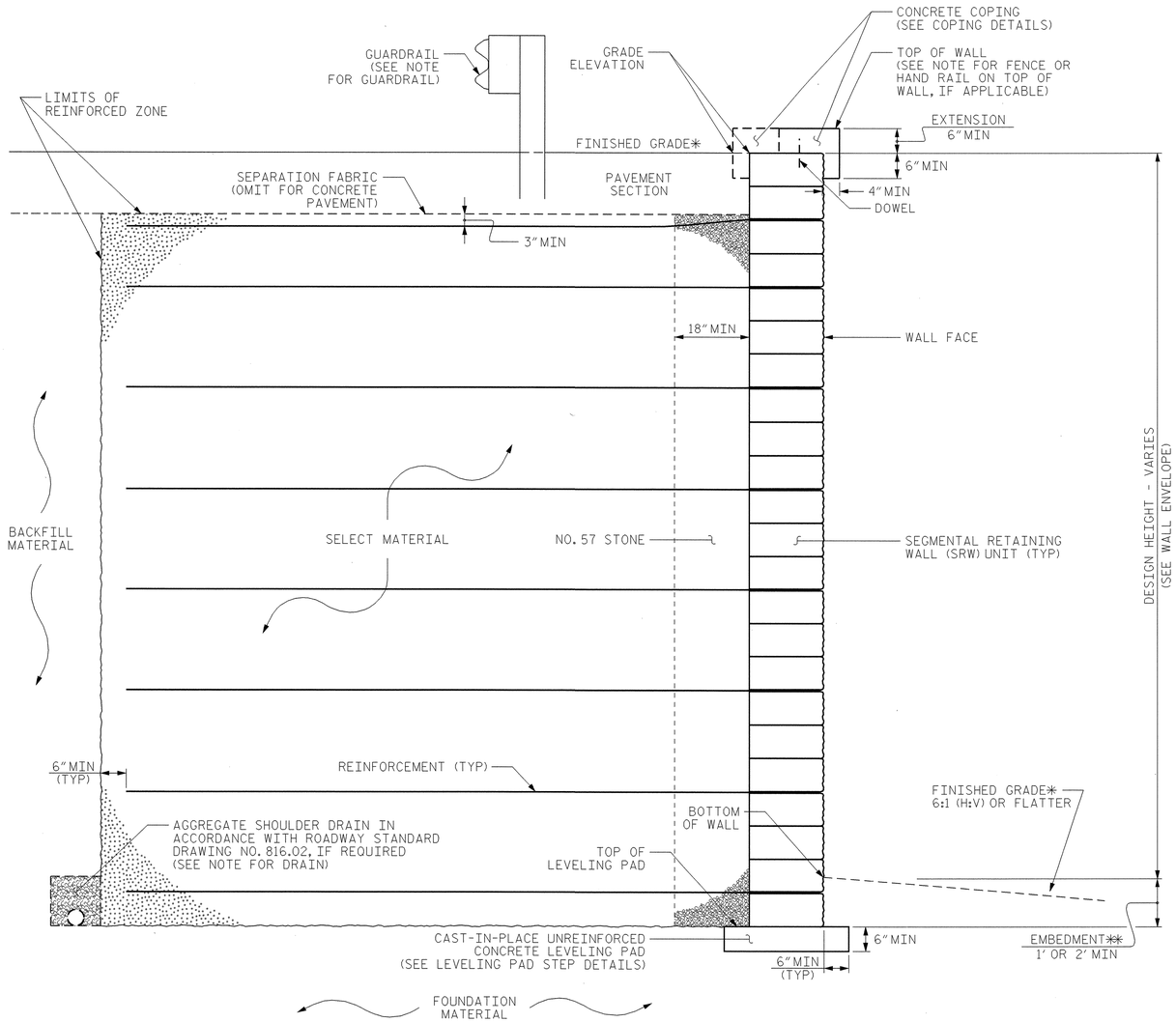
| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-W |

GEOTECHNICAL ENGINEER

SIGNATURE DATE

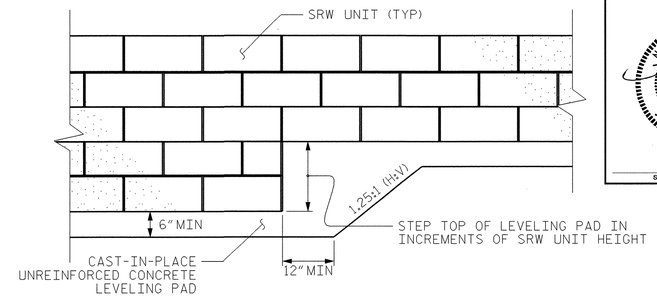
ENGINEER

SIGNATURE DATE

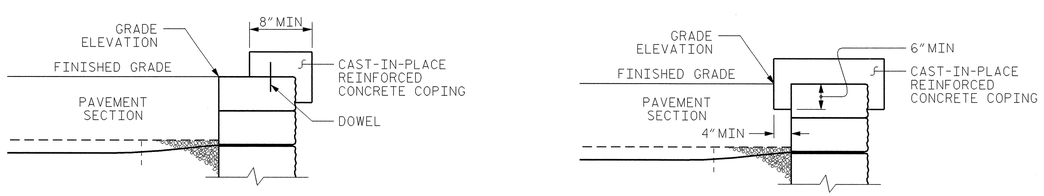



## MSE WALL WITH SRW UNITS TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT REQUIREMENTS.




## LEVELING PAD STEP DETAILS




## COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECTCOPING TO SRW UNITS
WITH DOWELS OREXTEND COPING DOWN BACK OF SRW UNITS.

## NOTES

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

WHEN USING AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL UNITS FOR RETAINING WALL NO. 1, FREEZE-THAW DURABLE SRW UNITS ARE REQUIRED IN ACCORDANCE WITH THE MSE RETAINING WALLS PROVISION.

USE SEGMENTAL RETAINING WALL WITH A NATURAL STONE TYPE FACE FOR RETAINING WALL NO. 1.

USE SEGMENTAL RETAINING WALL WITH A EARTH TONE COLOR FOR RETAINING WALL NO. 1.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 1.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEAVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) ALLOWABLE BEARING CAPACITY = 2800 PSF
3) SELECT MATERIAL PARAMETERS:

| MATERIAL STANDARD SIZE NO. (IN ACCORDANCE WITH SECTIONS 1005 AND 1014 OF THE STANDARD SPECIFICATIONS) | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| 2S AND 2MS | 125 | 34 | 0 |
| 57, 67 AND 78M | 110 | 38 | 0 |

4) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| BACKFILL | 120 | 30 | 0 |
| FOUNDATION | 120 | 0 | 1000 |

DESIGN RETAINING WALL NO. 1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1.

DO NOT PLACE LEVELING PAD CONCRETE, SELECT MATERIAL OR REINFORCEMENT FOR RETAINING WALL NO. 1 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

| | |
|---|---|
| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA**
**DEPARTMENT OF TRANSPORTATION**
**RALEIGH**

WALL NO. 1
MSE WALL WITH SRW UNIT
(OPTION 1)

REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | | | 3 | | |
| 2 | | | 4 | | |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-X |

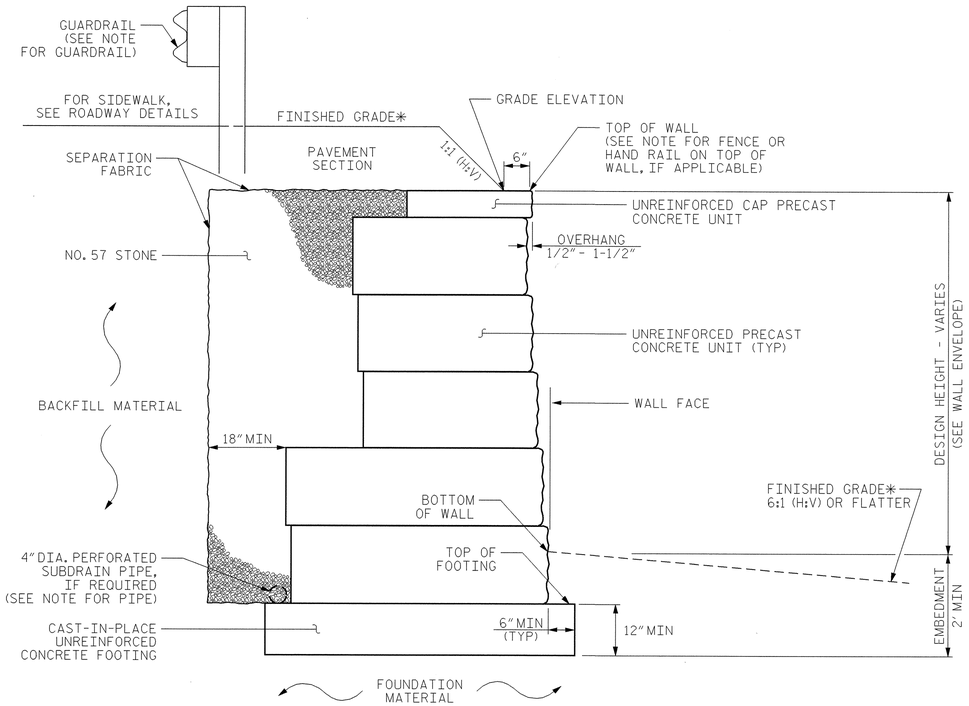
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

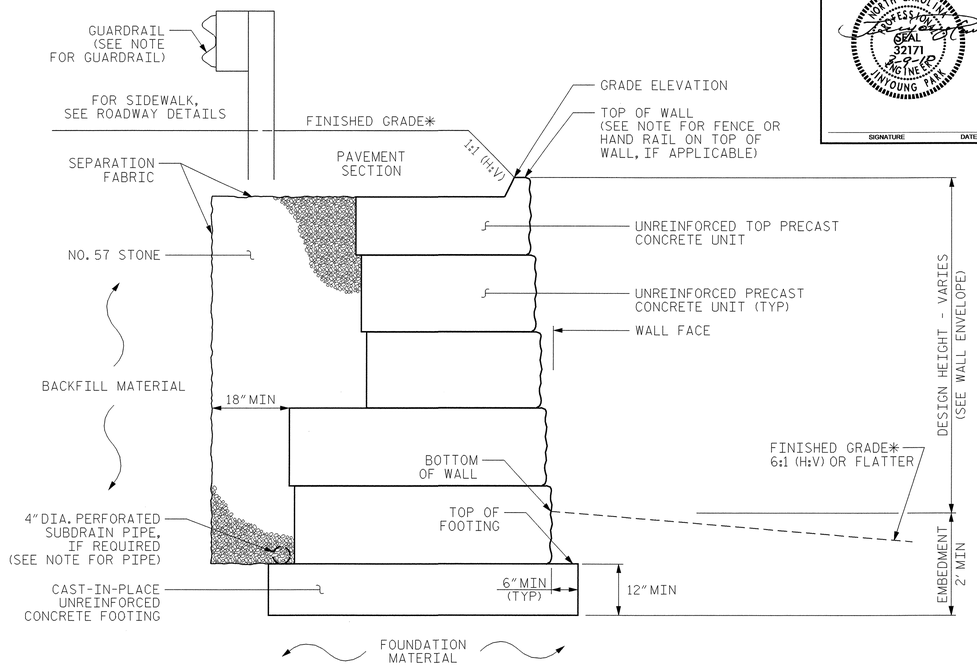
ENGINEER

SIGNATURE DATE




## PRECAST GRAVITY WALL WITH CAP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.




## PRECAST GRAVITY WALL WITH TOP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

## NOTES

FOR PRECAST GRAVITY RETAINING WALLS, SEE PRECAST GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

USE PRECAST CONCRETE UNITS WITH A NATURAL STONE TYPE FACE FOR RETAINING WALL NO. 1.

USE PRECAST CONCRETE UNITS WITH A EARTH TONE COLOR FOR RETAINING WALL NO. 1.

A SUBDRAIN PIPE IS REQUIRED FOR RETAINING WALL NO. 1.

BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

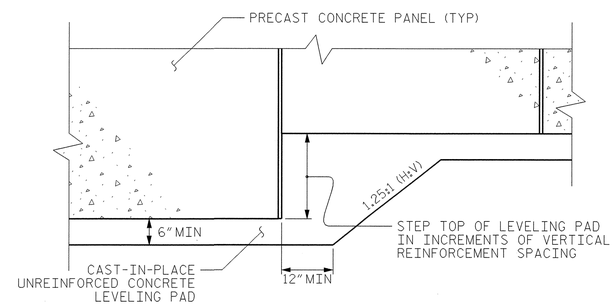
DESIGN RETAINING WALL NO. 1 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) ALLOWABLE BEARING CAPACITY = 2800 PSF
3) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| BACKFILL | 120 | 30 | 0 |
| FOUNDATION | 120 | 0 | 1000 |

DESIGN RETAINING WALL NO. 1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL NO. 1 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.




## LEVELING PAD STEP DETAILS

| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
|---|---|
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH**

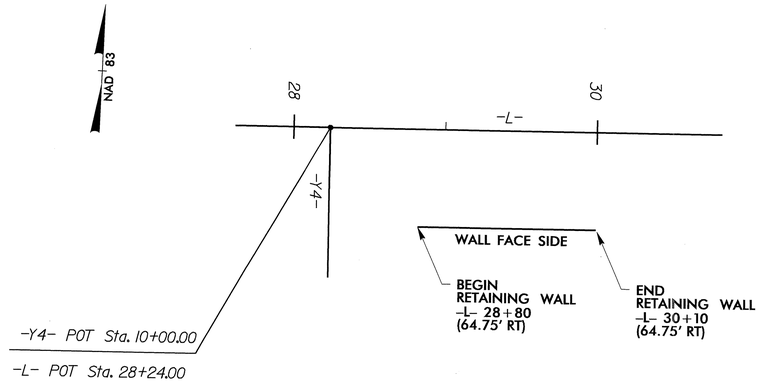
# WALL NO. 1 PRECAST GRAVITY WALL (OPTION 2)

REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-Y |

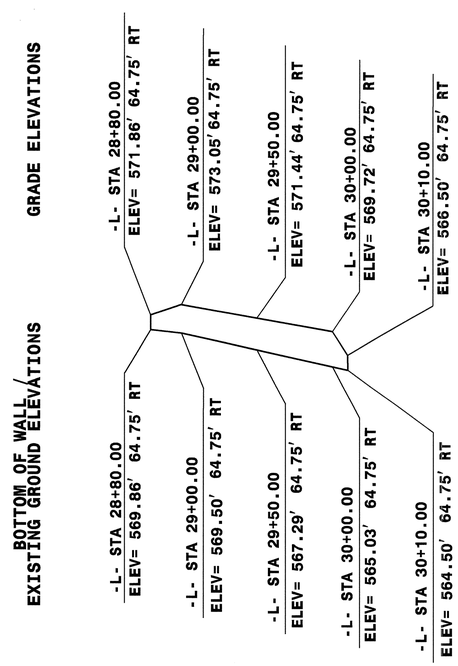
| GEOTECHNICAL ENGINEER | ENGINEER |
|---|---|
| SIGNATURE DATE | SIGNATURE DATE |




## WALL NO. 2 PLAN VIEW, NTS

| RETAINING WALL TYPICAL SECTION | | | | |
|---|---|---|---|---|
| STA. | OFFSET FROM ℄ | GRADE ELEV. | ELEV. @ BOTTOM OF WALL | DESIGN HEIGHT |
| -L- 28+80.00 | 64.75' RT | 571.86 | 569.86 | 2.00' |
| -L- 29+00.00 | 64.75' RT | 573.05 | 569.50 | 3.55' |
| -L- 29+50.00 | 64.75' RT | 571.44 | 567.29 | 4.15' |
| -L- 30+00.00 | 64.75' RT | 569.72 | 565.03 | 4.69' |
| -L- 30+10.00 | 64.75' RT | 566.50 | 564.50 | 2.00' |

| TOTAL BILL OF MATERIAL | |
|---|---|
| OPTION 1 : SEGMENTAL GRAVITY RETAINING WALLS | 580 SQUARE FEET |
| OPTION 2 : PRECAST GRAVITY RETAINING WALLS | 510 SQUARE FEET |




## WALL NO. 2 ENVELOPE, NTS

*– EXPOSED WALL FACE –*

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH**

WALL NO. 2 ENVELOPE

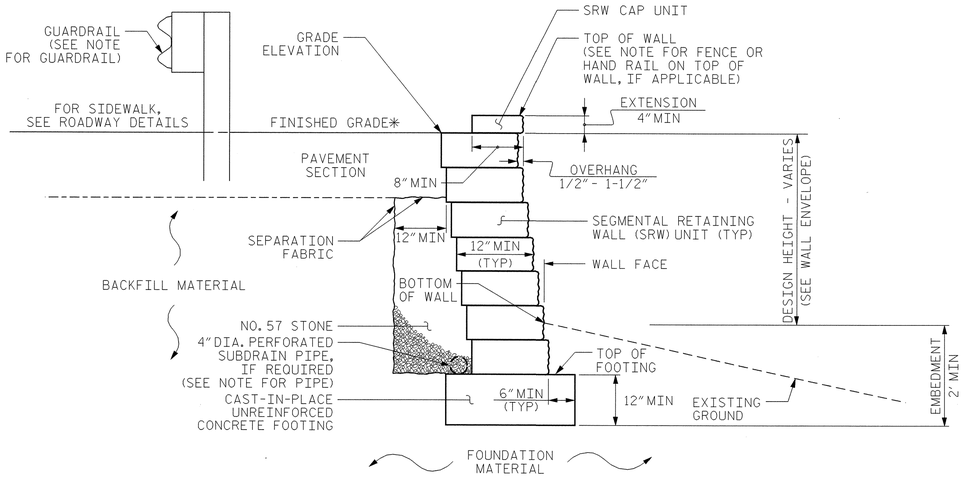
| REVISIONS | | | | | |
|---|---|---|---|---|---|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| | |
|---|---|
| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-Z |

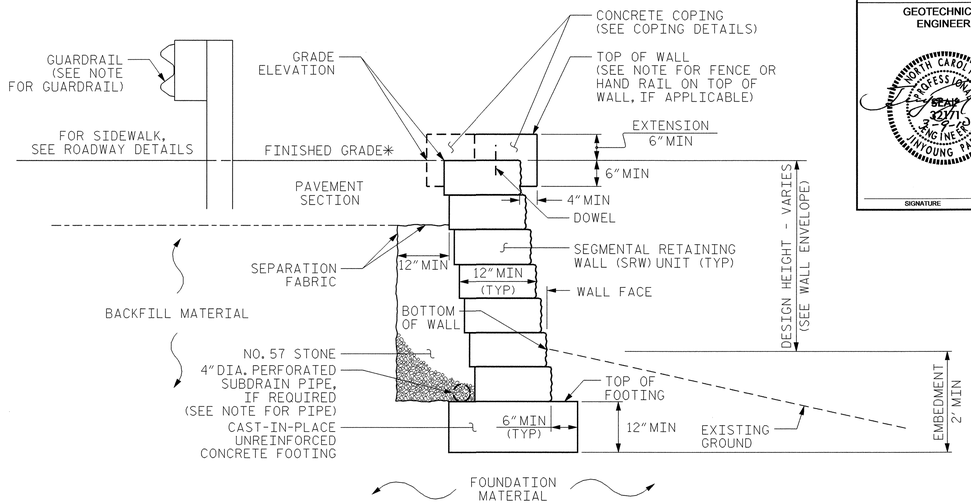
GEOTECHNICAL ENGINEER — SIGNATURE — DATE

ENGINEER — SIGNATURE — DATE




## SEGMENTAL GRAVITY WALL WITH SRW CAP UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

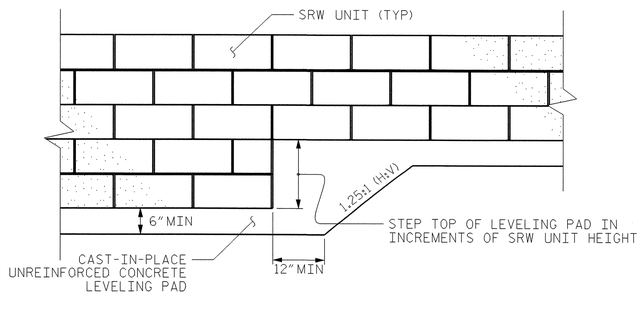



## SEGMENTAL GRAVITY WALL WITH COPING TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

## COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECTCOPING TO SRW UNITS WITH DOWELS OREXTEND COPING DOWN BACK OF SRW UNITS.




## LEVELING PAD STEP DETAILS

## NOTES

FOR SEGMENTAL GRAVITY RETAINING WALLS, SEE SEGMENTAL GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FREEZE-THAW DURABLE SEGMENTAL RETAINING WALL UNITS ARE REQUIRED IN ACCORDANCE WITH THE SEGMENTAL GRAVITY RETAINING WALLS PROVISION.

USE PRECAST CONCRETE UNITS WITH A NATURAL STONE TYPE FACE FOR RETAINING WALL NO. 2.

USE PRECAST CONCRETE UNITS WITH A EARTH TONE COLOR FOR RETAINING WALL NO. 2.

A SUBDRAIN PIPE IS REQUIRED FOR RETAINING WALL NO. 2.

BEFORE BEGINNING SEGMENTAL GRAVITY WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 2 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) ALLOWABLE BEARING CAPACITY = 2800 PSF
3) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| BACKFILL | 120 | 30 | 0 |
| FOUNDATION | 120 | 0 | 1000 |

DESIGN RETAINING WALL NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL NO. 2 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
|---|---|
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH**

# WALL NO. 2 SEGMENTAL GRAVITY WALL (OPTION 1)

REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-AA |

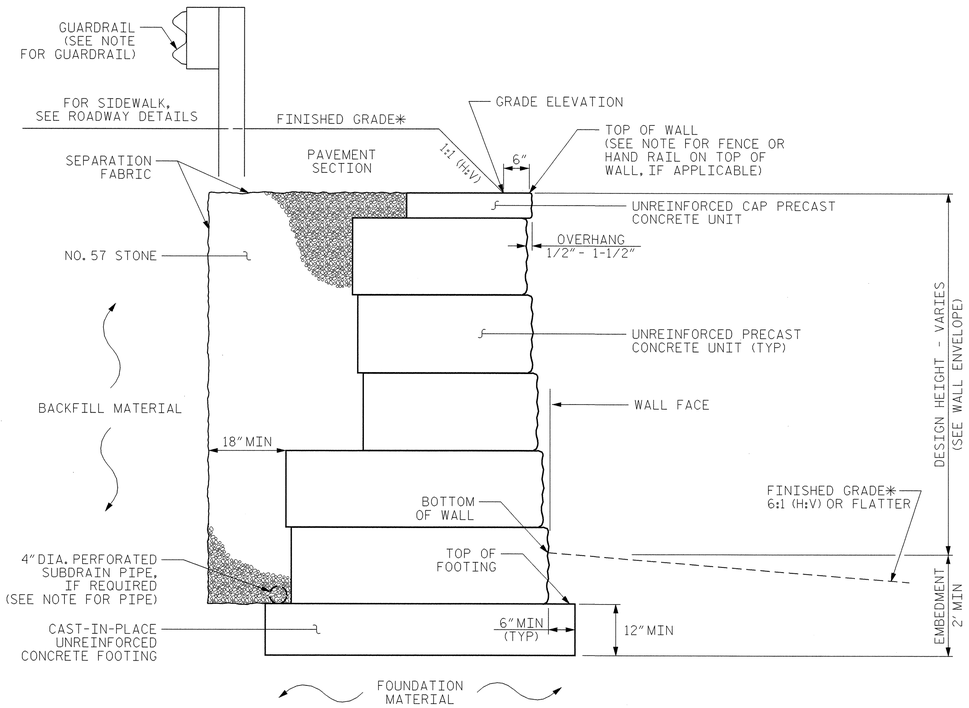
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

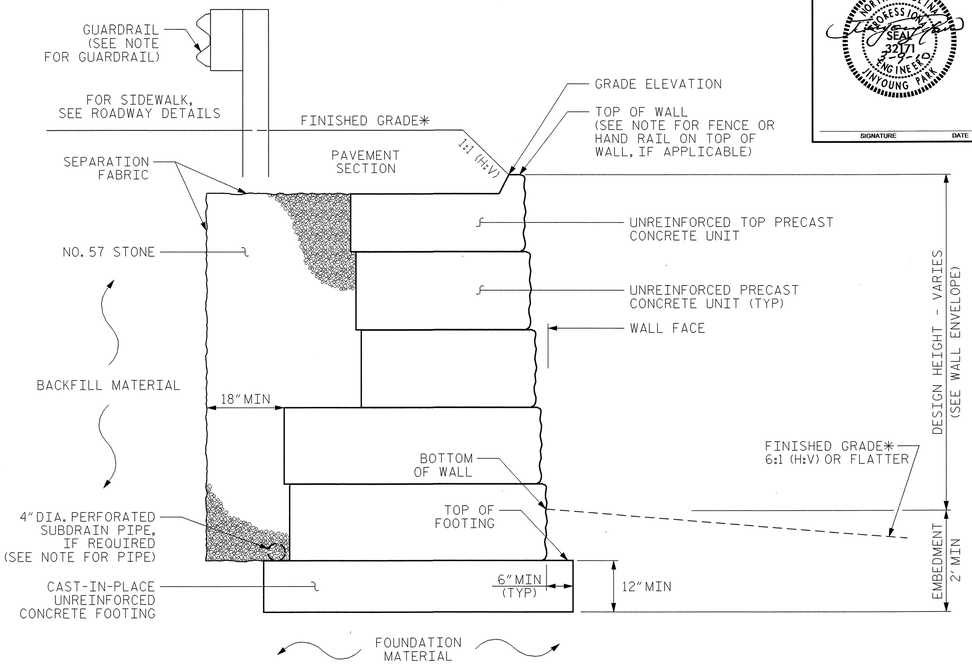
ENGINEER

SIGNATURE DATE




## PRECAST GRAVITY WALL WITH CAP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.




## PRECAST GRAVITY WALL WITH TOP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

## NOTES

FOR PRECAST GRAVITY RETAINING WALLS, SEE PRECAST GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

USE PRECAST CONCRETE UNITS WITH A NATURAL STONE TYPE FACE FOR RETAINING WALL NO. 2.

USE PRECAST CONCRETE UNITS WITH A EARTH TONE COLOR FOR RETAINING WALL NO. 2.

A SUBDRAIN PIPE IS REQUIRED FOR RETAINING WALL NO. 2.

BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

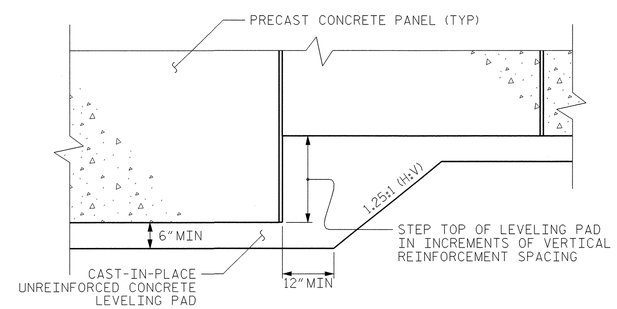
DESIGN RETAINING WALL NO. 2 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) ALLOWABLE BEARING CAPACITY = 2800 PSF
3) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| BACKFILL | 120 | 30 | 0 |
| FOUNDATION | 120 | 0 | 1000 |

DESIGN RETAINING WALL NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL NO. 2 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.




## LEVELING PAD STEP DETAILS

| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
|---|---|
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH**

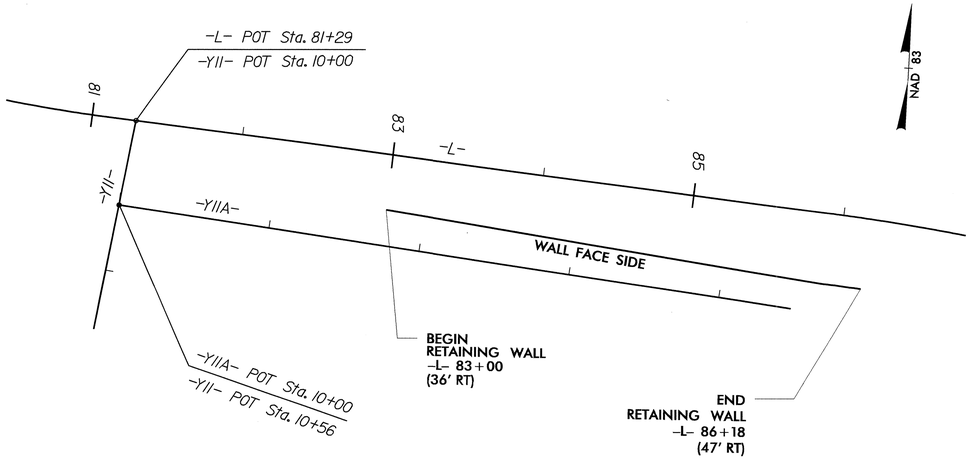
WALL NO. 2
PRECAST GRAVITY WALL
(OPTION 2)

REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-BB |

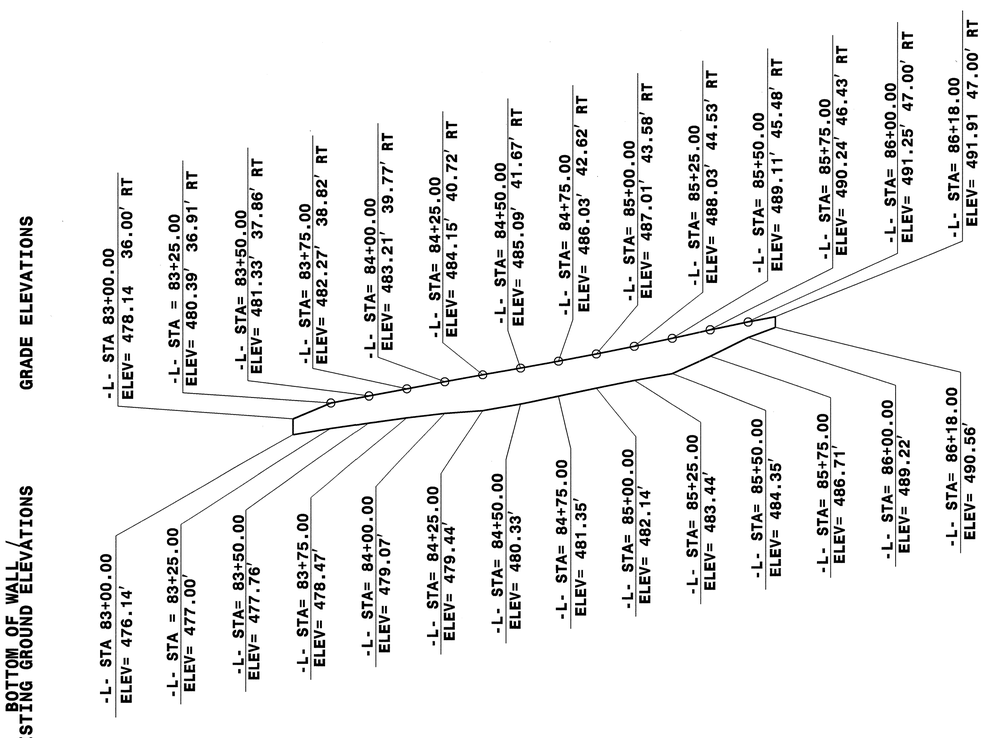
| GEOTECHNICAL ENGINEER | ENGINEER |
|---|---|
| NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK | |
| SIGNATURE DATE | SIGNATURE DATE |




## WALL NO. 3 PLAN VIEW, NTS

| RETAINING WALL TYPICAL SECTION | | | | |
|---|---|---|---|---|
| STA. | OFFSET FROM ℄ | GRADE ELEV. | ELEV. @ BOTTOM OF WALL | DESIGN HEIGHT |
| -L- 83+00.00 | 36.00' RT | 478.14 | 476.14 | 2.00 |
| -L- 83+25.00 | 36.91' RT | 480.39 | 477.00 | 3.39' |
| -L- 83+50.00 | 37.86 RT | 481.33 | 477.76 | 3.57' |
| -L- 83+75.00 | 38.82' RT | 482.27 | 478.47 | 3.80' |
| -L- 84+00.00 | 39.77' RT | 483.21 | 479.07 | 4.14' |
| -L- 84+25.00 | 40.72' RT | 484.15 | 479.44 | 4.71' |
| -L- 84+50.00 | 41.67' RT | 485.09 | 480.33 | 4.76' |
| -L- 84+75.00 | 42.62' RT | 486.03 | 481.35 | 4.68' |
| -L- 85+00.00 | 43.58' RT | 487.01 | 482.14 | 4.87' |
| -L- 85+25.00 | 44.53' RT | 488.03 | 483.44 | 4.59' |
| -L- 85+50.00 | 45.48' RT | 489.11 | 484.35 | 4.76' |
| -L- 85+75.00 | 46.43' RT | 490.24 | 486.71 | 3.53' |
| -L- 86+00.00 | 47.00' RT | 491.25 | 489.22 | 2.03' |
| -L- 86+18.00 | 47.00' RT | 491.91 | 490.56 | 1.35' |

| TOTAL BILL OF MATERIAL | |
|---|---|
| OPTION 1 : SEGMENTAL GRAVITY RETAINING WALLS | 1430 SQUARE FEET |
| OPTION 2 : PRECAST GRAVITY RETAINING WALLS | 1270 SQUARE FEET |




## WALL NO. 3 ENVELOPE, NTS

*– EXPOSED WALL FACE –*

| | |
|---|---|
| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

WALL NO. 3 ENVELOPE

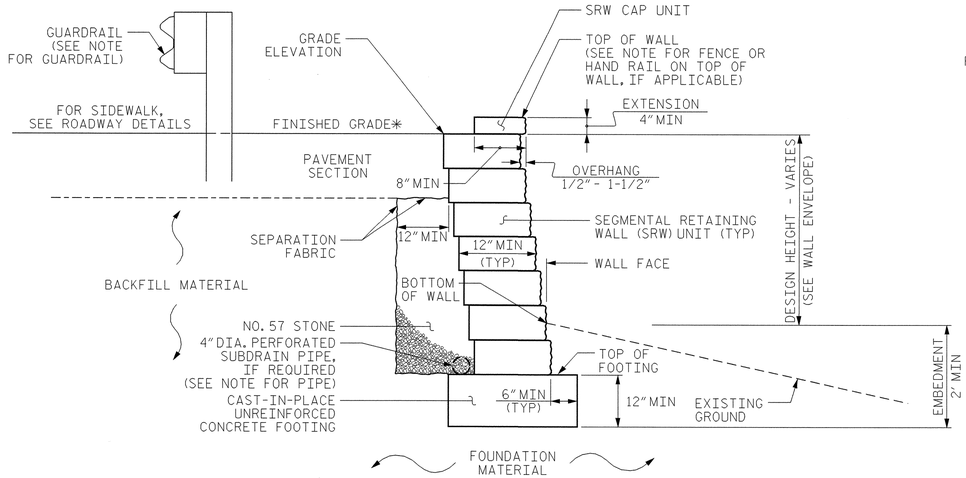
| REVISIONS | | | | | |
|---|---|---|---|---|---|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-CC |

GEOTECHNICAL ENGINEER

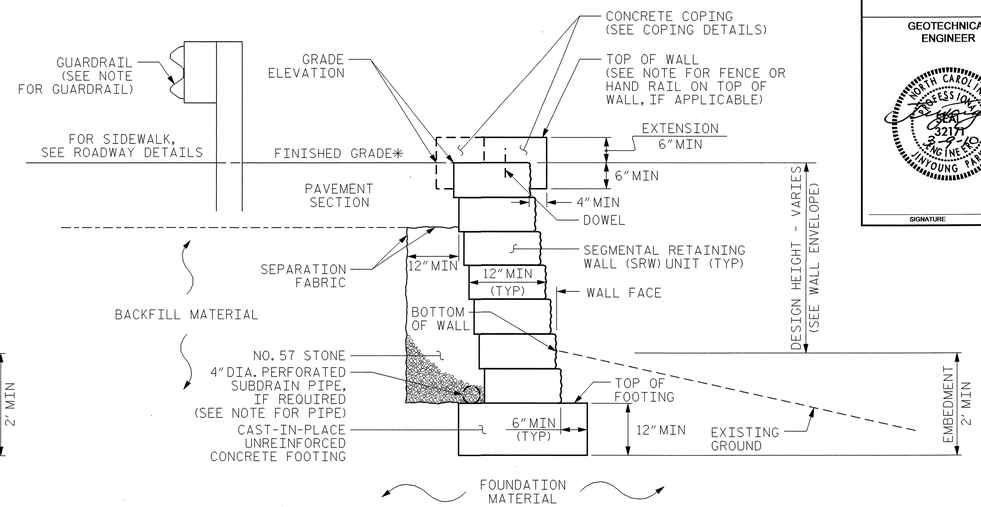
ENGINEER

SIGNATURE DATE SIGNATURE DATE



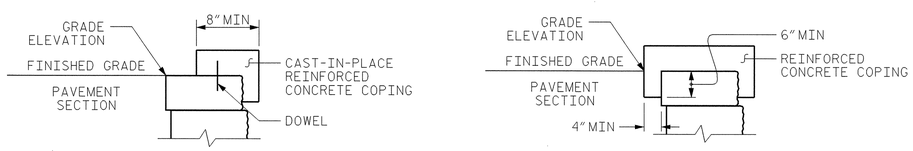

## SEGMENTAL GRAVITY WALL WITH SRW CAP UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



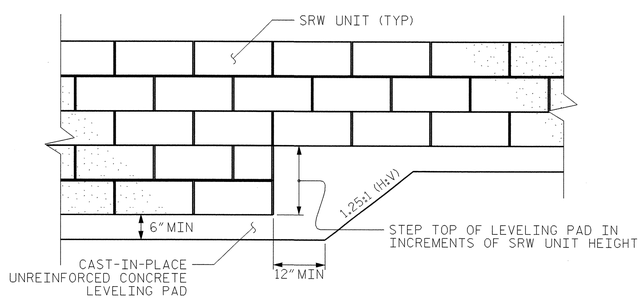

## SEGMENTAL GRAVITY WALL WITH COPING TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.




## COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECTCOPING TO SRW UNITS WITH DOWELS OREXTEND COPING DOWN BACK OF SRW UNITS.




## LEVELING PAD STEP DETAILS

## NOTES

FOR SEGMENTAL GRAVITY RETAINING WALLS, SEE SEGMENTAL GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FREEZE-THAW DURABLE SEGMENTAL RETAINING WALL UNITS ARE REQUIRED IN ACCORDANCE WITH THE SEGMENTAL GRAVITY RETAINING WALLS PROVISION.

USE PRECAST CONCRETE UNITS WITH A NATURAL STONE TYPE FACE FOR RETAINING WALL NO. 3.

USE PRECAST CONCRETE UNITS WITH A EARTH TONE COLOR FOR RETAINING WALL NO. 3.

A SUBDRAIN PIPE IS REQUIRED FOR RETAINING WALL NO. 3.

BEFORE BEGINNING SEGMENTAL GRAVITY WALL DESIGN FOR RETAINING WALL NO. 3, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 3 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALL NO. 3 FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) ALLOWABLE BEARING CAPACITY = 2600 PSF
3) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| BACKFILL | 120 | 30 | 0 |
| FOUNDATION | 120 | 0 | 900 |

DESIGN RETAINING WALL NO. 3 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL NO. 3 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

| | | | |
|---|---|---|---|
| PREPARED BY: | JINYOUNG PARK | DATE: | 02/2010 |
| REVIEWED BY: | JAMES R. BATTS | DATE: | 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH**

WALL NO. 3
SEGMENTAL GRAVITY WALL
(OPTION 1)

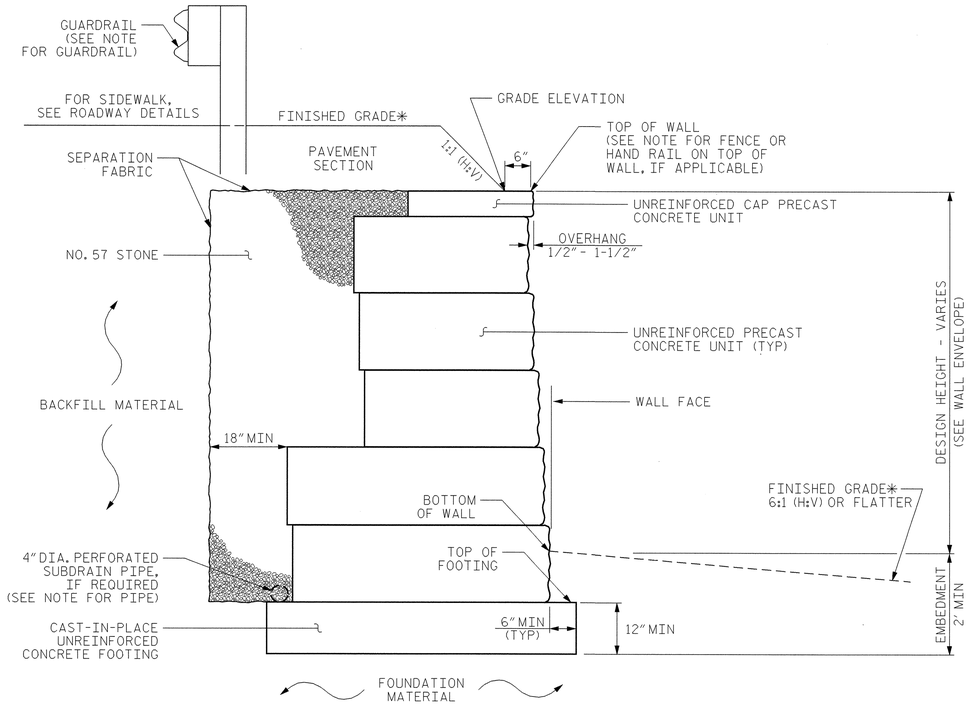
REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| PROJECT REFERENCE NO. | SHEET |
|---|---|
| (U-3306) | 2-DD |

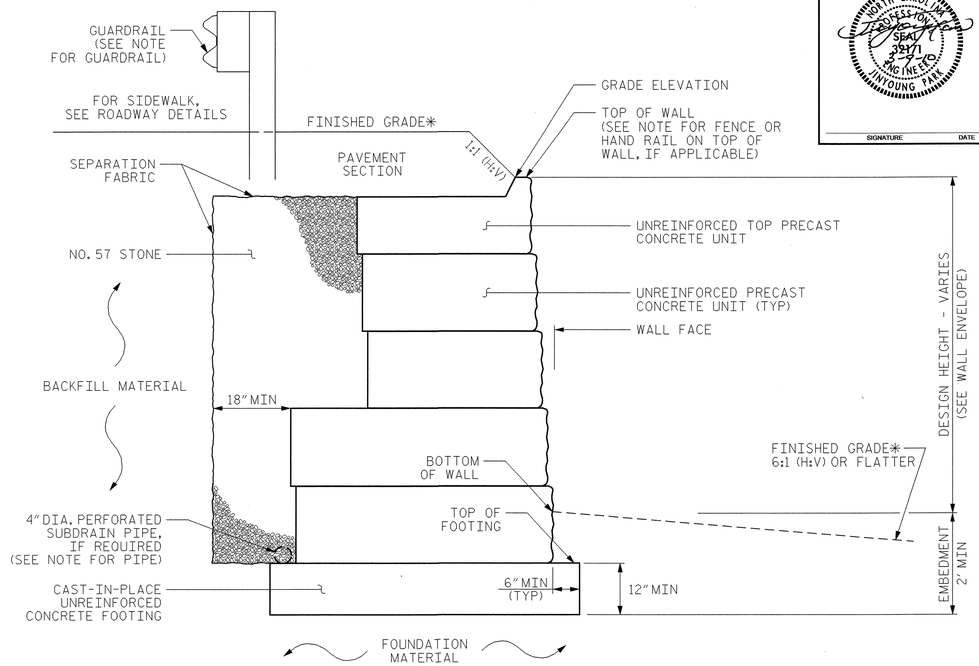
GEOTECHNICAL ENGINEER — SIGNATURE — DATE

ENGINEER — SIGNATURE — DATE




## PRECAST GRAVITY WALL WITH CAP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.




## PRECAST GRAVITY WALL WITH TOP PRECAST UNIT TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

## NOTES

FOR PRECAST GRAVITY RETAINING WALLS, SEE PRECAST GRAVITY RETAINING WALLS PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

USE PRECAST CONCRETE UNITS WITH A NATURAL STONE TYPE FACE FOR RETAINING WALL NO. 3.

USE PRECAST CONCRETE UNITS WITH A EARTH TONE COLOR FOR RETAINING WALL NO. 3.

A SUBDRAIN PIPE IS REQUIRED FOR RETAINING WALL NO. 3.

BEFORE BEGINNING PRECAST GRAVITY WALL DESIGN FOR RETAINING WALL NO. 3, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

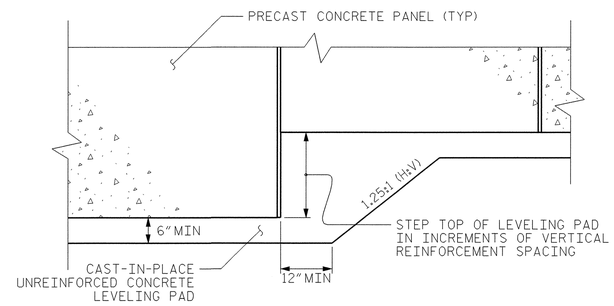
DESIGN RETAINING WALL NO. 3 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT PLUS DEPTH TO TOP OF FOOTING (DIFFERENCE BETWEEN GRADE ELEVATION AND TOP OF FOOTING ELEVATION).

DESIGN RETAINING WALL NO. 3 FOR THE FOLLOWING:
1) MINIMUM SERVICE LIFE = 75 YEARS
2) ALLOWABLE BEARING CAPACITY = 2600 PSF
3) IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (gamma) PCF | FRICTION ANGLE (phi) DEGREES | COHESION (c) PSF |
|---|---|---|---|
| BACKFILL | 120 | 30 | 0 |
| FOUNDATION | 120 | 0 | 900 |

DESIGN RETAINING WALL NO. 3 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DO NOT PLACE CONCRETE FOR FOOTINGS FOR RETAINING WALL NO. 3 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.




## LEVELING PAD STEP DETAILS

| PREPARED BY: JINYOUNG PARK | DATE: 02/2010 |
|---|---|
| REVIEWED BY: JAMES R. BATTS | DATE: 02/2010 |

**GEOTECHNICAL ENGINEERING UNIT**

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

**STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH**

WALL NO. 3
PRECAST GRAVITY WALL
(OPTION 2)

REVISIONS

| NO. | BY | DATE | NO. | BY | DATE |
|---|---|---|---|---|---|
| 1 | - | - | 3 | - | - |
| 2 | - | - | 4 | - | - |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-EE |

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

ENGLISH DETAIL DRAWING FOR

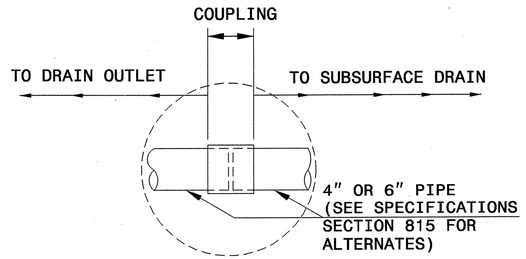
# SUBSURFACE DRAIN

SHEET 1 OF 1

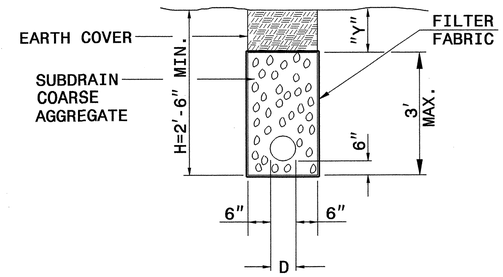
**815D02**

NOTES:
WHEN PROOF ROLLING IS REQUIRED, PLACE PIPE FOR SUBSURFACE DRAINS A MINIMUM OF 6' BELOW SUBGRADE ELEVATION.

CONNECT PIPE OUTLET INTO DRAINAGE STRUCTURE WHEREVER POSSIBLE. IF NOT CONNECTED TO DRAINAGE STRUCTURE, PROTECT END OF PIPE BY CONCRETE PAD FOR OUTLET END OF DRAIN. PADS ARE NEEDED AT LOCATIONS WHERE PIPE IS NOT PLACED IN DRAINAGE STRUCTURE TO FACILITATE MAINTENANCE AND AID IN IDENTIFICATION. OUTLETS ARE REQUIRED EVERY 500' OR AS DIRECTED BY THE ENGINEER

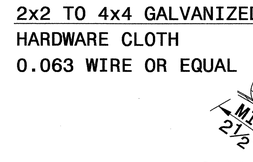



**AUXILIARY VIEW**

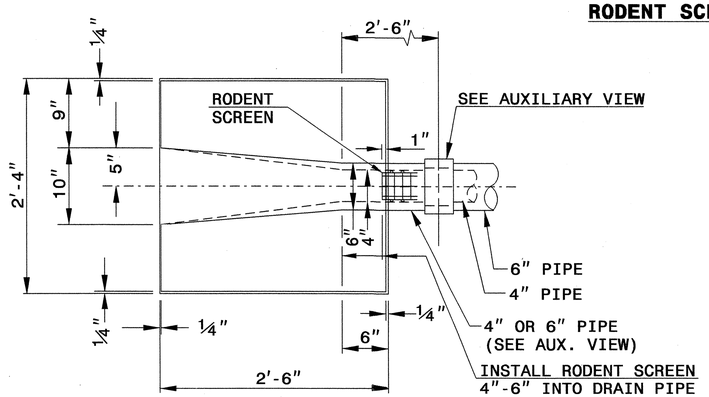



**SUBSURFACE DRAIN**

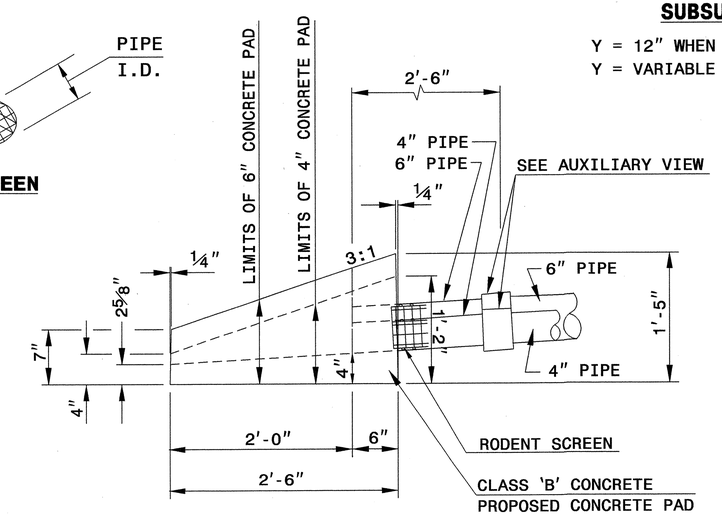
Y = 12" WHEN "H" IS 4'-0" OR LESS
Y = VARIABLE WHEN "H" IS OVER 4'-0"




**RODENT SCREEN**



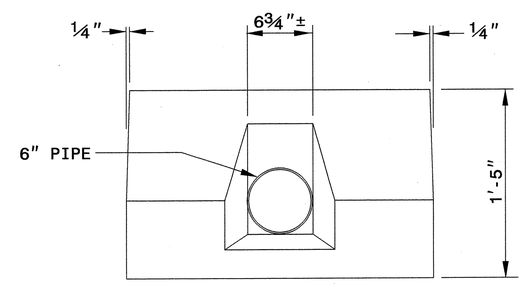

**PLAN VIEW**



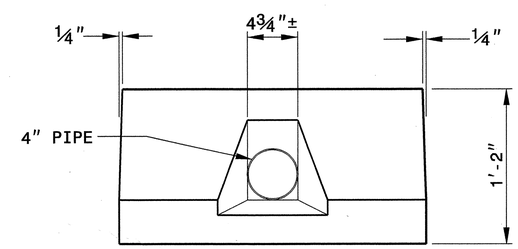

**ELEVATION VIEW**

| SUBDRAIN QUANTITIES |
|---|
| EXCAV. OR COURSE AGGREGATE CU. YDS. PER FT. DEPTH/LIN. FT. |
| 0.056 |

THE CONCRETE PAD CONSISTS OF 4" DRAIN 0.137 CUBIC YARDS, 6" DRAIN 0.177 CUBIC YARDS CLASS "B" CONCRETE.




**END ELEVATION VIEW**




**END ELEVATION VIEW**

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

ENGLISH DETAIL DRAWING FOR

# SUBSURFACE DRAIN

SHEET 1 OF 1

**815D02**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
5/11/10


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


**SEE PLATE FOR TITLE**

ORIGINAL BY: STD.815.02 DATE:
MODIFIED BY: T.SPELL DATE: 11-10-09
CHECKED BY: DATE: 3/25/10
FILE SPEC.: s:tspell/details/815d02.dgn

25-MAR-2010 07:40
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jhowerton AT PS237501

22-APR-2010 09:59
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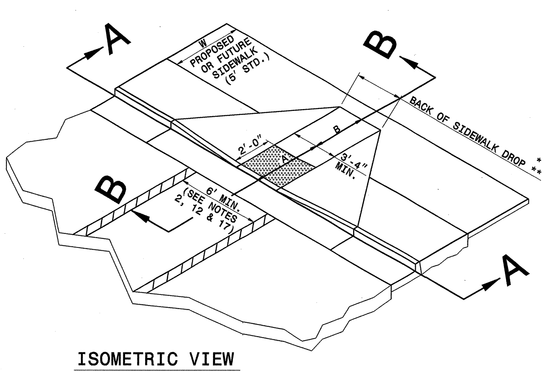
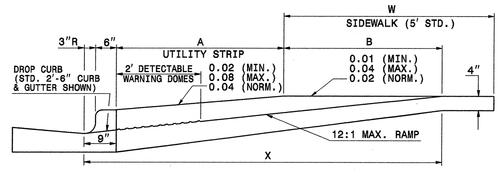
.tspell AT PS244552

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

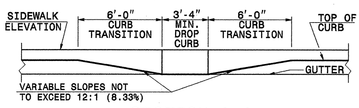
ENGLISH DETAIL DRAWING FOR
**WHEELCHAIR RAMP**
PROPOSED CURB AND GUTTER




ISOMETRIC VIEW

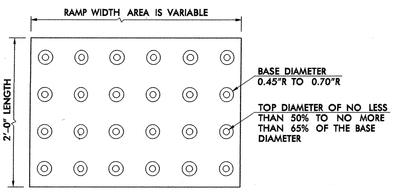


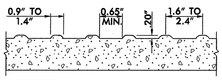

SECTION B-B




SECTION A-A

NOTES:
1. DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

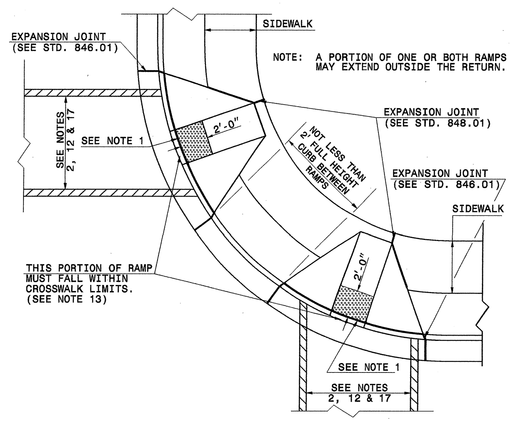



**DETECTABLE WARNING DOMES**

| W | A | W+A+9" | X | B |
|---|---|---|---|---|
| 5' | 0.0' | 5.8' | 5.8' | 5.0'* |
| 6' | 0.0' | 6.8' | 6.8' | 6.0'** |
| 7' | 0.0' | 7.8' | 7.3' | 6.5'** |
| 8' | 0.0' | 8.8' | 7.3' | 6.5'** |
| 5' | 2.0' | 7.8' | 7.8' | 5.0' |
| 5' | 2.5' | 8.3' | 8.1' | 4.8' |
| 5' | 3.0' | 8.8' | 8.3' | 4.4' |
| 5' | 3.5' | 9.3' | 8.4' | 4.1' |
| 5' | 4.0' | 9.8' | 8.6' | 3.8' |
| 5' | 4.5' | 10.3' | 8.7' | 3.4' |
| 5' | 5.0' | 10.8' | 8.9' | 3.1' |

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.

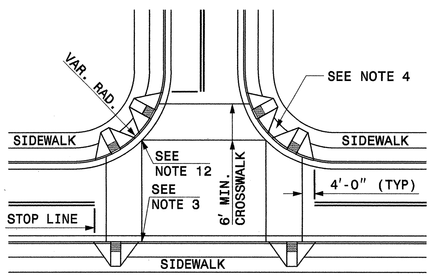



PLAN VIEW
DUAL RAMPS
ANY RADII
(40" MIN. FLOOR WIDTH)

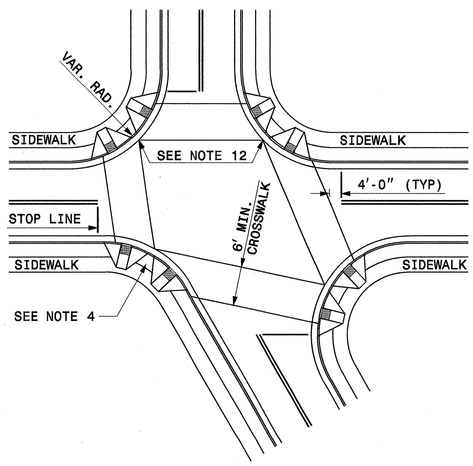
SHEET 1 OF 3
**848D05**

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

ENGLISH DETAIL DRAWING FOR
**WHEELCHAIR RAMP**
PROPOSED CURB AND GUTTER




DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS




DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ROADWAY PLAN SYMBOL
WCR
FOR PROPOSED WHEELCHAIR RAMP

PROPOSED WHEELCHAIR RAMP
PROPOSED OR FUTURE SIDEWALK

ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY

SHEET 2 OF 3
**848D05**

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC.: S:\SpecialDetails\EricWard\STDS\848d05.dgn

NORTH CAROLINA PROFESSIONAL SEAL 02506 ENGINEER
5/11/10

PROJECT REFERENCE NO. U-3306
SHEET NO. 2-FF

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

ENGLISH DETAIL DRAWING FOR

**WHEELCHAIR RAMP**

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

**848D05**

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILTIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

   IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1,1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

   THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILIAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.
4. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED PLACE NOT LESS THAN 2 FEET OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. CONSTRUCT WHEELCHAIR RAMPS 40" (3'-4") OR GREATER FOR DUAL RAMPS.
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
9. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
10. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 24" OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
11. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
12. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
13. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
14. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

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

ENGLISH DETAIL DRAWING FOR

**WHEELCHAIR RAMP**

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

**848D05**

NORTH CAROLINA PROFESSIONAL SEAL 022066 ENGINEER
JOSEPH E. HAMILTON
5/1/10

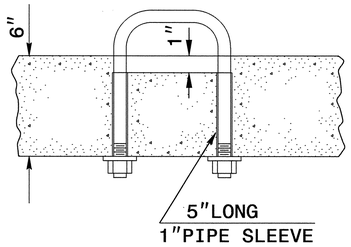
**PROJECT SERVICES UNIT**
**STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC.: S:\Specialdetails\Ericward\STDS\848d05.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-66 |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-HH |

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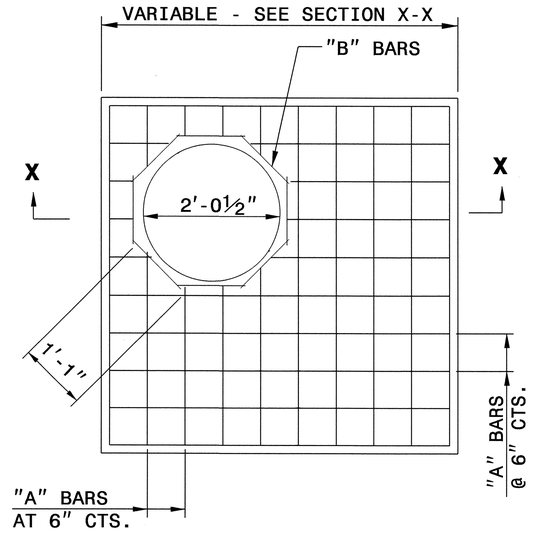
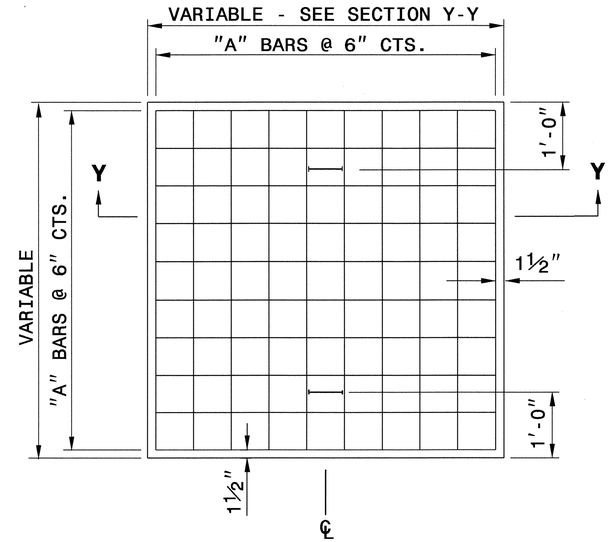



**PLAN**




**PLAN**

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

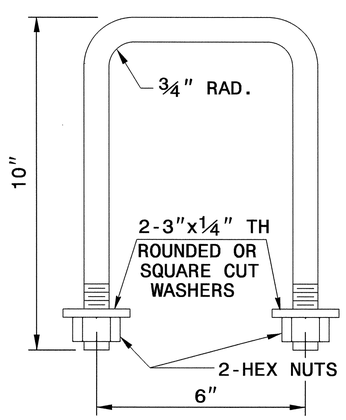
THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

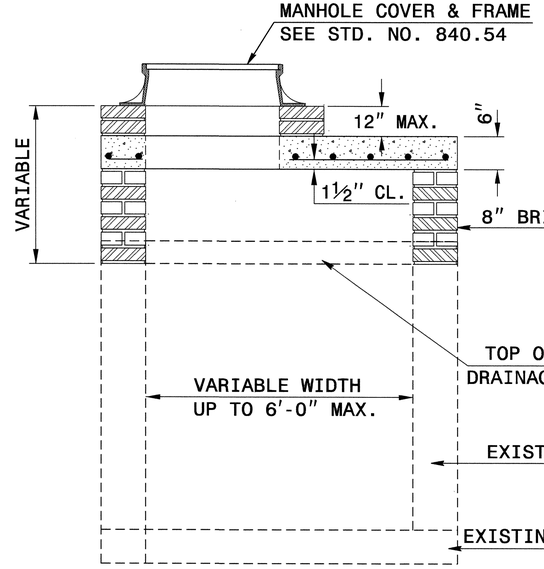
## BILL OF MATERIALS

| REINFORCING STEEL | | | | |
|---|---|---|---|---|
| CODE | SIZE | QTY. | LENGTH | REINF. STEEL LBS. |
| A | #4 | 20 | 4'-6" | 60.12 |
| B | #4 | 8 | 1'-1" | 5.79 |
| TOTAL | | | | 65.91 * |
| | | | | |
| **MASONRY** | | | | CU YDS |
| TOP SLAB CONCRETE CLASS "B" | | | | .4326 * |
| BRICK MASONRY PER FT HT (MIN) | | | | .4111 |

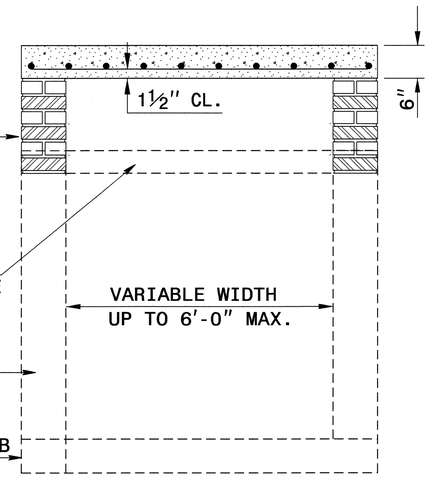
★ NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.




**DETAIL OF HANDLE**




**SECTION X-X**




**SECTION Y-Y**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
5/12/10

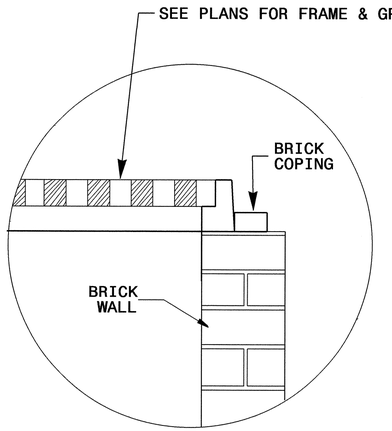
**PROJECT SERVICES UNIT**
**STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

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

| | | | |
|---|---|---|---|
| ORIGINAL BY: | T.S.S. | DATE: | NOV.1997 |
| MODIFIED BY: | T.S.S. | DATE: | FEB.2000 |
| CHECKED BY: | J.S.H. | DATE: | 5/11/10 |
| FILE SPEC.: | fs174:/usr/details/stand/boxtojbe.dgn | | |

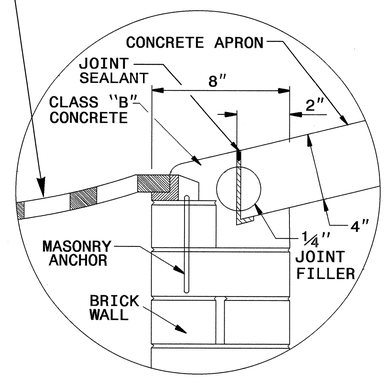

5/14/99
11-MAY-2010 10:35
S:\Contracts\Special Details\ericward\usr\details\stand\boxtojbe.dgn
$$$$USERNAME$$$$
PS237501 5/11/2010 boxtojbe jhowerton PS-Oce860-34dtbond

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 2-II |




## GRATE PLACEMENT DETAIL

FOR DROP INLETS

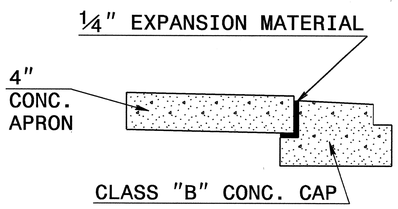



## GRATE PLACEMENT DETAIL

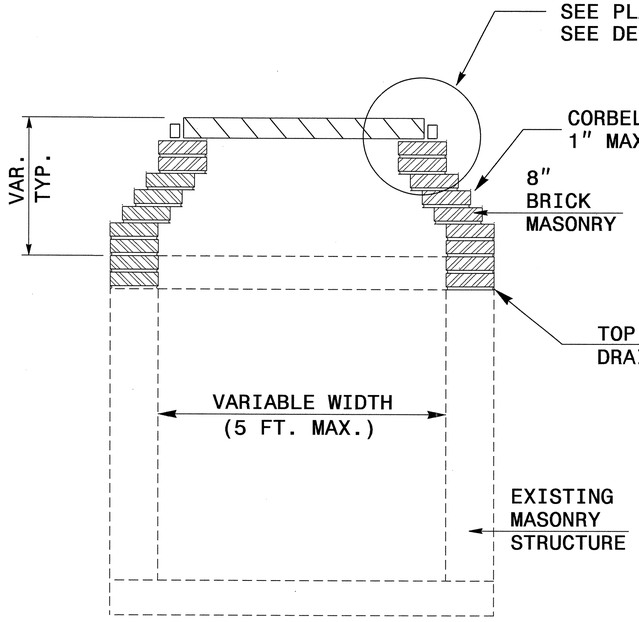
FOR GRATED DROP INLETS

GENERAL NOTES:

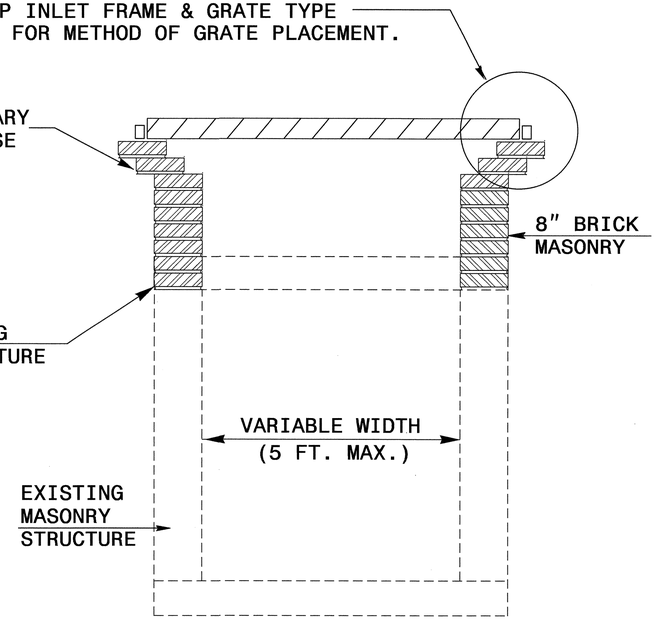
- -CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- -USE CLASS B CONCRETE.
- -THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- -JUMBO CONCRETE BRICK WILL BE PERMITTED. 4" CONCRETE BRICK OR 8" SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- -INCLUDE 18" CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.
- -SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- -CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- -SEE STD. DRAWING 840D25 FOR MASONRY ANCHORAGE.




**EXPANSION JOINT DETAIL**




**TYPICAL SECTION**




**TYPICAL SECTION**

NORTH CAROLINA PROFESSIONAL SEAL 022566 ENGINEER JOEL B. HOWERTON
5/12/10

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

**DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DROP INLET**

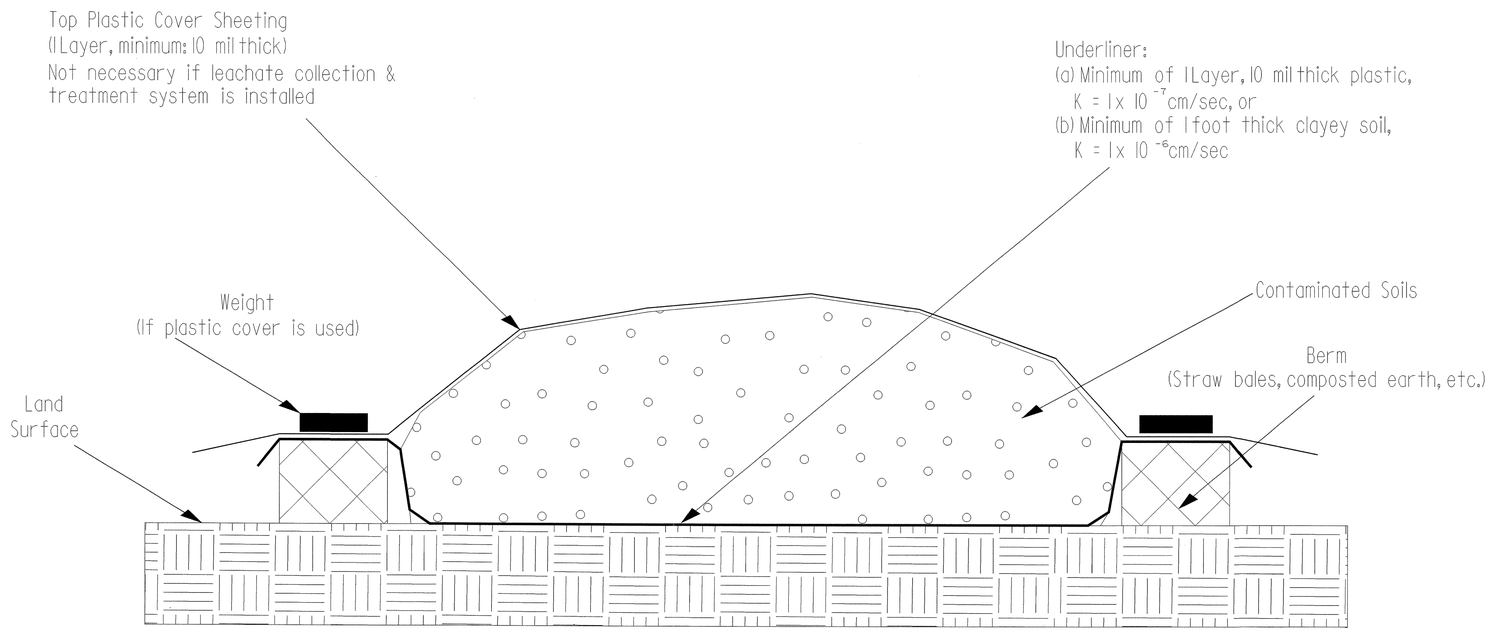
| | | | |
|---|---|---|---|
| ORIGINAL BY: | T.S.S. | DATE: | NOV.1997 |
| MODIFIED BY: | T.S.S. | DATE: | FEB.2000 |
| CHECKED BY: | | DATE: | 5/11/10 |
| FILE SPEC.: | u:/usr/details/stand/cbtodi02.dgn | | |

U:MAY-2010 10:40
C:\Contracts\Special Details\tspell\details\stand\cbtodi02.dgn
jhowerton AT PS237501

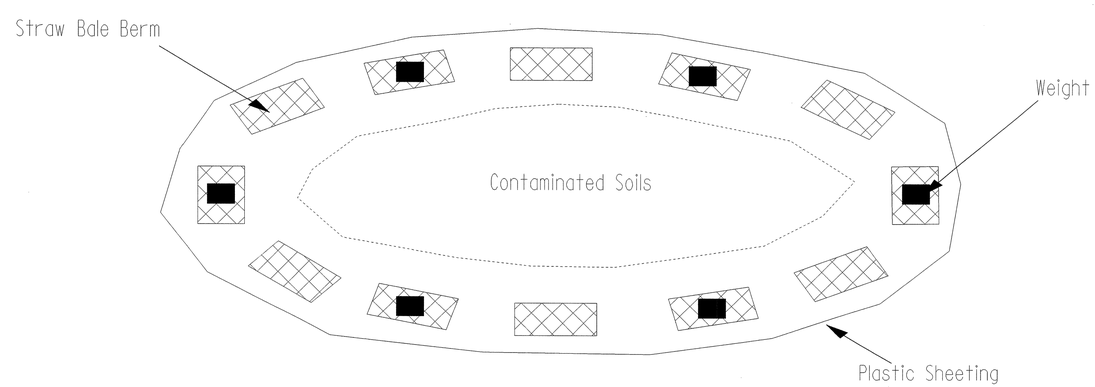
| PROJECT REFERENCE NO. | SHEET |
|---|---|
| U-3306 | 2-KK |
| | |
| | |

# Detail for Temporary Containment of Contaminated Soil

## Cross-Section View




## Map View



| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3 |



**STATE OF NORTH CAROLINA**
**DIVISION OF HIGHWAYS**
**ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202266**

| ItemNumber | Sec # | Quantity | Unit | Description |
|---|---|---|---|---|
| 0000100000-N | 800 | Lump Sum | | MOBILIZATION |
| 0001000000-E | 200 | Lump Sum | | CLEARING & GRUBBING .. ACRE(S) |
| 0015000000-N | 205 | 2 | EA | SEALING ABANDONED WELLS |
| 0022000000-E | 225 | 63,400 | CY | UNCLASSIFIED EXCAVATION |
| 0036000000-E | 225 | 3,050 | CY | UNDERCUT EXCAVATION |
| 0038000000-E | SP | 2,000 | CY | SHALLOW UNDERCUT |
| 0050000000-E | 226 | 1 | ACR | SUPPLEMENTARY CLEARING & GRUB-BING |
| 0080000000-E | SP | 4,000 | TON | CLASS IV SUBGRADE STABILIZA-TION |
| 0106000000-E | 230 | 4,950 | CY | BORROW EXCAVATION |
| 0134000000-E | 240 | 665 | CY | DRAINAGE DITCH EXCAVATION |
| 0141000000-E | 240 | 1,140 | LF | BERM DITCH CONSTRUCTION |
| 0156000000-E | 250 | 16,280 | SY | REMOVAL OF EXISTING ASPHALT PAVEMENT |
| 0195000000-E | SP | 500 | CY | SELECT GRANULAR MATERIAL |
| 0196000000-E | 270 | 11,000 | SY | FABRIC FOR SOIL STABILIZATION |
| 0255000000-E | SP | 100 | TON | GENERIC GRADING ITEM EXCAVATION AND STOCKPILING CONTAMINATED SOIL |
| 0318000000-E | SP | 1,595 | TON | FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS |
| 0320000000-E | SP | 5,075 | SY | FOUNDATION CONDITIONING FABRIC |
| 0335200000-E | SP | 6,524 | LF | 15" DRAINAGE PIPE |
| 0335300000-E | SP | 1,164 | LF | 18" DRAINAGE PIPE |
| 0335400000-E | SP | 2,604 | LF | 24" DRAINAGE PIPE |
| 0335500000-E | SP | 356 | LF | 30" DRAINAGE PIPE |
| 0335600000-E | SP | 264 | LF | 36" DRAINAGE PIPE |
| 0335700000-E | SP | 592 | LF | 42" DRAINAGE PIPE |
| 0335800000-E | SP | 56 | LF | 48" DRAINAGE PIPE |
| 0335850000-E | SP | 8 | EA | **" DRAINAGE PIPE ELBOWS (15") |
| 0335850000-E | SP | 2 | EA | **" DRAINAGE PIPE ELBOWS (18") |
| 0390000000-E | SP | 24 | LF | 36" RC PIPE CULVERTS, CLASS III |
| 0402000000-E | SP | 256 | LF | 48" RC PIPE CULVERTS, CLASS III |
| 0414000000-E | SP | 112 | LF | 60" RC PIPE CULVERTS, CLASS III |
| 0995000000-E | 340 | 2,020 | LF | PIPE REMOVAL |
| 1011000000-N | 500 | Lump Sum | | FINE GRADING |
| 1110000000-E | 510 | 1,000 | TON | STABILIZER AGGREGATE |
| 1122000000-E | 520 | 22,900 | TON | AGGREGATE BASE COURSE |
| 1220000000-E | 545 | 1,000 | TON | INCIDENTAL STONE BASE |
| 1308000000-E | 607 | 1,625 | SY | MILLING ASPHALT PAVEMENT, ***" TO ******" DEPTH (0" TO 1-1/2") |
| 1330000000-E | 607 | 165 | SY | INCIDENTAL MILLING |
| 1489000000-E | 610 | 10,025 | TON | ASPHALT CONC BASE COURSE, TYPE B25.0B |
| 1498000000-E | 610 | 20,610 | TON | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B |
| 1519000000-E | 610 | 19,850 | TON | ASPHALT CONC SURFACE COURSE, TYPE S9.5B |
| 1560000000-E | 620 | 2,591 | TON | ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22 |
| 1891000000-E | SP | 185 | SY | GENERIC PAVING ITEM 8" CONCRETE TRUCK APRON |
| 2026000000-E | SP | 2,790 | SY | FILTER FABRIC FOR SUBSURFACE DRAINS |
| 2036000000-E | SP | 470 | CY | SUBDRAIN COARSE AGGREGATE |
| 2070000000-N | SP | 6 | EA | SUBDRAIN PIPE OUTLETS |
| 2209000000-E | 838 | 20 | CY | ENDWALLS |
| 2220000000-E | 838 | 17 | CY | REINFORCED ENDWALLS |
| 2253000000-E | 840 | 4 | CY | PIPE COLLARS |
| 2264000000-E | 840 | 1 | CY | PIPE PLUGS |
| 2275000000-E | SP | 215 | CY | FLOWABLE FILL |
| 2286000000-N | 840 | 205 | EA | MASONRY DRAINAGE STRUCTURES |
| 2297000000-E | 840 | 4 | CY | MASONRY DRAINAGE STRUCTURES |
| 2308000000-E | 840 | 82 | LF | MASONRY DRAINAGE STRUCTURES |
| 2352000000-N | 840 | 1 | EA | FRAME WITH GRATE, STD 840.**** (840.33) |
| 2354200000-N | 840 | 1 | EA | FRAME WITH GRATE, STD 840.24 |
| 2364000000-N | 840 | 42 | EA | FRAME WITH TWO GRATES, STD 840.16 |
| 2367000000-N | 840 | 3 | EA | FRAME WITH TWO GRATES, STD 840.29 |
| 2374000000-N | 840 | 18 | EA | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E) |
| 2374000000-N | 840 | 63 | EA | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F) |
| 2374000000-N | 840 | 71 | EA | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G) |
| 2396000000-N | 840 | 21 | EA | FRAME WITH COVER, STD 840.54 |
| 2440000000-N | 852 | 3 | EA | CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN |
| 2451000000-N | 852 | 2 | EA | CONCRETE TRANSITIONAL SECTION FOR DROP INLETS |
| 2484000000-E | SP | 36 | LF | GENERIC DRAINAGE ITEM 6" OUTLET PIPE (SUBDRAINS) |
| 2484000000-E | SP | 2,750 | LF | GENERIC DRAINAGE ITEM 6" PERFORATED SUBDRAIN PIPE |
| 2495000000-E | SP | 624 | CY | GENERIC DRAINAGE ITEM SUBDRAIN EXCAVATION |
| 2542000000-E | 846 | 3,455 | LF | 1'-6" CONCRETE CURB & GUTTER |
| 2549000000-E | 846 | 33,650 | LF | 2'-6" CONCRETE CURB & GUTTER |
| 2591000000-E | 848 | 15,140 | SY | 4" CONCRETE SIDEWALK |
| 2605000000-N | 848 | 165 | EA | CONCRETE WHEELCHAIR RAMPS |
| 2612000000-E | 848 | 350 | SY | 6" CONCRETE DRIVEWAY |
| 2619000000-E | 850 | 25 | SY | 4" CONCRETE PAVED DITCH |
| 2655000000-E | 852 | 1,285 | SY | 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) |
| 2860000000-N | 859 | 2 | EA | CONVERT EXISTING CATCH BASIN TO JUNCTION BOX |
| 2875000000-N | 859 | 14 | EA | CONVERT EXISTING CATCH BASIN TO DROP INLET |
| 2905000000-N | 859 | 1 | EA | CONVERT EXISTING DROP INLET TO JUNCTION BOX |
| 3030000000-E | 862 | 2,400 | LF | STEEL BM GUARDRAIL |
| 3045000000-E | 862 | 50 | LF | STEEL BM GUARDRAIL, SHOP CURVED |
| 3150000000-N | 862 | 10 | EA | ADDITIONAL GUARDRAIL POSTS |
| 3195000000-N | 862 | 1 | EA | GUARDRAIL ANCHOR UNITS, TYPE AT-1 |
| 3210000000-N | 862 | 9 | EA | GUARDRAIL ANCHOR UNITS, TYPE CAT-1 |
| 3270000000-N | SP | 8 | EA | GUARDRAIL ANCHOR UNITS, TYPE 350 |
| 3628000000-E | 876 | 260 | TON | RIP RAP, CLASS I |
| 3649000000-E | 876 | 275 | TON | RIP RAP, CLASS B |
| 3656000000-E | 876 | 4,885 | SY | FILTER FABRIC FOR DRAINAGE |
| 4072000000-E | 903 | 2,540 | LF | SUPPORTS, 3-LB STEEL U-CHANNEL |
| 4102000000-N | 904 | 172 | EA | SIGN ERECTION, TYPE E |
| 4116100000-N | 904 | 2 | EA | SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D) |
| 4116100000-N | 904 | 1 | EA | SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E) |
| 4155000000-N | 907 | 91 | EA | DISPOSAL OF SIGN SYSTEM, U-CHANNEL |
| 4192000000-N | 907 | 3 | EA | DISPOSAL OF SUPPORT, U-CHANNEL |
| 4400000000-E | 1110 | 1,166 | SF | WORK ZONE SIGNS (STATIONARY) |
| 4405000000-E | 1110 | 512 | SF | WORK ZONE SIGNS (PORTABLE) |
| 4410000000-E | 1110 | 225 | SF | WORK ZONE SIGNS (BARRICADE MOUNTED) |
| 4415000000-N | 1115 | 2 | EA | FLASHING ARROW PANELS, TYPE C |
| 4420000000-N | 1120 | 2 | EA | CHANGEABLE MESSAGE SIGN |
| 4422000000-N | 1120 | 48 | DAY | CHANGEABLE MESSAGE SIGN (SHORT TERM) |
| 4430000000-N | 1130 | 675 | EA | DRUMS |
| 4445000000-E | 1145 | 248 | LF | BARRICADES (TYPE III) |
| 4455000000-N | 1150 | 500 | MD | FLAGGER |
| 4650000000-N | 1251 | 2,052 | EA | TEMPORARY RAISED PAVEMENT MARKERS |
| 4685000000-E | 1205 | 3,918 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS) |
| 4686000000-E | 1205 | 62,955 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS) |
| 4695000000-E | 1205 | 2,027 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS) |
| 4697000000-E | 1205 | 7,889 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS) |
| 4702000000-E | 1205 | 42 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS) |
| 4710000000-E | 1205 | 2,064 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS) |
| 4721000000-E | 1205 | 32 | EA | THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS) |
| 4725000000-E | 1205 | 364 | EA | THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS) |
| 4770000000-E | 1205 | 8,218 | LF | COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV) |
| 4795000000-E | 1205 | 96 | LF | COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (24") (IV) |
| 4805000000-N | 1205 | 15 | EA | COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (IV) |
| 4810000000-E | 1205 | 147,873 | LF | PAINT PAVEMENT MARKING LINES (4") |
| 4820000000-E | 1205 | 7,850 | LF | PAINT PAVEMENT MARKING LINES (8") |
| 4835000000-E | 1205 | 3,781 | LF | PAINT PAVEMENT MARKING LINES (24") |
| 4840000000-N | 1205 | 60 | EA | PAINT PAVEMENT MARKING CHARAC-TER |
| 4845000000-N | 1205 | 576 | EA | PAINT PAVEMENT MARKING SYMBOL |
| 4850000000-E | 1205 | 73,309 | LF | REMOVAL OF PAVEMENT MARKING LINES (4") |
| 4860000000-E | 1205 | 1,774 | LF | REMOVAL OF PAVEMENT MARKING LINES (8") |
| 4870000000-E | 1205 | 736 | LF | REMOVAL OF PAVEMENT MARKING LINES (24") |
| 4875000000-N | 1205 | 136 | EA | REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS |
| 4900000000-N | 1251 | 736 | EA | PERMANENT RAISED PAVEMENT MARKERS |
| 5325600000-E | 1510 | 475 | LF | 6" WATER LINE |
| 5325800000-E | 1510 | 533 | LF | 8" WATER LINE |
| 5326200000-E | 1510 | 447 | LF | 12" WATER LINE |
| 5326600000-E | 1510 | 814 | LF | 16" WATER LINE |
| 5546000000-E | 1515 | 5 | EA | 8" VALVE |
| 5558000000-E | 1515 | 5 | EA | 12" VALVE |
| 5558600000-E | 1515 | 1 | EA | 16" VALVE |
| 5571800000-E | 1515 | 2 | EA | 8" TAPPING VALVE |
| 5572200000-E | 1515 | 1 | EA | 12" TAPPING VALVE |
| 5606000000-E | 1515 | 3 | EA | 2" BLOW OFF |
| 5606400000-E | 1515 | 1 | EA | 4" BLOW OFF |
| 5606600000-E | 1515 | 3 | EA | 6" BLOW OFF |
| 5648000000-N | 1515 | 16 | EA | RELOCATE WATER METER |
| 5672000000-N | 1515 | 7 | EA | RELOCATE FIRE HYDRANT |
| 5691300000-E | 1520 | 324 | LF | 8" SANITARY GRAVITY SEWER |
| 5768000000-N | 1520 | 20 | EA | SANITARY SEWER CLEAN-OUT |
| 5775000000-E | 1525 | 4 | EA | 4' DIA UTILITY MANHOLE |
| 5800000000-E | 1530 | 450 | LF | ABANDON 6" UTILITY PIPE |
| 5801000000-E | 1530 | 184 | LF | ABANDON 8" UTILITY PIPE |
| 5804000000-E | 1530 | 323 | LF | ABANDON 12" UTILITY PIPE |
| 5810000000-E | 1530 | 780 | LF | ABANDON 16" UTILITY PIPE |
| 5815000000-N | 1530 | 1 | EA | REMOVE WATER METER |
| 5816000000-N | 1530 | 1 | EA | ABANDON UTILITY MANHOLE |
| 5828000000-N | 1530 | 2 | EA | REMOVE UTILITY MANHOLE |
| 5835600000-E | 1540 | 8 | LF | 12" ENCASEMENT PIPE |

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# STATE OF NORTH CAROLINA
# SUMMARY OF QUANTITIES

| PROJECT REFERENCE No. | SHEET No. |
|---|---|
| U-3306 | 3 |

(2 of 2)

| ItemNumber | Sec # | Quantity | Unit | Description |
|---|---|---|---|---|
| 5871700000-E | 1550 | 23 | LF | TRENCHLESS INSTALLATION OF 12" IN SOIL |
| 5871710000-E | 1550 | 23 | LF | TRENCHLESS INSTALLATION OF 12" NOT IN SOIL |
| 5882000000-N | SP | 3 | EA | GENERIC UTILITY ITEM ROTATE TOP FOR EXISTING MANHOLE (CONCENTRIC TOP) |
| 5882000000-N | SP | 3 | EA | GENERIC UTILITY ITEM ROTATE TOP FOR EXISTING MANHOLE (ECCENTRIC TOP) |
| 6000000000-E | 1605 | 20,700 | LF | TEMPORARY SILT FENCE |
| 6006000000-E | 1610 | 3,400 | TON | STONE FOR EROSION CONTROL, CLASS A |
| 6009000000-E | 1610 | 1,675 | TON | STONE FOR EROSION CONTROL, CLASS B |
| 6012000000-E | 1610 | 3,700 | TON | SEDIMENT CONTROL STONE |
| 6015000000-E | 1615 | 76 | ACR | TEMPORARY MULCHING |
| 6018000000-E | 1620 | 1,400 | LB | SEED FOR TEMPORARY SEEDING |
| 6021000000-E | 1620 | 6.5 | TON | FERTILIZER FOR TEMPORARY SEED-ING |
| 6024000000-E | 1622 | 950 | LF | TEMPORARY SLOPE DRAINS |
| 6027000000-N | 1622 | 20 | EA | INLET PROTECTION AT TEMPORARY SLOPE DRAINS |
| 6029000000-E | SP | 2,800 | LF | SAFETY FENCE |
| 6030000000-E | 1630 | 3,975 | CY | SILT EXCAVATION |
| 6036000000-E | 1631 | 32,200 | SY | MATTING FOR EROSION CONTROL |
| 6037000000-E | SP | 25 | SY | COIR FIBER MAT |
| 6038000000-E | SP | 350 | SY | PERMANENT SOIL REINFORCEMENT MAT |
| 6042000000-E | 1632 | 13,800 | LF | 1/4" HARDWARE CLOTH |
| 6048000000-E | SP | 60 | SY | FLOATING TURBIDITY CURTAIN |
| 6071010000-E | SP | 800 | LF | WATTLE |
| 6071020000-E | SP | 360 | LB | POLYACRYLAMIDE (PAM) |
| 6071030000-E | SP | 1,050 | LF | COIR FIBER BAFFLES |
| 6071050000-E | SP | 2 | EA | **" SKIMMER (1-1/2") |
| 6084000000-E | 1660 | 39 | ACR | SEEDING & MULCHING |
| 6087000000-E | 1660 | 48 | ACR | MOWING |
| 6090000000-E | 1661 | 600 | LB | SEED FOR REPAIR SEEDING |
| 6093000000-E | 1661 | 1.5 | TON | FERTILIZER FOR REPAIR SEEDING |
| 6096000000-E | 1662 | 950 | LB | SEED FOR SUPPLEMENTAL SEEDING |
| 6108000000-E | 1665 | 28 | TON | FERTILIZER TOPDRESSING |
| 6114500000-N | SP | 10 | MHR | SPECIALIZED HAND MOWING |
| 6117000000-N | SP | 36 | EA | RESPONSE FOR EROSION CONTROL |
| 6123000000-E | 1670 | 0.25 | ACR | REFORESTATION |
| 6147000000-E | SP | 10,000 | LF | GENERIC EROSION CONTROL ITEM TREE PROTECTION FENCE |
| 6890000000-E | SP | 5 | CY | CONCRETE STEPS |
| 6895000000-E | SP | 85 | LF | HANDRAIL ON STEPS |
| 7000000000-E | 1705 | 40 | EA | PEDESTRIAN SIGNAL HEAD (**", ** SECTION) (16", 1 SECTION WITH COUNTDOWN ) |
| 7060000000-E | 1705 | 14,335 | LF | SIGNAL CABLE |
| 7120000000-E | 1705 | 60 | EA | VEHICLE SIGNAL HEAD (12", 3 SECTION) |
| 7132000000-E | 1705 | 9 | EA | VEHICLE SIGNAL HEAD (12", 4 SECTION) |
| 7144000000-E | 1705 | 14 | EA | VEHICLE SIGNAL HEAD (12", 5 SECTION) |
| 7252000000-E | 1710 | 200 | LF | MESSENGER CABLE (1/4") |
| 7264000000-E | 1710 | 3,420 | LF | MESSENGER CABLE (3/8") |
| 7279000000-E | 1715 | 60 | LF | TRACER WIRE |
| 7288000000-E | 1715 | 195 | LF | PAVED TRENCHING (**********) (1, 2") |
| 7300000000-E | 1715 | 1,490 | LF | UNPAVED TRENCHING (**********) (1, 2") |
| 7324000000-N | 1716 | 21 | EA | JUNCTION BOX (STANDARD SIZE) |
| 7348000000-N | 1716 | 1 | EA | JUNCTION BOX (OVER-SIZED, HEA-VY DUTY) |
| 7360000000-N | 1720 | 28 | EA | WOOD POLE |
| 7372000000-N | 1721 | 64 | EA | GUY ASSEMBLY |
| 7396000000-E | 1722 | 21 | EA | 1/2" RISER WITH WEATHERHEAD |
| 7408000000-E | 1722 | 6 | EA | 1" RISER WITH WEATHERHEAD |
| 7420000000-E | 1722 | 27 | EA | 2" RISER WITH WEATHERHEAD |
| 7432000000-E | 1722 | 6 | EA | 2" RISER WITH HEAT SHRINK TUBING |
| 7444000000-E | 1725 | 14,960 | LF | INDUCTIVE LOOP SAWCUT |
| 7456000000-E | 1726 | 19,910 | LF | LEAD-IN CABLE (**********) (14-2) |
| 7484000000-N | SP | 1 | EA | MICROWAVE VEHICLE DETECTOR |
| 7552000000-N | 1731 | 6 | EA | INTERCONNECT CENTER |
| 7564000000-N | 1732 | 6 | EA | FIBER-OPTIC TRANSCEIVER, DROP & REPEAT |
| 7574000000-N | SP | 1 | EA | FURNISH FIBER-OPTIC TRANSCEIV-ER |
| 7636000000-N | 1745 | 6 | EA | SIGN FOR SIGNALS |
| 7684000000-N | 1750 | 6 | EA | SIGNAL CABINET FOUNDATION |
| 7756000000-N | 1751 | 6 | EA | CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED) |
| 7780000000-N | 1751 | 34 | EA | DETECTOR CARD (TYPE 2070L) |
| 7901000000-N | 1753 | 6 | EA | CABINET BASE EXTENDER |
| ******* BEGIN SCHEDULE AA ******* ******* (2 ALTERNATES) ******* | | | | |
| 8801000000-E AA1 | SP | 3,250 | SF | MSE RETAINING WALLS |
| *** OR *** | | | | |
| 8802031000-E AA2 | SP | 3,070 | SF | PRECAST GRAVITY RETAINING WALLS |
| ******* END SCHEDULE AA ******* | | | | |
| ******* BEGIN SCHEDULE AB ******* ******* (2 ALTERNATES) ******* | | | | |
| 8802030000-E AB1 | SP | 580 | SF | SEGMENTAL GRAVITY RETAINING WALLS |
| *** OR *** | | | | |
| 8802031000-E AB2 | SP | 510 | SF | PRECAST GRAVITY RETAINING WALLS |
| ******* END SCHEDULE AB ******* | | | | |
| ******* BEGIN SCHEDULE AC ******* ******* (2 ALTERNATES) ******* | | | | |
| 8802030000-E AC1 | SP | 1,430 | SF | SEGMENTAL GRAVITY RETAINING WALLS |
| *** OR *** | | | | |
| 8802031000-E AC2 | SP | 1,270 | SF | PRECAST GRAVITY RETAINING WALLS |
| ******* END SCHEDULE AC ******* | | | | |

COMPUTED BY: JCL DATE: 2/10/10
CHECKED BY: WAS DATE: 4/8/10

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-A |

# SUMMARY OF EARTHWORK

## IN CUBIC YARDS

| LOCATION | UNCLASSIFIED EXCAVATION | UNDERCUT | EMBT+% | BORROW | WASTE |
|---|---|---|---|---|---|
| SUMMARY #1 | | | | | |
| -L- STA 10+65.00 TO STA 41+00.00 (LT) | 6349 | | 4878 | 466 | 1937 |
| -Y- STA 15+50.00 TO STA 19+79.51 (LT) | 188 | | 136 | | 52 |
| -Y1- STA 10+84.19 TO STA 11+50.00 (LT) | 15 | | 108 | 93 | |
| -Y3- STA 11+83.75 TO STA 11+50.00 (LT) | 13 | | 41 | 28 | |
| -DR1- STA 10+87.56 TO STA 11+20.00 (LT) | 27 | | | | 27 |
| -Y6- STA 10+83.53 TO STA 11+75.00 (LT) | 49 | | 20 | | 29 |
| SUBTOTAL | 6641 | | 5183 | 587 | 2045 |
| | | | | | |
| SUMMARY #2 | | | | | |
| -L- STA 41+00.00 TO STA 71+00.00 (LT) | 1003 | | 4781 | 3778 | |
| -Y7A- STA 10+35.01 TO STA 11+00.00 (LT) | 17 | | 13 | | 4 |
| -Y7B- STA 10+23.18 TO STA 10+75.00 (LT) | 23 | | 14 | | 9 |
| SUBTOTAL | 1043 | | 4808 | 3778 | 13 |
| | | | | | |
| SUMMARY #3 | | | | | |
| -L- STA 71+00.00 TO 101+00.00 (LT) | 2380 | | 8881 | 7656 | 1155 |
| -Y12- STA 10+75.00 TO STA 13+75.00 (LT) | 30 | | 395 | 365 | |
| -Y12A- STA 10+50.00 TO STA 11+14.75 (LT) | 7 | | 66 | 59 | |
| SUBTOTAL | 2417 | | 9342 | 8080 | 1155 |
| | | | | | |
| SUMMARY #4 | | | | | |
| -L- STA 101+00.00 TO 131+00.00 (LT) | 376 | | 1121 | 745 | |
| -Y12B- STA 10+35.00 TO 10+96.00 (LT) | 45 | | 11 | | 34 |
| SUBTOTAL | 421 | | 1132 | 745 | 34 |
| | | | | | |
| SUMMARY #5 | | | | | |
| -L- STA 131+00.00 TO 153+50.00 (LT) | 21237 | 704 | 7774 | | 13463 |
| -Y18- STA 10+65.67 TO STA 11+48.00 (LT) | 239 | | | | 239 |
| -Y19- STA 15+96.96 TO STA 21+64.05 (LT) | 1231 | | 446 | | 785 |
| SUBTOTAL | 22707 | 704 | 8220 | | 14487 |
| | | | | | |
| | | | | | |
| LEFT SIDE TOTAL | 33229 | 704 | 28685 | 13190 | 17734 |

| LOCATION | UNCLASSIFIED EXCAVATION | UNDERCUT | EMBT+% | BORROW | WASTE |
|---|---|---|---|---|---|
| SUMMARY #6 | | | | | |
| -L- STA 10+65.00 TO STA 41+00.00 (RT) | 810 | | 2839 | 2149 | 120 |
| -Y- STA 10+40.00 TO STA 15+50.00 (RT) | 337 | | 347 | 10 | |
| -Y5- STA 11+00.00 TO STA 11+25.00 (RT) | 23 | | 17 | | 6 |
| SUBTOTAL | 1170 | | 3202 | 2159 | 126 |
| | | | | | |
| SUMMARY #7 | | | | | |
| -L- STA 41+00.00 TO STA 71+00.00 (RT) | 2139 | | 7491 | 5492 | 140 |
| -Y7- STA 10+73.32 TO STA 11+15.00 (RT) | 18 | | 18 | | |
| -Y8- STA 10+80.17 TO STA 11+25.00 (RT) | 25 | | 31 | 6 | |
| -Y9- STA 10+50.00 TO STA 11+00.00 (RT) | 35 | | 11 | | 24 |
| SUBTOTAL | 2217 | | 7551 | 5498 | 164 |
| | | | | | |
| SUMMARY #8 | | | | | |
| -L- STA 71+00.00 TO 101+00.00 (RT) | 490 | | 4723 | 4233 | |
| -Y10- STA 10+77.03 TO STA 11+25.00 (RT) | 51 | | 7 | | 44 |
| -Y11- STA 10+25.00 TO STA 11+40.00 (RT) | 18 | | 100 | 82 | |
| -Y11A- STA 10+13.80 TO STA 14+48.00 (RT) | 114 | | 115 | 1 | |
| SUBTOTAL | 673 | | 4945 | 4316 | 44 |
| | | | | | |
| SUMMARY #9 | | | | | |
| -L- STA 101+00.00 TO STA 131+00.00 (RT) | 152 | | 1348 | 1196 | |
| -Y17- STA 10+66.32 TO STA 11+50.00 (RT) | 40 | | 12 | | 28 |
| SUBTOTAL | 192 | | 1360 | 1196 | 28 |
| | | | | | |
| SUMMARY #10 | | | | | |
| -L- STA 131+00.00 TO STA 153+50.00 (RT) | 26976 | 650 | 6081 | | 20897 |
| -Y17A- STA 11+30.90 TO STA 14+50.00 | 148 | | 294 | 146 | |
| -Y19- STA 11+60.90 TO STA 15+25.00 (RT) | 706 | | 29 | | 677 |
| SUBTOTAL | 27832 | 650 | 6404 | 146 | 21574 |
| | | | | | |
| RIGHT SIDE TOTAL | 32084 | 650 | 23463 | 13315 | 21936 |
| TOTAL | 65313 | 1354 | 52148 | 26505 | 39670 |
| | | | | | |
| Loss Due to Clearing and Grubbing | -2000 | | | 2000 | |
| Waste in Lieu of Borrow | | | | -25566 | -25566 |
| PROJECT TOTAL | 63313 | 1354 | 52148 | 2939 | 14104 |
| Additional Undercut | | 1650 | 1980 | 1980 | |
| GRAND TOTAL | 63313 | 3004 | 54128 | 4919 | 14104 |
| SAY | 63400 | 3050 | | 4950 | |
| Shallow Undercut | | 2000 | | | |

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/8/10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. U-3306 | SHEET NO. 3-B

# 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 | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 11+39.7 | RT | 1 | | 577.0' | 574.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 12+30.5 | RT | 1 | 2 | | 574.0' | 577.7' | | | 92' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 12+30.5 | RT | 2 | | 580.7' | 577.7' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 12+45.6 | RT | 2 | 3 | | 577.7' | 578.2' | | | 16' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 12+45.6 | RT | 3 | | 581.2' | 578.2' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y- 18+66.8 | LT | 4 | | 575.7' | 569.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 18+08.7 | RT | 5 | | 579.0' | 573.4' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 18+17.2 | RT | 5 | 6 | | 573.4' | 573.3' | | | 8' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 18+17.2 | RT | 6 | | 578.9' | 573.3' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 19+15.6 | LT | 7 | | 575.9' | 570.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 21+40.1 | RT | 8 | | 570.8' | 565.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 21+49.0 | RT | 8 | 9 | | 565.9' | 565.8' | | | 8' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 21+49.0 | RT | 9 | | 570.6' | 565.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+51.4 | RT | 9 | 10 | | 565.8' | 565.6' | | | 36' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+51.4 | RT | 10 | | 570.5' | 565.6' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+82.2 | RT | 10 | 11 | | 565.6' | 565.4' | | | 32' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+82.2 | RT | 9 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+82.2 | RT | 11 | | 570.1' | 566.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 21+85.00 | LT | 12 | | 570.4' | 561.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 21+85.00 | LT | 12 | 13 | | 561.5' | 560.0' | | | | 16' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+40.00 | LT | 12 | 14 | | 561.5' | 561.8' | | | | 56' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+40.00 | LT | 14 | | 570.0' | 561.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+50.00 | LT | 14 | 15 | | 561.8' | 561.9' | | | | 12' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+50.00 | LT | 15 | | 570.0' | 561.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+90.00 | LT | 15 | 16 | | 561.9' | 562.0' | | | | 40' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+90.00 | LT | 16 | | 570.3' | 562.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 23+80.00 | LT | 16 | 22A | | 562.0' | 564.5' | | | 128' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 24+20.00 | LT | 22A | | | 571.6' | 564.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 24+80.00 | LT | 22A | 23A | | 564.5' | 564.8' | | | 64' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 24+90.00 | LT | 23A | | | 567.0' | 564.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+80.00 | C/L | 11 | 17 | | 566.4' | 566.2' | | | | 48' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+80.00 | LT | 17 | | 570.1' | 566.2' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+70.00 | LT | 17 | 18 | | 566.2' | 566.0' | | | | 24' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+70.00 | LT | 18 | | 569.0' | 566.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+62.00 | LT | 18 | 20 | | 566.0' | 565.8' | | | | 28' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+62.00 | LT | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+66.00 | RT | 20 | | 570.2' | 565.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 23+06.00 | RT | 20 | 21 | | 565.8' | 565.5' | | | | 40' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 384' | 264' | | | | | | | | | | | | | | | | | | | | | | | | | | |

| STATION | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | | D.I. STD. 840.14 OR STD. 840.15 | | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 11+39.7 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 10' | REM EXIST CB |
| -L- 12+30.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 84' | DO NOT USE CSP OR CAA |
| -L- 12+30.5 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | REMOVE EXIST CB |
| -L- 12+45.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 12' | DO NOT USE CSP OR CAA |
| -L- 12+45.6 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | REMOVE EXIST CB |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y- 18+66.8 | 1 | 1.7' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 10' | REMOVE EXIST DI |
| -L- 18+08.7 | 1 | 0.6' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 18+17.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 18+17.2 | 1 | 0.6' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | REMOVE EXIST CB |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 19+15.6 | 1 | 0.4' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 7' | REMOVE EXIST CB |
| -L- 21+40.1 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 21+49.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 21+49.0 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH, REM EXIST CI & 7' OF 15" |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+51.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y2- 10+51.4 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y2- 10+82.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y2- 10+82.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 62' | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+82.2 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH, REM EXIST DI |
| -L- 21+85.00 | 1 | 3.9' | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 21+85.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 22+40.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+40.00 | 1 | 3.3' | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+50.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 22+50.00 | 1 | 3.2' | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+90.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+90.00 | 1 | 3.3' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | 130' | REMOVE EXIST JB |
| -L- 23+80.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 24+20.00 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 24+80.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTION |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 24+90.00 | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y2- 10+80.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE EXIST 15" RCP |
| -Y2- 10+80.00 | 1 | 0.2' | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH, REMOVE EXIST DI |
| -Y2- 10+70.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 22' | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y2- 10+70.00 | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y2- 10+62.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y2- 10+62.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 76' | REMOVE EXIST 18" & MH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 22+66.00 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 23+06.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 54' | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | 20 | 17.2' | | 18 | 4 | 7 | 7 | | 2 | | | | | | | | | | | 2 | | | | | | | | | | | | | 467' | |

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

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

07-APR-2010 12:03
r:\roadway\proj\u3306_rdy_sum_ut_revs.dgn
$$$$USERNAME$$$$

| COMPUTED BY: | SRM | DATE: | 4/1/10 |
|---|---|---|---|
| CHECKED BY: | JCL | DATE: | 4/8/10 |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-C |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 23+06.00 | C/L | 16 | 21 | | 562.0' | 562.9' | | | | | 76' | | | | |
| -L- 23+06.00 | RT | 21 | | 570.2' | 562.9' | | | | | | | | | | |
| -L- 24+01.00 | RT | 21 | 22 | | 567.2' | 568.2' | | | 96' | | | | | | |
| -L- 24+01.00 | RT | 22 | | 571.2' | 568.2' | | | | | | | | | | |
| -L- 24+38.00 | LT | 23 | | | | | | | | | | | | | |
| -L- 29+00.00 | LT | 24 | | 572.1' | 569.1' | | | | | | | | | | |
| -L- 31+05.00 | LT | 24 | 25 | | 569.1' | 561.2' | | | 200' | | | | | | |
| -L- 31+05.00 | LT | 25 | | 564.2' | 561.2' | | | | | | | | | | |
| -L- 31+52.00 | LT | 25 | 26 | | 561.2' | 558.5' | | | 48' | | | | | | |
| -L- 31+52.00 | LT | 26 | | 562.5' | 557.6' | | | | | | | | | | |
| -L- 32+49.00 | RT | 27 | | 557.2' | 554.2' | | | | | | | | | | |
| -L- 32+83.00 | RT | 27 | 28 | | 554.2' | 553.3' | | | 36' | | | | | | |
| -L- 32+83.00 | RT | 28 | | 556.3' | 551+/- | | | | | | | | | | |
| -L- 32+83.00 | RT | 29 | | | | | | | | | | | | | |
| -L- 32+67.00 | LT | 30 | | 557.0' | 552.1' | | | | | | | | | | |
| -L- 32+75.00 | LT | 30 | 31 | | 552.1' | 552.3' | | | 8' | | | | | | |
| -L- 32+62.00 | LT | 31 | | 556.3' | 552.3' | | | | | | | | | | |
| -Y6- 10+63.00 | LT | 32 | | 555.5' | 550.0' | | | | | | | | | | |
| -Y6- 10+63.00 | C/L | 33 | | 554.1' | 554.8' | | | | | | | | | | |
| -Y6- 10+76.00 | RT | 34 | | 554.1' | 551.1' | | | | | | | | | | |
| -L- 33+60.00 | LT | 34A | | | | | | | | | | | | | |
| -L- 33+75.00 | LT | 34 | 33 | | 551.1' | 547.8' | | | 20' | | | | | | |
| -L- 33+75.00 | LT | 35 | | 552.0' | 544.5' | | | | | | | | | | |
| -L- 36+95.00 | LT | 36 | | 537.9' | 533.2' | | | | | | | | | | |
| -L- 37+40.00 | LT | 36 | 37 | | 533.2' | 531.9' | | | 44' | | | | | | |
| -L- 37+40.00 | LT | 37 | | 535.8' | 531.4' | | | | | | | | | | |
| -L- 37+52.00 | LT | 37 | 38 | | 531.4' | 531.4' | | | | | 12' | | | | |
| -L- 37+52.00 | LT | 38 | | 535.6' | 531.4' | | | | | | | | | | |
| -L- 40+20.00 | LT | 38 | 40 | | 531.4' | 523.7' | | | | | 268' | | | | |
| -L- 40+20.00 | LT | 40 | | 527.5' | 523.7' | | | | | | | | | | |
| -L- 40+00.00 | RT | 41 | | 527.9' | 524.9' | | | | | | | | | | |
| -L- 40+20.00 | RT | 41 | 42 | | 524.9' | 524.5' | | | 20' | | | | | | |
| -L- 40+20.00 | RT | 42 | | 527.5' | 524.5' | | | | | | | | | | |
| -L- 40+20.00 | C/L | 42 | 40 | | 524.5' | 523.9' | | | 52' | | | | | | |
| -L- 40+49.00 | LT | 43 | | 527.1' | 521.3' | | | | | | | | | | |
| -L- 40+20.00 | LT | 43 | 40 | | 521.3' | 523.7' | | | | | 44' | | | | |
| PAGE TOTAL | | | | | | | | | 524' | | 400' | | | | |

| SIZE / THICKNESS OR GAUGE | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 24" | 30" .079 | 30" | 36" .079 | 36" | 42" .109 | 42" | 48" .109 | 48" | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | |

| STATION | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | * LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 23+06.00 (16-21) | | | | | | | | | | | | |
| -L- 23+06.00 (21) | | | | | | 1 | 2.9 | | | | | |
| -L- 24+01.00 (21-22) | | | | | | | | | | | | |
| -L- 24+01.00 (22) | | | | | | 1 | | | 1 | | | 1 |
| -L- 24+38.00 (23) | | | | | | | | | | | | |
| -L- 29+00.00 (24) | | | | | | 1 | | | 1 | | | 1 |
| -L- 31+05.00 (24-25) | | | | | | | | | | | | |
| -L- 31+05.00 (25) | | | | | | 1 | | | 1 | | | 1 |
| -L- 31+52.00 (25-26) | | | | | | | | | | | | |
| -L- 31+52.00 (26) | | | | | | 1 | | | | | | |
| -L- 32+49.00 (27) | | | | | | 1 | | | 1 | | 1 | |
| -L- 32+83.00 (27-28) | | | | | | | | | | | | |
| -L- 32+83.00 (28) | | | | | | 1 | | | | | | |
| -L- 32+83.00 (29) | | | | | | | | | | | | |
| -L- 32+67.00 (30) | | | | | | 1 | | | | | | |
| -L- 32+75.00 (30-31) | | | | | | | | | | | | |
| -L- 32+62.00 (31) | | | | | | 1 | | | 1 | | | 1 |
| -Y6- 10+63.00 (32) | | | | | | 1 | | | 1 | | 1 | |
| -Y6- 10+63.00 (33) | | | | | | 1 | 0.3 | | | | | |
| -Y6- 10+76.00 (34) | | | | | | 1 | | | 1 | | | 1 |
| -L- 33+60.00 (34A) | | | | | | | | | | | | |
| -L- 33+75.00 (34-33) | | | | | | | | | | | | |
| -L- 33+75.00 (35) | | | | | | 1 | 2.5' | | | | | |
| -L- 36+95.00 (36) | | | | | | 1 | | | | | | |
| -L- 37+40.00 (36-37) | | | | | | | | | | | | |
| -L- 37+40.00 (37) | | | | | | 1 | | | 1 | | | 1 |
| -L- 37+52.00 (37-38) | | | | | | | | | | | | |
| -L- 37+52.00 (38) | | | | | | 1 | | | 1 | | | 1 |
| -L- 40+20.00 (38-40) | | | | | | | | | | | | |
| -L- 40+20.00 (40) | | | | | | 1 | | | 1 | | | 1 |
| -L- 40+00.00 (41) | | | | | | 1 | | | 1 | | 1 | |
| -L- 40+20.00 (41-42) | | | | | | | | | | | | |
| -L- 40+20.00 (42) | | | | | | 1 | | | 1 | | 1 | |
| -L- 40+20.00 (42-40) | | | | | | | | | | | | |
| -L- 40+49.00 (43) | | | | | | 1 | 0.8' | | 1 | | | 1 |
| -L- 40+20.00 (43-40) | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | 21 | 6.5' | | 13 | | 4 | 9 |

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

| STATION | D.I. STD. 840.14 OR STD. 840.15 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | J.B. STD. 840.31 OR 840.32 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 23+06.00 (16-21) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE EXIST 18" RCP |
| -L- 23+06.00 (21) | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | |
| -L- 24+01.00 (21-22) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 24+01.00 (22) | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 24+38.00 (23) | | | | | | | | | | | | | | | | | | | | | | | 16' | |
| -L- 29+00.00 (24) | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 31+05.00 (24-25) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 31+05.00 (25) | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 31+52.00 (25-26) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 31+52.00 (26) | | | | | | | | | | | | | | | 1 | | 1 | | | | | | 16' | REMOVE CB |
| -L- 32+49.00 (27) | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 32+83.00 (27-28) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 32+83.00 (28) | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | |
| -L- 32+83.00 (29) | | | | | | | | | | | | | | | | | | | | | | | 29' | REMOVE CB |
| -L- 32+67.00 (30) | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE CB |
| -L- 32+75.00 (30-31) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 32+62.00 (31) | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y6- 10+63.00 (32) | | | | | | | | | | | | | | | | | | | | | | | | REMOVE EXIST. CB |
| -Y6- 10+63.00 (33) | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE EXIST. CB |
| -Y6- 10+76.00 (34) | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 33+60.00 (34A) | | | | | | | | | | | | | | | | | | | | | | | 40' | |
| -L- 33+75.00 (34-33) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 33+75.00 (35) | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE CB |
| -L- 36+95.00 (36) | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE CB |
| -L- 37+40.00 (36-37) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 37+40.00 (37) | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 37+52.00 (37-38) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 37+52.00 (38) | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 40+20.00 (38-40) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE 322' OF 18" RCP |
| -L- 40+20.00 (40) | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH; REMOVE EXIST CB |
| -L- 40+00.00 (41) | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 40+20.00 (41-42) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 40+20.00 (42) | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 40+20.00 (42-40) | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 40+49.00 (43) | | | | | | | | | | | | | | | | | | | | | | | | REMOVE EXIST CB |
| -L- 40+20.00 (43-40) | | | | | | | | | | | | | | | | | | | | | | | 39' | DO NOT USE CSP OR CAA |
| PAGE TOTAL | | | | | | | | | | 1 | | | | 1 | 7 | | 6 | | | | | | 140' | |

ABBREVIATIONS

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

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$$$$USERNAME$$$$

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COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/8/10

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-D |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 42+20.00 | RT | 44 | | 524.0' | 521.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 42+20.00 | RT | 44 | 44A | | 521.0' | 518.1' | | | 32' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+50.00 | RT | 46 | | 523.2' | 517.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+60.00 | RT | 46 | 52 | | 517.9' | 517.4' | | | | | | | | 36' | | | | | | | | | | | | | | | | | | | | |
| -L- 43+55.00 | RT | 46 | 53 | | 517.9' | 518.1' | | | | | | | | 36' | | | | | | | | | | | | | | | | | | | | |
| -L- 43+39.00 | LT | 47 | | 514.9' | 510.1' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+39.00 | LT | 47 | 48 | | 510.1' | 513.6' | | | 8' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+39.00 | LT | 48 | | 516.4' | 513.6' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+50.00 | LT | 49 | | 523.4' | 514.3' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+60.00 | LT | 49 | 50 | | 519.8' | 520.0' | | | 12' | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+60.00 | LT | 50 | | 523.4' | 520.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+60.00 | RT | 51 | | 523.6' | 515.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+65.00 | RT | 51 | 45 | | 515.5' | 516.4' | | | | | | 84' | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+85.00 | RT | 52 | | 523.7' | 517.4' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 44+50.00 | RT | 52 | 55A | | 517.4' | 516.7' | | | | | | | | 144' | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 44+10.00 | LT | 50 | 54 | | 520.0' | 523.4' | | | 48' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 44+10.00 | LT | 54 | | 523.4' | 520.4' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 45+45.00 | RT | 55 | | 526.5' | 522.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 46+50.00 | RT | 55 | 55A | | 522.0' | 521.4' | | | 24' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 45+30.00 | RT | 55A | | 524.4' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 46+00.00 | RT | 55A | 56 | | 516.7' | 514.6' | | | | | | | | 120' | | | | | | | | | | | | | | | | | | | | |
| -L- 46+50.00 | RT | 56 | | 523.3' | 514.6' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 46+47.00 | RT | 56 | 57 | | 514.6' | 514.5' | | | 48' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 46+65.00 | RT | 57 | | 522.2' | 514.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 48+65.00 | LT | 58 | | 517.0' | 514.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 48+65.00 | LT | 58 | 59 | | 514.0' | 512.0' | | | 32' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 48+82.00 | LT | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 48+50.00 | RT | 57 | 61 | | 514.5' | 505.5' | | | | | | | | 256' | | | | | | | | | | | | | | | | | | | | |
| -L- 49+57.00 | LT | 63 | | 510.0' | 504.2' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 49+50.00 | LT | 63 | 63A | | 504.2' | 505.0' | | | | | | | | | 28' | | | | | | | | | | | | | | | | | | | |
| -L- 49+55.00 | RT | 63B | | 508.3' | 502.2' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 49+55.00 | RT | 63B | 63C | | 502.2' | 501.9' | | | | | | | | | 28' | | | | | | | | | | | | | | | | | | | |
| -L- 50+35.00 | RT | 64 | | 514.7' | 511.7' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 50+35.00 | RT | 64 | 65 | | 511.7' | 504.9' | | | 28' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 50+35.00 | LT | 66 | | 514.7' | 511.7' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+09.00 | LT | 66 | 67 | | 511.7' | 510.8' | | | 76' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+09.00 | LT | 67 | | 514.3' | 510.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+09.00 | LT | 67 | 68 | | 510.8' | 511.0' | | | 20' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+09.00 | LT | 68 | | 512.9' | 511.0' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+53.00 | LT | 67 | 69 | | 510.8' | 510.5' | | | 44' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+53.00 | LT | 69 | | 514.3' | 510.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+53.00 | C/L | 69 | 70 | | 510.5' | 507.5' | | | 80' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 54+00.00 | LT | 71 | | 510.1' | 507.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 54+00.00 | LT | 71 | 72 | | 507.9' | 507.0' | | | | 20' | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 54+00.00 | LT | 72 | | 511.4' | 506.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 54+00.00 | C/L | 72 | 73 | | 507.1' | 507.4' | | | 52' | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 504' | 20' | | 84' | | 592' | 56' | | | | | | | | | | | | | | | | | | | |

| STATION | LOCATION | STRUCTURE NO. FROM | STRUCTURE NO. TO | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 42+20.00 | RT | 44 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 42+20.00 | RT | 44 | 44A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 43+50.00 | RT | 46 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+60.00 | RT | 46 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 43+55.00 | RT | 46 | 53 | 4.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 43+39.00 | LT | 47 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | |
| -L- 43+39.00 | LT | 47 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 43+39.00 | LT | 48 | | | | 1 | | | | | | | | | 1 | | | | | 1 | | | | | | | | | | | | | | | | | |
| -L- 43+50.00 | LT | 49 | | | | 1 | 4.1' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 43+60.00 | LT | 49 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 43+60.00 | LT | 50 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 43+60.00 | RT | 51 | | | | 1 | 3.1' | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | | EXTRA DEPTH |
| -L- 43+65.00 | RT | 51 | 45 | 2.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 43+85.00 | RT | 52 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 44+50.00 | RT | 52 | 55A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 44+10.00 | LT | 50 | 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 44+10.00 | LT | 54 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 45+45.00 | RT | 55 | | | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 46+50.00 | RT | 55 | 55A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 45+30.00 | RT | 55A | | | | 1 | 2.7' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 46+00.00 | RT | 55A | 56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 46+50.00 | RT | 56 | | | | 1 | 3.7' | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | SEE SPECIAL DETAIL |
| -L- 46+47.00 | RT | 56 | 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 46+65.00 | RT | 57 | | | | 1 | 2.6' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 48+65.00 | LT | 58 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 48+65.00 | LT | 58 | 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 48+82.00 | LT | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 38' | |
| -L- 48+50.00 | RT | 57 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 49+57.00 | LT | 63 | | | | 1 | 1.8' | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | |
| -L- 49+50.00 | LT | 63 | 63A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>SEE SHEET 3-M FOR ENDWALL |
| -L- 49+55.00 | RT | 63B | | | | 1 | 1.0' | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 49+55.00 | RT | 63B | 63C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>SEE SHEET 3-M FOR ENDWALL |
| -L- 50+35.00 | RT | 64 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 50+35.00 | RT | 64 | 65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS<br>RCP NOT ALLOWED |
| -L- 50+35.00 | LT | 66 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 51+09.00 | LT | 66 | 67 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 56' | DO NOT USE CSP OR CAA |
| -L- 51+09.00 | LT | 67 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 51+09.00 | LT | 67 | 68 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 51+09.00 | LT | 68 | | | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 51+53.00 | LT | 67 | 69 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 51+53.00 | LT | 69 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 51+53.00 | C/L | 69 | 70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 54+00.00 | LT | 71 | | | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 54+00.00 | LT | 71 | 72 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 54+00.00 | LT | 72 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 54+00.00 | C/L | 72 | 73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | 6.8 | | 22 | 14.9' | | 14 | 3 | 5 | 6 | 4 | | 1 | | | | | 1 | 3 | | 4 | | | 1 | | 1 | | | | | | | | 178' | |

ABBREVIATIONS

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

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r:\roadway\proj\u3306_rdy_sum_ut_revs.dgn
$$$$USERNAME$$$$

3/07/06

| COMPUTED BY: | SRM | DATE: | 4/1/10 |
|---|---|---|---|
| CHECKED BY: | JCL | DATE: | 4/8/10 |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-E |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

**ABBREVIATIONS**

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 54+00.00 | RT | 73 | | 510.4' | 507.4' | | | | | | | | | | |
| -L- 55+28.00 | LT | 72 | 75 | | 506.9' | 504.4' | | | | | 128' | | | | |
| -L- 55+28.00 | LT | 74 | | 507.0' | 504.8' | | | | | | | | | | |
| -L- 55+28.00 | LT | 74 | 75 | | 504.8' | 504.5' | | | 16' | | | | | | |
| -L- 55+28.00 | LT | 75 | | 509.2' | 504.4' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 55+28.00 | C/L | 75 | 76 | | 505.0' | 505.2' | | | 52' | | | | | | |
| -L- 55+28.00 | RT | 76 | | 508.2' | 505.2' | | | | | | | | | | |
| -L- 57+67.00 | LT | 75 | 77 | | 504.4' | 499.7' | | | | | 240' | | | | |
| -L- 57+67.00 | LT | 77 | | 504.7' | 499.7' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 57+67.00 | C/L | 77 | 78 | | 501.0' | 501.3' | | | 52' | | | | | | |
| -L- 57+67.00 | RT | 78 | | 504.3' | 501.3' | | | | | | | | | | |
| -Y7C- 10+50.00 | LT | 77 | 79 | | 499.8' | 499.9' | | | 24' | | | | | | |
| -Y7C- 10+50.00 | LT | 79 | | 502.9' | 499.9' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -Y7C- 10+26.00 | C/L | 79 | 80 | | 499.9' | 500.1' | | | 52' | | | | | | |
| -Y7C- 10+38.00 | RT | 80 | | 503.1' | 500.1' | | | | | | | | | | |
| -L- 58+58.00 | RT | 81 | | | | | | | | | | | | | |
| -L- 59+15.00 | LT | 77 | 82 | | 499.7' | 498.2' | | | | | 148' | | | | |
| | | | | | | | | | | | | | | | |
| -L- 59+15.00 | LT | 82 | | 502.0' | 498.2' | | | | | | | | | | |
| -L- 59+15.00 | C/L | 82 | 83 | | 498.6' | 498.8' | | | 64' | | | | | | |
| -L- 59+15.00 | RT | 83 | | 501.8' | 498.8' | | | | | | | | | | |
| -L- 60+00.00 | LT | 82 | 84 | | 498.2' | 493.2' | | | | | 188' | | | | |
| | | | | | | | | | | | | | | | |
| -L- 61+00.00 | LT | 84 | | 498.4' | 493.1' | | | | | | | | | | |
| -L- 61+00.00 | LT | 84 | 85 | | 493.1' | 491.5' | | | | | | 40' | | | |
| -L- 62+00.00 | LT | 84 | 86 | | 493.3' | 494.4' | | | 100' | | | | | | |
| -L- 62+00.00 | LT | 86 | | 497.5' | 494.4' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 62+15.00 | LT | 86 | 87 | | 494.4' | 494.6' | | | 16' | | | | | | |
| -L- 62+15.00 | LT | 87 | | 497.6' | 494.6' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 62+00.00 | RT | 89 | | 497.6' | 494.6' | | | | | | | | | | |
| -L- 62+15.00 | RT | 89 | 90 | | 494.6' | 494.4' | | | 16' | | | | | | |
| -L- 62+15.00 | RT | 90 | | 497.6' | 494.4' | | | | | | | | | | |
| -L- 62+30.00 | LT | 91 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 62+30.00 | C/L | 91 | 92 | | 487.7' | 486.5' | | | | | | | | | |
| -L- 62+25.00 | RT | 90 | 92 | | 494.4' | 494.2' | | | 28' | | | | | | |
| -L- 62+30.00 | RT | 92 | | 498.3' | 487.5' | | | | | | | | | | |
| -L- 62+30.00 | RT | 92 | 93 | | 486.5' | 486.0' | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 64+00.00 | RT | 94 | | 500.0' | 497.0' | | | | | | | | | | |
| -L- 64+00.00 | RT | 94 | 95 | | 497.0' | 496.5' | | | 28' | | | | | | |
| | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 440' | | 704' | 40' | | | |

| STATION | FROM | TO | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" | 15" | 18" | 24" | 24" | 30" | 30" | 36" | 36" | 42" | 42" | 48" | 48" | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THICKNESS OR GAUGE | | | .064 | .064 | .064 | .064 | | .079 | | .079 | | .109 | | .109 | | | | | | | | | |
| -L- 54+00.00 | 73 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 72 | 75 | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 74 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 74 | 75 | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 75 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 75 | 76 | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 76 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 57+67.00 | 75 | 77 | | | | | | | | | | | | | | | | | | | | | |
| -L- 57+67.00 | 77 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 57+67.00 | 77 | 78 | | | | | | | | | | | | | | | | | | | | | |
| -L- 57+67.00 | 78 | | | | | | | | | | | | | | | | | | | | | | |
| -Y7C- 10+50.00 | 77 | 79 | | | | | | | | | | | | | | | | | | | | | |
| -Y7C- 10+50.00 | 79 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -Y7C- 10+26.00 | 79 | 80 | | | | | | | | | | | | | | | | | | | | | |
| -Y7C- 10+38.00 | 80 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 58+58.00 | 81 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 59+15.00 | 77 | 82 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 59+15.00 | 82 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 59+15.00 | 82 | 83 | | | | | | | | | | | | | | | | | | | | | |
| -L- 59+15.00 | 83 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 60+00.00 | 82 | 84 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 61+00.00 | 84 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 61+00.00 | 84 | 85 | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+00.00 | 84 | 86 | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+00.00 | 86 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+15.00 | 86 | 87 | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+15.00 | 87 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+00.00 | 89 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+15.00 | 89 | 90 | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+15.00 | 90 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+30.00 | 91 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+30.00 | 91 | 92 | | | | | | | | | | | | | | | | | | | | | 104' |
| -L- 62+25.00 | 90 | 92 | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+30.00 | 92 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+30.00 | 92 | 93 | | | | | | | | | | | | | | | | | | | | | 16' |
| | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 64+00.00 | 94 | | | | | | | | | | | | | | | | | | | | | | |
| -L- 64+00.00 | 94 | 95 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | | | | | | | | | | | | | | | 120' |

| STATION | FROM | TO | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES (* 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' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 54+00.00 | 73 | | | | | | | 1 | | | 1 | | 1 | |
| -L- 55+28.00 | 72 | 75 | | | | | | | | | | | | |
| -L- 55+28.00 | 74 | | | | | | | 1 | | | | | | |
| -L- 55+28.00 | 74 | 75 | | | | | | | | | | | | |
| -L- 55+28.00 | 75 | | | | | | | 1 | | | 1 | | | 1 |
| | | | | | | | | | | | | | | |
| -L- 55+28.00 | 75 | 76 | | | | | | | | | | | | |
| -L- 55+28.00 | 76 | | | | | | | 1 | | | 1 | | 1 | |
| -L- 57+67.00 | 75 | 77 | | | | | | | | | | | | |
| -L- 57+67.00 | 77 | | | | | | | 1 | | | 1 | | | 1 |
| | | | | | | | | | | | | | | |
| -L- 57+67.00 | 77 | 78 | | | | | | | | | | | | |
| -L- 57+67.00 | 78 | | | | | | | 1 | | | 1 | | 1 | |
| -Y7C- 10+50.00 | 77 | 79 | | | | | | | | | | | | |
| -Y7C- 10+50.00 | 79 | | | | | | | 1 | | | | | | |
| | | | | | | | | | | | | | | |
| -Y7C- 10+26.00 | 79 | 80 | | | | | | | | | | | | |
| -Y7C- 10+38.00 | 80 | | | | | | | 1 | | | 1 | | | 1 |
| -L- 58+58.00 | 81 | | | | | | | | | | | | | |
| -L- 59+15.00 | 77 | 82 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| -L- 59+15.00 | 82 | | | | | | | 1 | | | 1 | | | 1 |
| -L- 59+15.00 | 82 | 83 | | | | | | | | | | | | |
| -L- 59+15.00 | 83 | | | | | | | 1 | | | 1 | | 1 | |
| -L- 60+00.00 | 82 | 84 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| -L- 61+00.00 | 84 | | | | | | | | | | | | | |
| -L- 61+00.00 | 84 | 85 | | | | | | 1 | 0.3' | | 1 | | | 1 |
| -L- 62+00.00 | 84 | 86 | | | | | | | | | | | | |
| -L- 62+00.00 | 86 | | | | | | | 1 | | | 1 | 1 | | |
| | | | | | | | | | | | | | | |
| -L- 62+15.00 | 86 | 87 | | | | | | | | | | | | |
| -L- 62+15.00 | 87 | | | | | | | 1 | | | 1 | 1 | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| -L- 62+00.00 | 89 | | | | | | | 1 | | | 1 | 1 | | |
| -L- 62+15.00 | 89 | 90 | | | | | | | | | | | | |
| -L- 62+15.00 | 90 | | | | | | | 1 | | | 1 | 1 | | |
| -L- 62+30.00 | 91 | | | | | 6.0 | | | | | | | | |
| | | | | | | | | | | | | | | |
| -L- 62+30.00 | 91 | 92 | | | | | | | | | | | | |
| -L- 62+25.00 | 90 | 92 | | | | | | | | | | | | |
| -L- 62+30.00 | 92 | | | | | | | 1 | | | | | | |
| -L- 62+30.00 | 92 | 93 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| -L- 64+00.00 | 94 | | | | | | | 1 | | | 1 | | | 1 |
| -L- 64+00.00 | 94 | 95 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | 6.0 | | 17 | 0.3' | | 14 | 4 | 4 | 6 |

| STATION | FROM | TO | | D.I. STD. 840.14 OR STD. 840.15 | | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 54+00.00 | 73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 72 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE EXIST 24" RCP |
| -L- 55+28.00 | 74 | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 55+28.00 | 74 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 55+28.00 | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 55+28.00 | 75 | 76 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 55+28.00 | 76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 57+67.00 | 75 | 77 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 57+67.00 | 77 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 57+67.00 | 77 | 78 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 57+67.00 | 78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y7C- 10+50.00 | 77 | 79 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y7C- 10+50.00 | 79 | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | EXTRA DEPTH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y7C- 10+26.00 | 79 | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y7C- 10+38.00 | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | 27' | REMOVE EXIST CB |
| -L- 58+58.00 | 81 | | | | | | | | | | | | | | | | | | | | | | | | | | | 36' | |
| -L- 59+15.00 | 77 | 82 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 59+15.00 | 82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 59+15.00 | 82 | 83 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 59+15.00 | 83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 60+00.00 | 82 | 84 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 61+00.00 | 84 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 61+00.00 | 84 | 85 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 62+00.00 | 84 | 86 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 62+00.00 | 86 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+15.00 | 86 | 87 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 62+15.00 | 87 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+00.00 | 89 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+15.00 | 89 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 62+15.00 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 62+30.00 | 91 | | | | | | | | | | | | | | | | | | | | | | | | | | | | HEADWALL FOR 48" RCP |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 62+30.00 | 91 | 92 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE 24" & 36" RCP |
| -L- 62+25.00 | 90 | 92 | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 62+30.00 | 92 | | | | | | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | |
| -L- 62+30.00 | 92 | 93 | | | | | | | | | | | | | | | | | | | | | | | | | | | 75' | DO NOT USE CSP OR CAA<br>REMOVE 24" RCP |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 64+00.00 | 94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 64+00.00 | 94 | 95 | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | 2 | | | | | | | | | 1 | | 2 | | | | | 1 | | | | | | | | 138' | |

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CHECKED BY: JCL DATE: 4/8/10

3/07/06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-F |

# 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 | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C.P. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 72+00.00 | RT | 96 | | 494.4' | 491.4' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 72+75.00 | RT | 96 | 97 | | 491.4' | 485.9' | | | 144' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 73+50.00 | RT | 97 | | 488.9' | 485.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 74+50.00 | RT | 97 | 98 | | 485.9' | 482.2' | | | 128' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 74+77.00 | RT | 98 | | 485.2' | 481.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 74+77.00 | RT | 98 | 101 | | 481.9 | 479.1' | | | | 136' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | LT | 100 | | 480.4' | 477.2' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | C/L | 100 | 101 | | 477.2' | 479.1' | | | | 52' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | RT | 101 | | 482.4' | 479.1' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | RT | 101 | 102 | | 479.7' | 481.5' | | | 20' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | RT | 102 | | 483.7' | 481.5' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+50.00 | LT | 100 | 103 | | 477.2' | 471.7' | | | | 108' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 77+20.00 | LT | 103 | | 475.0' | 473.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 77+20.00 | LT | 103 | 104 | | 473.8' | 471.6' | | | | 28' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 77+88.00 | C/L | 104A | 105 | | 470.5' | 472.8' | | | | 96' | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 77+88.00 | RT | 105 | | 476.9' | 472.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+60.00 | RT | 105 | 106 | | 472.8' | 473.3' | | | 28' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+60.00 | RT | 106 | | 476.6' | 473.3' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+60.00 | LT | 106 | 107 | | 473.3' | 473.8' | | | 44' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+50.00 | RT | 106A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+60.00 | LT | 107 | | 476.6' | 473.8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+55.00 | C/L | 107A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 79+00.00 | LT | 108 | | 472.7' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 79+00.00 | RT | 108 | 109 | | 467.5' | 467.4' | | | | | | 24' | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 79+75.00 | RT | 108 | 112 | | 468.0' | 468.6' | | | | | 76' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 79+75.00 | RT | 112 | | 472.3' | 468.6' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 79+87.00 | RT | 112 | 114 | | 468.6' | 468.6' | | | | | 12' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 79+87.00 | RT | 114 | | 472.3' | 468.6' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 80+00.00 | RT | 115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7.14 | |
| -L- 80+10.00 | LT | 116 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 80+26.00 | C/L | 117 | | | 463.0' | 461.3' | | | | | | | | | | | | | | | | | | | | | | | | | | | 136' | | | | | |
| -L- 80+50.00 | LT | 114 | 119 | | 468.6' | 469.6' | | | | | 104' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 81+00.00 | LT | 119 | | 473.4' | 469.6' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y11- 11+00.00 | LT | 120 | | 465.5' | 461.2' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y11- 10+95.00 | LT | 120 | 121 | | 462.5' | 462.9' | | | 12' | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y11- 10+95.00 | LT | 121 | | 465.1' | 462.9' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y11A- 10+65.00 | LT | 122 | | 472.4' | 467.4' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 81+56.00 | LT | 119 | 123 | | 469.6' | 471.8' | | | | | 128' | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 82+28.00 | LT | 123 | | 476.5' | 472.7' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 376' | 420' | 320' | 24' | | | | | | | | | | | | | | | | | | | 136' | | | | 7.14 | |

| STATION | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 72+00.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 72+75.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 73+50.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 74+50.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 74+77.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 74+77.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 76+09.00 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 76+09.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 76+09.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 76+09.00 | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | 20' | REMOVE EXIST 18" RCP |
| -L- 76+50.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 77+20.00 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 77+20.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE RCP |
| -L- 77+88.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 77+88.00 | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y10- 10+60.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y10- 10+60.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y10- 10+60.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y10- 10+50.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 50' | REMOVE CB'S |
| -Y10- 10+60.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | .07 | | EXTRA DEPTH |
| -Y10- 10+55.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30' | |
| -L- 79+00.00 | 1 | 1.1' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 79+00.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 79+75.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 79+75.00 | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 79+87.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 79+87.00 | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 80+00.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 80+10.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 60' | |
| -L- 80+26.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 80+50.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 81+00.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y11- 11+00.00 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| -Y11- 10+95.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -Y11- 10+95.00 | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y11A- 10+65.00 | 1 | 0.1' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | REMOVE EXIST. DI & 6' OF 15" RCP |
| -L- 81+56.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 82+28.00 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| PAGE TOTAL | 18 | 1.2' | | 14 | 2 | 9 | 3 | 3 | | | | | | | | | | 3 | | | | | | | | 1 | | 2–18" | | 0.07 | 160' | |

ABBREVIATIONS

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

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COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/8/10

3/07/06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-G |

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

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 82+28.00 | C/L | 123 | 124 | | 471.8' | 472.3' | | | | | 52' | | | | |
| -L- 82+28.00 | RT | 124 | | 476.7' | 472.9' | | | | | | | | | | |
| -L- 83+05.00 | LT | 125 | | | | | | | | | | | | | |
| -L- 83+60.00 | RT | 124 | 126 | | 472.3' | 477.3' | | | | | 132' | | | | |
| -L- 83+60.00 | RT | 126 | | 481.0' | 477.3' | | | | | | | | | | |
| -L- 83+63.00 | C/L | 126 | 127 | | 478.0' | 478.4' | | | 60' | | | | | | |
| -L- 83+63.00 | LT | 127 | | 481.4' | 478.4' | | | | | | | | | | |
| -L- 84+36.00 | LT | 128 | | | | | | | | | | | | | |
| -L- 85+00.00 | C/L | 129 | | | | | | | | | | | | | |
| -L- 85+90.00 | RT | 130 | | | | | | | | | | | | | |
| -L- 86+00.00 | RT | 126 | 131 | | 477.3' | 486.7' | | | | | 240' | | | | |
| -L- 86+00.00 | RT | 131 | | 490.5' | 486.7' | | | | | | | | | | |
| -L- 86+00.00 | C/L | 131 | 132 | | 487.5' | 488.9' | | | 48' | | | | | | |
| -L- 86+00.00 | LT | 132 | | 491.9' | 488.9' | | | | | | | | | | |
| -L- 88+25.00 | RT | 131 | 134 | | 486.7' | 497.3' | | | 176' | | | | | | |
| -L- 88+37.00 | RT | 133 | | 500.8' | 497.8' | | | | | | | | | | |
| -L- 88+08.00 | RT | 133 | 134 | | 497.8' | 495.9' | | | 48' | | | | | | |
| -L- 87+84.00 | RT | 134 | | 498.9' | 495.9' | | | | | | | | | | |
| -L- 87+84.00 | RT | 134 | 135 | | 495.9' | 497.9' | | | 40' | | | | | | |
| -L- 87+84.00 | LT | 135 | | 500.9' | 497.9' | | | | | | | | | | |
| -L- 87+84.00 | LT | 135 | 136 | | 497.9' | 501.1' | | | 52' | | | | | | |
| -L- 87+84.00 | LT | 136 | | 503.3' | 501.1' | | | | | | | | | | |
| -Y12- 11+05.00 | LT | 136 | 137 | | 501.1' | 504.1' | | | 56' | | | | | | |
| -Y12- 11+14.00 | LT | 137 | | 507.2' | 504.1' | | | | | | | | | | |
| -Y12- 12+47.00 | LT | 138 | | | | | | | | | | | | | |
| -Y12- 12+70.00 | LT | 137 | 139 | | 503.9' | 507.3' | | | 144' | | | | | | |
| -Y12- 12+70.00 | LT | 139 | | 511.7' | 507.3' | | | | | | | | | | |
| -Y12- 12+72.00 | LT | 139 | 140 | | 507.3' | 507.4' | | | 16' | | | | | | |
| -Y12- 12+75.00 | LT | 140 | | 509.6' | 507.4' | | | | | | | | | | |
| -Y12- 11+12.00 | RT | 141 | | | | | | | | | | | | | |
| -Y12- 11+12.00 | RT | 142 | | 509.6' | 501.5' | | | | 12' | | | | | | |
| -Y12- 12+50.00 | RT | 142 | 143 | | 501.5' | 507.8' | | | 128' | | | | | | |
| -Y12- 12+75.00 | RT | 143 | | 510.8' | 507.8' | | | | | | | | | | |
| -L- 89+40.00 | LT | 135 | 144 | | 497.9' | 502.7' | | | 112' | | | | | | |
| -L- 89+40.00 | LT | 144 | | 505.7' | 502.7' | | | | | | | | | | |
| -L- 89+45.00 | LT | 144 | 145 | | 502.7' | 502.8' | | | 16' | | | | | | |
| -L- 89+50.00 | LT | 145 | | 505.8' | 502.8' | | | | | | | | | | |
| -L- 90+00.00 | LT | 146 | | | | | | | | | | | | | |
| -L- 90+07.00 | C/L | 147 | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 908' | | 424' | | | | |

| C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 |
|---|---|---|---|---|---|---|---|

| CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|

| 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|

| STATION (STRUCTURE NO.) | QUANTITIES FOR DRAINAGE STRUCTURES: 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 | | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 82+28.00 (123-124) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 82+28.00 (124) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 83+05.00 (125) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 109' | |
| -L- 83+60.00 (124-126) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 83+60.00 (126) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 83+63.00 (126-127) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE EXIST CB & 30' OF 15" RCP |
| -L- 83+63.00 (127) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 84+36.00 (128) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 147' | |
| -L- 85+00.00 (129) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.06 | | FILL 12" RCP W/FLOWABLE FILL |
| -L- 85+90.00 (130) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80' | |
| -L- 86+00.00 (126-131) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 86+00.00 (131) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 86+00.00 (131-132) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 86+00.00 (132) | 1 | | | | | | | | | | | | | | 1 | | | | | | 1 | | | | | | | | 1 | | | | | |
| -L- 88+25.00 (131-134) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 88+37.00 (133) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 88+08.00 (133-134) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 87+84.00 (134) | 1 | | | 1 | | 1 | | | | | | | | | 1 | | | | | | 1 | | | | | | | | 1 | | | | | EXTRA DEPTH |
| -L- 87+84.00 (134-135) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 87+84.00 (135) | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| -L- 87+84.00 (135-136) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 87+84.00 (136) | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y12- 11+05.00 (136-137) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y12- 11+14.00 (137) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y12- 12+47.00 (138) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 50' | |
| -Y12- 12+70.00 (137-139) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y12- 12+70.00 (139) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y12- 12+72.00 (139-140) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -Y12- 12+75.00 (140) | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y12- 11+12.00 (141) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 88' | REMOVE EXIST CB |
| -Y12- 11+12.00 (142) | 1 | 3.1' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 0.4 | | | REMOVE EXIST CB & 7' OF 15" RCP |
| -Y12- 12+50.00 (142-143) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y12- 12+75.00 (143) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 89+40.00 (135-144) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 89+40.00 (144) | 1 | | | 1 | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| -L- 89+45.00 (144-145) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 89+50.00 (145) | 1 | | | 1 | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| -L- 90+00.00 (146) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30' | REMOVE CB'S |
| -L- 90+07.00 (147) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.1 | | FILL 15" RCP W/FLOWABLE FILL |
| PAGE TOTAL | 16 | 3.1' | | 12 | | 3 | 9 | | 2 | | | | | 2 | 2 | | | | | 2 | 2 | | | | | | 1 | | 2 | | 0.4 | 0.16 | 504' | |

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

ABBREVIATIONS

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

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COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/8/10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-H |

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

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 94+30.00 | LT | 148 | | 506.3' | 503.3' | | | | | | | | | | |
| -L- 94+30.00 | C/L | 148 | 149 | | 503.3' | 502.4' | | | 32' | | | | | | |
| -L- 94+30.00 | RT | 149 | | 505.4' | 502.4' | | | | | | | | | | |
| -L- 95+00.00 | RT | 149 | 150 | | 502.4' | 499.1' | | | 208' | | | | | | |
| -L- 96+40.00 | RT | 150 | | 502.1' | 499.1' | | | | | | | | | | |
| -L- 96+40.00 | C/L | 150 | 151 | | 499.1' | 496.5' | | | 40' | | | | | | |
| -L- 96+40.00 | LT | 151 | | | | | | | | | | | | | |
| -L- 99+40.00 | LT | 152 | | 496.8' | 493.8' | | | | | | | | | | |
| -L- 101+05.00 | LT | 152 | 153 | | 493.8' | 488.3' | | | 168' | | | | | | |
| -L- 101+05.00 | LT | 153 | | 492.9' | 488.2' | | | | | | | | | | |
| -L- 101+23.00 | RT | 154 | | 492.4' | 489.4' | | | | | | | | | | |
| -Y12B- 10+70.00 | LT | 155 | | 491.4' | 487.4' | | | | | | | | | | |
| -Y12B- 10+70.00 | RT | 156 | | 491.8' | 487.1' | | | | | | | | | | |
| -L- 102+25.00 | LT | 157 | | 489.6' | 484.8' | | | | | | | | | | |
| -L- 102+35.00 | RT | 158 | | 487.0' | 483.8' | | | | | | | | | | |
| -L- 103+00.00 | RT | 159 | | | | | | | | | | | | | |
| -L- 102+00.00 | RT | 154 | 160 | | 489.4' | 482.9' | | | 184' | | | | | | |
| -L- 103+05.00 | RT | 160 | | 486.7' | 482.9' | | | | | | | | | | |
| -L- 102+75.00 | RT | 158 | 161 | | 483.8' | 483.1' | | | 80' | | | | | | |
| -L- 103+13.00 | RT | 161 | | 486.1' | 483.1' | | | | | | | | | | |
| -L- 103+13.00 | RT | 160 | 161 | | 482.9' | 483.1' | | | 12' | | | | | | |
| -L- 103+43.00 | LT | 162 | | 485.1' | 479.3' | | | | | | | | | | |
| -L- 103+43.00 | LT | 162 | 163 | | 481.5' | 481.7' | | | 12' | | | | | | |
| -L- 103+43.00 | LT | 163 | | 484.7' | 481.7' | | | | | | | | | | |
| -L- 105+00.00 | LT | 164 | | | | | | | | | | | | | |
| -L- 105+10.00 | LT | 164 | 165 | | 468.8' | 468.6' | | | 20' | | | | | | |
| -L- 105+18.00 | LT | 165 | | 474.5' | 468.4' | | | | | | | | | | |
| -L- 105+40.00 | LT | 165 | 166 | | 468.4' | 468.2' | | | 20' | | | | | | |
| -L- 105+40.00 | LT | 166 | | | | | | | | | | | | | |
| -L- 107+02.00 | LT | 168 | | 467.3' | 460.4' | | | | | | | | | | |
| -L- 107+10.00 | LT | 168 | 169 | | 460.4' | 460.8' | | | 8' | | | | | | |
| -L- 107+10.00 | LT | 169 | | 468.1' | 460.8' | | | | | | | | | | |
| -L- 109+60.00 | LT | 170 | | 455.8' | 450.1' | | | | | | | | | | |
| -L- 109+60.00 | LT | 170 | 171 | | 452.6' | 453.1' | | | 12' | | | | | | |
| -L- 109+60.00 | LT | 171 | | 456.7' | 453.1' | | | | | | | | | | |
| -L- 109+60.00 | C/L | 171 | 172 | | 453.1' | 456.4' | | | 60' | | | | | | |
| -L- 109+60.00 | RT | 172 | | 459.6' | 456.4' | | | | | | | | | | |
| -L- 111+55.00 | LT | 173 | | 446.1' | 440.4' | | | | | | | | | | |
| -L- 112+97.00 | LT | 174 | | 437.2' | 431.7' | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 856' | | | | | | |

| STATION (STRUCTURE) | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 24" | .079 | | 36" .079 | 36" | 42" .109 | 42" | 48" .109 | 48" | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 94+30.00 (148) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 94+30.00 (148–149) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 94+30.00 (149) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 95+00.00 (149–150) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 96+40.00 (150) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 96+40.00 (150–151) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 96+40.00 (151) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 99+40.00 (152) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 101+05.00 (152–153) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 101+05.00 (153) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 101+23.00 (154) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y12B- 10+70.00 (155) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y12B- 10+70.00 (156) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 102+25.00 (157) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 102+35.00 (158) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+00.00 (159) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 102+00.00 (154–160) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+05.00 (160) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 102+75.00 (158–161) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+13.00 (161) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+13.00 (160–161) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+43.00 (162) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+43.00 (162–163) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+43.00 (163) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+00.00 (164) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+10.00 (164–165) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+18.00 (165) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+40.00 (165–166) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+40.00 (166) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 107+02.00 (168) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 107+10.00 (168–169) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 107+10.00 (169) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 109+60.00 (170) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 109+60.00 (170–171) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 109+60.00 (171) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 109+60.00 (171–172) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 109+60.00 (172) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 111+55.00 (173) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 112+97.00 (174) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | | |

QUANTITIES FOR DRAINAGE STRUCTURES — * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

| STATION (STRUCTURE) | PER EACH (0' THRU 5.0') | LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | | D.I. STD. 840.14 OR STD. 840.15 | | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 94+30.00 (148) | 1 | | | 1 | | 1 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| -L- 94+30.00 (148–149) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 94+30.00 (149) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 95+00.00 (149–150) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 96+40.00 (150) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 96+40.00 (150–151) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 96+40.00 (151) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.4 | | | REMOVE EXIST CB AND 6' OF 15" RCP |
| -L- 99+40.00 (152) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 101+05.00 (152–153) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 101+05.00 (153) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 101+23.00 (154) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y12B- 10+70.00 (155) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH, REMOVE EXIST CB |
| -Y12B- 10+70.00 (156) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH, REMOVE EXIST CB |
| -L- 102+25.00 (157) | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE EXIST CB |
| -L- 102+35.00 (158) | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 103+00.00 (159) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 31' | REMOVE EXIST CB |
| -L- 102+00.00 (154–160) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 103+05.00 (160) | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | |
| -L- 102+75.00 (158–161) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>NO PIPE RESTRICTIONS |
| -L- 103+13.00 (161) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 103+13.00 (160–161) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 103+43.00 (162) | 1 | 0.8' | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE EXIST CB |
| -L- 103+43.00 (162–163) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 103+43.00 (163) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+00.00 (164) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.4 | | | REMOVE 24' of 18" RCP |
| -L- 105+10.00 (164–165) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 105+18.00 (165) | 1 | 1.1' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 105+40.00 (165–166) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE EXIST. CB & 15' of 15" RCP |
| -L- 105+40.00 (166) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.4 | | | |
| -L- 107+02.00 (168) | 1 | 1.9' | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 107+10.00 (168–169) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 107+10.00 (169) | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | |
| -L- 109+60.00 (170) | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 109+60.00 (170–171) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 109+60.00 (171) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 109+60.00 (171–172) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 109+60.00 (172) | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 111+55.00 (173) | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 112+97.00 (174) | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| PAGE TOTAL | 18 | 3.8' | | 13 | | 6 | 7 | | 2 | | | | | 1 | | | | | 3 | 5 | | | 1 | | 4 | | 3 | | | | 1.2 | | 31' | |

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 |

3/07/06

COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/8/10

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-1 |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 112+97.00 | LT | 174 | 175 | | 434.2' | 434.6' | | | 8' | | | | | | |
| -L- 112+97.00 | LT | 175 | | 437.6' | 434.6' | | | | | | | | | | |
| -L- 112+97.00 | RT | 176 | | 430.1' | 427.1' | | | | | | | | | | |
| -L- 113+48.00 | RT | 176 | 177 | | 427.1' | 427.6' | | | 16' | | | | | | |
| -L- 113+48.00 | RT | 177 | | 430.8' | 427.6' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 114+80.00 | LT | 178 | | 424.3' | 419.9' | | | | | | | | | | |
| -L- 114+80.00 | LT | 178 | 179 | | 419.9' | 420.3' | | | 8' | | | | | | |
| -L- 114+80.00 | LT | 179 | | 424.1' | 420.3' | | | | | | | | | | |
| -L- 114+80.00 | C/L | 179 | 180 | | 420.3' | 420.9' | | | 64' | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 114+80.00 | RT | 180 | | 423.9' | 420.9' | | | | | | | | | | |
| -L- 114+80.00 | RT | 176 | 180 | | 427.1' | 420.9' | | | 132' | | | | | | |
| -L- 115+40.00 | LT | 181 | | 419.0' | 413.4' | | | | | | | | | | |
| -L- 115+55.00 | LT | 181 | 182 | | 413.4' | 412.3' | | | | | | | 20' | | |
| | | | | | | | | | | | | | | | |
| -L- 115+55.00 | LT | 182 | | | | | | | | | | | | | |
| -L- 116+00.00 | LT | 183 | | 415.4' | 409+/- | | | | | | | | | | |
| -L- 116+00.00 | LT | 183 | 184 | | 411.3' | 411.7' | | | 8' | | | | | | |
| -L- 116+00.00 | LT | 184 | | 414.7' | 411.7' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 116+80.00 | RT | 185 | | 408.2' | 393.8' | | | | | | | | | | |
| -L- 117+25.00 | LT | 186 | | 406.4' | 397.9' | | | | | | | | | | |
| -L- 118+85.00 | LT | 187 | | 393.5' | 386.5' | | | | | | | | | | |
| -L- 119+80.00 | RT | 188 | | 382.3' | 379.3' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 119+80.00 | RT | 188 | 189 | | 379.3' | 378.9' | | | 8' | | | | | | |
| -L- 119+80.00 | RT | 189 | | 381.1' | 373.6' | | | | | | | | | | |
| -L- 120+32.00 | LT | 190 | | 381.0' | 374.5' | | | | | | | | | | |
| -L- 121+33.00 | LT | 191 | | 372.6' | 367.2' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 121+50.00 | RT | 192 | | 369.3' | 366.3' | | | | | | | | | | |
| -L- 121+50.00 | RT | 192 | 193 | | 366.3' | 365.6' | | | 8' | | | | | | |
| -L- 121+50.00 | RT | 193 | | 367.8' | 361.0' | | | | | | | | | | |
| -L- 122+50.00 | LT | 194 | | 364.9' | 359.2' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 123+25.00 | RT | 195 | | 358.8' | 355.8' | | | | | | | | | | |
| -L- 123+25.00 | RT | 195 | 196 | | 355.8' | 355.0' | | | | | | | | | |
| -L- 123+25.00 | RT | 196 | | 358.8' | 350.8' | | | | | | | | | | |
| -L- 123+55.00 | LT | 197 | | 359.6' | 352.4' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 123+55.00 | RT | 198 | | 350.8' | 343.1' | | | | | | | | | | |
| -L- 126+15.00 | RT | 199 | | 345.3' | 337.5' | | | | | | | | | | |
| -L- 126+25.00 | RT | 199 | 200 | | 337.5' | 337.2' | | | 12' | | | | | | |
| -L- 126+25.00 | RT | 200 | | 345.0' | 337.2' | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| -L- 126+50.00 | RT | 200 | 201 | | 337.2' | 335.0' | | | 48' | | | | | | |
| -L- 126+72.00 | RT | 201 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 312' | | | | | 20' | |

SIZE / THICKNESS OR GAUGE

| C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | | | | | | | | | | | | | |

| STATION | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 112+97.00 (174-175) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 112+97.00 (175) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 112+97.00 (176) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 113+48.00 (176-177) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 113+48.00 (177) | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | EXTRA DEPTH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 114+80.00 (178) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 114+80.00 (178-179) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 114+80.00 (179) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 114+80.00 (179-180) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 114+80.00 (180) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 114+80.00 (176-180) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 115+40.00 (181) | 1 | 0.6' | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 115+55.00 (181-182) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE 19' OF EXIST 30" RCP |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 115+55.00 (182) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.8 | | | REMOVE CB |
| -L- 116+00.00 (183) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 116+00.00 (183-184) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 116+00.00 (184) | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 116+80.00 (185) | 1 | 5.0' | 4.4' | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | REMOVE CB & 4' OF EXIST 30" RCP |
| -L- 117+25.00 (186) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 118+85.00 (187) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 119+80.00 (188) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 119+80.00 (188-189) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 119+80.00 (189) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 120+32.00 (190) | 1 | 1.5' | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE CB |
| -L- 121+33.00 (191) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 121+50.00 (192) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 121+50.00 (192-193) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 121+50.00 (193) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 122+50.00 (194) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 123+25.00 (195) | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 123+25.00 (195-196) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 123+25.00 (196) | 1 | 3.0' | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | | REMOVE CB |
| -L- 123+55.00 (197) | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 123+55.00 (198) | 1 | 2.7' | | | | | | | | | | | | | | 1 | | | | | | | 1 | | | | | | | | | REMOVE CB |
| -L- 126+15.00 (199) | 1 | 2.8' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 126+25.00 (199-200) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 126+25.00 (200) | 1 | 2.8' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 126+50.00 (200-201) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | REMOVE 15" RCP |
| -L- 126+72.00 (201) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.4 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | 16 | 18.4' | 4.4' | 10 | | 7 | 3 | 2 | | | | | | | | 2 | 9 | 11 | 1 | 1 | | | 3 | | 1 | | | | 1.2 | | | |

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 |

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COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/8/10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-J |

# 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 | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 126+72.00 | LT | 202 | | 344.8′ | 339.0′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+55.00 | RT | 203 | | 344.1′ | 331.1′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+55.00 | RT | 203 | 204 | | 331.1′ | 327.9′ | | | 8′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+55.00 | RT | 204 | | 333.6′ | 327.9′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+55.00 | LT | 205 | | 334.1′ | 331.1′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+65.00 | LT | 206 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+00.00 | LT | 205 | 207 | | 333.1′ | 323.9′ | | | 344′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+00.00 | LT | 207 | | 326.9′ | 323.9′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+00.00 | C/L | 207 | 208 | | 323.9′ | 323.4′ | | | 52′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+00.00 | RT | 208 | | 326.9′ | 323.4′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+20.00 | RT | 208 | 209 | | 323.4′ | 323.0′ | | | 40′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+20.00 | RT | 210 | | 323.1′ | 319.6′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+30.00 | RT | 210 | 211 | | 319.6′ | 319.5′ | | | 16′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+30.00 | RT | 211 | | 323.0′ | 319.5′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+20.00 | C/L | 210 | 212 | | 319.6′ | 319.8′ | | | 76′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+20.00 | LT | 212 | | 323.0′ | 319.8′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+75.00 | LT | 212 | 213 | | 319.8′ | 320.0′ | | | 60′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+75.00 | LT | 213 | | 323.3′ | 320.0′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 10+55.00 | C/L | 211 | 226 | | 319.5′ | 318.5′ | | | 92′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 11+55.00 | LT | 215 | 216 | | 321.7′ | 321.8′ | | | 32′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 11+80.00 | LT | 216 | | 324.1′ | 321.8′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 11+80.00 | C/L | 216 | 217 | | 321.8′ | 321.9′ | | | 40′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 11+80.00 | LT | 217 | | 324.9′ | 321.9′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 12+50.00 | LT | 217 | 218 | | 321.9′ | 324.6′ | | | 160′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 13+55.00 | LT | 218 | | 327.6′ | 324.6′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+80.00 | LT | 218 | 221 | | 324.6′ | 325.8′ | | | 112′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 12+26.00 | RT | 219 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 13+40.00 | RT | 220 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+70.00 | LT | 221 | | 329.3′ | 325.8′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+70.00 | C/L | 221 | 221A | | 325.8′ | 326.2′ | | | 36′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+70.00 | RT | 221A | | 328.5′ | 326.2′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+80.00 | RT | 221A | 221B | | 326.2′ | 327.8′ | | | 28′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 137+10.00 | RT | 222 | | 322.2′ | 319.2′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 137+20.00 | RT | 222 | 223 | | 319.2′ | 319.0′ | | | 12′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 137+20.00 | RT | 223 | | 322.9′ | 319.0′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 137+20.00 | RT | 223 | 224 | | 319.0′ | 318.5′ | | | 28′ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 139+50.00 | RT | 228 | | 322.0′ | 319.0′ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 1136′ | | | | | | | | | | | | | | | | | | | | | | | | | |

| STATION | STRUCTURE NO. FROM | STRUCTURE NO. TO | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | | D.I. STD. 840.14 OR STD. 840.15 | | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 126+72.00 | 202 | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 130+55.00 | 203 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+55.00 | 203 | 204 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| -L- 130+55.00 | 204 | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| -L- 130+55.00 | 205 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 130+65.00 | 206 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 21′ | |
| -L- 134+00.00 | 205 | 207 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 134+00.00 | 207 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+00.00 | 207 | 208 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+00.00 | 208 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 134+20.00 | 208 | 209 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 136+20.00 | 210 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+30.00 | 210 | 211 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+30.00 | 211 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+20.00 | 210 | 212 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 136+20.00 | 212 | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 136+75.00 | 212 | 213 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 136+75.00 | 213 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -Y17A- 10+55.00 | 211 | 226 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y17A- 11+55.00 | 215 | 216 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y17A- 11+80.00 | 216 | | | | 1 | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | EXTRA DEPTH |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 11+80.00 | 216 | 217 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y17A- 11+80.00 | 217 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 12+50.00 | 217 | 218 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y17A- 13+55.00 | 218 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+80.00 | 218 | 221 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE 50′ OF EXIST 12" RCP |
| -Y17A- 12+26.00 | 219 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 24′ | |
| -Y17A- 13+40.00 | 220 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 21′ | |
| -Y17A- 14+70.00 | 221 | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y17A- 14+70.00 | 221 | 221A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y17A- 14+70.00 | 221A | | | | 1 | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | | | | | |
| -Y17A- 14+80.00 | 221A | 221B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA<br>REMOVE 15" RCP |
| -L- 137+10.00 | 222 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 137+20.00 | 222 | 223 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 137+20.00 | 223 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 137+20.00 | 223 | 224 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NO PIPE RESTRICTIONS |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 139+50.00 | 228 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | | | 16 | | | 14 | 2 | 7 | 5 | | 1 | | | | | | | | | | 2 | 3 | 1 | | | | | | | | 1 | | | | 66′ | |

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

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 |

3/07/06

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$$$$USERNAME$$$$

RD238344 4/7/2010 u3306_rdy_sum_ut_revs jlansford RD-Oce860-34

COMPUTED BY: SRM DATE: 4/1/10
CHECKED BY: JCL DATE: 4/10/10

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-K |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 139+50.00 | RT | 228 | 229 | | 319.0' | 318.0' | | | 32' | | | | | | | NO PIPE RESTRICTIONS |
| -L- 140+10.00 | LT | 230 | | 321.8' | 312.3' | | | | | | | | | | | |
| -L- 139+65.00 | C/L | 231 | | | 313.0 | 311.6 | | | | | | 208' | | | | NO PIPE RESTRICTIONS |
| -L- 141+00.00 | LT | 230 | 232 | | 312.5' | 318.1' | | | 156' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 141+21.00 | LT | 232 | | 321.1' | 318.1' | | | | | | | | | | | |
| -L- 141+67.00 | LT | 232 | 234 | | 318.1' | 317.5' | | | 80' | | | | | | | |
| -Y18- 10+57.00 | RT | 234 | | 320.5' | 317.5' | | | | | | | | | | | |
| -Y18- 10+57.00 | C/L | 234 | 235 | | 317.5' | 317.2' | | | 44' | | | | | | | DO NOT USE CSP OR CAA |
| -Y18- 10+57.00 | LT | 235 | | 320.5' | 317.2' | | | | | | | | | | | EXTRA DEPTH |
| -Y18- 10+57.00 | LT | 235 | 236 | | 317.2' | 316.8' | | | 48' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 142+85.00 | LT | 236 | | 319.8' | 316.8' | | | | | | | | | | | |
| -L- 143+50.00 | LT | 236 | 239 | | 316.8' | 313.4' | | | 108' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 141+70.00 | RT | 237 | | 321.2' | 318.2' | | | | | | | | | | | |
| -L- 141+70.00 | RT | 237 | 238 | | 318.2' | 317.0' | | | 28' | | | | | | | NO PIPE RESTRICTIONS |
| -L- 144+00.00 | LT | 239 | | 317.0' | 313.4' | | | | | | | | | | | EXTRA DEPTH |
| -L- 144+00.00 | C/L | 239 | 240 | | 313.4' | 313.9' | | | 52' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 144+00.00 | RT | 240 | | 316.9' | 313.9' | | | | | | | | | | | |
| -L- 144+00.00 | RT | 240 | 241 | | 313.9' | 318.0' | | | 40' | | | | | | | DO NOT USE CSP OR CAA / RCP NOT ALLOWED |
| -L- 146+50.00 | LT | 239 | 242 | | 313.4' | 310.0' | | | 248' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 146+50.00 | LT | 242 | | 313.3' | 310.0' | | | | | | | | | | | EXTRA DEPTH |
| -L- 146+50.00 | C/L | 242 | 243 | | 310.0' | 310.3' | | | 52' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 146+50.00 | RT | 243 | | 313.3' | 310.3' | | | | | | | | | | | |
| -L- 149+15.00 | LT | 242 | 244 | | 310.0' | 307.9' | | | | 264' | | | | | | DO NOT USE CSP OR CAA |
| -L- 149+15.00 | LT | 244 | | 311.7' | 307.4' | | | | | | | | | | | EXTRA DEPTH |
| -L- 149+15.00 | C/L | 244 | 245 | | 308.0' | 308.7' | | | 52' | | | | | | | DO NOT USE CSP OR CAA |
| -L- 149+15.00 | RT | 245 | | 311.7' | 308.7' | | | | | | | | | | | |
| -L- 149+15.00 | RT | 245 | 246 | | 308.7' | 328.7' | | | 44' | | | | | | | RCP NOT ALLOWED |
| -L- 150+65.00 | RT | 247 | | 324.4' | 321.2' | | | | | | | | | | | EXTRA DEPTH |
| -L- 150+90.00 | RT | 247 | 248 | | 321.2' | 320.9' | | | 28' | | | | | | | |
| -L- 150+90.00 | RT | 248 | | 323.2' | 320.9' | | | | | | | | | | | |
| -L- 150+93.00 | RT | 248 | 249 | | 320.9' | 307.4' | | | 36' | | | | | | | RCP NOT ALLOWED |
| -L- 150+93.00 | RT | 249 | | 310.4' | 307.4' | | | | | | | | | | | |
| -L- 150+93.00 | C/L | 249 | 250 | | 307.4' | 307.0' | | | 64' | | | | | | | |
| -L- 150+93.00 | LT | 244 | 250 | | 307.4' | 306.0' | | | | | 176' | | | | | |
| -L- 150+93.00 | LT | 250 | | 310.4' | 306.0' | | | | | | | | | | | |
| -L- 152+50.00 | LT | 250 | 251 | | 306.0' | 304.6' | | | | | 156' | | | | | |
| -L- 152+50.00 | LT | 251 | | 309.8' | 304.6' | | | | | | | | | | | |
| -L- 152+60.00 | LT | 251 | 252 | | 304.6' | 304.5' | | | | | 8' | | | | | |
| -L- 152+60.00 | LT | 252 | | 309.8' | 303.5' | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 985' | | 340' | | | | | |
| | | | | | | | | | | 264' | | 208' | | | | |

| STATION | FROM | TO | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PAGE TOTAL | | | | | | | | | | | | | | | | | | | | | | | |

| STATION | FROM | TO | QUANTITIES FOR DRAINAGE STRUCTURES 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 | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE 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. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 140+10.00 | 230 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 141+21.00 | 232 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y18- 10+57.00 | 234 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y18- 10+57.00 | 235 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 142+85.00 | 236 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 141+70.00 | 237 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 144+00.00 | 239 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 144+00.00 | 240 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 144+00.00 | 240 | 241 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1–15" | | | |
| -L- 146+50.00 | 242 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 146+50.00 | 243 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 149+15.00 | 244 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 149+15.00 | 245 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 149+15.00 | 245 | 246 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1–15" | | | |
| -L- 150+65.00 | 247 | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | |
| -L- 150+90.00 | 248 | | 1 | | | | | | | 1 | | | | | | | | | | 1 | | | | | | | | | | | | | |
| -L- 150+93.00 | 248 | 249 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2–15" | | | |
| -L- 150+93.00 | 249 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 150+93.00 | 250 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 152+50.00 | 251 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 152+60.00 | 252 | | 1 | 1.3' | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PAGE TOTAL | | | 18 | 1.3' | | 16 | 1 | 6 | 9 | 2 | | | | | | | | | | 2 | | | | | | | | | | 4–15" | | | |

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

ABBREVIATIONS

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

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COMPUTED BY: SM DATE: 4/14/10
CHECKED BY: JCL DATE: 4/21/10

3/07/06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-L |

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

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 152+50.00 | RT | 253 | | 309.6' | 306.6' | | | | | | | | | | |
| -L- 152+60.00 | RT | 253 | 254 | | 306.6' | 306.5' | | | 8' | | | | | | |
| -L- 152+60.00 | RT | 254 | | 309.6' | 305.9' | | | | | | | | | | |
| -L- 152+60.00 | C/L | 252 | 254 | | 304.5' | 305.9' | | | | | 64' | | | | |
| -L- 152+60.00 | RT | 254 | 255 | | 306.5' | 310.8' | | | | 32' | | | | | |
| -L- 152+60.00 | RT | 255 | | 313.8' | 310.8' | | | | | | | | | | |
| -L- 152+28.00 | C/L | 256 | | | | | | | | | | | | | |
| -L- 153+25.00 | LT | 257 | | 309.8' | 307.5' | | | | | | | | | | |
| -L- 153+25.00 | LT | 257 | 258 | | 307.5' | 307.0' | | | 16' | | | | | | |
| -L- 153+25.00 | LT | 258 | | 310.0' | 303.0' | | | | | | | | | | |
| -L- 153+25.00 | LT | 252 | 258 | | 303.5' | 303.0' | | | | | | | 64' | | |
| -L- 153+45.00 | RT | 254 | 259 | | 305.9' | 306.7' | | | | | 88' | | | | |
| -L- 153+45.00 | RT | 259 | | 309.9' | 306.7' | | | | | | | | | | |
| -Y19- 11+60.00 | LT | 260 | | | | | | | | | | | | | |
| -Y19- 11+85.00 | LT | 261 | | | | | | | | | | | | | |
| -Y19- 11+88.00 | LT | 260 | 262 | | | 317.8' | | | | 28' | | | | | |
| -Y19- 11+88.00 | LT | 262 | | 321.0' | 317.8' | | | | | | | | | | |
| -Y19- 12+40.00 | LT | 262 | 263 | | 317.8' | 315.9' | | | | 52' | | | | | |
| -Y19- 12+40.00 | LT | 263 | | 319.1' | 315.9' | | | | | | | | | | |
| -Y19- 12+75.00 | RT | 264 | | 318.7' | 313.3' | | | | | | | | | | |
| -Y19- 12+75.00 | RT | 264 | 265 | | 314.6' | 315.2' | | | 12' | | | | | | |
| -Y19- 12+75.00 | RT | 265 | | 318.2' | 315.2' | | | | | | | | | | |
| -Y19- 13+95.00 | LT | 263 | 266 | | 315.9' | 311.7' | | | | 156' | | | | | |
| -Y19- 13+95.00 | LT | 266 | | 314.9' | 311.7' | | | | | | | | | | |
| -Y19- 13+95.00 | LT | 266 | 267 | | 311.9' | 317.8' | | | 28' | | | | | | |
| -Y19- 13+95.00 | LT | 267 | | 320.0' | 317.8' | | | | | | | | | | |
| -Y19- 14+24.00 | LT | 268 | | | | | | | | | | | | | |
| -Y19- 14+90.00 | LT | 266 | 269 | | 311.7' | 309.4' | | | | 96' | | | | | |
| -Y19- 14+90.00 | LT | 269 | | 312.6' | 308.9' | | | | | | | | | | |
| -Y19- 14+90.00 | LT | 269 | 259 | | 308.9' | 306.7' | | | | 64' | | | | | |
| -Y19- 15+06.00 | RT | 270 | | 312.7' | 304.4' | | | | | | | | | | |
| -Y19- 15+06.00 | RT | 270 | 271 | | 308.9' | 309.2' | | | 12' | | | | | | |
| -Y19- 15+06.00 | RT | 271 | | 312.2' | 309.2' | | | | | | | | | | |
| -Y19- 16+22.00 | RT | 258 | 272 | | 303.0' | 302.5' | | | | | | | 80' | | |
| -Y19- 16+40.00 | RT | 272 | | 310.5' | 302.5' | | | | | | | | | | |
| -Y19- 16+40.00 | LT | 272 | 273 | | 302.5' | 301.8' | | | | | | | 100' | | |
| -Y19- 16+40.00 | C/L | 274 | | | | | | | | | | | | | |
| -Y19- 17+97.00 | RT | 275 | | 308.5' | | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 76' | 428' | 152' | | 244' | | |

| C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| STATION | STRUCTURE NO. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | | D.I. STD. 840.14 OR STD. 840.15 | | 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 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATES STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 152+50.00 | 253 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 152+60.00 | 253-254 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 152+60.00 | 254 | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 152+60.00 | 252-254 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 152+60.00 | 254-255 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2-15" | | | | DO NOT USE CSP OR CAA RCP NOT ALLOWED |
| -L- 152+60.00 | 255 | 1 | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -L- 152+28.00 | 256 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 260' | |
| -L- 153+25.00 | 257 | 1 | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | EXTRA DEPTH |
| -L- 153+25.00 | 257-258 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 153+25.00 | 258 | 1 | 2.0' | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 153+25.00 | 252-258 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 153+45.00 | 254-259 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -L- 153+45.00 | 259 | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 11+60.00 | 260 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0.5 | | | |
| -Y19- 11+85.00 | 261 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 94' | REMOVE CB |
| -Y19- 11+88.00 | 260-262 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 11+88.00 | 262 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 12+40.00 | 262-263 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 12+40.00 | 263 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 12+75.00 | 264 | 1 | 0.4' | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | REMOVE CB |
| -Y19- 12+75.00 | 264-265 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 12+75.00 | 265 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 13+95.00 | 263-266 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 13+95.00 | 266 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 13+95.00 | 266-267 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2-15" | | | | DO NOT USE CSP OR CAA RCP NOT ALLOWED |
| -Y19- 13+95.00 | 267 | 1 | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y19- 14+24.00 | 268 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 23' | |
| -Y19- 14+90.00 | 266-269 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 14+90.00 | 269 | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 14+90.00 | 269-259 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 15+06.00 | 270 | 1 | 3.3' | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | |
| -Y19- 15+06.00 | 270-271 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 15+06.00 | 271 | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 16+22.00 | 258-272 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 16+40.00 | 272 | 1 | 5.0' | 3.0' | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | JB IN CONFLICT WITH SANITARY SEWER |
| -Y19- 16+40.00 | 272-273 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 16+40.00 | 274 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 84' | |
| -Y19- 17+97.00 | 275 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | EXTRA DEPTH |
| PAGE TOTAL | | 17 | 10.7' | 3.0' | 10 | 2 | 3 | 5 | | 3 | | | | | | | | | | | | 3 | | | | | | 4 | | 4 | | | 4-15" | 0.5 | | 461' | |

ABBREVIATIONS

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

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3/15/06

COMPUTED BY: SM  DATE: 4/14/10
CHECKED BY: JCL  DATE: 4/21/10

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-M |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -Y19- 18+00.00 | C/L | 275 | 276 | | 305.9' | 306.6' | | | | 32' | | | | | |
| -Y19- 18+00.00 | LT | 276 | | 309.6' | 306.6' | | | | | | | | | | |
| -Y19- 18+50.00 | LT | 277 | | 308.1' | 304.7' | | | | | | | | | | |
| -Y19- 18+54.00 | LT | 277 | 278 | | 304.8' | 304.9' | | | 16' | | | | | | |
| -Y19- 18+54.00 | LT | 278 | | 307.4' | 304.9' | | | | | | | | | | |
| -Y19- 19+15.00 | LT | 279 | | 306.5' | 303.5' | | | | | | | | | | |
| -Y19- 19+15.00 | LT | 279 | 280 | | 303.5' | 303.3' | | | 8' | | | | | | |
| -Y19- 19+15.00 | LT | 280 | | 306.9' | 303.2' | | | | | | | | | | |
| PAGE TOTAL | | | | | | | | | 24' | 32' | | | | | |
| GRAND TOTAL | | | | | | | | | 6524' | | 2604' | | 264' | | 56' |
| | | | | | | | | | | 1164' | | 356' | | 592' | |
| SAY | | | | | | | | | | | | | | | |

| STATION | C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GRAND TOTAL | | | | | | | | | | | | | | 24' | | 256' |

| STATION | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -Y19- 18+00.00 (275-276) | | | | | | | | | | | | |
| -Y19- 18+00.00 (276) | | | | | | 1 | | | | | | |
| -Y19- 18+50.00 (277) | | | | | | 1 | | | | | | |
| -Y19- 18+54.00 (277-278) | | | | | | | | | | | | |
| -Y19- 18+54.00 (278) | | | | | | 1 | | | 1 | | | 1 |
| -Y19- 19+15.00 (279) | | | | | | 1 | | | 1 | | | 1 |
| -Y19- 19+15.00 (279-280) | | | | | | | | | | | | |
| -Y19- 19+15.00 (280) | | | | | | 1 | | | | | | |
| PAGE TOTAL | | | | | | 5 | | | 2 | | | 2 |
| GRAND TOTAL | | | | 19.9 | | 205 | 66.6' | 4.4' | 152 | 18 | 63 | 71 |
| SAY | | | | 20 | | | 82' | | | | | |

| STATION | D.I. STD. 840.14 OR STD. 840.15 | | 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. FRAME WITH TWO GRATES STD. 840.22 | CONC. TRANSITIONAL SECTION FOR CATCH BASIN | CONC. TRANSITIONAL SECTION FOR DROP INLET | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | CONV. EXIST. C.B. TO D.I. | D.I. FRAME & GRATE STD. 840.16 | T.B.D.I. STD. 840.35 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | CONV. EXIST. C.B. TO J.B. | M.H. STD. 840.51 OR 840.53 | M.H. FRAME & COVER STD. 840.54 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | T.B.J.B. STD. 840.34 | CONV. EXIST. D.I. TO J.B. | G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29 | DRAINAGE PIPE 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -Y19- 18+00.00 (275-276) | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 18+00.00 (276) | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | |
| -Y19- 18+50.00 (277) | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | |
| -Y19- 18+54.00 (277-278) | | | | | | | | | | | | | | | | | | | | | | | | | | DO NOT USE CSP OR CAA |
| -Y19- 18+54.00 (278) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 19+15.00 (279) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 19+15.00 (279-280) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -Y19- 19+15.00 (280) | | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | REMOVE CB |
| PAGE TOTAL | 1 | | | | | | | | | | | 1 | | | | | 2 | | 2 | | | | | | | |
| GRAND TOTAL | 25 | | | 1 | | 3 | 2 | | 1 | 6 | 14 | 42 | 4 | 1 | 2 | 1 | 21 | | 16 | 1 | 3 | 8–15" | 3.3 | 0.33 | 2007' | |
| | | | | | | | | | | | | | | | | | | | | | | 2–18" | | | | |
| SAY | | | | | | | | | | | | | | | | | | | | | | | 4 | 1 | 2020' | |

ABBREVIATIONS

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

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

| STATION | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54" | 60" | 66" | 72" | 78" | 84" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 48+52.00 | RT | 61 | | | | | | | | | | | |
| -L- 49+53.00 | C/L | 62 | 61 | | 504.0 | 502.0' | | | 76' | | | | |
| -L- 49+55.00 | RT | 61 | 61A | | 502.0' | 500.9' | | | 36' | | | | |
| GRAND TOTAL | | | | | | | | | 112' | | | | |
| SAY | | | | | | | | | | | | | |

| STATION | BITUMINOUS COATED C.S. PIPE TYPE B 54" .109 | 54" .138 | 54" .168 | 54" SHOP ELON-GATED .138 | 54" SHOP ELON-GATED .168 | 60" .138 | 60" .168 | 66" .138 | 66" .168 | 72" .138 | 72" .168 | STRUCTURAL PLATE PIPE 60" 12 | 60" 10 | 66" 12 | 66" 10 | 72" 12 | 72" 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -L- 48+52.00 | | | | | | | | | | | | | | | | | |
| -L- 49+53.00 | | | | | | | | | | | | | | | | | |
| -L- 49+55.00 | | | | | | | | | | | | | | | | | |
| GRAND TOTAL | | | | | | | | | | | | | | | | | |
| SAY | | | | | | | | | | | | | | | | | |

| STATION | REINFORCED ENDWALLS WITH R.C. – C.Y. | WITH C.S. – C.Y. | MASONARY DRAINAGE STRUCTURES CUBIC YARDS | REINF. CONC. FLARED END SECTIONS NO. & SIZE | CORR. STEEL FLARED END SECTIONS NO. & SIZE | REINF. CONC. ELBOWS NO. & SIZE | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD 840.72 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| -L- 48+52.00 | | | 3.3 | | | | | | | |
| -L- 49+53.00 | 8.0 | | | | | | | | | SEE SHEET 2–T FOR ENDWALL DETAIL |
| -L- 49+55.00 | 8.0 | | | | | | | | | SEE SHEET 2–T FOR ENDWALL DETAIL |
| GRAND TOTAL | 16.0 | | 3.3 | | | | | | | |
| SAY | 17.0 | | 4.0 | | | | | | | |

ABBREVIATIONS

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

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COMPUTED BY: JCL DATE: 1/14/10
CHECKED BY: DATE:

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-N |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

# GUARDRAIL SUMMARY

| SURVEY 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 | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | STRAIGHT | SHOP CURVED | DOUBLE FACED | APPROACH END | TRAILING END | | | APPROACH END | TRAILING END | APPROACH END | TRAILING END | CAT-1 | AT-1 | TYPE 350 | | | | | | NO. | PERMITTED G | PERMITTED NG | | | | |
| -Y1-/L | 10+90.00 -Y1- | 15+10.00 -L- | Lt | 25' | 25' | | | | 12' | 14' | | | | | 1 | | | | | | | | | | | | | | |
| -L-/-Y3- | 15+10.00 -L- | 10+97.00 -Y3- | Lt | 300' | 25' | | | | 12' | 14' | | | | | | 1 | | | | | | | | | | | | | |
| -L- | 28+65.00 -L- | 30+10.00 -L- | Rt | 150' | | | | | 12' | 14' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 48+42.00 -L- | 50+38.00 -L- | Lt | 200' | | | | | 12' | 14' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 49+00.00 -L- | 55+25.00 -L- | Rt | 625' | | | | | 12' | 14' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 71+40.00 -L- | 75+15.00 -L- | Lt | 375' | | | | | 12' | 14' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 79+00.00 -L- | 80+75.00 -L- | Lt | 175' | | | | | 12' | 14' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 79+45.00 -L- | 80+83.00 -L- | Rt | 137.5' | | | | | 12' | 14' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 81+75.00 -L- | 86+12.00 -L- | Rt | 437.5' | | | | | 2' | 10' | | | | | 1 | | 1 | | | | | | | | | | | | |
| -L- | 89+00.00 -L- | 91+00.00 -L- | Rt | 200' | | | | | 2' | 10' | | | | | 1 | | 1 | | | | | | | | | | | | |
| | TOTAL | | | 2625' | 50' | | | | | | | | | | 9 | 1 | 8 | | | | | | | | | | | | |
| DEDUCTION FOR ANCHORS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | TYPE 350 @ 50' EACH | | | -200' | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | CAT-1 @ 6.25' EACH | | | -56.25' | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | AT-1 @ 6.25' EACH | | | -6.25' | | | | | | | | | | | | | | | | | | | | | | | | | |
| | GRAND TOTAL | | | 2362.50' | 50' | | | | | | | | | | 9 | 1 | 8 | | | | | | | | | | | | |
| | SAY | | | 2400' | | | | ADDITIONAL GUARDRAIL POSTS | | 10 EACH | | | | | 9 | 1 | 8 | | | | | | | | | | | | |

# PAVEMENT REMOVAL SUMMARY (IN SQUARE YARDS)

| STATION TO STATION | LOCATION | ASPHALT REMOVAL | ASPHALT BREAKUP | CONCRETE REMOVAL | CONCRETE BREAKUP |
|---|---|---|---|---|---|
| -L- 10+65 to 13+60 | Rt | 33 | | | |
| -L- 10+65 to 12+62 | Lt | 22 | | | |
| -Y- 14+25 to 14+75 | Lt | 6 | | | |
| -Y- 16+14 to 17+75 | Lt | 18 | | | |
| -L- 15+50 to 21+95 | Rt | 74 | | | |
| -L- 19+10 to 23+05 | Median | 468 | | | |
| -L- 22+63 to 25+17 | Rt | 28 | | | |
| -L- 26+15 to 27+85 | Rt | 19 | | | |
| -L- 28+30 to 30+35 | Median | 215 | | | |
| -Y5- 10+75 to 11+25 | Lt & Rt | 11 | | | |
| -Y6- 10+72 to 11+75 | Lt/Rt/Med | 56 | | | |
| -L- 36+14 to 38+00 | Median | 267 | | | |
| -L- 38+00 to 48+50 | Rt | 3240 | | | |
| -L- 66+75 to 68+70 | Lt | 263 | | | |
| -L- 68+92 to 72+00 | Lt. | 666 | | | |
| -L- 89+15 to 94+50 | Lt. | 1770 | | | |
| -Y12- 10+50 to 13+75 | Rt. | 549 | | | |

| STATION TO STATION | LOCATION | ASPHALT REMOVAL | ASPHALT BREAKUP | CONCRETE REMOVAL | CONCRETE BREAKUP |
|---|---|---|---|---|---|
| -L- 86+05 to 96+75 | Rt. | 1180 | | | |
| -L- 97+13 to 106+38 | Rt. | 1400 | | | |
| -L- 105+00 to 120+65 | Lt. | 1486 | | | |
| -L- 106+78 to 114+30 | Rt. | 666 | | | |
| -L- 115+50 to 116+25 | Rt. | 41 | | | |
| -L- 117+00 to 127+05 | Rt. | 773 | | | |
| -L- 121+00 to 127+05 | Lt. | 572 | | | |
| -L- 127+40 to 13+60 -Y17A- | Rt. | 2246 | | | |
| -L- 128+30 to 130+60 | Lt. | 136 | | | |
| -Y17A- 13+60 to 14+50 | Lt. | 10 | | | |
| -Y18- 10+80 to 11+48 | Rt. & Lt. | 15 | | | |
| -Y19- 17+42 to 19+45 | Rt. | 23 | | | |
| -Y19- 19+80 to 21+64 | Lt. | 20 | | | |
| -L- 154+95 to 155+30 | Rt. | 4 | | | |
| GRAND TOTAL | | 16277 | | | |
| SAY | | 16,280 | | | |

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 3-0 |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# PARCEL INDEX SHEET

| PARCEL No. | SHEET No. | PROPERTY OWNER NAME |
|---|---|---|
| 1 | 4 | TOWN OF CHAPEL HILL (Fire Sta. North) |
| | | |
| 3 | 4 | ROBERT L. & JAYE HOCKADAY |
| 4 | 4 | DONALD J. & JENNIFER S. LOFLAND |
| 5 | 4 | RESOLUTE DEVELOPMENT CORP. |
| 6 | 4 | WALGREEN CO. |
| 7 | 4 | TALL TIMBERS PROPERTIES |
| 8 | 4 | ELIZABETH MALLETT |
| 9 | 4 & 5 | BANK OF AMERICA |
| 10 | 4 | CAI GROUP VII, LLC |
| | | |
| 12 | 5 | WACHOVIA BANK & TRUST |
| 13 | 5 | SPIKE II, LLC |
| 14 | 5 | SELLERS HOSIERY MILLS |
| | | |
| | | |
| 17 | 5 | THE STATE OF NORTH CAROLINA |
| 18 | 5 & 6 | VILCOM CAMPUS PROPERTIES |
| 19 | 5 & 6 | AMERICAN BOARD OF PEDIATRICS, INC |
| 20 | 6 & 7 | BENCHMARK ATLANTIC CO. INC |
| 21 | 6 | EDWINA A. ZAGAMI |
| 22 | 6 & 7 | BOBBY P. & CATHERINE S. RILEY, JR. |
| 23 | 7 | JOYCE K. MOORE |
| 24 | 7 | WEATHERSTONE HOA |
| 25 | 7 | JOYCE KAUFMAN MOORE, ET AL |
| 27 | 7 | JAMES & SUSAN KITCHEN |
| 28 | 7 | ST. BENEDICT'S CHURCH |
| 29 | 7 | TING-KUO SHIEH |
| 30 | 7 | COVENTRY HOMEOWNERS ASSOCIATION |
| | | |
| 31A | 7 | CROSS CREEK OF CHAPEL HILL HOA |
| 32 | 7 | COVENTRY HOMEOWNERS ASSOCIATION |
| 33 | 7 THRU 10 | CHAPEL HILL RESIDENTIAL RETIREMENT CNT, INC |
| 34 | 7 & 8 | ALFREDO & KAREN MENDES |
| 35 | 8 | STEVEN O. & NATALIE D. FRANKLIN |
| 36 | 8 | JOHN B. BUSE & LAURA RAFTERY |
| 37 | 8 | NANCY NEWTON SIPP & JOHN SIPP |
| 38 | 8 & 9 | MARKS FAMILY TRUST |
| | | |

| PARCEL No. | SHEET No. | PROPERTY OWNER NAME |
|---|---|---|
| | | |
| 41 | 9 | JAMES S. & MARY JO FICKLE |
| 42 | 9 | JOHN F. & SHIRLEY N. HORN |
| | | |
| 44 | 9 | MICHAEL J. AND ERIN SANFORD |
| 45 | 9 | MICHAEL L. K. BENSON |
| 46 | 9 | HARLAN E. & LENA E. CORNELL |
| 47 | 9 | DANIEL J. DEACON |
| 48 | 9 | DAVID R. & LISA S. KISTLER, JR. |
| 49 | 9 | DAWN JARVIS |
| 50 | 9 | G. PATRICK & KATHLEEN W. RHODES |
| 51 | 9 & 10 | TOWN OF CHAPEL HILL |
| 52 | 10 | M.M. FOWLER, INC |
| 53 | 10 & 11 | CHAPEL HILL-CARRBORO CITY BOARD OF ED. |
| 54 | 11 | TOWN OF CHAPEL HILL |
| 55 | 11 | RAJ S & KATHLEEN M PRUTHI |
| 56 | 11 | THOMAS AND CARRIE GUEST |
| 57 | 12 | WILLIAM A. & DONNA RENFROW RUTALA |
| 58 | 12 | ROBERT A. & M. REBECCA LEADBETTER |
| 59 | 12 | IGNAZIO TZOUMAS & IVEY P. ALTOMARE |
| 60 | 12 | STUART L. & LOIS SCHNIDER |
| 61 | 12 | MARILYN CARTER & MARK EMAMIAN |
| 62 | 12 & 13 | MANOJ S. & NALINI M. DESAI |
| 63 | 13 | DAVID N. & JENIFER J. SWERS |
| 64 | 13 | CHESLEY, PHASE IV, HOMEOWNERS ASS. (no claim) |
| 65 | 13 | GARY L. & CARELYN MONROE |
| 66 | 13 | MATHEW R AND ALICIA M SMITH |
| 67 | 13 | KYLE L AND PAULA D CLEMENTS |
| 68 | 13 & 14 | MELVIN PROPERTIES, LTD |
| 69 | 13 | HENRY E. & SANDRA C. ESSEY |
| 70 | 13 | CHARLES HAROLD & MAEOLA T. HORNE, JR. |
| 71 | 13 & 14 | CAROLINA CONFERENCE ASSOCIATION OF SEVENTH DAY ADVENTISTS, INC |
| 72 | 13 | BERNICE L. & EDNA P. TILLMAN |
| 73 | 14 | JAMES EDWARD & MARY ANN RITA YOUNG, JR. |
| | | |
| 75 | 14 | SPRINGCREST HOMEOWNERS ASS. OF CHAPEL HILL |
| 76 | 14 | B. N. & EVELYN M. BIRTCHETT |
| 77 | 14 | THOMAS C. & CHRISTINE C. MEYER |
| 78 | 14 | GREGORY W. & RAQUEL CHARACKLIS |

| PARCEL No. | SHEET No. | PROPERTY OWNER NAME |
|---|---|---|
| | | |
| 80 | 14 | CHAPEL HILL COVENTRY HOMEOWNERS ASSOCIATION |
| 81 | 14 | CHARLIE & JIN MIE TSUI |
| 82 | 14 | CHU-LAN CHIANG |
| 83 | 14 | BRANCH BANKING & TRUST CO. |
| 84 | 14 | BRUCE & DIANE ALLEN |
| 85 | 14 | CHARLENE B. REGESTER |
| 86 | 14 | ANNE HAZARD ALDRICH |
| 87 | 14 & 15 | NCDOT |
| 88 | 14 & 15 | FREDERICK L. & BEVERLY S. METZ |
| 89 | 15 | ANDREW L. & MARY ALICE MOONEY |
| 90 | 15 | MANSOOR ESKANDARI |
| 91 | 15 | BIRCH MEADOW HOME OWNERS ASSOC. |
| 92 | 15 | LAWRENCE SMITH |
| 93 | 15 | CHAPEL HILL BIBLE CHURCH OF CHAPEL HILL, NC, INC. |
| 94 | 14 & 15 | TOWN OF CHAPEL HILL |

## SUBSURFACE DRAIN SUMMARY

| STATION TO STATION | SUBDRAIN PIPE (LF) | SUBDRAIN EXCAVATION (CY) | SUBDRAIN COARSE AGGREGATE (CY) | FILTER FABRIC FOR SUBSURFACE DRAINS (SY) | 6" OUTLET PIPE (LF) | SUBDRAIN PIPE OUTLETS (EA) |
|---|---|---|---|---|---|---|
| -L- 142+00 - 151+00 | 2000' | 452 | 340 | 2024 | 24' | 4 |
| CONTINGENCY AMOUNT | 750' | 172 | 128 | 762 | 12' | 2 |
| TOTAL | 2750' | 624 | 468 | 2786 | 36' | 6 |
| SAY | 2750' | 624 | 470 | 2790 | 36' | 6 |

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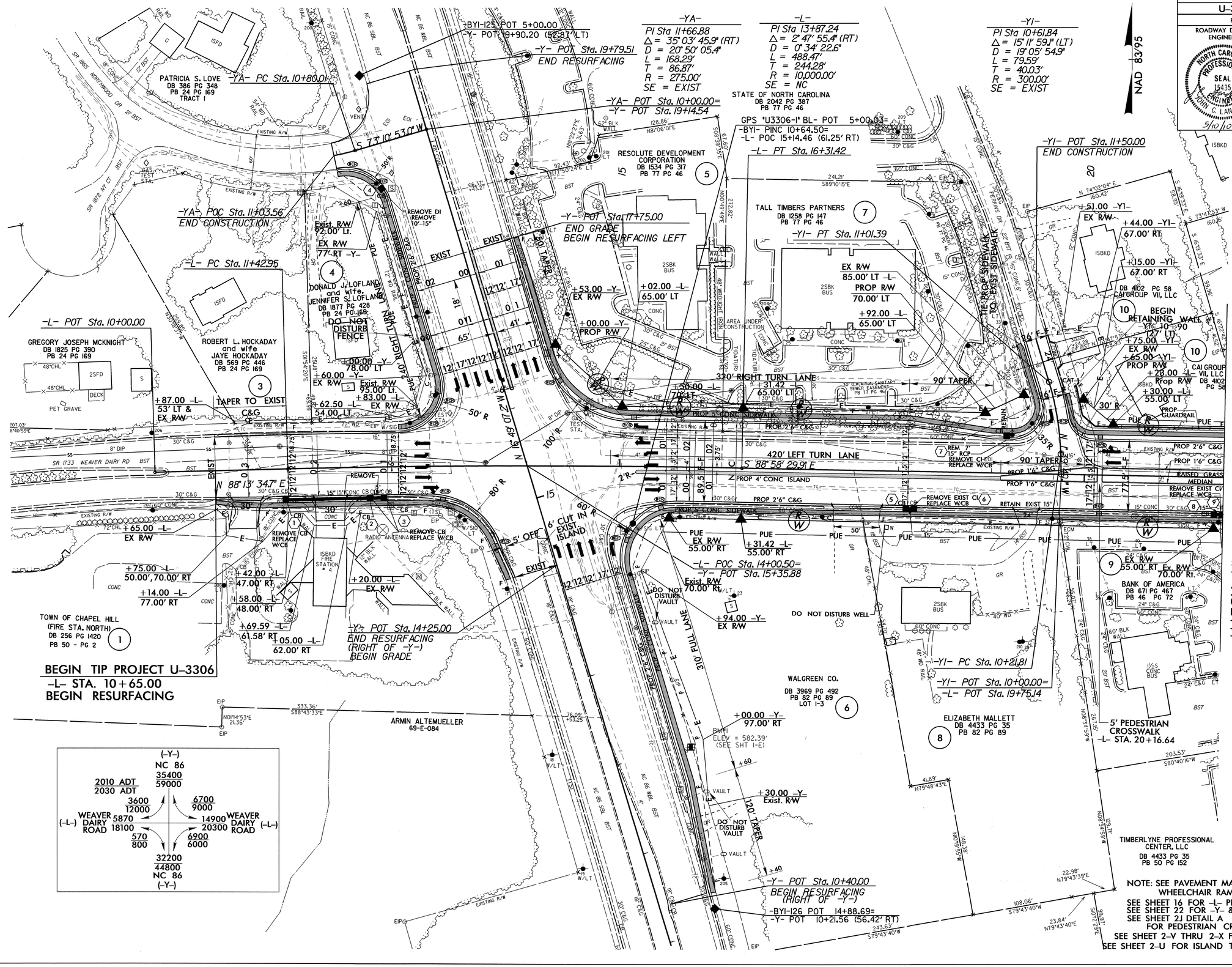
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 4 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN M. MORGAN 5-7-10




NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP STATIONS

SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 22 FOR -Y- & -Y1- PROFILE
SEE SHEET 2J DETAIL A FOR PEDESTRIAN CROSSWALK DETAIL
SEE SHEET 2-V THRU 2-X FOR RETAINING WALL PLANS
SEE SHEET 2-U FOR ISLAND TO CURB TRANSITION DETAIL

REVISIONS

8/17/99

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RD238344 4/15/2010 u3306_rdy_psh_s4 jlansford RD-Oce860-34

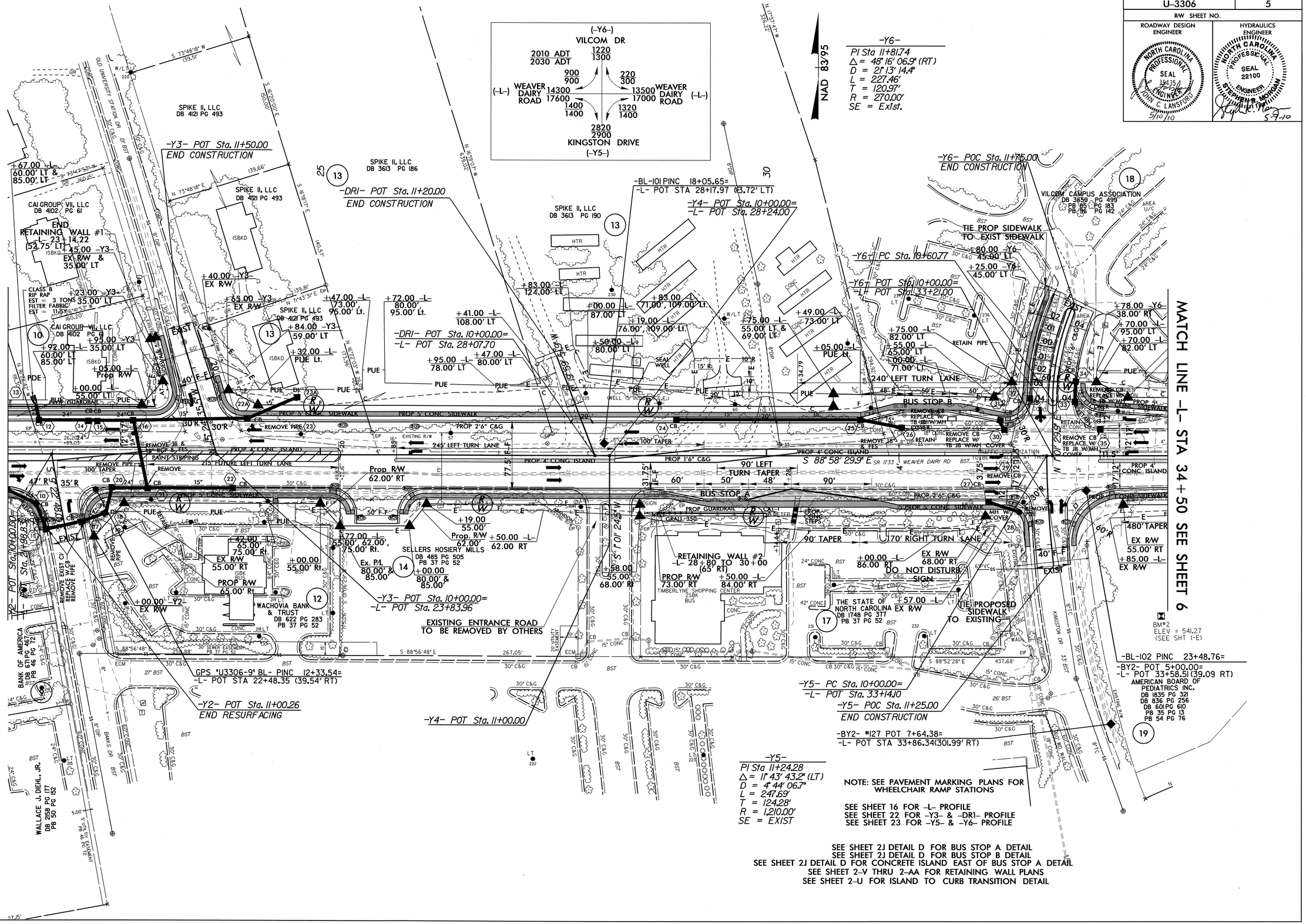
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 5 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 12435 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 5-9-10

REVISIONS

8/17/99




NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP STATIONS

SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 22 FOR -Y3- & -DR1- PROFILE
SEE SHEET 23 FOR -Y5- & -Y6- PROFILE

SEE SHEET 2J DETAIL D FOR BUS STOP A DETAIL
SEE SHEET 2J DETAIL D FOR BUS STOP B DETAIL
SEE SHEET 2J DETAIL D FOR CONCRETE ISLAND EAST OF BUS STOP A DETAIL
SEE SHEET 2-V THRU 2-AA FOR RETAINING WALL PLANS
SEE SHEET 2-U FOR ISLAND TO CURB TRANSITION DETAIL

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 6 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN F. MORGAN 5-7-10

REVISIONS

8/17/99

-L-
PI Sta 45+89.46
Δ = 6° 41′ 00.6″ (LT)
D = 2° 17′ 30.6″
L = 291.62′
T = 145.98′
R = 2,500.00′
SE = 02
RO = 52′

-Y7A-
PI Sta 11+04.51
Δ = 25° 37′ 53.0″ (LT)
D = 57° 17′ 44.8″
L = 44.74′
T = 22.75′
R = 100.00′
SE = EXIST

NAD 83/95

(-Y17A-) SHULTZ ST 720 800
2010 ADT 2030 ADT
500 500 / 200 200
(-L-) WEAVER DAIRY ROAD 13500 17000 — 13500 17000 WEAVER DAIRY ROAD (-L-)
200 200 / 500 500
720 800 TIMBERLYNE DR (-Y17-)

-Y7A- POC Sta. 11+00.00
END CONSTRUCTION

-L- PC Sta. 44+43.49

-BL-103 PINC 36+20.83=
-L- POC STA 46+30.69 (28.00′ LT)

-Y7A- PC Sta. 10+81.76

-Y7A- POT Sta. 10+00.00=
-L- POC Sta. 46+00.34
-L- PT Sta. 47+35.11

MATCH LINE -L- STA 34+50 SEE SHEET 5

MATCH LINE -L- STA 47+50 SEE SHEET 7

VILCOM CAMPUS ASSOCIATION
DB 3659 PG 499
PB 85 PG 183
PB 96 PG 142
18

BENCHMARK ATLANTIC CO., INC.
PB 38 PG 87
PB 40 PG 116
20

BENCHMARK ATLANTIC CO., INC.
PB 38 PG 87
PB 40 PG 116

BENCHMARK ATLANTIC CO., INC.
PB 38 PG 87
PB 40 PG 116
CONVERT OTCB TO JB

TIE PROP SIDEWALK TO EXIST SIDEWALK
+25.00 -L- 84.00′ 95.00′ Lt.
+05.00 -L- 65.00′ LT
+00.00 -L- 72.00′ LT
240′ RIGHT TURN TAPER
240′ LEFT TURN LANE
90′ LEFT TURN TAPER
+04.05
TIE PROP SIDEWALK TO EXIST SIDEWALK
+30.00 -L- 55.00′ LT & 65.00′ LT
+30.00 -L- 55.00′ LT & 65.00′ LT
TIE PROP SIDEWALK TO EXIST SIDEWALK
+07.00 -L- 65.00′ LT
+35.00 -L- Exist. R/W
Exist. R/W 40.00′ LT
RETAIN EXIST SIDEWALK
REMOVE/REPLACE CB'S
REMOVE 18" REPLACE W/24"
REMOVE CB REPLACE W/ TB JB W/MH COVER
REMOVE 18"
PROP 2'6" C&G
PROP 5' CONC SIDEWALK
PROP 4' CONC ISLAND
RAISED GRASS MEDIAN
PROP 1'6" C&G
S 88° 58′ 29.9″ E
+50.00 -L- 55.00′ LT & 64.00′ LT & 69.00′ LT
+28.00 -L- 55.00′ LT & 68.00′ LT
+71.00 -L- 58.00′ LT
+00.00 -L- 40.00′ LT & 52.00′ LT
+43.49 -L- 52.00′ LT
+76.00 -L- 101.00′ LT & 60.00′ -L-
+50.00 -L- 63.00′ LT & 52.00′ LT & 65.00′ LT
48′ TAPER
BUS STOP D
60′ TAPER
30′ R
+35.11 -L- 40.40′ Lt.
+58.00 -L- PROP R/W 70.00′ LT 40.00′ LT
+43.00 -L- 65.00′ LT
480′ TAPER TO DROP LANES
+13.00 55.00′, 60.00′, 70.00′ Rt.
+33.00 -L- 55.00′, 60.00′, 70.00′ Rt.
+20.00 -L- 55.00′ RT
70′ TAPER FOR MEDIAN
+00.00 -L- 55.00′ Rt. 60.00′ Rt.
CL B RIP RAP EST 1 TON EST 5 SY FF
60′ TAPER
50′ BUS STOP C
48′ TAPER
+08.82
+43.49 -L- EX R/W
+35.11 -L- EX R/W
BOBBY P. RILEY JR. and wife CATHERINE S. RILEY DB 1172 PG 416 PB 29 PG 93
+82.00 -Y7- EX R/W
+00.00 -L- 55.00′ RT 60.00′ RT 73.00′ RT
+55.00 -L- 73.00′ RT
+97.00 -L- EX R/W
SEE DETAIL B TOE PROTECTION W/CLASS B RIP RAP -L- STA. 42+50 – 44+00 RT CLASS B RIP RAP EST = 69 TONS FILTER FABRIC EST = 204.59
DO NOT DISTURB EXIST. FENCE
DO NOT DISTURB EXIST. FENCE

AMERICAN BOARD OF PEDIATRICS INC.
DB 1835 PG 321
DB 836 PG 236
DB 60 PG 610
PB 35 PG 13
PB 54 PG 76
PB 72 PG 195
19

POND W.E. 527.7

FOUNTAIN

30′ SANITARY SEWER EASEMENT

-Y7- PC Sta. 10+99.29

-Y7- POT Sta. 10+00.00=
-L- POC Sta. 45+98.17

AMERICAN BOARD OF ORTHOPEDICS INC
DB 837 PG 626
PB 35 PG 13
PB 54 PG 76
PB 72 PG 195

-Y7-
PI Sta 11+72.88
Δ = 3° 22′ 19.7″ (RT)
D = 2° 17′ 30.6″
L = 147.14′
T = 73.59′
R = 2,500.00′

DOWINA A. ZAGAMI
DB 2645 PG 555
PB 29 PG 93
21

WILLIAM A. PALMER and wife ROSEMARY J. PALMER
DB 658 PG 402
PB 29 PG 93

SARA C. ROSCOE
DB 3830 PG 55
PB 29 PG 93

TIMOTHY A. PRESSLEY and wife PATRICIA P. PRESSLEY
DB 440 PG 244
PB 29 PG 93
22

STEVEN L. PLADNA and wife ROSEMARIE M. PLADNA
DB 395 PG 160
PB 29 PG 93

-Y7- POC Sta. 11+15.00
END CONSTRUCTION

DETAIL B
TOE PROTECTION
(Not to Scale)
Natural Ground — d — 2:1 OR FLATTER — Fill Slope — Filter Fabric
d= 1.0 Ft.
Type of Liner= CL B Rip-Rap
-L- STA 42+50 – 44+00 RT

SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 23 FOR -Y7- & -Y7A- PROFILE
SEE SHEET 2K DETAIL E FOR BUS STOP C DETAIL
SEE SHEET 2K DETAIL E FOR BUS STOP D DETAIL
SEE SHEET 2-U FOR ISLAND TO CURB TRANSITION DETAIL
NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP STATIONS

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| PROJECT REFERENCE NO. | SHEET NO. |
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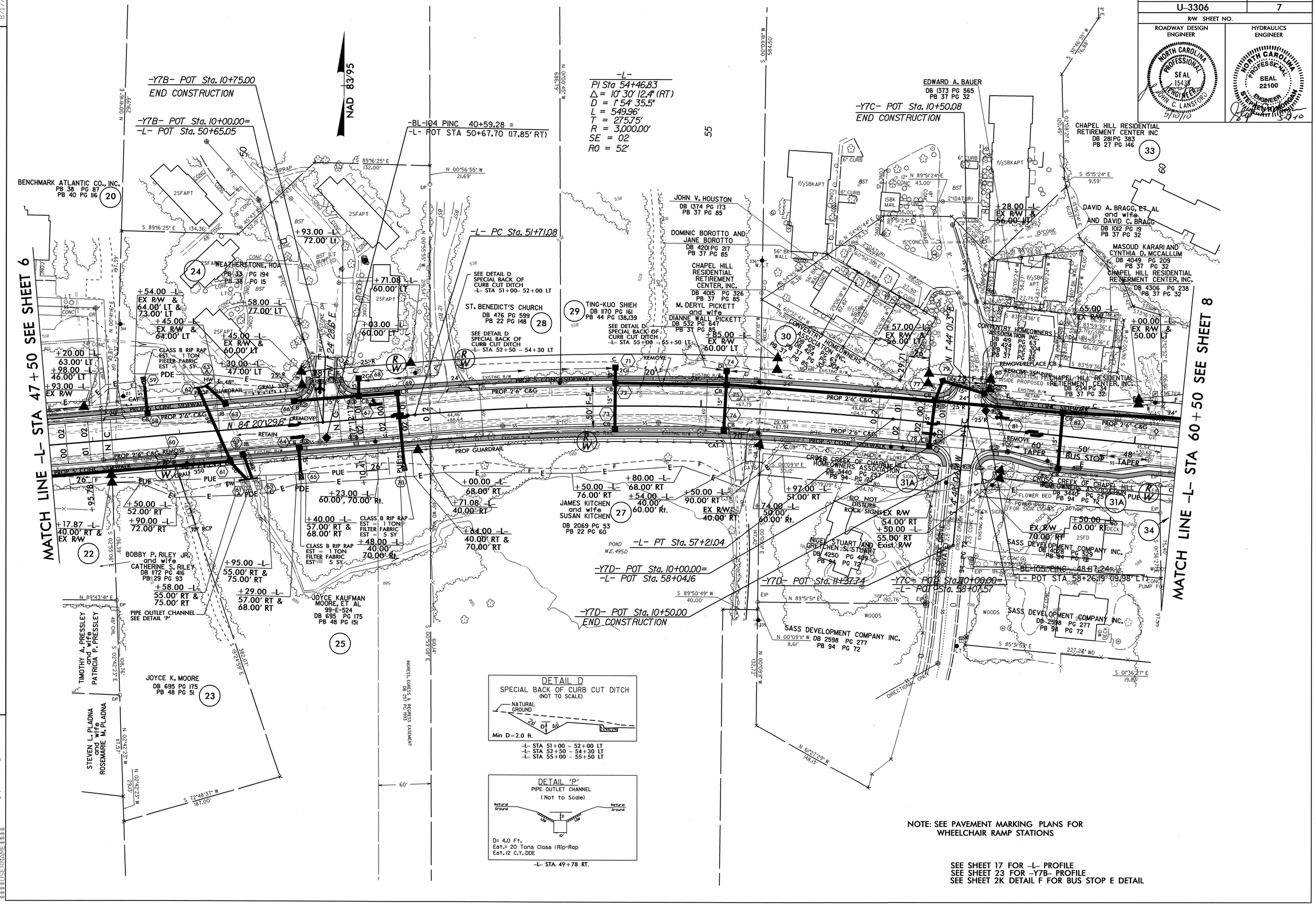
| U-3306 | 7 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15439 ENGINEER JOHN C. LANSFORD 5/10/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN H. HORGAN 5/10/10




REVISIONS

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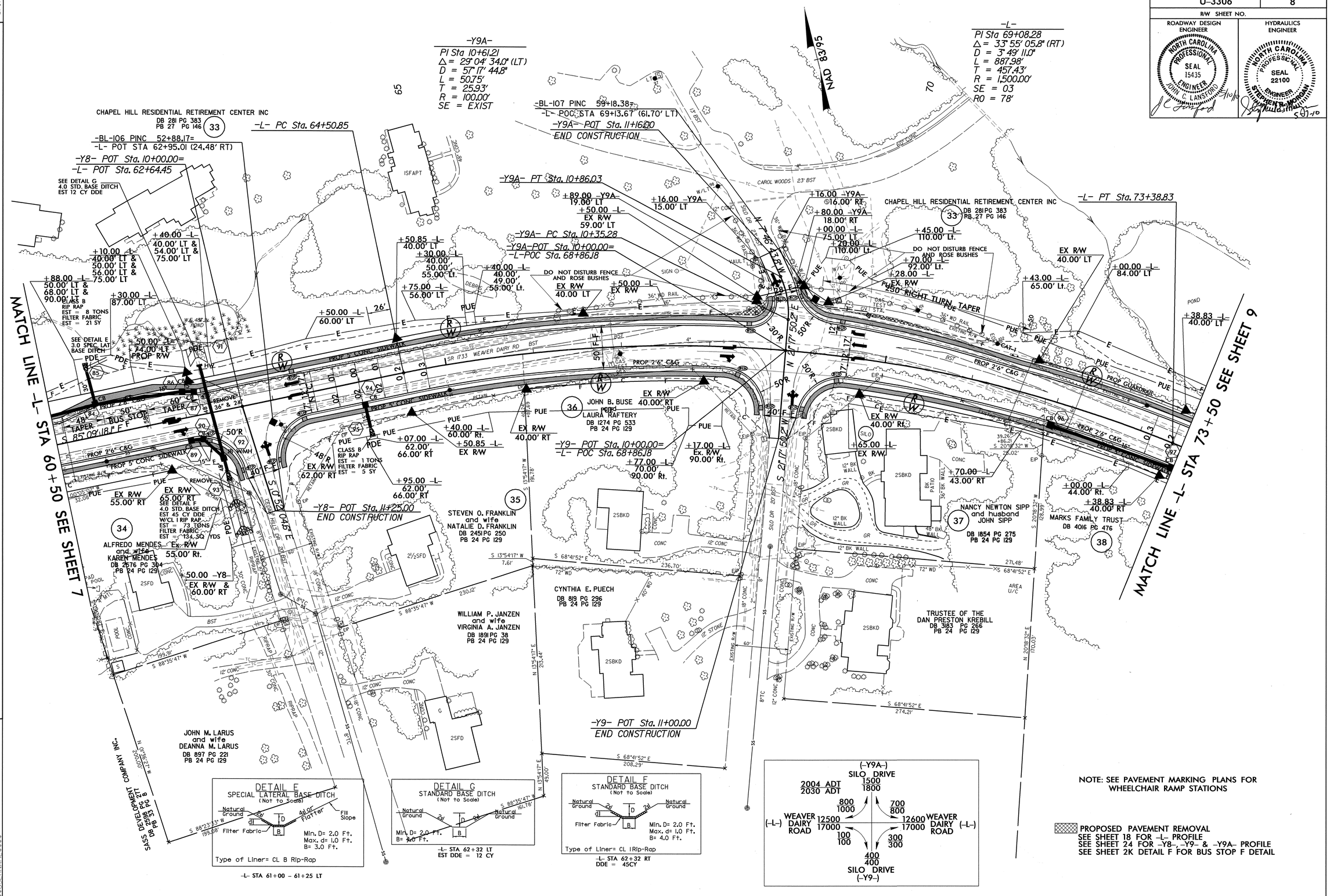
| U-3306 | 8 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN 5/10/10

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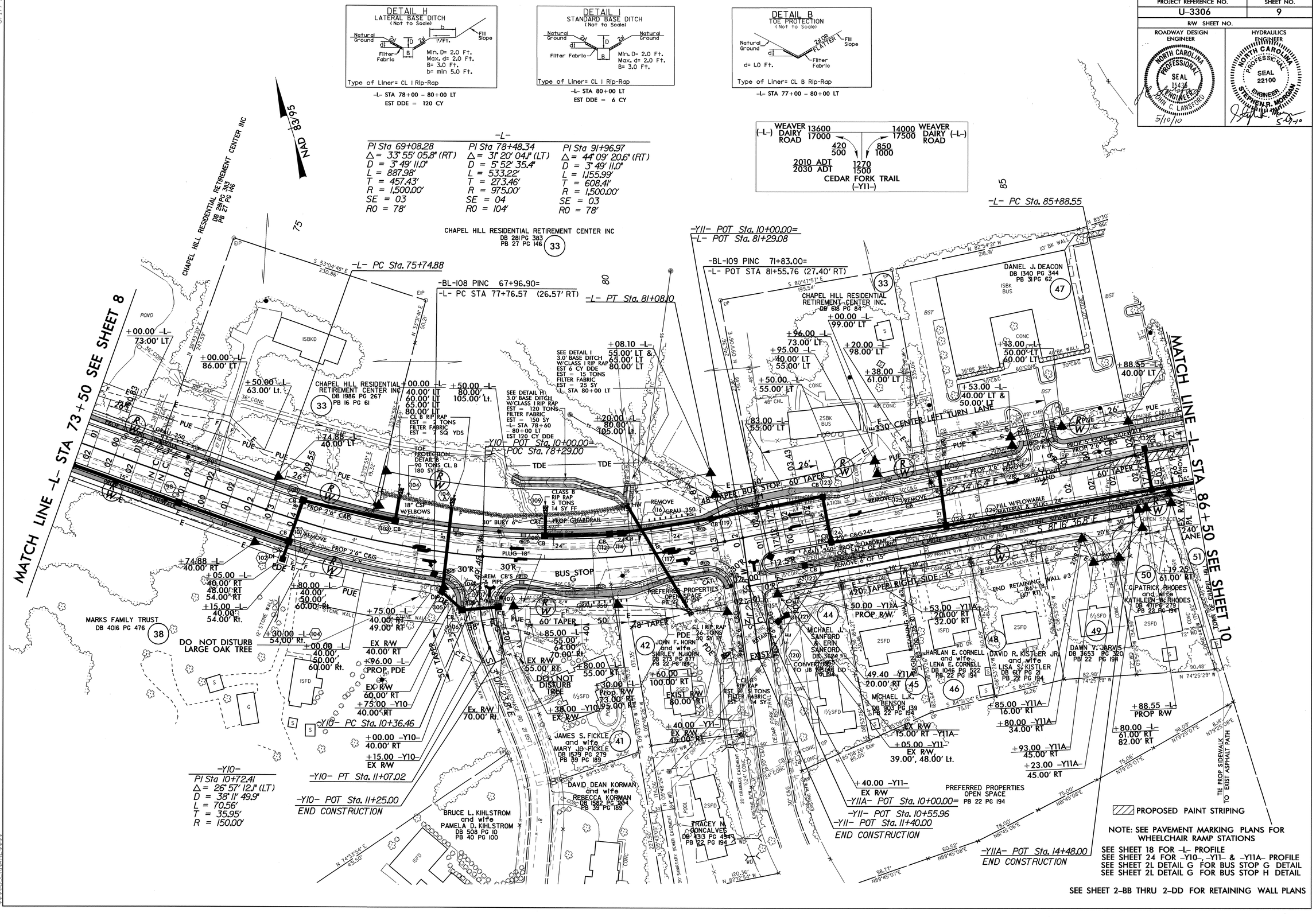
| U-3306 | 9 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15436 ENGINEER JOHN C. LANSFORD 5/10/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 5/10/10




NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP STATIONS

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 24 FOR -Y10-, -Y11- & -Y11A- PROFILE
SEE SHEET 2L DETAIL G FOR BUS STOP G DETAIL
SEE SHEET 2L DETAIL G FOR BUS STOP H DETAIL

SEE SHEET 2-BB THRU 2-DD FOR RETAINING WALL PLANS

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| PROJECT REFERENCE NO. | SHEET NO. |
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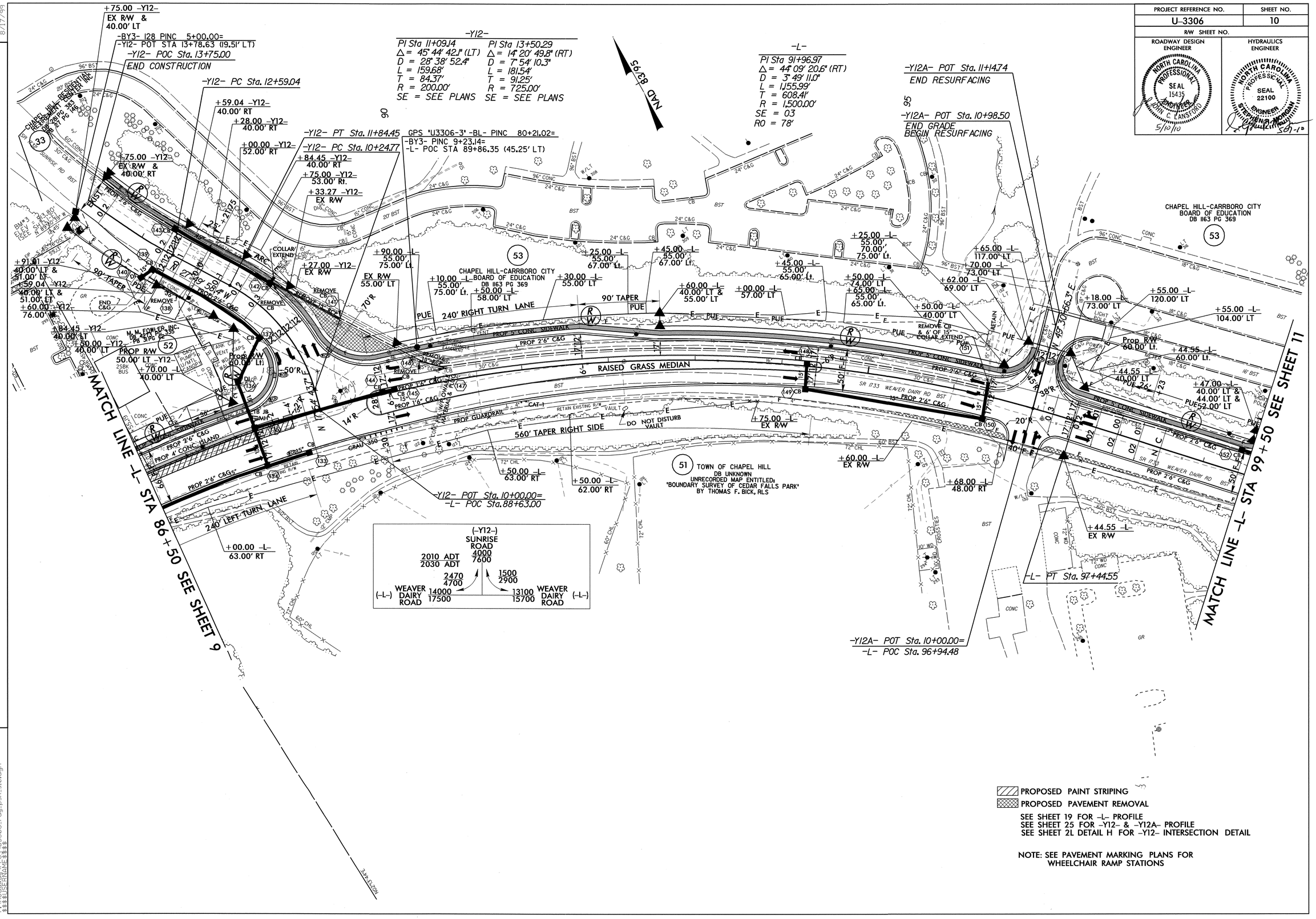
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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| PROJECT REFERENCE NO. | SHEET NO. |
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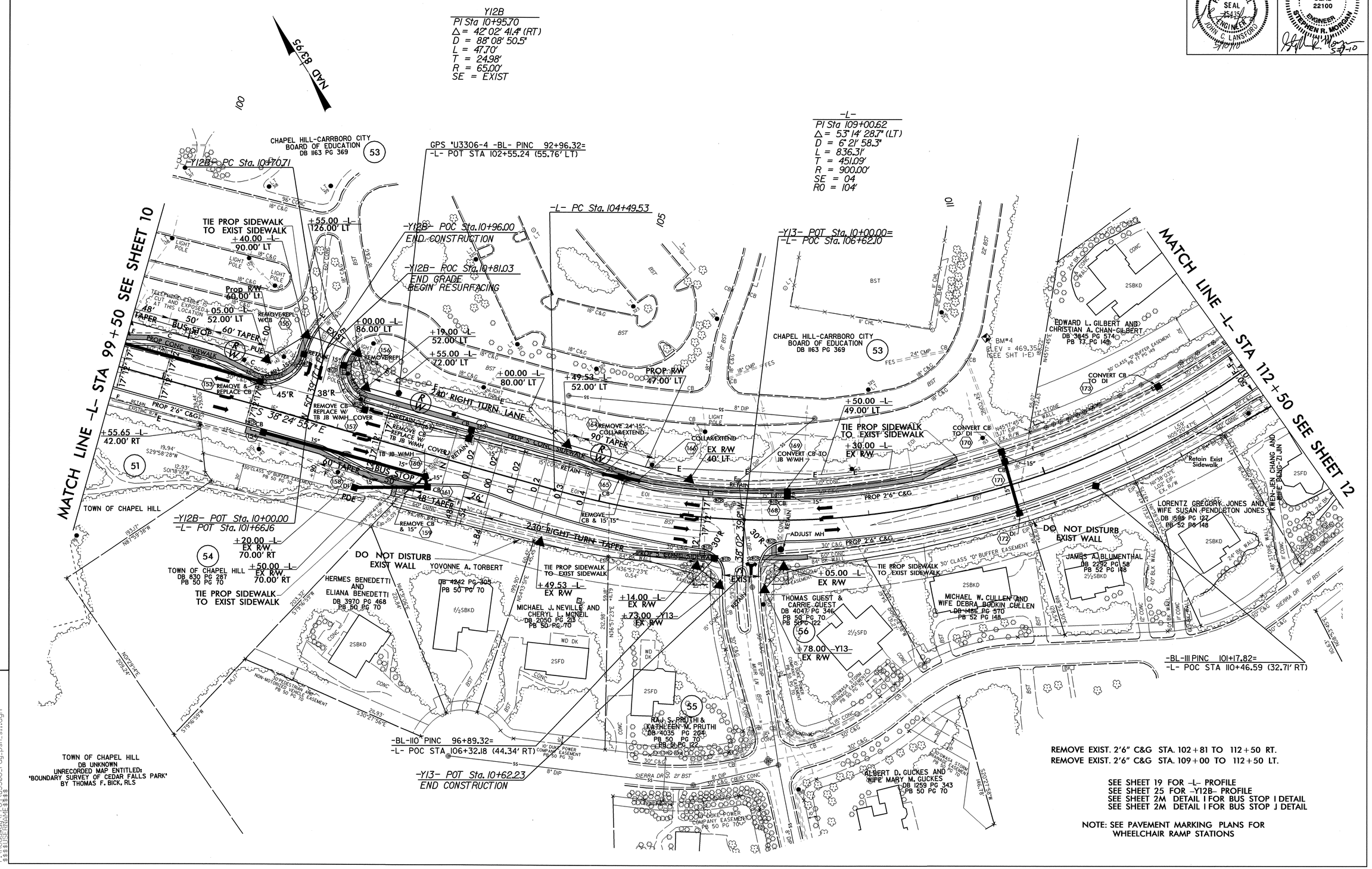
| U-3306 | 11 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15439 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 5/10/10

REVISIONS

8/17/99

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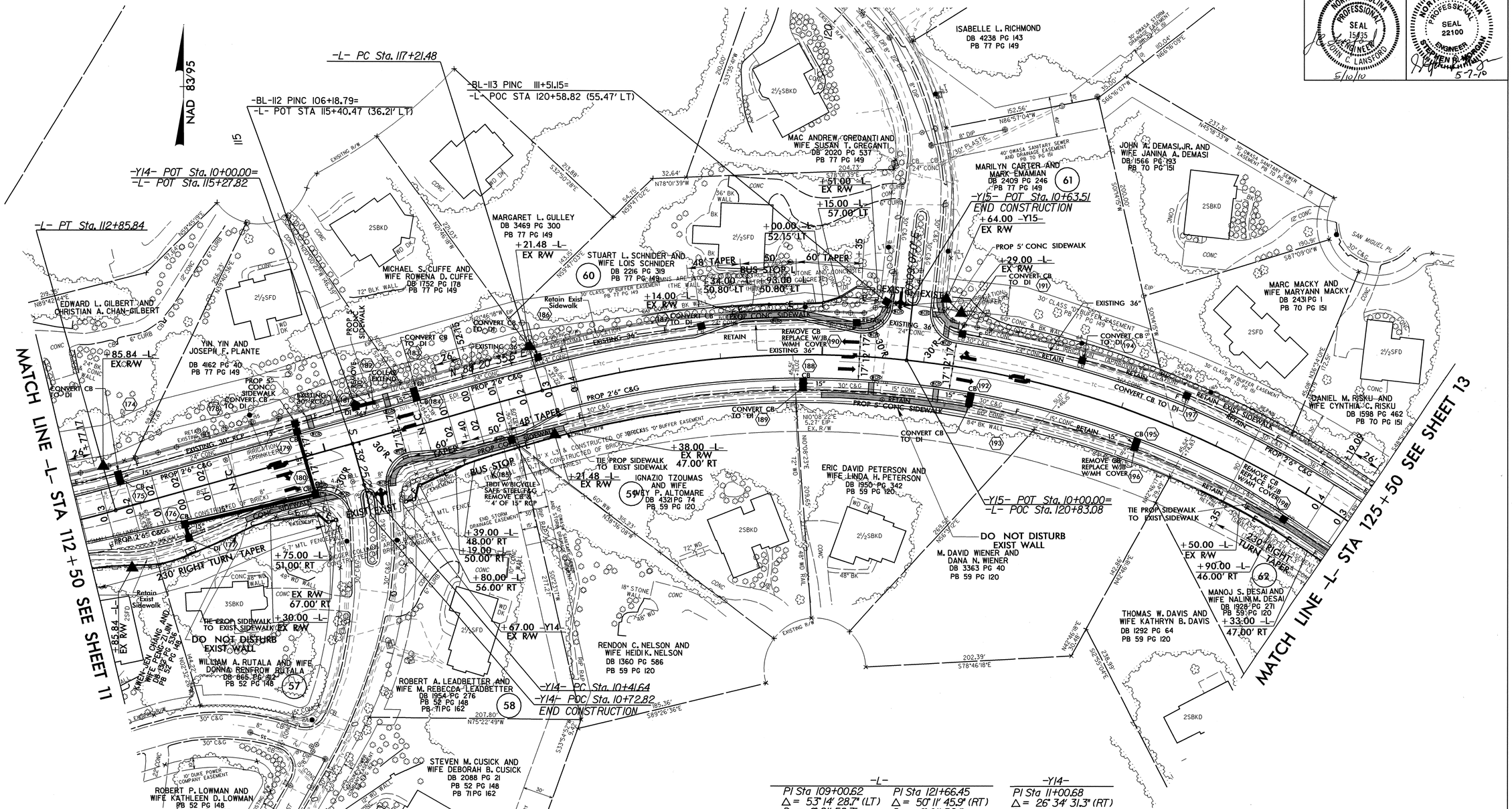
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 12 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15635 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN P. MORGAN 5-7-10




| -L- | | -Y14- |
|---|---|---|
| PI Sta 109+00.62 | PI Sta 121+66.45 | PI Sta 11+00.68 |
| Δ = 53° 14' 28.7" (LT) | Δ = 50° 11' 45.9" (RT) | Δ = 26° 34' 31.3" (RT) |
| D = 6° 21' 58.3" | D = 6° 01' 52.1" | D = 22° 55' 05.9" |
| L = 836.31' | L = 832.28' | L = 115.96' |
| T = 451.09' | T = 444.97' | T = 59.04' |
| R = 900.00' | R = 950.00' | R = 250.00' |
| SE = 04 | SE = 04 | SE = EXIST |
| R0 = 104' | R0 = 104' | |

REVISIONS

8/17/99

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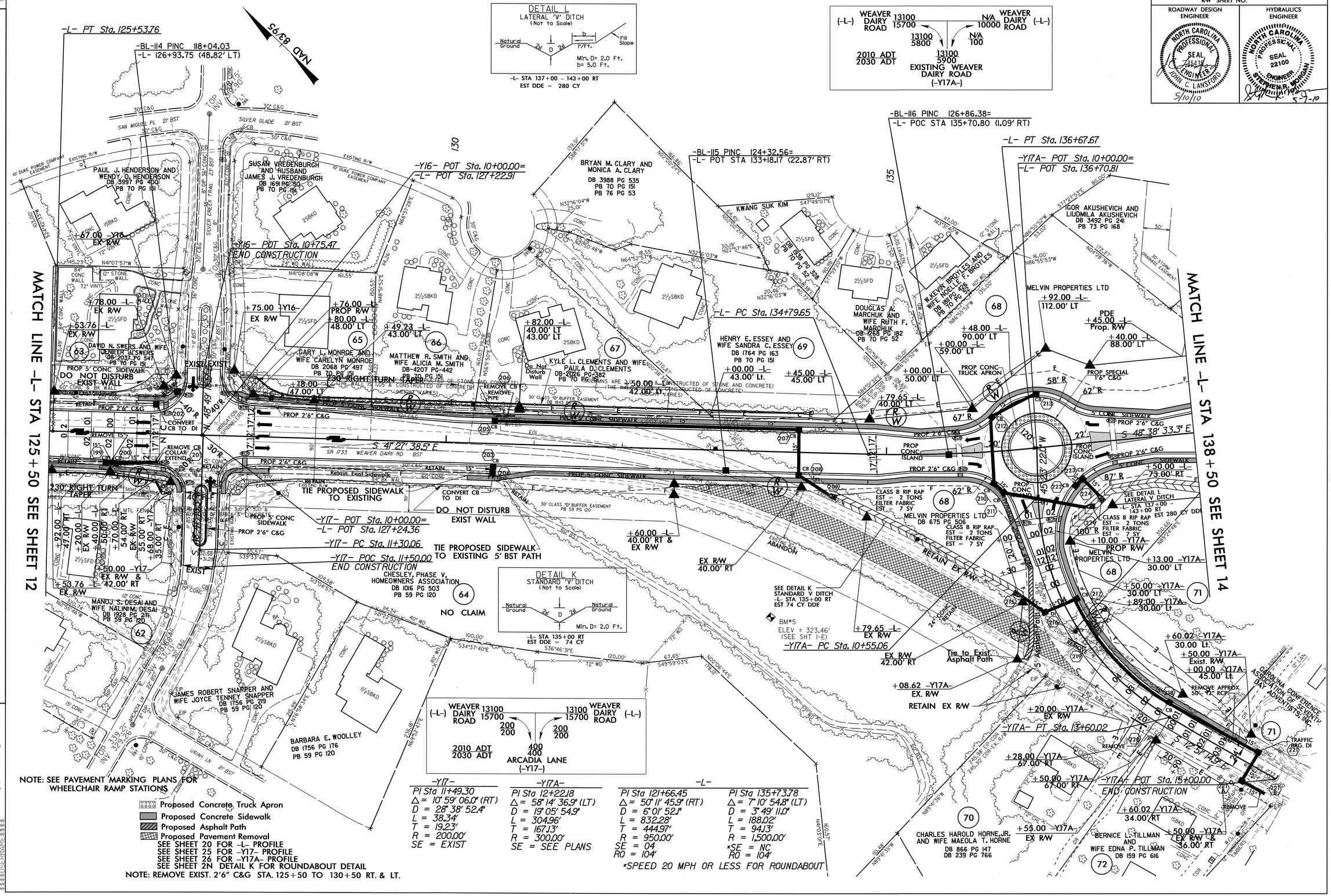
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 13 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15437 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 5-7-10

REVISIONS

8/17/99

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| PROJECT REFERENCE NO. | SHEET NO. |
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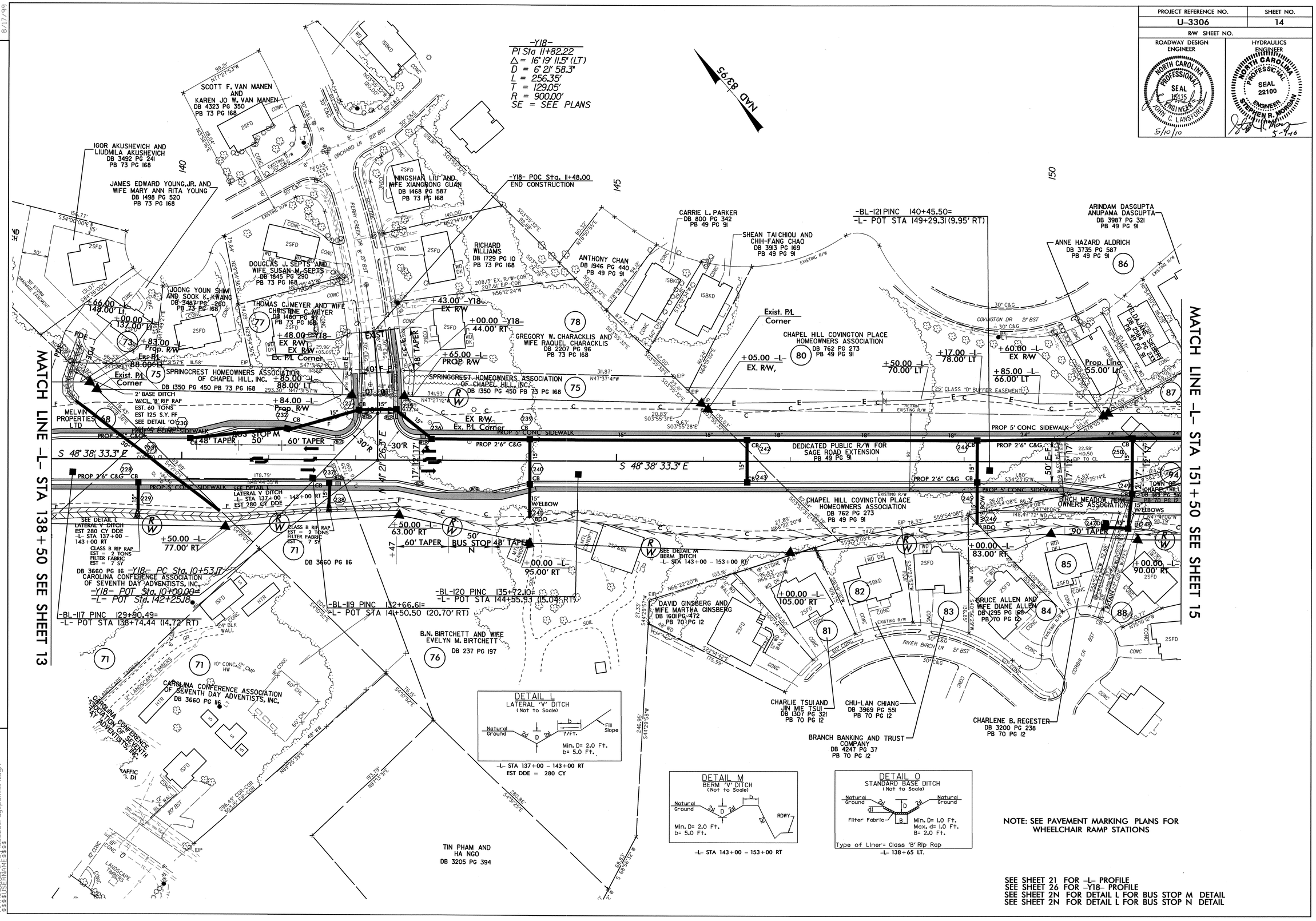
| U-3306 | 14 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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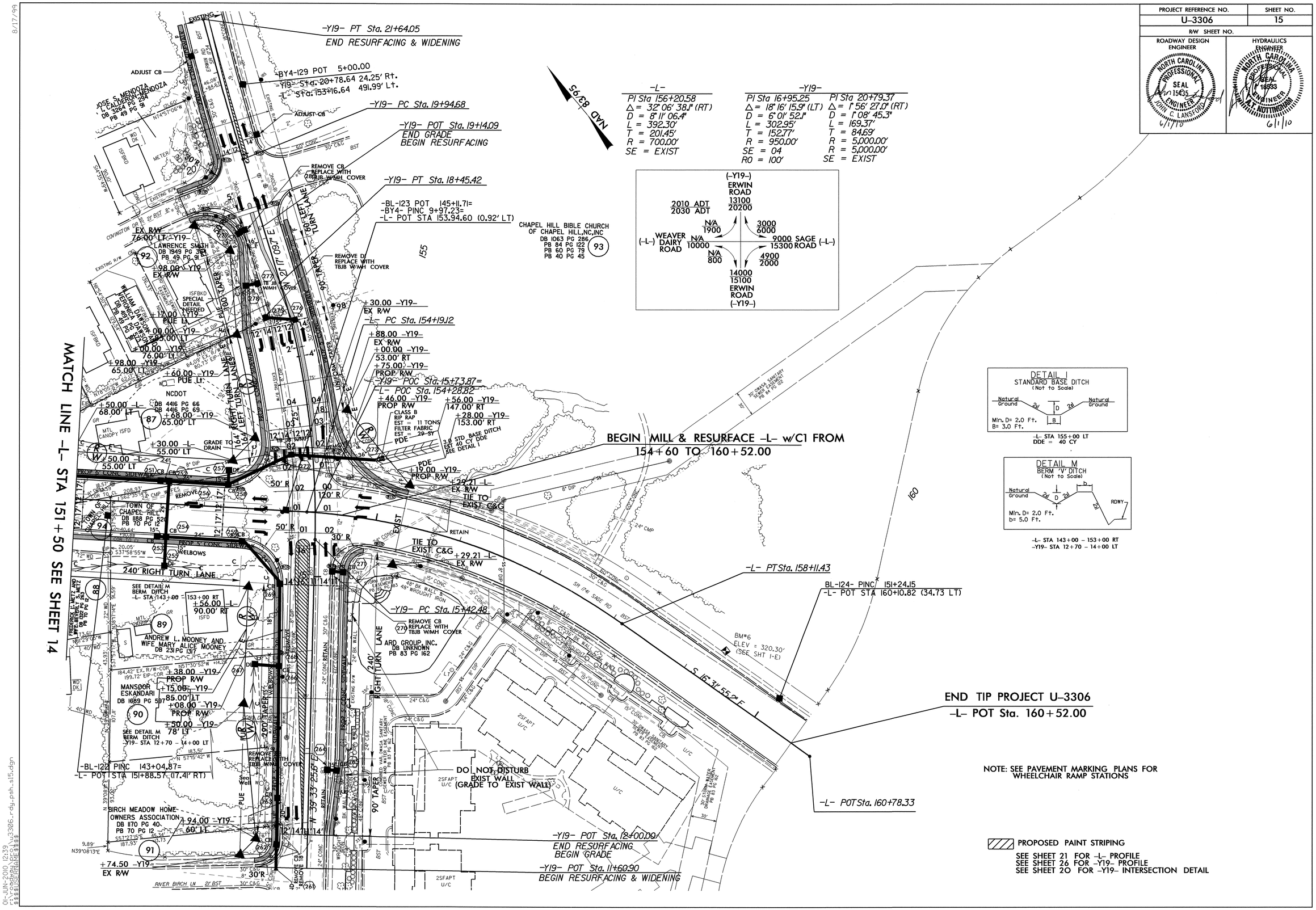
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 15 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15635 ENGINEER JOHN C. LANSFORD 6/1/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER JEFF NOTTINGHAM 6/1/10

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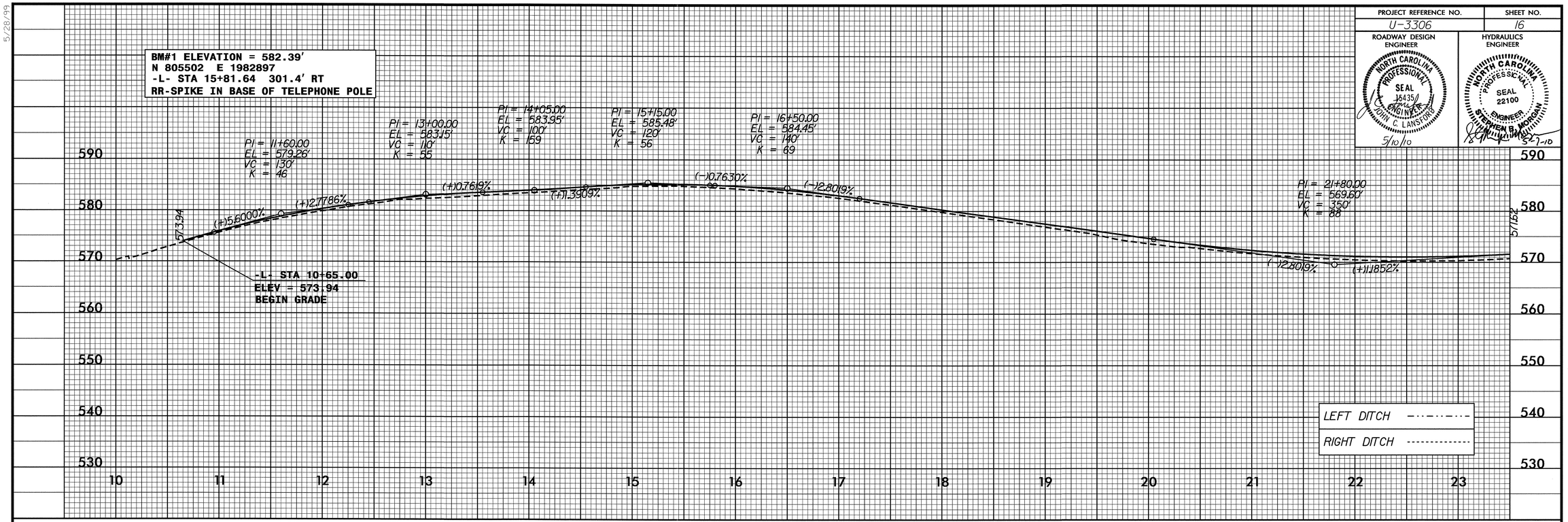
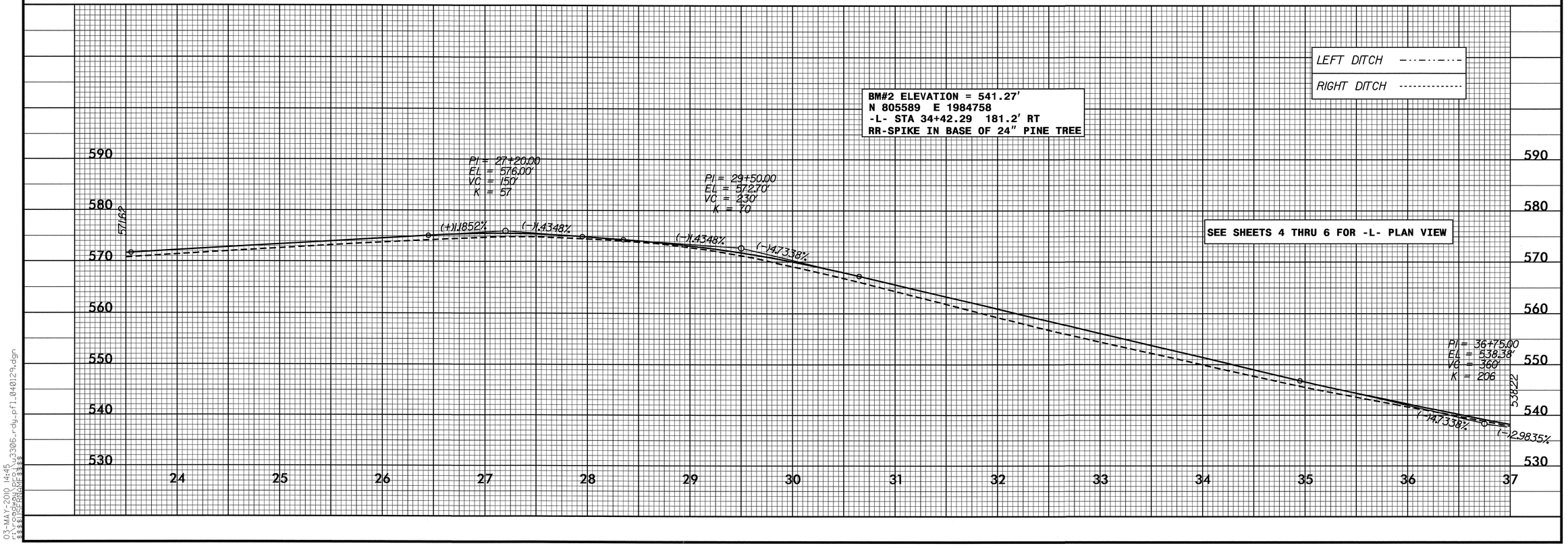
RD238344 6/1/2010 u3306_rdy_psh_s15 jlansford RD-Oce860-34

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 16 |

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 36435 ENGINEER JOHN C. L. LANSFORD 5/10/10

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN 5-7-10

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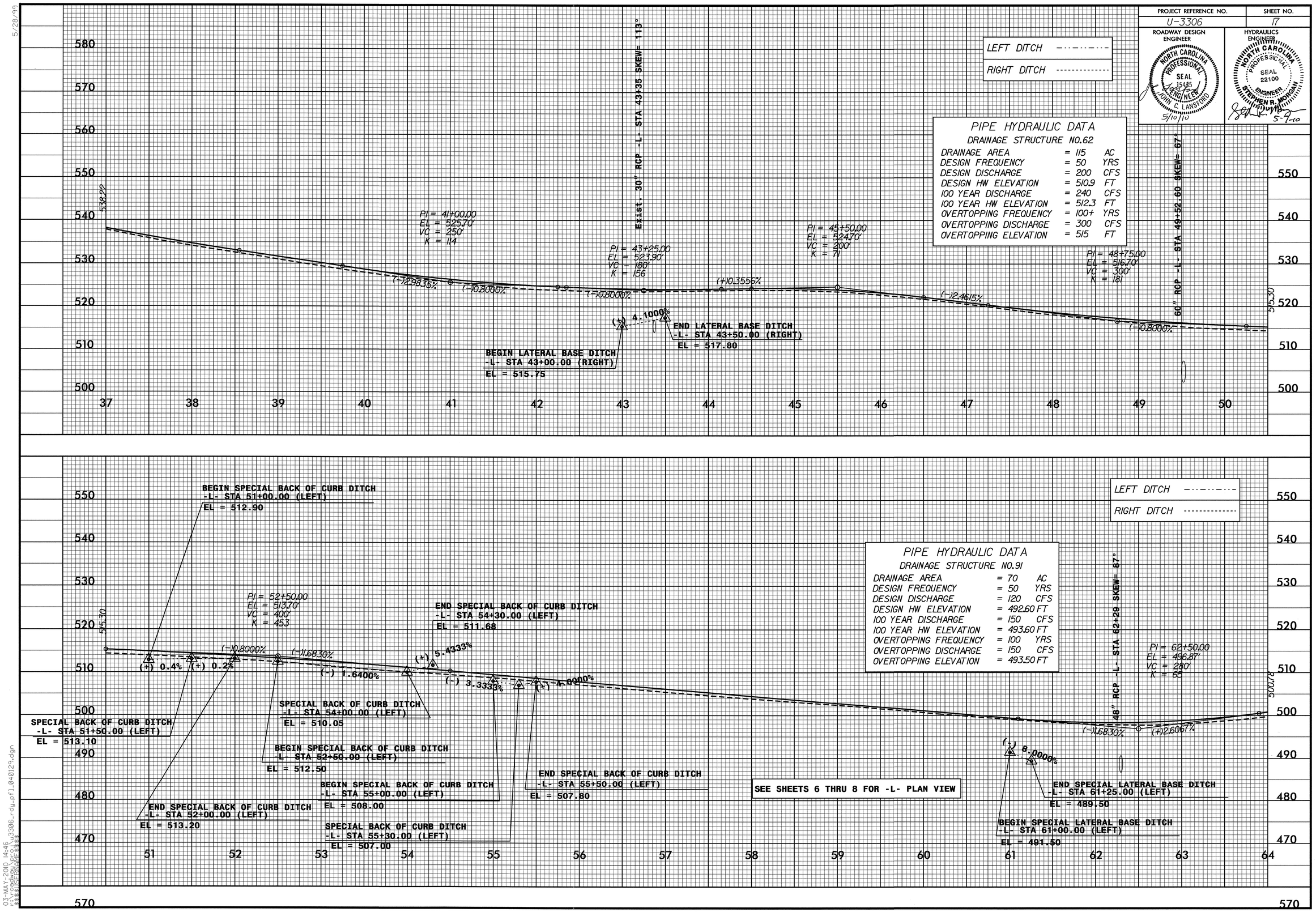
RD238344 5/3/2010 u3306_rdy_pfl_040129 jlansford RD-Oce860-34

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 17 |

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15485 ENGINEER JOHN C. LANSFORD — 5/10/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN — 5-9-10




5/28/99

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RD238344 5/3/2010 u3306_rdy_pfl_040129 jlansford RD-Oce860-34

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 18 |

ROADWAY DESIGN ENGINEER

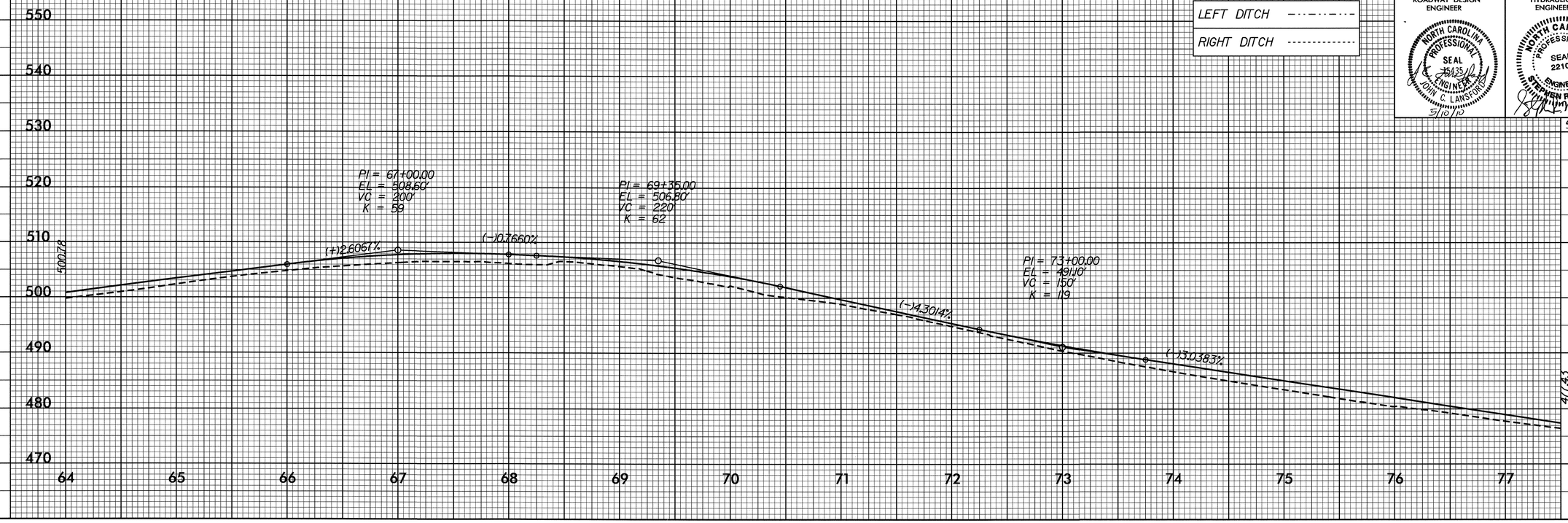
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

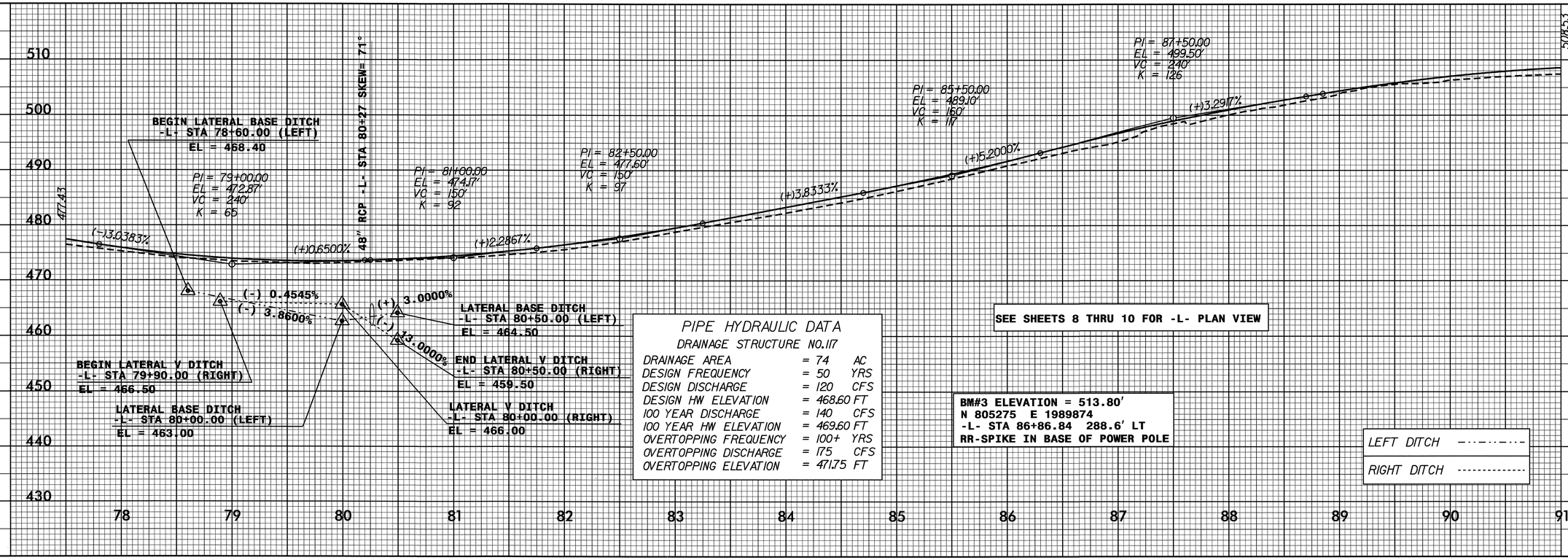
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 5-7-10

LEFT DITCH -·-·-·-·-

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




PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.117

| | | |
|---|---|---|
| DRAINAGE AREA | = 74 | AC |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN DISCHARGE | = 120 | CFS |
| DESIGN HW ELEVATION | = 468.60 | FT |
| 100 YEAR DISCHARGE | = 140 | CFS |
| 100 YEAR HW ELEVATION | = 469.60 | FT |
| OVERTOPPING FREQUENCY | = 100+ | YRS |
| OVERTOPPING DISCHARGE | = 175 | CFS |
| OVERTOPPING ELEVATION | = 471.75 | FT |

SEE SHEETS 8 THRU 10 FOR -L- PLAN VIEW

BM#3 ELEVATION = 513.80'
N 805275 E 1989874
-L- STA 86+86.84 288.6' LT
RR-SPIKE IN BASE OF POWER POLE

LEFT DITCH -·-·-·-·-

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

5/28/99

03-MAY-2010 14:46
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$$$$USERNAME$$$$

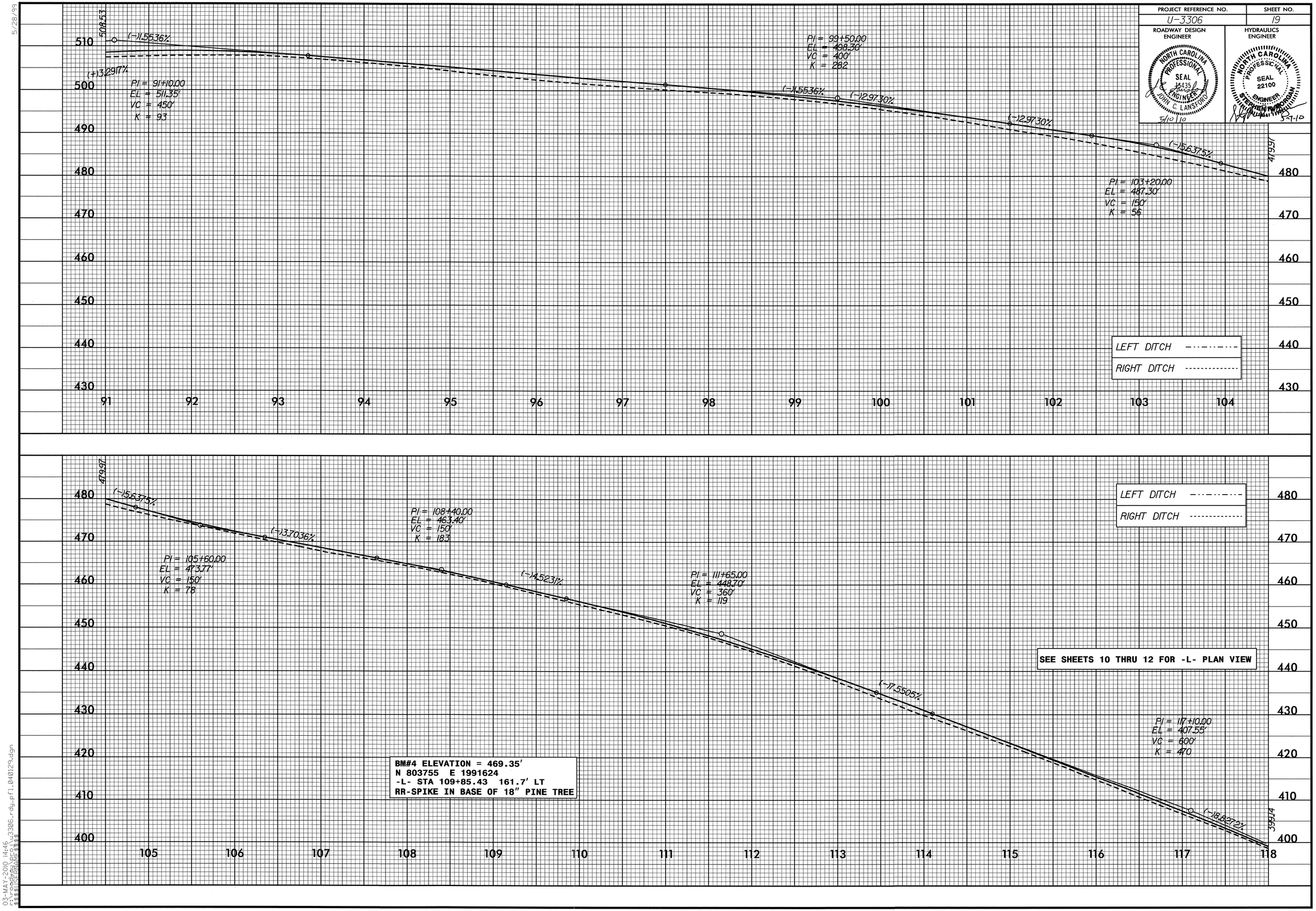
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 19 |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 5/10/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN M. MORGAN 5-7-10




5/28/99

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RD238344 5/3/2010 u3306_rdy_pfl_040129 jlansford RD-Oce860-34

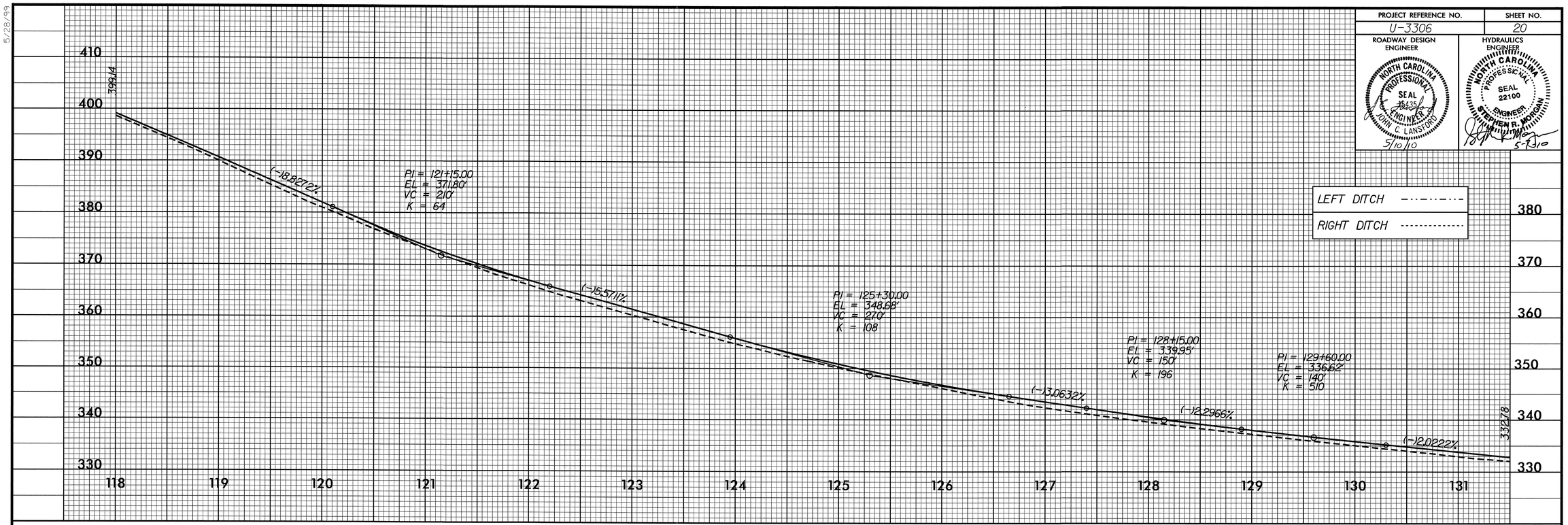
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 20 |

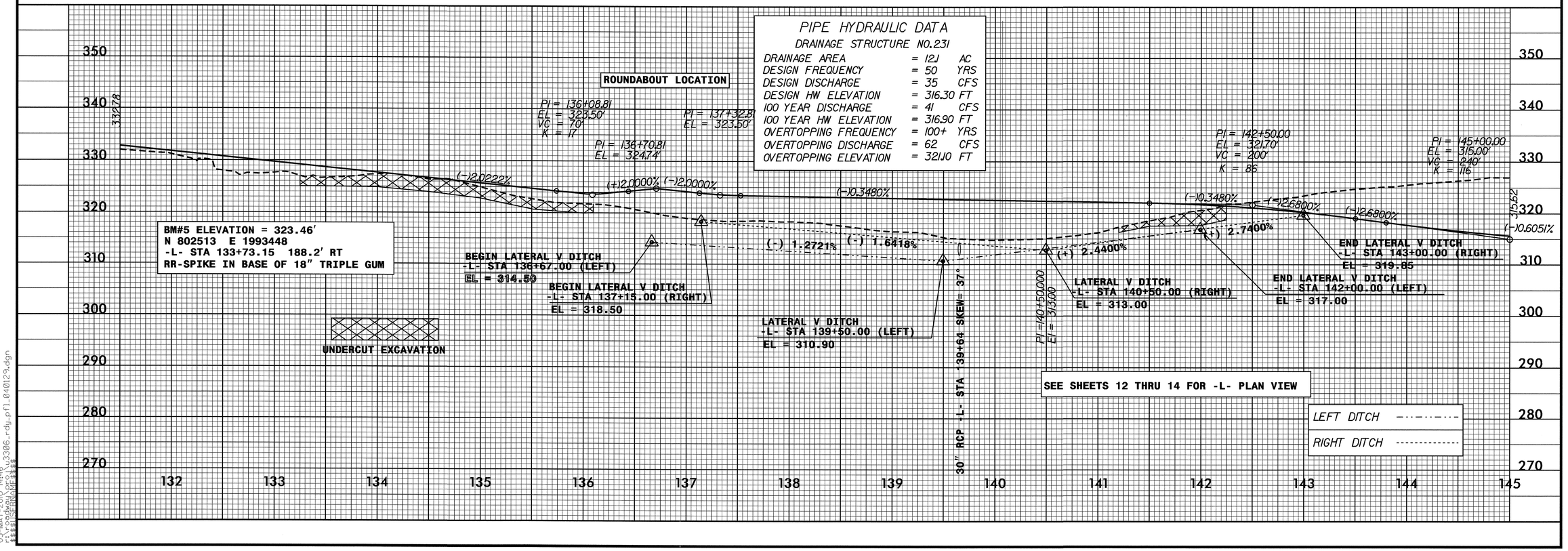
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19135 ENGINEER JOHN C. LANSFORD
5/10/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
5/7/10




5/28/99

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RD238344 5/3/2010 u3306_rdy_pfl_040129 jlansford RD-Oce860-34

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 21 |

ROADWAY DESIGN ENGINEER

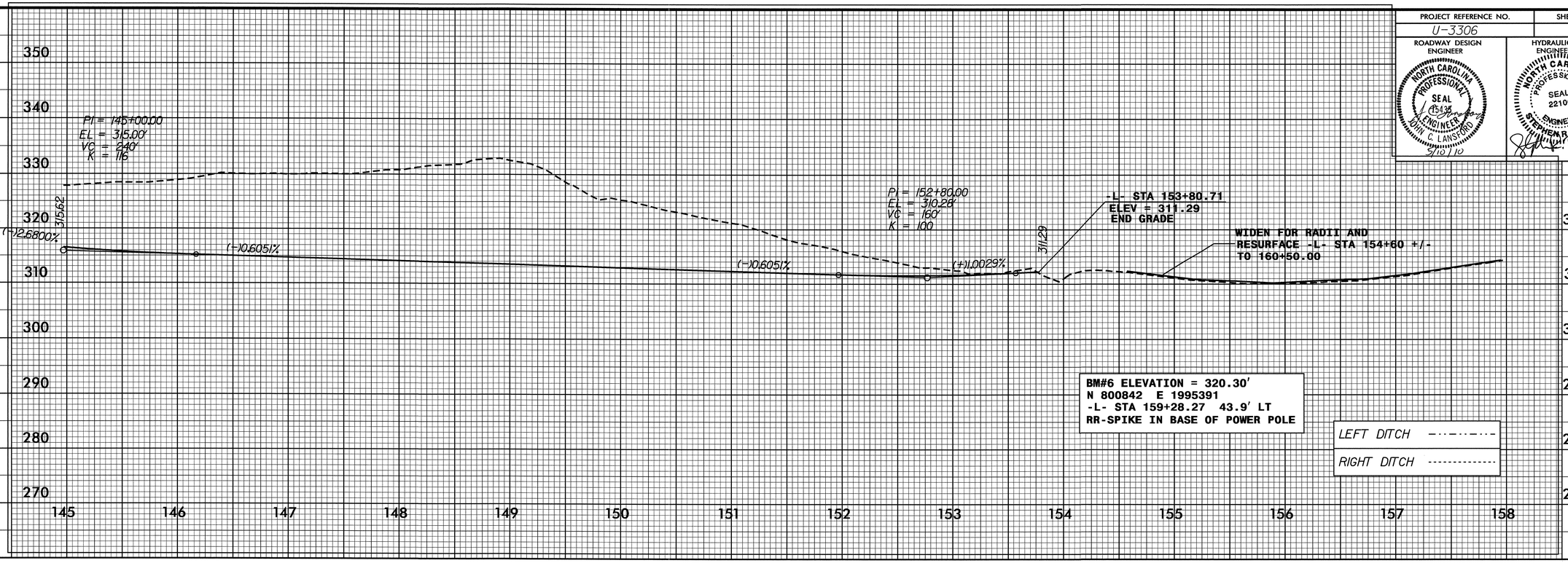
NORTH CAROLINA PROFESSIONAL SEAL 19638 ENGINEER JOHN C. LANSFORD

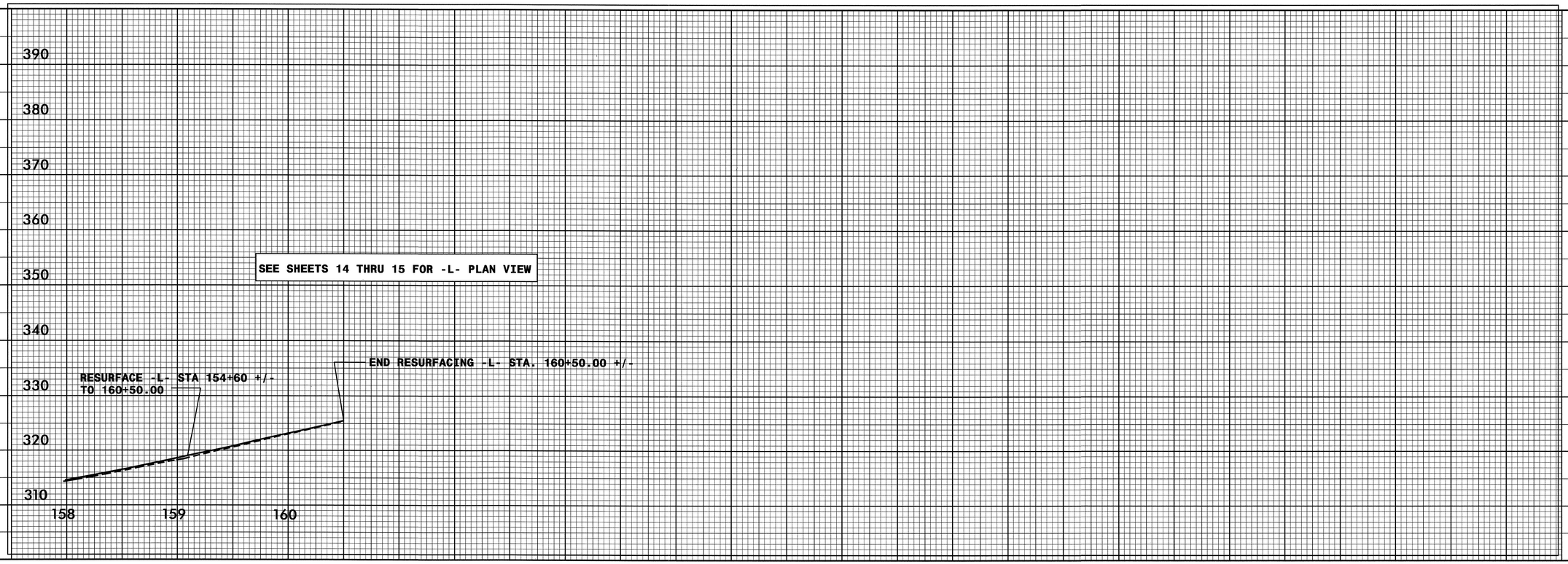
5/28/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

5-7-10

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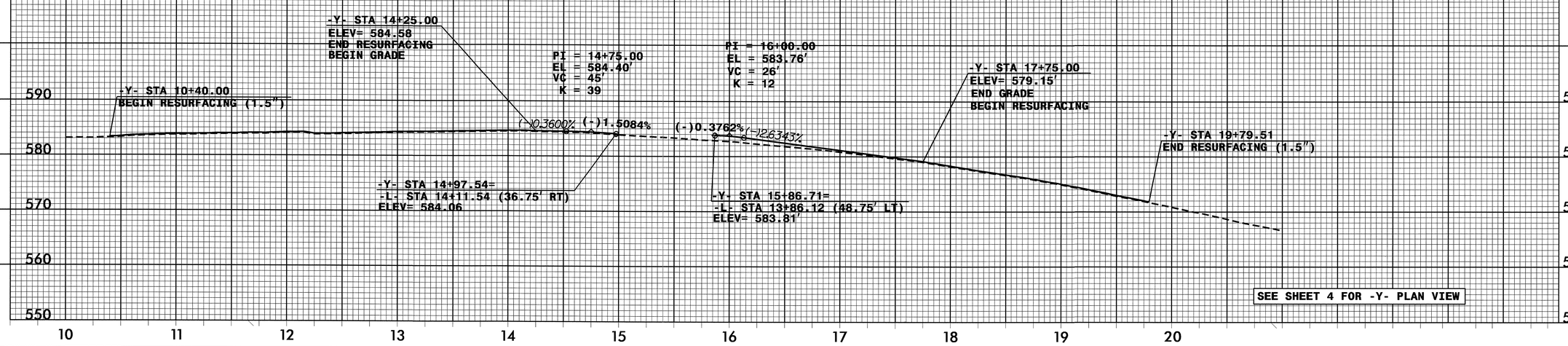
5/28/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 22 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 15425 ENGINEER JOHN C. LANSFORD 5/10/10

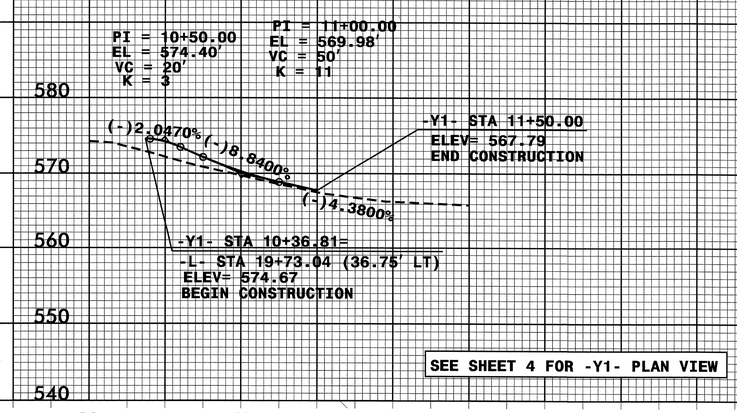
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 05-7-10

# -Y- NC 86



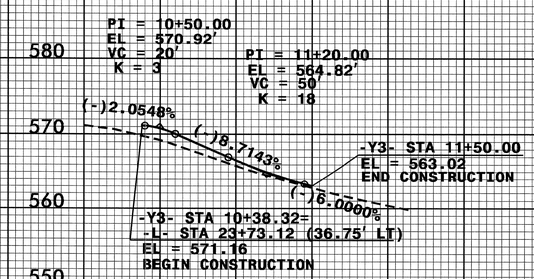

SEE SHEET 4 FOR -Y- PLAN VIEW

# -Y1- PERKINS DR



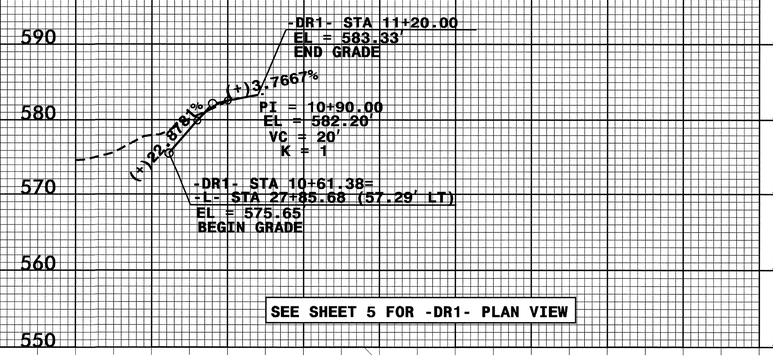

SEE SHEET 4 FOR -Y1- PLAN VIEW

# -Y3- OLD UNIVERSITY DR




SEE SHEET 5 FOR -Y3- PLAN VIEW

# -DR1-




SEE SHEET 5 FOR -DR1- PLAN VIEW

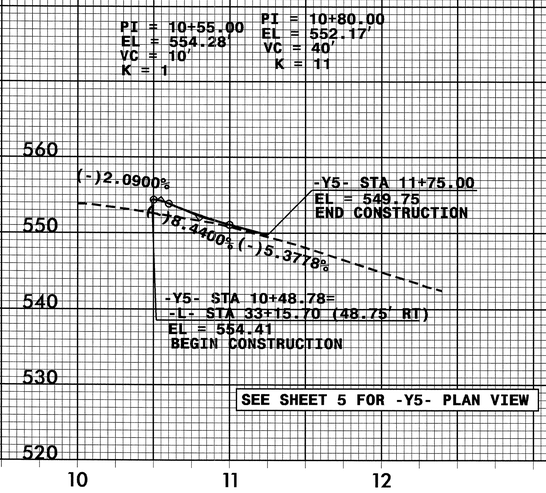
5/28/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 23 |

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD
3/10/10

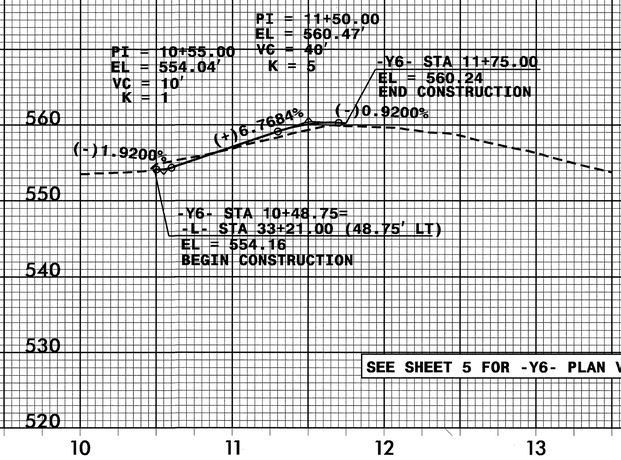
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
5-7-10

# -Y5- KINGSTON DR



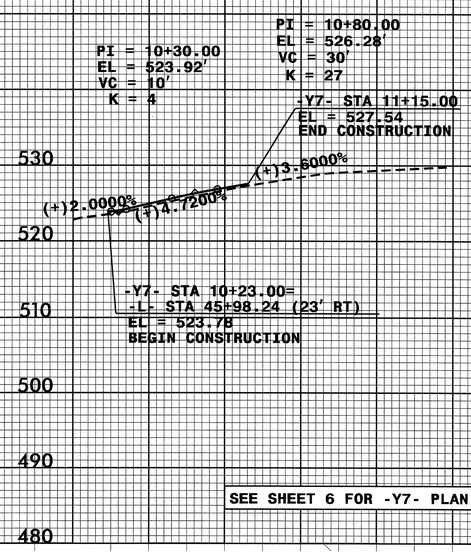

SEE SHEET 5 FOR -Y5- PLAN VIEW

# -Y6- VILCOM DR



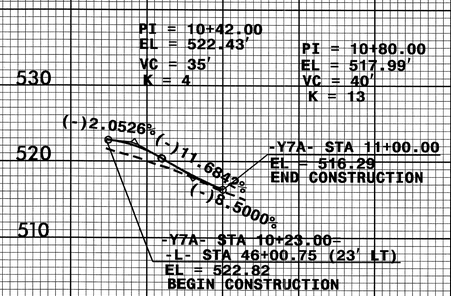

SEE SHEET 5 FOR -Y6- PLAN VIEW

# -Y7- TIMBERLYNE DR



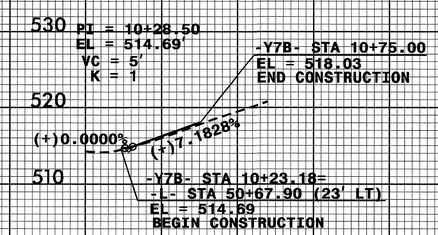

SEE SHEET 6 FOR -Y7- PLAN VIEW

# -Y7A- SCHULTZ ST




SEE SHEET 6 FOR -Y7A- PLAN VIEW

# -Y7B- WEATHERSTONE DR




SEE SHEET 7 FOR -Y7B- PLAN VIEW

5/28/99

ROW REVISION: ADDED GRADE AND PROFILE FOR -Y7D-. DJC 05/30/07

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 24 |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15405 ENGINEER JOHN C. LANSFORD

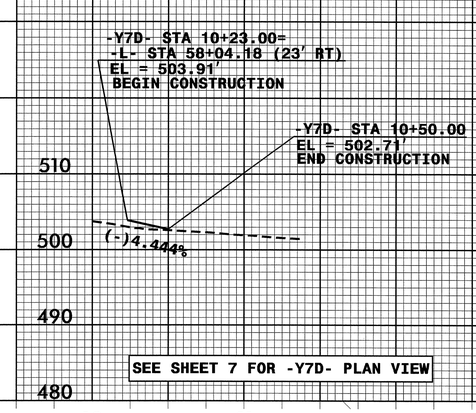
5/10/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN B. MORGAN

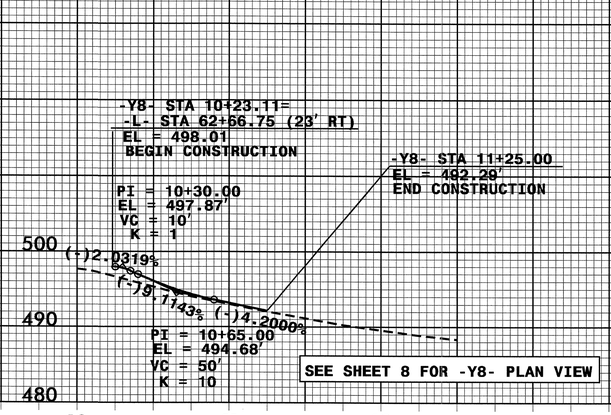
5-7-10

# -Y7D- CROSS CREEK DR



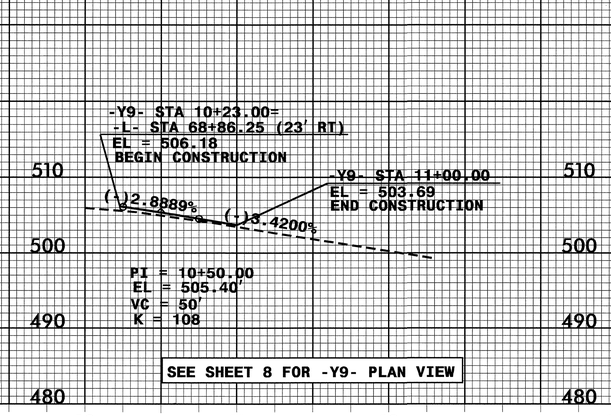

SEE SHEET 7 FOR -Y7D- PLAN VIEW

# -Y8- CEDAR HILLS DR



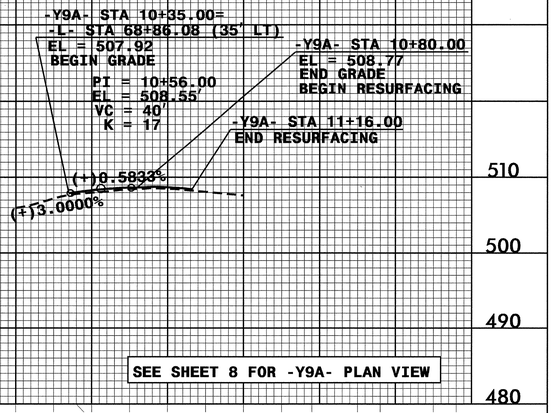

SEE SHEET 8 FOR -Y8- PLAN VIEW

# -Y9- SILO DR



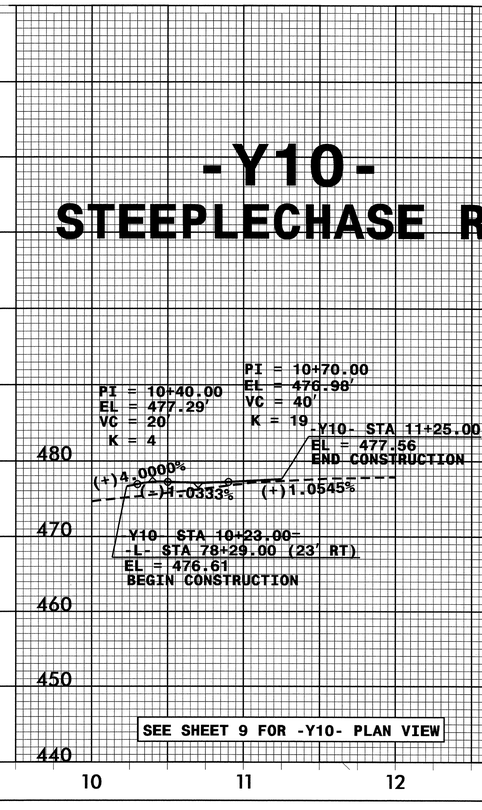

SEE SHEET 8 FOR -Y9- PLAN VIEW

# -Y9A-



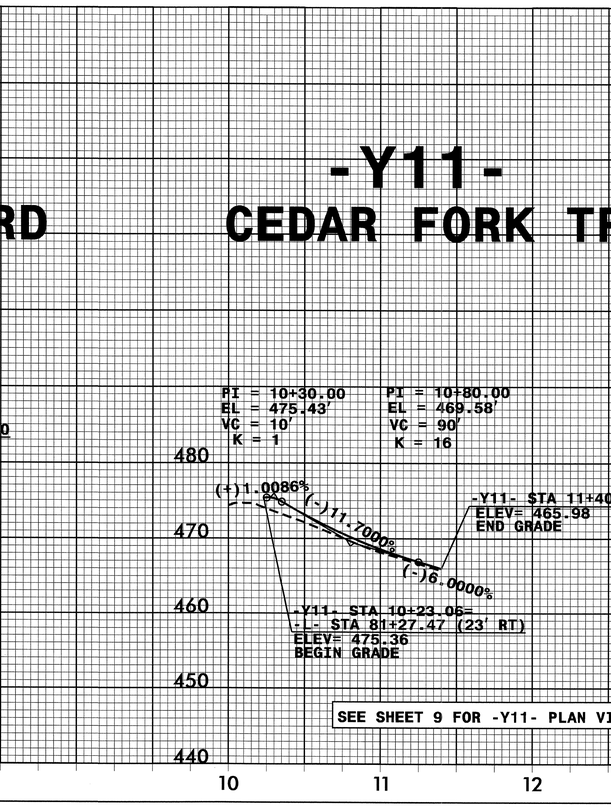

SEE SHEET 8 FOR -Y9A- PLAN VIEW

# -Y10- STEEPLECHASE RD



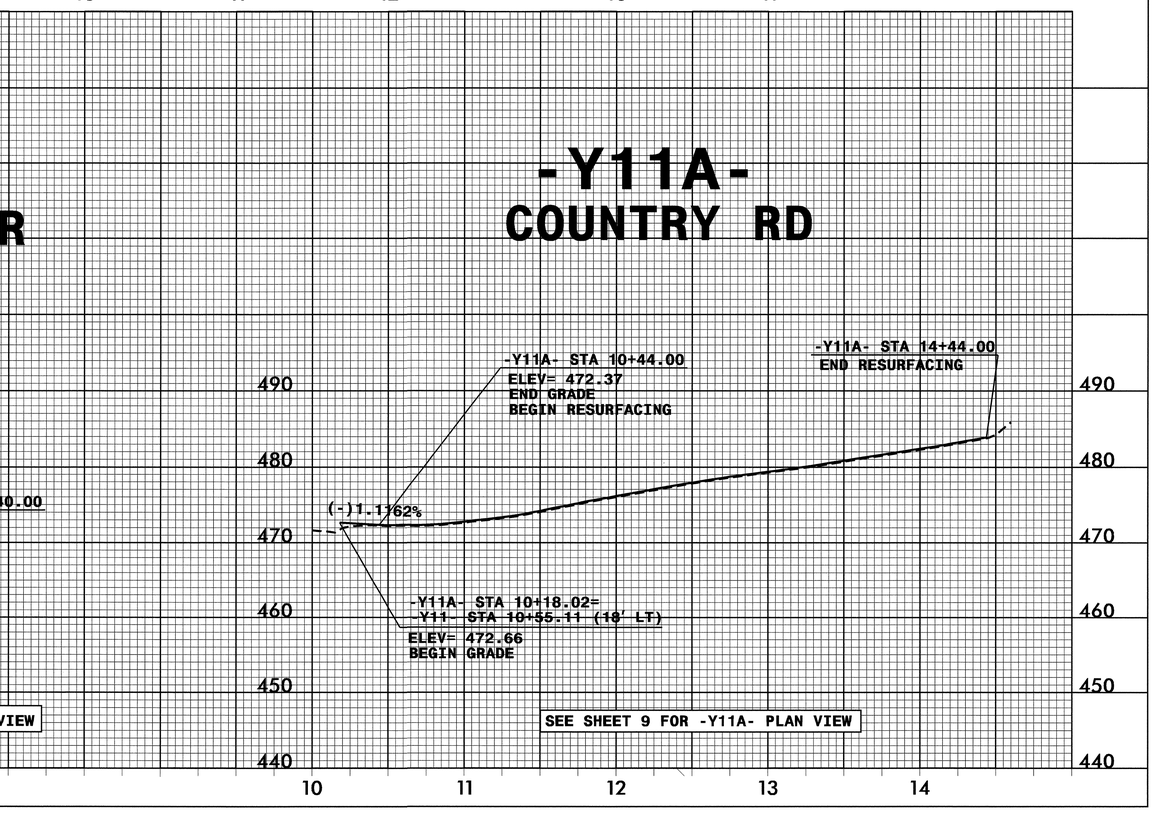

SEE SHEET 9 FOR -Y10- PLAN VIEW

# -Y11- CEDAR FORK TR




SEE SHEET 9 FOR -Y11- PLAN VIEW

# -Y11A- COUNTRY RD




SEE SHEET 9 FOR -Y11A- PLAN VIEW

5/28/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 25 |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19435 ENGINEER JOHN C. LANSFORD

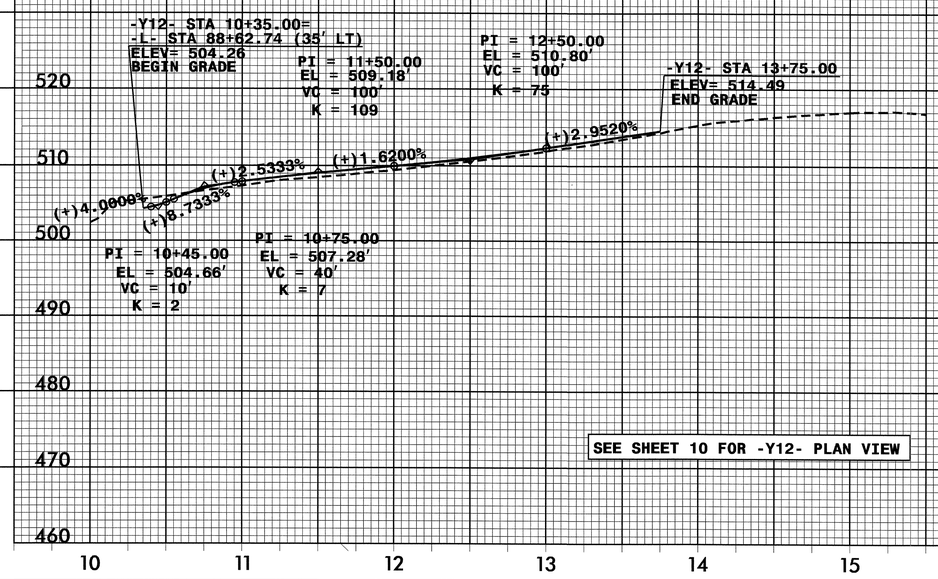
5/10/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

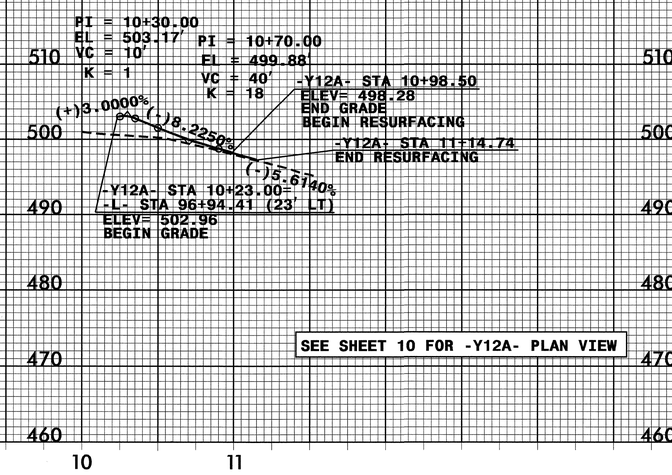
5/10/10

# -Y12- SUNRISE RD



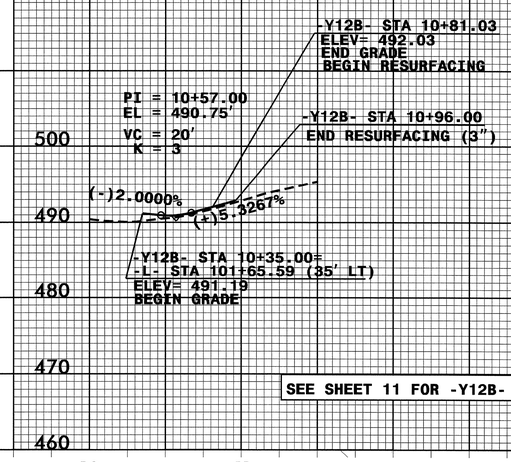

SEE SHEET 10 FOR -Y12- PLAN VIEW

# -Y12A-



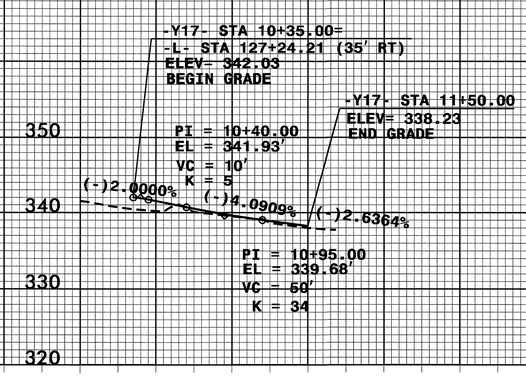

SEE SHEET 10 FOR -Y12A- PLAN VIEW

# -Y12B-




SEE SHEET 11 FOR -Y12B- PLAN VIEW

# -Y17- ARCADIA LN



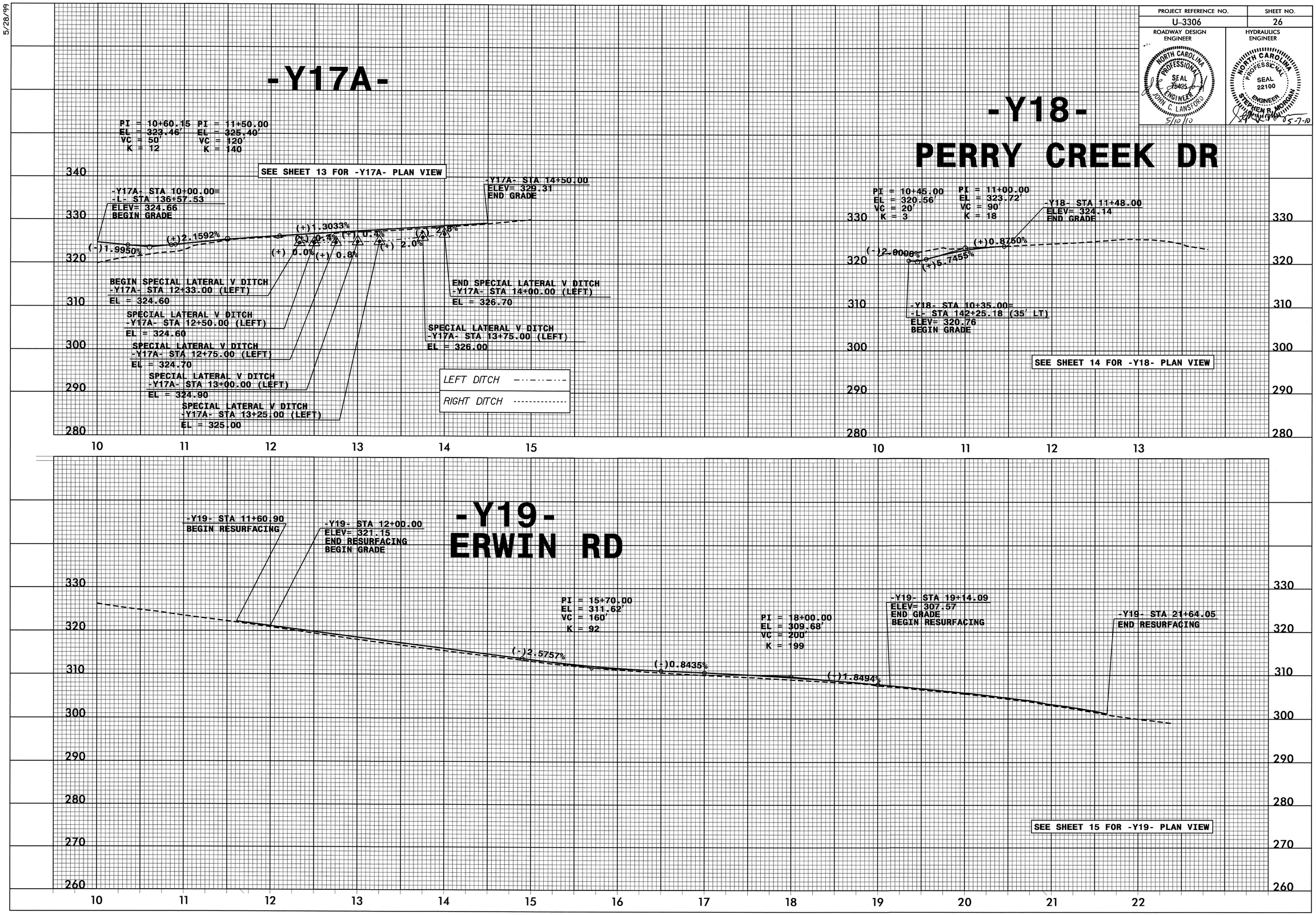

SEE SHEET 13 FOR -Y17- PLAN VIEW

5/28/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-3306 | 26 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

NORTH CAROLINA PROFESSIONAL SEAL 18405 ENGINEER JOHN C. LANSFORD 5/10/10

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 05-7-10




RD238344 4/15/2010 u3306_rdy_pfl_040129 jlansford RD-Oce860-34