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.		BB0114	1	92
				(2)	BLACKFISH LAKE STR. & APPRS. (S)			

"A FULLY CONTROLLED ACCESS FACILITY"

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

BLACKFISH LAKE STR. & APPRS. (S)

ST. FRANCIS COUNTY

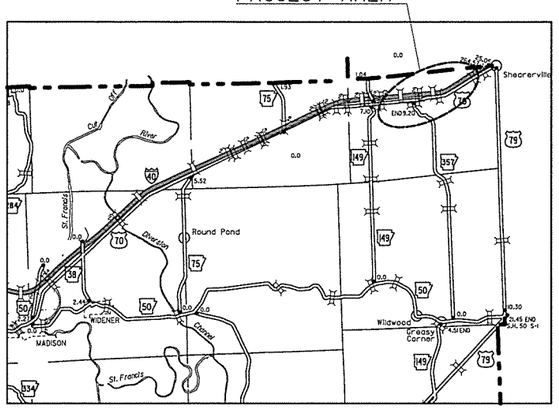
ROUTE 40 SECTION 51

FEDERAL AID PROJ. NHPP-B40-0(231)

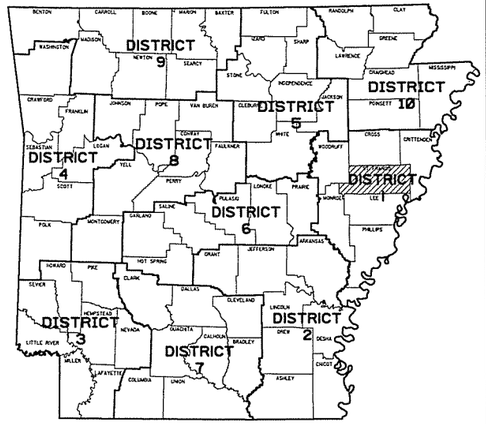
JOB BB0114

NOT TO SCALE

PROJECT AREA



VICINITY MAP

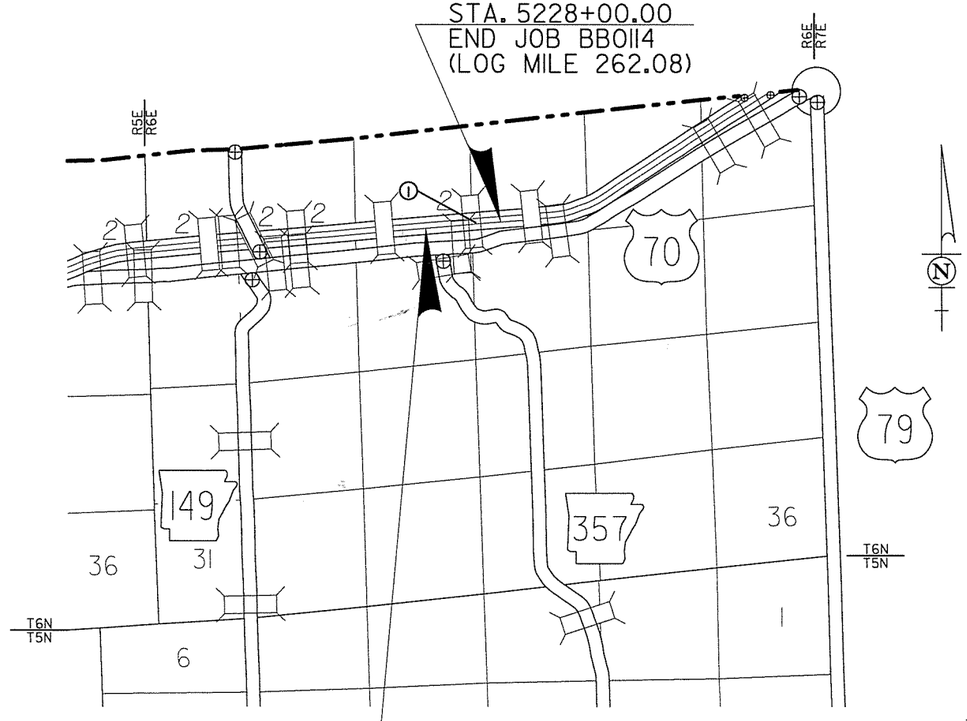


ARK. HWY. DIST. NO. 1

BRIDGE DATA

① STA. 5208+97.01 BR. END
562'-5⅛" BRIDGE LENGTH 560'
CONT. COMP. W-BEAM SPANS
(64', 72', 72', 72', 72', 72', 72' 64')
BR. NO. 06940
2 - 63'-0" CLEAR ROADWAYS
STA. 5214+59.49 BR. END

STA. 5228+00.00
END JOB BB0114
(LOG MILE 262.08)



STA. 5196+00.00
BEGIN JOB BB0114
(LOG MILE 261.47)

DESIGN TRAFFIC DATA

DESIGN YEAR	2035
2015 ADT	31,000
2035 ADT	38,000
2035 DHV	4180
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	56%
DESIGN SPEED	70 MPH

BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE 35° 08' 01" N	LATITUDE 35° 08' 02" N	LATITUDE 35° 08' 02" N
LONGITUDE 90° 27' 32" W	LONGITUDE 90° 27' 13" W	LONGITUDE 90° 26' 54" W

LENGTH IS COMPUTED ALONG C.L. MEDIAN & IS SHOWN FOR INFORMATION ONLY

GROSS	LENGTH OF	PROJECT	3200.00	FEET	OR	0.606	MILES
NET	"	ROADWAY	2637.52	"	"	0.499	"
NET	"	BRIDGES	562.48	"	"	0.107	"
NET	"	PROJECT	3200.00	"	"	0.606	"

JACOBS ENGINEERING GROUP, INC. CERTIFICATE OF AUTHORIZATION No. 175 ARKANSAS-ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 8940 MARK ASHER

12/10/14

P. E. BB0106

JACOBS

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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.		BB0114	2	92
				(2)	INDEX OF SHEETS			

INDEX OF SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-19-2015				6	ARK.			
				JOB NO.		BB0114	3	92
				(2)	GOVERNING SPECIFICATIONS AND GENERAL NOTES			

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESEY
2/19/15

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__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - TRAINING PROGRAM - JOB BB0114
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
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
620-1_____	MULCH COVER
JOB BB0114__	ASSESSMENT OF WORKING DAYS - SATURDAYS
JOB BB0114__	AUTOMATED WORK ZONE INFORMATION SYSTEM
JOB BB0114__	BRIDGE CONSTRUCTION CONTROL
JOB BB0114__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB BB0114__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB BB0114__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB BB0114__	COORDINATION OF WORK
JOB BB0114__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB BB0114__	EMPLOYMENT REPORTING
JOB BB0114__	FURNISH AND OPERATION OF MOBILE SPEED NOTIFICATION SYSTEM
JOB BB0114__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB BB0114__	HIGH PERFORMANCE PAVEMENT MARKING
JOB BB0114__	MAINTENANCE OF TRAFFIC
JOB BB0114__	MANDATORY USE OF INTERNET BIDDING
JOB BB0114__	MODULAR GLARE SHIELD
JOB BB0114__	NESTING SITES OF MIGRATORY BIRDS
JOB BB0114__	PARTNERING REQUIREMENTS
JOB BB0114__	PERCENT WITHIN LIMITS
JOB BB0114__	PORTABLE CONSTRUCTION LIGHTING
JOB BB0114__	PROSECUTION AND PROGRESS
JOB BB0114__	REMOVAL AND DISPOSAL OF GUARDRAIL
JOB BB0114__	ROADWAY CONSTRUCTION CONTROL
JOB BB0114__	SECTION 404 NATIONWIDE 23 PERMIT REQUIREMENTS
JOB BB0114__	SEQUENCE OF CONSTRUCTION
JOB BB0114__	SITE USE (A + C METHOD)
JOB BB0114__	SOIL STABILIZATION
JOB BB0114__	SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB BB0114__	STORM WATER POLLUTION PREVENTION PLAN
JOB BB0114__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB BB0114__	TEMPORARY PORTLAND CEMENT CONCRETE PAVEMENT
JOB BB0114__	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
JOB BB0114__	TRENCHING AND SHOULDER PREPARATION
JOB BB0114__	UTILITY ADJUSTMENTS
JOB BB0114__	VALUE ENGINEERING
JOB BB0114__	WARM MIX ASPHALT

GENERAL NOTES

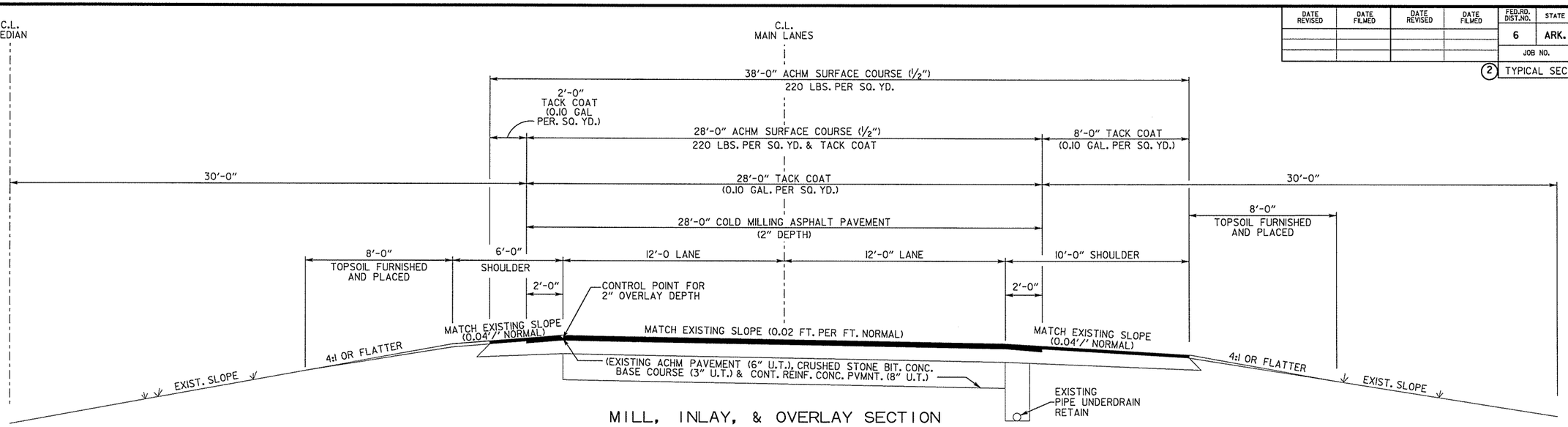
1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY 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. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
8. 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.

GOVERNING SPECIFICATIONS AND GENERAL NOTES

JACOBS

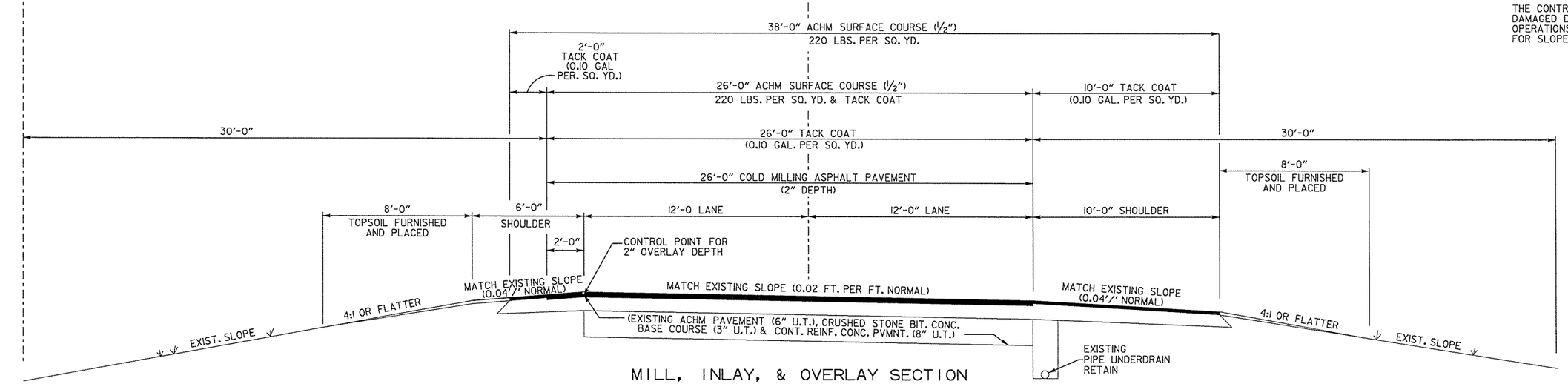
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	4	92

(2) TYPICAL SECTIONS OF IMPROVEMENT



MILL, INLAY, & OVERLAY SECTION
(SHOWN IN DIRECTION OF TRAFFIC)

LEFT MAIN LANES	RIGHT MAIN LANES
STA. 5196+00.00 TO STA. 5196+60.00	STA. 5196+00.00 TO STA. 5196+60.00
STA. 5227+15.00 TO STA. 5228+00.00	STA. 5227+15.00 TO STA. 5228+00.00



MILL, INLAY, & OVERLAY SECTION
(SHOWN IN DIRECTION OF TRAFFIC)

LEFT MAIN LANES	RIGHT MAIN LANES
STA. 5196+60.00 TO STA. 5199+00.00	STA. 5196+60.00 TO STA. 5199+00.00
STA. 5224+75.00 TO STA. 5227+15.00	STA. 5224+75.00 TO STA. 5227+15.00

NOTES:
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 CONTRACTOR SHALL REPAIR ANY SLOPES DAMAGED DURING THE CONSTRUCTION OPERATIONS. NO PAYMENT WILL BE MADE FOR SLOPE REPAIR.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14

TYPICAL SECTIONS OF IMPROVEMENT

JACOBS

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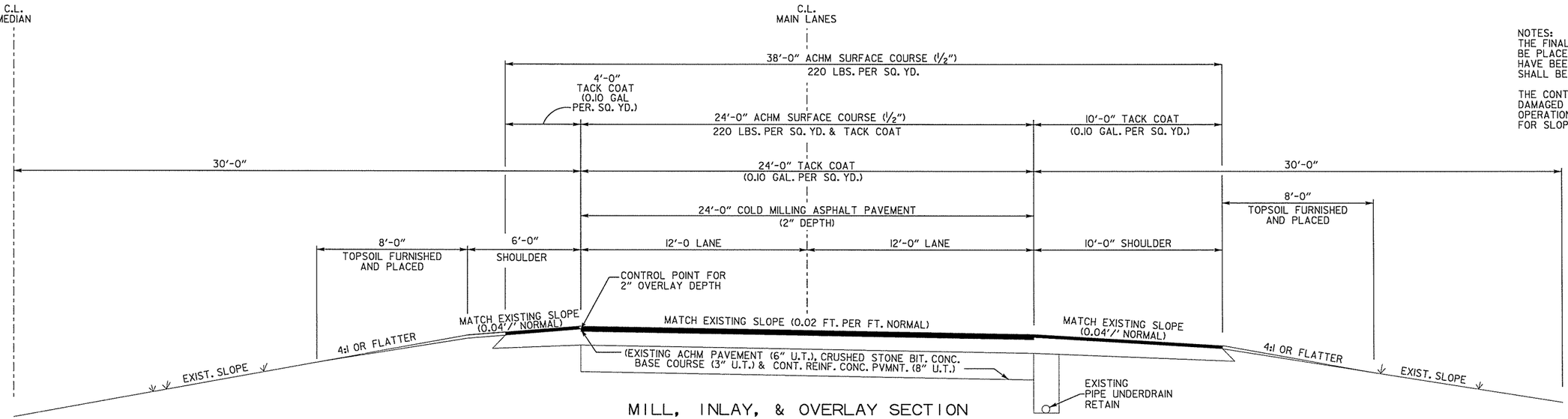
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		B8011 4	5	92

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14



MILL, INLAY, & OVERLAY SECTION
(SHOWN IN DIRECTION OF TRAFFIC)

NOTES:
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 CONTRACTOR SHALL REPAIR ANY SLOPES DAMAGED DURING THE CONSTRUCTION OPERATIONS. NO PAYMENT WILL BE MADE FOR SLOPE REPAIR.

LEFT MAIN LANE
STA. 5199+00.00 TO STA. 5205+50.12
STA. 5218+06.38 TO STA. 5224+75.00

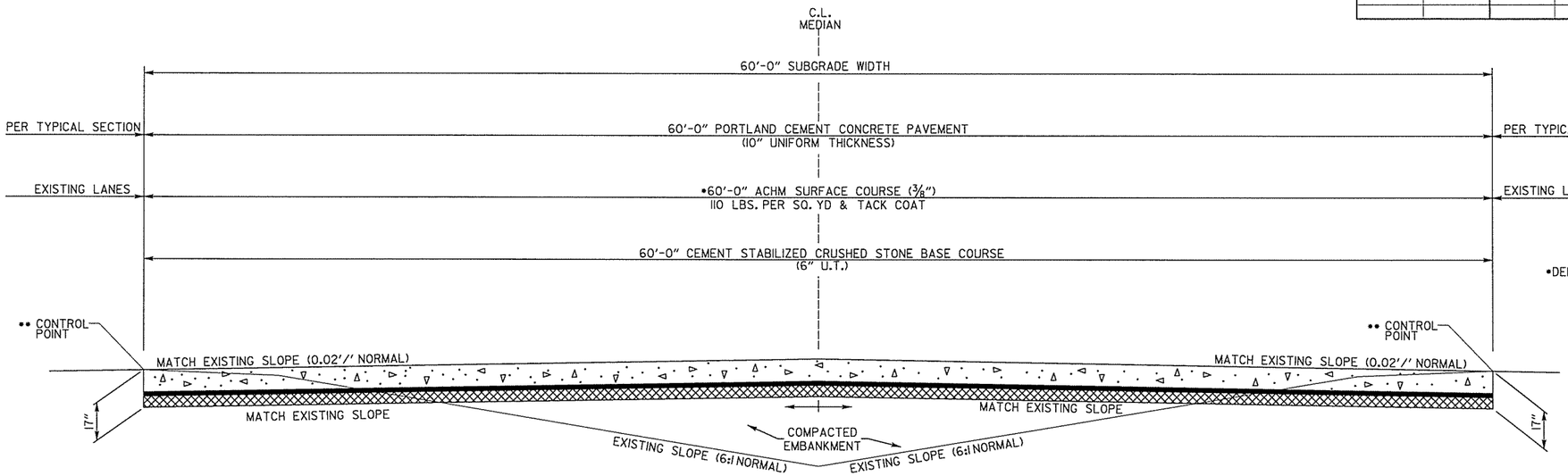
RIGHT MAIN LANES
STA. 5199+00.00 TO STA. 5205+50.12
STA. 5218+06.38 TO STA. 5224+75.00

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.		BB0114	6	92

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14

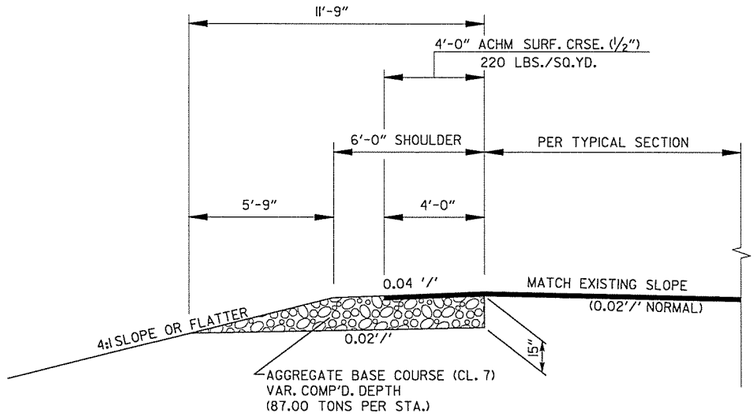
•• NOTE:
REFER TO SHEET 9 FOR ADDITIONAL INFORMATION.



•DENSITY REQUIREMENTS WAIVED.

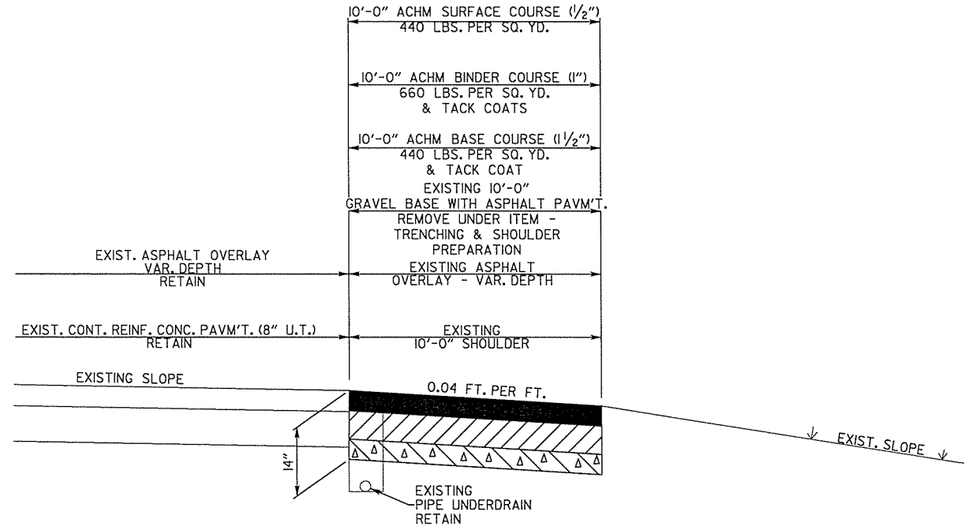
TEMPORARY PAVEMENT FOR MAINTENANCE OF TRAFFIC

STA. 5199+00.00 TO STA. 5208+50.12
STA. 5215+06.38 TO STA. 5224+75.00



TYPICAL SECTION OF SHOULDER RECONSTRUCTION (SHOWN IN DIRECTION OF TRAFFIC)

LT. MAIN LANES	RT. MAIN LANES
STA. 5199+00.00 TO STA. 5208+00.00	STA. 5199+00.00 TO STA. 5208+00.00
STA. 5215+56.00 TO STA. 5224+75.00	STA. 5215+56.00 TO STA. 5224+75.00



TYPICAL SECTION OF SHOULDER RECONSTRUCTION FOR MAINTENANCE OF TRAFFIC (SHOWN IN DIRECTION OF TRAFFIC)

LT. MAIN LANES	RT. MAIN LANES
STA. 5196+60.00 TO STA. 5208+96.34	STA. 5196+60.00 TO STA. 5208+24.98
STA. 5215+31.89 TO STA. 5227+15.00	STA. 5214+60.53 TO STA. 5227+15.00

TYPICAL SECTIONS OF IMPROVEMENT

JACOBS

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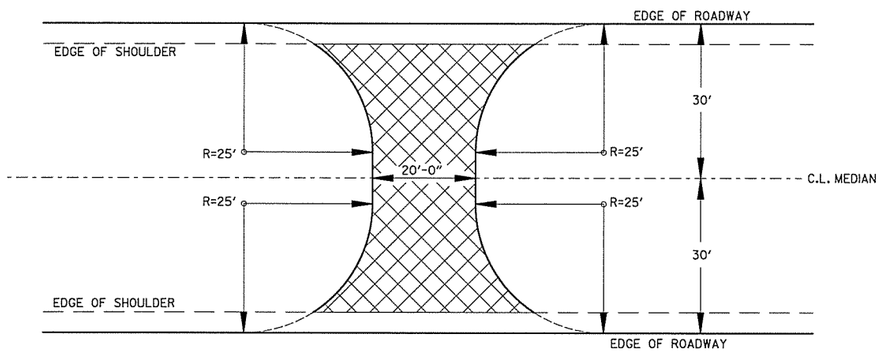
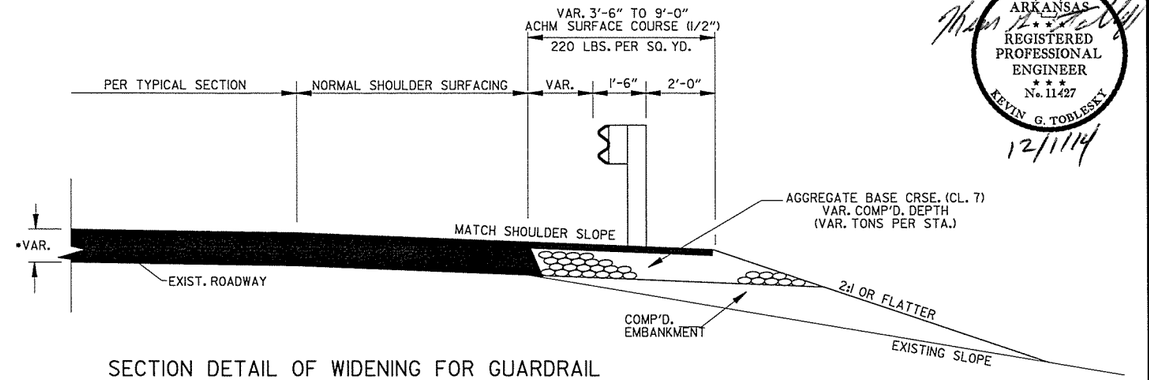
				6	ARK.			
				JOB NO.		BB0114	7	92
				(2)	SPECIAL DETAILS			

ASPHALT CONCRETE HOT MIX SURFACE COURSE
220 LBS. PER SQ. YD. AND AGGREGATE
BASE COURSE (CL. 7) 6" COMP'D. DEPTH



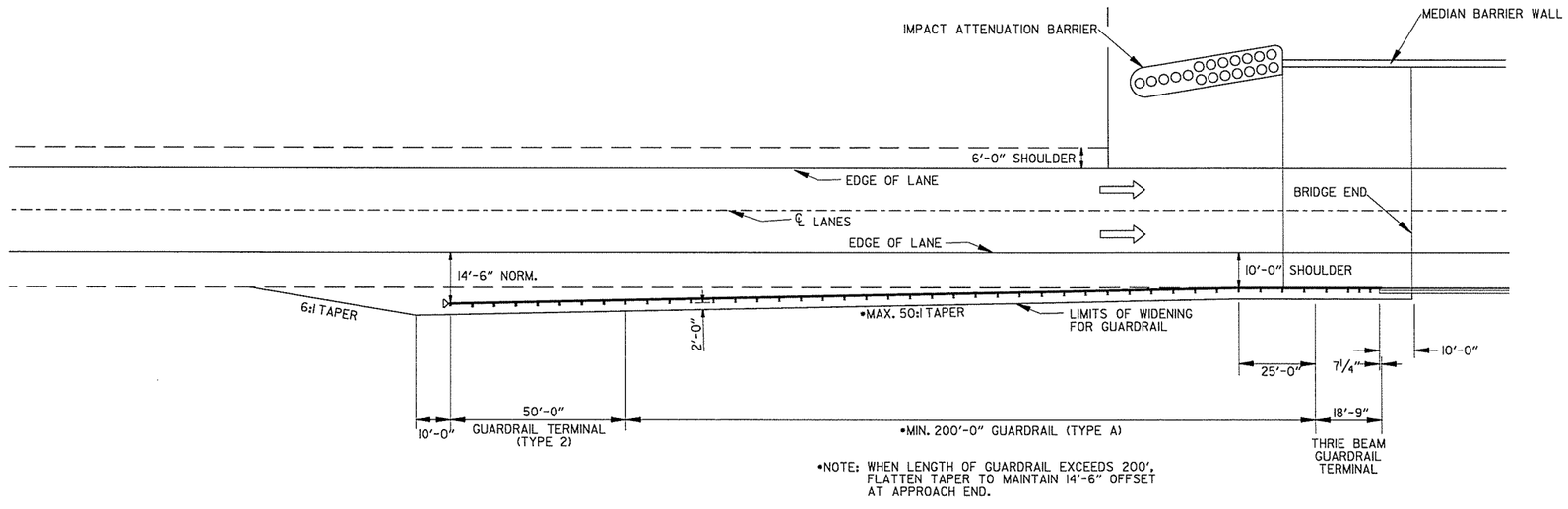
DETAIL OF MEDIAN CROSSING

•NOTE:
REFER TO SHEET 9 FOR
ADDITIONAL INFORMATION.



SECTION DETAIL OF WIDENING FOR GUARDRAIL

NOTE: REFER TO STANDARD DRAWINGS,
GR-8, GR-8A, GR-9, GR-9A, GR-10, & GR-10A
FOR ADDITIONAL INFORMATION.



•NOTE: WHEN LENGTH OF GUARDRAIL EXCEEDS 200',
FLATTEN TAPER TO MAINTAIN 14'-6" OFFSET
AT APPROACH END.

TYPICAL LAYOUT OF GUARDRAIL AT BRIDGE ENDS

STATE OF ARKANSAS
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No. 11427
KEVIN G. TOBLESKY
12/11/14

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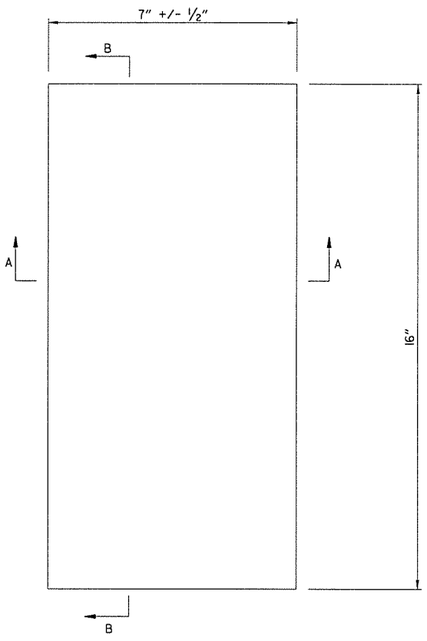
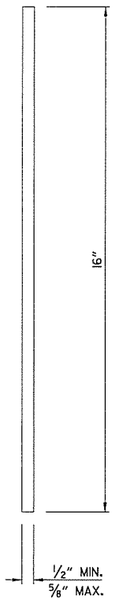
				6	ARK.			
				JOB NO.		BB0114	8	92

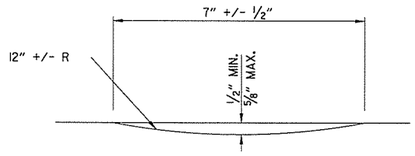
(2) SPECIAL DETAILS



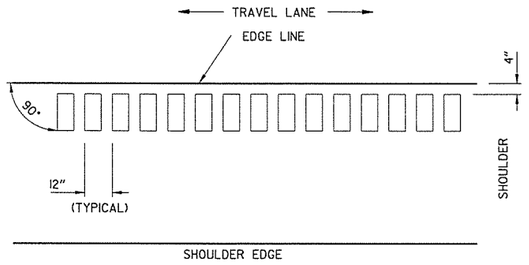
PLAN



SECTION B-B



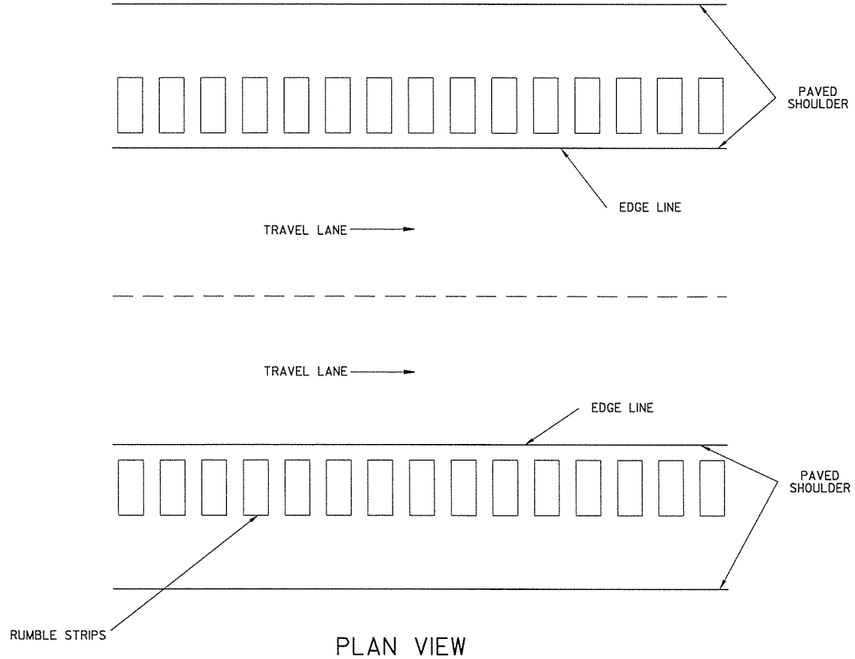
SECTION A-A



LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER

NOTES:

1. ALIGNMENT OF RUMBLE STRIPS SHALL GENERALLY BE STRAIGHT AND OFFSET APPROXIMATELY 4" FROM THE OUTER EDGE OF THE EDGE LINE. THIS OFFSET MAY BE ADJUSTED TO ACCOMMODATE VARIATIONS IN THE EDGE LINE AS WELL AS TO AVOID EXISTING LONGITUDINAL JOINTS.
2. THE ½" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 16" LENGTH. SOME VARIATIONS TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.
3. RUMBLE STRIPS SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH GUTTERS, OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.



PLAN VIEW

DETAILS OF RUMBLE STRIPS

STATE OF ARKANSAS
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No. 11427
KEVIN G. TOBLESKY
12/1/14

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.		BB0114	9	92
				(2)	SPECIAL DETAILS			

*NOTE:
REFER TO SPECIAL PROVISION "BRIDGE CONSTRUCTION CONTROL" FOR ADDITIONAL INFORMATION.

NOTE:
THE TEMPORARY PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE CONSTRUCTED IN SUCH A WAY AS TO MATCH THE FINAL SURFACE OF THE PAVEMENT TRANSITION AT BLACKFISH LAKE BRIDGE. TEMPORARY PORTLAND CEMENT CONCRETE PAVEMENT OUTSIDE THE TRANSITION SHALL MATCH THE EXISTING SURFACE.

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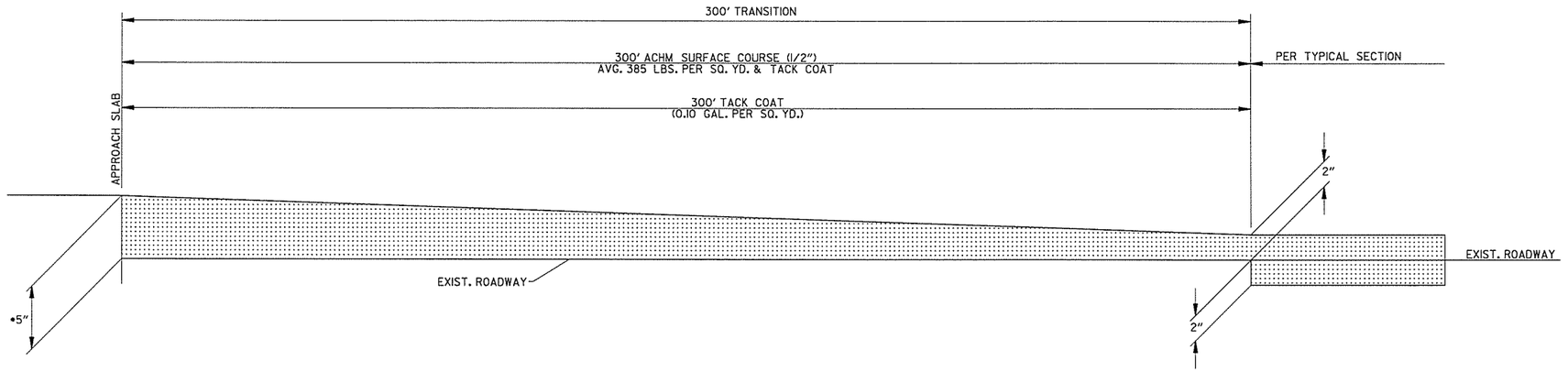
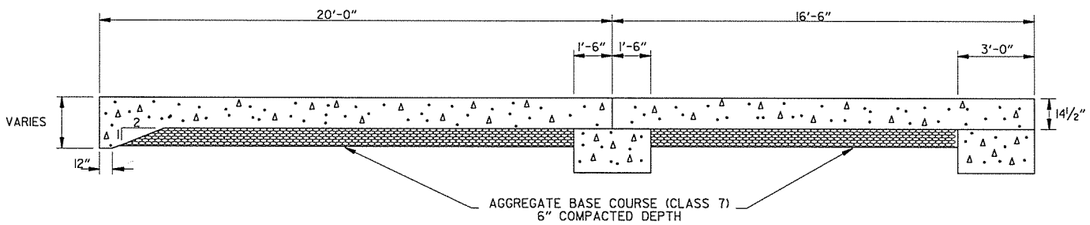
12/1/14

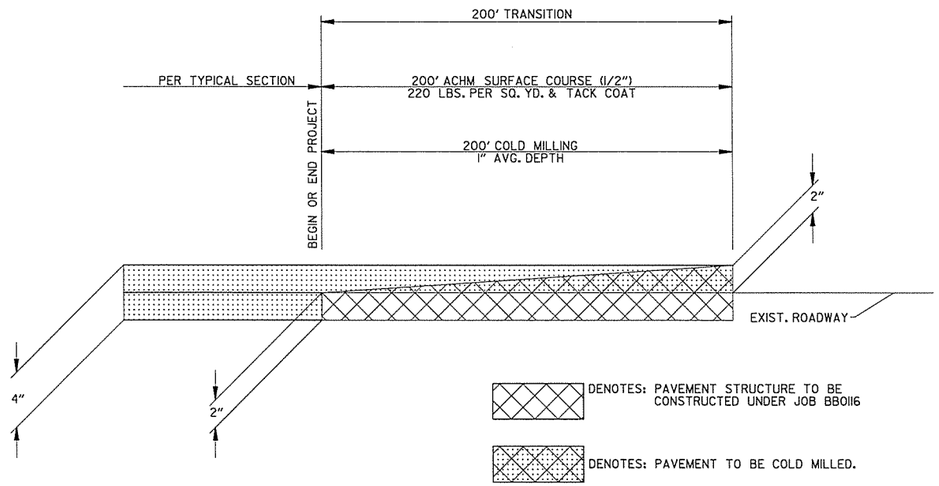


PAVEMENT TRANSITION AT BLACKFISH BRIDGE
BRIDGE NO. 06940

STA. 5205+50.12 TO STA. 5208+50.12
STA. 5215+06.38 TO STA. 5218+06.38



SPECIAL DETAIL OF APPROACH SLAB



PAVEMENT TRANSITION FOR BEGINNING & ENDING OF PROJECT

STA. 5194+00.00 TO STA. 5196+00.00
STA. 5228+00.00 TO STA. 5230+00.00

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.		BB0114	10	92

2 TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
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No. 11427
KEVIN G. TOBLESKY
12/1/14

N

STA. 5196+00.00
BEGIN JOB BB0114
LOG MILE 261.47

ENVIRONMENTALLY SENSITIVE AREA

EXIST. R/W & C OF A

EXIST. R/W

100 YR. FLOODPLAIN LIMIT

E-7 E-1

REVISIONS

DATE	REVISION

LEGEND

E-7 DROP INLET SILT FENCE

E-11 SILT FENCE

COUNTY ROAD 34
JEANETTE ROAD UNDERPASS)

STA. 5228+00.00
END JOB BB0114
LOG MILE 262.08

TEMPORARY EROSION CONTROL DETAILS
PRIOR TO CONSTRUCTION

JACOBS

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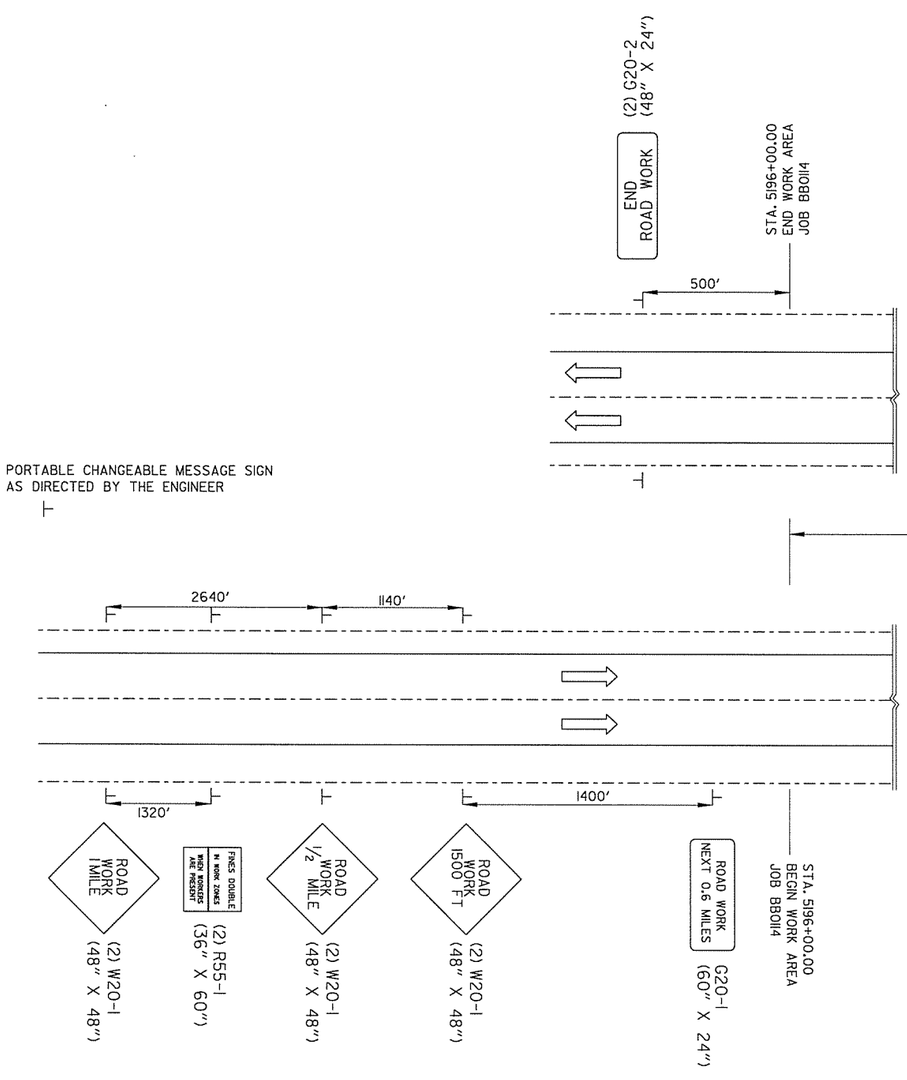
12/1/2014 10:27:29 AM ...\04erosioncontrol3.dgn

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.		BB0114	11	92
				(2)	MAINTENANCE OF TRAFFIC			

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14

NOTE: THESE SIGNS
MAY BE TEMPORARILY REPLACED BY
SOME OF THE ADVANCE SIGNS FOR LANE CLOSURES
WHILE WORK IS UNDER WAY IN THESE AREAS.



NOTE: THESE SIGNS
MAY BE TEMPORARILY REPLACED BY
SOME OF THE ADVANCE SIGNS FOR LANE CLOSURES
WHILE WORK IS UNDER WAY IN THESE AREAS.

ADVANCE SIGNS AT BEGINNING AND END OF JOB BB0114
ALL STAGES

MAINTENANCE OF TRAFFIC
ADVANCE WARNING SIGNS

JACOBS

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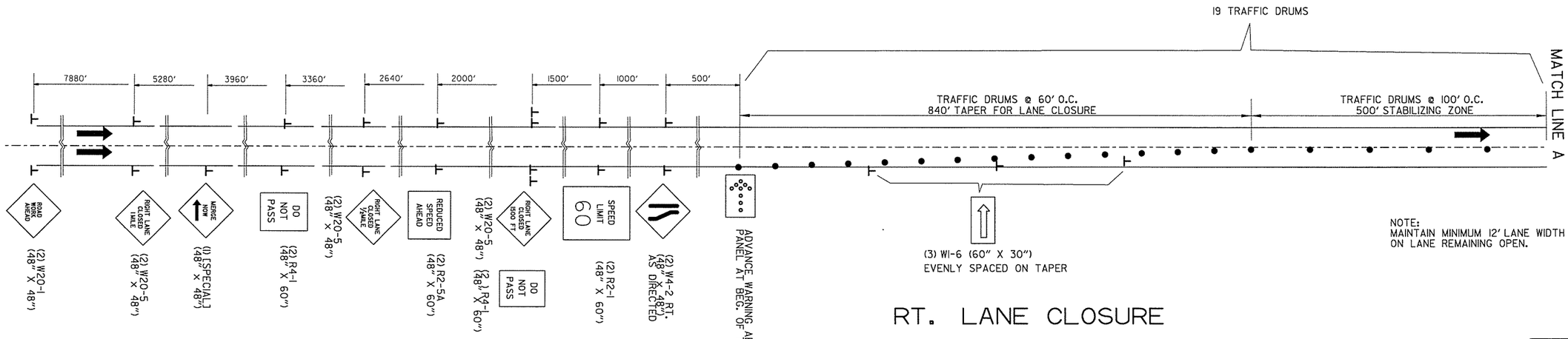
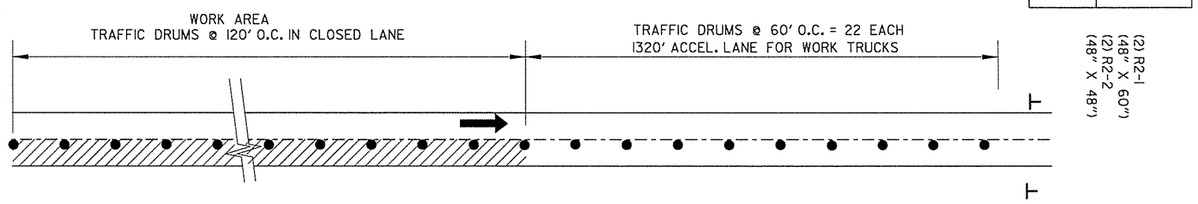
				6	ARK.			
				JOB NO.		BB0114	12	92
				(2)	MAINTENANCE OF TRAFFIC			

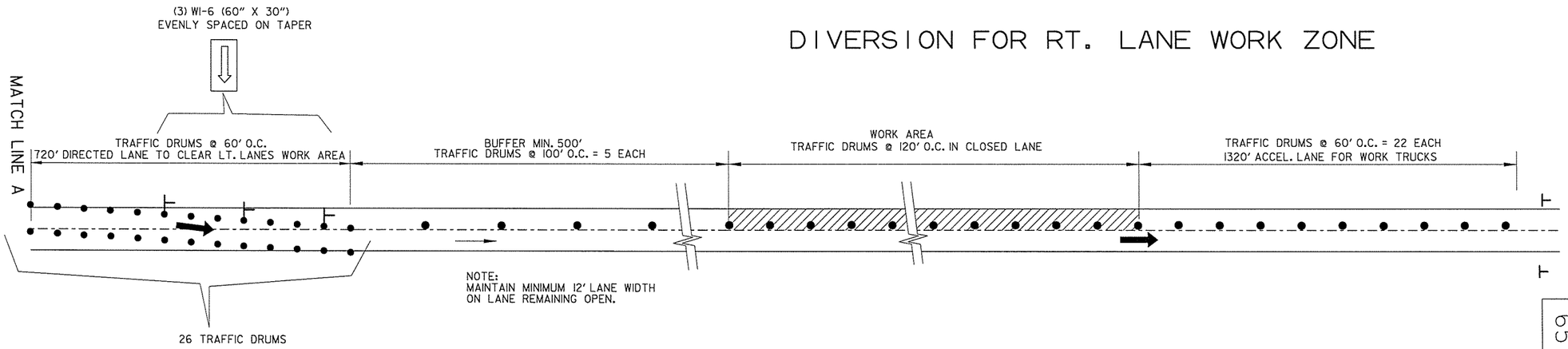
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14

RT. LANE CLOSURE



DIVERSION FOR RT. LANE WORK ZONE





DIVERSION FOR LT. LANE WORK ZONE

LANE CLOSURES FOR MAINTENANCE OF TRAFFIC

JACOBS

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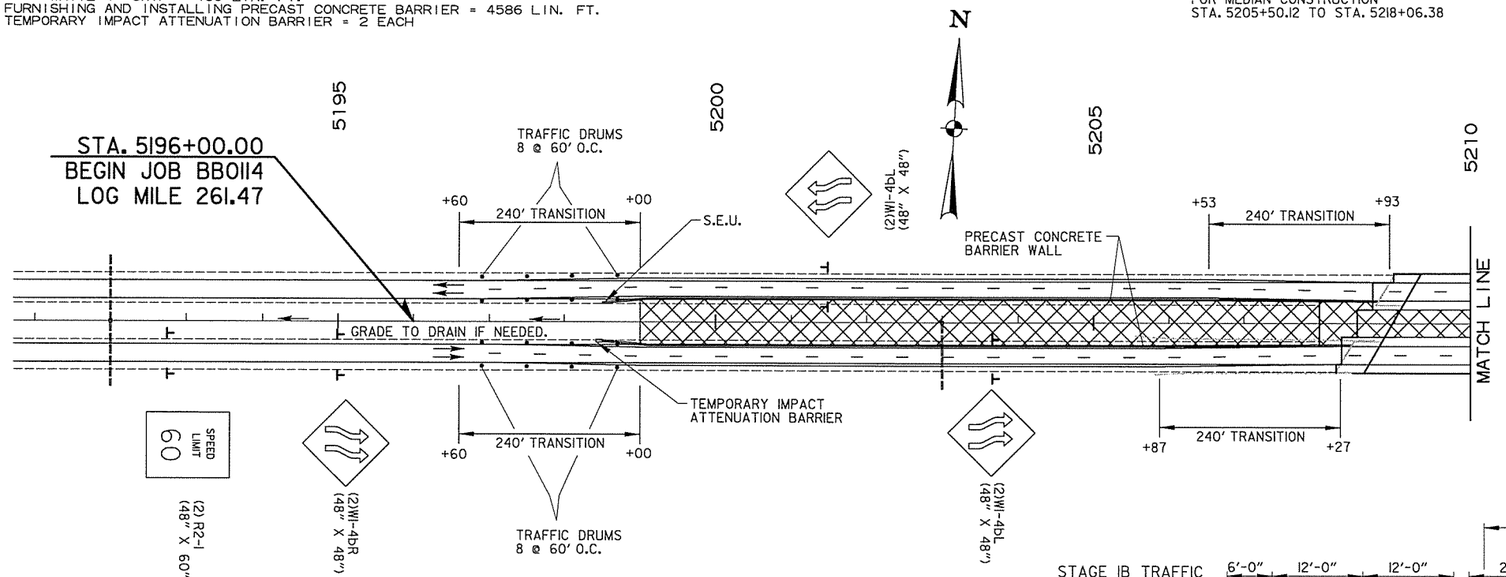
				6	ARK.			
				JOB NO.		BB0114	13	92
				(2)	MAINTENANCE OF TRAFFIC			

STAGE 1B
REMOVAL OF PERMANENT PAVEMENT MARKINGS = 10820 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4' CONTINUOUS = 4680 LIN. FT.
WHITE 4' CONTINUOUS = 4680 LIN. FT.
WHITE 4' SKIP = 1480 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4' CONTINUOUS = 1845 LIN. FT.
WHITE 4' CONTINUOUS = 1845 LIN. FT.
WHITE 4' SKIP = 460 LIN. FT.
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 4586 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 2 EACH

NOTE:
SPECIAL DETAILS SHEET 9
FOR MEDIAN CONSTRUCTION
STA. 5205+50.12 TO STA. 5218+06.38



SEQUENCE OF CONSTRUCTION FOR BRIDGE CONSTRUCTION

STAGE 1A
INSTALL ADVANCE WARNING SIGNS.
PLACE TEMPORARY TRAFFIC CONTROL DEVICES.
ROUTE I-40 TRAFFIC TO INSIDE LANE OF W.B. AND E.B. LANES.
TRENCH AND SHOULDER PREPARATION OF OUTSIDE SHOULDERS FOR M.O.T.
STAGE 1B
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANE AND SHOULDER.
PLACE P.C.C.B. WALL.
CONSTRUCT APPROACH AND PORTION OF BRIDGE IN MEDIAN.
STAGE 2
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND E.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 3
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED BRIDGE AND EXISTING E.B. LANES.
ROUTE I-40 W.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND W.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 4
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANES.
REMOVE M.O.T. PAVEMENT IN MEDIAN.
CONSTRUCT INSIDE SHOULDER.
STAGE 5
MILL AND INLAY & FINAL LIFT OF INSIDE LANES.
PLACE FINAL INSIDE LANE EDGE STRIPING.
MILL AND INLAY & FINAL LIFT OF OUTSIDE LANES.
PLACE FINAL OUTSIDE LANE EDGE STRIPING AND SKIP LINE.

STATE OF ARKANSAS
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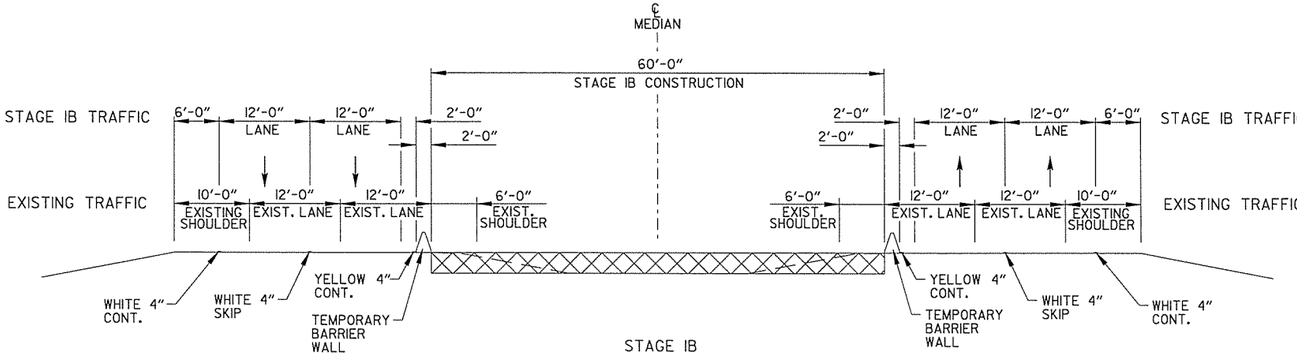
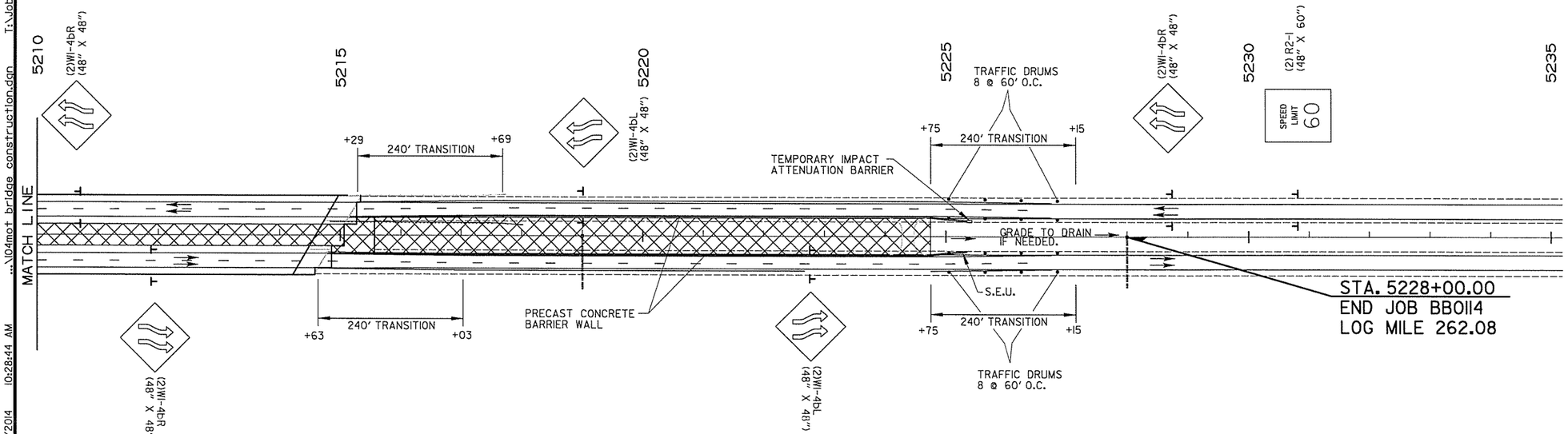




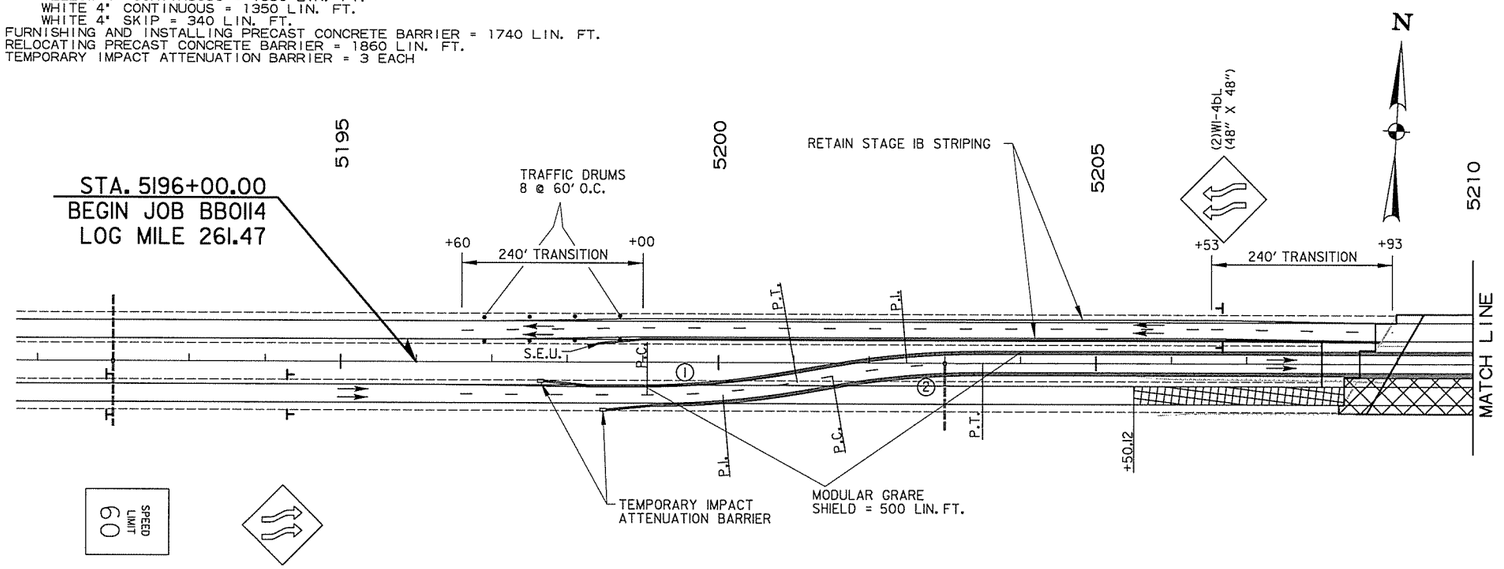
MAINTENANCE OF TRAFFIC
BRIDGE CONSTRUCTION
STAGE IB - BLACKFISH LAKE

JACOBS

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.		BB0114	14	92

(2) MAINTENANCE OF TRAFFIC

STAGE 2
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 3077 LIN. FT.
WHITE 4" CONTINUOUS = 2540 LIN. FT.
WHITE 4" SKIP = 770 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 1350 LIN. FT.
WHITE 4" CONTINUOUS = 1350 LIN. FT.
WHITE 4" SKIP = 340 LIN. FT.
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 1740 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 1860 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 3 EACH



SEQUENCE OF CONSTRUCTION FOR BRIDGE CONSTRUCTION

STAGE 1A
INSTALL ADVANCE WARNING SIGNS.
PLACE TEMPORARY TRAFFIC CONTROL DEVICES.
ROUTE I-40 TRAFFIC TO INSIDE LANE OF W.B. AND E.B. LANES.
TRENCH AND SHOULDER PREPARATION OF OUTSIDE SHOULDERS FOR M.O.T.
STAGE 1B
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANE AND SHOULDER.
PLACE P.C.C.B. WALL.
CONSTRUCT APPROACH AND PORTION OF BRIDGE IN MEDIAN.
STAGE 2
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND E.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 3
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED BRIDGE AND EXISTING E.B. LANES.
ROUTE I-40 W.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND W.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 4
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANES.
REMOVE M.O.T. PAVEMENT IN MEDIAN.
CONSTRUCT INSIDE SHOULDER.
STAGE 5
MILL AND INLAY & FINAL LIFT OF INSIDE LANES.
PLACE FINAL INSIDE LANE EDGE STRIPING.
MILL AND INLAY & FINAL LIFT OF OUTSIDE LANES.
PLACE FINAL OUTSIDE LANE EDGE STRIPING AND SKIP LINE.

STATE OF ARKANSAS
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No. 11427
KEVIN G. TOBLESKY
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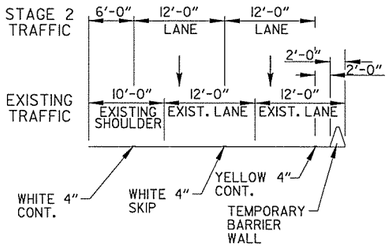
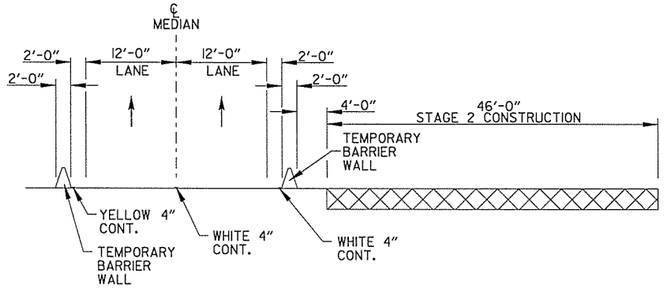
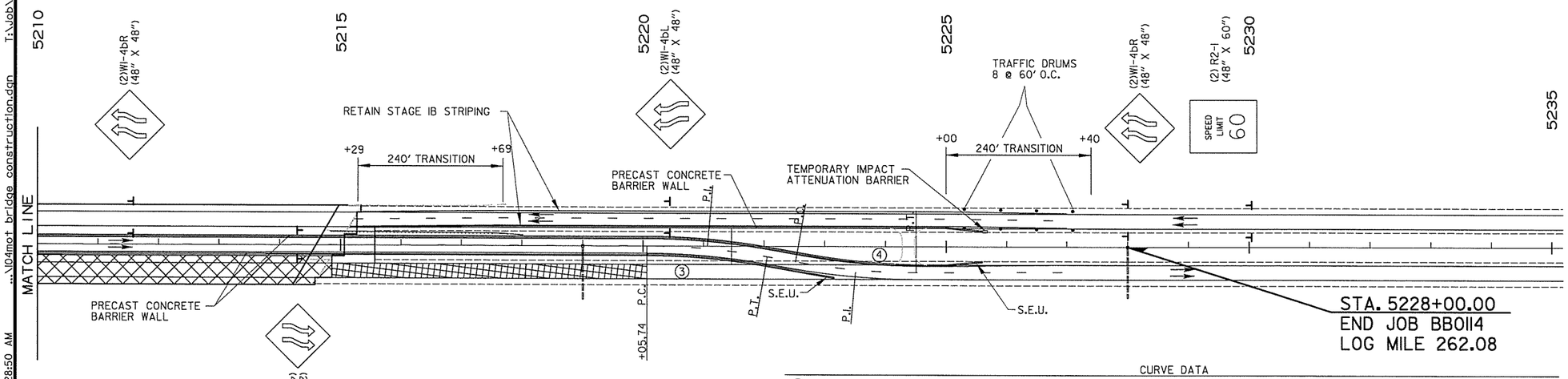




STAGE 2



CURVE DATA

①	②	③	④
PI = 5200+05.99	PI = 5202+53.11	PI = 5221+05.99	PI = 5223+53.11
Δ = 10°00'00" LT.	Δ = 10°00'00" LT.	Δ = 10°00'00" LT.	Δ = 10°00'00" LT.
D = 5°00'00"	D = 5°00'00"	D = 5°00'00"	D = 5°00'00"
T = 100.25'	T = 100.25'	T = 100.25'	T = 100.25'
L = 200.00'	L = 200.00'	L = 200.00'	L = 200.00'
PC = 5199+05.74	PC = 5201+52.86	PC = 5520+05.74	PC = 5222+52.86
PT = 5201+05.74	PT = 5203+52.86	PT = 5222+05.74	PT = 5224+52.86

MAINTENANCE OF TRAFFIC BRIDGE CONSTRUCTION STAGE 2 - BLACKFISH LAKE

JACOBS

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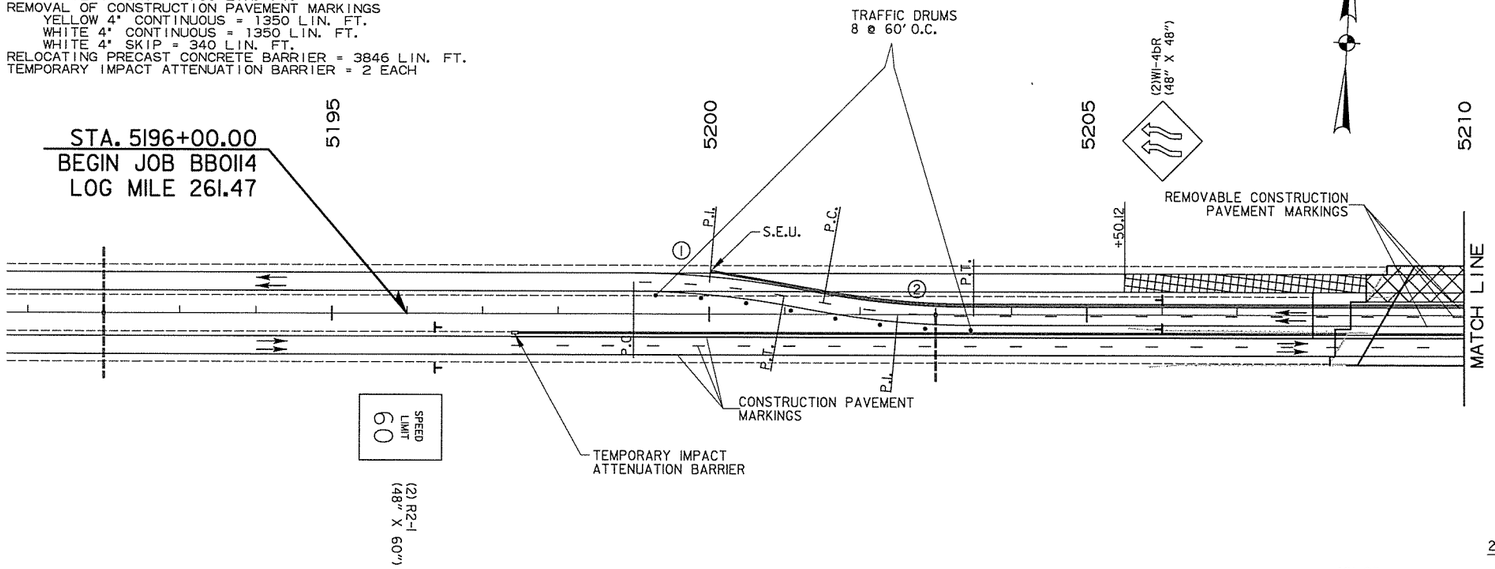
				6	ARK.			
				JOB NO.		BB0114	15	92

(2) MAINTENANCE OF TRAFFIC

STAGE 3
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 2580 LIN. FT.
WHITE 4" CONTINUOUS = 2580 LIN. FT.
WHITE 4" SKIP = 650 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 3100 LIN. FT.
WHITE 4" CONTINUOUS = 3100 LIN. FT.
WHITE 4" SKIP = 780 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 1350 LIN. FT.
WHITE 4" CONTINUOUS = 1350 LIN. FT.
WHITE 4" SKIP = 340 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 3846 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 2 EACH



SEQUENCE OF CONSTRUCTION FOR BRIDGE CONSTRUCTION

STAGE 1A
INSTALL ADVANCE WARNING SIGNS.
PLACE TEMPORARY TRAFFIC CONTROL DEVICES.
ROUTE I-40 TRAFFIC TO INSIDE LANE OF W.B. AND E.B. LANES.
TRENCH AND SHOULDER PREPARATION OF OUTSIDE SHOULDERS FOR M.O.T.
STAGE 1B
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANE AND SHOULDER.
PLACE P.C.C.B. WALL.
CONSTRUCT APPROACH AND PORTION OF BRIDGE IN MEDIAN.
STAGE 2
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND E.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 3
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED BRIDGE AND EXISTING E.B. LANES.
ROUTE I-40 W.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND W.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 4
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANES.
REMOVE M.O.T. PAVEMENT IN MEDIAN.
CONSTRUCT INSIDE SHOULDER.
STAGE 5
MILL AND INLAY & FINAL LIFT OF INSIDE LANES.
PLACE FINAL INSIDE LANE EDGE STRIPING.
MILL AND INLAY & FINAL LIFT OF OUTSIDE LANES.
PLACE FINAL OUTSIDE LANE EDGE STRIPING AND SKIP LINE.

STATE OF ARKANSAS
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KEVIN G. TOBLESKY
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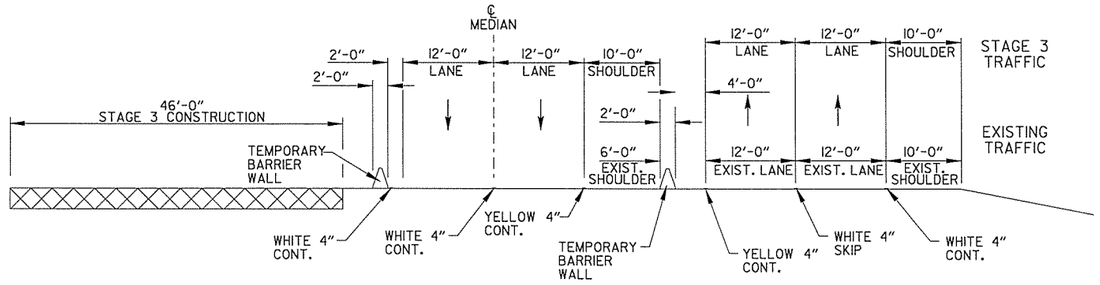
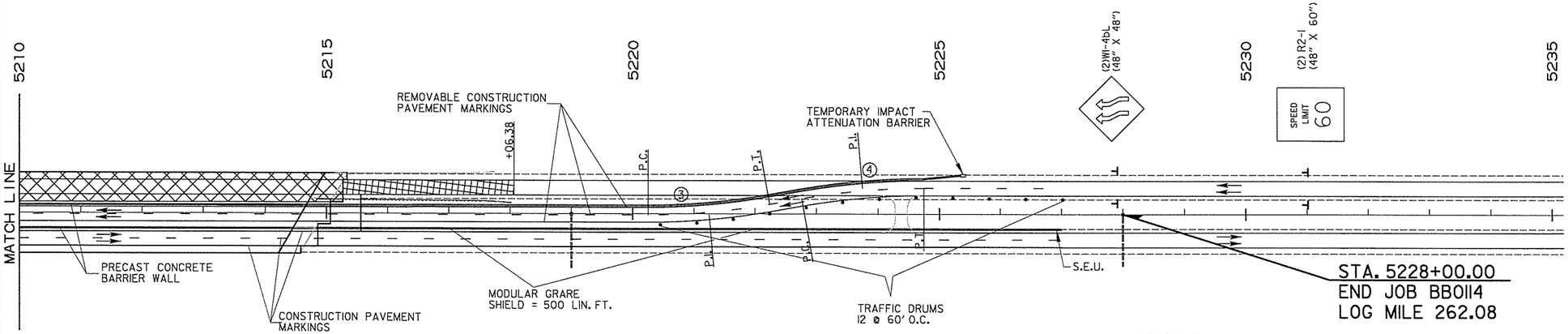


STAGE 3



CURVE DATA

①	②	③	④
PI = 5200+00.25	PI = 5202+53.15	PI = 5221+25.19	PI = 5223+78.09
Δ = 10°00'00" LT.	Δ = 10°00'00" LT.	Δ = 10°00'00" LT.	Δ = 10°00'00" LT.
D = 5°00'00"	D = 5°00'00"	D = 5°00'00"	D = 5°00'00"
T = 100.25'	T = 100.25'	T = 100.25'	T = 100.25'
L = 200.00'	L = 200.00'	L = 200.00'	L = 200.00'
PC = 5199+00.00	PC = 5201+52.90	PC = 5220+24.94	PC = 5222+77.84
PT = 5201+00.00	PT = 5203+52.90	PT = 5222+24.94	PT = 5224+77.84

MAINTENANCE OF TRAFFIC BRIDGE CONSTRUCTION STAGE 3 - BLACKFISH LAKE

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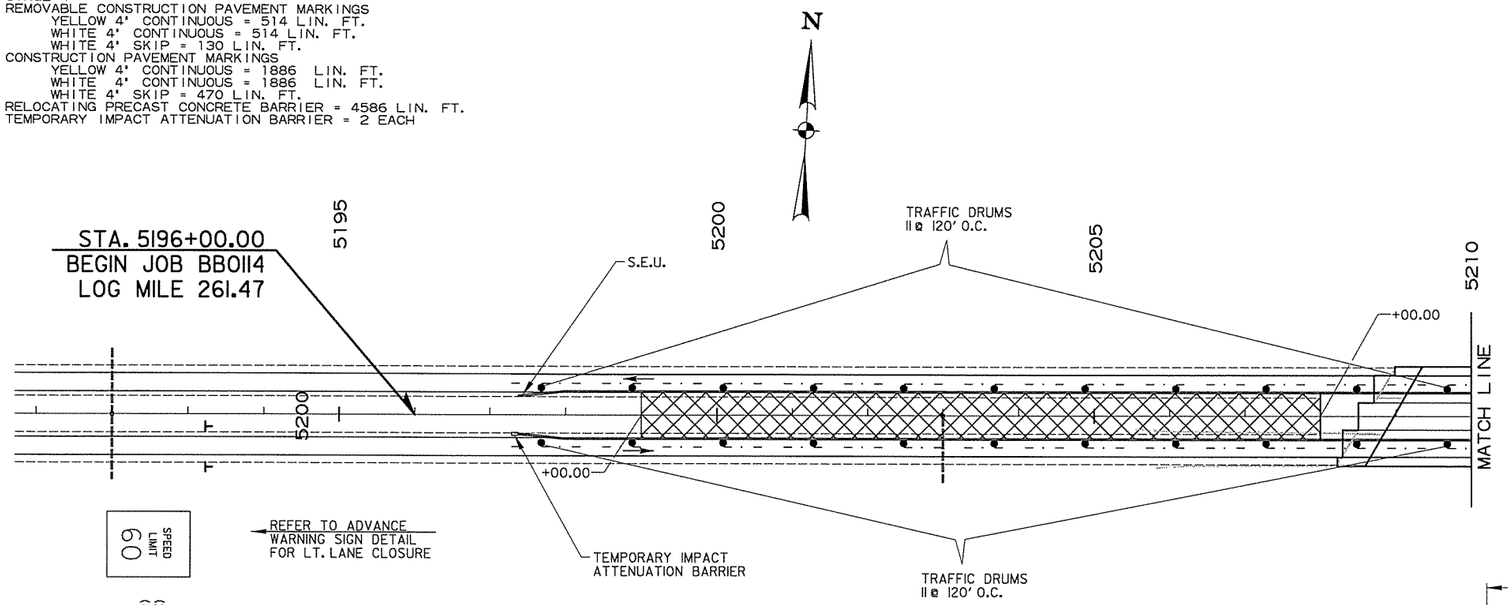
				6	ARK.			
				JOB NO.		BB0114	16	92
				(2)	MAINTENANCE OF TRAFFIC			

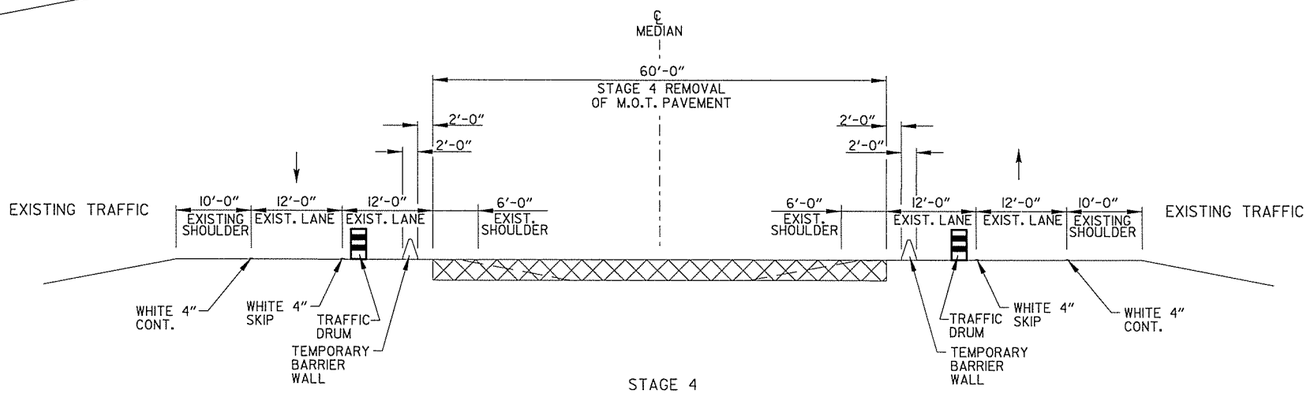
STAGE 4
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 514 LIN. FT.
WHITE 4" CONTINUOUS = 514 LIN. FT.
WHITE 4" SKIP = 130 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS
YELLOW 4" CONTINUOUS = 1886 LIN. FT.
WHITE 4" CONTINUOUS = 1886 LIN. FT.
WHITE 4" SKIP = 470 LIN. FT.
RELOCATING PRECAST CONCRETE BARRIER = 4586 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 2 EACH



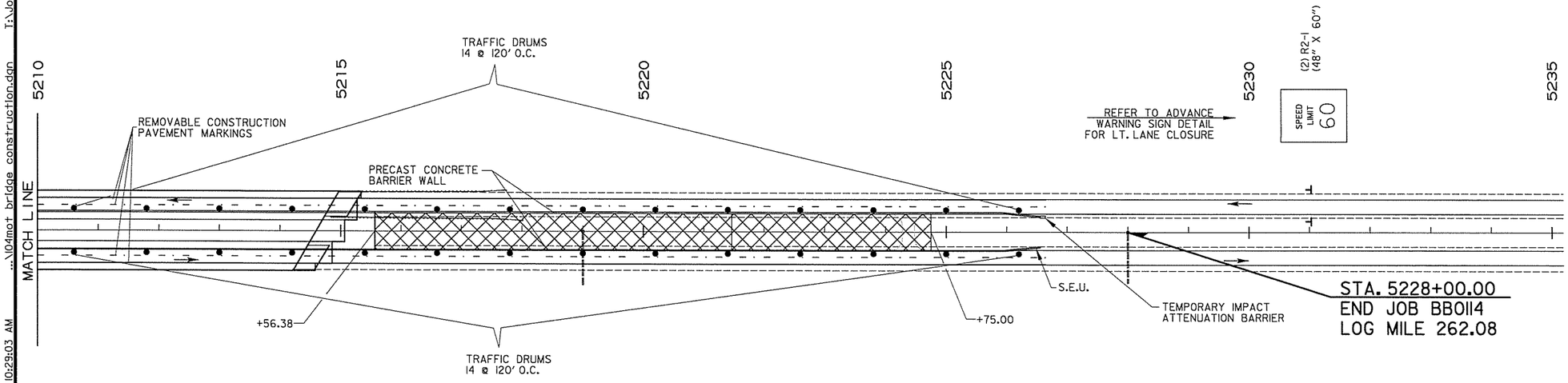
SEQUENCE OF CONSTRUCTION FOR BRIDGE CONSTRUCTION

STAGE 1A
INSTALL ADVANCE WARNING SIGNS.
PLACE TEMPORARY TRAFFIC CONTROL DEVICES.
ROUTE I-40 TRAFFIC TO INSIDE LANE OF W.B. AND E.B. LANES.
TRENCH AND SHOULDER PREPARATION OF OUTSIDE SHOULDERS FOR M.O.T.
STAGE 1B
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANE AND SHOULDER.
PLACE P.C.C.B. WALL.
CONSTRUCT APPROACH AND PORTION OF BRIDGE IN MEDIAN.
STAGE 2
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND E.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 3
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. TRAFFIC TO NEWLY CONSTRUCTED BRIDGE AND EXISTING E.B. LANES.
ROUTE I-40 W.B. TRAFFIC TO NEWLY CONSTRUCTED APPROACH AND BRIDGE IN MEDIAN.
CONSTRUCT APPROACH AND W.B. PORTION OF BRIDGE.
INSTALL GUARDRAIL.
STAGE 4
RELOCATE P.C.C.B. WALL.
ROUTE I-40 E.B. & W.B. TRAFFIC TO OUTSIDE LANES.
REMOVE M.O.T. PAVEMENT IN MEDIAN.
CONSTRUCT INSIDE SHOULDER.
STAGE 5
MILL AND INLAY & FINAL LIFT OF INSIDE LANES.
PLACE FINAL INSIDE LANE EDGE STRIPING.
MILL AND INLAY & FINAL LIFT OF OUTSIDE LANES.
PLACE FINAL OUTSIDE LANE EDGE STRIPING AND SKIP LINE.

STATE OF ARKANSAS
KEVIN G. TOBLESKY
No. 11427
REGISTERED PROFESSIONAL ENGINEER
12/1/14



STAGE 4



MAINTENANCE OF TRAFFIC
BRIDGE CONSTRUCTION
STAGE 4 - BLACKFISH LAKE

JACOBS

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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.		BB0114	17	92

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
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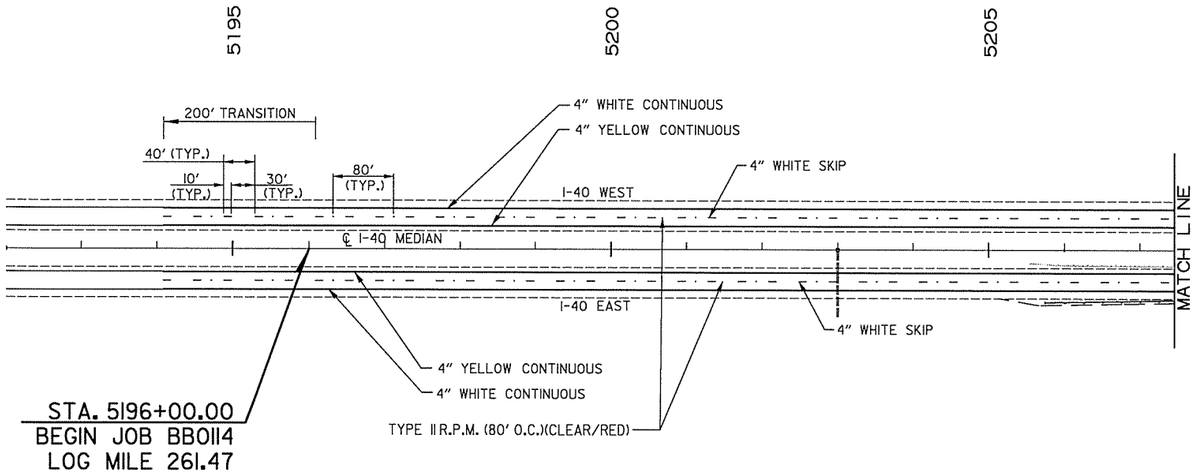
12/1/14



HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS (4" WHITE)
I-40 EASTBOUND

	QUANTITY
APPROACH SLAB & BRIDGE NO. 06940	
STA. 5208+29.33 TO STA. 5214+85.62	160 L.F.

HIGH PERFORMANCE PAVEMENT MARKINGS I-40 EASTBOUND
STA. 5194+00.00 TO STA. 5230+00.00

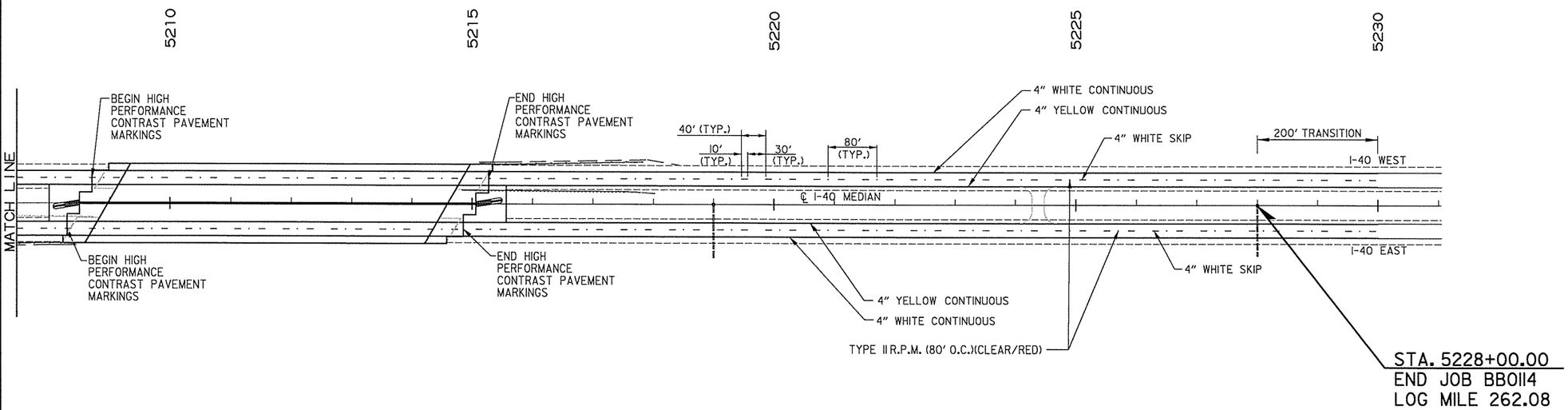
	QUANTITY
4" WHITE CONTINUOUS	3600 L.F.
4" YELLOW CONTINUOUS	3600 L.F.
4" WHITE SKIP	740 L.F.
RAISED PAVEMENT MARKINGS (80' O.C.)(TYPE II) CLEAR/RED	45 EACH

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS (4" WHITE)
I-40 WESTBOUND

	QUANTITY
APPROACH SLAB & BRIDGE NO. 06940	
STA. 5208+70.88 TO STA. 5215+27.16	160 L.F.

HIGH PERFORMANCE PAVEMENT MARKINGS I-40 WESTBOUND
STA. 5194+00.00 TO STA. 5230+00.00

	QUANTITY
4" WHITE CONTINUOUS	3600 L.F.
4" YELLOW CONTINUOUS	3600 L.F.
4" WHITE SKIP	740 L.F.
RAISED PAVEMENT MARKINGS (80' O.C.)(TYPE II) CLEAR/RED	45 EACH



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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.		BB0114	18	92

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESEY
12/1/14

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	BRIDGE CONSTRUCTION				END OF PROJECT	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING	HIGH PERFORMANCE PAVEMENT MARKING		
	STAGE 1B	STAGE 2	STAGE 3	STAGE 4						TYPE II (WHITE/RED)	4" WHITE	4" WHITE	SKIP	4" YELLOW
						LIN.FT.		LIN.FT.		EACH	LIN.FT.	LIN.FT.		
REMOVAL OF PERMANENT PAVEMENT MARKINGS	10820					10820								
CONSTRUCTION PAVEMENT MARKINGS	10840		6980	4242			22062							
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	4150	3040	3040					10230						
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		6387	5810	1158					13355					
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)					90					90				
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING 4" WHITE					320						320			
HIGH PERFORMANCE PAVEMENT MARKING 4" WHITE					7200							7200		
HIGH PERFORMANCE PAVEMENT MARKING (SKIP LINE) 4" WHITE					1480								1480	
HIGH PERFORMANCE PAVEMENT MARKING 4" YELLOW					7200									7200
TOTALS:						**10820**	**22062**	**10230**	**13355**	**90**	**320**	**7200**	**1480**	**7200**

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

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	BRIDGE CONSTRUCTION						MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	PORTABLE CHANGEABLE MESSAGE SIGN	ADVANCE WARNING ARROW PANEL	PORTABLE CONSTRUCTION LIGHTING	FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	MODULAR GLARE SHIELD
			STAGE 1A	STAGE 1B	STAGE 2	STAGE 3	STAGE 4	STAGE 5		NO.	SQ. FT.	EACH	WEEK	DAY	DAY	LIN. FT.		EACH			LIN. FT.
G20-1	ROAD WORK NEXT xx MILES	60"x24"	2	2	2	2	2	2	2	2	20.0										
G20-2	END ROAD WORK	48"x24"	4	4	4	4	4	4	4	4	32.0										
R2-1	SPEED LIMIT (ADVISORY)	48"x60"	8	12	12	12	8	8	12	12	240.0										
R2-2	SPEED LIMIT TRUCKS (ADVISORY)	48"x48"	4	4	4	4	4	4	4	4	64.0										
R2-5A	REDUCED SPEED AHEAD	48"x60"	4	4	4	4	4	4	4	4	80.0										
R4-1	DO NOT PASS	48"x60"	4				4	4	4	4	80.0										
R55-1	FINES DOUBLE IN WORK ZONES WHEN WORKERS ARE PRESENT	36"x60"	4	4	4	4	4	4	4	4	60.0										
RSP-1	SHOULDER CLOSED	48"x30"	4	4	4	4	4	4	4	4	40.0										
W1-4L	DOUBLE REVERSE CURVE TO LEFT	48"x48"		8	4	2			8	8	128.0										
W1-4R	DOUBLE REVERSE CURVE TO RIGHT	48"x48"		8	6	2			8	8	128.0										
W1-6	LARGE ARROW	60"x30"	6				12	12	12	12	150.0										
W20-1	ROAD WORK 1 MILE	48"x48"	4	4	4	4	4	4	4	4	64.0										
W20-1	ROAD WORK 1/2 MILE	48"x48"	4	4	4	4	4	4	4	4	64.0										
W20-1	ROAD WORK 1500 FT.	48"x48"	4	4	4	4	4	4	4	4	64.0										
W20-1	ROAD WORK AHEAD	48"x48"	4				4	4	4	4	64.0										
W20-5	RIGHT LANE CLOSED 1 MILE	48"x48"	4				4	4	4	4	64.0										
W20-5	RIGHT LANE CLOSED 1/2 MILE	48"x48"	4				4	4	4	4	64.0										
W20-5	RIGHT LANE CLOSED 1500 FT	48"x48"	4				4	4	4	4	64.0										
W4-2 RT	RIGHT LANE MERGE	48"x48"	4				4	4	4	4	64.0										
SPECIAL	MERGE NOW	48"x48"	2				2	2	2	2	32.0										
	TRAFFIC DRUMS		132	32	16	20	194	194	194			194									
	PORTABLE CHANGEABLE MESSAGE SIGN		2	2	2	2	2	2	2				90								
	ADVANCE WARNING ARROW PANEL		2				2	2	2					1280							
	PORTABLE CONSTRUCTION LIGHTING				2	2			2						1280						
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER			4586	1740				6326							6326					
	RELOCATING PRECAST CONCRETE BARRIER				1860	3846	4586		10292								10292				
	TEMPORARY IMPACT ATTENUATION BARRIER			2	1				3									3			
	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)				2	2	2		6										6		
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			2	3	2	2		9											9	
	MODULAR GLARE SHIELD				500	500			500												500
TOTALS:											**1566.0**	**194**	**90**	**1280**	**1280**	**6326**	**10292**	**3**	**6**	**9**	**500**

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	13	26
TOTALS:	**13**	**26**

NOTE: QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
BASIS OF ESTIMATE: PATCHING 25 TONS PER MILE
TACK COAT 50 GAL. PER MILE

FURNISH AND OPERATION OF MOBILE SPEED NOTIFICATION SYSTEM

LOCATION	EACH
ENTIRE PROJECT - IF AND WHERE DIRECTED BY THE ENGINEER.	2
TOTAL:	**2**

AUTOMATED WORK ZONE INFORMATION SYSTEM

LOCATION	*AWIS MOBILIZATION	*AWIS OPERATION	* DEVICE RELOCATION	FURNISH AND INSTALL			
				*CLOSED CIRCUIT TELEVISION SYSTEM	*PUBLIC NOTIFICATION SYSTEM	*VARIABLE MESSAGE SIGN	*VEHICLE DETECTION SYSTEM
	LUMP SUM	MONTH	EACH	EACH			
ENTIRE PROJECT	1.00	21	16	2	2	6	22
TOTALS:	**1.00**	**21**	**16**	**2**	**2**	**6**	**22**

* QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
REFER TO "AUTOMATED WORK ZONE INFORMATION SYSTEM" SPECIAL PROVISION.

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.		BB0114	19	92
				(2)	QUANTITIES			

REMOVAL AND DISPOSAL OF ITEMS

FROM			TO			CONCRETE PAVEMENT	APPROACH SLAB AND GUTTERS	FENCE	CONCRETE PARAPET WALL	GUARDRAIL
STATION	SIDE	LOCATION	STATION	SIDE	LOCATION	SQ. YD.	EACH	LIN. FT.	EACH	LIN. FT.
5208+53	RIGHT	RIGHT MAIN LANES I-40							1	
5208+90	LEFT	RIGHT MAIN LANES I-40							1	
5214+79	RIGHT	LEFT MAIN LANES I-40							1	
5215+03	LEFT	LEFT MAIN LANES I-40							1	
5206+15	RIGHT	RIGHT MAIN LANES I-40	5208+40	RIGHT	RIGHT MAIN LANES I-40					225
5206+77	LEFT	RIGHT MAIN LANES I-40	5208+77	LEFT	RIGHT MAIN LANES I-40					200
5214+92	RIGHT	LEFT MAIN LANES I-40	5216+92	RIGHT	LEFT MAIN LANES I-40					200
5215+16	LEFT	LEFT MAIN LANES I-40	5217+41	LEFT	LEFT MAIN LANES I-40					225
5208+49	RIGHT	RIGHT MAIN LANES I-40						70		
5209+61	LEFT	LEFT MAIN LANES I-40						70		
5213+95	RIGHT	RIGHT MAIN LANES I-40						70		
5215+11	LEFT	LEFT MAIN LANES I-40						70		
5208+62		RIGHT MAIN LANES I-40					1			
5209+11		LEFT MAIN LANES I-40					1			
5214+46		RIGHT MAIN LANES I-40					1			
5214+94		LEFT MAIN LANES I-40					1			
5199+00	MEDIAN	I-40	5208+00	MEDIAN	I-40	6000				
5215+56	MEDIAN	I-40	5224+75	MEDIAN	I-40	6127				
ENTIRE PROJECT		RIGHT AND LEFT MAIN LANES I-40			RIGHT AND LEFT MAIN LANES I-40					
TOTALS:						12127	4	280	4	850

IMPACT ATTENUATION BARRIER

STATION	LOCATION	(TYPE A) EACH
5208+31	C.L. MEDIAN I-40	1
5215+26	C.L. MEDIAN I-40	1
TOTAL:		2

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BENCH MARKS

STATION	LOCATION	EACH
5214+15	BLACKFISH LAKE BRIDGE - SE CORNER	1
TOTAL:		1

NOTE: SHOWN FOR INFORMATION ONLY. BENCH MARKS SHALL BE FURNISHED AND PLACED BY STATE FORCES.

GUARDRAIL

STATION	STATION	SIDE	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
				LIN. FT.	EACH	
5205+79.20	5208+47.95	RIGHT	RIGHT MAIN LANES I-40	200	1	1
5215+08.56	5217+77.31	LEFT	LEFT MAIN LANES I-40	200	1	1
TOTALS:				400	2	2

TRENCHING & SHOULDER PREPARATION

STATION	STATION	SIDE	LOCATION	STATION
5196+60.00	5208+24.98	RIGHT	RIGHT MAIN LANES I-40	13
5214+60.53	5227+15.00	RIGHT	RIGHT MAIN LANES I-40	14
5196+60.00	5208+96.34	LEFT	LEFT MAIN LANES I-40	13
5215+31.89	5227+15.00	LEFT	LEFT MAIN LANES I-40	13
TOTAL:				53

TOPSOIL FURNISHED AND PLACED

STATION	STATION	SIDE	LOCATION	CU. YD.
5194+00.00	5208+22.65	RIGHT	RIGHT MAIN LANES I-40	71
5214+58.13	5230+00.00	RIGHT	RIGHT MAIN LANES I-40	76
5194+00.00	5208+00.00	LEFT	RIGHT MAIN LANES I-40	69
5215+56.00	5230+00.00	LEFT	RIGHT MAIN LANES I-40	72
5194+00.00	5208+00.00	RIGHT	LEFT MAIN LANES I-40	69
5215+56.00	5230+00.00	RIGHT	LEFT MAIN LANES I-40	72
5194+00.00	5208+98.37	LEFT	LEFT MAIN LANES I-40	74
5215+33.85	5230+00.00	LEFT	LEFT MAIN LANES I-40	73
TOTAL:				576

NOTE: QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

FENCING

STATION	SIDE	LOCATION	WIRE FENCE (TYPE A)	* 16'-0" GATES
			LIN. FT.	EACH
5208+57	RIGHT	RIGHT MAIN LANES I-40	66	
5209+37	LEFT	LEFT MAIN LANES I-40	56	1
5214+20	RIGHT	RIGHT MAIN LANES I-40	50	1
5214+99	LEFT	LEFT MAIN LANES I-40	72	
TOTALS:			244	2

* DENOTES ALTERNATE BID ITEM.

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	*UNCLASSIFIED EXCAVATION	*COMPACTED EMBANKMENT	*SOIL STABILIZATION
			CU. YD.		TON
5199+00.00	5208+50.12	C.L. MEDIAN I-40 / TEMPORARY MEDIAN PAVEMENT FOR M.O.T.	1022	2818	
5215+06.38	5224+75.00	C.L. MEDIAN I-40 / TEMPORARY MEDIAN PAVEMENT FOR M.O.T.	1042	2873	
5224+40.00		C.L. MEDIAN I-40 / MEDIAN CROSSING		59	
ENTIRE PROJECT		EARTHWORK FOR PAVEMENT TRANSITION AT FISHING LAKE BRIDGE		373	
ENTIRE PROJECT		GUARDRAIL INSTALLATION		30	
5199+00.00	5208+00.00	C.L. MEDIAN I-40 / REMOVAL OF TEMPORARY MEDIAN PAVEMENT FOR M.O.T.	3900		
5215+56.00	5224+75.00	C.L. MEDIAN I-40 / REMOVAL OF TEMPORARY MEDIAN PAVEMENT FOR M.O.T.	3982		
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.					100
* TOTALS:			9946	6153	100

NOTE: QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

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

APPROACH GUTTERS AND SLABS

STATION	STATION	SIDE	LOCATION	APPROACH GUTTERS (TYPE C)	APPROACH SLABS (TYPE SPECIAL 1)	REINFORCING STEEL RDWY. (GR. 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	AGGREGATE BASE CRS. (CLASS 7)
				CU. YD.		POUND	POUND	TON
5208+60.51	5208+97.01		CENTERLINE I-40		300.55	33494	1188	153.3
		RIGHT	RIGHT MAIN LANES I-40	18.10		995		
		LEFT	LEFT MAIN LANES I-40	18.10		995		
5214+59.49	5214+95.99		CENTERLINE I-40		300.55	33494	1188	153.3
		RIGHT	RIGHT MAIN LANES I-40	18.10		995		
		LEFT	LEFT MAIN LANES I-40	18.10		995		
TOTALS:				72.40	601.10	70968	2376	306.6

JACOBS

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.		BB0114	20	92
				(2)		QUANTITIES		

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RUMBLE STRIPS

STATION	STATION	SIDE	LOCATION	IN ASPHALT SHOULDER
				LIN. FT.
5194+00.00	5208+22.65	RIGHT	RIGHT MAIN LANES I-40	1422.65
5214+58.13	5230+00.00	RIGHT	RIGHT MAIN LANES I-40	1541.87
5194+00.00	5208+00.00	LEFT	RIGHT MAIN LANES I-40	1400.00
5215+56.00	5230+00.00	LEFT	RIGHT MAIN LANES I-40	1444.00
5194+00.00	5208+00.00	RIGHT	LEFT MAIN LANES I-40	1400.00
5215+56.00	5230+00.00	RIGHT	LEFT MAIN LANES I-40	1444.00
5194+00.00	5208+98.37	LEFT	LEFT MAIN LANES I-40	1498.37
5215+33.85	5230+00.00	LEFT	LEFT MAIN LANES I-40	1466.15
TOTAL:				11617.04

COLD MILLING ASPHALT PAVEMENT

	STATION	STATION	LOCATION	LENGTH LIN. FT.	AVG. WIDTH FEET	SQ. YD.
**	5194+00.00	5196+00.00	RIGHT MAIN LANES - TRANSITION	200.00	28.0	622.22
*	5196+00.00	5196+60.00	RIGHT MAIN LANES	60.00	28.0	186.67
*	5196+60.00	5199+00.00	RIGHT MAIN LANES	240.00	26.0	693.33
*	5199+00.00	5205+50.12	RIGHT MAIN LANES	650.12	24.0	1733.65
*	5218+06.38	5224+75.00	RIGHT MAIN LANES	668.62	24.0	1782.99
*	5224+75.00	5227+15.00	RIGHT MAIN LANES	240.00	26.0	693.33
*	5227+15.00	5228+00.00	RIGHT MAIN LANES	85.00	28.0	264.44
**	5228+00.00	5230+00.00	RIGHT MAIN LANES - TRANSITION	200.00	28.0	622.22
**	5194+00.00	5196+00.00	RIGHT MAIN LANES - TRANSITION	200.00	28.0	622.22
*	5196+00.00	5196+60.00	RIGHT MAIN LANES	60.00	28.0	186.67
*	5196+60.00	5199+00.00	RIGHT MAIN LANES	240.00	26.0	693.33
*	5199+00.00	5205+50.12	RIGHT MAIN LANES	650.12	24.0	1733.65
*	5218+06.38	5224+75.00	RIGHT MAIN LANES	668.62	24.0	1782.99
*	5224+75.00	5227+15.00	RIGHT MAIN LANES	240.00	26.0	693.33
*	5227+15.00	5228+00.00	RIGHT MAIN LANES	85.00	28.0	264.44
**	5228+00.00	5230+00.00	RIGHT MAIN LANES - TRANSITION	200.00	28.0	622.22
	TOTAL:					13197.70

* NOTE: MILLING DEPTH 2".
** NOTE: AVERAGE MILLING DEPTH 1".

NOTE: THE REMOVAL AND DISPOSAL OF PLOWABLE PAVEMENT MARKERS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "COLD MILLING ASPHALT PAVEMENT."

PERMANENT EROSION CONTROL

STATION	STATION	LOCATION / DESCRIBTION	SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION
			ACRE	TON	ACRE	M. GAL.	ACRE
ENTIRE	PROJECT	C.L. MEDIAN	1.52	3.04	1.52	155.0	1.52
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.38	0.76	0.38	38.8	0.38
TOTALS:			1.90	3.80	1.90	193.8	1.90

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING.

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

*QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

TEMPORARY EROSION CONTROL ITEMS AND DEVICES

STATION	STATION	LOCATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	ACRE	M. GAL.	BAG	CU. YD.	LIN. FT.	LIN. FT.	CU. YD.
ENTIRE	PROJECT	PRIOR TO CONSTRUCTION	1.52	1.52	31.0			64	120	7
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			0.38	0.38	7.8	88	12	16	30	2
TOTALS:			1.90	1.90	38.8	88	12	80	150	9

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

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

*QUANTITIES ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

BASE AND SURFACING - TEMPORARY PORTLAND CEMENT CONCRETE PAVEMENT

STATION	STATION	LOCATION	LENGTH	CEMENT STABILIZED CRUSHED STONE BASE COURSE (6" COMP'D. DEPTH)				ACHM SURFACE COURSE (3/8") 110 LBS. PER SQ. YD.			TACK COAT 0.03 GAL. PER SQ. YD.			TEMPORARY PORTLAND CEMENT CONCRETE PAVEMENT	
				AVG. WID.	PROCESSING	CEMENT	AGGREGATE	AVG. WID.	SQ. YD.	(PG64-22)	AVG. WID.	SQ. YD.	GAL.	AVG. WID.	10" U.T.
			FEET	FEET	SQ. YD.	TON	TON	FEET		TON	FEET			FEET	SQ. YD.
5199+00.00	5208+50.12	C.L. MEDIAN I-40	950.12	60.00	6334.13	133.02	2083.93	60.00	6334.13	348.38	60.00	6334.13	190.02	60.00	6334.13
5215+06.38	5224+75.00	C.L. MEDIAN I-40	968.62	60.00	6457.47	135.61	2124.51	60.00	6457.47	355.16	60.00	6457.47	193.72	60.00	6457.47
TOTALS:					12791.60	268.63	4208.44		12791.60	703.54		12791.60	383.74		12791.60

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (3/8").....94.3% MIN. AGGR.....5.7% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
CEMENT STABILIZED CRUSHED STONE BASE COURSE = 94.0% AGGR. 6.0% CEMENT

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.		B80114	21	92
				(2)		QUANTITIES		

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BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")				
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 76-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 76-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	PG 76-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
RIGHT MAIN LANES - INLAY																						
5196+00.00	5196+60.00	RIGHT MAIN LANES	60.00			28.00	186.67	0.10	18.67									28.00	186.67	220		20.53
5196+60.00	5199+00.00	RIGHT MAIN LANES	240.00			26.00	693.33	0.10	69.33									26.00	693.33	220		76.27
5199+00.00	5205+50.12	RIGHT MAIN LANES	650.12			24.00	1733.65	0.10	173.37									24.00	1733.65	220		190.70
5218+06.38	5224+75.00	RIGHT MAIN LANES	668.62			24.00	1782.99	0.10	178.30									24.00	1782.99	220		196.13
5224+75.00	5227+15.00	RIGHT MAIN LANES	240.00			26.00	693.33	0.10	69.33									26.00	693.33	220		76.27
5227+15.00	5228+00.00	RIGHT MAIN LANES	85.00			28.00	264.44	0.10	26.44									28.00	264.44	220		29.09
RIGHT MAIN LANES & SHOULDERS																						
5194+00.00	5205+50.12	RIGHT MAIN LANES & SHOULDERS	1150.12			38.00	4856.06	0.03	145.68									38.00	4856.06	220		534.17
5205+50.12	5208+50.12	RIGHT MAIN LANES & SHOULDERS - TRANSITION	300.00			38.00	1266.67	0.03	38.00									38.00	1266.67	385		243.83
5194+00.00	5208+50.12	RIGHT MAIN LANES & SHOULDERS	1450.12			38.00	6122.73	0.10	612.27													
5215+06.38	5218+06.38	RIGHT MAIN LANES & SHOULDERS - TRANSITION	300.00			38.00	1266.67	0.03	38.00									38.00	1266.67	385		243.83
5218+06.38	5230+00.00	RIGHT MAIN LANES & SHOULDERS	1193.62			38.00	5039.73	0.03	151.19									38.00	5039.73	220		554.37
5215+06.38	5230+00.00	RIGHT MAIN LANES & SHOULDERS	1493.62			38.00	6306.40	0.10	630.64													
LEFT MAIN LANES - INLAY																						
5196+00.00	5196+60.00	LEFT MAIN LANES	60.00			28.00	186.67	0.10	18.67									28.00	186.67	220		20.53
5196+60.00	5199+00.00	LEFT MAIN LANES	240.00			26.00	693.33	0.10	69.33									26.00	693.33	220		76.27
5199+00.00	5205+50.12	LEFT MAIN LANES	650.12			24.00	1733.65	0.10	173.37									24.00	1733.65	220		190.70
5218+06.38	5224+75.00	LEFT MAIN LANES	668.62			24.00	1782.99	0.10	178.30									24.00	1782.99	220		196.13
5224+75.00	5227+15.00	LEFT MAIN LANES	240.00			26.00	693.33	0.10	69.33									26.00	693.33	220		76.27
5227+15.00	5228+00.00	LEFT MAIN LANES	85.00			28.00	264.44	0.10	26.44									28.00	264.44	220		29.09
LEFT MAIN LANES & SHOULDERS																						
5194+00.00	5205+50.12	LEFT MAIN LANES & SHOULDERS	1150.12			38.00	4856.06	0.03	145.68									38.00	4856.06	220		534.17
5205+50.12	5208+50.12	LEFT MAIN LANES & SHOULDERS - TRANSITION	300.00			38.00	1266.67	0.03	38.00									38.00	1266.67	385		243.83
5194+00.00	5208+50.12	LEFT MAIN LANES & SHOULDERS	1450.12			38.00	6122.73	0.10	612.27													
5215+06.38	5218+06.38	LEFT MAIN LANES & SHOULDERS - TRANSITION	300.00			38.00	1266.67	0.03	38.00									38.00	1266.67	385		243.83
5218+06.38	5230+00.00	LEFT MAIN LANES & SHOULDERS	1193.62			38.00	5039.73	0.03	151.19									38.00	5039.73	220		554.37
5215+06.38	5230+00.00	LEFT MAIN LANES & SHOULDERS	1493.62			38.00	6306.40	0.10	630.64													
SHOULDER RECONSTRUCTION																						
5199+00.00	5208+00.00	RIGHT MAIN LANES - INSIDE SHOULDER	900.00	87.00	783.00													4.00	400.00	220		44.00
5215+56.00	5224+75.00	RIGHT MAIN LANES - INSIDE SHOULDER	919.00	87.00	799.53													4.00	408.44	220		44.93
5199+00.00	5208+00.00	LEFT MAIN LANES - INSIDE SHOULDER	900.00	87.00	783.00													4.00	400.00	220		44.00
5215+56.00	5224+75.00	LEFT MAIN LANES - INSIDE SHOULDER	919.00	87.00	799.53													4.00	408.44	220		44.93
ADDITIONAL																						
ENTIRE PROJECT		GUARDRAIL WIDENING		VAR.	842.33													VAR.	5365.93	220	590.25	
5224+40.00		MEDIAN CROSSING		VAR.	58.33													VAR.	147.08	220	16.18	
5196+60.00	5208+24.98	RIGHT MAIN LANES I-40 - TRENCHING AND SHOULDER PREPARATION	1164.98			40.00	5177.69	0.03	155.33	10.00	1294.42	440	284.77	10.00	1294.42	660	427.16	10.00	1294.42	440		284.77
5214+60.53	5227+15.00	RIGHT MAIN LANES I-40 - TRENCHING AND SHOULDER PREPARATION	1254.47			40.00	5575.42	0.03	167.26	10.00	1393.86	440	306.65	10.00	1393.86	660	459.97	10.00	1393.86	440		306.65
5196+60.00	5208+96.34	LEFT MAIN LANES I-40 - TRENCHING AND SHOULDER PREPARATION	1236.34			40.00	5494.84	0.03	164.85	10.00	1373.71	440	302.22	10.00	1373.71	660	453.32	10.00	1373.71	440		302.22
5215+31.89	5227+15.00	LEFT MAIN LANES I-40 - TRENCHING AND SHOULDER PREPARATION	1183.11			40.00	5258.27	0.03	157.75	10.00	1314.57	440	289.21	10.00	1314.57	660	433.81	10.00	1314.57	440		289.21
TOTALS:					4065.72		81931.56		4947.63		5376.56		1182.85		5376.56		1774.26		48073.53		606.43	5691.09

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.3% MIN. AGGR.....5.7% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.1% MIN. AGGR.....3.9% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

JACOBS

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.		BB0114	22	92
				06940 - QUANTITIES - 55891B				

(1)

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. BB0114

BRIDGE NUMBER / CODE NUMBER	BRIDGE NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	801	802	802	802	803	804	804	805	805	805	805	805	807	808	809	812	816	816
			ITEM / UNIT	REMOVAL OF EXISTING BRIDGE STRUCTURE	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	COFFERDAM	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	SEAL CONCRETE - BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL SHELL PILING (16" DIA.)	TEST PILE (16" DIA.)	STEEL SHELL PILING (18" DIA.)	TEST PILE (18" DIA.)	STEEL SHELL PILING (24" DIA.)	STRUCTURAL STEEL IN BEAM SPANS (M270, GR. 50W)	ELASTOMERIC BEARINGS	ARMORED JOINT WITH NEOPRENE STRIP SEAL	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
				LUMP SUM	CU. YD.	EACH	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. INCH	LIN. FT.	EACH	SQ. YD.	CU. YD.
06940 X071	BLACKFISH LAKE	BENT NO. 1			439		184.11			0.5	30,657	1,189											
		BENT NO. 2			1,061	6	334.01		344.44		51,801		1,800	360			780	1,157	12,941.3	150		2,194	1,063
		BENT NO. 3			1,390	6	355.69		824.97		69,550				2,400	480			13,005.2				
		BENT NO. 4			1,320	6	371.56		824.97		61,806				2,400	480			7,395.0				
		BENT NO. 5			1,320	6	371.56		824.97		61,806				2,400	480			7,395.0				
		BENT NO. 6			1,320	6	371.56		824.97		61,806				2,700	540			7,395.0				
		BENT NO. 7			1,390	6	355.70		824.97		69,550				2,700	540			7,395.0				
		BENT NO. 8			1,319	6	340.30		465.01		53,652		2,400	480					13,005.2				
		BENT NO. 9			474		184.11			0.5	30,657	1,189					910	1,157	12,941.3	150		1,968	952
		560'-0" CONT. COMP. W-BEAM UNIT						2,084.70		177.6	9,495	542,072						1,780,526			1		
		EXIST. BR. NO. A3904 (Site No. 1)		0.5																			
		EXIST. BR. NO. B3904 (Site No. 1)		0.5																			
TOTALS FOR JOB NO. BB0114				1	10,033	42	2,868.60	2,084.70	4,934.30	178.6	500,780	544,450	4,200	840	12,600	2,520	1,690	1,782,840	88,868.0	300	1	4,162	2,015

STATE OF ARKANSAS
CHRISTOPHER J. CRISWELL
REGISTERED PROFESSIONAL ENGINEER
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SCHEDULE OF BRIDGE QUANTITIES
BLACKFISH LAKE STR. & APPRS. (S)
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 4/27/14 FILENAME: bbb0114x1_qx1.dgn
CHECKED BY: CGW DATE: 5/1/14
DESIGNED BY: CMF DATE: 4/27/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55891B

JACOBS

12/1/2014 11:08:55 AM T:\Job\WL_XM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106Quantities01.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
2-19-2015				6	ARK.			
				JOB NO.		BB0114	23	92

(2) SUMMARY OF QUANTITIES & REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESEY
2/19/15

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
202	REMOVAL AND DISPOSAL OF FENCE	280	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE PARAPET WALL	4	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE PAVEMENT	12127	SQ. YD.
202	REMOVAL AND DISPOSAL OF APPROACH SLAB AND GUTTERS	4	EACH
SP & 202	REMOVAL AND DISPOSAL OF GUARDRAIL	850	LIN. FT.
210	UNCLASSIFIED EXCAVATION	9946	CU. YD.
210	COMPACTED EMBANKMENT	6153	CU. YD.
SP & 210	SOIL STABILIZATION	100	TON
SP & 215	TRENCHING AND SHOULDER PREPARATION	53	STATION
303	AGGREGATE BASE COURSE (CLASS 7)	4372	TON
308	AGGREGATE IN CEMENT STABILIZED CRUSHED STONE BASE COURSE	4208	TON
308	CEMENT IN CEMENT STABILIZED CRUSHED STONE BASE COURSE	269	TON
308	PROCESSING CEMENT STABILIZED CRUSHED STONE BASE COURSE	12792	SQ. YD.
401	TACK COAT	5357	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	1137	TON
SP & 405	ASPHALT BINDER (PG 76-22) IN ACHM BASE COURSE (1 1/2")	46	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	1698	TON
SP, SS, & 406	ASPHALT BINDER (PG 76-22) IN ACHM BINDER COURSE (1")	76	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (3/8")	664	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (3/8")	40	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	5939	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	35	TON
SP, SS, & 407	ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2")	324	TON
412	COLD MILLING ASPHALT PAVEMENT	13198	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	13	TON
SP & 501	TEMPORARY PORTLAND CEMENT CONCRETE PAVEMENT (10" UNIFORM THICKNESS)	12792	SQ. YD.
504	APPROACH SLABS	601.10	CU. YD.
504	APPROACH GUTTERS	72.40	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SP & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
603	TRAFFIC CONTROL SUPERVISOR	1.00	LUMP SUM
SS & 604	SIGNS	1566	SQ. FT.
SS & 604	TRAFFIC DRUMS	194	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	6326	LIN. FT.
SP	MOBILE SPEED NOTIFICATION SYSTEM	2	EACH
604	RELOCATING PRECAST CONCRETE BARRIER	10292	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	22062	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	13355	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	10230	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	10820	LIN. FT.
604	ADVANCE WARNING ARROW PANEL	1280	DAY
SP & 604	PORTABLE CHANGEABLE MESSAGE SIGN	90	WEEK
SP	MODULAR GLARE SHIELD	500	LIN. FT.
SP	PORTABLE CONSTRUCTION LIGHTING	1280	DAY
617	GUARDRAIL (TYPE A)	400	LIN. FT.
617	GUARDRAIL TERMINAL (TYPE 2)	2	EACH
617	THRIE BEAM GUARDRAIL TERMINAL	2	EACH
619	WIRE FENCE (TYPE A)	244	LIN. FT.
* 619	16' STEEL GATES	2	EACH
* 619	16' ALUMINUM GATES	2	EACH
620	LIME	4	TON
620	SEEDING	1.90	ACRE
SS & 620	MULCH COVER	3.80	ACRE
620	WATER	232.6	M.GAL.
621	TEMPORARY SEEDING	1.90	ACRE
621	SILT FENCE	150	LIN. FT.
621	SAND BAG DITCH CHECKS	88	BAG
621	DROP INLET SILT FENCE	80	LIN. FT.
621	SEDIMENT REMOVAL AND DISPOSAL	9	CU. YD.
621	ROCK DITCH CHECKS	12	CU. YD.
623	SECOND SEEDING APPLICATION	1.90	ACRE
628	TOPSOIL FURNISHED AND PLACED	576	CU. YD.
SP & 635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	11617	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING WHITE (4")	7200	LIN. FT.
* SP	HIGH PERFORMANCE MARKING TAPE WHITE (4")	7200	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING (SKIP LINE) WHITE (4")	1480	LIN. FT.
* SP	HIGH PERFORMANCE MARKING TAPE (SKIP LINE) WHITE (4")	1480	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	7200	LIN. FT.
* SP	HIGH PERFORMANCE MARKING TAPE YELLOW (4")	7200	LIN. FT.
* SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4")	320	LIN. FT.
* SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4")	320	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	90	EACH
731	IMPACT ATTENUATION BARRIER (TYPE A)	2	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER	3	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	9	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)	6	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)	70968	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)	2376	POUND
SP	AWIS MOBILIZATION	1.00	LUMP SUM
SP	AWIS OPERATION	21	MONTH
SP	DEVICE RELOCATION	16	EACH
SP	FURNISH AND INSTALL CLOSED CIRCUIT TELEVISION SYSTEM	2	EACH
SP	FURNISH AND INSTALL PUBLIC NOTIFICATION SYSTEM	2	EACH
SP	FURNISH AND INSTALL VARIABLE MESSAGE SIGN	6	EACH
SP	FURNISH AND INSTALL VEHICLE DETECTION SYSTEM	22	EACH
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
SP & 636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	10033	CU. YD.
801	COFFERDAM	42	EACH
802	CLASS S CONCRETE - BRIDGE	2868.60	CU. YD.
802	CLASS S(AE) CONCRETE - BRIDGE	2084.70	CU. YD.
802	SEAL CONCRETE - BRIDGE	4934.30	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	178.6	GAL.
804	REINFORCING STEEL-BRIDGE (GRADE 60)	500780	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)	544450	POUND
805	STEEL SHELL PILING (16" DIAMETER)	4200	LIN. FT.
805	STEEL SHELL PILING (18" DIAMETER)	12600	LIN. FT.
805	STEEL SHELL PILING (24" DIAMETER)	1690	LIN. FT.
805	TEST PILE (16" DIAMETER)	840	LIN. FT.
805	TEST PILE (18" DIAMETER)	2520	LIN. FT.
807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)	1782840	POUND
808	ELASTOMERIC BEARINGS	88868.0	CU. IN.
809	ARMORED JOINT WITH NEOPRENE STRIP SEAL	300	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	4162	SQ. YD.
816	DUMPED RIPRAP	2015	CU. YD.

* DENOTES ALTERNATE BID ITEM.

REVISIONS

DATE	REVISION	SHEET NUMBER
2/19/2015	DELETED SP "ELECTRONIC SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS" AND ADDED SP "SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS"	3, 23

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.		BB0114	24	92
				(2) PLAN SHEET- STA. 5185+00 TO STA. 5245+00				

5185 5190 5195 5200 5205 5210 5215

N

0 100 200 300
GRAPHIC SCALE IN FEET

STA. 5203+00 IN PLACE
TYPE H DROP INLET IN
MEDIAN (2 OPENINGS)
(4'-0" X4'-0" X2'-10")
24" X88' R.C. PIPE CULVERT
RETAIN

STA. 5209+28.25 - STA. 5214+76.75 IN PLACE LEFT MAIN LANES
548'-6" X 28'-0" CLEAR ROADWAY BRIDGE CONSISTING OF
SEVEN 68'-0" COMPOSITE I-BEAM SPANS WITH WEBBED
2-COLUMN REINFORCED CONCRETE BENTS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1)=1.00 LUMP SUM

DENOTES: PAVEMENT TRANSITION

STA. 5208+97.01 - STA. 5214+59.49 CONSTRUCT
562'-5 7/8" X 2 @ 63'-0" CLEAR ROADWAY BRIDGE NO. 06940
560'-0" CONTINUOUS COMPOSITE STEEL W-BEAM UNIT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11427
KEVIN G. TOBLESKY
12/1/14

BLACKFISH LAKE - FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS A 5 CFS STREAM. THE STREAM BANK ELEVATIONS ARE 195.0 FT. SEE SUBSECTION 110.06 (C) FOR THE STANDARD SPECIFICATIONS REGARDING CONSTRUCTION OF TEMPORARY FILLS WITHIN 5 CFS STREAM LIMITS.

ENVIRONMENTALLY SENSITIVE AREA

200' TRANSITION

EXIST. R/W & C OF A

STA. 5196+00.00
BEGIN JOB BB0114
LOG MILE 261.47

℄ I-40 N86°56'00"E

24' 60' 24'

EXIST. R/W & C OF A

ENVIRONMENTALLY SENSITIVE AREA

REMOVAL AND DISPOSAL OF FENCE
STA. 5208+49 RT. OF R.M.L. = 70 LIN. FT.
STA. 5213+95 RT. OF R.M.L. = 70 LIN. FT.
STA. 5209+61 LT. OF L.M.L. = 70 LIN. FT.
STA. 5215+11 LT. OF L.M.L. = 70 LIN. FT.

EXIST. R/W

EXIST. B.E. 5209+28.25

PROP. B.E. 5208+97.01

+50.12

EXIST. BR. 3904A

PROP. BR. 06940

+50.12

EXIST. BR. 3904B

+00.12

EXIST. R/W

BLACKFISH LAKE

100 YR. FLOODPLAIN LIMIT

IMPACT ATTENUATION BARRIER
STA. 5208+31 CENTERLINE MAIN LANES = 1 EACH

EXIST. B.E. 5208+79.75

STA. 5208+79.75 - STA. 5214+28.25 IN PLACE RIGHT MAIN LANES
548'-6" X 28'-0" CLEAR ROADWAY BRIDGE CONSISTING OF
SEVEN 68'-0" COMPOSITE I-BEAM SPANS WITH WEBBED
2-COLUMN REINFORCED CONCRETE BENTS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1)=1.00 LUMP SUM

REMOVAL & DISPOSAL OF GUARDRAIL
STA. 5206+15 TO STA. 5208+40 RT. OF R.M.L. = 225 LIN. FT.
STA. 5206+77 TO STA. 5208+77 LT. OF R.M.L. = 200 LIN. FT.
STA. 5214+92 TO STA. 5216+92 RT. OF L.M.L. = 200 LIN. FT.
STA. 5215+16 TO STA. 5217+41 LT. OF L.M.L. = 225 LIN. FT.

GUARDRAIL INSTALLATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
STA. 5205+79.20 TO STA. 5208+47.95 RT. OF R.M.L.	200 LIN. FT.	1 EACH	1 EACH

STA. 5192+00 IN PLACE
TYPE H DROP INLET IN
MEDIAN (2 OPENINGS)
(4'-0" X4'-0" X3'-1")
24" X172' R.C. PIPE CULVERT
RETAIN

REMOVAL & DISPOSAL OF APPROACH SLAB & GUTTERS
STA. 5208+62 R.M.L. = 1 EACH
STA. 5209+11 L.M.L. = 1 EACH
STA. 5214+46 R.M.L. = 1 EACH
STA. 5214+94 L.M.L. = 1 EACH

REMOVAL & DISPOSAL OF CONCRETE PARAPET WALL
STA. 5208+53 RT. OF R.M.L. = 1 EACH
STA. 5208+90 LT. OF R.M.L. = 1 EACH
STA. 5214+79 RT. OF L.M.L. = 1 EACH
STA. 5215+03 LT. OF L.M.L. = 1 EACH

STA. 5337+00 IN PLACE
TYPE H DROP INLET IN
MEDIAN (2 OPENINGS)
(4'-0" X4'-0" X2'-10")
24" X88' R.C. PIPE CULVERT
RETAIN

5215 5220 5225 5230 5235 5240 5245

STA. 5219+00 IN PLACE
TYPE H DROP INLET IN
MEDIAN (2 OPENINGS)
(4'-0" X4'-0" X2'-10")
24" X88' R.C. PIPE CULVERT
RETAIN

DENOTES: PAVEMENT TRANSITION

	WIRE FENCE (TYPE A)	16'-0" GATE
STA. 5208+57 RT. OF R.M.L.	66 LIN. FT.	
STA. 5209+37 LT. OF L.M.L.	56 LIN. FT.	1 EACH
STA. 5214+20 RT. OF R.M.L.	50 LIN. FT.	1 EACH
STA. 5214+99 LT. OF L.M.L.	72 LIN. FT.	

N

0 100 200 300
GRAPHIC SCALE IN FEET

100 YR. FLOODPLAIN LIMIT

EXIST. B.E. 5214+76.75

EXIST. R/W & C OF A

PROP. B.E. 5214+59.49

200' TRANSITION

+56.38 +06.38

℄ I-40 N86°56'00"E

24' 60' 24'

EXIST. R/W & C OF A

STA. 5228+00.00
END JOB BB0114
LOG MILE 262.08

EXIST. B.E. 5214+28.25

IMPACT ATTENUATION BARRIER (TYPE A)
STA. 5215+26 CENTERLINE MAIN LANES = 1 EACH

GUARDRAIL INSTALLATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
STA. 5215+08.56 TO STA. 5217+77.31 LT. OF L.M.L.	200 LIN. FT.	1 EACH	1 EACH

STA. 5228+00 IN PLACE
TYPE H DROP INLET IN
MEDIAN (2 OPENINGS)
(4'-0" X4'-0" X2'-10")
24" X84' R.C. PIPE CULVERT
RETAIN

COUNTY ROAD 34
(JEANETTE ROAD UNDERPASS)

JACOBS

T:\Job\WLXM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\777 Roadway\Drawings\104plh13.dgn
...\Drawings\104plh13.dgn
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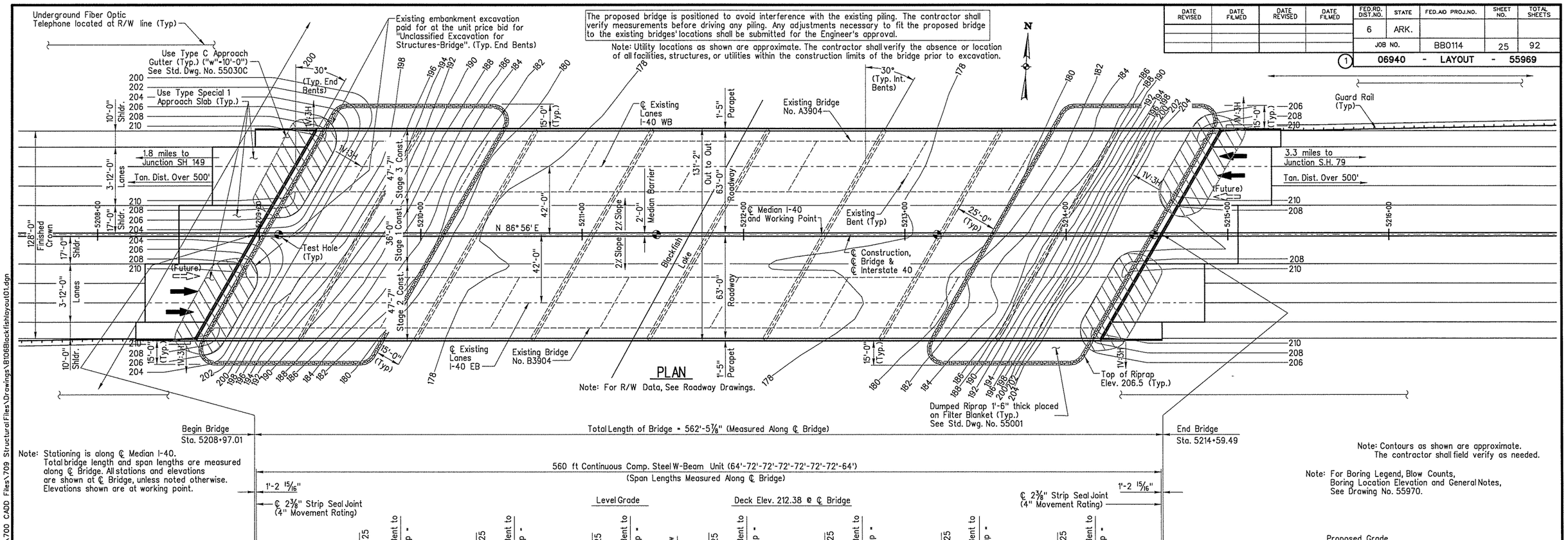
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	25	92
				1	06940 - LAYOUT - 55969			

The proposed bridge is positioned to avoid interference with the existing piling. The contractor shall verify measurements before driving any piling. Any adjustments necessary to fit the proposed bridge to the existing bridges' locations shall be submitted for the Engineer's approval.

Note: Utility locations as shown are approximate. The contractor shall verify the absence or location of all facilities, structures, or utilities within the construction limits of the bridge prior to excavation.



Begin Bridge Sta. 5208+97.01

Total Length of Bridge = 562'-5⅞" (Measured Along ℄ Bridge)

End Bridge Sta. 5214+59.49

Note: Stationing is along ℄ Median I-40. Total bridge length and span lengths are measured along ℄ Bridge. All stations and elevations are shown at ℄ Bridge, unless noted otherwise. Elevations shown are at working point.

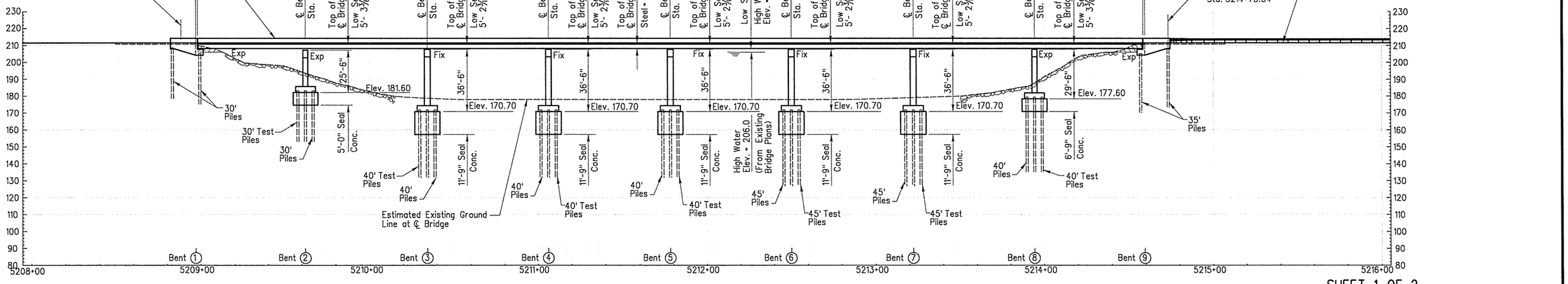
560 ft Continuous Comp. Steel W-Beam Unit (64'-72'-72'-72'-72'-72'-72'-64')
(Span Lengths Measured Along ℄ Bridge)

1'-2 15/16" — ℄ 2⅜" Strip Seal Joint (4" Movement Rating) — 1'-2 15/16"

Level Grade — Deck Elev. 212.38 @ ℄ Bridge

Slope Intercept Sta. 5208+83.16 — Concrete Parapet Railing — Slope Intercept Sta. 5214+73.34 — Proposed Grade @ ℄ Bridge

℄ Bent No. 2	℄ Bent No. 3	℄ Bent No. 4	℄ Bent No. 5	℄ Bent No. 6	℄ Bent No. 7	℄ Bent No. 8
Sta. 5209+62.25	Sta. 5210+34.25	Sta. 5211+06.25	Sta. 5211+78.25	Sta. 5212+50.25	Sta. 5213+22.25	Sta. 5213+94.25
Top of Deck @ ℄ Bridge & ℄ Bent to ℄ Bridge & ℄ Bent to Low Seat of Cap - 5'- 3⅜"	Top of Deck @ ℄ Bridge & ℄ Bent to ℄ Bridge & ℄ Bent to Low Seat of Cap - 5'- 2⅜"	Top of Deck @ ℄ Bridge & ℄ Bent to ℄ Bridge & ℄ Bent to Low Seat of Cap - 5'- 2⅜"	Top of Deck @ ℄ Bridge to Low Steel - 4'-9¼"	Top of Deck @ ℄ Bridge & ℄ Bent to ℄ Bridge & ℄ Bent to Low Seat of Cap - 5'- 2⅜"	Low Steel to High Water Elev. = 1.61'	Top of Deck @ ℄ Bridge & ℄ Bent to ℄ Bridge & ℄ Bent to Low Seat of Cap - 5'- 2⅜"	Top of Deck @ ℄ Bridge & ℄ Bent to ℄ Bridge & ℄ Bent to Low Seat of Cap - 5'- 3⅜"



ELEVATION

Note: Skew not shown in Elevation for clarity.

Note: Contours as shown are approximate. The contractor shall field verify as needed.

Note: For Boring Legend, Blow Counts, Boring Location Elevation and General Notes, See Drawing No. 55970.

STATE OF ARKANSAS — CHRISTOPHER J. CRISWELL — REGISTERED PROFESSIONAL ENGINEER — No. 11328 — 12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER BLACKFISH LAKE
BLACKFISH LAKE STR. & APPRS. (S)
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: WEG DATE: 9/18/13 FILENAME: bbb0114x3_lx1.dgn
CHECKED BY: MAA DATE: 9/23/13
DESIGNED BY: CJC DATE: 9/16/13 SCALE: 1" = 30'-0"
BRIDGE NO. 06940 DRAWING NO. 55969

JACOBS

BORING BLOW COUNTS

℄ Median I-40 Sta. 5209+12	℄ Median I-40 Sta. 5211+46	℄ Median I-40 Sta. 5213+20	℄ Median I-40 Sta. 5214+54
0.5-1.5, N-13	5.5-10.0, N-3	4.5-5.5, N-2	24.0-25.0, N-16
29.0-30.0, N-15	14.0-15.0, N-17	6.5-7.5, N-14	29.0-30.0, N-28
34.0-35.0, N-26	19.0-20.0, N-30	14.0-15.0, N-34	34.0-35.0, N-35
39.0-40.0, N-50	24.0-25.0, N-30	19.0-20.0, N-33	39.0-40.0, N-36
44.0-45.0, N-55	29.0-30.0, N-31	24.0-25.0, N-25	44.0-45.0, N-38
49.0-50.0, N-56	34.0-35.0, N-(50/10")	29.0-30.0, N-30	49.0-50.0, N-34
54.0-55.0, N-50	39.0-40.0, N-(50/11")	34.0-35.0, N-12	54.0-55.0, N-38
59.0-60.0, N-(50/11")	44.0-45.0, N-(50/10")	39.0-40.0, N-11	59.0-60.0, N-26
64.0-65.0, N-50	49.0-50.0, N-(50/10")	44.0-45.0, N-42	64.0-65.0, N-30
69.0-70.0, N-51	54.0-55.0, N-50	49.0-50.0, N-50	69.0-70.0, N-50
74.0-75.0, N-50	59.0-60.0, N-50	54.0-55.0, N-50	74.0-75.0, N-50
79.0-80.0, N-(50/10")	64.0-65.0, N-(50/10")	59.0-60.0, N-50	79.0-80.0, N-(50/10")
84.0-85.0, N-53	69.0-70.0, N-50	64.0-65.0, N-(50/10")	84.0-85.0, N-(50/10")
89.0-90.0, N-(50/8")	74.0-75.0, N-42	69.0-70.0, N-(50/11")	89.0-90.0, N-(50/8")
94.0-95.0, N-(50/8")	79.0-80.0, N-50	74.0-75.0, N-35	94.0-95.0, N-(50/8")
99.0-100.0, N-(50/7")	84.0-85.0, N-(50/10")	79.0-80.0, N-(50/9")	99.0-100.0, N-(50/00")
	89.0-90.0, N-(50/7")	84.0-85.0, N-50	109.00-110.0, N-(50/8")
	94.0-95.0, N-(50/5")	89.0-90.0, N-(50/11")	
	99.0-100.0, N-(50/5")	94.0-95.0, N-(50/3")	
		99.0-100.0, N-(50/5")	
		109.00-110.0, N-(50/6")	

BORING LEGEND

A- Medium dense tan clayey gravel w/organics
B- Firm dark brown clay w/ferrous stains and roots
C- Stiff brown clay w/ferrous stains
D- Medium dense to dense gray silty sand w/organics
E- Very soft gray clay w/organics
F- Stiff dark gray clay w/organics
G- Medium dense brown sand w/organics and fine gravel
H- Very dense gray and brown sand w/coarse gravel
I- Very soft brown and gray clay w/organics
J- Medium dense to dense brown and gray sand w/organics
K- Medium dense gray sandy silt
L- Very dense gray and brown sand w/organics
M- Medium dense brown clayey gravel
N- Firm brown and gray silty clay
O- Medium dense brown and gray sandy silt
P- Dense brown and gray sand
Q- Medium dense gray clayey silt
R- Dense to very dense gray and brown coarse sand w/gravel and silt
S- Very soft brown and gray silt

GENERAL NOTES

BENCH MARK: Top of slab at end of existing Bridge No. A3904 14'-0" Lt. of inside face of right curb (looking upstation). ℄ Median I-40 Sta. 5214+74.50, Elev. 211.13

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 in the plans, section and subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Highway Bridges (2002 edition) with current interim specifications.

LIVE LOADING: HS20 and Alternate Military Load — METHOD OF DESIGN: Load Factor

SEISMIC PERFORMANCE CATEGORY: C

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c=4,000 psi
Class S Concrete (substructure)	f'c=3,500 psi
Seal Concrete (substructure)	f'c=2,100 psi
Reinforcing Steel (AASHTO M31 or M322, Type A Gr. 60)	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.

CONCRETE FILLED STEEL SHELL PILING: Piling in Bents 1 & 9 shall be 24" dia. concrete filled steel shells and shall be driven with an approved air, steam, or diesel hammer to a minimum ultimate bearing capacity of 200 tons per pile and to a tip elevation of 177.50 or lower at Bent 1 and a tip elevation of 172.50 or lower at Bent 9. Piling in end bents shall be driven after embankment to bottom of cap is in place. Test piles are not required at Bents 1 & 9 but may be driven for the contractor's information in accordance with Subsection 805.08(g). Piling in Bents 2 and 8 shall be 16" dia. concrete filled steel shells and shall be driven with an approved air, steam, or diesel hammer to a minimum ultimate bearing capacity of 110 tons per pile and to a tip elevation of 154.00 or lower for Bent 2 and 140.00 or lower for Bent 8. Piling in Bents 3-7 shall be 18" dia. concrete filled steel shells and shall be driven with and approved air, steam, or diesel hammer to a minimum ultimate bearing capacity of 150 tons and to a tip elevation of 139.00 or lower for Bents 3-5 and 133.00 or lower for Bents 6 & 7. The first two piles driven in each footing at Bents 2-8, designated as long piles in the Standard Specifications, shall be driven without a follower and shall serve as test piles to determine the established tip elevation. See bent details for test pile locations. Subsequent piles in each footing at Bents 2-8 may be driven with a follower to the established tip elevation. The length of test piles shown on the layout are the estimated lengths of test pile to be left in place. Lengths of piles and test piles shown are assumed for estimating quantities only. Lengths will be determined in the field. Piles and test piles will be measured and paid for as the actual linear feet of accepted piles left in place. There will be no payment for cut-off or build-up of the piles.

PILE DESIGN CAPACITY: Bents 1 & 9 - 73 tons per pile, Bents 2 & 8 - 40 tons per pile, Bents 3 thru 7 - 54 tons per pile.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for all piling in Bents 1 & 9 and for test piling in Bents 2-8 shall be based on the requirements of Subsection 805.09(b) "Method B - Wave Equation Analysis (WEAP)" of the Standard Specifications. It is estimated that the minimum required rated energy of the hammer to obtain the minimum ultimate bearing capacity will be 22,000 foot pounds per blow at all bents.

PREBORING/JETTING: For Bents 1 and 9 preboring may be required to obtain the minimum pile penetration requirements. The actual size and depth of preboring shall be determined by the Engineer. All equipment, labor, tools, and incidentals necessary for preboring shall not be paid for directly but shall be considered subsidiary to the item "Steel Shell Piling (24" Dia.)". Jetting will not be allowed to obtain minimum pile penetration requirements for Bents 1 and 9.

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.		BB0114	26	92
				①	06940 - LAYOUT - 55970			

For Bents 2 thru 8 preboring or jetting may be required to obtain the minimum pile penetration requirements. The method used to obtain minimum pile penetration shall not be mixed. The actual size and depth of preboring or the depth of jetting shall be determined by the Engineer. The size and depth of preboring or the pressure and depth of jetting used for driving the test piles shall be the same as for driving production piles. All equipment, labor, tools, and incidentals necessary for preboring or jetting shall not be paid for directly but shall be considered subsidiary to the item "Steel Shell Piling (16" Dia.)", "Test Pile (16" Dia.)", "Steel Shell Piling (18" Dia.)" or "Test Pile (18" Dia.)".

For all preboring operations the Contractor shall be responsible for keeping prebored holes free from debris prior to backfilling which may require the use of temporary casing or other methods. All equipment, labor, tools, and incidentals necessary for the cost of keeping the prebored hole free from debris shall not be paid for directly but shall be considered subsidiary to the item "Steel Shell Piling (16" Dia.)", "Test Pile (16" Dia.)", "Steel Shell Piling (18" Dia.)", "Test Pile (18" Dia.)", or "Steel Shell Piling (24" Dia.)".

FOOTINGS: The top of the footings for Bents 2-8 shall be set a minimum of 2'-0" below the estimated ground line. Any necessary adjustment of footing elevations shall be submitted for the Engineer's approval. Foundation for footings shall be set in accordance with Subsection 801.04 of the Standard Specifications. For dewatering cofferdams, maximum water surface elevation is 192.00.

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

DETAIL DRAWINGS: — DRAWING NO.

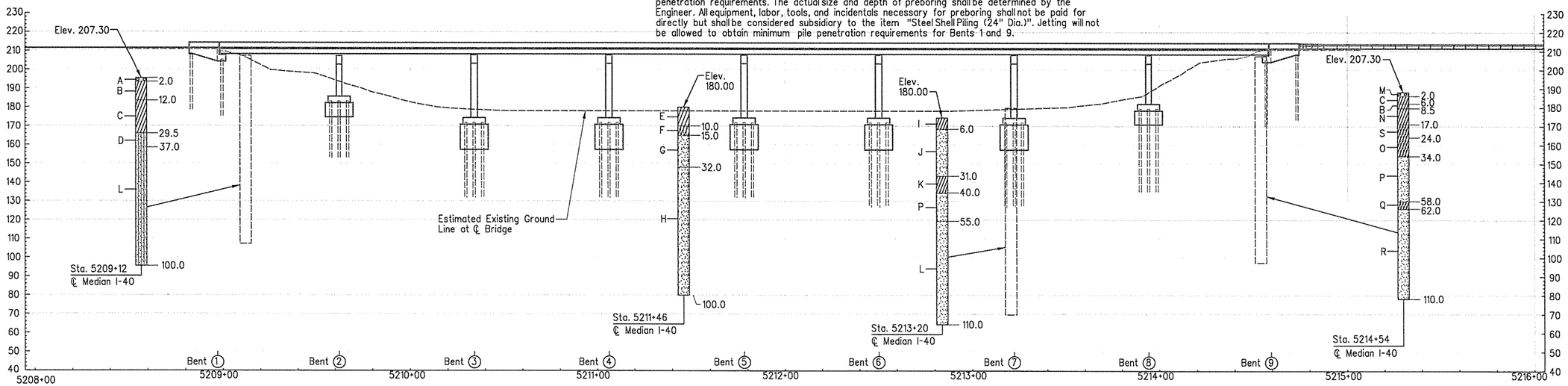
Stage Construction	55971 - 55974
End Bents	55975 - 55980
Intermediate Bents	55981 - 55989
W-Beam Unit	55990 - 56003
Elastomeric Bearings	56004 - 56005
Type 1 Special Approach Slabs	55966B - 55968B
Concrete Filled Steel Shell Pile	55021

EXISTING BRIDGE: Existing Bridge No. A3904 (log 261.72) is 34' wide and 548' long and consists of a steel superstructure supported by a concrete substructure. Existing Bridge No. B3904 (log 261.72) is 34' wide and 548' long and consists of a steel superstructure supported by a concrete substructure. Half size sheets of existing bridges may be obtained from the Arkansas State Highway and Transportation Department. For Bridge A3904 and B3904, see Drawing Nos. 13033 - 13037.

REMOVAL AND SALVAGE: Remove Existing Bridge No. B3904 after Stage 1 Construction is complete and open to traffic. Remove Existing Bridge No. A3904 after Stage 2 Construction is complete and open to traffic. Existing Bridges No. A3904 and B3904 shall be removed in accordance with Section 205 of the Standard Specifications. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See details of Stage Construction (Drawing No. 55971 - 55974). See Roadway Plans for additional details not shown.

HYDRAULICS: Bridge was designed to provide equal or greater waterway area as the existing bridges.



BORING LOCATION ELEVATION

Note: Skew not shown in Elevation for clarity.

SHEET 2 OF 2
LAYOUT OF
BRIDGE OVER BLACKFISH LAKE
BLACKFISH LAKE STR. & APPRS. (S)
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER J. CRISWELL — No. 11328
12/3/14
BRIDGE ENGINEER
PRINT DATE: 12/2/2014

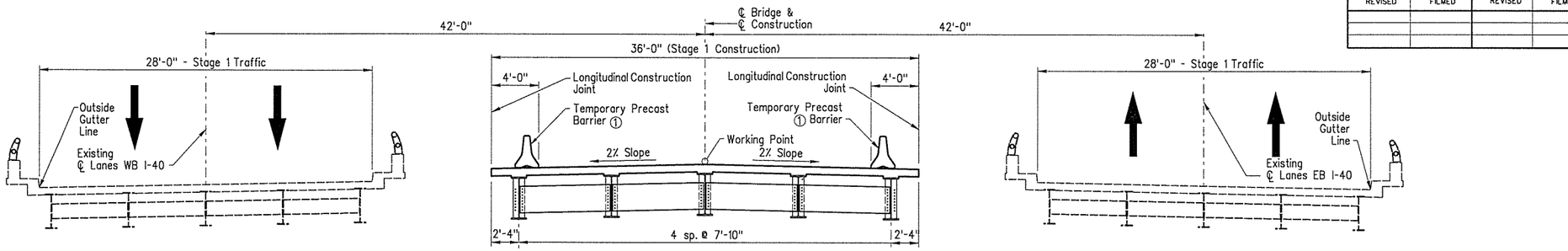
DRAWN BY: WEG DATE: 9/16/13
CHECKED BY: MAA DATE: 9/17/13
DESIGNED BY: CJC DATE: 6/17/13
BRIDGE NO. 06940
FILENAME: bbb0114x3_lx2.dgn
SCALE: 1" = 30'-0"
DRAWING NO. 55970

JACOBS

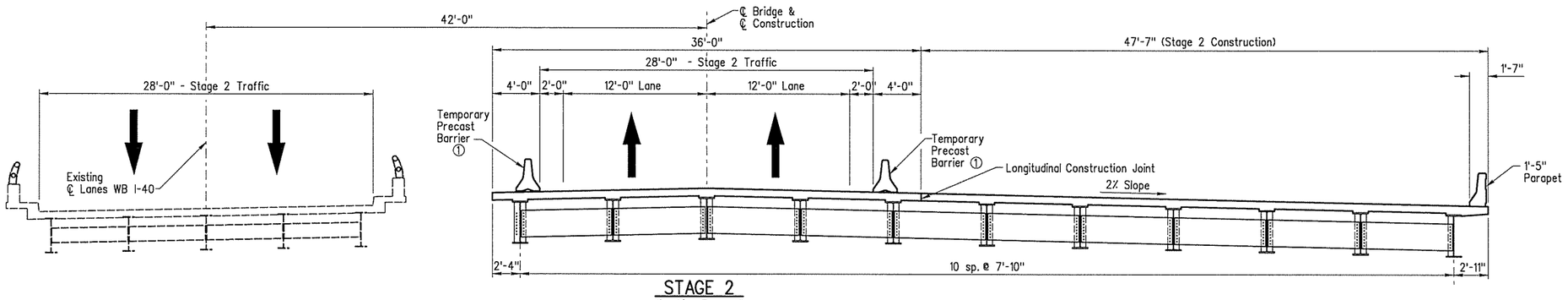
12/2/2014 9:06:46 AM T:\Job\WLXM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106Blackfishlayout02.dgn

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.		BB0114	27	92

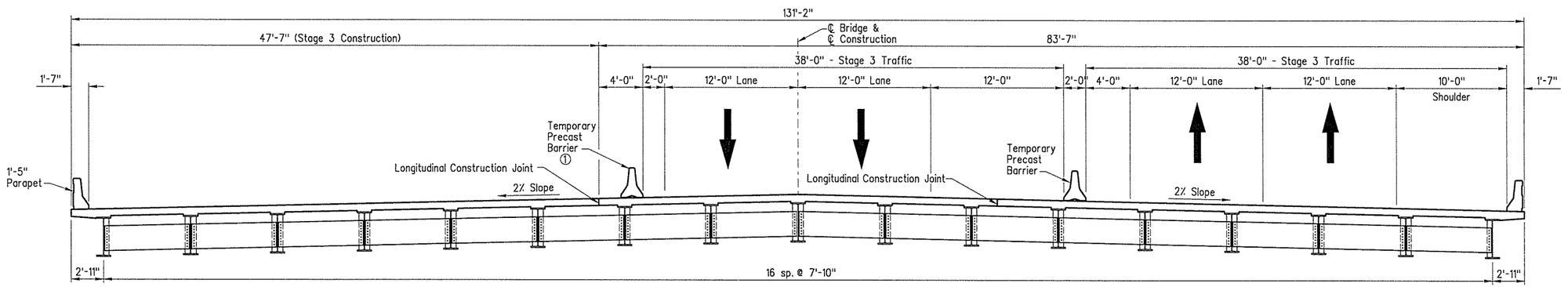
(1) 06940 - STAGE CONSTRUCTION - 55971



STAGE 1
(Looking Forward)



STAGE 2
(Looking Forward)



STAGE 3
(Looking Forward)

Notes:

Details which relate to Maintenance of Traffic are shown on Bridge Plans for information only. See Roadway Plans for Maintenance of Traffic.

Outline of Existing Bridges is indicated by dashed lines. Heavy lines indicate new work.

(1) Temporary Barrier shall be attached to the bridge deck. For details, see Std. Dwg. TC-4.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 15927 CHARLES G. WISE 12/1/14

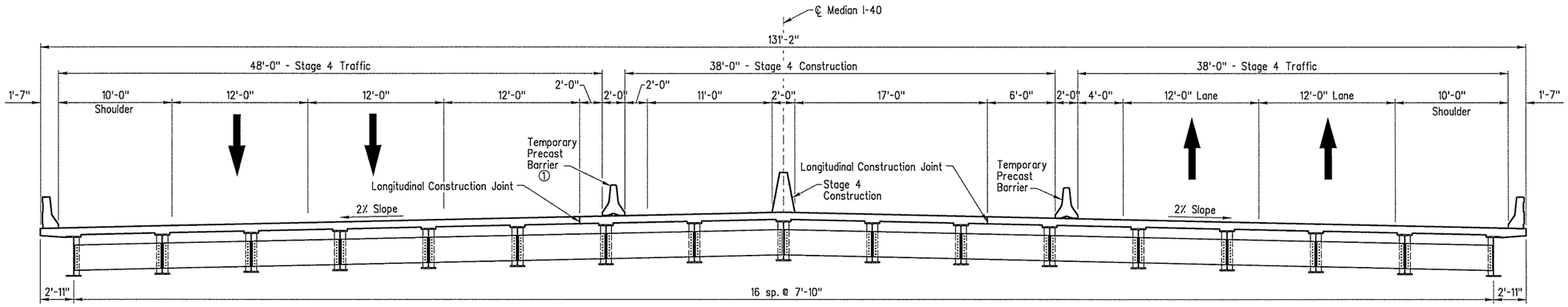
BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 1 OF 4
DETAILS OF STAGE CONSTRUCTION
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

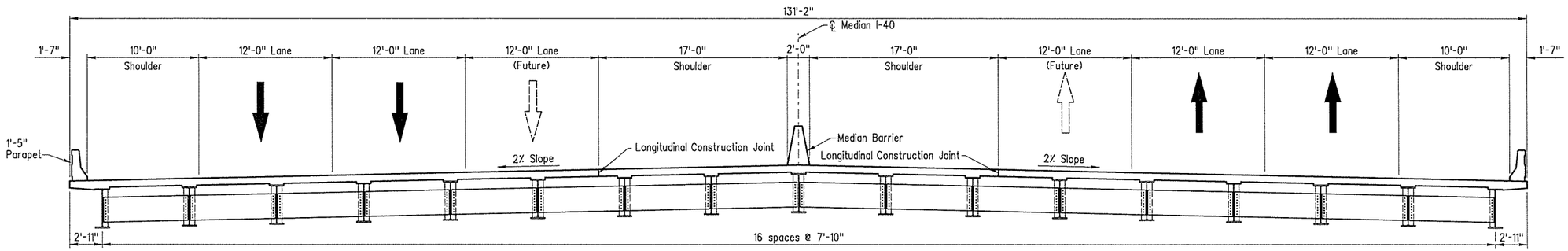
DRAWN BY: WEG DATE: 6/24/13 FILENAME: bbb0114x3_sc1.dgn
CHECKED BY: MAA DATE: 6/28/13
DESIGNED BY: CJC DATE: 6/17/13 SCALE: 3/16"=1'-0
BRIDGE NO. 06940 DRAWING NO. 55971

JACOBS

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.		BB0114	28	92
				(1) 06940 - STAGE CONSTRUCTION - 55972				



STAGE 4
(Looking Forward)



FINAL
(Looking Forward)

Notes:
Details which relate to Maintenance of Traffic are shown on Bridge Plans for information only. See Roadway Plans for Maintenance of Traffic.

① Temporary Barrier shall be attached to the bridge deck. For details, see Std. Dwg. TC-4.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 2 OF 4
DETAILS OF STAGE CONSTRUCTION
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 1/22/14 FILENAME: bbb0114x3_sc2.dgn
CHECKED BY: MAA DATE: 1/24/14
DESIGNED BY: CJC DATE: 6/17/13 SCALE: 3/16"=1'-0
BRIDGE NO. 06940 DRAWING NO. 55972

JACOBS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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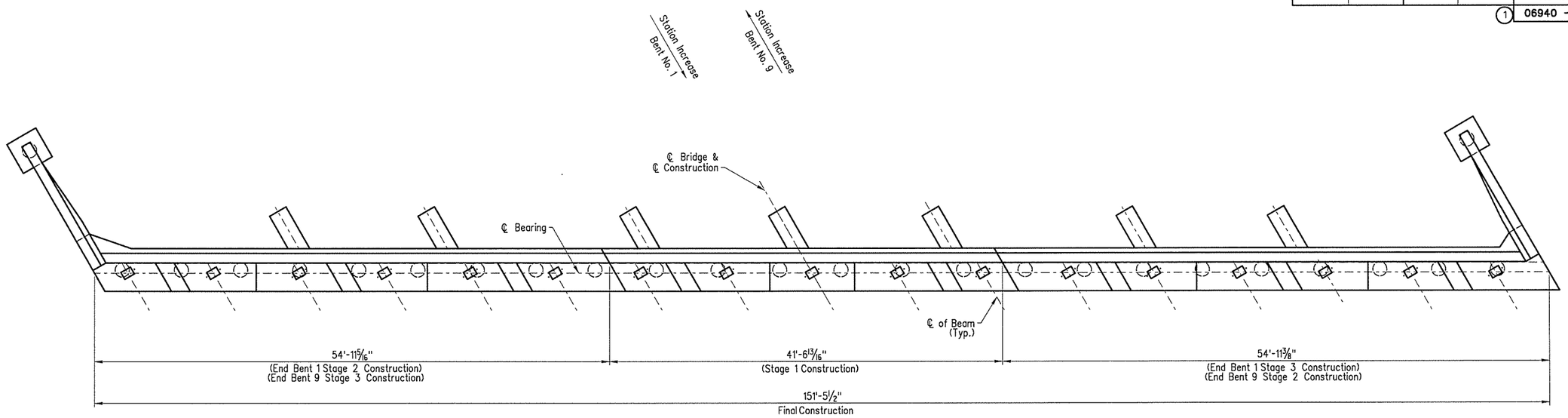
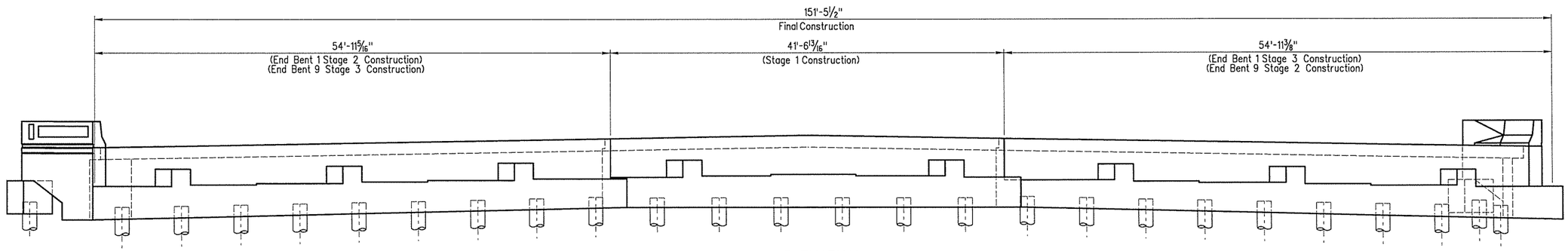
				JOB NO.		BB0114	29	92
				(1) 06940 - STAGE CONSTRUCTION - 55973				



PLAN

Note:
Dimensions shown are along ℄ Bearing.



ELEVATION
(Looking Back - End Bent 1)
(Looking Forward - End Bent 9)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 3 OF 4
DETAILS OF STAGE CONSTRUCTION
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 02/18/14 FILENAME: bbb0114x3_sc3.dgn
CHECKED BY: MAA DATE: 05/19/14
DESIGNED BY: CGW DATE: 02/13/14 SCALE: NO SCALE
BRIDGE NO. 06940 DRAWING NO. 55973

JACOBS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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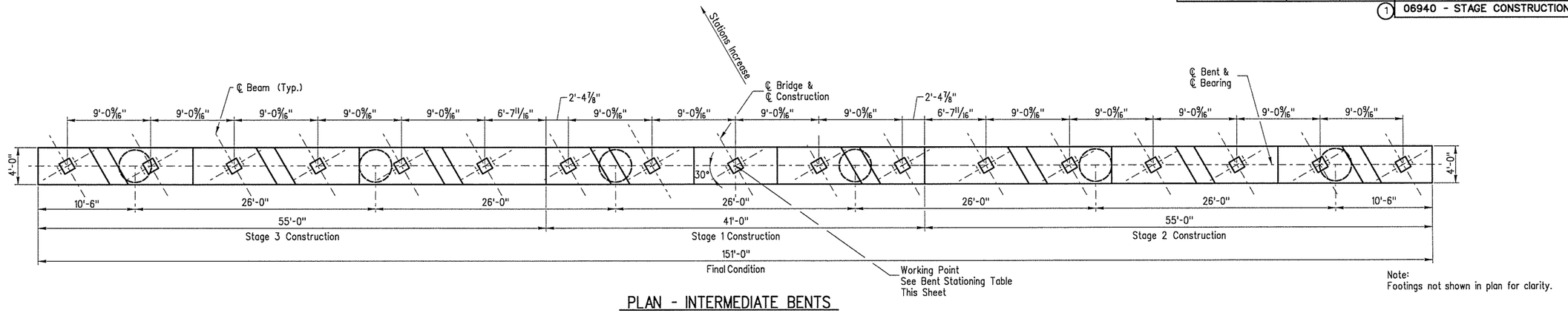
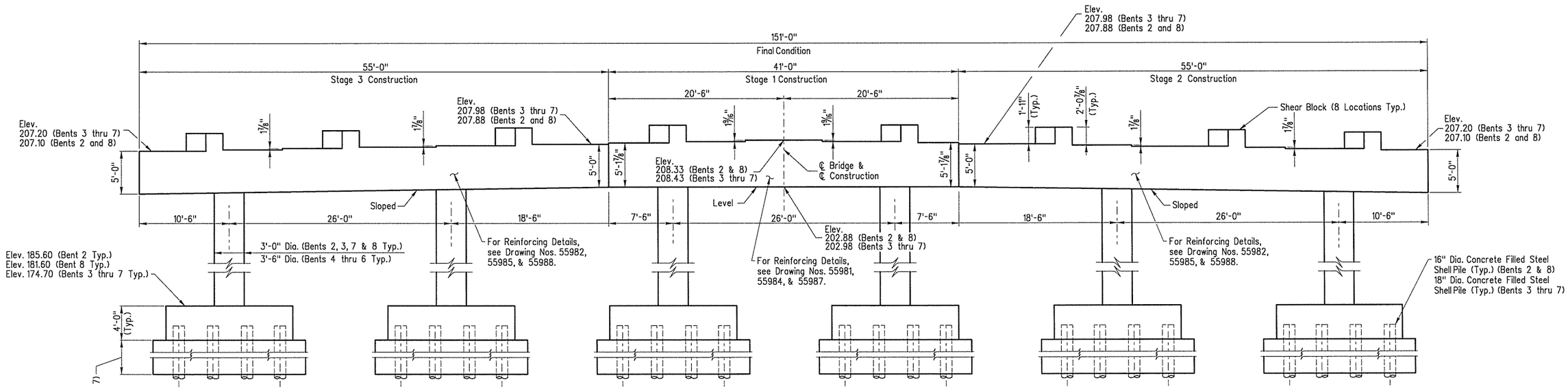
				JOB NO.		BB0114	30	92
				(1) 06940 - STAGE CONSTRUCTION - 55974				



Note:
Footings not shown in plan for clarity.

PLAN - INTERMEDIATE BENTS



ELEVATION - INTERMEDIATE BENTS

(Looking Forward)

BENT STATIONING TABLE	
Bent 2	Sta. 5209+62.25
Bent 3	Sta. 5210+34.25
Bent 4	Sta. 5211+06.25
Bent 5	Sta. 5211+78.25
Bent 6	Sta. 5212+50.25
Bent 7	Sta. 5213+22.25
Bent 8	Sta. 5213+94.25

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

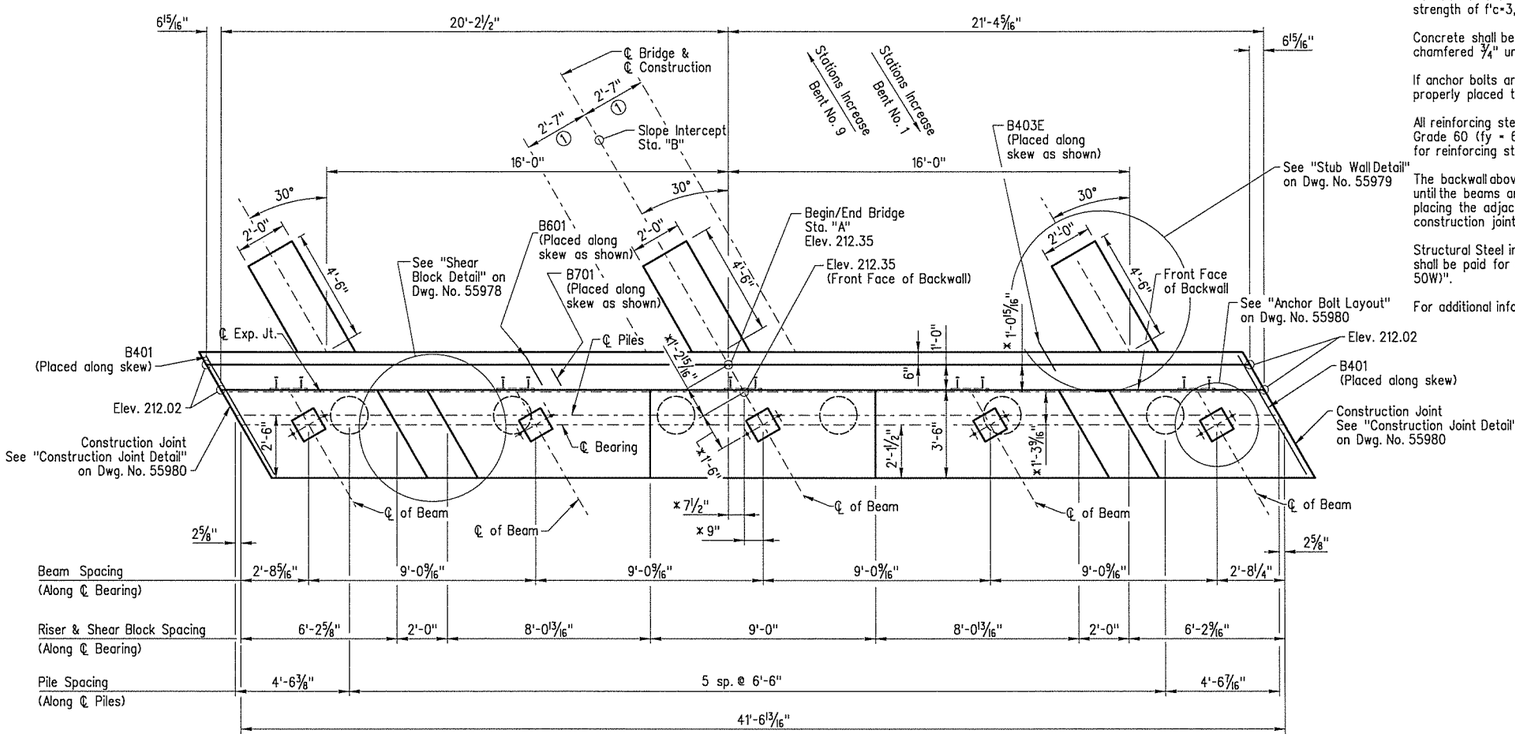
SHEET 4 OF 4
DETAILS OF STAGE CONSTRUCTION
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JWB DATE: 3/5/14 FILENAME: bbb0114x3_sc4.dgn
CHECKED BY: CGW DATE: 4/8/14
DESIGNED BY: BLB DATE: 2/10/14 SCALE: 1" = 6'-0"
BRIDGE NO. 06940 DRAWING NO. 55974

JACOBS

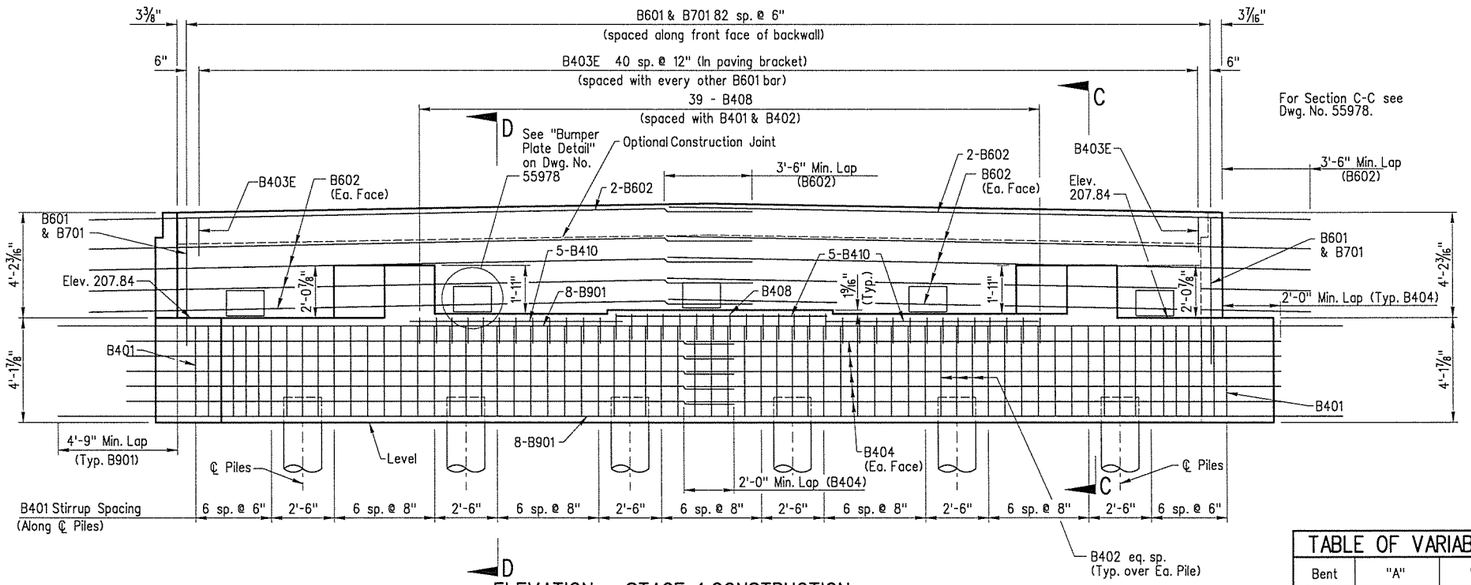
Note: Class 1 Protective Surface Treatment shall be applied to the top of the backwall.

① See "Rounding Detail" on Dwg. No. 55990.



PLAN - STAGE 1 CONSTRUCTION
(No Scale)

*Dimensions are shown to ℄ Expansion Jt.



ELEVATION - STAGE 1 CONSTRUCTION
(Bent 1 Looking Back Stage 1)
(Bent 9 Looking Forward Stage 1)
(No Scale)

TABLE OF VARIABLES		
Bent	"A"	"B"
No. 1	5208+97.01	5208+83.16
No. 9	5214+59.49	5214+73.34

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c=3,500 psi.

Concrete shall be poured in the dry and exposed corners shall be chamfered 3/4" unless otherwise noted.

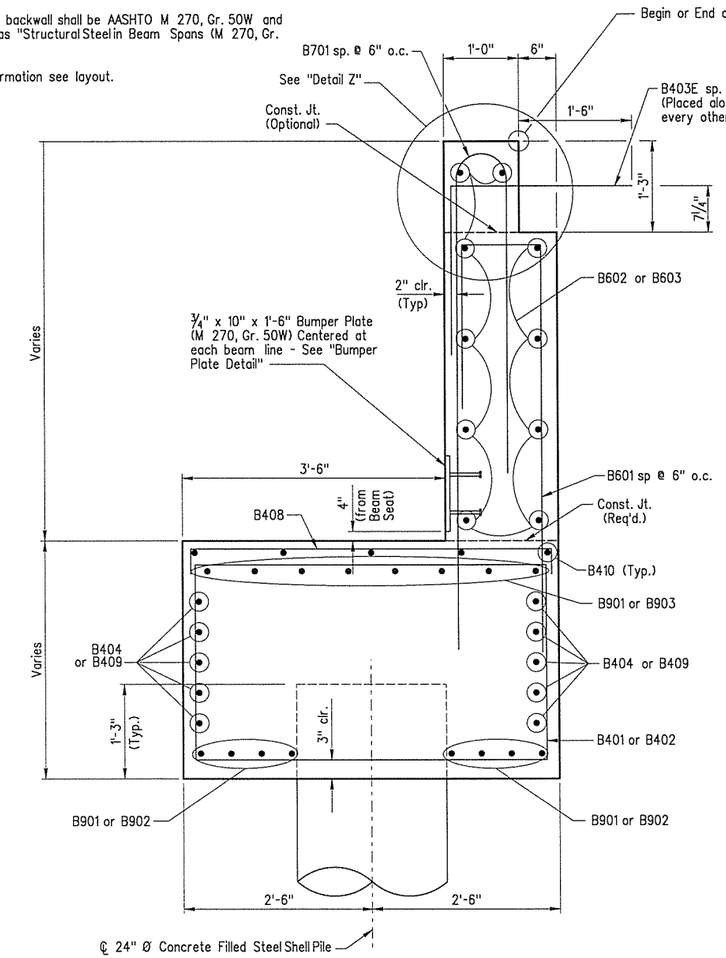
If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All reinforcing steel shall conform to AASHTO M31 or M322 Type A, Grade 60 (fy = 60,000 psi). Mill test reports shall be submitted for reinforcing steel.

The backwall above the required constr. joints shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 56002 for "Expansion Device Installation".

Structural Steel in backwall shall be AASHTO M 270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

For additional information see layout.



SECTION D-D
(No Scale)

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.		BB0114	31	92

① 06940 - END BENT DETAILS - 55975

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 16927 CHARLES G. WISE

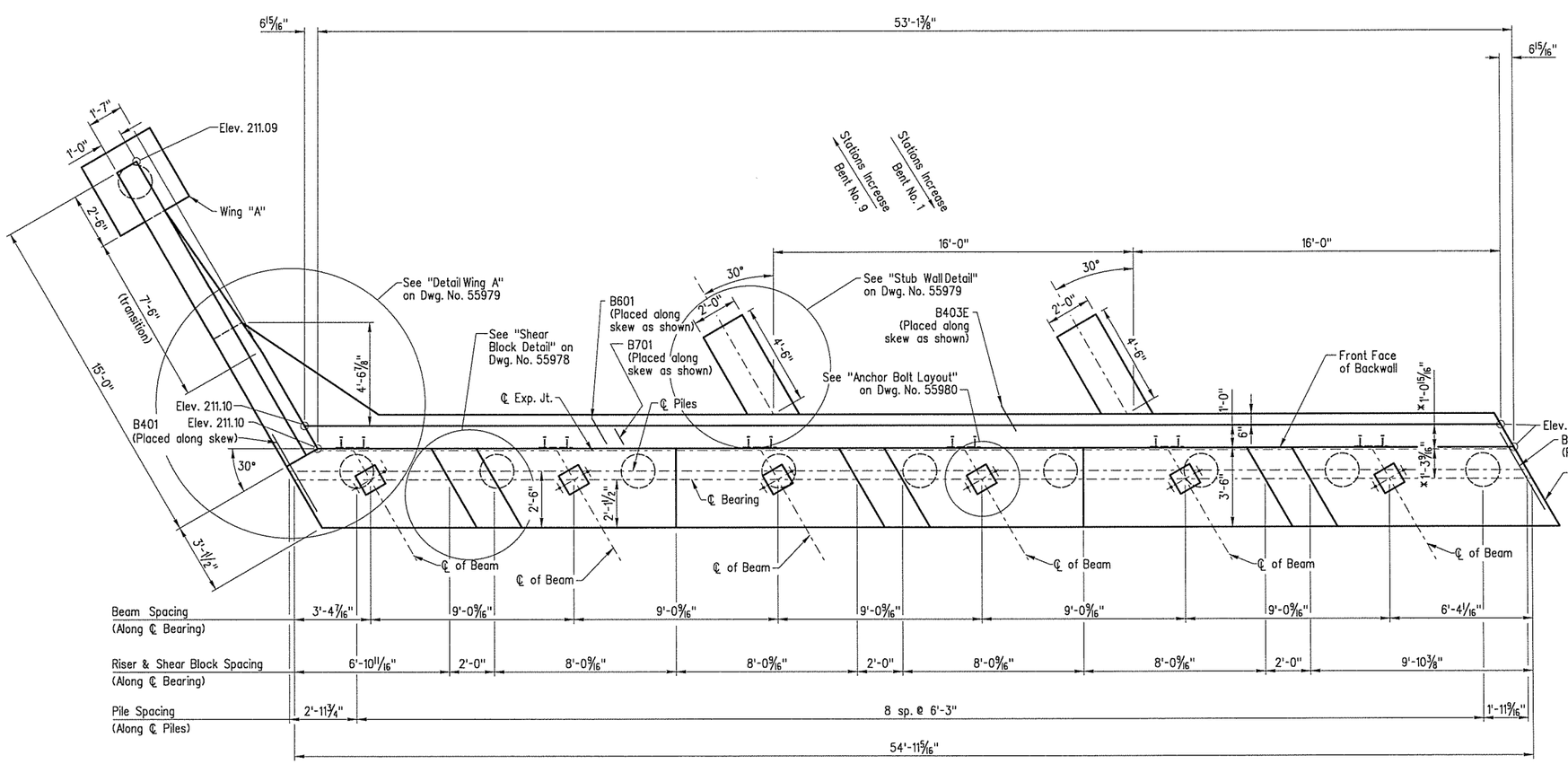
BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 1 OF 6
DETAILS OF END BENTS 1 & 9
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 3/28/14
CHECKED BY: MAA DATE: 5/1/14
DESIGNED BY: JRS DATE: 3/20/14
BRIDGE NO. 06940
FILENAME: bbb0114x3_ax1.dgn
SCALE: No Scale
DRAWING NO. 55975

JACOBS

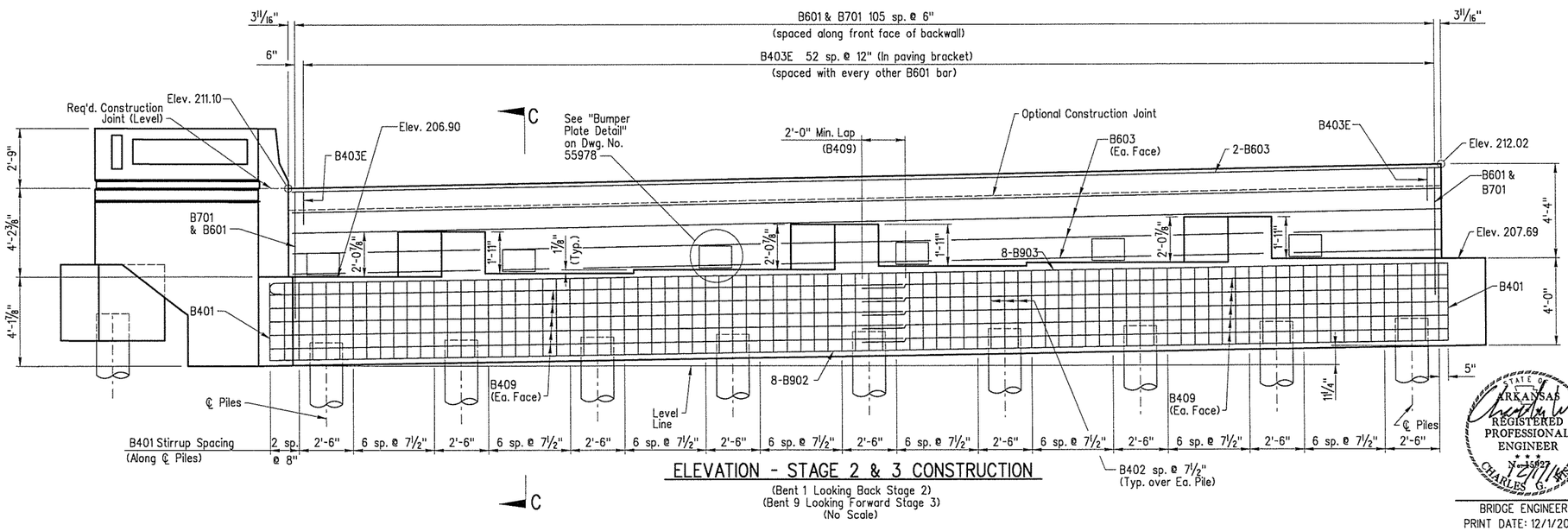
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	32	92
				(1) 06940 - END BENT DETAILS - 55976				



PLAN - STAGE 2 & 3 CONSTRUCTION

(No Scale)

x Dimensions are shown to ℄ Expansion Jt.



ELEVATION - STAGE 2 & 3 CONSTRUCTION

(Bent 1 Looking Back Stage 2)
(Bent 9 Looking Forward Stage 3)
(No Scale)

Note: Class 1 Protective Surface Treatment shall be applied to the roadway face and top of the transition rail, and to the top of the backwall.

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c-3,500 psi.

Concrete shall be poured in the dry and exposed corners shall be chamfered 3/4" unless otherwise noted.

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All reinforcing steel shall conform to AASHTO M31 or M322 Type A, Grade 60 (fy = 60,000 psi). Mill test reports shall be submitted for reinforcing steel.

The backwall above the required constr. joints shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 56002 for "Expansion Device Installation".

Structural Steel in backwall shall be AASHTO M 270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

For additional information see layout.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15827
CHARLES G. JESSE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

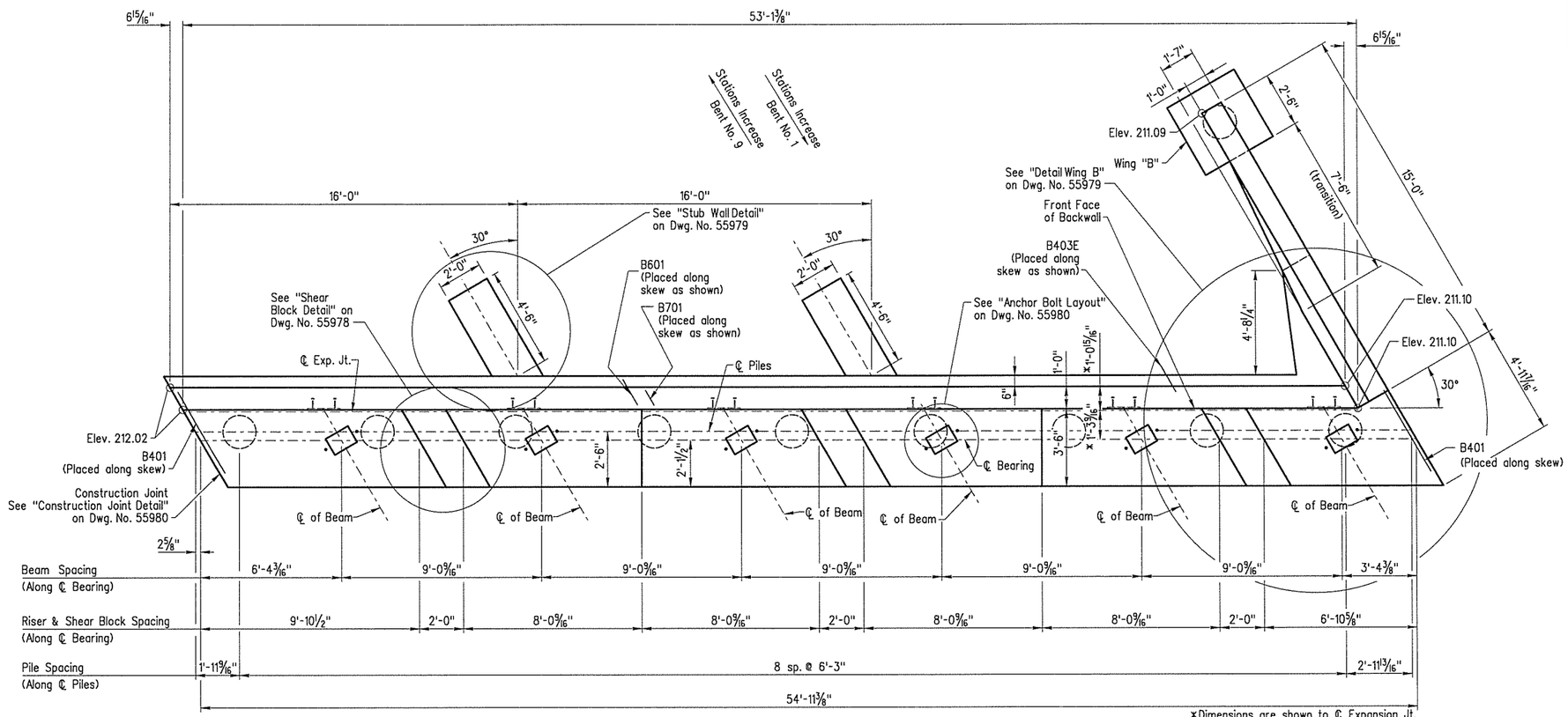
SHEET 2 OF 6
DETAILS OF END BENTS 1 & 9
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	LHG	DATE: 3/28/14	FILENAME: bbb0114x3_ax2.dgn
CHECKED BY:	MAA	DATE: 5/20/14	
DESIGNED BY:	JRS	DATE: 3/20/14	SCALE: No Scale
BRIDGE NO. 06940		DRAWING NO. 55976	

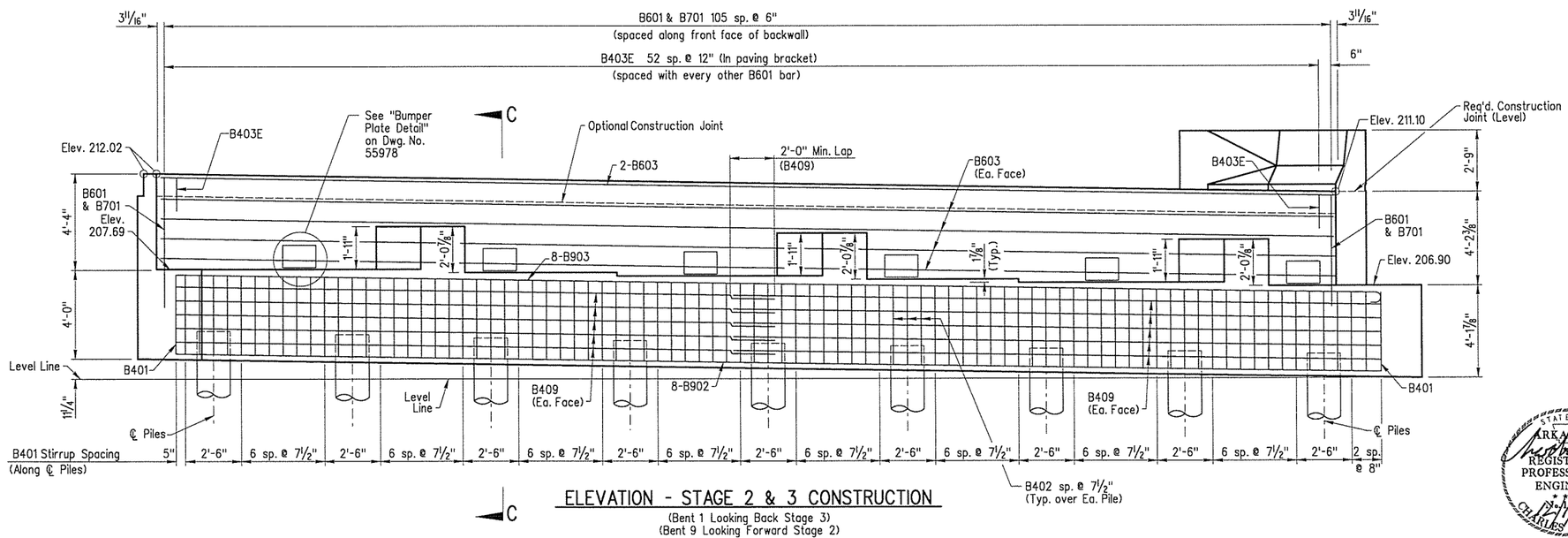
JACOBS

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.		BB0114	33	92

(1) 06940 - END BENT DETAILS - 55977



PLAN - STAGE 2 & 3 CONSTRUCTION
(No Scale)



ELEVATION - STAGE 2 & 3 CONSTRUCTION
(Bent 1 Looking Back Stage 3)
(Bent 9 Looking Forward Stage 2)
(No Scale)

Note: Class 1 Protective Surface Treatment shall be applied to the roadway face and top of the transition rail, and to the top of the backwall.

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c=3,500 psi.

Concrete shall be poured in the dry and exposed corners shall be chamfered ¾" unless otherwise noted.

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All reinforcing steel shall conform to AASHTO M31 or M322 Type A, Grade 60 (f_y = 60,000 psi). Mill test reports shall be submitted for reinforcing steel.

The backwall above the required constr. joints shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 56002 for "Expansion Device Installation".

Structural Steel in backwall shall be AASHTO M 270, Gr. 50W and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)".

For additional information see layout.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

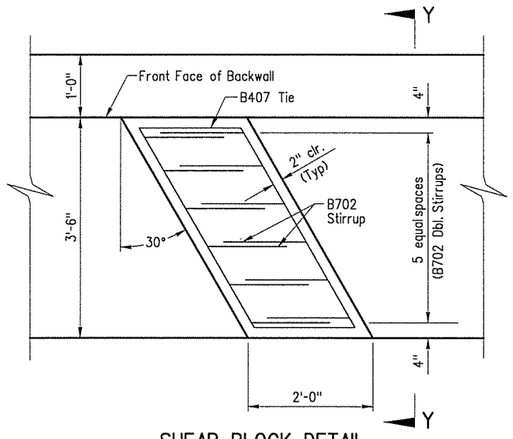
SHEET 3 OF 6
DETAILS OF END BENTS 1 & 9
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 3/24/14 FILENAME: bbb0114x3_ax3.dgn
CHECKED BY: MAA DATE: 5/20/14
DESIGNED BY: JRS DATE: 3/20/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55977

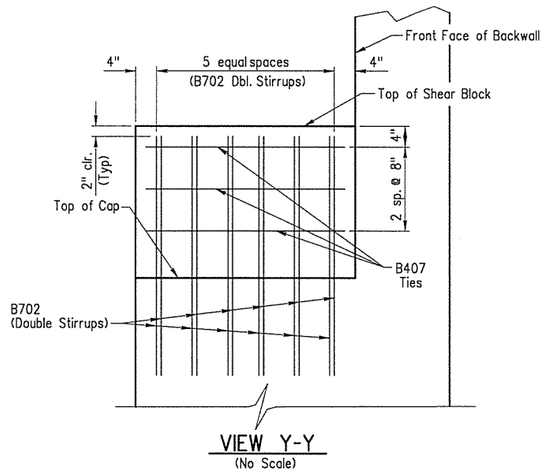
JACOBS

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.		BB0114	34	92

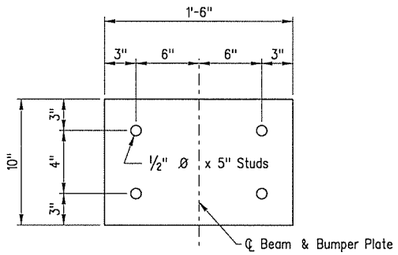
(1) 06940 - END BENT DETAILS - 55978



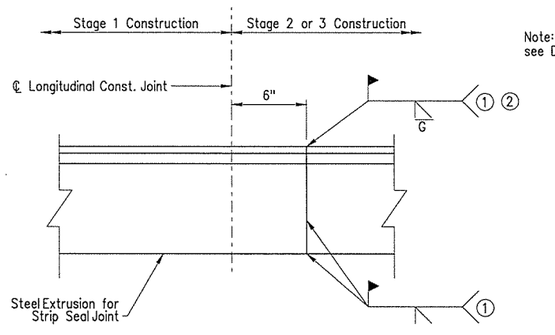
SHEAR BLOCK DETAIL
(No Scale)



VIEW Y-Y
(No Scale)

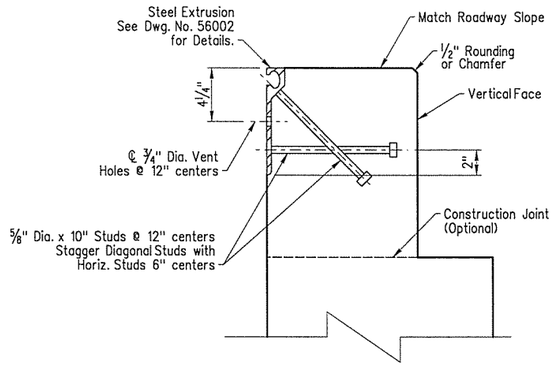


BUMPER PLATE DETAIL
(No Scale)



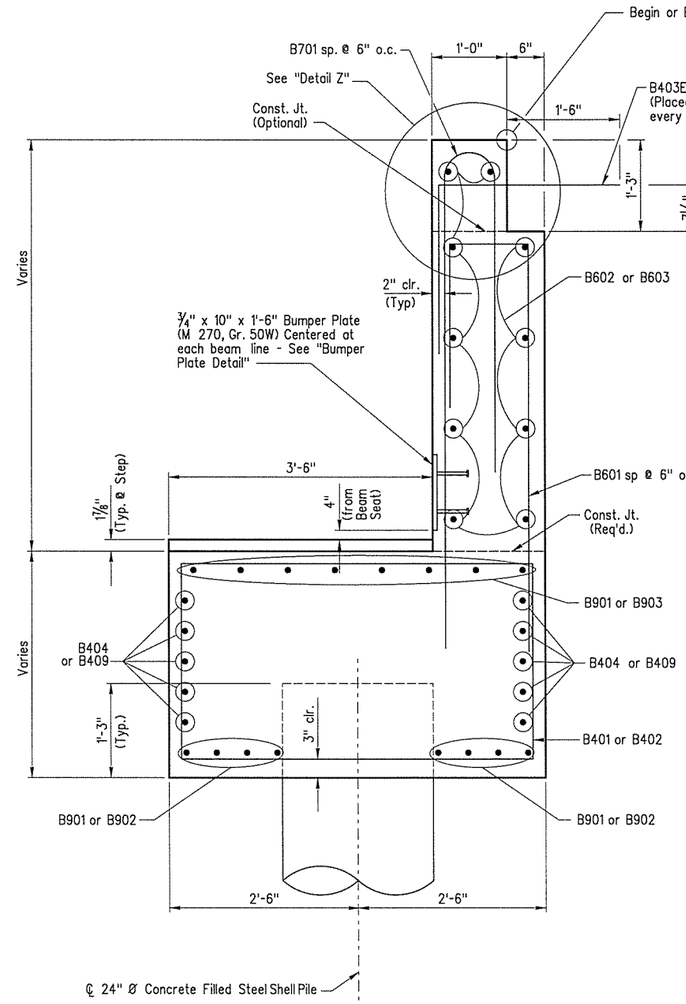
BACKWALL ARMOR JOINT DETAIL
(No Scale)

Note: For additional joint details see Dwg. No. 56002.



DETAIL Z
(No Scale)

Note: Concrete shall be hand packed under the Joint Armor.



SECTION C-C
(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
CHARLES G. WISE
BRIDGE ENGINEER
PRINT DATE: 12/1/2014

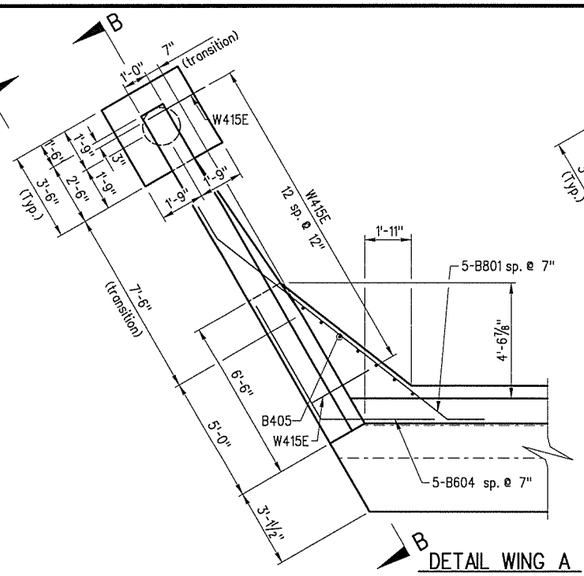
SHEET 4 OF 6
DETAILS OF END BENTS 1 & 9
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 02/18/14 FILENAME: bbb0114x3_ax4.dgn
CHECKED BY: MAA DATE: 05/20/14
DESIGNED BY: CGW DATE: 02/13/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55978

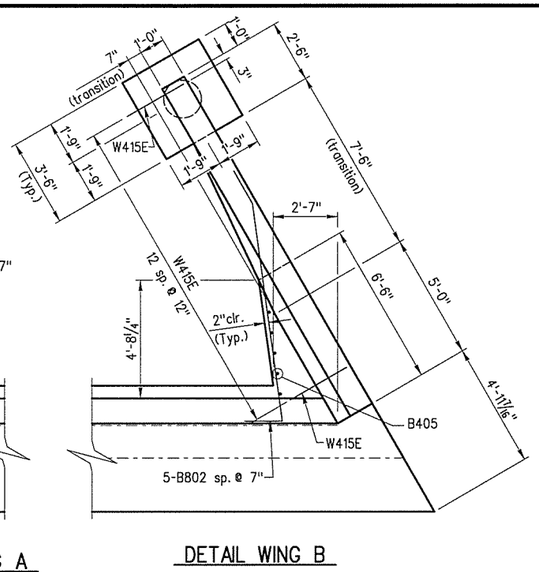
JACOBS

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.		BB0114	35	92

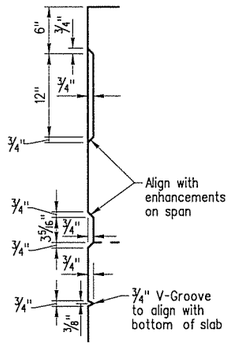
(1) 06940 - END BENT DETAILS - 55979



DETAIL WING A
(No Scale)

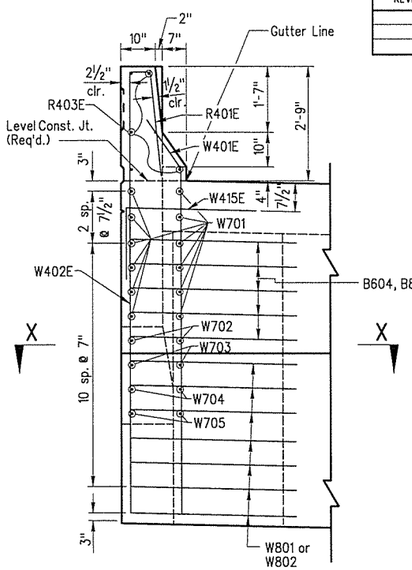


DETAIL WING B
(No Scale)

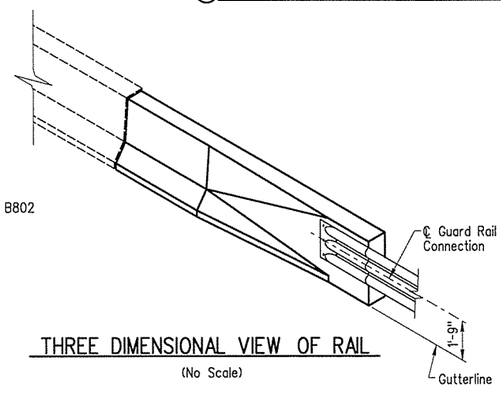


DETAIL Y
(No Scale)

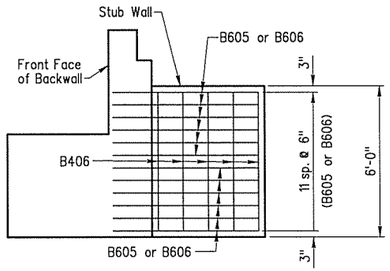
Note: Parapet enhancements at abutment shall align with enhancement in adjacent span.



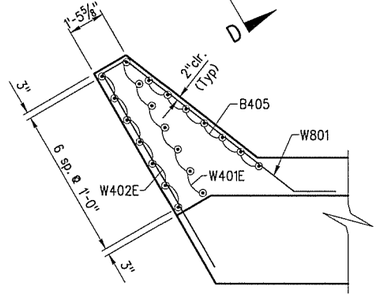
VIEW E-E
(No Scale)



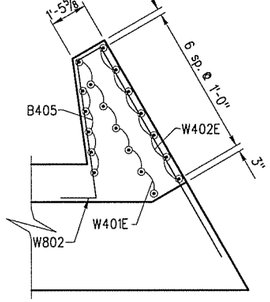
THREE DIMENSIONAL VIEW OF RAIL
(No Scale)



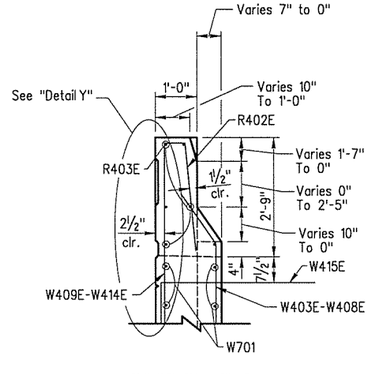
SECTION H-H
(No Scale)



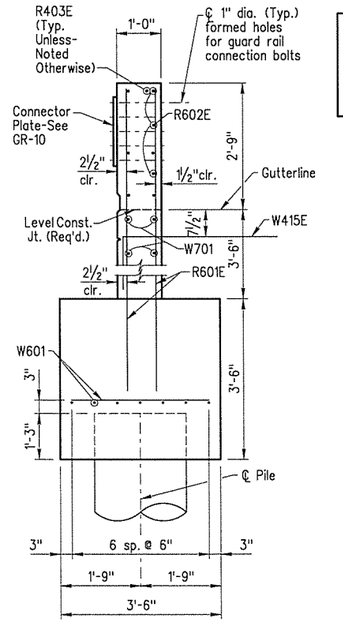
SECTION X-X (WING A)
(No Scale)



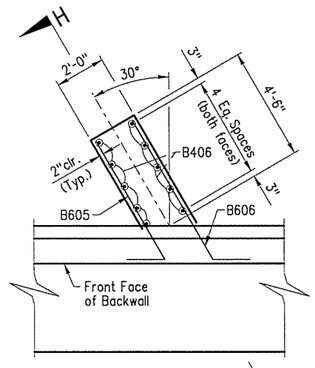
SECTION X-X (WING B)
(No Scale)



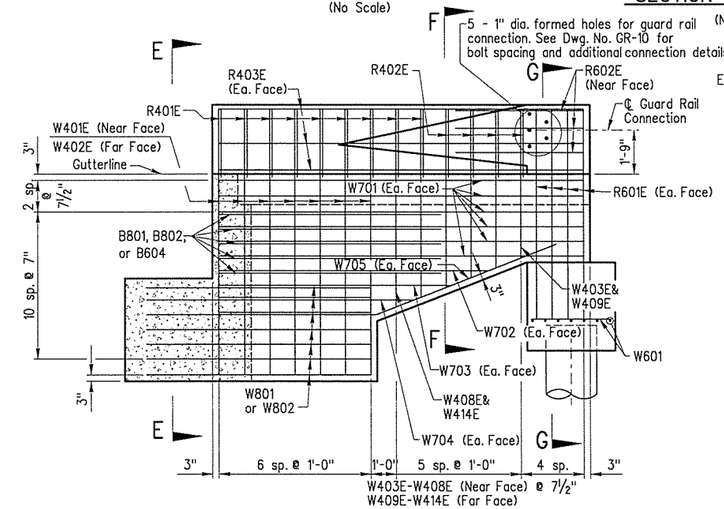
SECTION F-F
(No Scale)



SECTION G-G
(No Scale)



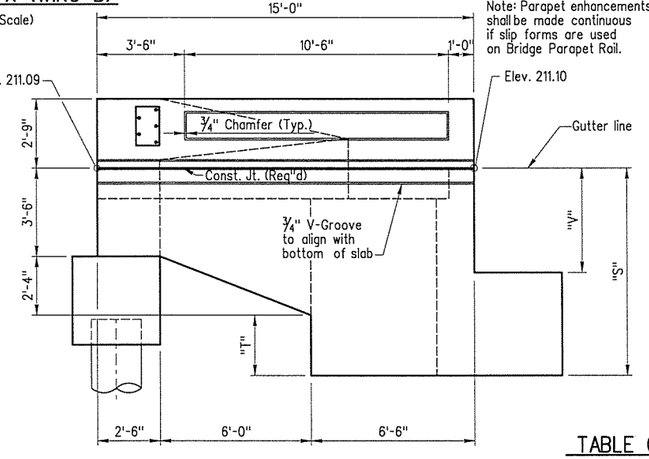
STUB WALL DETAIL
(No Scale)



5 - 1" dia. formed holes for guard rail connection. See Dwg. No. GR-10 for bolt spacing and additional connection details.

SECTION B-B
(No Scale)

Note: Details shown are typical for all transition rails and wings. Details are opposite hand for rails and wings on opposite side of bridge.



Note: Parapet enhancements shall be made continuous if slip forms are used on Bridge Parapet Rail.

VIEW D-D
(No Scale)

Note: Details shown are typical for all transition rails and wings. Details are opposite hand for rails and wings on opposite side of bridge.

TABLE OF VARIABLES

Bt.	Wing	"S"	"T"	"V"
1	A	8'-4¼"	2'-4"	4'-2⅜"
	B	8'-4¼"	2'-4"	4'-2⅜"
9	A	8'-4¼"	2'-4"	4'-2⅜"
	B	8'-4¼"	2'-4"	4'-2⅜"

Note: Wing designations are looking ahead.

STATE OF ARKANSAS
CHARLES G. WISE
REGISTERED PROFESSIONAL ENGINEER
15207
12/1/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 5 OF 6
DETAILS OF END BENTS 1 & 9
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	LHG	DATE:	02/18/14
CHECKED BY:	MAA	DATE:	05/20/14
DESIGNED BY:	CGW	DATE:	02/13/14
BRIDGE NO. 06940		DRAWING NO. 55979	

FILENAME: bbb0114x3_ax5.dgn
SCALE: No Scale

JACOBS

12/1/2014 11:08:59 ArkJob\WL\XM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106BlackfishEndBentDetails02.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.		BB0114	36	92

(1) 06940 - END BENT DETAILS - 55980

STAGE 1 CONSTRUCTION BAR LIST

MARK	NO. REQ'D	LENGTH	PIN DIA.
B401	98	18'-3"	2"
B402	36	12'-5"	2"
B403E	82	4'-3"	3"
B404	40	24'-0"	Str.
B406	60	5'-8"	Str.
B407	12	10'-8"	2"
B408	78	7'-3"	2"
B410	30	8'-5"	Str.
B601	166	6'-10"	4½"
B602	40	26'-5"	Str.
B605	72	6'-9"	4½"
B606	72	7'-5"	4½"
B701	166	9'-7"	7½"
B702	48	10'-6"	5¼"
B901	32	51'-5"	Str.

Note: All bars designated with an "E" suffix are to be epoxy coated.

Number of bars in bar list are for both End Bents Nos. 1 & 9.

STAGE 2 CONSTRUCTION BAR LIST

MARK	NO. REQ'D	LENGTH	PIN DIA.
B401	122	18'-3"	2"
B402	54	12'-5"	2"
B403E	106	4'-3"	3"
B405	12	6'-9"	Str.
B406	40	5'-8"	Str.
B407	18	10'-8"	2"
B409	40	28'-6"	Str.
B601	212	6'-10"	4½"
B603	20	52'-9"	Str.
B604	5	9'-0"	4½"
B605	48	6'-9"	4½"
B606	48	7'-8"	4½"
B701	212	9'-7"	7½"
B702	72	10'-6"	5¼"
B801	5	13'-11"	6"
B802	5	10'-11"	6"
B902	16	54'-8"	Str.
B903	16	55'-11"	9"
W401E	14	9'-5"	2"
W402E	14	10'-6"	Str.
W403E to W408E	2 ea.	4'-8" to 6'-8"	2"
W409E to W414E	2 ea.	5'-9" to 7'-9"	Str.
W415E	26	3'-6"	3"
W601	28	3'-0"	Str.
W701	24	14'-8"	Str.
W702	4	10'-9"	Str.
W703	4	9'-3"	Str.
W704	4	7'-9"	Str.
W705	4	13'-9"	5¼"
W801	7	19'-8"	6"
W802	7	16'-10"	6"
R401E	18	3'-11"	2"
R402E	8	4'-0"	2"
R403E	12	14'-8"	Str.
R601E	16	8'-1"	Str.
R602E	6	5'-0"	Str.

Note: All bars designated with an "E" suffix are to be epoxy coated.

Number of bars in bar list are for both End Bents Nos. 1 & 9.

STAGE 3 CONSTRUCTION BAR LIST

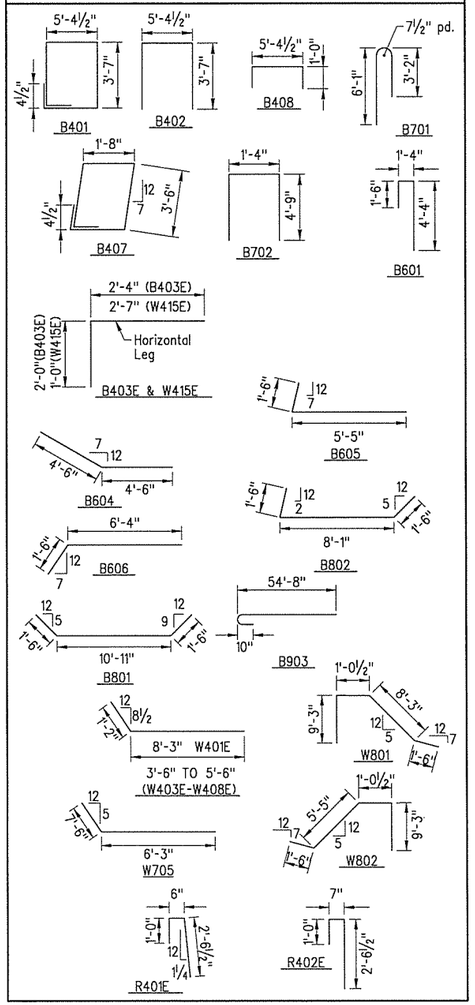
MARK	NO. REQ'D	LENGTH	PIN DIA.
B401	122	18'-3"	2"
B402	54	12'-5"	2"
B403E	106	4'-3"	3"
B405	12	6'-9"	Str.
B406	40	5'-8"	Str.
B407	18	10'-8"	2"
B409	40	28'-6"	Str.
B601	212	6'-10"	4½"
B603	20	52'-9"	Str.
B604	5	9'-0"	4½"
B605	48	6'-9"	4½"
B606	48	7'-8"	4½"
B701	212	9'-7"	7½"
B702	72	10'-6"	5¼"
B801	5	13'-11"	6"
B802	5	10'-11"	6"
B902	16	54'-8"	Str.
B903	16	55'-11"	9"
W401E	14	9'-5"	2"
W402E	14	10'-6"	Str.
W403E to W408E	2 ea.	4'-8" to 6'-8"	2"
W409E to W414E	2 ea.	5'-9" to 7'-9"	Str.
W415E	26	3'-6"	3"
W601	28	3'-0"	Str.
W701	24	14'-8"	Str.
W702	4	10'-9"	Str.
W703	4	9'-3"	Str.
W704	4	7'-9"	Str.
W705	4	13'-9"	5¼"
W801	7	19'-8"	6"
W802	7	16'-10"	6"
R401E	18	3'-11"	2"
R402E	8	4'-0"	2"
R403E	12	14'-8"	Str.
R601E	16	8'-1"	Str.
R602E	6	5'-0"	Str.

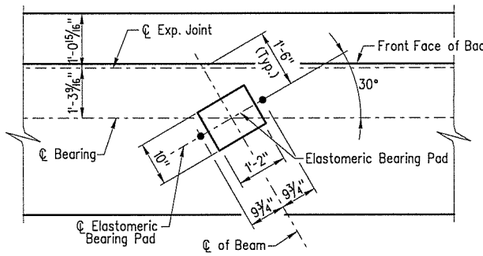
Note: All bars designated with an "E" suffix are to be epoxy coated.

Number of bars in bar list are for both End Bents Nos. 1 & 9.

BENDING DIAGRAMS

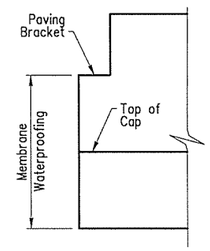
(DIMENSIONS ARE OUT TO OUT OF BARS)

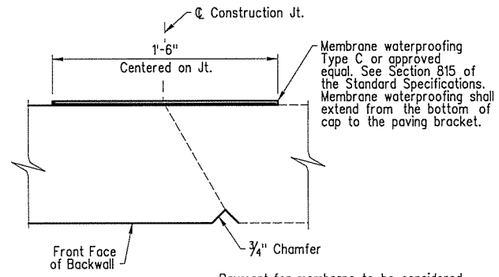




ANCHOR BOLT LAYOUT

(No Scale)





Payment for membrane to be considered subsidiary to Class S Concrete - Bridge.

CONSTRUCTION JOINT DETAIL

(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

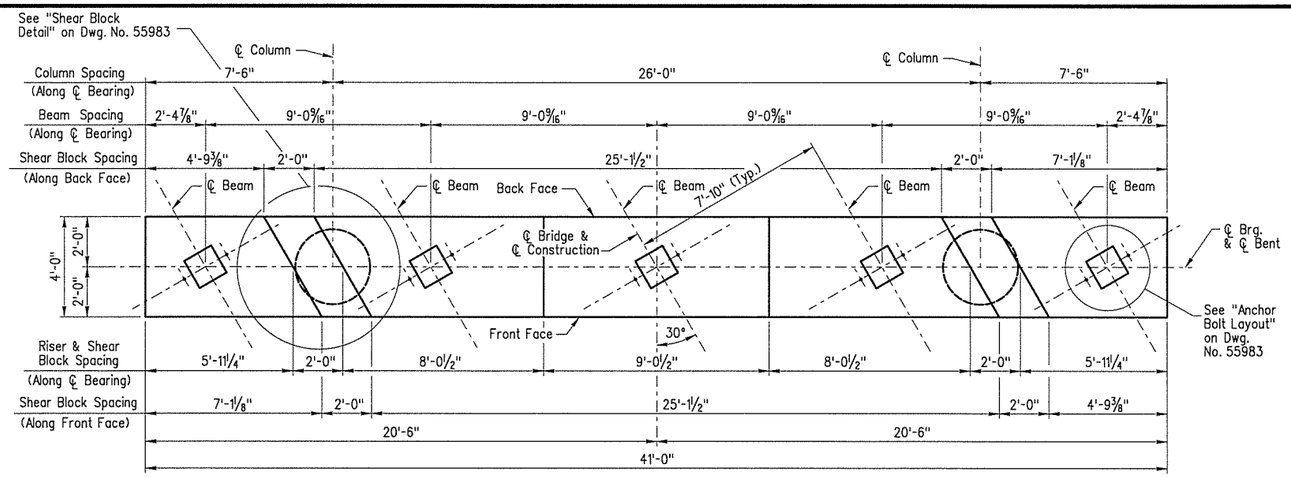
SHEET 6 OF 6
DETAILS OF END BENTS 1 & 9
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 02/18/14 FILENAME: bbb0114x3_ax6.dgn
CHECKED BY: MAA DATE: 05/20/14
DESIGNED BY: CGW DATE: 02/13/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55980

JACOBS

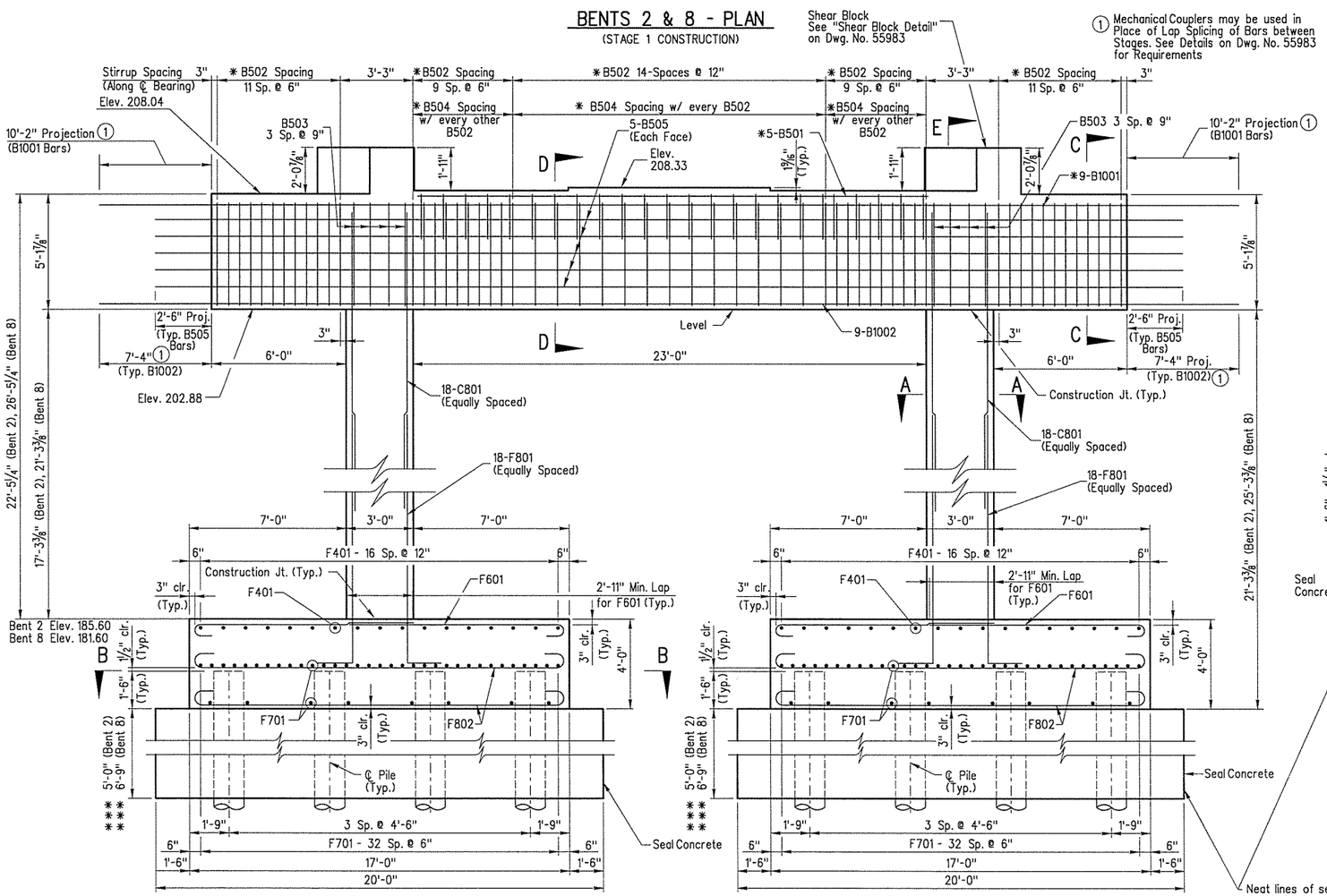
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	37	92

(1) 06940 - INT. BENT DETAILS - 55981



BENTS 2 & 8 - PLAN

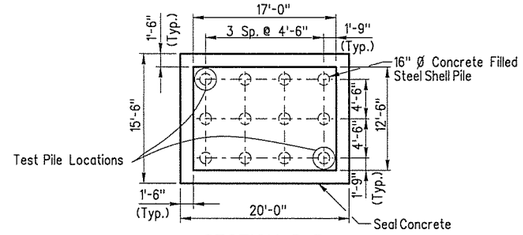
(STAGE 1 CONSTRUCTION)



∗∗∗For seal size shown, maximum water surface elevation shall not exceed 192.0 for dewatered cofferdam.

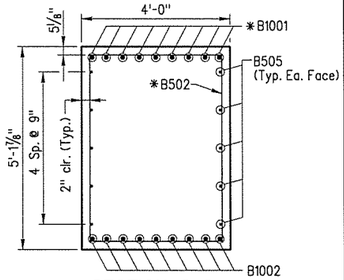
BENTS 2 & 8 - ELEVATION

(STAGE 1 CONSTRUCTION, LOOKING AHEAD)



SECTION B-B

(No Scale)



SECTION C-C

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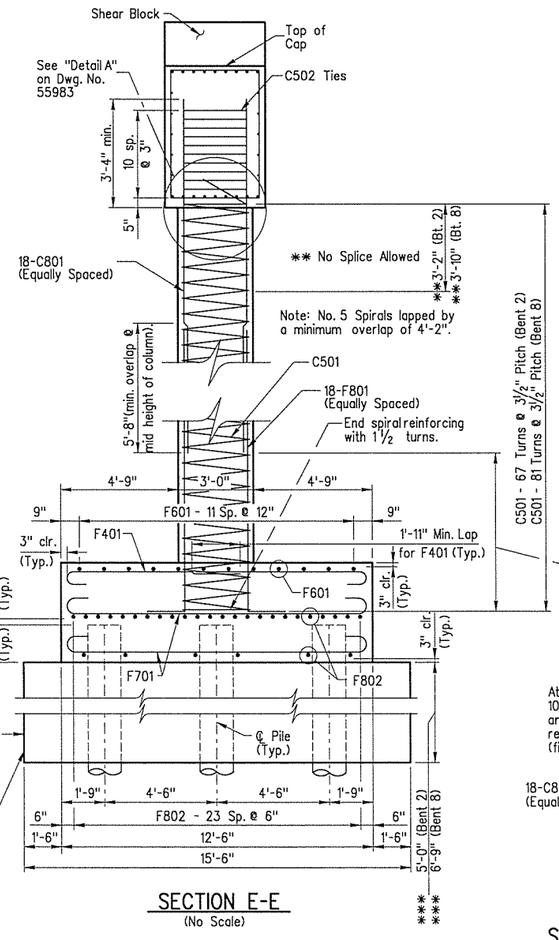
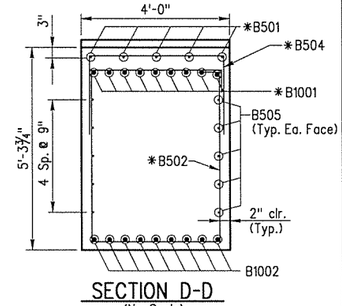


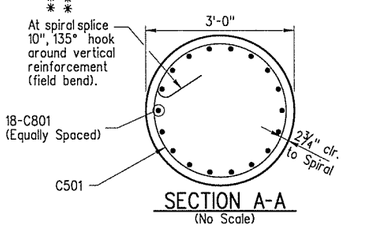
SECTION E-E

(No Scale)



SECTION D-D

(No Scale)



SECTION A-A

(No Scale)

∗ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Neat lines of seal.
The inside face of the cofferdam shall be at or outside the seal concrete dimensions shown.
The plan quantity for seal concrete and structural excavation shall be based on the dimensions shown.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 15947 CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

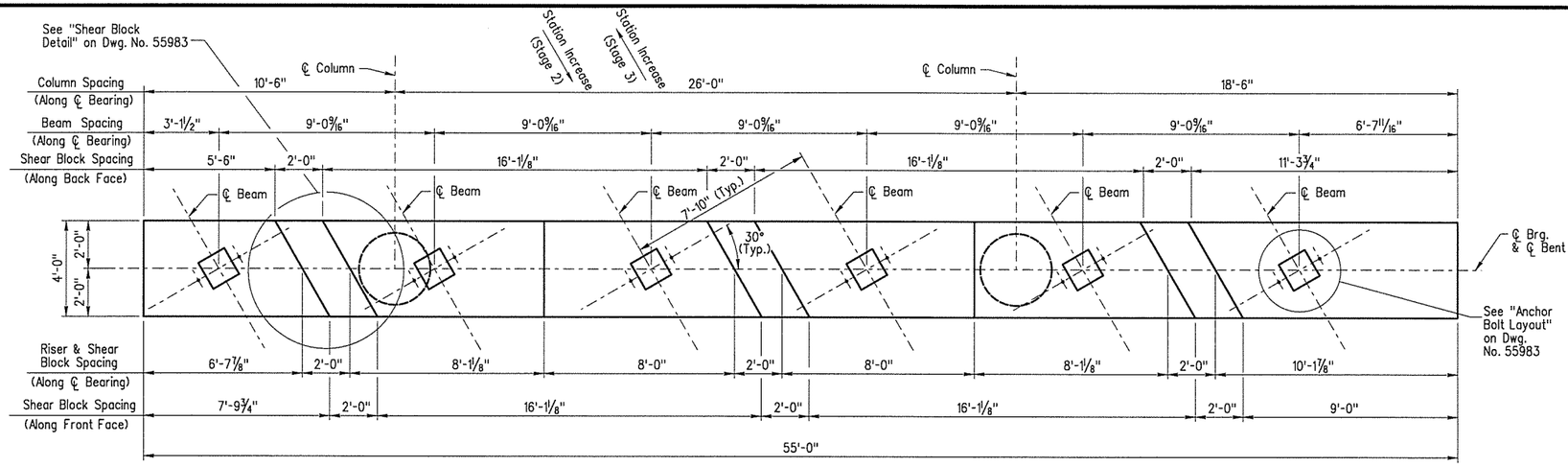
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENTS 2 & 8
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	JWB	DATE:	3/5/14	FILENAME:	bbb0114x3_bx1.dgn
CHECKED BY:	CGW	DATE:	4/8/14		
DESIGNED BY:	BLB	DATE:	2/10/14	SCALE:	1" = 3'-0"
BRIDGE NO.	06940			DRAWING NO.	55981

JACOBS

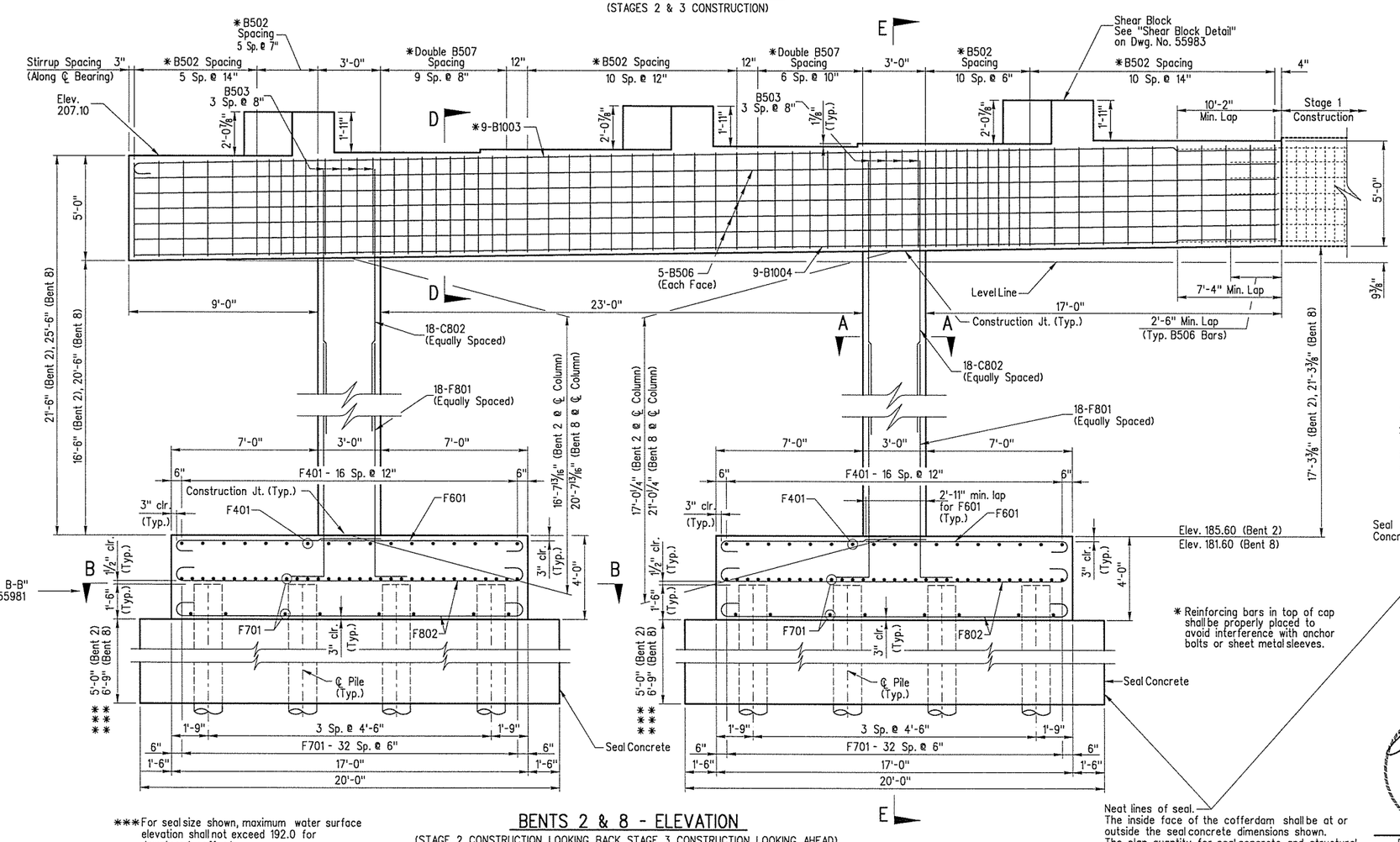
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	38	92

(1) 06940 - INT. BENT DETAIL - 55982



BENTS 2 & 8 - PLAN

(STAGES 2 & 3 CONSTRUCTION)



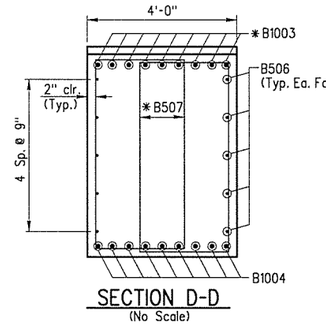
***For seal size shown, maximum water surface elevation shall not exceed 192.0 for dewatered cofferdam.

BENTS 2 & 8 - ELEVATION

(STAGE 2 CONSTRUCTION LOOKING BACK, STAGE 3 CONSTRUCTION LOOKING AHEAD)

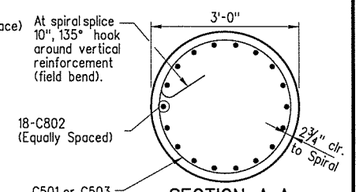
* Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Neat lines of seal. The inside face of the cofferdam shall be at or outside the seal concrete dimensions shown. The plan quantity for seal concrete and structural excavation shall be based on the dimensions shown.



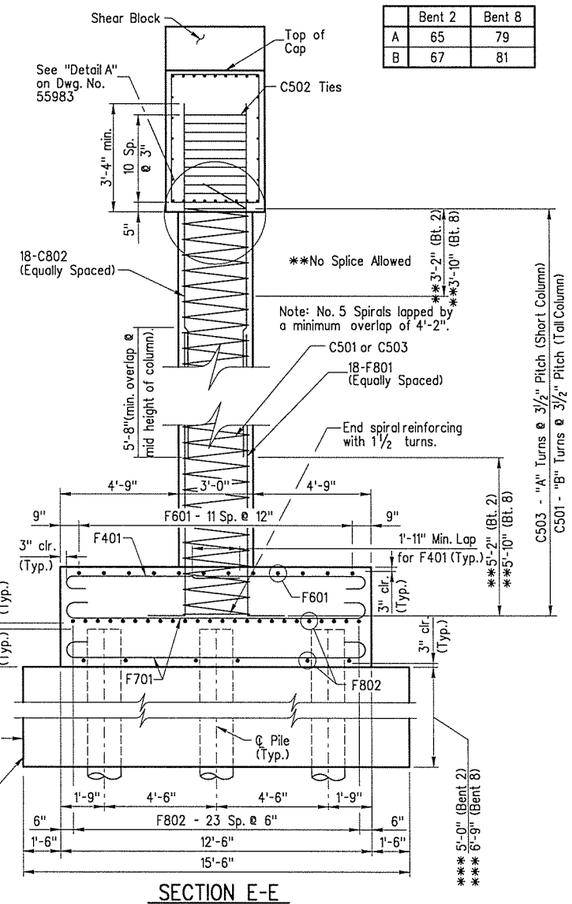
SECTION D-D

(No Scale)



SECTION A-A

	Bent 2	Bent 8
A	65	79
B	67	81



SECTION E-E

(No Scale)

SHEET 2 OF 3

DETAILS OF INTERMEDIATE BENTS 2 & 8

BRIDGE OVER BLACKFISH LAKE

ST. FRANCIS COUNTY

ROUTE 40 SECTION 51

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARKANSAS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 13992 CHARLES G. WISE

BRIDGE ENGINEER

PRINT DATE: 12/1/2014

DRAWN BY:	JWB	DATE:	3/5/14	FILENAME:	bbb0114x3_bx2.dgn
CHECKED BY:	CGW	DATE:	4/8/14		
DESIGNED BY:	BLB	DATE:	2/10/14	SCALE:	1" - 3'-0"
BRIDGE NO. 06940			DRAWING NO. 55982		

JACOBS

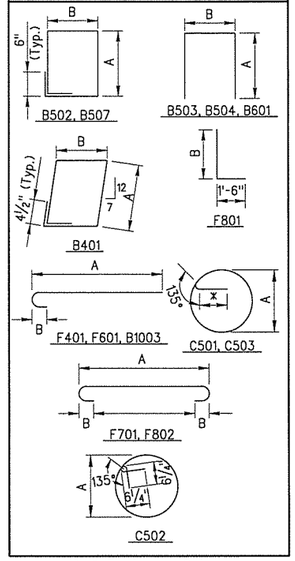
Bar List - Stage 1 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	4	11'-10"	4'-2"	1'-7"	2"
B501	5	24'-10"	---	---	Str.
B502	57	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B504	24	7'-5½"	2'-0"	3'-8"	2½"
B505	10	46'-0"	---	---	Str.
B601	24	8'-8"	3'-9"	1'-4"	4½"
B1001	9	61'-4"	---	---	Str.
B1002	9	55'-8"	---	---	Str.
C501	2	C	2'-6½"	---	3¾"
C502	22	9'-4"	2'-6½"	---	3¾"
C801	36	D	---	---	Str.
F401	68	7'-6"	7'-0"	4½"	3
F601	48	10'-5"	9'-9"	6"	4½"
F701	82	13'-5"	11'-9"	7"	5¼"
F801	36	E	---	F	6"
F802	60	18'-4"	16'-6"	8"	6"

	Bent 2	Bent 8
C	561'-10"	673'-7"
D	14'-10"	16'-10"
E	15'-0"	17'-0"
F	13'-8"	15'-8"
G	545'-10"	657'-8"
H	14'-7"	16'-7"

Bar List - Stage 2 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	6	11'-10"	4'-2"	1'-7"	2"
B502	43	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B506	10	54'-8"	---	---	Str.
B507	34	14'-5"	4'-6½"	2'-5"	2½"
B601	36	8'-8"	3'-9"	1'-4"	4½"
B1003	9	56'-2"	54'-8"	1½"	10"
B1004	9	54'-8"	---	---	Str.
C501	1	C	2'-6½"	---	3¾"
C502	22	9'-4"	2'-6½"	---	3¾"
C503	1	G	2'-6½"	---	3¾"
C802	36	H	---	---	Str.
F401	68	7'-6"	7'-0"	4½"	3
F601	48	10'-5"	9'-9"	6"	4½"
F701	82	13'-5"	11'-9"	7"	5¼"
F801	36	E	---	F	6"
F802	60	18'-4"	16'-6"	8"	6"

Bar List - Stage 3 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	6	11'-10"	4'-2"	1'-7"	2"
B502	43	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B506	10	54'-8"	---	---	Str.
B507	34	14'-5"	4'-6½"	2'-5"	2½"
B601	36	8'-8"	3'-9"	1'-4"	4½"
B1003	9	56'-2"	54'-8"	1½"	10"
B1004	9	54'-8"	---	---	Str.
C501	1	C	2'-6½"	---	3¾"
C502	22	9'-4"	2'-6½"	---	3¾"
C503	1	G	2'-6½"	---	3¾"
C802	36	H	---	---	Str.
F401	68	7'-6"	7'-0"	4½"	3
F601	48	10'-5"	9'-9"	6"	4½"
F701	82	13'-5"	11'-9"	7"	5¼"
F801	36	E	---	F	6"
F802	60	18'-4"	16'-6"	8"	6"

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT OF BARS)



*10" ℄ Footing and Splices
*24" ℄ Cap.

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.		BB0114	39	92

① 06940 - INT. BENT DETAILS - 55983

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c = 3,500 psi.

Concrete shall be poured in the dry and exposed corners shall be chamfered ¾" unless otherwise noted.

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60.

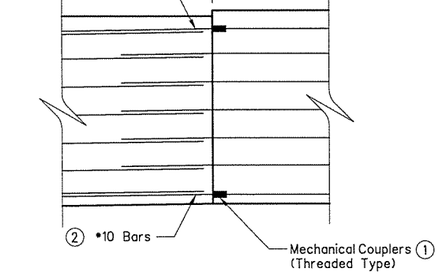
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A, Grade 60, or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625". Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices, or bracing needed for assembly, shipping, handling, or erecting.

Spiral reinforcement projected into the footing shall be terminated with 1½ turns and a 135° hook with a 10" tail hooked around a vertical bar and projected into the column core. The 135° hook may be field bent.

Spiral reinforcement at lapped splices shall be terminated by a 135° hook with a 10" tail hooked around a vertical bar and projected into the column core. The 135° hook may be field bent. Spiral lap splices shall occur at the mid height of column.

Spiral reinforcement projected into the cap shall be terminated with 1½ turns and a 135° hook with a 24" tail hooked around a vertical bar and projected into cap within the column core. The 135° hook may be field bent.

For additional information see layout.



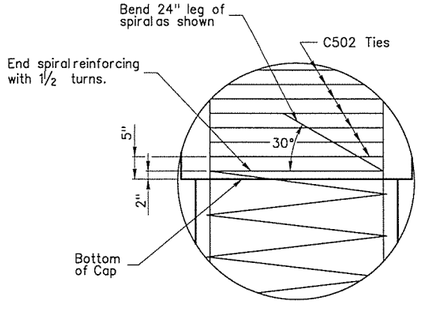
OPTIONAL MECHANICAL COUPLER DETAIL
(No Scale)

① The Mechanical Couplers shall be an approved type in accordance with AHTD Qualified Products List (QPL).

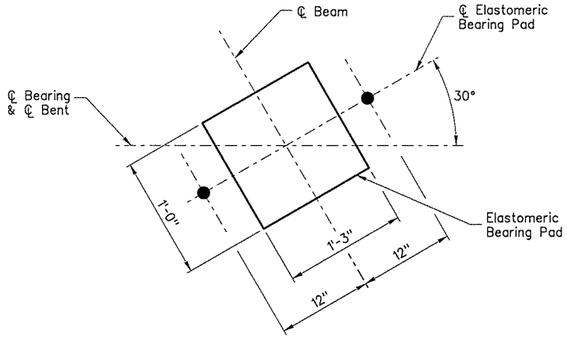
The cost of Mechanical Couplers shall not be measured for separate payment but shall be considered subsidiary to the item "REINFORCING STEEL - BRIDGE (GRADE 60)".

Mechanical Couplers shall be developed at least 125% of the specified yield strength of the Reinforcing Steel.

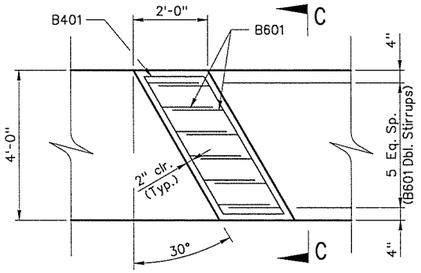
② One end of bar shall be threaded to match Mechanical Coupler. Length of bar shall match lap splice length detailed on plans.



DETAIL A
(No Scale)



ANCHOR BOLT LAYOUT - BENT 2 & 8
(No Scale)



SHEAR BLOCK DETAIL
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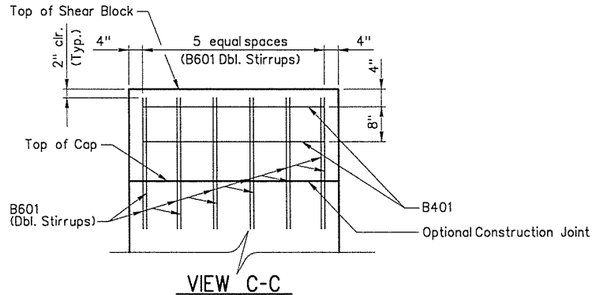


VIEW C-C
(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
12-1-2014
CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENTS 2 & 8
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

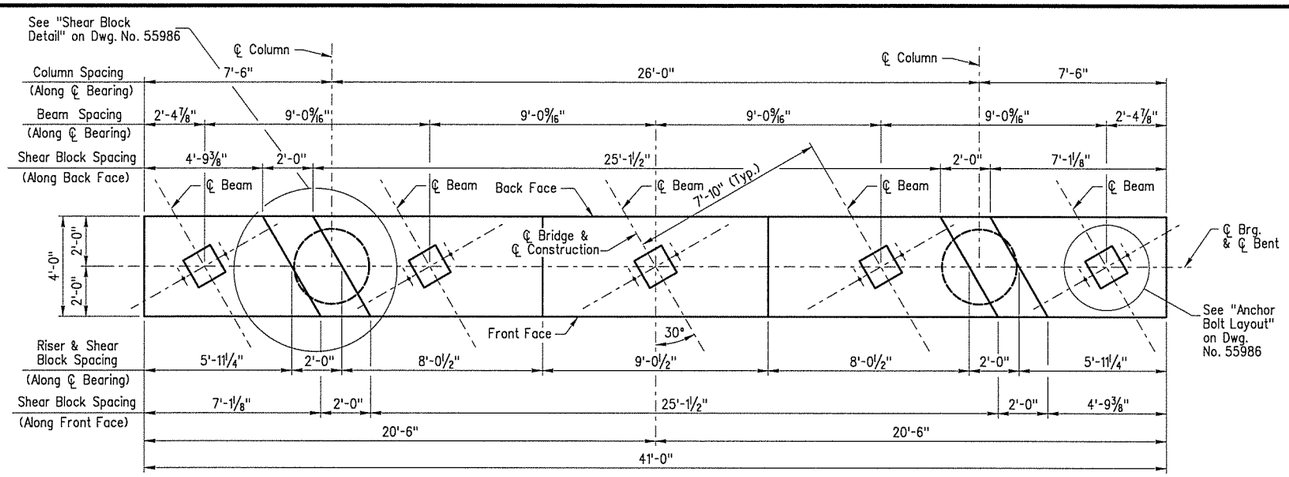
DRAWN BY: JWB DATE: 3/5/14 FILENAME: bbb0114x3_bx3.dgn
CHECKED BY: CGW DATE: 4/8/14
DESIGNED BY: BLB DATE: 2/10/14 SCALE: 1" = 2'-0"
BRIDGE NO. 06940 DRAWING NO. 55983

JACOBS

11:09:01 AM F:\Job\WLXM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106BlackfishLakeInBent03.dgn
12/1/2014

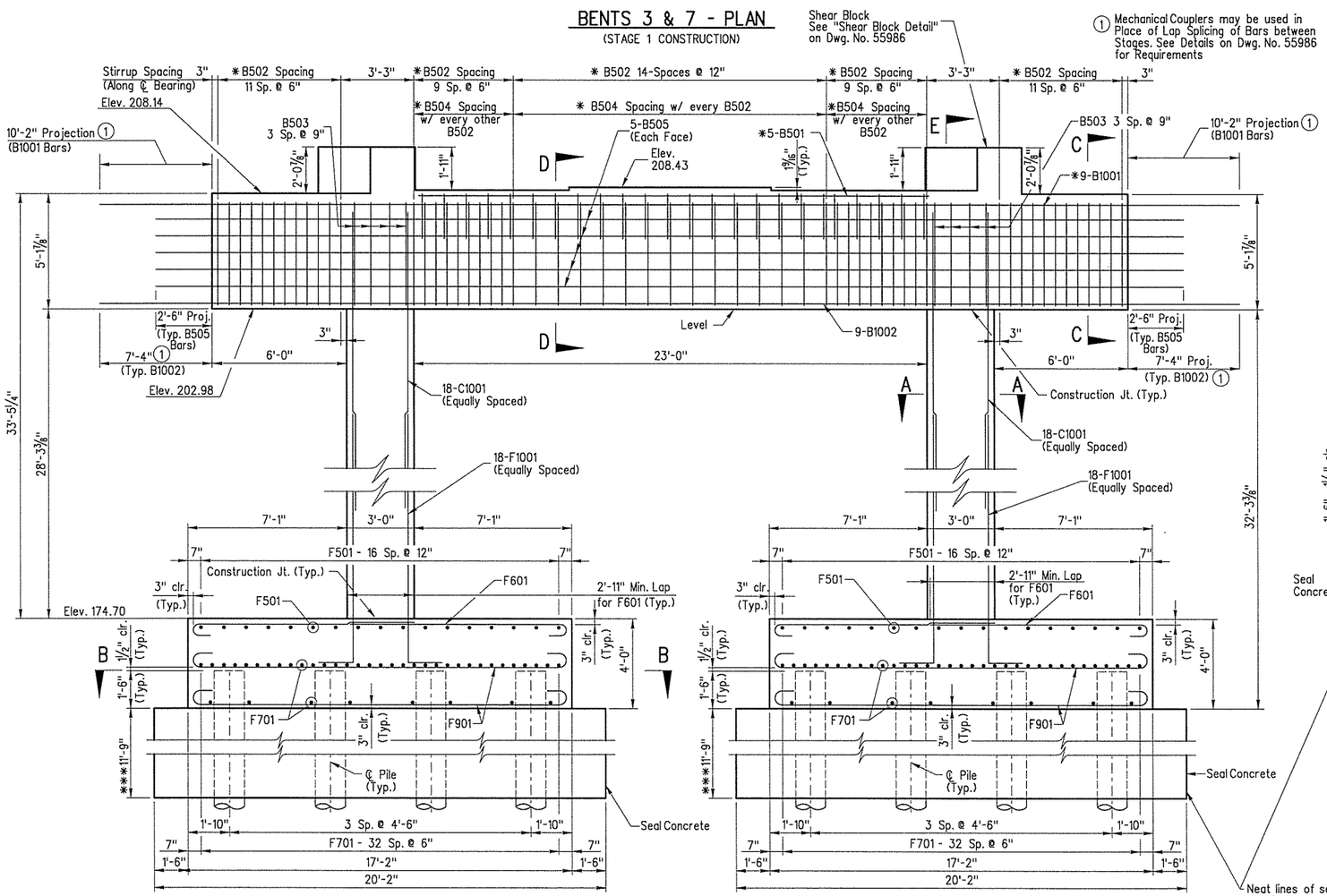
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	40	92

(1) 06940 - INT. BENT DETAILS - 55984



BENTS 3 & 7 - PLAN

(STAGE 1 CONSTRUCTION)

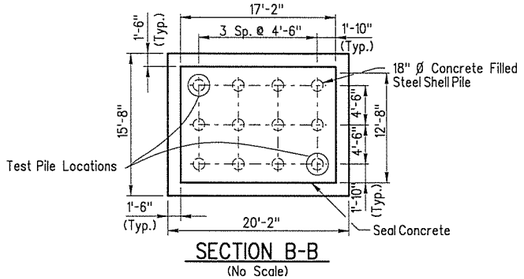


***For seal size shown, maximum water surface elevation shall not exceed 192.0 for dewatered cofferdam.

BENTS 3 & 7 - ELEVATION

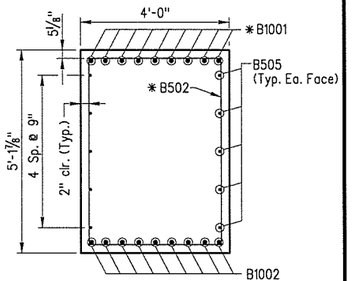
(STAGE 1 CONSTRUCTION, LOOKING AHEAD)

(1) Mechanical Couplers may be used in Place of Lap Splicing of Bars between Stages. See Details on Dwg. No. 55986 for Requirements



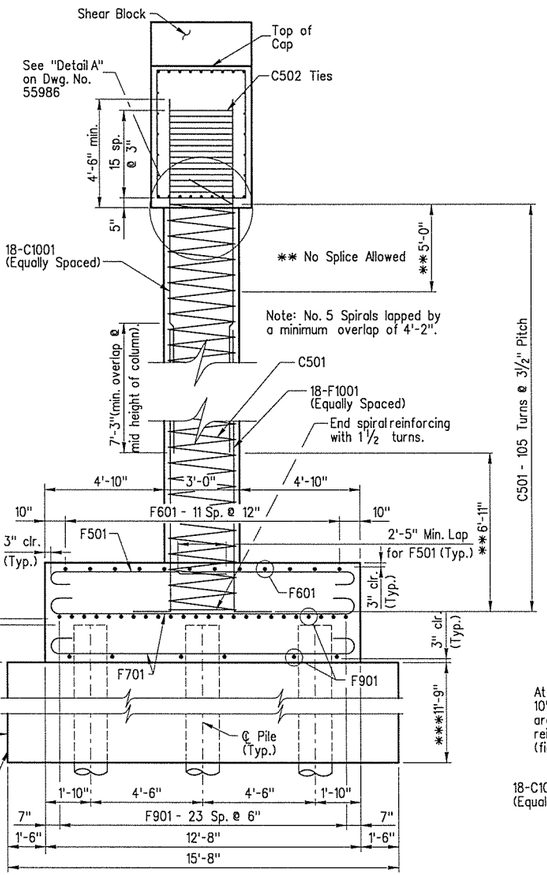
SECTION B-B

(No Scale)



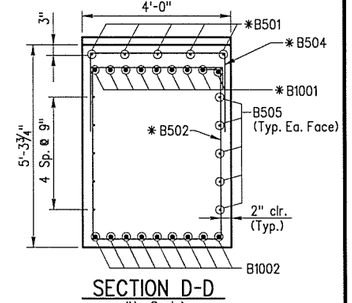
SECTION C-C

(No Scale)



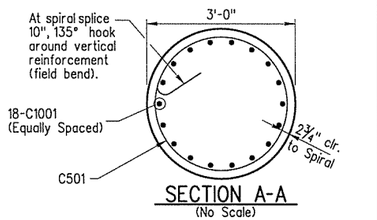
SECTION E-E

(No Scale)



SECTION D-D

(No Scale)



SECTION A-A

(No Scale)

✱ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Neat lines of seal. The inside face of the cofferdam shall be at or outside the seal concrete dimensions shown. The plan quantity for seal concrete and structural excavation shall be based on the dimensions shown.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 12-15982 CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

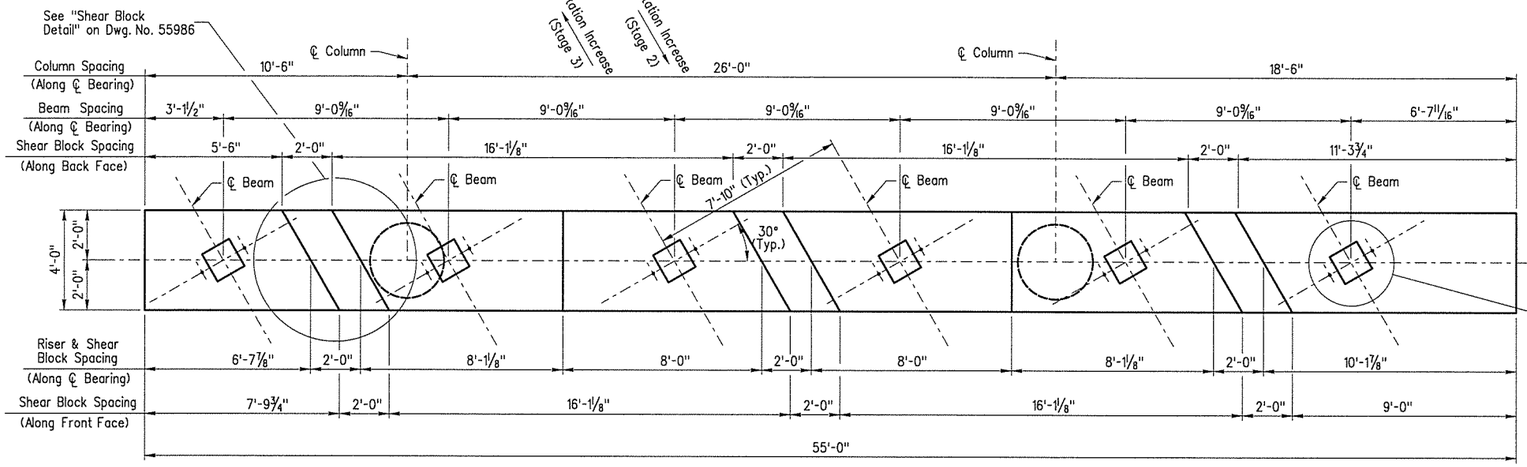
SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENTS 3 & 7
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	JWB	DATE:	3/5/14	FILENAME:	bbb0114x3_bx4.dgn
CHECKED BY:	CGW	DATE:	4/8/14		
DESIGNED BY:	BLB	DATE:	2/10/14	SCALE:	1" = 3'-0"
BRIDGE NO.	06940			DRAWING NO.	55984

JACOBS

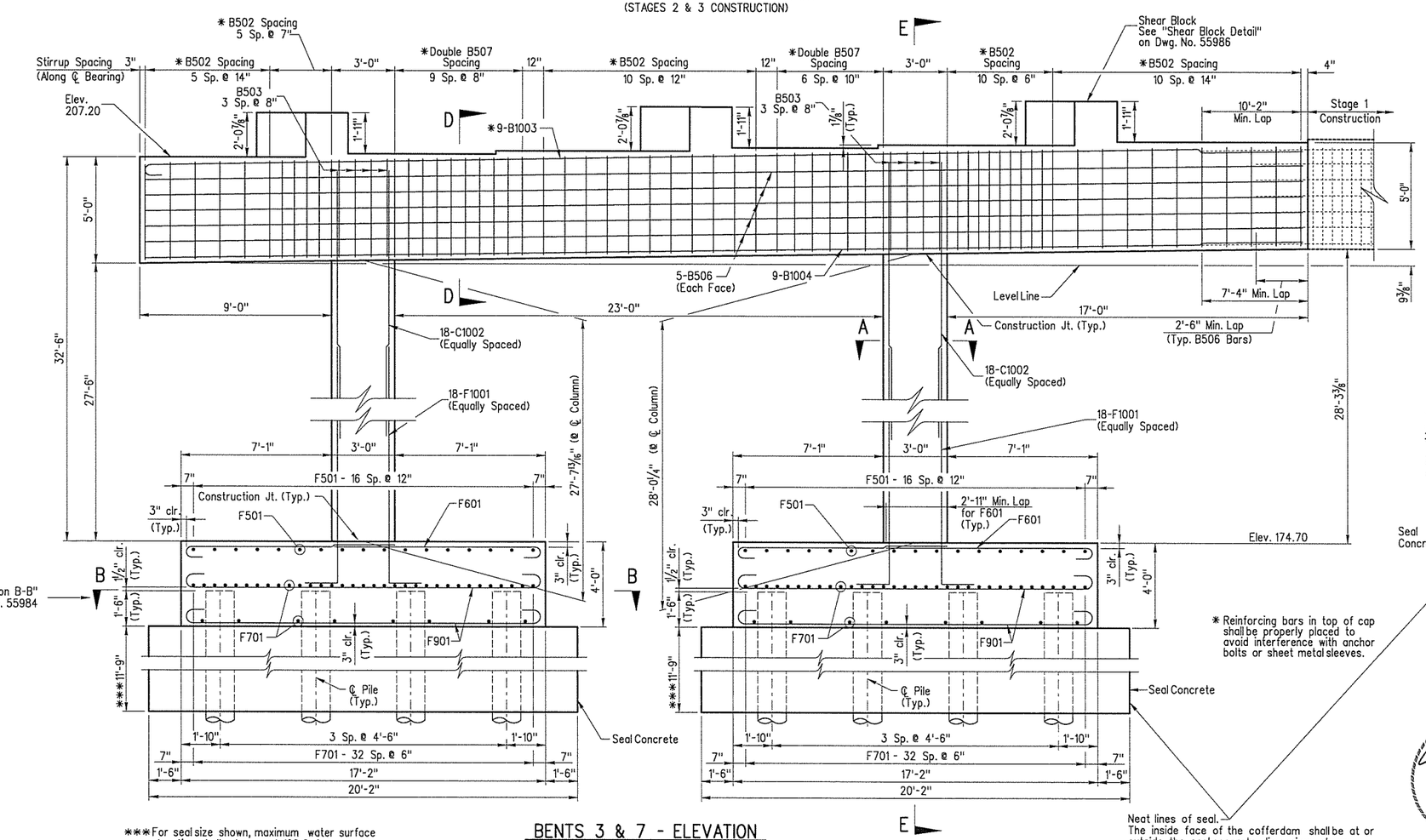
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	41	92

(1) 06940 - INT. BENT DETAILS - 55985



BENTS 3 & 7 - PLAN

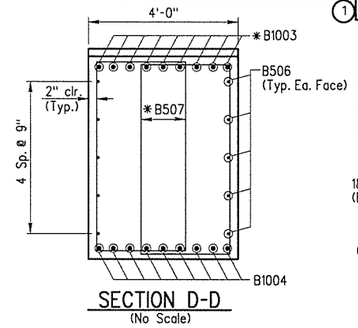
(STAGES 2 & 3 CONSTRUCTION)



***For seal size shown, maximum water surface elevation shall not exceed 192.0 for dewatered cofferdam.

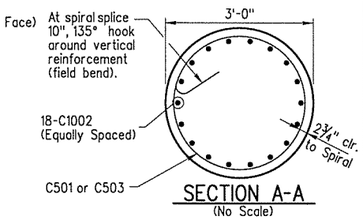
BENTS 3 & 7 - ELEVATION

(STAGE 2 CONSTRUCTION LOOKING BACK, STAGE 3 CONSTRUCTION LOOKING AHEAD)



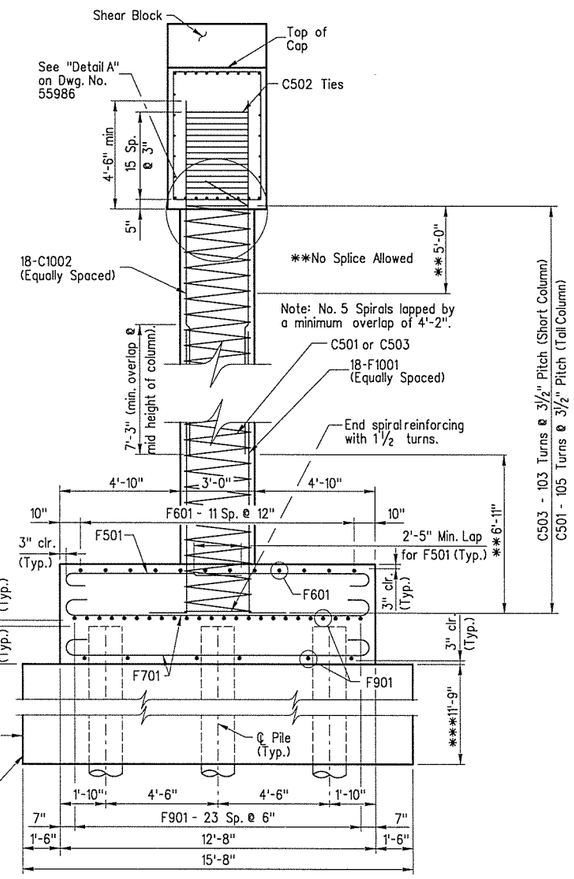
SECTION D-D

(No Scale)



SECTION A-A

(No Scale)



SECTION E-E

(No Scale)

✱ Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Neat lines of seal. The inside face of the cofferdam shall be at or outside the seal concrete dimensions shown. The plan quantity for seal concrete and structural excavation shall be based on the dimensions shown.

STATE OF ARKANSAS
CHARLES G. WISE
No. 15927
REGISTERED PROFESSIONAL ENGINEER
12/1/14

BRIDGE ENGINEER

PRINT DATE: 12/1/2014

SHEET 2 OF 3

DETAILS OF INTERMEDIATE BENTS 3 & 7 BRIDGE OVER BLACKFISH LAKE ST. FRANCIS COUNTY

ROUTE 40 SECTION 51

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARKANSAS

DRAWN BY:	JWB	DATE:	3/5/14	FILENAME:	bbb0114x3_bx5.dgn
CHECKED BY:	CGW	DATE:	4/8/14		
DESIGNED BY:	BLB	DATE:	2/10/14	SCALE:	1" = 3'-0"
BRIDGE NO.	06940			DRAWING NO.	55985

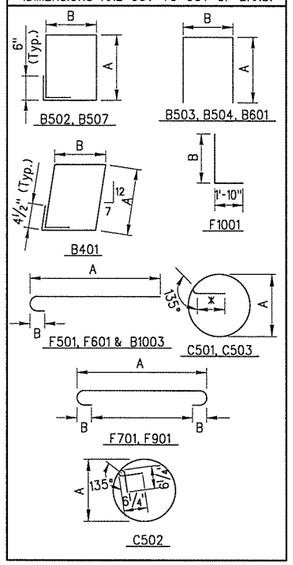
JACOBS

Bar List - Stage 1 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	4	11'-10"	4'-2"	1'-7"	2"
B501	5	24'-10"	---	---	Str.
B502	57	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B504	24	7'-5½"	2'-0"	3'-8"	2½"
B505	10	46'-0"	---	---	Str.
B601	24	8'-8"	3'-9"	1'-4"	4½"
B1001	9	61'-4"	---	---	Str.
B1002	9	55'-8"	---	---	Str.
C501	2	865'-3"	2'-6½"	---	3¾"
C502	32	9'-4"	2'-6½"	---	3¾"
C1001	36	22'-4"	---	---	Str.
F501	68	7'-11"	7'-4"	5"	3¾"
F601	48	10'-6"	9'-10"	6"	4½"
F701	82	13'-10"	12'-2"	7"	5¼"
F901	60	19'-2"	16'-8"	10"	9"
F1001	36	21'-7"	---	20'-0"	10"

Bar List - Stage 2 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	6	11'-10"	4'-2"	1'-7"	2"
B502	43	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B506	10	54'-8"	---	---	Str.
B507	34	14'-5"	4'-6½"	2'-5"	2½"
B601	36	8'-8"	3'-9"	1'-4"	4½"
B1003	9	56'-2"	54'-8"	11½"	10"
B1004	9	54'-8"	---	---	Str.
C501	1	865'-3"	2'-6½"	---	3¾"
C502	32	9'-4"	2'-6½"	---	3¾"
C503	1	849'-3"	2'-6½"	---	3¾"
C1002	36	22'-0"	---	---	Str.
F501	68	7'-11"	7'-4"	5"	3¾"
F601	48	10'-6"	9'-10"	6"	4½"
F701	82	13'-10"	12'-2"	7"	5¼"
F901	60	19'-2"	16'-8"	10"	9"
F1001	36	21'-7"	---	20'-0"	10"

Bar List - Stage 3 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	6	11'-10"	4'-2"	1'-7"	2"
B502	43	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B506	10	54'-8"	---	---	Str.
B507	34	14'-5"	4'-6½"	2'-5"	2½"
B601	36	8'-8"	3'-9"	1'-4"	4½"
B1003	9	56'-2"	54'-8"	11½"	10"
B1004	9	54'-8"	---	---	Str.
C501	1	865'-3"	2'-6½"	---	3¾"
C502	32	9'-4"	2'-6½"	---	3¾"
C503	1	849'-3"	2'-6½"	---	3¾"
C1002	36	22'-0"	---	---	Str.
F501	68	7'-11"	7'-4"	5"	3¾"
F601	48	10'-6"	9'-10"	6"	4½"
F701	82	13'-10"	12'-2"	7"	5¼"
F901	60	19'-2"	16'-8"	10"	9"
F1001	36	21'-7"	---	20'-0"	10"

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT OF BARS)



*10" @ Footing and Splices
*24" @ Cap.

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.		BB0114	42	92

(1) 06940 - INT. BENT DETAILS - 55986

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c = 3,500 psi.

Concrete shall be poured in the dry and exposed corners shall be chamfered ¾" unless otherwise noted.

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60.

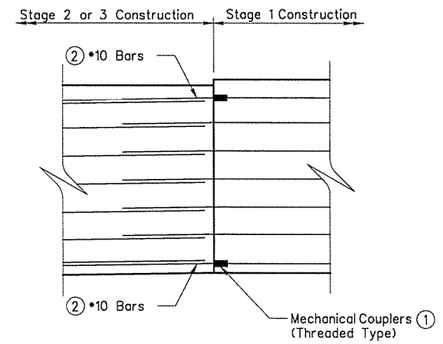
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A, Grade 60, or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625". Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices, or bracing needed for assembly, shipping, handling, or erecting.

Spiral reinforcement projected into the footing shall be terminated with 1½ turns and a 135° hook with a 10" tail hooked around a vertical bar and projected into the column core. The 135° hook may be field bent.

Spiral reinforcement at lapped splices shall be terminated by a 135° hook with a 10" tail hooked around a vertical bar and projected into the column core. The 135° hook may be field bent. Spiral lap splices shall occur at the mid height of column.

Spiral reinforcement projected into the cap shall be terminated with 1½ turns and a 135° hook with a 24" tail hooked around a vertical bar and projected into cap within the column core. The 135° hook may be field bent.

For additional information see layout.



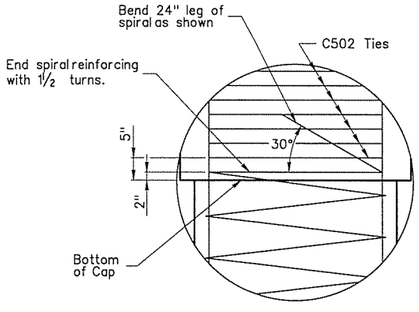
OPTIONAL MECHANICAL COUPLER DETAIL
(No Scale)

(1) The Mechanical Couplers shall be an approved type in accordance with AHTD Qualified Products List (QPL).

The cost of Mechanical Couplers shall not be measured for separate payment but shall be considered subsidiary to the item "REINFORCING STEEL - BRIDGE (GRADE 60)".

Mechanical Couplers shall be developed at least 125% of the specified yield strength of the Reinforcing Steel.

(2) One end of bar shall be threaded to match Mechanical Coupler. Length of bar shall match lap splice length detailed on plans.



DETAIL A
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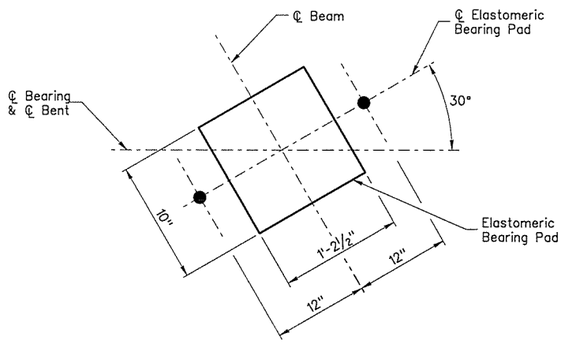
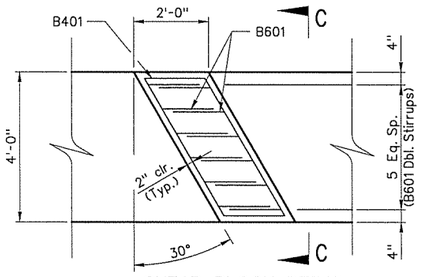


ANCHOR BOLT LAYOUT - BENT 3 & 7
(No Scale)



SHEAR BLOCK DETAIL
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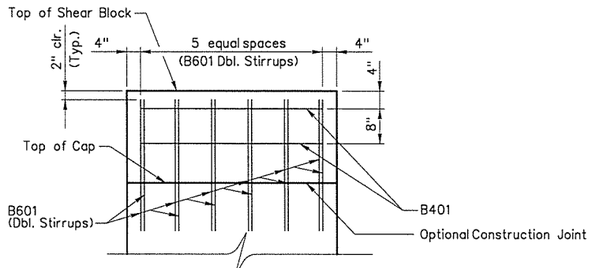


VIEW C-C
(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 13927
CHARLES G. WISE
12/1/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

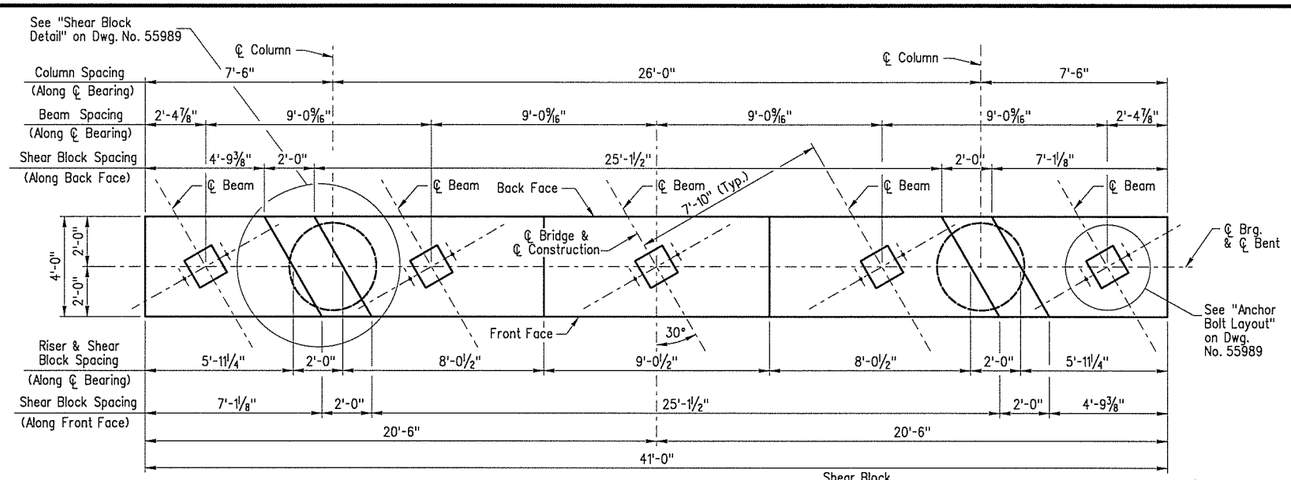
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENTS 3 & 7
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JWB DATE: 3/5/14 FILENAME: bbb0114x3_bx6.dgn
CHECKED BY: CGW DATE: 4/8/14
DESIGNED BY: BLB DATE: 2/10/14 SCALE: 1" = 2'-0"
BRIDGE NO. 06940 DRAWING NO. 55986

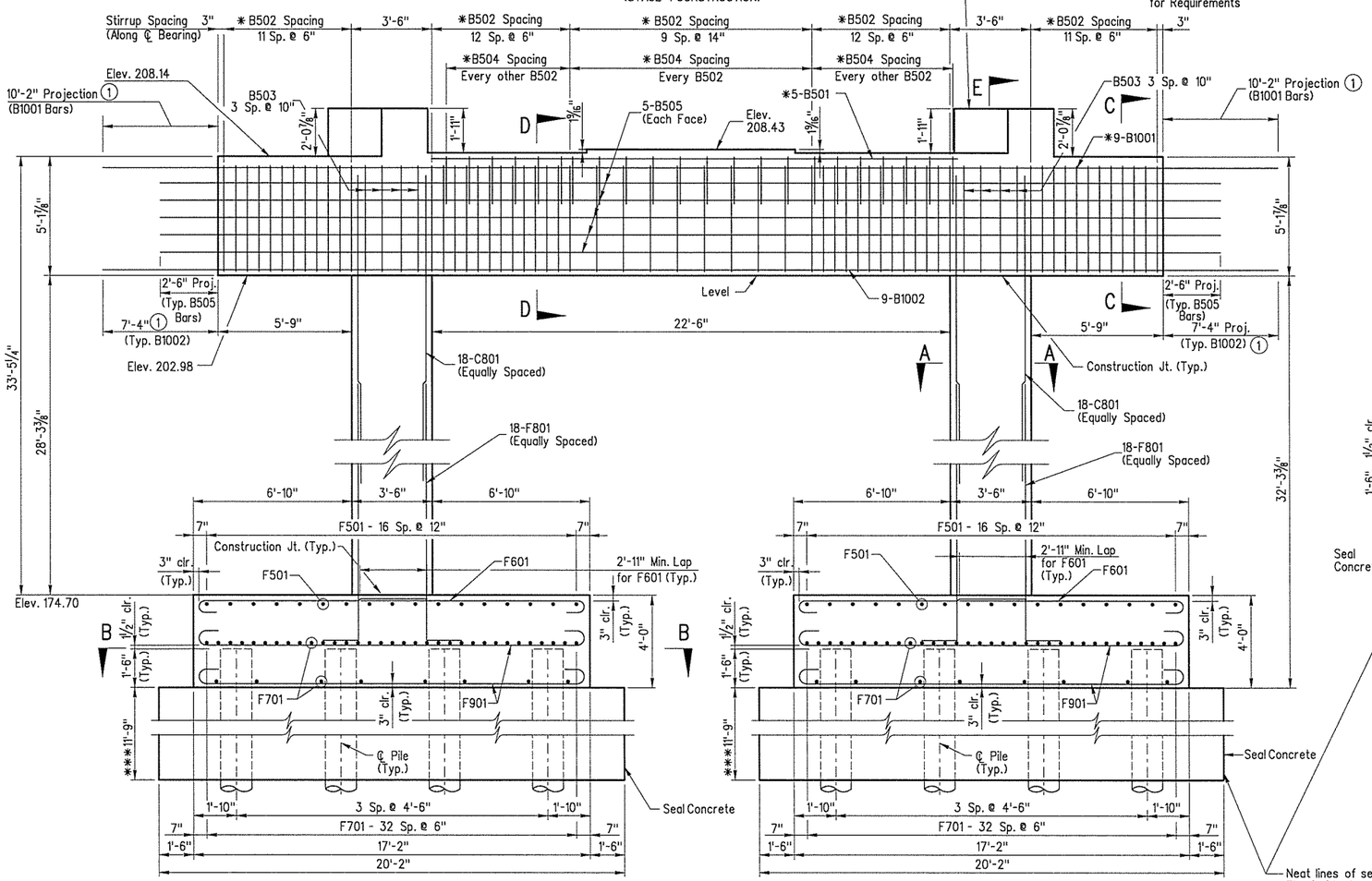
JACOBS

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.		BB0114	43	92

(1) 06940 - INT. BENT DETAILS - 55987



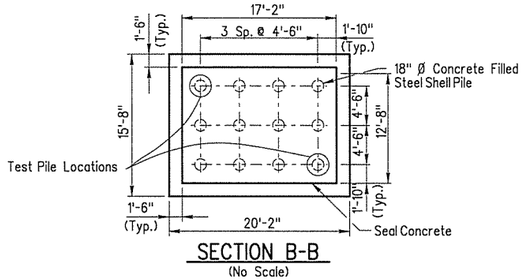
BENTS 4 THRU 6 - PLAN
(STAGE 1 CONSTRUCTION)



***For seal size shown, maximum water surface elevation shall not exceed 192.0 for dewatered cofferdam.

BENTS 4 THRU 6 - ELEVATION
(STAGE 1 CONSTRUCTION, LOOKING AHEAD)

(1) Mechanical Couplers may be used in Place of Lap Splicing of Bars between Stages. See Details on Dwg. No. 55989 for Requirements



SECTION B-B
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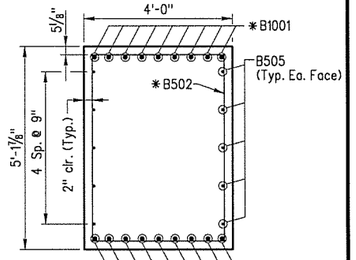

SECTION C-C
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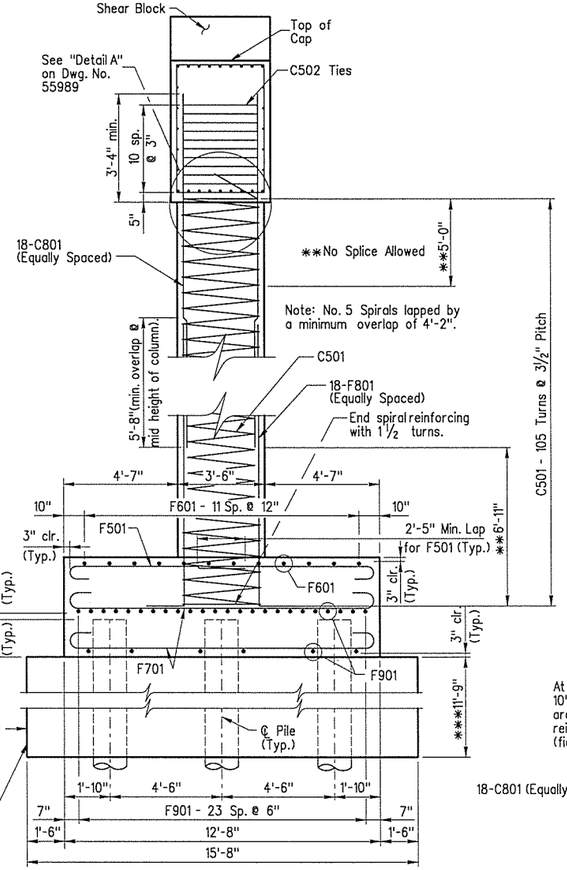
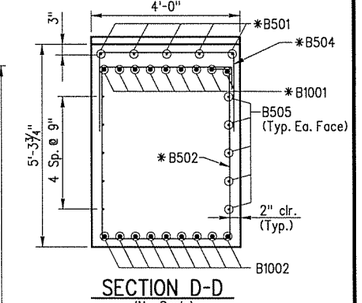
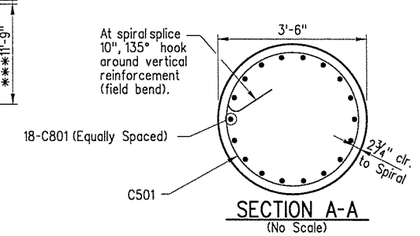


SECTION E-E
(No Scale)



SECTION D-D
(No Scale)



SECTION A-A
(No Scale)

* Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Neat lines of seal. The inside face of the cofferdam shall be at or outside the seal concrete dimensions shown. The plan quantity for seal concrete and structural excavation shall be based on the dimensions shown.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 12-1-14 CHARLES G. WISE

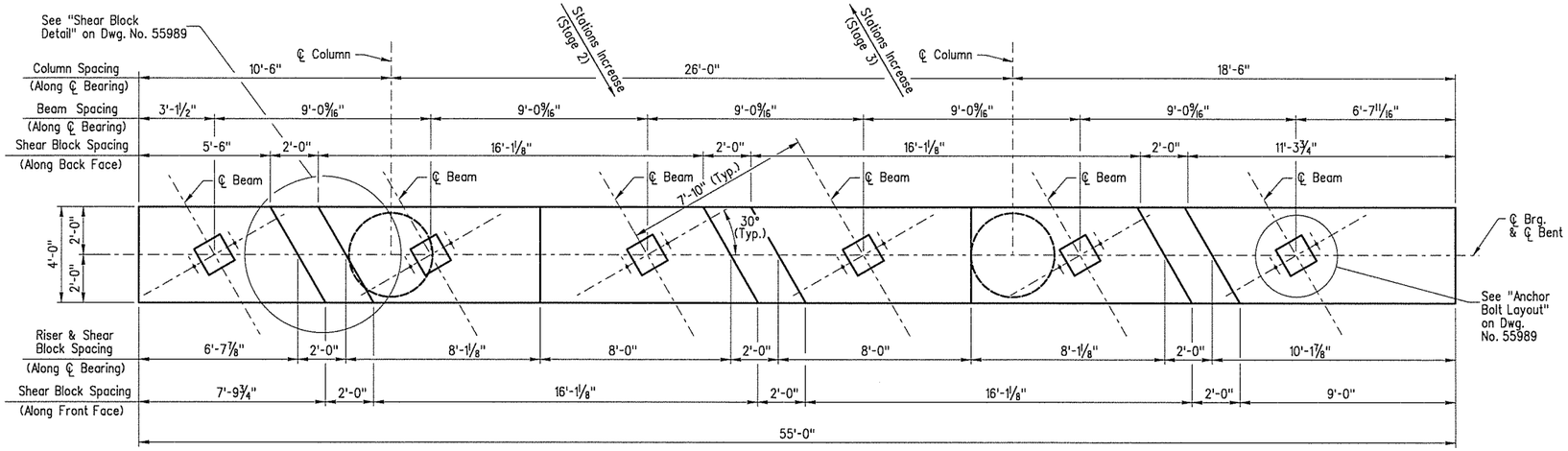
BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 1 OF 3
DETAILS OF INTERMEDIATE BENTS 4 THRU 6
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

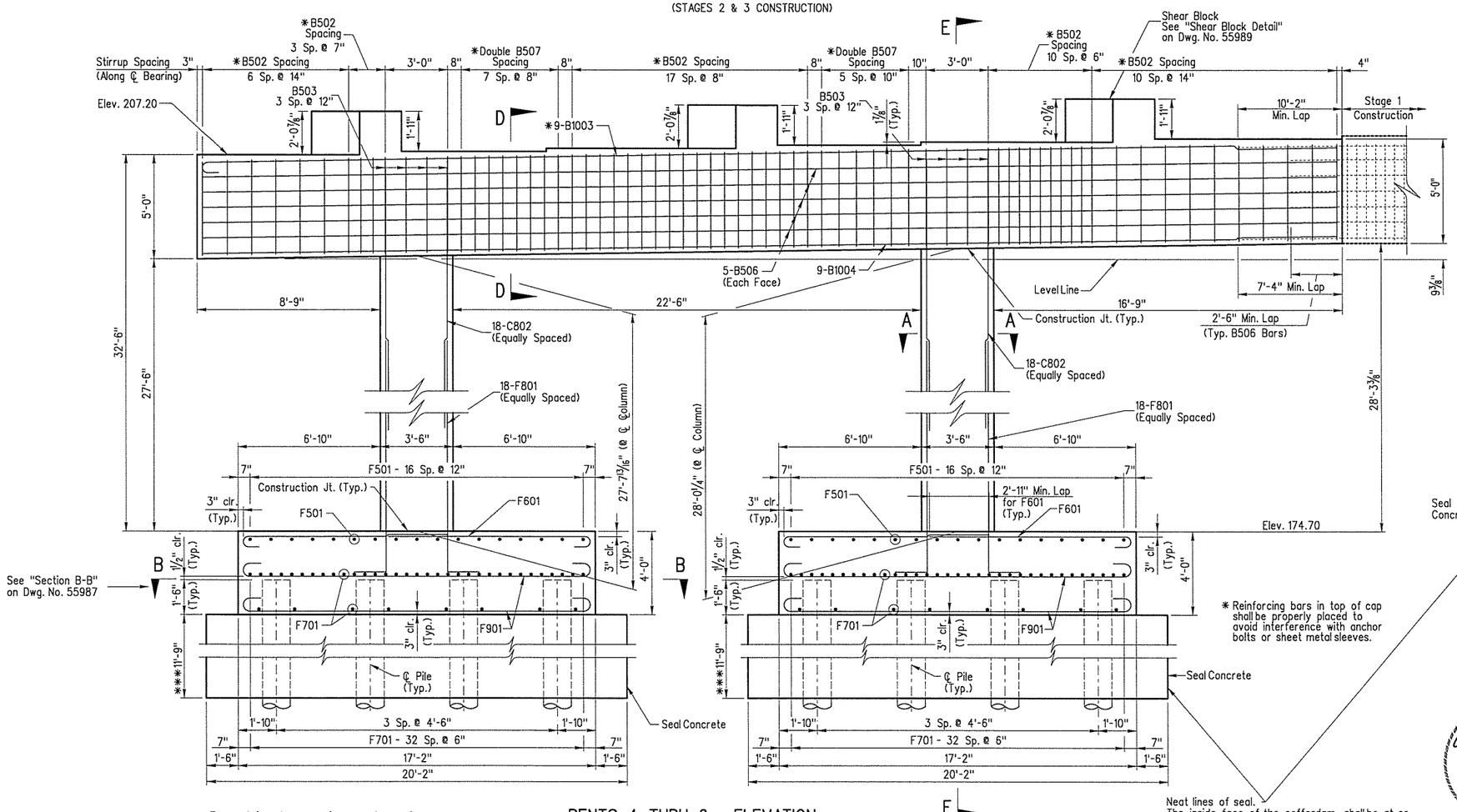
DRAWN BY:	JWB	DATE:	3/5/14	FILENAME:	bbb0114x3_bx7.dgn
CHECKED BY:	CGW	DATE:	4/8/14		
DESIGNED BY:	BLB	DATE:	2/10/14	SCALE:	1" = 3'-0"
BRIDGE NO.	06940			DRAWING NO.	55987

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.		BB0114	44	92

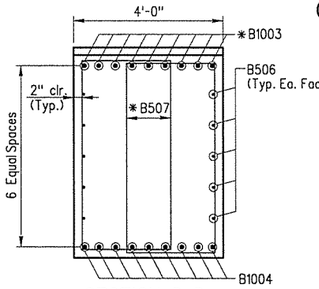
(1) 06940 - INT. BENT DETAILS - 55988



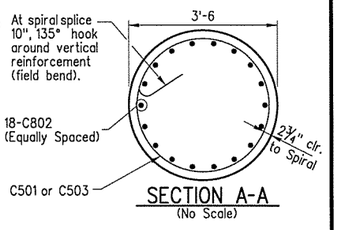
BENTS 4 THRU 6 - PLAN
(STAGES 2 & 3 CONSTRUCTION)



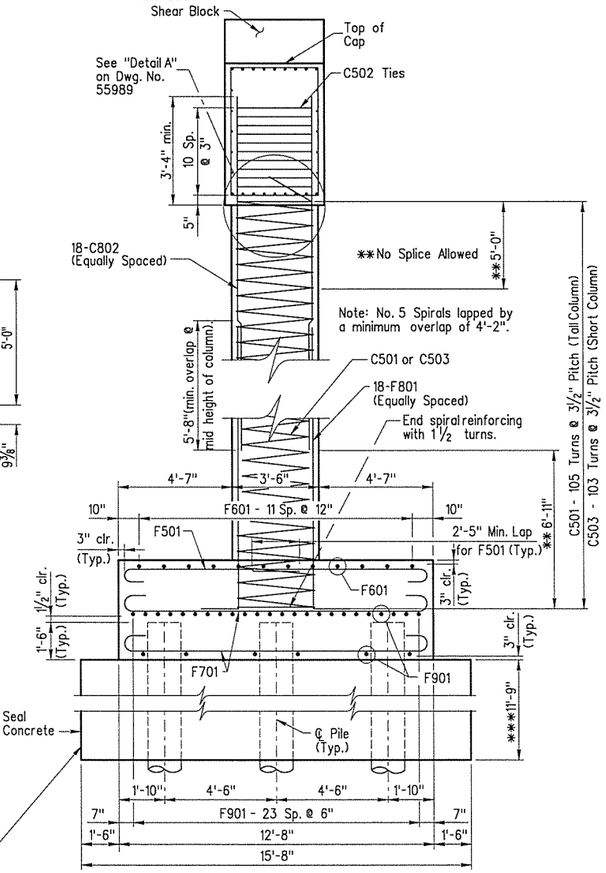
BENTS 4 THRU 6 - ELEVATION
(STAGE 2 CONSTRUCTION LOOKING BACK, STAGE 3 CONSTRUCTION LOOKING AHEAD)



SECTION D-D
(No Scale)



SECTION A-A
(No Scale)



SECTION E-E
(No Scale)

* Reinforcing bars in top of cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Neat lines of seal.
The inside face of the cofferdam shall be at or outside the seal concrete dimensions shown.
The plan quantity for seal concrete and structural excavation shall be based on the dimensions shown.

*** For seal size shown, maximum water surface elevation shall not exceed 192.0 for dewatered cofferdam.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 16927 CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 2 OF 3
DETAILS OF INTERMEDIATE BENTS 4 THRU 6
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	JWB	DATE:	3/5/14	FILENAME:	bbb0114x3_bx8.dgn
CHECKED BY:	CGW	DATE:	4/8/14		
DESIGNED BY:	BLB	DATE:	2/10/14	SCALE:	1" = 3'-0"
BRIDGE NO.	06940			DRAWING NO.	55988

JACOBS

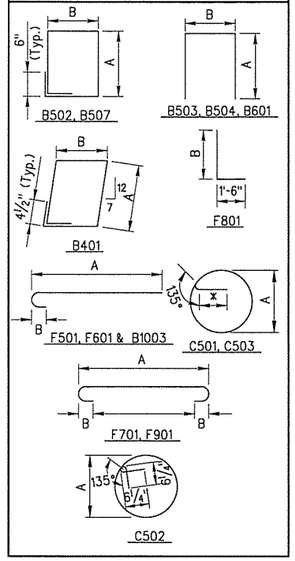
12/1/2014 11:09:03 AM F:\Job\WLKM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106BlackfishLakeIntBent08.dgn

Bar List - Stage 1 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	4	11'-10"	4'-2"	1'-7"	2"
B501	5	24'-10"	---	---	Str.
B502	58	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B504	22	7'-5½"	2'-0"	3'-8"	2½"
B505	10	46'-0"	---	---	Str.
B601	24	8'-8"	3'-9"	1'-4"	4½"
B1001	9	61'-4"	---	---	Str.
B1002	9	55'-8"	---	---	Str.
C501	2	1034'-11"	3'-0½"	---	3¾"
C502	22	10'-11"	3'-0½"	---	3¾"
C801	36	20'-4"	---	---	Str.
F501	68	7'-11"	7'-4"	5"	3¾"
F601	48	10'-6"	9'-10"	6"	4½"
F701	82	13'-10"	12'-2"	7"	5¼"
F801	36	20'-6"	---	19'-2"	6"
F901	60	19'-2"	16'-8"	10"	9"

Bar List - Stage 2 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	6	11'-10"	4'-2"	1'-7"	2"
B502	47	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B506	10	54'-8"	---	---	Str.
B507	28	14'-5"	4'-6½"	2'-5"	2½"
B601	36	8'-8"	3'-9"	1'-4"	4½"
B1003	9	56'-2"	54'-8"	11½"	10"
B1004	9	54'-8"	---	---	Str.
C501	1	1034'-11"	3'-0½"	---	3¾"
C502	22	10'-11"	3'-0½"	---	3¾"
C503	1	1015'-9"	3'-0½"	---	3¾"
C802	36	20'-1"	---	---	Str.
F501	68	7'-11"	7'-4"	5"	3¾"
F601	48	10'-6"	9'-10"	6"	4½"
F701	82	13'-10"	12'-2"	7"	5¼"
F801	36	20'-6"	---	19'-2"	6"
F901	60	19'-2"	16'-8"	10"	9"

Bar List - Stage 3 Construction (Per Int. Bent)					
Mark	No. Req'd	Length	A	B	Pin Dia.
B401	6	11'-10"	4'-2"	1'-7"	2"
B502	47	16'-11"	4'-6½"	3'-8"	2½"
B503	8	12'-6½"	4'-6½"	3'-8"	2½"
B506	10	54'-8"	---	---	Str.
B507	28	14'-5"	4'-6½"	2'-5"	2½"
B601	36	8'-8"	3'-9"	1'-4"	4½"
B1003	9	56'-2"	54'-8"	11½"	10"
B1004	9	54'-8"	---	---	Str.
C501	1	1034'-11"	3'-0½"	---	3¾"
C502	22	10'-11"	3'-0½"	---	3¾"
C503	1	1015'-9"	3'-0½"	---	3¾"
C802	36	20'-1"	---	---	Str.
F501	68	7'-11"	7'-4"	5"	3¾"
F601	48	10'-6"	9'-10"	6"	4½"
F701	82	13'-10"	12'-2"	7"	5¼"
F801	36	20'-6"	---	19'-2"	6"
F901	60	19'-2"	16'-8"	10"	9"

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT OF BARS)



×10" @ Footing and Splices
×24" @ Cap.

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.		BB0114	45	92

(1) 06940 - INT. BENT DETAILS - 55989

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength of f'c = 3,500 psi.

Concrete shall be poured in the dry and exposed corners shall be chamfered ¾" unless otherwise noted.

If anchor bolts are drilled into cap, top reinforcing bars shall be properly placed to avoid damage.

All reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60.

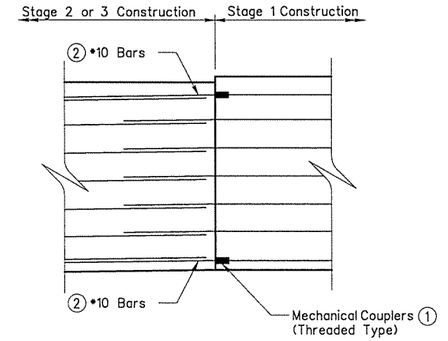
Spiral reinforcing shall be plain round or deformed steel bars meeting the requirements of AASHTO M31 or M322, Type A, Grade 60 or shall be cold drawn wire meeting the requirements of AASHTO M32 or M225 (Grade 70) with a minimum diameter of 0.625". Spiral reinforcement shall be paid for at the contract unit price bid per pound for "Reinforcing Steel-Bridge (Grade 60)". No additional payment shall be made for spacers, additional splices, or bracing needed for assembly, shipping, handling, or erecting.

Spiral reinforcement projected into the footing shall be terminated with 1½ turns and a 135° hook with a 10" tail hooked around a vertical bar and projected into the column core. The 135° hook may be field bent.

Spiral reinforcement at lapped splices shall be terminated by a 135° hook with a 10" tail hooked around a vertical bar and projected into the column core. The 135° hook may be field bent. Spiral lap splices shall occur at the mid height of column.

Spiral reinforcement projected into the cap shall be terminated with 1½ turns and a 135° hook with a 24" tail hooked around a vertical bar and projected into cap within the column core. The 135° hook may be field bent.

For additional information see layout.



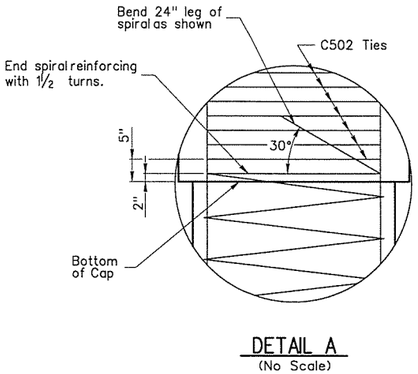
OPTIONAL MECHANICAL COUPLER DETAIL
(No Scale)

(1) The Mechanical Couplers shall be an approved type in accordance with AHTD Qualified Products List (QPL).

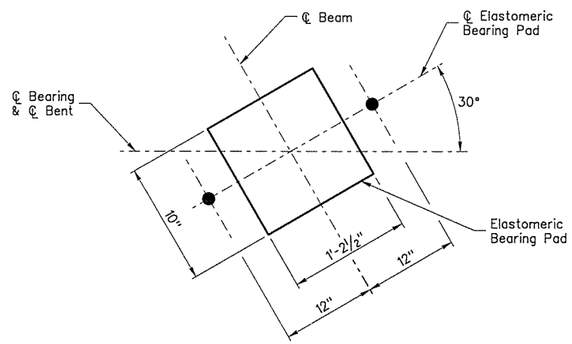
The cost of Mechanical Couplers shall not be measured for separate payment but shall be considered subsidiary to the item "REINFORCING STEEL - BRIDGE (GRADE 60)".

Mechanical Couplers shall be developed at least 125% of the specified yield strength of the Reinforcing Steel.

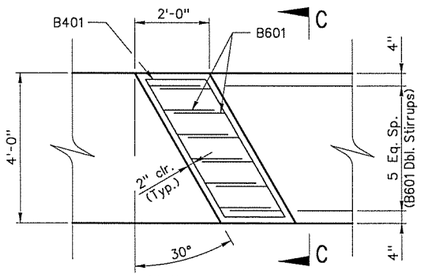
(2) One end of bar shall be threaded to match Mechanical Coupler. Length of bar shall match lap splice length detailed on plans.



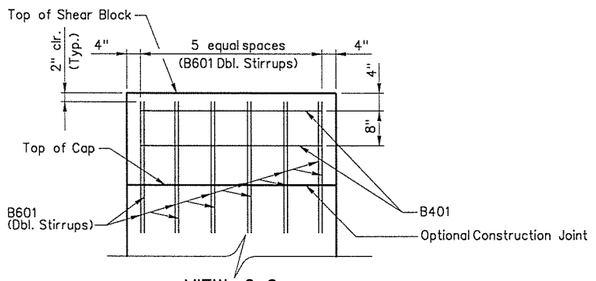
DETAIL A
(No Scale)



ANCHOR BOLT LAYOUT - BENT 4 THRU 6
(No Scale)



SHEAR BLOCK DETAIL
(No Scale)



VIEW C-C
(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
16927
CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

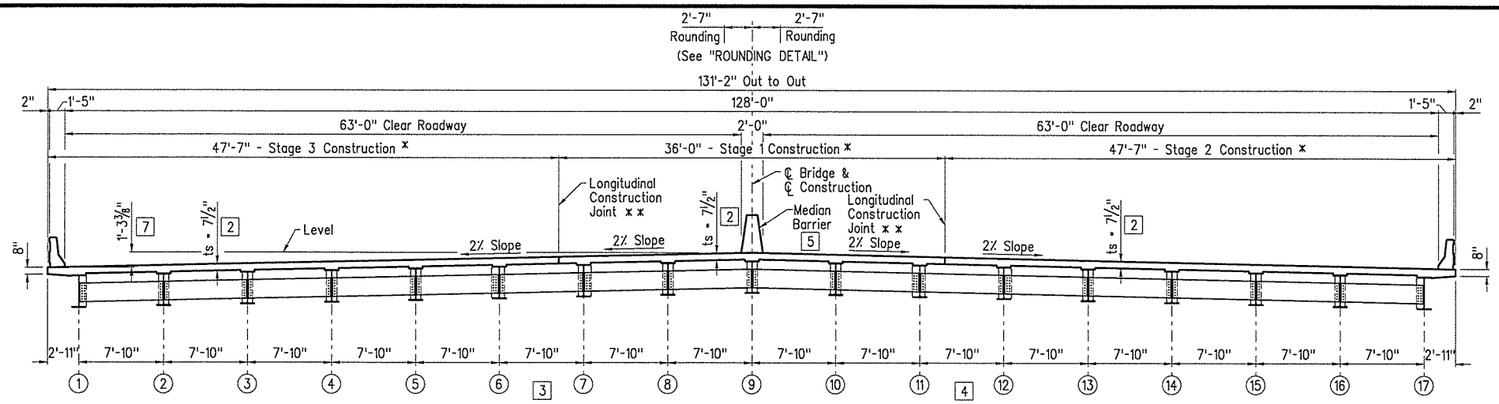
SHEET 3 OF 3
DETAILS OF INTERMEDIATE BENTS 4 THRU 6
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: JWB DATE: 3/5/14 FILENAME: bbb0114x3_bx9.dgn
CHECKED BY: CGW DATE: 4/8/14
DESIGNED BY: BLB DATE: 2/10/14 SCALE: 1" = 2'-0"
BRIDGE NO. 06940 DRAWING NO. 55989

JACOBS

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.		BB0114	46	92

(1) 06940 - SPAN DETAILS - 55990



Note:
Class 1 Protective Surface Treatment shall be applied to the Roadway Surface, the top and roadway surfaces of the Median Barrier, and the top and roadway surface of each Parapet Rail.

TYPICAL SECTION - FINAL CONDITION

(Looking Ahead)
No Scale

SLAB REINFORCING (Stage 1 Construction)
Transverse - S502E @ 6" Centers in Top & Bottom
Longitudinal - S401E spaced as shown (Top)
S501E spaced as shown (Bottom)
S601E spaced as shown (Top) (over Int. Bents)

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" on Drawing No. 55991.

2 See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED" on Drawing No. 55991.

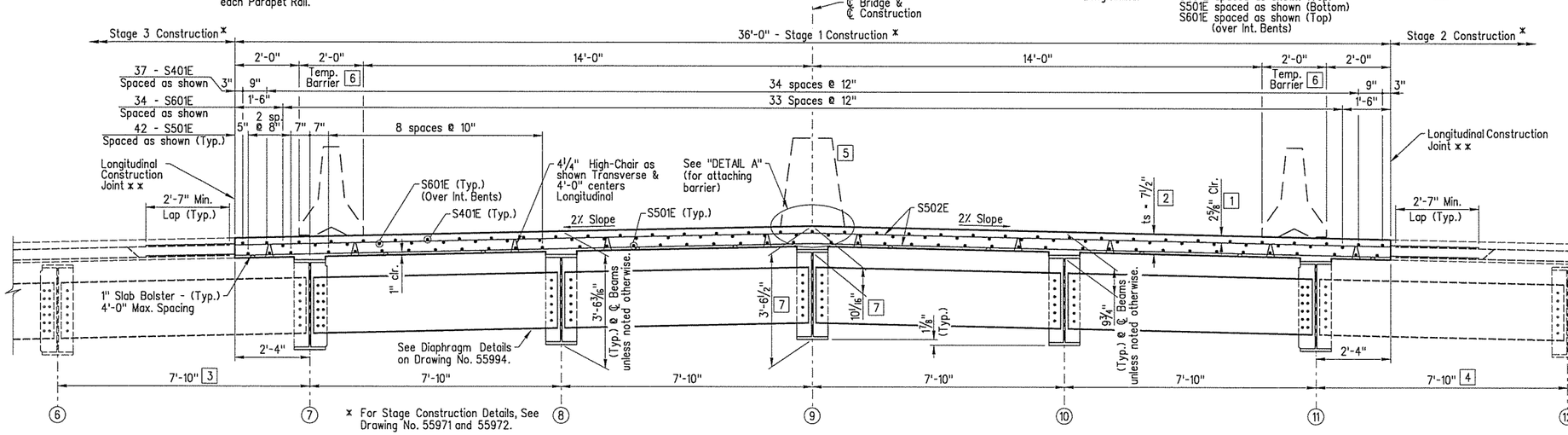
3 Before the Stage 3 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten all bolts in diaphragms between Beams 6 and 7 only after all deck pours for Stage 3 Construction are complete.

4 Before the Stage 2 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten bolts in diaphragms between Beams 11 and 12 only after all deck pours for Stage 2 Construction are complete.

5 2' wide Median Barrier (Stage 4 Construction).

6 Threaded inserts shall be cast in place in Stage 1 Construction to accomodate the connection of temporary barrier. See Standard Drawing TC-4 for additional details.

7 Measured to Working Point - See Rounding Detail.

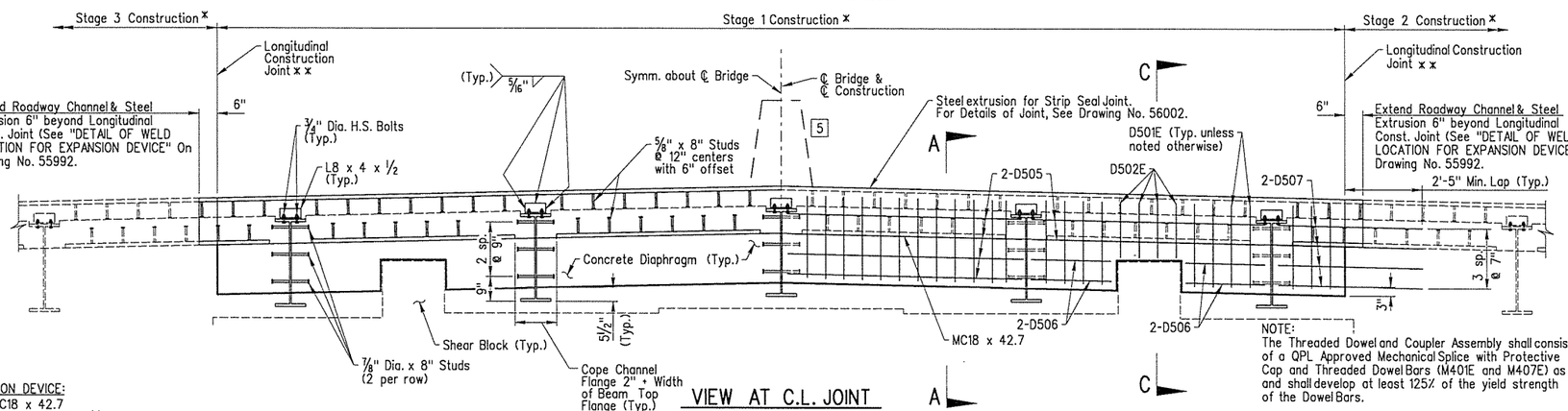


x For Stage Construction Details, See Drawing No. 55971 and 55972.

xx See Details on Drawing No. 55998.

PARTIAL TYPICAL SECTION

(Looking Ahead)
(No Scale)



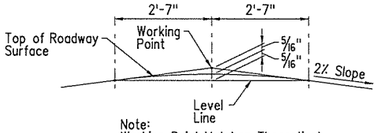
VIEW AT C.L. JOINT

(Looking Ahead)
(Stage 1 Construction)
(No Scale)

Stage 2 and 3 Concrete Diaphragms not shown for clarity.

NOTE:
The Threaded Dowel and Coupler Assembly shall consist of a QPL Approved Mechanical Splice with Protective Cap and Threaded Dowel Bars (M401E and M407E) as shown and shall develop at least 125% of the yield strength of the Dowel Bars.

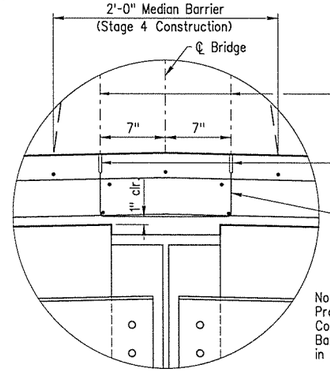
M401E and M407E Dowel Bars shall be a minimum 60 ksi yield strength and threaded as required. Threaded Dowel and Coupler assembly, except mating surfaces, shall be epoxy coated in accordance with the requirements of Section 804.



Note:
Working Point Matches Theoretical Profile Grade.

ROUNDING DETAIL

No Scale



Note:
Protect Threads in Couplers Until Median Barrier is Constructed in Stage 4 Construction

DETAIL "A"

No Scale

xxx Space and Orient M407E Bars to align Mechanical Couplers with M401E Bars to be installed in Stage 4 Construction. See Median Barrier Details on Drawing No. 56001 for spacing and positioning of M401E Bars.

EXPANSION DEVICE:
Rdwy. MC18 x 42.7
Conn. Angles L8 x 4 x ½
Neoprene Strip Seal with Steel Extrusion
Detail Device ⅛" High and Provide ¼" Shims using 2 - 1/16" and 1 - ⅛" Plates

Note:
See Drawing No. 55999 for Section A-A.
See Drawing No. 55997 for Section C-C.
See Drawing No. 56003 for "Partial Plan of Concrete Diaphragm Reinforcing."

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER J. CRISWELL
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 1 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE

ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	LHG	DATE:	3/28/14	FILENAME:	bbb0114x3_x11.dgn
CHECKED BY:	MAA	DATE:	4/28/14		
DESIGNED BY:	CJC	DATE:	3/20/14	SCALE:	No Scale
BRIDGE NO. 06940				DRAWING NO.	55990

JACOBS

12/1/2014 11:09:04 AM T:\Job\WLXM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106BlackfishTypSec01.dgn

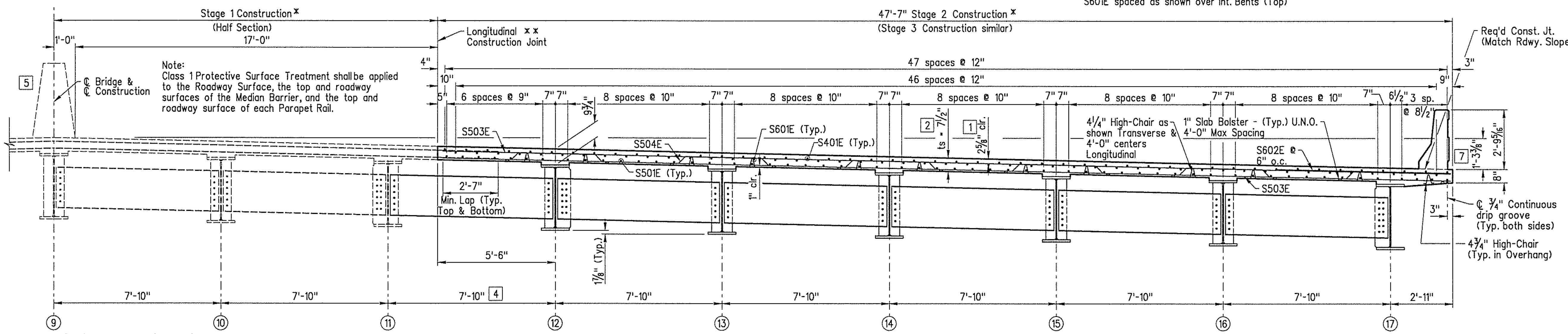
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
					JOB NO.	BB0114	47	92

1 06940 - SPAN DETAILS - 55991

Note:
At the Contractor's option, one Epoxy coated #5 Bar in the Top and one Epoxy Coated #5 Bar in the Bottom may be subsituted for each Bar S504E. Payment will be based on the weight of Bar S504E.

SLAB REINFORCING (Stage 2 Construction)
Transverse - S503E @ 12" Centers in Top & Bottom
S504E @ 12" Centers bent up over Beams
S602E @ 6" Centers in Top of Overhang

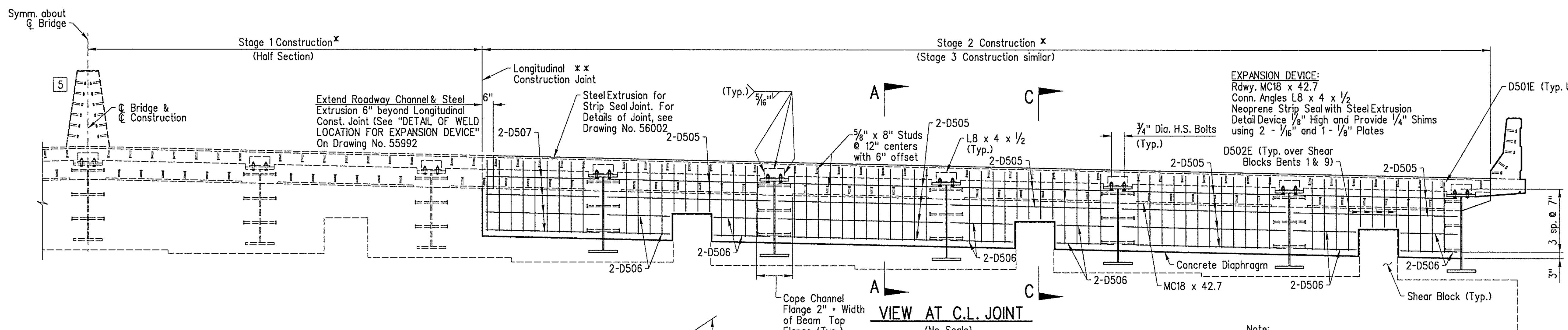
Longitudinal - S401E spaced as shown (Top)
S501E spaced as shown (Bottom)
S601E spaced as shown over Int. Bents (Top)



x For Stage Construction Details, See Drawing Nos. 55971 and 55972.

x x See Details on Drawing No. 55998.

PARTIAL TYPICAL SECTION
(No Scale)



VIEW AT C.L. JOINT
(No Scale)

Note:
See Drawing No. 55999 for Section A-A.
See Drawing No. 55997 for Section C-C.

TOLERANCE

1. 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" detail.

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

3. Before the Stage 3 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten all bolts in diaphragms between Beams 6 and 7 only after all deck pours for Stage 3 Construction are complete.

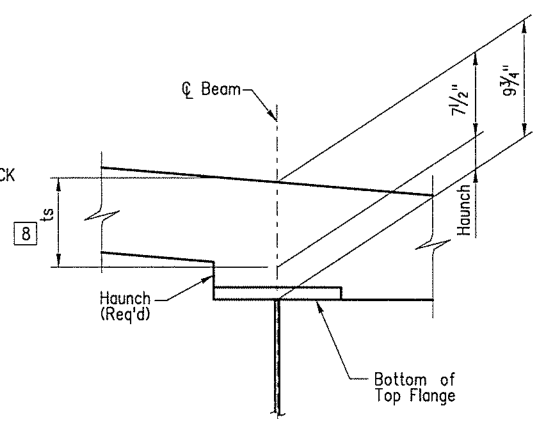
4. Before the Stage 2 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten bolts in diaphragms between Beams 11 and 12 only after all deck pours for Stage 2 Construction are complete.

5. 2' wide Median Barrier (Stage 4 Construction).

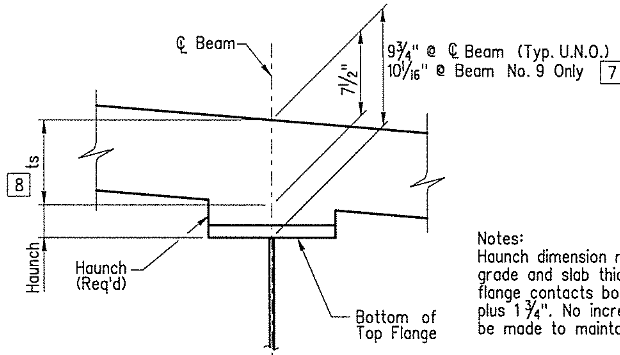
6. Threaded inserts shall be cast in place in Stage 1 Construction to accomodate the connection of temporary barrier. See Standard Drawing TC-4 for additional details.

7. Measured to Working Point - See Rounding Detail on Drawing No. 55990.

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



EXTERIOR BEAM



INTERIOR BEAM

Note: ts - Slab Thickness shown in "TYPICAL SECTION".

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED
(No Scale)

Notes:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance. Minimum - occurs when top flange contacts bottom reinforcing steel. Maximum-top flange thickness plus 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.

LEGEND
U.N.O. - Unless Noted Otherwise

ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 15927 CHARLES G. WISE 12/1/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 2 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 3/28/14 FILENAME: bbb0114x3_x12.dgn
CHECKED BY: MAA DATE: 4/28/14
DESIGNED BY: CJC DATE: 3/20/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55991

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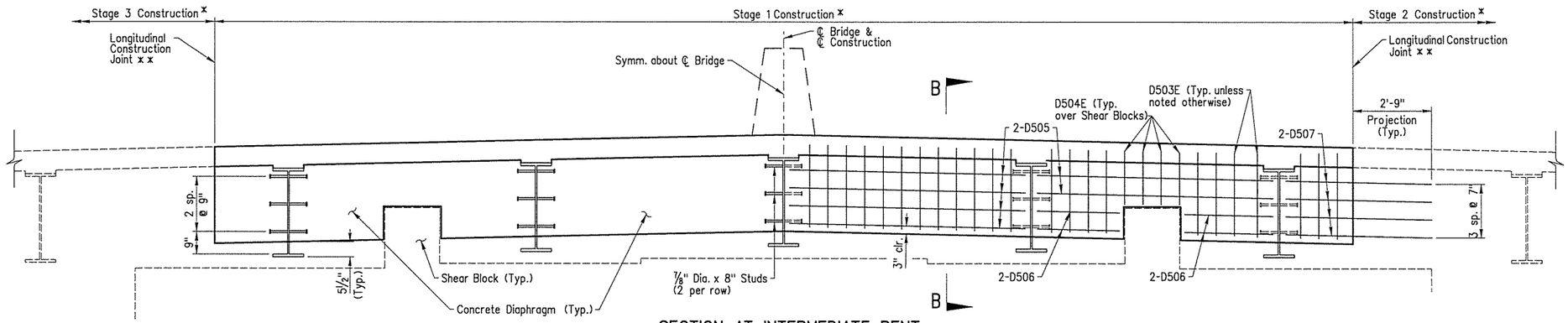
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	48	92
				(1)	06940 - SPAN DETAILS - 55992			



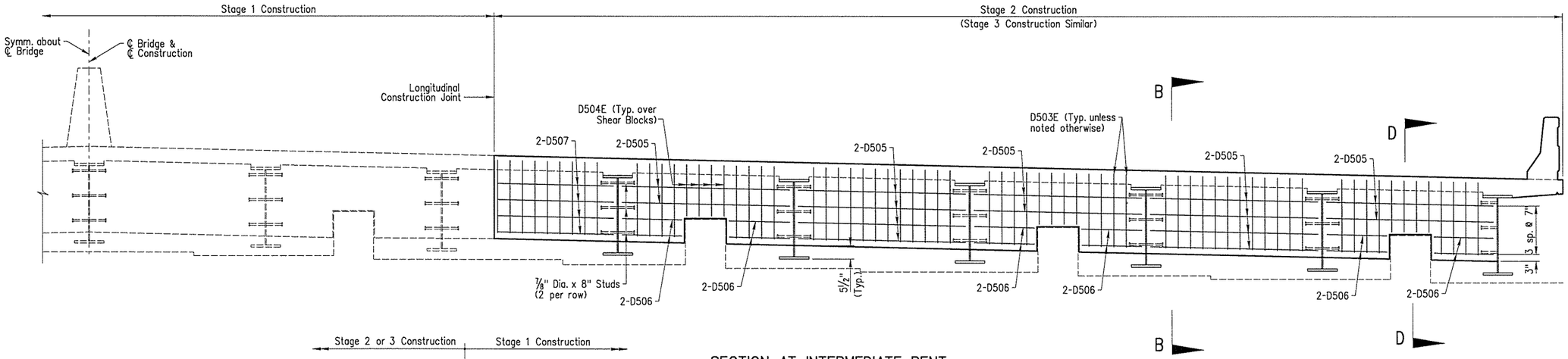
SECTION AT INTERMEDIATE BENT

(Looking Ahead)
(Stage 1 Construction)
(No Scale)

⁎ For Stage Construction Details, see Drawing Nos. 55971 and 55972.

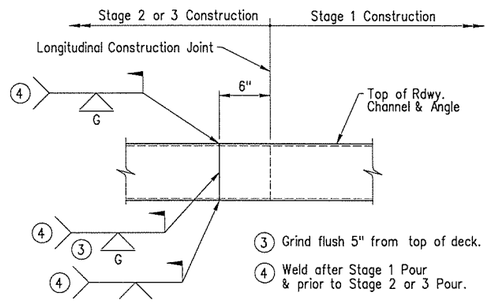
⁎⁎ See Details on Drawing No. 55998.

Note:
See Drawing No. 55999 for "Section B-B".
See Drawing No. 55997 for "Section D-D".



SECTION AT INTERMEDIATE BENT

(Looking Ahead)
(Stage 2 Construction)
(Stage 3 Construction Similar)
(No Scale)



DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

(No Scale)

STATE OF ARKANSAS
CHRISTOPHER J. CRISWELL
REGISTERED PROFESSIONAL ENGINEER
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 3 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 3/28/14
CHECKED BY: MAA DATE: 4/28/14
DESIGNED BY: CJC DATE: 3/20/14
BRIDGE NO. 06940
FILENAME: bbb0114x3_x13.dgn
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DRAWING NO. 55992

JACOBS

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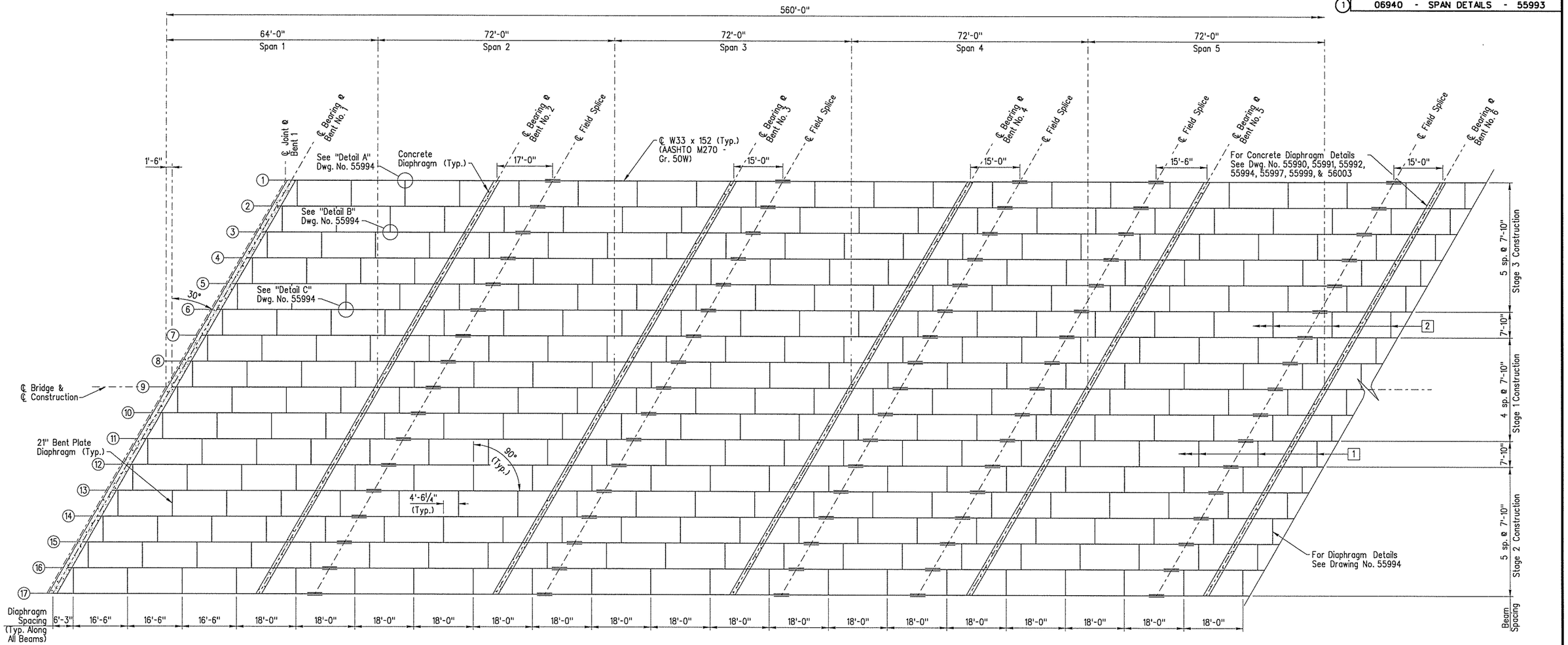
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	49	92
				(1)	06940 - SPAN DETAILS - 55993			



FRAMING PLAN
(No Scale)

[1] Before the Stage 2 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten bolts in diaphragms between Beams 11 and 12 only after all deck pours for Stage 2 Construction are complete.

[2] Before the Stage 3 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten all bolts in diaphragms between Beams 6 and 7 only after all deck pours for Stage 3 Construction are complete.

Note: Bolts in diaphragm connections shall be properly installed and tightened in accordance with Subsection 807.71 of the Standard Specifications except as noted.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER J. CRISWELL
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 4 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

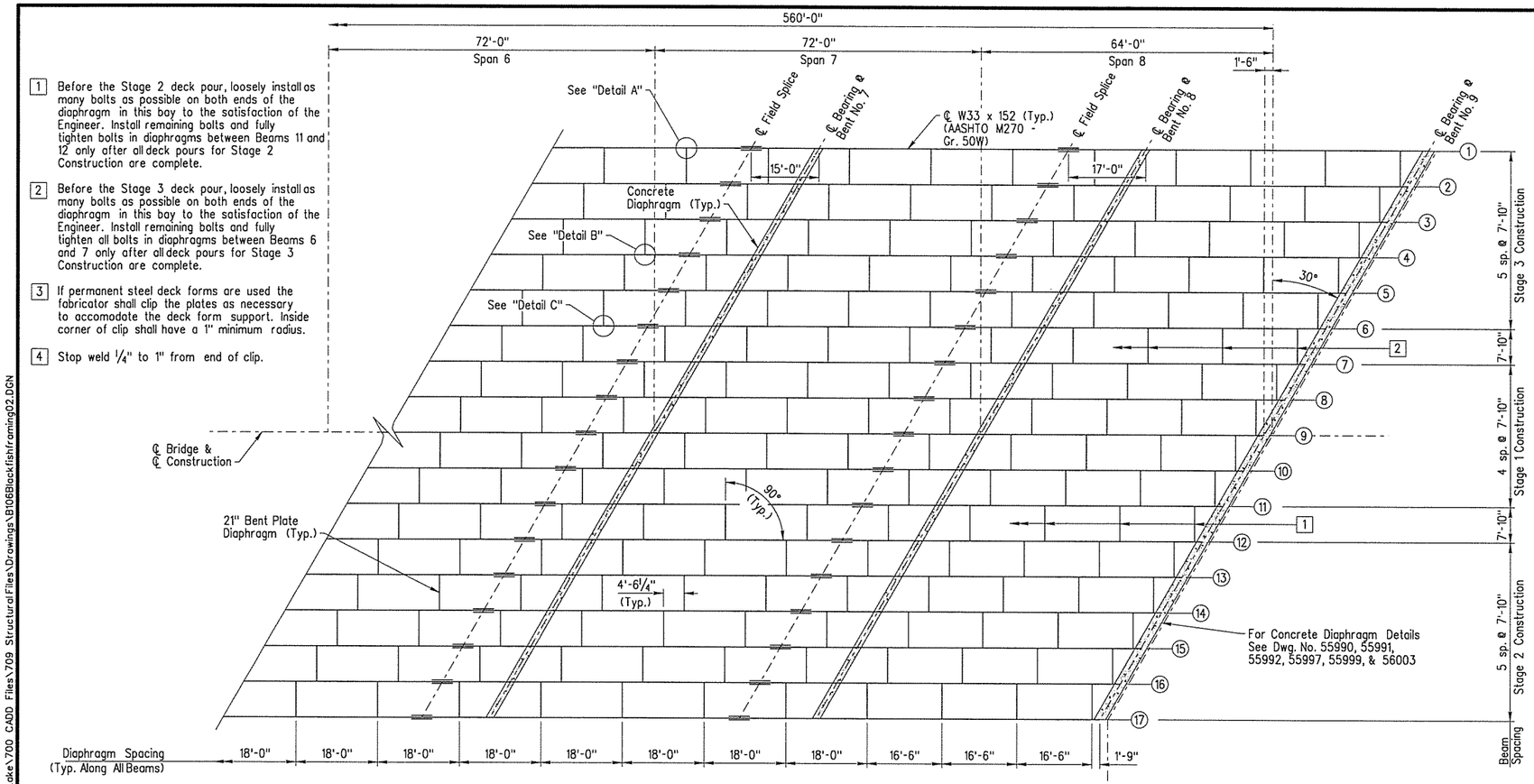
DRAWN BY: LHG DATE: 3/20/14 FILENAME: bbb0114x3_x14.dgn
CHECKED BY: CJC DATE: 4/28/14
DESIGNED BY: CGW DATE: 3/15/14 SCALE: NO SCALE
BRIDGE NO. 06940 DRAWING NO. 55993

JACOBS

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.		BB0114	50	92

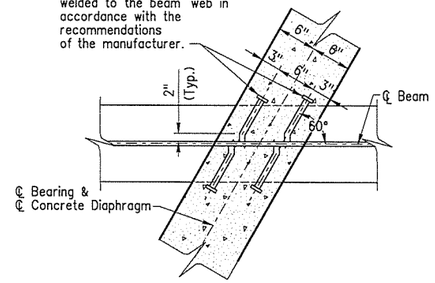
1 **06940 - SPAN DETAILS - 55994**

1. Before the Stage 2 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten bolts in diaphragms between Beams 11 and 12 only after all deck pours for Stage 2 Construction are complete.
2. Before the Stage 3 deck pour, loosely install as many bolts as possible on both ends of the diaphragm in this bay to the satisfaction of the Engineer. Install remaining bolts and fully tighten all bolts in diaphragms between Beams 6 and 7 only after all deck pours for Stage 3 Construction are complete.
3. If permanent steel deck forms are used the fabricator shall clip the plates as necessary to accomodate the deck form support. Inside corner of clip shall have a 1" minimum radius.
4. Stop weld 1/4" to 1" from end of clip.



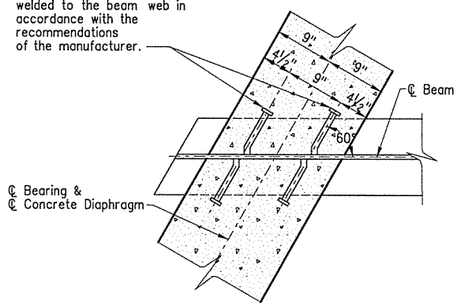
FRAMING PLAN
(No Scale)

3 -7/8" Dia. x 8" Studs. Studs shall be granular flux filled, solid fluxed or equal, and automatically end welded to the beam web in accordance with the recommendations of the manufacturer.

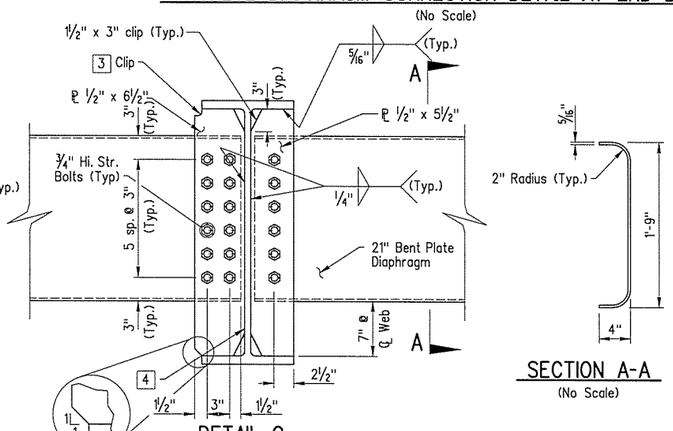


CONCRETE DIAPHRAGM CONNECTION DETAIL AT INTERMEDIATE BENTS
(No Scale)

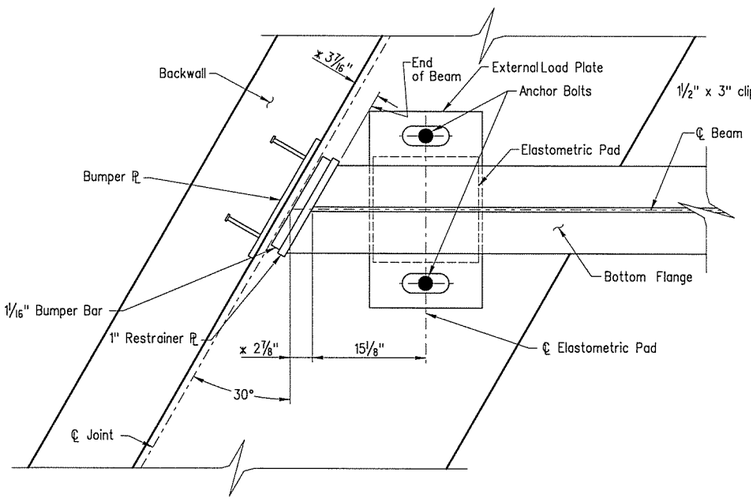
3 -7/8" Dia. x 8" Studs. Studs shall be granular flux filled, solid fluxed or equal, and automatically end welded to the beam web in accordance with the recommendations of the manufacturer.



CONCRETE DIAPHRAGM CONNECTION DETAIL AT END BENTS
(No Scale)

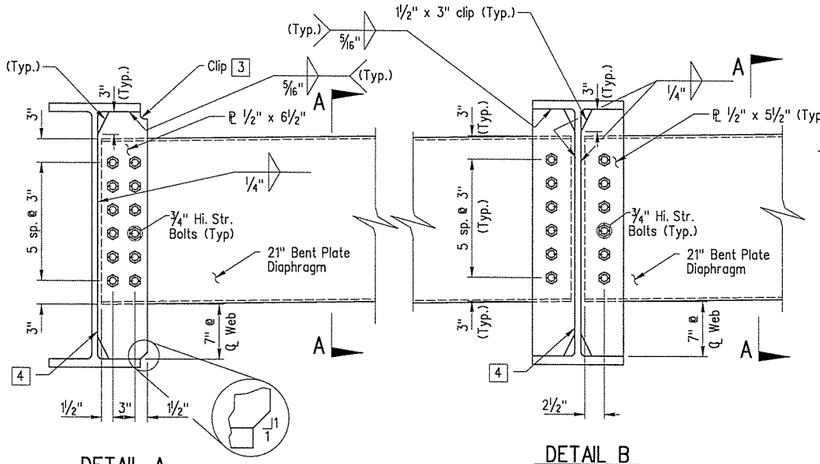


SECTION A-A
(No Scale)



PLAN OF BEARING AT END BENT
(No Scale)
x @ 60°F

Note: For Bumper Bar and Restrainer Plate details, see Drawing No. 55997.
For Bumper Plate Details, see Drawing No. 55978.



DETAIL A
(Beam 1 shown)
(Beam 17 opposite hand)
(No Scale)

Note: Bolts in diaphragm connections shall be properly installed and tightened in accordance with Subsection 807.71 of the Standard Specifications except as noted.

DETAIL B
(Typical at Beams 2 - 5, 8-10 & 13-16)
(No Scale)

DETAIL C
(Beams 6 & 11 shown looking ahead)
(Beams 7 & 12 opposite hand)
(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 5 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 3/20/14 FILENAME: bbb0114x3_x15.dgn
CHECKED BY: CJC DATE: 4/28/14
DESIGNED BY: CGW DATE: 3/15/14 SCALE: NO SCALE
BRIDGE NO. 06940 DRAWING NO. 55994

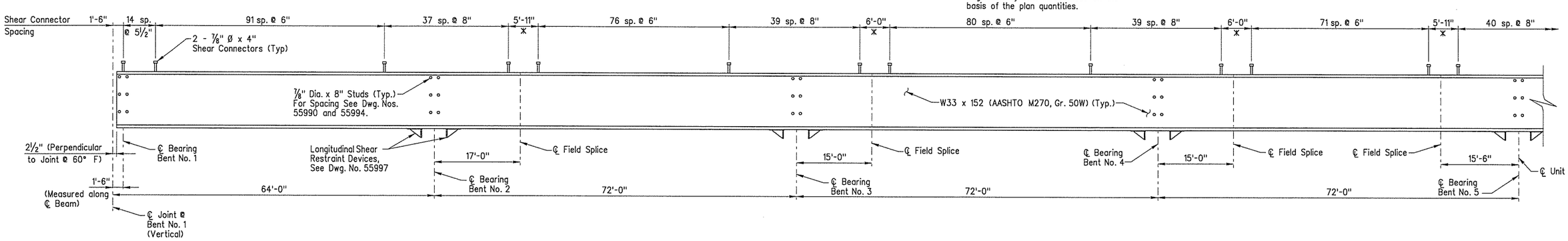
JACOBS

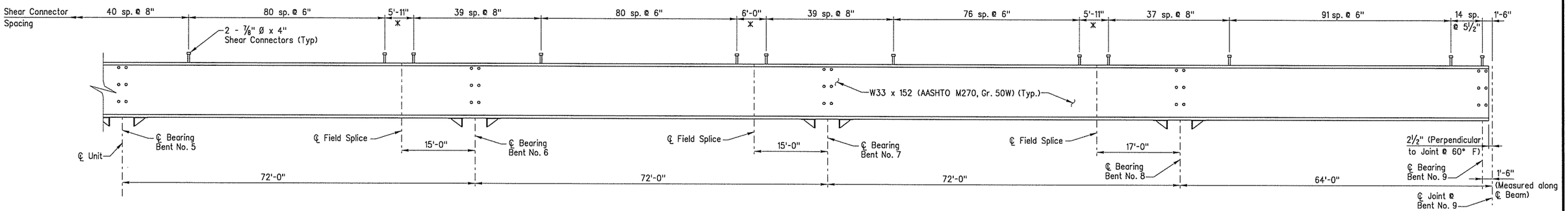
12/1/2014 11:09:07 AM T:\Job\WLXM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\V700 CADD Files\V709 Structural Files\Drawings\B106Blackfishframing02.DGN

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.		BB0114	51	92
				(1)	06940 - SPAN DETAILS - 55995			

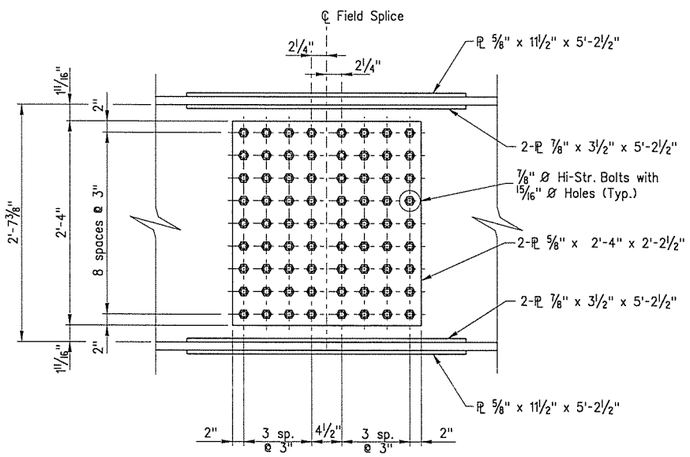
* 2-⅞" Dia. x 4" shear connectors will be required at about 6" spacing when the bolted field splice is omitted. Payment will be made on the basis of the plan quantities.

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



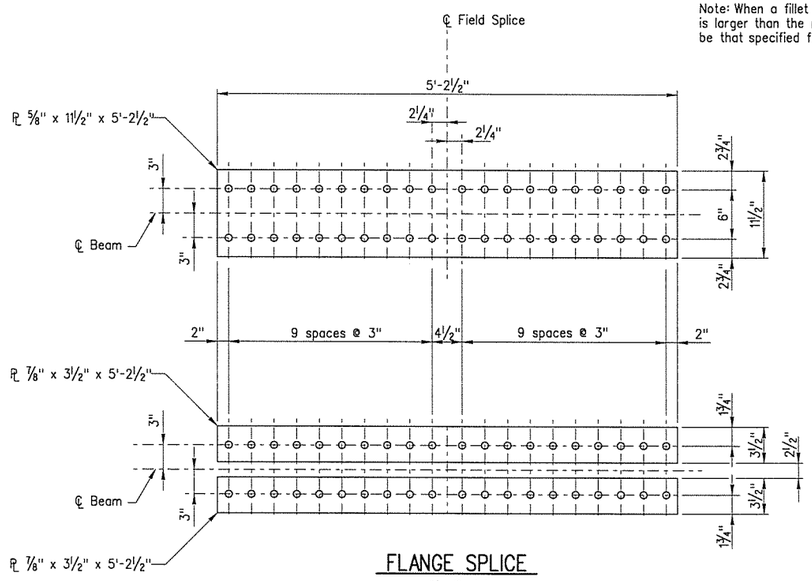


TYPICAL BEAM ELEVATION
(No Scale)



WEB SPLICE
(No Scale)

Note:
1. All Field Splice Plates shall be AASHTO M270, Gr. 50W.
2. All Field Splice Bolts shall be ⅞" Hi-Str. Bolts.
3. All Field Splice Bolt Holes shall be 15/16" Ø.

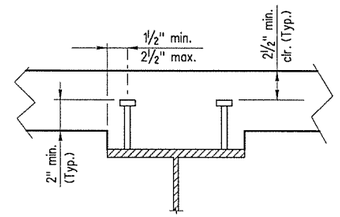


FLANGE SPLICE
(No Scale)

TABLE FOR WELDS

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"	

Note: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.



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 = 2'-0".

SHEAR CONNECTOR DETAIL
(No Scale)

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 16927 CHARLES G. WISE 12/1/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 6 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 2/14/14 FILENAME: bbb0114x3_x16.dgn
CHECKED BY: CJC DATE: 5/07/14
DESIGNED BY: CGW DATE: 1/17/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55995

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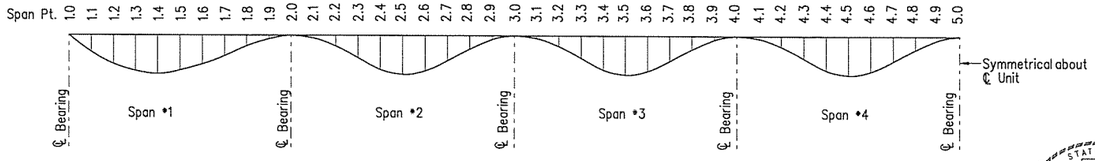
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	52	92
				(1)	06940 - SPAN DETAILS - 55996			

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point	Beams 1 & 17			Beams 2 - 5 & 13 - 16			Beams 6 & 12			Beams 7 & 11			Beams 8 - 10		
		Structural Steel	Structural Steel & Slab	Structural Steel, Slab & Parapet	Structural Steel	Structural Steel & Slab	Structural Steel, Slab & Parapet	Structural Steel	Structural Steel & Slab	Structural Steel, Slab & Parapet	Structural Steel	Structural Steel & Slab	Structural Steel, Slab & Median Barrier	Structural Steel	Structural Steel & Slab	Structural Steel, Slab & Median Barrier
1	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1.1	0.045	0.202	0.210	0.047	0.225	0.233	0.045	0.259	0.266	0.045	0.189	0.207	0.047	0.225	0.242
	1.2	0.084	0.373	0.389	0.086	0.416	0.430	0.084	0.480	0.493	0.084	0.349	0.384	0.086	0.416	0.448
	1.3	0.111	0.492	0.514	0.114	0.549	0.569	0.111	0.633	0.651	0.111	0.461	0.508	0.114	0.548	0.591
	1.4	0.123	0.546	0.570	0.126	0.609	0.631	0.123	0.702	0.723	0.123	0.511	0.564	0.126	0.608	0.657
	1.5	0.119	0.533	0.556	0.123	0.594	0.616	0.120	0.685	0.706	0.119	0.499	0.550	0.123	0.593	0.641
	1.6	0.103	0.457	0.476	0.105	0.510	0.528	0.103	0.588	0.607	0.102	0.428	0.471	0.105	0.509	0.550
	1.7	0.075	0.336	0.349	0.077	0.375	0.388	0.075	0.433	0.446	0.075	0.315	0.345	0.077	0.375	0.404
	1.8	0.044	0.197	0.205	0.045	0.220	0.227	0.044	0.251	0.258	0.044	0.185	0.202	0.045	0.220	0.236
	1.9	0.015	0.068	0.071	0.016	0.077	0.080	0.015	0.089	0.091	0.015	0.064	0.070	0.016	0.077	0.083
2	2.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.1	0.008	0.034	0.036	0.009	0.039	0.041	0.008	0.044	0.047	0.008	0.032	0.037	0.009	0.039	0.043
	2.2	0.033	0.143	0.151	0.033	0.153	0.159	0.032	0.178	0.185	0.033	0.134	0.151	0.033	0.153	0.166
	2.3	0.059	0.257	0.270	0.061	0.284	0.295	0.060	0.338	0.351	0.059	0.241	0.269	0.061	0.284	0.307
	2.4	0.081	0.356	0.373	0.085	0.398	0.413	0.081	0.455	0.472	0.081	0.333	0.371	0.085	0.397	0.429
	2.5	0.090	0.393	0.412	0.094	0.439	0.456	0.090	0.504	0.522	0.090	0.368	0.409	0.094	0.439	0.475
	2.6	0.083	0.365	0.382	0.087	0.408	0.423	0.083	0.468	0.485	0.083	0.342	0.379	0.087	0.408	0.441
	2.7	0.064	0.280	0.293	0.068	0.317	0.329	0.064	0.362	0.376	0.064	0.262	0.290	0.068	0.316	0.342
	2.8	0.038	0.166	0.174	0.040	0.188	0.195	0.037	0.206	0.214	0.038	0.156	0.173	0.040	0.188	0.203
	2.9	0.011	0.048	0.050	0.012	0.055	0.057	0.011	0.064	0.067	0.011	0.045	0.050	0.012	0.055	0.060
3	3.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3.1	0.014	0.061	0.064	0.014	0.069	0.072	0.014	0.079	0.082	0.014	0.057	0.063	0.014	0.068	0.073
	3.2	0.042	0.187	0.196	0.042	0.202	0.209	0.041	0.235	0.242	0.042	0.175	0.194	0.042	0.202	0.217
	3.3	0.070	0.311	0.325	0.072	0.343	0.355	0.072	0.407	0.420	0.070	0.291	0.322	0.072	0.342	0.369
	3.4	0.093	0.411	0.430	0.096	0.458	0.475	0.093	0.526	0.543	0.093	0.385	0.425	0.096	0.458	0.494
	3.5	0.101	0.444	0.464	0.104	0.496	0.514	0.101	0.570	0.589	0.101	0.416	0.459	0.104	0.495	0.533
	3.6	0.093	0.409	0.427	0.096	0.456	0.472	0.093	0.524	0.541	0.093	0.383	0.422	0.096	0.455	0.490
	3.7	0.071	0.313	0.327	0.074	0.353	0.366	0.071	0.404	0.418	0.071	0.293	0.323	0.074	0.353	0.381
	3.8	0.043	0.188	0.196	0.045	0.212	0.220	0.041	0.234	0.242	0.043	0.176	0.194	0.045	0.212	0.229
	3.9	0.013	0.058	0.061	0.014	0.066	0.068	0.014	0.077	0.080	0.013	0.054	0.060	0.014	0.066	0.071
4	4.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4.1	0.012	0.054	0.057	0.013	0.061	0.063	0.012	0.070	0.072	0.012	0.051	0.057	0.013	0.061	0.066
	4.2	0.040	0.176	0.184	0.040	0.190	0.197	0.039	0.220	0.227	0.040	0.164	0.182	0.040	0.189	0.204
	4.3	0.067	0.297	0.311	0.069	0.328	0.340	0.069	0.389	0.402	0.067	0.278	0.308	0.069	0.327	0.353
	4.4	0.090	0.397	0.415	0.094	0.443	0.459	0.090	0.508	0.525	0.090	0.372	0.412	0.094	0.442	0.477
	4.5	0.098	0.431	0.450	0.102	0.482	0.500	0.098	0.554	0.573	0.098	0.404	0.446	0.102	0.481	0.519
	4.6	0.090	0.398	0.416	0.094	0.444	0.460	0.090	0.511	0.528	0.090	0.373	0.412	0.094	0.444	0.479
	4.7	0.069	0.305	0.318	0.073	0.344	0.357	0.070	0.394	0.408	0.069	0.285	0.315	0.073	0.344	0.371
	4.8	0.041	0.183	0.191	0.044	0.207	0.215	0.040	0.227	0.235	0.041	0.171	0.189	0.044	0.206	0.222
	4.9	0.013	0.056	0.059	0.013	0.063	0.065	0.013	0.074	0.077	0.013	0.052	0.058	0.013	0.063	0.068
	5.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

← ℄ Unit

Note: This table is symmetrical about ℄ Unit.



DEAD LOAD DEFLECTION DIAGRAM

(No Scale)

Note: Camber beams for dead load deflection plus vertical curve. Tolerance is ±1/4". Deflections shown are from a chord extending from ℄ Bearing to ℄ Bearing. Vertical curve corrections are not included. Negative sign (-) indicates point above chord.

STATE OF ARKANSAS
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No. 11528
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
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SHEET 7 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 4/27/14 FILENAME: bbb0114x3_x17.dgn
CHECKED BY: CJC DATE: 5/7/14
DESIGNED BY: CGW DATE: 4/1/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 55996

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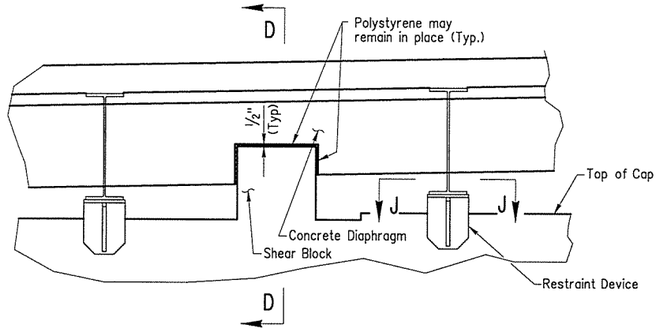
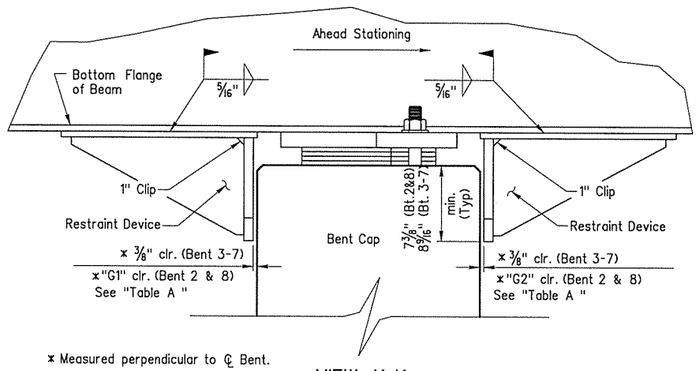
Note:
1/2" Polystyrene shall be used as a bond breaker between the shear block and the concrete diaphragm and may remain in place.

Polystyrene shall be considered subsidiary to "Class S(AE) Concrete - Bridge".



PARTIAL VIEW OF LONGITUDINAL SHEAR RESTRAINT DEVICES AND SHEAR BLOCK AT INTERMEDIATE BENTS
(No Scale)



* Measured perpendicular to ℄ Bent.

VIEW K-K
(Typ. at each beam)
(No Scale)

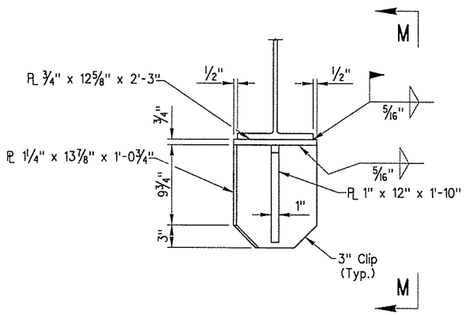
Note: Weld longitudinal shear restraint device to beam after the deck has been poured.

		Temperature				
		20°	40°	60°	80°	100°
Bent 2	"G1"	1 1/16"	1 5/16"	1 5/8"	1 15/16"	2 3/16"
	"G2"	2 3/16"	1 15/16"	1 5/8"	1 5/16"	1 1/16"
Bent 8	"G1"	2 3/16"	1 15/16"	1 5/8"	1 5/16"	1 1/16"
	"G2"	1 1/16"	1 5/16"	1 5/8"	1 15/16"	2 3/16"

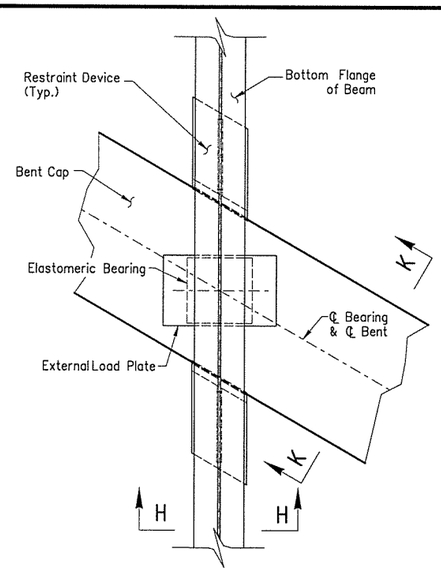
TABLE A

Note: The temperature used to set "G1" and "G2" shall be the approximate average air temperature during the 24 hour period immediately before the restrainers are welded to the beams.

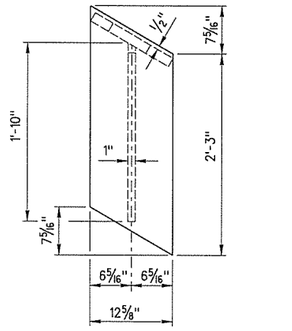
The Engineer shall establish the temperature. Interpolation of the table may be necessary.



VIEW H-H
(No Scale)

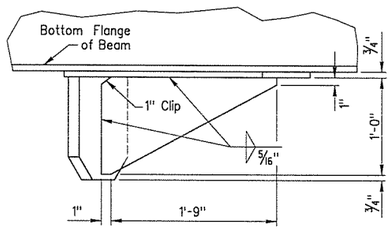


VIEW J-J
(No Scale)

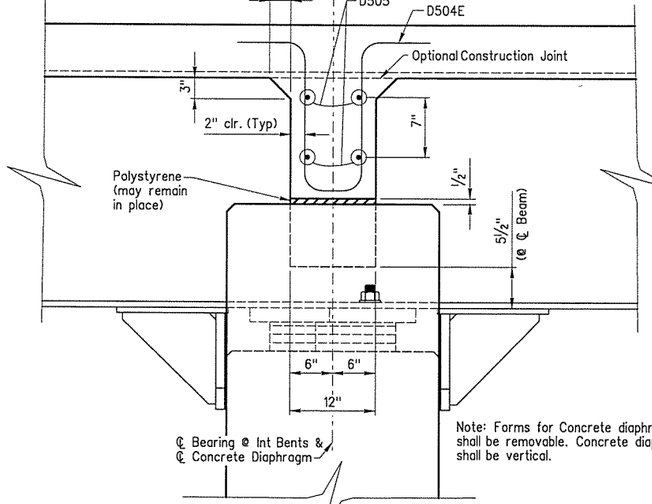


PLAN VIEW OF LONGITUDINAL SHEAR RESTRAINT DEVICE
(No Scale)

Note: Longitudinal Shear Restraint Devices shall conform to AASHTO M270, Gr. 50W and shall be included in the item "Structural Steel in Beam Spans (M270 - Gr. 50W)".



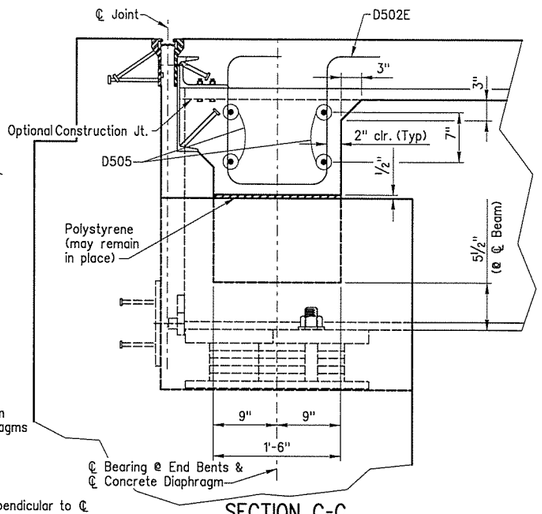
VIEW M-M
(No Scale)



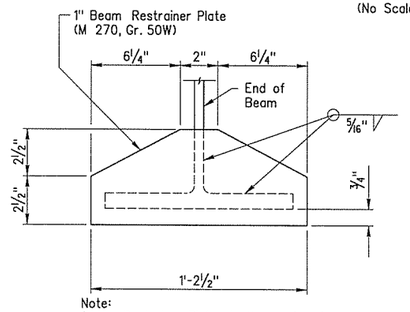
SECTION D-D
(No Scale)

Note: Forms for Concrete diaphragm shall be removable. Concrete diaphragms shall be vertical.

Note: Secton C-C and D-D are shown perpendicular to ℄ Bent. For additional Concrete Diaphragm details, see Drawing Nos. 55990, 55991, 55992, 55994, 55999, & 56003.



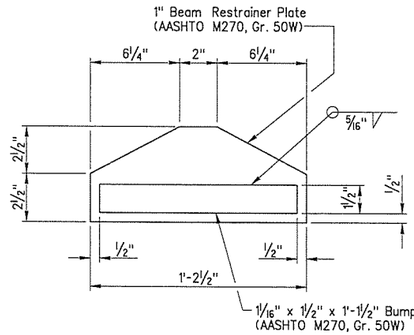
SECTION C-C
(No Scale)



Note:
Beam Restrainer Plate shall be centered on each beam line (flange & web).
Bumper Bar not shown for clarity.

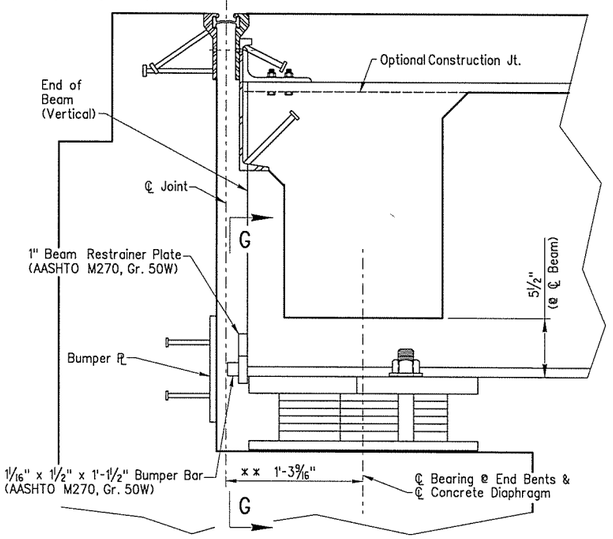
VIEW G-G
(No Scale)

Note: Beam Restrainer Plate and Bumper Bar shall conform to AASHTO M270, Gr. 50W and shall be included in the item "Structural Steel in Beam Spans (M270 - Gr. 50W)".



VIEW G-G
(No Scale)

Note: End of Beam not shown in this view for clarity.



SECTION AT END BENT
(No Scale)

** Perpendicular to Joint

Note: For Bumper P details, See "End Bent Details".
For Expansion Joint details, See Drawing No. 56002.

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.		BB0114	53	92
				1	06940 - SPAN DETAILS - 55997			

SHEET 8 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

STATE OF ARKANSAS
CHRISTOPHER J. CRISWELL
REGISTERED PROFESSIONAL ENGINEER
No. 11328
12/3/14

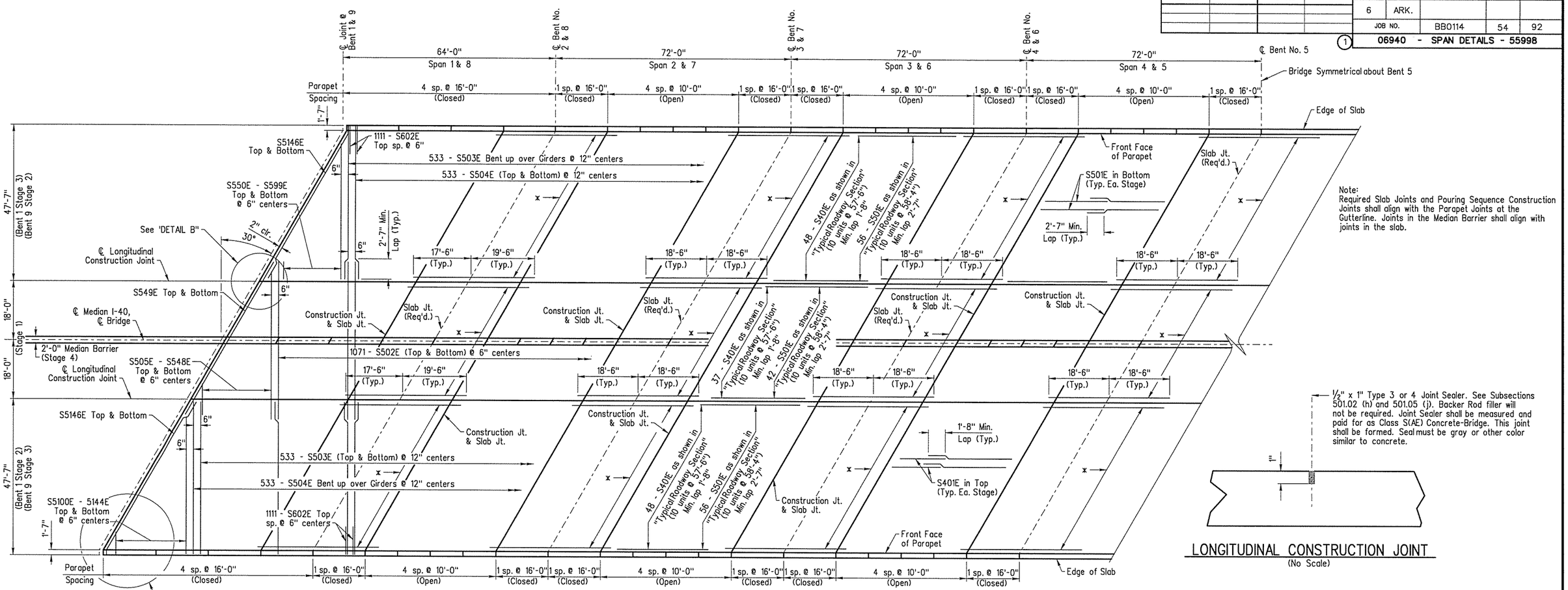
BRIDGE ENGINEER
PRINT DATE: 12/1/2014

DRAWN BY: LHG DATE: 4/16/14
CHECKED BY: CJC DATE: 5/9/14
DESIGNED BY: CGW DATE: 4/1/14
FILENAME: bbb0114x3_x18.dgn
SCALE: No Scale
BRIDGE NO. 06940
DRAWING NO. 55997

JACOBS

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.		BB0114	54	92

(1) 06940 - SPAN DETAILS - 55998



SLAB HALF-PLAN
(No Scale)

Note:
Required Slab Joints and Pouring Sequence Construction Joints shall align with the Parapet Joints at the Gutterline. Joints in the Median Barrier shall align with joints in the slab.

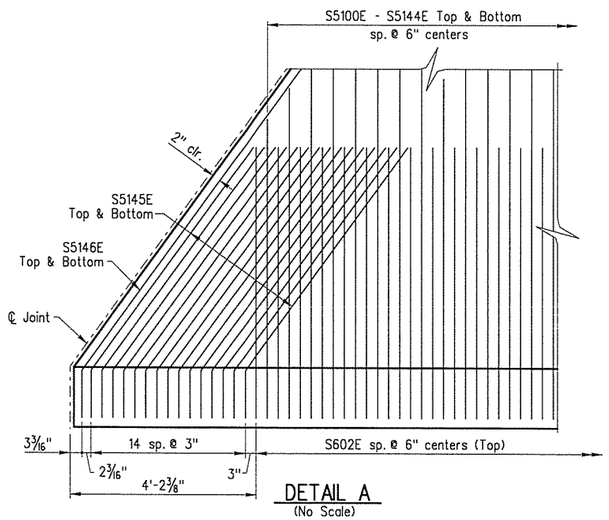
½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02 (h) and 501.05 (j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal must be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT
(No Scale)

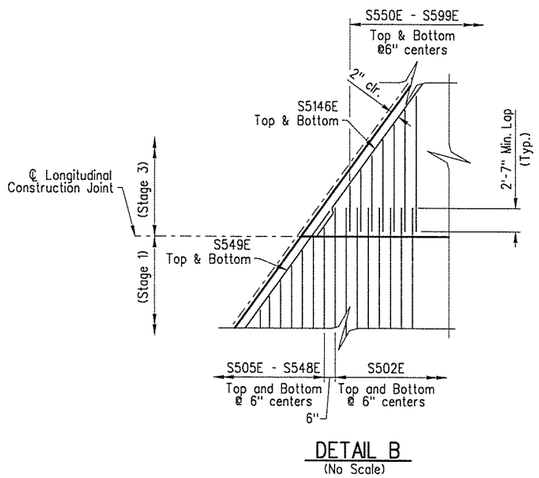
For spacing of parapet bars in Slab see Drawing No. 56000.

For Slab Pouring Sequence and location of Slab Joints, see Drawing No. 55999.

* S601E placed as shown over Int. Supports. Refer to "Typical Roadway Section".

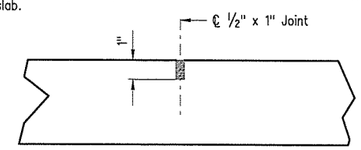


DETAIL A
(No Scale)



DETAIL B
(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 S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the 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. Median Barrier Joints shall align with joints in the slab.



SLAB JOINT DETAIL
(No Scale)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/5/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 9 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 2/17/14
CHECKED BY: MAA DATE: 2/20/14
DESIGNED BY: CMF DATE: 2/14/14
BRIDGE NO. 06940
FILENAME: bbb0114x3_x19.dgn
SCALE: No Scale
DRAWING NO. 55998

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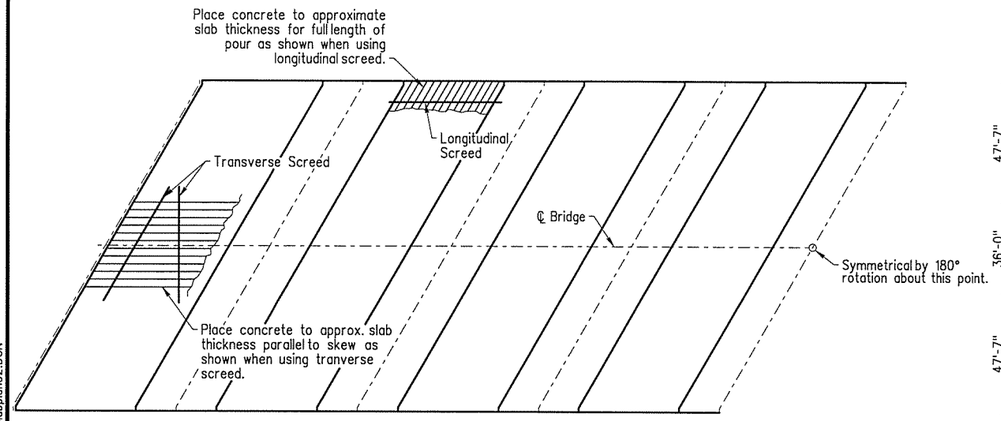
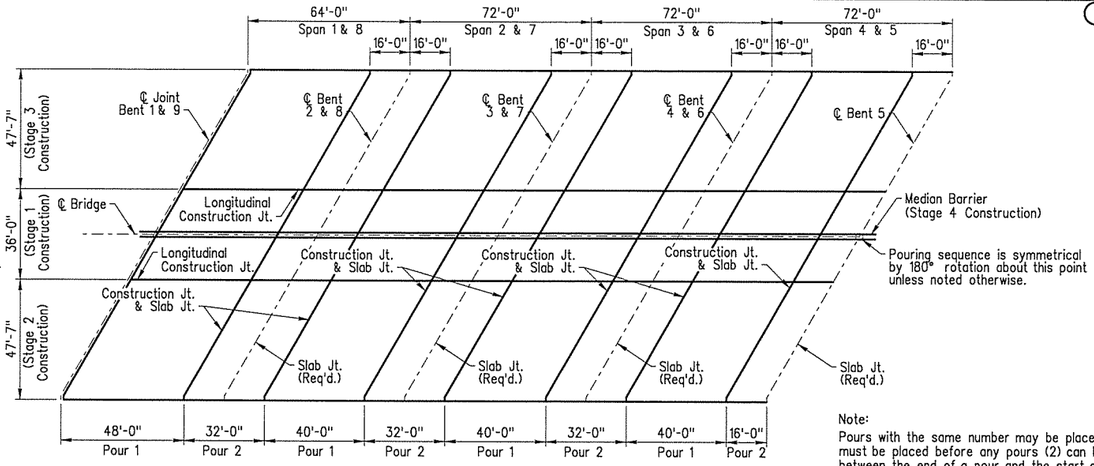
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	55	92

(1) 06940 - SPAN DETAILS - 55999



Note: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to ℄ Bridge.

CONCRETE PLACEMENT PROCEDURE
(No Scale)



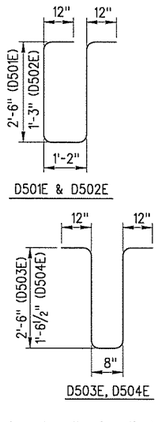
SLAB POURING SEQUENCE
(No Scale)

Note:
Pours with the same number may be placed simultaneously or separately. All pours (1) must be placed before any pours (2) can be placed. Forty-Eight (48) hours shall elapse between the end of a pour and the start of the next pour. Seventy-two (72) hours shall elapse between the end of a pour and the start of an adjacent pour, and between the end of a pour and the pouring of the parapet. Any railing pours made before the slab unit has been placed must be approved by the Engineer.

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

BAR LIST (STAGE 1)

Mark	No. Required	Length	Pin Dia.	Bending Diagrams Dimensions shown are out to out of bars
S401E	370	57'-6"	Str.	
S501E	420	58'-4"	Str.	
S502E	2142	41'-6"	Str.	
S505E to S548E	4 ea.	3'-10" to 41'-1"	Str.	
S549E	4	47'-11"	Str.	
S601E	238	37'-0"	Str.	
D501E	100	7'-7"	2½"	
D502E	12	5'-3"	2½"	
D503E	350	7'-3"	2½"	
D504E	42	5'-4"	2½"	
D505	216	8'-7"	Str.	
D506	144	2'-11"	Str.	
D507	72	5'-9"	Str.	
M407E	1074	2'-1"	2"	

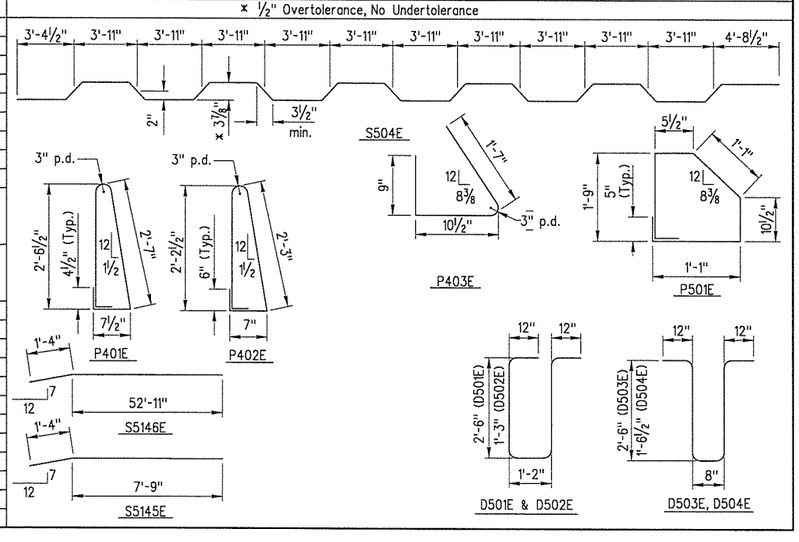


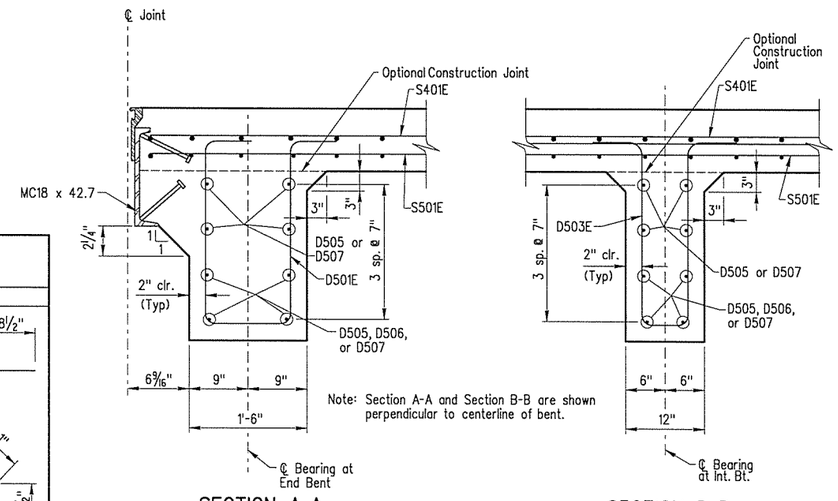
×× Ends threaded for mechanical couplers. Length of vertical leg includes the length of the mechanical coupler. The actual length of vertical leg engagement into the mechanical coupler shall be determined by the mechanical coupler manufacturer. The length of the vertical leg shall be adjusted accordingly.

Note: All bars designated with an "E" suffix are to be epoxy coated.

BAR LIST (PER STAGE 2 OR 3)

Mark	No. Required	Length	Pin Dia.	Bending Diagrams Dimensions shown are out to out of bars
P401E	672	6'-3"	3"	× ½" Overtolerance, No Undertolerance
P402E	168	5'-7"	3"	
P403E	168	3'-3"	3"	
P501E	672	5'-7"	3¾"	
P502E	160	15'-8"	Str.	
P503E	216	9'-8"	Str.	
S401E	480	57'-6"	Str.	
S501E	560	58'-4"	Str.	
S503E	1066	47'-3"	Str.	
S504E	533	48'-4"	3"	
S550E to S599E	2 ea.	2'-11" to 45'-5"	Str.	
S5100E to S5144E	2 ea.	8'-6" to 46'-8"	Str.	
S5145E	30	9'-1"	3¾"	
S5146E	4	54'-3"	3¾"	
S601E	329	37'-0"	Str.	
S602E	1111	8'-1"	Str.	
D501E	118	7'-11"	2½"	
D502E	81	5'-5"	2½"	
D503E	413	7'-4"	2½"	
D504E	63	5'-5"	2½"	
D505	252	8'-7"	Str.	
D506	216	2'-11"	Str.	
D507	72	5'-9"	Str.	





Note: Section A-A and Section B-B are shown perpendicular to centerline of bent.

SECTION A-A
(No Scale)

SECTION B-B
(No Scale)

SHEET 10 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

DRAWN BY: LHG DATE: 2/17/14
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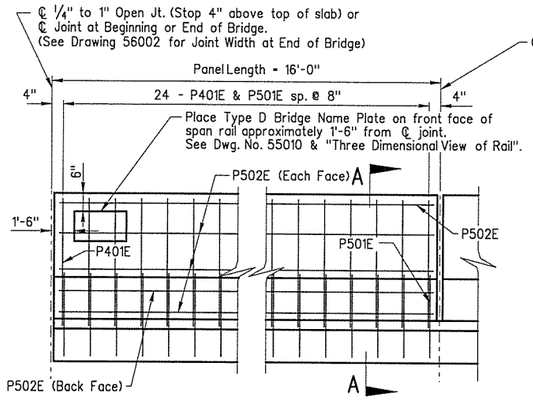
SCALE: No Scale
BRIDGE NO. 06940
DRAWING NO. 55999

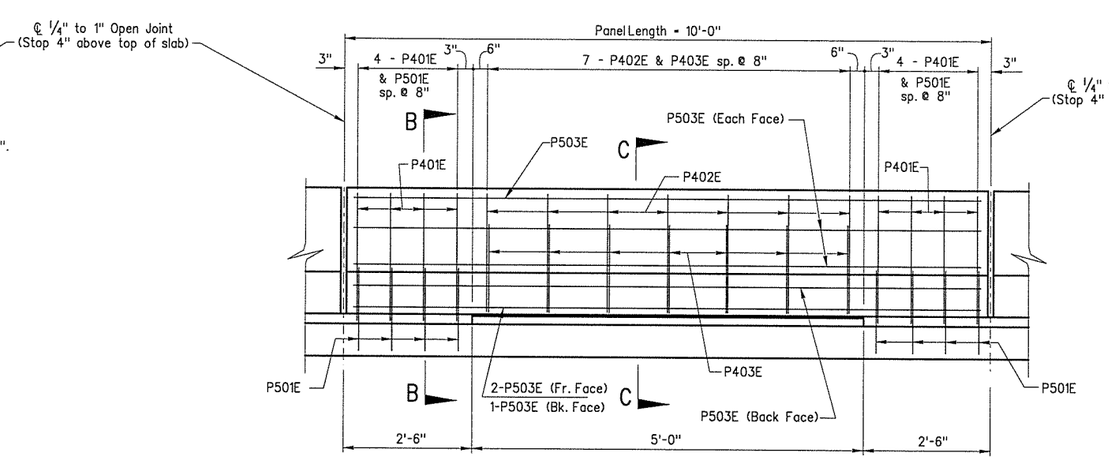
JACOBS

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.		BB0114	56	92

(1) 06940 - SPAN DETAILS - 56000

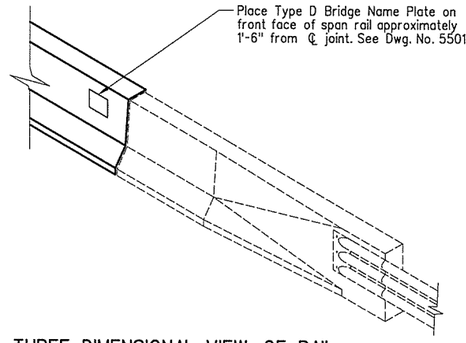


TYPICAL CLOSED PANEL PARAPET RAIL
(No Scale)

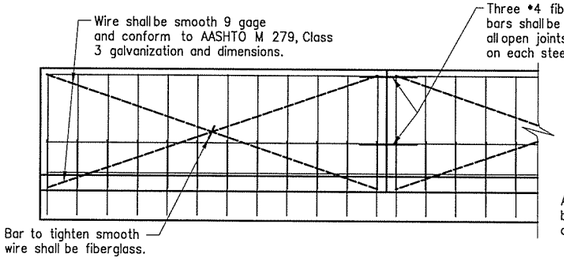


TYPICAL OPEN PANEL PARAPET RAIL
(No Scale)

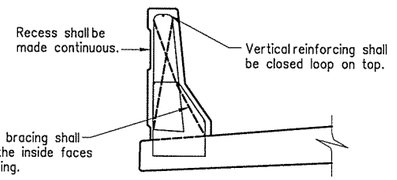
ELEVATIONS OF TYPICAL PARAPET RAIL
(As viewed from roadway side of Parapet)



THREE DIMENSIONAL VIEW OF RAIL
(No Scale)

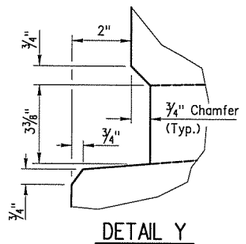


All panels shall be braced as shown to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

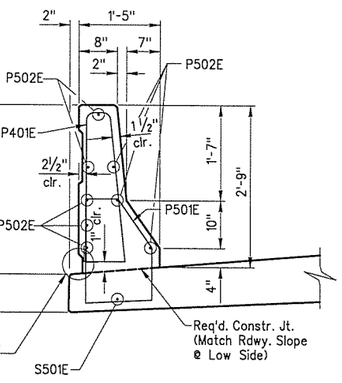


The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Unless otherwise noted exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish in place of the Class 2 Rubbed Finish.

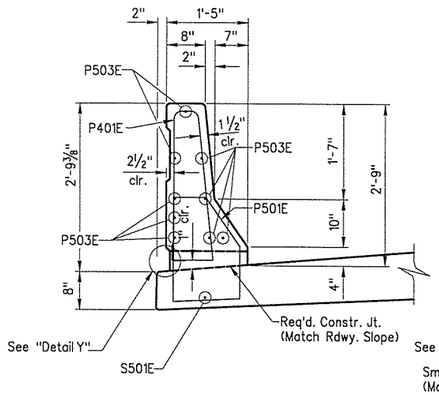
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
(No Scale)



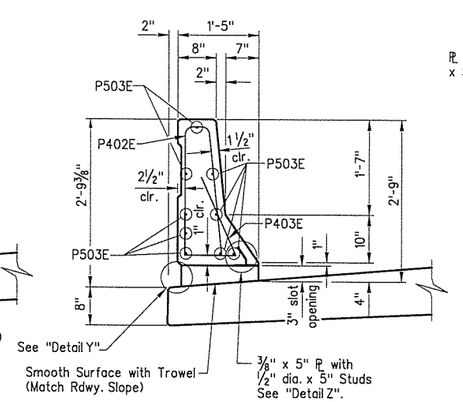
DETAIL Y
(No Scale)



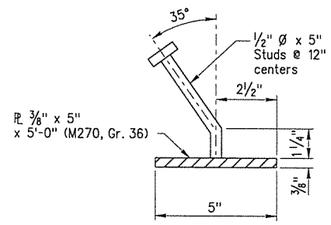
CLOSED PARAPET
SECTION A-A
(No Scale)



OPEN PARAPET @ END POST
SECTION B-B
(No Scale)



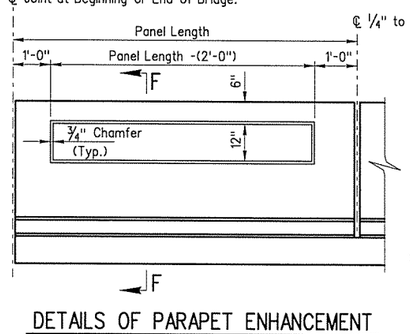
OPEN PARAPET @ DRAIN
SECTION C-C
(No Scale)



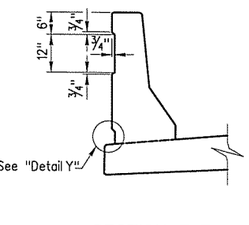
DETAIL Z
(No Scale)

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

The surfaces of the 3/8" plates which will not be in contact with concrete shall be painted in accordance with Section 638 or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidary to "Structural Steel in Beam Spans (M270, Gr 50W)."



DETAILS OF PARAPET ENHANCEMENT
(No Scale)



SECTION F-F
(No Scale)

Note: Recess shall be made continuous if slip forms are used. Vertical joints and open drains may not be eliminated.

SHEET 11 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11328
CHRISTOPHER J. CRISWELL
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

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SCALE: No Scale
BRIDGE NO. 06940
DRAWING NO. 56000

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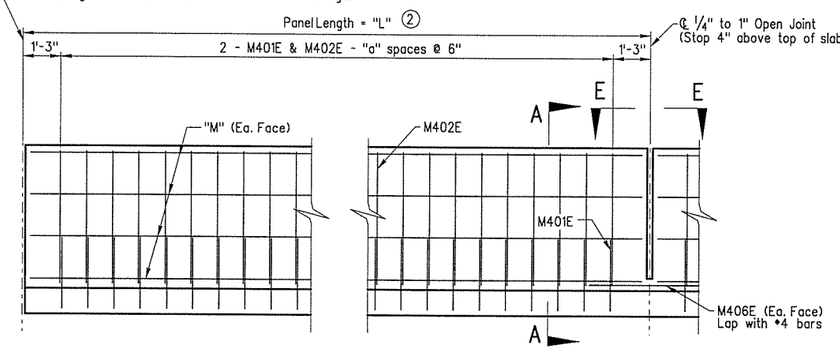
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	57	92
				06940	- SPAN DETAILS -		56001	

② See Dwg. No. 55998 for locations of Panels.

① Class 1 Protective Surface Treatment shall be applied to Median Barrier surfaces.

℄ 1/4" to 1" Open Jt. (Stop 4" above top of slab) or ℄ Joint at Beginning or End of Bridge. (See Drawing No. 56002 for Joint Width at End of Bridge)

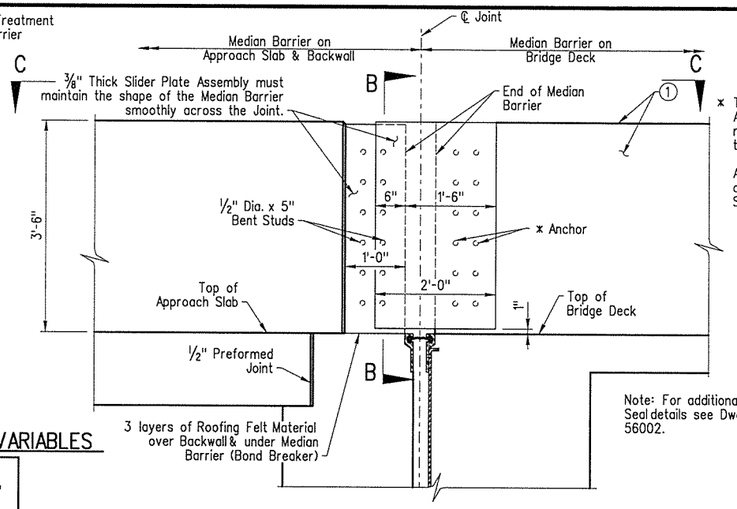


MEDIAN BARRIER - PARTIAL ELEVATION

Stage 4 Construction
(No Scale)

MEDIAN BARRIER RAIL VARIABLES

Panel Length "L"	"a"	"M"
10'-0"	15	M404E
16'-0"	27	M405E



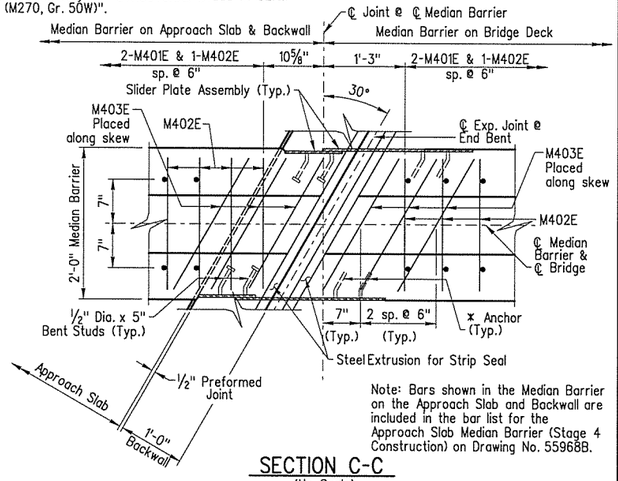
Note: For additional Strip Seal details see Dwg. No. 56002.

DETAIL OF NEOPRENE SEAL AT MEDIAN BARRIER

(No Scale)

x The method of attachment of the Cover Slider Plate Assembly or similar device must be such that it may be removed in order to provide for future replacement of the Neoprene Seal.

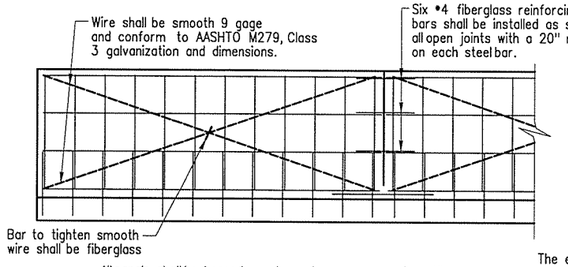
Anchors will not be paid for directly but will be considered subsidiary to "STRUCTURAL STEEL IN BEAM SPANS (M270, Gr. 50W)".



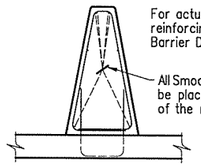
Note: Bars shown in the Median Barrier on the Approach Slab and Backwall are included in the bar list for the Approach Slab Median Barrier (Stage 4 Construction) on Drawing No. 55968B.

SECTION C-C

(No Scale)



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



The extruded Median Barrier 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. Exposed surfaces shall be given a Class 1 Protective Surface Treatment.

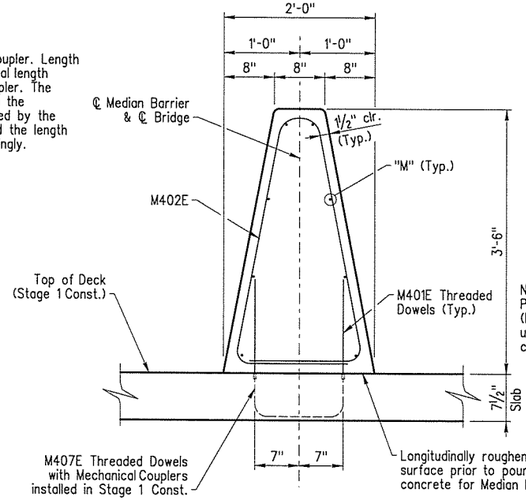
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE MEDIAN BARRIER

(No Scale)

MEDIAN BARRIER BAR LIST - STAGE 4 CONSTRUCTION

MARK	NO. REQ'D	LENGTH	PIN DIA.	BENDING DIAGRAMS (DIMENSIONS ARE OUT TO OUT OF BARS)
③ M401E	2150	1'-6"	Str.	
M402E	944	9'-8"	5 3/4", 3"	5 3/4" p.d., 2 3/8", 12, 3'-3", 15", 3" p.d., 3" p.d. M402E
M403E	264	10'-4"	9 3/4", 3"	9 3/4" p.d., 3, 12, 3'-1 1/2", 15", 3" p.d., 3" p.d. M403E
M404E	192	9'-8"	Str.	
M405E	160	15'-8"	Str.	
M406E	86	5'-6"	Str.	

③ One end threaded for mechanical coupler. Length of bar does not include any additional length for engagement into mechanical coupler. The actual length of bar engagement into the mechanical coupler shall be determined by the mechanical coupler manufacturer, and the length of the bar shall be adjusted accordingly.



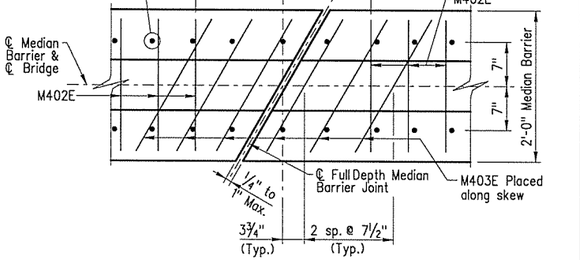
Note: Protect Threads in Couplers (Installed in Stage 1 Const.) until Median Barrier is constructed.

SECTION A-A

(No Scale)

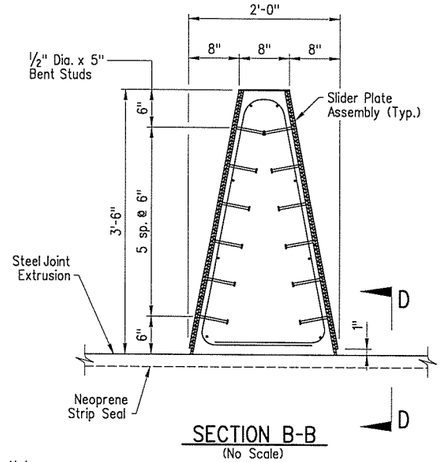
Note: The Threaded Dowel and Coupler Assembly shall consist of a QPL Approved Mechanical Splice with Protective Cap and Threaded Dowel Bars (M401E and M407E) as shown and shall develop at least 125% of the yield strength of the Dowel Bars. The Threaded Dowel and Coupler Assembly will not be paid for separately but will be considered included in the unit price for "Reinforcing Steel - Bridge (Grade 60)".

Note: M401E and M407E Dowel Bars shall be a minimum 60 ksi Yield Strength and Threaded as required. Threaded Dowel and Coupler Assembly, except mating surfaces, shall be Epoxy Coated in accordance with the requirements of Section 804.



SECTION E-E

(No Scale)



SECTION B-B

(No Scale)

Note: For Section D-D, see Drawing No. 56002.

GENERAL NOTES

CONCRETE: All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

REINFORCING STEEL: All reinforcing steel shall conform to AASHTO M31 or M322 Type A. Mill test reports shall be submitted.

Slider plates shall be AASHTO M270, Gr. 36 or Gr. 50 and shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W). The surfaces of the plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)".

Details of the Proposed Slider Plate Assembly for the Median Barrier shall be submitted to and approved by the Engineer prior to fabrication of the structural steel at the expansion device.

STATE OF ARKANSAS
CHRISTOPHER J. CRISWELL
REGISTERED PROFESSIONAL ENGINEER
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

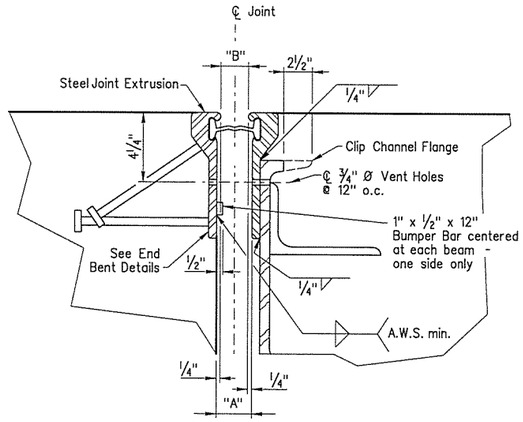
SHEET 12 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 4/3/14
CHECKED BY: CJC DATE: 5/14/14
DESIGNED BY: CGW DATE: 4/3/14
FILENAME: bbb0114x3_x1c.dgn
SCALE: No Scale
BRIDGE NO. 06940
DRAWING NO. 56001

JACOBS

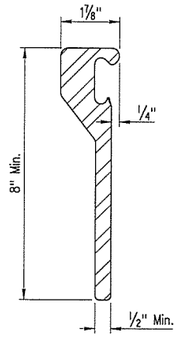
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0114	58	92

(1) 06940 - SPAN DETAILS - 56002

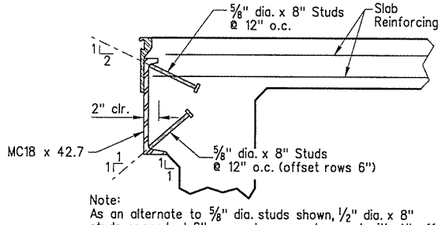


DETAIL A
(No Scale)

Note: Concrete shall be hand packed under the joint armor in the backwall and the span.

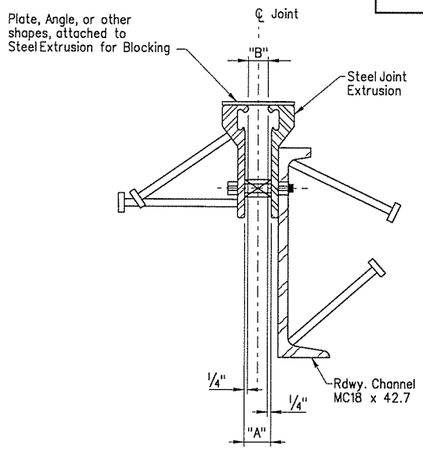


STEEL EXTRUSION DETAIL
(No Scale)



Note:
As an alternate to ⅝" dia. studs shown, ½" dia. x 8" studs spaced at 8" on centers may be used with 4" offset of rows. Use weight of ⅝" stud as basis of measurement of structural steel in anchors.

DETAILS OF ANCHORS
(No Scale)



Note:
Each expansion joint device shall be blocked in the shop by the Fabricator to the dimension "A" @ 60° F and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2'-0" of each end of the device and with a maximum spacing of 8'-0".

One of two different blocking systems is required depending on the type of finishing machine that is used.
1. For Transverse Strike-off: Plate, angle or other shapes, attach to steel extrusion for blocking.
2. For Longitudinal Strike-off: Bolt and spacer attached to channel and angle for blocking.

EXPANSION DEVICE INSTALLATION

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

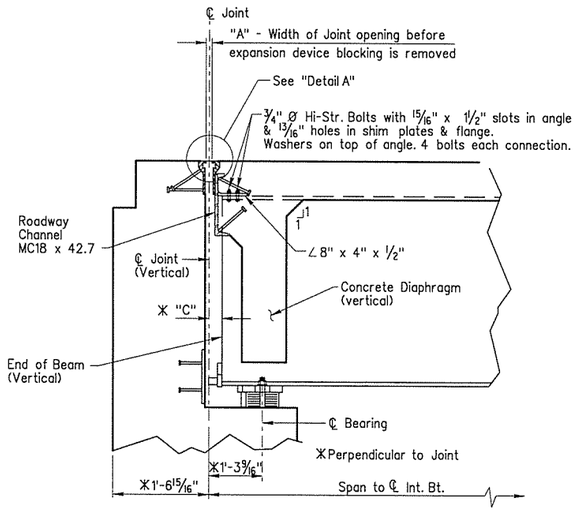
1. The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing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

STRIP SEAL JOINT DATA

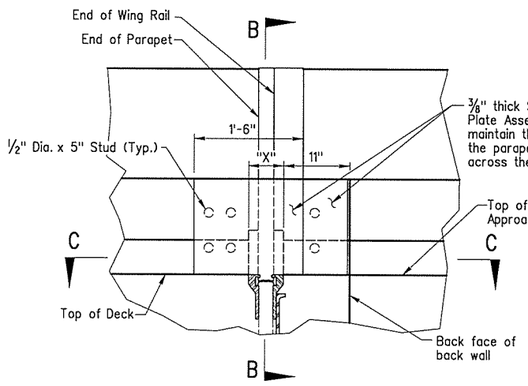
Bent No.	Movement Rating	"A" width perpendicular to joint at 24 hour average temperature of:			"B" width perpendicular to joint at 24 hour average temperature of:			"C" width perpendicular to joint at 24 hour average temperature of
		40° F	60° F	80° F	40° F	60° F	80° F	60° F
1 & 9	4"	2¾"	2⅜"	2"	2¼"	1⅛"	1½"	2½"

Note: 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. Installation is limited to 40 degrees F min. and 80 degrees F max. The temperature limitations by the lubricant-adhesive manufacturer shall be observed.



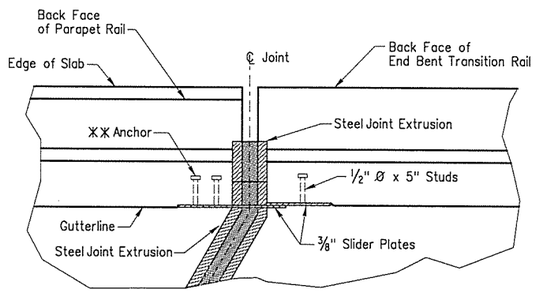
SECTION THROUGH JOINT AT END BENTS
(No Scale)

Note: Detail expansion device ⅛" high and provide ¼" shims using 2-7/16" plates and 1-⅛" plate. For additional details, see Dwg. Nos. 55990 & 55991.



DETAILS OF NEOPRENE SEAL AT PARAPET FACE
(No Scale)

Note: Dimension "X" equals the width of the opening in the parapet at the curb to allow for removal or repair of joint.

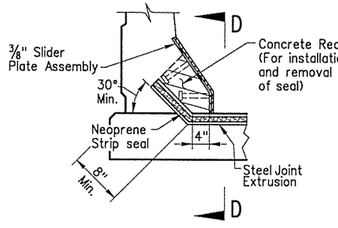


SECTION C-C
(No Scale)

✳✳ The method of attachment of the cover slider plate assembly or similar device must be such that it may be removed in order to provide for future replacement of the neoprene seal.

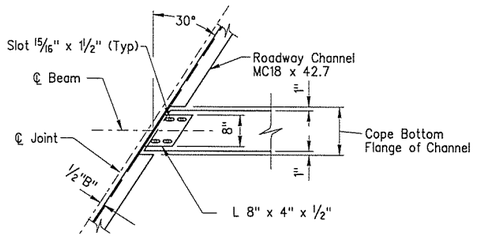
Anchors will not be paid for directly but will be considered subsidiary to "Structural Steel in Beam Spans (M270, Gr. 50W)".

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE
(No Scale)

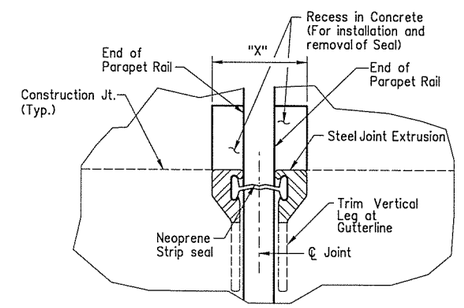


SECTION B-B
(No Scale)

Note: Details of joint turn-up in parapet are general and show basic design controls only. Method of installation and fabrication shall be determined by the manufacturer. See Section 809 of the Standard Specifications.



TYPICAL CHANNEL CONNECTION DETAIL
(No Scale)



SECTION D-D
(No Scale)

Note: Dimension "X" equals the width of the opening in the parapet at the curb to allow for removal or repair of joint.

GENERAL NOTES

EXPANSION NEOPRENE STRIP SEAL: The expansion device shall provide a movement of 4" as shown in the "STRIP SEAL JOINT DATA" table. The expansion joint shall be capable of sealing the deck surface and parapet area to prevent moisture and other contaminants from descending through the joint.

Details of proposed slider plate assembly shall be submitted to and approved by the Engineer prior to the fabrication of any structural steel at the expansion device.

All Structural Steel shall be AASHTO M270, Grade 36 unless otherwise noted. All exposed surfaces are to be cleaned and painted as directed in 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). Structural steel completely embedded in concrete need not be painted.

All Structural Steel, except for the steel extrusion for the strip seal, shall be paid for as "STRUCTURAL STEEL IN BEAM SPANS (M270, Grade 50W)". The steel extrusion and neoprene strip seal shall be paid for in accordance with Section 809 of the Standard Specifications.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15927
12/1/14
CHARLES G. WISE

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 13 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	LHG	DATE:	02/17/14	FILENAME: bbb0114x3_x1d.dgn
CHECKED BY:	CJC	DATE:	05/03/14	
DESIGNED BY:	CGW	DATE:	02/13/14	SCALE: No Scale
BRIDGE NO. 06940			DRAWING NO. 56002	

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12/1/2014

11:09:10 AM T:\Job WL\XM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106BlackfishJointDetails01.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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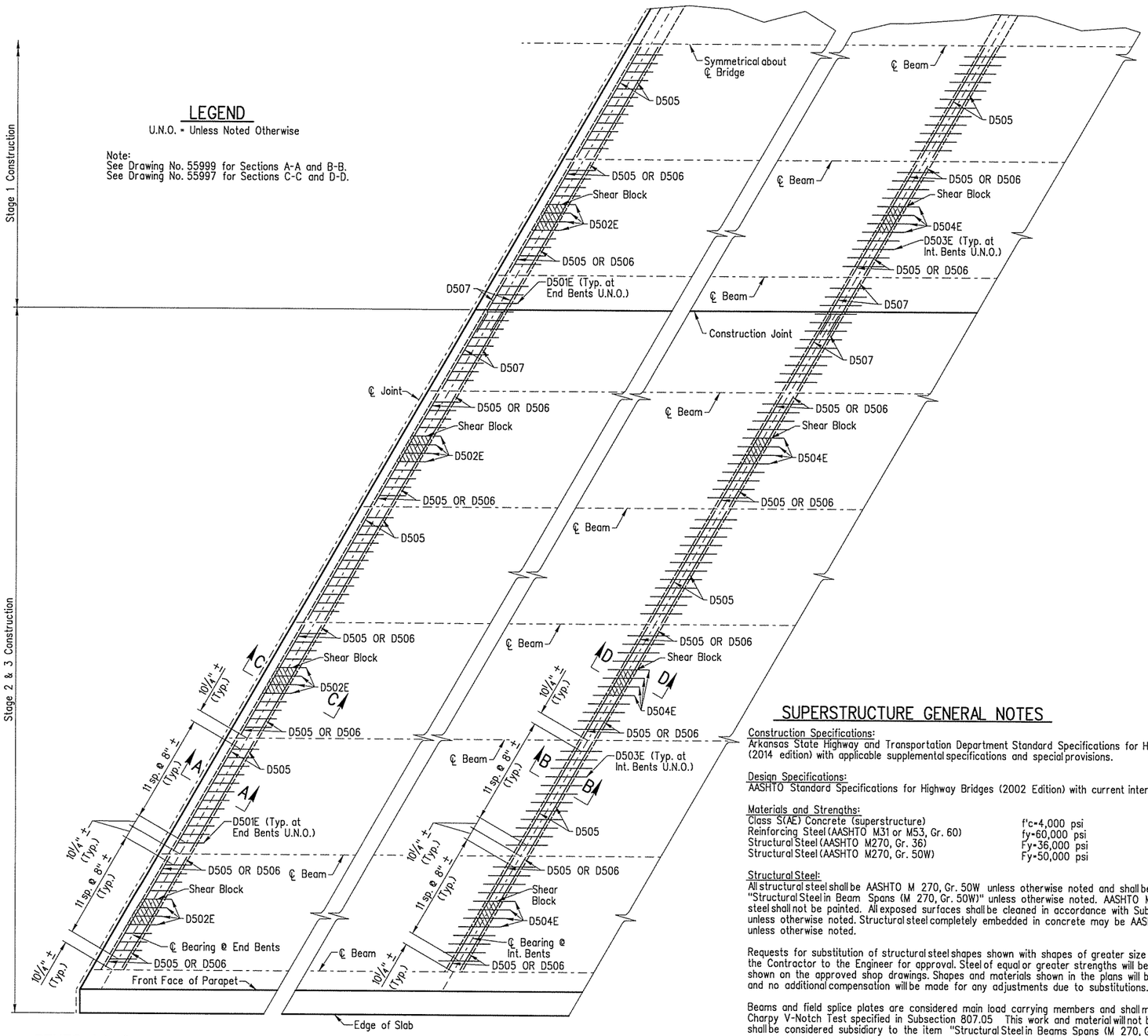
				JOB NO.		BB0114	59	92
				(1)	06940 - SPAN DETAILS - 56003			



PARTIAL PLAN OF CONCRETE DIAPHRAGM REINFORCING
(No Scale)

SUPERSTRUCTURE 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 Standard Specifications for Highway Bridges (2002 Edition) with current interim specifications.

Materials and Strengths:

Class S(AE) Concrete (superstructure)	f'c=4,000 psi
Reinforcing Steel (AASHTO M31 or M53, Gr. 60)	fy=60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy=36,000 psi
Structural Steel (AASHTO M270, Gr. 50W)	Fy=50,000 psi

Structural Steel:
All structural steel shall be AASHTO M 270, Gr. 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)" unless otherwise noted. AASHTO M 270, Gr. 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36 unless otherwise noted.

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

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05 This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beams Spans (M 270, Gr. 50W)".

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

All beams shall be blocked in their true position in the shop with the webs horizontal in groups as specified in Subsection 807.54 (b)(2). The camber, length of sections, distance between bearings, and openings of joints shall be measured with the beam in their true position and this information shall become a part of the permanent records of this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60°F. A tolerance of +/- 1/4" is allowed for camber.

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

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.

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

Steel diaphragms shall be installed as beams are erected. All bolts in field splices shall be installed and tightened in accordance with Subsection 807.71 of the Standard Specifications prior to pouring of the slab unless otherwise noted. Before the Stage 2 deck pour, loosely install as many bolts as possible on both ends of the diaphragm between Beams 11 and 12 to the satisfaction of the Engineer. Install remaining bolts and fully tighten bolts in diaphragms between Beams 11 and 12 only after all deck pours for Stage 2 Construction are complete. Before the Stage 3 deck pour, loosely install as many bolts as possible on both ends of the diaphragm between Beams 6 and 7 to the satisfaction of the Engineer. Install remaining bolts and fully tighten all bolts in diaphragms between Beams 6 and 7 only after all deck pours for Stage 3 Construction are complete.

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.

Reinforcing Steel:
All reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60 with mill test reports. 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 of "Epoxy Coated Reinforcing Steel (Grade 60)".

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

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

Concrete diaphragms shall be poured monolithically with the slab.

Concrete in bridge superstructure shall be placed and consolidated for the entire pour and screeded off before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for a Class 5 tined bridge roadway surface finish. Movement of the finishing machine across the 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. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing. A minimum of 72 hours shall elapse between completion of slab and pouring of the parapet rail.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER J. CRISWELL
No. 11328
12/3/14
BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 14 OF 14
DETAILS OF 560'-0" CONT. COMP. W-BEAM UNIT
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 5/09/14 FILENAME: bbb0114x3_x1e.dgn
CHECKED BY: CJC DATE: 5/08/14
DESIGNED BY: CGW DATE: 01/17/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 56003

JACOBS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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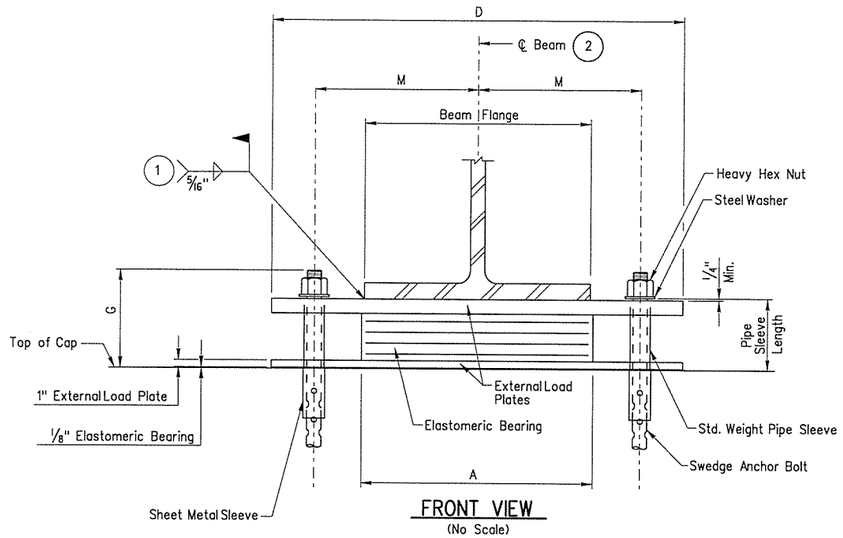
				JOB NO.		BB0114	60	92

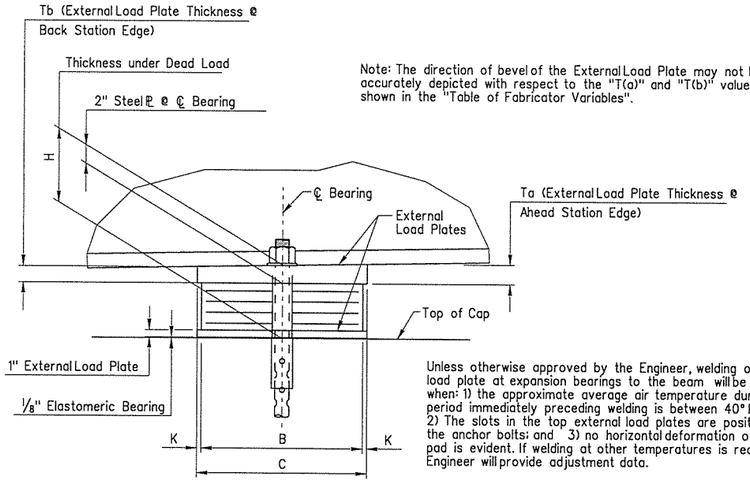
(1) 06940 - BEARING DETAILS - 56004



FRONT VIEW
(No Scale)

(1) Care shall be taken to ensure that the external load plate is in full and complete contact with the beam flange before welding begins.

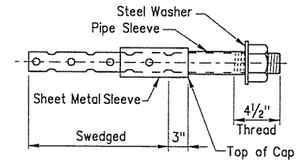
(2) ℄ Elastomeric pad shall be aligned with ℄ Beam.



SIDE VIEW
(No Scale)

Note: The direction of bevel of the External Load Plate may not be accurately depicted with respect to the "T(a)" and "T(b)" values shown in the "Table of Fabricator Variables".

Unless otherwise approved by the Engineer, welding of the top external load plate at expansion bearings to the beam will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) The slots in the top external load plates are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.

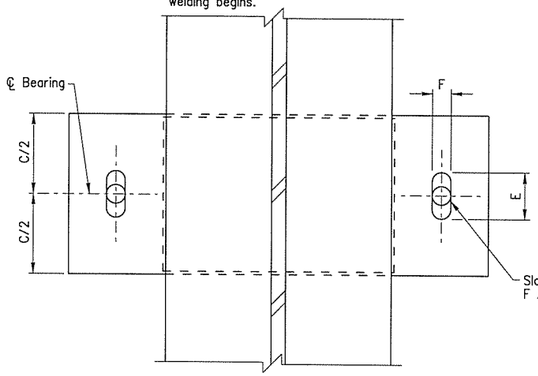


ANCHOR BOLT DETAIL
(No Scale)

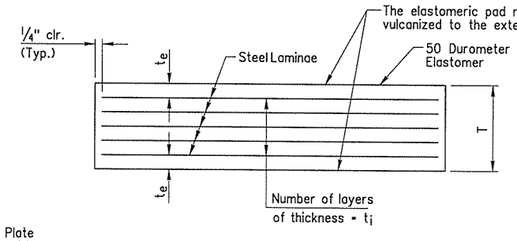
NOTE:

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans, (M 270, Gr. 50W)".



PLAN VIEW
(No Scale)



t_i = thickness of elastomer between steel laminae
t_e = thickness of elastomer cover on top and bottom of pad
N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING
(No Scale)

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 of the Standard Specifications and shall be paid for at the unit price bid for "Elastomeric Bearings."

External load plates shall conform to AASHTO M 270, Grade 50W and will not be paid for seperately, but will be included in the unit price bid for "Elastomeric Bearings". Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates shall be completely fabricated (including bevel, bolt holes and all shop welding) and shall be cleaned before vulcanized to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to Subsection 807.07 of the Standard Specifications. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)".

Bearings shall be seated in accordance with Subsection 808.08. Work and materials shall be considered subsidiary to the item "Elastomeric Bearings" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION			BEARING TYPE	NO. of BRGS. EACH BENT	*MAXIMUM DESIGN LOAD (kips)	ELASTOMERIC PAD							EXTERNAL LOAD PLATE								ANCHOR BOLT				
	BENT NO(S).	UNIT	BEAM NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT (Ø x L)	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	STEEL WASHER SIZE (O.D.)
06940	1 & 9	560'	All	Exp.	17	85	11¾"	8½"	1'-2"	10"	8	½"	¼"	9 @ 12 ga.	5 5/16"	11"	2'-2"	7 7/16"	3⅛"	½"	9¾"	2"	2"	2" x 2'-10"	55	2½" x 8¾"	4" x 6"	3¾"

*Maximum Load - Service Load

SHEET 1 OF 2
DETAILS OF ELASTOMERIC BEARINGS
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

STATE OF ARKANSAS
CHRISTOPHER J. CRISWELL
REGISTERED PROFESSIONAL ENGINEER
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

DRAWN BY: LHG DATE: 02/17/14 FILENAME: bbb0114x3_ex1.dgn
CHECKED BY: CJC DATE: 05/03/14
DESIGNED BY: CGW DATE: 01/23/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 56004

JACOBS

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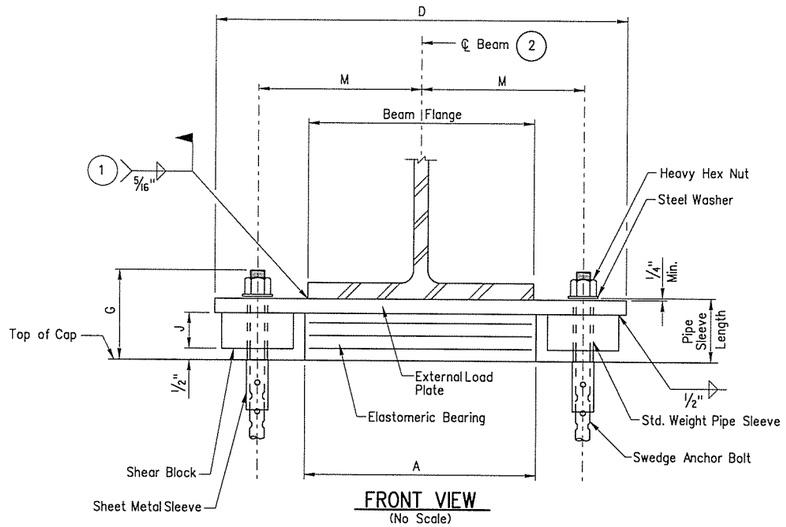
12/1/2014

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.		BB0114	61	92

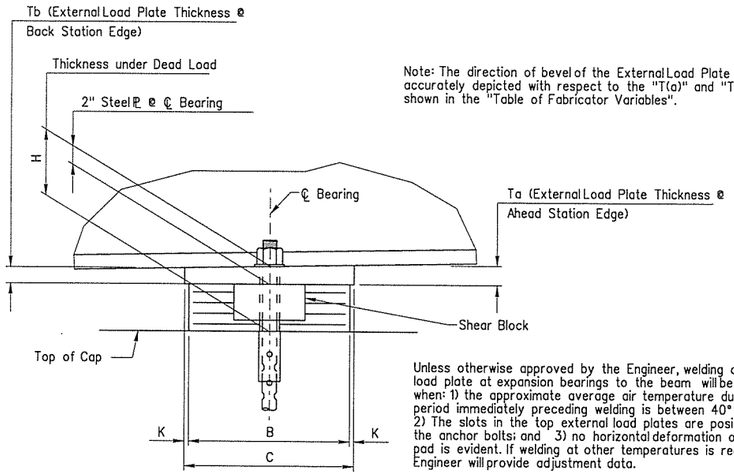
(1) 06940 - BEARING DETAILS - 56005



FRONT VIEW
(No Scale)

(1) Care shall be taken to ensure that the external load plate is in full and complete contact with the beam flange before welding begins.

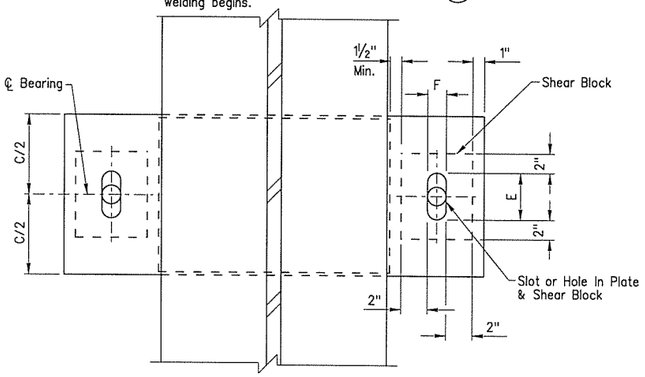
(2) ℄ Elastomeric pad shall be aligned with ℄ Beam.



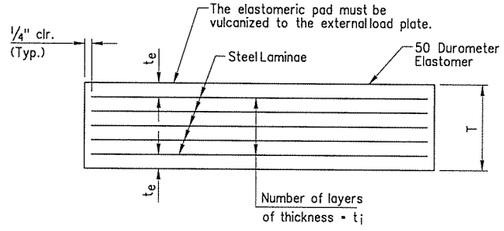
SIDE VIEW
(No Scale)

Note: The direction of bevel of the External Load Plate may not be accurately depicted with respect to the "T(a)" and "T(b)" values shown in the "Table of Fabricator Variables".

Unless otherwise approved by the Engineer, welding of the top external load plate at expansion bearings to the beam will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) The slots in the top external load plates are positioned to center on the anchor bolts; and 3) no horizontal deformation of the elastomeric pad is evident. If welding at other temperatures is required, the Engineer will provide adjustment data.

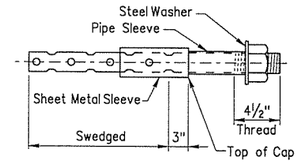


PLAN VIEW
(No Scale)



t_i = thickness of elastomer between steel laminae
t_e = thickness of elastomer cover on top and bottom of pad
N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING
(No Scale)



ANCHOR BOLT DETAIL
(No Scale)

NOTE:

Anchor Bolts may be cast in place or drilled and grouted into place. If Anchor Bolts are to be cast in place, the Galvanized Sheet Metal Sleeves will not be required.

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans, (M 270, Gr. 50W).

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 of the Standard Specifications and shall be paid for at the unit price bid for "Elastomeric Bearings."

External load plates and shear blocks shall conform to AASHTO M 270, Grade 50W and will not be paid for seperately, but will be included in the unit price bid for "Elastomeric Bearings". Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates and external load plates with shear blocks shall be completely fabricated (including bevel, bolt holes and all shop welding) and shall be cleaned before vulcanized to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(e) for unpainted Grade 50W steel.

Anchor Bolts, Washers and Nuts shall conform to Subsection 807.07 of the Standard Specifications. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)".

Bearings shall be seated in accordance with Subsection 808.08. Work and materials shall be considered subsidiary to the item "Elastomeric Bearings" and will not be paid for directly.

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION			BEARING TYPE	NO. of BRGS. EACH BENT	*MAXIMUM DESIGN LOAD (kips)	ELASTOMERIC PAD							EXTERNAL LOAD PLATE									ANCHOR BOLT				
	BENT NO(S).	UNIT	BEAM NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT (Ø x L)	GRADE	PIPE SLEEVE SIZE (Ø x L)	SHEET METAL SLEEVE SIZE (Ø x L)	STEEL WASHER SIZE (O.D.)
06940	2 & 8	560'	All	Exp.	17	166	8 5/8"	6 1/8"	1'-3"	1'-0"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	1'-1"	2'-8"	5 5/16"	2"	3 5/8"	1/2"	12"	2"	2"	1 1/4" x 1'-11"	55	1 1/4" x 6 3/8"	3" x 6"	2 1/2"
06940	3 - 7	560'	All	Fix	17	163	7 3/4"	4 15/16"	1'-2 1/2"	10"	4	1/2"	1/4"	5 @ 12 ga.	3"	11"	2'-8"	2 1/4"	2 1/4"	2 1/16"	1/2"	12"	2"	2"	1 1/2" x 2'-1"	55	1 1/2" x 5 1/4"	3" x 6"	3"

*Maximum Load = Service Load

STATE OF ARKANSAS
CHRISTOPHER J. CRISWELL
REGISTERED PROFESSIONAL ENGINEER
No. 11328
12/3/14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 2 OF 2
DETAILS OF ELASTOMERIC BEARINGS
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 02/17/14 FILENAME: bbb0114x3_ex2.dgn
CHECKED BY: CJC DATE: 05/03/14
DESIGNED BY: CGW DATE: 01/23/14 SCALE: No Scale
BRIDGE NO. 06940 DRAWING NO. 56005

JACOBS

12/1/2014 11:09:11 AM T:\Job\WLXM2600 AHTD On-Call 2011 Task Order B003\Blackfish Lake\700 CADD Files\709 Structural Files\Drawings\B106black fishBearing02.DGN

Note:
Threaded Inserts shall be cast in place in Stage 1 Approach Slab construction to accomodate the connection of Temporary Barrier. See Standard Drawing TC-4 for additional details.

The Surface Finish for Approach Slabs shall match that used on the Bridge Deck.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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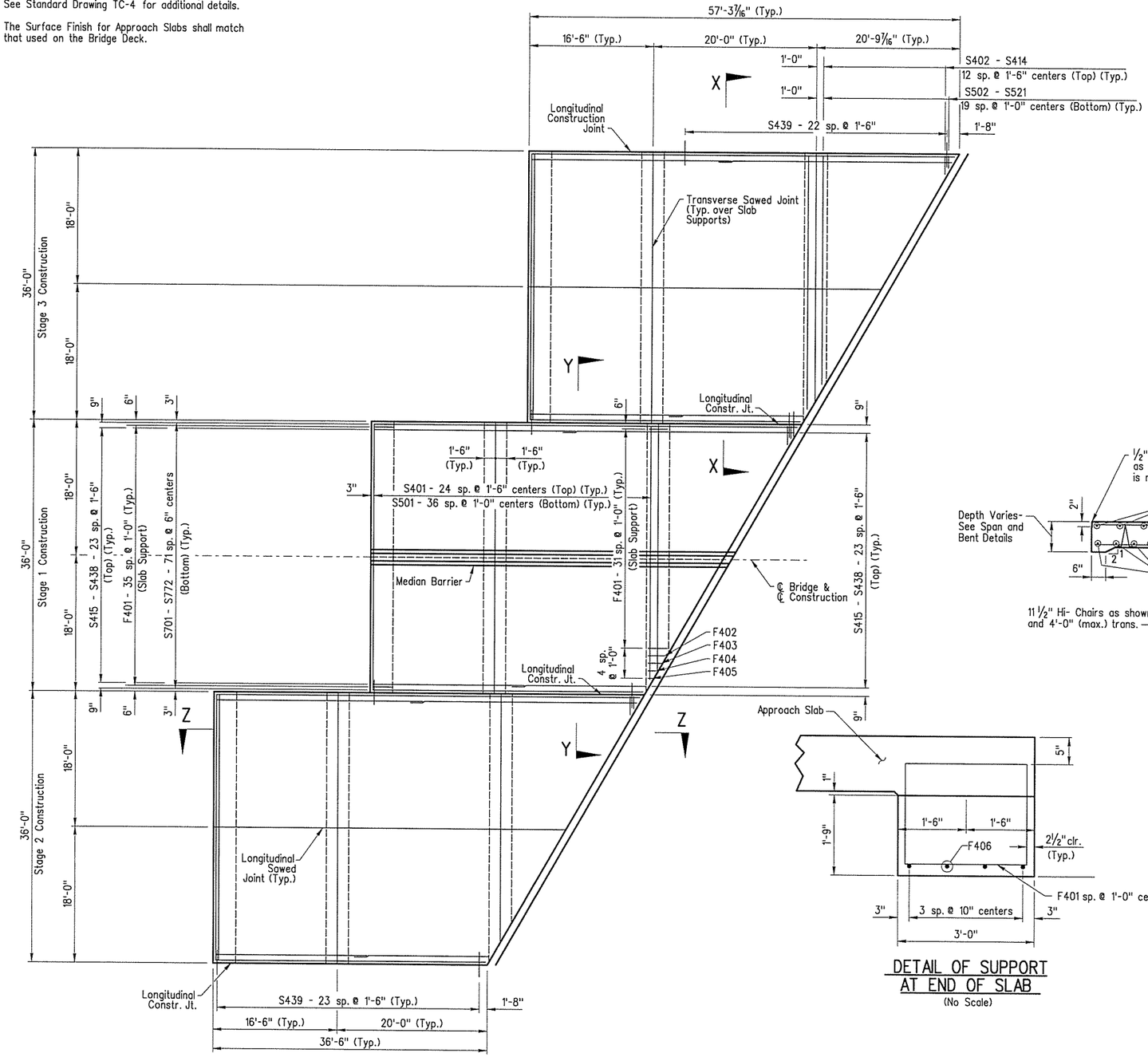
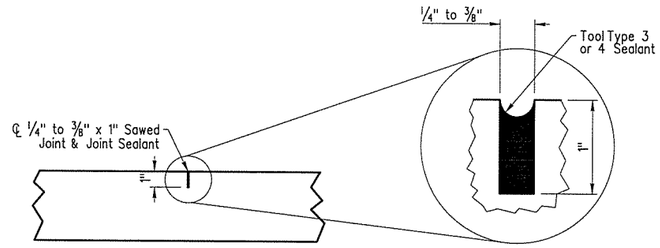
				JOB NO.		BB0114	62	92
				(1)	06940 - APPROACH SLAB - 55966B			

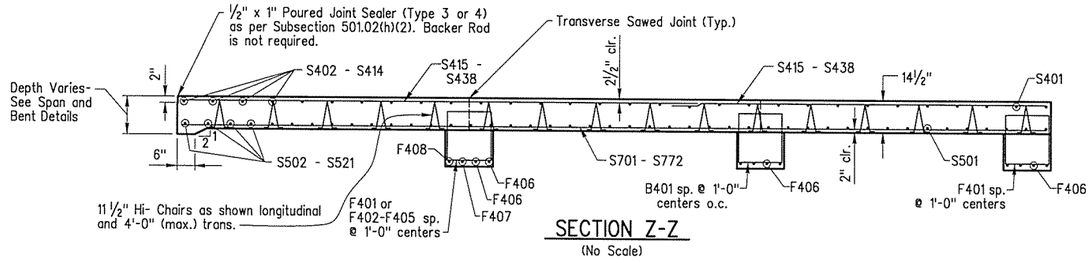


* Lap for #4 Bars = 2'-0"

PLAN OF APPROACH SLAB
(Blackfish Begin Bridge shown, End Bridge Similar)
(No Scale)

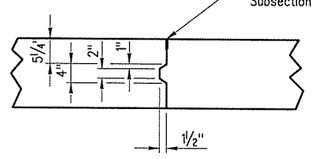


DETAIL OF SAWED LONGITUDINAL JOINT
(No Scale)

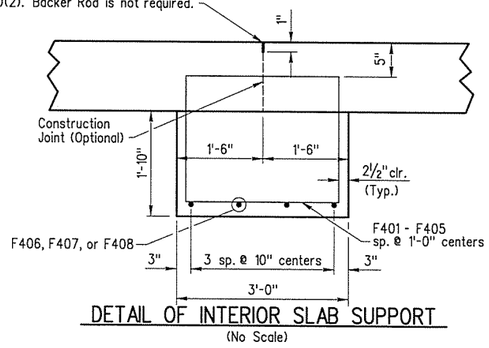


SECTION Z-Z
(No Scale)

DETAIL OF SUPPORT AT END OF SLAB
(No Scale)



DETAIL OF LONGITUDINAL CONSTRUCTION JOINT
(No Scale)



DETAIL OF INTERIOR SLAB SUPPORT
(No Scale)

Note:
For Details of Approach Gutters, see Dwg. No. 55030C.

STATE OF ARKANSAS
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JASON RANDALL SAULS
12-1-14

BRIDGE ENGINEER
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SHEET 1 OF 3
DETAILS OF TYPE SPECIAL 1 APPROACH SLABS
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY:	LHG	DATE:	2/17/14	FILENAME:	bbb0114x2_as1.dgn
CHECKED BY:	LHG	DATE:	5/26/14		
DESIGNED BY:	JRS	DATE:	2/13/14	SCALE:	No Scale
BRIDGE NO. 06940				DRAWING NO. 55966B	

JACOBS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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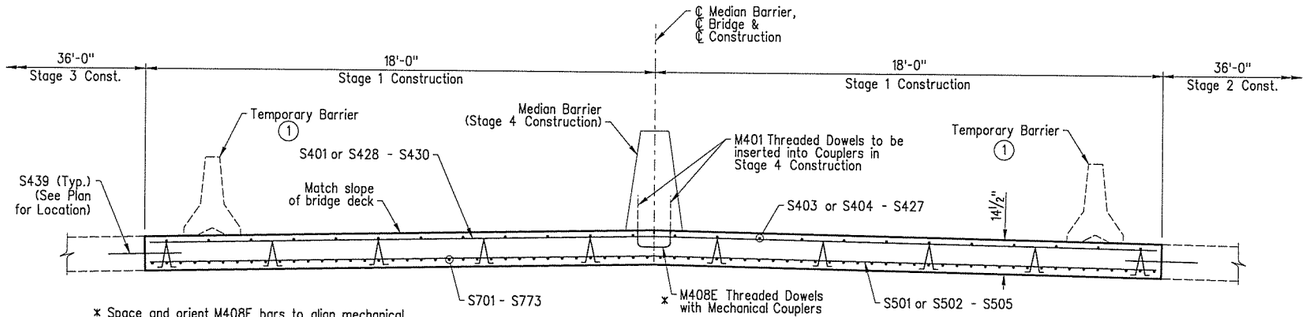
				JOB NO.		BB0114	63	92
				(1) 06940 - APPROACH SLAB - 55967B				

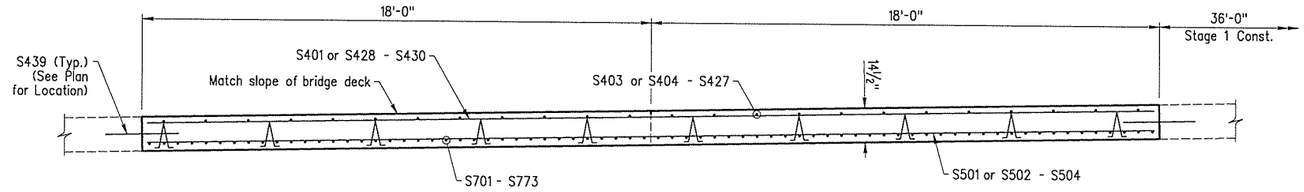


⁑ Space and orient M408E bars to align mechanical couplers with M401E bars to be installed in Stage 1 Construction. See Median Barrier on Approach Slab Details on Dwg. No. 55968B for spacing and positioning of M401E bars.

SECTION Y-Y STAGE 1 CONSTRUCTION

(No Scale)

(1) Threaded inserts shall be cast in place in Stage 1 slab construction to accomodate the connection of Temporary Barrier. See Standard Drawing TC-4 for addition details.



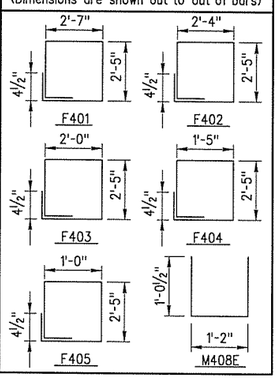
SECTION X-X STAGE 2 & 3 CONSTRUCTION

(No Scale)

DOWEL SCHEDULE	
Stage No.	"X"
1	20
2	48
3	24

BAR LIST FOR ONE STAGE TYPE SPECIAL APPROACH SLAB

	Mark	No.	Length	Pin Dia.	BENDING DIAGRAM (Dimensions are shown out to out of bars)
	S401	25	35'-8"	Str.	
	S402 to S414	1 each	2'-2" to 33'-4"	Str.	
	S415 to S438	2 each	19'-2" to 29'-0"	Str.	
(2)	S439	"X"	4'-0"	Str.	
	S501	37	35'-8"	Str.	
	S502 to S521	1 each	1'-4" to 34'-2"	Str.	
	F401	104	10'-4"	2"	
	F402	1	9'-10"	2"	
	F403	1	9'-2"	2"	
	F404	1	8'-0"	2"	
	F405	1	7'-2"	2"	
	F406	10	35'-8"	Str.	
	F407	1	34'-2"	Str.	
	F408	1	33'-2"	Str.	
	S701 to S772	1 each	36'-2" to 56'-8"	Str.	
(3)	M408E	92	3'-1"	2"	



Notes:
Bars shown are for Stage 1 Construction (one end of bridge). Stages 2 and 3 are similar except as noted in "Dowel Schedule" and do not include M408E bars.

Bar Designations Ending with "E" indicated Epoxy Coated Bars.

(2) See "Dowel Schedule" for number of bars.

(3) Ends Threaded for Mechanical Couplers. Length of vertical legs includes the length of the mechanical coupler. The actual length of vertical bar engagement into the mechanical coupler shall be determined by the mechanical coupler manufacturer, and the length of the vertical legs shall be adjusted accordingly.

GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi) and shall be poured in the dry.

Reinforcement Steel shall conform to AASHTO M31 or M322, Grade 60 (fy = 60,000 psi), Type A, with mill test reports.

Approach Slabs will be measured and paid for in accordance with Section 504 of the Standard Specifications.

QUANTITIES FOR ONE APPROACH SLAB

(All Stages, including Median Barrier on one Approach Slab.)

Reinforcing Steel (lbs.)	Epoxy-Coated Reinforcing Steel (lbs.)	Concrete (cubic yds)
		T-14½"
33,494	1188	300.55 ⁑⁑

⁑⁑ Includes 8.30 Cu. Yds. for the Median Barrier.

For details of Median Barrier, see Drawing No. 55968B.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 12981 JASON RANDALL SICILIN 12-1-14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 2 OF 3
DETAILS OF TYPE SPECIAL 1 APPROACH SLABS
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG DATE: 2/17/14
CHECKED BY: LHG DATE: 5/26/14
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SCALE: No Scale
DRAWING NO. 55967B

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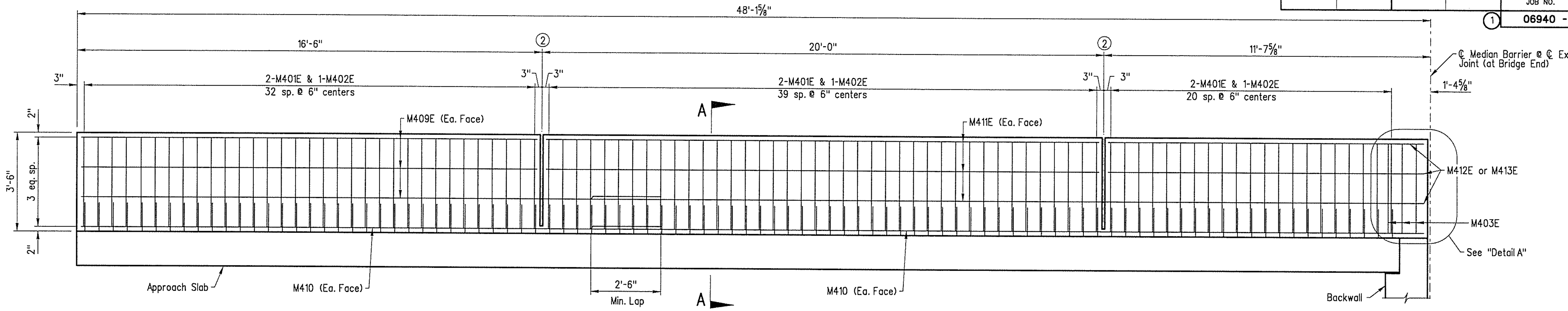
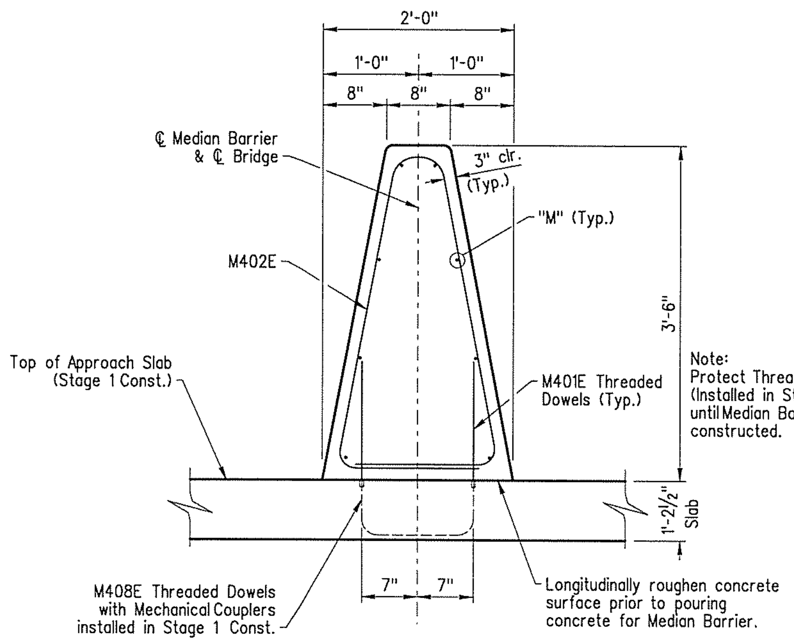


② ℄ Full Depth Median Barrier Joint (1/4" to 1" max.) Stop 4" above Top of Approach Slab.

ELEVATION - MEDIAN BARRIER ON APPROACH SLAB

Stage 4 Construction
(No Scale)



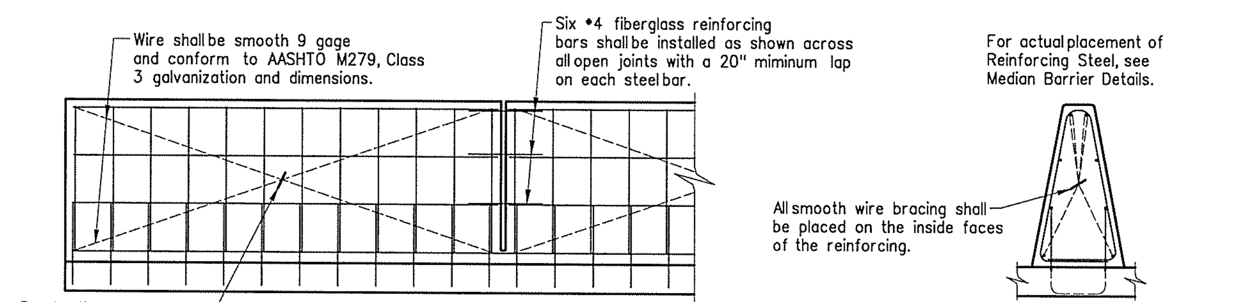
Note:
Protect Threads in Couplers (Installed in Stage 1 Const.) until Median Barrier is constructed.

SECTION A-A

(No Scale)

Note:
The Threaded Dowel and Coupler Assembly shall consist of a QPL Approved Mechanical Splice with Protective Cap and Threaded Dowel Bars (M401E and M408E) as shown and shall develop at least 125% of the yield strength of the Dowel Bars.

Note:
M401E and M408E Dowel Bars shall be a minimum 60 ksi Yield Strength and Threaded as required. Threaded Dowel and Coupler Assembly, except mating surfaces, shall be Epoxy Coated in accordance with the requirements of Section 804.

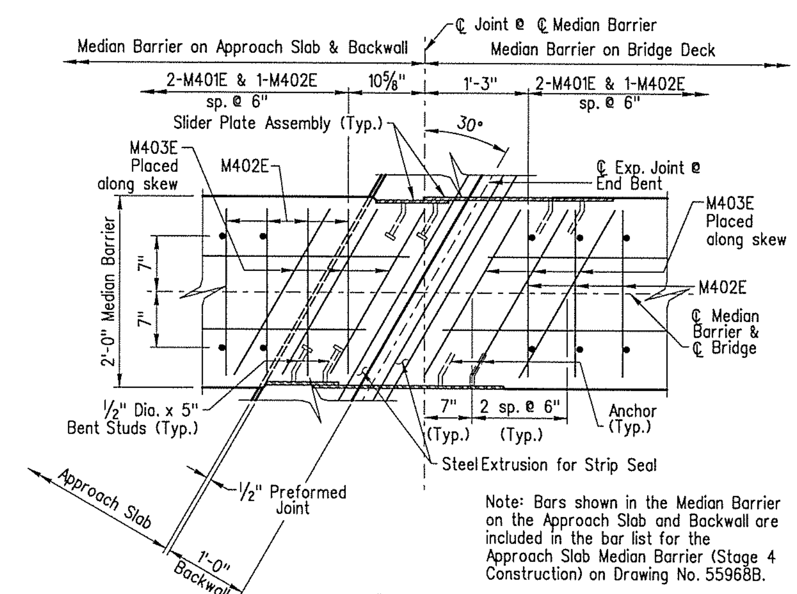


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE MEDIAN RAIL

(No Scale)



Note: Bars shown in the Median Barrier on the Approach Slab and Backwall are included in the bar list for the Approach Slab Median Barrier (Stage 4 Construction) on Drawing No. 55968B.

DETAIL A

(No Scale)

GENERAL NOTES

CONCRETE: All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

REINFORCING STEEL: All reinforcing steel shall conform to AASHTO M31 or M322 Type A. Mill test reports shall be submitted.

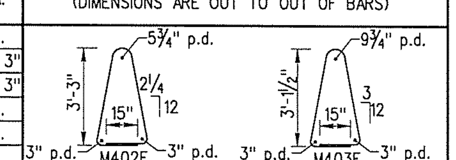
All structural steel for the Median Barrier Slider Plates, Bent Studs, and Slider Plate Anchors shall be AASHTO M270, Gr. 50W unless otherwise noted. Structural steel completely embedded in concrete need not be painted.

All structural steel for the Median Barrier Slider Plates and Bent Studs shall be paid for as "STRUCTURAL STEEL IN BEAM SPANS (M270, Gr. 50W)".

Details of the Proposed Slider Plate Assembly for the Median Barrier shall be submitted to and approved by the Engineer prior to fabrication of the structural steel at the expansion device.

(1) One end threaded for mechanical coupler. Length of bar does not include any additional length for engagement into mechanical coupler. The actual length of bar engagement into the mechanical coupler shall be determined by the mechanical coupler manufacturer, and the length of the bar shall be adjusted accordingly.

BAR LIST STAGE 4 CONSTRUCTION

MARK	NO. REQ'D	LENGTH	PIN DIA.	BENDING DIAGRAMS (DIMENSIONS ARE OUT TO OUT OF BARS)
(1) M401E	184	1'-1"	Str.	
M402E	92	9'-7"	5 3/4", 3"	
M403E	3	10'-4"	9 3/4", 3"	
M409E	6	16'-2"	Str.	
M410E	4	25'-6"	Str.	
M411E	6	19'-8"	Str.	
M412E	3	11'-4"	Str.	
M413E	3	10'-8"	Str.	

Notes:
Bar designations with "E" indicates epoxy coated bars.

Bars shown are for Stage 4 Construction, Median Barrier on Approach Slabs (one end of Bridge).

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 12981
JASON RANDALL STULIN
12-1-14

BRIDGE ENGINEER
PRINT DATE: 12/1/2014

SHEET 3 OF 3
DETAILS OF TYPE SPECIAL 1 APPROACH SLABS
BRIDGE OVER BLACKFISH LAKE
ST. FRANCIS COUNTY
ROUTE 40 SECTION 51
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

DRAWN BY: LHG	DATE: 02/17/14	FILENAME: bbb0114x2_as3.dgn	
CHECKED BY: LHG	DATE: 05/26/14		
DESIGNED BY: JRS	DATE: 02/13/14	SCALE: No Scale	
BRIDGE NO. 06940		DRAWING NO. 55968B	

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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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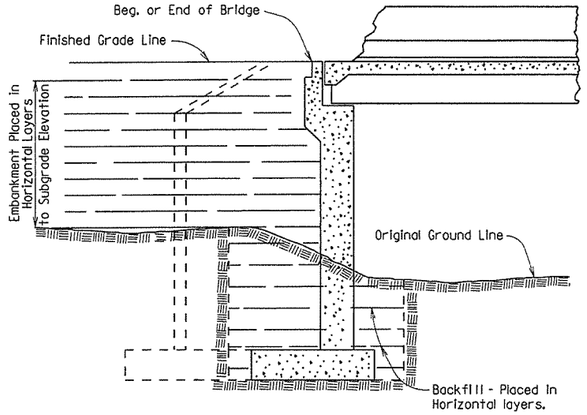
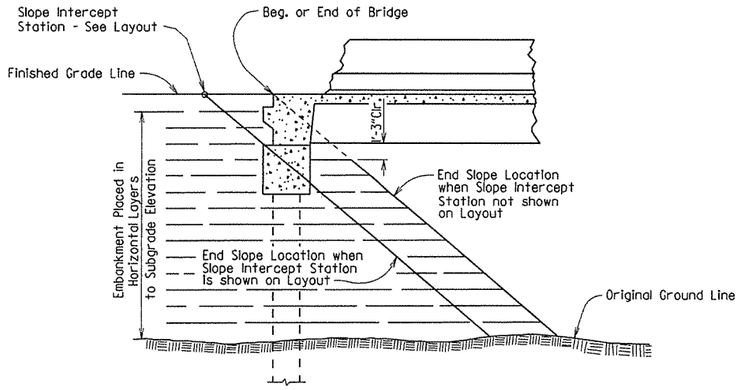
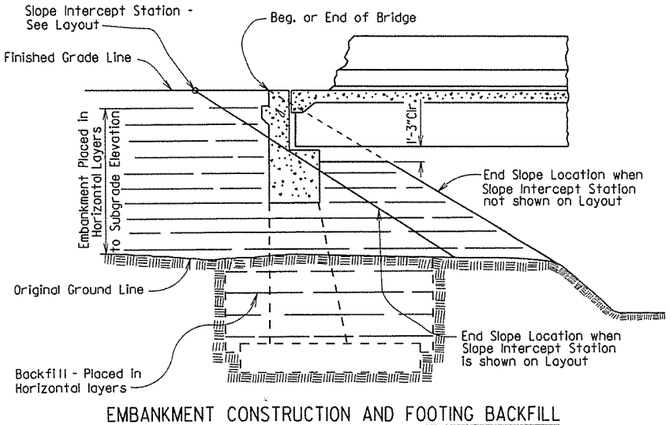


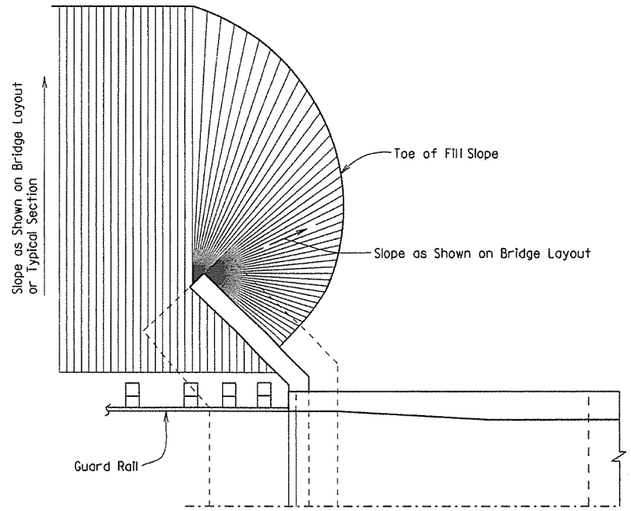
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



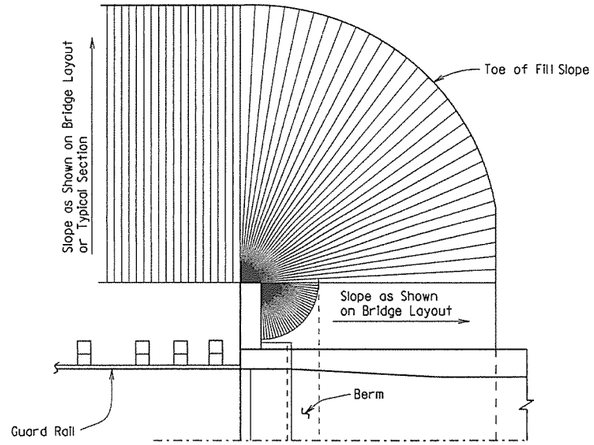
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



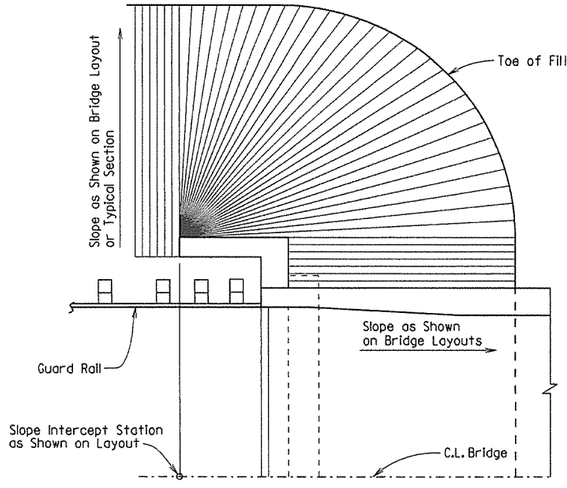
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



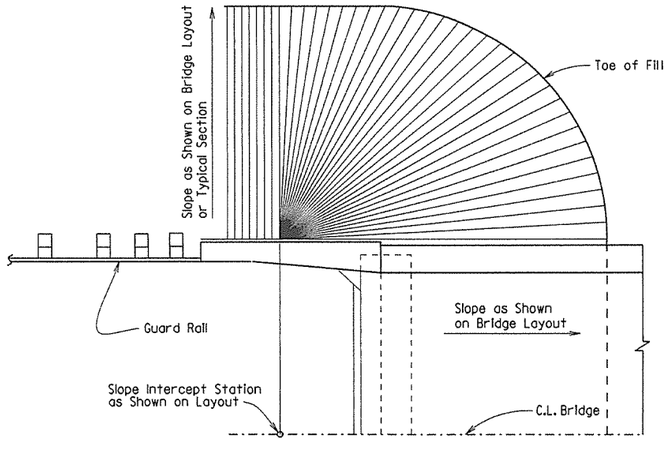
VERTICAL WALL ABUTMENTS



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.

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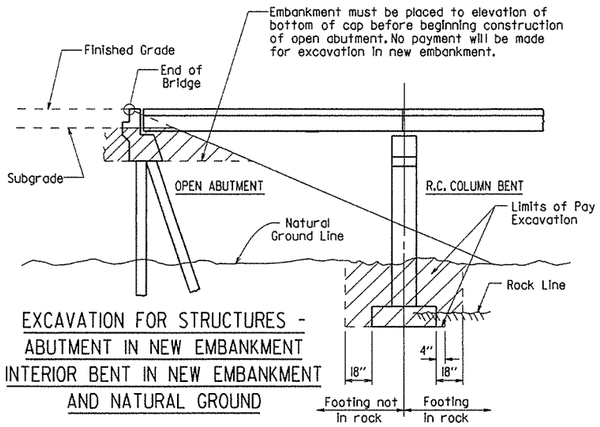
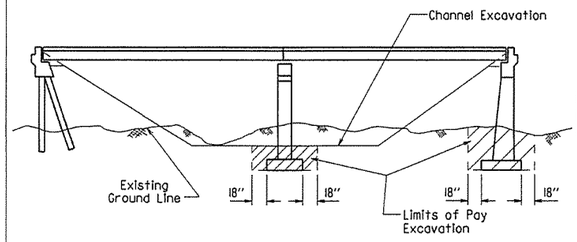
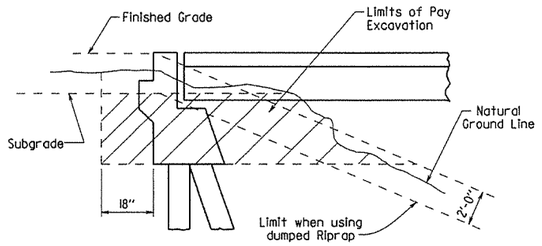


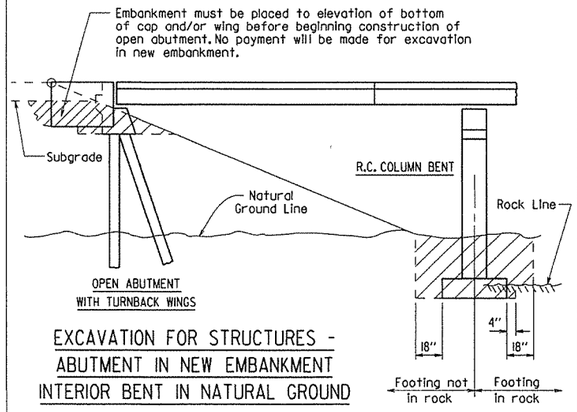
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



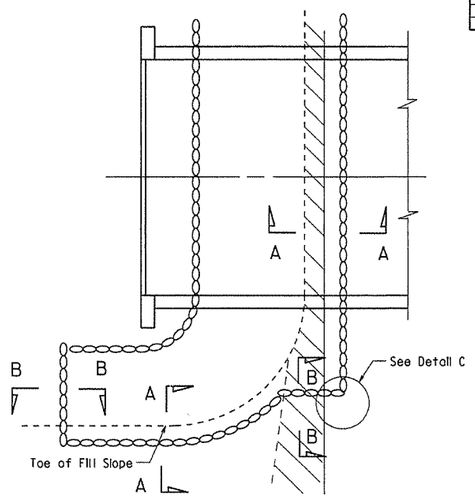
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



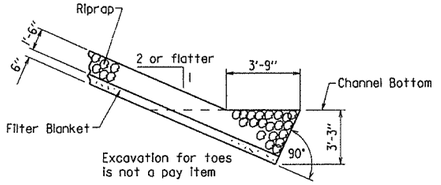
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



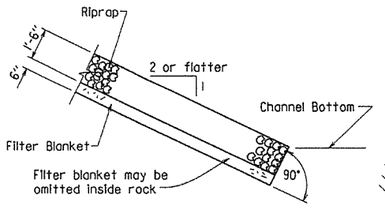
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



PLAN OF DUMPED RIPRAP



SECTION A-A
(Toe Excavation in Soil)

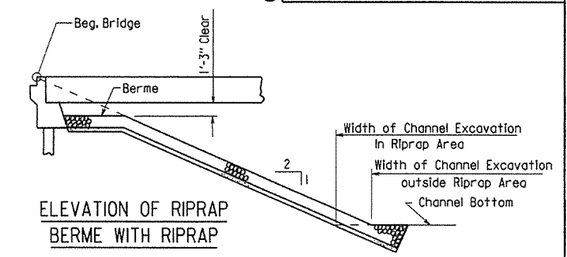


SECTION A-A
(Toe Excavation in Rock)

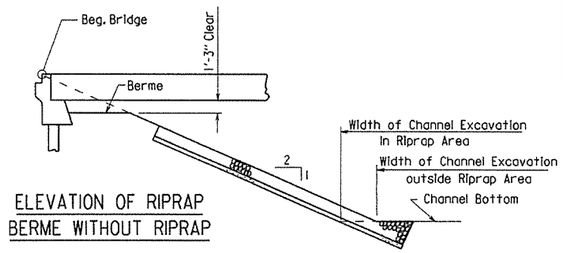
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

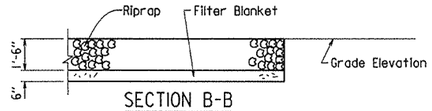
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



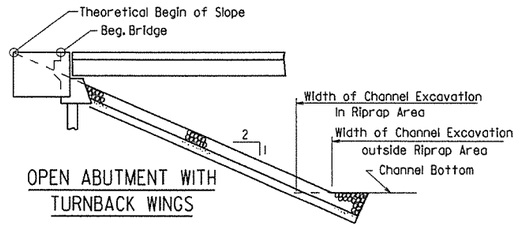
ELEVATION OF RIPRAP BERME WITH RIPRAP



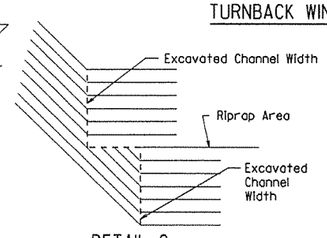
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



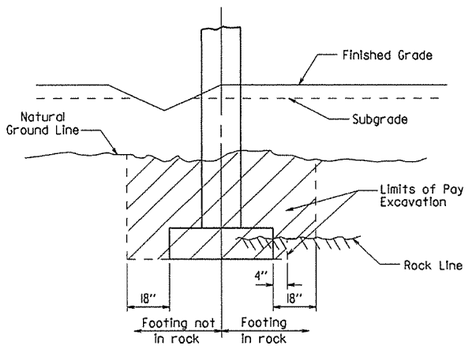
SECTION B-B



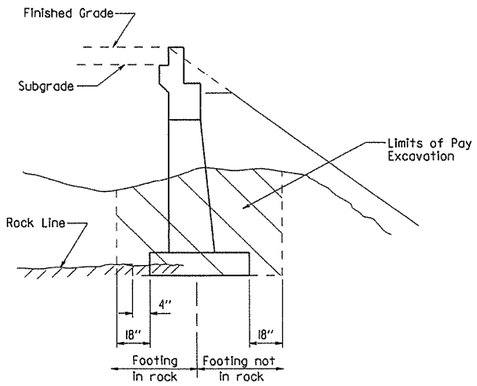
OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C



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

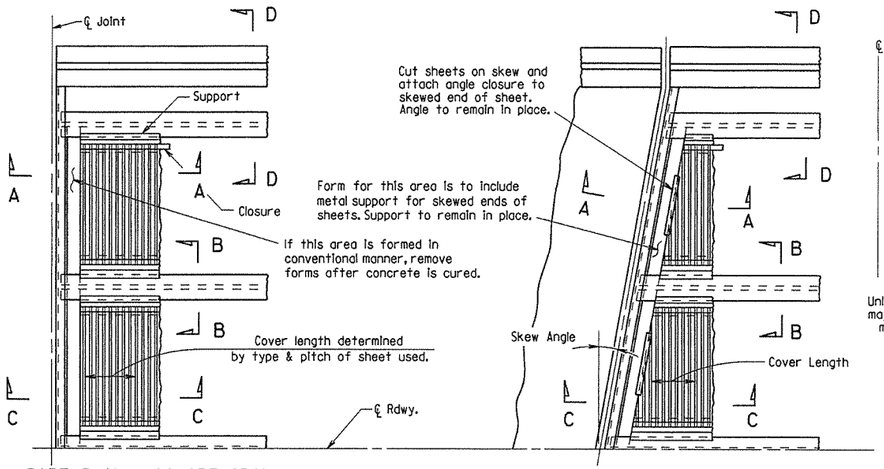
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

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.		107	
				JOB NO.				

(1) BRIDGE DECK FORMS 55005

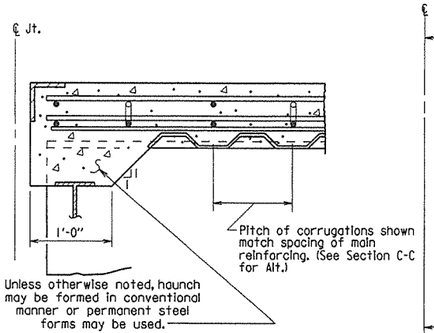


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

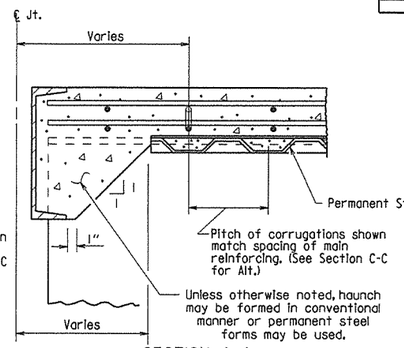
3/8" = 1'-0"



SECTION A-A

N.T.S.

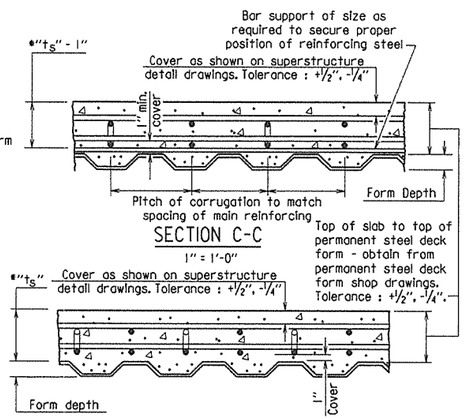
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



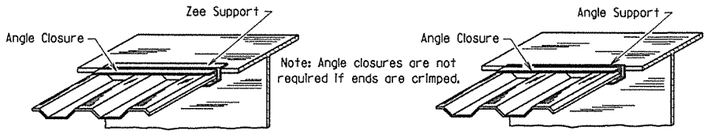
SECTION C-C

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.

*t_s = slab thickness as shown on superstructure detail drawings.

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.

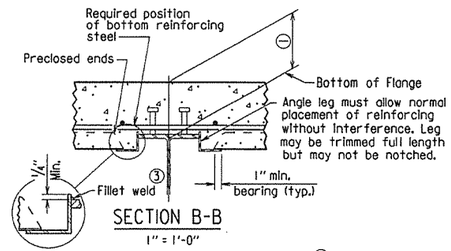
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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.

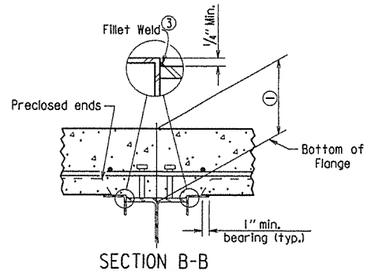


SECTION B-B

1" = 1'-0"

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

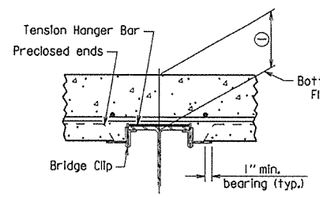
(3) Minimum weld: 1/8" x 1' @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

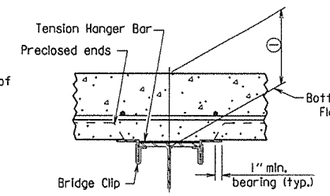
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

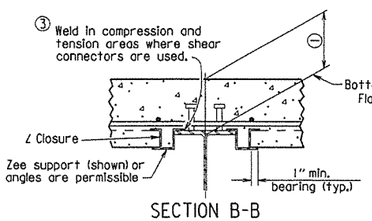
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

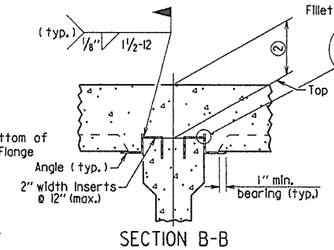
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

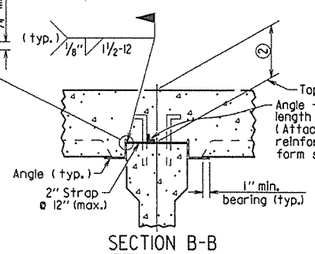


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

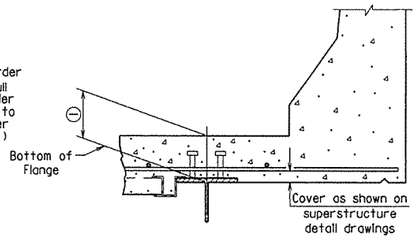


SECTION B-B

(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 = $t_s + 1\frac{3}{4}"$ + 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.

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: —

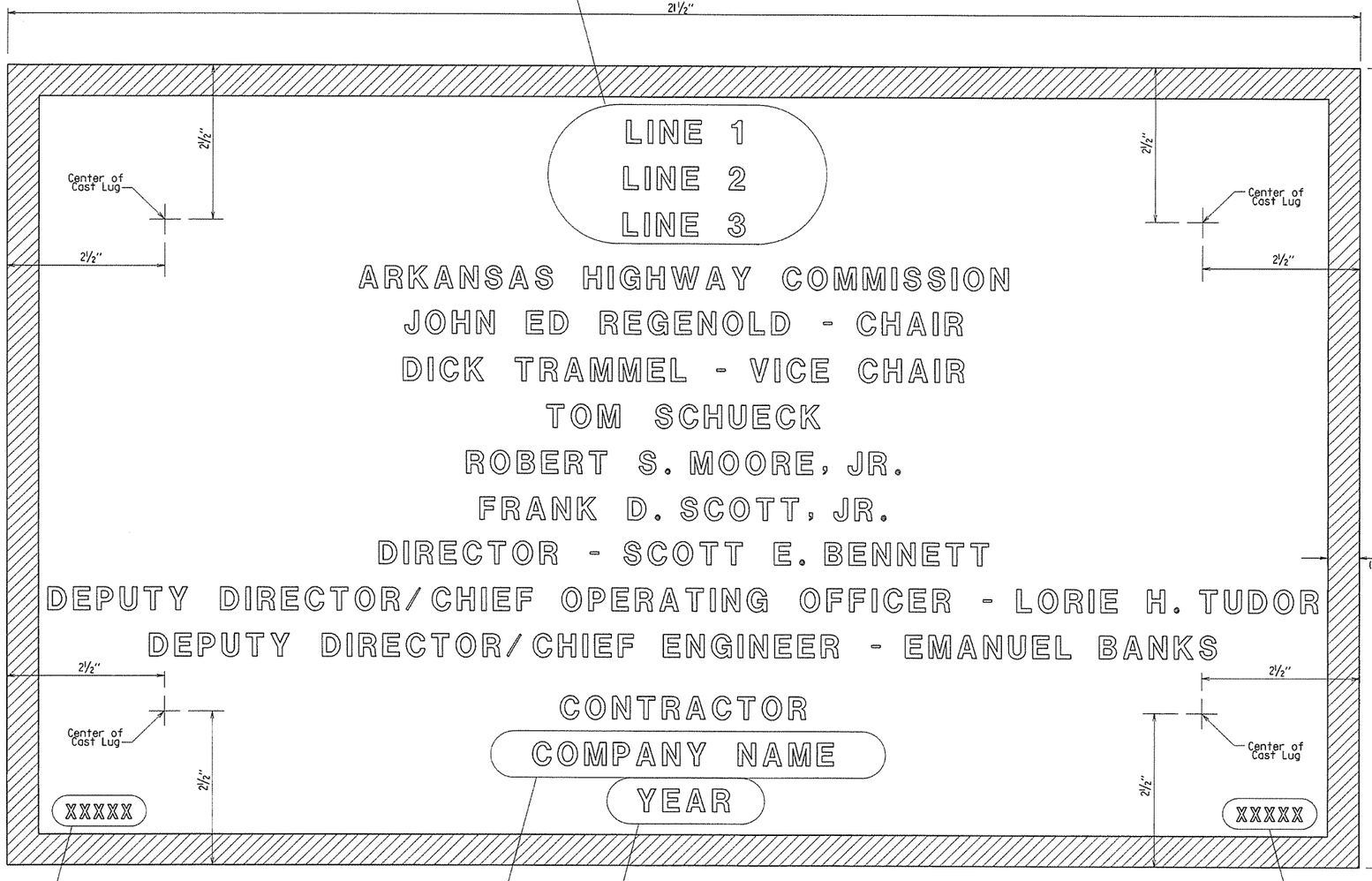
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.		68	
				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	



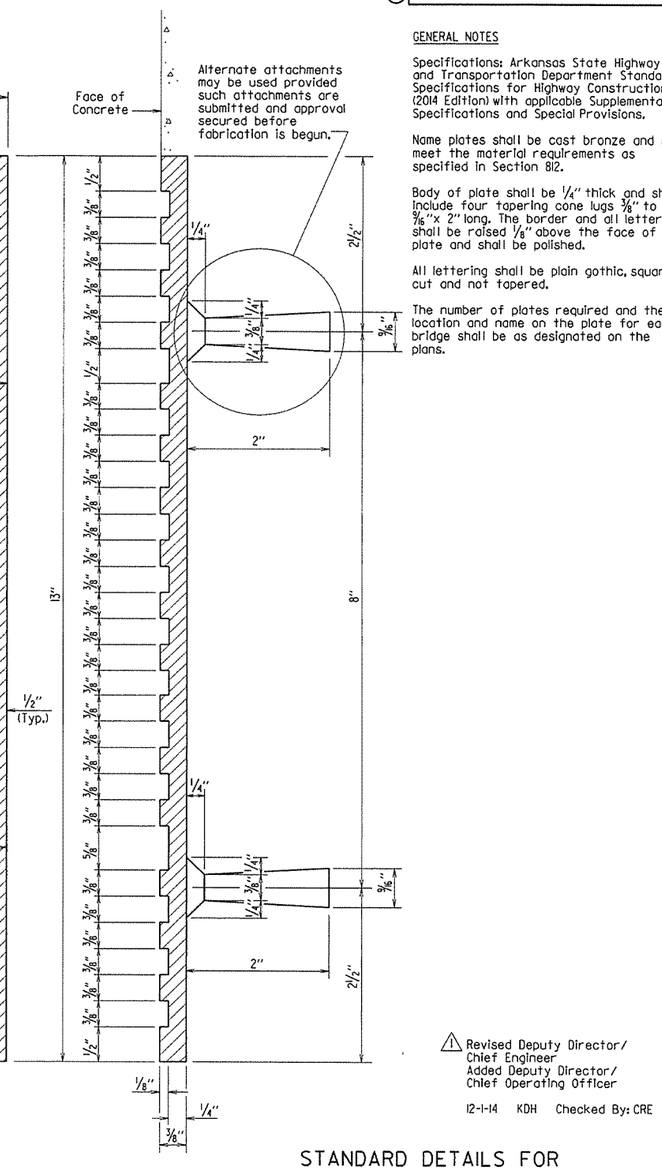
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

Place the Bridge number here using 1/8" raised letters and numerals 1/4" high. Examples : AI234
05432

TYPICAL BRIDGE NAME PLATE



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.

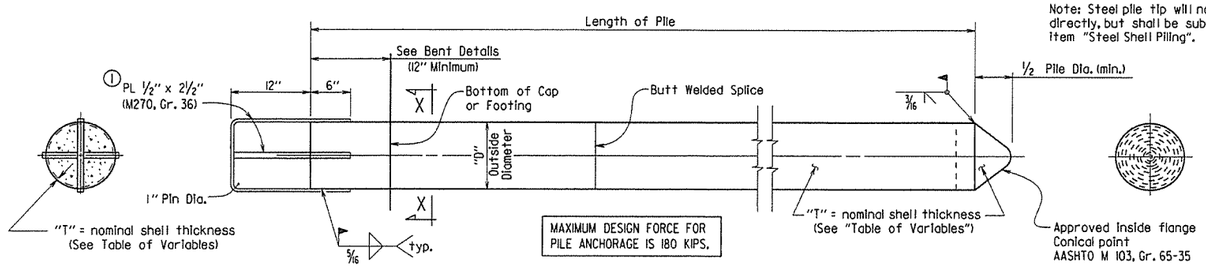
⚠1 Revised Deputy Director/ Chief Engineer
Added Deputy Director/ Chief Operating Officer
12-1-14 KDH Checked By: CRE

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

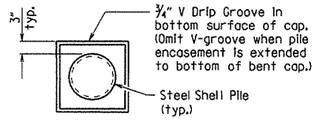


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

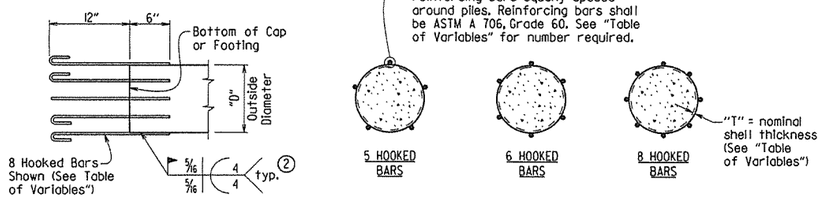
CONCRETE FILLED STEEL SHELL PILE

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.

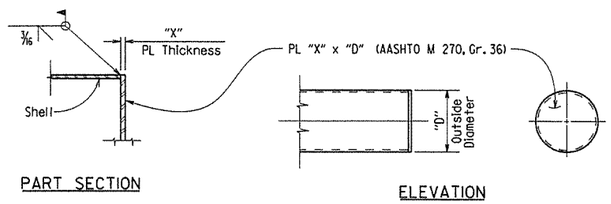


VIEW X-X



ALTERNATE PILE ANCHORAGE DETAIL

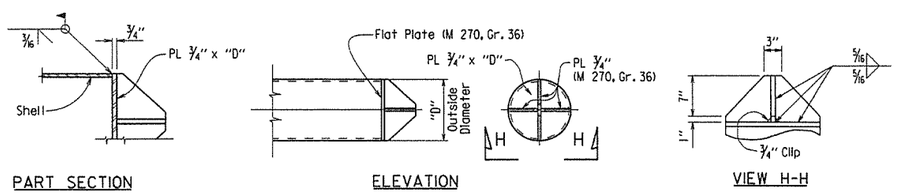
Note: Hooked bars shall be oriented to provide the required concrete clearances shown in the plans.



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 SHEETS:

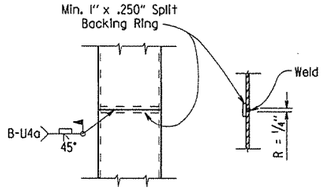
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

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.

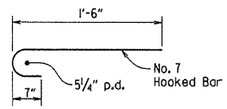
Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".



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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		69	
				JOB NO.				
				①	STEEL SHELL PILES		55021	

GENERAL NOTES FOR PILE ENCASEMENTS:

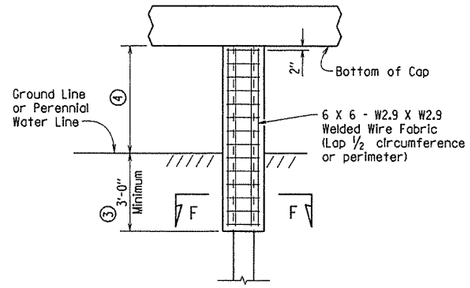
See Bridge Layout for additional notes and required location of pile encasements.

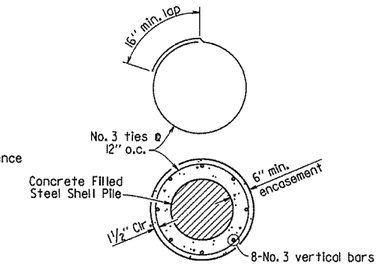
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

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

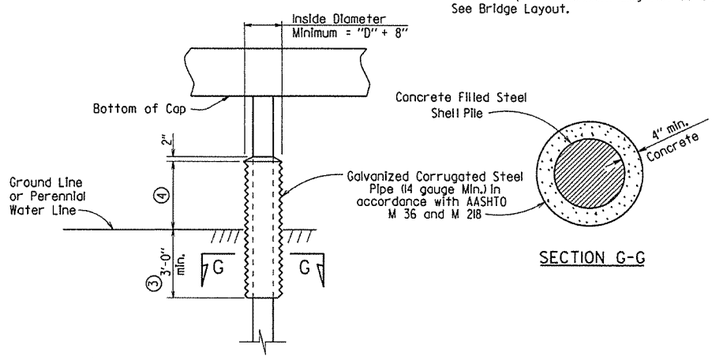
⑤ (Shown with Encasement to Bottom of Cap)

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

⑥ ALTERNATE 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

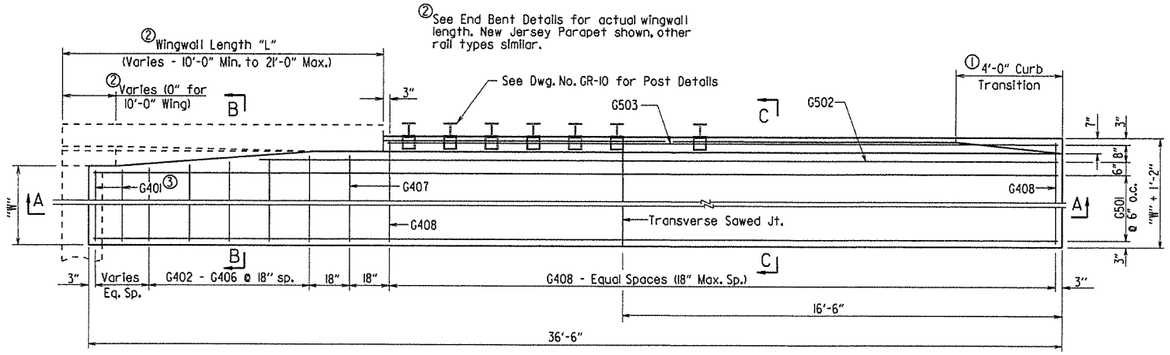
STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

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: —

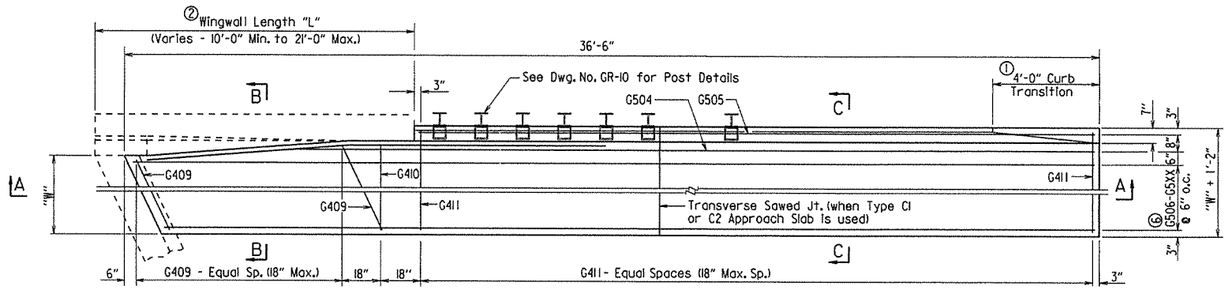
DRAWING NO. 55021

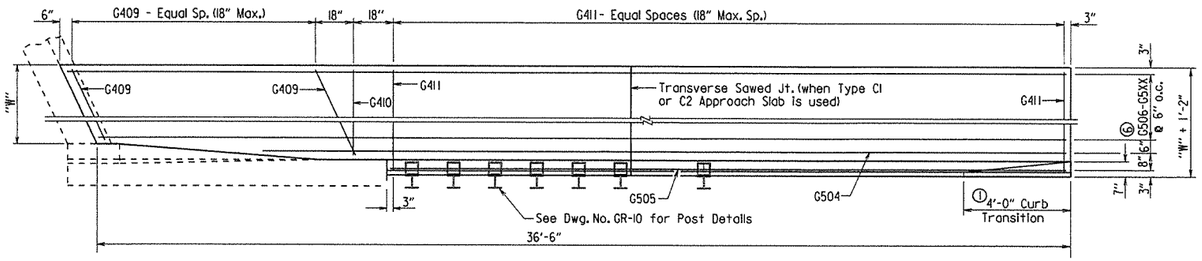
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		70	
				JOB NO.				
				①	TYPE C GUTTERS		55030C	



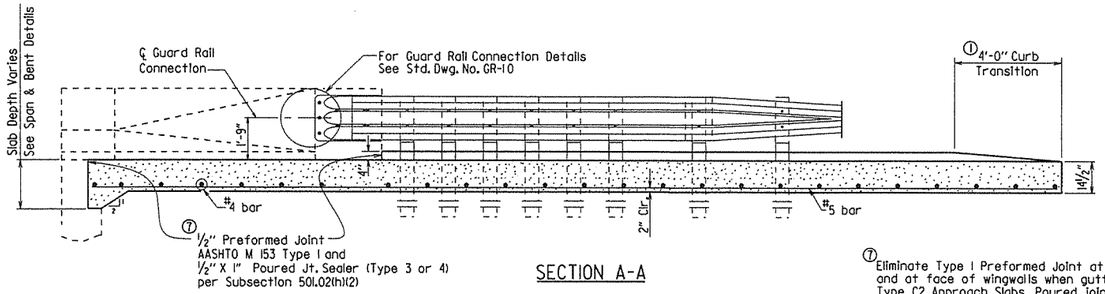
③Provide G401 bars @ 18" max. spacing. Number of G401 bars vary with wingwall length. No G401 bars required for 10'-0" wingwalls.

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





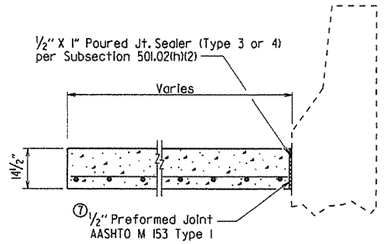
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



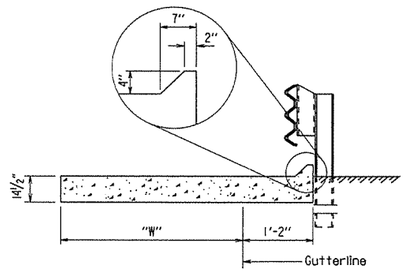
SECTION A-A

①Construct 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.

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.

⑦Eliminate Type 1 Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type C2 Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

BAR LIST FOR ONE TYPE C GUTTER

	Mark	No. Req'd. for Width "W" 4'-0"	6'-0"	8'-0"	10'-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	④	④	④	④	"W"+ 10"
	G501	8	12	16	20	36'-2"
	G502	1	1	1	1	(41'-11") - "L"
	G503	1	1	1	1	(37'-2") - "L"
Skewed Bridge	G409	④	④	④	④	⑤
	G410	1	1	1	1	"W"+3"
	G411	④	④	④	④	"W"+ 10"
	G504	1	1	1	1	⑤
	G505	1	1	1	1	⑤
	G506 - G5XX ⑥	1 each	1 each	1 each	1 each	⑤

④No. Req'd. varies with Skew and Wingwall Length.

⑤Bar Lengths vary with Skew and Wingwall Length.

⑥G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'
G525 for "W" = 10'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
4	445	8.30
6	630	11.55
8	810	14.80
10	995	18.10

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

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.

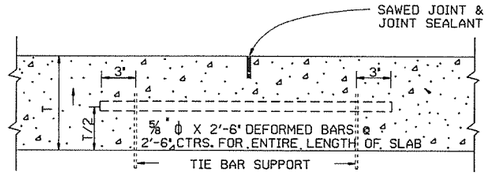
STANDARD DETAILS FOR TYPE C APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

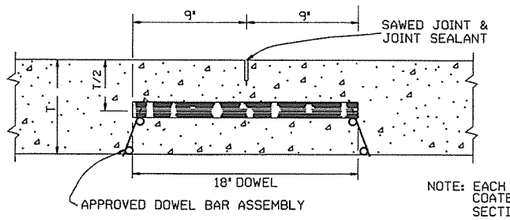
DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030c.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0"
DESIGNED BY: STD. DATE: or As Shown

DRAWING NO. 55030C



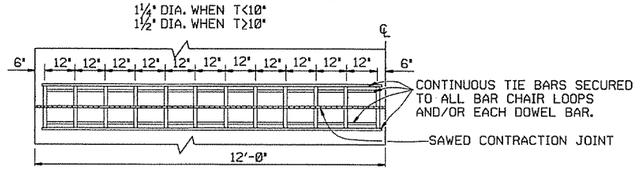
LONGITUDINAL JOINT

NOTE: THE TIE BAR SUPPORT SHOWN ABOVE MAY BE ELIMINATED IF OTHER APPROVED METHODS FOR PLACING AND SUPPORTING THE TIE BARS ARE PROVIDED.
TIE BARS SHALL BE 15' FROM TRANSVERSE JOINTS.



NOTE: EACH DOWEL TO BE COATED ACCORDING TO SECTION 502 OF THE STANDARD SPECIFICATIONS.

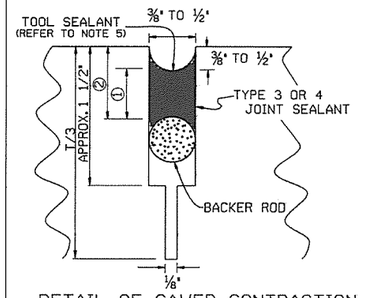
ROUND STEEL BAR DOWEL
1¼" DIA. WHEN T<10"
1½" DIA. WHEN T≥10"



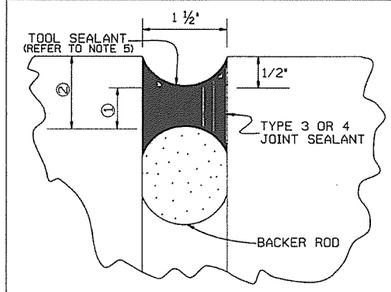
ONE-HALF 24' PAVEMENT
12 DOWELS
PLAN

NOTE: FOR 20' PAVEMENT USE 20 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 15' PAVEMENT USE 15 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR 26' PAVEMENT USE 26 DOWELS @ 12" CTRS. WITH 6" SPACING FROM C.L. AND EDGE OF SLAB TO FIRST BAR. FOR PAVEMENT WIDTHS OTHER THAN THOSE SHOWN ABOVE, USE DOWELS AT 12" CTRS. WITH 6" MAX. SPACING FROM C.L. TO FIRST BAR. DISTANCE FROM EDGE OF SLAB TO FIRST BAR SHALL BE ADJUSTED TO MAINTAIN 12" DOWEL BAR SPACING

CONTRACTION JOINT DETAILS



DETAIL OF SAWED CONTRACTION JOINT



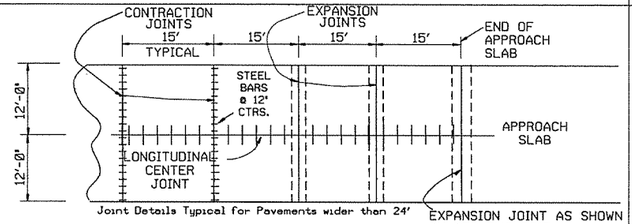
DETAIL OF EXPANSION JOINT

JOINT CONFIGURATION FOR
TYPE 3 OR 4 JOINT SEALANT

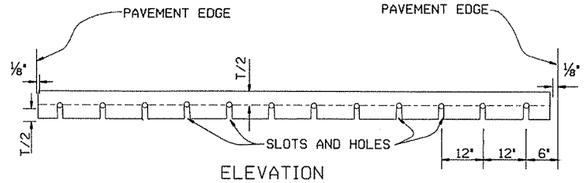
JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
¼	¼	⅜	½
⅜	¼	½	½
½	¼	½	½
⅝	⅜	⅝	⅝
¾	⅜	¾	⅝
⅞	½	⅞	¾
1 ½	¾	2	1 ¼

JOINT CONFIGURATION FOR
TYPE 5 JOINT SEALANT

JOINT WIDTH	SEALANT THICKNESS ①	BACKER ROD DIAMETER	BACKER ROD PLACEMENT DEPTH ②
INCHES			
¼	½	⅜	¾
⅜	¾	½	1

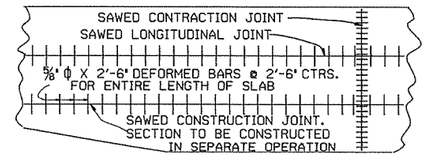


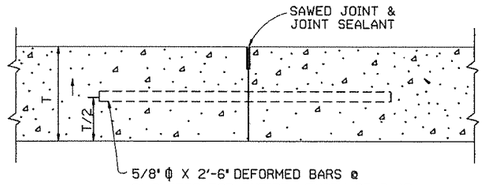
PLAN SHOWING EXPANSION JOINTS AT BRIDGE APPROACH SLABS



ELEVATION

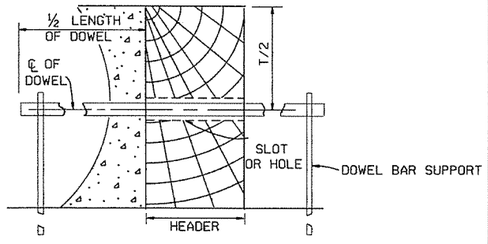
NOTE: ALL DOWEL BARS SHALL CONFORM TO THE DETAILS FOR CONTRACTION JOINTS.





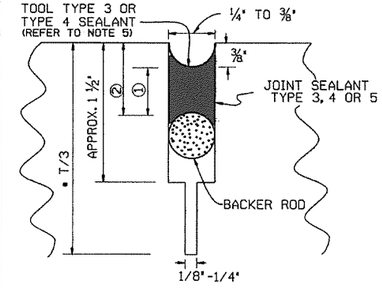
NOTE: TIE BARS SHALL BE 15' FROM TRANSVERSE JOINTS.

LONGITUDINAL CONSTRUCTION JOINT



SECTION

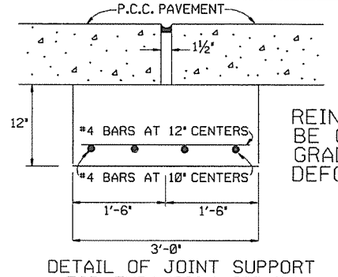
TRANSVERSE
CONSTRUCTION JOINT



*NOTE: T/3 SAW CUT NOT REQUIRED FOR LONGITUDINAL CONSTRUCTION JOINT.

DETAIL OF SAWED
LONGITUDINAL JOINT
AND LONGITUDINAL CONSTRUCTION JOINT

DATE	REVISION	DATE FILMED
5-25-06	ADDED GENERAL NOTE 7	
10-9-03	REMOVED TIE BAR COATING & REVISED GENERAL NOTES	
11-16-01	ADDED TOOL SEALANT AND NOTE 5; REVISED NOTE 3	
4-26-96	REVISED CONTRACTION JOINT NOTE	
11- 3-94	ADDED NOTE RE: REINF. BARS	
4- 1-93	REVISED DOWEL BARS & GEN. NOTES	4- 1-93
10- 1-92	REVISED DOWEL SPACING	10- 1-92
8- 15-91	ADDED SPAC FOR CONTR JTS & DEL KEYWAY	
05-24-90	REVISED TIE BAR, DOWEL & JOINT SIZE	
01-25-90	ADDED EXPANSION JOINT	01-25-90
11-30-89	CHANGED T/4+1 TO T/3+1	11-30-89
03-23-89	ALTERED SAWED JOINT & ADDED NOTE	512-03-23-89
07-15-88	REVISED AND REDRAWN	632-07-15-88



DETAIL OF JOINT SUPPORT
FOR EXPANSION JOINTS

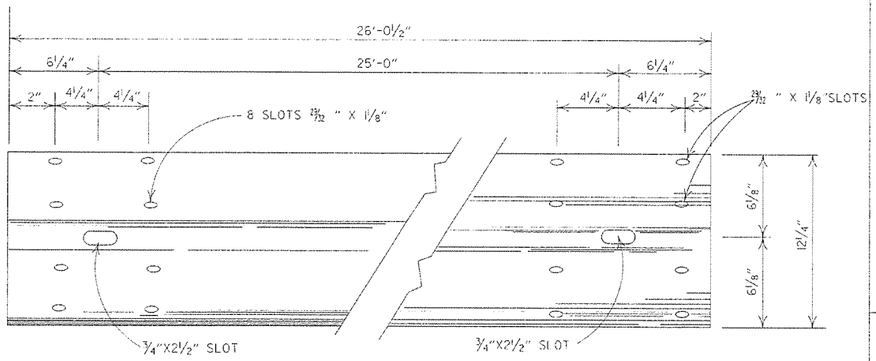
REINFORCING SHALL BE GRADE 40 OR GRADE 60 DEFORMED BARS.

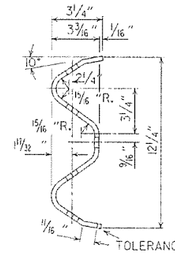
GENERAL NOTES
1. 'T' DENOTES THICKNESS OF SLAB.
2. DOWEL BARS SHALL BE PLACED IN ACCORDANCE WITH THE DIMENSIONS SHOWN. A TOLERANCE OF PLUS OR MINUS ONE INCH WILL BE ALLOWED FOR THE VERTICAL AND LATERAL PLACEMENT AND A TOLERANCE OF PLUS OR MINUS ¼" WILL BE ALLOWED FOR THE TILT AND SKEW. DOWEL BARS SHALL BE FIELD COATED FOR A MINIMUM DISTANCE OF 2" GREATER THAN HALF THE LENGTH OF THE BAR WITH AN APPROVED GREASE AS A BOND BREAKER JUST PRIOR TO PLACEMENT OF CONCRETE.
3. THE EXPANSION JOINT SUPPORT MAY BE CONSTRUCTED WITH CLASS 'A', 'S' OR PAVING CONCRETE. PAYMENT FOR THE JOINT SUPPORT SHALL BE FOR THE CONTRACT UNIT PRICE BID FOR THE CLASS OF CONCRETE SPECIFIED IN THE PLANS. PAYMENT FOR ALL OTHER WORK AND MATERIALS REQUIRED FOR THE CONSTRUCTION OF THE JOINT SUPPORT SHALL BE INCLUDED IN THE PRICE BID FOR THE ABOVE ITEMS.
4. CONTRACTION JOINTS SHALL BE CONSTRUCTED ON 15' CENTERS.
5. TOOLING NOT REQUIRED FOR SELF-LEVELING SILICONE.
6. UNLESS OTHERWISE SPECIFIED IN THE PLANS, CONCRETE SHOULDERS SHALL BE CONSTRUCTED ACCORDING TO THE DETAILS SHOWN HEREON. CONTRACTION JOINTS SHALL MATCH CONTRACTION JOINTS IN THE LANES.
7. TIE WIRES IN DOWEL BAR ASSEMBLIES SHALL NOT BE CUT PRIOR TO PLACEMENT OF PAVING CONCRETE.

ARKANSAS STATE HIGHWAY COMMISSION

TRANSVERSE & LONGITUDINAL JOINTS
FOR CONCRETE PAVEMENT (NON-REINFORCED)

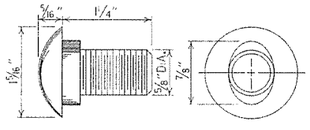
STANDARD DRAWING CPTJ - 6A



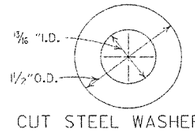


DETAILS OF W-BEAM GUARD RAIL

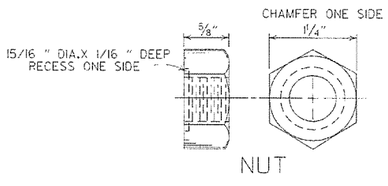
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



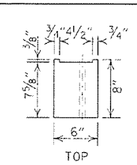
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

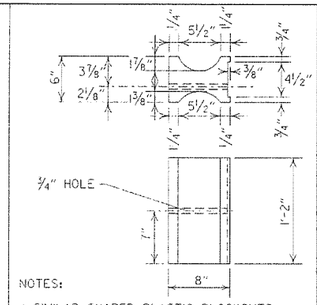


NUT



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

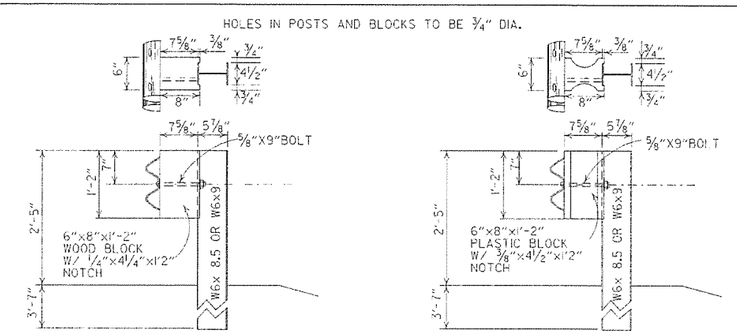
WOOD BLOCKOUT (W-BEAM)



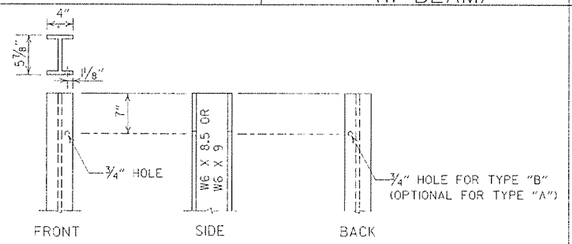
NOTES:

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.

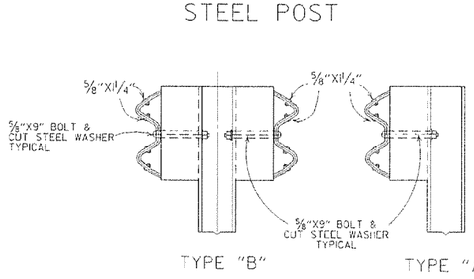
PLASTIC BLOCKOUT (W-BEAM)



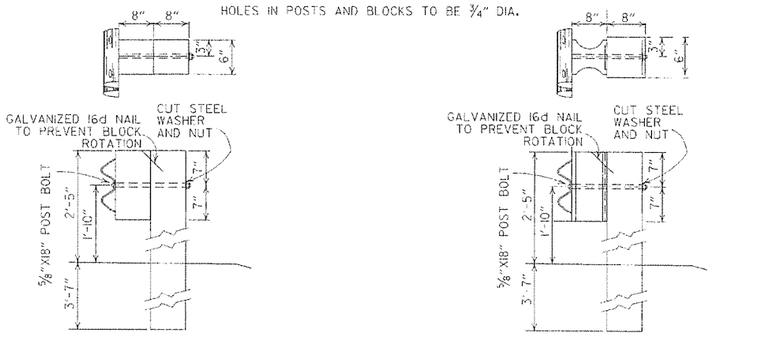
DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



DETAILS OF WOOD 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 3/4" 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.

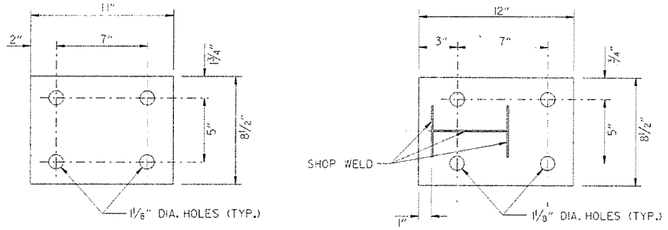
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

DATE	REVISION	DATE FILM
7-14-10	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	8-15-91
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

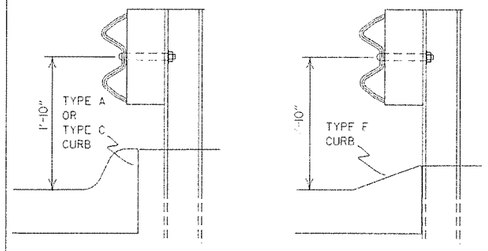
STANDARD DRAWING GR-8



WASHER PLATE

BASE PLATE

Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.



FOR DESIGN SPEEDS OF 50 MPH OR LESS

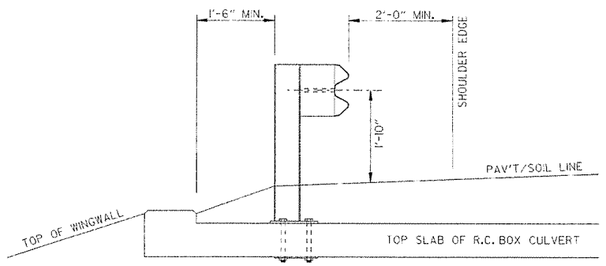
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE

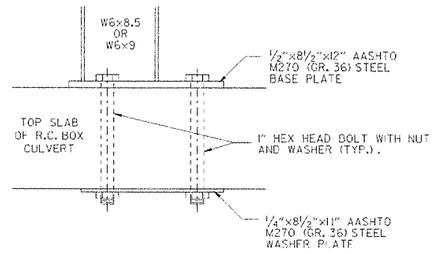
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

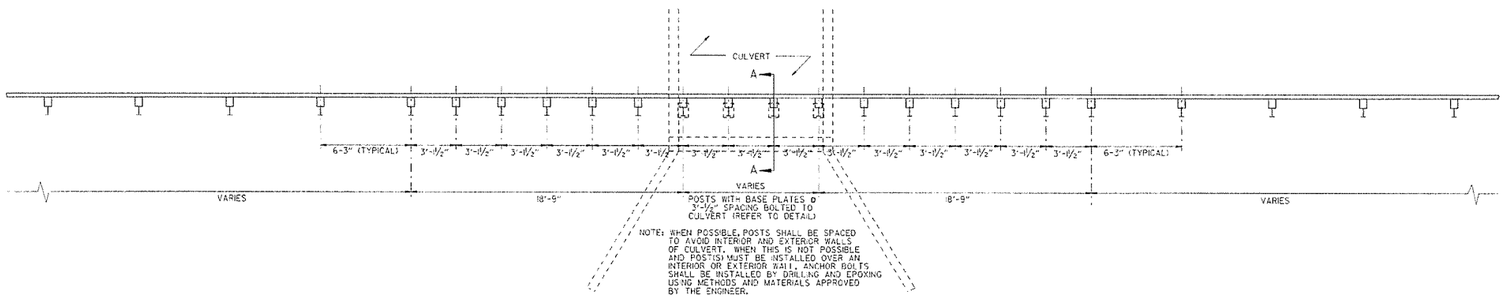
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



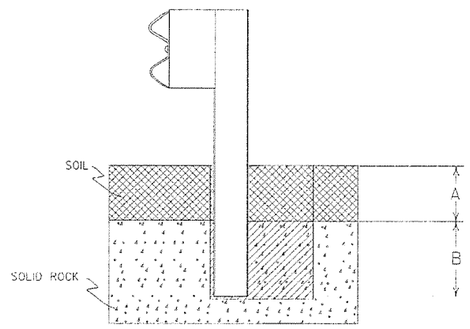
DETAIL OF CONNECTION



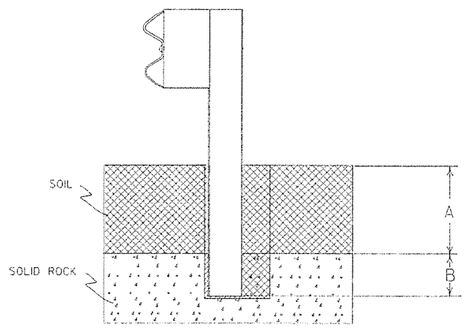
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DWG. GR-8.

Case 1

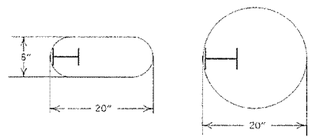


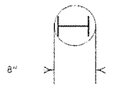
Case 2



Plan View Steel Posts

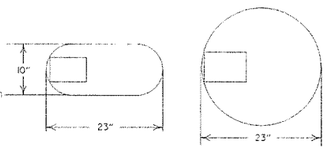
Either hole configuration acceptable

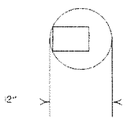




Plan View Wood Posts

Either hole configuration acceptable





Notes: For overlying soil depths (A) ranging from 0 to 18", the depth of required drilling (B) is equal to 24".

Zone A:
Backfill according to Section 617.03(a).

Zone B:
Backfill hole in 6" lifts with material meeting the requirements of Section 802.02(c) - Alternate gradation. Compact to 95% maximum dry density per ASTM D-698.

Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

Zone A & B:
Backfill according to Section 617.03(a).

DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)

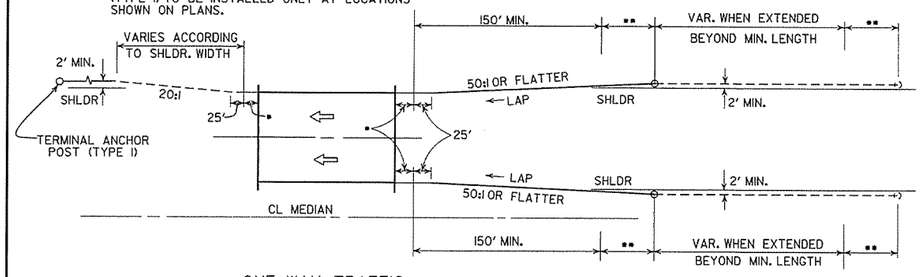
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
6-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULVT. DELETED DET. OF STEEL LINE POST CONN.& ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO 1988 SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-9-87	REDRAWN & REVISED	803-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

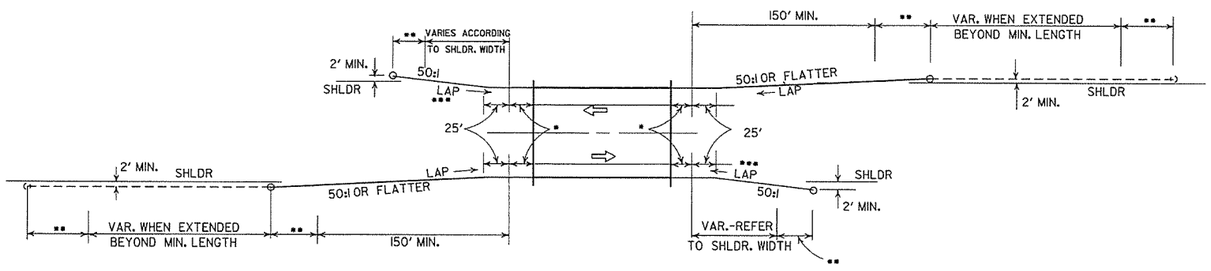
STANDARD DRAWING GR-8A

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



ONE-WAY TRAFFIC

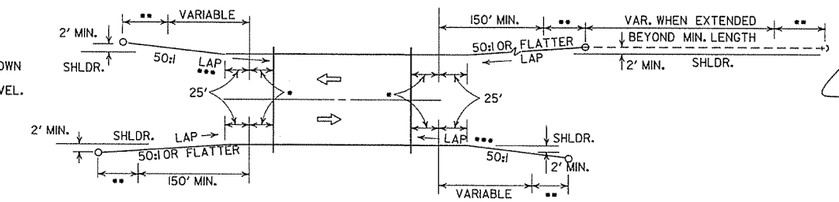
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

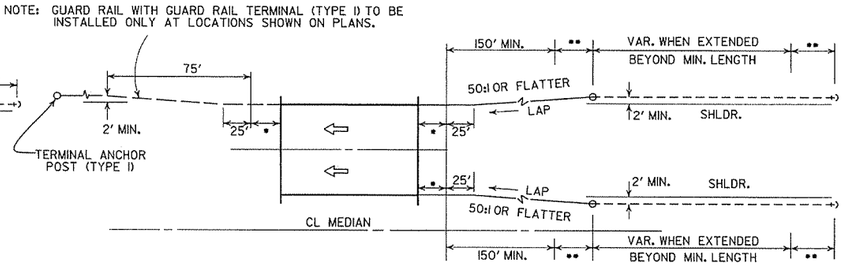
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• 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

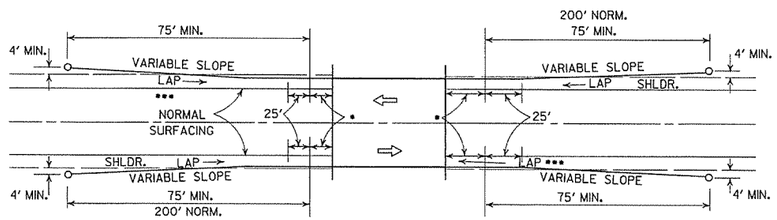
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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.



LEGEND

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

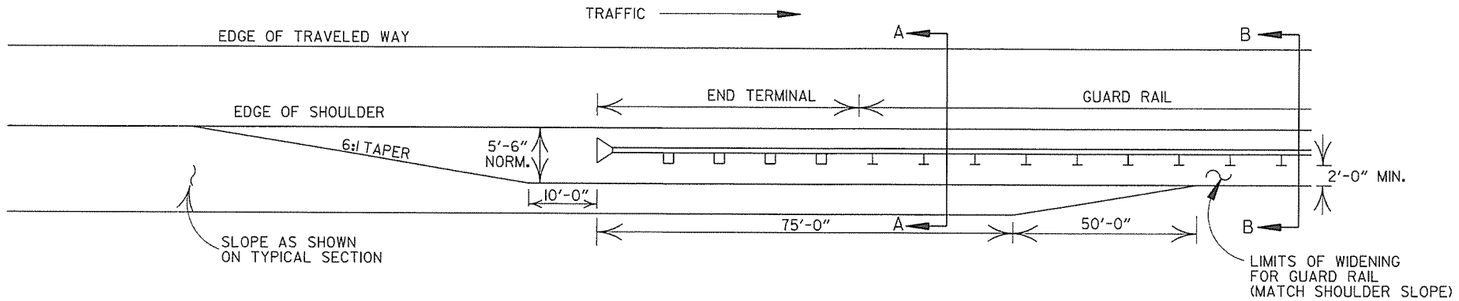
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

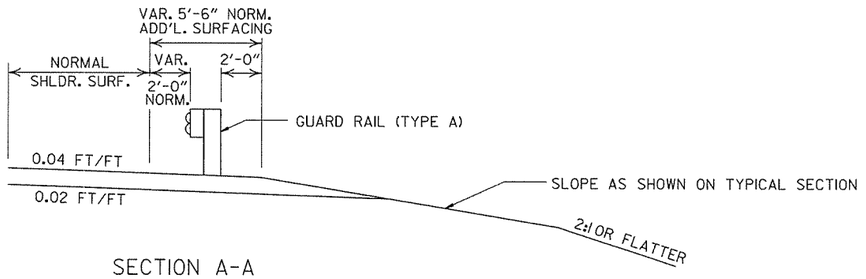
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

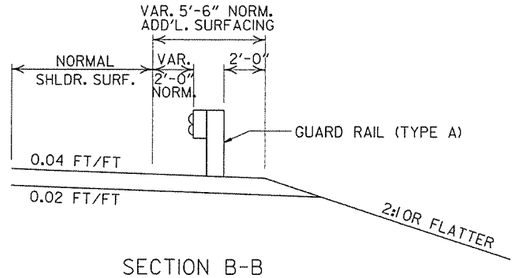
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





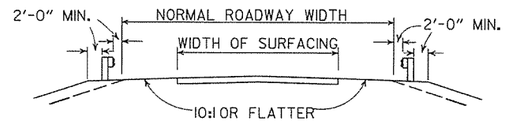
SECTION A-A



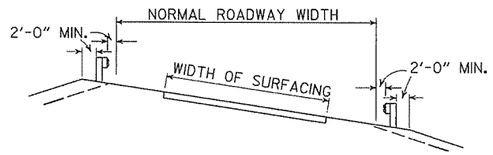
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

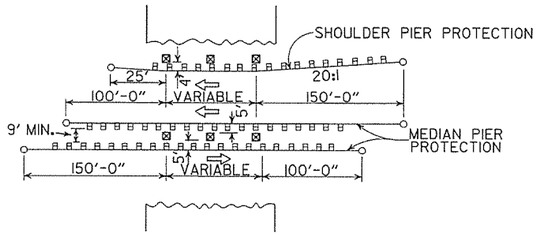


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



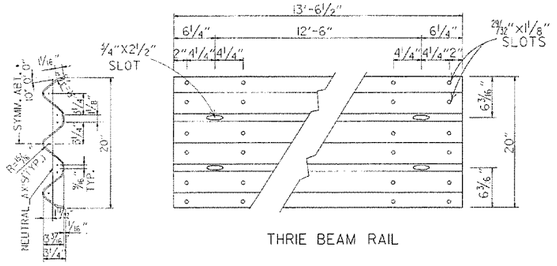
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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

ARKANSAS STATE HIGHWAY COMMISSION

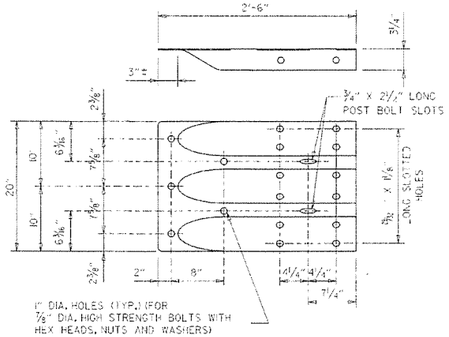
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



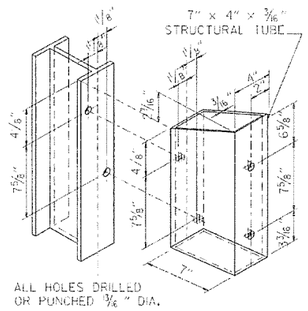
THRIE BEAM RAIL

SECTION THRU THRIE BEAM RAIL



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

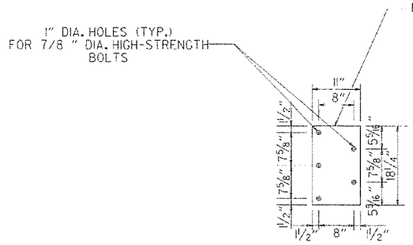
SPECIAL END SHOE



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

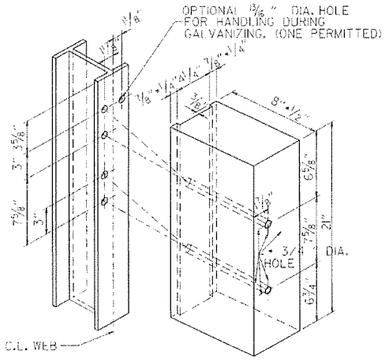
ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



CONNECTOR PLATE

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

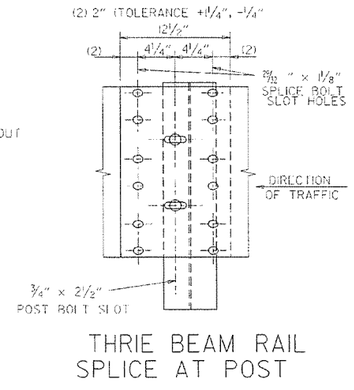


ALL HOLES 1⅛" DIAMETER EXCEPT AS NOTED

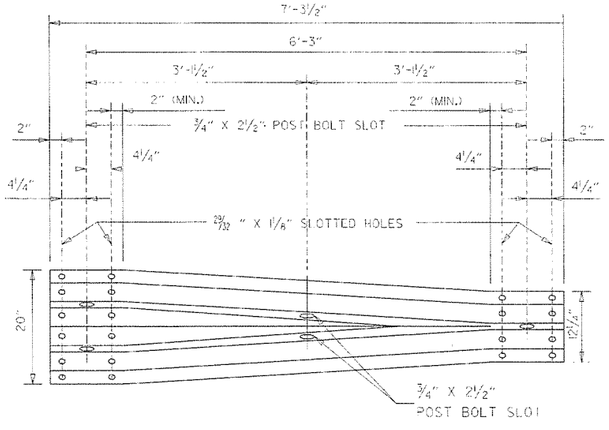
HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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

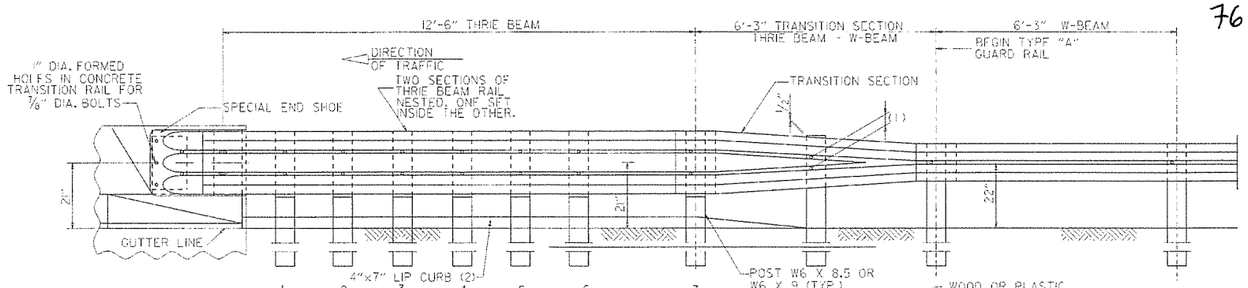
CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS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



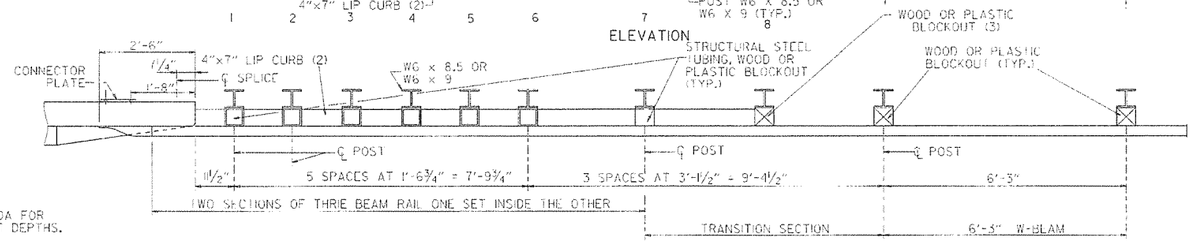
THRIE BEAM RAIL SPLICE AT POST



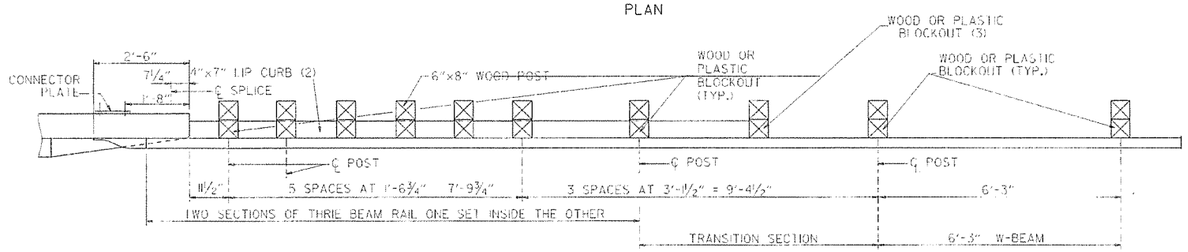
TRANSITION SECTION



ELEVATION



PLAN



PLAN

(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 I.

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# (M00 #) 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.

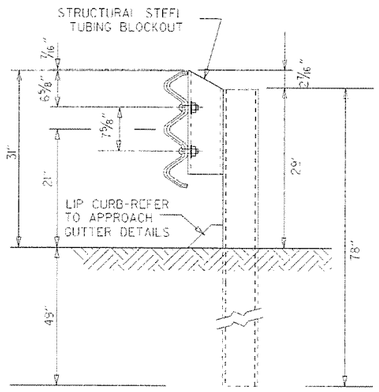
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W BEAM POSTS FOR ENTIRE JOB.

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	

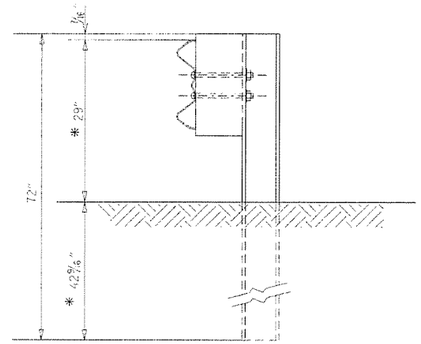
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

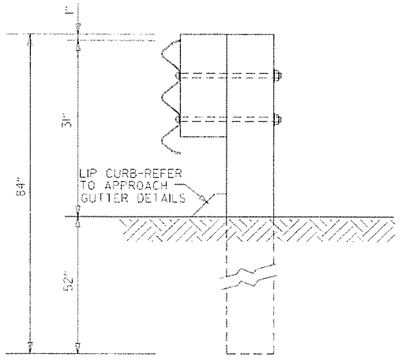


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

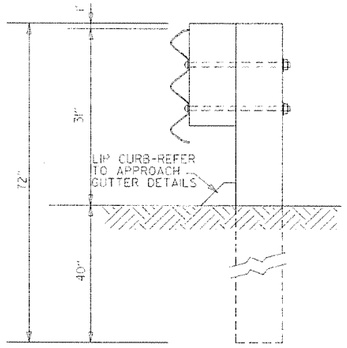


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

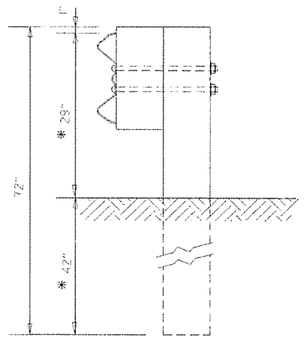
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



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.

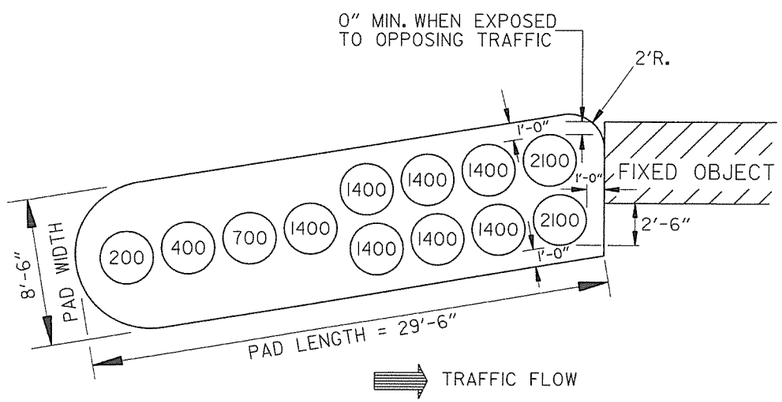
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

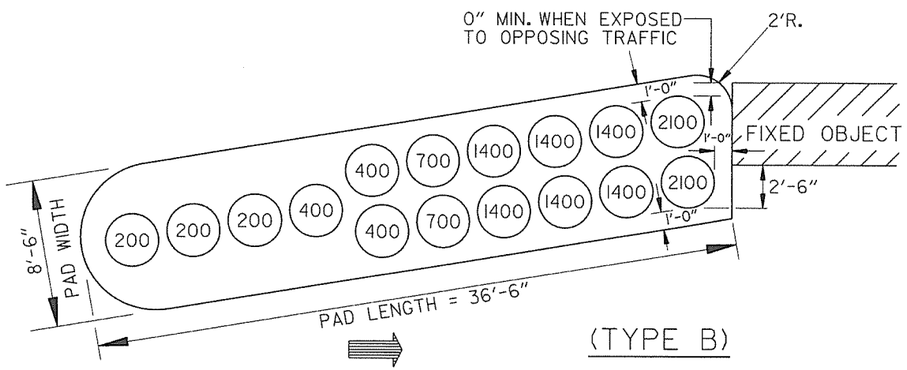
GUARD RAIL DETAILS

STANDARD DRAWING GR-10A



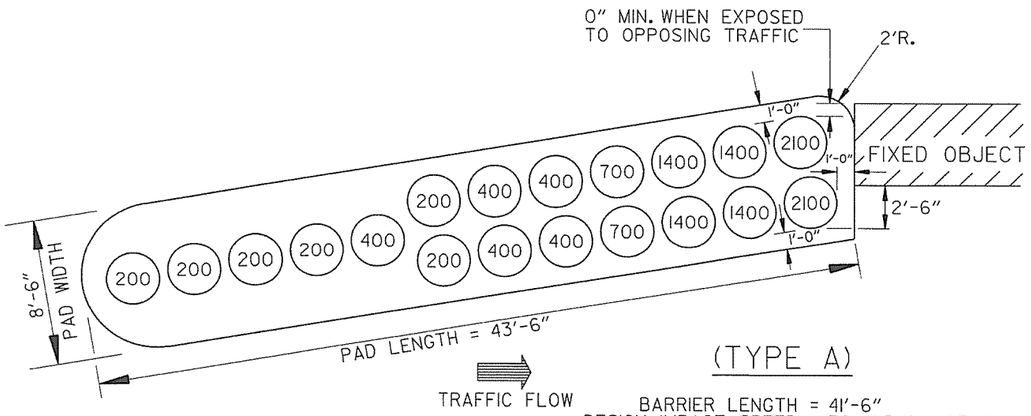
(TYPE C)

BARRIER LENGTH = 27'-6"
DESIGN IMPACT SPEED = 50 M.P.H.= 73.3 fps



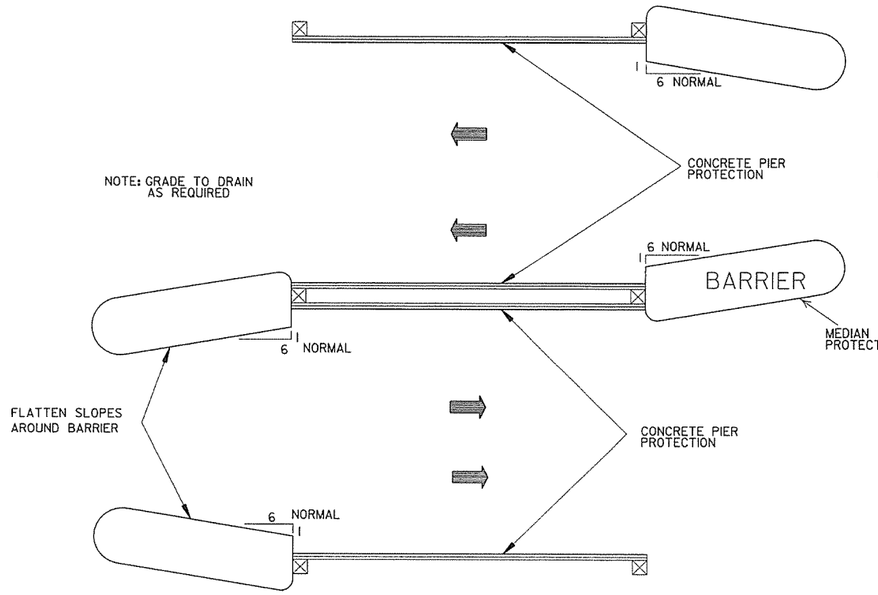
(TYPE B)

BARRIER LENGTH = 34'-6"
DESIGN IMPACT SPEED = 60 M.P.H.= 88 fps

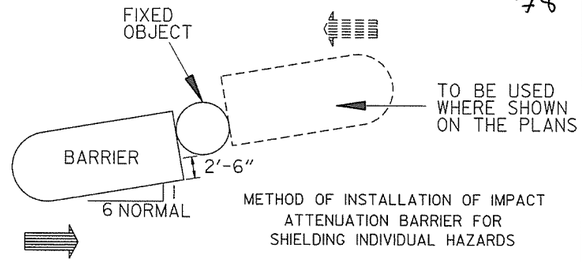


(TYPE A)

BARRIER LENGTH = 41'-6"
DESIGN IMPACT SPEED = 70 M.P.H.= 103 fps



METHOD OF INSTALLATION OF
IMPACT ATTENUATION BARRIER
FOR PIER PROTECTION



METHOD OF INSTALLATION OF IMPACT
ATTENUATION BARRIER FOR
SHIELDING INDIVIDUAL HAZARDS

APPROXIMATE QUANTITIES PER PAD

TYPE	ALTERNATE #1		ALTERNATE #2
	AGGR. BASE COURSE	A.C.H.M. SURFACE COURSE	P.C.CONC. BASE (4"U.T.)
	TONS	TONS	SQ.YDS.
A	9.7	4.6	41.6
B	8.1	3.8	34.9
C	6.6	3.1	28.3

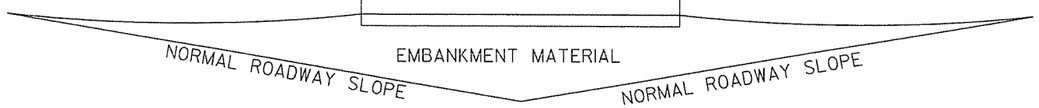
NOTE: APPROXIMATE QUANTITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. PAYMENT TO BE INCLUDED IN UNIT PRICE BID FOR IMPACT ATTENUATION BARRIER.

GENERAL NOTES

1. DIMENSIONS SHOWN ARE TO TOP OF PLASTIC MODULES.
2. SPACING BETWEEN PLASTIC MODULES SHALL NOT EXCEED 6" AT THE TOP.
3. PLASTIC MODULES SHALL MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

ALTERNATE #1
AVG. 8'-6" A.C.H.M. SURF. COURSE(1/2")
220 LBS. PER SQ. YD. &
AGGREGATE BASE COURSE
(4" COMPACTED DEPTH)

OR ALTERNATE #2
AVG. 8'-6" PORTLAND
CEMENT CONCRETE
BASE (4" U.T.)



DETAIL OF BARRIER PAD

NOTE: BARRIER PAD TO BE SKEWED TOWARD ONCOMING TRAFFIC
A MAXIMUM OF 6:1 WITH 6:1 BEING NORMAL

DATE	REVISION	DATE FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-29-07	REVISED TY. A & TY. C ARRAYS	
11-19-98	REVISED FIXED OBJECT	
11-18-98	REV. NOTES & TYPE A MOD. WTS.	
10-18-96	REDRAWN	
7-15-88	CONFORMED TO 1988 SPECS	
7-29-87	REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

IMPACT ATTENUATION BARRIER

STANDARD DRAWING IB-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	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.

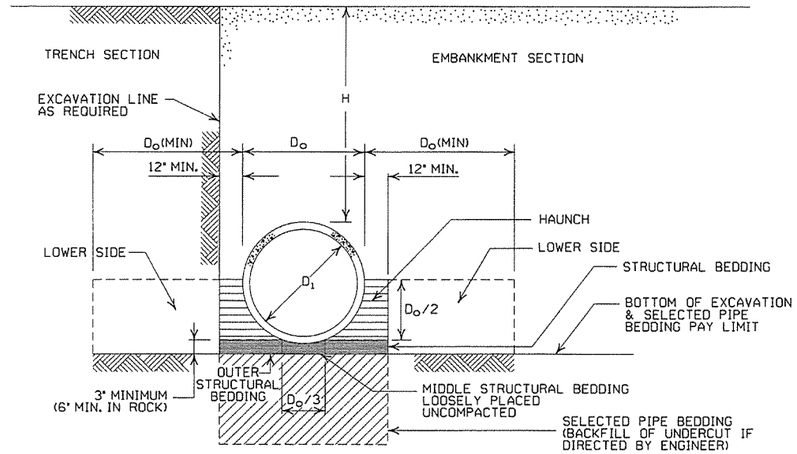
- LEGEND -

D_1 = 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 MINIMUM 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 MINIMUM 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

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.)	MAX. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	
				INSTALLATION	INSTALLATION			INSTALLATION	INSTALLATION	
				TYPE 1	TYPE 1			TYPE 1	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		INSTALLATION				
				TYPE 2	TYPE 1	TYPE 2	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			

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

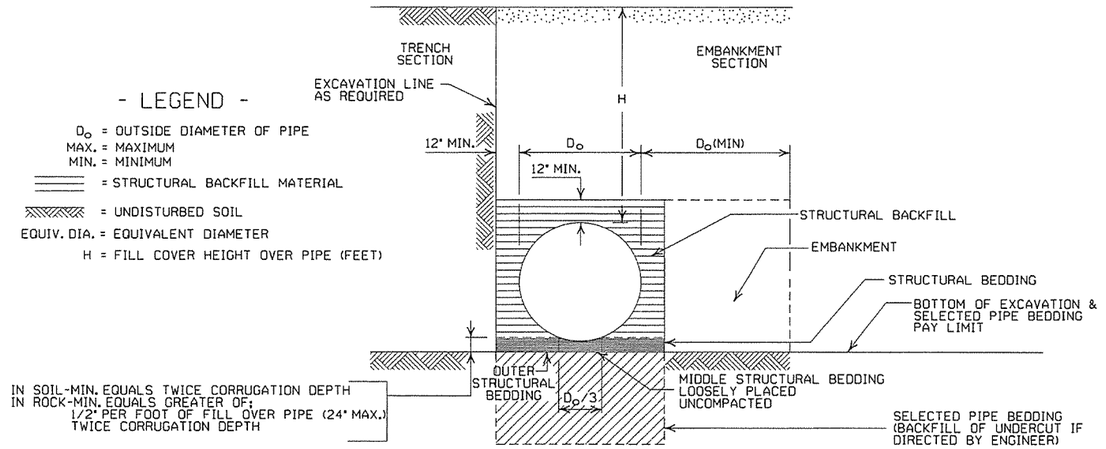
③ SM-3 WILL NOT BE ALLOWED.

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

- 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."

① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

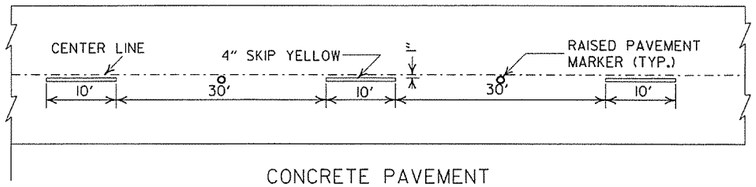
② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

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	

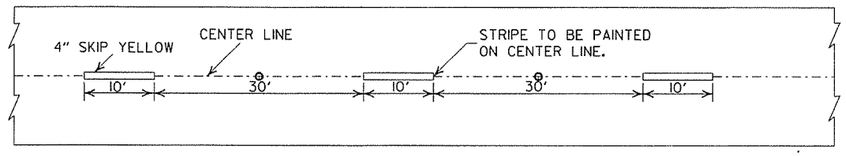
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

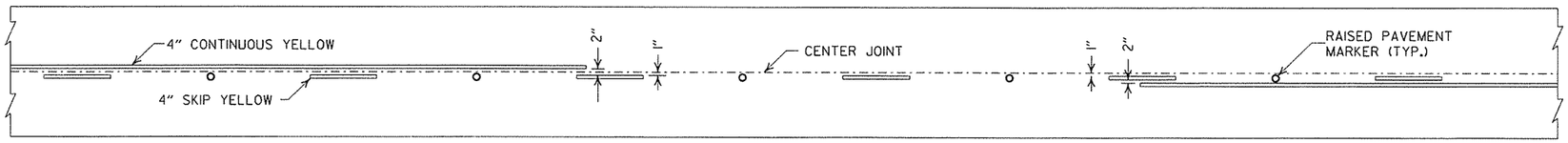


CONCRETE PAVEMENT

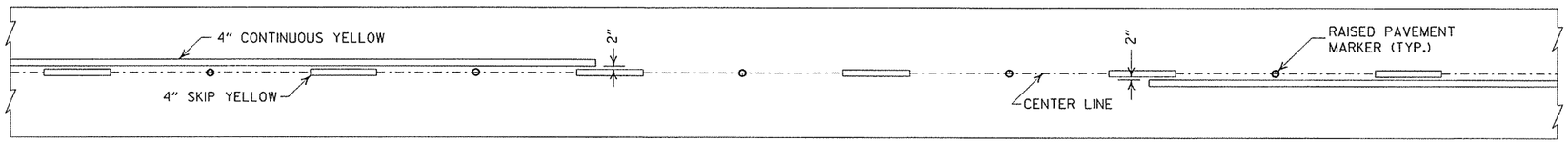


ASPHALT PAVEMENT

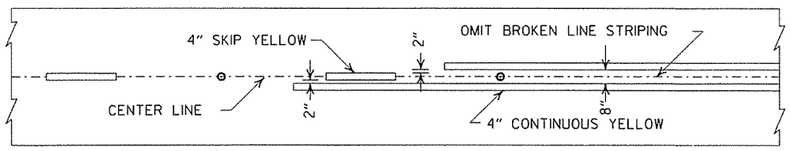
BROKEN LINE STRIPING



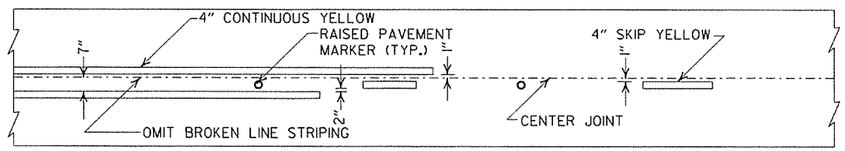
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

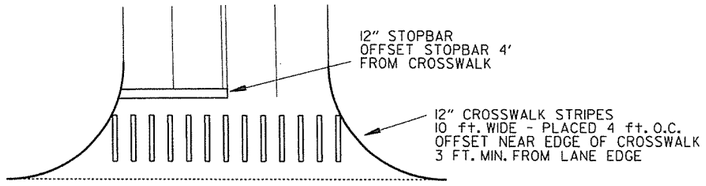


ASPHALT PAVEMENT



CONCRETE PAVEMENT

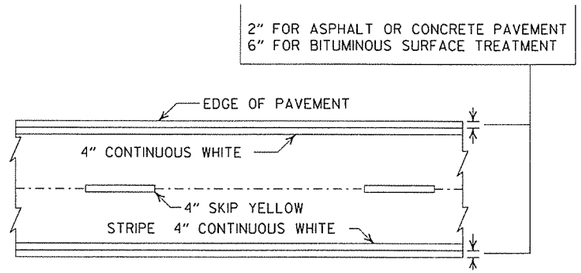
STRIPING AT ADJACENT NO PASSING LANES



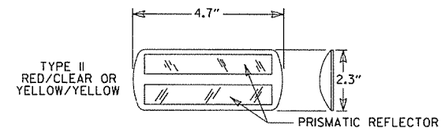
CROSSWALK AND STOPBAR DETAILS

NOTES:

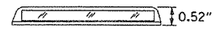
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.



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

SUPERELEVATION TABLE FOR ONE - 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	65 MPH e	65 MPH Ls (FT) MINIMUM	65 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.			N. C.		
0° 30′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 45′	N. C.			N. C.			R. C.			0.022			0.023			0.025			0.028		
1° 00′	N. C.			N. C.			0.021			0.026			0.030			0.033	250		0.037	275	
1° 15′	N. C.			R. C.			0.026			0.032			0.037			0.041			0.046		
1° 30′	N. C.			0.021			0.031	200		0.037	225		0.043	250		0.048			0.054		
1° 45′	N. C.			0.025	175		0.036			0.043			0.049			0.055			0.062		
2° 00′	R. C.			0.028			0.040			0.048			0.055			0.062			0.070		
2° 15′	R. C.			0.031			0.045			0.053			0.061			0.069	265		0.078	300	
2° 30′	0.021			0.034			0.049			0.058			0.067			0.075	280		0.085	315	400
2° 45′	0.023			0.037			0.053			0.063			0.072			0.081	300		0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.087	315		0.096	350	
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.090	325	400	0.098	360	450
3° 30′	0.029			0.046			0.065	205		0.076	255		0.086	285		0.095	340		0.100	360	
3° 45′	0.031		250	0.049			0.069	215		0.080	265		0.090	295	400	0.097	345				
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305		0.099	350				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.096	315							
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320							
5° 30′	0.043			0.066	185		0.088	260		0.094	300	400									
6° 00′	0.046			0.070	190		0.092	270		0.096	305										
6° 30′	0.050			0.074	200		0.095	280		0.100	315										
7° 00′	0.053			0.078	210		0.098	285	350												
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	300															
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	300																		
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 = 4° 15′ | D MAX = 3° 30′

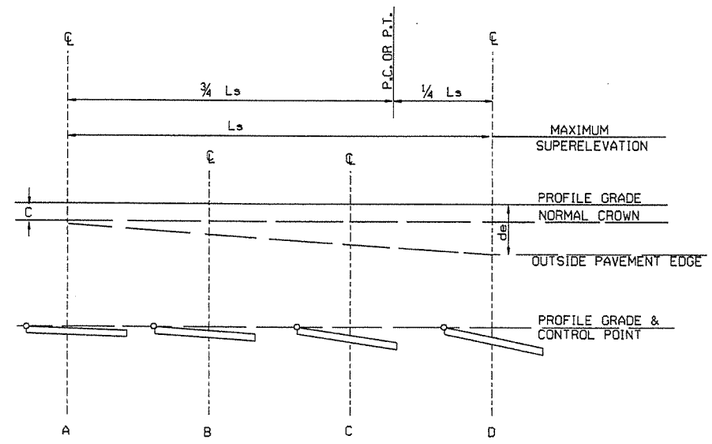
GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L_s MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM L_s VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%

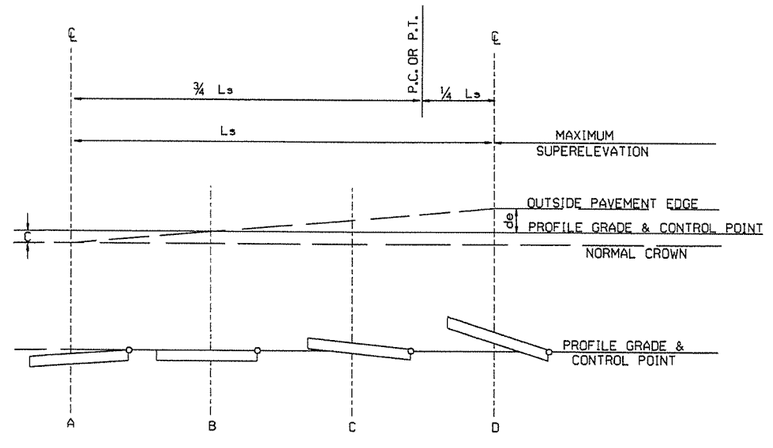
ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
S - SUPERELEVATION
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT
e - MAXIMUM RATE OF SUPERELEVATION (FT. PER FT.)
L_s - LENGTH OF SUPERELEVATION TRANSITION (FT.)
C - NORMAL CROWN (FT.)



ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de-C)}{Ls} - C$



ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

DATE	REVISION	DATE FILMED
01-09-87	ISSUED	578-1-15-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

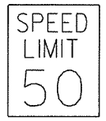
RI-1

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

RI-2

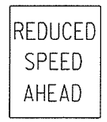
STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

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"

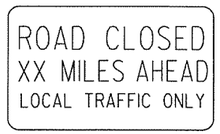
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

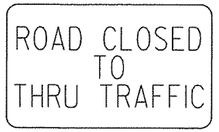
48"X30"

RII-3A



60"X30"

RII-4

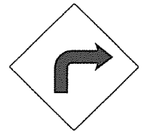


60"X30"

RSP-1

48"X30"

WI-1



STD. 36"X36"
FWY. 48"X48"

WI-2

STD. 36"X36"
FWY. 48"X48"

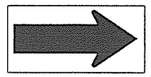
WI-3

STD. 48"X48"

WI-4

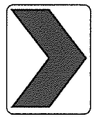
STD. 48"X48"

WI-6



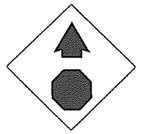
STD. 48"X24"
SPECIAL 60"X30"

WI-8



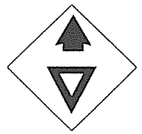
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



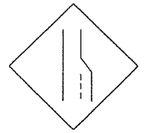
STD. 36"X36"
SPECIAL 48"X48"

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"

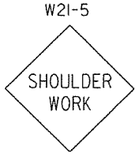
W20-7a

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"

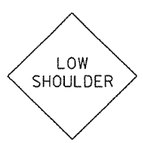
R56-1

STD. 18"X18"

W8-11

STD. 36"X36"
FWY. 48"X48"

W8-9

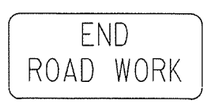


STD. 36"X36"
FWY. 48"X48"

G20-1

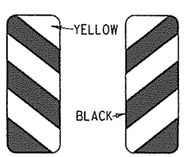
60"X24"

G20-2



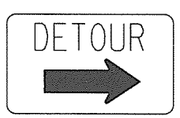
48"X24"

OM-3L OM-3R



12"X36"

M4-9

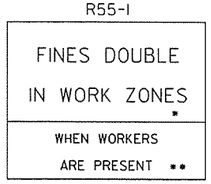


STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



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.

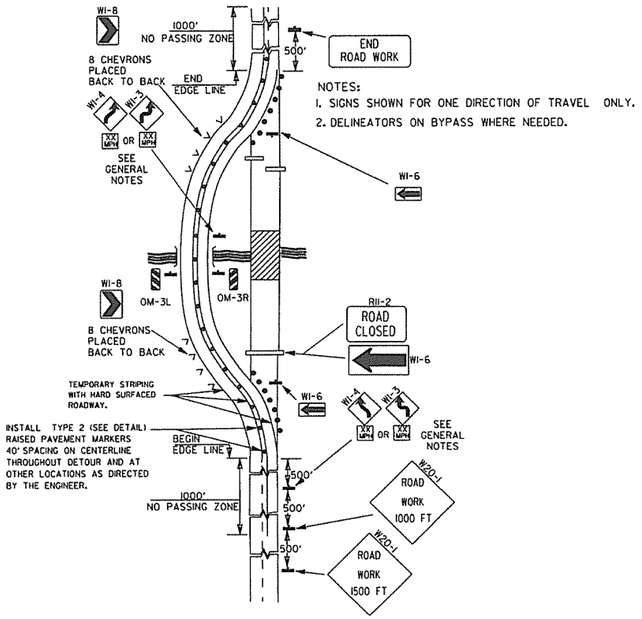
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY 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

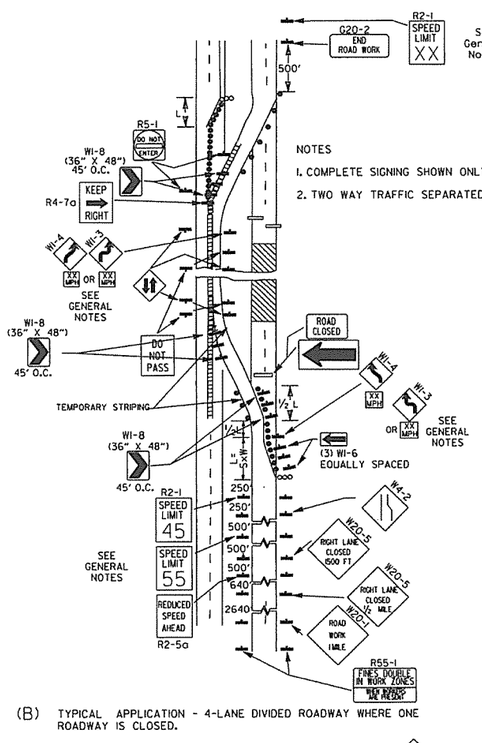
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



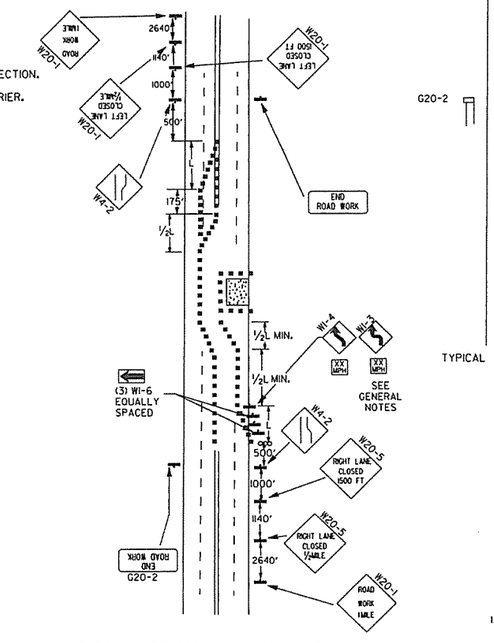
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

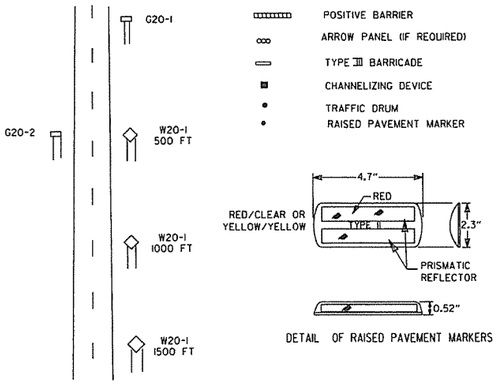


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.

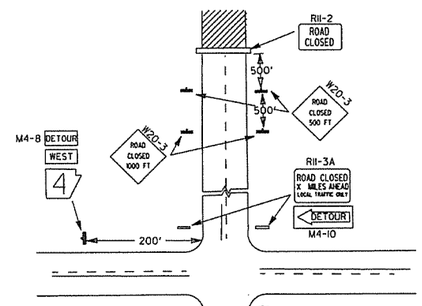


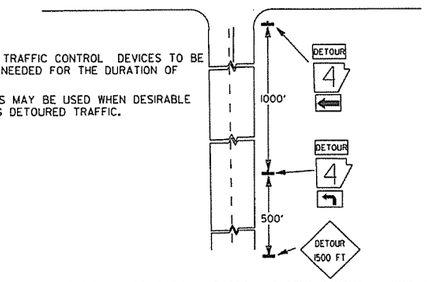
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



DETAIL OF RAISED PAVEMENT MARKERS

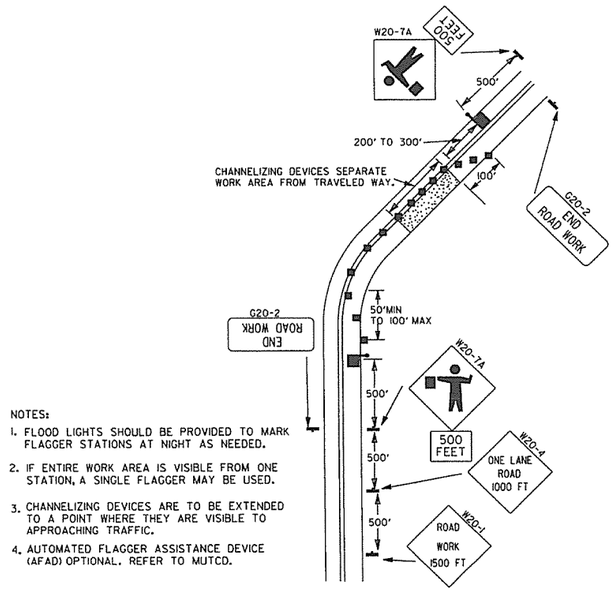
TYPICAL ADVANCE WARNING SIGN PLACEMENT





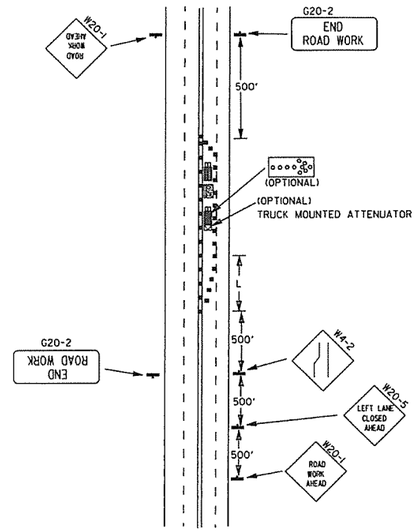
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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.

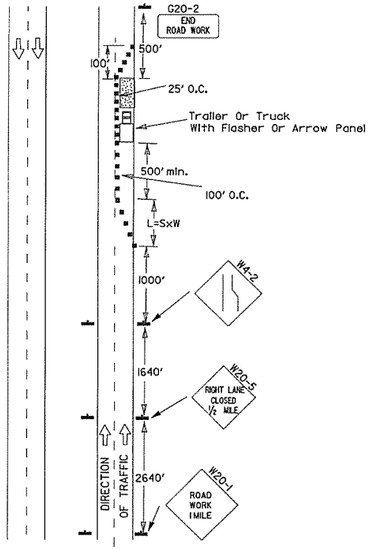
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A 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	
3-11-10	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 W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

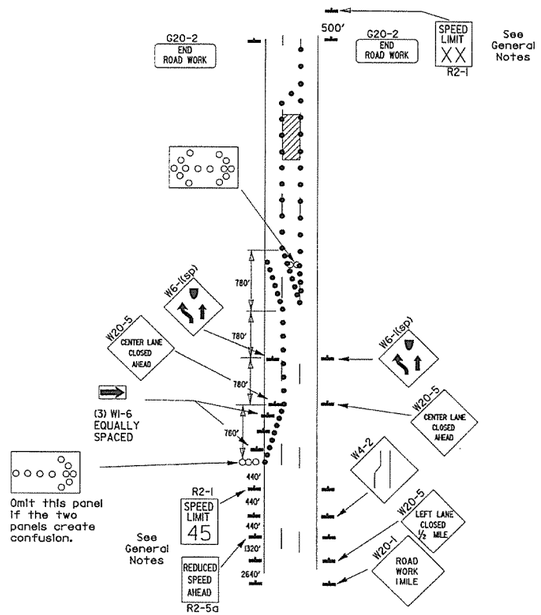
ARKANSAS STATE HIGHWAY COMMISSION

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.

KEY:

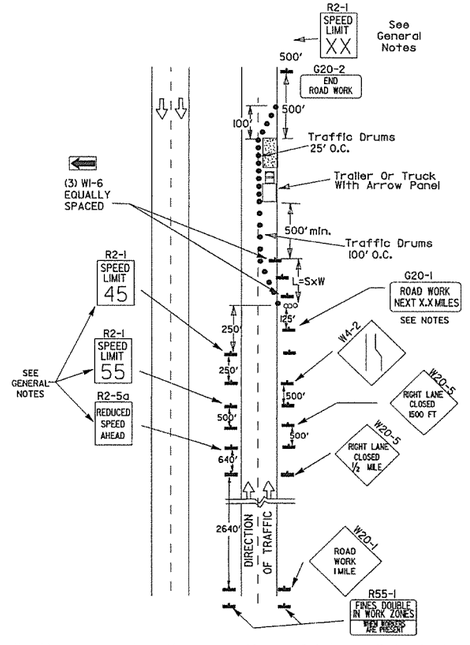
○○○ Arrow Panel (If Required)

■ Channelizing Device

● Traffic drum

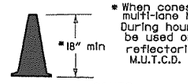
GENERAL NOTES:

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 R2-1 55mph 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.

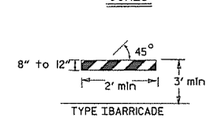


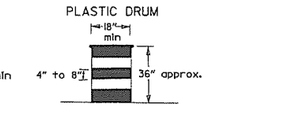
(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

Channelizing devices

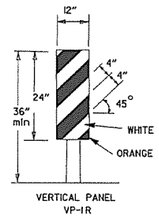


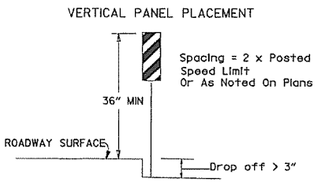
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.





NOTE: For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



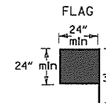


TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

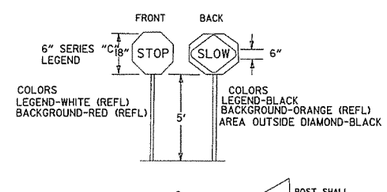
VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

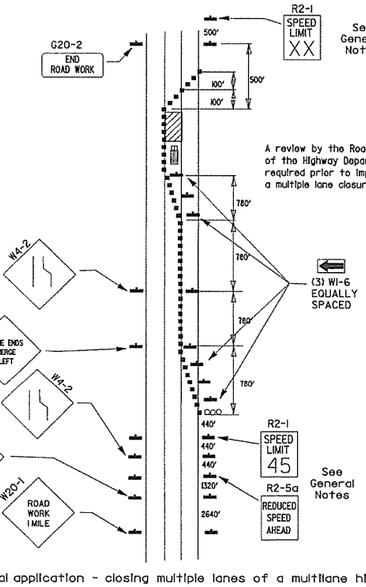
* When shown on the plans concrete barrier will be used.

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.

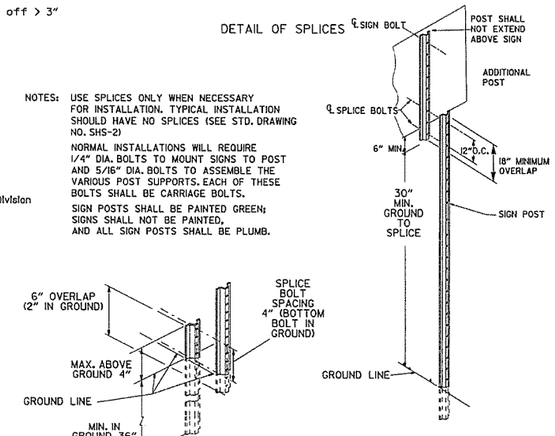


Flag shall be of good grade red material





(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.

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	

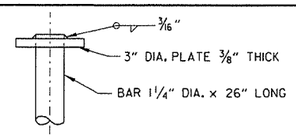
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

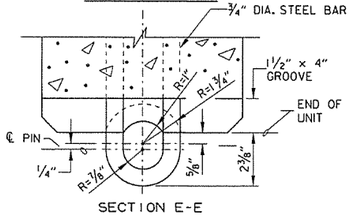
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S & DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 1" MIN. CLEAR TO BAR, 7", 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP, 1'-6"
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, 9 1/2", 2'-1 3/8", 4 3/8"

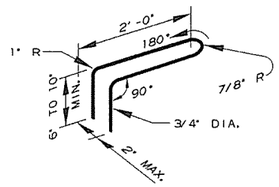


CONNECTING PIN

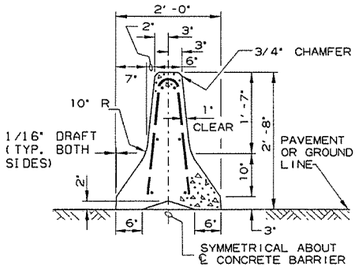


SECTION E-E

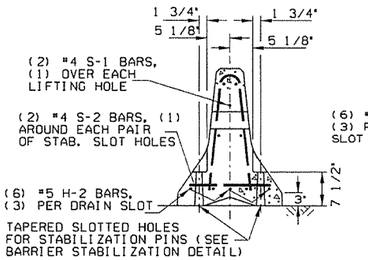
CONNECTION DETAILS



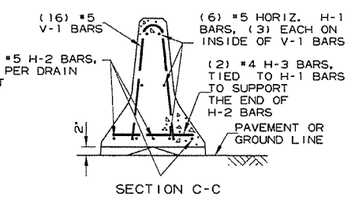
CONNECTION LOOP



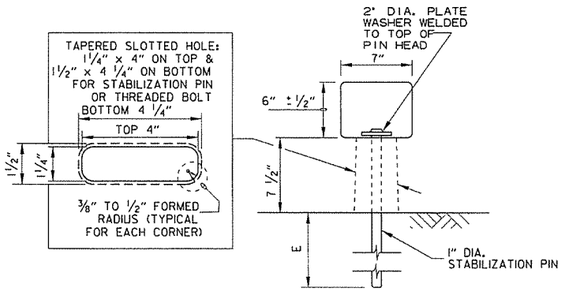
SECTION A-A



SECTION B-B



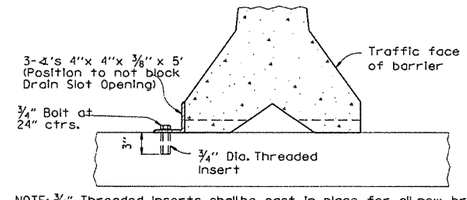
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

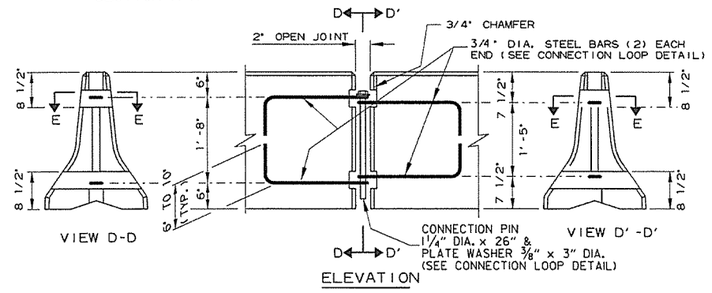
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the Inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

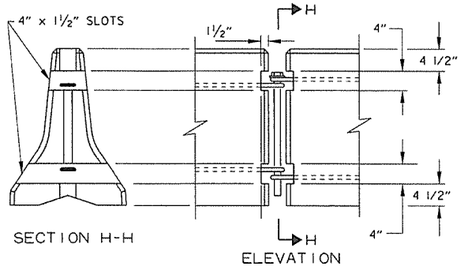
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

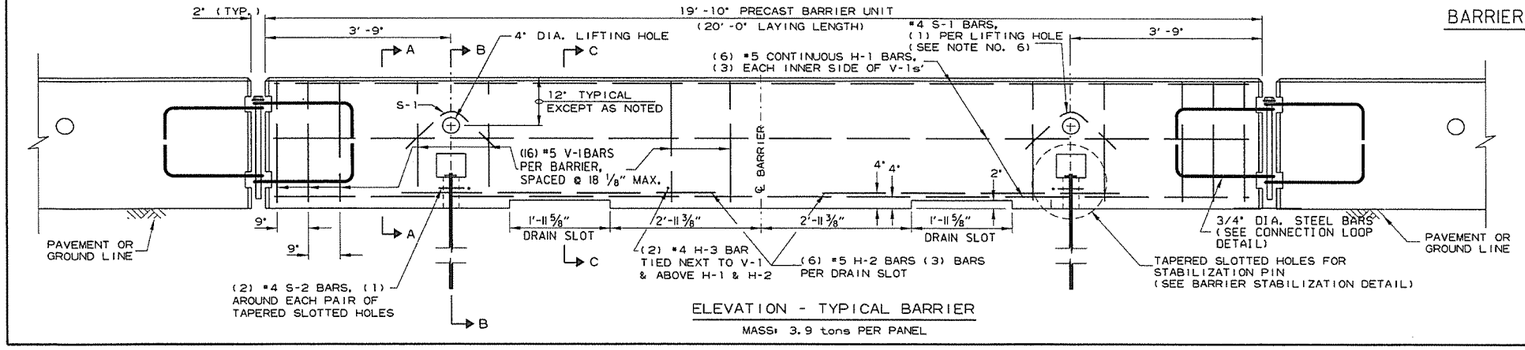
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

1. The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

2. Materials shall meet the following minimum requirements;
   Concrete: 2500 psi compressive strength at 28 days.
   Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
   Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
   Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

   In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
   Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
   Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier".
   The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

3. Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

4. Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

5. Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

6. A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

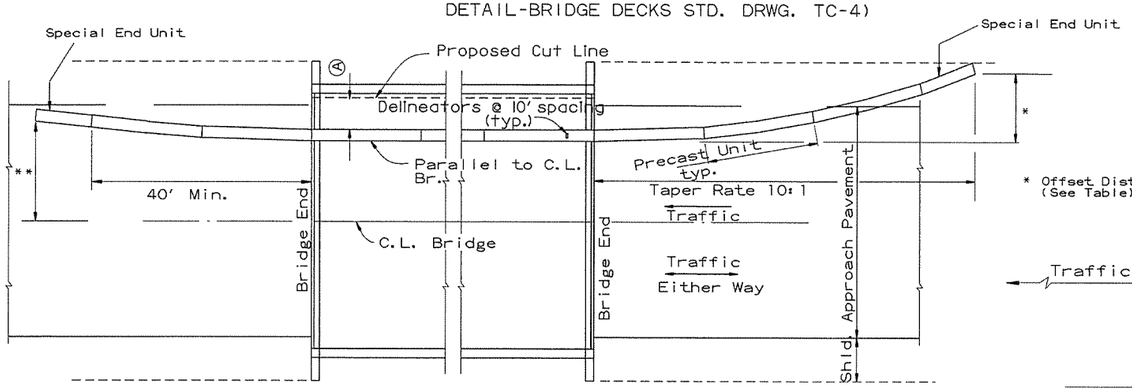
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)

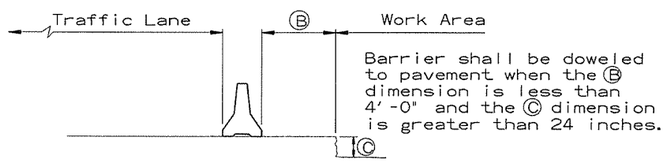


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

** Offset Distance for Two Way Traffic Only

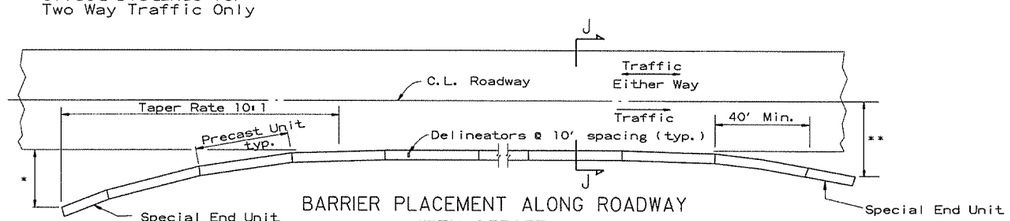
* Offset Distance (See Table)



Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

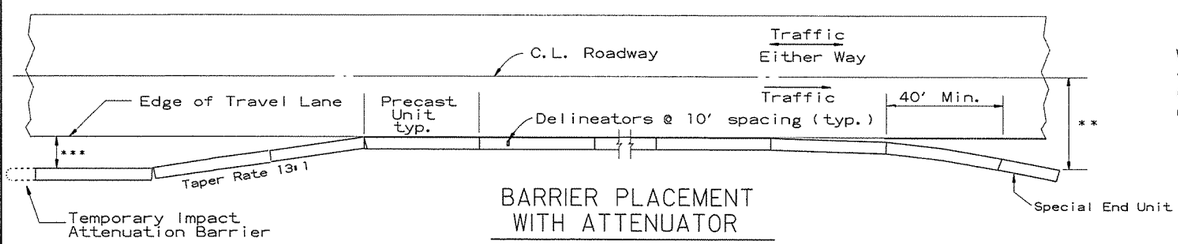
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see 'Barrier Placement With Attenuator' Detail shown below.

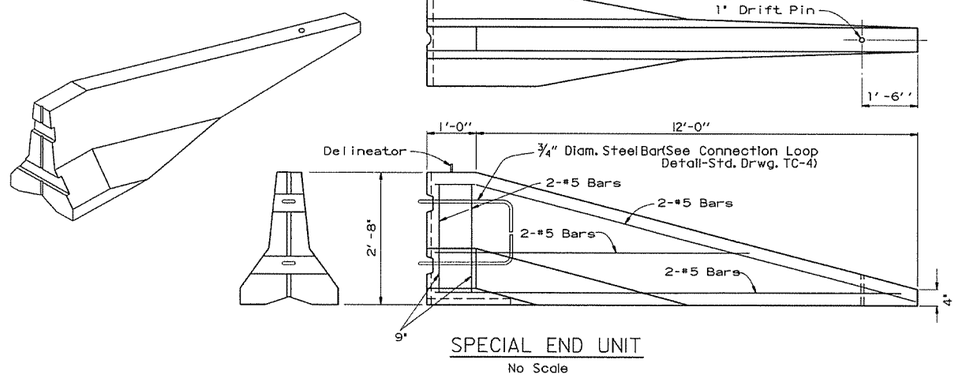


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

** Offset Distance For Two Way Traffic Only



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

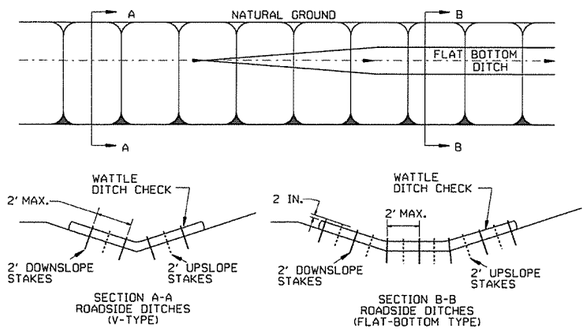
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

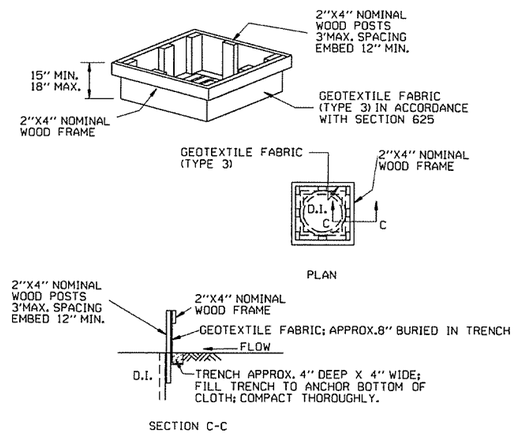
STANDARD DRAWING TC-5

GENERAL NOTES

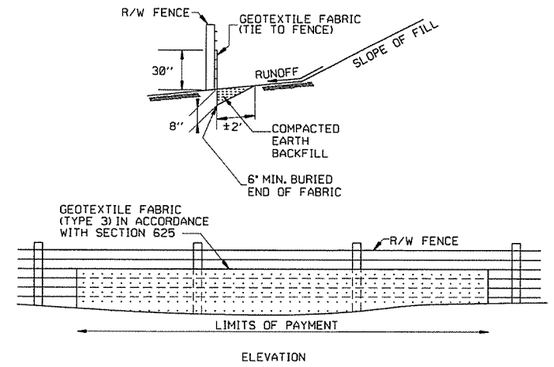
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

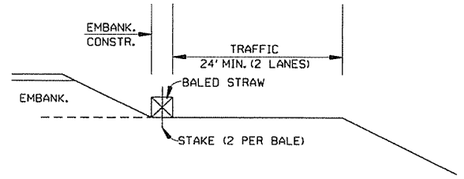
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

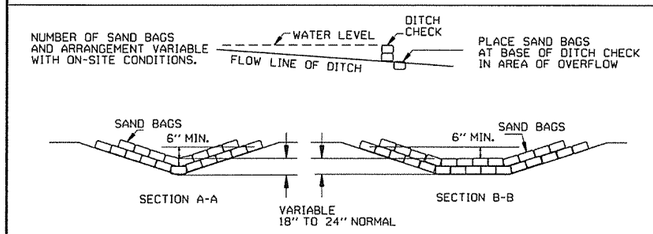
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

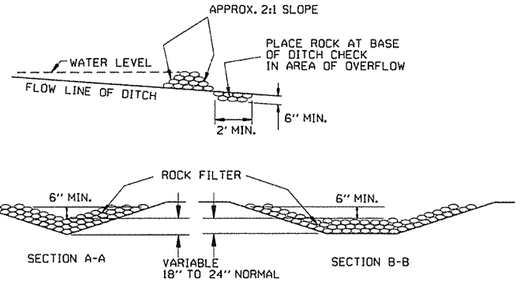
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



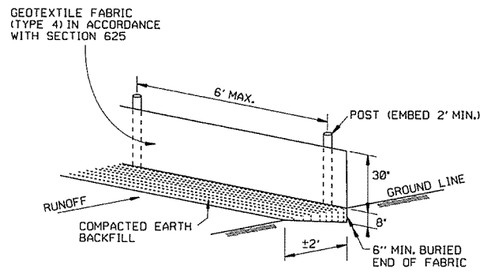
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

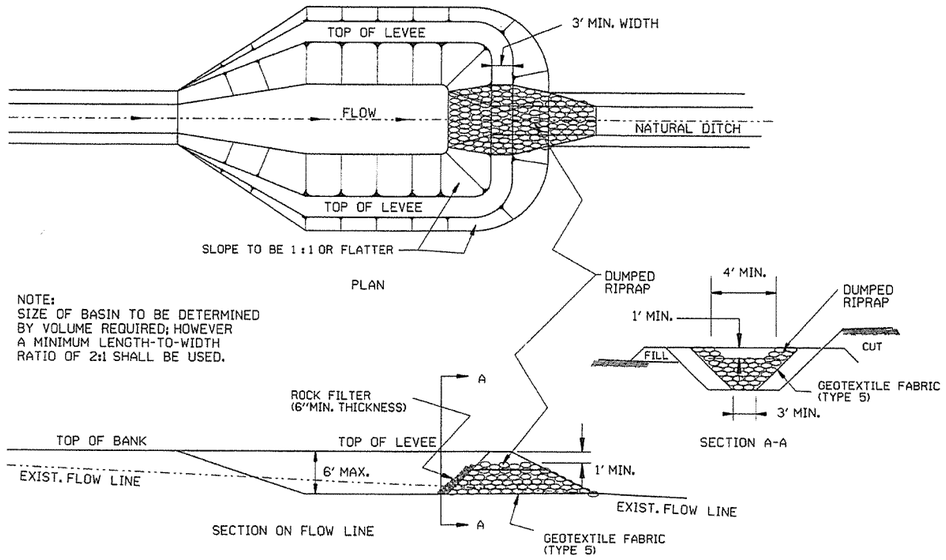
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

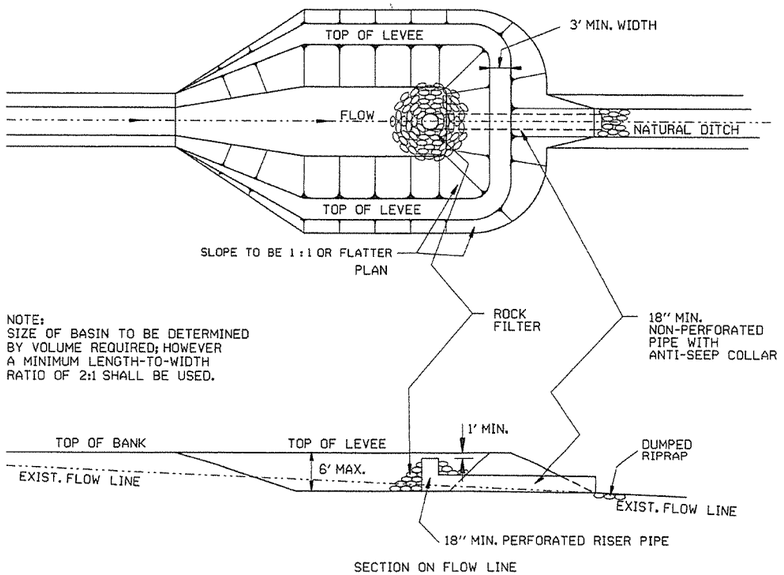
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

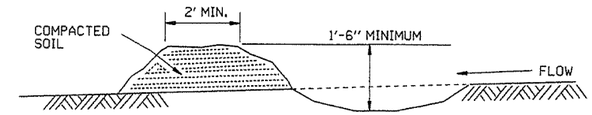
STANDARD DRAWING TEC-1



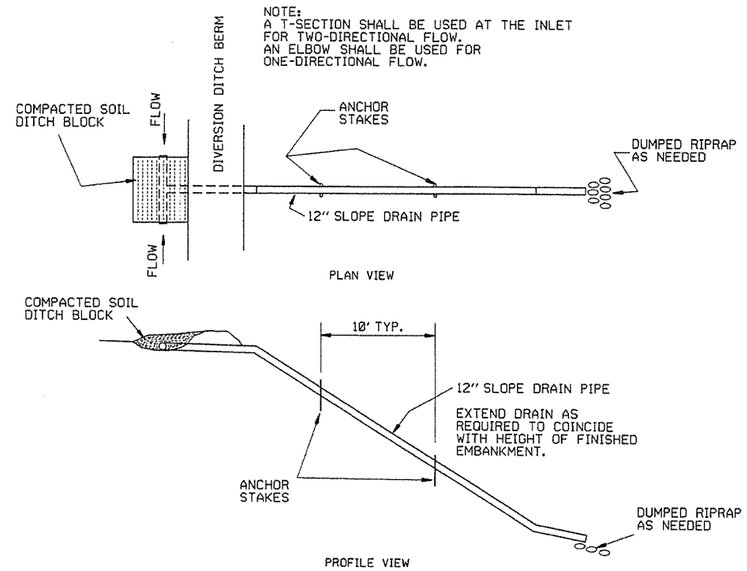
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



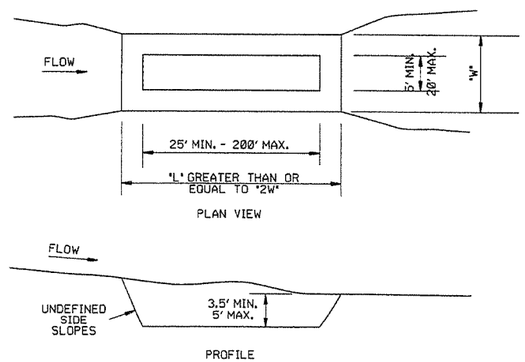
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

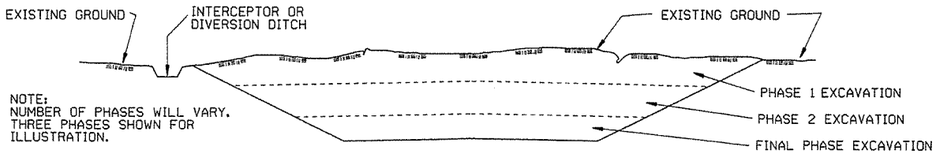
STANDARD DRAWING TEC-2

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



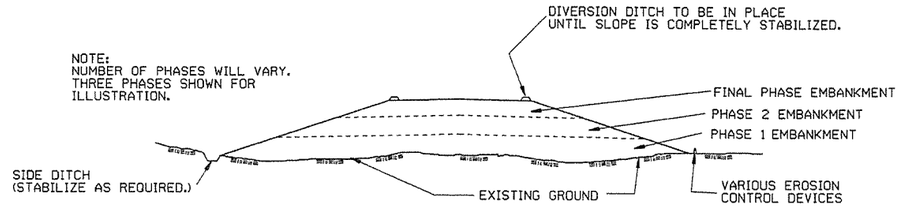
GENERAL NOTE

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

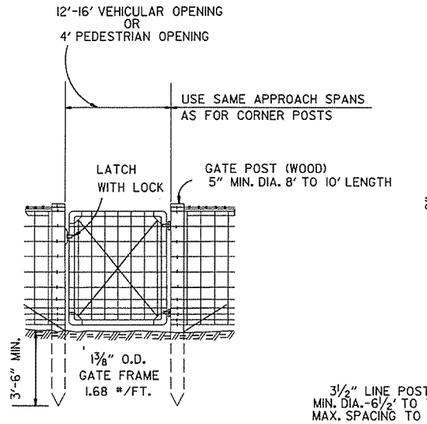
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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.

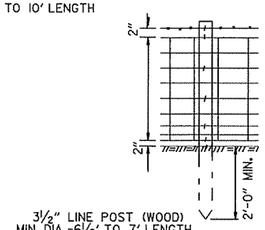
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

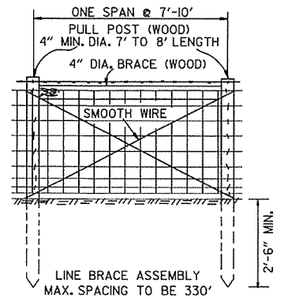
ARKANSAS STATE HIGHWAY COMMISSION

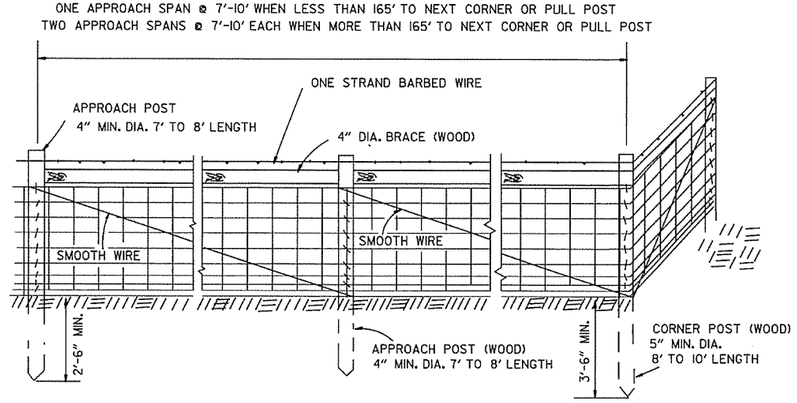
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



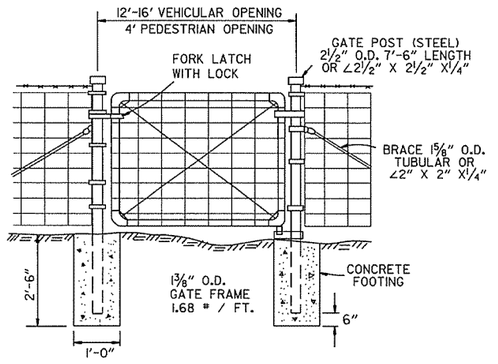


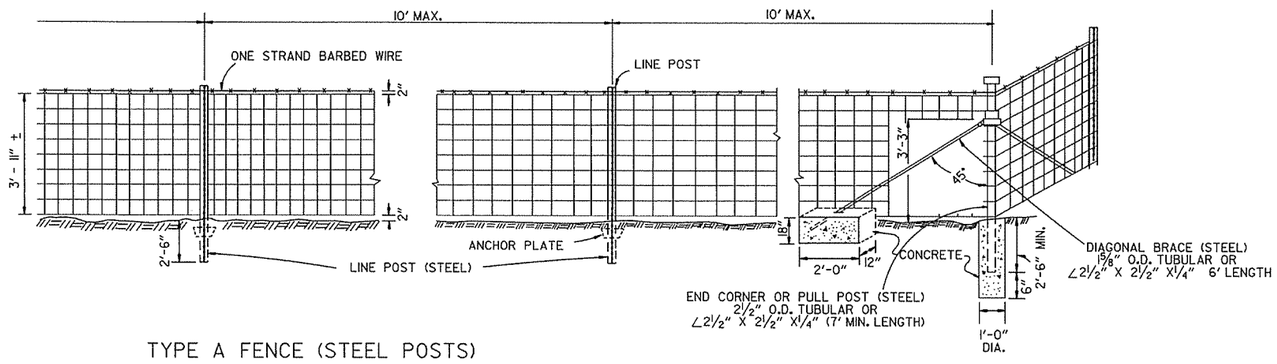




NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE A FENCE (WOOD POSTS)





TYPE A FENCE (STEEL POSTS)

GENERAL NOTES:

STEEL LINE POSTS SHALL BE GALVANIZED, 7 FT. IN LENGTH.

TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK).

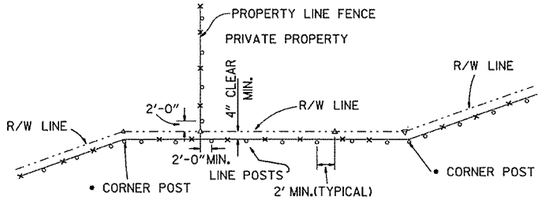
THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF WOOD LINE POSTS OF 7' LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

GATE HINGES AND LATCHES WITH LOCKS TO BE OF A TYPE APPROVED BY THE ENGINEER. DRIVEWAY GATES, EITHER SINGLE 12' OR 16' OR DOUBLE 6' TO 8' OPENINGS OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE FOR USE BY MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF BANK TO THE BRIDGE STRUCTURE, A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFIEICNT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO THE BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

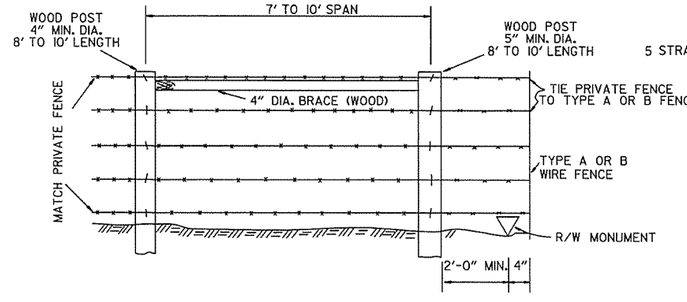
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD": AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRE A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.



*NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

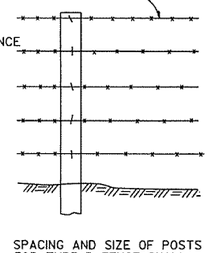
△ - R/W MONUMENTS
○ - FENCE POSTS

RIGHT-OF-WAY FENCE LOCATION



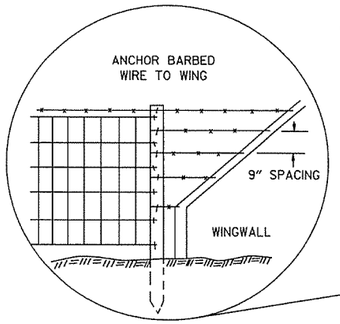
WHERE EXISTING PRIVATE FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN WITH TYPE A FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

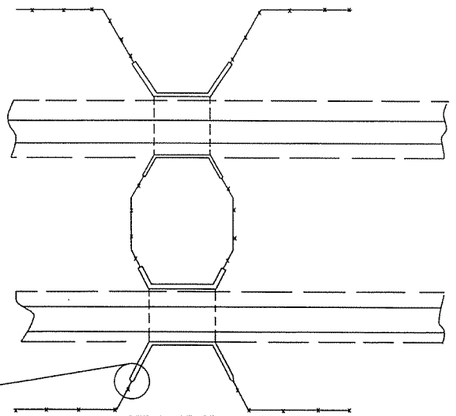
PRIVATE FENCE TERMINAL INSTALLATION



SPACING AND SIZE OF POSTS FOR TYPE B FENCE SHALL BE THE SAME AS TYPE A FENCE.

TYPE B FENCE





DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

DATE	REVISION	DATE FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	ADDED CORNER POST NOTE	6-2-94
8-5-93	REVISED R-O-W LOCATION DETAIL	8-5-93
10-1-92	ADDED STAPLE NOTE	
8-2-90	REV'D PULL POST LENGTH	
11-30-89	DELETED CLASS CONC.	
7-15-88	ADDED SPLICE NOTES	
7-15-88	ADDED HEIGHT DIMENSION	
4-3-87	REVISED VARIOUS NOTES	
	AND GENERAL NOTES	
11-1-84	MAX. POST SPACING	
1-4-83	MIN. DIA. LINE POST	
10-2-72	REVISED & REDRAWN	

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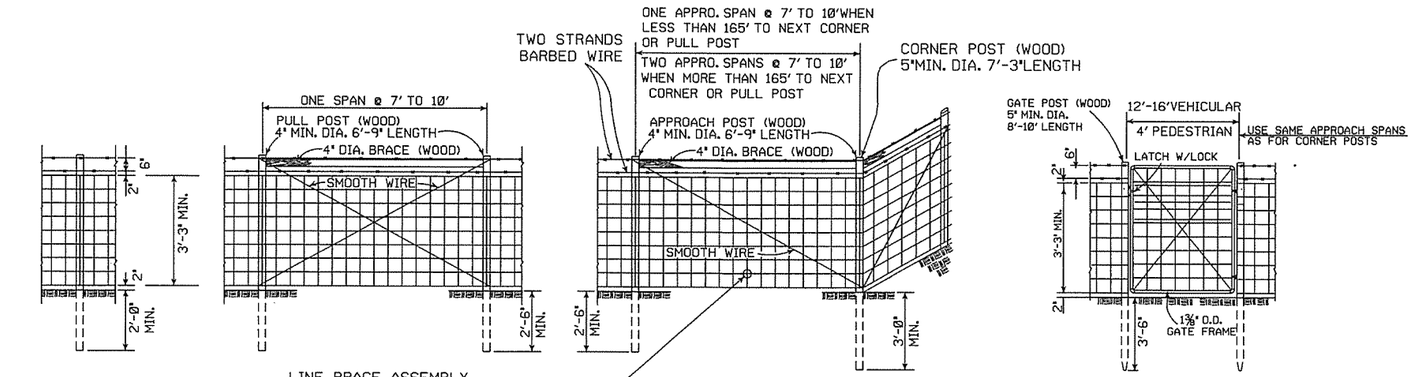
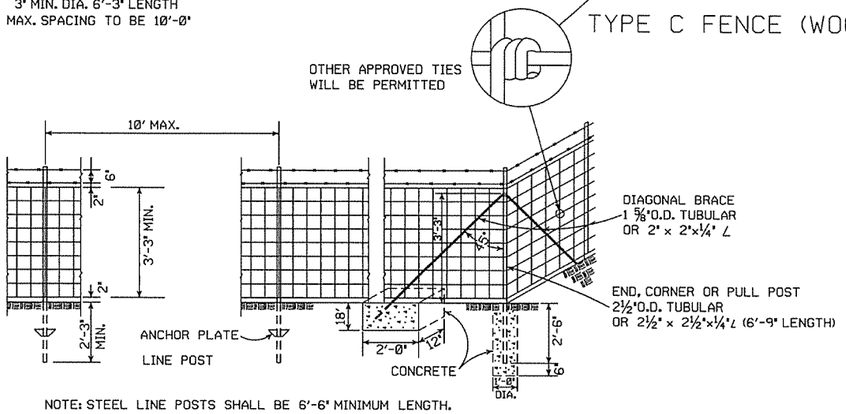
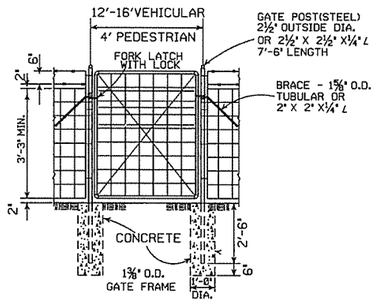
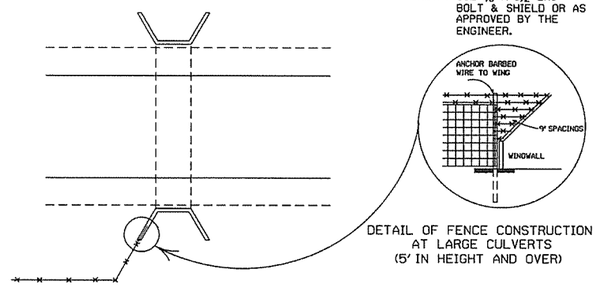
WIRE FENCE
TYPE A AND B

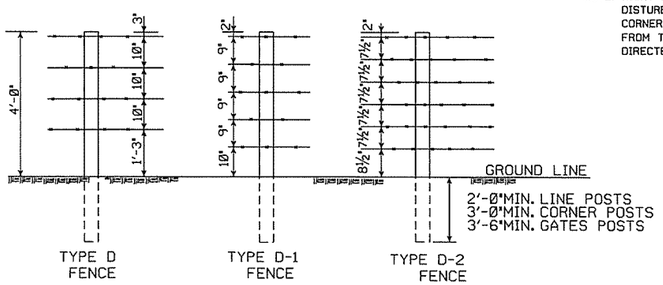
STANDARD DRAWING WF-1











TYPE C FENCE (WOOD POSTS)

NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

DETAIL OF FENCE CONSTRUCTION
AT LARGE CULVERTS
(5' IN HEIGHT AND OVER)

SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION

TYPICAL VEHICULAR GATES

(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK)SHALL MEET THE APPROVAL OF THE ENGINEER.

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.

PRIVATE FENCE TERMINAL INSTALLATION

WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND	6-2-94
	ADDED CORNER POST NOTES	
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4