

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

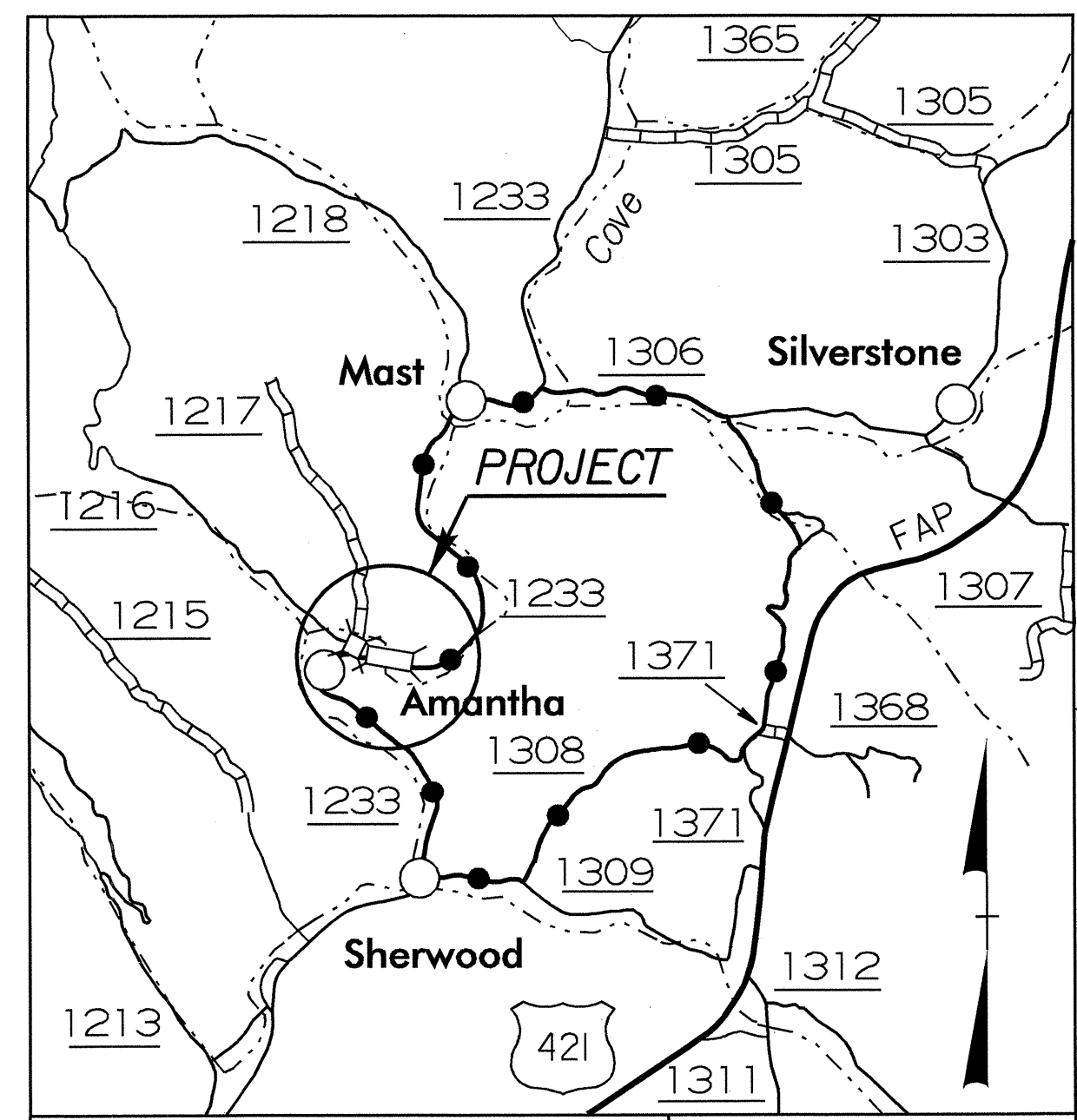
WATAUGA COUNTY

LOCATION: BRIDGE NO. 302 ON SR 1233 OVER COVE CREEK

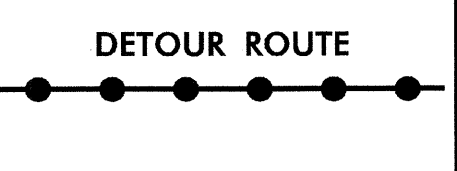
TYPE OF WORK: DRAINAGE, GRADING, PAVING, & CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3377	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33025.1.1	BRZ-1217(3)	PE	
33025.2.2	BRZ-1217(3)	R/W & UTL.	
33025.3.1	BRZ-1217(3)	CONST.	

TIP PROJECT: B-3377



VICINITY MAP



SR 1216 FLETCHER BRANCH RD.

SR 1217 HENSON BRANCH RD.

COVE CREEK

END CULVERT
-L- STA.18+78.41

SR 1233

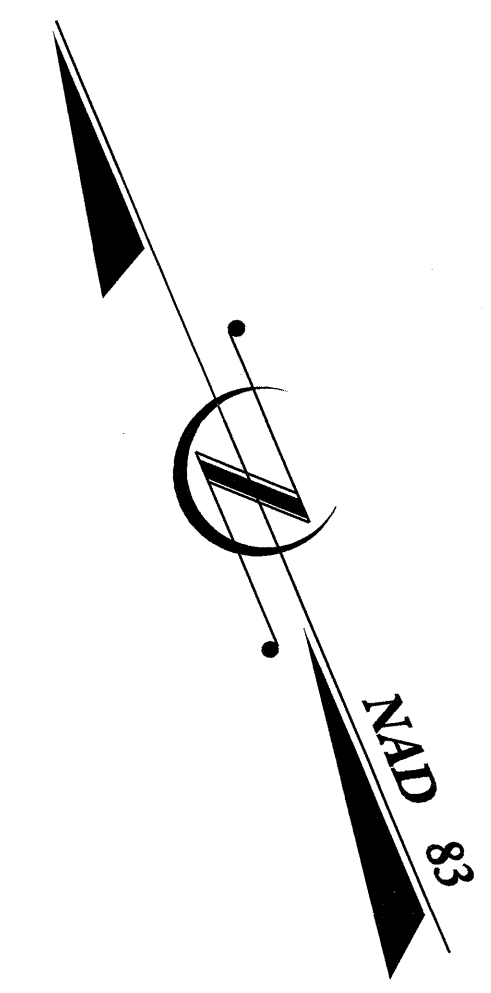
STA. 23+10.00 -L-
END TIP PROJECT B-3377

BEGIN CULVERT
-L- STA.18+23.59

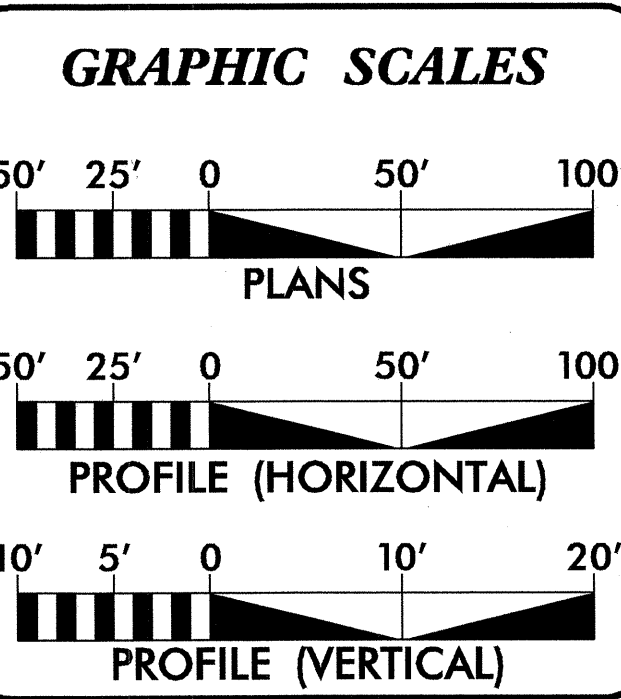
STA.15+90.00 -L-
BEGIN TIP PROJECT B-3377

TO AMANTHA
SR 1233 OLD 421

TO MAST
SR 1233 OLD 421



** DESIGN EXCEPTION FOR DESIGN SPEED



DESIGN DATA

ADT 2009 =	460
ADT 2030 =	650
DHV =	10 %
D =	60 %
T =	4 % *
**V =	30 MPH
FUNC. CLASS. =	LOCAL
* TTST 1%	DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3377	=	0.126 MILES
LENGTH STRUCTURE TIP PROJECT B-3377	=	0.010 MILES
TOTAL LENGTH OF TIP PROJECT B-3377	=	0.136 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 3, 2008

LETTING DATE:
March 17, 2009

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

Professional Engineer Seal for Roger D. Thomas, No. 19721

Professional Engineer Seal for Michael W. Little, No. 22557

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

09-OCT-2008 10:40 3377_r.dwg tsh.dgn

CONTRACT: C202023

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



M.W.
10/27/08

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

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS
2-A	DETAIL OF ANCHORAGE FOR FRAMES - BRICK / CONCRETE / PRECAST CONCRETE
2-B	DETAIL OF TEMPORARY 1" STEEL COVER
3	SUMMARY OF QUANTITIES
3-A	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)
3-B	SUMMARIES OF GUARDRAIL AND EARTHWORK
3-C	SUMMARIES OF SHOULDER BERM GUTTER, CONCRETE EXPRESSWAY GUTTER, AND PAVEMENT REMOVAL
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-3	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS-SECTIONS
C-1 THRU C-4	CULVERT PLANS

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

**GRADE LINE:
GRADING AND SURFACING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

- BLUE RIDGE EMC POWER (POWER)
- AT&T OF NC (TELEPHONE)
- CHARTER COMMUNICATIONS (CABLE TV)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

3/15/06

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for right of way: Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Proposed Wheel Chair Ramp Curb Cut, Curb Cut for Future Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for vegetation: Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for utilities: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.*).

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.*), Above Ground Water Line.

TV:

Table listing symbols for TV: TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.*).

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.*).

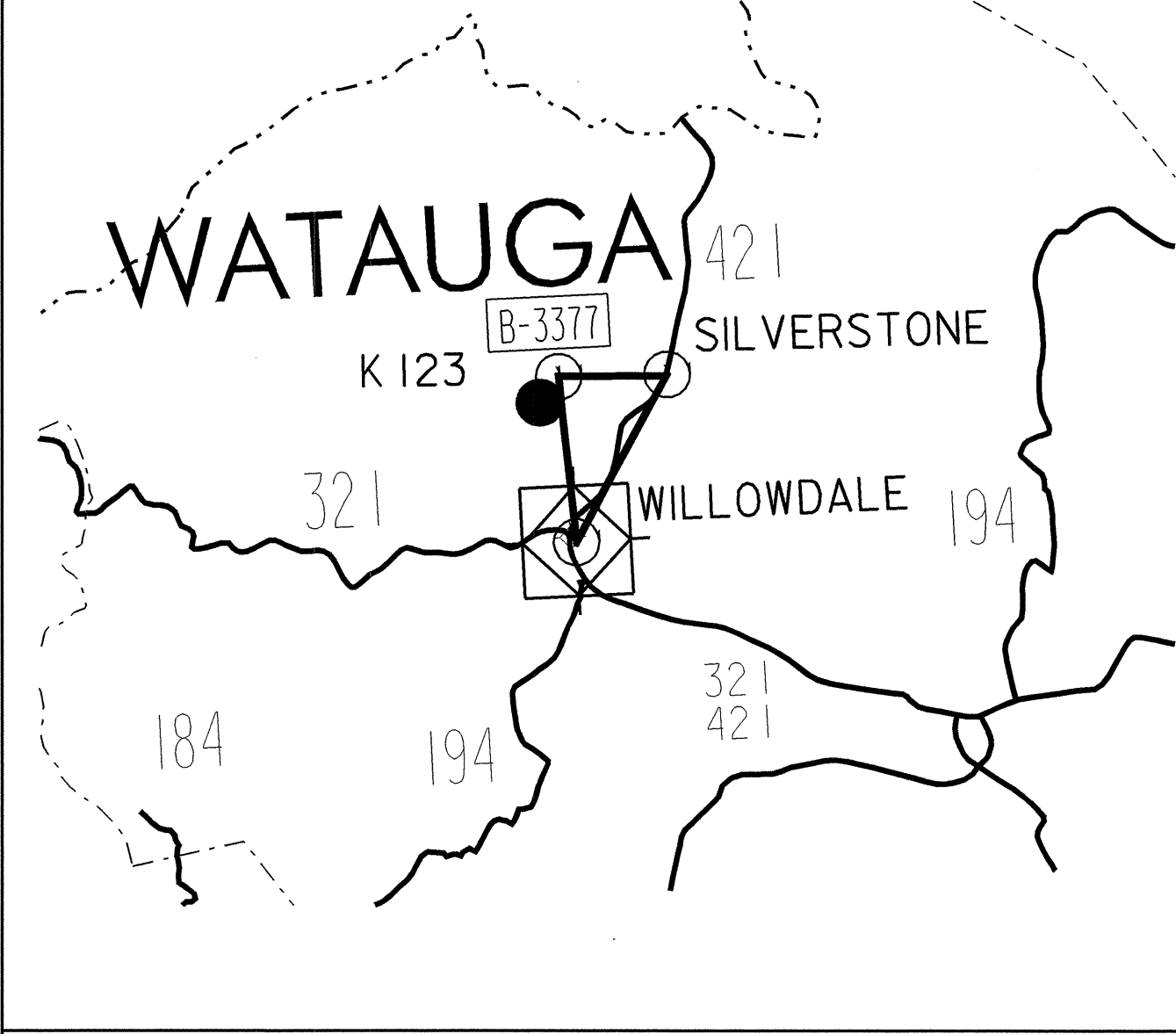
MISCELLANEOUS:

Table listing symbols for miscellaneous: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, A/G Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.*), Abandoned According to Utility Records, End of Information.

6/2/09

PROJECT REFERENCE NO.	SHEET NO.
B-3377	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-3377



NETWORK CONTROL

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		GPS B3062-C1	931513.3560	1180177.7520	2732.56	OUTSIDE PROJECT LIMITS	
101		BL-2	931712.5360	1180315.1230	2730.70	OUTSIDE PROJECT LIMITS	
102		BL-3	931801.2950	1180635.8160	2728.57	16+10.74	13.59 LT
103		BL-4	931833.1430	1181077.0100	2727.00	20+70.12	14.47 RT
104		BL-5	931595.5140	1181490.4200	2733.21	OUTSIDE PROJECT LIMITS	
3		GPS B3062-C3	931619.2470	1181959.8270	2738.33	OUTSIDE PROJECT LIMITS	

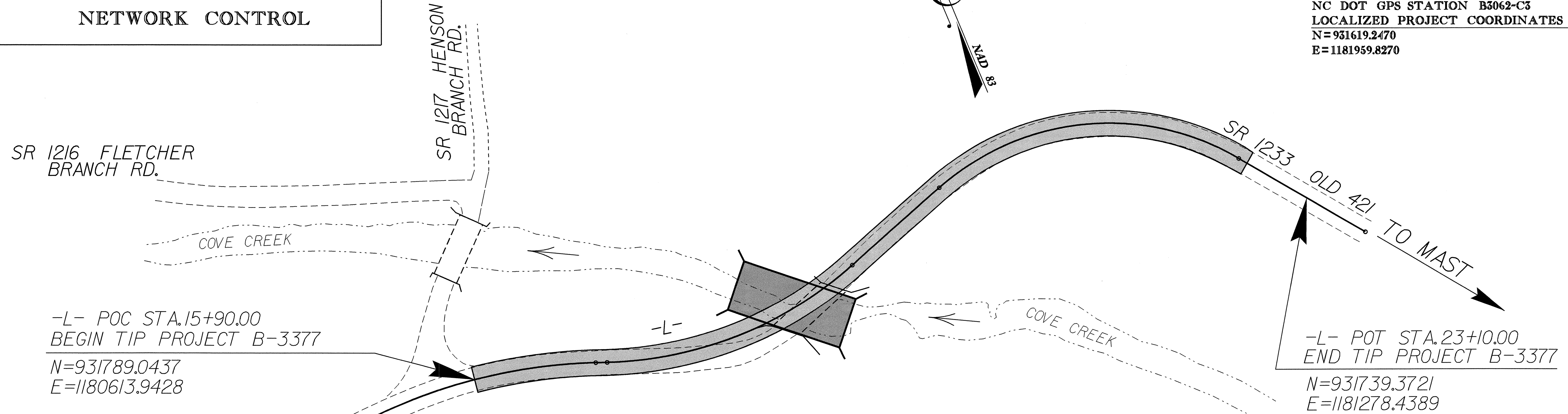
.....
 BM*1 ELEVATION=2716.41'
 N 931629 E 1180019
 OUTSIDE PROJECT LIMITS
 P.K. NAIL SET ON WEST SIDE OF COVE CREEK
 IN THE NORTHWEST CORNER OF CONC.
 WING WALL OF A PRIVATE BRIDGE

 BM*2 ELEVATION=2732.36'
 N 932330 E 1180055
 OUTSIDE PROJECT LIMITS
 P.K. NAIL SET IN A ROCK, IN A CUT, ON
 NORTH SIDE OF SR-1216 (FLETCHER BRANCH
 ROAD)

 BM*3 ELEVATION=2729.86'
 N 931554 E 1181829
 OUTSIDE PROJECT LIMITS
 8" SPIKE IN BASE OF 28" MAPLE TREE ON
 NORTH BANK OF COVE CREEK

NC DOT GPS STATION B3062-C2
 LOCALIZED PROJECT COORDINATES
 N=932648.1360
 E=1179603.9170

NC DOT GPS STATION B3062-C3
 LOCALIZED PROJECT COORDINATES
 N=931619.2470
 E=1181959.8270



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "B3062-C1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 931513.3560(ft) EASTING: 1180177.7520(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999902200 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3062-C1" TO -L- STATION 15+90.00 IS N 57°42'21" E 516.01' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

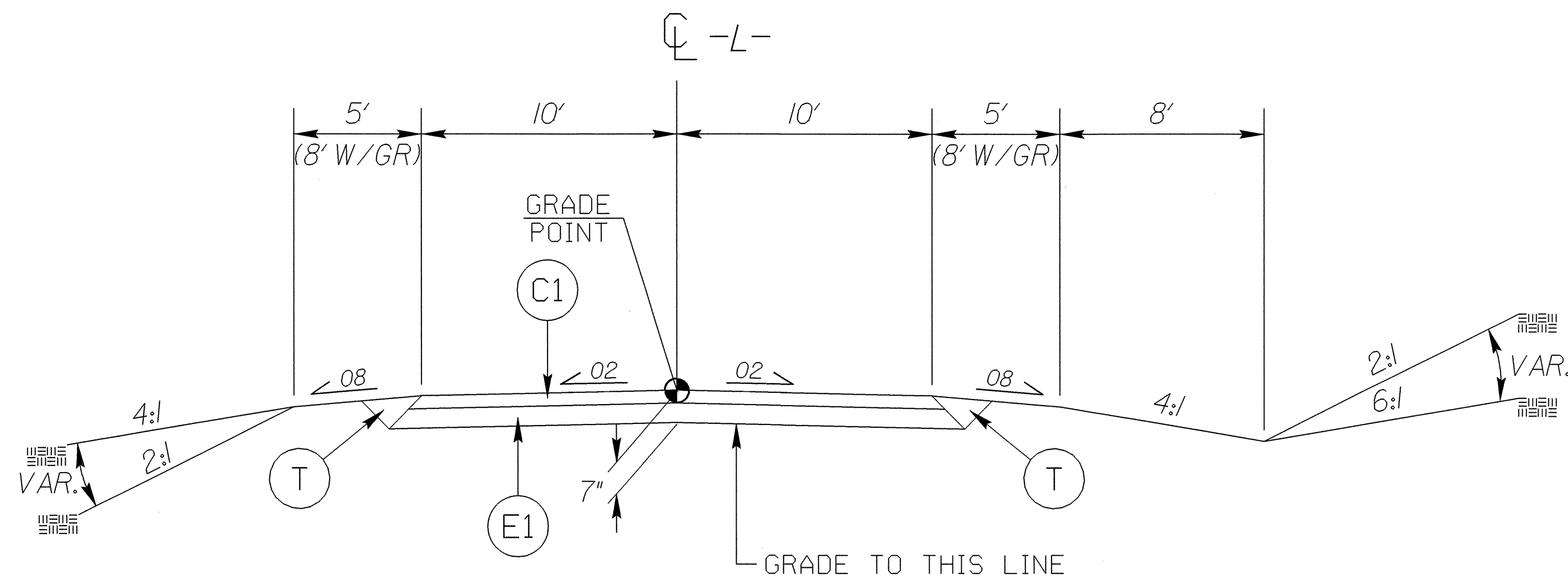
- NOTES:**
1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.DOHDOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B3377_LS_CONTROL_081002.TXT
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 2. INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
- SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

09-OCT-2008 10:00 3377_r.dwg

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF 2 LAYERS
E1	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
R1	CONCRETE EXPRESSWAY GUTTER
R2	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL

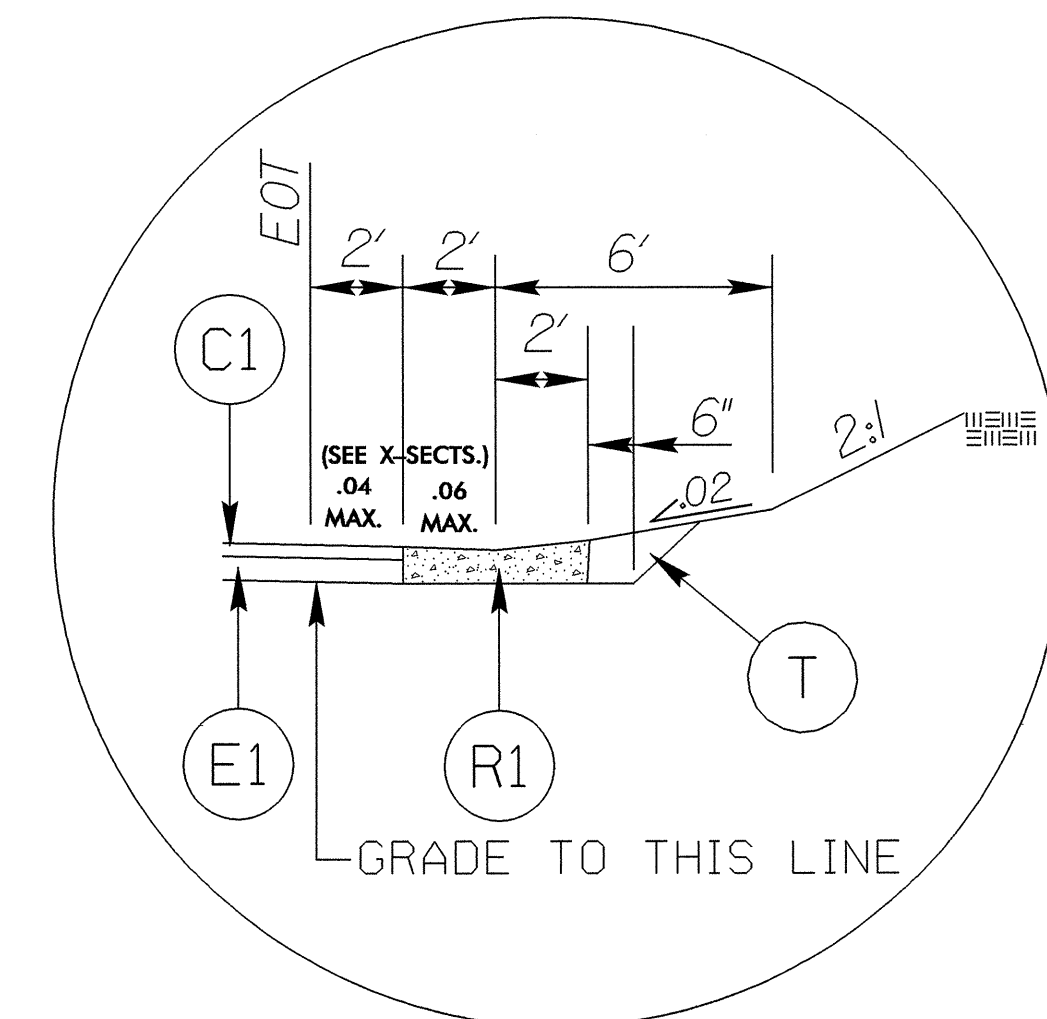
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 16+40.00 TO -L- STA. 22+00.90

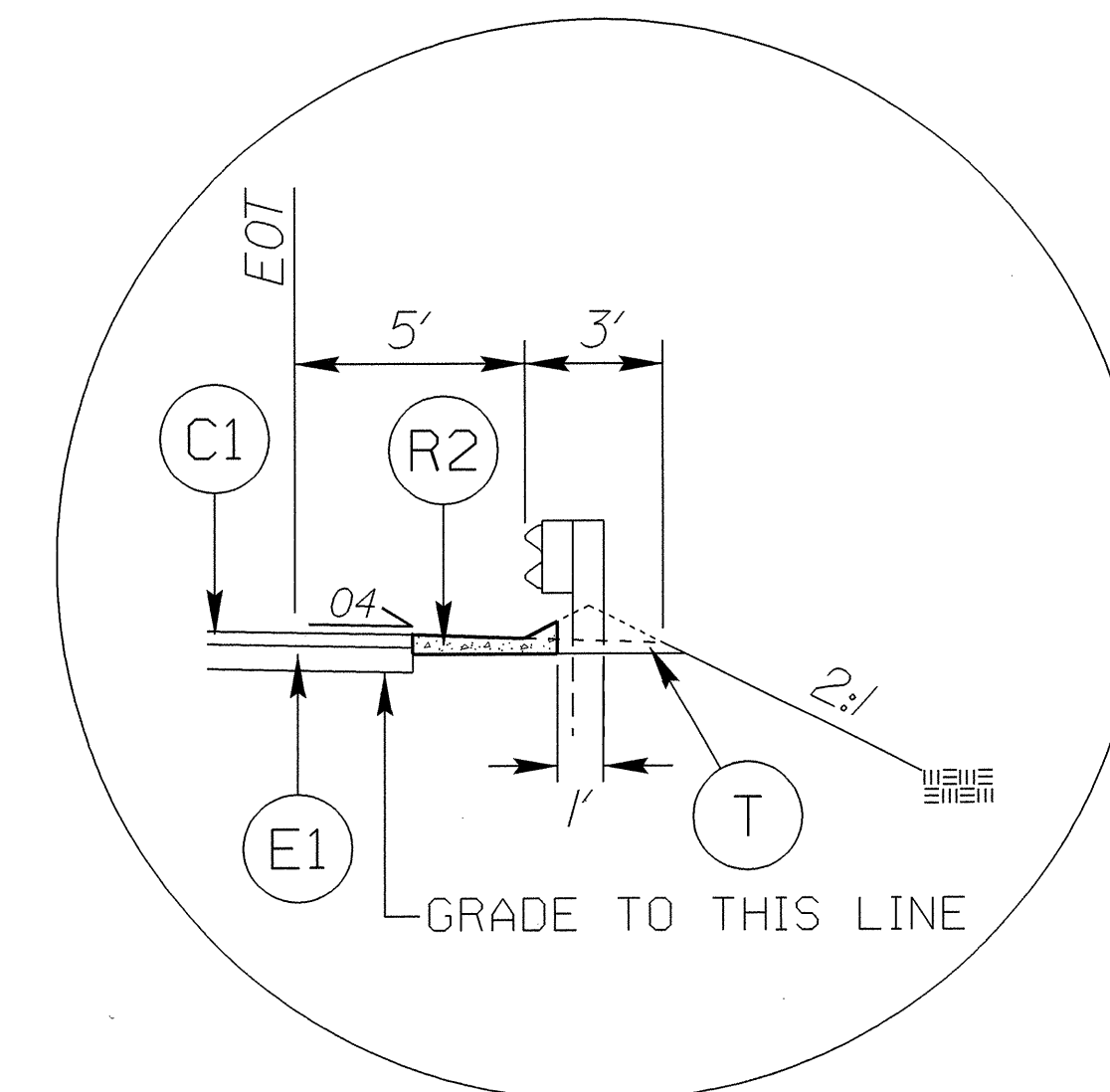
NOTES:
TRANSITION FROM EXISTING TO T.S. NO. 1
-L- STA. 15+90.00 TO -L- STA. 16+40.00
TRANSITION FROM T.S. NO. 1 TO EXISTING
-L- STA. 22+00.90 TO -L- STA. 22+50.90
SHLD. WORK ONLY -L- STA. 22+50.90 TO -L- STA. 23+10.00



INSET NO. 1

USE INSET NO. 1 WITH TYPICAL SECTION NO. 1

-L- STA. 15+90.00 (RT.) TO -L- STA. 17+60.00 (RT.)
-L- STA. 19+80.00 (LT.) TO -L- STA. 21+75.00 (LT.)



INSET NO. 2

USE INSET NO. 2 WITH TYPICAL SECTION NO. 1
-L- STA. 16+95.00 (LT.) TO -L- STA. 19+05.00 (LT.)

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

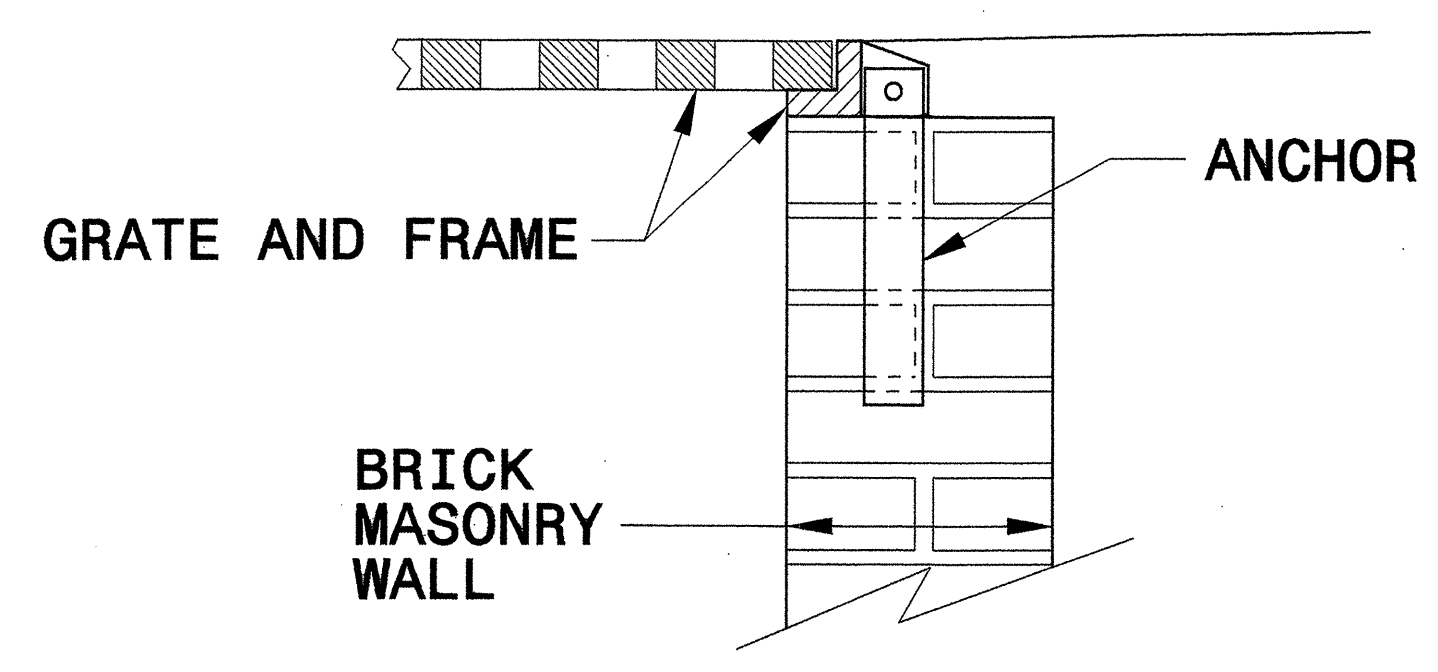
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

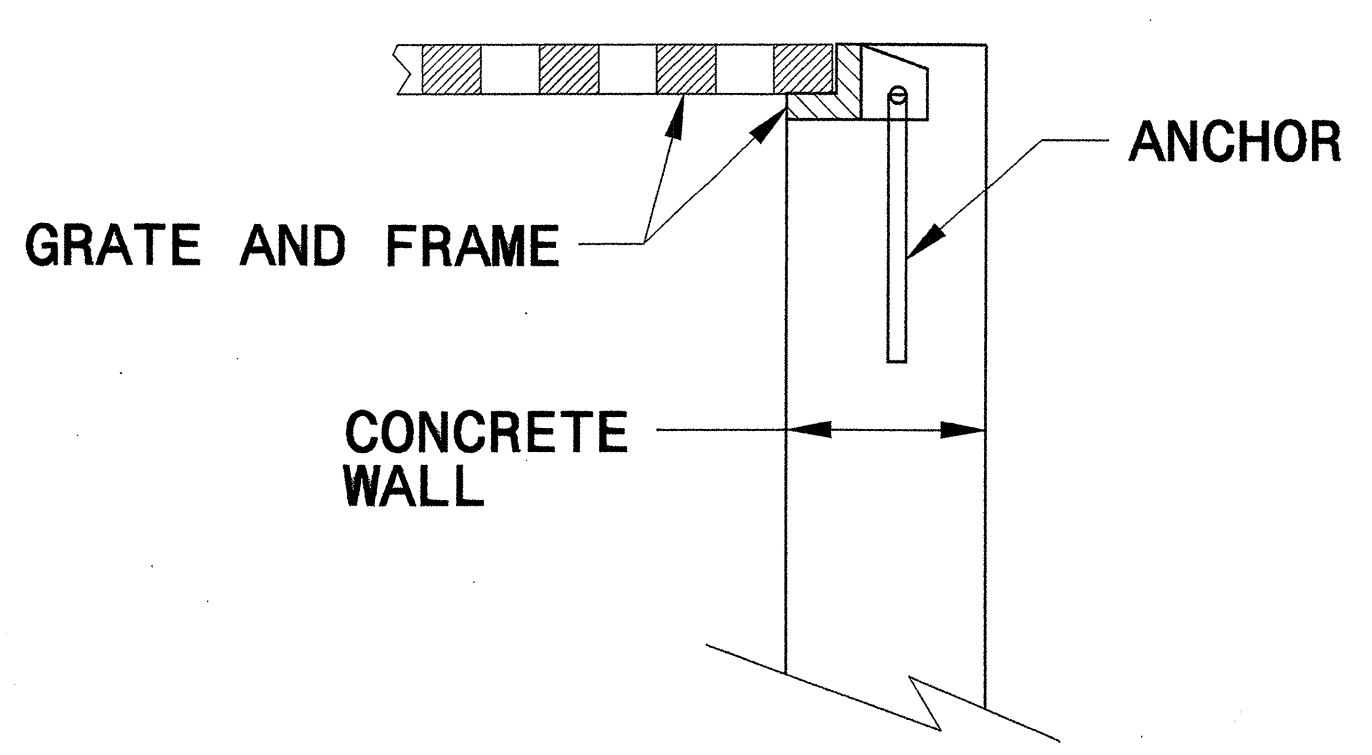
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

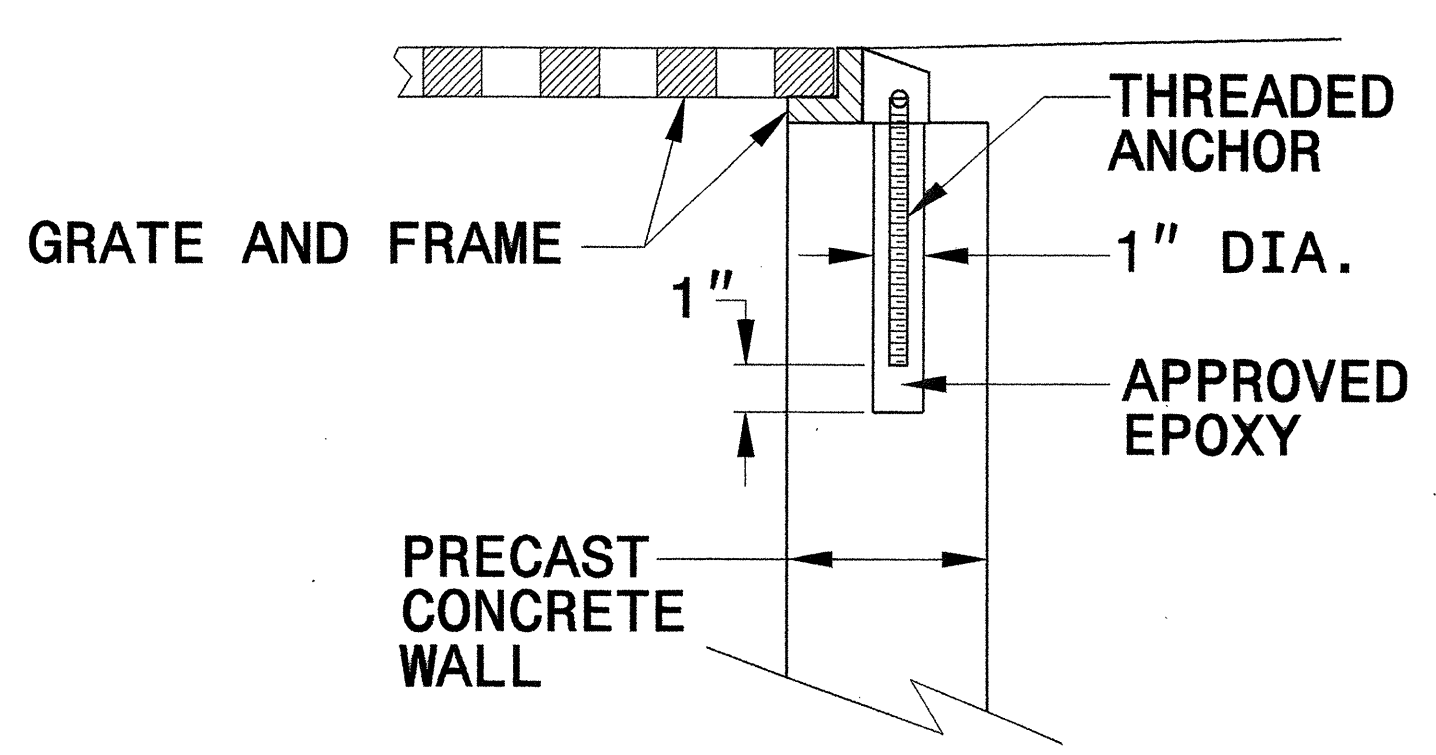
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



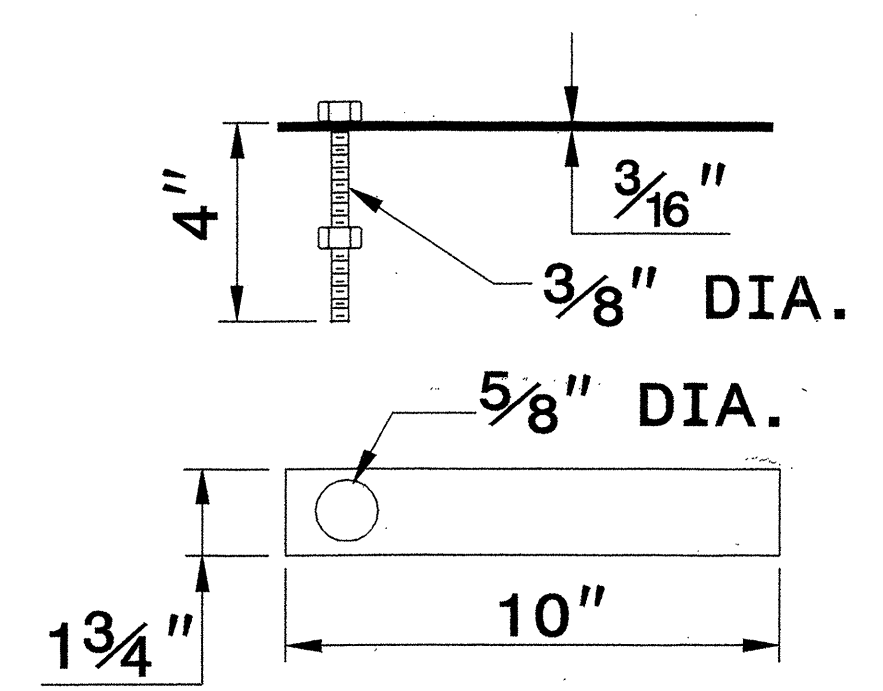
CONCRETE CONSTRUCTION



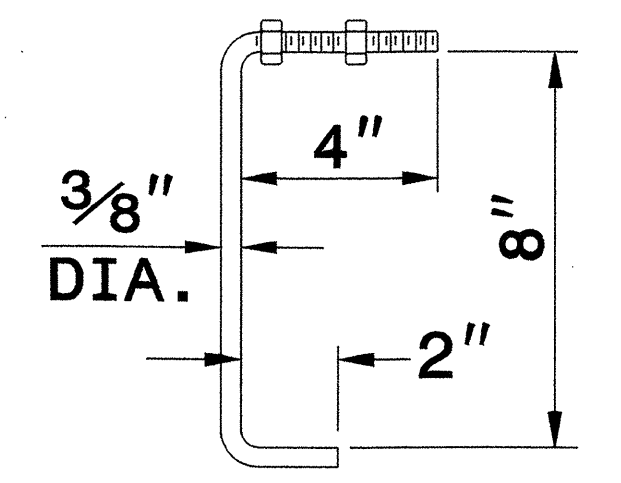
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

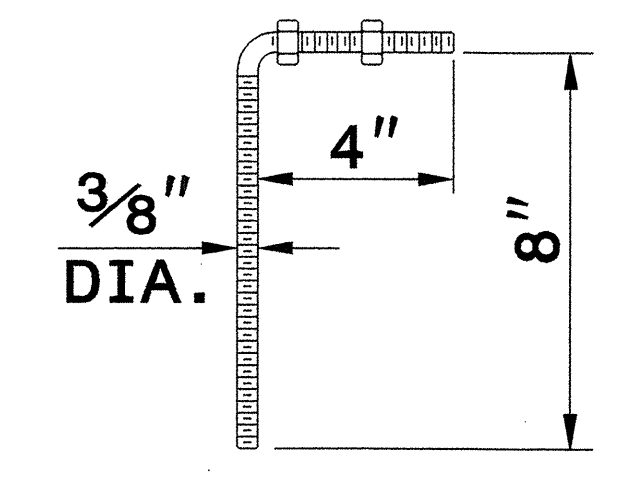
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



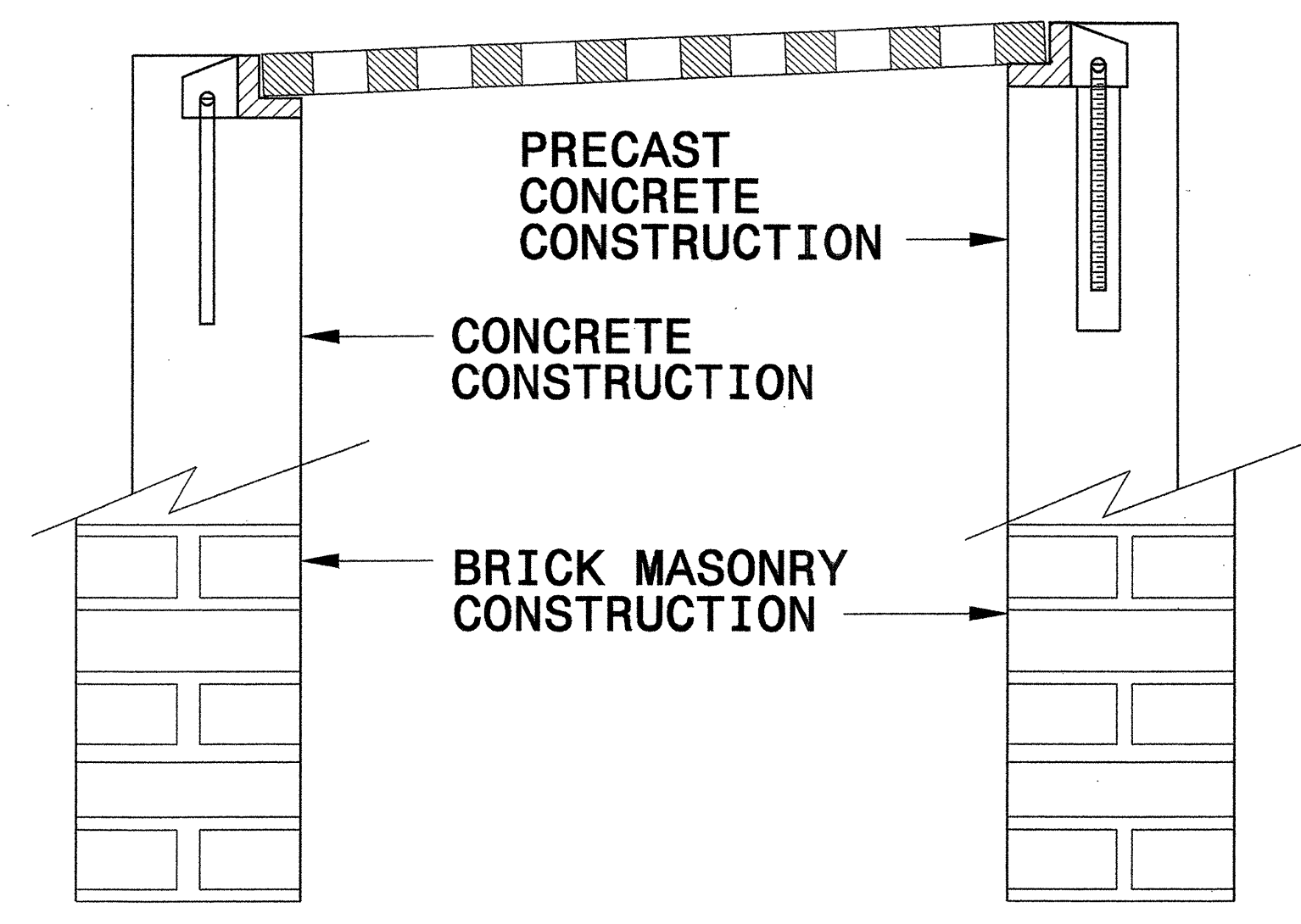
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR

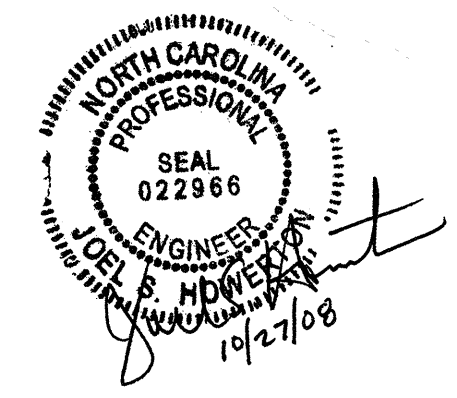


PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

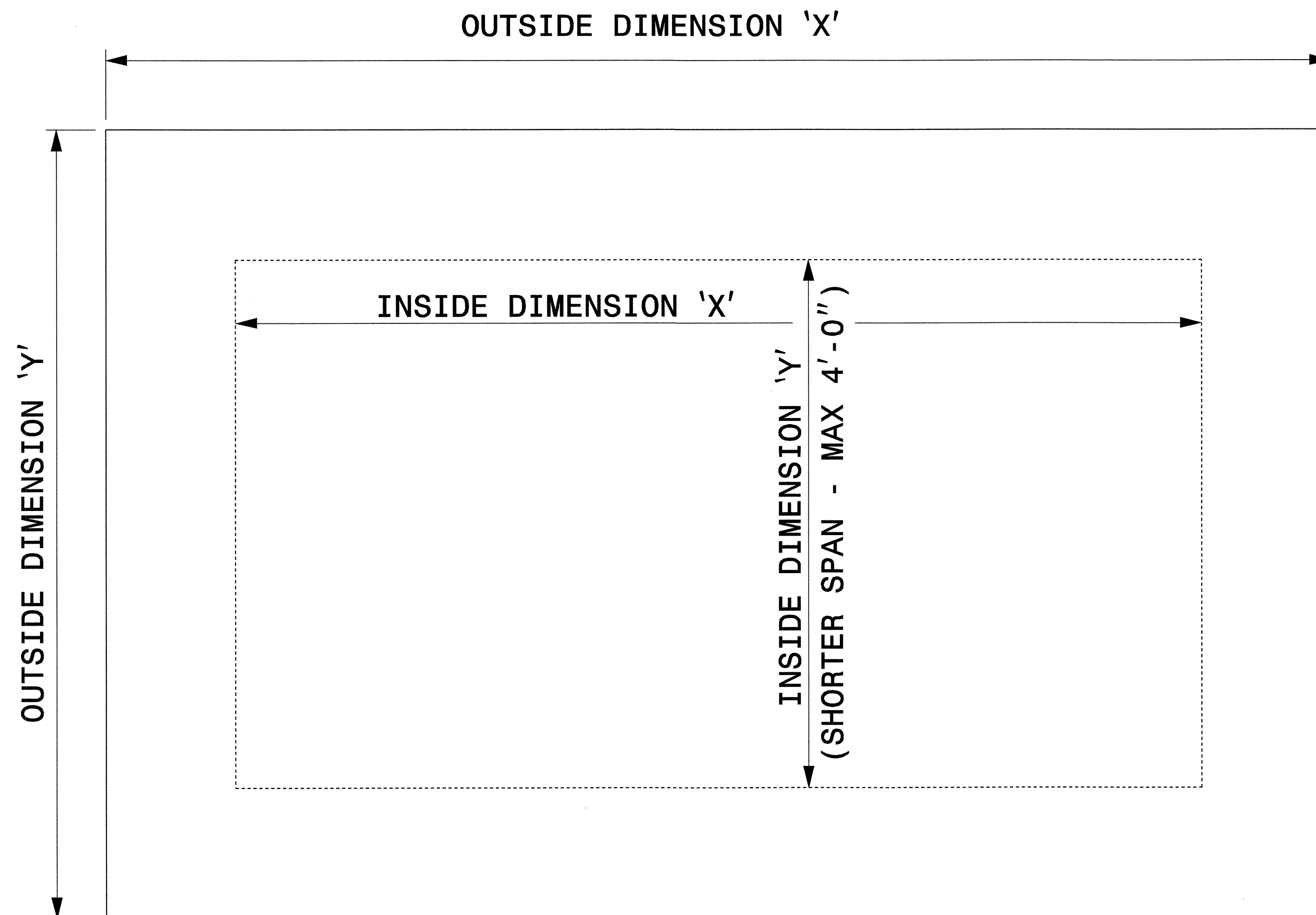
PLATE 840D25



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

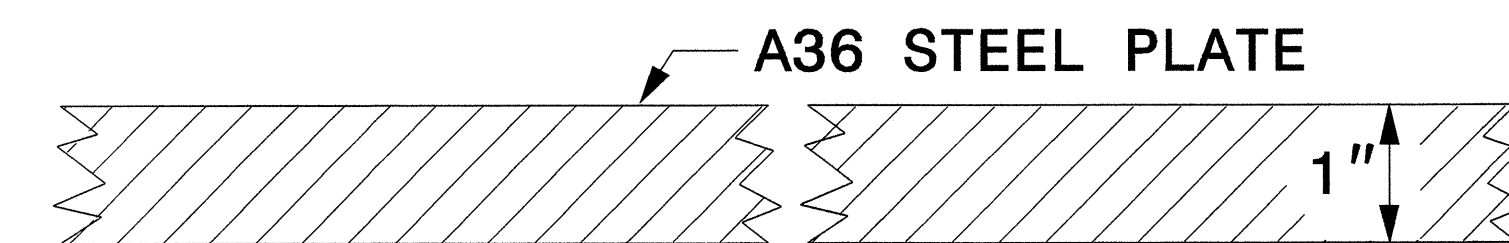
SEE PLATE FOR TITLE

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



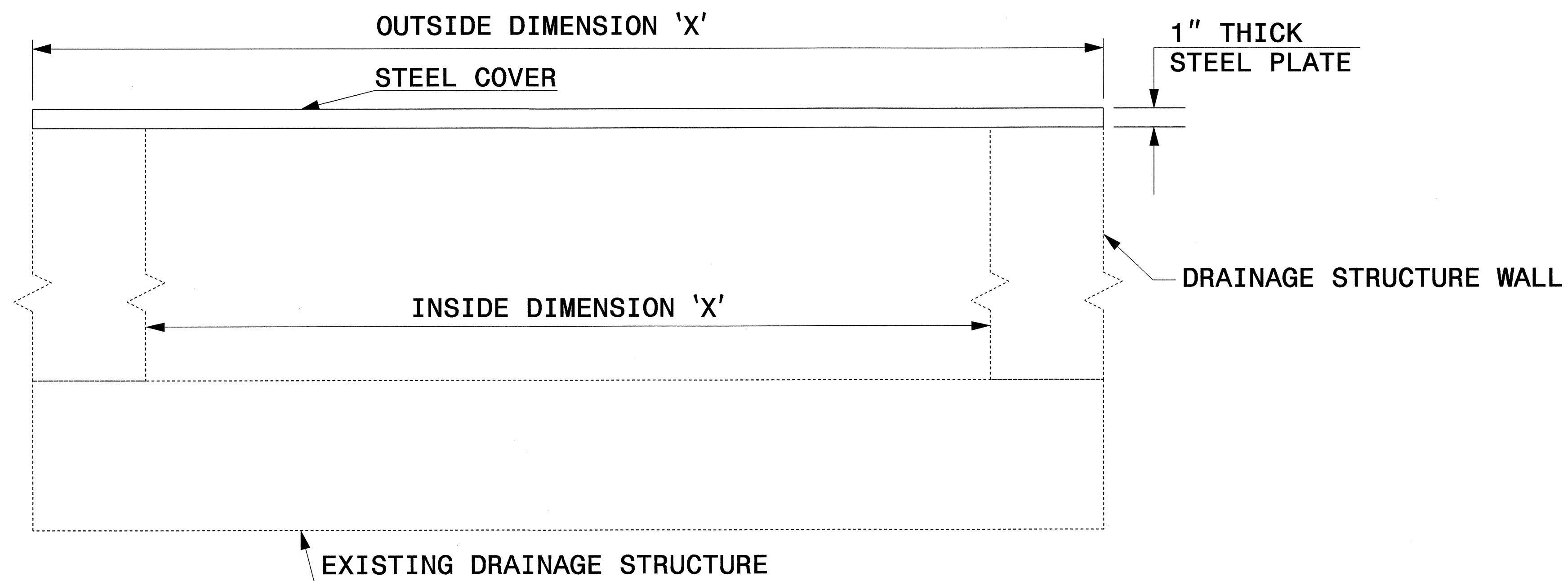
GENERAL NOTES:

- USE GRADE A36 STEEL
- STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- QUANTITIES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.

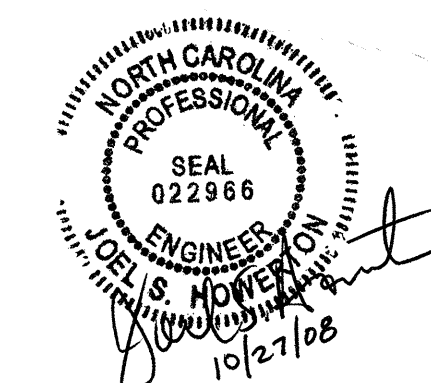


SECTION VIEW OF STEEL TOP PLATE

PLAN VIEWS



ELEVATION VIEWS



PROJECT SERVICES UNIT STANDARDS AND SPECIAL DESIGN	
Office 919-250-4128	FAX 919-250-4119
DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE	
ORIGINAL BY: E.E. WARD	DATE: 2-2-98
MODIFIED BY: <i>[Signature]</i>	DATE: <i>[Signature]</i>
CHECKED BY: <i>[Signature]</i>	DATE: 10/7/08
FILE SPEC.: c:\usr\details\metric\stand\stlcvr2.dgn	

\$\$\$\$\$
 SYSTEM\$\$\$\$\$
 Y\$\$\$\$\$
 DGN\$\$\$\$\$
 USER NAME\$\$\$\$\$
 \$\$\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202023

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	50	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
008000000-E	SP	50	TON	CLASS IV SUBGRADE STABILIZATION
010600000-E	230	2,150	CY	BORROW EXCAVATION
013400000-E	240	100	CY	DRAINAGE DITCH EXCAVATION
019500000-E	265	50	CY	SELECT GRANULAR MATERIAL
019600000-E	270	50	SY	FABRIC FOR SOIL STABILIZATION
031800000-E	300	60	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
037200000-E	310	92	LF	18" RC PIPE CULVERTS, CLASS III
070600000-E	310	112	LF	12" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
070800000-E	310	28	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
071400000-E	310	120	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
080500000-E	310	2	EA	12" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
099500000-E	340	417	LF	PIPE REMOVAL
112100000-E	520	85	TON	AGGREGATE BASE COURSE
122000000-E	545	50	TON	INCIDENTAL STONE BASE
148900000-E	610	490	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	290	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
156000000-E	620	40	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
169300000-E	654	15	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
200000000-N	806	21	EA	RIGHT OF WAY MARKERS
202200000-E	815	44.8	CY	SUBDRAIN EXCAVATION

ItemNumber	Sec #	Quantity	Unit	Description
203300000-E	815	33.6	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
219000000-N	828	2	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
228600000-N	840	12	EA	MASONRY DRAINAGE STRUCTURES
236600000-N	840	5	EA	FRAME WITH TWO GRATES, STD 840.24
236700000-N	840	6	EA	FRAME WITH TWO GRATES, STD 840.29
239600000-N	840	1	EA	FRAME WITH COVER, STD 840.54
255600000-E	846	210	LF	SHOULDER BERM GUTTER
257700000-E	846	365	LF	CONCRETE EXPRESSWAY GUTTER
303000000-E	862	287.5	LF	STEEL BM GUARDRAIL
304500000-E	862	50	LF	STEEL BM GUARDRAIL, SHOP CURVED
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
319500000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
327000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
364900000-E	876	30	TON	RIP RAP, CLASS B
365600000-E	876	470	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	443	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	132	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	18	EA	DRUMS
444500000-E	1145	96	LF	BARRICADES (TYPE III)
451600000-N	1180	18	EA	SKINNY DRUM
481000000-E	1205	5,280	LF	PAINT PAVEMENT MARKING LINES (4")

ItemNumber	Sec #	Quantity	Unit	Description
600000000-E	1605	1,050	LF	TEMPORARY SILT FENCE
600600000-E	1610	180	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	85	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	160	TON	SEDIMENT CONTROL STONE
601500000-E	1615	1.5	ACR	TEMPORARY MULCHING
601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	55	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	1	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	410	LF	SAFETY FENCE
603000000-E	1630	250	CY	SILT EXCAVATION
603600000-E	1631	1,900	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	20	SY	COIR FIBER MAT
603800000-E	SP	55	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	255	LF	1/4" HARDWARE CLOTH
607000000-N	SP	4	EA	SPECIAL STILLING BASINS
6071030000-E	SP	75	LF	COIR FIBER BAFFLES
6071050000-E	SP	3	EA	*** SKIMMER (1-1/2")
608400000-E	1660	8	ACR	SEEDING & MULCHING
608700000-E	1660	1	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	0.75	TON	FERTILIZER TOPDRESSING
611100000-E	SP	260	LF	IMPERVIOUS DIKE
611400000-N	SP	5	HR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL

***** BEGIN SCHEDULE AA *****				
***** (3 ALTERNATES) *****				
036000000-E	310	64	LF	12" RC PIPE CULVERTS, CLASS III
AA1				
036600000-E	310	148	LF	15" RC PIPE CULVERTS, CLASS III
AA1				
*** OR ***				
036000000-E	310	56	LF	12" RC PIPE CULVERTS, CLASS III
AA2				
054000000-E	SP	8	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (12", 0.064")
AA2				
054000000-E	SP	148	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (15", 0.064")
AA2				
*** OR ***				
036000000-E	310	56	LF	12" RC PIPE CULVERTS, CLASS III
AA3				
053600000-E	SP	8	LF	**** HDPE PIPE CULVERTS (12")
AA3				
053600000-E	SP	148	LF	**** HDPE PIPE CULVERTS (15")
AA3				
***** END SCHEDULE AA *****				

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STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

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

GUARDRAIL SUMMARY

BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM EOL (Feet)	SHOULDER WIDTH (Feet)	FLARE LENGTH		W		ANCHORS		REMARKS
			STRAIGHT (Feet)	SHOP CURVED (Feet)	DBL. FACED (Feet)	APPROACH END	TRAILING END			APPROACH END (Ft.)	TRAILING END (Ft.)	APPROACH END (Ft.)	TRAILING END (Ft.)	GRAU-350	AT-1	
-L- 16+15.50	-L- 19+53.00	LT.	337.50 Ft.			18+78.00	16+90.50	5	8	50	50	1	1	2		
-L- 18+62.00	-L- 19+62.00	RT.	100.00 Ft.	50.00 Ft.		18+62.00	18+87.00	5	8		50		1	1	1	
SUBTOTAL			437.50 Ft.	50.00 Ft.										3	1	
LESS ANCHOR DEDUCTIONS																
GRAU-350 3 @ 50.00 Ft.			150.00 Ft.													
AT-1 1 @ 6.25 Ft.			6.25 Ft.													
SUBTOTAL			-156.25 Ft.													
PROJECT TOTAL			281.25 Ft.	50.00 Ft.												
SAY			287.50 Ft.	50.00 Ft.												
ADDITIONAL GUARDRAIL POSTS			5 EA.													

SUMMARY OF EARTHWORK
 IN CUBIC YARDS

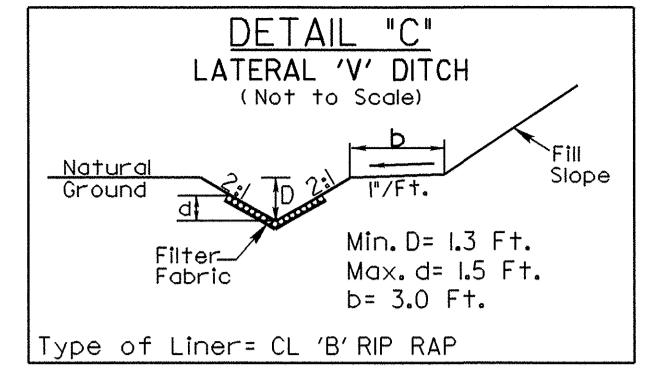
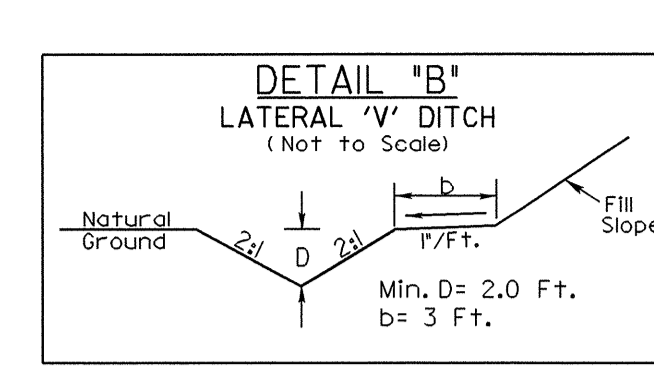
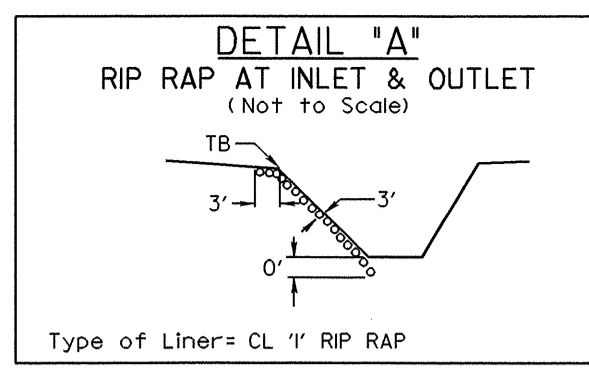
STATION TO STATION	UNCLASSIFIED EXCAVATION	EMBANKMENT + %	BORROW	WASTE
-L- STA. 15+90.00 TO -L- STA. 18+50.00	431	1,807	1,376	0
SUBTOTAL 1	431	1,807	1,376	0
-L- STA. 18+50.00 TO -L- STA. 23+10.00	57	2,476	2,419	0
SUBTOTAL 2	57	2,476	2,419	0
PROJECT SUBTOTAL	488	4,283	3,795	0
LOSS OF UNCLASSIFIED EXCAVATION DUE TO CLEARING & GRUBBING	-100		100	
EST. ADJUSTMENT FOR 100'x42'x10.5' CROWN SPAN		-1,878	-1,878	
PROJECT TOTAL	388	2,405	2,017	0
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT			101	
GRAND TOTAL	388		2,118	0
SAY	450 CY		2,150 CY	

EST. UNDERCUT EXCAVATION = 50 CY
 EST. DDE = 100 CY
 PAVEMENT STRUCTURE VOLUME = 50 CY

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

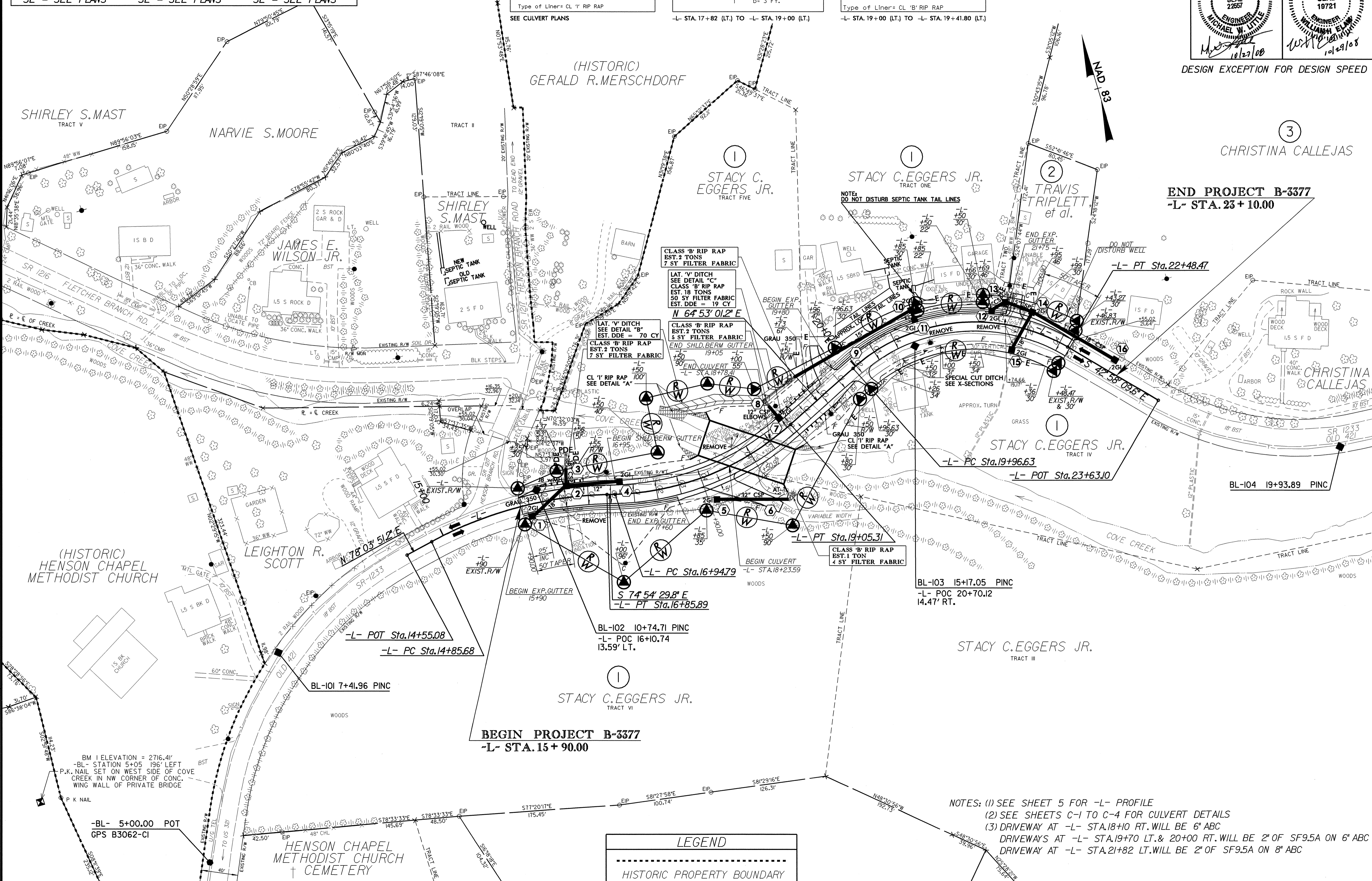
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

-L-		
PI Sta 15+87.68 Δ = 27° 01' 39.0" (RT) D = 13' 30' 00.0" L = 200.20' T = 102.00' R = 424.41' SE = SEE PLANS	PI Sta 18+04.59 Δ = 40° 12' 29.0" (LT) D = 19' 05' 54.9" L = 210.53' T = 109.81' R = 300.00' SE = SEE PLANS	PI Sta 21+42.33 Δ = 72° 08' 49.2" (RT) D = 28' 38' 52.4" L = 251.84' T = 145.70' R = 200.00' SE = SEE PLANS



PROJECT REFERENCE NO. B-3377	SHEET NO. 4
ROADWAY DESIGN RW SHEET NO.	HYDRAULICS ENGINEER
DESIGN EXCEPTION FOR DESIGN SPEED	

REVISIONS



BM 1 ELEVATION = 2716.41'
-BL- STATION 5+05 196' LEFT
P.K. NAIL SET ON WEST SIDE OF COVE
CREEK IN NW CORNER OF CONC.
WING WALL OF PRIVATE BRIDGE

-BL- 5+00.00 POT
GPS B3062-CI

LEGEND

--- HISTORIC PROPERTY BOUNDARY

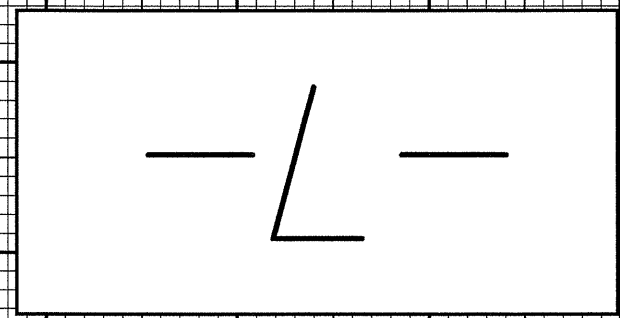
NOTES: (1) SEE SHEET 5 FOR -L- PROFILE
(2) SEE SHEETS C-1 TO C-4 FOR CULVERT DETAILS
(3) DRIVEWAY AT -L- STA.18+10 RT. WILL BE 6" ABC
DRIVEWAYS AT -L- STA.19+70 LT. & 20+00 RT. WILL BE 2" OF SF9.5A ON 6" ABC
DRIVEWAY AT -L- STA.21+82 LT. WILL BE 2" OF SF9.5A ON 8" ABC

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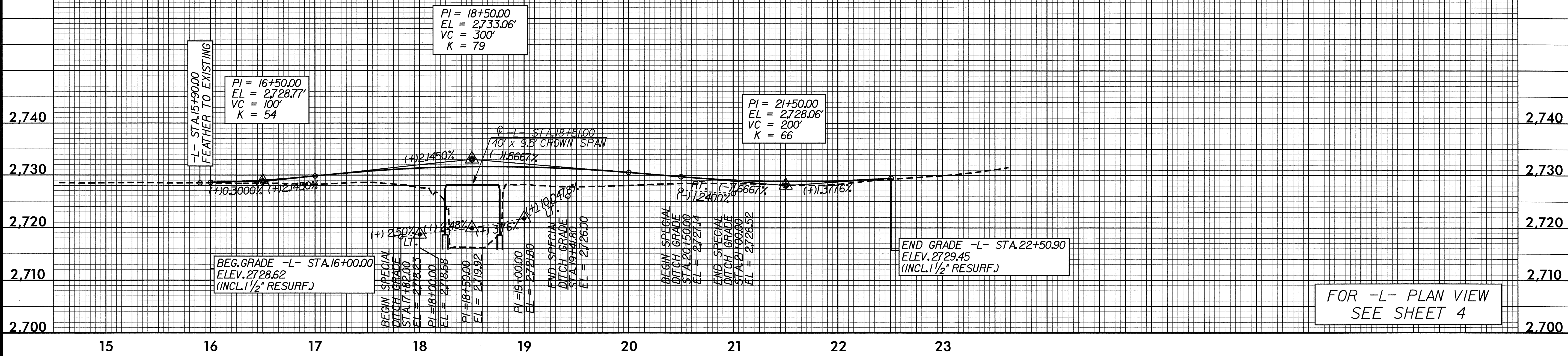
BENCHMARK LIST:
 BM *1 - P.K. NAIL SET ON WEST SIDE OF COVE CREEK IN THE NORTHWEST CORNER OF CONC. WING WALL OF A PRIVATE BRIDGE
 ELEV. = 2716.41
 -BL- STA. 5+05 (196' LT.)
 BM *3 - 8" SPIKE IN BASE OF 28" MAPLE TREE ON NORTH BANK OF COVE CREEK.
 ELEV. = 2729.86'
 -BL- STA. 23+30 (159' RT.)

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	3100	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2725.5	FT
BASE DISCHARGE	=	4600	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2728.3	FT
OVERTOPPING DISCHARGE	=	5100	CFS
OVERTOPPING FREQUENCY	=	100+	YRS
OVERTOPPING ELEVATION	=	2731.0	FT



DESIGN EXCEPTION FOR DESIGN SPEED



FOR -L- PLAN VIEW
SEE SHEET 4

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