DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	1	90
				(2) HWY. 212 STRS. & APPRS. (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 212
STRS. & APPRS. (S)

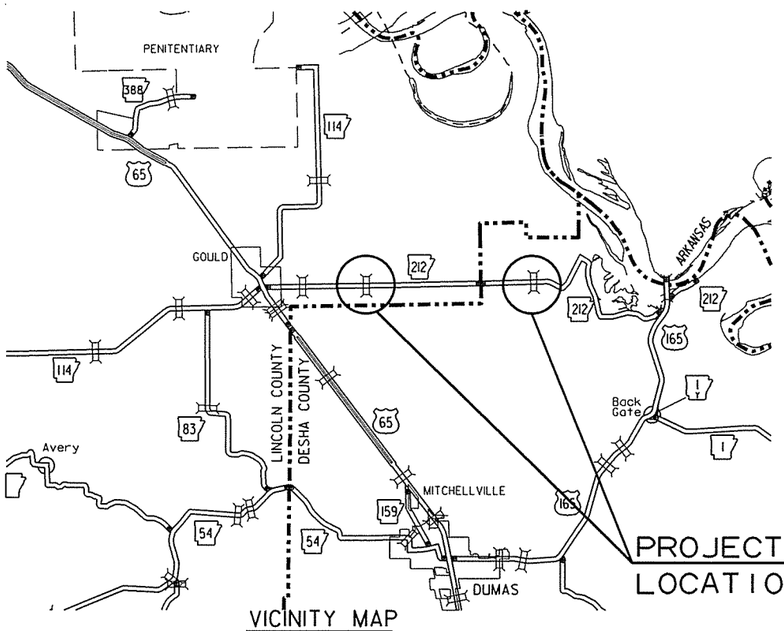
LINCOLN & DESHA COUNTIES

ROUTE 212 SECTIONS 5 & 6

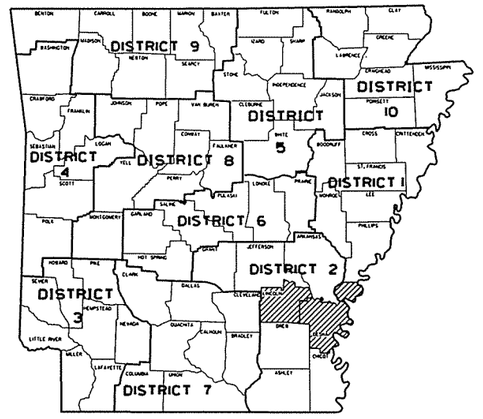
JOB 020542

FED. AID PROJ. STPF-4021(2)

NOT TO SCALE



VICINITY MAP



ARK. HWY. DIST. NO. 2

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2034
2014 ADT	800
2034 ADT	1000
2034 DHV	1100
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	9%
DESIGN SPEED	55 MPH

STA. 114+00.00
END SITE 1
LOG MILE 2.77

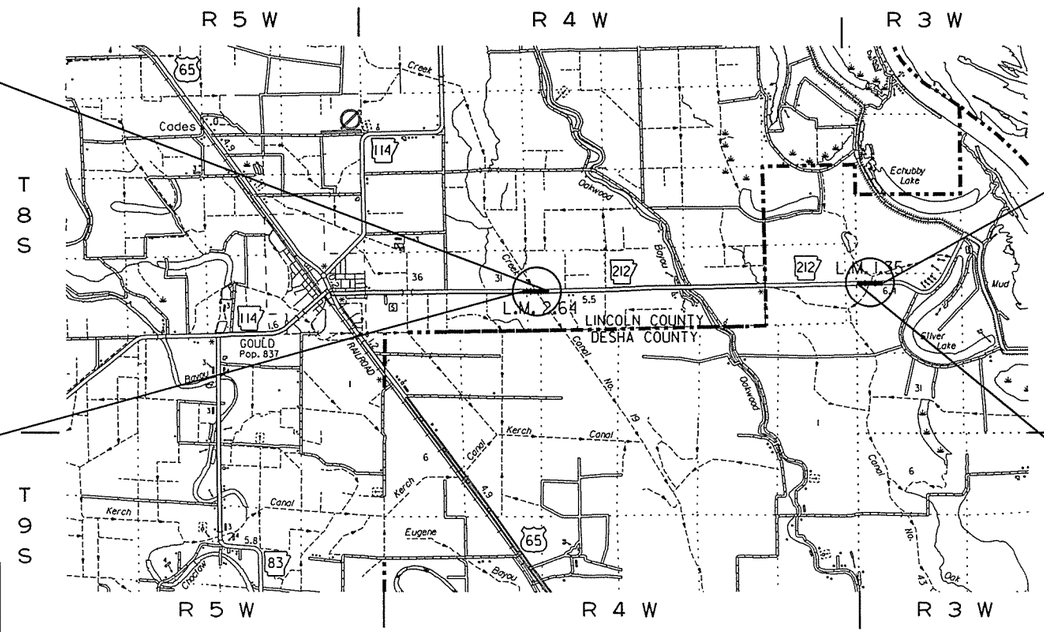
BRIDGE DATA

① BR. END STA. 106+95.75
BRIDGE NO. 07331
30'-00" CLEAR ROADWAY
122'-6" TOTAL LENGTH
120'-0" CONTINUOUS COMPOSITE
W-BEAM UNIT (37', 46', 37')
BR. END STA. 108+18.25

② BR. END STA. 206+97.75
BRIDGE NO. 07332
30'-00" CLEAR ROADWAY
102'-6" TOTAL LENGTH
100'-0" CONTINUOUS COMPOSITE
W-BEAM UNIT(32', 36', 32')
BR. END STA. 208+00.25

STA. 101+00.00 - BEGIN
JOB 020542
LOG MILE 2.53
BEGIN SITE 1

SITE 1								
BEGINNING:	LAT: N33°	59′	01"	LONG: W91°	31′	05"
MID POINT:	LAT: N33°	59′	00"	LONG: W91°	30′	56"
ENDING:	LAT: N33°	59′	00"	LONG: W91°	30′	47"
SITE 2								
BEGINNING:	LAT: N33°	58′	58"	LONG: W91°	26′	41"
MID POINT:	LAT: N33°	58′	58"	LONG: W91°	26′	34"
ENDING:	LAT: N33°	58′	58"	LONG: W91°	26′	26"



STA. 213+00.00 - END SITE 2
END JOB 020542
LOG MILE 1.46

STA. 202+50.00
BEGIN SITE 2
LOG MILE 1.26

N

APPROVED

STATE OF ARKANSAS
9-11-14
REGISTERED PROFESSIONAL ENGINEER
No. 4215
RALPH J. HALL

DEPUTY DIRECTOR
AND CHIEF ENGINEER

GROSS LENGTH OF PROJECT	2350.00	FEET	OR	0.445	MILES
NET " " ROADWAY	2125.00	"	"	0.402	"
NET " " BRIDGES	225.00	"	"	0.043	"
NET " " PROJECT	2350.00	"	"	0.445	"

P.E. 020542

08/19/14

r020542.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/23/14				6	ARK.			
				JOB NO.		020542	2	90

(2) INDEX OF SHEETS, GOV. SPECS. & GEN. NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-14

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRAWING NO.	DATE
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2	INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES			
3-4	TYPICAL SECTIONS OF IMPROVEMENT			
5	SPECIAL DETAILS			
6-9	TEMPORARY EROSION CONTROL DETAILS			
10-15	MAINTENANCE OF TRAFFIC DETAILS			
16	PERMANENT PAVEMENT MARKING DETAILS			
17-21	QUANTITIES			
22	SCHEDULE OF BRIDGE QUANTITIES	07331, 07332	56162	
23	SUMMARY OF QUANTITIES AND REVISIONS			
24-26	SURVEY CONTROL DETAILS			
27-30	PLAN AND PROFILE SHEETS			
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32	LAYOUT OF BRIDGE OVER CYPRESS CREEK (SHEET 2 OF 2)	070331	56164	
33	DETAILS OF END BENTS 1 AND 4 (SHEET 1 OF 2)	070331	56165	
34	DETAILS OF END BENTS 1 AND 4 (SHEET 2 OF 2)	070331	56166	
35	DETAILS OF BENTS 2 AND 3	070331	56167	
36	DETAILS OF 120'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 1 OF 5)	070331	56168	
37	DETAILS OF 120'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 2 OF 5)	070331	56169	
38	DETAILS OF 120'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 3 OF 5)	070331	56170	
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40	DETAILS OF 120'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 5 OF 5)	070331	56172	
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46	DETAILS OF 100'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 1 OF 5)	07332	56178	
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48	DETAILS OF 100'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 3 OF 5)	07332	56180	
49	DETAILS OF 100'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 4 OF 5)	07332	56181	
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51	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		55000	02/27/14
52	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES		55001	02/27/14
53	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDERS SPANS		55005	02/27/14
54	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE		55010	02/27/14
55	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS		55021	02/27/14
56	STANDARD DETAILS FOR TYPE A APPROACH GUTTERS		55030A	02/27/14
57	STANDARD DETAILS FOR TYPE A APPROACH SLAB		55040A	02/27/14
58	STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM		55054	04/17/14
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60	STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY WIDTH (SHEET 2 OF 2)		55056	04/17/14
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62	GUARD RAIL DETAILS		GR-9	4/17/08
63	GUARD RAIL DETAILS		GR-9A	4/17/08
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65	GUARD RAIL DETAILS		GR-10A	7/14/10
66	GUARD RAIL DETAILS		GRT-1	7/14/10
67	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	2/27/14
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74	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	12/15/11
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79	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11/3/94
80-90	CROSS SECTIONS			

NOTE: CROSS SECTIONS ARE NOT NORMALLY INCLUDED IN THE PLANS SOLD TO PROSECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT- SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPLLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
108-1	LIQUIDATED DAMAGES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
620-1	MULCH COVER
JOB 020542	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 020542	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 020542	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 020542	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 020542	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 020542	HIGH PERFORMANCE PAVEMENT MARKING
JOB 020542	MANDATORY USE OF INTERNET BIDDING
JOB 020542	NESTING SITES OF MIGRATORY BIRDS
JOB 020542	PARTNERING REQUIREMENTS
JOB 020542	PLASTIC PIPE
JOB 020542	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 020542	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB 020542	SOIL STABLIZATION
JOB 020542	STORM WATER POLLUTION PREVENTION PLAN
JOB 020542	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 020542	UTILITY ADJUSTMENTS
JOB 020542	VALUE ENGINEERING
JOB 020542	WARM MIX ASPHALT

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
7. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

10/23/2014

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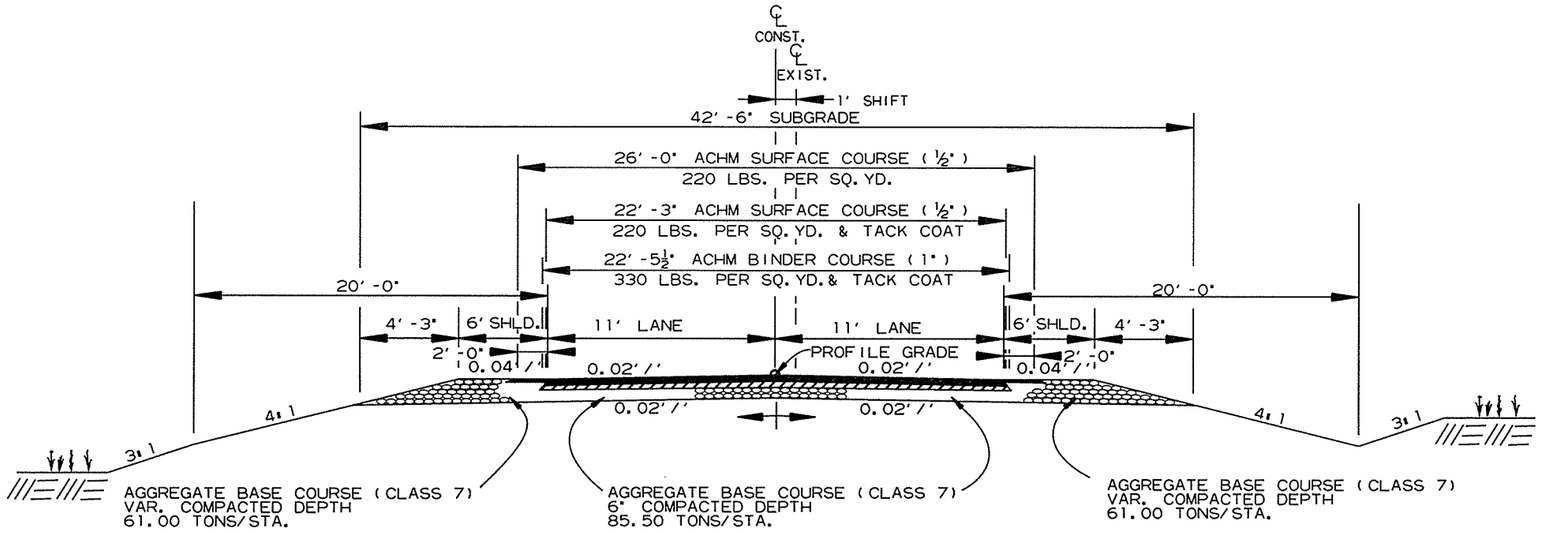
INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	3	90

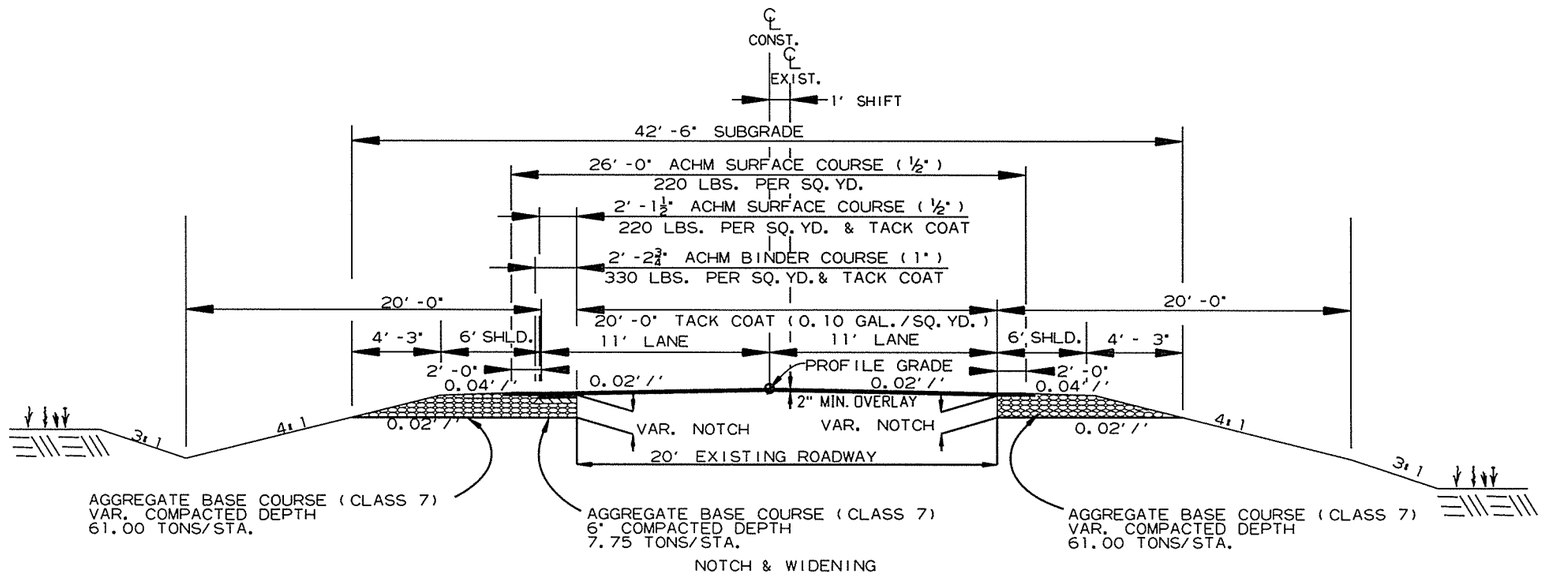
(2) TYPICAL SECTIONS OF IMPROVEMENT



FULL DEPTH

TYPICAL SECTIONS OF IMPROVEMENT

STA.	104+50.00	TO STA.	106+95.75
STA.	108+18.25	TO STA.	112+00.00
STA.	204+25.00	TO STA.	206+97.75
STA.	208+00.25	TO STA.	210+35.00



NOTCH & WIDENING

TYPICAL SECTIONS OF IMPROVEMENT

STA.	101+00.00	TO STA.	104+50.00
STA.	112+00.00	TO STA.	114+00.00
STA.	202+50.00	TO STA.	204+25.00
STA.	210+35.00	TO STA.	213+00.00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.

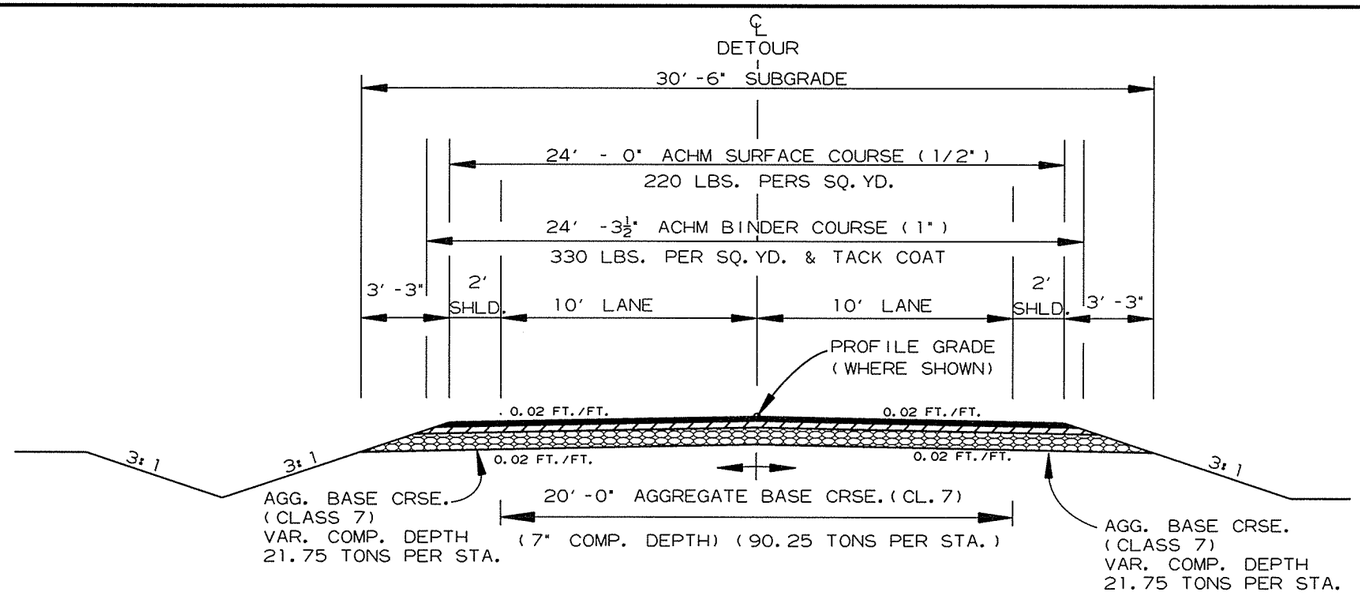
8/6/2014

R020542.DGN

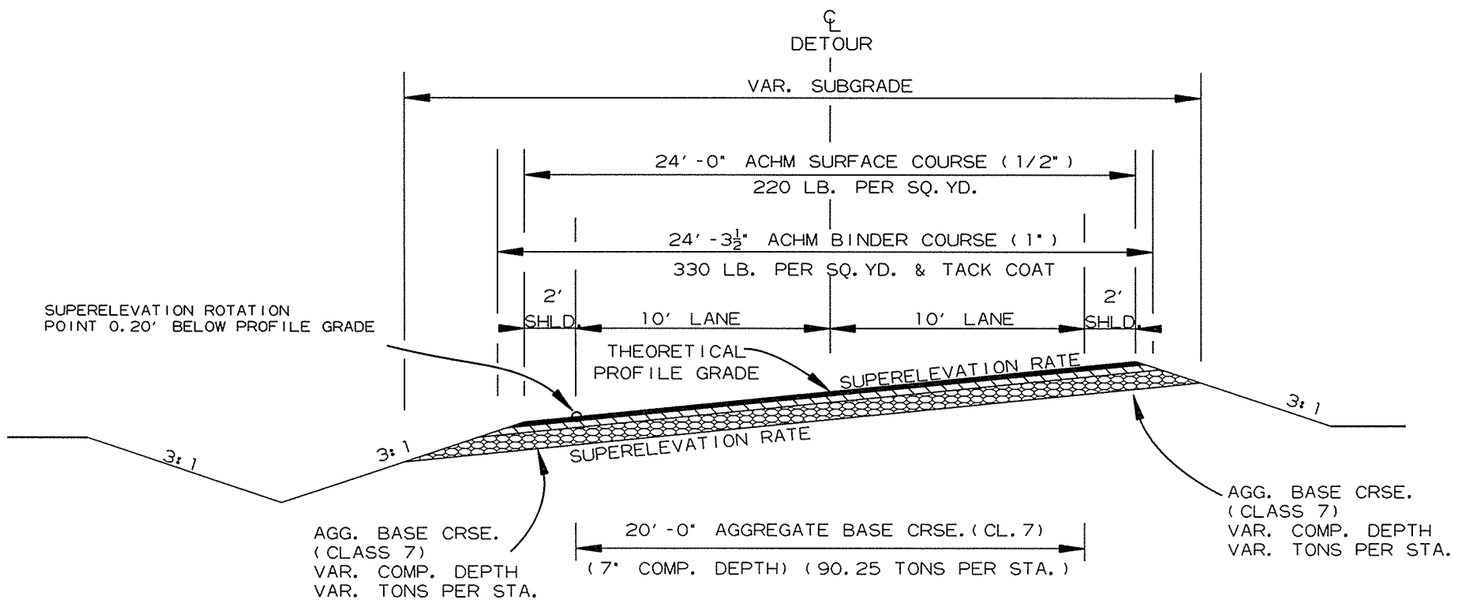
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	4	90

(2) TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTIONS OF IMPROVEMENT - DETOUR ROAD
NORMAL CROWN



TYPICAL SECTIONS OF IMPROVEMENT - DETOUR ROAD
SUPERELEVATION

NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

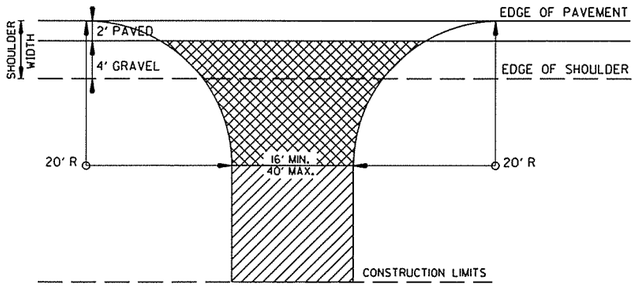
8/21/2014

R020542.DGN

TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	5	90

(2) SPECIAL DETAILS

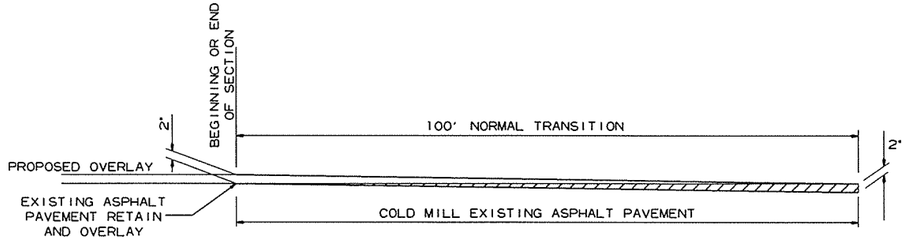


A.C.H.M. SURFACE COURSE (1/2") (220 LBS./SQ. YD.) & AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH)

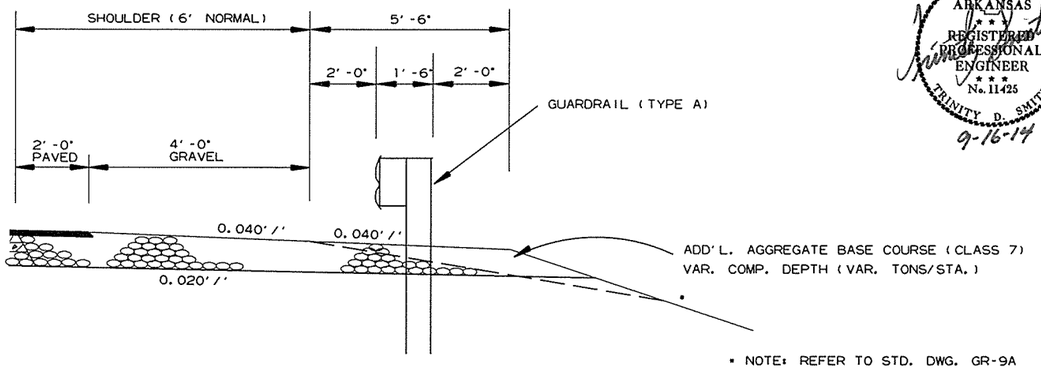
AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH OR CONFORM TO EXISTING DRIVEWAY

TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

DETAIL FOR DRIVEWAY TURNOUTS



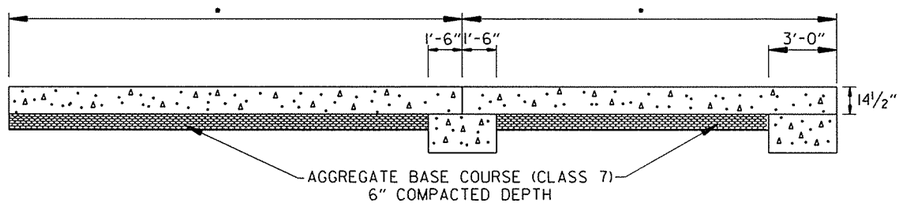
DETAIL FOR TRANSITIONS



• NOTE: REFER TO STD. DWG. GR-9A AND CROSS SECTIONS FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

WIDENING FOR GUARDRAIL

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 9-16-14



SPECIAL DETAIL OF APPROACH SLAB

• REFER TO BRIDGE DRAWINGS

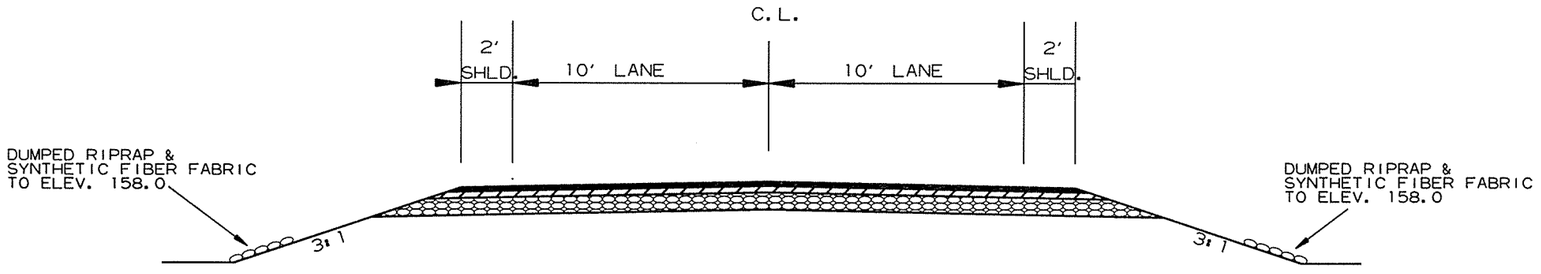
8/21/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	5A	90

(2) SPECIAL DETAILS

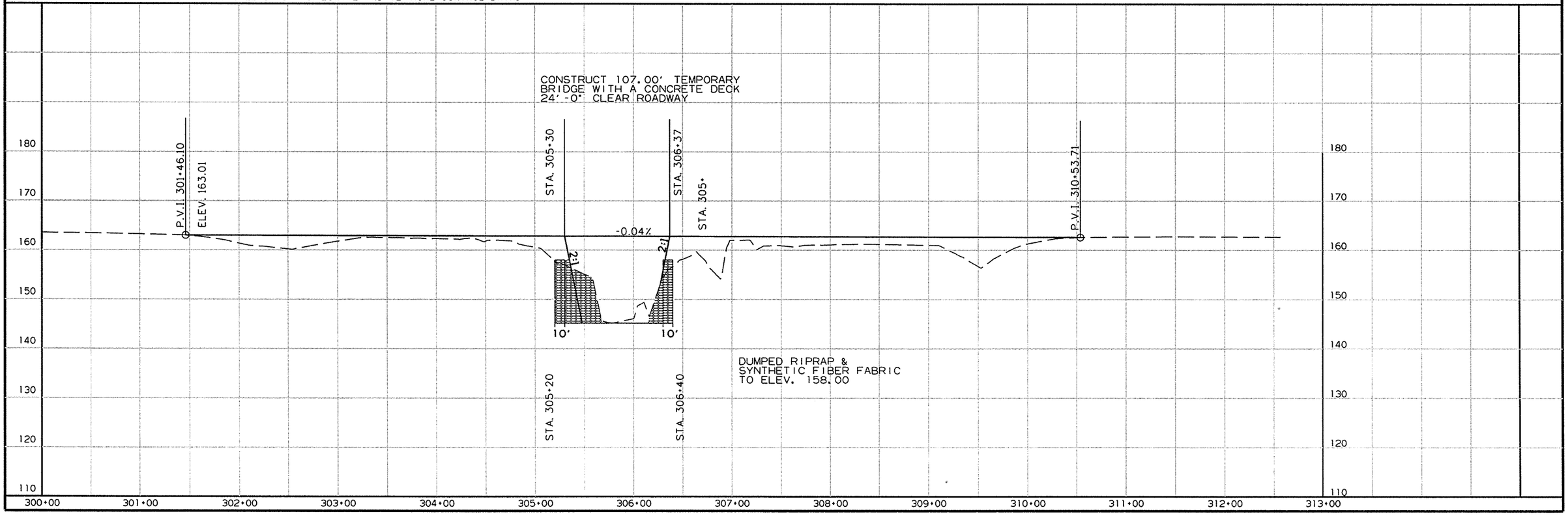
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE PERENNIAL STREAM BANK ELEVATION IS 158.0 FT. MSL.

TYPICAL SECTIONS OF IMPROVEMENT - DETOUR ROAD
STA. 305+20 - STA. 306+40

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.



ZBORDER.CEL 11/3/2010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	6	90

(2) TEMPORARY EROSION CONTROL DETAILS

SILT FENCE (E-11)

STA. 103+50.00 - STA. 112+50.00 LT. 980 LIN. FT.

SEDIMENT BASIN (E-14)

IF & WHERE DIRECTED BY THE ENGINEER 32 CU. YDS.

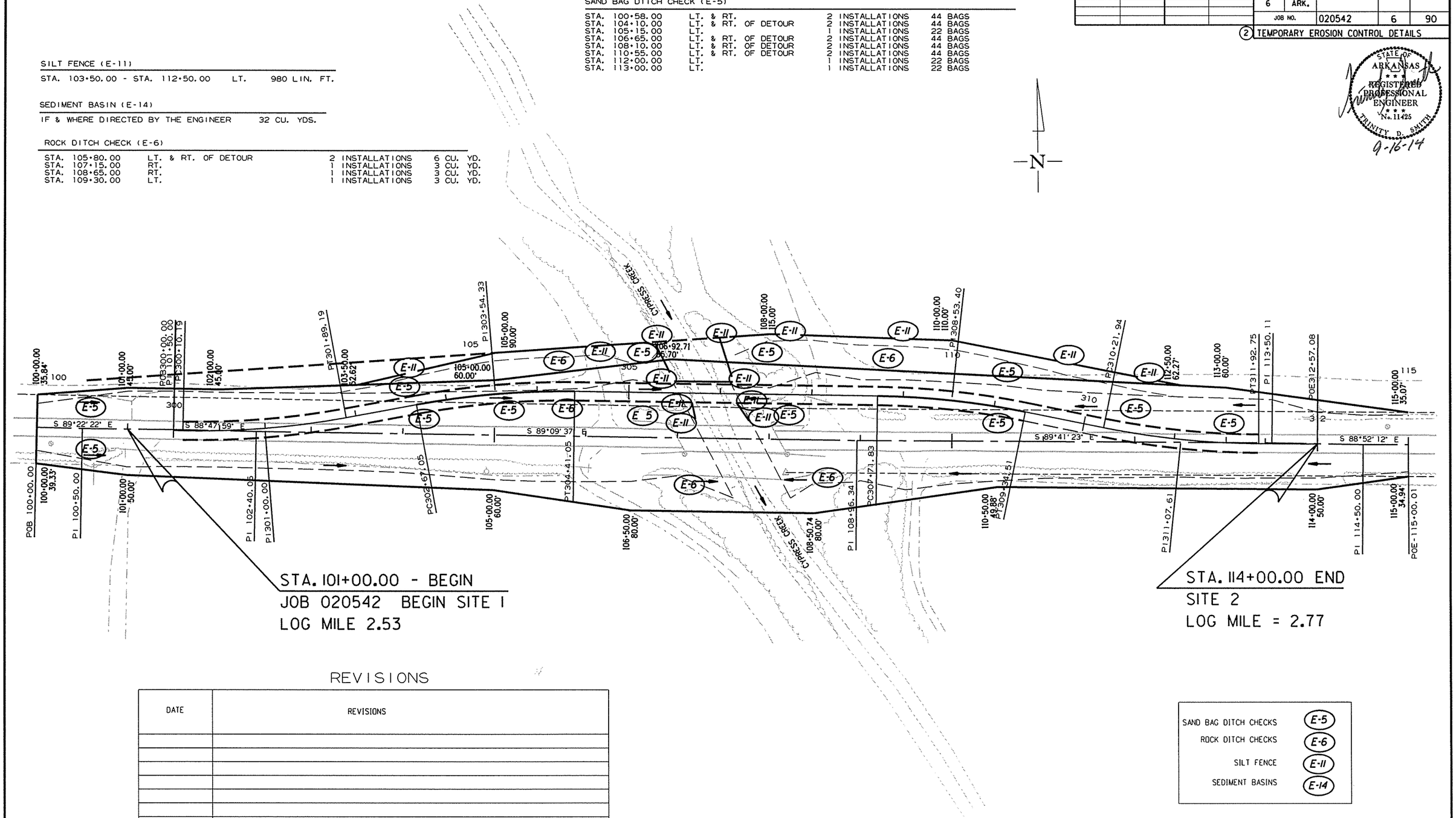
ROCK DITCH CHECK (E-6)

STA. 105+80.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	6 CU. YD.
STA. 107+15.00	RT.	1 INSTALLATIONS	3 CU. YD.
STA. 108+65.00	RT.	1 INSTALLATIONS	3 CU. YD.
STA. 109+30.00	LT.	1 INSTALLATIONS	3 CU. YD.

SAND BAG DITCH CHECK (E-5)

STA. 100+58.00	LT. & RT.	2 INSTALLATIONS	44 BAGS
STA. 104+10.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 105+15.00	LT.	1 INSTALLATIONS	22 BAGS
STA. 106+65.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 108+10.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 110+55.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 112+00.00	LT.	1 INSTALLATIONS	22 BAGS
STA. 113+00.00	LT.	1 INSTALLATIONS	22 BAGS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



STA. 101+00.00 - BEGIN
JOB 020542 BEGIN SITE 1
LOG MILE 2.53

STA. 114+00.00 END
SITE 2
LOG MILE = 2.77

REVISIONS

DATE	REVISIONS

SAND BAG DITCH CHECKS	E-5
ROCK DITCH CHECKS	E-6
SILT FENCE	E-11
SEDIMENT BASINS	E-14

SITE 1- STAGE 1
TEMPORARY EROSION CONTROL DETAILS

8/18/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	7	90

(2) TEMPORARY EROSION CONTROL DETAILS

ROCK DITCH CHECK (E-6)

STA. 206+80.00	RT.	1 INSTALLATIONS	3 CU. YD.
STA. 206+90.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	6 CU. YD.
STA. 208+25.00	RT.	1 INSTALLATIONS	3 CU. YD.

SAND BAG DITCH CHECK (E-5)

STA. 201+50.00	LT. & RT.	2 INSTALLATIONS	44 BAGS
STA. 203+00.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 206+00.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 208+10.00	LT.	1 INSTALLATIONS	22 BAGS
STA. 208+25.00	LT.	1 INSTALLATIONS	22 BAGS
STA. 209+85.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS
STA. 211+80.00	LT.	1 INSTALLATIONS	22 BAGS

SILT FENCE (E-11)

STA. 200+00.00 - STA. 215+00.24 LT. 1220 LIN. FT.

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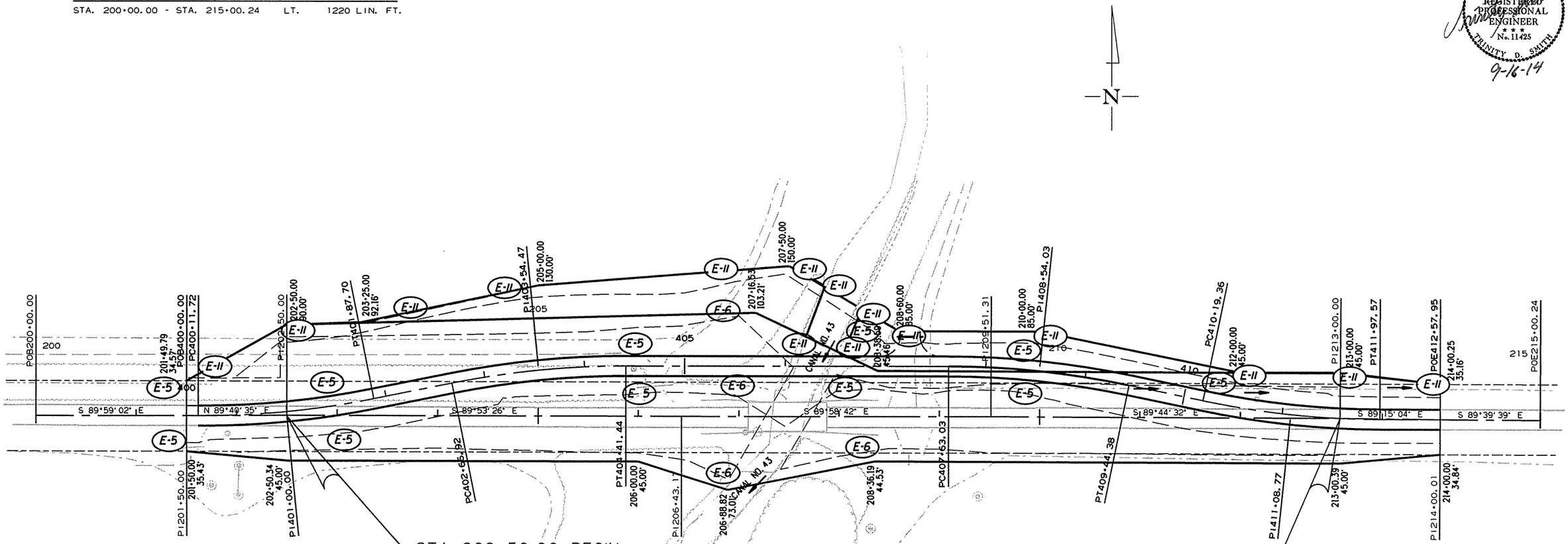

STA. 202+50.00 BEGIN
SITE 2
LOG MILE = 1.26

STA. 213+00.00 BEGIN
SITE 2
LOG MILE = 1.46

REVISIONS

DATE	REVISIONS

SAND BAG DITCH CHECKS	E-5
ROCK DITCH CHECKS	E-6
SILT FENCE	E-11
SEDIMENT BASINS	E-14

SITE 2 - STAGE 1
TEMPORARY EROSION CONTROL DETAILS

8/18/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	8	90

(2) TEMPORARY EROSION CONTROL DETAILS

SILT FENCE (E-11)

STA.	107+00.00	LT.	188 LIN. FT.
STA.	107+00.00	RT.	226 LIN. FT.
STA.	108+00.00	LT.	236 LIN. FT.
STA.	108+00.00	RT.	240 LIN. FT.

SAND BAG DITCH CHECK (E-5)

STA. 100+58.00	LT. & RT.	2	INSTALLATIONS	44 BAGS	RETAINED
STA. 104+10.00	LT. & RT. OF DETOUR	2	INSTALLATIONS	44 BAGS	RETAINED
STA. 105+15.00	LT.	1	INSTALLATIONS	22 BAGS	RETAINED
STA. 106+65.00	LT. & RT. OF DETOUR	1	INSTALLATIONS	44 BAGS	RETAINED
STA. 107+00.00	RT.	1	INSTALLATIONS	22 BAGS	
STA. 108+10.00	LT. & RT. OF DETOUR	2	INSTALLATIONS	44 BAGS	RETAINED
STA. 110+35.00	LT.	1	INSTALLATIONS	22 BAGS	
STA. 110+55.00	RT. & RT. OF DETOUR	2	INSTALLATIONS	44 BAGS	RETAINED
STA. 112+00.00	LT.	1	INSTALLATIONS	22 BAGS	RETAINED
STA. 113+00.00	LT.	1	INSTALLATIONS	22 BAGS	RETAINED

STATE OF ARKANSAS
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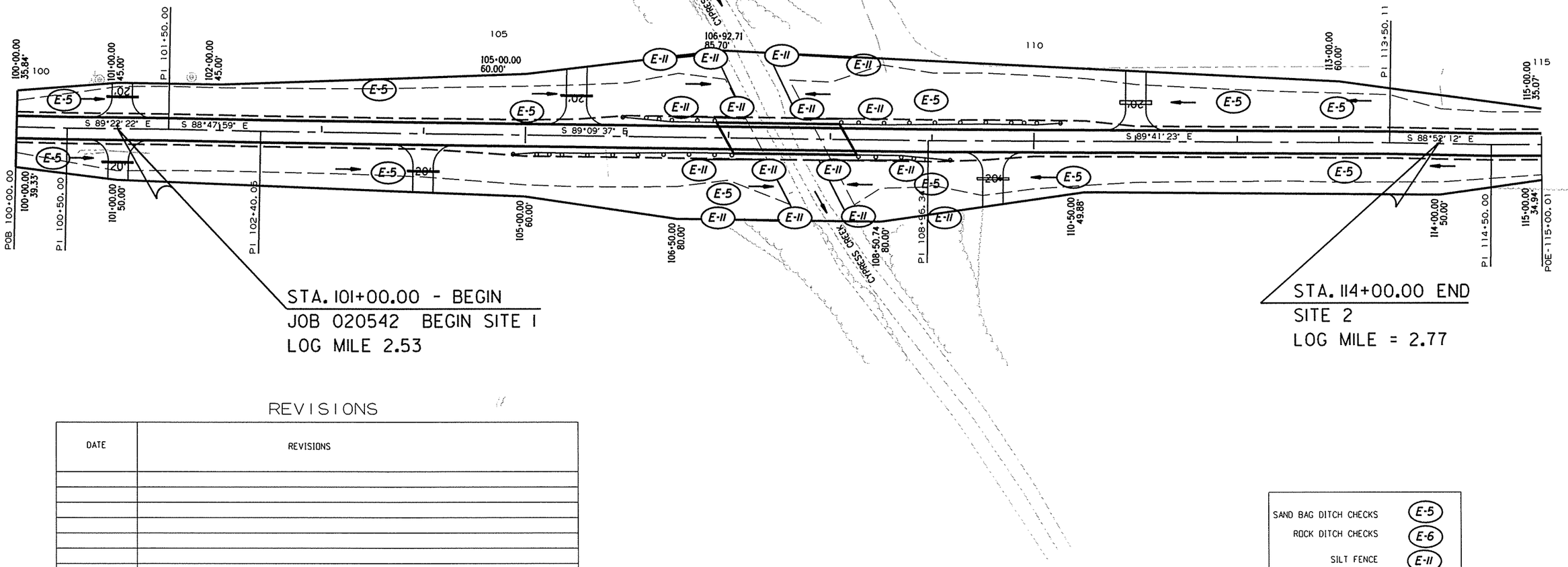


STA. 101+00.00 - BEGIN
JOB 020542 BEGIN SITE 1
LOG MILE 2.53

STA. 114+00.00 END
SITE 2
LOG MILE = 2.77

REVISIONS

DATE	REVISIONS

SAND BAG DITCH CHECKS	E-5
ROCK DITCH CHECKS	E-6
SILT FENCE	E-11
SEDIMENT BASINS	E-14

SITE 1 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

8/18/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	9	90

(2) TEMPORARY EROSION CONTROL DETAILS

SILT FENCE (E-11)

STA. 207+00.00	LT.	107 LIN. FT.
STA. 207+00.00	RT.	110 LIN. FT.
STA. 208+00.00	LT.	85 LIN. FT.
STA. 208+00.00	RT.	152 LIN. FT.

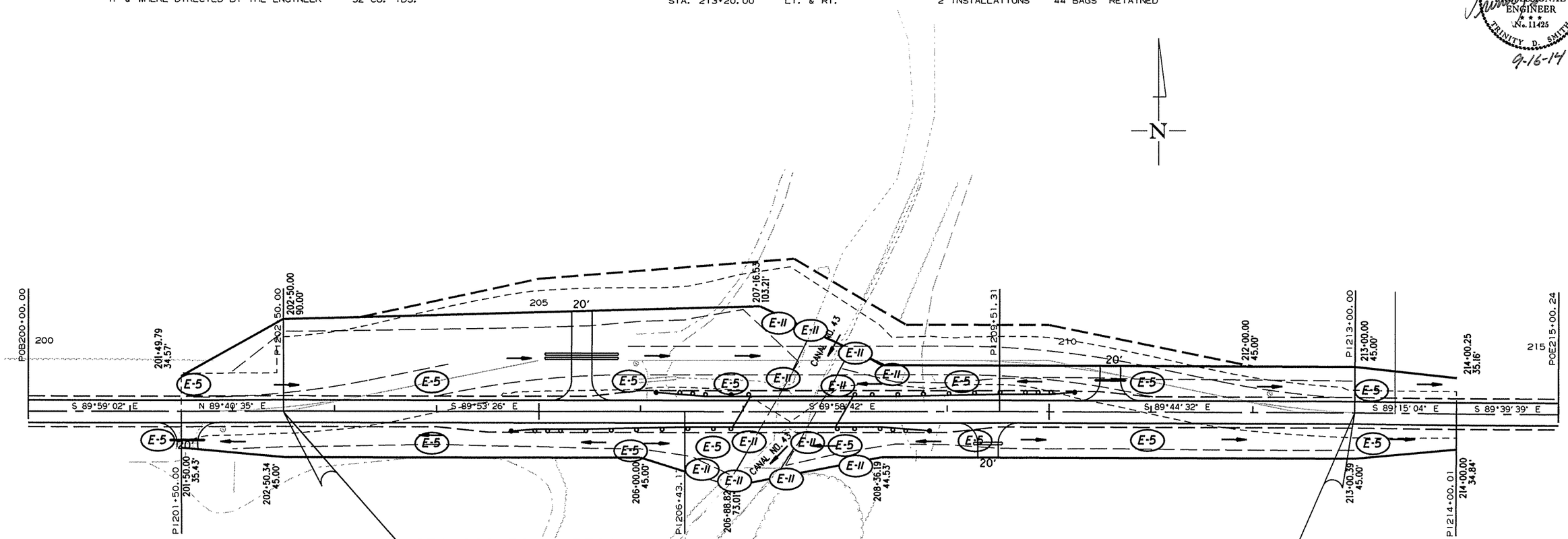
SEDIMENT BASIN (E-14)

IF & WHERE DIRECTED BY THE ENGINEER 32 CU. YDS.

SAND BAG DITCH CHECK (E-5)

STA. 201+50.00	LT. & RT.	2 INSTALLATIONS	44 BAGS	RETAINED
STA. 203+00.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS	RETAINED
STA. 204+00.00	LT. & RT.	2 INSTALLATIONS	44 BAGS	
STA. 205+90.00	LT. & RT.	2 INSTALLATIONS	44 BAGS	
STA. 206+00.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS	RETAINED
STA. 206+70.00	RT.	1 INSTALLATIONS	22 BAGS	
STA. 206+90.00	LT.	1 INSTALLATIONS	22 BAGS	
STA. 208+10.00	LT.	1 INSTALLATIONS	22 BAGS	
STA. 208+25.00	LT.	1 INSTALLATIONS	22 BAGS	
STA. 209+85.00	LT. & RT. OF DETOUR	2 INSTALLATIONS	44 BAGS	RETAINED
STA. 211+80.00	LT. & RT.	2 INSTALLATIONS	44 BAGS	
STA. 213+20.00	LT. & RT.	2 INSTALLATIONS	44 BAGS	RETAINED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



STA. 202+50.00 BEGIN
SITE 2
LOG MILE = 1.26

STA. 213+00.00 BEGIN
SITE 2
LOG MILE = 1.46

REVISIONS

DATE	REVISIONS

SAND BAG DITCH CHECKS	E-5
ROCK DITCH CHECKS	E-6
SILT FENCE	E-11
SEDIMENT BASINS	E-14

SITE 2 - STAGE 2
TEMPORARY EROSION CONTROL DETAILS

8/18/2014

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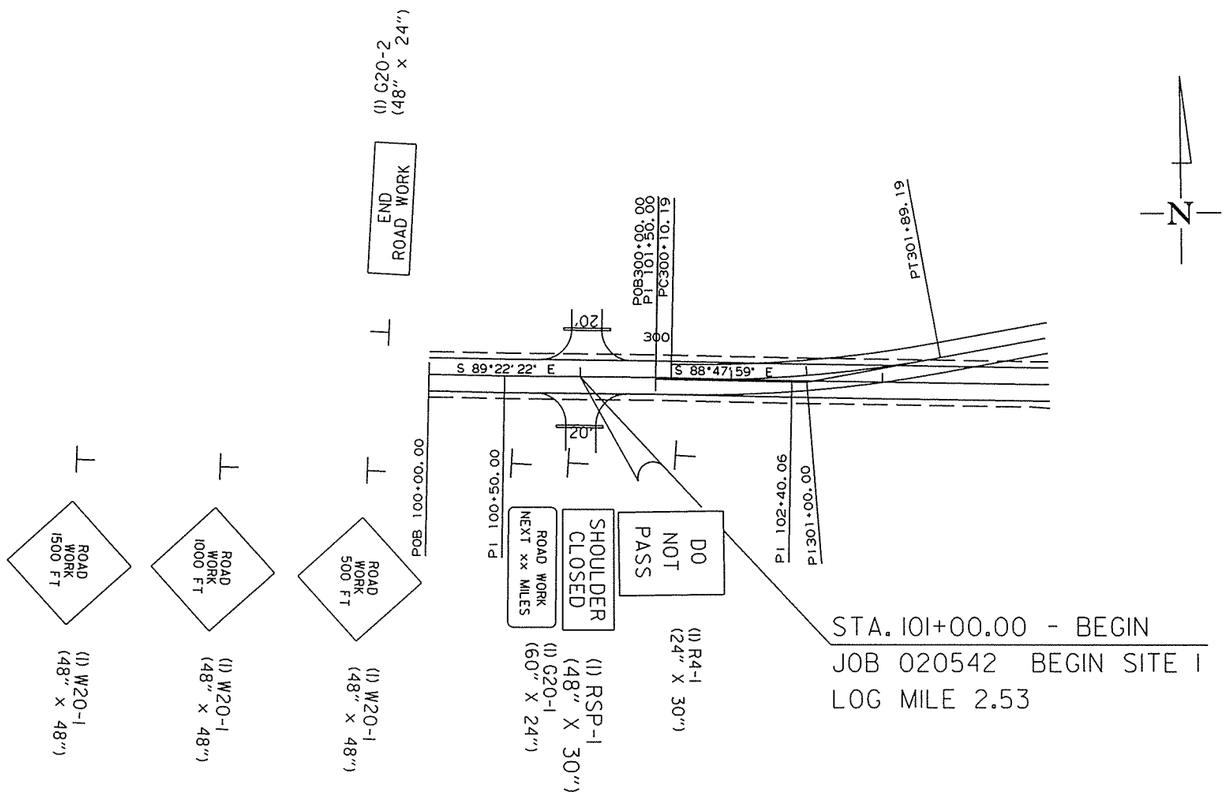
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	10	90

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



SITE I
MAINTENANCE OF TRAFFIC DETAILS
ADVANCE WARNING SIGNS

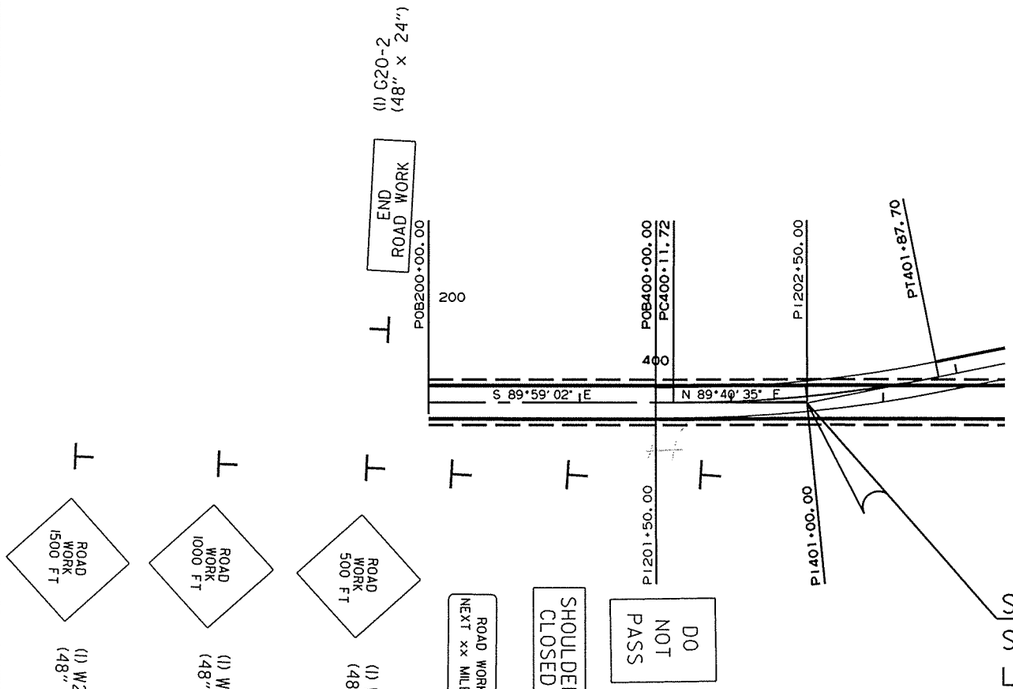
8/13/2014

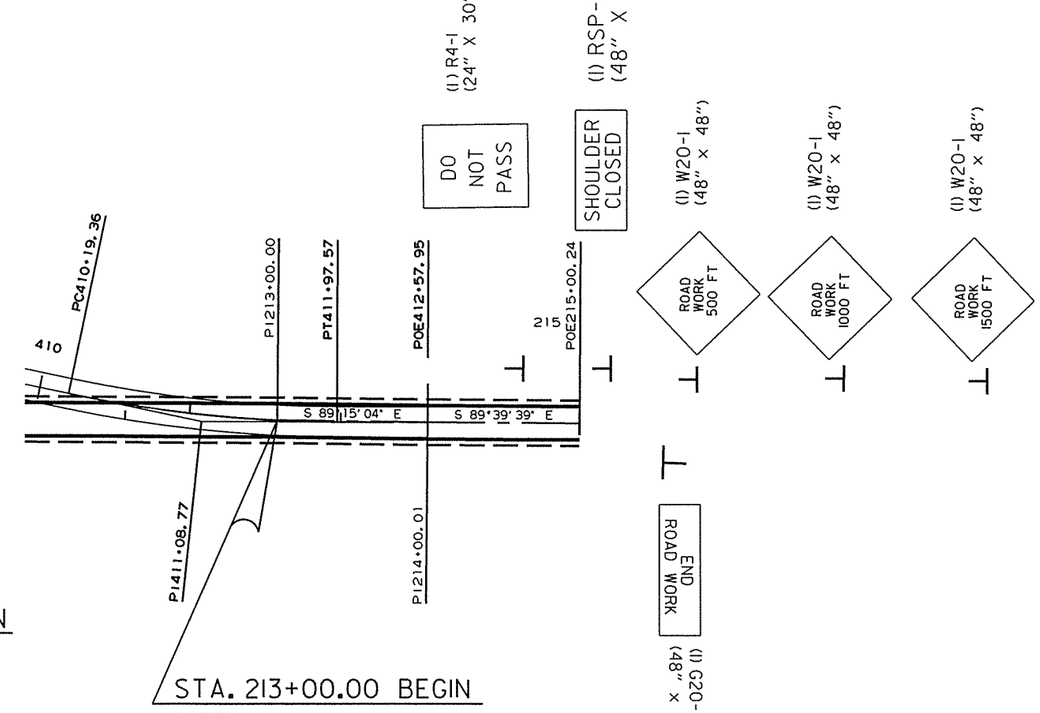
R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	11	90

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14





SITE 2
MAINTENANCE OF TRAFFIC DETAILS DETAILS
ADVANCE WARNING SIGNS

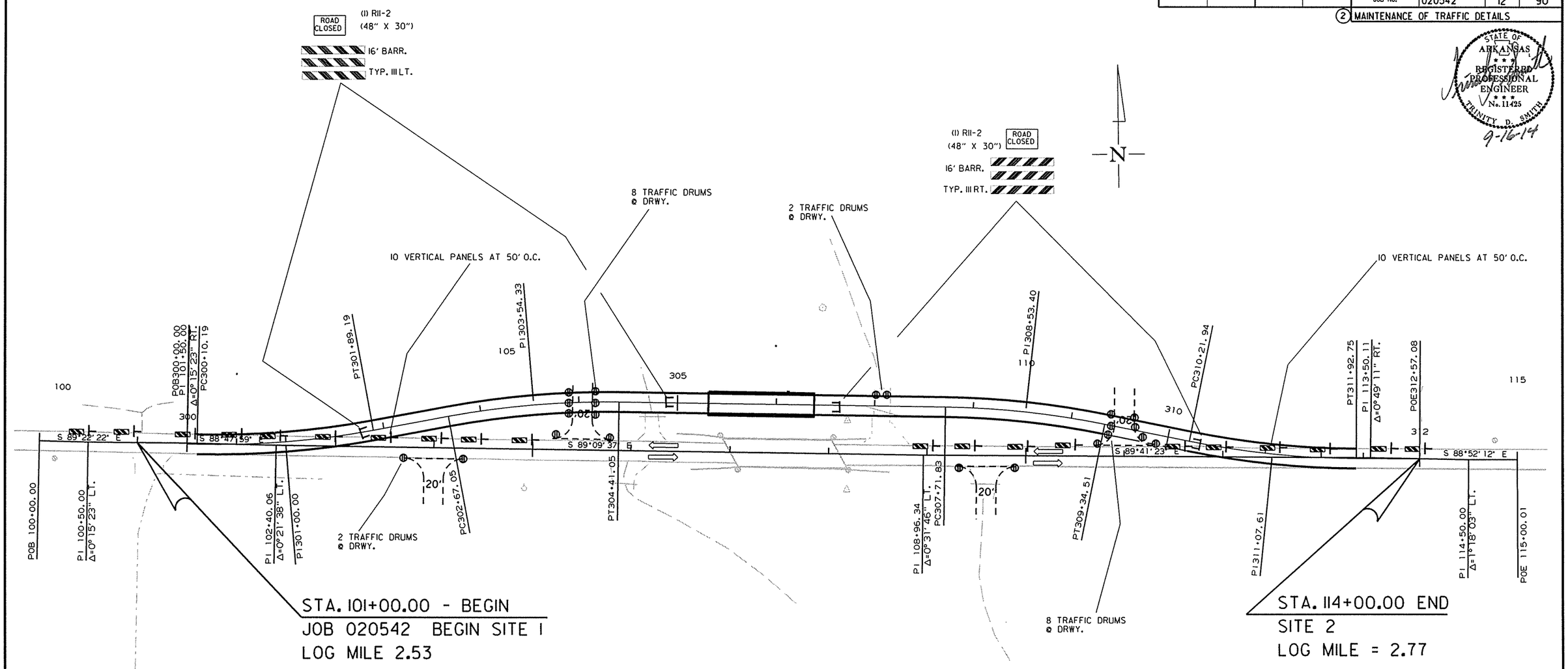
8/13/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	12	90

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



STA. 101+00.00 - BEGIN
JOB 020542 BEGIN SITE 1
LOG MILE 2.53

STA. 114+00.00 END
SITE 2
LOG MILE = 2.77

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR AND DETOUR BRIDGE. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS.

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. CONSTRUCT PROPOSED BRIDGE AND APPROACHES. INSTALL PIPE CULVERTS AND CONSTRUCT DRIVES. WIDEN EXISTING ROADWAY UTILIZING TRAFFIC DRUMS AT 50' O.C. SPACING AT NOTCH SECTIONS. PERFORM LEVELING OPERATIONS.

STAGE 3: SHIFT TRAFFIC BACK TO ROADWAY. INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

REMOVAL OF PERMANENT PAVEMENT MARKINGS	= 803 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	= 1257 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	= 2824 LIN. FT.
VERTICAL PANELS	= 20 EACH
TRAFFIC DRUMS	= 22 EACH

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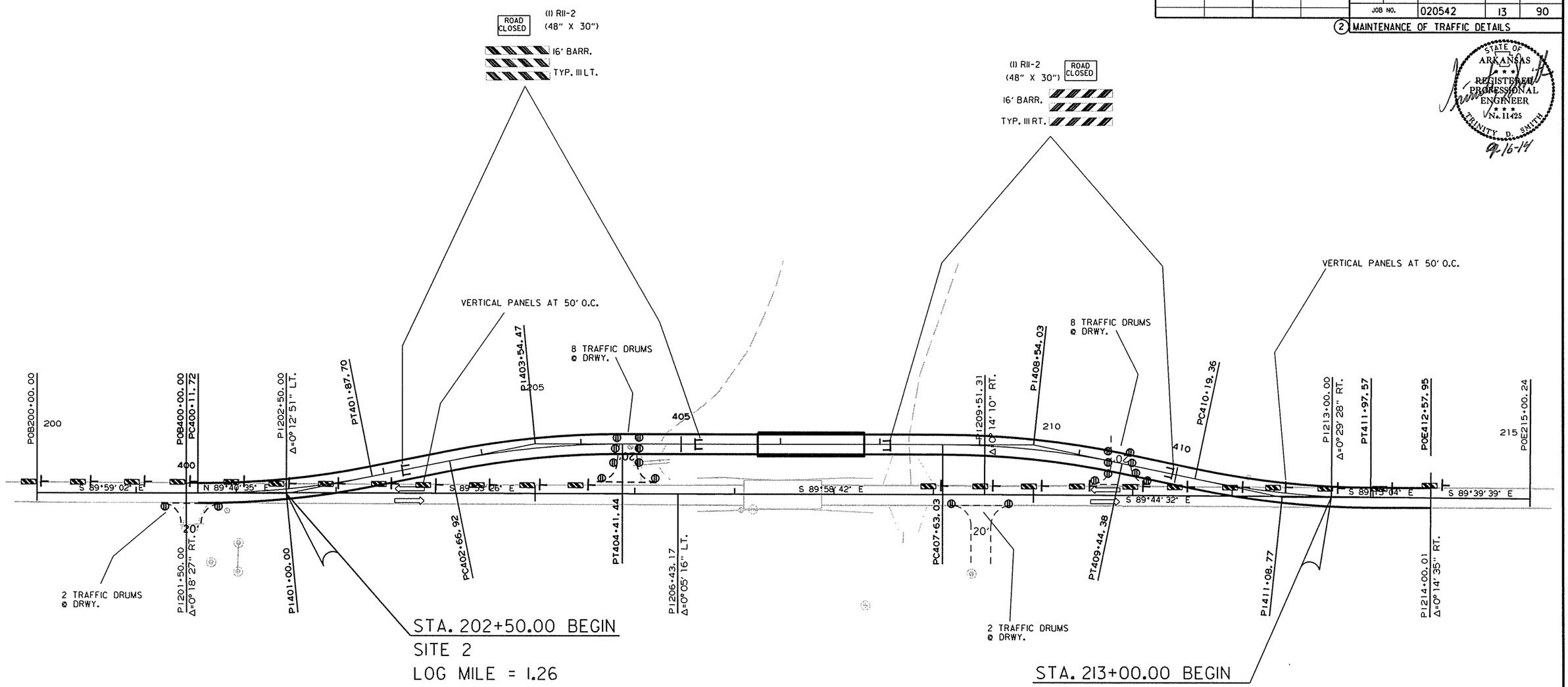
SITE 1 - STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	13	90

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9/16/14



STA. 202+50.00 BEGIN
SITE 2
LOG MILE = 1.26

STA. 213+00.00 BEGIN
SITE 2
LOG MILE = 1.46

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR AND DETOUR BRIDGE. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS.

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. CONSTRUCT PROPOSED BRIDGE AND APPROACHES. INSTALL PIPE CULVERTS AND CONSTRUCT DRIVES. WIDEN EXISTING ROADWAY UTILIZING TRAFFIC DRUMS AT 50' O.C. SPACING AT NOTCH SECTIONS. PERFORM LEVELING OPERATIONS.

STAGE 3: SHIFT TRAFFIC BACK TO ROADWAY. INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

REMOVAL OF PERMANENT PAVEMENT MARKINGS	= 511 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	= 1258 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	= 2044 LIN. FT.
VERTICAL PANELS	= 23 EACH
TRAFFIC DRUMS	= 20 EACH

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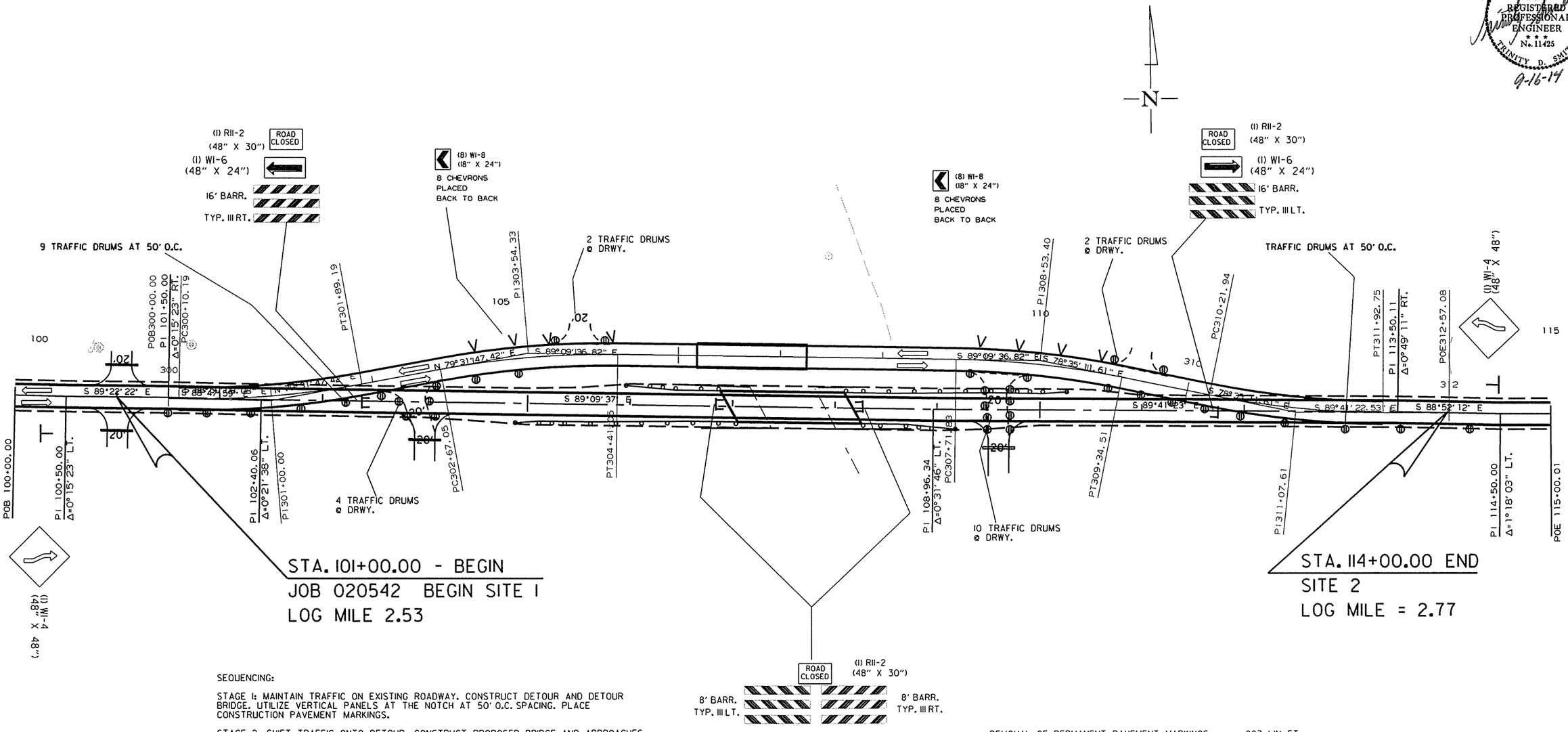
SITE 2 - STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	14	90

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
TRINITY D. SMITH
REGISTERED PROFESSIONAL ENGINEER
No. 11425
9-16-14



STA. 101+00.00 - BEGIN
JOB 020542 BEGIN SITE 1
LOG MILE 2.53

STA. 114+00.00 END
SITE 2
LOG MILE = 2.77

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR AND DETOUR BRIDGE. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS.

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. CONSTRUCT PROPOSED BRIDGE AND APPROACHES. INSTALL PIPE CULVERTS AND CONSTRUCT DRIVES. WIDEN EXISTING ROADWAY UTILIZING TRAFFIC DRUMS AT 50' O.C. SPACING AT NOTCH SECTIONS. PERFORM LEVELING OPERATIONS.

STAGE 3: SHIFT TRAFFIC BACK TO ROADWAY. INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

REMOVAL OF PERMANENT PAVEMENT MARKINGS	= 803 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	= 1257 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	= 2824 LIN. FT.
TRAFFIC DRUMS	= 36 EACH

8/13/2014

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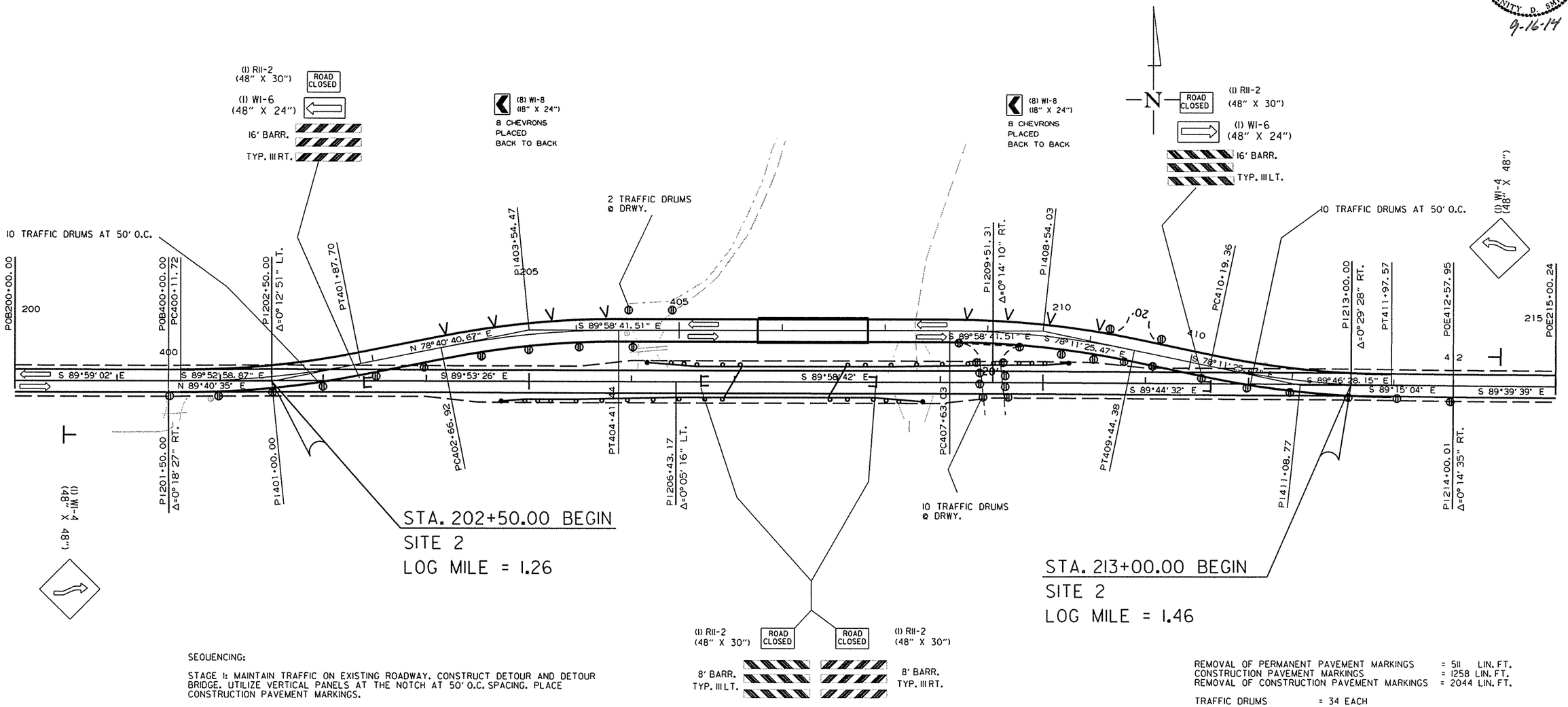
SITE 1- STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	15	90

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT DETOUR AND DETOUR BRIDGE. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING. PLACE CONSTRUCTION PAVEMENT MARKINGS.

STAGE 2: SHIFT TRAFFIC ONTO DETOUR. CONSTRUCT PROPOSED BRIDGE AND APPROACHES. INSTALL PIPE CULVERTS AND CONSTRUCT DRIVES. WIDEN EXISTING ROADWAY UTILIZING TRAFFIC DRUMS AT 50' O.C. SPACING AT NOTCH SECTIONS. PERFORM LEVELING OPERATIONS.

STAGE 3: SHIFT TRAFFIC BACK TO ROADWAY. INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE DETOUR.

REMOVAL OF PERMANENT PAVEMENT MARKINGS	= 511 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	= 1258 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	= 2044 LIN. FT.
TRAFFIC DRUMS	= 34 EACH

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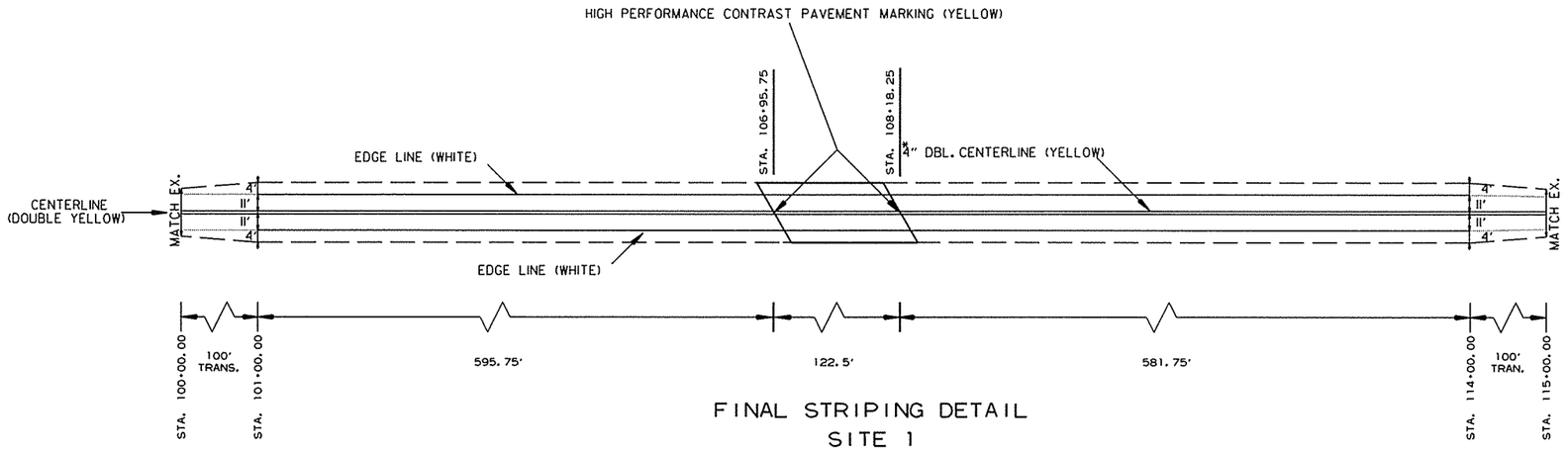
SITE 2 - STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

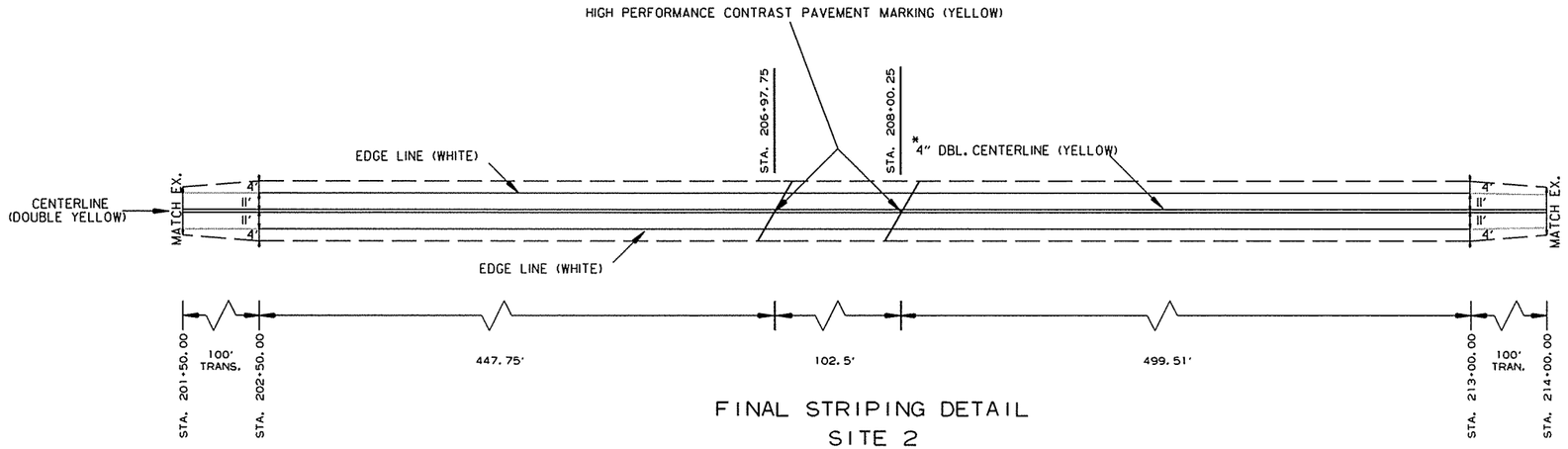
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	16	90

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



FINAL STRIPING DETAIL
SITE 1



FINAL STRIPING DETAIL
SITE 2

FINAL STRIPING:

REFLECTORIZED PAINT PAVEMENT MARKINGS

RT. AND LT. EDGE LINES WHITE (4") = 5500 LIN. FT.
DBL. CENTERLINE YELLOW (4") = 5052 LIN. FT.

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS

DBL. CENTERLINE YELLOW (4") = 452 LIN. FT.

*THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

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PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	17	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

ADVANCE WARNING SIGNS AND DEVICES,CONSTRUCTION PAVEMENT MARKINGS, AND PERMANENT PAVEMENT MARKINGS

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	END JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		REMOVAL OF PERM. PVMT. MARKINGS	REMOVAL OF CONST. PVMT. MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REFLECTORIZED PAINT PAVEMENT MARKING		*HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
												RIGHT	LEFT				WHITE (4")	YELLOW (4")	YELLOW (4")
			SQ.FT. - LIN.FT. - EACH					NO.	SQ.FT.	EACH	EACH	LIN. FT.		LIN. FT.			LIN.FT.		LIN. FT.
W20-1	ROAD WORK 1500 FT.	48"X48"	4	4	4	4	4	4	64.0										
W20-1	ROAD WORK 1000 FT.	48"X48"	4	4	4	4	4	4	64.0										
W20-1	ROAD WORK 500 FT.	48"X48"	4	4	4	4	4	4	64.0										
G20-1	ROAD WORK NEXT X.X MILES	60"X24'	4	4	4	4	4	4	40.0										
G20-2	END ROAD WORK	48"X24"	4	4	4	4	4	4	32.0										
R11-2	ROAD CLOSED	48"X30"	8	8	8	8	8	8	80.0										
R4-1	DO NOT PASS	24"X30"	4	4	4	4	4	4	20.0										
RSP-1	SHOULDER CLOSED	48"X30"	4	4	4	4	4	4	40.0										
W1-4	CURVE	48"X48"		4		4	4	4	64.0										
W1-6	ARROW	48"X24"		4	4	4	4	4	32.0										
W1-8	CHEVRONS	18"X24"		32		32	32	32	96.0										
	VERTICAL PANELS		43				43			43									
	TRAFFIC DRUMS		42	70			70				70								
	TYPE III BARRICADE-RT. (8')			4			4					32							
	TYPE III BARRICADE-LT. (8')			4			4						32						
	TYPE III BARRICADE-RT. (16')		4	2			4					64							
	TYPE III BARRICADE-LT. (16')		4	2			4						64						
	REMOVAL OF PERMANENT PAVEMENT MARKING													1314					
	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS														4868				
	CONSTRUCTION PAVEMENT MARKINGS															10060			
	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")																5500		
	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")																	5052	
	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")																		
																			452
TOTALS:									596.0	43	70	96	96	1314	4868	10060	5500	5052	452

THIS IS A LOW TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2014 EDITION.

* THE 4" YELLOW STRIPING QUANTITIY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

8/21/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	18	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

SOIL LOG

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO SOIL CLASS	COLOR
103+00	5' RT.	0-5	51	32	A-7-6(28)	BROWN
103+00	19' RT.	0-5	56	34	A-7-6(35)	BROWN
112+00	5' LT.	0-5	51	31	A-7-6(24)	BROWN
112+00	18' RT.	0-5	56	33	A-7-6(34)	BROWN
203+00	5' RT.	0-5	48	28	A-7-6(28)	GRAY
203+00	25' RT.	0-5	46	28	A-7-6(29)	BROWN
212+00	5' LT.	0-5	44	24	A-7-6(22)	GRAY
212+00	22' LT.	0-5	39	23	A-6(20)	BROWN
112+00	18' LT.	0-5	53	35	A-7-6(31)	BROWN
203+00	25' RT.	0-5	45	29	A-7-6(30)	BROWN

NOTE: SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATION OF THE SAMPLE, AND FROM SURFACE INDICATIONS ARE TYPICAL FOR THE LIMITS SHOWN. THESE DATA ARE SHOWN FOR INFORMATION ONLY. THE STATE WILL NOT BE RESPONSIBLE FOR VARIATIONS IN THE SOIL CHARACTERISTICS AND/OR EXTENT OF SAME DIFFERING FROM ABOVE TABULATIONS.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.	40
TOTAL:	40

NOTE: QUANTITY ARE ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

BENCH MARKS

LOCATION	BENCH MARKS
	EACH
STA. 108+18.25 BRIDGE	1
STA. 208+00.25 BRIDGE	1

SHOWN FOR INFORMATIONAL PURPOSES ONLY.
BENCH MARKS TO BE FURNISHED, PLACED AND RECORDED BY STATE FORCES.

SOIL STABILIZATION

LOCATION	SOIL STABILIZATION
	TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	100
TOTAL:	100

* QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

CLEARING AND GRUBBING

STATION	STATION	CLEARING	GRUBBING
		STATION	
100+00	115+00	15	15
201+50	214+00	13	13
TOTALS:		28	28

ACHM PATCHING OF EXISTING ROADWAY

LOCATION	ACHM PATCHING OF EXISTING ROADWAY
	TON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	50
TOTAL:	50

QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

GUARDRAIL

STATION	STATION	SIDE	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POSTS (TYPE 1)	THRIE BEAM GUARDRAIL TERMINAL
			LIN. FT.	EACH	
104+76.26	106+76.26	RT.	200	1	1
105+83.94	106+58.94	LT.	75	1	1
108+37.74	110+37.74	LT.	200	1	1
108+55.06	109+30.06	RT.	75	1	1
204+60.94	206+60.94	RT.	200	1	1
206+03.26	206+78.26	LT.	75	1	1
208+19.74	208+94.74	RT.	75	1	1
208+37.06	210+37.06	LT.	200	1	1
TOTALS:			1100	8	8

4" PIPE UNDERDRAINS

LOCATION	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
	LIN.FT.	EACH
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER	1000	8
TOTALS:	1000	8

NOTE: QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	ASPHALT CONC. PATCHING FOR MAINT. OF TRAFFIC	TACK COAT
	TON	GALLON
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	13	26
TOTALS:	13	26

BASIS OF ESTIMATE:
ASPHALT PATCH = 25 TONS PER MI.
TACK COAT = 50 GAL. PER MI.
QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

8/21/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	19	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	DESCRIPTION	SIDE	GUARDRAIL	PIPE CULVERT	POSTS
				LIN.FT.	EACH	EACH
100+63		14" X 25' STEEL PIPE FIELD DRAIN	RT.		1	
101+13		18" x 40' CM PIPE	RT.		1	
105+80		18" X 21' STEEL PIPE FIELD DRAIN	LT.		1	
105+92		18" X 30' CM PIPE	LT.		1	
106+21		12" X 27' STEEL PIPE	LT.		1	
106+44	108+38	GUARDRAIL	LT.	194		
106+61	108+62	GUARDRAIL	RT.	201		
108+54		42" X 38' CM PIPE	LT.		1	
109+60		24" X 30' CM PIPE	RT.		1	
114+00		18" X 20' CM PIPE	LT.		1	
201+56		18" X 24' CM PIPE	RT.		1	
205+95		STEEL POST	LT.			1
206+17		DBL. 24" X 37' PLASTIC PIPE	LT.		2	
206+38		STEEL POST	LT.			1
206+62	208+39	GUARDRAIL	LT.	177		
206+62	208+37	GUARDRAIL	RT.	175		
TOTALS:				747	11	2

PERMANENT EROSION CONTROL

STATION	STATION	LOCATION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M. GAL.	ACRE
100+00	115+00	MAIN LANES	2.51	5	2.51	256.02	2.51
201+50	214+00	MAIN LANES	2.28	5	2.28	232.56	2.28
ENTIRE	PROJECT	IF AND WHERE DIRECTED	1.00	2	1.00	102.00	1.00
		BY THE ENGINEER					
TOTALS:			5.79	12	5.79	590.58	5.79

BASIS OF ESTIMATE:
LIME ..... 2 TONS PER ACRE SEEDING;
WATER ..... 102.0 M.GAL. PER ACRE SEEDING
*QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

TEMPORARY EROSION CONTROL

STATION	STATION	LOCATION	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER
			BAG	CU. YD.	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	ACRE	ACRE	M.GAL.
100+00.00	114+00.00	STAGE 1	286	15	980	32	32	100	0.59	0.59	12.0
100+00.00	114+00.00	STAGE 2	44		1035						
200+00.00	214+00.00	STAGE 1	242	12	1220	32	32	100	1.10	1.10	22.4
200+00.00	214+00.00	STAGE 2	220		570						
ENTIRE	PROJECT	IF AND WHERE DIRECTED	66	9	500						
		BY THE ENGINEER									
TOTALS			858	36	4305	64	64	200	1.69	1.69	34.4

BASIS OF ESTIMATE
WATER .....20.4 M.G. / ACRE OF TEMPORARY SEEDING
SAND BAG DITCH CHECKS..... 22 BAGS / LOCATION
ROCK DITCH CHECKS .....3 CU. YD./ LOCATION

TEMPORARY EROSION CONTROL DEVICES SHOWN ABOVE AND ON THE PLANS SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO DETER EROSION AND SEDIMENTATION OF U.S. WATERWAYS AS EXPLAINED BY THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

*QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

APPROACH SLABS

STATION	STATION	APPROACH SLABS (TYPE A) WIDTH = 22'-0"	REINF. STEEL - RDWY. (GRADE 60)	AGGREGATE BASE COURSE (CLASS 7)
		CU. YD.	POUNDS	TONS
106+65.75	106+95.75	33.10	2110	31.10
108+18.25	108+48.25	33.10	2110	31.10
206+67.75	206+97.75	33.10	2110	31.10
208+00.25	208+30.25	33.10	2110	31.10
TOTALS:		132.40	8440	124.40

APPROACH GUTTERS

STATION	STATION	SIDE	APPROACH GUTTERS (TYPEA) W=4'-0"	REINFORCING STEEL - RDWY. (GRADE 60)
			CU. YD.	POUNDS
106+57.84	106+87.84	LT.	4.25	360
106+75.16	107+05.16	RT.	4.25	360
108+08.84	108+38.84	LT.	4.25	360
108+26.16	108+56.16	RT.	4.25	360
206+59.84	206+89.84	RT.	4.25	360
206+77.16	207+07.16	LT.	4.25	360
207+90.84	208+20.84	RT.	4.25	360
208+08.16	208+38.16	LT.	4.25	360
TOTALS:			34.00	2880

8/21/2014

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/31/14				6	ARK.			
				JOB NO.		020542	20	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-31-14

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	DESCRIPTION	LENGTH	WIDTH	COLD MILLING ASPHALT PAVEMENT
			LIN. FT.		SQ. YD.
100+00	101+00	SITE 1 - MAIN LANES	100	20	222
114+00	115+00	SITE 1 - MAIN LANES	100	20	222
201+50	202+50	SITE 2 - MAIN LANES	100	20	222
213+00	214+00	SITE 2 - MAIN LANES	100	20	222
TOTAL:					888

EARTHWORK

STATION	STATION	LOCATION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU.YD.	CU. YD.
100+00.00	106+95.75	DETOUR CONST. - SITE 1	499	1725
100+00.00	106+95.75	MAIN LANES - SITE 1	780	1026
100+00.00	106+95.75	DETOUR OBLITERATION. - SITE 1	2017	352
108+18.25	115+00.00	DETOUR CONST. - SITE 1	1630	1025
108+18.25	115+00.00	MAIN LANES - SITE 1	751	755
108+18.25	115+00.00	DETOUR OBLITERATION. - SITE 1	2143	1277
201+50.00	206+97.75	DETOUR CONST. - SITE 2	3924	2555
201+50.00	206+97.75	MAIN LANES - SITE 2	36	1182
201+50.00	206+97.75	DETOUR OBLITERATION. - SITE 2	3971	2621
207+89.50	214+00.00	DETOUR CONST. - SITE 2	47	1958
207+89.50	214+00.00	MAIN LANES - SITE 2	182	408
207+89.50	214+00.00	DETOUR OBLITERATION. - SITE 2	2226	57
ENTIRE	PROJECT	CHANNEL EXCAVATION	1505	
ENTIRE	PROJECT	DRIVEWAYS		750
ENTIRE	PROJECT	TEMPORARY DRIVEWAYS		40
ENTIRE	PROJECT	BRIDGE EXCAVATION - SITE 1	825	
ENTIRE	PROJECT	BRIDGE EXCAVATION - SITE 2	680	
TOTALS:			21216	15731

NOTE: EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

DRIVEWAYS & TURNOUTS- BASE & SURFACING

STATION	SIDE	LOCATION	DESCRIPTION	WIDTH	ACHM EXTENSION LENGTH	TURNOUT AREA	TOTAL DRIVEWAY AREA	AGGREGATE BASE CRSE. (CL.7) (7" COMP. DEPTH)	ACHM SURFACE CRSE. (1/2") (PG 64-22) (220 LB./SQ. YD.)	18" SIDE DRAIN	24" SIDE DRAIN	30" SIDE DRAIN	42" SIDE DRAIN	12" TEMPORARY CULVERT	18" TEMPORARY CULVERT	30" TEMPORARY CULVERT
					LIN.FT.	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.						
101+12	RT.	MAIN LANES	DRIVEWAY	20	18	52.8	93	38	5.81	38						
101+05	LT.	MAIN LANES	DRIVEWAY	20	9	52.8	73	30	5.81	38						
104+00	RT.	MAIN LANES	DRIVEWAY	20	27	52.8	113	46	5.81	38						
105+50	LT.	MAIN LANES	DRIVEWAY	20	38	52.8	137	56	5.81		42					
105+50	LT.	DETOUR LANES	TEMPORARY DRIVEWAYS	20		52.8	53	22							32	
109+60	RT.	MAIN LANES	DRIVEWAY	20	22	52.8	102	41	5.81		42					
111+00	LT.	MAIN LANES	DRIVEWAY	20	38	52.8	137	56	5.81				46			46
201+56	RT.	MAIN LANES	DRIVEWAY	20	6	52.8	66	27	5.81	34						
205+42	LT.	MAIN LANES	DRIVEWAY	20	70	52.8	208	84	5.81		144					
208+71	LT.	DETOUR LANES	TEMPORARY DRIVEWAYS	20		52.8								26		
209+40	RT.	MAIN LANES	DRIVEWAY	20		52.8			5.81							
210+60	LT.	MAIN LANES	DRIVEWAY	20		52.8			5.81	30		28				
TOTALS:								400	58.10	178	228	28	46	26	32	46

BASIS OF ESTIMATE:
VOLUME CONTROL: ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.7%, ASPHALT BINDER (PG 64-22) 5.3%

Nmax= 115 GYRATIONS FOR PG 64-22

NOTE: FOR R.C. CULVERTS INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE : FOR C.M. PIPE CULVERTS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

8/26/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	21	90

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")			
						AVERAGE WIDTH	SQ. YD.	GAL. PER SQ.YD.	GALLON	AVERAGE WIDTH	SQ.YD.	LBS. PER SQ.YD.	(PG 64-22) TON	AVERAGE WIDTH	SQ.YD.	LBS. PER SQ.YD.	(PG 64-22) TON
			LIN.FT.	TONS/STA.	TON	LIN. FT.				LIN. FT.				LIN. FT.			
100+00.00	101+00.00	MAIN LANES TRANSITION	100.00			21.00	233.33	0.10	23.33					21.00	233.33	220	25.67
101+00.00	104+50.00	MAIN LANES - NOTCH & WIDEN	350.00	129.75	454.13	4.35	169.17	0.03	5.08	2.23	86.72	330	14.31	28.13	1093.94	220	120.33
104+50.00	106+95.75	MAIN LANES - FULL DEPTH	245.75	207.50	509.93	44.71	1220.83	0.03	36.62	22.46	613.28	330	101.19	48.25	1317.49	220	144.92
108+18.25	112+00.00	MAIN LANES - FULL DEPTH	381.75	207.50	792.13	44.71	1896.45	0.03	56.89	22.46	952.68	330	157.19	48.25	2046.60	220	225.13
112+00.00	114+00.00	MAIN LANES - NOTCH & WIDEN	200.00	129.75	259.50	4.35	96.67	0.03	2.90	2.23	49.56	330	8.18	28.13	625.11	220	68.76
114+00.00	115+00.00	MAIN LANES TRANSITION	100.00			21.00	233.33	0.10	23.33					21.00	233.33	220	25.67
201+50.00	202+50.00	MAIN LANES TRANSITION	100.00			21.00	233.33	0.10	23.33					21.00	233.33	220	25.67
202+50.00	204+25.00	MAIN LANES - NOTCH & WIDEN	175.00	129.75	227.06	4.35	84.58	0.03	2.54	2.23	43.36	330	7.15	28.13	546.97	220	60.17
204+25.00	206+97.75	MAIN LANES - FULL DEPTH	272.75	207.50	565.96	44.71	1354.96	0.03	40.65	22.46	680.66	330	112.31	48.25	1462.24	220	160.85
208+00.25	210+35.00	MAIN LANES - FULL DEPTH	234.75	207.50	487.11	44.71	1166.19	0.03	34.99	22.46	585.83	330	96.66	48.25	1258.52	220	138.44
210+35.00	213+00.00	MAIN LANES - NOTCH & WIDEN	265.00	129.75	343.84	4.35	128.08	0.03	3.84	2.23	65.66	330	10.83	28.13	828.27	220	91.11
213+00.00	214+00.00	MAIN LANES TRANSITION	100.00			21.00	233.33	0.10	23.33					21.00	233.33	220	25.67
301+46.10	310+53.71	DETOUR LANES - SITE 1	907.61	133.75	1213.93	24.29	2449.54	0.03	73.49	24.29	2449.54	330	404.17	24.00	2420.29	220	266.23
401+42.29	410+65.81	DETOUR LANES - SITE 2	923.52	133.75	1235.21	24.29	2492.48	0.03	74.77	24.29	2492.48	330	411.26	24.00	2462.72	220	270.90
104+33.26	104+66.26	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	24.00	7.92												
104+66.26	107+04.41	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	238.15	48.00	114.31												
105+40.94	105+73.94	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	24.00	7.92												
105+73.94	106+87.09	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	113.15	48.00	54.31												
108+26.91	109+40.06	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	113.15	48.00	54.31												
109+40.06	109+73.06	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	24.00	7.92												
108+09.59	110+47.74	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	238.15	48.00	114.31												
110+47.74	110+80.74	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	24.00	7.92												
204+17.94	204+50.94	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	24.00	7.92												
204+50.94	206+89.09	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	238.15	48.00	114.31												
205+60.26	205+93.26	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	24.00	7.92												
205+93.26	207+06.41	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	113.15	48.00	54.31												
207+91.59	209+04.74	MAIN LANES - ADD'L - GUARDRAIL WIDENING RT.	113.15	48.00	54.31												
209+04.74	209+37.74	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER RT.	33.00	24.00	7.92												
208+08.91	210+47.06	MAIN LANES - ADD'L - GUARDRAIL WIDENING LT.	238.15	48.00	114.31												
210+47.06	210+80.06	MAIN LANES - ADD'L - GUARDRAIL WIDENING TAPER LT.	33.00	24.00	7.92												
ENTIRE	PROJECT	MAIN LANES - LEVELING	1015.00			20.00	2255.56	0.10	225.56					20.00	2255.56	110	124.06
TOTALS:						6826.64		14247.83		650.65		8019.77		1323.25		17251.03		1773.58

VOLUME CONTROL: ACHM SURFACE COURSE (1/2"): MIN. AGGR. 94.7%, ASPHALT BINDER (PG 64-22) 5.3%
Nmax= 115 GYRATIONS ACHM BINDER COURSE (1"): MIN. AGGR. 95.7%, ASPHALT BINDER (PG 64-22) 4.3%

7/21/2014

R020542.DGN

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.		020542	22	90
				①	07331 & 07332	QUANTITIES		56162

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 020542

BRIDGE NO.	CODE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	603	801	802	802	803	804	805	805	SP & 807	809	812	816	816
				ITEM	①REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S (AE) CONCRETE-BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	STEEL SHELL PILING (18" DIA.)	PILE ENCASEMENT	STRUCTURAL STEEL IN BEAM SPANS (M 270 GRADE 50W)	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
				UNIT	LUMP SUM	LIN. FT.	CU. YD	CU. YD	CU. YD	GAL.	LB.	LIN. FT.	LIN. FT.	LB.	LIN. FT.	EACH	SQ. YD.	CU. YD.
07331	X071	CYPRESS CREEK	BENT 1				20	26.65		0.25	2,785	164		715			242	135
			BENT 2					12.35			1,765	205	70					
			BENT 3					12.35			1,765	205	50					
			BENT 4				20	26.65		0.25	2,785	164		715			264	146
			120'-0" CONT. COMP. W-BEAM UNIT						128.30	9.90	28,330			53,890	76	1		
			SITE NO. 1 (BR. NO. M4014)		1	107												
			TOTALS FOR BRIDGE NO. 07331			107	40	78.00	128.30	10.40	37,430	738	120	55,320	76	1	506	281
07332	X071	CANAL NO. 43	BENT 1				20	26.65		0.25	2,785	232		715			342	186
			BENT 2					12.35			1,765	310	60					
			BENT 3					12.35			1,765	310	60					
			BENT 4				20	26.65		0.25	2,785	160		715			108	66
			100'-0" CONT. COMP. W-BEAM UNIT						107.20	8.20	23,580			43,740	76	1		
			SITE NO. 2 (BR. NO. M4015)		1	107												
			TOTALS FOR BRIDGE NO. 07332			107	40	78.00	107.20	8.70	32,680	1,012	120	45,170	76	1	450	252
			TOTALS FOR JOB NO. 020542			214	80	156.00	235.50	19.10	70,110	1,750	240	100,490	152	2	956	533

① The removal of exposed remnant piling from previous bridges shall be included in this pay item.

STEWART LINZ
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-7-2014
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
HWY. 212 STRS. & APPRS. (S)
LINCOLN & DESHA COUNTIES

ROUTE 212 SEC. 5 & 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 5/13/2014 FILENAME: b020542_ql.dgn
CHECKED BY: DHP DATE: 8/14/14 SCALE: NO SCALE
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07331 & 07332 DRAWING NO. 56162

PRINT DATE: 9/8/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10/23/14				6	ARK.			
10/31/14				JOB NO.		020542	23	90
				(2) SUMMARY OF QUANTITIES AND REVISIONS				

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		28	STATION
201	GRUBBING		28	STATION
SP& 202	REMOVAL AND DISPOSAL OF GUARDRAIL		747	LIN.FT.
202	REMOVAL AND DISPOSAL OF POSTS		2	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		11	EACH
210	UNCLASSIFIED EXCAVATION		21216	CU.YD.
210	COMPACTED EMBANKMENT		15731	CU.YD.
SP& 210	SOIL STABILIZATION		100	TON
303	AGGREGATE BASE COURSE (CLASS 7)		7351	TON
401	TACK COAT		677	GALLON
SP,SS& 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1266	TON
SP,SS& 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		57	TON
SP,SS& 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1735	TON
SP,SS& 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		97	TON
412	COLD MILLING ASPHALT PAVEMENT		888	SQ.YD.
SP& 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		13	TON
SP& 415	ACHM PATCHING OF EXISTING ROADWAY		50	TON
504	APPROACH GUTTERS		34.00	CU.YD.
504	APPROACH SLABS		132.40	CU.YD.
601	MOBILIZATION		1.00	LUMP SUM
SP& 602	FURNISHING FIELD OFFICE		1	EACH
603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	12" TEMPORARY CULVERT		26	LIN.FT.
603	18" TEMPORARY CULVERT		32	LIN. FT.
603	30" TEMPORARY CULVERT		46	LIN. FT.
604	SIGNS		596	SQ.FT.
604	BARRICADES		192	LIN.FT.
604	TRAFFIC DRUMS		70	EACH
604	VERTICAL PANELS		43	EACH
604	CONSTRUCTION PAVEMENT MARKINGS		10060	LIN.FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		4868	LIN.FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		1314	LIN.FT.
SP& 606	18" SIDE DRAIN		178	LIN.FT.
SP& 606	24" SIDE DRAIN		228	LIN.FT.
SP& 606	30" SIDE DRAIN		28	LIN.FT.
SP& 606	42" SIDE DRAIN		46	LIN.FT.
606	SELECTED PIPE BEDDING		40	CU.YD.
611	4" PIPE UNDERDRAINS		1000	LIN.FT.
611	UNDERDRAIN OUTLET PROTECTORS		8	EACH
617	GUARDRAIL (TYPE A)		1100	LIN.FT.
617	TERMINAL ANCHOR POSTS (TYPE 1)		8	EACH
617	THRIE BEAM GUARDRAIL TERMINAL		8	EACH
620	LIME		12	TON
620	SEEDING		5.79	ACRE
SS& 620	MULCH COVER		7.48	ACRE
620	WATER		625.0	M.GAL.
621	TEMPORARY SEEDING		1.69	ACRE
621	SILT FENCE		4305	LIN.FT.
621	SAND BAG DITCH CHECKS		858	BAGS
621	ROCK DITCH CHECKS		36	CU. YD.
621	SEDIMENT BASIN		64	CU.YD.
621	SEDIMENT REMOVAL AND DISPOSAL		200	CU.YD.
621	OBLITERATION OF SEDIMENT BASIN		64	CU.YD.
623	SECOND SEEDING APPLICATION		5.79	ACRE
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")		5500	LIN.FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")		5052	LIN.FT.
* SP& 719	INVERTED PROFILE THERMOPLASTIC CONTRAST MARKING YELLOW (4")	(ALTERNATE NO.1)	452	LIN.FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO.2)	452	LIN.FT.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		11320	POUND
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)		1.00	LUMP SUM
603	TEMPORARY BRIDGE STRUCTURE (24' ROADWAY WIDTH)		214	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		80	CU. YD.
802	CLASS S CONCRETE-BRIDGE		156.00	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		235.50	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		19.10	GALLON
804	REINFORCING STEEL-BRIDGE (GRADE 60)		70110	POUND
805	STEEL SHELL PILING (18" DIAMETER)		1750	LIN. FT.
805	PILE ENCASEMENT		240	LIN. FT.
SP& 807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		100490	POUND
809	SILICONE JOINT SEALANT		152	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		2	EACH
816	FILTER BLANKET		956	SQ. YD.
816	DUMPED RIPRAP		533	CU.YD.

*DENOTES ALTERNATE BID ITEMS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-31-14

REVISIONS

DATE	REVISION	SHEET NUMBER(S)
10/23/2014	REMOVE SHORING SP	2, 23
10/31/2014	ADD NOTE FOR PLAN QUANTITY TO EARTHWORK	20, 23

10/31/2014

R020542.DGN

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	24	90

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

SURVEY CONTROL COORDINATES

Project Name: s020542
Date: 11/30/2012
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL.
400020 - 400020A, AND 210043 - 210043A PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1792025.5703	1458636.1888	162.350	CTL	8 IN SPIKE, 16.0 NORTH CENTERLINE 32.0 SOUTH SERVICE POLE
2	1792011.7051	1459080.4243	162.534	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:2
3	1791970.7314	1460222.7319	161.799	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:3
4	1791881.2004	1480752.8247	162.370	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:4
5	1791924.1393	1481269.0806	162.493	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:5
6	1791879.7993	1482378.9193	161.024	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:6
100	1794718.8603	1453441.3761	164.629	GPS	AHTD GPS MON. 400020
101	1792095.2027	1453400.6869	160.750	GPS	AHTD GPS MON. 400020A
102	1793422.2718	1486900.4567	166.122	GPS	AHTD GPS MON. 210043
103	1791317.0186	1484576.9365	166.876	GPS	AHTD GPS MON. 210043A
900	1794913.8281	1443509.6215	168.883	TBM	CHISELED SQUARE IN CURB 37' NE OF E MOST RR
901	1792187.3417	1448092.8701	160.484	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:901 7' N OF FH
902	1792175.8887	1450820.6017	163.677	TBM	CHISELED SQUARE IN BRIDGE 48'N OF END GD
903	1792076.8058	1456023.6174	161.619	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:903 14' N CENTERLINE
904	1791983.1845	1459250.3874	163.763	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:904 3' NW CONC HUB RAIL
905	1791940.5887	1463942.4937	161.248	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:905 49' NE CENTER 2 CU
906	1791981.1063	1466664.0877	160.722	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:906 16' NE CUS
907	1792008.4278	1469628.0113	167.316	TBM	MARKED CORNER CONCRETE WATERWELL
908	1791930.0008	1472294.7425	160.892	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:908 15' S OF CL
909	1791914.4474	1474952.0448	161.992	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:909 13' S OF CL
910	1791898.0689	1477668.4344	162.065	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:910 12' S CL OF 212
911	1791922.1921	1482762.2584	159.042	TBM	CHISELED SQUARE ON WEST PIPE 27.5' N OF CL
912	1791888.5531	1481451.0918	162.945	TBM	5/8" Rebar with 2" Aluminum Cap stamped PN:912 SE CORNER 2ND BR
990	1797560.1485	1441680.1068	164.996	BM	NGS BM E 292
991	1792168.2010	1445367.4297	166.300	BM	NGS BM 12 AR
1500	1792007.6016	1457759.8040	161.643	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:1500
1501	1792005.7669	1460625.6974	160.871	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:1501
1502	1791883.6362	1479747.0635	161.500	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:1502
1503	1791896.7905	1483377.2510	160.777	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:1503
1504	1791918.7498	1482810.1106	160.655	CTL	5/8" Rebar with 2" Aluminum Cap stamped PN:1504

*Note - Rebar and Cap - Standard -"- Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999110664 HAS BEEN USED TO COMPUTE THE ABOVE LISTED GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GROUND COORDINATES ARE PROJECTED FROM AR. STATE PLANE GRID COORDINATES BY SCALING ALL X,Y
COORDINATE VALUES WITH THE INVERSE (1/X) OF THE COMBINED AJUSTMENT FACTOR (CAF) ABOUT X=0, Y=0.

GRID COORDINATES ARE STORED UNDER FILE NAME. s020542gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 ELEVATIONS FOR POINTS 1-6, 100-103, AND 900-912, 990 & 991 WERE ESTABLISHED BY 3-WIRE LEVEL TECHNIQUES FROM NGS BENCH MARKS.

POSITIONAL ACCURACY:

HORIZONTAL-GPS(POINTS 100-103): 1.0 CM 10 PPM, PRIMARY CONTROL(POINTS 1-6): 2.0 CM 20 PPM

VERTICAL-POSITIONAL ACCURACY IS THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS:
CONVERGENCE ANGLE: XX XX XX LEFT AT PN:XX
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

ALIGNMENT NAME: CONST 1

NAME	STATION	POINT TYPE	EASTING	NORTHING	ELEVATION
8000	100+00.00	POB	1458545.20	1792006.70	159.22
8001	100+50.00	P.I.	1458595.18	1792005.66	159.12
8002	101+50.00	P.I.	1458695.18	1792004.56	158.92
8003	102+40.06	P.I.	1458785.22	1792002.68	158.75
8004	108+96.34	P.I.	1459441.43	1791993.06	158.50
8005	113+50.11	P.I.	1459895.20	1791990.60	158.50
8006	114+50.00	P.I.	1459995.06	1791988.63	0.00
8007	115+00.01	POE	1460045.07	1791988.78	0.00

ALIGNMENT NAME: CONST 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8008	POB	200+00.00	1791901.0293	1480659.4638
8009	PI	201+50.00	1791900.9870	1480809.4640
8010	PI	202+50.00	1791901.5519	1480909.4653
8011	PI	206+43.17	1791900.8011	1481302.6357
8012	PI	209+51.31	1791900.6838	1481610.7767
8013	PI	213+00.00	1791899.1157	1481959.4610
8014	PI	214+00.01	1791897.8084	1482059.4561
8015	POE	215+00.24	1791897.2152	1482159.6857

ALIGNMENT NAME: DETOUR 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8016	POB	300+00.00	1792003.5616	1458695.1628
8017	PC	300+10.19	1792003.3545	1458705.3549
8018	PT	301+89.19	1792017.8493	1458883.4523
8019	PC	302+67.05	1792031.9987	1458960.0182
8020	PT	304+41.05	1792046.5808	1459133.1217
8021	PC	307+71.83	1792041.7327	1459463.8709
8022	PT	309+34.51	1792024.3961	1459625.3842
8023	PC	310+21.94	1792007.0948	1459711.0854
8024	PT	311+92.75	1791989.6764	1459880.7424
8025	POE	312+57.08	1791989.3279	1459945.0652

ALIGNMENT NAME: DETOUR 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8009	POB	400+00.00	1791900.9870	1480809.4640
8026	PC	400+11.72	1791900.9631	1480821.1824
8027	PT	401+87.70	1791918.1154	1480996.0359
8028	PC	402+66.92	1791933.6681	1481073.7141
8029	PT	404+41.44	1791950.8222	1481247.1033
8030	PC	407+63.03	1791950.6999	1481568.6903
8031	PT	409+44.38	1791932.0419	1481748.7572
8032	PC	410+19.36	1791916.6973	1481822.1464
8033	PT	411+97.57	1791898.0461	1481999.0793
8014	POE	412+57.95	1791897.8084	1482059.4561

5/8/2013

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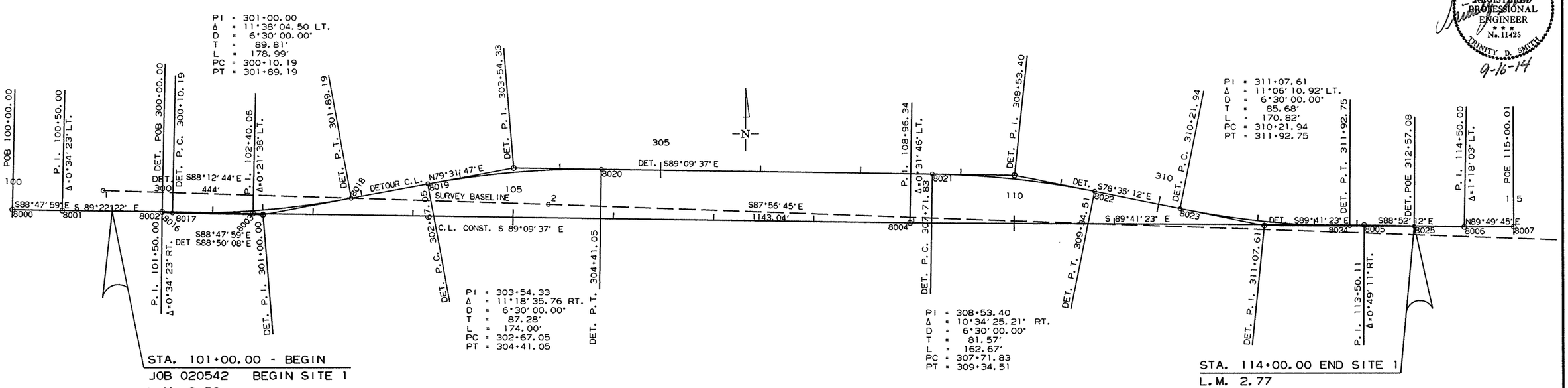
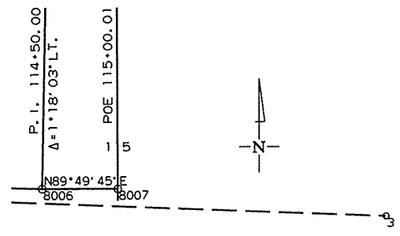
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	25	90

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14





SITE I
SURVEY CONTROL DETAILS

5/8/2013
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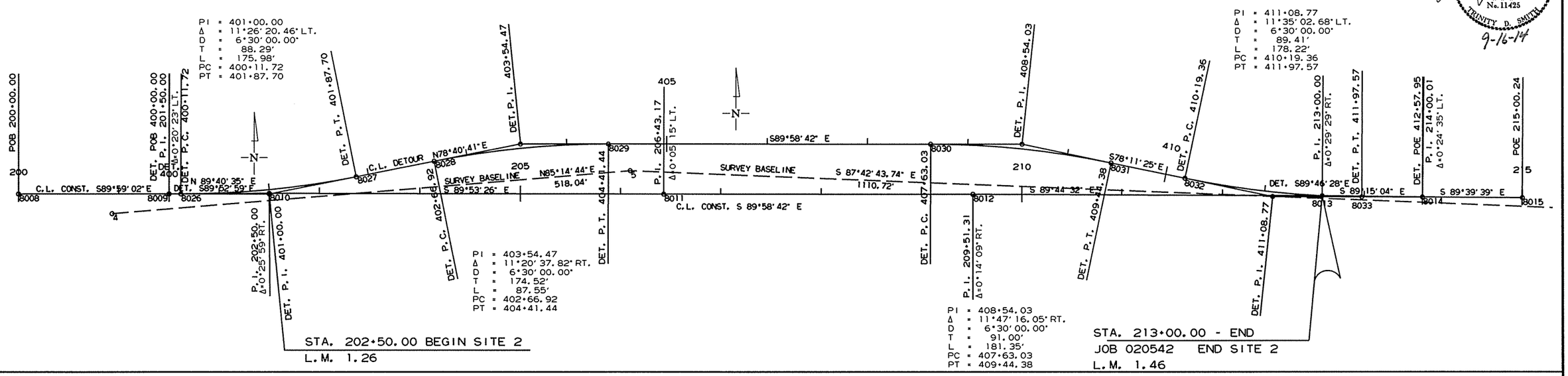
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	26	90

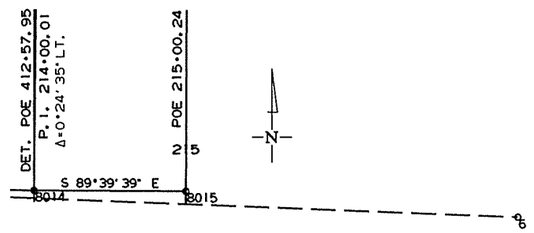
(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



STA. 202+50.00 BEGIN SITE 2
L.M. 1.26

STA. 213+00.00 - END
JOB 020542 END SITE 2
L.M. 1.46



5/8/2013

r020542.dgn

SITE 2
SURVEY CONTROL DETAILS

STA.	STA.	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE I)
104+76.26	106+76.26	RT. OF C.L. HWY. 214	200 LIN. FT.		
105+83.94	106+58.94	LT. OF C.L. HWY. 214	75 LIN. FT.		
108+37.74	110+37.74	LT. OF C.L. HWY. 214	75 LIN. FT.		
108+55.06	109+30.06	RT. OF C.L. HWY. 214	200 LIN. FT.		

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	27	90

(2) PLAN AND PROFILE SHEETS-SITE 1

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

STA. 101+05 INSTALL
18"x 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 50 CU. YD.

STA. 105+50 INSTALL
24" X 42' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 70 CU.YD.

STA. 105+80 IN PLACE
18"x21' STEEL PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 106+21 IN PLACE
12"x27' STEEL PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 106+95.75 TO STA. 108+18.25 CONSTRUCT
122'-6" X 30' CLEAR ROADWAY
BRIDGE NO. 07331
120' CONTINOUS COMPOSITE W-BEAM UNIT (37',46',37')

STA. 108+54 IN PLACE
42"x38' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 111+00 INSTALL
42"x46" PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 105 CU. YD.

STA. 114+00 IN PLACE
18"x20' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 100+63 IN PLACE
14"x25' STEEL PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 101+12 IN PLACE
18"x40' STEEL PIPE CULVERT
REMOVE AND INSTALL
18" X 38' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 25 CU. YD.

STA. 104+00 INSTALL
18"x38' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 60 CU. YD.

STA. 105+92 IN PLACE
18"x30' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 107+09.46 TO STA. 107+87.69 INPLACE
111'-0" X 29' CLEAR ROADWAY
BRIDGE NO. M4014
5 SIMPLE SPAN SUPERSTRUCTURE OF PRECAST CHANNEL BEAMS AND STEEL I-BEAMS SUPPORTED BY TIMBER CAP AND TIMBER PILE BENTS.
REMOVE (SITE I)

STA. 109+60 IN PLACE
24"x30' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 44' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 70 CU. YD.

STA. 101+00.00 - BEGIN
JOB 020542 BEGIN SITE I
LOG MILE 2.53

STA. 114+00.00 END
SITE 2
LOG MILE = 2.77

SPECIAL FLOOD HAZARD AREA
STA. 100+00 TO STA. 115+00

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

SITE 1

CYPRESS CREEK AT STA. 106+66.23 - STA. 107+86.23
TO MISSISSIPPI RIVER IS CLASSIFIED AS A
PERENNIAL STREAM. THE TOP OF CHANNEL ELEVATION
IS 158.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

P.V.C. 102+50.00 ELEV. 163.62
K=289.79 VC=200' e=0.17'
P.V.I. 103+50.00 ELEV. 163.62
P.V.T. 105+50.00 ELEV. 165.00
K=289.79 VC=200' e=-0.17'
P.V.C. 108+50.00 ELEV. 165.00
P.V.I. 109+50.00 ELEV. 165.00
K=192.27 VC=200' e=-0.26'
K=188.45 VC=200' e=0.27'
P.V.T. 112+50.00 ELEV. 162.94
P.V.I. 111+50.00 ELEV. 162.92
BRIDGE END STA. 106+95.75
BRIDGE END STA. 108+18.25
DESIGN HW 050 = 160.7
0.00% 0.69% -0.15% -0.20% -4.93% 0.00% 1.91% -1.04% 0.00% 0.49%

9/12/2014
R020542.DGN

STA.	STA.	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE I)
204+60.94	206+60.94	RT. OF C.L. HWY. 214	200 LIN. FT.		
206+03.26	206+78.26	LT. OF C.L. HWY. 214	75 LIN. FT.		
208+19.74	208+94.74	RT. OF C.L. HWY. 214	75 LIN. FT.		
208+37.06	210+37.06	LT. OF C.L. HWY. 214	200 LIN. FT.		

STA. 205+42 INSTALL
DBL. 24" X 72' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 265 CU.YD.

STA. 206+17 IN PLACE
DOUBLE 24"x37' PLASTIC PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 208+71 INSTALL
12" X 26' TEMPORARY
PIPE CULVERT LT. SIDE DRAIN
CONST. APPRS. = 10 CU.YD.

STA. 209+19 IN PLACE
30"x45' STEEL PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 210+60 INSTALL
18" X 30' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPRS. = 35 CU.YD.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	28	90

(2) PLAN AND PROFILE SHEETS-SITE 2

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

100' TRANSITION
T.C.E.
TEMP. CONST. LIMITS
20' PROPOSED R/W
CONST. LIMITS
EXIST. R/W
C.L.
P.O.B. 200+00.00
P.O.B. 400+00.00
P.I. 201+49.79 +50
Δ=0°20'23" LT. 34.57'
P.C. 400+11.72
202+50.00 90.00'
P.T. 401+87.70
203+25.00 92.16'
P.I. 403+54.47
205+00.00 130.00'
207+50.00 150.00'
P.I. 206+43.17
Δ=0°05'15" LT. 103.21'
207+16.53
CANAL NO. 43
208+38.59 45.46'
208+60.00 85.00'
210+00.00 85.00'
P.I. 408+54.03
212+00.00 45.00'
P.C. 410+19.36
213+00.00 45.00'
P.T. 411+97.57
P.O.E. 412+57.95
P.I. 214+00.01
Δ=0°24'35" LT. 214+00.25 35.16'
S89°59'02"E
S89°52'59"E
N89°40'35"E
S89°53'26"E
N78°40'41"E
S89°58'42"E
S78°11'25"E
S89°44'32"E
S89°46'28"E
S89°39'39"E
S89°15'04"E
PN:4 PDISTD;AHTD-MON.STAMPED PN:4
PN:5 PDISTD;AHTD MON. STAMPED PN:5
REBAR AND DISK
EXIST. R/W SPINE SHTRIG ELEV
PROPOSED R/W
CONST. LIMITS
200
205
210
215
400
410
412
20'
40'
22'
16'
6'
P.C. 201+50.00 35.43'
P.I. 202+50.00 Δ=0°25'59" RT. 34.34'
P.T. 401+00.00 202+50.34 45.00'
P.C. 402+65.92
P.T. 404+41.44
206+00.00 45.00'
206+70.00 73.00'
208+36.19 44.55'
P.C. 407+53.03
P.I. 209+51.31 Δ=0°14'09" RT. 38.77
P.T. 409+44.38
P.I. 411+08.77
P.I. 213+00.00 Δ=0°29'29" RT. 213+00.39 45.00'
P.O.E. 215+00.24

STA. 201+56 IN PLACE
18"x24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 34' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 35 CU.YD.

STA. 202+50.00 BEGIN
SITE 2
LOG MILE = 1.26

STA. 206+97.75 TO STA. 208+00.25 CONSTRUCT
102'-6" X 30' CLEAR ROADWAY
BRIDGE NO. 07332
100' CONTINOUS COMPOSITE W-BEAM UNIT (32',36',32')

STA. 208+09.46 TO STA. 108+87.69 INPLACE
79'-1" X 29'-6" CLEAR ROADWAY
BRIDGE NO. M4015
4 SIMPLE SPAN SUPERSTRUCTURE WITH CONCRETE DECK AND TIMBER BEAMS SUPPORTED BY TIMBER CAP AND TIMBER PILE BENTS.
REMOVE (SITE 2)

STA. 209+40 INSTALL
30" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPRS. = 35 CU.YD.

STA. 213+00.00 BEGIN
SITE 2
LOG MILE = 1.46

SPECIAL FLOOD HAZARD AREA
STA. 200+00 TO STA. 215+00.24

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

SITE 2

CANAL 43 AT STA. 207+21.18 - STA. 208+21.18
TO MISSISSIPPI RIVER IS CLASSIFIED AS A
INTERMITTENT STREAM. THE TOP OF CHANNEL ELEVATION
IS 160.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

VC=200'
K=875.35
e=-0.06'

VC=200'
K=588.58
e=-0.08'

P.V.C. 202+50.00
ELEV. 164.54

P.V.I. 203+50.00
ELEV. 164.54

P.V.C. 205+50.00
ELEV. 164.77

P.V.I. 205+50.00
ELEV. 165.00

BRIDGE END
STA. 206+97.75

BRIDGE END
STA. 208+00.25

P.V.C. 208+50.00
ELEV. 165.00

P.V.I. 209+50.00
ELEV. 165.00

P.V.C. 210+50.00
ELEV. 164.66

P.V.I. 212+50.00
ELEV. 164.32

0.00%
0.23%
0.00%
-0.34%
0.00%

DESIGN HW
Q50 = 160.6

L.T.D.G.-0.19%
L.T.D.G.-3.60%

202+50.00
154.33

206+40.00
153.60

P.V.T. 206+50.00
ELEV. 165.00

207+28.59
150.41

P.T. 205+50.00
ELEV. 164.77

P.T. 210+50.00
ELEV. 164.66

P.V.I. 211+50.00
ELEV. 164.32

200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00 215+00

210 200 190 180 170 160 150 140 130 120

9/12/2014

RD020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	29	90

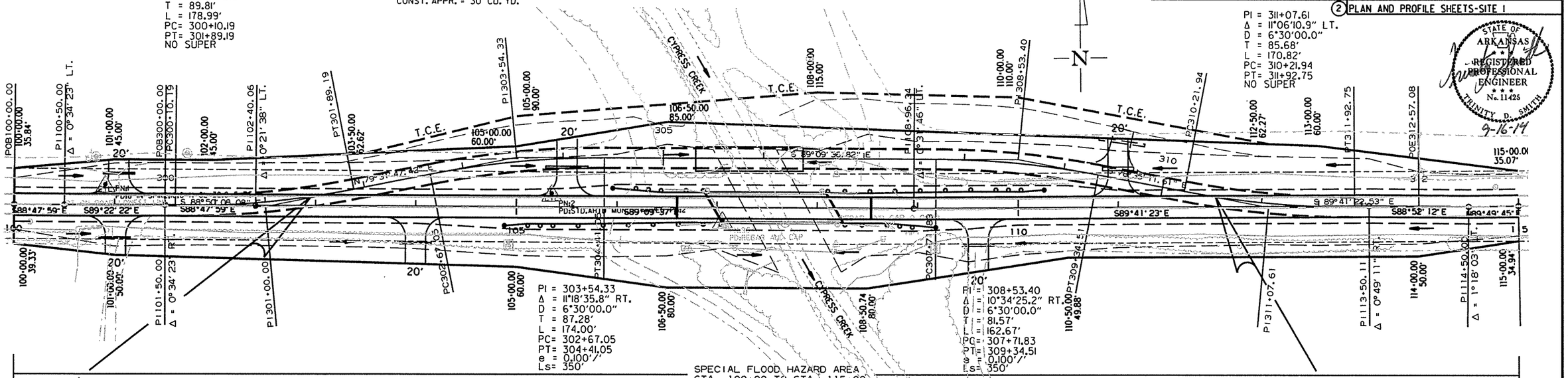
(2) PLAN AND PROFILE SHEETS-SITE 1

PI = 301+00.00
Δ = 11°38'05.5" LT.
D = 6°30'00.0"
T = 89.81'
L = 178.99'
PC= 300+10.19
PT= 301+89.19
NO SUPER

STA. 309+50 INSTALL
30"x46' TEMPORARY PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 30 CU. YD.

PI = 311+07.61
Δ = 11°06'10.9" LT.
D = 6°30'00.0"
T = 85.68'
L = 170.82'
PC= 310+21.94
PT= 311+92.75
NO SUPER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14



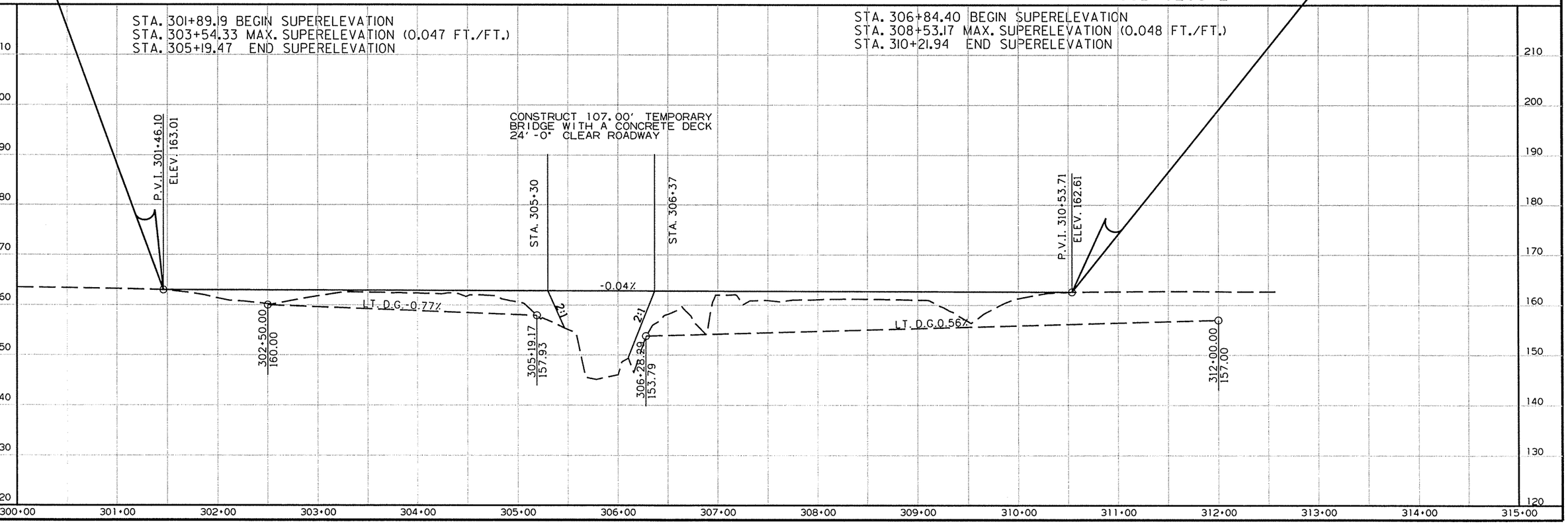
SPECIAL FLOOD HAZARD AREA
STA. 100+00 TO STA. 115+00

CYPRESS CREEK AT STA. 106+66.23 - STA. 107+86.23 TO MISSISSIPPI RIVER IS CLASSIFIED AS A PERENNIAL STREAM. THE TOP OF CHANNEL ELEVATION IS 158.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

STA. 301+46.10
BEGIN DETOUR SITE 1
JOB 020542

STA. 310+53.71
END DETOUR SITE 1
JOB 020542

DETOUR SITE 1



9/15/2014

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	30	90

(2) PLAN AND PROFILE SHEETS-SITE 2

PI = 401+00.00
Δ = 11°26'20.5" LT.
D = 6°30'00.0"
T = 88.29'
L = 175.98'
PC= 400+11.72
PT= 301+87.70
NO SUPER

STA. 407+25 INSTALL
12" X 26' TEMPORARY
PIPE CULVERT LT. SIDE DRAIN
CONST. APPRS. = 10 CU.YD.

PI = 411+08.77
Δ = 11°35'02.7" LT.
D = 6°30'00.0"
T = 89.41'
L = 178.22'
PC= 410+19.36
PT= 411+97.57
NO SUPER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-16-14

STA. 401+42.29
BEGIN DETOUR SITE 2
JOB 020542

PI = 303+54.47
Δ = 11°20'37.8" RT.
D = 6°30'00.0"
T = 174.52'
L = 87.55'
PC= 402+66.92
PT= 404+41.44
e = 0.100'/'
Ls= 350'

CANAL 43 AT STA. 207+21.18 - STA. 208+21.18
TO MISSISSIPPI RIVER IS CLASSIFIED AS A
INTERMITTENT STREAM. THE TOP OF CHANNEL ELEVATION
IS 160.0 FT. MSL.
REFER TO SECTION 110.05(c) TEMPORARY FILL
OF THE 2014 STANDARD SPECIFICATIONS.

PI = 408+53.03
Δ = 11°47'16.1" RT.
D = 6°30'00.0"
T = 91.00'
L = 181.35'
PC= 407+63.03
PT= 409+44.38
e = 0.100'/'
Ls= 350'

STA. 410+65.81
END DETOUR SITE 2
JOB 020542

SPECIAL FLOOD HAZARD AREA
STA. 200+00 TO STA. 215+00.24

DETOUR SITE 2

STA. 401+87.70 BEGIN SUPERELEVATION
STA. 403+54.47 MAX. SUPERELEVATION (0.048 FT./FT.)
STA. 405+21.24 END SUPERELEVATION

STA. 406+88.05 BEGIN SUPERELEVATION
STA. 408+53.71 MAX. SUPERELEVATION (0.047 FT./FT.)
STA. 410+19.36 END SUPERELEVATION

CONSTRUCT 107.00' TEMPORARY
BRIDGE WITH A CONCRETE DECK
24'-0" CLEAR ROADWAY

P.V.I. 401+42.29
ELEV. 164.10

P.V.I. 410+65.81
ELEV. 163.74

STA. 405+75

STA. 406+82

-0.04%

2:1

2:1

LT. D.G. -0.19%

LT. D.G. -3.60%

401+00.00
154.33

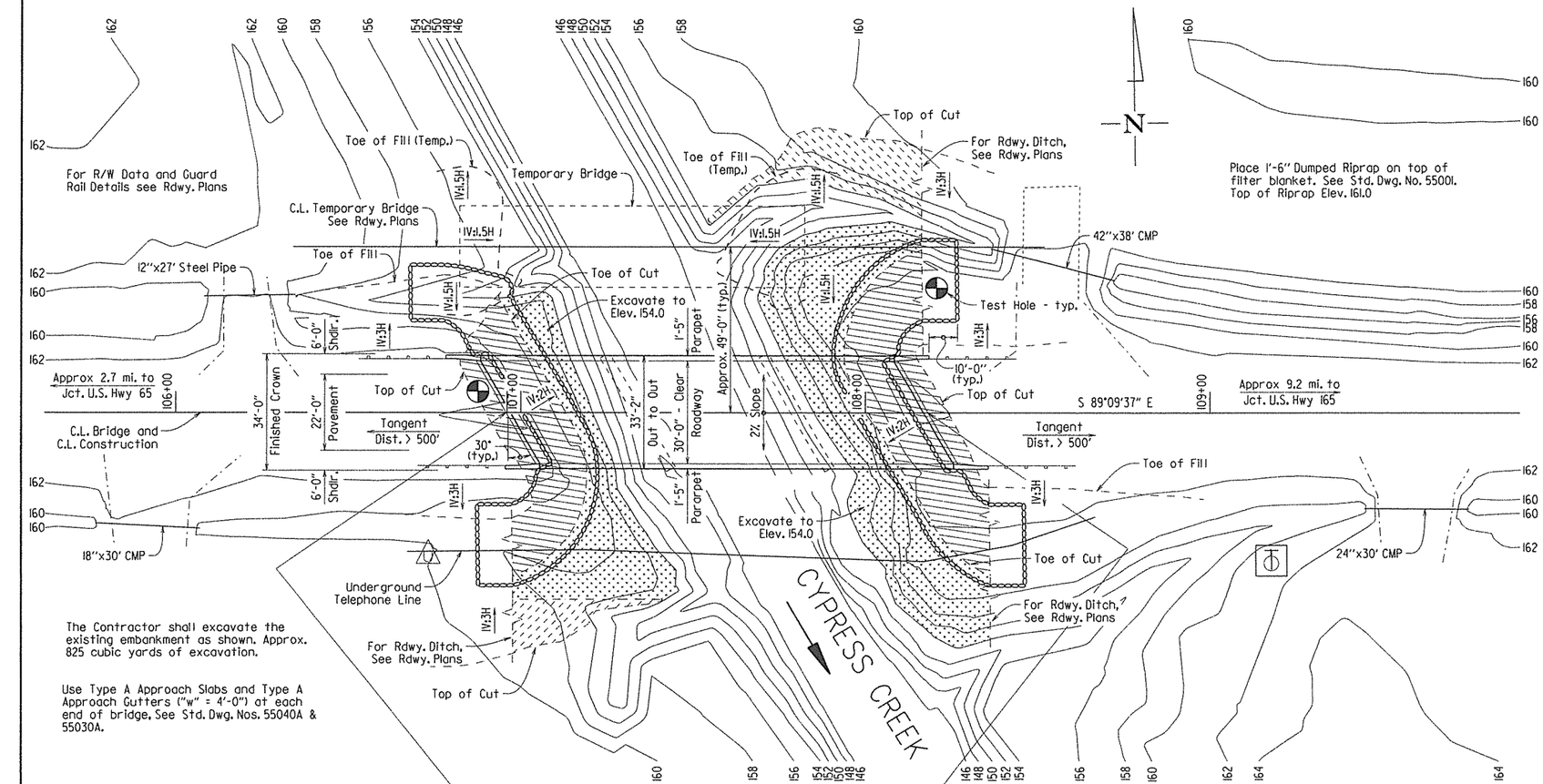
404+90.00
153.60

406+14.48
149.12

9/15/2014

R020542.DGN

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.		020542	31	90
				①	07331 -	LAYOUT		- 56163



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	2410	160.6	160.8
Base	100	2780	160.9	161.2
Extreme	500	3800	161.5	162.1
Overtopping	>500	-	-	-

*Unconstricted water surface without structure or roadway approaches.
Drainage area = 59.0 square miles.
Historical H.W. Elev. = 163.00 ft.
0100 Backwater Elev. for existing structure = 161.28 ft.
Proposed Low Bridge Chord Elev. = 162.02 ft.

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on Survey Control Data Sheets.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted on the plans, Section and Subsection numbers refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 6th Edition (2012), with 2013 interims.

LIVE LOADING: HL-93

SEISMIC ZONE: 2 S_{D1}=0.203 SITE CLASS = D

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (Grade 60, AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: All piling in Bents 1 thru 4 shall be 18" diameter concrete filled steel shell piles. Piling in Bents 1 and 4 shall be driven to a minimum ultimate bearing capacity of 175 tons per pile and piling in Bents 2 and 3 shall be driven to a minimum ultimate bearing capacity of 215 tons per pile, with an approved air, steam or diesel hammer. Lengths of piling shown are assumed for estimating quantities only. Actual piling lengths to be determined in the field. No additional payment will be made for cutoff or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). Piling in Bents 1 and 4 shall be driven after embankment to the bottom of cap is in place. Piling in Bents 1 thru 4 shall be driven to a tip elevation of 123.00 or lower.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimated bearing capacity will be 45,000 foot pounds per blow.

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

DETAIL DRAWINGS:	DRAWING NO.
End Bents	56165 & 56166
Intermediate Bents	56167
120' Cont. Comp. W-Beam Unit	56168 - 56172
Type "B" Special Shoes	56169
Type A Approach Gutters	55030A
Type A Approach Slabs	55040A
Concrete Filled Steel Shell Piles	55021

EXISTING BRIDGE: Existing Bridge No. M4014 (log mile 2.64) is 29.0' Out to Out and 111.0' long and consists of a 5 simple span superstructure of precast channel beams and steel I-beams supported by timber cap and timber pile bents. The existing bridge is along same C.L. as the proposed new bridge.

TEMPORARY BRIDGE: Construct a 107'-0" long (minimum) temporary bridge approximately 49'-0" upstream from C.L. construction with a minimum C.L. deck elevation of 162.70 feet. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length over the channel of 31'-0" with 19'-0" minimum length for all other spans, a minimum clear roadway width of 24'-0", and a minimum live load capacity of HI5. A timber deck will not be allowed. If timber piling and pine timber are used on this temporary bridge structure the materials shall be treated with a preservative according to the Standard Specifications. See Section 603 and Std. Drawing Numbers 55054, 55055, and 55056 for temporary bridge details.

PILING FOR TEMPORARY BRIDGE: All piling in the temporary bridge shall be driven according to the requirements of Subsections 805.07 through 805.09 using Method A, Empirical Pile Formulas. Painting of steel piling will not be required.

REMOVAL AND SALVAGE: After the temporary bridge is opened to traffic, existing Bridge No. M4014 and remnant piles shall be removed in accordance with Section 205. All material from the existing bridge and remnant piling shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-16-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER CYPRESS CREEK HWY. 212 STRS. & APPRS. (S) LINCOLN COUNTY

ROUTE 212 SEC. 5

ARKANSAS STATE HIGHWAY COMMISSION

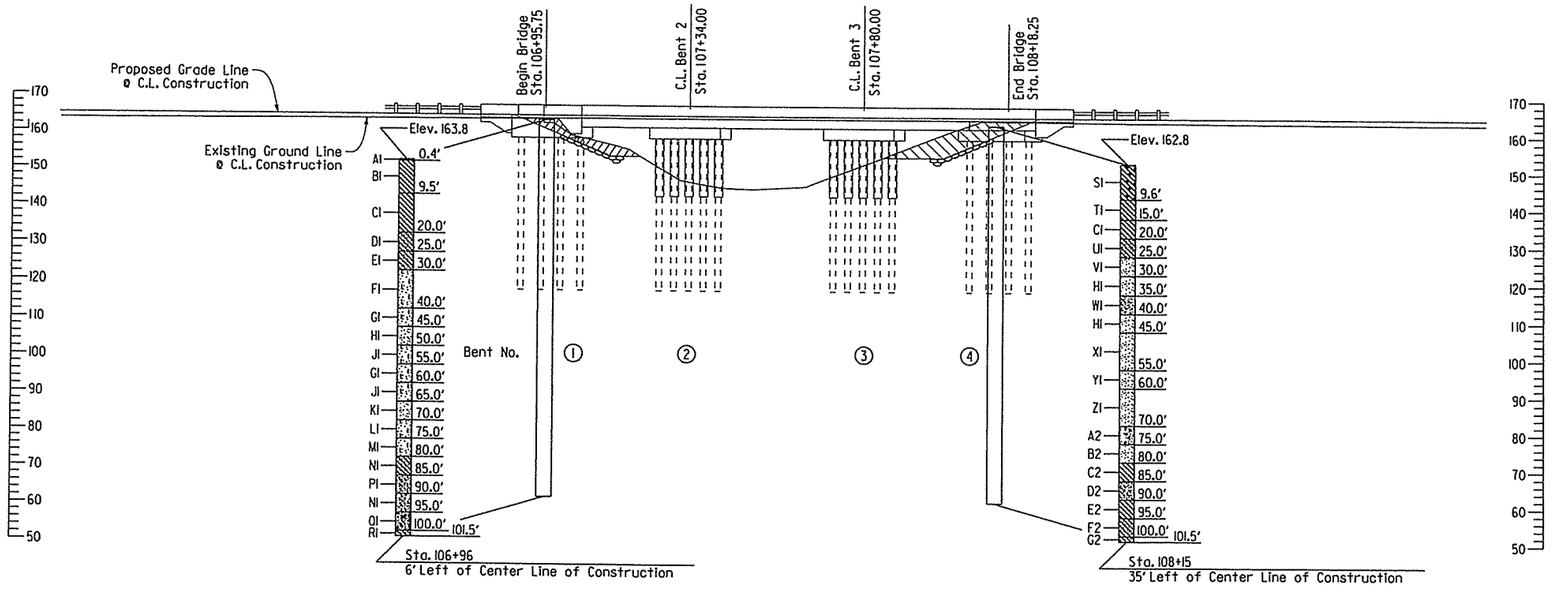
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: DEC 2013 FILENAME: b020542xl_ll.dgn
CHECKED BY: DHP DATE: 9-16-14 SCALE: 1"=20'-0"
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07331 DRAWING NO. 56163

PRINT DATE: 9/16/2014

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.		020542	32	90
				①	07331 -	LAYOUT	- 56164	



ELEVATION

BORING LEGEND

A1-Asphalt Pavement (5")
B1-Moist, Medium Stiff, Brown Clay with Sand
C1-Moist, Medium Stiff, Brown and Gray Clay
D1-Moist, Medium Stiff, Brown and Gray Sandy Clay
E1-Moist, Stiff, Reddish Brown Sandy Clay
F1-Wet, Medium Dense, Reddish Brown Sand with Silt
G1-Wet, Medium Dense, Brown Sand with Silt
H1-Wet, Medium Dense, Brown Sand
J1-Wet, Dense, Brown Sand with Silt
K1-Wet, Medium Dense, Brown Sand with some Gravel
L1-Wet, Dense, Gray and Brown Sand with Silt and Trace of Gravel
M1-Wet, Dense, Gray Silty Sand with some Gravel
N1-Moist, Very Stiff, Gray Clay with Sand
P1-Moist, Dense, Gray Silty, Clayey Sand
Q1-Moist, Very Dense, Gray Clayey Sand with Gravel
R1-Moist, Very Stiff, Gray Sandy Clay
S1-Moist, Medium Stiff, Brown Clay with Organic Matter (Wood)
T1-Moist, Medium Stiff, Reddish Brown Clay
U1-Moist, Stiff, Reddish Brown Clay with Sand
V1-Wet, Loose, Brown Sand
W1-Wet, Medium Dense, Brown Sand with Gray Clay
X1-Wet, Dense, Light Brown Sand
Y1-Wet, Medium Dense, Brown and Gray Sand with some Gravel
Z1-Wet, Medium Dense, Brown and Gray Sand
A2-Wet, Medium Dense, Brown and Gray Sand with Gravel
B2-Wet, Dense, Gray Sand with Trace of Clay and Gravel
C2-Moist, Very Stiff, Gray Clay with Sand Partings
D2-Moist, Dense, Gray Sand with Clay Seams
E2-Moist, Very Stiff, Gray Clay with Sand and Silt Partings
F2-Moist, Very Stiff, Gray and Green Sandy Clay
G2-Moist, Very Stiff, Gray Clay with Green Sand Seams and Shells

"N" VALUES

Sta. 106+96 - 6' Left of C.L. of Construction	Sta. 108+15 - 35' Left of C.L. of Construction
5.0- 6.0, N=8	5.1- 6.1, N=8
10.0- 11.0, N=7	10.1- 11.1, N=6
15.5- 16.5, N=6	15.5- 16.5, N=7
20.5- 21.5, N=8	20.5- 21.5, N=11
25.5- 26.5, N=15	25.5- 26.5, N=9
30.5- 31.5, N=17	30.5- 31.5, N=17
35.5- 36.5, N=21	35.5- 36.5, N=13
40.5- 41.5, N=21	40.5- 41.5, N=26
45.5- 46.5, N=21	45.5- 46.5, N=34
50.5- 51.5, N=34	50.5- 51.5, N=34
55.5- 56.5, N=30	55.5- 56.5, N=12
60.5- 61.5, N=50	60.5- 61.5, N=30
65.5- 66.5, N=26	65.5- 66.5, N=23
70.5- 71.5, N=38	70.5- 71.5, N=24
75.5- 76.5, N=32	75.5- 76.5, N=46
80.5- 81.5, N=26	80.5- 81.5, N=25
85.5- 86.5, N=35	85.5- 86.5, N=34
90.5- 91.5, N=25	90.5- 91.5, N=26
95.5- 95.6, N=50(1")	95.5- 96.5, N=25
100.5-101.5, N=26	100.5-101.5, N=26

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER CYPRESS CREEK
HWY. 212 STRS. & APPRS. (S)
LINCOLN COUNTY

ROUTE 212 SEC. 5

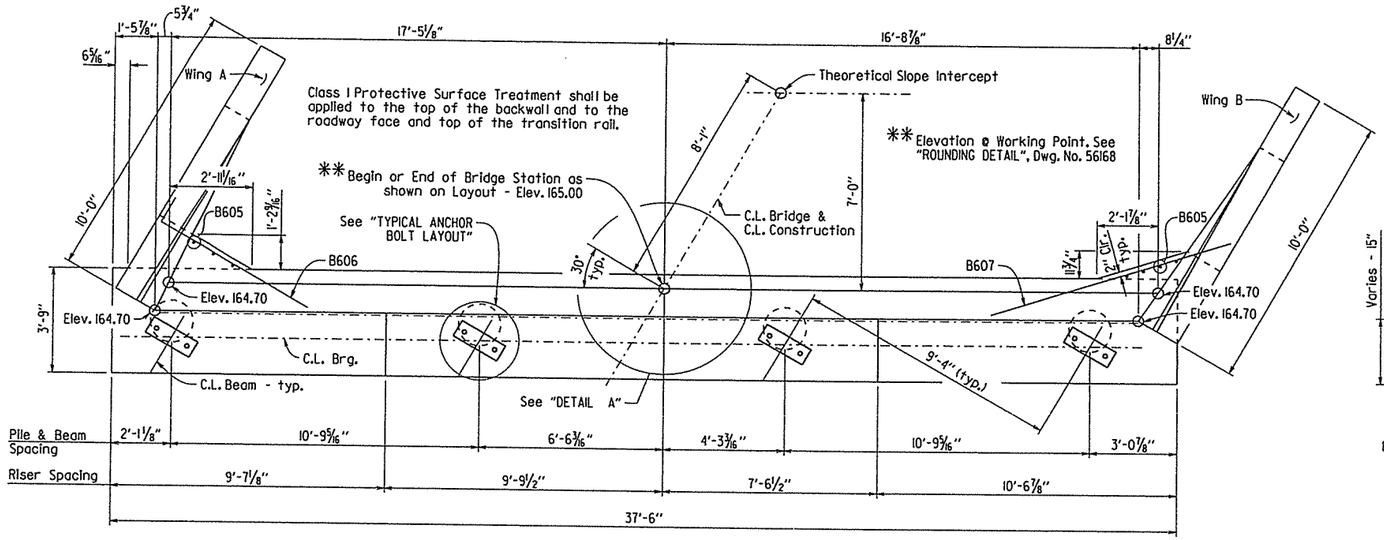
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: DEC 2013 FILENAME: b020542xl_11.dgn
CHECKED BY: DHP DATE: 8/4/14 SCALE: 1"=20'-0"
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07331 DRAWING NO. 56164

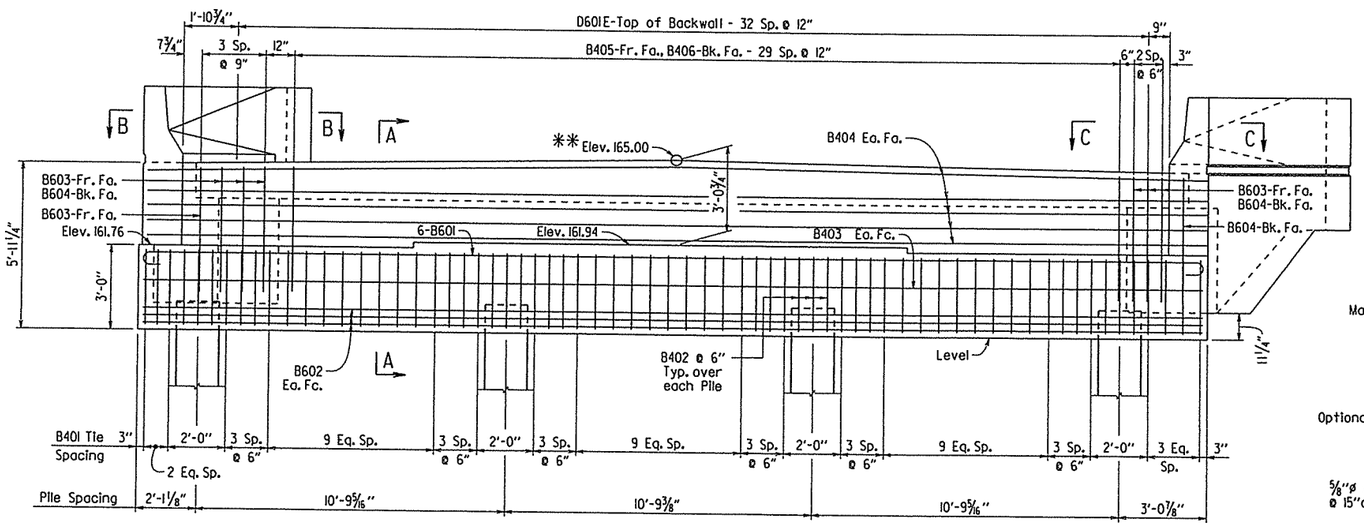
PRINT DATE: 9/8/2014

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.		020542	33	90
				(1)	07331 - END BENTS - 56165			



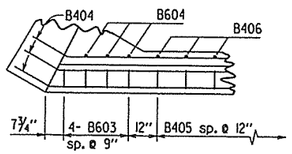
PLAN - BENTS 1 & 4

Scale: 3/8" = 1'-0"



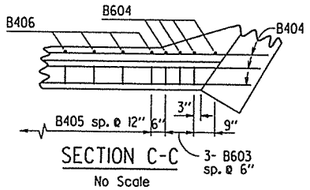
ELEVATION

Bent 1 - Looking Back
Bent 4 - Looking Ahead
Scale: 3/8" = 1'-0"



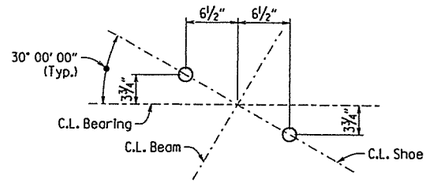
SECTION B-B

No Scale



SECTION C-C

No Scale

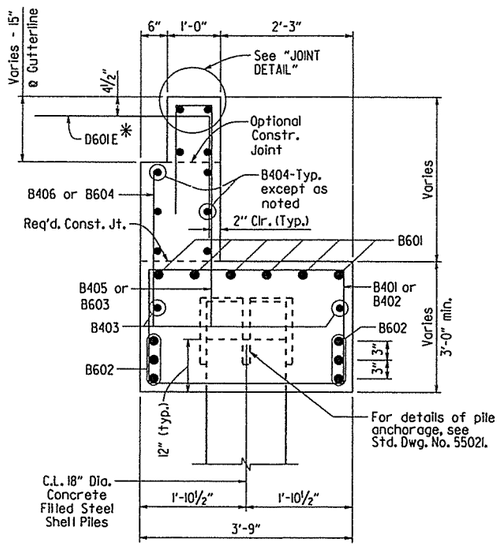


For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 56169.

TYPICAL ANCHOR BOLT LAYOUT

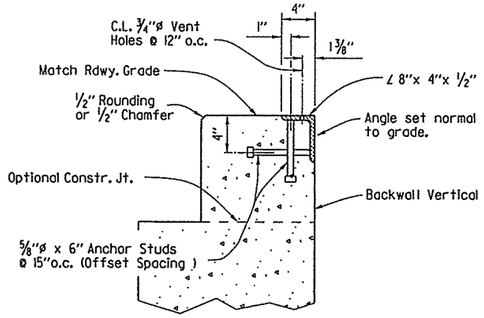
No Scale

* Adjust spacing of D601E bars as necessary to provide 3" clear from the longitudinal construction joint between the approach slab and gutters.



SECTION A-A

No Scale

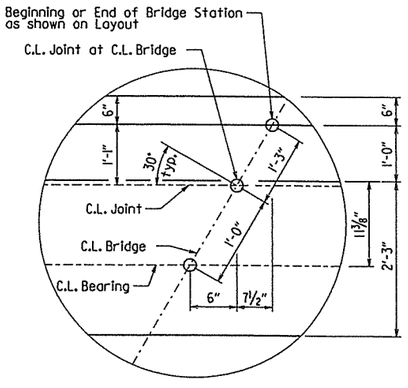


For additional Joint Details See Dwg. No. 56172.

Concrete shall be hand packed under joint armor in the backwall.

JOINT DETAIL

No Scale



DETAIL A

No Scale

GENERAL NOTES

All concrete shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)"

Top reinforcing bars shall be properly placed to avoid interference with anchor bolts.

No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation" note, see Dwg. No. 56172.

Special care shall be taken to properly and thoroughly consolidate the concrete in the vicinity of the expansion joint device in the backwall. See Subsection 802.09(a)(3).

For additional information see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 1 AND 4
CYPRESS CREEK

ROUTE SEC.

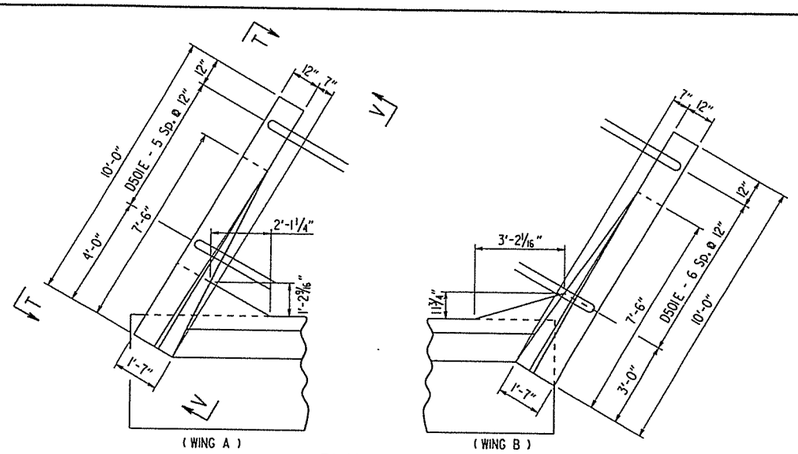
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 5/15/2014 FILENAME: b020542_b1.dgn
CHECKED BY: DHP DATE: 8/4/14 SCALE: As Shown
DESIGNED BY: CSG DATE: DEC 2013

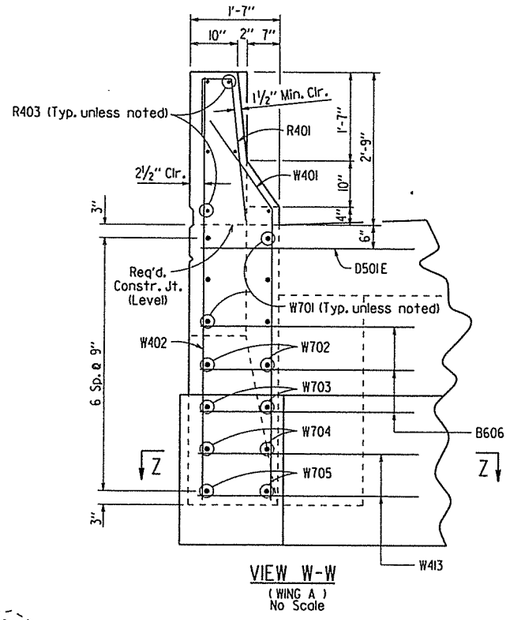
BRIDGE NO. 07331 DRAWING NO. 56165

PRINT DATE: 9/8/2014

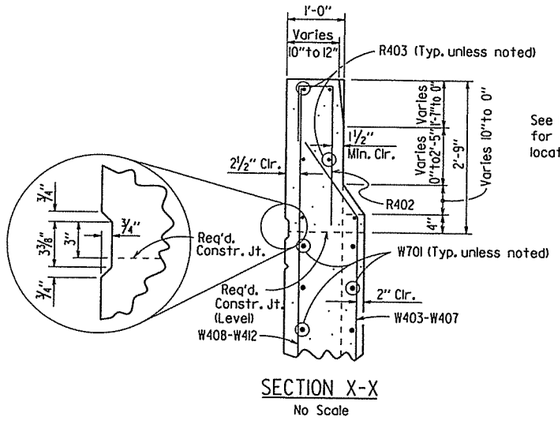
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	34	96
				(1)		07331 - END BENTS - 56166		



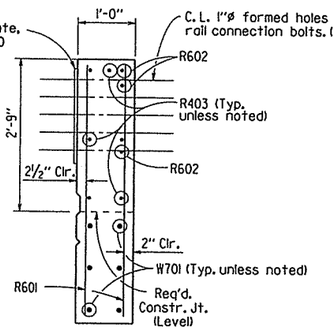
PLAN OF RAIL
No Scale



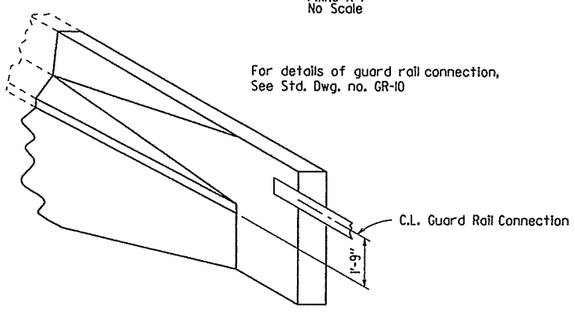
VIEW W-W
(WING A)
No Scale



SECTION X-X
No Scale



SECTION Y-Y
No Scale

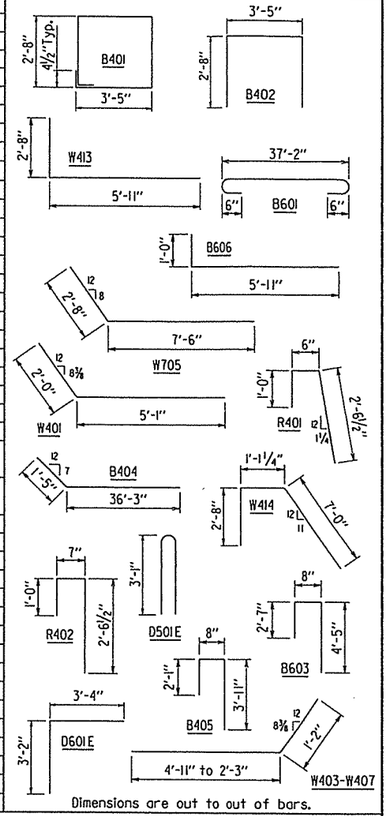


THREE DIMENSIONAL VIEW OF RAIL
No Scale

BAR LIST-PER BENT

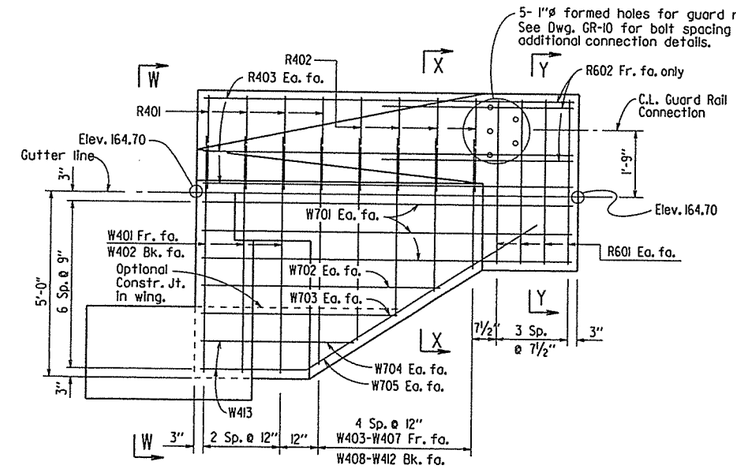
Mark	No. Req'd.	Length	Pin Dia.
B401	55	12'-6"	2"
B402	12	8'-7"	2"
B403	2	37'-2"	Str.
B404	10	37'-8"	3"
B405	30	6'-6"	2"
B406	30	2'-8"	Str.
B601	6	38'-6"	4½"
B602	6	37'-2"	Str.
B603	7	7'-5"	4½"
B604	7	3'-2"	Str.
B605	7	3'-5"	Str.
B606	3	6'-9"	4½"
B607	3	8'-10"	Str.
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	7'-1"	2"
W402	6	7'-5"	Str.
W403-W407	2 ea.	6'-1" to 3'-5"	2"
W408-W412	2 ea.	7'-2" to 4'-6"	Str.
W413	2	8'-6"	2"
W414	2	10'-9"	2"
W701	12	9'-8"	Str.
W702	4	6'-3"	Str.
W703	4	5'-2"	Str.
W704	4	4'-0"	Str.
W705	4	10'-2"	5¼"
D501E	13	6'-4"	3¾"
D601E	33	6'-5"	4½"

Bending Diagram

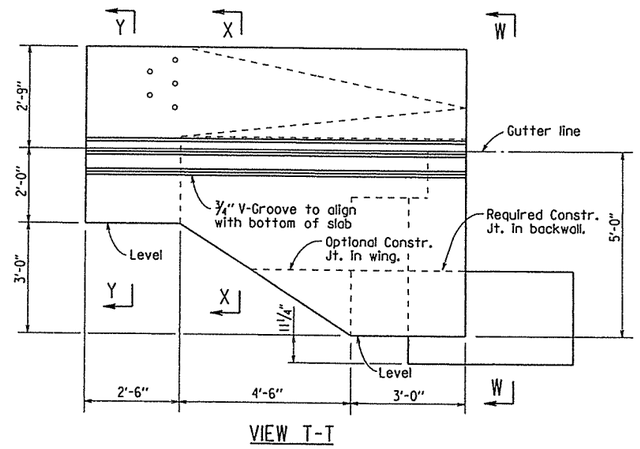


Dimensions are out to out of bars.

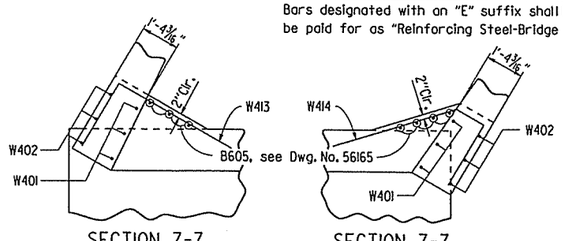
Bars designated with an "E" suffix shall be epoxy coated. Epoxy coated bars will be paid for as "Reinforcing Steel-Bridge (Grade 60)".



VIEW V-V
No Scale



VIEW T-T
No Scale



SECTION Z-Z
(WING A)
No Scale

SECTION Z-Z
(WING B)
No Scale

STATE OF ARKANSAS
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SHEET 2 OF 2
DETAILS OF BENTS 1 AND 4
CYPRESS CREEK

ROUTE SEC.

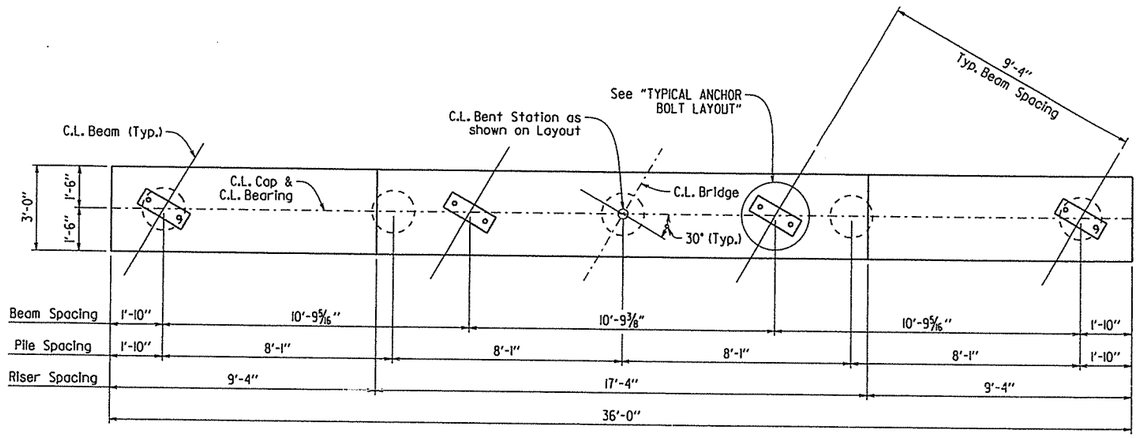
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 5/21/2014
CHECKED BY: DHP DATE: 9/4/14
DESIGNED BY: R.S.G. DATE: DEC. 2013
FILENAME: b020542_bl.dgn
SCALE: As Shown

BRIDGE NO. 07331 DRAWING NO. 56166

PRINT DATE: 9/8/2014

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.		020542	35	90
				(1)	07331	- INT. BENTS -	56167	

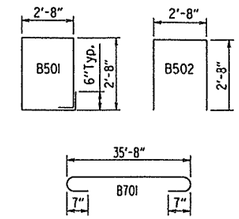


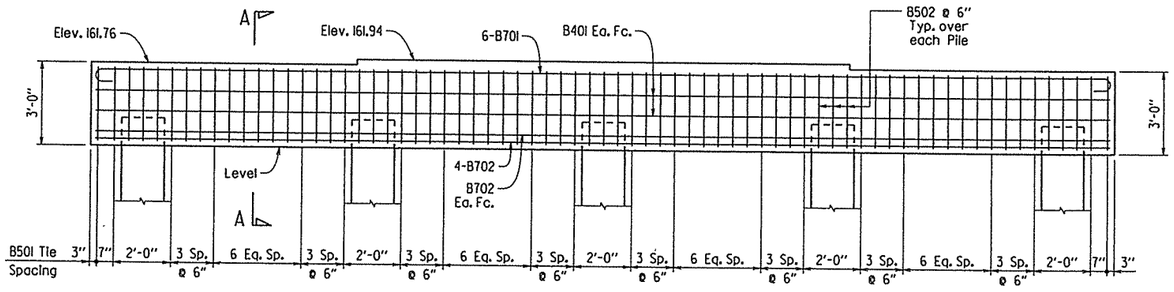
PLAN

Scale: 3/8" = 1'-0"

BAR LIST - PER BENT

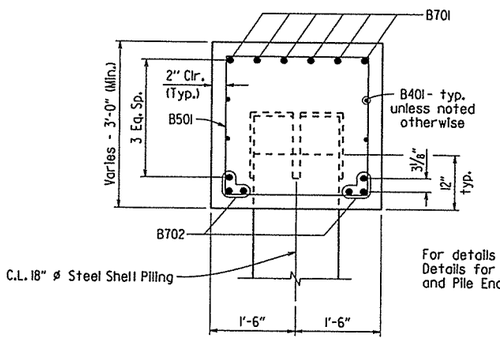
MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	4	35'-8"	Str.	Dimensions are out to out of bars.
B501	56	11-2"	2½"	
B502	15	7'-10"	2½"	
B701	6	37'-4"	5¼"	
B702	6	35'-8"	Str.	





ELEVATION

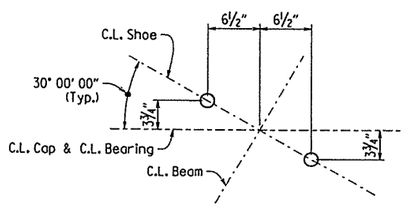
Scale: 3/8" = 1'-0"



SECTION A-A

No Scale

For details of pile anchorage, see "Standard Details for Concrete Filled Steel Shell Piles and Pile Encasements", Std. Dwg. No. 55021.



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 56169.

TYPICAL ANCHOR BOLT LAYOUT

No Scale

GENERAL NOTES

Concrete in the cap shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Top reinforcing bars shall be properly placed to avoid interference with anchor bolts.

For Details of Steel Shell Piles, See Std. Dwg. No. 55021.

For additional information see layout.

STATE OF ARKANSAS
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DETAILS OF BENTS 2 AND 3 CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 5/15/2014 FILENAME: b020542_b2.dgn

CHECKED BY: DHP DATE: 8/4/14 SCALE: As Shown

DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07331 DRAWING NO. 56167

PRINT DATE: 9/8/2014

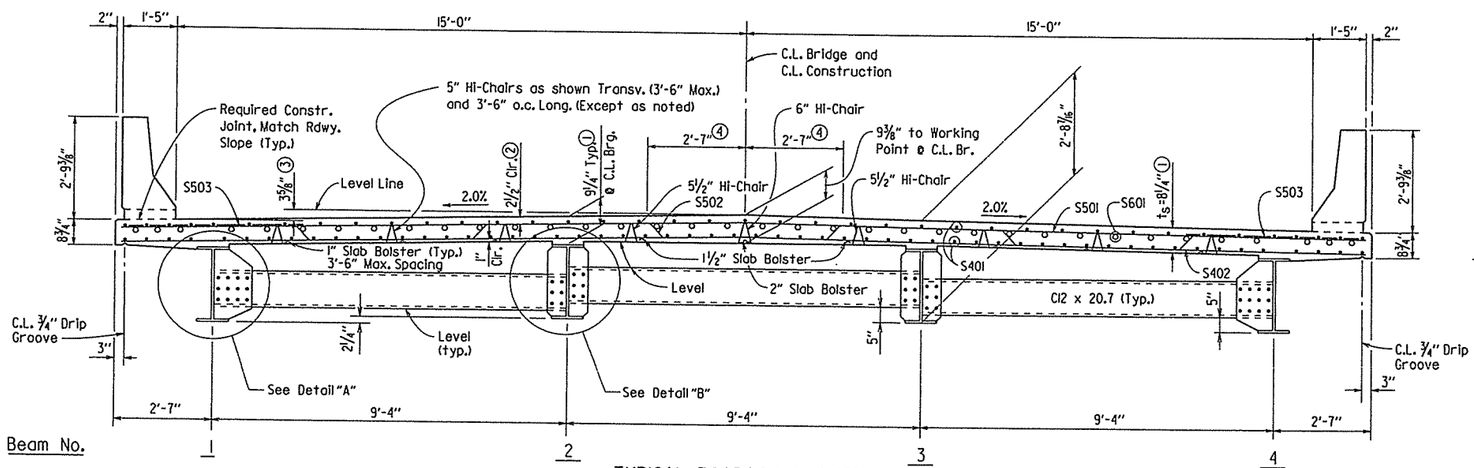
Class I Protective Surface Treatment shall be applied to the roadway surface and the roadway face and top of the concrete parapet rail.

At the Contractor's option, two straight #5 bars, top and bottom, may be substituted for bar S502. Payment will be based on weight of S502 bar.

For General Notes, See Dwg. No. 56172.

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.		020542	36	90

(1) 07331 - SPAN DETAILS - 56168



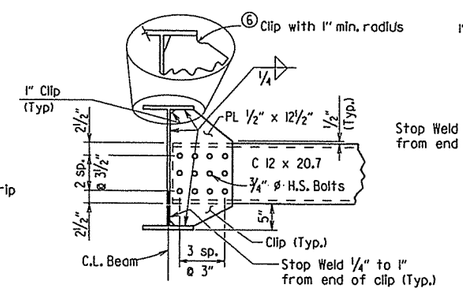
TYPICAL ROADWAY SECTION
½" = 1'-0"
(Looking Ahead)

Slab Reinforcing:

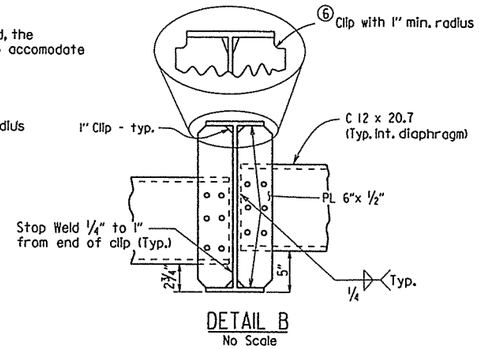
Longitudinal: S401 placed as shown in top and bottom
S601 placed as shown over interior supports (See Reinf. Plan)

Transverse: S502 ℄ 12" o.c. bent up over beams — Alternate
S501 ℄ 12" o.c. in top, S402 ℄ 12" o.c. in bottom — Alternate
S503 bundled in top of slab ℄ gutterline.

⑥ If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.



DETAIL A
No Scale

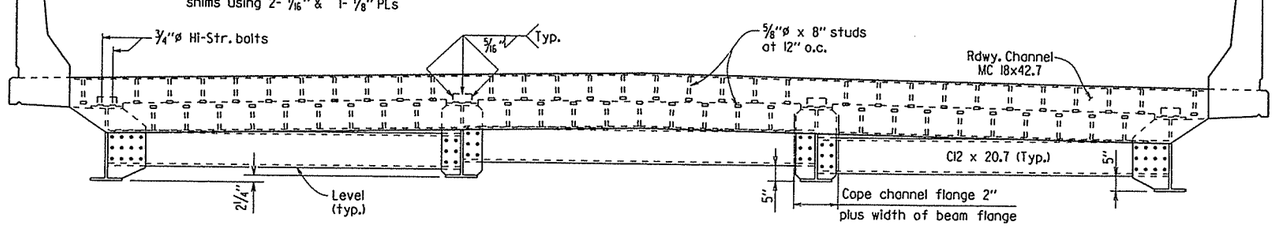


DETAIL B
No Scale

Bolts in diaphragm connections shall be properly installed and tightened is accordance with Subsection 807.71.

Expansion Device:
Rdwy. Channel - MC 18x42.7
Conn. L's 8"x4"x ½"
Detail Device ⅛" high & provide ¼" shims using 2- 1/16" & 1- ⅛" PLs

For details of poured silicone joint, see Dwg. No. 56172.

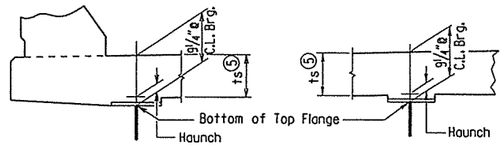


SECTION THRU JOINT
½" = 1'-0"
(Looking Ahead)

TABLE FOR WELD

Material Thickness Of Thicker Part Joined (Inches)	Minimum Size Of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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.

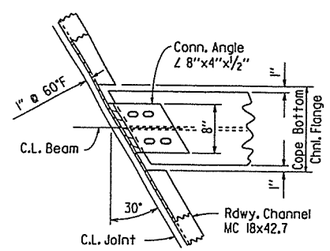


⑤ Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

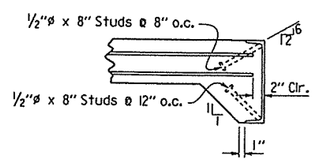
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 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

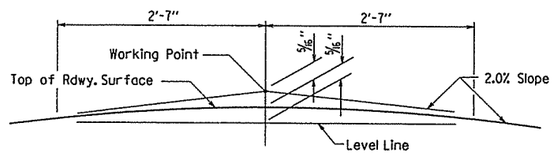


CHANNEL CONNECTION DETAILS
No Scale



As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCING
No Scale



Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL
No Scale

① Tolerance: Minus = ¼"
Plus = Equal to amount of slab thickening used to meet slab thickness tolerance- See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED"

② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED"

③ Working Point to Gutter line

④ See "ROUNDING DETAIL"

The superstructure details shown are for use when Removable Deck Forming is used and are the basis for measurement of Class S(AE) Concrete.

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SHEET 1 OF 5
DETAILS OF 120' CONTINUOUS COMPOSITE W-BEAM UNIT
CYPRESS CREEK

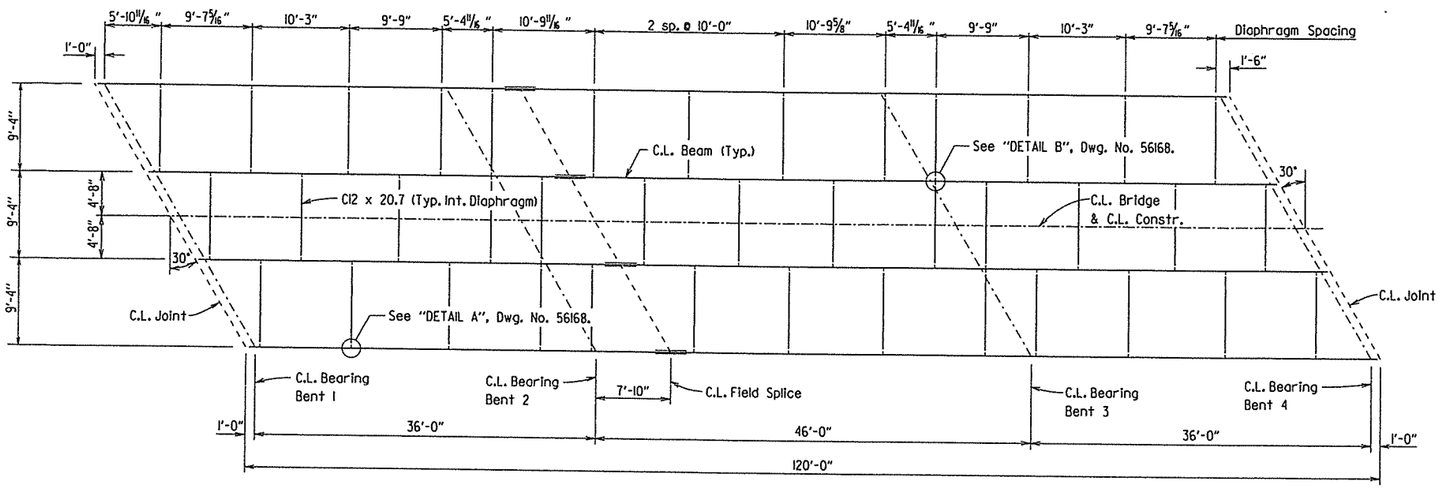
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
CHECKED BY: CMW DATE: 9/9/14 SCALE: AS SHOWN
DESIGNED BY: CSG DATE: DEC 2013
BRIDGE NO. 07331 DRAWING NO. 56168

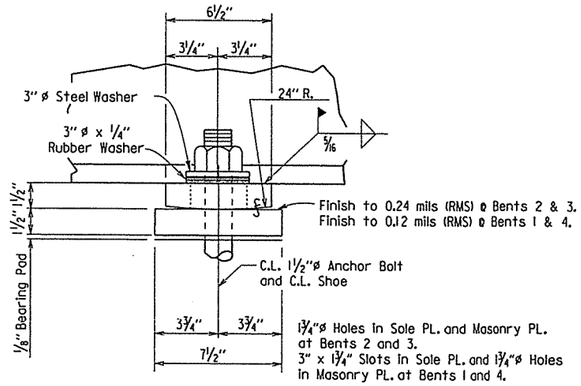
PRINT DATE: 9/8/2014

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.		020542	37	90
				07331 - SPAN DETAILS - 56169				



FRAMING PLAN

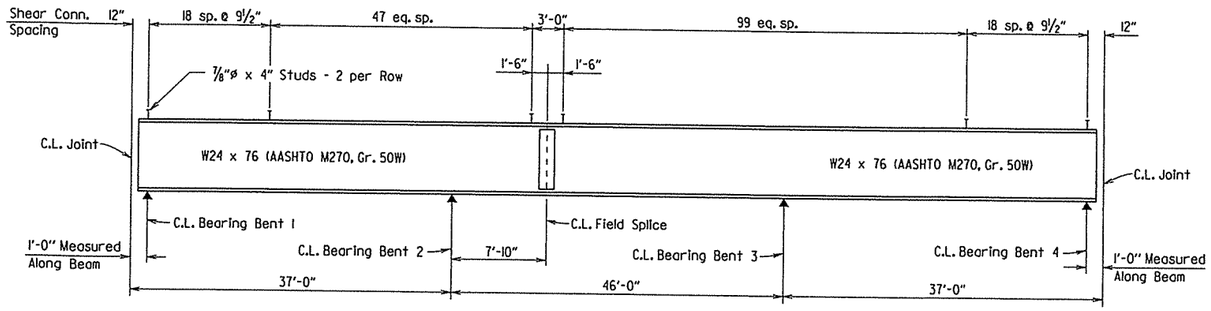
1/8" = 1'-0"



ELEVATION TYPE "B" SPECIAL SHOE

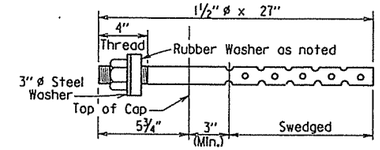
N.T.S.

Plates for Type "B" Special Shoes Shall be M270, GR. 50W.



TYPICAL BEAM ELEVATION

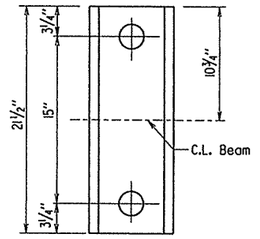
No Scale



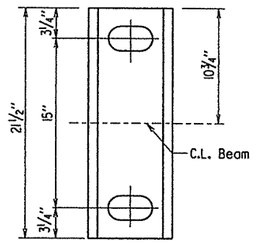
ANCHOR BOLT DETAIL

N.T.S.

Anchor Bolts, Nuts and Washers to be according to Subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of Structural Steel. Anchor bolts shall be Grade 55.



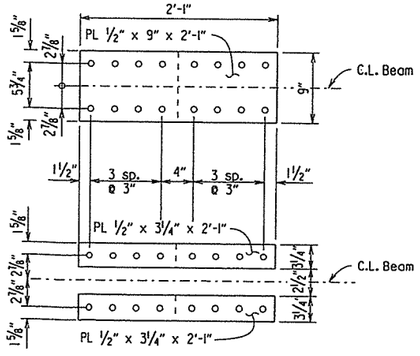
BENTS: 2 and 3



BENTS: 1 and 4

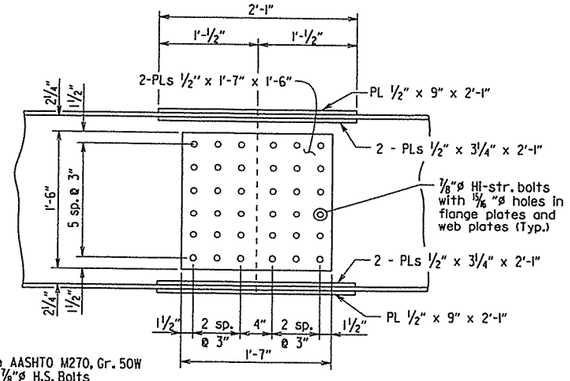
PLAN TYPE "B" SPECIAL SHOE

N.T.S.



FLANGE SPLICE

TOP AND BOTTOM



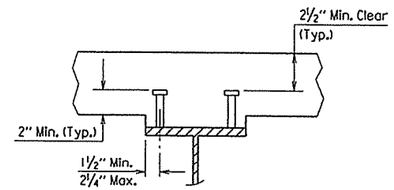
WEB SPLICE

All Field Splice Plates shall be AASHTO M270, Gr. 50W
All Field Splice Bolts shall be 7/8"ø H.S. Bolts
All Field Splice Bolt Holes shall be 15/16 "ø

DETAILS OF FIELD SPLICE

No Scale

Bolted Field Splices may be elliminated or Shop Welded Splices substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



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

SHEAR CONNECTOR DETAIL

No Scale

STATE OF ARKANSAS
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No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 5
DETAILS OF 120' CONTINUOUS COMPOSITE W-BEAM UNIT
CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

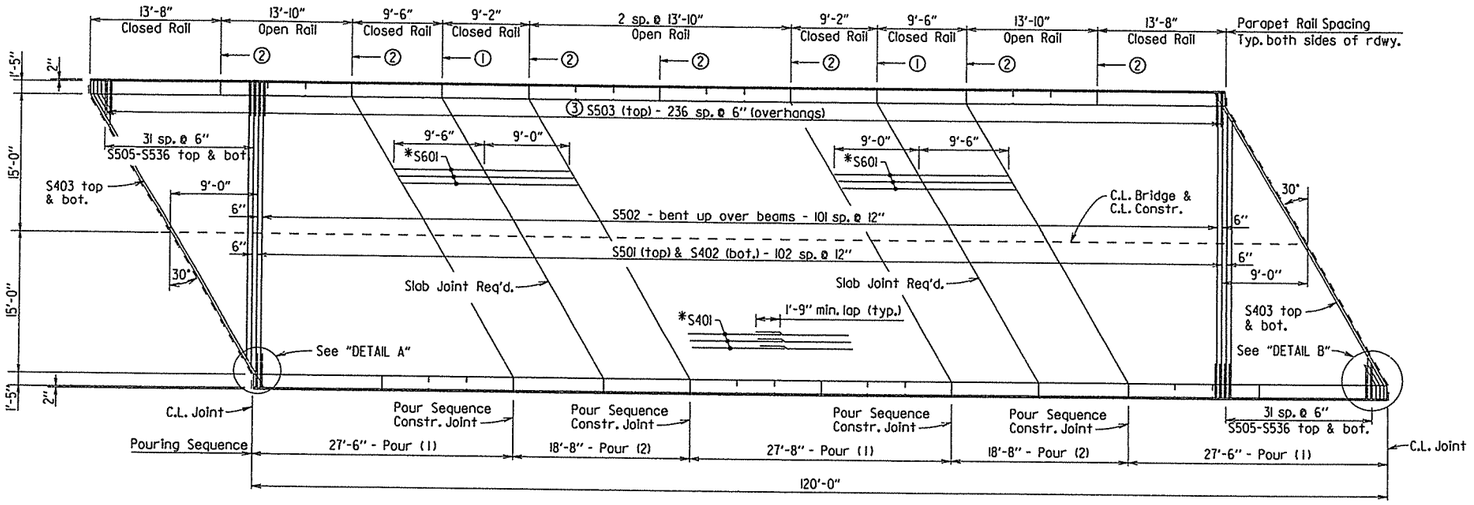
DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
CHECKED BY: CMJ DATE: 9/3/14 SCALE: AS SHOWN
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07331 DRAWING NO. 56169

PRINT DATE: 9/8/2014

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.		020542	3B	90
				(1)	07331 -	SPAN DETAILS	- 56170	

*Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 56168.



REINFORCING PLAN

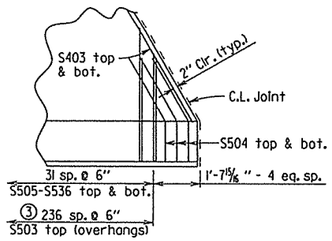
1/8" = 1'-0"

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any rolling pours made before the entire slab unit has been placed must be approved by the Engineer. 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 Contractor must obtain approval from the Engineer for any deviations from the pouring sequence.

① C.L. Full Depth Parapet Joint (1/4" - 1" max.) Stop 4" from top of slab.

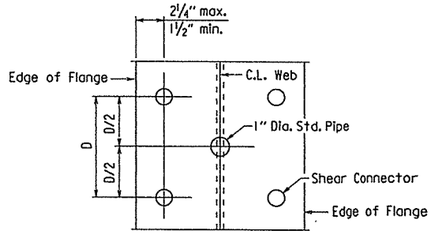
② C.L. Partial Depth Parapet Joint (1/4" - 1" max.) Stop 1'-2" from top of slab.

③ Bundled with S501 and S502 Typ. both sides of rdwy.



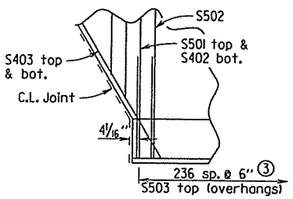
DETAIL B

No Scale



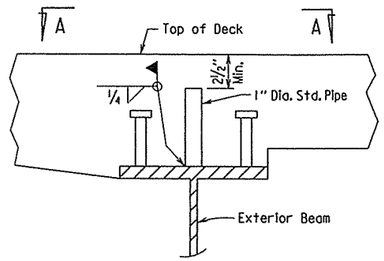
VIEW A-A

N.T.S.



DETAIL A

No Scale



TRANSVERSE SCREED RAIL SUPPORT DETAIL

N.T.S.

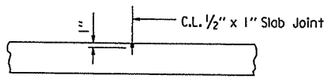
The transverse screed rail supports shall be centered over the beam web and centered longitudinally between adjacent rows of shear connectors.

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 voids do not exist in the pipe after placement of the deck concrete.

All welding shall be performed by a certified welder and in accordance with Subsections 802.13 and 807.26.



Use Type 3 or 4 Joint Sealer. See subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class SAE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before parapet railing is to be poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.

SLAB JOINT DETAIL

No Scale

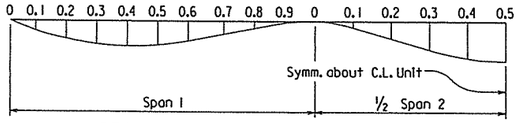
TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet
1	0	0.000	0.00	0.000
	0.1	0.009	0.097	0.104
	0.2	0.017	0.178	0.191
	0.3	0.022	0.233	0.249
	0.4	0.024	0.254	0.272
	0.5	0.023	0.242	0.260
	0.6	0.019	0.201	0.216
	0.7	0.013	0.139	0.149
	0.8	0.007	0.071	0.076
	0.9	0.002	0.016	0.017
2	0	0.000	0.000	0.000
	0.1	0.006	0.060	0.066
	0.2	0.016	0.170	0.185
	0.3	0.027	0.282	0.306
	0.4	0.035	0.363	0.394
	0.5	0.037	0.392	0.425

C.L. Unit

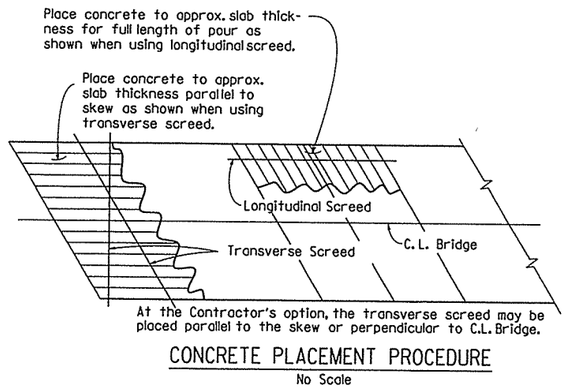
This table is symmetrical about C.L. Unit

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.



DEAD LOAD DEFLECTION DIAGRAM

No Scale



CONCRETE PLACEMENT PROCEDURE

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 5
DETAILS OF 120' CONTINUOUS COMPOSITE W-BEAM UNIT
CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
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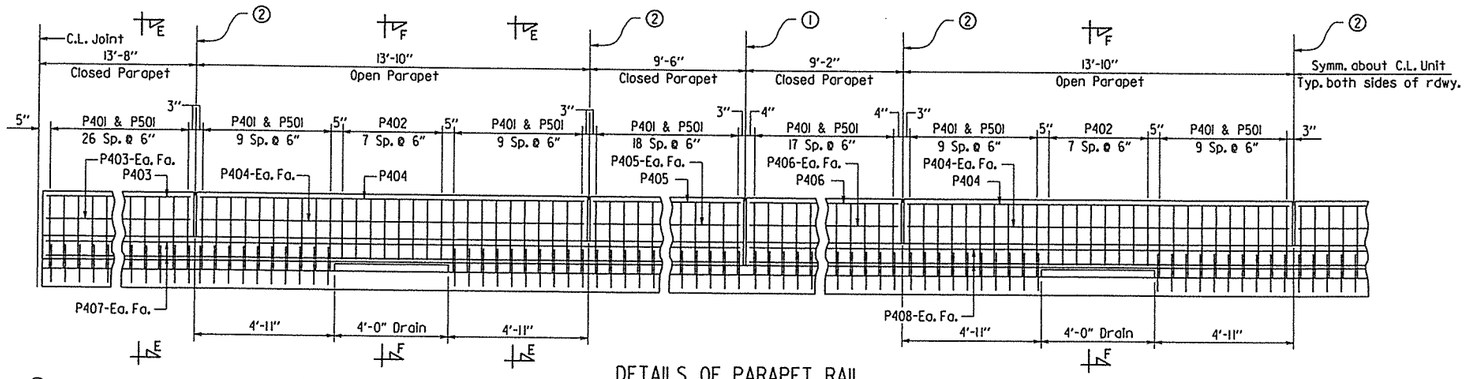
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07331 DRAWING NO. 56170

PRINT DATE: 9/8/2014

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.		020542	39	90
				①	07331 -	SPAN DETAILS	- 56171	



① C.L. Full-Depth Parapet Joint (¼" to 1" Max.) as shown in "REINFORCING PLAN" Dwg. No. 56170. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (¼" to 1" Max.) as shown in "REINFORCING PLAN" Dwg. No. 56170. Stop 1'-2" from top of slab.

DETAILS OF PARAPET RAIL

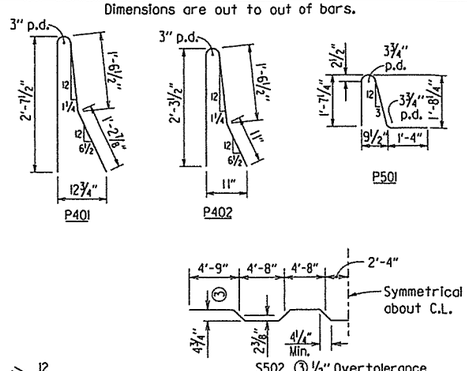
Scale: ⅜" = 1'-0"

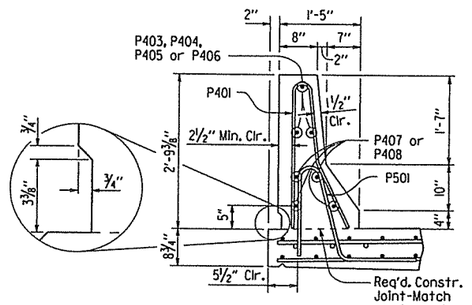
BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
S401	285	41'-0"	Str.
S402	103	32'-10"	Str.
S403	4	36'-4"	Str.
P401	416	5'-6"	3"
P402	64	4'-10"	3"
P403	12	13'-2"	Str.
P404	24	13'-6"	Str.
P405	12	9'-2"	Str.
P406	12	8'-10"	Str.
P407	16	36'-7"	Str.
P408	8	45'-8"	Str.
S501	103	32'-10"	Str.
S502	102	33'-7"	3"
S503	474	3'-8"	Str.
S504	12	4'-1"	2½"
S505-S536	4 Each	3'-9"-30'-8"	Str.
P501	416	4'-9"	3¾"
S601	72	18'-6"	Str.

BENDING DIAGRAMS

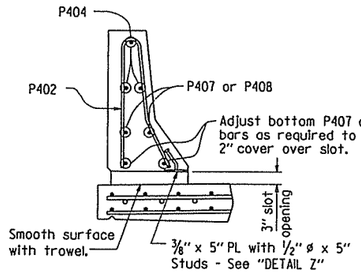
Dimensions are out to out of bars.





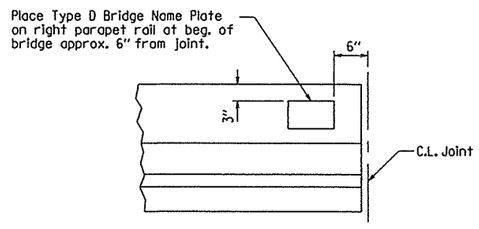
SECTION E-E

Scale: ¾" = 1'-0"



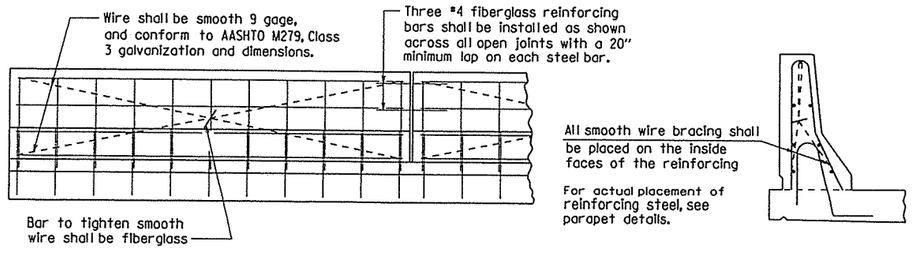
SECTION F-F

Scale: ¾" = 1'-0"



NAME PLATE DETAIL

No Scale

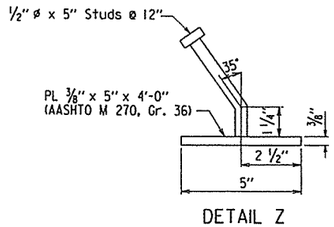


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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 SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



DETAIL Z

No Scale

The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint 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 considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)."

Parapet studs shall be 5" long., granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)."

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 120' CONTINUOUS COMPOSITE W-BEAM UNIT CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn

CHECKED BY: CMW DATE: 9/9/14 SCALE: AS SHOWN

DESIGNED BY: CSG DATE: DEC 2010

BRIDGE NO. 07331 DRAWING NO. 56171

PRINT DATE: 9/8/2014

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.		020542	40	90
				(1)	07331 -	SPAN DETAILS	- 56172	

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012 Edition with 2013 Interims).

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.

Reinforcing Steel: Reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr.36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)". Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36 or Gr. 50. AASHTO M270, Gr. 50W Steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless noted otherwise.

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 including web and flange splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

Steel plates for main members 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.

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted, and approval secured before fabrication is begun.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with the recommendations of the manufacturer.

All beams shall be blocked in their true position in the shop as specified in Subsection 807.54(b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with the beams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those 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" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 13/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø if a washer is supplied for use under both the nut and the head of the bolt. Bolt spacing shall be 2 1/2" for 3/4"ø bolts unless otherwise noted. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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 permanent or temporary, 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 do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

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 deck.

Bearings shall be seated in accordance with Subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

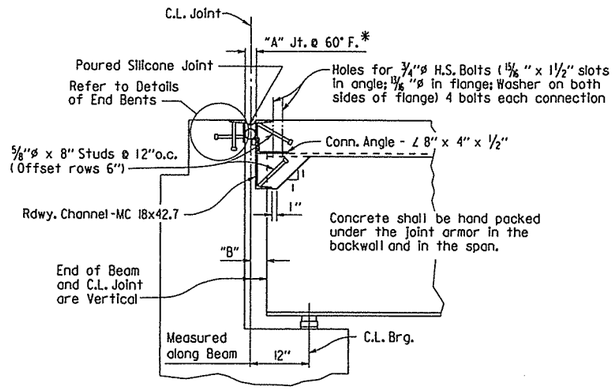
REINFORCING STEEL:
The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports, sufficient in size and number, to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item "Reinforcing Steel (Grade 60)".

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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.

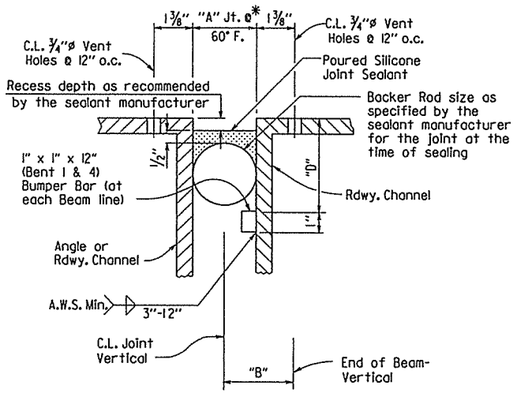
The concrete deck shall be given a Tine Finish in accordance with Subsection 802.19 for Class 5, Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient 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 bridge deck slab and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.



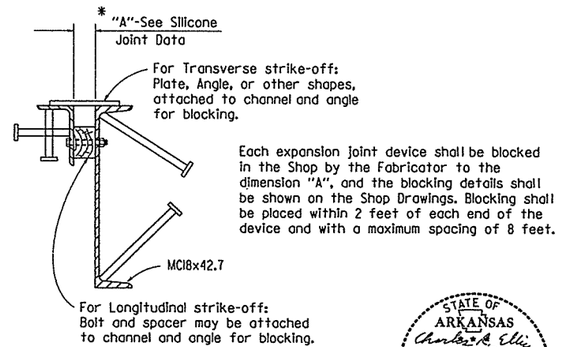
SECTION THRU JOINT AT BENTS 1 & 4

NO SCALE



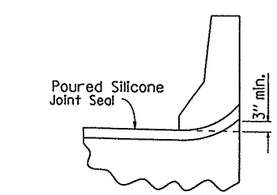
DETAIL OF POURED SILICONE JOINT SEAL

NO SCALE



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

NO SCALE



JOINT SEAL PLACEMENT AT CURB

No Scale

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40°F	60°F	80°F			
1 & 4	2 1/16"	2"	1 15/16"	± 3 1/8"	1" x 1"	5"

* The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

The temperature limitations recommended by the sealant manufacturer shall be observed.

The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

BACKER ROD NOTE:

Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod that can be sealed in the same day.

The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives.

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature, and the backwall constructed.

2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature.

STATE OF ARKANSAS
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SHEET 5 OF 5
DETAILS OF 120' CONTINUOUS COMPOSITE W-BEAM UNIT
CYPRESS CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
CHECKED BY: CMJ DATE: 9/8/14 SCALE: 1/4" = 1'-0"
DESIGNED BY: CSG DATE: DEC. 2013

BRIDGE NO. 07331 DRAWING NO. 56172

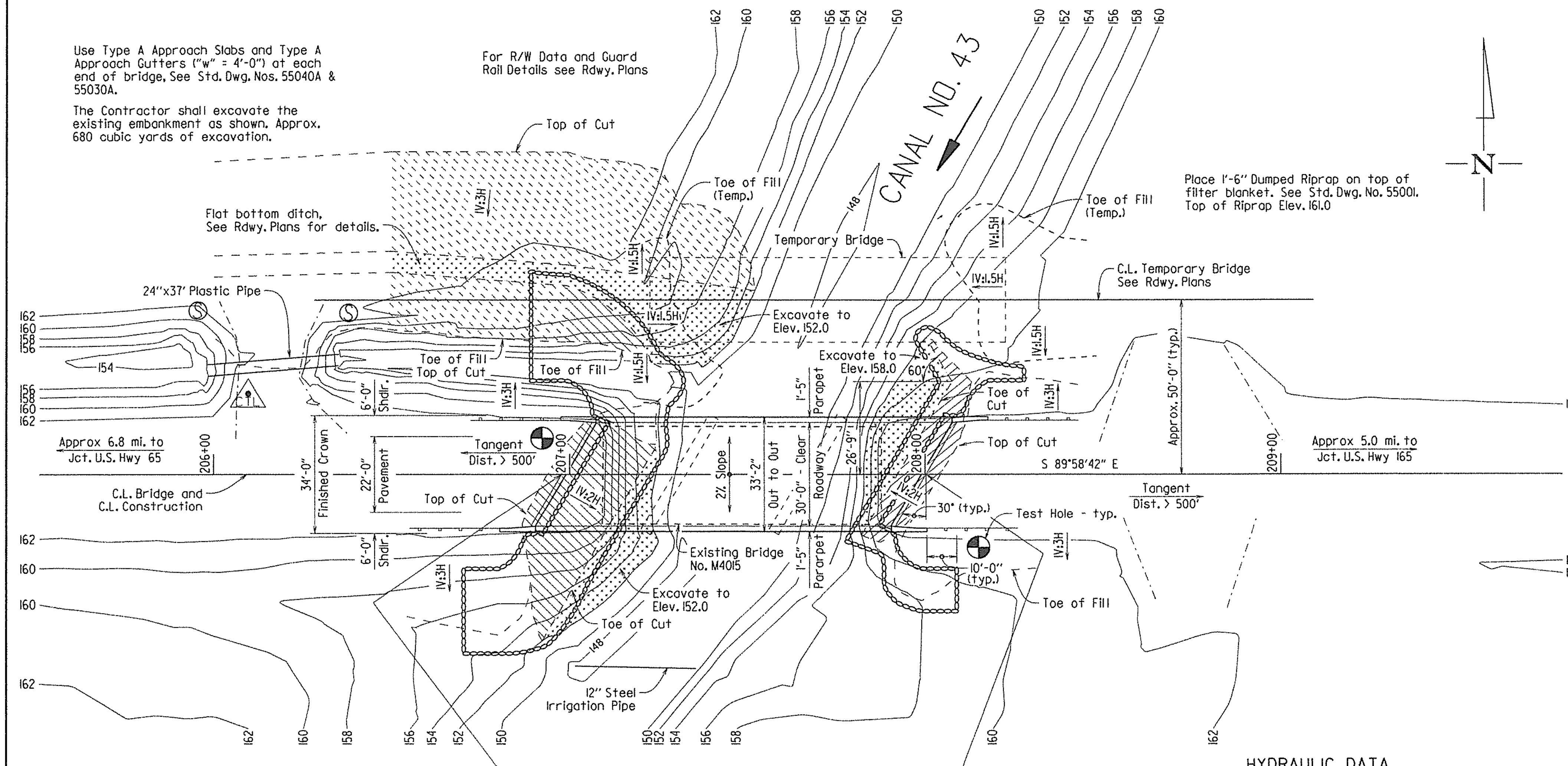
PRINT DATE: 9/8/2014

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.		020542	41	90
				(1) 07332 -		LAYOUT		- 56173

Use Type A Approach Slabs and Type A Approach Gutters ("w" = 4'-0") at each end of bridge. See Std. Dwg. Nos. 55040A & 55030A.

The Contractor shall excavate the existing embankment as shown. Approx. 680 cubic yards of excavation.

For R/W Data and Guard Rail Details see Rdwy. Plans

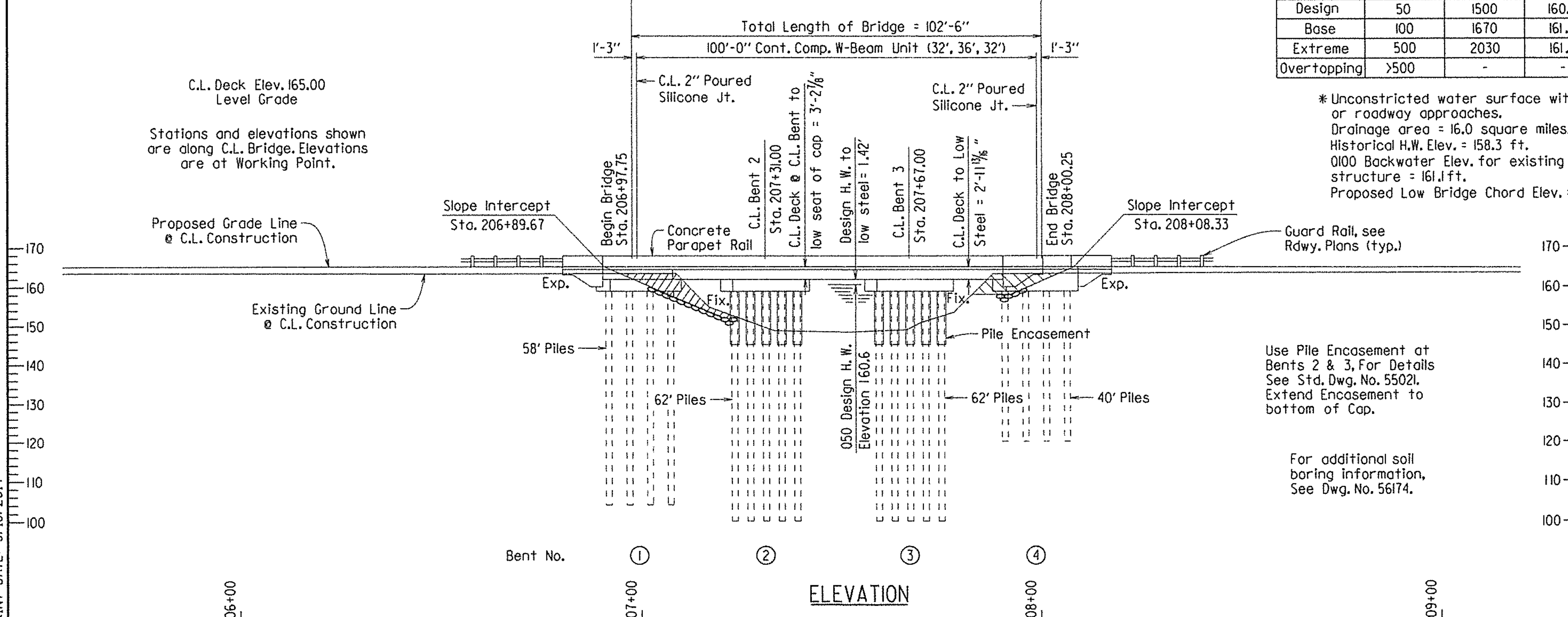


PLAN

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	1500	160.6	160.6
Base	100	1670	161.0	161.1
Extreme	500	2030	161.8	161.9
Overtopping	>500	-	-	-

* Unconstricted water surface without structure or roadway approaches.
Drainage area = 16.0 square miles.
Historical H.W. Elev. = 158.3 ft.
0100 Backwater Elev. for existing structure = 161.1 ft.
Proposed Low Bridge Chord Elev. = 162.02 ft.



ELEVATION

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown on Survey Control Data Sheets.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted on the plans, Section and Subsection numbers refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 6th Edition (2012), with 2013 interims.

LIVE LOADING: HL-93

SEISMIC ZONE: 2 S_{D1} = 0.203 SITE CLASS = D

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure)	f'c = 4,000 psi
Class S Concrete (Substructure)	f'c = 3,500 psi
Reinforcing Steel (Grade 60, AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy = 50,000 psi

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

STEEL SHELL PILING: All piling in Bents 1 thru 4 shall be 18" diameter concrete filled steel shell piles and shall be driven with an approved air, steam or diesel hammer. Piling in Bents 1 and 4 shall be driven to an ultimate bearing capacity of 175 tons per pile and piling in Bents 2 and 3 shall be driven to an ultimate bearing capacity of 230 tons per pile. Lengths of piling shown are assumed for estimating quantities only. Actual piling lengths to be determined in the field. No additional payment will be made for cutoff or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). Piling in Bents 1 and 4 shall be driven after embankment to the bottom of cap is in place. Piling in Bents 1 and 2 shall be driven to a tip elevation of 108.00 or lower and piling in Bents 3 and 4 shall be driven to a tip elevation of 126.00 or lower.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimated bearing capacity will be 45,000 foot pounds per blow.

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

DETAIL DRAWINGS:	DRAWING NO.
End Bents	56175 & 56176
Intermediate Bents	56177
100' Cont. Comp. W-Beam Unit	56178 - 56182
Type "B" Special Shoes	56179
Type A Approach Gutters	55030A
Type A Approach Slabs	55040A
Concrete Filled Steel Shell Piles	55021

EXISTING BRIDGE: Existing Bridge No. M4015 (log mile 1.35) is 29.5' Out to Out and 79.10' long and consists of a 4 simple span superstructure with a concrete deck and timber beams supported by timber cap and timber pile bents. The existing bridge is along same C.L. as the proposed new bridge.

TEMPORARY BRIDGE: Construct a 107'-0" long (minimum) temporary bridge approximately 50'-0" upstream from C.L. construction with a minimum C.L. deck elevation of 163.80 feet. See roadway plans for actual detour grade and alignment. The temporary bridge shall have a minimum span length over the channel of 31'-0" with 19'-0" minimum length for all other spans, a minimum clear roadway width of 24'-0", and a minimum live load capacity of H15. A timber deck will not be allowed. If timber piling and pine timber are used on this temporary bridge structure the materials shall be treated with a preservative according to the Standard Specifications. See Section 603 and Std. Drawing Numbers 55054, 55055, and 55056 for temporary bridge details.

PILING FOR TEMPORARY BRIDGE: All piling in the temporary bridge shall be driven according to the requirements of Subsections 805.07 through 805.09 using Method A, Empirical Pile Formulas. Painting of steel piling will not be required.

REMOVAL AND SALVAGE: After the temporary bridge is opened to traffic, existing Bridge No. M4015 and remnant piles shall be removed in accordance with Section 205. All material from the existing bridge and remnant piling shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER CANAL NO. 43
HWY. 212 STRS. & APPRS. (S)
DESHA COUNTY

ROUTE 212 SEC. 6
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9235 CHARLES R. ELLIS 9-16-14

BRIDGE ENGINEER

DRAWN BY: CSG DATE: DEC 2013 FILENAME: b020542x2_ll.dgn
CHECKED BY: DHP DATE: 9-16-14 SCALE: 1"=20'-0"
DESIGNED BY: CSG DATE: DEC 2013
BRIDGE NO. 07332 DRAWING NO. 56173

PRINT DATE: 9/16/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		020542	42	90
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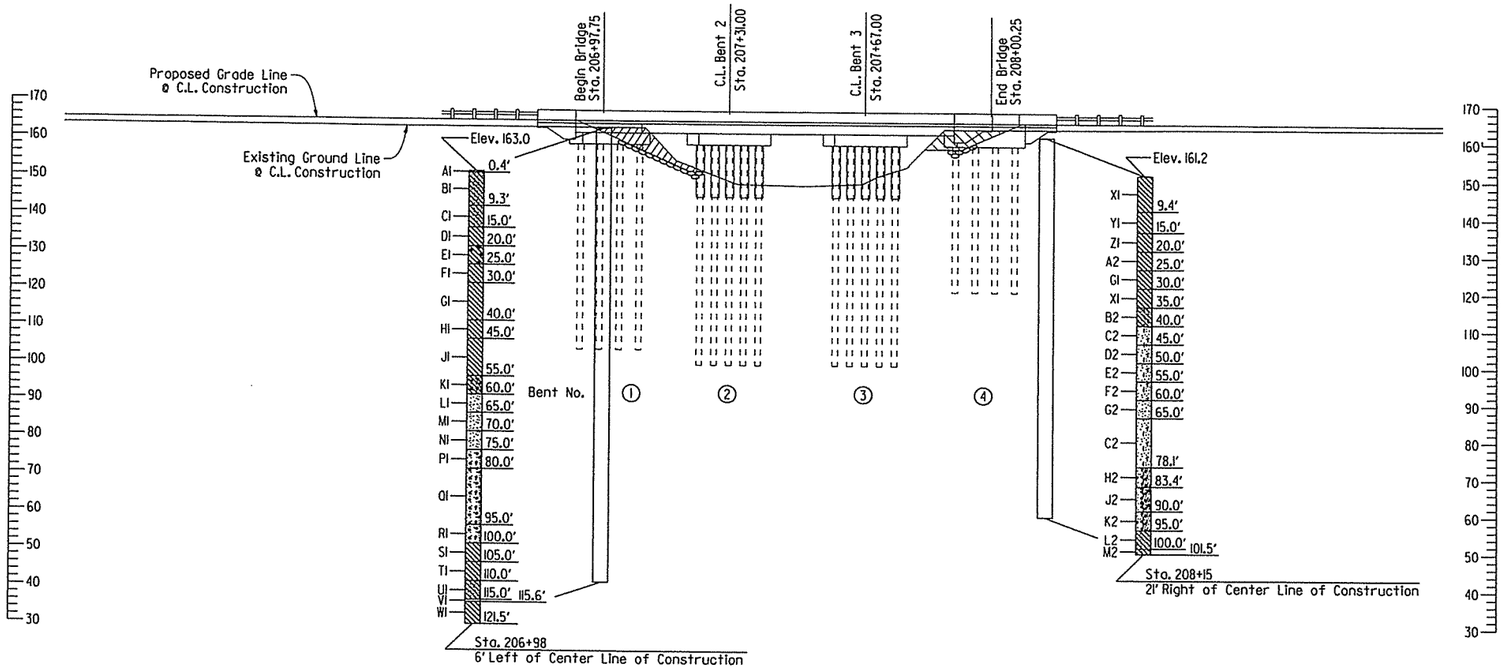

ELEVATION

BORING LEGEND

AI-Asphalt Pavement (5")
BI-Moist, Medium Stiff, Brown Clay with Sand
CI-Moist, Medium Stiff, Brown and Gray Clay with Sand
DI-Moist, Medium Stiff, Gray Clay with Trace of Sand
EI-Moist, Soft, Gray Clay with Organic Matter
FI-Moist, Soft, Gray Clay with some Siltstone Fragments
GI-Wet, Soft, Gray Clay
HI-Wet, Soft, Gray and Brown Clay
JI-Wet, Soft, Brown Clay
KI-Wet, Soft, Brown and Gray Sandy Clay with Gravel
LI-Wet, Medium Dense, Gray Sand
MI-Wet, Medium Dense, Gray Sand with Trace of Clay
NI-Wet, Dense, Gray Sand with some Gravel
PI-Wet, Dense, Gray Sand with Gravel
QI-Wet, Medium Dense, Gray Sand with Gravel
RI-Wet, Very Dense, Gray Sand with Gravel
SI-Moist, Very Stiff, Gray Clay with Sand Partings and Trace of Organic Matter
TI-Moist, Very Stiff, Gray Clay with Shells
UI-Moist, Very Stiff, Gray Clay with Sand
VI-Siltstone (115.0' - 115.6')
WI-Moist, Very Stiff, Gray Clay with Sand Partings
XI-Moist, Medium Stiff, Brown Clay
YI-Moist, Stiff, Brown and Gray Clay with some Organic Matter
ZI-Moist, Medium Stiff, Gray Clay
A2-Moist, Soft, Gray Clay
B2-Wet, Medium Stiff, Brown Silty Clay with Sand
C2-Wet, Dense, Brown and Gray Sand with Silt
D2-Wet, Medium Dense, Brown and Gray Sand with Silt and some Gravel
E2-Wet, Medium Dense, Brown and Gray Sand with Silt
F2-Wet, Very Dense, Brown and Gray Sand with Silt
G2-Wet, Medium Dense, Brown and Gray Sand with Trace of Gravel
H2-Wet, Dense, Brown and Gray Sand with Silt and Gravel
J2-Wet, Dense, Brown and Gray Silty Sand with Gravel and Organic Matter
K2-Wet, Medium Dense, Brown and Gray Silty Sand with Gravel
L2-Moist, Very Stiff, Gray Sandy Clay
M2-Moist, Very Stiff, Gray Clay with Sand and Shells

"N" VALUES

Sta. 206+98 - 6' Left of Center Line of Construction

4.8-	5.8, N=5
9.8-	10.8, N=6
15.5-	16.5, N=5
20.5-	21.5, N=2
25.5-	26.5, N=2
30.5-	31.5, N=2
35.5-	36.5, N=2
40.5-	41.5, N=3
45.5-	46.5, N=2
50.5-	51.5, N=3
55.5-	56.5, N=4
60.5-	61.5, N=25
65.5-	66.5, N=24
70.5-	71.5, N=31
75.5-	76.5, N=31
80.5-	81.5, N=21
85.5-	86.5, N=25
90.5-	91.5, N=23
95.5-	96.5, N=52
100.5-	101.5, N=20
105.5-	106.5, N=18
110.5-	111.5, N=21
115.0-	115.0, N=60(.01')
120.5-	121.5, N=25

Sta. 208+15 - 21' Right of Center Line of Construction

4.9-	5.9, N=7
9.9-	10.9, N=10
15.5-	16.5, N=5
20.5-	21.5, N=4
25.5-	26.5, N=4
30.5-	31.5, N=6
35.5-	36.5, N=5
40.5-	41.5, N=34
45.5-	46.5, N=27
50.5-	51.5, N=22
55.5-	56.5, N=52
60.5-	61.5, N=30
65.5-	66.5, N=32
70.5-	71.5, N=31
75.5-	76.5, N=33
80.5-	81.5, N=48
85.5-	86.5, N=35
90.5-	91.5, N=28
95.5-	96.5, N=25
100.5-	101.5, N=25

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER CANAL NO. 43
HWY. 212 STRS. & APPRS. (S)
DESHA COUNTY

ROUTE 212 SEC. 6

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: DEC 2013 FILENAME: b020542x2_11.dgn
CHECKED BY: DHF DATE: 9/4/14 SCALE: 1"=20'-0"
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07332 DRAWING NO. 56174

PRINT DATE: 9/8/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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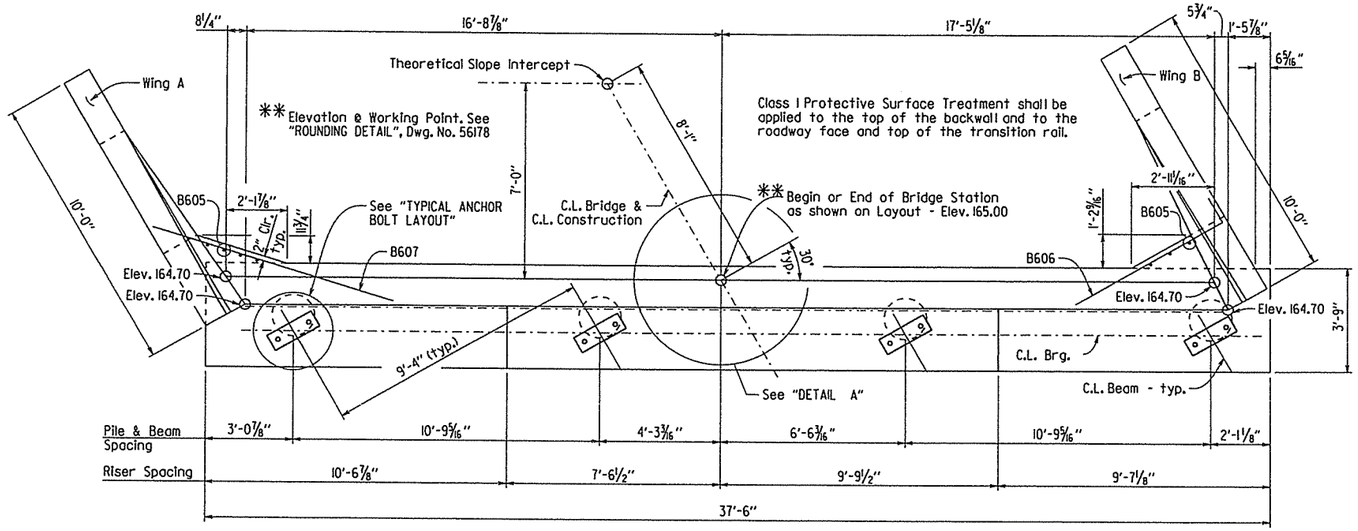
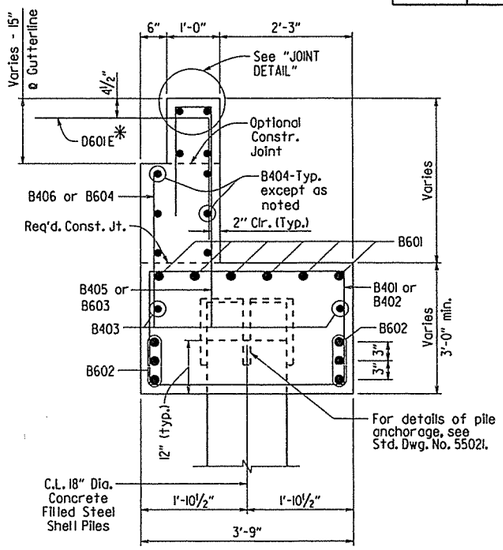
				JOB NO.		020542	43	90
				①	07332 - END BENTS - 56175			



PLAN - BENTS 1 & 4

Scale: ⅜" = 1'-0"



SECTION A-A

No Scale

GENERAL NOTES

All concrete shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

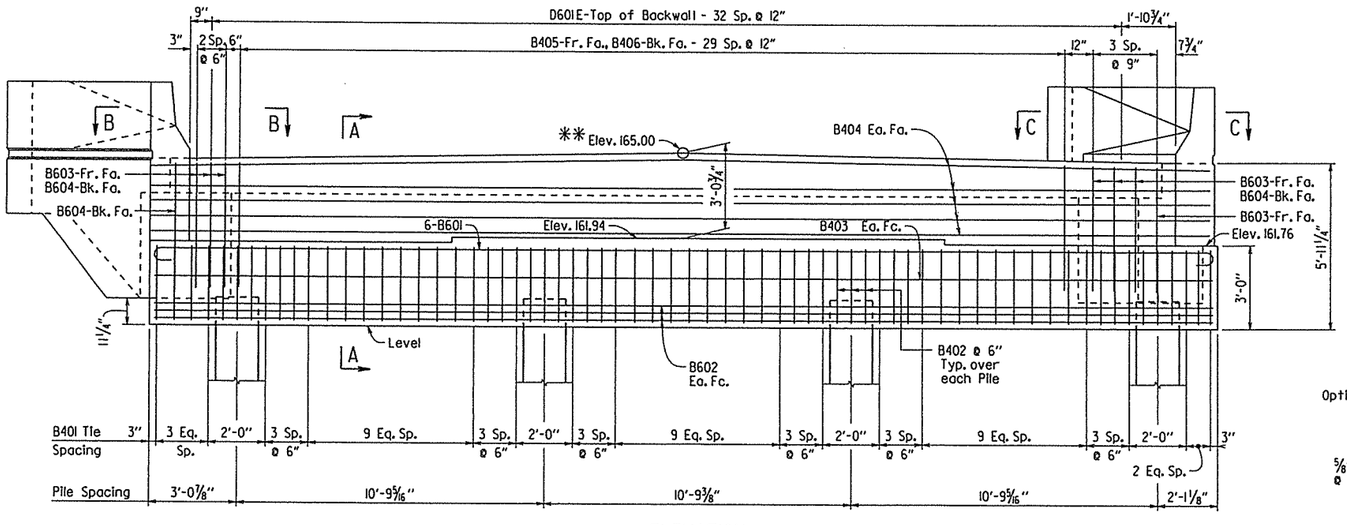
All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)"

Top reinforcing bars shall be properly placed to avoid interference with anchor bolts.

No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansioon Device Installation" note, see Dwg. No. 56182.

Special care shall be taken to properly and throughly consolidate the concrete in the vicinity of the expansion joint device in the backwall. See Subsection 802.09(a)(3).

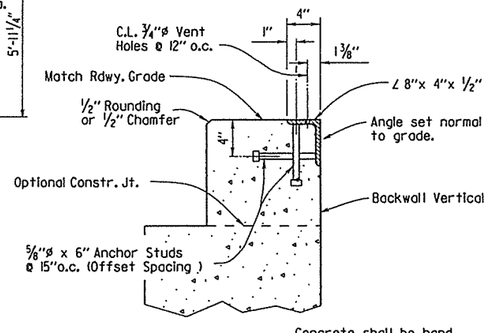
For additional information see layout.



ELEVATION

Bent 1 - Looking Back
Bent 4 - Looking Ahead
Scale: ⅜" = 1'-0"

* Adjust spacing of D601E bars as necessary to provide 3" clear from the longitudinal construction joint between the approach slab and gutters.

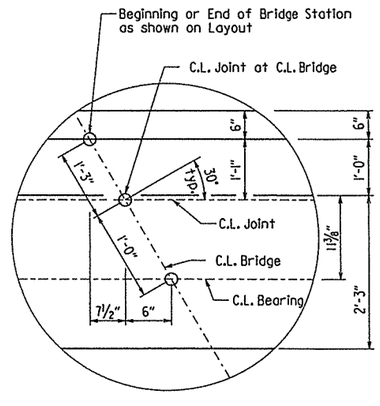


For additional Joint Details See Dwg. No. 56182.

Concrete shall be hand packed under joint armor in the backwall.

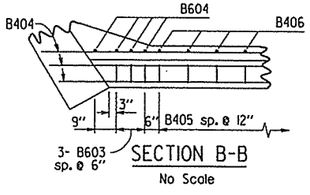
JOINT DETAIL

No Scale



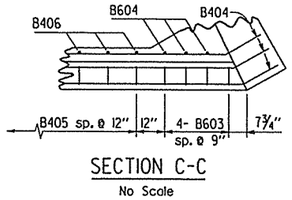
DETAIL A

No Scale



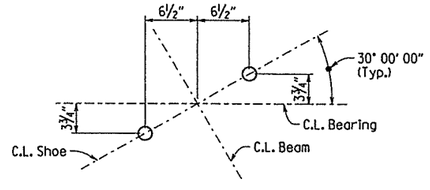
SECTION B-B

No Scale



SECTION C-C

No Scale



For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 56179.

TYPICAL ANCHOR BOLT LAYOUT

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 1 AND 4
CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

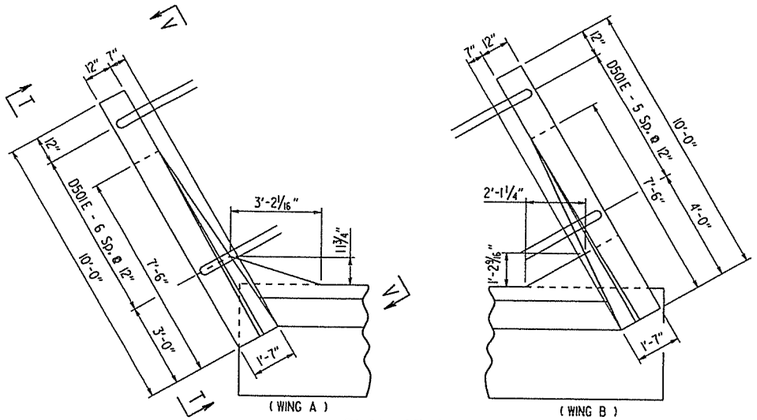
LITTLE ROCK, ARK.

DRAWN BY: CMW	DATE: 5/15/2014	FILENAME: b020542_b1.dgn	
CHECKED BY: DHP	DATE: 3/5/14	SCALE: As Shown	
DESIGNED BY: CSG	DATE: DEC 2013		

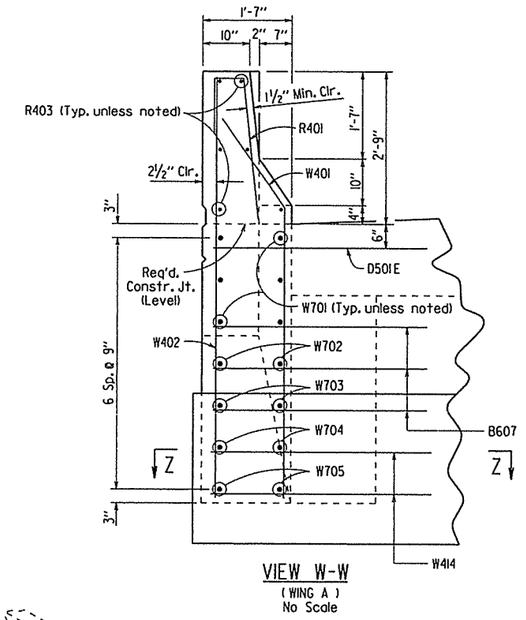
BRIDGE NO. 07332 DRAWING NO. 56175

PRINT DATE: 9/8/2014

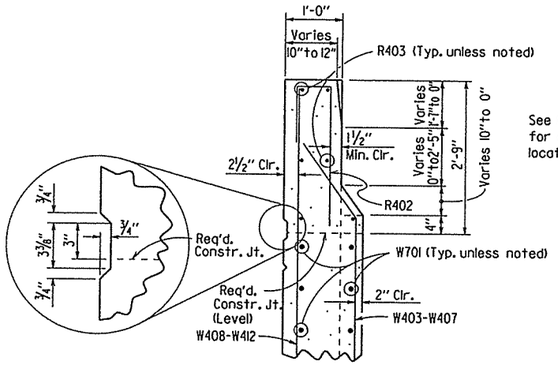
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	44	90
				①		07332 - END BENTS - 56176		



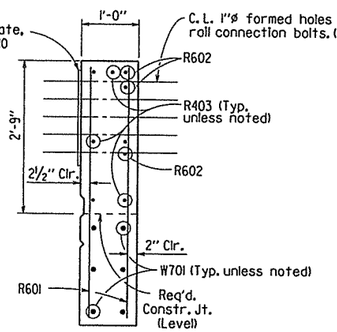
PLAN OF RAIL
No Scale



VIEW W-W
(WING A)
No Scale

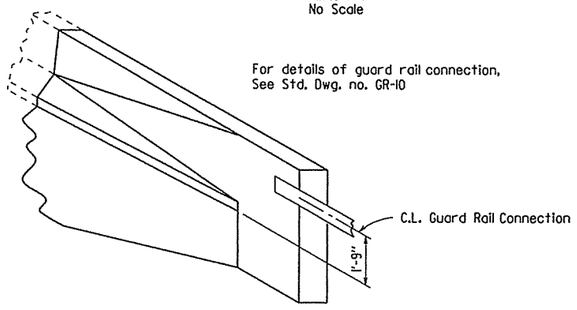


SECTION X-X
No Scale



SECTION Y-Y
No Scale

See Rdwy. Plans for guardrail locations



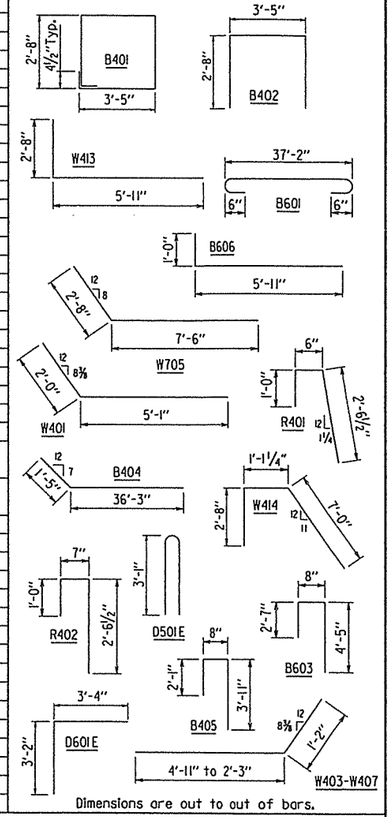
THREE DIMENSIONAL VIEW OF RAIL
No Scale

For details of guard rail connection, See Std. Dwg. no. GR-10

Mark	No. Req'd.	Length	Pin Dia.
B401	55	12'-6"	2"
B402	12	8'-7"	2"
B403	2	37'-2"	Str.
B404	10	37'-8"	3"
B405	30	6'-6"	2"
B406	30	2'-8"	Str.
B601	6	38'-6"	4 1/2"
B602	6	37'-2"	Str.
B603	7	7'-5"	4 1/2"
B604	7	3'-2"	Str.
B605	7	3'-5"	Str.
B606	3	6'-9"	4 1/2"
B607	3	8'-10"	Str.
R401	8	3'-11"	2"
R402	8	4'-0"	2"
R403	12	9'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401	6	7'-1"	2"
W402	6	7'-5"	Str.
W403-W407	2 ea.	6'-1" to 3'-5"	2"
W408-W412	2 ea.	7'-2" to 4'-6"	Str.
W413	2	8'-6"	2"
W414	2	10'-9"	2"
W701	12	9'-8"	Str.
W702	4	6'-3"	Str.
W703	4	5'-2"	Str.
W704	4	4'-0"	Str.
W705	4	10'-2"	5 1/4"
D501E	13	6'-4"	3 3/4"
D601E	33	6'-5"	4 1/2"

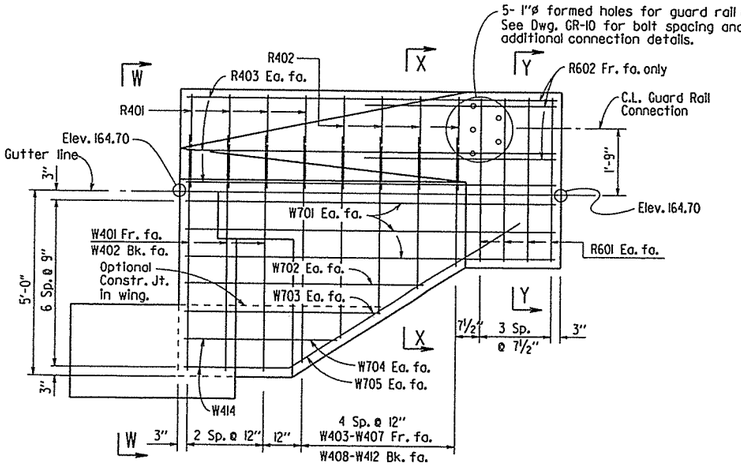
BAR LIST-PER BENT

Bending Diagram

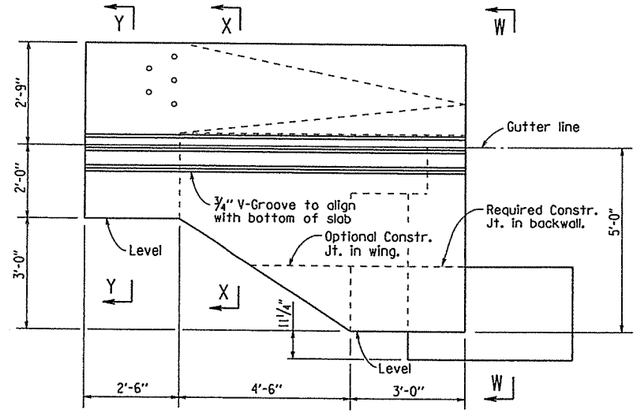


Dimensions are out to out of bars.

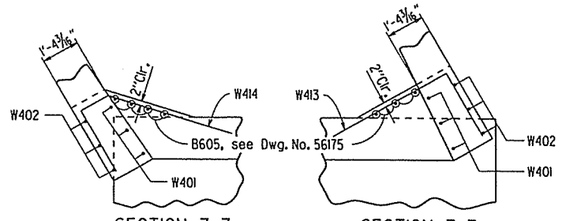
Bars designated with an "E" suffix shall be epoxy coated. Epoxy coated bars will be paid for as "Reinforcing Steel-Bridge (Grade 60)".



VIEW V-V
No Scale



VIEW T-T
No Scale



SECTION Z-Z
(WING A)
No Scale

SECTION Z-Z
(WING B)
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS 1 AND 4
CANAL NO. 43

ROUTE SEC.

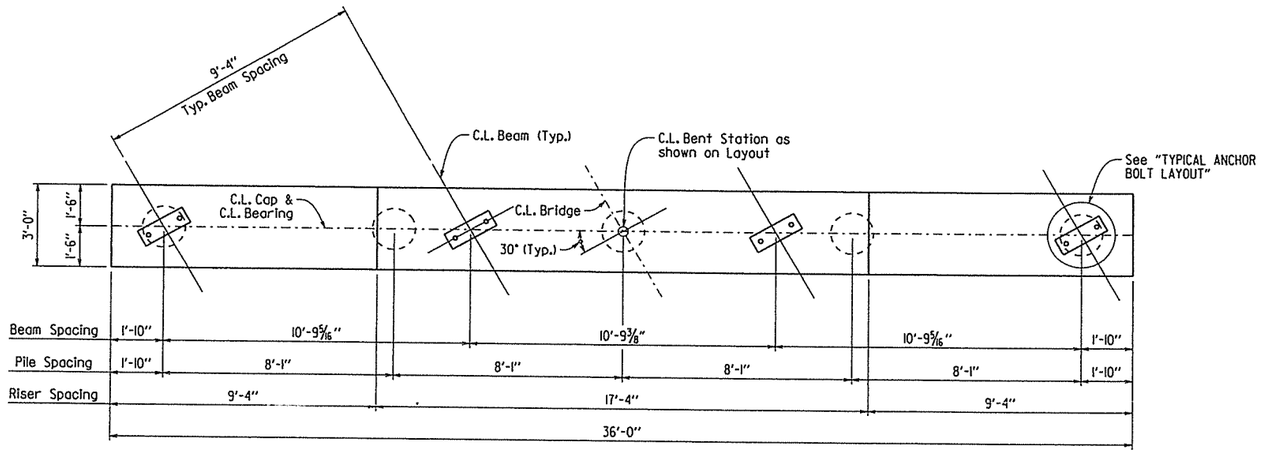
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 5/21/2014 FILENAME: b020542_bl.dgn
CHECKED BY: DHP DATE: 3/4/14 SCALE: As Shown
DESIGNED BY: CSG DATE: 2013

BRIDGE NO. 07332 DRAWING NO. 56176

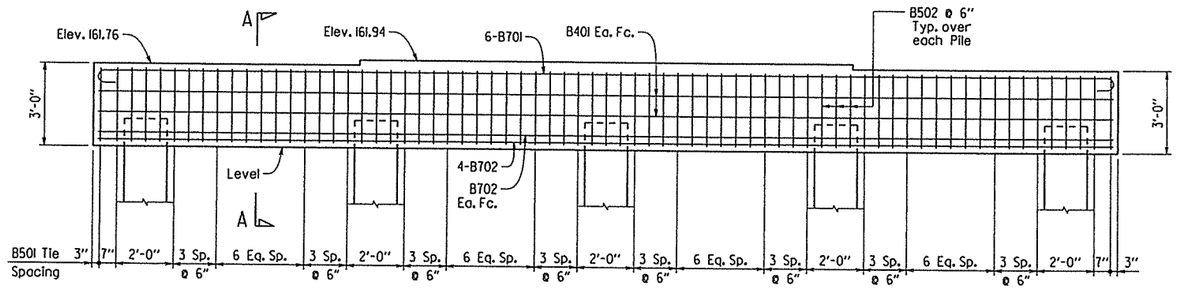
PRINT DATE: 9/8/2014

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.		020542	45	90
				①	07332 - INT. BENTS - 56177			



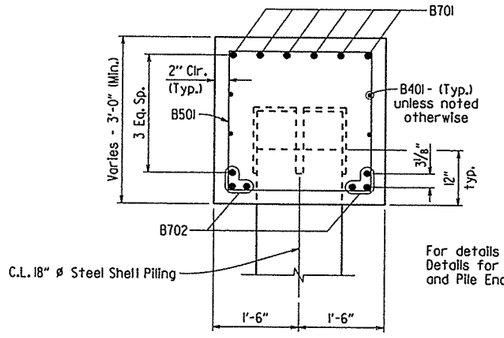
PLAN

Scale: 3/8" = 1'-0"



ELEVATION

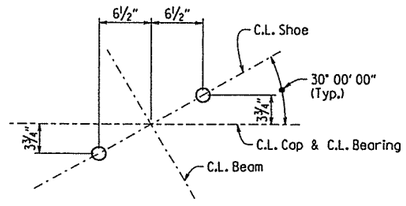
Scale: 3/8" = 1'-0"



SECTION A-A

No Scale

For details of pile anchorage, see "Standard Details for Concrete Filled Steel Shell Piles and Pile Encasements", Std. Dwg. No. 55021.



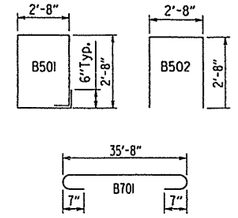
For details of Type "B" Special Shoe and Anchor Bolts, see Dwg. No. 56179.

TYPICAL ANCHOR BOLT LAYOUT

No Scale

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
B401	4	35'-8"	Str.	Dimensions are out to out of bars.
B501	56	11-2"	2 1/2"	
B502	15	7'-10"	2 1/2"	
B701	6	37'-4"	5 1/4"	
B702	6	35'-8"	Str.	



GENERAL NOTES

Concrete in the cap shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Top reinforcing bars shall be properly placed to avoid interference with anchor bolts.

For Details of Steel Shell Piles, See Std. Dwg. No. 55021.

For additional information see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENTS 2 AND 3 CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CMW DATE: 5/15/2014 FILENAME: b020542_b2.dgn

CHECKED BY: DHF DATE: 5/4/14 SCALE: As Shown

DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07332 DRAWING NO. 56177

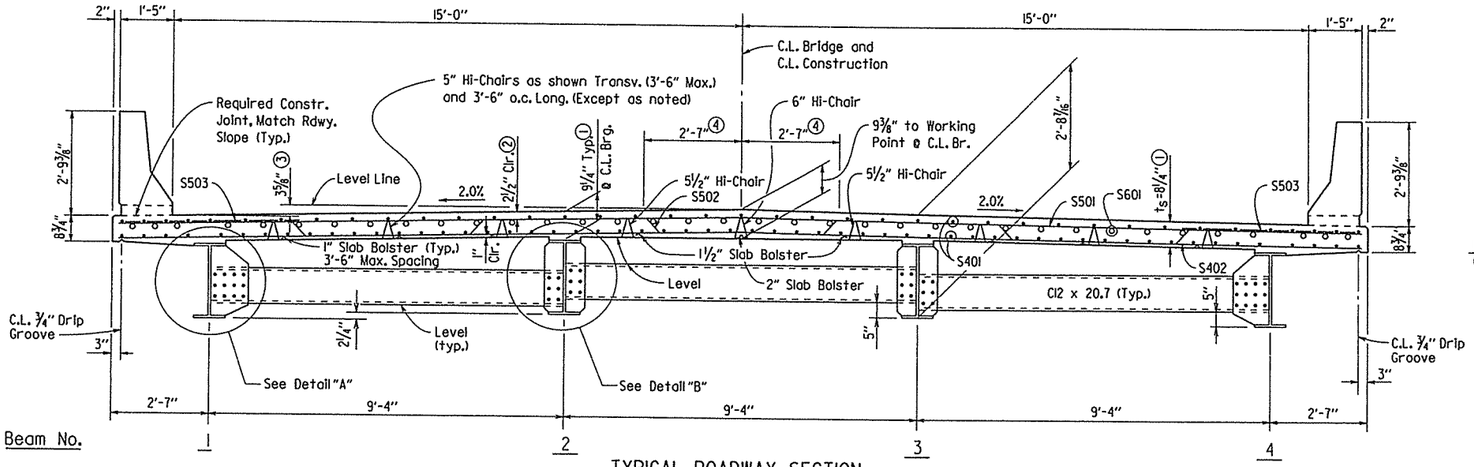
PRINT DATE: 9/8/2014

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.		020542	40	90
				(1)	07332 -	SPAN DETAILS	- 56178	

Class I Protective Surface Treatment shall be applied to the roadway surface and the roadway face and top of the concrete parapet rail.

At the Contractor's option, two straight #5 bars, top and bottom, may be substituted for bar S502. Payment will be based on weight of S502 bar.

For General Notes, See Dwg. No. 56182.



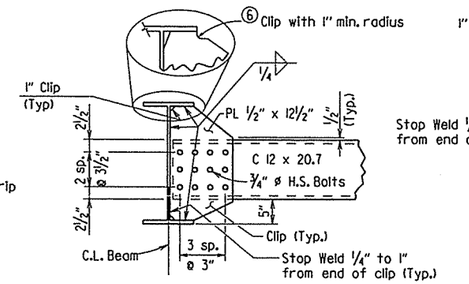
TYPICAL ROADWAY SECTION
½" = 1'-0"
(Looking Ahead)

Slab Reinforcing:

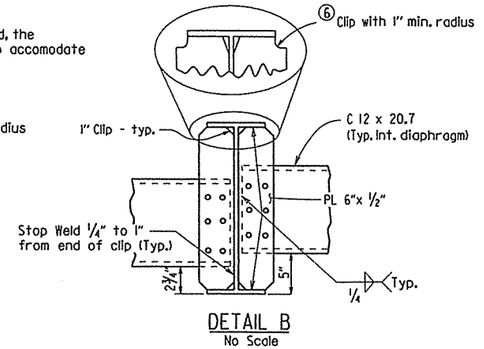
Longitudinal: S401 placed as shown in top and bottom
S601 placed as shown over interior supports (See Reinf. Plan)

Transverse: S502 @ 12" o.c. bent up over beams — Alternate
S501 @ 12" o.c. in top, S402 @ 12" o.c. in bottom
S503 bundled in top of slab @ gutterline.

⑥ If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.



DETAIL A
No Scale

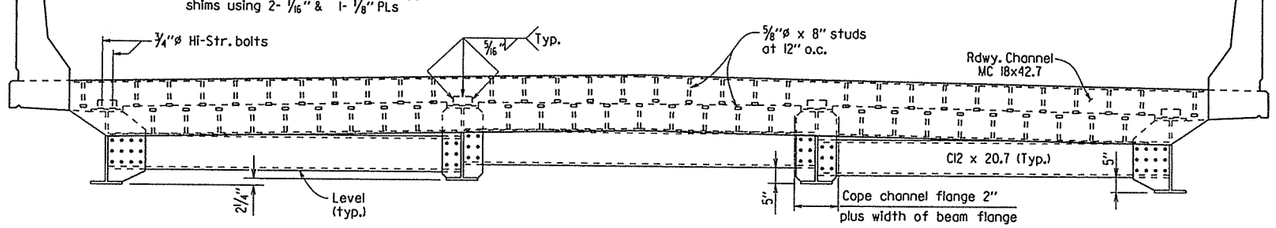


DETAIL B
No Scale

Bolts in diaphragm connections shall be properly installed and tightened is accordance with Subsection 807.71.

Expansion Device:
Rdwy. Channel - MC 18x42.7
Conn. ∠'s 8"x4"x ½"
Detail Device ⅛" high & provide ¼" shims using 2- 1/16" & 1- ⅛" PLs

For details of poured silicone joint, see Dwg. No. 56182.

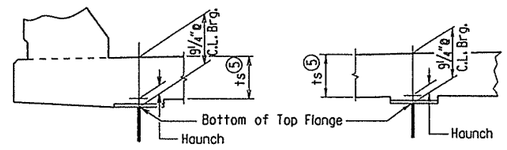


SECTION THRU JOINT
½" = 1'-0"
(Looking Ahead)

TABLE FOR WELD

Material Thickness Of Thicker Part Joined (Inches)	Minimum Size Of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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.

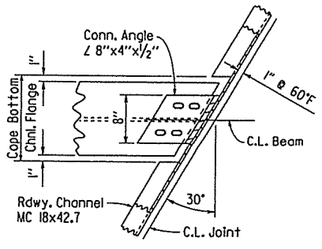


⑤ Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

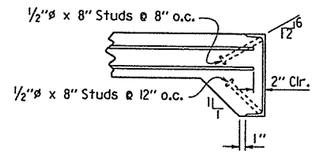
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 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

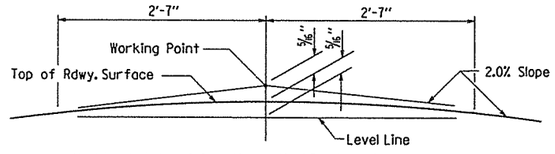


CHANNEL CONNECTION DETAILS
No Scale



As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCING
No Scale



Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL
No Scale

① Tolerance: Minus = ¼"
Plus = Equal to amount of slab thickening used to meet slab thickness tolerance-
See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED"

② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED"

③ Working Point to Gutter line

④ See "ROUNDING DETAIL"

The superstructure details shown are for use when Removable Deck Forming is used and are the basis for measurement of Class S(AE) Concrete.

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SHEET 1 OF 5
DETAILS OF 100' CONTINUOUS COMPOSITE W-BEAM UNIT
CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
CHECKED BY: CMH DATE: 9/9/14 SCALE: AS SHOWN
DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07332 DRAWING NO. 56178

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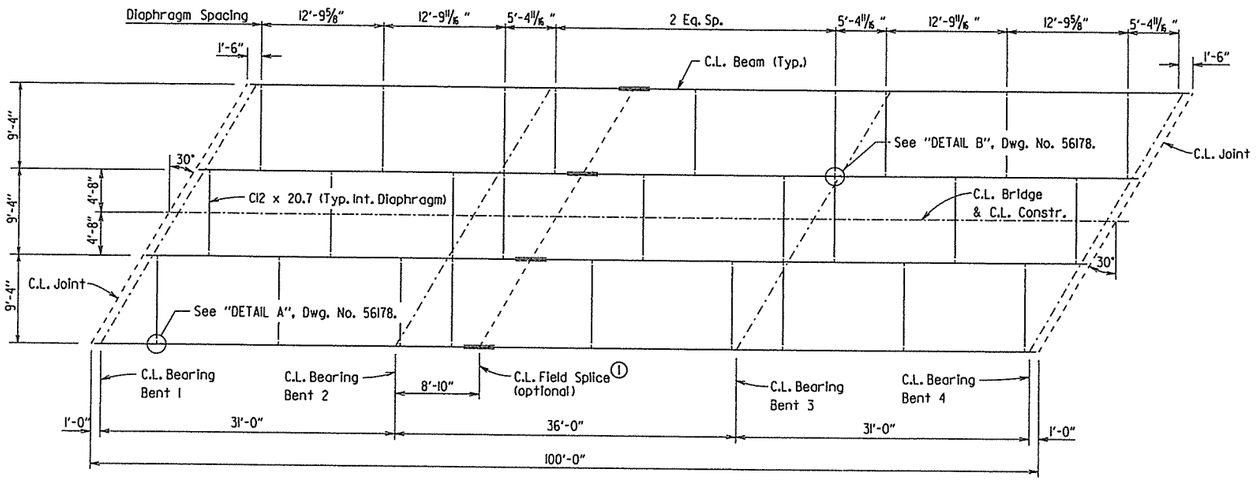
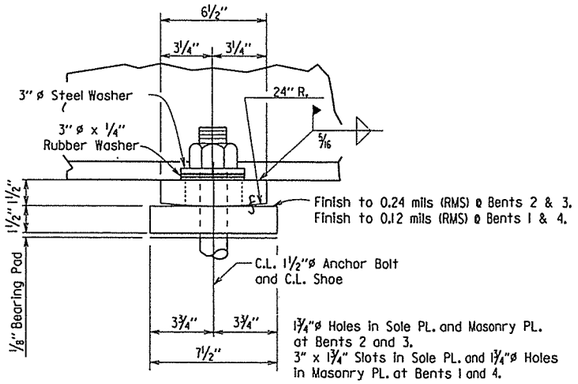
				6	ARK.			
				JOB NO.		020542	47	90
				①	07332 -	SPAN DETAILS	- 56179	



FRAMING PLAN

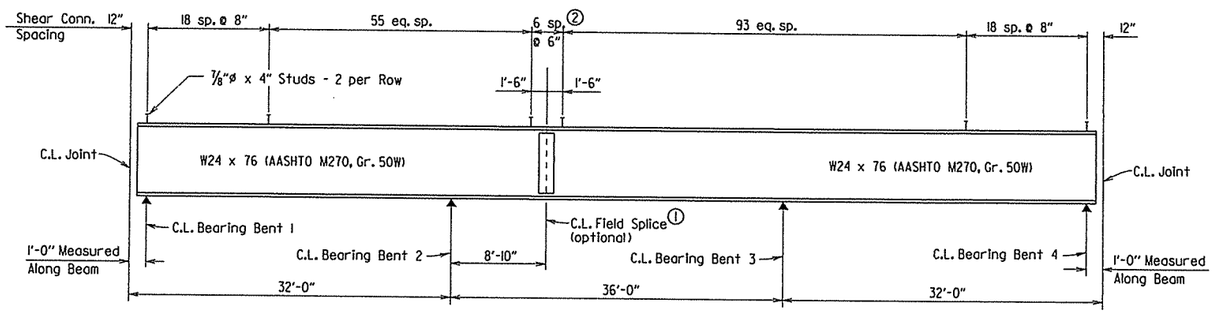
⅛" = 1'-0"



ELEVATION TYPE "B" SPECIAL SHOE

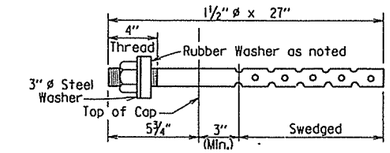
N.T.S.

Plates for Type "B" Special Shoes Shall be M270, GR. 50W.



TYPICAL BEAM ELEVATION

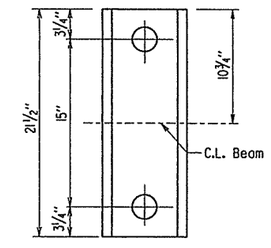
No Scale



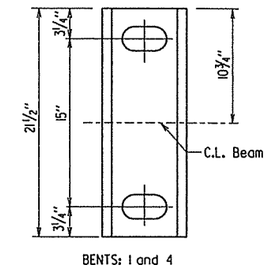
ANCHOR BOLT DETAIL

N.T.S.

Anchor Bolts, Nuts and Washers to be according to Subsection 807.07. Indentations shall be circular with rounded bottoms and staggered as shown above. Rubber washer shall be closed cell expanded rubber, meeting the requirements of ASTM D1056 - 85 2B2 E2, and shall be considered subsidiary to the item of Structural Steel. Anchor bolts shall be Grade 55.



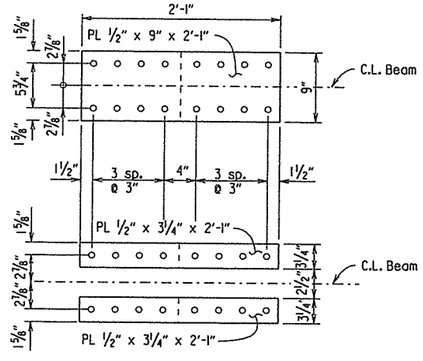
BENTS: 2 and 3



BENTS: 1 and 4

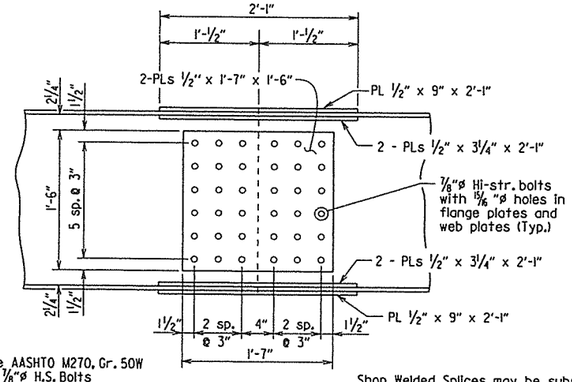
PLAN TYPE "B" SPECIAL SHOE

N.T.S.



FLANGE SPLICE

TOP AND BOTTOM



WEB SPLICE

All Field Splice Plates shall be AASHTO M270, Gr. 50W
All Field Splice Bolts shall be ⅞"ø H.S. Bolts
All Field Splice Bolt Holes shall be 15/16 "ø

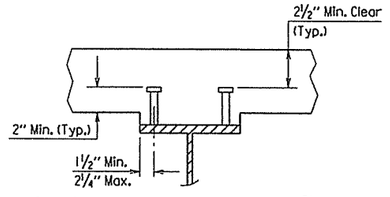
Shop Welded Splices may be substituted for the optional field splice with the approval of the Engineer. No payment will be made for this substitution.

① DETAILS OF OPTIONAL FIELD SPLICE

No Scale

① At the Contractor's option, a field splice may be provided at this location. No additional payment will be made for the optional field splice.

② Shear Connectors in this region may be omitted if optional field splice is used.



Stud Shear Connectors shown shall be ⅞"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown, at the ratio of 1.361 - ¾"ø studs in place of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL

No Scale

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SHEET 2 OF 5
DETAILS OF 100' CONTINUOUS COMPOSITE W-BEAM UNIT
CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
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DESIGNED BY: CSG DATE: DEC 2013

BRIDGE NO. 07332 DRAWING NO. 56179

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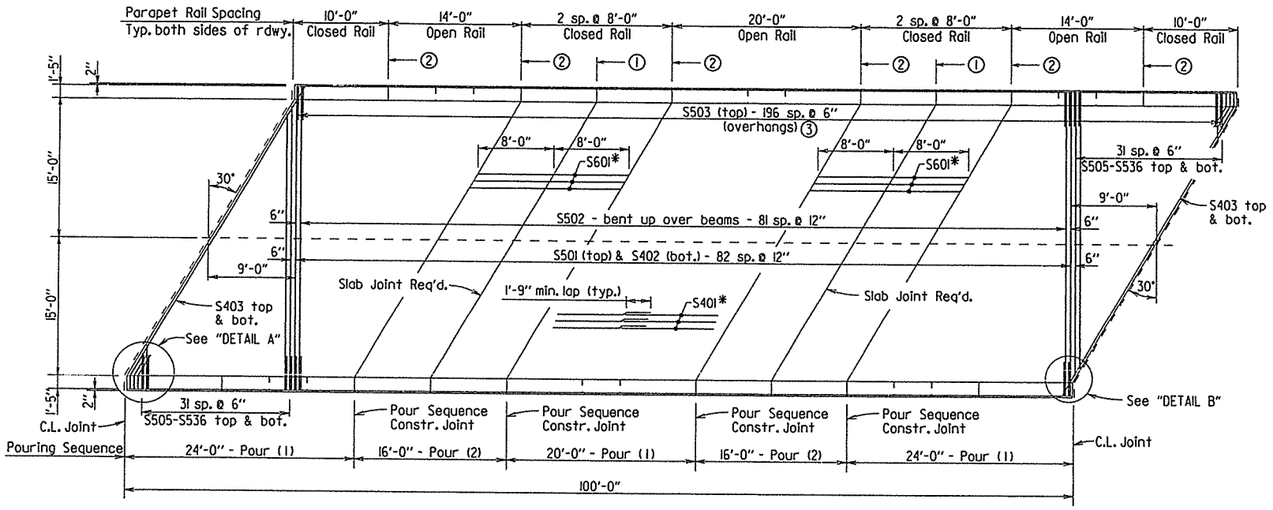
				JOB NO.		020542	49	90
				(1)	07332 -	SPAN DETAILS	- 56180	

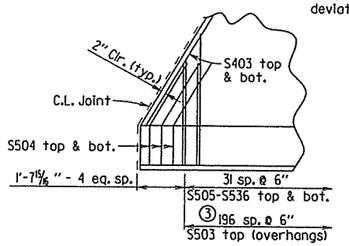
*Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 56178.



REINFORCING PLAN

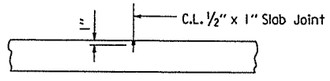
1/8" = 1'-0"

Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour. Any rolling pours made before the entire slab unit has been placed must be approved by the Engineer. 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 Contractor must obtain approval from the Engineer for any deviations from the pouring sequence.



DETAIL A

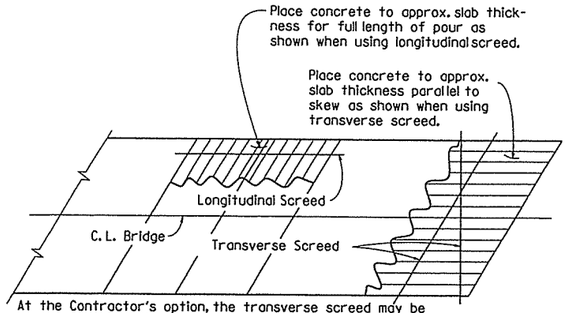
No Scale



Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class SA(E) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before parapet railing is to be poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab (gutterline to gutterline). Slab joints shall align with parapet open joints.

SLAB JOINT DETAIL

No Scale



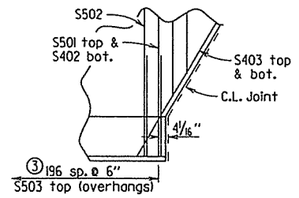
CONCRETE PLACEMENT PROCEDURE

No Scale

① C.L. Full Depth Parapet Joint (1/4" - 1" max.) Stop 4" from top of slab.

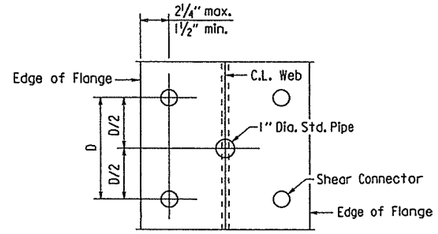
② C.L. Partial Depth Parapet Joint (1/4" - 1" max.) Stop 1'-2" from top of slab.

③ Bundled with S501 and S502 Typ. both sides of rdwy.



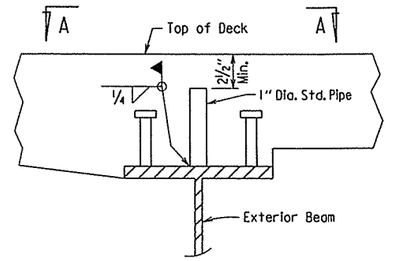
DETAIL B

No Scale



VIEW A-A

N.T.S.



TRANSVERSE SCREED RAIL SUPPORT DETAIL

N.T.S.

The transverse screed rail supports shall be centered over the beam web and centered longitudinally 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 voids do not exist in the pipe after placement of the deck concrete.

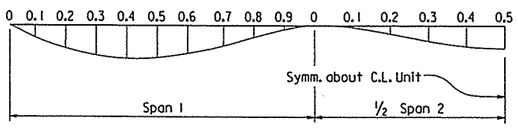
All welding shall be performed by a certified welder and in accordance with Subsections 802.13 and 807.26.

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet
1	0	0.000	0.000	0.000
	0.1	0.006	0.060	0.064
	0.2	0.010	0.111	0.119
	0.3	0.014	0.147	0.157
	0.4	0.015	0.163	0.174
	0.5	0.015	0.159	0.170
	0.6	0.013	0.137	0.147
	0.7	0.009	0.101	0.108
	0.8	0.005	0.059	0.063
	0.9	0.002	0.021	0.022
2	0	0.000	0.000	0.000
	0.1	0.001	0.009	0.010
	0.2	0.004	0.040	0.044
	0.3	0.007	0.075	0.082
	0.4	0.009	0.101	0.110
C.L. Unit	0.5	0.010	0.110	0.120

This table is symmetrical about C.L. Unit

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.



DEAD LOAD DEFLECTION DIAGRAM

No Scale

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 3 OF 5
DETAILS OF 100' CONTINUOUS COMPOSITE W-BEAM UNIT
CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
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BRIDGE NO. 07332 DRAWING NO. 56180

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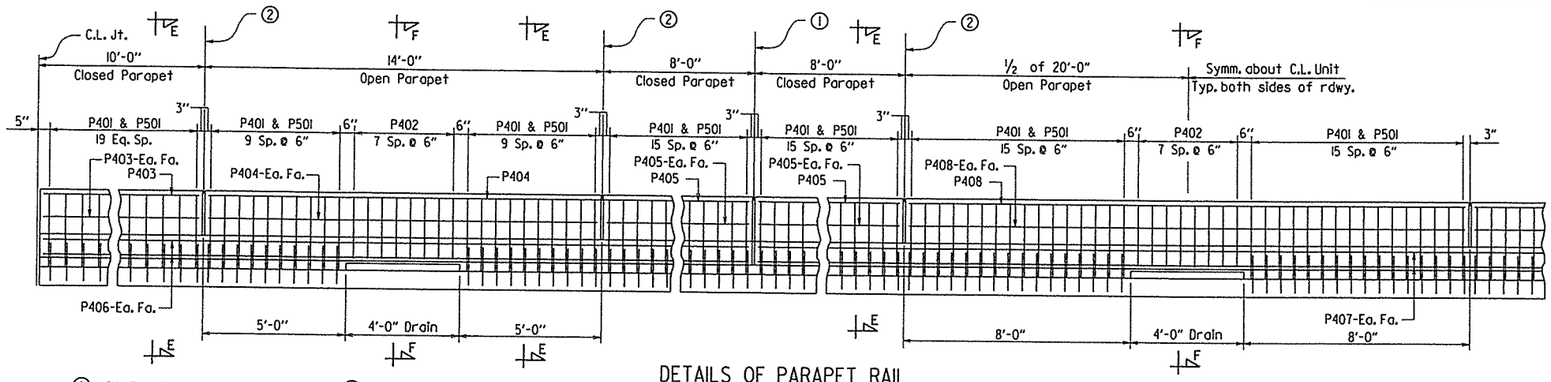
				JOB NO.		020542	49	90
				①	07332 -	SPAN DETAILS	- 56181	



① C.L. Full-Depth Parapet Joint (¼" to 1" Max.) as shown in "REINFORCING PLAN" Dwg. No. 56180. Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (¼" to 1" Max.) as shown in "REINFORCING PLAN" Dwg. No. 56180. Stop 1'-2" from top of slab.

DETAILS OF PARAPET RAIL

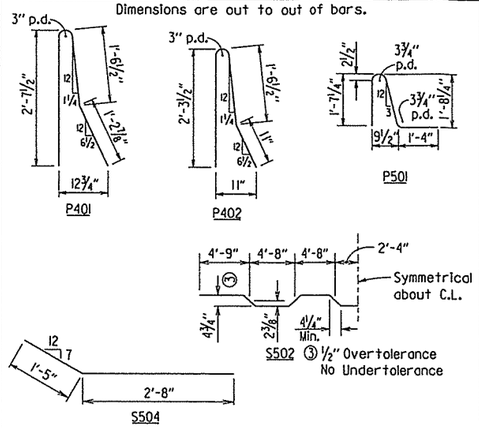
Scale: ⅜" = 1'-0"

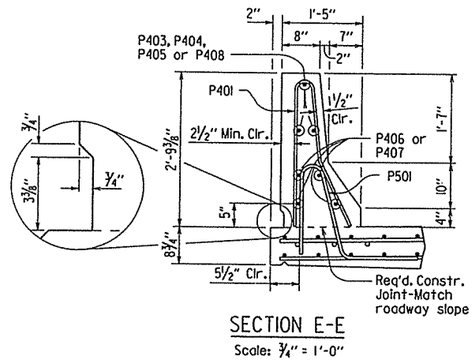
BAR LIST

MARK	NO. REQ'D	LENGTH	P.D.
S401	285	34'-4"	Str.
S402	83	32'-10"	Str.
S403	4	36'-4"	Str.
P401	352	5'-6"	3"
P402	48	4'-10"	3"
P403	24	9'-8"	Str.
P404	12	13'-8"	Str.
P405	24	7'-8"	Str.
P406	16	31'-7"	Str.
P407	8	35'-8"	Str.
P408	6	19'-8"	Str.
S501	83	32'-10"	Str.
S502	82	33'-7"	3"
S503	394	3'-8"	Str.
S504	12	4'-1"	2½"
S505-S536	4 Each	3'-9"-30'-8"	Str.
P501	352	4'-9"	3¾"
S601	72	16'-0"	Str.

BENDING DIAGRAMS

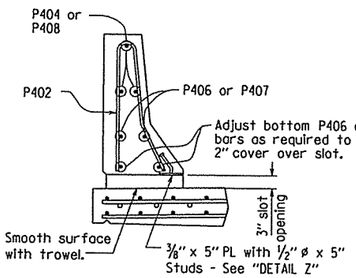
Dimensions are out to out of bars.





SECTION E-E

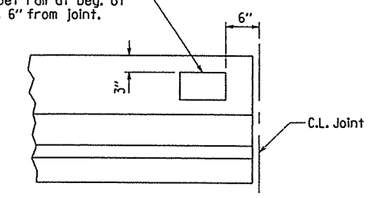
Scale: ¾" = 1'-0"



SECTION F-F

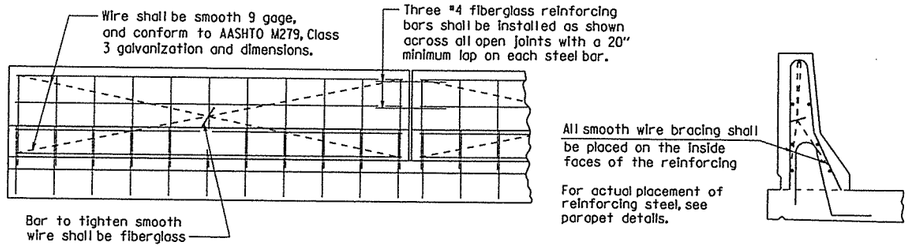
Scale: ¾" = 1'-0"

Place Type D Bridge Name Plate on right parapet rail at beg. of bridge approx. 6" from joint.



NAME PLATE DETAIL

No Scale

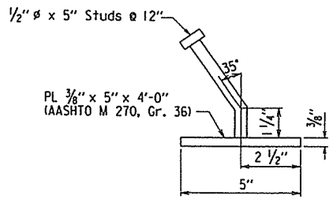


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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 SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale



DETAIL Z

No Scale

The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint 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 considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)."

Parapet studs shall be 5" long., granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)."

STATE OF ARKANSAS Charles R. Ellis REGISTERED PROFESSIONAL ENGINEER No. 9235 9-9-14 CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 5
DETAILS OF 100' CONTINUOUS COMPOSITE W-BEAM UNIT CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
CHECKED BY: CMW DATE: 9/8/14 SCALE: AS SHOWN
DESIGNED BY: CSG DATE: DEC 2013
BRIDGE NO. 07332 DRAWING NO. 56181

PRINT DATE: 9/8/2014

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.		020542	50	90
				(1) 07332 -		SPAN DETAILS	- 56182	

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2012 Edition with 2013 interims).

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4000 psi.

Reinforcing Steel: Reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50W (Fy = 50,000 psi.) or AASHTO M270, Gr. 36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)". Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36 or Gr. 50. AASHTO M270, Gr. 50W Steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless noted otherwise.

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 including web and flange splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

Steel plates for main members 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.

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted, and approval secured before fabrication is begun.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with the recommendations of the manufacturer.

All beams shall be blocked in their true position in the shop as specified in Subsection 807.54(b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with the beams in their true position and this information shall become part of the permanent record of this job. The component parts shall be match marked in this assembly and those 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" (plus or minus) allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4"ø, except as noted, and open holes shall be 11/16 "ø unless otherwise noted. Holes for 3/4"ø bolts may be 15/16 "ø If a washer is supplied for use under both the nut and the head of the bolt. Bolt spacing shall be 2 1/2" for 3/4"ø bolts unless otherwise noted. For field splices, bolts shall be 7/8"ø bolts. Open holes shall be 15/16 "ø. Bolt spacing shall be 3" for 7/8"ø bolts. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

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 permanent or temporary, 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 do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

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 deck.

Bearings shall be seated in accordance with Subsection 807.66. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

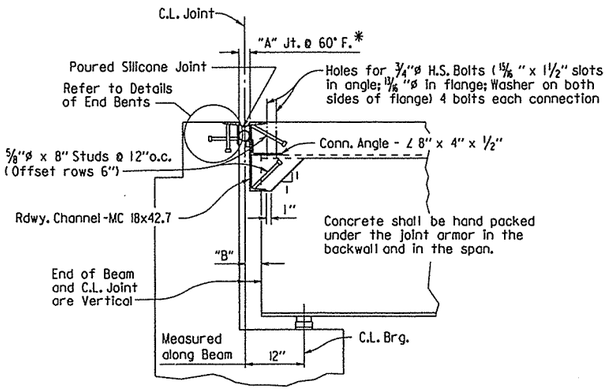
REINFORCING STEEL:
The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports, sufficient in size and number, to prevent displacement during the course of construction. The wire supports will not be paid for directly but will be considered subsidiary to the item "Reinforcing Steel (Grade 60)".

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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.

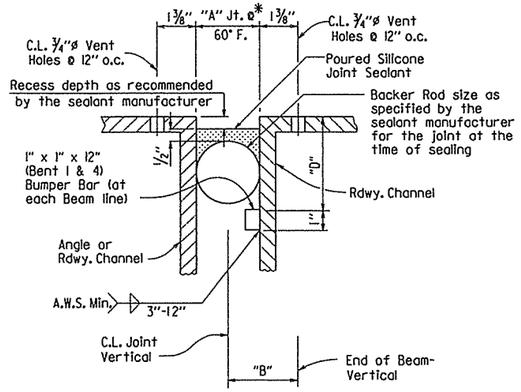
The concrete deck shall be given a Tine Finish in accordance with Subsection 802.19 for Class 5, Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient 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 bridge deck slab and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.



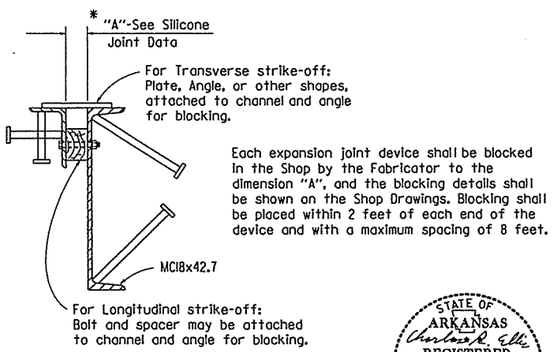
SECTION THRU JOINT AT BENTS 1 & 4

NO SCALE



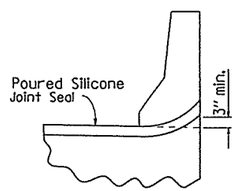
DETAIL OF POURED SILICONE JOINT SEAL

NO SCALE



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

NO SCALE



JOINT SEAL PLACEMENT AT CURB

No Scale

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40°F	60°F	80°F			
1 & 4	2 1/16"	2"	1 15/16 "	± 3 1/8"	1" x 1"	5"

*The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

The temperature limitations recommended by the sealant manufacturer shall be observed.

The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

BACKER ROD NOTE:

Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod that can be sealed in the same day.

The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives.

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature, and the backwall constructed.

2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-9-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 5
DETAILS OF 100' CONTINUOUS COMPOSITE W-BEAM UNIT CANAL NO. 43

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: MAR 2014 FILENAME: b020542_sl.dgn
CHECKED BY: CMW DATE: 9/3/14 SCALE: 1/4" = 1'-0"
DESIGNED BY: CSG DATE: DEC. 2013

BRIDGE NO. 07332 DRAWING NO. 56182

PRINT DATE: 9/8/2014

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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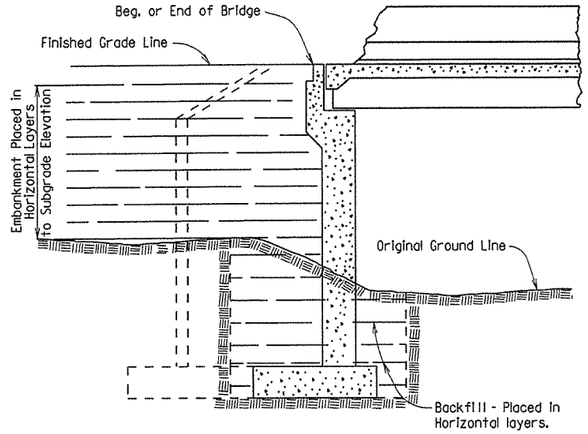
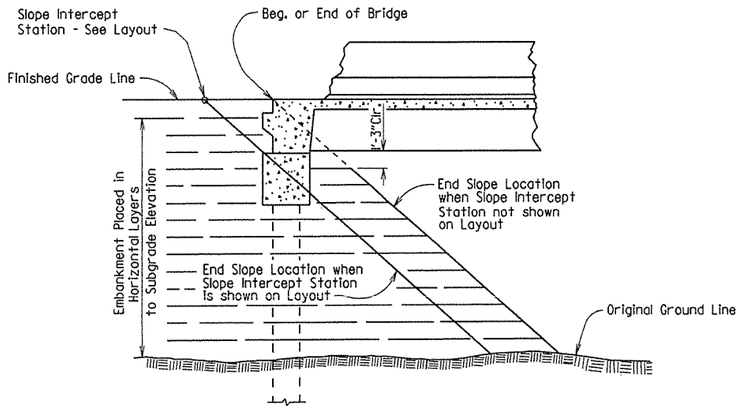
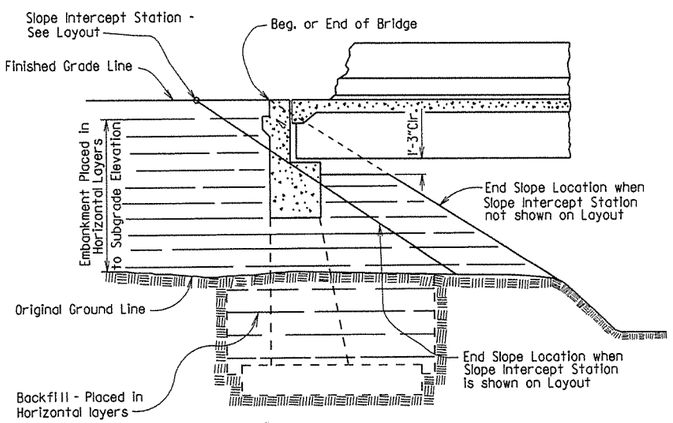
				JOB NO.				
				① EMBANKMENT & BACKFILL 55000				



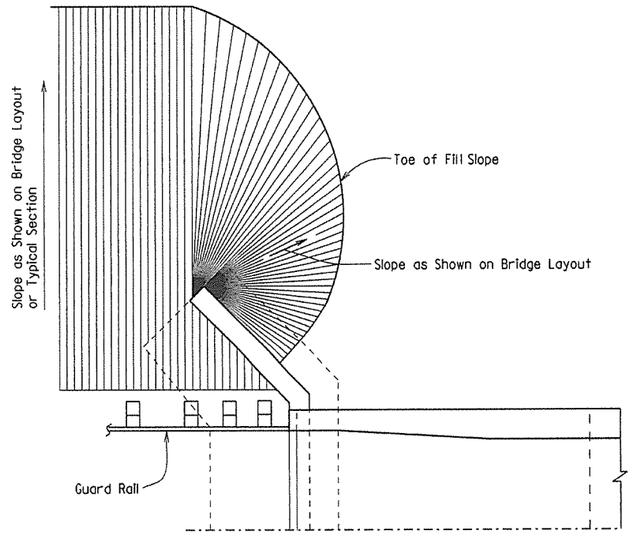
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



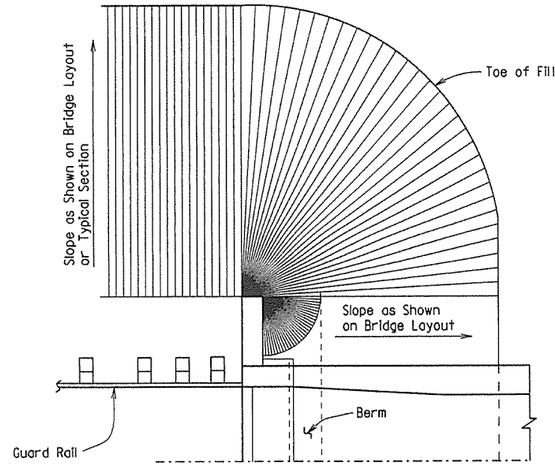
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



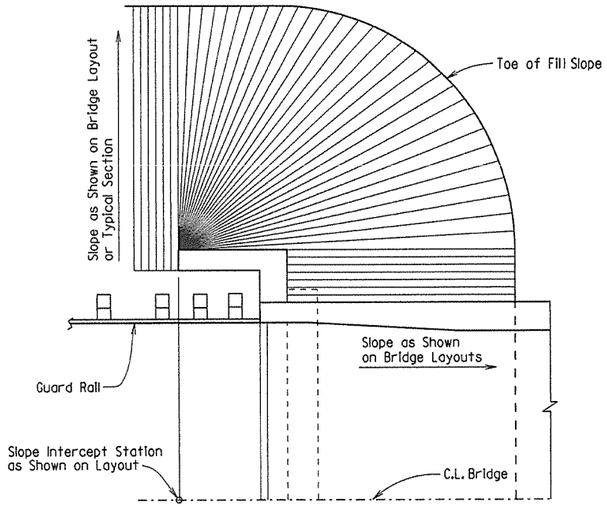
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



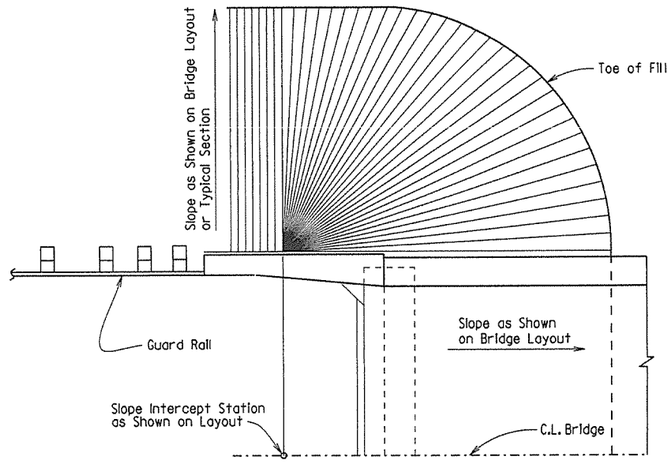
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 6 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to Subsections 210.09, 210.10 and 801.08 for construction requirements.

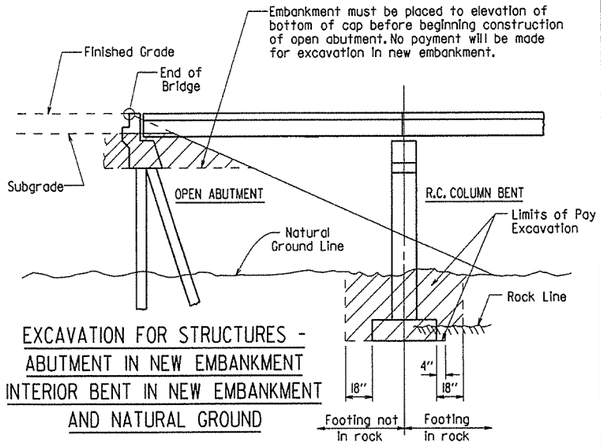
STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

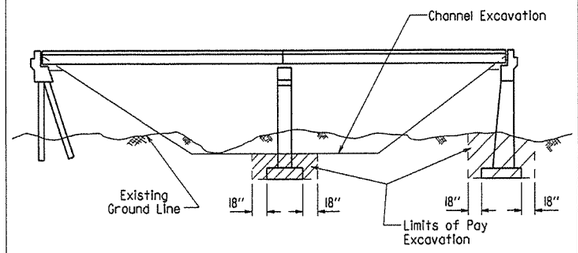
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

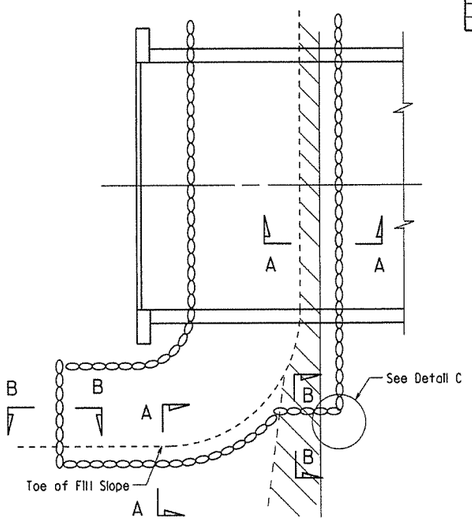
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		52	
				JOB NO.				
				(1) RIPRAP & EXCAV. 55001				



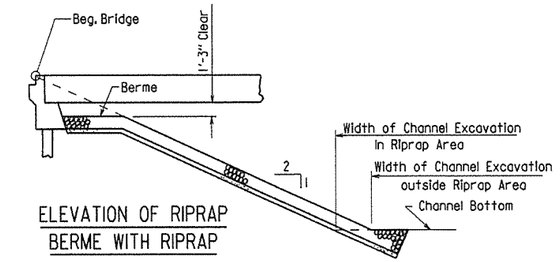
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



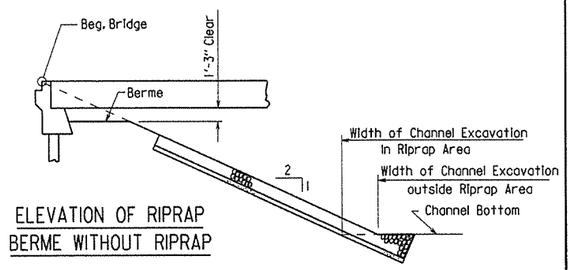
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



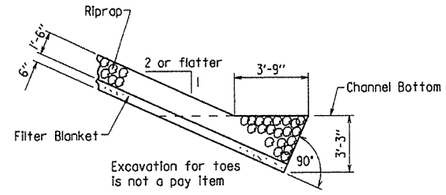
PLAN OF DUMPED RIPRAP



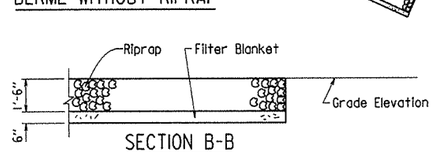
ELEVATION OF RIPRAP BERME WITH RIPRAP



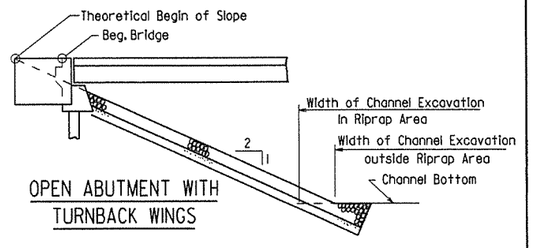
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



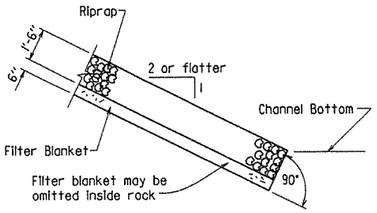
SECTION A-A
(Toe Excavation in Soil)



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS

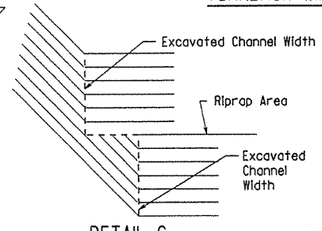


SECTION A-A
(Toe Excavation in Rock)

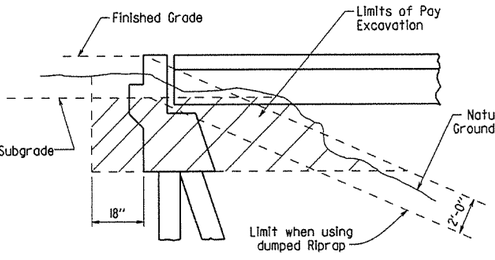
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

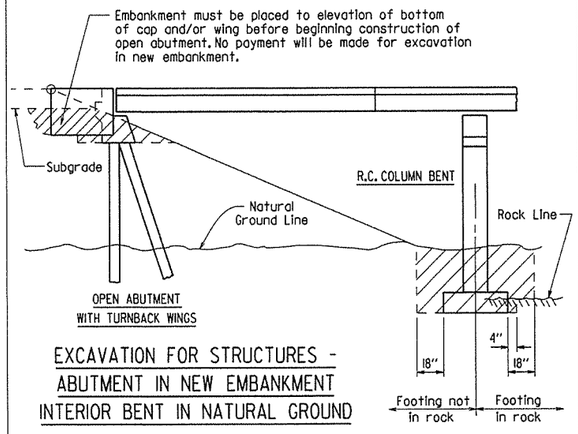
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



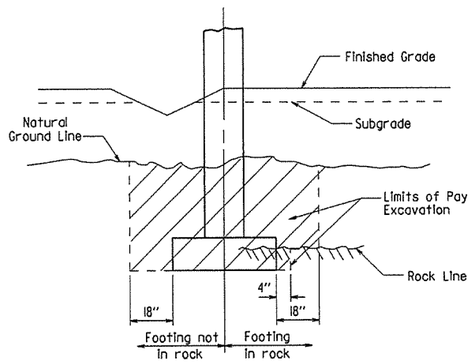
DETAIL C



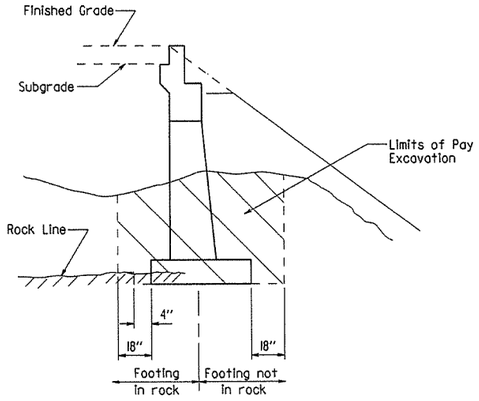
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

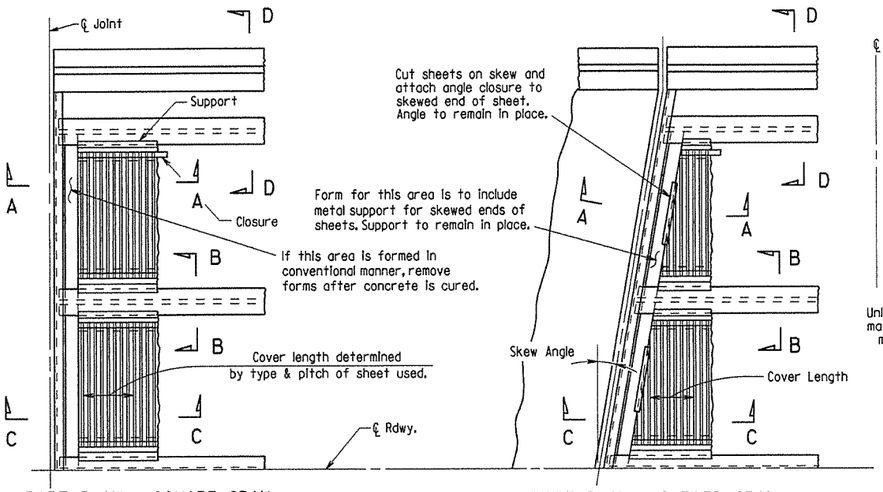
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		53	
				JOB NO.				

① BRIDGE DECK FORMS 55005

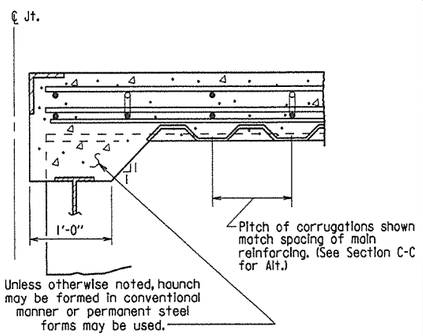


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

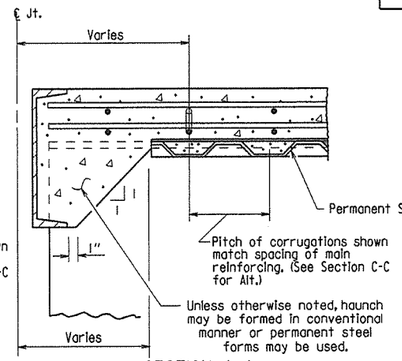
3/8" = 1'-0"



SECTION A-A

N.T.S.

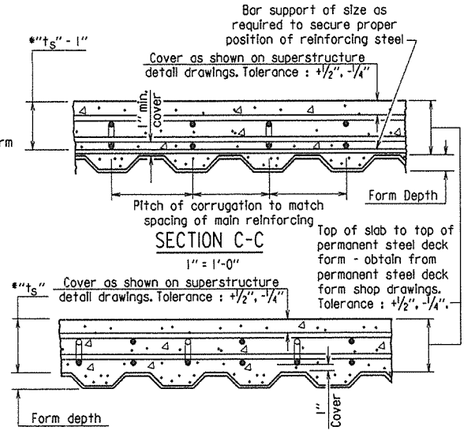
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



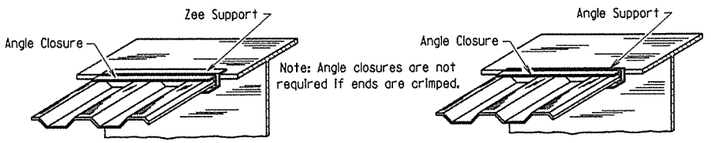
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

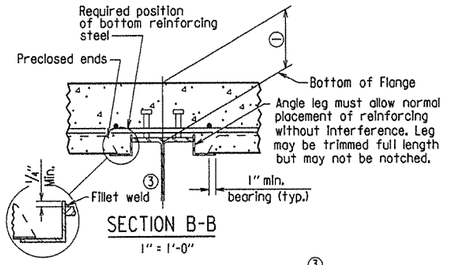
1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

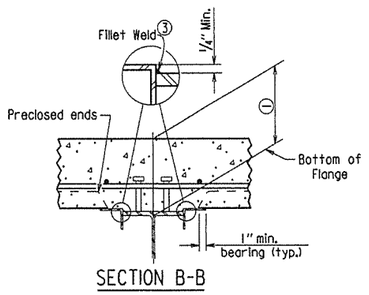


SECTION B-B

1" = 1'-0"

(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

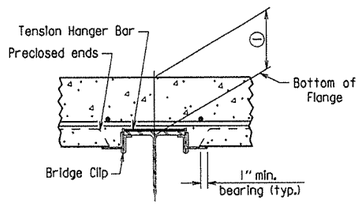
③ Minimum weld: 1/8" x 1' @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

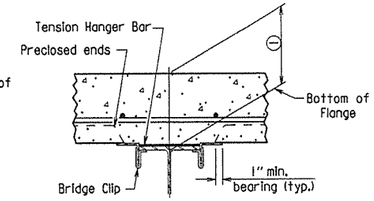
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

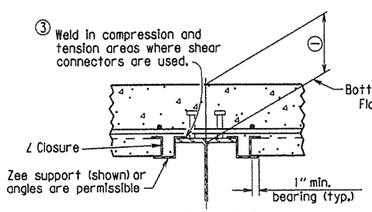
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

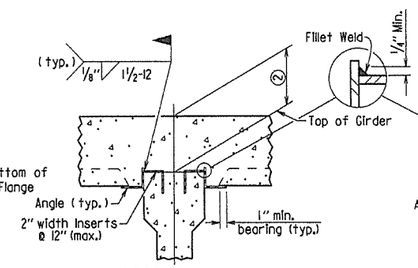
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

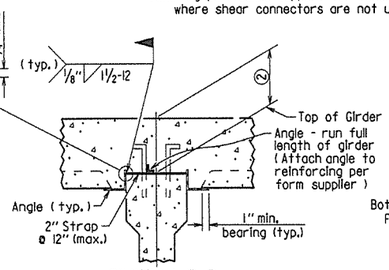


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

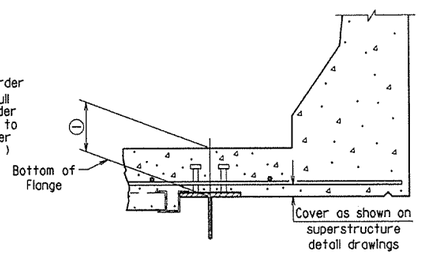


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE

DESIGNED BY: STD. DATE: —

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		54	
				JOB NO.				

(1) TYPE D NAME PLATE 55010

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	Red River	Southern	Saline	
Line 2	Relief	Railroad	River	Highway 5
Line 3		Overpass	Relief	

21½"

LINE 1
LINE 2
LINE 3

Center of Cast Lug

2½"

2½"

ARKANSAS HIGHWAY COMMISSION
JOHN ED REGENOLD - CHAIR
DICK TRAMMEL - VICE CHAIR
TOM SCHUECK
ROBERT S. MOORE, JR.
FRANK D. SCOTT, JR.

DIRECTOR - SCOTT E. BENNETT
DEPUTY DIRECTOR/CHIEF ENGINEER - RALPH J. HALL

CONTRACTOR
COMPANY NAME
YEAR

XXXXX

Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example : 2001

Place the name of the company awarded the construction contract here using 1/8" raised letters and numerals 3/8" high. Example : ABCD CONSTRUCTION, INC.

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : A1234
05432

TYPICAL BRIDGE NAME PLATE

Face of Concrete

Alternate attachments may be used provided such attachments are submitted and approval secured before fabrication is begun.

1/2" (Typ.)

13"

8"

2"

1/4"

3/8"

9/16"

GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 9/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

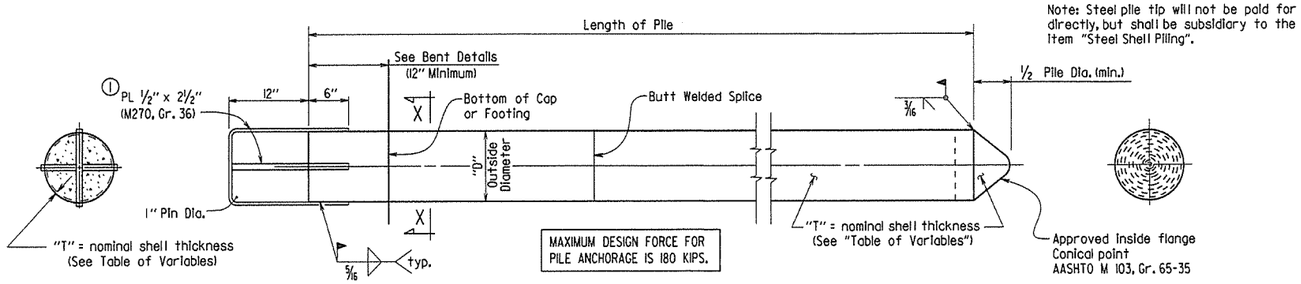
STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55010

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		55	
				JOB NO.				
				①	STEEL SHELL PILES		55021	

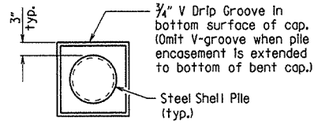


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

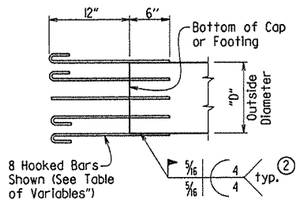
CONCRETE FILLED STEEL SHELL PILE

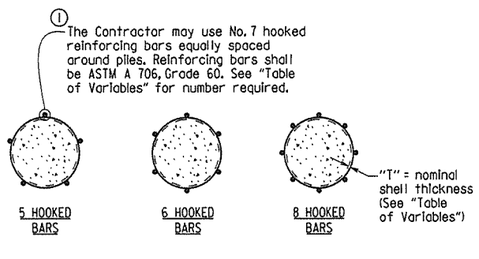
① Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

② Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.



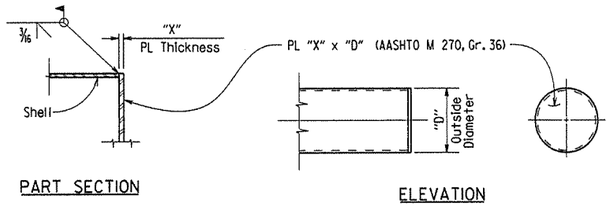
VIEW X-X





ALTERNATE PILE ANCHORAGE DETAIL

Note: Hooked bars shall be oriented to provide the required concrete clearances shown in the plans.

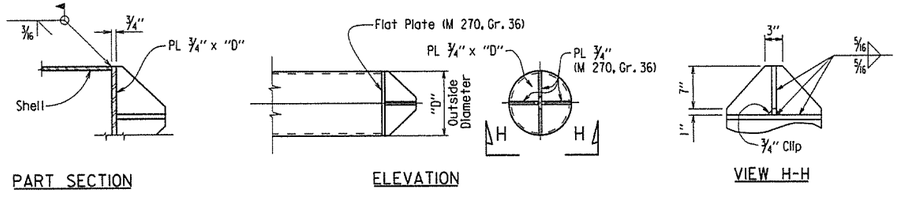


PART SECTION

ELEVATION

ALTERNATE FLAT TIP DETAIL

Note: The alternate flat tip detail shall not be used on steel shell piling to be driven through embankments constructed with internal geosynthetic reinforcement.



PART SECTION

ELEVATION

VIEW H-H

ALTERNATE VANED TIP DETAIL

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

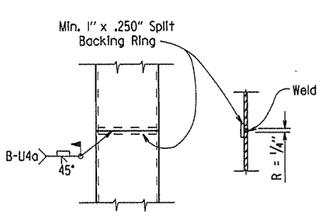
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. and shall be poured in the dry.

Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with Subsection 805.02.

See Bridge Layout for size and estimated length of steel shell piles and for driving information.

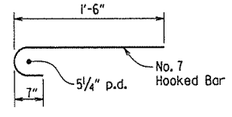
Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".



TYPICAL SPLICE DETAILS

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE
14"	0.50"	¾"	5
16"	0.50"	1"	5
18"	0.50"	1¼"	6
20"	0.50"	1½"	6
24"	0.50"	1¾"	8



HOOKED BAR DETAIL

GENERAL NOTES FOR PILE ENCASEMENTS:

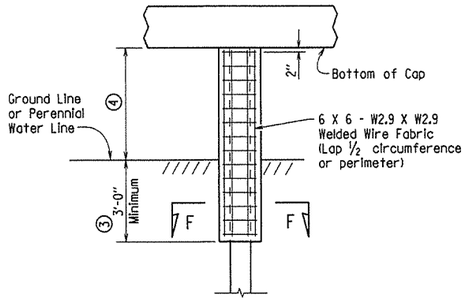
See Bridge Layout for additional notes and required location of pile encasements.

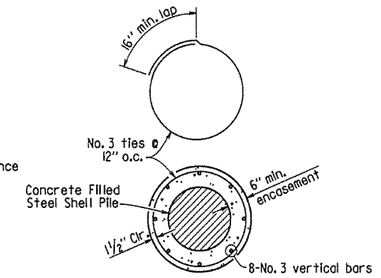
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

Welded wire fabric shall conform to AASHTO M 55 or M 221.

Concrete, welded wire fabric or reinforcing steel, and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".





SECTION F-F (REINF. ALTERNATE)

PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

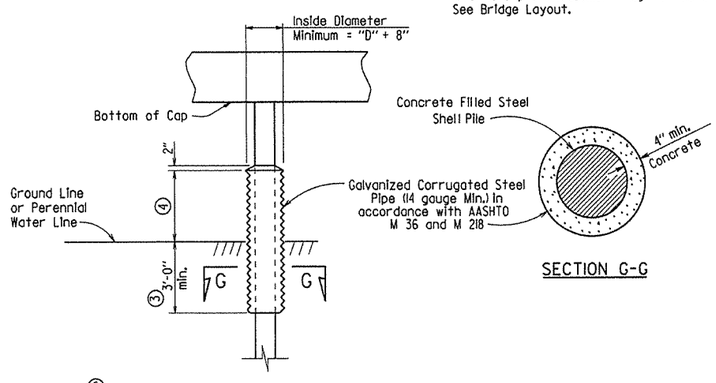
⑤(Shown with Encasement to Bottom of Cap)

③ Unless otherwise noted on Bridge Layout.

④ See Bridge Layout for height of pile encasement (3'-0" Minimum).

⑤ Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.

⑥ Alternate pile encasement may not be allowed. See Bridge Layout.



SECTION G-G

⑥ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on February 27, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

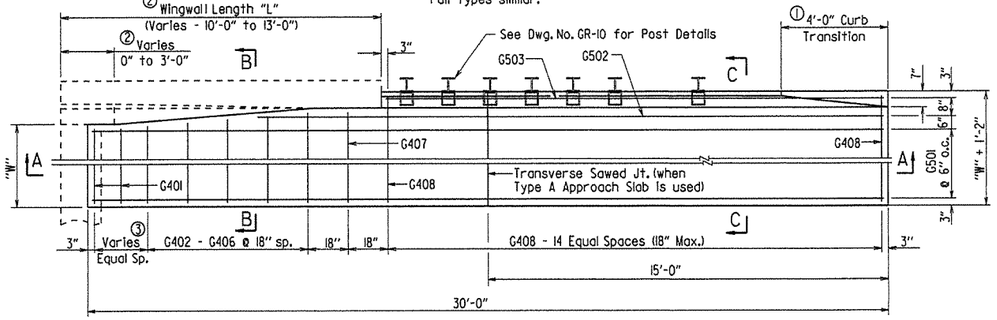
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55021.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

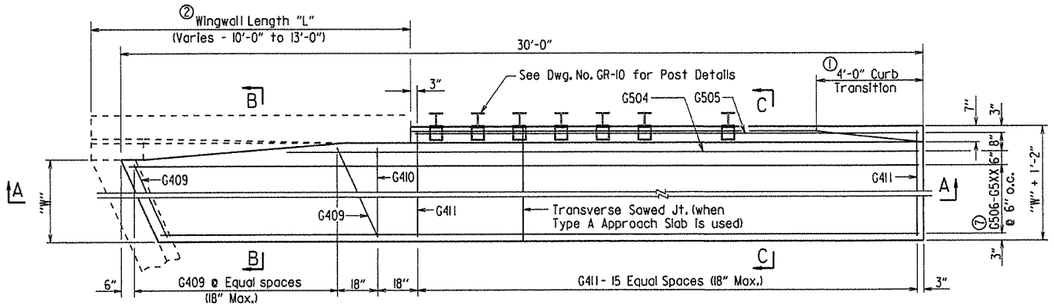
DRAWING NO. 55021

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		56	
				JOB NO.				
				①	TYPE A GUTTERS		55030A	

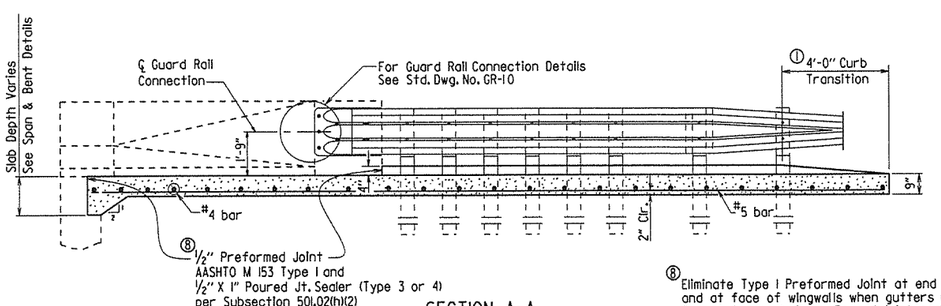


③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

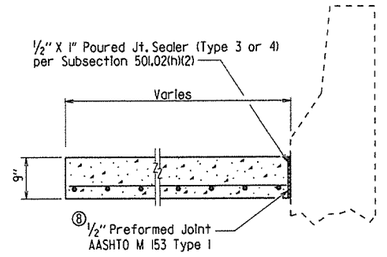


SECTION A-A

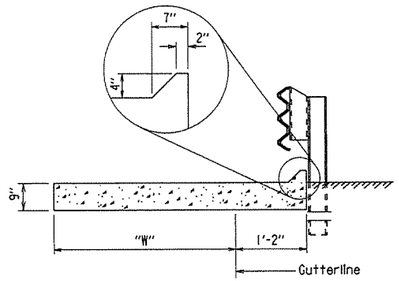
⑧ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type A Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

BAR LIST FOR ONE TYPE A GUTTER

	Mark	No. Req'd. for Width "W" 3'-0"	4'-0"	6'-0"	8'-0"	Length
Square Bridge	G401	④	④	④	④	"W"- 4"
	G402-G406	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	"W"+3"
	G408	15	15	15	15	"W"+ 10"
	G501	6	8	12	16	29'-8"
	G502	1	1	1	1	(35'-5") - "L"
	G503	1	1	1	1	30'-8"-"L"
Skewed Bridge	G409	⑥	⑥	⑥	⑥	⑤
	G410	1	1	1	1	"W"+3"
	G411	16	16	16	16	"W"+ 10"
	G504	1	1	1	1	⑤
	G505	1	1	1	1	⑤
	G506 - G5XX ⑦	1 each	1 each	1 each	1 each	⑤

④ 0 for "L" = 10'
1 for "L" = 11'
2 for "L" = 12'
2 for "L" = 13'

⑦ G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ No. Req'd. varies with Skew and Wingwall length.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
3	285	3.40
4	360	4.25
6	515	5.90
8	665	7.55

Quantities are based on "L" = 10'-0".

Note:
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Gutters will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

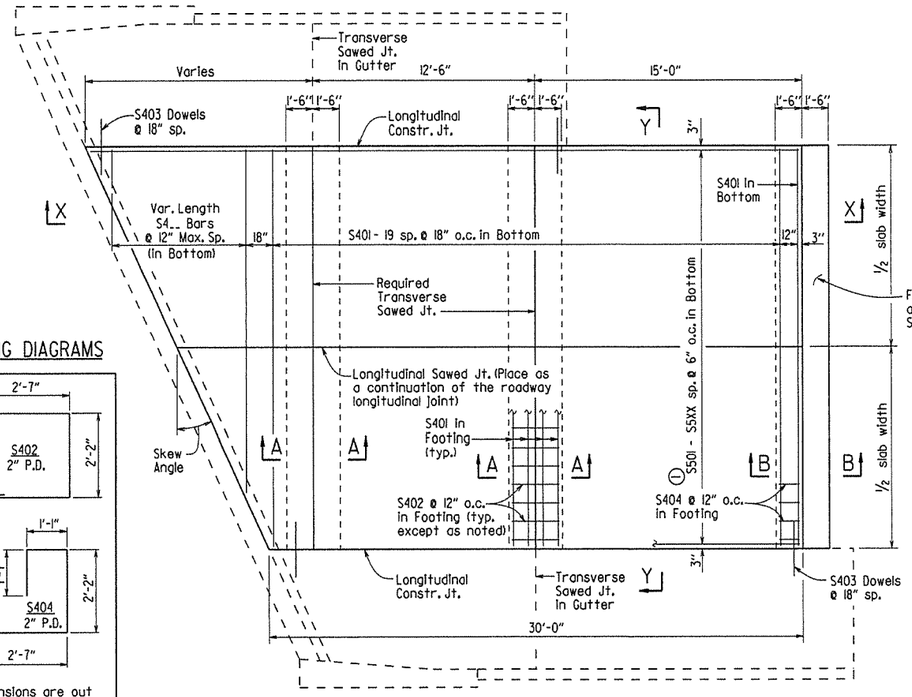
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

DRAWING NO. 55030A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		57	
				JOB NO.				

TYPE A APPROACH SLAB 55040A



PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

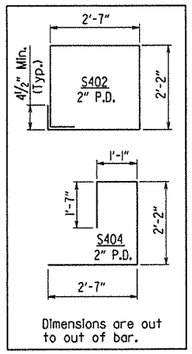
1/4" = 1'-0"

Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.

① S5XX = S540 for 20'-0" Width
= S544 for 22'-0" Width
= S548 for 24'-0" Width
= S572 for 36'-0" Width

BENDING DIAGRAMS



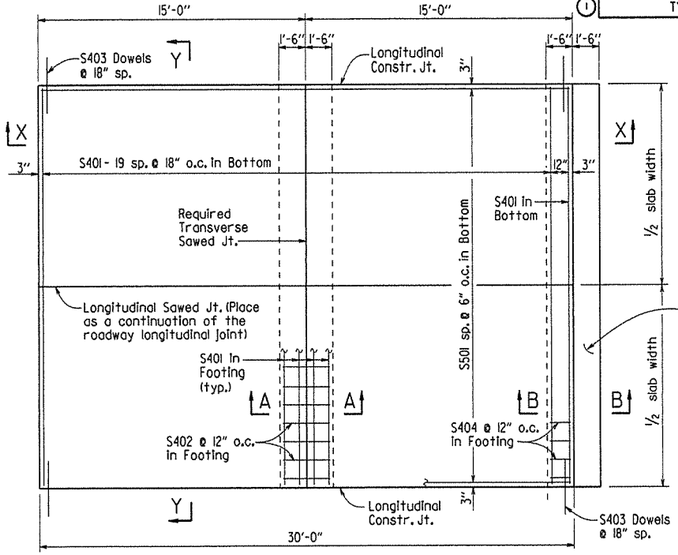
Dimensions are out to out of bar.

BAR LIST

(Square & Skewed Approach Slabs)

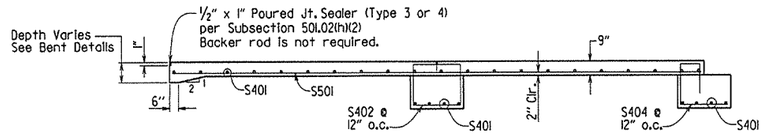
	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
20'-0" Slab Width	S401	29	19'-8"	33	19'-8"
	S402	20	9'-10"	40	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	20	7'-2"	20	7'-2"
	S4__	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	40	29'-8"	—	—
	S501 - S540	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 19.75' (tan skew angle)
22'-0" Slab Width	S401	29	21'-8"	33	21'-8"
	S402	22	9'-10"	44	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	22	7'-2"	22	7'-2"
	S4__	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	29'-8"	—	—
	S501 - S544	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 21.75' (tan skew angle)
24'-0" Slab Width	S401	29	23'-8"	33	23'-8"
	S402	24	9'-10"	48	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	24	7'-2"	24	7'-2"
	S4__	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	48	29'-8"	—	—
	S501 - S548	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 23.75' (tan skew angle)
36'-0" Slab Width	S401	29	35'-8"	33	35'-8"
	S402	36	9'-10"	72	9'-10"
	S403	40	3'-0"	*	3'-0"
	S404	36	7'-2"	36	7'-2"
	S4__	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	72	29'-8"	—	—
	S501 - S572	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 35.75' (tan skew angle)

*Varies with skew angle



PLAN - SQUARE APPROACH SLAB

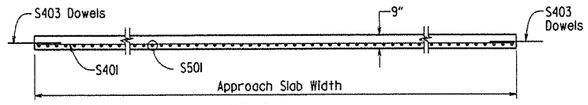
1/4" = 1'-0"



SECTION X-X

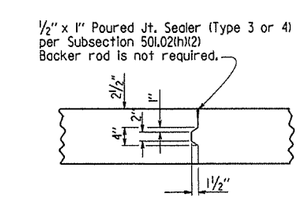
SQUARE APPROACH SLAB SHOWN

1/4" = 1'-0"



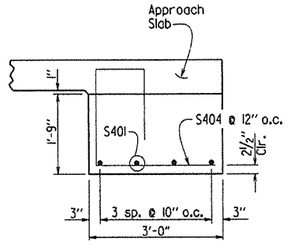
SECTION Y-Y

N.T.S.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

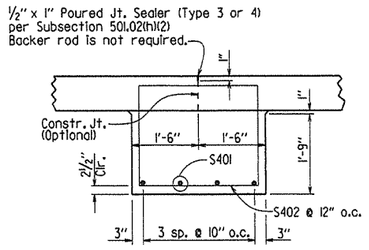
1" = 1'-0"



SECTION B-B

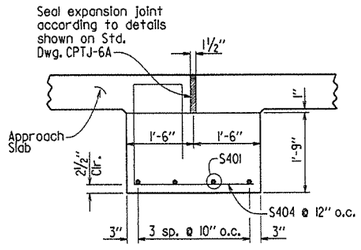
AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION A-A

N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
20'-0"	1925	24.85
22'-0"	2110	27.30
24'-0"	2300	29.90
36'-0"	3410	44.85

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zones 2, 3 & 4 and for the maximum skew angles shown below:

20'-0" Slab Width: Maximum Skew Angle = 45°
22'-0" Slab Width: Maximum Skew Angle = 45°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

All concrete shall be Class S (AE) with a minimum 28 day compressive strength f'c = 4,000 psi and shall be poured in the dry.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

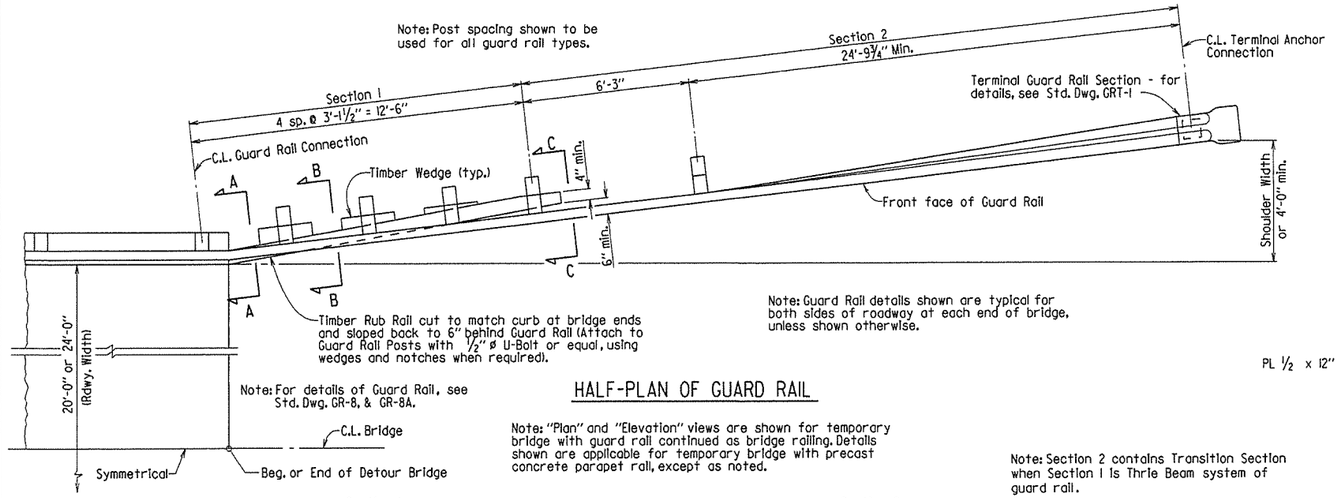
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040a.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

DRAWING NO. 55040A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		58	
				JOB NO.				
				①		TEMP. BRIDGE	55054	

Note: Post spacing shown to be used for all guard rail types.



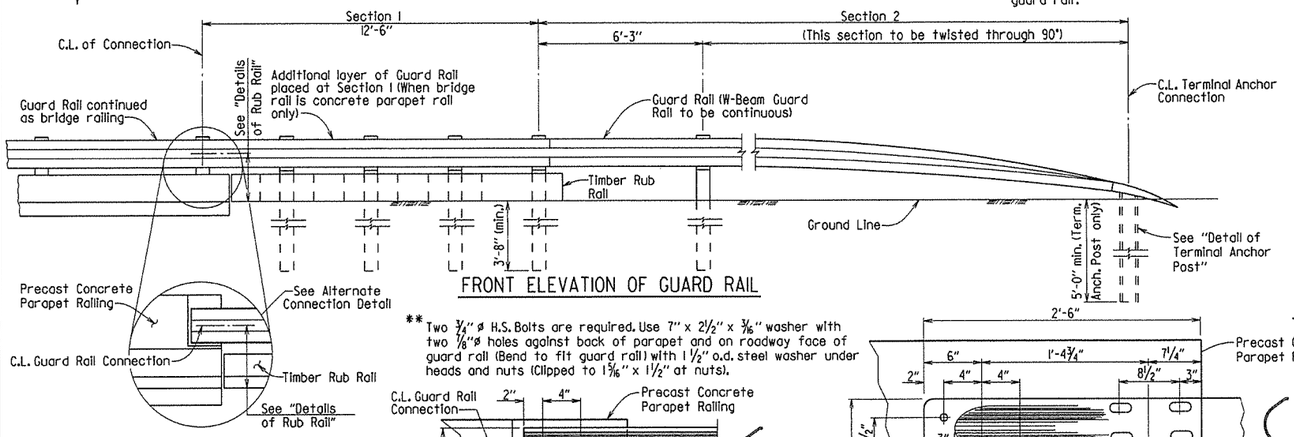
Note: For details of Guard Rail, see Std. Dwg. GR-8, & GR-8A.

Note: Guard Rail details shown are typical for both sides of roadway at each end of bridge, unless shown otherwise.

HALF-PLAN OF GUARD RAIL

Note: "Plan" and "Elevation" views are shown for temporary bridge with guard rail continued as bridge railing. Details shown are applicable for temporary bridge with precast concrete parapet rail, except as noted.

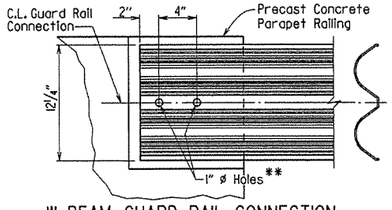
Note: Section 2 contains Transition Section when Section 1 is Thrie Beam system of guard rail.



FRONT ELEVATION OF GUARD RAIL

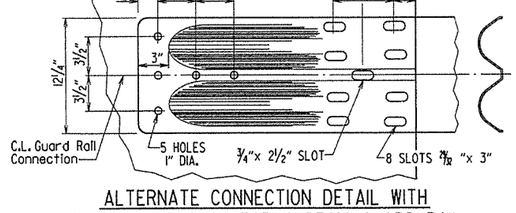
Note: For details of Thrie Beam system of guard rail, see Std. Dwg. GR-10 & GR-10A. Thrie Beam rail and five bolt connection as shown on GR-10 are required when precast rail has five cast holes for guard rail connection.

** Two ¾" ø H.S. Bolts are required. Use 7" x 2½" x ⅜" washer with two ⅞" ø holes against back of parapet and on roadway face of guard rail (Bend to fit guard rail) with 1½" o.d. steel washer under heads and nuts (Clipped to 1⅝" x 1½" at nuts).



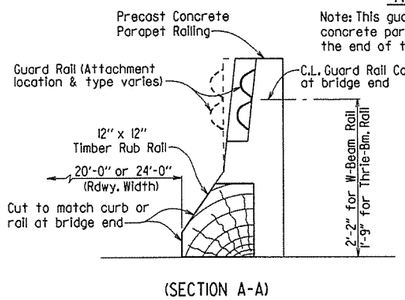
W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

Note: This guard rail connection will only be allowed on precast concrete parapet rail units with a 12½" x 14" x 3⅜" notch at the end of the unit for connection of guard rails.

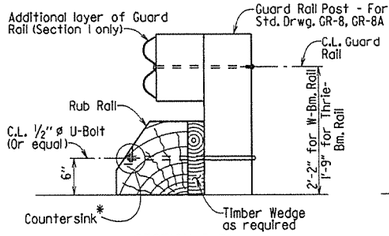


ALTERNATE CONNECTION DETAIL WITH SPECIAL END SHOE FOR W-BEAM GUARD RAIL CONNECTION AT CONCRETE PARAPET RAIL

Note: Special End Shoe and four ⅞" ø x 2½" H.S. Bolts are required when concrete insert anchor assembly is present in precast rail unit.

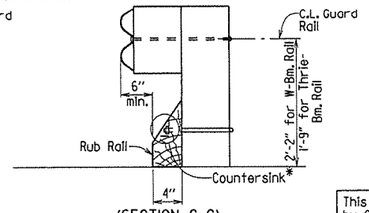


(SECTION A-A)



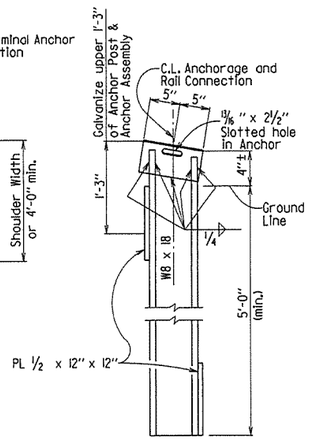
(SECTION B-B)

DETAILS OF RUB RAIL (CONC. PARAPET BRIDGE RAIL)

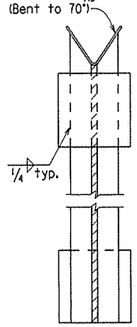


(SECTION C-C)

* U-Bolt Assembly, or equal, shall not project beyond rdwy. face of Rub Rail at any location.



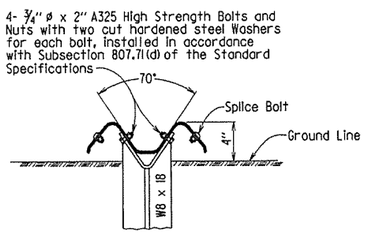
(ELEVATION)



(SECTION)

Note: Post shall be driven or set in dug hole and compacted.

DETAILS OF TERMINAL ANCHOR POST



DETAILS OF TERMINAL ANCHOR CONNECTION

GENERAL NOTES

Bridge End Protection is required on both sides of roadway at both ends of temporary bridge. The end protection system shall consist of a minimum of two end sections (Section 1 and Section 2). If additional guard rail is used, it shall be placed in Section 2 and shall have a maximum post spacing of 6'-3".

If W-Beam Guard Rail is also used as Bridge Rail, it shall be continuous from terminal anchor post to terminal anchor post with splices as shown on Std. Drwg. GR-8.

A doubled guard rail beam section (One W-Beam Rail section or one Thrie Beam Rail section nested inside the other) shall be required for Section 1 if the guard rail is not continued as bridge rail, but connects directly to a precast concrete parapet bridge rail end.

Rub rails shown in Section 1 are representative of members required to transition the curb or wheel guard section to a minimum distance behind the face of guard rail.

Timber rub rail, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

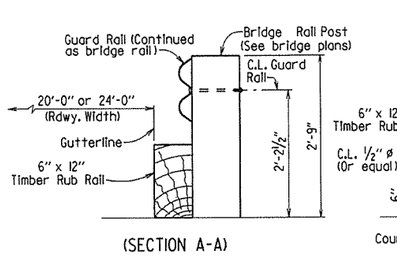
Except as noted, bolts shall conform to the requirements of ASTM A 307 and minimum dimensions as shown. Malleable or cast iron washers to be used under all bolt heads and nuts bearing on timber. High strength bolts shall conform to Section 807.

Guard rail as described in Subsection 617.01 of the Standard Specifications and these plans shall be constructed in accordance with Subsection 617.03. Subsection 617.02 is modified to allow the use of materials consistent with the requirements of Section 603.

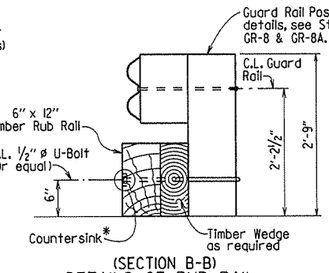
Payment: The bridge end protection system completed and accepted will not be paid for directly, but shall be included in the contract unit price bid per linear foot for temporary bridge structure, which price shall be full compensation for furnishing materials and erecting guard rail, line posts, blockouts, rub rails, terminal anchor posts, etc.; and for all labor, tools, equipment and incidentals necessary to complete the work.

GUARD RAIL CONNECTION COMBINATIONS

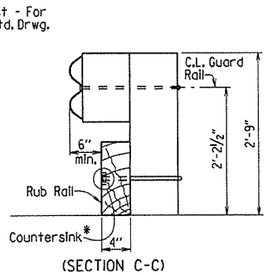
BRIDGE RAIL TYPE	GUARD RAIL AND CONNECTION TYPE
Guard Rail continued as bridge railing	W-Beam Guard Rail. See Std. Drwg. GR-8 for splice details.
Concrete Parapet with 12½" x 14" x 3⅜" notch and two cast in holes	W-Beam Guard Rail fastened with two high-strength bolts as shown; blunt end on guard rail. Guard Rail doubled at Section 1.
Concrete Parapet with Concrete Insert Anchor assembly (4-Bolt embedded Anchor) flush with rail face	W-Beam Guard Rail fastened with four high-strength bolts; Special End Shoe. Guard Rail doubled at Section 1.
Concrete Parapet with 5 cast in holes	Thrie Beam Guard Rail; five high-strength through bolts with back-up plate; special end shoe as shown on Std. Dwg. GR-10. Guard Rail doubled at Section 1. Section 2 contains transitional rail and W-Beam Guard Rail.



(SECTION A-A)



(SECTION B-B)



(SECTION C-C)

DETAILS OF RUB RAIL (CONTINUOUS W-BEAM RAIL)

STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE BRIDGE END PROTECTION SYSTEM

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on April 17, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS ★★★ REGISTERED PROFESSIONAL ENGINEER ★★★ No. 7510 CARL J. FUSELIER

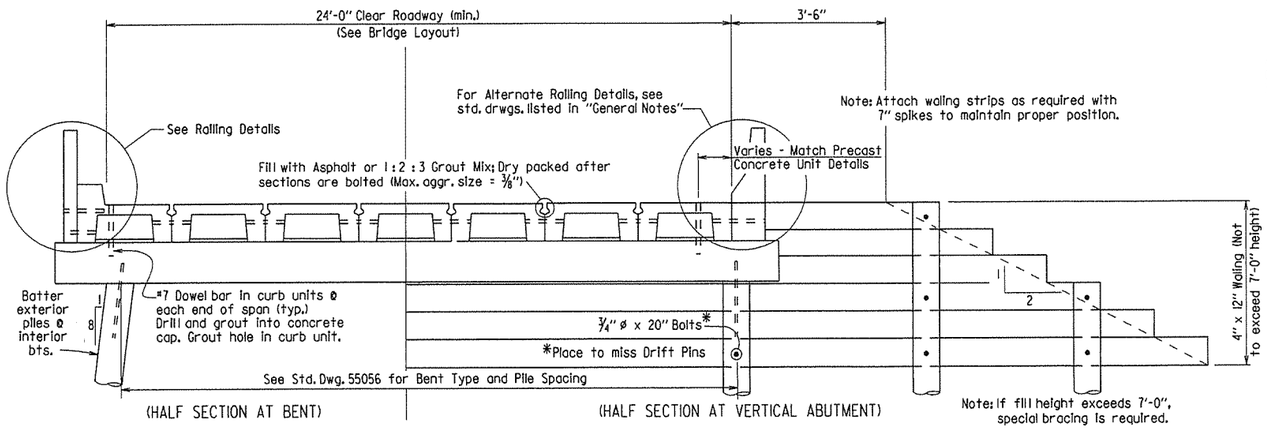
BRIDGE ENGINEER

DRAWN BY:	JYP	DATE:	4-17-14	FILENAME:	b55054.dgn
CHECKED BY:	AMS	DATE:	4-17-14	SCALE:	No Scale
DESIGNED BY:	STD.	DATE:	—		

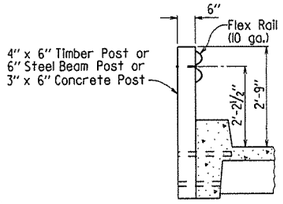
DRAWING NO. 55054

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		59	
				JOB NO.				

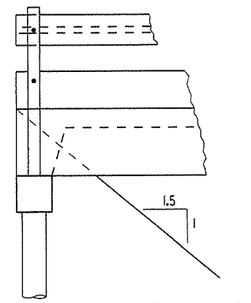
TEMP. BRIDGE 55055



TYPICAL ROADWAY SECTION

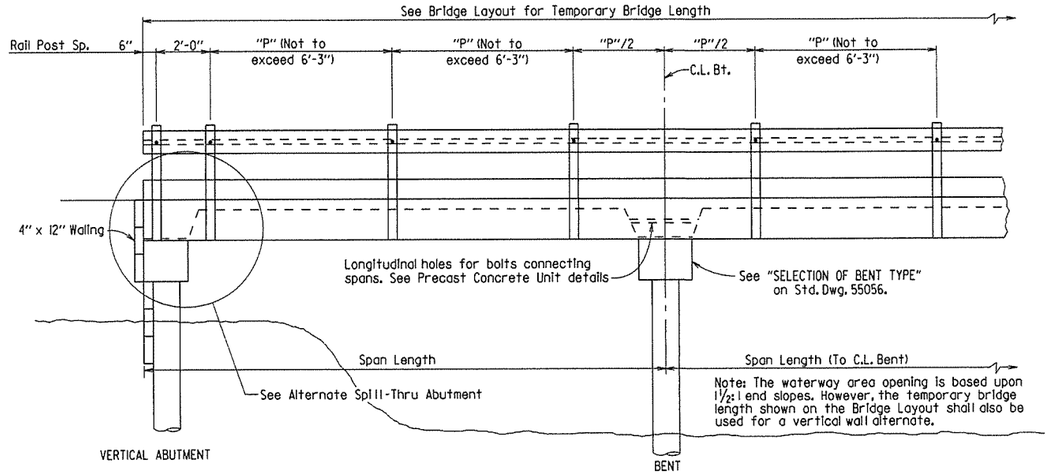


RAILING DETAILS

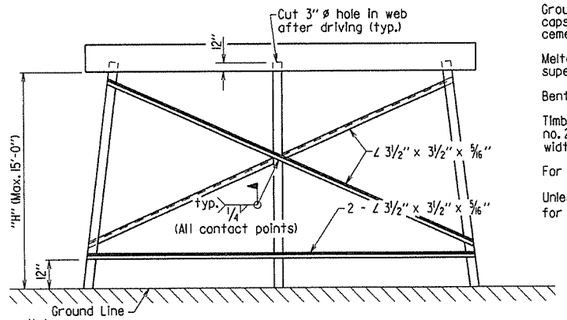


Note: Piles for Alternate Abutment to be driven after embankment is in place.

ALTERNATE SPILL-THRU ABUTMENT



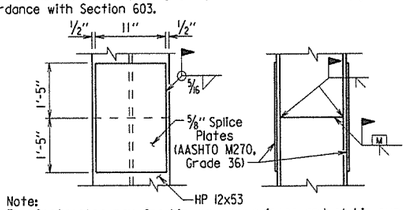
LONGITUDINAL SECTION



Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment for any bracing required shall be considered incidental to Item 603 "Temporary Bridge Structure".

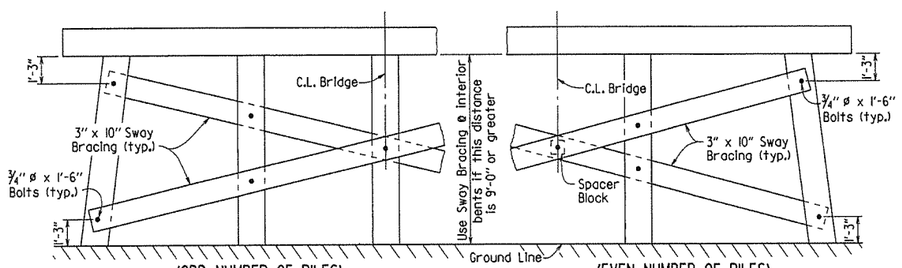
Omit bottom bracing when "H" is less than 10'. Omit all bracing when "H" is less than 5'. When "H" exceeds 15', additional X-bracing is required to provide a maximum unbraced pile length of 14'.

DETAILS OF BRACING FOR STEEL PILES



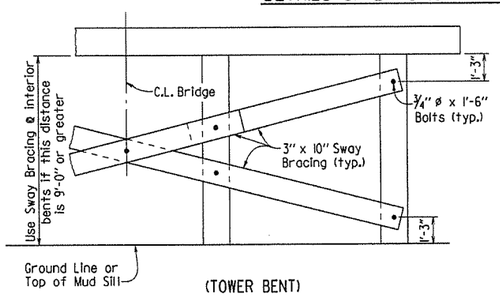
Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 ft. A proprietary steel pile splicer sufficient to develop the full strength of the section may be substituted for the details shown. Pile splicers shall be installed in accordance with manufacturer's recommendations.

PILE SPLICE DETAIL



DETAILS OF SWAY BRACING FOR TIMBER PILES

Note: Sway Bracing, if required, shall be used on both lines of piles for Tower Bents.



This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on April 17, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

GENERAL NOTES

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges, 2002 Edition, with current interim specifications.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2014 Edition, with applicable special provisions and supplemental specifications.

SEISMIC PERFORMANCE ZONE: 1

DESIGN LIVE LOADS: H 15-44 (No Overload).

DESIGN DEAD LOADS: 50 lbs. per cu. ft. for lumber
150 lbs. per cu. ft. for concrete

Precast Concrete Units shall comply with the requirements of AHTD standard drawings and special provisions. Drawings for old style units are within the drawing series 5291 thru 5307 and 14800 thru 14899. New style units (Current Design) are within the drawing series 15190 thru 15400.

Load Factor Design is used for the new style precast concrete units. Allowable Stress Design is used for the old style precast concrete units and timber components. The allowable unit stresses used assume normal duration of loading for stress grades of sawn lumber and are as follows:

fb=1200 psi
fv=85 psi

Concrete shall be Class S with a minimum 28 day compressive strength f'c = 3500 psi unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Structural Steel shall be AASHTO M 270, Grade 36 unless otherwise noted.

Timber piling shall comply with Section 818 of the Standard Specifications and shall be driven to a minimum bearing capacity of 20 tons per pile. Steel piling shall be HP12x53 and shall be driven to a minimum bearing capacity of 44 tons per pile.

Malleable or cast iron washers shall be used under all bolt heads and nuts bearing on timber. Standard washers shall be provided under all bolt heads and nuts in connection with concrete.

Bolts shall conform to the requirements of ASTM A 307. ASTM A 307 Threaded Rods may be used in lieu of bolts. Minimum dimensions are shown for bolts, dowels, and drift pins.

Grout placed around Drift Pins in piles shall be allowed to cure for 72 hours before caps are used to support the superstructure. Grout to consist of one part portland cement to two parts sand.

Melted sulfur may be used in lieu of grout placed around drift pins. The superstructure may be placed as soon as the sulfur has hardened.

Bent caps to be handled from points approximately 5' from the ends.

Timber material, regardless of species, must be of equal or better strength than no. 2 southern pine or douglas fir, graded by the standard grading rules. All timber widths and thicknesses are shown as nominal.

For additional notes concerning "Bridge End Protection System", see Std. Dwg. 55054.

Unless otherwise noted, the Temporary Bridge Structure shall comply with and be paid for in accordance with Section 603.

SHEET 1 OF 2

STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY WIDTH

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

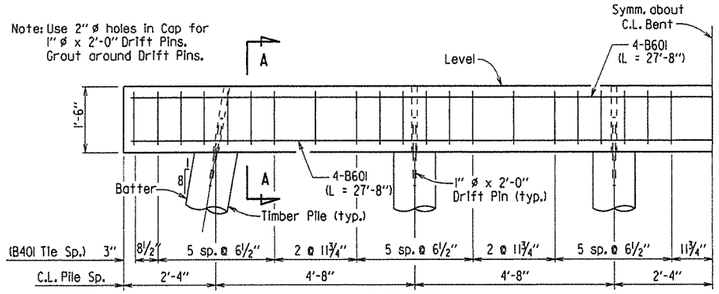
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-17-14 FILENAME: b55055.dgn
CHECKED BY: AMS DATE: 4-17-14 SCALE: No Scale
DESIGNED BY: STD. DATE: —

DRAWING NO. 55055

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		60	
				JOB NO.				
				①		TEMP. BRIDGE	55056	

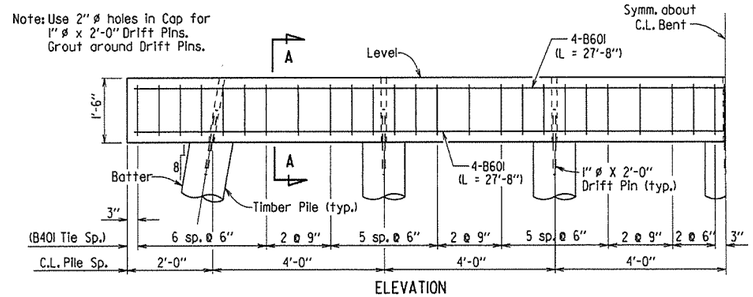
Note: Reinforcing steel in cap shall be placed to not interfere with dowel bars.



ELEVATION

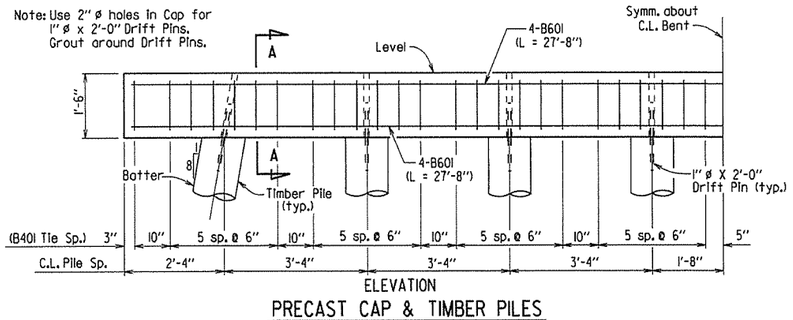
PRECAST CAP & TIMBER PILES
("SI" + "S2" ≤ 38')

"S" = Span Length



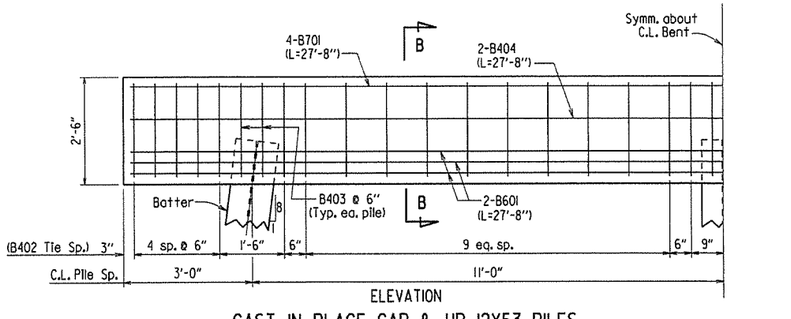
ELEVATION

PRECAST CAP & TIMBER PILES
(38' < "SI" + "S2" ≤ 50')



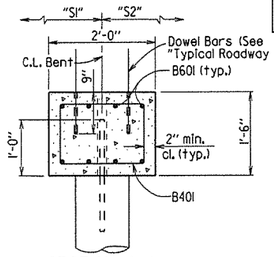
ELEVATION

PRECAST CAP & TIMBER PILES
(50' < "SI" + "S2" ≤ 62')



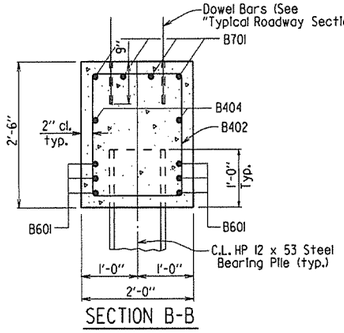
ELEVATION

CAST IN PLACE CAP & HP 12X53 PILES

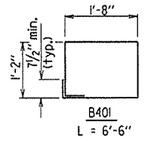


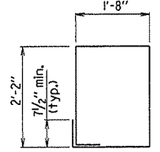
SECTION A-A

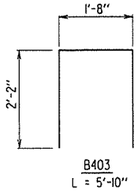
NOTE: THE ENDS OF ALL PRECAST SPANS SHALL BE FIXED TO THE CAP USING 1 DOWEL BAR IN EACH OF THE CURB UNITS.

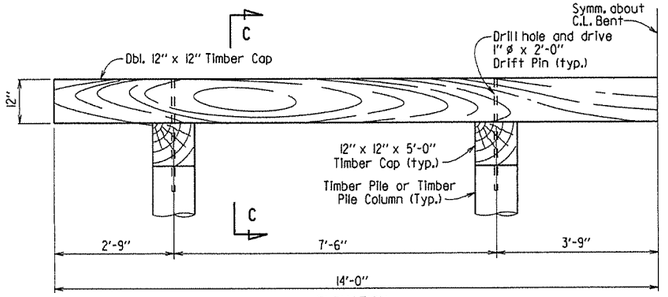


SECTION B-B



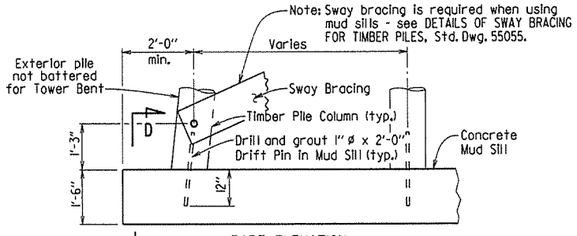






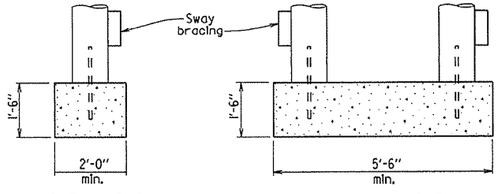
ELEVATION

TOWER BENT - TIMBER CAP & PILES



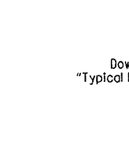
PART ELEVATION

MUD SILL DETAILS



SECTION D-D
(When bottom of cap to top of mud sill is 10' or less)

SECTION D-D
(When bottom of cap to top of mud sill is greater than 10')



SECTION C-C

SELECTION OF BENT TYPES

These temporary bridge drawings provide the following bent types:
- Driven timber piles with precast concrete cap.
- Driven steel HP 12x53 piles with cast in place concrete cap.
- Tower bent with driven timber piles and timber cap.
- Mud sill with timber pile columns and precast concrete cap.
- Tower bent with mud sill and timber pile columns and timber cap.

Guidelines to be used in determining the appropriate bent type are:

1) Driven piles may be used at intermediate bents if a pile penetration of at least 15' below the ground line can be obtained. At end bents, a pile penetration of at least 5' below the bottom of cap is required. Pile penetration measurements at end bents can include embankment, but fill material may not be placed around intermediate bent piles in order to meet the 15' requirement.

2) If driven timber piles are used at intermediate bents and the distance from the bottom of cap to ground line exceeds 15' at any intermediate bent, tower bents must be used at the minimum rate of one tower bent for every 160' of total bridge length. Tower bent(s), when required, shall be placed at the bent location(s) having the greatest distance from bottom of cap to ground line.

3) If piles cannot be practically driven at a bent, mud sills shall be used. All soft and yielding material shall be removed from the bearing area before placing the sill concrete.

4) Timber piles shall be used as columns in mud sills. The column spacing shall be the same as that used for driven timber pile bents for the appropriate span lengths involved.

5) If a mud sill is to be used and the distance from the bottom of cap to ground line is more than 10', a tower bent with mud sill must be used at that location.

6) A timber cap may be used only if tower bents are used.

This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on April 17, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 2

STANDARD DETAILS FOR TEMPORARY BRIDGE STRUCTURE PRECAST CONCRETE SPANS 24' ROADWAY WIDTH

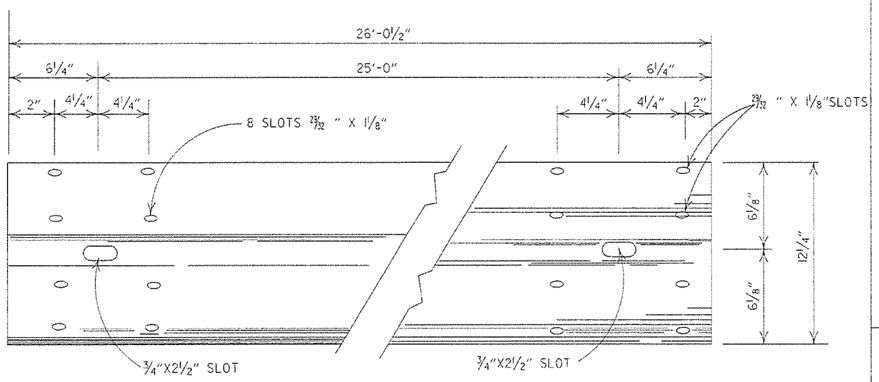
ROUTE SEC.

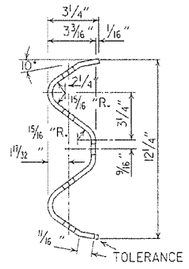
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-17-14 FILENAME: b55055.dgn
CHECKED BY: AMS DATE: 4-17-14 SCALE: No Scale
DESIGNED BY: STD. DATE: —

DRAWING NO. 55056

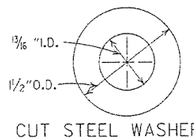




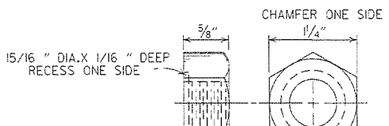
DETAILS OF W-BEAM GUARD RAIL

RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.

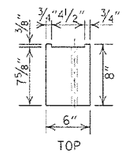
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

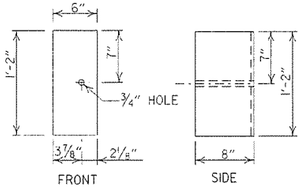


NUT

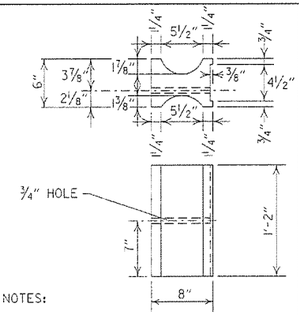


WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



WOOD BLOCKOUT (W-BEAM)

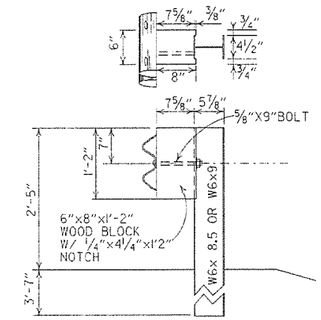


NOTES:

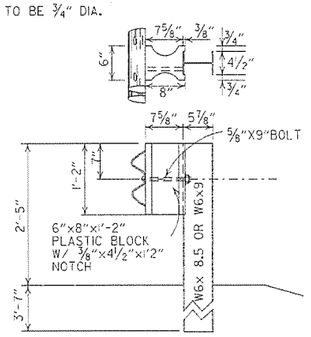
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.

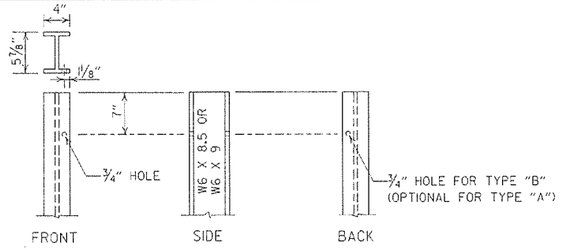


WOOD BLOCKOUT CONNECTIONS

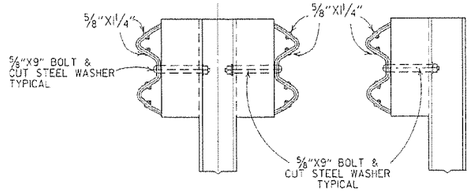


PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

WHERE W-BEAM GUARD RAIL CONTINUES, THE INTERMEDIATE SECTIONS SHALL HAVE A POST SPACING OF 6'-3" UNLESS OTHERWISE NOTED.

W-BEAM GUARD RAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

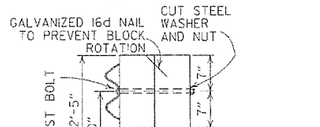
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

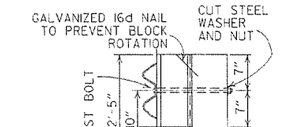
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS



PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

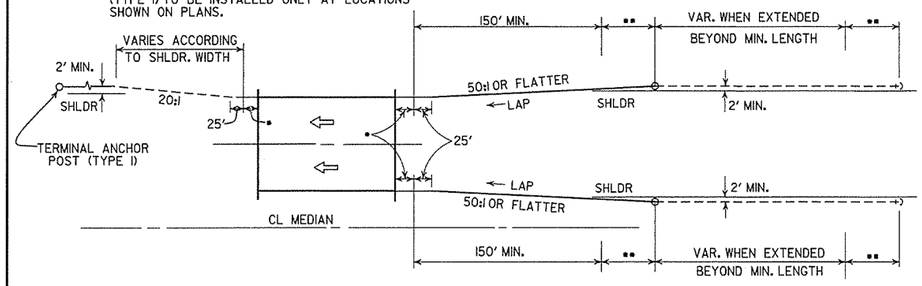
DATE	REVISION	DATE FILM
7-4-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-5-91
8-2-90	REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
3-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

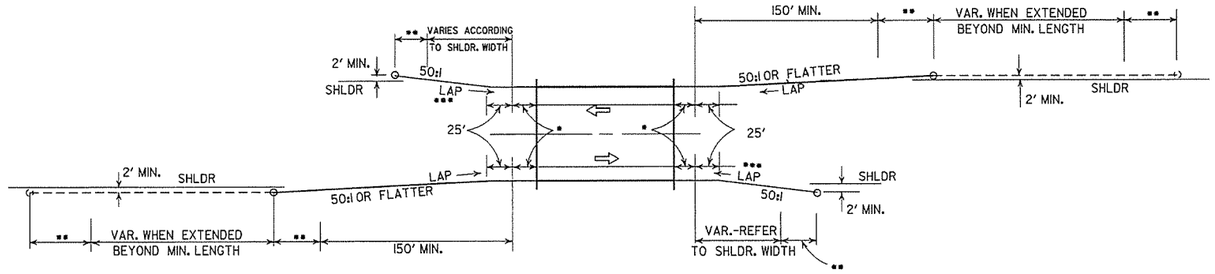
STANDARD DRAWING GR-8

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

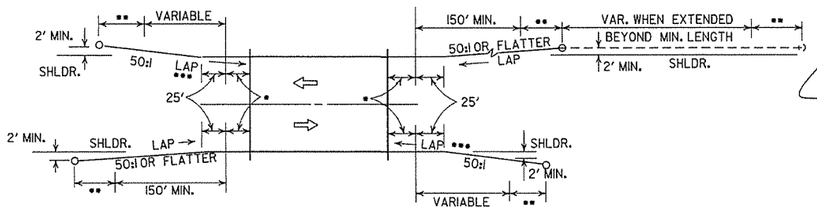
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

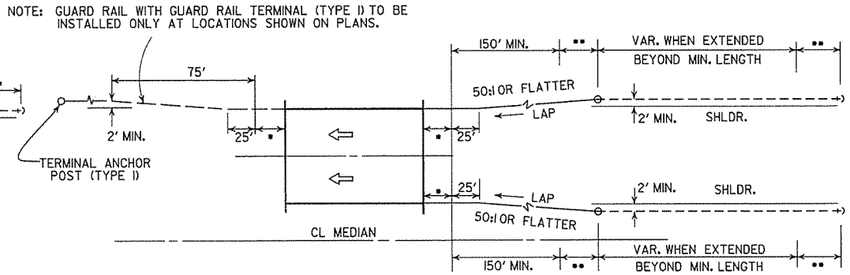
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

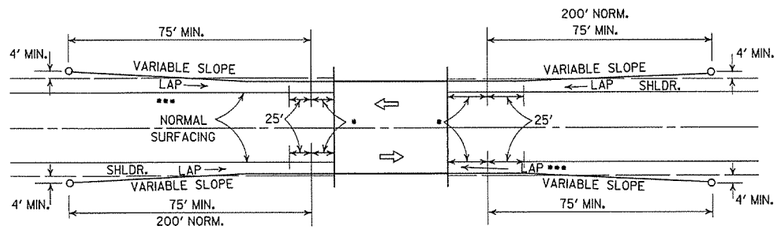
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

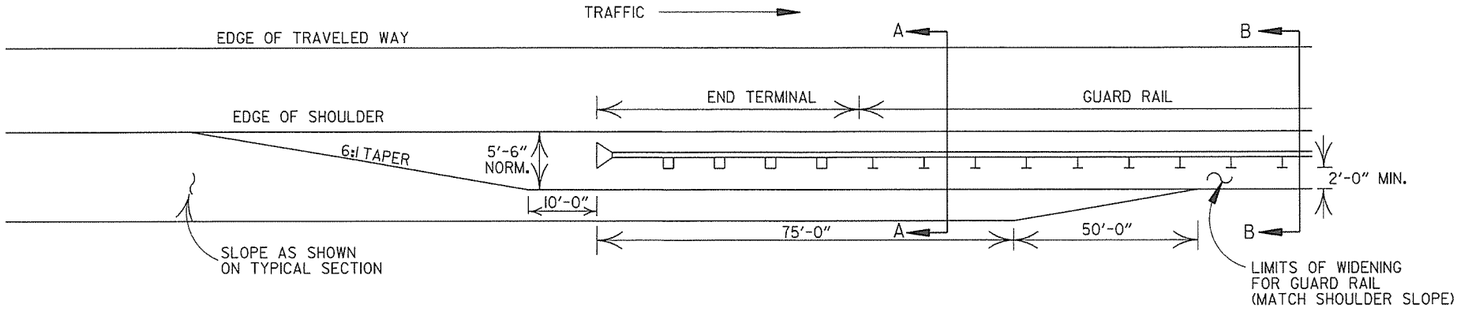
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

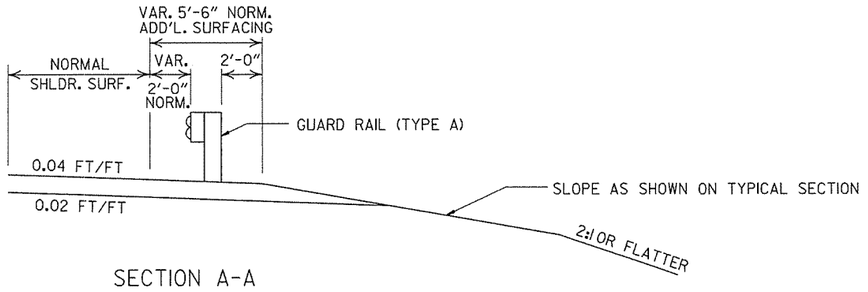
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

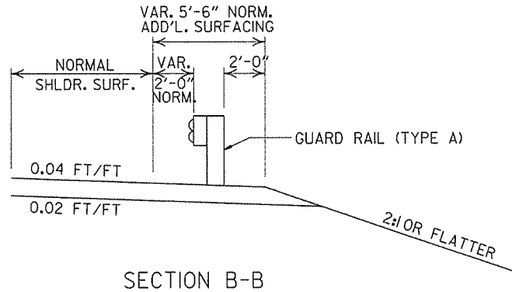
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





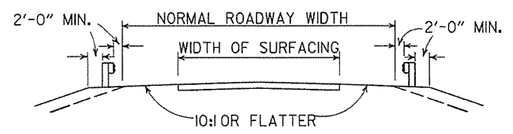
SECTION A-A



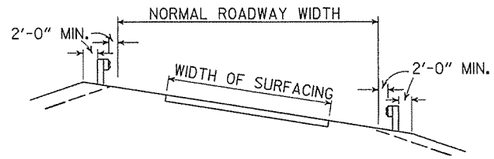
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARD RAIL.

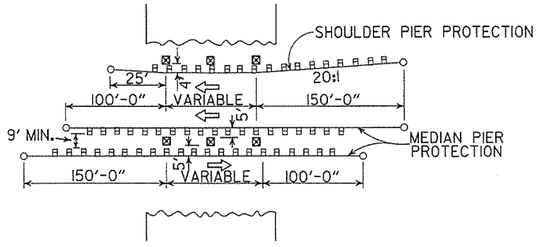


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



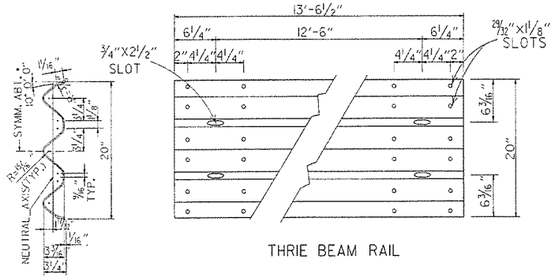
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

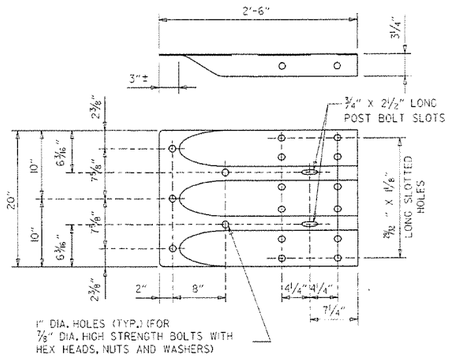
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



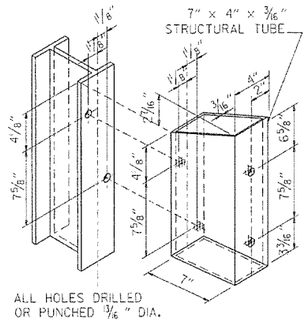
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



1" DIA. HOLES (TYP.) FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

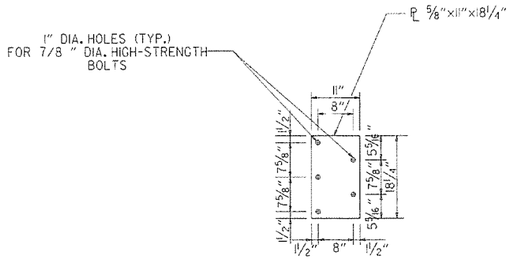
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

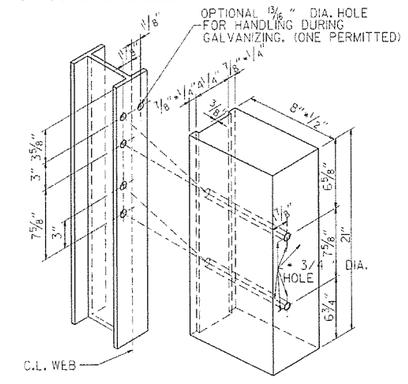
ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.



CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.

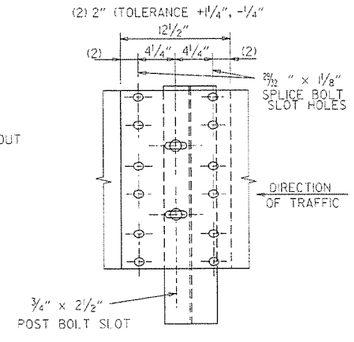
NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



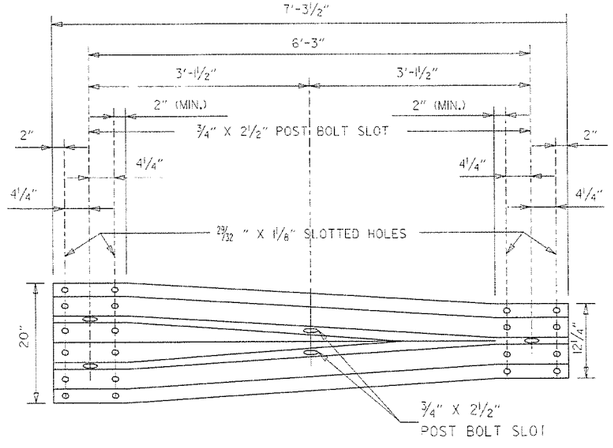
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

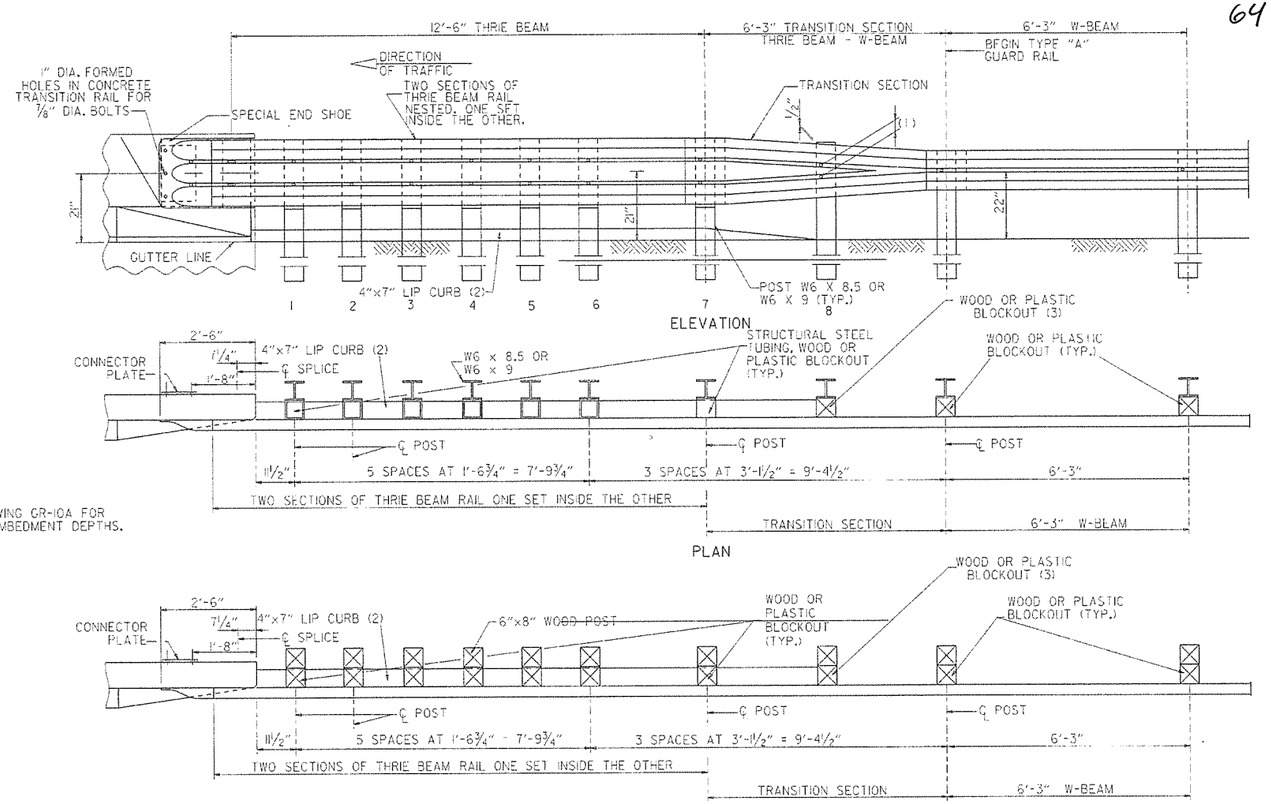
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION



(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE II.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7# (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

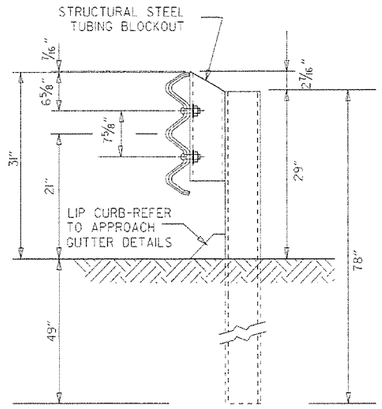
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

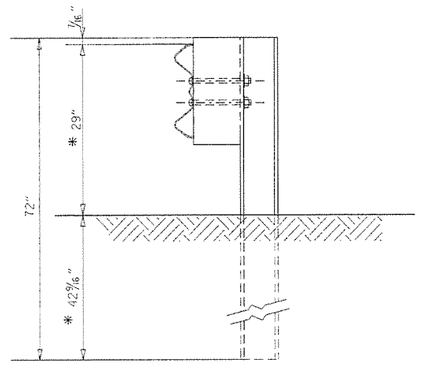
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

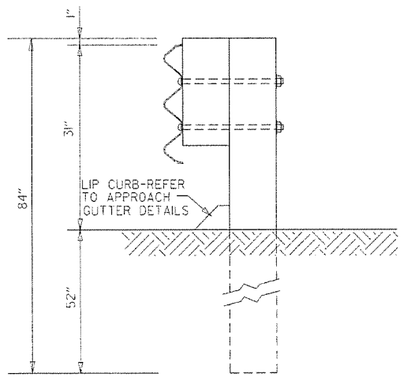


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

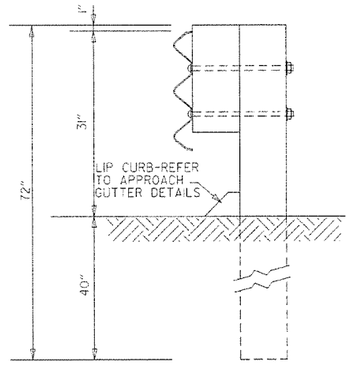


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

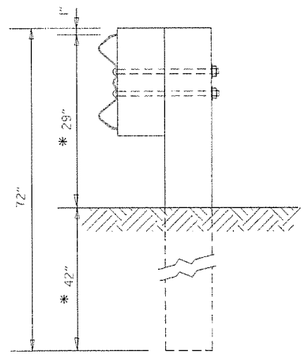
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

GENERAL NOTES:

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

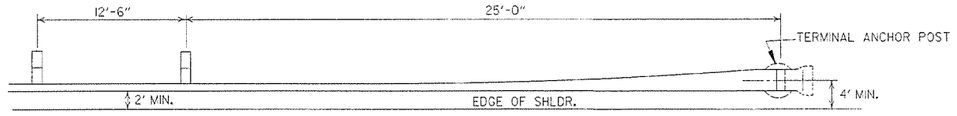
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO.1 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

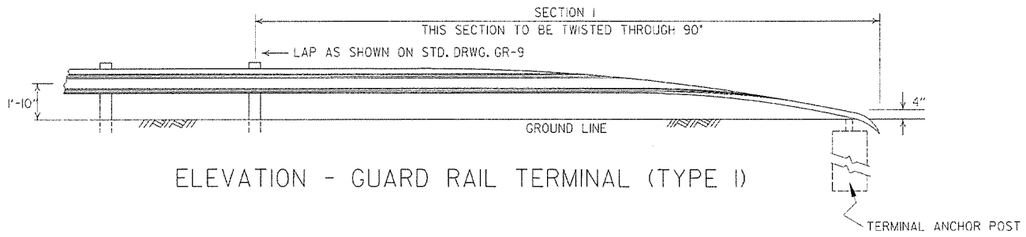
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

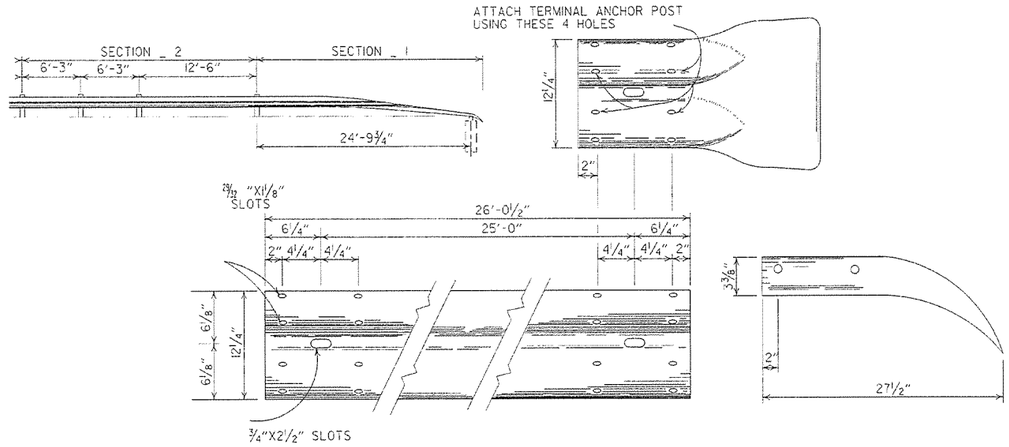


PLAN - GUARD RAIL TERMINAL (TYPE I)



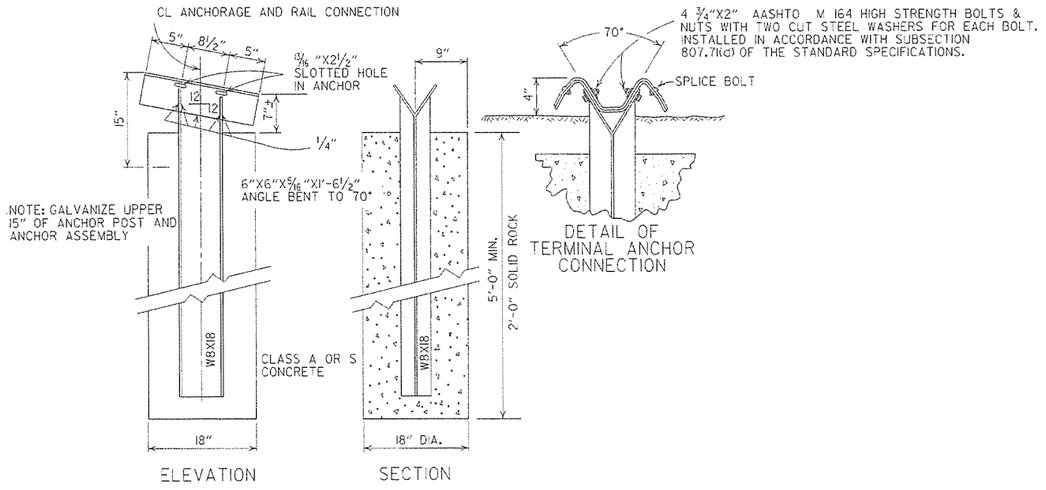
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS I AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.



SECTION I

TERMINAL SECTION



NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
6-26-97	REVISED LAP NOTE	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-3-94	DIMENSION TERMINAL DETAIL	
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92
10-1-92	DRAWN & ISSUED	10-1-92

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31 5/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206.

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

EQUIV. DIA.	AASHTO M 207	
	SPAN	RISE
INCHES	INCHES	
18	23	14
24	30	19
27	34	22
30	38	24
33	42	27
36	45	29
39	49	32
42	53	34
48	60	38
54	68	43
60	76	48
66	83	53
72	91	58
78	98	63
84	106	68

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(1).

NOTE: HAUNCH AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF CONCRETE PIPE.

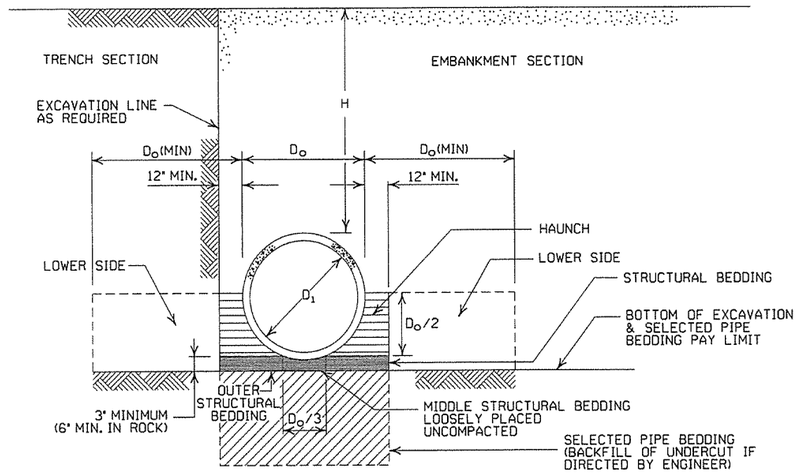
- LEGEND -

D_i = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

*SM-3 WILL NOT BE ALLOWED.

**MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170. R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

NOTE: FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM OF 12" OF PAVEMENT AND/OR BASE.

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

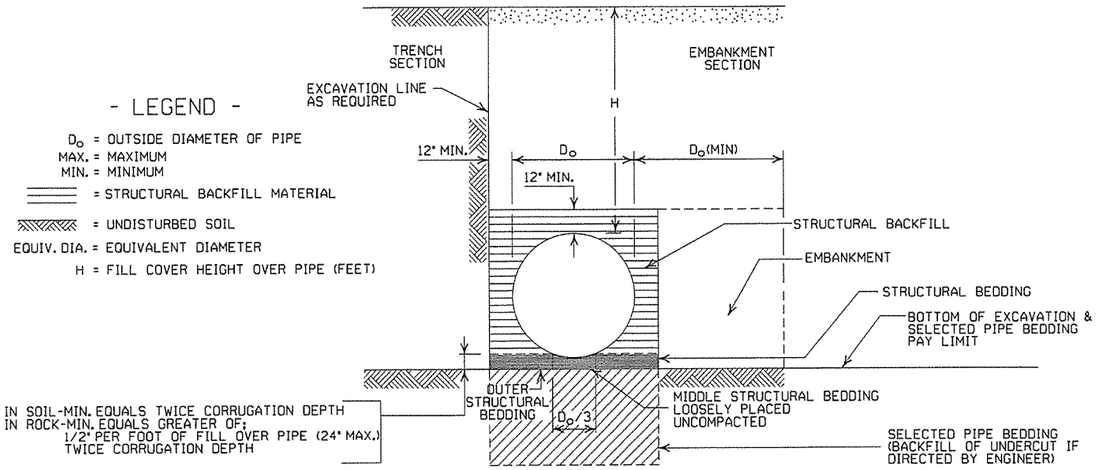
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION TYPE 2	INSTALLATION TYPE 1			
36	40x31	5	0.079	3	2	12	15	
42	46x36	6	0.079	3	2	13	15	
48	53x41	7	0.079	3	2	13	15	
54	60x46	8	0.079	3	2	13	15	
60	66x51	9	0.079	3	2	13	15	
66	73x55	12	0.079	3	2	15	15	
72	81x59	14	0.079	3	2	15	15	
78	87x63	14	0.079	3	2	15	15	
84	95x67	16	0.109	3	2	15	15	
90	103x71	16	0.109	3	2	15	15	
96	112x75	18	0.109	3	2	15	15	
102	117x79	18	0.109	3	2	15	15	
108	128x83	18	0.138	3	2	15	15	

① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

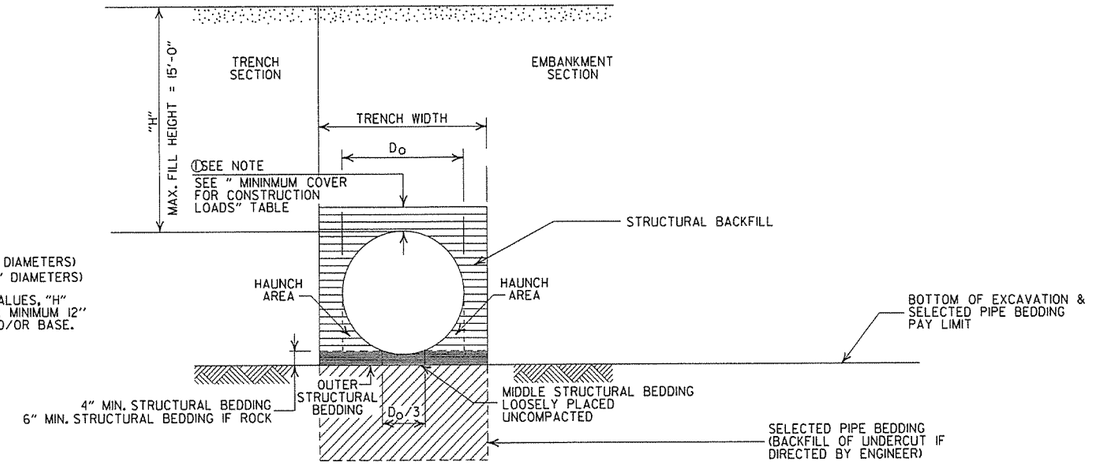
STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
Ø = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PVC PIPE.

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

MULTIPLE INSTALLATION OF PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

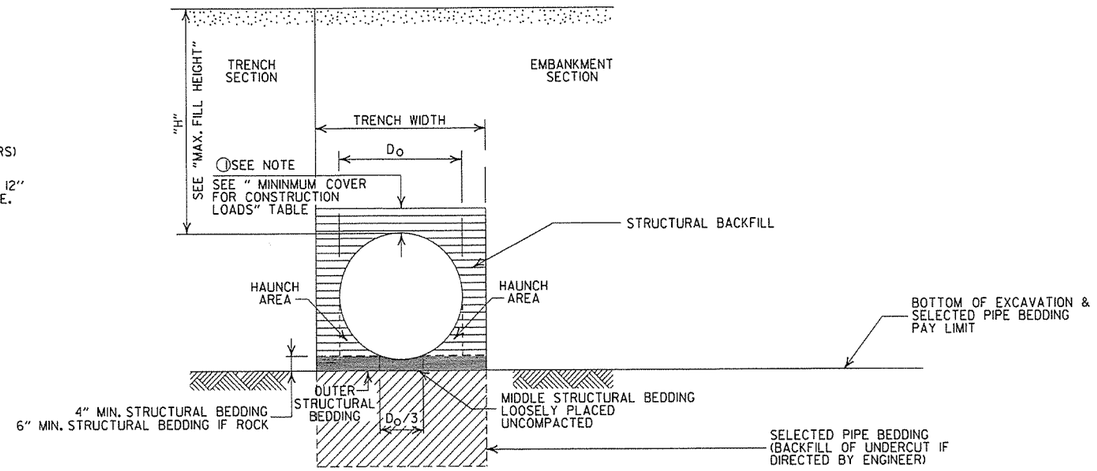
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

H = FILL HEIGHT (FT.)
D_O = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

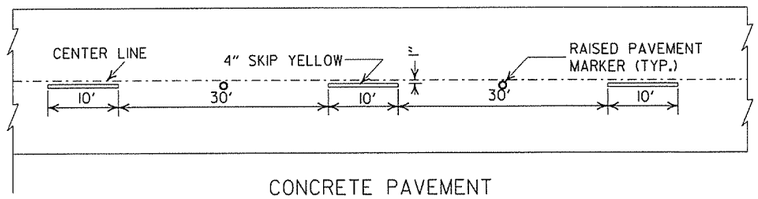
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

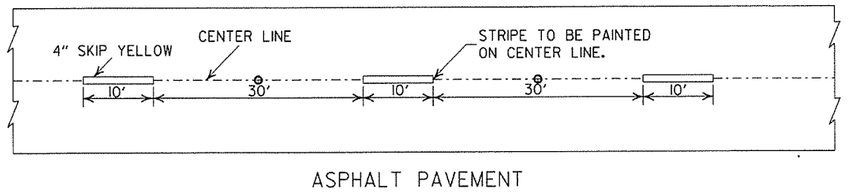
STANDARD DRAWING PCP-2

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.

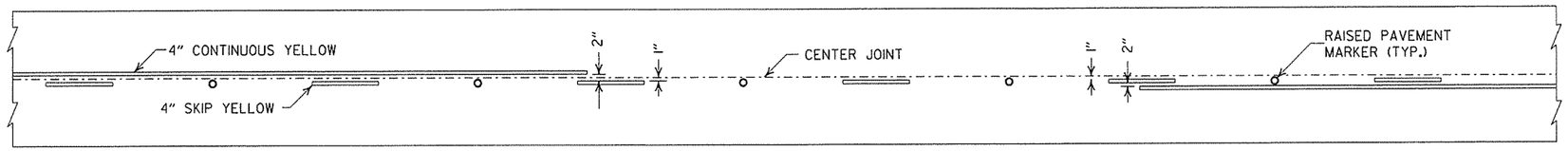


CONCRETE PAVEMENT

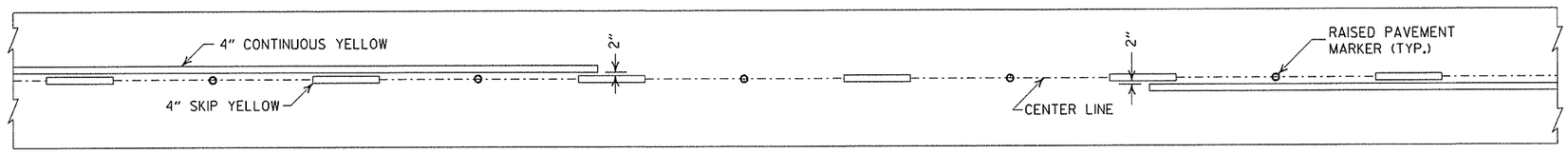


ASPHALT PAVEMENT

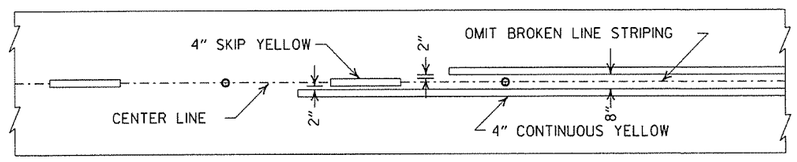
BROKEN LINE STRIPING



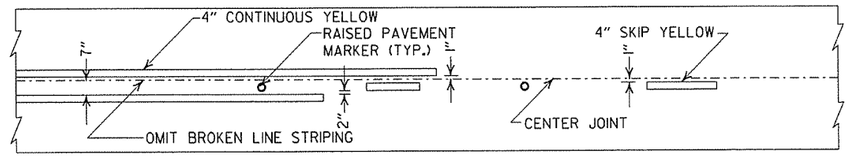
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

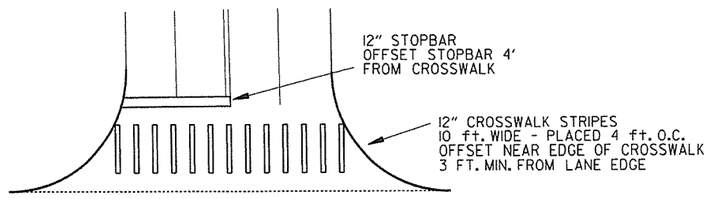


ASPHALT PAVEMENT



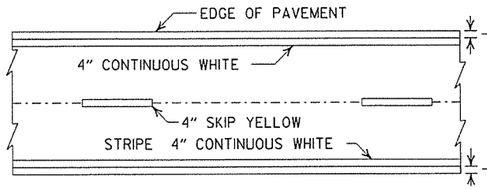
CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

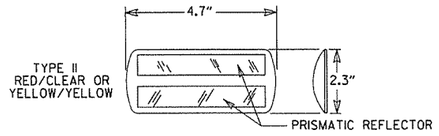


CROSSWALK AND STOPBAR DETAILS

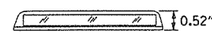
2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING



NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

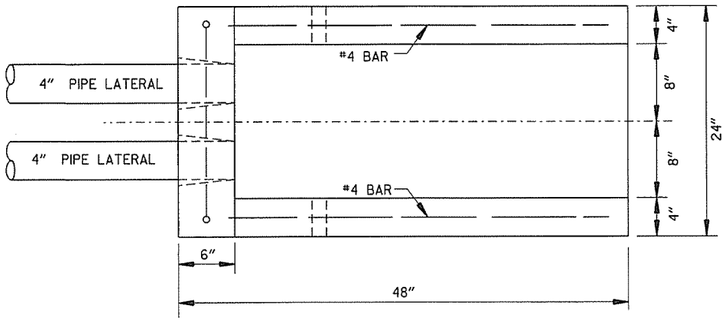
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

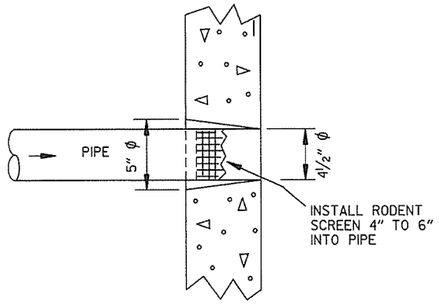
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

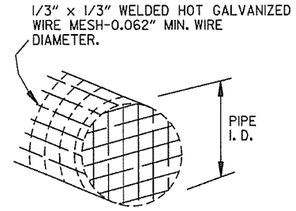
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



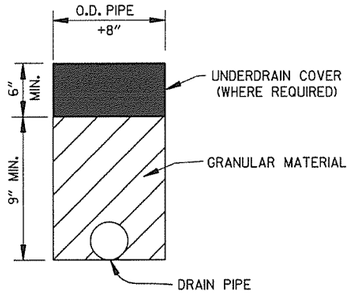
PLAN VIEW

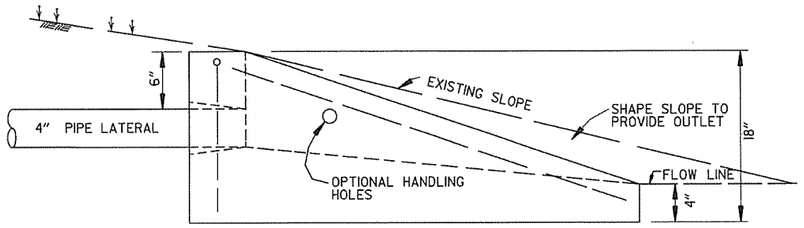


DETAIL OF HOLE FOR 4" PIPE

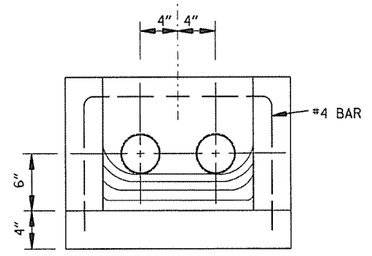


DETAIL OF RODENT SCREEN

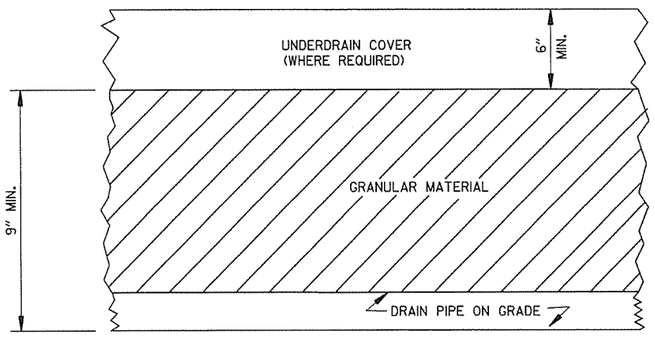




SIDE VIEW

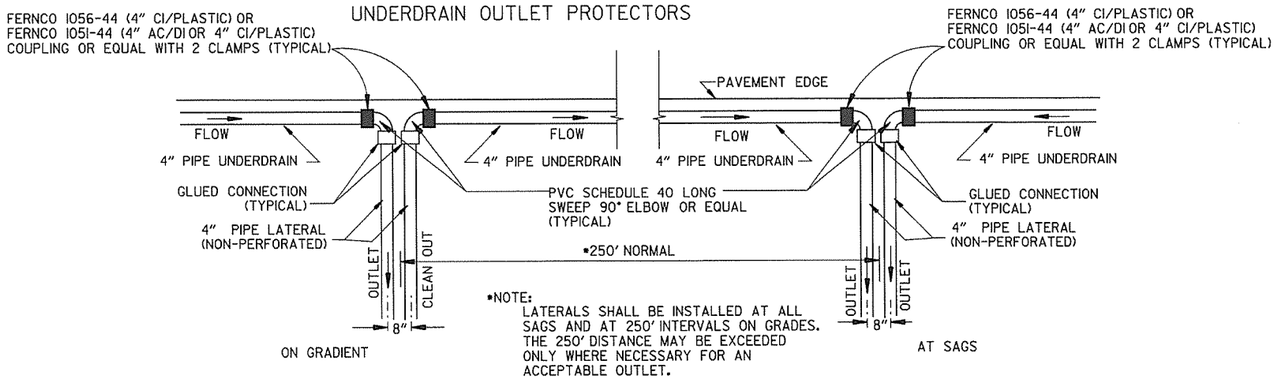


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

DATE	REVISION	DATE FILMED
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

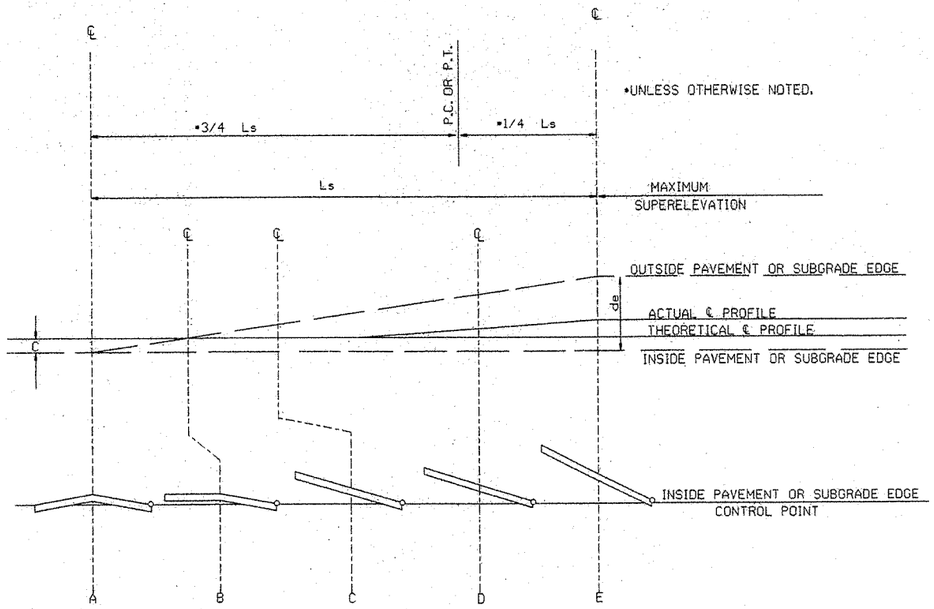
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30′	N.C.			N.C.			N.C.			N.C.			0.023			0.028		
0° 45′	N.C.			N.C.			R.C.			0.022			0.030			0.037	275	300
1° 00′	N.C.			N.C.			0.021			0.026			0.037			0.046		
1° 15′	N.C.			R.C.			0.026			0.032			0.043	250	300	0.054		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.049			0.062		
1° 45′	N.C.			0.025	175		0.036			0.043		300	0.055			0.070		
2° 00′	R.C.			0.028			0.040			0.048			0.061			0.078	300	350
2° 15′	R.C.			0.031			0.045		250	0.053			0.067			0.085	315	
2° 30′	0.021			0.034			0.049			0.058			0.072			0.091	335	
2° 45′	0.023			0.037		200	0.053			0.063			0.077	260		0.096	350	400
3° 00′	0.025	150		0.040			0.057			0.067	230		0.082	275		0.098	360	
3° 15′	0.027			0.043			0.061			0.072	245		0.086	285	350	0.100	360	
3° 30′	0.029			0.046			0.065	205		0.076	255		0.090	295				
3° 45′	0.031		200	0.049			0.069	215		0.080	265		0.093	305				
4° 00′	0.033			0.051			0.072	225		0.083	270		0.096	315				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.098	320				
5° 00′	0.040			0.061			0.083	250		0.091	295	350						
5° 30′	0.043			0.066	185		0.088	260		0.094	300							
6° 00′	0.046			0.070	190		0.092	270		0.096	305							
6° 30′	0.050			0.074	200		0.095	280	300	0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
7° 30′	0.056			0.081	215		0.099	290										
8° 00′	0.058			0.084	220		0.100	290										
8° 30′	0.061			0.087	225	250												
9° 00′	0.063			0.089	230													
10° 00′	0.068	160		0.094	235													
11° 00′	0.072	170		0.097	250													
12° 00′	0.076	175		0.099	250													
13° 00′	0.080	180		0.100	250													
14° 00′	0.083	190																
15° 00′	0.086	195																
16° 00′	0.089	200																
17° 00′	0.091	200																
18° 00′	0.093	205																
19° 00′	0.095	210																
20° 00′	0.097	215	250															
21° 00′	0.098	215																
22° 00′	0.099	215																
23° 00′	0.099	215																
24° 00′	0.100	220																

D MAX = 24° 45′ | D MAX = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 3° 30′

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

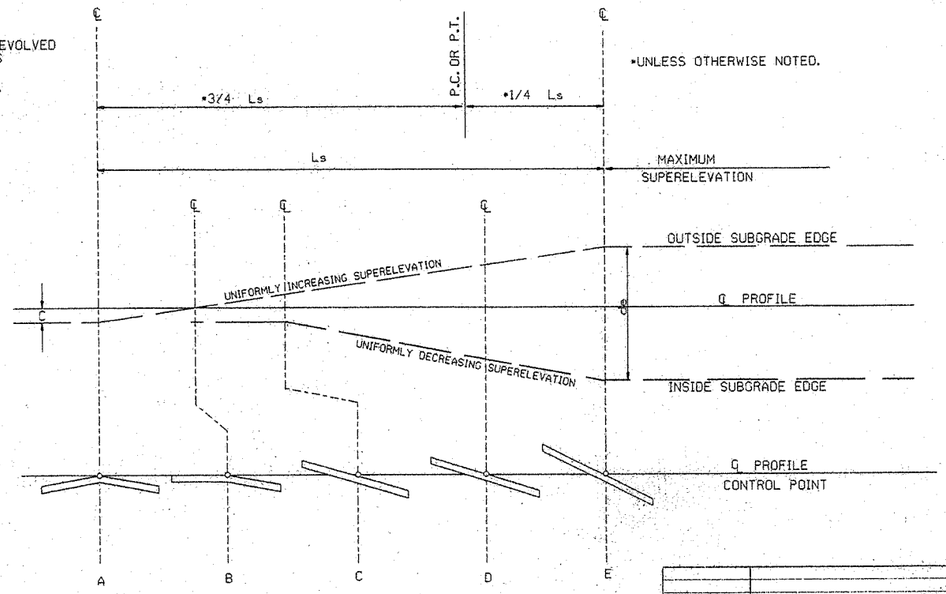
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED	+20%
4 LANE UNDIVIDED	+50%
5 LANE UNDIVIDED	+80%
6 LANE UNDIVIDED	+100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

$$\text{SUPERELEVATION FORMULA} = \frac{Lde}{Ls}$$

DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

RI-1

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

RI-2

STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5A

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5C

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

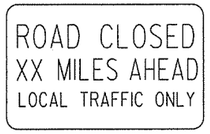
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

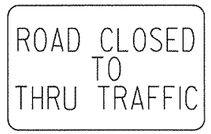
48"X30"

RII-3A



60"X30"

RII-4

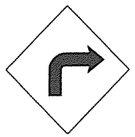


60"X30"

RSP-1

48"X30"

WI-1



STD. 36"X36"
FWY. 48"X48"

WI-2

STD. 36"X36"
FWY. 48"X48"

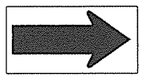
WI-3

STD. 48"X48"

WI-4

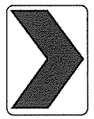
STD. 48"X48"

WI-6



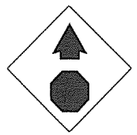
STD. 48"X24"
SPECIAL 60"X30"

WI-8



STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1

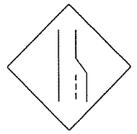


STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

STD. 36"X36"
FWY. 48"X48"

WI3-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

STD. 36"X36"
FWY. 48"X48"

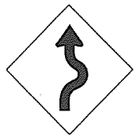
W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

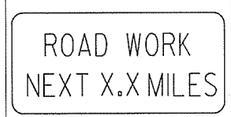
W8-11

STD. 36"X36"
FWY. 48"X48"

W8-9

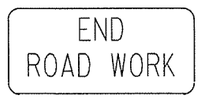
STD. 36"X36"
FWY. 48"X48"

G20-1



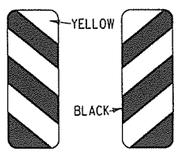
60"X24"

G20-2



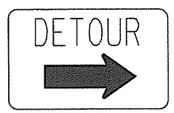
48"X24"

OM-3L OM-3R



12"X36"

M4-9



STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1

FINES DOUBLE
IN WORK ZONES *

WHEN WORKERS
ARE PRESENT **

36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

• 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

• 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

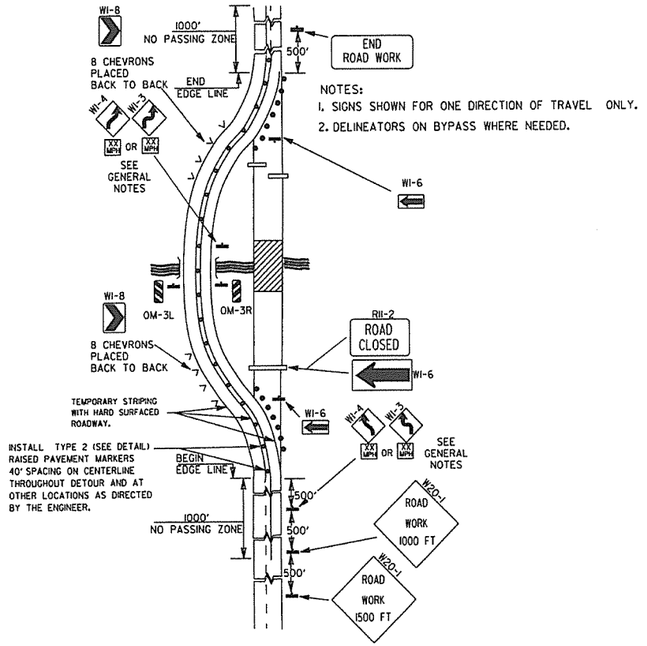
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

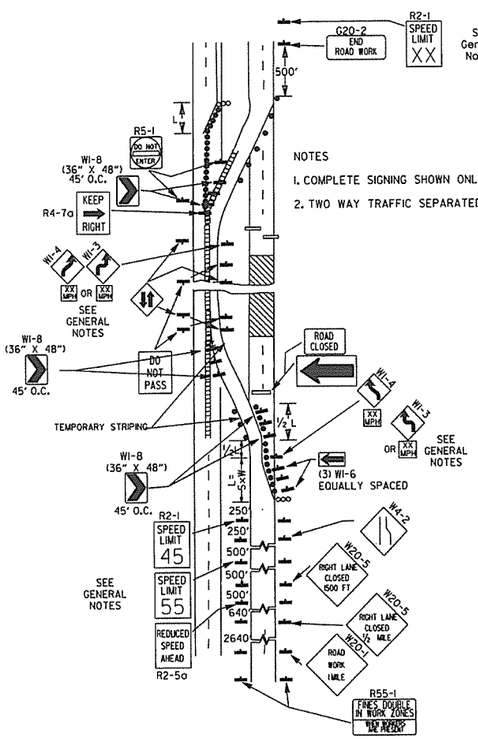
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



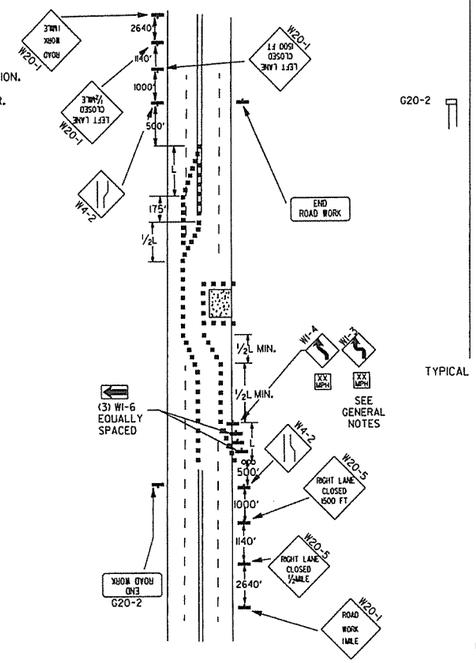
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

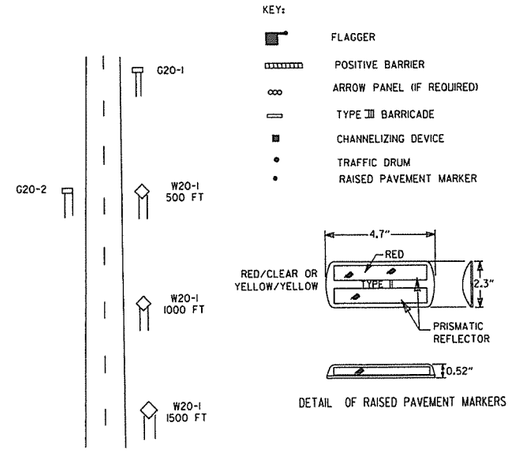


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.

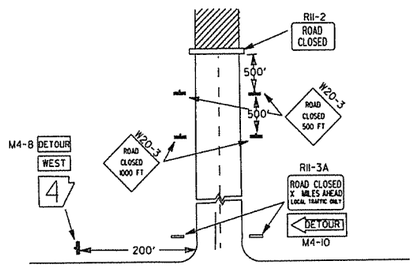


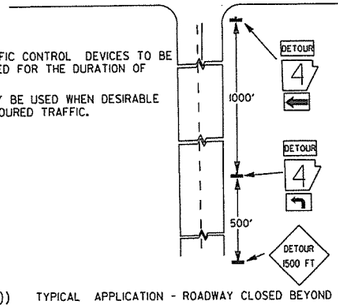
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



DETAIL OF RAISED PAVEMENT MARKERS

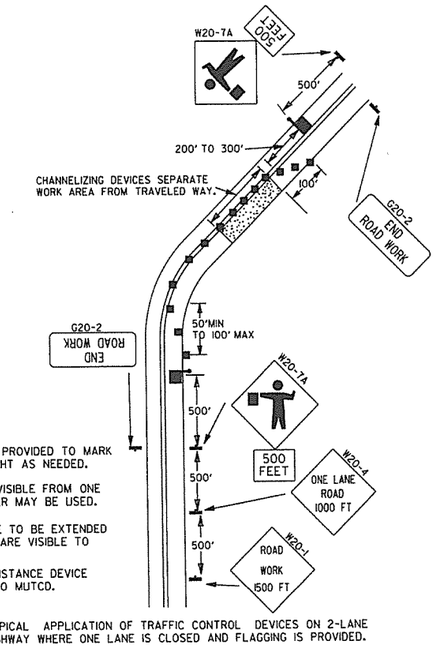
TYPICAL ADVANCE WARNING SIGN PLACEMENT





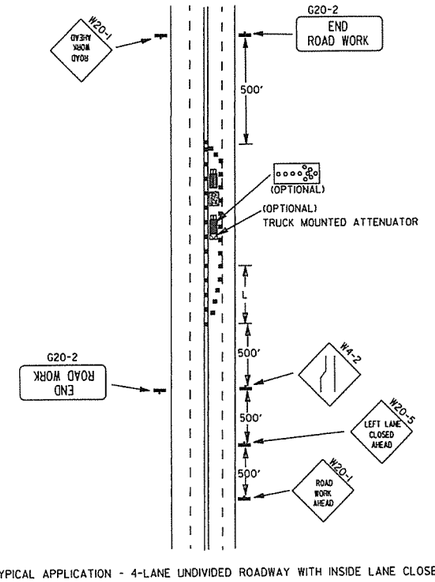
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

GENERAL NOTES:

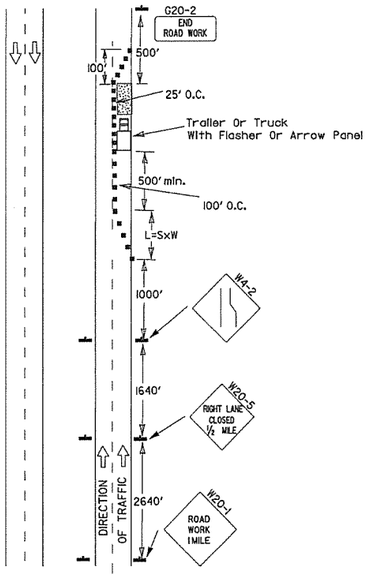
1. ADVISORY SPEED POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

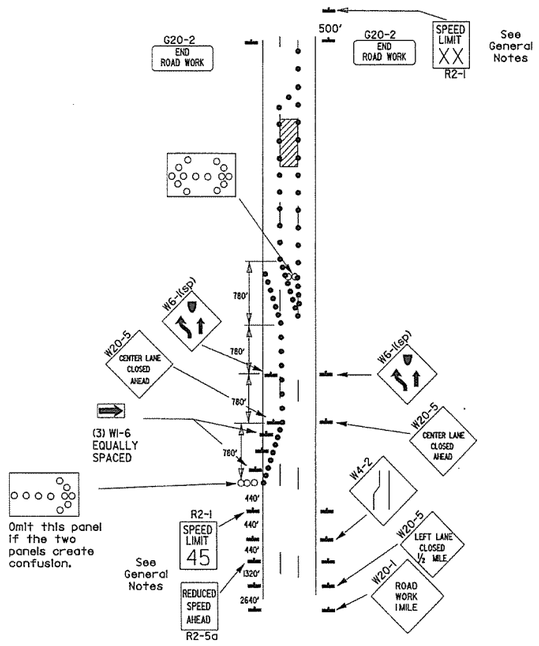
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

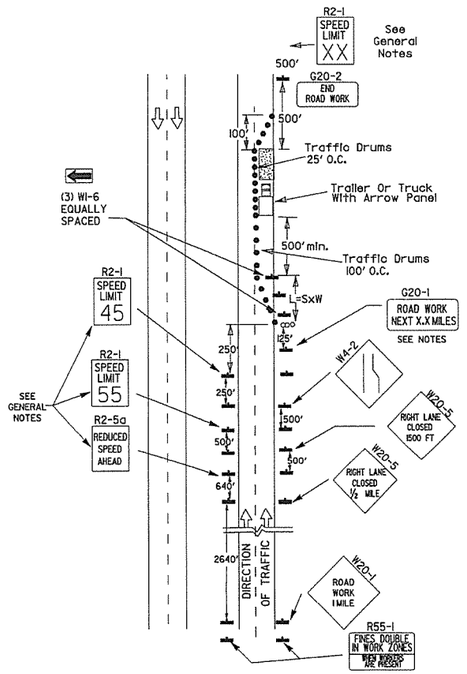
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-155mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices

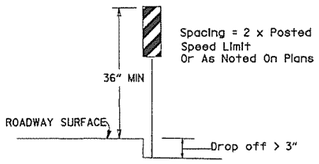
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

CONES

PLASTIC DRUM

NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

VERTICAL PANEL PLACEMENT



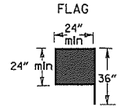
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

* When shown on the plans concrete barrier will be used.

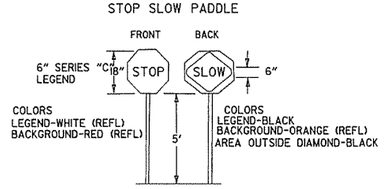
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

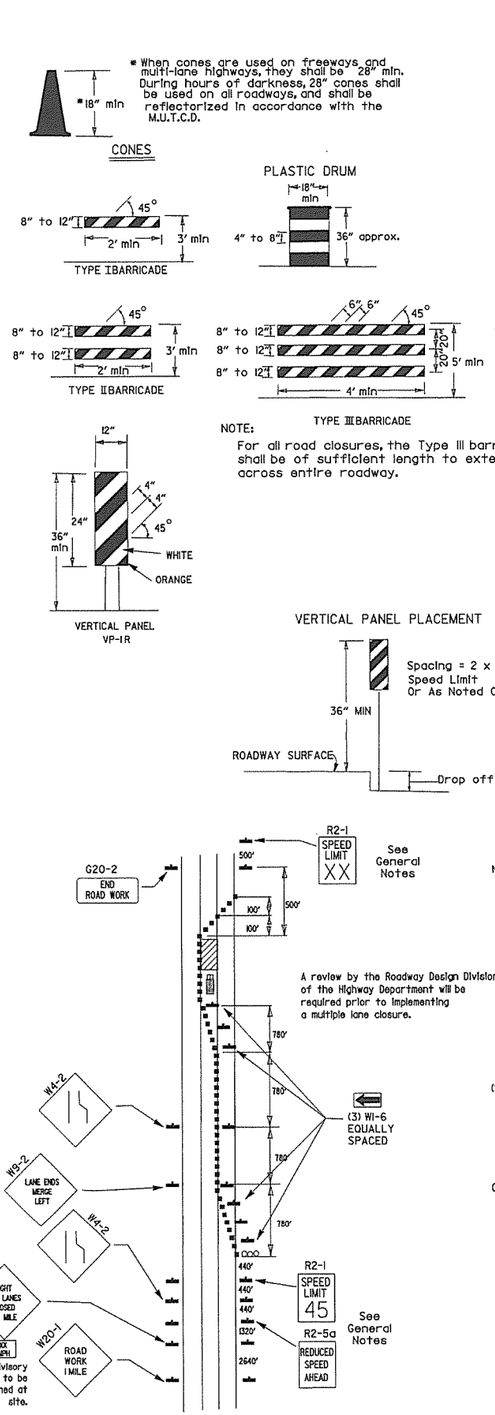
FLAG



Flag shall be of good grade red material

STOP SLOW PADDLE





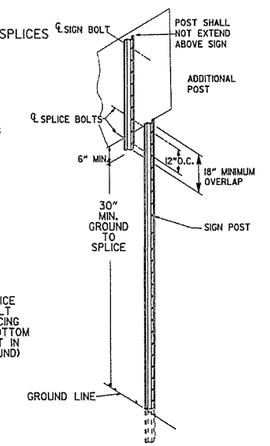
(D) Typical application - closing multiple lanes of a multilane highway.

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.

DETAIL OF SPLICES



DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

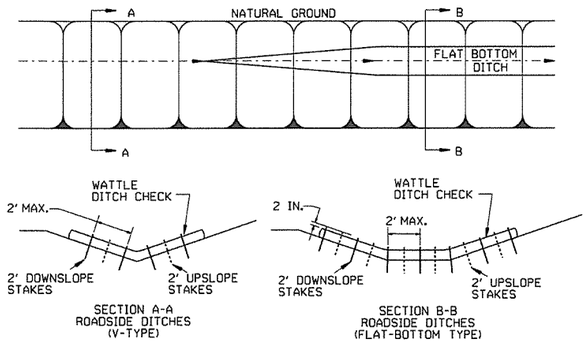
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

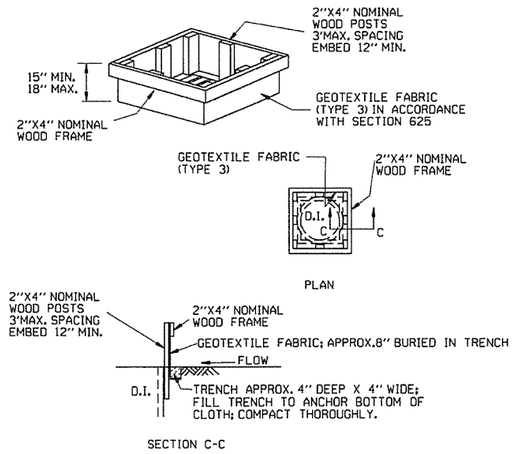
STANDARD DRAWING TC-3

GENERAL NOTES

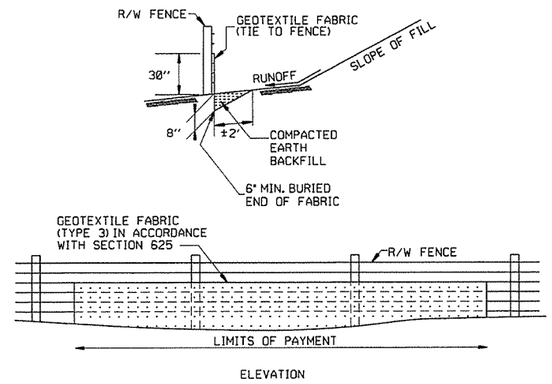
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

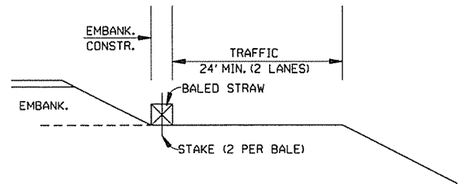
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

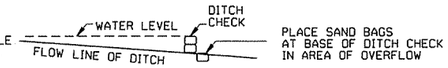
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

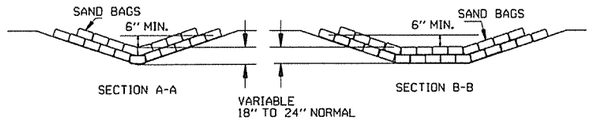


BALED STRAW FILTER BARRIER (E-2)

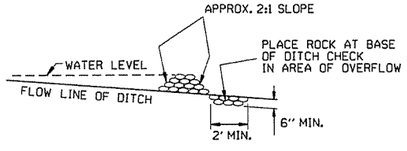
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

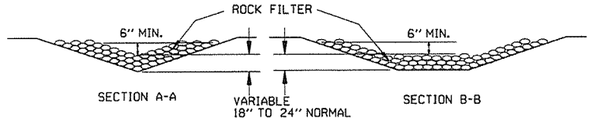


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW

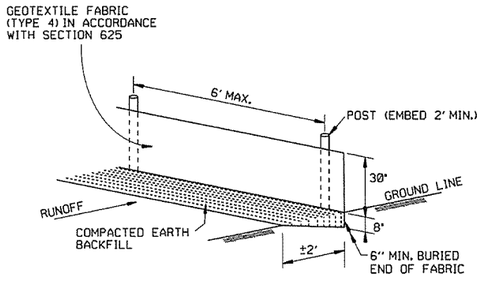


SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

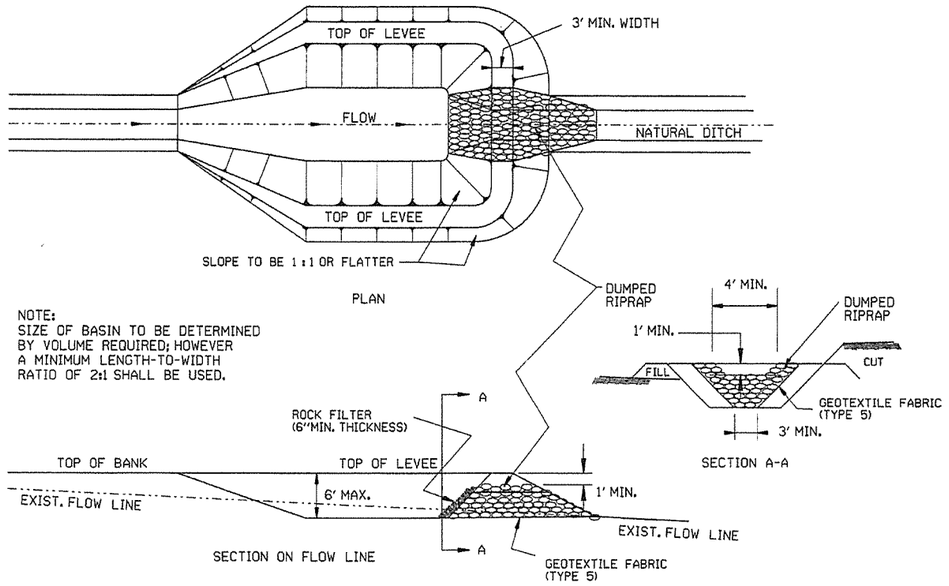
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

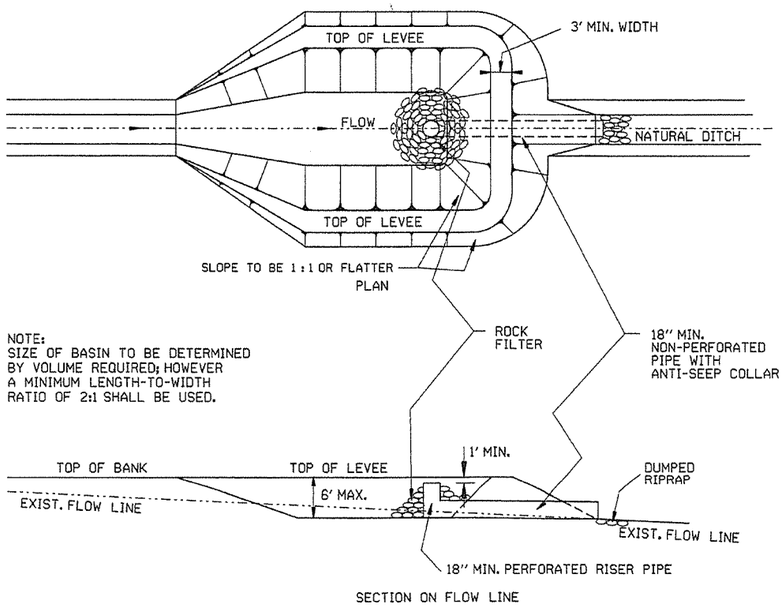
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

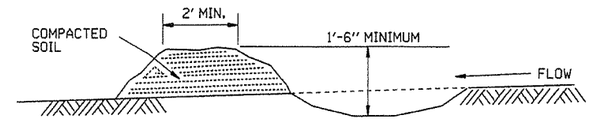
STANDARD DRAWING TEC-1



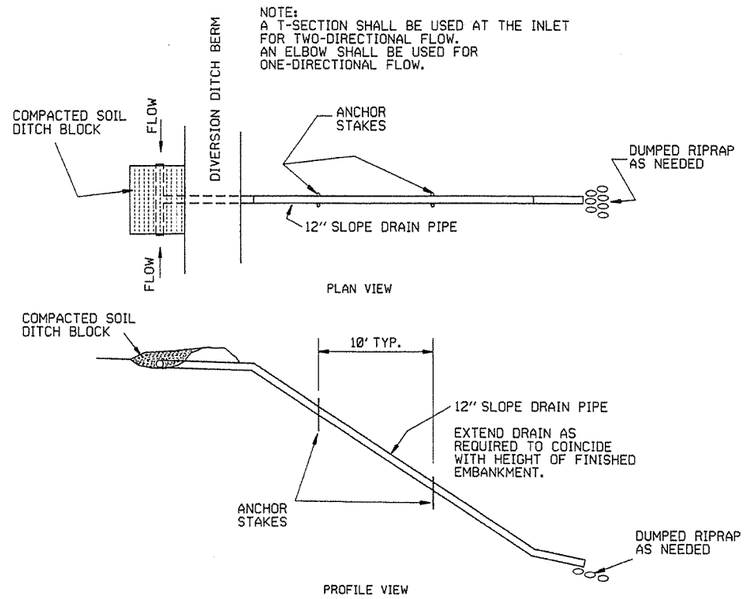
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



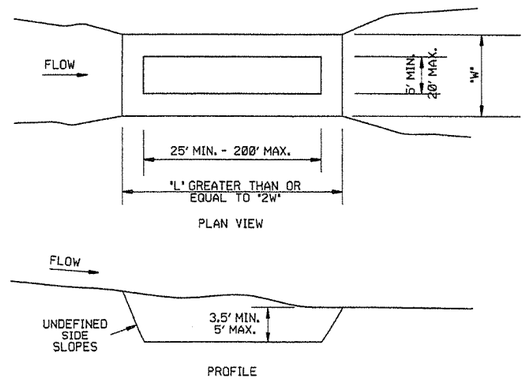
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

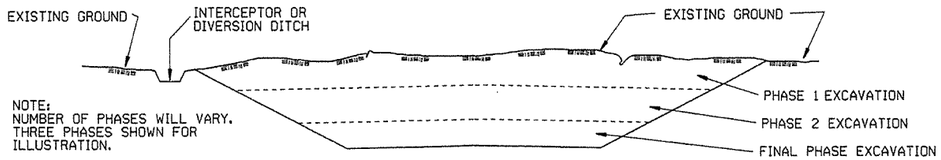
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



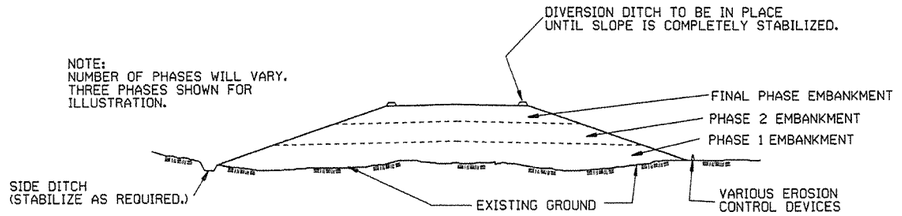
GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

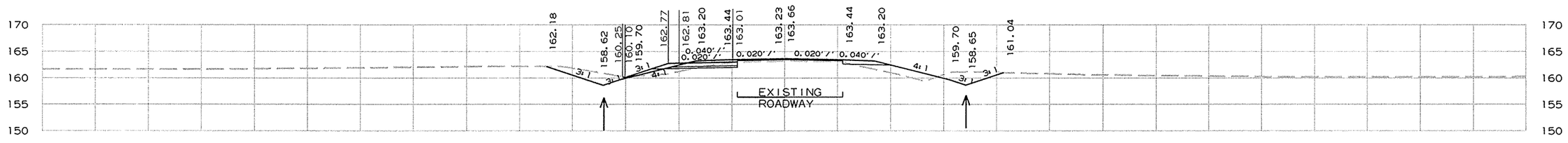
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

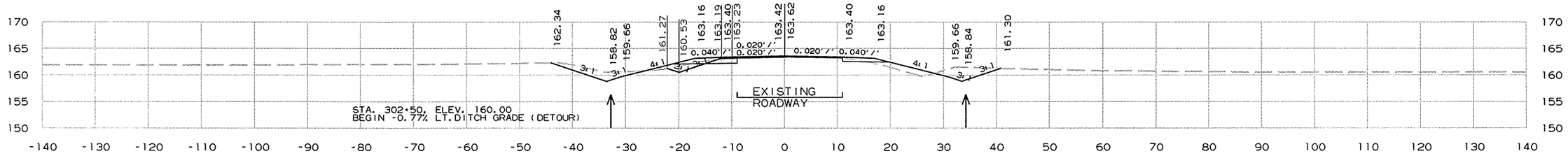
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	80	90

(2) CROSS SECTIONS SITE 1

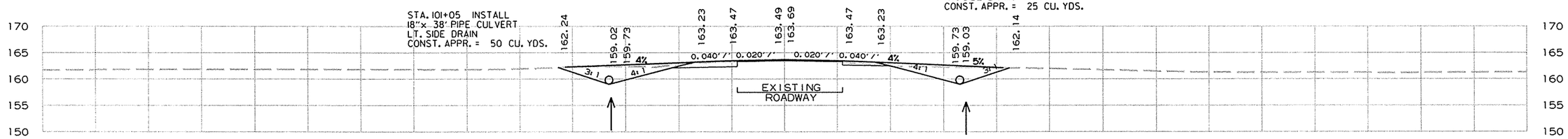
STAGE 1 STAGE 2 STAGE 3 STAGE 1 STAGE 2 STAGE 3



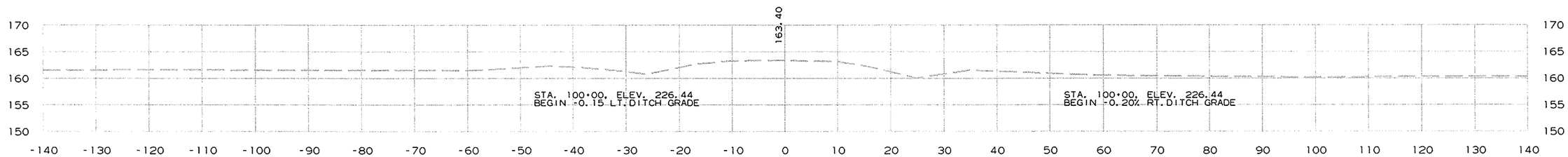
AREA CUT 5 AREA FILL 6 | AREA CUT 17 AREA FILL 16 | AREA CUT 25 AREA FILL 0 | 103+00 | CUT VOLUME 27 FILL VOLUME 11 | CUT VOLUME 66 FILL VOLUME 49 | CUT VOLUME 76 FILL VOLUME 15



AREA CUT 10 AREA FILL 0 | AREA CUT 19 AREA FILL 10 | AREA CUT 16 AREA FILL 8 | 102+00 | STA. 101+12 IN PLACE 18"x 30' STEEL PIPE CULVERT REMOVE & INSTALL 18"x 38' PIPE CULVERT RT. SIDE DRAIN CONST. APPR. = 25 CU. YDS. | CUT VOLUME 107 FILL VOLUME 0 | CUT VOLUME 105 FILL VOLUME 0 | CUT VOLUME 31 FILL VOLUME 15



AREA CUT 48 AREA FILL 0 | AREA CUT 38 AREA FILL 0 | AREA CUT 0 AREA FILL 0 | 101+00 BEGIN JOB 020542 BEGIN SITE 1 END 100' TRANSISTION | CUT VOLUME 89 FILL VOLUME 0 | CUT VOLUME 70 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0



AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0 | 100+00 BEGIN 100' TRANSITION | CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0

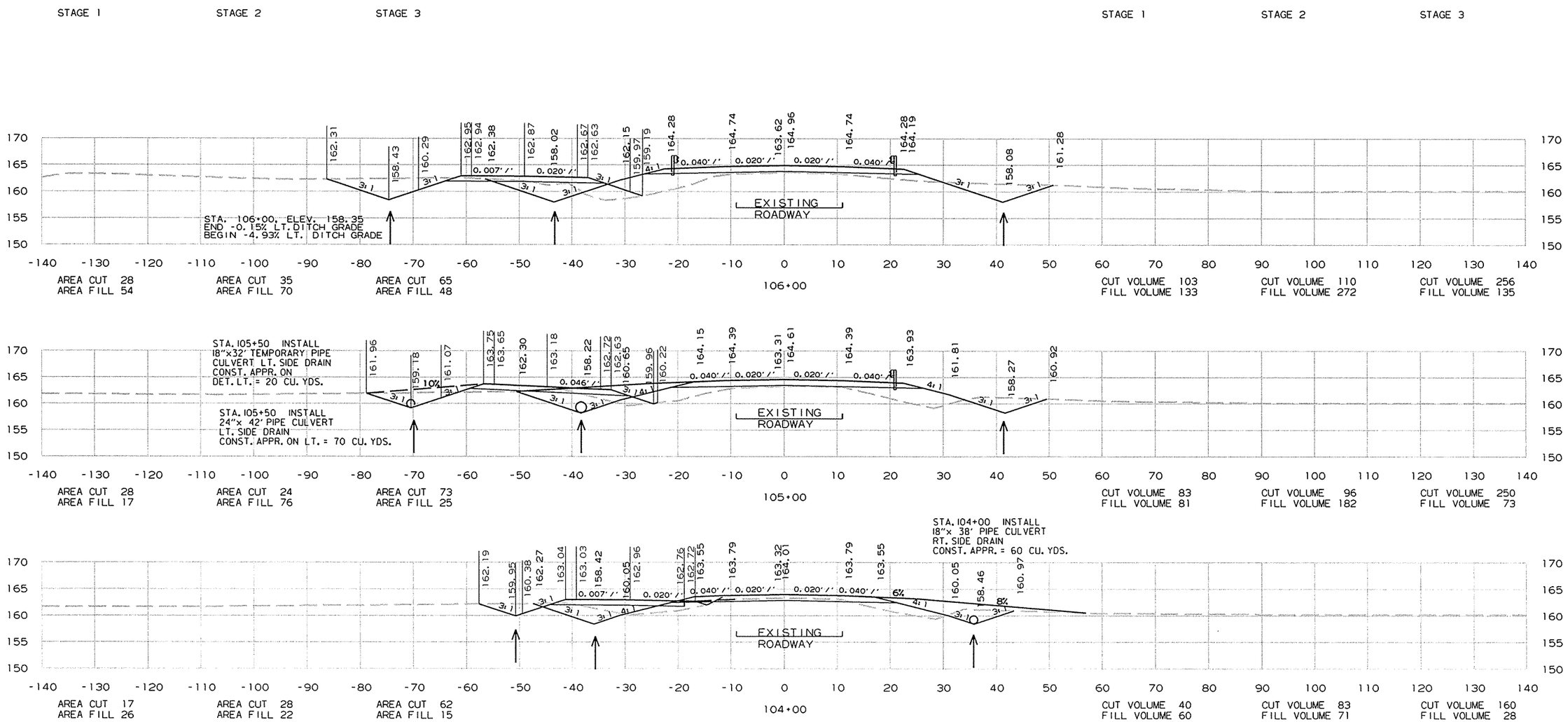
CROSS SECTION STA. 100+00 TO STA. 103+00

3/27/2013

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	81	90

(2) CROSS SECTIONS SITE 1



CROSS SECTION STA. 104+00 TO STA. 106+00

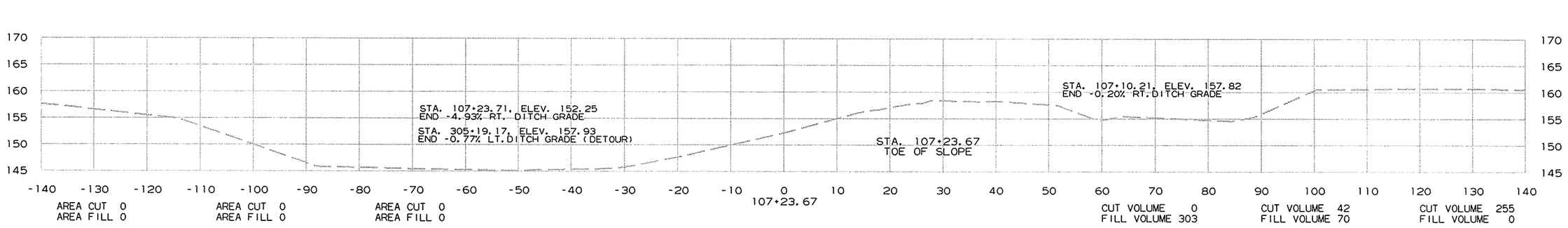
3/27/2013

R020542.DGN

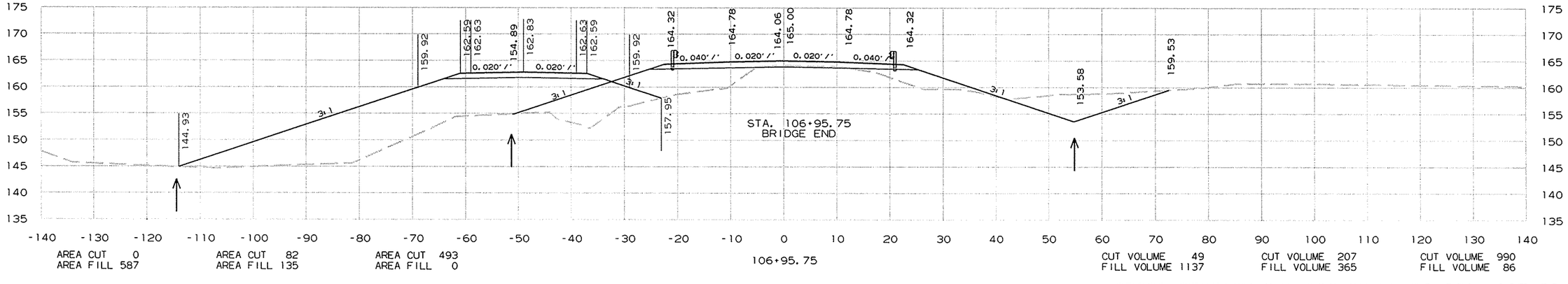
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	82	90

(2) CROSS SECTIONS SITE 1

STAGE 1 STAGE 2 STAGE 3



STAGE 1 STAGE 2 STAGE 3



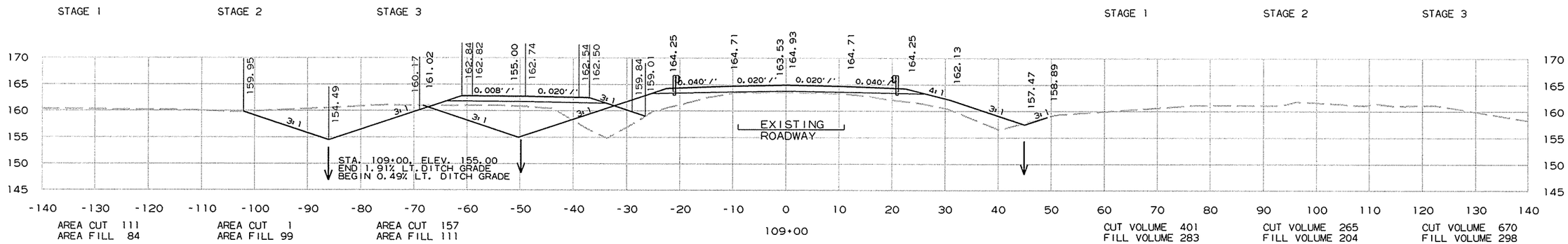
CROSS SECTION STA. 106+95.75 TO STA. 107+23.67

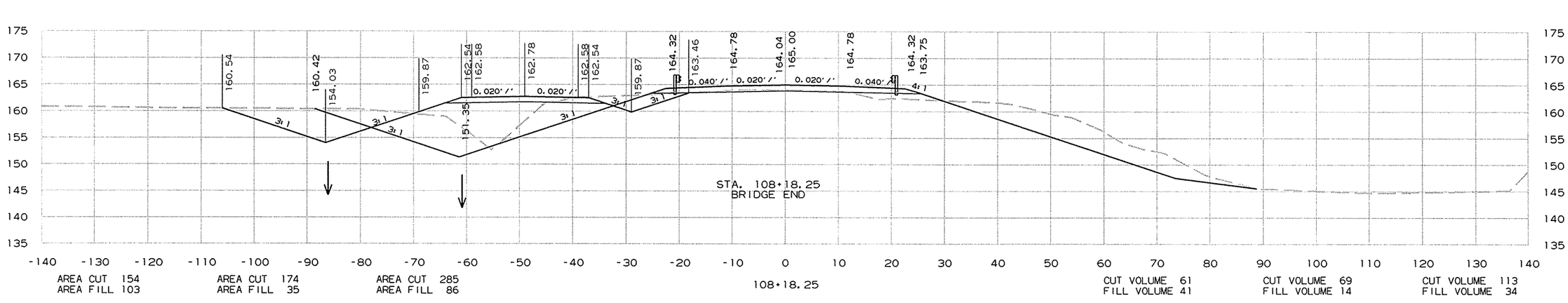
3/27/2013

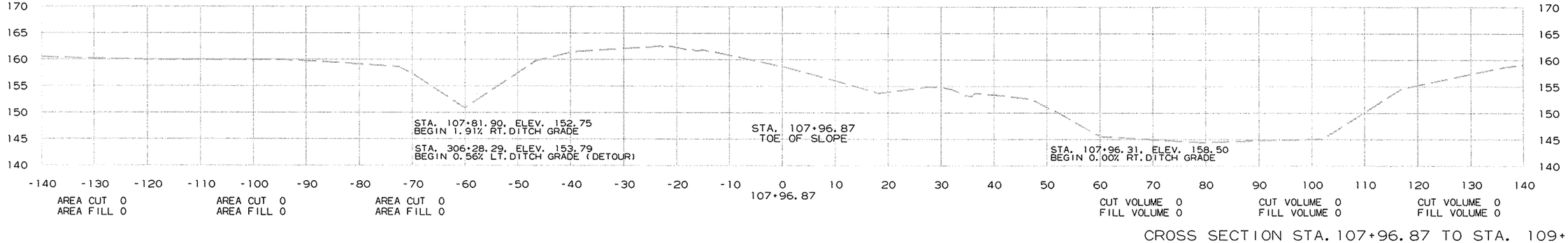
R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	83	90

(2) CROSS SECTIONS SITE 1







CROSS SECTION STA. 107+96.87 TO STA. 109+00

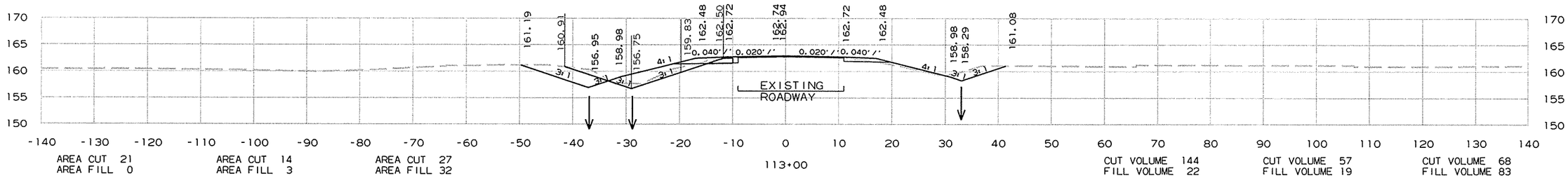
7/24/2014

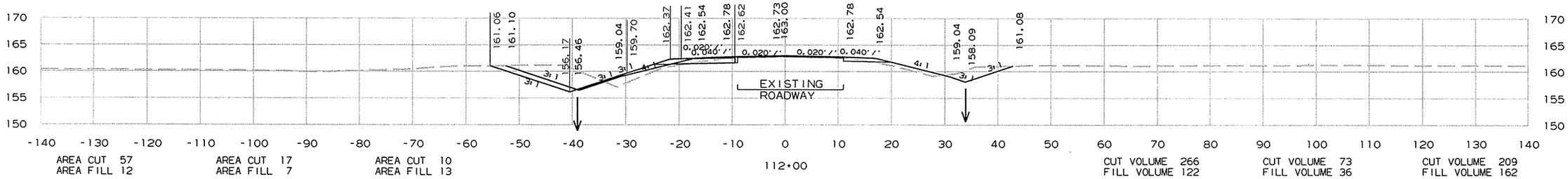
R020542.DGN

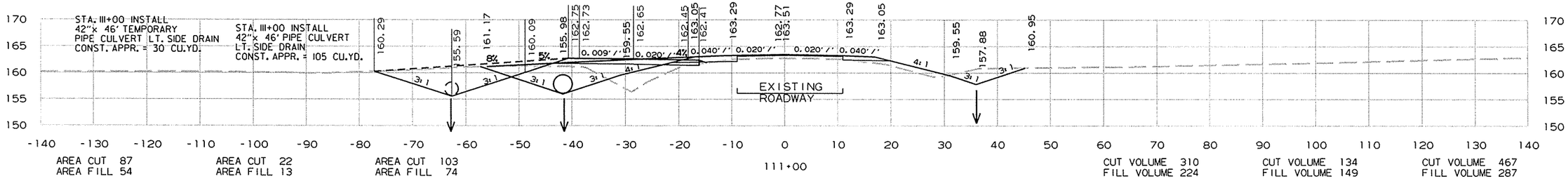
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	84	90

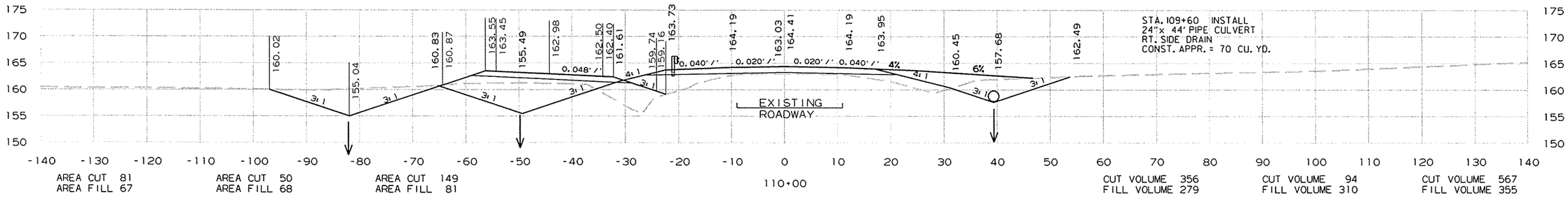
(2) CROSS SECTIONS SITE 1

STAGE 1 STAGE 2 STAGE 3 STAGE 1 STAGE 2 STAGE 3









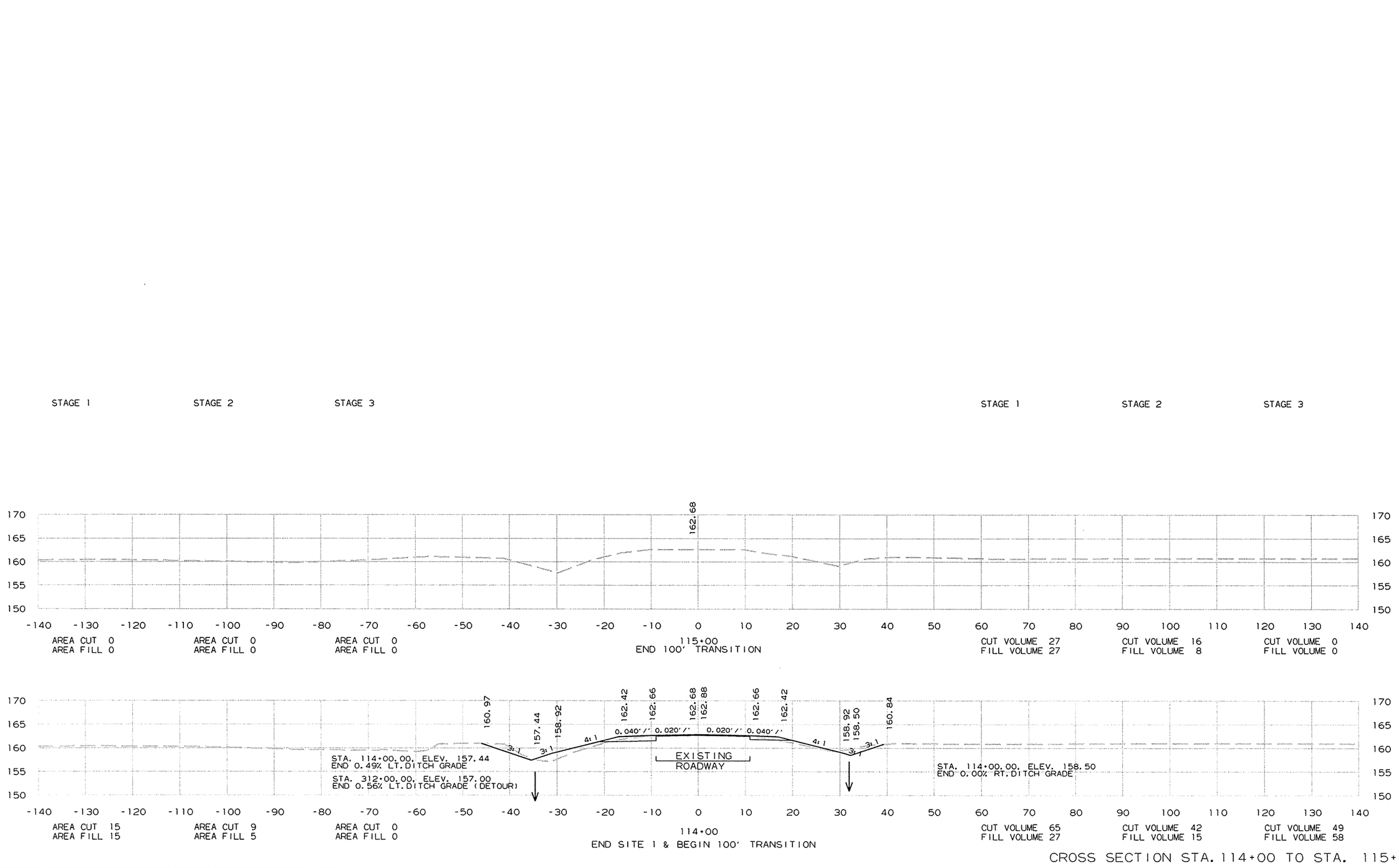
CROSS SECTION STA. 110+00 TO STA. 113+00

3/27/2013

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	85	90

(2) CROSS SECTIONS SITE 1



CROSS SECTION STA. 114+00 TO STA. 115+00

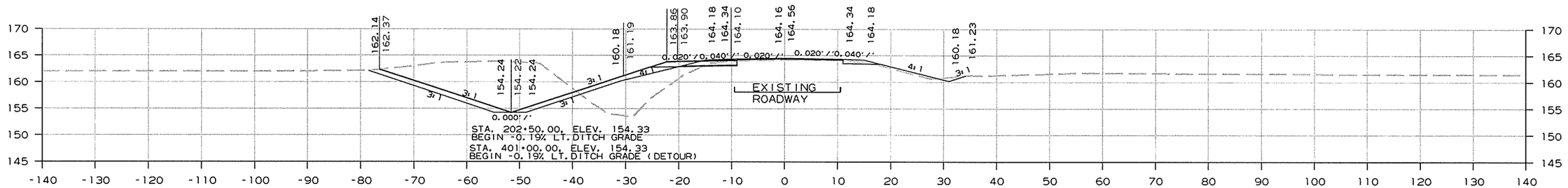
3/27/2013

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	86	90

(2) CROSS SECTIONS SITE 2

STAGE 1 STAGE 2 STAGE 3 STAGE 1 STAGE 2 STAGE 3

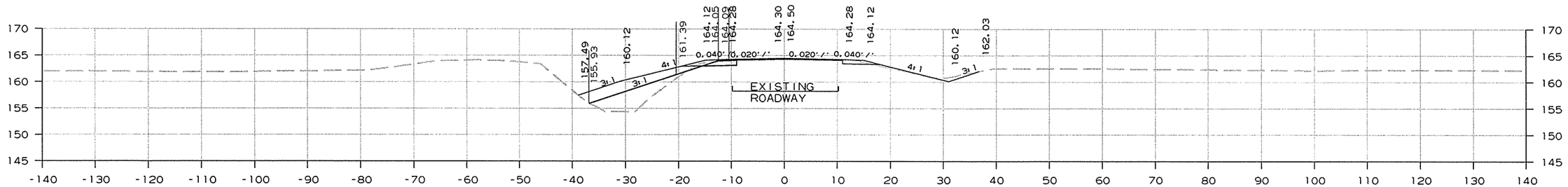


AREA CUT 203 AREA FILL 102 | AREA CUT 4 AREA FILL 4 | AREA CUT 55 AREA FILL 0

203+00

CUT VOLUME 387 FILL VOLUME 268 | CUT VOLUME 18 FILL VOLUME 10 | CUT VOLUME 103 FILL VOLUME 71

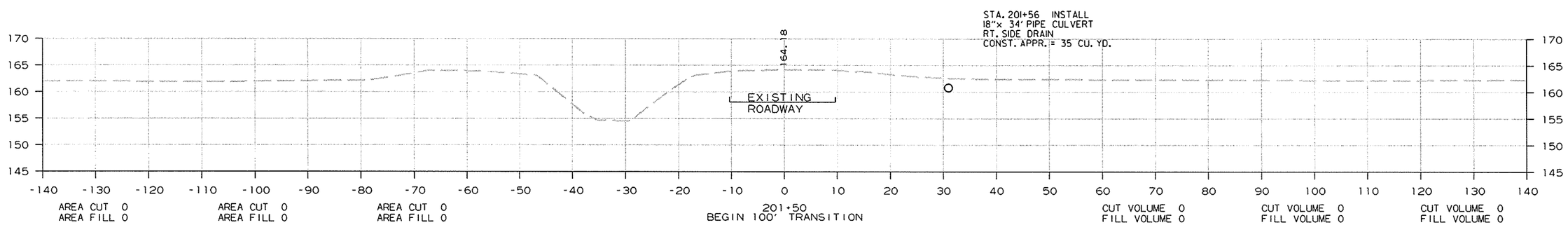
STA. 202+50.00 - BEGIN SITE 2 & END 100' TRANSITION



AREA CUT 6 AREA FILL 43 | AREA CUT 6 AREA FILL 2 | AREA CUT 0 AREA FILL 38

202+00

CUT VOLUME 6 FILL VOLUME 39 | CUT VOLUME 5 FILL VOLUME 2 | CUT VOLUME 0 FILL VOLUME 35



AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0 | AREA CUT 0 AREA FILL 0

201+50
BEGIN 100' TRANSITION

CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0 | CUT VOLUME 0 FILL VOLUME 0

CROSS SECTION STA. 201+50 TO STA. 203+00

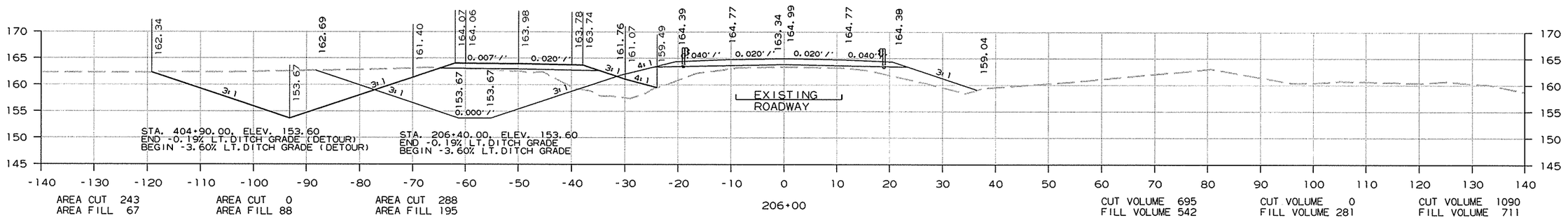
3/29/2013

R020542.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	87	90

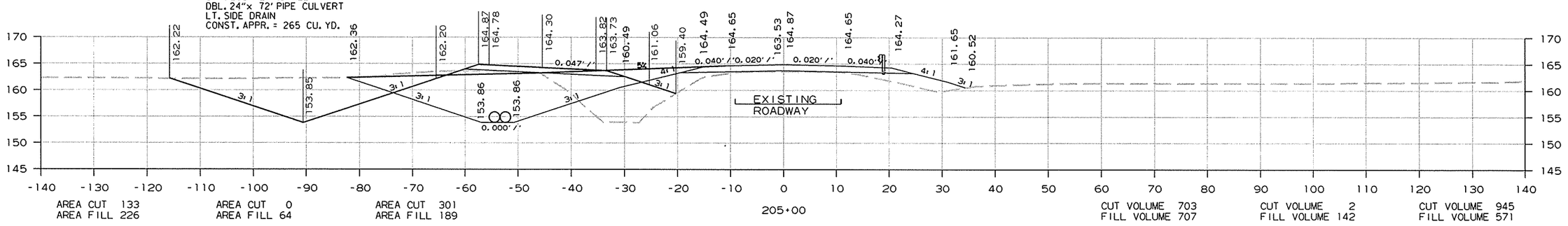
(2) CROSS SECTIONS SITE 2

STAGE 1 STAGE 2 STAGE 3 STAGE 1 STAGE 2 STAGE 3

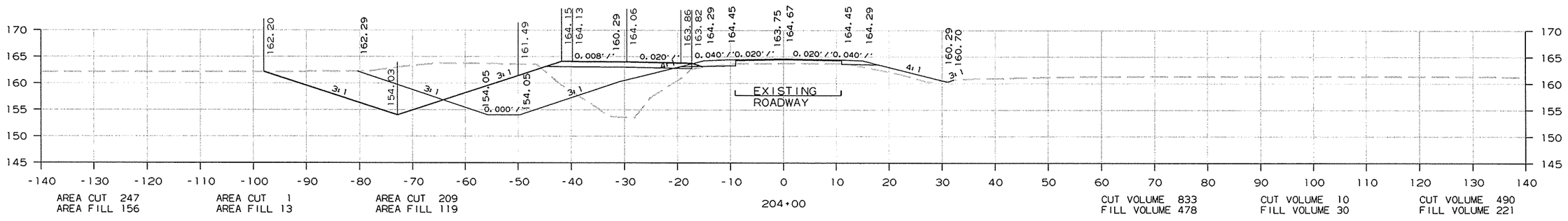


AREA CUT 243 AREA FILL 67 | AREA CUT 0 AREA FILL 88 | AREA CUT 288 AREA FILL 195 | CUT VOLUME 695 FILL VOLUME 542 | CUT VOLUME 0 FILL VOLUME 281 | CUT VOLUME 1090 FILL VOLUME 711

STA. 205+42 INSTALL
DBL. 24"x 72' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 265 CU. YD.



AREA CUT 133 AREA FILL 226 | AREA CUT 0 AREA FILL 64 | AREA CUT 301 AREA FILL 189 | CUT VOLUME 703 FILL VOLUME 707 | CUT VOLUME 2 FILL VOLUME 142 | CUT VOLUME 945 FILL VOLUME 571



AREA CUT 247 AREA FILL 156 | AREA CUT 1 AREA FILL 13 | AREA CUT 209 AREA FILL 119 | CUT VOLUME 833 FILL VOLUME 478 | CUT VOLUME 10 FILL VOLUME 30 | CUT VOLUME 490 FILL VOLUME 221

CROSS SECTION STA. 204+00 TO STA. 206+00

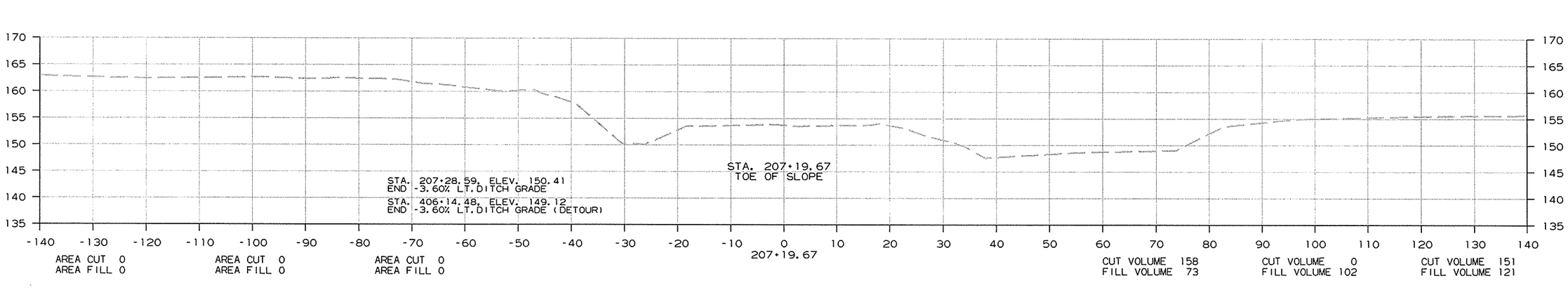
3/29/2013

R020542.DGN

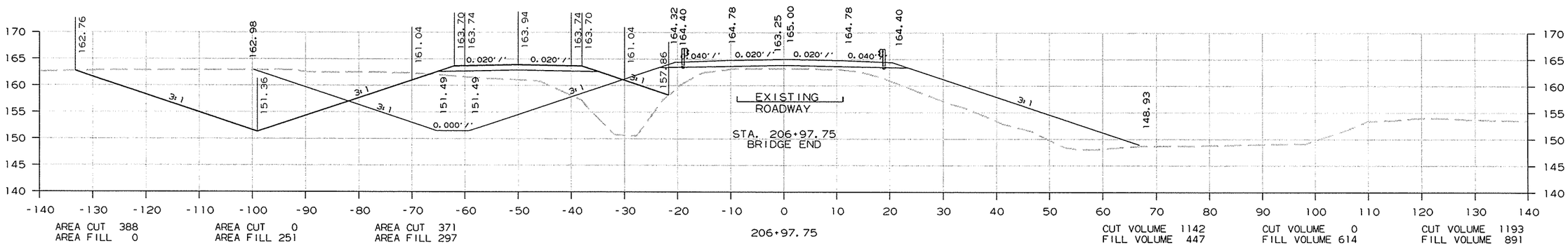
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	88	90

(2) CROSS SECTIONS SITE 2

STAGE 1 STAGE 2 STAGE 3



STAGE 1 STAGE 2 STAGE 3



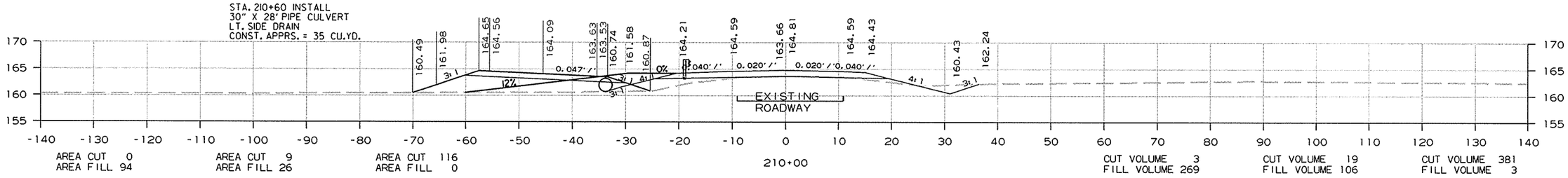
CROSS SECTION STA. 206+97.75 TO STA. 207+19.67

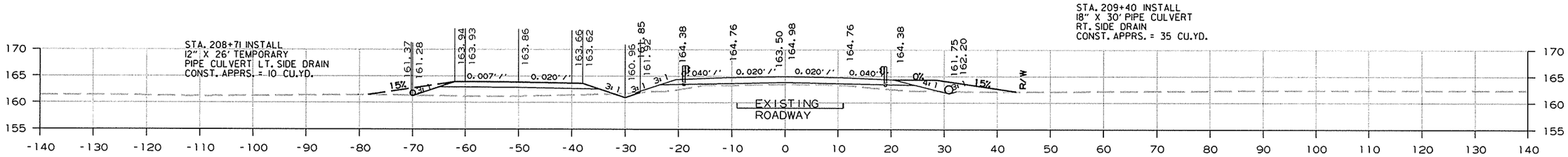
3/29/2013

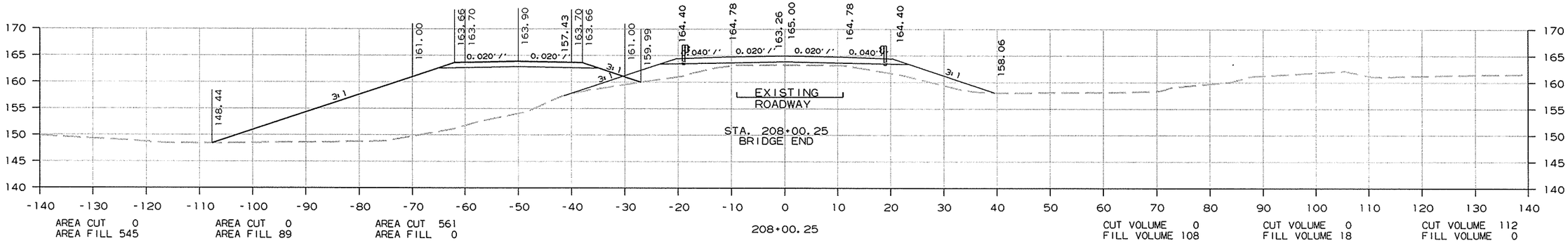
R020542.DGN

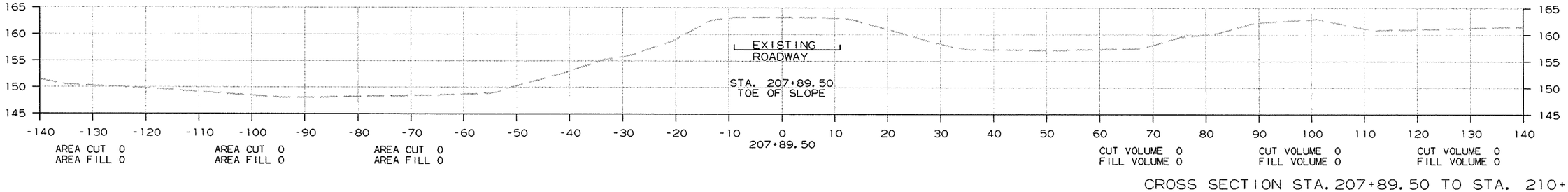
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	89	90

(2) CROSS SECTIONS SITE 2









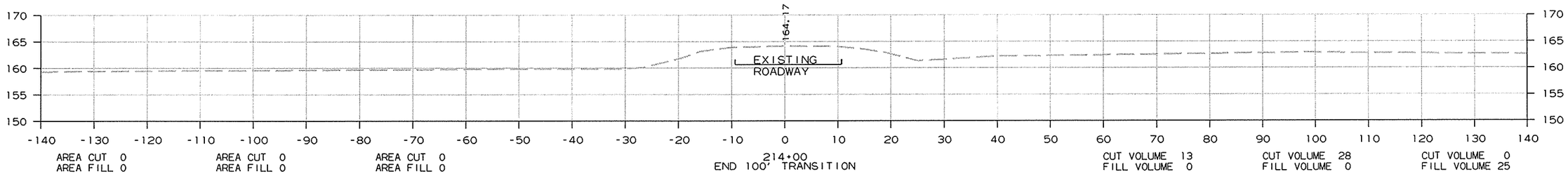
CROSS SECTION STA. 207+89.50 TO STA. 210+00

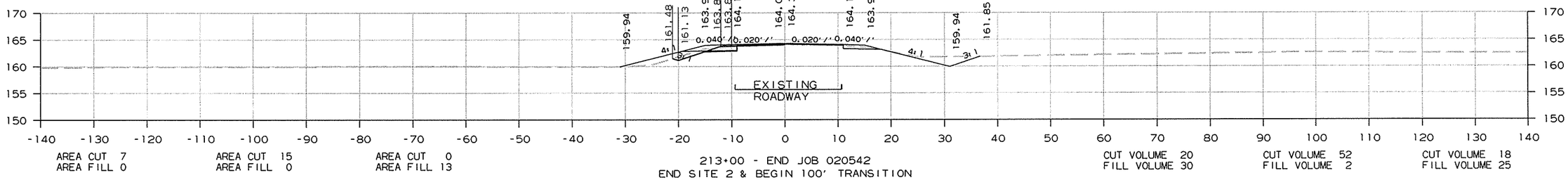
3/29/2013

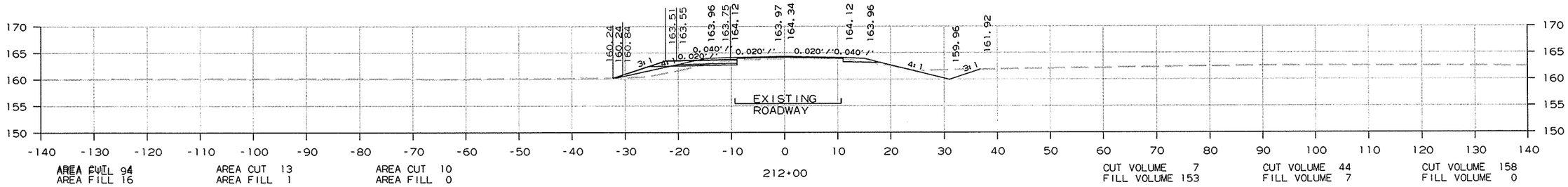
R020542.DGN

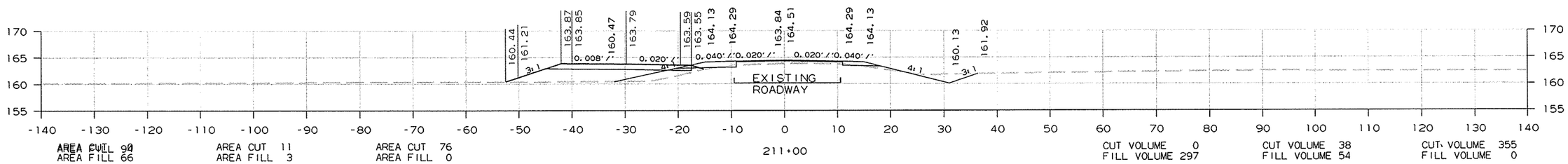
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020542	90	90

(2) CROSS SECTIONS SITE 2









CROSS SECTION STA. 211+00 TO STA. 214+00

3/29/2013

R020542.DGN