

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HOKE COUNTY

LOCATION: PALMER ROAD EXTENSION FROM NC 211
AT SR 1149 TO NC 20 AT SR 1403

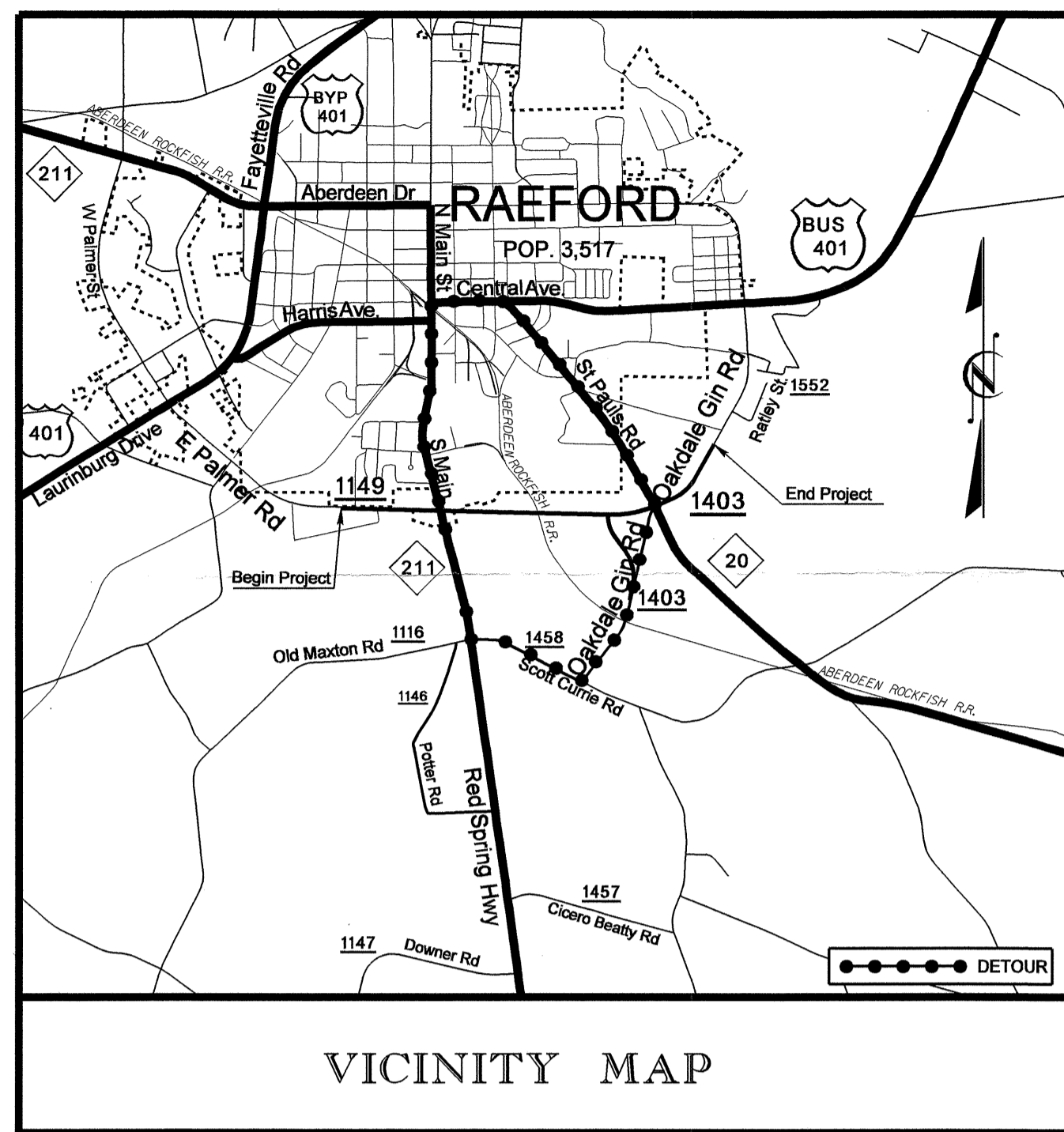
TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE AND SIGNALS

-L- STA. 87 + 50.00 END TIP PROJECT U-3816

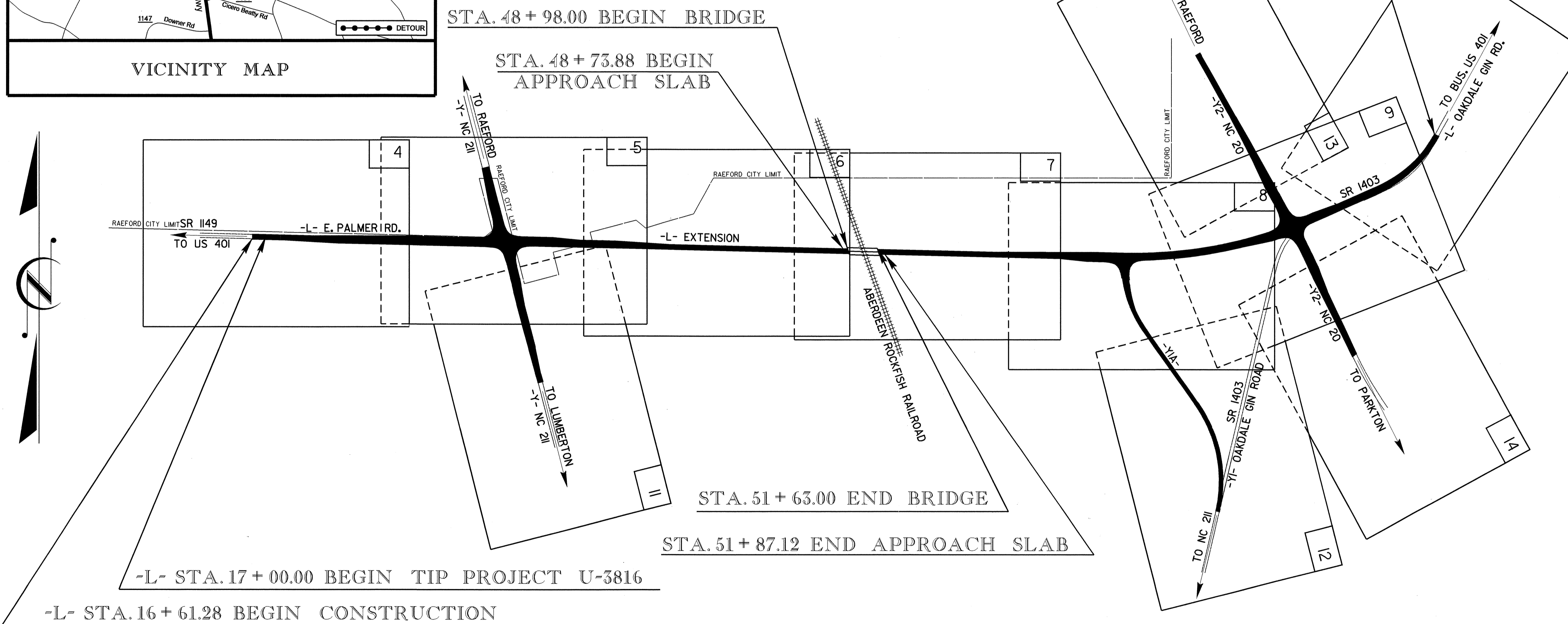
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3816	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34979.1.1	STP-0831 (2)	PE	
34979.2.2	STP-0831(2)	RW & UTIL	
34979.3.1	STP-0831(2)	CONST	

TIP PROJECT: U-3816

CONTRACT: C201738

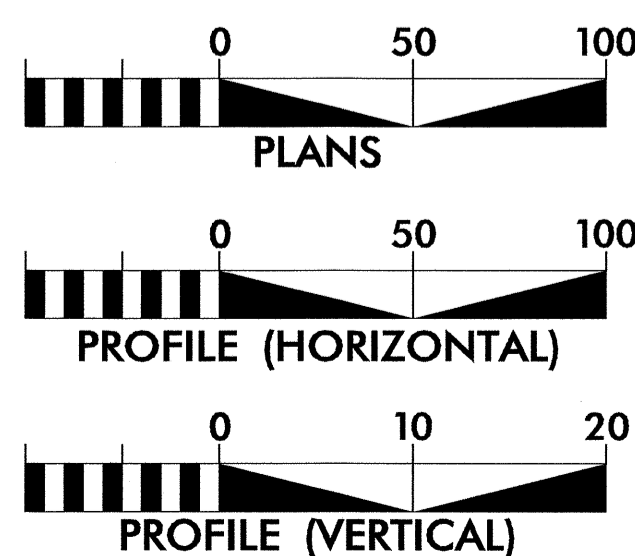


VICINITY MAP



-L- STA. 17 + 00.00 BEGIN TIP PROJECT U-3816
-L- STA. 16 + 61.28 BEGIN CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 8950
ADT 2025 = 15000
DHV = 14%
D = 60%
T = 6%
V = 50 MPH
TTST 2% DUAL 4%
FUNC CLASS =
RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-3816 = 1.285 MI
LENGTH OF STRUCTURE TIP PROJECT U-3816 = 0.050 MI
TOTAL LENGTH OF TIP PROJECT U-3816 = 1.335 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 21, 2006

LETTING DATE:
DECEMBER 18, 2007

G. E. BREW, PE
PROJECT ENGINEER

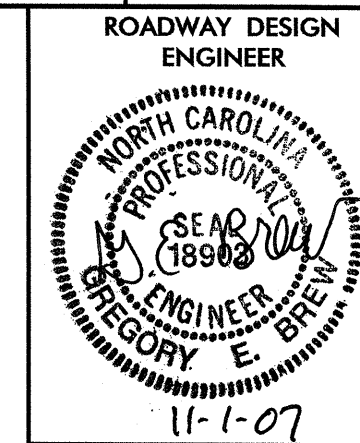
W. T. BEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

10/16/07
A.J. Miller
SIGNATURE
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18533
10/12/07
W. T. Best
SIGNATURE
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

cut m. miller
P.E.
STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED DIVISION ADMINISTRATOR DATE



INDEX OF SHEETS

SHEET NUMBER	SHEET
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1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-E	SURVEY CONTROL SHEETS
2 THRU 2-E	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAIL, AND MISCELLANEOUS DETAILS
2-F	DETAIL FOR ANCHORAGE FOR FRAMES - BRICK OR CONCRETE
2-G THRU 2-H	INTERSECTION DETAIL SHEET
2-I	CONCRETE JUNCTION BOX
2-J THRU 2-K	WITH 10" DIP LINE PASSING THRU REINFORCED SLOPE
3	SUMMARY OF QUANTITIES
3-A THRU 3-D	SUMMARY OF DRAINAGE SHEETS
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GENERAL NOTES

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING
 THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SUFRACING 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, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS

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

DRIVEWAYS:
 DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.03 AT LOCATION 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.

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

UTILITIES:
 UTILITY OWNERS ON THIS PROJECT ARE, PROGRESS ENERGY, EMBARQ, PIEDMONT NATURAL GAS, CITY OF RAEFORD, AND TIME WARNER CABLE.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. - DATED JULY 18, 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	METHOD OF CLEARING - METHOD II
225.02	GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT
DIVISION 3 - PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION - METHOD 'A'
310.10	DRIVEWAY PIPE CONSTRUCTION
DIVISION 4 - MAJOR STRUCTURES	
422.10	REINFORCED BRIDGE APPROACH FILLS
DIVISION 5 - SUBGRADE, BASE 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
838.33	REINFORCED CONCRETE ENDWALL - FOR SINGLE 66" PIPE 90 SKEW
838.45	NOTES FOR REINFORCED CONCRETE ENDWALL - STD. DWG. 838.21 THRU 838.40
838.63	REINFORCED BRICK ENDWALL - FOR SINGLE 66" PIPE 90 SKEW
838.75	NOTES FOR REINFORCED BRICK ENDWALL - STD. DWG. 838.21 THRU 838.40
838.80	PRECAST ENDWALLS - 12" THRU 72" PIPE 90 SKEW
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURE
840.01	BRICK CATCH BASIN - 12" THRU 54" PIPE
840.02	CONCRETE CATCH BASIN - 12" THRU 54" PIPE
840.03	FRAME, GRATE 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 FRAM AND GRATES - FOR USE WITH STD. DWG. 840.14 AND 840.15
840.18	CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.19	CONCRETE GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.24	FRAMES AND NARROW SLOT SAG GRATES
840.27	BRICK GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.28	BRICK GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.29	FRAMES AND NARROW SLOT FLAT GRATES
840.34	TRAFFIC BEARING JUNCTION BOX - FOR USE WITH PIPES 42" AND UNDER
840.45	PRECAST DRAINAGE STRUCTURE
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE
840.54	MANHOLE FRAME AND COVER
840.66	DRAINAGE STRUCTURE STEPS
840.71	CONCRETE AND BRICK PIPE PLUG
846.01	CONCRETE CURB, GUTTER AND CURB & GUTTER
846.04	DRAINAGE INSTALLATION IN SHOULDER BERM GUTTER
848.03	DRIVEWAY TURN - DROP CURB TYPE
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
862.03	STRUCTURE ANCHOR UNITS
876.01	RIP RAP IN CHANNELS
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS
876.04	DRAINAGE DITCHES WITH CLASS 'B' RIP RAP

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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	-x-x-x-
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	○
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ CSX TRANSPORTATION 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	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite Marker	○
Existing Control of Access	○
Proposed Control of Access	○
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	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○
Power Line Tower	□
Power Transformer	□
U/G Power Cable Hand Hole	□
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	□
U/G Telephone Cable Hand Hole	□
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

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

TV:

TV Satellite Dish	○
TV Pedestal	□
TV Tower	○
U/G TV Cable Hand Hole	□
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

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

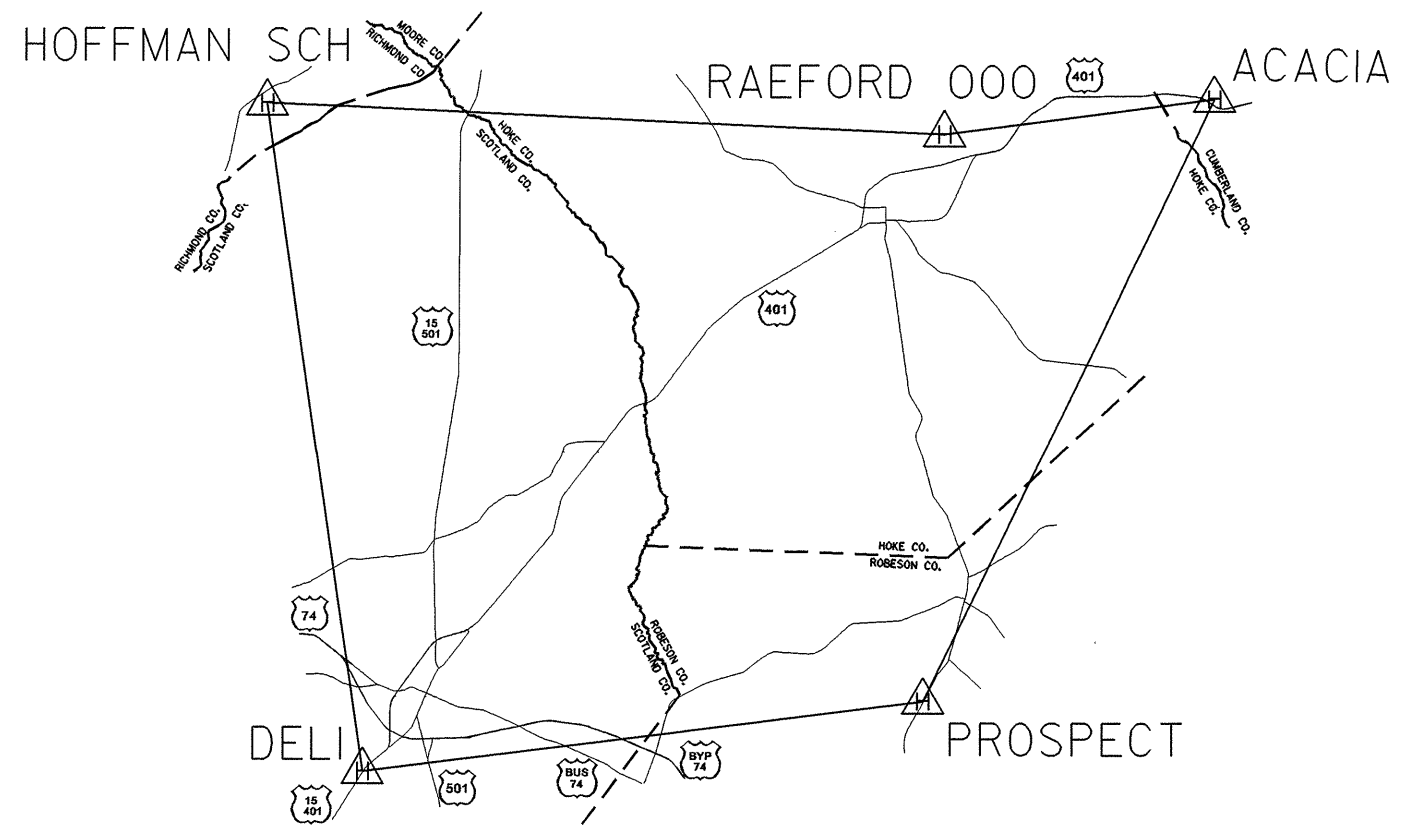
SANITARY SEWER:

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

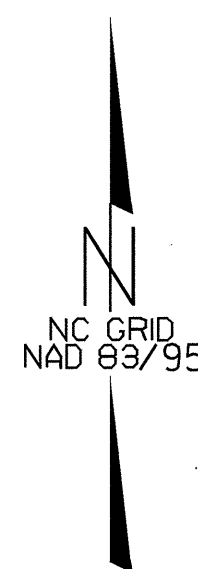
MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line	-----
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.

SURVEY CONTROL SHEET U-3816



GPS CONTROL NETWORK
NOT TO SCALE



NCDOT GPS STATION "U3816-3"
LOCALIZED PROJECT COORDINATES
N = 444975.9160
E = 1936382.9340

NCDOT GPS STATION "U3816-4"
LOCALIZED PROJECT COORDINATES
N = 444146.5010
E = 1936930.2300

NCDOT GPS STATION "U3816-1"
LOCALIZED PROJECT COORDINATES
N = 443231.1280
E = 1932962.948

NCDOT GPS STATION "U3816-2"
LOCALIZED PROJECT COORDINATES
N = 441697.6070
E = 1933363.9780

-L- STA. 17+00.00 BEGIN TIP PROJECT U-3816
LOCALIZED PROJECT COORDINATES
N = 442969.1165
E = 1931723.1692

-L- STA. 87+50.00 END TIP PROJECT U-3816
LOCALIZED PROJECT COORDINATES
N = 443765.5424
E = 1938450.4894

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "RAEFORD 000" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 460811.365(ft) EASTING: 1941839.587(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988427 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "RAEFORD 000" TO -L- STATION 17+00.00 IS S 29°33'10.46" W 20,510.675' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

- NOTES:**
1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO 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/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)
THE FILES TO BE FOUND ARE AS FOLLOWS:
U3816_LS_GPSCALIB_051110.HTML
U3816_LS_WGS84_051110.TXT
U3816_LS_LOCAL_051110.TXT
U3816_LS_CONTROL_051110.TXT
THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊙ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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SURVEY CONTROL SHEET U-3816

PROJECT REFERENCE NO.	SHEET NO.
U-3816	ID
Location and Surveys	

GPS CALIBRATION REPORT
PROJECT : U3816

TIP NUMBER U-3816
 USER NAME SCRANFORD DATE & TIME 4:39:05 PM
 11/8/2005
 COORDINATE SYSTEM US STATE PLANE ZONE NORTH CAROLINA
 1983(AT GROUND) NAD 1983 (CONUS) 3200
 HORIZONTAL DATUM GEOD MODEL GEOD99 (CONUS)
 VERTICAL DATUM
 COORDINATE UNITS US SURVEY FEET
 DISTANCE UNITS US SURVEY FEET
 HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION
 LOCALIZED AROUND
 LATITUDE 35°00'57.62474"N
 LONGITUDE 79°13'39.38702"W
 SITE SCALE FACTOR 1.0001157434
 HEIGHT 182.8365FT

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 433250.1355FT
 EASTING COORDINATE OF ROTATION CENTER 1921291.3565FT
 ROTATION ABOUT THE CENTER POINT 0°00'00"
 TRANSLATION NORTH 0.0055FT
 TRANSLATION EAST -0.0085FT
 SCALE FACTOR 1.00000009

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT 460811.3705FT
 EASTING COORDINATE OF ORIGIN POINT 1941839.5865FT
 VERTICAL SEPARATION AT ORIGIN -0.0275FT
 SLOPE NORTH 0.55PPM
 SLOPE EAST 0.056PPM

GEOD MODEL DEFINITION
 GEOD99 (CONUS)

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY			
	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.0165FT	0.003	HOFFMAN SCH GPS
VERTICAL	0.0305FT	0.015	PROSPECT GPS
THREE-DIMENSIONAL	0.0305FT	0.015	

WGS84 COORDINATES		POINT RESIDUALS CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	RAEFORD 000 GPS	NORTHING	460811.3705FT	POINT	RAEFORD 000
LATITUDE	35°00'57.62474"N	EASTING	1941839.5865FT	NORTHING	460811.3655FT
LONGITUDE	79°13'39.38702"W	ELEVATION	249.975FT	EASTING	1941839.5875FT
HEIGHT	182.8095FT	HORZ ERROR	0.0055FT	ELEVATION	249.0265FT
		VERT ERROR	0.0275FT	UTILIZED	HORZ AND VERT
		3D ERROR	0.0275FT	QUALITY CONTROL	QUALITY
POINT	ACACIA GPS	NORTHING	466066.8775FT	POINT	ACACIA
LATITUDE	35°01'50.12720"N	EASTING	1984263.7975FT	NORTHING	466066.8875FT
LONGITUDE	79°03'09.30117"W	ELEVATION	221.1065FT	EASTING	1984263.7895FT
HEIGHT	112.7245FT	HORZ ERROR	0.0135FT	ELEVATION	221.1645FT
		VERT ERROR	0.0575FT	UTILIZED	HORZ AND VERT
		3D ERROR	0.0585FT	QUALITY CONTROL	QUALITY
POINT	PROSPECT GPS	NORTHING	372019.2795FT	POINT	PROSPECT
LATITUDE	34°46'19.34203"N	EASTING	1938868.3335FT	NORTHING	372019.2755FT
LONGITUDE	79°12'12.83922"W	ELEVATION	197.0125FT	EASTING	1938868.3245FT
HEIGHT	88.8035FT	HORZ ERROR	0.0095FT	ELEVATION	196.2255FT
		VERT ERROR	0.0905FT	UTILIZED	HORZ AND VERT
		3D ERROR	0.0905FT	QUALITY CONTROL	QUALITY
POINT	DELI GPS	NORTHING	360956.6765FT	POINT	DELI
LATITUDE	34°44'26.86075"N	EASTING	1850981.1335FT	NORTHING	360956.6625FT
LONGITUDE	79°29'45.62981"W	ELEVATION	218.3295FT	EASTING	1850981.1345FT
HEIGHT	112.3695FT	HORZ ERROR	0.0145FT	ELEVATION	218.4155FT
		VERT ERROR	0.0865FT	UTILIZED	HORZ AND VERT
		3D ERROR	0.0875FT	QUALITY CONTROL	QUALITY
POINT	HOFFMAN SCH GPS	NORTHING	465345.9095FT	POINT	HOFFMAN SCH
LATITUDE	35°01'38.56325"N	EASTING	1836029.1985FT	NORTHING	465345.9205FT
LONGITUDE	79°32'51.68192"W	ELEVATION	417.6875FT	EASTING	1836029.2105FT
HEIGHT	313.6215FT	HORZ ERROR	0.0165FT	ELEVATION	417.6405FT
		VERT ERROR	0.0475FT	UTILIZED	HORZ AND VERT
		3D ERROR	0.0505FT	QUALITY CONTROL	QUALITY
POINT	U3816-1 GPS	NORTHING	443231.1285FT	POINT	U3816-1
LATITUDE	34°58'03.56854"N	EASTING	1932962.9415FT	NORTHING	443231.1275FT
LONGITUDE	79°13'25.54854"W	ELEVATION	242.7925FT	EASTING	1932962.9475FT
HEIGHT	135.5655FT	HORZ ERROR	0.0065FT	ELEVATION	242.7935FT
		VERT ERROR	0.0115FT	UTILIZED	HORZ AND VERT
		3D ERROR	0.0065FT	QUALITY ADJUSTED	QUALITY

POINT U3816-2 GPS
 LATITUDE 34°57'48.99777"N
 LONGITUDE 79°13'28.88872"W
 HEIGHT 135.4885FT
 NORTHING 441697.6055FT
 EASTING 1933363.9785FT
 ELEVATION 242.7505FT
 HORZ ERROR 0.0055FT
 VERT ERROR 0.0085FT
 3D ERROR 0.0095FT
 POINT U3816-2
 NORTHING 441697.6085FT
 EASTING 1933363.9795FT
 ELEVATION 242.7455FT
 UTILIZED HORZ AND VERT
 QUALITY ADJUSTED QUALITY

POINT U3816-3 GPS
 LATITUDE 34°58'20.89011"N
 LONGITUDE 79°12'44.80133"W
 HEIGHT 141.9245FT
 NORTHING 444975.9175FT
 EASTING 1936382.9365FT
 ELEVATION 249.2215FT
 HORZ ERROR 0.0045FT
 VERT ERROR 0.0125FT
 3D ERROR 0.0135FT
 POINT U3816-3
 NORTHING 444975.9155FT
 EASTING 1936382.9385FT
 ELEVATION 249.2085FT
 UTILIZED HORZ AND VERT
 QUALITY ADJUSTED QUALITY

POINT U3816-4 GPS
 LATITUDE 34°58'12.69810"N
 LONGITUDE 79°12'37.90997"W
 HEIGHT 141.2835FT
 NORTHING 444146.5015FT
 EASTING 1936930.2335FT
 ELEVATION 249.6085FT
 HORZ ERROR 0.0055FT
 VERT ERROR 0.0165FT
 3D ERROR 0.0175FT
 POINT U3816-4
 NORTHING 444146.5015FT
 EASTING 1936930.2285FT
 ELEVATION 248.6935FT
 UTILIZED HORZ AND VERT
 QUALITY ADJUSTED QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "RAEFORD 000" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 460811.365(ft) EASTING: 1941839.587(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988427 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "RAEFORD 000" TO -L- STATION 17+00.00 IS S 29°33'10.46" W 205.10675' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

- 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.
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTP://WWW.DOHDOT.STATE.NC.US/PRECONSTRUCTION/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruction/highway/location/project/) THE FILES TO BE FOUND ARE AS FOLLOWS:
 U3816.LS.GPSCALIB.05110.HTML
 U3816.LS.WGS84.05110.TXT
 U3816.LS.LOCAL.05110.TXT
 U3816.LS.CONTROL.05110.TXT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET U-3816

PROJECT REFERENCE NO.	SHEET NO.
U-3816	1E
Location and Surveys	

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	442970.6830	1931024.1310	245.79	10+01.12	14.97 RT
102	BL-102	442976.6680	1932112.4660	243.81	20+09.01	16.76 LT
103	BL-103	442935.8280	1933097.1360	242.42	30+74.37	0.78 RT
104	BL-104	442913.9090	1933687.2870	241.87	36+64.87	8.73 RT
105	BL-105	442901.8730	1934003.5600	241.80	39+01.34	13.29 RT
106	BL-106	442877.0260	1934646.5340	238.78	46+24.73	22.92 RT
107	BL-107	442866.2300	1934924.9740	234.42	49+03.34	27.12 RT
108	BL-108	442856.2250	1935136.2770	234.40	51+14.82	32.13 RT
109	BL-109	442838.0540	1935571.4280	236.85	55+50.28	39.99 RT
110	BL-110	443027.0810	1937492.7450	248.90	74+05.26	14.75 LT
111	BL-111	443335.6410	1938202.6350	246.33	82+62.11	43.47 RT
112	BL-112	444332.8010	1938745.4440	244.06		OUTSIDE PROJECT LIMITS

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
113	BY1-113	444394.2060	1932739.8070	243.00		OUTSIDE PROJECT LIMITS
1	U3816-1	443231.1280	1932962.9480	242.79	20+25.97	33.83 RT
103	BL-103	442935.8280	1933097.1360	242.42	23+45.34	23.63 LT
2	U3816-2	441697.6070	1933363.9780	242.75	36+11.04	25.32 RT

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	RAILROAD STATION	OFFSET
114	BY2-114	443702.4600	1934544.3210	243.87	10+02.53	14.88 RT
115	BY2-115	443326.8360	1934881.0810	235.57	15+05.61	11.17 LT
108	BL-108	442856.2250	1935136.2770	234.40	20+36.69	30.11 LT
116	BY2-116	442722.6440	1935131.1870	233.39	21+63.32	11.74 RT
119	BY2-119	442130.0170	1935321.6410	237.95	27+84.76	18.46 RT
120	BY2-120	441924.8420	1935442.6930	237.54	30+21.55	9.60 RT

BY3 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
4	U3816-4	444146.5010	1936930.2300	248.59		OUTSIDE PROJECT LIMITS
110	BL-110	443027.0810	1937492.7450	248.90	21+04.33	26.93 RT
117	BY3-117	442801.3520	1938021.7950	243.49	32+56.90	28.05 RT

BY4 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
110	BL-110	443027.0810	1937492.7450	248.90	29+95.38	39.37 LT
118	BY4-118	441085.8310	1936998.3530	247.92		OUTSIDE PROJECT LIMITS

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.....
BM #1 ELEVATION = 242.72
N 442659 E 1933086
Y STATION 26+11 56 RIGHT
RR SPIKE IN BASE OF POWER POLE
.....
BM #2 ELEVATION = 231.85
N 442688 E 1935110
RAILROAD STATION 21+91 41 RIGHT
RR SPIKE IN BASE OF 24" OAK TREE
.....
BM #3 ELEVATION = 249.38
N 443147 E 1937265
L STATION 73+09 201 LEFT
RR SPIKE IN BASE OF POWER POLE
.....
    
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DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "RAEFORD 000" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 460811.365(ft) EASTING: 1941839.587(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988427 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "RAEFORD 000" TO -L- STATION 17+00.00 IS S 29°33'10.46" W 20,510.675' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO 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/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 U3816_LS_GPSCALIB_061110.HTML
 U3816_LS_WGS84_061110.TXT
 U3816_LS_LOCAL_061110.TXT
 U3816_LS_CONTROL_061110.TXT
 THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- © INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION.
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

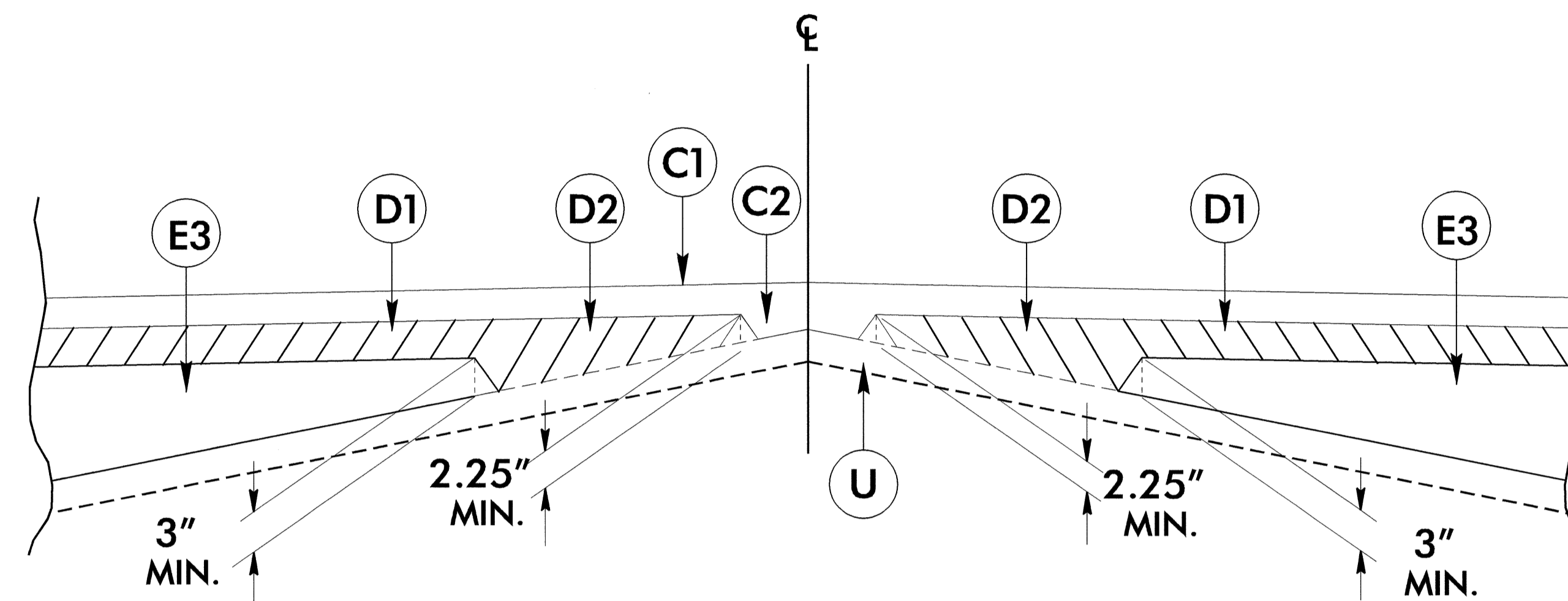
NOTE: DRAWING NOT TO SCALE

6/2/09

PROJECT REFERENCE NO. U-3816	SHEET NO. 2
ROADWAY DESIGN ENGINEER GREGORY E. BREW 10-12-07	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON 10/1/07

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
J2	PROP. 8" AGGREGATE BASE COURSE.
R1	PROP. 2'6" CONCRETE CURB & GUTTER
R2	PROP. CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

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



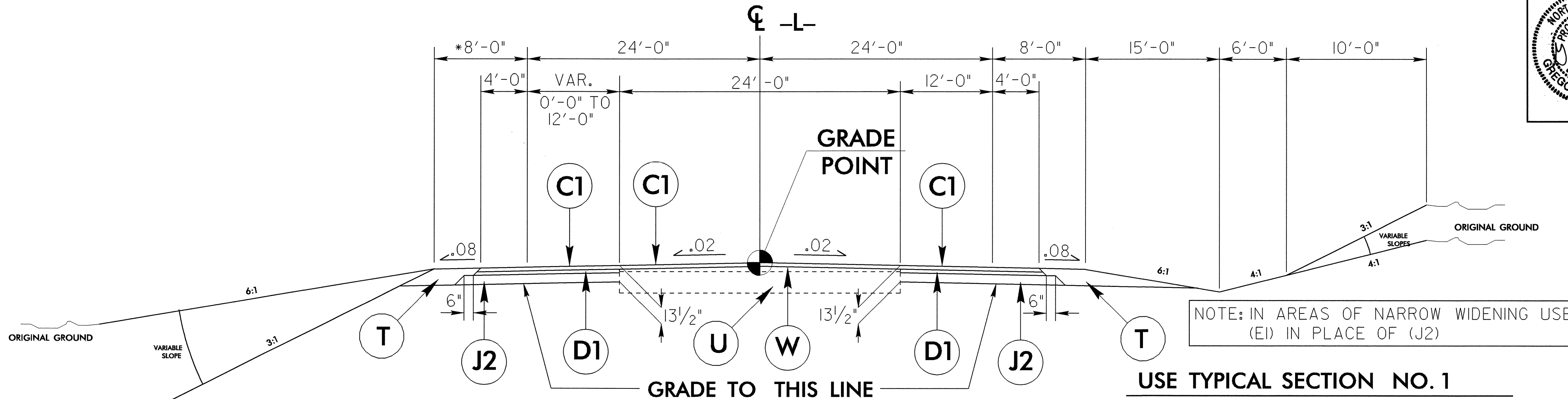
Detail Showing Method of Wedging

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6/2/99

C1	PROP. APPROX. 3" S9.5B
D1	PROP. APPROX. 2 1/2" TYPE I19.0B
E1	PROP. APPROX. 4" B25.0B
E3	PROP. VARIABLE DEPTH B25.0B
J2	PROP. 8" AGGREGATE BASE COURSE
J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE
R1	PROP. 2'6" CONCRETE CURB & GUTTER
R2	PROP. CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

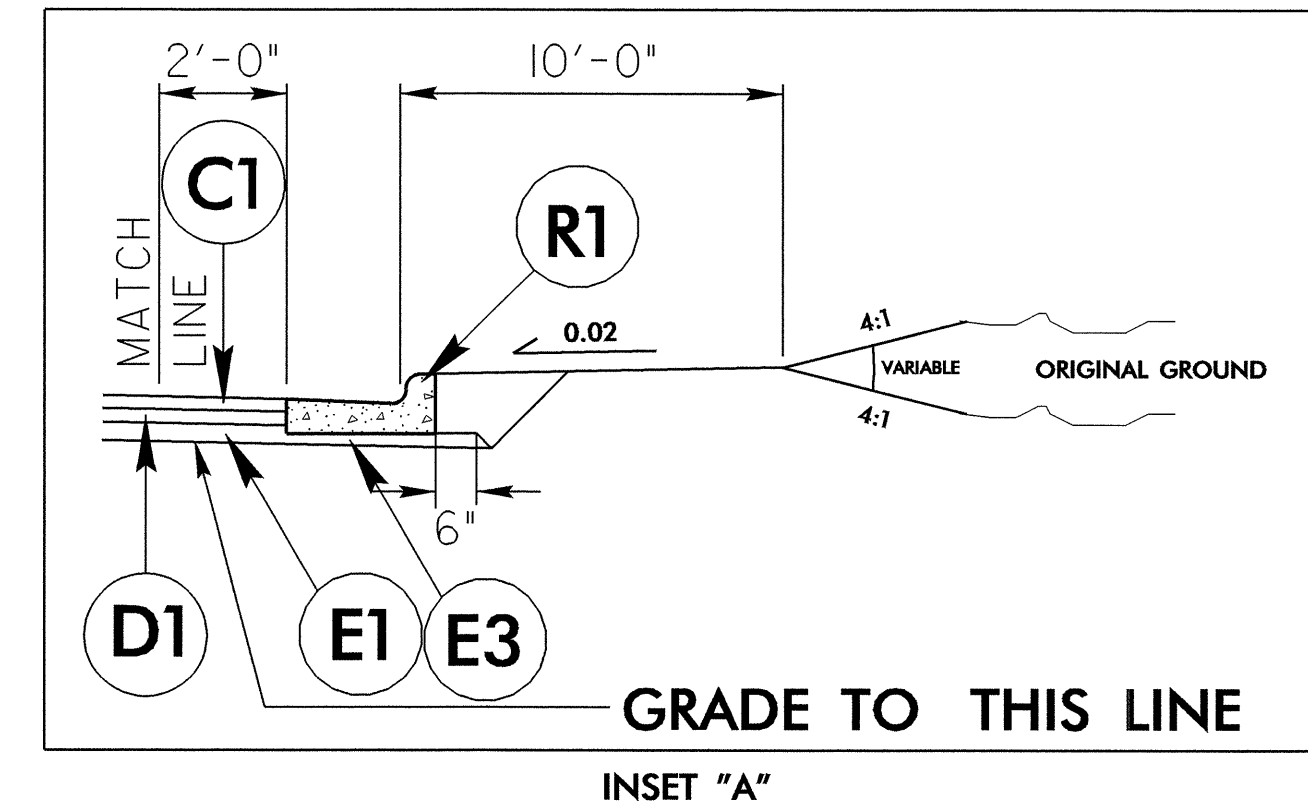
PROJECT REFERENCE NO. U-3816	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER GREGORY E. BREW SEAL 18903 10/12/07	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON SEAL 22896 10/11/07



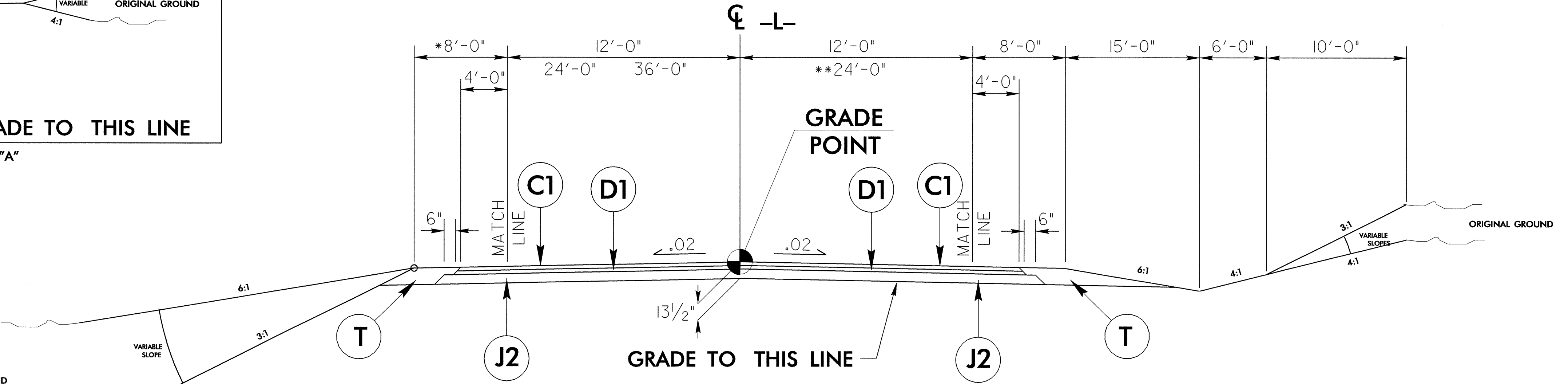
NOTE: IN AREAS OF NARROW WIDENING USE (E1) IN PLACE OF (J2)

TYPICAL SECTION NO. 1

- USE TYPICAL SECTION NO. 1**
- L- STA. 16+61.28 TO STA. 29+39.65 LT. SIDE OF ROADWAY
 - L- STA. 16+61.28 TO STA. 21+10.87, OVERLAY EXISTING PAVEMENT RT. SIDE OF ROADWAY
 - L- STA. 21+10.87 TO STA. 29+39.65 RT. SIDE OF ROADWAY

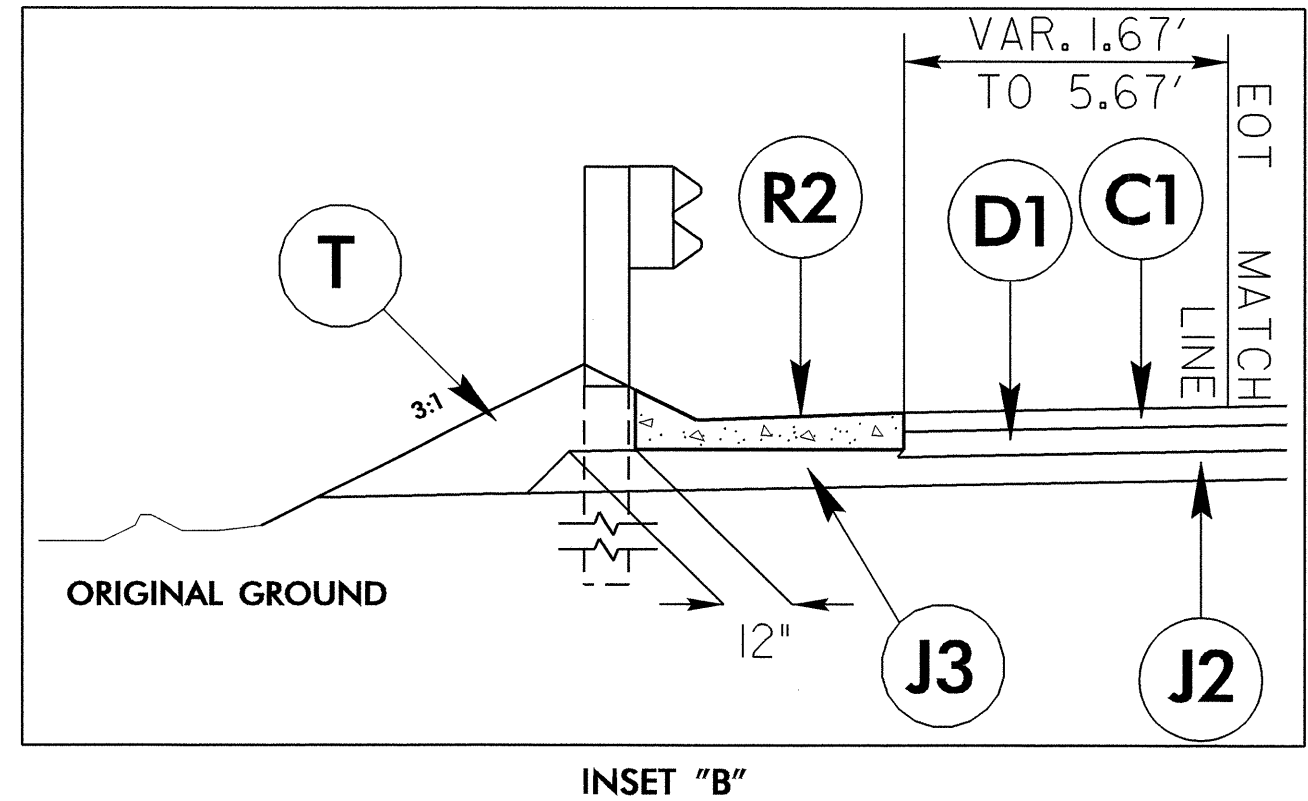


USE INSERT 'A' IN CONJUNCTION WITH TYPICAL SECTION NO. 1
-L- RT. SIDE STA. 21+10.87 TO STA. 29+39.59



TYPICAL SECTION NO. 2

- USE TYPICAL SECTION NO. 2**
- L- STA. 30+80.77 TO STA. 35+41.66 LT. SIDE OF ROADWAY USE 36'-0" PAVEMENT WIDTH
 - L- STA. 35+41.66 TO STA. 36+91.66 LT. SIDE OF ROADWAY TRANSITION FROM 36'-0" TO 24'-0" PAVEMENT WIDTH
 - L- STA. 36+91.66 TO STA. 38+00.00 LT. SIDE OF ROADWAY USE 24'-0" PAVEMENT WIDTH
 - L- STA. 38+00.00 TO STA. 44+00.00 LT. SIDE OF ROADWAY TRANSITION FROM 24'-0" TO 12'-0" PAVEMENT WIDTH
 - L- STA. 30+80.77 TO STA. 48+98.00 (BEGIN BRIDGE) RT. SIDE OF ROADWAY
 - L- STA. 51+63.00 (END BRIDGE) TO STA. 58+00.00 LT. SIDE OF ROADWAY
 - L- STA. 58+00.00 TO STA. 64+00.00 LT. SIDE OF ROADWAY TRANSITION FROM 12'-0" TO 24'-0" PAVEMENT WIDTH
 - L- STA. 64+00.00 TO STA. 74+88.00 LT. SIDE OF ROADWAY USE 24'-0" PAVEMENT WIDTH
 - L- STA. 51+63.00 (END BRIDGE) TO STA. 68+63.29 RT. SIDE OF ROADWAY
 - L- STA. 68+63.29 TO STA. 70+13.29 RT. SIDE OF ROADWAY TRANSITION FROM 12'-0" TO 24'-0" PAVEMENT WIDTH
 - L- STA. 70+13.29 TO STA. 74+88.00 LT. SIDE OF ROADWAY USE 24'-0" PAVEMENT WIDTH
 - L- STA. 79+35.00 TO STA. 85+50.00



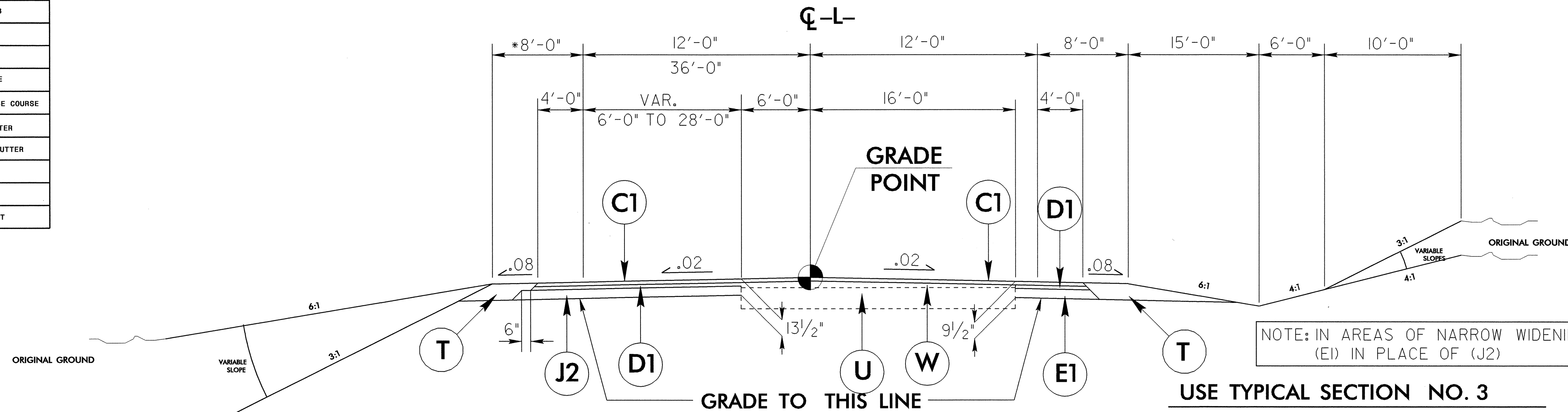
USE INSERT 'B' IN CONJUNCTION WITH TYPICAL SECTION NO. 2
-L- LT. SIDE STA. 44+96.97 TO STA. 48+67.86
-L- RT. SIDE STA. 45+47.00 TO STA. 48+79.66
-L- LT. SIDE STA. 51+81.33 TO STA. 56+55.00
-L- RT. SIDE STA. 51+92.45 TO STA. 56+03.74

08-OCT-2007 15:38 2816-r.dj - ttyp.dgn

6/2/09

C1	PROP. APPROX. 3" S9.5B
D1	PROP. APPROX. 2 1/2" TYPE I19.0B
E1	PROP. APPROX. 4" B25.0B
E3	PROP. VARIABLE DEPTH B25.0B
J2	PROP. 8" AGGREGATE BASE COURSE
J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE
R1	PROP. 2'6" CONCRETE CURB & GUTTER
R2	PROP. CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

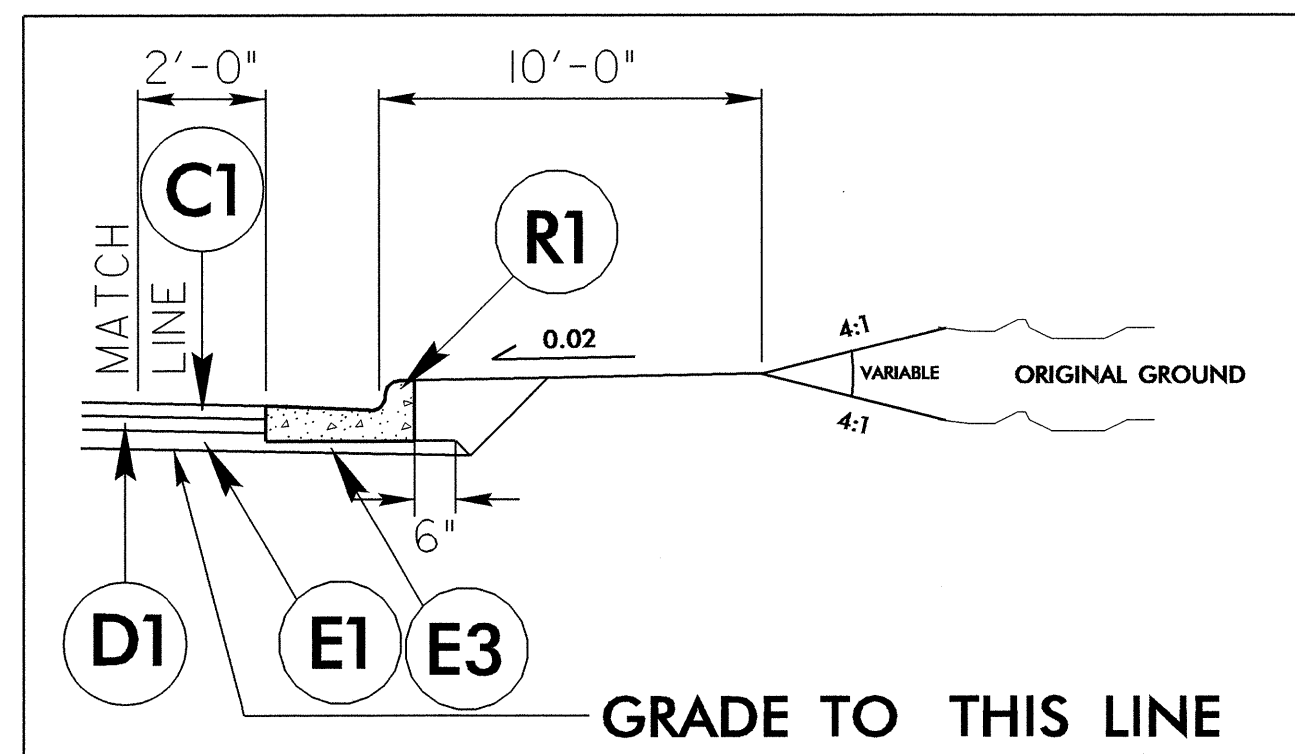
PROJECT REFERENCE NO. U-3816	SHEET NO. 2-B
ROADWAY DESIGN ENGINEER GREGORY E. BREW	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

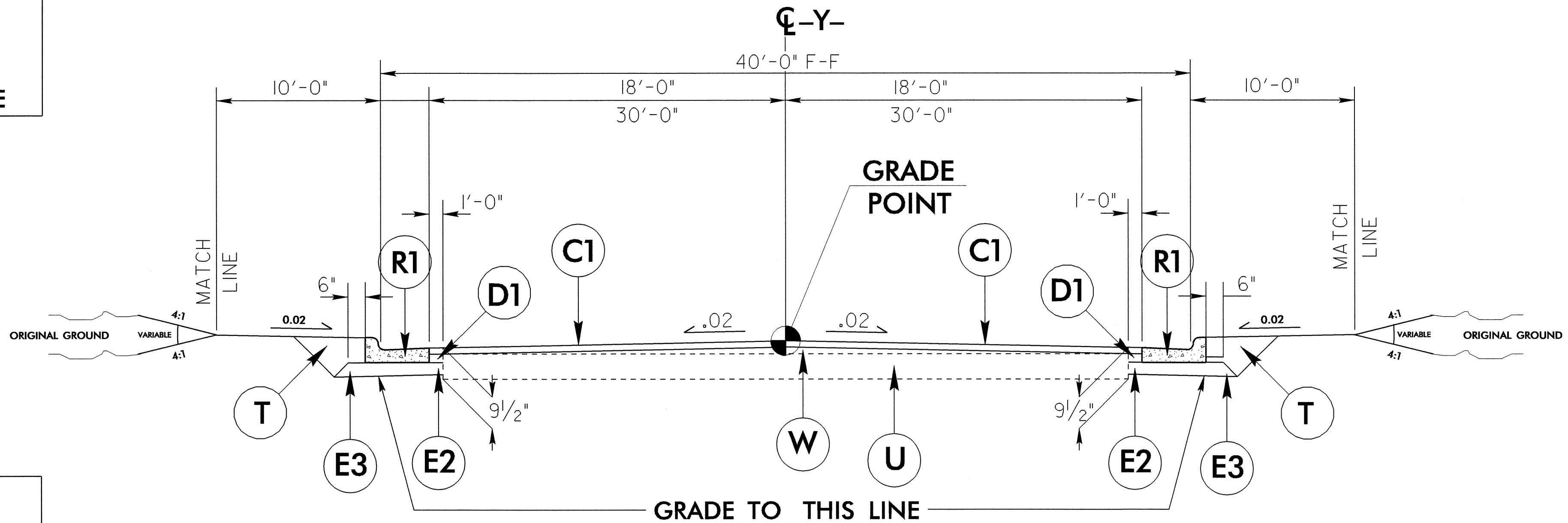
- L- STA. 70+13.29 TO STA. 79+50.00 LT. SIDE OF ROADWAY USE 36'-0" PAVEMENT WIDTH
- L- STA. 79+50 TO STA. 85+50.00 LT. SIDE OF ROADWAY TRANSITION FROM 36'-0" TO 12'-0" PAVEMENT WIDTH
- L- STA. 85+50 TO STA. 87+50.00 LT. SIDE OF ROADWAY
- L- STA. 70+13.29 TO STA. 87+50.00 RT. SIDE OF ROADWAY



INSET "A"

USE INSERT 'A' IN CONJUNCTION WITH TYPICAL SECTION NO. 3

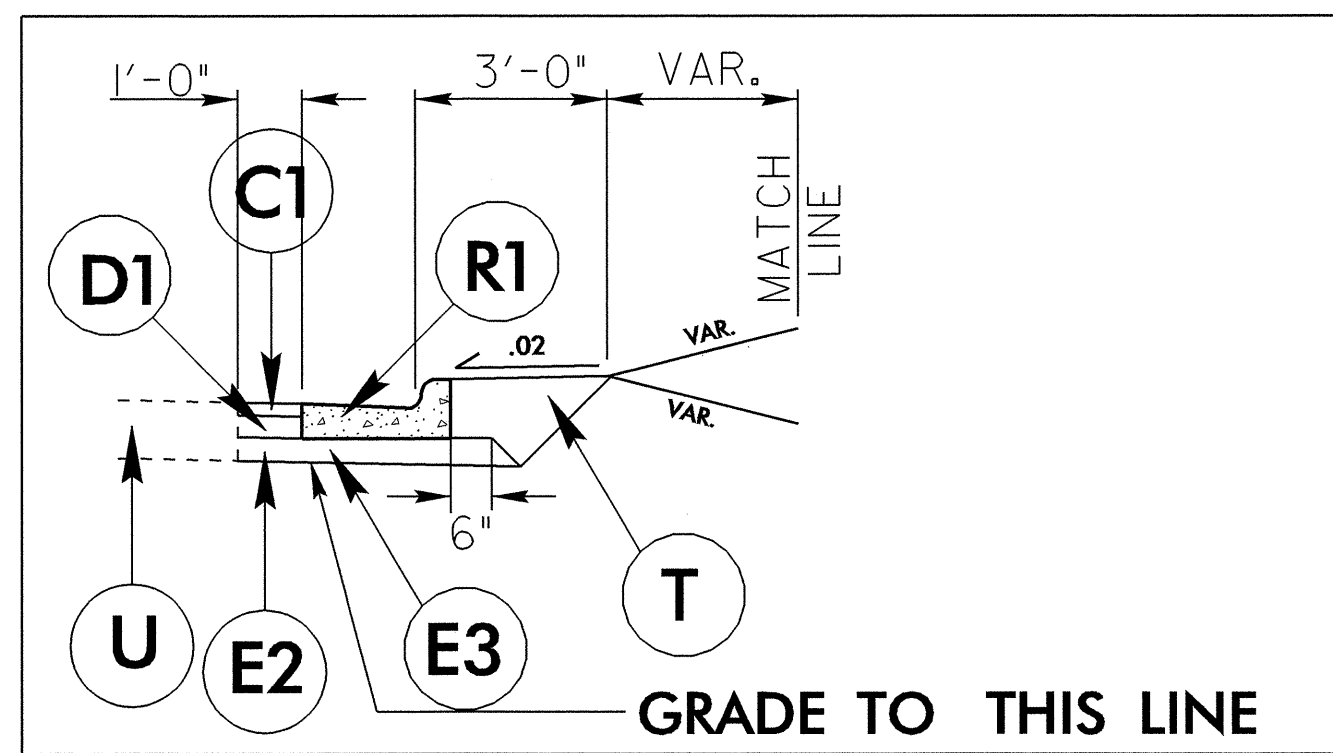
- L- RT. SIDE STA. 76+02.89 TO STA. 79+45.87



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

- Y- RT. STA. 18+84.37 TO STA. 20+00.00, USE 30' PAVEMENT WIDTH
- Y- RT. STA. 24+06.52 TO STA. 26+17.47
- Y- LT. STA. 18+23.42 TO STA. 22+04.63
- Y- LT. STA. 24+32.41 TO STA. 28+46.89, USE 30' PAVEMENT WIDTH



INSET "C"

USE INSERT 'C' IN CONJUNCTION WITH TYPICAL SECTION NO. 4

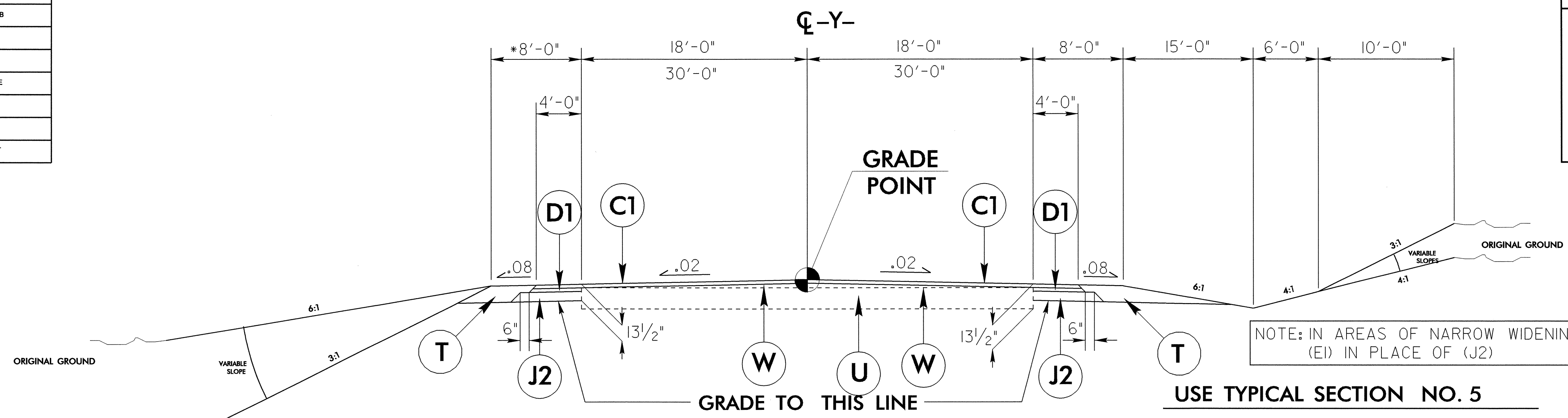
- Y- RT. STA. 18+20.38 TO STA. 20+00.00
- Y- RT. STA. 24+06.52 TO STA. 26+17.47
- Y- LT. STA. 18+52.51 TO STA. 21+60.83
- Y- LT. STA. 24+57.48 TO STA. 28+46.89

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\$\$\$\$\$USER\$\$\$\$\$

6/2/09

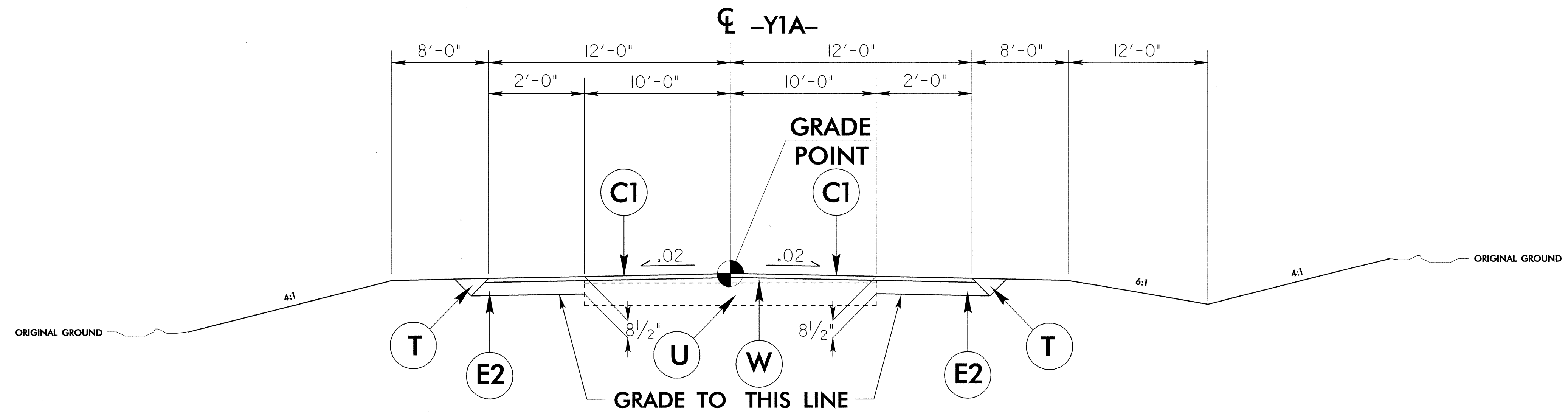
C1	PROP. APPROX. 3" 99.5B
D1	PROP. APPROX. 2 1/2" TYPE I19.0B
E1	PROP. APPROX. 4" B25.0B
E2	PROP. APPROX. 5 1/2" B25.0B
J2	PROP. 8" AGGREGATE BASE COURSE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

PROJECT REFERENCE NO. U-3816	SHEET NO. 2-C
ROADWAY DESIGN ENGINEER GREGORY E. BROWN 10/12/07	PAVEMENT DESIGN ENGINEER CLAYTON S. MORRISON 10/16/07



TYPICAL SECTION NO. 5

- USE TYPICAL SECTION NO. 5**
- Y- STA. 16+70.00 TO STA. 17+34.37
 - Y- RT. STA. 17+34.37 TO STA. 18+84.37, TRANSITION FROM TYP. SECT. NO. 5 TO TYP. SECT. NO. 4, USE 30' PAVEMENT WIDTH
 - Y- RT. STA. 20+00.00 TO STA. 21+84.37, USE 30' PAVEMENT WIDTH
 - Y- RT. STA. 26+17.47 TO STA. 31+00.00
 - Y- LT. STA. 28+46.89 TO STA. 28+79.91, USE 30' PAVEMENT WIDTH
 - Y- LT. STA. 28+79.91 TO STA. 30+20.91, TRANSITION FROM 30' TO 18' PAVEMENT WIDTH
 - Y- LT. STA. 30+20.91 TO STA. 31+00.00
 - Y- STA. 31+00.00 TO STA. 34+00.00, TRANSITION FROM TYP. SECT. NO. 5 TO EXISTING




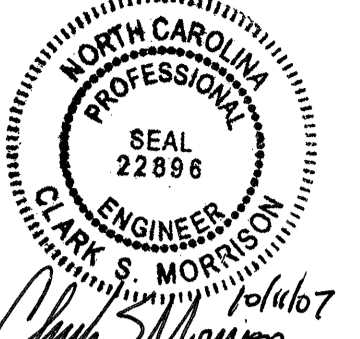
TYPICAL SECTION NO. 6

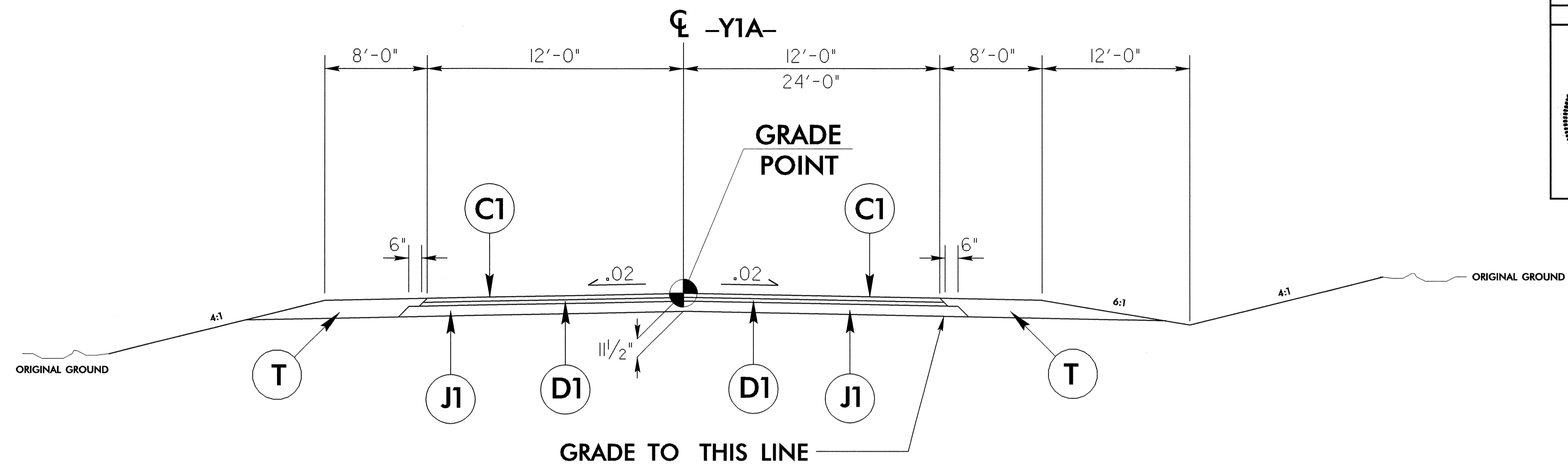
- USE TYPICAL SECTION NO. 6**
- Y1A- STA. 10+00.00 TO 12+41.75
 - Y1A- STA. 12+41.75 TO STA. 14+46.50, TRANSITION FROM TYP. SECT. NO. 6 TO TYP. SECT. NO. 7

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6/2/09

C1	PROP. APPROX. 3" 89.58
D1	PROP. APPROX. 2 1/2" TYPE 119.08
E2	PROP. APPROX. 5 1/2" B25.08
J1	PROP. 6" AGGREGATE BASE COURSE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

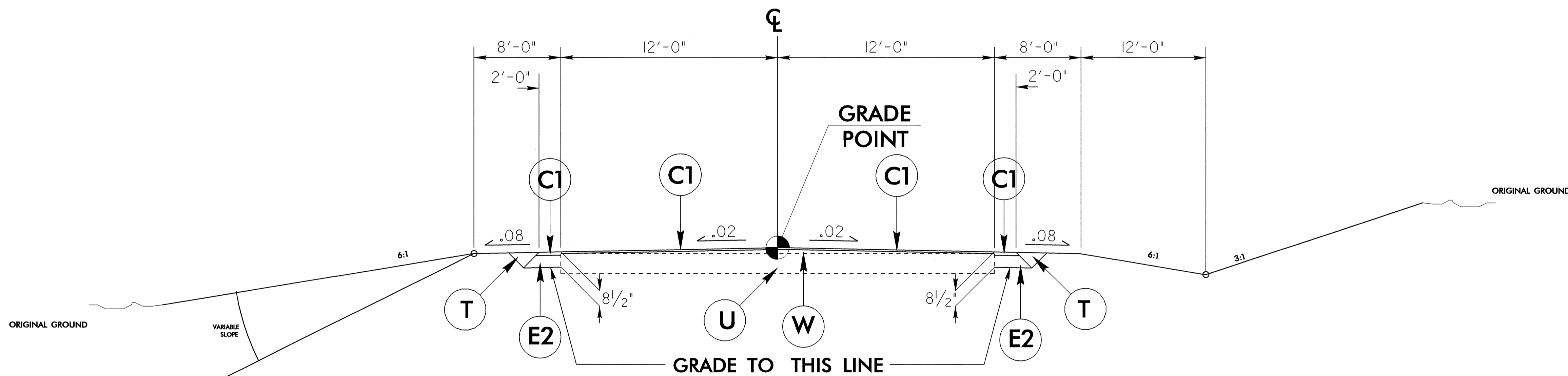
PROJECT REFERENCE NO. U-3816	SHEET NO. 2-D
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-Y1A- STA. 14+46.50 TO STA. 22+61.30
 -Y1A- STA. 22+61.30 TO STA. 24+11.30, TRANSITION RT. LANE
 FROM 12'-0" TO 24'-0" PAVEMENT WIDTH
 -Y1A- STA. 24+11.30 TO STA. 27+86.30



TYPICAL SECTION NO. 8

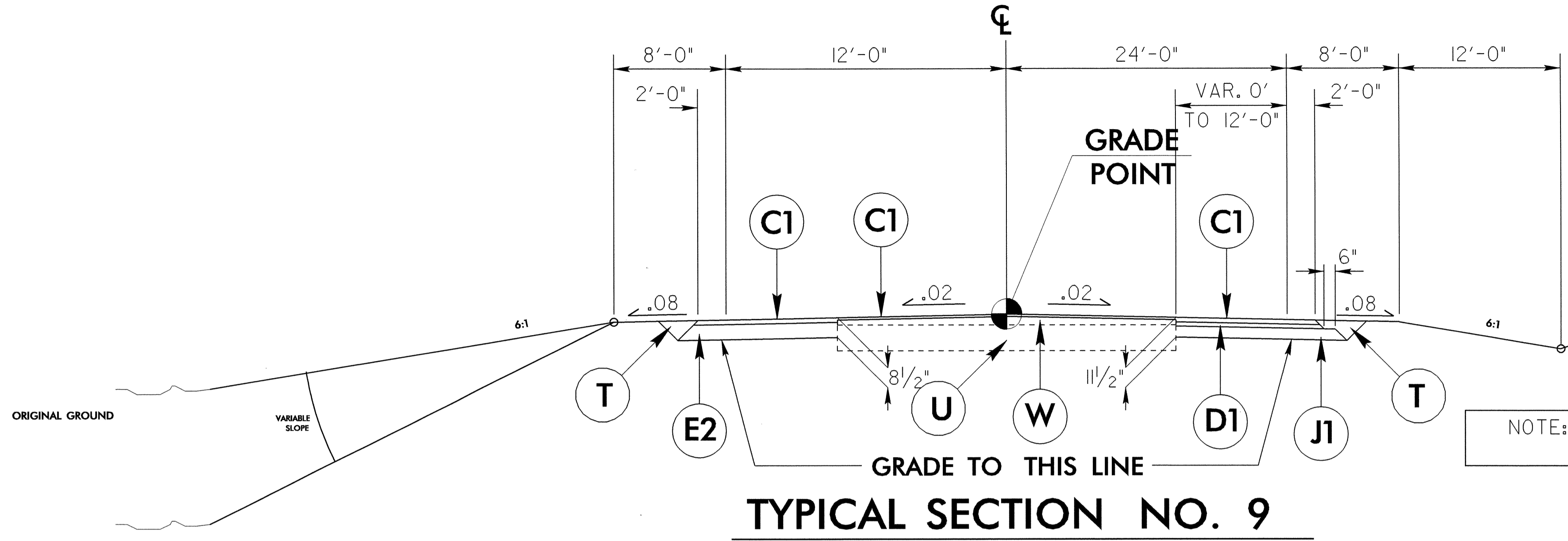
USE TYPICAL SECTION NO. 8

-Y2- STA. 13+50.00 TO STA. 14+00.00
 -Y2- STA. 14+00.00 TO STA. 18+00.00, TRANSITION FROM
 TYP. SECT. NO. 8 TO TYP. SECT. NO. 9
 -Y2- STA. 29+19.00 TO STA. 30+00.00

6/2/09

C1	PROP. APPROX. 3" S9.5B
D1	PROP. APPROX. 2 1/2" TYPE I19.0B
E2	PROP. APPROX. 5 1/2" B25.0B
E3	PROP. VAR. DEPTH B25.0B
J1	PROP. 6" AGGREGATE BASE COURSE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

PROJECT REFERENCE NO. U-3816	SHEET NO. 2-E
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER

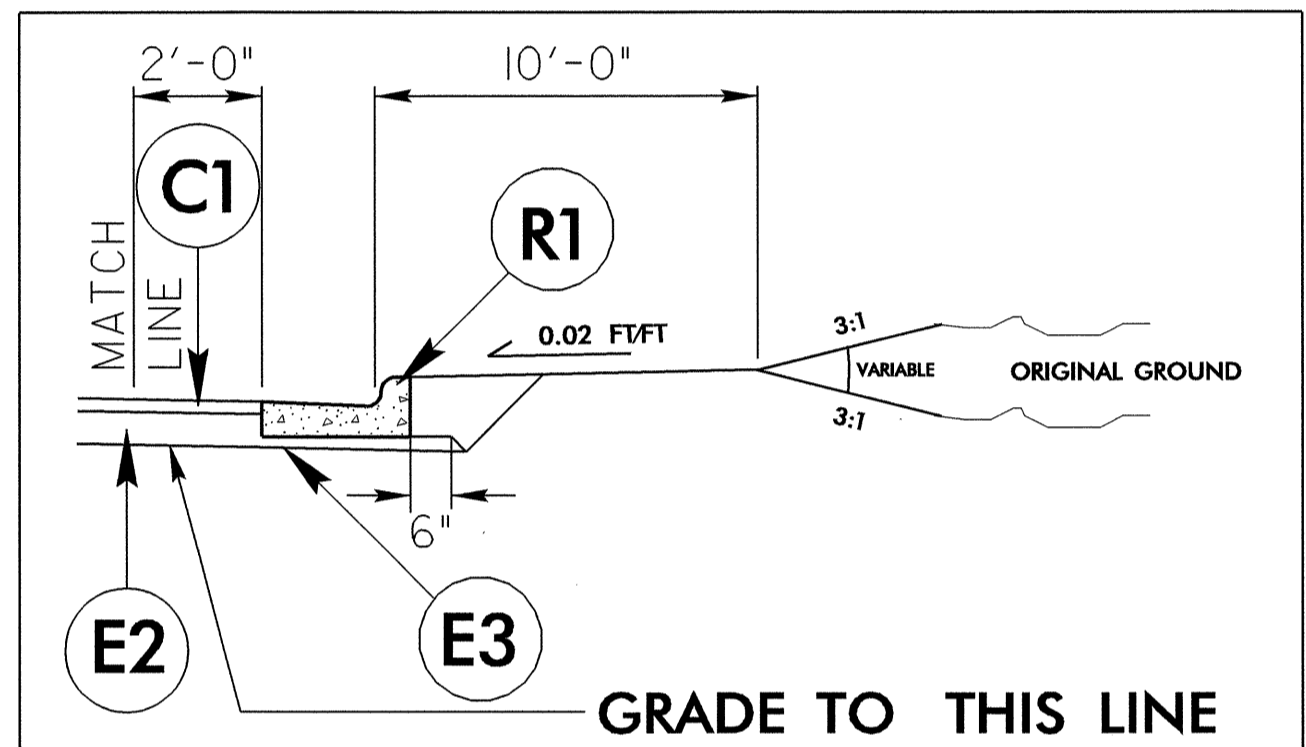


NOTE: IN AREAS OF NARROW WIDENING USE (E2) IN PLACE OF (D1) AND (J1)

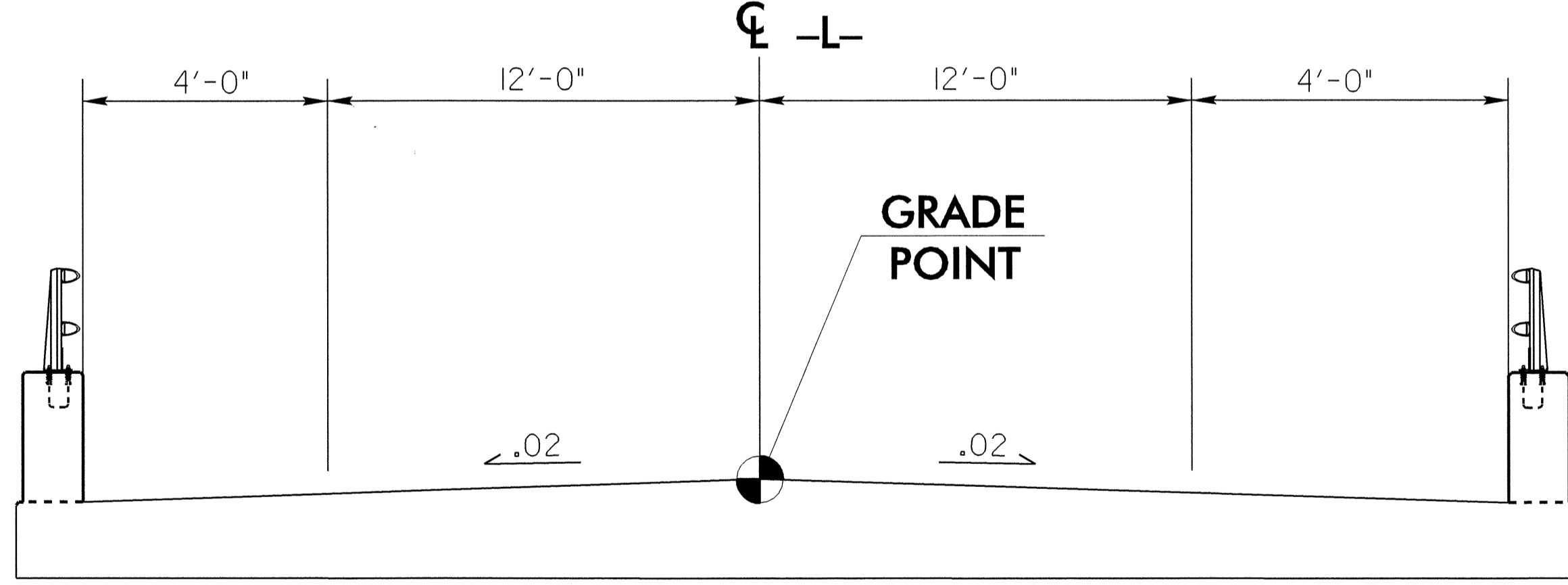
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

- Y2- STA. 18+00.00 TO STA. 20+04.96
- Y2- STA. 22+37.44 TO STA. 24+19.00
- Y2- STA. 24+19.00 TO STA. 29+19.00, TRANSITION FROM TYP. SECT. NO. 9 TO TYP. SECT. NO. 8



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 9
-Y2-LT. STA. 34+34.61 TO STA. 37+56.23



TYPICAL SECTION NO. 10

BRIDGE

USE TYPICAL SECTION NO. 10

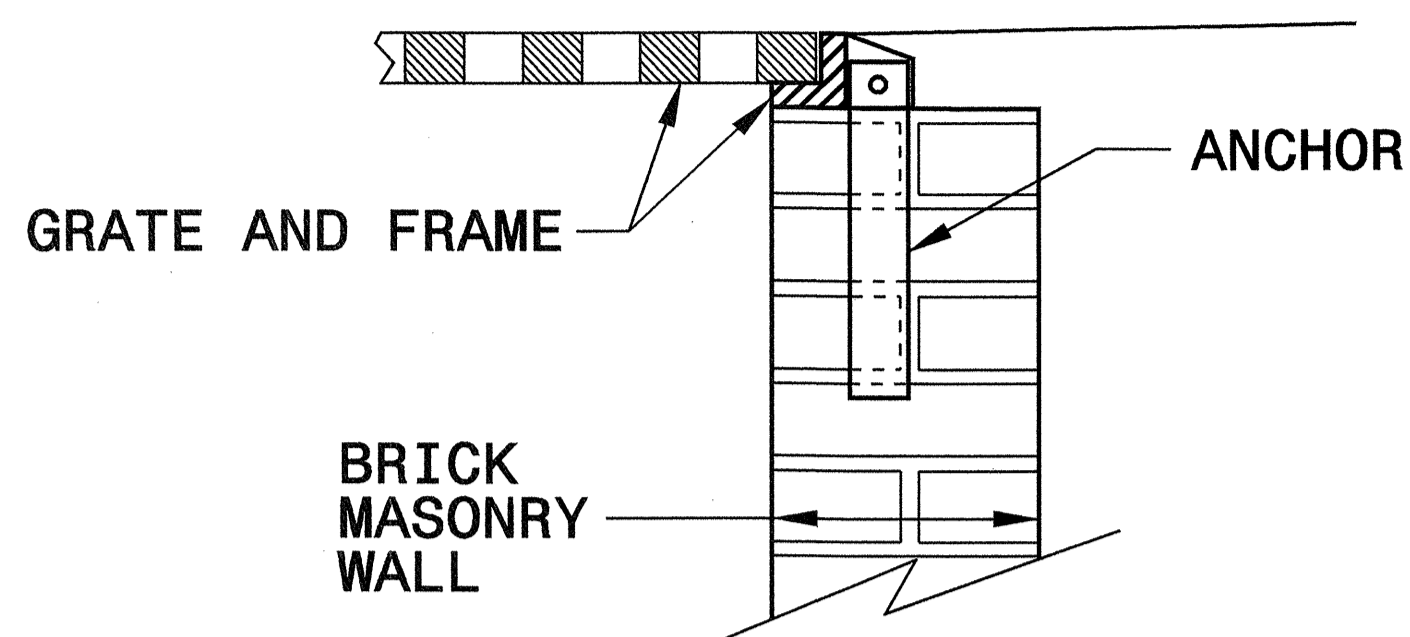
-L- STA. 48+98.00 (BEGIN BRIDGE) TO 51+63.00 (END BRIDGE)

08-OCT-2007 15:38 2816_r.dwg - typ.dgn

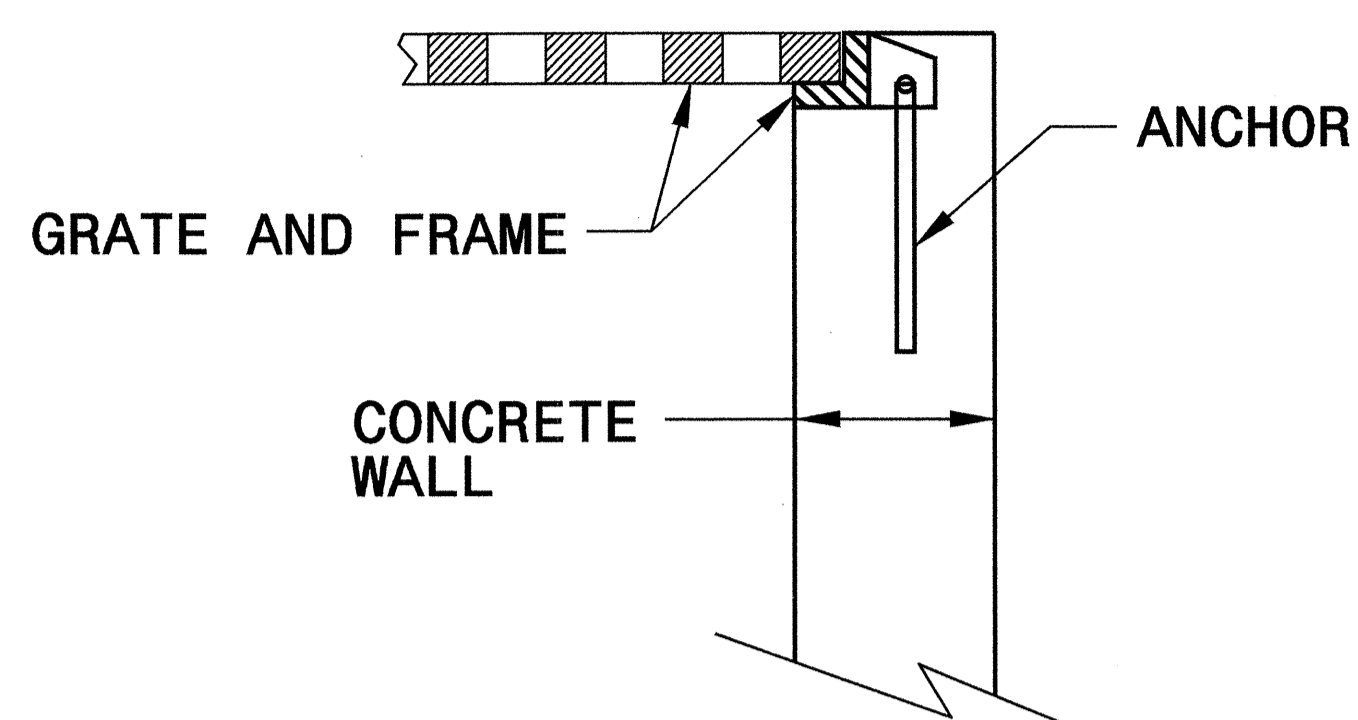
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

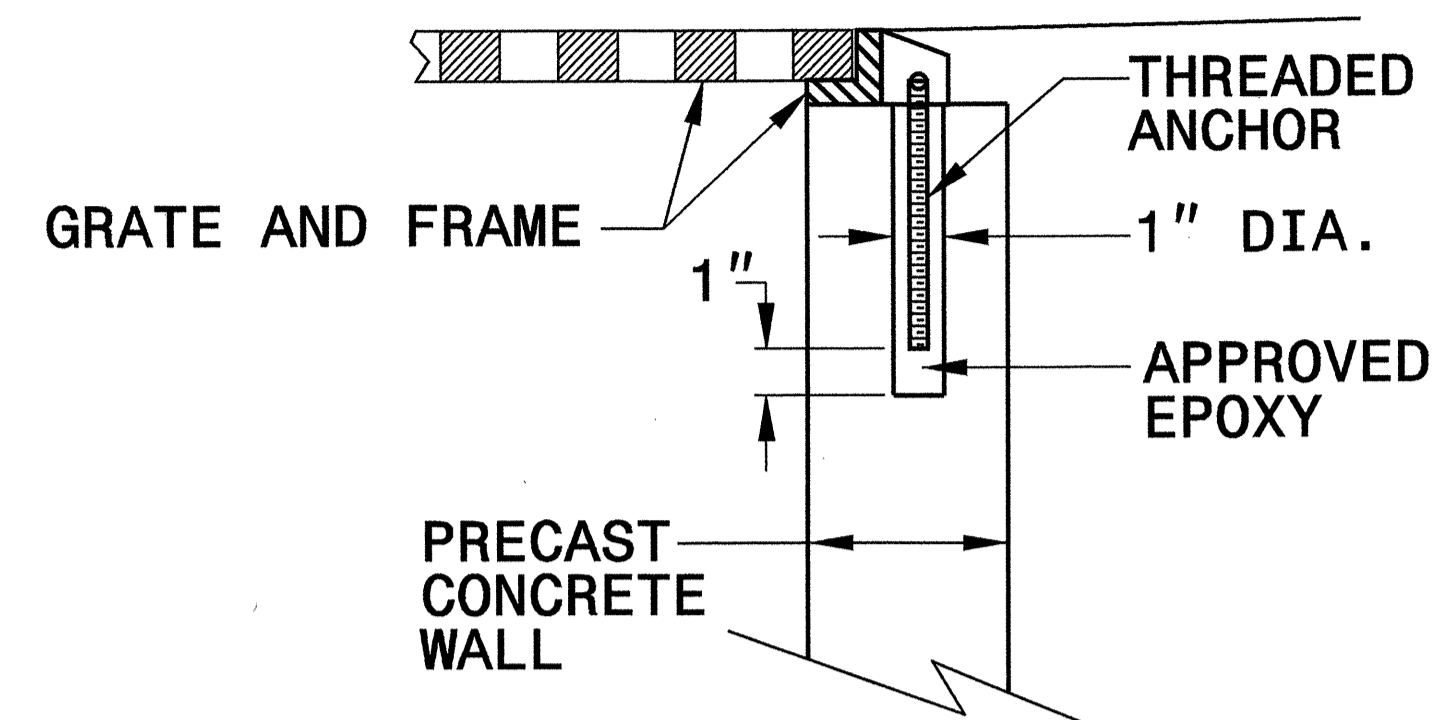
SHEET 1 OF 1
840D25



**BRICK MASONRY
CONSTRUCTION**



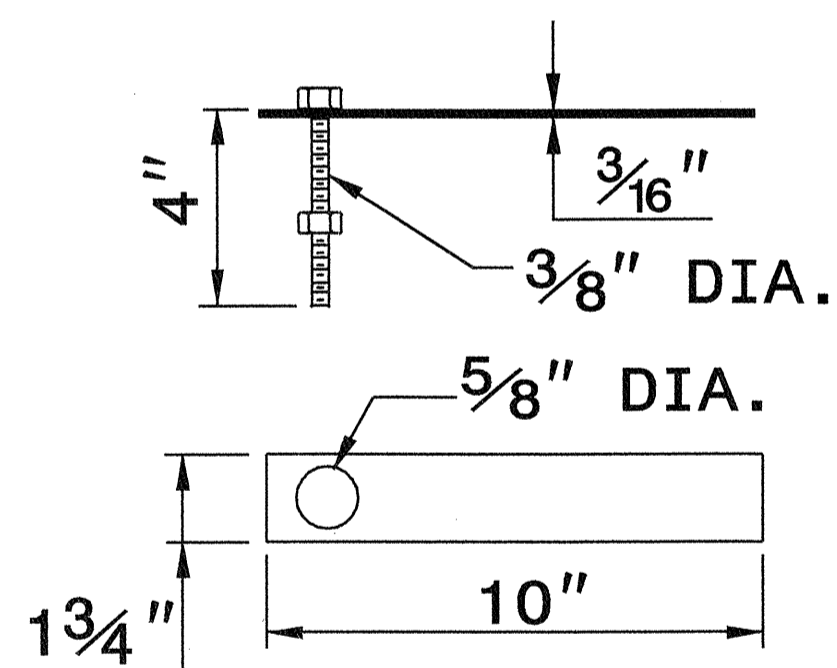
**CONCRETE
CONSTRUCTION**



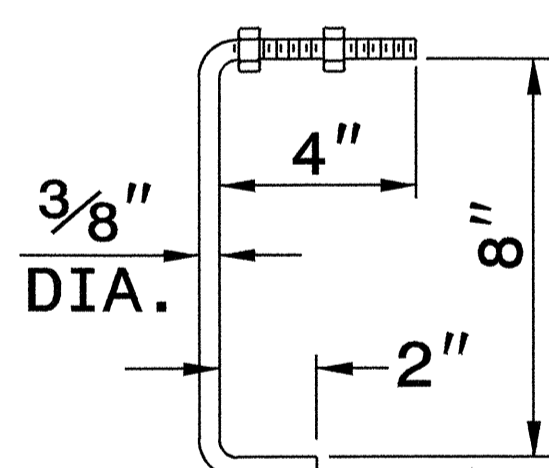
**PRECAST CONCRETE
CONSTRUCTION**

**DETAIL SHOWING ANCHORAGE OF
FRAME FOR GRATED DROP INLET**

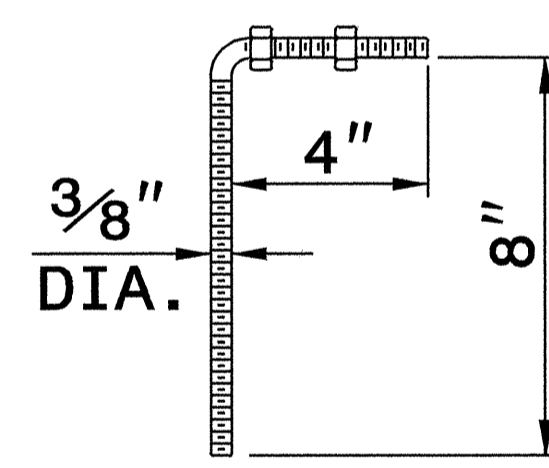
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL
OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



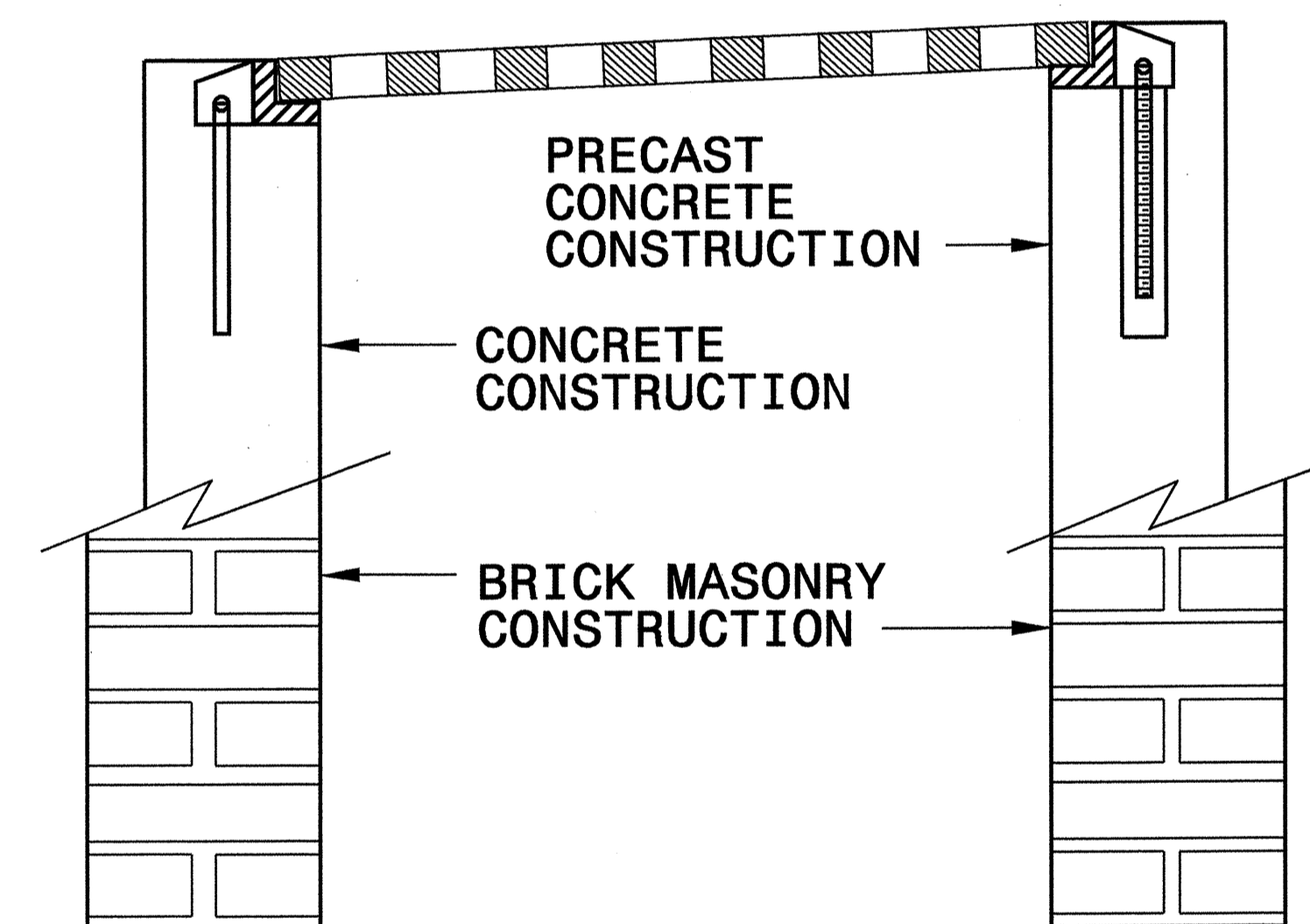
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



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



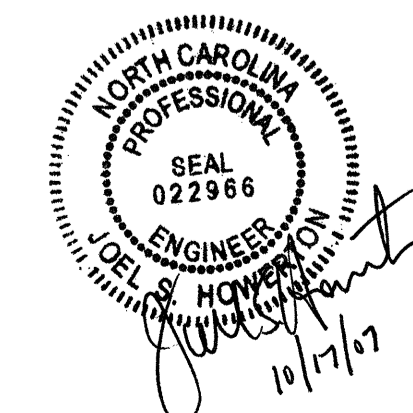
**FRAME AND GRATE INSTALLATION
FOR NORMAL CROWN AND
SUPERELEVATED SECTIONS**

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

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

SHEET 1 OF 1
840D25

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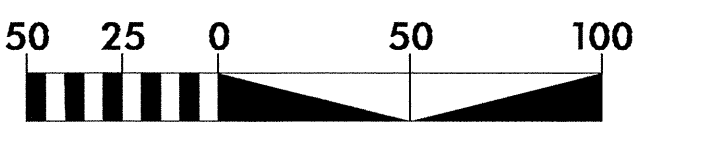


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SEE PLATE FOR TITLE

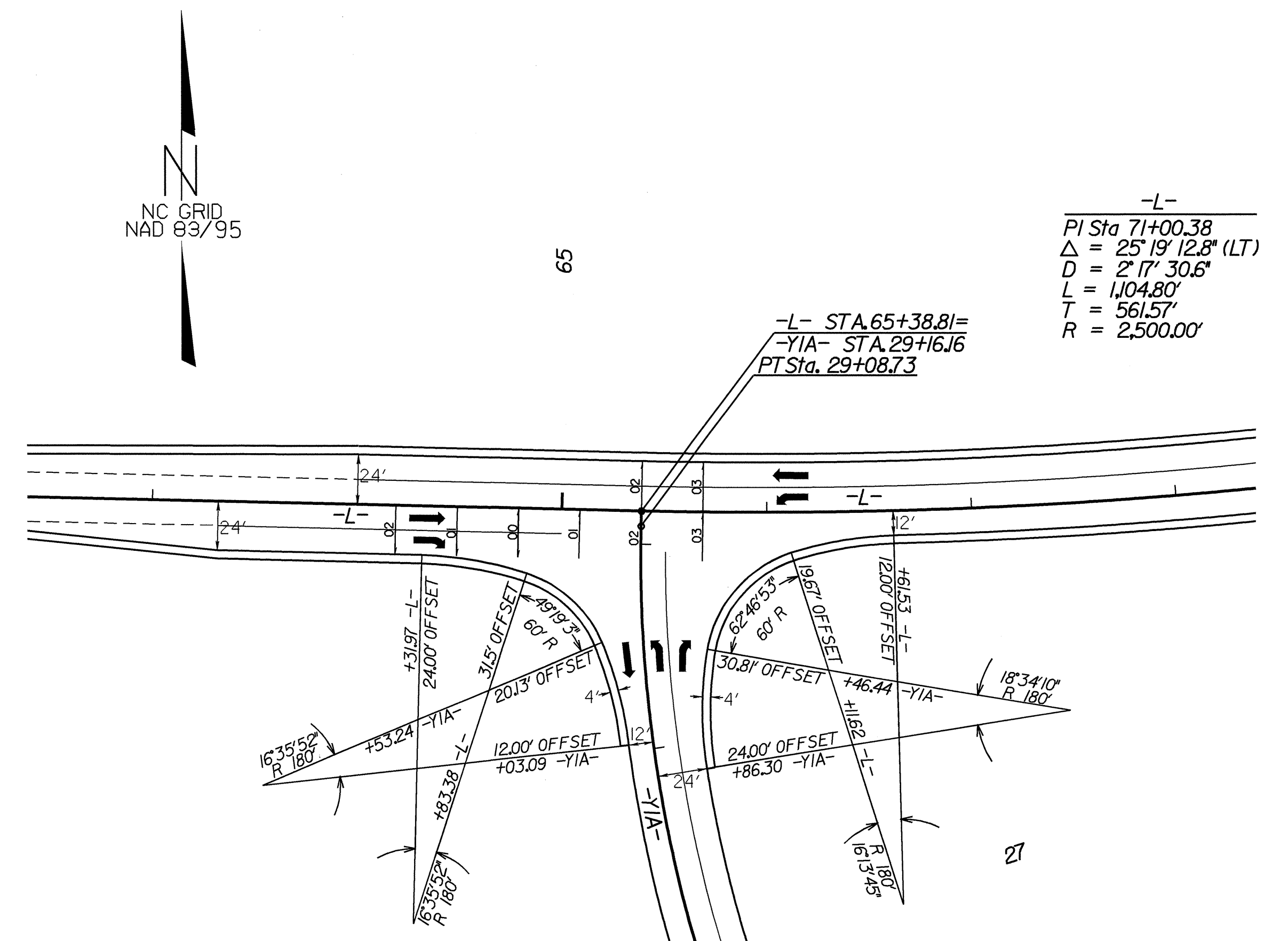
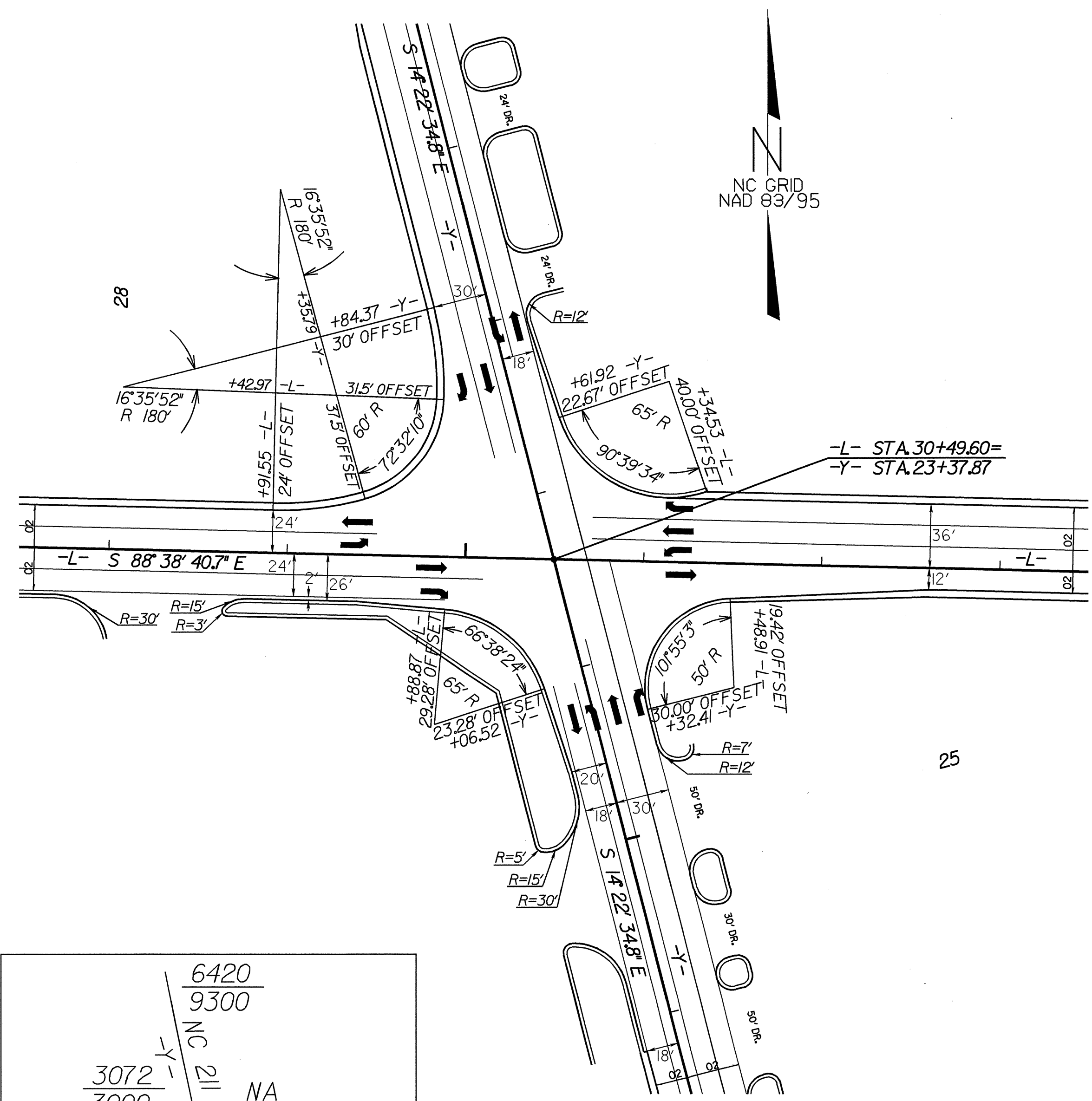
ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE: _____
FILE SPEC.: _____

INTERSECTION DETAIL



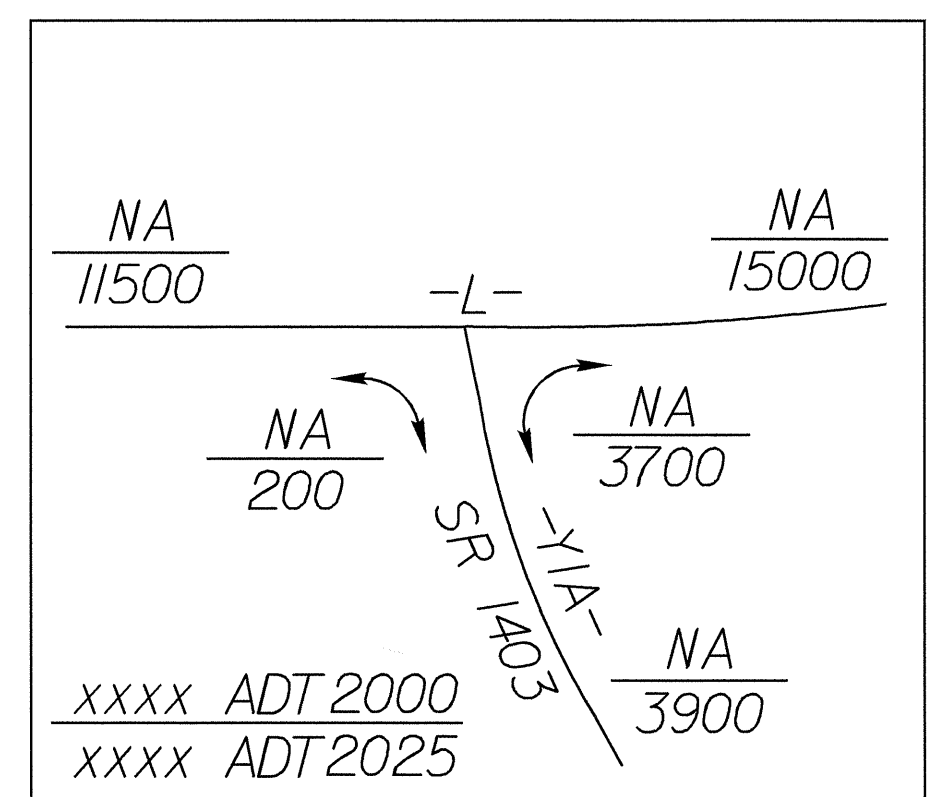
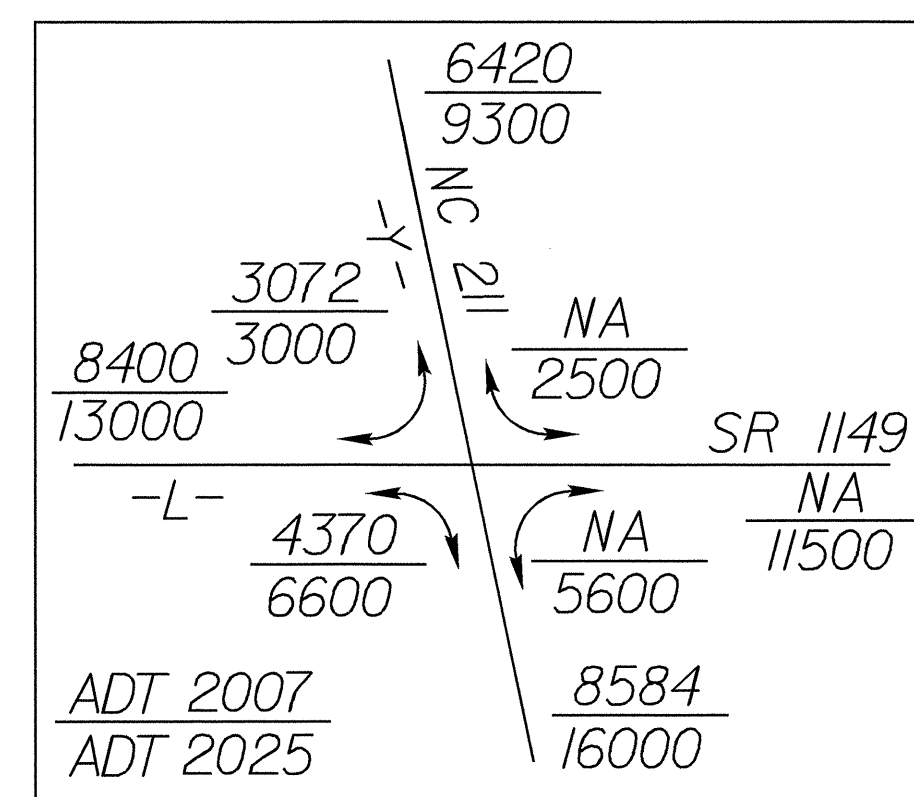
-L- SR 1149 & -Y- NC211

-L- SR 1149 & -YIA- SR 1403



-L-
PI Sta 71+00.38
 $\Delta = 25^\circ 19' 12.8''$ (LT)
D = 2' 17' 30.6"
L = 1,104.80'
T = 561.57'
R = 2,500.00'

-YIA-
PI Sta 26+99.89
 $\Delta = 36^\circ 46' 16.6''$ (RT)
D = 8' 29' 17.7"
L = 433.20'
T = 224.35'
R = 675.00'



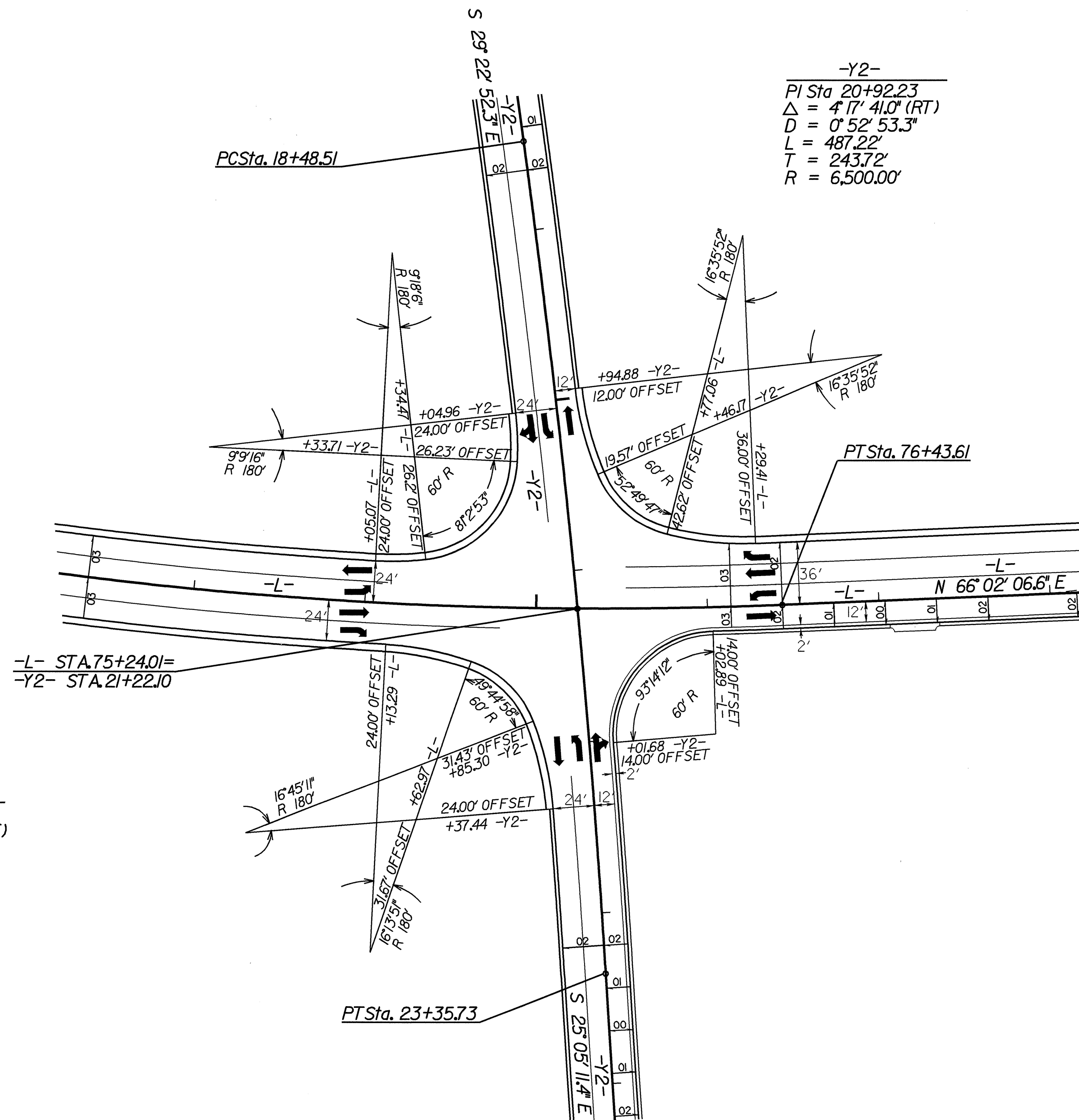
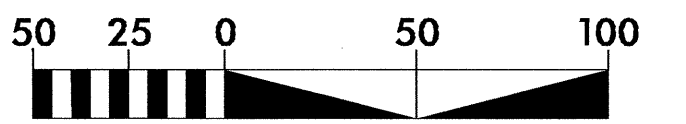
5/14/99
12-OCT-2007 10:05
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5/14/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 2-H
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INTERSECTION DETAIL

-L- SR 1149 & -Y2- NC220



-L-
 PI Sta 71+00.38
 $\Delta = 25' 19' 12.8''$ (LT)
 $D = 2' 17' 30.6''$
 $L = 1,104.80'$
 $T = 561.57'$
 $R = 2,500.00'$

ADT 2007	NC 20	3072	
ADT 2025		4800	
800	NA	665	7440
NA	2100	1600	15000
NA			SR 1403
15000	NA	1536	2400
	1900		
	100		
SR 1403	NA	3385	5400
3900	NA		
NA			

12-OCT-2007 12:05
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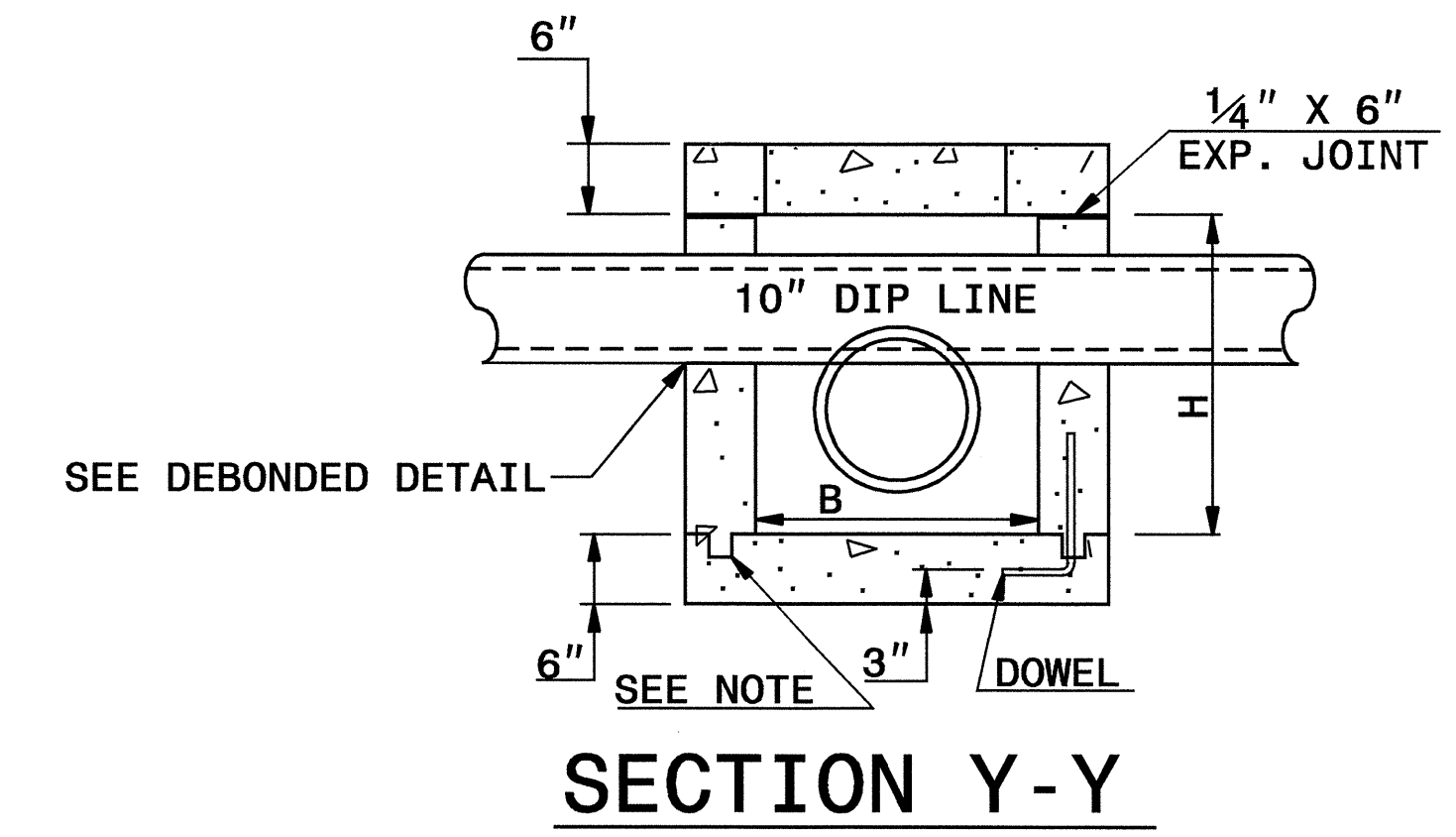
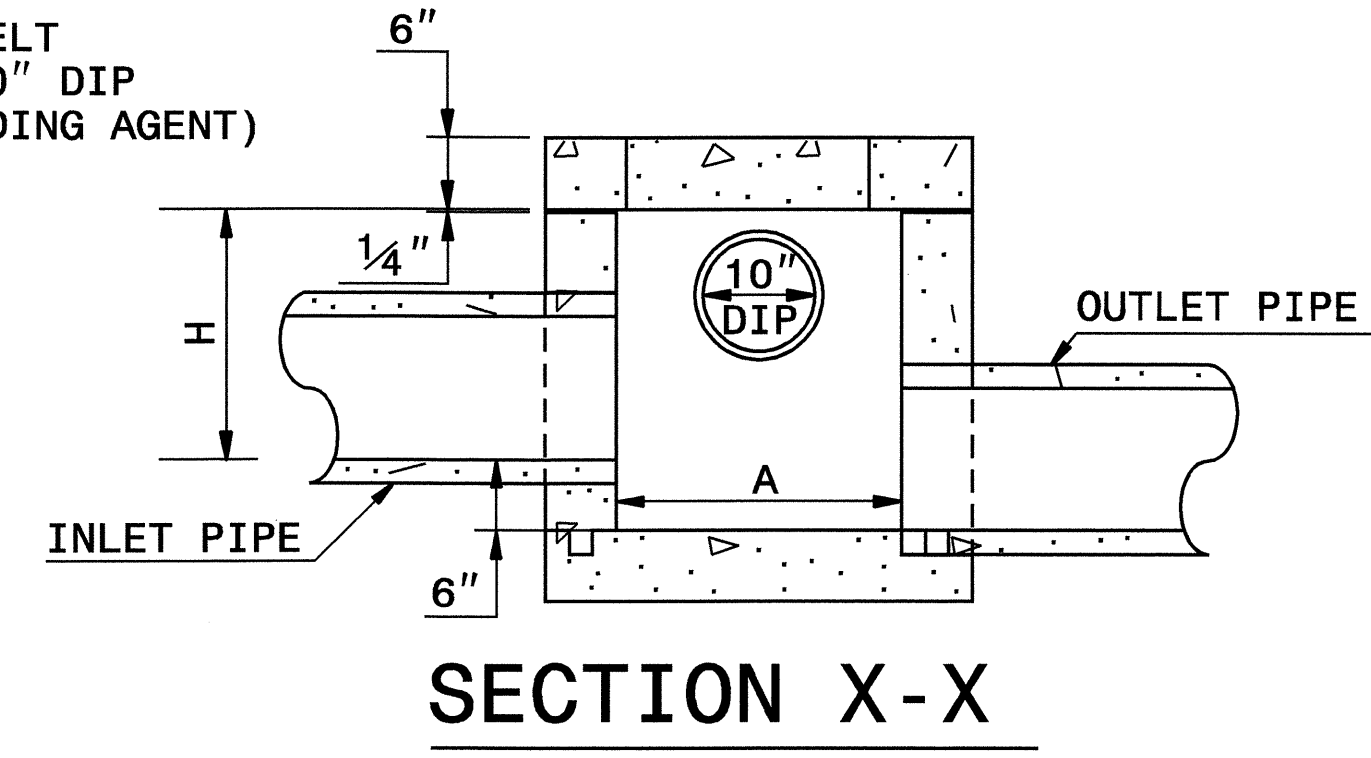
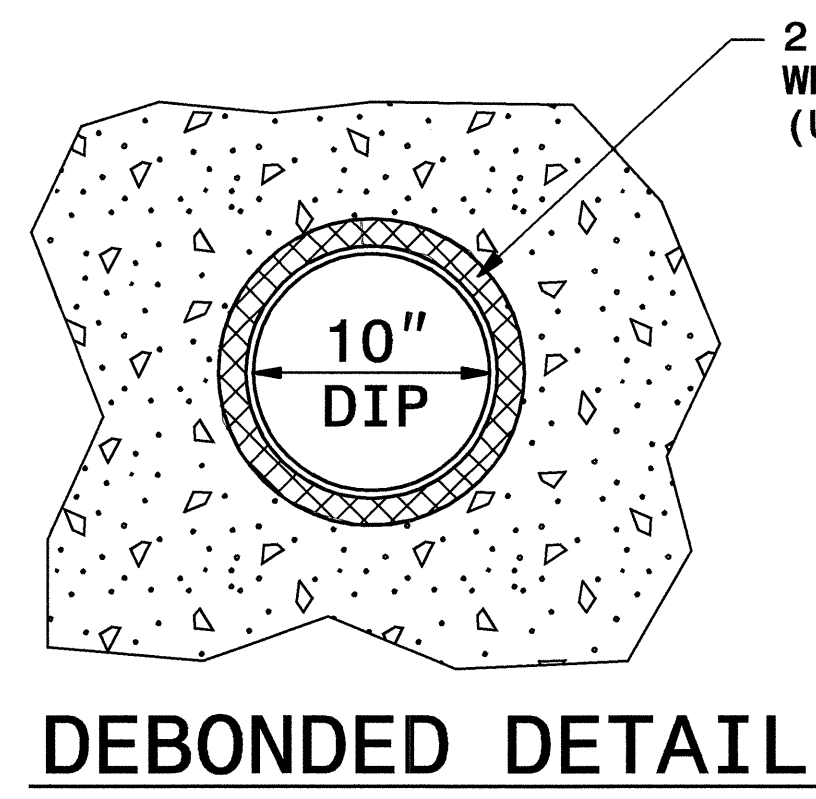
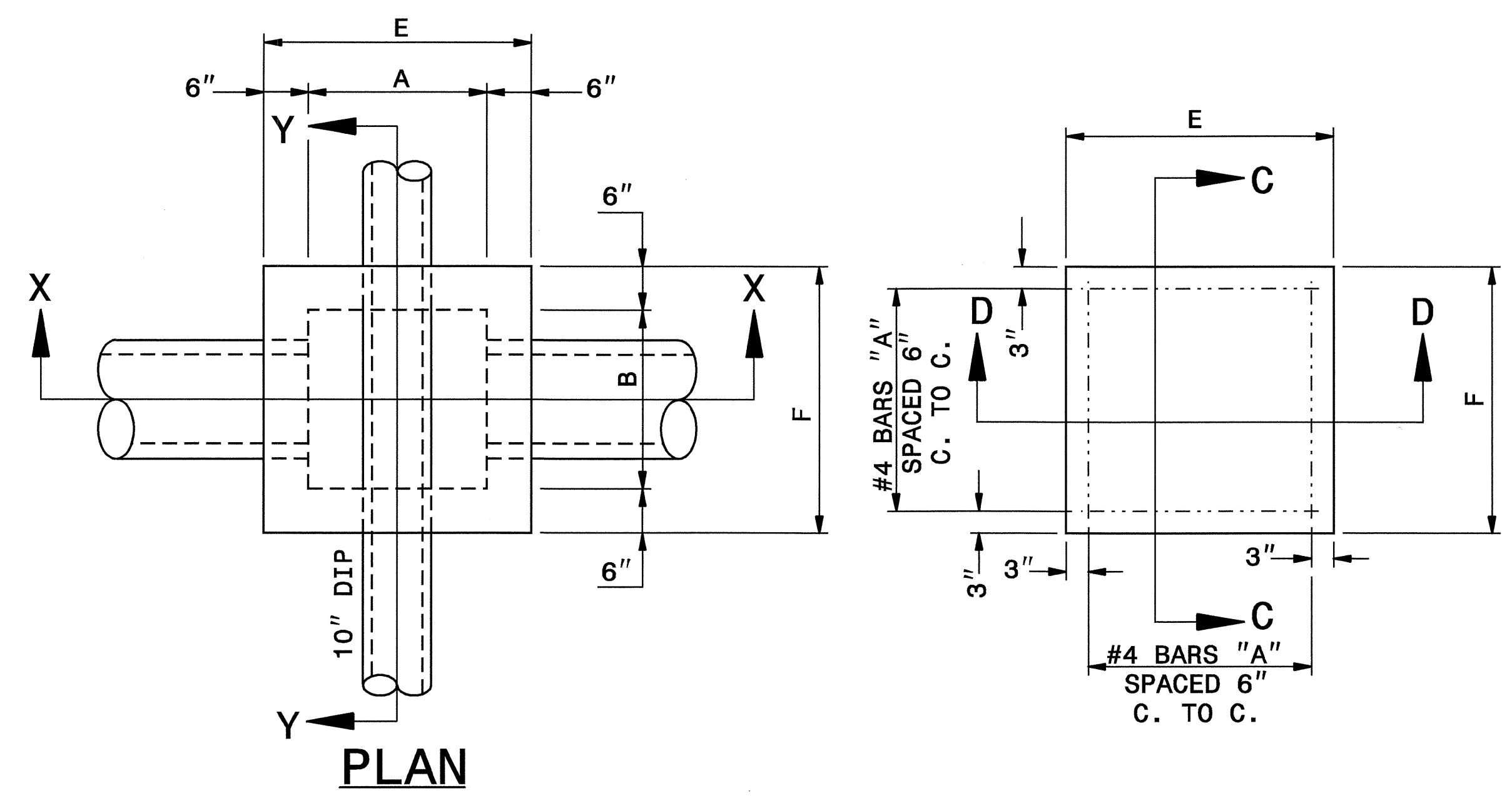
ENGLISH DETAIL DRAWING FOR
**CONCRETE JUNCTION BOX WITH
10" DIP LINE PASSING THRU
12" THRU 48" PIPE**

SHEET 1 OF 1
840D31

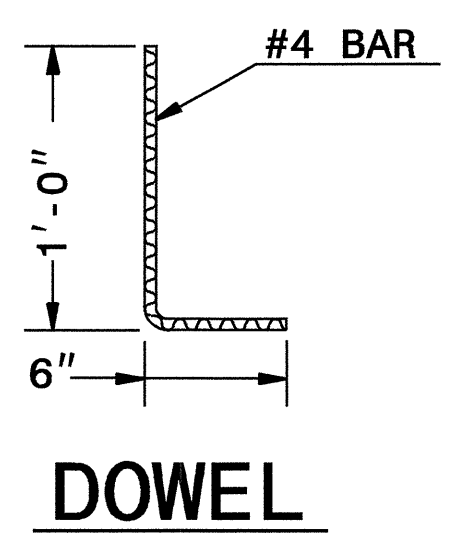
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DIVISION OF HIGHWAYS
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ENGLISH DETAIL DRAWING FOR
**CONCRETE JUNCTION BOX WITH
10" DIP LINE PASSING THRU
12" THRU 48" PIPE**

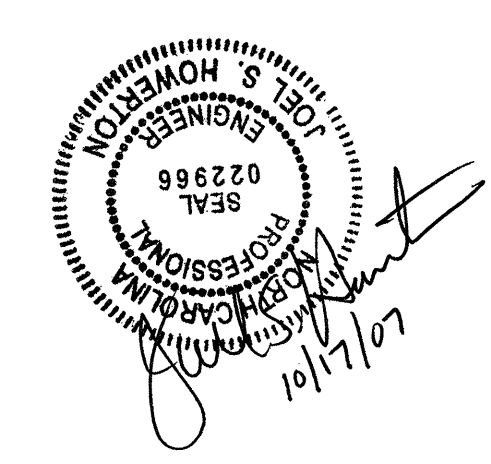
SHEET 1 OF 1
840D31



GENERAL NOTES:
USE CLASS "B" CONCRETE THROUGHOUT.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
REFER TO R.S.D.N. 840.31 FOR PLACEMENT OF MANHOLE COVER IN JUNCTION BOX.



DIMENSIONS AND QUANTITIES FOR CONCRETE JUNCTION BOXES															
DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS "A"		COVER DIMENSIONS		CUBIC YARDS IN BOX			TOTAL QUANTITIES BOX AND COVER		DEDUCTIONS FOR ONE PIPE CU.YDS.		
PIPE	SPAN	WIDTH	HEIGHT	NO.	LENGTH	E	F	COVER	FLOOR	WALL/ FT. OF HT.	LBS. REINF.	CU. YDS. MIN. "H"	C.S.	R.C.	
12"	2'-0"	2'-0"	2'-3"	12	2'-9"	3'-0"	3'-0"	0.167	0.167	0.185	22	0.750	0.015	0.024	
15"	2'-3"	2'-3"	2'-6"	12	3'-0"	3'-3"	3'-3"	0.196	0.196	0.204	24	0.902	0.023	0.036	
18"	2'-6"	2'-6"	2'-9"	14	3'-3"	3'-6"	3'-6"	0.227	0.227	0.222	30	1.065	0.033	0.049	
24"	3'-0"	3'-0"	3'-3"	16	3'-9"	4'-0"	4'-0"	0.296	0.296	0.259	40	1.434	0.059	0.085	
30"	3'-6"	3'-6"	3'-9"	18	4'-3"	4'-6"	4'-6"	0.375	0.375	0.296	51	1.860	0.092	0.127	
36"	4'-0"	4'-0"	4'-3"	20	4'-9"	5'-0"	5'-0"	0.463	0.463	0.333	64	2.341	0.132	0.178	
42"	4'-6"	4'-6"	4'-9"	22	5'-3"	5'-6"	5'-6"	0.560	0.560	0.370	77	2.878	0.180	0.243	
48"	5'-0"	5'-0"	5'-3"	24	5'-9"	6'-0"	6'-0"	0.667	0.667	0.407	92	3.471	0.235	0.317	

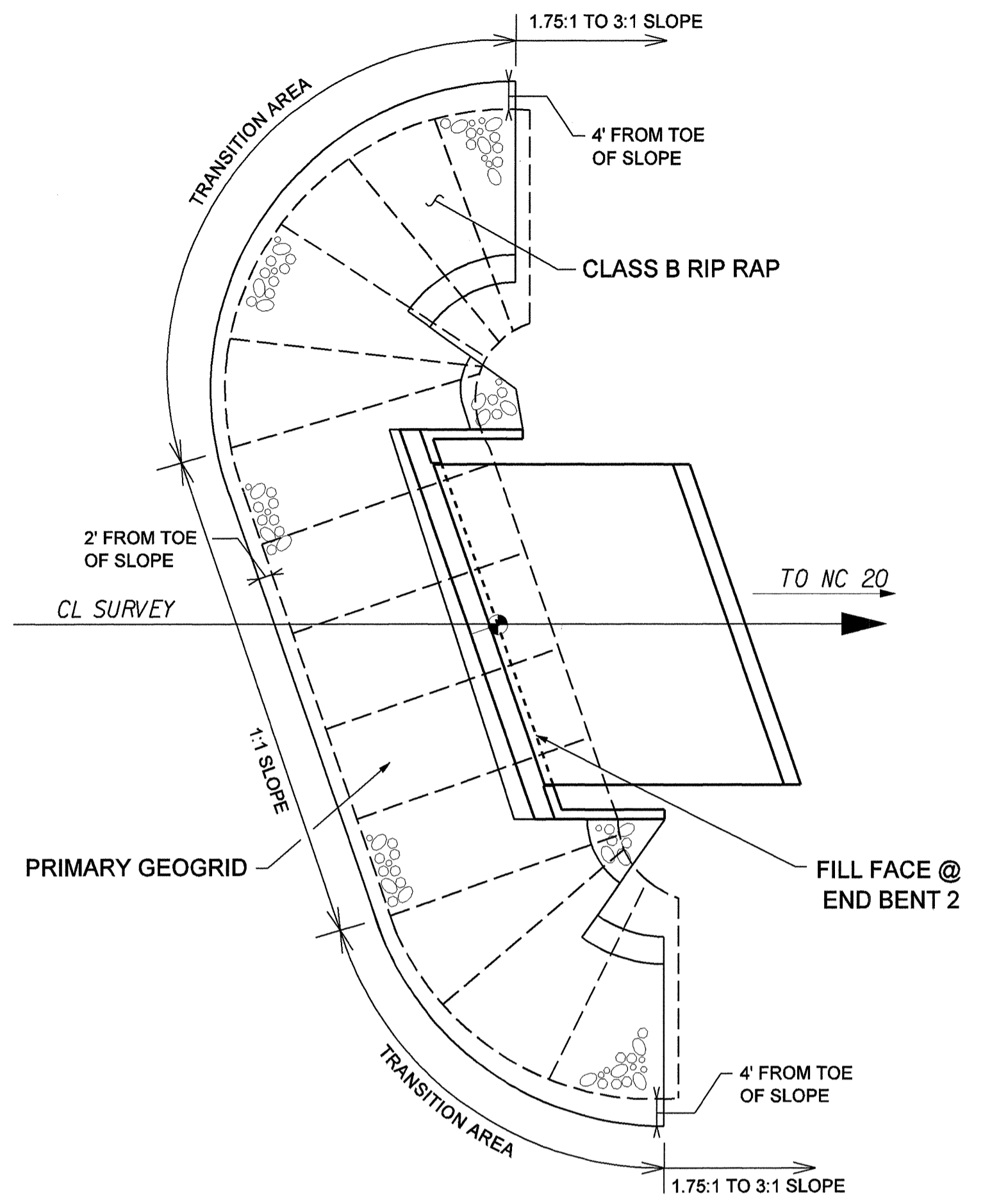
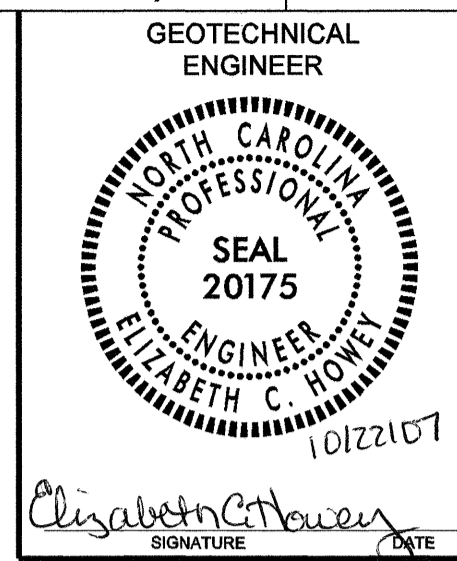


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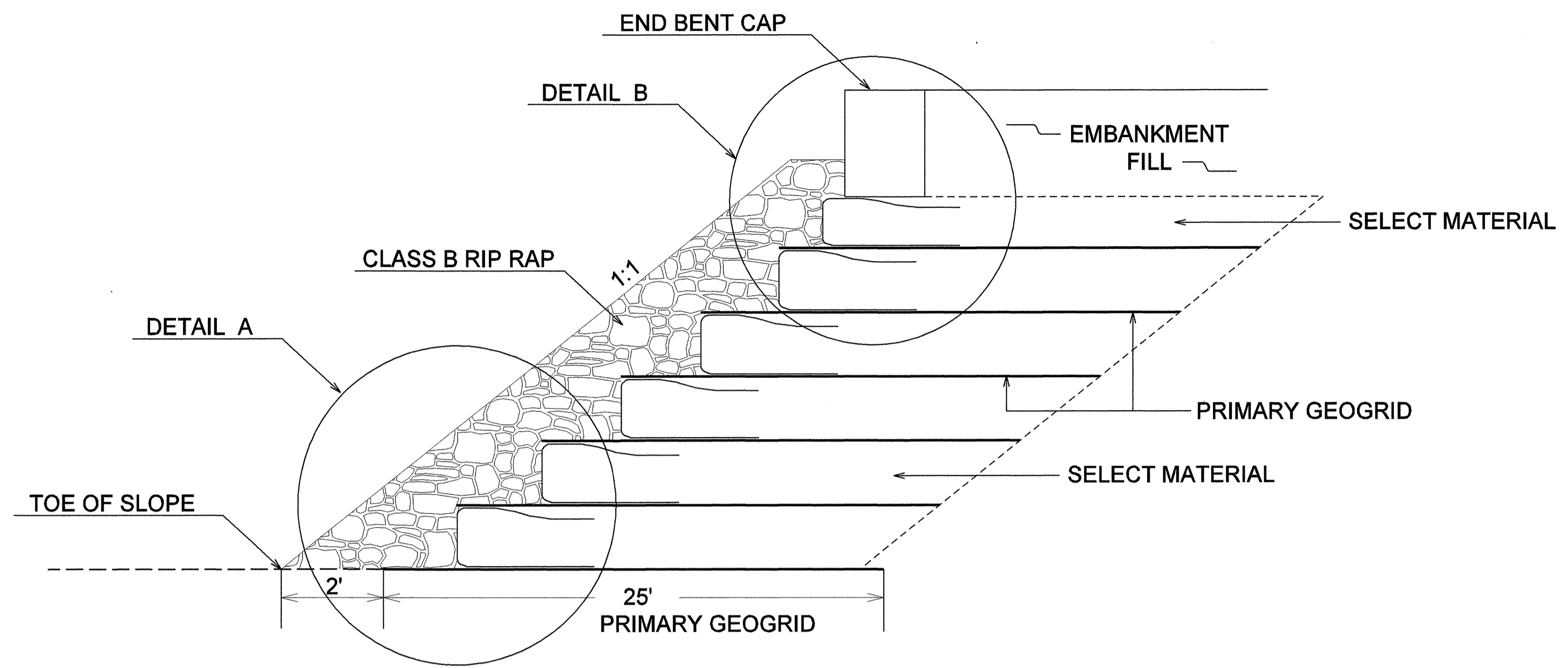
ORIGINAL BY: E.E. WARD DATE: 3-12-98
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CHECKED BY: DATE:
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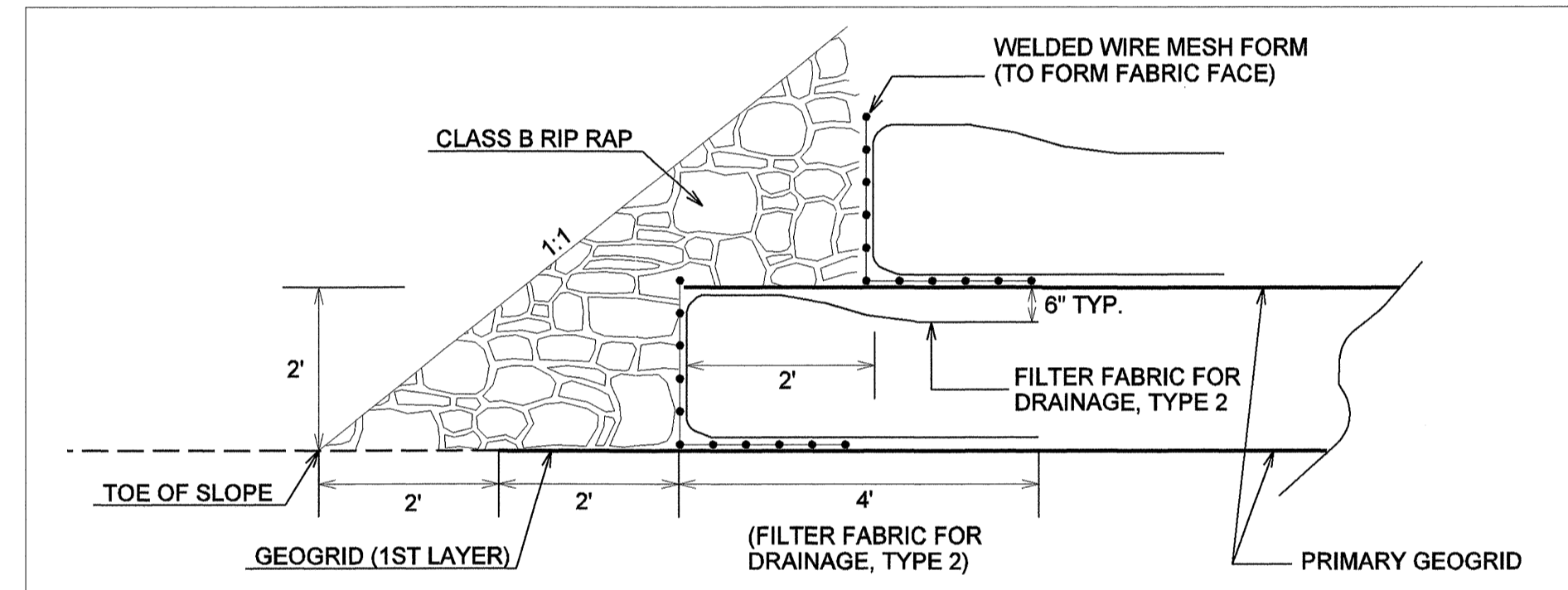


PLAN VIEW OF END SLOPE
N.T.S.

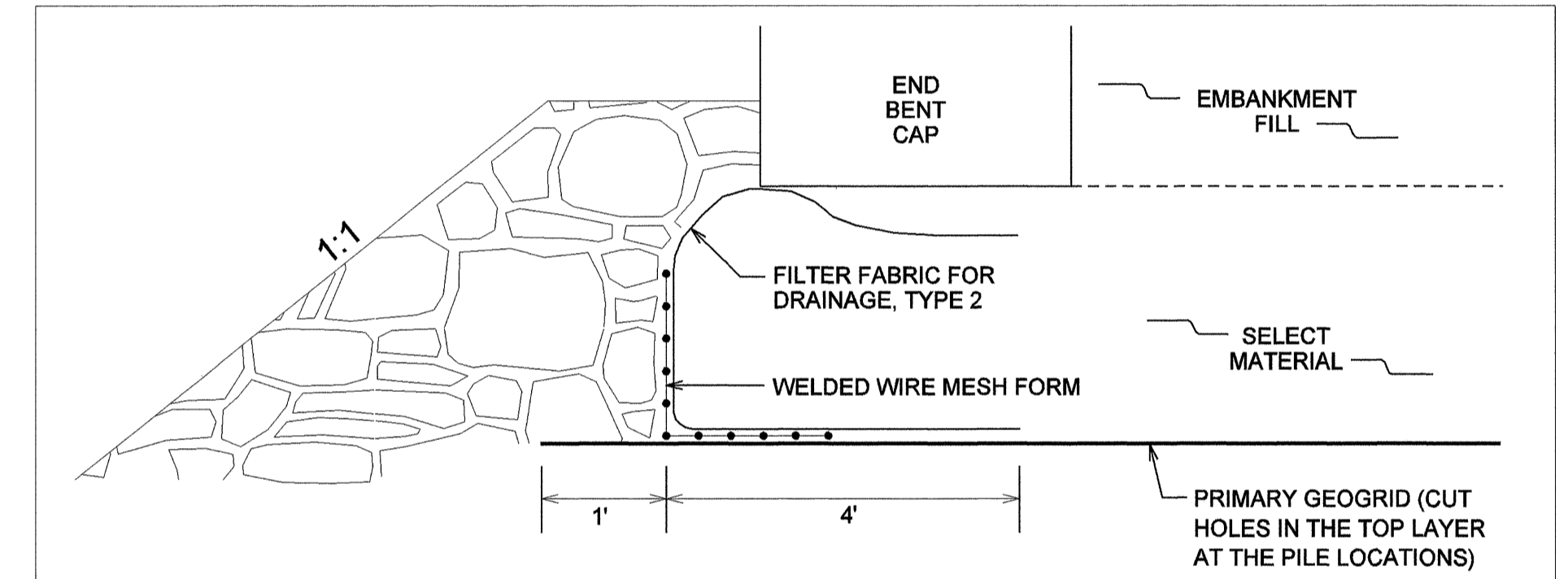
IF GEOGRID IS OVERLAPPED IN THE SLOPE TRANSITION AREAS, SEPARATE OVERLAPPING LAYERS WITH A MINIMUM OF 6 IN. OF BACKFILL. NOTE THAT SIGNIFICANT OVERLAPS AND/OR WASTE ARE ANTICIPATED IN THE TRANSITION AREAS WHICH ARE NOT INCLUDED IN THE ESTIMATED QUANTITIES.



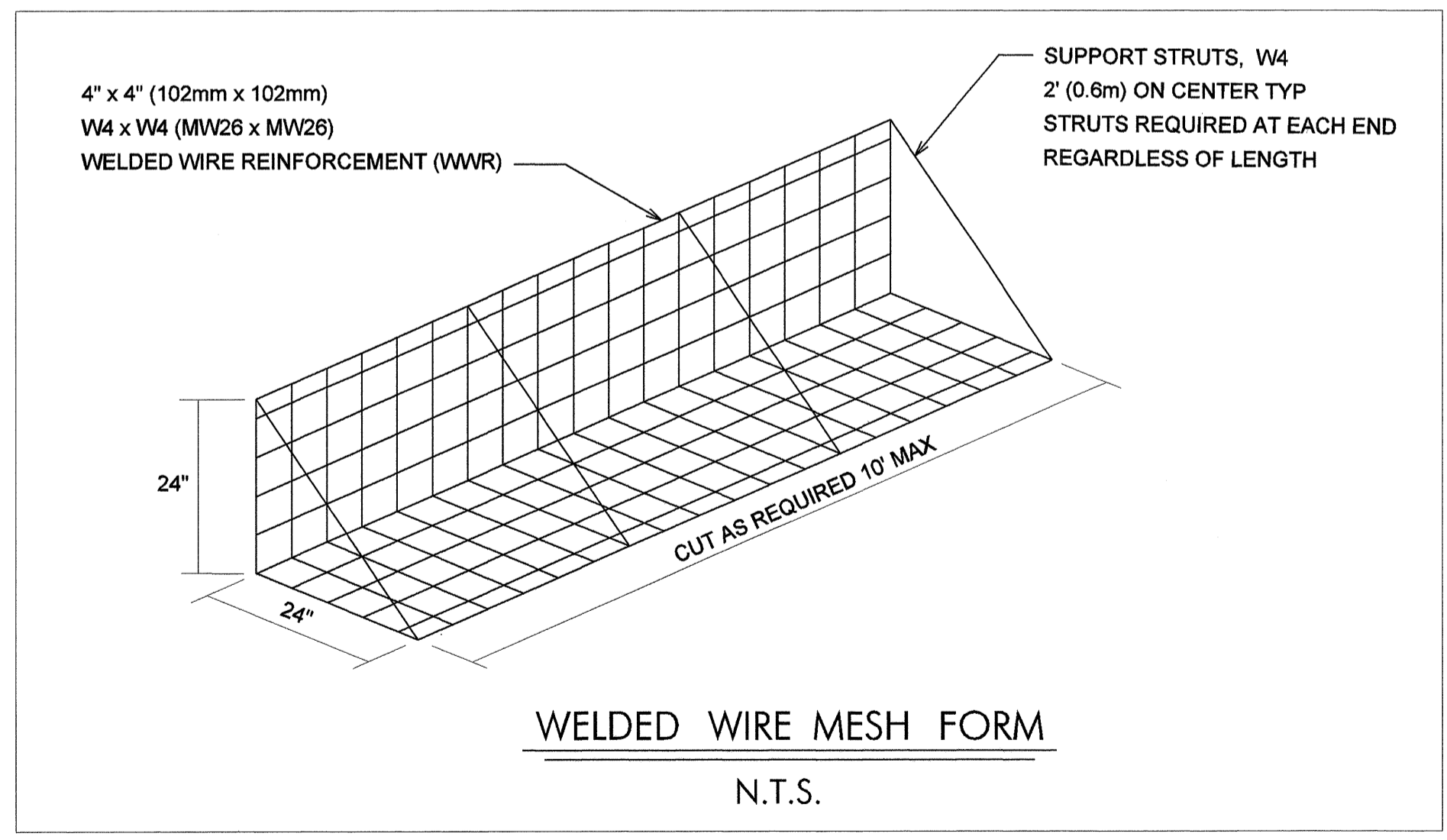
TYPICAL SECTION AT END SLOPE FOR PRIMARY GEOGRID
N.T.S.



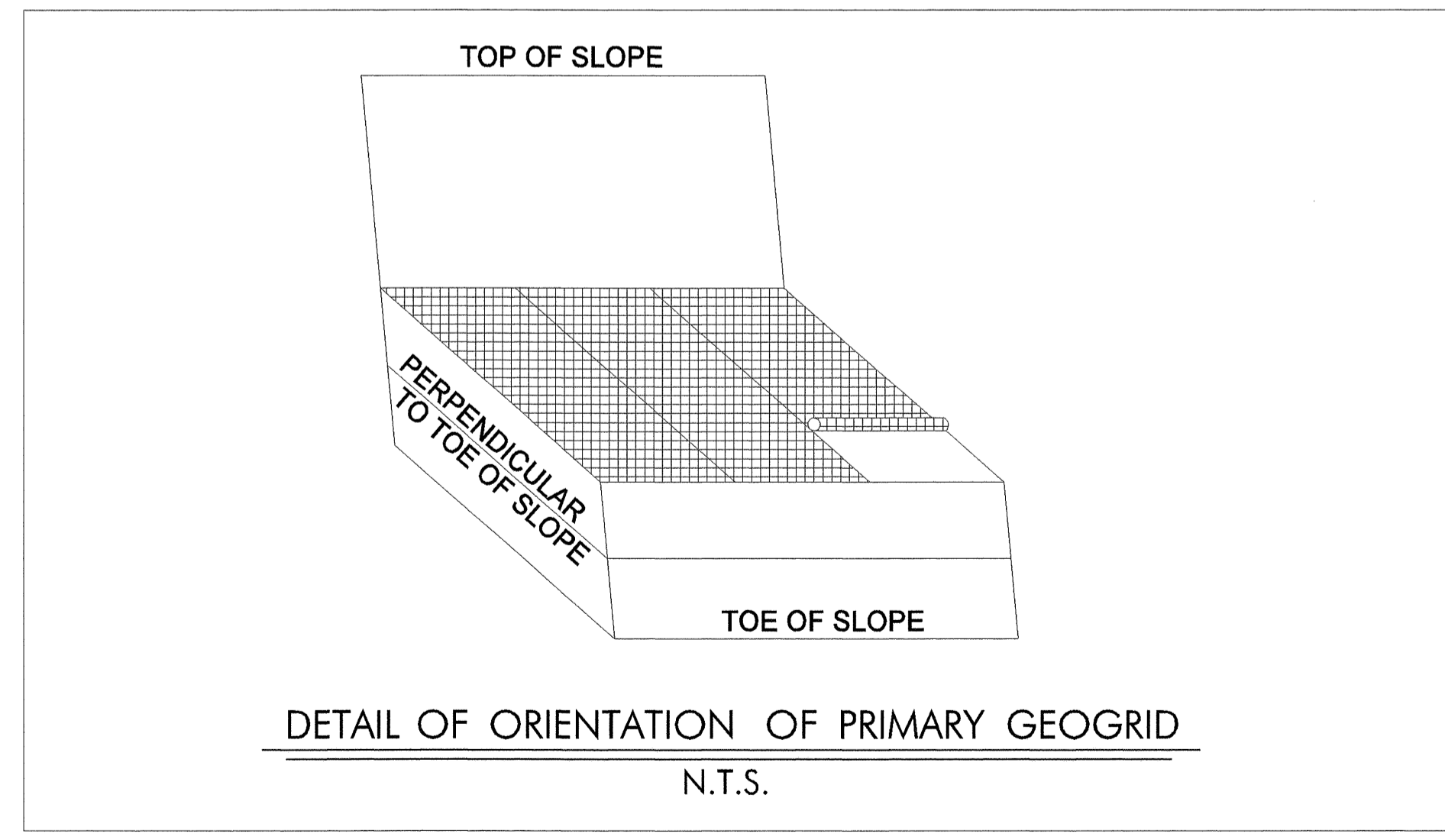
DETAIL A - 1:1 SLOPE
N.T.S.
(SEE NEXT SHEET FOR DETAIL WITH 1.75:1 SLOPE)



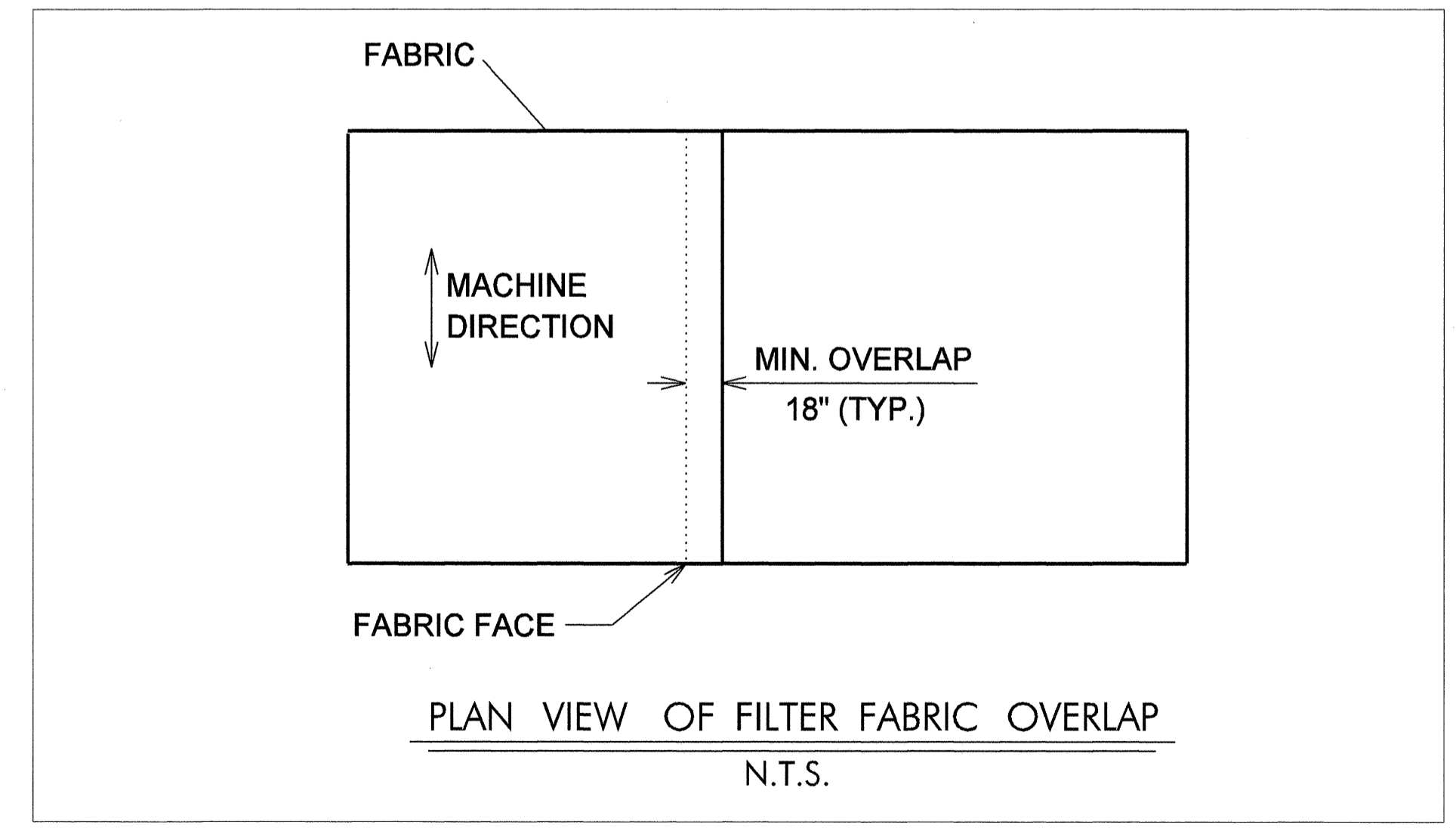
TOP WELDED WIRE MESH FORM MAY BE SHIFTED FORWARD TO AVOID INTERFERENCE WITH THE END BENT CAP AND DRIVEN PILES. EXTEND FILTER FABRIC TO THE BOTTOM OF THE END BENT CAP TO SEPARATE THE RIP RAP FROM THE SELECT MATERIAL.
DETAIL B - 1:1 SLOPE
N.T.S.



WELDED WIRE MESH FORM
N.T.S.



DETAIL OF ORIENTATION OF PRIMARY GEOGRID
N.T.S.



PLAN VIEW OF FILTER FABRIC OVERLAP
N.T.S.

PREPARED BY: D. RACEY	DATE: 06/07
REVIEWED BY: E.C. HOWEY	DATE: 06/07

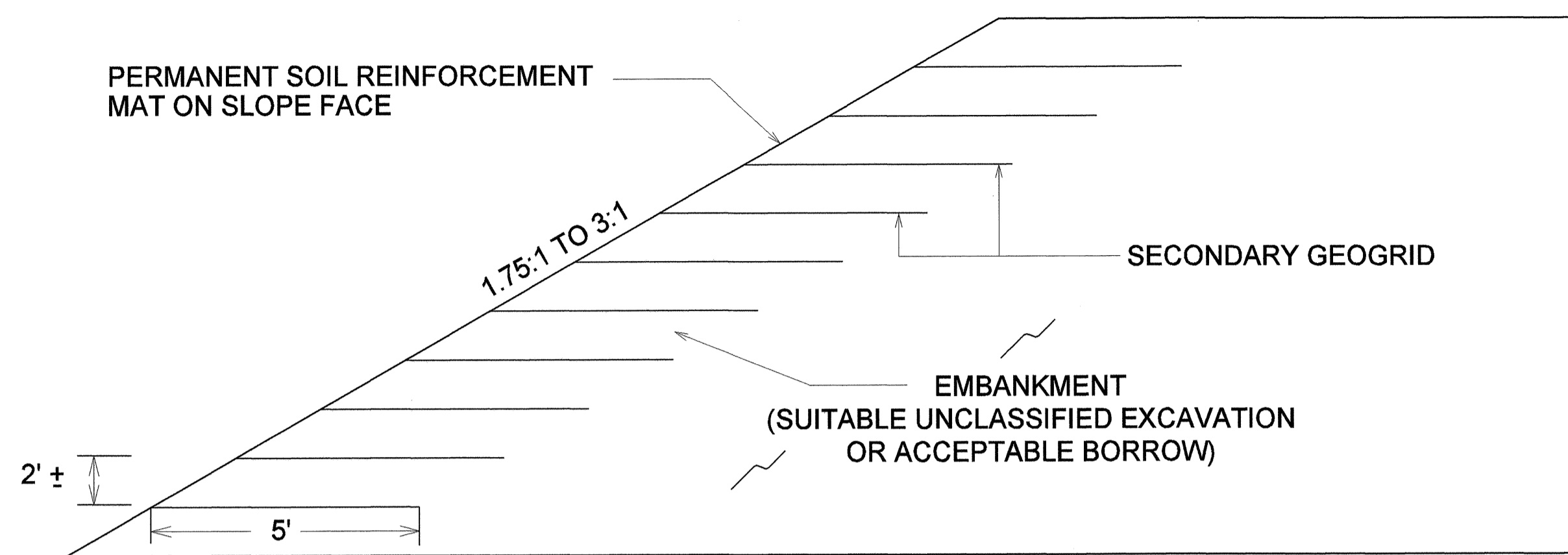
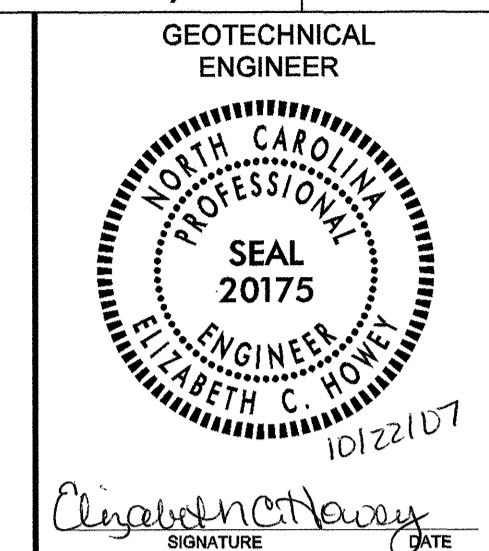
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REINFORCED SLOPE

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



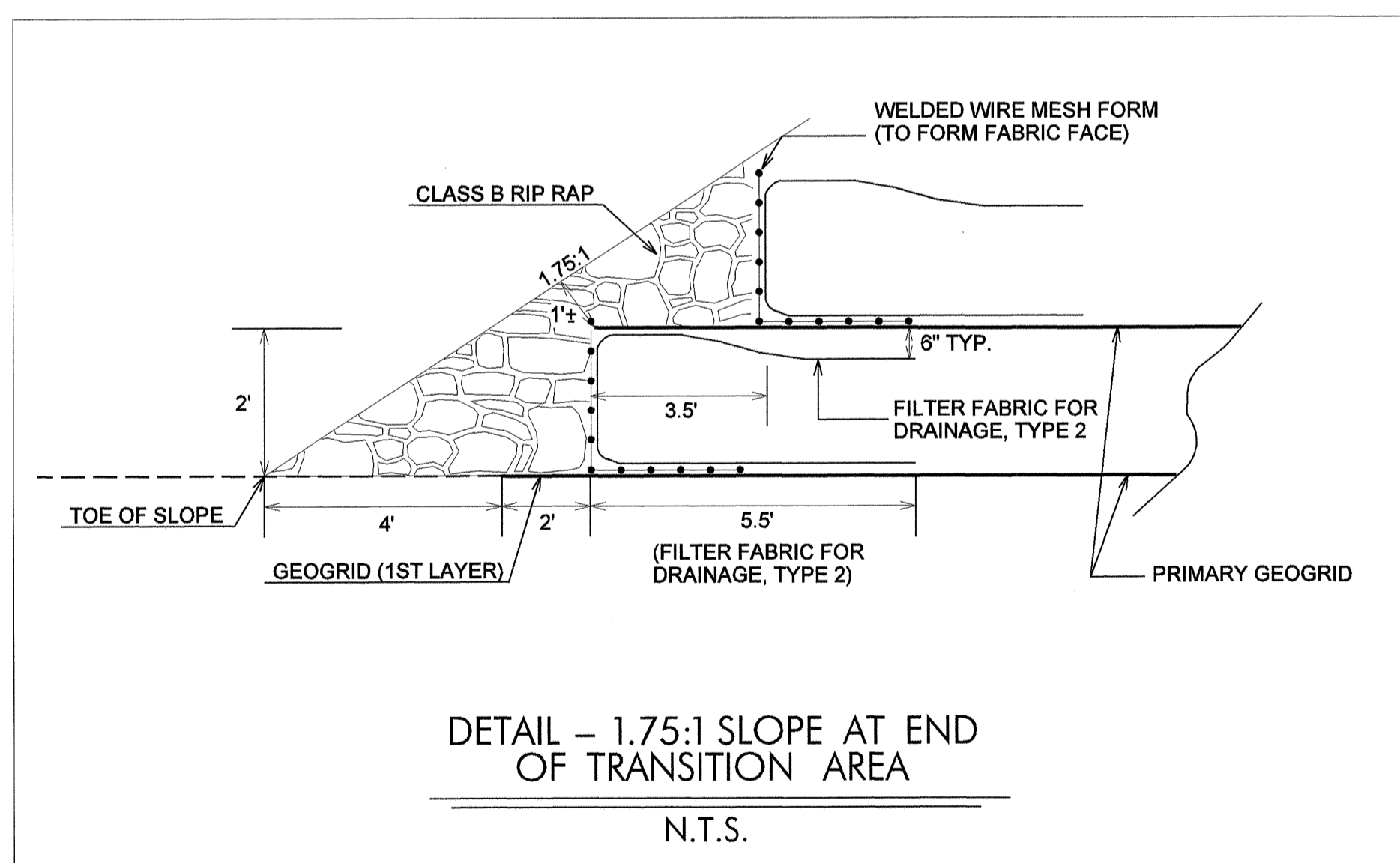
BEGIN SECONDARY GEOGRID 5 FT. BEFORE THE END OF THE PRIMARY GEOGRID. FOR SEPARATION, PLACE FILTER FABRIC FOR DRAINAGE AT THE INTERFACE OF THE RIP RAP AND THE EMBANKMENT SOIL.

TYPICAL SECTION AT SIDE SLOPES FOR SECONDARY GEOGRID

N.T.S.

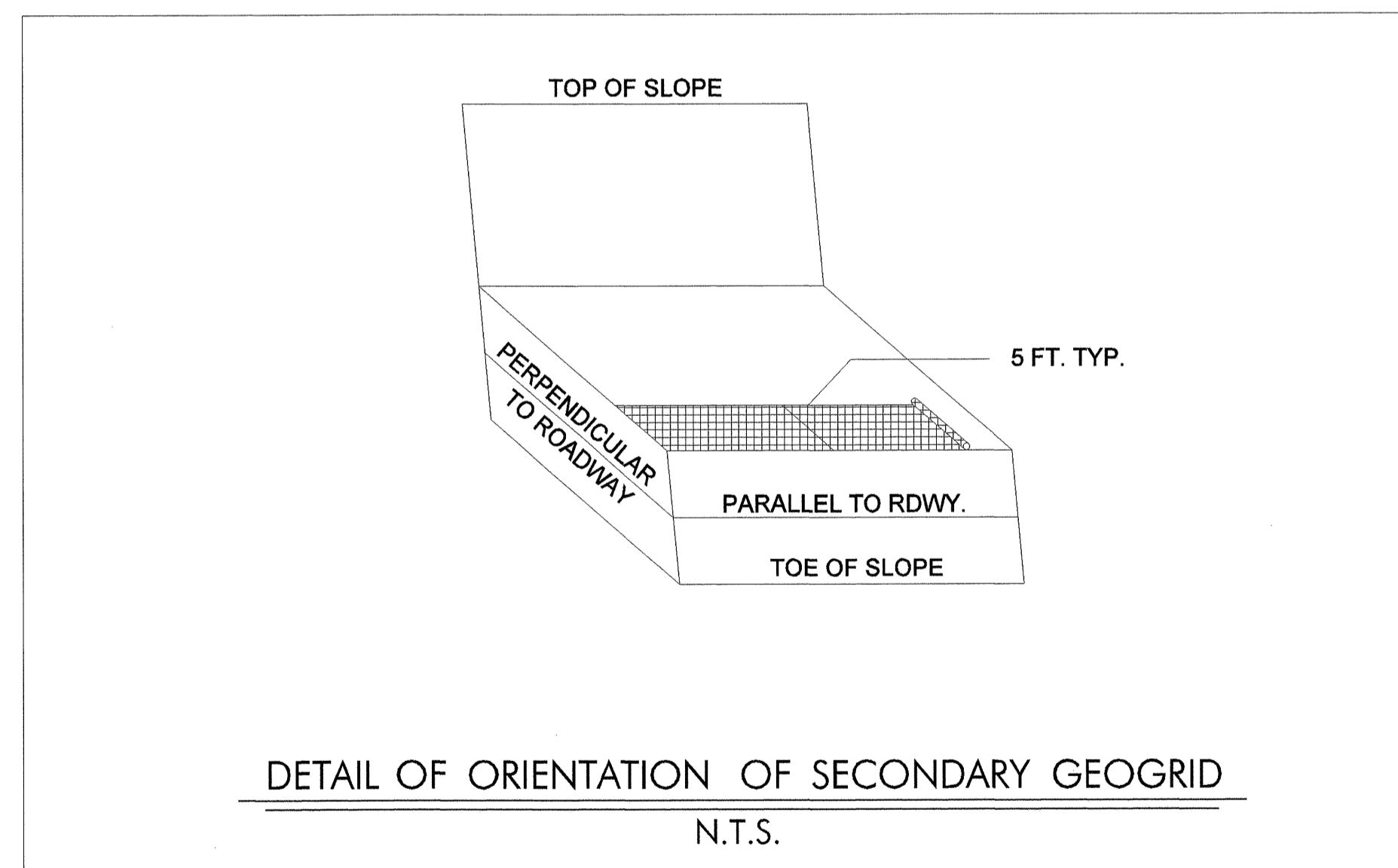
NOTES:

1. PRIMARY GEOGRID REINFORCEMENT SHALL BE PLACED AT BOTH END BENTS SINCE THE PROPOSED END SLOPES ARE 1:1 (H:V). THE SLOPES SHALL BE BENCHES AS SHOWN ON THE TYPICAL SECTION TO ALLOW FOR THE PLACEMENT OF CLASS B RIP RAP SLOPE PROTECTION. TO AVOID DEFORMATION OF THE TOP LAYER OF PRIMARY GEOGRID, HOLES SHOULD BE CUT AT THE ANTICIPATED PILE LOCATIONS PRIOR TO DRIVING PILES.
2. SECONDARY GEOGRID REINFORCEMENT AND PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED ON THE LEFT AND RIGHT SIDE SLOPES BETWEEN SLOPE ANGLES OF 1.75:1 AND 3:1.
3. LAYERS OF REINFORCEMENT MAY NEED TO BE ADDED OR SUBTRACTED AS THE EMBANKMENT HEIGHT VARIES.
4. THE TOP LAYER OF PRIMARY GEOGRID REINFORCEMENT MAY BE LOWERED SLIGHTLY IF NECESSARY TO AVOID INTERFERENCE WITH THE END BENT CAPS.
5. THE PRIMARY GEOGRID REINFORCEMENT SHALL BE PLACED IN CONTINUOUS STRIPS IN THE DIRECTION PERPENDICULAR TO THE TOE OF SLOPE (SEE DETAIL).
6. ADJACENT STRIPS/ROLLS OF GEOGRID SHOULD BE BUTTED UP AGAINST EACH OTHER. PRIMARY GEOGRID IN THE TRANSITION AREAS MAY BE OVERLAPPED IF SEPARATED WITH A MINIMUM OF SIX INCHES OF BACKFILL.
7. THE FIRST LAYER OF GEOGRID SHALL BE PLACED ON LEVEL GROUND, NOT STEEPER THAN 5% GRADE.
8. THE GEOGRID REINFORCED PORTION OF THE 1:1 END SLOPES SHALL BE CONSTRUCTED OF GRANULAR SOIL MEETING THE CRITERIA OF SELECT MATERIAL, CLASS II, TYPE 2 OR CLASS III, TYPE 2, OF SECTION 1016 OF THE NCDOT STANDARD SPECIFICATIONS.
9. THE SECONDARY GEOGRID REINFORCED SIDE SLOPES MAY BE CONSTRUCTED WITH SUITABLE UNCLASSIFIED EXCAVATION OR ACCEPTABLE BORROW MATERIAL.
10. TO PREVENT ACCUMULATION OF SURFACE RUNOFF IN THE TOE OF THE REINFORCED SOIL SLOPE REGION, THE CONTRACTOR SHOULD PROVIDE A DRAINAGE SYSTEM TO DIRECT SURFACE RUNOFF AWAY FROM THE TOE OF SLOPE.
11. SEE THE "SPECIAL PROVISION FOR GEOGRID REINFORCED SLOPES" FOR DETAILED REQUIREMENTS OF MATERIALS AND CONSTRUCTION.
12. THE CONTRACTOR MAY ELECT TO USE A FORMING SYSTEM TO CONSTRUCT THE FABRIC FACE OTHER THAN THE WIRE MESH FORM OPTION SHOWN IN THESE PLANS. HOWEVER, THE ALTERNATE METHOD MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
13. THE ENTIRE EMBANKMENT SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH THE REINFORCED SLOPES.



DETAIL - 1.75:1 SLOPE AT END OF TRANSITION AREA

N.T.S.



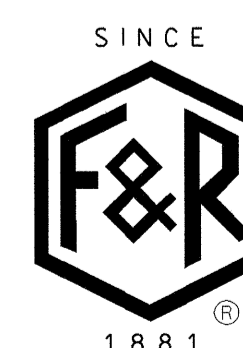
DETAIL OF ORIENTATION OF SECONDARY GEOGRID

N.T.S.

ESTIMATED QUANTITIES	
PRIMARY GEOGRID REINFORCEMENT	4,000 SQ.YDS.
SECONDARY GEOGRID REINFORCEMENT	5,500 SQ.YDS.
SELECT MATERIAL FOR PRIMARY GEOGRID REINFORCEMENT	3,000 CU.YDS.
FILTER FABRIC FOR DRAINAGE, TYPE 2	2,300 SQ.YDS.
PERMANENT SOIL REINFORCEMENT MAT	4,000 SQ.YDS.

ESTIMATED QUANTITIES DO NOT INCLUDE GEOGRID OR FABRIC OVERLAPS OR WASTE.

PREPARED BY: D. RACEY	DATE: 06/07
REVIEWED BY: E.C. HOWEY	DATE: 06/07



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REINFORCED SLOPE

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

COMPUTED BY: JPM DATE: 8/13/07
 CHECKED BY: WTB DATE: 9/13/07

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA *GUARDRAIL SUMMARY*

PROJECT REFERENCE NO. U-3816 SHEET NO. 3-E

RD223186

"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 BEGIN

G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS												
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	III	G					NG											
-L-	44+85.03	49+03.78	RIGHT	418.75			49+03.78		4	11	200		4																											
-L-	44+35.97	48+92.22	LEFT	456.25				48+92.22	4	11		200		4																										
-L-	51+67.50	56+61.25	RIGHT	493.75				51+67.50	4	11		200		4																										
-L-	51+56.38	57+12.63	LEFT	556.25			51+56.38		4	11	200		4																											
SUBTOTAL				1925.00													4						4																	
DEDUCTION FOR GUARDRAIL ANCHOR UNITS				275.00																																				
TOTAL				1650.00													4						4																	
10 EA. ADDITIONAL GUARDRAIL POSTS																																								

DEDUCTIONS FOR GUARDRAIL ANCHOR UNITS
 GRAU TYPE 350 4@50' EACH = 200'
 TYPE III 4@18.75' EACH = 75'
 TOTAL = 275'

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY NO. 1					
17+00.00 TO 29+50.00 -L- LT. SIDE	907		716		191
17+00.00 TO 22+50.00 -Y- RT. SIDE	240		289	49	
SUMMARY TOTAL NO. 1	1147		1006	49	191
SUMMARY NO. 2					
21+25.00 TO 30+00.00 -L- RT. SIDE	59		1039	980	
23+50.00 TO 34+00.00 -Y- RT. SIDE	72		1582	1510	
SUMMARY TOTAL NO. 2	131		2621	2490	
SUMMARY NO. 3					
31+00.00 TO 49+00.00 -L-	3088		48341	45253	
17+00.00 TO 34+00.00 -Y- LT. SIDE	366		2647	2281	
SUMMARY TOTAL NO. 3	3454		50988	47534	
SUMMARY NO. 4					
52+00.00 TO 74+50.00 -L-	2756		58987	56231	
10+00.00 TO 28+50.00 -Y1A-	2618		2790	172	
14+00.00 TO 21+00.00 -Y2- RT. SIDE	488		144		344
22+00.00 TO 29+50.00 -Y2- RT. SIDE	605		104		501
SUMMARY TOTAL NO. 4	6467		62026	56403	845
SUMMARY NO. 5					
75+00.00 TO 87+00.00 -L- LT. SIDE	2097		247		1850
14+00.00 TO 21+00.00 -Y2- LT. SIDE	152		107		45
SUMMARY TOTAL NO. 5	2249		354		1895
SUMMARY NO. 6					
75+00.00 TO 87+00.00 -L- RT. SIDE	841		560		281
22+00.00 TO 29+50.00 -Y2- LT. SIDE	226		559	333	
SUMMARY TOTAL NO. 6	1067		1120	333	281
TOTAL SUMMARIES	14515		118114	106809	3211
LOSS DUE TO CLEARING AND GRUBBING	-2500			2500	
WASTE TO BE USED IN LIEU OF BORROW				-3211	-3211
ADDITIONAL SHOULDER MATERIAL			3980	3980	
PROJECT TOTAL	12015			110979	
EST. 5% FOR REPLACING TOPSOIL AT BORROW PIT				5549	
GRAND TOTAL	12015			116528	
SAY	12500			117000	
ESTIMATE 1125 CU. YDS DDE					
ESTIMATE 2000 CU. YDS UNDERCUT					
ESTIMATE 2000 CU. YDS SELECT GRANULAR MATERIAL					
ESTIMATE 1000 CU. YDS CLASS IV SUBGRADE STABILIZATION					

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

IN SQUARE YARDS

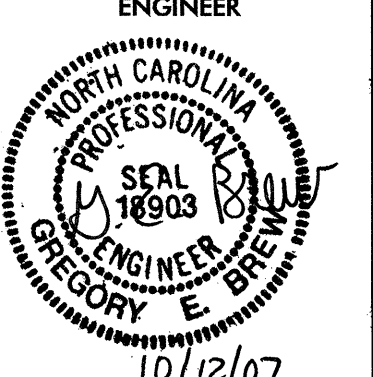
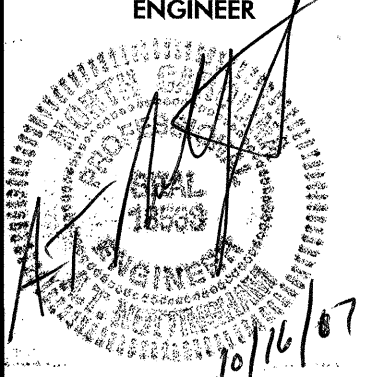
LINE	STATION TO STATION	LOCATION	SQ. YDS.
-Y-	28+26.00 TO 28+52.00	CENTER	69
-Y1-	13+10.83 TO 14+47.51	CENTER	119
-Y1-	14+47.51 TO 29+42.29	CENTER	3322
-Y1-	29+42.29 TO 29+51.75	CENTER	21
-L-	79+77.86 TO 84+87.15	RIGHT	739
		TOTAL	4270
		SAY	4280

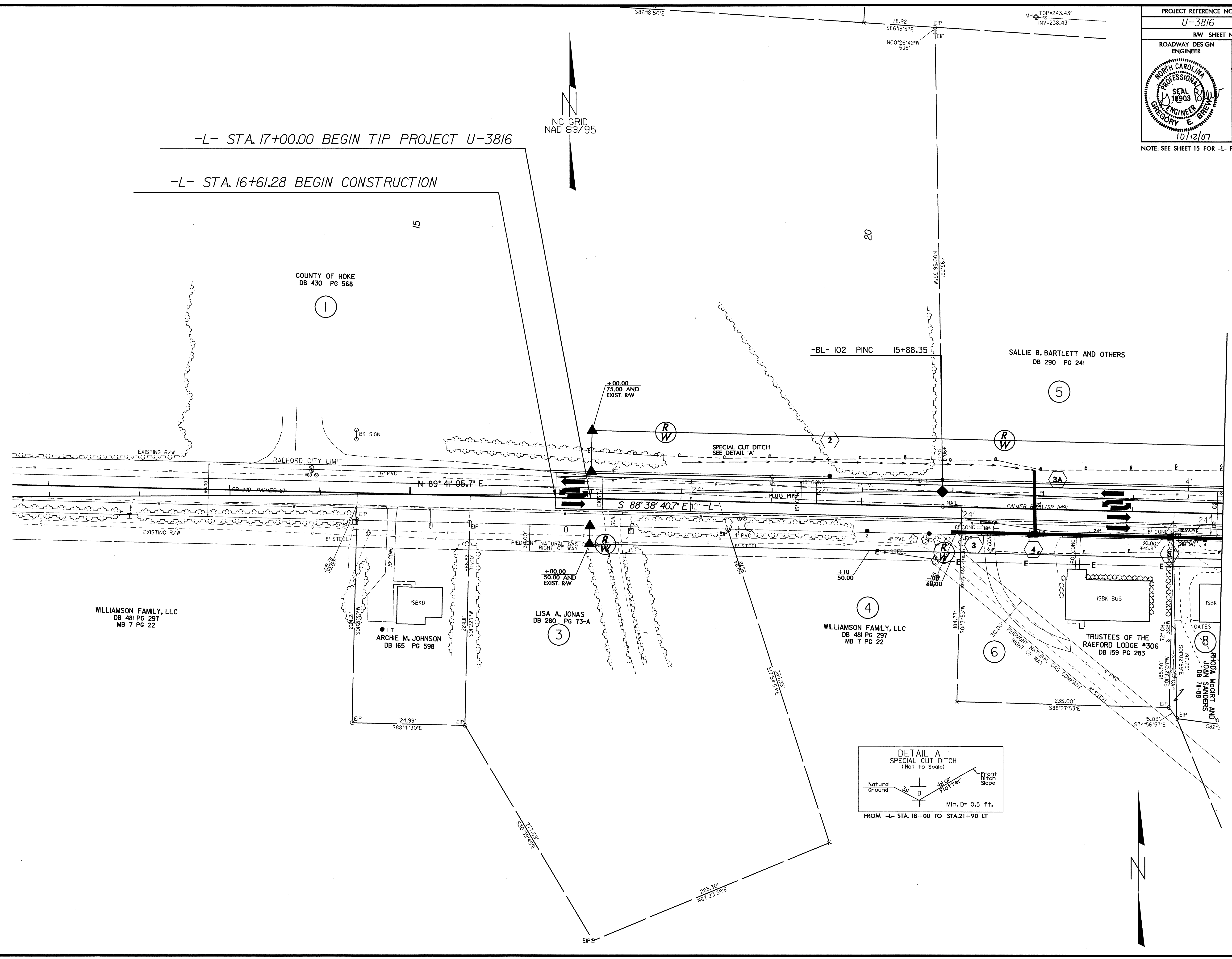
Quantities are approximate only. the resident engineer recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

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.

5/9/206 08-OCT-2007 15:38 1:38:51 PM C:\PROJECTS\3816-rdy-sum.dgn

8/17/99
09-OCT-2007 07:56 2816_r.dwg_psh4.dgn

PROJECT REFERENCE NO. U-3816	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
NOTE: SEE SHEET 15 FOR -L- PROFILE	



MATCHLINE STA. 24+00.00 -L- SEE SHEET 5

8/17/99

ES, LIMITED PARTNERSHIP
236 PG 44

PROJECT REFERENCE NO. U-3816	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER GREGORY E. BREWSTER 10/12/07	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SHAL 18533 A.L. NOTTINGHAM 10/16/07

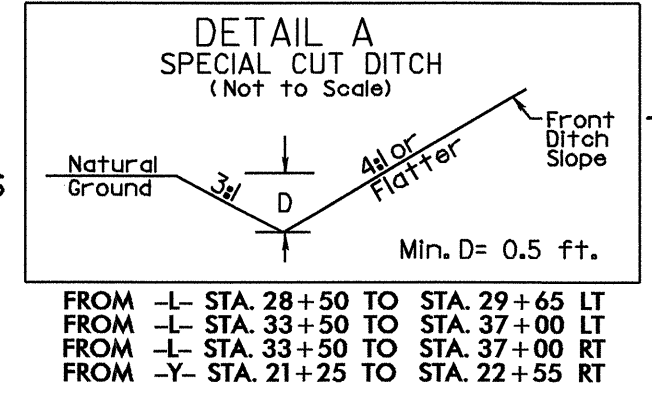
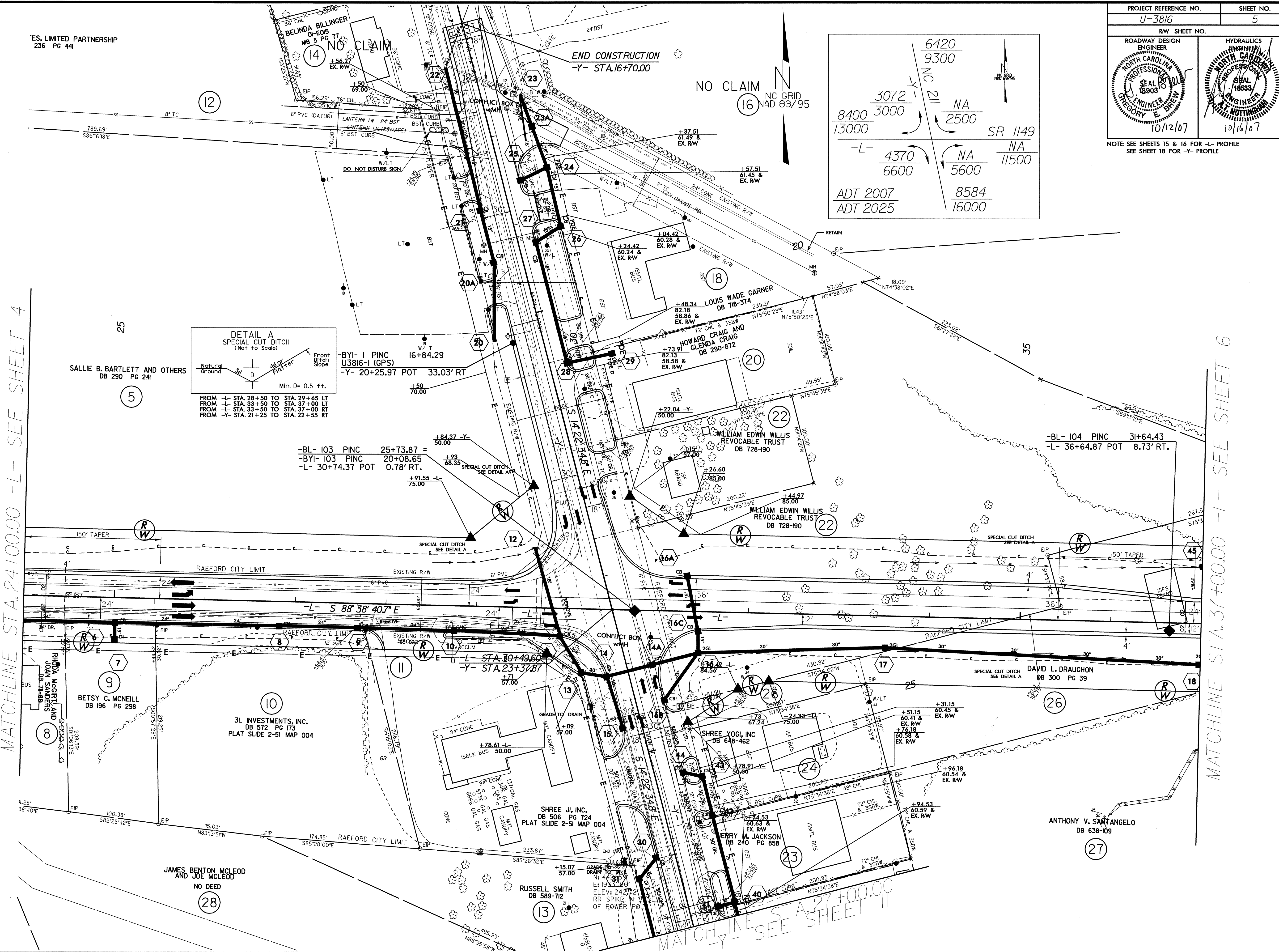
NOTE: SEE SHEETS 15 & 16 FOR -L- PROFILE
SEE SHEET 18 FOR -Y- PROFILE

6420 9300	3072 3000	NA 2500	SR 1149
8400 13000	4370 6600	NA 5600	NA 11500
-L-	ADT 2007	8584	
	ADT 2025	16000	

MATCHLINE STA. 24+00.00 -L- SEE SHEET 4

MATCHLINE STA. 37+00.00 -L- SEE SHEET 6

12-OCT-2007 12:06
U-3816_rdw.pst5.dgn
5:58:58 PM



-BL- 103 PINC 25+73.87 =
-BYI- 103 PINC 20+08.65
-L- 30+74.37 POT 0.78' RT.

-BL- 104 PINC 31+64.43
-L- 36+64.87 POT 8.73' RT.

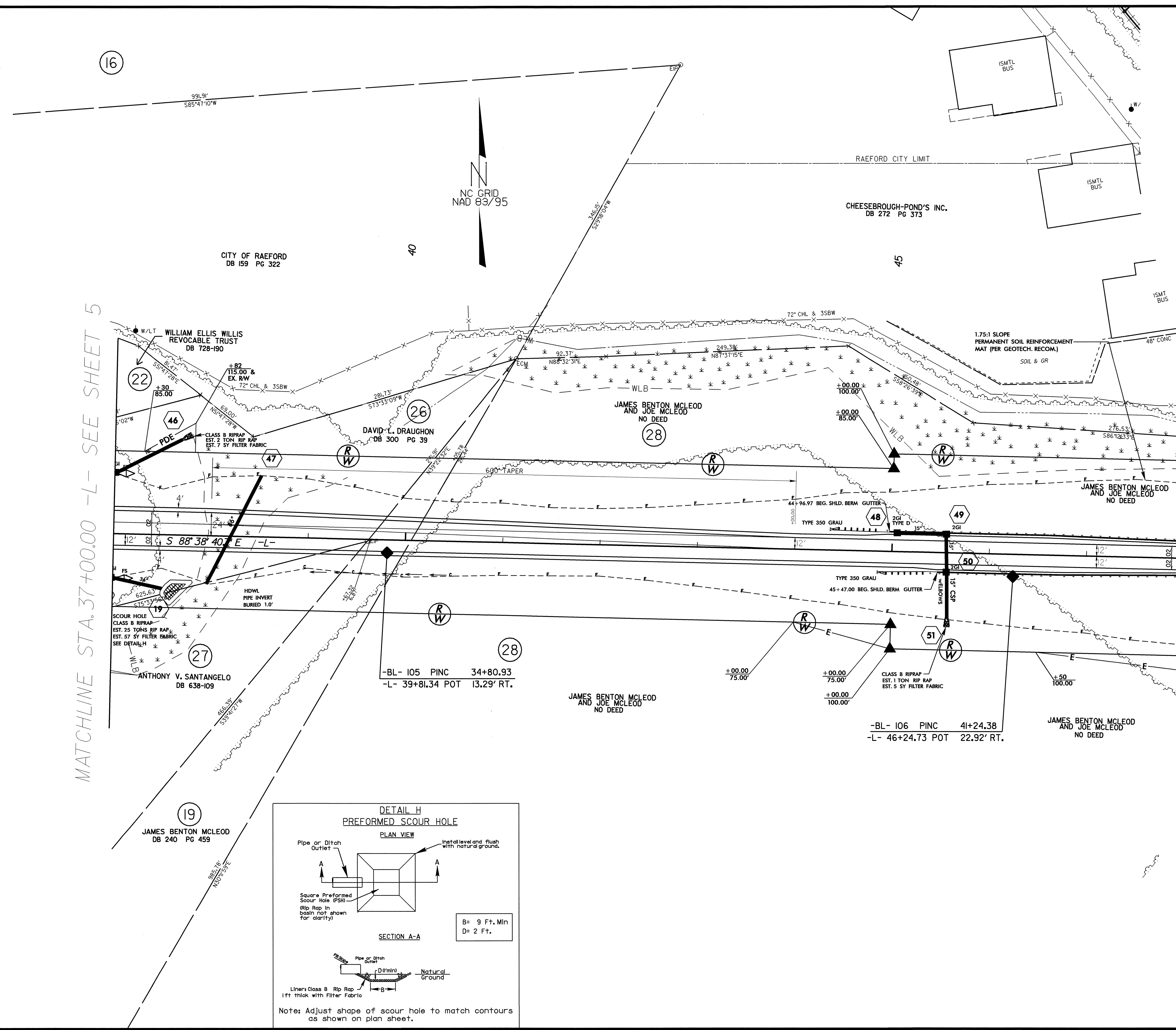
JAMES BENTON MCLEOD
AND JOE MCLEOD
NO DEED

MATCHLINE STA. 27+00.00
-Y- SEE SHEET 11

8/17/09

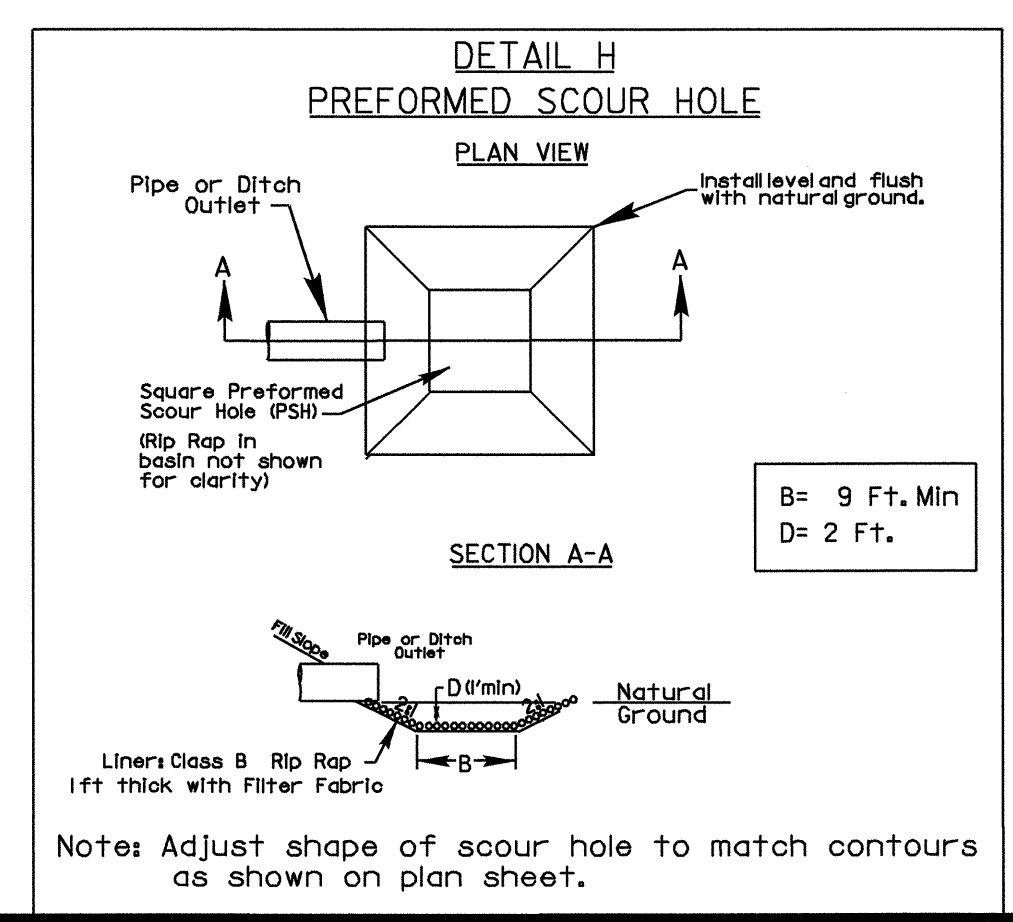
PROJECT REFERENCE NO. U-3816	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL GREGORY E. BREW 10/12/07	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 10/16/07

NOTE: SEE SHEET 16 FOR -L- PROFILE



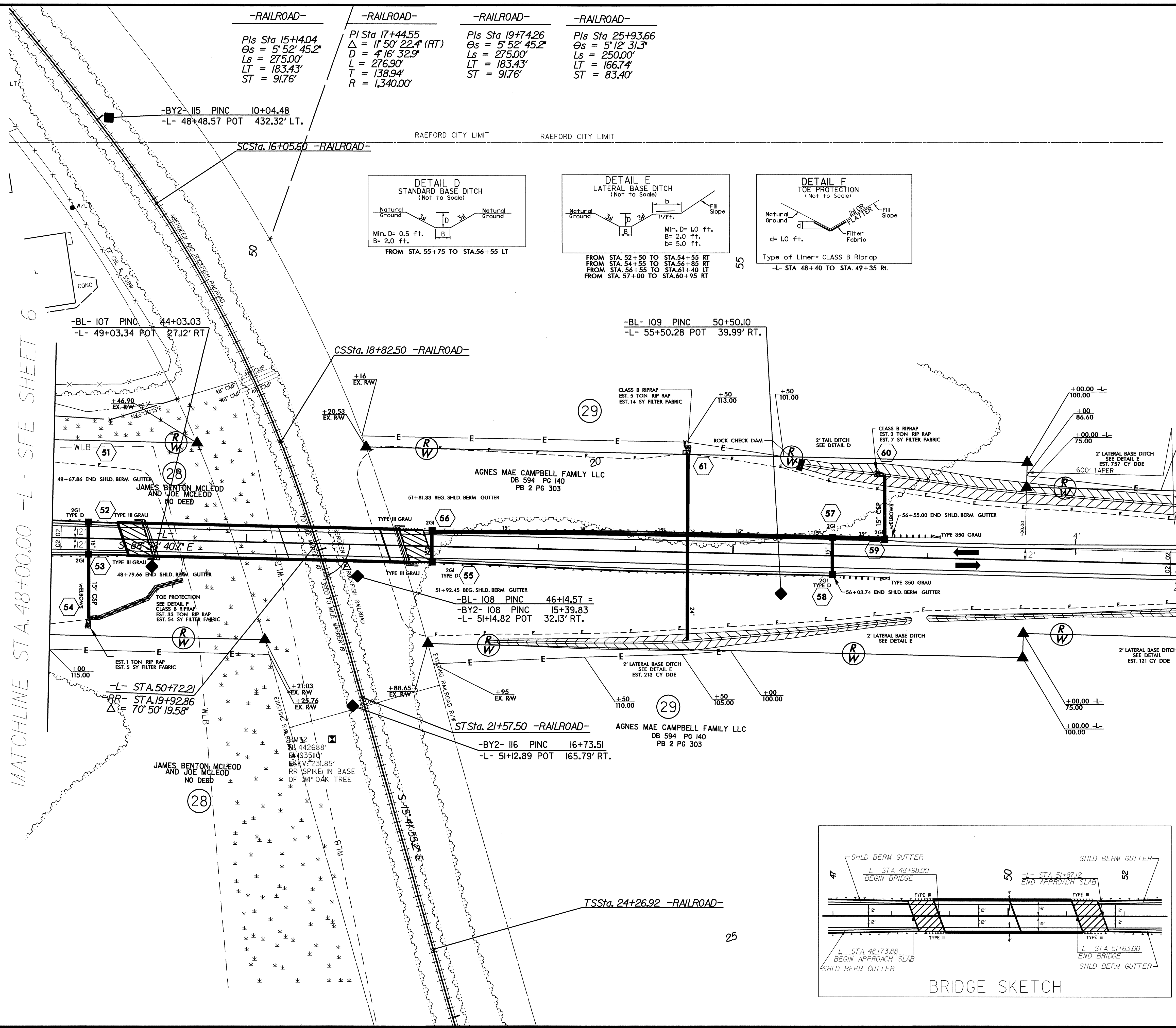
MATCHLINE STA. 37+00.00 -L- SEE SHEET 5

MATCHLINE STA. 48+00.00 -L- SEE SHEET 7



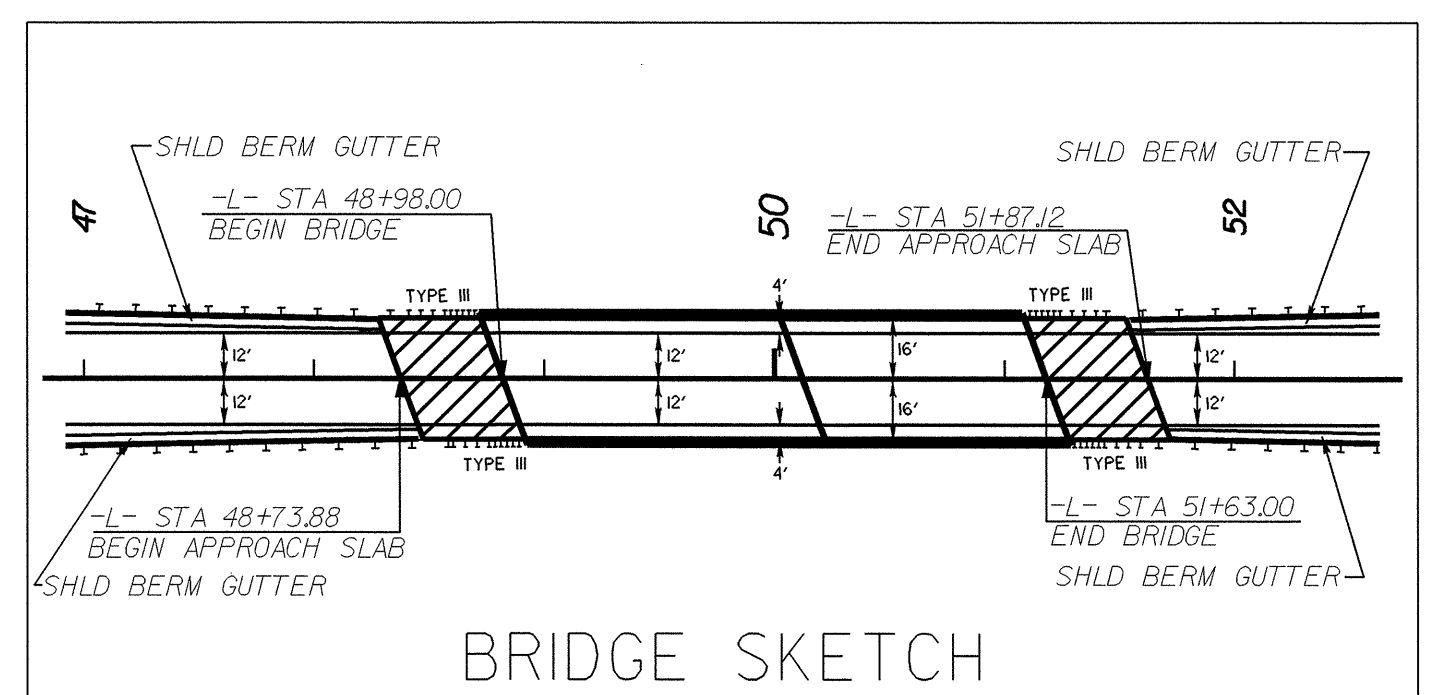
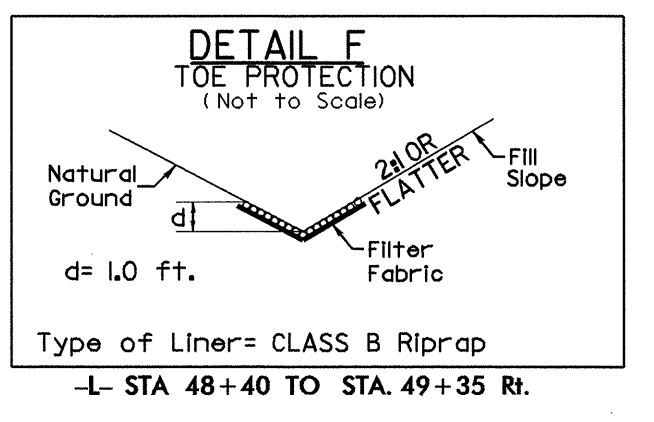
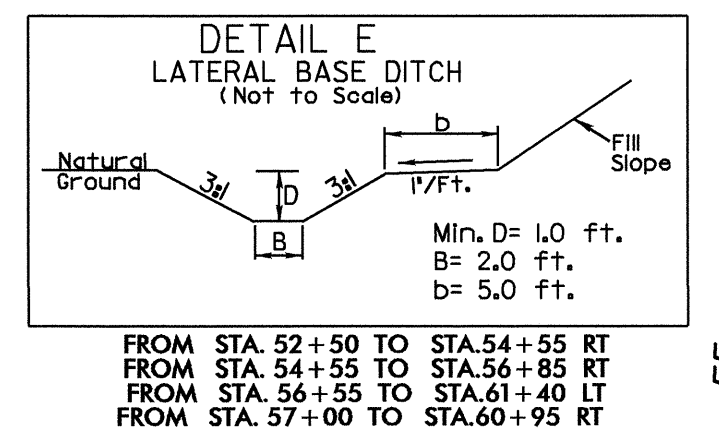
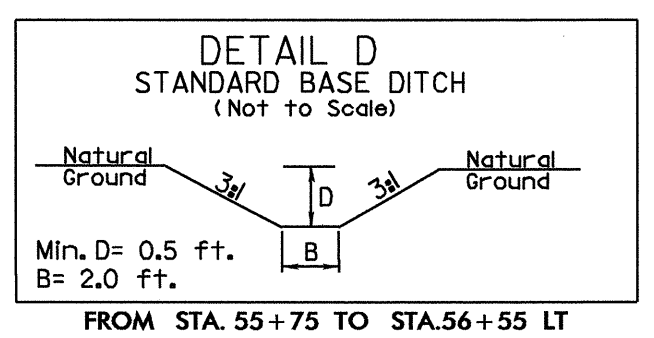
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NOTE: SEE SHEET 16 FOR -L- PROFILE



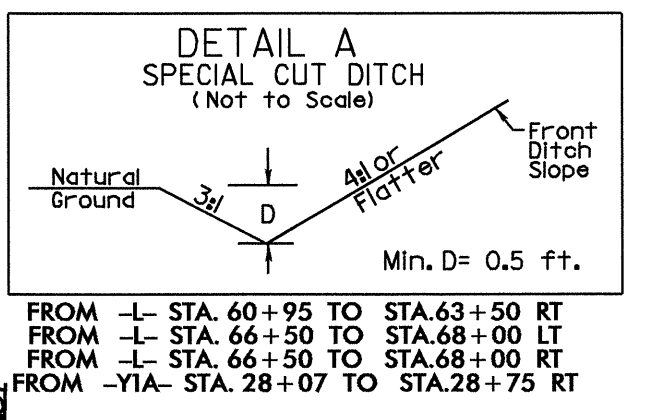
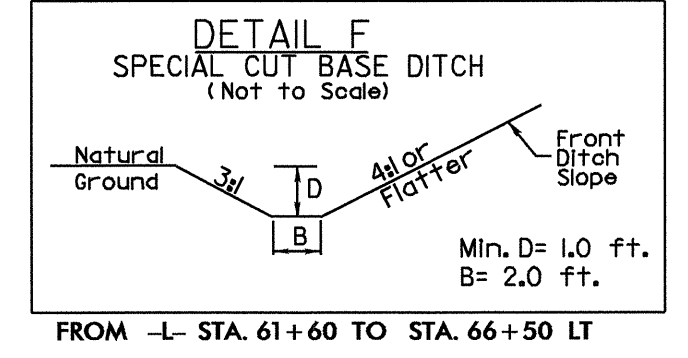
MATCHLINE STA. 48+00.00 -L- SEE SHEET 6

MATCHLINE STA. 60+00.00 -L- SEE SHEET 8



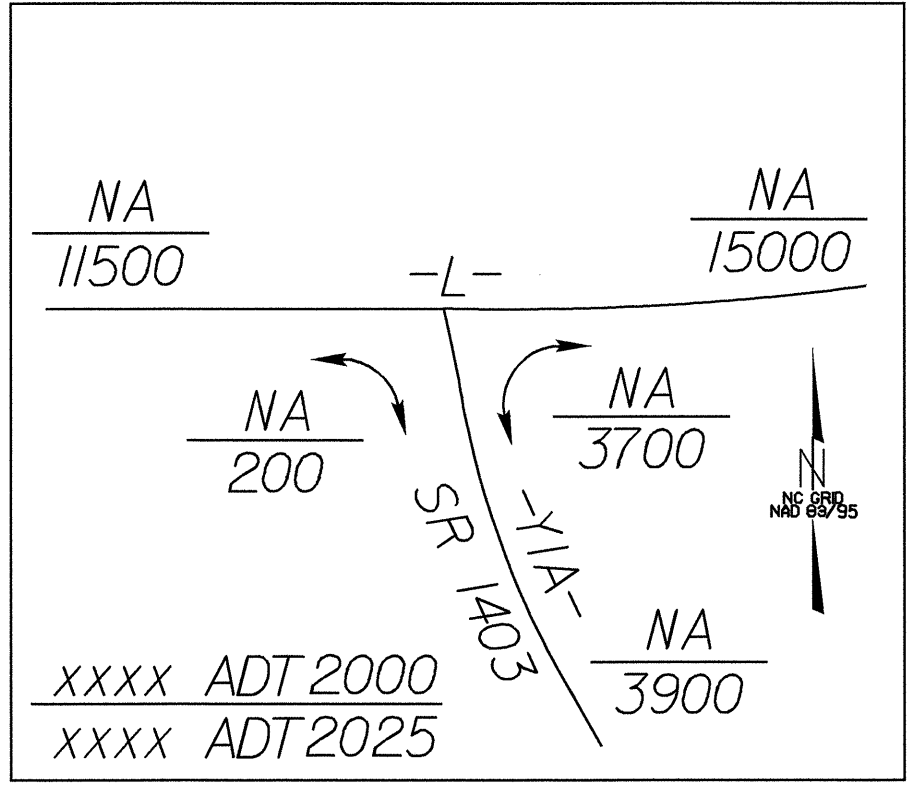
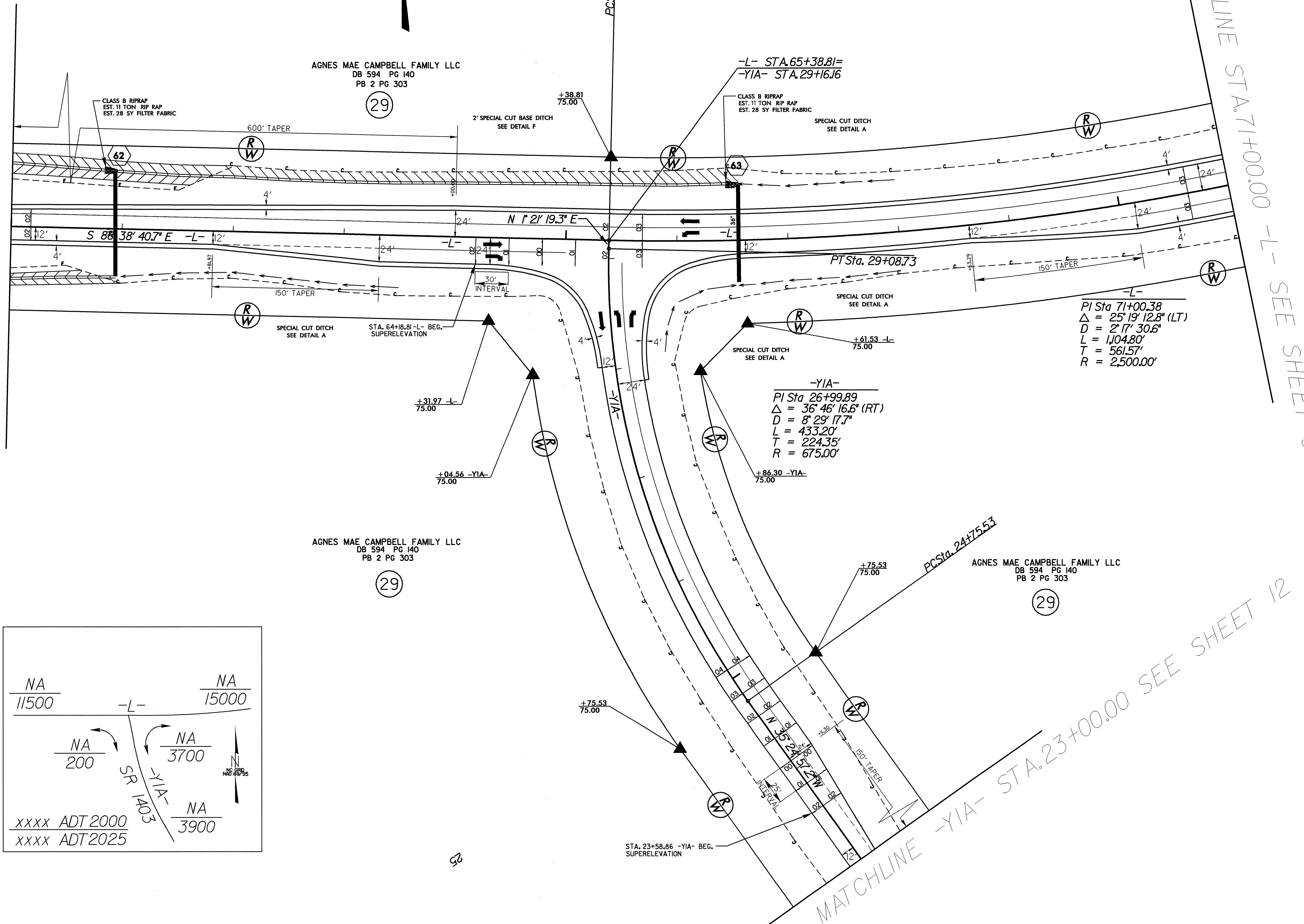
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NOTE: SEE SHEETS 16 & 17 FOR -L- PROFILE
SEE SHEET 19 FOR -YIA- PROFILE



MATCHLINE STA.60+00.00 -L- SEE SHEET 7

MATCHLINE STA.71+00.00 -L- SEE SHEET 9



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8/17/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE: SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 20 FOR -Y2- PROFILE

MATCHLINE -Y2- STA.17+00.00 SEE SHEET 13

MATCHLINE STA.71+00.00 -L- SEE SHEET 8

MATCHLINE STA.82+00.00 -L- SEE SHEET 10

MATCHLINE -Y1- STA.24+00.00
SEE SHEET 12

MATCHLINE -Y2- STA.26+00.00 SEE SHEET 14

PAVEMENT REMOVAL

-Y2-
 PI Sta 20+92.23
 $\Delta = 4' 17" 41.0" (RT)$
 $D = 0' 52" 53.3"$
 $L = 487.22'$
 $T = 243.72'$
 $R = 6,500.00'$

AGNES MAE CAMPBELL FAMILY LLC
DB 594 PG 140
PB 2 PG 303

-BL- IIO PINC 69+80.69 =
 -BY3- IIO PINC 17+52.81 =
 -BY4- IIO POT 5+00.00
 -L- 74+95.26 POC 14.74' LT.

BM#3
 N: 443147
 E: 1937265
 ELEV: 249.38'
 RR SPIKE IN BASE
 OF POWER POLE

-L-
 PI Sta 71+00.38
 $\Delta = 25' 19" 12.8" (LT)$
 $D = 2' 17" 30.6"$
 $L = 1,044.80'$
 $T = 561.57'$
 $R = 2,500.00'$

AGNES MAE CAMPBELL FAMILY LLC
DB 594 PG 140
PB 2 PG 303

-L- -Y1-
 PI Sta 27+81.86 $\Delta = 6' 52" 31.8" (RT)$
 $D = 5' 52" 35.4"$
 $L = 117.00'$
 $T = 58.57'$
 $R = 975.00'$

PI Sta 29+18.83 $\Delta = 24' 48" 15.8" (RT)$
 $D = 16' 22" 12.8"$
 $L = 151.52'$
 $T = 76.97'$
 $R = 350.00'$

AGNES MAE CAMPBELL FAMILY LLC
DB 594 PG 140
PB 2 PG 303

-L-
 PI Sta 82+67.46
 $\Delta = 37' 03" 02.2" (LT)$
 $D = 5' 43" 46.5"$
 $L = 646.66'$
 $T = 335.09'$
 $R = 1,000.00'$

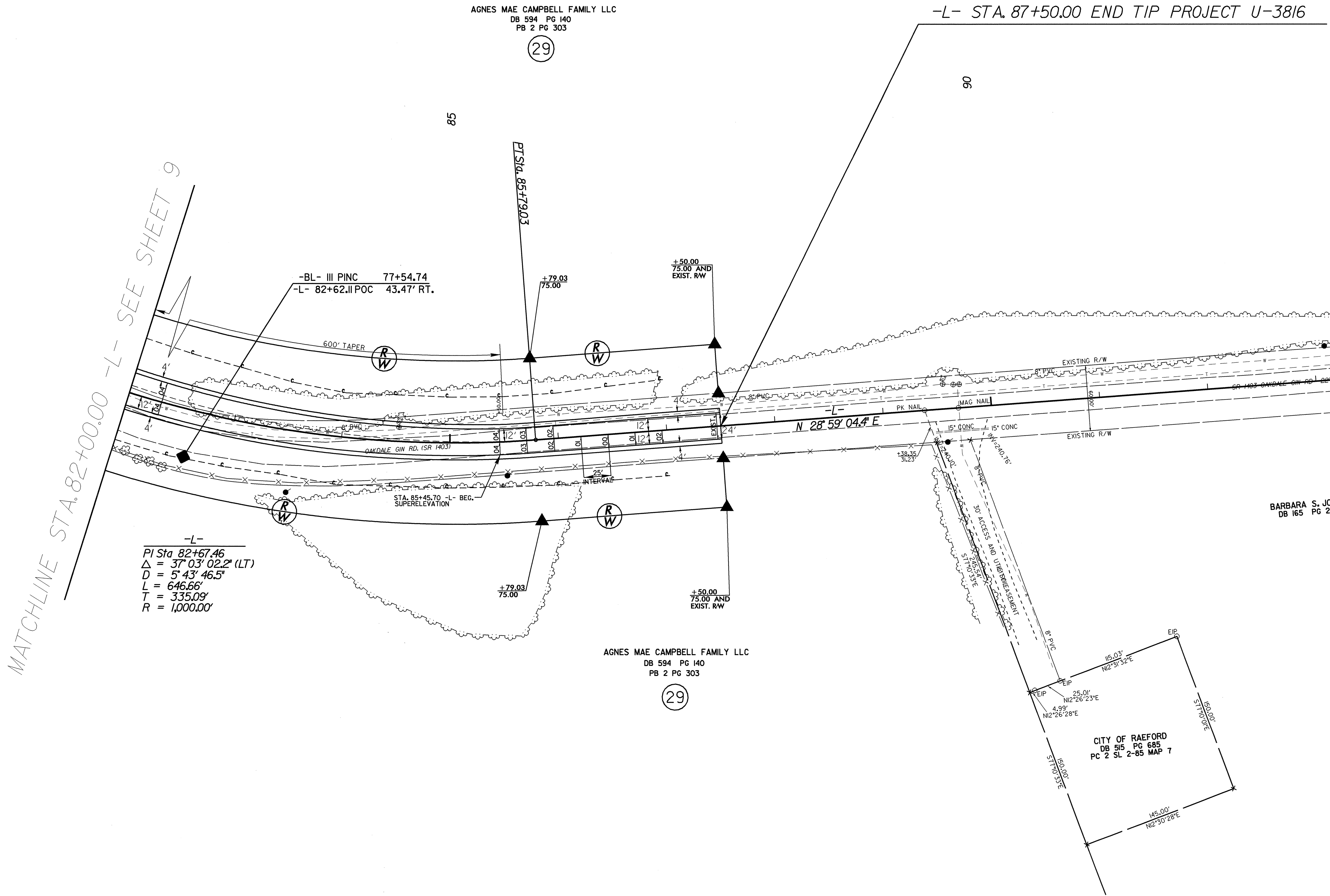
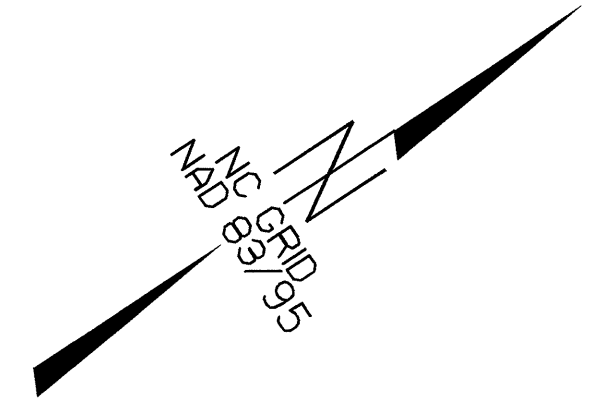
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ADT 2025	4800		
800	665	7440	
NA	1600	15000	
NA	2100		
NA			SR 1403
15000	1536	2400	
SR 1403	1900		
3900	100	3385	
NA	NA	5400	

12-OCT-2007 12:06 u:\3816_r\dj_psh9.dgn

8/17/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 18903 GREGORY E. BREW 10/12/07	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 18533 L. NOTTINGHAM 10/16/07

NOTE: SEE SHEET 17 FOR -L- PROFILE



-L-
 PI Sta 82+67.46
 $\Delta = 37^{\circ} 03' 02.2''$ (LT)
 $D = 5^{\circ} 43' 46.5''$
 $L = 646.66'$
 $T = 335.09'$
 $R = 1,000.00'$

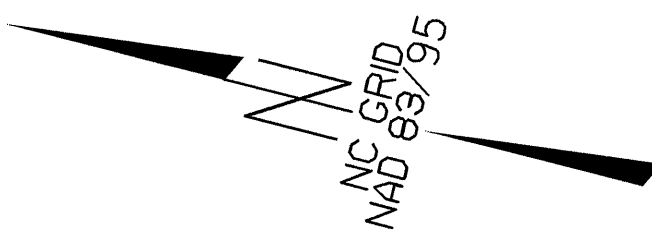
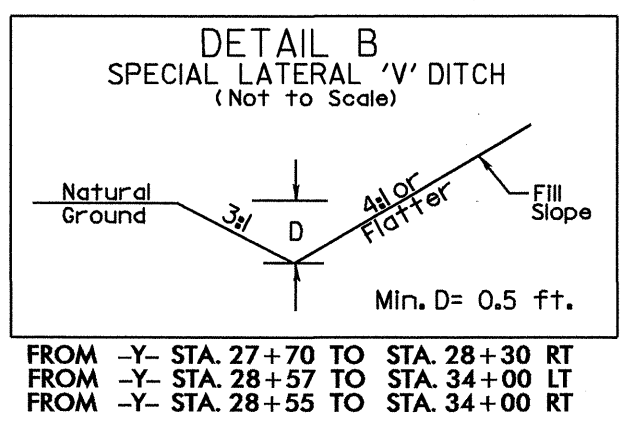
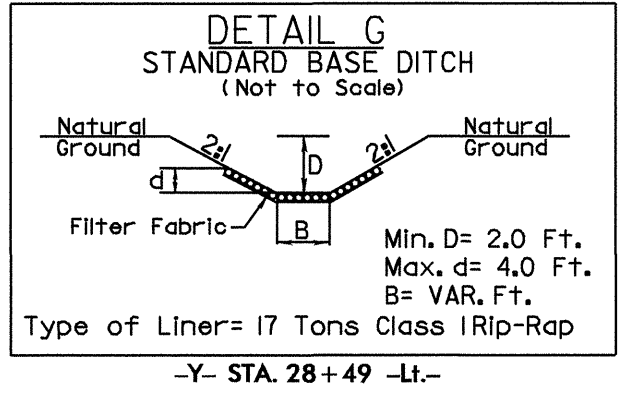
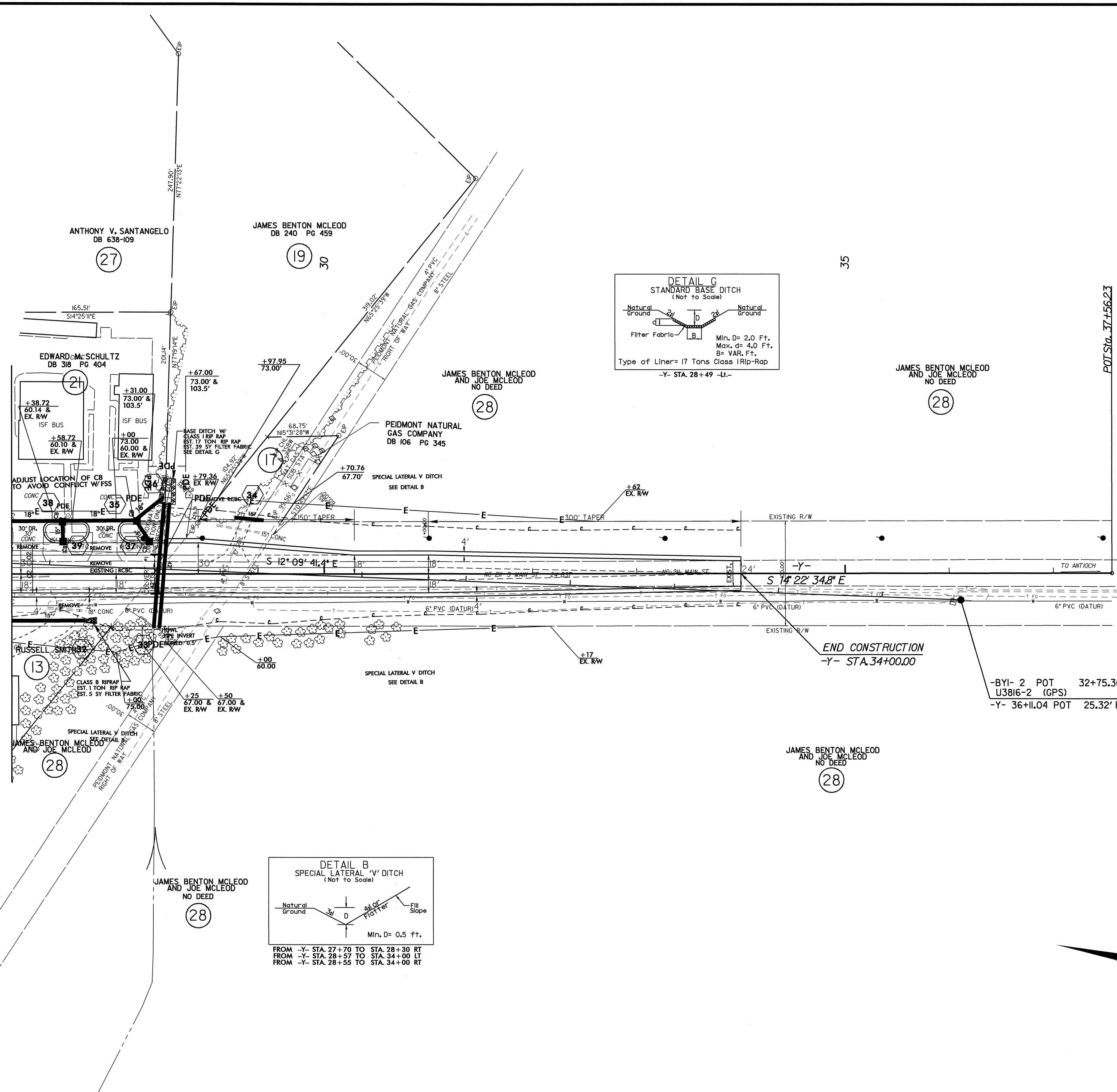
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8/17/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER GREGORY E. BRUNN	HYDRAULICS ENGINEER A. NOTTINGHAM

NOTE: SEE SHEET 18 FOR -Y- PROFILE

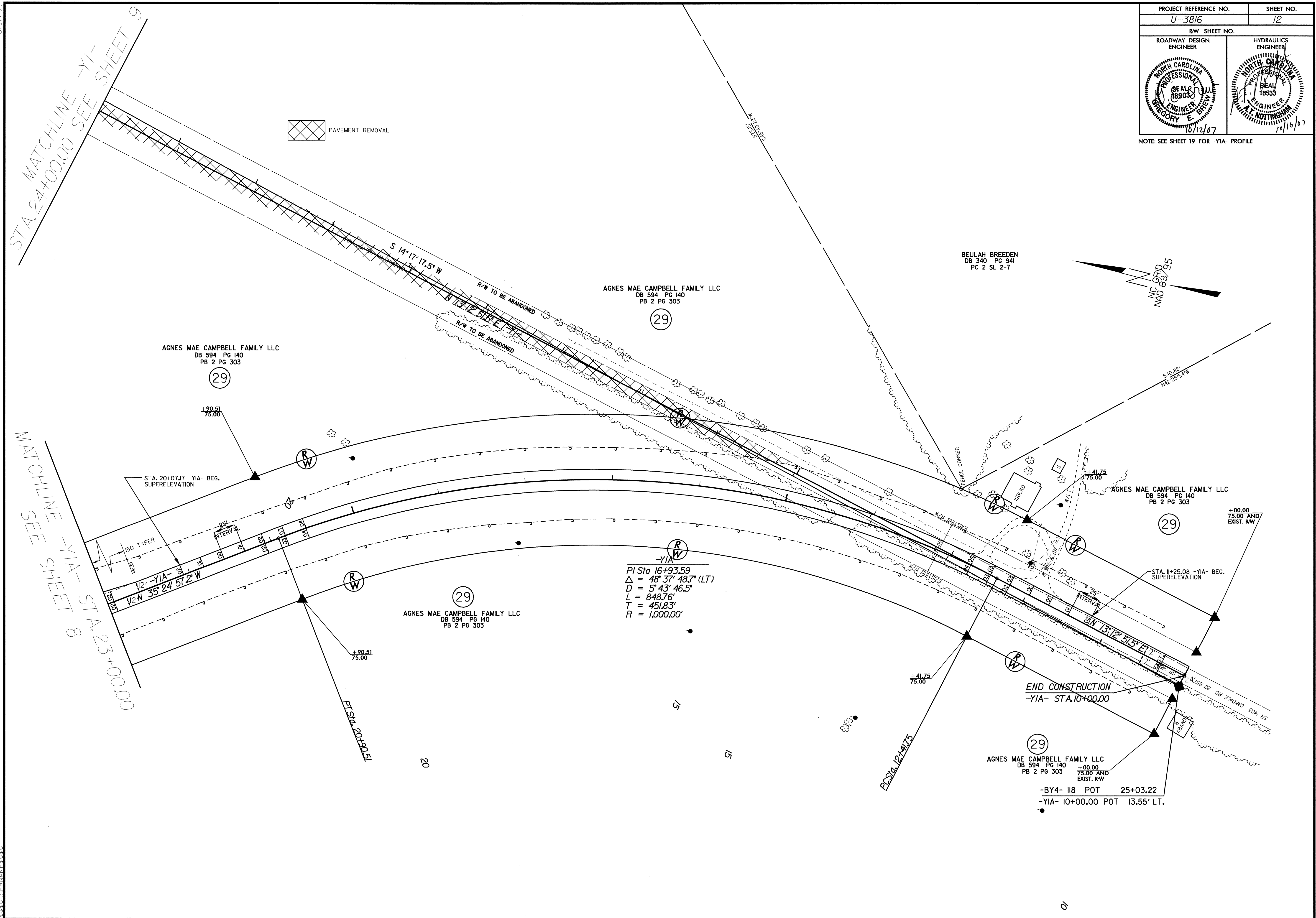
MATCHLINE STA. 27+00.00 -Y- SEE SHEET 5



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PROJECT REFERENCE NO. U-3816	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRALLICS ENGINEER

NOTE: SEE SHEET 19 FOR -YIA- PROFILE

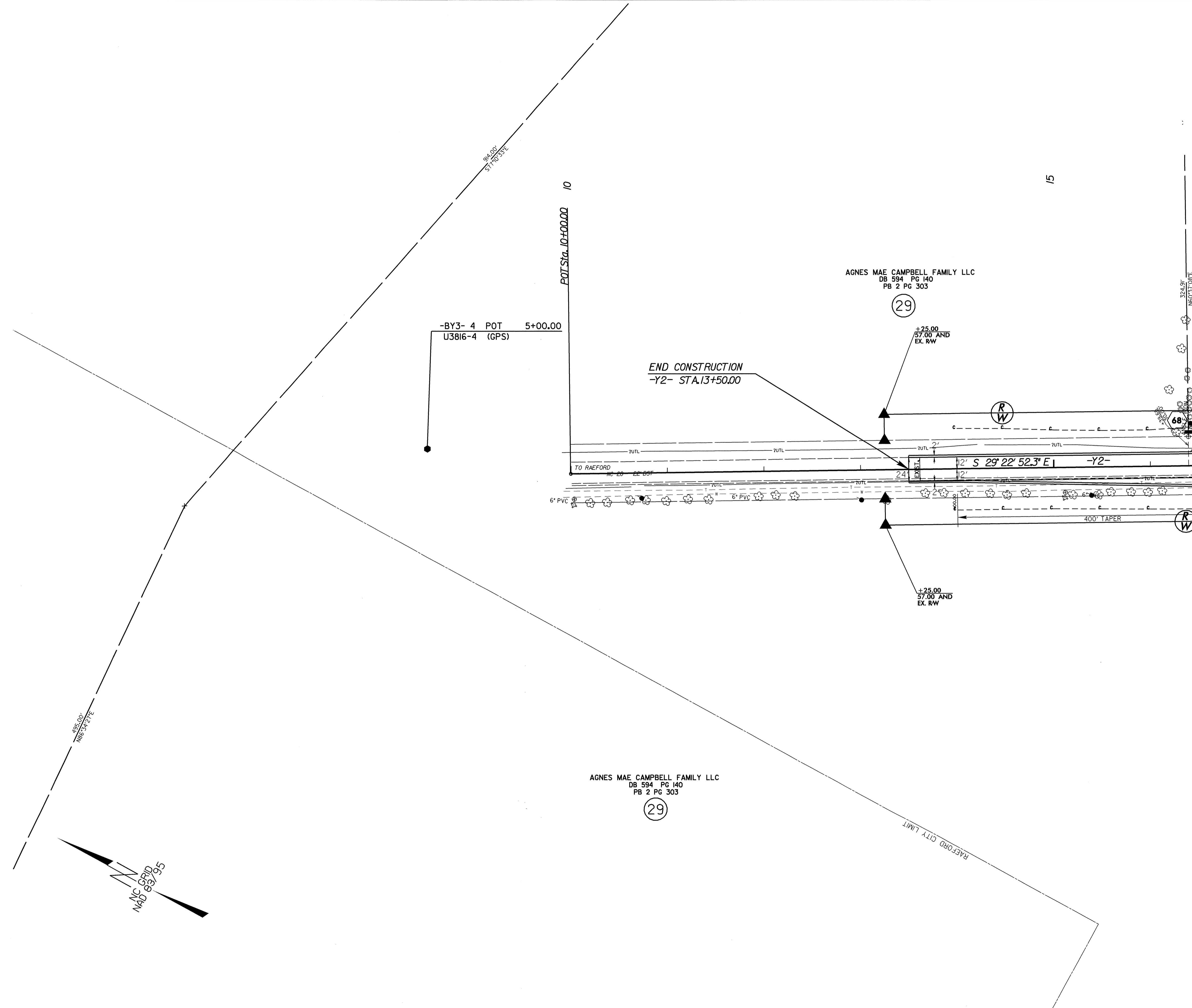


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 8/17/99

8/17/99

PROJECT REFERENCE NO.		SHEET NO.	
U-3816		13	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

NOTE: SEE SHEET 20 FOR -Y2- PROFILE

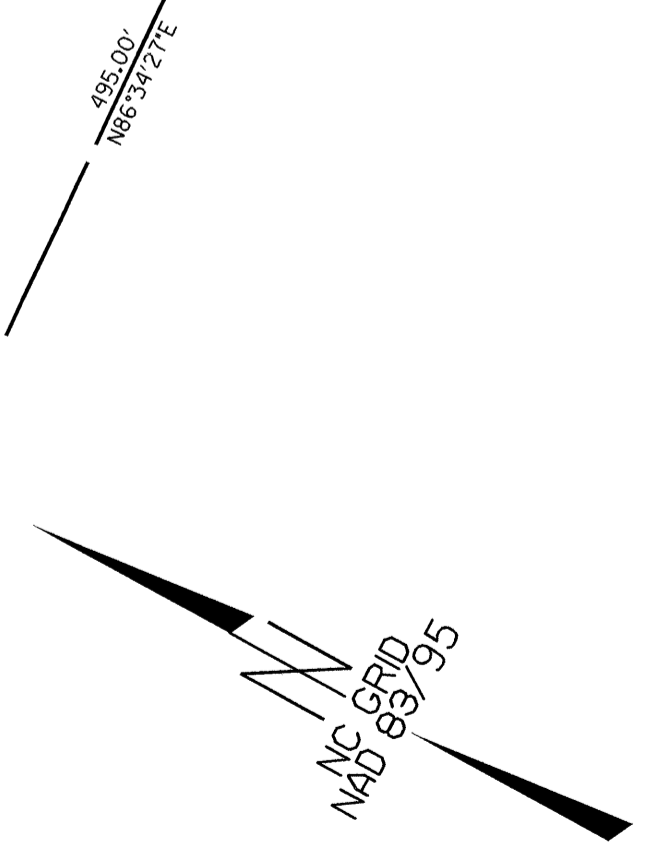


(31)
 JOHN R. MAXWELL
 DB 282 PG 478

MATCHLINE -Y2- STA.17+00.00 SEE SHEET 9

70

08-OCT-2007 15:38
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AGNES MAE CAMPBELL FAMILY LLC
 DB 594 PG 140
 PB 2 PG 303

(29)

AGNES MAE CAMPBELL FAMILY LLC
 DB 594 PG 140
 PB 2 PG 303

(29)

-BY3- 4 POT 5+00.00
 U3816-4 (GPS)

END CONSTRUCTION
 -Y2- STA.13+50.00

+25.00
 57.00 AND
 EX. RW

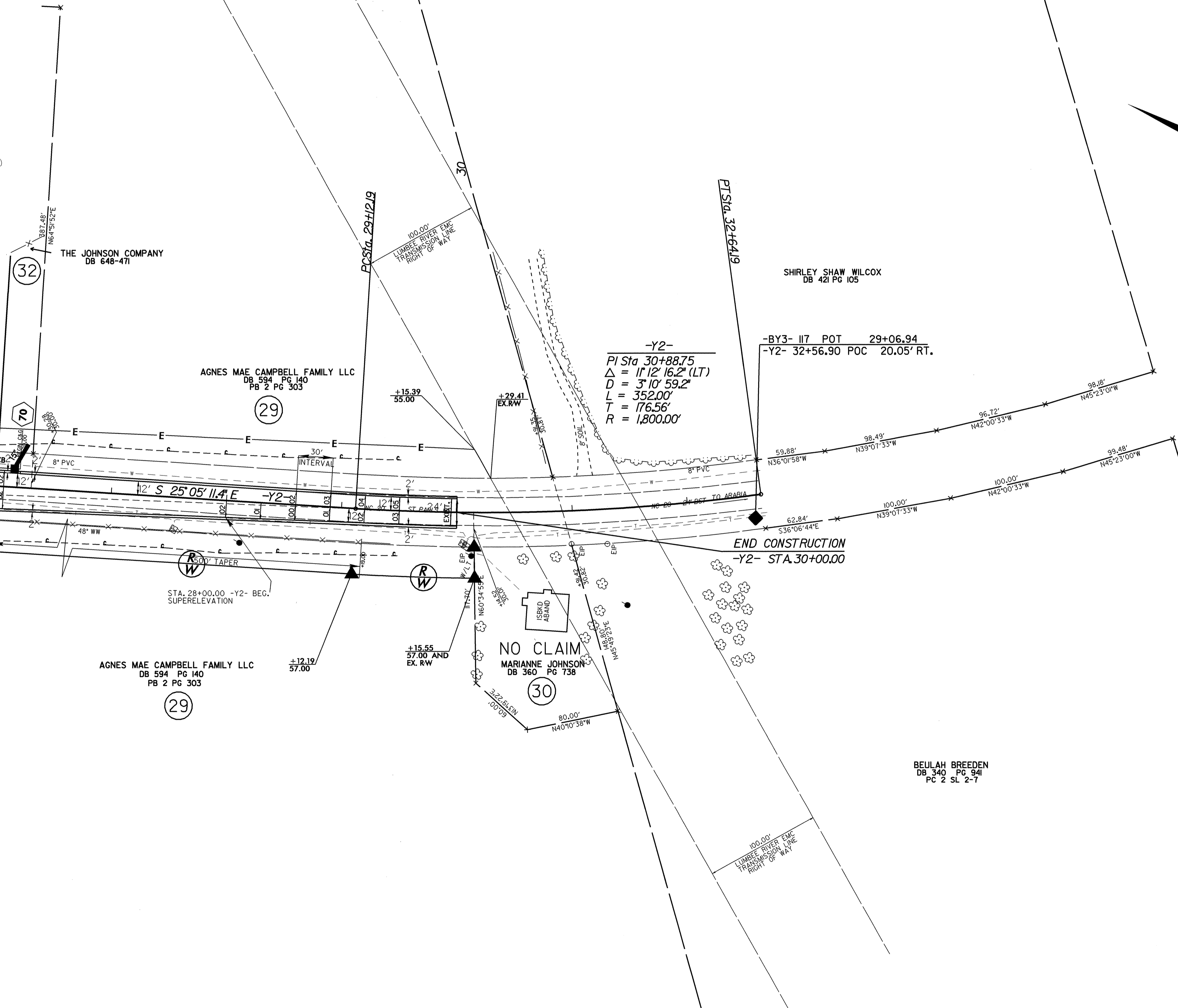
+25.00
 57.00 AND
 EX. RW

RAEFORD CITY LIMIT

PROJECT REFERENCE NO. U-3816	SHEET NO. 14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER GREGORY E. BIEW SEAL 18903 10/12/07	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 18533 10/16/07

NOTE: SEE SHEET 20 FOR -Y2- PROFILE

MATCHLINE -Y2- STA. 26+00.00 SEE SHEET 9



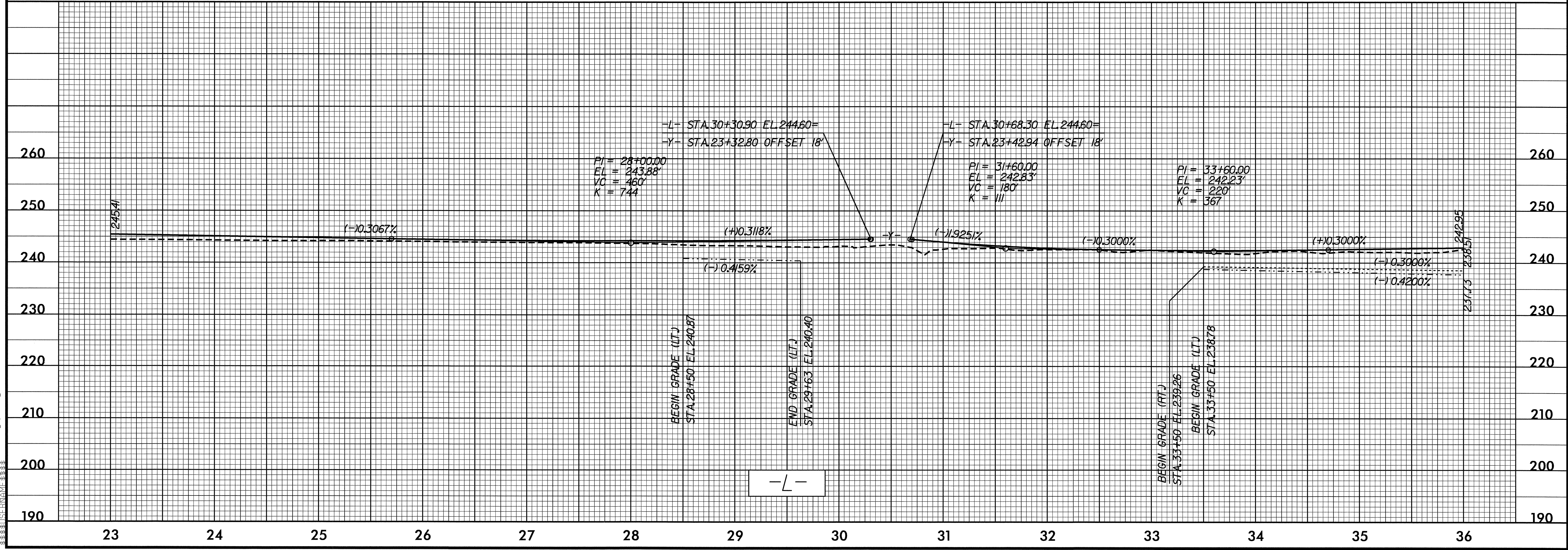
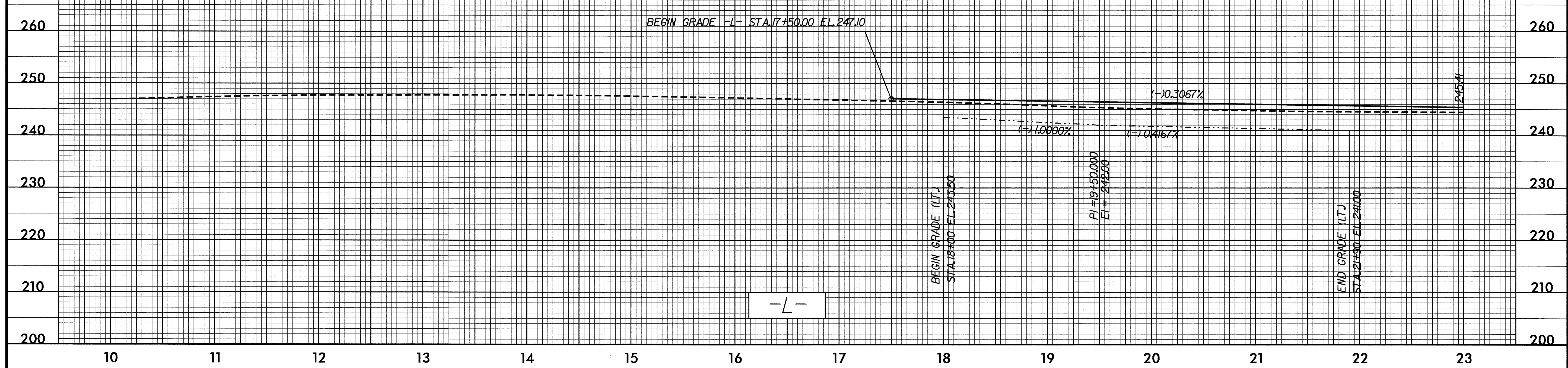
8/17/99

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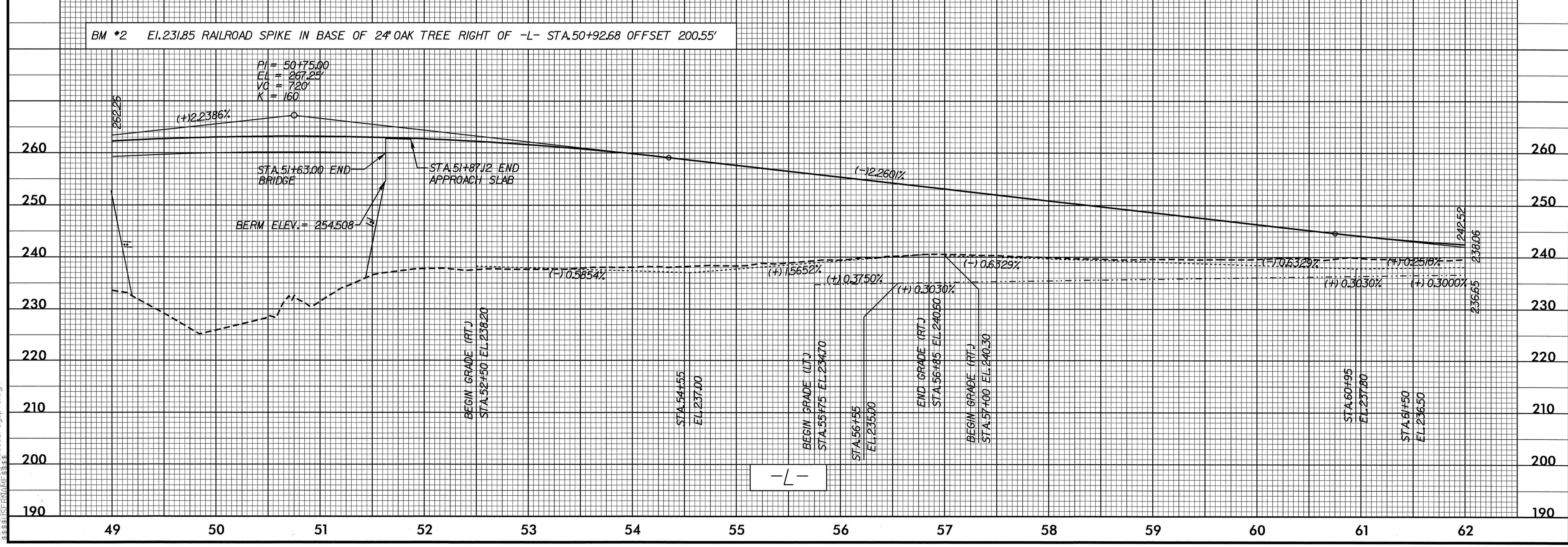
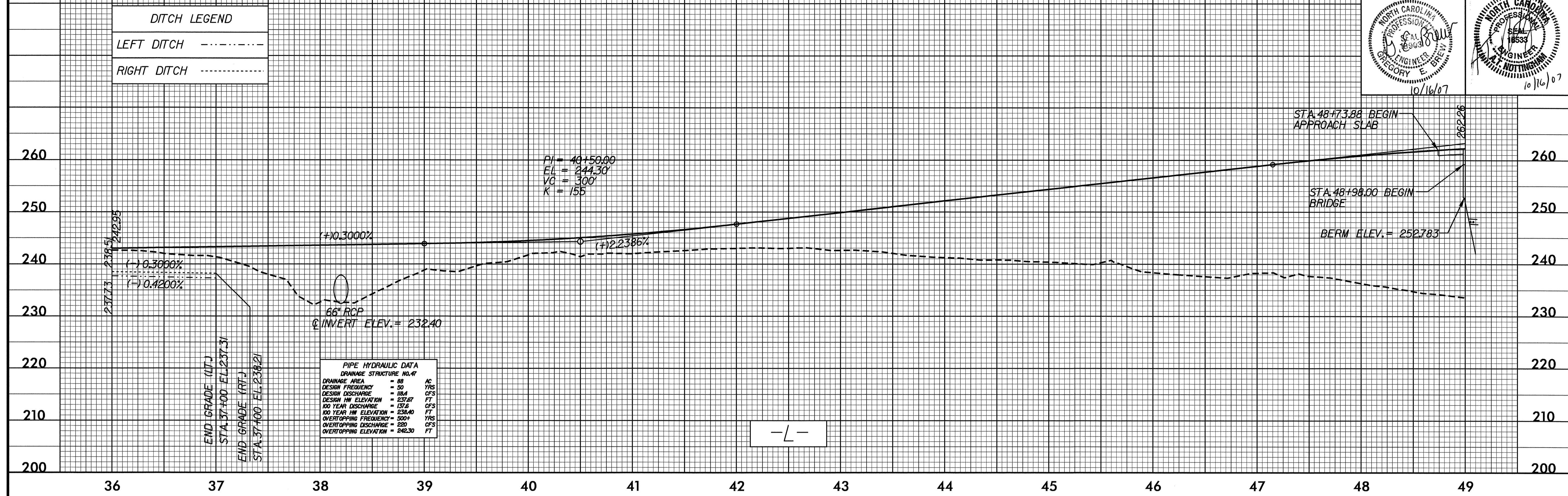
5/28/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



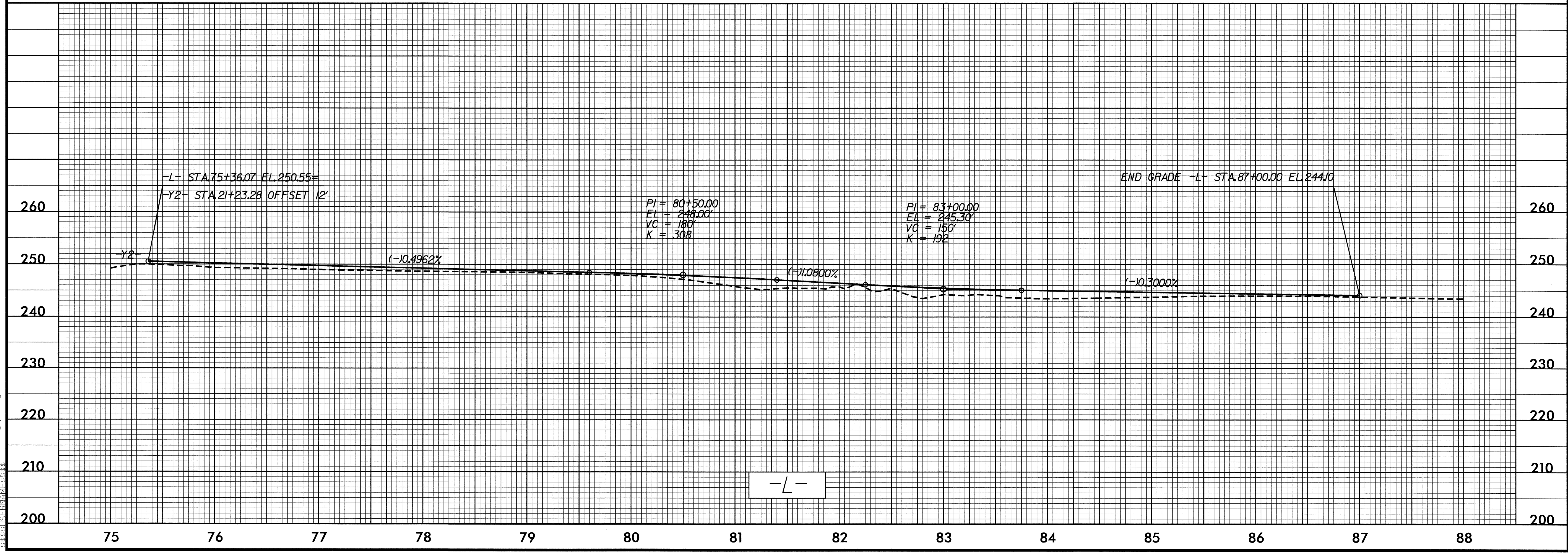
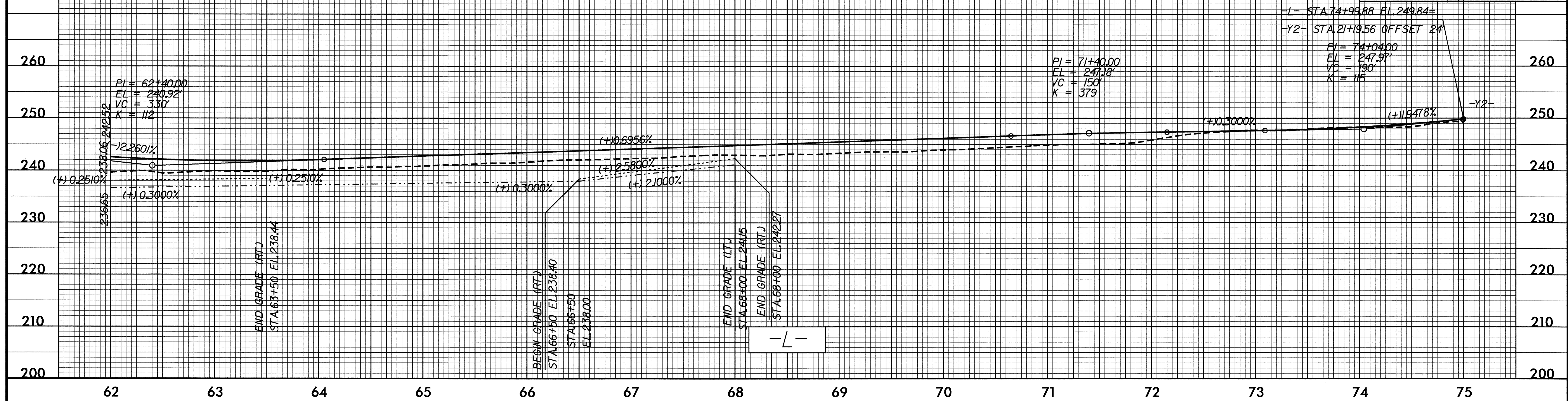
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5/28/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

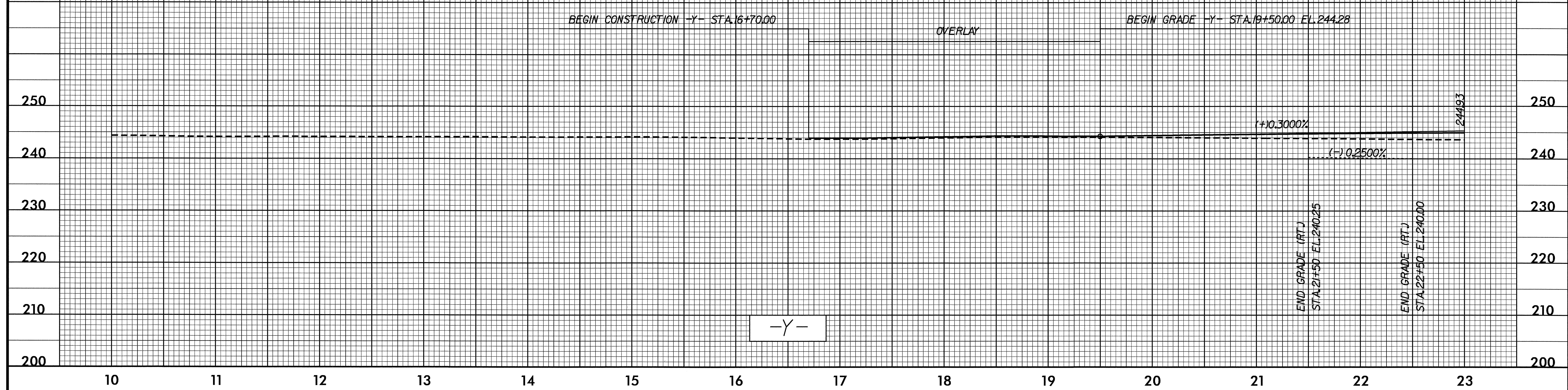


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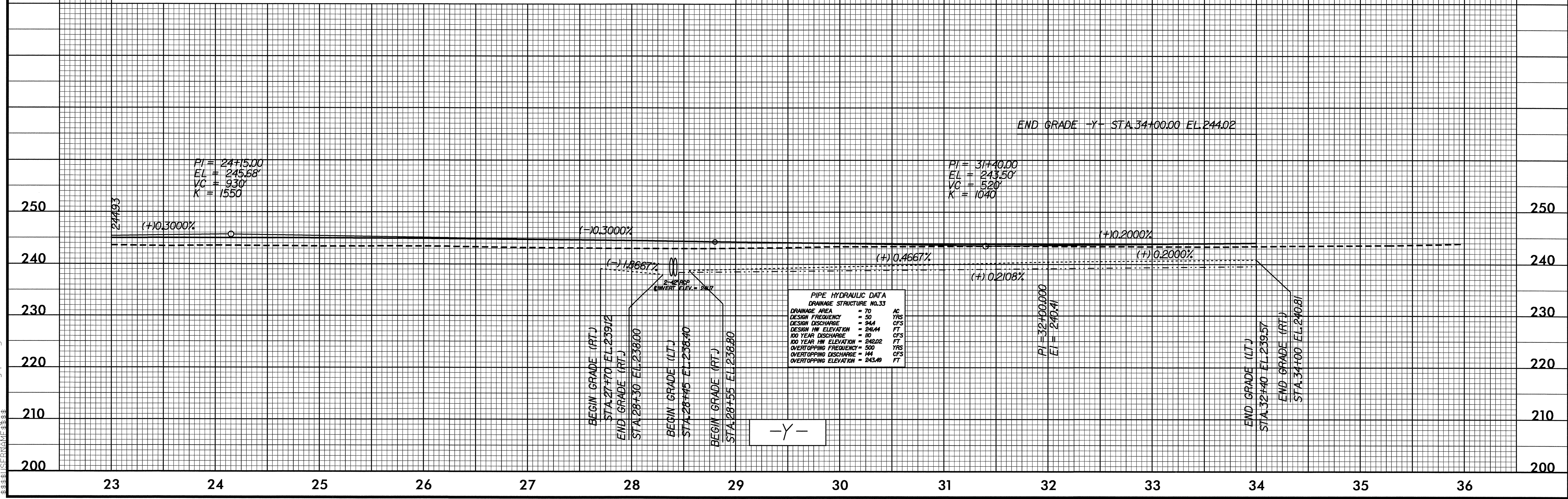
5/28/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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


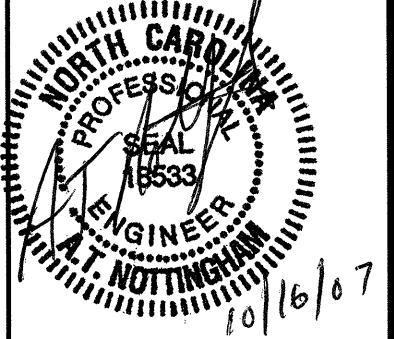


BM *1 EL.242.72 RAILROAD SPIKE IN BASE OF POWER POLE RIGHT OF -Y- STA.26+11.22 OFFSET 55.63'

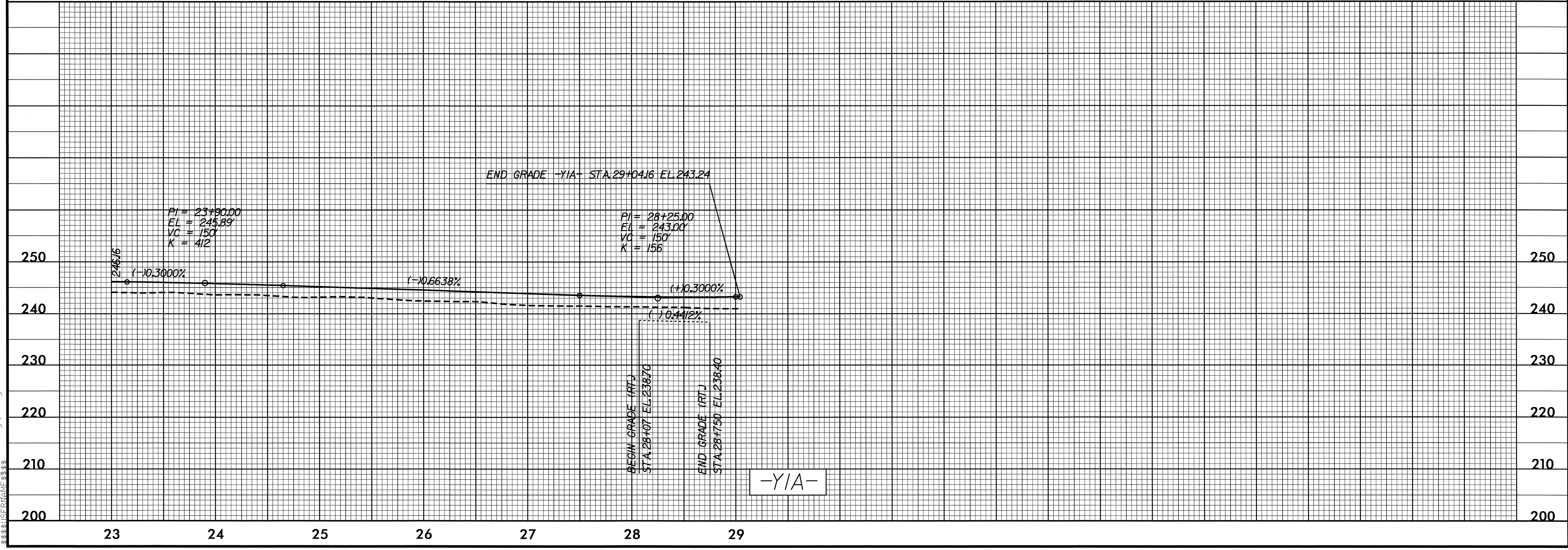
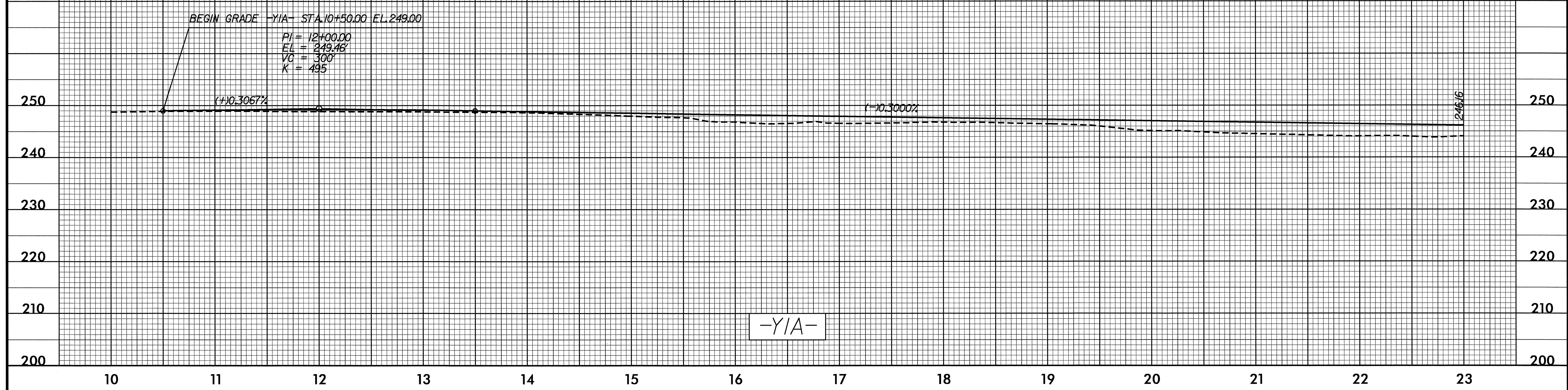


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5/28/99

PROJECT REFERENCE NO. U-3816	SHEET NO. 19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
10/12/07	10/16/07

DITCH LEGEND
RIGHT DITCH - - - - -

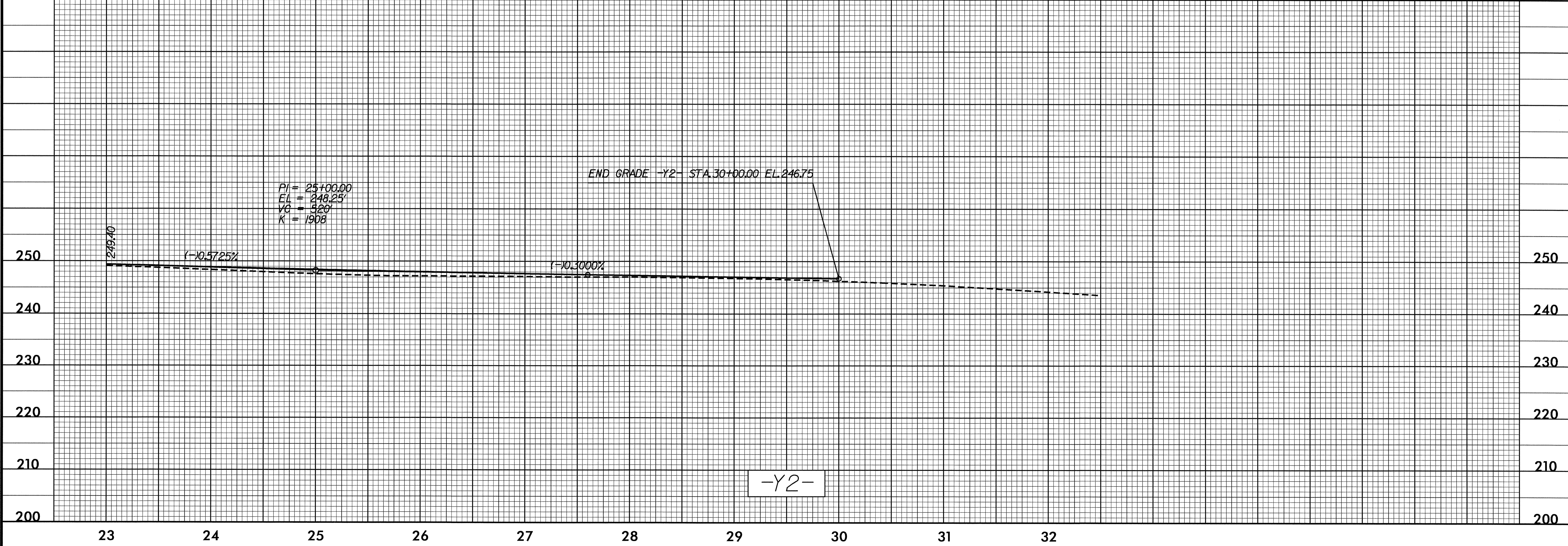
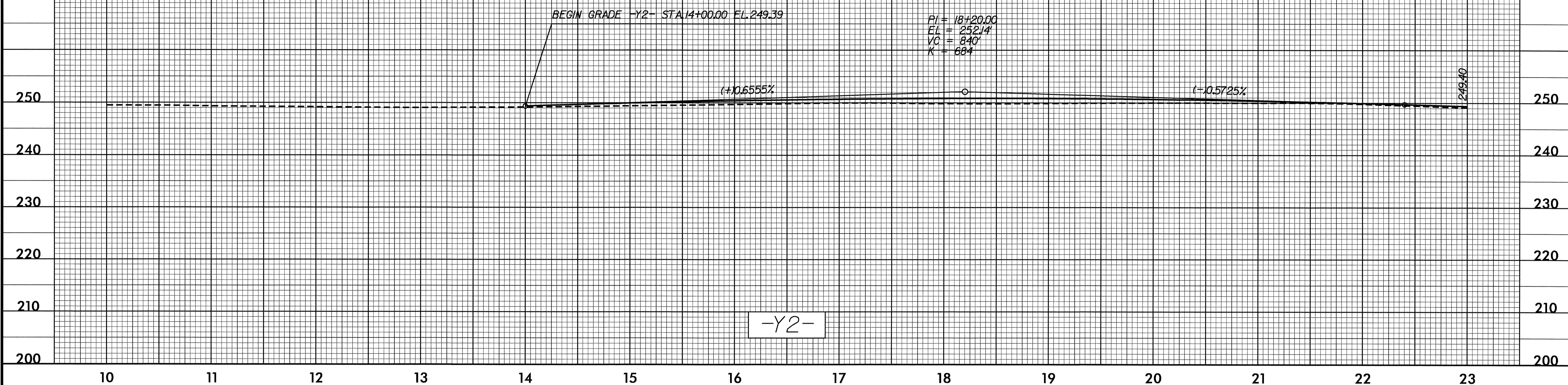


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5/28/99

BM *3 EI.249.38 RAILROAD SPIKE IN BASE OF POWER POLE RIGHT OF -Y2- STA.18+87.66 OFFSET 171.49'

PROJECT REFERENCE NO. U-3816	SHEET NO. 20
ROADWAY DESIGN ENGINEER GREGORY E. BREW 10/12/07	HYDRAULICS ENGINEER WALTER NOTTINGHAM 10/16/07



08-OCT-2007 16:37
c:\work\p16\p16.dgn