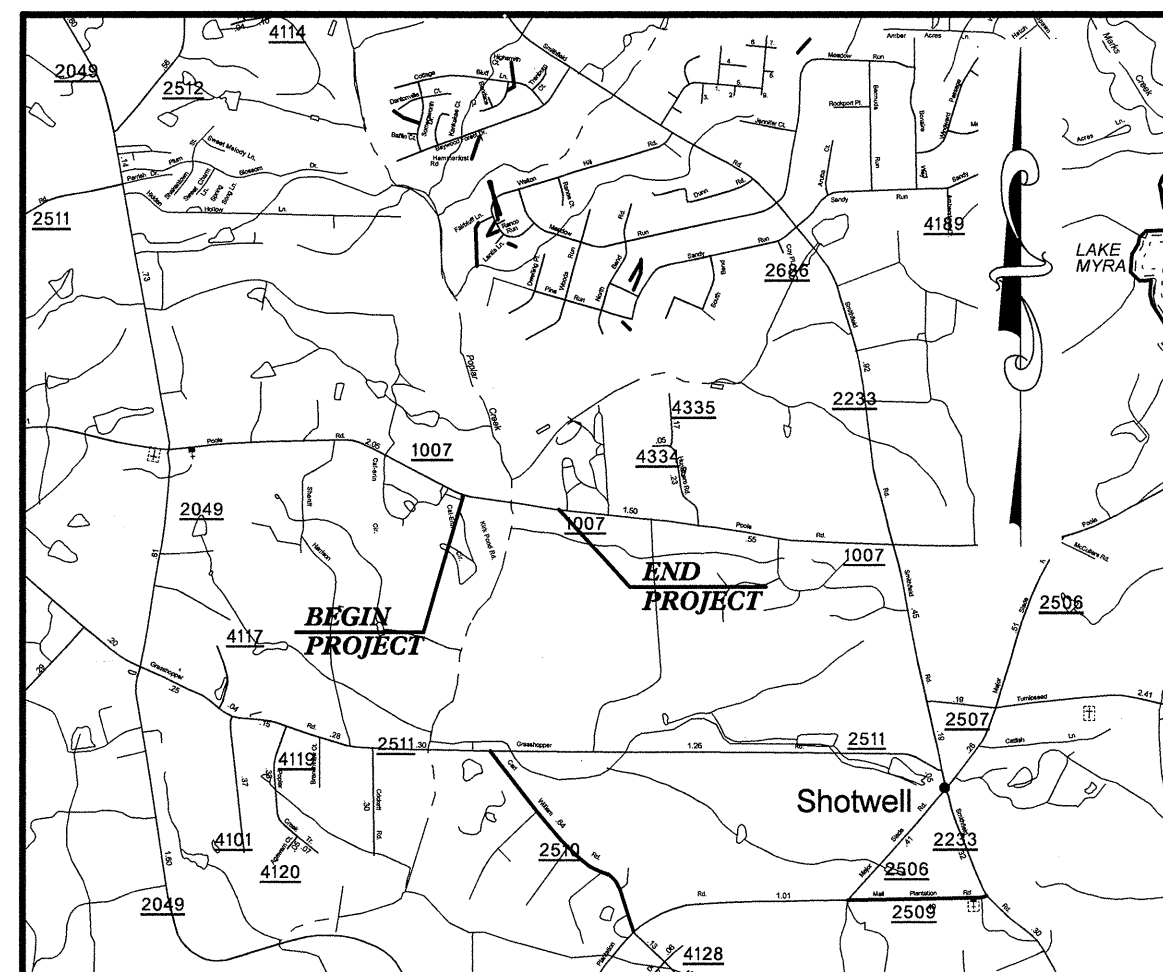


See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP
(NOT TO SCALE)

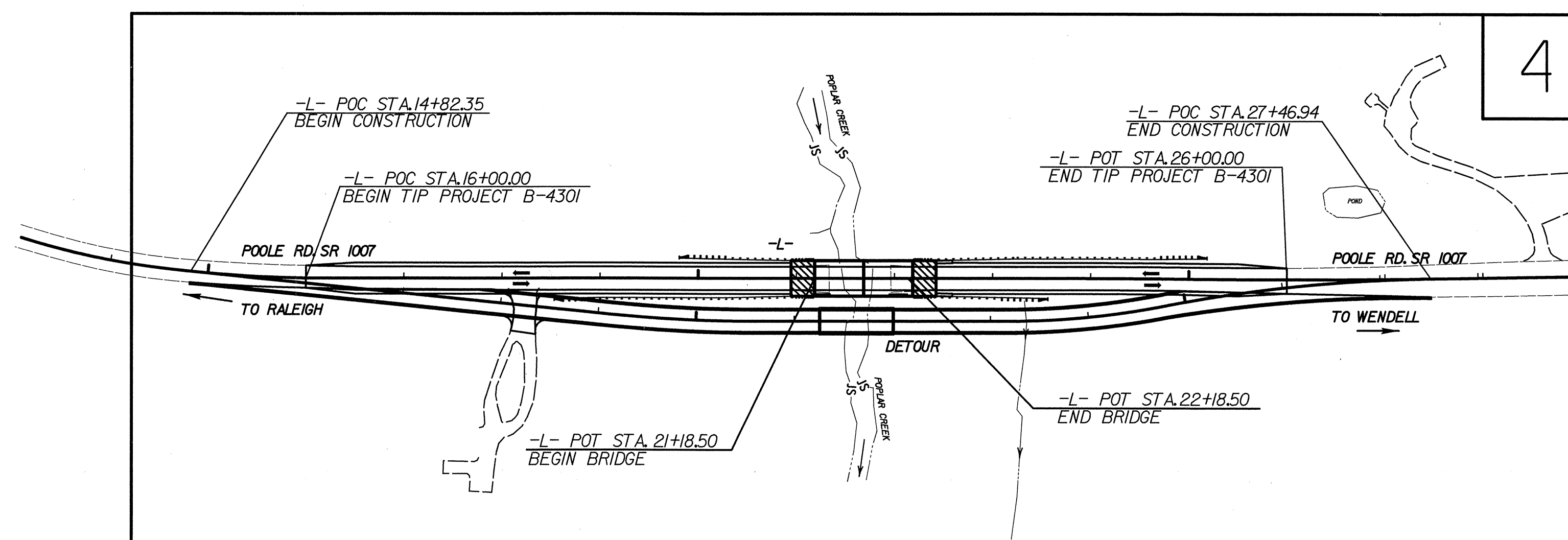
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: BRIDGE NO. 229 OVER POPLAR CREEK ON SR 1007

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4301	1	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
33638.1.1	BRSTP-1007(9)	P.E.	
33638.2.1	BRSTP-1007(9)	RW, UTIL	
33638.3.1	BRSTP-1007(9)	CONST.	

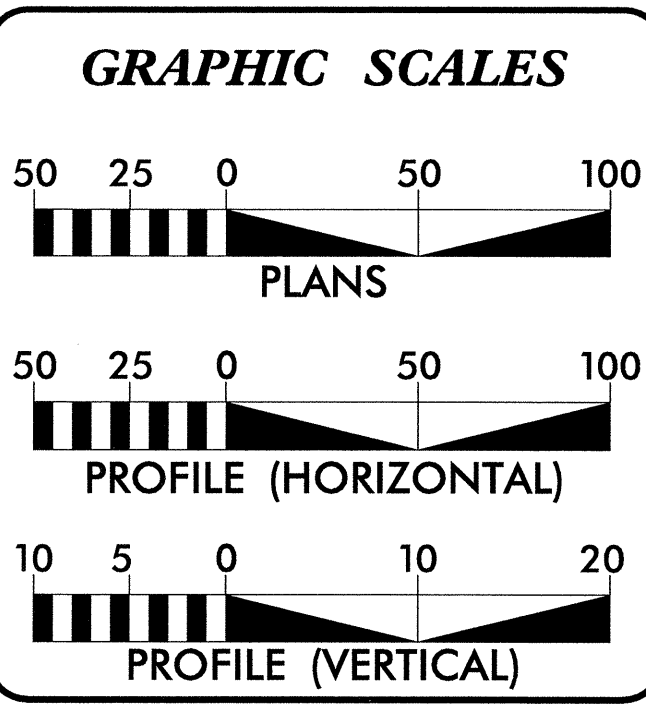


TIP: B-4301

CONTRACT: C201830

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

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



DESIGN DATA

ADT 2008 =	5,804
ADT 2030 =	13,800
DHV =	10 %
D =	75 %
T =	4 % *
V =	60 MPH
FUNCTION. =	RURAL MAJOR COLLECTOR
CLASS.	
* (TTST 1% +	DUALS 3%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4301 =	0.170 MI
LENGTH STRUCTURE TIP PROJECT B-4301 =	0.019 MI
TOTAL LENGTH TIP PROJECT B-4301 =	0.189 MI

Prepared In the Office of:
MULKEY ENGINEERS & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION
2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 18, 2007	TIM S. HAYES, PE PROJECT ENGINEER
LETTING DATE: JULY 15, 2008	JOHNNY R. BANKS PROJECT MANAGER

HYDRAULICS ENGINEER

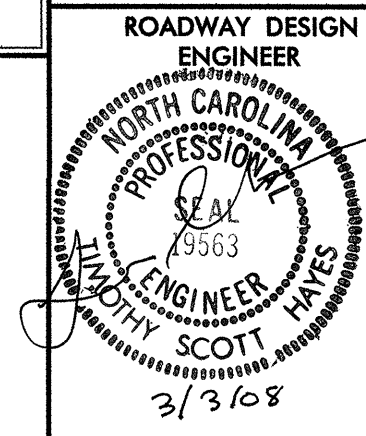
SIGNATURE: *Tim S. Hayes* 3-3-08 P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: *Johnny R. Banks* 2/3/08 P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

St. Amilla
STATE HIGHWAY DESIGN ENGINEER



Index of Sheets, General Notes, and List of Standards

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

INDEX OF SHEETS:

Sheet #	Description
1	Title Sheet
1-A	Index of Sheets, General Notes, and List of Standards
1-B	Conventional Symbols
1-C	Survey Control Sheet
2	Pavement Schedule, Wedging Detail, and Typical Sections
2-A thru 2-B	Typical Sections
2-C	Detour
2-D	Anchorage for Frames
3	Summary of Quantities
3-A	List of Pipe, Endwalls, Etc. (For Pipes 48" & Under)
3-B	Guardrail Summary, Temporary Guardrail Summary, Summary of Pavement Removal
3-C	Summary of Earthwork in Cubic Yards
4	Plan and Profile
TCP-1 thru TCP-7	Traffic Control Plans
EC-1 thru EC-6	Erosion Control Plans
RF1	Reforestation Detail Sheet
SIGN1- SIGN3	Signing Plans
UO-1 thru UO-2	Utilities By Others Plans
EW-Volume-1	Cross-Section Summary Sheet
X-1 thru X-9	Cross-Sections
S-1 thru S-21	Structure Plans

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED 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:

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.

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Progress Energy, Time Warner, AT&T
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'
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
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
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & 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
815.03	Pipe Underdrain and Blind Drain

REVISIONS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

 PO BOX 33127 RALEIGH, N.C. 27636 919 881-9112 FAX WWW.MULKEYINC.COM	PROJECT REFERENCE NO.	SHEET NO.
	B-4301	I-B
	RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○ EIP
Property Corner	_____
Property Monument	□ ECM
Parcel/Sequence Number	②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○ W
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	_____

HYDROLOGY:

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

RAILROADS:

Standard Gauge	_____
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	_____
RR Dismantled	_____

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	_____
Woods Line	_____
Orchard	_____
Vineyard	□ Vineyard

EXISTING STRUCTURES:

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

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	-P-
Designated U/G Power Line (S.U.E.*)	-P-

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	-T-
Designated U/G Telephone Cable (S.U.E.*)	-T-
Recorded U/G Telephone Conduit	-TC-
Designated U/G Telephone Conduit (S.U.E.*)	-TC-
Recorded U/G Fiber Optics Cable	-T FO-
Designated U/G Fiber Optics Cable (S.U.E.*)	-T FO-

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

REVISIONS

10/25/05

4:54:45 PM R:\Roadway\Pro\104301\rdy_1.fgh.dgn

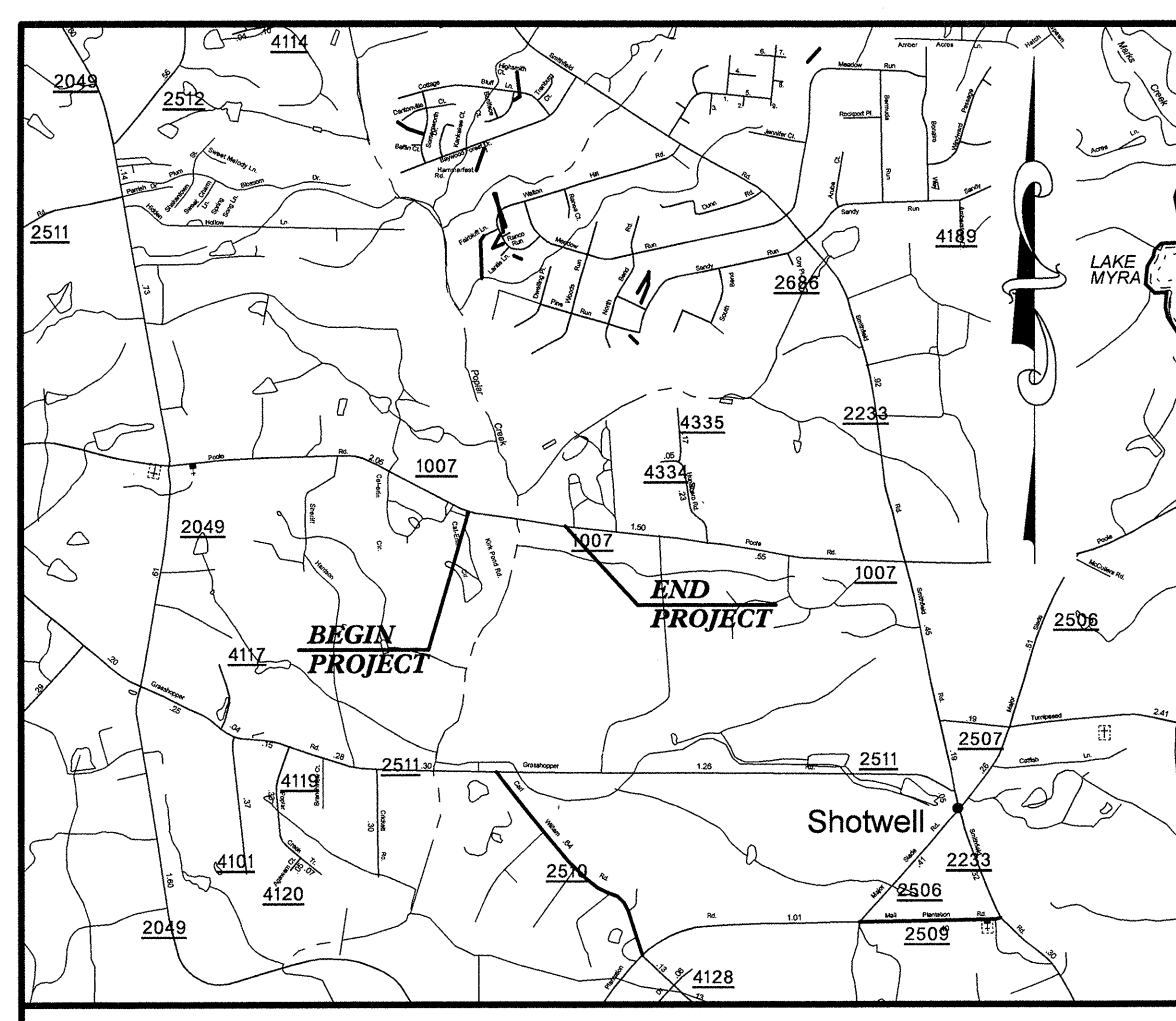
2/27/2008

SURVEY CONTROL SHEET B-4301

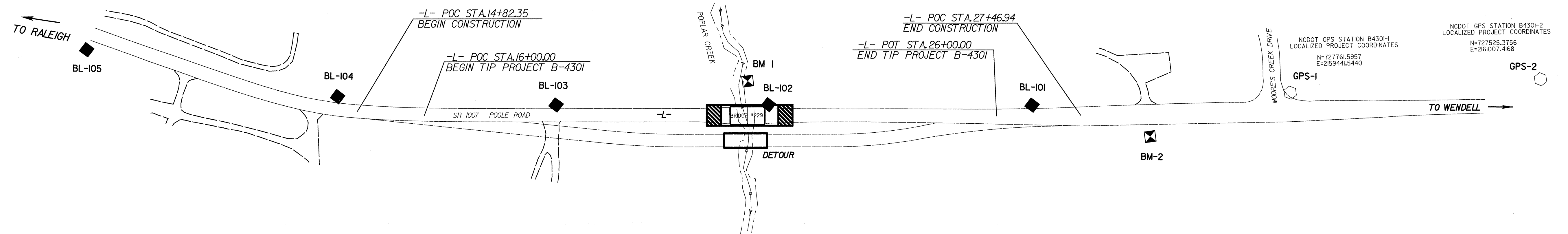
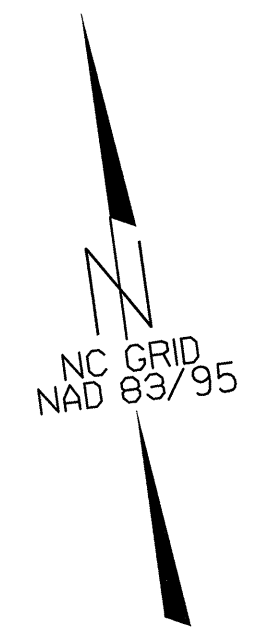
WAKE COUNTY

LOCATION: BRIDGE NO. 229 OVER POPLAR CREEK ON SR 1007

B-4301



VICINITY MAP
(NOT TO SCALE)



BASELINE POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
105	BL-105	728123.8675	2157367.9021	224.13		OUTSIDE PROJECT LIMITS
104	BL-104	727983.1020	2157790.9152	204.06	14+44.34	22.05 LT
103	BL-103	727915.7629	2158167.4716	187.38	18+29.94	17.98 LT
102	BL-102	727865.6295	2158534.8894	184.10	22+00.76	18.55 LT
101	BL-101	727801.3337	2158991.7277	183.70	26+62.20	18.33 LT
1	B4301-1	727761.5957	2159441.5440	193.81		OUTSIDE PROJECT LIMITS

BENCHMARK DATA	
BM1	ELEVATION - 183.32
N 727911	E 2158506
L STATION	21+66 59 LEFT
RR SPIKE	IN 46' POPLAR
BM2	ELEVATION - 187.74
N 727717	E 2159190
L STATION	28+70 40 RIGHT
RR SPIKE	IN 32' POPLAR

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4301-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 727761.596(ft) EASTING: 2159441.544(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990492 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4301-1" TO L- STATION 14+82.35 IS N 83°17'05" W 1630.86' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCTION/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruction/highway/location/project/)
THE FILES TO BE FOUND ARE AS FOLLOWS:
B4301_la_control_061017.txt

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

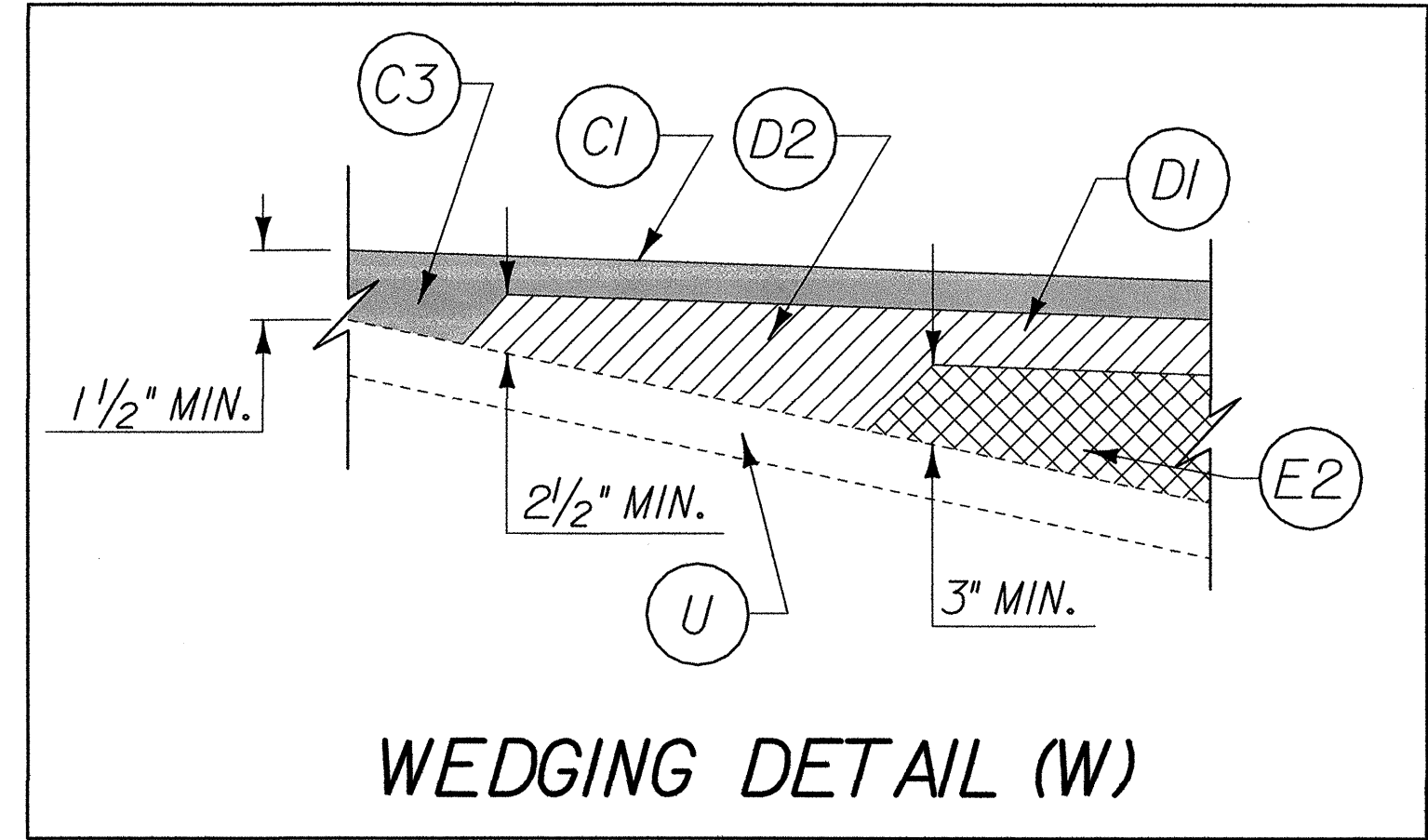
○ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE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

NOTE: DRAWING NOT TO SCALE

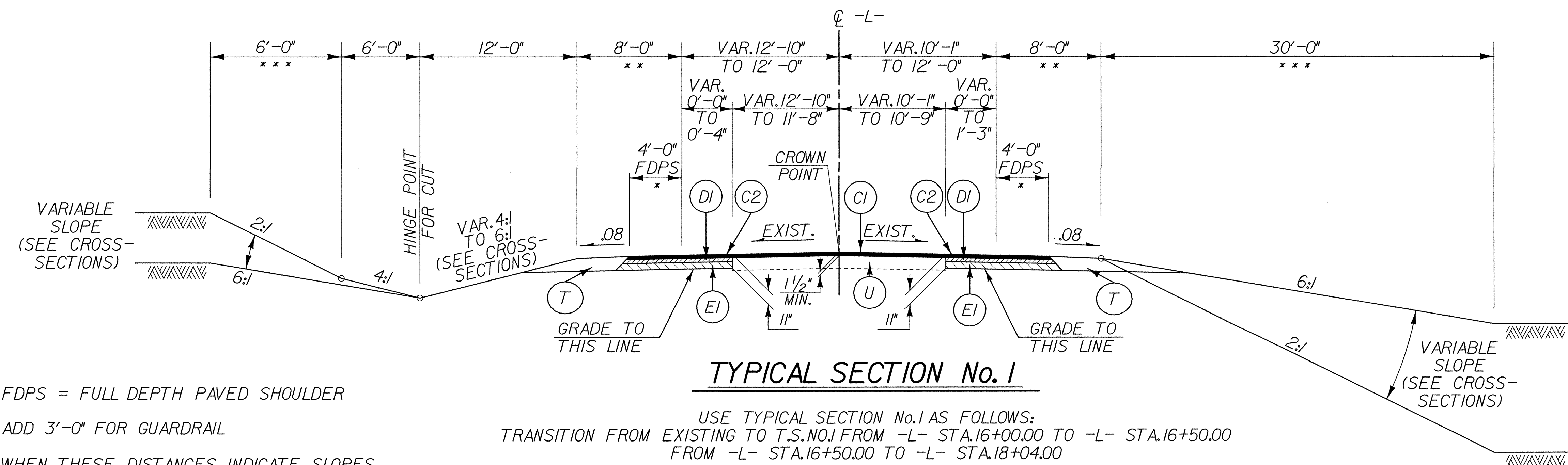
10/16/07
I:\3\2008 US ARMY\sect\2005\434\00 (B-4301)\Roadway\Proj\B4301_1c_061017.dgn

PAVEMENT SCHEDULE

C1	PROPOSED APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C3	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" OR GREATER THAN 2" IN DEPTH.
D1	PROPOSED APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD
D2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROXIMATE 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD.
E2	PROPOSED VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5 1/2" IN DEPTH.
J1	8" AGGREGATE BASE COURSE
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL



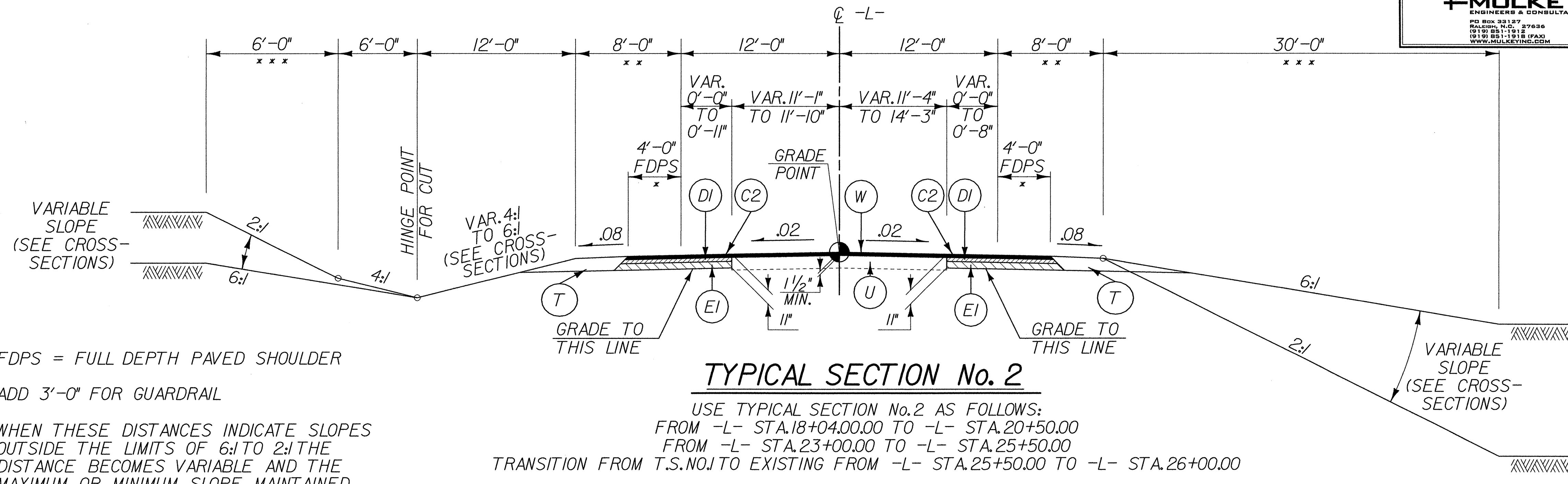
NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



- * FDPS = FULL DEPTH PAVED SHOULDER
- ** ADD 3'-0" FOR GUARDRAIL
- *** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 2:1 THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM OR MINIMUM SLOPE MAINTAINED.

USE TYPICAL SECTION No. 1 AS FOLLOWS:
TRANSITION FROM EXISTING TO T.S. NO. 1 FROM -L- STA. 16+00.00 TO -L- STA. 16+50.00
FROM -L- STA. 16+50.00 TO -L- STA. 18+04.00

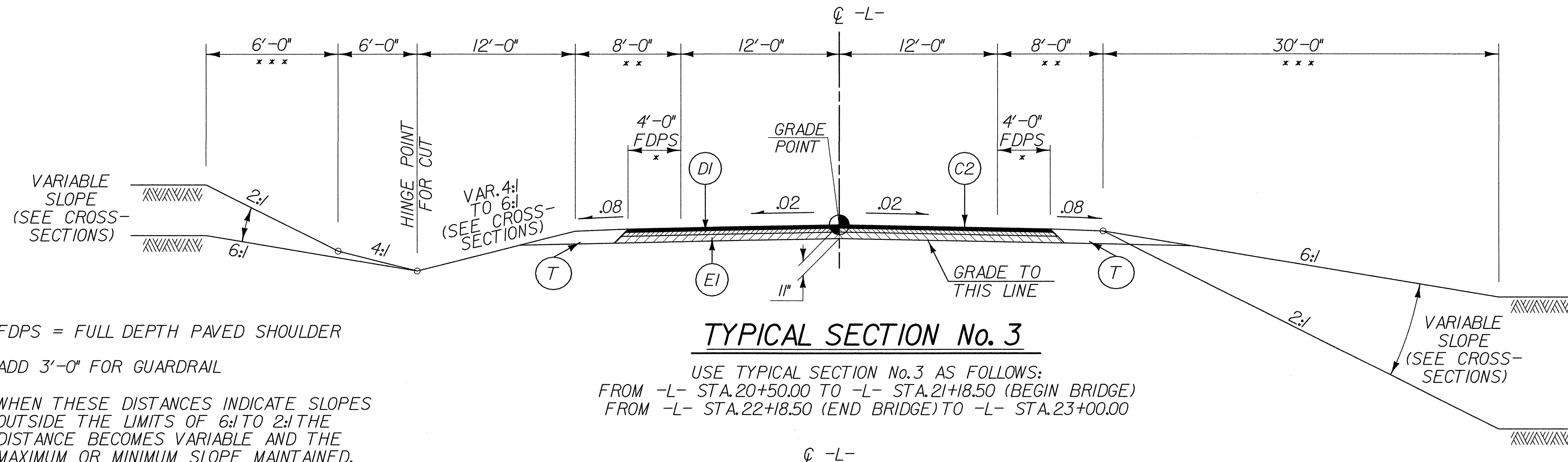
REVISIONS



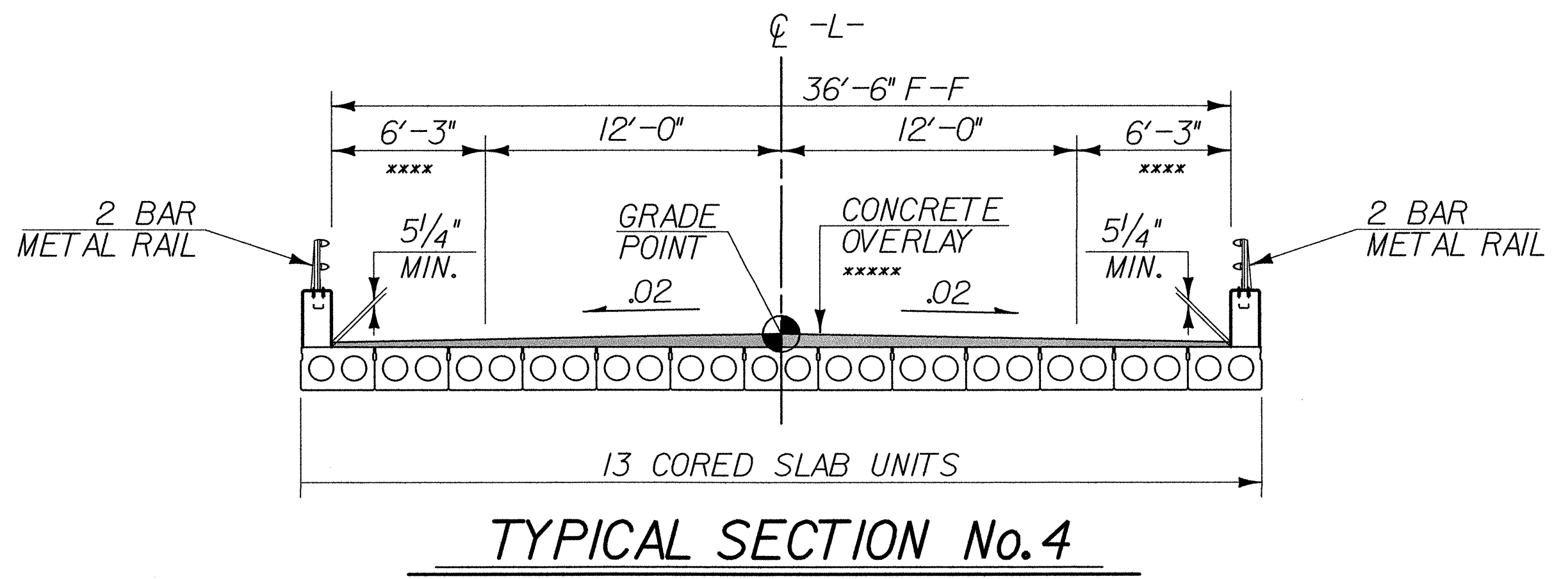
- * FDPS = FULL DEPTH PAVED SHOULDER
- ** ADD 3'-0" FOR GUARDRAIL
- *** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 2:1 THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM OR MINIMUM SLOPE MAINTAINED.

C1	1/2" S9.5B
C2	3" S9.5B
C3	VAR. DEPTH S9.5B
D1	3" 119.0B
D2	VAR. DEPTH 119.0B
E1	5" B25.0B
E2	VAR. DEPTH B25.0B
J1	8" ABC
P	PRIME COAT
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

NOTE:
1. SEE SHEET 2 FOR DETAILED DESCRIPTION OF PAVEMENT SCHEDULE
2. ALL PAVEMENT EDGES ARE 1:1 UNLESS OTHERWISE NOTED

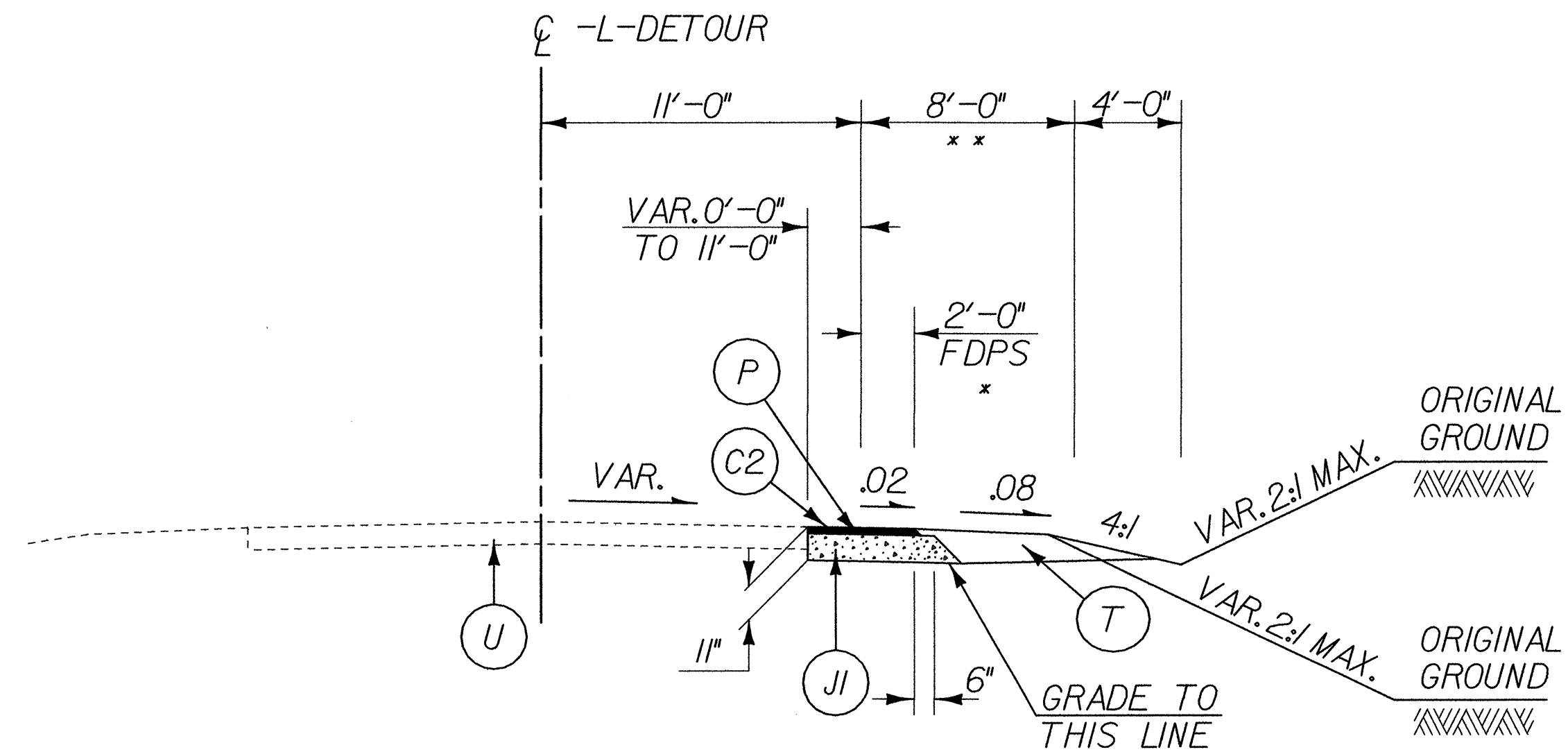


- * FDPS = FULL DEPTH PAVED SHOULDER
- ** ADD 3'-0" FOR GUARDRAIL
- *** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 2:1 THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM OR MINIMUM SLOPE MAINTAINED.



**** OFFSET INCREASED TO 6'-3" TO ACCOUNT FOR HYDRAULIC SPREAD
**** STRUCTURE PAY ITEM

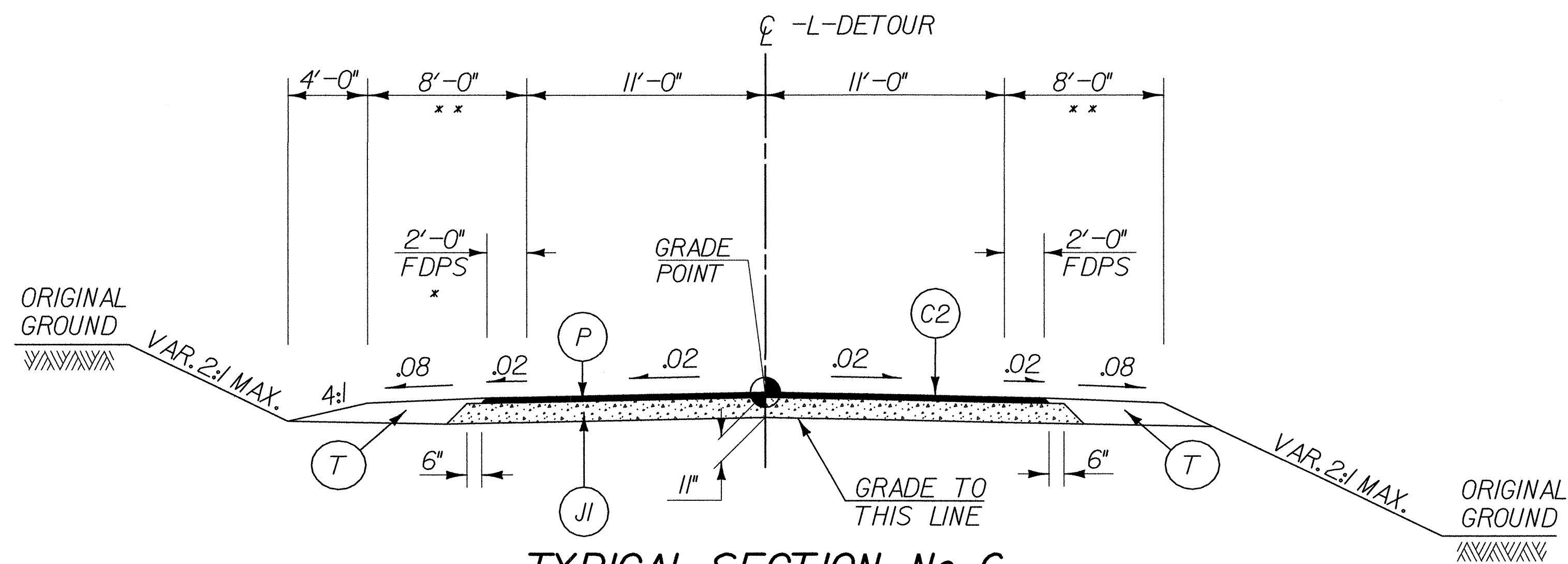
REVISIONS



TYPICAL SECTION No. 5

USE TYPICAL SECTION No.5 AS FOLLOWS:
FROM DETOUR STA.14+82.35 TO DETOUR STA.16+57.00
FROM DETOUR STA.25+63.68 TO DETOUR STA.27+52.00

- * FDPS = FULL DEPTH PAVED SHOULDER
- ** ADD 2'-0" FOR GUARDRAIL



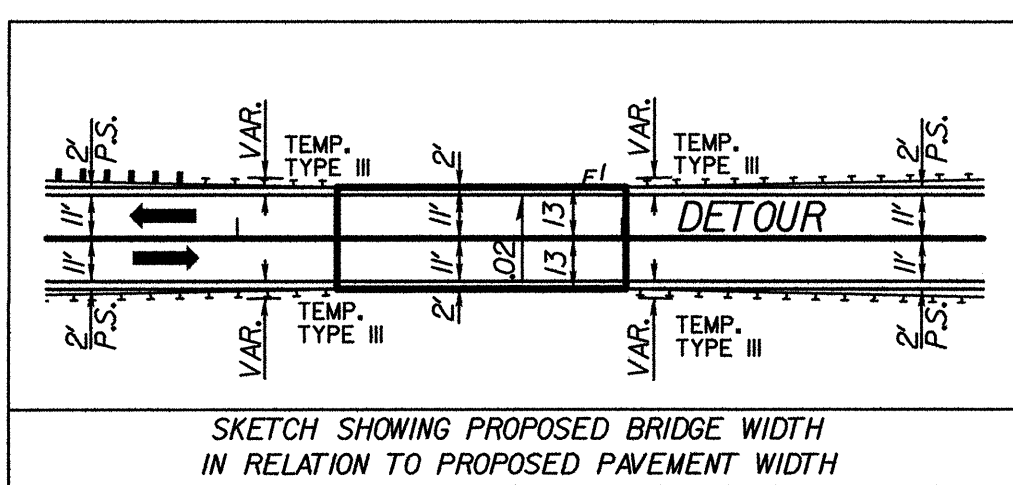
TYPICAL SECTION No. 6

USE TYPICAL SECTION No.6 AS FOLLOWS:
FROM DETOUR STA.16+57.00 TO DETOUR STA.21+26.00 (BEGIN BRIDGE)
FROM DETOUR STA.22+01.00 (END BRIDGE) TO DETOUR STA.25+63.68

C1	1/2" S9.5B
C2	3" S9.5B
C3	VAR. DEPTH S9.5B
D1	3" 119.0B
D2	VAR. DEPTH 119.0B
E1	5" B25.0B
E2	VAR. DEPTH B25.0B
J1	8" ABC
P	PRIME COAT
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

NOTE:
1. SEE SHEET 2 FOR DETAILED DESCRIPTION OF PAVEMENT SCHEDULE
2. ALL PAVEMENT EDGES ARE 1:1 UNLESS OTHERWISE NOTED

REVISIONS

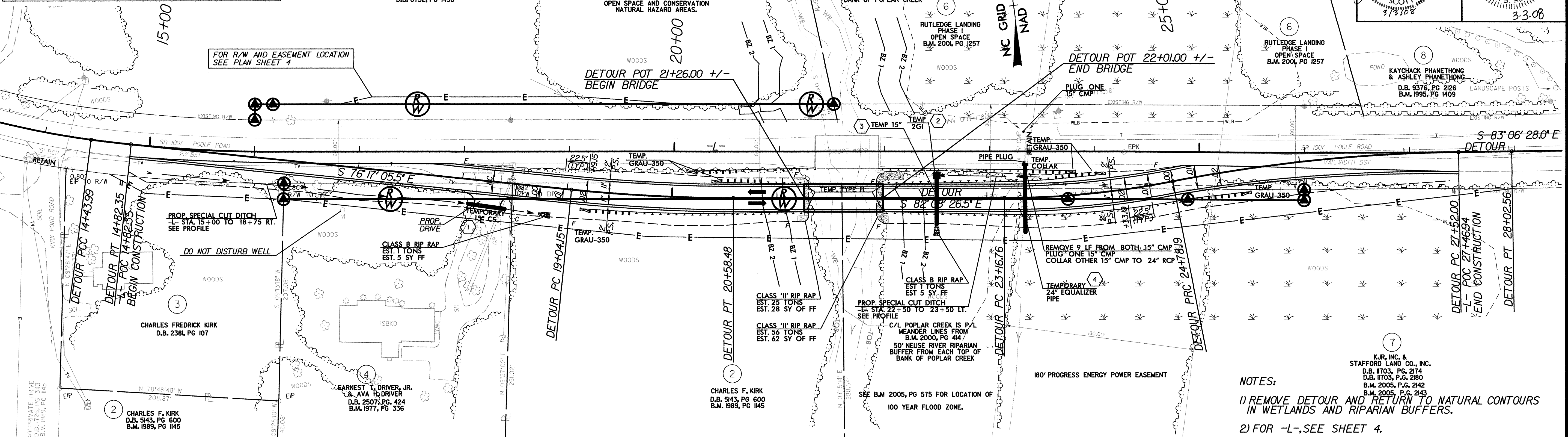


DETOUR					
PI Sta 13+64.68 Δ = 1° 37' 00.8" (LT) D = 7' 17" 55.8" L = 159.16' T = 79.85' R = 785.00' SE = EXIST.	PI Sta 14+63.17 Δ = 1° 39' 31.7" (LT) D = 4' 19" 27.2" L = 38.36' T = 19.18' R = 1,325.00' SE = EXIST.	PI Sta 19+81.38 Δ = 5° 51' 21.0" (LT) D = 3' 47" 39.9" L = 154.33' T = 77.23' R = 1,510.00' SE = .02	PI Sta 23+97.73 Δ = 1° 06' 13.0" (LT) D = 6' 52' 41.7" L = 161.43' T = 80.97' R = 833.00' SE = EXIST.	PI Sta 26+15.47 Δ = 10° 23' 22.3" (RT) D = 3' 47" 39.9" L = 273.81' T = 137.28' R = 1,510.00' SE = EXIST.	PI Sta 27+77.28 Δ = 0° 15' 10.9" (LT) D = 0° 30' 01.4" L = 50.56' T = 25.58' R = 11,450.00' SE = EXIST.

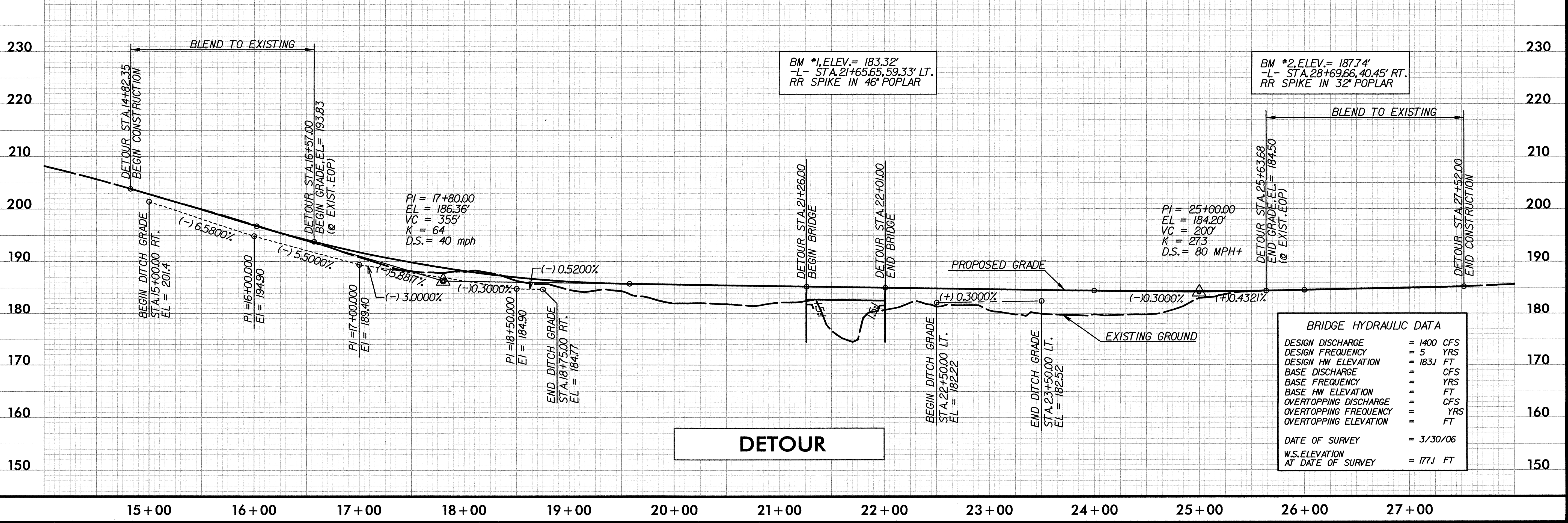
DETOUR



PROJECT REFERENCE NO. B-4301 SHEET NO. 2-C
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 3197 DENNIS SCOTT 3/19/08
NORTH CAROLINA PROFESSIONAL SEAL 3197 DENNIS SCOTT 3/19/08
KAYCHACK PHANETHONG & ASHLEY PHANETHONG LANDSCAPE POSTS
D.B. 9376, PG. 2125
B.M. 1995, PG. 1409



NOTES:
1) REMOVE DETOUR AND RETURN TO NATURAL CONTOURS IN WETLANDS AND RIPARIAN BUFFERS.
2) FOR -L-, SEE SHEET 4.



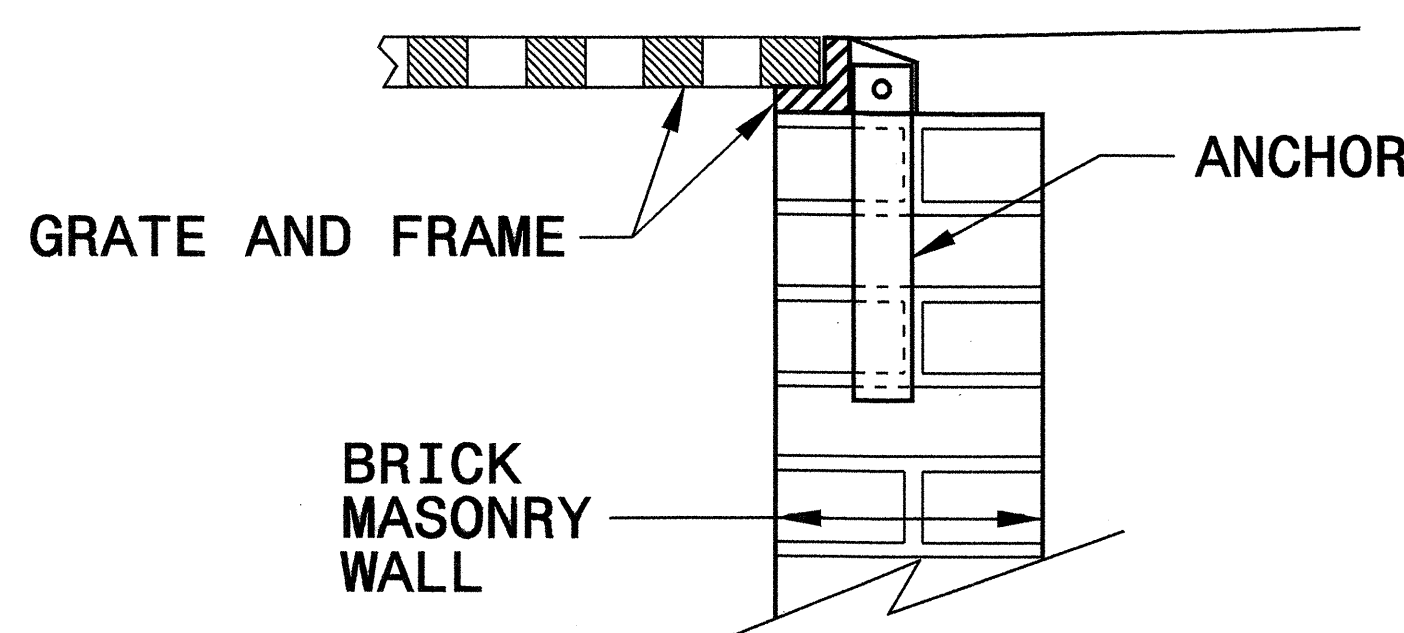
DETOUR

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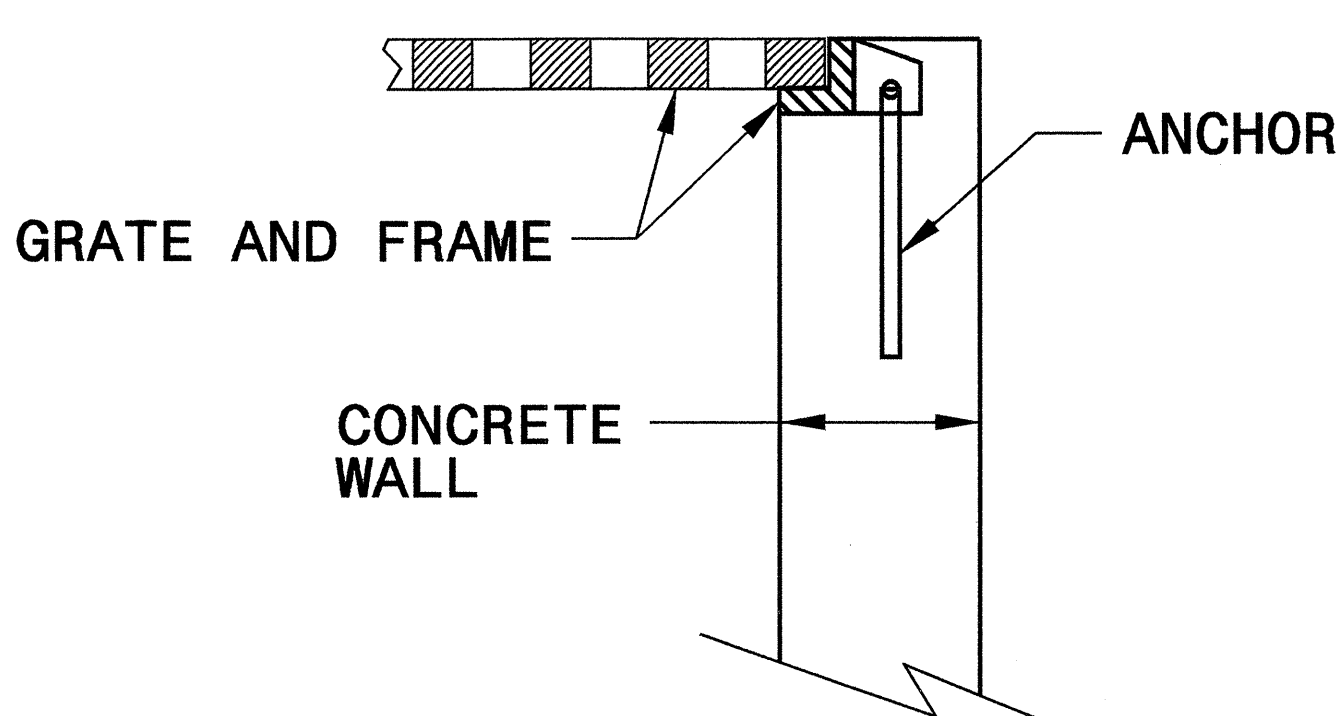
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

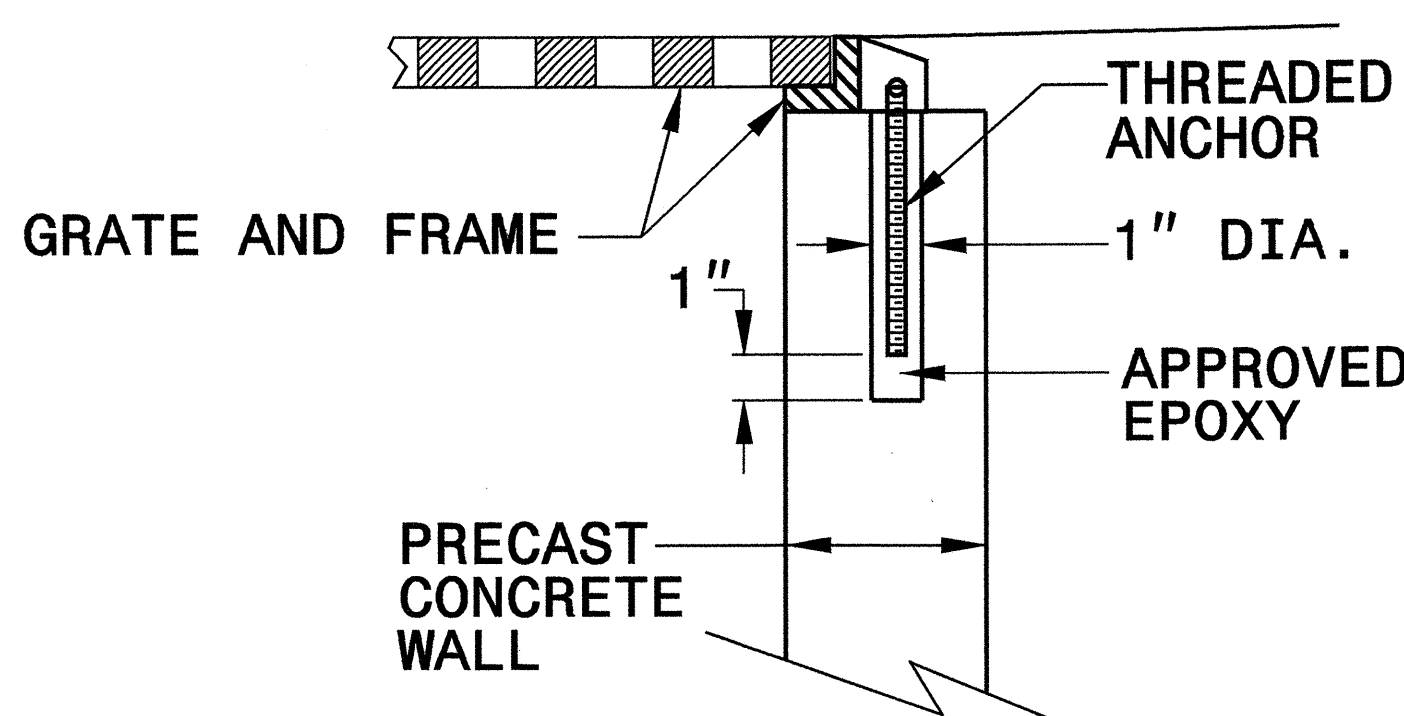
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



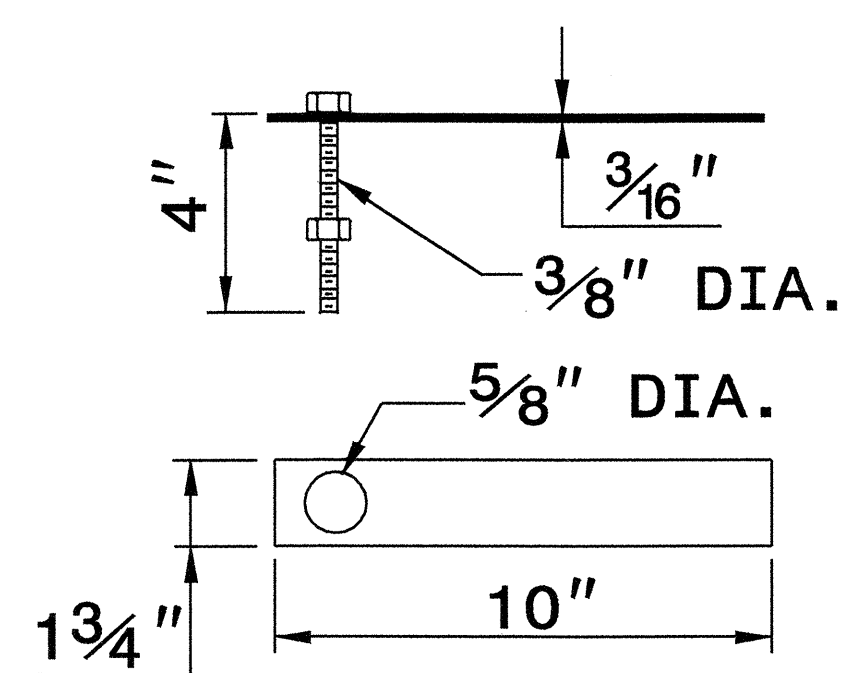
CONCRETE CONSTRUCTION



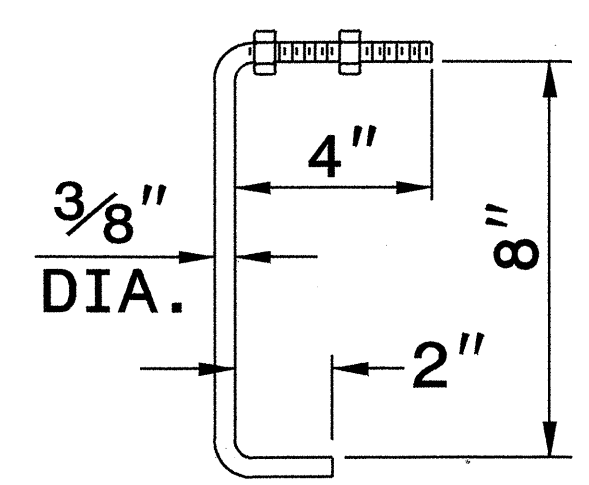
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

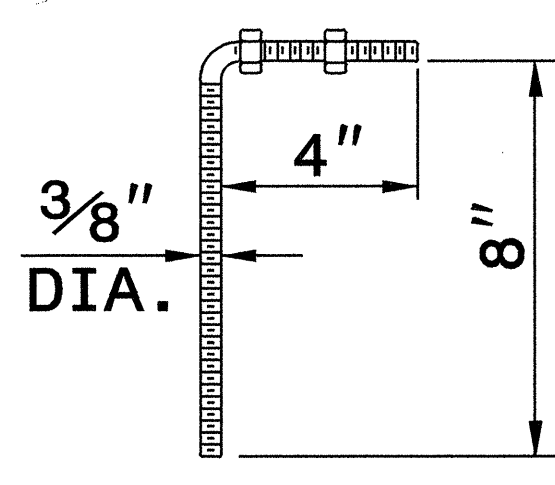
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



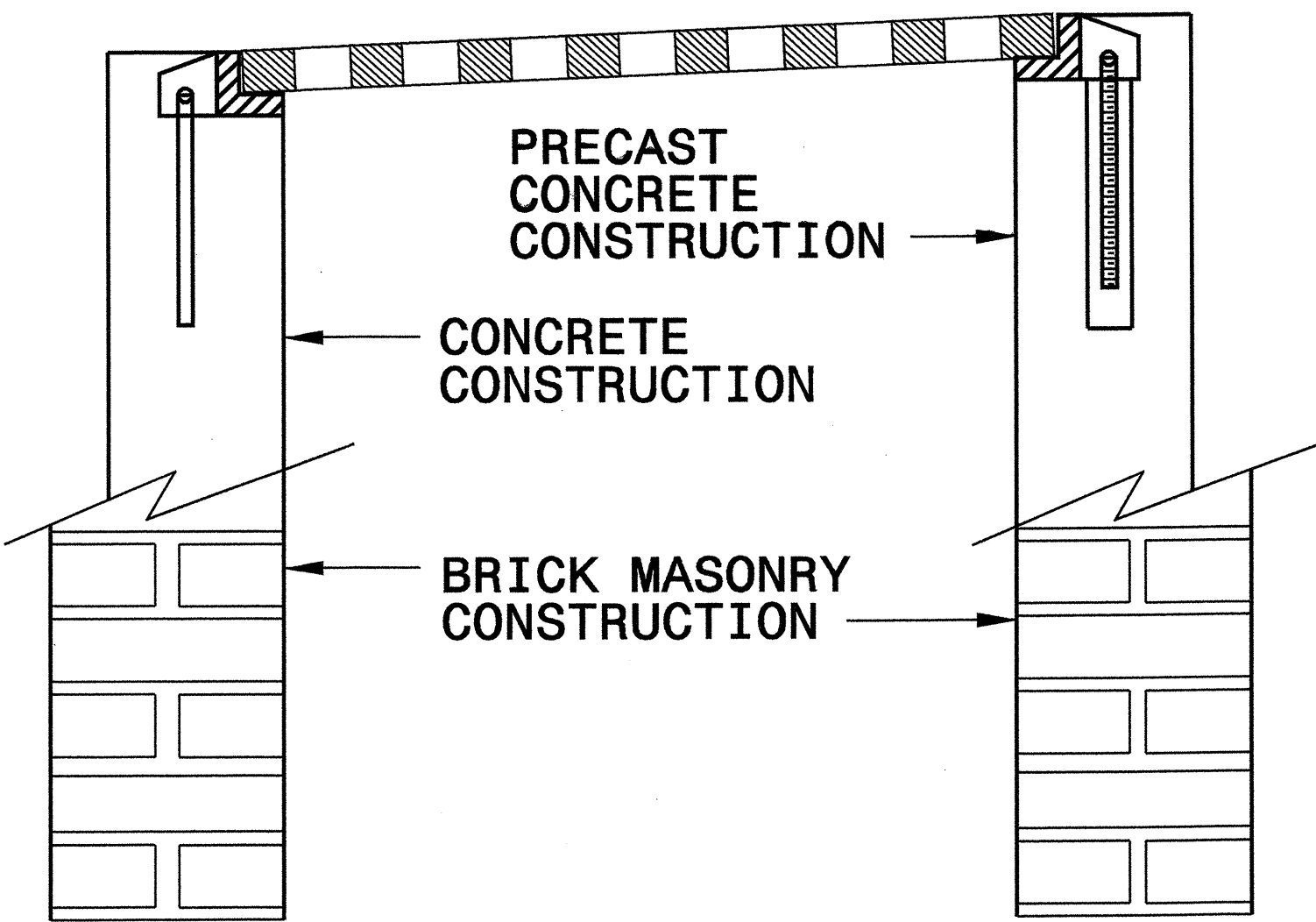
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



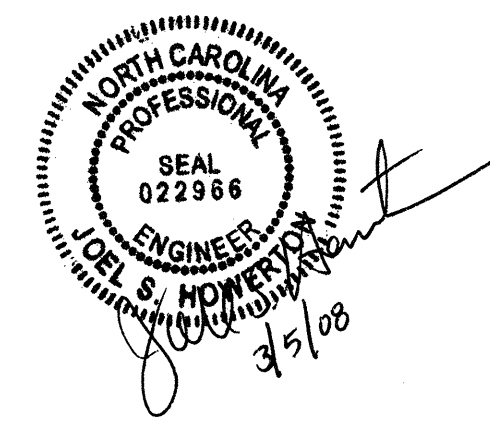
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

01-MAR-2007 09:04 c:\projects\special details\verward\stds\06 stds to special details\84025 anchorage for frames\0840d25.dgn j.hover-ton



**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.: _____

Summary of Quantities

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201830

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (21+68.50)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	400	CY	UNDERCUT EXCAVATION
0195000000-E	265	1,000	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	1,000	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	300	30	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	36	LF	15" SIDE DRAIN PIPE
0378000000-E	310	108	LF	24" RC PIPE CULVERTS, CLASS III
0582000000-E	310	36	LF	15" CS PIPE CULVERTS, 0.064" THICK
0995000000-E	340	126	LF	PIPE REMOVAL
1121000000-E	520	1,200	TON	AGGREGATE BASE COURSE
1220000000-E	545	30	TON	INCIDENTAL STONE BASE
1275000000-E	600	878.5	GAL	PRIME COAT
1489000000-E	610	390	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	330	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	860	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	84	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	20	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	10	EA	RIGHT OF WAY MARKERS
2022000000-E	815	45	CY	SUBDRAIN EXCAVATION
2033000000-E	815	34	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE

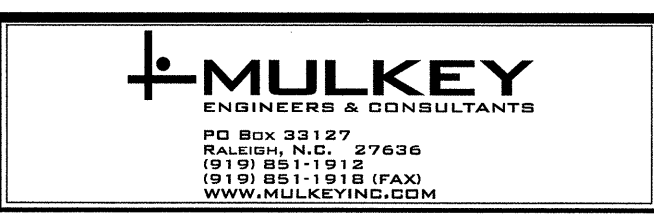
ItemNumber	Sec #	Quantity	Unit	Description
2055000000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2253000000-E	840	0.6	CY	PIPE COLLARS
2264000000-E	840	0.1	CY	PIPE PLUGS
2286000000-N	840	3	EA	MASONRY DRAINAGE STRUCTURES
2365000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.22
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	33	LF	SHOULDER BERM GUTTER
3030000000-E	862	575	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3380000000-E	862	825	LF	TEMPORARY STEEL BM GUARDRAIL
3387000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** TEMPORARY (III)
3389100000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3635000000-E	876	85	TON	RIP RAP, CLASS II
3649000000-E	876	10	TON	RIP RAP, CLASS B
3656000000-E	876	315	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4025000000-E	901	9	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (E)
4072000000-E	903	15	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	1	EA	SIGN ERECTION, TYPE E
4155000000-N	907	7	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

ItemNumber	Sec #	Quantity	Unit	Description
4400000000-E	1110	48	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	40	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	70	EA	DRUMS
4435000000-N	1135	30	EA	CONES
4445000000-E	1145	72	LF	BARRICADES (TYPE III)
4450000000-N	1150	80	HR	FLAGGER
4650000000-N	1251	40	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	2,600	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	2,600	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4770000000-E	1205	440	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (3)
4810000000-E	1205	22,400	LF	PAINT PAVEMENT MARKING LINES (4")
4850000000-E	1205	500	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4900000000-N	1251	20	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-E	1605	1,620	LF	TEMPORARY SILT FENCE
6006000000-E	1610	90	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	540	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	240	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	2.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6029000000-E	SP	250	LF	SAFETY FENCE
6030000000-E	1630	1,620	CY	SILT EXCAVATION
6036000000-E	1631	1,260	SY	MATting FOR EROSION CONTROL
6042000000-E	1632	250	LF	1/4" HARDWARE CLOTH
6071030000-E	SP	370	LF	COIR FIBER BAFFLES
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	1.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	4.5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	1	ACR	REFORESTATION

ItemNumber	Sec #	Quantity	Unit	Description
***** BEGIN SCHEDULE AA *****				
***** (3 ALTERNATES) *****				
0366000000-E	310	84	LF	15" RC PIPE CULVERTS, CLASS III
AA1				
*** OR ***				
0366000000-E	310	76	LF	15" RC PIPE CULVERTS, CLASS III
AA2				
0536000000-E	SP	8	LF	**** HDPE PIPE CULVERTS (15")
AA2				
*** OR ***				
0366000000-E	310	76	LF	15" RC PIPE CULVERTS, CLASS III
AA3				
0540000000-E	SP	8	LF	**** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (15", 0.064")
AA3				
***** END SCHEDULE AA *****				

COMPUTED BY: W.A. DATE: 12 / 07
 CHECKED BY: J.B. DATE: 12 / 07

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. B-4301
 SHEET NO. 3-B
 RW SHEET NO.

GUARDRAIL SUMMARY

"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.

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR TYPE 350			REMARKS				
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE III	GRAU-350	CAT-1	AT-1	EA	G	NG					
-L-	18+56.00	21+18.50	RT	262.50'			21+18.50		8	11.00'	50.00'	87.50'	1.00'	1.75'			1	1									BEGIN AT DRIVEWAY
-L-	19+81.00	21+18.50	LT	137.50'				21+18.50	8	11.00'	68.75'	50.00'	1.375'	1.00'			1	1									
-L-	22+18.50	23+56.00	RT	137.50'				22+18.50	8	11.00'	68.75'	50.00'	1.375'	1.00'			1	1									
-L-	22+18.50	25+18.50	LT	300.00'					8	11.00'	50.00'	87.50'	1.00'	1.75'			1	1									
				SUB-TOTAL	837.50'												4	4									
				GRAU-350 - 4 @ 50.00' EA.	-200.00'																						
				TYPE III - 4 @ 18.75' EA.	-75.00'																						
				TOTAL	565.50'												4	4									
				SAY	575.00'												4	4									

ADDITIONAL GUARDRAIL POST = 5 EA.

TEMPORARY GUARDRAIL SUMMARY

"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.

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS				TEMPORARY ANCHORS				IMPACT ATTENUATOR TYPE 350			REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GRAU-350	CAT-1	AT-1	GRAU-350	CAT-1	TYPE III	SPECIAL GUARDRAIL	EA	G	NG			
-L-	20+10.00	21+35.00	RT	125.00'			20+34.50		1.00'	VAR.	50.00'	75.00'	1.00'	1.50'							1							
-L-	21+94.00	23+81.50	RT	187.50'				20+94.25	1.00'	VAR.	137.50'	50.00'	2.75'	1.00'							1							
DETOUR	19+11.30	21+26.00	RT	212.50'			21+26.00		2.00'	10.00'	50.00'	143.75'	1.00'	2.875'							1		1				TIE TO PROP. TEMP. BRIDGE RAIL	
DETOUR	20+38.50	21+26.00	LT	87.50'				21+26.00	2.00'	10.00'	18.75'	50.0'	.375'	1.00'							1		1				TIE TO PROP. TEMP. BRIDGE RAIL	
DETOUR	22+01.00	25+63.50	RT	362.50'				24+63.50	2.00'	10.00'	293.75'	50.0'	5.875'	1.00'							1		1				TIE TO PROP. TEMP. BRIDGE RAIL	
DETOUR	22+01.00	24+13.50	LT	212.50'			23+81.50		2.00'	10.00'	50.00'	143.75'	1.00'	2.875'							1		1				TIE TO PROP. TEMP. BRIDGE RAIL	
				SUB-TOTAL	1,187.50'																	6		4				
				GRAU-350 - 6 @ 50.00' EA.	-300.00'																							
				TYPE III - 4 @ 18.75' EA.	-75.00'																							
				TOTAL	812.50'																	6		4				
				SAY	825.00'																	6		4				

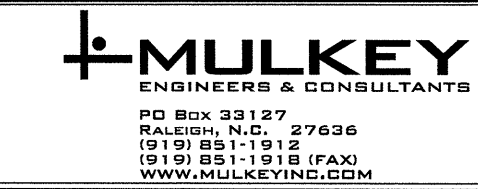
SUMMARY OF PAVEMENT REMOVAL IN SQUARE YARDS

LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP	CONCRETE REMOVAL	CONCRETE BREAK-UP
-L- STA. 20+50 TO 21+33	230 SY			
-L- STA. 21+96 TO 23+00	281 SY			
DETOUR STA. 14+82.35 TO 17+88.00	405 SY			
DETOUR STA. 17+88.00 TO 21+26.00 (BEG. BRIDGE)	976 SY			
DETOUR STA. 22+01.00 (END BRIDGE) TO 24+91.00	838 SY			
DETOUR STA. 24+91.00 TO 27+52.00	305 SY			
TOTAL	3035 SY			
SAY	3100 SY			

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING". (SEE PROJECT SPECIAL PROVISIONS.)

COMPUTED BY: J.B. DATE: 12 / 07
 CHECKED BY: T.H. DATE: 12 / 07

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. B-4301 SHEET NO. 3-C
 RW SHEET NO.

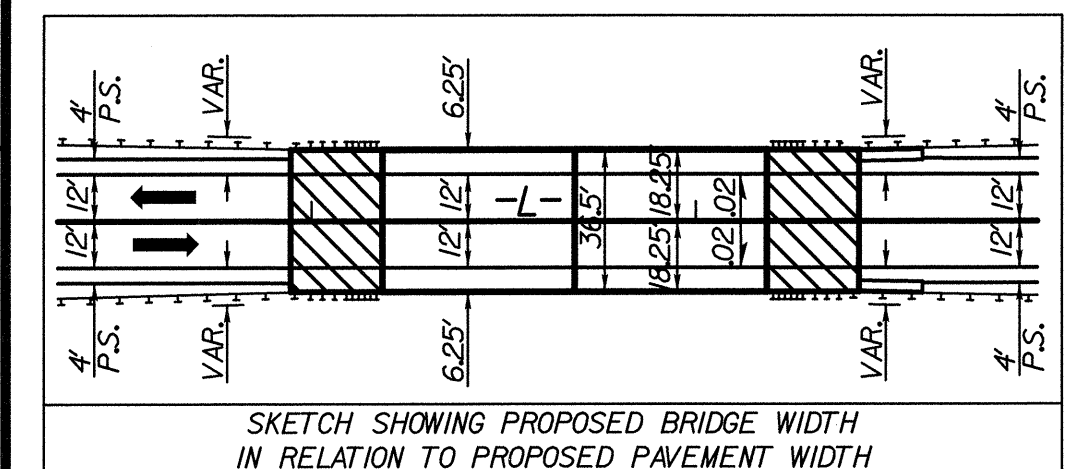
SUMMARY OF EARTHWORK
IN CUBIC YARDS

SURVEY LINE	STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT + %	BORROW	WASTE
-L-	16+00.00	21+18.50	509		173	0	336
BRIDGE							
SUBTOTAL			509		173	0	336
BRIDGE							
-L-	22+18.50	26+00.00	44		271	227	0
SUBTOTAL			44		271	227	0
DETOUR	14+82.35	21+26.00	208		816	608	0
BRIDGE							
SUBTOTAL			208		816	608	0
BRIDGE							
DETOUR	22+01.00	27+52.00	52		2,090	2,038	0
SUBTOTAL			52		2,090	2,038	0
PROJECT SUBTOTALS			813		3,350	2873	336
EARTH WASTE TO REPLACE BORROW						-336	-336
EST. SHOULDER MATERIAL					816	816	
PROJECT TOTALS			813		4,166	3,353	0
REMOVE DETOUR			2,422				2,422
PROJECT TOTALS			3,235		4,166	3,353	2,422
PROJECT TOTALS			3,235		4,166	3,353	2,422
EST. 5% FOR REPLACING TOP SOIL ON BORROW						168	
GRAND TOTAL			3,235			3,521	2,422
SAY			3,400			3,700	2,550

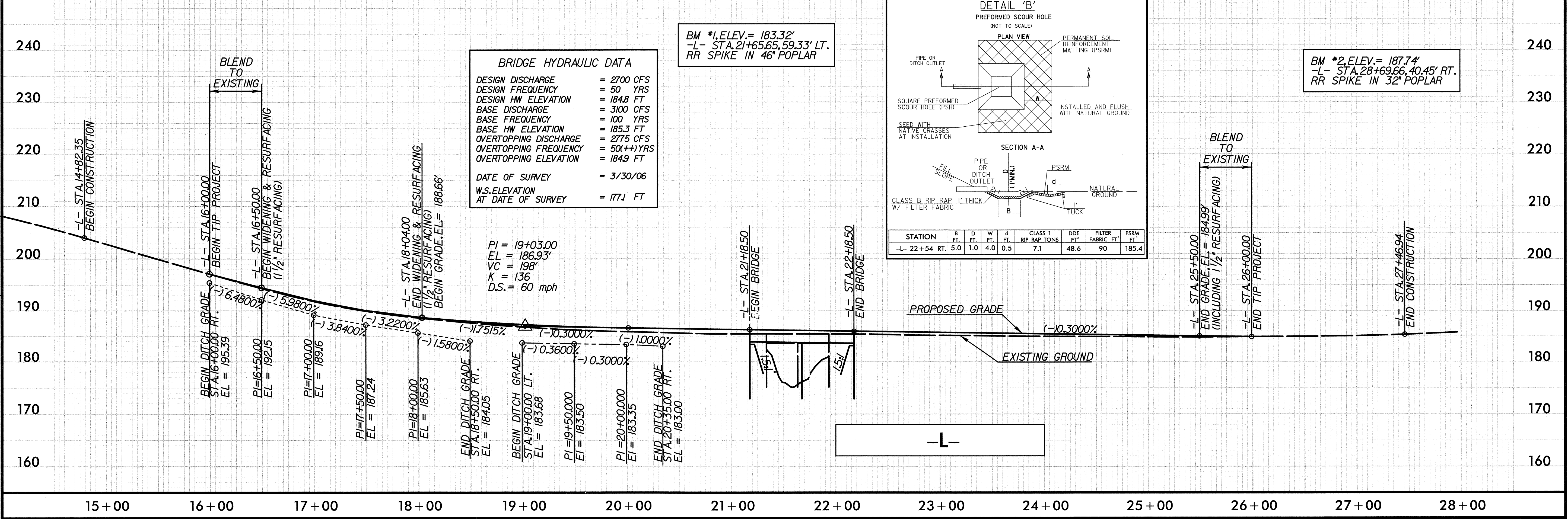
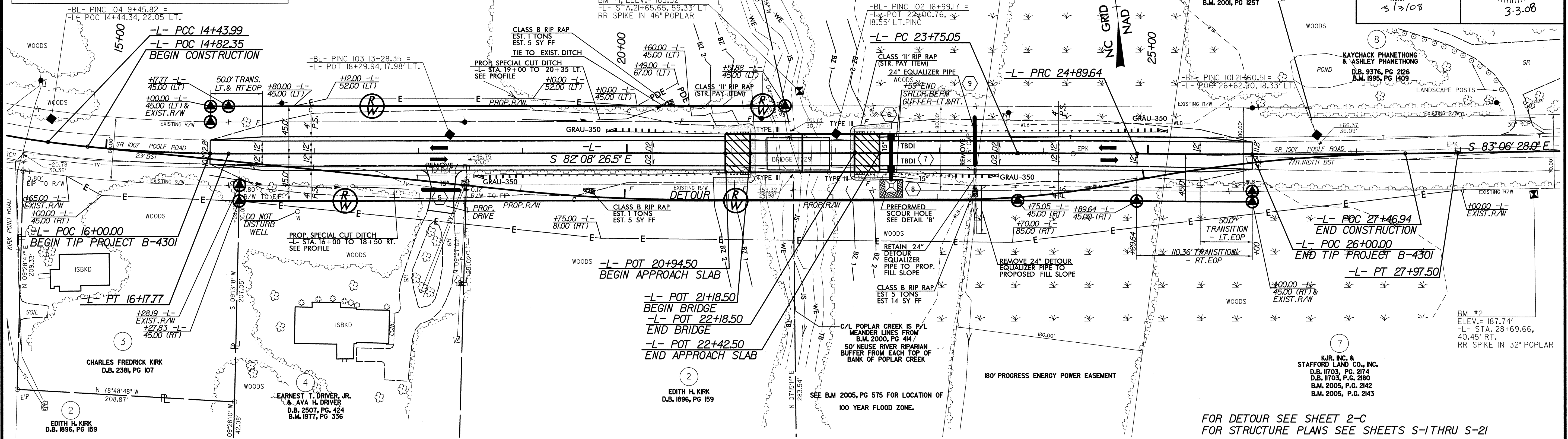
UNDERCUT EXCAVATION = 400 CY (CONTINGENCY)

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.

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING". (SEE PROJECT SPECIAL PROVISIONS.)

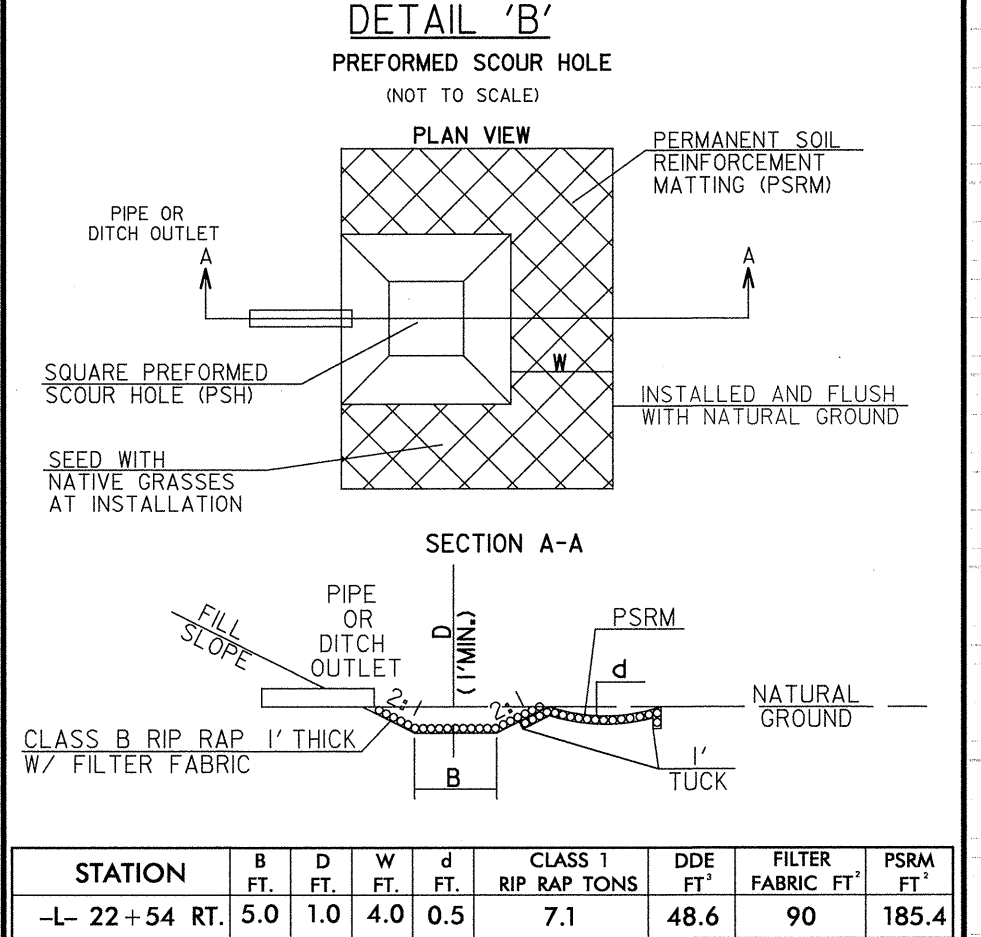


PI Sta 13+64.68 Δ = 1° 37' 00.6" (LT) D = 7' 17" 55.8" L = 159.16' T = 79.85' R = 785.00' SE = EXIST.	PI Sta 15+31.00 Δ = 7° 30' 52.7" (LT) D = 4' 19" 27.2" L = 173.78' T = 87.02' R = 1,325.00' SE = EXIST.	PI Sta 24+32.35 Δ = 0° 34' 24.3" (RT) D = 0' 30" 01.4" L = 114.59' T = 153.94' R = 11,450.00' SE = NC	PI Sta 26+43.58 Δ = 1° 32' 25.8" (LT) D = 0' 30" 01.4" L = 307.86' T = 153.94' R = 11,450.00' SE = NC
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BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2700 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 184.8 FT
BASE DISCHARGE	= 3100 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 185.3 FT
OVERTOPPING DISCHARGE	= 2775 CFS
OVERTOPPING FREQUENCY	= 50++ YRS
OVERTOPPING ELEVATION	= 184.9 FT
DATE OF SURVEY	= 3/30/06
W.S. ELEVATION AT DATE OF SURVEY	= 177.1 FT



BM #2, ELEV. = 187.74'
 -L- STA. 28+69.66, 40.45' RT.
 RR SPIKE IN 32" POPLAR

2/27/2008 4:54:33 PM P:\Roadway\Proj\B-4301_rdy_psh04.dgn