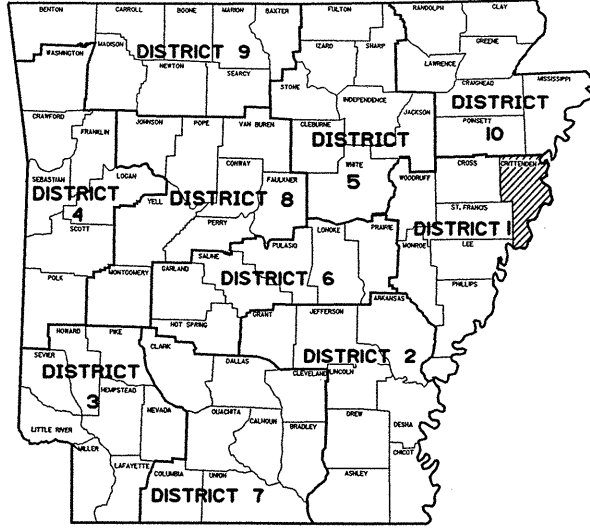


ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

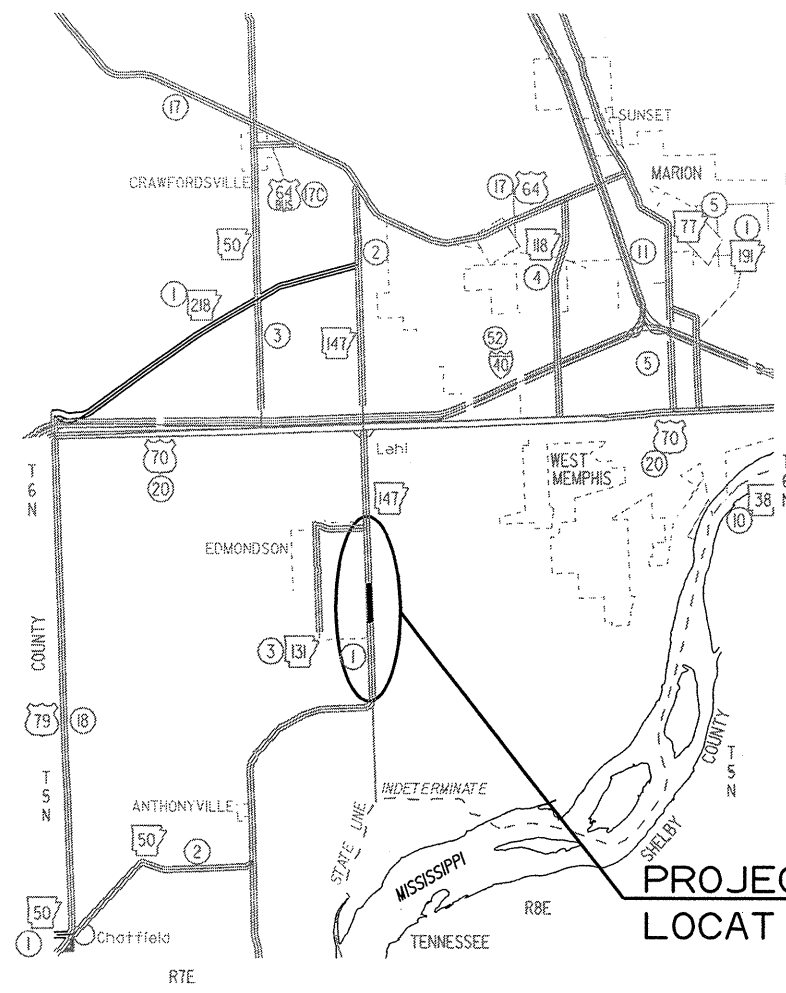
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				6	ARK.			
				JOB NO.	110514		1	78
(2) TEN MILE BAYOU CUTOFF DITCH STR. & APPRS. (C&E) (S)								

TEN MILE BAYOU CUTOFF
DITCH STR. & APPRS. (C&E) (S)

CRITTENDEN COUNTY
ROUTE 147 SECTION 1
JOB 110514



ARK. HWY. DIST. NO. 1



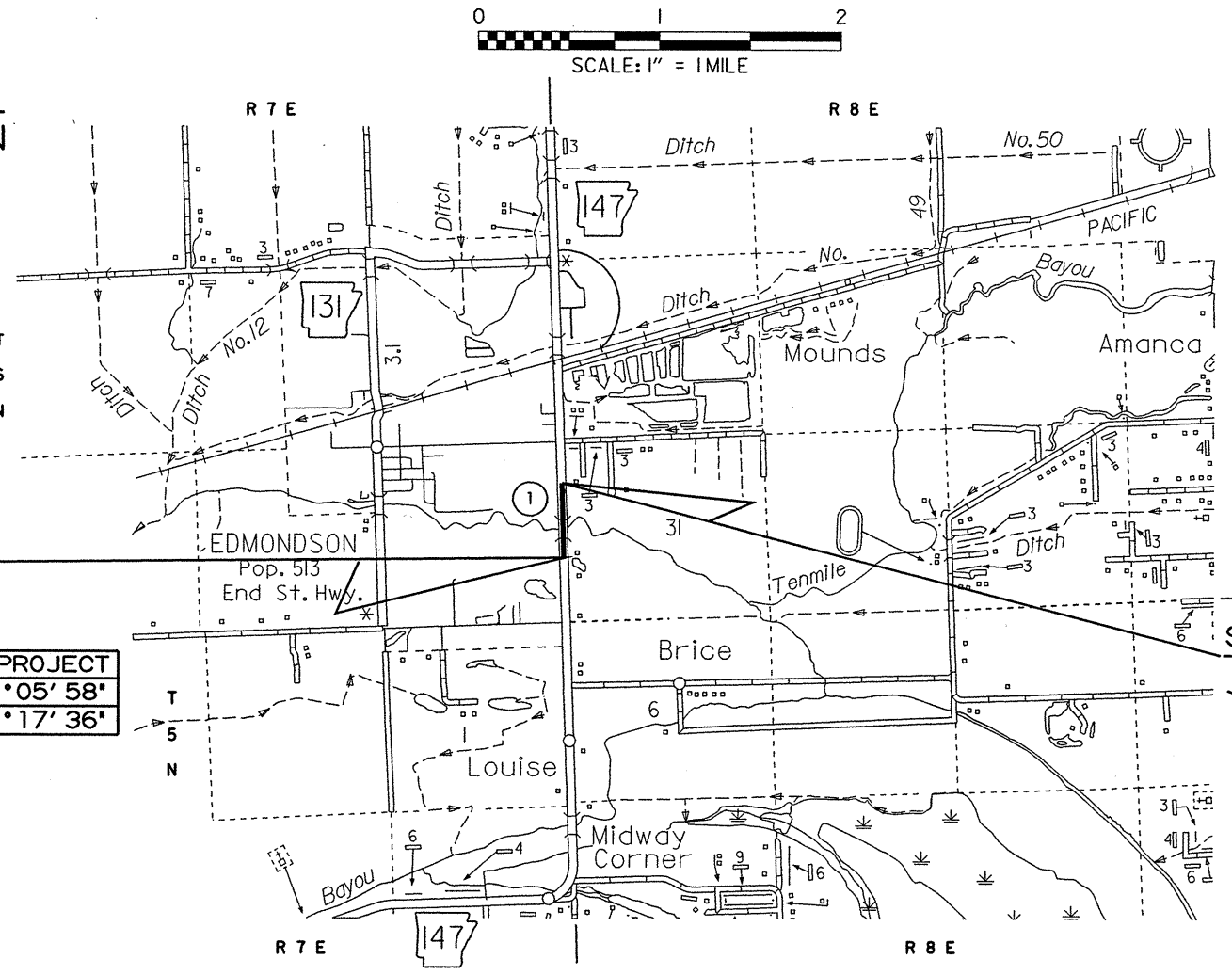
VICINITY MAP

BRIDGE CONSTRUCTION DATA

- 1 STA. 108+59.72 BRIDGE END
BRIDGE NO. 07173
CONTINUOUS INTEGRAL W-BEAM UNIT
40' -0" CLEAR ROADWAY WIDTH
159' -0" BRIDGE LENGTH
STA. 110+18.72 BRIDGE END

STA. 99+93.70 BEGIN JOB 110514
LOG MILE 11.79

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 35°05' 39"	N 35°05' 54"	N 35°05' 58"
LONGITUDE	W 90°17' 36"	W 90°17' 36"	W 90°17' 36"



DESIGN TRAFFIC DATA

DESIGN YEAR	2030
2010 ADT	2600
2030 ADT	3300
2030 DHV	363
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	5%
DESIGN SPEED	60 MPH

STA. 119+06.31 END
JOB 110514

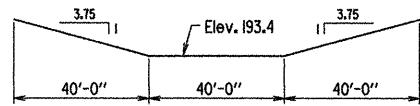
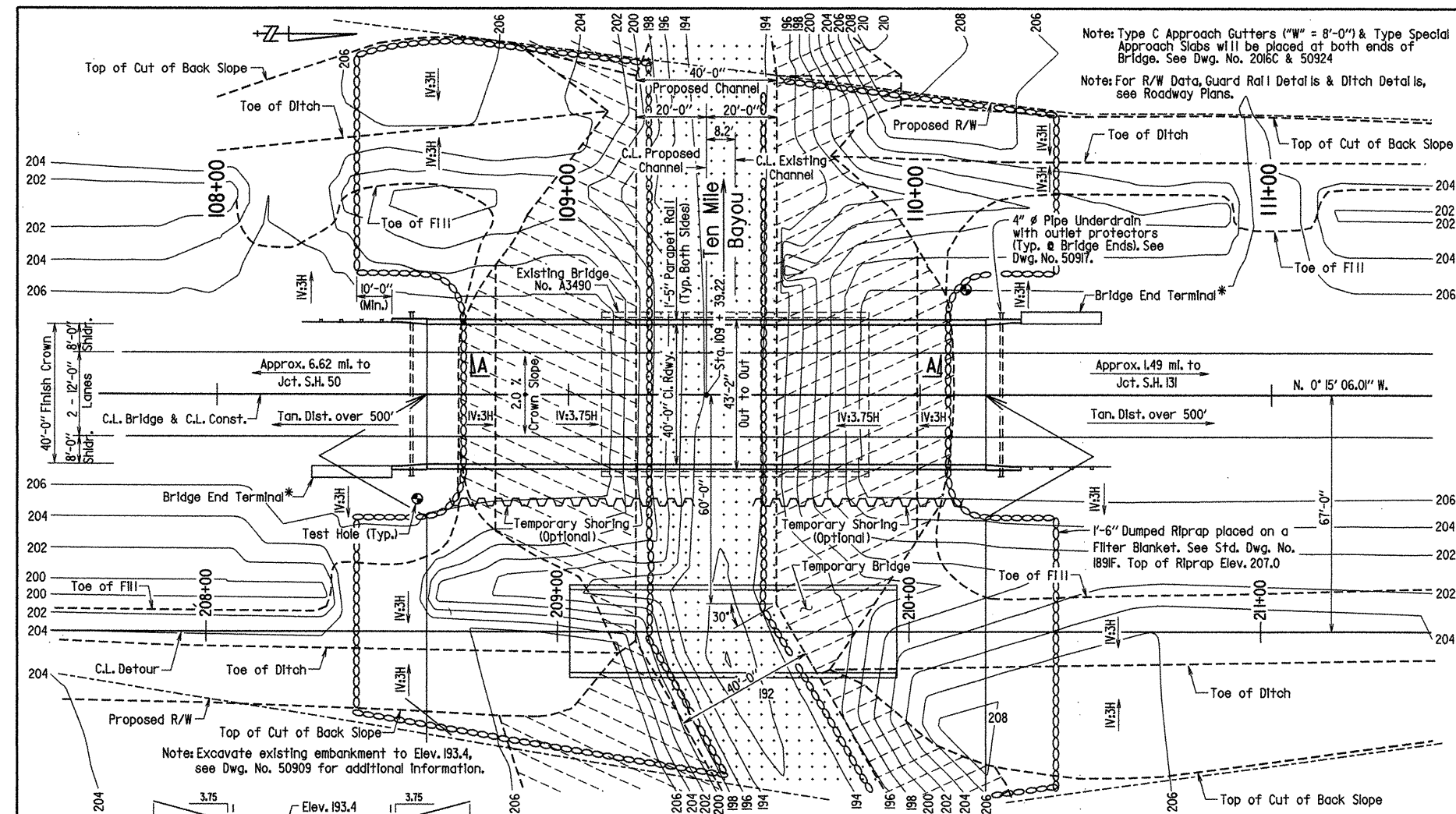
GROSS LENGTH OF PROJECT	1912.61	FEET OR	0.362	MILES
NET " " ROADWAY	1753.61	" "	0.332	"
NET " " BRIDGES	159.00	" "	0.030	"
NET " " PROJECT	1912.61	" "	0.362	"

P.E. 110514
NON-PART.



APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3947
FRANK VOZEL
2/12/10
DEPUTY DIRECTOR
AND CHIEF ENGINEER



SECTION A-A

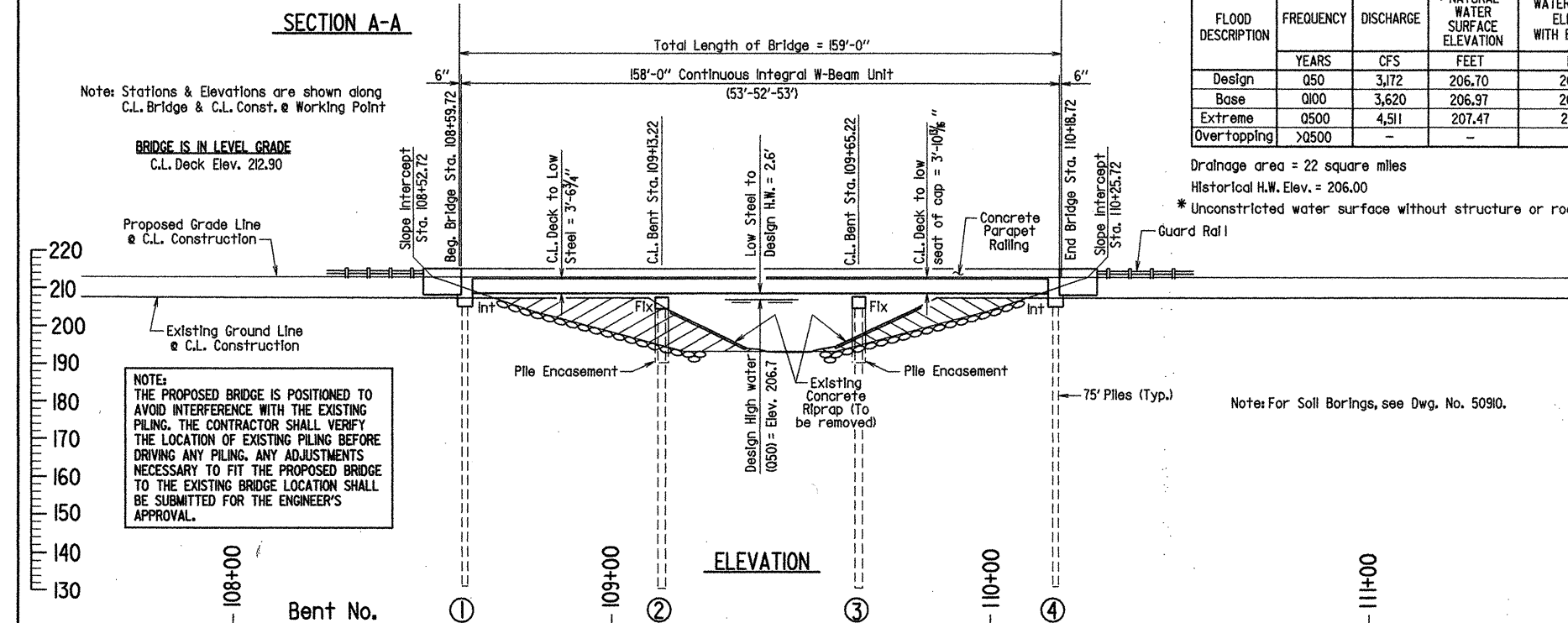
HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	* NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	050	3,172	206.70	207.24
Base	0100	3,620	206.97	207.62
Extreme	0500	4,511	207.47	209.10
Overtopping	>0500	-	-	-

Drainage area = 22 square miles

Historical H.W. Elev. = 206.00

* Unconstricted water surface without structure or roadway approaches



NOTE: THE PROPOSED BRIDGE IS POSITIONED TO AVOID INTERFERENCE WITH THE EXISTING PILING. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING PILING BEFORE DRIVING ANY PILING. ANY ADJUSTMENTS NECESSARY TO FIT THE PROPOSED BRIDGE TO THE EXISTING BRIDGE LOCATION SHALL BE SUBMITTED FOR THE ENGINEER'S APPROVAL.

* Install Bridge End Terminal as shown. Eliminate or modify curb section to fit Bridge End Terminal. No payment shall be made for eliminating or modifying this curb, compensation shall be considered included in the price bid for "Approach Gutters (Type C)".

GENERAL NOTES

BENCH MARK: BM 906 - Chiseled Sq. in center of Headwall, 43.54 Lt. of Sta. 100+53.66, Elev. 204.67

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans Section and Subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition (2007), with 2008 interim Revisions.

LIVE LOADING: HL-93

SEISMIC ZONE: 3

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)

$f'_c = 4,000$ psi

Class S Concrete (substructure)

$f'_c = 3,500$ psi

Reinforcing Steel (AASHTO M 31 or M 53, Gr. 60)

$f_y = 60,000$ psi

Structural Steel (AASHTO M 270, Gr. 50W)

$F_y = 50,000$ psi

Structural Steel (AASHTO M 270, Gr. 36)

$F_y = 36,000$ psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

PILING: Piling for Bents 1 and 4 shall be 16" concrete filled steel shell and shall be driven to a minimum ultimate bearing capacity of 426 tons per pile. Piling in Bents 2 and 3 shall be 24" concrete filled steel shell and shall be driven to an ultimate bearing capacity of 166 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. All piling shall have a tip elevation of 136 or lower. Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. Test Piles are not required, but may be driven for the Contractor's information in accordance with subsection 805.08(g). There will be no additional payment for cut-off or build-up of the piles.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of section 805.09(b), "Method B - Wave Equation Analysis (WEAP)" of the standard specifications. It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity on 16" dia. piles will be 28,000 foot pounds per blow and on 24" dia. piles shall be 40,000 foot pounds per blow.

PREBORING: Preboring may be required to obtain minimum penetration. Preboring is required on all piling in Bents 1 & 4 to a depth of 10' below bottom of cap. Prebored holes shall be a minimum of 6" greater than the diameter of the pile section and shall be back-filled with sand or pea gravel after piles are in place. Additional preboring locations and depths shall be as directed by the Engineer. Any additional preboring will be paid for at the unit price bid for "Preboring". The Contractor shall be responsible for keeping prebored holes free of debris prior to backfilling, which may require the use of temporary casings or other methods. Temporary casings, if required, shall not be paid for directly but shall be considered subsidiary to Preboring.

PILE ENCASEMENT: Pile encasement for Bents 2 & 3 shall extend 3 feet below Channel Bottom and to Bottom of Cap. See Drawing No. 50913 for additional details.

BRIDGE DECK: The concrete bridge deck shall be given a fine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.

PIPE UNDERDRAIN: One Pipe Underdrain with Outlet Protectors shall be installed behind each bridge end in accordance with Section 611. Pipe Underdrains and Outlet Protectors will not be paid for directly but shall be considered subsidiary to "Unclassified Excavation".

DETAIL DRAWINGS:

DRAWING NO.

End Bents

50911

Intermediate Bents

50912

Concrete Filled Steel Shell Piling

50913

158" Integral W-Beam Unit

50914-50918

Type C Approach Gutters

2016C

Type Special Approach Slabs

50924

EXISTING BRIDGE: Existing Bridge No. A3490 (LM 11.96) is 75' in length and 46.9' wide and is comprised of 3-25' concrete slabs with voids supported by concrete pile bents. Centerline of existing bridge is located on the proposed roadway centerline.

TEMPORARY SHORING: Temporary shoring may be required to excavate channel and maintain traffic on Detour. Shoring shall be in accordance with SP Job 110514 "Shoring".

REMOVAL AND SALVAGE: After temporary bridge is open to traffic, existing Bridge No. A3490 shall be removed in accordance with Section 205 of the Standard Specifications. The removal of existing concrete riprap and any abandoned utility lines on or under the bridge shall be considered included in the price paid for "Removal of Existing Bridge Structure (Site No. 1)". All material from the existing bridge shall become the property of the Contractor.

TEMPORARY BRIDGE: Construct a temporary bridge in accordance with Section 603 approximately 67 feet upstream from centerline construction with a minimum deck elevation of 206.70. See Roadway Plans for actual detour grade and alignment. The temporary bridge shall have a minimum length of 93' with a minimum roadway width of 24', and a minimum live load capacity of H15. See Dwg. Nos. 50919-50923 & 2465 for temporary bridge details. All piling for Temporary Bridge shall be in accordance with subsections 805.03 thru 805.06 and use Method A. Timber deck and timber piling will not be allowed. The length of temporary bridge is based upon crossing the existing width channel and no extra payment shall be made for additional length of bridge that may be required for the Contractor's sequence of construction.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

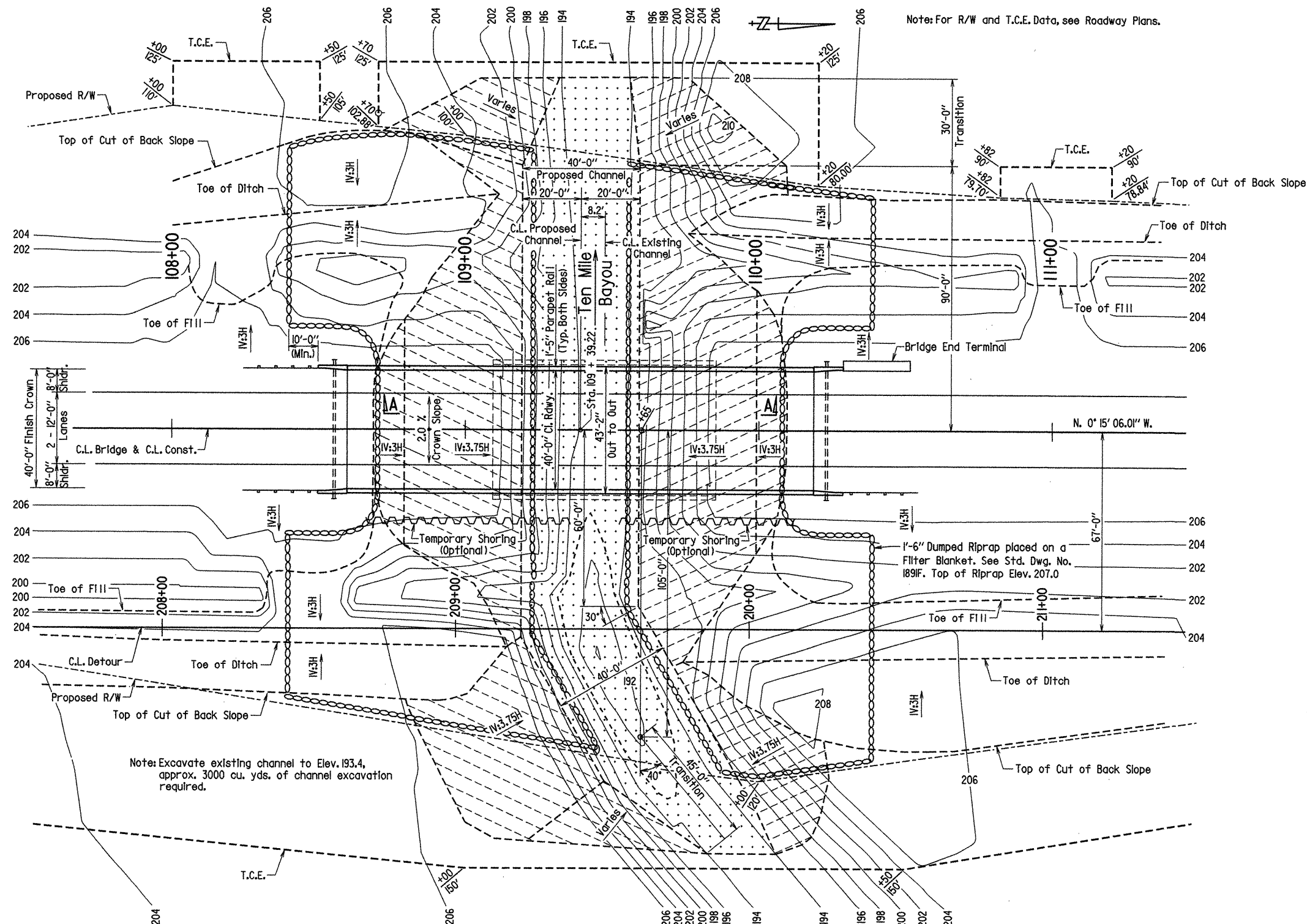
Revised ultimate bearing capacities 09/21/10 MJT Checked by BEE

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER TEN MILE BAYOU
TEN MILE BAYOU CUTOFF DITCH
(STR. & APPRS.) (C.O.E.) (S)
CRITTENDEN COUNTY
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.



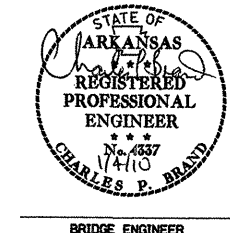
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CHECKED BY: DBS DATE: 12/14/09 SCALE: 1" = 20'-0"
DESIGNED BY: BEE DATE: 2/09
BRIDGE NO. 07173 DRAWING NO. 50908

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	23	78
						07173	LAYOUT	50909



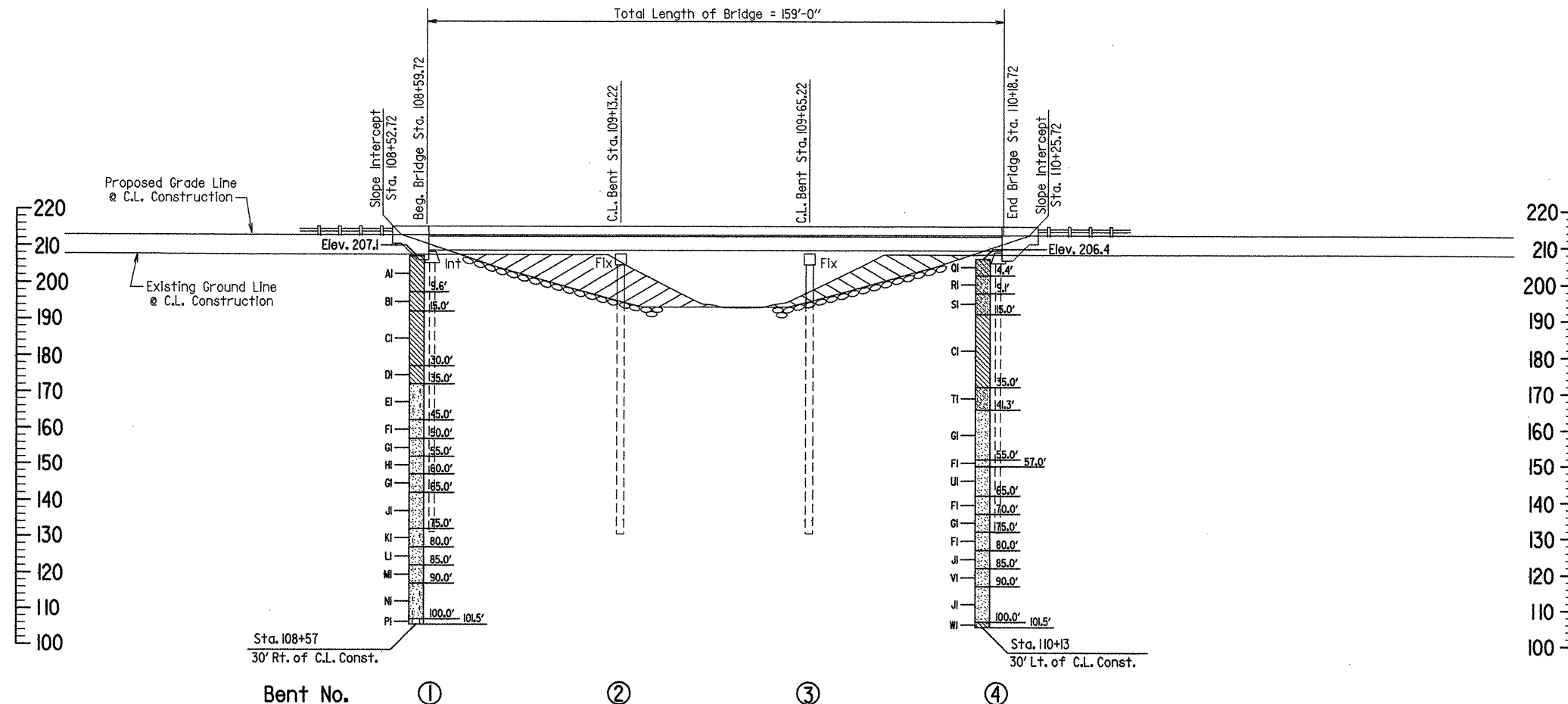
LOCATION PLAN FOR CHANNEL EXCAVATION AND RIPRAP

Notes:
 Details show limits of construction for channel excavation, riprap and filter blanket at the end of construction. It is anticipated that construction will be staged in multiple sequences; however, any additional work or materials required for constructing in stages will not be paid for directly but shall be considered subsidiary to the other items in the Contract.
 See Roadway Plans for detour grade and alignment.



SHEET 2 OF 2
 LAYOUT OF BRIDGE OVER TEN MILE BAYOU
 TEN MILE BAYOU CUTOFF DITCH
 (STR. & APPRS.) (C.O.E.) (S)
 CRITTENDEN COUNTY
 ROUTE 147 SEC. 1
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: MJT DATE: 04/23/09 FILENAME: BH0514X1.LLDGN
 CHECKED BY: DBJ DATE: 12/4/09 SCALE: 1" = 20'-0"
 DESIGNED BY: BEF DATE: 2/09
 BRIDGE NO. 07173 DRAWING NO. 50909

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	24	78
				07173	LAYOUT			50910



"N" VALUES

Sta. 108+57 - 30' Rt. of C.L. Const.

5.1- 6.1, N=7
10.1- 11.1, N=3
15.5- 16.5, N=1
20.5- 21.5, N=0
25.5- 26.5, N=0
30.5- 31.5, N=3
35.5- 36.5, N=23
40.5- 41.5, N=22
45.5- 46.5, N=13
50.5- 51.5, N=18
55.5- 56.5, N=9
60.5- 61.5, N=20
65.5- 66.5, N=26
70.5- 71.5, N=14
75.5- 76.5, N=29
80.5- 81.5, N=39
85.5- 86.5, N=28
90.5- 91.5, N=42
95.5- 96.5, N=38
100.5- 101.5, N=26

BORING LEGEND

A1-Moist, Medium Stiff, Gray Clay
B1-Wet, Soft, Gray Clay with some Sand
C1-Wet, Very Soft, Gray Clay
D1-Wet, Soft, Gray Clay
E1-Wet, Medium Dense, Gray Silty Sand
F1-Wet, Medium Dense, Gray Sand with Trace of Pea Gravel
G1-Wet, Medium Dense, Gray Sand with some Pea Gravel
H1-Wet, Loose, Gray Sand with Trace of Pea Gravel
I1-Wet, Medium Dense, Gray Sand with Trace of Pea Gravel and Organic Matter
J1-Wet, Medium Dense, Gray Sand with Silt, some Pea Gravel and Trace of Organic Matter
K1-Wet, Medium Dense, Gray Sand with Silt, some Pea Gravel and Trace of Organic Matter
L1-Wet, Dense, Gray Sand with Trace of Pea Gravel
M1-Wet, Medium Dense, Gray Sand with some Pea Gravel and Trace of Organic Matter
N1-Wet, Dense, Gray Silty Sand with Trace of Pea Gravel and Organic Matter
P1-Moist, Medium Dense, Light Gray and Brown Silt
Q1-Moist, Medium Stiff, Brown Sandy Clay
R1-Moist, Loose, Brown Sand with Clay
S1-Wet, Very Loose, Gray Clayey Sand
T1-Wet, Loose, Gray Clayey Sand
U1-Wet, Loose, Gray Sand with some Pea Gravel and Trace of Organic Matter
V1-Wet, Dense, Gray Sand with Trace of Organic Matter
W1-Moist, Hard, Light Gray and Brown Clay with Sand and Trace of Pea Gravel

"N" VALUES

Sta. 110+13 - 30' Lt. of C.L. Const.

4.6- 5.6, N=7
9.6- 10.6, N=3
15.5- 16.5, N=0
20.5- 21.5, N=0
25.5- 26.5, N=0
30.5- 31.5, N=0
35.5- 36.5, N=5
40.5- 41.5, N=7
45.5- 46.5, N=21
50.5- 51.5, N=16
55.5- 56.5, N=13
60.5- 61.5, N=6
65.5- 66.5, N=20
70.5- 71.5, N=13
75.5- 76.5, N=27
80.5- 81.5, N=26
85.5- 86.5, N=36
90.5- 91.5, N=25
95.5- 96.5, N=28
100.5- 101.5, N=49

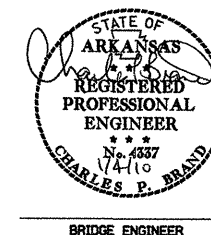
ELEVATION

108+00

109+00

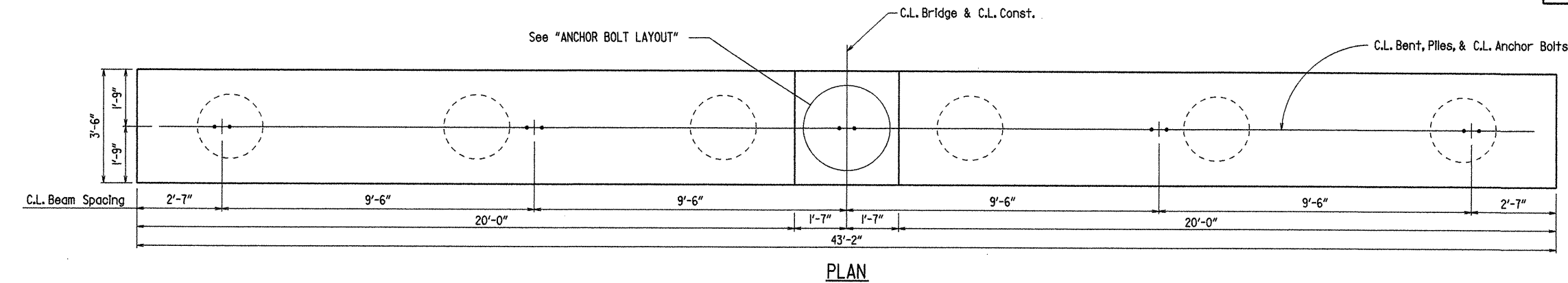
110+00

111+00



SOIL BORINGS
LAYOUT OF BRIDGE OVER TEN MILE BAYOU
TEN MILE BAYOU CUTOFF DITCH
(STR. & APPRS.) (C.O.E.) (S)
CRITTENDEN COUNTY
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MJT DATE: 03/04/09 FILENAME: B110514X1.LLDGN
CHECKED BY: DBS DATE: 11/3/09 SCALE: 1" = 20'-0"
DESIGNED BY: DEF DATE: 2/09
BRIDGE NO. 07173 DRAWING NO. 50910

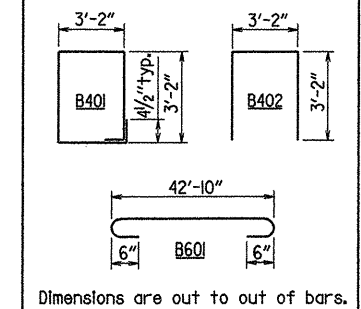
① 07173 INTERMEDIATE BENT DETAILS 50912



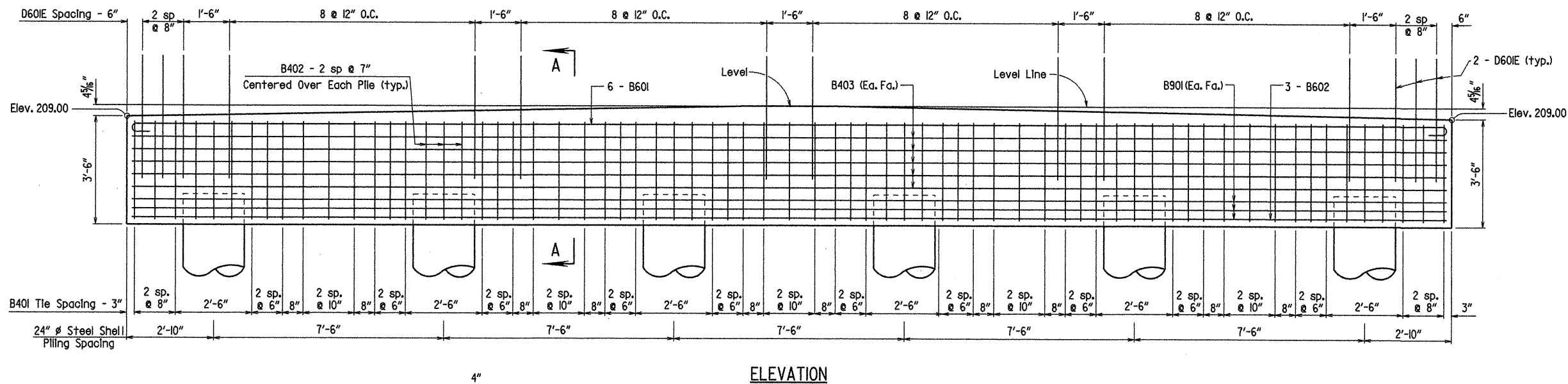
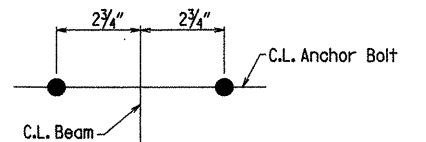
BAR LIST-PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.
B401	51	13'-0"	3"
B402	18	9'-5"	3"
B403	10	42'-10"	Str.
B601	6	44'-2"	4½"
B602	15	7'-2"	Str.
*D601E	84	4'-0"	Str.
B901	6	42'-10"	Str.

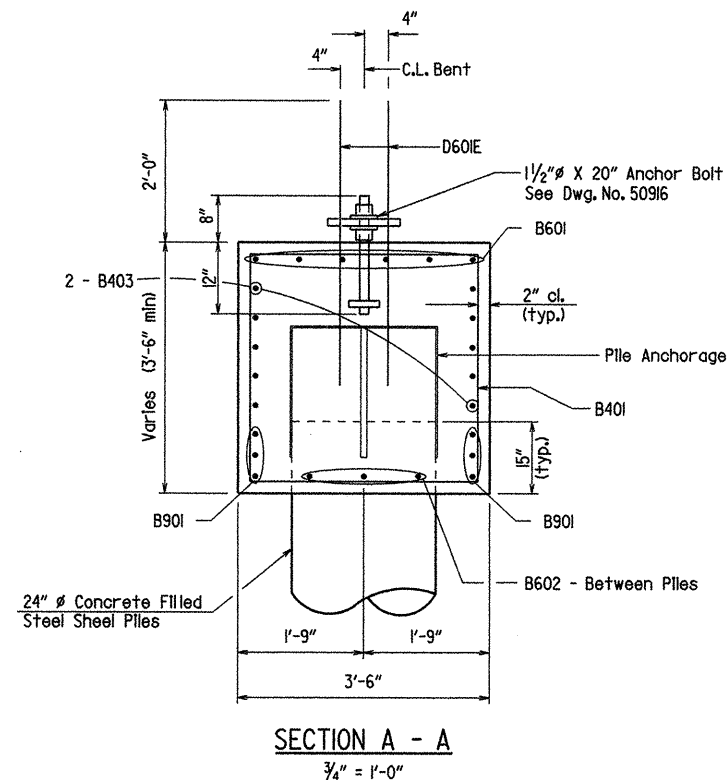
BENDING DIAGRAMS



*D60IE bars shall be epoxy coated and shall measured and paid for as Epoxy Coated Reinforcing Steel (Grade 60).

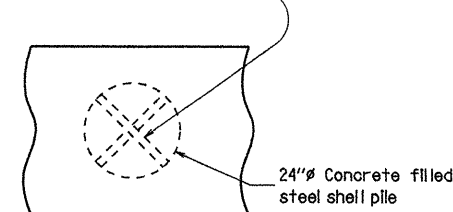
ELEVATION

ANCHOR BOLT LAYOUT
N.T.S.



SECTION A - A
3/4" = 1'-0"

Position to minimize interference with reinforcing steel and anchor bolts. —



PILE ANCHORAGE DETAIL
N.T.S.

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi. Concrete shall be poured in the dry and all exposed corners to be chamfered $\frac{3}{4}"$ unless otherwise noted.

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (yield strength = 60,000 psi.).

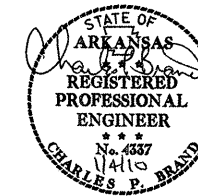
For details of pipe piles, pile anchorage, & pile encasement, see Dwg. No. 50913.

For additional information, see layout.

DETAILS OF INTERMEDIATE BENTS
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

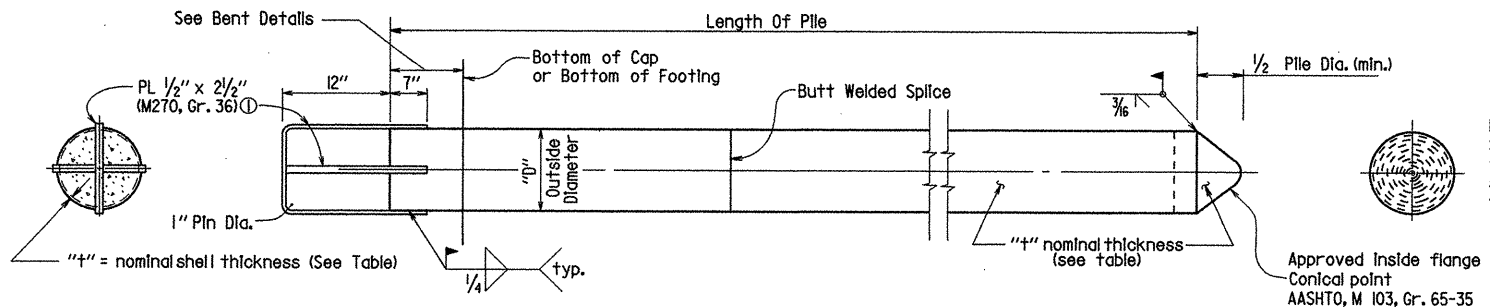
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CHECKED BY: JGT DATE: 9-14-09 SCALE: 1/2" = 1'-0" or
DESIGNED BY: BEF DATE: 5/09 as noted

BRIDGE NO. 07173 DRAWING NO. 50912



BRIDGE ENGINEER

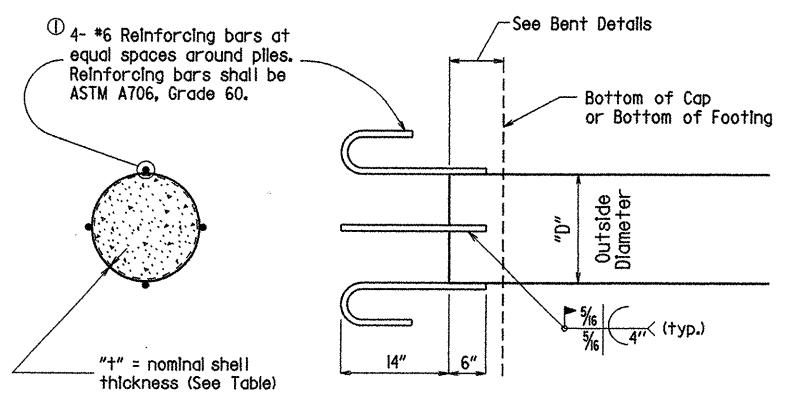
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				6	ARK.			
				JOB NO.		110514	27	78
				07173		PILE DETAILS		50913



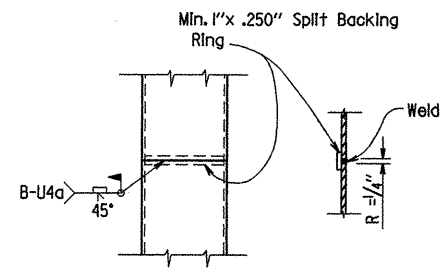
Note:
Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling"

CONCRETE FILLED STEEL SHELL PILES

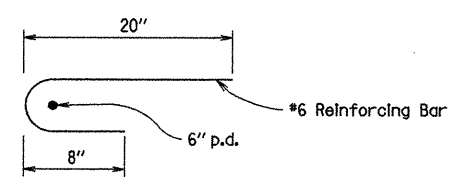
① Anchorage straps shall be arranged so as to clear Anchor Bolts and reinforcing.



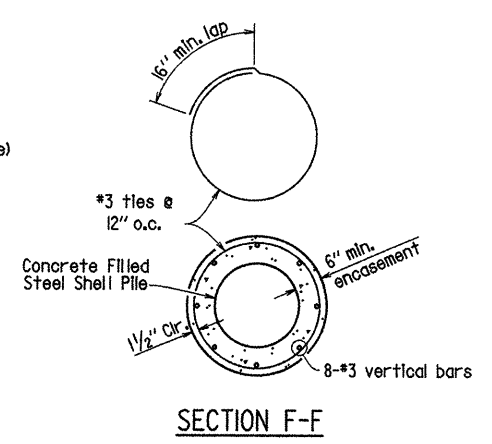
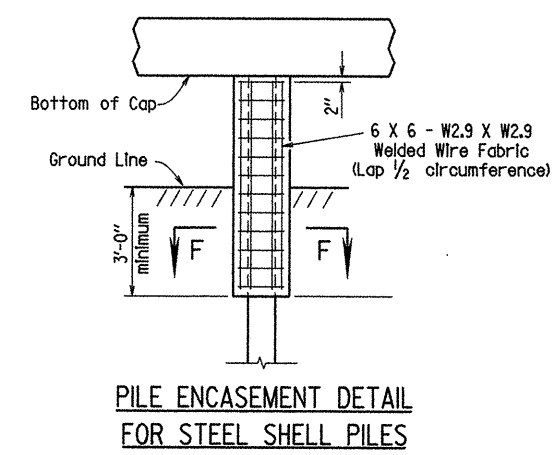
ALTERNATE CONNECTION DETAIL



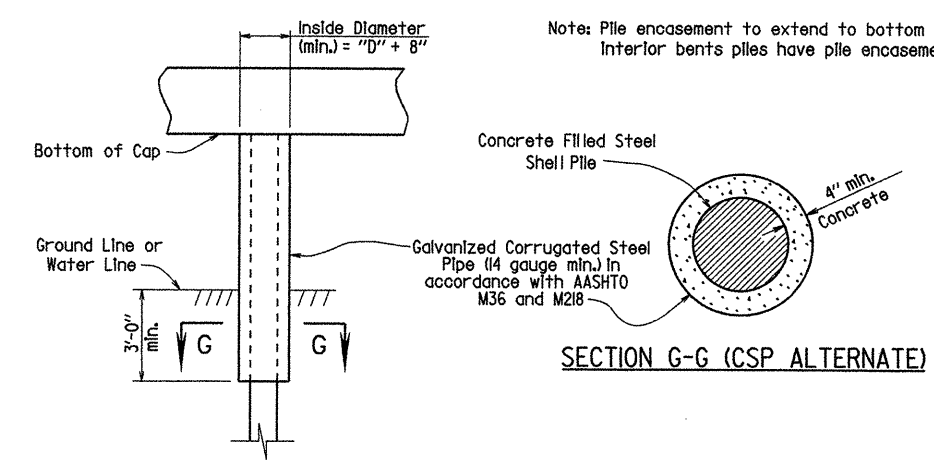
TYPICAL SPLICE DETAILS



TYPICAL HOOKED BAR DETAIL



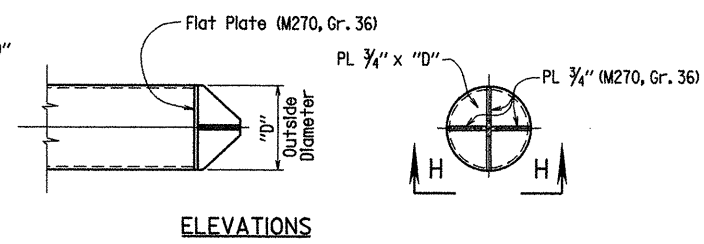
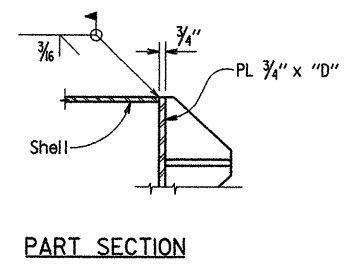
Note: Pile encasement to extend to bottom of cap. Only interior bents piles have pile encasements.



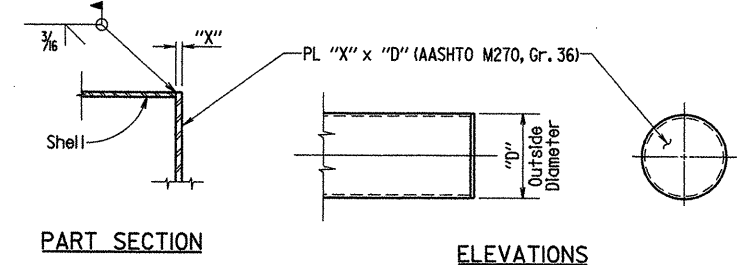
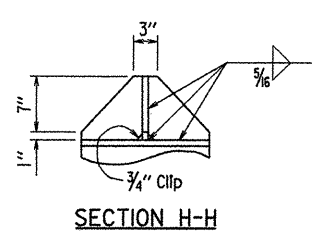
ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

TABLE FOR SHELL PILES

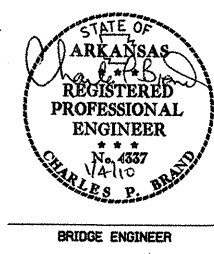
OUTSIDE DIAMETER D	"t"-NOMINAL SHELL THICKNESS	"X"
16"	0.50"	1"
24"	0.50"	1 3/4"



ALTERNATE VANED TIP DETAIL



ALTERNATE FLAT TIP DETAIL



DETAILS OF CONCRETE FILLED STEEL SHELL PILES

ROUTE 147 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 9/4/2009 FILENAME: B110514_CLDGN

CHECKED BY: JGT DATE: 9-14-09 SCALE: None

DESIGNED BY: BEF DATE: 5/09

BRIDGE NO. 07173 DRAWING NO. 50913

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	28	78
				07173		SPAN DETAILS		50914

Note: Class I Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of Concrete Parapet Rail.

Note: At the Contractors option, one epoxy coated No.5 straight bar top and bottom may be substituted for bar S502E. Payment for reinforcing will be based on the weight of bar S502E.

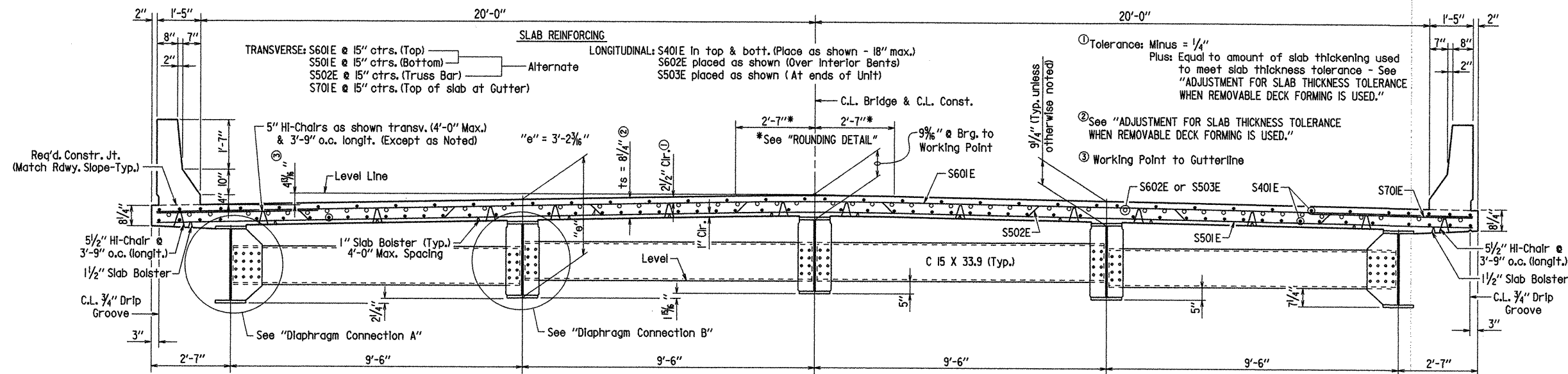
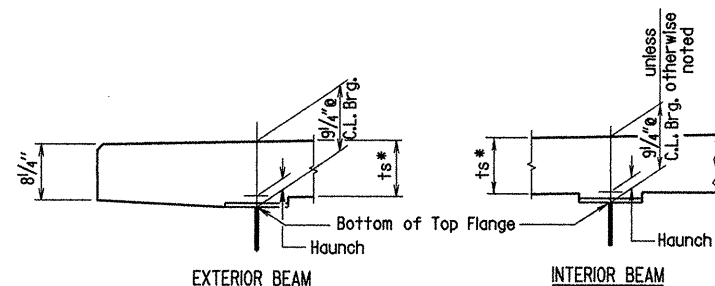


TABLE FOR WELD

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To 3/4" Inclusive	1/4"	
Over 3/4"	5/16"	

Note: When a fillet weld size, as shown on the Plans, is larger than the minimum, the First Pass shall be that specified for minimum size of fillet weld.



*Tolerance when removable deck forming is used is $\pm 1/2"$, $-1/4"$. Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

Notes: Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus $1 1/4"$. No increase in concrete and structural steel quantities will be made to maintain tolerances.

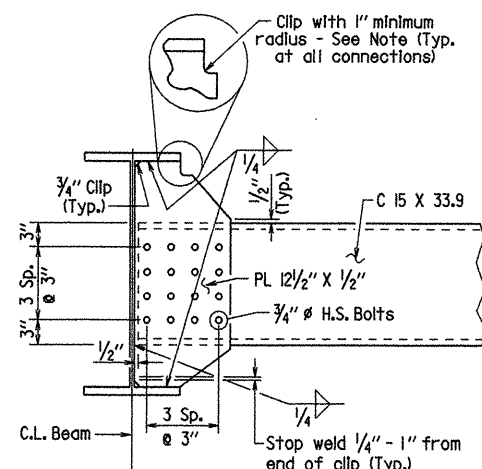
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale

TYPICAL ROADWAY SECTION

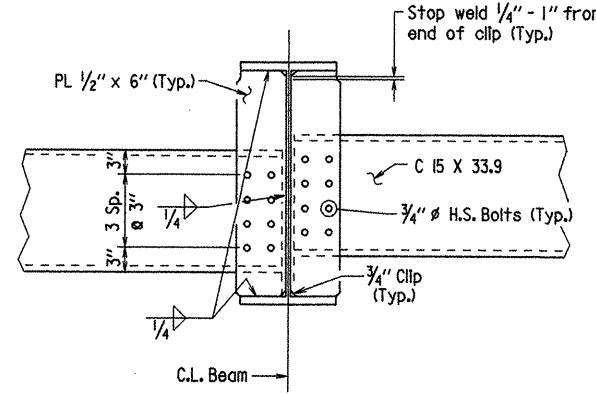
(LOOKING AHEAD)
Scale: 1/2" = 1'-0"



DIAPHRAGM CONNECTION A

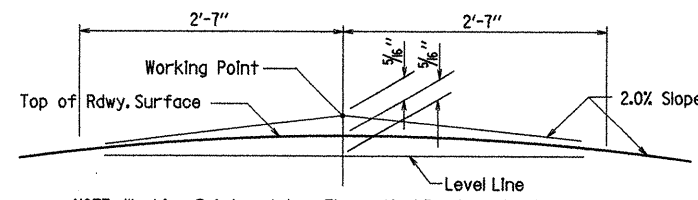
Scale: 1" = 1'-0"

Note: If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.



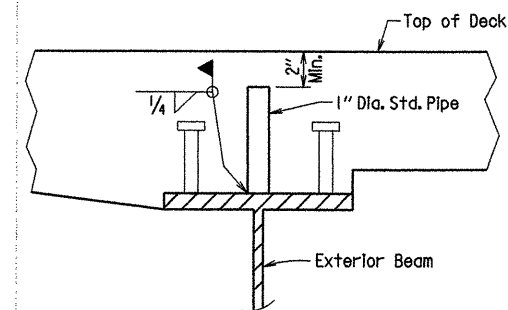
DIAPHRAGM CONNECTION B

Scale: 1" = 1'-0"



ROUNDING DETAIL

No Scale



SCREED RAIL SUPPORT DETAIL

No Scale

Notes: The screed rail supports shall be centered over the beam web and centered between adjacent rows of shear connectors.

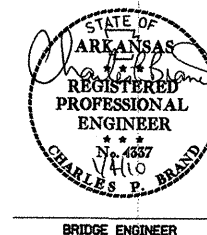
The pipe shall not interfere with the proper vertical position of the deck reinforcing steel.

The pipe shall be free of dirt, grease, rust, or other foreign substance before the deck is poured.

Care shall be exercised so as air voids do not exist in the pipe after placement of the deck concrete.

All field welding shall be in accordance with subsection 807.26.

If a transverse finishing machine is used, the screed rail shall be supported directly over the exterior beams, see "SCREED RAIL SUPPORT DETAIL".

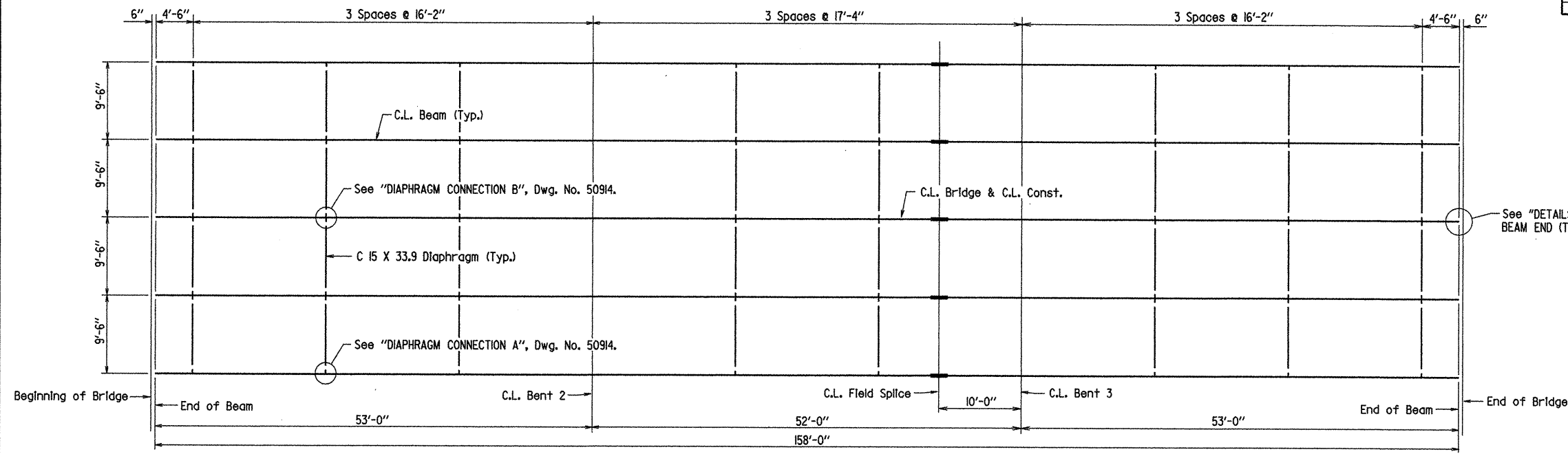


SHEET 1 OF 5
DETAILS OF 158'-0" CONTINUOUS
COMPOSITE INTEGRAL W-BEAM UNIT
TEN MILE BAYOU
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

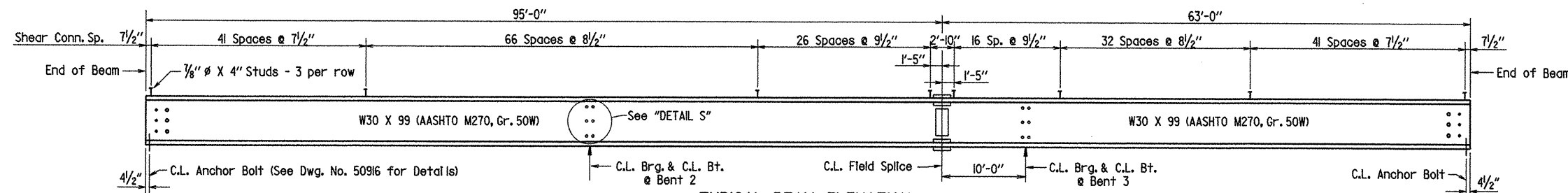
DRAWN BY: MJT DATE: 04/02/09 FILENAME: BII0514X1.SLDGN
CHECKED BY: JST DATE: 9-5-09 SCALE: 3/8" = 1'-0"
DESIGNED BY: BEF DATE: 4/09 OR AS NOTED
BRIDGE NO. 07173 DRAWING NO. 50914

Note: Bolted field splices may be eliminated or shop welds substituted with the approval of the Engineer. Payment will be made on the basis of the splices shown.

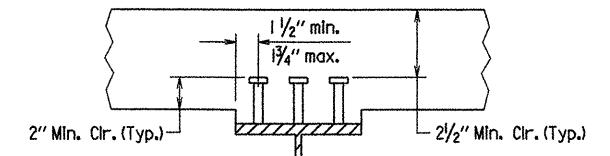
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	29	78
				07173		SPAN DETAILS		50915



FRAMING PLAN



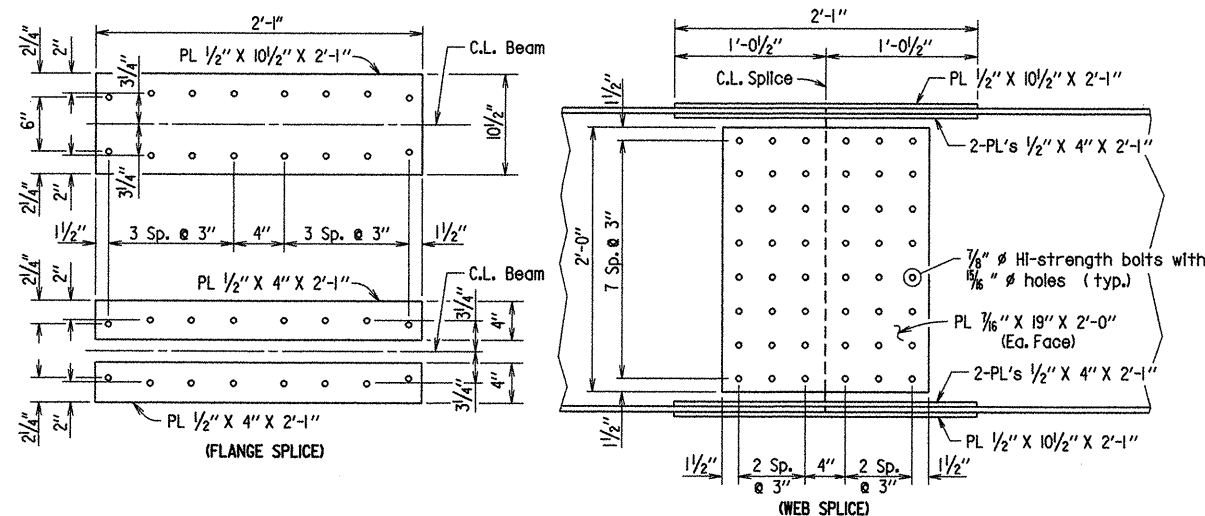
TYPICAL BEAM ELEVATION



Stud Shear Connectors shown shall be $\frac{7}{8}$ " ϕ x 4" long, granular flux filled, solid fluxed or equal, and automatically and welded to the beam flange in accordance with the recommendations of the Manufacturer. $\frac{3}{4}$ " ϕ studs may be used in place of the $\frac{7}{8}$ " ϕ studs shown, at the ratio of 1.361 - $\frac{3}{4}$ " ϕ studs in place of one $\frac{7}{8}$ " ϕ stud. $\frac{7}{8}$ " ϕ studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL

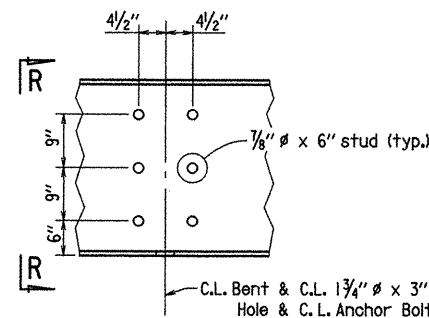
No Scale



DETAILS OF FIELD SPICE

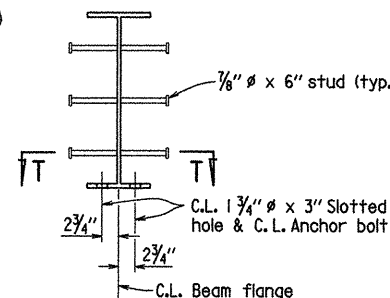
No Scale

- Notes:
1. All Field Splice Bolts to be $\frac{7}{8}$ " ϕ H.S. Bolts.
 2. All Field Splice plates to be AASHTO M270, Gr. 50W steel.
 3. All holes for splice bolts to be $\frac{1}{8}$ " ϕ .



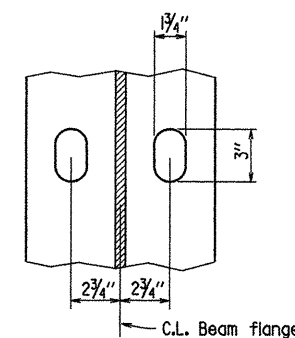
DETAIL S

$\frac{3}{4}$ " = 1'-0"



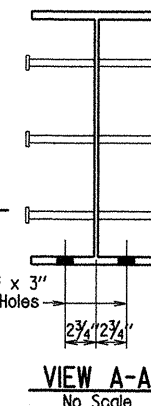
VIEW R - R

$\frac{3}{4}$ " = 1'-0"



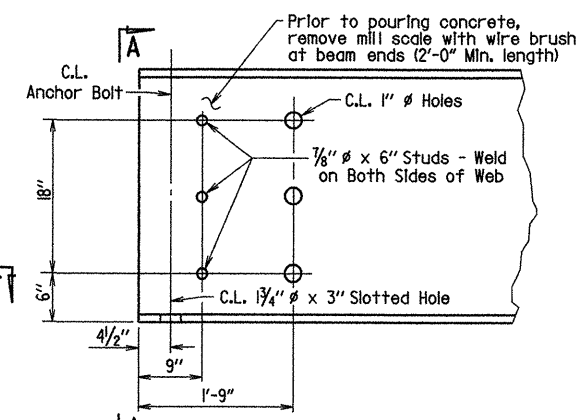
SECTION T - T

NTS



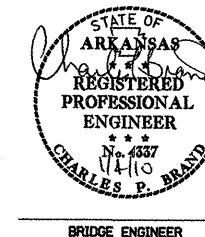
VIEW A-A

No Scale



DETAIL OF BEAM END (TYP.)

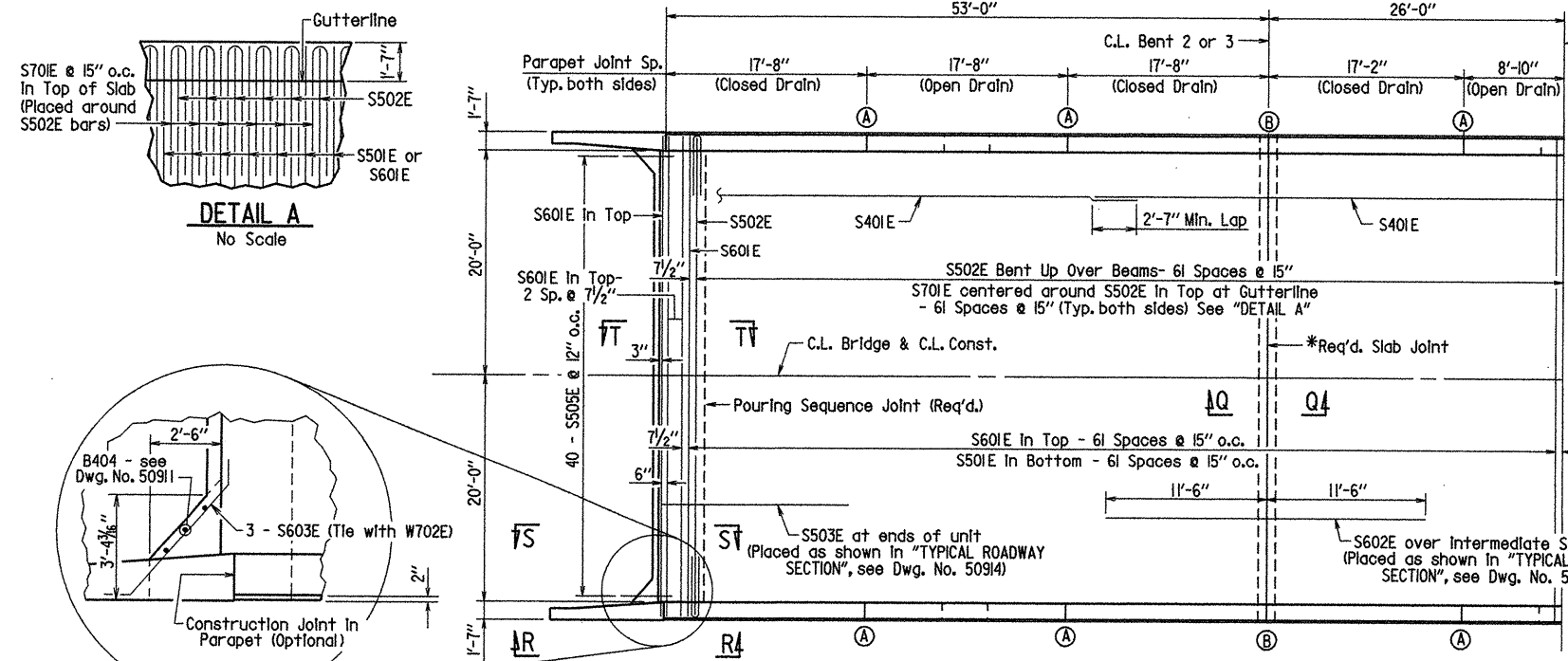
No Scale



SHEET 2 OF 5
DETAILS OF 158'-0" CONTINUOUS
COMPOSITE INTEGRAL W-BEAM UNIT
TEN MILE BAYOU
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

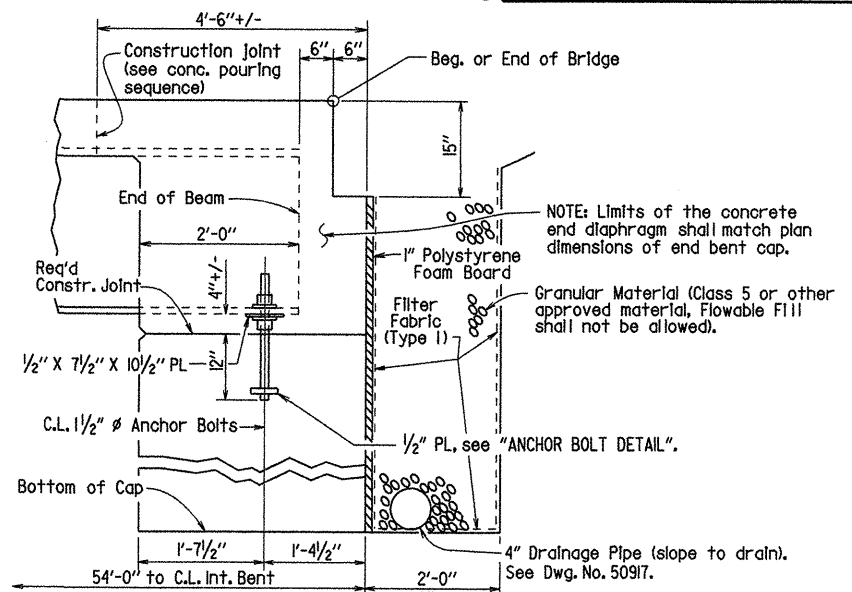
DRAWN BY: MJT DATE: 04/02/09 FILENAME: B110514X1.SLDGN
CHECKED BY: JGT DATE: 9-15-09 SCALE: $\frac{3}{8}$ " = 1'-0"
DESIGNED BY: BEF DATE: 4/09 OR AS NOTED
BRIDGE NO. 07173 DRAWING NO. 50915

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	30	78
				07173		SPAN DETAILS		50916



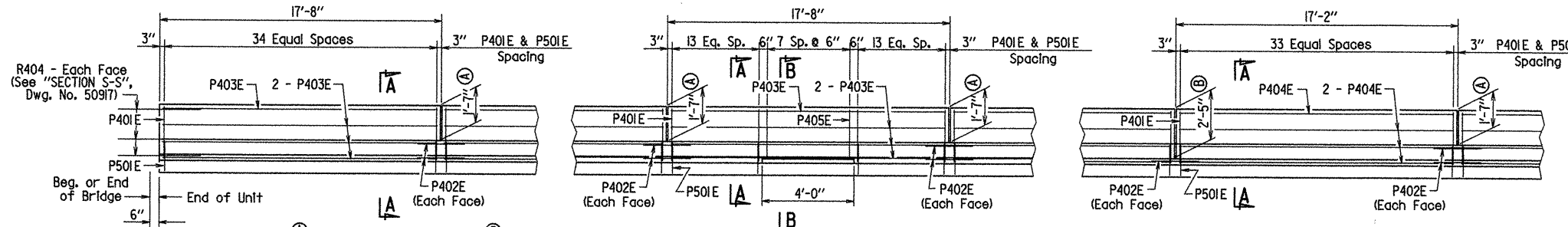
HALF-REINFORCING PLAN
1/8" = 1'-0"

Notes:
Ralls and wings are included in span construction and included in span quantities.
* Required slab joints and intermediate pouring sequence joint shall align with parapet open joints at the gutterline. For concrete pouring sequence, see Dwg. No. 50918.
For "SECTION Q-Q", "VIEW R-R", "SECTION S-S" and "SECTION T-T", see Dwg. No. 50917.

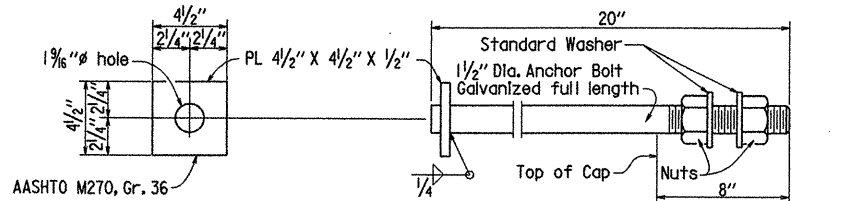


SECTION AT END BENT
No Scale

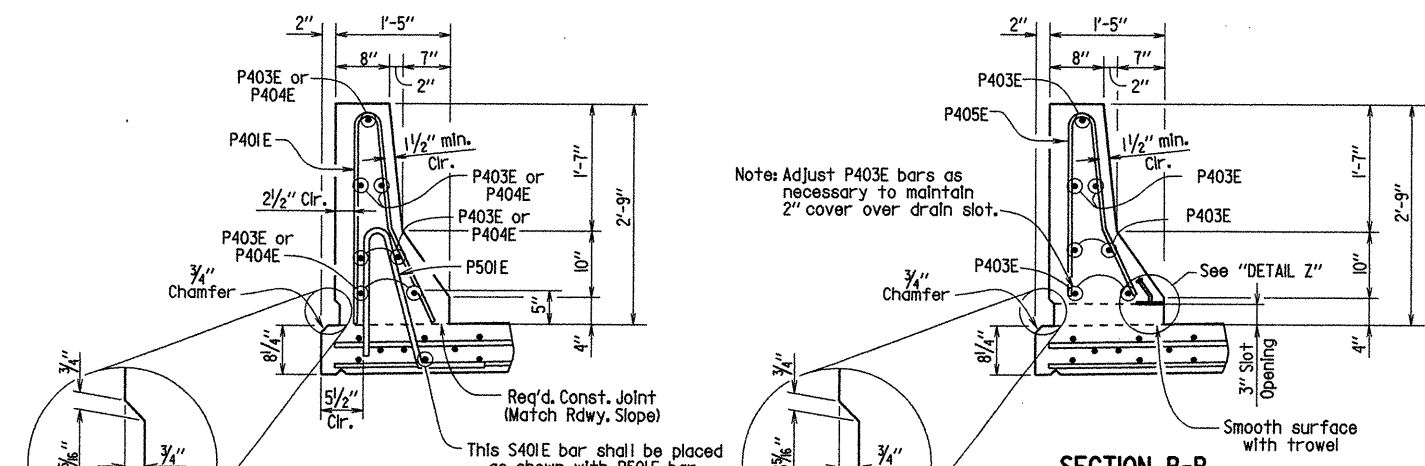
Notes: For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611 of the Standard Specifications. Pipe underdrains, outlet protectors, granular materials, drain pipe, filter fabric and polystyrene foam board will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Class S(AE) Concrete - Bridge".



PLAN VIEW OF PARAPET RAIL
N.T.S.

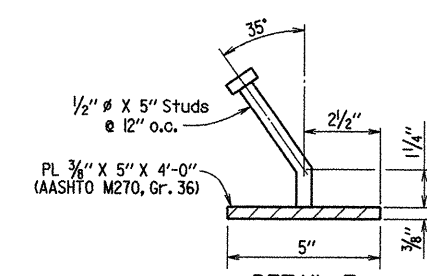


ANCHOR BOLT DETAIL
No Scale



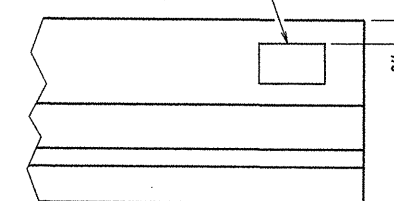
SECTION A-A
Scale: 3/4" = 1'-0"

SECTION B-B
Scale: 3/4" = 1'-0"

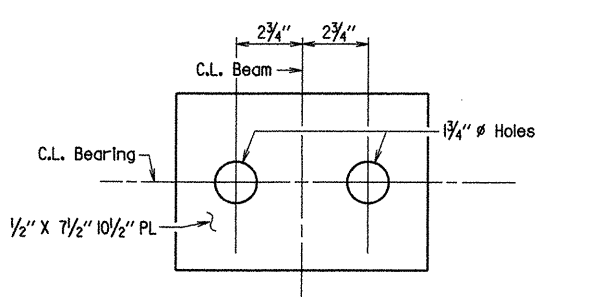


DETAIL Z
N.T.S.

Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge. (Right side of roadway only) See Std. Dwg. No. 2387

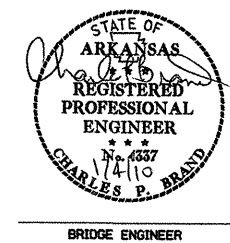


NAME PLATE DETAIL
N.T.S.



ANCHOR BOLT PLATE DETAIL
No Scale

Note: Parapet Studs shall be 5' long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)". The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly but will be included in the item for structural steel.

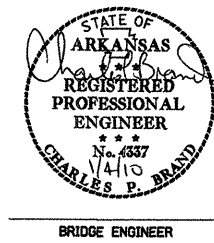
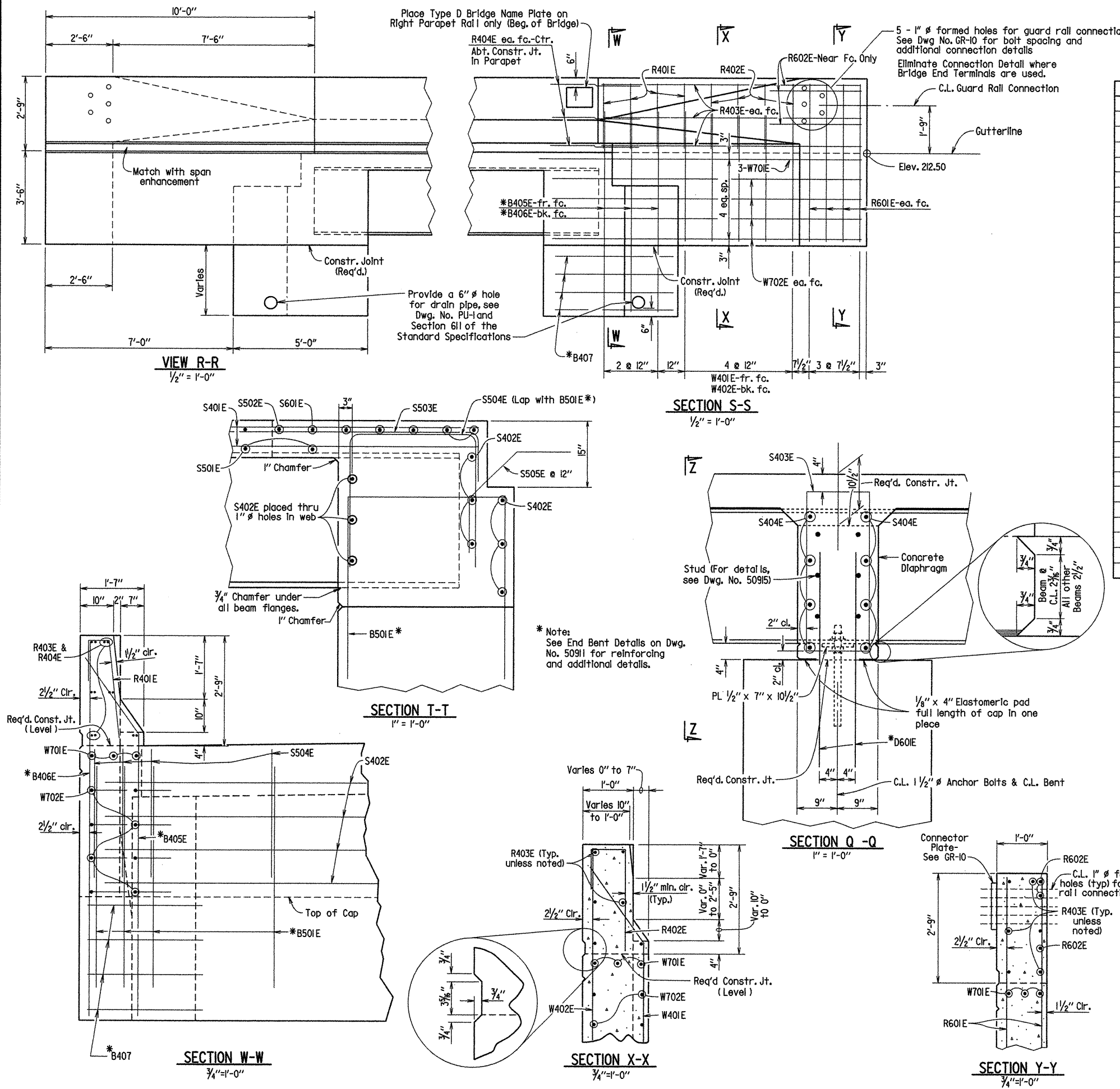


SHEET 3 OF 5
DETAILS OF 158'-0" CONTINUOUS
COMPOSITE INTEGRAL W-BEAM UNIT
TEN MILE BAYOU
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MJT DATE: 04/06/09 FILENAME: B110514X1.SLDGN
CHECKED BY: JGT DATE: 9-15-09 SCALE: 3/4" = 1'-0"
DESIGNED BY: BEF DATE: 4/09 OR AS NOTED
BRIDGE NO. 07173 DRAWING NO. 50916

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	31	78
				07173		SPAN DETAILS		50917

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
P401E	584	5'-6"	2"	<p>Dimensions are out to out of bars.</p> <p>** 1/2" Overtolerance, No Undertolerance.</p>
P402E	56	5'-2"	str.	
P403E	98	17'-4"	str.	
P404E	28	16'-10"	str.	
P405E	48	4'-10"	2"	
P501E	584	4'-9"	3 3/4"	
R401E	16	3'-11"	2"	
R402E	16	4'-0"	2"	
R403E	24	9'-8"	str.	
R404E	24	5'-0"	str.	
R601E	32	5'-11"	str.	
R602E	12	5'-0"	str.	
S401E	384	4'-6"	str.	
S402E	18	42'-10"	str.	
S403E	84	8'-8"	2"	
S404E	64	7'-2"	str.	
S405E	16	5'-3"	2"	
S501E	124	42'-10"	str.	
S502E	123	43'-8"	3"	
S503E	124	15'-3"	3 3/4"	
S504E	80	8'-0"	2 1/2"	
S505E	80	3'-7"	2 1/2"	
S601E	124	42'-10"	str.	
S602E	124	23'-0"	str.	
S603E	12	7'-4"	4 1/2"	
S701E	246	10'-9"	6"	
W401E	20	4'-9"	2"	<p>Note: Bars designated with an "E" suffix are to be epoxy-coated.</p>
W402E	20	5'-11"	str.	
W701E	12	12'-0"	str.	
W702E	32	12'-3"	5 1/4"	



SHEET 4 OF 5
 DETAILS OF 158'-0" CONTINUOUS
 COMPOSITE INTEGRAL W-BEAM UNIT
 TEN MILE BAYOU
 ROUTE 147 SEC. 1
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04/06/09 FILENAME: B10514XL.SLDGN
 CHECKED BY: JGT DATE: 9-15-09 SCALES: 3/8" = 1'-0"
 DESIGNED BY: BEF DATE: 4/09 OR AS NOTED
 BRIDGE NO. 07173 DRAWING NO. 50917

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition (2007) with 2009 interims.

MATERIALS AND STRENGTHS:

Class S (AE) Concrete
Reinforcing Steel (AASHTO M31 or M53, Gr. 60)
Structural Steel (AASHTO M 270, Gr. 50W)
Structural Steel (AASHTO M 270, Gr. 36)

$f_c = 4,000$ psi
 $f_y = 60,000$ psi
 $F_y = 50,000$ psi
 $F_y = 36,000$ psi

CONCRETE:

Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted. All concrete shall be Class S (AE) with a minimum 28 day compressive strength $f_c = 4,000$ psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S (AE) Concrete. See Standard Drawing No. 14991 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

The concrete deck shall be given a fine finish in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing.

REINFORCING STEEL:

All reinforcing steel shall conform to AASHTO M31 or M53, Grade 60. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel".

STRUCTURAL STEEL:

All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted. Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in subsection 807.05.

All beams shall be blocked in their true position with webs horizontal in the shop. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" +/- is allowed for camber.

Flange field splice plates shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that does not exceed the limitations of subsection 802.13 will not require approval prior to construction. All welding shall conform to subsection 807.26.

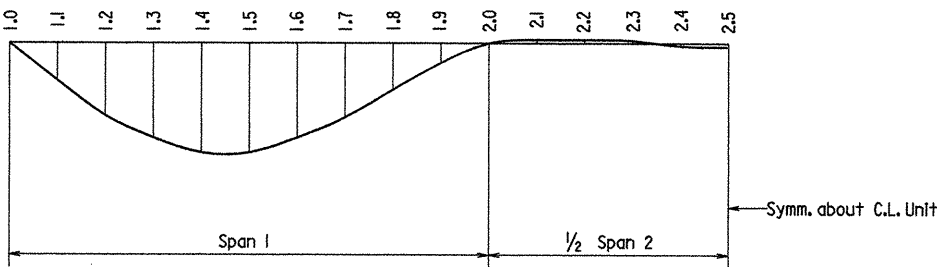
Field connections shall be bolted with high-strength bolts and shall be 3/4" diameter bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for 3/4" diameter high-strength bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt.

Diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

TABLE OF DEAD LOAD DEFLECTIONS - INCHES

Negative sign (-) Indicates upward deflection.

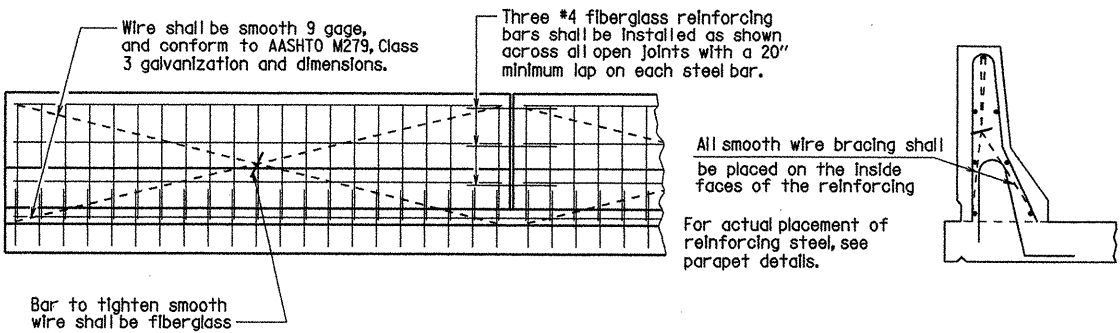
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
1	0	0	0	0	0	0	0
	0.1	0.036	0.033	0.322	0.254	0.337	0.278
	0.2	0.067	0.062	0.599	0.473	0.627	0.518
	0.3	0.089	0.082	0.798	0.630	0.835	0.690
	0.4	0.100	0.093	0.900	0.711	0.942	0.779
	0.5	0.100	0.092	0.897	0.709	0.939	0.776
	0.6	0.089	0.082	0.797	0.630	0.834	0.690
	0.7	0.069	0.064	0.618	0.488	0.647	0.534
	0.8	0.044	0.041	0.393	0.311	0.411	0.341
	0.9	0.019	0.017	0.168	0.133	0.176	0.146
2	0	0	0	0	0	0	0
	0.1	-0.007	-0.006	-0.062	-0.049	-0.065	-0.054
	0.2	-0.006	-0.006	-0.053	-0.042	-0.055	-0.046
	0.3	-0.002	-0.002	-0.017	-0.014	-0.018	-0.015
	0.4	0.002	0.002	0.017	0.013	0.018	0.014
	0.5	0.003	0.003	0.030	0.024	0.031	0.026



DEAD LOAD DEFLECTION DIAGRAM

No Scale

NOTE: Camber for Dead Load Deflection plus Vertical curve +/- 1/4" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

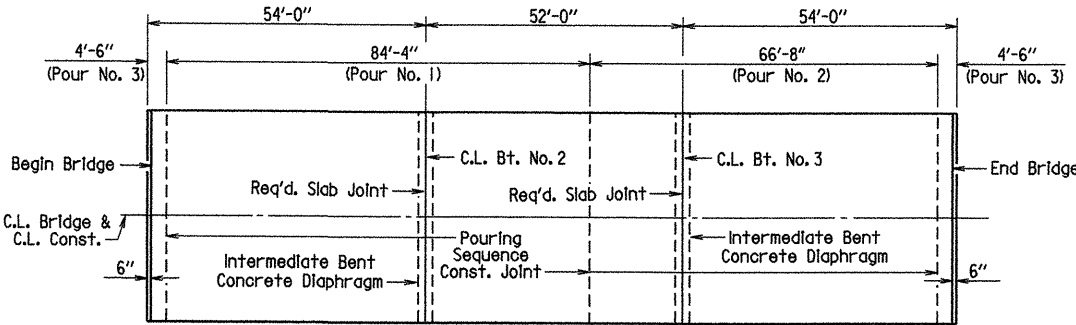


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



CONCRETE POURING SEQUENCE

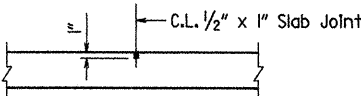
No Scale

Notes: Any ralling pours made before the entire slab unit has been placed must be approved by the Bridge Engineer.

Concrete in bridge superstructure must be consolidated for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The Contractor must obtain approval from the Bridge Engineer for any deviations from the Pouring Sequences shown.

Note: Pours with the same number may be poured simultaneously or separately. Pour (1) must be placed before Pour (2) can be placed. Pour (2) must be placed before Pours (3) can be placed. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

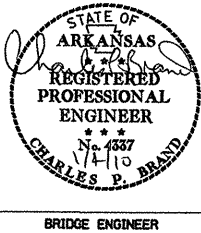
Concrete Diaphragms at Intermediate Bents shall be poured a minimum of 48 hours before the slab is poured.



Use 1/2" x 1" Type 3, 4 or 6 Joint Seder. See subsections 501.02(h) and 501.05(j). Backer rod shall not be installed. Joint Seder shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the slab has sufficiently set to allow sawing of the joints without damaging the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

SLAB JOINT DETAIL

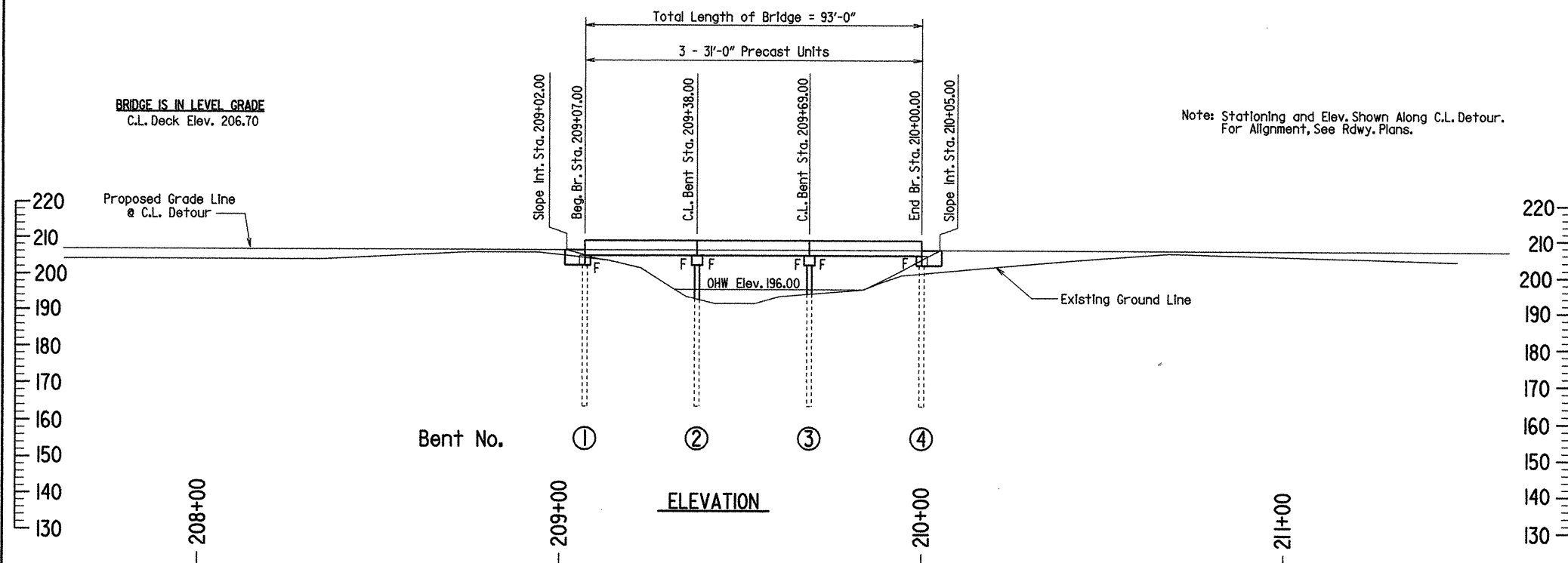
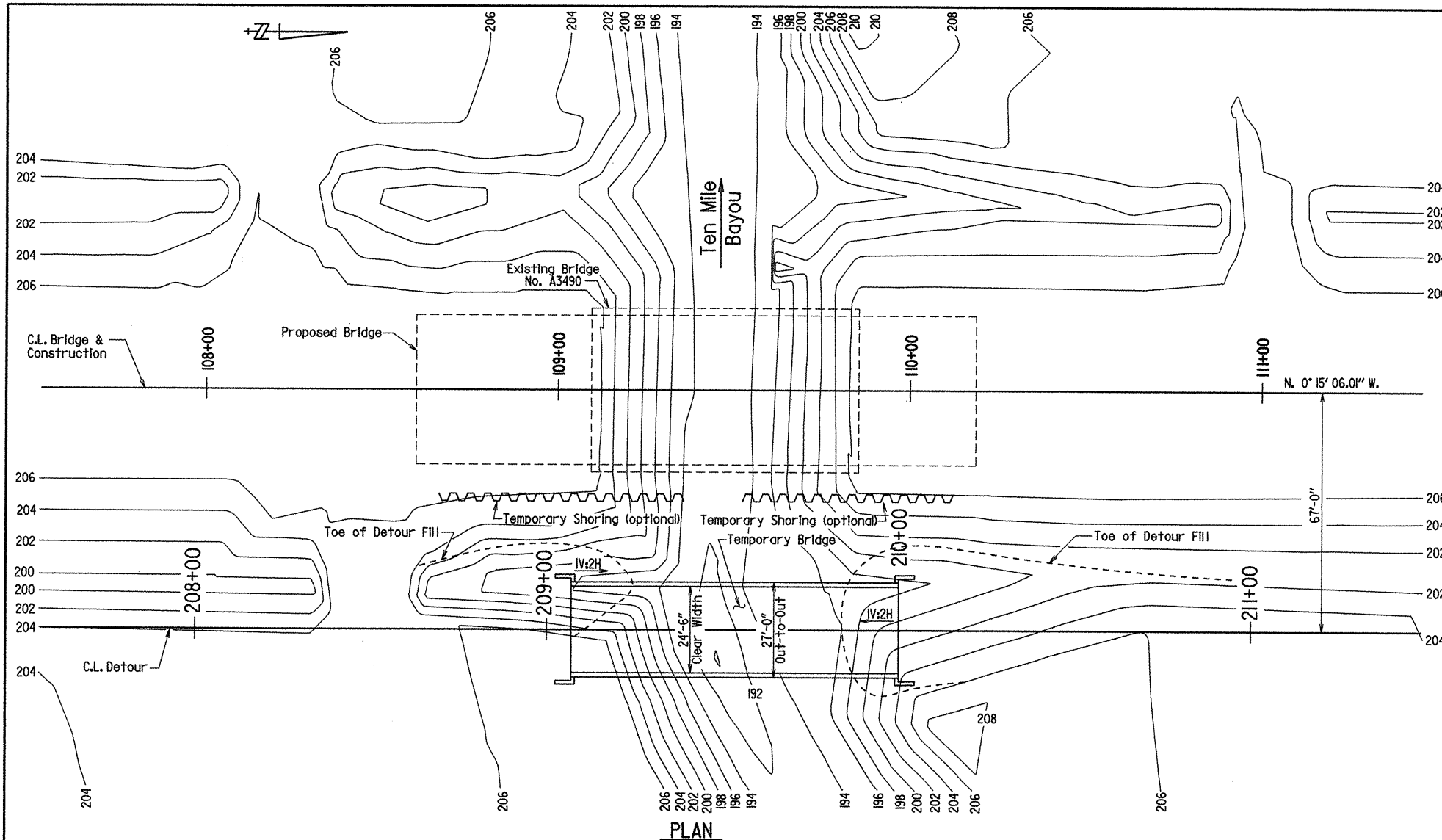
No Scale



SHEET 5 OF 5
DETAILS OF 158'-0" CONTINUOUS
COMPOSITE INTEGRAL W-BEAM UNIT
TEN MILE BAYOU
ROUTE 147 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04/06/09 FILENAME: B10514XL.SLDGN
CHECKED BY: JGT DATE: 9-15-09 SCALE: 3/8" = 1'-0"
DESIGNED BY: BEF DATE: 4/09 OR AS NOTED
BRIDGE NO. 07173 DRAWING NO. 50918



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	33	78
				07173		LAYOUT		50919

GENERAL NOTES FOR TEMPORARY BRIDGE STRUCTURE

BENCH MARK: BM 906 - Chiseled Sq. In center of headwall, 43.54 Lt. of Sta. 100+53.66, Elev. 204.67

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 edition, with applicable supplemental specifications and special provisions. Unless otherwise noted in the plans Section and Subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 edition.

SEISMIC PERFORMANCE CATEGORY: B

LIVE LOADING: HS20

MATERIALS AND STRENGTHS:
 Class S (AE) Concrete (superstructure) $f'_c = 4,000$ psi
 Class S Concrete (substructure) $f'_c = 3,000$ psi
 Reinforcing Steel (AASHTO M31 or M53, Gr. 60) $f_y = 60,000$ psi

PILING: Piling for Bents 1 thru 4 shall be 16" \emptyset unfilled steel shell piling and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 44 tons per pile. Drive piles in Bents 1 thru 4 to a tip elevation of 164.00 or lower.

Preboring or other methods as approved by the Engineer may be used to achieve the minimum penetration. Any cost for these methods shall be included in the item "Temporary Bridge Structure".

PRECAST CONCRETE UNITS: Precast concrete units within the drawings series 15190 thru 15400 may be used in lieu of units shown on Dwg. 50922 & 50923. All precast units shall be doweled to bent caps as shown on Dwg. No. 50922.

DETAIL DRAWINGS:	DRAWING NO
Bent Details	50920
Unfilled Steel Shell Piles	50921
3' - Precast Concrete Spans	50922
Precast Parapet Rail	50923
Temporary Bridge Structure	
Bridge End Protection System	2465

The Temporary Bridge Structure shall comply with and be paid per linear foot as Temporary Bridge Structure (24' Roadway Width) in accordance with Section 603.



LAYOUT OF TEMPORARY BRIDGE
 OVER TEN MILE BAYOU CUTOFF DITCH
 (STR. & APPRS.) (C.O.E.) (S)
 CRITTENDEN COUNTY

ROUTE 147 SEC. 1
 ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 9/18/2009 FILENAME: b110514XL.dwg

CHECKED BY: DBS DATE: 12/4/09 SCALE: 1" = 20'-0"

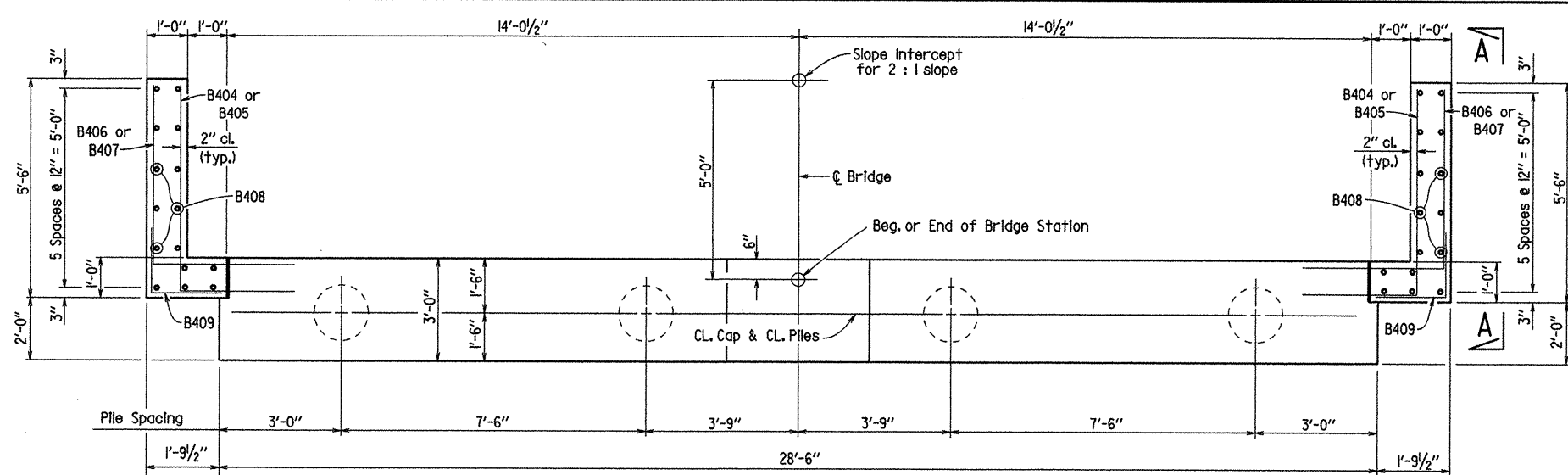
DESIGNED BY: BEF DATE: 8/09

BRIDGE NO. 07173 DRAWING NO. 50919

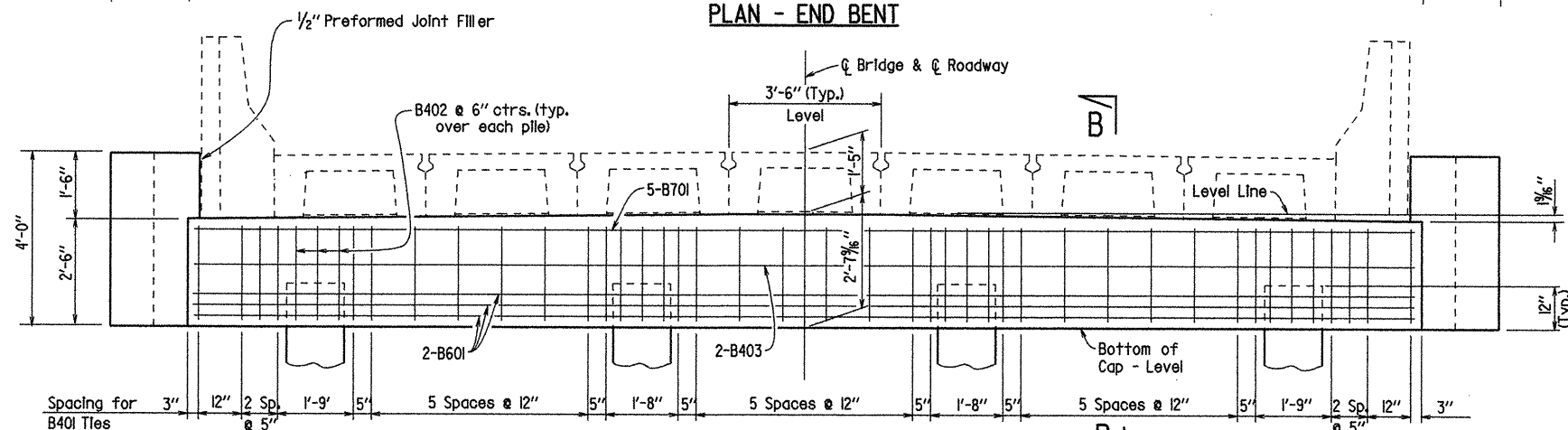
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	34	78
				07173		Bents		50920

BAR LIST PER BENT

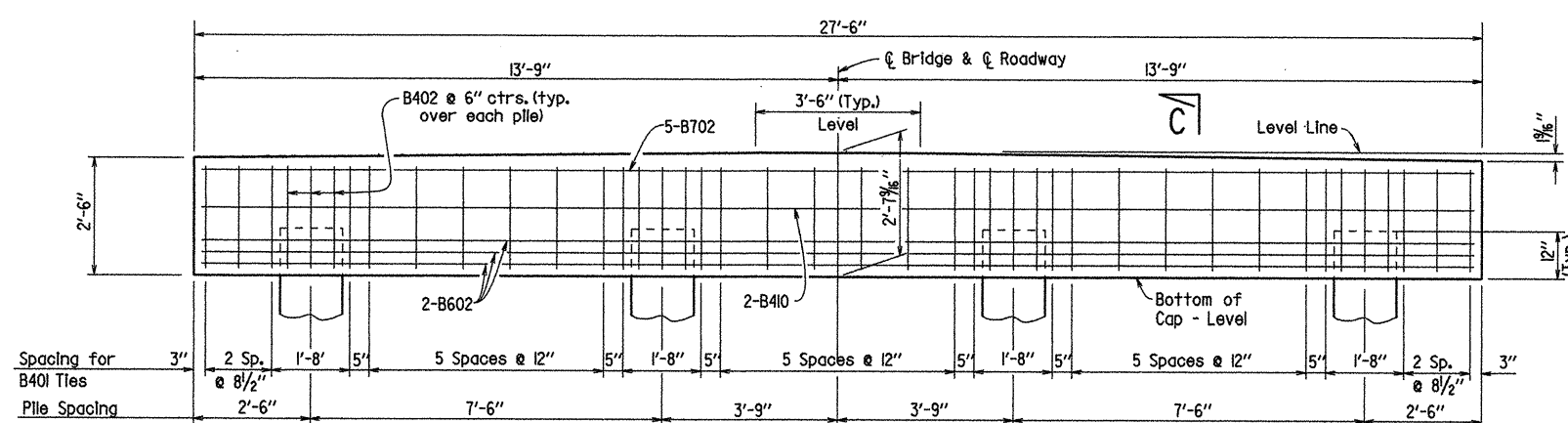
MARK	NO. REQ'D.	END BT.	INT. BT.	LENGTH	'A'	'B'	P.D.	BENDING DIAGRAMS
B401	32	30		10'-0"	2'-8"	2'-2"	2"	
B402	12	12		6'-10"	2'-8"	2'-2"	2"	
B403	2	-		28'-2"	-	-	Str.	
B404	4	-		6'-1"	5'-2"	1'-0"	2"	
B405	6	-		7'-11"	5'-2"	2'-10"	2"	
B406	4	-		6'-1"	4'-6"	1'-8"	2"	
B407	6	-		7'-11"	4'-6"	3'-6"	2"	
B408	30	-		3'-8"	-	-	Str.	
B409	10	-		3'-3"	1'-8"	1'-8"	2"	
B410	-	2		27'-2"	-	-	Str.	
B601	6	-		28'-2"	-	-	Str.	
B602	-	6		27'-2"	-	-	Str.	
B701	5	-		28'-2"	-	-	Str.	
B702	-	5		27'-2"	-	-	Str.	
S701	(See Precast Concrete Span Unit Bar List for number required)							



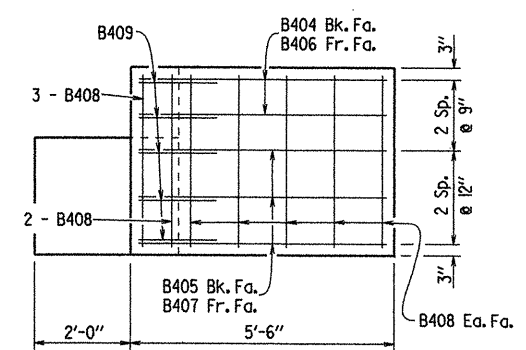
PLAN - END BENT



ELEVATION - END BENT



ELEVATION - INTERMEDIATE BENT



VIEW A-A

QUANTITIES

Bent Type	Class "S" Concrete - Bridge	Reinforcing Steel (Gr. 60) - Bridge
Int.	7.9 Cu. Yds.	820 Lbs.
End	10.0 Cu. Yds.	1040 Lbs.

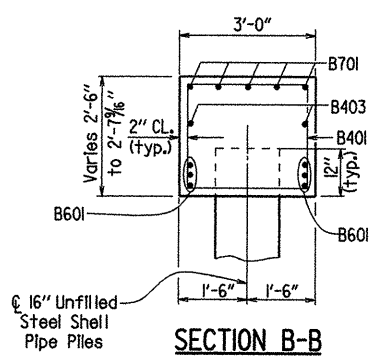
General Notes

Concrete : All concrete shall be Class "S" and have a minimum 28 day compressive strength $F'_c = 3500$ psi. All exposed corners shall be chamfered $\frac{3}{4}$ " unless otherwise noted.

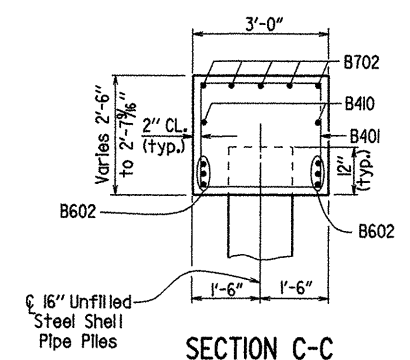
Reinforcing Steel : Reinforcing steel shall conform to AASHTO M 31 OR M 53, Grade 60.

For Details of Unfilled Steel Shell Piles, see Dwg. No. 50921.

For Details of 31'-0" Precast Spans, see Dwg. No. 50922 & 50923.

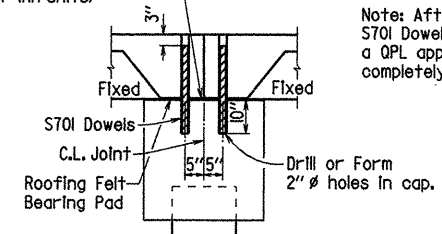


SECTION B-B



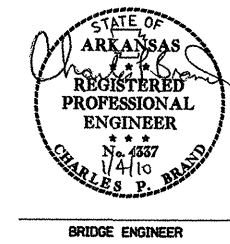
SECTION C-C

Completely fill $\frac{1}{4}$ " gap below end strut at End Bent with Roofing Felt (All Units)



SECTION AT FIXED BENT

Note: After each unit is in its final position, S701 Dowels shall be grouted in place using a OPL approved non-shrink grout that completely fills the holes.

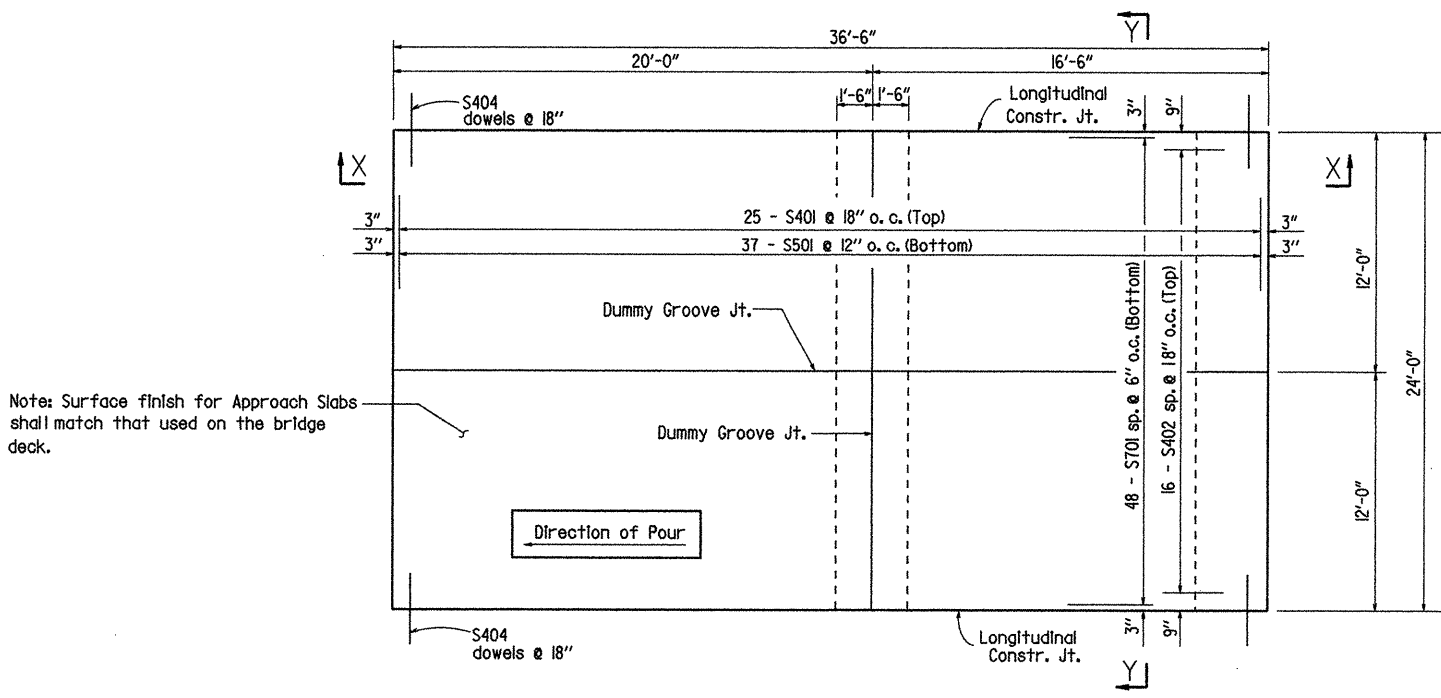


DETAILS OF PILE BENTS (16" DIA. UNFILLED SHELL PILES) FOR 31'-0" PRECAST CONCRETE SPANS - 24'-6" RDWY.

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 9/18/2009 FILENAME: bl10514.dbl.dgn
CHECKED BY: DBS DATE: 12/4/09 SCALE: $\frac{1}{2}$ " = 1'-0"
DESIGNED BY: Std DATE:
BRIDGE NO. 07173 DRAWING NO. 50920

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110514	38	78
				07173		APPROACH SLAB		50924



Note: Surface finish for Approach Slabs shall match that used on the bridge deck.

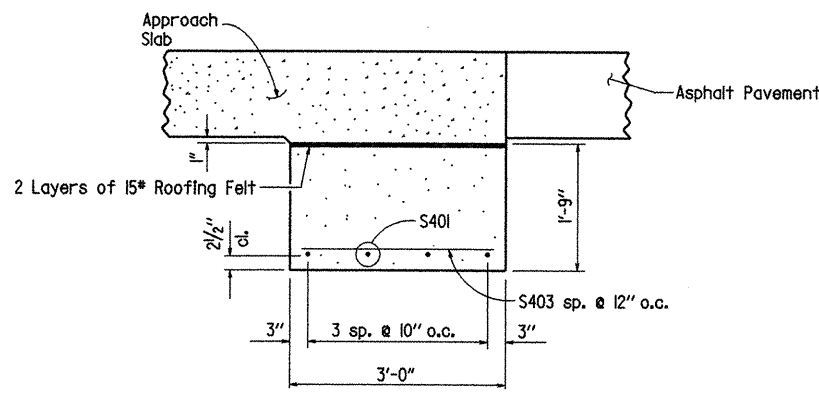
PLAN - APPROACH SLAB
N.T.S.

BAR LIST

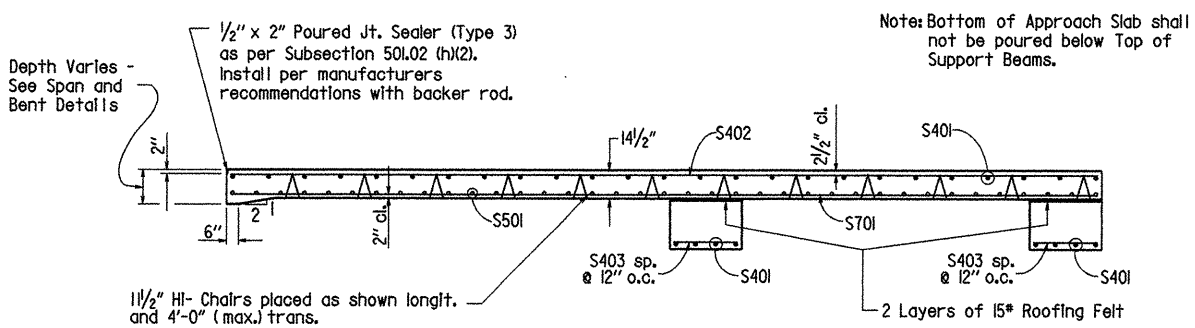
Mark	No. Req'd.	Length
S401	33	23'-8"
S402	16	36'-2"
S403	48	2'-8"
S404	50	3'-0"
S501	37	23'-8"
S701	48	36'-2"

TABLE OF QUANTITIES FOR ONE TYPE SPECIAL APPROACH SLAB

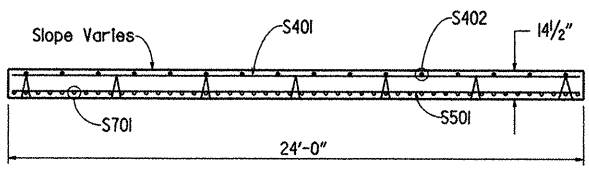
Slab Width	Reinforcing Steel (lbs.)	Concrete (Cu. Yds.)
24'-0"	5,556	49.15



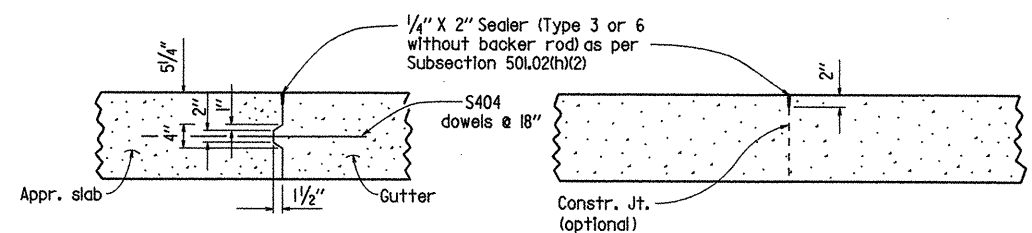
DETAILS OF SUPPORT AT EXPANSION JOINT
3/4" = 1'-0"



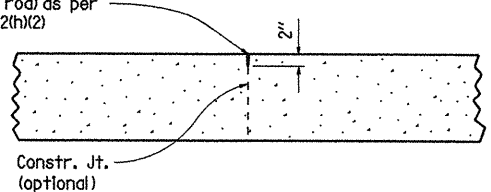
SECTION X - X
N.T.S.



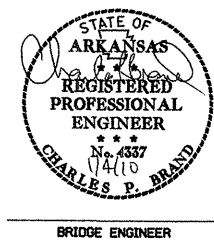
SECTION Y - Y
N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT
3/4" = 1'-0"



DETAILS OF DUMMY GROOVED JOINT
3/4" = 1'-0"



DETAILS OF TYPE SPECIAL APPROACH SLAB
ROUTE 147 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: TMG DATE: 11-16-07 FILENAME: B110514XLASLDGN
CHECKED BY: DBS DATE: 12/4/09 SCALE: AS SHOWN
DESIGNED BY: Std. DATE:
BRIDGE NO. 07173 DRAWING NO. 50924

GENERAL NOTES
Concrete shall be Class S (AE) (f'c = 4,000 psi).
Reinforcement Steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).
Approach Slabs will be measured and paid for in accordance with Section 504 of the Standard Specifications.