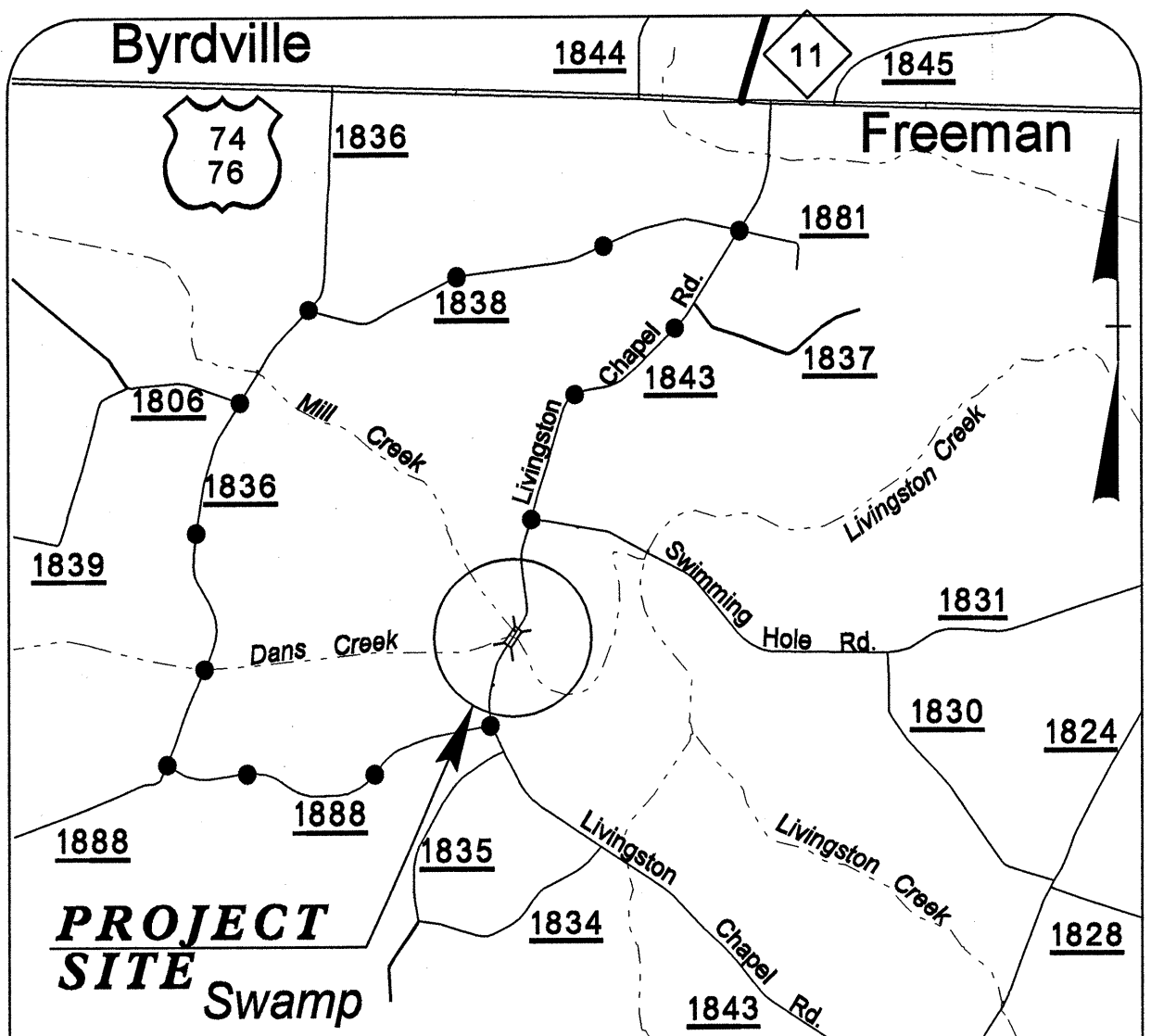


I:\JUL-2008\10-48  
 Y:\Projects\NCDOT\Bridges Group 46 FinalDesign\B4029\Roadway\Proj\B4029-B4082-combined\_rdy\_tsh.dgn  
 pedu@dir.AT.LPA30660

**TIP PROJECT: B-4029 / B-4082**  
**CONTRACT: C202120**

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



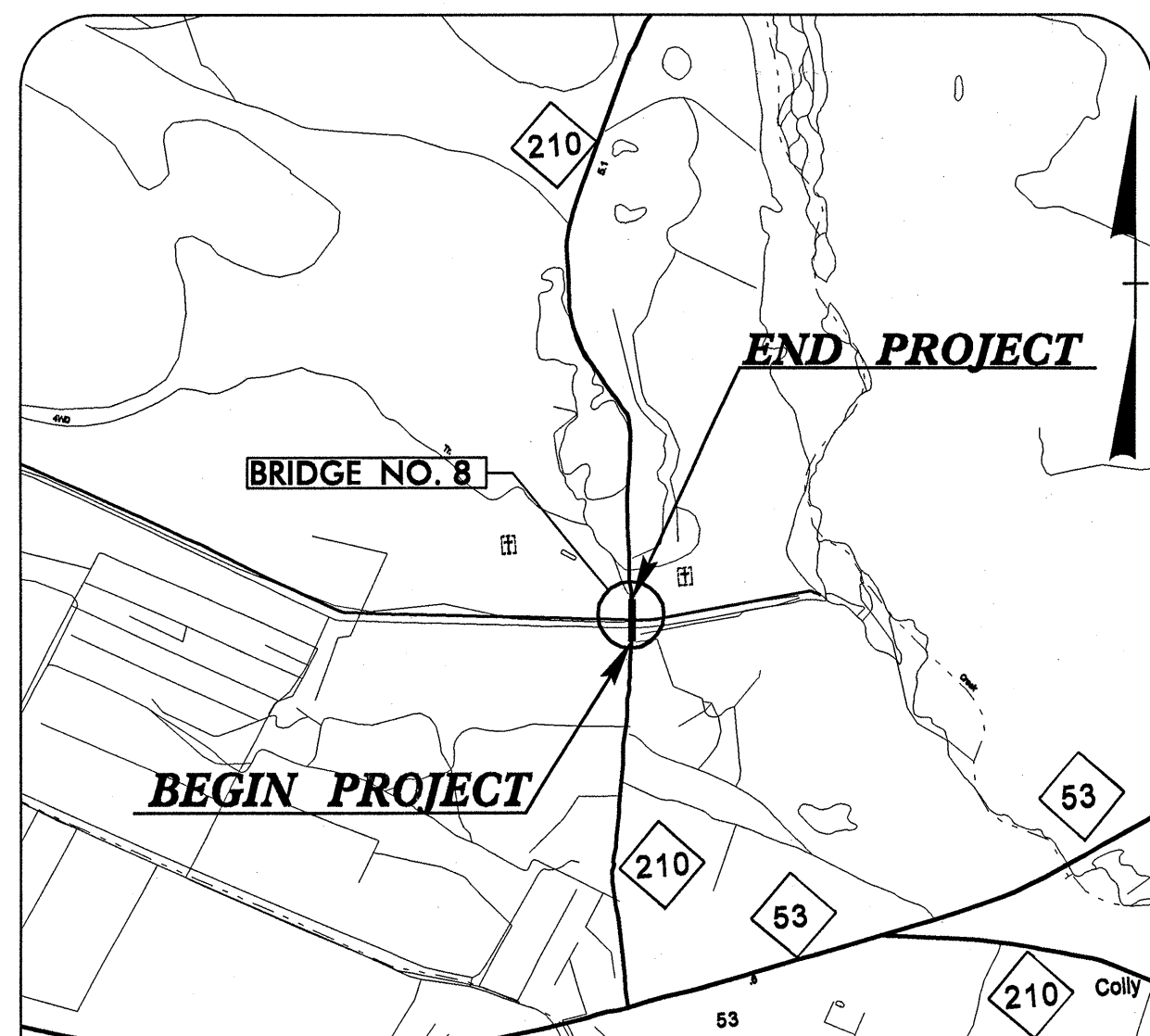
B-4082 (COLUMBUS COUNTY) VICINITY MAP

--- DENOTES OFFSITE DETOUR

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**COLUMBUS COUNTY  
&  
BLADEN COUNTY**

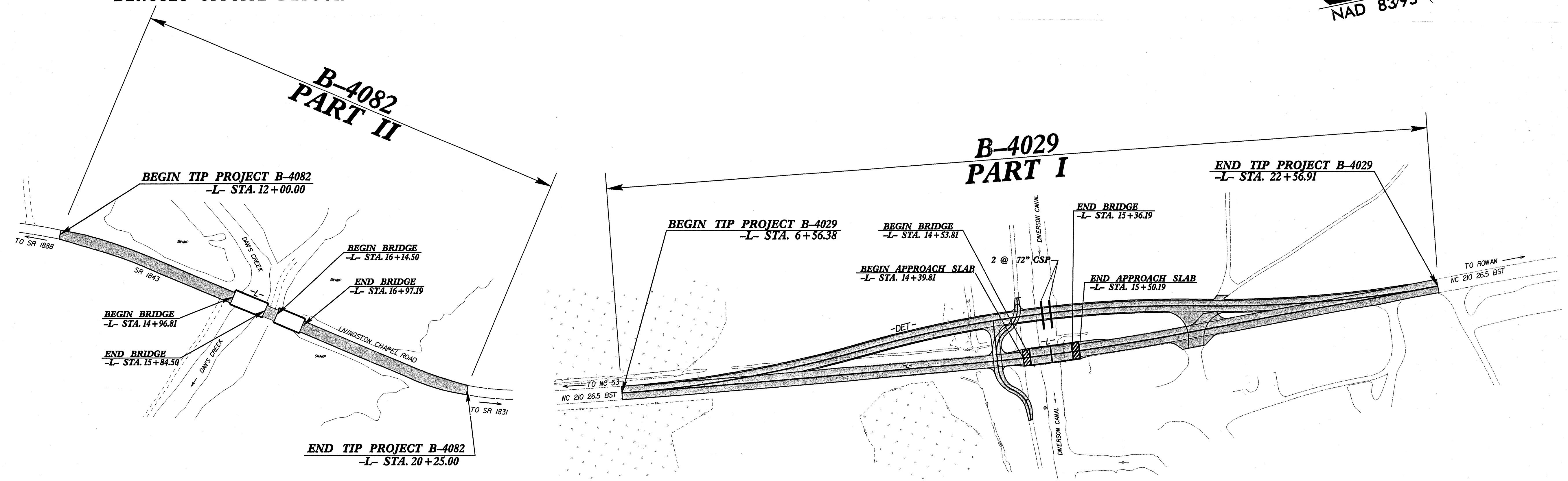
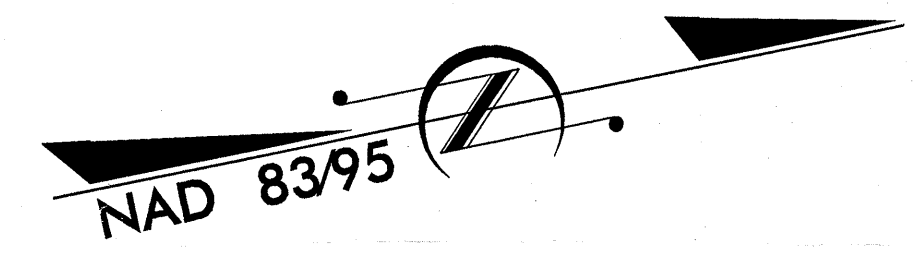
**LOCATION: BRIDGE NO. 8 OVER DIVERSION CANAL  
ON NC 210 & BRIDGE NO. 280 & NO. 281  
OVER DAN'S CREEK ON SR 1843  
(LIVINGSTON CHAPEL ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, &  
STRUCTURE**



B-4029 (BLADEN COUNTY) VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4029/B-4082	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33396.1.1	BRSTP-210 (6)	B-4029 (PE)	
33396.2.1	BRSTP-210 (6)	B-4029 (RW & UTIL.)	
33443.1.1	BRZ-1843 (1)	B-4082 (PE)	
33443.2.1	BRZ-1843 (1)	B-4082 (RW & UTIL.)	
33396.3.1	BRSTP-210 (6)	B-4029 (CONST.)	
33443.3.1	BRZ-1843 (1)	B-4082 (CONST.)	



NCDOT CONTACT : CATHY HOUSER, P.E.  
ROADWAY DESIGN-ENGINEERING COORDINATION

PROJECT LENGTH	
Length Roadway TIP Project B-4029/B-4082	= 0.411 Miles
Length Structure TIP Project B-4029/B-4082	= 0.048 Miles
Total Length TIP Project B-4029/B-4082	= 0.459 Miles

Prepared in the Office of:

THE LPA GROUP  
TRANSPORTATION CONSULTANTS

THE LPA GROUP of North Carolina, p.a.  
5000 Falls of Neuse Rd., Suite 304  
Raleigh, North Carolina 27609

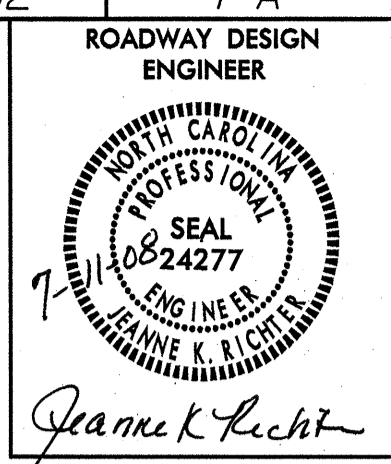
---

2006 STANDARD SPECIFICATIONS

<b>RIGHT OF WAY DATE:</b> SEPTEMBER 21, 2007  <b>LETTING DATE:</b> SEPTEMBER 16, 2008	<b>JEANNE K. RICHTER, P.E.</b> PROJECT ENGINEER  <b>JODY L. COLE</b> PROJECT DESIGN ENGINEER
---	--

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER



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

SHEET NUMBER	SHEET
1	TITLE SHEET (B-4029/B-4082)
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
3	SUMMARY OF QUANTITIES
<b>PART I</b>	
1	TITLE SHEET (B-4029)
1-C	SURVEY CONTROL SHEET
2 THRU 2A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2B THRU 2C	DETOUR PLAN AND PROFILE
2D	ANCHORAGE FOR FRAME AND GRATE DETAIL
2E	DETAIL OF REINFORCED SANDBAG HEAD WALL
3A	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY, AND PARCEL INDEX
3B	SUMMARY OF DRAINAGE QUANTITIES, AND GUARDRAIL SUMMARY
4 THRU 5	PLAN AND PROFILE SHEETS
TCP-1 THRU TCP-9	TRAFFIC CONTROL PLANS
EC-1 THRU EC-8	EROSION CONTROL PLANS
RF-1	REFORSTATION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION SUMMARY SHEET
X-2 THRU X-12	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS
<b>PART II</b>	
1	TITLE SHEET (B-4082)
1-C	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS AND PAVEMENT SCHEDULE WEDGING DETAILS
2A	ROCK PLATING DETAIL
2B	ANCHORAGE FOR FRAMES DETAIL
3A	EARTHWORK SUMMARY, EXISTING ASPHALT PAVEMENT BREAK-UP/REMOVAL SUMMARY, GUARDRAIL SUMMARY, AND GUARDRAIL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-4	TRAFFIC CONTROL PLANS
SD-1	SPECIAL SIGN DESIGN
EC-1 THRU EC-4	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-8	CROSS-SECTIONS
S-1 THRU S-36	STRUCTURE PLANS

**GENERAL NOTES:**

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

**GRADE LINE:  
GRADING AND SURFACING: (B-4082)**

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.

**GRADING AND SURFACING OR RESURFACING AND WIDENING: (B-4029)**

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

**CLEARING:**

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

**SUPERELEVATION:**

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

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**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 B-4029. 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  
(B-4029) Four - County EMC, Star Telephone  
(B-4082) Progress Energy, AT&T

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

**RIGHT-OF-WAY MARKERS:**

ALL RIGHT-OF-WAY MARKERS ON B-4082 SHALL BE PLACED BY OTHERS.  
ALL RIGHT-OF-WAY MARKERS ON B-4029 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
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.10	Reinforced Bridge Approach Fills
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 8 - INCIDENTALS</b>	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.04	Markers for Drainage Structure and Concrete Pad
838.40	Reinforced Concrete Endwall - for Double and Triple 72" Pipes 90 Skew
838.70	Reinforced Brick Endwall - for Double and Triple 72" Pipes 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
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
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

8/17/99  
 I:\JUL-2008\10453  
 Y:\Projects\NCDOT\Bridges Group 46 Final Design\B4029\Roadway\Proj\B4029-b4082-combined\_rdy\_PSHA.dgn  
 resubmit

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:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	→
Property Monument	□
Parcel/Sequence Number	(23)
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:

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

### 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:

Standard Gauge	-----
RR Signal Milepost	○
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	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

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

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	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	-----

### UTILITIES:

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

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	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	2UTL
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.

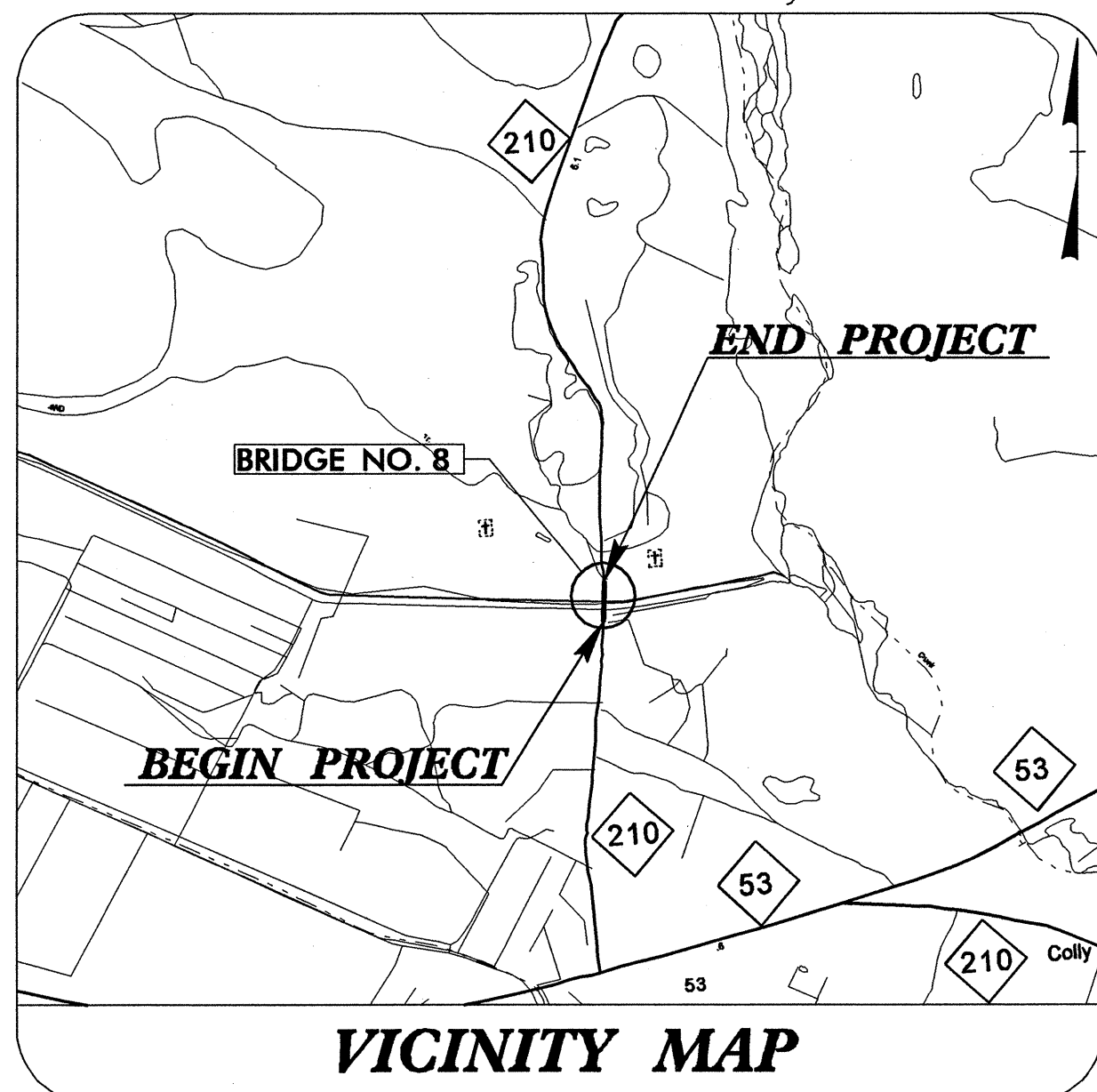
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**SUMMARY OF QUANTITIES**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202120

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
000010000-N	800	Lump Sum		MOBILIZATION	127500000-E	600	1,210	GAL	PRIME COAT	327000000-N	SP	5	EA	GUARDRAIL ANCHOR UNITS, TYPE 350	468600000-E	1205	3,220	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
000040000-N	801	Lump Sum		CONSTRUCTION SURVEYING	148900000-E	610	440	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	331700000-N	862	8	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77	477000000-E	1205	400	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (TYPE III)
000096000-E	SP	500	SY	GENERIC MISCELLANEOUS ITEM ROCK PLATING	149800000-E	610	300	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	338000000-E	862	325	LF	TEMPORARY STEEL BM GUARDRAIL	481000000-E	1205	35,720	LF	PAINT PAVEMENT MARKING LINES (4")
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (14+95.00)	151900000-E	610	800	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	338200000-E	862	100	LF	TEMPORARY STEEL BM GUARDRAIL (SHOP CURVED)	485000000-E	1205	3,300	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (15+40.50)	152500000-E	610	435	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A	338700000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** TEMPORARY (AT-1)	490000000-N	1251	32	EA	PERMANENT RAISED PAVEMENT MARKERS
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (16+56.00)	156000000-E	620	115	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	338910000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY	600000000-E	1605	5,100	LF	TEMPORARY SILT FENCE
004300000-N	226	Lump Sum		GRADING	169300000-E	654	100	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	364900000-E	876	35	TON	RIP RAP, CLASS B	600600000-E	1610	100	TON	STONE FOR EROSION CONTROL, CLASS A
005000000-E	226	2	ACR	SUPPLEMENTARY CLEARING & GRUB-BING	200000000-N	806	8	EA	RIGHT OF WAY MARKERS	365600000-E	876	755	SY	FILTER FABRIC FOR DRAINAGE	600900000-E	1610	445	TON	STONE FOR EROSION CONTROL, CLASS B
005700000-E	226	1,200	CY	UNDERCUT EXCAVATION	202200000-E	815	46	CY	SUBDRAIN EXCAVATION	365900000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON	601200000-E	1610	260	TON	SEDIMENT CONTROL STONE
013400000-E	240	10	CY	DRAINAGE DITCH EXCAVATION	203300000-E	815	34	CY	SUBDRAIN FINE AGGREGATE	407200000-E	903	16	LF	SUPPORTS, 3-LB STEEL U-CHANNEL	601500000-E	1615	4	ACR	TEMPORARY MULCHING
019500000-E	265	300	CY	SELECT GRANULAR MATERIAL	204400000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE	410200000-N	904	2	EA	SIGN ERECTION, TYPE E	601800000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
019600000-E	270	100	SY	FABRIC FOR SOIL STABILIZATION	205500000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS	415500000-N	907	13	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	602100000-E	1620	0.75	TON	FERTILIZER FOR TEMPORARY SEEDING
031800000-E	300	49	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS	206600000-N	815	2	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET	440000000-E	1110	495	SF	WORK ZONE SIGNS (STATIONARY)	602400000-E	1622	100	LF	TEMPORARY SLOPE DRAINS
034400000-E	310	24	LF	18" SIDE DRAIN PIPE	207700000-E	815	12	LF	6" OUTLET PIPE (SUBDRAINS)	440500000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)	602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
036600000-E	310	60	LF	15" RC PIPE CULVERTS, CLASS III	222000000-E	838	9.8	CY	REINFORCED ENDWALLS	441000000-E	1110	205	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)	602900000-E	SP	1,500	LF	SAFETY FENCE
039600000-E	310	64	LF	42" RC PIPE CULVERTS, CLASS III	228600000-N	840	5	EA	MASONRY DRAINAGE STRUCTURES	443000000-N	1130	35	EA	DRUMS	603000000-E	1630	780	CY	SILT EXCAVATION
057600000-E	310	112	4F	72" CS PIPE CULVERTS, 0.13" THICK	235500000-N	840	1	EA	FRAME WITH GRATE, STD 840.29	443500000-N	1135	10	EA	CONES	603600000-E	1631	1,460	SY	MATTING FOR EROSION CONTROL
068000000-E	310	4	EA	8" COMICS PIPE ELBOWS, ***** THICK (15", 0.064)	236300000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.***** (840.29)	444500000-E	1145	272	LF	BARRICADES (TYPE III)	604200000-E	1632	450	LF	1/4" HARDWARE CLOTH
070800000-E	310	124	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK	253500000-E	846	25	LF	***X*** CONCRETE CURB (6" x 8")	445000000-N	1150	530	HR	FLAGGER	604800000-E	SP	50	SY	FLOATING TURBIDITY CURTAIN
073800000-E	310	64	LF	42" BIT COAT CS PIPE CULVERTS, TYPE B 0.109" THICK	255600000-E	846	111	LF	SHOULDER BERM GUTTER	448000000-N	1165	1	EA	TMLA	607103000-E	SP	320	LF	COIR FIBER BAFFLES
095500000-E	340	297	LF	PIPE REMOVAL	303000000-E	862	712.5	LF	STEEL BM GUARDRAIL	450700000-E	SP	48	LF	WATER FILLED BARRIER	608400000-E	1660	4	ACR	SEEDING & MULCHING
112100000-E	520	2,051	TON	AGGREGATE BASE COURSE	304500000-E	862	150	LF	STEEL BM GUARDRAIL, SHOP CURVED	451600000-N	1180	20	EA	SKINNY DRUM	608700000-E	1660	3	ACR	MOWING
122000000-E	545	200	TON	INCIDENTAL STONE BASE	315000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS	465000000-N	1251	40	EA	TEMPORARY RAISED PAVEMENT MARKERS	609000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
					319500000-N	862	3	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1	468500000-E	1205	3,220	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	609300000-E	1661	0.5	TON	FERTILIZER FOR REPAIR SEEDING
														609600000-E	1662	125	LB	SEED FOR SUPPLEMENTAL SEEDING	
														610800000-E	1665	3	TON	FERTILIZER TOPDRESSING	
														611400000-N	SP	4.5	HR	SPECIALIZED HAND MOWING	
														611700000-N	SP	39	EA	RESPONSE FOR EROSION CONTROL	
														612300000-E	1670	1	ACR	REFORESTATION	

5/28/09  
09-JUN-2008 14:33  
I:\Projects\NCDOT\Bridges\Group 46 Final Design\B4029\Roadway\Proj\B4029\_rdy\_psh03.dgn

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



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BLADEN COUNTY**

**LOCATION: BRIDGE NO. 8 OVER DIVERSION CANAL ON NC 210**

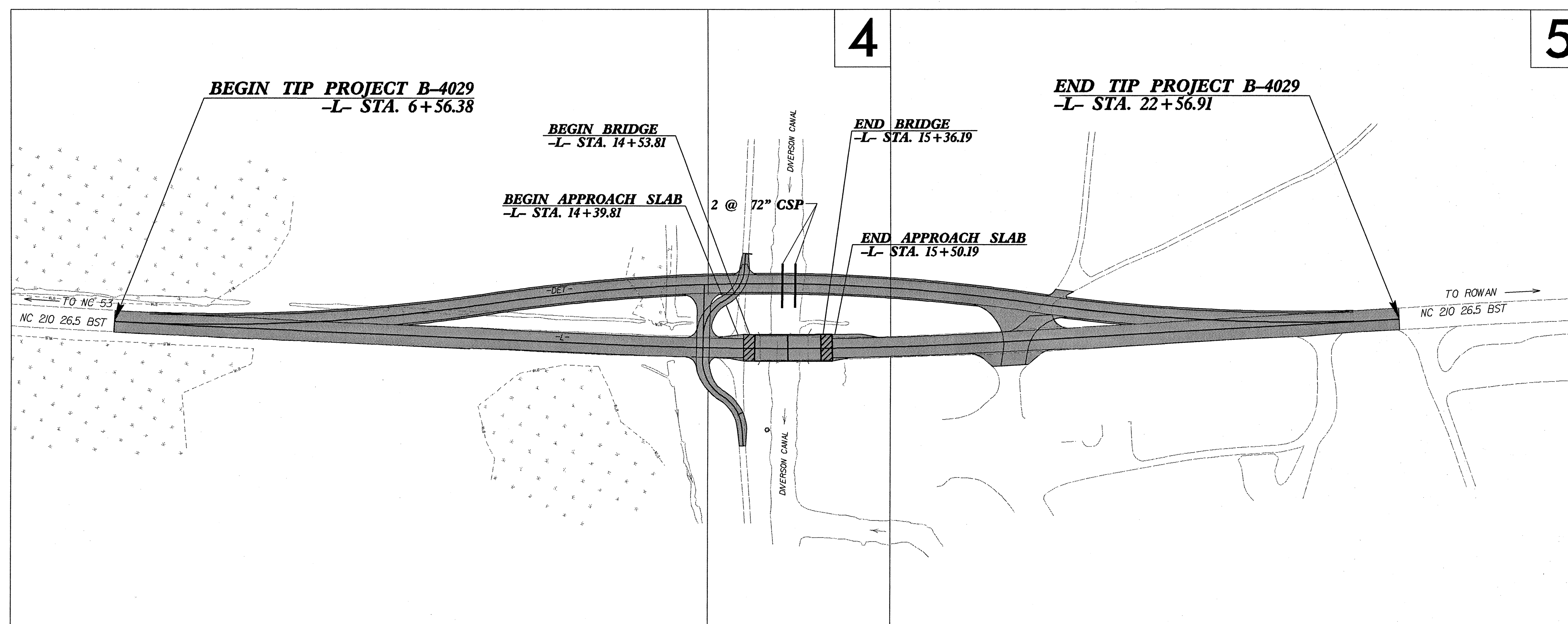
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4029	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33396.1.1	BRSTP-210 (6)	PE	
33396.2.1	BRSTP-210 (6)	RW & UTIL.	
33396.3.1	BRSTP-210 (6)	CONST.	



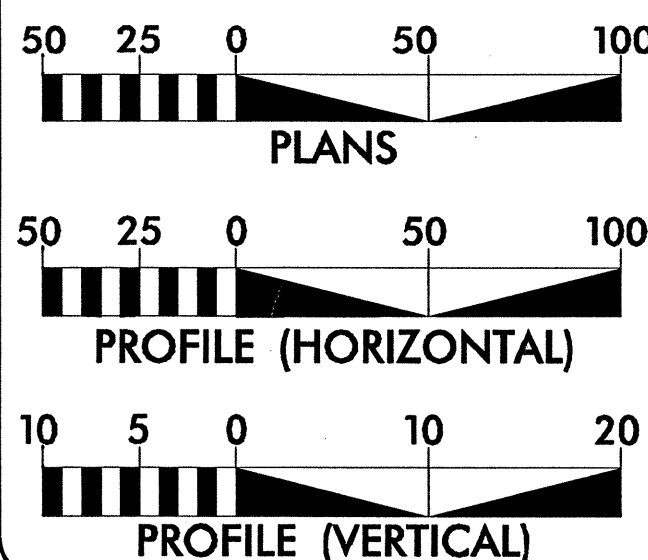
**TIP PROJECT: B-4029**

**CONTRACT: C202120**



NCDOT CONTACT : CATHY HOUSER, P.E.  
ROADWAY DESIGN-ENGINEERING COORDINATION

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2008 = 1083  
ADT 2028 = 1691  
DHV = 10%  
D = 60%  
T = 20% \*  
V = 60 MPH  
\* TTST 15% DUAL 5%  
FUNC. CLASS = RURAL MAJOR COLLECTOR

**PROJECT LENGTH**

Length Roadway TIP Project B-4029 = 0.287 Miles  
Length Structure TIP Project B-4029 = 0.016 Miles  
Total Length TIP Project B-4029 = 0.303 Miles

Prepared In the Office of:  
THE LPA GROUP  
TRANSPORTATION CONSULTANTS

THE LPA GROUP of North Carolina, p.a.  
5000 Falls of Neuse Rd., Suite 304  
Raleigh, North Carolina 27609

2006 STANDARD SPECIFICATIONS

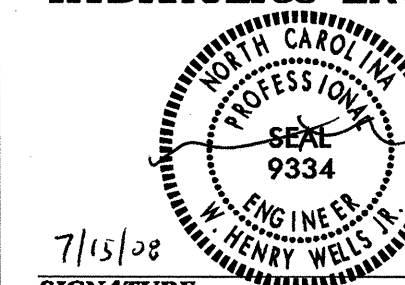
RIGHT OF WAY DATE:  
SEPTEMBER 21, 2007

LETTING DATE:  
SEPTEMBER 16, 2008

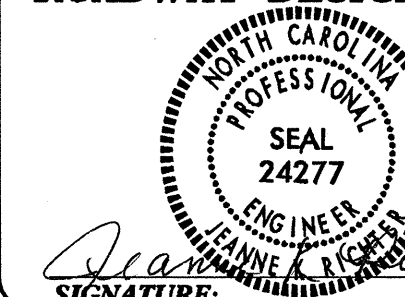
JEANNE K. RICHTER, P.E.  
PROJECT ENGINEER

JODY L. COLE  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

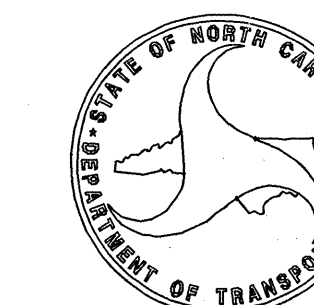


ROADWAY DESIGN ENGINEER



SIGNATURE: Jeanne K. Richter P.E.

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**



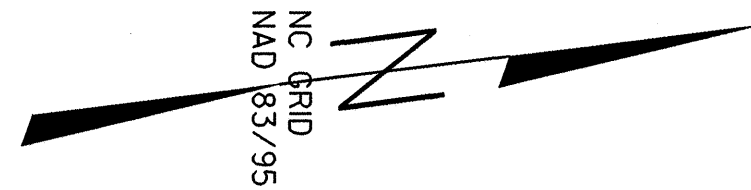
STATE HIGHWAY DESIGN ENGINEER

09/08/09

I:\Projects\NCDOT\Bridges Group 46 Final Design\B4029\Roadway\Proj\b4029\_rdy\_tsh.dgn  
J.Cole AT LPA20625  
09-JUN-2008 13:31

# SURVEY CONTROL SHEET B-4029

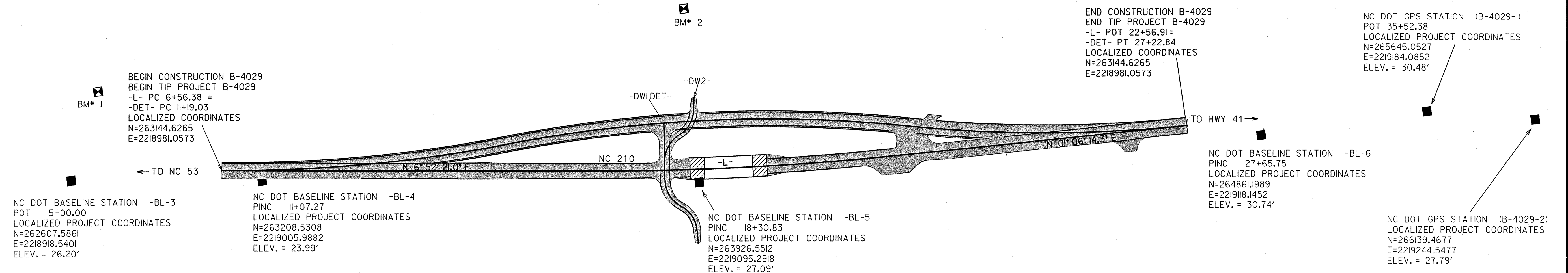
PROJECT REFERENCE NO. B-4029	SHEET NO. I-C
Location and Surveys	



BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3		262607.5861	2218918.5401	26.20	OUTSIDE PROJECT LIMITS	
4	BL-4		263208.5308	2219005.9882	23.99	7+22.96	16.40 RT
5	BL-5		263926.5512	2219095.2918	27.09	14+45.67	21.15 RT
6	BL-6		264861.1989	2219118.1452	30.74	OUTSIDE PROJECT LIMITS	
1		GPS B-4029-1	265645.0527	2219184.0852	30.48	OUTSIDE PROJECT LIMITS	

.....  
 BM1 ELEVATION = 31.22  
 N 262771 E 2218619  
 L STATION 6+56  
 S 44° 03' 34.3" W DIST 520.20  
 R/R SPIKE SET IN 18 INCH PINE  
 .....

.....  
 BM2 ELEVATION = 26.46  
 N 263946 E 2218726  
 L STATION 14+32.348 LEFT  
 R/R SPIKE SET IN 12 INCH PINE  
 .....



**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4029\_LS\_CONTROL\_060912.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.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "78 MEA" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 284257.4794(±) EASTING: 2249859.4242(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993925

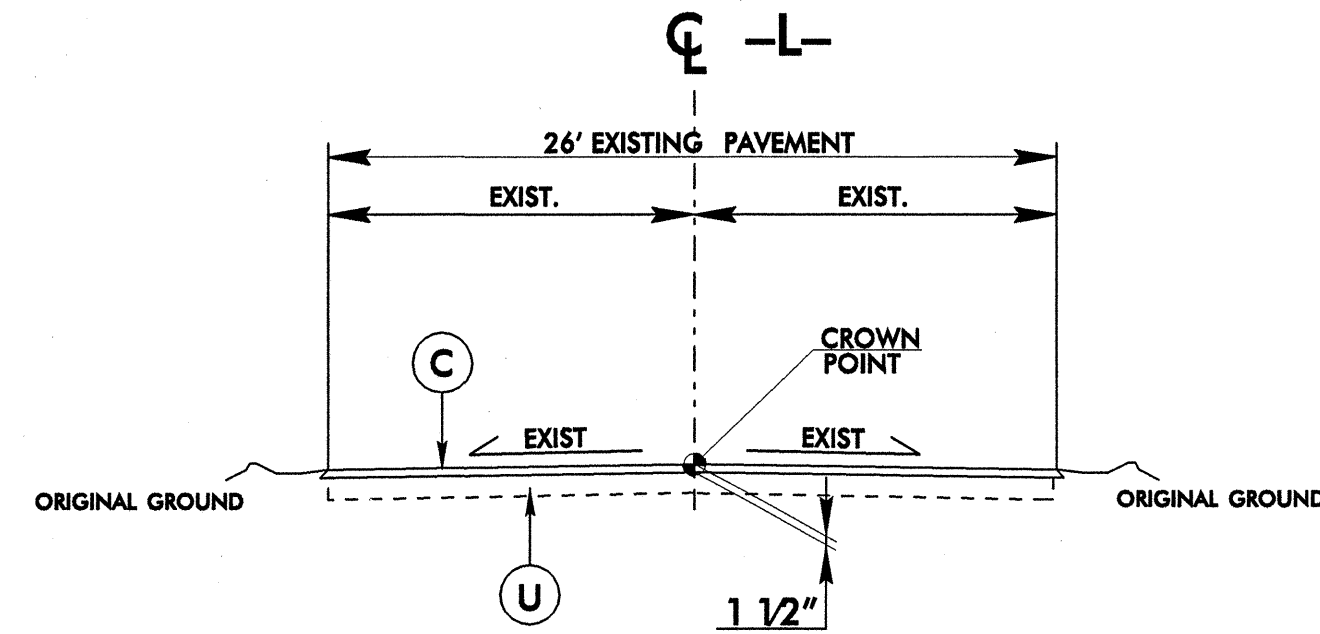
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "78 MEA" TO -L- STATION 6+56.38 IS 37,406.23' BEARING S 55° 38' 17" W

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

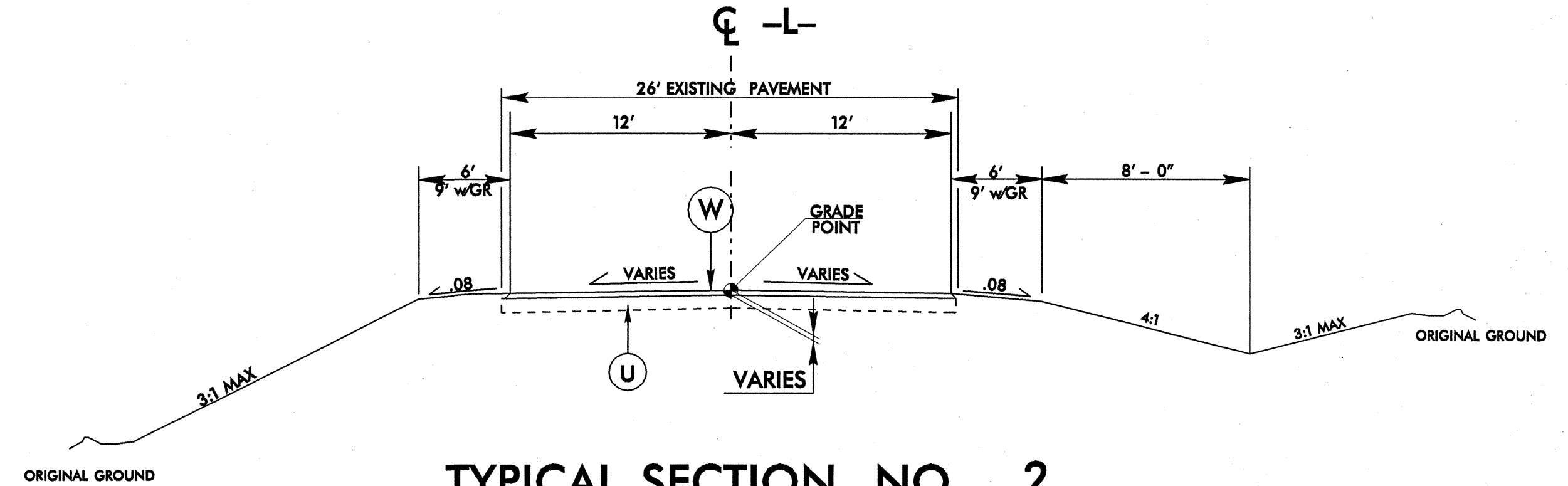
A	5" PORTLAND CEMENT CONCRETE PAVEMENT.	D1	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
C	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD. IN ONE LAYER.	E1	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.	U	EXISTING PAVEMENT.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J	PROP. 8" AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL BELOW)
D	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J1	PROP. 6" AGGREGATE BASE COURSE		

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



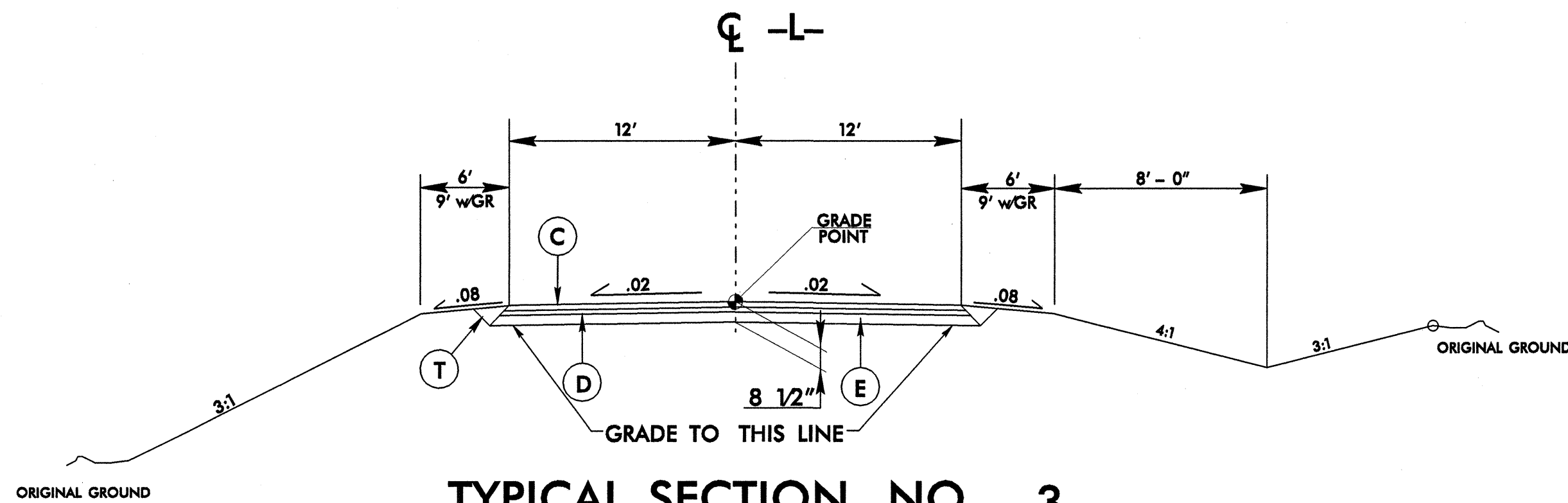
**TYPICAL SECTION NO. 1**

- \*\* -L- STA. 6+56.38 TO STA. 11+00.00
- \*\* -L- STA. 18+80.00 TO STA. 22+56.91
- \*\* OVERLAY EXISTING PAVEMENT ONLY



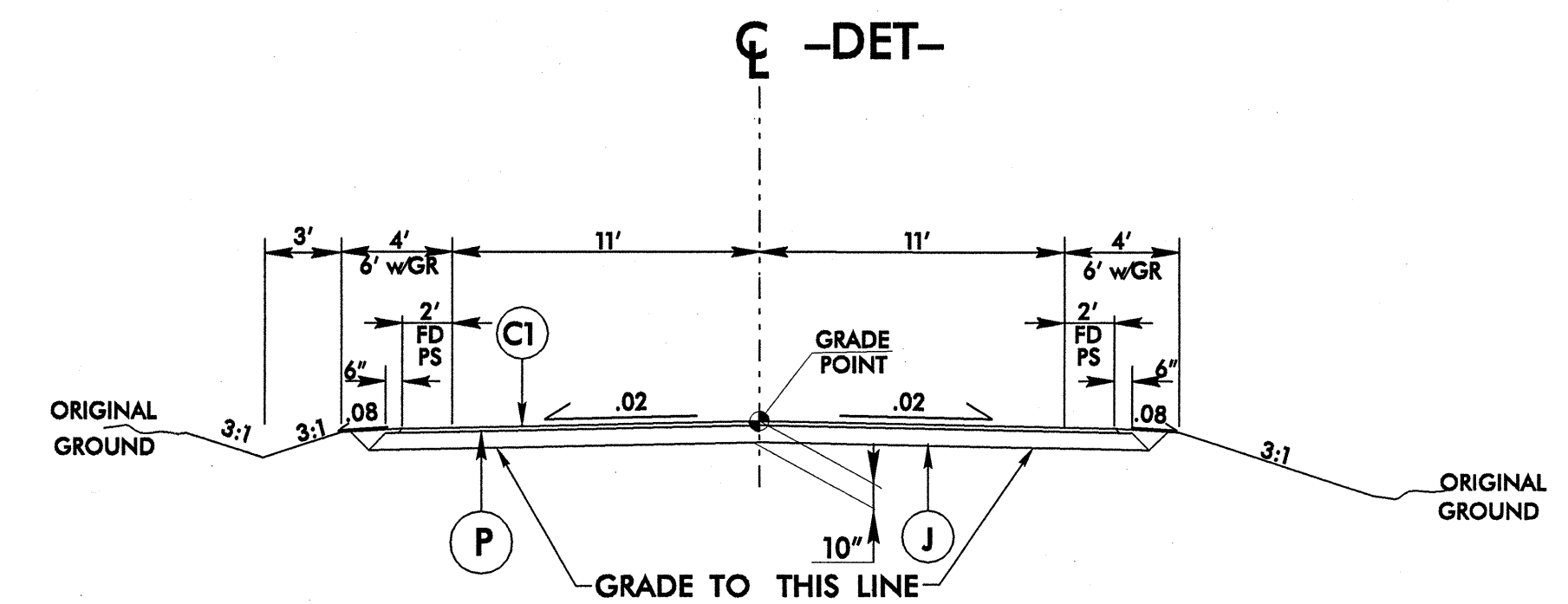
**TYPICAL SECTION NO. 2**

- \* -L- STA. 11+00.00 TO STA. 13+00.00
- \* -L- STA. 16+60.00 TO STA. 18+80.00
- \* RESURFACING ONLY



**TYPICAL SECTION NO. 3**

- L- STA. 13+00.00 TO STA. 14+53.81 (BEGIN BRIDGE)
- L- STA. 15+36.19 (END BRIDGE) TO STA. 16+60.00



**TYPICAL SECTION NO. 4**

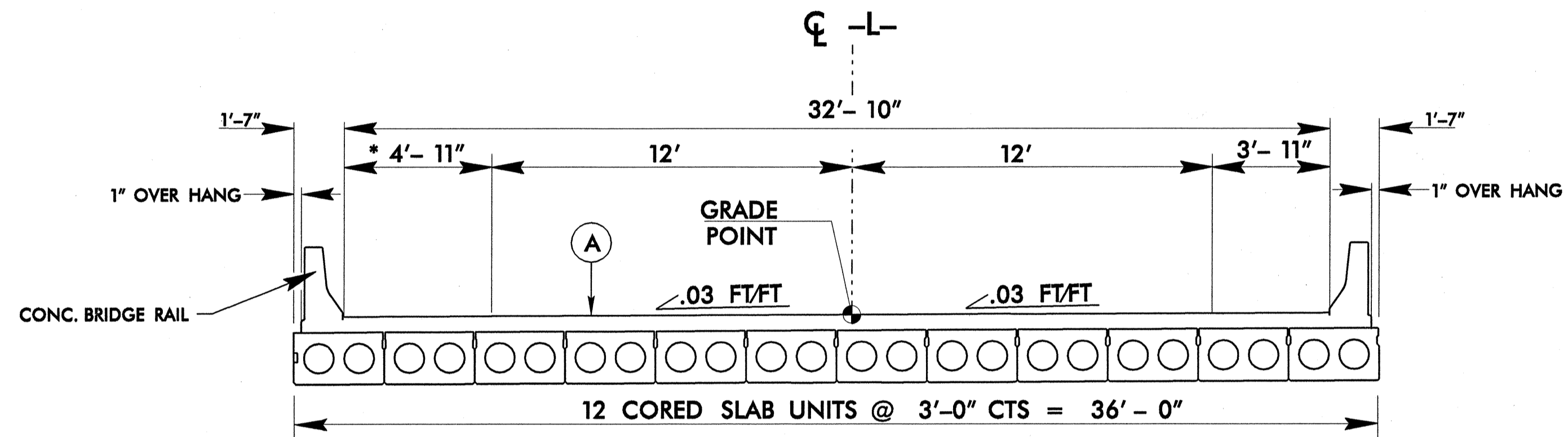
- DET- STA. 13+74.34 TO STA. 24+81.71

6/2/99

PROJECT REFERENCE NO. B-4029	SHEET NO. 2A
ROADWAY DESIGN ENGINEER SEAL 24277 JAMES L. RECHER	PAVEMENT DESIGN ENGINEER SEAL 13368 DONG-CHI CHEN

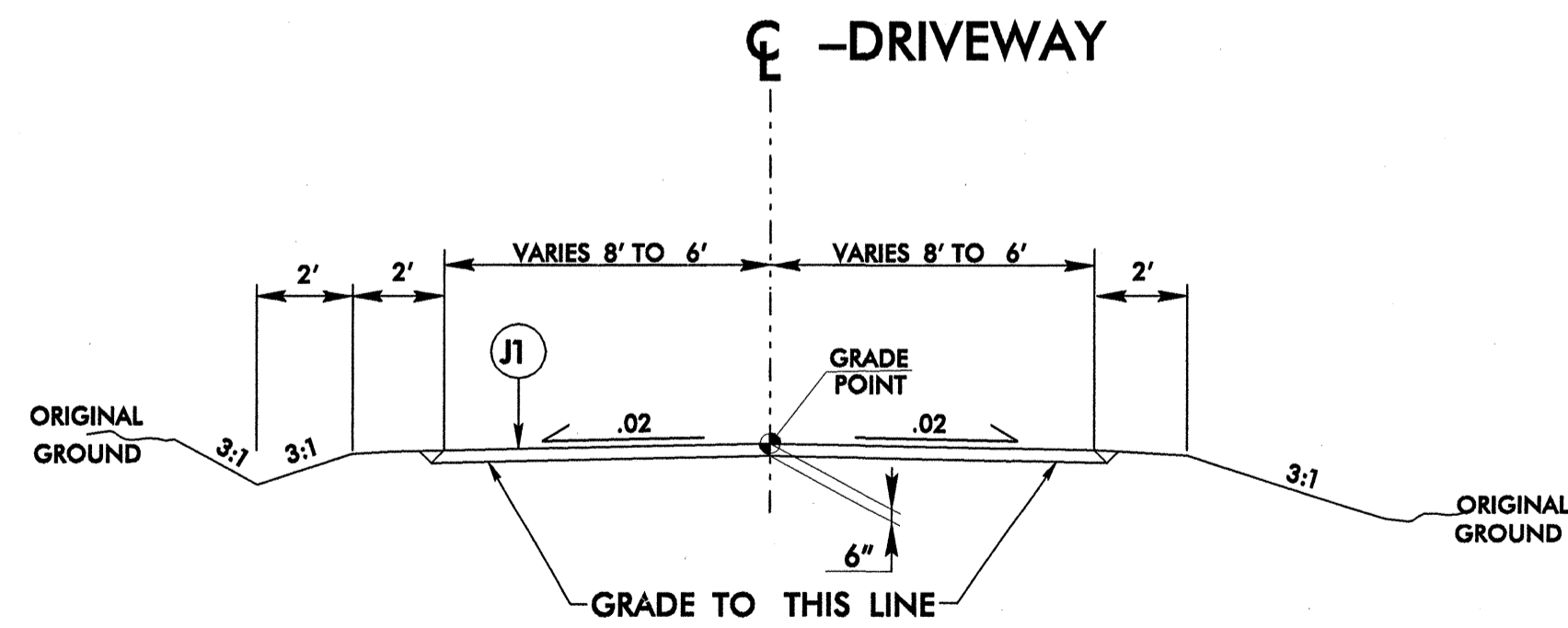
A	5" PORTLAND CEMENT CONCRETE PAVEMENT.	D1	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
C	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD. IN ONE LAYER.	E1	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.	U	EXISTING PAVEMENT.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J	PROP. 8" AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL BELOW)
D	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J1	PROP. 6" AGGREGATE BASE COURSE		

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



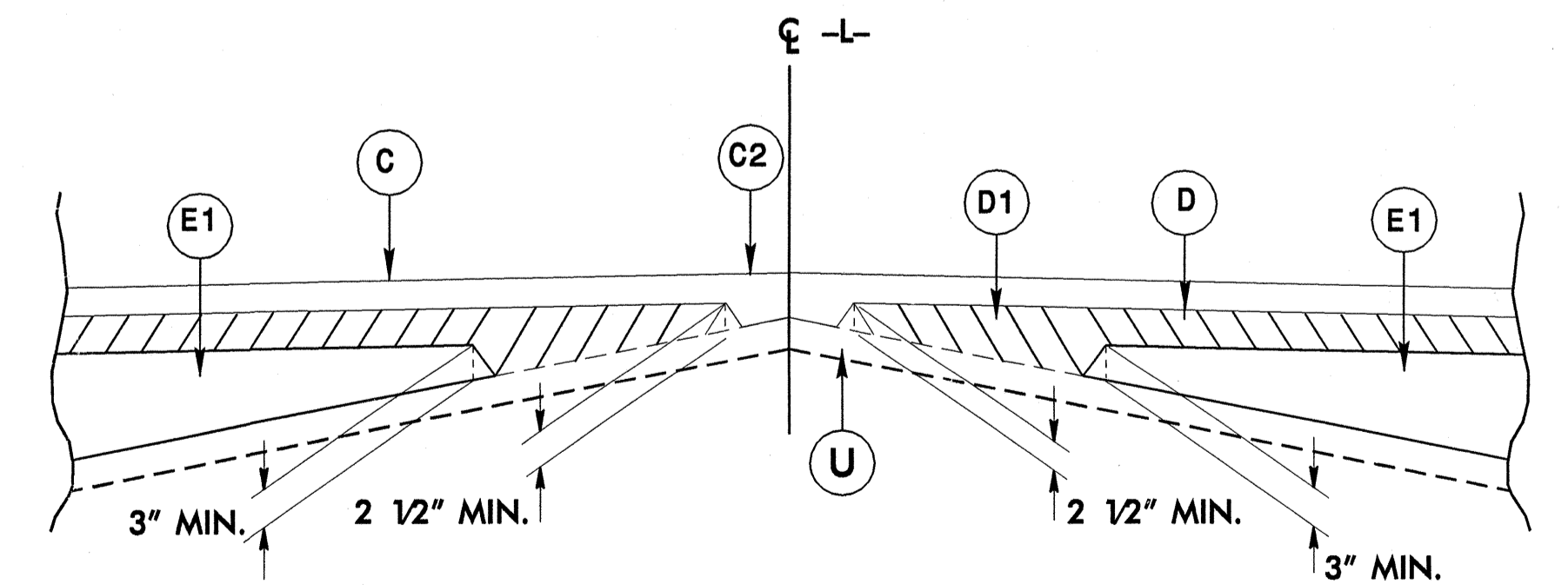
**TYPICAL BRIDGE SECTION NO.5**

-L- STA. 14+53.81 (BEGIN BRIDGE) TO STA. 15+36.19 (END BRIDGE)  
 \* WIDENED SHOULDER DUE TO HYDRAULIC SPREAD



**TYPICAL SECTION NO. 6**

-DWIDET- STA. 9+32.97 TO STA. 11+39.56  
 -DWI- STA. 10+12.61 TO STA. 11+39.55  
 -DW2- STA. 10+00.00 TO STA. 11+23.93



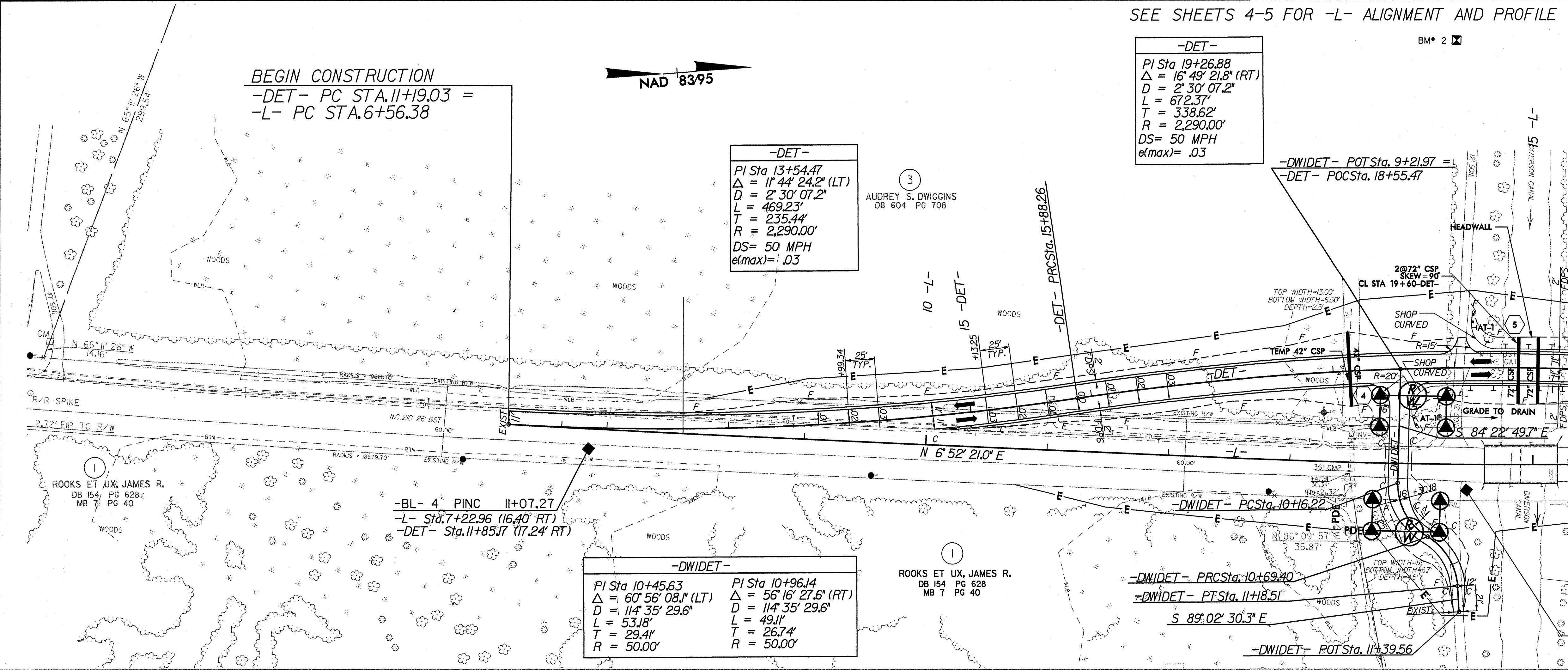
**Detail Showing Method of Wedging**

09-JUN-2008 14:33  
 Pe Group\_46\_F:\09\Design\B4029\Roadway\Proj\B4029\_rdy\_tup.dgn  
 Coals AT LPR20625



SEE SHEETS 4-5 FOR -L- ALIGNMENT AND PROFILE

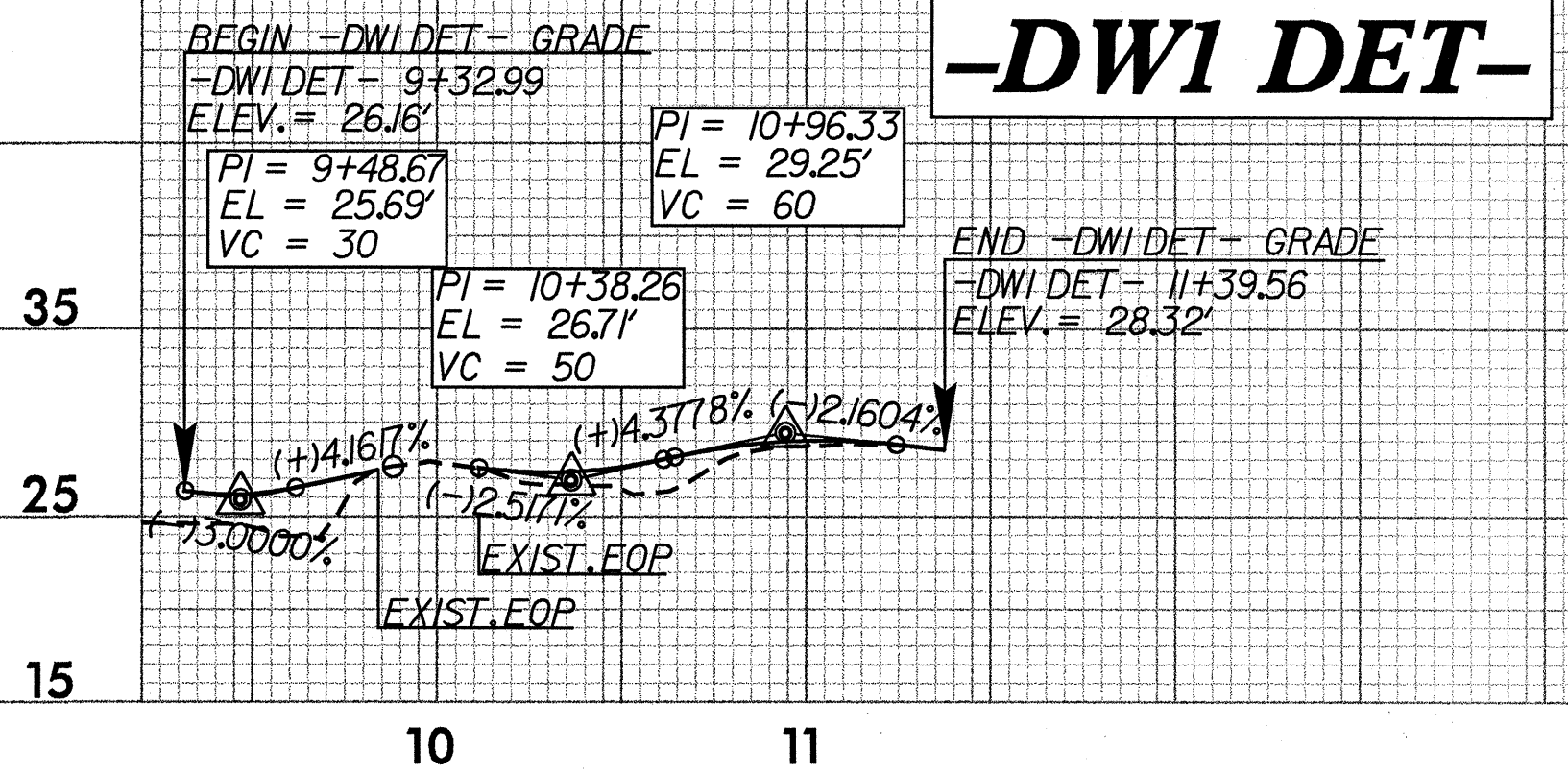
PROJECT REFERENCE NO. B-4029	SHEET NO. 2B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 



**CULVERT HYDRAULIC DATA**  
2 @ 72" CSP

DESIGN DISCHARGE	= 220	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 22.2	FT
BASE DISCHARGE	= N/A	CFS
BASE FREQUENCY	= N/A	YRS
BASE HW ELEVATION	= N/A	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING ELEVATION	= N/A	FT

BM\* 2 ELEV. 26.46'  
N 263,945.8062 E 2,218,726.1657  
R/R SPIKE SET IN 12" PINE  
-BL- STA 18+04.38 368.68 LT  
-L- STA 14+32.25 348.25 LT  
-DET- STA 19+03.96 268.36 LT



BEGIN GRADE  
-DET- Sta. 13+74.34 =  
-L- Sta. 9+11.33  
ELEV. = 26.06

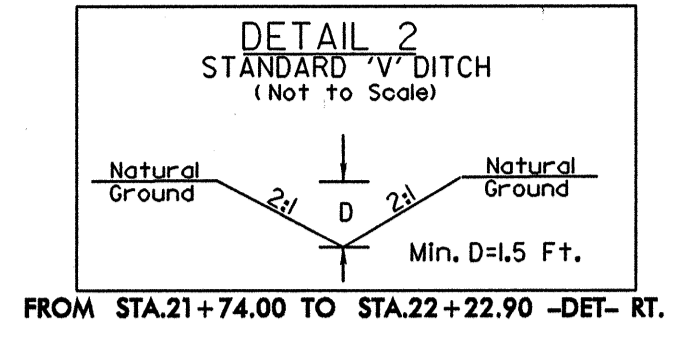
PI = 16+00.00  
EL = 25.67'  
VC = 200'  
K = 407  
Ds = 50mph

BM\* 1 ELEV. 31.22'  
N 262,720.1421 E 2,218,967.4783  
R/R SPIKE SET IN 18" PINE  
-BL- STA 6+18.43 320' LT

NOTE: BENCH MARK #1 IS LOCATED  
OUTSIDE OF THE PROJECT LIMITS.

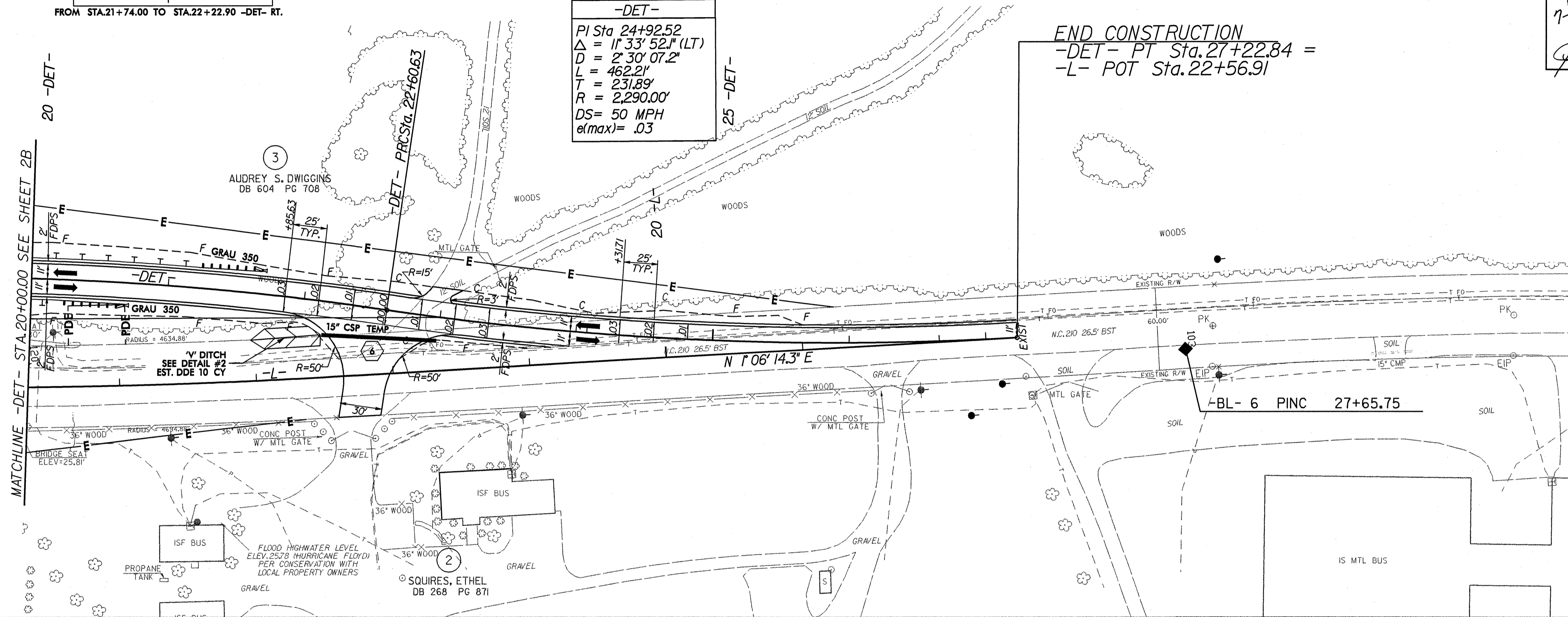
8/17/99  
REVISIONS  
I:\JUL-2008 09:05  
I:\Users\Bdes Group 46\Final Design\B4029\Roadway\Proj\B4029\_rdy\_psh02b.cdg  
I:\Users\Bdes Group 46\Final Design\B4029\Roadway\Proj\B4029\_rdy\_psh02b.cdg

PROJECT REFERENCE NO. B-4029	SHEET NO. 2C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Jeanette K. Richter	7/15/08



**-DET-**  
 PI Sta 24+92.52  
 $\Delta = 11' 33'' 52''$  (LT)  
 $D = 2' 30'' 07.2''$   
 $L = 462.21'$   
 $T = 231.89'$   
 $R = 2,290.00'$   
 $DS = 50$  MPH  
 $e(max) = .03$

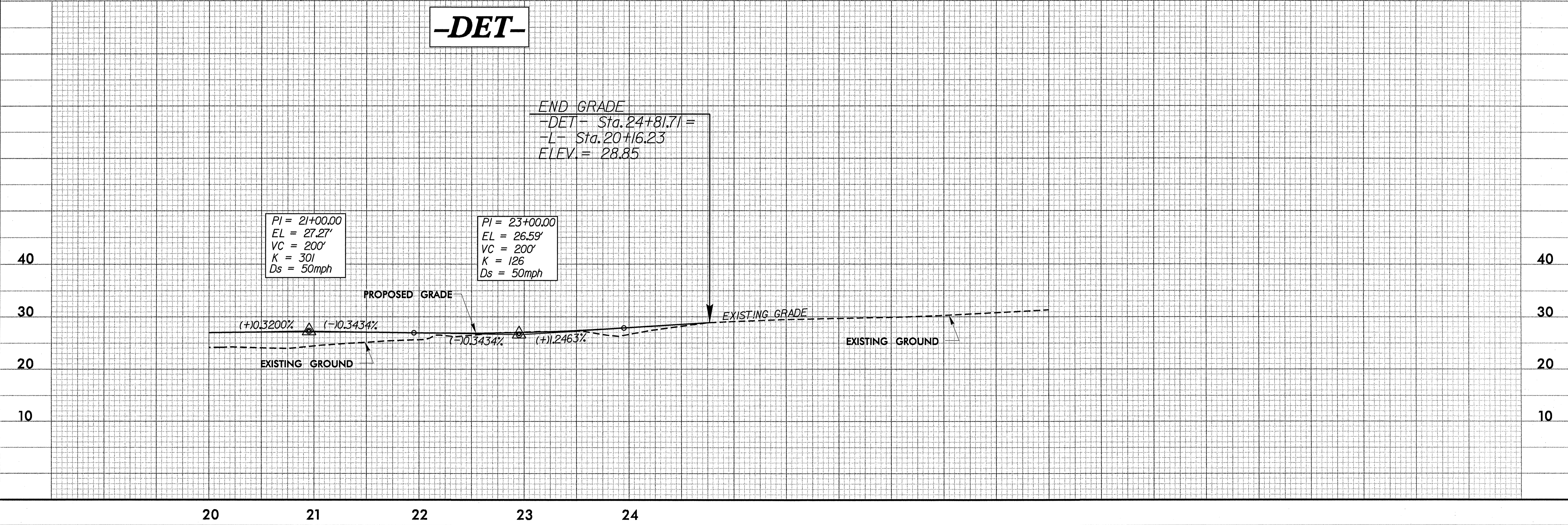
**END CONSTRUCTION**  
 -DET- PT Sta. 27+22.84 =  
 -L- POT Sta. 22+56.91



**-DET-**

**END GRADE**  
 -DET- Sta. 24+81.71 =  
 -L- Sta. 20+16.23  
 ELEV. = 28.85

PI = 21+00.00 EL = 27.27' VC = 200' K = 301 Ds = 50mph	PI = 23+00.00 EL = 26.59' VC = 200' K = 126 Ds = 50mph
--	--



REVISIONS

I:\JUL-2008 09:05 46 Final Design\B4029\Roadway\Proj\B4029\_rdy\_psh02C.dgn

8/17/99

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

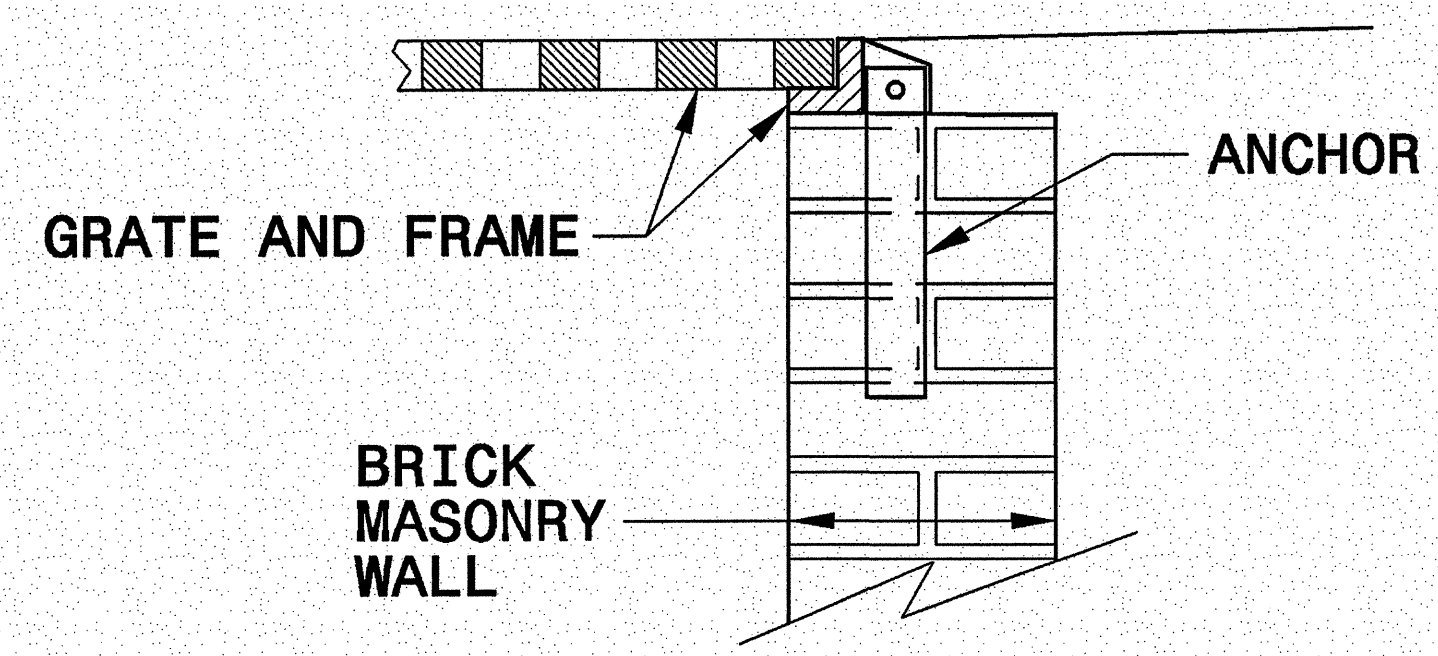
ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1  
**840D25**

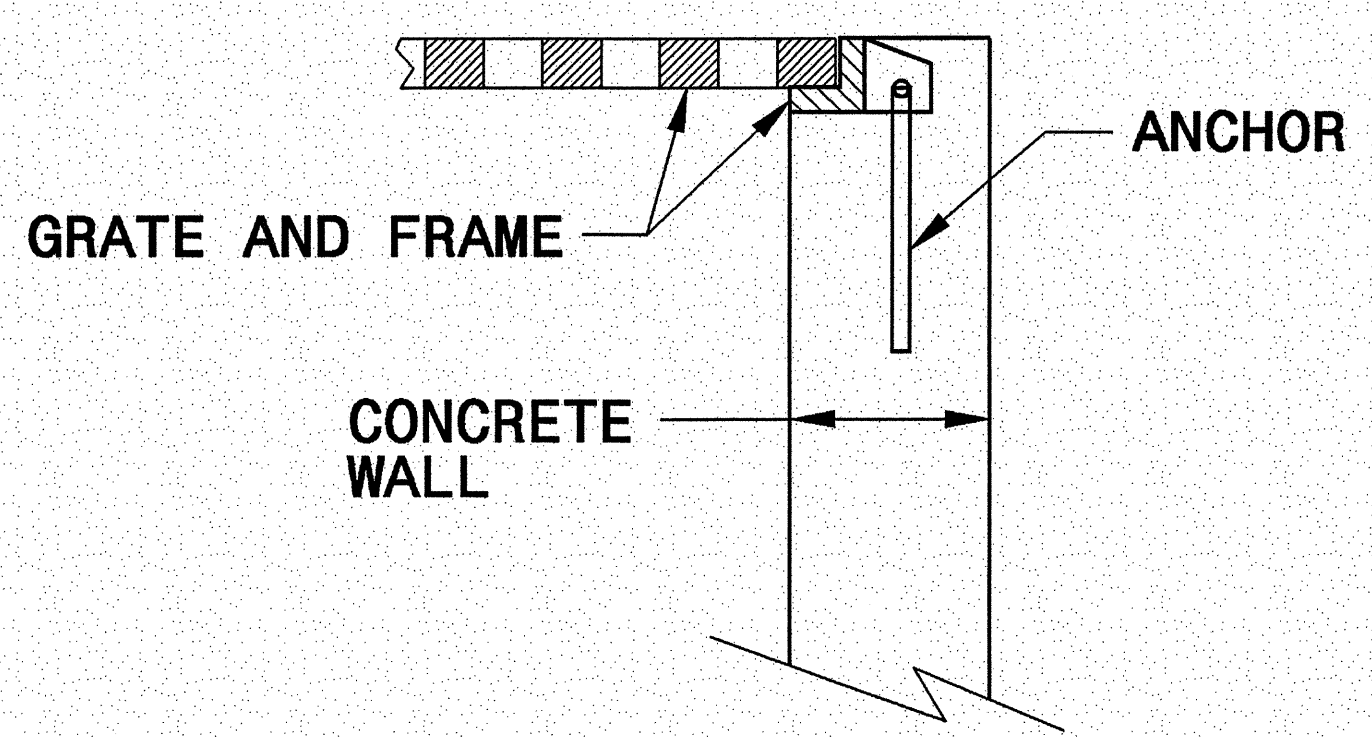
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

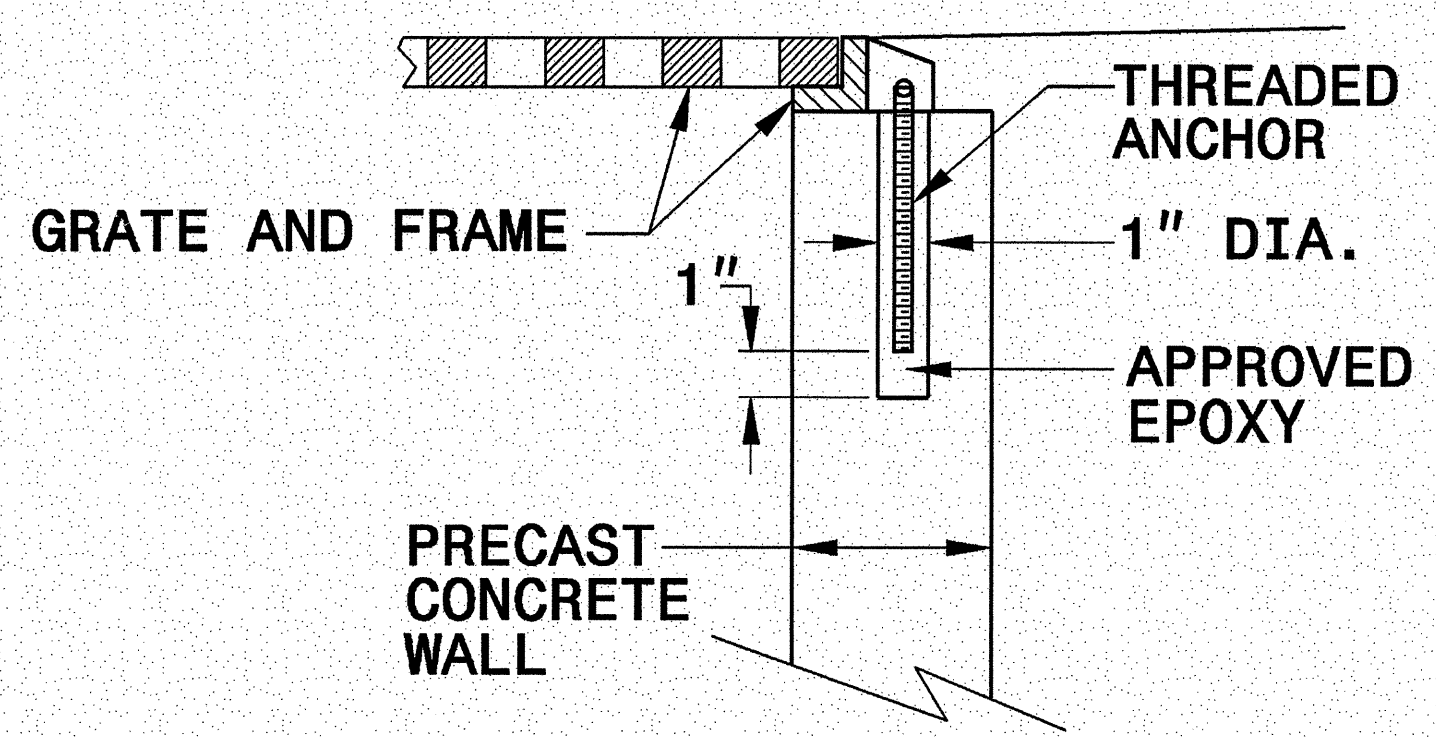
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY  
CONSTRUCTION**



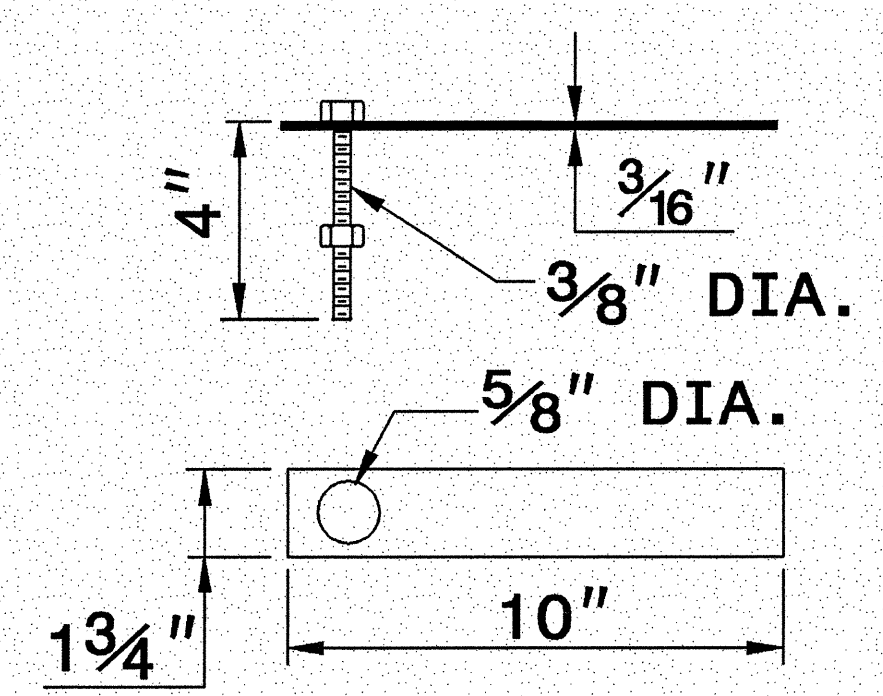
**CONCRETE  
CONSTRUCTION**



**PRECAST CONCRETE  
CONSTRUCTION**

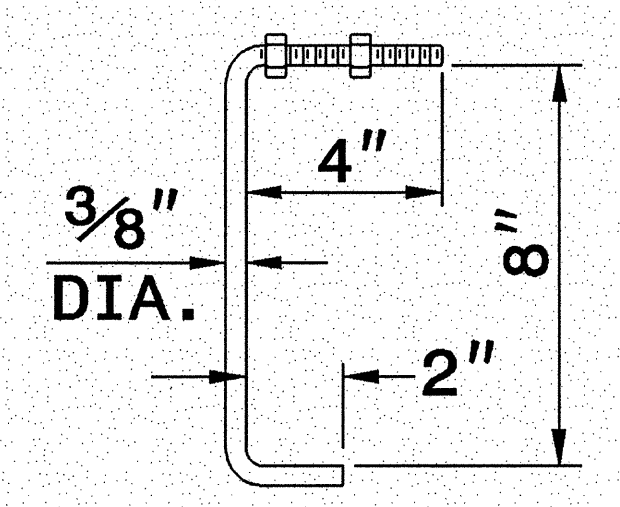
**DETAIL SHOWING ANCHORAGE OF  
FRAME FOR GRATED DROP INLET**

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



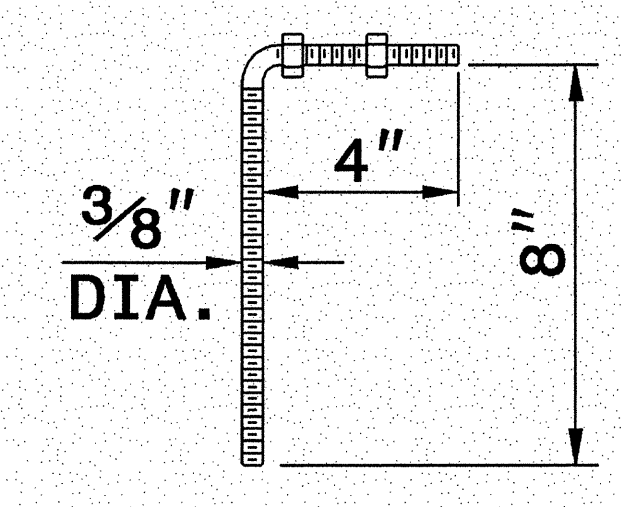
**MASONRY ANCHOR**

3/8" DIA. BOLT WITH PLATE



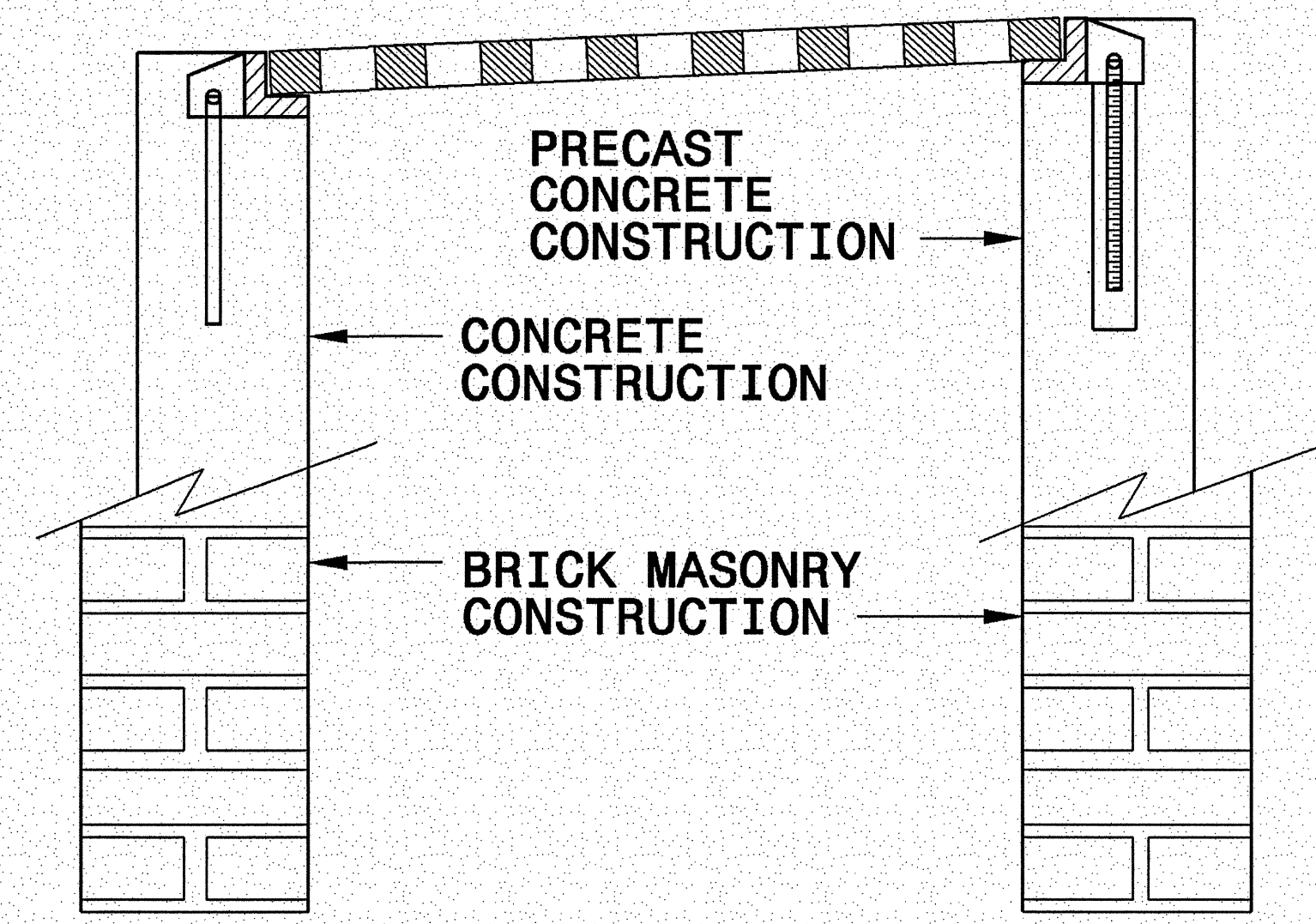
**CONCRETE ANCHOR**

3/8" DIA. BENT BAR



**PRECAST  
CONCRETE ANCHOR**

3/8" DIA. BENT BAR



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

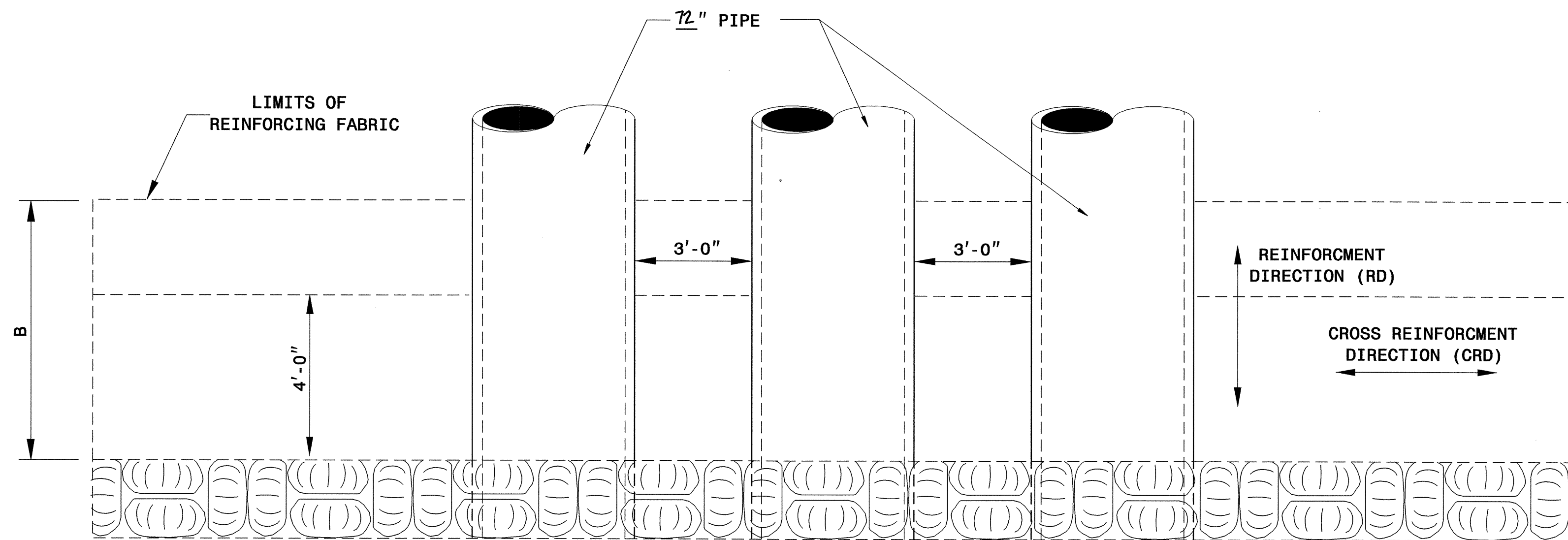
27-SEP-2006 08:59 S:\Contr-acas\1-922225\Special\_Details\erward\stds\06\_Std to Special\_Details\84025 Anchorage for Frames\0840d25.dgn erward A1 P222225



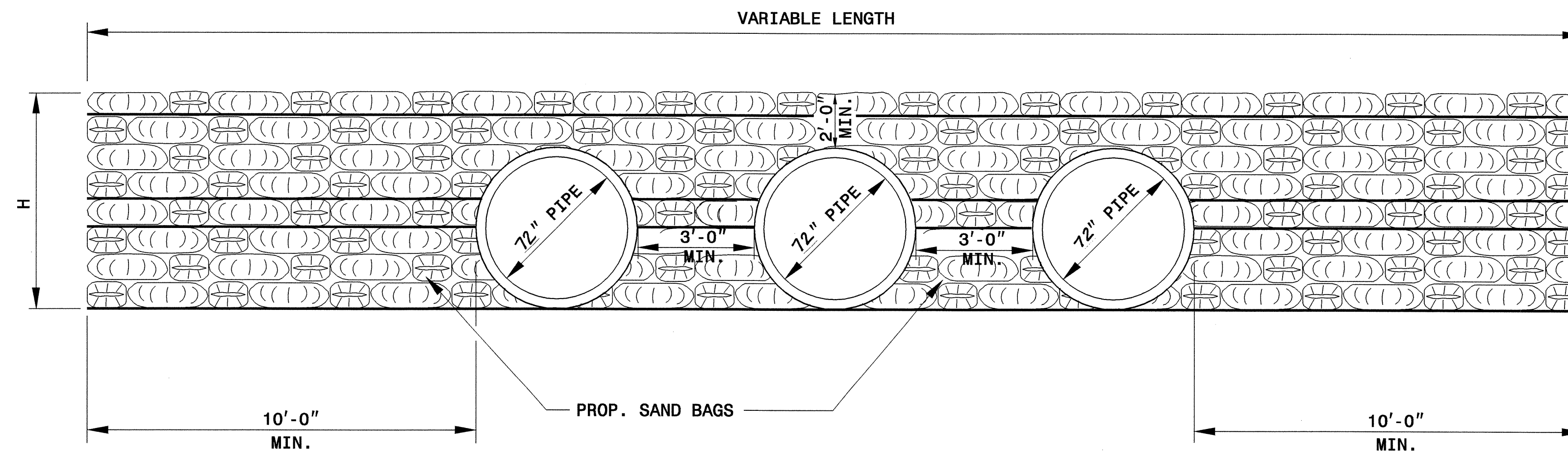
PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-250-4128 FAX 919-250-4119

**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.:



**PLAN**



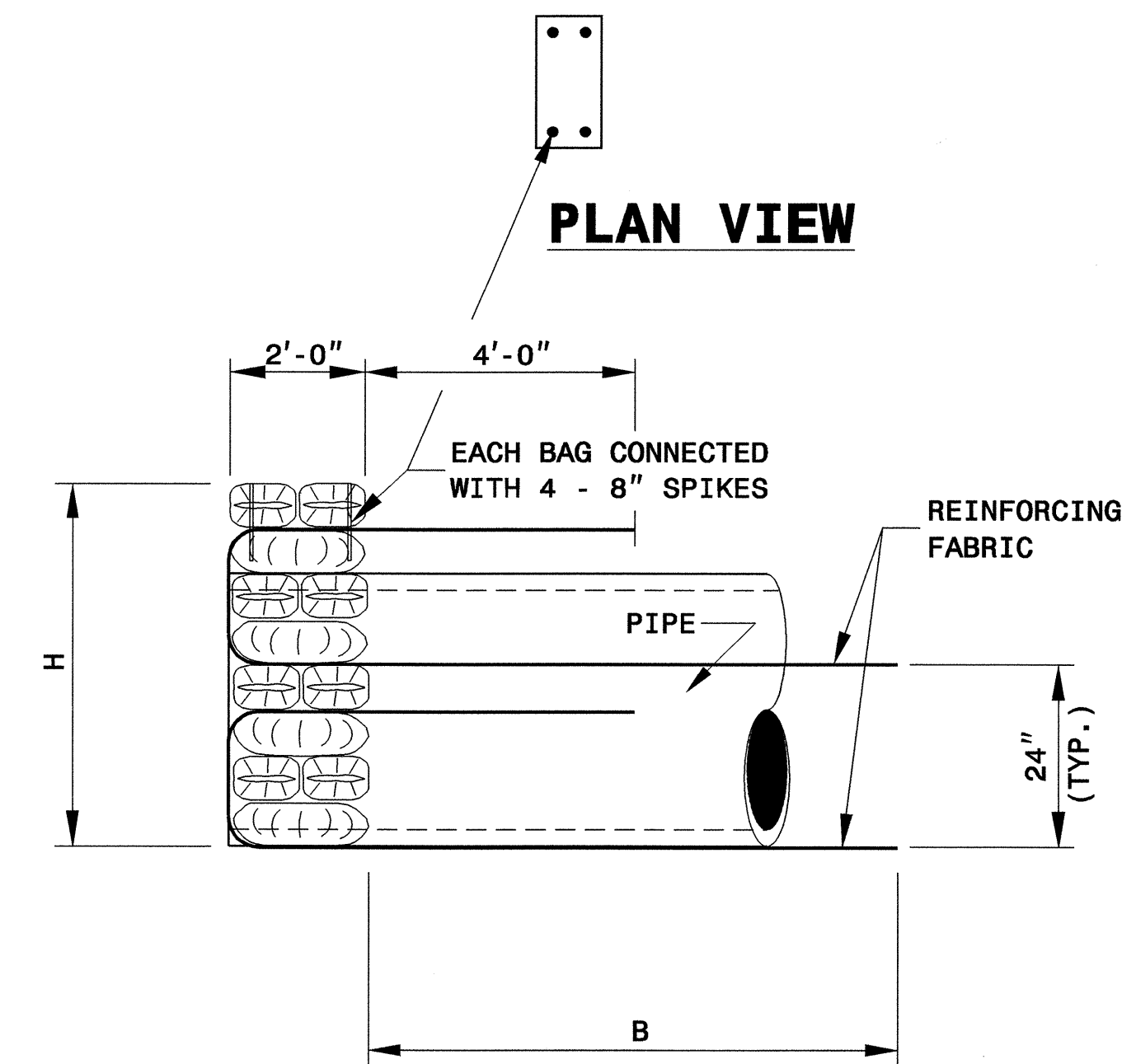
**FRONT ELEVATION**

**NOTES:**

- REINFORCED SAND BAG HEADWALLS ARE BASED ON THE FOLLOWING ASSUMPTIONS:
  - TRAFFIC SURCHARGE IS 240 PSF OR LESS AND BACKSLOPE IS 2:1 OR FLATTER.
  - GRADE IN FRONT OF WALL IS 6:1 OR FLATTER
  - MAXIMUM APPLIED BEARING PRESSURE IS LESS THAN 1 TSF.
- REINFORCED SAND BAG HEADWALLS ARE BASED ON THE FOLLOWING IN-SITU SOIL PARAMETERS:
  - UNIT WEIGHT = 120 PCF
  - FRICTION ANGLE = 30 DEGREES

DO NOT USE REINFORCED SAND BAG HEADWALL DETAIL WHEN ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT BELOW BOTTOM OF PIPE.
- PLACE REINFORCEMENT IN SLIGHT TENSION AND FREE OF KINKS, FOLDS, WRINKLES AND CREASES.
- DO NOT SPLICE REINFORCEMENT IN THE REINFORCEMENT DIRECTION (RD). SEAMS ARE ALLOWED IN THE CROSS-REINFORCEMENT DIRECTION (CRD).
- BACKFILL IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS.
 

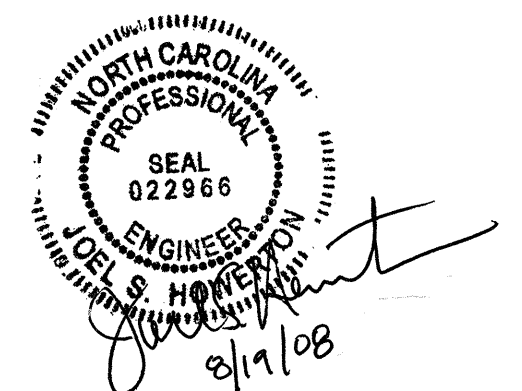
DO NOT BACKFILL WITH ROCK, BROKEN PAVEMENT OR SIMILAR MATERIAL.  
DO NOT DAMAGE REINFORCEMENT WHEN PLACING AND COMPACTING BACKFILL.  
DO NOT USE SHEEPSFOOT, GRID ROLLERS OR OTHER TYPES OF COMPACTION EQUIPMENT WITH FEET.  
DO NOT OPERATE HEAVY EQUIPMENT ON REINFORCEMENT UNTIL IT IS COVERED WITH AT LEAST 10" OF BACKFILL.  
USE ONLY HAND OPERATED EQUIPMENT TO COMPACT WITHIN 3 ft OF THE HEADWALL FACE.
- #4 REINFORCING BARS (GRADE 60) 24" LONG MAY BE SUBSTITUTED FOR 8" SPIKES. THE #4 BAR SHALL BE DRIVEN THRU 4 BAGS MAXIMUM.
- Headwall dimensions may be adjusted for single, double or more pipes as shown in the plans.



**SIDE ELEVATION**

REINFORCING FABRIC		
WALL HEIGHT H (ft)	REINF. LENGTH B (ft)	ULTIMATE TENSILE STRENGTH (lb/ft)
< 4	6	2400
4 TO 6	6	3000
6 TO 8	= H	3600
8 TO 10	= H	4500

TOTAL AREA SAND BAG HEADWALL = 300 S.F.



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

**DETAIL OF REINFORCED SAND BAG HEADWALL**

ORIGINAL BY: rnbritt DATE: 11-09-04  
 MODIFIED BY: tspell DATE: 6-10-08  
 CHECKED BY: J.S. Howerton DATE: 8/11/08  
 FILE SPEC.: c:\details\howerton\sandbagheadwall.dgn

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

**PAVEMENT  
 REMOVAL SUMMARY**

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
<b>PHASE I</b>					
-DET- 11+19.03 TO 27+22.84	507		3,150	2,643	
<b>SUBTOTAL</b>	<b>507</b>		<b>3,150</b>	<b>2,643</b>	
<b>PHASE II</b>					
-L- 11+00.00 TO 14+53.81 (BEGIN BRIDGE)	137		536	399	
-L- 15+36.19 (END BRIDGE) TO 18+80.00	78		183	105	
<b>SUBTOTAL</b>	<b>215</b>		<b>719</b>	<b>504</b>	
<b>PHASE III (-L- /W-DET- REMOVAL)</b>					
-L- 8+92.46 TO 20+99.37	3,354		389		2,965
<b>SUBTOTAL</b>	<b>3,354</b>		<b>389</b>		<b>2,965</b>
<b>PROJECT SUBTOTAL</b>	<b>4,076</b>		<b>4,258</b>	<b>3,147</b>	<b>2,965</b>
EST. 5% FOR REPLACING TOPSOIL ON ON BORROW PIT				157	
<b>PROJECT TOTAL</b>	<b>4,076</b>			<b>3,304</b>	
<b>SAY</b>	<b>4,100</b>			<b>3,350</b>	
<b>B-4029 PROJECT TOTALS (SAY)</b>	<b>4,100</b>			<b>3,350</b>	
EST. DDE = 10 C.Y.					
EST. SELECT GRANULAR MATERIAL = 200 C.Y.					
EST. UNDERCUT EXCAVATION = 1000 C.Y.					
<b>B-4082 PROJECT TOTALS (SAY)</b>	<b>40</b>			<b>90</b>	
EST. UNDERCUT EXCAVATION = 200 C.Y.					
EST. SELECT GRANULAR MATERIAL = 100 C.Y.					
<b>GRAND TOTAL</b>	<b>4,140</b>			<b>3,440</b>	

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD'
-L-	13+00.00	14+60.00	CL	462.22
-L-	15+20.00	16+60.00	CL	404.44
-DET-	11+51.99	14+68.91	CL	311.22
-DET-	14+68.91	23+82.46	CL	2,639.14
-DET-	23+82.46	26+96.51	CL	324.78
B-4029 TOTAL (SAY):				4,150
B-4082 TOTAL (SAY):				355
<b>GRAND TOTAL:</b>				<b>4,505.00</b>

**PARCEL INDEX**

PARCEL NO.	PROPERTY OWNER	SHEET NO.
1	JAMES R. ROOKS, ET UX	4
2	ETHEL SQUIRES	4+5
3	AUDREY S. DWIGGINS	4+5

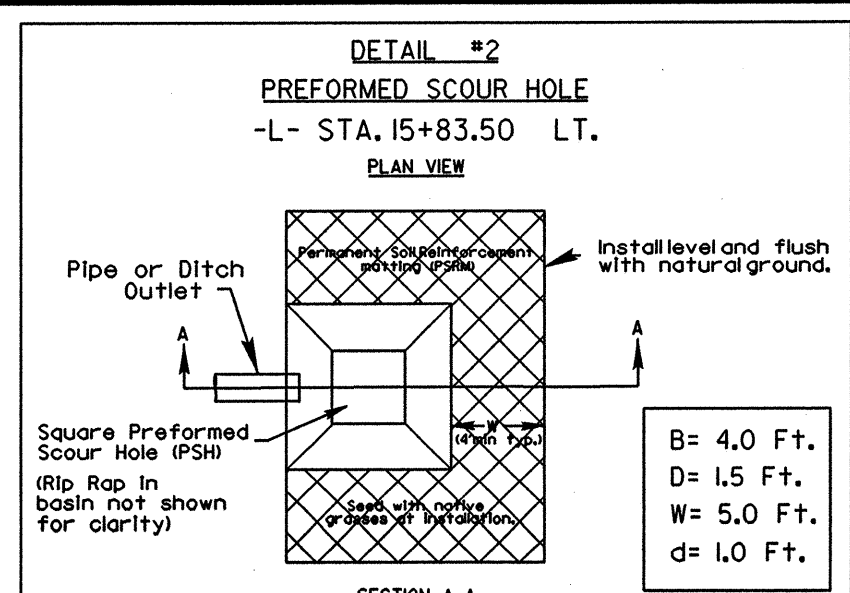
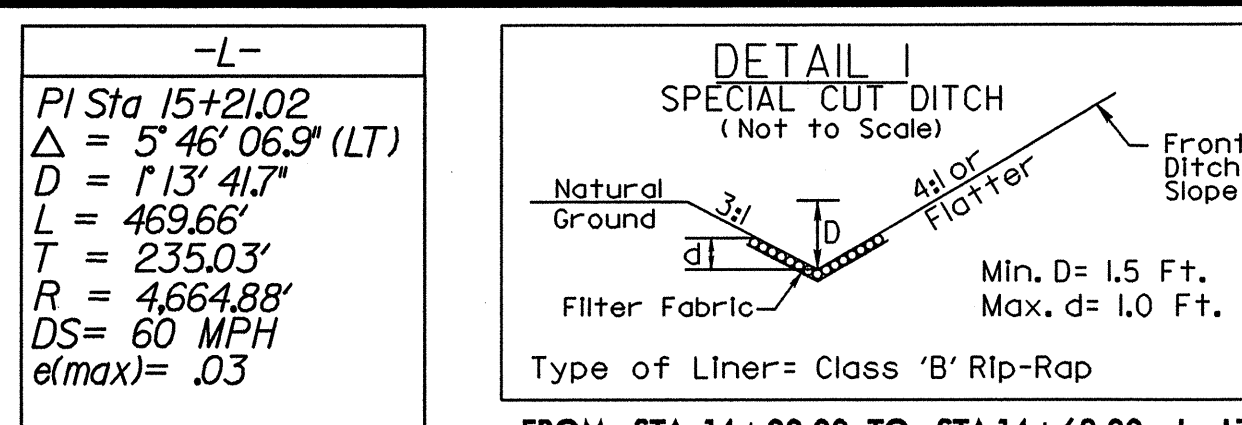
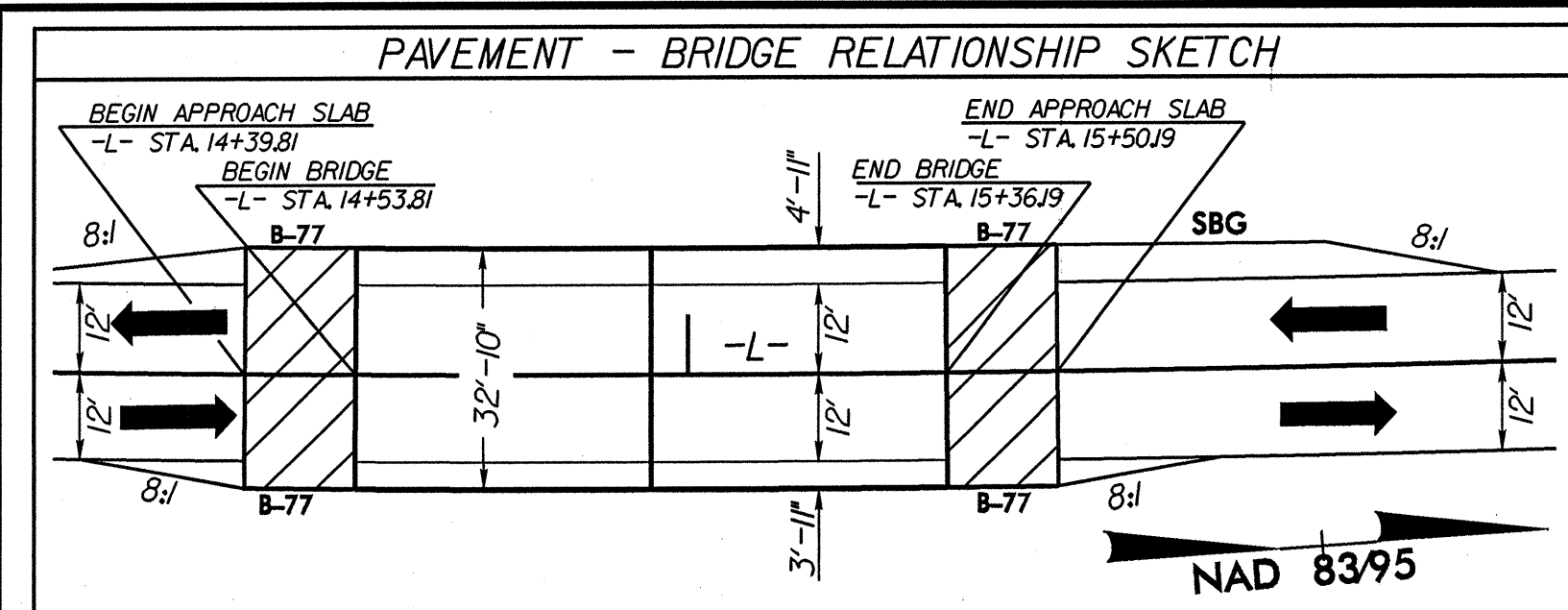
GRAND TOTAL EST. DDE = 10 C.Y.  
 GRAND TOTAL EST. SELECT GRANULAR MATERIAL = 300 C.Y.  
 GRAND TOTAL EST. UNDERCUT EXCAVATION = 1200 C.Y.

**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."

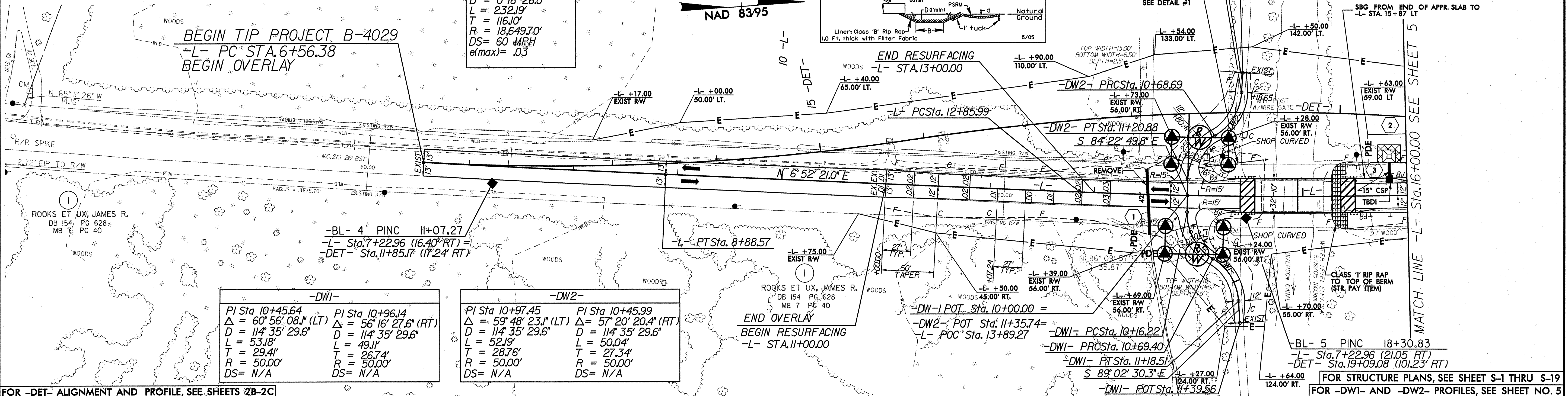
5/9/06  
 I:\Projects\2008\0904  
 I:\Projects\2008\0904\Roadway\Proj\B4029\_rdy\_psh03A.dgn  
 I:\Projects\2008\0904\Roadway\Proj\B4029\_rdy\_psh03A.dgn  
 I:\Projects\2008\0904\Roadway\Proj\B4029\_rdy\_psh03A.dgn  
 I:\Projects\2008\0904\Roadway\Proj\B4029\_rdy\_psh03A.dgn





-L-  
 PI Sta 15+21.02  
 $\Delta = 5' 46'' 06.9''$  (LT)  
 $D = 1' 13'' 41.7''$   
 $L = 469.66'$   
 $T = 235.03'$   
 $R = 4,664.88'$   
 $DS = 60$  MPH  
 $e(max) = .03$

-L-  
 PI Sta 7+72.48  
 $\Delta = 0' 42'' 48.1''$  (LT)  
 $D = 0' 18'' 26.0''$   
 $L = 232.19'$   
 $T = 116.10'$   
 $R = 18,649.70'$   
 $DS = 60$  MPH  
 $e(max) = .03$



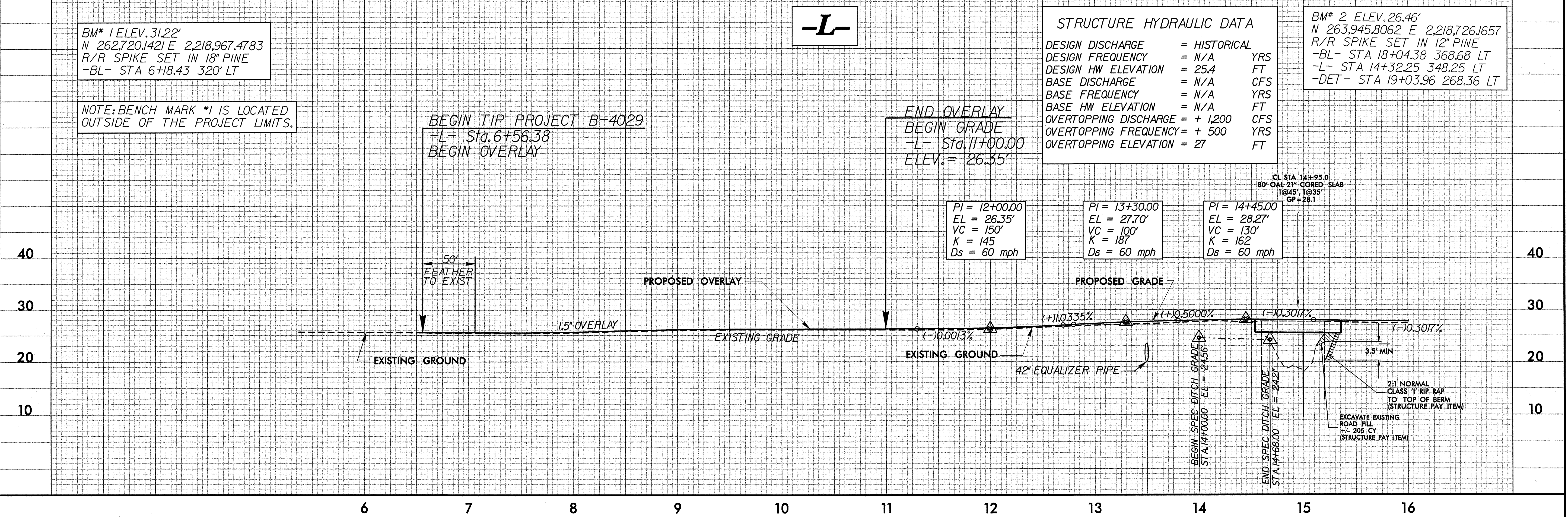
-DW1-  
 PI Sta 10+45.64  
 $\Delta = 60' 56'' 08.1''$  (LT)  
 $D = 114' 35'' 29.6''$   
 $L = 53.18'$   
 $T = 29.41'$   
 $R = 50.00'$   
 $DS = N/A$

-DW2-  
 PI Sta 10+97.45  
 $\Delta = 59' 48'' 23.1''$  (LT)  
 $D = 114' 35'' 29.6''$   
 $L = 52.19'$   
 $T = 28.76'$   
 $R = 50.00'$   
 $DS = N/A$

STRUCTURE HYDRAULIC DATA

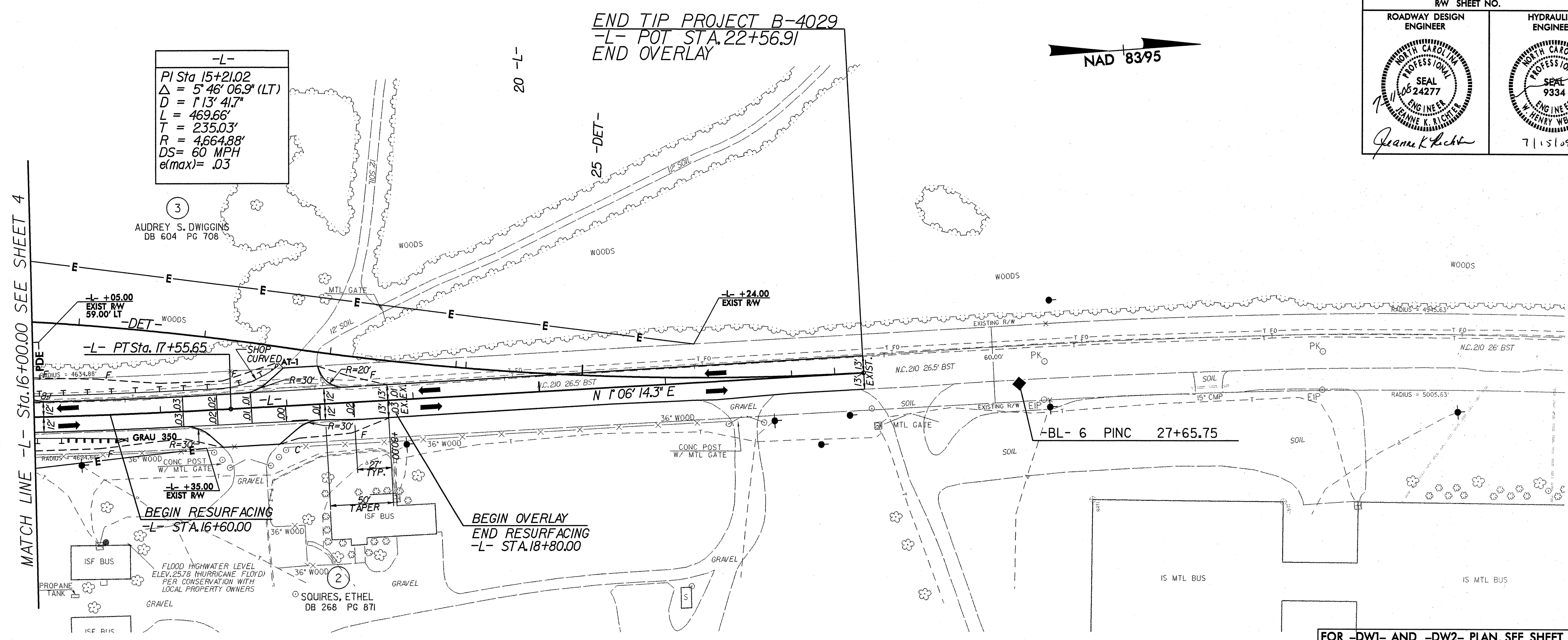
DESIGN DISCHARGE	= HISTORICAL
DESIGN FREQUENCY	= N/A YRS
DESIGN HW ELEVATION	= 25.4 FT
BASE DISCHARGE	= N/A CFS
BASE FREQUENCY	= N/A YRS
BASE HW ELEVATION	= N/A FT
OVERTOPPING DISCHARGE	= + 1,200 CFS
OVERTOPPING FREQUENCY	= + 500 YRS
OVERTOPPING ELEVATION	= 27 FT

BM\* 2 ELEV. 26.46'  
 N 263.945, 8062 E 2,218.726, 1657  
 R/R SPIKE SET IN 12" PINE  
 -BL- STA 18+04.38 368.68 LT  
 -L- STA 14+32.25 348.25 LT  
 -DET- STA 19+03.96 268.36 LT



REVISIONS

I:\JUL-2008 09:04 B:\Projects\B4029\Roadway\Proj\B4029\_r.dwg psh04.dgn  
 1:10:2008 09:04 B:\Projects\B4029\Roadway\Proj\B4029\_r.dwg psh04.dgn  
 1:10:2008 09:04 B:\Projects\B4029\Roadway\Proj\B4029\_r.dwg psh04.dgn



REVISIONS  
 8/17/99  
 I:\Projects\2008\09\04\Roadway\B4029\Roadway\Proj\B4029\_rdy\_psh05.dgn

FOR -DW1- AND -DW2- PLAN, SEE SHEET NO. 4  
 FOR -DET- ALIGNMENT AND PROFILE, SEE SHEETS 2B-2C

