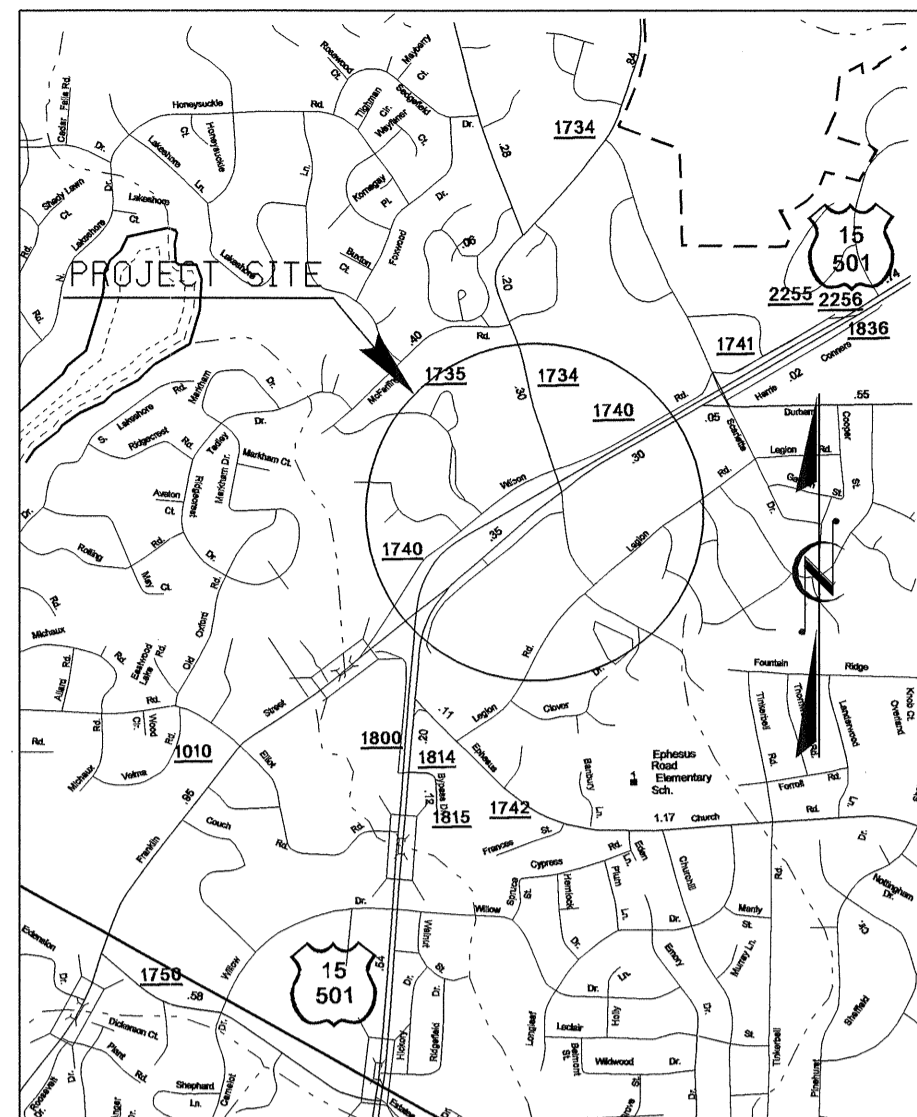


09/08/99

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



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CHAPEL HILL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

LOCATION: INTERSECTION IMPROVEMENT AT US 15-501
AND ERWIN ROAD IN CHAPEL HILL

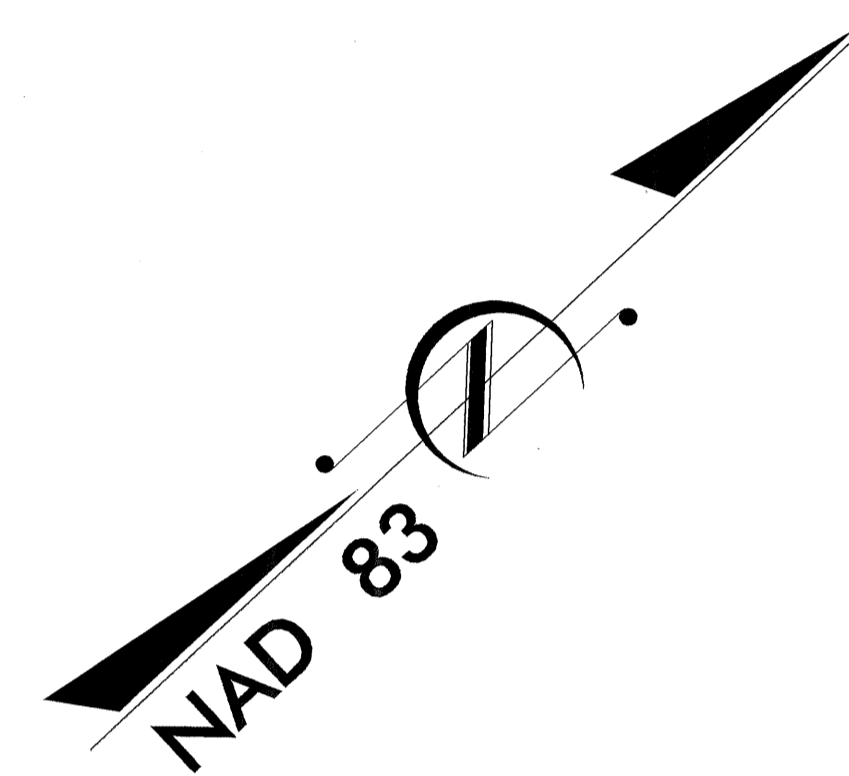
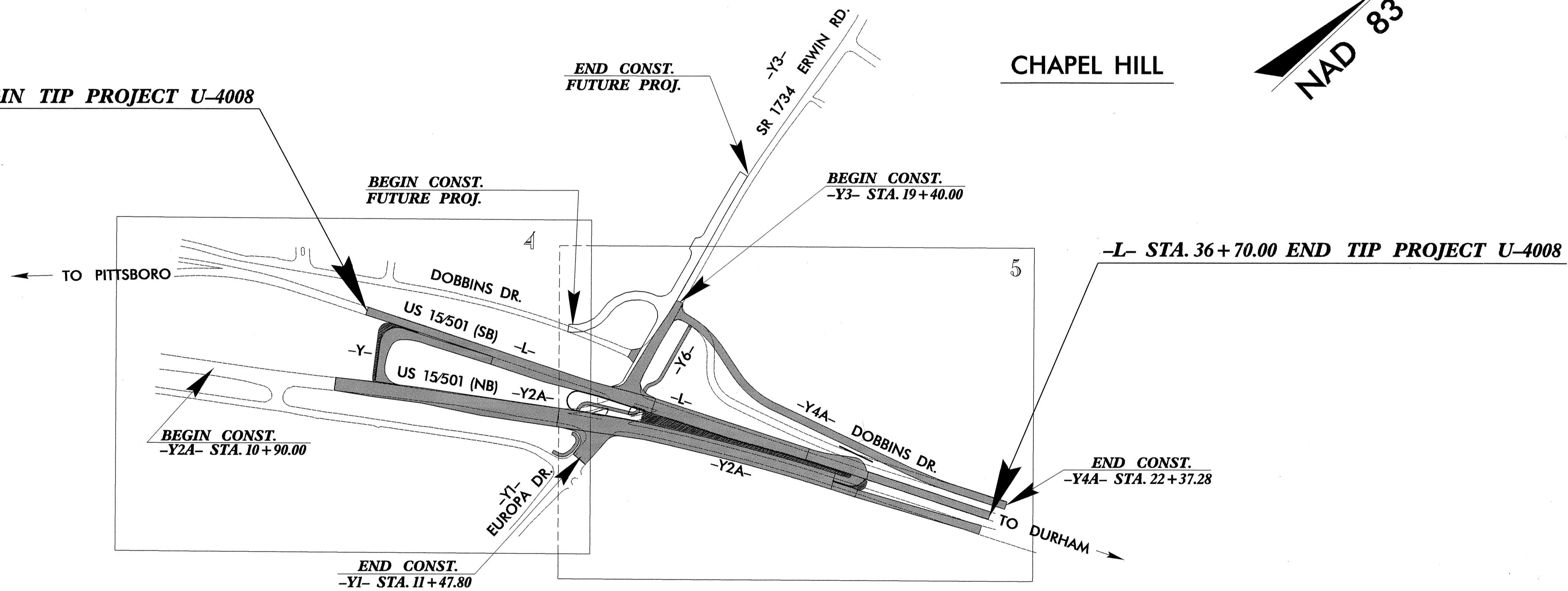
TYPE OF WORK: GRADING, WIDENING, DRAINAGE, PAVING,
SIGNALS, RETAINING WALL AND RESURFACING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4008	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35009.1.1	NHF-15(9)	P.E.	
35009.2.2	NHS-15(9)	ROW, UTIL.	
35009.3.2	NHS-15(16)	CONST.	

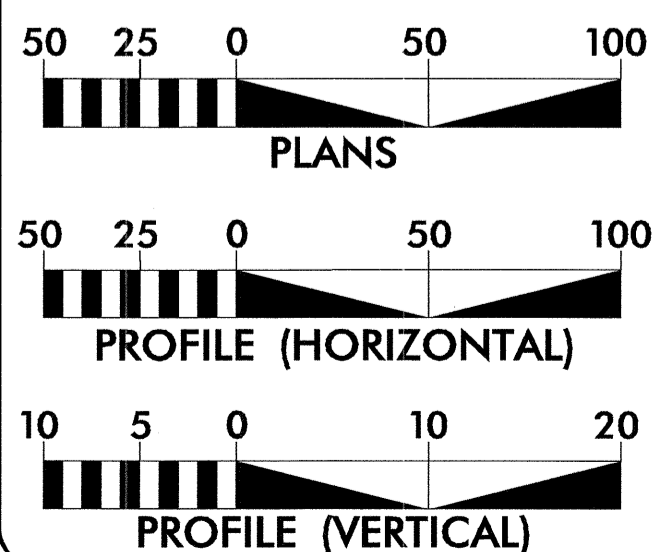
TIP PROJECT: U-4008

CONTRACT: C201580

-L- STA. 16+00.00 BEGIN TIP PROJECT U-4008



GRAPHIC SCALES



DESIGN DATA

ADT 2002 = 48,800
ADT 2025 = 96,400
DHV = 11 %
D = 55 %
T = 3 % *
V = 45 MPH
* TTST 1% DUAL 2%
FUNC CLASS = ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4008 = 0.392 MILES
TOTAL LENGTH TIP PROJECT U-4008 = 0.392 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2002 STANDARD SPECIFICATIONS

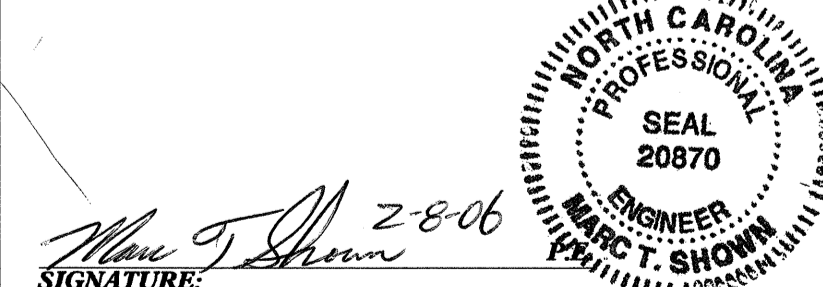
RIGHT OF WAY DATE:
JANUARY 30, 2004

LETTING DATE:
MAY 16, 2006

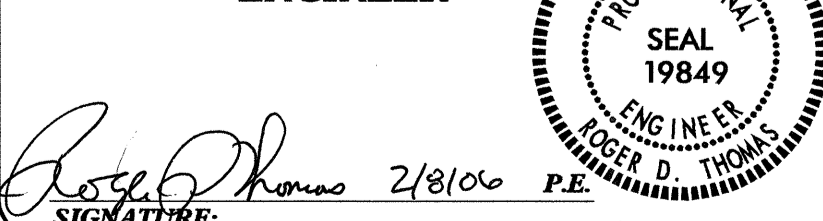
ROGER D. THOMAS, PE
PROJECT ENGINEER

BRIAN P. ROBINSON
PROJECT DESIGN ENGINEER

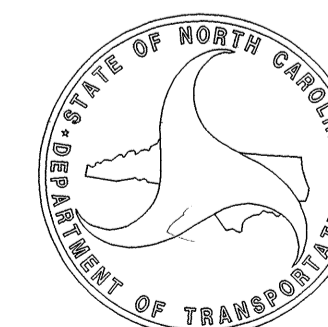
HYDRAULICS ENGINEER



ROADWAY DESIGN ENGINEER



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



Signature: *out m... P.E.*
STATE HIGHWAY DESIGN ENGINEER

02-FEB-2006 13:46
T:\roadway\proj\U4008.tsh
\$\$\$\$\$USERNAME\$\$\$\$\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
INDEX OF SHEETS

PROJECT U-4008

INDEX OF SHEETS

1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
2 thru 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, DETAIL SHOWING METHOD OF WEDGING, AND WEDGING DETAIL FOR RESURFACING
2-C thru 2-F	DETAIL DRAWINGS FOR GUARDRAIL INSTALLATION
2-G thru 2-J	DETAIL DRAWINGS FOR 41" PRECAST REINFORCED CONCRETE BARRIER
2-K	DETAIL DRAWING FOR GUARDRAIL ANCHOR UNIT TYPE B-77
2-L thru 2-M	DETAIL DRAWINGS FOR WHEELCHAIR RAMP
2-N thru 2-O	DETAIL DRAWINGS FOR PILE / PANEL WALL
2-P	DETAIL DRAWING FOR DROP INLET INSTALLATION IN EXPRESSWAY GUTTER
2-Q	DETAIL DRAWING FOR CONVERTING DROP INLET TO OPEN THROAT CATCH BASIN
2-R	DETAIL DRAWING FOR TWO GRATE INLET
2-S	DETAIL DRAWING FOR MEDIAN CONSTRUCTION SHOWING 6" CONCRETE ISLAND COVER
2-T	DETAIL DRAWING FOR BIKE PATH RESTRICTION CONCRETE BOLLARD
2-U	DETAIL DRAWING FOR STAMPED ASPHALT
3	SUMMARY OF QUANTITIES
3-A thru 3-B	SUMMARY OF PIPES 48" AND UNDER AND SUMMARY OF PIPES 54" AND OVER
3-C	SUMMARY OF EARTHWORK, ASPHALT PAVEMENT REMOVAL SUMMARY, AND GUARDRAIL SUMMARY
3-Z	PARCEL INDEX SHEET
4 thru 5	PLAN SHEETS
6 thru 9	PROFILE SHEETS
TCP-1 thru TCP-14	TRAFFIC CONTROL PLANS
PM-1 thru PM-4	PAVEMENT MARKING PLANS
EC-1 thru EC-6	EROSION CONTROL PLANS
SIGN-1 thru SIGN-9	SIGNING PLANS
SIG-1 thru SIG-26	SIGNAL PLANS
UC-1 thru UC-4	UTILITY CONSTRUCTION PLANS
UO-1 thru UO-3	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION SUMMARY
X-1 thru X-22	CROSS SECTIONS

GENERAL NOTES:

2002 SPECIFICATIONS
EFFECTIVE: 01-15-02
REVISED: 05-14-03

**GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:**

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

ASHPALT AND EARTH 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.

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.

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:

PSNC ENERGY, DUKE POWER, BELLSOUTH, TIME WARNER CABLE, PROGRESS TELECOM

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

RIGHT-OF-WAY MARKERS:

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

WHEELCHAIR RAMPS:

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

EFF. 01-15-02

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 January 15, 2002 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE	
		DIVISION 2 - EARTHWORK
200.03	Method of Clearing - Method III	
225.02	Guide for Grading Subgrade - Secondary and Local	
225.04	Method of Obtaining Superelevation- Two Lane Pavement	
240.01	Guide for Berm Ditch Construction	
		DIVISION 3 - PIPE CULVERTS
300.01	Method of Pipe Installation - Method 'A'	
		DIVISION 5 - SUBGRADE, BASES, AND SHOULDERS
560.01	Method of Shoulder Construction- High Side of Superelevated Curve - Method I	
		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	
838.22	Reinforced Concrete Endwall - for Double and Triple 54" Pipes 90° Skew	
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg.s 838.21 thru 838.40	
838.52	Reinforced Brick Endwall - for Double and Triple 54" Pipes 90° Skew	
838.75	Notes for Reinforced Brick Endwall - Std. Dwg.s 838.51 thru 838.70	
838.80	Precast Endwalls - 12" thru 72" Pipe 90° Skew	
840.00	Concrete Base Pad for Drainage Structures	
840.01	Brick Catch Basin - 12" thru 54" Pipe	
840.02	Concrete Catch Basin - 12" thru 54" Pipe	
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin	
840.04	Concrete Catch Basin with Single and Multiple Pipes - 12" thru 48" Pipe	
840.05	Brick Catch Basin with Single and Multiple Pipes - 12" thru 48" Pipe	
840.17	Concrete Median Drop Inlet Type 'A' - 12" thru 72" Pipe	
840.18	Concrete Median Drop Inlet Type 'B' - 12" thru 36" Pipe	
840.24	Frames and Narrow Slot Sag Grates	
840.26	Brick Median Drop Inlet Type 'A' - 12" thru 72" Pipe	
840.27	Brick Median 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	
840.35	Traffic Bearing 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	
850.01	Concrete Paved Ditches	
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe	
852.01	Concrete Islands	
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter	
862.01	Guardrail Placement	
876.02	Guide for Rip Rap at Pipe Outlets	
876.04	Drainage Ditches with Class 'B' Rip Rap	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

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

RIGHT OF WAY

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

HYDROLOGY

Stream or Body of Water	
River Basin Buffer	
Flow Arrow	
Disappearing Stream	
Spring	
Swamp Marsh	
Shoreline	
Falls, Rapids	
Prop Lateral, Tail, Head Ditches	

STRUCTURES

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

MINOR	
Head & End Wall	
Pipe Culvert	
Footbridge	
Drainage Boxes	
Paved Ditch Gutter	

UTILITIES

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

Recorded Water Line	
Designated Water Line (S.U.E.*)	
Sanitary Sewer	
Recorded Sanitary Sewer Force Main	
Designated Sanitary Sewer Force Main(S.U.E.*)	
Recorded Gas Line	
Designated Gas Line (S.U.E.*)	
Storm Sewer	
Recorded Power Line	
Designated Power Line (S.U.E.*)	
Recorded Telephone Cable	
Designated Telephone Cable (S.U.E.*)	
Recorded U/G Telephone Conduit	
Designated U/G Telephone Conduit (S.U.E.*)	
Unknown Utility (S.U.E.*)	
Recorded Television Cable	
Designated Television Cable (S.U.E.*)	
Recorded Fiber Optics Cable	
Designated Fiber Optics Cable (S.U.E.*)	
Exist. Water Meter	
U/G Test Hole (S.U.E.*)	
Abandoned According to U/G Record	
End of Information	

BOUNDARIES & PROPERTIES

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Property Line Symbol	
Exist. Iron Pin	
Property Corner	
Property Monument	
Property Number	
Parcel Number	
Fence Line	
Existing Wetland Boundaries	
High Quality Wetland Boundary	
Medium Quality Wetland Boundaries	
Low Quality Wetland Boundaries	
Proposed Wetland Boundaries	
Existing Endangered Animal Boundaries	
Existing Endangered Plant Boundaries	

BUILDINGS & OTHER CULTURE

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

TOPOGRAPHY

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

VEGETATION

Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	

RAILROADS

Standard Gauge	
RR Signal Milepost	
Switch	

SURVEY CONTROL SHEET U-4008

NOTES

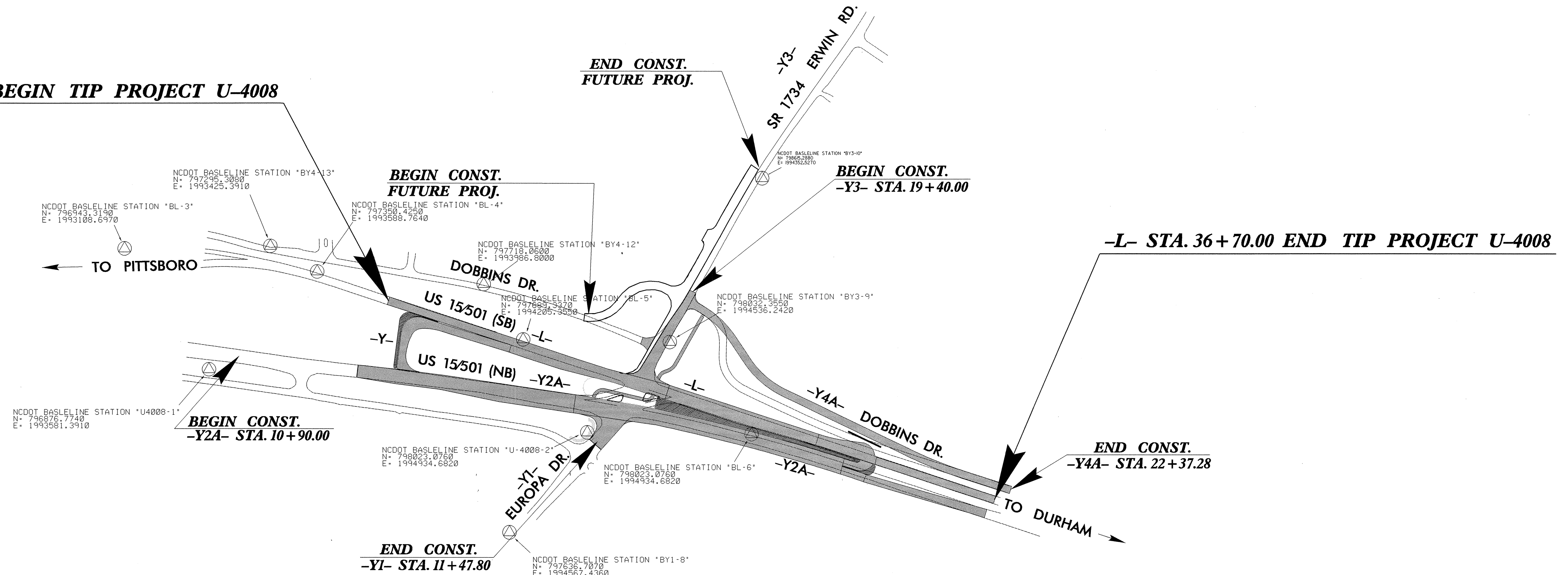
I. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

FILE: U4008_LS_CONTROL_040123.TXT

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

-L- STA. 16+00.00 BEGIN TIP PROJECT U-4008



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	796943.3190	1993108.6970	278.64		OUTSIDE PROJECT LIMITS
4	BL-4	797358.4250	1993588.7640	291.40	13+51.06	18.69 LT
5	BL-5	797689.3370	1994205.3550	296.19	20+54.38	17.48 LT
6	BL-6	798023.0760	1994934.6820	296.28	28+54.07	42.79 RT
BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
2	U-4008	797636.7070	1994567.4360	302.35	12+42.55	45.67 RT
8	BY1-8	797232.2290	1994629.9790	317.40		OUTSIDE PROJECT LIMITS
BY2 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
2	U-4008-2	797636.7070	1994567.4360	302.35	12+42.55	45.67 RT
1	U-4008-1	796876.7740	1993581.3910	298.89	10+31.65	37.41 LT
BY3 POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
11	BY3-11	799114.4600	1994254.4670	325.32	10+00.72	23.20 LT
10	BY3-10	798615.2890	1994252.5270	310.82	15+10.13	13.14 LT
9	BY3-9	798032.3550	1994536.2420	288.87	21+22.06	15.77 LT
2	U-4008	797636.7070	1994567.4360	302.35	12+42.55	45.67 RT
BY4 POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
9	BY3-9	798032.3550	1994536.2420	288.87	21+22.06	15.77 LT
12	BY4-12	797718.0600	1993986.8000	288.54	19+65.97	13.61 LT
13	BY4-13	797295.3860	1993425.3910	289.26	12+63.38	13.42 LT
3	BL-3	796943.3190	1993108.6970	278.64		OUTSIDE PROJECT LIMITS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4008-2"
 WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 797636.707(11) EASTING: 1994567.4360(11)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994023
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4008-2" TO -L- STATION 16+00 IS
 S 76°22'28" W 773.25'

.....
 BM #1 ELEVATION = 276.42
 N 796925 E 1993030
 L STATION 10+00
 S 58° 22' 00.8" W DIST 351.49
 4819

 BM #2 ELEVATION = 321.33
 N 796640 E 1995675
 L STATION 36+70
 N 14° 39' 55.8" E DIST 189.72
 09

⊙ 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 NGS ONLINE POSITIONING USER SERVICE (OPUS)
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

5/14/99

09-FEB-2004 08:48
 R:\proj\4008-1s\ic_040123.dgn
 D:\clemm\at_r101501c

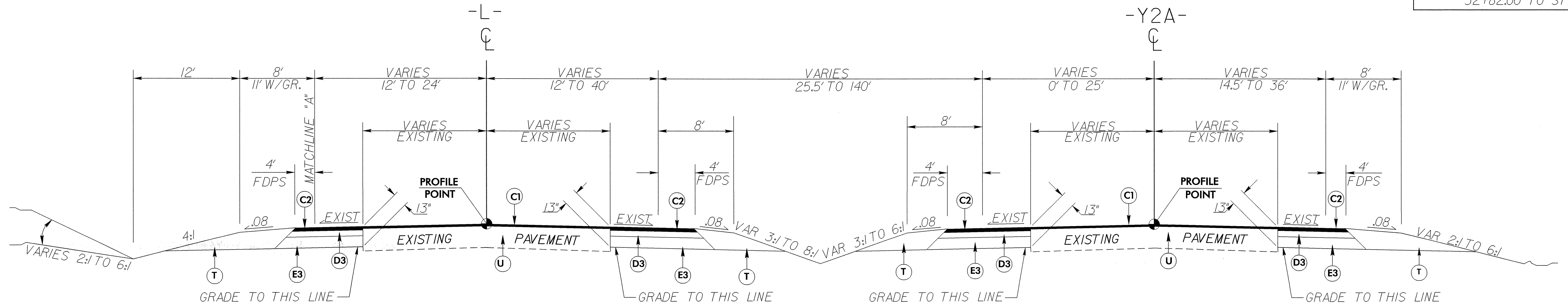
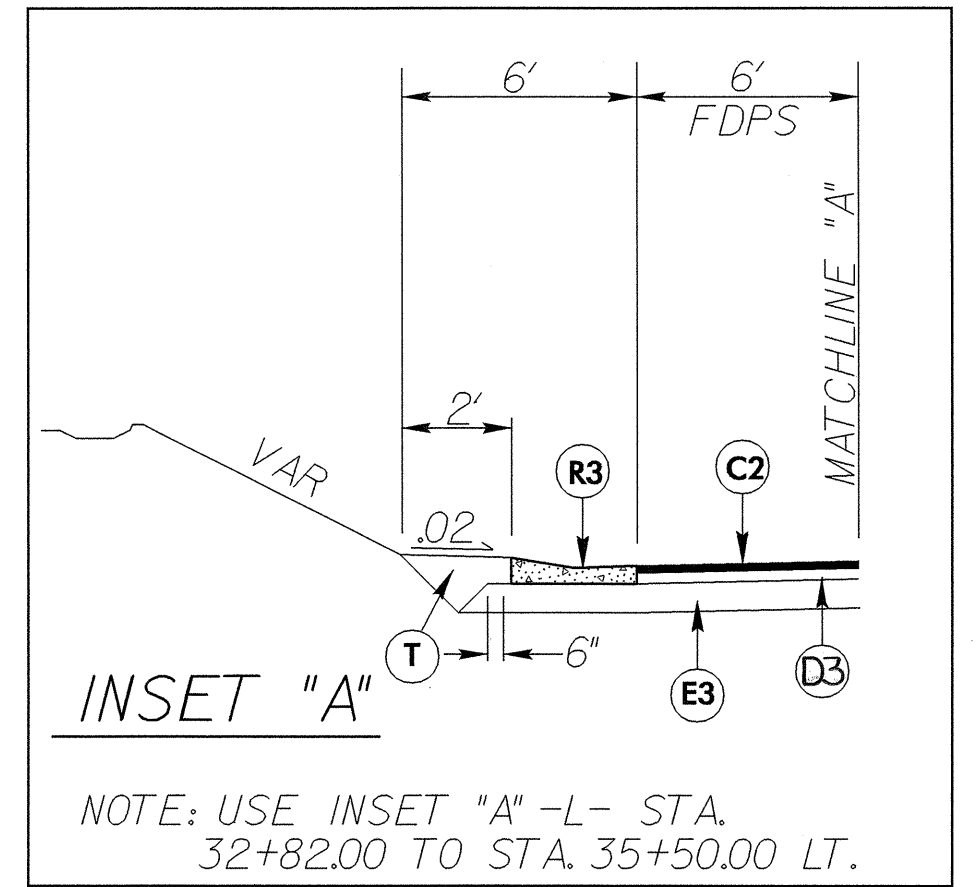
6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	D5	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 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R2	1'-6" CONCRETE CURB AND GUTTER.
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	4' CONCRETE EXPRESSWAY GUTTER.
C4	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.	E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	5" MONOLITHIC CONCRETE ISLAND.
C5	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 1 1/2" IN DEPTH.	E3	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R5	6" CONCRETE ISLAND COVER.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	E4	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 5 1/2" IN DEPTH.	T	EARTH MATERIAL.
D2	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	Q	MILLING EXISTING PAVEMENT, 2 1/2" DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET NO. 2-B)

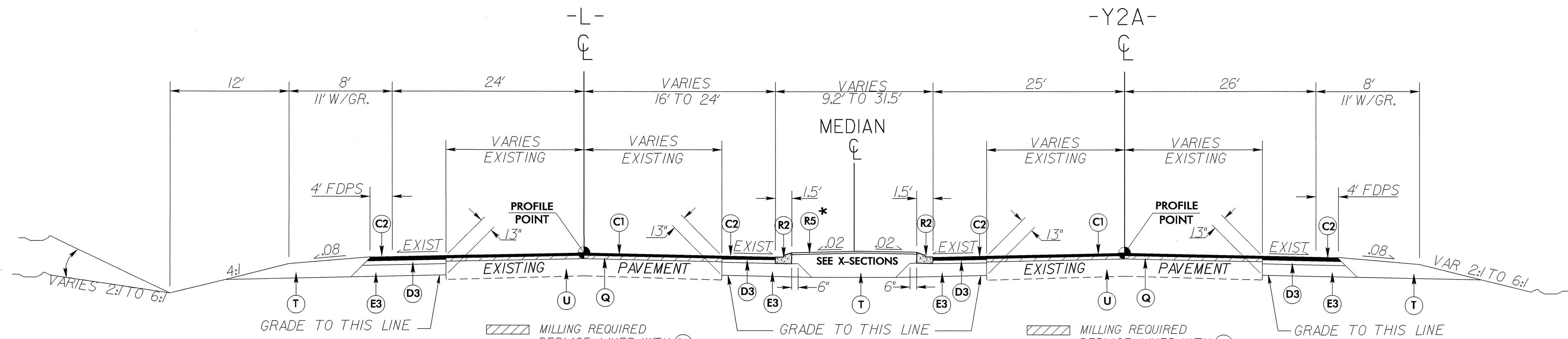
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO. U-4008	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER



USE TYPICAL SECTION NO. 1

-L- STA. 16+00.00 TO STA. 22+86.00
-L- STA. 32+67.00 TO STA. 36+50.00

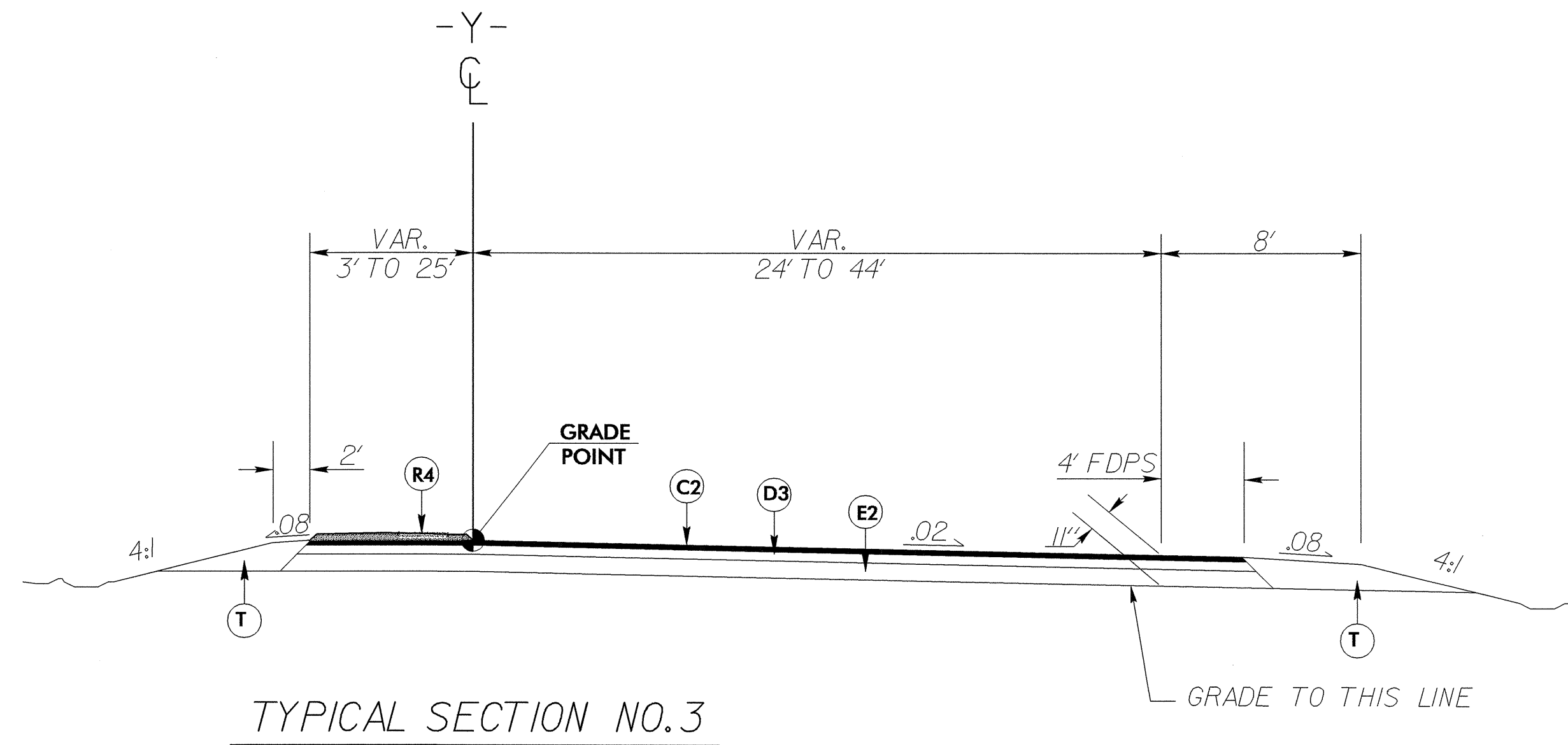


USE TYPICAL SECTION NO. 2

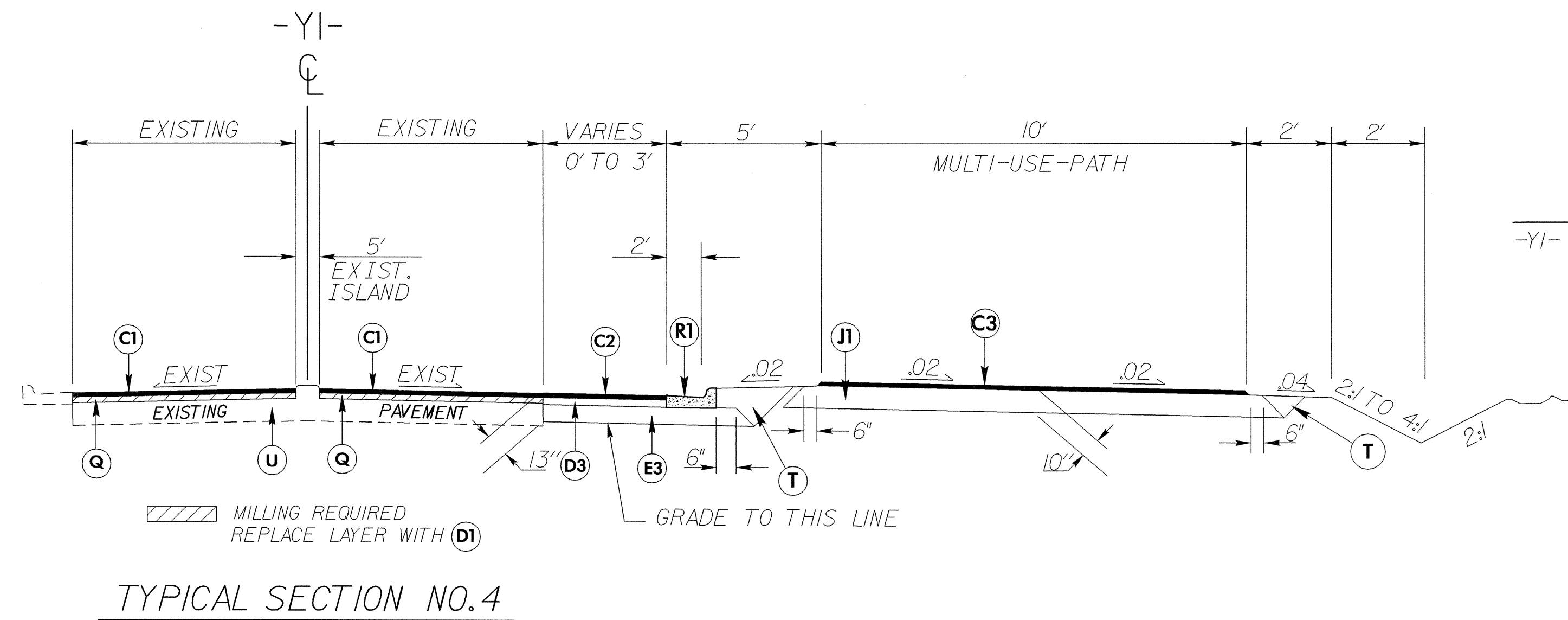
* -L- STA. 22+86.00 TO STA. 25+27.00 (RAISED GRASS MEDIAN)

-L- STA. 25+27.00 TO STA. 32+00.00

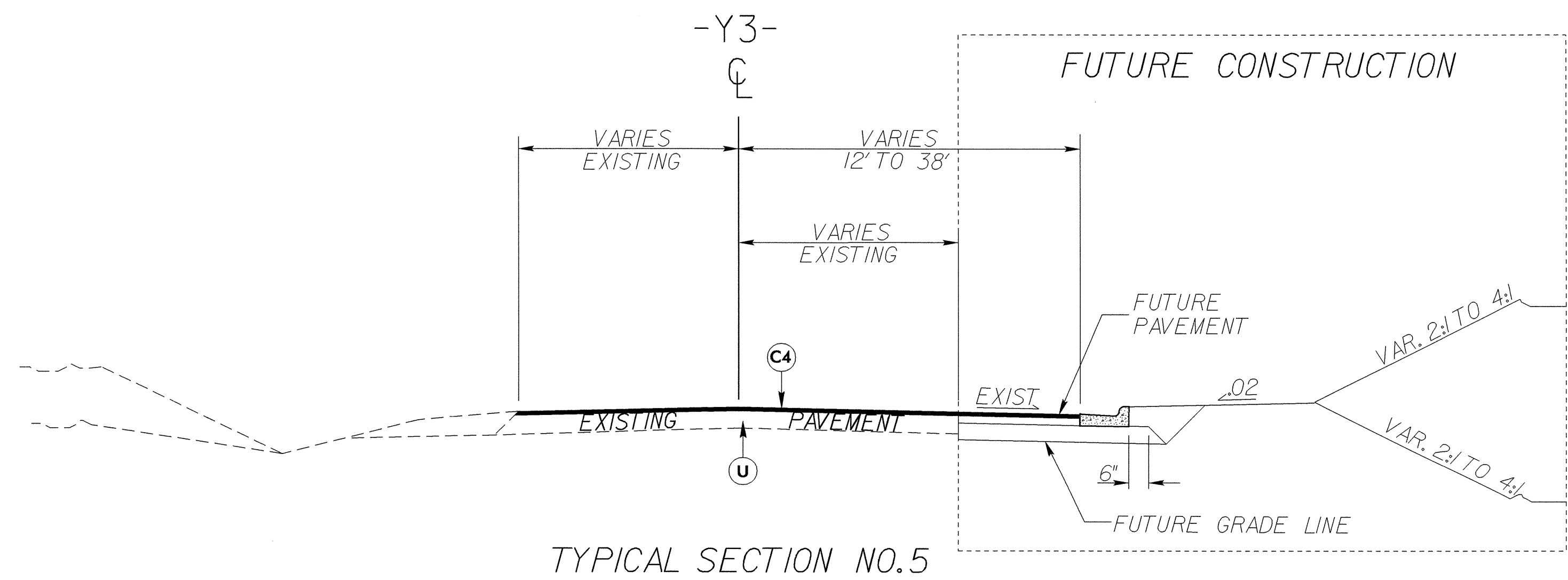
30-SEP-2004 10:35
C:\prow\k04008\pup
skrdonald



USE TYPICAL SECTION NO.3
-Y- STA. 10+27.00 TO STA. 13+19.00



USE TYPICAL SECTION NO.4
-Y1- STA. 10+29.00 TO STA. 11+47.80



USE TYPICAL SECTION NO.5
-Y3- STA. 19+40.00 TO STA. 22+61.83

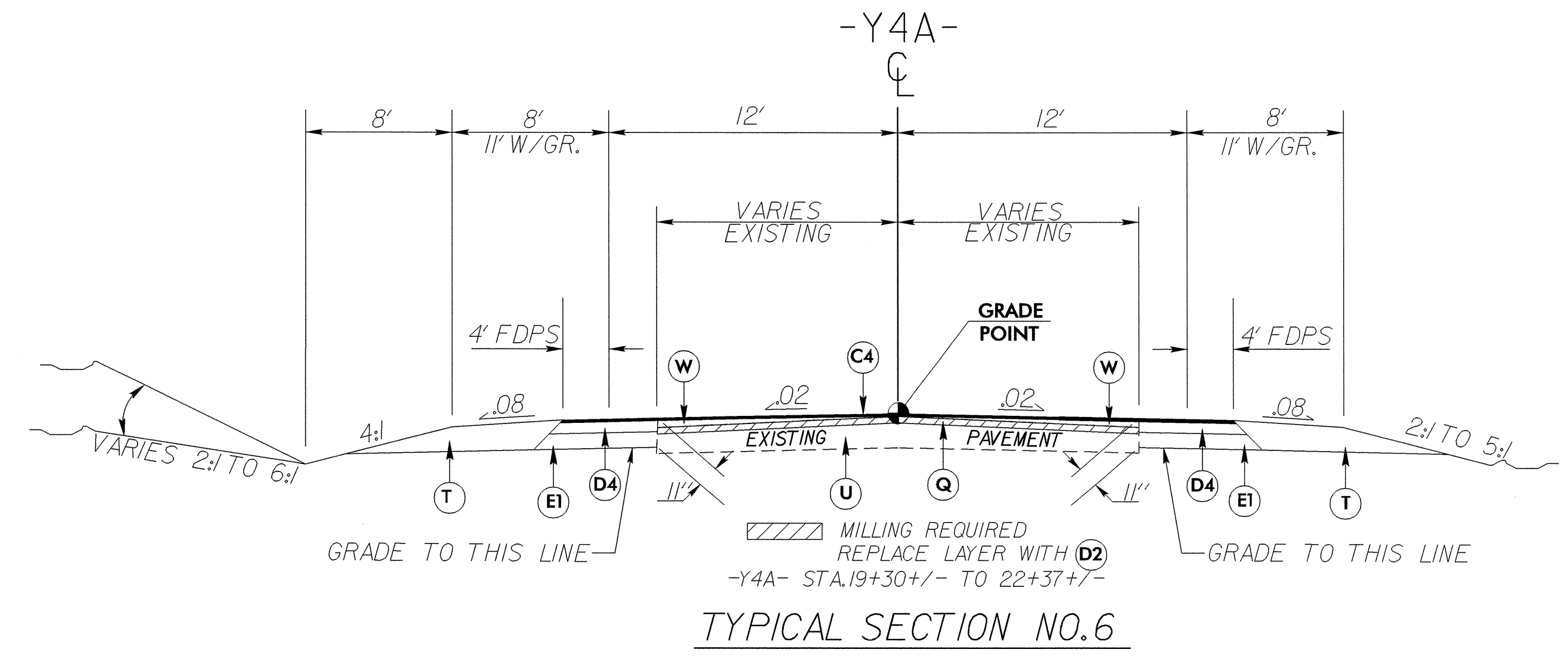
PAVEMENT SCHEDULE

C1	1.5", TYPE S9.5C,
C2	3", TYPE S9.5C,
C3	2", TYPE S9.5B,
C4	3", TYPE S9.5B,
C5	VAR. DEPTH, TYPE S9.5B,
D1	2½", TYPE I19.0C
D2	2½", TYPE I19.0B
D3	4", TYPE I19.0C
D4	4", TYPE I19.0B
D5	VAR. DEPTH, TYPE I19.0B
E1	4", TYPE B25.0B
E2	4", TYPE B25.0C
E3	6", TYPE B25.0C
E4	VAR. DEPTH, TYPE B25.0B
J1	8", ABC
Q	MILLING, 2½" DEPTH
R1	2'-6" CONC. CURB AND GUTTER.
R2	1'-6" CONC. CURB AND GUTTER.
R3	4' CONC. EXPRESSWAY GUTTER.
R4	5" MONOLITHIC CONC. ISLAND
R5	6" CONC. ISLAND COVER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

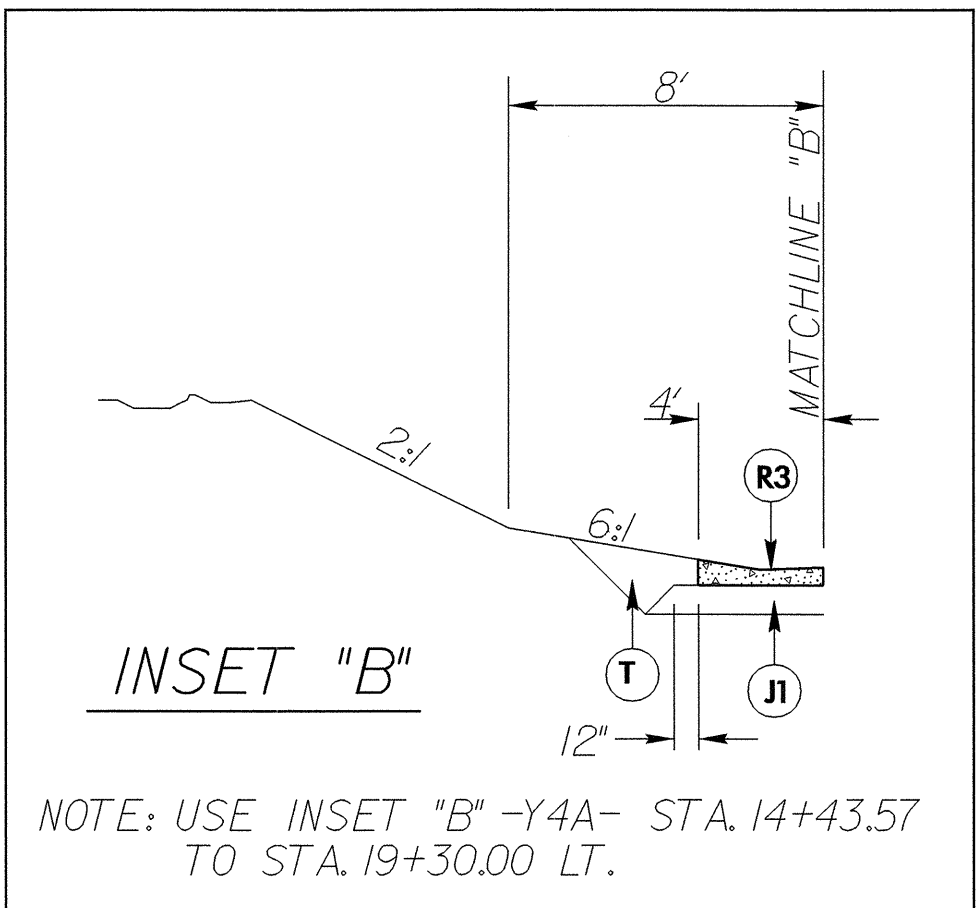
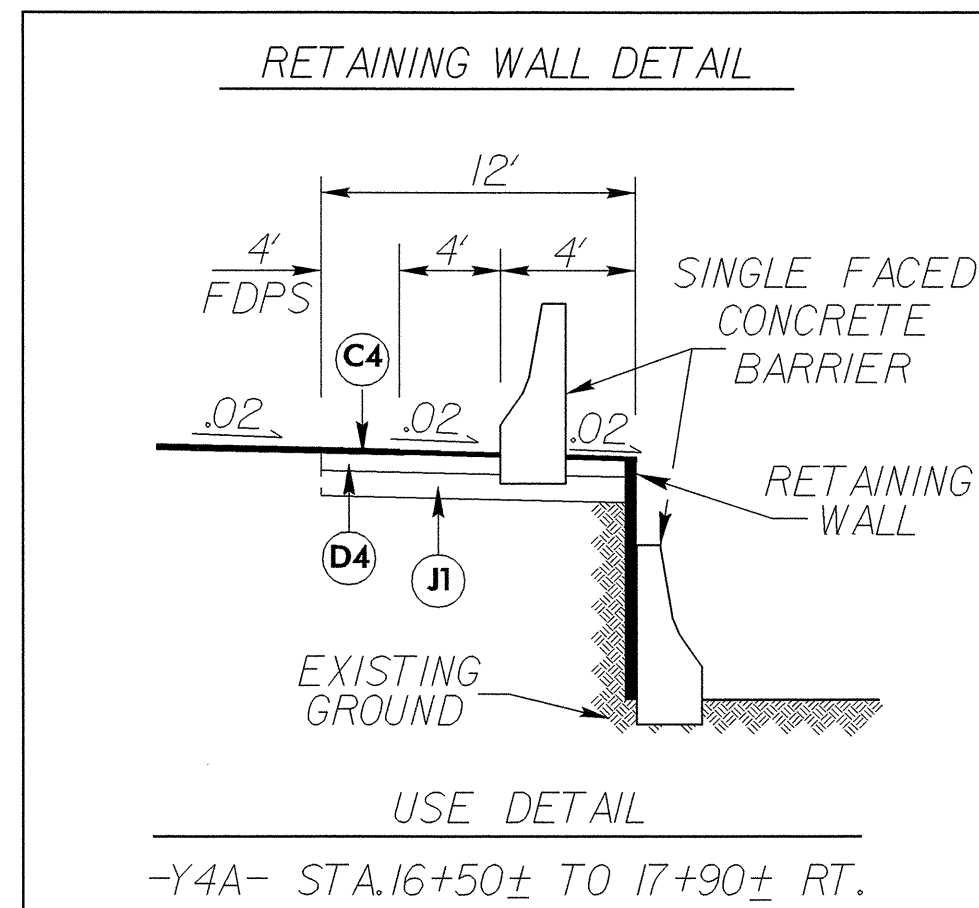
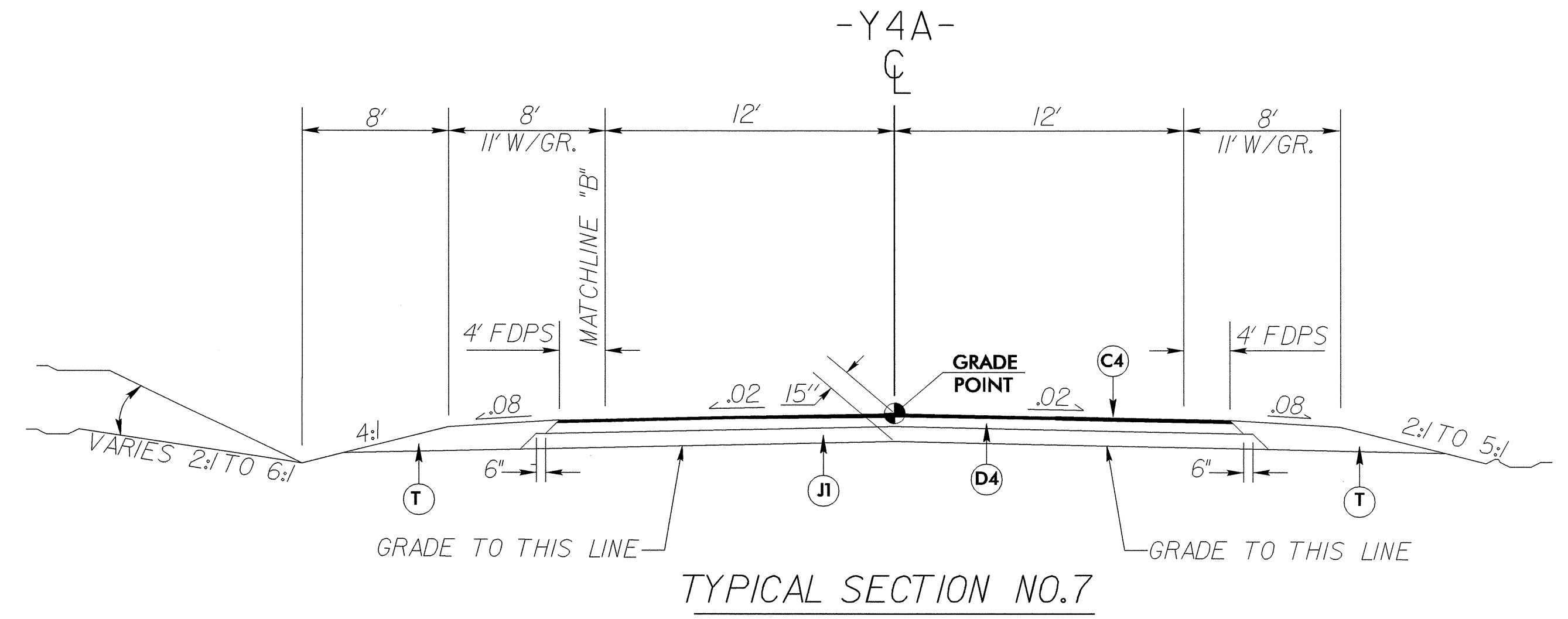
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO. U-4008	SHEET NO. 2B
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 1988 FORER D. THOMAS 10/4/04	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 1988 CHEN 10/15/04

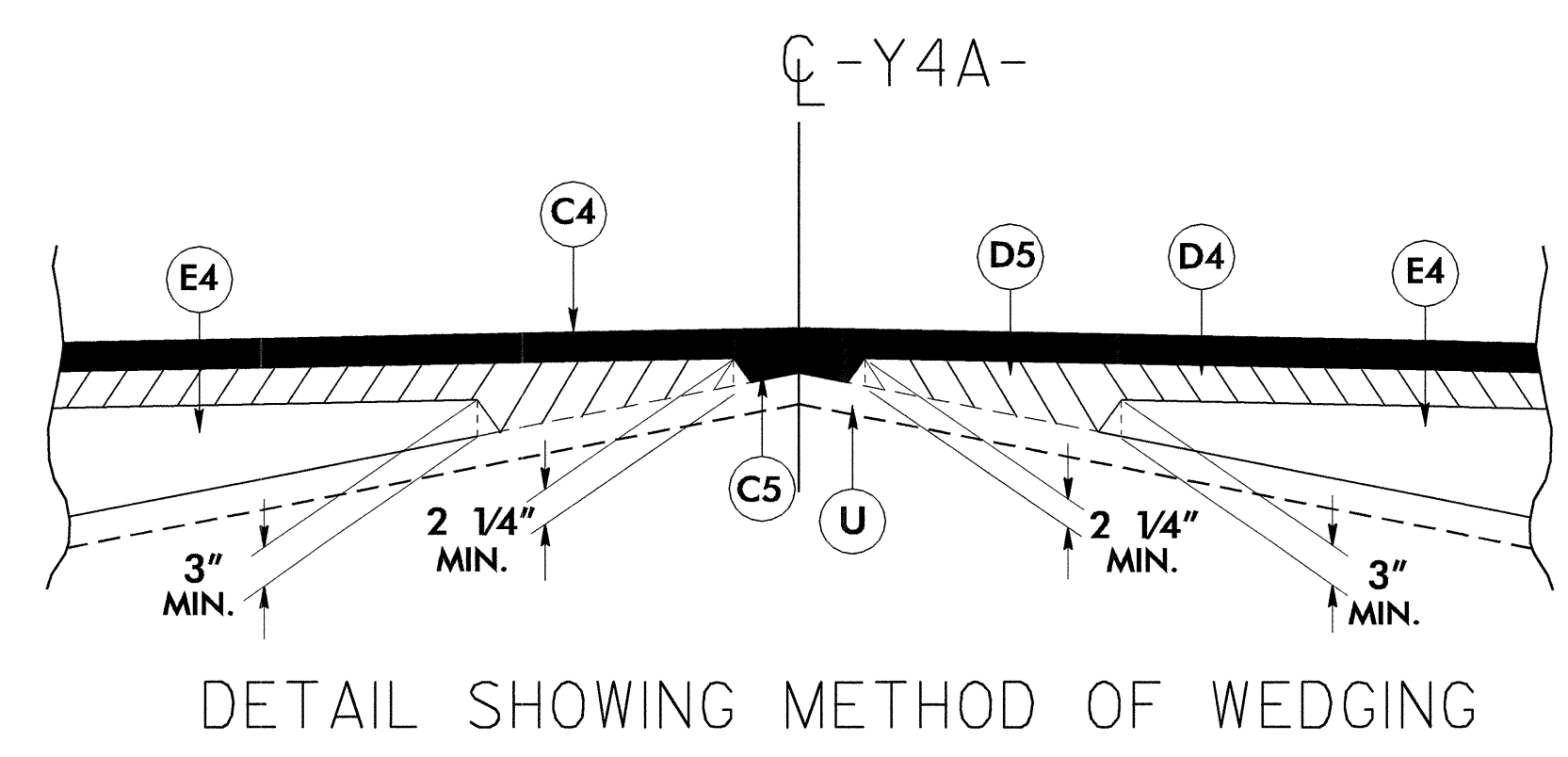
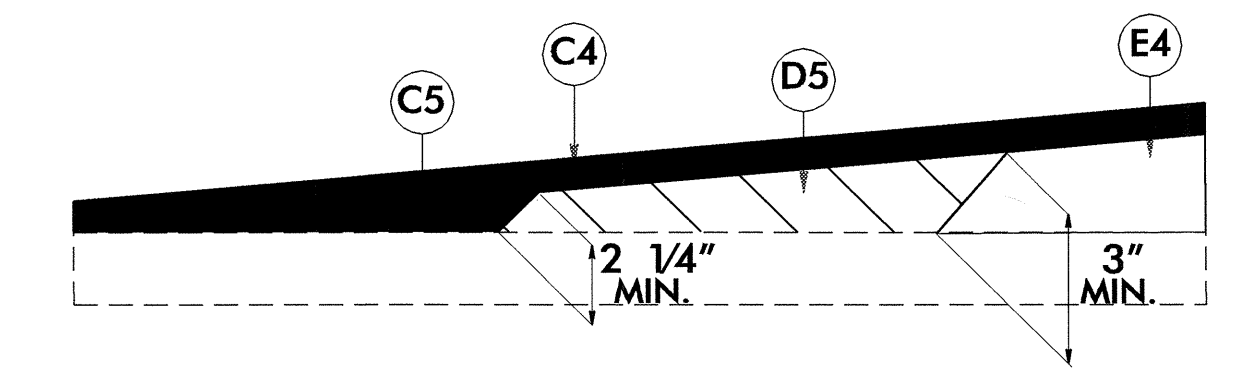
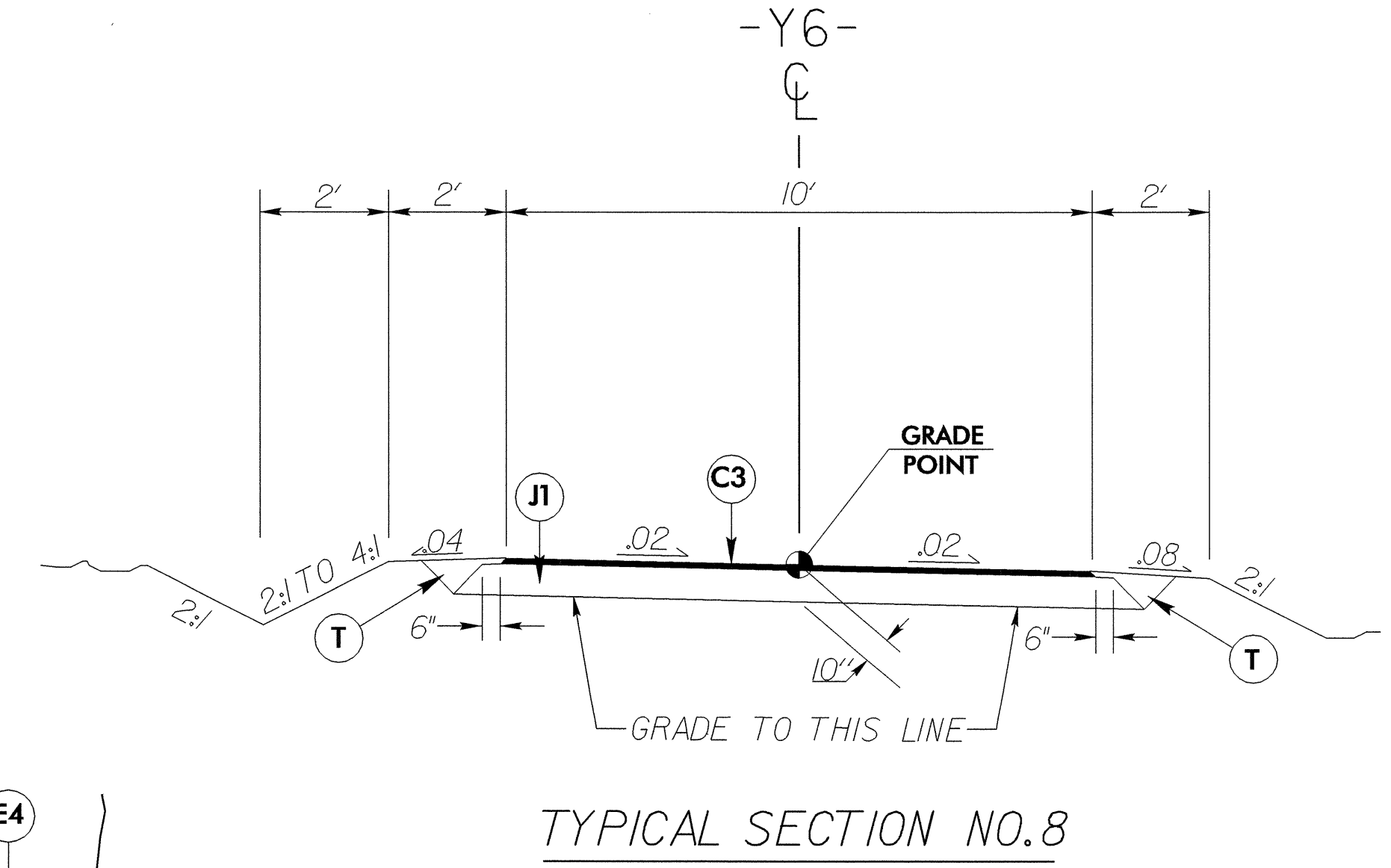
USE TYPICAL SECTION NO.6
-Y4A- STA. 10+12.00 TO STA. 12+00.00
-Y4A- STA. 19+30.00 TO STA. 22+37.28



USE TYPICAL SECTION NO.7
-Y4A- STA. 12+00.00 TO STA. 19+30.00



USE TYPICAL SECTION NO.8
MULTI-USE-PATH
-Y6- STA. 10+17.12 TO STA. 12+70.01



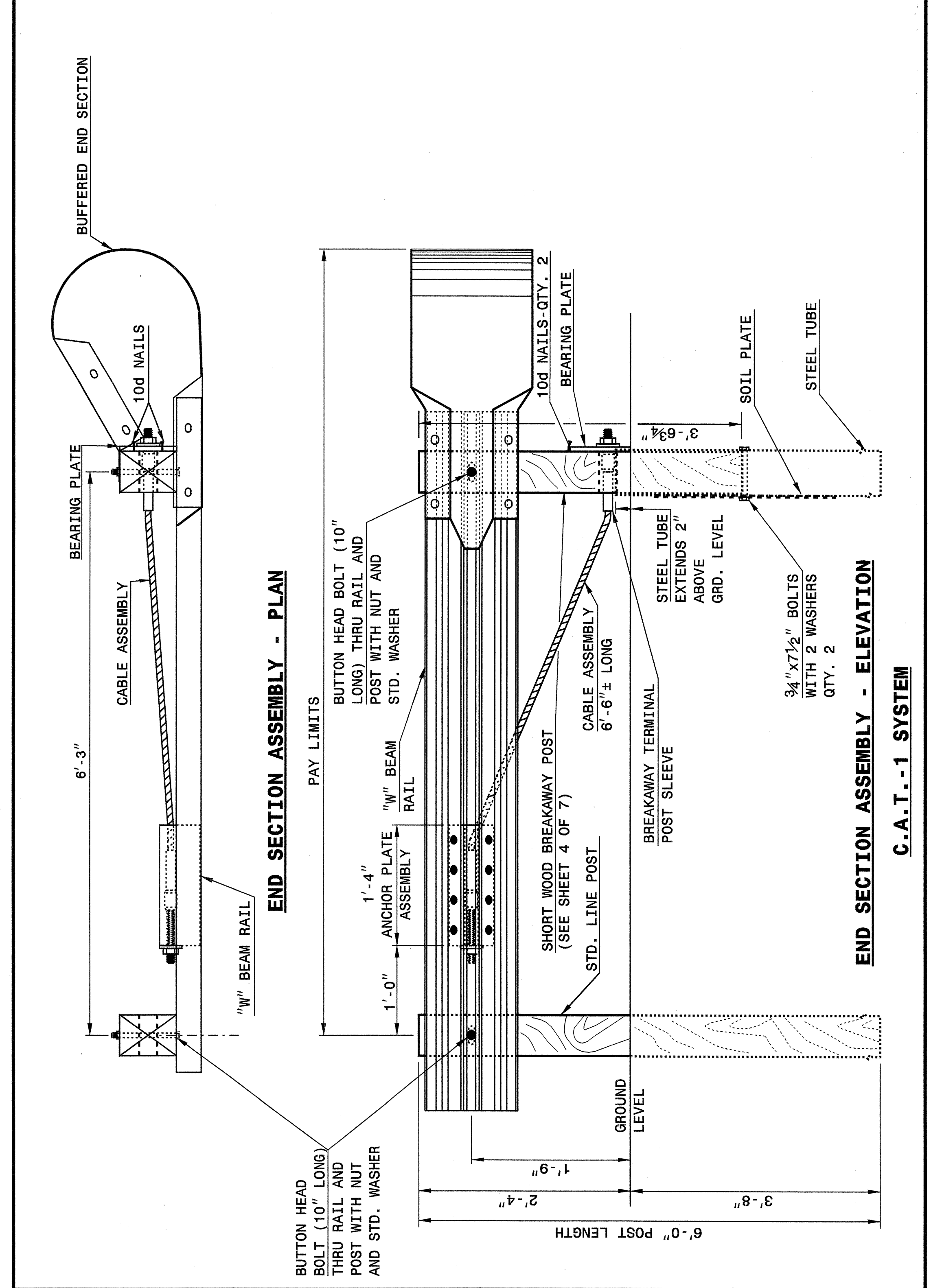
PAVEMENT SCHEDULE	
C1	1.5", TYPE S9.5C,
C2	3", TYPE S9.5C,
C3	2", TYPE S9.5B,
C4	3", TYPE S9.5B,
C5	VAR. DEPTH, TYPE S9.5B,
D1	2 1/2", TYPE I19.0C
D2	2 1/2", TYPE I19.0B
D3	4", TYPE I19.0C
D4	4", TYPE I19.0B
D5	VAR. DEPTH, TYPE I19.0B
E1	4", TYPE B25.0B
E2	4", TYPE B25.0C
E3	6", TYPE B25.0C
E4	VAR. DEPTH, TYPE B25.0B
J1	8", ABC
Q	MILLING, 2 1/2" DEPTH
R1	2'-6" CONC. CURB AND GUTTER.
R2	1'-6" CONC. CURB AND GUTTER.
R3	4' CONC. EXPRESSWAY GUTTER.
R4	5" MONOLITHIC CONC. ISLAND
R5	6" CONC. ISLAND COVER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

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

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

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 7
862D02



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

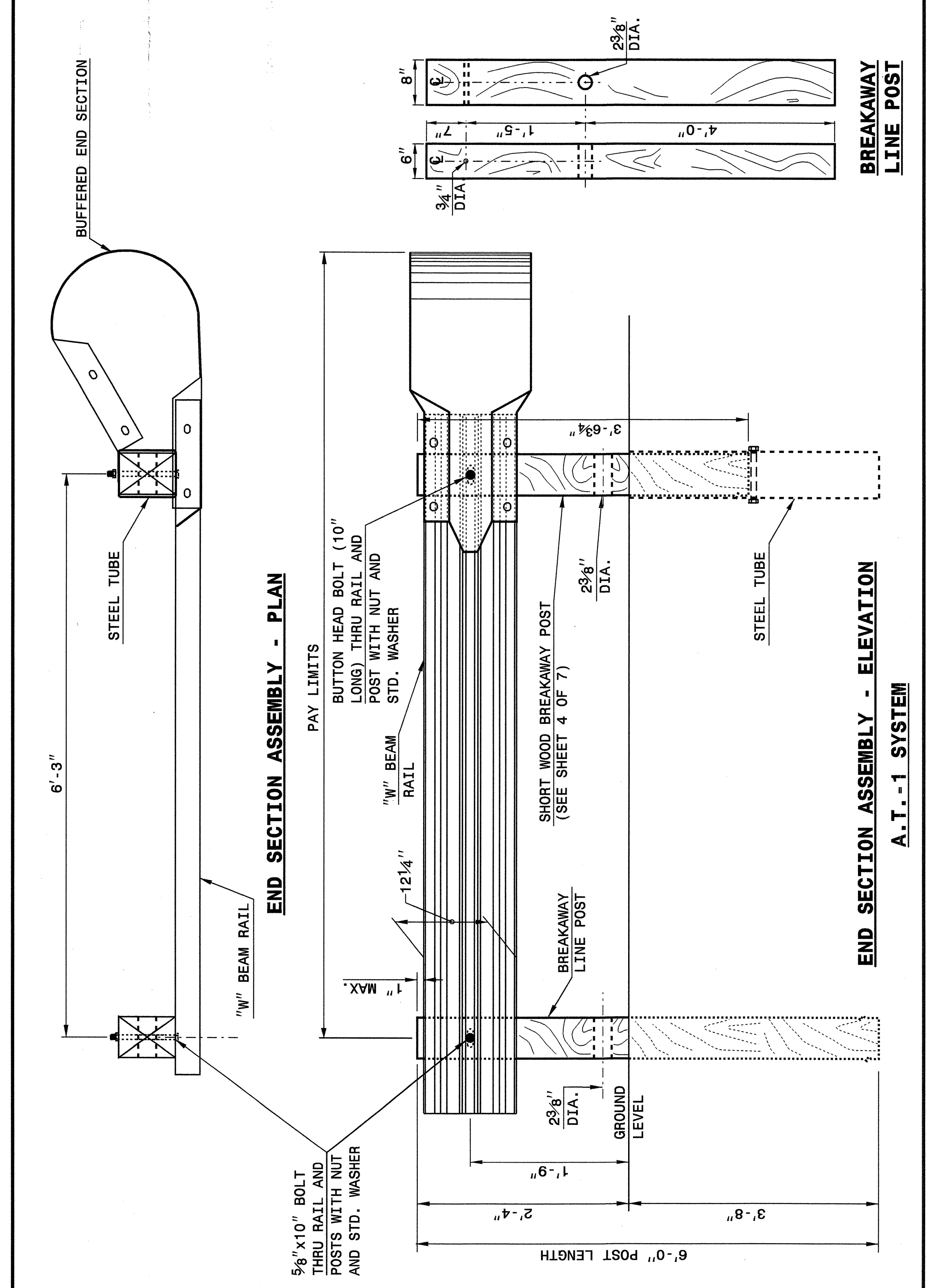
ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 7
862D02

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

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 7
862D02



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

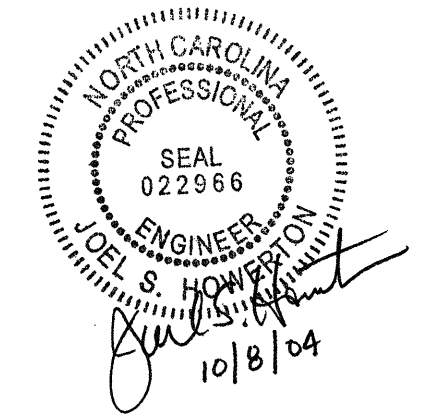
ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 7
862D02

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: *[Signature]* DATE: 4-29-04
FILE SPEC.: /usr/stds/02todetail/english/86202/862d02.dgn



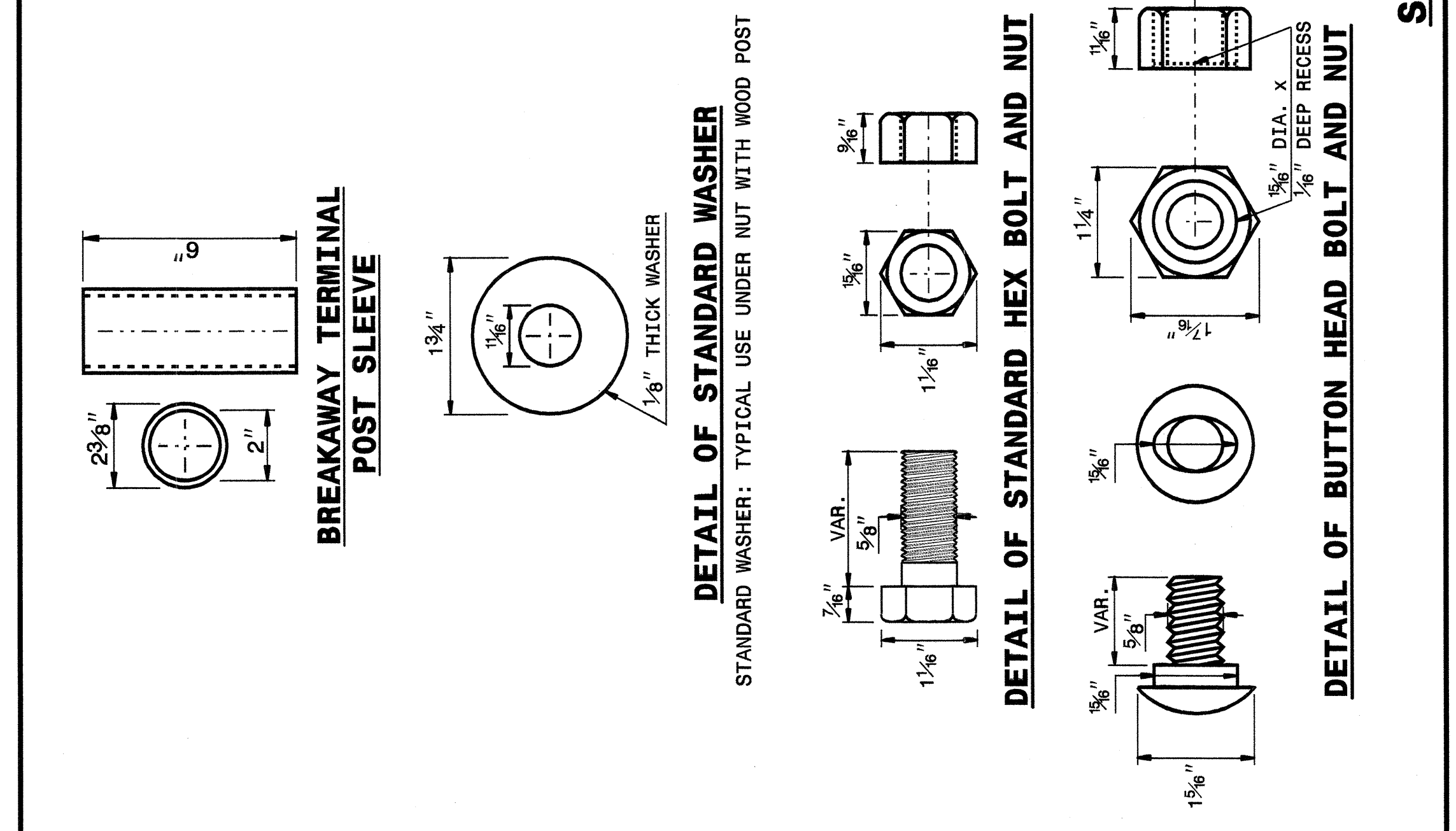
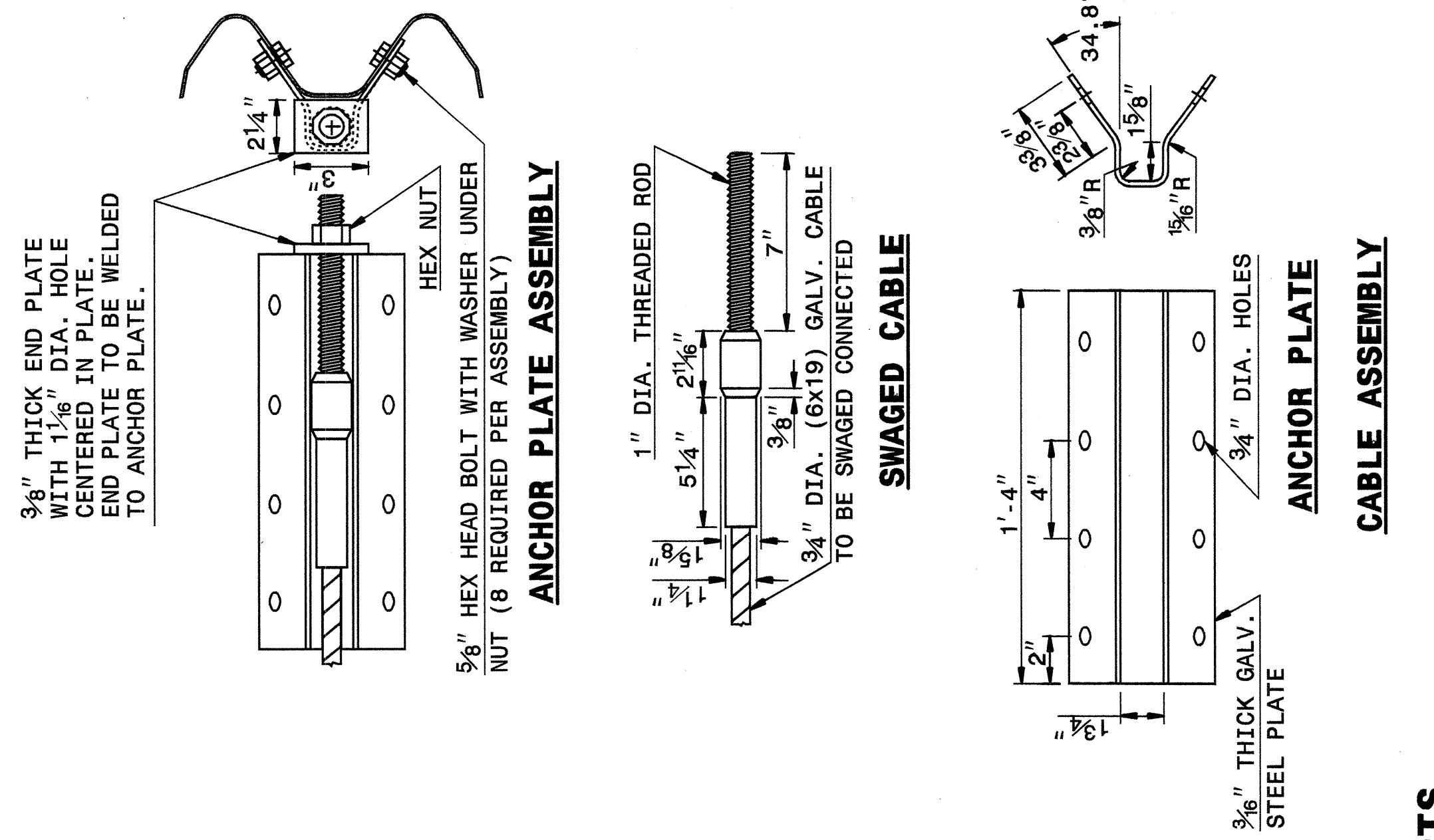
29-APR-2004 10:01 AM: Special Details\english\86202\0862d02.dgn

5/14/99

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

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 7
862D02



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

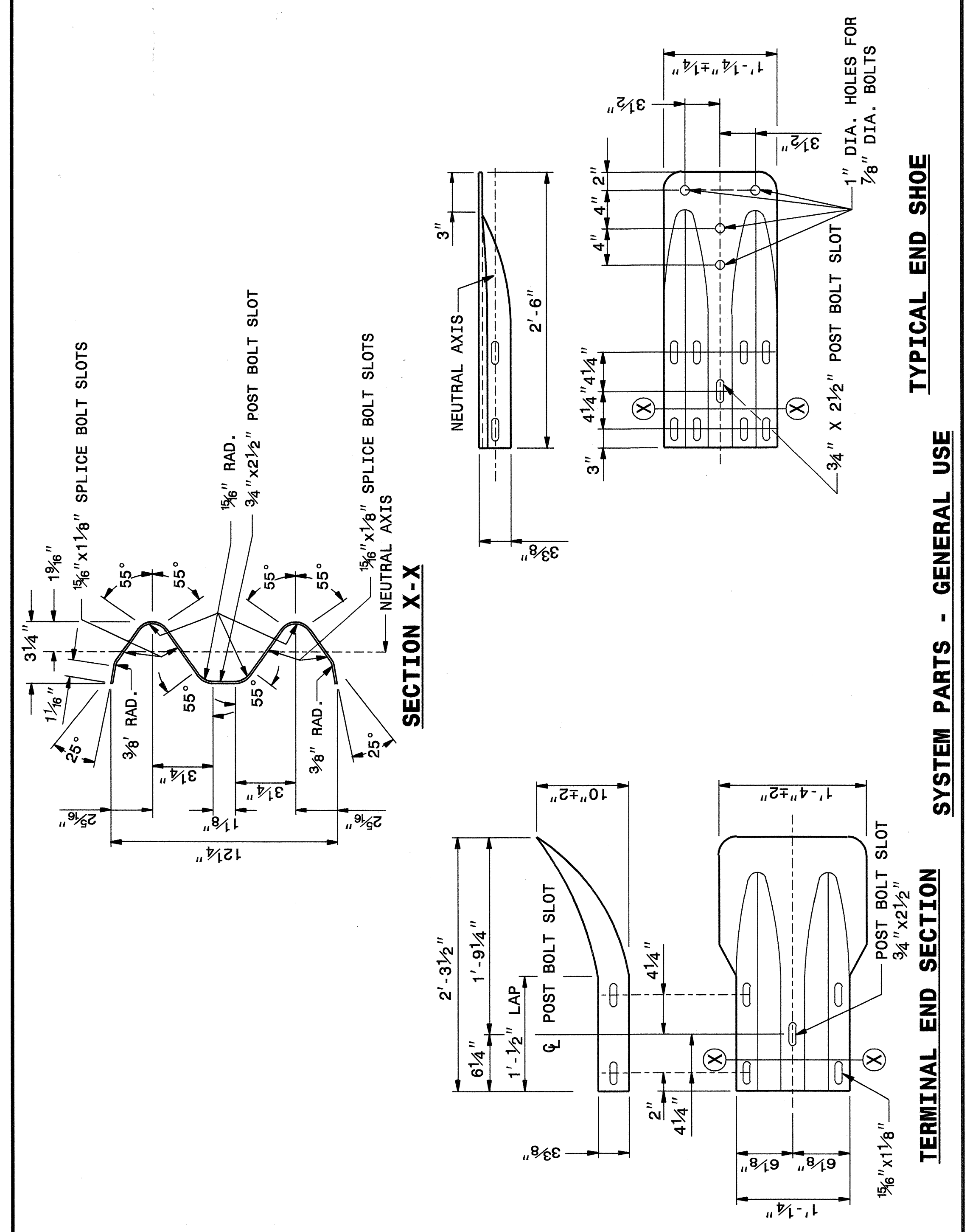
ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 7
862D02

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

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 7
862D02



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

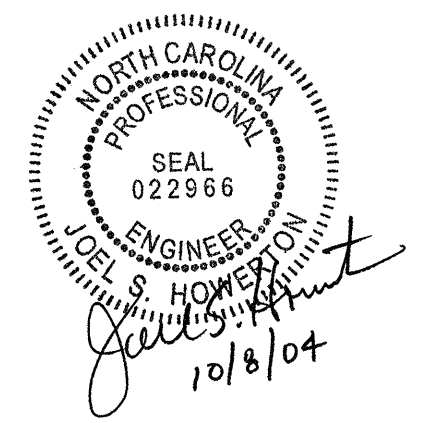
ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 7
862D02

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD. 862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: *[Signature]* DATE: 4-29-04
FILE SPEC.: /usr/stds/02todetail/english/86202/862d02.dgn

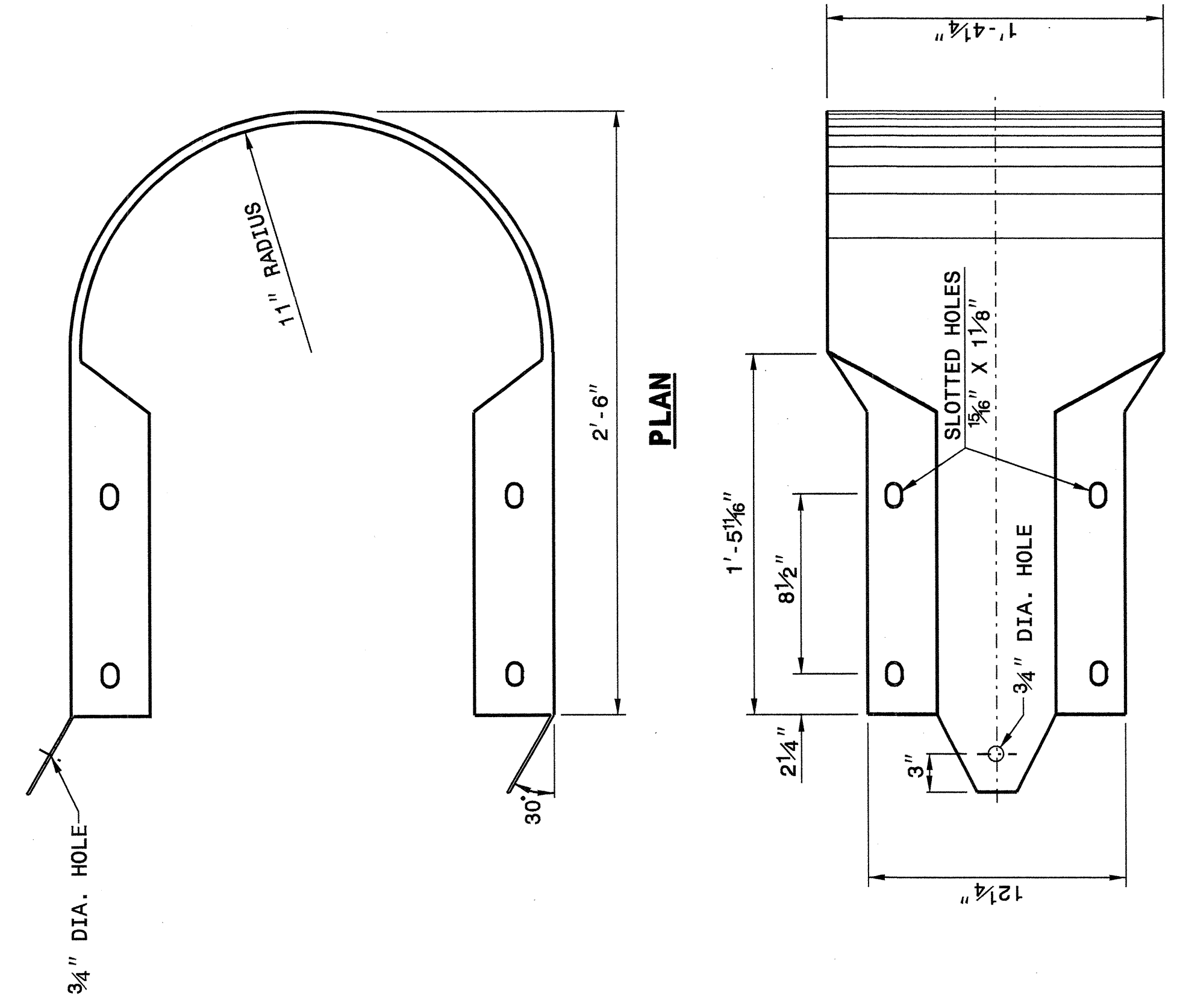


29-APP-2004.lit01
 W:\Special Details\English\86202\0862d02.dgn
 5/14/04
 5/14/04

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

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02

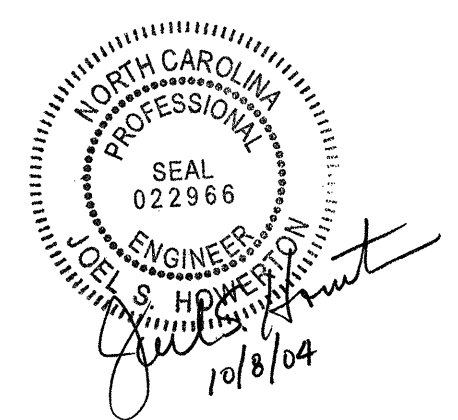


PLAN
ELEVATION
BUFFERED END SECTION

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

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02



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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD. 862.02 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 02-09-03
 CHECKED BY: *[Signature]* DATE: 4-29-04
 FILE SPEC.: /usr/stds/02todetail/english/86202/862d02.dgn

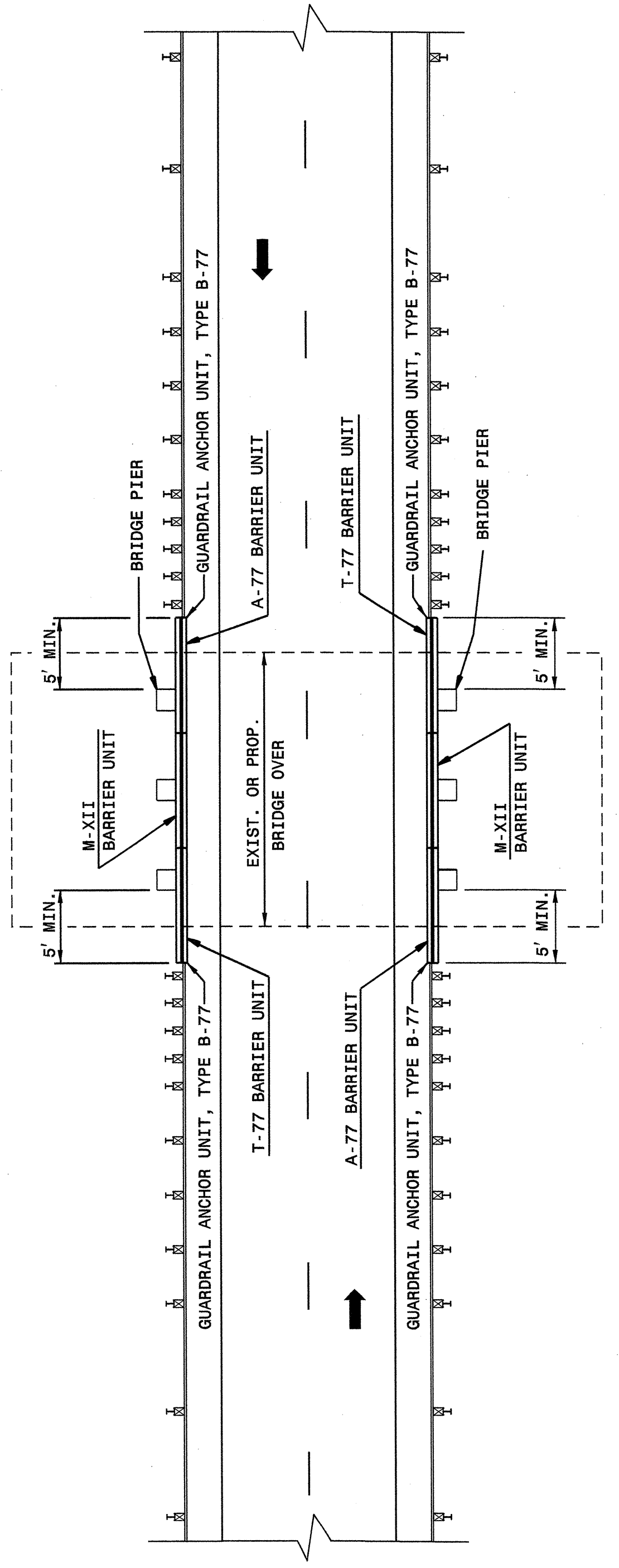
29-APR-2004 11:01
 W:\Special Details\Standard\stds\02\stds to Special Details\english\86202\0862d02.dgn
 Eric Ward AT 05212250 5/14/99

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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 1 OF 8
857D01

NOTE:
1) THIS DRAWING IS NOT INTENDED TO SHOW TYPICAL BARRIER AND GUARDRAIL INSTALLATION. IT DETAILS POSSIBLE BARRIER AND STRUCTURE ANCHOR COMBINATIONS FOR THIS TYPE FACILITY.
2) USE TRAILING END GUARDRAIL IF WARRANTED



**GUARDRAIL AND BARRIER AT UNDIVIDED
HIGHWAY BRIDGE UNDERPASS**

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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

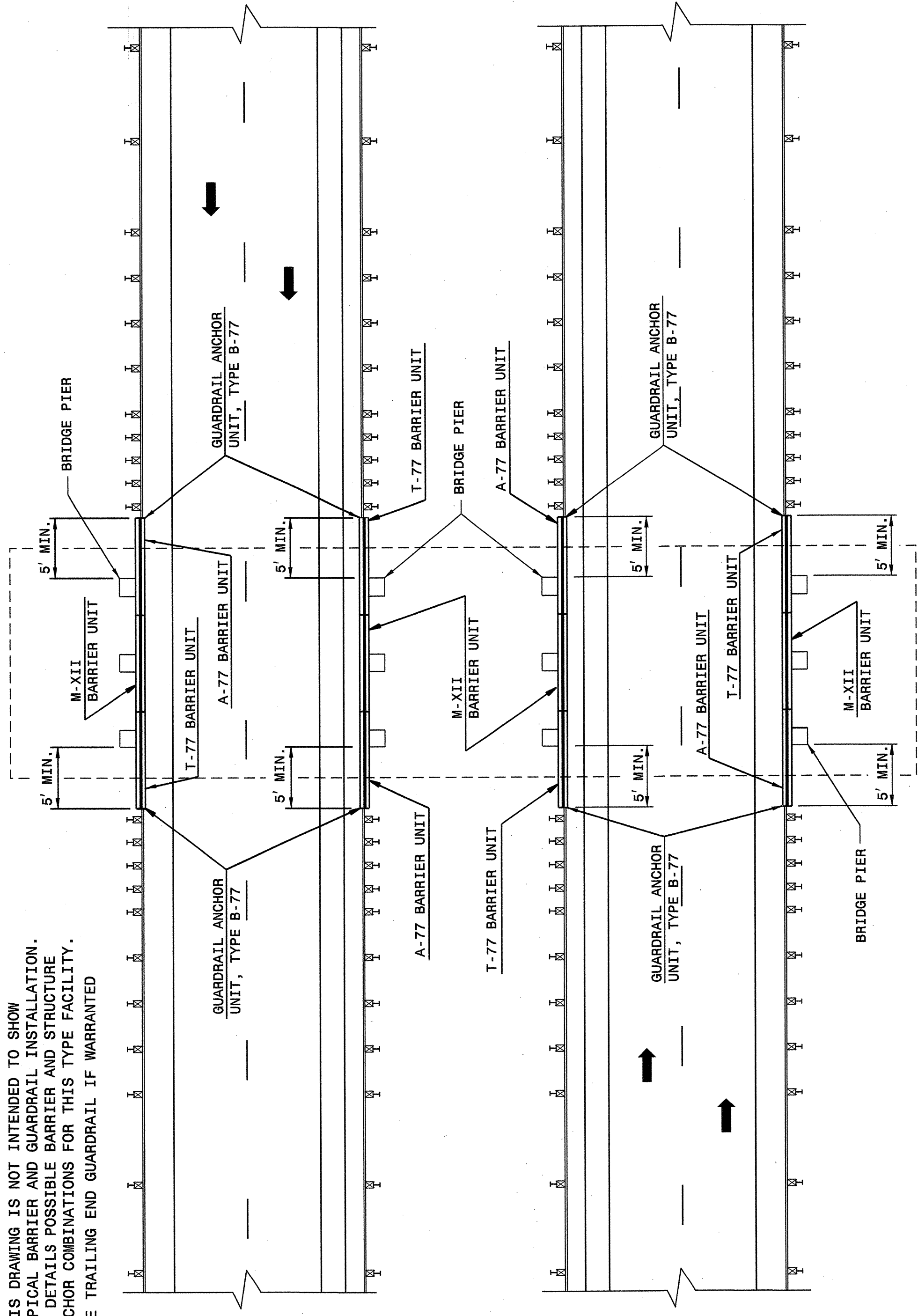
SHEET 1 OF 8
857D01

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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 2 OF 8
857D01

NOTE:
1) THIS DRAWING IS NOT INTENDED TO SHOW TYPICAL BARRIER AND GUARDRAIL INSTALLATION. IT DETAILS POSSIBLE BARRIER AND STRUCTURE ANCHOR COMBINATIONS FOR THIS TYPE FACILITY.
2) USE TRAILING END GUARDRAIL IF WARRANTED



**GUARDRAIL AND BARRIER AT DIVIDED
HIGHWAY BRIDGE UNDERPASS**

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

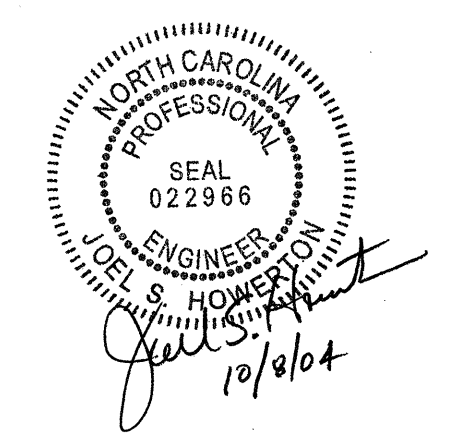
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 2 OF 8
857D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD. 857.01 DATE: _____
MODIFIED BY: E.E. WARD DATE: 6-12-03
CHECKED BY: C.D. Wynn DATE: 4/12/04
FILE SPEC.: /usr/stds/02tdetail/eng.lish/85701/857d01.dgn

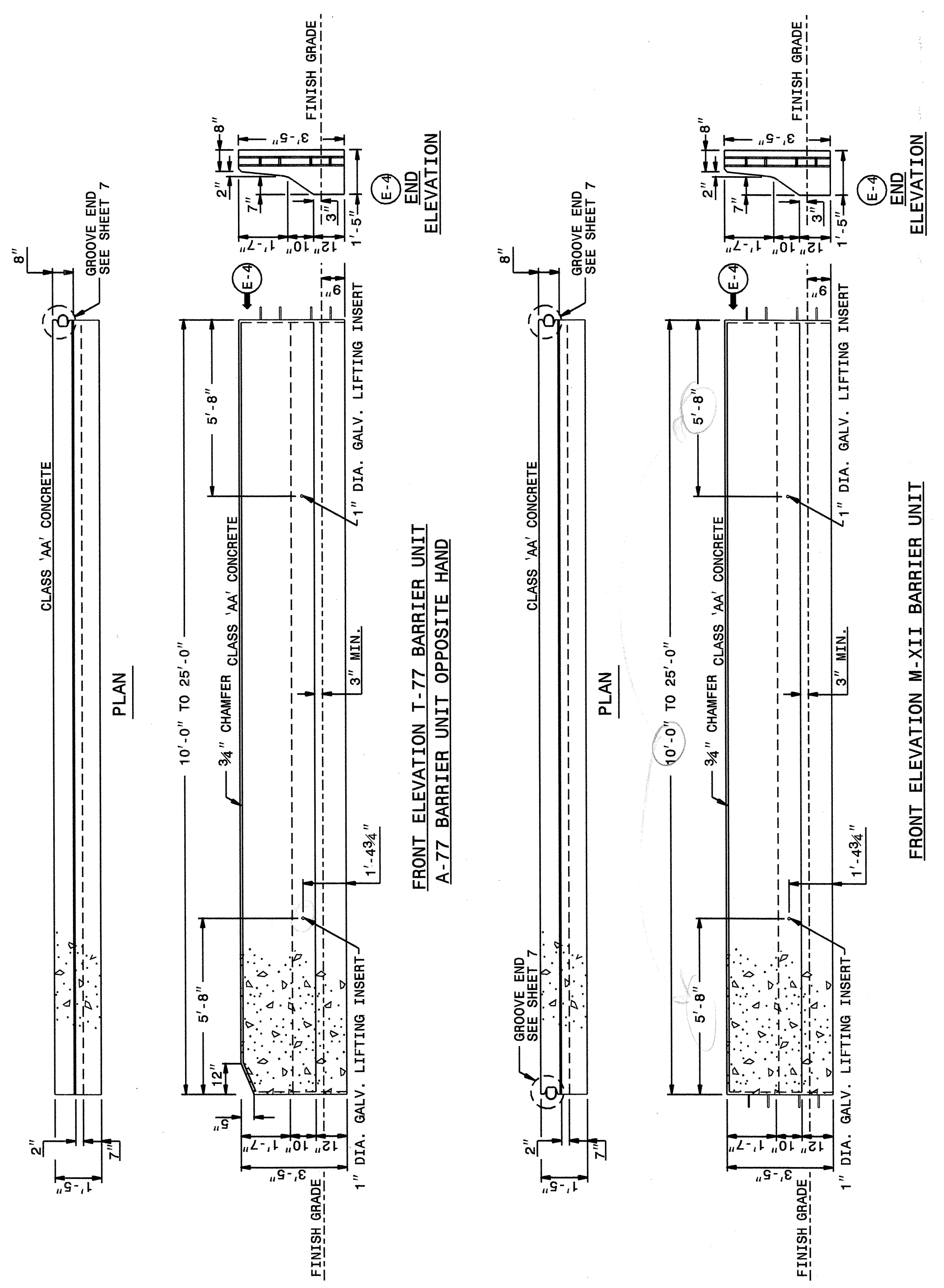


I:\APR-2004\08.dwg
 W:\spec\01\Detail\spec\word\stds\02\stds to Special Detail\english\85701\857d01.dgn
 4/12/04
 E:\new\j

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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 3 OF 8
857D01



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

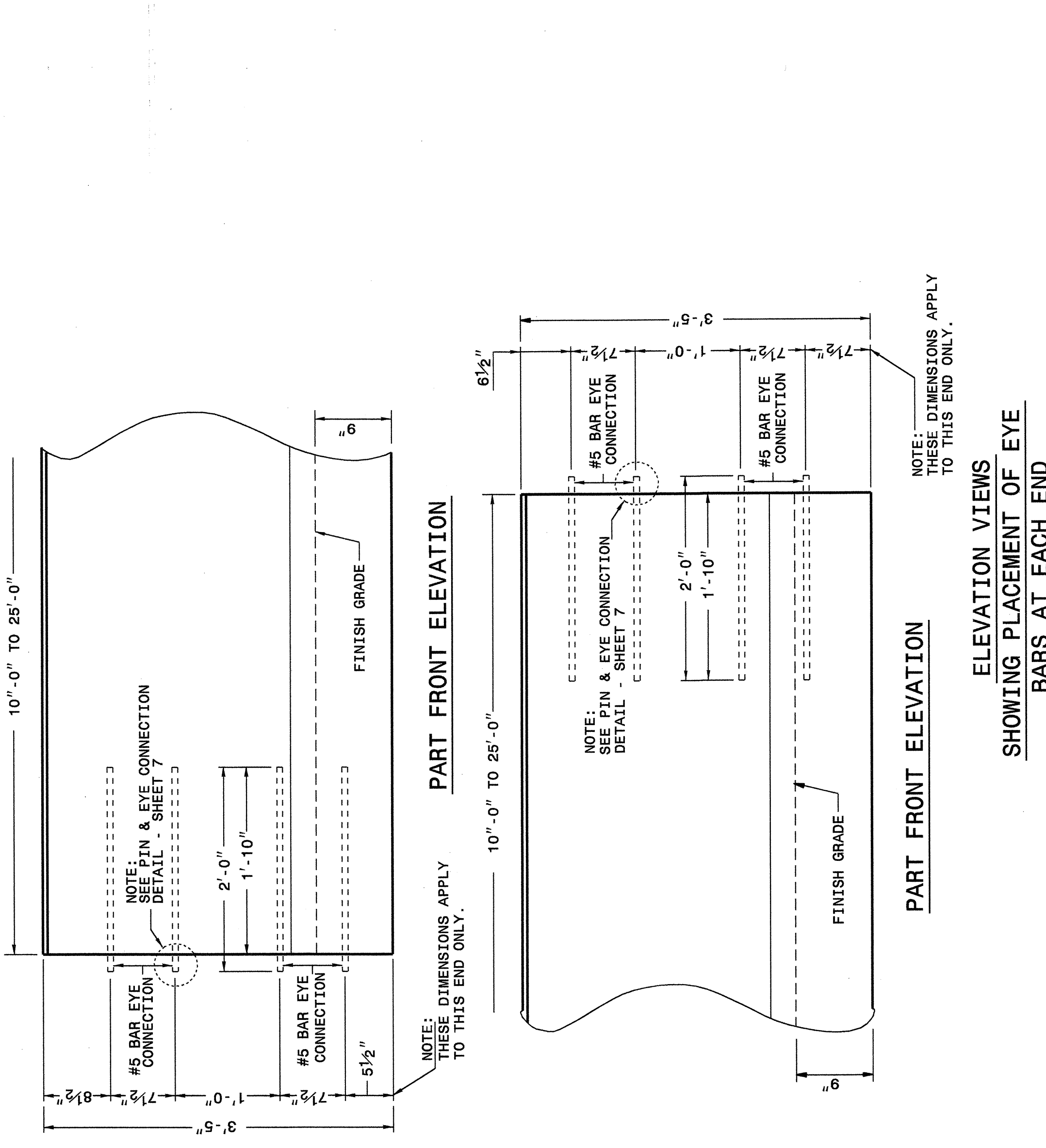
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 3 OF 8
857D01

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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 4 OF 8
857D01



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

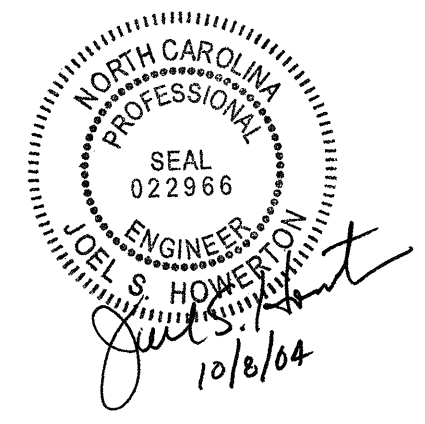
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 4 OF 8
857D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.857.01 DATE:
MODIFIED BY: E.E. WARD DATE: 6-12-03
CHECKED BY: [Signature] DATE: 7-12-04
FILE SPEC.: /usr/stds/02todetail/eng1ish/85701/857d01.dgn



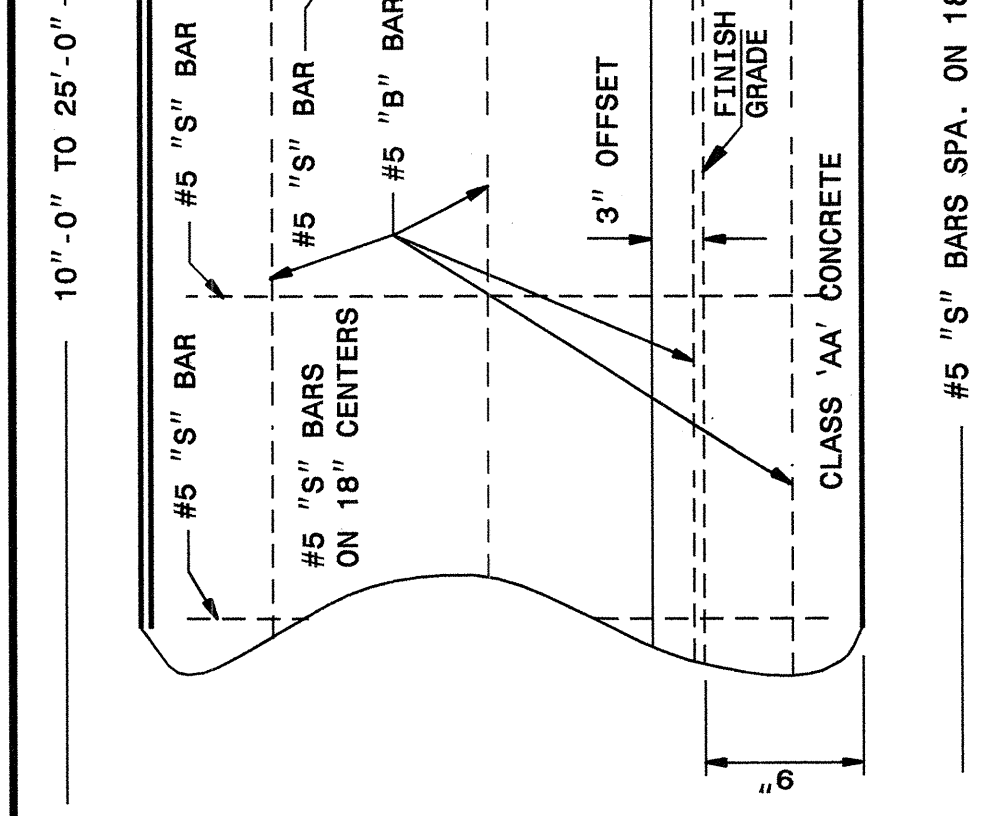
I:\APP-2004_0820
 \V\Projects\10651\structure\divstds\02\stds to Special Details\english\85701\857d01.dgn
 created AT 05:12:50

08 APR 2004 11:53 \\sra\work\stds\02\stds to Special Details\english\85701\857d01.dgn
enrichard At 05/14/04

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

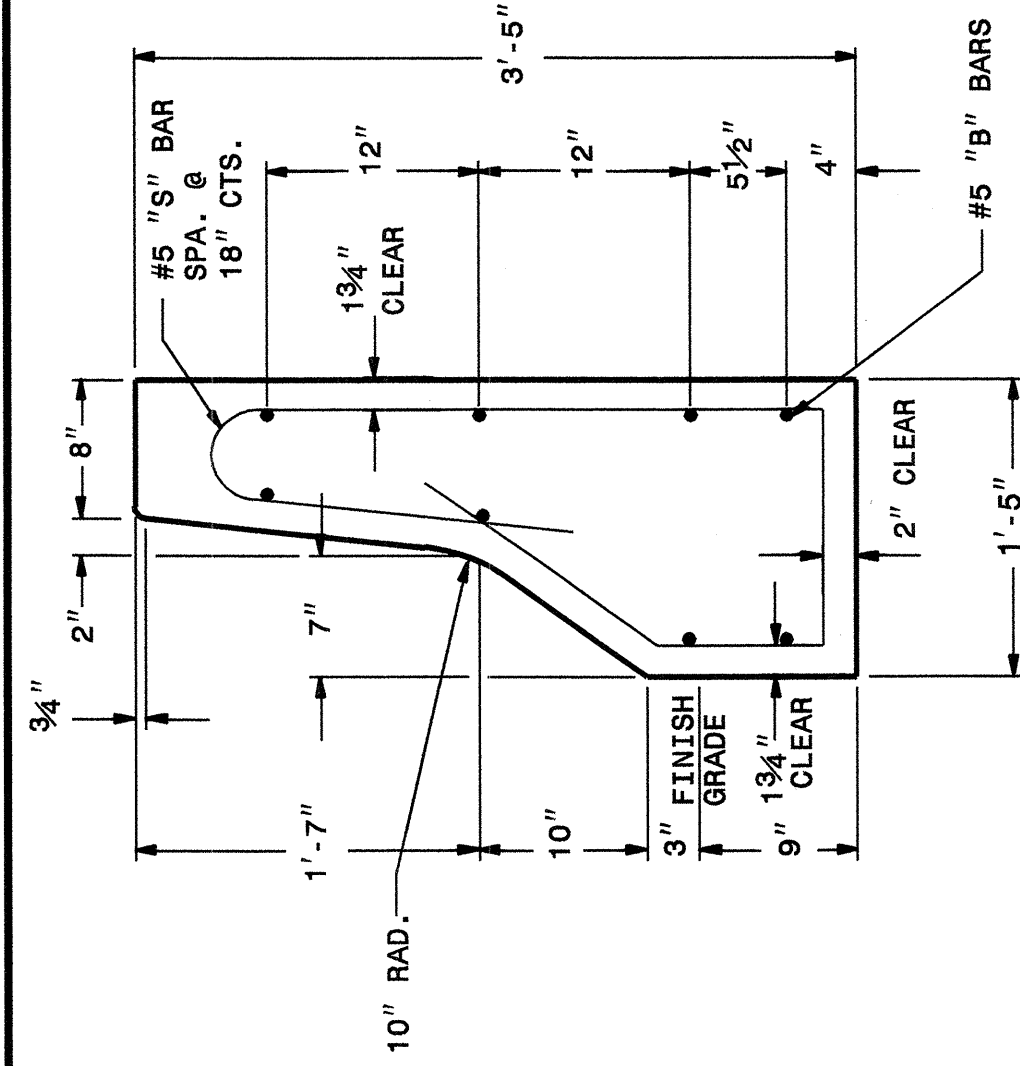
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 5 OF 8
857D01



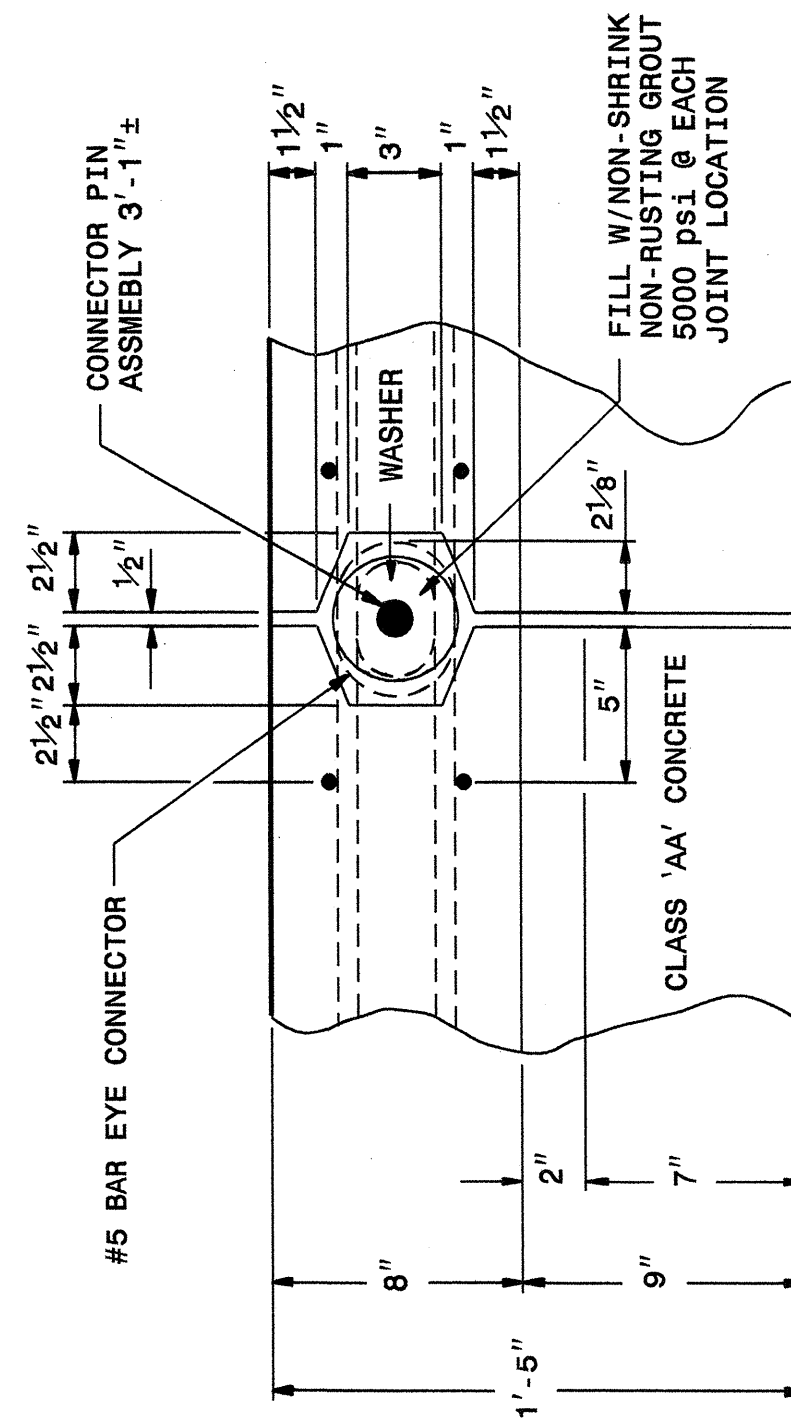
PART FRONT ELEVATION

#5 "S" BARS SPA. ON 18" CTRS.

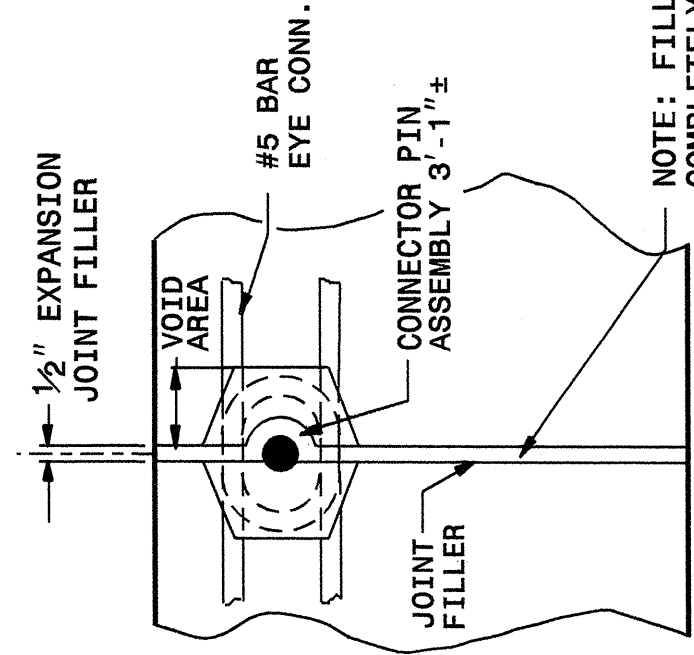


DETAIL X-X
CROSS SECTIONAL VIEW

*SEE SHEET 4
FOR DIMENSIONS



PLAN OF BONDED CONNECTION OF PRECAST UNIT



NOTE: FILL THROUGH
COMPLETELY SECTION

JOINT FILLER DETAIL

S - BARS
#5 BAR

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

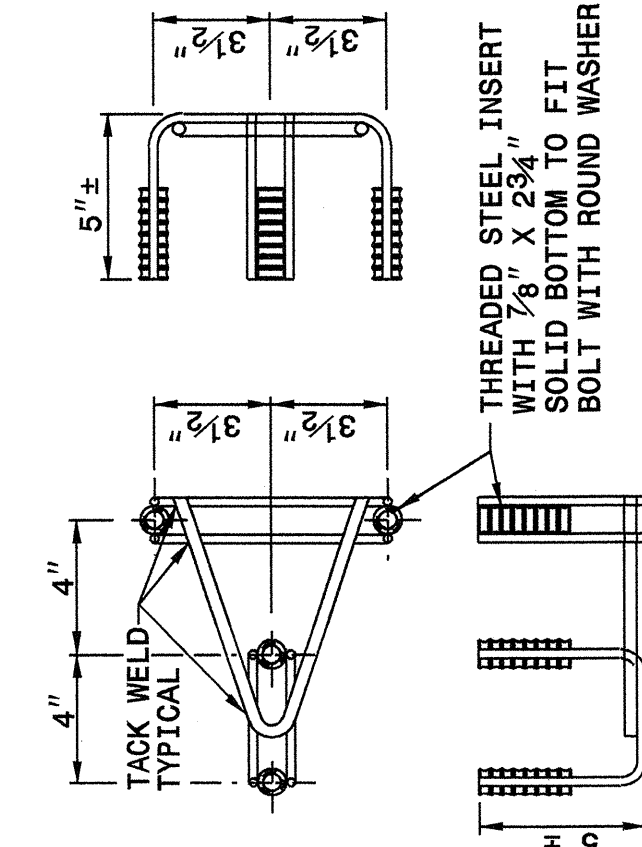
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 5 OF 8
857D01

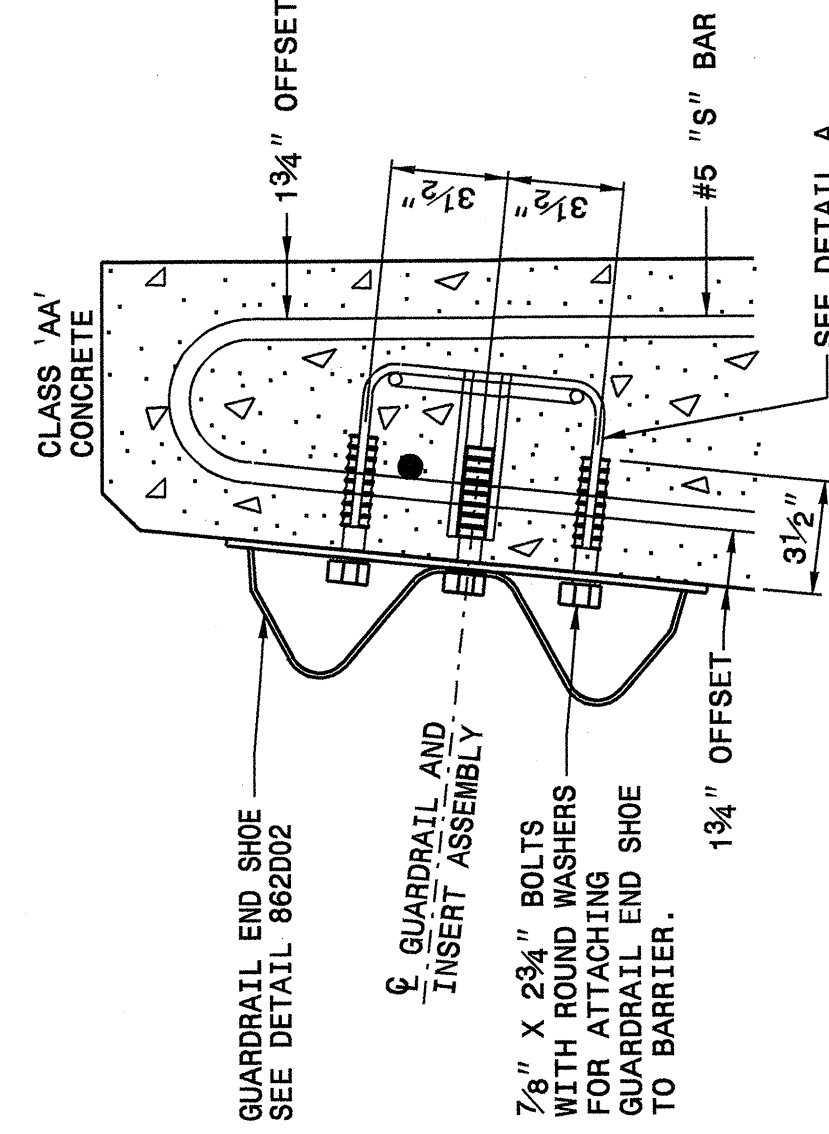
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

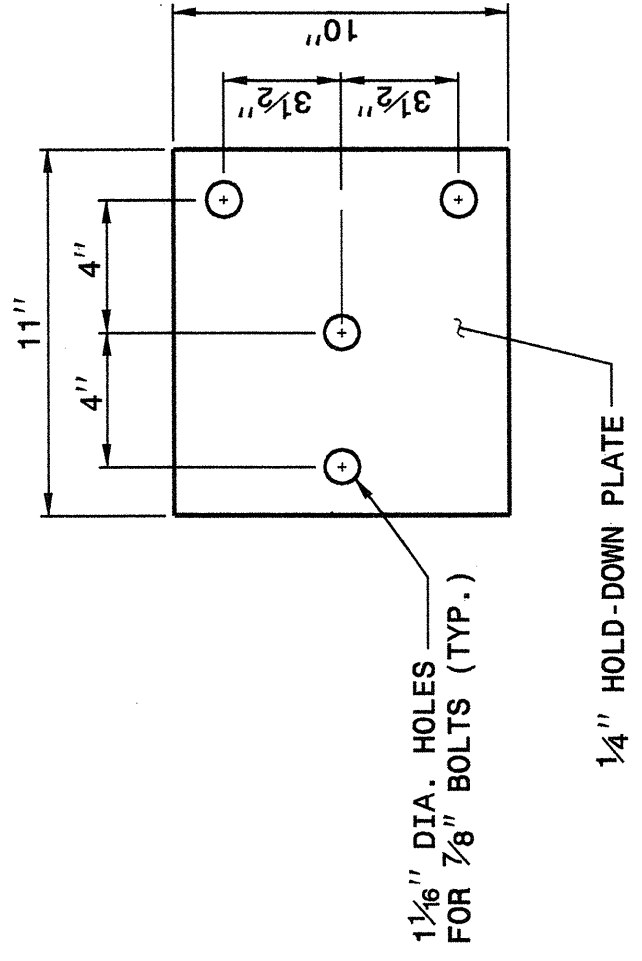
SHEET 6 OF 8
857D01



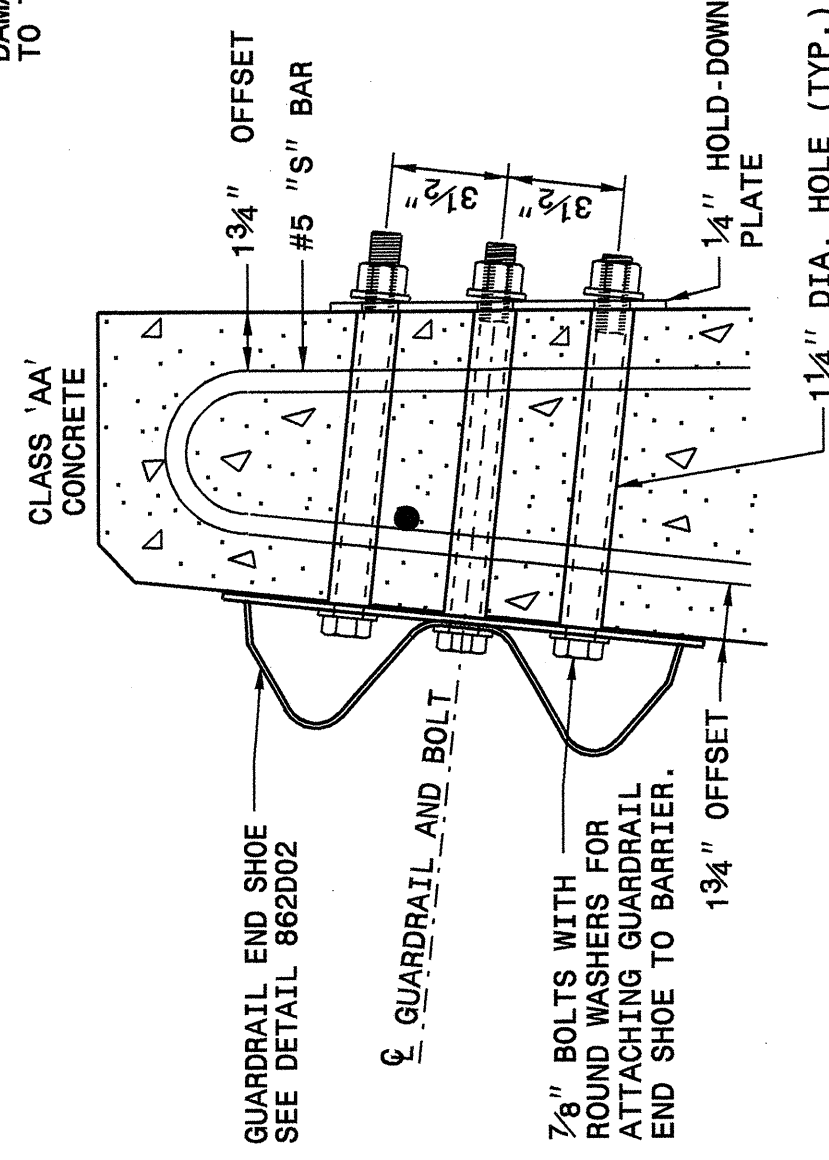
DETAIL A
4 BOLT INSERT ASSEMBLY



**PART SECTION
OF BARRIER**
THRU END SHOE SECTION AND
4 BOLT INSERT ASSEMBLY



DETAIL B
4 BOLT HOLD-DOWN PLATE



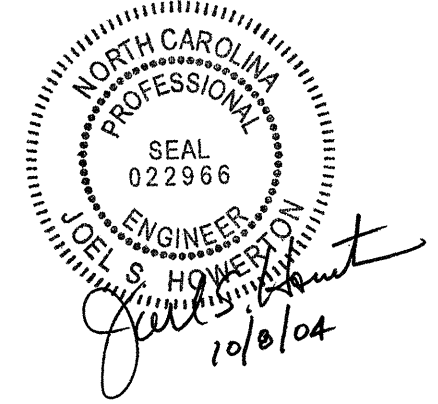
**PART SECTION
OF BARRIER**
THRU END SHOE SECTION AND
4 BOLT HOLD-DOWN PLATE

NOTES FOR 4-BOLT HOLD-DOWN PLATE
THE GUARDRAIL ANCHOR ASSEMBLY SHALL
CONSIST OF A 1/4" HOLD-DOWN PLATE AND
4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.
THE HOLD-DOWN PLATE SHALL CONFORM TO
AASHTO M270 GRADE 50 AFTER APPLICATION,
THE ANCHOR SHALL BE GALVANIZED OR
GALVANIZED IN ACCORDANCE WITH AASHTO M111.
AFTER INSTALLATION, THE EXPOSED THREAD
OF THE BOLT SHALL BE BURRED WITH A
SHARP POINTED TOOL.
THE 1 1/4" DIA. HOLES SHALL BE FORMED OR
DRILLED WITH A CORE BIT. IMPACT TOOLS
WILL NOT BE PERMITTED. ANY CONCRETE
DAMAGED BY THIS WORK SHALL BE REPAIRED
TO THE SATISFACTION OF THE ENGINEER.

ORIGINAL BY: 2002 STD.857.01 DATE:
MODIFIED BY: E.E. WARD DATE: 4-07-04
CHECKED BY: C.H.W. DATE: 4-17-04
FILE SPEC.: /usr/stds/02stdetail/english/85701/857d01.dgn

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

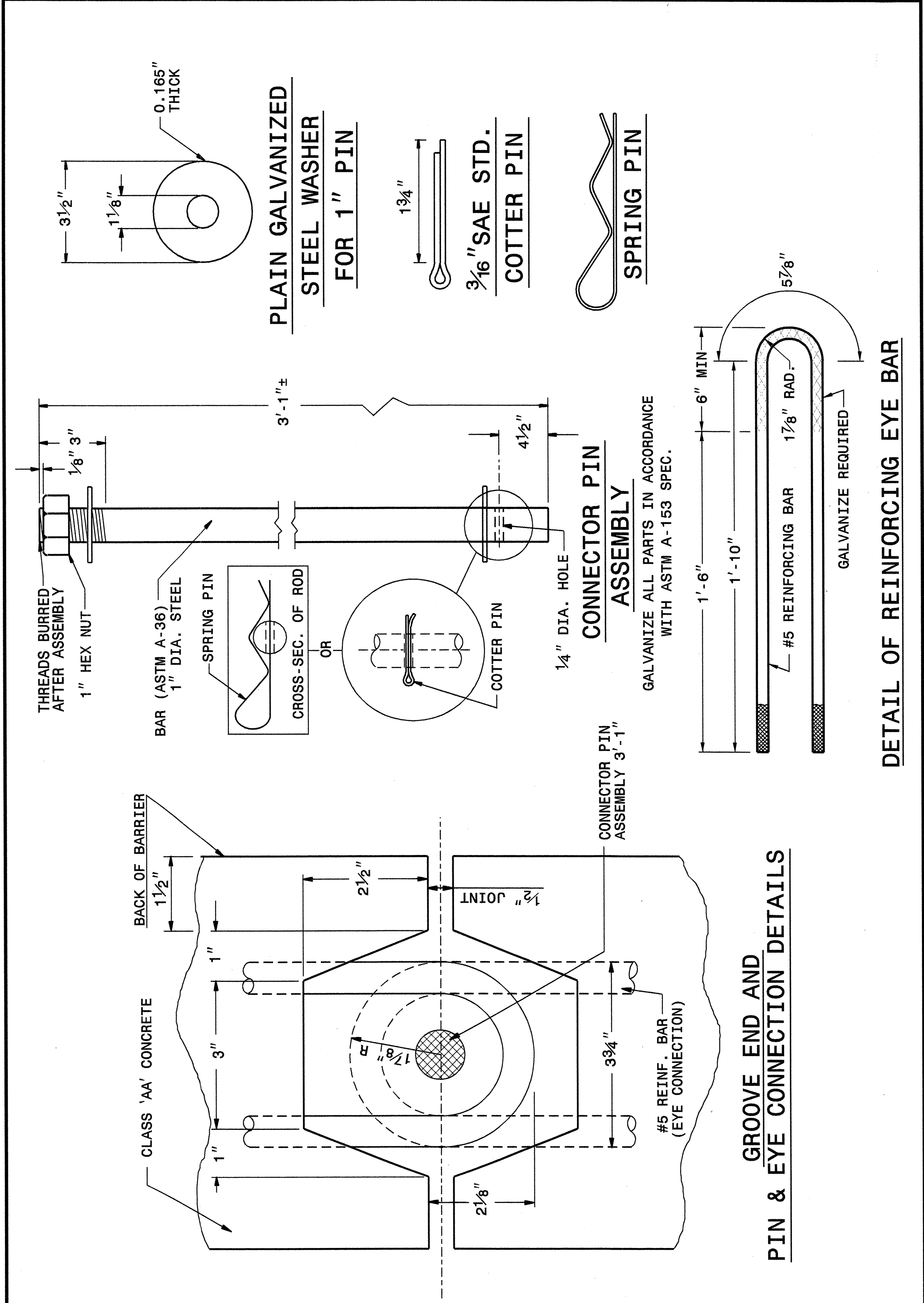
SEE PLATE FOR TITLE



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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 7 OF 8
857D01



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

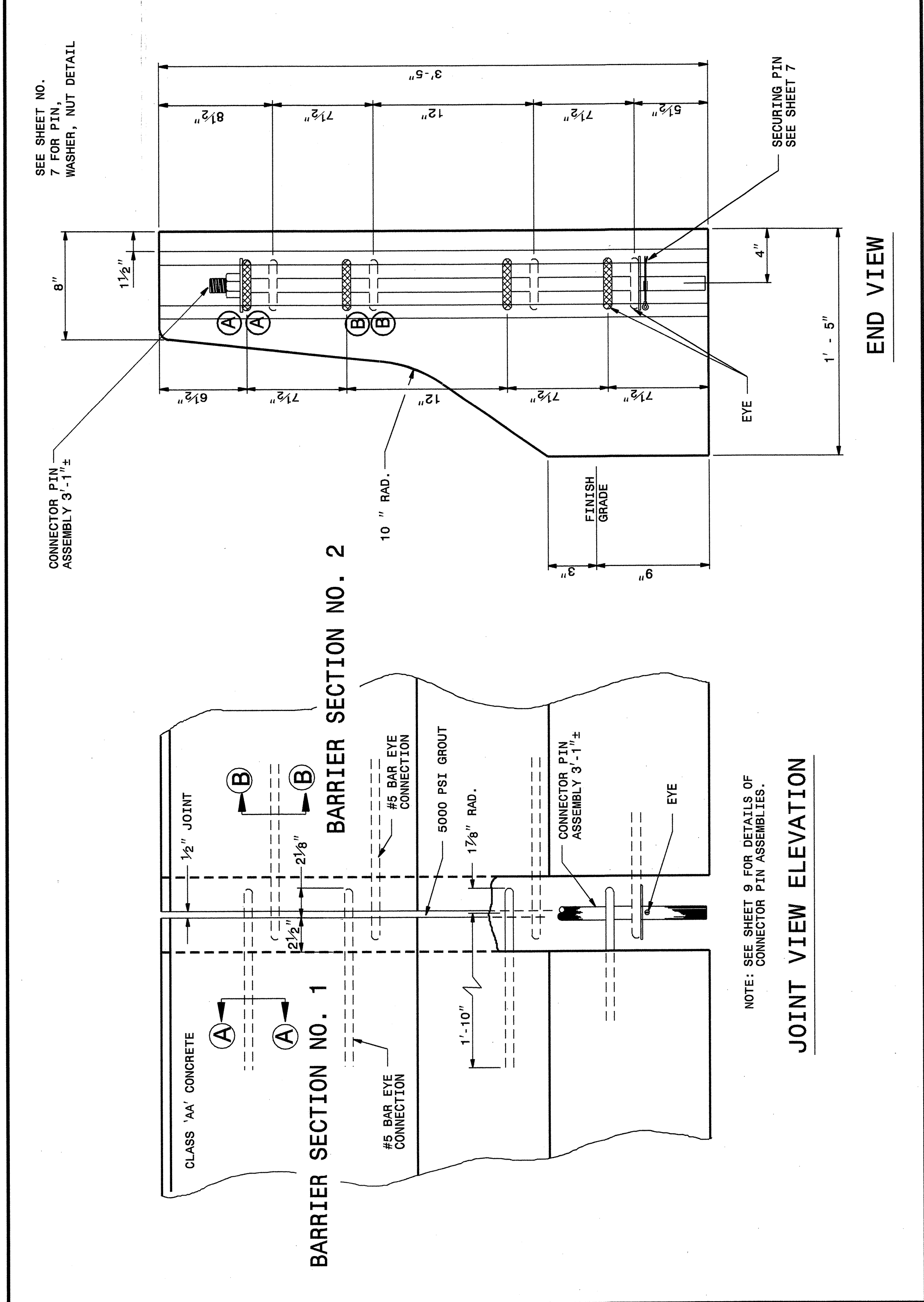
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 7 OF 8
857D01

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

ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 8 OF 8
857D01



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

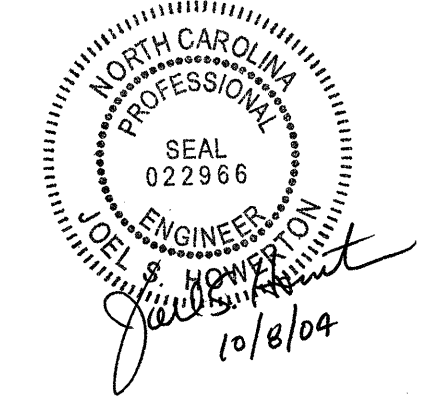
ENGLISH DETAIL DRAWING FOR
PRECAST REINFORCED CONCRETE BARRIER
41" SINGLE FACED

SHEET 8 OF 8
857D01

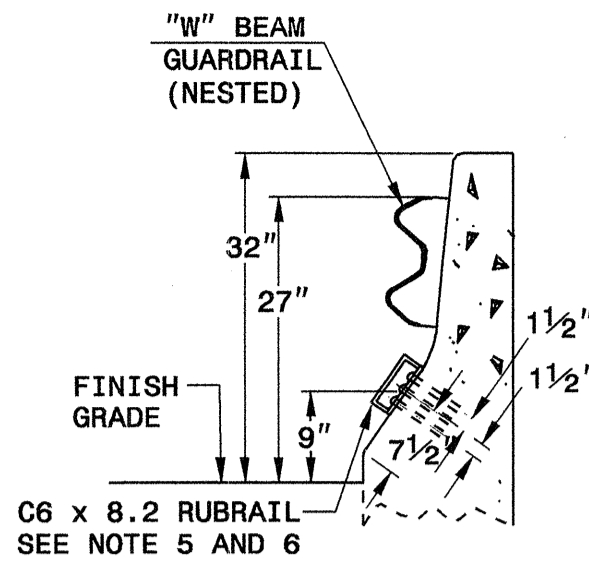
**DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

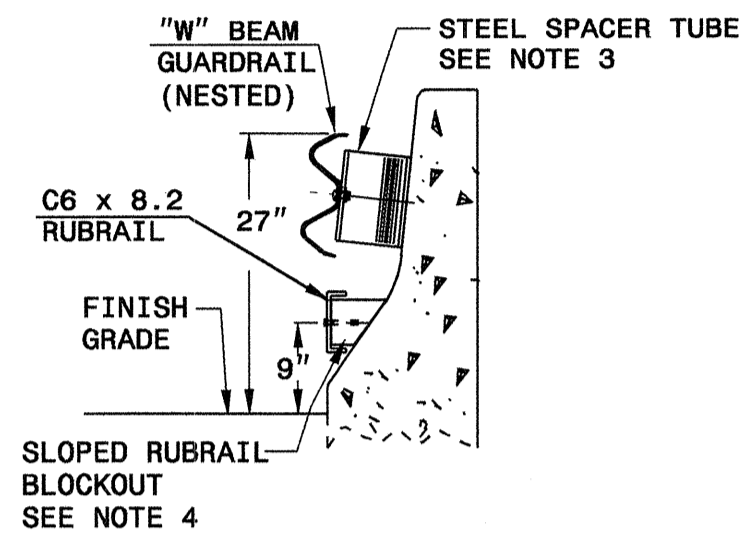
ORIGINAL BY: 2002 STD. 857.01 DATE: 6-12-03
 MODIFIED BY: E.E. WARD DATE: 7-12-04
 CHECKED BY: J. B. WARD DATE: 7-12-04
 FILE SPEC.: /usr/stds/02stdetail/english/85701/857d01.dgn



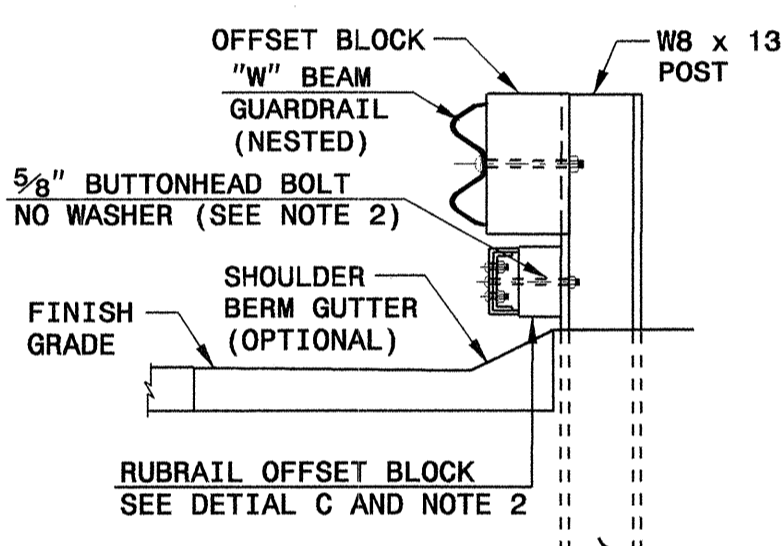
I:\APR-2004_08-22
 12:41:57
 jward\stds\02stdetail\english\85701\857d01.dgn
 10/8/04



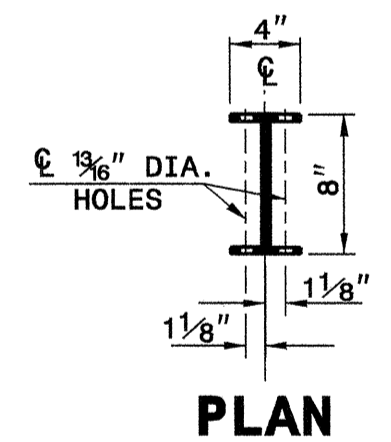
SECTION A-A



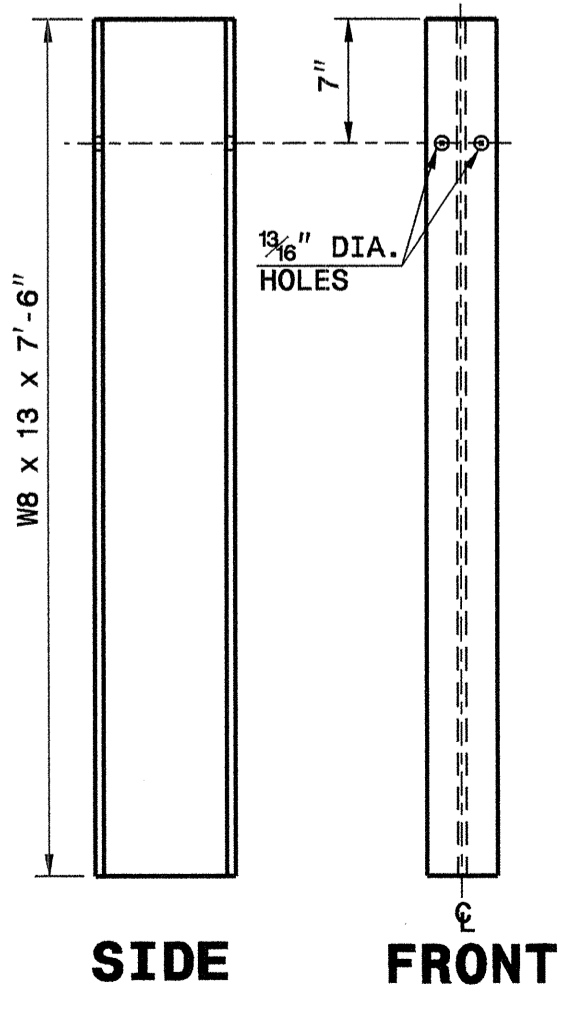
SECTION B-B



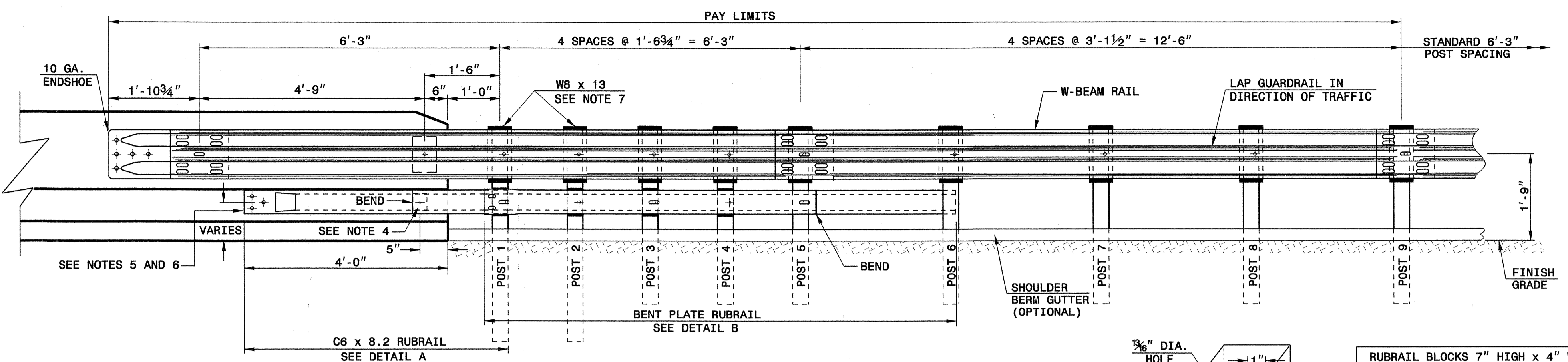
SECTION C-C



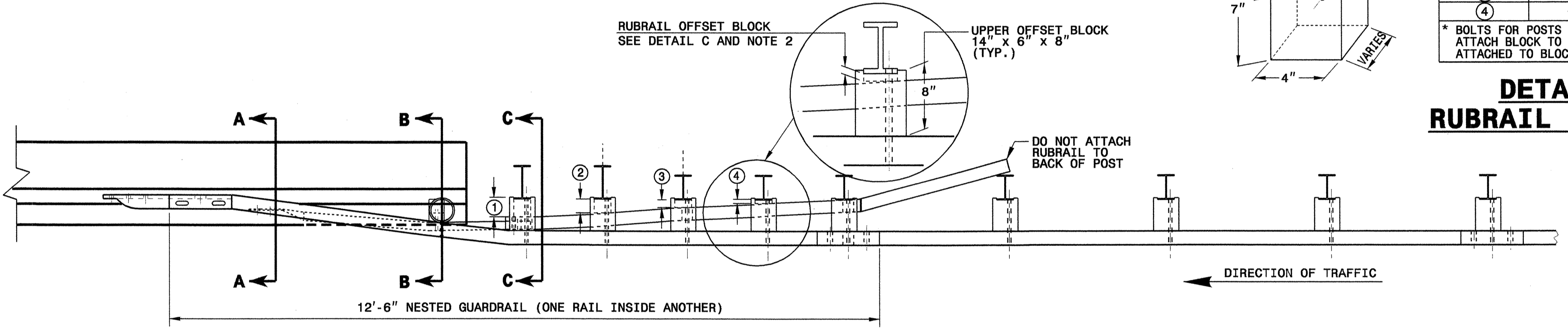
PLAN



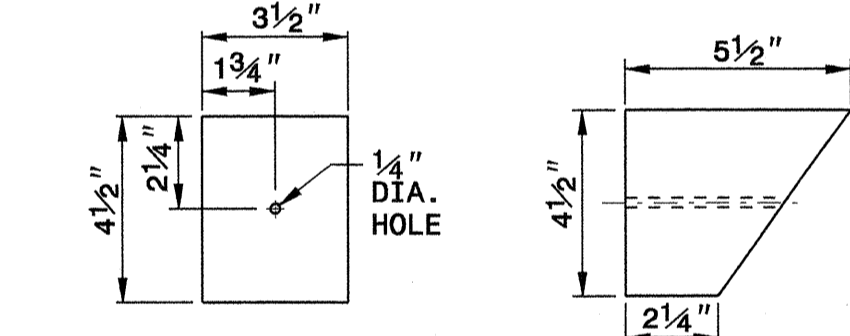
DETAIL F
"W8 X 13 X 7'-6" STEEL POST



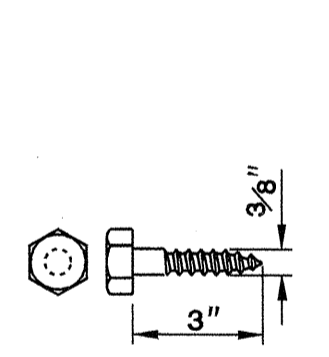
ELEVATION



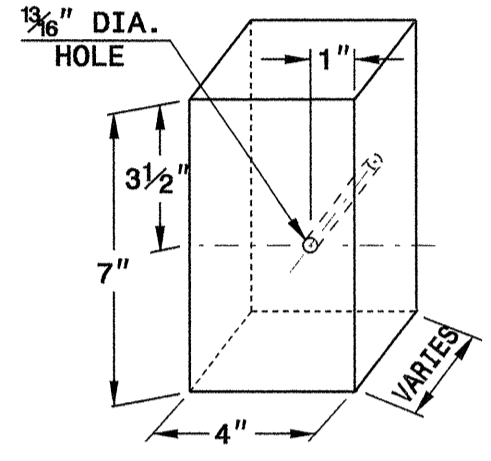
PLAN



DETAIL D
SLOPED RUBRAIL BLOCKOUT



DETAIL E
LAG BOLT



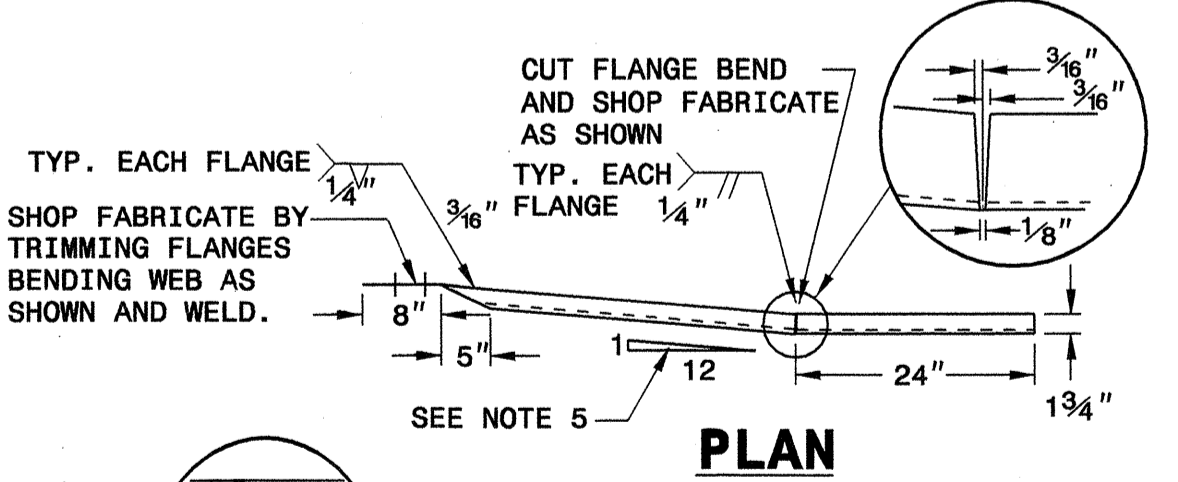
RUBRAIL BLOCKS 7" HIGH x 4" WIDE		
POST	THICKNESS	BOLT LENGTH
①	4 1/4"	9"
②	3 1/4"	5"*
③	2"	6"
④	1"	3"*

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

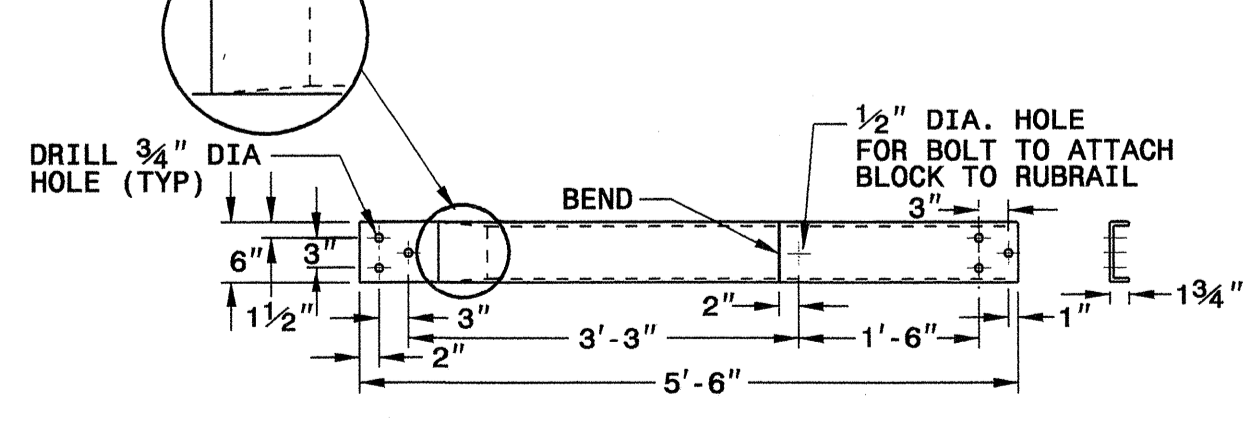
DETAIL C
RUBRAIL BLOCKOUT

GENERAL NOTES:

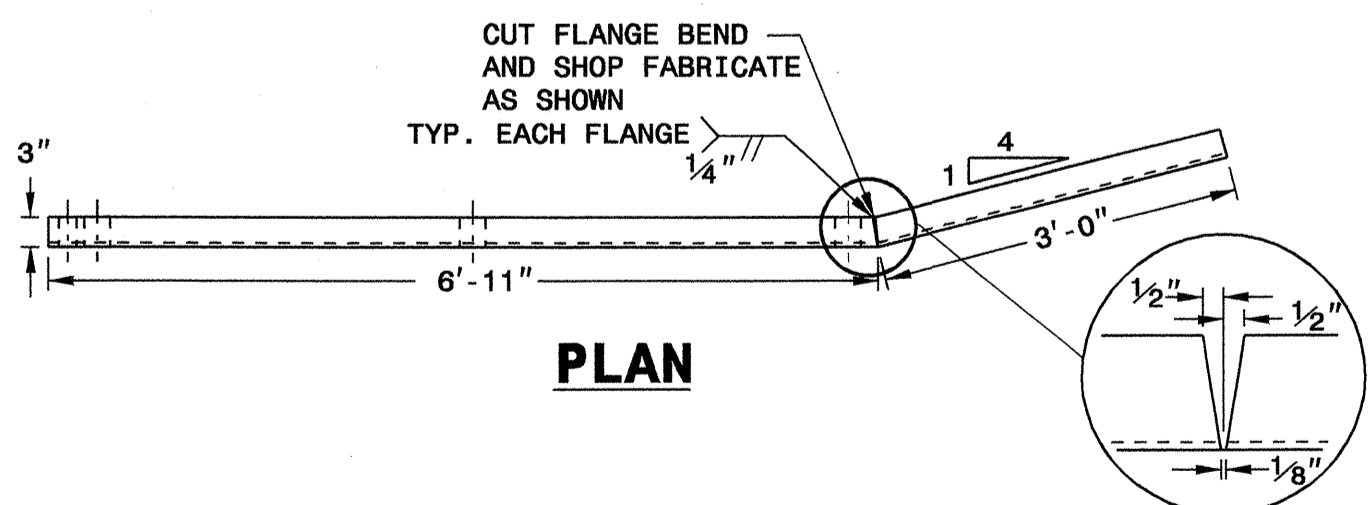
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
- RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 5/8" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A 5/8" x 4 1/2" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
- STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" x 1 1/4" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
- SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" x 3" LAG BOLT WITH FLAT WASHER.
- SHOP FABRICATE THE C6x8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE JERSEY SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
- ANCHORAGE:
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, RUBRAIL SHALL BE ANCHORED USING THREE 5/8" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS.
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, THE W-BEAM END SHOE SHALL BE ANCHORED USING A 4 BOLT HOLD-DOWN PLATE AS SHOWN ON DETAIL 857D01 SHEET 6. A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (857D01). THE W-BEAM END SHOE SHALL BE INSTALLED BEHIND THE NESTED W-BEAM ELEMENTS.
 - AT NEW BRIDGE RAIL, THE W-BEAM END SHOE AND RUBRAIL SHALL BE ANCHORED AS DETAILED ON THE STRUCTURE PLANS.
- POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.



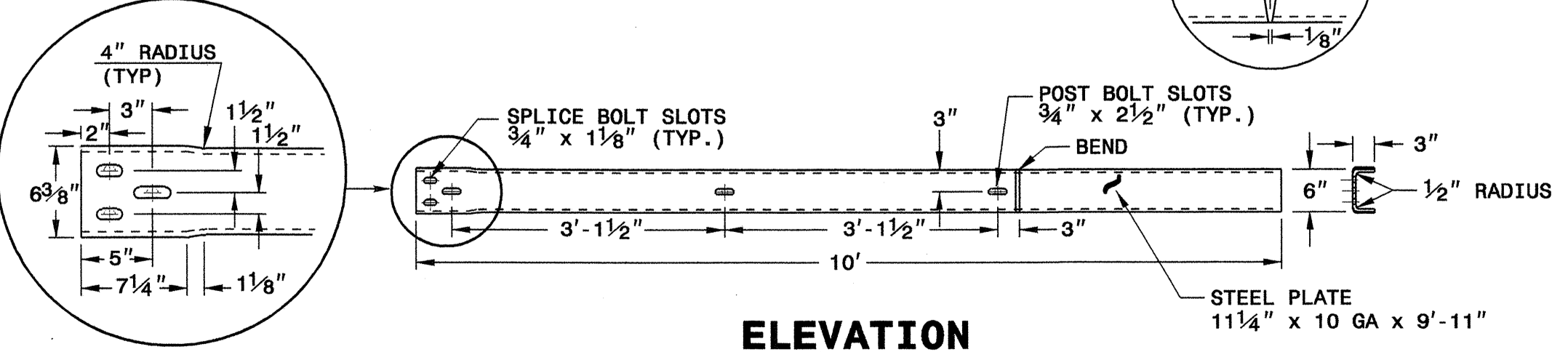
DETAIL A
C6 x 8.2 RUBRAIL



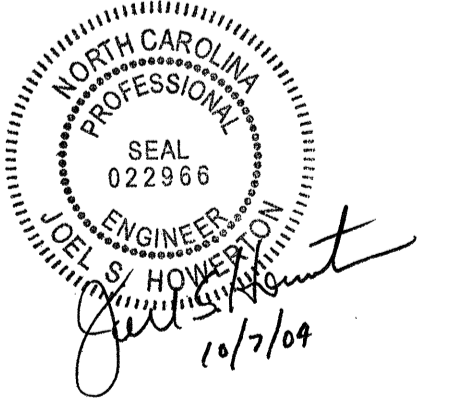
DETAIL A
C6 x 8.2 RUBRAIL



DETAIL B
BENT PLATE RUBRAIL



DETAIL B
BENT PLATE RUBRAIL



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

GUARDRAIL ANCHOR UNIT
TYPE B-77

ORIGINAL BY: CONNDOT DATE: 10-01-00
 MODIFIED BY: E.E. WARD DATE: 04-07-04
 CHECKED BY: C.B. Berry DATE: 4-12-04
 FILE SPEC.:

08-APR-2004 11:36 W:\Special Details\ericward\Misc. guardrail\NCHRP350 Approved\B-77 ConnDot.dgn ericward AT 05:21:2260

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT

SHEET 1 OF 4
848D05

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

ISOMETRIC VIEW

SECTION A-A
SECTION B-B

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT

SHEET 1 OF 4
848D05

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

ISOMETRIC VIEW

SECTION A-A
SECTION B-B

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT

SHEET 1 OF 4
848D05

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

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT

SHEET 1 OF 4
848D05

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

ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT

SHEET 1 OF 4
848D05

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

ENGLISH DETAIL DRAWING FOR RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING WHEELCHAIR RAMP CURB CUT

SHEET 2 OF 4
848D05

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

ISOMETRIC VIEW

SECTION A-A
SECTION B-B

ENGLISH DETAIL DRAWING FOR RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING WHEELCHAIR RAMP CURB CUT

SHEET 2 OF 4
848D05

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

ENGLISH DETAIL DRAWING FOR RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING WHEELCHAIR RAMP CURB CUT

SHEET 2 OF 4
848D05

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

ENGLISH DETAIL DRAWING FOR RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING WHEELCHAIR RAMP CURB CUT

SHEET 2 OF 4
848D05

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

ENGLISH DETAIL DRAWING FOR RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING WHEELCHAIR RAMP CURB CUT

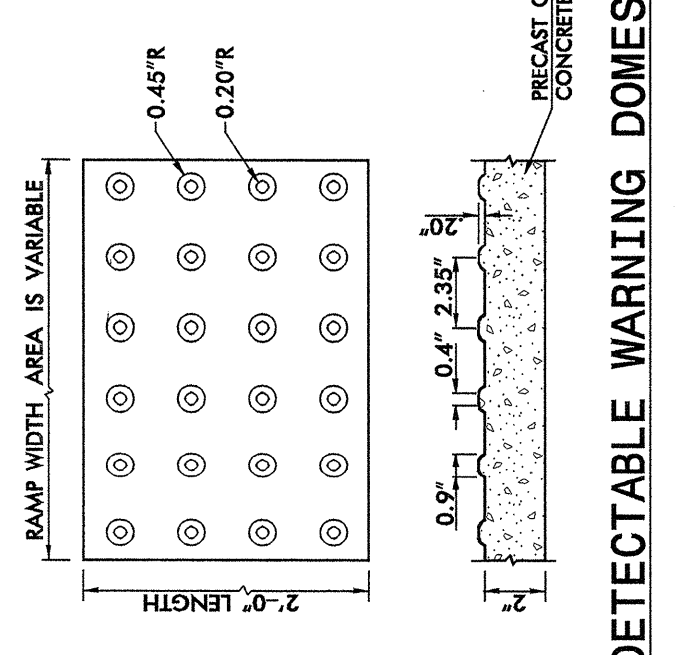
SHEET 2 OF 4
848D05

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

25-JUN-2003 10:34 AM Special Details\en\stds\02 Stds to Special Details\english\848D05\0848D05.dgn
 5/14/99

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'	7.8'	7.0'
9'	0.0'	9.8'	8.3'	7.5'
10'	0.0'	10.8'	8.8'	8.0'
11'	0.0'	11.8'	9.3'	8.5'
12'	0.0'	12.8'	9.8'	9.0'
13'	0.0'	13.8'	10.3'	9.5'
14'	0.0'	14.8'	10.8'	10.0'
15'	0.0'	15.8'	11.3'	10.5'

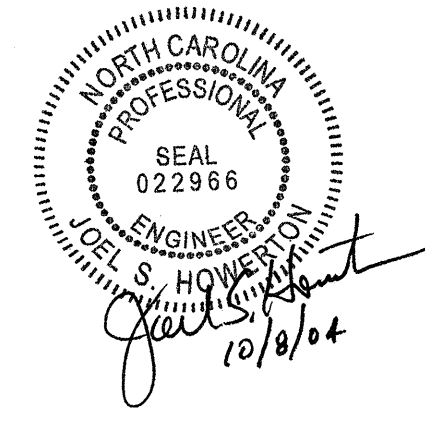
B = X - (A+9")
 B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (6.33%) SLOPE
 * BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
 ** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



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

SEE PLATE FOR TITLE

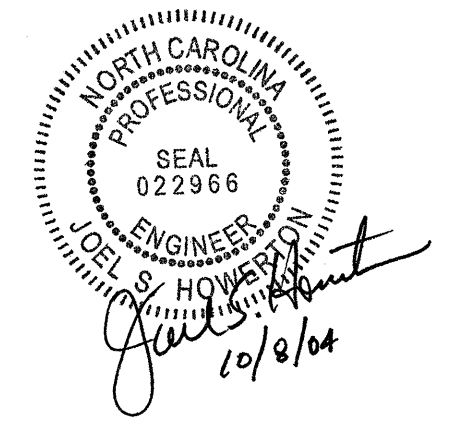
ORIGINAL BY: 2002 STD. 848.05 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 06-18-03
 CHECKED BY: *[Signature]* DATE: 6-03
 FILE SPEC.: /usr/stds/02code/11/english/84805/848D05.dgn



25 JUN 2003 10:34 AM C:\Special_Details\eng1\sh\84805\084805.dgn
 5/14/99

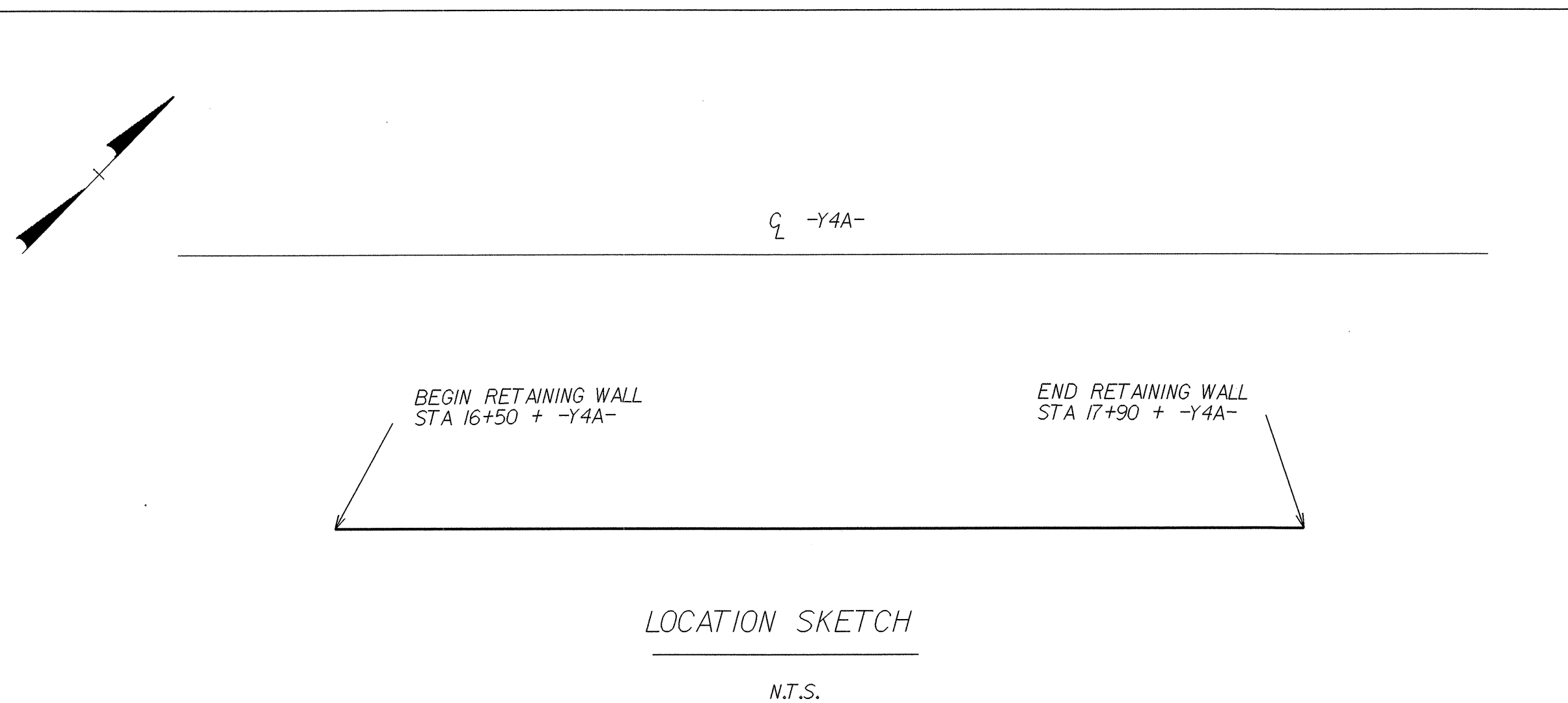
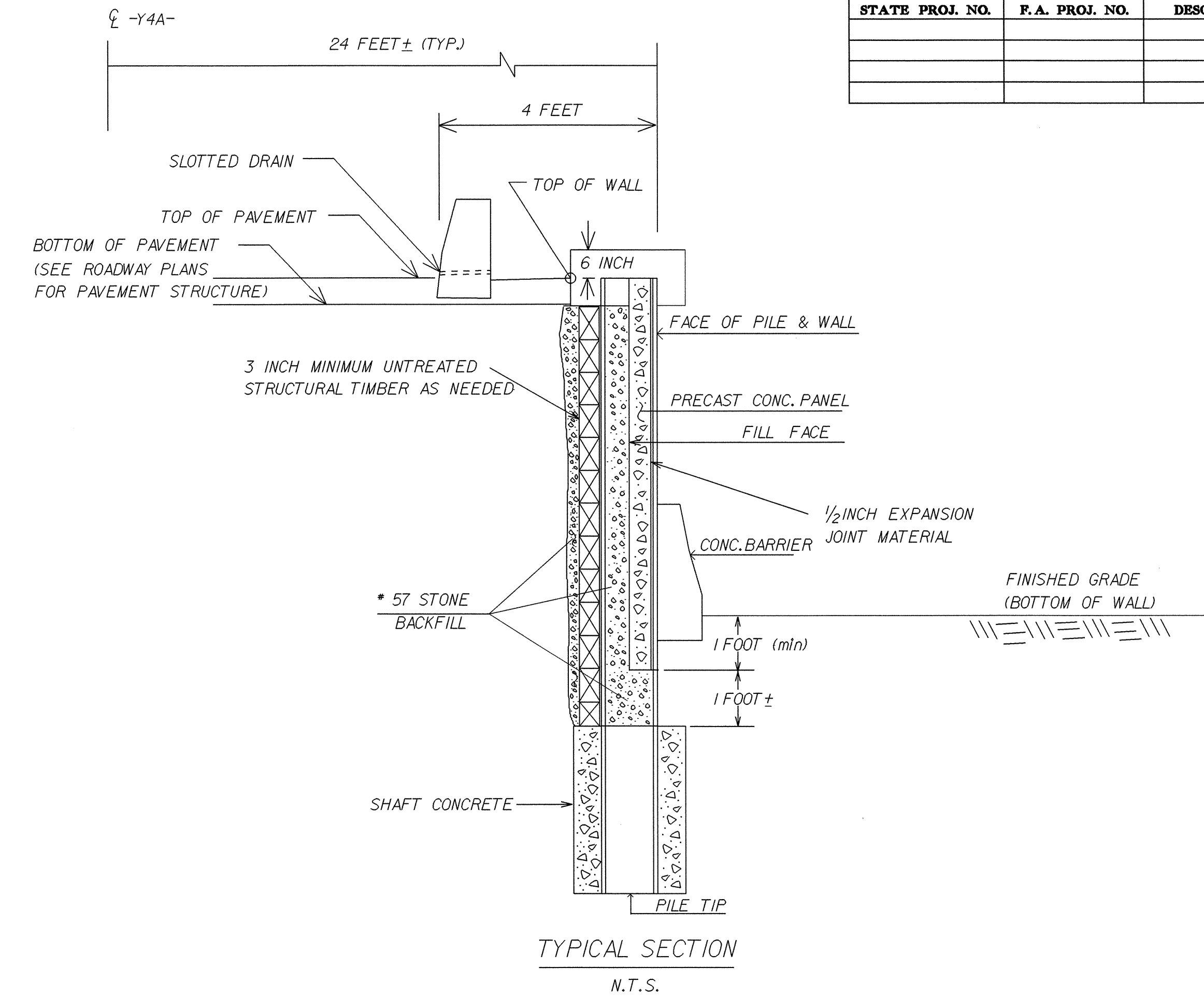
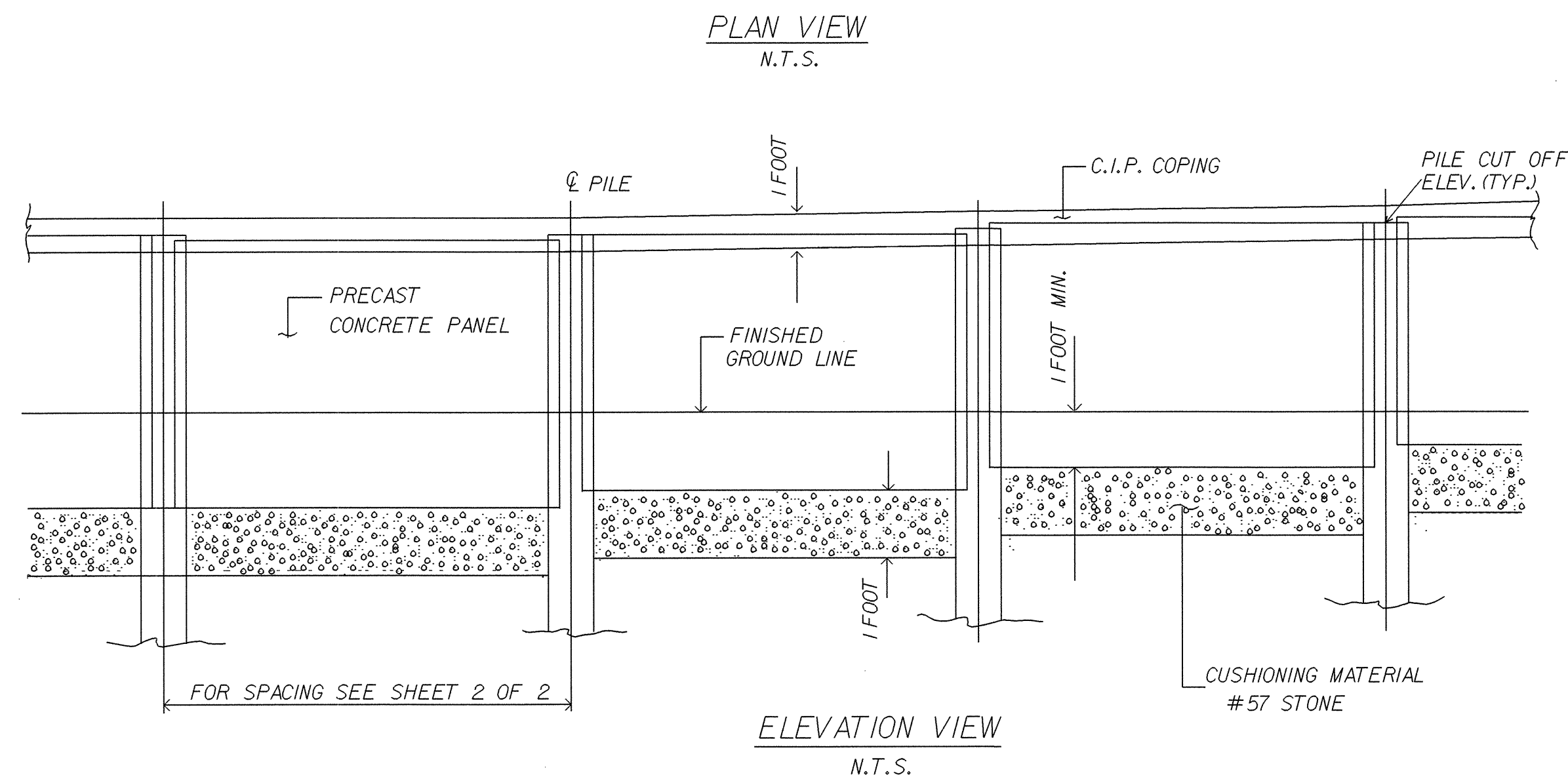
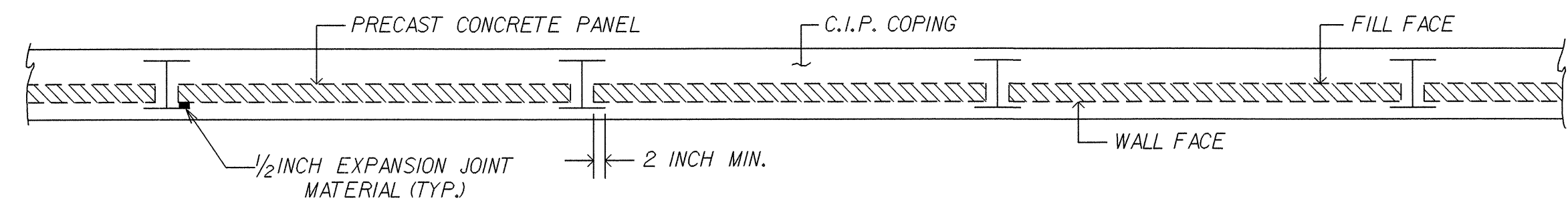
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT	SHEET 3 OF 4 848D05		
DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMP, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS				
DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMP, PEDESTRIAN CROSSWALKS AND STOP LINES				
ALLOWABLE LOCATIONS ----- DUAL RAMP RADII.....ANY				
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> PROPOSED WHEELCHAIR RAMP PROPOSED OR FUTURE SIDEWALK </td> </tr> </table>				PROPOSED WHEELCHAIR RAMP PROPOSED OR FUTURE SIDEWALK
	PROPOSED WHEELCHAIR RAMP PROPOSED OR FUTURE SIDEWALK			
SHEET 3 OF 4 848D05				

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR WHEELCHAIR RAMP CURB CUT	SHEET 4 OF 4 848D05
NOTES:		
<ol style="list-style-type: none"> 1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANCE 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 UTILITIES 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 SIMILAR 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. PAY FOR ALL VARIABLE DEPTH CONCRETE USED FOR CONSTRUCTION OF WHEELCHAIR RAMPS AS CONCRETE WHEELCHAIR RAMPS. (SQ. YDS.) 6. PAY FOR ALL DEPRESSED CURBS AT WHEELCHAIR RAMPS AS THE TYPE CURB AND GUTTER USED ADJACENT TO DEPRESSED CURB. (LN. FT.) 7. SUCH PRICES AND PAYMENTS IS CONSIDERED FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO SATISFACTORILY COMPLETE THE WORK. 8. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET. 9. CONSTRUCT WHEELCHAIR RAMPS 40" (3'-4") OR GREATER FOR DUAL RAMPS. 10. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE. 11. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01. 12. 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) 13. 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. 14. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE. 15. 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. 16. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK. 17. 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. 		
SHEET 4 OF 4 848D05		



DESIGN SERVICES UNIT STANDARDS AND SPECIAL DESIGN Office 919-250-4128 FAX 919-250-4119	
SEE PLATE FOR TITLE	
ORIGINAL BY: 2002 STD. 848.05 DATE: MODIFIED BY: E. E. WARD DATE: 06-18-03 CHECKED BY: <i>[Signature]</i> DATE: 6-03 FILE SPEC.: /usr/stds/02todet/21/eng1sh/84805/848d05.dgn	

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
U-4008	2-IV	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION



NOTES:

- PILES SHALL BE INSTALLED TO THE CUT OFF ELEVATIONS AND TIP ELEVATION SHOWN ON THE PLANS.
- USE ASTM GRADE 36 OR BETTER STEEL PILES WITH THE ADDITION OF 0.2% MINIMUM COPPER.
- SPlicing OF PILES IS ONLY ALLOWED IN THE PORTION OF THE PILE PERMANENTLY BELOW GROUND.
- THE TOP OF THE INSTALLED PILES SHALL BE WITHIN 2 INCHES OF THEIR PLAN LOCATION IN ANY DIRECTION.
- CONCRETE PANELS SHALL HAVE A MINIMUM BEARING DISTANCE OF 2 INCHES ON THE PILE FLANGE. 1/2 INCH THICK EXPANSION JOINT MATERIAL SHALL BE PLACED BETWEEN THE CONCRETE PANELS AND PILE FLANGES FOR THE WIDTH OF THE BEARING SURFACE.
- THE EXPOSED FACE OF THE CONCRETE PANELS SHALL HAVE A VERTICAL BROOMED FINISH.
- CONCRETE PANELS SHALL BE HELD SECURELY AGAINST PILES UNTIL BACKFILL IS PLACED. BACKFILL SHALL BE BROUGHT UP UNIFORMLY.
- BACKFILL MATERIAL, BOTH CUSHIONING MATERIAL AND BACKFILL BEHIND PANELS, SHALL BE COMPACTED AS REQUIRED BY THE ENGINEER. THE STONE SHALL BE RODDED AND SPREAD IN ORDER TO FILL ALL VOIDS AND INSURE MAXIMUM DENSITY. FLUSHING THE STONE WITH WATER TO AID COMPACTION WILL NOT BE ALLOWED.
- BACKFILLING SHALL BE COMPLETED PRIOR TO FORMING THE COPING.
- TOP OF COPING TO BE ADJUSTED BY ENGINEER TO GIVE A UNIFORM APPEARANCE.
- CONSTRUCTION JOINTS IN COPING ARE PERMITTED AT 50 FOOT CENTERS. EXPANSION JOINTS ARE NOT PERMITTED.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF DRAINAGE STRUCTURES AND UTILITIES PRIOR TO INSTALLING PILES. THE LAYOUT OF THE WALL MAY NEED TO BE ADJUSTED TO AVOID UNANTICIPATED INTERFERENCE.
- CONSTRUCTION SEQUENCE:
 - DRILL 24 INCH DIAMETER SHAFTS FROM NATURAL GROUND
 - INSTALL PILES
 - BACKFILL WITH CONCRETE TO THE TOP OF SHAFT ELEVATIONS (PILE CUTOFF MINUS PANEL HEIGHT AND 1 FOOT OF CUSHIONING MATERIAL) BEFORE EXCAVATING TO INSTALL PANELS.
- IF NECESSARY, TAKE SPECIAL MEASURES TO ENSURE THE STABILITY OF THE SHAFT, SUCH AS INSTALLING TEMPORARY CASINGS PRIOR TO DRILLING, INSTALLING THE PILE AND PLACING CONCRETE IMMEDIATELY AFTER A SHAFT IS EXCAVATED, INSTALLING WELL POINTS, OR OTHER MEASURES. IF CAVING OCCURS, HALT THE SHAFT EXCAVATION OPERATION UNTIL SPECIAL MEASURES ARE IMPLEMENTED.
- PILE/PANEL WALL MUST BE BUILT BEFORE PLACING ANY FILL MATERIAL BEHIND THE WALL.
- IF ROCK IS ENCOUNTERED DURING DRILLING OR PRE-AUGURING AS DETERMINED BY THE ENGINEER, THE PILE TIP ELEVATION MAY BE RAISED IF A ROCK SOCKET AT LEAST 6 FEET IN LENGTH IS MAINTAINED. SEE BORING AT 16+92 -Y4A-.

PROJECT U-4008
ORANGE COUNTY
STATION 16+53 to 17+90 -Y4A-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALPHIGH

PILE/PANEL WALL

DRAWN BY RSW DATE 5 / 04
CHECKED BY JRB DATE 5 / 04

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
U-4008	2-0	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

BILL OF MATERIALS

PRECAST CONCRETE PANELS					
BAR NO.	NO.	SIZE	TYPE	LENGTH (FT)	WEIGHT (LB)
H1	201	#4	STR	9.2	1258.4
V2	38	#4	STR	3.7	95.1
V3	76	#4	STR	4.7	242.2
V4	95	#4	STR	5.7	367.7
V5	57	#4	STR	6.7	259.5
REINFORCING STEEL				LBS	2222.9
CLASS 'A' CONCRETE				CUBIC YARDS	13.9

C.I.P. COPING					
A	B	C	NO.	WEIGHT (LB)	VOLUME (CY)
40	142	4	#5 STR	25.00	1058.6
		4	#4 B	2.67	258.0
		4	#5 C	4.83	20.6
REINFORCING STEEL (COPING)				LBS	1337.2
CLASS 'A' CONCRETE (COPING)				CUBIC YARDS	7.0

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
C.I.P. COPING	LINEAR FEET	142.0
#57 STONE BACKFILL	CUBIC YARDS	21.0
PRECAST CONCRETE PANEL TYPE 'B1'	NO.	2
PRECAST CONCRETE PANEL TYPE 'C1'	NO.	4
PRECAST CONCRETE PANEL TYPE 'D1'	NO.	5
PRECAST CONCRETE PANEL TYPE 'E1'	NO.	3
HP 12X53 STEEL PILES	NO. = 15 LF =	239

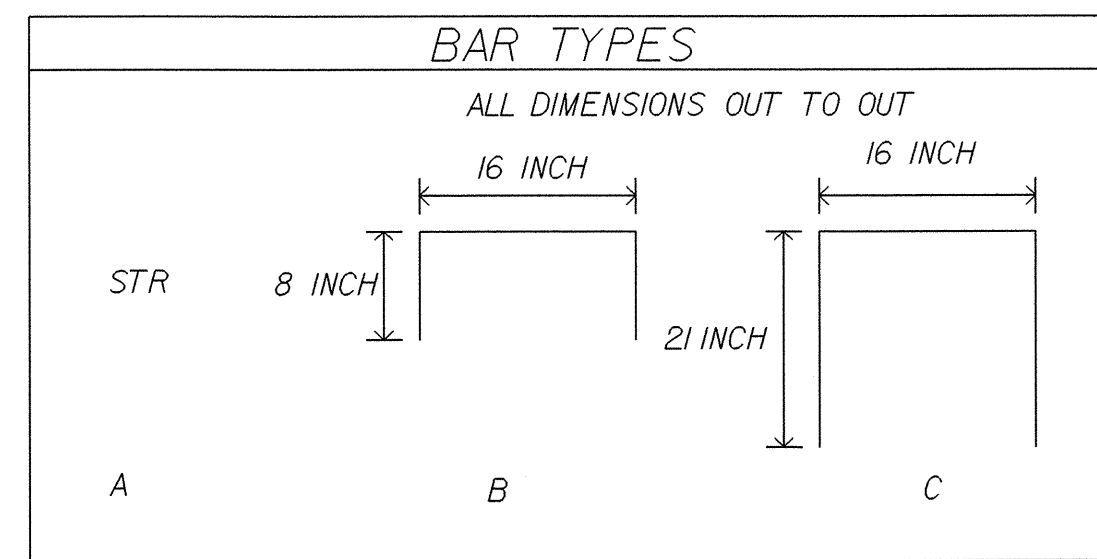
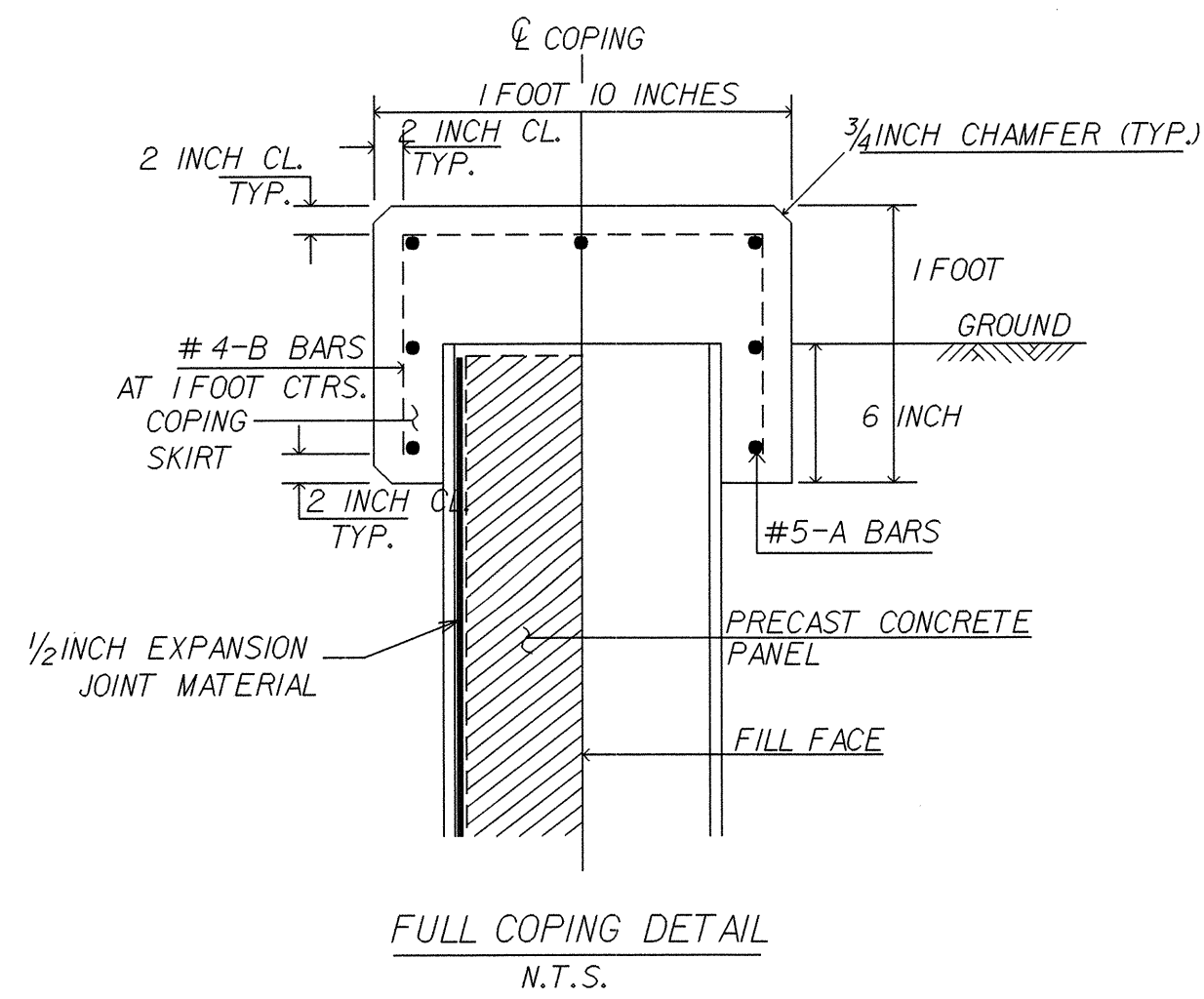
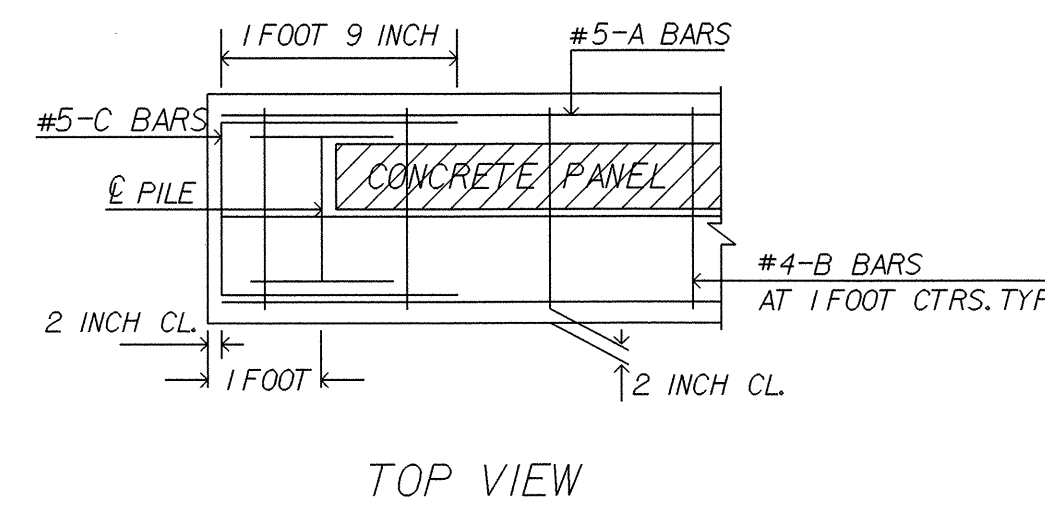
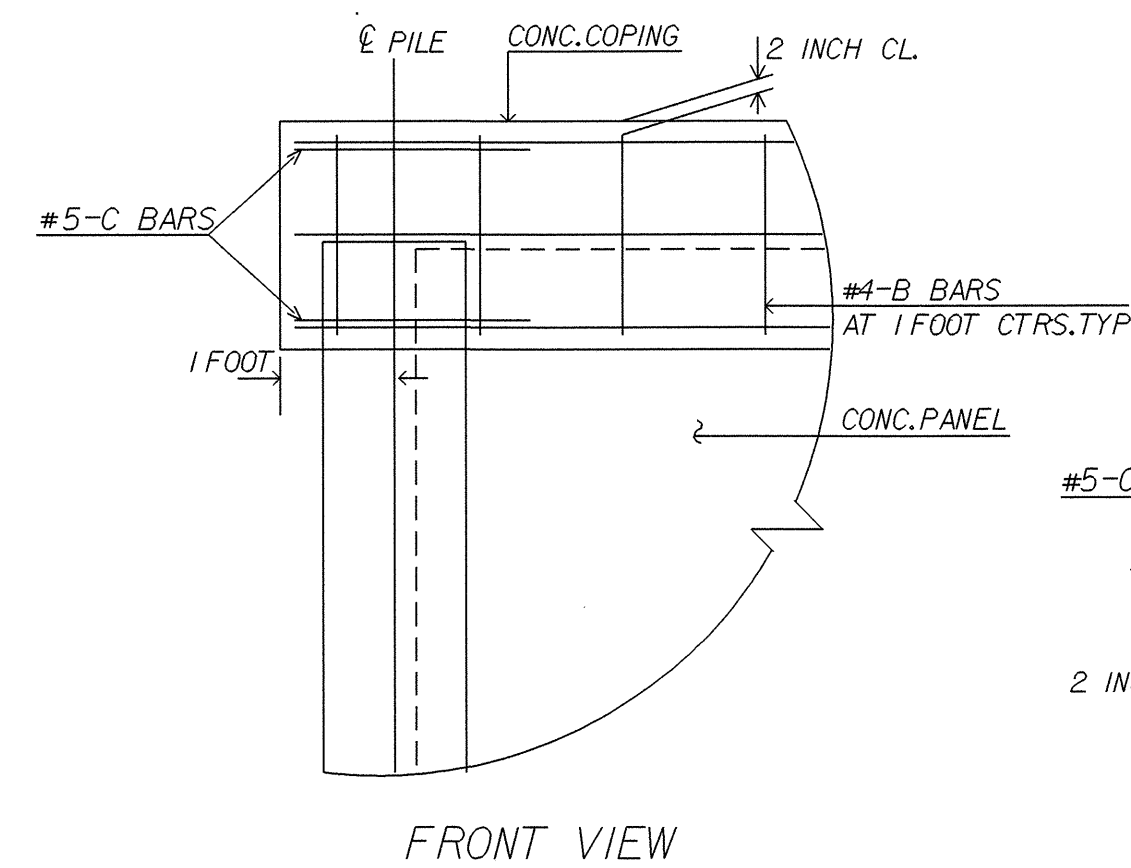
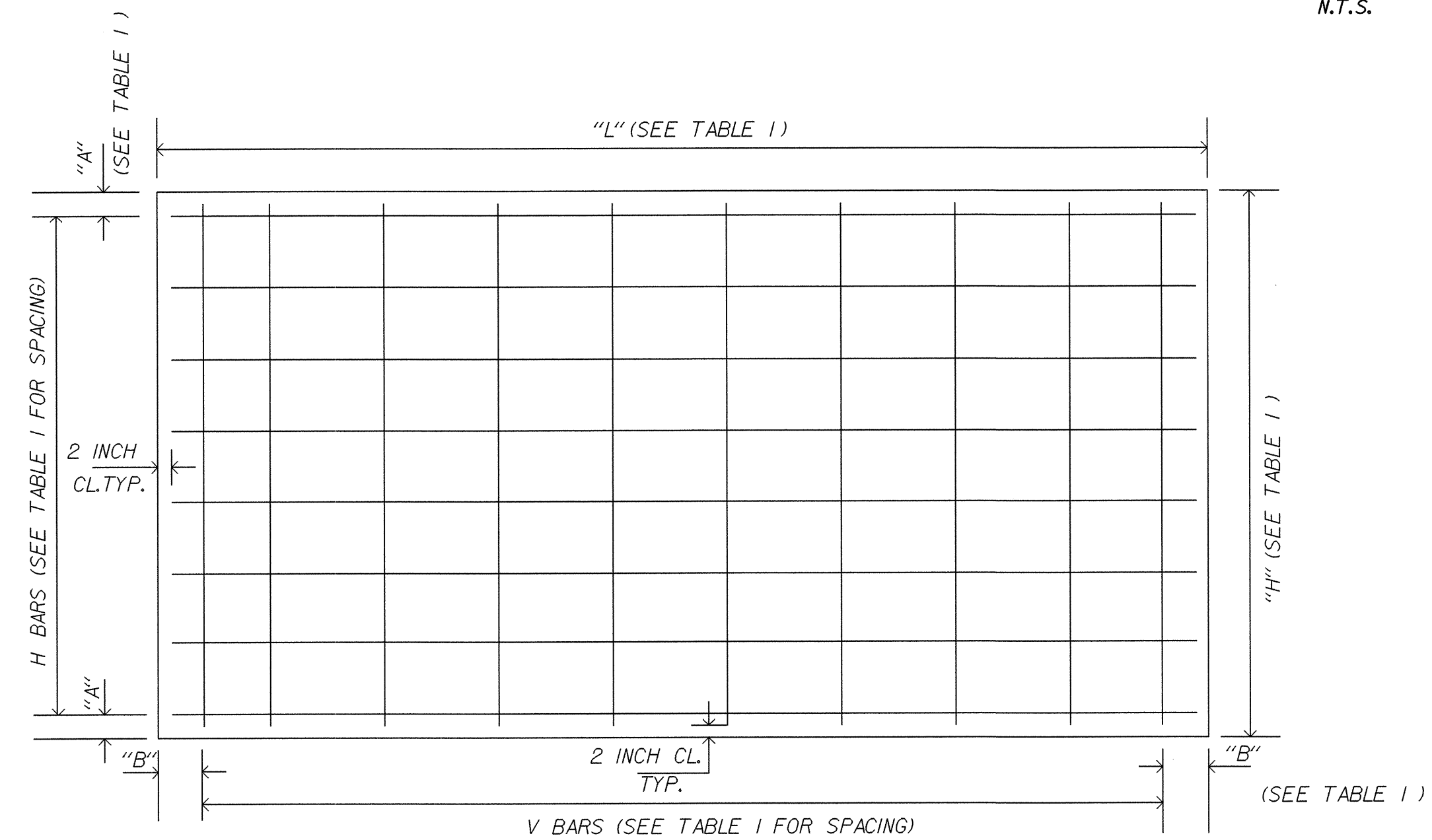


TABLE 1
PRECAST PANELS

PANEL TYPE	"H" (ft)	"L" (ft)	BAR TYPES				"A" (in)	"B" (in)	CONC. CUBIC YARDS PER PANEL
			HORIZONTAL		VERTICAL				
			NO. PER PANEL	SPACING C-C (ft)	NO. PER PANEL	SPACING C-C (ft)			
B1	4.0	9.5	8-H1	6	19-V3	6	3	3	0.70
C1	5.0	9.5	10-H1	6	19-V3	6	3	3	0.88
D1	6.0	9.5	17-H1	4	19-V4	6	4	3	1.06
E1	7.0	9.5	20-H1	4	19-V5	6	4	3	1.23



END OF COPING DETAIL N.T.S.



TYPICAL PRECAST PANEL DETAIL N.T.S.

PILE ELEVATIONS AND PANEL TYPES

PILE STATION	PILE NO.	PILE SIZE	TIP ELEV. (FT)	TOP OF CONCRETE (FT)	BOTTOM OF WALL (FT)	CUTOFF ELEV (FT)	PILE LENGTH (FT)*	PANEL TYPE
16+50	1	HP12X53	295	301.8	305.7	307.0	12.0	
16+60	2	HP12X53	292	300.3	304.0	307.1	15.1	B1
16+70	3	HP12X53	290	299.2	302.3	307.2	17.2	D1
16+80	4	HP12X53	290	299.2	301.7	307.4	17.4	E1
16+90	5	HP12X53	290	299.2	302.0	307.5	17.5	E1
17+00	6	HP12X53	290	299.2	302.3	307.6	17.6	E1
17+10	7	HP12X53	291	300.3	302.6	307.7	16.7	D1
17+20	8	HP12X53	291	300.5	302.9	307.8	16.8	D1
17+30	9	HP12X53	291	300.8	303.3	308.0	17.0	D1
17+40	10	HP12X53	291	300.7	303.7	308.1	17.1	D1
17+50	11	HP12X53	292	301.8	304.1	308.2	16.2	C1
17+60	12	HP12X53	292	301.9	304.5	308.3	16.3	C1
17+70	13	HP12X53	293	302.4	304.8	308.4	15.4	C1
17+80	14	HP12X53	294	302.5	305.9	308.6	14.6	C1
17+90	15	HP12X53	297	303.5	307.4	308.7	11.7	B1

* SEE NOTE 16 ON SHEET 1

PROJECT U-4008
ORANGE COUNTY
STATION 16+50 to 17+90 -Y4A-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE/PANEL WALL

DRAWN BY RSW DATE 5 / 04
CHECKED BY JRB DATE 5 / 04

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

ENGLISH DETAIL DRAWING FOR
**DROP INLET INSTALLATION IN
EXPRESSWAY GUTTER**

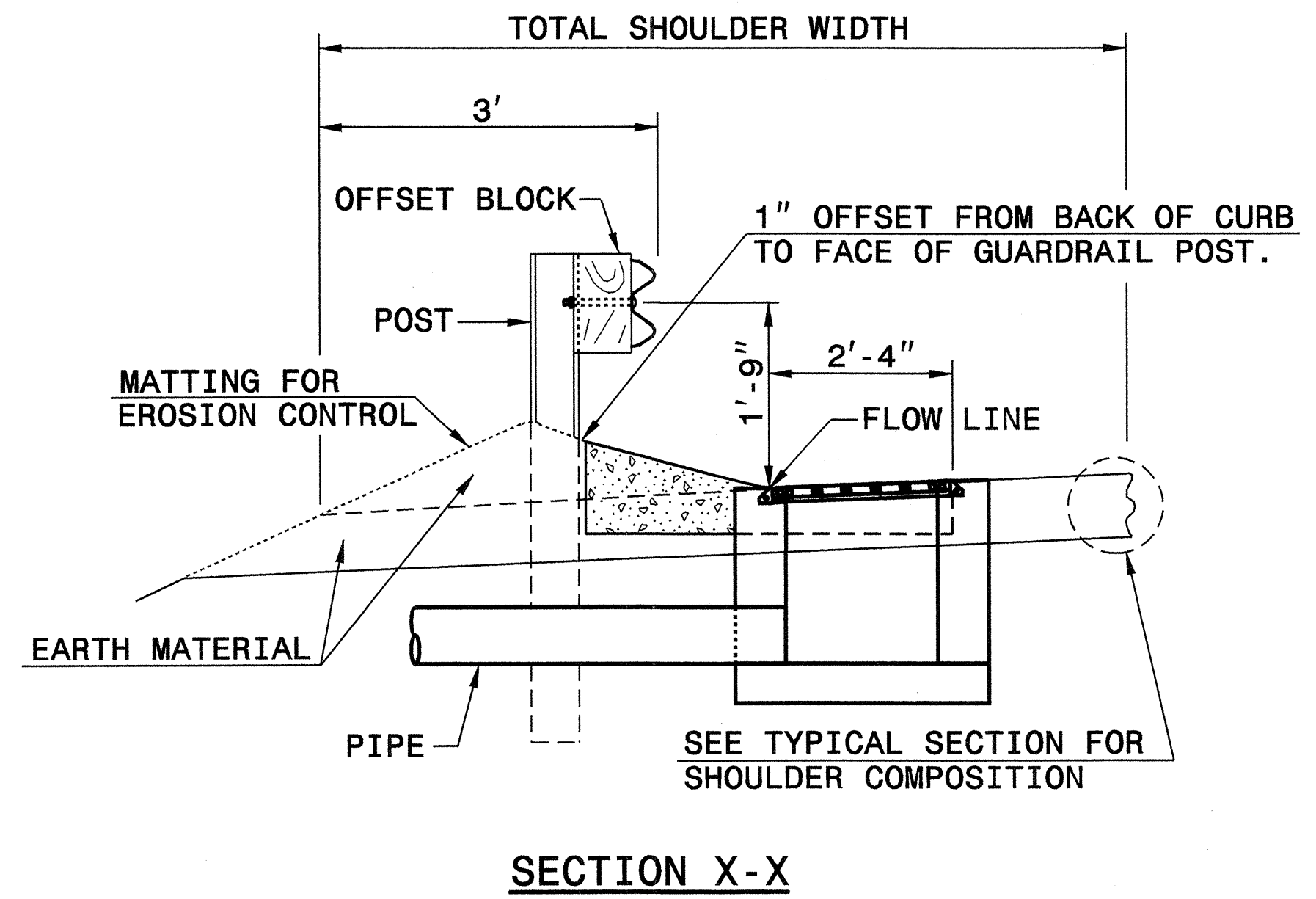
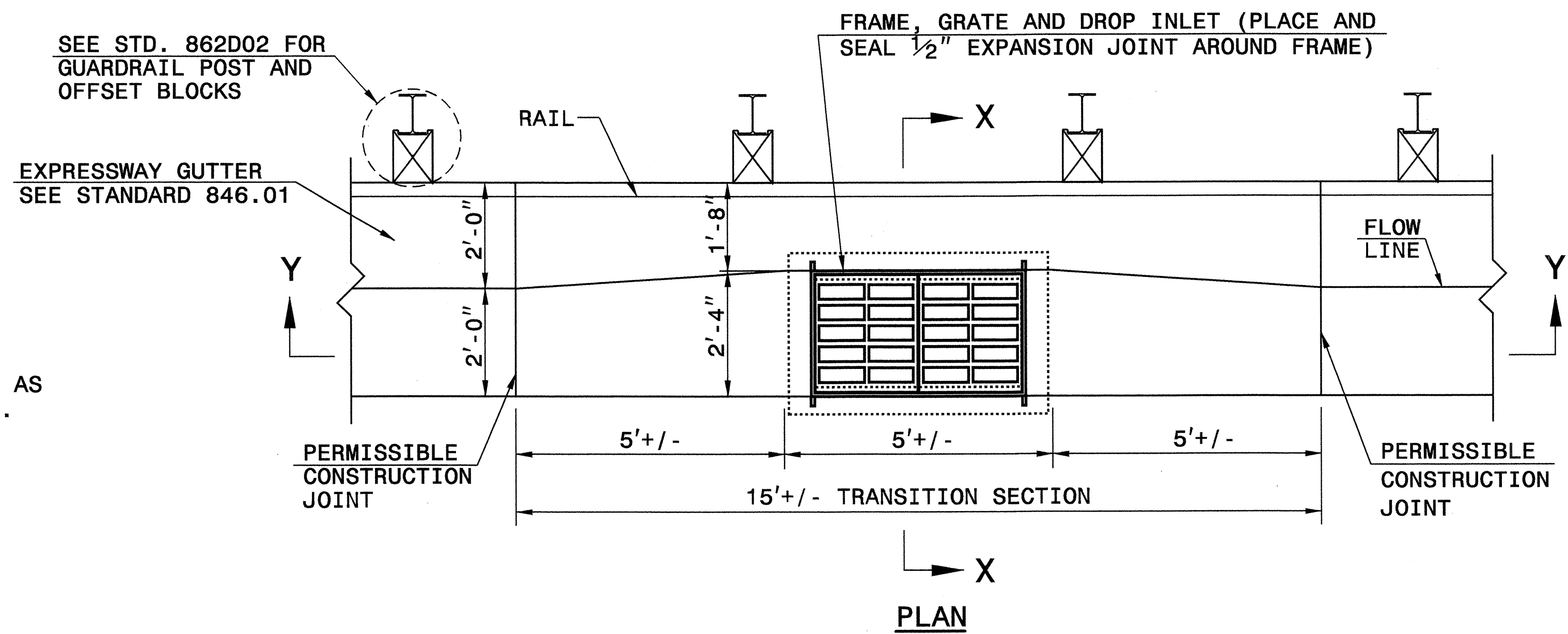
SHEET 1 OF 1
846D02

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

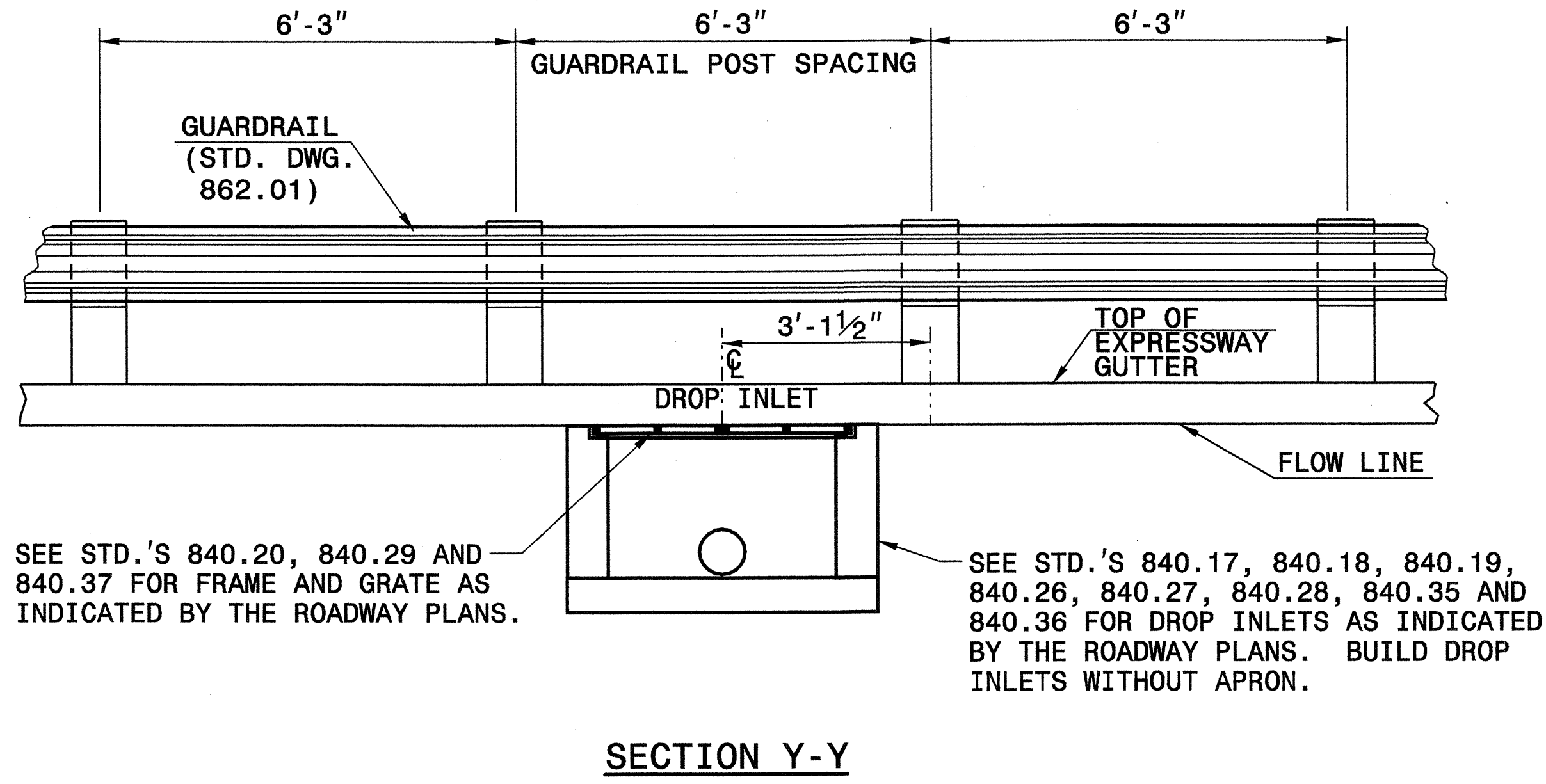
ENGLISH DETAIL DRAWING FOR
**DROP INLET INSTALLATION IN
EXPRESSWAY GUTTER**

SHEET 1 OF 1
846D02

GENERAL NOTES:
-PAY FOR TRANSITION SECTION AS
CONCRETE EXPRESSWAY GUTTER.
-GUARDRAIL OPTIONAL

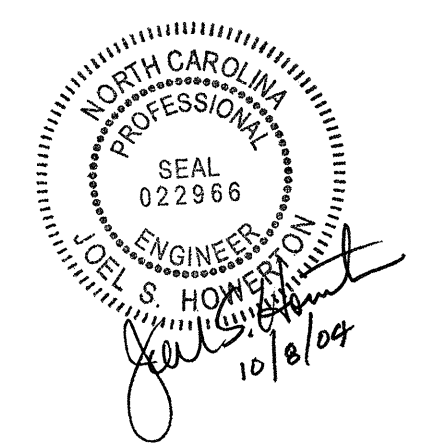


SECTION X-X



SECTION Y-Y

DROP INLET INSTALLATION IN EXPRESSWAY GUTTER



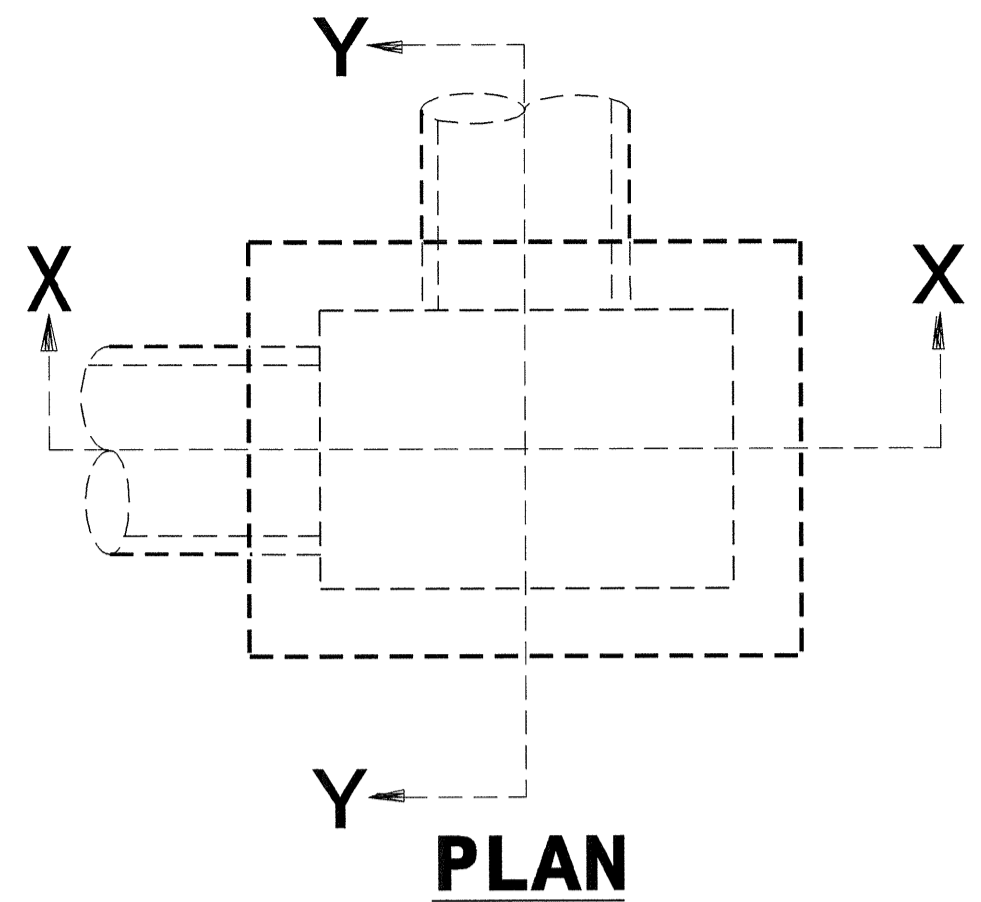
**DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS	DATE: 01-15-02
MODIFIED BY: E. E. WARD	DATE: 04-07-04
CHECKED BY: C. B. Perry	DATE: 4-12-04
FILE SPEC.: stds/02stds/details/english/846d02.dgn	

07-APR-2004 16:52
M:\Special Details\stds\stds\02\stds to Special Details\english\846d02\0846d02.dgn
ericward AT 05212260

5/14/99

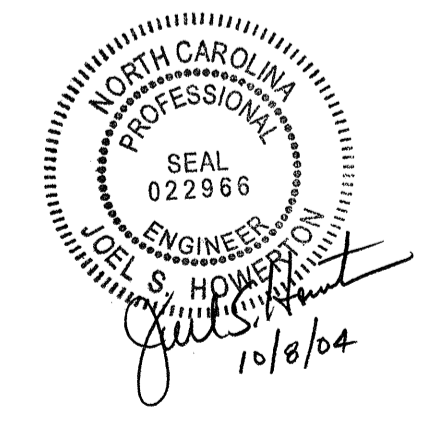
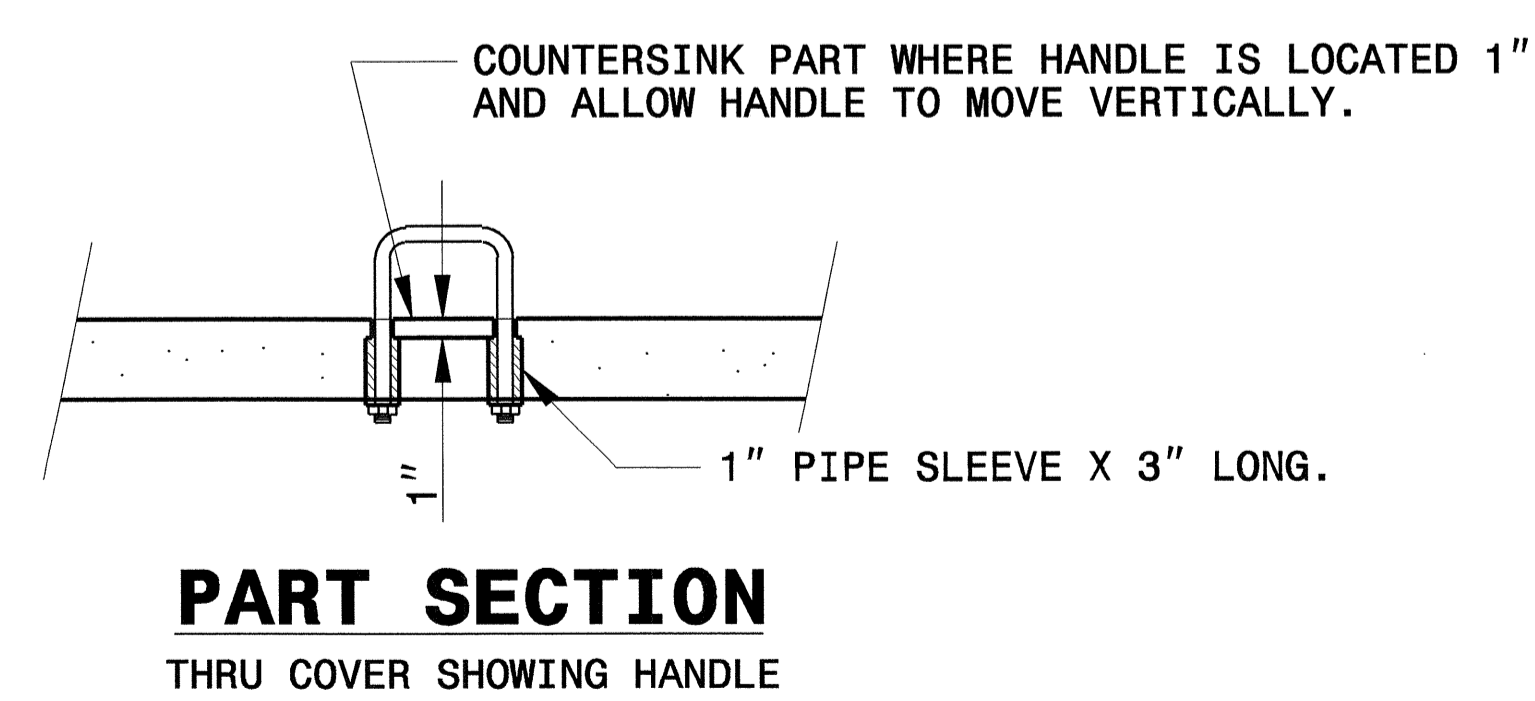
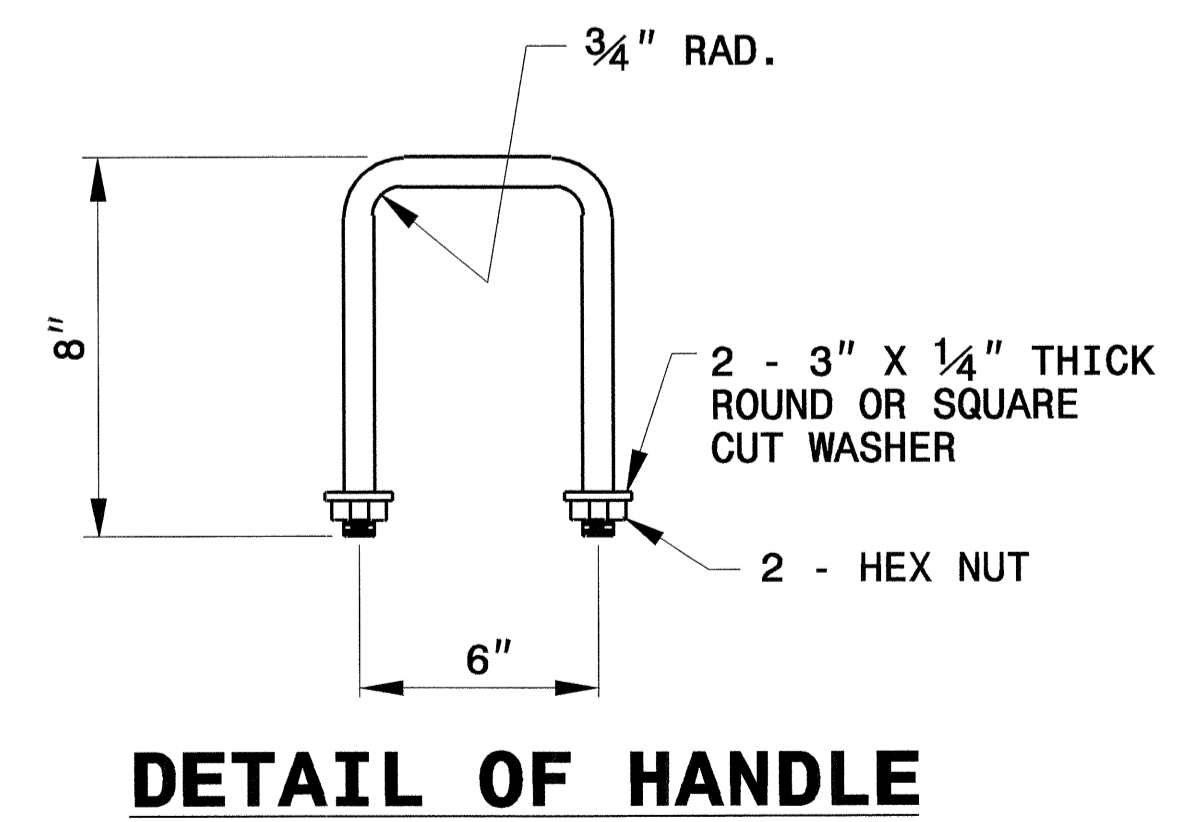
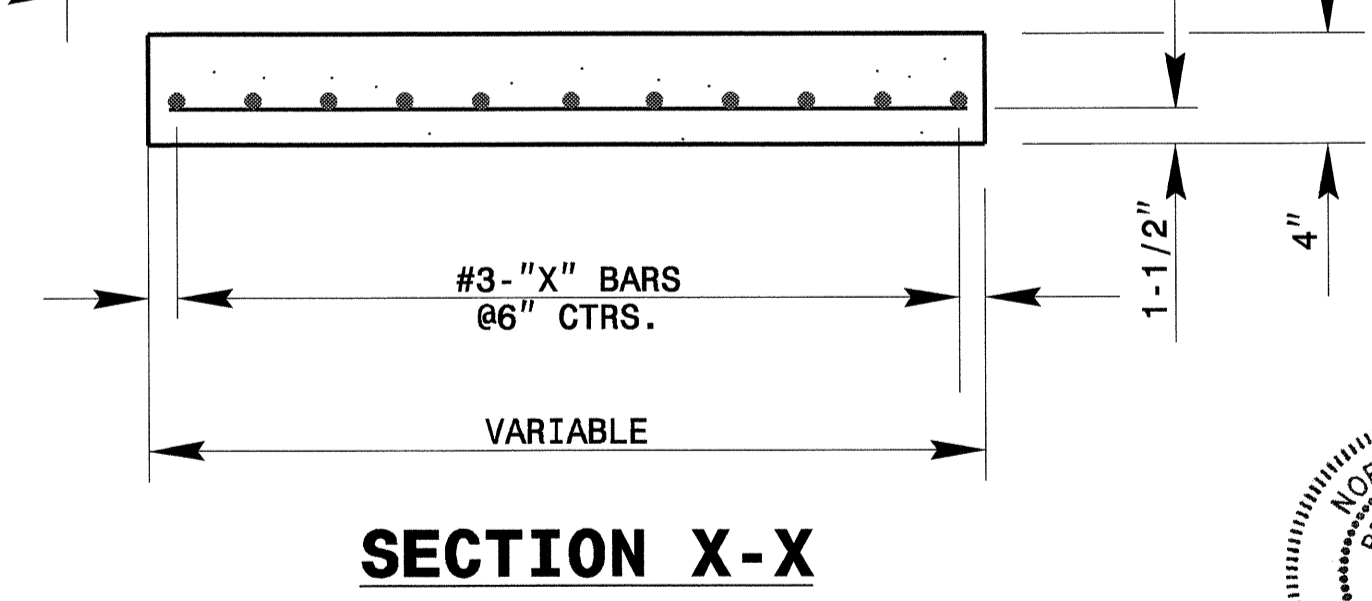
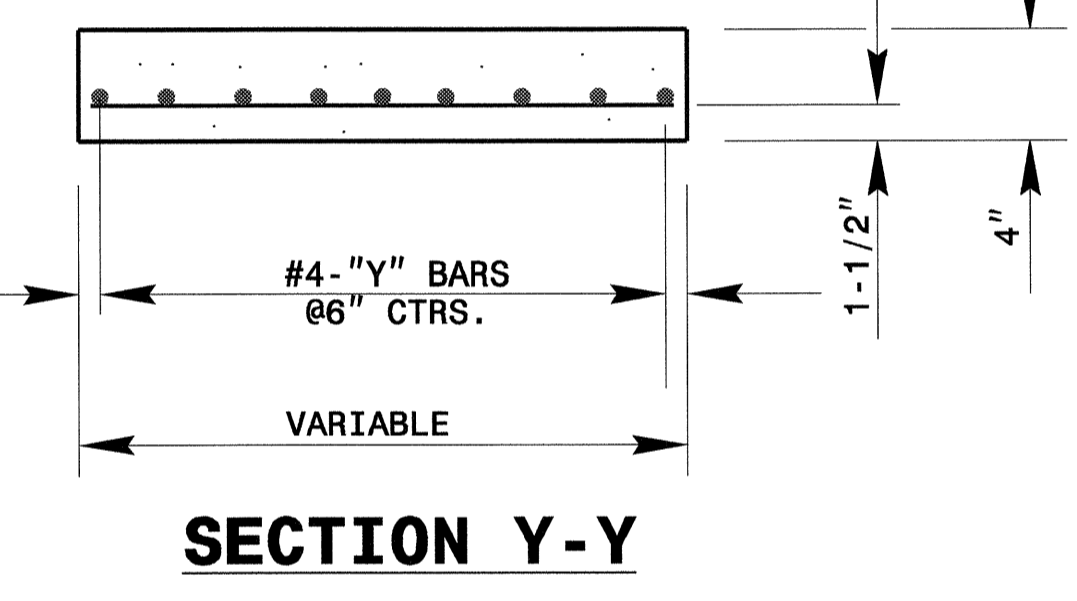
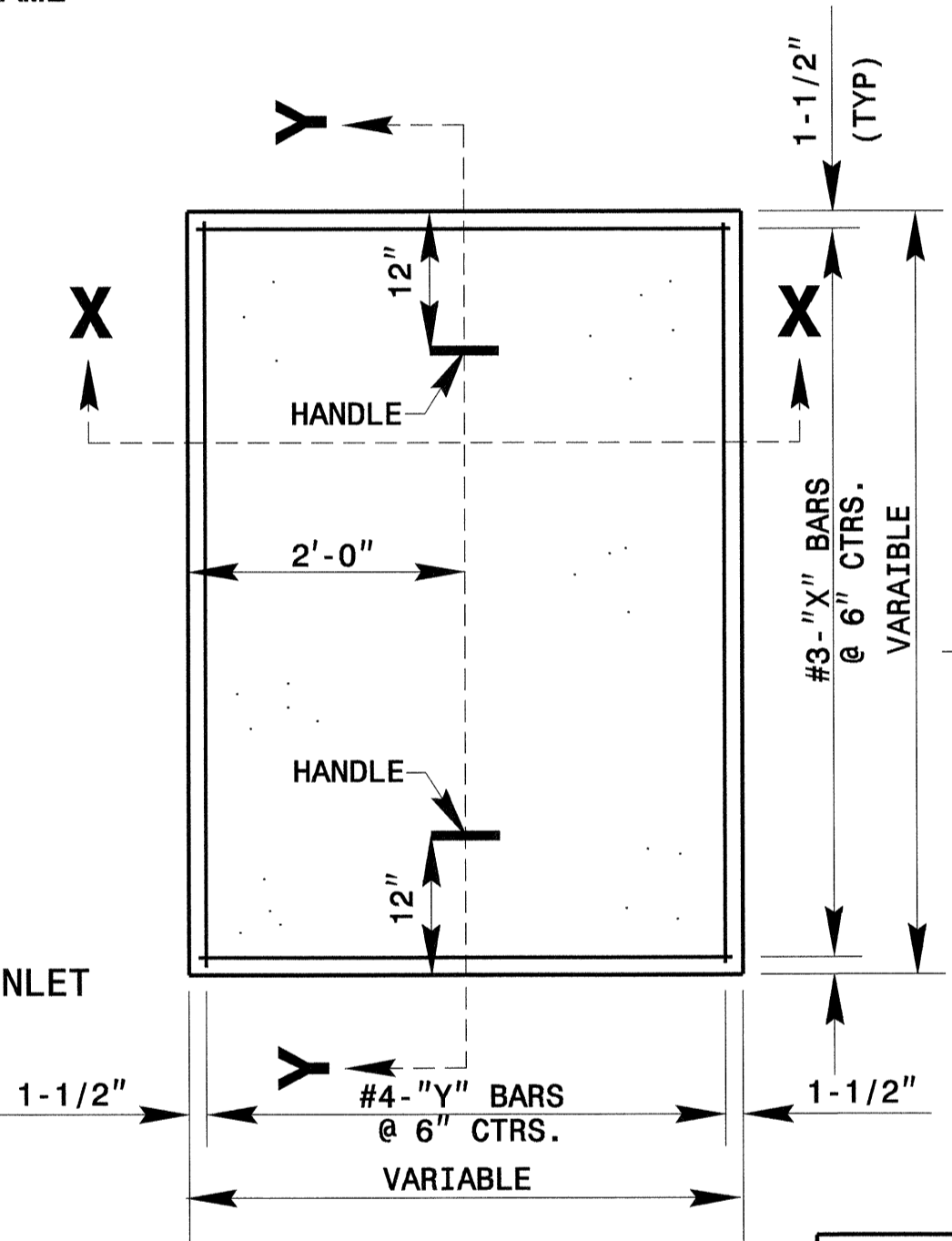
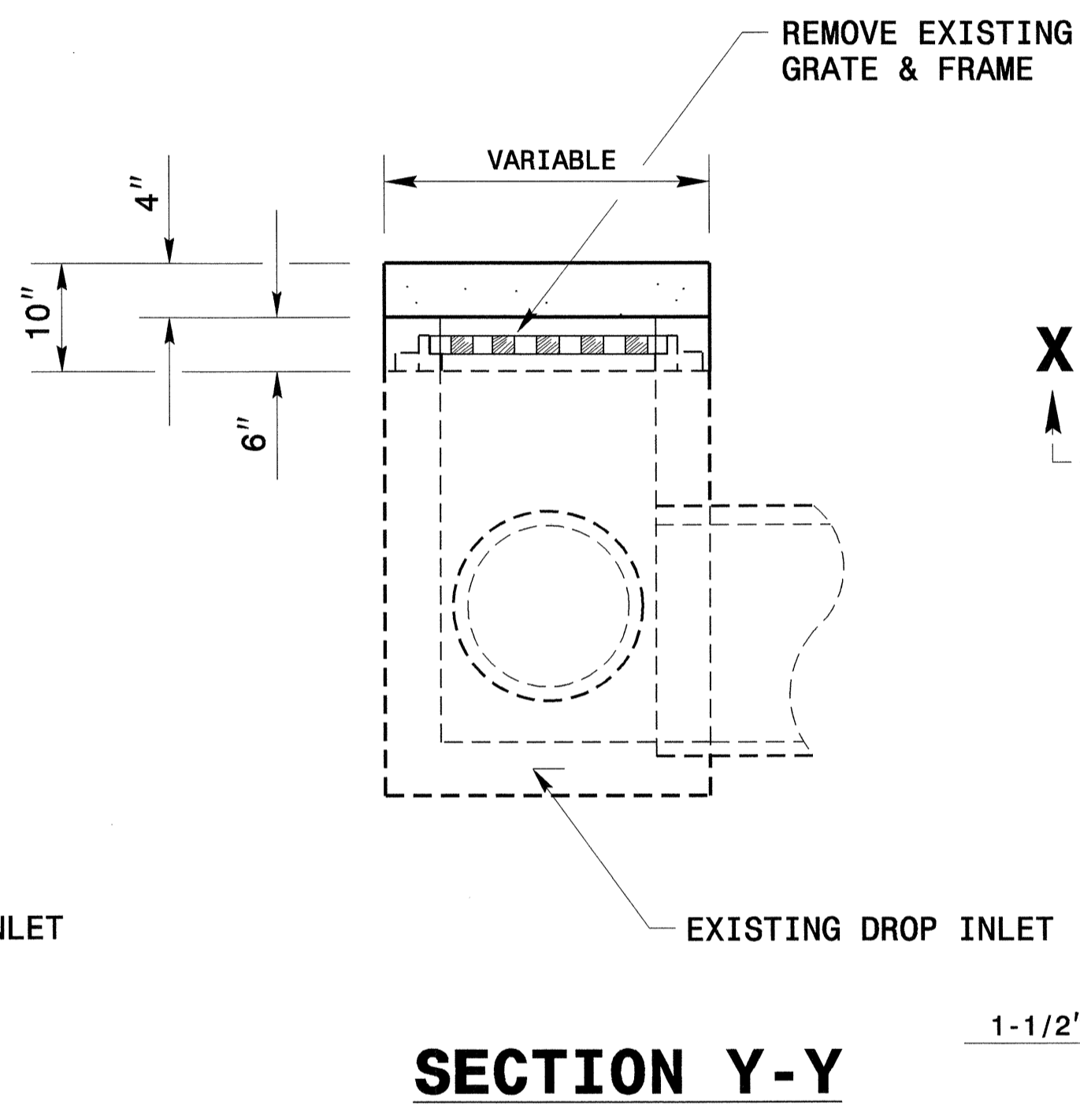
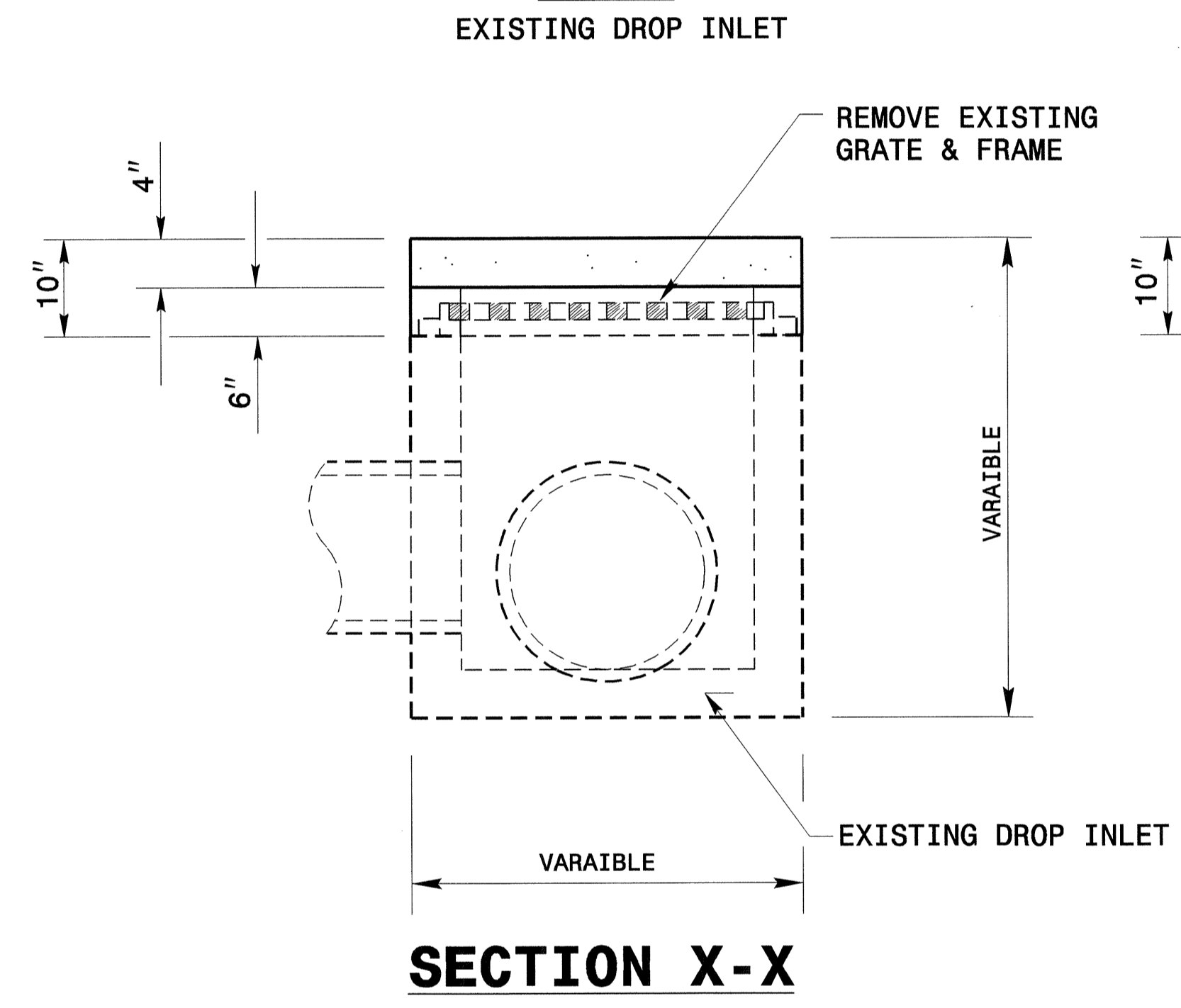


GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
 APPROXIMATE AND MAY VARY SLIGHTLY.
 DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.
 DRAWING NOT TO SCALE.

BILL OF MATERIALS				
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL lbs.
X	#3	9	3'-1"	10.4
Y	#4	7	4'-1"	19.1
TOTAL				29.5 *
MASONRY				CY
TOP SLAB CONCRETE CLASS "B"				0.1783 *
BRICK MASONRY PER FT HT (MIN)				0.3127 *

NO DEDUCTIONS HAVE BEEN TAKEN FOR OPEN THROAT OPENINGS

*** NOTE:**
 QUANTITIES BASED ON 3'-0" X 2'-0" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES.



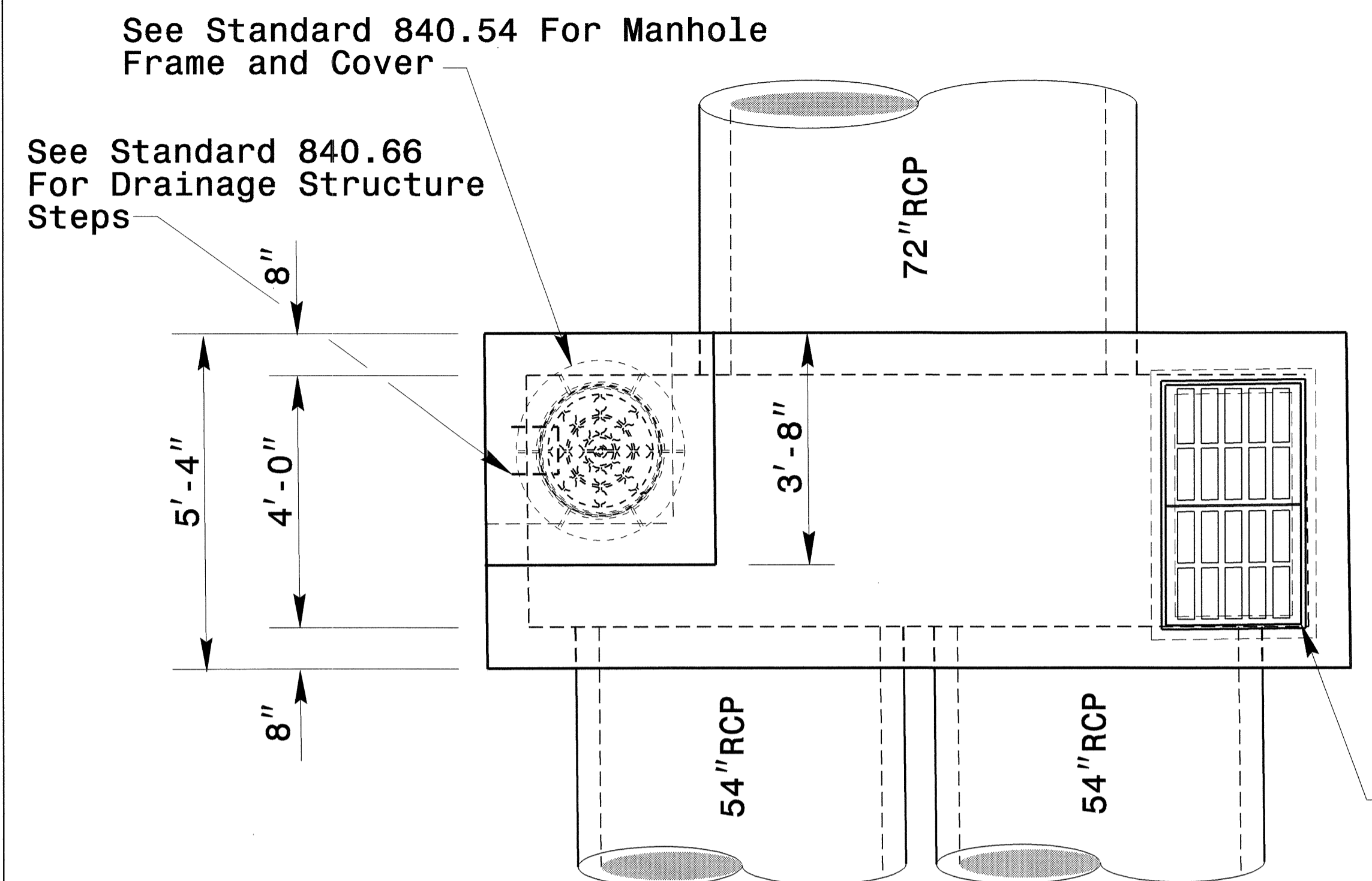
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
 Office 919-250-4128 FAX 919-250-4119

DETAIL CONVERTING DROP INLET TO OPEN THROAT CATCH BASIN

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: nbritt DATE: 09-30-04
 CHECKED BY: *Joel S. Howerton* DATE: 10/4/04
 FILE SPEC.: _____

30-SEP-2004 09:43
 W:\Special_Details\nbritt\english\urban\4008 6sland cover.dgn
 RNB-itt AT DS203039

5/14/99



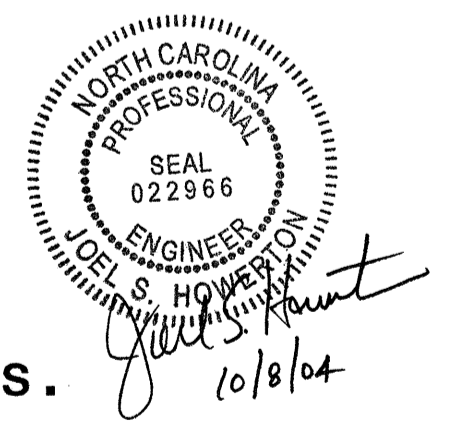
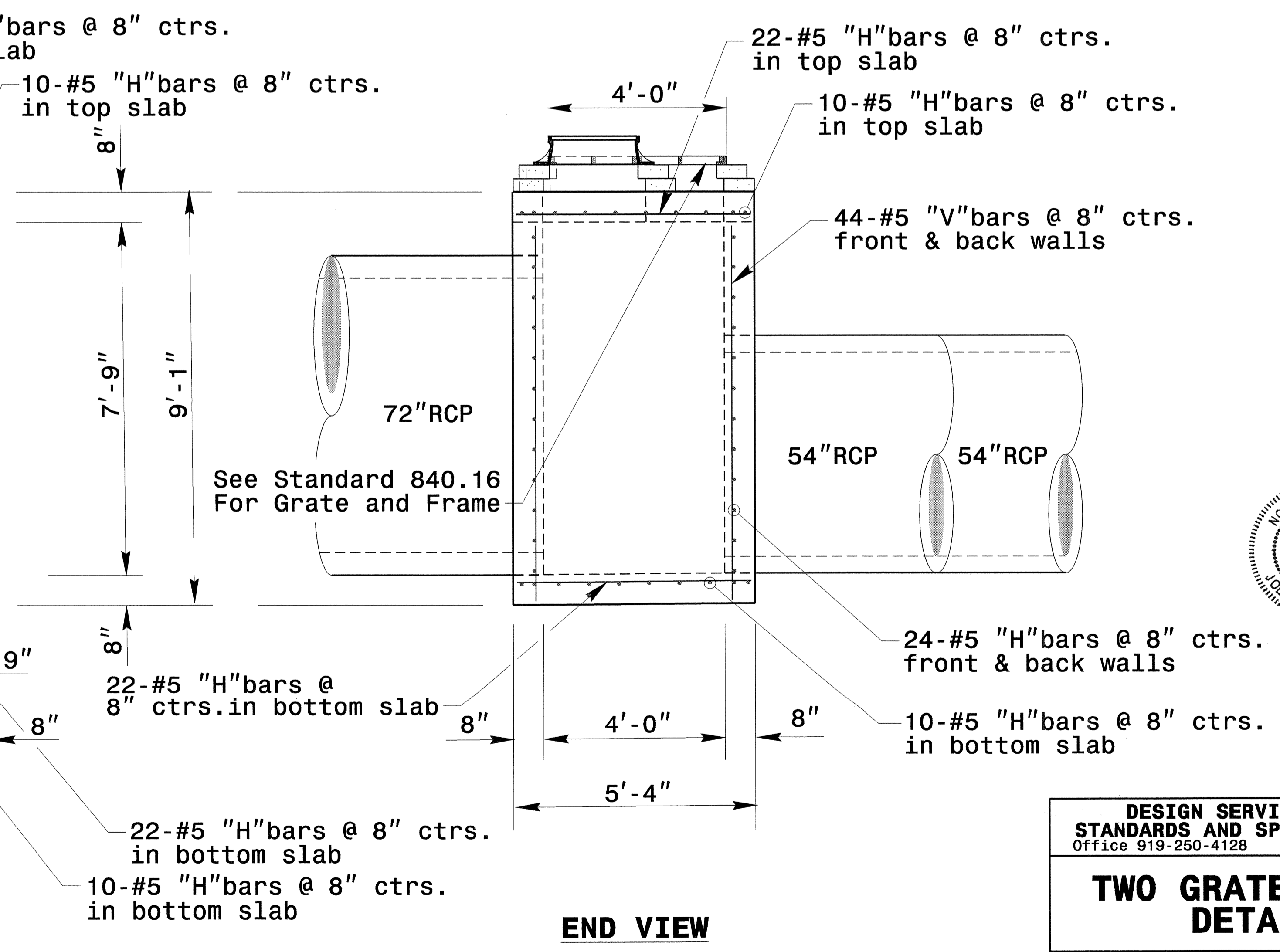
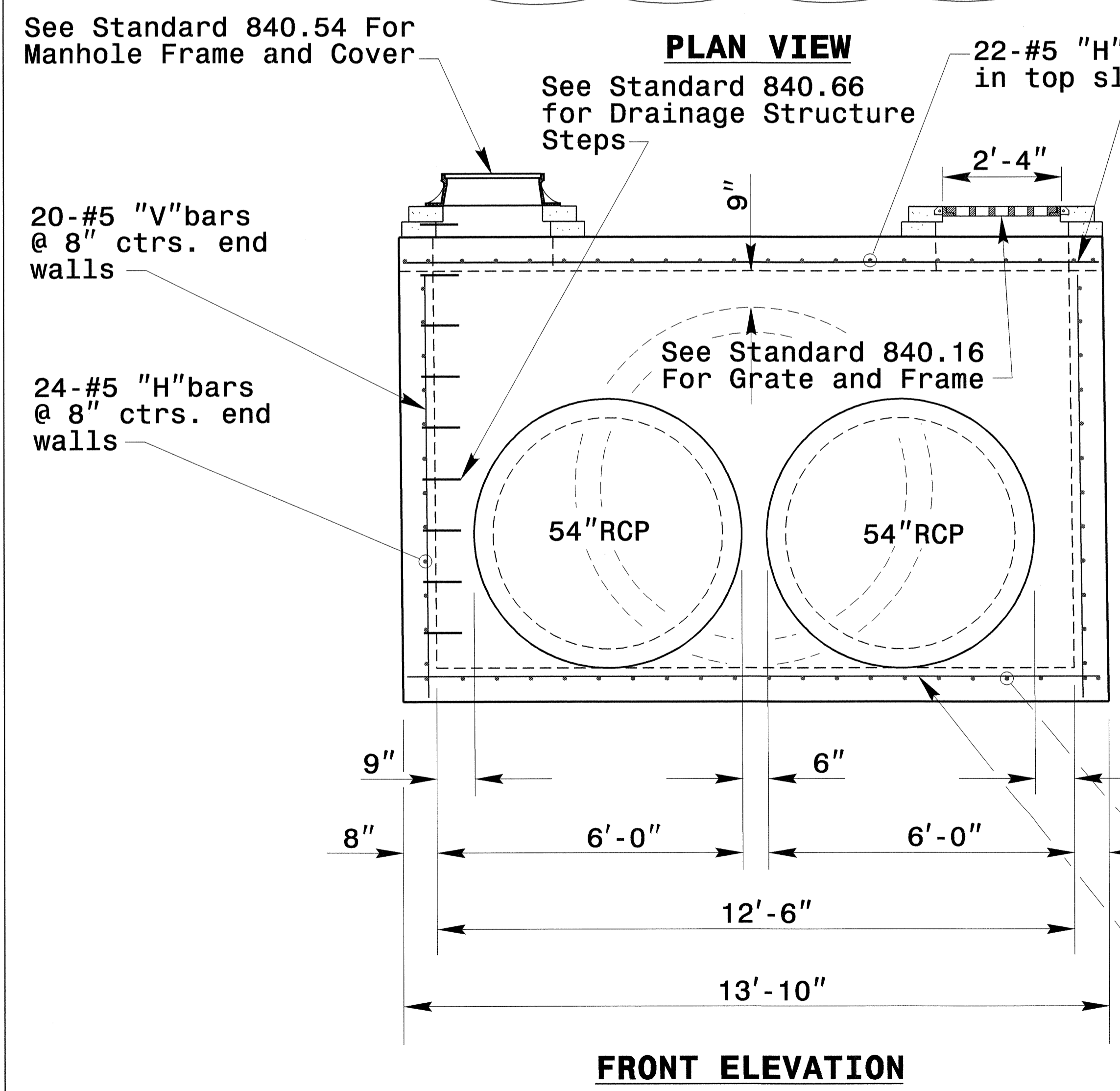
GENERAL NOTES:

- * USE CLASS "B" CONCRETE THROUGHOUT.
- * PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
- * OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- * USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
- * ALL CONSTRUCTION AS DIRECTED BY THE ENGINEER
- * CHAMFER ALL EXPOSED CORNERS 1".
- * APPROXIMATE AND MAY VARY SLIGHTLY.
- * DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

BAR	NO.	SIZE	LENGTH	WEIGHT
H	44	#6	18'-8"	628
H	68	#5	5'-2"	367
V	64	#5	8'-3"	551
TOTAL REINF. STEEL (LBS.)				1546
CONC. (CU. YDS.)				10.5
PIPE DEDUCTION				
1 @ 72" (CU. YDS.)				-1.0
2 @ 54" (CU. YDS.)				-1.1
TOTAL CONC. (CU. YDS.)				8.4

* 0.30 CU. YD. PER FOOT OF RISER HEIGHT



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

**TWO GRATE INLET
DETAIL**

ORIGINAL BY: nbritt DATE: 10-06-04
 MODIFIED BY: [Signature] DATE: [Blank]
 CHECKED BY: [Signature] DATE: 10/8/04
 FILE SPEC.: [Blank]

07-OCT-2004 09:53
 M:\Specs\urba\urbant\english\urban\4008 6sland cover.dgn
 nbritt AT 05203059

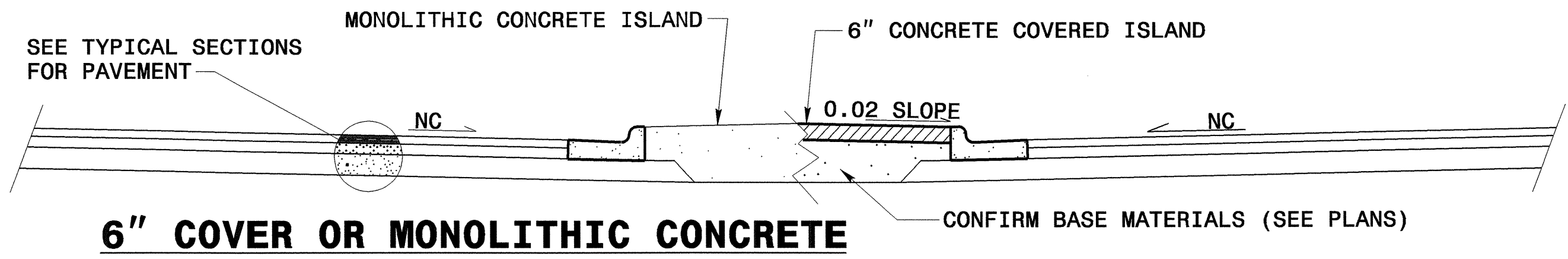
5/14/99

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

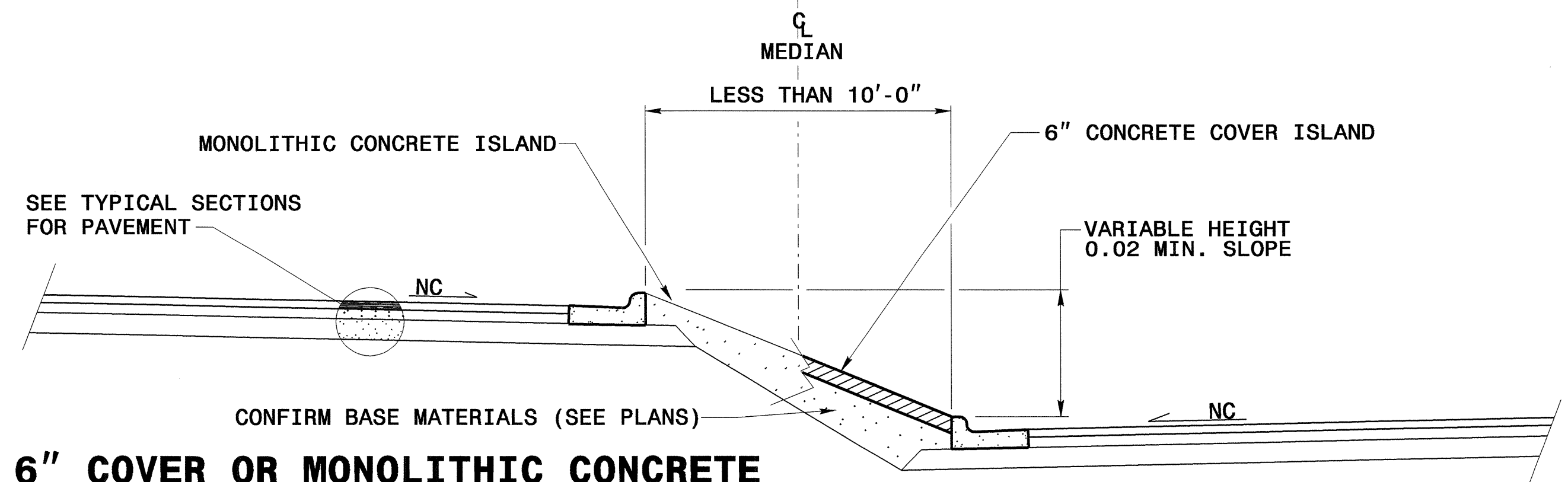
1-05

ENGLISH STANDARD DRAWING FOR
MEDIAN CONSTRUCTION WITH CURB AND GUTTER

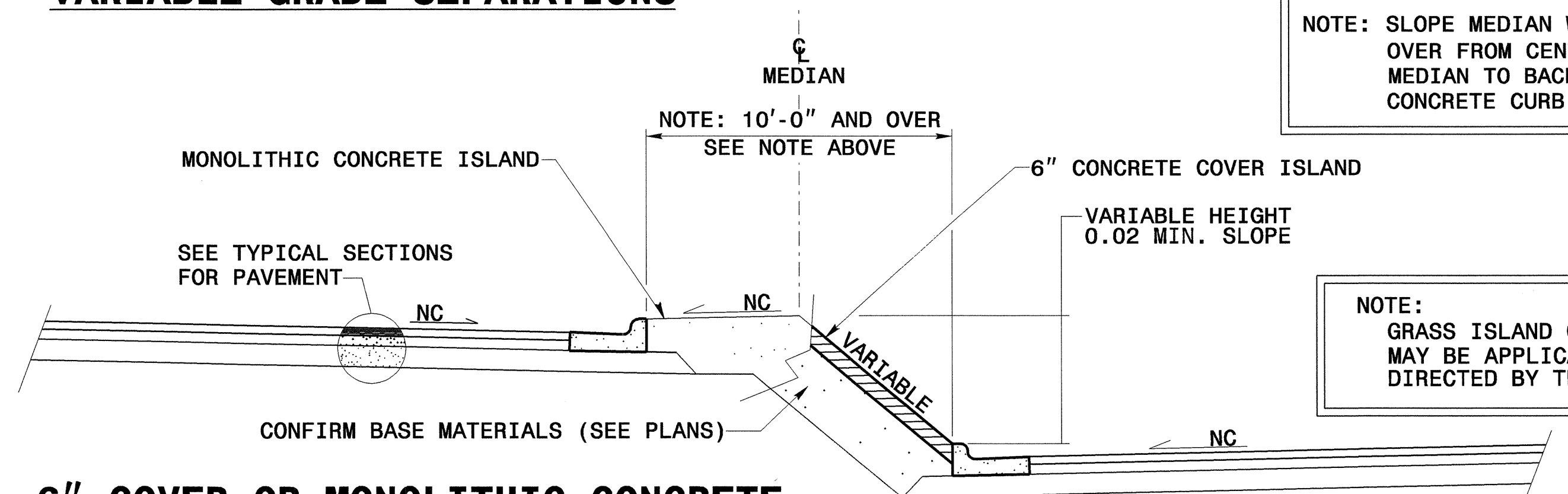
SHEET 1 OF 1
852D10



6" COVER OR MONOLITHIC CONCRETE



6" COVER OR MONOLITHIC CONCRETE VARIABLE GRADE SEPARATIONS



6" COVER OR MONOLITHIC CONCRETE VARIABLE GRADE SEPARATION

NOTE: SLOPE MEDIAN WIDTHS 10'-0" AND OVER FROM CENTERLINE OF MEDIAN TO BACK OF EACH CONCRETE CURB.

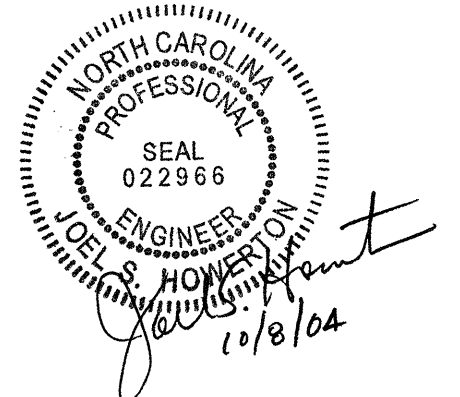
NOTE: GRASS ISLAND CONSTRUCTION MAY BE APPLICABLE AS DIRECTED BY THE ENGINEER.

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

1-05

ENGLISH STANDARD DRAWING FOR
MEDIAN CONSTRUCTION WITH CURB AND GUTTER

SHEET 1 OF 1
852D10



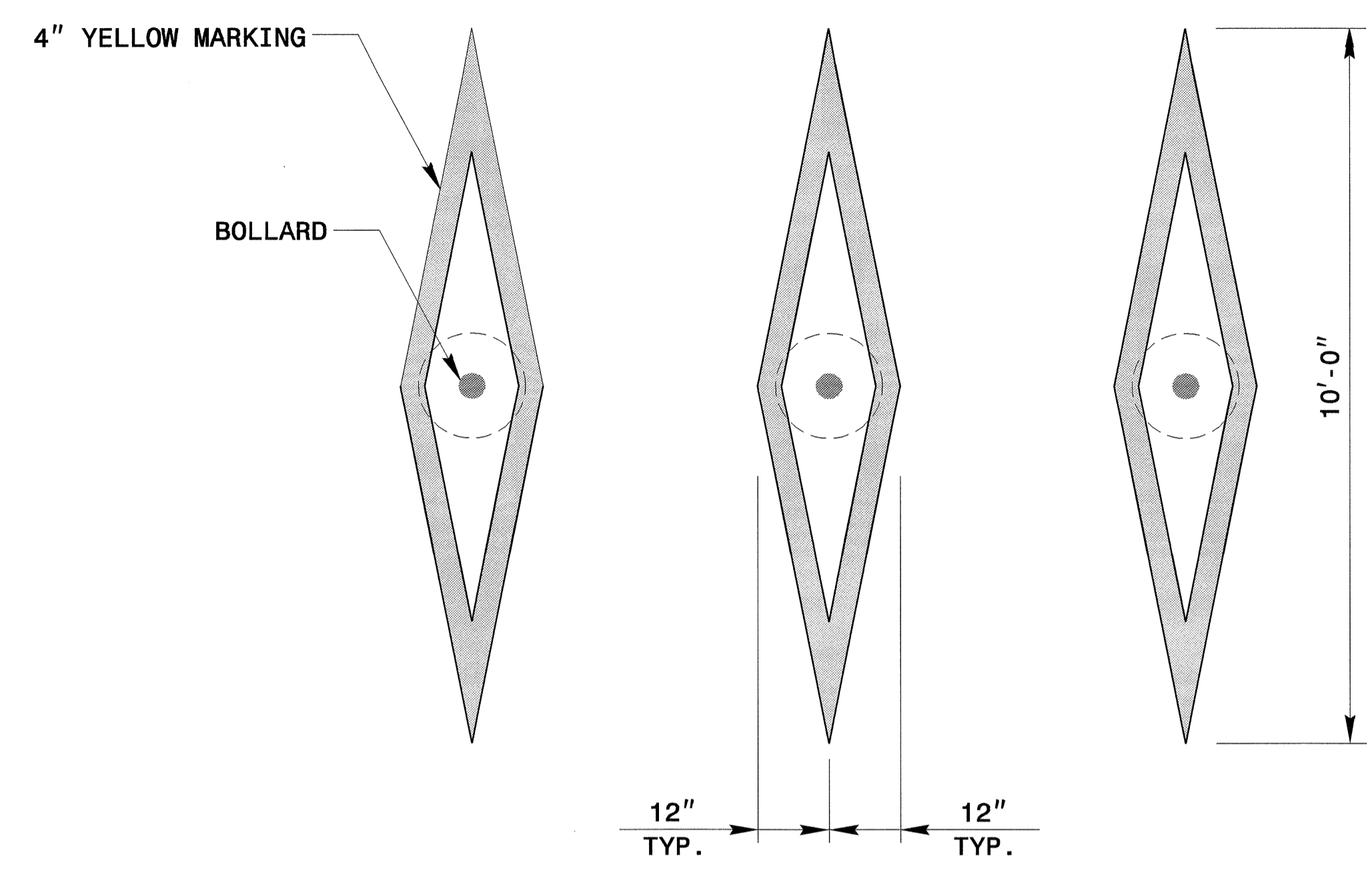
**DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

**MEDIAN CONSTRUCTION DETAIL
SHOWING 6" CONCRETE ISLAND COVER**

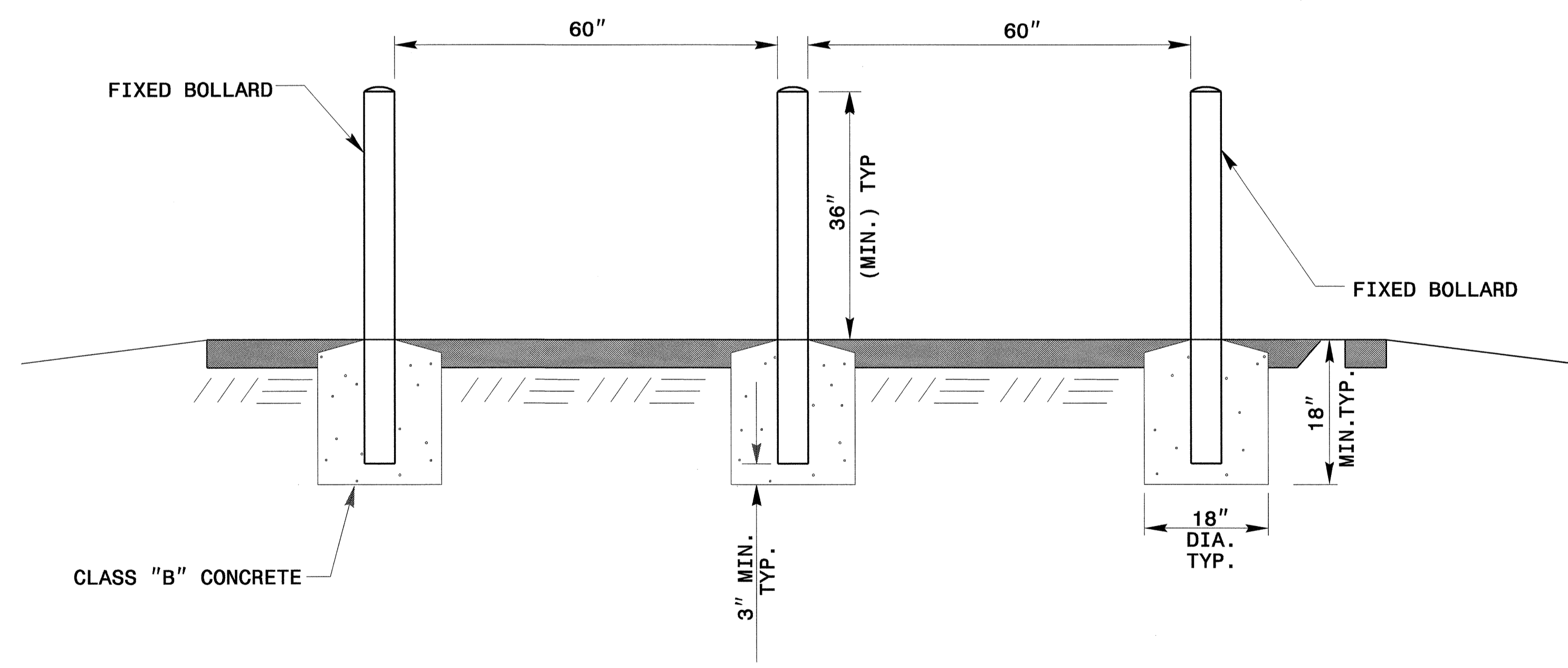
ORIGINAL BY:	DATE:
MODIFIED BY: nbritt	DATE: 09-30-04
CHECKED BY: J. S. Howler	DATE: 10/4/04
FILE SPEC.:	

30-SEP-2004 09:54
M:\Special_Details\abcttt\english\urban\4008 6sland cover.dgn
ANB-itt AI DS203035

5/14/99



PLAN



SECTION

NOTES :

BOLLARDS SHALL BE OF A TYPE DESIGNED TO PROHIBIT ENTRY OF UNAUTHORIZED VEHICLES AND SHALL BE A MINIMUM OF 4-1/2" OUTSIDE DIAMETER FOR ROUND BOLLARDS OR 4-1/2" EDGE DIMENSION FOR SQUARE BOLLARDS. BOLLARDS SHALL HAVE A SURFACE THAT IS GENERALLY SMOOTH AND FREE OF PROTRUSIONS, BURRS, ETC.

LOCKABLE REMOVABLE BOLLARDS SHALL HAVE A LOCKING DEVICE MEETING THE APPROVAL OF THE ENGINEER AND SHALL BE DESIGNED TO BE REMOVED OR FOLDED FLAT WHEN UNLOCKED TO PERMIT ENTRY OF AUTHORIZED VEHICLES. LOCKABLE REMOVABLE BOLLARDS SHALL BE DESIGNED SO THAT, WHEN LOCKED IN PLACE, THEY HAVE THE SAME GENERAL OUTWARD APPEARANCE AS THE FIXED BOLLARDS.

BOLLARDS SHALL BE PRIMED AND PAINTED IN A HIGH VISIBILITY YELLOW COLOR AS APPROVED BY THE ENGINEER.

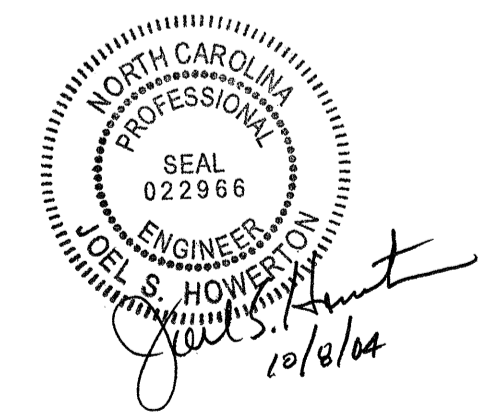
BOLLARDS SHALL HAVE REFLECTORIZED SHEETING MEETING THE APPLICABLE REQUIREMENTS OF SECTION 1088-1(B)(2) OF THE STANDARD SPECIFICATIONS ATTACHED TO ALL SIDES IN AN AMOUNT, LOCATION AND BY A METHOD MEETING THE APPROVAL OF THE ENGINEER.

THE PAVED SURFACE SHALL BE CLEANED AND REPAIRED AROUND THE INSTALLED BOLLARDS AS APPROVED BY THE ENGINEER.

PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF SECTION 1087 AND DIVISION 12 OF THE STANDARD SPECIFICATIONS.

INSTALLATION OF BOLLARDS SHALL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER. INSTALLATION OF BOLLARDS SHALL BE IN ACCORDANCE WITH THE PLANS, THE SPECIAL PROVISIONS, THE STANDARD SPECIFICATIONS, ALL APPLICABLE MANUFACTURER'S INSTRUCTIONS, AND AS DIRECTED BY THE ENGINEER.

PLACE BOLLARDS 3 FT. FROM EACH END OF EXISTING BRIDGE.



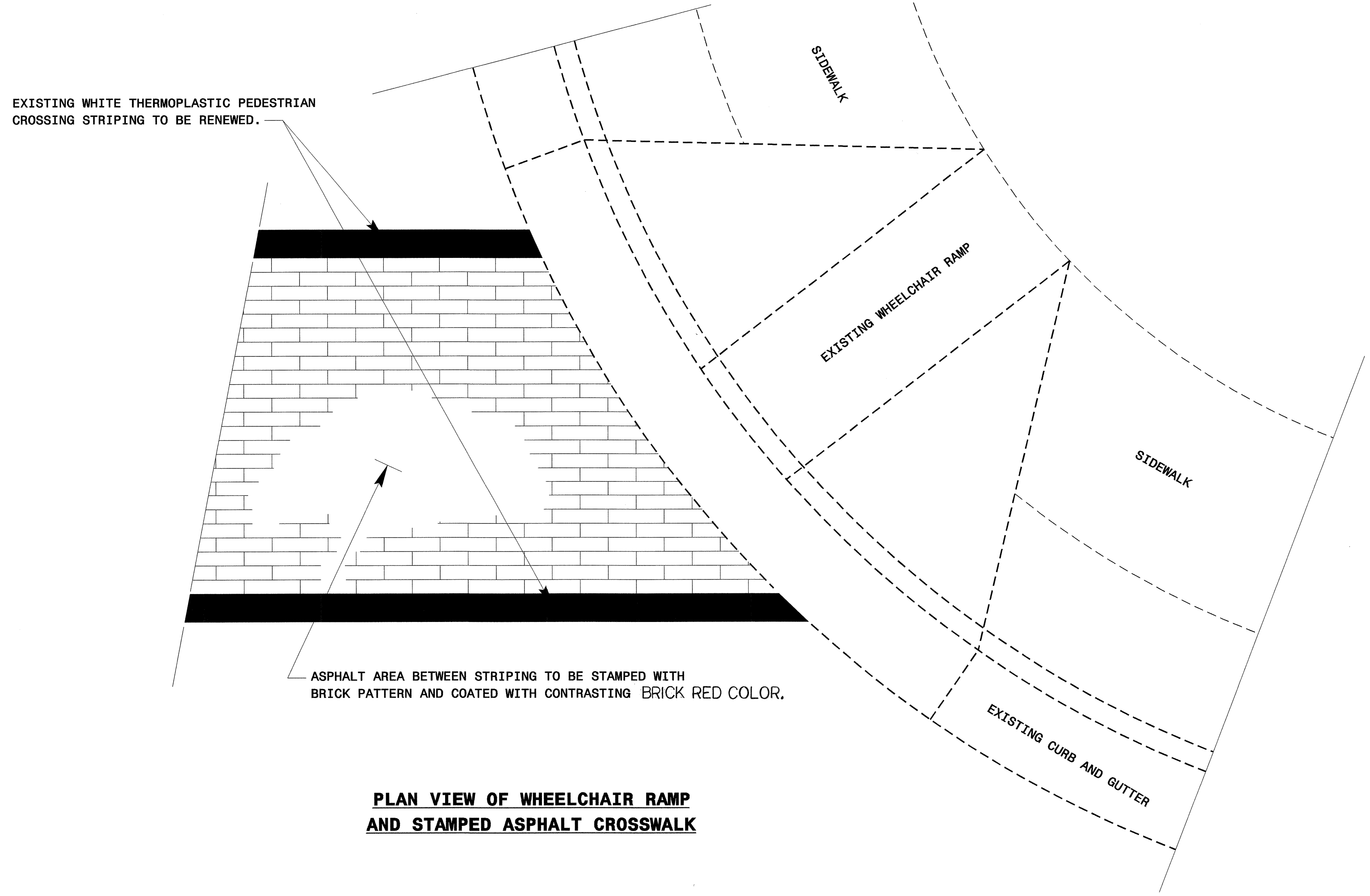
**DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

**BIKE PATH RESTRICTION
CONCRETE BOLLARD**

ORIGINAL BY: nbritt DATE: 09-30-04
 MODIFIED BY: J.S.H. DATE: 10/7/04
 CHECKED BY: J.S.H. DATE: 10/7/04
 FILE SPEC.: details/nbritt/english/urban/u4008 6islandcover.dgn

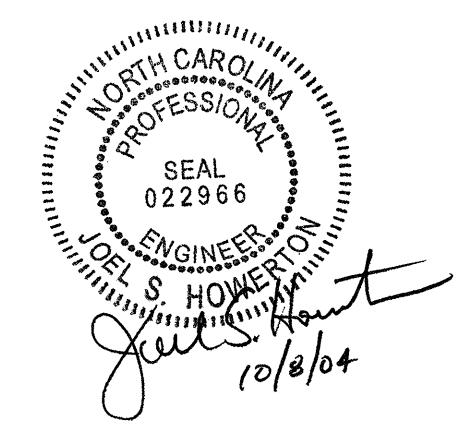
05-OCT-2004 08:28
 W:\Special Details\nbritt\english\urban\4008 6island cover.dgn
 RNBritt AT DS203039

5/14/99



**PLAN VIEW OF WHEELCHAIR RAMP
AND STAMPED ASPHALT CROSSWALK**

01-OCT-2004 09:03
 M:\Special_Details\rbritt\english\urban\4008 6island cover.dgn
 RNBritt AT DS203039



DESIGN SERVICES UNIT STANDARDS AND SPECIAL DESIGN	
Office 919-250-4128	FAX 919-250-4119
STAMPED ASPHALT	
ORIGINAL BY: nbritt	DATE: 10-01-04
MODIFIED BY: <i>Joe S. Howerton</i>	DATE: 10/8/04
CHECKED BY: <i>Joe S. Howerton</i>	DATE: 10/8/04
FILE SPEC.: M:\Special_Details\rbritt\english\urban\4008 6islandcover.dgn	

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201580

Table with 15 columns: ItemNumber, Sec #, Quantity, Unit, Description, ItemNumber, Sec #, Quantity, Unit, Description, ItemNumber, Sec #, Quantity, Unit, Description. It lists various construction items such as mobilization, grading, excavation, drainage structures, and pavement marking.

5/28/99

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
485000000-E	1205	1,433	LF	REMOVAL OF PAVEMENT MARKING LINES (4")	602100000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING	798000000-N	SP	4	EA	GENERIC SIGNAL ITEM FIBER-OPTIC TRANSCIEVER SELF-HEALING RING
490000000-N	1252	1,085	EA	PERMANENT RAISED PAVEMENT MARKERS	602900000-E	SP	150	LF	SAFETY FENCE	798000000-N	SP	3	EA	GENERIC SIGNAL ITEM GPS UNIT
525500000-N	1413	Lump Sum		PORTABLE LIGHTING	603000000-E	1630	3,000	CY	SILT EXCAVATION	798000000-N	SP	5	EA	GENERIC SIGNAL ITEM MAST ARM WITH METAL POLE DESIGN
530000000-E	1505	750	TON	FOUNDATION CONDITIONING MATERIAL, UTILITIES CLASS ***** (IV)	603600000-E	1631	2,425	SY	MATting FOR EROSION CONTROL	798000000-N	SP	1	EA	GENERIC SIGNAL ITEM MASTER CONTROLLER W/ CABINET, NEMA TS-1
530600000-E	SP	750	TON	BEDDING MATERIAL, UTILITIES CLASS ***** (IV)	604200000-E	1632	420	LF	1/4" HARDWARE CLOTH	798000000-N	SP	3	EA	GENERIC SIGNAL ITEM METAL POLE WITH DOUBLE MAST ARM
536600000-E	1510	628	LF	8" DI WATER PIPE, PC 350	608400000-E	1660	8.5	ACR	SEEDING & MULCHING	798000000-N	SP	2	EA	GENERIC SIGNAL ITEM METAL POLE WITH SINGLE MAST ARM
537800000-E	1510	40	LF	12" DI WATER PIPE, PC 350	608700000-E	1660	5	ACR	MOWING	799000000-E	SP	1,425	LF	GENERIC SIGNAL ITEM UNDERGROUND POLYETHYLENE CONDUIT 2", (1 CONDUIT)
538400000-E	1510	1,464	LF	16" DI WATER PIPE, PC **** (350)	609000000-E	1661	100	LB	SEED FOR REPAIR SEEDING	799200000-E	SP	40	CY	GENERIC SIGNAL ITEM DRILLED PIER FOUNDATION
539600000-E	1510	13	LF	*** DI RESTRAINED JOINT WATER PIPE, CLASS ***** (6",350)	609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING					
540800000-E	1510	25	LF	*** COPPER WATER PIPE, TYPE K (1")	609600000-E	1662	200	LB	SEED FOR SUPPLEMENTAL SEEDING					
540800000-E	1510	113	LF	*** COPPER WATER PIPE, TYPE K (2")	610800000-E	1665	6.25	TON	FERTILIZER TOPDRESSING					
541400000-E	1510	124	LF	3/4" COPPER WATER PIPE, TYPE K	611400000-N	SP	2.5	HR	SPECIALIZED HAND MOWING					
550400000-E	1510	1	EA	*** CORPORATION STOP (3/4")	613200000-N	SP	8	EA	GENERIC EROSION CONTROL ITEM RESPONSE FOR EROSION CONTROL					
552800000-E	1510	1	EA	2" CORPORATION STOP	700000000-E	1705	4	EA	PEDESTRIAN SIGNAL HEAD (**, ** SECTION) (16", 1 SECTION WITH COUNT-DOWN)					
553400000-E	1510	1	EA	*** GATE VALVE & VALVE BOX, ****WP (1",200#)	706000000-E	1705	3,850	LF	SIGNAL CABLE					
554000000-E	1510	1	EA	6" GATE VALVE & VALVE BOX, 200# WP	712000000-E	1705	32	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)					
554600000-E	1510	6	EA	8" GATE VALVE & VALVE BOX, ****WP (200#)	713200000-E	1705	2	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)					
555800000-E	1510	2	EA	12" GATE VALVE & VALVE BOX, ****WP (200#)	714400000-E	1705	2	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)					
558200000-E	1510	1	EA	**X*** TAPPING SADDLE (16"X1")	718000000-N	1706	17	EA	BACKPLATE					
558200000-E	1510	1	EA	**X*** TAPPING SADDLE (16"X3/4")	726400000-E	1710	875	LF	MESSENGER CABLE (3/8")					
558200000-E	1510	1	EA	**X*** TAPPING SADDLE (8" X 3/4")	727900000-E	1715	1,910	LF	TRACER WIRE					
558200000-E	1510	1	EA	**X*** TAPPING SADDLE (8"X2")	730000000-E	1715	1,939	LF	TRENCHING (UNPAVED)					
572000000-E	1520	233	LF	*** DI SEWER PIPE, PC **** (4",350)	730100000-E	SP	485	LF	DIRECTIONAL DRILL POLYETHYLENE CONDUIT, ***** (** CONDUIT) (2", 1)					
572600000-E	1520	155	LF	8" DI SEWER PIPE, PC 350	730100000-E	SP	638	LF	DIRECTIONAL DRILL POLYETHYLENE CONDUIT, ***** (** CONDUIT) (2", 2)					
573800000-E	1520	135	LF	12" DI SEWER PIPE, PC 350	732400000-N	1716	22	EA	JUNCTION BOX (STANDARD SIZE)					
577100000-E	1520	191	LF	GENERIC UTILITY ITEM (4"PVC SEWER PIPE, SCH.40)	733600000-N	1716	9	EA	JUNCTION BOX (OVER-SIZED)					
579800000-E	1530	466	LF	FILL OR REMOVE ABANDONED *** PIPE, ***** (8",AC-WATER)	736000000-N	1720	3	EA	WOOD POLE					
580400000-E	1530	1,444	LF	FILL OR REMOVE ABANDONED 12" PIPE, ***** (AC-WATER)	737200000-N	1721	10	EA	GUY ASSEMBLY					
582200000-N	1530	1	EA	BREAK DOWN & REBUILD EXISTING MANHOLE	740800000-E	1722	1	EA	1" RISER WITH WEATHERHEAD					
582800000-N	1530	1	EA	REMOVE EXISTING MANHOLE	742000000-E	1722	4	EA	2" RISER WITH WEATHERHEAD					
588200000-N	SP	4	EA	GENERIC UTILITY ITEM (16" BUTTERFLY VALVE AND 6' DI A. MANHOLE ,250# WP)	744400000-E	1725	3,307	LF	INDUCTIVE LOOP SAWCUT					
588200000-N	SP	2	EA	GENERIC UTILITY ITEM 12" TRANSITION COUPLING, DI TO AC	745600000-E	1726	4,570	LF	LEAD-IN CABLE					
588200000-N	SP	1	EA	GENERIC UTILITY ITEM 8" TRANSITION COUPLING, DI TO AC	751600000-E	1730	2,195	LF	COMMUNICATIONS CABLE (**FIBER) (12)					
590600000-E	SP	4,315	LB	GENERIC UTILITY ITEM DI RESTRAINED JOINT WATER PIPE FITTINGS, 250# MIN WP	755200000-N	1731	4	EA	INTERCONNECT CENTER					
600000000-E	1605	550	LF	TEMPORARY SILT FENCE	756600000-N	1733	9	EA	DELINEATOR MARKER					
600600000-E	1610	200	TON	STONE FOR EROSION CONTROL, CLASS A	756800000-N	SP	1	EA	FURNISH FIBER-OPTIC RESTORATION KIT					
600900000-E	1610	1,140	TON	STONE FOR EROSION CONTROL, CLASS B	757000000-N	SP	1	EA	FURNISH FIBER-OPTIC POWER METER					
601200000-E	1610	620	TON	SEDIMENT CONTROL STONE	757200000-N	SP	1	EA	FURNISH OPTICAL LIGHT GENERATOR					
601500000-E	1615	8.5	ACR	TEMPORARY MULCHING	757400000-N	SP	1	EA	FURNISH FIBER-OPTIC TRANSCIEVER					
601800000-E	1620	300	LB	SEED FOR TEMPORARY SEEDING	757500000-N	SP	Lump Sum		FIBER-OPTIC TRAINING					
					7575160000-E	SP	5,920	LF	REMOVE EXISTING COMMUNICATIONS CABLE					
					761300000-N	SP	5	EA	SOIL TEST					
					762400000-N	1743	5	EA	SIGNAL PEDESTAL WITH FOUNDATION					
					763600000-N	1745	10	EA	SIGN FOR SIGNALS					
					768400000-N	1750	5	EA	SIGNAL CABINET FOUNDATION					
					768800000-N	SP	5	EA	CABINET BASE ADAPTER					
					775600000-N	1751	5	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)					
					778000000-N	SP	15	EA	DETECTOR CARD (TYPE 2070L)					

17-AUG-2004 12:36
R:\Roadway\Projects\4256_rdlj_tjpd.dgn
Mlabri AT DS212419

6/21/00

COMPUTED BY: JRM DATE: 07/8/04
CHECKED BY: SKR DATE: 08/10/04

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. U-4008
SHEET NO. 3-B

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

Table with columns: STATION, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, CLASS III R.C. PIPE, BITUMINOUS COATED C.S. PIPE TYPE B, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES AND HOOD STANDARD, TYPE OF GRATE, and REMARKS. Includes a summary row at the bottom with 'SHEET TOTALS' and 'TOTAL'.

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

Table with columns: STATION, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, CLASS III R.C. PIPE, REINFORCED ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES AND HOOD STANDARD, TYPE OF GRATE, and REMARKS. Includes a summary row at the bottom with 'TOTAL'.

08-OCT-2004 11:06
Z:\pro\14008\sum
SKR\agland AT

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
 IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L-					
16 + 00.00 TO 36 + 70.13	3266		2970		296
-Y-					
10 + 27.00 TO 13 + 19.00	6		4756	4750	
-Y1-					
10 + 29.00 TO 11 + 47.80	62				62
-Y2A-					
14 + 77.00 TO 35 + 74.00	3782		2773		1009
-Y3-					
19 + 40.00 TO 22 + 61.83	0		6	6	
-Y4A-					
10 + 12.00 TO 22 + 37.28	6906		613		6293
-Y6-					
10 + 17.12 TO 12 + 70.01	142		458	316	
PROJECT TOTALS	14164		11576	5072	7660
LOSS DUE TO CLEARING & GRUBBING (PER GEOTECHNICAL)	- 800				- 800
EARTH TO REPLACE BORROW				- 5072	- 5072
GRAND TOTAL	13364			0	1788
SAY	13500				1800

ASPHALT PAVEMENT REMOVAL SUMMARY
 IN SQUARE YARDS

LINE	STATION TO STATION	LOCATION	AREA (SQUARE FEET)	SQUARE YARDS
-Y2A-	11 + 00.00 TO 14 + 24.00	RIGHT	4223.63	469.29
-Y2A-	31 + 63.00 TO 34 + 90.50	LEFT	1710	190
-Y4A-	11 + 20.00 TO 21 + 06.00	RIGHT	19096.60	2121.84
		TOTAL		2781.14
		SAY		2800

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

ESTIMATED UNDERCUT EXCAVATION 900 CY
 ESTIMATED DRAINAGE DITCH EXCAVATION 3360 CY

"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 SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS			SINGLE FACED CONC. BARRIER	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	CAT-1	GRAU 350	B-77		
-Y2A-	24 + 91.50	32 + 91.50	RT.	800.00'			25 + 91.50	32 + 80.00	8'	11'	50'		1'		1	1			
-Y4A-	15 + 75.00	16 + 50.00	RT.	75.00'			RETAINING WALL		8'	11'	50'		1'			1	1	140'	RETAINING WALL.
-Y4A-	17 + 90.00	18 + 65.00	RT.	75.00'			RETAINING WALL		8'	11'		50'		1'		1	1	140'	
-L-	25 + 87.50	28 + 00.00	LT.	212.50'			27 + 00.00	25 + 87.50	8'	11'	50'		1'		1	1			
SUBTOTAL =				1,162.50'											2	4	2	280'	
LESS DEDUCTION FOR ANCHORS =				(-) 250.00'															
TOTAL =				912.50'															
SAY =				925.00'															ADDITIONAL GUARDRAIL POST 5 EACH.

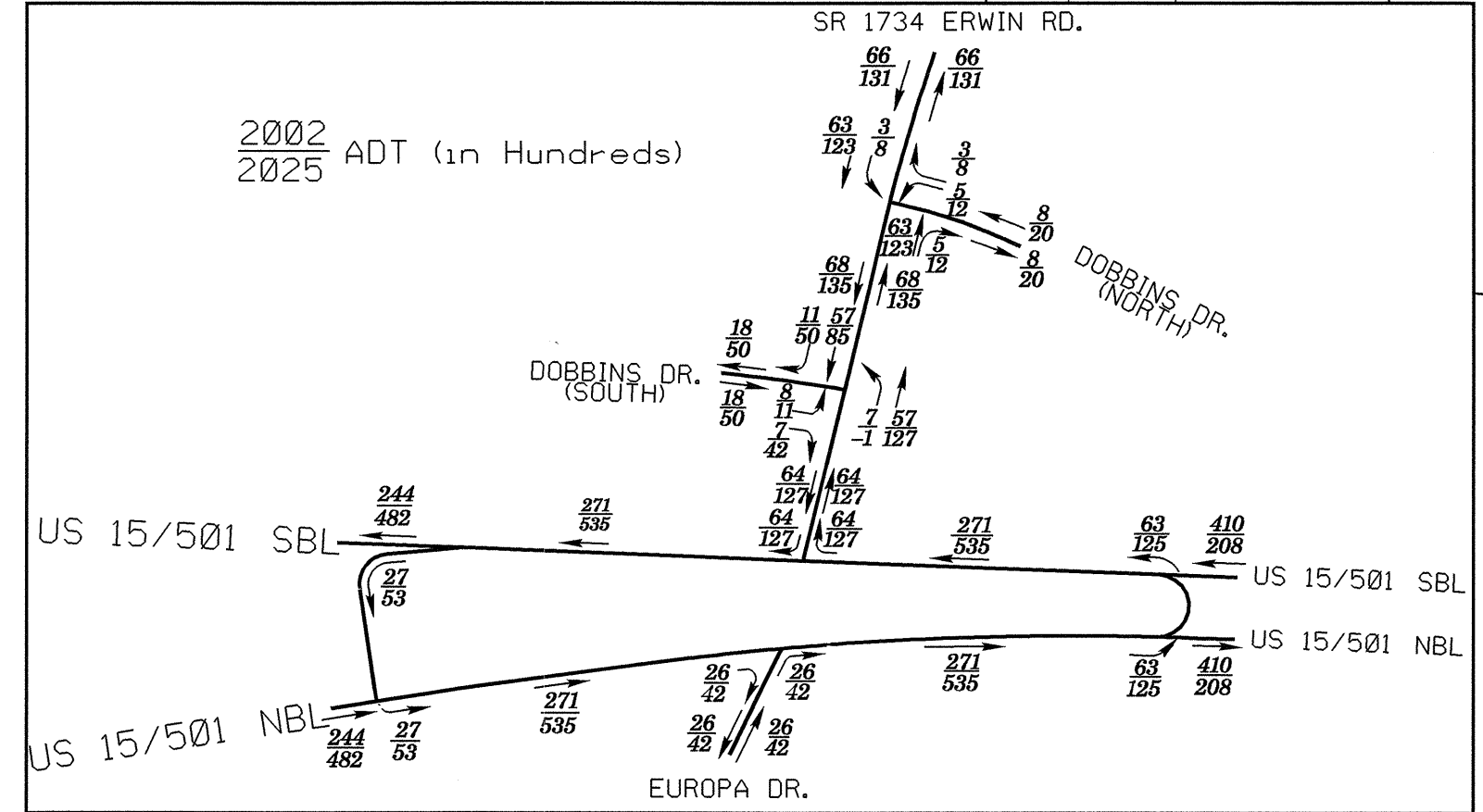
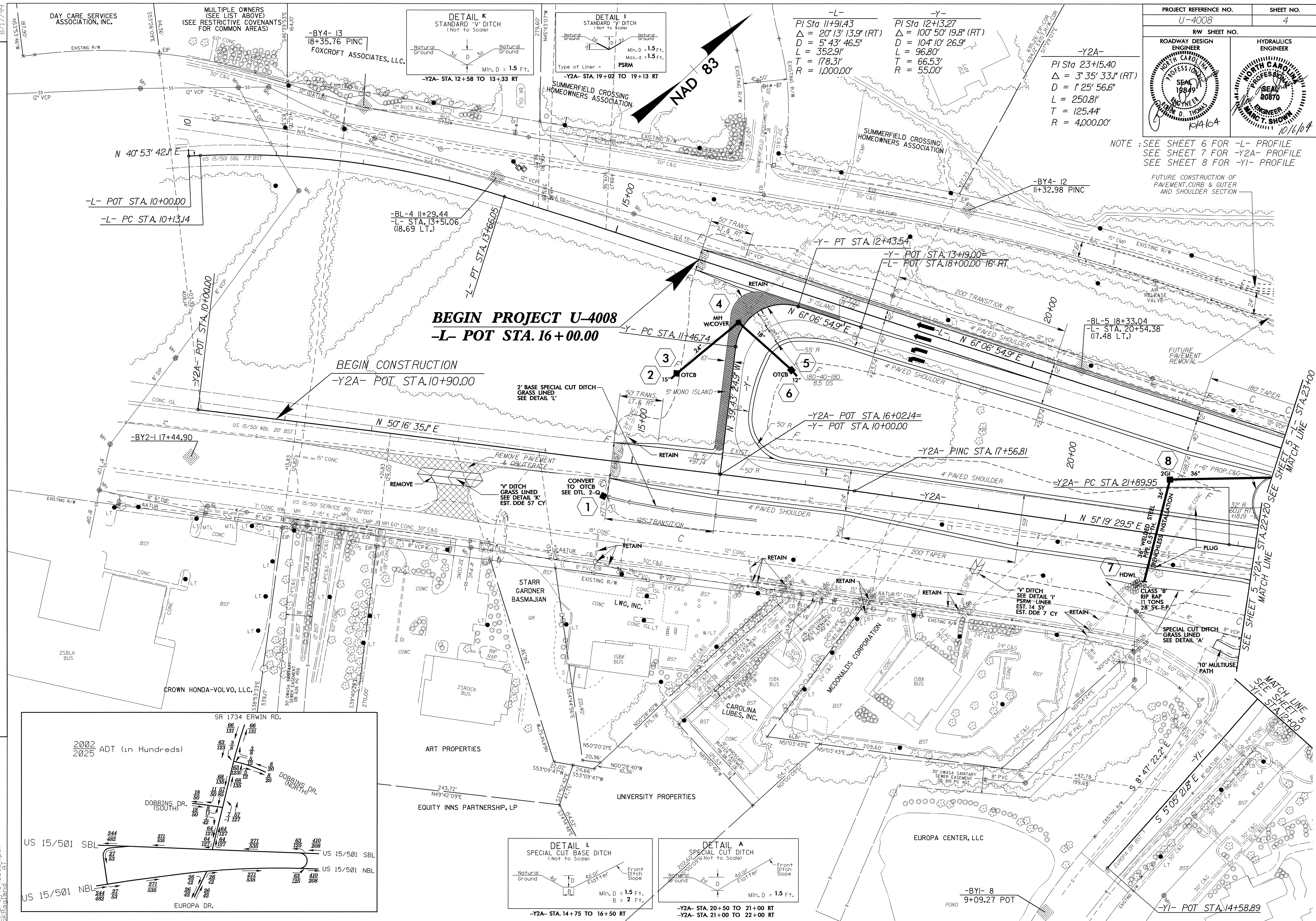
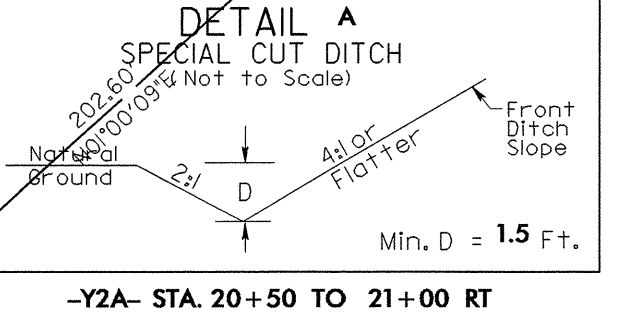
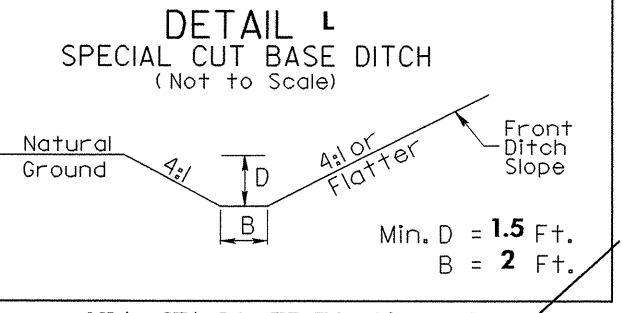
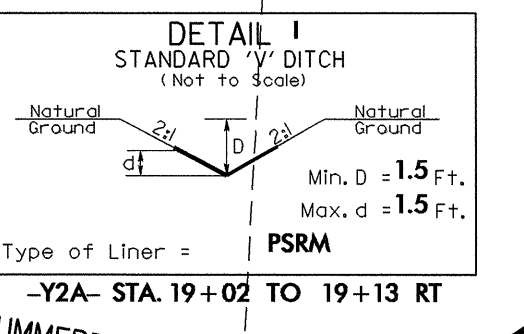
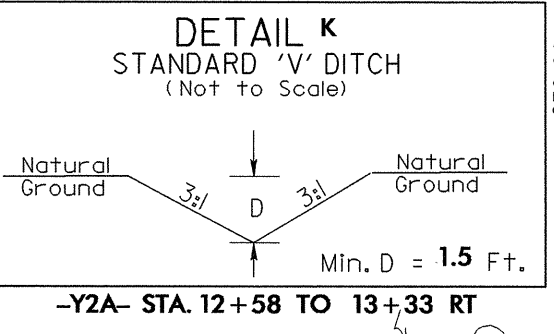
NOTE: SEE SHEET 6 FOR -L- PROFILE
SEE SHEET 7 FOR -Y2A- PROFILE
SEE SHEET 8 FOR -YI- PROFILE

FUTURE CONSTRUCTION OF PAVEMENT, CURB & GUTTER AND SHOULDER SECTION

-L-
PI Sta 11+91.43
 $\Delta = 20' 13' 13.9''$ (RT)
D = 5' 43' 46.5"
L = 352.91'
T = 178.31'
R = 1,000.00'

-Y-
PI Sta 12+13.27
 $\Delta = 100' 50' 19.8''$ (RT)
D = 104' 10' 26.9"
L = 96.80'
T = 66.53'
R = 55.00'

-Y2A-
PI Sta 23+15.40
 $\Delta = 3' 35' 33.1''$ (RT)
D = 1' 25' 56.6"
L = 250.81'
T = 125.44'
R = 4,000.00'



8/17/99
30-SEP-2004 10:35
E:\proj\U4008\4-ph.ktagland -dt

REVISIONS

MATCH LINE - STA. 23+00
MATCH LINE - STA. 21+00
MATCH LINE - STA. 12+00

BEGIN PROJECT U-4008
-L- POT STA. 16+00.00

BEGIN CONSTRUCTION
-Y2A- POT STA. 10+90.00

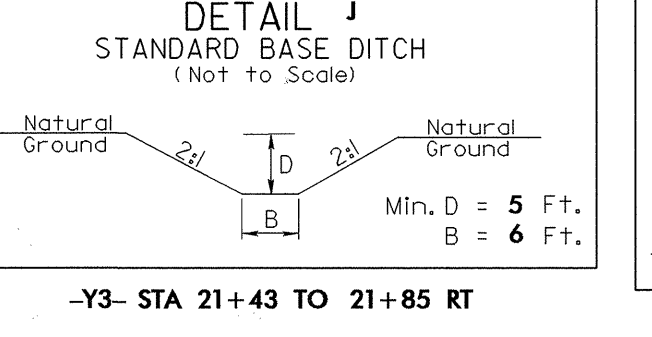
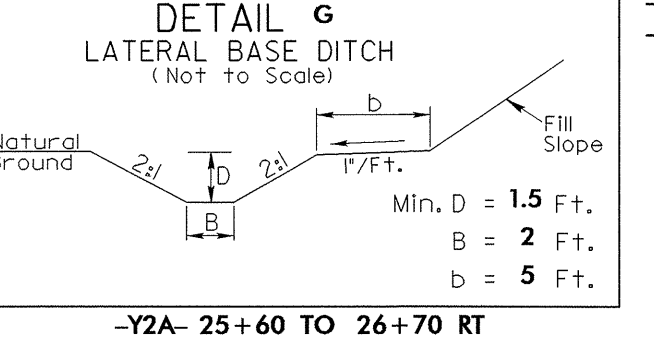
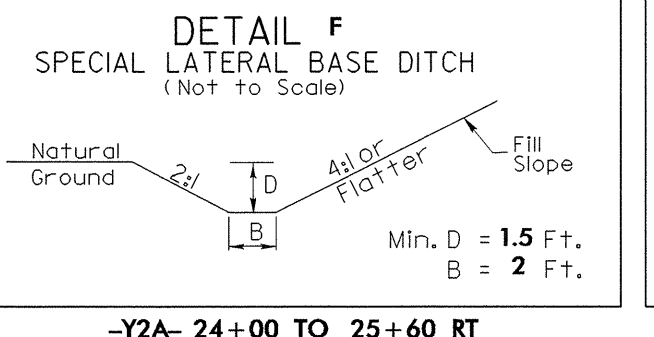
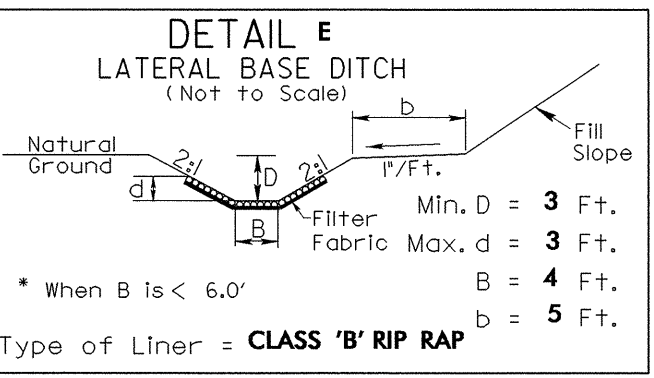
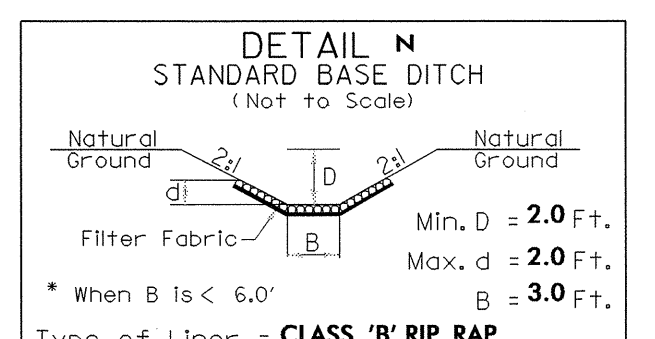
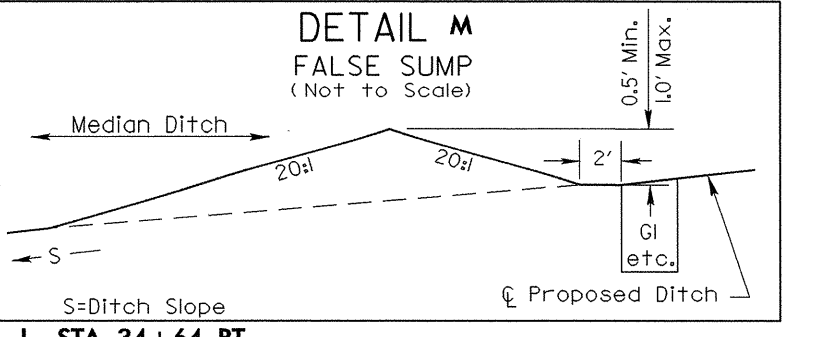
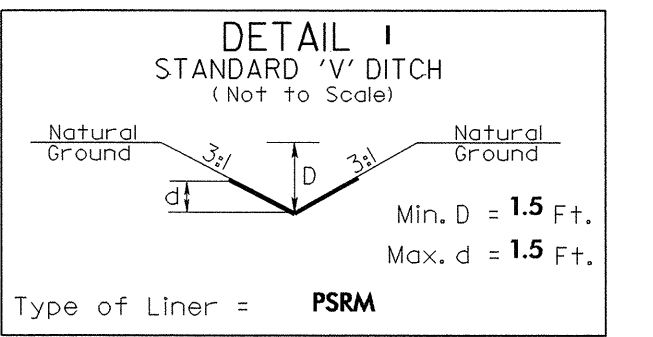
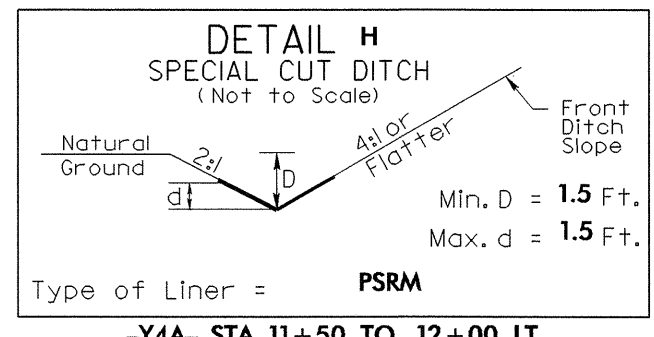
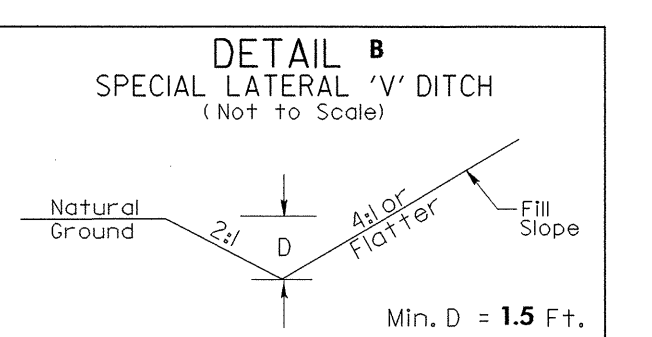
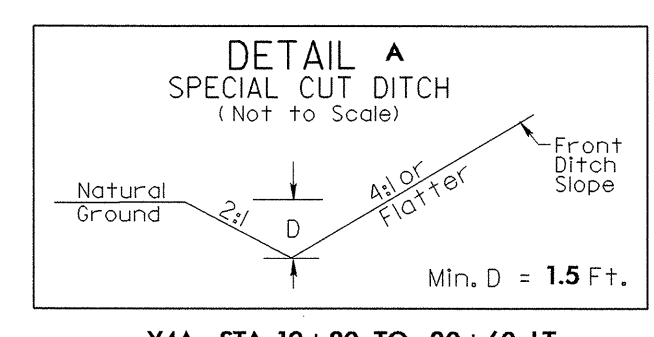
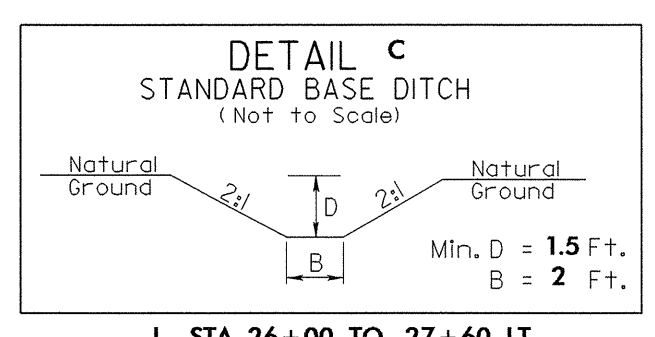
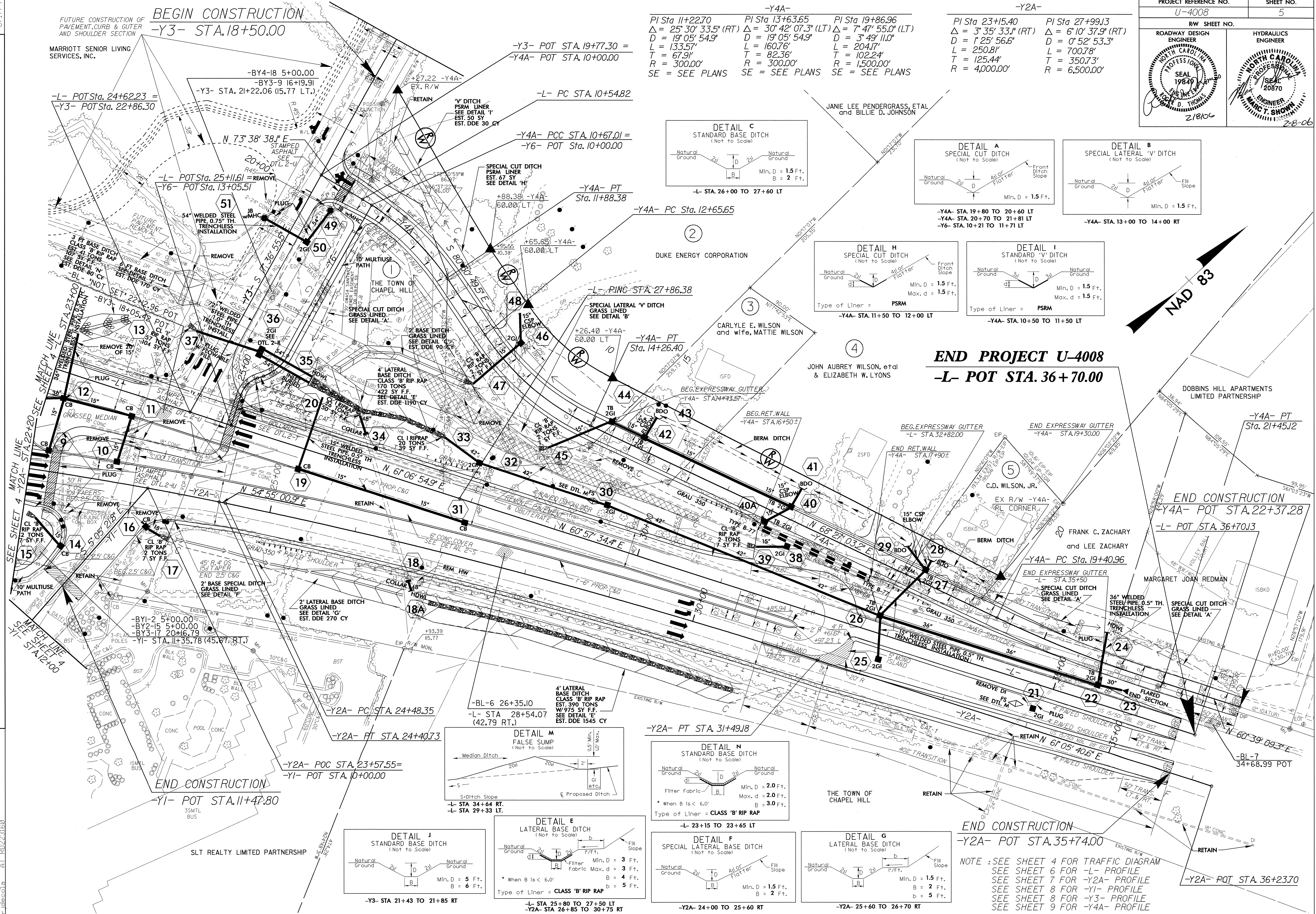
-YI- POT STA. 14+58.89

-YI- 8
9+09.27 POT

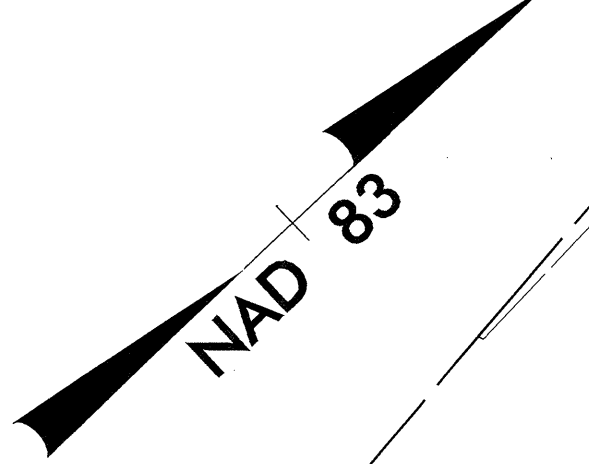
-Y2A- STA. 14+75 TO 16+50 RT
-Y2A- STA. 20+50 TO 21+00 RT
-Y2A- STA. 21+00 TO 22+00 RT

PROJECT REFERENCE NO. U-4008	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER K. D. THOMAS 2/18/06	HYDRAULICS ENGINEER MARC T. SHOWN 2-8-06

-Y4A-		-Y2A-	
PI Sta 11+22.70 $\Delta = 25^\circ 30' 33.5" (RT)$ $D = 19^\circ 05' 54.9"$ $L = 133.57'$ $T = 67.91'$ $R = 300.00'$ SE = SEE PLANS	PI Sta 13+63.65 $\Delta = 30^\circ 42' 07.3" (LT)$ $D = 19^\circ 05' 54.9"$ $L = 160.76'$ $T = 82.36'$ $R = 300.00'$ SE = SEE PLANS	PI Sta 19+86.96 $\Delta = 7^\circ 47' 55.0" (LT)$ $D = 3^\circ 49' 11.0"$ $L = 204.17'$ $T = 102.24'$ $R = 1500.00'$ SE = SEE PLANS	PI Sta 23+15.40 $\Delta = 3^\circ 35' 33.1" (RT)$ $D = 1^\circ 25' 56.6"$ $L = 250.81'$ $T = 125.44'$ $R = 4000.00'$
PI Sta 19+77.30 = -Y3- POT STA. 19+77.30 = -Y4A- POT STA. 10+00.00	PI Sta 27+99.13 $\Delta = 6^\circ 10' 37.9" (RT)$ $D = 0^\circ 52' 53.3"$ $L = 700.78'$ $T = 350.73'$ $R = 6,500.00'$		



NOTE : SEE SHEET 4 FOR TRAFFIC DIAGRAM
SEE SHEET 6 FOR -L- PROFILE
SEE SHEET 7 FOR -Y2A- PROFILE
SEE SHEET 8 FOR -Y1- PROFILE
SEE SHEET 8 FOR -Y3- PROFILE
SEE SHEET 9 FOR -Y4A- PROFILE



END PROJECT U-4008
-L- POT STA. 36+70.00

END CONSTRUCTION
-Y4A- POT STA. 22+37.28

-L- POT STA. 36+70.13

-Y4A- PC Sta. 19+40.96

-Y4A- POT STA. 36+70.13

-Y4A- POT STA. 21+45.12

-Y4A- POT STA. 36+70.13

-Y4A- POT STA. 36+70.13

-Y4A- POT STA. 36+70.13

-Y4A- POT STA. 36+70.13

-Y4A- POT STA. 36+70.13

-Y4A- POT STA. 36+70.13

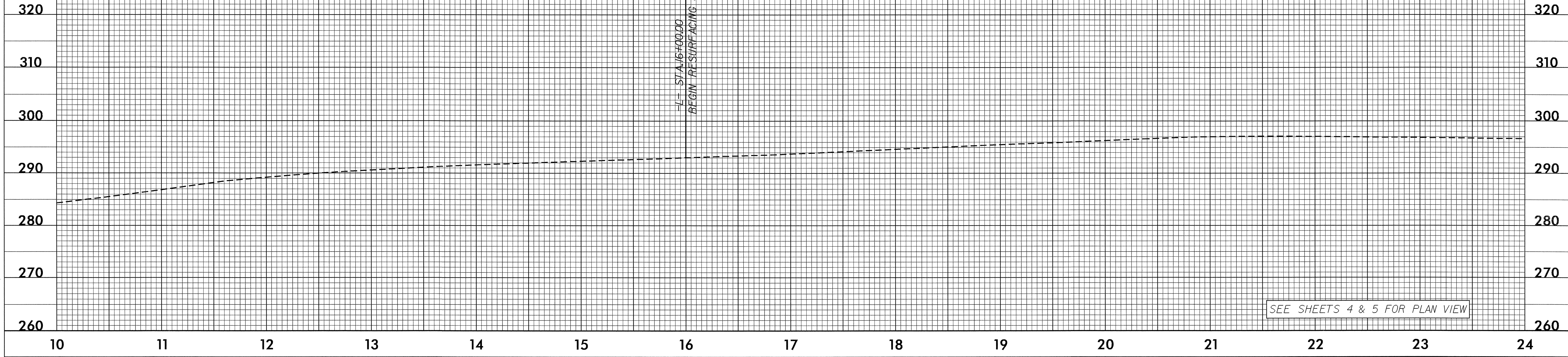
8/17/99
REVISIONS
02 JUN 2005 11:45 ash
01 JUN 2005 11:45 ash
01 JUN 2005 11:45 ash
01 JUN 2005 11:45 ash

5/28/99

PROJECT REFERENCE NO. U-4008	SHEET NO. 6
ROADWAY DESIGN ENGINEER SEAL 10949 RODGER D. THOMAS	HYDRAULICS ENGINEER SEAL 20870 MARC T. SHOWN
10/10/04	10/16/04

TBM* 1
12" NAIL IN BASE OF 16" PINE TREE
-BL- STA. 4+29.00 38.00 FT.LT.
ELEV. 276.42

US 15/501 (SBL)
-L-

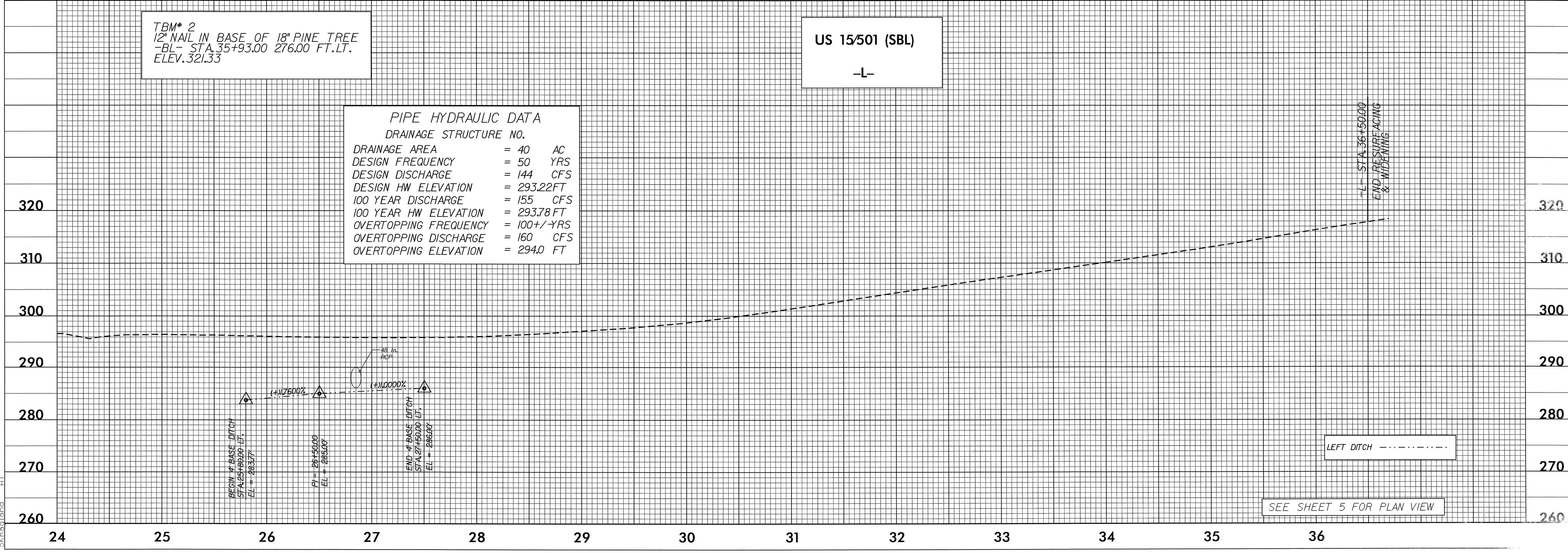


TBM* 2
12" NAIL IN BASE OF 18" PINE TREE
-BL- STA. 35+93.00 276.00 FT.LT.
ELEV. 321.33

US 15/501 (SBL)
-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 40 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 144 CFS
DESIGN HW ELEVATION	= 293.22 FT
100 YEAR DISCHARGE	= 155 CFS
100 YEAR HW ELEVATION	= 293.78 FT
OVERTOPPING FREQUENCY	= 100+/- YRS
OVERTOPPING DISCHARGE	= 160 CFS
OVERTOPPING ELEVATION	= 294.0 FT



16-SEP-2004 09:24
R:\proj\U4008\CF1
Skl\logland

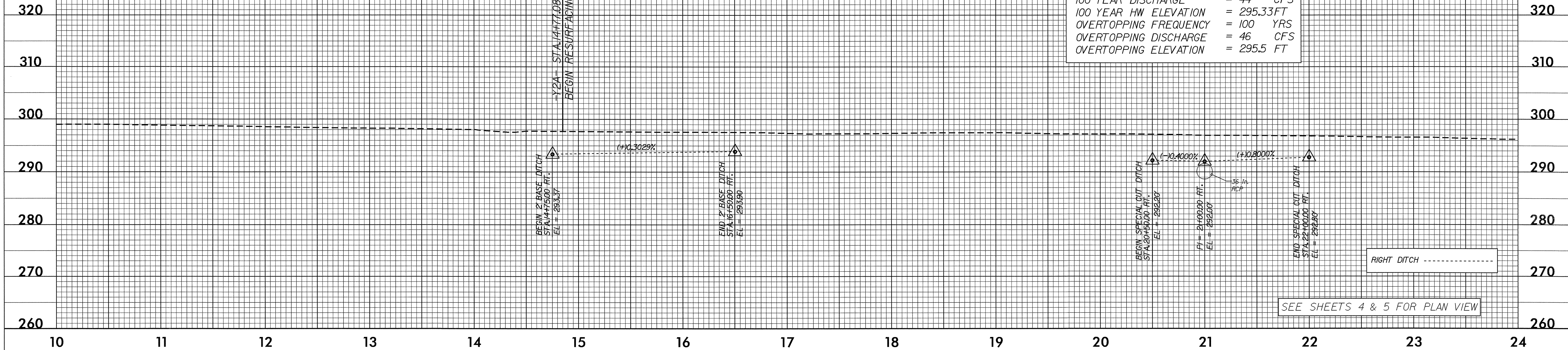
5/28/99

PROJECT REFERENCE NO. U-4008	SHEET NO. 7
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

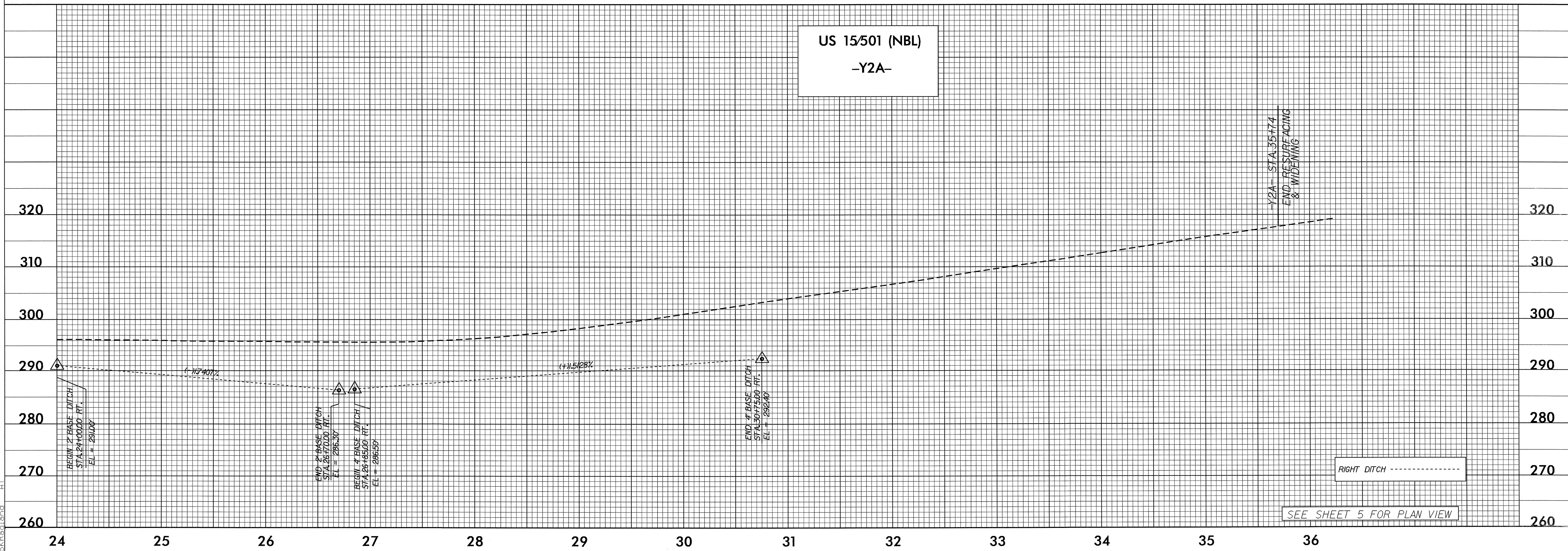
US 15/501 (NBL)
-Y2A-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 9.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 295.18	FT
100 YEAR DISCHARGE	= 44	CFS
100 YEAR HW ELEVATION	= 295.33	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 46	CFS
OVERTOPPING ELEVATION	= 295.5	FT



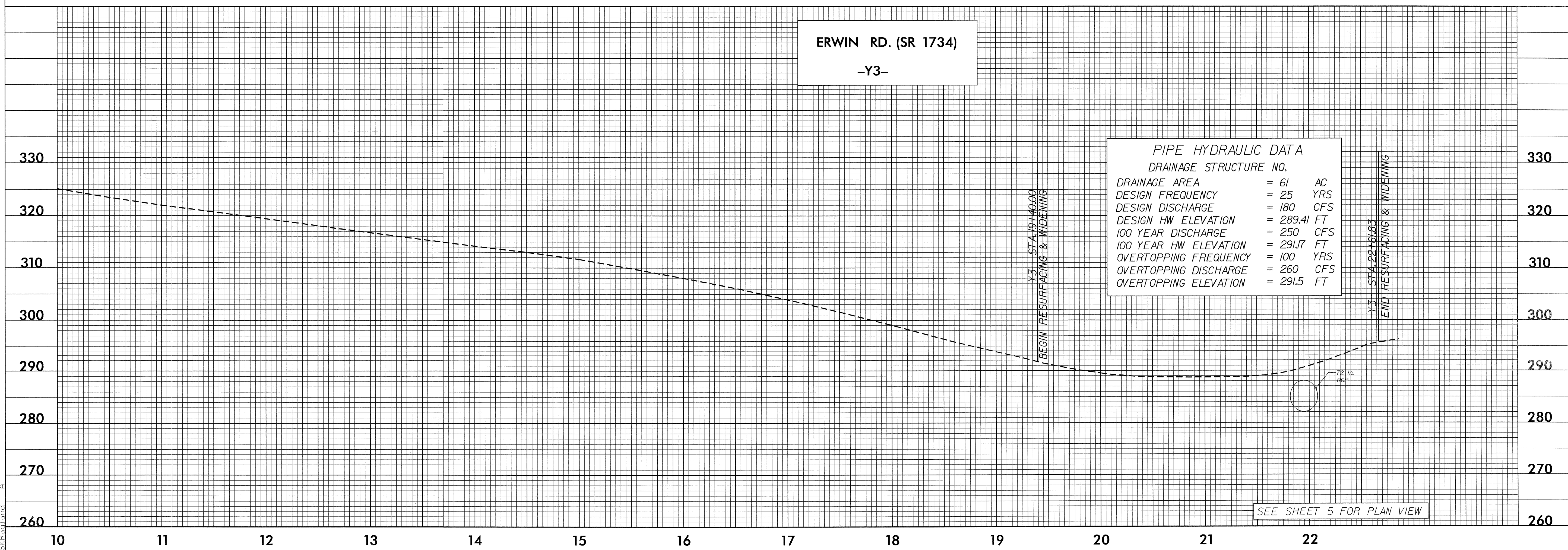
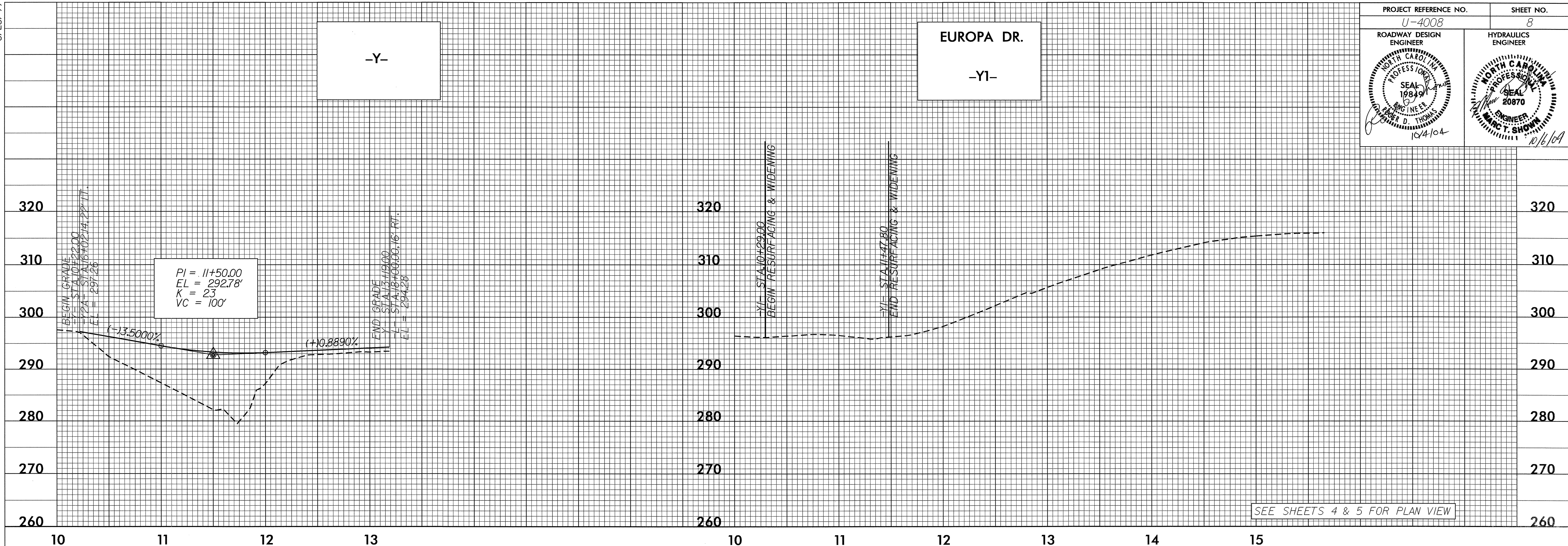
US 15/501 (NBL)
-Y2A-



16-SEP-2004 09:24
R:\proj\14\08\p1
SK\land

5/28/99

PROJECT REFERENCE NO. U-4008	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



16-SEP-2004 09:23
C:\pco\14008\p1
sk\road.dwg

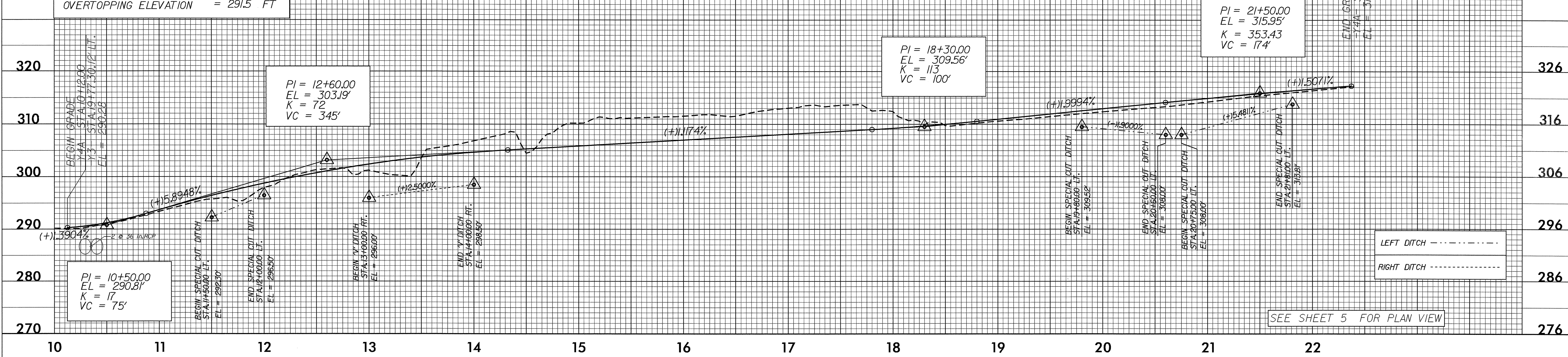
5/28/99

PROJECT REFERENCE NO. U-4008	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

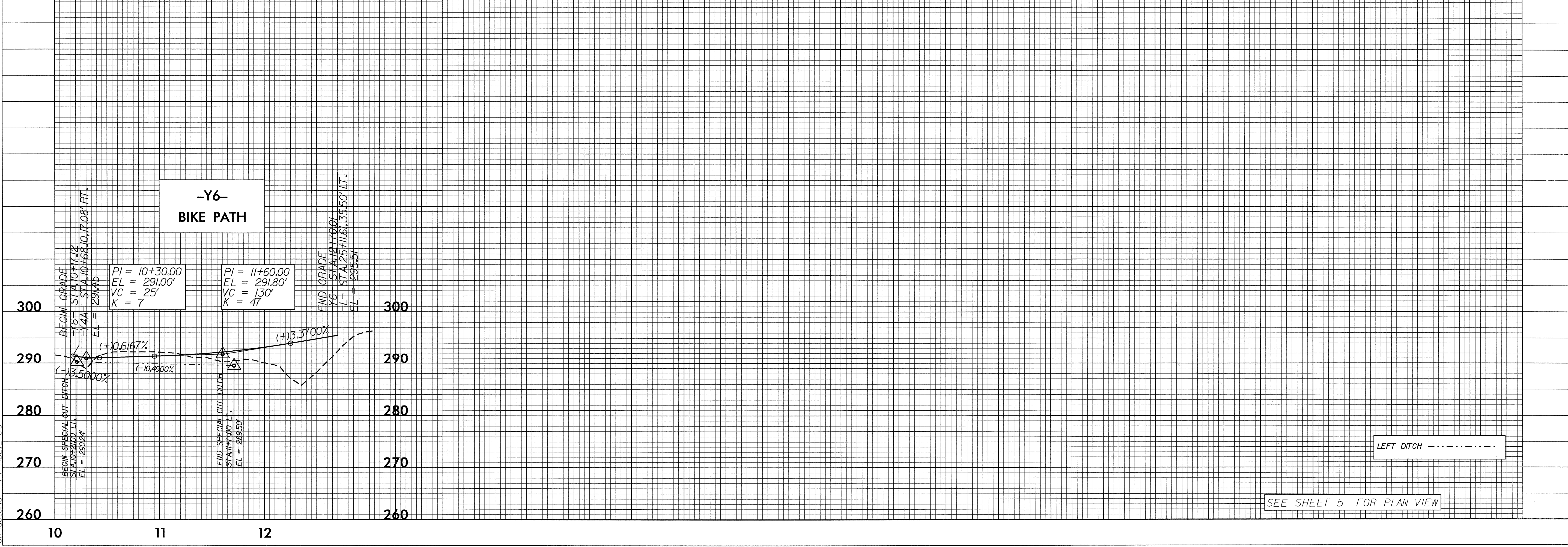
DRAINAGE AREA	= 41 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 135 CFS
DESIGN HW ELEVATION	= 291.81 FT
100 YEAR DISCHARGE	= 159 CFS
100 YEAR HW ELEVATION	= N/A FT
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 128 CFS
OVERTOPPING ELEVATION	= 291.5 FT

-Y4A-



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

SEE SHEET 5 FOR PLAN VIEW



-Y6- BIKE PATH

LEFT DITCH - - - - -

SEE SHEET 5 FOR PLAN VIEW

18-SEP-2004 09:23
R:\pco\144008\p1
SKEngland