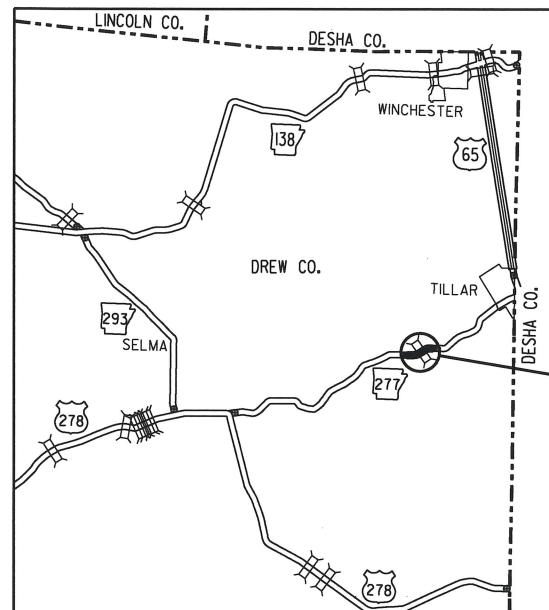


ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

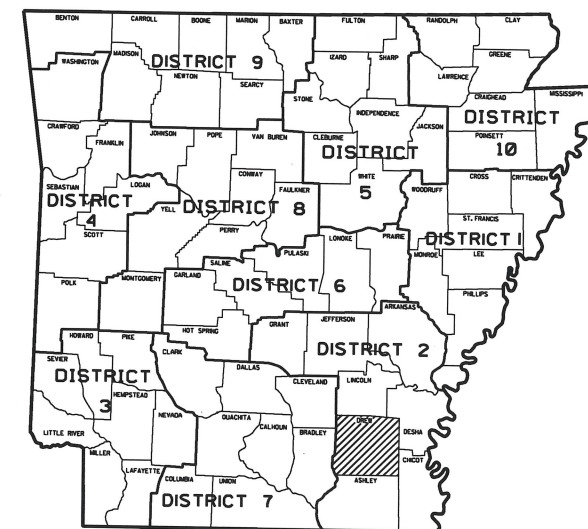
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	1	58
				2 BAYOU BARTHOLOMEW STR. & APPRS. (S)				



VICINITY MAP

PROJECT
LOCATION

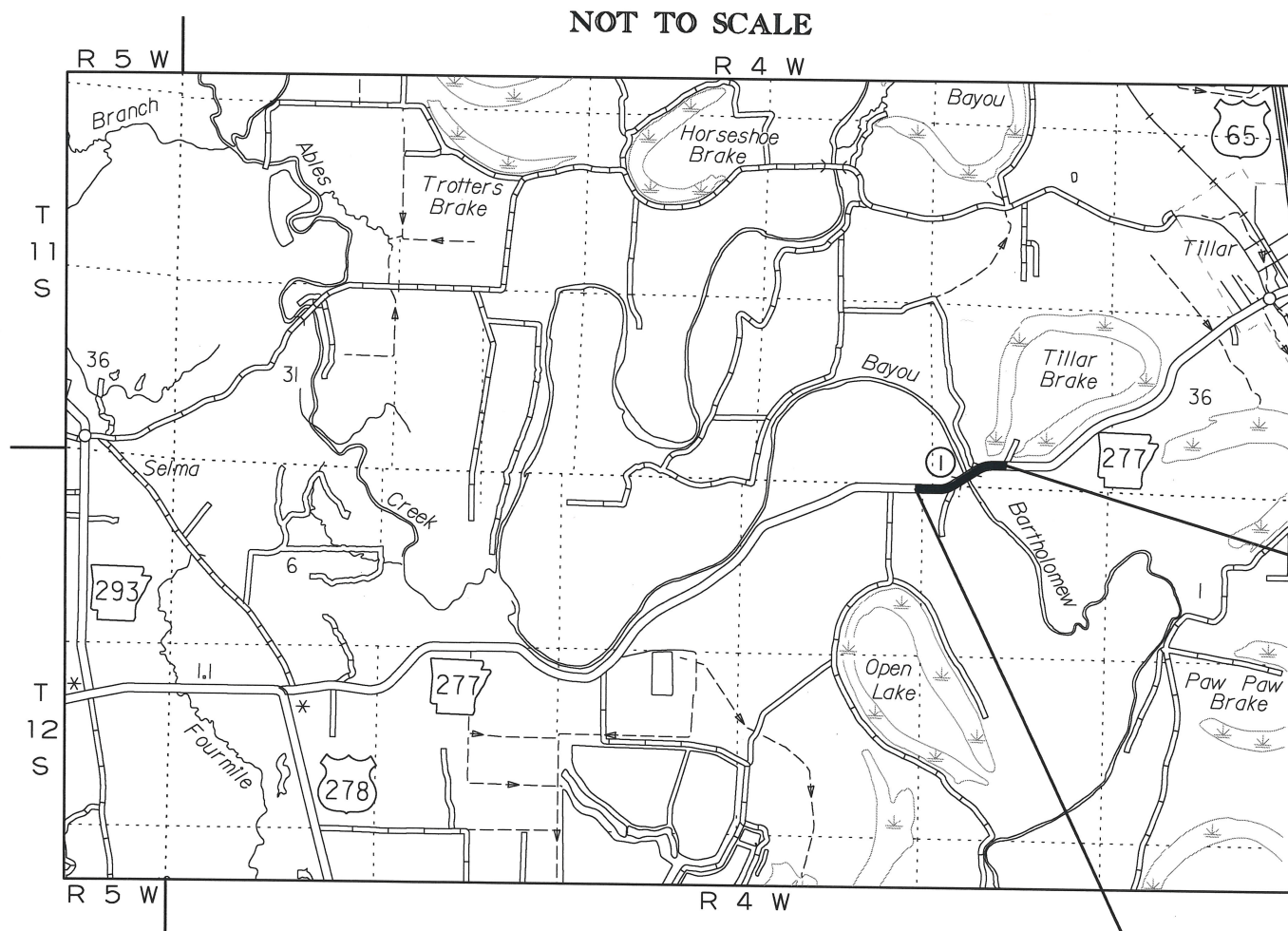
BAYOU BARTHOLOMEW
STR. & APPRS. (S)
DREW COUNTY
ROUTE 277 SECTION 1
JOB 020589
FEDERAL AID PROJECT NHPP-022(38)



ARKANSAS HIGHWAY DISTRICT 2

BRIDGE CONSTRUCTION DATA

- ① STA. 113+68.94 BRIDGE END
BRIDGE NO. 07453 OVER BAYOU BARTHOLOMEW
210'-0" COMP. PRESTRESSED
CONCRETE GIRDER UNIT (70',70',70')
140'-0" COMP. PRESTRESSED
CONCRETE GIRDER UNIT (70',70')
30'-0" CLEAR ROADWAY
352'-1 1/2" BRIDGE LENGTH
STA. 117+21.06 BRIDGE END



DESIGN TRAFFIC DATA

DESIGN YEAR	2040
2020 ADT	530
2040 ADT	660
2040 DHV	73
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	9%
DESIGN SPEED	55 MPH

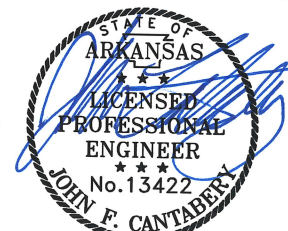
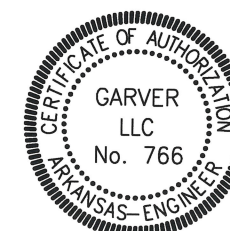
STA. 126+50.00
END JOB 020589

STA. 102+00.00
BEGIN JOB 020589
L.M. 4.09

PROJECT COORDINATES

	BEGIN	MID-POINT	END
LATITUDE	N 33°41'38"	N 33°41'41"	N 33°41'45"
LONGITUDE	W 91°29'14"	W 91°29'01"	W 91°28'48"
STATION	102+00.00	114+25.00	126+50.00

GROSS LENGTH OF PROJECT	2450.00 FEET OR 0.464 MILES
NET LENGTH OF ROADWAY	2097.88 FEET OR 0.397 MILES
NET LENGTH OF BRIDGES	352.12 FEET OR 0.067 MILES
NET LENGTH OF PROJECT	2450.00 FEET OR 0.464 MILES



11-4-2019

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.	020589	2
							58	
INDEX OF SHEETS AND STANDARD DRAWINGS								

2



SHEET NO.	TITLE	BRIDGE NO.	DRAWING NO.
1	TITLE SHEET		
2	INDEX OF SHEETS AND STANDARD DRAWINGS		
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
4 - 5	TYPICAL SECTIONS OF IMPROVEMENT		
6 - 7	SPECIAL DETAILS		
8 - 10	TEMPORARY EROSION CONTROL DETAILS		
11 - 12	MAINTENANCE OF TRAFFIC DETAILS		
13	PERMANENT PAVEMENT MARKING DETAILS		
14	SOIL BORING LOGS		
15 - 17	QUANTITIES		
18	SCHEDULE OF BRIDGE QUANTITIES	07453	60891
19	SUMMARY OF QUANTITIES AND REVISIONS		
20 - 21	SURVEY CONTROL DETAILS		
22 - 23	PLAN AND PROFILE SHEETS		
24	DRIVEWAY PROFILES		
25	LAYOUT OF BRIDGE HWY. 277 OVER BAYOU BARTHOLOMEW (SHEET 1 OF 3)	07453	60892
26	LAYOUT OF BRIDGE HWY. 277 OVER BAYOU BARTHOLOMEW (SHEET 2 OF 3)	07453	60893
27	LAYOUT OF BRIDGE HWY. 277 OVER BAYOU BARTHOLOMEW (SHEET 3 OF 3)	07453	60894
28	DETAILS OF END BENTS (SHEET 1 OF 4)	07453	60895
29	DETAILS OF END BENTS (SHEET 2 OF 4)	07453	60896
30	DETAILS OF END BENTS (SHEET 3 OF 4)	07453	60897
31	DETAILS OF END BENTS (SHEET 4 OF 4)	07453	60898
32	DETAILS OF INTERMEDIATE BENTS (SHEET 1 OF 4)	07453	60899
33	DETAILS OF INTERMEDIATE BENTS (SHEET 2 OF 4)	07453	60900
34	DETAILS OF INTERMEDIATE BENTS (SHEET 3 OF 4)	07453	60901
35	DETAILS OF INTERMEDIATE BENTS (SHEET 4 OF 4)	07453	60902
36	DETAILS OF 24" & 30" DIA. STEEL SHELL PILES	07453	60903
37	DETAILS OF ELASTOMERIC BEARINGS (SHEET 1 OF 2)	07453	60904
38	DETAILS OF ELASTOMERIC BEARINGS (SHEET 2 OF 2)	07453	60905
39	DETAILS OF 210'-0" PRESTRESSED CONCRETE GIRDER UNIT (SHEET 1 OF 3)	07453	60906
40	DETAILS OF 210'-0" PRESTRESSED CONCRETE GIRDER UNIT (SHEET 2 OF 3)	07453	60907
41	DETAILS OF 210'-0" PRESTRESSED CONCRETE GIRDER UNIT (SHEET 3 OF 3)	07453	60908
42	DETAILS OF 140'-0" PRESTRESSED CONCRETE GIRDER UNIT (SHEET 1 OF 3)	07453	60909
43	DETAILS OF 140'-0" PRESTRESSED CONCRETE GIRDER UNIT (SHEET 2 OF 3)	07453	60910
44	DETAILS OF 140'-0" PRESTRESSED CONCRETE GIRDER UNIT (SHEET 3 OF 3)	07453	60911
45	DETAILS OF PRESTRESSED PRECAST CONCRETE DECK PANELS	07453	60912
46	DETAILS COMMON TO ALL UNITS (SHEET 1 OF 4)	07453	60913
47	DETAILS COMMON TO ALL UNITS (SHEET 2 OF 4)	07453	60914
48	DETAILS COMMON TO ALL UNITS (SHEET 3 OF 4)	07453	60915
49	DETAILS COMMON TO ALL UNITS (SHEET 4 OF 4)	07453	60916
50	DETAILS OF TYPE SPECIAL APPROACH SLAB	07453	60917
51 - 58	CROSS SECTIONS		
NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.			

BRIDGE STANDARD DRAWINGS

DRWNG. NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02/27/14
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02/27/14
55008	STANDARD DETAILS FOR POURED SILICONE JOINTS	02/11/16
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	03/24/20
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03/24/16
55030C	STANDARD DETAILS FOR TYPE C APPROACH GUTTERS	02/27/14

ROADWAY STANDARD DRAWINGS

DRWNG. NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12/08/16
FES-1	FLARED END SECTION	10/18/96
FES-2	FLARED END SECTION	10/18/96
GR-6	GUARD RAIL DETAILS	11/07/19
GR-7	GUARD RAIL DETAILS	11/07/19
GR-8	GUARD RAIL DETAILS	11/07/19
GR-9	GUARD RAIL DETAILS	11/07/19
GR-10	GUARD RAIL DETAILS	11/07/19
GR-11	GUARD RAIL DETAILS	11/07/19
GR-12	GUARD RAIL DETAILS	05/14/20
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02/27/14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	02/27/14
PCP-1	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)	02/27/14
PCP-2	PLASTIC PIPE CULVERT (PVC F949)	02/27/14
PCP-3	PLASTIC PIPE CULVERT (POLYPROPYLENE)	02/27/20
PM-1	PAVEMENT MARKING DETAILS	02/27/20
PU-1	DETAILS OF PIPE UNDERDRAIN	12/08/16
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	11/07/19
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11/07/19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11/07/19
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	02/27/20
TC-4	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11/07/19
TC-5	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11/07/19
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11/16/17
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11/03/94
WF-4	WIRE FENCE TYPE C & D	08/22/02

5/5/2020 10:00:20 AM
WORKSPACE: AHTD
L:\2017\1701520 - Bayou Bartholomew\Drawings\17020589_1DX_01.dgn
REVISED DATE:

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.		020589	3	58
				2 GOVERNING SPECIFICATIONS AND GENERAL NOTES				

GOVERNING SPECIFICATIONS

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

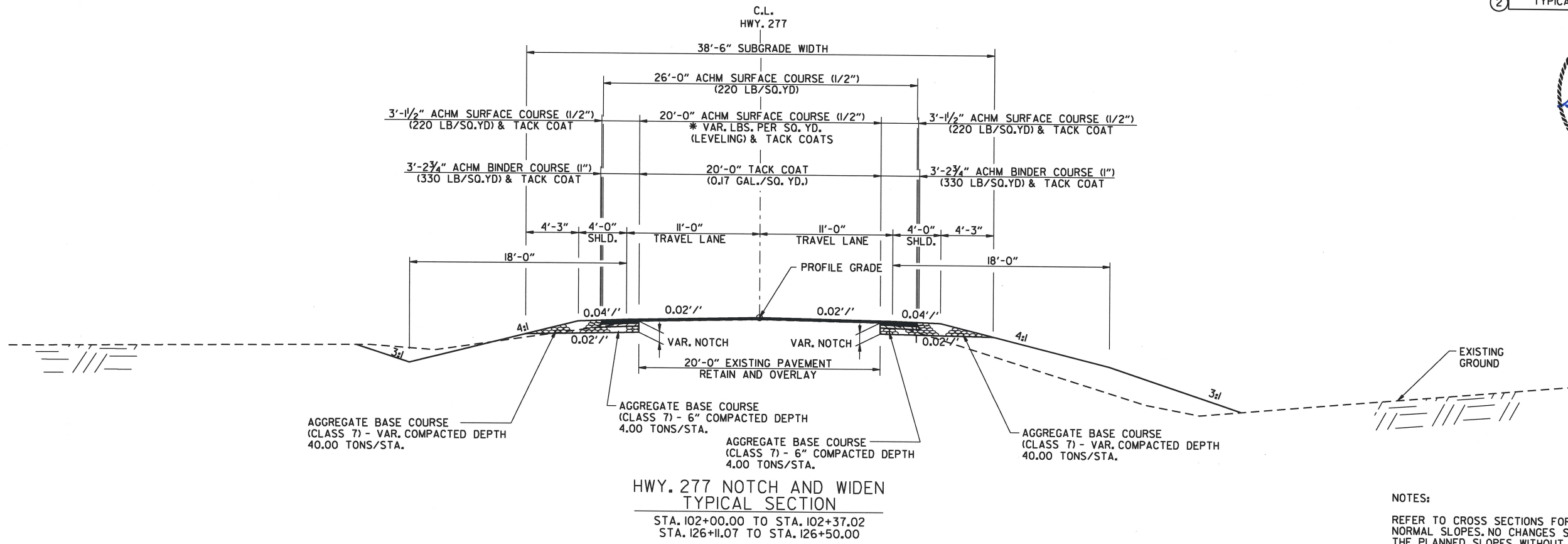
NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
100-4	DEPARTMENT NAME CHANGE
102-2	ISSUANCE OF PROPOSALS
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
210-1	UNCLASSIFIED EXCAVATION
303-1	AGGREGATE BASE COURSE
306-1	QUALITY CONTROL AND ACCEPTANCE
400-1	TACK COATS
400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6	LIQUID ANTI-STRIP ADDITIVE
404-3	DESIGN OF ASPHALT MIXTURES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
600-2	INCIDENTAL CONSTRUCTION
603-1	LANE CLOSURE NOTIFICATION
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1	CONCRETE DITCH PAVING
606-1	PIPE CULVERTS FOR SIDE DRAINS
617-1	GUARDRAIL TERMINAL (TYPE 2)
620-1	MULCH COVER
800-1	STRUCTURES
802-3	CONCRETE FOR STRUCTURES
804-2	REINFORCING STEEL FOR STRUCTURES
807-2	STEEL STRUCTURES
808-1	INSTALLATION OF ELASTOMERIC BEARINGS
808-2	ELASTOMERIC BEARINGS
JOB 020589	BIDDING REQUIREMENTS AND CONDITIONS
JOB 020589	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 020589	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 020589	CARGO PREFERENCE ACT REQUIREMENTS
JOB 020589	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 020589	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 020589	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 020589	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 020589	ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB 020589	EXCAVATION AND EMBANKMENT
JOB 020589	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 020589	MANDATORY ELECTRONIC CONTRACT
JOB 020589	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 020589	NESTING SITES OF MIGRATORY BIRDS
JOB 020589	PARTNERING REQUIREMENTS
JOB 020589	PLASTIC PIPE
JOB 020589	PRECAST DECK PANELS
JOB 020589	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 020589	RESTRAINING CONDITIONS
JOB 020589	SECTION 404 NATIONWIDE 23 PERMIT REQUIREMENTS
JOB 020589	SHORING FOR CULVERTS
JOB 020589	SOIL STABILIZATION
JOB 020589	STORM WATER POLLUTION PREVENTION PLAN
JOB 020589	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 020589	UTILITY ADJUSTMENTS
JOB 020589	VALUE ENGINEERING
JOB 020589	VEGETATED BUFFER ZONE
JOB 020589	WARM MIX ASPHALT
JOB 020589	WELLHEAD PROTECTION

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. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.
8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENT REMOVED SHALL BE PAID FOR UNDER PAY ITEM 210 - EXCAVATION AND EMBANKMENT, UNLESS OTHERWISE NOTED.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.



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.		020589	4	58
2 TYPICAL SECTIONS OF IMPROVEMENT								



NOTES:

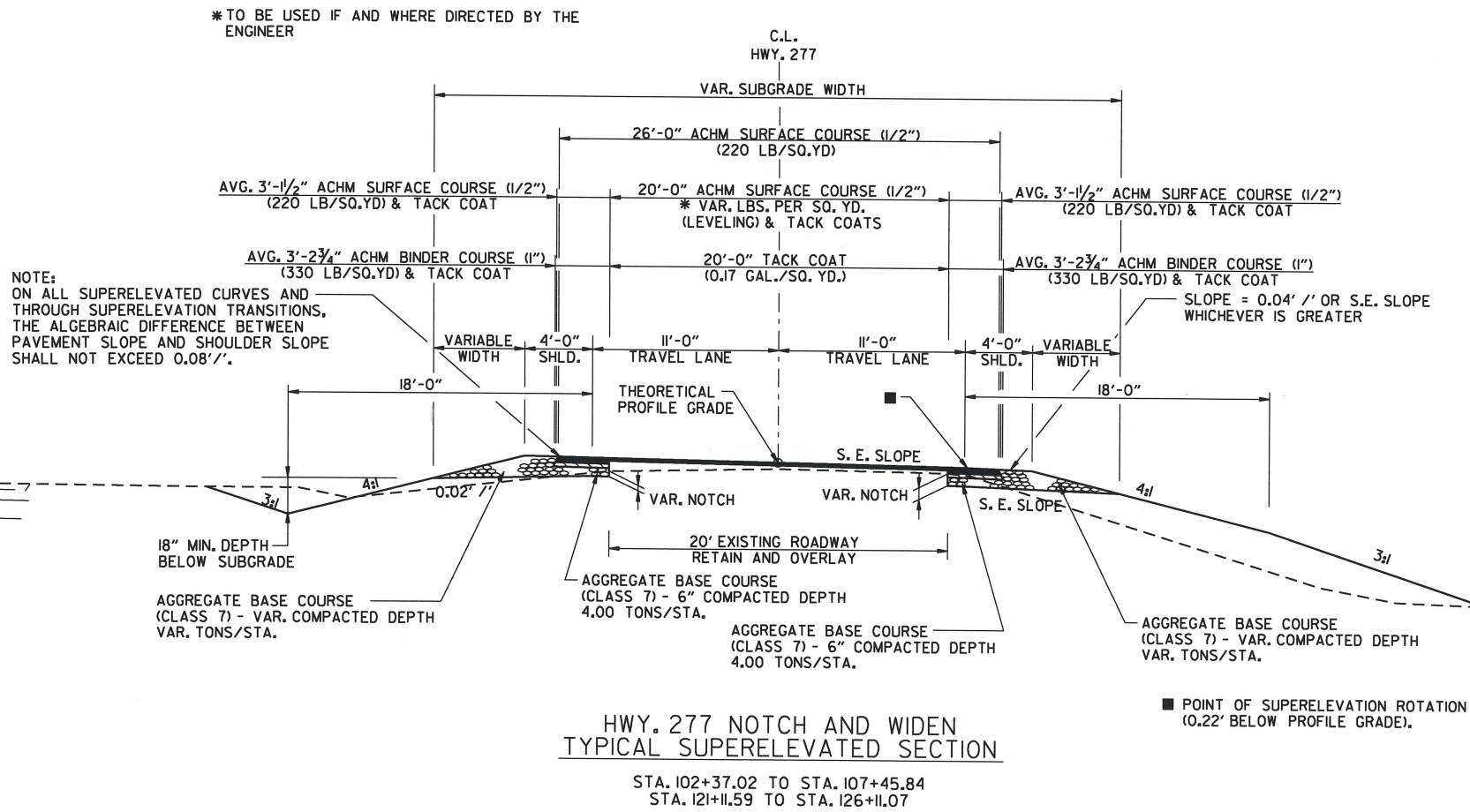
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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

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

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.



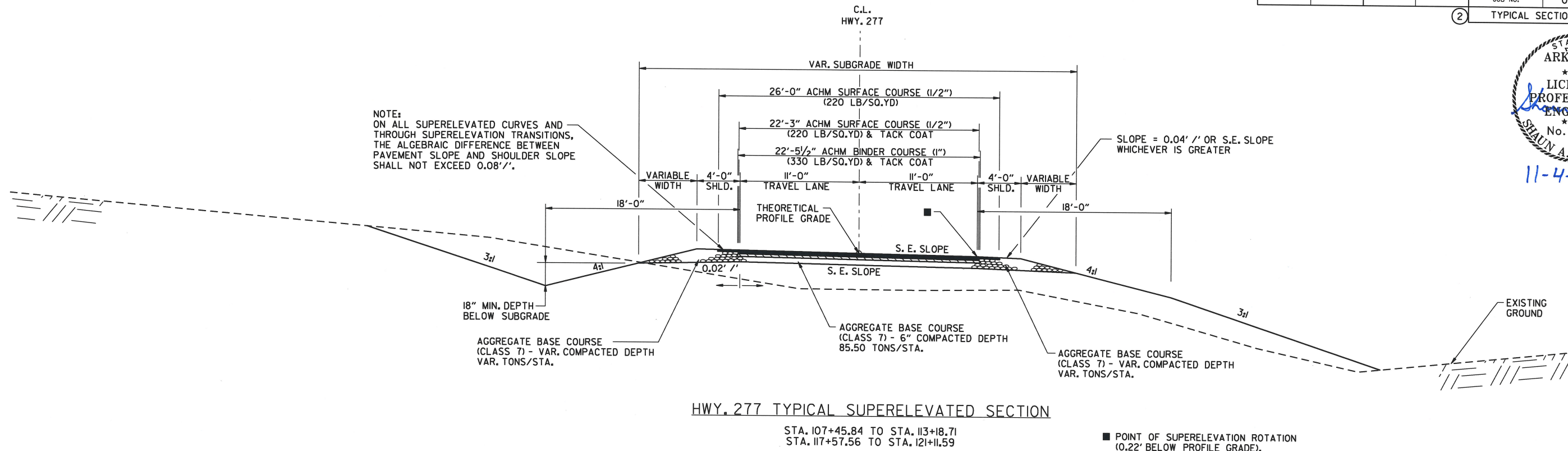
NOTE:
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

■ POINT OF SUPERELEVATION ROTATION
(0.22' BELOW PROFILE GRADE).

C:\gervosini\11/1/2019 9:06:21 AM
 WORKSPACE1\AHTD
 L:\2017\101520 - Bayou Bartholomew Drawings\020589_TYP.dgn
 REVISED DATE:

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.		020589	5	58
2 TYPICAL SECTIONS OF IMPROVEMENT								

STATE OF ARKANSAS
 LICENSED PROFESSIONAL ENGINEER
 No. 13436
 SHAUN A. ROBERSON
 11-4-2019



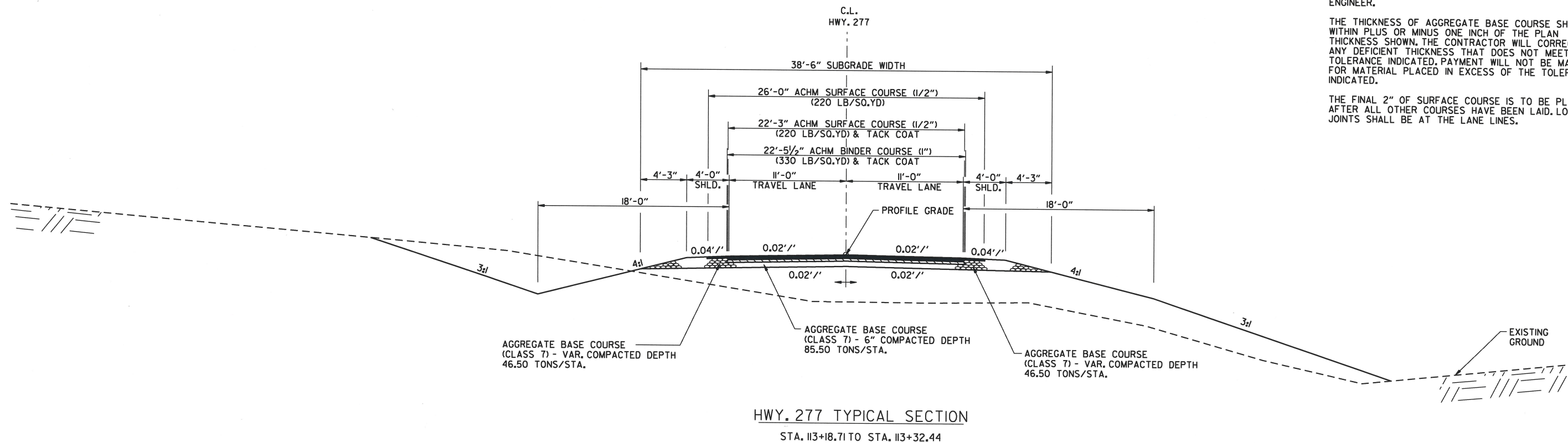
NOTE: SEE BRIDGE PLANS FOR STA. 113+68.94 TO STA. 117+21.06

NOTES:

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

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

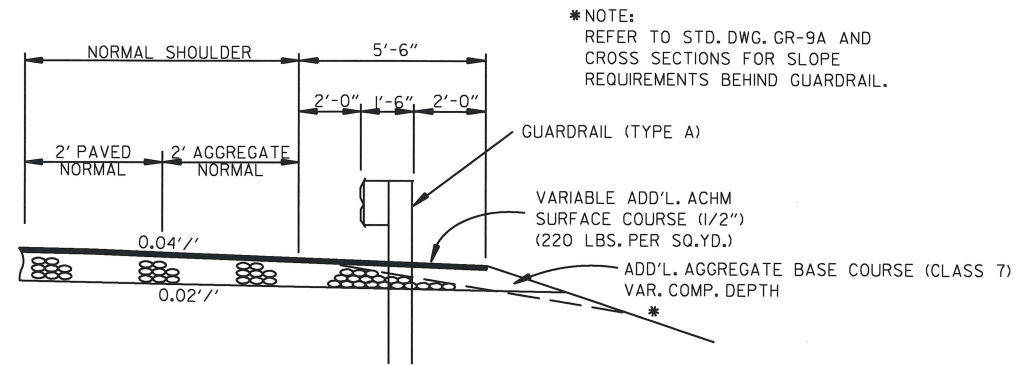
THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES.



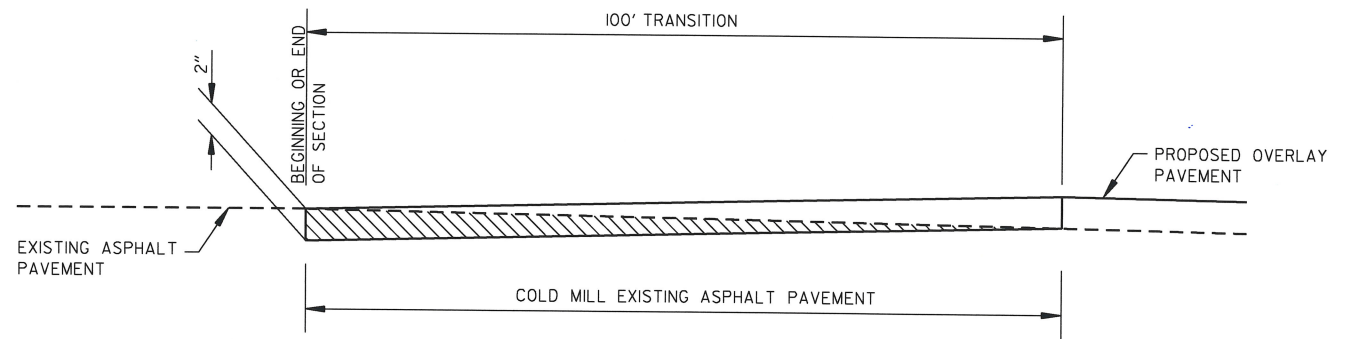
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	020589		6	58

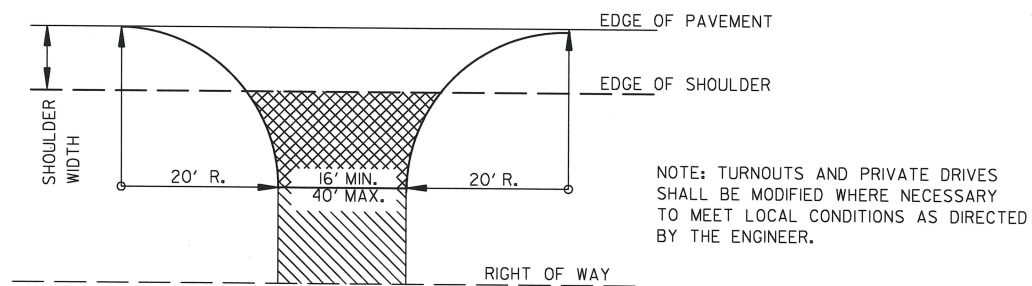
2 SPECIAL DETAILS



WIDENING FOR GUARDRAIL AT PROPOSED SHOULDER EDGE

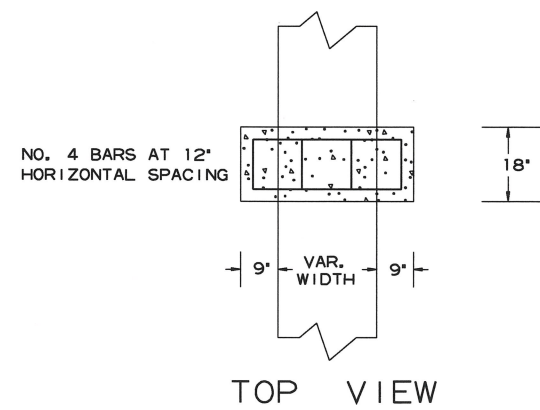


DETAIL FOR TRANSITIONS

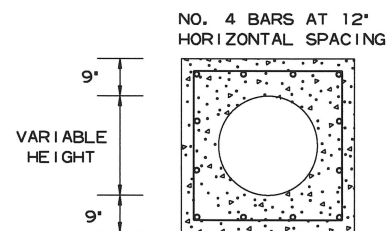


- ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT DRIVE EXISTS
- AGGREGATE BASE COURSE (CLASS 7) 9" COMP. DEPTH OR CONFORM TO EXISTING DRIVEWAY.

DETAIL FOR DRIVEWAY TURNOUTS



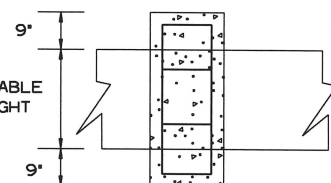
TOP VIEW



FRONT VIEW

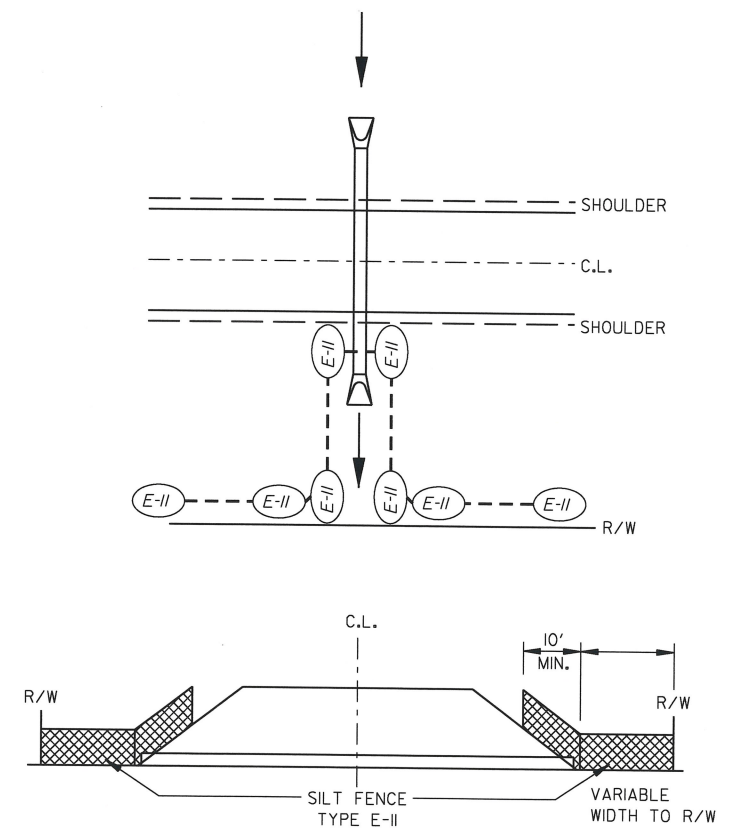
MIN 3' COVER

NO. 4 BARS AT 12' VERTICAL SPACING



SIDE VIEW

SINGLE PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL



DETAILS OF SILT FENCE AT CROSS DRAINS

SPECIAL DETAILS

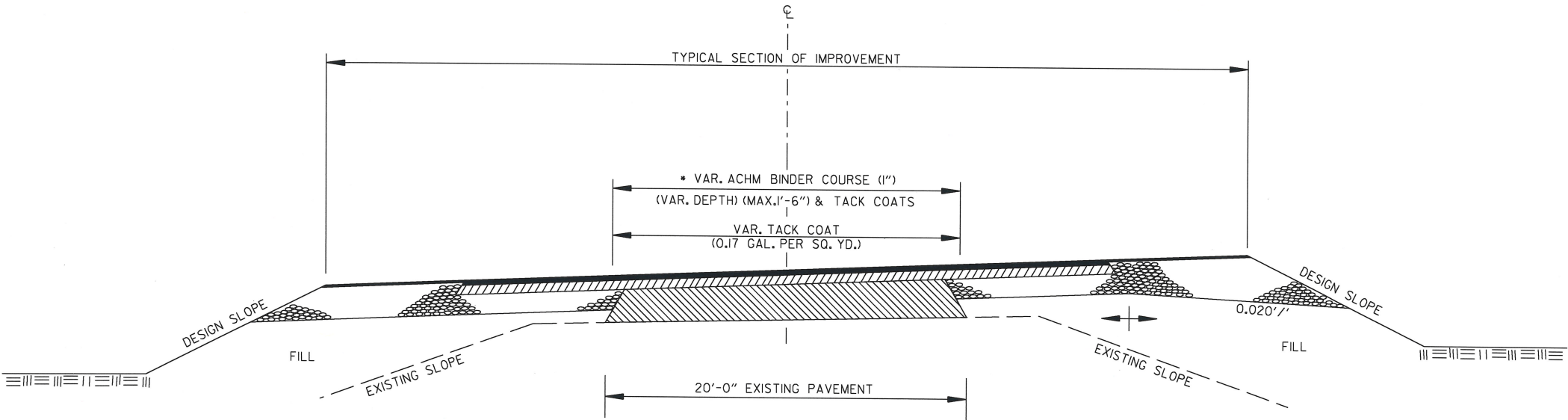


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	7	58

2 SPECIAL DETAILS



11-4-2019



* 6" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH ACHM BINDER COURSE (1")

METHOD OF RAISING GRADE

NOTES:

- (1) THIS DETAIL TO BE USED ONLY IF AND WHERE DIRECTED BY THE ENGINEER.
- (2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
- (3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS.

SPECIAL DETAILS

STATE OF
ARKANSAS

LICENSED
PROFESSIONAL
ENGINEER

No. 13436
SHAUN A. ROBBERSON
11-4-2019

STA. 102+00.00
BEGIN JOB 020589
L.M. 4.09

REVI SI ONS

[illegible]

(E-5) = SAND BAG DITCH CHECKS (E-7) = DROP INLET SILT FENCE
 (E-6) = ROCK DITCH CHECKS (E-11) = SILT FENCE

EROSION CONTROL MEASURES TO BE
PLACED DURING APPROPRIATE STAGES.
THESE DEVICES SHALL BE LEFT IN PLACE AS
LONG AS REQUIRED TO CONTROL EROSION.

HWY. 277

SILT FENCE	(E-11)	LINE, FT.
STA. 116+75 TO 118+70	LT.	420
STA. 118+85 TO 122+90	LT.	540
STA. 124+85 TO 127+50	LT.	265
STA. 119+00 TO 122+95	RT.	365
STA. 123+05 TO 124+90	RT.	185
STA. 125+10 TO 127+50	RT.	250

SAND BAG DITCH CHECK	(E-5)	INSTALLATION
STA. 122+55	RT.	I
STA. 122+85	LT.	I

ROCK DITCH CHECK	(E-6)	INSTALLATION
STA. 123+15	LT.	I
STA. 123+55	RT.	I

STA. 126+50.00
END JOB 020589

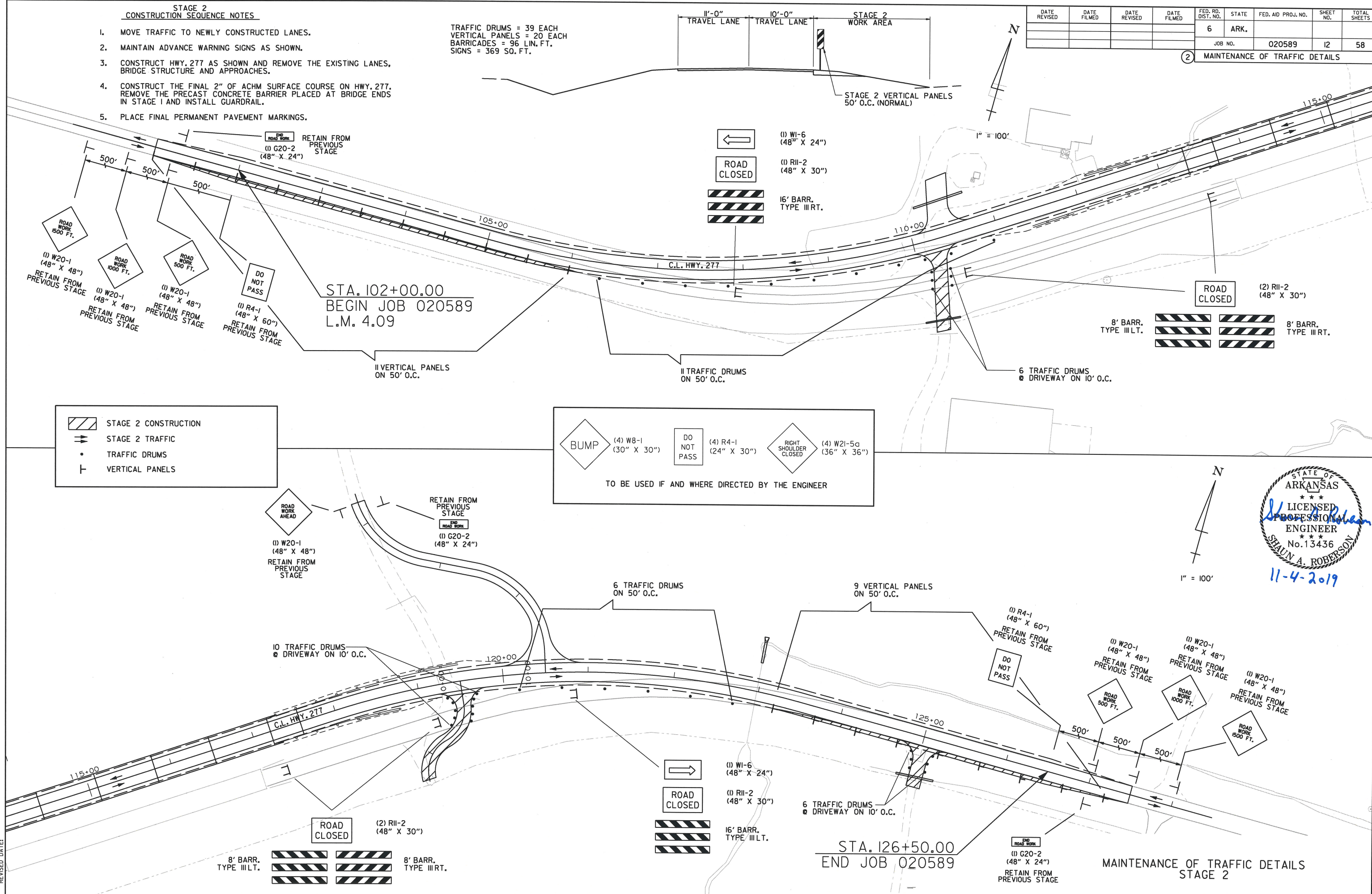
TEMPORARY EROSION
CONTROL DETAILS
CLEARING AND GRUBBING STAGE

1. MOVE TRAFFIC TO NEWLY CONSTRUCTED LANES.
2. MAINTAIN ADVANCE WARNING SIGNS AS SHOWN.
3. CONSTRUCT HWY. 277 AS SHOWN AND REMOVE THE EXISTING LANES, BRIDGE STRUCTURE AND APPROACHES.
4. CONSTRUCT THE FINAL 2" OF ACHM SURFACE COURSE ON HWY. 277. REMOVE THE PRECAST CONCRETE BARRIER PLACED AT BRIDGE ENDS IN STAGE 1 AND INSTALL GUARDRAIL.
5. PLACE FINAL PERMANENT PAVEMENT MARKINGS.

Diagram illustrating the layout of the Stage 2 Work Area. The layout consists of two travel lanes, each 11'-0" wide, separated by a 10'-0" gap. The total width of the work area is 32'-0".

Section	Width
TRAVEL LANE	11'-0"
TRAVEL LANE	11'-0"
GAP	10'-0"
TOTAL	32'-0"

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.		020589	12	58
				MAINTENANCE OF TRAFFIC DETAILS				



CGGervasi
WORKSPACE: AHTD
L:\2017\1701520 - Bayou Bartholomew\Drawings\020589_MOT_STG.dgn
11/1/2019 9:06:26 AM
REVISED DATE:

11/1/2019 9:06:26 AM
C:\Users\cervosini\OneDrive\Documents\Drawings\020589_P.M_01.dgn
WORKSPACE: AHTD
L:\201\101520 - Bayou Bartholomew Drawings\020589_P.M_01.dgn
REVISED DATE:



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.		020589	13	58
② PERMANENT PAVEMENT MARKING DETAILS								

STA. 102+00.00
BEGIN JOB 020589
L.M. 4.09

6" WHITE REFLECTORIZED PAINT PAVEMENT MARKING			
STA.	STA.	LOCATION	LIN. FT.
101+00.00	115+00.00	LT.	1400
101+00.00	115+00.00	RT.	1400

6" YELLOW REFLECTORIZED PAINT PAVEMENT MARKING			
STA.	STA.	LOCATION	LIN. FT.
101+00.00	115+00.00	C.L.	2800

TYPE II YELLOW/YELLOW RAISED PAVEMENT MARKERS AT 80' SPACING			
STA.	STA.	LOCATION	EA.
101+00.00	115+00.00	C.L.	18

6" WHITE REFLECTORIZED
PAINT PAVEMENT MARKING

* 6" DOUBLE YELLOW REFLECTORIZED
PAINT PAVEMENT MARKING W/ TYPE II
YELLOW/YELLOW RAISED PAVEMENT MARKERS
AT 80' SPACING

* THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON
A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT.
THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES
PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE
MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE
HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

6" WHITE REFLECTORIZED PAINT PAVEMENT MARKING			
STA.	STA.	LOCATION	LIN. FT.
115+00.00	127+50.00	LT.	1250
115+00.00	127+50.00	RT.	1250

6" YELLOW REFLECTORIZED PAINT PAVEMENT MARKING			
STA.	STA.	LOCATION	LIN. FT.
115+00.00	127+50.00	C.L.	2500

TYPE II YELLOW/YELLOW RAISED PAVEMENT MARKERS AT 80' SPACING			
STA.	STA.	LOCATION	EA.
115+00.00	127+50.00	C.L.	16

* 6" DOUBLE YELLOW REFLECTORIZED
PAINT PAVEMENT MARKING W/ TYPE II
YELLOW/YELLOW RAISED PAVEMENT MARKERS
AT 80' SPACING

6" WHITE REFLECTORIZED
PAINT PAVEMENT MARKING

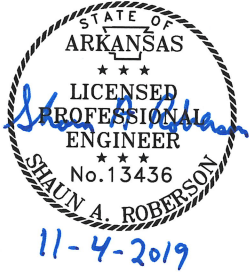
STA. 126+50.00
END JOB 020589

PERMANENT PAVEMENT MARKING DETAILS

CC06ervostini 11/1/2019 9:06:27 AM
WORKSPACE: AHTD
L:\2017\101520 - Bayou Bartholomew Drawings\020589_SBL.dgn
REVISED DATE:

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.		020589	14	58

2 SOIL BORING LOG

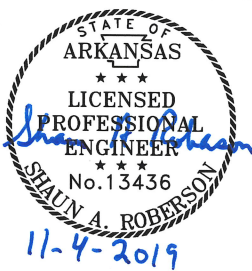


SOIL BORING LOG									
BORING or TEST PIT NO.	APPROX. STATION	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			PERCENT PASSING #200, %	UNIFIED CLASS.	AASHTO CLASS.
				LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX			
P1	102+50, 20' LT	0.5-1.5	15	34	17	17	70	CL	A-6
P1	102+50, 20' LT	4.5-5.5	21	34	19	15	93	CL	A-6
P2	107+54, CL	0.5-1.5	14	23	17	6	67	ML-CL	A-4
P2	107+54, CL	2.5-3.5	19	32	19	13	97	CL	A-6
S1A	113+68, CL	0.5-1.5	11	32	20	12	94	CL	A-6
S1A	113+68, CL	4.5-5.5	22	56	20	36	99	CH	A-7-6
S1	112+93, 5' RT	0.5-1.5	21	35	19	16	90	CL	A-6
S1	112+93, 5' RT	6.5-7.5	26	NON-PLASTIC			99	ML	A-4
S1	112+93, 5' RT	14-15	26	27	20	7	93	ML-CL	A-4
S1	112+93, 5' RT	24-24.5	29	29	19	10	92	CL	A-4
S1	112+93, 5' RT	29-30	20	----	----	----	9	SM-SP	A-3
S1	112+93, 5' RT	34-35	24	----	----	----	16	SM	A-2-4
S1	112+93, 5' RT	44-45	23	----	----	----	8	SM-SP	A-3
S1	112+93, 5' RT	54-55	17	----	----	----	20	SM	A-1-b
S1	112+93, 5' RT	69-70	15	----	----	----	8	GM-GP	A-1-a
S1	112+93, 5' RT	74-75	12	----	----	----	8	SM-SW	A-1-a
S1	112+93, 5' RT	84-85	19	37	16	21	40	SC	A-6
S1	112+93, 5' RT	99-100	18	----	----	----	2	GW	A-1-a
S1	112+93, 5' RT	109-110	15	44	15	29	10	SC-SP	A-2-7
S2	117+85, 10' RT	2.5-3.5	22	39	17	22	94	CL	A-6
S2	117+85, 10' RT	6.5-7.5	17	----	----	----	84	ML	A-4
S2	117+85, 10' RT	9-10	23	----	----	----	79	ML	A-4
S2	117+85, 10' RT	14-15	9	----	----	----	40	SM	A-4
S2	117+85, 10' RT	24-25	16	----	----	----	11	SM-SP	A-3
S2	117+85, 10' RT	44-45	21	----	----	----	4	SP	A-3
S2	117+85, 10' RT	54-55	15	----	----	----	33	SW	A-1-b
S2	117+85, 10' RT	69-70	18	----	----	----	3	SP	A-1-b
S2	117+85, 10' RT	84-85	16	----	----	----	2	SP	A-1-b
S2	117+85, 10' RT	89-90	14	----	----	----	3	SW	A-1-b
S2	117+85, 10' RT	109-110	32	83	27	56	99	CH	A-7-6
S3	114+70, 25' RT	4-5	25	38	15	23	64	CL	A-6
S3	114+70, 25' RT	9-10	25	NON-PLASTIC			24	SM	A-2-4
S3	114+70, 25' RT	19-20	23	----	----	----	7	SM-SP	A-3
S3	114+70, 25' RT	24-25	26	NON-PLASTIC			60	SM	A-4
S3	114+70, 25' RT	29-30	22	----	----	----	7	SM-SP	A-3
S3	114+70, 25' RT	39-40	27	----	----	----	12	SM-SP	A-2-4
S3	114+70, 25' RT	49-50	21	----	----	----	6	SM-SW	A-1-b
S3	114+70, 25' RT	59-60	15	----	----	----	1	GW	A-1-a
S4	115+93, 70' RT	14-15	37	24	22	2	52	SM	A-4
S4	115+93, 70' RT	24-25	23	----	----	----	7	SM-SP	A-3
S4	115+93, 70' RT	39-40	14	----	----	----	8	SM-SW	A-1-b
S4	115+93, 70' RT	64-65	12	----	----	----	11	GM-GP	A-1-a
S4	115+93, 70' RT	74-75	10	----	----	----	1	GM-GW	A-1-a
S2A	117+20, CL	0.5-1.5	22	41	20	21	83	CL	A-7-6
S2A	117+20, CL	2.5-3.5	16	36	17	19	65	CL	A-6
P3	121+98, 6' LT	0.5-1.5	10	30	18	12	79	CL	A-6
P3	121+98, 6' LT	2.5-3.5	10	29	19	10	88	CL	A-4
P4	126+54, 28' RT	0.5-1.5	16	NON-PLASTIC			14	SM	A-2-4
P4	126+54, 28' RT	4.5-5.5	16	27	19	8	86	CL	A-4
10/01A	108+60, CL	0.5-1.5	14	26	18	8	61	CL	A-4
10/01B	122+20, 5' LT	0.5-1.5	15	NON-PLASTIC			37	SM	A-4

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

SOIL BORING LOG

CG6ervosInI
WORKSPACE: AH1D
L:\2017\0101520 - Boyou Bar-tholomew Drawings\1-020589.01Y-01.dgn
11/4/2019 8:44:06 AM
REVISED DATE:



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.		020589	15	58
				2	QUANTITIES			

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	ENTIRE JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	REFLECTORIZED PAINT PAVEMENT MARKING	
			TYPE II (YELLOW/YELLOW)	WHITE 6"	YELLOW 6"
			EACH	LIN. FT.	
CONSTRUCTION PAVEMENT MARKINGS	10600	10600			
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)	34		34		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")	5300			5300	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")	5300				5300
TOTALS:		10600	34	5300	5300

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

NOTE: THE 6" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT.
THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING.
CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAX. NUMBER	TOTAL REQUIRED	VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING AND INSTALLING PRECAST CONC. BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER
									RIGHT	LEFT		
		IN.	EACH	EACH	REQ'D.	SQ. FT.	EACH	EACH	L.F.		L.F.	EACH
G20-2	END ROAD WORK	48" X 24"	3	3	3	24.00						
OM-3	OBJECT MARKER	12" X 36"	14		14	42.00						
* R4-1	DO NOT PASS	48" X 60"	6	6	6	120.00						
R11-2	ROAD CLOSED	48" X 30"	6	6	6	60.00						
* W21-5a	RIGHT SHOULDER CLOSED	36" X 36"	4	4	4	36.00						
W1-6	ONE DIRECTION ARROW	48" X 24"	2	2	2	16.00						
* W8-1	BUMP	30" X 30"	4	4	4	25.00						
W20-1	ROAD WORK AHEAD	48" X 48"	1	1	1	16.00						
W20-1	ROAD WORK xxxx FT	48" X 48"	6	6	6	96.00						
	TYPE III BARRICADE-LT. (8')		4	4	4					32		
	TYPE III BARRICADE-RT. (8')		4	4	4				32			
	TYPE III BARRICADE-LT. (16')		1	1	1					16		
	TYPE III BARRICADE-RT. (16')		1	1	1				16			
	TRAFFIC DRUMS		75	39	75			75				
	VERTICAL PANELS		29	20	29		29					
	FURNISHING AND INSTALLING PRECAST CONC. BARRIER		360		360						360	
	TEMPORARY IMPACT ATTENUATION BARRIER		1		1							1
TOTALS:						435.00	29	75	48	48	360	1

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

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

NOTE: THE QUANTITY OF VERTICAL PANELS AND TRAFFIC DRUMS PROVIDED IN THE CONTRACT IS FOR THE FULL LENGTH OF THE PROJECT.

REMOVAL AND DISPOSAL OF STRUCTURES

STATION	STATION	LOCATION	BUILDINGS	CONCRETE SLABS	FENCE	GUARDRAIL	PIPE CULVERTS	SIGNS	SIGN FOUNDATIONS	WELL
			EACH	SQ. YD.	L.F.	L.F.	EACH	EACH	EACH	EACH
110+90	111+00	HWY. 277 - LT.	1							
111+80		HWY. 277 - LT.	1							
112+15	112+38	HWY. 277 - LT.	1							
111+77	111+99	HWY. 277 - LT.		12						
112+12		HWY. 277 - LT.		70						
117+70	122+50	HWY. 277 - LT.			560					
118+80	119+30	HWY. 277 - LT.			50					
113+52	113+78	HWY. 277 - RT.				25				
113+52	113+78	HWY. 277 - RT.				25				
116+99	117+26	HWY. 277 - RT.				25				
117+00	117+26	HWY. 277 - RT.				25				
110+31		HWY. 277 - RT.					1			
125+02		HWY. 277 - RT.					1			
110+20		HWY. 277 - LT.						1		
109+74		HWY. 277 - LT.							2	
111+00		HWY. 277 - LT.								1
112+80		HWY. 277 - LT.								1
114+96		HWY. 277 - ATT. TO BRIDGE								1
TOTALS:			3	82	610	100	2	1	2	3

APPROACH GUTTERS

STATION	STATION	LOCATION	APPROACH GUTTERS (TYPE C)	REINFORCING STEEL - ROADWAY (GR. 60)
			CU. YD.	LB.
113+32.44	113+68.94	HWY. 277	8.30	445
113+32.44	113+68.94	HWY. 277	8.30	445
117+21.06	117+57.56	HWY. 277	8.30	445
117+21.06	117+57.56	HWY. 277	8.30	445
TOTALS:			33.20	1780

APPROACH SLABS

STATION	STATION	LOCATION	APPROACH SLAB TYPE SPECIAL	REINFORCING STEEL RDWY. (GR 60)
			CU. YD.	POUND
113+32.44	113+68.94	HWY. 277	45.00	5540
117+21.06	117+57.56	HWY. 277	45.00	5540
TOTALS:			90.00	11080

EARTHWORK

LOCATION	UNCLASSIFIED EXCAVATION			COMPACTED EMBANKMENT
	UNDERCUT	TYPICAL	TOTAL	*TOTAL
	CU. YD.			
HWY. 277 - STAGE 1	603	2541	3144	21194
HWY. 277 - STAGE 2		3761	3761	378
BRIDGE TOE CUT		1506	1506	
DRIVEWAYS				1948
TOTALS:	603	7808	8411	23520

EARTHWORK NOTES:

- ESTIMATES FOR QUANTITIES OF EXCAVATION AND EMBANKMENT ARE TAKEN DIRECTLY FROM THE CROSS SECTIONS, DETAILED IN ACCORDANCE WITH THE PLANS.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENT REMOVED SHALL BE PAID FOR UNDER PAY ITEM 210 - EXCAVATION AND EMBANKMENT, UNLESS OTHERWISE NOTED.
- EARTHWORK QUANTITIES SHOWN ABOVE SHALL BE PAID AS PLAN QUANTITY.

* INCLUDES 603 CU. YDS. OF COMPACTED EMBANKMENT USED FOR BACKFILL OF UNDERCUT.

FENCING

STATION	STATION	LOCATION	WIRE FENCE
			(TYPE D)
			LIN. FT.
117+94	120+10	HWY. 277 - LT.	235
120+80	122+15	HWY. 277 - LT.	140
TOTAL:			375

SOIL STABILIZATION

LOCATION	TON
ENTIRE PROJECT	100

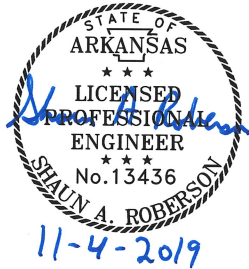
QUANTITY ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

QUANTITIES

CGGervosini
WORKSPACE: AHTD
L:\2017\101520 - Boyou Barr\Holmes\Drawings\020589.01Y_01.dgn
11/1/2019 9:35:25 AM
REVISED DATE:

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.		020589	16	58
				QUANTITIES				

2



TEMPORARY EROSION CONTROL

STATION	STATION	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	SEDIMENT REMOVAL AND DISPOSAL	TEMPORARY SEEDING	MULCH COVER	WATER
		BAG	CU. YD.	L.F.	CU. YD.	CU. YD.	CU. YD.	ACRE	ACRE	M.G.
CLEARING & GRUBBING										
103+30	106+40			340						
113+00	114+05			215						
113+90		22								
116+75	118+70			420						
118+85	122+90			540						
119+00	122+95			365						
122+55		22								
122+85		22								
123+05	124+90			185						
123+15			15							
123+55			15							
124+85	127+50			265						
125+10	127+50			250						
STAGE 1										
106+90			15							
110+00		22								
112+05			15							
113+50		22								
122+80		22								
122+90	123+10			125						
123+10			15							
STAGE 2										
102+10		22								
111+00			15							
113+60	114+10			180						
116+75	117+35			215						
118+80	119+30			105						
120+05		22								
121+15			15							
121+40		22								
121+65			15							
122+30		22								
122+70			15							
122+95		22								
* ENTIRE PROJECT		44	30	100	100	100	100	3.95	3.95	80.6
TOTALS:		286	165	3305	100	100	100	3.95	3.95	80.6

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

BASIS OF ESTIMATE:

SAND BAG DITCH CHECKS = 22 BAGS / LOCATION

ROCK DITCH CHECKS = 15 CU. YD. / LOCATION

WATER = 20.4 M.G. PER ACRE TEMPORARY SEEDING

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

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING CU. YD.
ENTIRE PROJECT	100

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
122+99.40	HEADWALL RT. OF HWY. 277	1
TOTAL:		1

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

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	GUARDRAIL TERMINAL (TYPE 2)	THRIE BEAM GUARDRAIL TERMINAL
			L.F.	EACH	EACH
111+39.79	113+58.54	HWY. 277 - RT.	150	1	1
112+14.79	113+58.54	HWY. 277 - LT.	75	1	1
117+31.46	119+50.21	HWY. 277 - LT.	150	1	1
117+31.46	118+75.21	HWY. 277 - RT.	75	1	1
TOTALS:			450	4	4

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	WIDTH FEET	SQ. YD.
101+00.00	102+00.00	HWY. 277	VAR.	233
126+50.00	127+50.00	HWY. 277	VAR.	233
TOTAL:				466

EROSION CONTROL

LOCATION	LIME	SEEDING	MULCH COVER	SECOND SEEDING	WATER
	TON	ACRE			M.G.
ENTIRE PROJECT	7.90	3.95	3.95	3.95	402.9
TOTALS:	7.90	3.95	3.95	3.95	402.9

BASIS OF ESTIMATE:

LIME = 2 TONS PER ACRE SEEDING

WATER = 102.0 M.G. PER ACRE SEEDING

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
102+00.00	110+00.00	HWY. 277 - LT.	800.00	711.11
110+60.00	113+02.00	HWY. 277 - LT.	242.00	215.11
122+90.00	124+80.00	HWY. 277 - LT.	190.00	168.89
102+00.00	104+00.00	HWY. 277 - RT.	200.00	177.78
120+00.00	121+00.00	HWY. 277 - RT.	100.00	88.89
124+00.00	124+84.00	HWY. 277 - RT.	84.00	74.67
TOTAL:				1436.45

NOTE: AVERAGE WIDTH = 8'-0"

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STA.	
112+50.00	114+50.00	HWY. 277	2	2
116+40.00	125+50.00	HWY. 277	9	9
TOTALS:			11	11

4" PIPE UNDERDRAINS

LOCATION	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
	LIN. FT.	EACH
ENTIRE PROJECT *	500	4

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

QUANTITIES

4/16/2020 2:09:20 PM
WORKSPACE: AHTD
L:\2017\1701520 - Bayou Bartholomew Drawings\020589.0TY_01.dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						020589	17	58
				JOB NO.	QUANTITIES			

2

STRUCTURES

STATION	LOCATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III)	FLARED END SECTIONS FOR R.C. PIPE CULVERTS	SIDE DRAINS		SOLID SODDING	WATER	STANDARD DRAWINGS
			30"	30"	18"	24"			
			L.F.	EACH	L.F.		SQ. YD.	M.G.	
110+31.00	HWY. 277	INSTALL SIDE DRAIN LT.				60			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
110+31.00	HWY. 277	INSTALL SIDE DRAIN RT.			42				PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
122+96.57	HWY. 277	EXTEND CROSS DRAIN LT. AND CONSTRUCT F.E.S. ON LT.	26	1			13	0.2	PCC-1, FES-1, FES-2
125+02.00	HWY. 277	INSTALL SIDE DRAIN RT.				44			PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
TOTALS:			26	1	42	104	13	0.2	

BASIS OF ESTIMATE:
WATER = 12.6 GALS. PER SQ. YD. SOLID SODDING

FOR R.C. PIPE CULVERT INSTALLATIONS, USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	CONCRETE DITCH PAVING (TYPE B)		SOLID SODDING	WATER
			FEET	"W"	SQ. YD.		
						SQ. YD.	M.G.
121+00.00	122+95.00	HWY. 277	195	6	130	87	1.1
*ENTIRE PROJECT					25	17	0.2
TOTALS:					155	104	1.3

BASIS OF ESTIMATE:
WATER = 12.6 GALS. PER SQ. YD. SOLID SODDING

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



DIGITALLY SIGNED 4-20-2020

ACHM PATCHING OF EXISTING ROADWAY

LOCATION	TON
* ENTIRE PROJECT	100

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

ASPHALT CONCRETE PATCHING FOR
MAINTENANCE OF TRAFFIC

LOCATION	ASPHALT CONCRETE TON	TACK COAT GAL.
* ENTIRE PROJECT	10	20

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

BASIS OF ESTIMATE:
ASPHALT CONCRETE= 25 TONS PER MILE
TACK COAT = 50 GAL. PER MILE

BASE & SURFACING - DRIVEWAYS

STATION	LOCATION	WIDTH	AGGREGATE BASE COURSE (CLASS 7)(7" DEPTH)	ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ.YD.) (PG 64-22)	
		FEET	TON	SQ. YD.	TON
110+31	HWY. 277 - LT.	24	65.55	160.89	17.70
110+31	HWY. 277 - RT.	16	70.87	173.96	19.14
119+50	HWY. 277 - RT.	16	87.58	214.98	23.65
120+50	HWY. 277 - LT.	16	250.62	615.17	67.67
125+00	HWY. 277 - RT.	16	35.94	88.22	9.70
*ENTIRE PROJECT - TEMPORARY DRIVES			100.00		
TOTALS:			610.56	1253.22	137.86

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2") : 5.2% ASPHALT BINDER (PG 64-22), 94.8% MINERAL AGGREGATE, N_{MAX}=115

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

THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, WILL BE ALLOWED TO SUBSTITUTE A HIGHER PERFORMANCE GRADE ASPHALT SURFACE COURSE FOR DRIVEWAYS AND MINOR SIDE STREET CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.

BASE & SURFACING

STATION	STATION	LOCATION	LENGTH	ACHM SURFACE COURSE (1/2") (PG 64-22)									ACHM BINDER COURSE (1") (PG 64-22)				AGGREGATE BASE COURSE (CLASS 7)		TACK COAT						
				AVG. WIDTH FEET	SQ. YD.	LBS. PER SQ. YD.	TON	AVG. WIDTH FEET	SQ. YD.	LBS. PER SQ. YD.	TON	TOTAL	AVG. WIDTH FEET	SQ. YD.	LBS. PER SQ. YD.	TON			TOTAL	TONS PER STATION	TON	TOTAL WIDTH FEET	SQ. YD.	0.05 GAL./SQ. GAL.	AVG. WIDTH FEET
			FEET																						
101+00.00	102+00.00	TRANSITION	100.00	21.00	233.33	220	25.67					25.67					VAR.	44.00							
102+00.00	102+37.02	HWY. 277 - NOTCH AND WIDEN	37.02	26.00	106.95	220	11.76	6.25	25.71	220	2.83	14.59	6.46	26.57	330	4.38	88.00	32.58	32.71	134.55	6.73				
102+37.02	105+00.00	HWY. 277 - NOTCH AND WIDEN	262.98	26.00	759.72	220	83.57	6.25	182.63	220	20.09	103.66	6.46	188.76	330	31.15	VAR.	284.04	32.71	955.79	47.79				
105+00.00	107+45.84	HWY. 277 - NOTCH AND WIDEN	245.84	26.00	710.20	220	78.12	22.25	607.77	220	66.85	144.97	22.46	613.51	330	101.23	VAR.	354.44	44.71	1221.28	61.06				
107+45.84	113+18.71	HWY. 277	572.87	26.00	1654.96	220	182.05	22.25	1416.26	220	155.79	337.84	22.46	1429.63	330	235.89	VAR.	1100.23	44.71	2845.89	142.29				
113+18.71	113+32.44	HWY. 277	13.73	26.00	39.66	220	4.36	22.25	33.94	220	3.73	8.09	22.46	34.26	330	5.65	178.50	24.51	44.71	68.21	3.41				
113+32.44	113+68.94	HWY. 277 - APPROACH SLAB	36.50														67.95	24.80							
117+21.06	117+57.56	HWY. 277 - APPROACH SLAB	36.50														67.95	24.80							
117+57.56	121+11.59	HWY. 277	354.03	26.00	1022.75	220	112.50	22.25	875.24	220	96.28	208.78	22.46	883.50	330	145.78	VAR.	704.91	44.71	1758.74	87.94				
121+11.59	125+00.00	HWY. 277 - NOTCH AND WIDEN	388.41	26.00	1122.07	220	123.43	22.25	960.24	220	105.63	229.06	22.46	969.30	330	159.93	VAR.	469.75	44.71	1929.53	96.48				
125+00.00	126+11.07	HWY. 277 - NOTCH AND WIDEN	111.07	26.00	320.87	220	35.30	6.25	77.13	220	8.48	43.78	6.46	79.72	330	13.15	VAR.	109.49	32.71	403.68	20.18				
126+11.07	126+50.00	HWY. 277 - NOTCH AND WIDEN	38.93	26.00	112.46	220	12.37	6.25	27.03	220	2.97	15.34	6.46	27.94	330	4.61	88.00	34.26	32.71	141.49	7.07				
126+50.00	127+50.00	TRANSITION	100.00	21.00	233.33	220	25.67					25.67					VAR.	44.00				20.00	222.22	37.78	
ADDITIONAL FOR LEVELING																									
102+00.00	102+37.02	HWY. 277 - NOTCH AND WIDEN	37.02	20.00	82.27	VAR.	3.26					3.26										20.00	82.27	13.99	
102+37.02	105+00.00	HWY. 277 - NOTCH AND WIDEN	262.98	20.00	584.40	VAR.	162.00					162.00										20.00	584.40	99.35	
121+11.59	126+50.00	HWY. 277 - NOTCH AND WIDEN	538.41	20.00	1196.47	VAR.	189.52					189.52										20.00	1196.47	203.40	
ADDITIONAL FOR METHOD OF RAISING GRADE																									
105+00.00	107+45.84	HWY. 277 - NOTCH AND WIDEN	245.84										16.80	458.90	VAR.	354.36			16.80	458.90	22.95	16.80	458.90	78.01	
ADDITIONAL FOR GUARDRAIL WIDENING																									
110+84.29	113+58.54	GUARDRAIL WIDENING - RT.	274.25	VAR.	221.82	220	24.40					24.40					VAR.	217.98							
111+68.29	113+58.54	GUARDRAIL WIDENING - LT.	190.25	VAR.	137.72	220	15.15					15.15					VAR.	98.16							
117+31.46	119+21.71	GUARDRAIL WIDENING - RT.	190.25	VAR.	136.62	220	15.03					15.03					VAR.	100.87							
117+31.46	120+05.71	GUARDRAIL WIDENING - LT.	274.25	VAR.	238.12	220	26.19					26.19					VAR.	375.69							
ADDITIONAL FOR MOT VERTICAL TRANSITIONS																									
106+10.03	109+69.70	HWY. 277	359.67	VAR.	639.93	VAR.	72.00					72.00	VAR.	639.93	VAR.	700.00			20.00	799.27	39.96	20.00	799.27	135.88	
118+67.66	123+22.73	HWY. 277	455.07	VAR.	681.72	VAR.	77.00					77.00	VAR.	681.72	VAR.	285.00			20.00	1011.27	50.56	20.00	1011.27	171.92	
TOTALS:						10235.37		1279.35		4205.95		462.65	1742.00		6033.74		2041.13		4044.51		11728.60	586.42		4577.02	778.11

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2") : 5.2% ASPHALT BINDER (PG 64-22), 94.8% MINERAL AGGREGATE, N_{MAX}=115
ACHM BINDER COURSE (1") : 4.4% ASPHALT BINDER (PG 64-22), 95.6% MINERAL AGGREGATE, N_{MAX}=115

QUANTITIES

C:\Users\jthomas\OneDrive\Documents\11/1/2019 1:58:11 PM
WORKSPACES\ARDOT\Bartolomew\Drawings\BAYOUBART-S001-QT.dgn
LA\2017\1017520 - Bayou Bartholomew\Drawings\BAYOUBART-S001-QT.dgn
REVISED DATE:

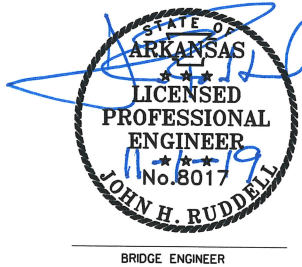
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	18	58
				07453	QUANTITIES			60891

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 020589

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	SS & 802	SP, SS, & 802	SS & 802	803	SS & 804	SS & 804	SS & 805	SS & 805	SS & 805	SS & 805	SP, SS, & 807	SS & 808	SS & 809	812	816	816	SP JOB 020589
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE ②	PRESTRESSED CONCRETE GIRDERS (TYPE III)	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL SHELL PILING (18" DIA.) ①	STEEL SHELL PILING (24" DIA.) ①	STEEL SHELL PILING (30" DIA.) ①	PILE ENCASEMENT	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP	PRECAST DECK PANELS
			UNIT	LUMP SUM	CU. YD.	CU. YD.	LIN. FT.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.	SQ. YD.
07453	HIGHWAY 277 OVER BAYOU BARTHOLOMEW	END BENT NO. 1			33.28			0.3	4,096	377	305				570	2,145.0	33		999	535	
		INTERMEDIATE BENT NO. 2			18.89				2,606			390		95		4,290.0					
		INTERMEDIATE BENT NO. 3			18.64				2,593				350	155		4,290.0					
		INTERMEDIATE BENT NO. 4			21.68				2,837				350	155		4,290.0	33				
		INTERMEDIATE BENT NO. 5			20.73				2,970		395			90		4,290.0					
		END BENT NO. 6			33.48			0.3	4,088	377	265				570	2,145.0	33		1,084	581	
		210'-0" COMPOSITE PRESTRESSED CONC. GIRDER UNIT				204.02	834.0	17.3		50,760					3,340			1			490
		140'-0" COMPOSITE PRESTRESSED CONC. GIRDER UNIT				135.98	556.0	11.5		33,366					3,010						327
		SITE NO. 1 (EXISTING BR. NO. 03700)		1																	
		TOTALS FOR JOB NO. 020589			146.70	340.00	1,390.0	29.4	19,190	84,880	570	785	700	495	7,490	21,450.0	99	1	2,083	1,116	817

① Steel shell piles shall conform to ASTM A252, Grade 3, Fy = 45 ksi.

② Class S(AE) Concrete - Bridge quantity reduced to account for volume of precast concrete panels. Precast concrete panels paid for separately under the item "PRECAST DECK PANELS".



SCHEDULE OF BRIDGE QUANTITIES
BAYOU BARTHOLOMEW STR. & APPRS. (S)
DREW COUNTY
ROUTE 277 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: JULY 2019 FILENAME: b020589-ql.dgn
CHECKED BY: DRG DATE: AUG. 2019 SCALE: None
DESIGNED BY: CSW DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60891

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	11	STATION
201	GRUBBING	11	STATION
202	REMOVAL AND DISPOSAL OF FENCE	3	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE SLABS	610	LN. FT.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	82	SQ. YD.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	2	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	2	EACH
202	REMOVAL AND DISPOSAL OF BUILDINGS	100	LN. FT.
202	REMOVAL AND DISPOSAL OF SIGNS	3	EACH
SS & 210	UNCLASSIFIED EXCAVATION	8411	CU. YD.
SP & 210	COMPACTED EMBANKMENT	23520	CU. YD.
SP & 210	SOIL STABILIZATION	100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	4655	TON
SS & 401	TACK COAT	1385	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	1951	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	90	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1782	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	98	TON
412	COLD MILLING ASPHALT PAVEMENT	466	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	10	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	100	TON
504	APPROACH SLABS	90.00	CU. YD.
504	APPROACH GUTTERS	33.20	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SS & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	435	SQ. FT.
SS & 604	BARRICADES	96	LN. FT.
SS & 604	TRAFFIC DRUMS	75	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	360	LN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS	10600	LN. FT.
SS & 604	VERTICAL PANELS	29	EACH
SS & 605	CONCRETE DITCH PAVING (TYPE B)	155	SQ. YD.
606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	26	LN. FT.
SP, SS, & 606	18" SIDE DRAIN	42	LN. FT.
SP, SS, & 606	24" SIDE DRAIN	104	LN. FT.
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	1	EACH
606	SELECTED PIPE BEDDING	100	CU. YD.
SS & 611	4" PIPE UNDERDRAINS	500	LN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	4	EACH
SS & 617	GUARDRAIL (TYPE A)	450	LN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	4	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
619	WIRE FENCE (TYPE D)	375	LN. FT.
620	LIME	8	TON
620	SEEDING	3.95	ACRE
SS & 620	MULCH COVER	7.90	ACRE
620	WATER	485.0	M. GAL.
621	TEMPORARY SEEDING	3.95	ACRE
621	SILT FENCE	3305	LN. FT.
621	SAND BAG DITCH CHECKS	286	BAG
621	SEDIMENT BASIN	100	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	100	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	100	CU. YD.
621	ROCK DITCH CHECKS	165	CU. YD.
623	SECOND SEEDING APPLICATION	3.95	ACRE
624	SOLID SODDING	117	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	1436	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")	5300	LN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")	5300	LN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	34	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER	1	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	12860	POUND
STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
SS & 802	CLASS S CONCRETE-BRIDGE	146.70	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	340.00	CU. YD.
SS & 802	PRESTRESSED CONCRETE GIRDBERS (TYPE III)	1390.0	LN. FT.
SP	PRECAST DECK PANELS	817	SQ. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	29.4	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	19190	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	84880	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)	570	LN. FT.
SS & 805	STEEL SHELL PILING (24" DIAMETER)	785	LN. FT.
SS & 805	STEEL SHELL PILING (30" DIAMETER)	700	LN. FT.
SS & 805	PILE ENCASEMENT	495	LN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	7490	POUND
SS & 808	ELASTOMERIC BEARINGS	21450.0	CU. IN.
SS & 809	SILICONE JOINT SEALANT	99	LN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	2083	SQ. YD.
816	DUMPED RIPRAP	1116	CU. YD.

SUMMARY OF QUANTITIES & REVISIONS

DATE	REVISION	SHEET NUMBER
06-04-2020	REVISED "STORM WATER POLLUTION PREVENTION PLAN" SPECIAL PROVISION	19

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
06-04-2020				6	ARK.			
				JOB NO.		020589	19	58
				SUMMARY OF QUANTITIES & REVISIONS				



CGervosini 11/1/2019 9:07:10 AM
WORKSPACE: AHTD
L:\2017\101520 - Bayou Bartholomew Drawings\020589.SC.01.dgn
REVISED DATE:

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.		020589	20	58

2 SURVEY CONTROL DETAILS



SURVEY CONTROL COORDINATES

Project Name: s020589
Date: 6/6/2017
Coordinate System: ARKANSAS STATE PLANE -SOUTH ZONE BASED ON GPS CONTROL,
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1687327.3751	1471749.2666	153.472	CTL	AHTD STD. MON. STAMPED PN: 1
2	1687326.7634	1471056.8329	153.862	CTL	AHTD STD. MON. STAMPED PN: 2
3	1687353.9762	1470331.8856	155.637	CTL	AHTD STD. MON. STAMPED PN: 3
4	1687104.0322	1469791.9243	156.075	CTL	AHTD STD. MON. STAMPED PN: 4
5	1686645.5433	1468569.4430	154.368	CTL	AHTD STD. MON. STAMPED PN: 5
6	1686649.5160	1468034.5559	153.900	CTL	AHTD STD. MON. STAMPED PN: 6
7	1686657.7663	1466914.6897	154.166	CTL	AHTD STD. MON. STAMPED PN: 7
100	1686745.1622	1469108.1347	152.789	GPS	AHTD GPS *220034
101	1686677.1224	1467469.7557	152.269	GPS	AHTD GPS *220034A
901	1687370.1774	1471608.4854	150.534	TBM	
902	1687281.1970	1470280.0768	143.434	TBM	
903	1686614.5735	1467445.7646	153.569	TBM	

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999932661178 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME s020589gi.ctb
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL
IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED.
REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 220034 - 220034A
CONVERGENCE ANGLE: 00 17 22.43 RIGHT AT LT: 33-41-42.63 LG: 091-28-57.49
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

ALIGNMENT NAME: HWY. 277

POINT	STATION	TYPE	NORTHING	EASTING
8000	100+00.00	POB	1686632.7779	1468157.5175
8001	104+99.52	PC	1686629.6627	1468657.0285
8002	107+86.02	PI	1686627.8760	1468943.5256
8003	110+56.21	PT	1686784.1001	1469183.6875
8004	117+97.30	PC	1687188.2057	1469804.9159
8005	120+80.85	PI	1687342.8205	1470042.6039
8006	123+48.57	PT	1687342.6615	1470326.1551
8007	128+49.33	POE	1687342.3807	1470826.9174

ALIGNMENT NAME: DRIVE 119+50

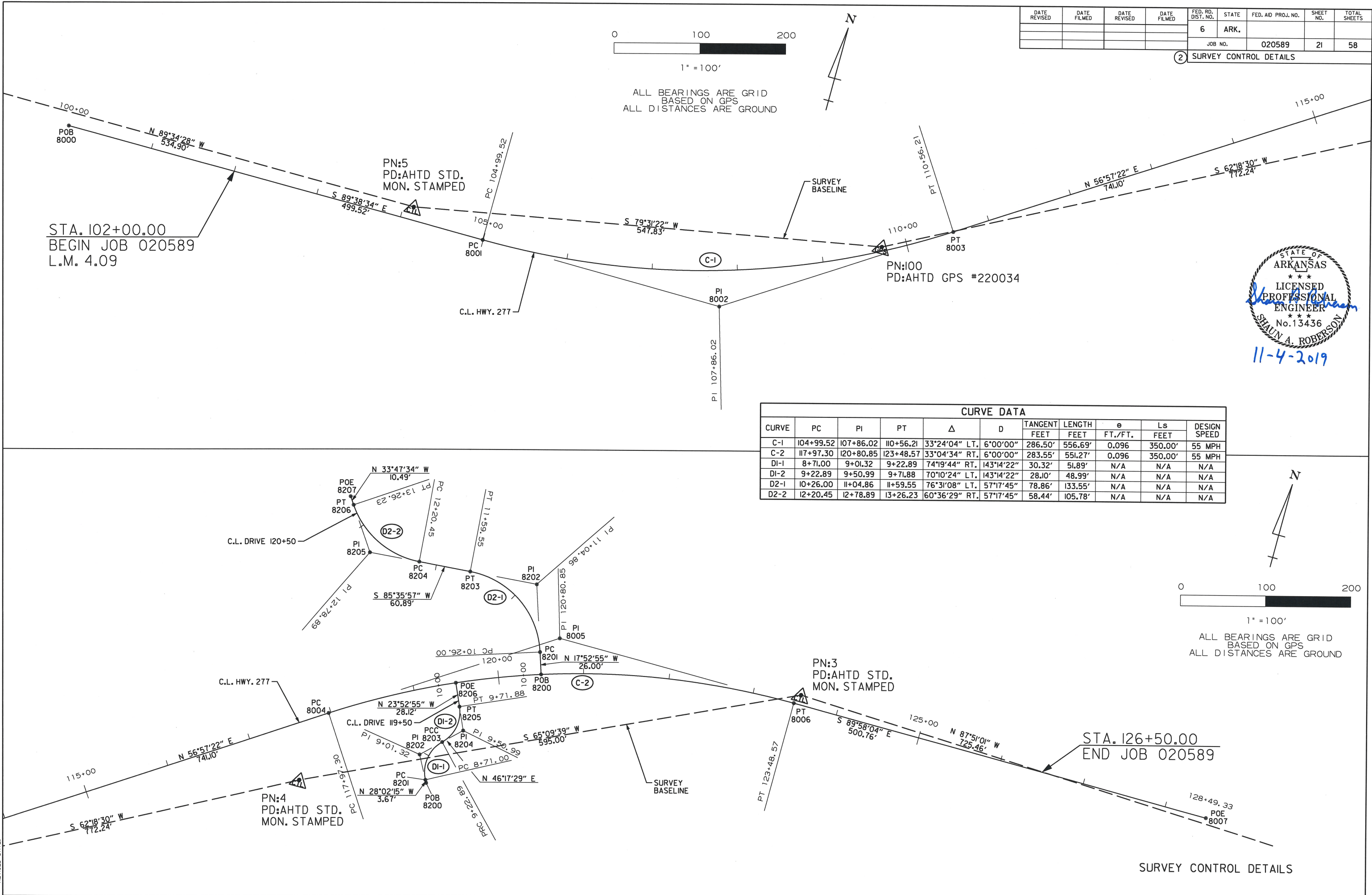
POINT	STATION	TYPE	NORTHING	EASTING
8100	8+67.33	POB	1687139.1218	1469935.5218
8101	8+71.00	PC	1687142.3608	1469933.7969
8102	9+01.32	PI	1687169.1247	1469919.5437
8103	9+22.89	PCC	1687190.0773	1469941.4628
8104	9+50.99	PI	1687209.4932	1469961.7742
8105	9+71.88	PT	1687235.1860	1469950.3983
8106	10+00.00	POE	1687260.9017	1469939.0124

ALIGNMENT NAME: DRIVE 120+50

POINT	STATION	TYPE	NORTHING	EASTING
8200	10+00.00	POB	1687296.5299	1470032.4013
8201	10+26.00	PC	1687321.2739	1470024.4178
8202	11+04.86	PI	1687396.3245	1470000.2032
8203	11+59.55	PT	1687390.2733	1469921.5754
8204	12+20.45	PC	1687385.6006	1469860.8600
8205	12+78.89	PI	1687381.1159	1469802.5877
8206	13+26.23	PT	1687429.6865	1469770.0813
8207	13+36.71	POE	1687438.4015	1469764.2486

SURVEY CONTROL DETAILS

11/1/2019 9:07:12 AM
C:\Users\vasini\OneDrive\Documents\Drawings\020589_SC.02.dgn
WORKSPACE: AHTD
L:\2017\01\520 - Bayou Bartholomew Drawings\020589_SC.02.dgn
REVISED DATE:



STATE OF
ARKANSAS

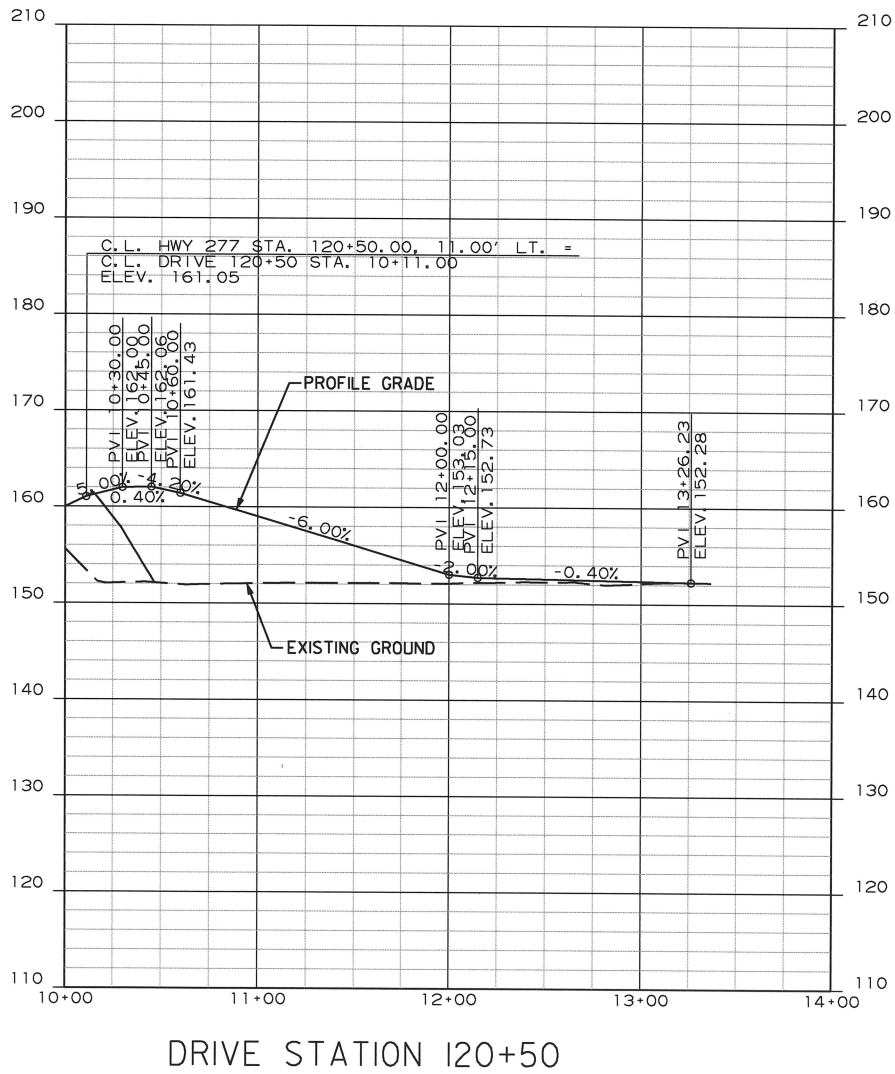
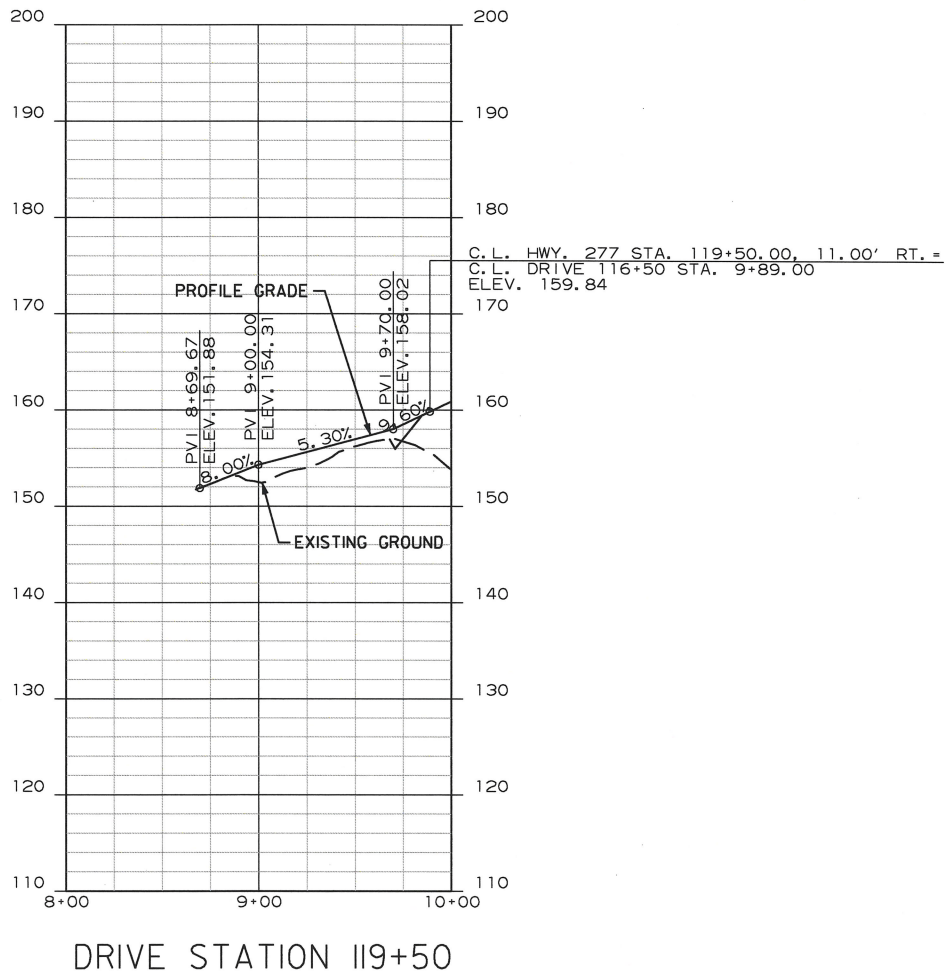
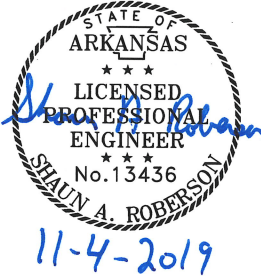
LICENSED
PROFESSIONAL
ENGINEER

No. 13436
SHAUN A. ROBERSON
11-4-2019



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.		020589	24	58

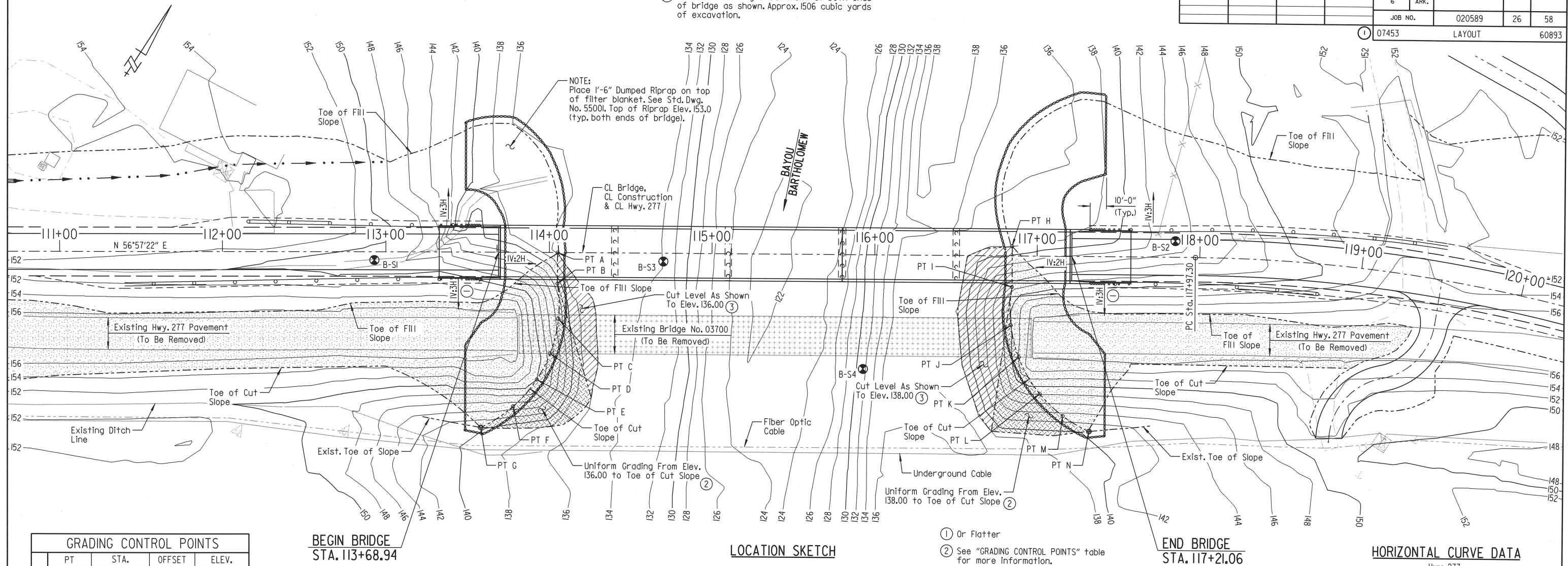
② DRIVEWAY PROFILES



DRIVEWAY PROFILES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	020589	26	58	
				07453	LAYOUT	60893		

③ Excavate existing embankment at both ends of bridge as shown. Approx. 1506 cubic yards of excavation.

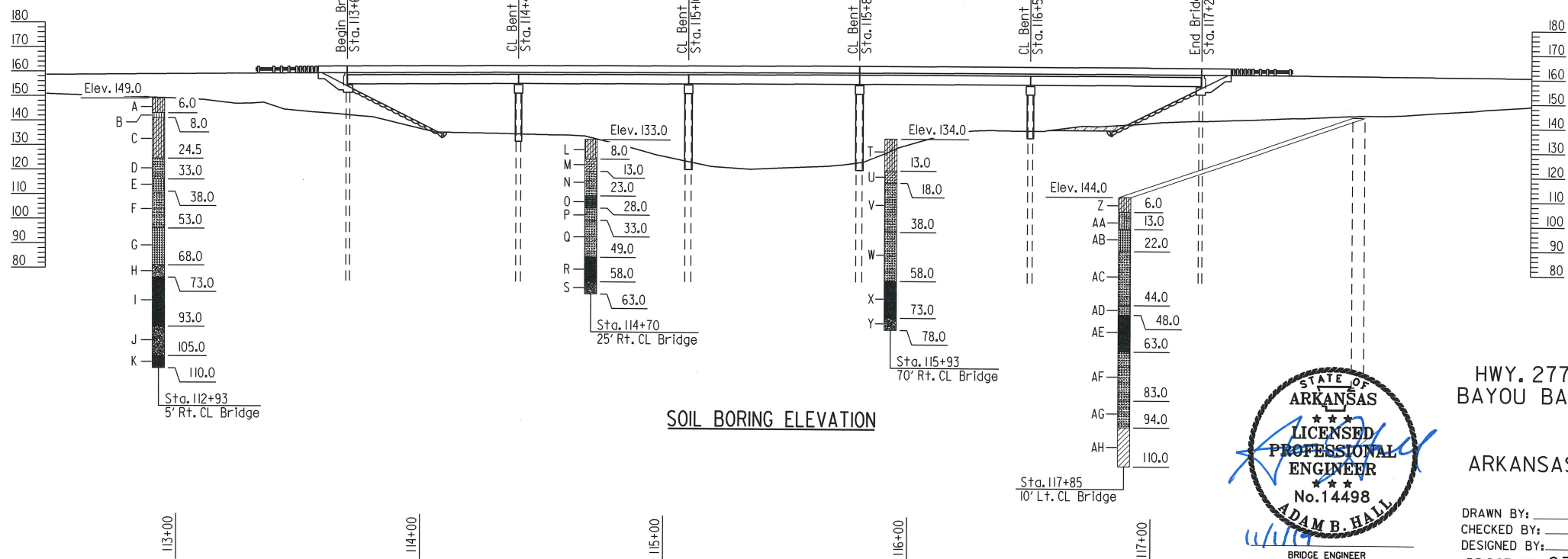


GRADING CONTROL POINTS				
PT	STA.	OFFSET	ELEV.	
A	114+05.00	0.00	136.00	
B	114+05.00	19.00' RT.	136.00	
C	114+05.50	40.50' RT.	137.50	
D	114+00.50	62.00' RT.	138.50	
E	113+92.50	78.00' RT.	139.50	
F	113+78.00	94.50' RT.	140.00	
G	113+58.00	107.50' RT.	140.50	
H	116+84.50	6.00' LT.	138.00	
I	116+84.50	19.00' RT.	138.00	
J	116+84.00	42.50' RT.	138.50	
K	116+89.00	62.00' RT.	139.50	
L	117+02.00	84.50' RT.	140.00	
M	117+16.00	98.00' RT.	140.25	
N	117+32.00	107.00' RT.	140.50	

HORIZONTAL CURVE DATA

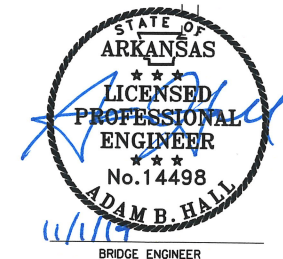
Hwy. 277
 PI = 120+80.85
 $\Delta = 33^{\circ}04'33''$ Rt.
 $D = 6^{\circ}00'00''$
 $T = 283.55'$
 $L = 551.27'$
 $e = 0.096$ Ft./Ft.
 $R = 954.93'$

NOTES:
 For "GENERAL NOTES", "BORING LEGEND" & "N VALUES",
 see Dwg. No. 60894.



SHEET 2 OF 3
 LAYOUT OF BRIDGE
 HWY. 277 OVER BAYOU BARTHOLOMEW
 BAYOU BARTHOLOMEW STR. & APPRS. (S)
 DREW COUNTY
 ROUTE 277 SEC. 1
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: SEP. 2018 FILENAME: b020589_12.dgn
 CHECKED BY: JHR DATE: SEP. 2018 SCALE: 1" = 30'-0"
 DESIGNED BY: ABH DATE: SEP. 2018
 BRIDGE NO. 07453 DRAWING NO. 60893



GENERAL NOTES

BENCHMARK: Vertical Control Data are shown on the Survey Control Data Sheets.

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

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications (2014, 7th Edition) with current Interims

LIVE LOADING: HL-93

SEISMIC ZONE:2 S_{MS}:0.18lg Site Class:D

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (Superstructure) f'c = 4,000 psi
Class S Concrete (Prestressed Concrete Girders) f'c = 7,000 psi
Prestressing Strands (AASHTO M 203, Gr. 270) fpu = 270,000 psi
Class S Concrete (Substructure) f'c = 3,500 psi
Reinforcing Steel (AASHTO M 31 or M 322 Type A, Gr. 60) fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 50W) Fy = 50,000 psi
Structural Steel (ASTM A709, Gr. 36) Fy = 36,000 psi

BORING LOGS: Boring Logs may be obtained from the Construction Contract Procurement Section of the Program Management Division.

STEEL SHELL PILING:Piling in Bents 1 & 6 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 211 tons per pile.Piling in Bents 2 & 5 shall be 24" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 345 tons per pile.Piling in Bents 3 & 4 shall be 30" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 368 tons per pile. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 125 or lower at Bents 1 and 6, a minimum tip elevation of 100 or lower at Bents 2 and 5, and a minimum tip elevation of 90 or lower at Bents 3 and 4.Piling in end bents shall be driven after embankment to bottom of cap is in place.

Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field.No additional payment will be made for cut-off or build-up. Test piles are not required but may be driven for the Contractor's information in accordance with Subsection 805.08(g). No piles will be paid for as Test Piles.

Water Jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the items "STEEL SHELL PILING (18" DIA.)", "STEEL SHELL PILING (24" DIA.)", and "STEEL SHELL PILING (30" DIA.)".

PILE ENCASEMENT:Pile encasement for Bents 2-5 shall extend from Elev. 141.00 to 3' below natural ground. See Std. Dwg. No. 55021 for additional information.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to obtain the minimum ultimate bearing capacity for 18" piles shall be 41,000 foot pounds per blow, for 24" piles shall be 100,000 foot pounds per blow, and for 30" piles shall be 100,000 foot pounds per blow.

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

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

EXISTING BRIDGE: Existing Bridge No. 03700 (Log Mile 4.33) is 317' in length, 28.5' wide and consists of composite I-beam spans supported by concrete columns on concrete pile footings in the main channel and supported by concrete pile bents elsewhere. The existing bridge is located approximately 50' downstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, the Contractor shall remove existing Bridge No. 03700 in accordance with Section 205. Existing USGS gage equipment shall also be removed. This work shall be considered subsidiary to the item "REMOVAL OF EXISTING BRIDGE STRUCTURE". All material from the existing bridge shall become property of the Contractor except the following which shall remain the property of the State:

21" I-Beams in all spans

The Contractor shall notify the Department prior to removal to determine the specific pieces deemed salvageable. The Contractor shall provide temporary storage and on site loading onto ARDOT equipment for removal of salvage items from the site. This work shall be considered incidental to the item "REMOVAL OF EXISTING BRIDGE STRUCTURE".

MAINTENANCE OF TRAFFIC: See Roadway Plans.

DETAIL DRAWINGS:

End Bents
Intermediate Bents
Details Of 24" And 30" Dia. Steel Shell Piles
Elastomeric Bearings
210'-0" Prestressed Concrete Girder Unit
140'-0" Prestressed Concrete Girder Unit
Details Of Prestressed Precast Concrete Deck Panels
Details Common To All Units
Dumped Riprap
Poured Silicone Joints
Concrete Filled Steel Shell Piling
Type C Approach Gutters
Type Special Approach Slabs

DRAWING NO.

60895-60898
60899-60902
60903
60904-60905
60906-60908
60909-60911
60912
60913-60916
55001
55008
55021
55030C
60917

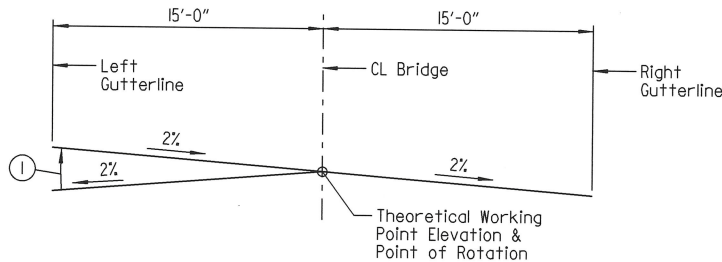
BORING LEGEND

- A - Firm brown silty clay w/organic stains
B - Medium dense brown silt
C - Stiff brown silty clay
D - Medium dense brownish tan fine sand, slightly silty
E - Dense gray silty fine sand
F - Dense to very dense gray fine sand, slightly silty
G - Dense to very dense brownish tan and gray silty fine to medium sand w/trace fine gravel
H - Dense to very dense brown and tan fine gravel w/clay pockets
I - Dense to very dense brown and tan fine to coarse sand w/some fine to coarse gravel, slightly silty
J - Dense brown and tan sandy fine to coarse gravel
K - Dense to very dense gray fine to coarse sand, slightly clayey w/some fine gravel
L - Very soft brown silty clay
M - Medium dense gray clayey fine sand
N - Dense gray fine sand, slightly silty
O - Soft gray fine sandy clay
P - Dense brown and gray fine sand, slightly silty
Q - Dense brown and gray fine to medium sand, slightly silty w/trace fine gravel and occasional clay pockets
R - Medium dense brown and gray fine to coarse sand w/some fine to coarse gravel
S - Dense to very dense brown and gray sandy fine to coarse gravel
T - Soft brown and gray silty clay
U - Very loose gray clayey fine sand
V - Medium dense brown and gray fine sand, slightly silty
W - Dense gray and brown fine to coarse sand w/a little fine gravel and occasional clay pockets
X - Dense gray and brown medium to coarse sand w/some fine gravel
Y - Dense brown sandy fine to coarse gravel
Z - Very soft to soft brown silty clay w/organic stains
AA - Medium dense brown silt and fine sandy silt
AB - Dense tan silty fine sand
AC - Dense tan fine sand, slightly silty
AD - Dense gray fine to medium sand
AE - Dense gray fine to medium sand w/some fine gravel
AF - Dense grayish tan fine to medium sand
AG - Dense to very dense tan fine to medium sand w/a little fine gravel
AH - Very stiff to hard olive clay w/silt partings

N VALUES

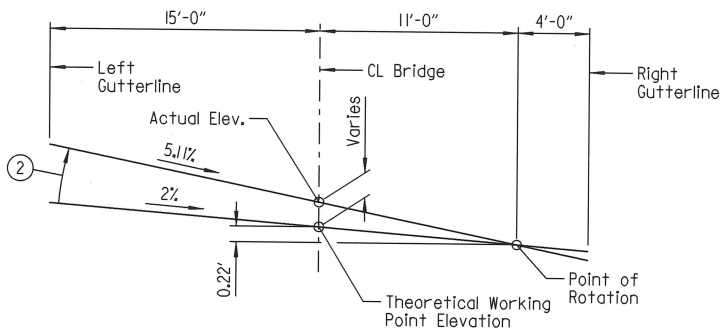
Sta. 112+93 Offset 5' Rt.	Sta. 114+70 Offset 25' Rt.	Sta. 115+93 Offset 70' Rt.	Sta. 117+85 Offset 10' Lt.
0.5-1.5, N=9	0.0-1.0, N=2	4.0-5.0, N=4	0.5-1.5, N=4
2.5-3.5, N=10	4.0-5.0, N=6	9.0-10.0, N=6	2.5-3.5, N=16
4.5-5.5, N=13	9.0-10.0, N=12	14.0-15.0, N=0/WHO	4.5-5.5, N=13
6.5-7.5, N=11	14.0-15.0, N=33	19.0-20.0, N=28	6.5-7.5, N=20
9.0-10.0, N=18	19.0-20.0, N=64	24.0-25.0, N=48	9.0-10.0, N=31
14.0-15.0, N=19	24.0-25.0, N=4	29.0-30.0, N=54	14.0-15.0, N=34
19.0-20.0, N=13	29.0-30.0, N=58	34.0-35.0, N=53	19.0-20.0, N=50/9"
24.0-25.0, N=35	34.0-35.0, N=44	39.0-40.0, N=34	24.0-25.0, N=38
29.0-30.0, N=13	39.0-40.0, N=36	44.0-45.0, N=46	29.0-30.0, N=23
34.0-35.0, N=37	44.0-45.0, N=31	49.0-50.0, N=31	34.0-35.0, N=33
39.0-40.0, N=50/7"	49.0-50.0, N=19	54.0-55.0, N=48	39.0-40.0, N=33
44.0-45.0, N=50/7"	54.0-55.0, N=66	59.0-60.0, N=47	44.0-45.0, N=47
49.0-50.0, N=50/7"	59.0-60.0, N=50/3"	64.0-65.0, N=60	49.0-50.0, N=45
54.0-55.0, N=50/8"		69.0-70.0, N=43	54.0-55.0, N=25
59.0-60.0, N=50/8"		74.0-75.0, N=47	59.0-60.0, N=50/9"
64.0-65.0, N=51			64.0-65.0, N=49
69.0-70.0, N=50/8"			69.0-70.0, N=32
74.0-75.0, N=50/9"			74.0-75.0, N=50/9"
79.0-80.0, N=43			79.0-80.0, N=50/8"
84.0-85.0, N=44			84.0-85.0, N=50/6"
89.0-90.0, N=49			89.0-90.0, N=50/8"
94.0-95.0, N=50/10"			94.0-95.0, N=50/9"
99.0-100.0, N=37			99.0-100.0, N=45
109.0-110.0, N=50/9"			109.0-110.0, N=50/9"

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	27	58
				07453		LAYOUT		60894



SKETCH #1 - STATION 114+40.00 TO 115+80.00

(Looking Ahead)



SKETCH #2 - STATION 115+80.00 TO 117+21.06 (END BRIDGE)

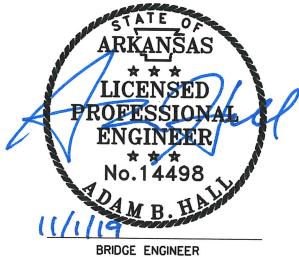
(Looking Ahead)

SUPERELEVATION TRANSITION
METHOD OF ROTATION

- ① Cross slope left of CL Bridge varies from 2% down from Profile Grade (Sta. 114+40.00) to 2% up from Profile Grade (Sta. 115+80.00).
② Cross slope varies from 2% (Sta. 115+80.00) to 5.11% (Sta. 117+21.06).

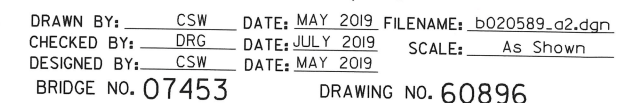
SHEET 3 OF 3
LAYOUT OF BRIDGE
HWY. 277 OVER BAYOU BARTHOLOMEW
BAYOU BARTHOLOMEW STR. & APPRS. (S)
DREW COUNTY
ROUTE 277 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: SEP. 2018 FILENAME: b020589_12.dgn
CHECKED BY: JHR DATE: SEP. 2018 SCALE: 1" = 30'-0"
DESIGNED BY: ABH DATE: SEP. 2018
BRIDGE NO. 07453 DRAWING NO. 60894

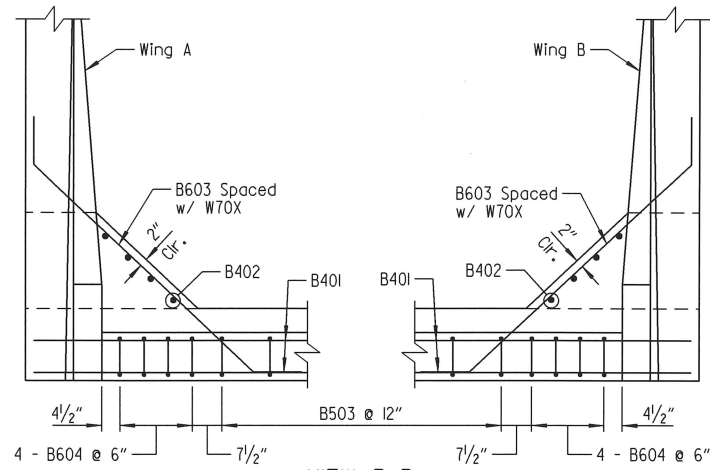


ICWThomas 10/3/2019 5:44:28 PM
WORKSPACE: ARD0T Bridge
L:\2017\17017520 - Bayou Bar tholomew Drawings\BAYOUBART-3201-AB.dgn
REVISED DATE:

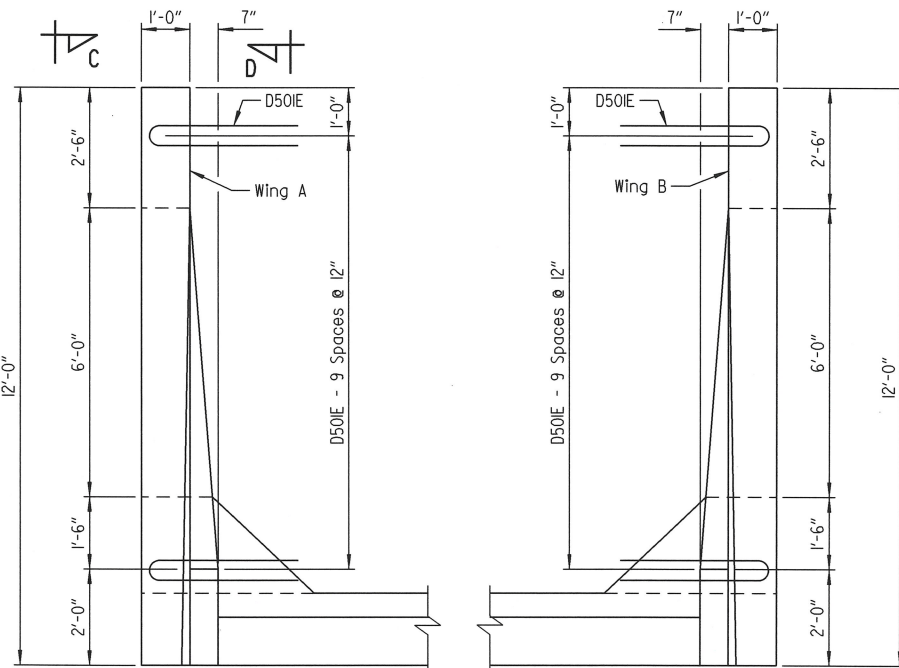
For "VIEW B-B", & "BAR LIST - END BENT NO.1", "BAR BENDING DIAGRAMS - END BENT NO.1" & details of Wing and Rail, see Dwg. Nos. 60897 & 60898.



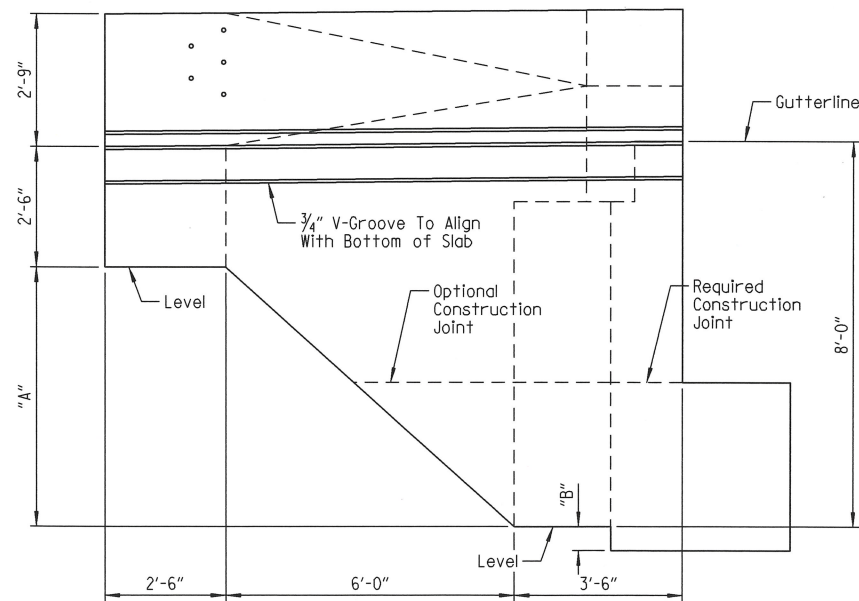
10/31/2019 5:44:29 PM
WORKSPACE: ARDOT Bridge
L:\2017\101520 - Bayou Bartholomew Drawings\BAYOUBART-S203-AB.dgn
REVISED DATE:



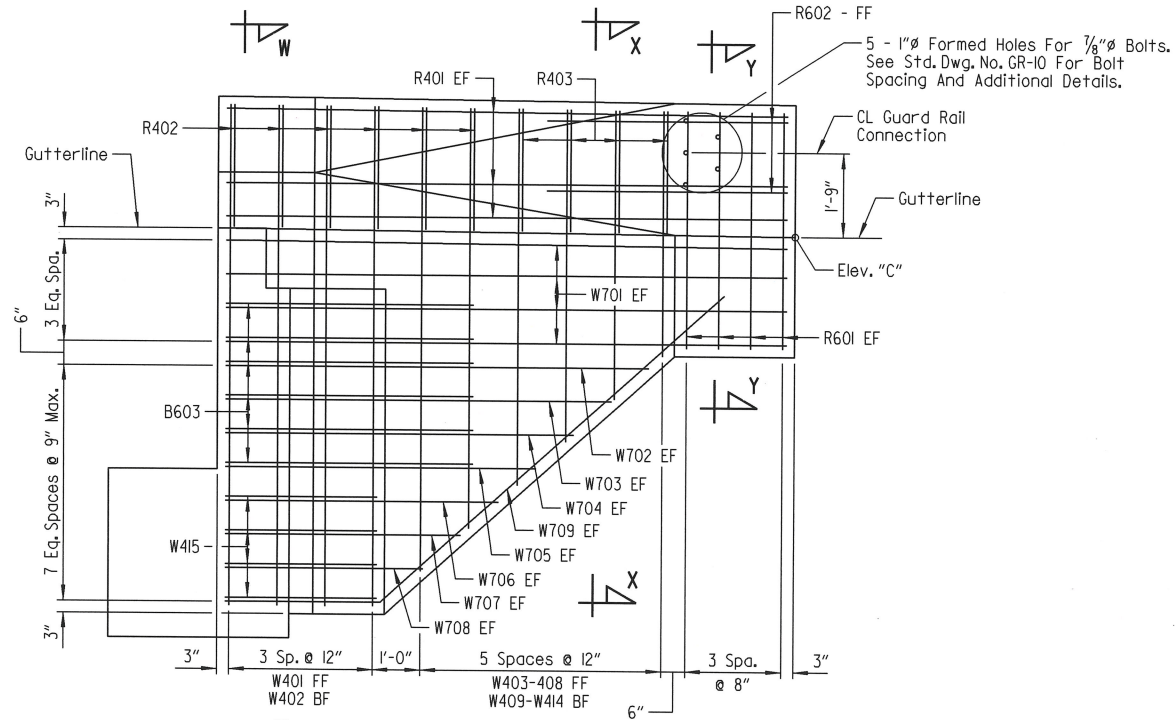
VIEW B-B
Scale: 1/2" = 1'-0"



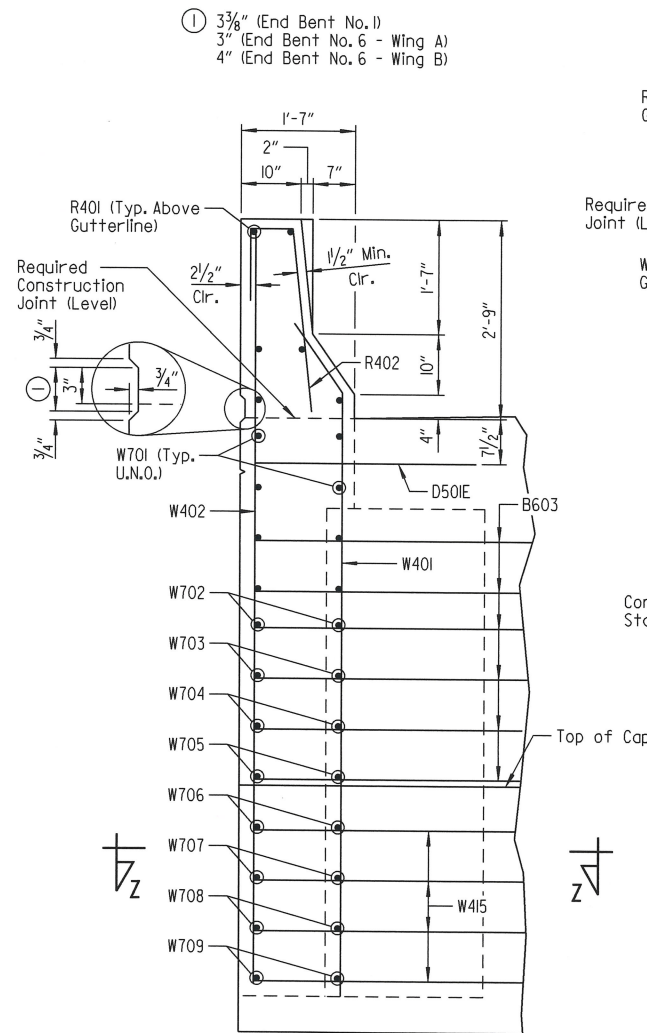
PLAN OF RAIL
Scale: 1/2" = 1'-0"



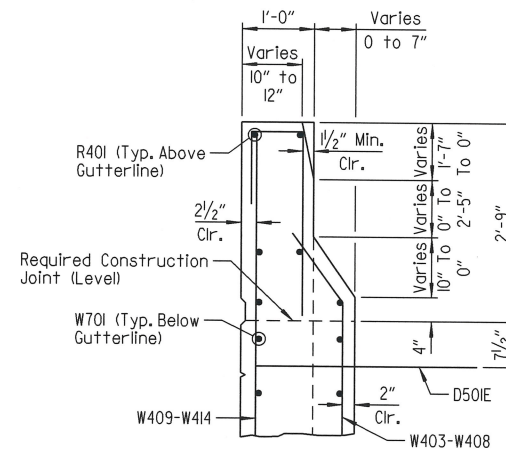
VIEW C-C
Scale: 1/2" = 1'-0"



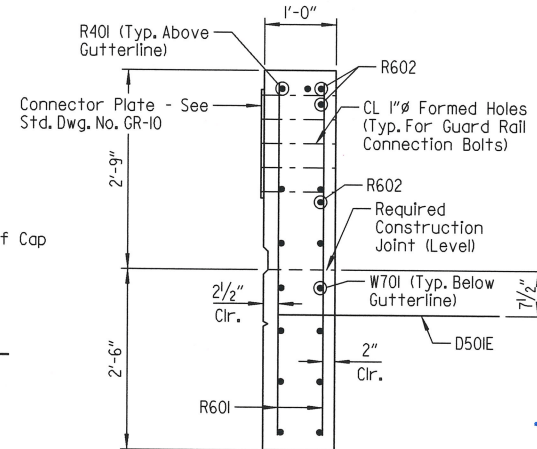
SECTION D-D
Scale: 1/2" = 1'-0"



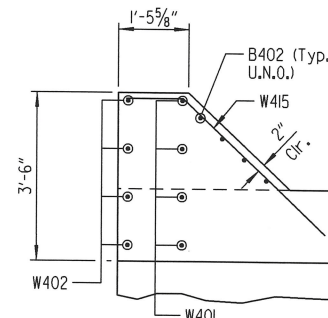
SECTION W-W
Scale: 3/4" = 1'-0"



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



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



SECTION Z-Z
Scale: 1/2" = 1'-0"

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	30	58

07453 END BENT DETAILS 60897

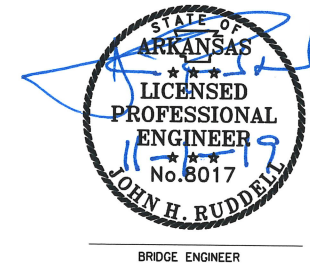
TABLE OF VARIABLES				
Bent No.	Location	"A"	"B"	Elev. "C"
1	Wing A	5'-4 1/16"	5 5/8"	159.19
1	Wing B	5'-4 1/16"	5 5/8"	159.19
6	Wing A	5'-7 3/16"	7 1/16"	162.25
6	Wing B	5'-5 3/8"	8 1/16"	160.57

LEGEND

U.N.O. = Unless Noted Otherwise
EF = Each Face
FF = Front Face

SHEET 3 OF 4
DETAILS OF END BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSW DATE: MAY 2019 FILENAME: b020589_a3.dgn
CHECKED BY: DRG DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60897

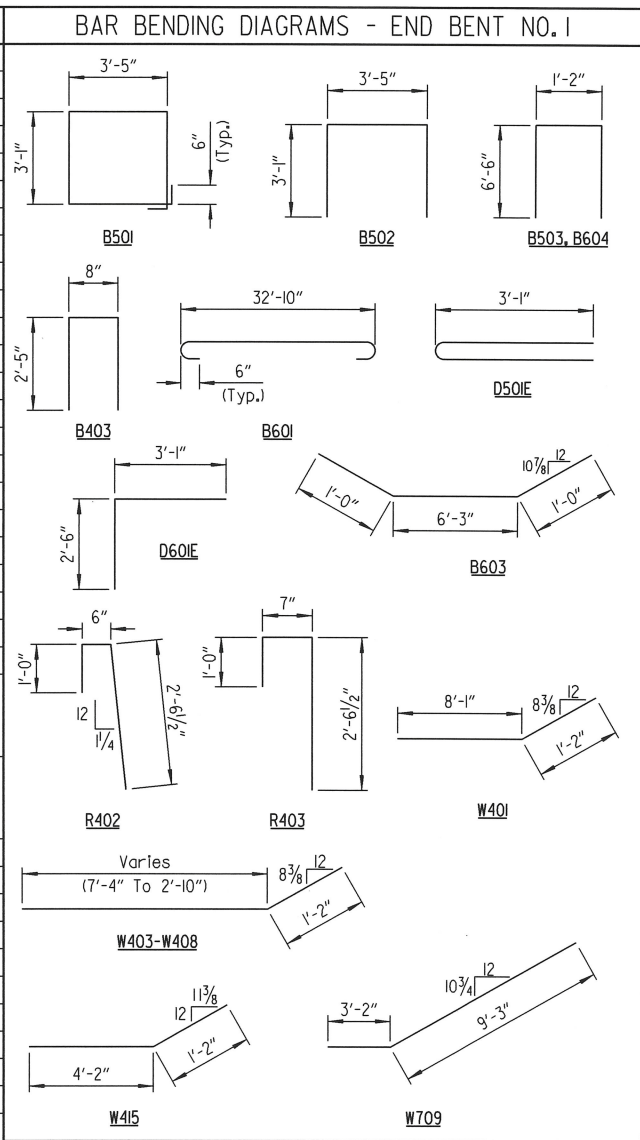


DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	31	58
				07453	END BENT DETAILS		60898	

BAR LIST - END BENT NO. 1			
Mark	No. Req'd.	Length	Pin. Dia.
B401	22	32'-10"	Str.
B402	8	6'-4"	Str.
B403	34	5'-4"	2"
B501	40	13'-6"	2 1/2"
B502	10	9'-4 1/2"	2 1/2"
B503	26	13'-11 1/2"	2 1/2"
B601	6	34'-2"	4 1/2"
B602	8	32'-10"	Str.
B603	12	8'-3"	4 1/2"
B604	8	13'-10"	4 1/2"
R401	12	11'-8"	Str.
R402	12	3'-10 1/2"	2"
R403	8	3'-11 1/2"	2"
R601	16	4'-10"	Str.
R602	6	5'-0"	Str.
W401	8	9'-3"	2"
W402	8	10'-4"	Str.
W403	2 Ea.	8'-6"	2"
W408		To 4'-0"	
W409	2 Ea.	9'-7"	Str.
W414		To 5'-1"	
W415	8	5'-4"	2"
W701	16	11'-8"	Str.
W702	4	8'-11"	Str.
W703	4	8'-1"	Str.
W704	4	7'-3"	Str.
W705	4	6'-5"	Str.
W706	4	5'-8"	Str.
W707	4	4'-10"	Str.
W708	4	4'-0"	Str.
W709	4	12'-5"	5 1/4"
D501E	20	6'-4"	3 3/4"
D601E	30	5'-5"	4 1/2"

NOTE:
Dimension of Bars Are Out-To-Out.

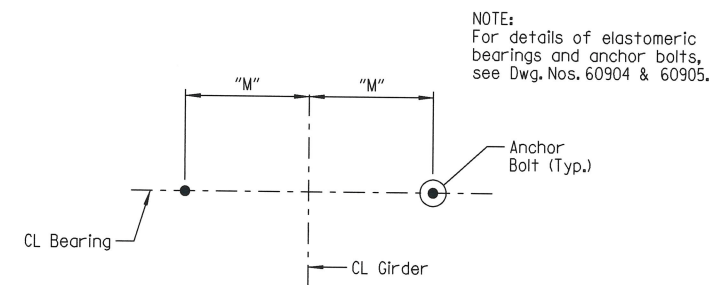
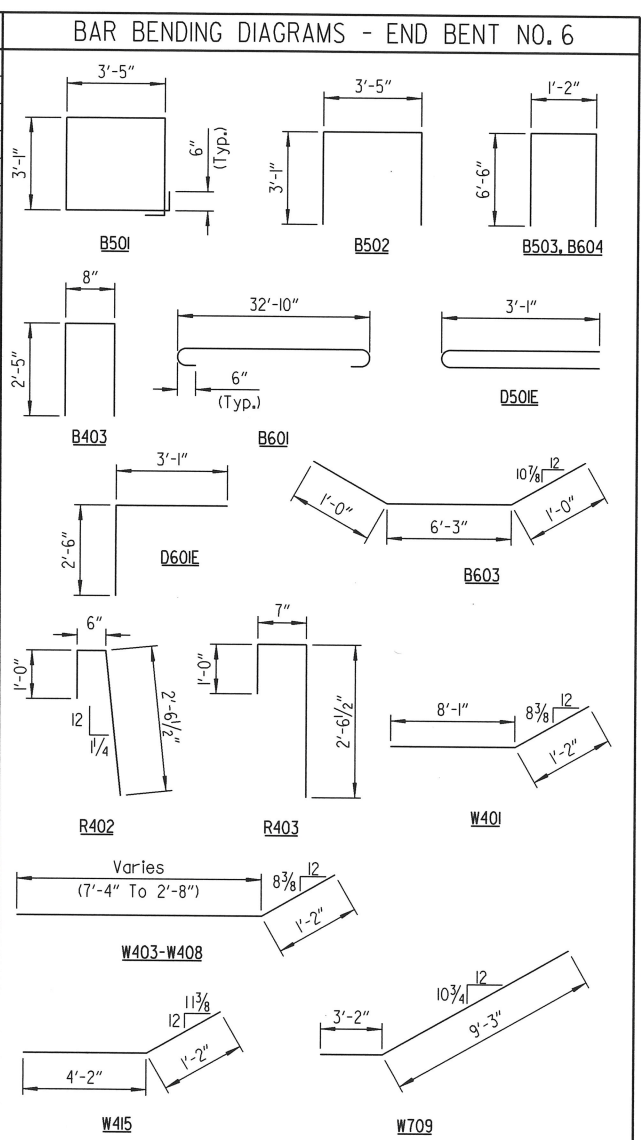
Bars designated with an "E" suffix are to be epoxy coated.



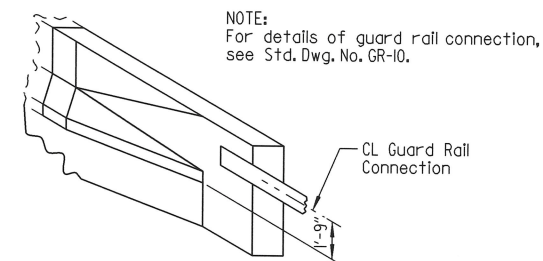
BAR LIST - END BENT NO. 6			
Mark	No. Req'd.	Length	Pin. Dia.
B401	22	32'-10"	Str.
B402	8	6'-4"	Str.
B403	34	5'-4"	2"
B501	40	13'-6"	2 1/2"
B502	10	9'-4 1/2"	2 1/2"
B503	26	13'-11 1/2"	2 1/2"
B601	6	34'-2"	4 1/2"
B602	8	32'-10"	Str.
B603	12	8'-3"	4 1/2"
B604	8	13'-10"	4 1/2"
R401	12	11'-8"	Str.
R402	12	3'-10 1/2"	2"
R403	8	3'-11 1/2"	2"
R601	16	4'-10"	Str.
R602	6	5'-0"	Str.
W401	8	9'-3"	2"
W402	8	10'-4"	Str.
W403	2 Ea.	8'-6"	2"
W408		To 3'-10"	
W409	2 Ea.	9'-7"	2"
W414		To 4'-11"	
W415	8	5'-4"	2"
W701	16	11'-8"	Str.
W702	4	8'-8"	Str.
W703	4	7'-11"	Str.
W704	4	7'-2"	Str.
W705	4	6'-4"	Str.
W706	4	5'-7"	Str.
W707	4	4'-9"	Str.
W708	4	4'-0"	Str.
W709	4	12'-5"	5 1/4"
D501E	20	6'-4"	3 3/4"
D601E	30	5'-5"	4 1/2"

NOTE:
Dimension of Bars Are Out-To-Out.

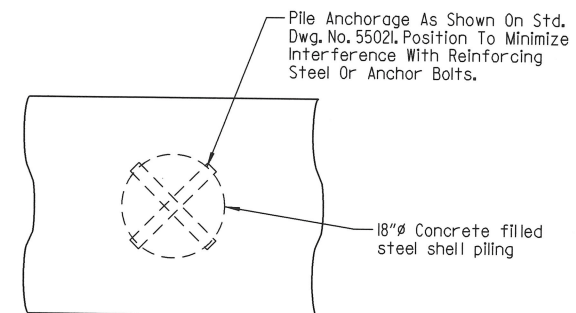
Bars designated with an "E" suffix are to be epoxy coated.



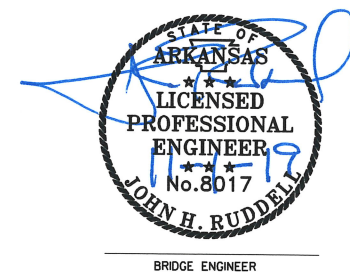
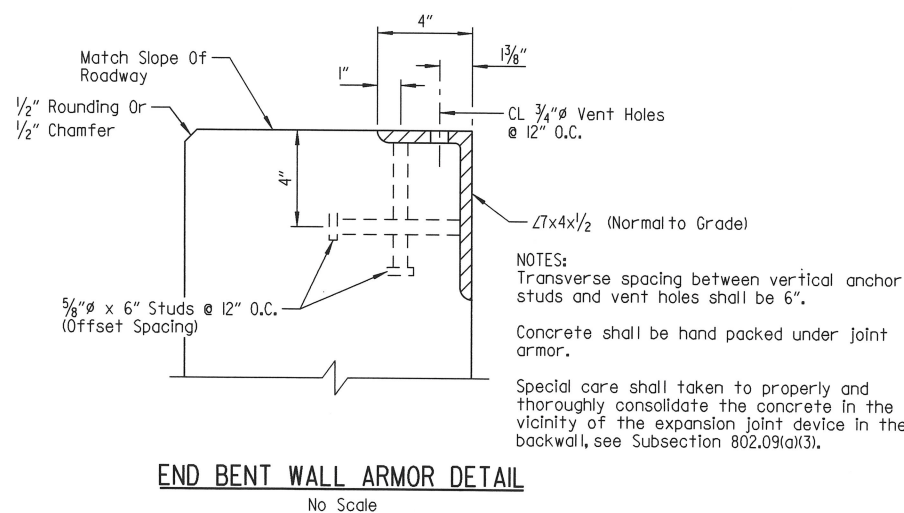
TYPICAL ANCHOR BOLT LAYOUT
No Scale



3-D VIEW OF RAIL TRANSITION
No Scale



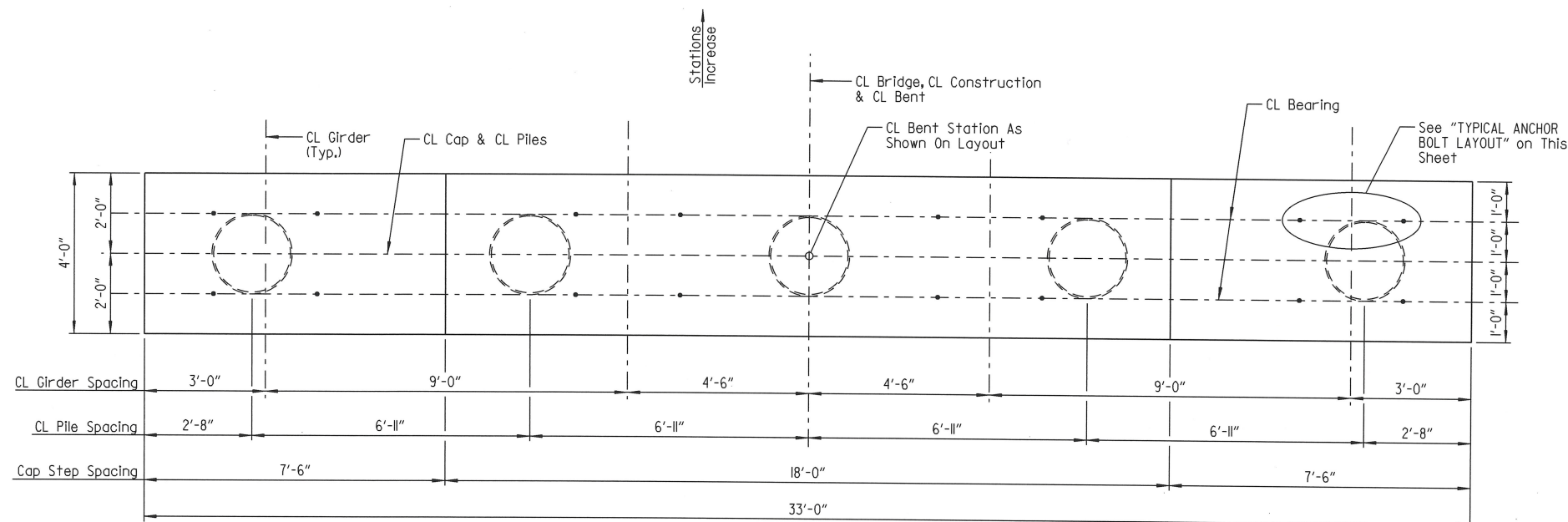
PILE ANCHORAGE DETAIL
No Scale



SHEET 4 OF 4
DETAILS OF END BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

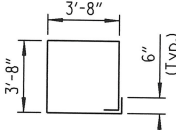
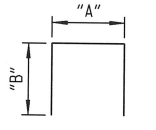
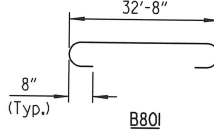
DRAWN BY: CSW DATE: MAY 2019 FILENAME: b020589_a4.dgn
CHECKED BY: DRG DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60898

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	32	58
				07453		INT. BENT DETAILS		60899

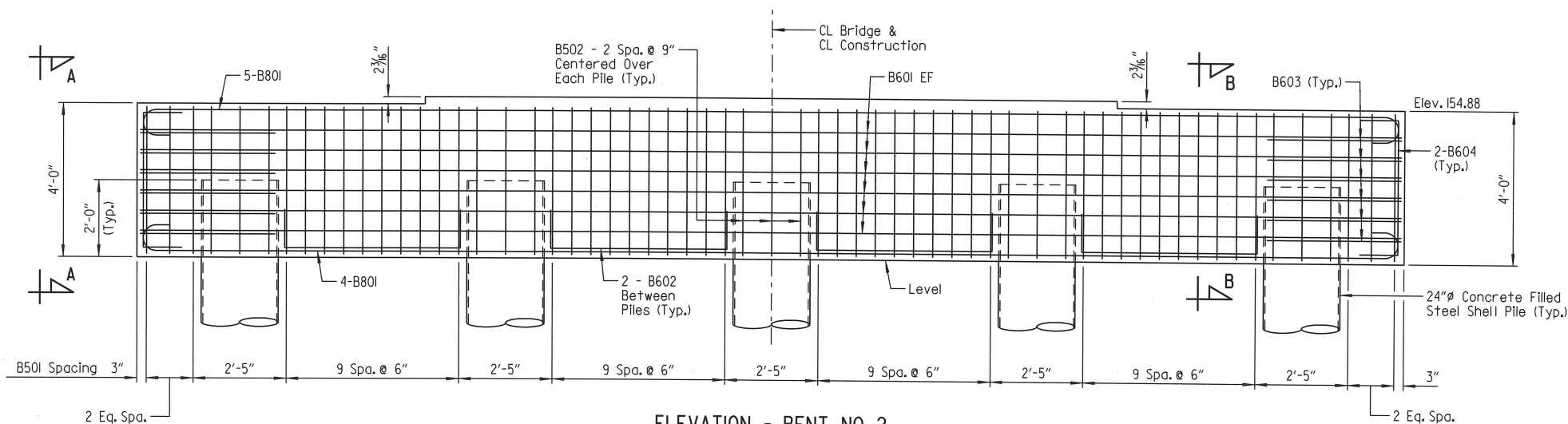


PLAN - BENT NO. 2

Scale: 1/2" = 1'-0"

BAR LIST - INT. BENT NO. 2						BAR BENDING DIAGRAMS	
MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.		
B501	46	15'-2"			2½"		
B502	15	10'-9½"	3'-8"	3'-8"	2½"		
B601	12	32'-8"			Str.		
B602	8	6'-3"	4'-7"	1'-0"	4½"		
B603	12	10'-2½"	3'-6½"	3'-6"	4½"		
B604	4	5'-2½"	3'-6½"	1'-0"	4½"		
B801	9	34'-6"			6"		

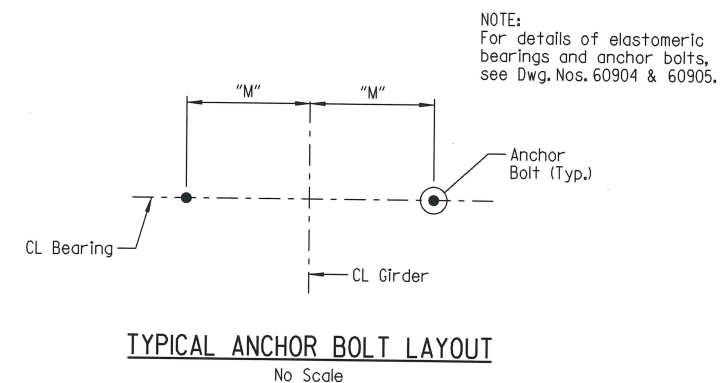
NOTE:
Dimensions of bars are out-to-out.



ELEVATION - BENT NO. 2

(Looking Ahead)

Scale: 1/2" = 1'-0"



NOTE:
For details of elastomeric bearings and anchor bolts, see Dwg. Nos. 60904 & 60905.

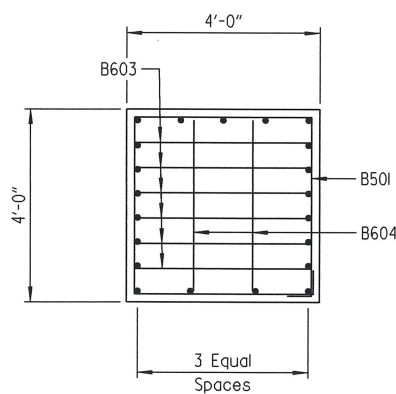
NOTES:
Concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi and shall be poured in the dry. All exposed corners shall be chamfered 3/4" unless noted otherwise.

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.

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

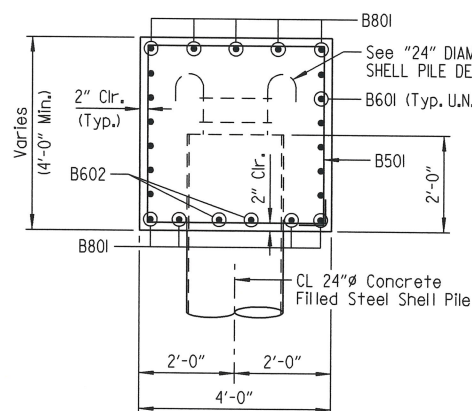
Piles at Bent No. 2 shall be 24" ϕ concrete filled steel shell piles. See Dwg. No. 60903 for details.

For additional information, see Layout.



VIEW A-A

Scale: 1/2" = 1'-0"



SECTION B-B

Scale: 1/2" = 1'-0"

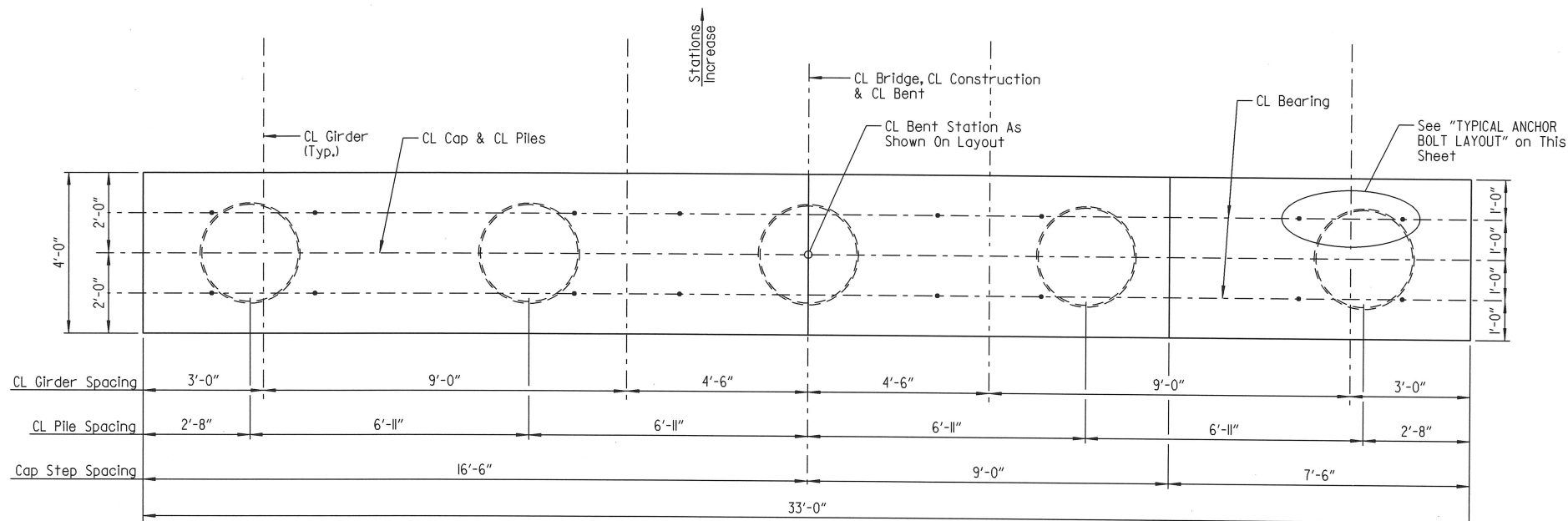
LEGEND
U.N.O. = Unless Noted Otherwise
EF = Each Face
CL = Centerline



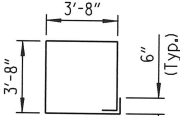
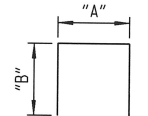
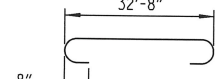
SHEET 1 OF 4
DETAILS OF INTERMEDIATE BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSW DATE: JAN. 2019 FILENAME: b020589_bl.dgn
CHECKED BY: DRG DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60899

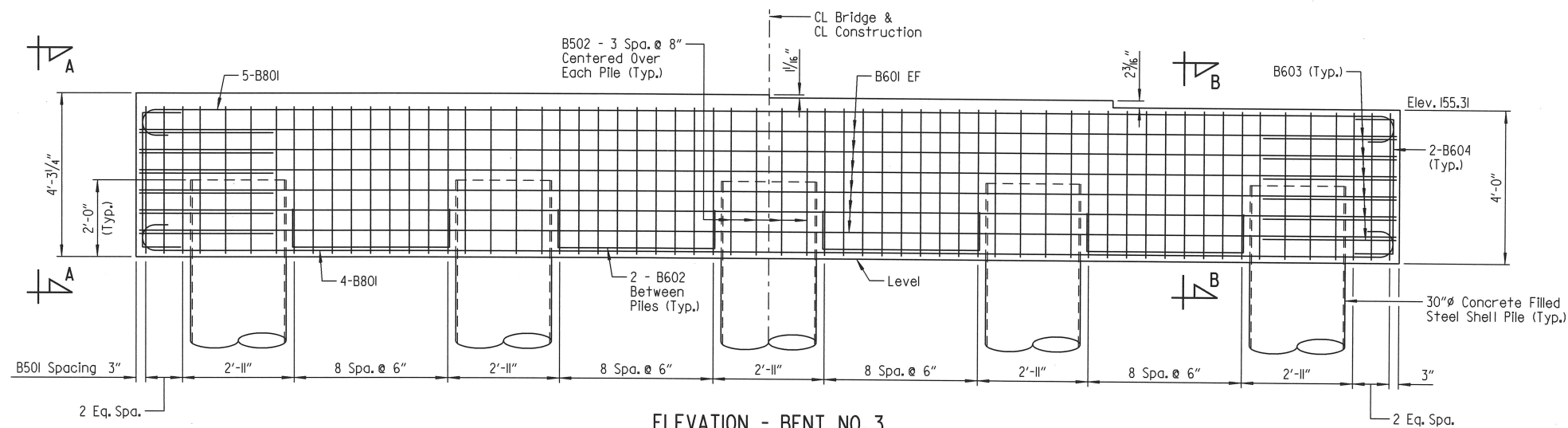
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	020589		33	58
				07453	INT. BENT DETAILS		60900	



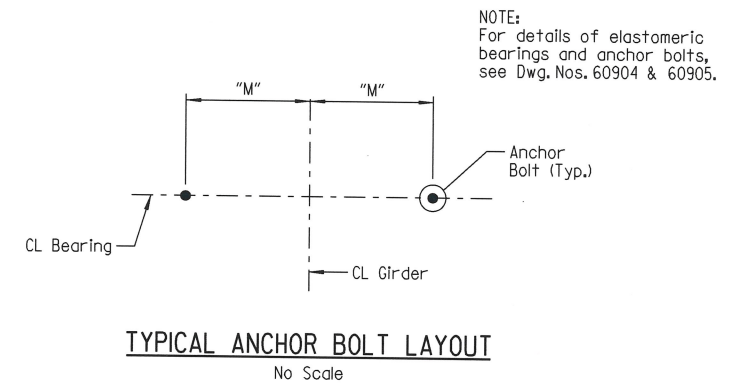
PLAN - BENT NO. 3
Scale: 1/2" = 1'-0"

BAR LIST - INT. BENT NO. 3						BAR BENDING DIAGRAMS	
MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.		
B501	42	15'-2"			2½"		
B502	20	10'-9½"	3'-8"	3'-8"	2½"		
B601	12	32'-8"			Str.		
B602	8	5'-9"	4'-1"	1'-0"	4½"		
B603	12	10'-2½"	3'-6½"	3'-6"	4½"		
B604	4	5'-2½"	3'-6½"	1'-0"	4½"		
B801	9	34'-6"			6"		

NOTE:
Dimensions of bars are out-to-out.



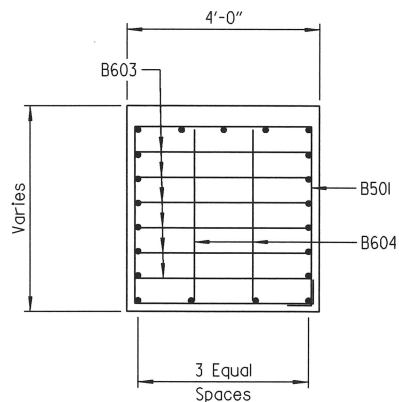
ELEVATION - BENT NO. 3
(Looking Ahead)
Scale: 1/2" = 1'-0"



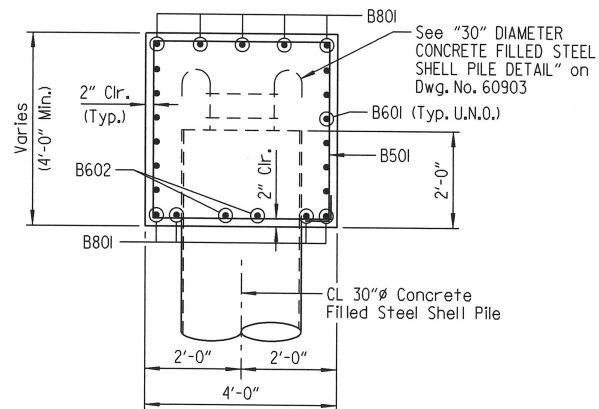
TYPICAL ANCHOR BOLT LAYOUT
No Scale

NOTES:
Concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi and shall be poured in the dry. All exposed corners shall be chamfered 3/4" unless noted otherwise.
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.
Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.
Piles at Bent No. 2 shall be 24" concrete filled steel shell piles. See Dwg. No. 60903 for details.
For additional information, see Layout.

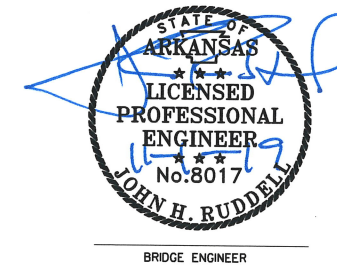
LEGEND
U.N.O. = Unless Noted Otherwise
EF = Each Face
CL = Centerline



VIEW A-A
Scale: 1/2" = 1'-0"

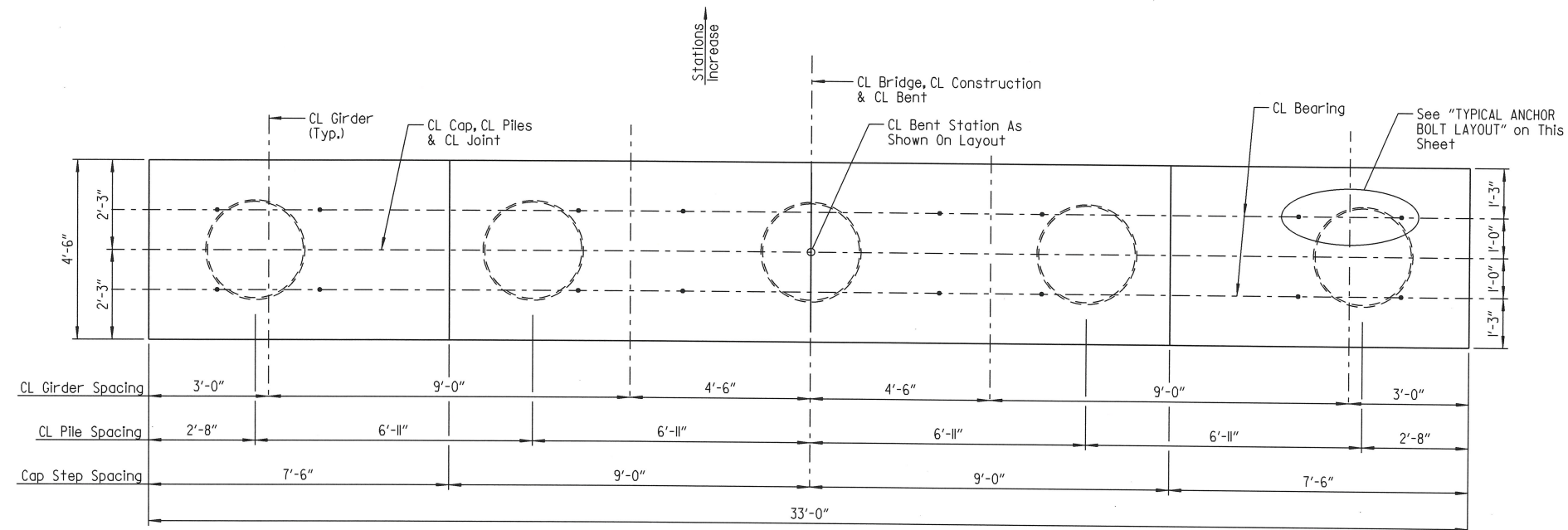


SECTION B-B
Scale: 1/2" = 1'-0"



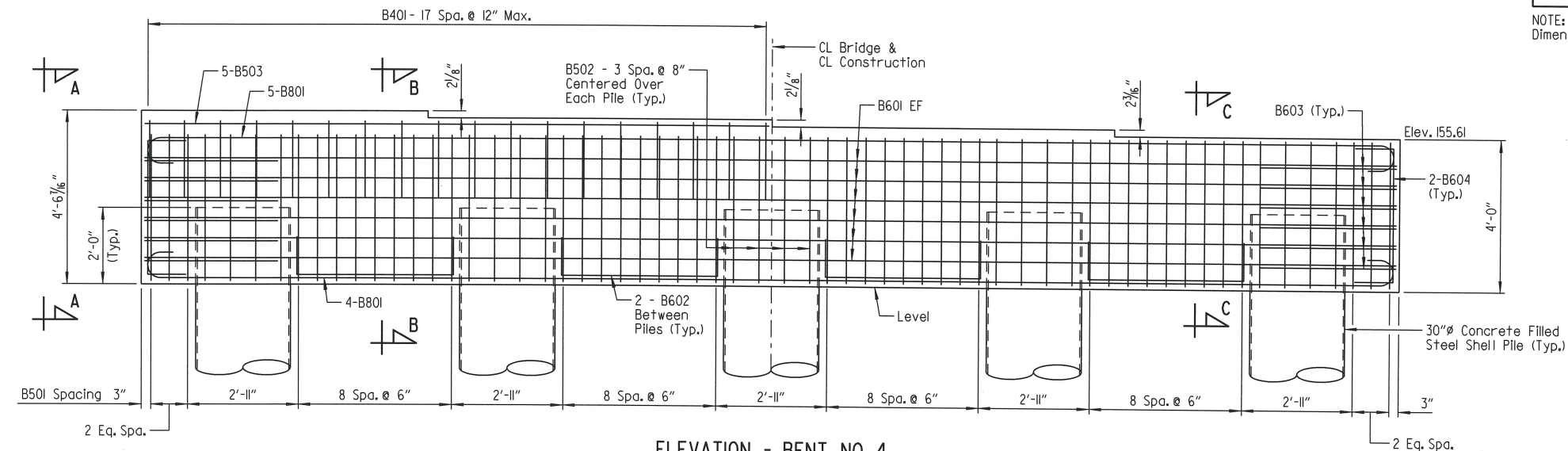
SHEET 2 OF 4
DETAILS OF INTERMEDIATE BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: JAN. 2019 FILENAME: b020589_b2.dgn
CHECKED BY: DRG DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60900

07453	INT. BENT DETAILS	60901
-------	-------------------	-------



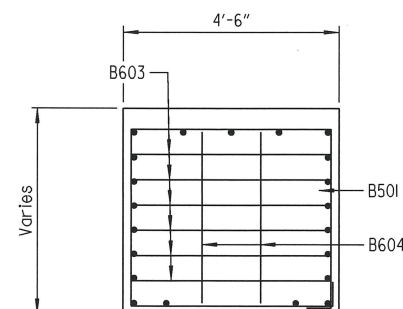
PLAN - BENT NO. 4

Scale: $\frac{1}{2}'' = 1'-0''$



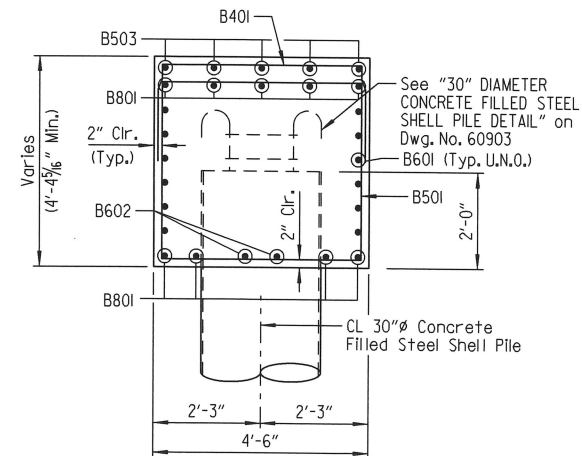
ELEVATION - BENT NO. 4

(Looking Ahead)
Scale: $\frac{1}{2}" = 1'-0"$



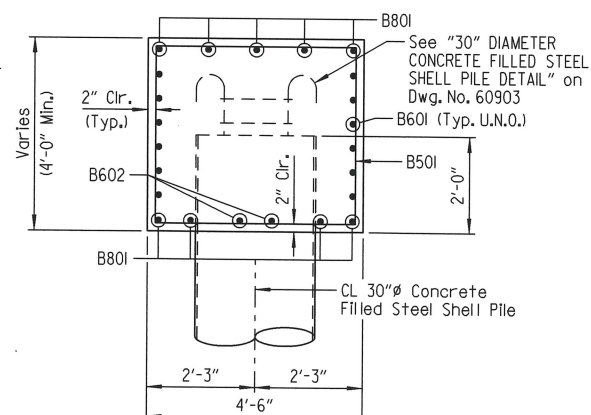
VIEW A-A

Scale: $\frac{1}{2}'' = 1'-0''$



SECTION B-B

Scale: $\frac{1}{2}" = 1'-0"$

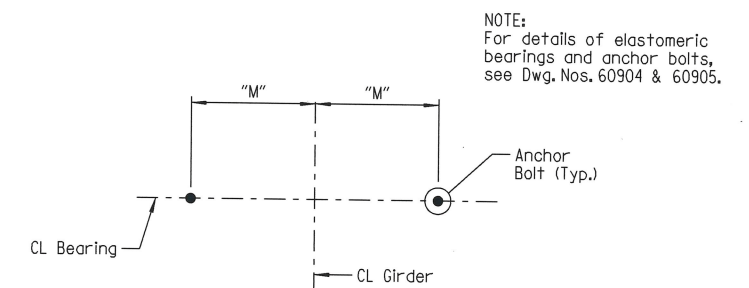


SECTION C-C

Scale: $\frac{1}{2}'' = 1'-0''$

BAR LIST - INT. BENT NO. 4						BAR BENDING DIAGRAMS	
MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.		
B40I	18	8'-0"	4'-2"	2'-0"	2"	B50I B40I, B502, B602, B603 & B604 B80I	
B50I	42	16'-2"			2 1/2"		
B502	20	11'-3 1/2"	4'-2"	3'-8"	2 1/2"		
B503	5	16'-2"			Str.		
B60I	12	32'-8"			Str.		
B602	8	5'-9"	4'-1"	1'-0"	4 1/2"		
B603	12	10'-8 1/2"	4'-0 1/2"	3'-6"	4 1/2"		
B604	4	5'-2 1/2"	3'-6 1/2"	1'-0"	4 1/2"		
B80I	9	34'-6"			6"		

NOTE:
Dimensions of bars are out-to-out.



TYPICAL ANCHOR BOLT LAYOUT

No Scale

NOTE:
For details of elastomeric
bearings and anchor bolts,
see Dwg. Nos. 60904 & 60905.

LEGEND

U.N.O. = Unless Noted Otherwise
EF = Each Face
CL = Centerline

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

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.

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Piles at Bent No.2 shall be 24"Ø concrete filled steel shell piles.
See Dwg.No.60903 for details.

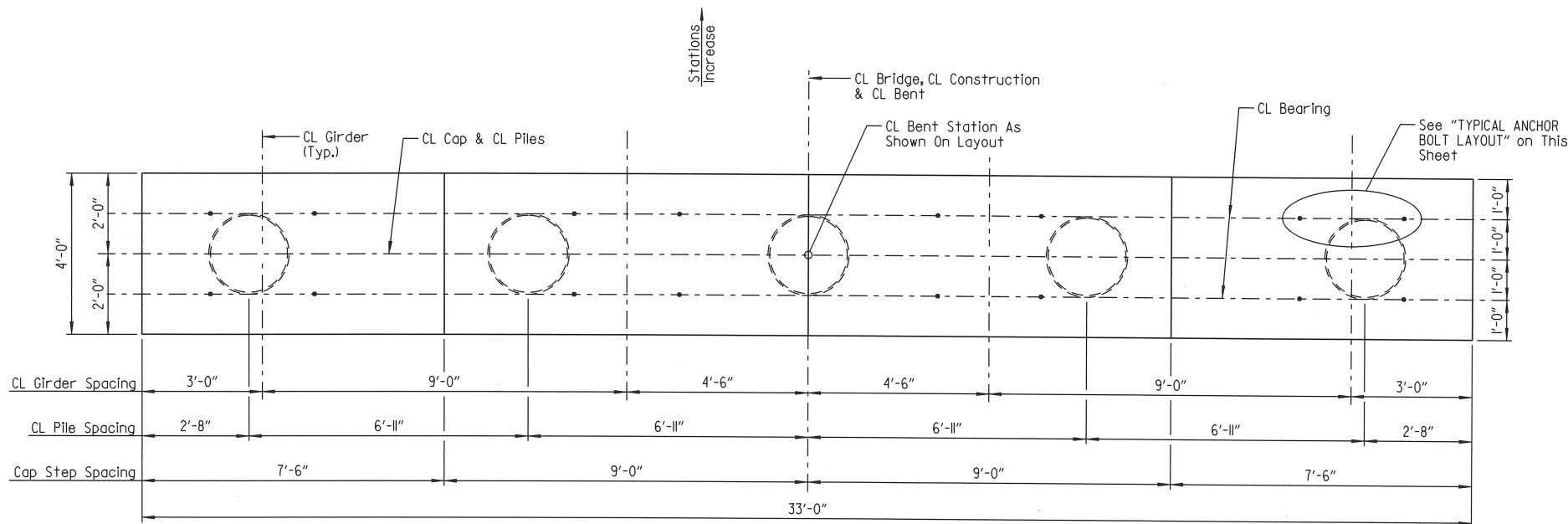
For additional information, see Layout.



SHEET 3 OF 4
DETAILS OF INTERMEDIATE BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

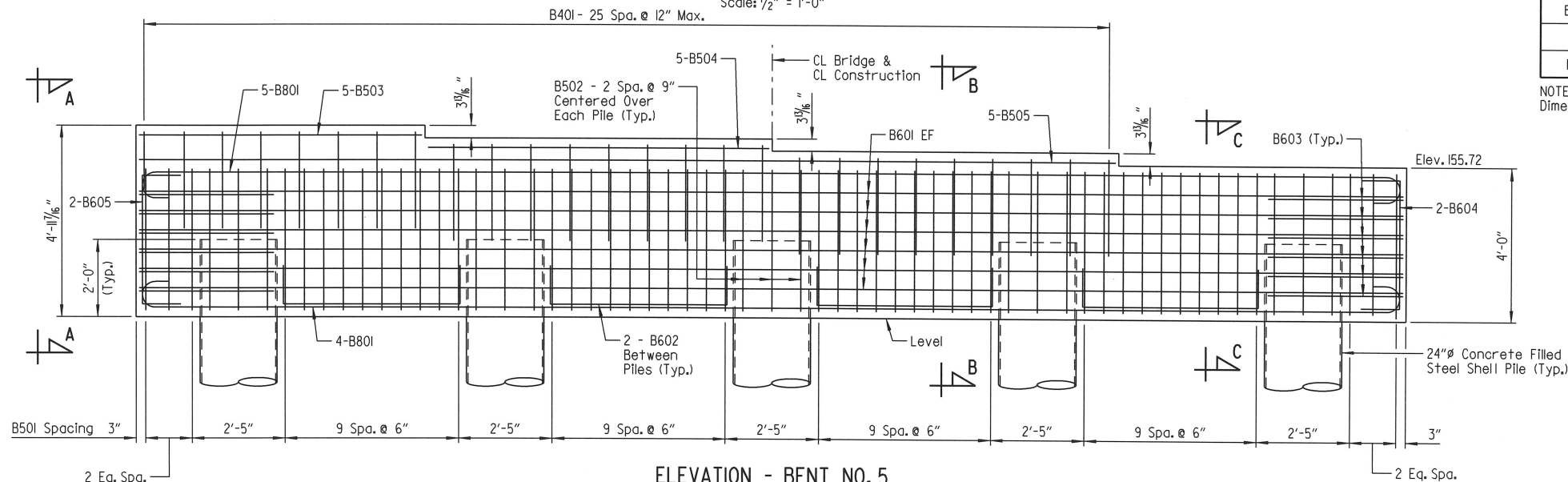
DRAWN BY: CSW DATE: JAN. 2019 FILENAME: b020589-b3.dgn
 CHECKED BY: DRG DATE: JULY 2019 SCALE: As Shown
 DESIGNED BY: CSW DATE: JULY 2019
 BRIDGE NO. 07453 DRAWING NO. 60901

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	35	58
				07453	INT. BENT DETAILS		60902	



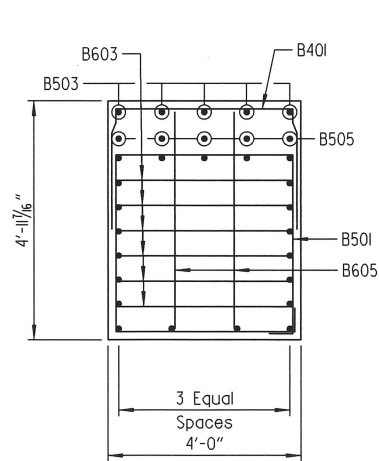
PLAN - BENT NO. 5

Scale: 1/2" = 1'-0"



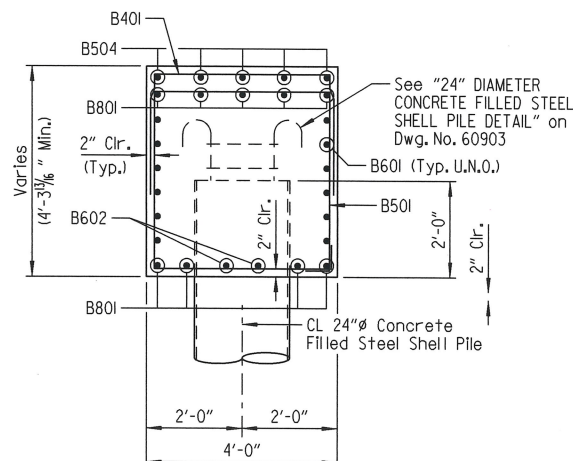
ELEVATION - BENT NO. 5

(Looking Ahead)
Scale: 1/2" = 1'-0"



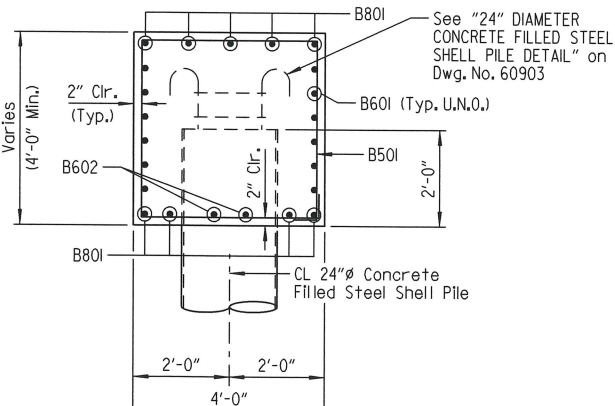
VIEW A-A

Scale: 1/2" = 1'-0"



SECTION B-B

Scale: 1/2" = 1'-0"

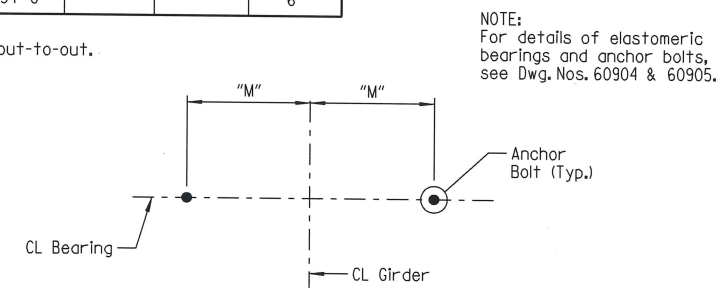
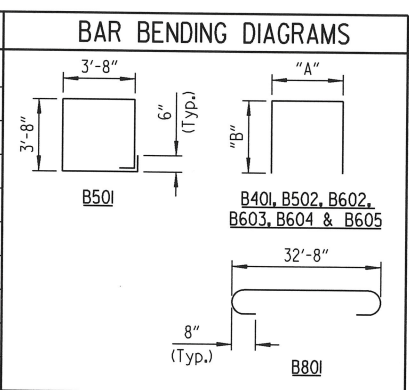


SECTION C-C

Scale: 1/2" = 1'-0"

BAR LIST - INT. BENT NO. 5					
MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B401	26	8'-6"	3'-8"	2'-6"	2"
B501	46	15'-2"			2 1/2"
B502	15	10'-9 1/2"	3'-8"	3'-8"	2 1/2"
B503	5	7'-2"			Str.
B504	5	8'-8"			Str.
B505	5	25'-2"			Str.
B601	12	32'-8"			Str.
B602	8	6'-3"	4'-7"	1'-0"	4 1/2"
B603	12	10'-2 1/2"	3'-6 1/2"	3'-6"	4 1/2"
B604	2	5'-2 1/2"	3'-6 1/2"	1'-0"	4 1/2"
B605	2	6'-1 1/2"	4'-5 1/2"	1'-0"	4 1/2"
B801	9	34'-6"			6"

NOTE:
Dimensions of bars are out-to-out.



TYPICAL ANCHOR BOLT LAYOUT

No Scale

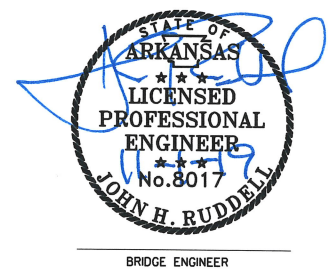
LEGEND

U.N.O. = Unless Noted Otherwise
EF = Each Face
CL = Centerline

NOTES:
Concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi and shall be poured in the dry. All exposed corners shall be chamfered 3/4" unless noted otherwise.
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.
Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.
Piles at Bent No. 2 shall be 24" concrete filled steel shell piles. See Dwg. No. 60903 for details.
For additional information, see Layout.

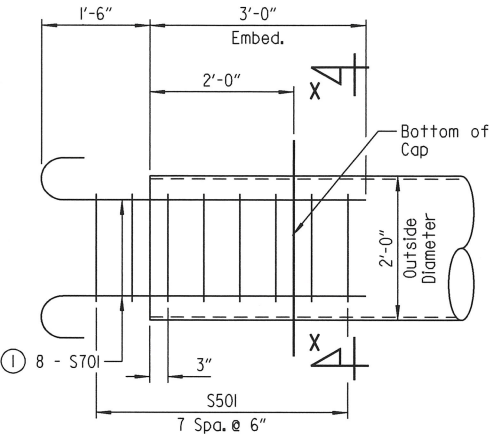
SHEET 4 OF 4
DETAILS OF INTERMEDIATE BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSW DATE: JAN. 2019 FILENAME: b020589_b4.dgn
CHECKED BY: DRG DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60902



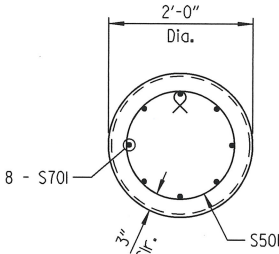
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	36	58
				07453	30" DIA. STEEL SHELL PILES			60903

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



24" DIAMETER CONCRETE FILLED STEEL SHELL PILE
Scale: $\frac{3}{4}" = 1'-0"$

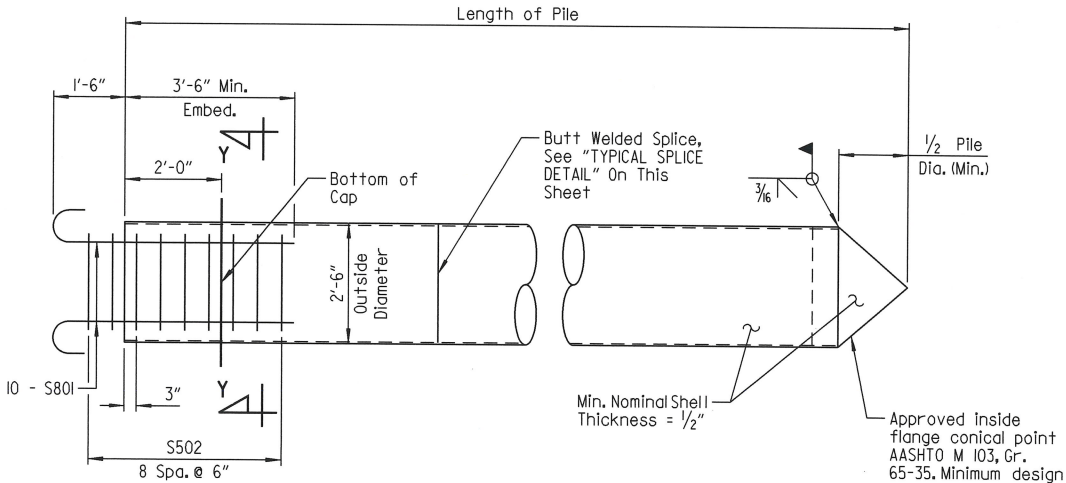
① Pile anchorage detail shown for 24" Diameter Concrete Filled Steel Shell pile shall be used in lieu of anchorage details shown on Std. Dwg. No. 5502L.



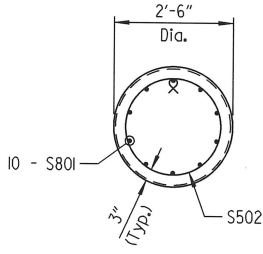
SECTION X-X
Scale: $\frac{3}{4}" = 1'-0"$

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

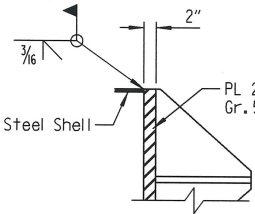
For all other details and General Notes for 24" Concrete Filled Steel Shell piles and pile encasements, see Std. Dwg. No. 5502L.



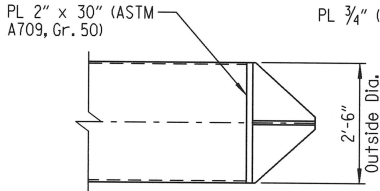
30" DIAMETER CONCRETE FILLED STEEL SHELL PILE
Scale: $\frac{1}{2}" = 1'-0"$



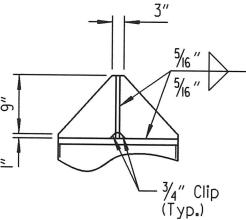
SECTION Y-Y
Scale: $\frac{1}{2}" = 1'-0"$



PART SECTION

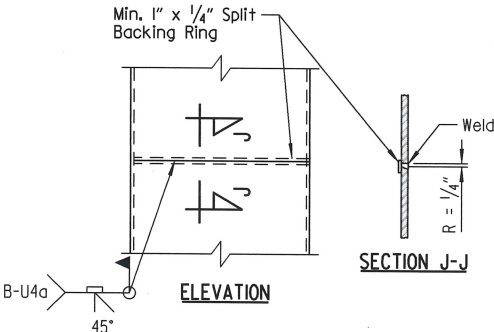


ELEVATION

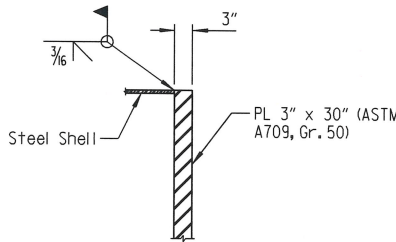


VIEW H-H

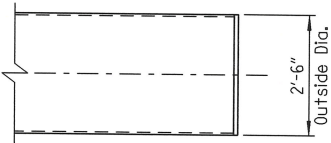
ALTERNATE VANED TIP DETAIL FOR 30" PILE
No Scale



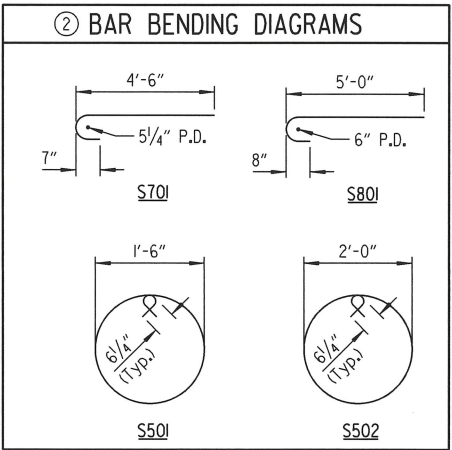
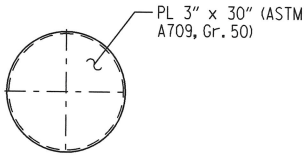
TYPICAL SPLICE DETAIL
No Scale



PART SECTION



ELEVATION



NOTE:
Dimensions of bars are out-to-out.

② Reinforcing steel used in pile anchorage shall not be paid for directly, but shall be considered subsidiary to the item "STEEL SHELL PILING".

GENERAL NOTES - 30" CONCRETE FILLED STEEL SHELL PILES

Steel shells shall conform to ASTM A252, Grade 3 ($F_y = 45,000$ 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.

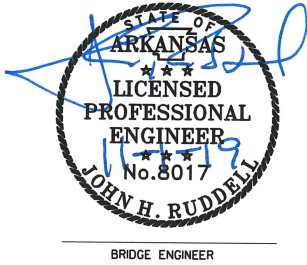
Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

Steel shell piling shall be encased with concrete in accordance with Std. Dwg. No. 5502L to the elevation shown on the Bridge Layout. 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, and reinforcing steel shall not be paid for directly, but shall be considered subsidiary to the item "30" DIA. STEEL SHELL PILING".

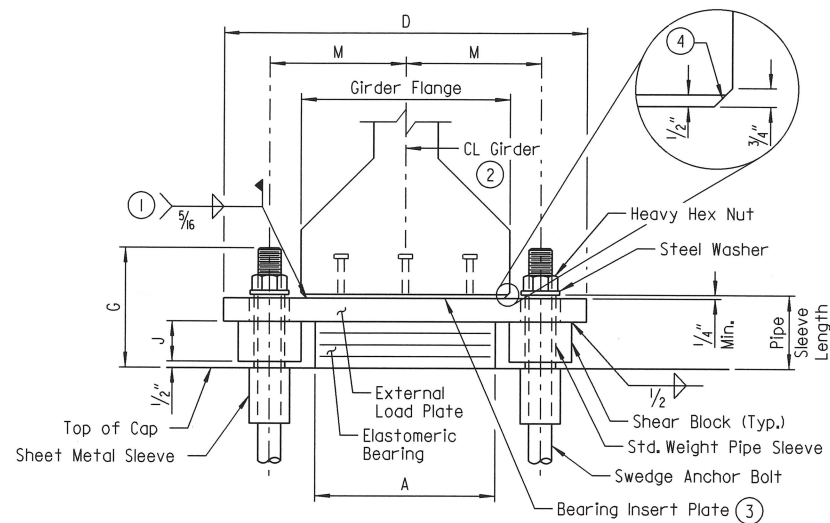
ALTERNATE FLAT TIP DETAIL FOR 30" PILE
No Scale



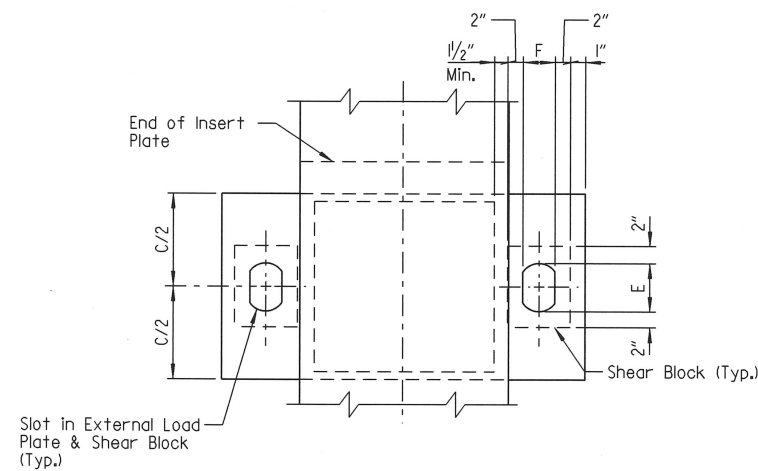
DETAILS OF 24" & 30" DIA. STEEL SHELL PILES
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSW DATE: MAY 2019 FILENAME: b020589_b5.dgn
CHECKED BY: JHR DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: DRG DATE: JULY 2019
BRIDGE NO. 07453 DRAWING NO. 60903

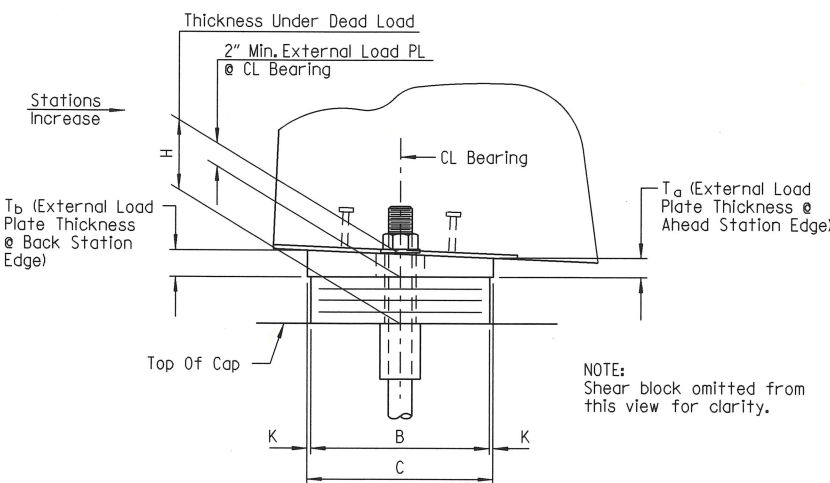
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	37	58
				07453	ELASTOMERIC BEARINGS			60904



FRONT VIEW - AT BENT NOS. 1, 4 & 6



PLAN VIEW - AT BENT NOS. 1, 4 & 6



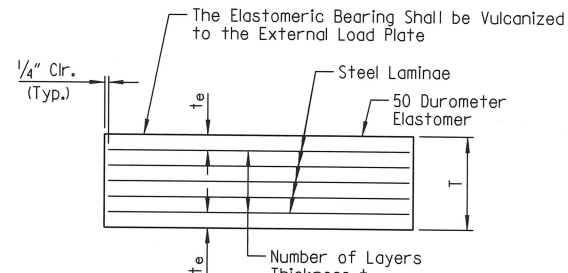
SIDE VIEW - AT BENT NOS. 1, 4 & 6

- 1 Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder 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 external load plate 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.

Care shall be taken to ensure that the external load plate is in full and complete contact with the bearing insert plate before welding begins.

- 2 Centerline elastomeric pad shall be aligned with centerline girder.
- 3 Bearing insert plate (A709, Gr. 50W) & studs shall be considered subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE III)". Studs shall conform to Subsection 807.08.
- 4 Bevel Bearing Insert Plate to conform to girder chamfer.

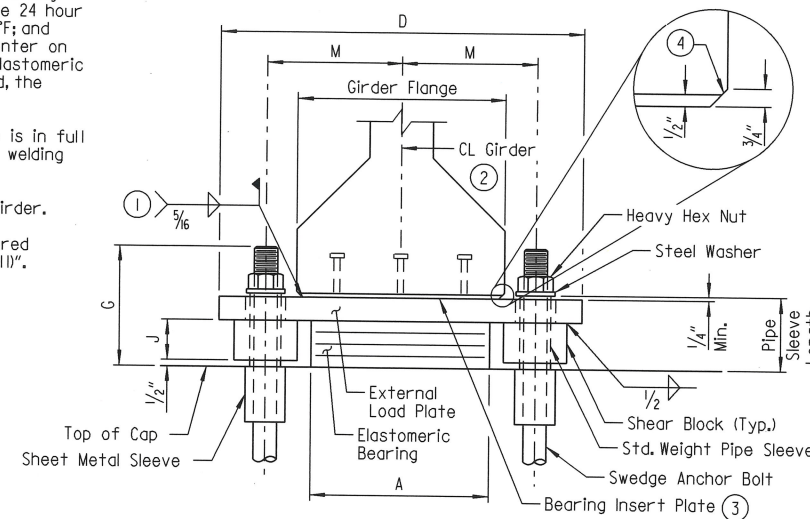
Prior to erection of the beams or girders, the Contractor shall verify the orientation of the bearings with respect to T_a and T_b .



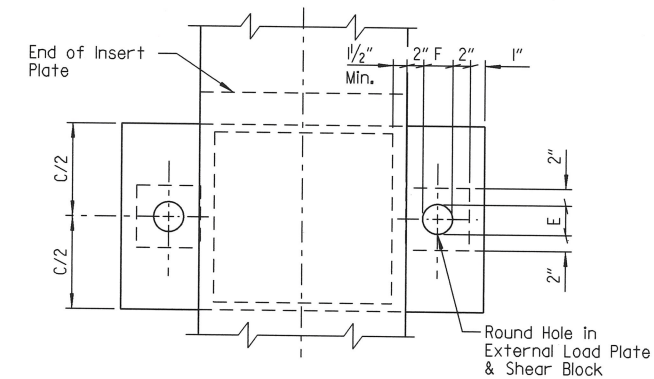
t_e = Thickness of Elastomer Cover on Top and Bottom of Pad
 t_1 = Thickness of Elastomer Between Steel Laminae
 N = Number of Elastomer Layers of Thickness t_1

ELASTOMERIC BEARING

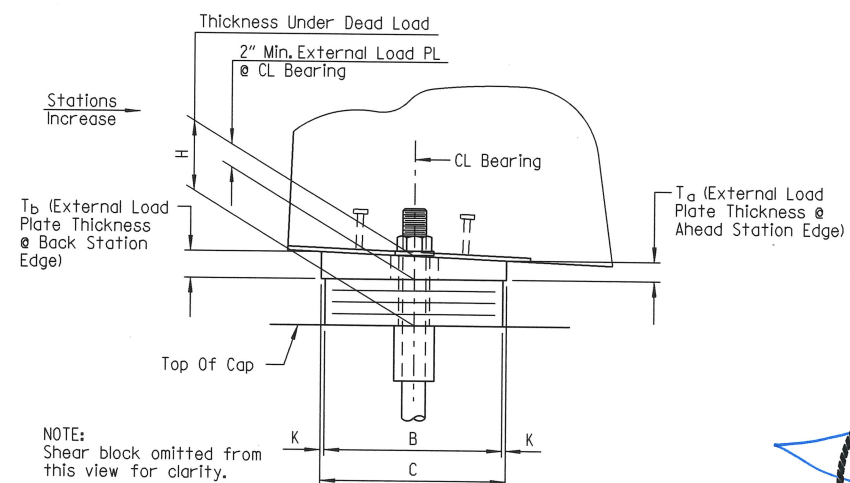
NOTE:
The direction of bevel of the external load plate may not be accurately depicted with respect to T_a and T_b values shown in "TABLE OF FABRICATOR VARIABLES".



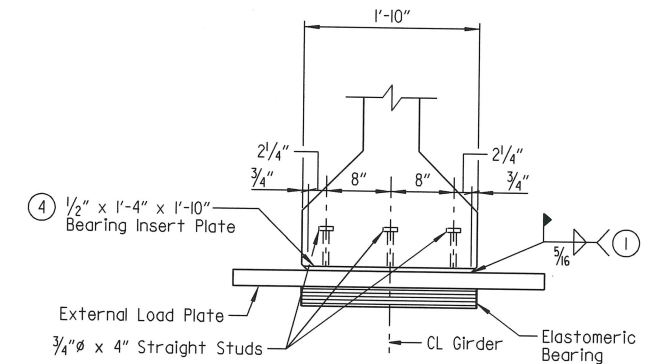
FRONT VIEW - AT BENT NOS. 2, 3 & 5



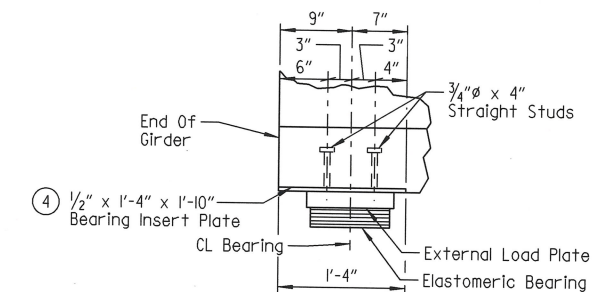
PLAN VIEW - AT BENT NOS. 2, 3, & 5



SIDE VIEW - AT BENT NOS. 2, 3 & 5



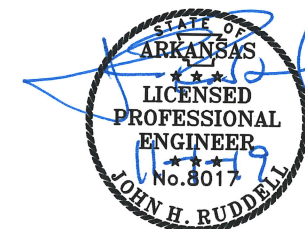
FRONT VIEW



SIDE VIEW

BEARING INSERT PLATE & STUD DETAIL

NOTE:
For "GENERAL NOTES", "ANCHOR BOLT DETAIL", and "TABLE OF FABRICATOR VARIABLES", see Dwg. No. 60905.



SHEET 1 OF 2
DETAILS OF ELASTOMERIC BEARINGS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020589-el.dgn
CHECKED BY: DRG DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60904

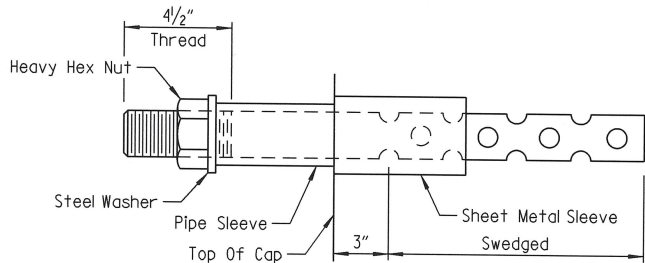
C:\Thames\WORKSPACE\ARDOT\Bridges\BAYOUBART-S302-BG.dgn
11/20/2017 10:17:52 - Bayou Bartholomew Drawings\BAYOUBART-S302-BG.dgn
REVISED DATE:
10/31/2019 5:44:32 PM

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	38	58
				07453		ELASTOMERIC BEARINGS		60905

TABLE OF FABRICATOR VARIABLES

					Elastomeric Pad										External Load Plate										Anchor Bolt				
Location		Bearing Type	No. Of Bearings Each Bent	* Maximum Design Load (Kips)	G	H	A	B	N	t _i	t _e	No. & Thickness Of Steel Laminæ	T	C	D	E	F	J	K	M	T _G	T _B	Anchor Bolt		Pipe Sleeve Size (Dia. x L)	Sheet Metal Sleeve Size (Dia. x L)	Steel Washer Size (O.D.)		
Bent No.	Girder No.																						(Dia. x L)	Grade					
1	All	Exp.	4	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.04	1.96	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 8"	3 3⁄8"		
2 Bk.	All	Fixed	4	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.04	1.96	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 8"	2 1⁄2"		
2 Ah.	1	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.06	1.94	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 8"	2 1⁄2"		
2 Ah.	2	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.04	1.96	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 8"	2 1⁄2"		
2 Ah.	3-4	Fixed	2	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.03	1.97	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 8"	2 1⁄2"		
3 Bk.	1	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.06	1.94	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 9"	2 1⁄2"		
3 Bk.	2	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.04	1.96	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 9"	2 1⁄2"		
3 Bk.	3-4	Fixed	2	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.03	1.97	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 9"	2 1⁄2"		
3 Ah.	1	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.04	1.96	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 9"	2 1⁄2"		
3 Ah.	2	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.03	1.97	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 9"	2 1⁄2"		
3 Ah.	3-4	Fixed	2	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.03	1.97	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 9"	2 1⁄2"		
4 Bk.	1	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	4 1⁄4"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.04	1.96	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
4 Bk.	2	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	4 1⁄4"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.03	1.97	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
4 Bk.	3-4	Exp.	2	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	4 1⁄4"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.02	1.98	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
4 Ah.	1	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.04	1.96	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
4 Ah.	2	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.03	1.97	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
4 Ah.	3	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.02	1.98	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
4 Ah.	4	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.02	1.98	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 12"	3 3⁄8"		
5 Bk.	1	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.04	1.96	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Bk.	2	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.03	1.97	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Bk.	3	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.02	1.98	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Bk.	4	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.01	1.99	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Ah.	1	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.03	1.97	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Ah.	2	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.02	1.98	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Ah.	3	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.01	1.99	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
5 Ah.	4	Fixed	1	153	6 7⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	39"	2"	2"	1 7⁄8"	1⁄2"	15 1⁄2"	2.00	2.00	1 1⁄4" x 23"	55	1 1⁄4" x 4 5⁄8"	3" x 17"	2 1⁄2"		
6	1	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.03	1.97	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 10"	3 3⁄8"		
6	2	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.02	1.98	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 10"	3 3⁄8"		
6	3	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.01	1.99	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 10"	3 3⁄8"		
6	4	Exp.	1	153	7 3⁄8"	4 3⁄8"	22"	10"	3	1⁄2"	1⁄4"	4 @ 12 Ga.	2 1⁄8"	11"	40 1⁄4"	3 1⁄2"	2 5⁄8"	1 7⁄8"	1⁄2"	15 9⁄16"	2.00	2.00	1 3⁄4" x 29"	55	2" x 4 5⁄8"	4" x 10"	3 3⁄8"		

* Maximum Design Load = LRFD Service I Limit State



ANCHOR BOLT DETAIL

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 concrete. Bolts placed in drilled holes shall be accurately set and fixed using a OPL 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 (A709, GR. 50W)".

GENERAL NOTES

Elastomeric bearings shall conform to Section 808 and shall be paid for at the unit price bid for "ELASTOMERIC BEARINGS."

External load plates and shear blocks shall conform to ASTM A709, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

External load plates and shear blocks shall be completely fabricated (including bevel, bolt holes, and all shop welding) and shall be cleaned before vulcanizing 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(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

Anchor bolts, washers and nuts shall conform to Subsection 807.07. 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 (A709, GR. 50W)". External load plates and shear blocks will not be measured or paid for separately but will be considered incidental to the unit price bid for "ELASTOMERIC BEARINGS".

Bearings shall be seated in accordance with Subsection 808.08. This work and materials are considered subsidiary to the item "ELASTOMERIC BEARINGS" and will not be paid for directly.

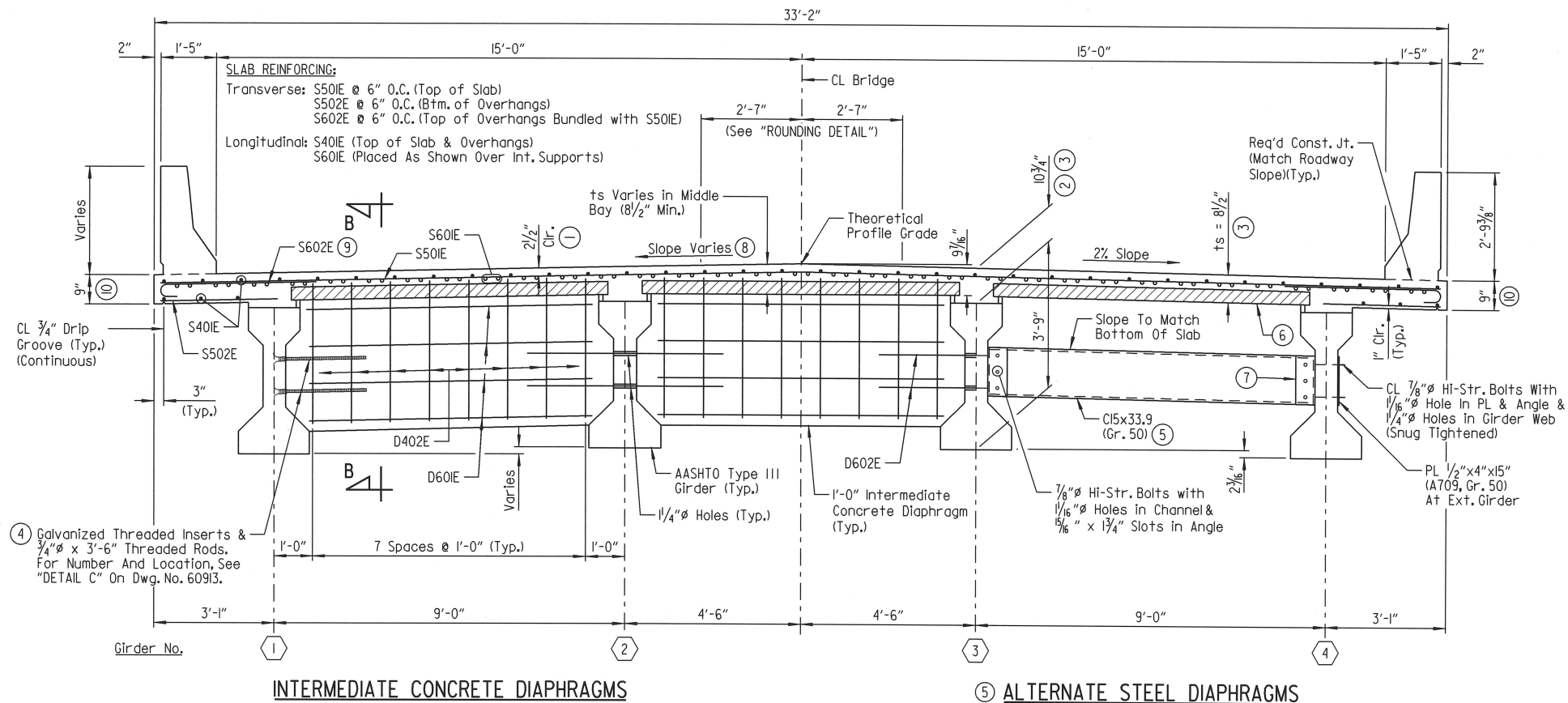


BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF ELASTOMERIC BEARINGS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

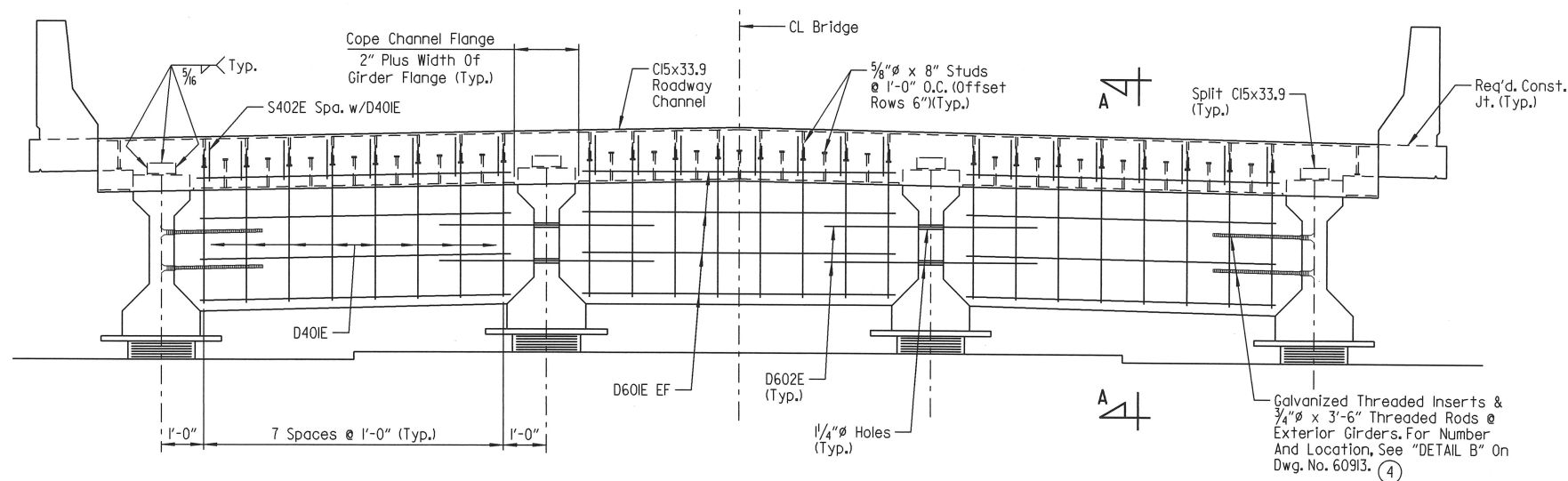
DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020589_e2.dgn
CHECKED BY: DRG DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60905

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	39	58
				07453		210' UNIT		60906



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS
 (Looking Ahead)
 Scale: 1/2" = 1'-0"

EXPANSION DEVICE:
 Roadway Channel: C15x33.9
 Conn. Angle: C15x33.9 (Cope One Flange)
 Detail Devices 1/8" High and Provide 1/4"
 Shims Using 2-1/16" & 1-1/8" Plates



Note:
 For Details of Poured Silicone Joint,
 See Dwg. No. 60916.

Note:
 For "DETAIL OF ALTERNATE ANCHORS",
 see Dwg. No. 60916.

① TOLERANCE:

Minus = 1/4"
 Plus = Equal to amount of slab thickening used to meet slab thickness tolerance - see "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Dwg. No. 60914.

② This dimension taken at CL Bearing & CL Girder.

③ See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Dwg. No. 60914.

④ Galvanized threaded inserts: Dayton-Richmond F-42 Loop Ferrule Insert or an approved equal, 3/4" threaded rods to be ASTM A709, Grade 36 or AASHTO M31 or M53, Gr. 60. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE III)". Galvanizing shall be in accordance with AASHTO M232 Class C or AASHTO M298 Class 50.

⑤ Galvanized steel diaphragms may be used in place of concrete at intermediate diaphragms only. All components of the alternate steel diaphragms shall be galvanized. Galvanizing shall be in accordance with AASHTO M11. Payment will be based on concrete diaphragms.

⑥ Precast Deck Panel - See Dwg. No. 60912 For Details

⑦ L6" x 4" x 1/2" x 15" (center angle on web of girder). A standard washer shall be supplied for use under both the nut and the head of the 1/8" H.S. bolts. An additional plate washer shall cover the angle slots.

⑧ See "SUPERELEVATION TRANSITION METHOD OF ROTATION" on Dwg. No. 60894.

⑨ Rotate S602E bars as req'd. to maintain minimum clear cover on hooked end.

⑩ Maintain 9" slab thickness throughout slab overhang.

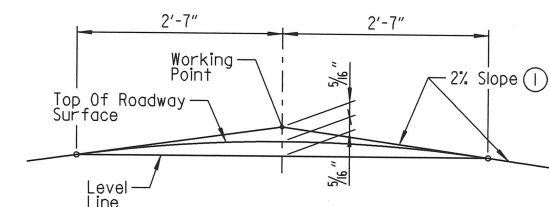
Notes:

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

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06. Placement of slab bolster or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

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

For "SECTION A-A" and "SECTION B-B" see Dwg. No. 60907.



Note:
 Working Point matches
 Theoretical Profile Grade.

① Values shown are for 2% Peaked Crown.
 Dimension from Working Point to Top of
 Roadway Surface Varies from 5/16" at
 Station 114+00.00 to 0" at Station 115+80.00

LEGEND
 EF = Each Face



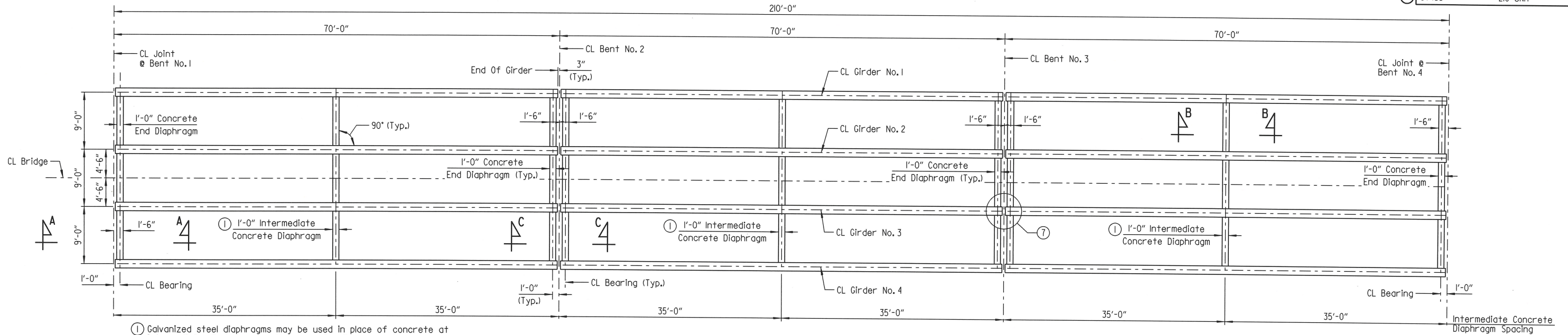
SHEET 1 OF 3
DETAILS OF 210'-0" PRESTRESSED
CONCRETE GIRDER UNIT
 ROUTE 210
 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: FEB. 2019 FILENAME: B020589_SLDGN
 CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
 DESIGNED BY: CSW DATE: FEB. 2019
 BRIDGE NO. 07453 DRAWING NO. 60906

CWThomas 10/31/2019 5:44:33 PM
WORKSPACE: ARDOT Bridge
L:\2019\101520 - Bayou Bartholomew Drawings\BAYOUBART-S304-SF.dgn
REVISED DATE:

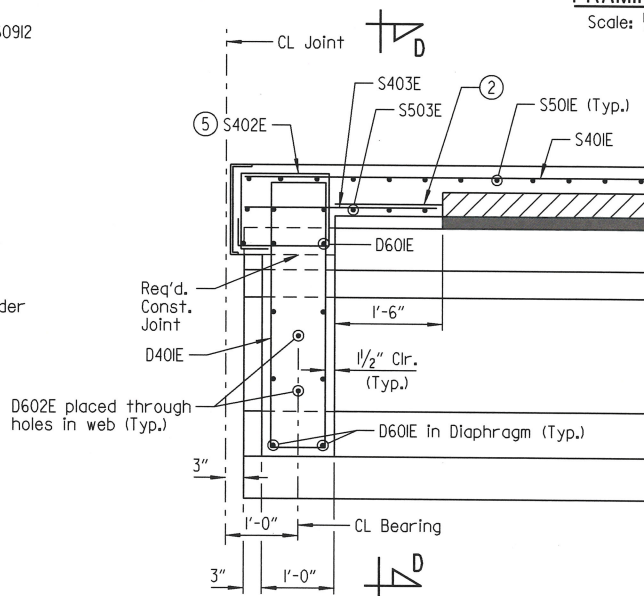
⑦ After erection, the ends of the girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps. The ends of girders shall remain blocked until 72 hours after the concrete diaphragms are poured or until the steel diaphragms are in place.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	40	58
				① 07453		210' UNIT		60907

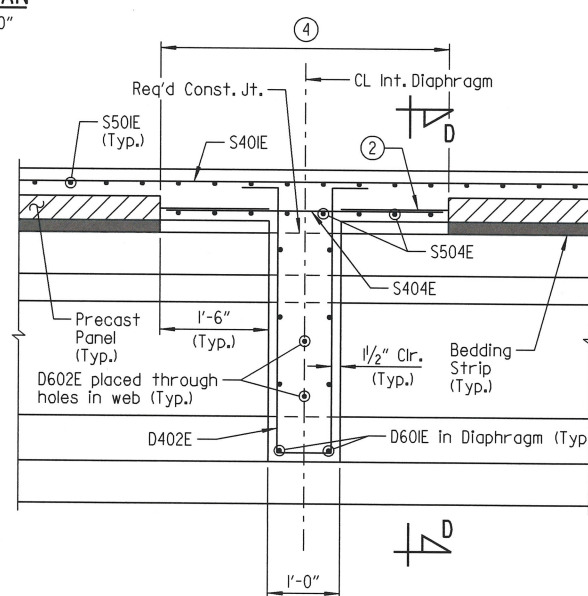


- Galvanized steel diaphragms may be used in place of concrete at intermediate diaphragm locations only. See Dwg. No. 60906 for additional details.
- Extend longitudinal panel reinforcement as shown. See Dwg. No. 60912 for precast panel details.
- See "TRANSVERSE SLAB JOINT DETAIL" on Dwg. No. 60916.
- Precast panels shall be continuous through this region if the alternate steel diaphragm is used. Payment for "CLASS S(AE) CONCRETE - BRIDGE", "EPOXY COATED REINFORCING STEEL (GRADE 60)" and "PRECAST DECK PANELS" will be based on plan quantities.
- Space with Bars D40IE
- All formwork beneath link slab shall be removed

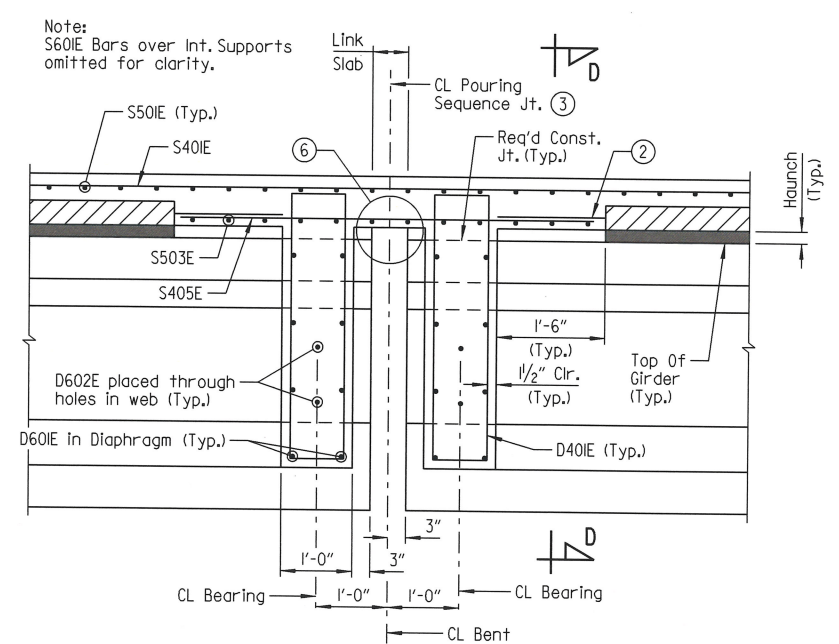
FRAMING PLAN
Scale: $\frac{1}{8}" = 1'-0"$



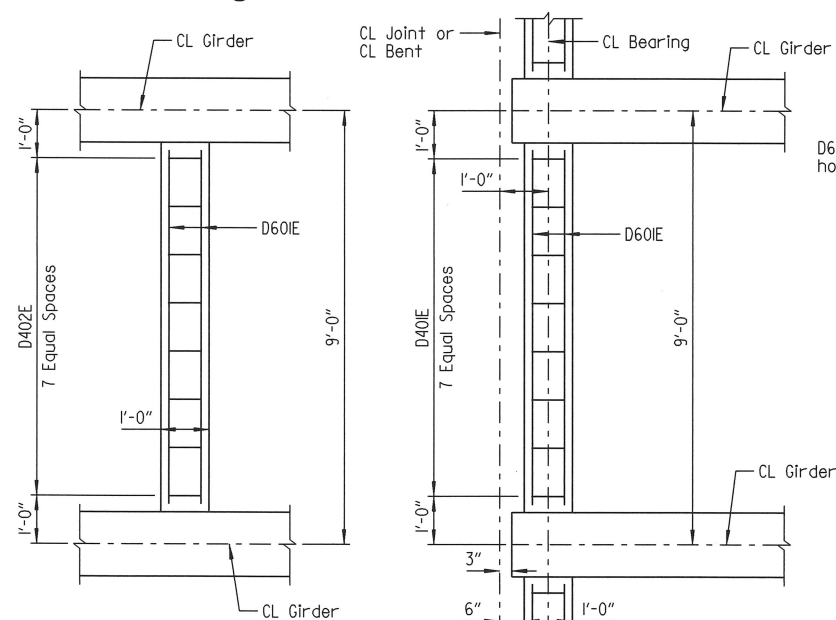
SECTION A-A
Scale: $\frac{3}{4}" = 1'-0"$



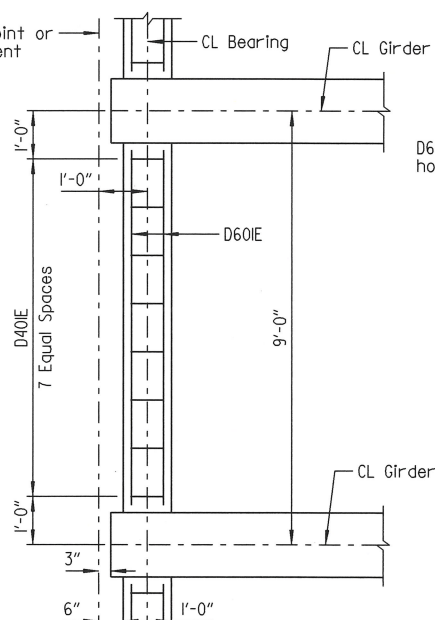
SECTION B-B
Scale: $\frac{3}{4}" = 1'-0"$



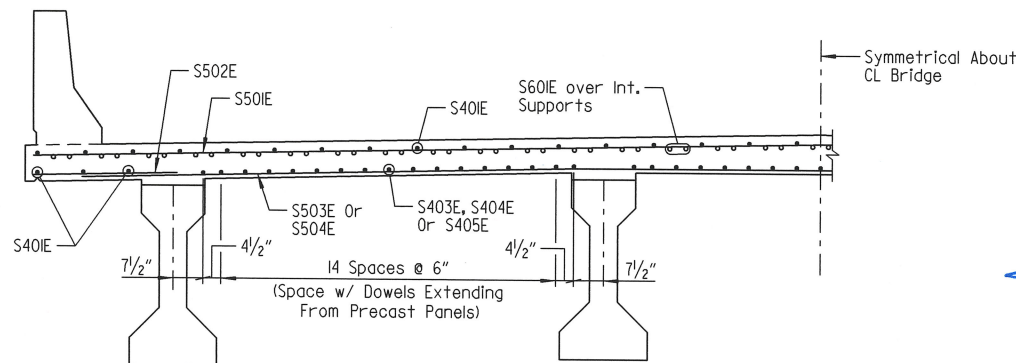
SECTION C-C
Scale: $\frac{3}{4}" = 1'-0"$



PLAN
① INTERMEDIATE DIAPHRAGM
Scale: $\frac{1}{2}" = 1'-0"$

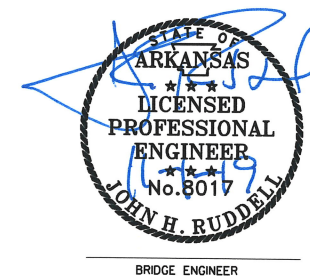


PLAN
END DIAPHRAGM
Scale: $\frac{1}{2}" = 1'-0"$



SECTION D-D
Scale: $\frac{1}{2}" = 1'-0"$

LEGEND
CL = Centerline

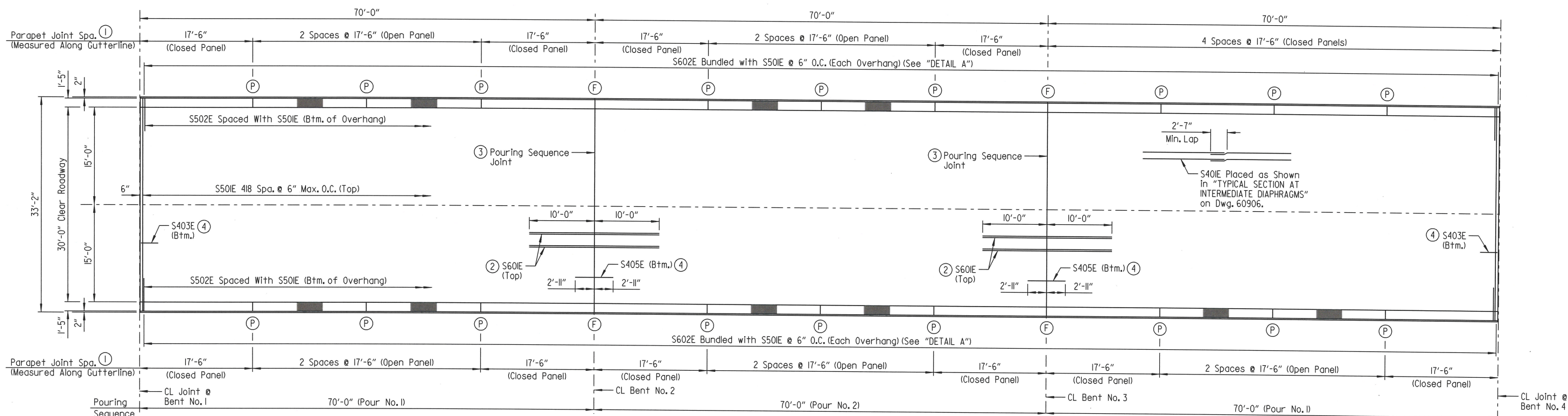


SHEET 2 OF 3
DETAILS OF 210'-0" PRESTRESSED
CONCRETE GIRDER UNIT
ROUTE 210
SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: B020589_S2.DGN
CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60907

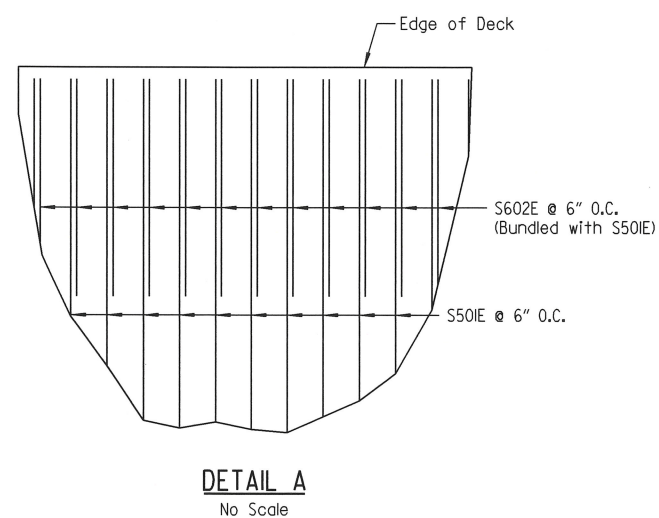
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	41	58
				07453		210' UNIT		60908

- ① Parapet Joints designated with symbol (F) shall be stopped 4" from top of slab. All other parapet joints with symbol (P) shall be partial depth joints stopped 1'-2" from top of Slab.



REINFORCING PLAN & DECK POURING SEQUENCE

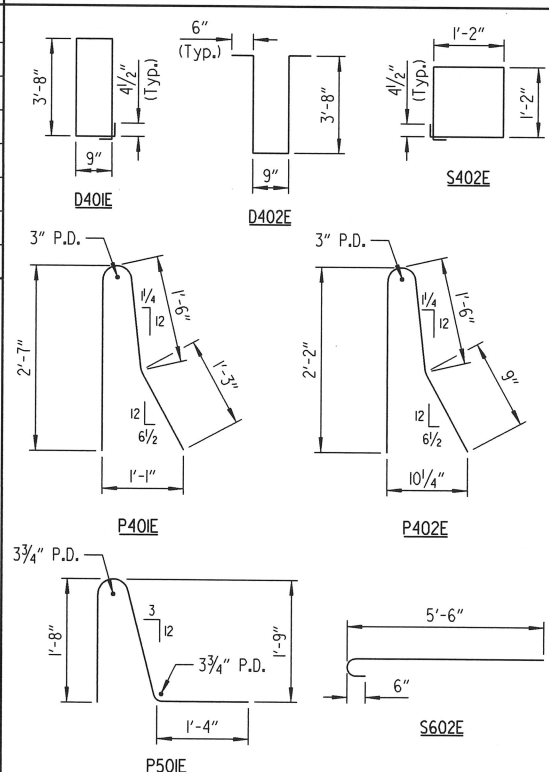
Scale: 1/8" = 1'-0"



BAR LIST							
MARK	NO. REQ'D	LENGTH	P.D.	MARK	NO. REQ'D	LENGTH	P.D.
D401E	144	9'-2"	2"	S501E	419	32'-10"	Str.
D402E	72	8'-9"	2"	S502E	838	3'-2"	Str.
				S503E	36	28'-0"	Str.
D601E	222	7'-3"	Str.	S504E	24	28'-0"	Str.
D602E	36	6'-9"	Str.				
				S601E	132	20'-0"	Str.
P401E	750	5'-5"	3"	S602E	838	6'-2"	4 1/2"
P402E	90	4'-6"	3"				
P403E	168	17'-0"	Str.				
P404E	72	5'-2"	Str.				
P501E	750	4'-10"	3 3/4"				
S401E	240	37'-7"	Str.				
S402E	48	5'-0"	2"				
S403E	102	2'-8"	Str.				
S404E	153	3'-10"	Str.				
S405E	102	5'-10"	Str.				

NOTES:
Dimensions of bars are out-to-out.
Bar designations ending with "E" indicate epoxy coated bars.

BAR BENDING DIAGRAMS



- ② Refer to "TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS" on Dwg. No. 60906 for placement.
③ See "TRANSVERSE SLAB JOINT DETAIL" on Dwg. No. 60916.
④ Refer to "SECTION A-A" & "SECTION B-B" on Dwg. No. 60907.
⑤ Bars within intermediate diaphragms will not be required if alternate steel diaphragms are used.
⑥ Adjust number of bars required if alternate steel diaphragms are used.

Note:
Pours with the same number may be poured simultaneously or separately. All pours (1) must be placed before pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

Diaphragm Pours: End diaphragms and Intermediate Diaphragms shall be poured at least 48 hours prior to deck pours.

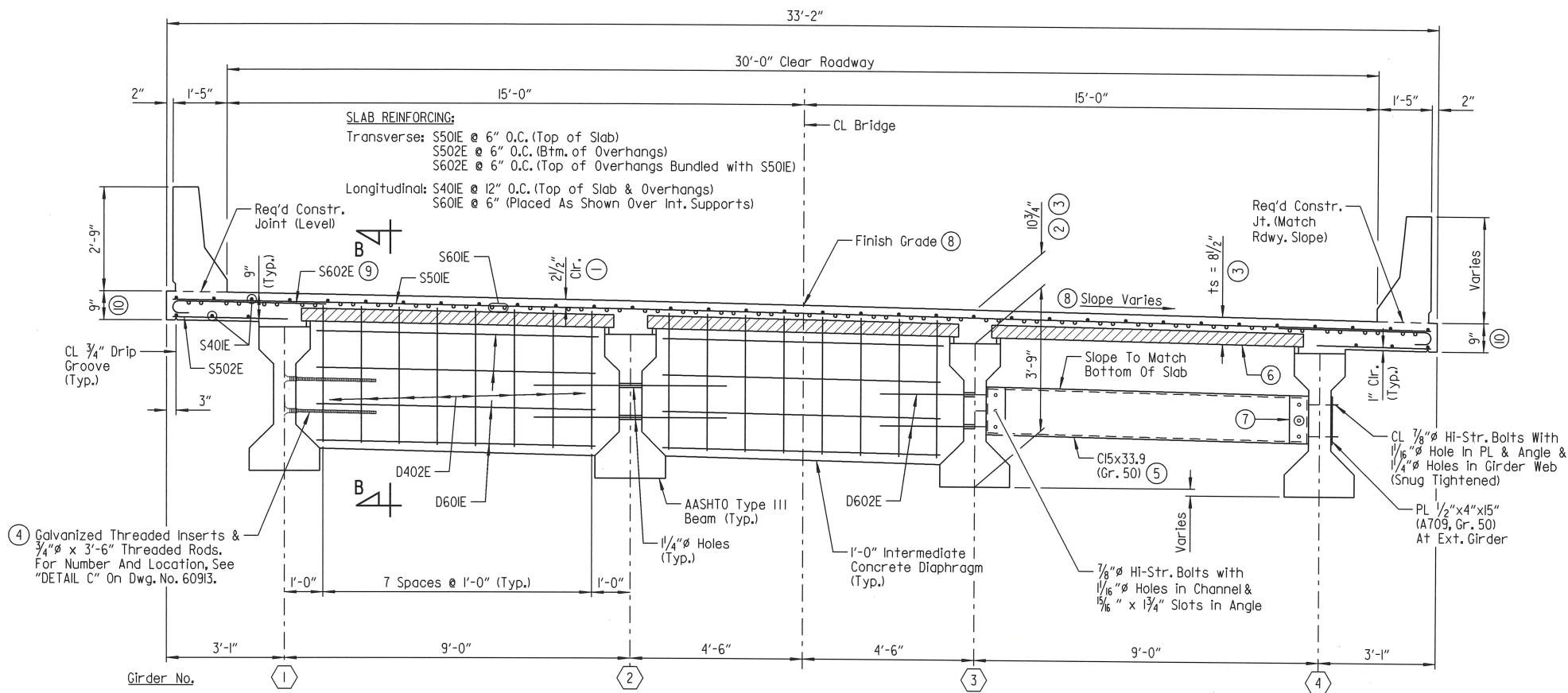
No rolling pours shall be made before the entire slab unit has been placed unless approval of the Engineer has been obtained. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence as shown.



SHEET 3 OF 3
DETAILS OF 210'-0" PRESTRESSED
CONCRETE GIRDER UNIT
ROUTE 210
ARIZONA STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020589_s3.dgn
CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60908

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	42	58
				① 07453		140' UNIT		60909



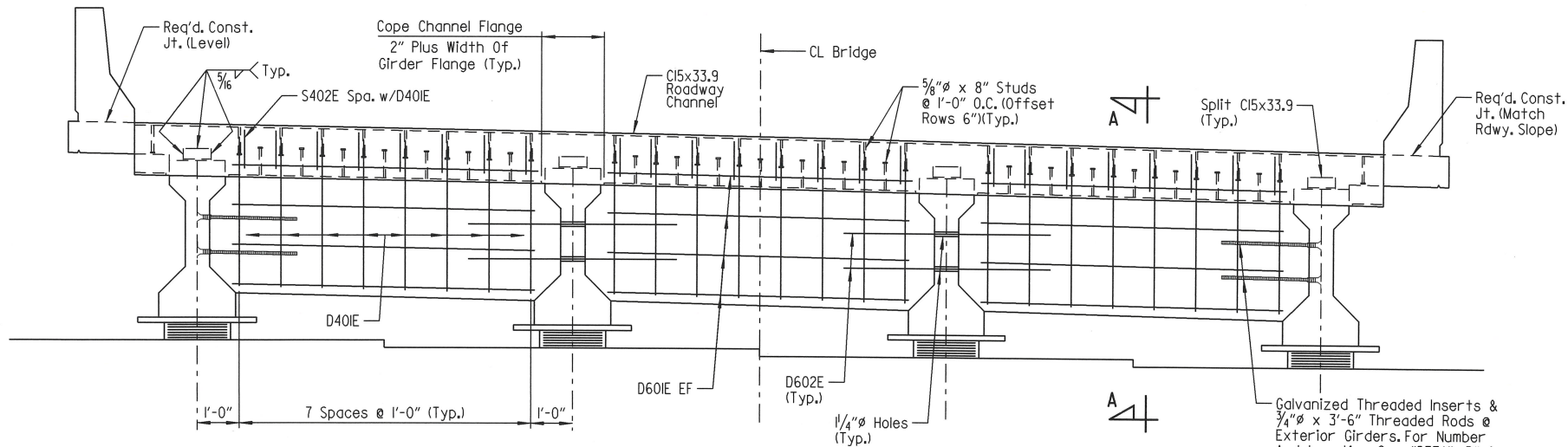
INTERMEDIATE CONCRETE DIAPHRAGMS

⑤ ALTERNATE STEEL DIAPHRAGMS

TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS

EXPANSION DEVICE:
 Roadway Channel: C15x33.9
 Conn. Angle: C15x33.9 (Cope One Flange)
 Detail Devices 1/8" High and Provide 1/4" Shims Using 2-1/16" & 1-1/8" Plates

(Looking Ahead)
 Scale: 1/2" = 1'-0"



TYPICAL SECTION THRU JOINT

(Joint @ Bent No. 4 shown, Joint @ Bent No. 7 similar)
 (Looking Ahead)
 Scale: 1/2" = 1'-0"

Note:
 For Details of Poured Silicone Joint, See Dwg. No. 60916.

Note:
 For Alternate Anchor Detail, See Dwg. No. 60916.

- TOLERANCE:**
 Minus = 1/4"
 Plus = Equal to amount of slab thickening used to meet slab thickness tolerance - see ADJUSTMENT FOR SLAB THICKNESS TOLERANCE on Dwg. No. 60914.
- This dimension taken at CL Bearing & CL Beam
- See ADJUSTMENT FOR SLAB THICKNESS TOLERANCE on Dwg. No. 60914.
- Galvanized threaded Inserts: Dayton-Richmond F-42 Loop Ferrule Insert or an approved equal 3/4" threaded rods to be ASTM A709, Grade 36 or AASHTO M31 or M53, Gr. 60. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE III)". Galvanizing shall be in accordance with AASHTO M232 Class C or AASHTO M298 Class 50.
- Galvanized steel diaphragms may be used in place of concrete at intermediate diaphragms only. All components of the alternate steel diaphragms shall be galvanized. Galvanizing shall be in accordance with AASHTO M11. Payment will be based on concrete diaphragms.
- Precast Deck Panel - See Dwg. No. 60912 for details
- 1/2" x 4" x 1/2" x 15" (center angle on web of girder). A standard washer shall be supplied for use under both the nut and the head of the 1/2" H.S. bolts. An additional plate washer shall cover the angle slots.
- See "SUPERELEVATION TRANSITION METHOD OF ROTATION" on Dwg. No. 60894.
- Rotate S602E bars as req'd. to maintain minimum clear cover on hooked end.
- Maintain 9" slab thickness throughout slab overhang.

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

Bar positions or clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06. Placement of slab bolster or high-chairs with full-length lower runners directly on removable deck forms will not be allowed.

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

For "SECTION A-A" and "SECTION B-B" see Dwg. No. 60910.

LEGEND
 EF = Each Face



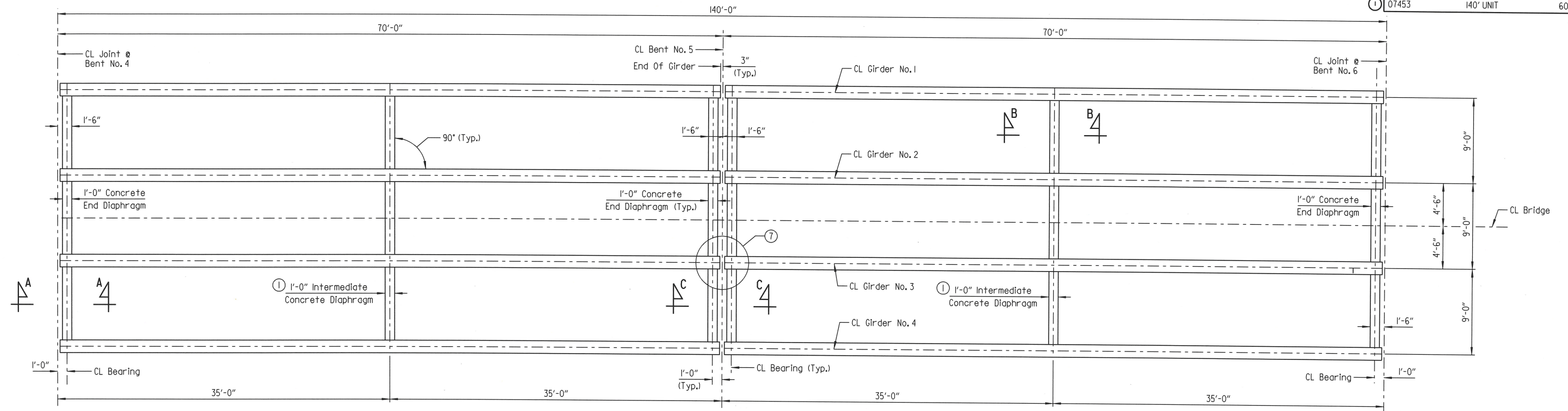
SHEET 1 OF 3
 DETAILS OF 140" PRESTRESSED
 CONCRETE GIRDER UNIT
 ROUTE 140
 SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JAN. 2019 FILENAME: b020589_s4.dgn
 CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
 DESIGNED BY: ABH DATE: JAN 2019
 BRIDGE NO. 07453 DRAWING NO. 60909

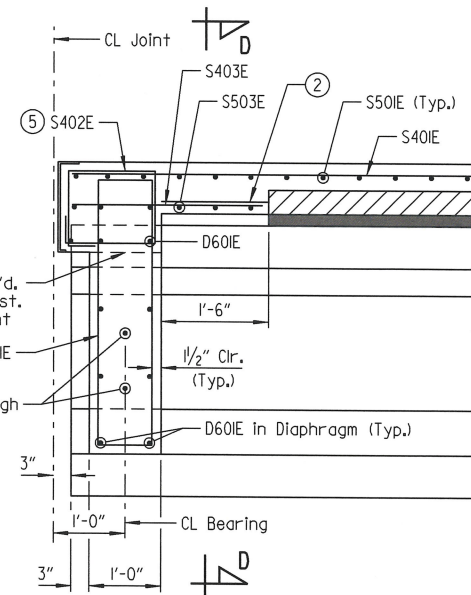
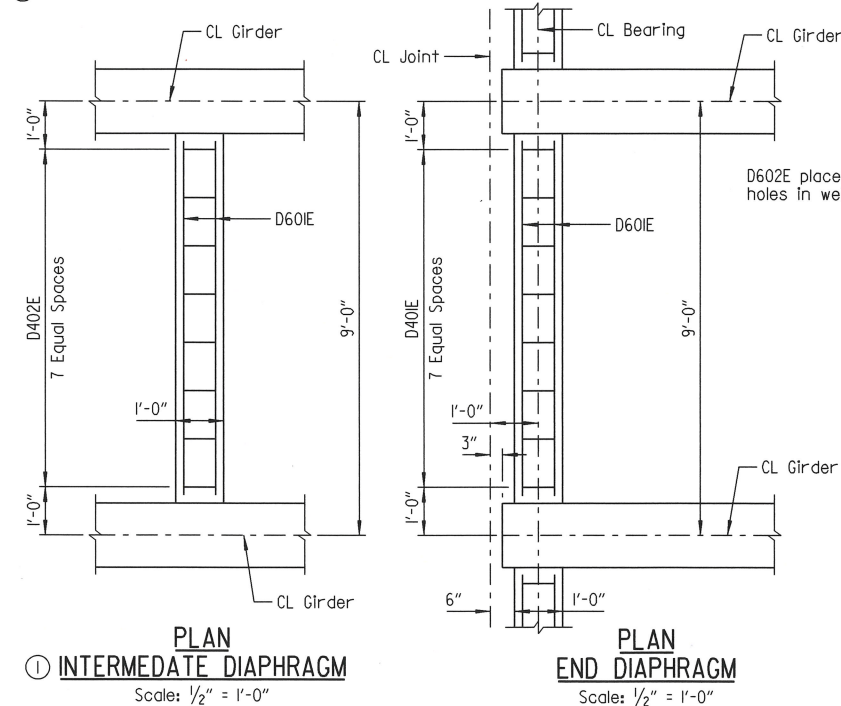
C:\Thomson\11/1/2019 10:07:35 AM
WORKSPACE: ARDOT Bridge
L:\CDOT\11011520 - Bayou Bartholomew Drawings\BAYOUBART-S307-SF.dgn
REVISED DATE:

⑦ After erection, the ends of the girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps. The ends of girders shall remain blocked until 72 hours after the concrete diaphragms are poured or until the steel diaphragms are in place.

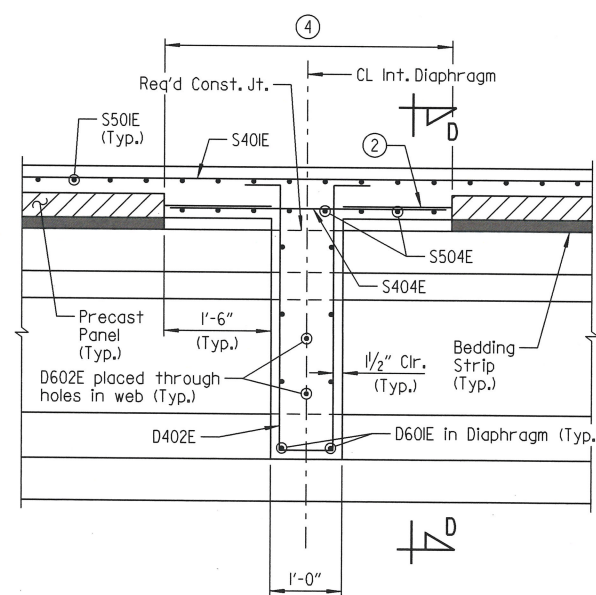
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	43	58
				07453		140' UNIT		60910



- Galvanized steel diaphragms may be used in place of concrete at intermediate diaphragm locations only. See Dwg. No. 60909 for additional details.
- Extend longitudinal panel reinforcement as shown. See Dwg. No. 60912 for precast panel details.
- See "TRANSVERSE SLAB JOINT DETAIL" on Dwg. No. 60916.
- Precast panels shall be continuous through this region if the alternate steel diaphragm is used. Payment for "CLASS S(AE) CONCRETE - BRIDGE", "EPOXY COATED REINFORCING STEEL (GRADE 60)" and "PRECAST DECK PANELS" will be based on plan quantities.
- Space with Bars D40IE
- All formwork beneath link slab shall be removed



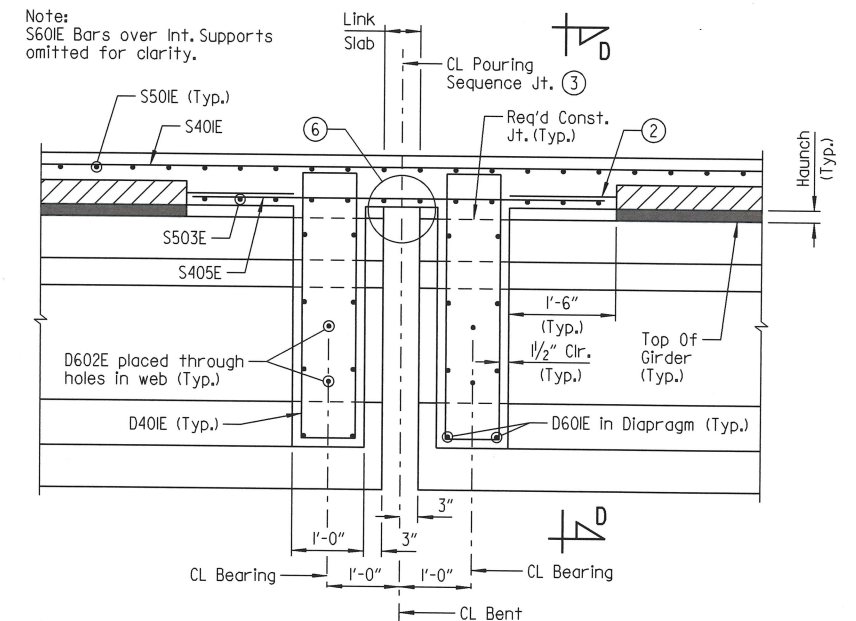
SECTION A-A
Scale: 3/4" = 1'-0"



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

Note:
For "SECTION D-D",
see Dwg. No. 60907.

LEGEND
CL = Centerline



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

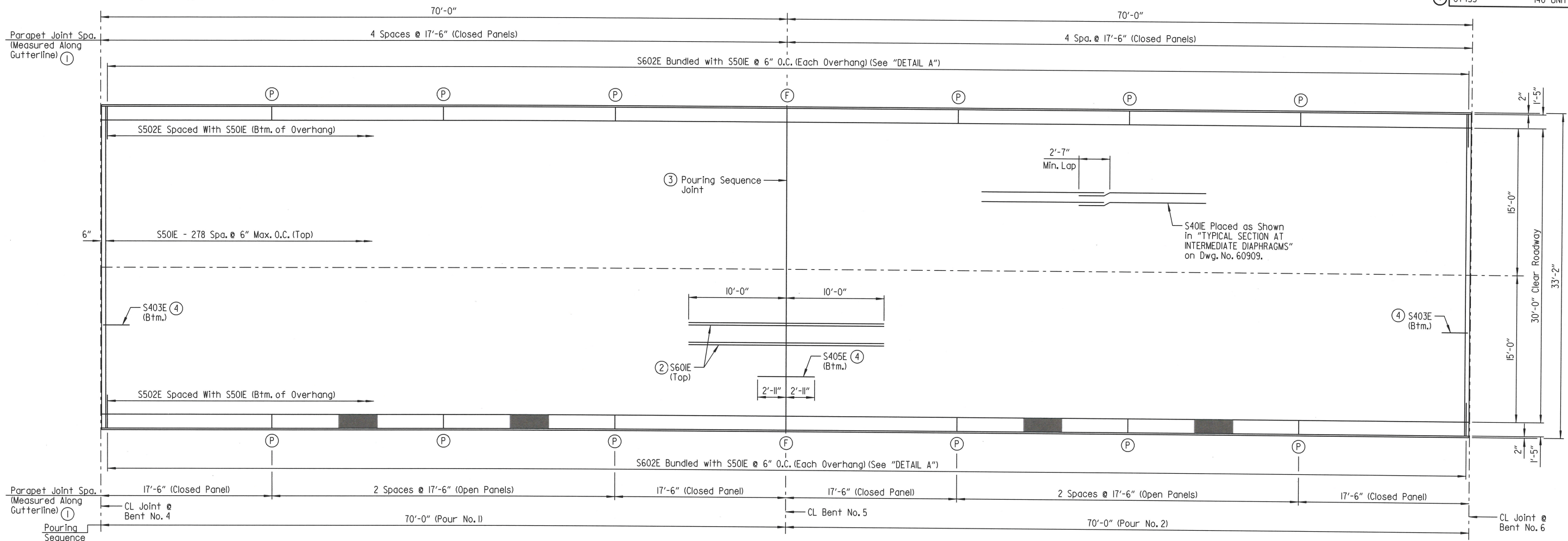


SHEET 2 OF 3
DETAILS OF 140'-0" PRESTRESSED
CONCRETE GIRDER UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: HEW DATE: JAN. 2019 FILENAME: B020589_S5.DGN
CHECKED BY: JHR DATE: APR. 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60910

C:\Users\jthomas\OneDrive\Documents\Drawings\BAYOUBART-S308-SB.dgn
10/31/2019 5:44:35 PM
WORKSPACE: ARDOT Bridge
L:\2017\101520 - Bayou Bartholomew Drawings\BAYOUBART-S308-SB.dgn
REVISED DATE:

- ① Parapet Joints designated with symbol (F) shall be stopped 4" from top of slab. All other parapet joints with symbol (P) shall be partial depth joints stopped 1'-2" from top of Slab.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	44	58
				07453		140' UNIT		60911



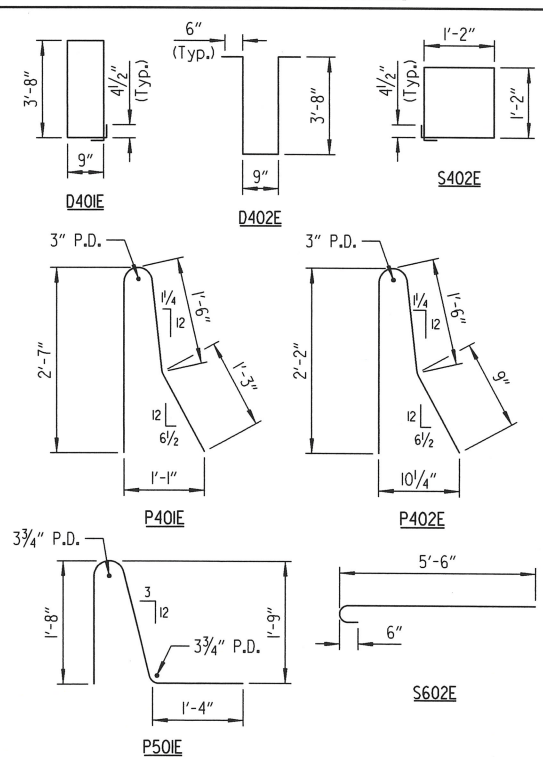
REINFORCING PLAN & DECK POURING SEQUENCE

Scale: $\frac{3}{16}'' = 1'-0''$

BAR LIST							
MARK	NO. REQ'D	LENGTH	P.D.	MARK	NO. REQ'D	LENGTH	P.D.
D401E	96	9'-2"	2"	S501E	279	32'-10"	Str.
D402E	48	8'-9"	2"	S502E	558	3'-2"	Str.
				S503E	24	28'-0"	Str.
D601E	150	7'-3"	Str.	S504E	16	28'-0"	Str.
D602E	24	6'-9"	Str.				
				S601E	66	20'-0"	Str.
P401E	524	5'-5"	3"	S602E	558	6'-2"	4 1/2"
P402E	36	4'-6"	3"				
P403E	112	17'-0"	Str.				
P404E	48	5'-2"	Str.				
P501E	524	4'-10"	3 3/4"				
S401E	160	37'-7"	Str.				
S402E	48	5'-0"	2"				
S403E	102	2'-8"	Str.				
S404E	102	3'-10"	Str.				
S405E	51	5'-10"	Str.				

NOTES:
Dimensions of bars are out-to-out.
Bar designations ending with "E" indicate epoxy coated bars.

BAR BENDING DIAGRAMS

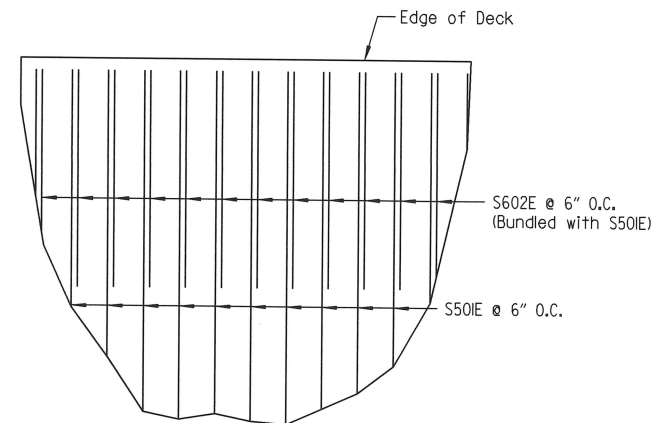


- ② Refer to "TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS" on Dwg. No. 60909 for placement.
- ③ See "TRANSVERSE SLAB JOINT DETAIL" on Dwg. No. 60916.
- ④ Refer to "SECTION A-A" & "SECTION B-B" on Dwg. No. 60910.
- ⑤ Bars within intermediate diaphragms will not be required if alternate steel diaphragms are used.
- ⑥ Adjust number of bars required if alternate steel diaphragms are used.

Note:
Pours with the same number may be poured simultaneously or separately. All pours (1) must be placed before pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between the end of a pour and the start of an adjacent pour.

Diaphragm Pours: End diaphragms and Intermediate Diaphragms shall be poured at least 48 hours prior to deck pours.

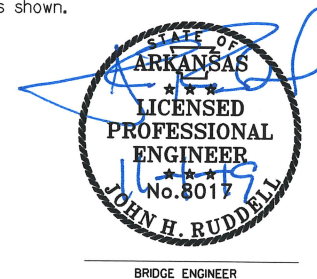
No railing pours shall be made before the entire slab unit has been placed unless approval of the Engineer has been obtained. The Contractor must obtain approval from the Engineer for any deviation from the pouring sequence as shown.



DETAIL A
No Scale

SHEET 3 OF 3
DETAILS OF 140'-0" PRESTRESSED
CONCRETE GIRDER UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: B020589_S6.DGN
CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60911



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	45	58
				① 07453		PRECAST DECK PANELS		60912

GENERAL NOTES

PRESTRESSED CONCRETE PANELS:
Prestensioning steel shall be $\frac{3}{8}$ " diameter low relaxation strands with a minimum ultimate strength of 270 ksi and shall conform to AASHTO M 203.

Concrete shall be Class S(AE) with a minimum 28-day compressive strength, $f'c=5000$ psi. The alternative gradation shown in Subsection 802.2(c) shall be used. The initial prestressing force applied to each prestressing strand shall be 17,200 lbs. Transfer of this tensioning load to the panel shall not be done until compressive strength of the concrete is 4,000 psi.

Larger strands may be used with the same spacing and initial tension.

The contractor shall submit the method and sequence for release of strands to the Engineer for approval prior to casting the panels.

The top surface of all panels shall be rough floated at approximately the time of initial set and shall receive a scored finish with a depth of $\frac{1}{8}$ " perpendicular to the prestressing strands in the panels.

Suitable anchorage devices for lifting panels may be cast in panels provided the details are shown on the shop drawings and approved by the Engineer.

Panel lengths shall be determined by the contractor and shown on the shop drawings.

Reinforcing steel shall be AASHTO M 31 or M 322 Type A, Grade 60 ($f_y=60,000$ psi). The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction.

All reinforcing other than the prestressing strands shall be epoxy coated.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 0.22 square inches per foot, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the P30IE bars shown. Wire or bar diameter shall not exceed $\frac{3}{8}$ inch.

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

See Job 020589 SP "PRECAST DECK PANELS" for additional information.

BEDDING STRIPS:
Erected panels must bear uniformly on bedding strips of extruded polystyrene bedding material meeting the requirements of ASTM C578, Type VI with a minimum compressive strength of 40 psi.

The same thickness of bedding material shall be used under one edge of any panel. The maximum change thickness between adjacent panels shall be $\frac{1}{4}$ inch. Alternatively, bedding strips may be cut to grade.

Bedding strips shall be comprised of one layer. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances. Bedding strip material may be increased in $\frac{1}{4}$ inch increments.

Bond bedding strips to the girders with an adhesive compatible with bedding strip material and approved by the supplier. Bedding strips over $\frac{1}{2}$ inches in height shall also be bonded to the bottom of the panels.

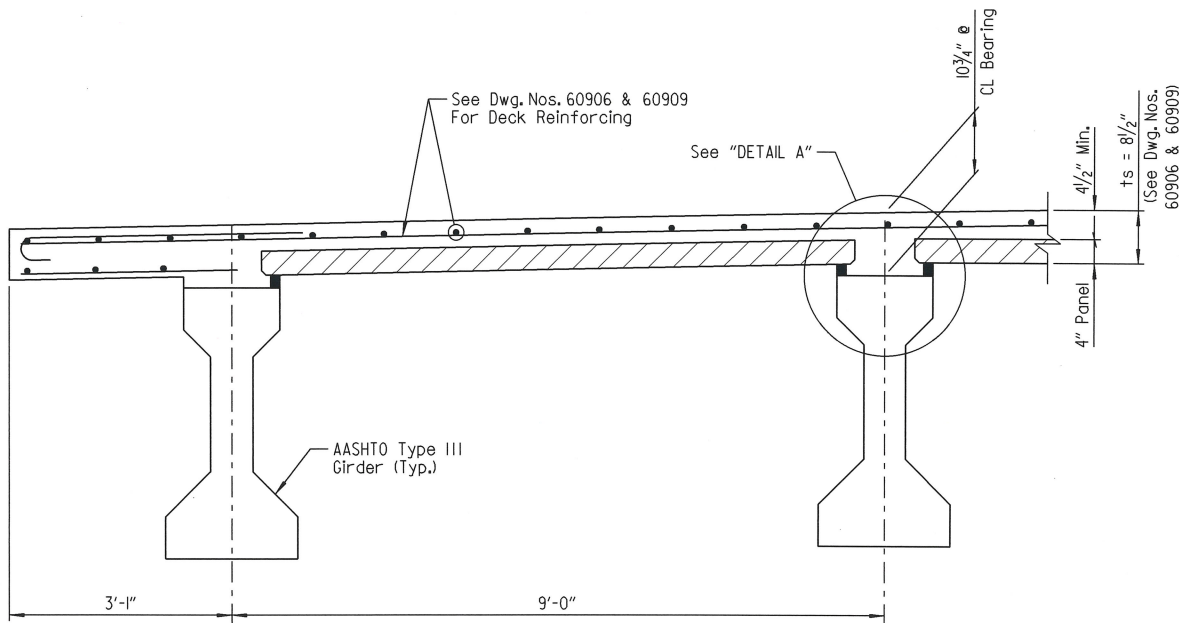
CONSTRUCTION NOTES:
Edges of panels shall be uniformly seated on the bedding strips before slab reinforcement is placed. If additional blocking is required, the details for supporting the panels and extra reinforcement between the girder and slab shall be the responsibility of the contractor.

If P302E (U-Bars projecting from panel) bars interfere with placement of the slab reinforcement, the u-bars may be bent over, as necessary, to clear slab reinforcement.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete under the edges of the panels adjacent to bedding strips. Bedding strips must be placed at the girder flange edges so that adequate space is provided for the concrete to flow a minimum of $\frac{1}{2}$ " under the panels as the slab concrete is placed.

To allow the proper amount of concrete to flow between the girder and panel, the minimum vertical opening must be $\frac{1}{2}$ ". Roadway cross-slope reduces the opening available for entry of the concrete. Bedding strips varying in thickness across the girder are therefore required.

Precast panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no freestanding water on the panels or in the area to be cast.

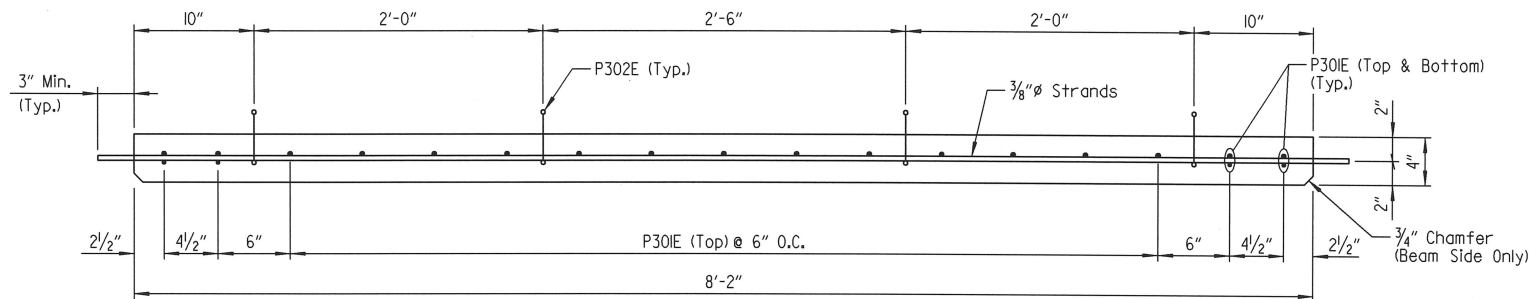


TYPICAL SECTION

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

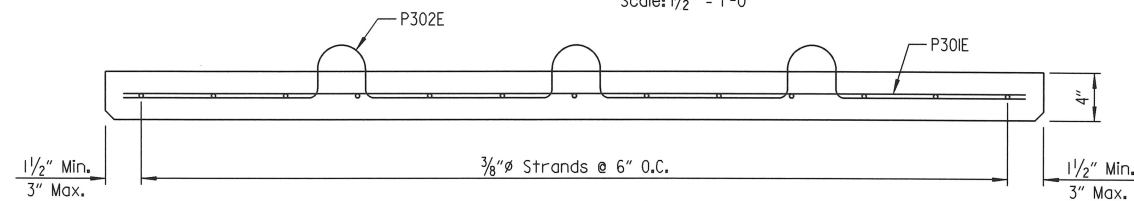
NOTE:
Top Bars shall be placed above strands.
Bottom Bars shall be placed below strands.

- ① At connection with cast-in-place slab, extend longitudinal panel reinforcement 1'-6" past panel end. Alternatively, provide #3 x 3'-0" epoxy coated dowels at 6" max. spacing and extend dowels 1'-6" past panel end.



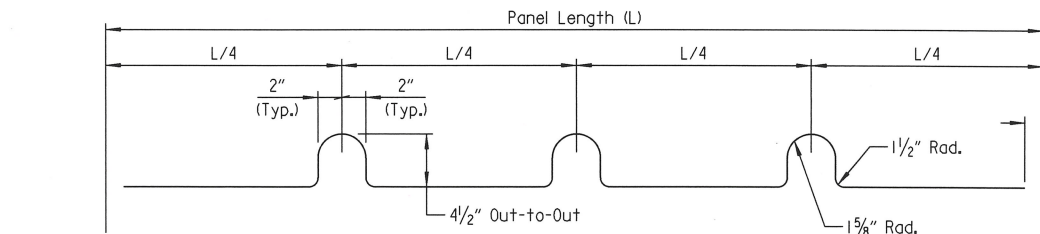
SECTION B-B

Scale: $\frac{1}{2}$ " = 1'-0"



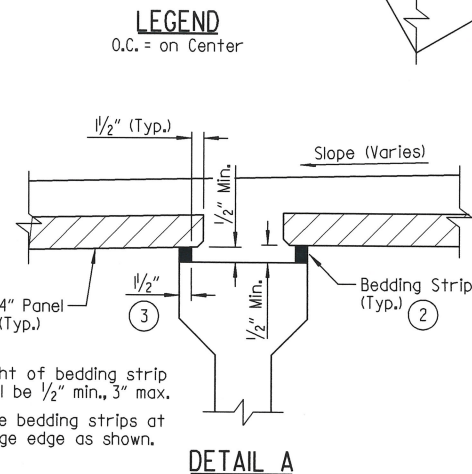
SECTION C-C

Scale: $\frac{1}{2}$ " = 1'-0"



P302E

NOTE:
At the fabricator's option, Bars P302E may be placed parallel to the transverse panel reinforcement with horizontal legs in the plane of the $\frac{3}{8}$ " strands. Adjust height of P302E to maintain cover. Damage to epoxy coating shall be repaired per Subsection 804.05.



LEGEND

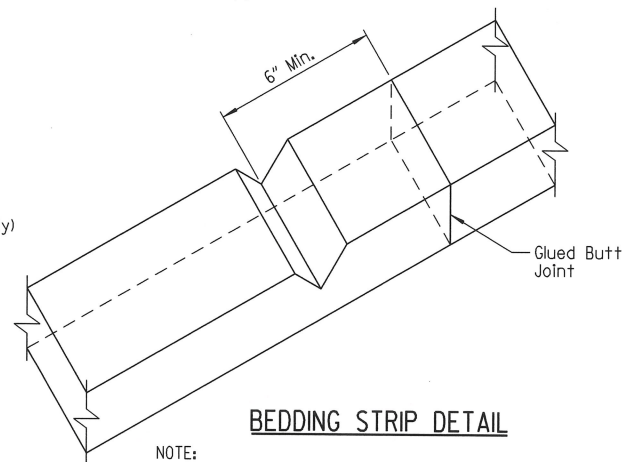
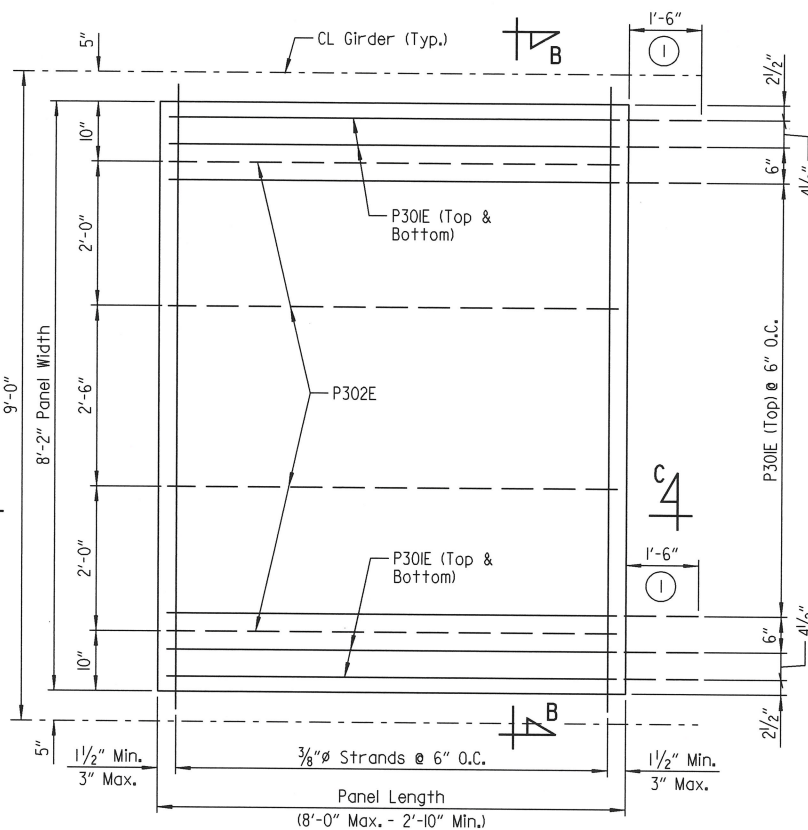
O.C. = on Center

DETAIL A

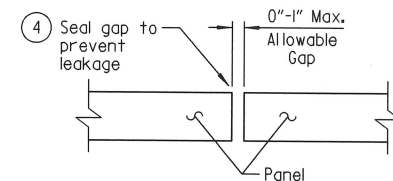
NOTE:
Contractor shall ensure proper consolidation under and between panels.

PLAN OF PANEL

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



NOTE:
Butt adjacent bedding strips together with adhesive. Cut V-notches, approx. $\frac{1}{4}$ " deep, in the top of bedding strips at 8'-0" max. o.c.



TYPICAL SECTION AT PANEL JOINT

(Panel reinforcing not shown for clarity. The gap cannot be considered as a panel fabrication tolerance. Adjust panel placement to minimize joint openings.)

- ④ Seal gaps using polyurethane sealant or expanding foam sealer. Make seal flush with top of panel.

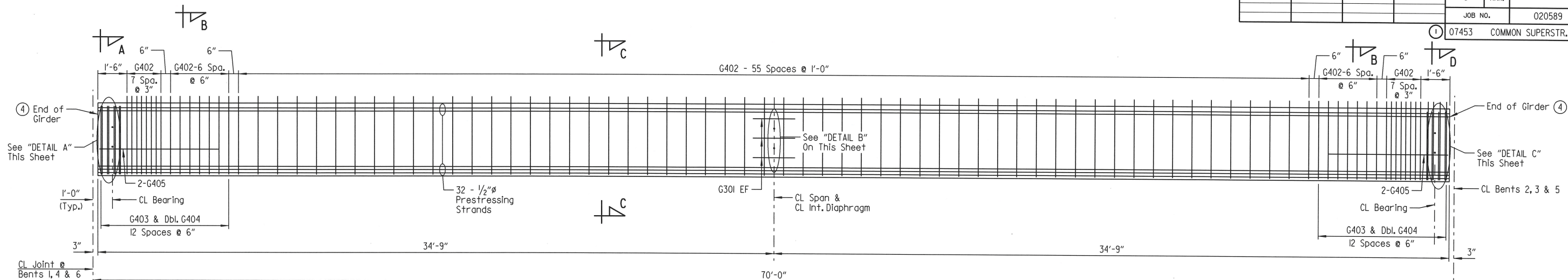


DETAILS OF PRESTRESSED PRECAST CONCRETE DECK PANELS

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

DRAWN BY: HEW DATE: FEB. 2019 FILENAME: b020589_s7.dgn
CHECKED BY: DRG DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: JHR DATE: FEB. 2019
BRIDGE NO. 07453 DRAWING NO. 60912

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	46	58
				07453	COMMON SUPERSTR. DETAILS		60913	



④ Saw cut or grind all strands flush with end of girder. The ends of the girder shall be coated with a $\frac{1}{16}$ " min. thick coating of a QPL approved epoxy resin.

TYPICAL GIRDER ELEVATION (TYPE III)

Scale: $\frac{3}{8}$ " = 1'-0"

- ① Inserts shown are for intermediate concrete diaphragms. See Dwg. No. 60906 and 60909 for Alternate Steel Diaphragms.
- ② Galvanized $\frac{3}{4}$ " Ø Dayton-Richmond F-42 Loop Ferrule Insert or an approved equalomit in exterior face of exterior girders. These are to be subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE III)". See Dwg. No. 60906 and 60909 for Alternate Steel Diaphragms.

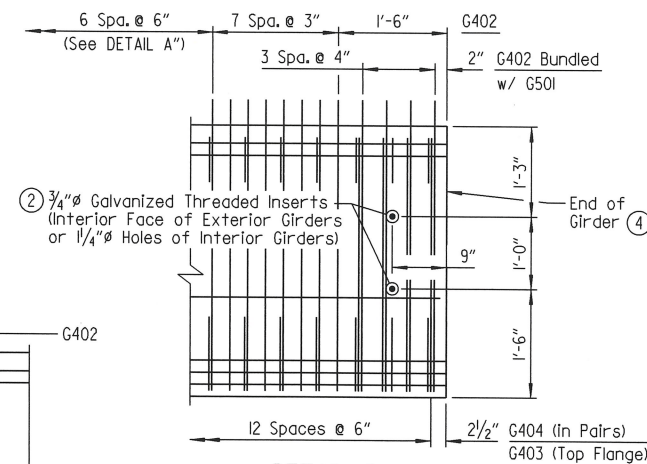
- ③ Provide $1\frac{3}{4}$ " wide smooth finished strip to facilitate placement of bedding strips.

TABLE OF GIRDER VARIABLES

STRAND DESIGNATION		VARIABLES OF BONDING/DEBONDING			BONDING/DEBONDING DIAGRAM	
ROW	LINE	"A"	"B"	"C"		
1	A,C,E,F,H,K	69'-6"				
1	B,D,G,J		3'-0"	63'-6"		
2	A,B,C,D,E,F,G,H,J,K	69'-6"				
3	B,C,D,E,F,G,H,J	69'-6"				
4	E,F	69'-6"				
5	E,F	69'-6"				

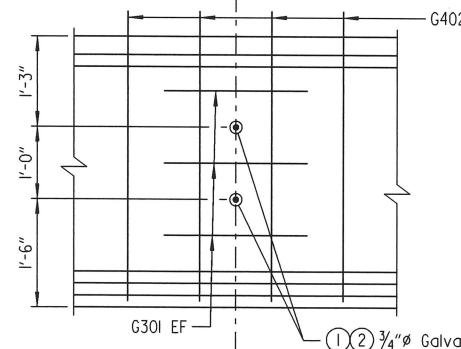
LEGEND

EF = Each Face



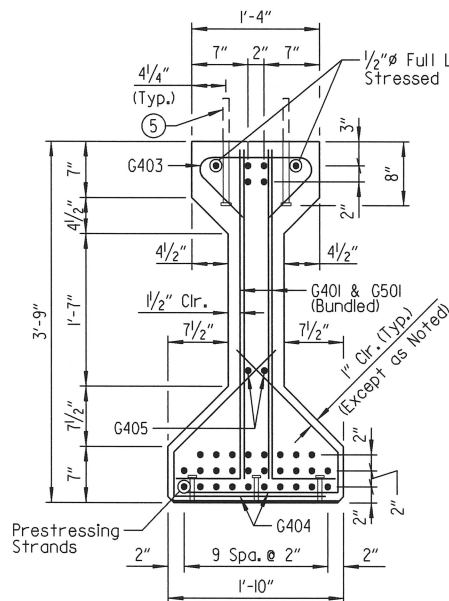
DETAIL C

(Girder ends @ Bents 2, 3 & 5)
Scale: $\frac{3}{4}$ " = 1'-0"



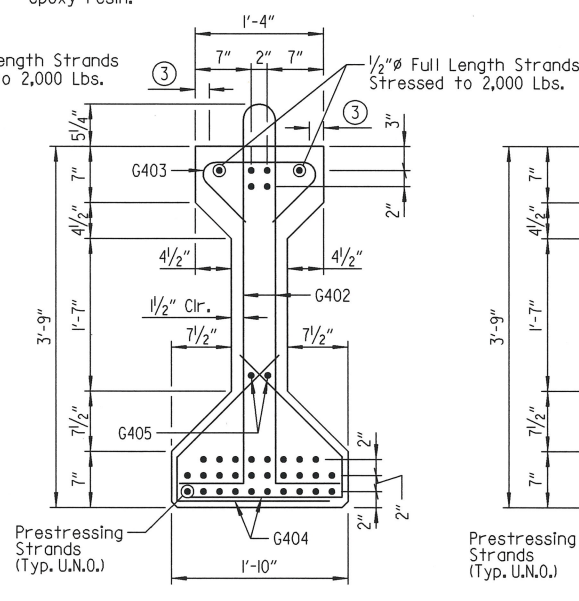
DETAIL B

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



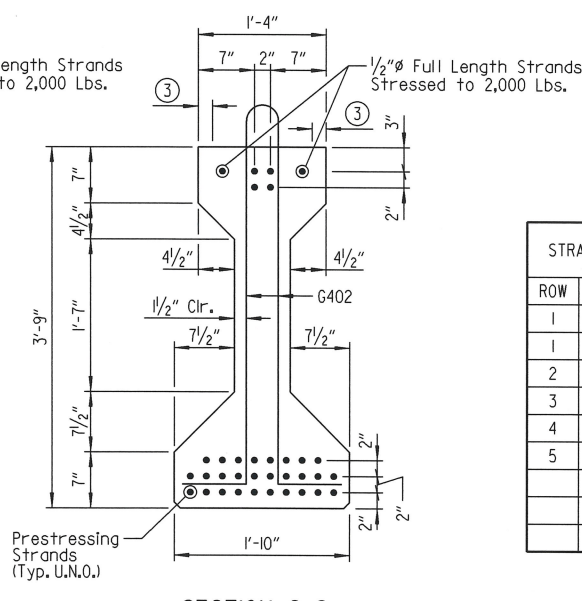
SECTION A-A

Scale: 1" = 1'-0"



SECTION B-B

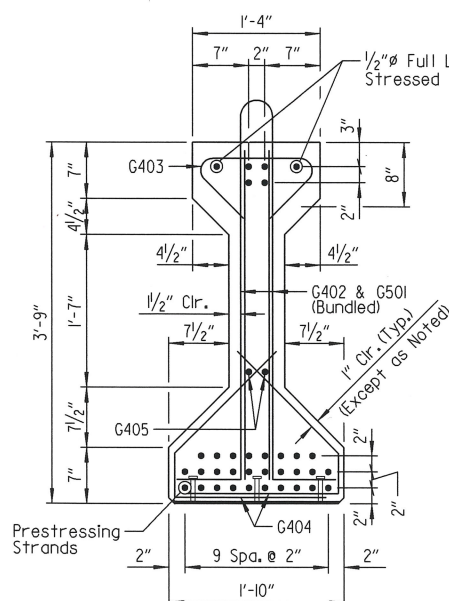
Scale: 1" = 1'-0"



SECTION C-C

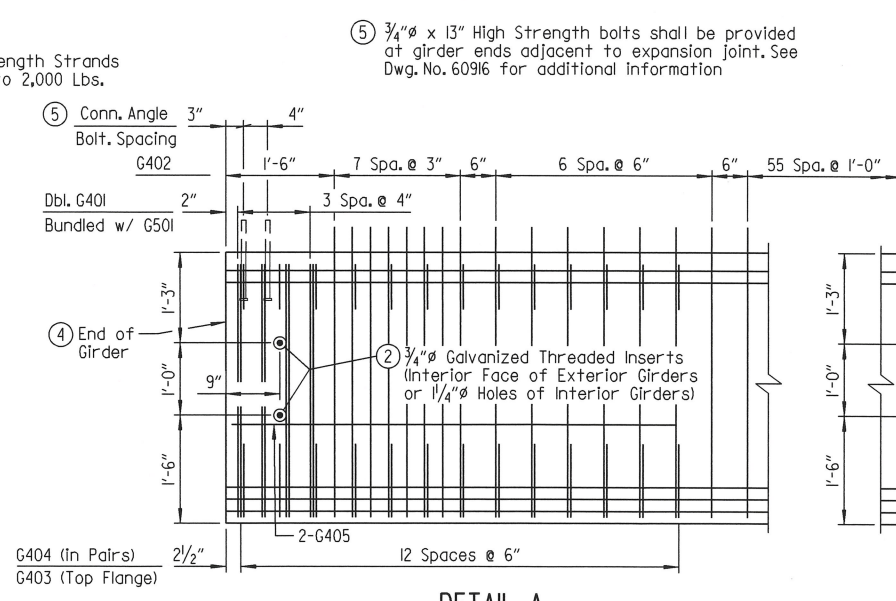
Scale: 1" = 1'-0"

- ⑤ $\frac{3}{4}$ " Ø x 13" High Strength bolts shall be provided at girder ends adjacent to expansion joint. See Dwg. No. 60916 for additional information.



SECTION D-D

Scale: 1" = 1'-0"



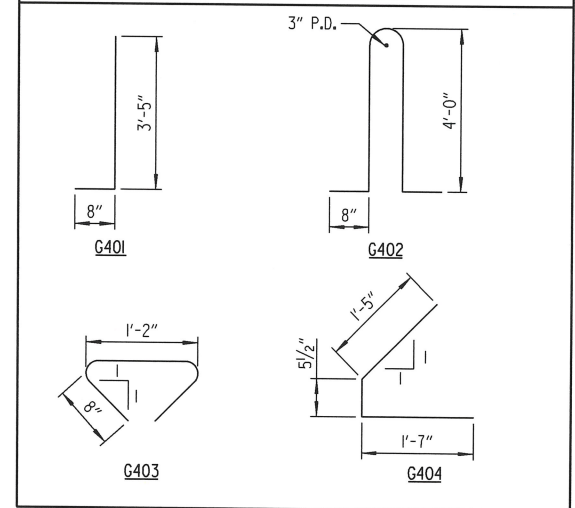
DETAIL A

(Girder ends @ Bent 1, 4 & 6)
Scale: $\frac{3}{4}$ " = 1'-0"

BAR LIST

Mark	No. Req'd. Spans 1, 3, 4 & 5	No. Req'd. Span 2	Length	Pin. Dia.
G301	6	6	2'-0"	Str.
G401	8	-	4'-0"	2"
G402	90	94	9'-3 1/2"	2"
G403	26	26	2'-9"	3"
G404	52	52	3'-4"	2"
G405	4	4	6'-2"	Str.
G501	16	16	3'-5"	Str.

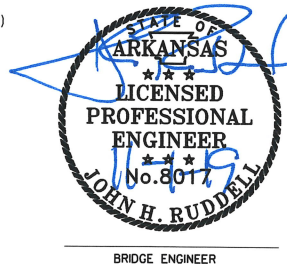
BAR BENDING DIAGRAMS



Notes:
Dimensions of bars in bending diaphragm are out-to-out.
Number of bars shown is for one girder only.

SHEET 1 OF 4
DETAILS COMMON TO ALL UNITS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020589_s8.dgn
CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60913



BRIDGE ENGINEER

GENERAL NOTES

PRESTRESSED CONCRETE GIRDERS:

Pretensioning steel shall be 1/2" dia.low relaxation strands with a minimum ultimate strength of 270 KSI and shall conform to AASHTO M 203.

Distances from the forms and spacing of the prestressing steel shall be maintained by stays, ties,hangers, spacers, or other approved supports which shall be shown on the shop drawings.

Allgirders shall be Type III as noted on the details and shall be the standard prestressing sections adopted by the Joint Committee of AASHTO and the Prestressed Concrete Institute.All girders shall be cast in floored pallets and in metal forms.All work and materials shall be as specified in Subsection 802.22.

Concrete shall be Class S and shall have a minimum 28-day compressive strength f'c = 7,000 psi.The initial tensile force applied to each 1/2" dia.strand shall be 3,000 lbs,except as noted.Transfer of this tensioning load to the girder shall not be done until the compressive strength of the concrete is 5,500 psi.

Dimensions shown are to the center of the strands.

The contractor shall submit the method and sequence for release of strands to the engineer for approval prior to casting of the girders.

Holes and inserts shall be cast into the girders.

The first 16" along the tops of the girders at ends adjacent to expansion joints shall have a smooth surface.The tops of the remaining length of the girders shall be rough floated at approximately the time of set.This portion of the tops of girders shall be scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface with an amplitude of 1/4" for bonding the slab.Provide 1 3/4" wide smooth finish strip to facilitate placement of bedding strip (see "DETAIL Z").

Extreme care shall be exercised in handling and moving precast prestressed concrete girders.Girders must be maintained in an upright position at all times and must be picked up from points near the girder ends.Disregard of this requirement may lead to collapse of the girder.The contractor's proposed lifting details shall be submitted on shop drawings to the Engineer for approval.The use of holes for lifting purposes will not be permitted.

The points of support and directions of the reactions with respect to the member shall be approximately the same during transportation and storage as when the member is in its final position.

Girder lengths shown on the design plans are net lengths measured horizontally along the girder centerlines.The girder manufacturer shall make the necessary allowances for grade and shortening due to elastic shortening, creep, and shrinkage.

Reinforcing steel shall be AASHTO M31 or M32 Type A, Gr. 60 (Fy = 60,000 psi).

After detensioning, saw cut or grind all strands flush with end of girder.The ends of girder shall be coated with a 1/16" min.thick coating of a QPL approved epoxy resin.

The Contractor may submit alternate strand patterns with design calculations for review and approval in accordance with Subsection 802.22.

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

REINFORCING STEEL:

All reinforcing steel shall conform to AASHTO M31 or M322 Type A, Gr. 60.The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports,sufficient in number and size to prevent displacement during the course of construction.The wire supports will not be paid for directly but will be considered subsidiary to the item "EPOXY COATED REINFORCING STEEL (GRADE 60)".

CONCRETE:

Concrete shall be poured in the dry,and all exposed corners shall be chamfered 3/4" unless otherwise noted.All concrete in slab,parapet and diaphragms shall be Class S(AE) with a minimum 28 day compressive strength, f'c = 4,000 psi.All end diaphragms and intermediate diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured.Removable forms shall be used when pouring diaphragms.

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

The concrete deck shall be given a fine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder.If a longitudinal strike-off is used,a vertical camber between completion of the bridge deck slab and the pouring of the parapet railing.Any railing pours made before the entire slab has been placed and cured must be approved by the engineer.

STRUCTURAL STEEL:

All structural steel shall be ASTM A709,Gr. 50W unless noted otherwise,and all structural steel shall be paid for at the unit price per pound bid for "STRUCTURAL STEEL IN BEAM SPANS (A709,Gr.50W)".All structural steel shall be cleaned in accordance with Subsection 807.84 unless noted otherwise.See Dwg.No.60905 for cleaning requirements of externalload plates on elastomeric bearings.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the contractor to the engineer for approval.Steels of equal or greater strengths will be accepted only when shown on 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.

Drawings show general features of design only.Shop drawings shallbe prepared in accordance with the specifications,submitted and approved before fabrication is begun.

All welding that is to be done during fabrication of structuralsteel ,including temporary welds,shall be detailed on the shop drawings and submitted for approval.If additional welds are required,whether temporary or permanent,a formal request with detailed drawings shall be submitted to the engineer for approval;however,additionalwelds 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.

SPECIAL CAMBER NOTES

The camber and dead load deflection values shown on the plans are estimated based on the required minimum concrete strength for the prestressed concrete girders.The contractor shall provide the Engineer with the following information:

- A.Actual 28-Day concrete strength of prestressed concrete girders
- B.Estimated age of prestressed concrete girders at time of erection.
- C.Profile of each girder under its own weight in final position.

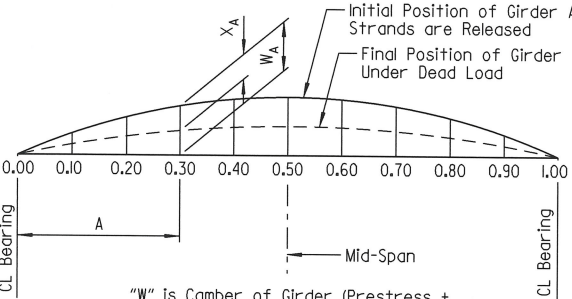
Following receipt of the above data,the Engineer will provide an updated deflection diagram to the contractor.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	47	58
				07453	COMMON SUPERSTR. DETAILS			60914

SPAN PT.	INCHES	
	W _A	X _A
0.00	0.00	0.00
0.10	0.653	0.230
0.20	1.152	0.463
0.30	1.487	0.648
0.40	1.681	0.765
0.50	1.744	0.805

Table symmetric about mid-span

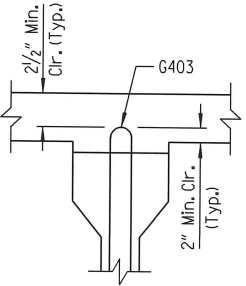
① Note:
Camber and Deflection Values shown are based on a concrete girder strength, f'c = 7000 psi. Greater strengths may require adjustments. See "SPECIAL CAMBER NOTES".



"W" is Camber of Girder (Prestress + Dead Load of Girder @ 90 Days After Release)

"X" is Dead Load Deflection of Slab + Diaphragms + Composite Dead Load

① CAMBER & DEFLECTIONS (INCHES)
No Scale

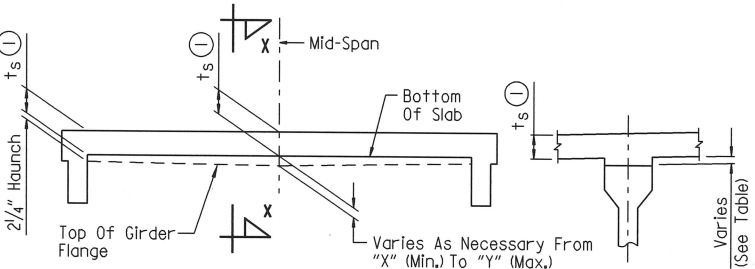


NOTE:
For prestressed concrete girder reinforcing details, see Dwg. No. 60913.

SHEAR REINFORCEMENT DETAIL

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

TABLE OF VARIABLES		
SPAN NO.	"X"	"Y"
1-3	3/4"	2 3/4"
4 & 5	1"	2 1/2"



GIRDER ELEVATION

No Scale

SECTION X-X

No Scale

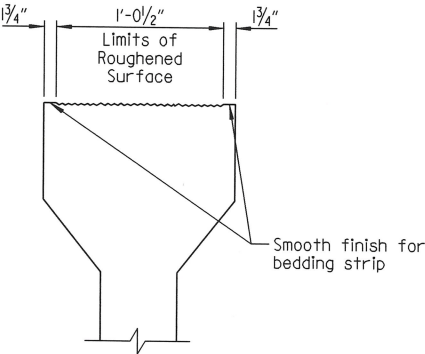
Note: t_s = slab thickness as shown on superstructure details. See "TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS" on Dwg.No.60906 and Dwg.No.60909.

① Tolerance is +/- 1/2", -1/4".Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

"GIRDER ELEVATION" sketches show the range of acceptability of the top of girder relative to bottom of slab after the placement of the slab.When the top of the profiled girder is such that Dimension "X" can not be met,a raise in grade will be necessary.Girders shall be set in a sufficient number of spans so when adjustment is necessary the profile grade can be adjusted over suitable increments so the revised grade line will produce a smooth riding surface.Variation of haunch height will be at the Contractor's expense.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

Note:
For additional information, see "DETAILS OF PRESTRESSED PRECAST CONCRETE DECK PANEL DETAILS", on Dwg. No. 60912.

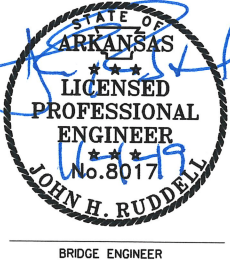


DETAIL Z

No Scale

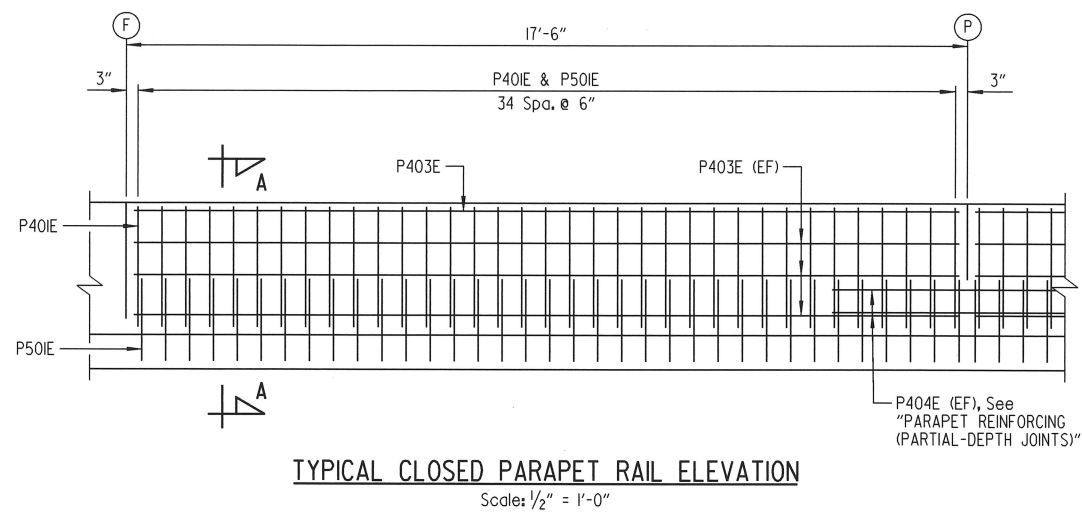
SHEET 2 OF 4
DETAILS COMMON TO ALL UNITS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSW DATE: JAN. 2019 FILENAME: b020589_s9.dgn
CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60914



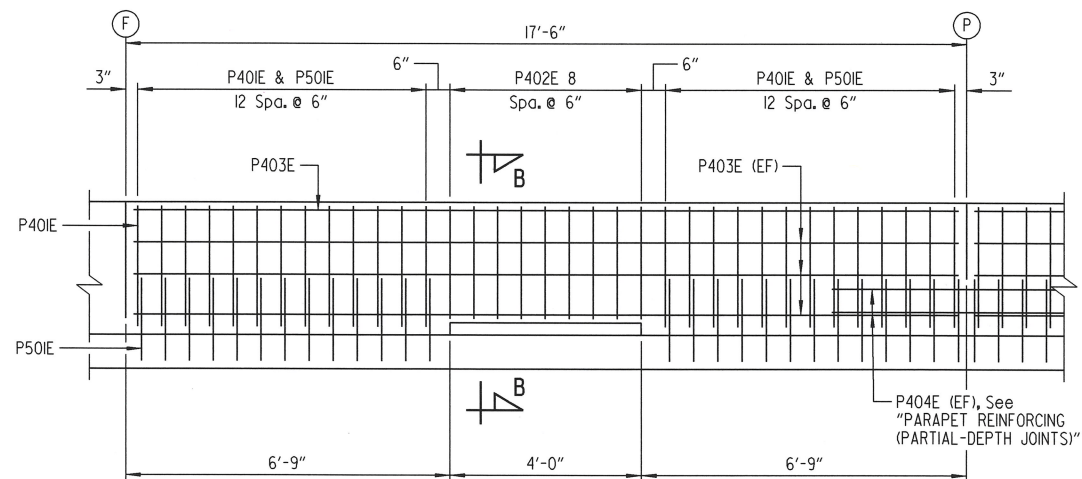
BRIDGE ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	48	58
				07453	COMMON SUPERSTR. DETAILS			60915



TYPICAL CLOSED PARAPET RAIL ELEVATION

Scale: 1/2" = 1'-0"

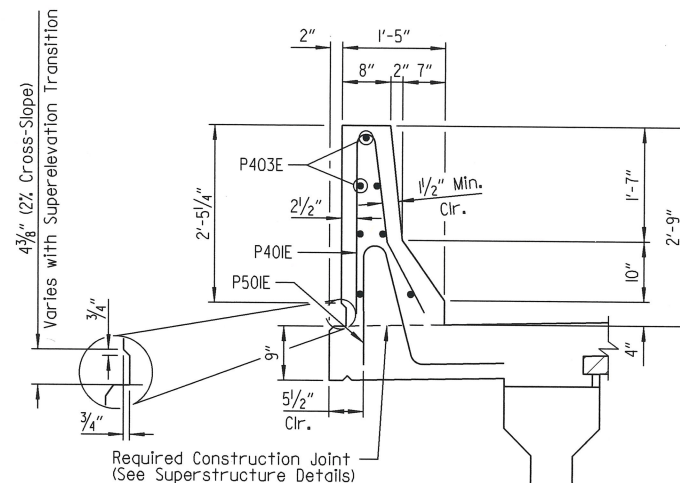


TYPICAL OPEN PARAPET RAIL ELEVATION

Scale: 1/2" = 1'-0"

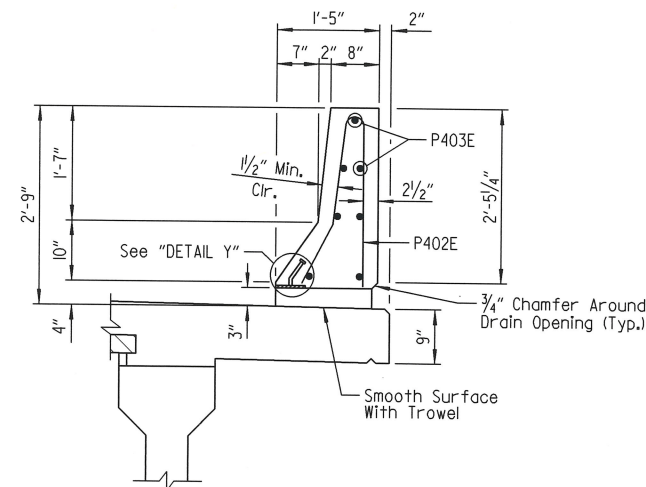
For locations of closed and open panels and locations of full-depth and partial-depth parapet joints, see "REINFORCING PLAN & DECK POURING SEQUENCE" on Dwg. Nos. 60908 and 60911.

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.



SECTION A-A

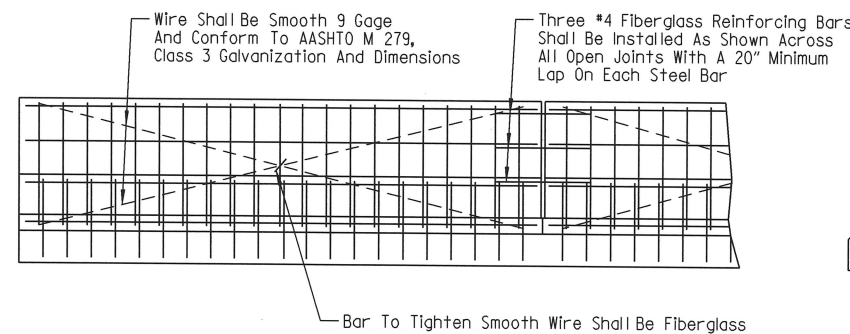
Scale: 3/4" = 1'-0"



SECTION B-B

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

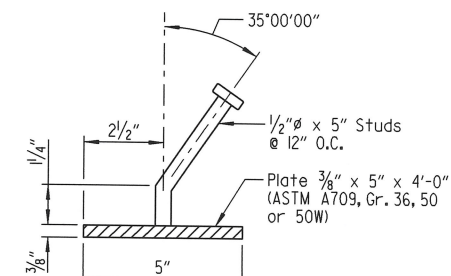
LEGEND
EF = Each Face



For actual placement of reinforcing steel, see parapet details.

All Smooth Wire Bracing Shall Be Placed On The Inside Faces Of The Reinforcing

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.

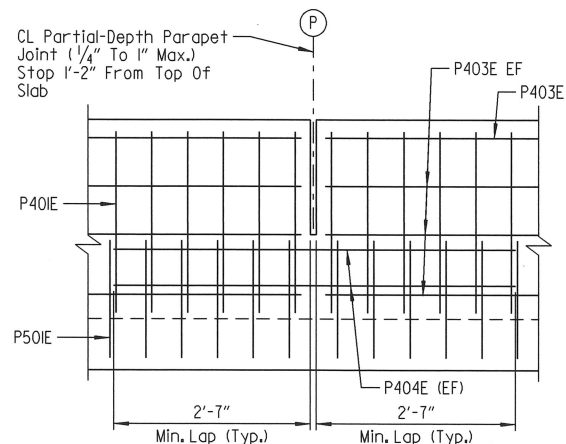


DETAIL Y

No Scale

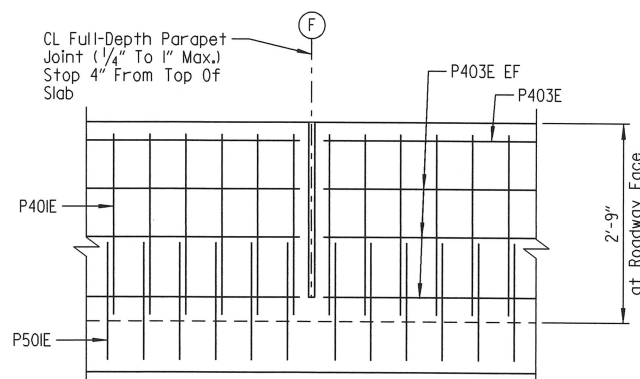
Notes:
Parapet studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as Structural Steel in Beam Spans (A709, Gr. 50W).

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 subsidiary to Structural Steel in Beam Spans (A709, Gr. 50W).



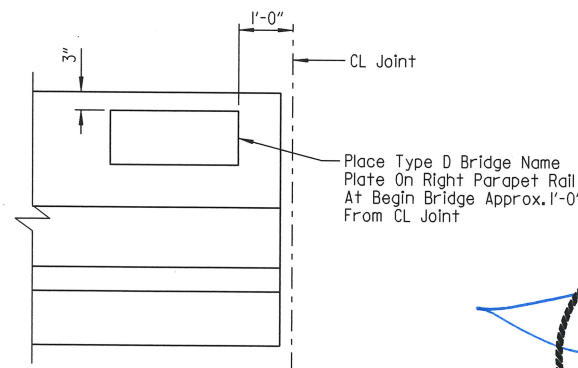
PARAPET REINFORCING (PARTIAL-DEPTH JOINTS)

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



PARAPET REINFORCING (FULL-DEPTH JOINTS)

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



VIEW SHOWING LOCATION OF NAME PLATE

(Showing Inside Face Of Parapet)
No Scale

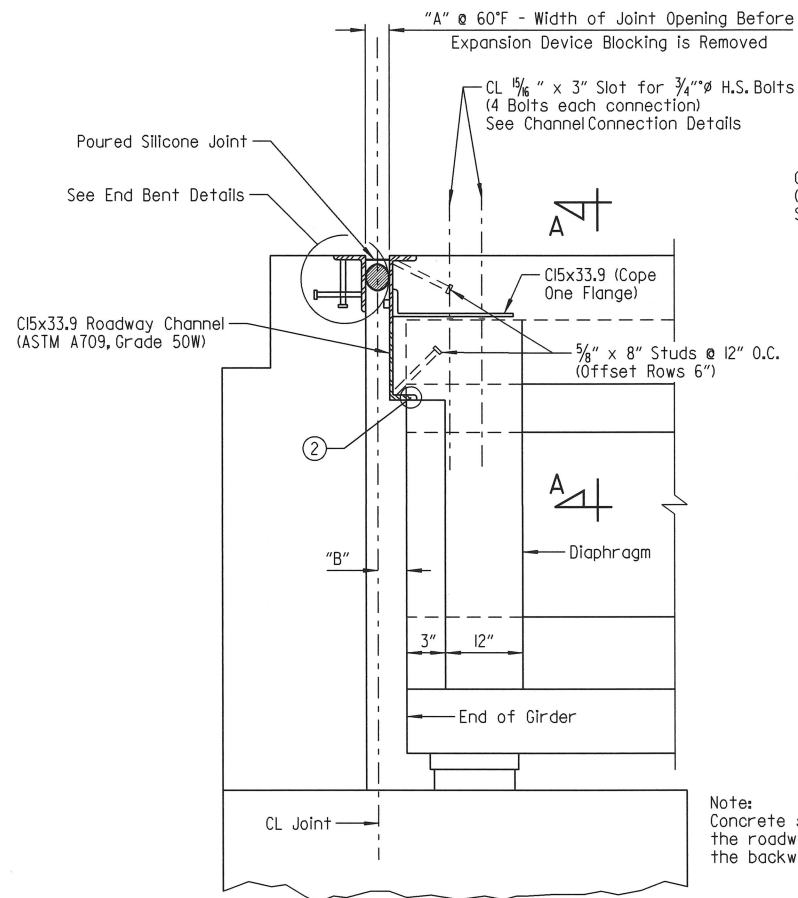


BRIDGE ENGINEER

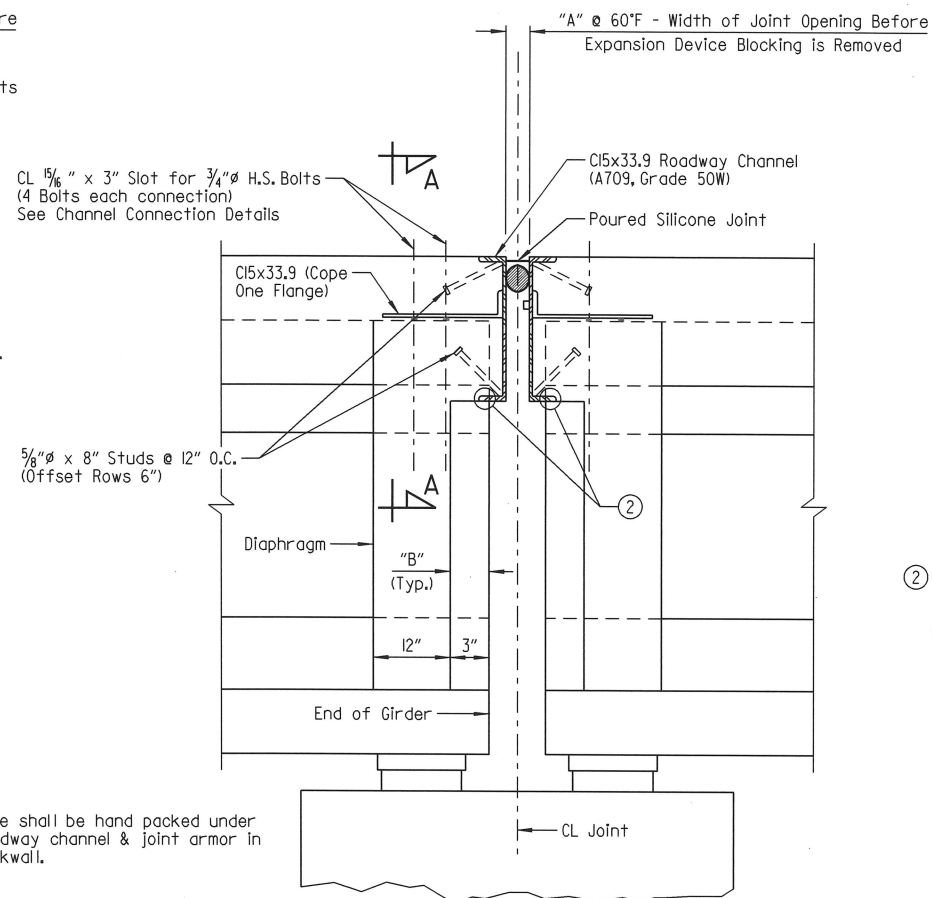
SHEET 3 OF 4
DETAILS COMMON TO ALL UNITS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020589_sl0.dgn
CHECKED BY: JHR DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: CSW DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60915

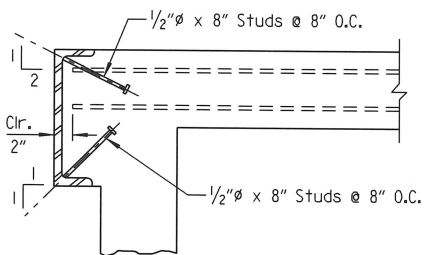
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	49	58
				07453	COMMON SUPERSTR. DETAILS			60916



SECTION THRU JOINT AT END BENT NOS. 1 & 6
No Scale

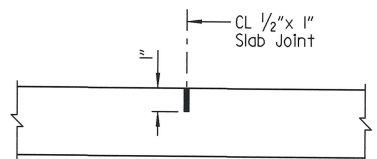


SECTION THRU JOINT AT BENT NO. 4
No Scale



DETAIL OF ALTERNATE ANCHORS
No Scale

NOTE:
As an alternate to 5/8" studs, 1/2" x 8" studs spaced as shown may be used. Use weight of 5/8" stud as basis of measurement of structural steel in anchors.



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 and shall align with open joints at the front face of the parapet. 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. The joint sealer shall extend across the deck from gutterline to gutterline.

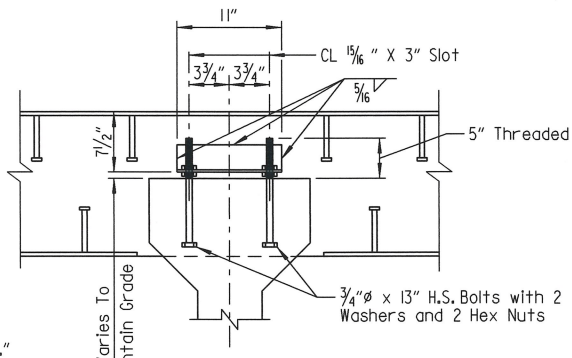
TRANSVERSE SLAB JOINT DETAIL
No Scale

		SILICONE JOINT DATA			
Location	"A" Width Perpendicular To Joint At 24 Hour Average Temperature ① 0f:			"B" Perpendicular To Joint At 60°F	Bumper Plate Size
	40°F	60°F	80°F		
Bent No. 1	1 5/8"	1 1/2"	1 3/8"	3"±	1" x 3/4" x 12"
Bent No. 4	2 5/8"	2"	1 1/8"	3"±	1" x 3/4" x 12"
Bent No. 6	1 9/16"	1 1/2"	1 1/8"	3"±	1" x 3/4" x 12"

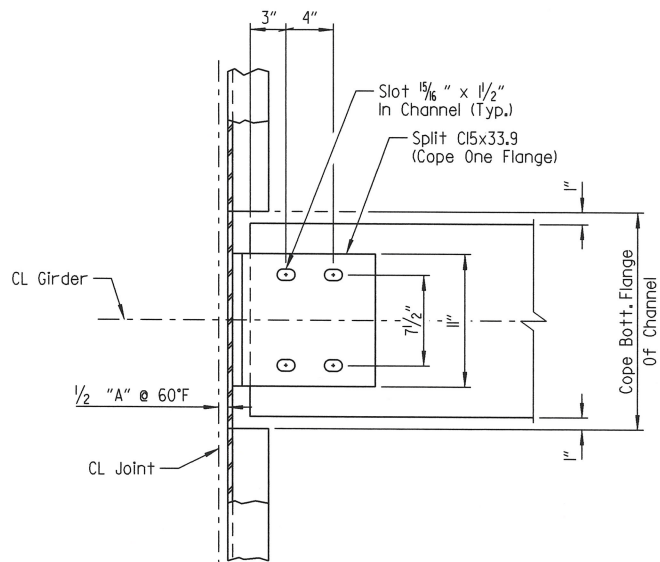
① The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

NOTE:
For "DETAIL OF POURING SEQUENCE CONSTRUCTION JOINT", "JOINT SEAL PLACEMENT AT RAIL" and "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE", see Std. Dwg. No. 55008.

Note:
Bolts, washers, and hex nuts shall be considered subsidiary to the item "PRESTRESSED CONCRETE GIRDERS (TYPE III)." "Varies To Maintain Grade"



SECTION A-A
No Scale



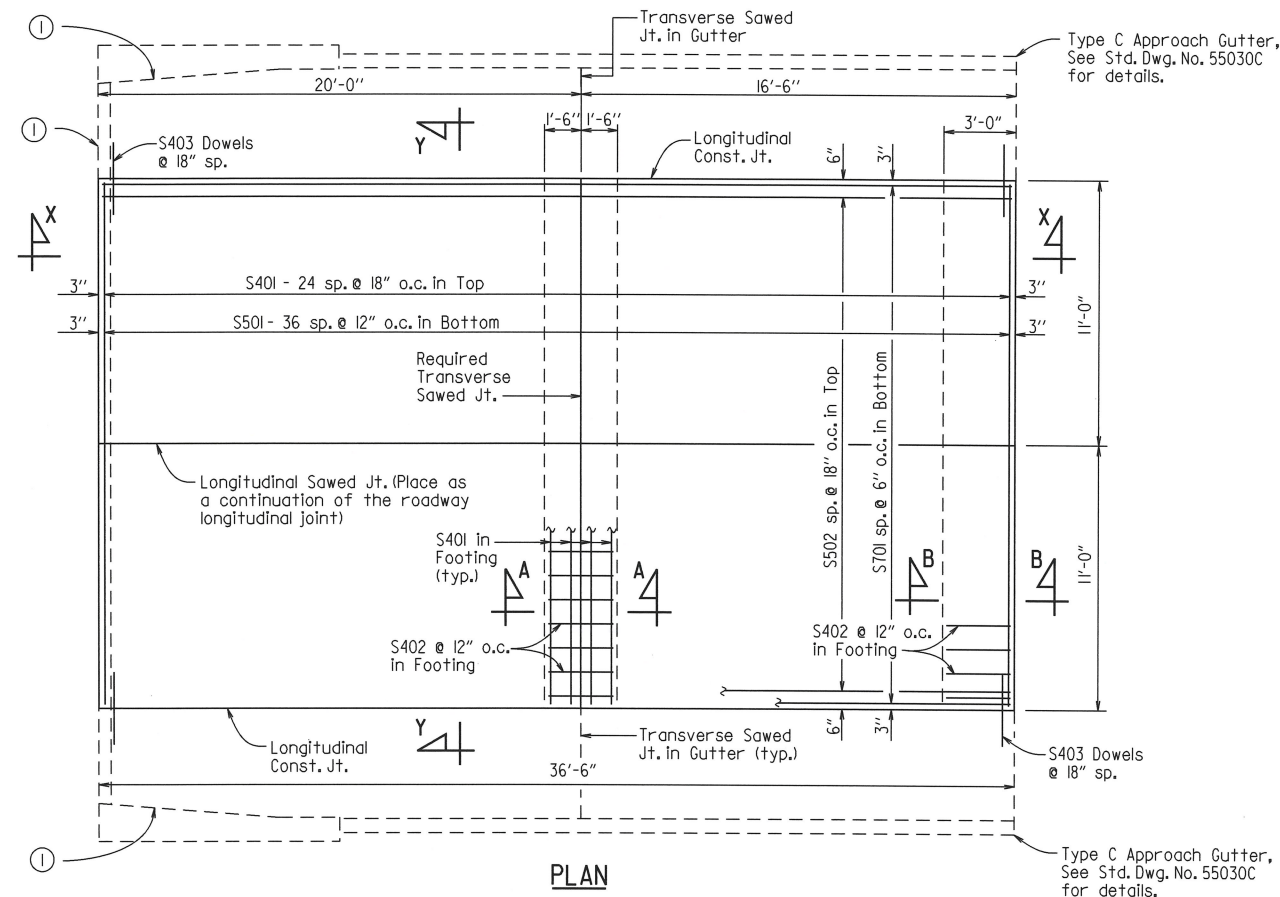
CHANNEL CONNECTION DETAIL
(TYPE III GIRDER)
No Scale



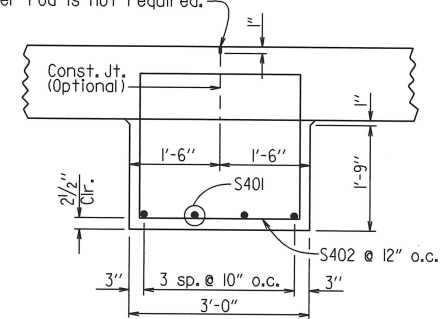
SHEET 4 OF 4
DETAILS COMMON TO ALL UNITS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020589_sl1.dgn
CHECKED BY: ABH DATE: MAY 2019 SCALE: As Shown
DESIGNED BY: JHR DATE: JAN. 2019
BRIDGE NO. 07453 DRAWING NO. 60916

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	50	58
				07453		APPROACH SLAB		60917

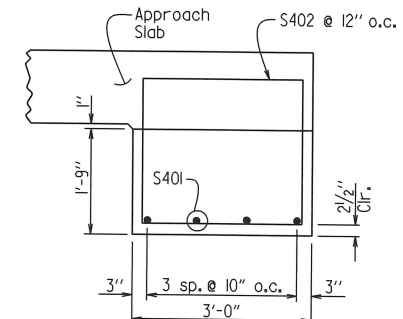
① Eliminate Type I Preformed Joint at the concrete diaphragm and at the face of the wingwalls. Poured Joint Sealer is required, however backer rod shall be eliminated.



1/2" x 1" Poured Jt. Sealer (Type 3 or 4) per Subsection 501.02(h)(2). Backer rod is not required.



SECTION A-A

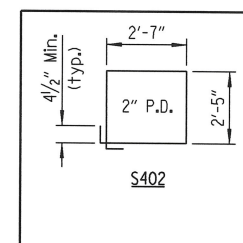


SECTION B-B

BAR LIST

Mark	No. Req'd.	Length
S401	33	21'-8"
S402	44	10'-4"
S403	50	3'-0"
S501	37	21'-8"
S502	15	36'-2"
S701	44	36'-2"

BENDING DIAGRAMS



NOTE: Dimensions of bar are out-to-out.

TABLE OF QUANTITIES FOR ONE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
22'-0"	5540	45.00

GENERAL NOTES

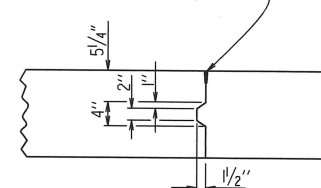
All concrete shall be Class S (AE) with a minimum 28 day compressive strength $f'_c = 4,000$ psi and shall be poured in the dry.

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

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

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

1/2" x 1" Poured Jt. Sealer (Type 3 or 4) per Subsection 501.02(h)(2). Backer rod is not required.



DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

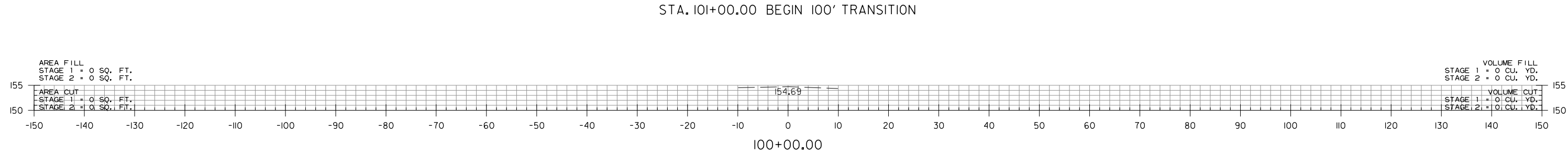
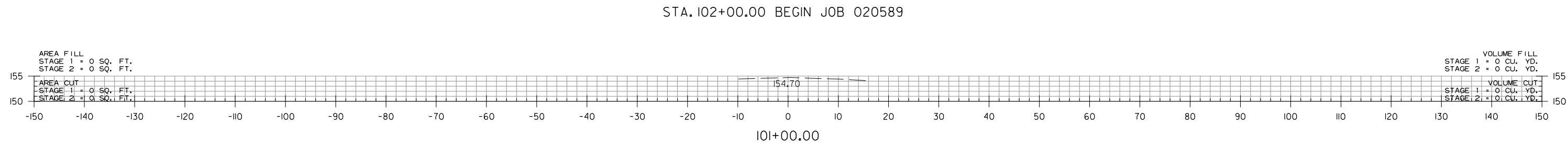
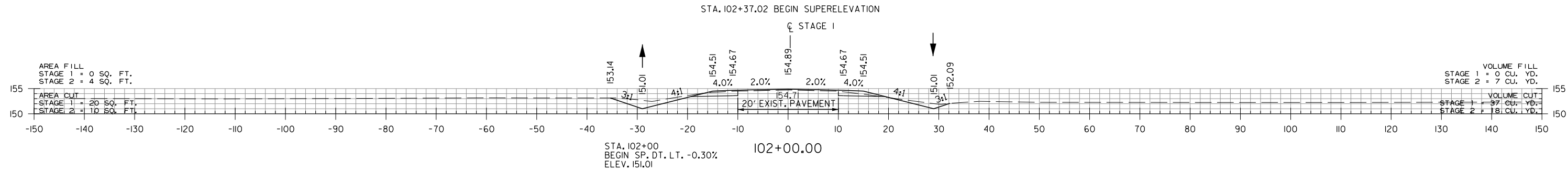
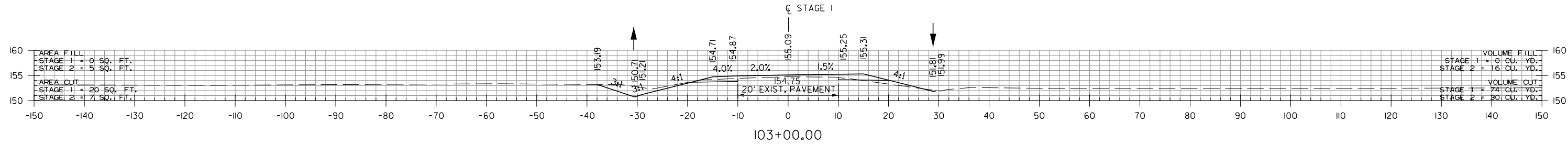
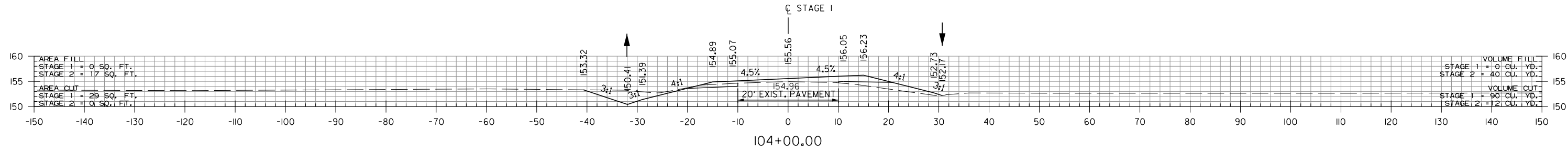


DETAILS OF TYPE SPECIAL APPROACH SLAB
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: OCT. 2019 FILENAME: b020589_as.dgn
CHECKED BY: ABH DATE: OCT. 2019 SCALE: NO SCALE
DESIGNED BY: JHR DATE: OCT. 2019
BRIDGE NO. 07453 DRAWING NO. 60917

CGGervosini 10/3/2019 10:46:55 AM
WORKSPACE: AHTD
L:\2017\1017520 - Bayou Bartholomew Drawings\020589_CX.HWY 277.dgn
REVISED DATE:

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.		020589	51	58
(2)				CROSS SECTIONS				

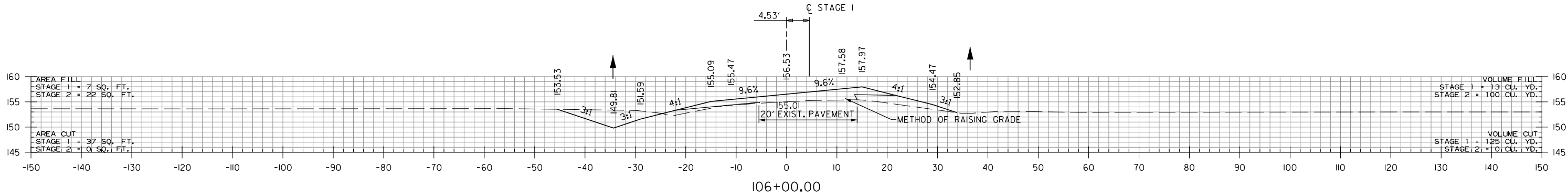
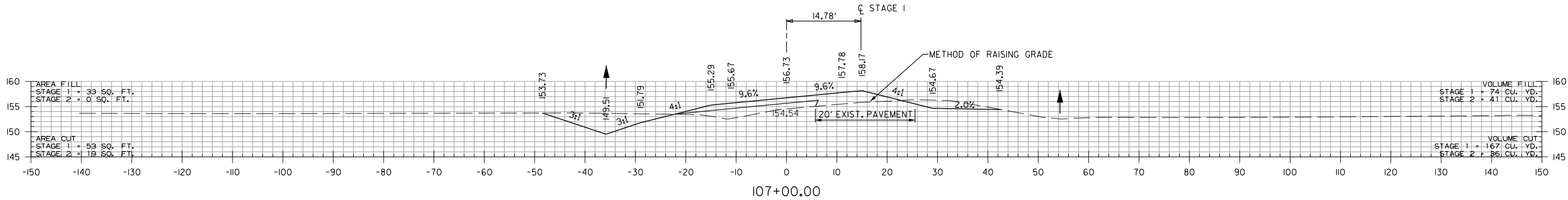
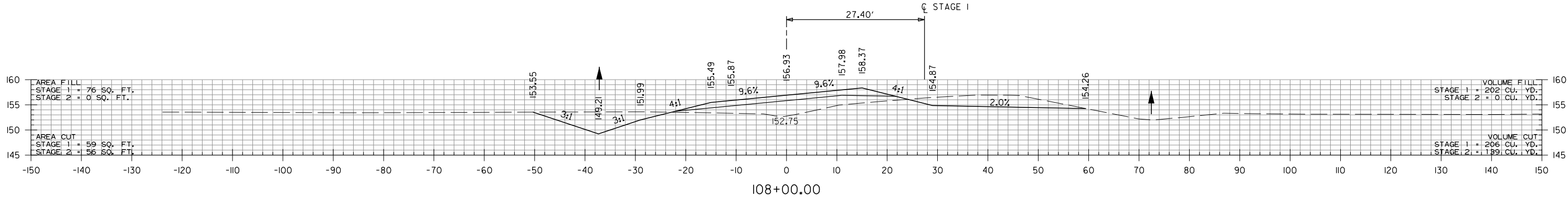


STA. 100+00 TO STA. 104+00

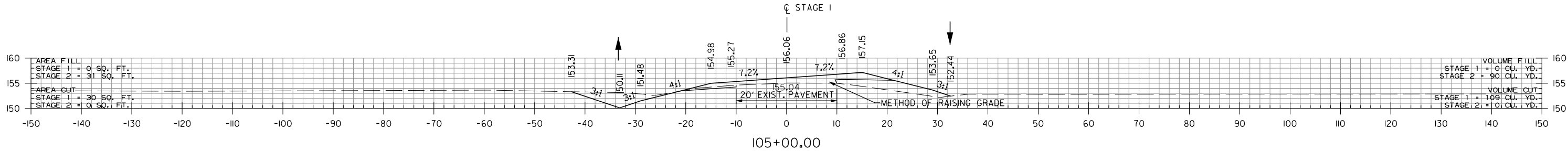
CGGervosini 10/31/2019 10:46:56 AM
WORKSPACE: AHTD
L:\2017\101520 - Bayou Bartholomew Drawings\020589.CX.HWY 277.dgn
REVISED DATE:

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.		020589	52	58

2 CROSS SECTIONS

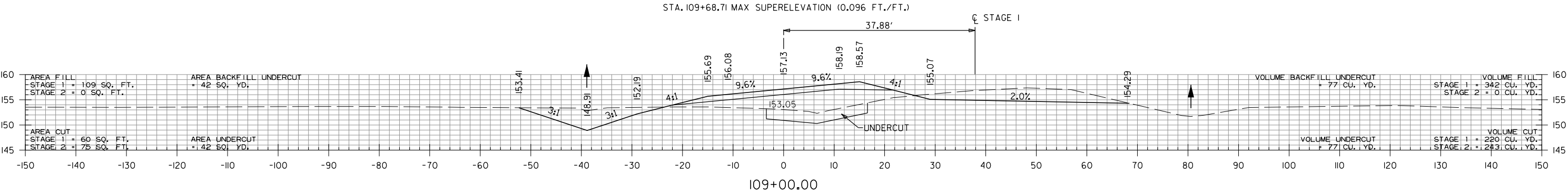
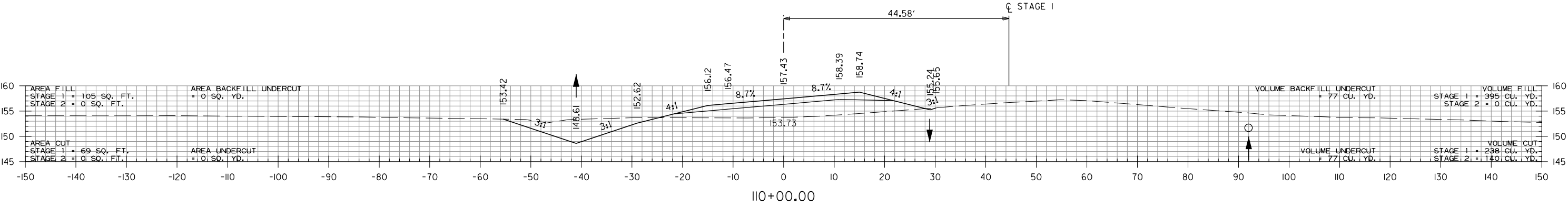
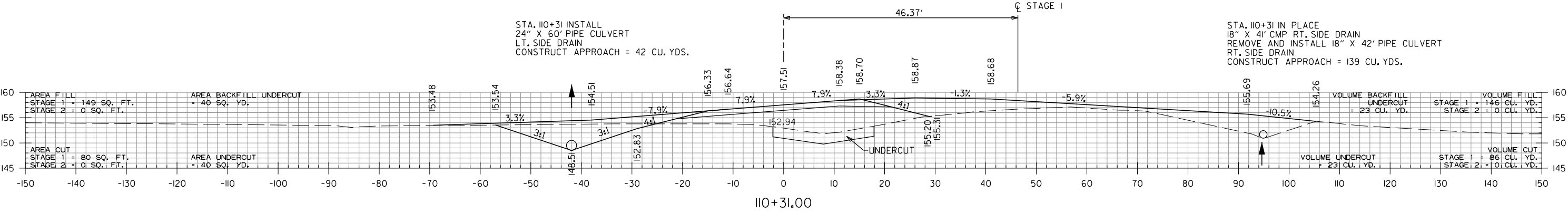
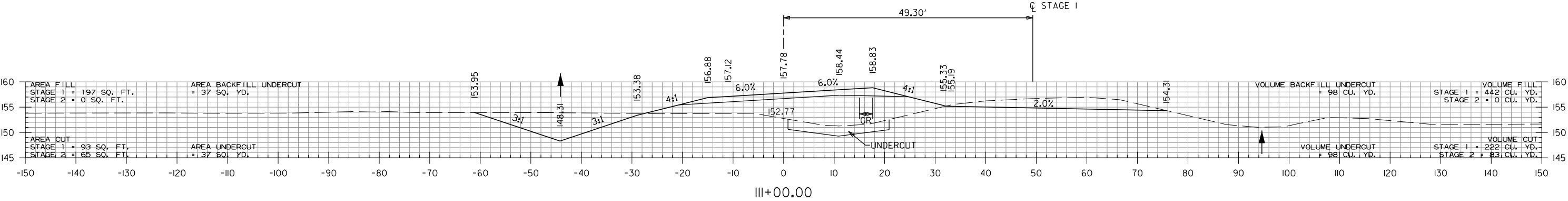


STA. 105+87.02 MAX SUPERELEVATION (0.096 FT./FT.)



STA. 105+00 TO STA. 108+00

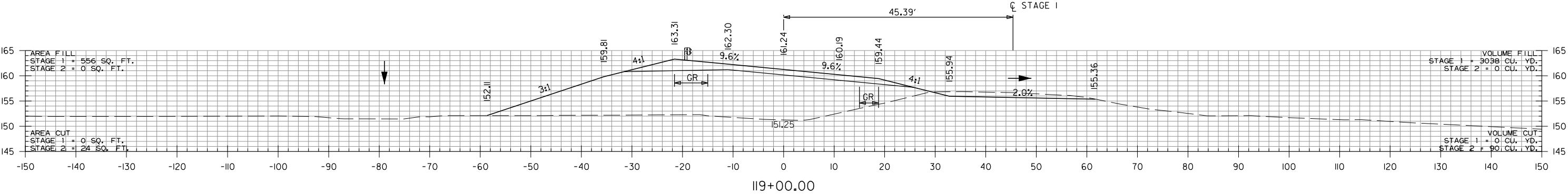
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020589	53	58
2 CROSS SECTIONS								



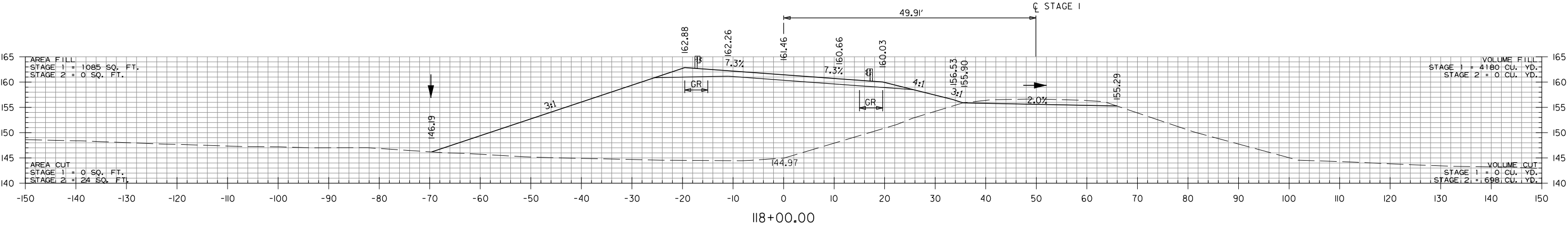
STA. I09+00 TO STA. III+00

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.		020589	55	58

2 CROSS SECTIONS



STA. 118+84.80 MAX SUPERELEVATION (0.096 FT./FT.)



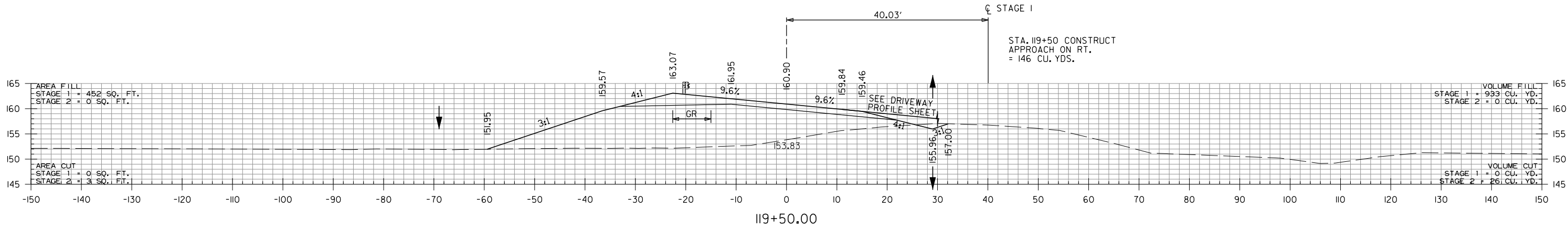
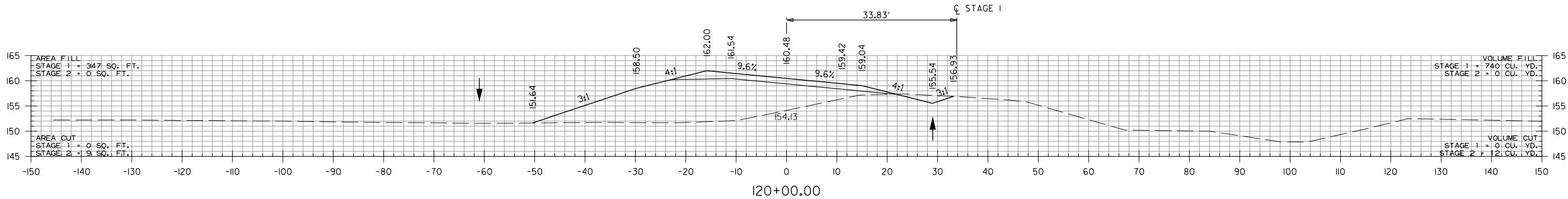
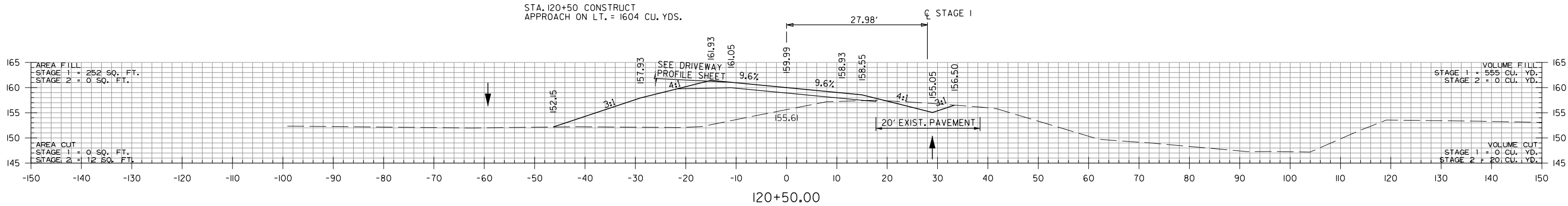
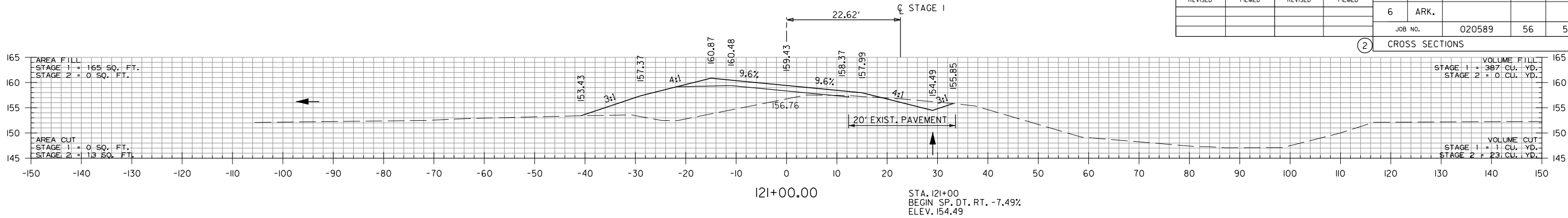
STA. 117+21.06 END BRIDGE

STA. 116+84.60 BEGIN TOE OF SLOPE
AT ELEVATION 140.20'

STA. 117+00 TO STA. 119+00

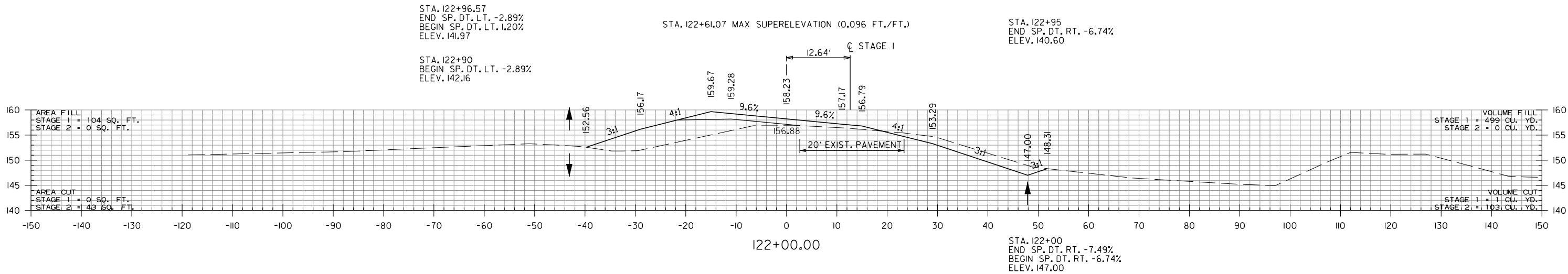
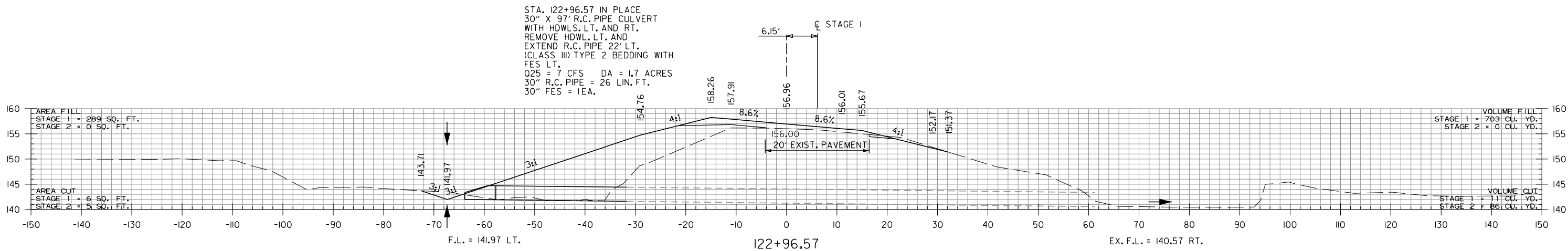
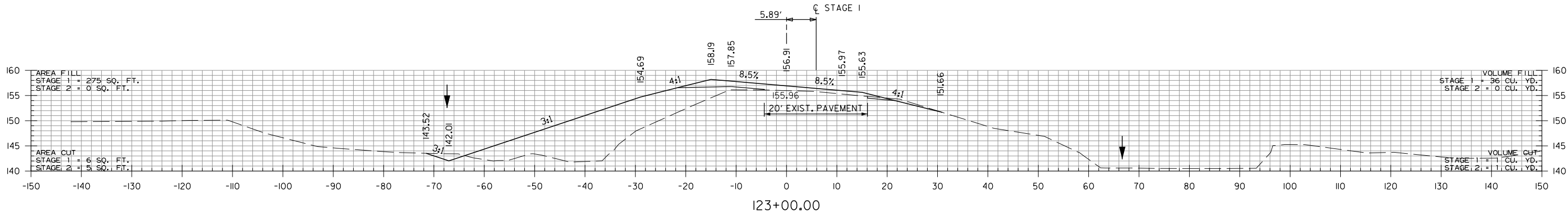
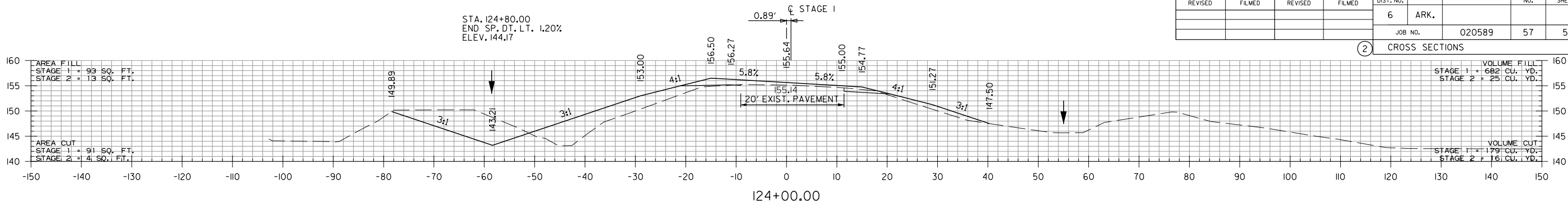
CGGervosini 10/3/2019 10:46:57 AM
WORKSPACE: AHTD
L:\2017\1017520 - Bayou Bartholomew Drawings\020589.CX.HWY 277.dgn
REVISED DATE:

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.		020589	56	58
2 CROSS SECTIONS								



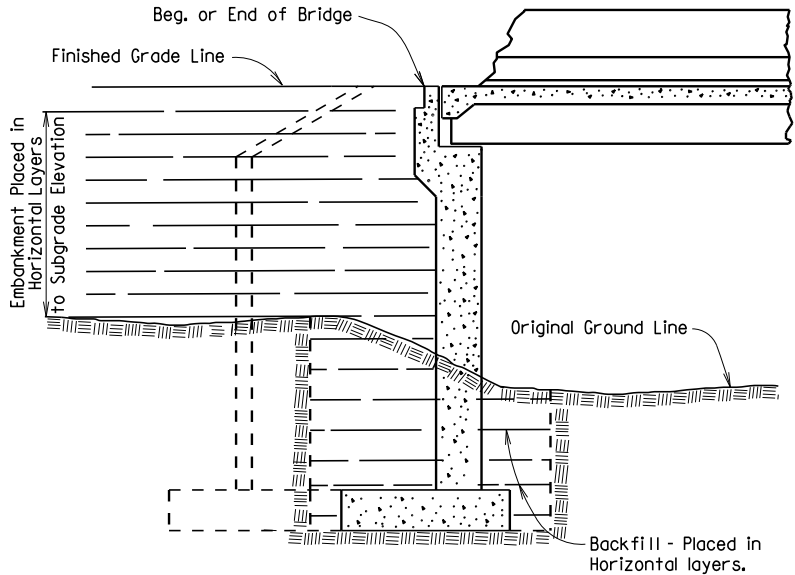
STA. 119+50 TO STA. 121+00

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.		020589	57	58
2 CROSS SECTIONS								

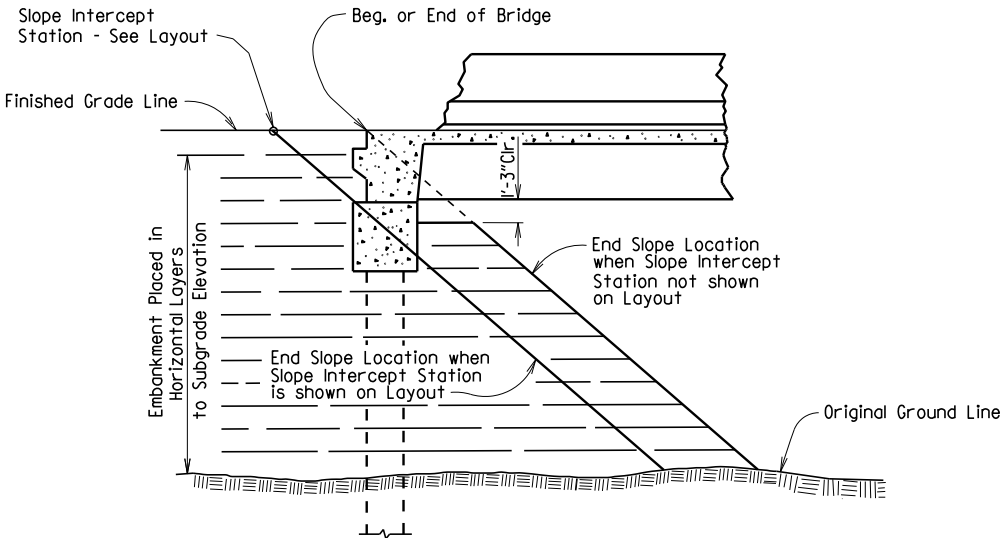


STA. 122+00 TO STA. 124+00

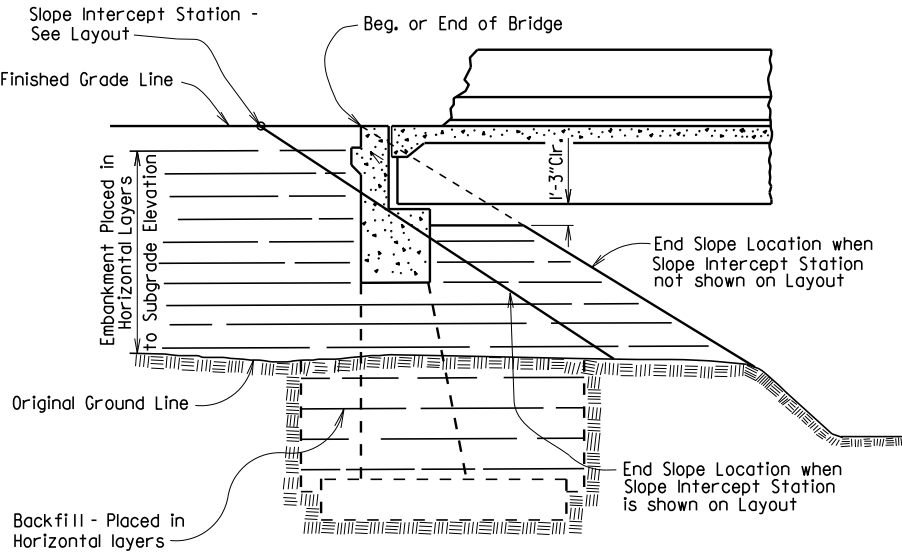
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				1 EMBANKMENT & BACKFILL			55000	



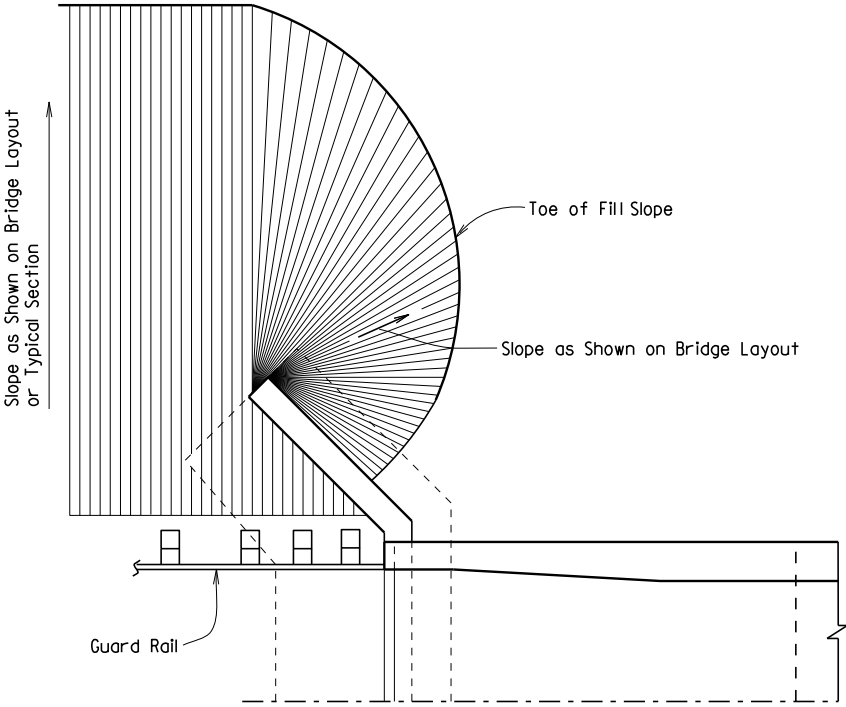
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT VERTICAL WALL ABUTMENTS



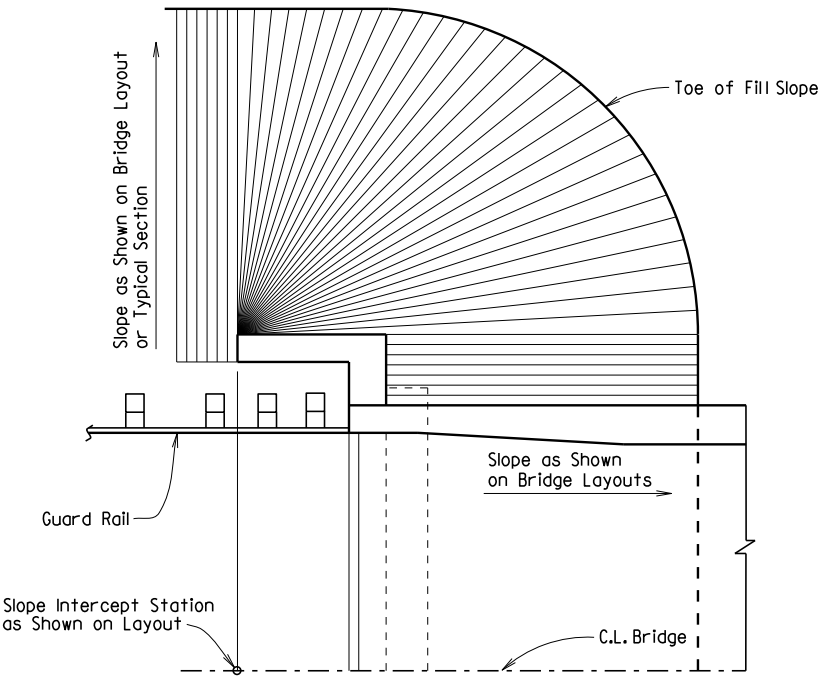
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH
PILE END BENTS



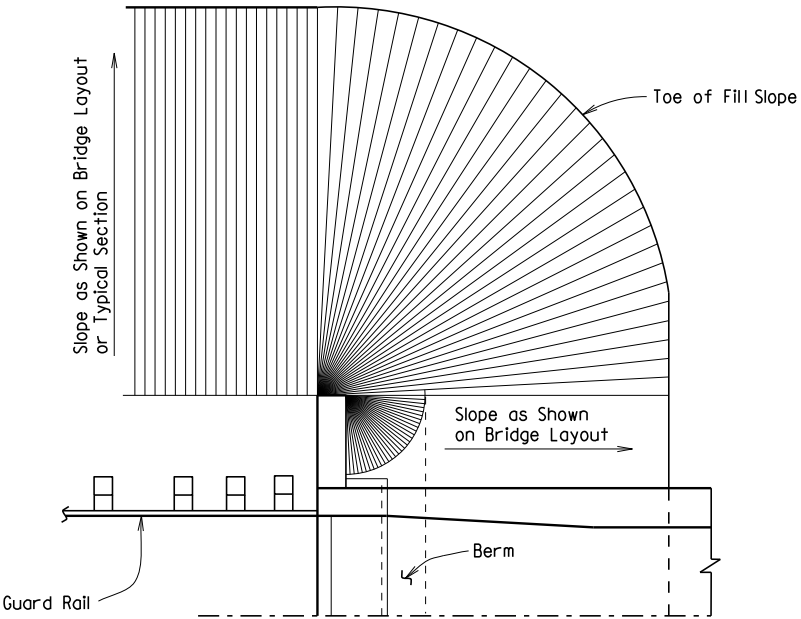
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL
AT SPILL-THROUGH END BENTS



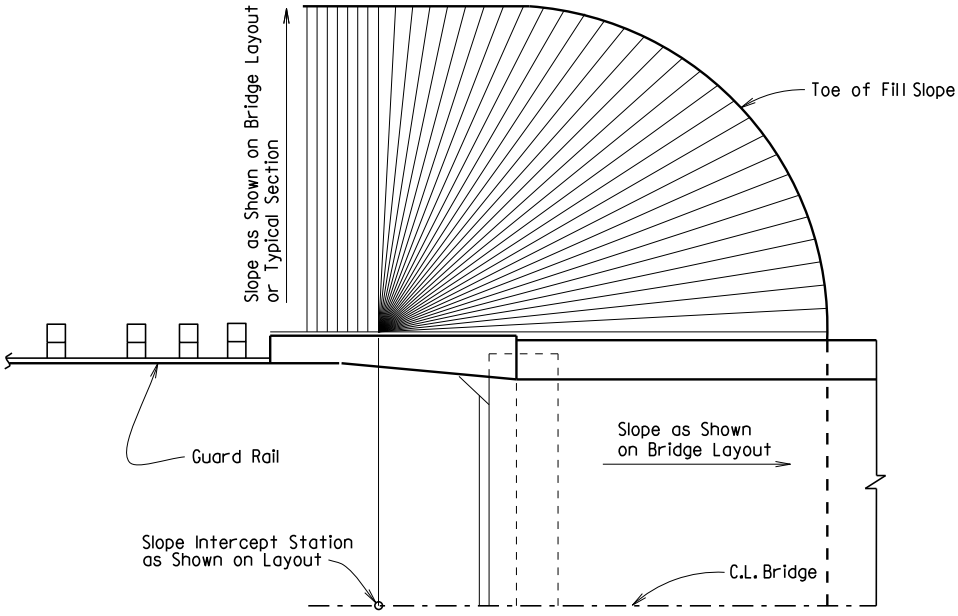
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

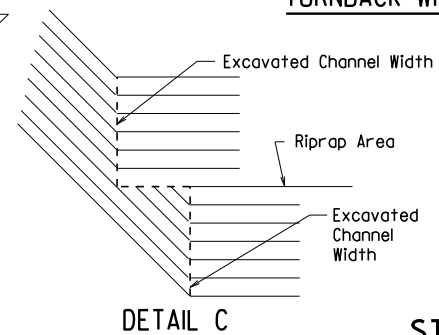
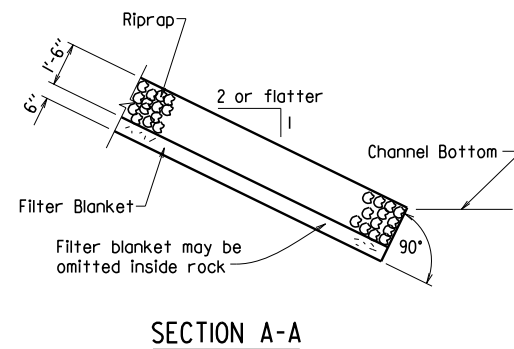
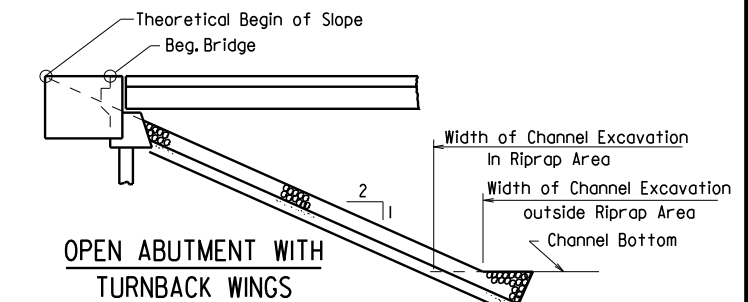
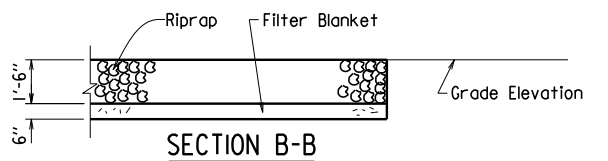
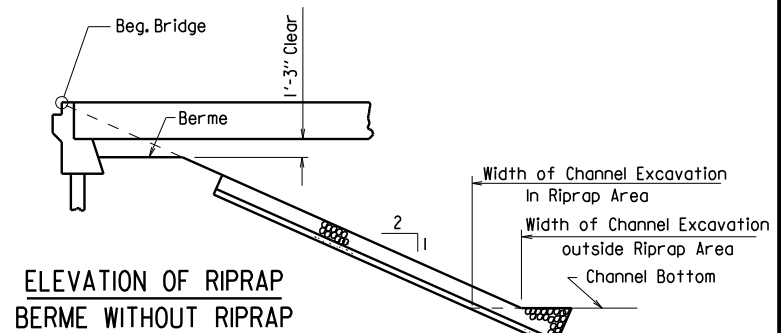
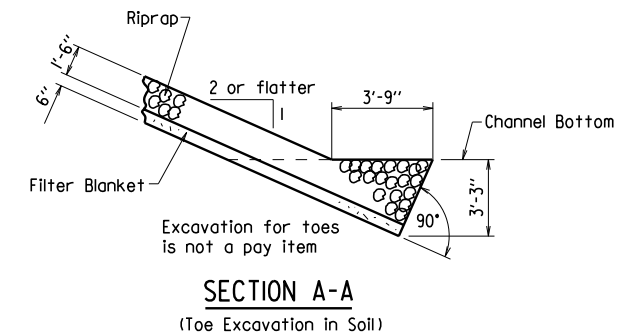
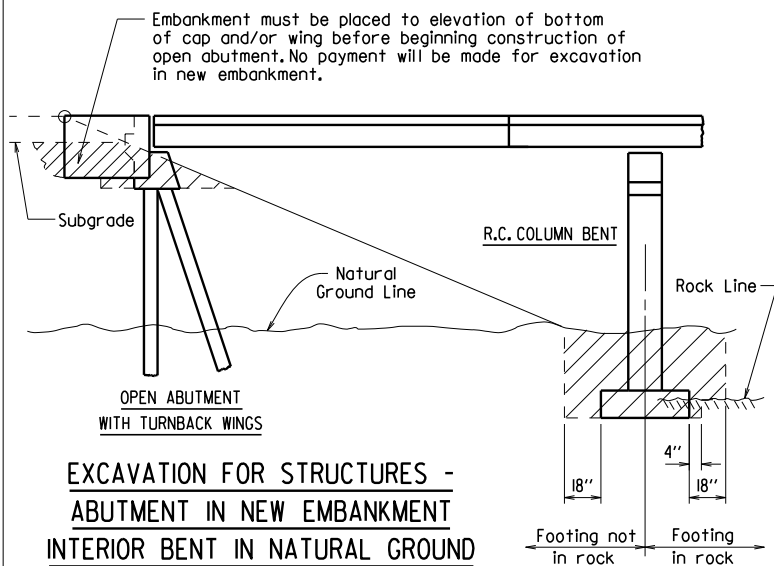
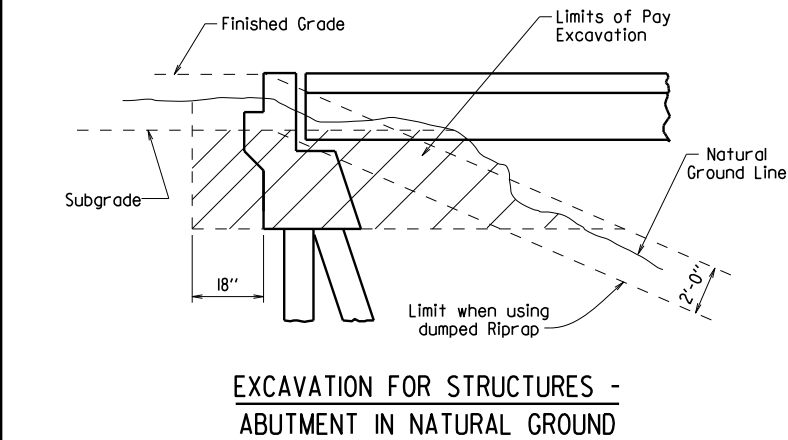
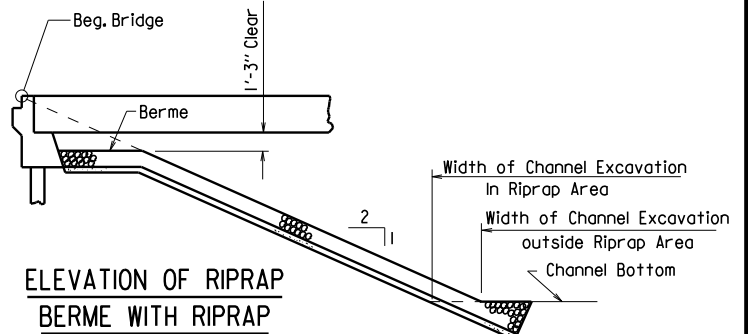
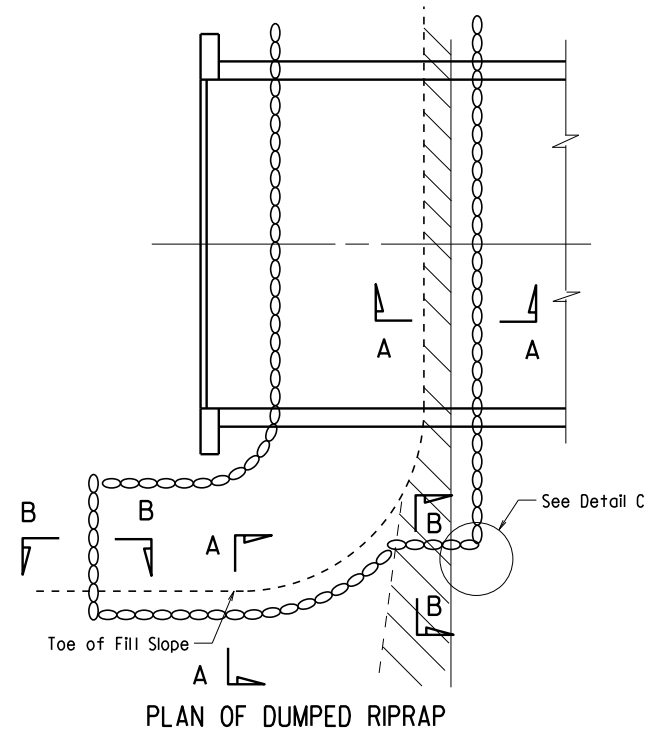
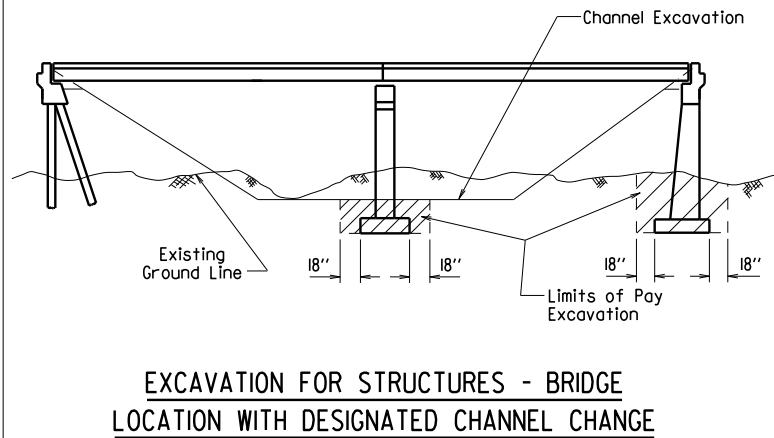
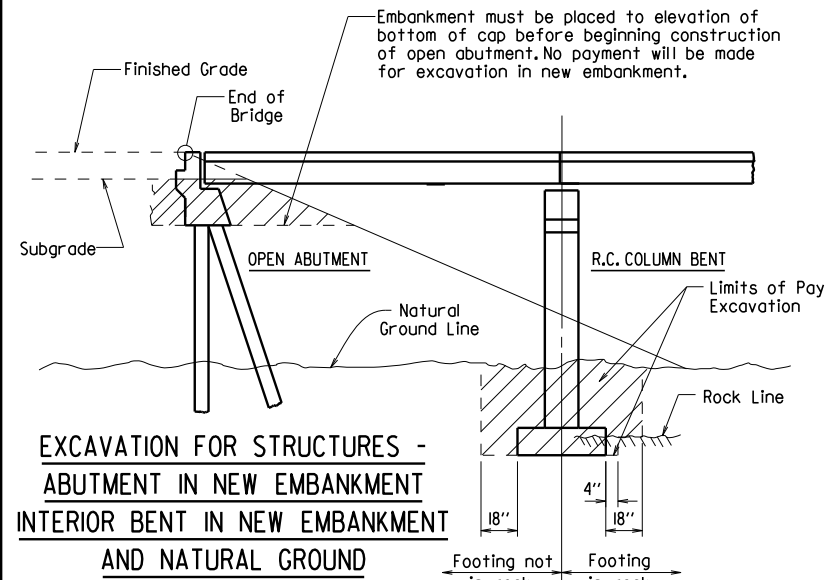
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

DRAWING NO. 55000

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				RIPRAP & EXCAV. 5500I				

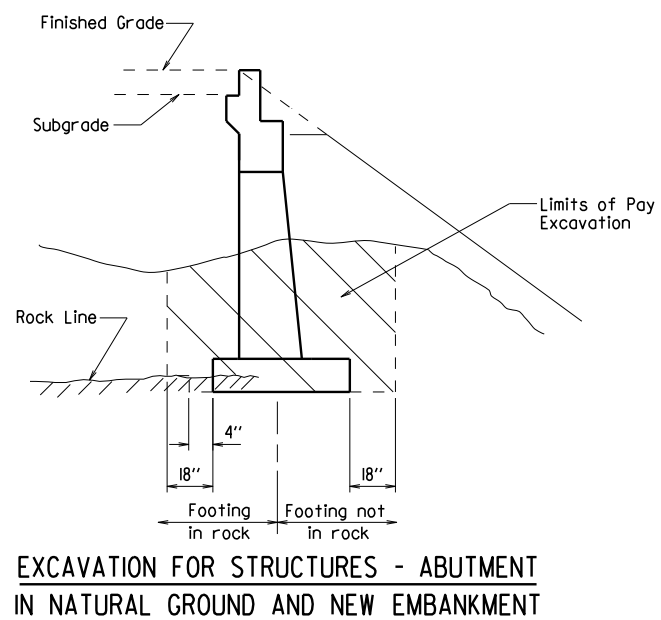
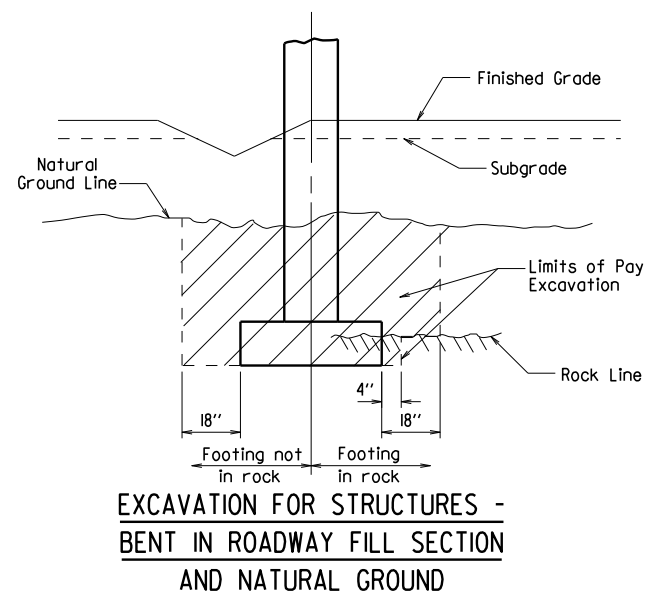


STANDARD DETAILS FOR
DUMPED RIPRAP AND FILTER BLANKET
AND COMPUTING
EXCAVATION FOR STRUCTURES
ARKANSAS STATE HIGHWAY COMMISSION

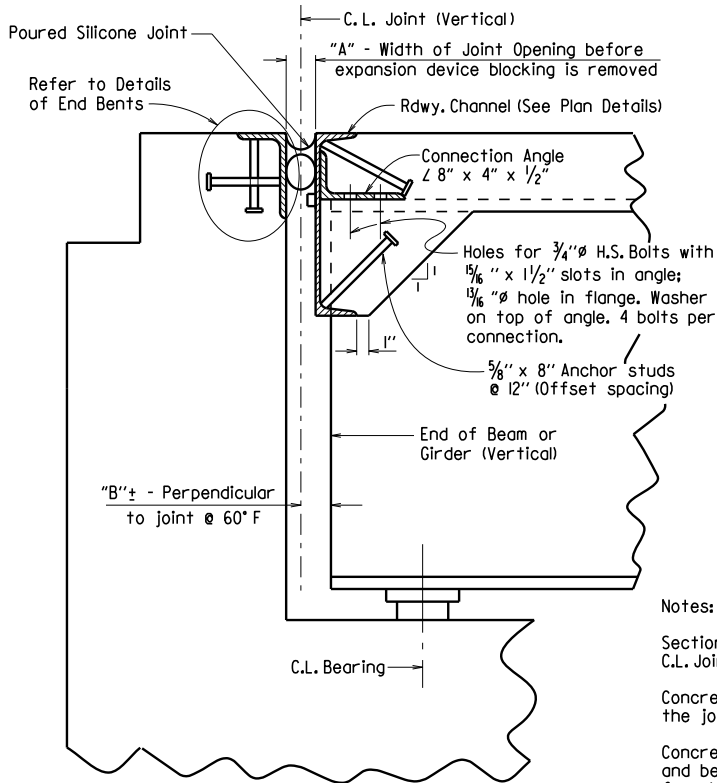
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b5500I.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

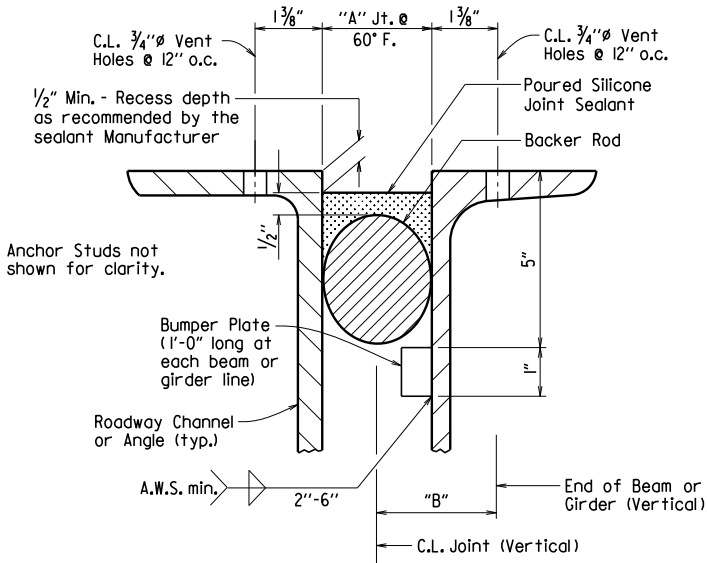
DRAWING NO. 5500I



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		POURED SILICONE JOINT		55008



SECTION THRU JOINT AT END BENT



DETAIL OF POURED SILICONE JOINT

Silicone joint material and installation shall conform to Section 809. The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

Use an appropriately sized backer rod at the depth shown in the Manufacturer's literature based on the joint width at the time of sealing. Unless otherwise noted, do not install more backer rod than can be sealed in the same day.

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

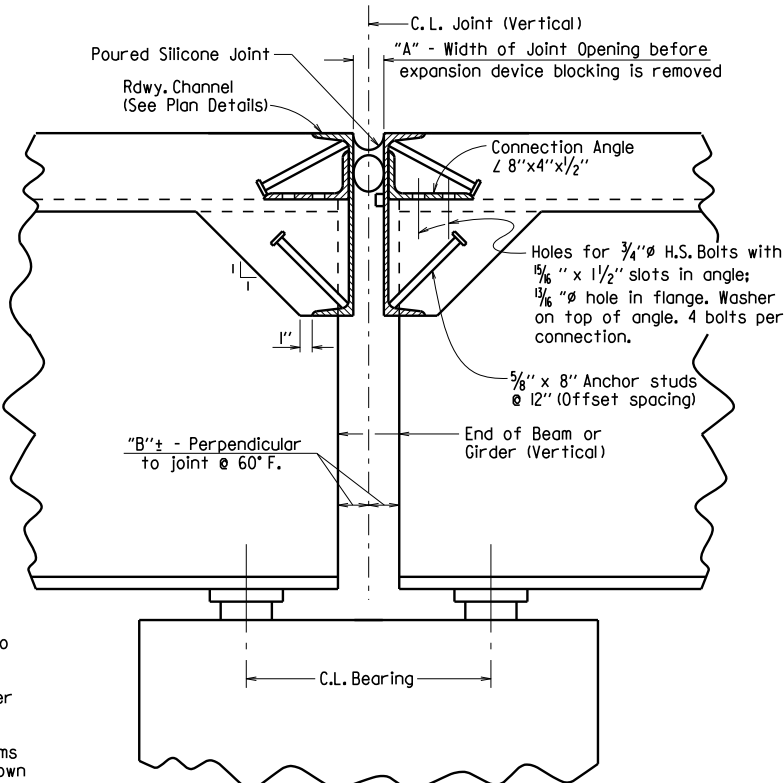
When bridge deck is constructed in stages, backer rods shall be extended beyond length of poured joint in initial construction stage so that the two pieces can be properly spliced together prior to installing sealant in subsequent stages. Manufacturer's recommendations shall be followed to prevent sealant from "running out of joint" during stage construction.

Notes:

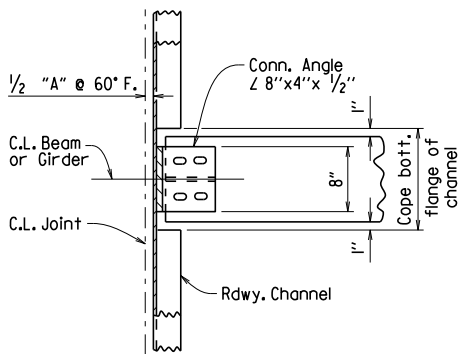
Sections are taken perpendicular to C.L. Joint.

Concrete shall be hand packed under the joint armor.

Concrete diaphragms, steel diaphragms and bearing stiffeners are not shown for clarity. See plans for details.

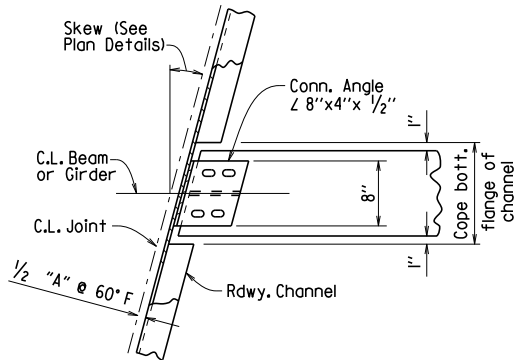


SECTION THRU JOINT AT INTERMEDIATE BENT



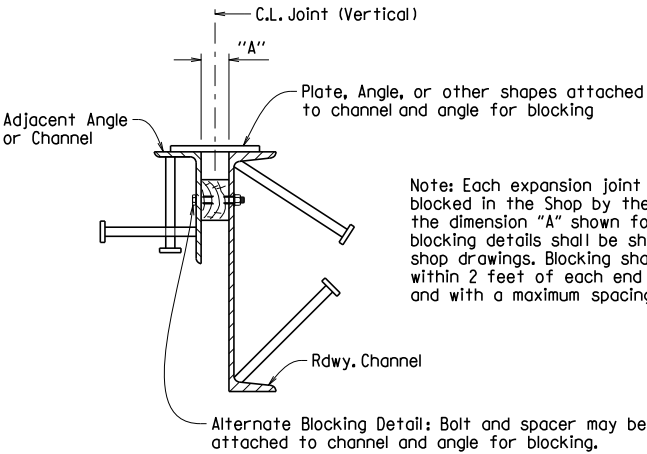
CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW



CHANNEL CONNECTION DETAIL

BENTS WITH SKEW



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

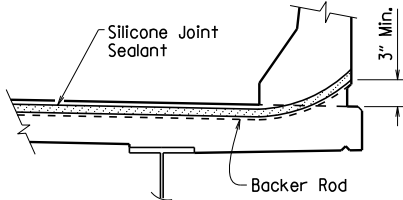
The Contractor may elect to install the expansion device using one of the following two alternatives:

- 1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders 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, and the opening adjusted for temperature and grade.
- 2) The backwall shall be poured to the optional construction joint after beams or girders 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 and grade.

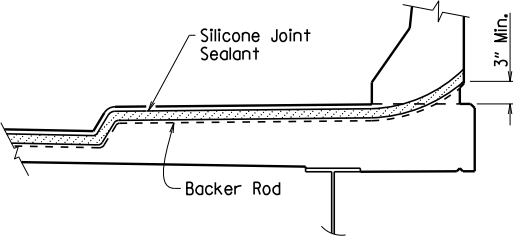
EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

After all beams or girders on each side of the joint are erected the blocked expansion device shall be installed and adjusted for grade. Deck concrete shall be placed for the entire unit or span on one side of the joint before deck concrete on the other side is placed. Connection bolts for the first side to have deck concrete placed shall be completely bolted. Bolts on the other side shall be loosely installed so that thermal and rotational movements will not be restricted during concrete placement on the first side.

Connection bolts on the second side shall remain loose until the concrete pour adjacent to the joint is to be placed. Immediately prior to pouring the span concrete on the second side, the blocking shall be removed, the joint adjusted for temperature and grade, and the connection bolts tightened.



JOINT SEAL PLACEMENT AT RAIL



JOINT SEAL PLACEMENT AT SIDEWALK

SECTION AND SUBSECTION REFER TO THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2014 EDITION).

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS. SEE "TABLE OF SILICONE JOINT DATA" IN PLAN DETAILS FOR VARIABLES "A" AND "B", AND BUMPER PLATE SIZE.

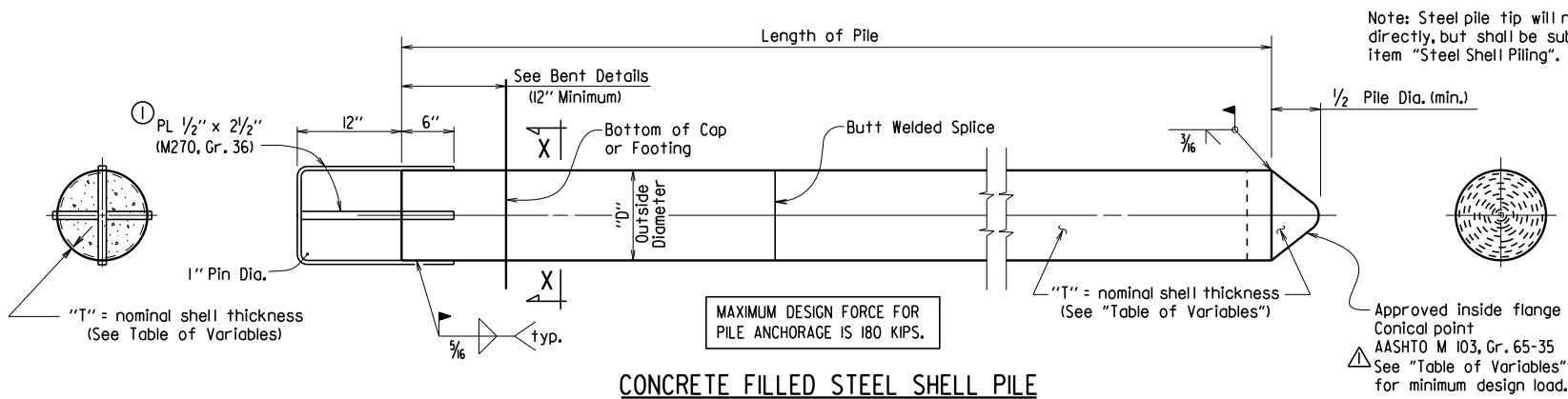
STANDARD DETAILS FOR
POURED SILICONE JOINTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

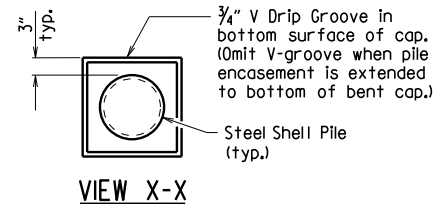
DRAWN BY: A.C.P. DATE: 2/11/2016 FILENAME: b55008.dgn
CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale
DESIGNED BY: STD. DATE: —

DRAWING NO. 55008



CONCRETE FILLED STEEL SHELL PILE

- Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.
- Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.



GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES:

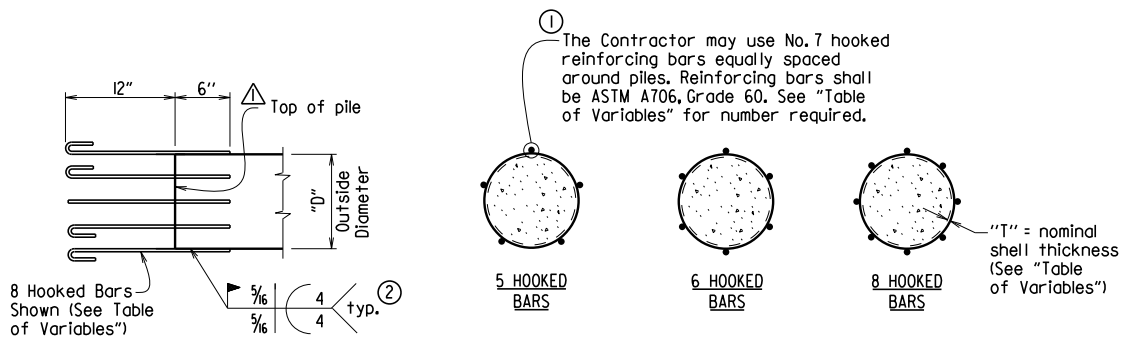
Steel shells shall conform ASTM A252, Grade 3 ($F_y = 45,000$ psi.)

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.

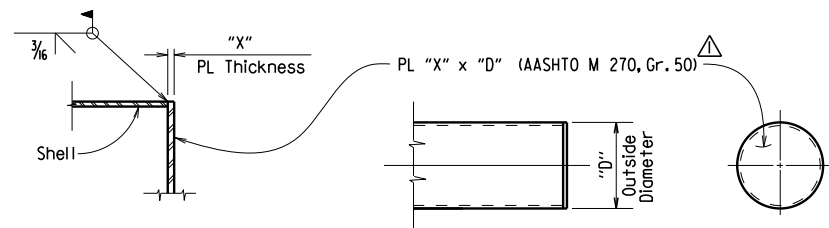
See Bridge Layout for size and estimated length of steel shell piles and for driving information.

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".



ALTERNATE PILE ANCHORAGE DETAIL

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

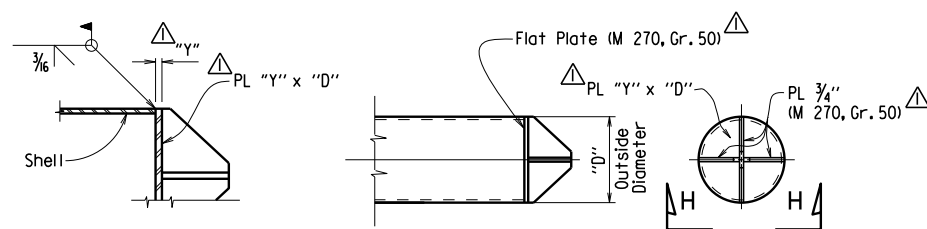


PART SECTION

ELEVATION

ALTERNATE FLAT TIP DETAIL

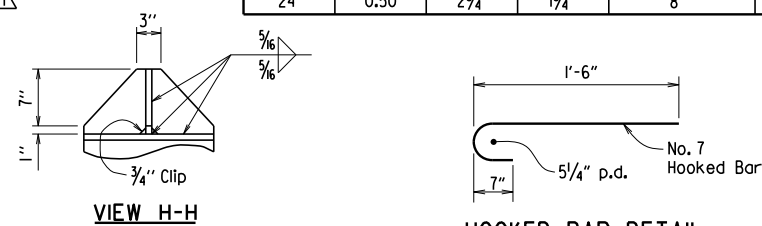
Note: The alternate flat tip detail shall not be used on steel shell piling to be driven through embankments constructed with internal geosynthetic reinforcement.



PART SECTION

ELEVATION

ALTERNATE VANED TIP DETAIL



HOOKED BAR DETAIL

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	PLATE THICKNESS "Y"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE	MINIMUM CONICAL TIP DESIGN LOAD (KIPS)
14"	0.50"	2 1/4"	1 1/2"	5	859
16"	0.50"	2 1/4"	1 1/2"	5	986
18"	0.50"	2 1/2"	1 1/2"	6	1,114
20"	0.50"	2 1/2"	1 3/4"	6	1,241
24"	0.50"	2 3/4"	1 3/4"	8	1,495

Revised and added various details by KWy, Ck'd. by BEF, 3/24/16.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				
							STEEL SHELL PILES	55021

GENERAL NOTES FOR PILE ENCASEMENTS:

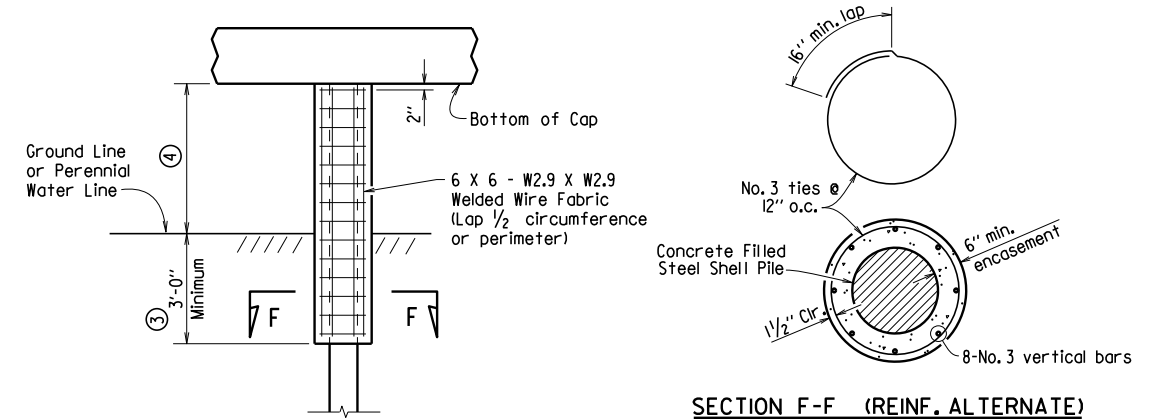
See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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".

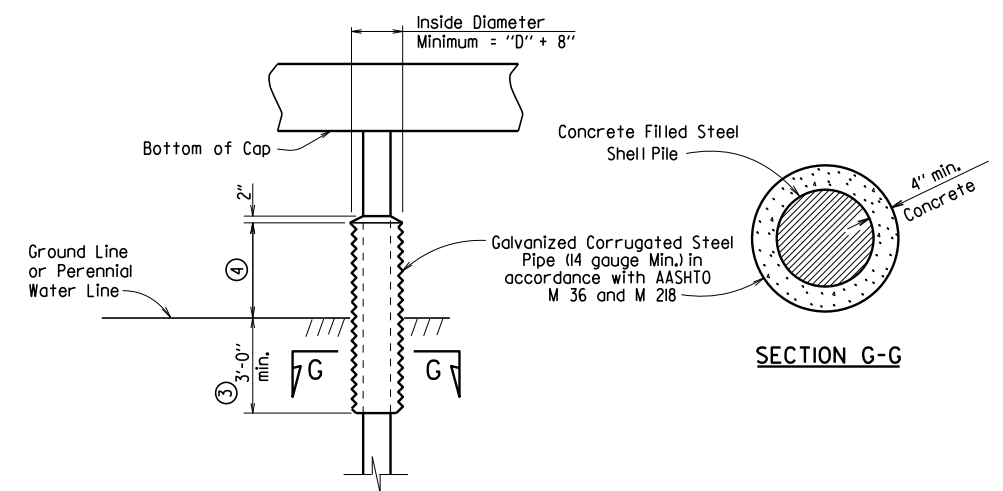


PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Encasement to Bottom of Cap)

- Unless otherwise noted on Bridge Layout.
- See Bridge Layout for height of pile encasement (3'-0" Minimum).

- 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.



ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(Shown with Partial Height Encasement)

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on March 24, 2016. This copy is not a signed and sealed document.



BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

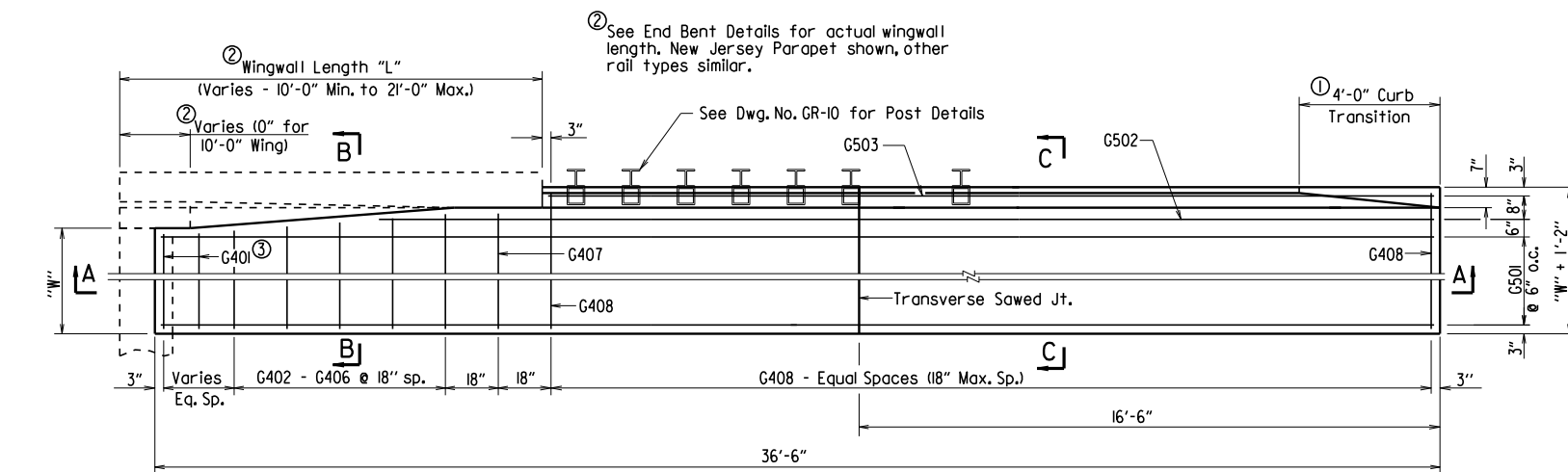
ARKANSAS STATE HIGHWAY COMMISSION

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: —

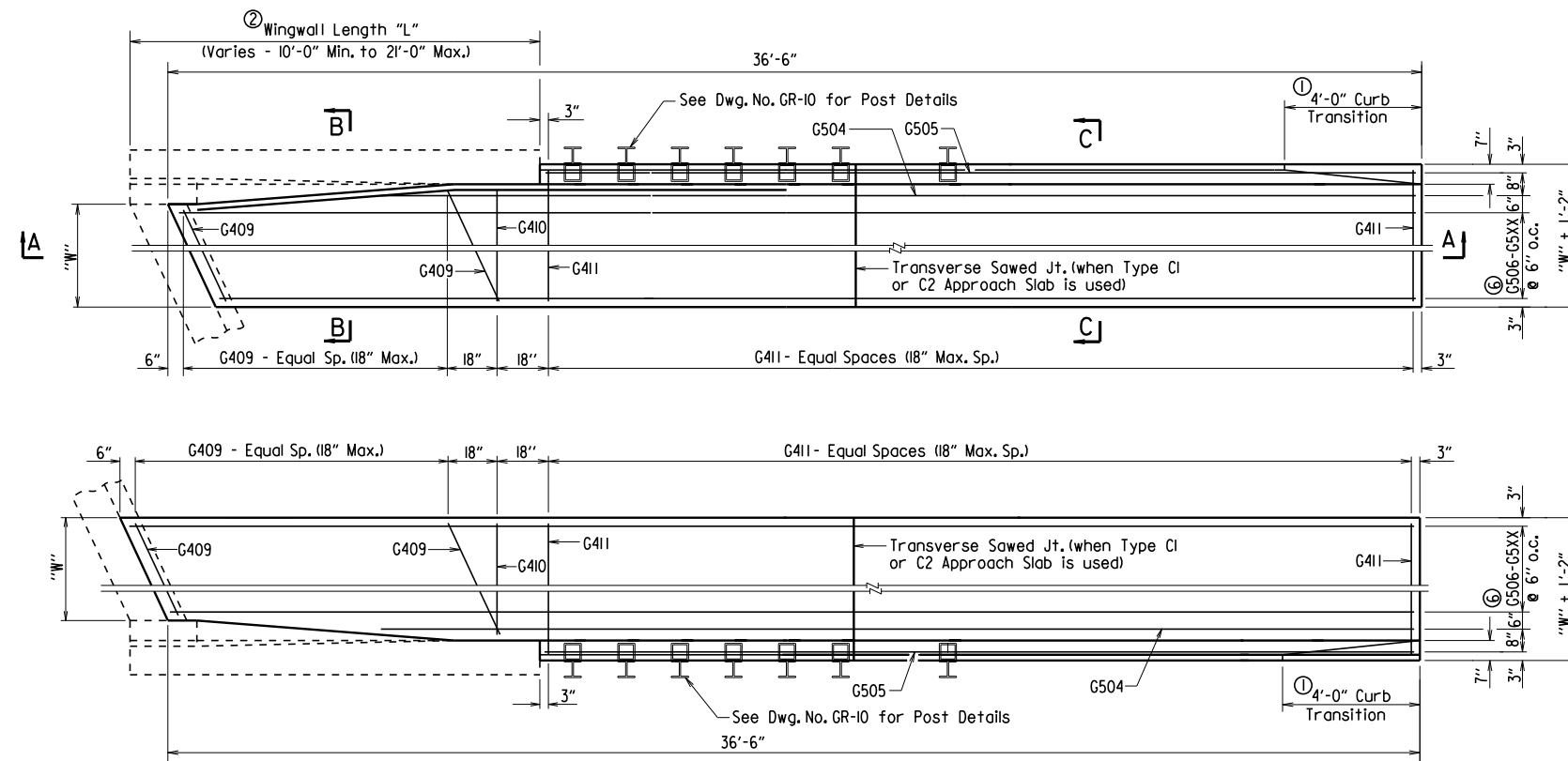
DRAWING NO. 55021

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

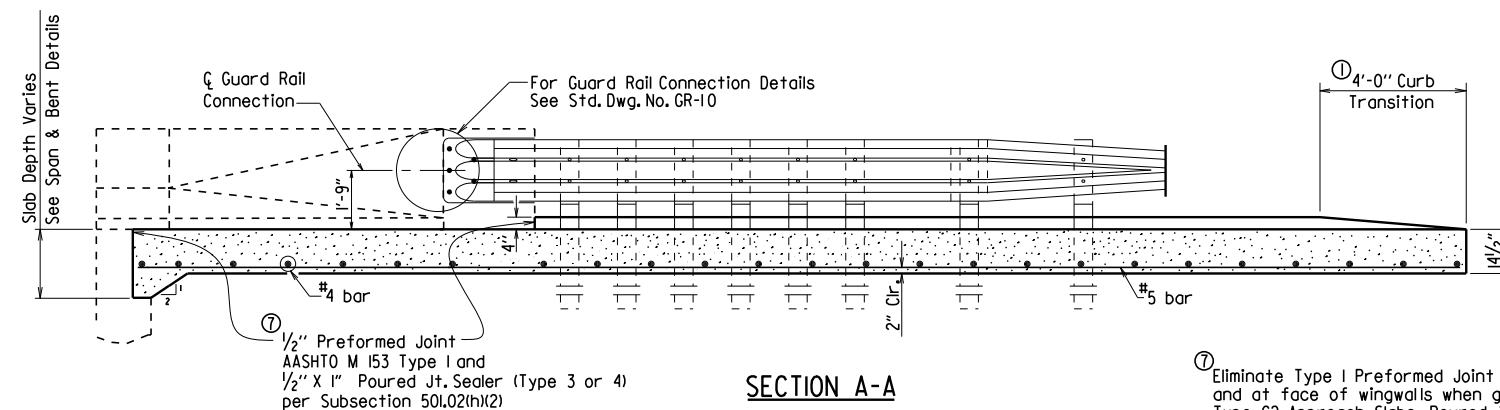


③ Provide G40I bars @ 18" max. spacing.
Number of G40I bars vary with wingwall length.
No G40I bars required for 10'-0" wingwalls.

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



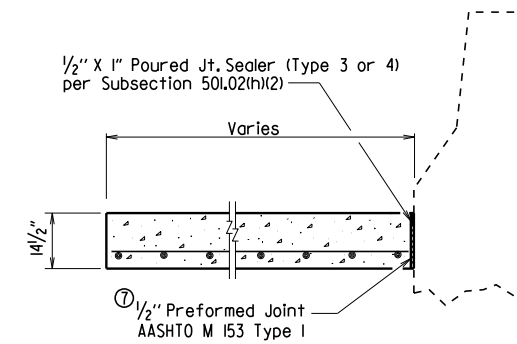
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



⑦ Eliminate Type I 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.

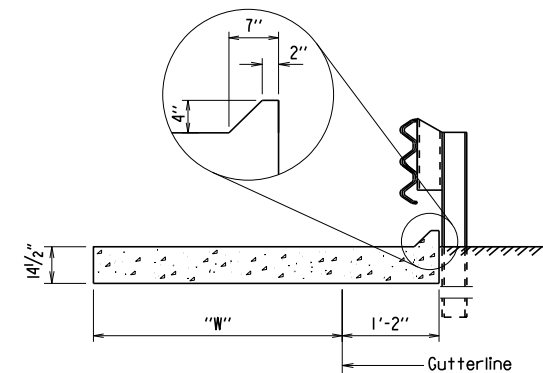
① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

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



SECTION B-B

N.T.S.



SECTION C-C

N.T.S.

	Mark	No. Req'd. for Width "W"				Length
		4'-0"	6'-0"	8'-0"	10'-0"	
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	(4'-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)

- ④ No. Req'd. varies with Skew and Wingwall Length.
- ⑤ Bar Lengths vary with Skew and Wingwall Length.
- ⑥
 - G513 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.

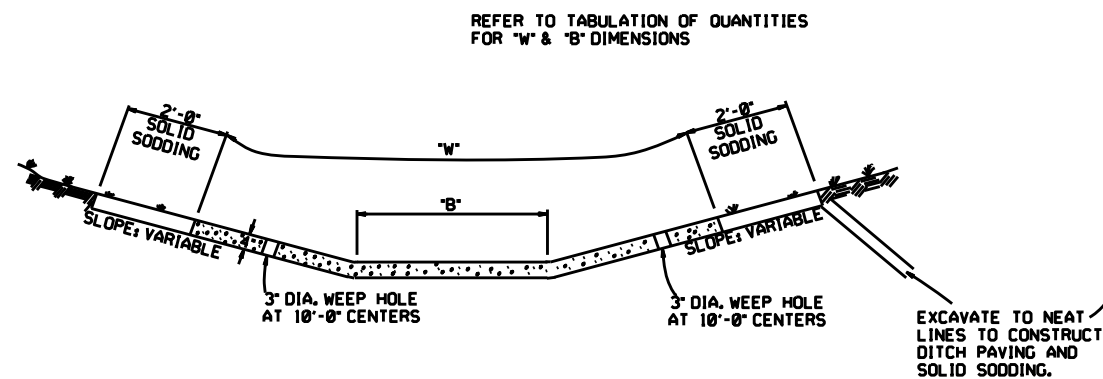
STANDARD DETAILS FOR TYPE C APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

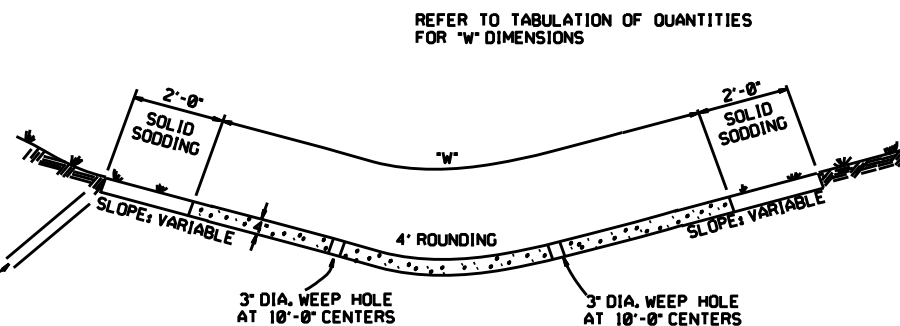
LITTLE ROCK, ARK.

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

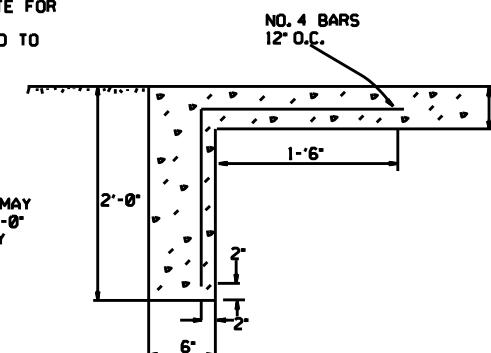


TYPE A

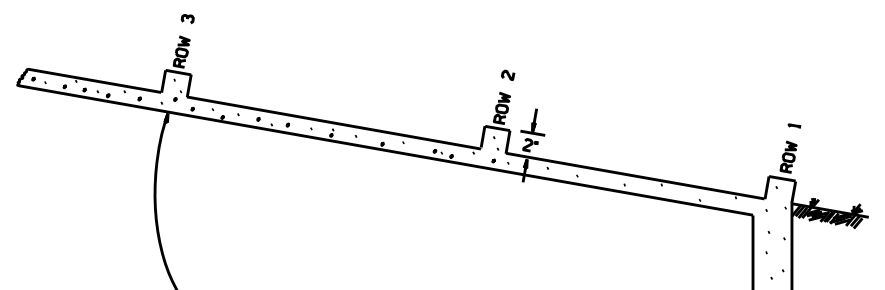


TYPE B

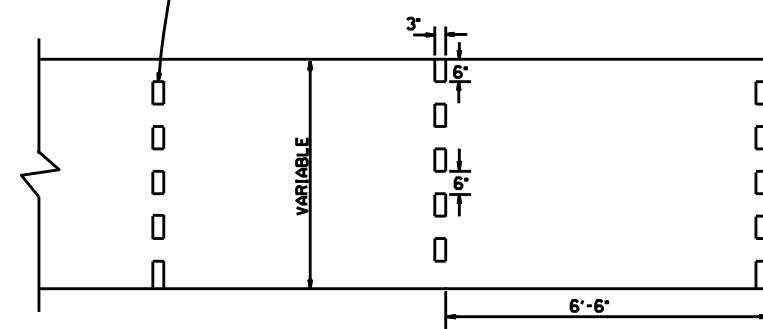
THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR "CONCRETE DITCH PAVING."



TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION



ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

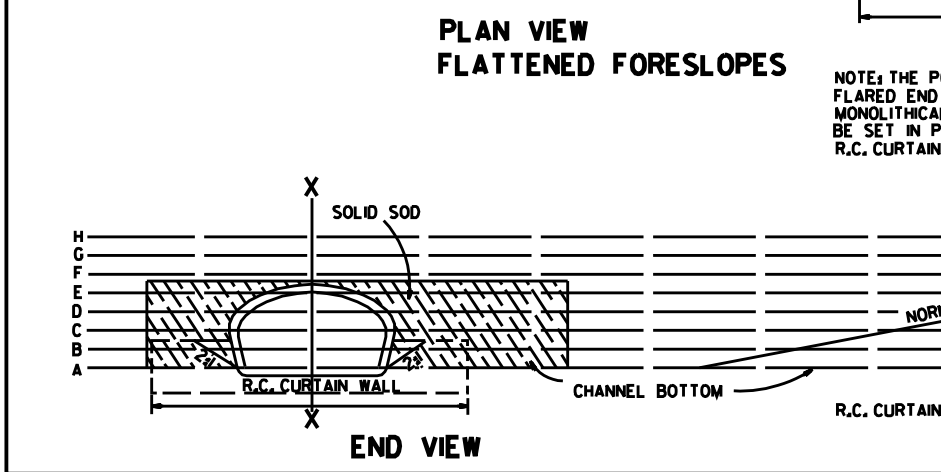
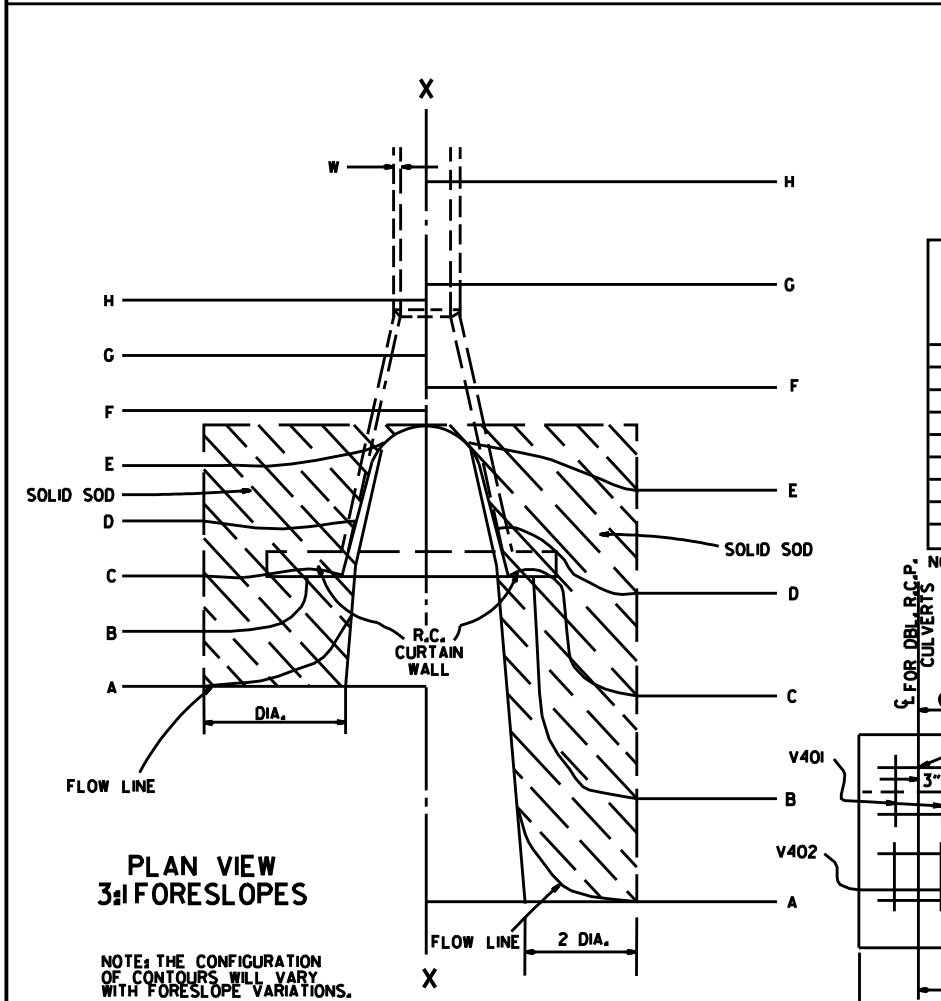
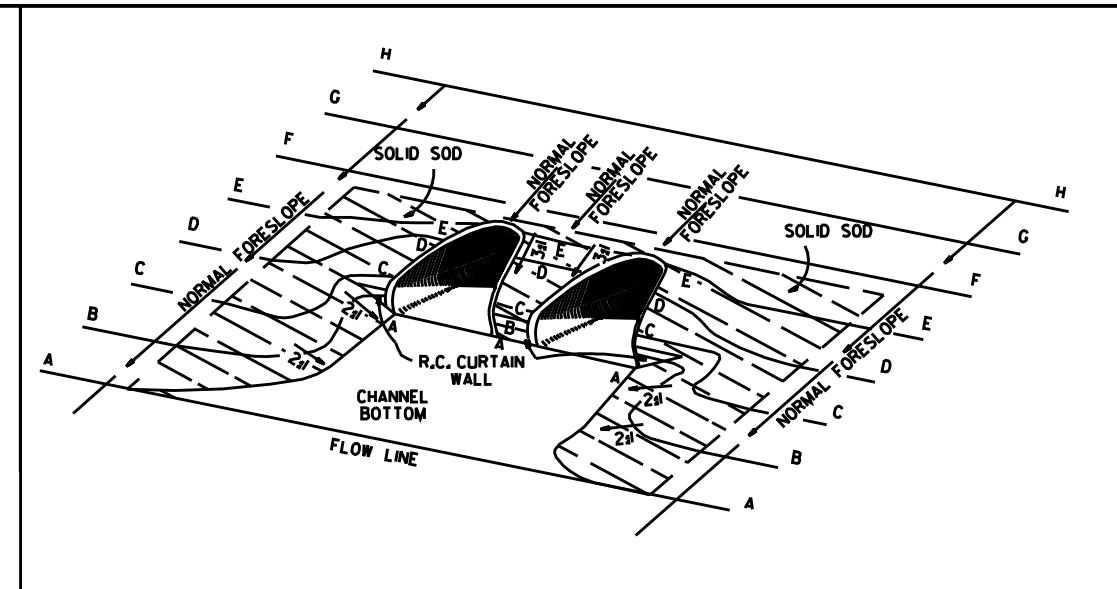
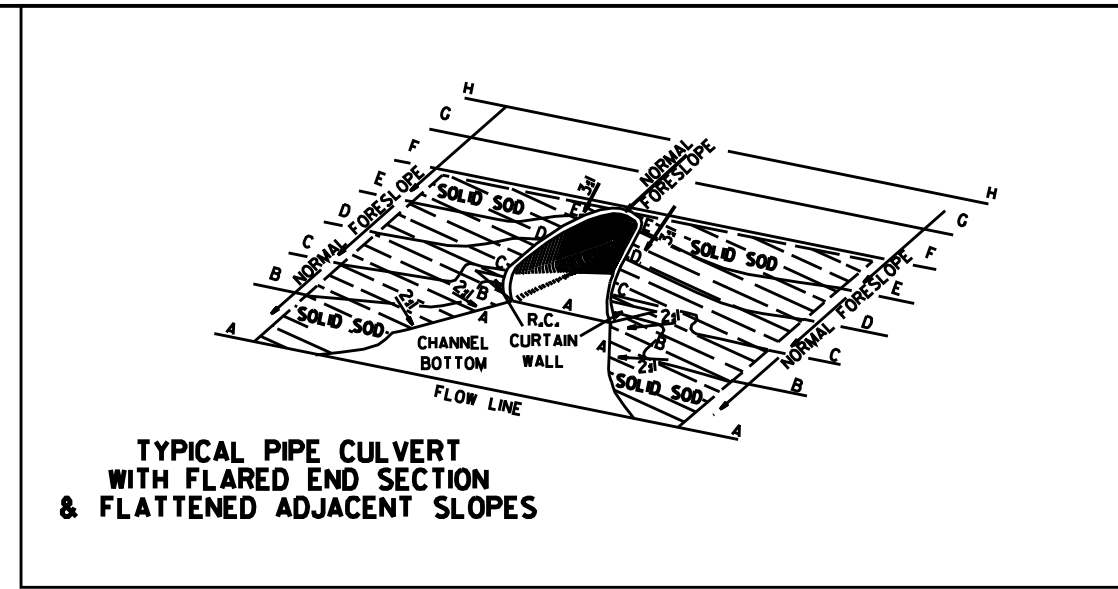
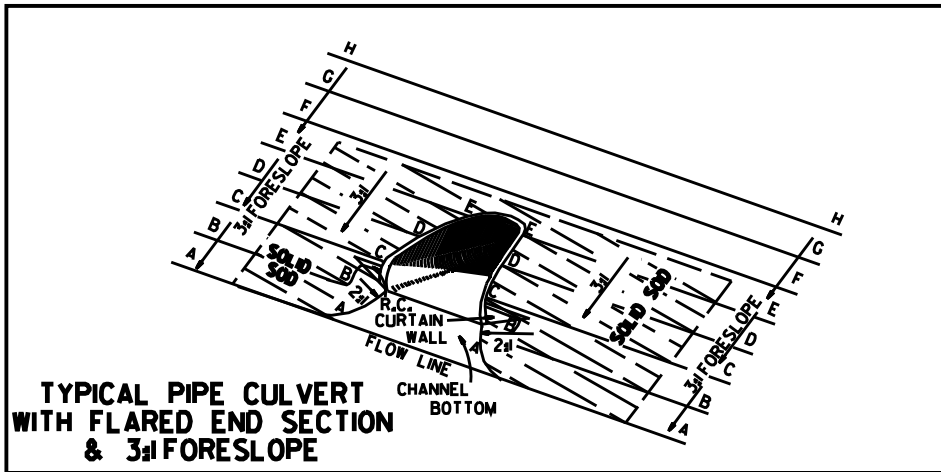
1' WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-88	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	632-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	639-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED	
10-2-72	TYPED A & B	
	REVISED AND REDRAWN	508-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

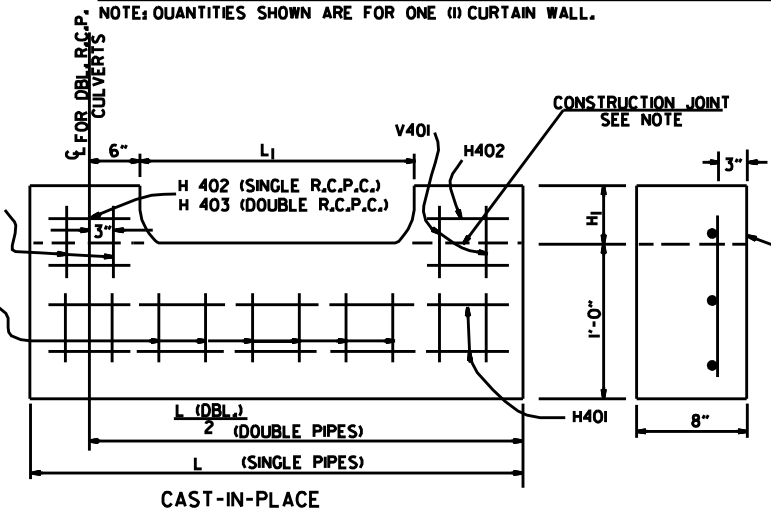
STANDARD DRAWING CDP-1



R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

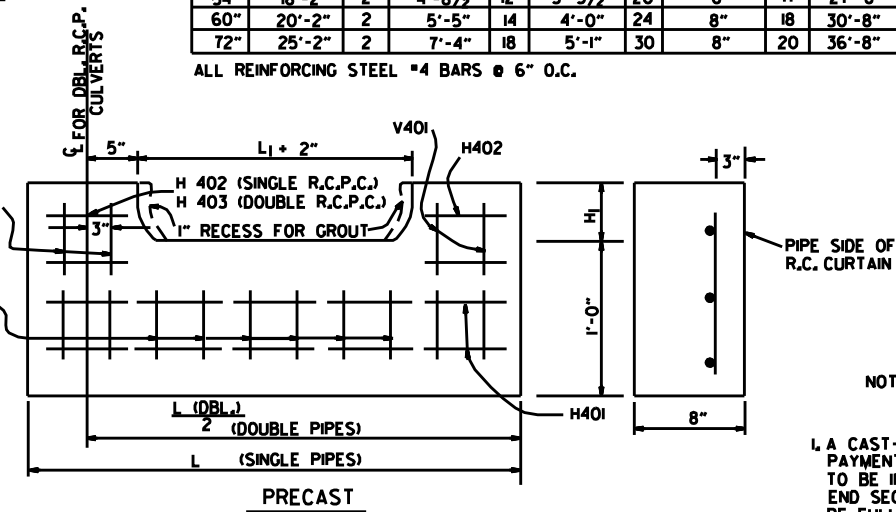
PIPE DIA.	H ₁	L ₁	L	L (DBL.) 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1 1/2"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9 1/2"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

NOTE: QUANTITIES SHOWN ARE FOR ONE (1) CURTAIN WALL.



NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.

R.C. CURTAIN WALL DETAILS



NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT							
	H401		H402		V401		V402		H401		H402		H403		V401	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11 1/2"	4	1'-7 1/2"	8	8"	8	12'-2"	2	1'-11 1/2"	4	8"	2	1'-7 1/2"	10
24"	9'-2"	2	2'-2"	4	1'-8 1/2"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8 1/2"	12
30"	10'-8"	2	2'-4 1/2"	4	1'-11 1/2"	10	8"	12	17'-8"	2	2'-4 1/2"	4	8"	2	1'-11 1/2"	14
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14
42"	15'-2"	2	3'-9 1/2"	8	2'-9 1/2"	16	8"	15	23'-8"	2	3'-9 1/2"	8	8"	4	2'-9 1/2"	18
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20
54"	18'-2"	2	4'-8 1/2"	12	3'-5 1/2"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5 1/2"	22
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33

ALL REINFORCING STEEL #4 BARS @ 6" O.C.

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.						DOUBLE R.C.P.C.					
	3:1		4:1		6:1		3:1		4:1		6:1	
	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.	SO. YDS.
18"	5	7	12	6	8	13	10	12	18	10	15	20
24"	8	12	19	9	13	20	15	18	25	15	22	30
30"	13	18	29	14	19	30	22	25	37	22	30	40
36"	17	26	41	18	28	43	28	33	48	28	37	50
42"	23	35	55	25	37	57	35	41	60	35	45	60
48"	29	46	68	31	48	70	42	50	75	42	55	75
54"	35	57	85	37	59	87	50	60	90	50	65	90
60"	45	62	104	48	65	107	60	70	110	60	75	110
72"	64	92	156	67	95	159	85	100	150	85	105	150

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

- GENERAL NOTES
1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
 2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
 3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
 4. WELDED WIRE MESH 3 x 3 W/10 x W/10 MAY BE USED IN LIEU OF REINFORCING BARS.

10-18-98 ADDED NOTE TO SOLID SODDING		ARKANSAS STATE HIGHWAY COMMISSION
10-12-95 CORRECTED SPELLING		
11- 3-94 ADDED GENERAL NOTE NO. 4		
8-15-94 REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT.		
3-2-81 ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES		
5-15-80 ADDED PRECAST WALL & GENERAL NOTES		
10-2-72 REVISED AND REDRAWN		
DATE	REVISION	FILMED
		STANDARD DRAWING FES-1



**NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION**

END VIEW
CONCRETE ARCH PIPE

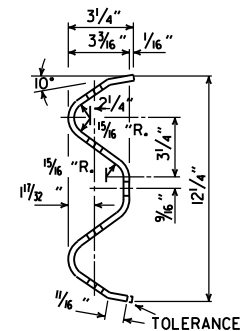
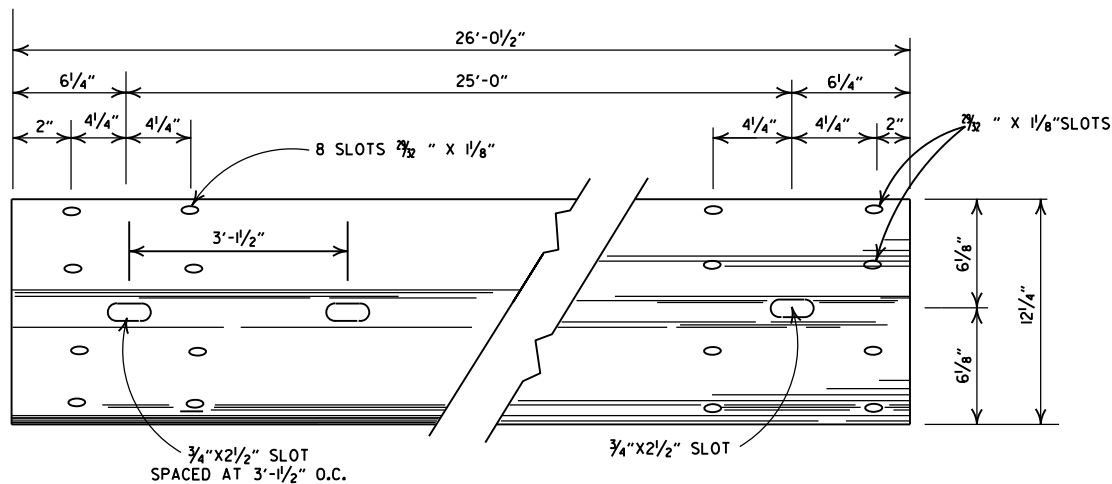
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

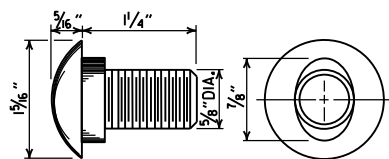
C.M. ARCH PIPE

10-18-96	REVISED ASTM REF. TO AASHTO			ARKANSAS STATE HIGHWAY COMMISSION
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80		
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78		
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75		FLARED END SECTION
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74		
5-24-73	CMP END SECTION, SHOW PIPE PAY LENGTH	627-5-24-73		
10-2-72	REVISED AND REDRAWN	760-10-2-72		STANDARD DRAWING FES-2
DATE	REVISION		FILED	

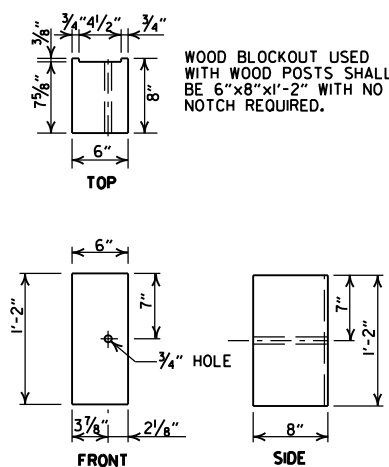
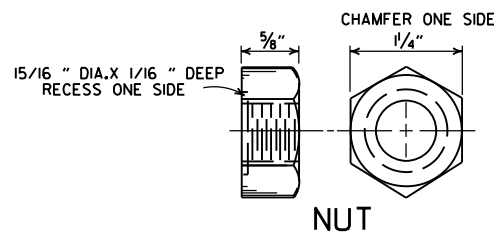
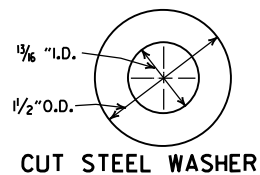


DETAILS OF W-BEAM GUARDRAIL

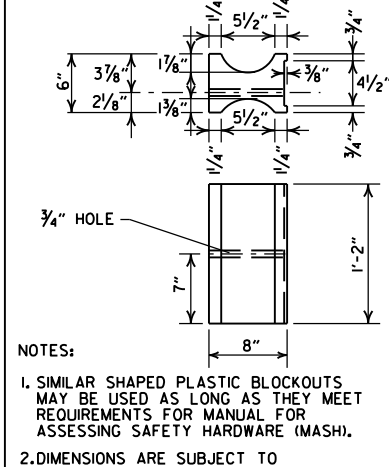
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



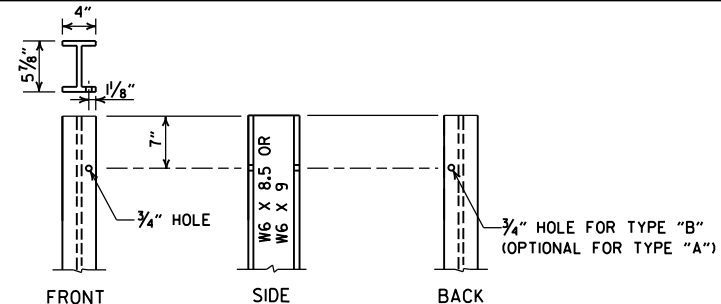
SPLICE BOLT POST BOLT - SAME EXCEPT LENGTH



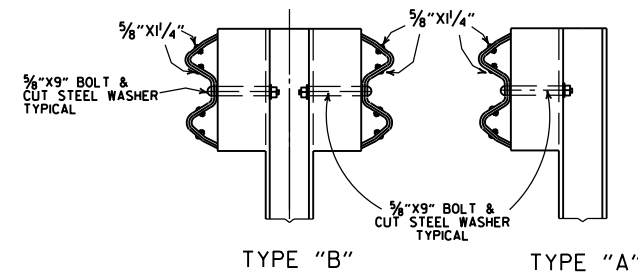
WOOD BLOCKOUT (W-BEAM)



PLASTIC BLOCKOUT (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

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

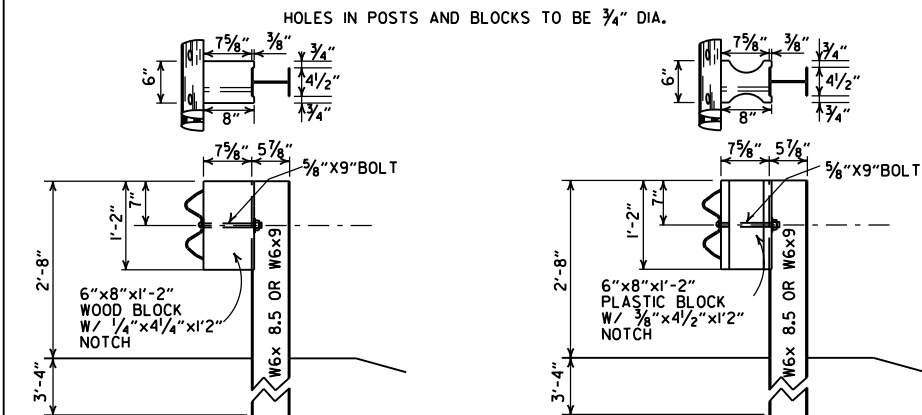
W-BEAM GUARDRAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

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

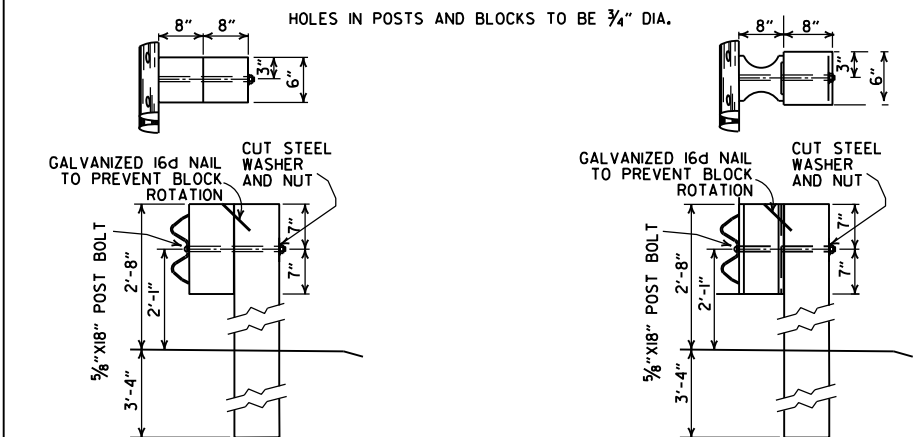
ANY BACKFILLING UNDER OR AROUND POST SHALL BE DAMP SAND THOROUGHLY TAMPED IN PLACE.

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

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARDRAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARDRAIL.



WOOD BLOCKOUT CONNECTIONS DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



POSTS AND BLOCKS TO BE ROUGH SAWN 6" X 8" WITH A TOLERANCE OF + OR - 1/4".

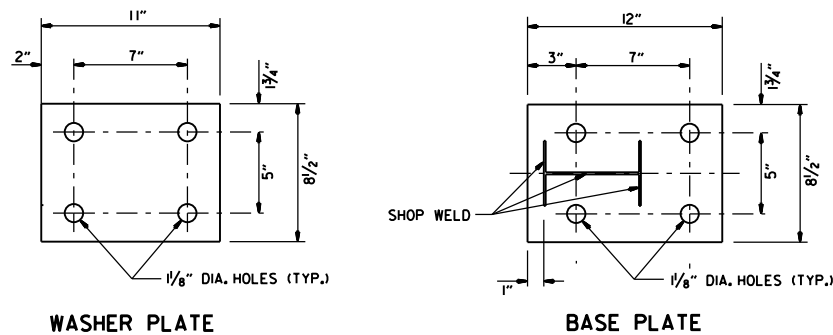
WOOD BLOCKOUT CONNECTIONS DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

11-07-19	RENUMBERED AND RENAMED	
11-16-17	REVISED GENERAL NOTES AND RAISED GUARDRAIL HEIGHT 3"	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
03-30-00	REMOVED GUARDRAIL AT BRIDGE ENDS	
01-12-00	ADDED PLASTIC BLOCKOUT	
08-12-98	REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARDRAIL 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	
04-03-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
06-02-94	ADDED ALT. STEEL POST SIZE	
08-05-93	REVISED STEEL POST SIZE	8-5-93
10-01-92	REDRAWN & REVISED	10-1-92
08-15-91	REVISED WASHER NOTE	8-15-91
08-02-90	REV. GEN. NOTE & DEPTH OF ANC. POST IN ROCK	8-2-90
07-15-88	REVISED SECTION 3 & GENERAL NOTES	
03-04-88	REV. ANCHOR POST ,ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-09-87	REDRAWN & REVISED	802-10-9-87
DATE	REVISION	FILMED

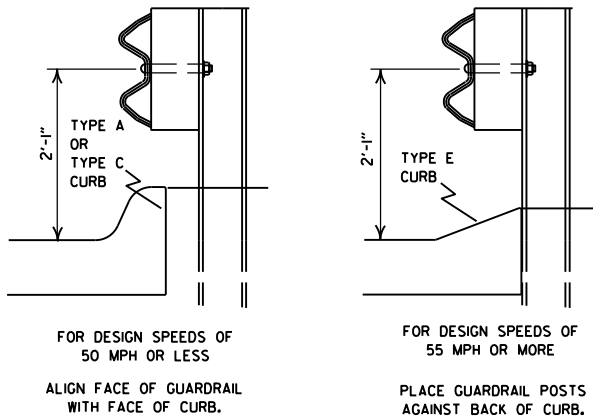
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-6

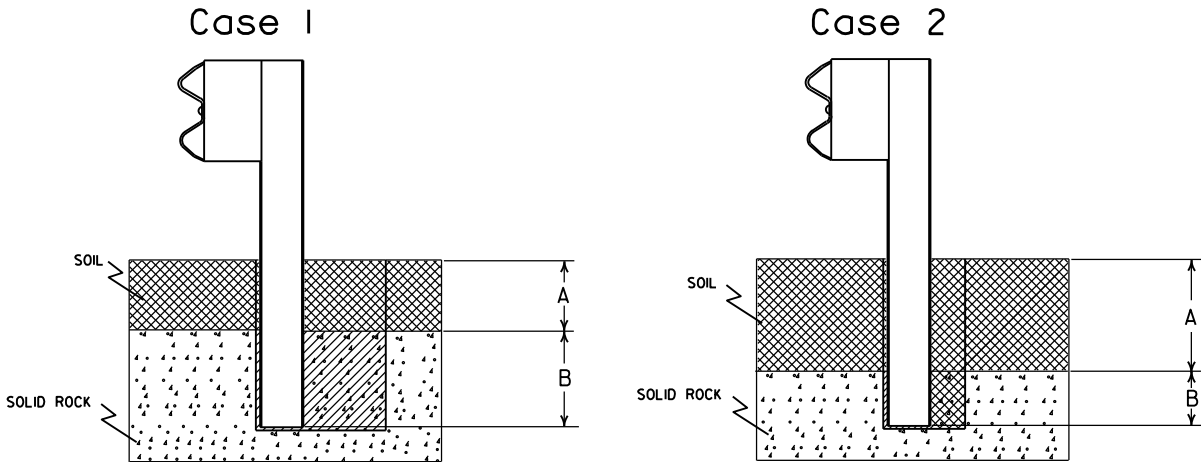
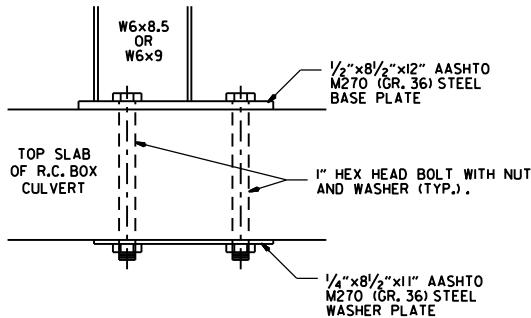
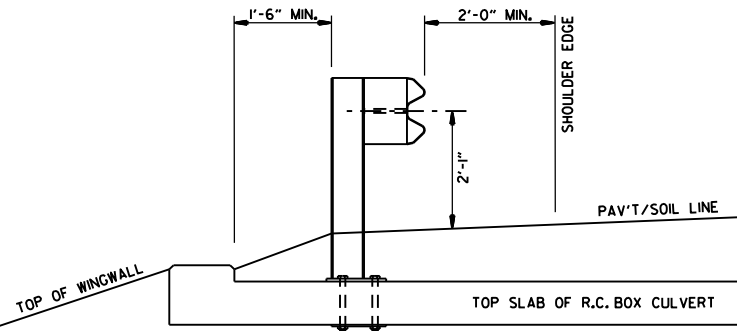


Note: Bolts, nuts, washers and plates shall be galvanized in accordance with Section 807 of the Standard Specifications.



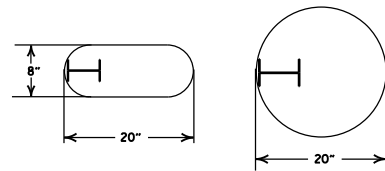
DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

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.



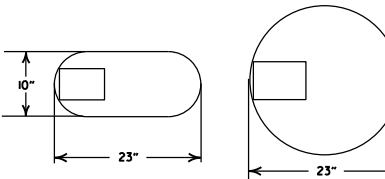
Plan View Steel Posts

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".

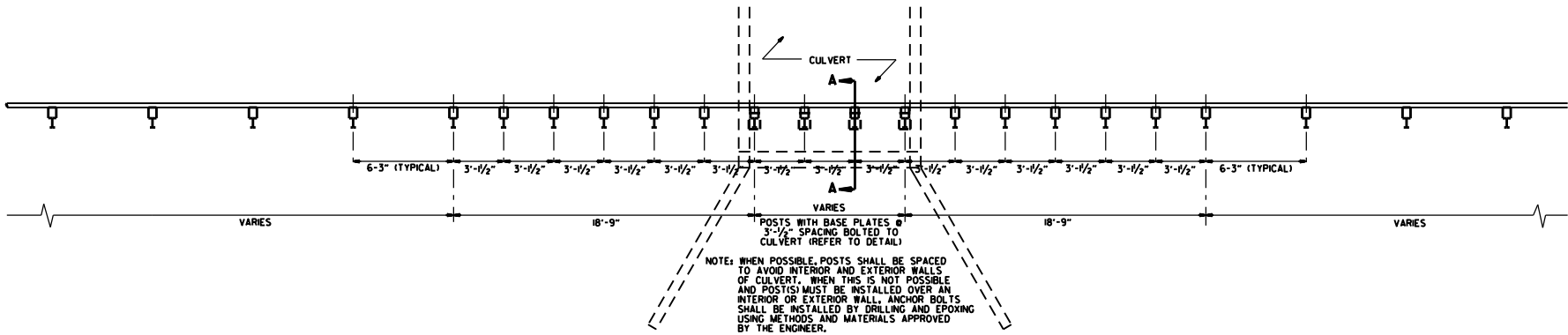
Zone A: Backfill according to Section 617.03(a).

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)



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

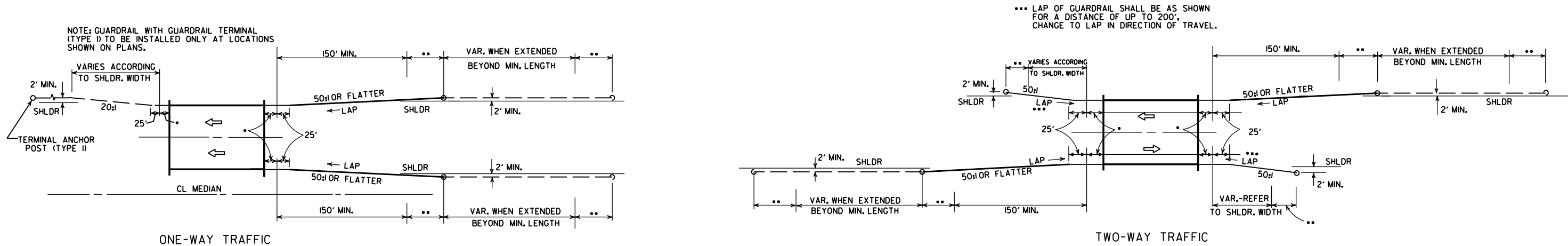
NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARDRAIL POSTS AS SHOWN ON STD. DRWG. GR-6.

DATE	REVISION	FILED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARDRAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARDRAIL CONNECTION TO R.C. BOX CULVT., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARDRAIL PLACE. BEHIND CURB & DET. OF POSTPLACE. IN SOLID ROCK	
04-03-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
06-02-94	REVISED ALTERNATE POST SIZE	
08-05-93	REVISED STEEL POST SIZE	
10-01-92	REDRAWN & REVISED	10-1-92
08-02-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
07-15-88	CONFORMED TO 1988 SPECS	
03-04-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-09-87	REDRAWN & REVISED	803-10-9-87

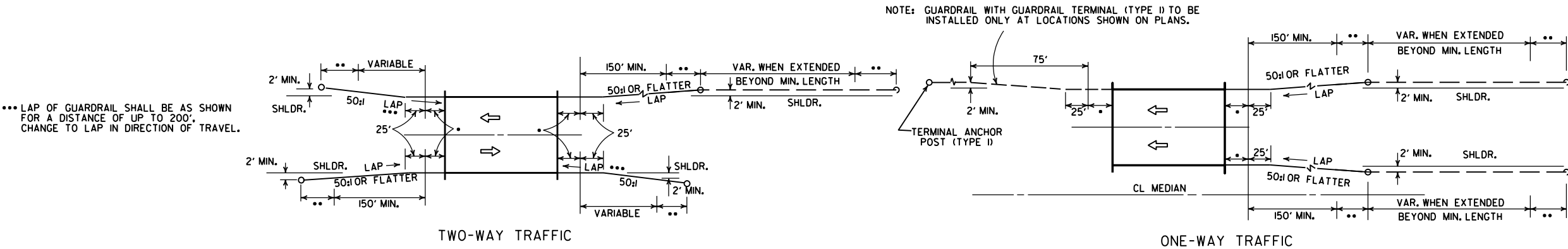
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

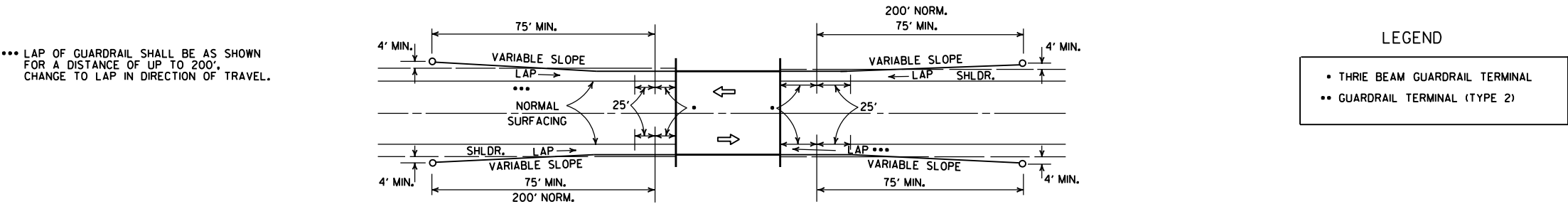
STANDARD DRAWING GR-7



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

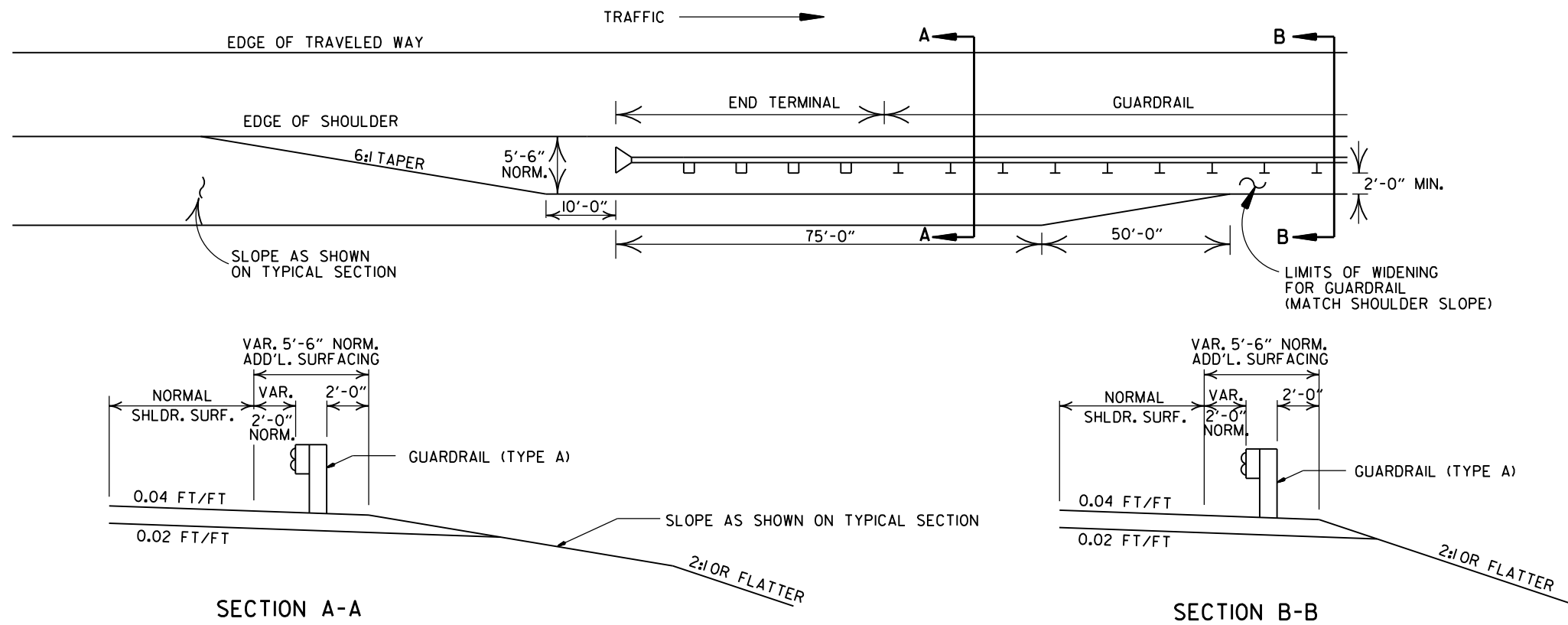


METHOD OF INSTALLATION OF GUARDRAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

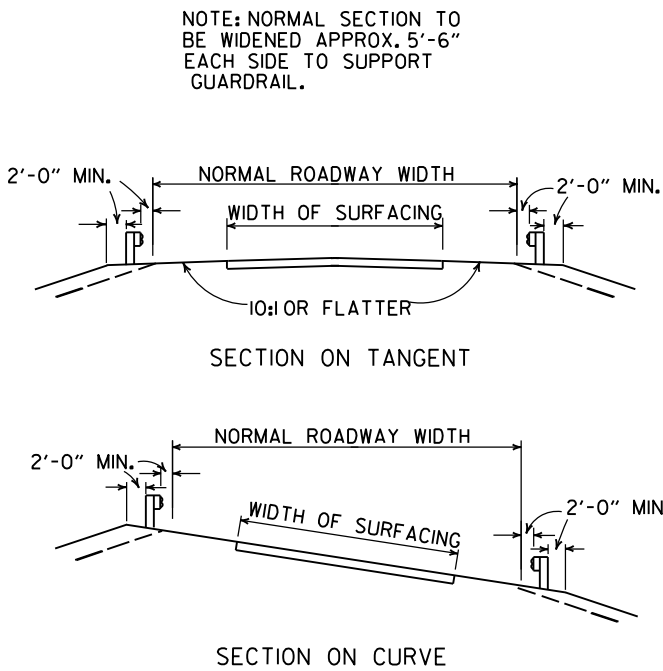


METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)

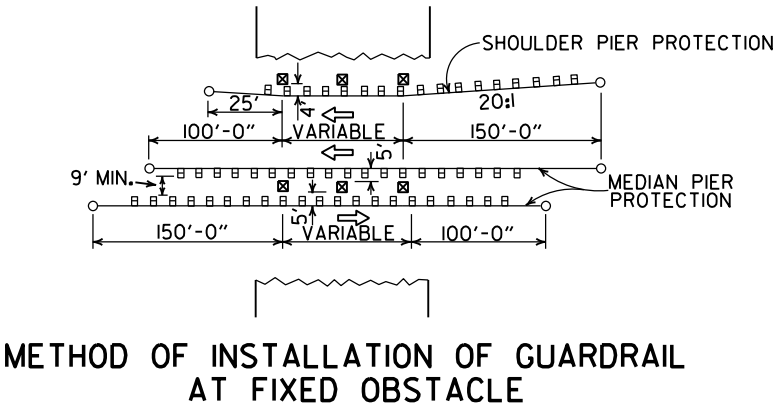
			ARKANSAS STATE HIGHWAY COMMISSION
11-07-19	RENUMBERED AND RENAMED		GUARDRAIL DETAILS
4-17-08	REVISED LAYOUTS		
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS		
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)		
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00	STANDARD DRAWING GR-8
6-26-97	REVISED LAYOUT		
10-1-92	REDRAWN & REVISED	10-1-92	
10-9-87	ADDED NOTE		
DATE	REVISION	DATE	FILM



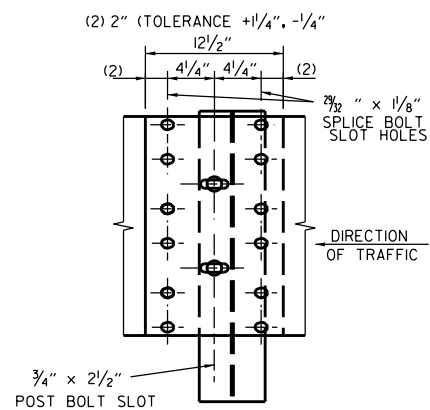
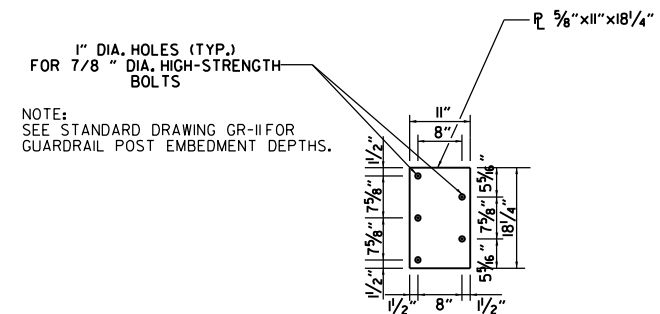
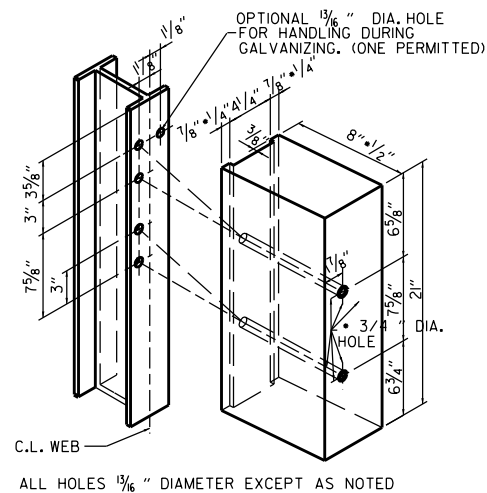
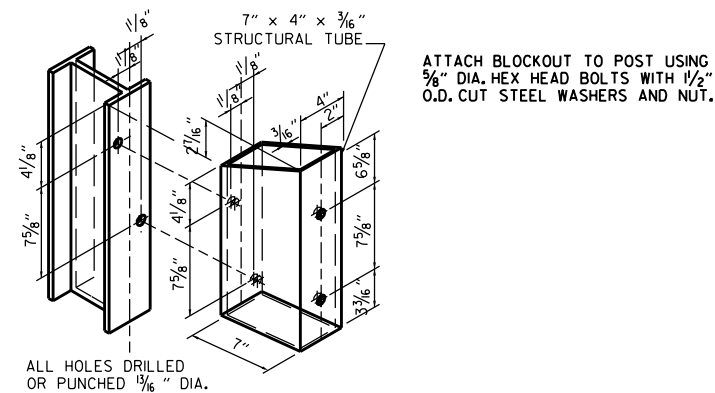
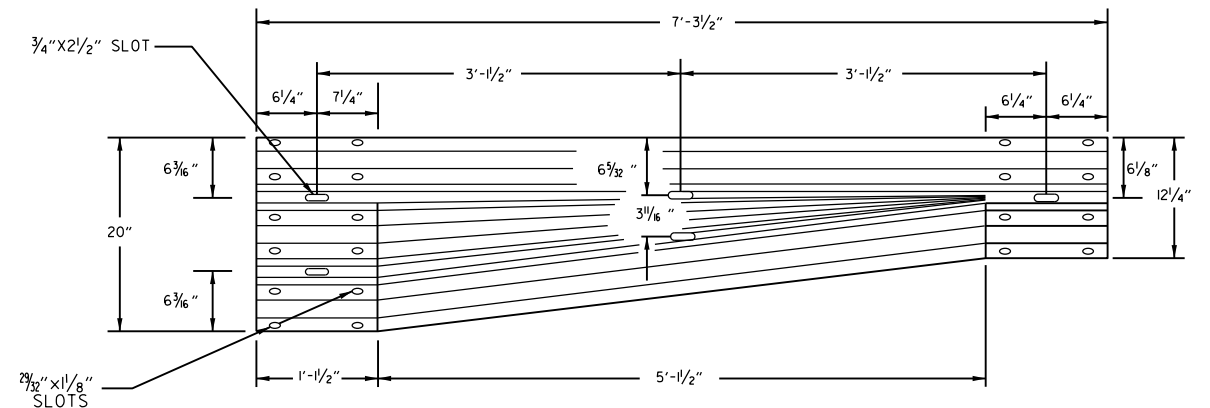
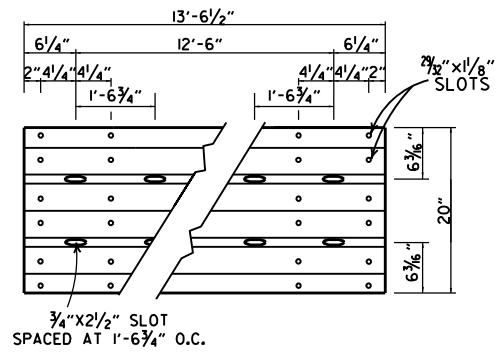
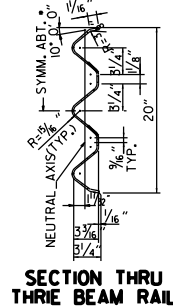
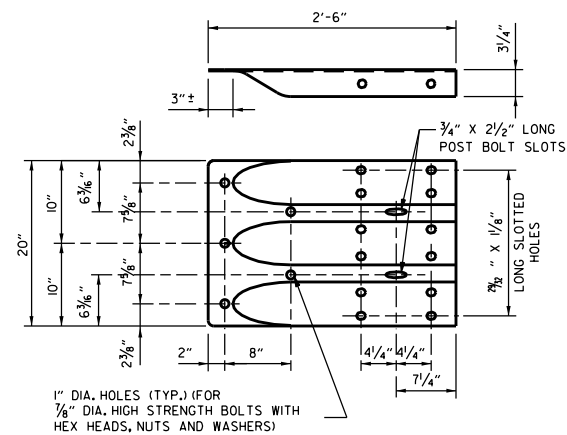
DETAILS OF WIDENING FOR GUARDRAIL



DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY



			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
			STANDARD DRAWING GR-9
11-07-19	RENUMBERED AND RENAMED		
4-17-08	MINOR REVISION		
11-10-05	DRAWN		
DATE	REVISION	DATE FILED	



GENERAL NOTES:

THE THREE 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 3"4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

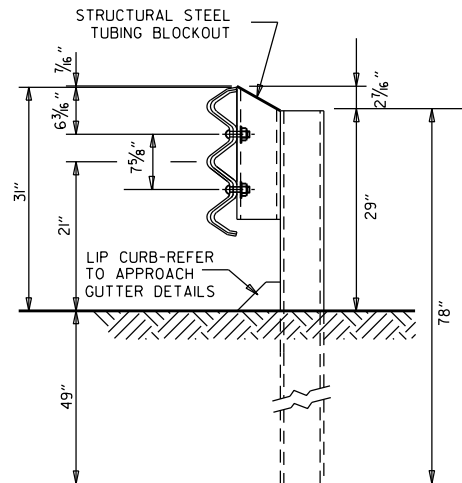
REFER TO STD. DRWG. GR-II FOR POST DETAILS.

USE THREE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

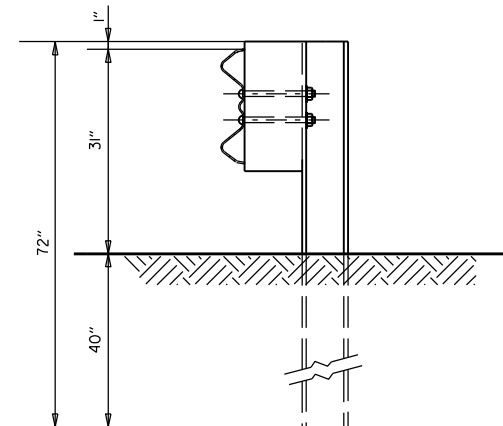
THREE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 350 f SOUTHERN PINE.

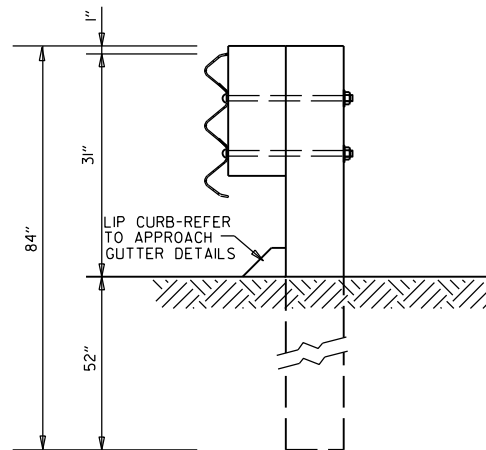
II-07-19	RENAMED AND REVISED REFERENCES		
II-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THREE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12		
07-14-10	RAISED HEIGHT OF W-BEAM 1"		
II-29-07	ADDED PLASTIC BLOCKOUTS		ARKANSAS STATE HIGHWAY COMMISSION
II-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT		
II-18-04	REVISED GENERAL NOTES		
10-9-03	REVISED GENERAL NOTES		
04-10-03	REVISED GENERAL NOTES		GUARDRAIL DETAILS
08-22-02	REVISED NOTE (2)		
06-29-00	MOVED DIMENSION LINES		
05-18-00	ADDED NOTE		
03-30-00	DRAWN & ISSUED		STANDARD DRAWING GR-10
DATE	REVISION	FILMED	



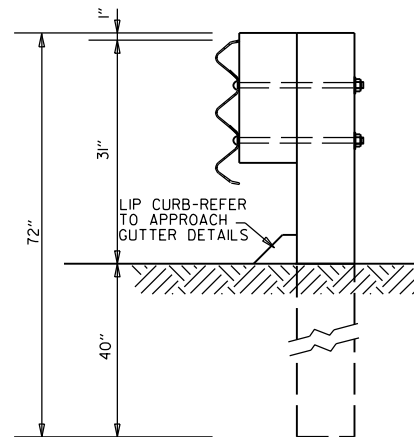
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



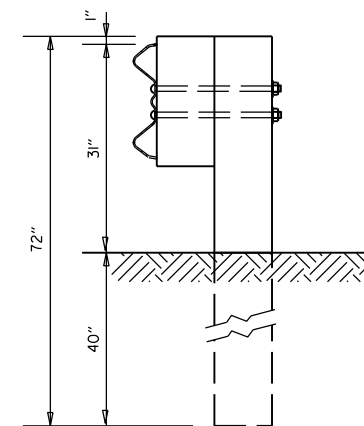
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



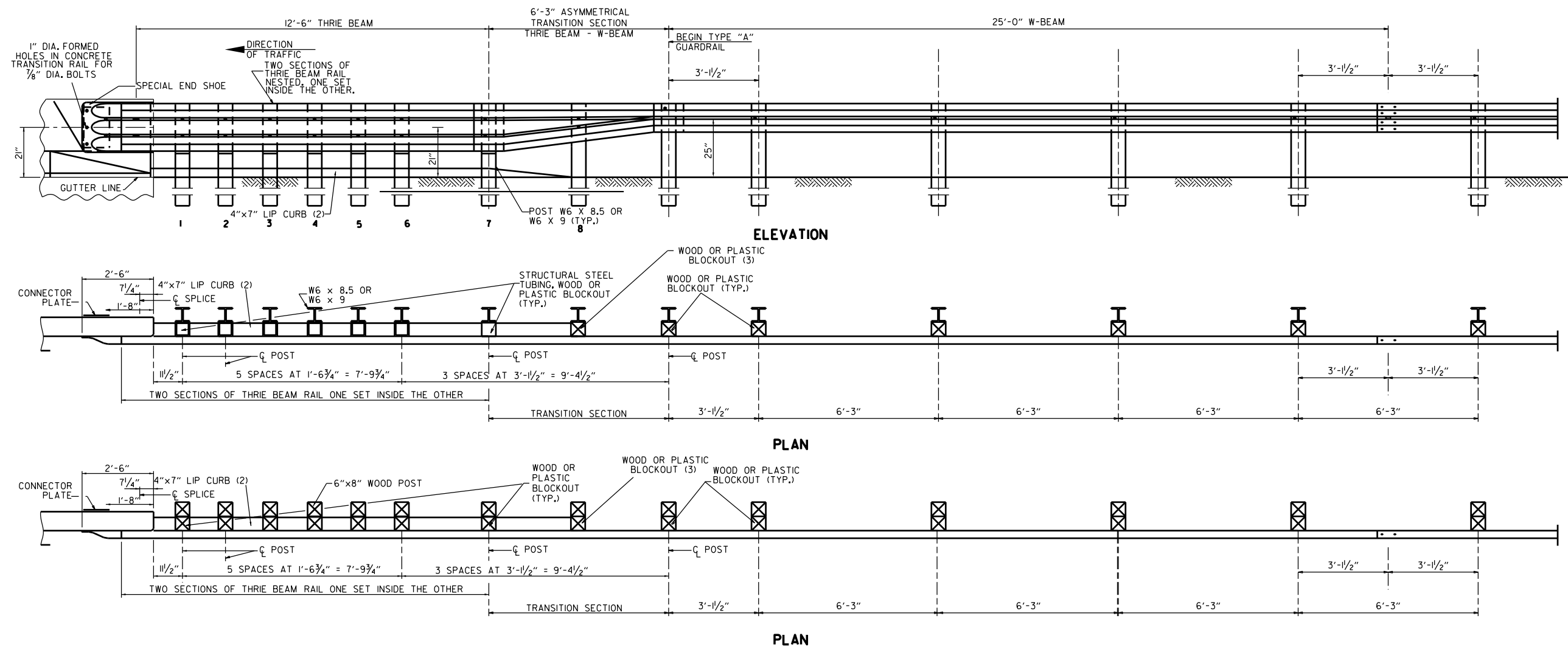
W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

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 9.7f (1400 f) OR NO. 1 350 f SOUTHERN PINE.

			ARKANSAS STATE HIGHWAY COMMISSION
			GUARDRAIL DETAILS
11-07-19	RENAMED		
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-II		STANDARD DRAWING GR-II
07-14-10	REVISED POST 8 DIMENSIONS		
11-29-07	ADDED PLASTIC BLOCKOUTS		
08-22-02	REVISED LIP CURB NOTE		
03-30-00	DRAWN & ISSUED		
DATE	REVISION	FILMED	



- (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 GUARDRAIL 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 3/4" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.

REFER TO STD. DRWG. GR-II FOR POST DETAILS.

USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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

POSTS SHALL NOT BE PLACED AT SPLICE LOCATIONS ALONG W-BEAM RAILS.

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

ARKANSAS STATE HIGHWAY COMMISSION		
GUARDRAIL DETAILS		
STANDARD DRAWING GR-12		
05-14-20	REVISED NOTES	
11-07-19	RENAMED & REVISED REFERENCES	
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED	
DATE	REVISION	FILMED

REINFORCED CONCRETE
ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDOT NOMINAL	AASHTO M 206	ARDOT NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26¾	27
42	51½	51	31¾	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	87½	87
120	154	154	96¾	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE
HORIZONTAL ELLIPTICAL
PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

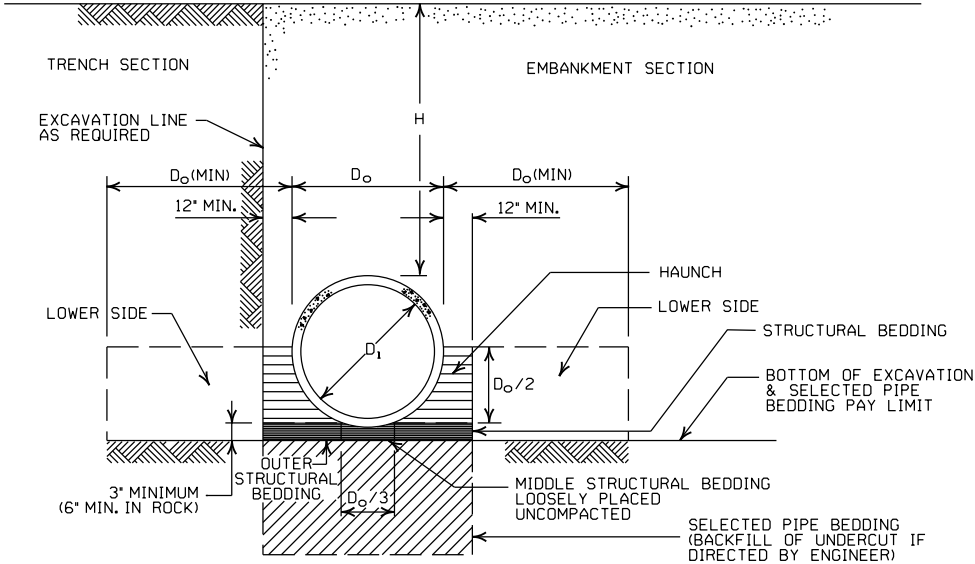
- LEGEND -

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

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION 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.

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 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.

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.

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	
DATE	REVISION	DATE FILMED

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
2 3/4 INCH BY 1/2 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 3/4 INCH BY 1/2 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)	MINIMUM 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 3/4 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 3/4 INCH BY 1/2 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	3 1/2	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	0.135	3	15	
66	77x52	8	0.168	3	15	0.164	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				① FOR MINIMUM COVER VALUES, "H" SHALL ② WHERE THE STANDARD 2 2/3" x 1/2" COR WITH A 3' x 1' OR 5' x 1' CORRUGATION OR GREATER THAN THE MAXIMUM FILL		
			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.

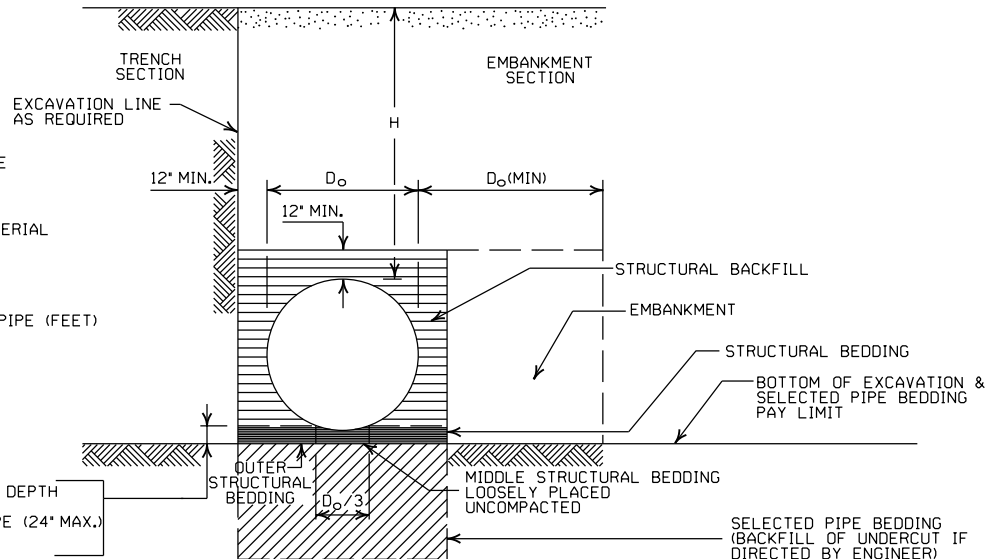
EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL		ALUMINUM	
ZINC COATED	UNCOATED		
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)

IN SOIL-MIN. EQUALS TWICE CORRUGATION DEPTH
IN ROCK-MIN. EQUALS GREATER OF:
1/2" PER FOOT OF FILL OVER PIPE (24" MAX.)
TWICE CORRUGATION DEPTH



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. INSTALLATION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2 3/4" X 1/2" 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 DEPARTMENT OF TRANSPORTATION 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 1/2" 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.

2-27-14	REVISED GENERAL NOTE 1	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT
FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1



INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4)

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.
 - SM3 WILL NOT BE ALLOWED.
 - STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/2 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.
- STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF HDPE PIPE.

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" ≥ 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

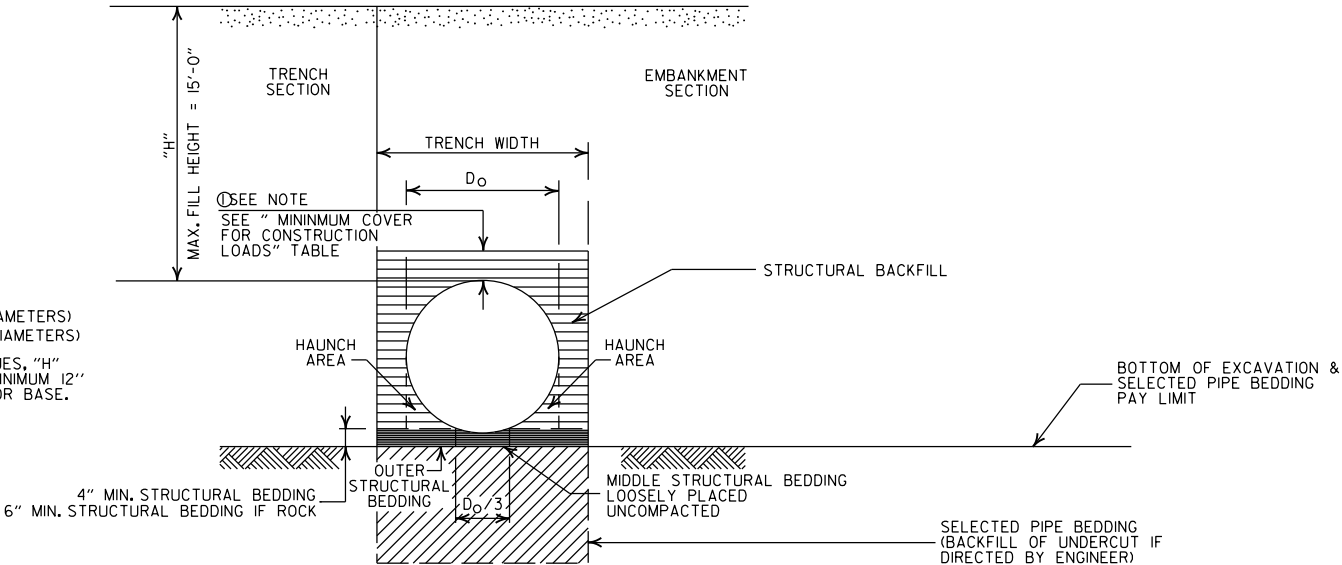
MINIMUM COVER VALUES, "H"
SHALL INCLUDE A MINIMUM 12"
OF PAVEMENT AND/OR BASE.

MULTIPLE INSTALLATION OF
HIGH DENSITY POLYETHYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

②MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

- LEGEND -

- H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
- ===== = STRUCTURAL BACKFILL MATERIAL
===== = UNDISTURBED SOIL

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

			ARKANSAS STATE HIGHWAY COMMISSION
			PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)
			STANDARD DRAWING PCP-1
2-27-14	REVISED GENERAL NOTE 1.		
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE		
11-17-10	ISSUED		
DATE	REVISION	DATE FILMED	

INSTALLATION TYPE	•• MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 2	•SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4)

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1/4 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" ≥ 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"

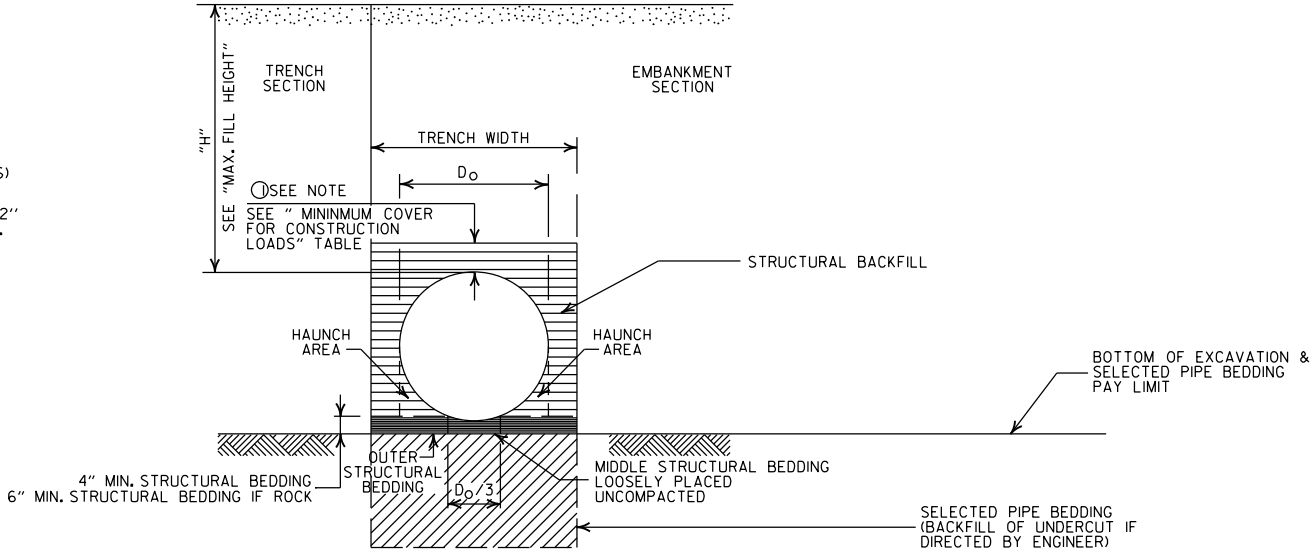
MULTIPLE INSTALLATION OF
PVC PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"

MAXIMUM FILL HEIGHT
BASED ON STRUCTURAL BACKFILL

PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

① NOTE:
12" MIN. (18" - 36" DIAMETERS)
MINIMUM COVER VALUE, "H"
SHALL INCLUDE A MINIMUM 12"
OF PAVEMENT AND/OR BASE.



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

- LEGEND -

H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

===== = STRUCTURAL BACKFILL MATERIAL
||||||| = UNDISTURBED SOIL

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT
(PVC F949)

STANDARD DRAWING PCP-2



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

* SM3 WILL NOT BE ALLOWED.

** STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1 INCH. STRUCTURAL BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, STONES LARGER THAN 1.50 INCH IN GREATEST DIMENSION, OR FROZEN LUMPS.

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

MULTIPLE INSTALLATION OF POLYPROPYLENE PIPES

PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"
60"	5'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

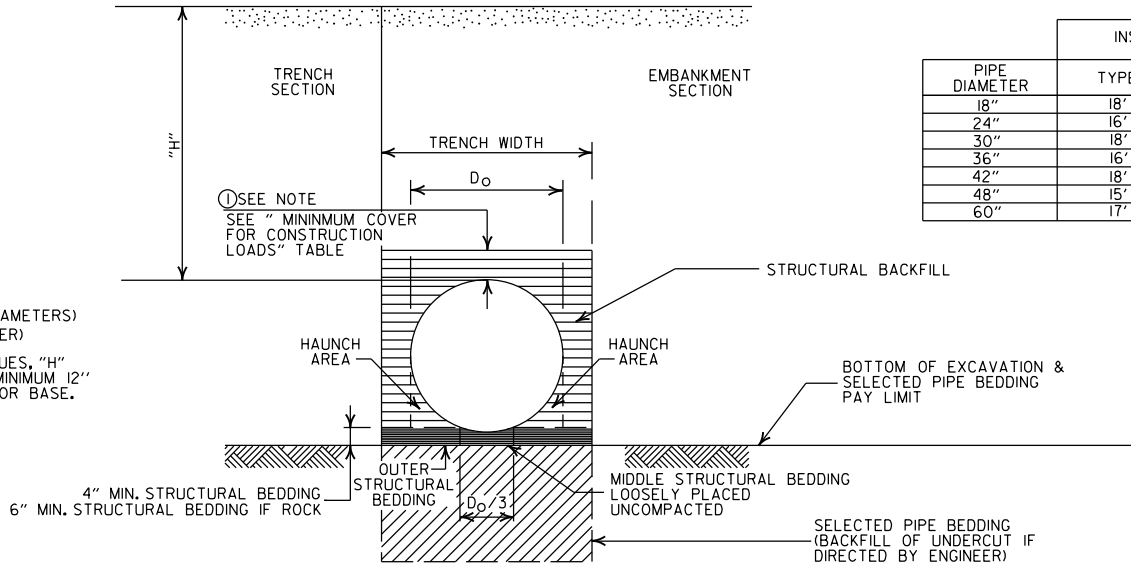
PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"
60"	10'-0"	15'-0"

① NOTE:
12" MIN. (18" - 42" DIAMETERS)
24" MIN. (60" DIAMETER)
MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-150.0 (KIPS)
36" OR LESS	2'-0"	2'-6"	3'-0"	3'-0"
42" OR GREATER	3'-0"	3'-0"	3'-6"	4'-0"

② MINIMUM COVER SHALL BE MEASURED FROM TOP OF PIPE TO TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE. THE SURFACE SHALL BE MAINTAINED.



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. THE STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE LAYERS SHALL BE BROUGHT UP EVENLY AND SIMULTANEOUSLY TO THE ELEVATION OF THE MINIMUM COVER.
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS, WEIGHTING OR OTHER APPROVED METHODS IN ORDER TO HELP MAINTAIN GRADE AND ALIGNMENT.

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M330, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE, IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

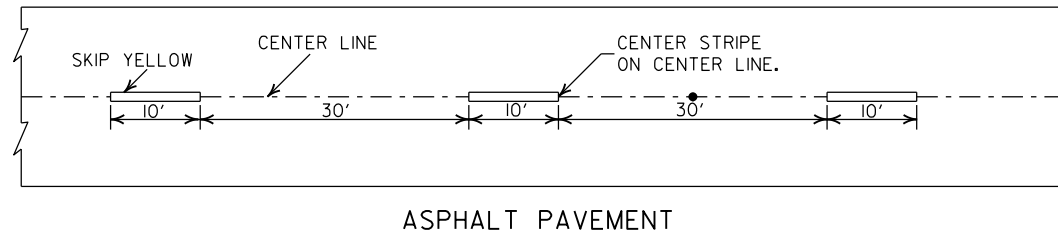
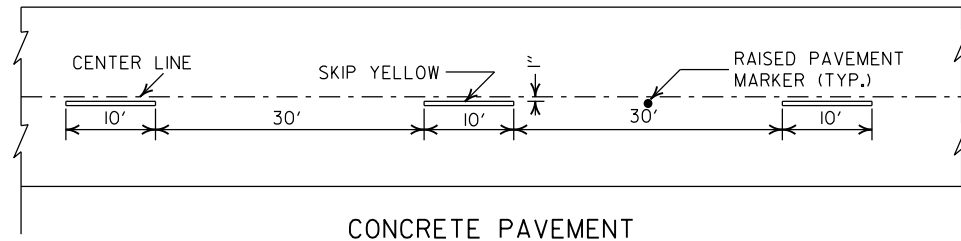
- LEGEND -

H = FILL HEIGHT (FT.)
D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM

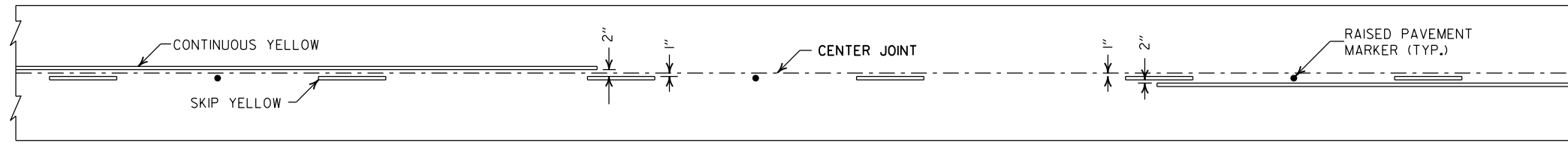
===== STRUCTURAL BACKFILL MATERIAL
XXXXXX UNDISTURBED SOIL

02-27-20	REVISED	
11-07-19	ISSUED	
DATE	REVISION	DATE FILMED

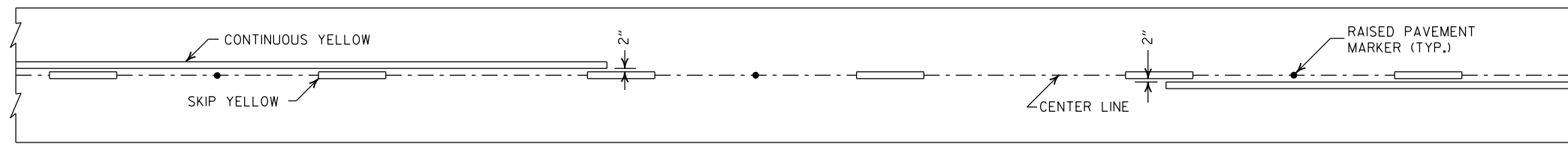
ARKANSAS STATE HIGHWAY COMMISSION	
PLASTIC PIPE CULVERT (POLYPROPYLENE)	
STANDARD DRAWING	PCP-3 



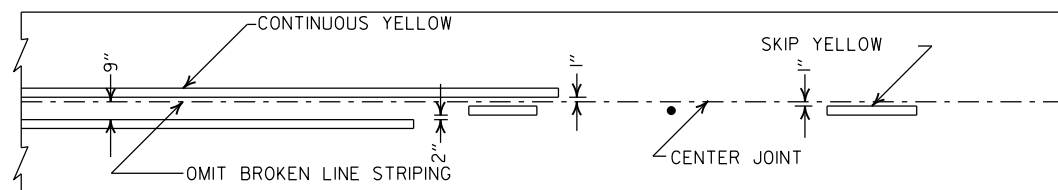
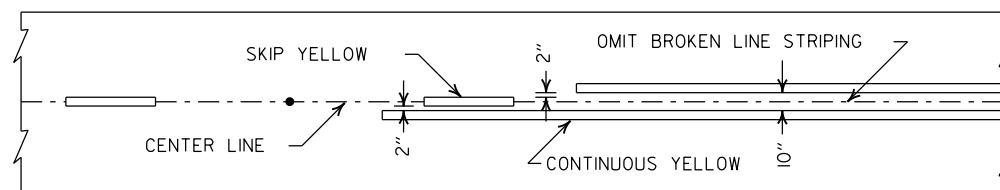
BROKEN LINE STRIPING



SOLID LINE STRIPING ON CONCRETE PAVEMENT



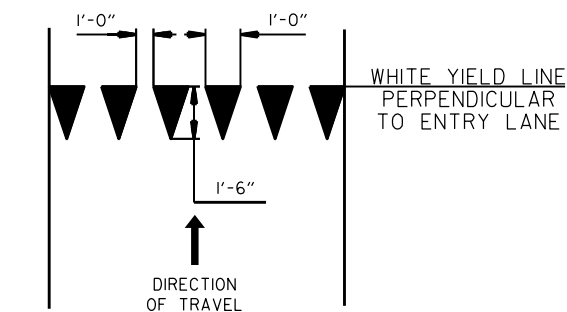
SOLID LINE STRIPING ON ASPHALT PAVEMENT



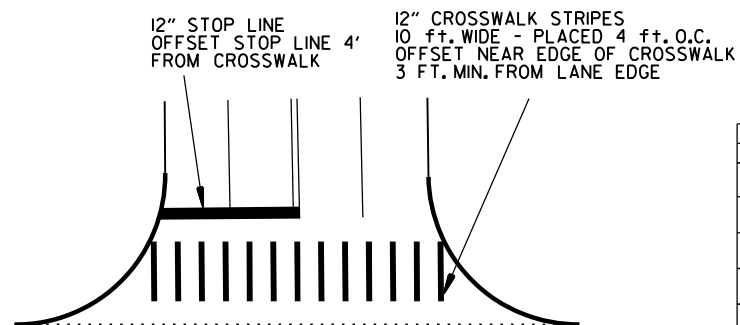
ASPHALT PAVEMENT

CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL

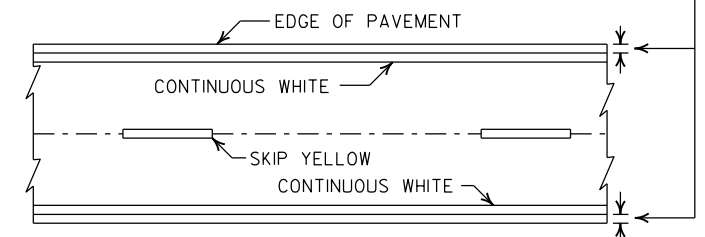


CROSSWALK AND STOP LINE DETAILS

NOTES:

1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.

2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT

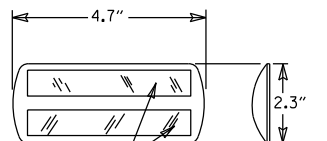


PAVEMENT EDGE LINE MARKING

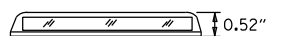
NOTE:
THE RED LENS OF THE
TYPE II R.P.M. SHALL
FACE THE INCORRECT
TRAFFIC MOVEMENT.

TYPE II
RED/CLEAR OR
YELLOW/YELLOW

PRISMATIC REFLECTOR



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 ARDOT QUALIFIED
PRODUCTS LIST.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

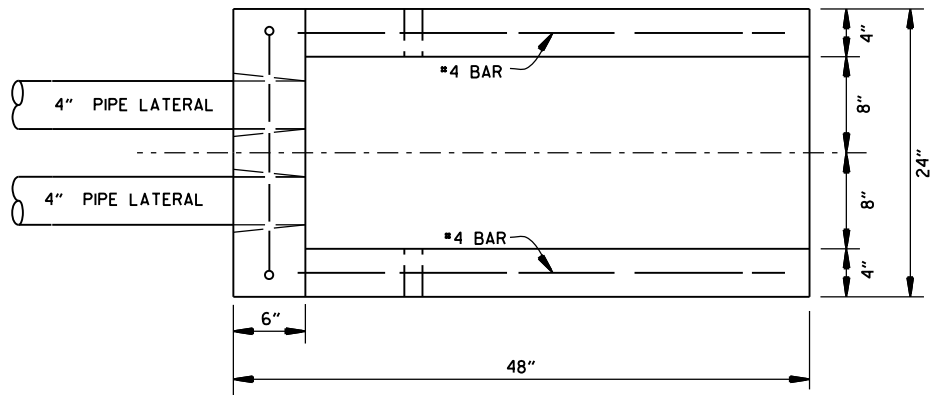
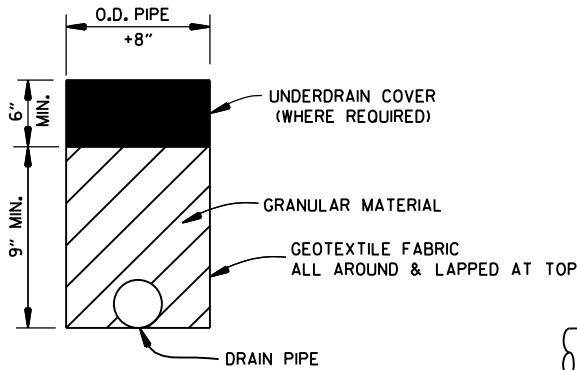
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & 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
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

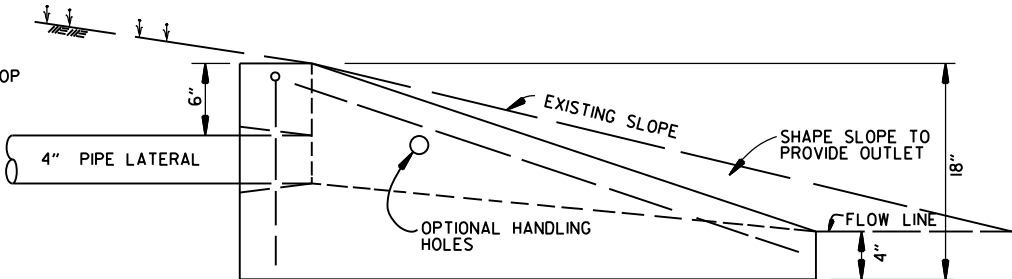
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

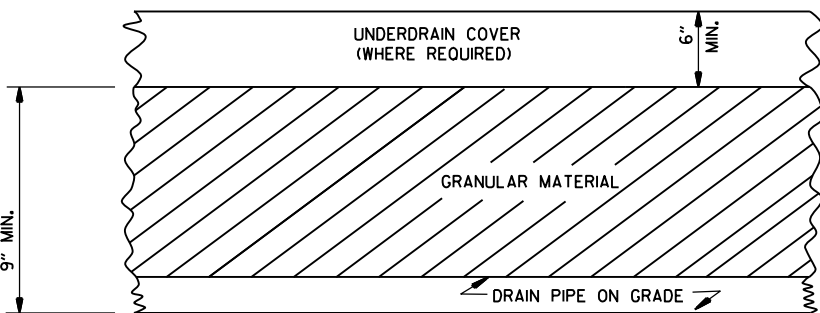
NOTE:
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



PLAN VIEW



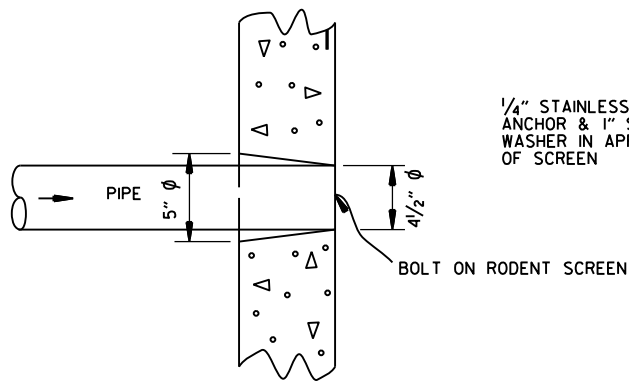
SIDE VIEW



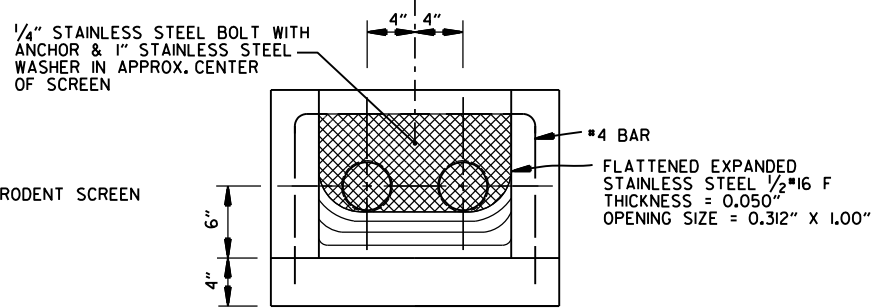
DETAILS OF PIPE UNDERDRAIN

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.
2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.
3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."
4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.
5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."
6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."
7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.



DETAIL OF HOLE FOR 4" PIPE

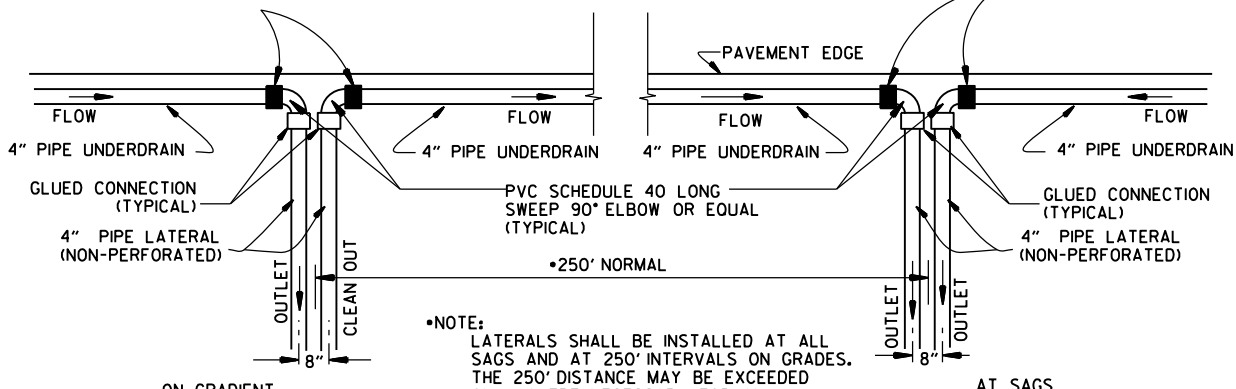


FRONT VIEW
(DETAIL OF RODENT SCREEN)

FERNCO 1056-44 (4" CI/PLASTIC) OR
FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC)
COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)

UNDERDRAIN OUTLET PROTECTORS

FERNCO 1056-44 (4" CI/PLASTIC) OR
FERNCO 1051-44 (4" AC/DI OR 4" CI/PLASTIC)
COUPLING OR EQUAL WITH 2 CLAMPS (TYPICAL)



NOTE:
LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250' INTERVALS ON GRADES. THE 250' DISTANCE MAY BE EXCEEDED ONLY WHERE NECESSARY FOR AN ACCEPTABLE OUTLET.

DETAIL OF PIPE UNDERDRAIN LATERALS
WHEN PLACED ALONG PAVEMENT EDGE

NOTE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D 1785 (LATEST REVISION) FOR SCHEDULE 40 PIPE.

12-8-16	ADDED NOTES FOR PIPE UNDERDRAINS, REVISED RODENT SCREEN DETAIL AND NOTES, REMOVED NOTE 1 FOR GRANULAR MATERIAL, ADDED NOTE FOR GEOTEXTILE FABRIC	
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE: 5 1/2" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYETHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88
DATE	REVISION	DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		RC	96	
0° 45'	NC			NC			NC			NC			RC	96		RC	96		0.024	106		0.026	110		0.030	120		0.030	120	
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139		0.038	139	
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.044	154		0.046	158		0.046	158	
1° 30'	NC			RC	78		0.022	88		0.028	108		0.032	125		0.038	139		0.044	154		0.050	168		0.056	182		0.056	182	
1° 45'	RC	72		RC	78		0.026	97		0.030	113		0.036	134		0.044	154		0.050	168		0.056	182		0.064	202		0.064	202	
2° 00'	RC	72		0.024	86		0.028	101		0.034	122		0.042	149		0.048	163		0.056	182		0.064	202		0.070	216		0.070	216	
2° 15'	RC	72		0.026	90		0.032	109		0.038	131		0.046	158		0.054	178		0.062	197		0.070	216		0.078	235		0.078	235	
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	211		0.076	230		0.086	254		0.086	254	
2° 45'	0.024	79		0.030	98		0.038	122		0.046	149		0.054	178		0.064	202		0.072	221		0.082	245		0.092	269		0.092	269	
3° 00'	0.026	83		0.034	105		0.040	126		0.050	158		0.058	187		0.068	211		0.078	235		0.088	259		0.098	283		0.098	283	
3° 15'	0.028	86		0.036	109		0.044	134		0.052	162		0.062	197		0.072	221		0.082	245		0.092	269		0.100	288		0.100	288	
3° 30'	0.030	90		0.038	113		0.046	139		0.056	171		0.066	206		0.076	230		0.086	254		0.096	278		0.100	288		0.100	288	
3° 45'	0.032	93		0.040	117		0.050	147		0.058	176		0.070	216		0.080	240		0.090	264		0.098	283		0.100	288		0.100	288	
4° 00'	0.034	97		0.042	121		0.052	151		0.062	185		0.072	221		0.084	250		0.094	274		0.100	288		0.100	288		0.100	288	
4° 15'	0.036	100		0.044	125		0.054	155		0.064	189		0.076	230		0.086	254		0.096	278		0.100	288		0.100	288		0.100	288	
4° 30'	0.036	100		0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283		0.100	288		0.100	288		0.100	288	
4° 45'	0.038	104		0.048	133		0.060	168		0.070	203		0.082	245		0.092	269		0.098	283		0.100	288		0.100	288		0.100	288	
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207		0.084	250		0.094	274		0.098	283		0.100	288		0.100	288		0.100	288	
5° 30'	0.044	115		0.054	144		0.066	181		0.078	221		0.088	259		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
6° 30'	0.050	126		0.062	160		0.074	198		0.086	239		0.096	278		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257		0.098	283		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
8° 30'	0.060	144		0.072	179		0.086	223		0.096	261		0.098	283		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
9° 00'	0.062	148		0.076	187		0.088	227		0.098	266		0.098	283		0.098	283		0.098	283		0.100	288		0.100	288		0.100	288	
9° 30'	0.064	151		0.078	191		0.092	235		0.100	270		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288		0.100	288	
10° 00'	0.066	155		0.080	195		0.094	240		0.094	240		0.094	240		0.094	240		0.094	240		0.094	240		0.094	240		0.094	240	
11° 00'	0.070	162		0.084	203		0.096	244		0.096	244		0.096	244		0.096	244		0.096	244		0.096	244		0.096	244		0.096	244	
12° 00'	0.074	169		0.088	211		0.098	248		0.098	248		0.098	248		0.098	248		0.098	248		0.098	248		0.098	248		0.098	248	
13° 00'	0.076	173		0.090	215		0.090	215		0.090	215		0.090	215		0.090	215		0.090	215		0.090	215		0.090	215		0.090	215	
14° 00'	0.080	180		0.094	222		0.094	222		0.094	222		0.094	222		0.094	222		0.094	222		0.094	222		0.094	222		0.094	222	
15° 00'	0.082	184		0.096	226		0.096	226		0.096	226		0.096	226		0.096	226		0.096	226		0.096	226		0.096	226		0.096	226	
16° 00'	0.086	191		0.098	230		0.098	230		0.098	230		0.098	230		0.098	230		0.098	230		0.098	230		0.098	230		0.098	230	
17° 00'	0.088	194		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
18° 00'	0.090	198		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
19° 00'	0.092	202		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
20° 00'	0.094	205		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
21° 00'	0.096	209		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
22° 00'	0.096	209		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
23° 00'	0.098	212		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
24° 00'	0.098	212		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	
25° 00'	0.100	216		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234		0.100	234	

ABBREVIATIONS

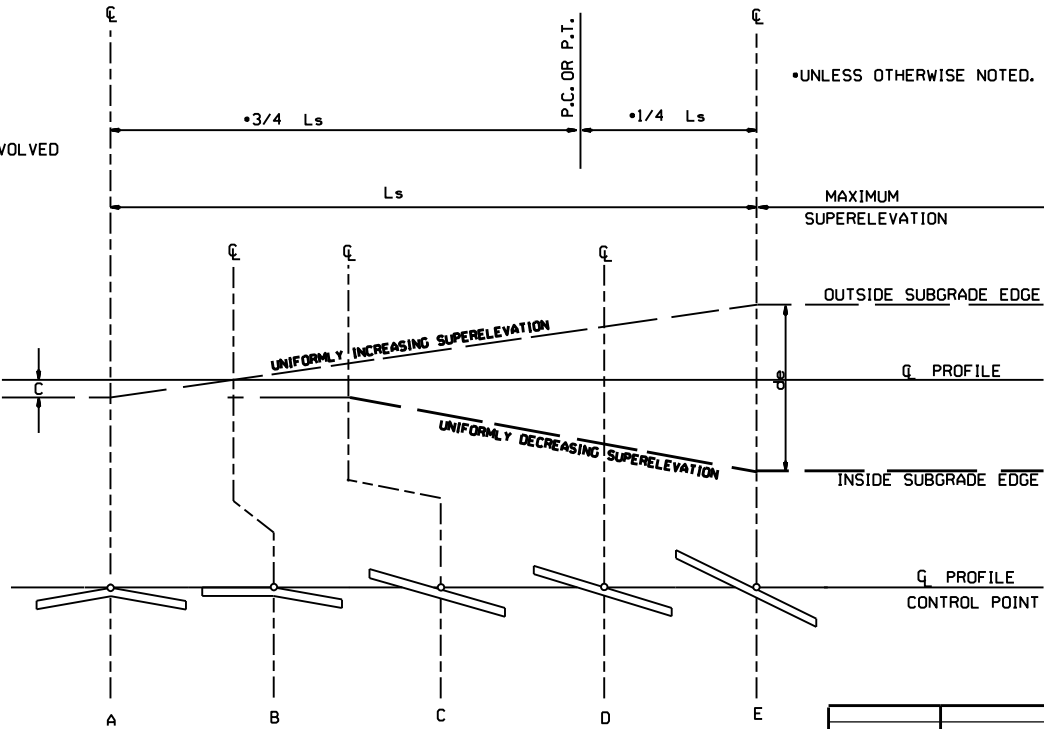
NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL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

- GENERAL NOTES
- ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
 - SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
 - LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
 - PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

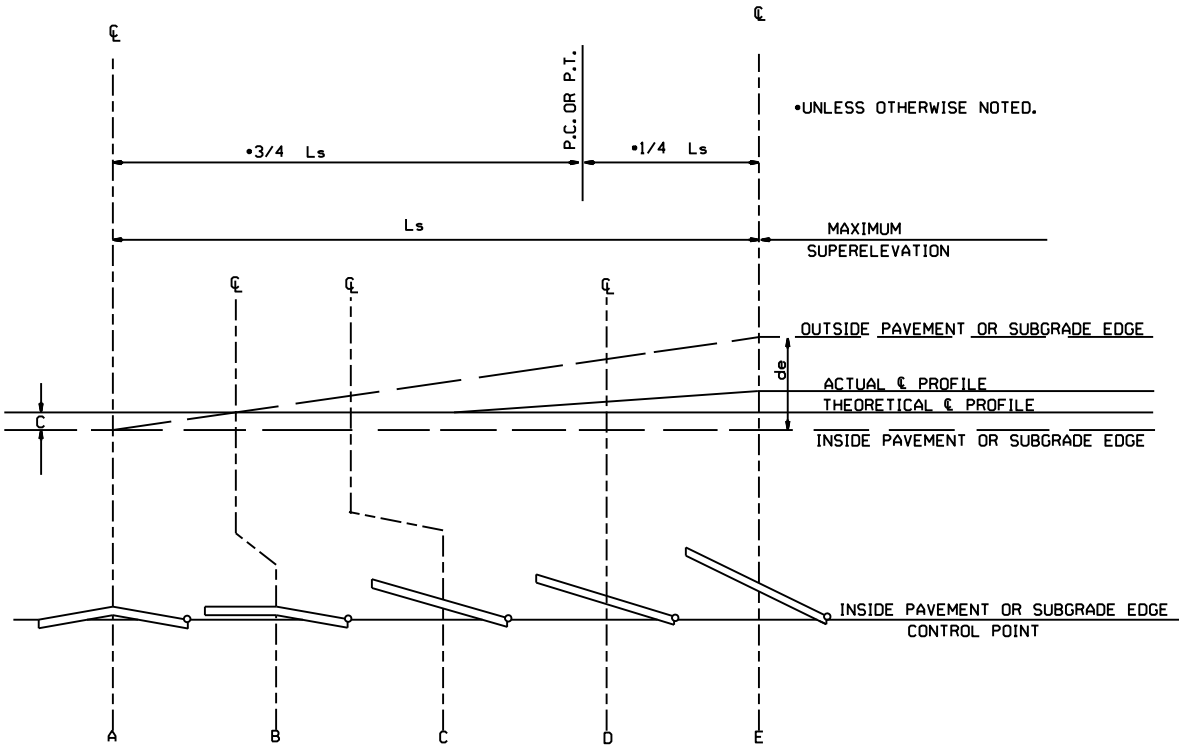
3 LANE UNDIVIDED - - - - +20%
4 LANE UNDIVIDED - - - - +50%
5 LANE UNDIVIDED - - - - +80%
6 LANE UNDIVIDED - - - - +100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.
RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

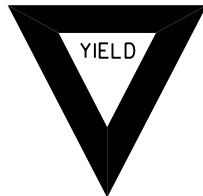
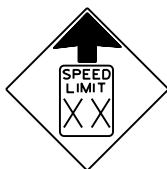
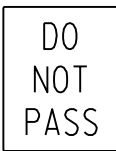
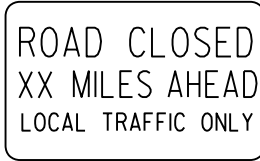
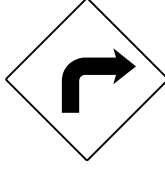
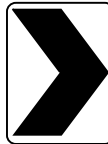
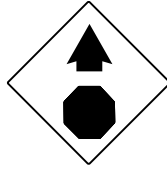
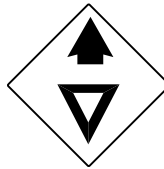
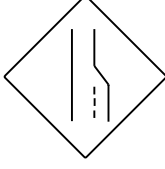
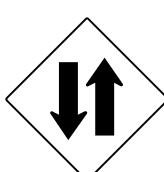
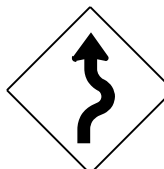
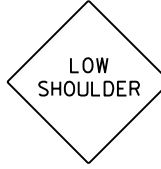
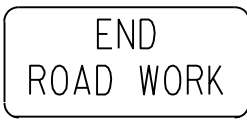
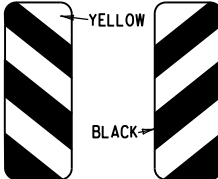
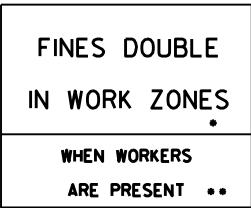
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

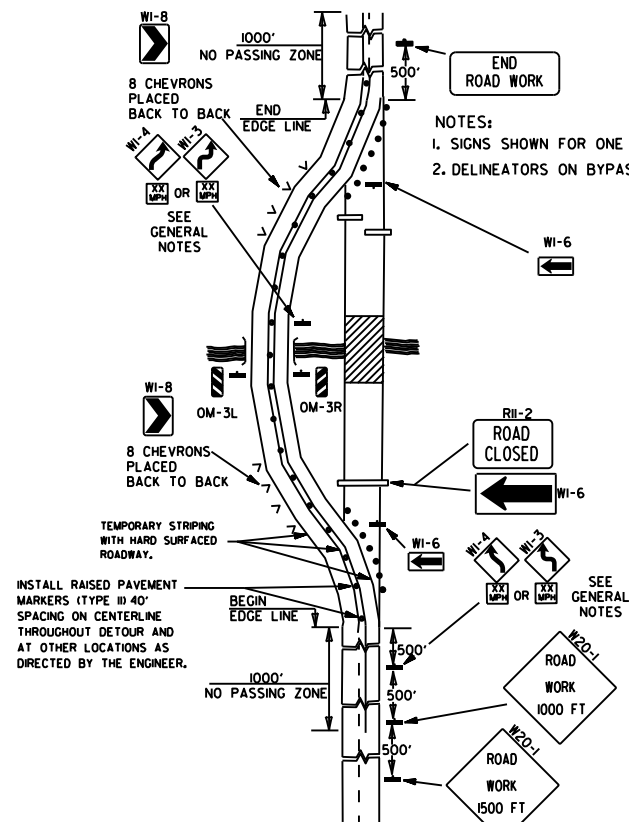


ST

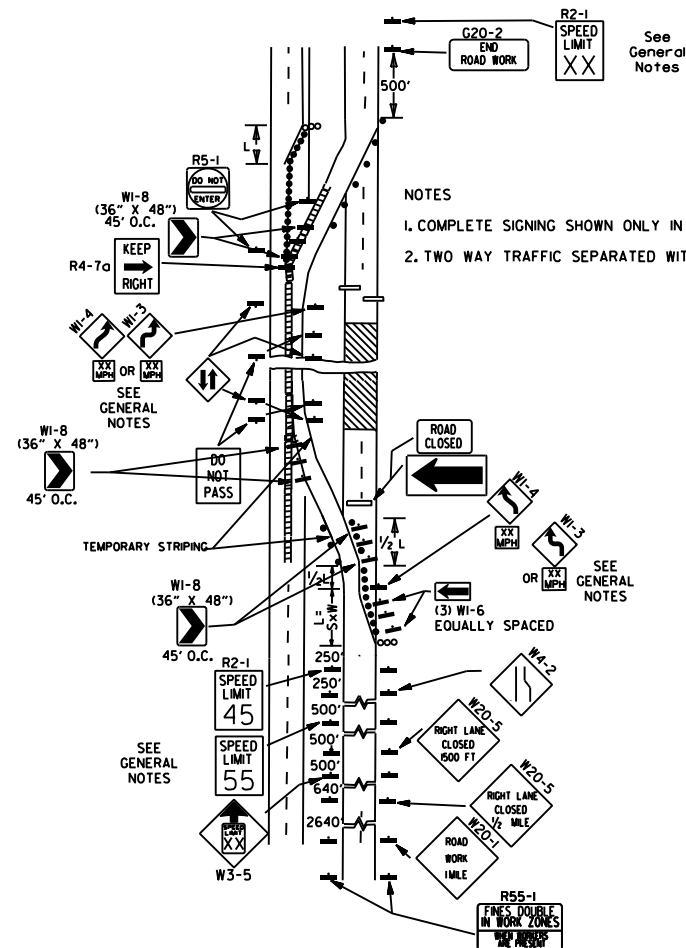
RI-I  STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"	RI-2  STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"	R2-I  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	W3-5  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	W3-5a  STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"	R4-I  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	R4-2  STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"	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 MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.
R5-I  STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"	R1I-2  48"x30"	R1I-3A  60"x30"	R1I-4  60"x30"	W2I-5a  STD. 36"x36" FWY. 48"x48"	WI-I  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-I  STD. 36"x36" SPECIAL 48"x48"	W3-2  STD. 36"x36" SPECIAL 48"x48"	W4-2  STD. 36"x36" FWY. 48"x48"	
W5-I  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"	W13-I  STD. 24"x24"	W20-I  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  18" 500 FEET 24" W16-2 STD. 36"x36" FWY. 48"x48"	W2I-2  STD. 30"x30" SPECIAL 36"x36"	W2I-5  STD. 30"x30" SPECIAL 36"x36"	W24-I  STD. 36"x36"	WI-4b  STD. 48"x48"	R56-I  STD. 18"x18"
W8-II  STD. 36"x36" FWY. 48"x48"	W8-9  STD. 36"x36" FWY. 48"x48"	G20-I  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-I  36"x60" • USE 6" C LETTERS •• USE 4" D LETTERS

II-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W2I-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
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	
DATE	REVISION	FILMED

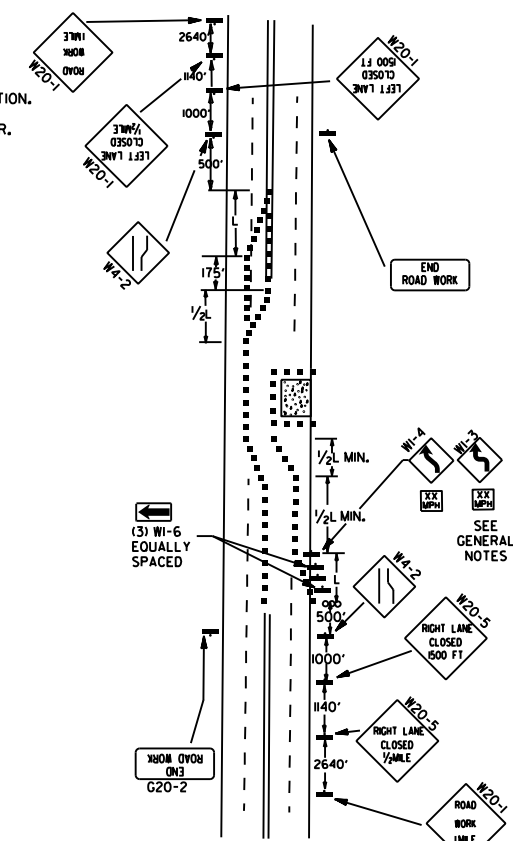
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-1



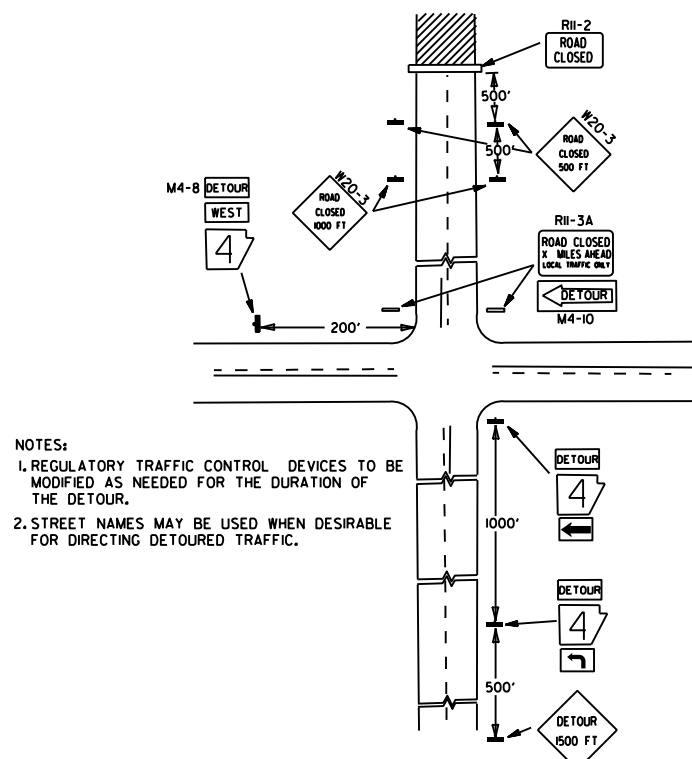
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



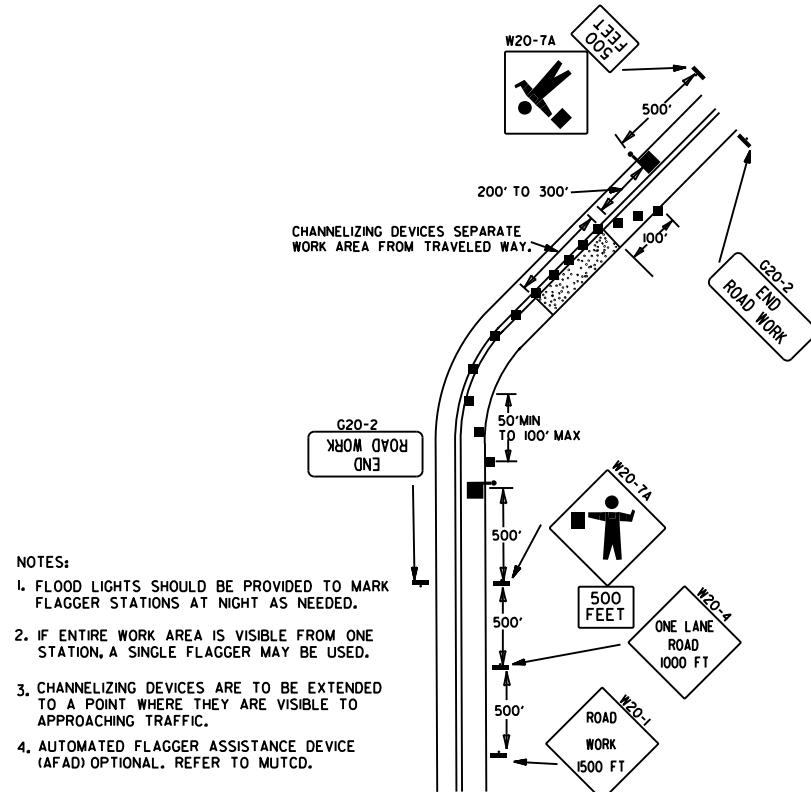
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



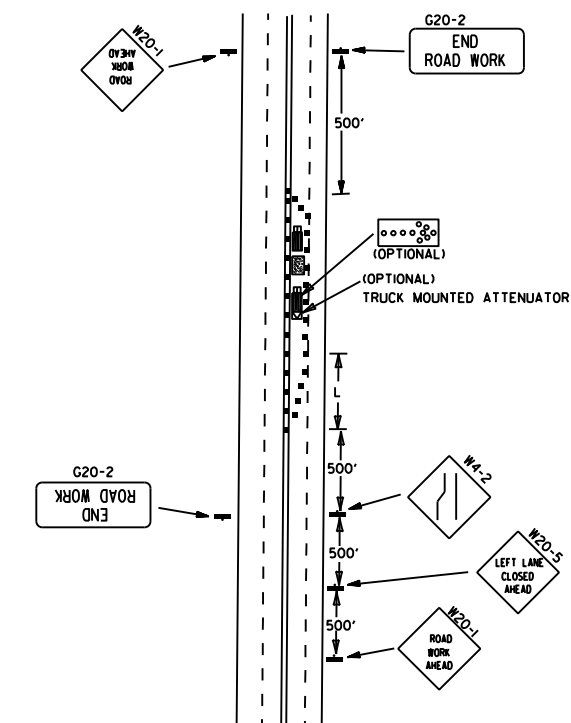
(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



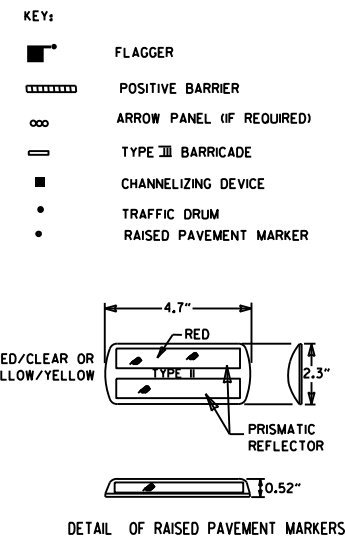
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



(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.



TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

$L = S \times W$ FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{W \times S^2}{60}$ 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.

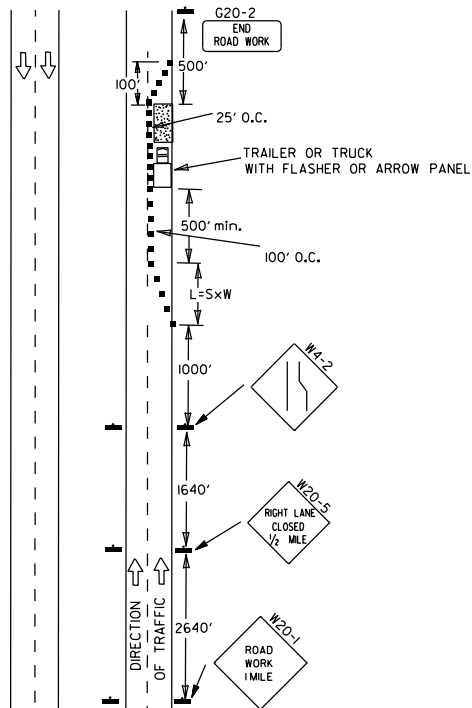
W = WIDTH OF OFFSET.

- GENERAL NOTES:
- THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
 - WHEN THE EXISTING SPEED LIMIT IS 55MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45MPH) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS.
 - 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.
 - 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.
 - 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.
 - WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
 - PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
 - 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.
 - 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 ARDOT QUALIFIED PRODUCTS LIST.
 - ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

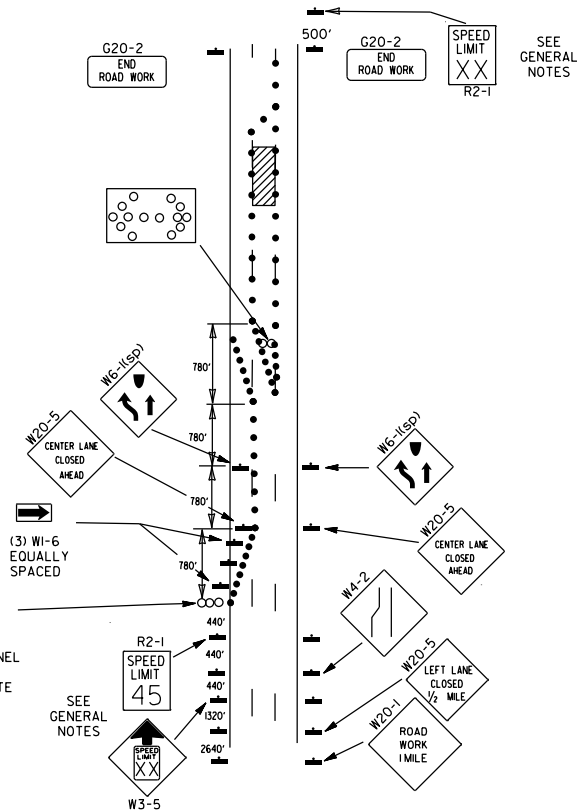
DATE	REVISION	FILED
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
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:

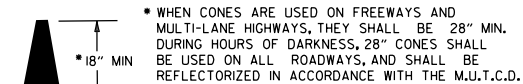
- ○ ○ ○ ARROW PANEL (IF REQUIRED)
- CHANNELIZING DEVICE
- TRAFFIC DRUM

GENERAL NOTES:

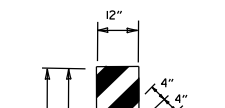
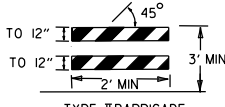
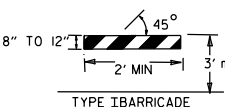
1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 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(65) SHALL BE OMITTED. ADDITIONAL R2-1(55)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 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(1/2 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 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.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

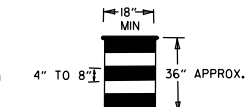
CHANNELIZING DEVICES



CONES



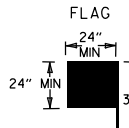
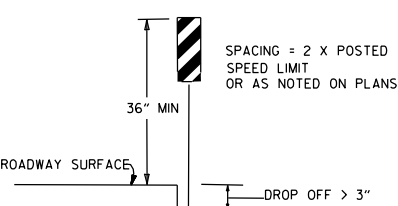
PLASTIC DRUM



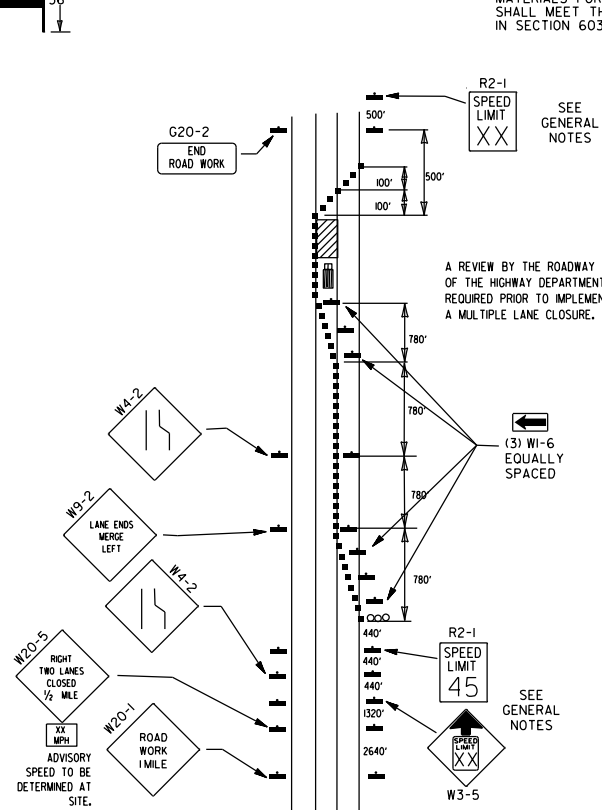
TYPE III BARRICADE

NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.

VERTICAL PANEL PLACEMENT



FLAG SHALL BE OF GOOD GRADE RED MATERIAL



(D) TYPICAL APPLICATION - CLOSING MULTIPLE LANES OF A MULTILANE HIGHWAY.

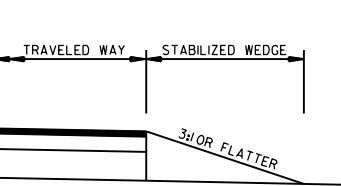
TRAFFIC CONTROL DEVICES

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING	W8-11 AND LANE STRIPING
> 2"	CENTERLINE	STANDARD LANE CLOSURE	STANDARD LANE CLOSURE
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-9, EDGE LINE STRIPING, AND VERTICAL PANELS
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS	W8-17, EDGE LINE STRIPING, AND VERTICAL PANELS
≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽¹⁾	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS ⁽³⁾
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES	PRECAST CONCRETE BARRIER ⁽⁴⁾ & EDGE LINES

INTERSTATE		
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 2"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 2"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
> 2"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS ⁽²⁾
≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

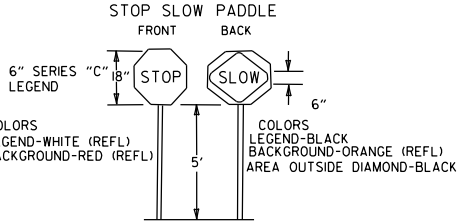
INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

- GENERAL NOTES:
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
 2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS.
 3. IF AND WHERE DIRECTED BY THE ENGINEER, A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL.
 4. IF AND WHERE DIRECTED BY THE ENGINEER, W21-5, W21-5G, AND/OR W21-5D SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.



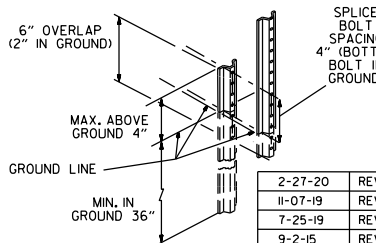
STABILIZED WEDGE

NOTE:
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.



DETAIL OF SPLICES

- 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
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE II	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
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

3/8"

3" DIA. PLATE 3/8" THICK

BAR 1 1/4" DIA. x 26" LONG

CONNECTING PIN

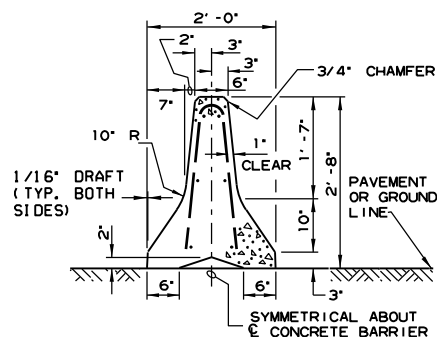
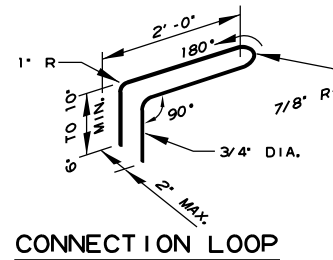
3/4" DIA. STEEL BAR

1 1/2" x 4" GROOVE

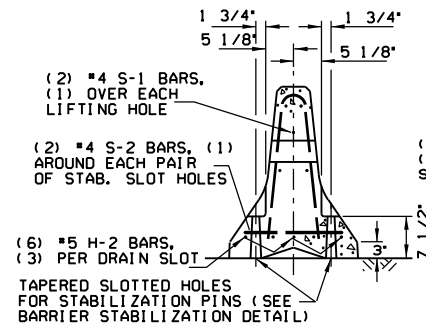
END OF UNIT

SECTION E-E

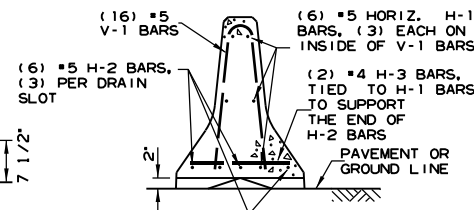
CONNECTION DETAILS



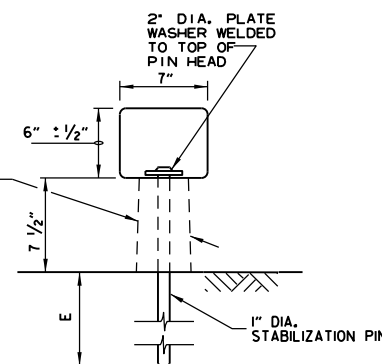
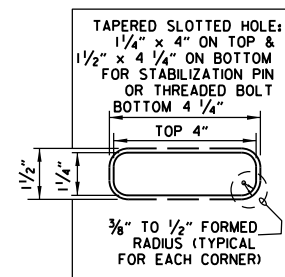
SECTION A-A



SECTION B-B



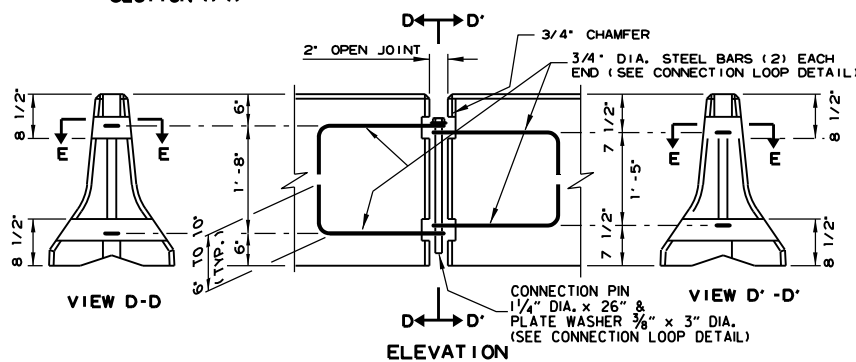
SECTION C-C



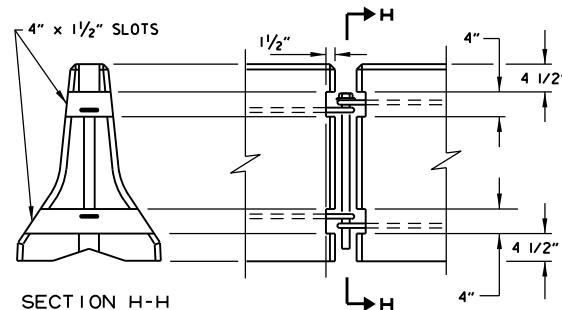
BARRIER STABILIZATION DETAIL

ROADWAY SECTION

(E) 4" - CONCRETE PAVEMENT
8" - ASPHALT PAVEMENT
12" - SHOULDER AREAS



ELEVATION

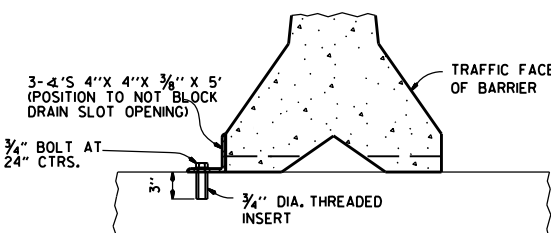


SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS

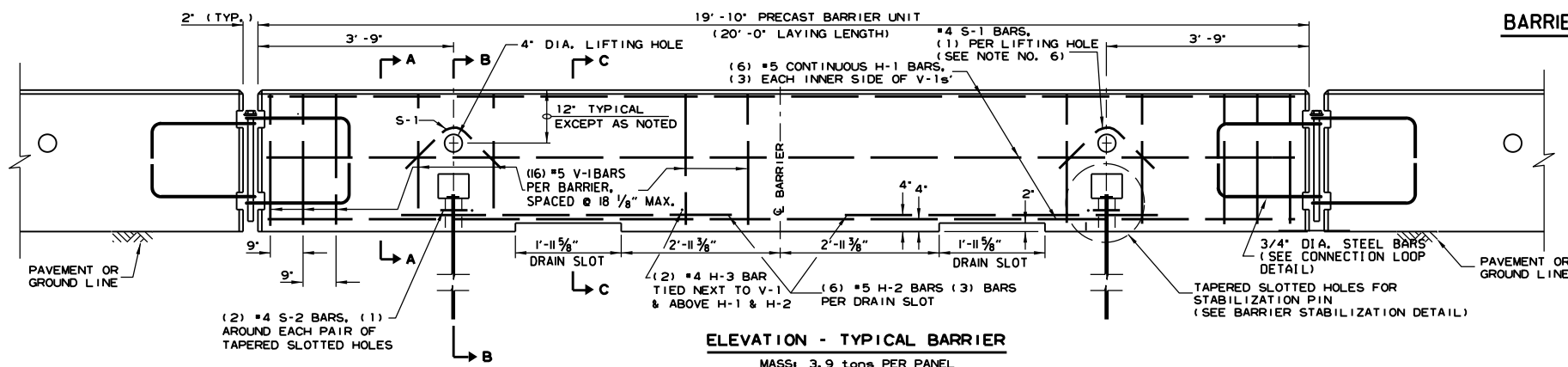
4"



NOTE: " 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



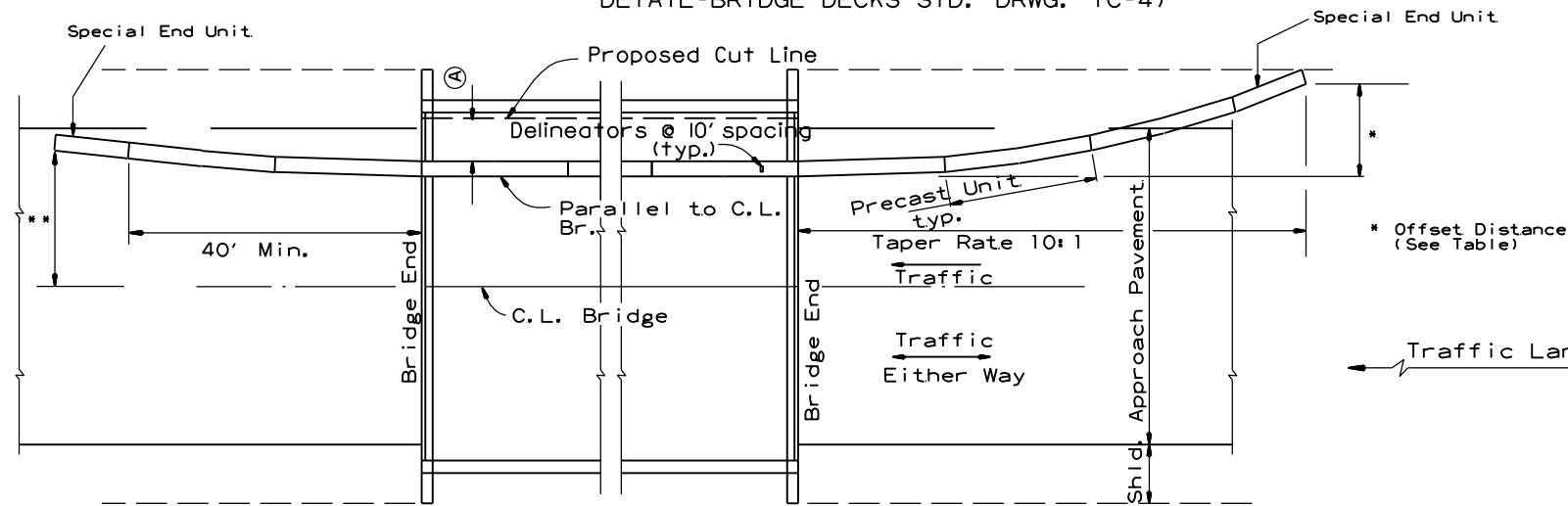
11-07-19	REVISED NOTE 3	
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	
DATE	REVISION	FILE #

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

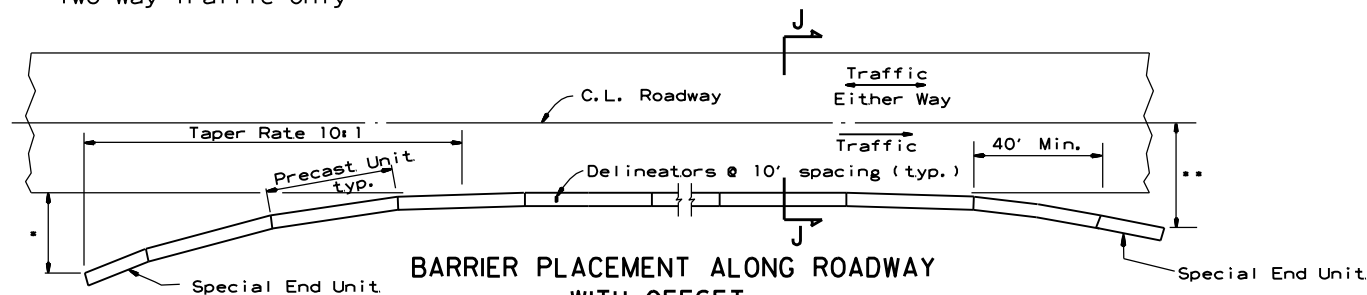
- (A) 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

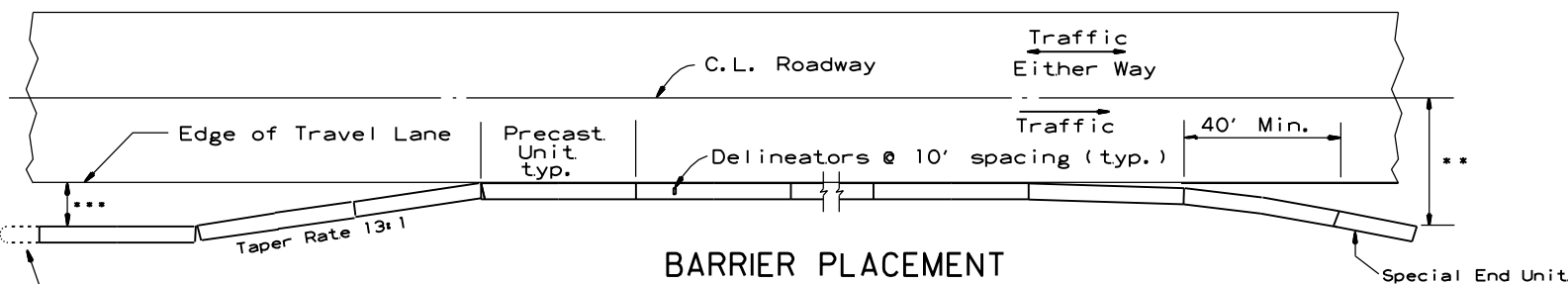
* Offset Distance (See Table)

** 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.

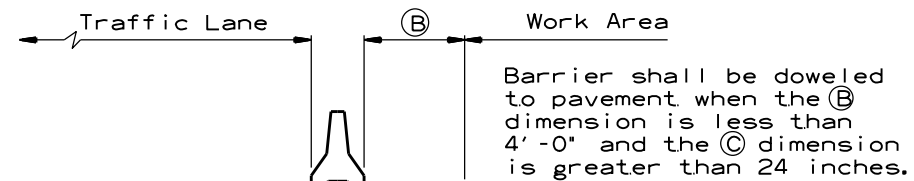


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

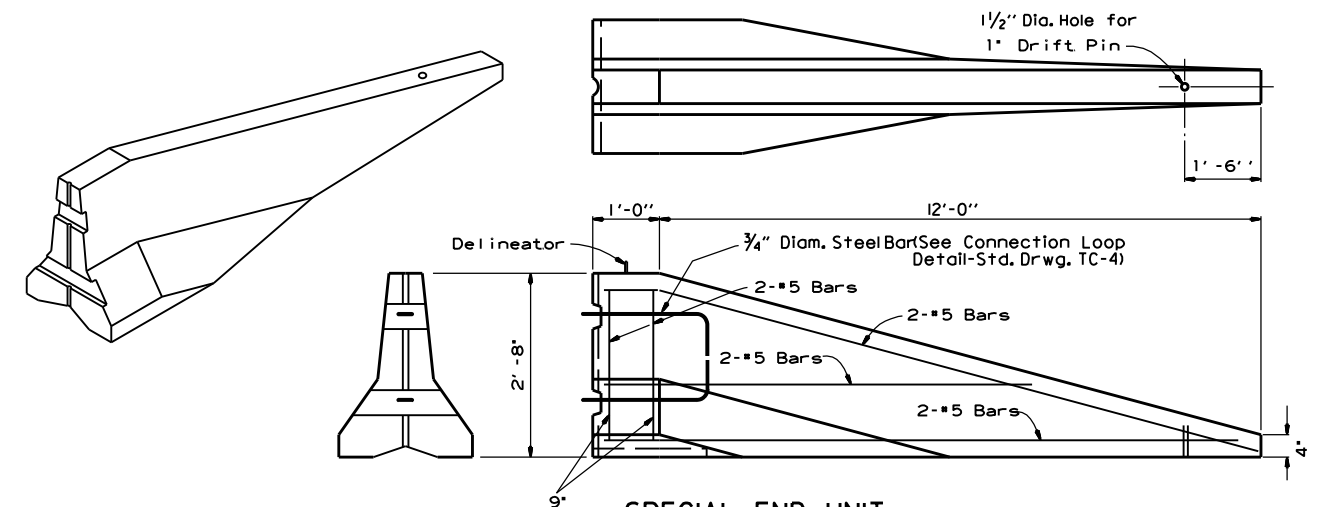
** Offset Distance For Two Way Traffic Only

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



SECTION J-J

No Scale



SPECIAL END UNIT

No Scale

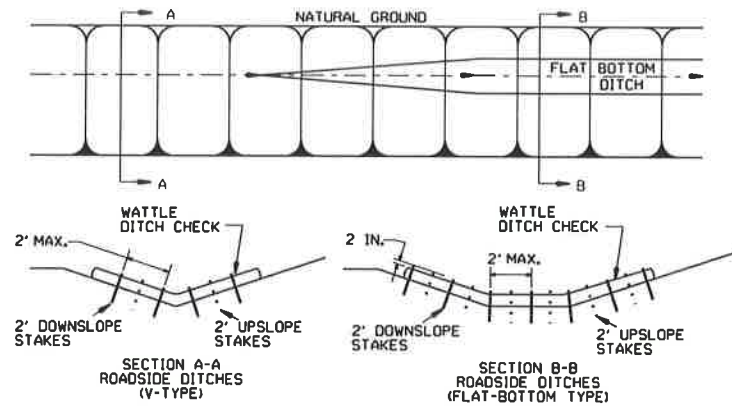
General Notes

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

ARIZONA STATE HIGHWAY COMMISSION			STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER	
11-07-19	REVISED NOTE		STANDARD DRAWING TC-5	
10-15-09	ADDED REFERENCE TO MASH			
5-25-06	REVISED BARRIER PLACEMENT			
8-22-02	ISSUED NEW DRAWING			
DATE	REVISION	FILMED		

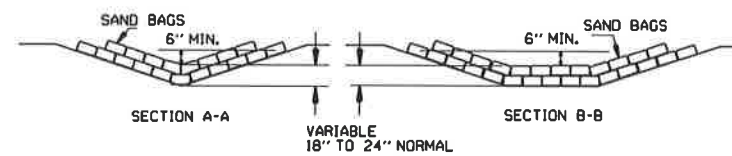
GENERAL NOTES

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

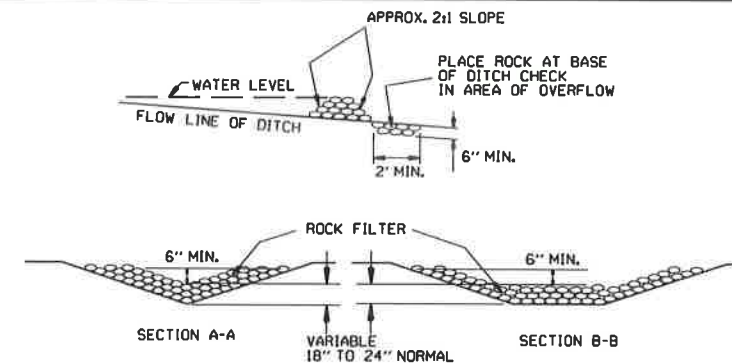


WATTLE DITCH CHECK (E-1)

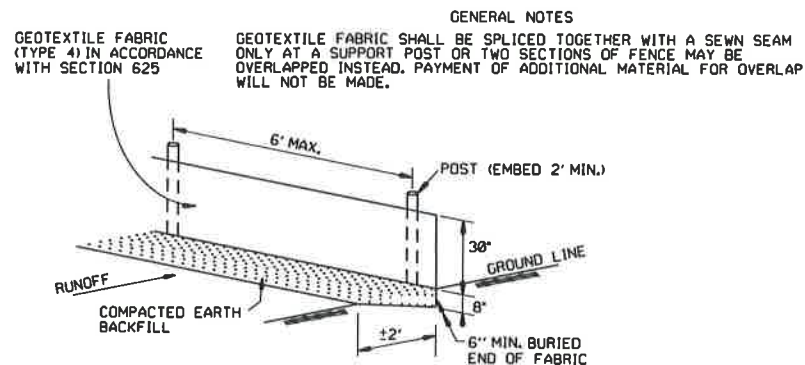
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS. PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW.



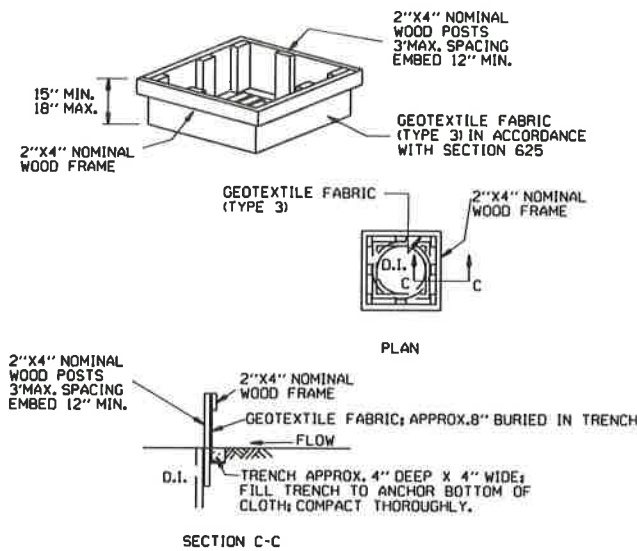
SAND BAG DITCH CHECK (E-5)



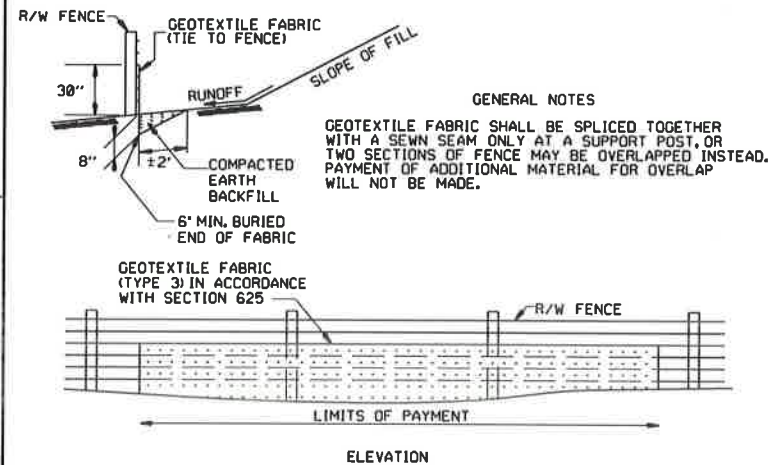
ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

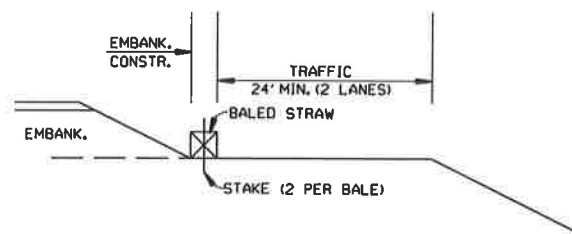


DROP INLET SILT FENCE (E-7)

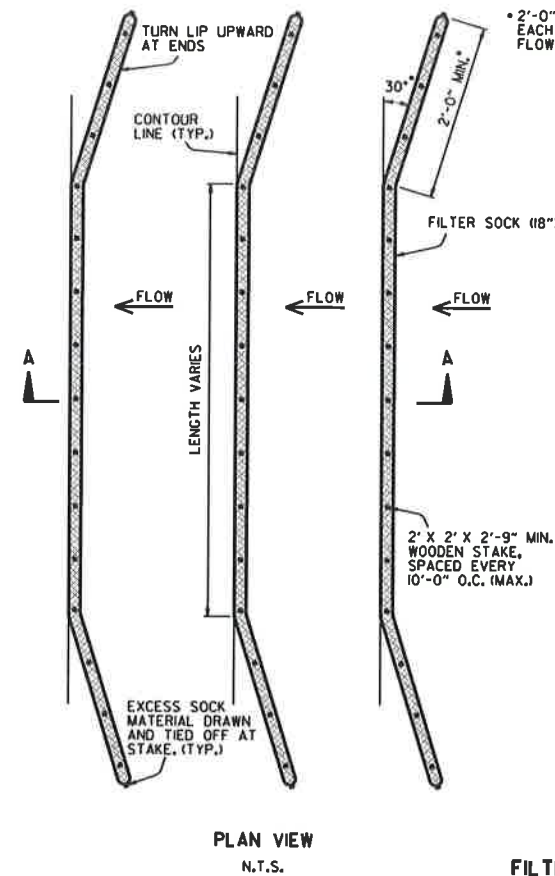


SILT FENCE ON R/W FENCE (E-4)

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.

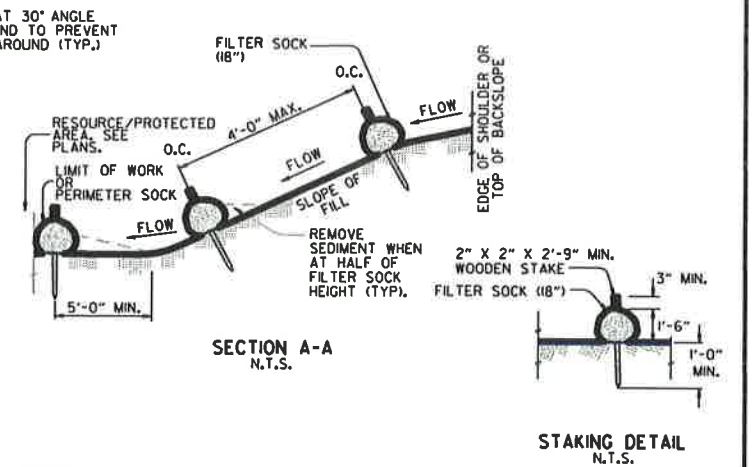


BALED STRAW FILTER BARRIER (E-2)



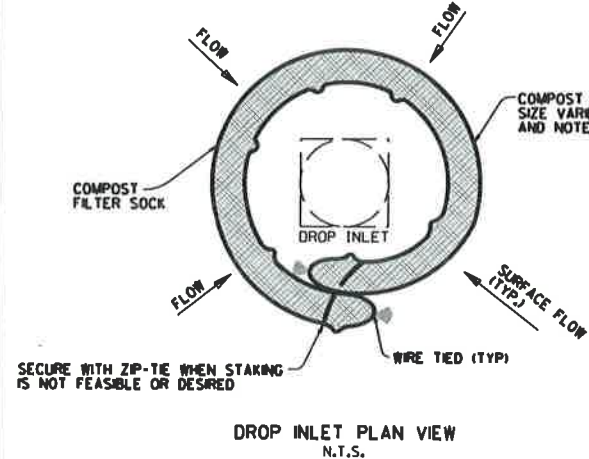
PLAN VIEW
N.T.S.

FILTER SOCK ALONG SLOPE (E-3)



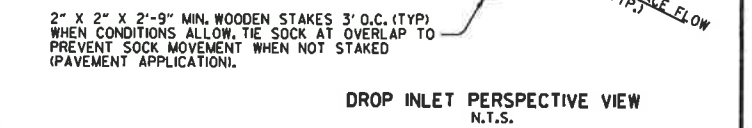
NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.
3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBSIDIARY TO "FILTER SOCK (18\"/>
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.
5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.



DROP INLET PLAN VIEW
N.T.S.

COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)



DROP INLET PERSPECTIVE VIEW
N.T.S.

NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).
2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

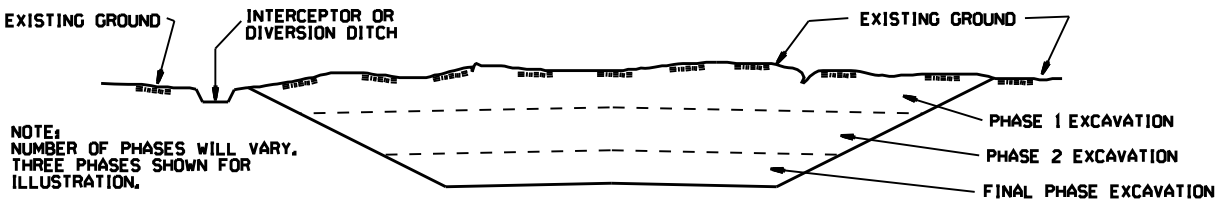
11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
4-18-98	ADDED NOTES	
07-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
07-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
07-15-94	REV. E-4 & E-11 MIN. 13\"/>	
06-02-94	REVISED E-1, 4, 7 & 11; DELETED E-2 & 3	6-2-94
04-01-93	REDRAWN	
10-01-92	REDRAWN	
08-02-76	ISSUED R.O.M.	298-7-28-76
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION
TEMPORARY EROSION
CONTROL DEVICES
STANDARD DRAWING TEC-1

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

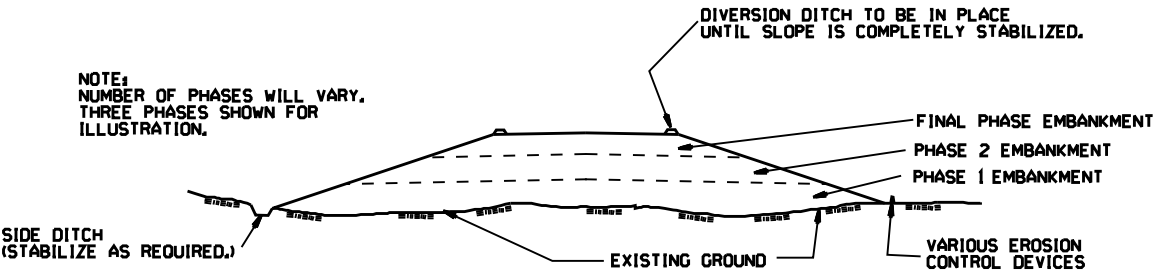


GENERAL NOTE

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

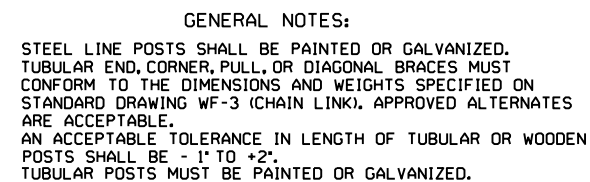


GENERAL NOTE

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.

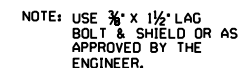
			ARKANSAS STATE HIGHWAY COMMISSION
			TEMPORARY EROSION CONTROL DEVICES
			STANDARD DRAWING TEC-3
11-03-94	CORRECTED SPELLING		
6-2-94	Drawn & Issued	6-2-94	
DATE	REVISION	FILED	



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.

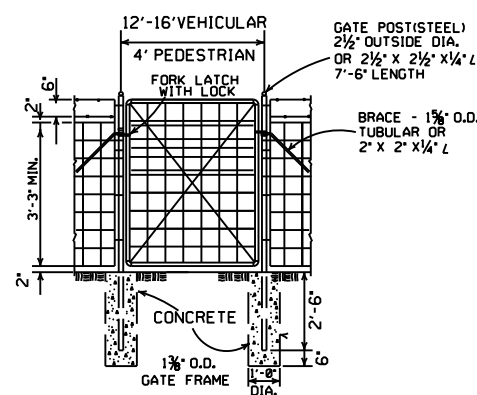
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.



SPlice for BARBED WIRE BETWEEN PULL
PORT 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.

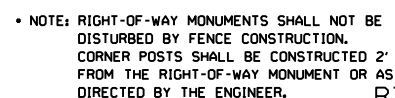
STAPLE AT LEAST TOP,BOTTOM AND ALTERNATE
WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.



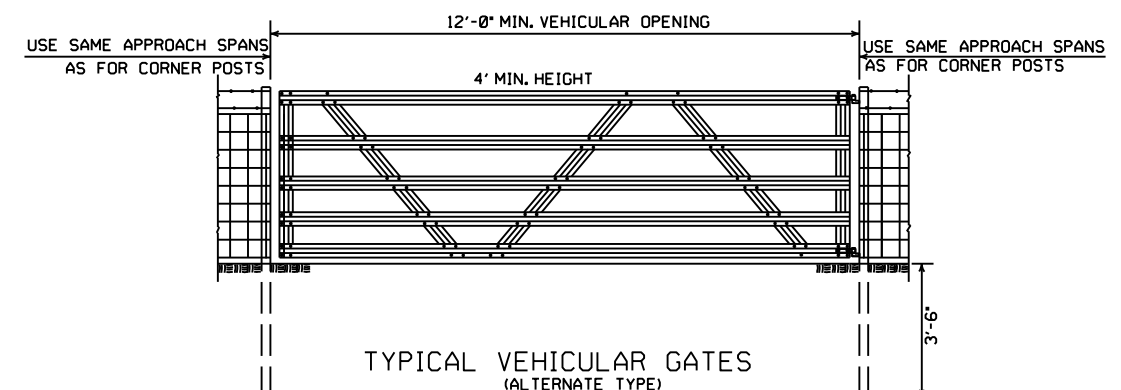
DETAIL OF FENCE CONSTRUCTION
AT LARGE CULVERTS
(5' IN HEIGHT AND OVER)

TYPE C FENCE (STEEL POSTS)

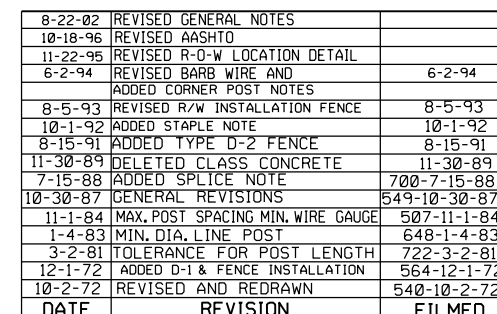
- 4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)



RIGHT-OF-WAY FENCE LOCATION



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.



ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE C AND D

STANDARD DRAWING WF-4