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.		020590	1	108
				(2) UPRR STR. & APPRS. (MCGEHEE)(S)				

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

UPRR STR. & APPRS. (MCGEHEE) (S)

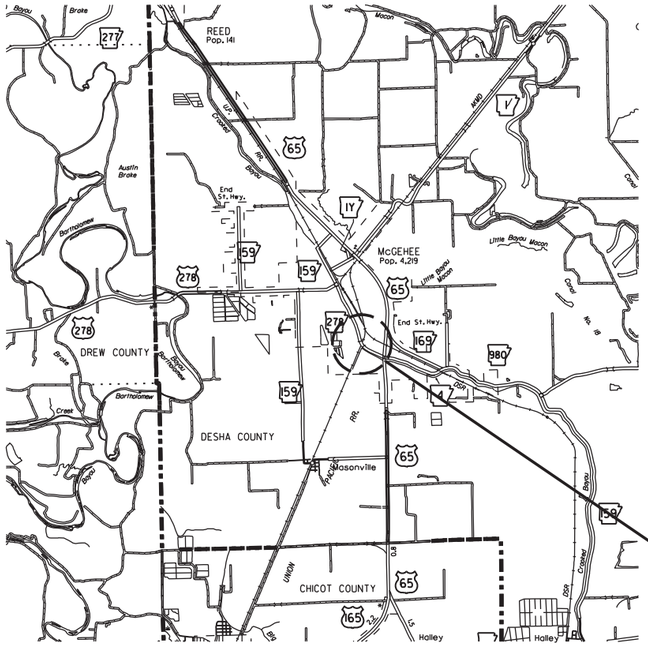
DESHA COUNTY

ROUTE 278 SECTION 16

FED. AID PROJ. NHPP-0021(40)

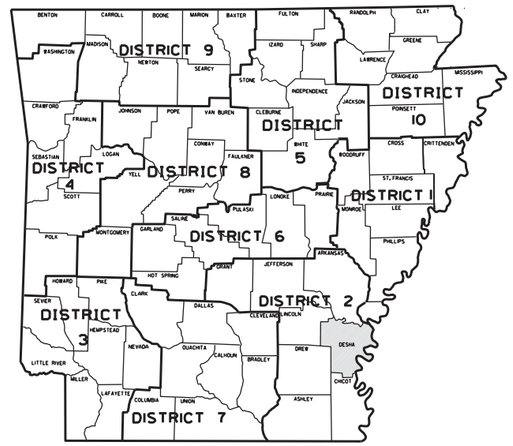
JOB 020590

NOT TO SCALE



PROJECT LOCATION

VICINITY MAP



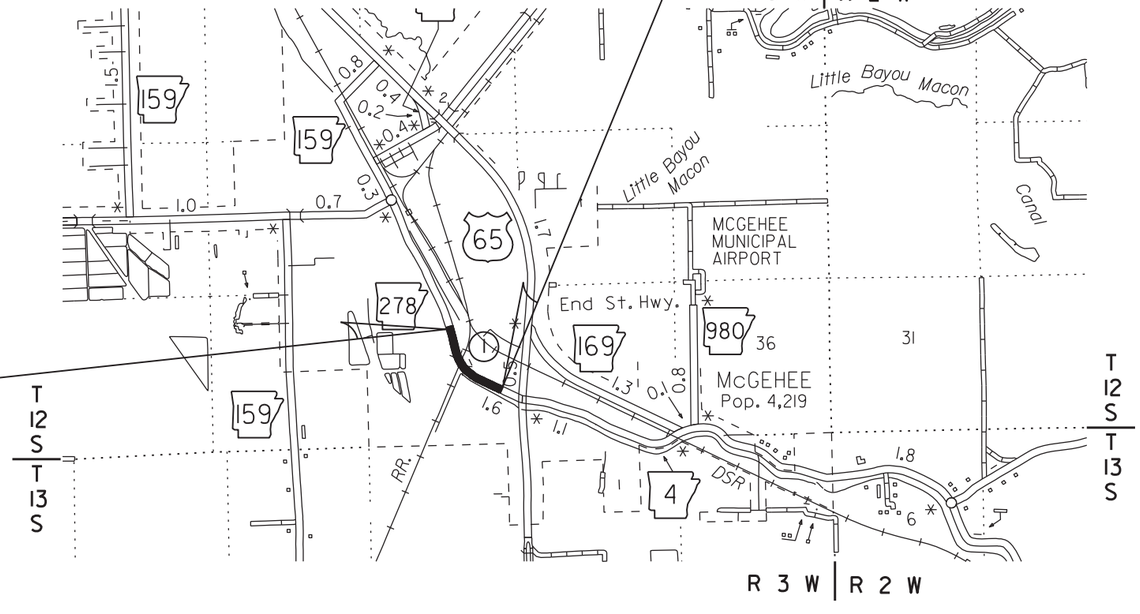
ARK. HWY. DIST. NO. 2

BRIDGE DATA

(1) STA. 110+18.40 BRIDGE END
BRIDGE NO. 07452
240'-0" C.C. PLATE GIRDER (75'-90'-75')
440'-0" C.C. PLATE GIRDER (125'-185'-130')
240'-0" C.C. PLATE GIRDER (75'-90'-75')
30' CLEAR ROADWAY
922'-2½" BRIDGE LENGTH
STA. 119+40.60 BRIDGE END

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22

STA. 129+25.00
END JOB 020590



DESIGN TRAFFIC DATA	
DESIGN YEAR	2040
2020 ADT	6600
2040 ADT	7300
2040 DHV	803
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	4%
DESIGN SPEED	35 MPH

APPROVED

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 7836
R. Brandt Emanuel
Jul 13 2020 7:12 AM

DEPUTY DIRECTOR
AND CHIEF ENGINEER

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LONGITUDE	N 33°37'05"	N 33°36'52"	N 33°36'44"
LATITUDE	W 91°23'28"	W 91°23'23"	W 91°23'11"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF PROJECT	2721.00	FEET	OR	0.515	MILES
NET : : ROADWAY	1798.80	:		0.340	MILES
NET : : BRIDGES	922.20	:		0.175	MILES
NET : : PROJECT	2721.00	:		0.515	MILES

HT39710 6/4/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	2	108

(2) INDEX OF SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:59 PM
DocuSign

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.
1	TITLE SHEET		
2	INDEX OF SHEETS		
3	STANDARD DRAWINGS		
4	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
5 - 8	TYPICAL SECTIONS OF IMPROVEMENT		
9 - 14	SPECIAL DETAILS		
15 - 21	TEMPORARY EROSION CONTROL DETAILS		
22 - 30	MAINTENANCE OF TRAFFIC DETAILS		
31 - 32	PERMANENT PAVEMENT MARKING DETAILS		
33 - 38	QUANTITIES		
39	SCHEDULE OF BRIDGE QUANTITIES	07452	61213
40	SUMMARY OF QUANTITIES AND REVISIONS		
41 - 43	SURVEY CONTROL DETAILS		
44 - 47	PLAN AND PROFILE SHEETS		
48	SIGNALIZATION PLAN SHEET		
49	LAYOUT OF BRIDGE HIGHWAY 278 OVER UNION PACIFIC RAILROAD (SHEET 1 OF 4)	07452	61214
50	LAYOUT OF BRIDGE HIGHWAY 278 OVER UNION PACIFIC RAILROAD (SHEET 2 OF 4)	07452	61215
51	LAYOUT OF BRIDGE HIGHWAY 278 OVER UNION PACIFIC RAILROAD (SHEET 3 OF 4)	07452	61216
52	LAYOUT OF BRIDGE HIGHWAY 278 OVER UNION PACIFIC RAILROAD (SHEET 4 OF 4)	07452	61217
53	EXHIBIT A - LAYOUT OF BRIDGE HIGHWAY 278 OVER UNION PACIFIC RAILROAD (SHEET 1 OF 2)	07452	61218
54	EXHIBIT A - LAYOUT OF BRIDGE HIGHWAY 278 OVER UNION PACIFIC RAILROAD (SHEET 2 OF 2)	07452	61219
55	DETAILS OF END BENTS (SHEET 1 OF 4)	07452	61220
56	DETAILS OF END BENTS (SHEET 2 OF 4)	07452	61221
57	DETAILS OF END BENTS (SHEET 3 OF 4)	07452	61222
58	DETAILS OF END BENTS (SHEET 4 OF 4)	07452	61223
59	DETAILS OF INT. BENT NOS. 2, 3, 8, & 9 (SHEET 1 OF 3)	07452	61224
60	DETAILS OF INT. BENT NOS. 2, 3, 8, & 9 (SHEET 2 OF 3)	07452	61225
61	DETAILS OF INT. BENT NOS. 2, 3, 8, & 9 (SHEET 3 OF 3)	07452	61226
62	DETAILS OF INT. BENT NOS. 4 & 7 (SHEET 1 OF 3)	07452	61227
63	DETAILS OF INT. BENT NOS. 4 & 7 (SHEET 2 OF 3)	07452	61228
64	DETAILS OF INT. BENT NOS. 4 & 7 (SHEET 3 OF 3)	07452	61229
65	DETAILS OF INT. BENT NOS. 5 & 6 (SHEET 1 OF 2)	07452	61230
66	DETAILS OF INT. BENT NOS. 5 & 6 (SHEET 2 OF 2)	07452	61231
67	DETAILS OF ELASTOMERIC BEARINGS (SHEET 1 OF 2)	07452	61232
68	DETAILS OF ELASTOMERIC BEARINGS (SHEET 2 OF 2)	07452	61233
69	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 1 OF 7)	07452	61234
70	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 2 OF 7)	07452	61235
71	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 3 OF 7)	07452	61236
72	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 4 OF 7)	07452	61237
73	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 5 OF 7)	07452	61238
74	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 6 OF 7)	07452	61239
75	DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 7 OF 7)	07452	61240
76	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 1 OF 7)	07452	61241
77	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 2 OF 7)	07452	61242
78	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 3 OF 7)	07452	61243
79	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 4 OF 7)	07452	61244
80	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 5 OF 7)	07452	61245
81	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 6 OF 7)	07452	61246
82	DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 7 OF 7)	07452	61247
83	DETAILS COMMON TO ALL UNITS	07452	61248
84	DETAILS OF NEOPRENE STRIP SEAL JOINT (SHEET 1 OF 2)	07452	61249
85	DETAILS OF NEOPRENE STRIP SEAL JOINT (SHEET 2 OF 2)	07452	61250
86	DETAILS OF CURVED CHAIN LINK FENCE	07452	61251
87	DETAILS OF TYPE SPECIAL APPROACH SLAB	07452	61252
88 - 108	CROSS SECTIONS		

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

HT39710 6/12/2020
R020590.DGN

INDEX OF SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
09-10-21				6	ARK.			
				JOB NO.		020590	3	108

(2) STANDARD DRAWINGS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Sep 29 2021 12:18 PM

DocuSign

BRIDGE STANDARD DRAWINGS

DRWG.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
55002	STANDARD DETAILS FOR CONCRETE RIPRAP	02-27-14
55005	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FORSTEEL & CONCRETE GIRDER SPANS	03-24-16
55006	STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES	09-02-15
55007	STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES	02-11-16
55008	STANDARD DETAILS FOR POURED SLICONE JOINTS	02-11-16
55009	STANDARD DETAILS FOR NEOPRENE STRIP SEAL JOINTS	02-11-16
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	05-11-21
55013	STANDARD DETAILS FOR TRANSITION APPROACH RAILNG	02-11-16
55014	STANDARD DETAILS FOR TYPE H RALING	02-11-16
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03-24-16

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
CG-1	CURBING DETAILS	11-29-07
DR-1	DETAILS OF DRIVEWAYS & ISLANDS	11-07-19
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
FPC-9	DETAILS OF DROP INLETS & JUNCTION BOXES	11-16-01
FPC-9E	DETAILS OF DROP INLETS (TYPE C)	08-22-02
FPC-9M	DETAILS OF DROP INLET (TYPE MO)	08-22-02
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-3	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC (4% MAXIMUM)	11-07-19
SI-1	DETAILS OF SPECIAL ITEMS	10-25-18
TC-1	STANDARD TRAFFIC CONTROLS FORHIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FORHIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FORHIGHWAY CONSTRUCTION	08-12-21
TC-4	STANDARD TRAFFIC CONTROLS FORHIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TC-5	STANDARD TRAFFIC CONTROLS FORHIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
WR-1	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	11-10-05

HT39710 9/9/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-08-20				6	ARK.			
10-30-20				JOB NO.		020590	4	108
10-28-21								

(2) GOVERNING SPECS. AND GENERAL NOTES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Nov 1 2021 11:38 AM

DocuSigned

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA_____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - TRAINING PROGRAM - JOB 020590
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTORS 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
400-7_____	TRACKLESS TACK
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
502-1_____	WELDED WIRE REINFORCEMENT
505-1_____	PORTLAND CEMENT CONCRETE DRIVEWAY
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
620-1_____	MULCH COVER
621-1_____	FILTER SOCKS
633-1_____	CONCRETE WALKS, CONCRETE STEPS, AND HAND RAILING
634-1_____	CURBING
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 020590__	AIRPORT CLEARANCE REQUIREMENTS
JOB 020590__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 020590__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 020590__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 020590__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 020590__	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 020590__	COLD MILLING - COUNTY PROPERTY
JOB 020590__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 020590__	CONSTRUCTION PROJECT INFORMATION SIGN
JOB 020590__	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 020590__	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 020590__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 020590__	FLEXIBLE BEGINNING OF WORK – CALENDAR DAY CONTRACT
JOB 020590__	GEOSYTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
JOB 020590__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 020590__	INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (UPRR)
JOB 020590__	MANDATORY ELECTRONIC CONTRACT
JOB 020590__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 020590__	NESTING SITES OF MIGRATORY BIRDS
JOB 020590__	PARTNERING REQUIREMENTS
JOB 020590__	PLASTIC PIPE
JOB 020590__	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 020590__	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 020590__	RECTANGULAR RAPID FLASHING BEACON (RRFB)
JOB 020590__	REMOVING AND REPLACING TOPSOIL
JOB 020590__	SETTLEMENT MONITORING
JOB 020590__	SHORING
JOB 020590__	SHORING FOR CULVERTS
JOB 020590__	SITE USE (A+C METHOD) – CALENDAR DAY CONTRACT
JOB 020590__	SOIL STABILIZATION
JOB 020590__	STORM WATER POLLUTION PREVENTION PLAN
JOB 020590__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 020590__	UTILITY ADJUSTMENTS
JOB 020590__	VALUE ENGINEERING
JOB 020590__	WARM MIX ASPHALT
JOB 020590__	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. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. 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 ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. 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.
8. 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.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. 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.
11. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 23 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.

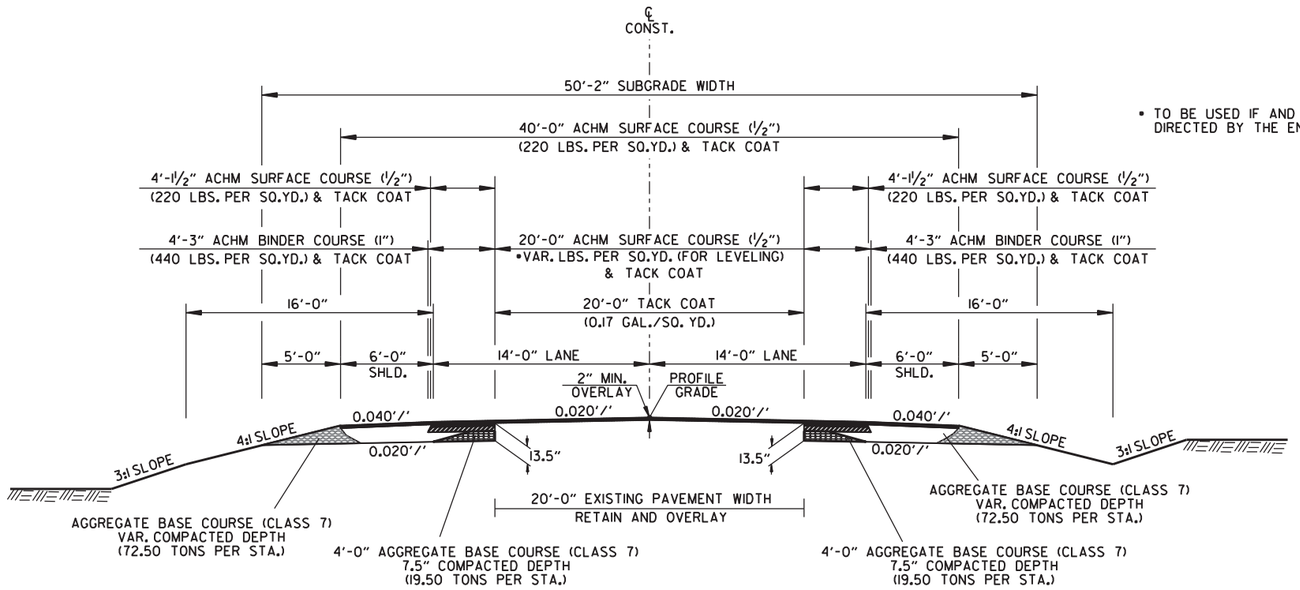
h139710 10/28/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	5	108

(2) TYPICAL SECTIONS OF IMPROVEMENT



Jul 10 2020 1:48 PM
DocuSign



HWY. 278
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN - 20' EXISTING PAVEMENT
OPEN SHOULDER
STA. 102+04.00 TO STA. 102+16.50
STA. 129+12.50 TO STA. 129+25.00

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

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

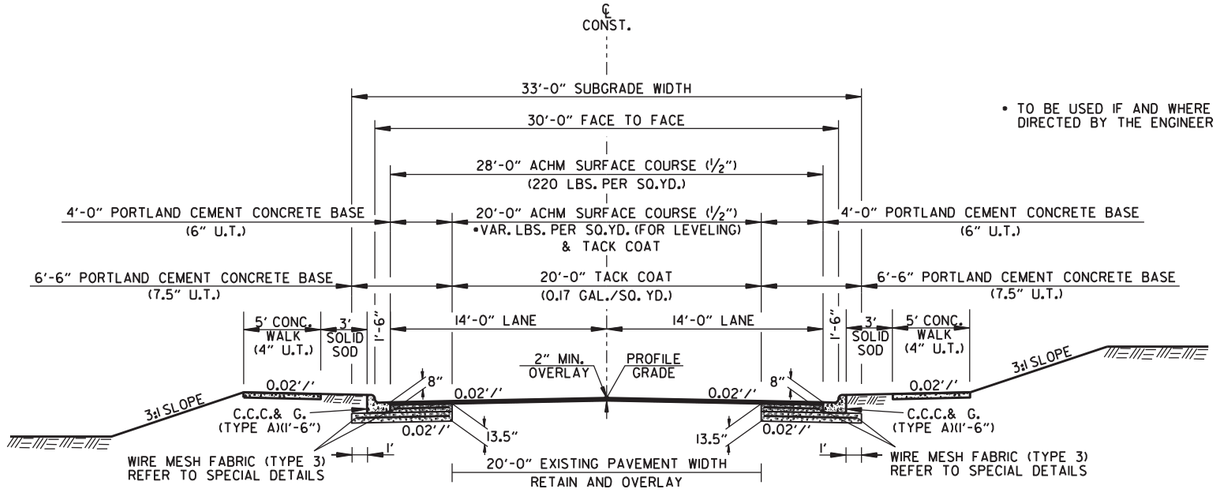
ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED INCLUDED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

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

REFER TO PLAN SHEETS FOR SIDEWALK LOCATIONS.

PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.



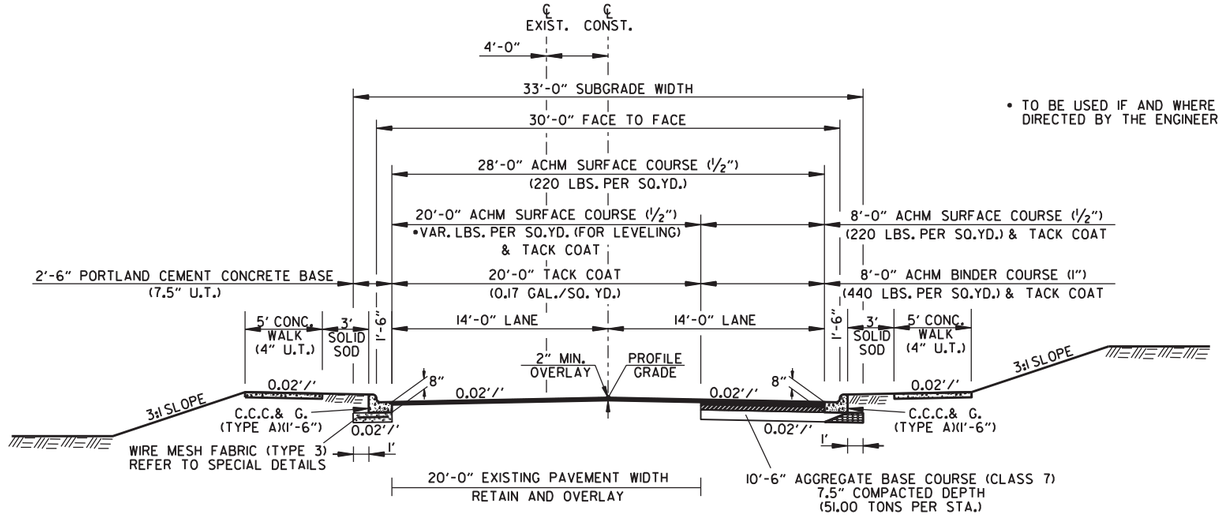
HWY. 278
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN - 20' EXISTING PAVEMENT
CURB AND GUTTER
STA. 102+16.50 TO STA. 104+18.35
STA. 127+50.00 TO STA. 129+12.50

HT39710 6/11/2020
RO20590.DGN

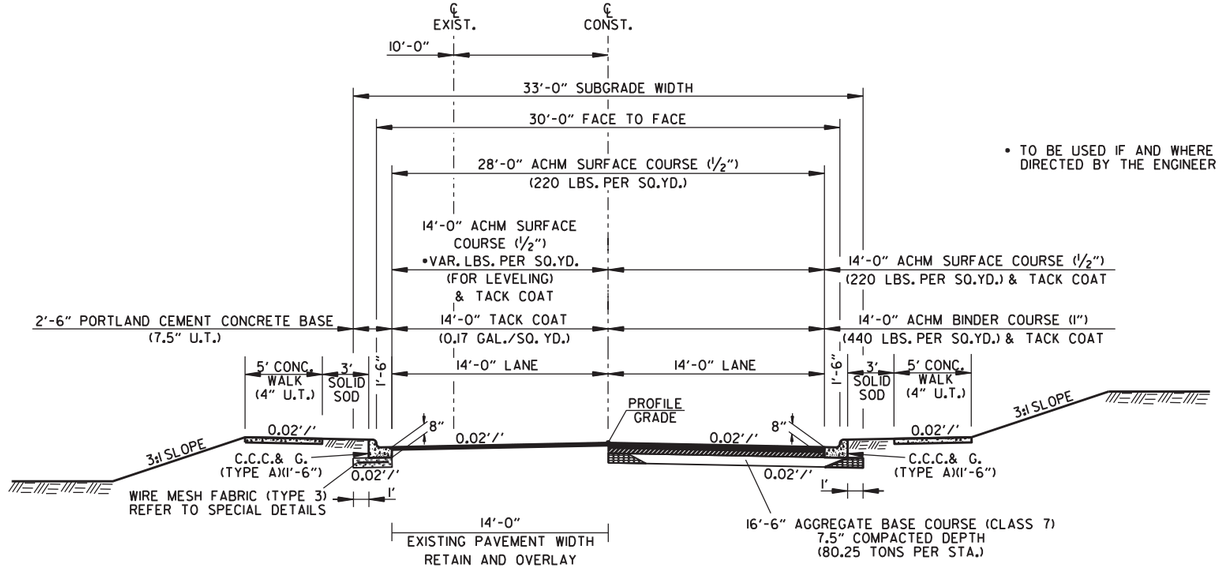
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	6	108

(2) TYPICAL SECTIONS OF IMPROVEMENT



HWY. 278
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN RT. - 20' EXISTING PAVEMENT
CURB AND GUTTER
STA. 104+18.35 TO STA. 104+49.68



HWY. 278
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN RT. - 14' EXISTING PAVEMENT
CURB AND GUTTER
STA. 104+49.68 TO STA. 105+54.74

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND 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 FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

REFER TO PLAN SHEETS FOR SIDEWALK LOCATIONS.

PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:48 PM
DocuSign

HT39710 6/11/2020
RO20590.DGN

TYPICAL SECTIONS OF IMPROVEMENT

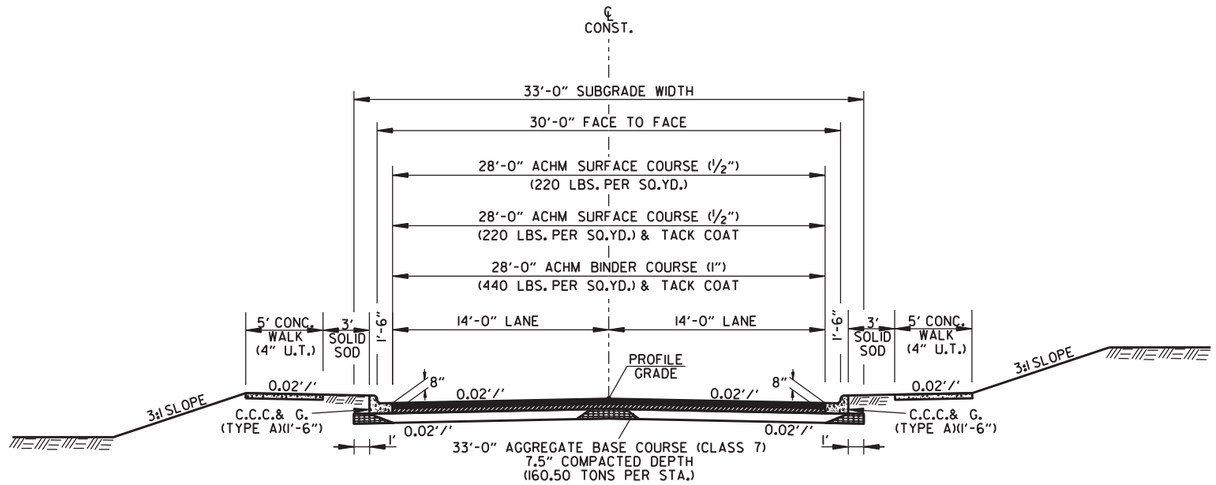
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	7	108

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:48 PM
DocuSign



HWY. 278
TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH CURB & GUTTER
STA. 105+54.74 TO STA. 109+81.90
STA. 119+77.10 TO STA. 127+50.00

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND 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 FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

REFER TO PLAN SHEETS FOR SIDEWALK LOCATIONS.

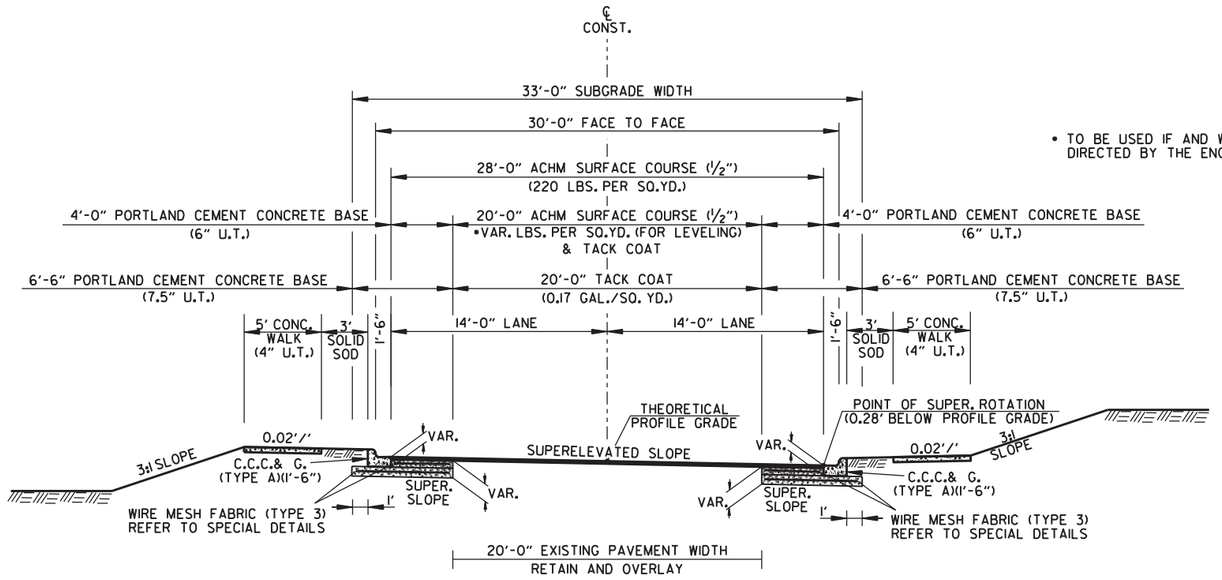
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

HT39710 6/11/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	8	108

(2) TYPICAL SECTIONS OF IMPROVEMENT



• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

HWY. 278
TYPICAL SECTION OF IMPROVEMENT
NOTCH AND WIDEN - 20' EXISTING PAVEMENT
SUPERELEVATED

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

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

ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND 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 FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

REFER TO PLAN SHEETS FOR SIDEWALK LOCATIONS.

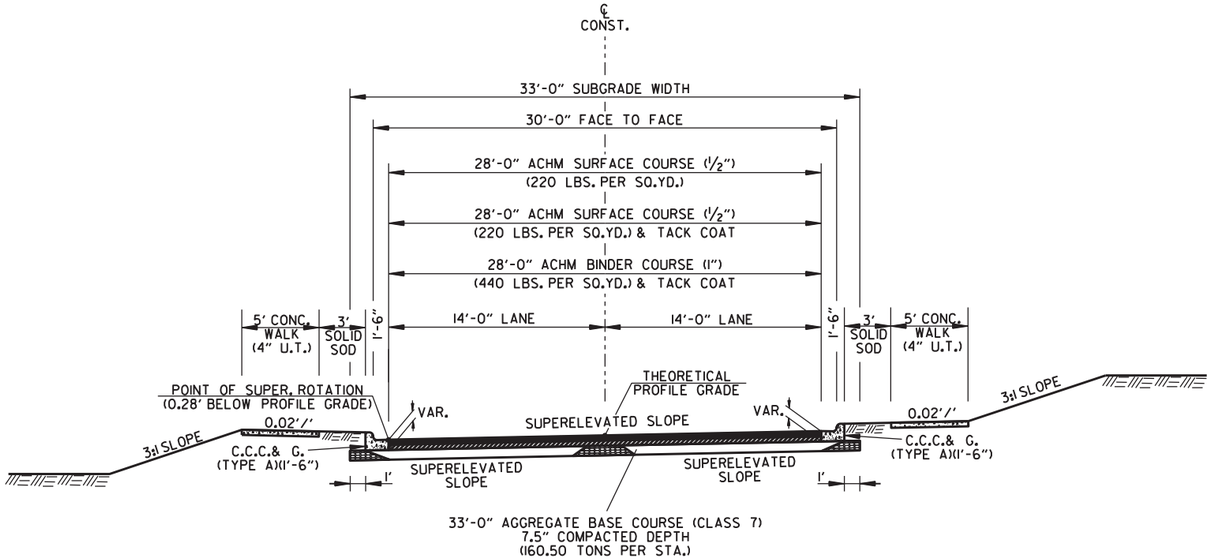
PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:49 PM
DocuSign



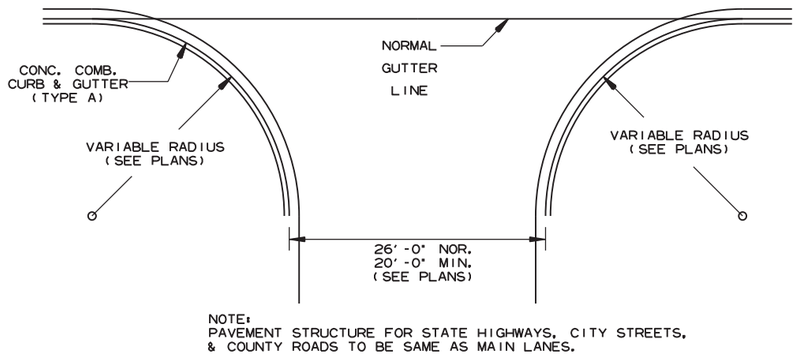
HWY. 278
TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH CURB & GUTTER
SUPERELEVATED

HT39710 6/11/2020
R020590.DGN

TYPICAL SECTIONS OF IMPROVEMENT

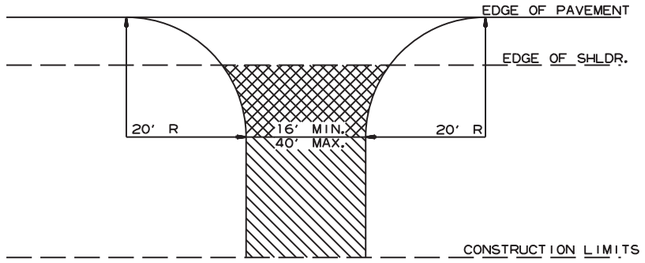
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	9	108

(2) SPECIAL DETAILS



NOTE:
PAVEMENT STRUCTURE FOR STATE HIGHWAYS, CITY STREETS, & COUNTY ROADS TO BE SAME AS MAIN LANES.

DETAIL OF TURNOUTS, ASPHALT STREETS, COUNTY ROADS & STATE HIGHWAYS CURB & GUTTER SECTION

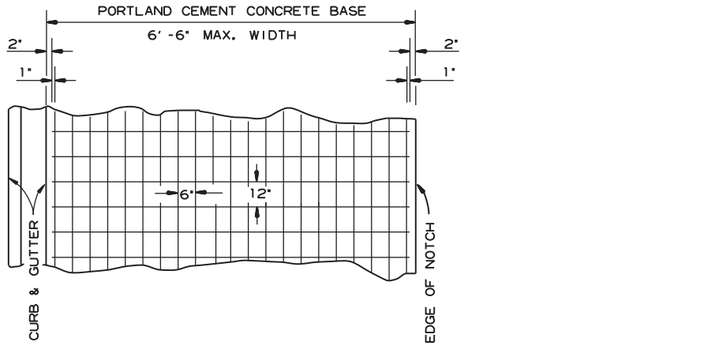


ASPHALT CONCRETE HOT MIX SURFACE COURSE (220 LBS. PER SQ. YD.)
AGGREGATE BASE COURSE (CLASS 7)
7" COMP. DEPTH IF ASPHALT DRIVE EXIST OR
6" CONCRETE IF CONCRETE DRIVE EXIST.

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

NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

DETAIL FOR DRIVEWAY TURNOUTS (COLLECTORS)

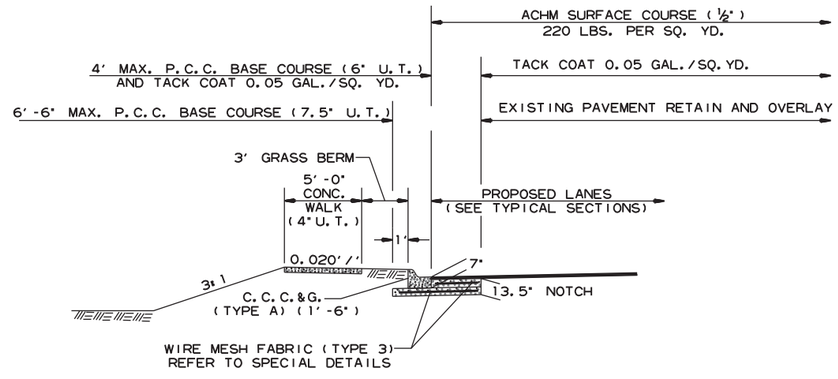


6" X 12" MESH FABRIC (TYPE 3) (W5.5 X W2.9) = 4.26 LBS./SQ.YD.

NOTES:

1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6" TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (7.5" U.T. AND 6" U.T.)

DETAIL OF REINFORCING STEEL FOR PAVEMENT (MESH FABRIC TYPE 3)



P.C.C. BASE WIDENING DETAIL

P.C.C. BASE WIDENING TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:49 PM
DocuSign

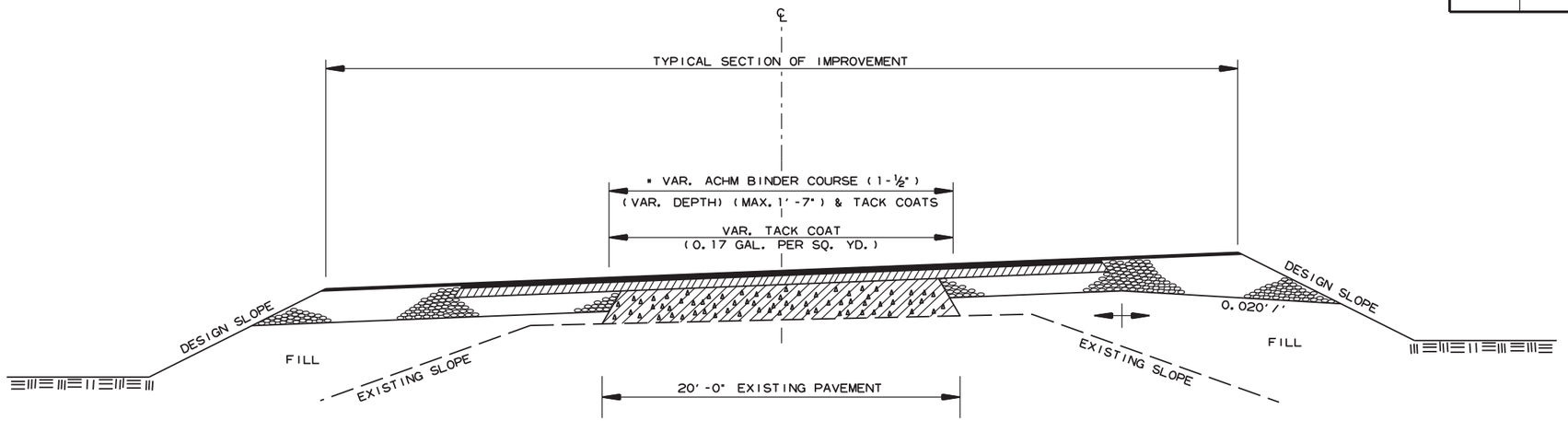
HT39710 6/12/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	10	108

(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:49 PM
DocuSign



▪ 7.5" AGGREGATE BASE COURSE (CLASS 7)
TO BE REPLACED WITH ACHM BINDER COURSE (1-½")

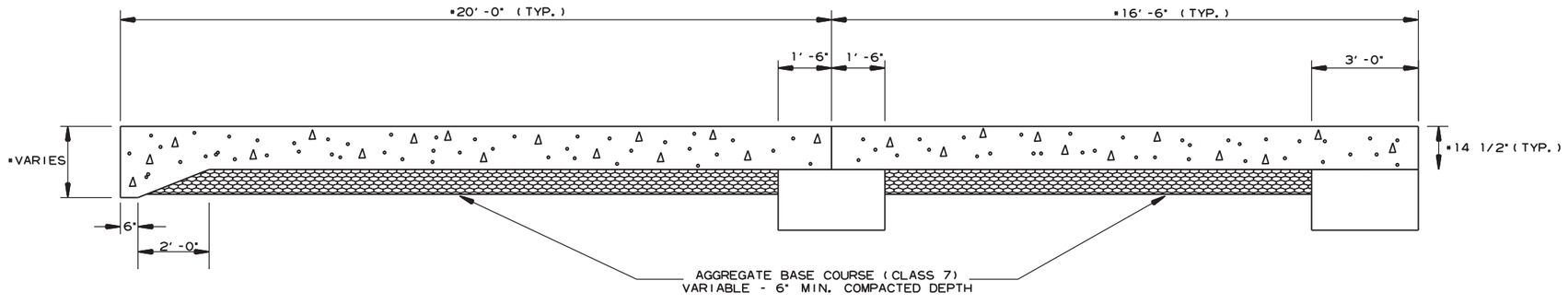
METHOD OF RAISING GRADE

NOTES:

(1) THIS DETAIL TO BE USED ONLY 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.



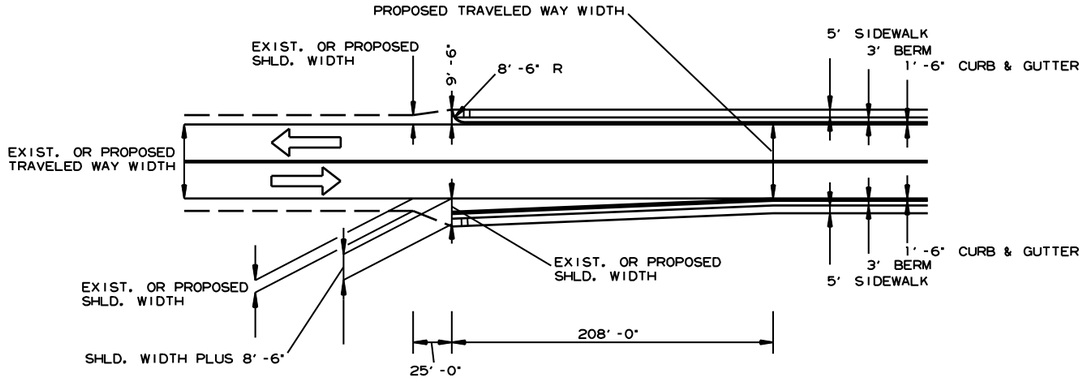
▪ SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

SECTION OF APPROACH SLAB

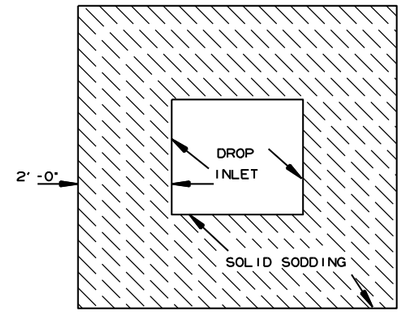
HT39710 6/12/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
09-10-21				6	ARK.			
				JOB NO.		020590	11	108

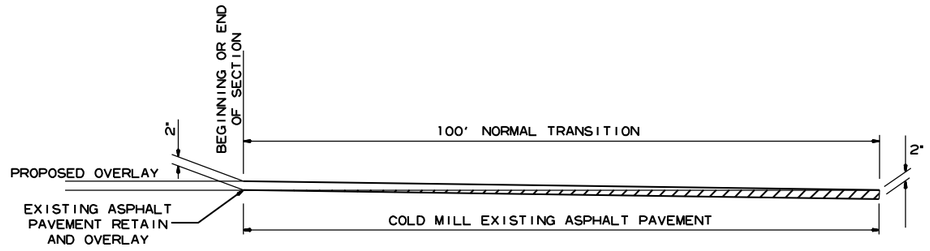
(2) SPECIAL DETAILS



TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION



DETAIL FOR SOLID SODDING AROUND DROP INLETS



DETAIL FOR TRANSITIONS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Sep 29 2021 12:18 PM

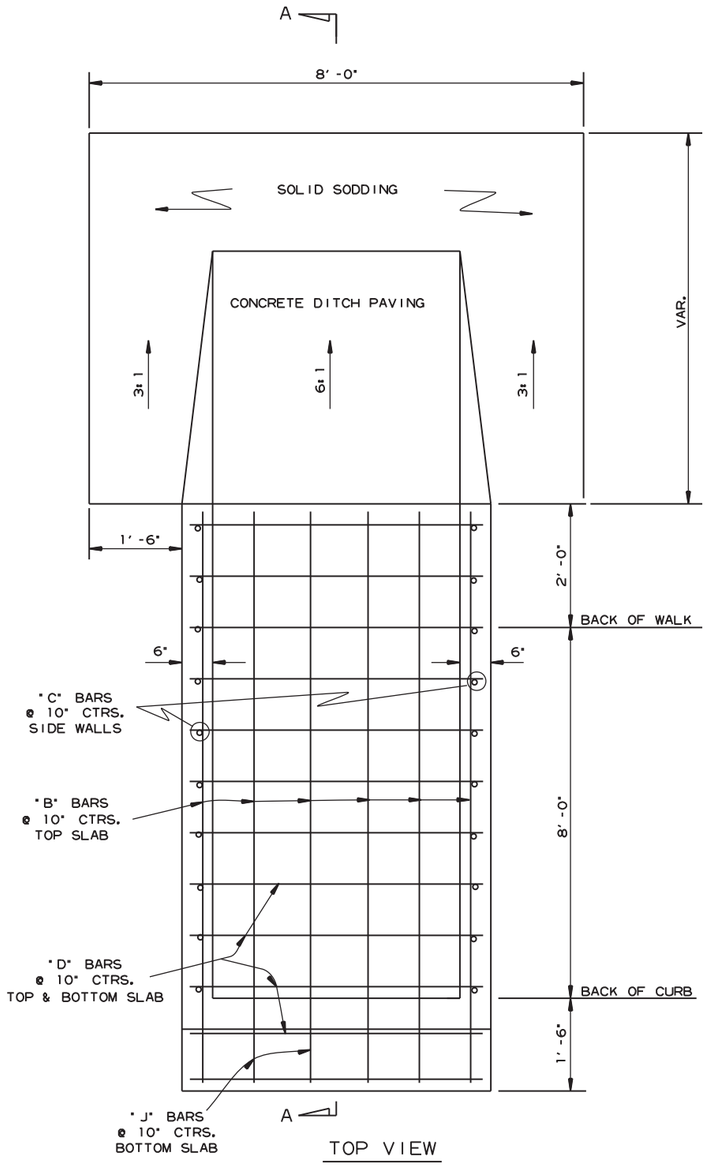
HT39710 9/9/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	12	108

(2) SPECIAL DETAILS

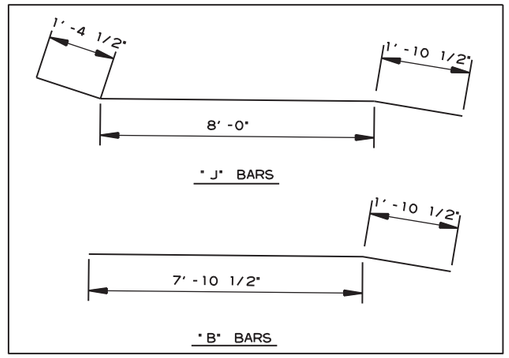
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:50 PM
DocuSign



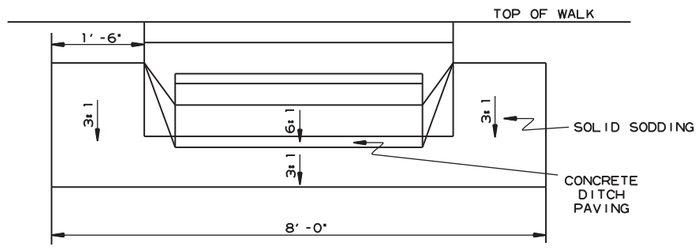
TOP VIEW

BAR DIAGRAM

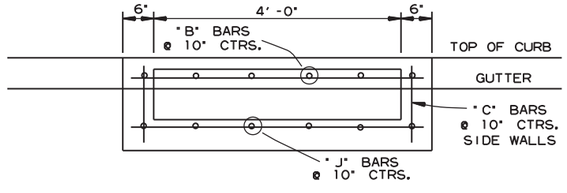


CLASS A CONC.	REINF. STEEL-RDWY. GRADE 60
CU. YDS.	POUND
2.53	207

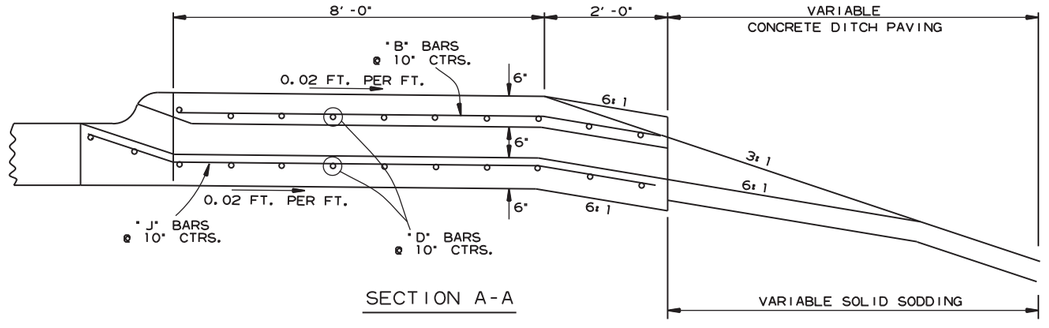
QUANTITIES FOR INFORMATION ONLY
DROP INLET (TYPE SPECIAL)



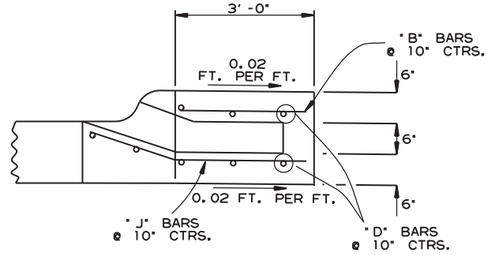
BACK VIEW



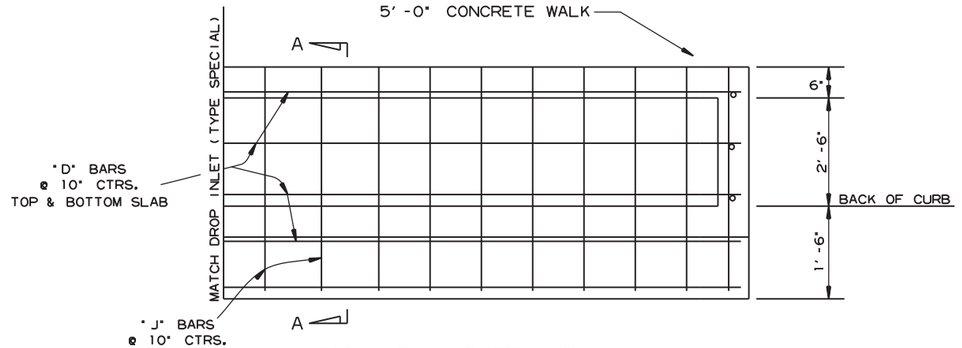
FRONT VIEW



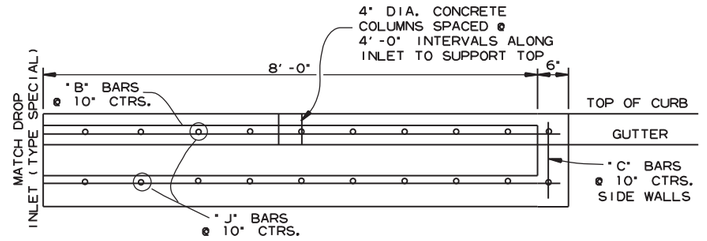
SECTION A-A



SECTION A-A - EXTENSION



TOP VIEW - EXTENSION



FRONT VIEW - EXTENSION

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. ALL REINF. BARS SHALL BE #4 AND HAVE 1 1/2" COVER.
3. DROP INLETS AND EXTENSIONS ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
4. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
5. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
6. CONCRETE DITCH PAVING & SOLID SODDING SHALL BE PAID FOR SEPARATELY.
7. CONSTRUCT EXTENSIONS UPSTREAM OF DROP INLET UNLESS OTHERWISE SPECIFIED.

H139710 6/12/2020
R020590.DGN

DROP INLET (TYPE SPECIAL)

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.		020590	13	108

(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

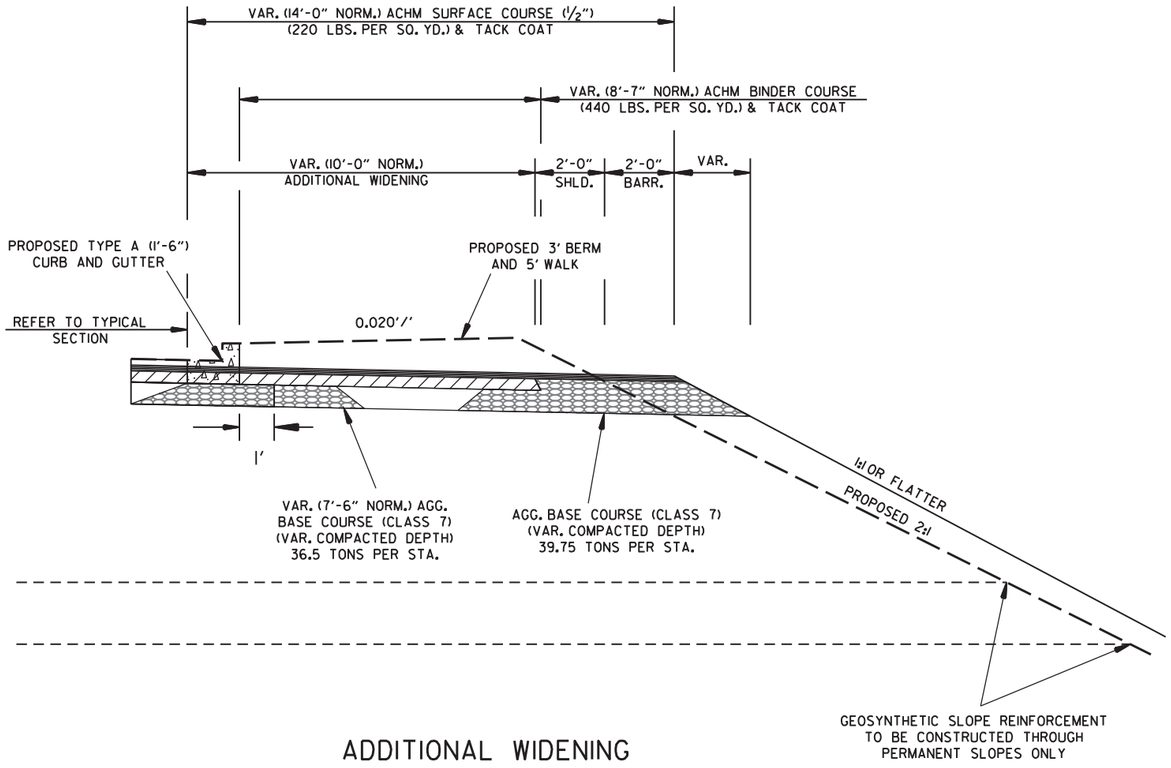
Trinity Smith

Jul 10 2020 1:50 PM
DocuSign



6.0" Radius, 1.3" Border, Black on Orange;
'Job XXXXXX' C 2K; 'Start Date Mo Year' C 2K;
'Est Completion Mo Year' C 2K; 'IDRIVE ' Arial;
' ARKANSAS.COM ' Arial;

CONSTRUCTION PROJECT INFORMATION SIGN



ADDITIONAL WIDENING
FOR MAINTENANCE OF TRAFFIC
(STAGE I WIDENING ON RT.)

STA. 120+00.00 - STA. 126+00.00

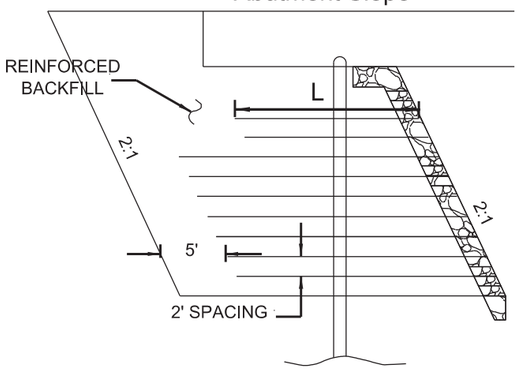
HT39710 6/12/2020
RO20590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	14	108

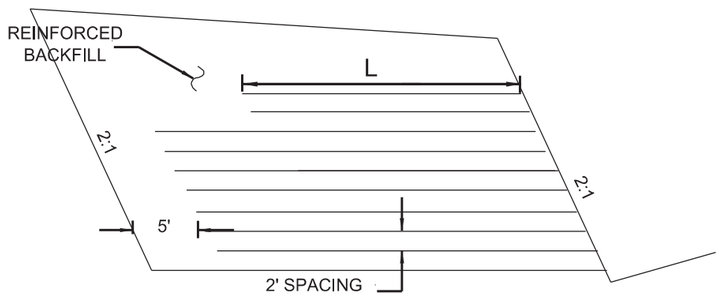
(2) SPECIAL DETAILS

GENERALIZED REINFORCED PROFILE

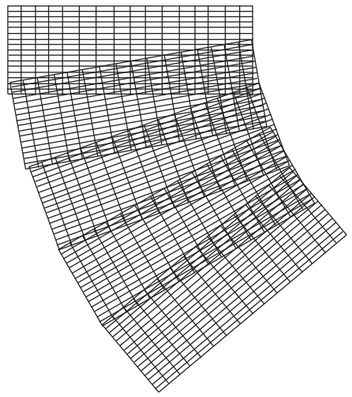
Abutment Slope



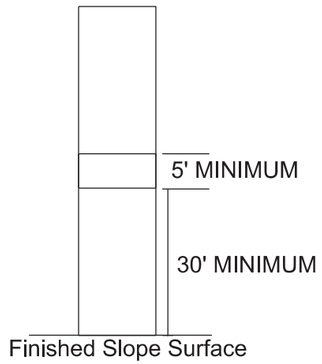
Side Slope



Side Slope to End Slope Geogrid Transition



Geogrid Overlap



WEST ABUTMENT SLOPE (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	143.6	--
1	145.5	20
2	147.5	
3	149.5	
4	151.5	
5	153.5	
6	155.5	
7	157.5	
8	159.5	
9	161.5	
Top of the Slope	164.0	--

EAST ABUTMENT SLOPE (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	148.0	--
1	150	20
2	152	
3	154	
4	156	
5	158	
6	160	
7	162	
Top of the Slope	165.0	--

SIDE SLOPE STA 119+37 (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	135.7	--
1	136	40
2	138	
3	140	
4	142	
5	144	
6	146	
7	148	
8	150	
9	152	
10	154	
11	156	
12	158	
13	160	
14	162	
Top of the Slope	165.0	--

SIDE SLOPE STA 119+85 (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	135.5	--
1	136	30
2	138	
3	140	40
4	142	
5	144	
6	146	
7	148	
8	150	
9	152	
10	154	
11	156	
12	158	
13	160	
Top of the Slope	165.0	--

SIDE SLOPE STA 121+00 (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	135.2	--
1	136	25
2	138	
3	140	30
4	142	
5	144	
6	146	
7	148	
8	150	40
9	152	
10	154	
11	156	
Top of the Slope	159.3	--

SIDE SLOPE STA 122+00 (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	135.0	--
1	136	25
2	138	
3	140	
4	142	
5	144	
6	146	
7	148	30
8	150	
9	152	
Top of the Slope	156.0	--

SIDE SLOPE STA 122+55 (2:1) REINFORCEMENT CONFIGURATION

Reinforcement Layer No.	Elevation	Length (feet)
Toe of the Slope	134.9	--
1	136	20
2	138	
3	140	
4	142	
5	144	
6	146	
7	148	
8	150	
Top of the Slope	154.5	--

Side Slope Reinforcement Extends to Station 123+00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:50 PM
DocuSign

NOTES:

Based on the required lengths of the geogrid reinforcement, over excavation of the existing slopes may be required for installation of the geogrid reinforcement.

At the east abutment where the soil will be reinforced along the abutment and side slope, the reinforcement should be installed so the reinforcement overlaps in a radial pattern around the corner to create continuous reinforcement for both the abutment and side slope. Side slope reinforcement extends to Station 123+00.

Special attention should be paid to placement of the reinforcement with regards to the location of driven foundations. During installation of the geogrid, for reinforcement in the upper 10 feet of soil,a hole should be cut to allow for the driving of piles through the geogrid. At depths greater than 10 feet, the overburden pressure should allow for the driving of piles through the geogrid without wrinkling the geogrid mat.

Use a working platform of 6 inches or more between the reinforcement and the wheels or track of construction equipment.

Payment of the geogrid reinforcement will not be paid for separately, but will be subsidiary to the pay item Compacted Embankment (Special).

HT39710 6/11/2020
R020590.DGN

GEOSYNTHETIC SLOPE REINFORCEMENT
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.		020590	15	108

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:50 PM

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22

POB100+00.00
S 16°29'02" E
PROP. R/W
EXIST. R/W
C.L. HWY. 278
S 7°21'33" E
PC102+60.59
PT104+45.08
PC109+18.18
P.C.E.
25' BUFFER
SHORT RAILROAD ST
E. PECAN ST
HIGH ST
CHURCH ST
1ST ST
FRUITWOOD DR
R/R ROW
100
105
110
115
E-6
E-11

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

HT39710 6/19/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	16	108

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:51 PM
DocuSign

STA. 129+25.00
END JOB 020590

C.L. HWY. 278

C.E.

R/R ROW

CHURCH ST

1ST ST

SCHOOL ST

C B KING DR

EXIST. R/W

190 LIN.FT.

SHERMAN ST

P.C.E.

T.C.E.

PROP. R/W

25' BUFFER

CARVER ST

PARKS ST

N PARK ST

S 64°41'59" E

S 59°57'41" E

S 72°33' E

P.I.117+01.43

P.I.123+51.69

P.I.125+40.72

P.C.124+93.31

P.T.125+88.07

POE130+25.00

120

125

130

E-6

E-11

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

HT39710 6/19/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	17	108

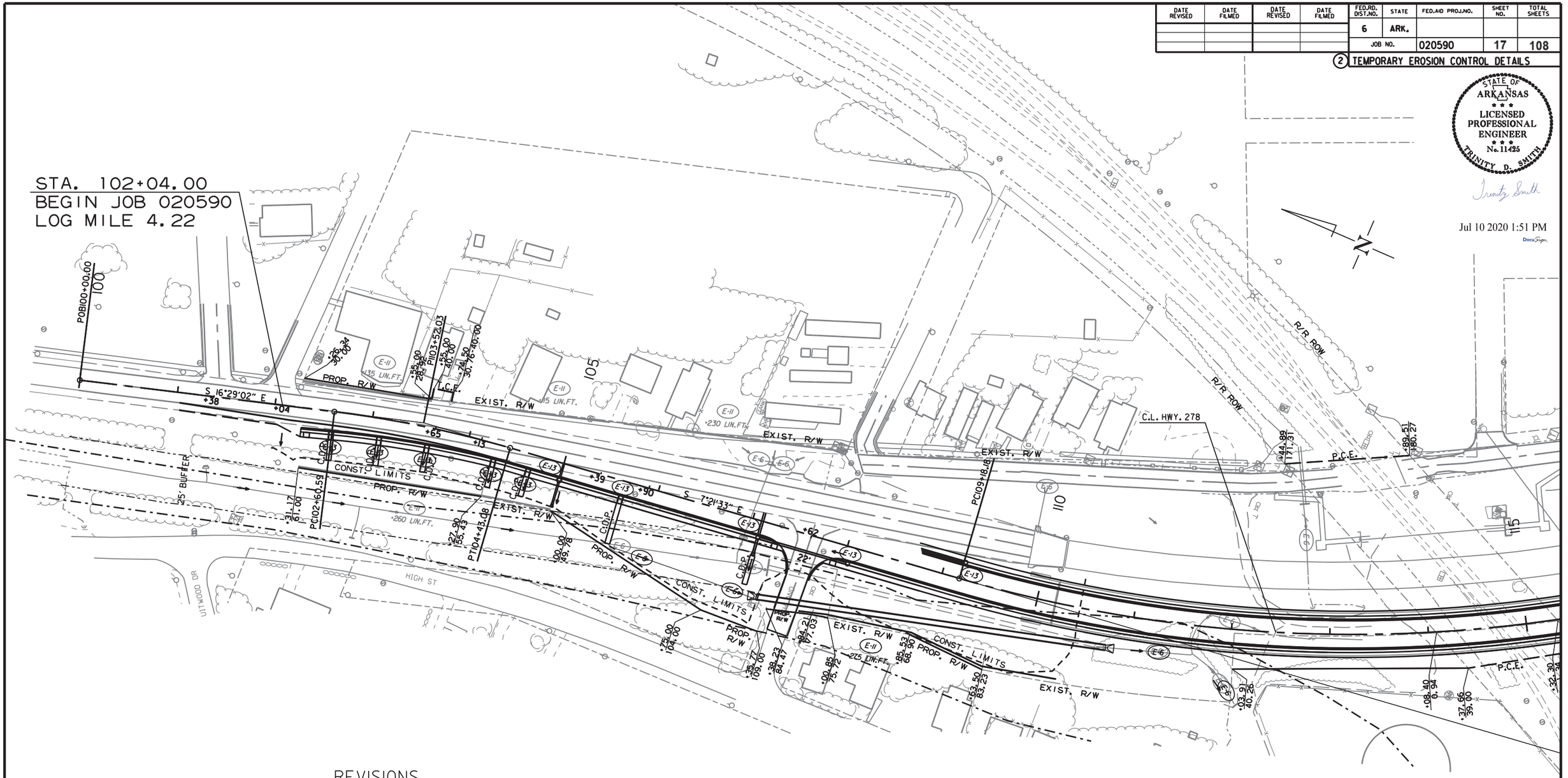
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:51 PM
DocuSign

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22



REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE
E-13	= FILTER SOCK

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

STAGE I
TEMPORARY EROSION CONTROL DETAILS

HT39710 6/19/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	18	108

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:51 PM
DocuSign

STA. 129+25.00
END JOB 020590

C.L. HWY. 278

EXIST. R/W

CONST. LIMITS

P.C.E.

25' BUFFER

C.D.P.

PROP. R/W

N PARK ST

PARKS ST

R/R ROW

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE
E-13	= FILTER SOCK

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

HT39710 6/19/2020
R020590.DGN

STAGE I
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

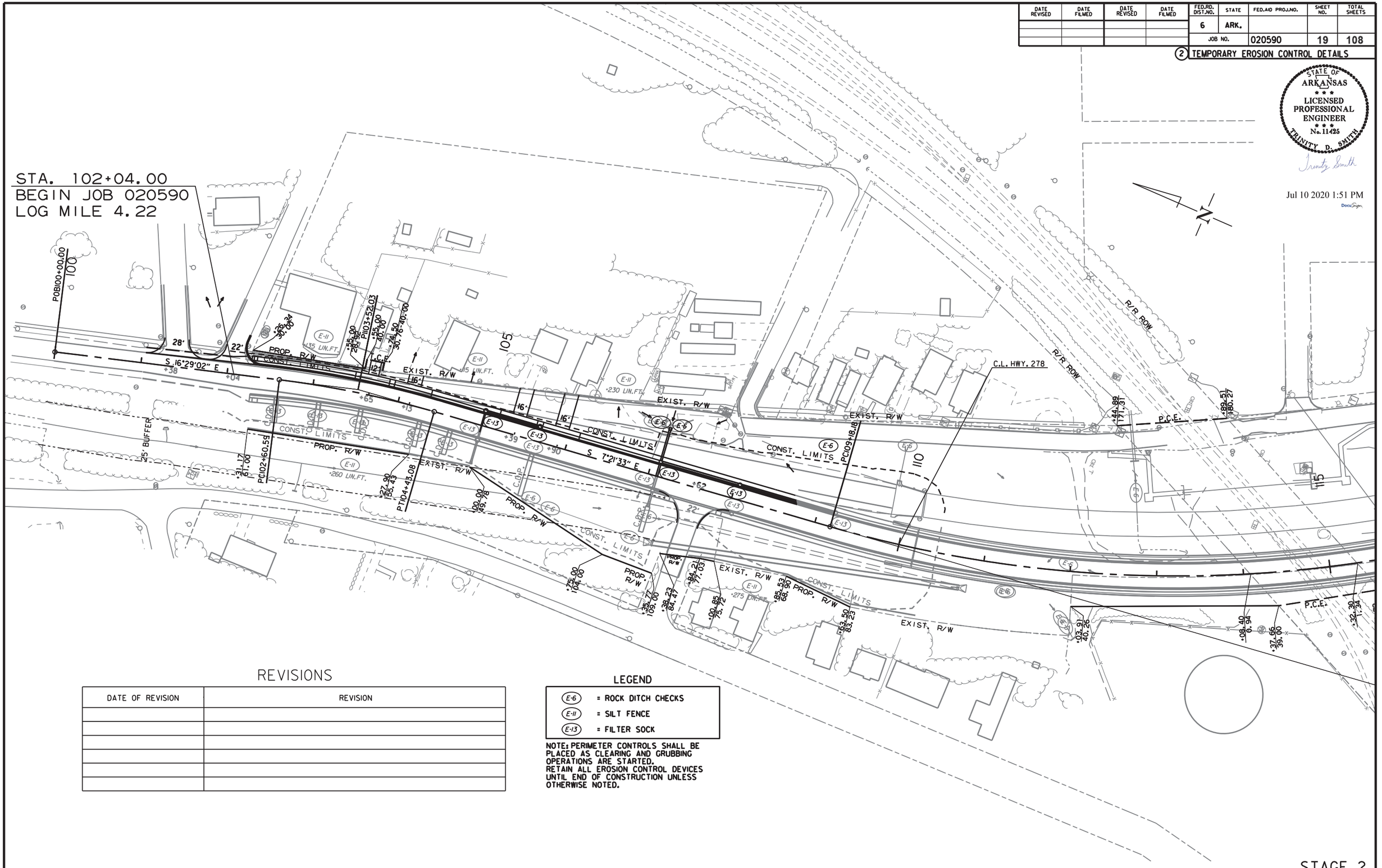
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	19	108

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:51 PM
DocuSign

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22



REVISIONS

DATE OF REVISION	REVISION

LEGEND

- E-6 = ROCK DITCH CHECKS
- E-11 = SILT FENCE
- E-13 = FILTER SOCK

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

STAGE 2
TEMPORARY EROSION CONTROL DETAILS

HT39710 6/19/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	20	108

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:51 PM
DocuSign

STA. 129+25.00
END JOB 020590

C.L. HWY. 278

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE
E-13	= FILTER SOCK

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

HT39710 6/19/2020
R020590.DGN

STAGE 2
TEMPORARY EROSION CONTROL 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.		020590	21	108

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:52 PM

STA. 129+25.00
END JOB 020590

C.L. HWY. 278

CHURCH ST
SCHOOL ST
C B KING DR
SHERMAN ST
N PARK ST
PARKS ST
R/R ROW

EXIST. R/W
CONST. LIMITS
P.C.E.
T.C.E.
PROP. R/W
25' BUFFER
C.D.P.
EXIST. R/W

PI123+51.69
PI125+40.72
PC124+93.31
PT125+88.07
PI117+01.43
POE130+25.00

S 72°33' E
S 59°57'41" E

REVISIONS

DATE OF REVISION	REVISION

LEGEND

E-6	= ROCK DITCH CHECKS
E-11	= SILT FENCE
E-13	= FILTER SOCK

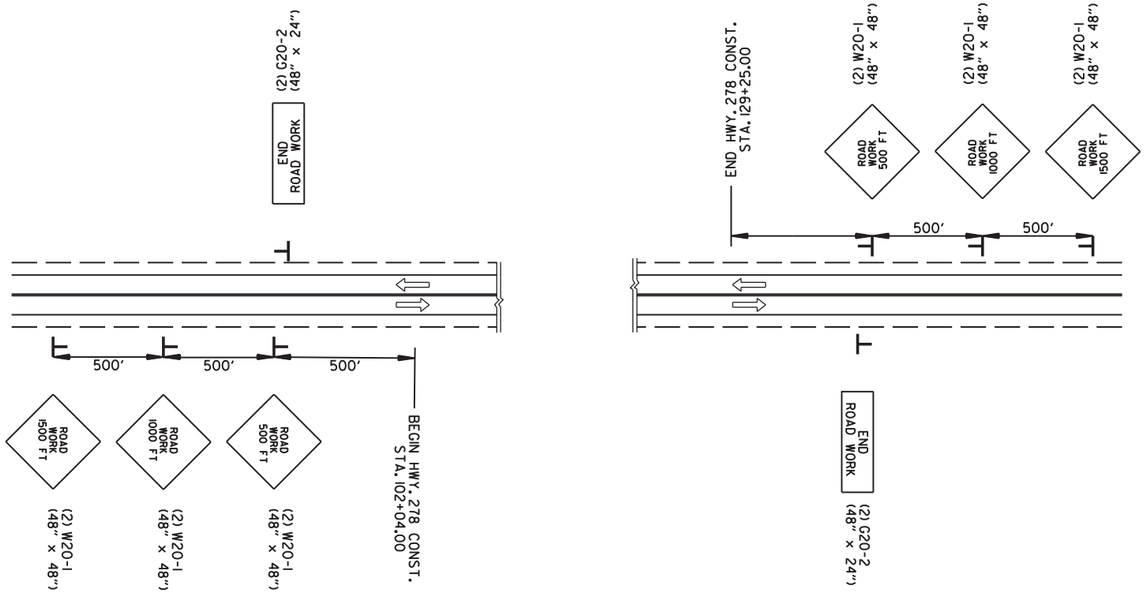
NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED. RETAIN ALL EROSION CONTROL DEVICES UNTIL END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

HT39710 6/19/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	22	108

(2) MAINTENANCE OF TRAFFIC DETAILS



ADVANCE WARNING
(ALL STAGES)

BUMP	(2) W8-1 (30" X 30")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
DO NOT PASS	(4) R4-1 (24" X 30")	ALL STAGES SPACED AT 1/4 MILE INTERVALS
RIGHT SHOULDER CLOSED	(4) W21-5a (36" x 36")	ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

ROAD CLOSED

(1) R11-2 (48" X 30")

16' BARR. TYP. III LT.

STAGE 1
STA. 107+00 RT.
STA. 124+00 RT.

STAGE 2
STA. 107+50 LT.
STA. 123+65 LT

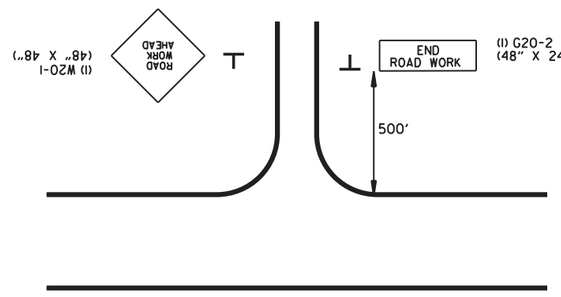
ROAD CLOSED

(1) R11-2 (48" X 30")

16' BARR. TYP. III RT.

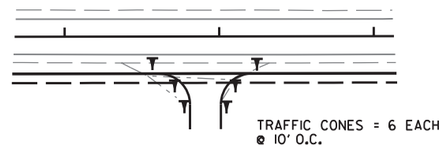
STAGE 1
STA. 108+00 RT.

STAGE 2
STA. 122+60 LT.



STA. 101+38 LT. - E. PEAR ST.
STA. 102+04 LT. - SHORT RAILROAD RD.
STA. 107+62 RT. - HIGHLAND
STA. 123+13 LT. - 1ST ST.
STA. 125+28 RT. - CARVER ST.
STA. 125+38 LT. - SHERMAN ST.

ADVANCE WARNING - SIDE ROADS
(ALL STAGES)



DRIVEWAY/TRAFFIC CONE DETAIL

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:52 PM
DocuSign

HT39710 6/10/2020
R020590.DGN

ADVANCE WARNING
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	23	108

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:52 PM
DocuSign

CONSTRUCTION SEQUENCE

STAGE 1:

INSTALL ADVANCE WARNING SIGNS AT THE LOCATIONS LISTED ON THE ADVANCE WARNING DETAILS. INSTALL END ROAD WORK SIGNS AT THE END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAILS. INSTALL ROAD WORK AHEAD (W20-1) AND END ROAD WORK (G20-2) SIGNS ON SIDE ROADS AS SHOWN IN THE ADVANCE WARNING DETAILS.

MAINTAIN TRAFFIC IN EXISTING LANES.

INSTALL CONSTRUCTION PAVEMENT MARKINGS, PRECAST CONCRETE BARRIERS, AND TRAFFIC DRUMS AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS.

APPLY LEVELING COURSE IF AND WHERE DIRECTED BY THE ENGINEER.

UTILIZE METHOD OF RAISING GRADE FROM STA. 123+60 TO STA. 126+00.

CONSTRUCT DRAINAGE STRUCTURES AS SHOWN IN THE STAGE 1 MAINTENANCE OF TRAFFIC DETAILS. CROSS DRAINS AT STA. 105+00, 107+10, AND 128+90 MAY BE REQUIRED TO BE CONSTRUCTED IN THEIR ENTIRETY DURING STAGE 1 TO MAINTAIN POSITIVE DRAINAGE.

CONSTRUCT RT. OF HWY. 278 FROM STA. 102+04.00 TO STA. 109+00.00. AND FROM STA. 126+00.00 TO STA. 129+25.00. CONSTRUCT LT. AND RT. OF HWY. 278 FROM STA. 109+00.00 TO STA. 110+18.40 AND FROM STA. 119+40.60 TO STA. 120+00.00. CONSTRUCT TEMPORARY WIDENING RT. OF HWY. 278 FROM STA. 120+00.00 TO STA. 126+00.00.

CONSTRUCT BRIDGE STRUCTURE FROM STA. 110+18.40 TO STA. 119+40.60 AS SHOWN ON THE BRIDGE STAGE CONSTRUCTION DETAILS.

STAGE 2:

RETAIN ADVANCE WARNING SIGNS AT THE LOCATIONS LISTED ON THE ADVANCE WARNING DETAILS. RETAIN END ROAD WORK SIGNS AT THE END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAILS. RETAIN ROAD WORK AHEAD SIGN AS SHOWN ON ADVANCE WARNING DETAILS.

SHIFT TRAFFIC TO STAGE 2 CENTERLINE AS SHOWN. INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC DRUMS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS. RELOCATE AND FURNISH AND INSTALL PRECAST CONCRETE BARRIERS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT LT. OF HWY. 278 FROM STA. 102+04.00 TO STA. 109+00.00 AND FROM STA. 120+00.00 TO STA. 129+25.00.

CONSTRUCT DRAINAGE STRUCTURES AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 3:

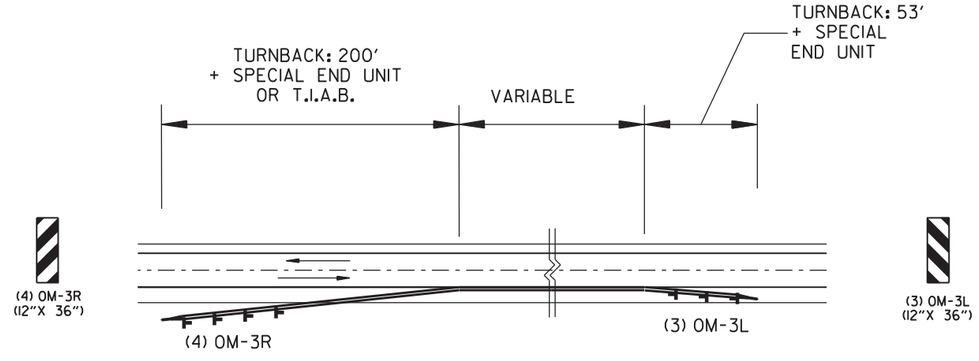
RETAIN ADVANCE WARNING SIGNS AT THE LOCATIONS LISTED ON THE ADVANCE WARNING DETAILS. RETAIN END ROAD WORK SIGNS AT THE END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAILS. RETAIN ROAD WORK AHEAD SIGN AS SHOWN ON ADVANCE WARNING DETAILS.

SHIFT TRAFFIC TO CONSTRUCTION CENTERLINE AS SHOWN. INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC DRUMS AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

CONSTRUCT RT. SIDEWALK FROM STA. 120+00.00 TO STA. 125+00.00 AND CONSTRUCT DROP INLETS AT STA. 124+00 RT. AND STA. 124+75 RT.

REMOVE TEMPORARY WIDENING RT. OF HWY. 278 FROM STA. 121+00 TO STA. 126+00.

APPLY FINAL 2" LIFT OF ACHM AND PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PERMANENT PAVEMENT MARKING DETAILS.



REFER ALSO TO STANDARD DRAWING TC-5 FOR DETAILS OF PLACEMENT OF PCCB TURNBACKS.

NOTE: OM-3L & OM-3R SIGNS SHALL BE EQUALLY SPACED ALONG PCCB TURNBACK.

DETAIL OF OBJECT MARKERS
AT PRECAST CONCRETE BARRIER TURNBACKS

HT39710 6/10/2020
R020590.DGN

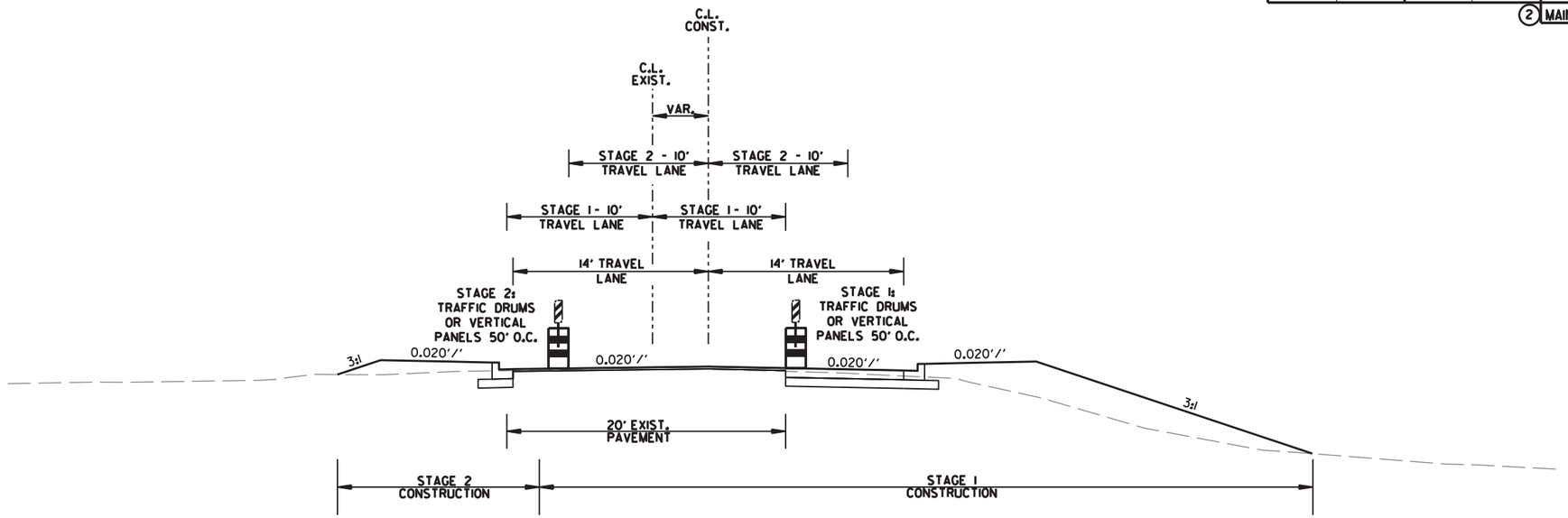
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	24	108

(2) MAINTENANCE OF TRAFFIC DETAILS

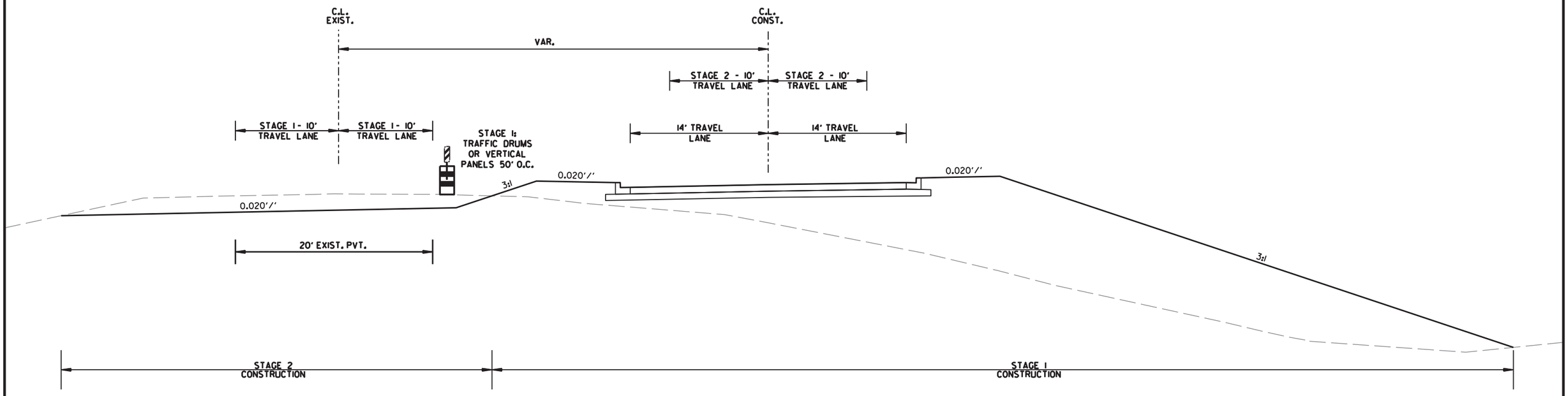
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:52 PM
DocuSign



STAGE CONSTRUCTION
STA. 102+04.00 - STA. 109+00.00
STA. 126+00.00 - STA. 129+25.00



STAGE CONSTRUCTION
STA. 109+00.00 - STA. 110+18.40.00

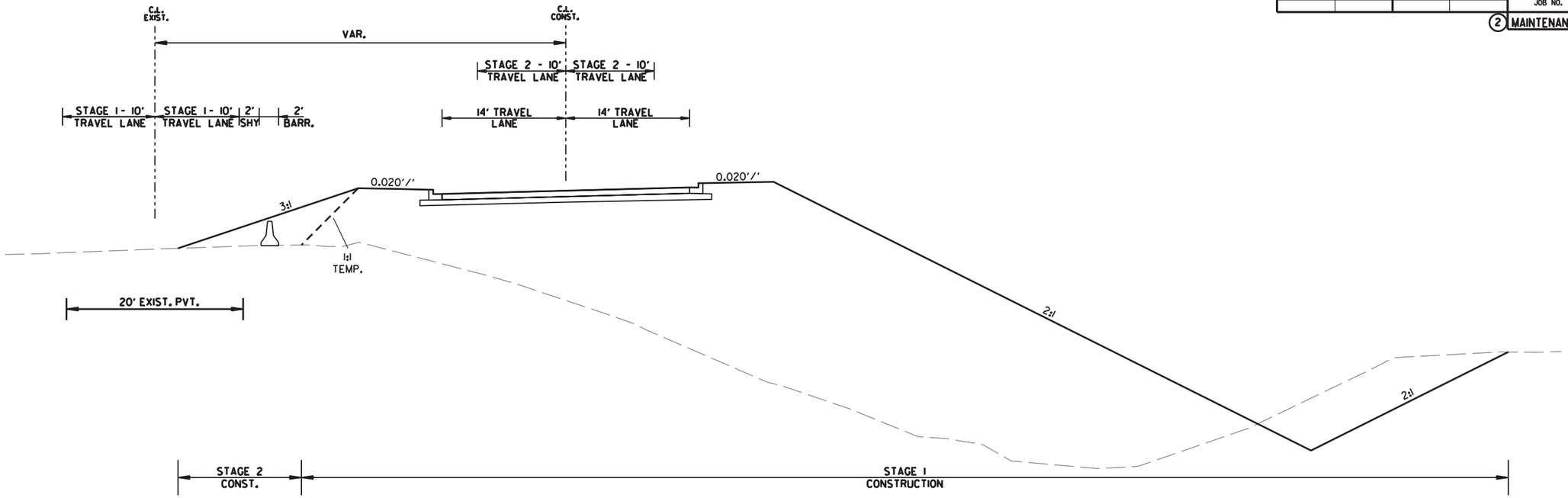
HT39710 6/12/2020
RO20590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	25	108

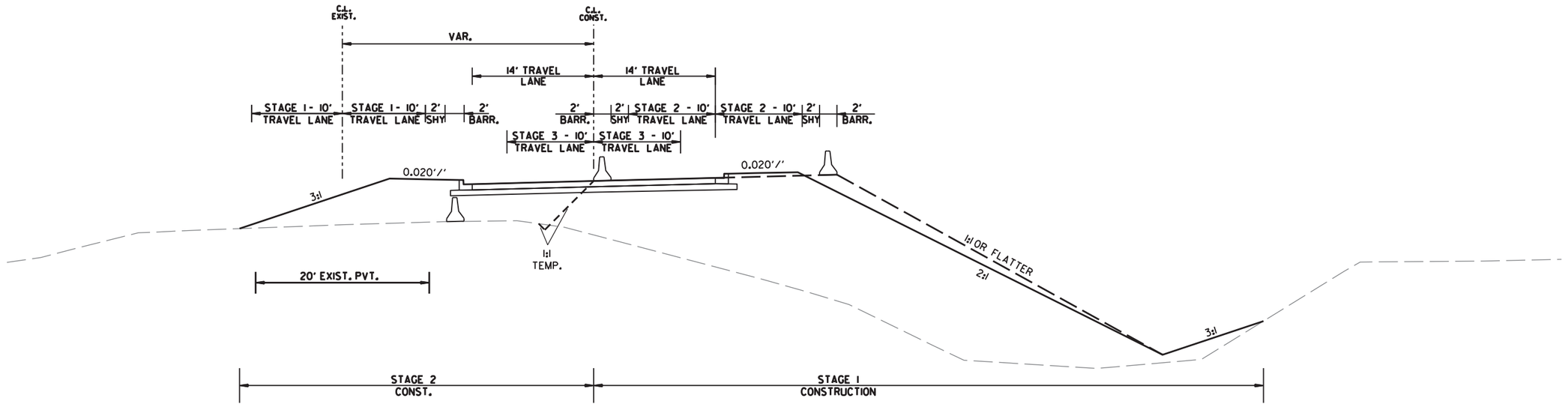
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:53 PM
DocuSign



STAGE CONSTRUCTION
STA. 119+40.60 - STA. 120+00.00



STAGE CONSTRUCTION
STA. 120+00.00 - STA. 126+00.00

HT39710 6/10/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
03-11-21			

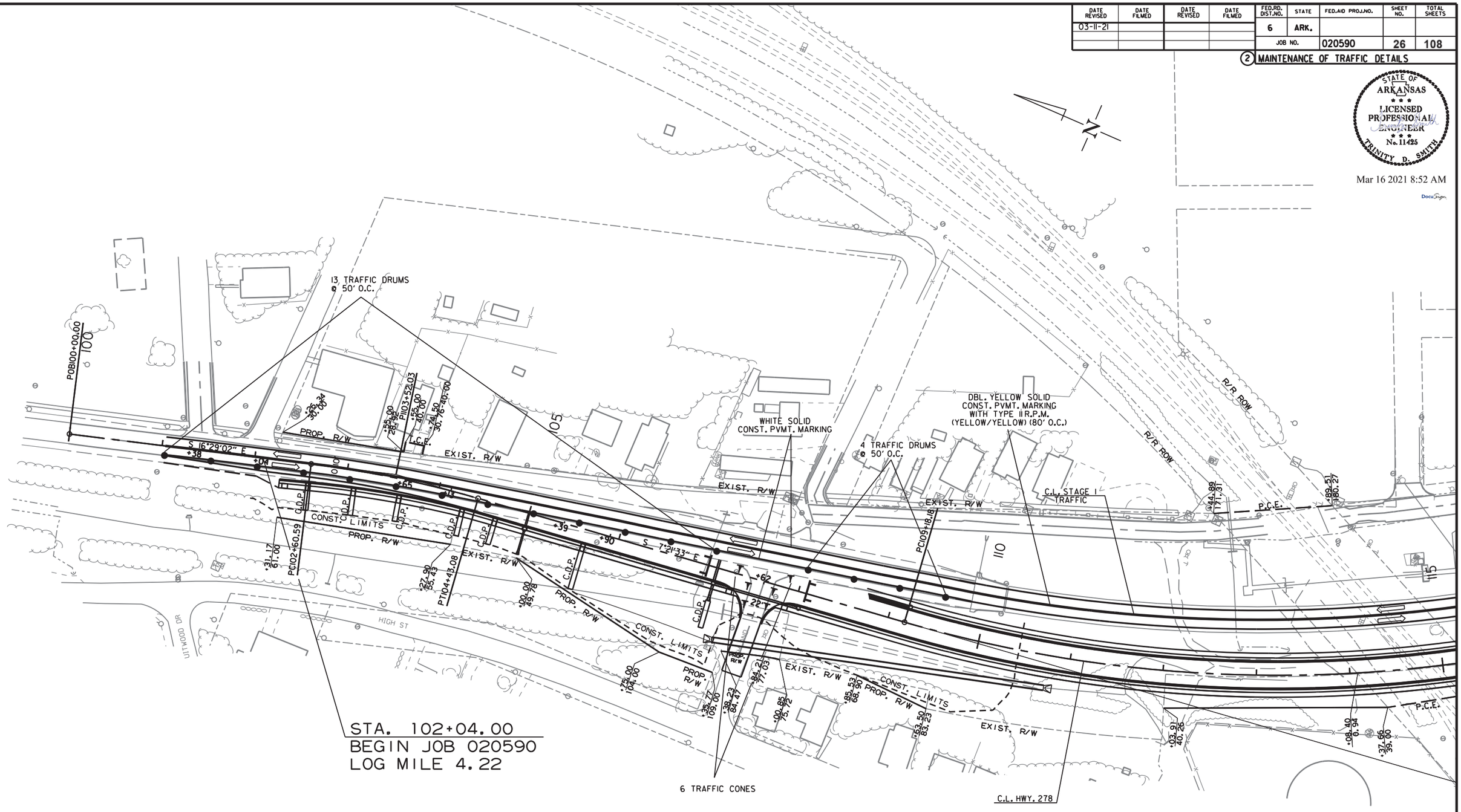
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	26	108

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Mar 16 2021 8:52 AM

DocuSign



STAGE I
MAINTENANCE OF TRAFFIC DETAILS

HT39710 3/11/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
03-11-21			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	27	108

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Mar 16 2021 8:51 AM

DocuSign

WHITE SOLID CONST. PVMT. MARKING

DBL. YELLOW SOLID CONST. PVMT. MARKING WITH TYPE II R.P.M. (YELLOW/YELLOW) (80' O.C.)

FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER WITH SPECIAL END UNIT - 413 LIN. FT. INSTALL TIAB - 1 EACH

C.L. STAGE I TRAFFIC

3 TRAFFIC DRUMS @ 50' O.C.

10 TRAFFIC DRUMS @ 50' O.C.

6 TRAFFIC CONES

STAGE I CONSTRUCTION 200' TAPER

STAGE I CONSTRUCTION 200' TAPER

STA. 123+15 INSTALL
18" X 56' TEMP. PIPE CULVERT
FILL AND ABANDON USING
6 CU. YD. FLOWABLE SELECT MATERIAL
IN STAGE 2

STA. 129+25.00
END JOB 020590

STAGE I
MAINTENANCE OF TRAFFIC DETAILS

HT39710 3/11/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
03-11-21			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	28	108

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Mar 16 2021 8:51 AM

DocuSign

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

H139710 3/11/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
03-11-21			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	29	108

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Mar 16 2021 8:51 AM

DocuSign

WHITE SOLID CONST. PVMT. MARKING

DBL. YELLOW SOLID CONST. PVMT. MARKING WITH TYPE II R.P.M. (YELLOW/YELLOW) (80' O.C.)

RELOCATE PRECAST CONCRETE BARRIER WITH SPECIAL END UNIT - 273 LIN. FT.
RELOCATE TIAB - 1 EACH

RELOCATE PRECAST CONCRETE BARRIER - 120 LIN. FT.
INSTALL TIAB - 2 EACH

6 TRAFFIC CONES

6 TRAFFIC CONES

6 TRAFFIC CONES

1 TRAFFIC DRUM

4 TRAFFIC DRUMS @ 50' O.C.

C.L. HWY. 278

CONST. LIMITS

EXIST. R/W

PROP. R/W

P.C.E.

R/R ROW

C.D.P.

I.C.E.

C.L. STAGE 2 TRAFFIC
0.00' OFFSET

C.L. STAGE 2 TRAFFIC
14.00' OFFSET

STAGE 2 TRAFFIC
200' TAPER

RELOCATE PRECAST CONCRETE BARRIER - 20 LIN. FT.

FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER WITH SPECIAL END UNIT - 373 LIN. FT.
INSTALL TIAB - 1 EACH

STA. 129+25.00
END JOB 020590

STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

HT39710 3/11/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
03-11-21			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	30	108

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Mar 16 2021 8:51 AM

DocuSign

ROW
P.C.E.
189.51
160.27
CHURCH ST
1ST CT
WHITE SOLID CONST. PVMT. MARKING
SCHOOL ST
DBL. YELLOW SOLID CONST. PVMT. MARKING WITH TYPE II R.P.M. (YELLOW/YELLOW) (80' O.C.)
C.L. HWY. 278
C.L. STAGE 3 TRAFFIC
E B KING BR
EXIST. R/W
PI123+51.63
120
125
PI125+40.72
SHERMAN ST
EXIST. R/W
EXIST. R/W
90.00
54.61
90.00
60.00
I.C.E.
60.00
60.00
52.31
EXIST. R/W
130
POE130+25.00
CONST. LIMITS
40'
CONST. LIMITS
40'
CONST. LIMITS
S 59°57'41" E
+28
+38
+25
+13
C.D.P.
C.D.P.
C.D.P.
C.D.P.
C.D.P.
20'
EXIST. R/W
CONST. LIMITS
PROP. R/W
25.00
49.82
25.00
87.00
P.C.E.
P.C.E.
32.39
1.34
153.72
34.56
441.21
3.05
P.C.E.
38.65
24.08
35.00
47.00
P.C.E.
21.63
58.79
23.61
8.53
S 7°21'33" E
R/R ROW
R/R ROW
PI117+01.43
57.36
92.16
EXIST. R/W
27.47
39.49
29.09
46.42
29.78
36.45
CONST. LIMITS
CONST. LIMITS
25.72
69.44
59.36
104.49
P.C.E.
P.C.E.
50.00
124.00
PC124+93.31
62.00
115.00
77.00
80.00
PT125+88.07
PARKS ST
N PARK ST
12 TRAFFIC DRUMS @ 50' O.C.
6 TRAFFIC CONES
STA. 129+25.00
END JOB 020590

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

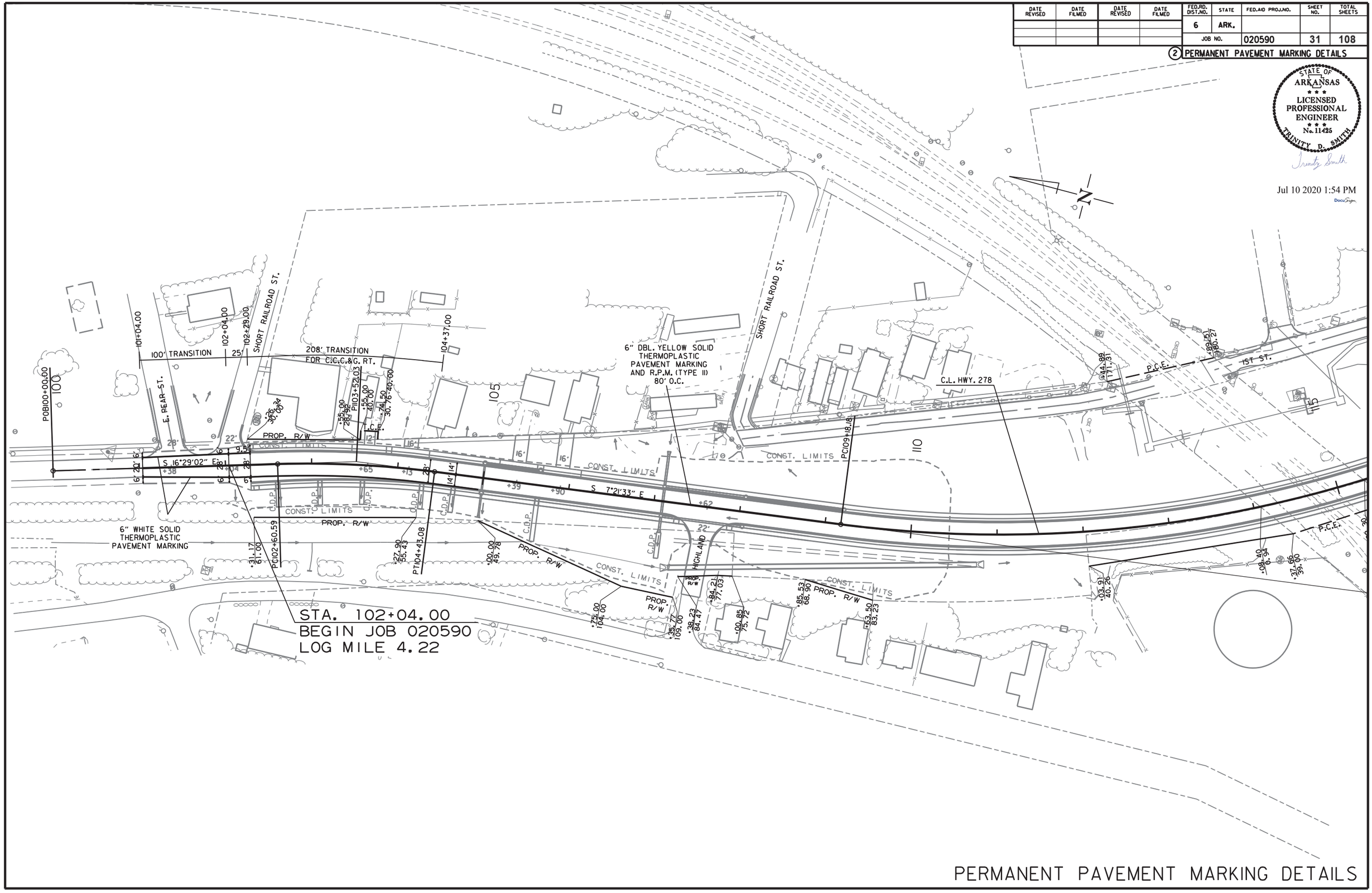
HT39710 3/11/2021
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	31	108

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:54 PM
DocuSign



PERMANENT PAVEMENT MARKING DETAILS

HT39710 6/10/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

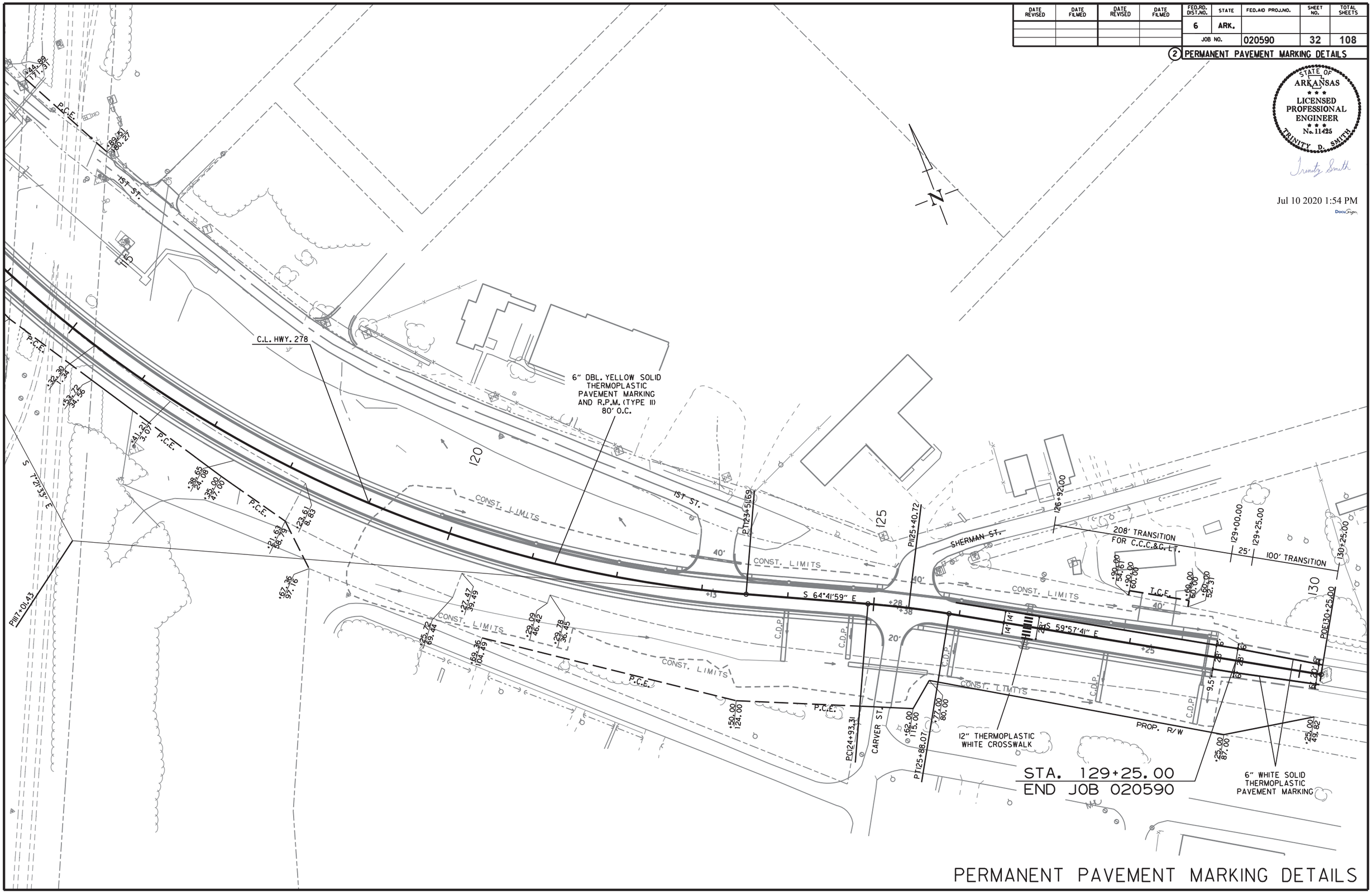
FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	32	108

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:54 PM
DocuSign



PERMANENT PAVEMENT MARKING DETAILS

HT39710 6/10/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
03-11-21				6	ARK.			
09-10-21				JOB NO.		020590	33	108

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Sep 29 2021 12:18 PM

DocuSigned

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		CONSTRUCTION PROJECT INFORMATION SIGN UPDATE	VERTICAL PANELS	TRAFFIC DRUMS	TRAFFIC CONE	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)	TEMP. IMPACT ATTEN.BARR. (RELOCATION)
				LIN. FT. - EACH				NO.	SQ. FT.	EACH		EACH		RIGHT	LEFT	LIN. FT.			EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2		2	2	32.0											
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2		2	2	32.0											
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2		2	2	32.0											
W20-1	ROAD WORK AHEAD	48"x48"	6	6	6		6	6	96.0											
G20-2	END ROAD WORK	48"x24"	8	8	8		8	8	64.0											
OM-3L	OBJECT MARKER	12"x36"	3	9			9	9	27.0											
OM-3R	OBJECT MARKER	12"x36"	4	12			12	12	36.0											
R4-1	DO NOT PASS	24"x30"	4	4	4		4	4	20.0											
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	4	4	4		4	4	36.0											
W8-1	BUMP	30"x30"	2	2	2		2	2	12.5											
SPECIAL	CONSTRUCTION PROJECT INFORMATION SIGN	96"x48"	2	2	2		2	2	64.0											
	CONSTRUCTION PROJECT INFORMATION SIGN UPDATE									10										
	VERTICAL PANELS		30	18	12		30				30									
	TRAFFIC DRUMS		30	18	12		30					30								
	TRAFFIC CONES		12	54	6		54						54							
	TYPE III BARRICADE-RT. (8')		1	1			1							8						
	TYPE III BARRICADE-LT. (8')		2	2			2								16					
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		413	373			786									786				
	RELOCATING PRECAST CONCRETE BARRIER			413			413										413			
	TEMPORARY IMPACT ATTENUATION BARRIER		1	3			4											4		
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)		1	3			4												4	
	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)			1			1													1
TOTALS:								451.5		10	30	30	54	8	16	786	413	4	4	1

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED INSECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING		
									TYPE II	6"		12"
	LIN. FT. - EACH				LIN. FT.		LIN. FT.		(YELLOW/YELLOW) EACH	WHITE	YELLOW	WHITE
										LIN. FT.		
REMOVAL OF PERMANENT PAVEMENT MARKINGS	1892				1892							
CONSTRUCTION PAVEMENT MARKINGS	11684	7696	7696			27076						
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	5984	2400	7696				16080					
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		3988	3988					7976				
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)	37	37	37	37					148			
THERMOPLASTIC PAVEMENT MARKING WHITE (6")				1071						1071		
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")				5842							5842	
THERMOPLASTIC PAVEMENT MARKING WHITE (12")				80								80
TOTALS:					1892	27076	16080	7976	148	1071	5842	80

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED INSECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTON.

NOTE: THE 6" YELLOW STRIPNG 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.

HT39710 9/9/2021
R020590.DGN

QUANTITIES

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.		020590	34	108

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:55 PM
DocuSign

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL						
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	ROCK DITCH CHECKS (E-6)	DROP INLET FILTER SOCK(12") (E-13)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	CU.YD.	LIN. FT.	LIN. FT.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						8.96	8.96	182.8	66		930	56
ENTIRE	PROJECT	STAGE 1	3.31	6.62	3.31	337.6	3.31				27	322		21
ENTIRE	PROJECT	STAGE 2	1.40	2.80	1.40	142.8	1.40				15	273		15
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.18	2.36	1.18	120.4	1.18	2.24	2.24	45.7	27	150	233	23
TOTALS:			**5.89**	**11.78**	**5.89**	**600.8**	**5.89**	**11.20**	**11.20**	**228.5**	**135**	**743**	**1163**	**115**

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
102+04	111+00	HWY. 278	9	9
119+00	126+00	HWY. 278	7	7
TOTALS:			**16**	**16**

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	DROP INLETS
		EACH	EACH
109+50	MAIN LANES - RT.	1	
109+80	MAIN LANES - LT.	1	1
119+37	MAIN LANES - LT.	1	1
123+13	MAIN LANES - LT.	1	
125+28	MAIN LANES - RT.	1	
128+25	MAIN LANES - LT.	1	
129+70	MAIN LANES - LT.	1	
TOTALS:		**7**	**2**

NOTE: QUANTITIES SHOWN ABOVE SHALL INCLUDE REMOVAL & DISPOSAL OF ALL HEADWALLS AND FLARED END SECTIONS IF APPLICAB_E.

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
110+18.40	MAIN LANES - RT. BRIDGE	1
119+40.60	MAIN LANES - LT. BRIDGE	1
TOTAL:		**2**

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

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CONCRETE DRIVEWAYS	WALKS	SIGN FOUNDATIONS	HEADWALLS	GUARDRAIL	STEEL POSTS	SIGNS
			SQ. YD.	SQ. YD.	EACH	EACH	LIN. FT.	EACH	EACH
102+17	106+65	MAIN LANES - LT.		253					
107+00	107+00	MAIN LANES - LT. AND RT.				2			
108+15	108+42	MAIN LANES - LT.					27		
108+16	110+18	MAIN LANES - RT.					202		
109+35	110+18	MAIN LANES - LT.					83		
119+05	120+35	MAIN LANES - LT.					130		
119+05	125+05	MAIN LANES - RT.					600		
124+60	124+60	MAIN LANES - RT.						3	
128+04	128+04	MAIN LANES - LT.			1				1
128+25	128+25	MAIN LANES - LT.	207						
128+55	128+55	MAIN LANES - LT.			1				1
TOTALS:			**207**	**253**	**2**	**2**	**1042**	**3**	**2**

NOTE: THE QUANTITY SHOWN ABOVE FOR THE REMOVAL AND DISPOSAL OF GUARDRAIL SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ALL GUARDRAIL TERMINALS AND TERMINAL ANCHOR POSTS.

EARTHWORK

	STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	COMPACTED EMBANKMENT (SPECIAL)	* REMOVING AND REPLACING TOPSOIL	* SOIL STABILIZATION
				CU. YD.				TON
	102+04.00	129+25.00	STAGE 1-MAIN LANES	2935	11547			
	102+04.00	129+25.00	STAGE 2-MAIN LANES	1008	2166			
	102+04.00	129+25.00	STAGE 3-MAIN LANES	325	91			
	102+04.00	129+25.00	APPROACHES		2300			
	102+04.00	129+25.00	TEMPORARY APPROACHES		195			
	119+40.60	123+00.00	STAGE 1-MAIN LANES			12881		
*	102+04.00	129+25.00	STAGE 1-UNDERCUT RT. MAIN LANES	1600	1600			
	110+18.40	119+40.60	BRIDGE EXCAVATION	2000				
*	ENTIRE	PROJECT	TO BE USED IF AND WHERE				3168	500
			DIRECTED BY THE ENGINEER					
	TOTALS:			**7868**	**17899**	**12881**	**3168**	**500**

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

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

HT39710 6/12/2020
R020590.DGN

QUANTITIES

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.		020590	35	108

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:55 PM
DocuSign

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
102+00	33	37	5.00	91	23	28.10	06 RT	0-5	ND	NP	A-4(0)	BROWN
102+00	33	37	4.90	91	23	28.20	15 RT	0-5	ND	NP	A-4(0)	BROWN
102+00	33	37	4.90	91	23	28.30	24 RT	0-5	ND	NP	A-4(0)	BROWN
109+90	33	36	57.20	91	23	26.30	33 RT	0-5	35	24	A-6(16)	BROWN
110+00	33	36	57.10	91	23	26.30	33 RT	0-5	43	33	A-7-6(29)	BROWN
119+00	33	36	49.30	91	23	21.20	30 RT	0-5	35	18	A-6(18)	BR/GR
127+00	33	36	45.20	91	23	13.30	06 LT	0-5	ND	NP	A-4(0)	BR/GR
127+00	33	36	45.20	91	23	13.20	15 LT	0-5	ND	NP	A-4(0)	BR/GR

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
102+60.00	102+60.00	MAIN LANES - RT.	21.14	5.00	11.74	9.40	0.12
103+10.00	103+10.00	MAIN LANES - RT.	21.06	5.00	11.70	9.36	0.12
103+60.00	103+60.00	MAIN LANES - RT.	19.80	5.00	11.00	8.80	0.11
104+30.00	104+30.00	MAIN LANES - RT.	21.18	5.00	11.77	9.41	0.12
104+67.00	104+67.00	MAIN LANES - RT.	20.82	5.00	11.57	9.25	0.12
105+65.00	105+65.00	MAIN LANES - RT.	42.20	5.00	23.44	18.76	0.24
107+10.00	107+10.00	MAIN LANES - RT.	30.00	5.00	16.67	13.33	0.17
124+00.00	124+00.00	MAIN LANES - RT.	50.50	5.00	28.06	22.44	0.28
124+75.00	124+75.00	MAIN LANES - RT.	42.00	5.00	23.33	18.67	0.24
126+00.00	126+00.00	MAIN LANES - RT.	48.00	5.00	26.67	21.33	0.27
127+75.00	127+75.00	MAIN LANES - RT.	49.50	5.00	27.50	22.00	0.28
128+90.00	128+90.00	MAIN LANES - RT.	45.75	5.00	25.42	20.33	0.26
TOTALS:					228.87	183.08	2.33

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
102+29	110+18	MAIN LANES - LT.	789
102+29	107+48	MAIN LANES - RT.	519
107+70	110+18	MAIN LANES - RT.	248
119+40	122+89	MAIN LANES - LT.	349
119+40	125+15	MAIN LANES - RT.	575
123+32	125+25	MAIN LANES - LT.	193
125+35	129+00	MAIN LANES - RT.	365
125+65	129+00	MAIN LANES - LT.	335
TOTAL:			3373

APPROACH SLABS

STATION	STATION	LOCATION	APPROACH SLABS	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	POUND	TON
109+81.90	110+18.40	HWY. 278	64.34	7695	33.90
119+40.60	119+77.10	HWY. 278	64.34	7695	33.90
TOTALS:			128.68	15390	67.80

CONCRETE WALKS & HAND RAILING

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS	HAND RAILING
			LIN. FT.	SQ.YD.	LIN. FT.
102+29	103+45	MAIN LANES - LT.	116	64	
102+29	107+39	MAIN LANES - RT.	510	283	
103+85	103+91	MAIN LANES - LT.	6	3	
104+35	105+17	MAIN LANES - LT.	82	46	
105+61	105+68	MAIN LANES - LT.	7	4	
106+12	110+18	MAIN LANES - LT.	406	226	
107+80	110+18	MAIN LANES - RT.	238	132	
119+40	122+81	MAIN LANES - LT.	341	189	
119+40	125+06	MAIN LANES - RT.	566	314	
119+41	123+51	MAIN LANES - RT.			410
123+41	125+16	MAIN LANES - LT.	175	97	
125+45	129+00	MAIN LANES - RT.	355	197	
125+72	127+91	MAIN LANES - LT.	219	122	
128+59	129+00	MAIN LANES - LT.	41	23	
TOTALS:				1700	410

SOLID SODDING

STATION	STATION	LOCATION	LENGTH	SOLID SODDING	WATER
			LIN. FT.	SQ.YD.	M. GAL.
102+29	103+45	MAIN LANES - LT.	116	39	1
102+29	107+39	MAIN LANES - RT.	510	170	2
103+85	103+91	MAIN LANES - LT.	6	2	1
104+35	105+17	MAIN LANES - LT.	82	27	1
105+61	105+68	MAIN LANES - LT.	7	2	1
106+12	110+18	MAIN LANES - LT.	406	135	2
107+80	110+18	MAIN LANES - RT.	238	79	1
119+40	122+81	MAIN LANES - LT.	341	114	1
119+40	125+06	MAIN LANES - RT.	566	189	2
123+41	125+16	MAIN LANES - LT.	175	58	1
125+45	129+00	MAIN LANES - RT.	355	118	1
125+72	127+91	MAIN LANES - LT.	219	73	1
128+59	129+00	MAIN LANES - LT.	41	14	1
TOTALS:				1020	16

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3
		SQ.YD.
102+30	MAIN LANES - LT.	5.4
102+30	MAIN LANES - RT.	5.4
107+28	MAIN LANES - RT.	5.4
107+90	MAIN LANES - RT.	5.4
122+71	MAIN LANES - LT.	5.4
123+54	MAIN LANES - LT.	5.4
124+95	MAIN LANES - RT.	5.4
125+05	MAIN LANES - LT.	5.4
125+58	MAIN LANES - RT.	5.4
125+82	MAIN LANES - LT.	5.4
126+80	MAIN LANES - LT.	11.2
126+80	MAIN LANES - RT.	11.2
128+95	MAIN LANES - LT.	5.4
128+95	MAIN LANES - RT.	5.4
TOTAL:		87.2

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			1500	6
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			1500	6

* NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.

UNDERDRAINS SHALL BE STUBBED INTO THE PROPOSED DROP INLET IF AND WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR THIS TO BE INCLUDED IN THE UNIT PRICE BID FOR 4" PIPE UNDERDRAIN.

HT39710 7/6/2020
R020590.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-28-21				6	ARK.			
				JOB NO.		020590	36	108

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Nov 1 2021 11:37 AM

DocuSign

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
105+00	MAIN LANES	7.92	14	4.1
128+90	MAIN LANES	8.50	20	6.3
TOTAL:				10.4

AVG. DEPTH = 12"

FLOWABLE SELECT MATERIAL

STATION	LOCATION	CU. YD.
123+15	MAIN LANES - TEMPORARY PIPE	6
TOTAL:		6

STRUCTURES

STATION	DESCRIPTION	PIPE CULVERT ALTERNATES								SIDE DRAIN	PIPE CULVERT STORM DRAIN ALTERNATES 1, 2, 3, 4, & 5		FLARED END SECTIONS ALT. 1 AND 2			TEMPORARY CULVERTS	DROP INLETS			YARD DRAINS	SOLID SODDING	WATER	STD. DWG. NOS.
		ALT. 1 (CLASS III)	ALT. 2, 3, 4, 5, 6, AND 7 (WITH CLASS III ALT. 1)	ALT. 1 (CLASS IV)			ALT. 2, 3, 4, 5, 6, AND 7 (WITH CLASS IV ALT. 1)		ALT. 2, 3, 4, AND 5 (WITH CLASS IV ALT. 1)								TYPE		EXT.				
		24"	24"	18"	24"	60"	18"	24"	60"	12"	18"	24"	18"	24"	60"	18"	MO	TYPE SPECIAL	4'				
		LIN. FT.											EACH			LIN. FT.	EACH				SQ.YD.	M.GAL.	
102+60	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
103+10	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
103+60	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
104+30	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
104+67	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
105+00	CONSTRUCT DROP INLET ON LT. W/ PIPE OUTLET			32			32										1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
105+00	CONSTRUCT DROP INLET ON RT. W/ PIPE OUTLET W/ F.E.S.										16		1				1				5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
105+65	CONSTRUCT DROP INLET ON LT. W/ PIPE OUTLET										62						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
105+65	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
107+10	CONSTRUCT DROP INLET ON LT. W/PIPE INLET W/F.E.S. AND W/PIPE OUTLET	32	32									32		1			1				8	0.10	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
107+10	CONSTRUCT DROP INLET ON RT. W/PIPE OUTLET W/F.E.S.											14		1			1				8	0.10	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
107+25	INSTALL PIPE CULVERT ON RT.					360			360						2								FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-4
108+05	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET											92					1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
108+05	CONSTRUCT DROP INLET ON RT. W/PIPE OUTLET											92					1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
109+20	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										112						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
119+85	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										110						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
121+00	CONSTRUCT DROP INLET ON LT. W/EXT. W/PIPE OUTLET										96						1		1				FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
122+00	CONSTRUCT DROP INLET ON LT. W/EXT. W/PIPE OUTLET										52						1		1				FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
122+55	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										140						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
123+15	INSTALL TEMPORARY PIPE															56							
124+00	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										72						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
124+00	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
124+75	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										124						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
124+75	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
126+00	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										172						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
126+00	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
127+75	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET										112						1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
127+75	CONSTRUCT DROP INLET ON RT.																	1					SPECIAL DETAIL
128+90	CONSTRUCT DROP INLET ON LT. W/PIPE OUTLET				38			38									1						FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
128+90	CONSTRUCT DROP INLET ON RT. W/PIPE OUTLET W/F.E.S.											10		1			1				8	0.10	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
*	ENTIRE PROJECT TO BE USED AS DIRECTED BY THE ENGINEER									600										6			FPC-9, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
TOTALS:		32	32	32	38	360	32	38	360	600	1068	240	1	3	2	56	18	10	2	6	29	0.36	

NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING

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

NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	160
ENGINEER	
TOTAL:	160

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
101+04.00	102+04.00	MAIN LANES	20.00	222.22
103+70.00	105+75.00	MAIN LANES	13.50	307.50
128+90.00	130+25.00	MAIN LANES	20.00	300.00
TOTAL:				829.72

NOTE: AVERAGE MILLING DEPTH 1".

COLD MILLINGS SHALL BE STOCKPILED AT THE FOLLOWING LOCATION:
DESHA COUNTY MAINTENANCE YARD
9054 HWY. 65 NORTH
MCGEHEE, AR 71654

HT39710 10/14/2021
R020590.DGN

QUANTITIES

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.		020590	37	108

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:56 PM
DocuSign

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	**MODIFIED CURB		PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS		STANDARD DRAWINGS
										24"	60"	
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.		
101+38	LT.	MAIN LANES - E. PEAR ST.	28				49.78	5.48	20.33			
102+04	LT.	MAIN LANES - SHORT RAILROAD ST.	22				44.44	4.89	18.15			
103+65	LT.	MAIN LANES	12	103+45	103+85		58.23	6.41	23.78			DR-1
104+13	LT.	MAIN LANES	16	103+91	104+35		60.44	6.65	24.68			DR-1
105+39	LT.	MAIN LANES	16	105+17	105+61		96.00	10.56	39.20			DR-1
105+90	LT.	MAIN LANES	16	105+68	106+12		110.22	12.12	45.01			DR-1
107+62	RT.	MAIN LANES - HIGHLAND	22				191.11	21.02	78.04			
123+13	LT.	MAIN LANES - 1ST ST.	40				171.55	18.87	70.05	60		PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
125+28	RT.	MAIN LANES - CARVER ST.	20				207.11	22.78	84.57		94	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
125+38	LT.	MAIN LANES - SHERMAN ST.	40				247.11	27.18	100.90			
128+25	LT.	MAIN LANES	40	127+91	128+59	207.11				54		DR-1, PCC-1, PCM-1, PCP-1, PCP-2, PCP-3
* ENTIRE PROJECT TEMPORARY DRIVES									195.00			
TOTALS:						**207.11**	**1235.99**	**135.96**	**699.71**	**114**	**94**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

** FOR INFORMATION ONLY

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

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	25
DIRECTED BY THE ENGINEER	
TOTAL:	**25**

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	25	50
DIRECTED BY THE ENGINEER		
TOTALS:	**25**	**50**

NOTE: QUANTITIES ARE ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC...25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE

HT39710 6/12/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	38	108

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Trinity Smith

Jul 10 2020 1:56 PM
DocuSign

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT							ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
						(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)																
				TON / STATION	TON	TOTAL WID.	SQ.YD.	GALLON	TOTAL WID.	SQ.YD.	GALLON	TOTAL GALLONS	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																									
101+04.00	102+04.00	TRANSITION - MAIN LANES	100.00	92.00	92.00	28.00	311.11	15.56				15.56	4.00	44.44	440.00	9.78	4.00	44.44	220.00	4.89	36.00	400.00	220.00	44.00	48.89
102+04.00	102+29.00	OPEN SHOULDER TO C.C.C.G. TRANSITION - MAIN LANES	25.00	139.00	34.75	42.00	116.67	5.83				5.83	11.00	30.56	440.00	6.72	11.00	30.56	220.00	3.36	46.50	129.17	220.00	14.21	17.57
102+29.00	104+18.35	NOTCH AND WIDEN - MAIN LANES	189.35	66.75	126.39	42.50	894.15	44.71				44.71	11.25	236.69	440.00	52.07	11.25	236.69	220.00	26.04	31.25	657.47	220.00	72.32	98.36
104+18.35	104+37.00	NOTCH AND WIDEN - MAIN LANES	18.65	57.00	10.63	37.50	77.71	3.89				3.89	9.25	19.17	440.00	4.22	9.25	19.17	220.00	2.11	28.25	58.54	220.00	6.44	8.55
104+37.00	104+81.02	NOTCH AND WIDEN - MAIN LANES	44.02	70.50	31.03	40.00	195.64	9.78				9.78	12.00	58.69	440.00	12.91	12.00	58.69	220.00	6.46	28.00	136.95	220.00	15.06	21.52
104+81.02	106+28.46	NOTCH AND WIDEN - MAIN LANES	147.44	114.25	168.45	49.00	802.73	40.14				40.14	21.00	344.03	440.00	75.69	21.00	344.03	220.00	37.84	28.00	458.70	220.00	50.46	88.30
106+28.46	109+81.90	FULL DEPTH - MAIN LANES	353.44	160.50	567.27	56.00	2199.18	109.96				109.96	28.00	1099.59	440.00	241.91	28.00	1099.59	220.00	120.95	28.00	1099.59	220.00	120.95	241.90
119+77.10	123+60.00	FULL DEPTH - MAIN LANES	382.90	160.50	614.55	56.00	2382.49	119.12				119.12	28.00	1191.24	440.00	262.07	28.00	1191.24	220.00	131.04	28.00	1191.24	220.00	131.04	262.08
123+60.00	126+00.00	FULL DEPTH - MAIN LANES	240.00	87.50	210.00	56.00	1493.33	74.67				74.67	28.00	746.67	440.00	164.27	28.00	746.67	220.00	82.13	28.00	746.67	220.00	82.13	164.26
126+00.00	126+92.00	NOTCH AND WIDEN - MAIN LANES	92.00			28.00	286.22	14.31				14.31									28.00	286.22	220.00	31.48	31.48
126+92.00	129+00.00	NOTCH AND WIDEN - MAIN LANES	208.00	46.25	96.20	38.00	878.22	43.91				43.91	7.00	161.78	440.00	35.59	7.00	161.78	220.00	17.80	31.00	716.44	220.00	78.81	96.61
129+00.00	129+25.00	OPEN SHOULDER TO C.C.C.G. TRANSITION - MAIN LANES	25.00	139.00	34.75	42.00	116.67	5.83				5.83	11.00	30.56	440.00	6.72	11.00	30.56	220.00	3.36	46.50	129.17	220.00	14.21	17.57
129+25.00	130+25.00	TRANSITION - MAIN LANES	100.00	92.00	92.00	28.00	311.11	15.56				15.56	4.00	44.44	440.00	9.78	4.00	44.44	220.00	4.89	36.00	400.00	220.00	44.00	48.89
ADDITIONAL FOR MAINTENANCE OF TRAFFIC																									
120+00.00	122+00.00	STAGE 1 CONST. TRANSITION	200.00	78.50	157.00	16.04	356.44	17.82				17.82	4.29	95.33	440.00	20.97	11.75	261.11	220.00	28.72					28.72
122+00.00	124+00.00	STAGE 1 CONST.	200.00	76.25	152.50	22.58	501.78	25.09				25.09	8.58	190.87	440.00	41.95	14.00	311.11	220.00	34.22					34.22
124+00.00	126+00.00	STAGE 1 CONST. TRANSITION	200.00	58.00	116.00	11.29	250.89	12.54				12.54	4.29	95.33	440.00	20.97	7.00	155.56	220.00	17.11					17.11
ADDITIONAL FOR LEVELING																									
102+04.00	104+30.00	NOTCH AND WIDEN - MAIN LANES	226.00						20.00	502.22	85.38	85.38					20.00	502.22	VAR.	35.64					35.64
105+39.00	107+00.00	NOTCH AND WIDEN - MAIN LANES	161.00						5.00	89.44	15.20	15.20					5.00	89.44	VAR.	15.84					15.84
126+00.00	127+75.00	NOTCH AND WIDEN - MAIN LANES	175.00			40.00	777.78	38.89	20.00	388.89	66.11	105.00	20.00	388.89	VAR.	182.94	20.00	388.89	220.00	42.78					42.78
127+75.00	130+25.00	NOTCH AND WIDEN - MAIN LANES	250.00						20.00	555.56	94.45	94.45					20.00	555.56	VAR.	35.64					35.64
ADDITIONAL FOR METHOD OF RAISING GRADE																									
123+60.00	126+00.00	M.O.R.G. - MAIN LANES	240.00			100.00	2666.67	133.33	32.00	853.33	145.07	278.40	32.00	853.33	VAR.	665.28									
TOTALS:					**2503.52**		**14618.79**	**730.94**		**2389.44**	**406.21**	**1137.15**		**5631.41**		**1813.84**		**6271.75**		**650.82**		**6410.16**		**705.11**	**1355.93**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	TACK COAT 0.05 GAL. PER SQ. YD.			FORTLAND CEMENT CONCRETE BASE			
				AVG. WID.	SQ. YD.	GAL.	AVG. WID.	6" U.T.	AVG. WID.	7.5" U.T.
			FEET	FEET			FEET	SQ. YD.	FEET	SQ. YD.
102+29.00	104+18.35	MAIN LANES - LT.	189.35	1.00	21.04	1.05	1.00	21.04	3.50	73.64
104+18.35	104+81.02	MAIN LANES - LT.	62.67						2.50	17.41
104+81.02	106+28.46	MAIN LANES - LT.	147.44						2.50	40.96
126+00.00	126+92.00	MAIN LANES - LT. & RT.	92.00	8.00	81.78	4.09	8.00	81.78	13.00	132.89
126+92.00	129+00.00	MAIN LANES - RT.	208.00	4.00	92.44	4.62	4.00	92.44	6.50	150.22
TOTALS:					**195.26**	**9.76**		**195.26**		**415.12**

BASIS OF ESTIMATE:
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULISIFED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

HT39710 6/12/2020
R020590.DGN

QUANTITIES

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.		020590	39	108
(1) 07452		QUANTITIES		61213

SCHEDULE OF BRIDGE QUANTITIES - JOB. NO. 020590

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	619	801	SS & 802	SP, SS, & 802	803	SS & 804	SS & 804	SS & 805	806	806	SP, SS & 807	SS & 807	SS & 808	SS & 809
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	5' STEEL CHAIN LINK FENCE	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL SHELL PILING (18" DIA.) (1)	METAL BRIDGE RAILING (TYPE H)	TRANSITIONAL APPROACH RAILING	STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)	PAINTING STRUCTURAL STEEL (2)	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT
			UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	EACH	LB.	TON	CU. IN.	LIN. FT.
07452	HIGHWAY 278 OVER UNION PACIFIC RAILROAD	END BENT NO. 1					46.08		0.1	5,564		(3) 342		2	1,313	0.6	2,537.4	47
		BENT NO. 2				468	257.43			37,796		1,200					4,241.3	
		BENT NO. 3				411	268.63			40,284		1,200					4,241.3	
		BENT NO. 4				297	272.66			43,590		1,656					6,150.0	
		BENT NO. 5				263	263.03			42,560		1,704					6,630.0	
		BENT NO. 6				271	261.91			42,310		1,704					6,630.0	
		BENT NO. 7				405	270.31			43,092		1,656					6,150.0	
		BENT NO. 8				500	260.79			38,543		1,248					4,241.3	
		BENT NO. 9				437	238.38			33,567		1,368					4,241.3	
		END BENT NO. 10					45.98		0.1	5,564		(3) 312		2	1,313	0.6	2,537.4	47
		240'-0" CONT. PL GIRDER UNIT						421.29	26.7		116,819		480		266,821	13.3		
		440'-0" CONT. PL GIRDER UNIT			254			776.12	49.2		218,122		626		833,652	21.5		
		240'-0" CONT. PL GIRDER UNIT						421.29	26.7		116,819		480		266,821	13.3		
		SITE NO. 1 (EXISTING BR. NO. 05018)		1														
		TOTALS FOR JOB NO. 020590			254	3,052	2,185.20	1,618.70	102.8	332,870	451,760	12,390	1,586	4	1,369,920	49.3	47,600.0	94

SCHEDULE OF BRIDGE QUANTITIES - JOB. NO. 020590

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	SS & 809	812	816
			ITEM	ARMORED JOINT WITH NEOPRENE STRIP SEAL	BRIDGE NAME PLATE (TYPE D)	CONCRETE RIPRAP
			UNIT	LIN. FT.	EACH	CU. YD.
07452	HIGHWAY 278 OVER UNION PACIFIC RAILROAD	END BENT NO. 1				50
		BENT NO. 2				
		BENT NO. 3				
		BENT NO. 4		46		
		BENT NO. 5				
		BENT NO. 6				
		BENT NO. 7		46		
		BENT NO. 8				
		BENT NO. 9				
		END BENT NO. 10				62
		240'-0" CONT. PL GIRDER UNIT			1	
		440'-0" CONT. PL GIRDER UNIT				
		240'-0" CONT. PL GIRDER UNIT				
		SITE NO. 1 (EXISTING BR. NO. 05018)				
		TOTALS FOR JOB NO. 020590		92	1	112

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

(2) All Grade 50W structural steel, except galvanized members and surfaces in contact with concrete, within ten feet of the bridge deck expansion joints shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close to Fed. Std. 595 B, Color Chip No. 30070 and as approved by the Engineer. The finish system may be applied in the shop.

(3) The "ALTERNATE FLAT TIP DETAIL" shown on Std. Dwg. No. 550021 will not be allowed on End Bent Nos. 1 and 10.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY
ROUTE 278 SEC. 16
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_ql.dgn
CHECKED BY: ABH DATE: SEP. 2019 SCALE: No Scale
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61213

abnall 6/5/2020 4:28:27 PM
WORKSPACE: ARDOT Bridge
L:\20\T\07\07590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278_S001-QT.dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
07-28-20		03-11-21		10-28-21	
10-08-20		09-10-21		11-02-21	
10-30-20		10-14-21			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	40	108

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

SUMMARY OF QUANTITIES (BOX 1 OF 2)

	ITEM NUMBER	ITEM		QUANTITY	UNIT
	201	CLEARING		16	STATION
	201	GRUBBING		16	STATION
	202	REMOVAL AND DISPOSAL OF STEEL POSTS		3	EACH
	202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		207	SQ. YD.
	202	REMOVAL AND DISPOSAL OF WALKS		253	SQ. YD.
	202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		2	EACH
	202	REMOVAL AND DISPOSAL OF DROP INLETS		2	EACH
	202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		7	EACH
	202	REMOVAL AND DISPOSAL OF HEADWALLS		2	EACH
	202	REMOVAL AND DISPOSAL OF GUARDRAIL		1042	LIN. FT.
	202	REMOVAL AND DISPOSAL OF SIGNS		2	EACH
	206	FLOWABLE SELECT MATERIAL		6	CU. YD.
	SS & 210	UNCLASSIFIED EXCAVATION		7868	CU. YD.
	210	COMPACTED EMBANKMENT		17899	CU. YD.
	SP & 210	COMPACTED EMBANKMENT (SPECIAL)		12881	CU. YD.
	SP	REMOVING AND REPLACING TOPSOIL		3168	CU. YD.
	SP & 210	SOIL STABILIZATION		500	TON
	SS & 303	AGGREGATE BASE COURSE (CLASS 7)		3271	TON
	SS & 309	PORTLAND CEMENT CONCRETE BASE (6" UNIFORM THICKNESS)		195	SQ. YD.
	SS & 309	PORTLAND CEMENT CONCRETE BASE (7 1/2" UNIFORM THICKNESS)		415	SQ. YD.
	SS & 401	TACK COAT		1197	GAL.
	SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1738	TON
	SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		76	TON
	SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1414	TON
	SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		78	TON
	SP & 412	COLD MILLING ASPHALT PAVEMENT		830	SQ. YD.
	SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		25	TON
	SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		25	TON
	504	APPROACH SLABS		128.68	CU. YD.
	SS & 505	PORTLAND CEMENT CONCRETE DRIVEWAY		207.11	SQ. YD.
	601	MOBILIZATION		1.00	LUMP SUM
	SP & 602	FURNISHING FIELD OFFICE		1	EACH
	SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
	603	18" TEMPORARY CULVERT		56	LIN. FT.
	SS & 604	SIGNS		452	SQ. FT.
	SP, SS, & 604	CONSTRUCTION PROJECT INFORMATION SIGN UPDATE		10	EACH
	SS & 604	BARRICADES		24	LIN. FT.
	SS & 604	TRAFFIC DRUMS		30	EACH
	SS & 604	TRAFFIC CONE		54	EACH
	SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		786	LIN. FT.
	SS & 604	RELOCATING PRECAST CONCRETE BARRIER		413	LIN. FT.
	604	CONSTRUCTION PAVEMENT MARKINGS		27076	LIN. FT.
	604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		7976	LIN. FT.
	604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		16080	LIN. FT.
	604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		1892	LIN. FT.
	SS & 604	VERTICAL PANELS		30	EACH
	SS & 605	CONCRETE DITCH PAVING (TYPE B)		229	SQ. YD.
*	606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1068	LIN. FT.
*	606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1068	LIN. FT.
*	SP & 606	18" POLYPROPYLENE PIPE	(ALTERNATE NO. 3)	1068	LIN. FT.
*	SP & 606	18" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 4)	1068	LIN. FT.
*	SP & 606	18" PVC PIPE	(ALTERNATE NO. 5)	1068	LIN. FT.
*	606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)	(ALTERNATE NO. 1)	32	LIN. FT.
*	606	18" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	32	LIN. FT.
*	606	18" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	32	LIN. FT.
*	606	18" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	(ALTERNATE NO. 4)	32	LIN. FT.
*	SP & 606	18" POLYPROPYLENE PIPE	(ALTERNATE NO. 5)	32	LIN. FT.
*	SP & 606	18" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 6)	32	LIN. FT.
*	SP & 606	18" PVC PIPE	(ALTERNATE NO. 7)	32	LIN. FT.
*	606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	32	LIN. FT.
*	606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	32	LIN. FT.
*	606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	32	LIN. FT.
*	606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 4)	32	LIN. FT.
*	SP & 606	24" POLYPROPYLENE PIPE	(ALTERNATE NO. 5)	32	LIN. FT.
*	SP & 606	24" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 6)	32	LIN. FT.
*	SP & 606	24" PVC PIPE	(ALTERNATE NO. 7)	32	LIN. FT.
*	606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	240	LIN. FT.
*	606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	240	LIN. FT.
*	SP & 606	24" POLYPROPYLENE PIPE	(ALTERNATE NO. 3)	240	LIN. FT.
*	SP & 606	24" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 4)	240	LIN. FT.
*	SP & 606	24" PVC PIPE	(ALTERNATE NO. 5)	240	LIN. FT.
*	606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)	(ALTERNATE NO. 1)	38	LIN. FT.
*	606	24" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	38	LIN. FT.
*	606	24" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	38	LIN. FT.
*	606	24" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 4)	38	LIN. FT.
*	SP & 606	24" POLYPROPYLENE PIPE	(ALTERNATE NO. 5)	38	LIN. FT.
*	SP & 606	24" HIGH DENSITY POLYETHYLENE PIPE	(ALTERNATE NO. 6)	38	LIN. FT.
*	SP & 606	24" PVC PIPE	(ALTERNATE NO. 7)	38	LIN. FT.
*	606	60" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)	(ALTERNATE NO. 1)	360	LIN. FT.
*	606	60" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 2)	360	LIN. FT.
*	606	60" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (16 GAUGE)	(ALTERNATE NO. 3)	360	LIN. FT.
*	606	60" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (16 GAUGE)	(ALTERNATE NO. 4)	360	LIN. FT.
*	SP & 606	60" POLYPROPYLENE PIPE	(ALTERNATE NO. 5)	360	LIN. FT.
	SS & 606	12" SIDE DRAIN		600	LIN. FT.
	SP, SS, & 606	24" SIDE DRAIN		114	LIN. FT.
	SS & 606	60" SIDE DRAIN		94	LIN. FT.
*	606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	1	EACH
*	606	18" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	1	EACH
*	606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	3	EACH
*	606	24" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	3	EACH
*	606	60" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	(ALTERNATE NO. 1)	2	EACH
*	606	60" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	(ALTERNATE NO. 2)	2	EACH
	606	SELECTED PIPE BEDDING		160	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
SS & 609	DROP INLETS (TYPE MO)	18	EACH
SS & 609	DROP INLETS (TYPE SPECIAL)	10	EACH
SS & 609	DROP INLET EXTENSIONS (4')	2	EACH
SS & 609	YARD DRAINS	6	EACH
SS & 611	4" PIPE UNDERDRAINS	1500	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	6	EACH
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)	10.4	CU. YD.
620	LIME	12	TON
620	SEEDING	5.89	ACRE
SS & 620	MULCH COVER	17.09	ACRE
620	WATER	848.0	M. GAL.
621	TEMPORARY SEEDING	11.20	ACRE
621	SILT FENCE	1163	LIN. FT.
621	SEDIMENT REMOVAL AND DISPOSAL	115	CU. YD.
621	ROCK DITCH CHECKS	135	CU. YD.
SS & 621	FILTER SOCK (12")	748	LIN. FT.
623	SECOND SEEDING APPLICATION	5.89	ACRE
624	SOLID SODDING	1232	SQ. YD.
SS & 633	CONCRETE WALKS	1700	SQ. YD.
SS & 633	HAND RAILING	410	LIN. FT.
SS & 634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	3373	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
641	WHEELCHAIR RAMPS (TYPE 3)	87	SQ. YD.
SP	RECTANGULAR RAPID FLASHING BEACON (RRFB)	2	EACH
719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")	1071	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	80	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	5842	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	148	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER	4	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	4	EACH
SS & 731	TEMPORARY IMPACT ATTENUATION BARRIER (RELOCATION)	1	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	15390	POUND
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
619	5' STEEL CHAIN LINK FENCE	254	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	3052	CU. YD.
SS & 802	CLASS S CONCRETE-BRIDGE	2185.20	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	1618.70	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	102.8	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	332870	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	451760	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)	12390	LIN. FT.
806	METAL BRIDGE RAILING (TYPE H)	1586	LIN. FT.
806	TRANSITIONAL APPROACH RAILING	4	EACH
SP, SS, & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)	1369920	POUND
SS & 807	PAINTING STRUCTURAL STEEL	49.3	TON
SS & 808	ELASTOMERIC BEARINGS	47600.0	CU. IN.
SS & 809	ARMORED JOINT WITH NEOPRENE STRIP SEAL	92	LIN. FT.
SS & 809	SILICONE JOINT SEALANT	94	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	CONCRETE RIPRAP	112	CU. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER
07-28-20	REPLACED BRIDGE DRAWING 61218. REPLACED "RECTANGULAR RAPID FLASHING BEACON (RRFB)" AND "UTILITY ADJUSTMENTS" SPECIAL PROVISIONS.	40, 53
10-08-20	REVISED SS 100-3. ADDED SS 400-7 AND SS 502-1. UPDATED ITEM NUMBERS FOR PAY ITEMS "PORTLAND CEMENT CONCRETE BASE (6" UNIFORM THICKNESS)" AND "PORTLAND CEMENT CONCRETE BASE (7 1/2" UNIFORM THICKNESS)".	4, 40
10-30-20	ADDED SPECIAL PROVISION "PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT".	4, 40
03-11-21	REVISED SPECIAL PROVISIONS "MANDATORY ELECTRONIC DOCUMENT SUBMITTAL" AND "PRICE ADJUSTMENT FOR ASPHALT BINDER". REVISED QUANTITY "RAISED PAVEMENT MARKERS (TYPE II)".	26-30, 33, 40
09-10-21	REVISED QUANTITY "SIGNS". REMOVED "USE CAUTION, SLOW DOWN" SIGN FROM SPECIAL DETAILS. REVISED STANDARD DRAWINGS 55010, TC-2, & TC-3	3, 11, 33, 40
10-14-21	REVISED SPECIAL PROVISIONS "DELAY OF RIGHT OF OCCUPANCY", "STORM WATER POLLUTION PREVENTION PLAN", AND "UTILITY ADJUSTMENTS".	40
10-28-21	ADDED "COLD MILLING - COUNTY PROPERTY" SPECIAL PROVISION. ADDED NOTE TO THE COLD MILLING QUANTITY BOX.	4, 36, 40
11-02-21	REVISED "UTILITY ADJUSTMENTS" SPECIAL PROVISION.	40

h139710 R020590.DGN 11/2/2021

SUMMARY OF QUANTITIES AND REVISIONS

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.		020590	41	108

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:57 PM
DocuSign

SURVEY CONTROL COORDINATES

Project Name: s020590
Date: 3/29/2017
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, 210045-210045A PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1657007.5231	1499379.7860	146.905	CTL	AHTD STD. MON. STAMPED PN:1
2	1657274.0422	1498923.3835	148.014	CTL	AHTD STD. MON. STAMPED PN:2
3	1657648.7449	1498392.0163	159.551	CTL	AHTD STD. MON. STAMPED PN:3
4	1658373.0807	1497942.1271	161.768	CTL	AHTD STD. MON. STAMPED PN:4
5	1658630.3462	1497934.8467	150.307	CTL	AHTD STD. MON. STAMPED PN:5
6	1659307.4962	1497765.9185	147.724	CTL	AHTD STD. MON. STAMPED PN:6
7	1657764.1209	1498106.7261	145.026	CTL	AHTD STD. MON. STAMPED PN:7
8	1658071.3334	1498180.8216	148.058	CTL	AHTD STD. MON. STAMPED PN:8
100	1659176.5063	1500533.0268	142.423	GPS	AHTD GPS MON 210045
101	1657187.7510	1500195.1914	142.987	GPS	AHTD GPS MON 210045A
900	1657007.4061	1499417.1163	148.498	TBM	R/W MONUMENT 20' NE OF SH MCEHEE

*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).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999395343 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 s020590gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
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: 210045-210045A
CONVERGENCE ANGLE: 00-20-29 RIGHT AT LT:N 33-36-54 LG:W 091-23-23
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE

HWY. 278

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	100+00.00	1659363.1966	1497728.5442
8001	PC	102+60.59	1659113.3214	1497802.4841
8003	PT	104+43.08	1658934.9529	1497840.1422
8004	PC	109+18.18	1658463.7605	1497900.9982
8006	PT	123+51.69	1657352.2363	1498709.4398
8007	PC	124+93.31	1657291.7157	1498837.4700
8009	PT	125+88.07	1657247.7226	1498921.3729
8010	POE	130+25.00	1657029.0042	1499299.6158

HT39710 6/10/2020
R020590.DGN

SURVEY CONTROL DETAILS

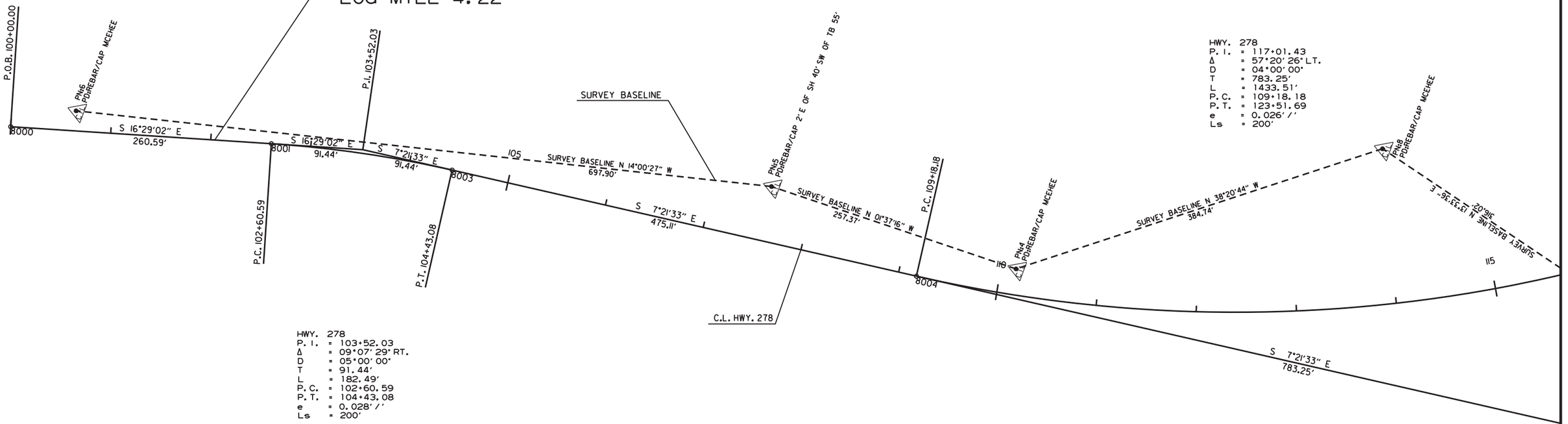
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	42	108

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:57 PM
DocuSign

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22



HWY. 278
P.I. = 117+01.43
Δ = 57°20'26" LT.
D = 04°00'00"
T = 783.25'
L = 1433.51'
P.C. = 109+18.18
P.T. = 123+51.69
e = 0.026'/'
Ls = 200'

HWY. 278
P.I. = 103+52.03
Δ = 09°07'29" RT.
D = 05°00'00"
T = 91.44'
L = 182.49'
P.C. = 102+60.59
P.T. = 104+43.08
e = 0.028'/'
Ls = 200'

HT39710 6/10/2020
R020590.DGN

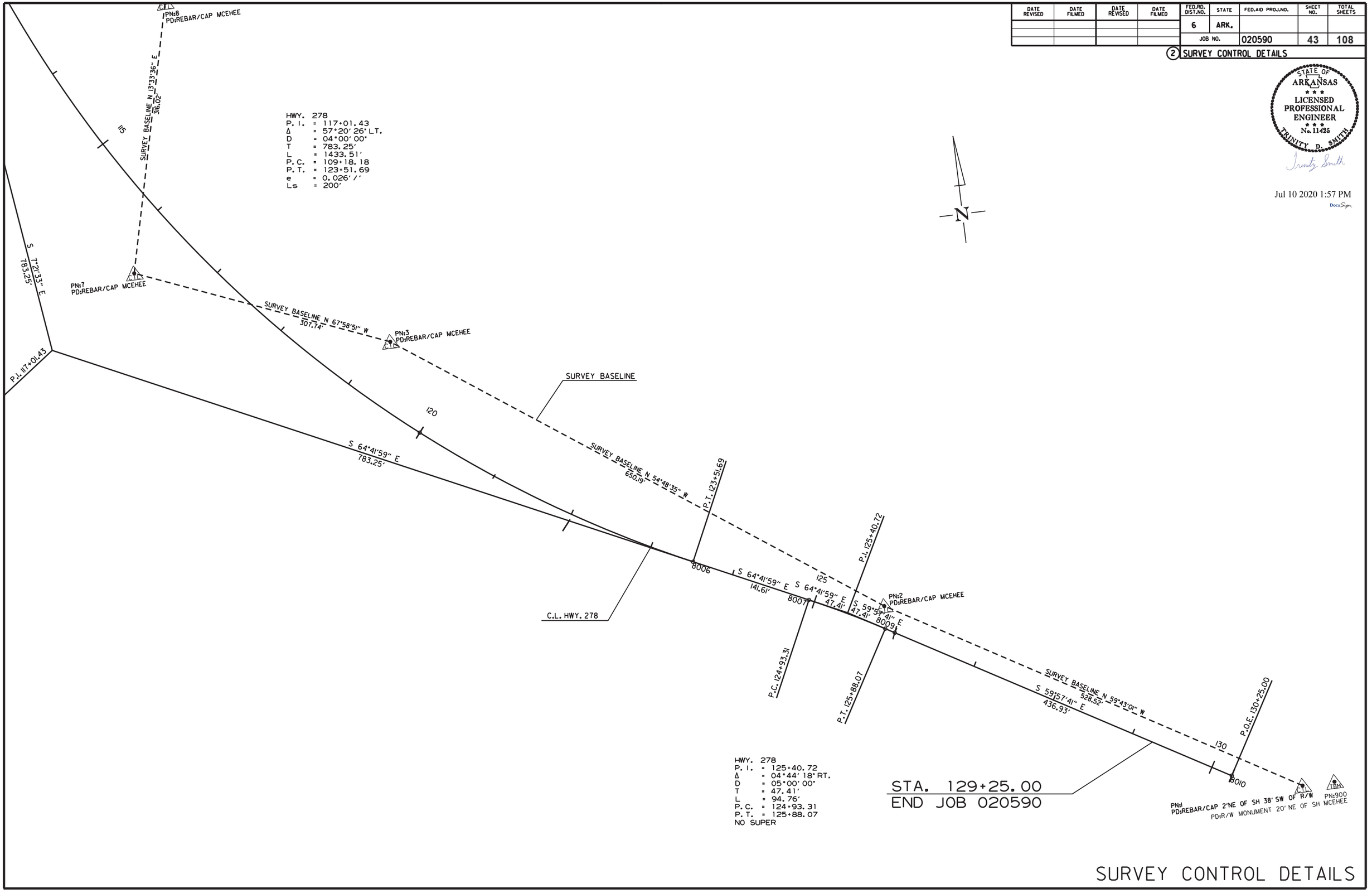
SURVEY CONTROL DETAILS

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.		020590	43	108

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:57 PM
DocuSign



HT39710 6/10/2020
RO20590.DGN

SURVEY CONTROL 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.		020590	44	108

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
TRINITY D. SMITH
No. 11425

Trinity Smith

Jul 10 2020 1:57 PM
DocuSign

STA. 102+04.00
BEGIN JOB 020590
LOG MILE 4.22

STA. 101+38 CONSTRUCT
TURNOUT ON LT. = 5 CU. YD.

STA. 102+04 CONSTRUCT
TURNOUT ON LT. = 20 CU. YD.

STA. 102+30 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS.

STA. 103+65 CONSTRUCT
APPROACH ON LT. = 5 CU. YD.

STA. 104+13 CONSTRUCT
APPROACH ON LT. = 5 CU. YD.

STA. 105+00 CONSTRUCT
DROP INLET ON LT.
AND 18" X 32' OUTLET
CONNECT TO DROP INLET @ STA. 105+00 RT.
DROP INLET H = 4'-3"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS IV)(TYPE 3) = 32 LIN. FT.
18" ASPHALT CSP (TYPE 2) = 32 LIN. FT.
18" ALUMINUM CSP (TYPE 2) = 32 LIN. FT.
18" POLYMER CSP (TYPE 2) = 32 LIN. FT.
18" HDPE CSP (TYPE 2) = 32 LIN. FT.
18" PVC (TYPE 2) = 32 LIN. FT.
18" PPL (TYPE 2) = 32 LIN. FT.

STA. 105+39 CONSTRUCT
APPROACH ON LT. = 5 CU. YD.

STA. 105+65 CONSTRUCT
DROP INLET ON LT.
AND 18" X 62' OUTLET
CONNECT TO DROP INLET @ STA. 105+00 LT.
DROP INLET H = 3'-11"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 62 LIN. FT.
18" SLPCCS (TYPE 2) = 62 LIN. FT.
18" HDPE (TYPE 2) = 62 LIN. FT.
18" PVC (TYPE 2) = 62 LIN. FT.
18" PPL (TYPE 2) = 62 LIN. FT.

STA. 105+90 CONSTRUCT
APPROACH ON LT. = 5 CU. YD.

STA. 107+00 IN PLACE
24" X 79' R.C. PIPE CULVERT
WITH HDWLS LT. AND RT.
REMOVE HDWLS
PLUG AND ABANDON

STA. 107+10 CONSTRUCT
DROP INLET ON LT.
AND 24" X 31' INLET WITH F.E.S.
AND 24" X 31' OUTLET
CONNECT TO DROP INLET @ STA. 107+10 RT.
DROP INLET H = 5'-1"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III)(TYPE 2) = 64 LIN. FT.
24" ASPHALT CSP (TYPE 2) = 32 LIN. FT.
24" ALUMINUM CSP (TYPE 2) = 32 LIN. FT.
24" POLYMER CSP (TYPE 2) = 32 LIN. FT.
24" HDPE CSP (TYPE 2) = 64 LIN. FT.
24" PVC (TYPE 2) = 64 LIN. FT.
24" PPL (TYPE 2) = 64 LIN. FT.
24" SLPCCS (TYPE 2) = 32 LIN. FT.
24" F.E.S. = 1EACH
Q25 = 5.49 CFS D.A. = 1.10 ACRES

STA. 108+05 CONSTRUCT
DROP INLET ON LT.
AND 24" X 91' OUTLET
CONNECT TO DROP INLET @ STA. 107+10 LT.
DROP INLET H = 5'-0"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III)(TYPE 3) = 92 LIN. FT.
24" SLPCCS (TYPE 2) = 92 LIN. FT.
24" HDPE (TYPE 2) = 92 LIN. FT.
24" PVC (TYPE 2) = 92 LIN. FT.
24" PPL (TYPE 2) = 92 LIN. FT.

STA. 109+20 CONSTRUCT
DROP INLET ON LT. W/ 4' EXTENSION
AND 18" X 111' OUTLET
CONNECT TO DROP INLET @ STA. 108+05
DROP INLET H = 5'-10"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 112 LIN. FT.
18" SLPCCS (TYPE 2) = 112 LIN. FT.
18" HDPE (TYPE 2) = 112 LIN. FT.
18" PVC (TYPE 2) = 112 LIN. FT.
18" PPL (TYPE 2) = 112 LIN. FT.

STA. 109+80 IN PLACE
DROP INLET ON LT.
AND 12" X 38' R.C. PIPE CULVERT
REMOVE

STA. 110+18.29 - STA. 119+02.50
34.0' X 849.0' STEEL MULTI-BEAM
BRIDGE NO. 05018
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

STA. 110+18.40
BRIDGE END
ELEV. 164.72

STA. 110+18.40 BRIDGE END
BRIDGE NO. 07452
240'-0" C.C. PLATE GIRDER (75'-90'-75')
440'-0" C.C. PLATE GIRDER (125'-185'-130')
240'-0" C.C. PLATE GIRDER (75'-90'-75')
30' CLEAR ROADWAY
922'-2½" BRIDGE LENGTH
STA. 119+40.60 BRIDGE END

HWY. 278
P. I. = 103+52.03
Δ = 09°07'29" RT.
D = 05°00'00"
T = 91.44'
L = 182.49'
P. C. = 102+60.59
P. T. = 104+43.08
e = 0.028'/'
Ls = 200'

STA. 102+30 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

STA. 102+60 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 103+10 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 103+60 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 104+30 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 104+67 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 105+00 CONSTRUCT
DROP INLET ON RT.
AND 18" X 16' OUTLET WITH F.E.S.
DROP INLET H = 4'-3"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 16 LIN. FT.
18" SLPCCS (TYPE 2) = 16 LIN. FT.
18" HDPE (TYPE 2) = 16 LIN. FT.
18" PVC (TYPE 2) = 16 LIN. FT.
18" PPL (TYPE 2) = 16 LIN. FT.
18" F.E.S. = 1EACH

STA. 105+65 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 107+10 CONSTRUCT
DROP INLET ON RT.
AND 24" X 13' OUTLET WITH F.E.S.
DROP INLET H = 5'-2"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III)(TYPE 3) = 14 LIN. FT.
24" PVC (TYPE 2) = 14 LIN. FT.
24" SLPCCS (TYPE 2) = 14 LIN. FT.
24" HDPE (TYPE 2) = 14 LIN. FT.
24" PPL (TYPE 2) = 14 LIN. FT.
24" F.E.S. = 1EACH

STA. 107+25 IN PLACE
54" X 350' R.C. PIPE CULVERT ON RT.
WITH HDWLS
REMOVE 130' FROM STA. 109+50 - STA. 110+80
PLUG AND ABANDON
INSTALL 60" X 360'
R.C. PIPE CULVERT ON RT.
WITH F.E.S. EACH END
60" R.C. PIPE (CLASS IV)(TYPE 3) = 360 LIN. FT.
60" F.E.S. = 2 EACH

STA. 107+28 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

STA. 107+62 CONSTRUCT
TURNOUT ON RT. = 265 CU. YD.

STA. 107+90 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

STA. 108+05 CONSTRUCT
DROP INLET ON RT.
AND 24" X 91' OUTLET
CONNECT TO DROP INLET @ STA. 107+10 RT.
DROP INLET H = 5'-0"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III)(TYPE 3) = 92 LIN. FT.
24" SLPCCS (TYPE 2) = 92 LIN. FT.
24" HDPE (TYPE 2) = 92 LIN. FT.
24" PVC (TYPE 2) = 92 LIN. FT.
24" PPL (TYPE 2) = 92 LIN. FT.

HWY. 278
P. I. = 117+01.43
Δ = 57°20'26" LT.
D = 04°00'00"
T = 783.25'
L = 1433.51'
P. C. = 109+18.18
P. T. = 123+51.69
e = 0.026'/'
Ls = 200'

SPECIAL FLOOD HAZARD AREA
SFHA BOUNDARY

HWY. 278

6/10/2020

R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	45	108

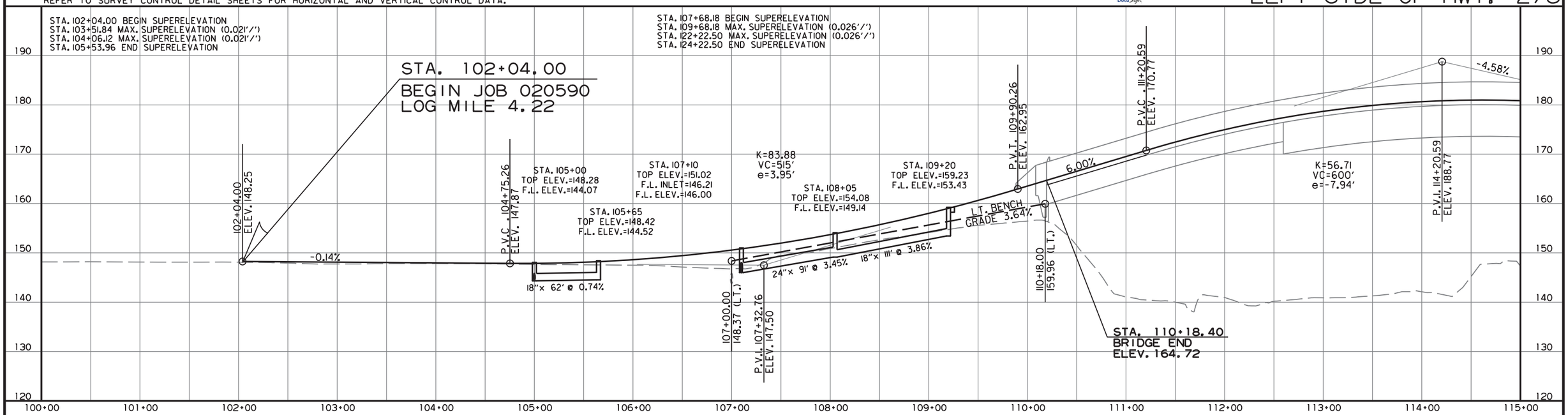
(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:58 PM
DocuSign

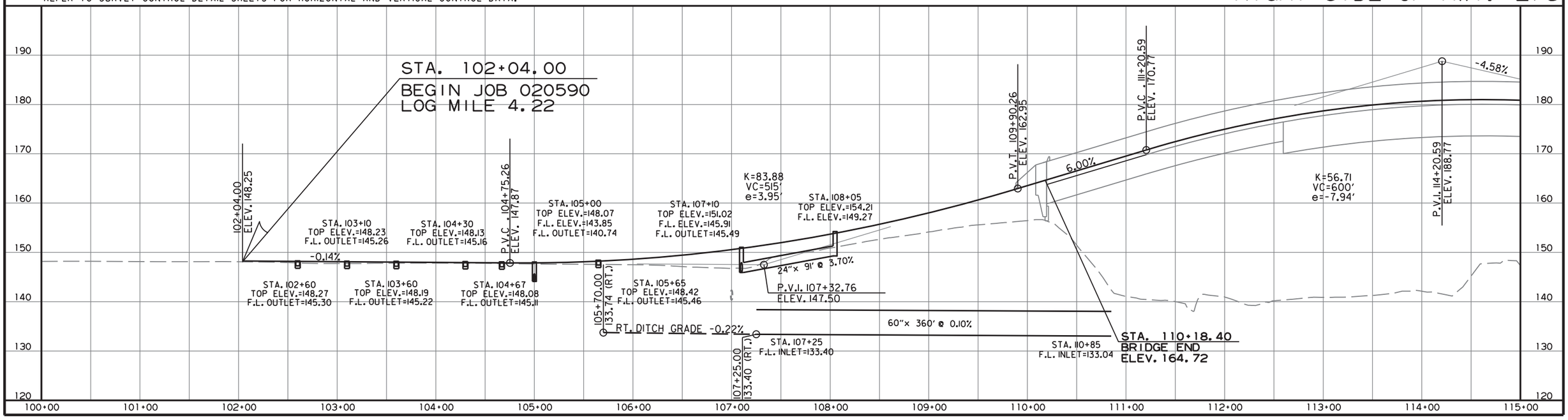
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

LEFT SIDE OF HWY. 278



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

RIGHT SIDE OF HWY. 278



6/10/2020

R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	46	108

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:58 PM

STA. 119+85 CONSTRUCT
DROP INLET ON LT.
AND 18" X 110' OUTLET
CONNECT TO DROP INLET @ STA. 121+00 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 110 LIN. FT.
18" SLPCCS (TYPE 2) = 110 LIN. FT.
18" HDPE (TYPE 2) = 110 LIN. FT.
18" PVC (TYPE 2) = 110 LIN. FT.
18" PPL (TYPE 2) = 110 LIN. FT.

STA. 121+00 CONSTRUCT
DROP INLET ON LT. W/ 4' EXTENSION
AND 18" X 95' OUTLET
CONNECT TO DROP INLET @ STA. 122+00 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 96 LIN. FT.
18" SLPCCS (TYPE 2) = 96 LIN. FT.
18" HDPE (TYPE 2) = 96 LIN. FT.
18" PVC (TYPE 2) = 96 LIN. FT.
18" PPL (TYPE 2) = 96 LIN. FT.

STA. 119+37 IN PLACE
DROP INLET ON LT.
AND 12" X 41' R.C. PIPE CULVERT
REMOVE

STA. 122+00 CONSTRUCT
DROP INLET ON LT. W/ 4' EXTENSION
AND 18" X 51' OUTLET
CONNECT TO DROP INLET @ STA. 122+55 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 52 LIN. FT.
18" SLPCCS (TYPE 2) = 52 LIN. FT.
18" HDPE (TYPE 2) = 52 LIN. FT.
18" PVC (TYPE 2) = 52 LIN. FT.
18" PPL (TYPE 2) = 52 LIN. FT.

STA. 122+71 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS.

STA. 122+55 CONSTRUCT
DROP INLET ON LT.
AND 18" X 140' OUTLET
CONNECT TO DROP INLET @ STA. 124+00 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 140 LIN. FT.
18" SLPCCS (TYPE 2) = 140 LIN. FT.
18" HDPE (TYPE 2) = 140 LIN. FT.
18" PVC (TYPE 2) = 140 LIN. FT.
18" PPL (TYPE 2) = 140 LIN. FT.

STA. 123+13 IN PLACE
24" X 47' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 60' R.C. PIPE CULVERT
CONSTRUCT TURNOUT ON LT. = 295 CU. YD.

STA. 123+54 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS.

STA. 124+00 CONSTRUCT
DROP INLET ON LT.
AND 18" X 71' OUTLET
CONNECT TO DROP INLET @ STA. 124+75 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 72 LIN. FT.
18" SLPCCS (TYPE 2) = 72 LIN. FT.
18" HDPE (TYPE 2) = 72 LIN. FT.
18" PVC (TYPE 2) = 72 LIN. FT.
18" PPL (TYPE 2) = 72 LIN. FT.

STA. 124+75 CONSTRUCT
DROP INLET ON LT.
AND 18" X 123' OUTLET
CONNECT TO DROP INLET @ STA. 126+00 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 124 LIN. FT.
18" SLPCCS (TYPE 2) = 124 LIN. FT.
18" HDPE (TYPE 2) = 124 LIN. FT.
18" PVC (TYPE 2) = 124 LIN. FT.
18" PPL (TYPE 2) = 124 LIN. FT.

STA. 125+05 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS.

STA. 125+38 CONSTRUCT
TURNOUT ON LT. = 115 CU. YD.

STA. 125+82 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS.

STA. 126+00 CONSTRUCT
DROP INLET ON LT.
AND 18" X 172' OUTLET
CONNECT TO DROP INLET @ STA. 127+75 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 172 LIN. FT.
18" SLPCCS (TYPE 2) = 172 LIN. FT.
18" HDPE (TYPE 2) = 172 LIN. FT.
18" PVC (TYPE 2) = 172 LIN. FT.
18" PPL (TYPE 2) = 172 LIN. FT.

STA. 126+80 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 11.2 SQ. YDS.

STA. 127+75 CONSTRUCT
DROP INLET ON LT.
AND 18" X 112' OUTLET
CONNECT TO DROP INLET @ STA. 128+90 LT.
DROP INLET H = 3'-8"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)(TYPE 3) = 112 LIN. FT.
18" SLPCCS (TYPE 2) = 112 LIN. FT.
18" HDPE (TYPE 2) = 112 LIN. FT.
18" PVC (TYPE 2) = 112 LIN. FT.
18" PPL (TYPE 2) = 112 LIN. FT.

STA. 128+25 IN PLACE
24" X 50' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
24" X 54' R.C. PIPE CULVERT
CONSTRUCT APPROACH ON LT. = 70 CU. YD.

STA. 128+90 CONSTRUCT
DROP INLET ON LT.
AND 24" X 37' OUTLET
CONNECT TO DROP INLET @ STA. 128+90 RT.
DROP INLET H = 4'-0"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS IV)(TYPE 3) = 38 LIN. FT.
24" ASPHALT CSP (TYPE 2) = 38 LIN. FT.
24" ALUMINUM CSP (TYPE 2) = 38 LIN. FT.
24" POLYMER CSP (TYPE 2) = 38 LIN. FT.
24" HDPE CSP (TYPE 2) = 38 LIN. FT.
24" PVC (TYPE 2) = 38 LIN. FT.
24" PPL (TYPE 2) = 38 LIN. FT.

STA. 129+25.00
END JOB 020590

STA. 128+95 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS.

HWY. 278
P. I. = 117+01.43
Δ = 57°20'26" LT.
D = 04°00'00"
T = 783.25'
L = 1433.51'
P. C. = 109+18.18
P. T. = 123+51.69
e = 0.026'/'
Ls = 200'

STA. 119+40.60
BRIDGE END
ELEV. 165.06

STA. 124+75 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 124+95 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

STA. 119+41 - STA. 123+51 INSTALL
HAND RAIL ON RT. = 410 LIN. FT.

STA. 124+00 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 125+28 IN PLACE
60" X 84' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
60" X 94' R.C. PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH ON RT. = 1510 CU. YD.

STA. 125+58 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

HWY. 278
P. I. = 125+40.72
Δ = 04°44'18" RT.
D = 05°00'00"
T = 47.41'
L = 94.76'
P. C. = 124+93.31
P. T. = 125+88.07
NO SUPER

STA. 126+00 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 126+80 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 11.2 SQ. YDS.

STA. 127+75 CONSTRUCT
DROP INLET TYPE SPECIAL ON RT.
DROP INLET H = 1'-0"
TYPE SPECIAL DROP INLET = 4' X 8'

STA. 128+90 CONSTRUCT
DROP INLET ON RT.
AND 24" X 10' OUTLET WITH F.E.S.
DROP INLET H = 4'-3"
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS IV)(TYPE 3) = 10 LIN. FT.
24" SLPCCS (TYPE 2) = 10 LIN. FT.
24" HDPE CSP (TYPE 2) = 10 LIN. FT.
24" PVC (TYPE 2) = 10 LIN. FT.
24" PPL (TYPE 2) = 10 LIN. FT.
24" F.E.S. = 1EACH

STA. 128+95 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

SPECIAL FLOOD HAZARD AREA

SFHA BOUNDARY

HWY. 278

6/10/2020

R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	47	108

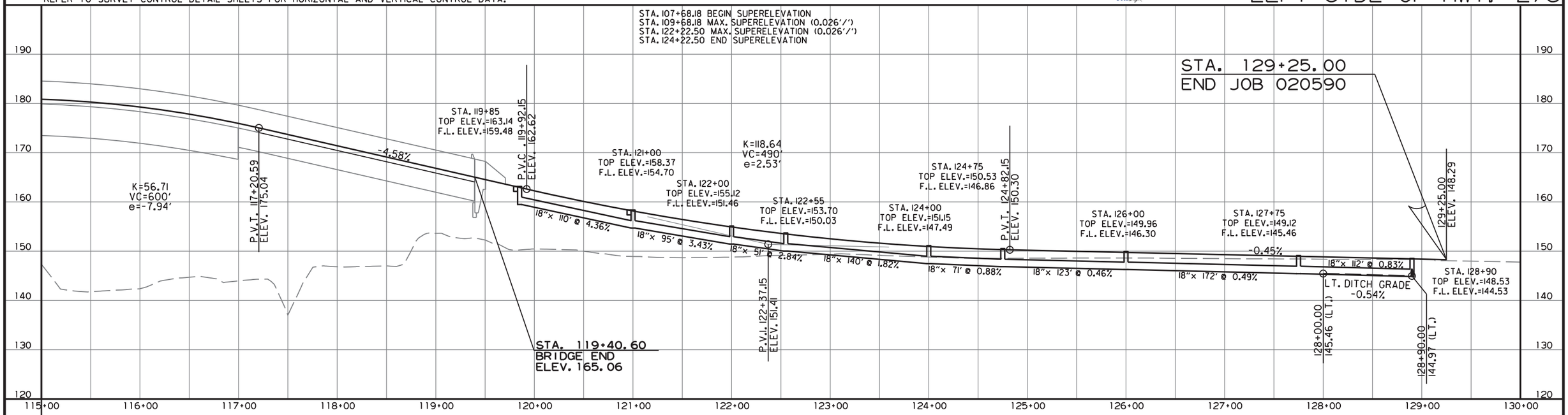
(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:58 PM
DocuSign

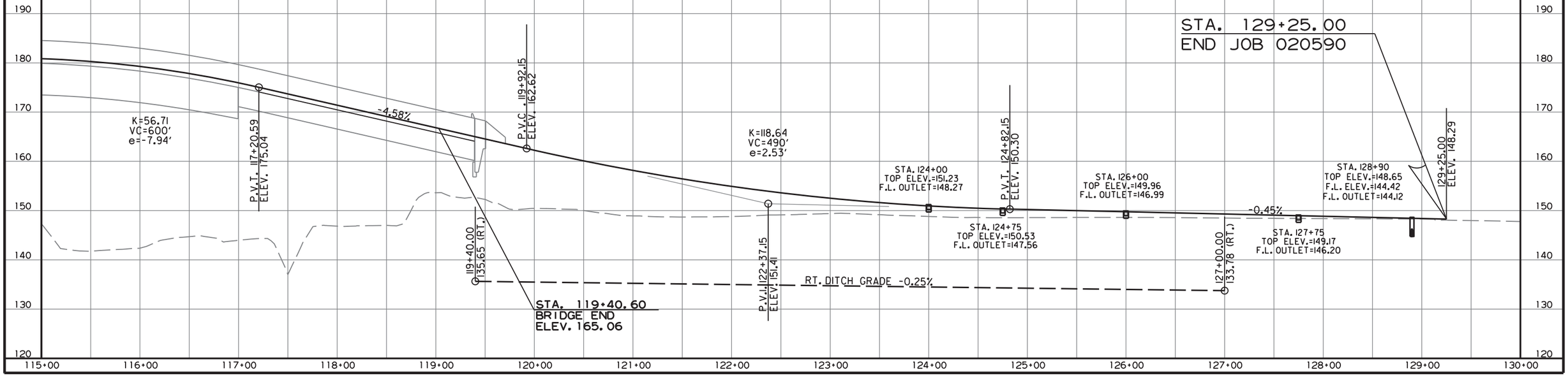
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

LEFT SIDE OF HWY. 278



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

RIGHT SIDE OF HWY. 278



6/10/2020

R020590.DGN

QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
SP	RECTANGULAR RAPID FLASHING BEACON (RRFB)	2	EACH

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.		020590	48	108

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

Jul 10 2020 1:58 PM
DocuSign

R/W
125
P1125+40.72
EXIST.
SHERMAN ST
EXIST. R/W
40'
IMITS
S 64°41'59" E
+28
+38
HWY. 278
S 59°57'41" E
+25
EXIST. R/W
POE13
C.D.P.
20'
CARVER ST
CONST. LIMITS
PROP. R/W
PC124+93.31
PT125+88.07
ARKS ST
N PARK ST

NOTE TO CONTRACTOR:

INSTALL RECTANGULAR RAPID FLASHING BEACONS AT CROSSWALK WHERE SHOWN ON THE PLANS. (SEE SPECIAL PROVISION RECTANGULAR RAPD FLASHING BEACON (RRFB)).

HIGHWAY 287 - POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 287 - STA. 126+83.90	13.86' RT.	1499012.77, 1657214.34
B	HWY. 287 - STA. 126+76.19	16.93' LT.	1498989.18, 1657188.95

SCALE IN FEET
0 20 40 80

DATE: 06-11-2020 FILE NAME: t020590_t01.dgn

LOCATION: HIGHWAY 278
CITY: MCGEHEE
COUNTY: DESHA
DISTRICT: 2 SCALE: 1" = 40' DRAWN BY: BRB

T020509_T01.DGN6/11/2020

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.		020590	49	108

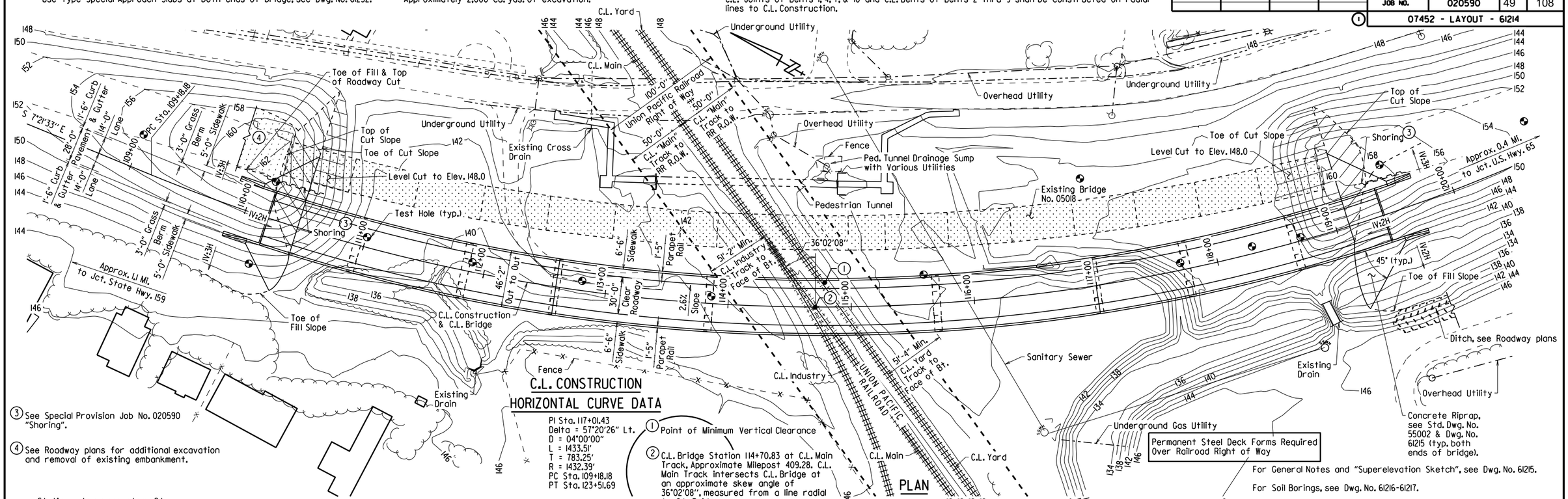
① 07452 - LAYOUT - 61214

FOR R/W DATA, SEE ROADWAY PLANS.

Use Type Special Approach Slabs at both ends of bridge, see Dwg. No. 61252.

The Contractor shall remove a portion of the existing approach embankments as shown to Elevation 148.0 using a 1V:2H cut slope. Approximately 2,000 cu. yds. of excavation.

C.L. Construction is on a 4° 00' curve left. C.L. girders and the longitudinal lines of both the bridge and approach slabs shall be constructed on curves concentric with C.L. Construction. C.L. Joints of Bents 1, 4, 7, & 10 and C.L. Bents of Bents 2 thru 9 shall be constructed on radial lines to C.L. Construction.



③ See Special Provision Job No. 020590 "Shoring".

④ See Roadway plans for additional excavation and removal of existing embankment.

C.L. CONSTRUCTION HORIZONTAL CURVE DATA

PI Sta. 117+01.43
Delta = 57°20'26" Lt.
D = 04°00'00"
L = 1433.51'
T = 783.25'
R = 1432.39'
PC Sta. 109+18.18
PT Sta. 123+51.69

① Point of Minimum Vertical Clearance

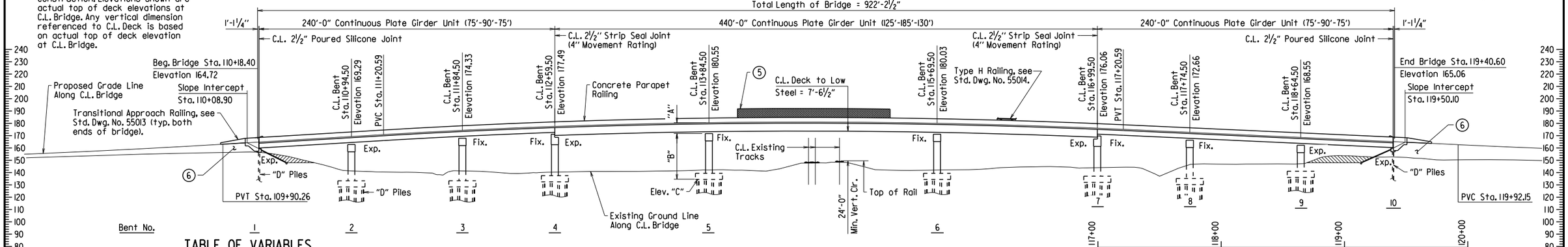
② C.L. Bridge Station 114+70.83 at C.L. Main Track, Approximate Milepost 409.28. C.L. Main Track intersects C.L. Bridge at an approximate skew angle of 36°02'08", measured from a line radial to C.L. Bridge.

For General Notes and "Superelevation Sketch", see Dwg. No. 61215.

For Soil Borings, see Dwg. No. 61216-61217.

For additional railroad information, see Exhibit A, Dwg. No. 61218-61219.

Stations shown are along C.L. Construction. Elevations shown are actual top of deck elevations at C.L. Bridge. Any vertical dimension referenced to C.L. Deck is based on actual top of deck elevation at C.L. Bridge.



⑤ Chain Link Fence - Left Side of Bridge, Sta. 113+87 to Sta. 115+17. Right Side of Bridge, Sta. 114+23 to Sta. 115+47. See Dwg. No. 61251 for details.

⑥ See Special Provision Job 020590 "Geosynthetic Internal Reinforced Embankment Construction" for details of geogrid reinforcement in bridge embankments.

See Special Provision Job 020590 "Settlement Monitoring" for details of settlement monitoring devices.

ELEVATION

TABLE OF VARIABLES

Bent No.	C.L. Deck at C.L. Bent to Low Side Top of Cap	Bent Height	Bottom of Footing Elevation	Pile Lengths
	"A"	"B"	"C"	"D"
1	-	-	-	57'
2	5'-5¾"	35'-6"	128.31	50'
3	5'-5¾"	40'-6"	128.35	50'
4	8'-0"	37'-0"	132.49	69'
5	8'-1 11/16"	38'-0"	134.41	71'
6	8'-1 11/16"	37'-6"	134.39	71'
7	8'-0"	36'-0"	132.06	69'
8	5'-5¾"	37'-0"	130.18	52'
9	5'-5¾"	27'-0"	136.06	57'
10	-	-	-	52'

VERTICAL CURVE DATA

Theoretical Grade Along C.L. Construction
L = 600'

+6.000% -4.575%

PVI Sta. 114+20.59
PVI Elev. 188.77

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Ellis, Rick
Jun 23 2020 3:43 PM
DocuSigned

BRIDGE ENGINEER

SHEET 1 OF 4
LAYOUT OF BRIDGE
HIGHWAY 278 OVER UNION PACIFIC RAILROAD
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY

ROUTE 278 SEC. 16

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6-15-18
CHECKED BY: DBS DATE: 6-22-2020
DESIGNED BY: LJB DATE: 4-2018
FILENAME: b020590_1l.dgn
SCALE: 1" = 40'

BRIDGE NO. 07452 DRAWING NO. 61214

PRINT DATE: 6/23/2020

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.		020590	50	108
				①		07452 - LAYOUT - 61215		

GENERAL NOTES

BENCH MARK: Vertical Control Data are shown in 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. Section and Subsection refer to the Standard Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014) with 2015 Interims.

LIVE LOADING: HL-93

SEISMIC PERFORMANCE ZONE: 2 S_{D1}: 0.177 SITE CLASS: D

MATERIALS AND STRENGTHS

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (ASTM A709, Gr. 36)	Fy = 36,000 psi
Structural Steel (ASTM A709, Gr. 50 or Gr. 50W)	Fy = 50,000 psi

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

WAITING PERIOD: The Contractor shall be aware that the embankment at End Bents 1 and 10 must be in place an estimated 120 days prior to installation of the end bent piling. This waiting period is necessary to allow the post construction settlement to occur prior to the end bent construction. The Contractor shall install settlement plates as described in Special Provision Job. No. 020590 "SETTLEMENT MONITORING" to measure the rate of settlement. If the settlement occurs more quickly than the estimated waiting period, the end bent construction may begin earlier but only at the approval of the Engineer.

STEEL SHELL PILING: Piling in Bents 1 thru 3 & Bents 8 thru 10 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 203 tons per pile. Piling in Bents 4 thru 7 shall be 18" diameter concrete filled steel shell piles and shall be driven to a minimum ultimate bearing capacity of 294 tons per pile. Piling in end bents shall be driven after embankment to bottom of cap is in place. Drive piles in end bents to a minimum penetration of 20' below natural ground. Drive piles in intermediate bents to a minimum penetration of 20' below bottom of footing. 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 item "STEEL SHELL PILING (18" DIA.)".

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 ultimate bearing capacity for piling in Bents 1 thru 3 & Bents 8 thru 10 will be 36,000 foot pounds per blow. It is estimated that the minimum rated hammer energy required to obtain the ultimate bearing capacity for piling in Bents 4 thru 7 will be 47,000 foot pounds per blow.

FOOTINGS: Footings at Bents 2 thru 4 and 7 thru 9 shall be set a minimum of 2' below natural ground, or at the elevations shown on the plans, whichever is lower. Footings at Bents 5 and 6 shall be set a minimum of 6' below base of rail, 2' below natural ground or at the elevations shown on the plans, whichever is lower. Foundations for footings shall be prepared in accordance with Subsection 801.04. Excavations shall be backfilled and compacted to the level of the existing ground in accordance with Subsection 801.08.

BRIDGE DECK: The concrete bridge deck, except the sidewalk, shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. The sidewalk shall be given a Class 6 Broomed Finish.

PROTECTIVE SURFACE TREATMENT: Class I Protective Surface Treatment shall be applied to the roadway surface, top of sidewalk, and to the face and top of the concrete parapet rail in accordance with Section 803.

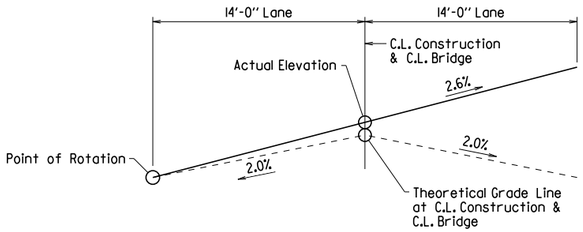
PAINTING: All Grade 50W structural steel, except galvanized members, surfaces in contact with concrete, and the expansion device, within 10 feet of bridge deck expansion joints shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close to Federal Std. 595B, Color Chip No. 30070 and as approved by the Engineer. The finish system may be applied in the shop. Any damage to the paint system occurring during transport or installation shall be corrected according to the manufacturer's recommendations at no cost to the Department.

DETAIL DRAWINGS:	DRAWING NO.
End Bents	61220 - 61223
Intermediate Bents	61224 - 61231
Elastomeric Bearings	61232 - 61233
240'-0" Continuous Plate Girder Unit	61234 - 61240, 61248
440'-0" Continuous Plate Girder Unit	61241 - 61248
Neoprene Strip Seal Joints	61249 - 61250
Curved Chain Link Fence	61251
Type Special Approach Slab	61252
General Notes for Steel Bridge Structures	55006
Details for Steel Bridge Structures	55007
Type H Railing	55014
Concrete Filled Steel Shell Piling	55021

EXISTING BRIDGE: Existing Bridge No. 05018, (L.M. 4.38) is 33.75' wide and 849.35' long and consists of steel I-beam spans and voided concrete slab spans. The end bents are supported by concrete piles. The intermediate bents are multi-column concrete piers supported by footings with concrete piles.

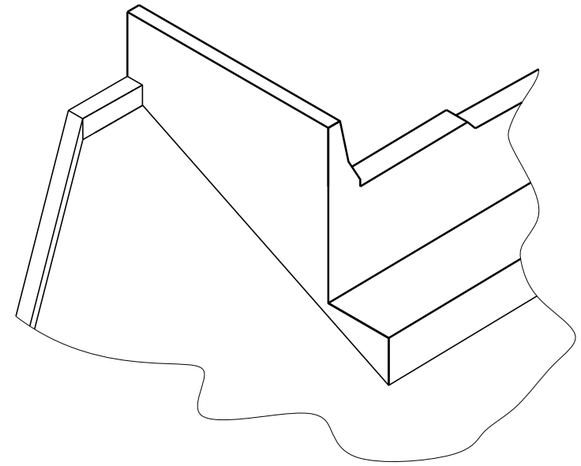
REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing Bridge No. 05018 shall be removed in accordance with Section 205. The bridge name plate shall be carefully removed and delivered to the Resident Engineer. The Contractor shall coordinate with the Resident Engineer for removal and delivery of the name plate. Payment for this work shall be considered incidental to "Removal of Existing Bridge Structure (Site No.)". The remaining material from the existing bridge shall become the property of the Contractor except the following which shall become property of the State. At the Direction of the Engineer, the steel guardrail posts and aluminum parapet rails at the existing bridge ends shall be protected and loaded onto State trucks. Payment for this work shall be considered incidental to "Removal of Existing Bridge Structure (Site No.)".

MAINTENANCE OF TRAFFIC: See Roadway Plans for maintenance of traffic.

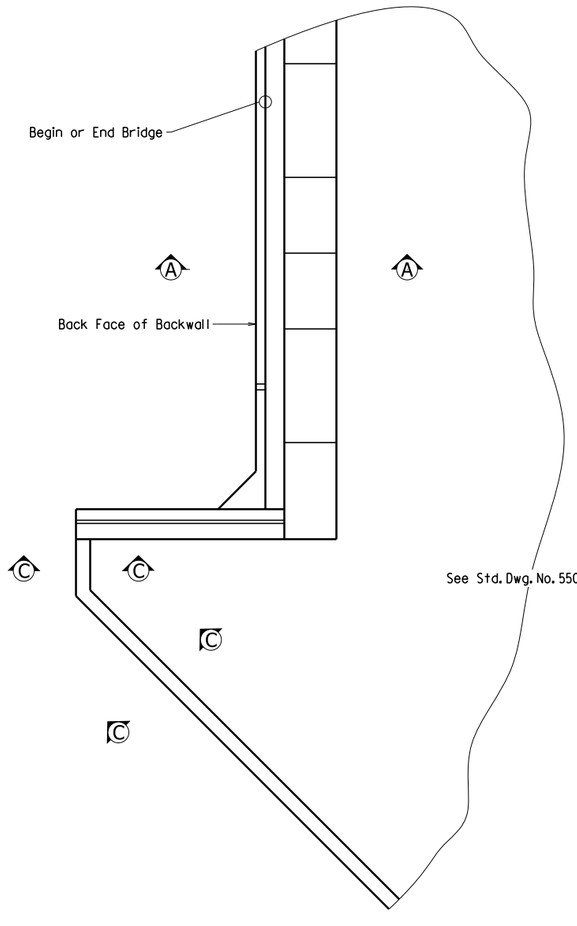


SUPERELEVATION SKETCH

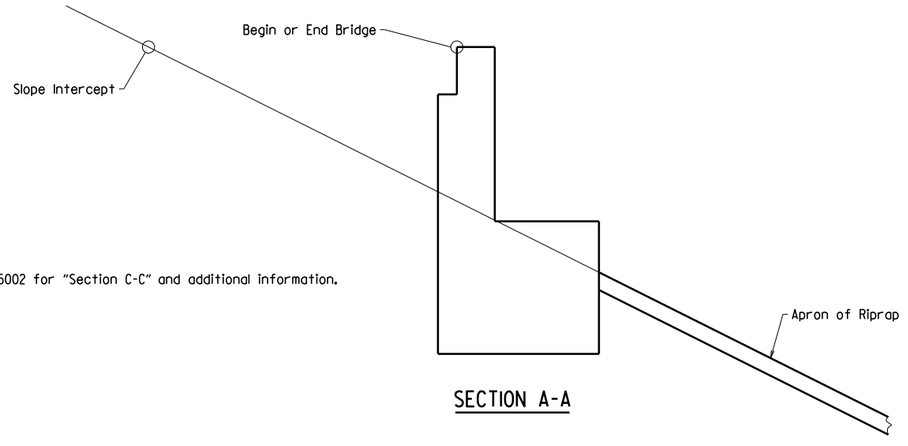
Looking Ahead



THREE DIMENSION VIEW OF CONCRETE RIPRAP



PLAN OF CONCRETE RIPRAP



SECTION A-A

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Jun 23 2020 3:42 PM

Charles R. Ellis

DocuSign

BRIDGE ENGINEER

SHEET 2 OF 4
LAYOUT OF BRIDGE
HIGHWAY 278 OVER UNION PACIFIC RAILROAD
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY

ROUTE 278 SEC. 16

ARKANSAS STATE HIGHWAY COMMISSION

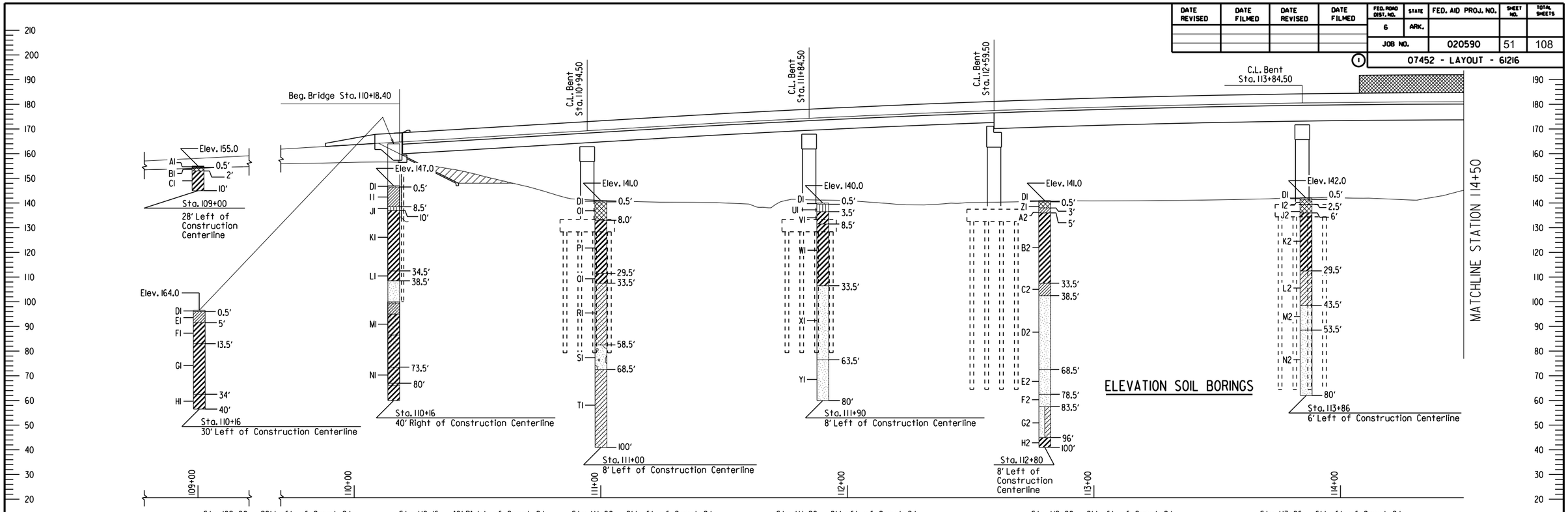
LITTLE ROCK, ARK.

DRAWN BY:	EOR	DATE:	6-15-18	FILENAME:	b020590_II.dgn
CHECKED BY:	DBS	DATE:	6-22-2020	SCALE:	No Scale
DESIGNED BY:	LJB	DATE:	4-2018		

BRIDGE NO. 07452 DRAWING NO. 61215

PRINT DATE: 6/23/2020

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.		020590	51	108
				①		07452 - LAYOUT - 61216		



Sta. 109+00 - 28' Left of Const. C.L.
1.0 - 2.5, N=29
3.5 - 5.0, N=4
6.0 - 7.5, N=7
8.5 - 10.0, N=6

Sta. 110+16 - 30' Left of Const. C.L.
1.0 - 2.5, N=4
3.5 - 5.0, N=5
6.0 - 7.5, N=5
8.5 - 10.0, N=6
13.5 - 15.0, N=7
18.5 - 20.0, N=10
23.5 - 25.0, N=7
28.5 - 30.0, N=7
33.5 - 35.0, N=8
38.5 - 40.0, N=7

Sta. 110+16 - 40' Right of Const. C.L.
1.0 - 2.5, N=5
3.5 - 5.0, N=4
6.0 - 7.5, N=4
8.5 - 10.0, N=6
13.5 - 15.0, N=9
18.5 - 20.0, N=8
23.5 - 25.0, N=10
28.5 - 30.0, N=13
33.5 - 35.0, N=11
38.5 - 40.0, N=26
43.5 - 45.0, N=39
48.5 - 50.0, N=30
53.5 - 55.0, N=10
58.5 - 60.0, N=29
63.5 - 65.0, N=27
68.5 - 70.0, N=18
73.5 - 75.0, N=29
78.5 - 80.0, N=65

Sta. 111+00 - 8' Left of Const. C.L.
1.0 - 2.5, N=5
3.5 - 5.0, N=4
6.5 - 8.0, N=2
13.5 - 15.0, N=7
18.5 - 20.0, N=8
23.5 - 25.0, N=8
28.5 - 30.0, N=12
33.5 - 35.0, N=15
38.5 - 40.0, N=32
43.5 - 45.0, N=25
48.5 - 50.0, N=50
53.5 - 55.0, N=29
58.5 - 60.0, N=17
63.5 - 65.0, N=20
68.5 - 70.0, N=31
78.5 - 80.0, N=47
88.5 - 90.0, N=51
98.5 - 100.0, N=27

"N" VALUES

Sta. 111+90 - 8' Left of Const. C.L.
1.0 - 2.5, N=14
3.5 - 5.0, N=3
8.5 - 10.0, N=7
13.5 - 15.0, N=7
18.5 - 20.0, N=8
23.5 - 25.0, N=8
28.5 - 30.0, N=8
33.5 - 35.0, N=15
38.5 - 40.0, N=10
43.5 - 45.0, N=21
48.5 - 50.0, N=29
53.5 - 55.0, N=13
58.5 - 60.0, N=21
63.5 - 65.0, N=27
68.5 - 70.0, N=31
78.5 - 80.0, N=38

Sta. 112+80 - 8' Left of Const. C.L.
1.0 - 2.5, N=3
6.0 - 7.5, N=4
8.5 - 10.0, N=6
13.5 - 15.0, N=7
18.5 - 20.0, N=5
23.5 - 25.0, N=6
28.5 - 30.0, N=7
33.5 - 35.0, N=8
38.5 - 40.0, N=19
43.5 - 45.0, N=23
48.5 - 50.0, N=30
53.5 - 55.0, N=31
58.5 - 60.0, N=35
68.5 - 70.0, N=30
78.5 - 80.0, N=7
88.5 - 90.0, N=50/5"
98.5 - 100.0, N=30

Sta. 113+86 - 6' Left of Const. C.L.
1.0 - 2.5, N=31
3.5 - 5.0, N=9
6.0 - 7.5, N=4
8.5 - 10.0, N=9
13.5 - 15.0, N=7
18.5 - 20.0, N=7
23.5 - 25.0, N=7
28.5 - 30.0, N=10
33.5 - 35.0, N=14
38.5 - 40.0, N=8
43.5 - 45.0, N=35
48.5 - 50.0, N=22
53.5 - 55.0, N=23
58.5 - 60.0, N=24
68.5 - 70.0, N=26
78.5 - 80.0, N=41

BORING LEGEND

AI-ASPHALT
BI-FILL: Red Sand
CI-Soft To Medium Stiff, Red-Brown and Gray, FAT CLAY (CH)
DI-TOPSOIL: 6 inches
EI-Soft to Medium Stiff, Gray, LEAN CLAY with Sand (CL)
FI-Medium Stiff, Gray and Brown, FAT CLAY (CH)
GI-Medium Stiff to Stiff, Brown to gray, FAT CLAY, Trace Oxide Nodules (CH)
HI-Medium Stiff, Maroon, FAT CLAY (CH)
II-Medium Stiff to Soft, Brown, LEAN CLAY (CL)
JI-Medium Stiff, Brown and Gray, Clayey SILT (ML)
KI-Stiff to Medium Stiff, Brown to Gray, FAT CLAY (CH)
LI-Stiff, Gray and Brown, FAT CLAY, little Sand (CH)
MI-Loose to Dense, Gray SAND (SP)
NI-Medium Dense to Very Dense, Gray SAND, little Gravel (SP)
OI-FILL: Red-Brown to Black, Lean Clay, Trace Wood
PI-Medium Stiff to Stiff, Red-Brown to Gray, FAT CLAY (CH)
QI-Stiff, Gray, FAT CLAY, Little Sand (CH)
RI-Medium Dense to Dense, Gray CLAYEY SAND, Trace Silt (SC)
SI-Medium Dense to Dense, Gray, GRAVELLY SAND, Trace Silt (SP)
TI-Medium Dense to Very Dense, Gray, CLAYEY SAND (SC)
UI-Stiff, Brown SILT (ML)
VI-Soft, Gray, FAT CLAY (CH)
WI-Medium Stiff, Gray and Brown, FAT CLAY (CH)
XI-Medium Dense to Loose, Gray to Brown SAND, Trace Silt (SP)
YI-Medium Dense to Dense, Gray SAND, Trace Gravel (SP)
ZI-FILL: Black, Lean Clay

A2-Medium Stiff, Gray, LEAN CLAY (CL)
B2-Soft to Medium Stiff, Gray and Brown to Red-Brown, FAT CLAY (CH)
C2-Medium Stiff, Gray, LEAN CLAY (CL)
D2-Medium Dense to Dense, Gray SAND (SP)
E2-Medium Dense, Gray Sand, Trace Gravel (SP)
F2-Loose, Gray Sand and Wood (SP)
G2-Very Dense, Gray SAND WITH CLAY (SP-SC)
H2-Very Stiff, Gray, FAT CLAY (CH)
I2-FILL: Brown Silt
J2-FILL: Black, Lean Clay and Gravel with Wood
K2-Soft to stiff, Gray to Red-Brown, FAT CLAY (CH)
L2-Loose, Red and Gray, CLAYEY SAND (SC)
M2-Loose to Dense, Gray SAND (SP)
N2-Medium Dense to Dense, Gray SAND, Trace Gravel (SP)
O2-Medium Stiff to Soft, Red-Brown SILT (ML)
P2-Medium Stiff, Gray, LEAN CLAY (CL)
Q2-Medium Stiff, Red-Brown and gray, FAT CLAY (CH)
R2-Stiff, Red-Brown and Gray, FAT CLAY, Little Sand (CH)
S2-Medium Dense to Dense, Brown to Gray, SILTY SAND (SM)
T2-Medium Dense to Dense, Gray SAND, Trace Gravel (SP)
U2-Very Stiff, Gray, FAT CLAY (CH)
V2-Medium Stiff, Red-Brown, LEAN CLAY (CL)
W2-Stiff to Medium Stiff, Brown and Gray, FAT CLAY (CH)
X2-Dense to Medium Dense, Gray SAND (SP)
Y2-Dense to Medium Dense, Gray SAND WITH SILT, Trace Gravel (SP) (SM)
Z2-Medium Stiff to Soft, Red-Brown to Gray, LEAN CLAY (CL)

A3-Medium Stiff, Gray, FAT CLAY, Some Sand (CH)
B3-Medium Stiff, Red-Brown to Gray, FAT CLAY (CH)
C3-Stiff, Gray, FAT CLAY, Some Sand (CH)
D3-Medium Dense to Dense, Gray SAND WITH SILT (SP-SM)
E3-Dense to Medium Dense, Gray SAND, Trace Gravel (SP)
F3-Stiff to Medium Stiff, Red-Brown SILT (ML)
G3-Medium Stiff, Red-Brown to Gray, LEAN CLAY (CL)
H3-Medium Stiff to Stiff, Gray and Brown, FAT CLAY (CH)
I3-Medium Dense to Dense, Brown and Gray, SILTY SAND (SM)
J3-Medium Stiff, Red-Brown, LEAN CLAY, Trace Sand and Roots (CL)
K3-Medium Stiff, Red-Brown to Gray, FAT CLAY, Trace Roots (CH)
L3-Medium Stiff, Gray to Red-Brown, LEAN CLAY (CL)
M3-Dense to Medium Dense, Brown to Gray SAND (SP)
N3-Medium Dense, Gray SAND WITH SILT, Trace Gravel (SP-SM)
O3-Very Stiff, Gray, FAT CLAY (CH)
P3-Dense, Gray SAND, Trace Gravel (SP)
Q3-BASE: 3 inches of Gravel
R3-FILL: Red Sand
S3-Soft to Medium Stiff, Red-Brown and Gray, FAT CLAY (CH)
T3-Stiff, Brown and Gray, FAT CLAY (CH)
U3-BASE: 6 inches of Gravel
V3-Medium Stiff, Red-Brown to Gray, FAT CLAY (CH)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Jun 23 2020 3:42 PM
Charles R. Ellis
DocuSign
BRIDGE ENGINEER

SHEET 3 OF 4
LAYOUT OF BRIDGE
HIGHWAY 278 OVER UNION PACIFIC RAILROAD
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY

ROUTE 278 SEC. 16

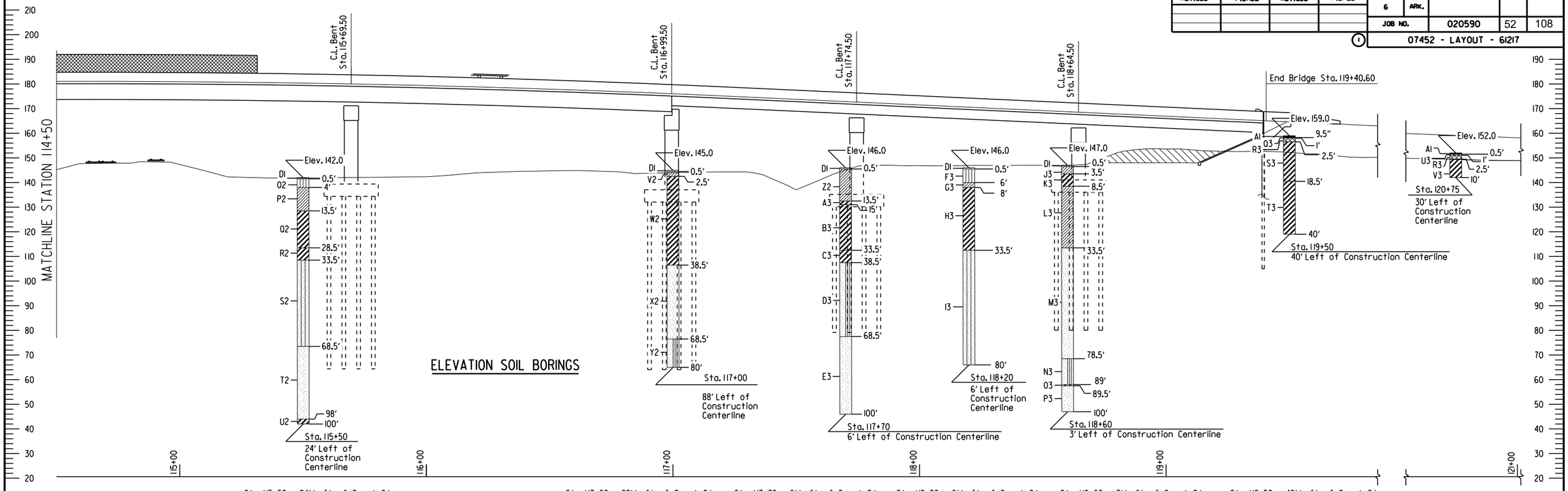
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 9-25-19 FILENAME: b020590_ll.dgn
CHECKED BY: DBS DATE: 6-22-2020 SCALE: 1" = 20'
DESIGNED BY: LJB DATE: 4-2018

BRIDGE NO. 07452 DRAWING NO. 61216

PRINT DATE: 6/23/2020

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.		020590	52	108
				①		07452 - LAYOUT - 61217		



ELEVATION SOIL BORINGS

"N" VALUES

Sta. 115+50 - 24' Left of Const. C.L.
1.0 - 3.0, N=6
3.5 - 5.5, N=4
6.0 - 8.0, N=5
13.5 - 15.0, N=6
18.5 - 20.0, N=6
23.5 - 25.0, N=6
28.5 - 30.0, N=10
33.5 - 35.0, N=13
38.5 - 40.0, N=17
43.5 - 45.0, N=36
48.5 - 50.0, N=14
53.5 - 55.0, N=16
58.5 - 60.0, N=30
68.5 - 70.0, N=23
78.5 - 80.0, N=38
88.5 - 90.0, N=32
98.5 - 100.0, N=28

Sta. 117+00 - 88' Left of Const. C.L.
1.0 - 2.5, N=5
3.5 - 5.0, N=10
6.0 - 7.5, N=5
8.5 - 10.0, N=8
13.5 - 15.0, N=6
18.5 - 20.0, N=7
23.5 - 25.0, N=7
28.5 - 30.0, N=6
33.5 - 35.0, N=8
38.5 - 40.0, N=34
43.5 - 45.0, N=50
48.5 - 50.0, N=30
58.5 - 60.0, N=30
68.5 - 70.0, N=34
78.5 - 80.0, N=30

Sta. 117+70 - 6' Left of Const. C.L.
1.0 - 3.0, N=7
3.5 - 5.5, N=6
6.0 - 8.0, N=4
8.5 - 10.0, N=8
13.5 - 15.0, N=8
18.5 - 20.0, N=7
23.5 - 25.0, N=6
28.5 - 30.0, N=8
33.5 - 35.0, N=10
38.5 - 40.0, N=32
43.5 - 45.0, N=26
48.5 - 50.0, N=32
58.5 - 60.0, N=25
68.5 - 70.0, N=34
78.5 - 80.0, N=24
88.5 - 90.0, N=33
98.5 - 100.0, N=31

Sta. 118+20 - 6' Left of Const. C.L.
1.0 - 2.5, N=10
3.5 - 5.0, N=6
8.5 - 10.0, N=5
13.5 - 15.0, N=8
18.5 - 20.0, N=6
23.5 - 25.0, N=9
28.5 - 30.0, N=10
33.5 - 35.0, N=15
38.5 - 40.0, N=23
43.5 - 45.0, N=17
48.5 - 50.0, N=36
58.5 - 60.0, N=28
68.5 - 70.0, N=33
78.5 - 80.0, N=33

Sta. 118+60 - 3' Left of Const. C.L.
1.0 - 3.0, N=5
3.5 - 5.5, N=5
8.5 - 10.0, N=6
18.5 - 20.0, N=8
23.5 - 25.0, N=6
28.5 - 30.0, N=7
33.5 - 35.0, N=39
38.5 - 40.0, N=34
43.5 - 45.0, N=30
48.5 - 50.0, N=26
58.5 - 60.0, N=30
68.5 - 70.0, N=30
78.5 - 80.0, N=30
88.5 - 90.0, N=30
98.5 - 100.0, N=37

Sta. 119+50 - 40' Left of Const. C.L.
1.0 - 2.5, N=28
3.5 - 5.0, N=4
6.0 - 7.5, N=4
8.5 - 10.0, N=5
13.5 - 15.0, N=7
18.5 - 20.0, N=10
23.5 - 25.0, N=10
28.5 - 30.0, N=9
33.5 - 35.0, N=9
38.5 - 40.0, N=12

Sta. 120+75 - 30' Left of Const. C.L.
1.0 - 2.5, N=28
3.5 - 5.0, N=5
6.0 - 7.5, N=6
8.5 - 10.0, N=7

BORING LEGEND

AI-ASPHALT
BI-FILL: Red Sand
CI-Soft To Medium Stiff, Red-Brown and Gray, FAT CLAY (CH)
DI-TOPSOIL: 6 Inches
EI-Soft to Medium Stiff, Gray, LEAN CLAY with Sand (CL)
FI-Medium Stiff, Gray and Brown, FAT CLAY (CH)
GI-Medium Stiff to Stiff, Brown to gray, FAT CLAY, Trace Oxide Nodules (CH)
HI-Medium Stiff, Maroon, FAT CLAY (CH)
II-Medium Stiff to Soft, Brown, LEAN CLAY (CL)
JI-Medium Stiff, Brown and Gray, Clayey SILT (ML)
KI-Stiff to Medium Stiff, Brown to Gray, FAT CLAY (CH)
LI-Stiff, Gray and Brown, FAT CLAY, little Sand (CH)
MI-Loose to Dense, Gray SAND (SP)
NI-Medium Dense to Very Dense, Gray SAND, little Gravel (SP)
OI-FILL: Red-Brown to Black, Lean Clay, Trace Wood
PI-Medium Stiff to Stiff, Red-Brown to Gray, FAT CLAY (CH)
QI-Stiff, Gray, FAT CLAY, Little Sand (CH)
RI-Medium Dense to Dense, Gray CLAYEY SAND, Trace Silt (SC)
SI-Medium Dense to Dense, Gray, GRAVELLY SAND, Trace Silt (SP)
TI-Medium Dense to Very Dense, Gray, CLAYEY SAND (SC)
UI-Stiff, Brown SILT (ML)
VI-Soft, Gray, FAT CLAY (CH)
WI-Medium Stiff, Gray and Brown, FAT CLAY (CH)
XI-Medium Dense to Loose, Gray to Brown SAND, Trace Silt (SP)
YI-Medium Dense to Dense, Gray SAND, Trace Gravel (SP)
ZI-FILL: Black, Lean Clay

A2-Medium Stiff, Gray, LEAN CLAY (CL)
B2-Soft to Medium Stiff, Gray and Brown to Red-Brown, FAT CLAY (CH)
C2-Medium Stiff, Gray, LEAN CLAY (CL)
D2-Medium Dense to Dense, Gray SAND (SP)
E2-Medium Dense, Gray Sand, Trace Gravel (SP)
F2-Loose, Gray Sand and Wood (SP)
G2-Very Dense, Gray SAND WITH CLAY (SP-SC)
H2-Very Stiff, Gray, FAT CLAY (CH)
I2-FILL: Brown Silt
J2-FILL: Black, Lean Clay and Gravel with Wood
K2-Soft to stiff, Gray to Red-Brown, FAT CLAY (CH)
L2-Loose, Red and Gray, CLAYEY SAND (SC)
M2-Loose to Dense, Gray SAND (SP)
N2-Medium Dense to Dense, Gray SAND, Trace Gravel (SP)
O2-Medium Stiff to Soft, Red-Brown SILT (ML)
P2-Medium Stiff, Gray, LEAN CLAY (CL)
Q2-Medium Stiff, Red-Brown and gray, FAT CLAY (CH)
R2-Stiff, Red-Brown and Gray, FAT CLAY, Little Sand (CH)
S2-Medium Dense to Dense, Brown to Gray, SILTY SAND (SM)
T2-Medium Dense to Dense, Gray SAND, Trace Gravel (SP)
U2-Very Stiff, Gray, FAT CLAY (CH)
V2-Medium Stiff, Red-Brown, LEAN CLAY (CL)
W2-Stiff to Medium Stiff, Brown and Gray, FAT CLAY (CH)
X2-Dense to Medium Dense, Gray SAND (SP)
Y2-Dense to Medium Dense, Gray SAND WITH SILT, Trace Gravel (SP) (SM)
Z2-Medium Stiff to Soft, Red-Brown to Gray, LEAN CLAY (CL)

A3-Medium Stiff, Gray, FAT CLAY, Some Sand (CH)
B3-Medium Stiff, Red-Brown to Gray, FAT CLAY (CH)
C3-Stiff, Gray, FAT CLAY, Some Sand (CH)
D3-Medium Dense to Dense, Gray SAND WITH SILT (SP-SM)
E3-Dense to Medium Dense, Gray SAND, Trace Gravel (SP)
F3-Stiff to Medium Stiff, Red-Brown SILT (ML)
G3-Medium Stiff, Red-Brown to Gray, LEAN CLAY (CL)
H3-Medium Stiff to Stiff, Gray and Brown, FAT CLAY (CH)
I3-Medium Dense to Dense, Brown and Gray, SILTY SAND (SM)
J3-Medium Stiff, Red-Brown, LEAN CLAY, Trace Sand and Roots (CL)
K3-Medium Stiff, Red-Brown to Gray, FAT CLAY, Trace Roots (CH)
L3-Medium Stiff, Gray to Red-Brown, LEAN CLAY (CL)
M3-Dense to Medium Dense, Brown to Gray SAND (SP)
N3-Medium Dense, Gray SAND WITH SILT, Trace Gravel (SP-SM)
O3-Very Stiff, Gray, FAT CLAY (CH)
P3-Dense, Gray SAND, Trace Gravel (SP)
Q3-BASE: 3 inches of Gravel
R3-FILL: Red Sand
S3-Soft to Medium Stiff, Red-Brown and Gray, FAT CLAY (CH)
T3-Stiff, Brown and Gray, FAT CLAY (CH)
U3-BASE: 6 inches of Gravel
V3-Medium Stiff, Red-Brown to Gray, FAT CLAY (CH)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Jun 23 2020 3:42 PM
Charles R. Ellis
DocuSign
BRIDGE ENGINEER

SHEET 4 OF 4
LAYOUT OF BRIDGE
HIGHWAY 278 OVER UNION PACIFIC RAILROAD
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY

ROUTE 278 SEC. 16

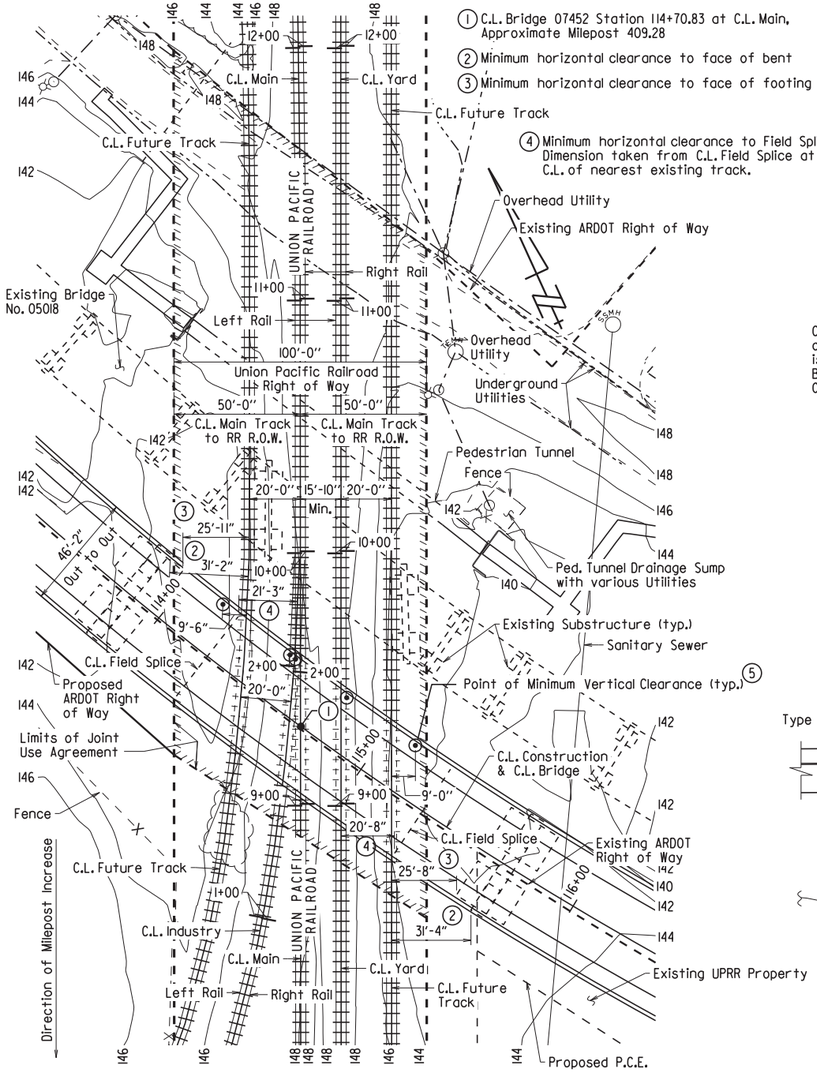
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 9-25-19
CHECKED BY: DBS DATE: 6-22-2020
DESIGNED BY: LJB DATE: 4-2018
FILENAME: b020590_ll.dgn
SCALE: 1" = 20'

BRIDGE NO. 07452 DRAWING NO. 61217

PRINT DATE: 6/23/2020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
07-28-2020				6	ARK.			
				JOB NO.		020590	53	108
				①		07452 - EXHIBIT A - 61218		

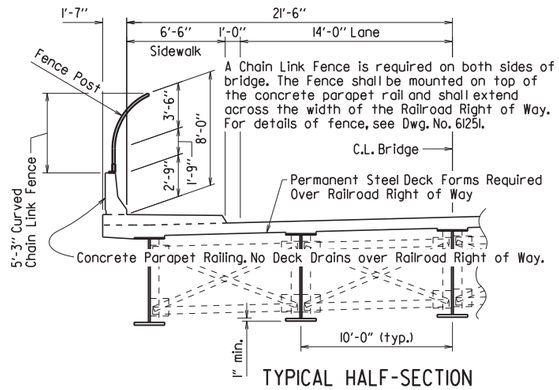


PLAN

1" = 30'

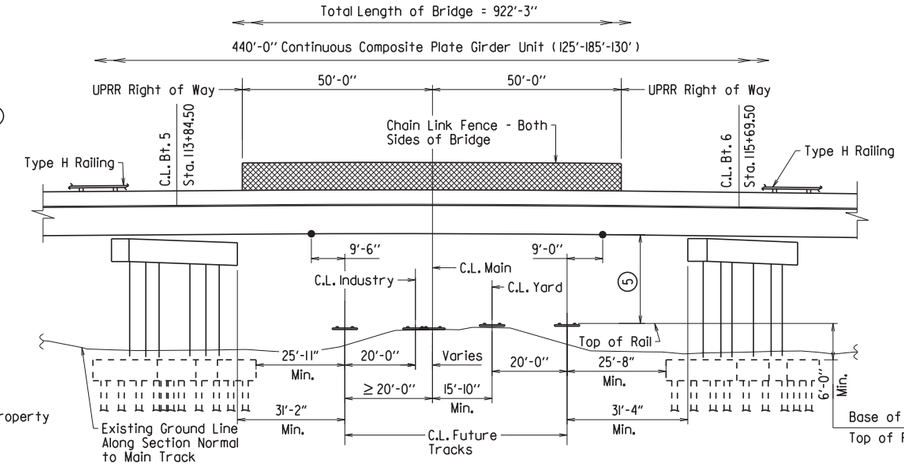
Existing bents within the Railroad right-of-way shall be removed to at least 3 feet below final grade or at least 2 feet below base of rail, whichever is lower, unless otherwise specified by the Railroad.

Construction Phasing: Existing Bridge No. 05018 will remain open to traffic while the Proposed New Bridge No. 07452 is constructed in its entirety. Once the Proposed New Bridge No. 07452 is open to traffic, Existing Bridge No. 05018 will be removed.



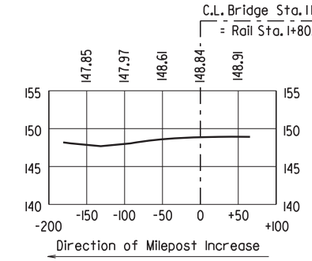
TYPICAL HALF-SECTION

No Scale



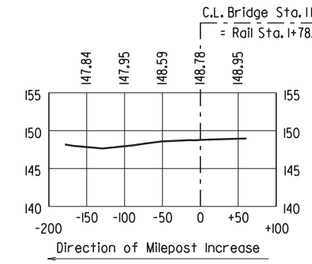
ELEVATION (NORMAL TO UPRR MAIN TRACK)

Looking in Direction of Milepost Decrease
All horizontal dimensions measured normal to centerline of respective tracks
1" = 20'



PROFILE ALONG TOP OF LEFT RAIL OF INDUSTRY (INDU) C432 01 712

1" = 100' Horizontal, 1" = 10' Vertical



PROFILE ALONG TOP OF RIGHT RAIL OF INDUSTRY (INDU) C432 01 712

1" = 100' Horizontal, 1" = 10' Vertical

Track	⑤ Table of Minimum Vertical Clearances	
	Location	Min. Vert. Clr.
Industry (INDU) C432 01 712	29'-6" Lt. of C.L. Track	23'-8" ⑥
	At Left Rail	24'-0" ⑥
Main (SIMN)	At Left Rail	24'-0" ⑥
Yard C431 01 001	At Right Rail	24'-0"
	29'-0" Rt. of C.L. Track	23'-10"

Minimum Vertical Clearances shown are after all permanent dead loads are applied to the structure and are measured from the lowest steel girder element at the location indicated, including field splice elements where applicable.

⑥ To accommodate future track raises, these vertical clearances are based on elevations along the Yard Track.

GENERAL NOTES

1. Site(s) shall be accessed without crossing tracks except at existing road crossings, unless explicit approvals have been obtained from UPRR.

2. The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the Railroad prior to construction.

3. Currently there are no known utilities on the Railroad right-of-way other than those shown. UPRR "Call Before You Dig" 1-800-533-2891 shall be contacted prior to construction.

4. Construction shall comply with requirements noted in Special Provision "Insurance, Construction, and Flagging Requirements on Railroad Property (UPRR)".

5. The proposed grade separation project shall not change the quantity and/or characteristics of the flow in the Railroad ditches and/or drainage structures. Existing drainage patterns will be maintained. Closed parapet railing (no deck drains) are typical on both sides of the bridge deck over the Railroad right-of-way.

6. The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad prior to beginning any grading on the project site.

7. Temporary construction clearances, including falsework clearances, shall comply with the details shown in "Minimum Construction Clearance Envelope". All equipment, materials, and personnel shall remain outside this envelope, except during designated track windows.

8. All shoring systems that impact the Railroad's operations and/or supports the Railroad's embankment shall be designed and constructed per the Railroad temporary shoring requirements.

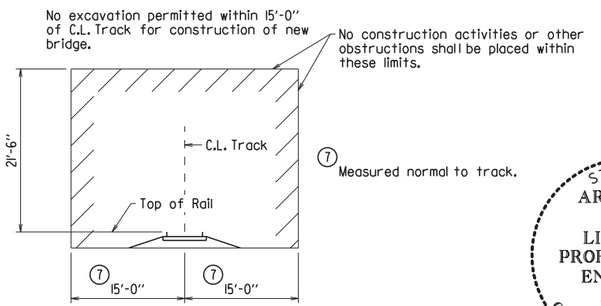
9. Erection over the Railroad right-of-way shall be designed to cause no interruption to all Railroad operations. Falsework will not be allowed in the Railroad right-of-way without Railroad approval.

10. All personnel must clear the area within 25 feet of track and secure all equipment during the approach and passage of a train. All work within 50 feet of track must cease during the approach and passage of a train.

11. All permanent clearances shall be verified before project closeout.

12. All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements.

13. "The State shall not plow ice, snow, or sleet over the sides of the structure. In consideration of this practice, the Carrier waives its request for the State to attach splash boards to sides of the structure." This statement is in the State-Railroad Agreement.



MINIMUM CONSTRUCTION CLEARANCE ENVELOPE

NORMAL TO RAILROAD
No Scale

⑦ Measured normal to track.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Ellis, Rick
Jul 27 2020 1:23 PM
DocuSign

BRIDGE ENGINEER

SHEET 1 OF 2
EXHIBIT A
LAYOUT OF BRIDGE
HIGHWAY 278 OVER UNION PACIFIC RAILROAD
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY

ROUTE 278 SEC. 16

ARKANSAS STATE HIGHWAY COMMISSION

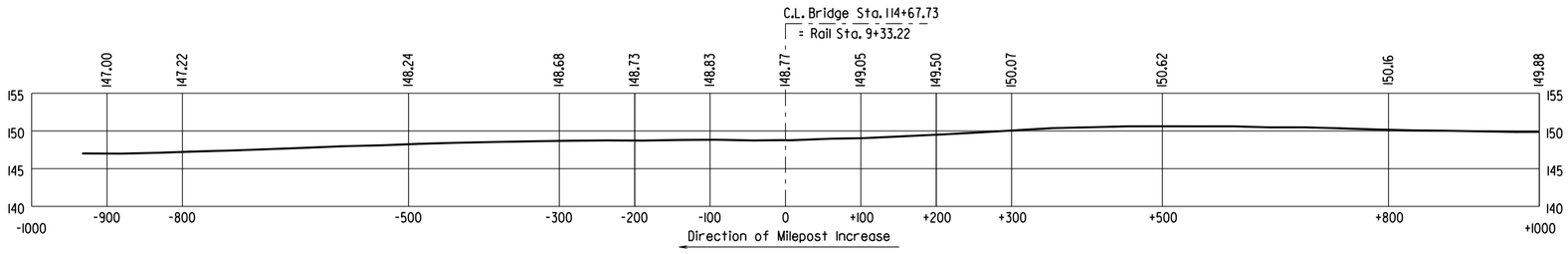
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 12-3-18
CHECKED BY: DBS DATE: 6-22-2020
DESIGNED BY: LJB DATE: 4-2018
FILENAME: b020590_ll.dgn
SCALE: As Noted

BRIDGE NO. 07452 DRAWING NO. 61218

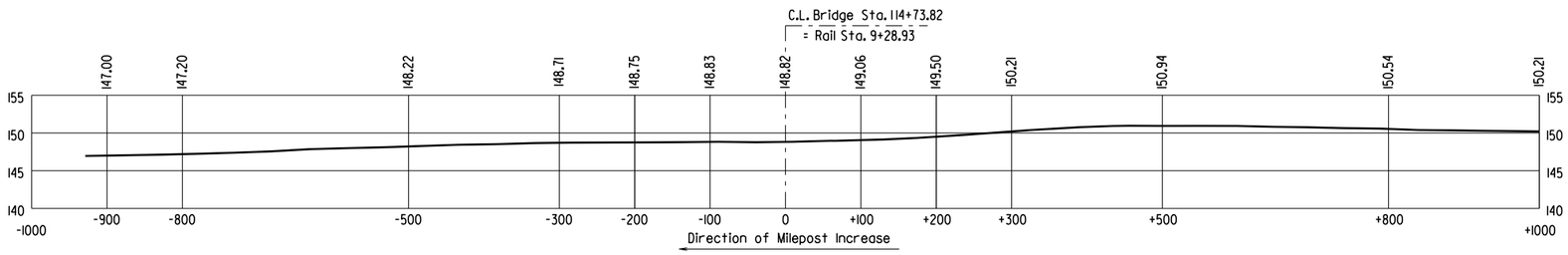
PRINT DATE: 7/27/2020

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.		020590	54	108
				①		07452 - EXHIBIT A - 61219		



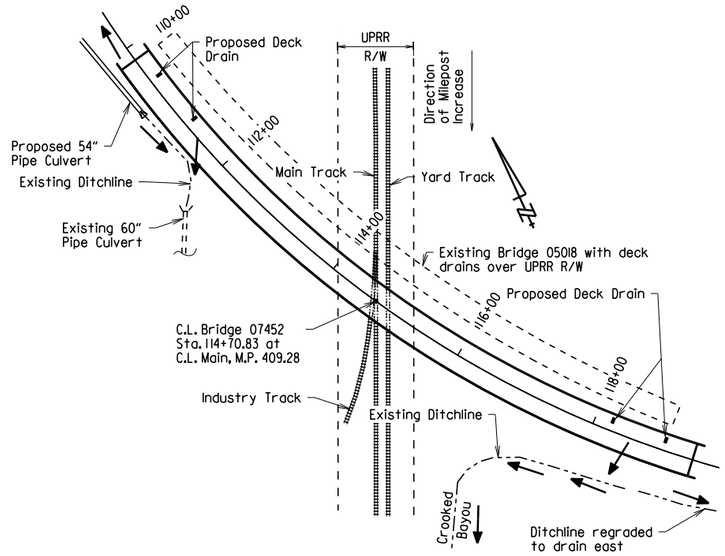
PROFILE ALONG TOP OF LEFT RAIL OF MAIN (SIMN)

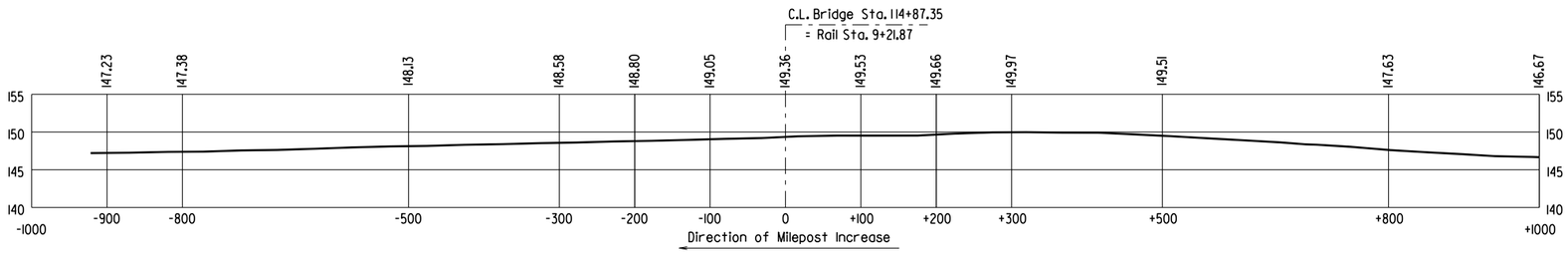
1" = 100' Horizontal, 1" = 10' Vertical



PROFILE ALONG TOP OF RIGHT RAIL OF MAIN (SIMN)

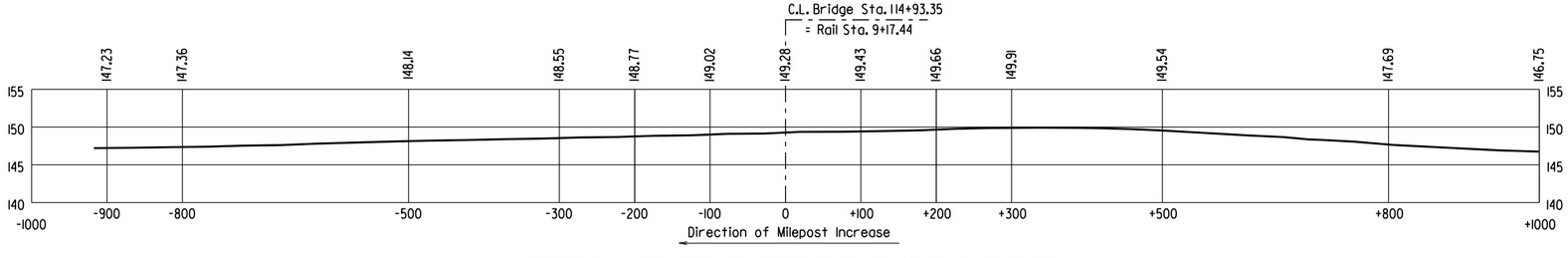
1" = 100' Horizontal, 1" = 10' Vertical





PROFILE ALONG TOP OF LEFT RAIL OF YARD C431 01 001

1" = 100' Horizontal, 1" = 10' Vertical



PROFILE ALONG TOP OF RIGHT RAIL OF YARD C431 01 001

1" = 100' Horizontal, 1" = 10' Vertical

DRAINAGE SKETCH

1" = 100'

The existing bridge has deck drains that deposit rainwater directly underneath the bridge for its full length, including over the Railroad Right of Way. On the west side of the Railroad, water deposited underneath the existing bridge is collected by a 60" pipe culvert located approximately 80' right of Station 112+10. On the east side of the Railroad, water deposited underneath the existing bridge is collected by Crooked Bayou, which flows southwest, paralleling the Railroad in the direction of increasing Mileposts.

The proposed bridge does not allow deck drains for the entire width of the Railroad Right of Way. The proposed bridge has deck drains located approximately at Stations 110+53.50, 111+28.50 to the west of the Railroad and deck drains located approximately at Stations 118+23.50 and 118+98.50 to the east of the Railroad. On the west side of the Railroad, water deposited underneath the proposed bridge is collected by a 60" pipe culvert located approximately 80' right of Station 112+10. On the east side of the Railroad, water deposited underneath the proposed bridge is collected by Crooked Bayou, which flows southwest, paralleling the Railroad in the direction of increasing Mileposts. At the east end of the proposed bridge, the right (south) side ditch is regraded to drain to the east, away from the Railroad and Crooked Bayou.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

Jun 23 2020 3:43 PM

Charles R. Ellis

DocuSign

BRIDGE ENGINEER

SHEET 2 OF 2
EXHIBIT A
LAYOUT OF BRIDGE
HIGHWAY 278 OVER UNION PACIFIC RAILROAD
UPRR STR. & APPRS. (MCGEHEE) (S)
DESHA COUNTY

ROUTE 278 SEC. 16

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

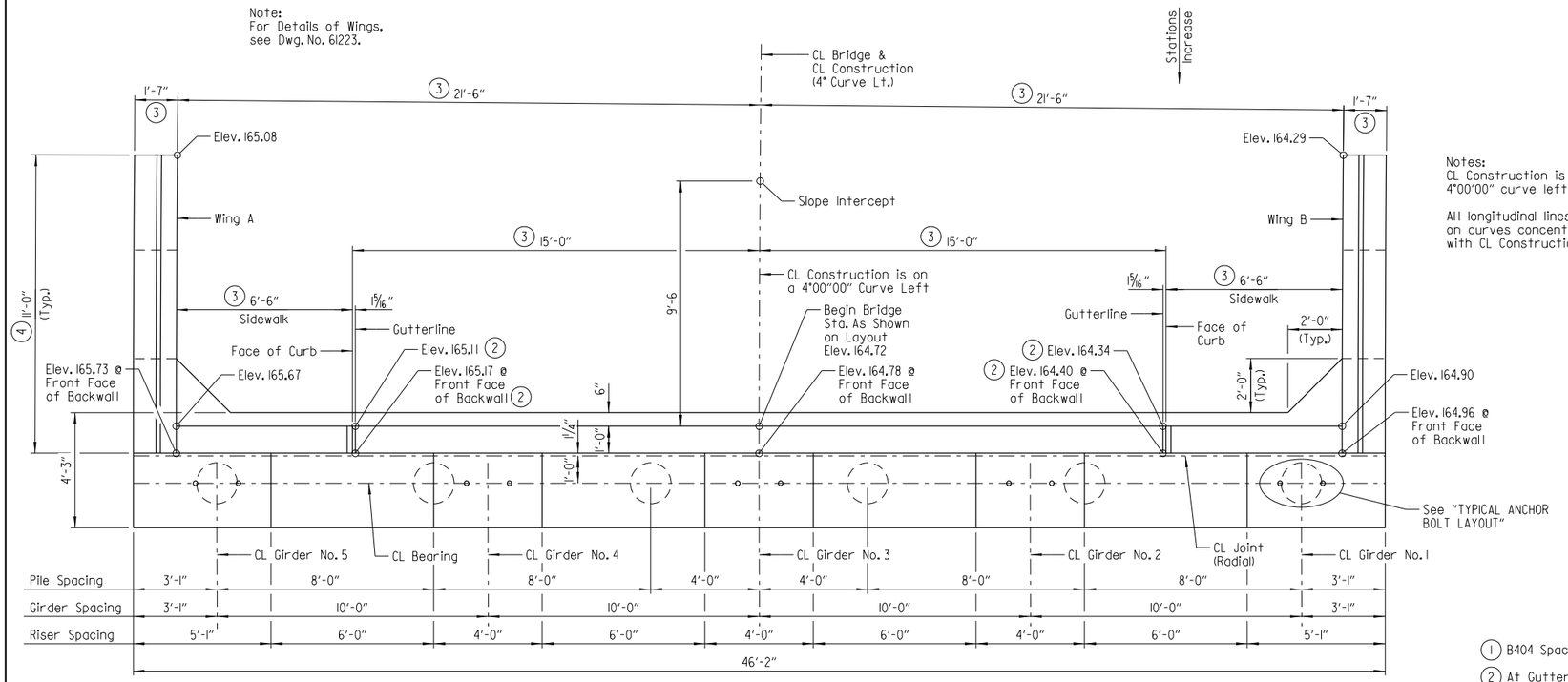
DRAWN BY: LJB DATE: 12-3-18 FILENAME: b020590_ll.dgn
CHECKED BY: DBS DATE: 6-22-2020 SCALE: As Noted
DESIGNED BY: LJB DATE: 4-2018

BRIDGE NO. 07452 DRAWING NO. 61219

PRINT DATE: 6/23/2020

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.		020590	55	108
				(1) 07452		END BENTS		61220

Note:
For Details of Wings,
see Dwg. No. 61223.



PLAN - END BENT NO. 1

(Looking Back)
Scale: 3/8" = 1'-0"

Notes:
CL Construction is on a 4°00'00" curve left.

All longitudinal lines are on curves concentric with CL Construction.

GENERAL NOTES

Structural steel in end bents shall be ASTM A709, Gr. 50W and shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

See Standard Drawing No. 55006 for additional notes.

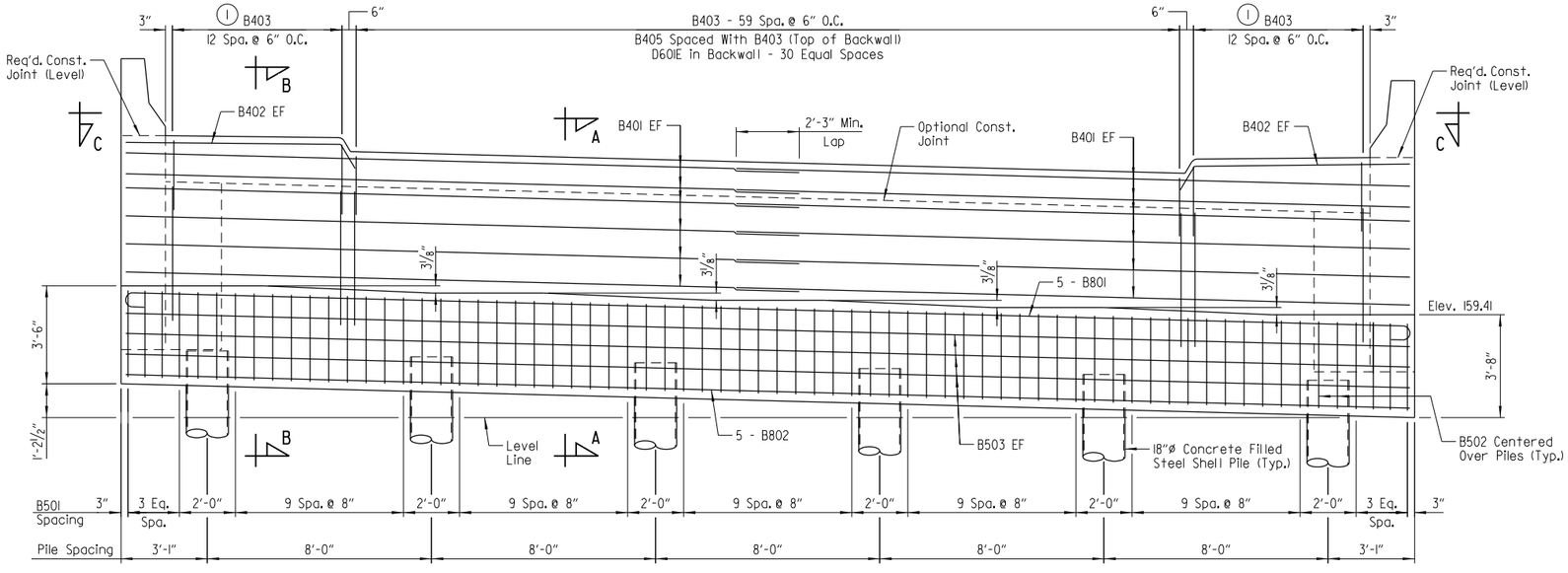
For additional information, see Layout.

NOTE:
For "SECTION A-A", "SECTION B-B" & "VIEW C-C", see Dwg. No. 61222.

LEGEND

EF = Each Face
FF = Front Face
BF = Back Face

(1) B404 Spaced With B403 (Top Of Backwall)
(2) At Gutterline
(3) Measured Radially
(4) Measured Along Front Face Of Rail

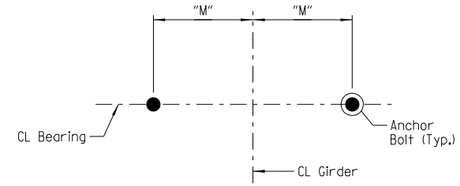


ELEVATION - END BENT NO. 1

(Looking Back)
Scale: 3/8" = 1'-0"

Note:
Class I Protective Surface Treatment shall be applied to the top of the backwall, sidewalk, and to the roadway face and top of the wing rails.

NOTE:
For Details of Elastomeric Bearings,
see Dwg. Nos. 61232 & 61233.



TYPICAL ANCHOR BOLT LAYOUT

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF END BENTS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

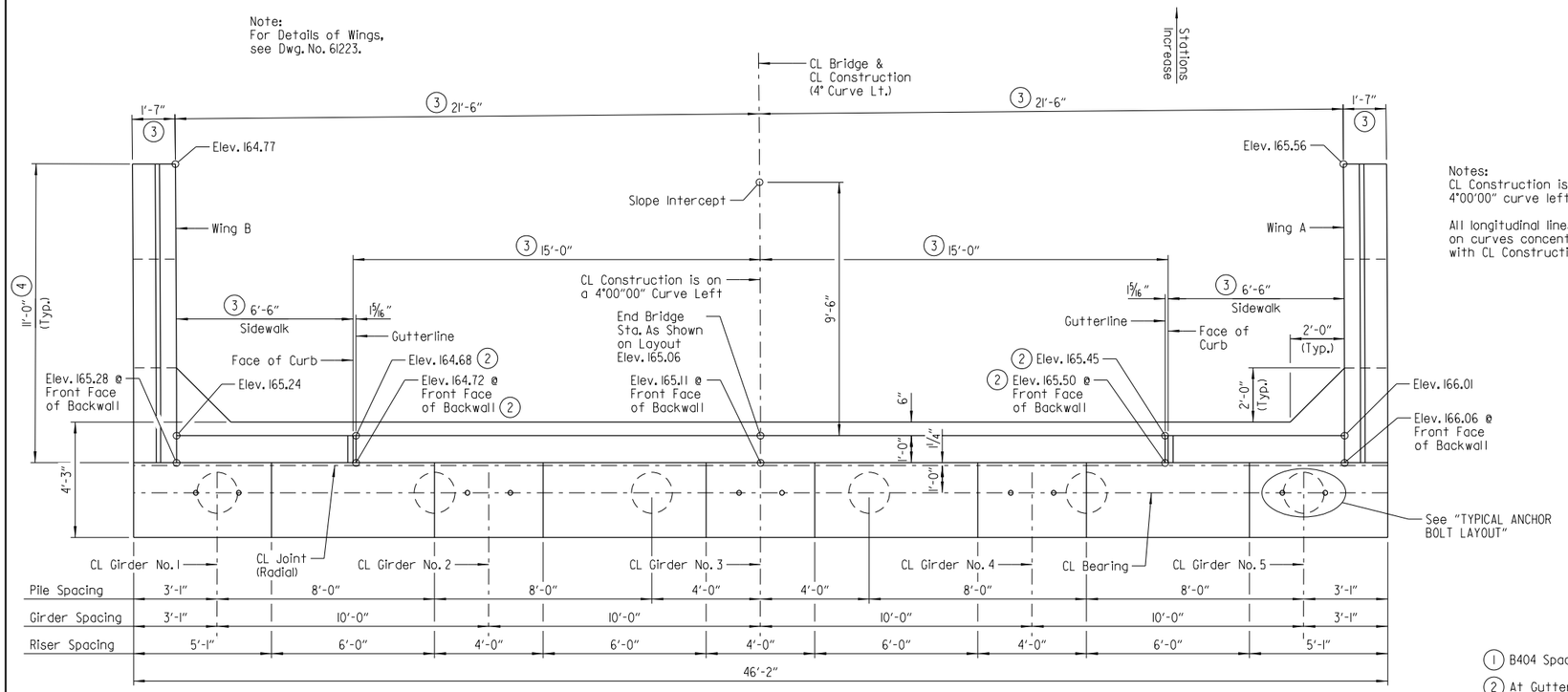
DRAWN BY: CWT DATE: MAR. 2019 FILENAME: b020590_b1.dgn
CHECKED BY: JHR DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: WMM DATE: JUNE 2019

BRIDGE NO. 07452 DRAWING NO. 61220

abhall 6/5/2020 4:28:28 PM
WORKSPACE: ARDOT Bridge
L:\20IT\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW7278_S201-AB (Bent 1).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.		020590	56	108
				(1) 07452		END BENTS		61221

Note:
For Details of Wings,
see Dwg. No. 61223.



PLAN - END BENT NO. 10

(Looking Ahead)
Scale: 3/8" = 1'-0"

Notes:
CL Construction is on a 4°00'00" curve left.

All longitudinal lines are on curves concentric with CL Construction.

GENERAL NOTES

Structural steel in end bents shall be ASTM A709, Gr. 50W and shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

See Standard Drawing No. 55006 for additional notes.

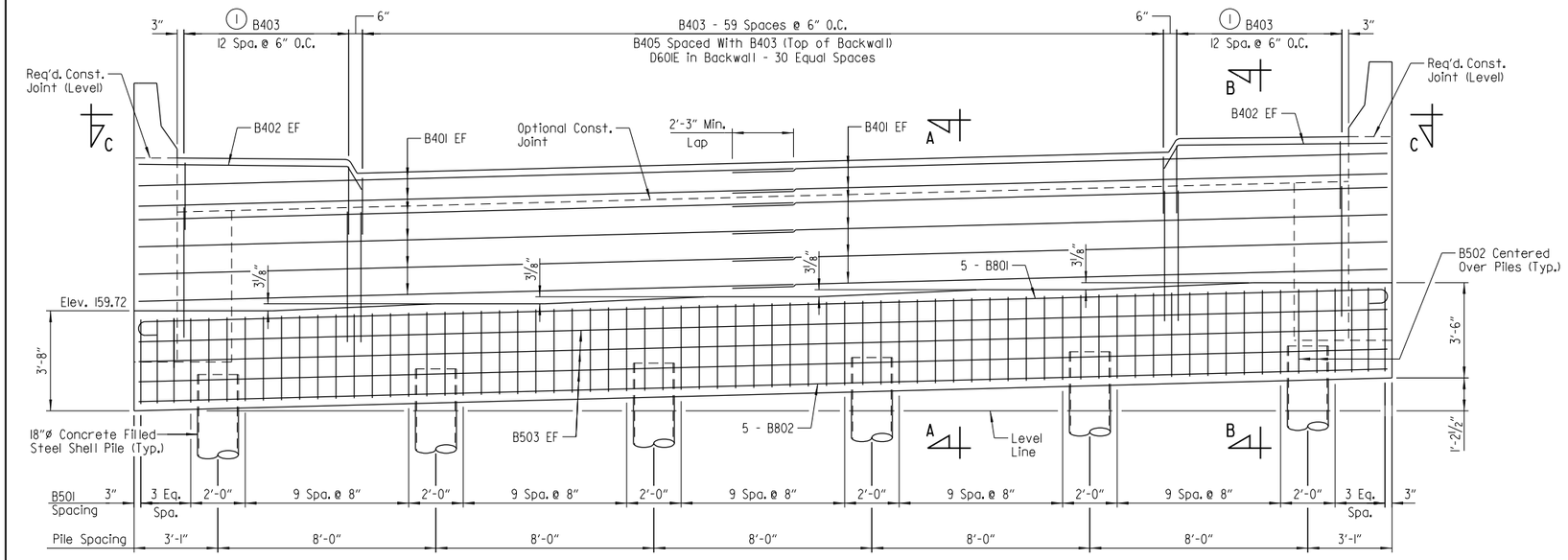
For additional information, see Layout.

NOTE:
For "SECTION A-A", "SECTION B-B" & "VIEW C-C", see Dwg. No. 61222.

(1) B404 Spaced With B403 (Top Of Backwall)
(2) At Gutterline
(3) Measured Radially
(4) Measured Along Front Face Of Rail

LEGEND

EF = Each Face
FF = Front Face
BF = Back Face

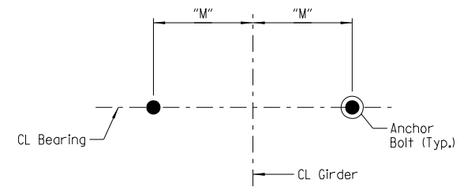


ELEVATION - END BENT NO. 10

(Looking Ahead)
Scale: 3/8" = 1'-0"

Note:
Class I Protective Surface Treatment shall be applied to the top of the backwall, sidewalk, and to the roadway face and top of the wing rails.

NOTE:
For Details of Elastomeric Bearings, see Dwg. Nos. 61232 & 61233.



TYPICAL ANCHOR BOLT LAYOUT

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF END BENTS

ROUTE SEC.

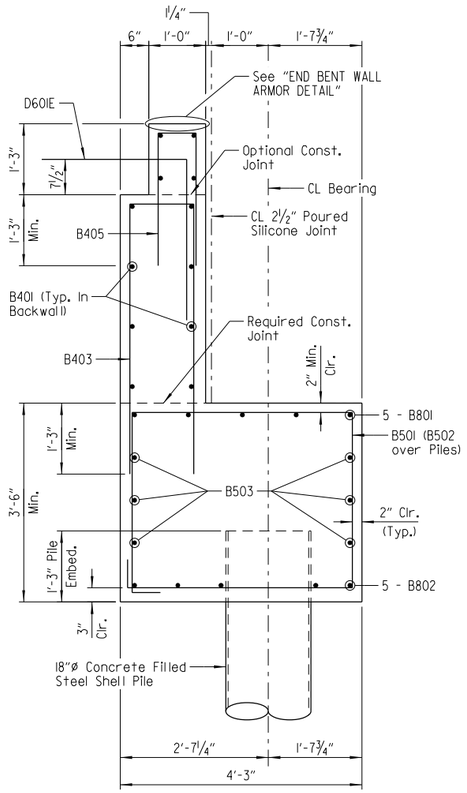
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: MAR. 2019 FILENAME: b020590_b2.dgn
CHECKED BY: JHR DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: WMM DATE: JUNE 2019

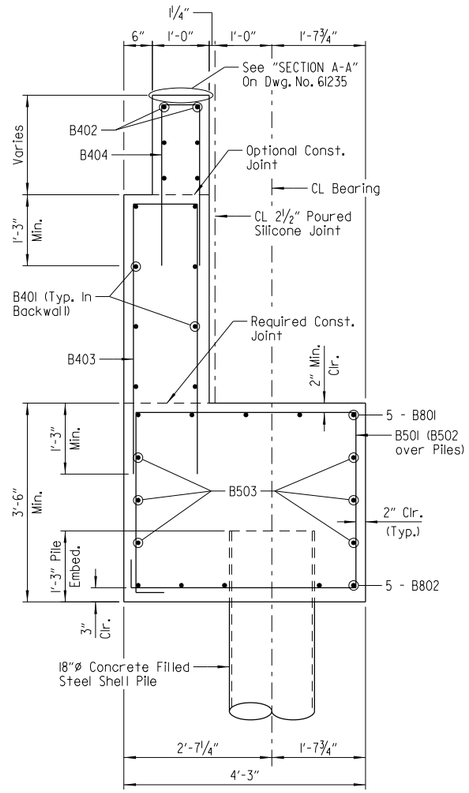
BRIDGE NO. 07452 DRAWING NO. 61221

abhall 6/5/2020 4:28:29 PM
WORKSPACE: ARDOT Bridge
L:\20ITV\70\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278_S202-AB (Bent 10).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.		020590	57	108
				(1) 07452		END BENTS		61222

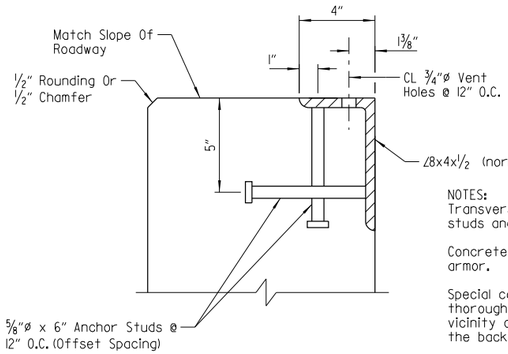


SECTION A-A
Scale: ¾" = 1'-0"



SECTION B-B
Scale: ¾" = 1'-0"

NOTE:
For details of concrete filled steel shell piles and pile anchorage details, see Std. Dwg. No. 55021.



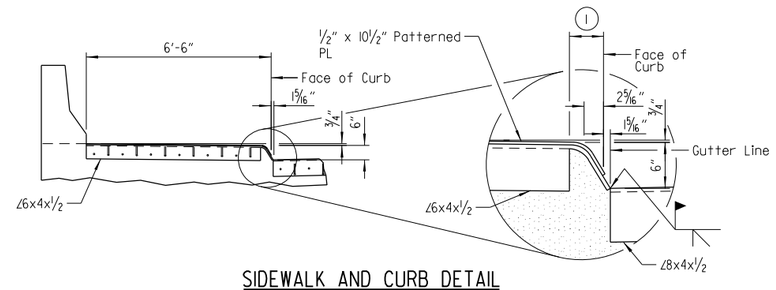
END BENT WALL ARMOR DETAIL
No Scale

NOTES:
Transverse spacing between vertical anchor studs and vent holes shall be 6".

Concrete shall be hand packed under joint armor.

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

The profile of the end bent wall armor shall be established based on the vertical curve in conjunction with the skew angle as shown on the layout.

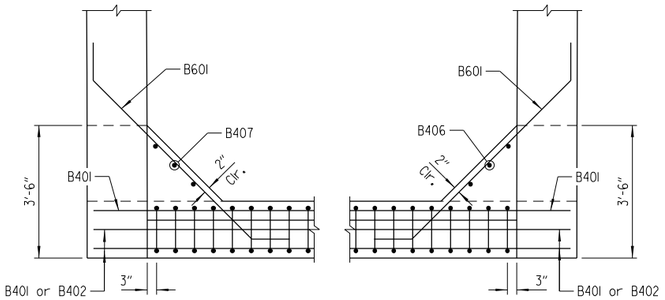


SIDEWALK AND CURB DETAIL
No Scale

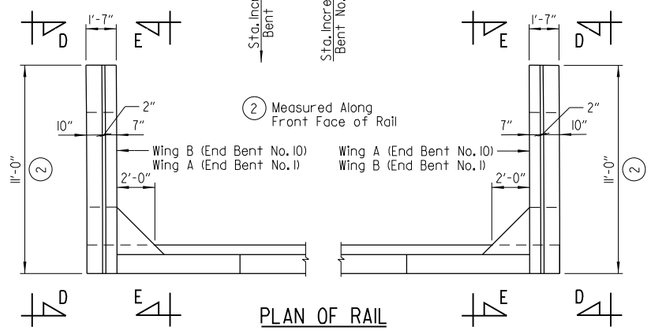
See "SECTION B-B" on Dwg. No. 61235 for additional details.

(1) Cope 6" leg of angle 6" from face of curb and bend 4" leg of angle to conform to curb.

(2) Cost of Bars D601E shall be included in the item "REINFORCING STEEL - BRIDGE (GRADE 60)".



VIEW C-C
Scale: ½" = 1'-0"

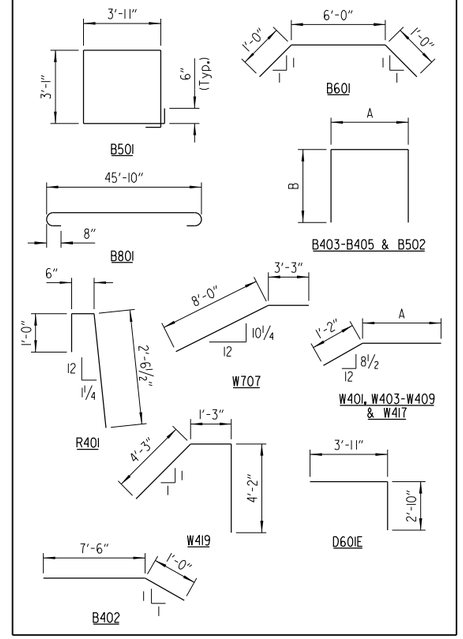


PLAN OF RAIL
Scale: ¼" = 1'-0"

BAR LIST (EACH END BENT)

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B401	24	24'-1"			Str.
B402	4	8'-6"			2"
B403	86	10'-4"	1'-2"	4'-8"	2"
B404	26	6'-8"	8"	3'-1"	2"
B405	60	5'-2"	8"	2'-4"	2"
B406	3	5'-4"			Str.
B407	3	5'-8"			Str.
B501	58	14'-6"			2½"
B502	12	9'-11"	3'-11"	3'-1"	2½"
B503	6	45'-10"			Str.
B601	10	8'-0"			4½"
B801	5	47'-8"			6"
B802	5	45'-10"			Str.
(2) D601E	31	6'-7"			4½"
R401	32	3'-11"			2"
R402	12	10'-8"			Str.
W401	8	8'-6"	7'-4"		3"
W402	8	9'-8"			Str.
W403 To W409	2 Each	8'-2" To 4'-1"	7'-0" To 2'-11"		3"
W410 To W416	2 Each	9'-4" To 5'-3"			Str.
W417	10	3'-10"	2'-8"		3"
W418	10	5'-0"			Str.
W419	6	9'-7"			2"
W701	20	10'-8"			Str.
W702	4	7'-6"			Str.
W703	4	6'-8"			Str.
W704	4	5'-9"			Str.
W705	4	4'-10"			Str.
W706	4	4'-0"			Str.
W707	4	11'-3"			5¼"

BAR BENDING DIAGRAM



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

Bars designated with "E" suffix shall be epoxy coated.

NOTE:
The backwall above the required construction joint shall not be poured until the girders are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. No heavy construction equipment shall be allowed within 10' feet of the backwall until the concrete for the span has been completed. See "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE" on Std. Dwg. No. 55008 for additional information.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL

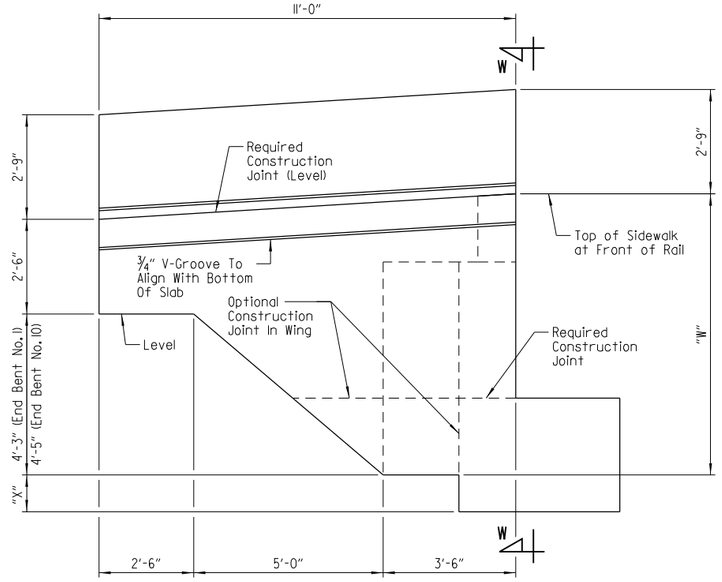
Digitally Signed 06/08/2020
BRIDGE ENGINEER

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

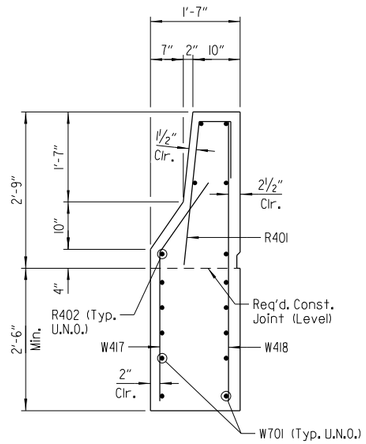
DRAWN BY: CWT DATE: MAR. 2019 FILENAME: b020590_b3.dgn
CHECKED BY: JHR DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: WMM DATE: JUNE 2019
BRIDGE NO. 07452 DRAWING NO. 61222

abhall 6/5/2020 4:28:29 PM
WORKSPACE: ARDOT Bridge
L:\20I7\I70I590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278.S203-AB (Bents I& I0).dgn
REVISED DATE:

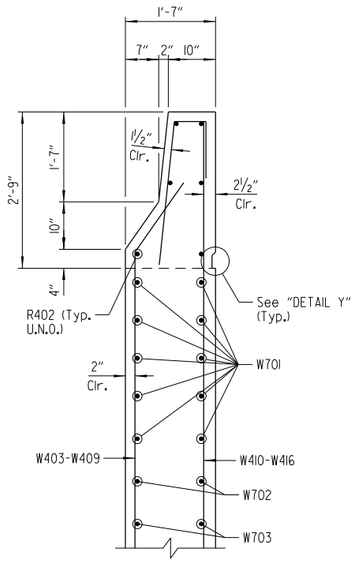
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	58	108
				(1) 07452		END BENTS		61223



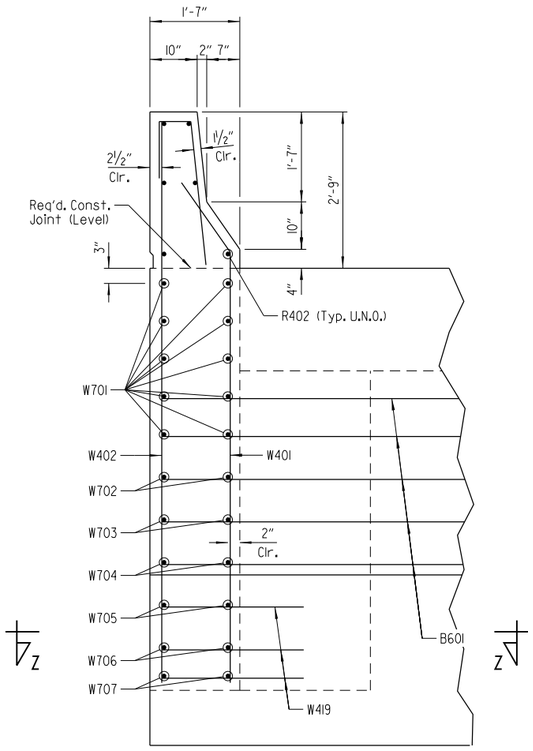
VIEW D-D
Scale: ½" = 1'-0"



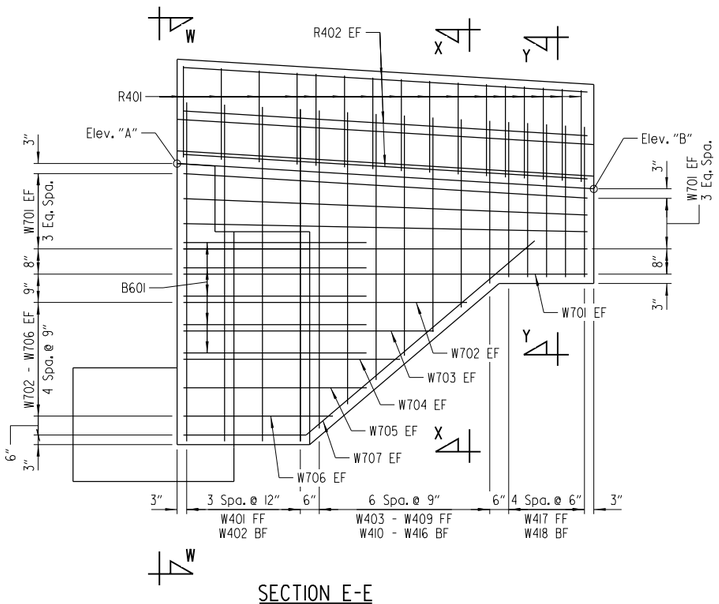
SECTION Y-Y
Scale: ¾" = 1'-0"



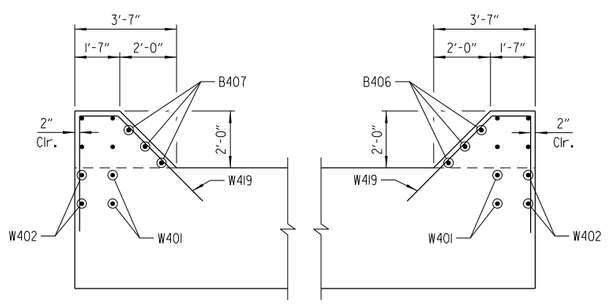
SECTION X-X
Scale: ¾" = 1'-0"



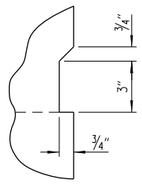
VIEW W-W
Scale: ¾" = 1'-0"



SECTION E-E
Scale: ½" = 1'-0"



SECTON Z-Z
Scale: ⅜" = 1'-0"



DETAIL Y
No Scale

LEGEND

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

TABLE OF ELEVATIONS					
End Bent	Wing	Elev. "A"	Elev. "B"	"W"	"X"
1	A	165.73	165.08	7'-4 13/16"	1'-4 9/16"
1	B	164.96	164.29	7'-5 1/16"	1'-9 5/8"
10	A	166.06	165.56	7'-5"	1'-4 5/8"
10	B	165.28	164.77	7'-5 1/8"	1'-9 5/8"

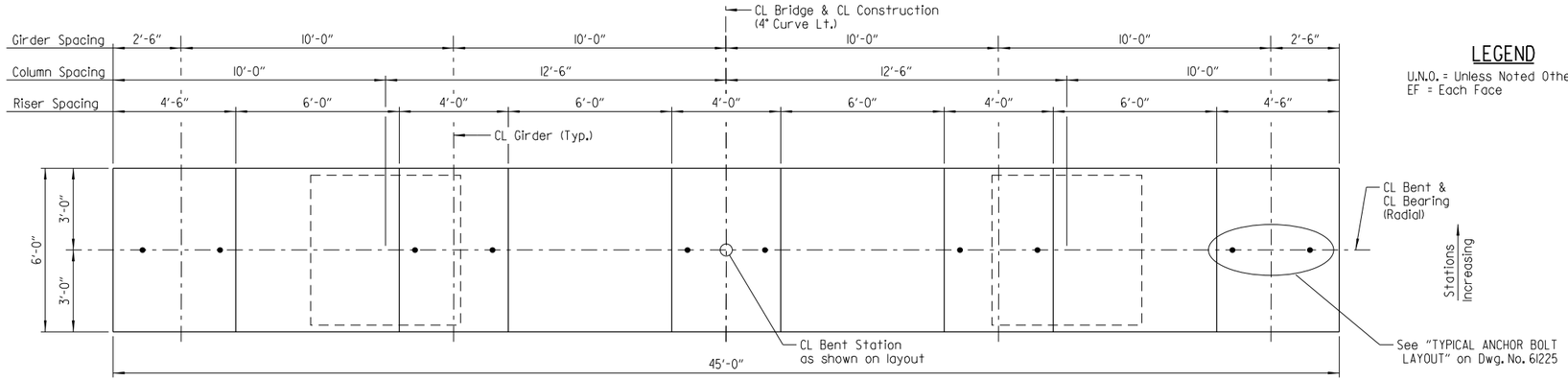
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

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

DRAWN BY: CWT DATE: MAR. 2019 FILENAME: b020590_b4.dgn
CHECKED BY: JHR DATE: JULY 2019 SCALE: As Shown
DESIGNED BY: WMM DATE: JUNE 2019
BRIDGE NO. 07452 DRAWING NO. 61223

abhall 6/5/2020 4:28:29 PM
WORKSPACE: ARDOT Bridge
L:\20\T\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278_S204-AB (Bents 1& 10).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.		020590	59	108
				07452		INT. BENTS 2, 3, 8, & 9		61224

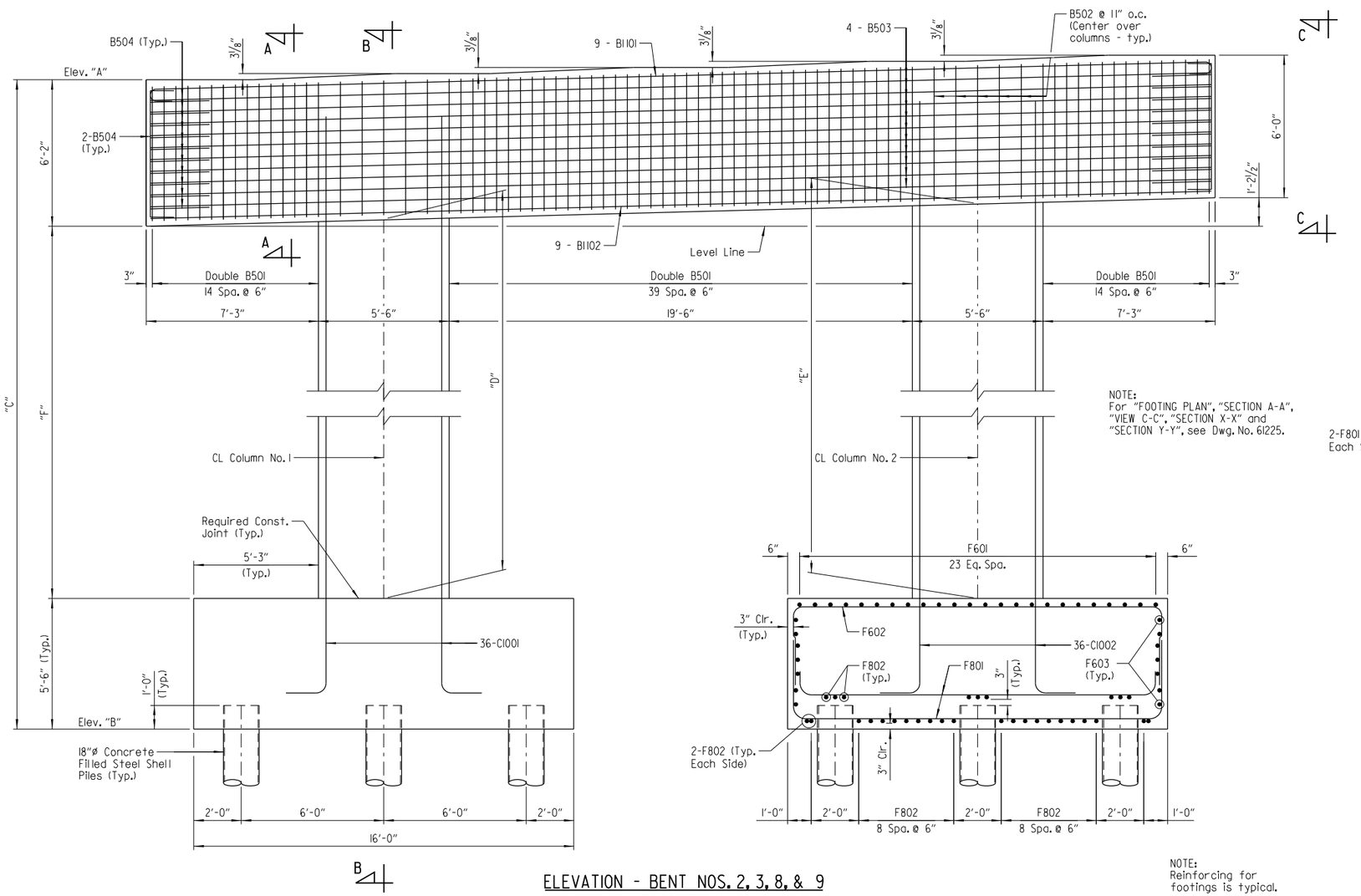


PLAN - BENT NOS. 2, 3, 8, & 9

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

LEGEND

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

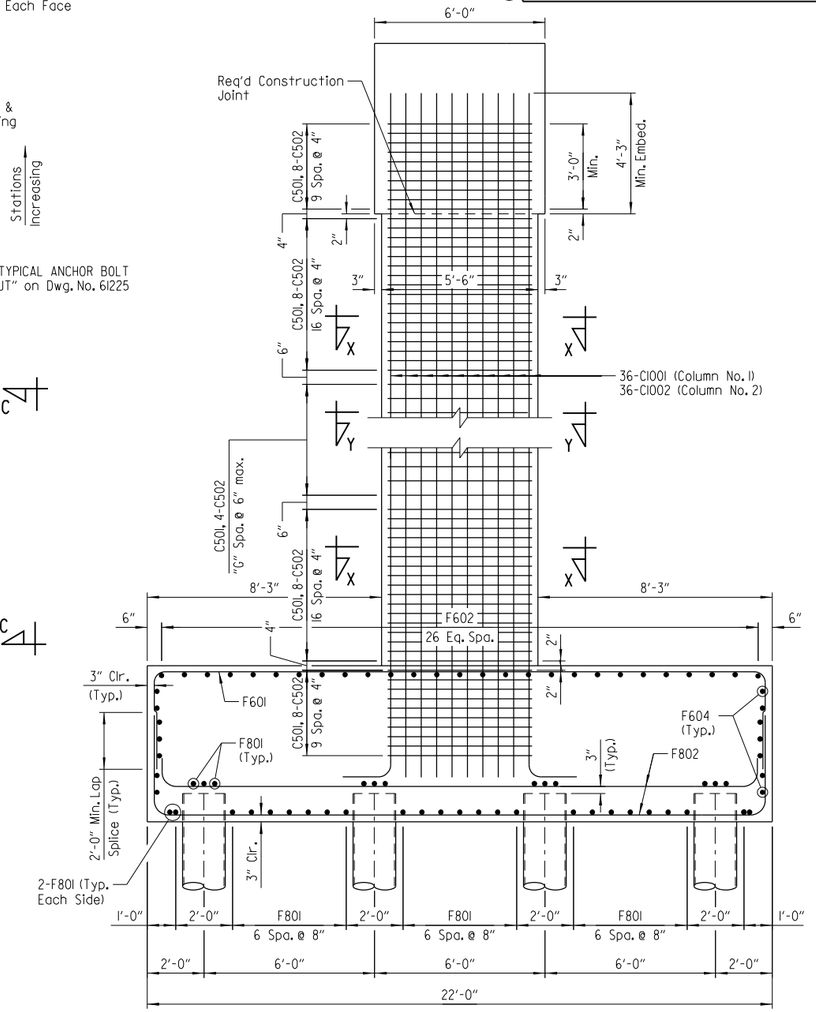


ELEVATION - BENT NOS. 2, 3, 8, & 9

(Looking Ahead)
Scale: 3/8" = 1'-0"

NOTE:
For "FOOTING PLAN", "SECTION A-A", "VIEW C-C", "SECTION X-X" and "SECTION Y-Y", see Dwg. No. 61225.

NOTE:
Reinforcing for footings is typical.



SECTION B-B

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

TABLE OF VARIABLES

BENT NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"
2	163.81	128.31	35'-6"	24'-1 1/4"	24'-9 1/4"	23'-10"	26
3	168.85	128.35	40'-6"	29'-1 1/4"	29'-9 1/4"	28'-10"	36
8	167.18	130.18	37'-0"	25'-7 1/4"	26'-3 1/4"	25'-4"	29
9	163.06	136.06	27'-0"	15'-7 1/4"	16'-3 1/4"	15'-4"	9

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF INT. BENT NOS. 2, 3, 8, & 9

ROUTE SEC.

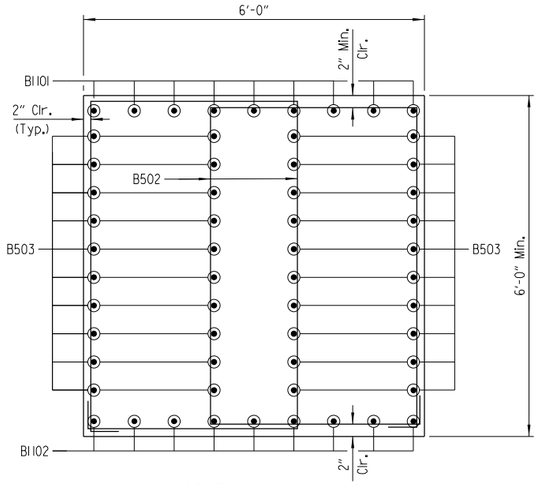
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b5.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019

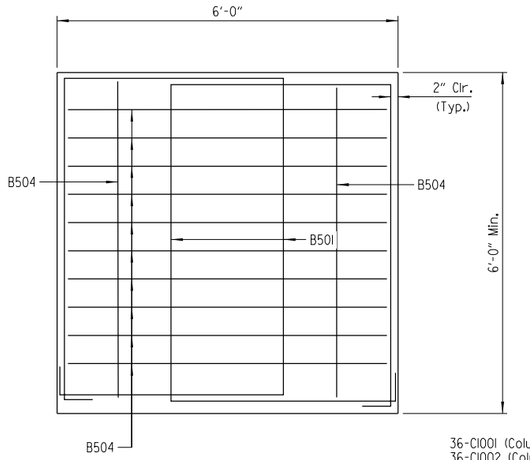
BRIDGE NO. 07452 DRAWING NO. 61224

abhall 6/5/2020 4:28:30 PM
WORKSPACE: ARDOT Bridge
L:\2017\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278_S205-BE (Bents 2,3,8,9).dgn
REVISED DATE:

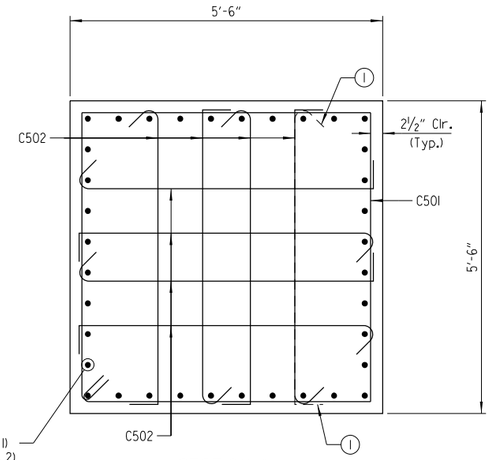
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	60	108
				① 07452		INT. BENTS 2, 3, 8, & 9		61225



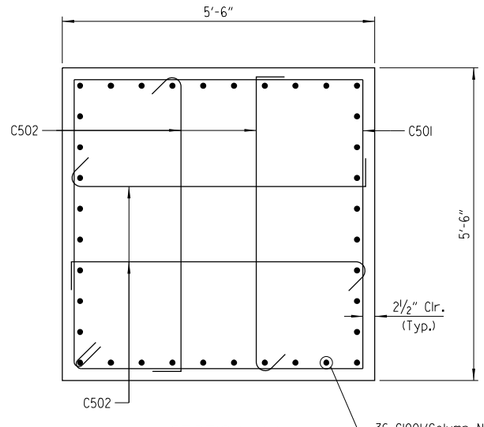
SECTION A-A
Scale: 3/4" = 1'-0"



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

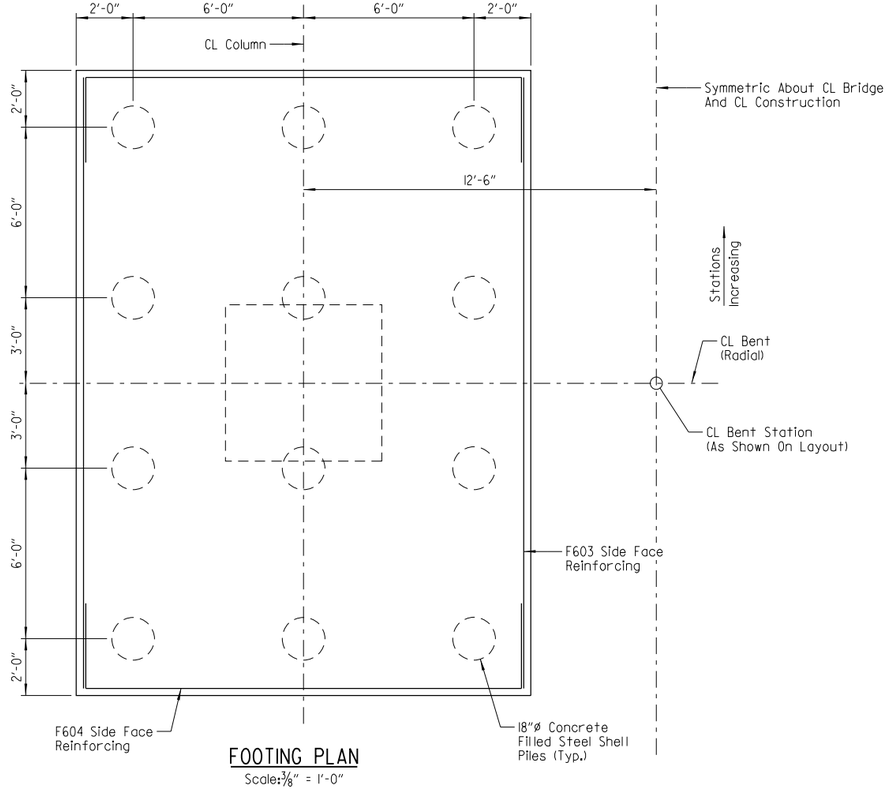


SECTION X-X
Scale: 3/4" = 1'-0"

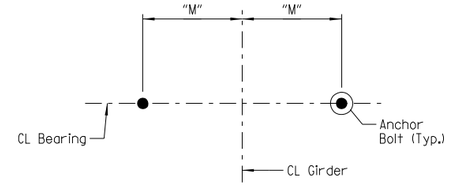


SECTION Y-Y
Scale: 3/4" = 1'-0"

① Alternate orientation of hooks on C502 Bars on adjacent horizontal rows.



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



TYPICAL ANCHOR BOLT LAYOUT
No Scale

NOTE:
For Details of Elastomeric Bearings, see Dwg. Nos. 61232 & 61233

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF INT. BENT NOS. 2, 3, 8, & 9
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b6.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61225

abhall 6/5/2020 4:28:30 PM
WORKSPACE: ARDOT Bridge
L:\2017\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278_S206-BE (Bents 2,3,8,9).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.		020590	61	108
				(1) 07452		INT. BENTS 2, 3, 8, & 9		61226

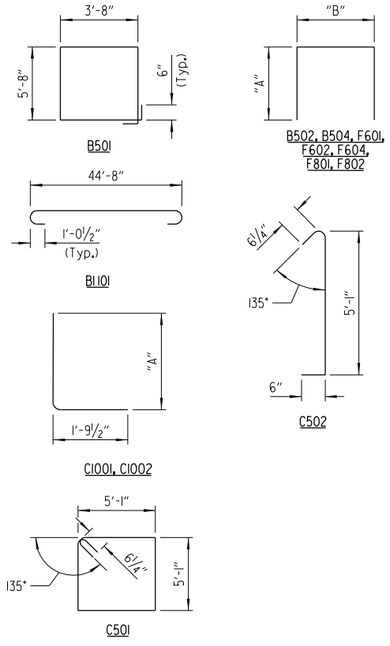
BAR LIST - BENT 2

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2½"
B502	10	16'-9½"	5'-8"	5'-8"	2½"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6½"	2½"
B1101	9	47'-8"			11¼"
B1102	9	44'-8"			Str.
C501	162	21'-0"			3¾"
C502	1080	6'-0"			2½"
C1001	36	34'-0"	32'-6"		10"
C1002	36	34'-8"	33'-2"		10"
F601	24	28'-5"	3'-7"	21'-6"	4½"
F602	27	22'-3"	3'-6"	15'-6"	4½"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4½"
F801	37	22'-1"	3'-6"	15'-6"	6"
F802	31	28'-3"	3'-7"	21'-6"	6"

BAR LIST - BENT 3

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2½"
B502	10	16'-9½"	5'-8"	5'-8"	2½"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6½"	2½"
B1101	9	47'-8"			11¼"
B1102	9	44'-8"			Str.
C501	182	21'-0"			3¾"
C502	1160	6'-0"			2½"
C1001	36	39'-0"	37'-6"		10"
C1002	36	39'-8"	38'-2"		10"
F601	24	28'-5"	3'-7"	21'-6"	4½"
F602	27	22'-3"	3'-6"	15'-6"	4½"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4½"
F801	37	22'-1"	3'-6"	15'-6"	6"
F802	31	28'-3"	3'-7"	21'-6"	6"

BAR BENDING DIAGRAMS



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

GENERAL NOTES

The concrete used in the construction of the interior bents shall use the Alternate Gradation (AASHTO M43 #57) given in Subsection 802.02(c) or approved equal.

See Standard Drawing No. 55006 for additional notes.

For additional information, see Layout.

BAR LIST - BENT 8

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2½"
B502	10	16'-9½"	5'-8"	5'-8"	2½"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6½"	2½"
B1101	9	47'-8"			11¼"
B1102	9	44'-8"			Str.
C501	168	21'-0"			3¾"
C502	1104	6'-0"			2½"
C1001	36	35'-6"	34'-0"		10"
C1002	36	36'-2"	34'-8"		10"
F601	24	28'-5"	3'-7"	21'-6"	4½"
F602	27	22'-3"	3'-6"	15'-6"	4½"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4½"
F801	37	22'-1"	3'-6"	15'-6"	6"
F802	31	28'-3"	3'-7"	21'-6"	6"

BAR LIST - BENT 9

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2½"
B502	10	16'-9½"	5'-8"	5'-8"	2½"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6½"	2½"
B1101	9	47'-8"			11¼"
B1102	9	44'-8"			Str.
C501	128	21'-0"			3¾"
C502	944	6'-0"			2½"
C1001	36	25'-6"	24'-0"		10"
C1002	36	26'-2"	24'-8"		10"
F601	24	28'-5"	3'-7"	21'-6"	4½"
F602	27	22'-3"	3'-6"	15'-6"	4½"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4½"
F801	37	22'-1"	3'-6"	15'-6"	6"
F802	31	28'-3"	3'-7"	21'-6"	6"

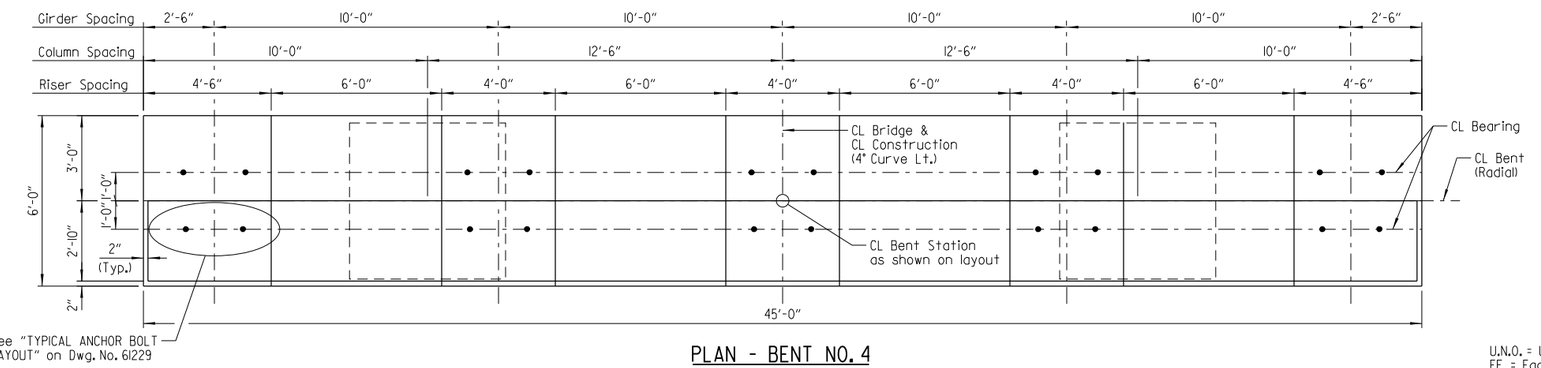
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF INT. BENT NOS. 2, 3, 8, & 9
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b7.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61226

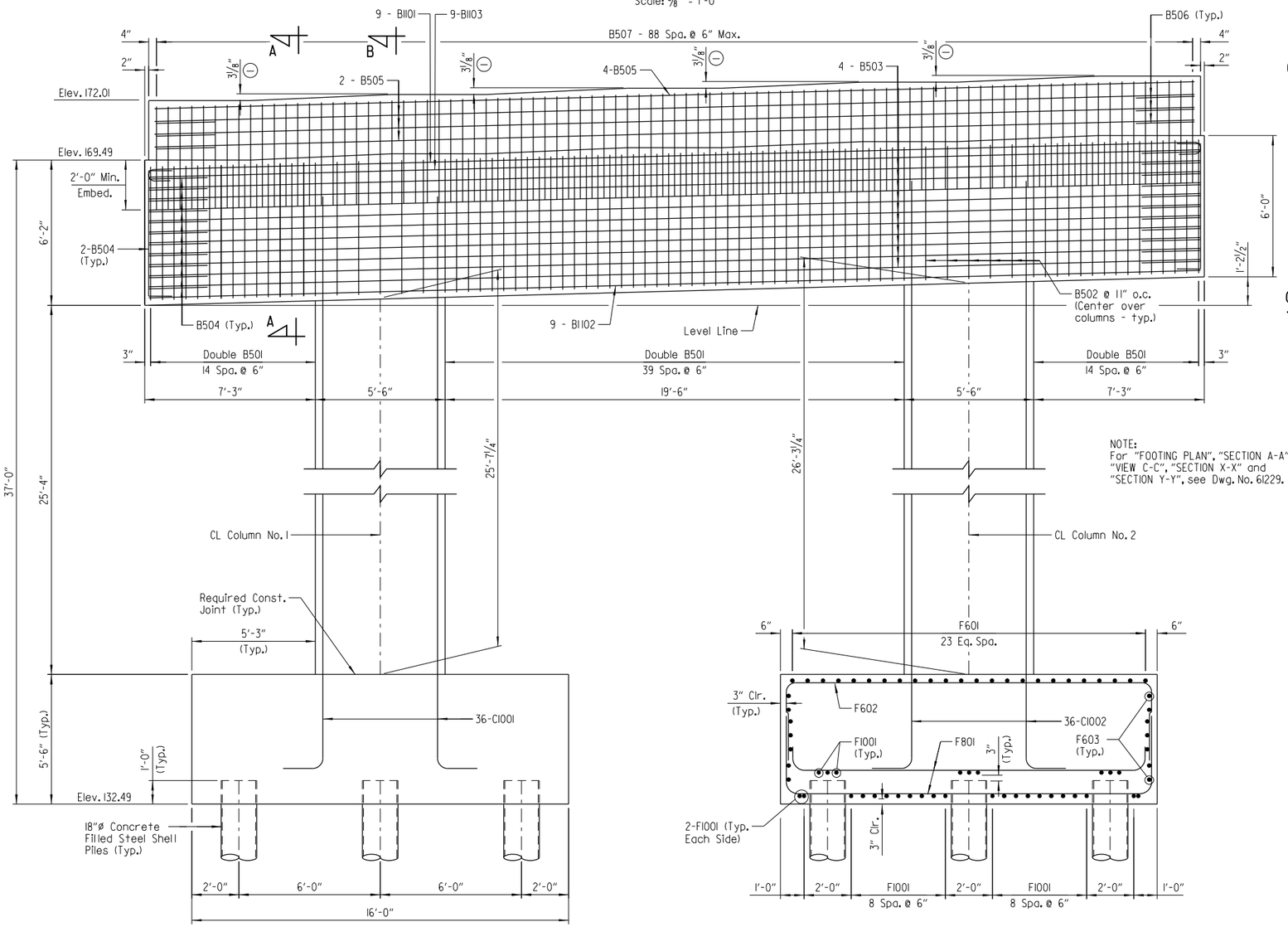
abhall 6/5/2020 4:28:30 PM
WORKSPACE: ARDOT Bridge
L:\20IT\170I590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278.S207-BE (Bents 2,3,8,9).dgn
REVISED DATE:

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.		020590	62	108
				① 07452		INT. BENTS 4 & 7		61227



PLAN - BENT NO. 4

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

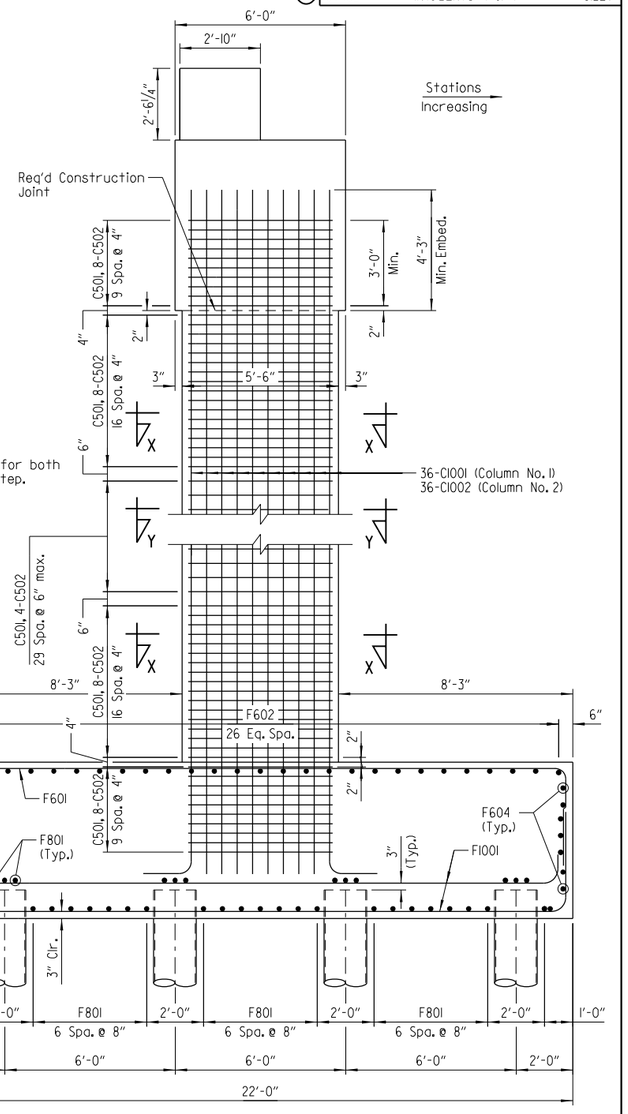


ELEVATION - BENT NO. 4

(Looking Ahead)
Scale: 3/8" = 1'-0"

LEGEND

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



① Steps shown are typical for both high & low side of cap step.

SECTION B-B

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.8017
JOHN H. RUDDELL

Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF INT. BENT NOS. 4 & 7

ROUTE SEC.

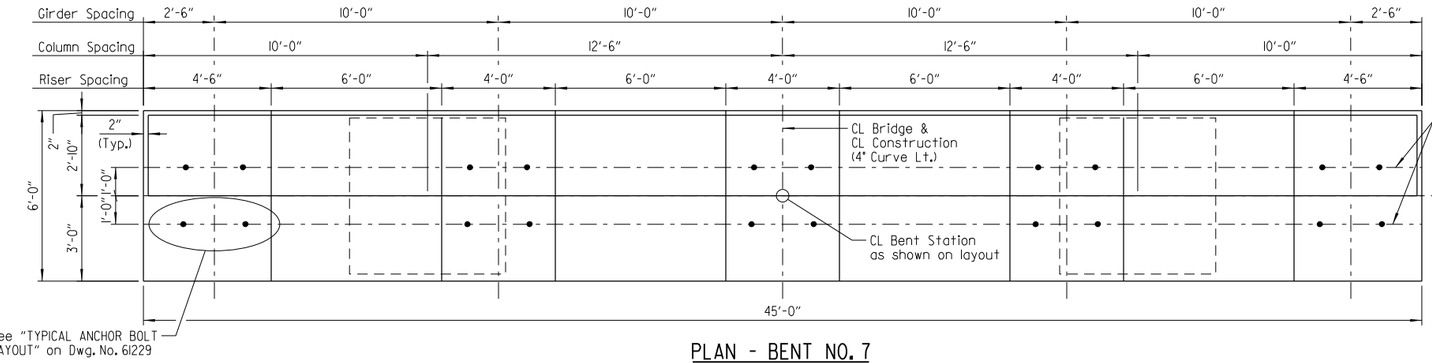
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b8.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61227

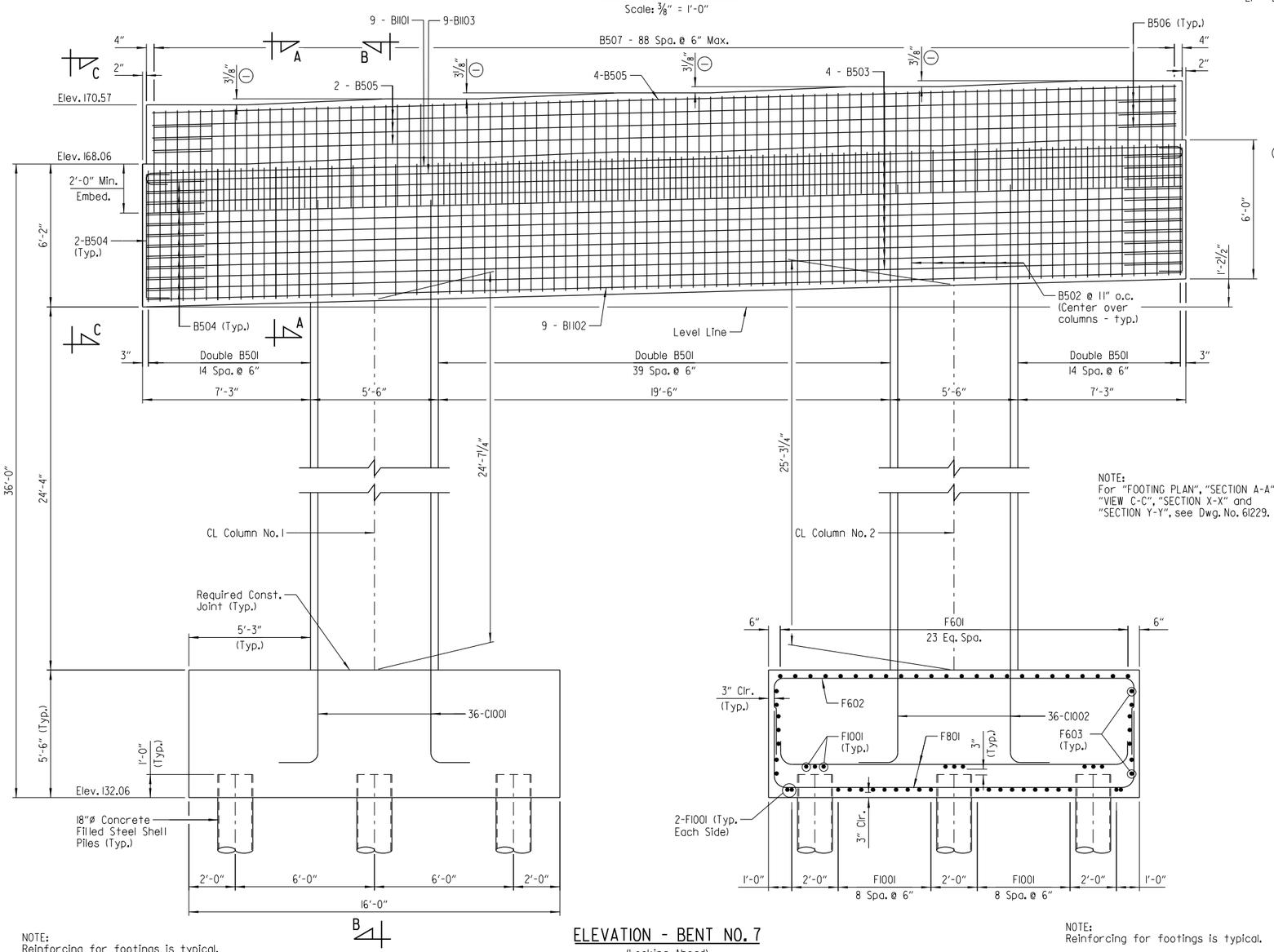
abnail 6/5/2020 4:28:31PM
WORKSPACE: ARDOT Bridge
L:\20\7\07590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278_S208-BE (Bent 4).dgn
REVISED DATE:

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.		020590	63	108
				① 07452		INT. BENTS 4 & 7		61228



PLAN - BENT NO. 7

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



NOTE:
Reinforcing for footings is typical.

ELEVATION - BENT NO. 7

(Looking Ahead)
Scale: 3/8" = 1'-0"

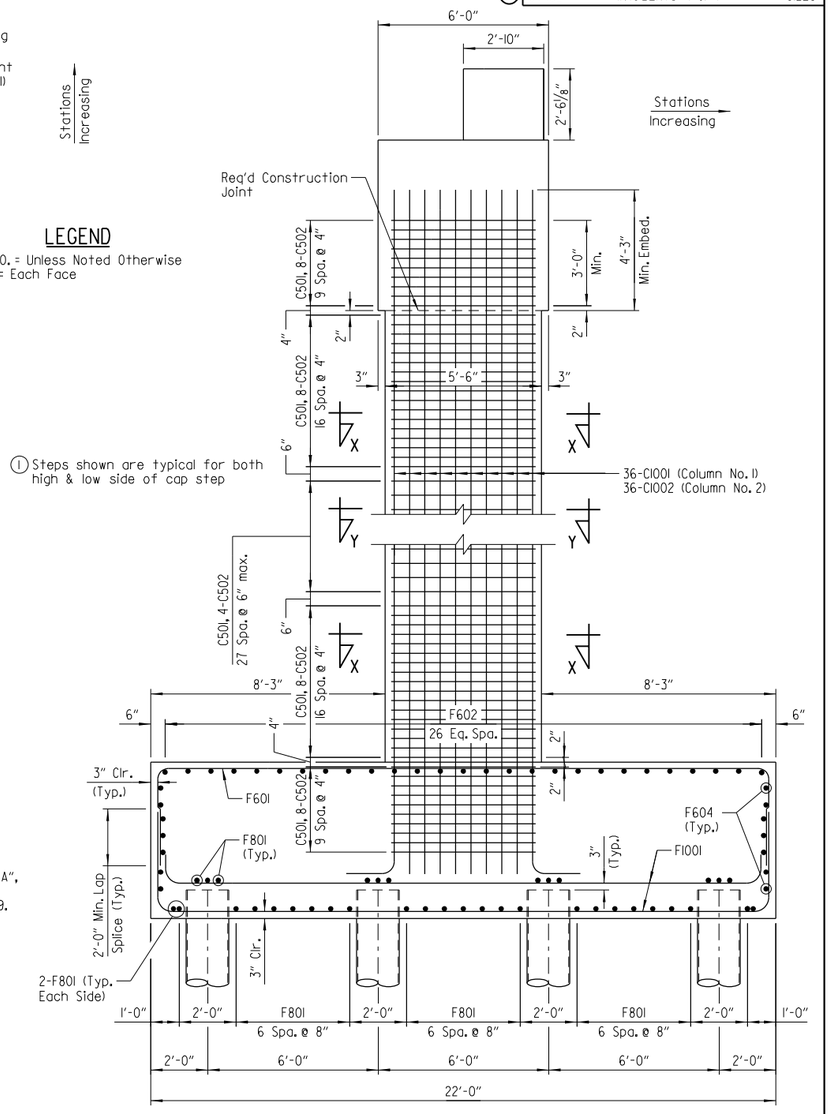
NOTE:
For "FOOTING PLAN", "SECTION A-A", "VIEW C-C", "SECTION X-X" and "SECTION Y-Y", see Dwg. No. 61229.

NOTE:
Reinforcing for footings is typical.

Stations Increasing

LEGEND

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



① Steps shown are typical for both high & low side of cap step

SECTION B-B

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL

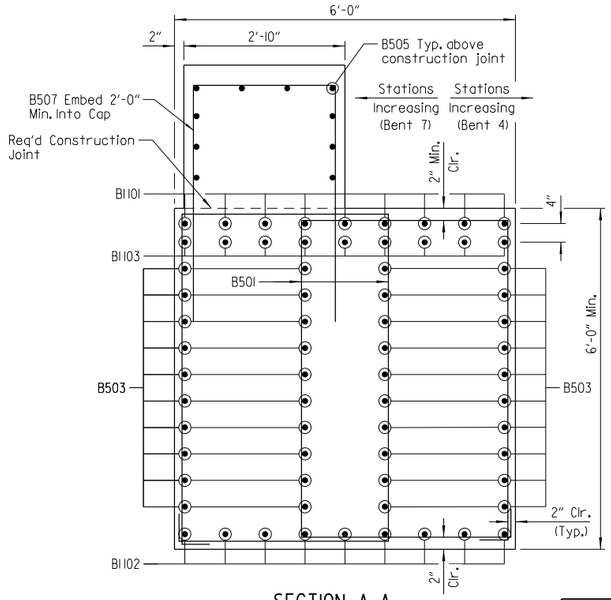
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF INT. BENT NOS. 4 & 7
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

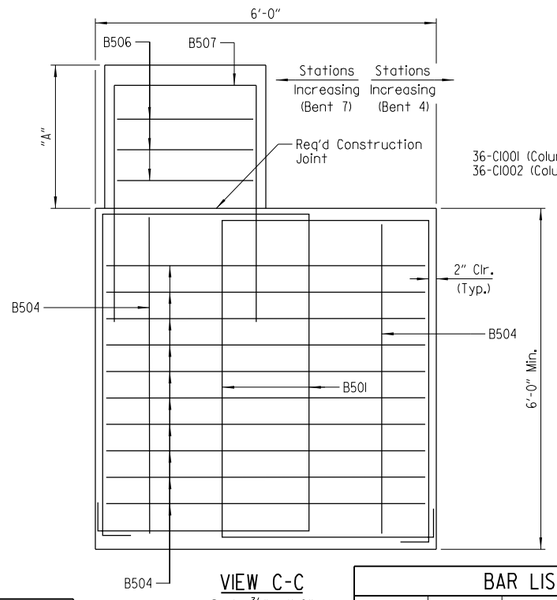
DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b9.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61228

abnail 6/5/2020 4:28:31PM
WORKSPACE: ARDOT Bridge
L:\20\7\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278_S209-BE (Bent 7).dgn
REVISED DATE:

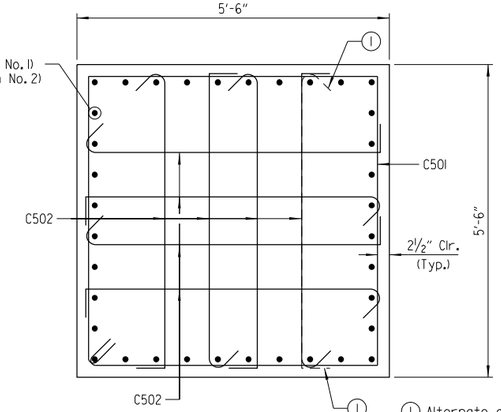
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	64	108
				(1) 07452		INT. BENTS 4 & 7		61229



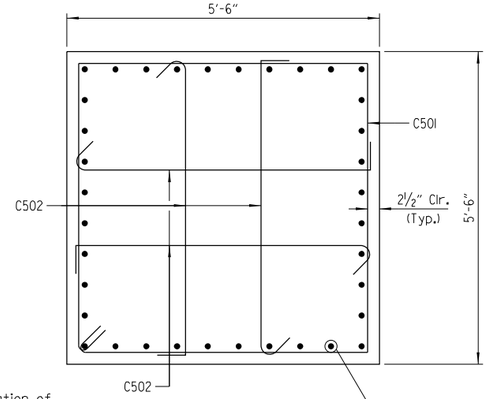
SECTION A-A
Scale: 3/4" = 1'-0"



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



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



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

BEARING STEP HEIGHT	
BENT NO.	"A"
4	2'-6 1/4"
7	2'-6 1/8"

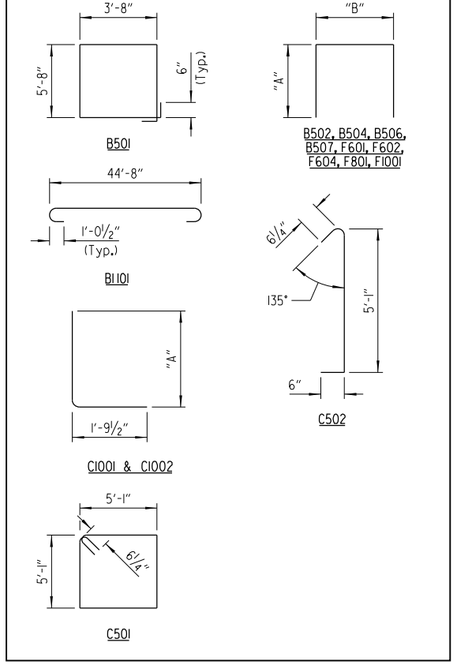
BAR LIST - BENT 4

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2 1/2"
B502	10	16'-9 1/2"	5'-8"	5'-8"	2 1/2"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6 1/2"	2 1/2"
B505	10	44'-4"			Str.
B506	6	7'-2"	2'-6"	2'-4 1/2"	2 1/2"
B507	89	11'-0"	4'-4"	2'-6"	2 1/2"
B1101	9	47'-8"			11 1/4"
B1102	9	44'-8"			Str.
B1103	9	44'-2"			Str.
C501	168	21'-0"			3 3/4"
C502	1104	6'-0"			2 1/2"
C1001	36	35'-6"	34'-0"		10"
C1002	36	36'-2"	34'-8"		10"
F601	24	28'-5"	3'-7"	21'-6"	4 1/2"
F602	27	22'-3"	3'-6"	15'-6"	4 1/2"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4 1/2"
F801	37	22'-1"	3'-6"	15'-6"	6"
F1001	31	28'-1"	3'-7"	21'-6"	10"

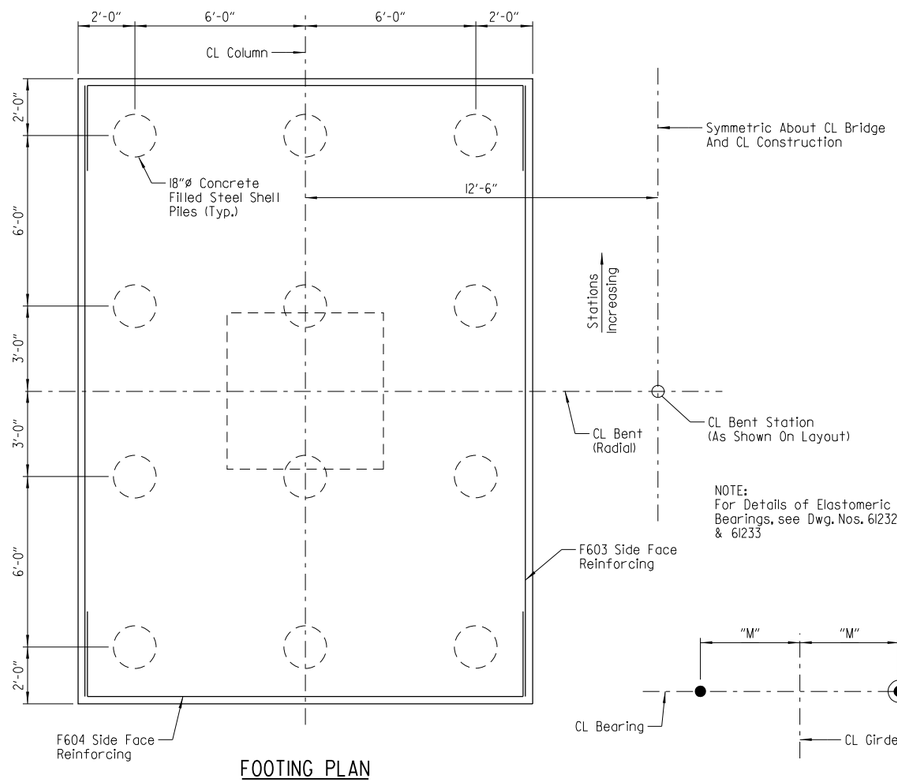
BAR LIST - BENT 7

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2 1/2"
B502	10	16'-9 1/2"	5'-8"	5'-8"	2 1/2"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6 1/2"	2 1/2"
B505	10	44'-4"			Str.
B506	6	7'-2"	2'-6"	2'-4 1/2"	2 1/2"
B507	89	11'-0"	4'-4"	2'-6"	2 1/2"
B1101	9	47'-8"			11 1/4"
B1102	9	44'-8"			Str.
B1103	9	44'-2"			Str.
C501	164	21'-0"			3 3/4"
C502	1088	6'-0"			2 1/2"
C1001	36	34'-6"	33'-0"		10"
C1002	36	35'-2"	33'-8"		10"
F601	24	28'-5"	3'-7"	21'-6"	4 1/2"
F602	27	22'-3"	3'-6"	15'-6"	4 1/2"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4 1/2"
F801	37	22'-1"	3'-6"	15'-6"	6"
F1001	31	28'-1"	3'-7"	21'-6"	10"

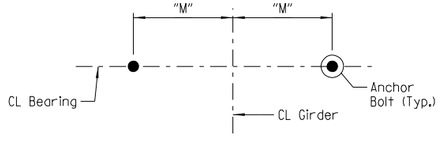
BAR BENDING DIAGRAMS



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



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



TYPICAL ANCHOR BOLT LAYOUT
No Scale

GENERAL NOTES

The concrete used in the construction of the interior bents shall use the Alternate Gradation (AASHTO M43 #57) given in Subsection 802.02(c) or approved equal.

See Standard Drawing No. 55006 for additional notes.

For additional information, see Layout.

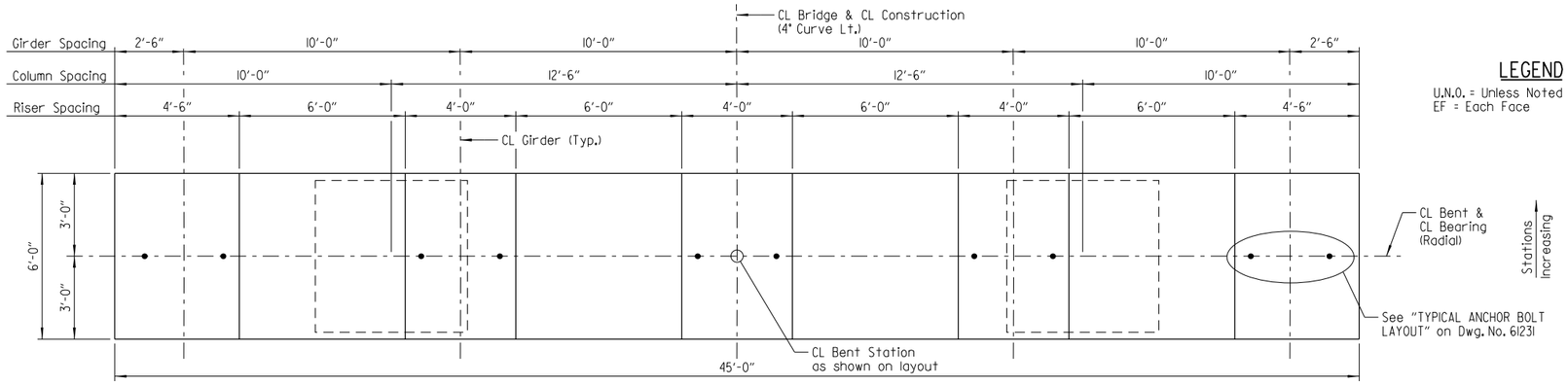
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF INT. BENT NOS. 4 & 7
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b10.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61229

abhall 6/5/2020 4:28:31 PM
WORKSPACE: ARDOT Bridge
L:\20\7\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278.S210-BE (Bents 4 & 7).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.		020590	65	108
				1 07452		INT. BENTS 5 & 6		61230

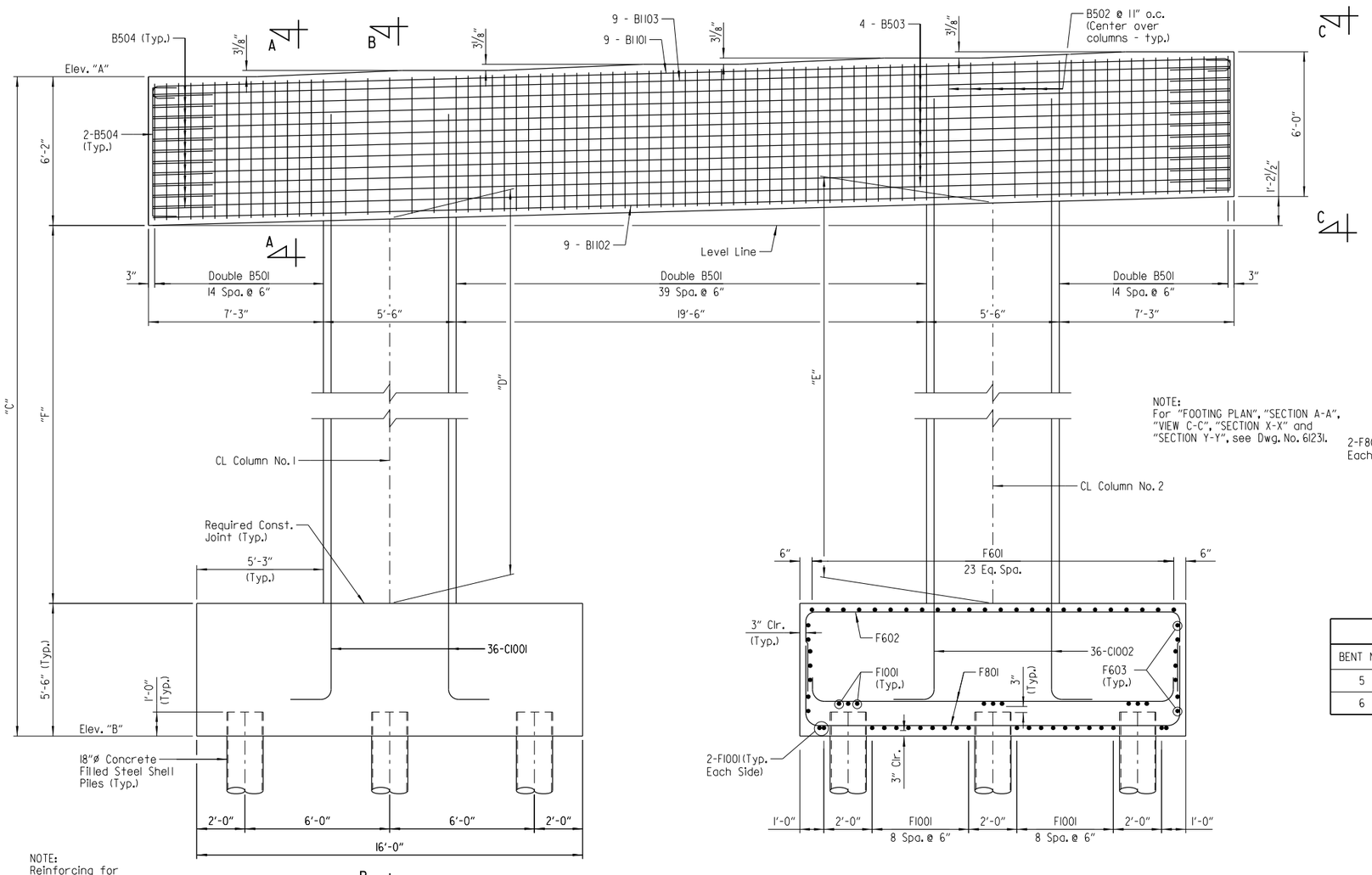


LEGEND

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

PLAN - BENT NOS. 5 & 6

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



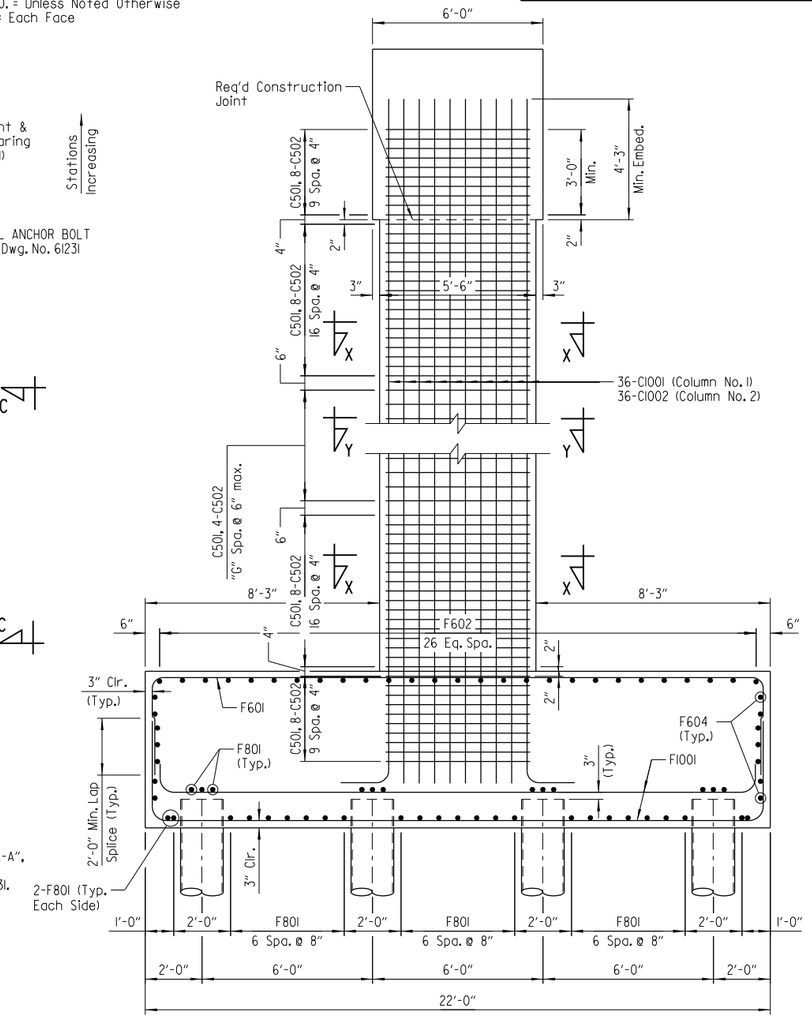
NOTE:
Reinforcing for
footings is typical.

ELEVATION - BENT NOS. 5 & 6

(Looking Ahead)
Scale: 3/8" = 1'-0"

NOTE:
For "FOOTING PLAN", "SECTION A-A",
"VIEW C-C", "SECTION X-X" and
"SECTION Y-Y", see Dwg. No. 61231.

NOTE:
Reinforcing for
footings is typical.



SECTION B-B

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

TABLE OF VARIABLES

BENT NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"
5	172.41	134.41	38'-0"	26'-7 1/4"	27'-3 1/4"	26'-4"	31
6	171.89	134.39	37'-6"	26'-1 1/4"	26'-9 1/4"	25'-10"	30

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL

Digitally Signed 06/08/2020
BRIDGE ENGINEER

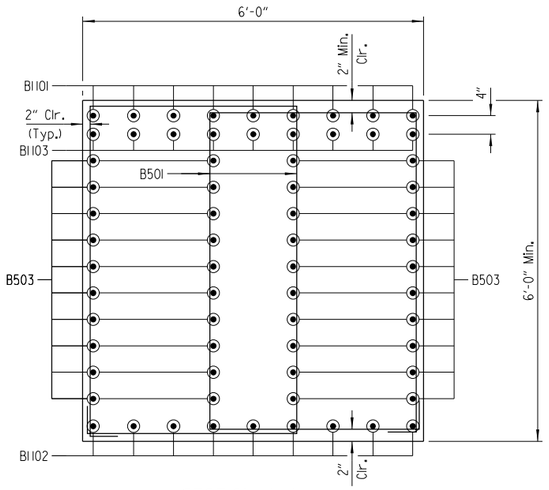
SHEET 1 OF 2
DETAILS OF INT. BENT NOS. 5 & 6
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_b11.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61230

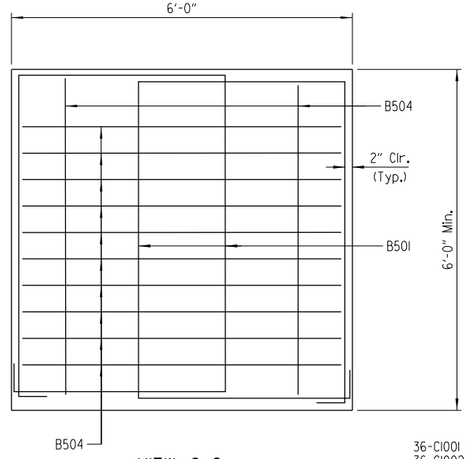
abnall 6/5/2020 4:28:32 PM
WORKSPACE: ARDOT Bridge
L:\20\7\07590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278_S2#-BE (Bents 5 & 6).dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

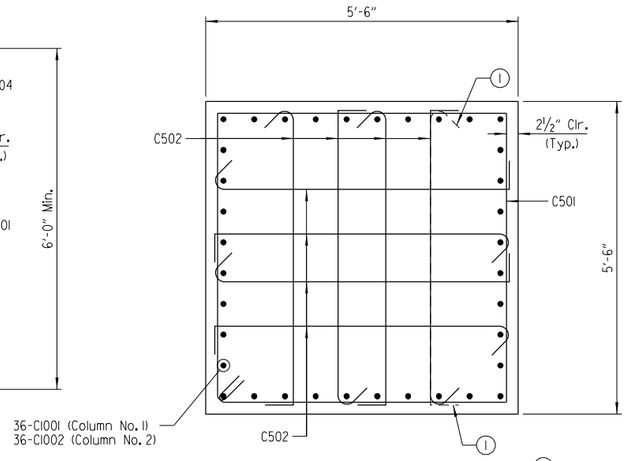
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	66	108
① 07452		INT. BENTS 5 & 6		61231



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

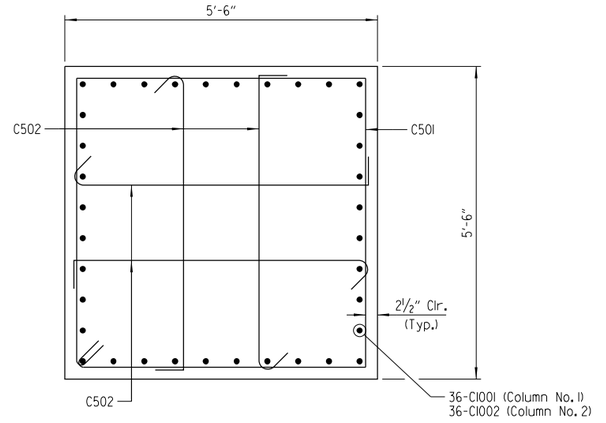


VIEW C-C
Scale: 3/4" = 1'-0"

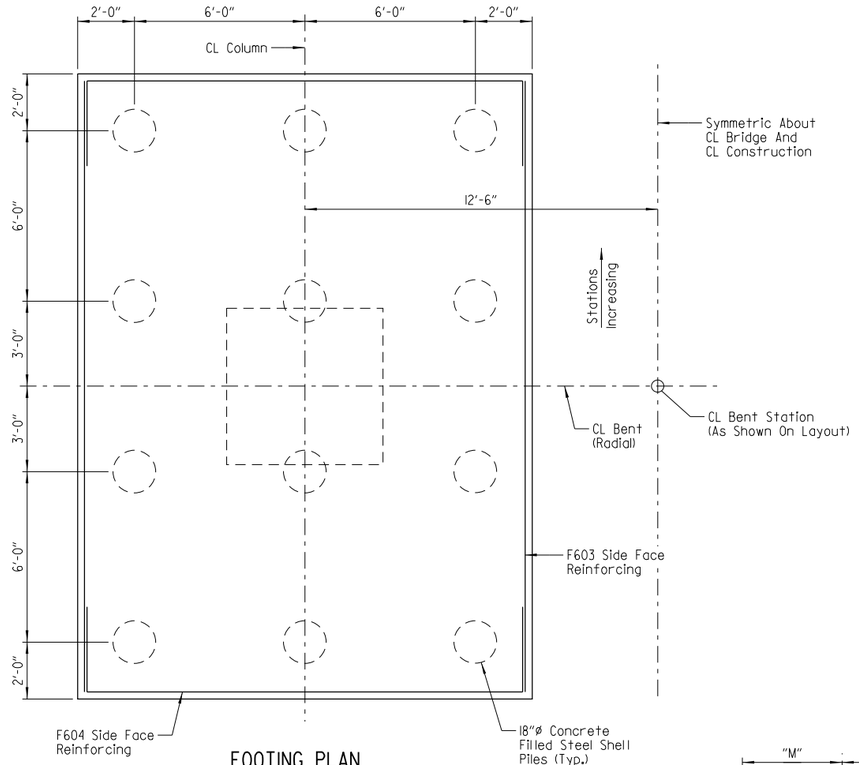


SECTION X-X
Scale: 3/4" = 1'-0"

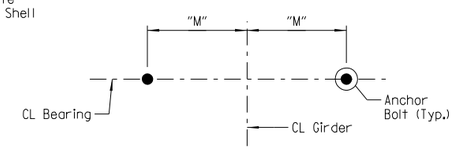
① Alternate orientation of hooks on C502 Bars on adjacent horizontal rows.



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



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



NOTE:
For Details of Elastomeric Bearings, see Dwg. Nos. 61232 & 61233

TYPICAL ANCHOR BOLT LAYOUT
No Scale

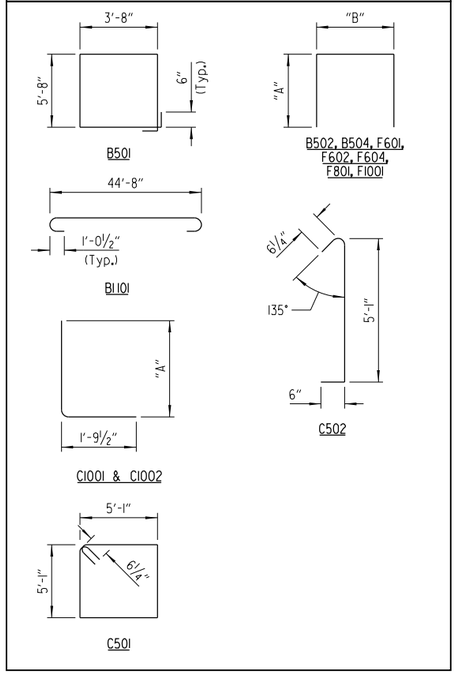
BAR LIST - BENT 5

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2 1/2"
B502	10	16'-9 1/2"	5'-8"	5'-8"	2 1/2"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6 1/2"	2 1/2"
B1101	9	47'-8"			11 1/4"
B1102	9	44'-8"			Str.
B1103	9	44'-2"			Str.
C501	172	21'-0"			3 3/4"
C502	1120	6'-0"			2 1/2"
C1001	36	36'-6"	35'-0"		10"
C1002	36	37'-2"	35'-8"		10"
F601	24	28'-5"	3'-7"	21'-6"	4 1/2"
F602	27	22'-3"	3'-6"	15'-6"	4 1/2"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4 1/2"
F801	37	22'-1"	3'-6"	15'-6"	6"
F1001	31	28'-1"	3'-7"	21'-6"	10"

BAR LIST - BENT 6

MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B501	140	19'-2"			2 1/2"
B502	10	16'-9 1/2"	5'-8"	5'-8"	2 1/2"
B503	40	44'-8"			Str.
B504	24	10'-4"	2'-6"	5'-6 1/2"	2 1/2"
B1101	9	47'-8"			11 1/4"
B1102	9	44'-8"			Str.
B1103	9	44'-2"			Str.
C501	170	21'-0"			3 3/4"
C502	1112	6'-0"			2 1/2"
C1001	36	36'-0"	34'-6"		10"
C1002	36	36'-8"	35'-2"		10"
F601	24	28'-5"	3'-7"	21'-6"	4 1/2"
F602	27	22'-3"	3'-6"	15'-6"	4 1/2"
F603	14	21'-6"			Str.
F604	14	21'-0"	3'-0"	15'-3"	4 1/2"
F801	37	22'-1"	3'-6"	15'-6"	6"
F1001	31	28'-1"	3'-7"	21'-6"	10"

BAR BENDING DIAGRAMS



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

GENERAL NOTES

The concrete used in the construction of the interior bents shall use the Alternate Gradation (AASHTO M43 #57) given in Subsection 802.02(c) or approved equal.

See Standard Drawing No. 55006 for additional notes.

For additional information, see Layout.

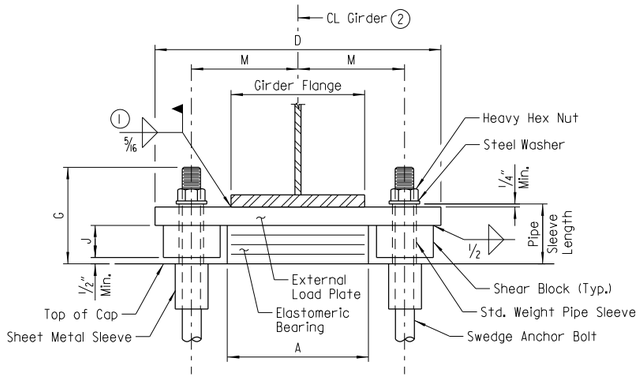
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 8017
JOHN H. RUDDELL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF INT. BENT NOS. 5 & 6
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

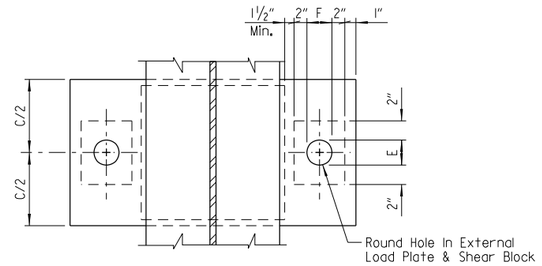
DRAWN BY: CWT DATE: JUL. 2019 FILENAME: b020590_bl2.dgn
CHECKED BY: JHR DATE: JUL. 2019 SCALE: As Shown
DESIGNED BY: JJB DATE: JUL. 2019
BRIDGE NO. 07452 DRAWING NO. 61231

abnail 6/5/2020 4:28:32 PM
WORKSPACE: ARDOT Bridge
L:\20\T\17017590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW\278_S202-BE (Bents 5 & 6).dgn
REVISED DATE:

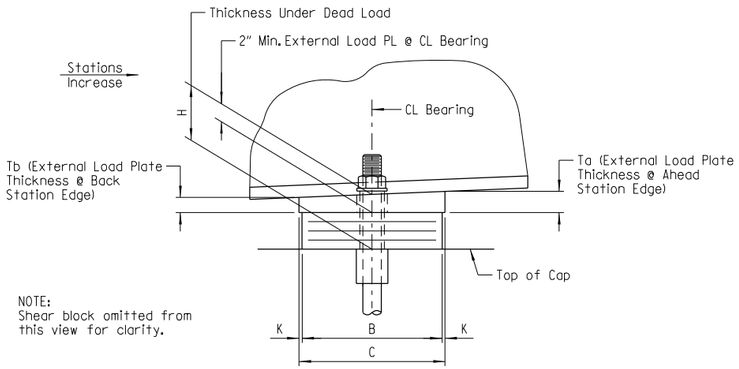
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	67	108
				(1) 07452		ELASTOMERIC BEARINGS		61232



FRONT VIEW - AT BENT NOS. 3, 4 BACK, 5, 6, 7 AHEAD & 8



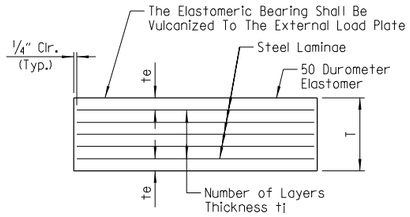
PLAN VIEW - AT BENT NOS. 3, 4 BACK, 5, 6, 7 AHEAD & 8



SIDE VIEW - AT BENT NOS. 3, 4 BACK, 5, 6, 7 AHEAD & 8

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

(2) Centerline elastomeric pad shall be aligned with centerline girder.



t_e = Thickness Of Elastomer Cover On Top And Bottom Of Pad
t_i = Thickness Of Elastomer Between Steel Laminae
N = Number Of Elastomer Layers Of Thickness t_i

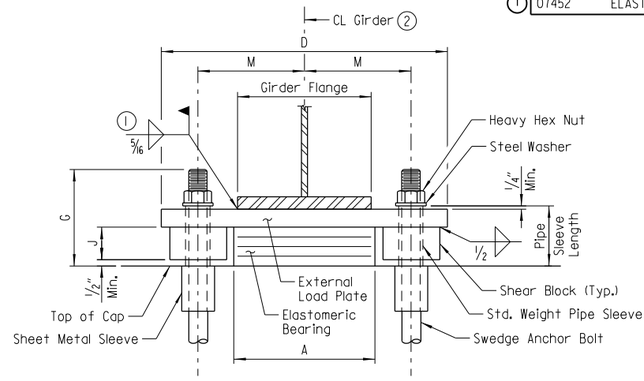
ELASTOMERIC BEARING

NOTES:

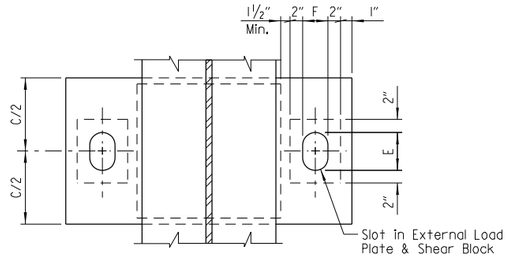
The direction of the bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in "TABLE OF FABRICATOR VARIABLES" on Dwg. No. 61233.

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.

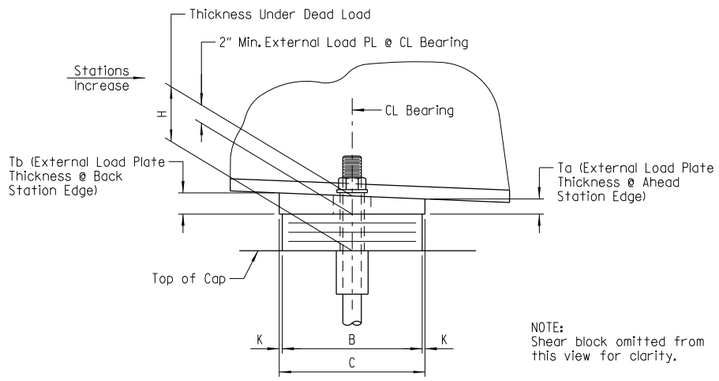
For "ANCHOR BOLT DETAIL" and "GENERAL NOTES", see Dwg. No. 61233.



FRONT VIEW - AT BENT NOS. 1, 2, 4 AHEAD, 7 BACK, 9 & 10



PLAN VIEW - AT BENT NOS. 1, 2, 4 AHEAD, 7 BACK, 9 & 10



SIDE VIEW - AT BENT NOS. 1, 2, 4 AHEAD, 7 BACK, 9 & 10

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

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

DRAWN BY: RH DATE: FEB. 2019 FILENAME: b020590_el.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: No Scale
DESIGNED BY: RH DATE: FEB. 2019
BRIDGE NO. 07452 DRAWING NO. 61232

abhall 6/5/2020 4:28:32 PM
WORKSPACE: ARDOT Bridge
L:\2017\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S30i-BG.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.		020590	68	108
				(1) 07452		ELASTOMERIC BEARINGS		61233

TABLE OF FABRICATOR VARIABLES

Location		Bearing Type	No. Of Bearings Each Bent	* Maximum Design Load (Kips)	Elastomeric Pad								External Load Plate									Anchor Bolt				
Bent No.	Girder No.				G	H	A	B	N	t_i	t_e	No. & Thickness Of Steel Laminae	T	C	D	E	F	J	K	M	T_a	T_b	Anchor Bolt (Dia. x L)	Grade	Pipe Sleeve Size (Dia. x L)	Sheet Metal Sleeve Size (Dia. x L)	Steel Washer Size (O.D.)
1	All	Exp.	5	131	8 5/16"	5 7/16"	14"	10"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	31 1/2"	5 1/4"	2 1/4"	3 1/16"	1/2"	1 15/8"	2.33"	1.67"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 10"	3"
2	All	Exp.	5	313	8 5/16"	5 9/16"	18"	13"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	14"	35 1/2"	4 1/4"	2 1/4"	3 1/16"	1/2"	1 3 5/8"	2.42"	1.58"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 10"	3"
3	All	Fixed	5	313	8 5/16"	5 9/16"	18"	13"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	14"	35 1/2"	2 1/4"	2 1/4"	3 1/16"	1/2"	1 3 5/8"	2.34"	1.66"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 10"	3"
4 Back	All	Fixed	5	131	8 5/16"	5 9/16"	14"	10"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	31 1/2"	2 1/4"	2 1/4"	3 1/16"	1/2"	1 15/8"	2.20"	1.80"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 14"	3"
4 Ahead	All	Exp.	5	176	8 5/16"	6 3/16"	17"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	34 1/2"	5 3/4"	2 1/4"	3 11/16"	1/2"	1 3 1/8"	2.19"	1.81"	1 1/2" x 28"	55	1 1/2" x 6 1/16"	3" x 14"	3"
5	All	Fixed	5	585	9 3/16"	6 3/16"	24"	13"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	14"	42 1/4"	2 5/8"	2 5/8"	3 11/16"	1/2"	1 6 13/16"	2.09"	1.91"	1 3/4" x 31"	55	2" x 6 1/16"	4" x 14"	3 3/8"
6	All	Fixed	5	585	9 3/16"	6 3/16"	24"	13"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	14"	42 1/4"	2 5/8"	2 5/8"	3 11/16"	1/2"	1 6 13/16"	1.87"	2.13"	1 3/4" x 31"	55	2" x 6 1/16"	4" x 14"	3 3/8"
7 Back	All	Exp.	5	176	8 5/16"	6 3/16"	17"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	34 1/2"	5 3/4"	2 1/4"	3 11/16"	1/2"	1 3 1/8"	1.77"	2.23"	1 1/2" x 28"	55	1 1/2" x 6 1/16"	3" x 14"	3"
7 Ahead	All	Fixed	5	131	8 5/16"	5 9/16"	14"	10"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	31 1/2"	2 1/4"	2 1/4"	3 1/16"	1/2"	1 15/8"	1.77"	2.23"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 14"	3"
8	All	Fixed	5	313	8 5/16"	5 9/16"	18"	13"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	14"	35 1/2"	2 1/4"	2 1/4"	3 1/16"	1/2"	1 3 5/8"	1.68"	2.32"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 10"	3"
9	All	Exp.	5	313	8 5/16"	5 9/16"	18"	13"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	14"	35 1/2"	4 1/4"	2 1/4"	3 1/16"	1/2"	1 3 5/8"	1.68"	2.32"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 10"	3"
10	All	Exp.	5	131	8 5/16"	5 9/16"	14"	10"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	31 1/2"	5 1/4"	2 1/4"	3 1/16"	1/2"	1 15/8"	1.75"	2.25"	1 1/2" x 28"	55	1 1/2" x 5 13/16"	3" x 10"	3"

* Maximum Design Load = LRFD Service I Limit State

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.

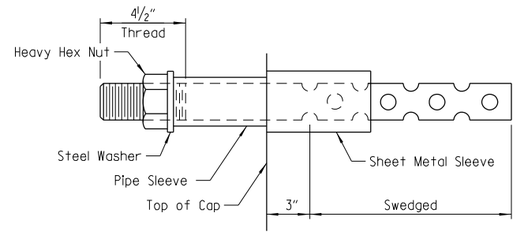
External load plates and shear blocks shall be completely fabricated (including bevel, bolt holes and all shop welding) and shall be cleaned before vulcanizing to the elastomeric bearing. The surfaces in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other 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 PLATE GIRDER SPANS (A709, GR. 50W)". External load plates and shear blocks will not be measured or paid for separately but will be considered subsidiary 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.

Prior to erection of the girders, the Contractor shall verify the orientation of the bearings with respect to Ta and Tb.



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 QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized sheet metal sleeves shall meet the requirements of ASTM 653, CS Type B or approved equivalent, be of minimum 16 gage thickness, and be galvanized according to ASTM B695, Class 50. Sheet metal sleeves will not be paid for directly but will be considered subsidiary to the item "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

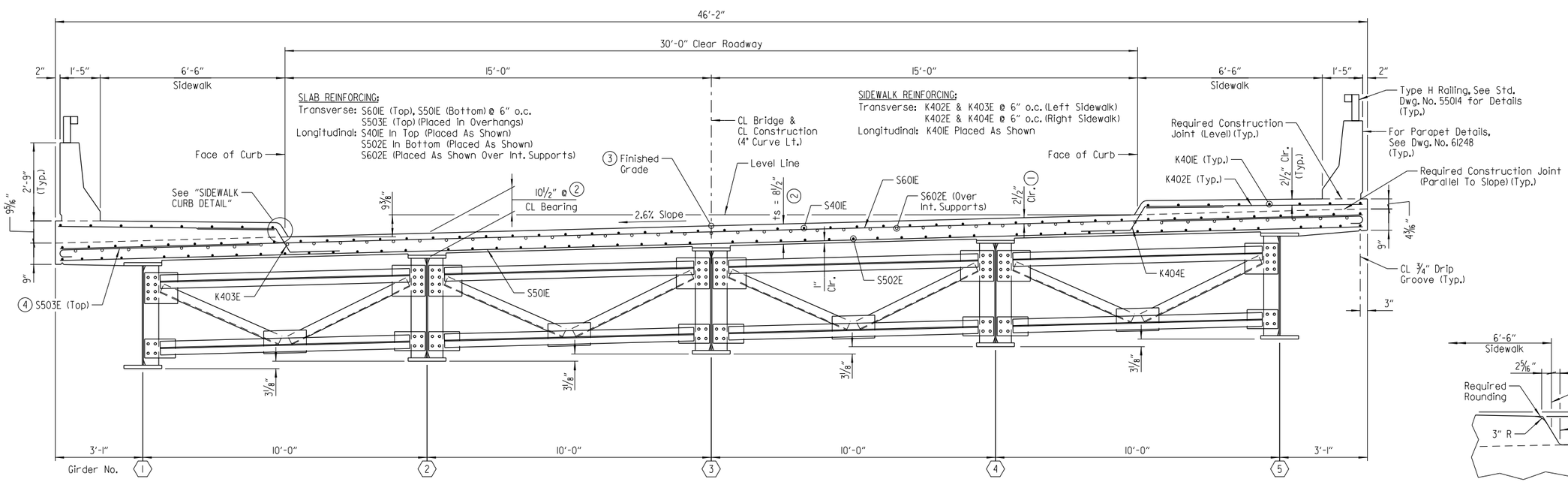
SHEET 2 OF 2
DETAILS OF ELASTOMERIC BEARINGS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RH DATE: FEB. 2019 FILENAME: b020590_e2.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: No Scale
DESIGNED BY: RH DATE: FEB. 2019
BRIDGE NO. 07452 DRAWING NO. 61233

abhall 6/5/2020 4:28:33 PM
WORKSPACE: ARDOT Bridge
L:\2017\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S302-B6.dgn
REVISED DATE:

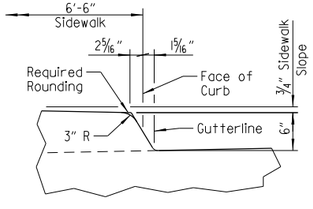
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	69	108
① 07452		240' PL GIRDER UNIT		61234



TYPICAL ROADWAY SECTION

(Looking Ahead)
Scale: ½" = 1'-0"



SIDEWALK CURB DETAIL

No Scale

① TOLERANCE:
Minus = ¼"
Plus = Amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.

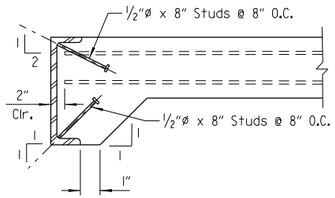
② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.

③ See "SUPERELEVATION SKETCH" on Dwg. No. 61215.

④ Bundle with S601E (Typ. in overhang). Rotate S503E as needed to provide clearance to hooks.

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

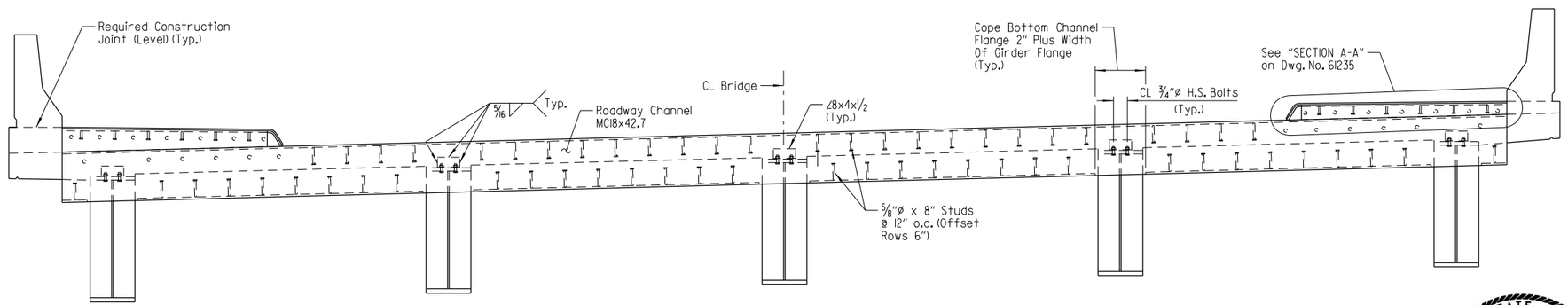
NOTE:
Class I Protective Surface Treatment shall be applied to the roadway and sidewalk surfaces and the inside face and top of concrete parapet rail.



DETAIL OF ALTERNATE ANCHORS

No Scale

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



TYPICAL SECTION THRU POURED SILICONE JOINT @ END BENTS

(Looking Ahead)
No Scale

NOTES:
For additional details of poured silicone joint, see Std. Dwg. No. 55008 and Dwg. No. 61235.

For details of strip seal joint at Bents 4 and 7, See Dwg. Nos. 61249 & 61250.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

NOTE:
For details of joint armor at Bents 4 & 7, see "TYPICAL SECTION THRU STRIP SEAL JOINT" on Dwg. No. 61241 and neoprene srip seal joint details on Dwg. Nos. 61249 & 61250.

EXPANSION DEVICE:
Rdwy. Channel MC18x42.7
Conn. Angles L8x4x½
Detail Device ⅛" High And Provide ¼" Shims Using 2 - 1/16" And 1 - ⅛" Plates

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 1 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

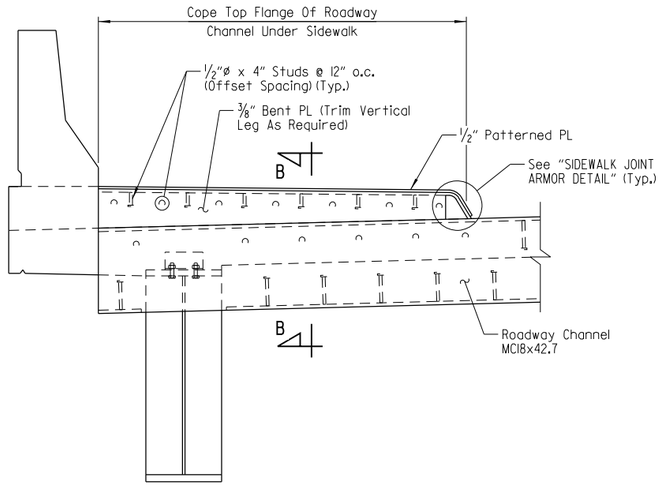
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JAN. 2019 FILENAME: b020590_sl.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: JAN. 2019

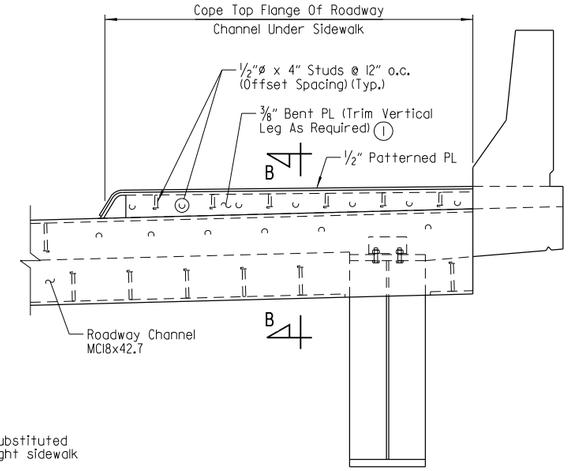
BRIDGE NO. 07452 DRAWING NO. 61234

abhall 6/5/2020 4:28:33 PM
WORKSPACE: ARDOT Bridge
L:\201\T01\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S303-SX (240' Unit).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.		020590	70	108
				(1) 07452		240' PL GIRDER UNIT		61235



LEFT SIDEWALK

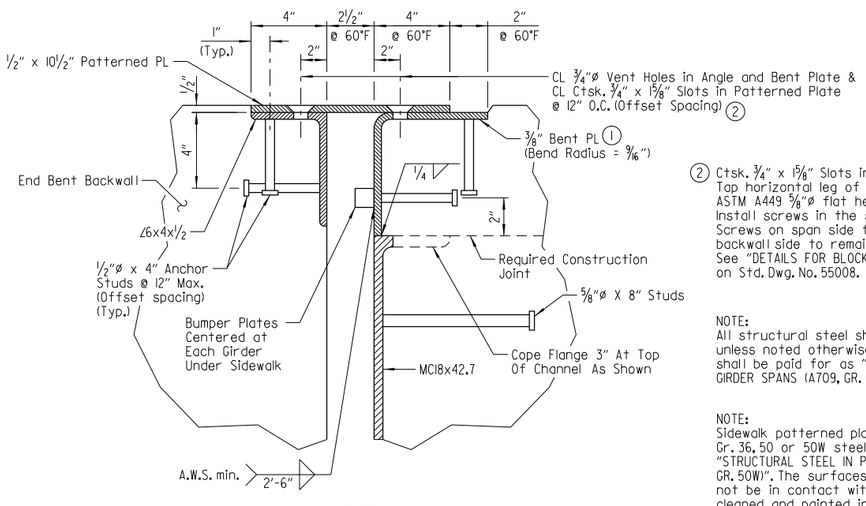


RIGHT SIDEWALK

(1) L6x6x½ may be substituted for Bent PL on right sidewalk

SECTION A-A

Scale: ¾" = 1'-0"



SECTION B-B

Scale: 3" = 1'-0"

NOTE:
Concrete shall be hand packed under the joint armor in the sidewalk.

(2) Ctsk. ¾" x 1⅝" Slots in ½" patterned Plate. Tap horizontal leg of angle and bent plate for ASTM A449 ⅞"ø flat head cap screws @ 12" O.C. Install screws in the shop and ship as a unit. Screws on span side to be removed. Screws on backwall side to remain in place after erection. See "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE" on Std. Dwg. No. 55008.

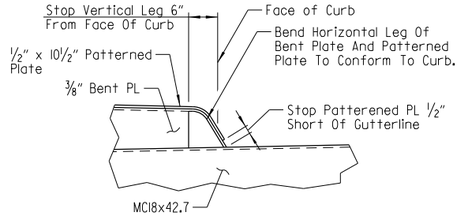
NOTE:
All structural steel shall be ASTM A709, Gr. 50W unless noted otherwise, and all structural steel shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

NOTE:
Sidewalk patterned plates shall be ASTM A709, Gr. 36, 50 or 50W steel and shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)". The surfaces of the plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricators shop. Painting shall not be paid for directly but will be considered subsidiary to "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

SILICONE JOINT DATA					
Location	"A" Width Perpendicular To Joint At 24 Hour Average Temperature (3) Of:			"B" Perpendicular To Joint At 60°F	Bumper Plate Size
	40°F	60°F	80°F		
End Bent 1	2 13/16"	2½"	2 3/16"	2½"±	1" x 1¼"
End Bent 10	2 13/16"	2½"	2 3/16"	2½"±	1" x 1¼"

(3) 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:
See additional joint details on Std. Dwg. No. 55008.



SIDEWALK JOINT ARMOR DETAIL

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

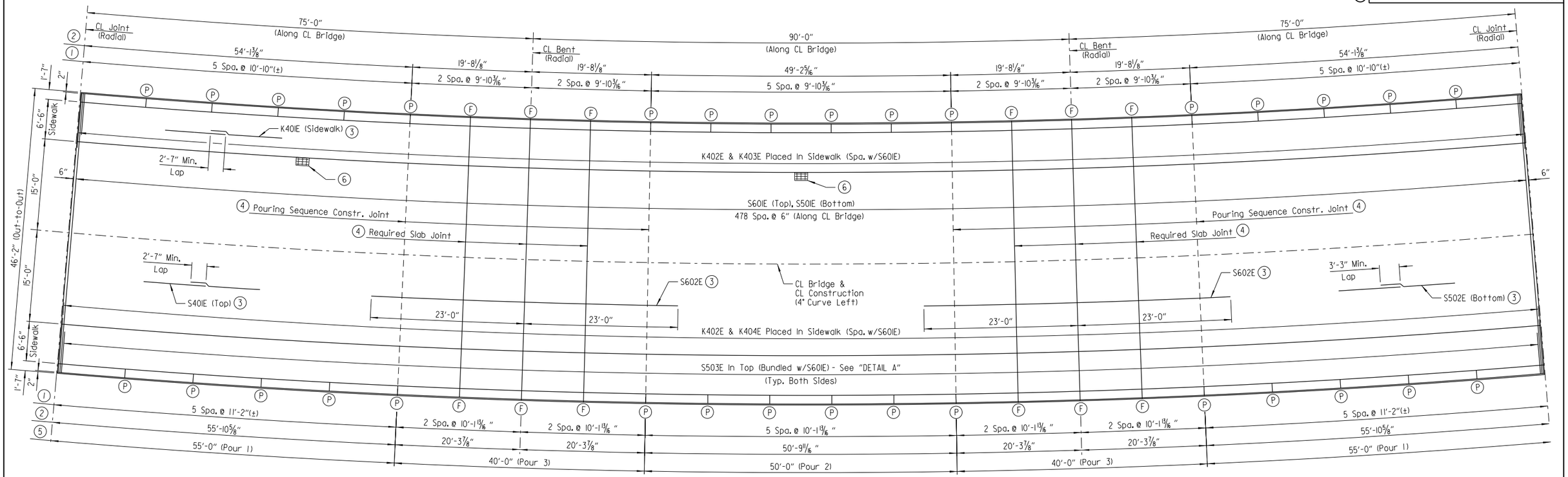
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JAN. 2019 FILENAME: b020590_s2.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: JAN. 2019

BRIDGE NO. 07452 DRAWING NO. 61235

abhall 6/5/2020 4:28:33 PM
WORKSPACE: ARDOT Bridge
L:\2017\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S304-SX (240' Unit).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.		020590	71	108
				(1) 07452		240' PL GIRDER UNIT		61236

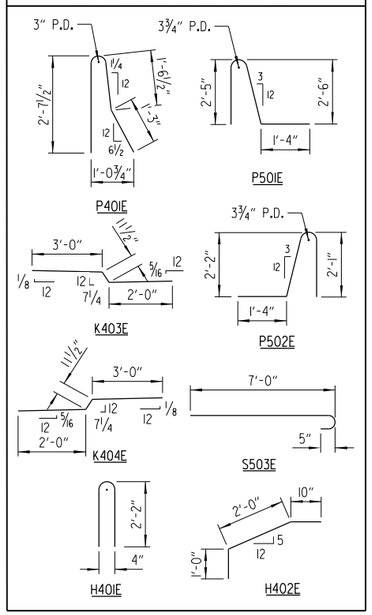


BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	350	37'-0"	Str.
S501E	479	45'-10"	Str.
S502E	260	51'-4"	Str.
S503E	958	7'-7"	3 3/4"
S601E	479	45'-10"	Str.
S602E	98	46'-0"	Str.
H401E	12	4'-6"	3"
H402E	4	3'-10"	2"
K401E	112	37'-0"	Str.
K402E	958	7'-8"	Str.
K403E	479	5'-11 1/2"	3"
K404E	479	5'-11 1/2"	3"
P401E	983	5'-6"	3"
P402E	128	5'-8"	Str.
P403E	91	9'-6"	Str.
P404E	91	9'-9"	Str.
P405E	70	10'-6"	Str.
P406E	70	10'-10"	Str.
P501E	480	6'-5"	3 3/4"
P502E	503	5'-9"	3 3/4"

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

BAR BENDING DIAGRAMS



REINFORCING PLAN AND DECK POURING SEQUENCE

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

(1) Parapet joint spacing (measured along roadway face of railing) - Parapet joints designated with symbol (F) shall be stopped 4" from top of sidewalk. All other parapet joints with symbol (P) shall be partial depth joints stopped 1'-2" from top of sidewalk.

(2) Measured along edge of deck

(3) Place as shown in "TYPICAL ROADWAY SECTION" on Dwg. No. 61234.

(4) See "TRANSVERSE SLAB JOINT DETAIL" on Std. Dwg. No. 55007.

(5) Pouring sequence (Measured along CL Bridge)

(6) For location and spacing of deck drains, see Dwg. No. 61240.

NOTES:
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3) 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 adjacent pours.

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.

72 hours shall elapse between the completion of the entire deck slab and the start of a sidewalk pour. 72 hours shall elapse between the completion of the entire sidewalk and the start of a railing pour. Any railing or sidewalk pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

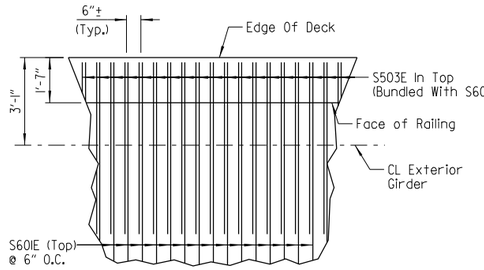
Required slab joints and pouring sequence joints shall align with the parapet joint at the front face of parapet.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

Unless noted otherwise, spacing shown for all transverse reinforcing is measured along CL Bridge. All transverse reinforcing shall be placed on lines radial to CL Bridge.

All longitudinal lines and longitudinal slab reinforcing shall be placed along curves concentric with CL Bridge.

For parapet reinforcing details, see Dwg. No. 61248.



DETAIL A

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 3 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

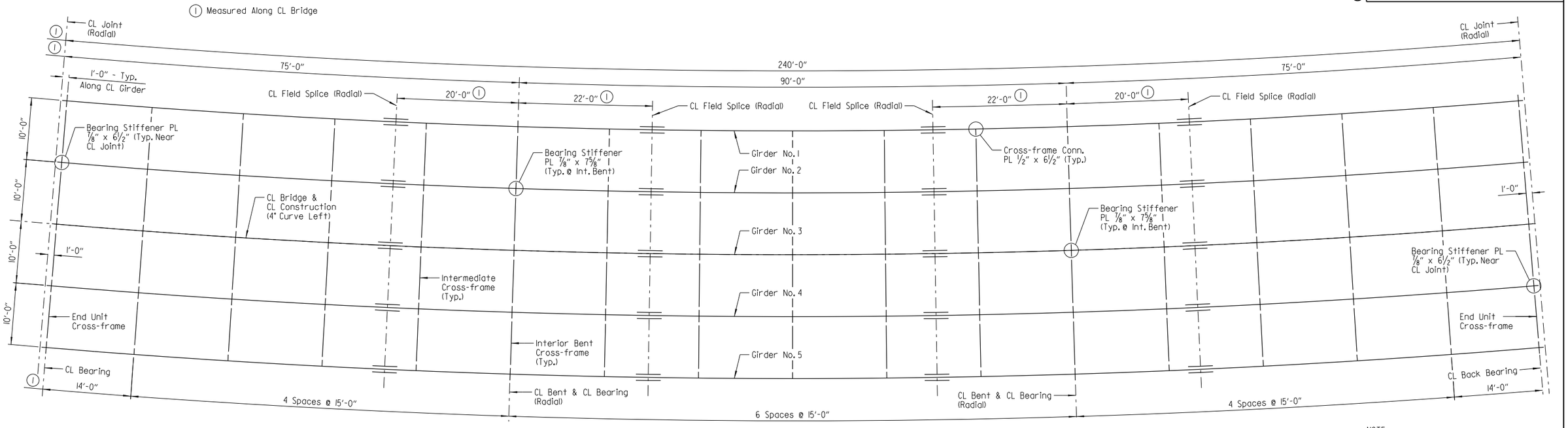
DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020590_s3.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: BWD DATE: JAN. 2019

BRIDGE NO. 07452 DRAWING NO. 61236

abhall 6/5/2020 4:28:34 PM
WORKSPACE: ARDOT Bridge
L:\2017\170175\90 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S305-SB (240' Unit).dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

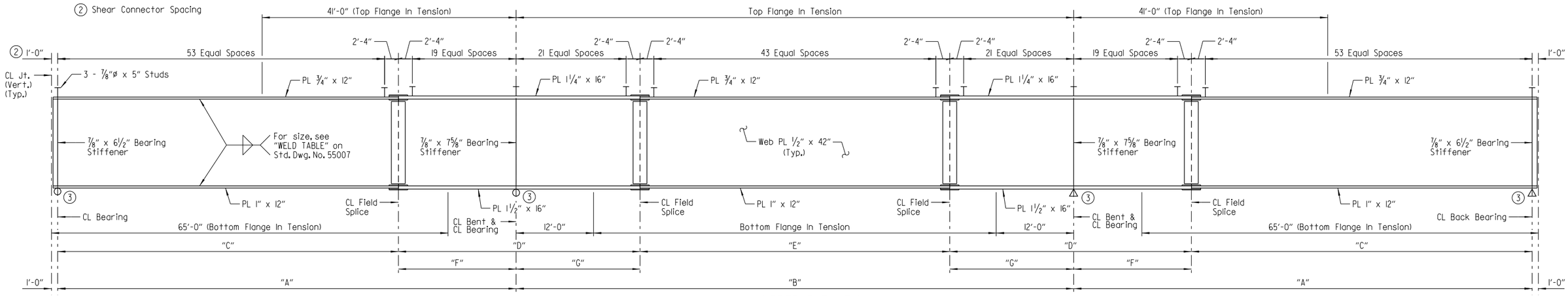
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	72	108
(1) 07452		240' PL GIRDER UNIT		61237



FRAMING PLAN

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

NOTE:
All longitudinal dimensions are measured along CL Bridge.



GIRDER ELEVATION

(Dimensions Measured Along CL Girder)
No Scale

TABLE OF VARIABLES							
GIRDER NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"
1	72'-11 7/16"	88'-8 5/16"	53'-2 1/16"	41'-4 5/16"	45'-4 5/16"	19'-8 5/8"	21'-8 5/16"
2	73'-5 11/16"	89'-4 7/16"	53'-7 3/8"	41'-8 1/2"	45'-8 1/8"	19'-10 5/16"	21'-10 1/8"
3	74'-0"	90'-0"	54'-0"	42'-0"	46'-0"	20'-0"	22'-0"
4	74'-6 5/16"	90'-7 9/16"	54'-4 5/8"	42'-3 1/2"	46'-3 1/8"	20'-11 1/16"	22'-1 7/8"
5	75'-0 9/16"	91'-3 1/16"	54'-9 1/16"	42'-7 1/16"	46'-7 11/16"	20'-3 3/8"	22'-3 1/16"

NOTES:
All girders are oriented along curves concentric with CL Bridge.

All intermediate and interior bent cross-frames are oriented along lines radial to CL Bridge. End unit cross-frames are oriented parallel to CL Joint.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

All structural steel shall be ASTM A709, Gr. 50W unless noted otherwise and shall be paid for at the unit price per pound bid for "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

Bolted Field Splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the Plan Quantities.

For "DETAILS OF WELDED SPLICES FOR PLATE GIRDERS" and "SHEAR CONNECTOR DETAIL", see Std. Dwg. No. 55007.

For painting of girder ends, see "GENERAL NOTES" on Dwg. No. 61215.

NOTES:
The erection of the structural steel shall be performed according to a plan permitting the steel to be erected plumb with bolts tightened while the steel is as close as possible to the no-load condition, so that the bolt holes can be aligned. This requirement may necessitate the use of large capacity cranes, temporary shoring or jacking frames.

The Contractor shall ensure that girders are stable throughout the erection process. The Contractor will be responsible for providing temporary bracing or stiffening devices to accommodate handling stresses in individual members or segments of the structure during erection.

(3) Bearing type designation shown for Unit No. 1. See Layout for designations of bearing type for Unit No. 3.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 4 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020590_s4.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: JAN. 2019

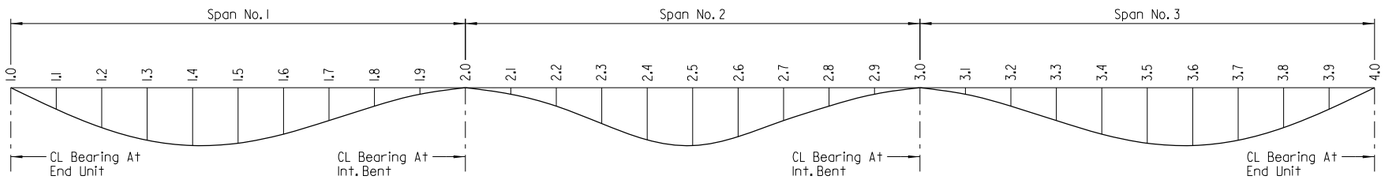
BRIDGE NO. 07452 DRAWING NO. 61237

abhall 6/5/2020 4:28:34 PM
WORKSPACE: ARDOT Bridge
L:\20\T\T01T590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S306-SF (240' Unit).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.		020590	73	108
				(1) 07452		240' PL GIRDER UNIT		61238

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

	Point Of Deflection	Girder 1			Girder 2			Girder 3			Girder 4			Girder 5		
		Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk
SPAN NO. 1	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1.1	0.043	0.304	0.367	0.048	0.358	0.410	0.051	0.384	0.433	0.051	0.380	0.431	0.050	0.354	0.411
	1.2	0.079	0.559	0.675	0.088	0.656	0.752	0.093	0.704	0.794	0.093	0.696	0.789	0.092	0.649	0.753
	1.3	0.104	0.733	0.885	0.115	0.857	0.983	0.121	0.920	1.038	0.122	0.911	1.034	0.120	0.849	0.985
	1.4	0.113	0.798	0.964	0.124	0.932	1.070	0.131	0.999	1.127	0.132	0.991	1.125	0.130	0.925	1.074
	1.5	0.107	0.761	0.921	0.118	0.888	1.020	0.124	0.949	1.071	0.126	0.945	1.073	0.123	0.881	1.024
	1.6	0.088	0.629	0.762	0.097	0.733	0.843	0.102	0.785	0.886	0.103	0.781	0.887	0.101	0.730	0.849
	1.7	0.061	0.440	0.533	0.067	0.512	0.588	0.070	0.548	0.619	0.071	0.546	0.620	0.070	0.512	0.595
	1.8	0.033	0.243	0.293	0.036	0.282	0.323	0.038	0.302	0.340	0.038	0.301	0.341	0.038	0.284	0.329
	1.9	0.010	0.084	0.101	0.011	0.096	0.109	0.012	0.103	0.116	0.012	0.104	0.117	0.012	0.099	0.114
SPAN NO. 2	2.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.1	0.010	0.040	0.059	0.010	0.048	0.063	0.011	0.052	0.066	0.011	0.049	0.064	0.010	0.039	0.056
	2.2	0.033	0.173	0.230	0.037	0.210	0.257	0.038	0.224	0.268	0.039	0.218	0.264	0.037	0.189	0.241
	2.3	0.062	0.343	0.444	0.068	0.411	0.494	0.071	0.440	0.517	0.071	0.427	0.508	0.069	0.379	0.470
	2.4	0.086	0.496	0.635	0.095	0.593	0.708	0.100	0.636	0.743	0.100	0.618	0.730	0.097	0.552	0.677
	2.5	0.095	0.549	0.702	0.105	0.656	0.783	0.110	0.703	0.821	0.110	0.684	0.807	0.107	0.613	0.752
	2.6	0.086	0.496	0.637	0.095	0.593	0.710	0.100	0.636	0.745	0.100	0.618	0.732	0.097	0.552	0.680
	2.7	0.064	0.357	0.465	0.070	0.427	0.517	0.074	0.458	0.542	0.074	0.445	0.532	0.071	0.394	0.492
	2.8	0.036	0.188	0.253	0.039	0.226	0.279	0.041	0.242	0.292	0.041	0.234	0.286	0.040	0.205	0.264
	2.9	0.010	0.039	0.061	0.010	0.048	0.066	0.011	0.052	0.069	0.011	0.049	0.067	0.010	0.039	0.059
SPAN NO. 3	3.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3.1	0.010	0.084	0.098	0.011	0.096	0.106	0.012	0.103	0.112	0.012	0.104	0.114	0.012	0.099	0.111
	3.2	0.033	0.244	0.288	0.036	0.282	0.317	0.038	0.302	0.334	0.038	0.301	0.335	0.038	0.284	0.323
	3.3	0.061	0.441	0.525	0.067	0.513	0.581	0.070	0.549	0.612	0.071	0.546	0.612	0.070	0.513	0.588
	3.4	0.088	0.629	0.751	0.097	0.734	0.833	0.102	0.785	0.876	0.103	0.780	0.877	0.101	0.730	0.840
	3.5	0.107	0.763	0.911	0.118	0.889	1.010	0.124	0.951	1.062	0.126	0.947	1.065	0.124	0.884	1.017
	3.6	0.113	0.800	0.954	0.125	0.934	1.060	0.131	1.000	1.117	0.133	0.994	1.117	0.130	0.927	1.065
	3.7	0.104	0.735	0.875	0.115	0.859	0.974	0.121	0.922	1.030	0.122	0.913	1.026	0.120	0.851	0.977
	3.8	0.080	0.563	0.669	0.088	0.659	0.747	0.093	0.707	0.789	0.094	0.700	0.786	0.092	0.652	0.748
	3.9	0.043	0.305	0.361	0.048	0.359	0.406	0.051	0.385	0.429	0.051	0.381	0.427	0.050	0.355	0.406
	4.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



DEAD LOAD DEFLECTION DIAGRAM

No Scale

NOTES:
Camber for dead load deflection plus vertical curve +/- 1/4" tolerance. Deflections shown are along CL Girder from the plane perpendicular to the web extending from CL Bearing to CL Bearing. Vertical curve corrections are not included. Negative sign (-) indicates point above chord.

Dead load deflections shown include an assumed loading of 18 psf to account for stay-in-place metal deck forms.

Revision to the deflection tables may be necessary upon review of the Contractor's submitted forming details.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.14498
ADAM B. HALL

Digitally Signed 06/08/2020

BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

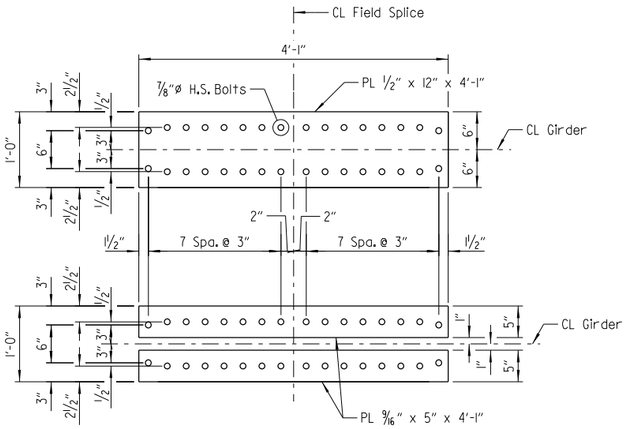
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: FEB. 2019 FILENAME: b020590_s5.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: FEB. 2019

BRIDGE NO. 07452 DRAWING NO. 61238

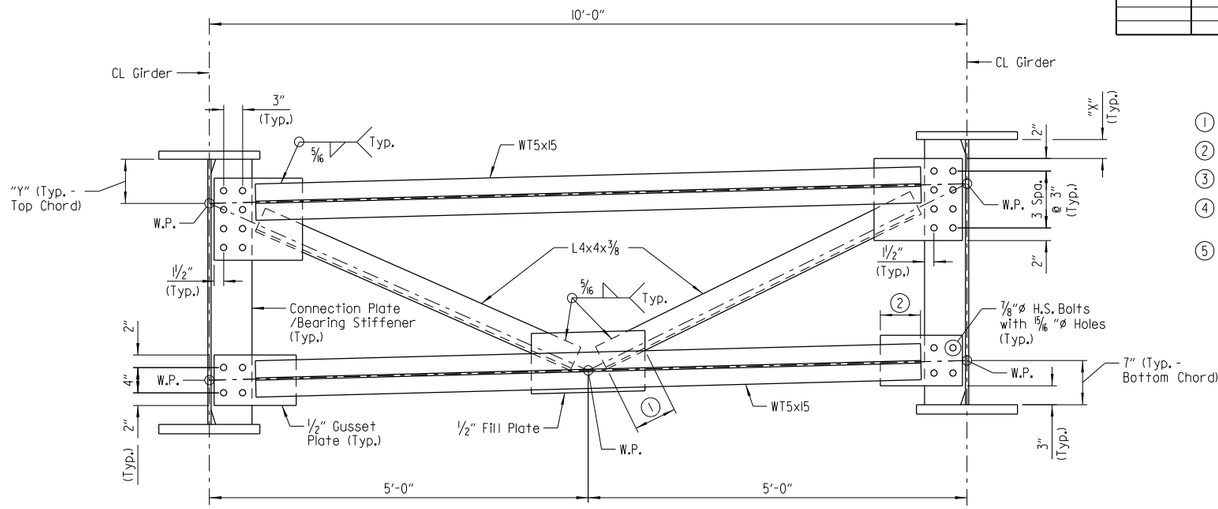
abhall 6/5/2020 4:28:36 PM
WORKSPACE: ARDOT Bridge
L:\2017\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S307-DF (240' Unit).dgn
REVISED DATE:

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.		020590	74	108
				(1) 07452		240' PL GIRDER UNIT		61239



TOP & BOTTOM FLANGE SPLICE

Scale: 1" = 1'-0"



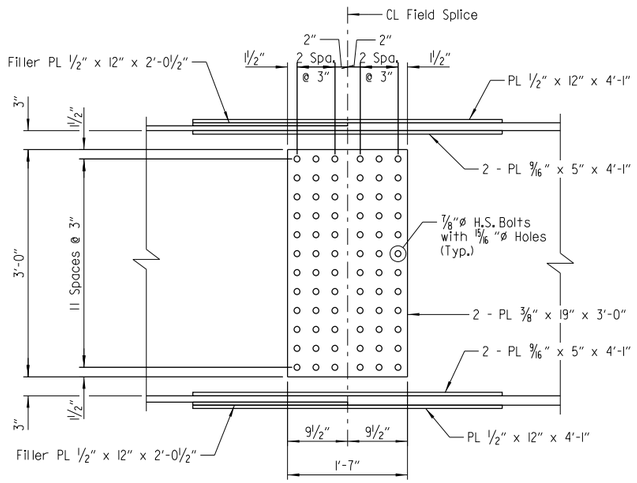
1. 4" Minimum Weld Length (Typ. - Diagonal Members)
2. 6" Minimum Weld Length (Typ. - Top and Bottom Chord Members)
3. See "WELD TABLE" on Std. Dwg. No. 55007 For Min. Weld Size.
4. If permanent deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form supports.
5. Stop weld 1/4" to 1" from end of clip (Typ.)

CROSS-FRAME DETAIL

Scale: 1" = 1'-0"

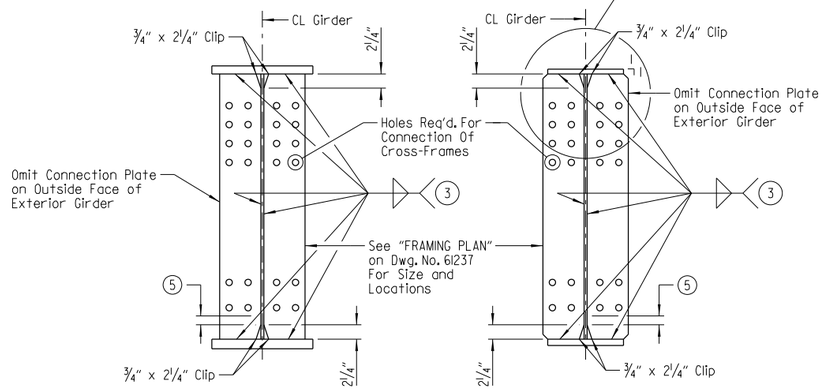
NOTE:
End unit cross-frames shall be fabricated such that the horizontal stems of the WT chord members point away from CL Joint.

Cross-frame Location	"X"	"Y"
End Unit	5"	9"
Intermediate	3"	7"
Interior Bent	3"	7"



ELEVATION OF FIELD SPLICE

Scale: 1" = 1'-0"

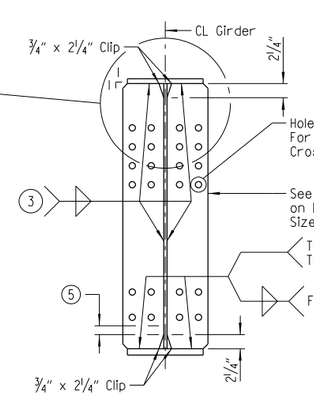


GIRDER WITH 16" WIDE FLANGE

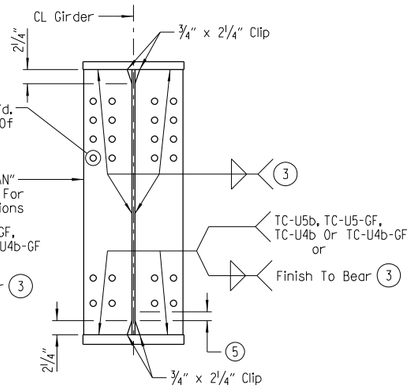
GIRDER WITH 12" WIDE FLANGE

CONNECTION PLATE DETAIL

Scale: 1" = 1'-0"



BENTS 1 & 4 (UNIT 1)
BENTS 7 & 10 (UNIT 3)



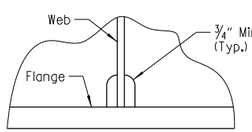
BENTS 2 & 3 (UNIT 1)
BENTS 8 & 9 (UNIT 3)

NOTE:
Bearing stiffeners shall be fabricated to be vertical in their final positions.

BEARING STIFFENER DETAIL

Scale: 1" = 1'-0"

NOTES:
All field connections shall be bolted with 7/8"ø high-strength bolts using 15/16 "ø open holes.



Height and width of clip shall be as noted in other details.

ALTERNATE CLIP DETAIL

(For Bearing Stiffeners and Cross-frame Connection Plates)
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 6 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

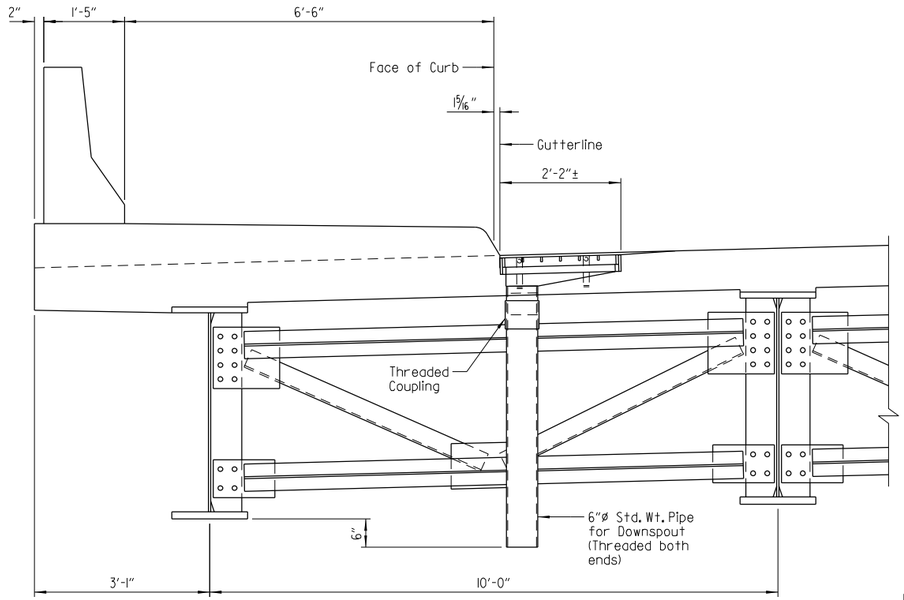
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: FEB. 2019 FILENAME: b020590_s6.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: FEB. 2019

BRIDGE NO. 07452 DRAWING NO. 61239

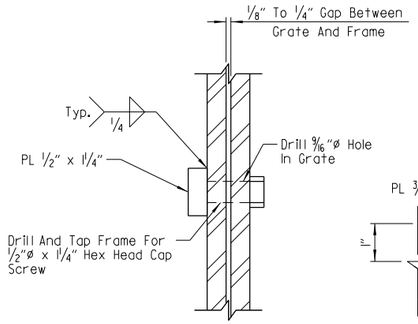
abnall 6/5/2020 4:28:36 PM
WORKSPACE: ARDOT Bridge
L:\20IT\170I7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW7278-5308-SD (240' Unit).dgn
REVISED DATE:

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.		020590	75	108
				(1) 07452		240' PL GIRDER UNIT		61240



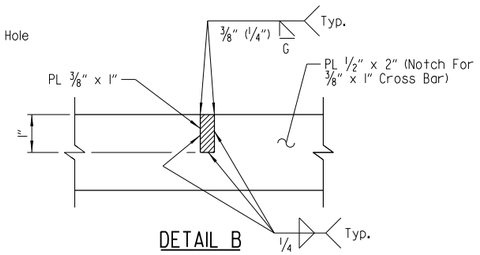
SECTION AT DECK DRAIN

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



DETAIL A

No Scale



DETAIL B

No Scale

DECK DRAIN LOCATION

Station	Offset
110+53.50	15' Left
111+28.50	15' Left
118+23.50	15' Left
118+98.50	15' Left

BAR LIST - PER DRAIN

(FOR INFORMATION ONLY)

Mark	No. Req'd.	Length
X401E	8	5'-6"
X402E	4	6'-9"
X501E	4	8'-1"
X601E	8	9'-10"

GENERAL NOTES:

Drain locations may be adjusted to clear crossframe connections and avoid reinforcing bars.

Standard weight pipe for deck drains shall conform to ASTM A501. All other structural steel shall be ASTM A709, Grade 36. After fabrication, all structural steel in drains shall be Galvanized in accordance with AASHTO M111. Steel fasteners shall be galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50.

Structural steel in deck drains shall not be paid for directly but shall be considered subsidiary to the Item "STRUCTURAL STEEL IN PLATE GIRDER SPANS (ASTM A709, GR. 50W)".

Top longitudinal reinforcing steel in the slab shall be cut as required to install the deck drains. Two #4 x 6'-9" straight bars (longitudinally) shall be placed on each side of the drain.

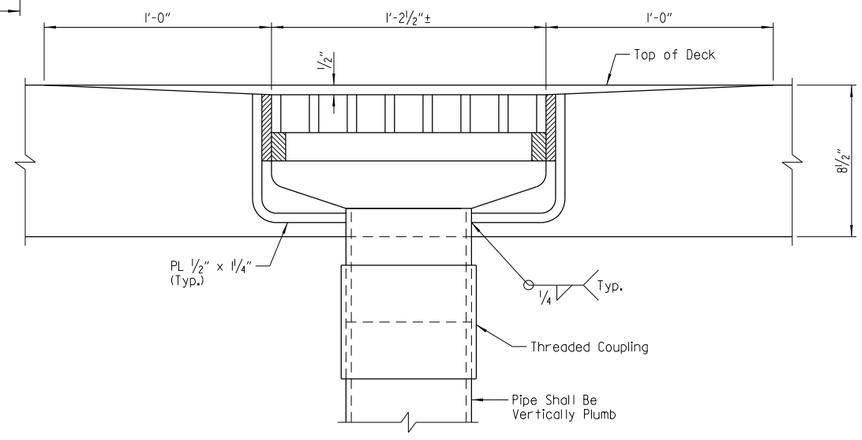
Top and bottom transverse reinforcing steel in the slab shall be cut as required (up to a maximum of three bars per mat) to install deck drains. Add two #6 x 9'-10" straight bars (transversely) per mat on each side of the drain.

Add one #4 x 5'-6" straight bar to top and bottom mat of reinforcing @ 45° angle to each corner of deck drain (total 8 bars per drain).

Repair all cut or damaged epoxy bars according to the Standard Construction Specifications.

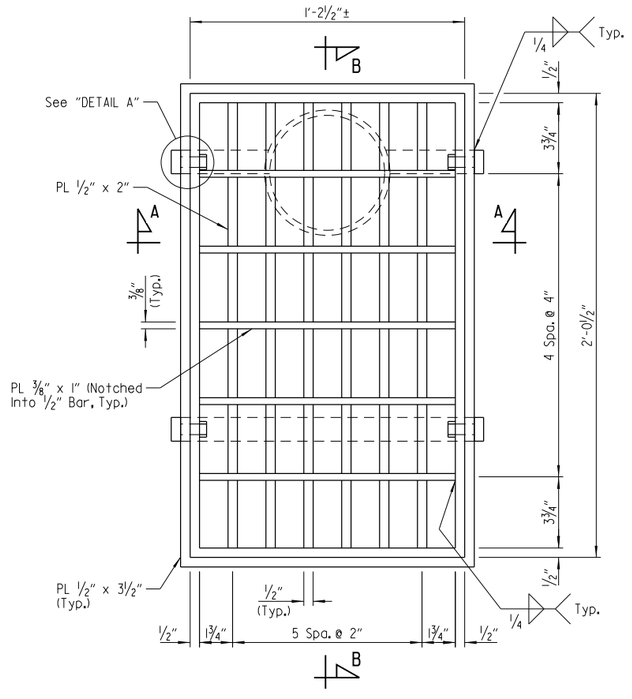
All additional reinforcing steel placed around deck drains shall be epoxy coated and shall not be paid for directly but shall be considered subsidiary to the Item "EPOXY COATED REINFORCING STEEL (GRADE 60)."

A pre-manufactored grate or grate and frame may be submitted for approval by the Engineer in place of the steel fabrication shown in the Plans. Grate shall have an AASHTO-AGC-ARTBA Type 5 or 6 Configuration and shall be designed for a 16,000 lb. wheel load.



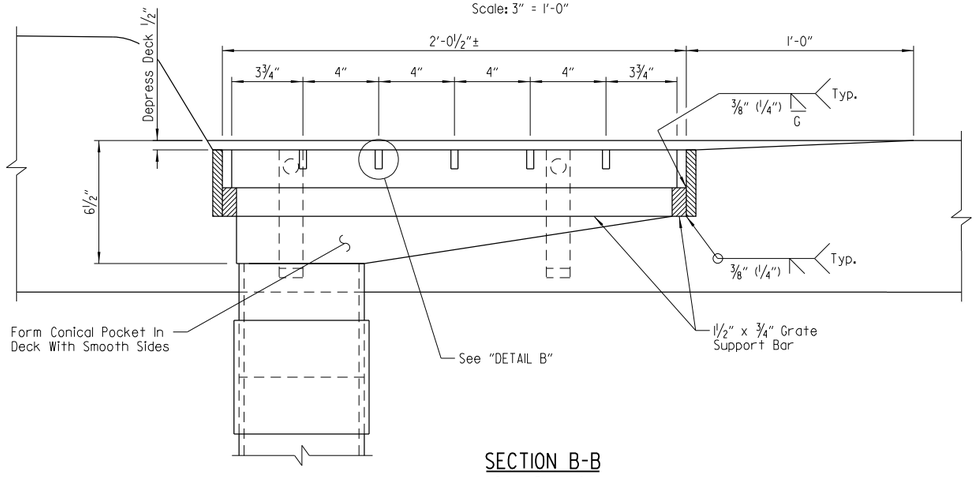
SECTION A-A

Scale: 3" = 1'-0"



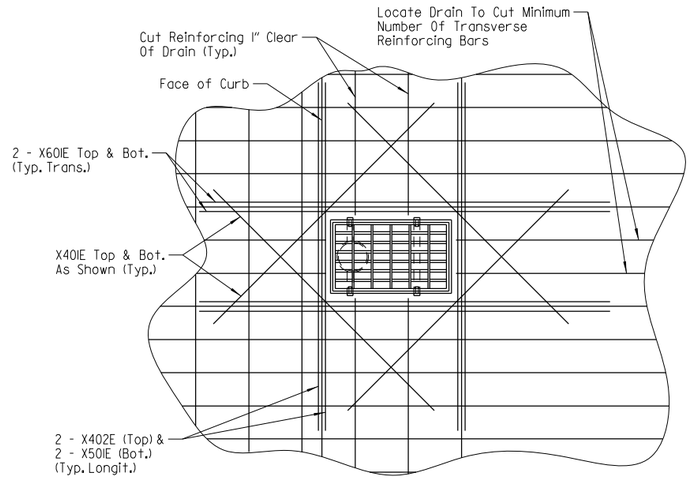
PLAN

Scale: 3" = 1'-0"



SECTION B-B

Scale: 3" = 1'-0"



PLAN OF REINFORCING AT DECK DRAINS

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL

Digitally Signed 06/08/2020

BRIDGE ENGINEER

SHEET 7 OF 7
DETAILS OF 240'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

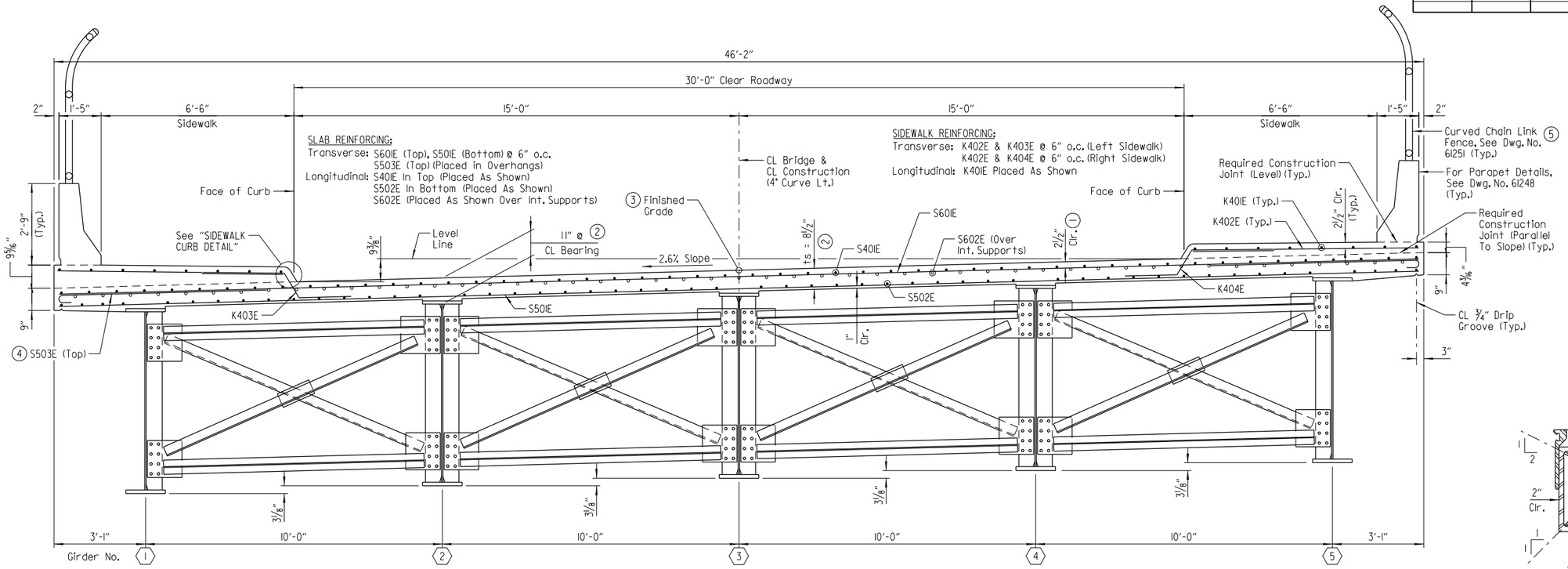
DRAWN BY: CWT DATE: FEB. 2019 FILENAME: b020590_s7.dgn
CHECKED BY: BWD DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: FEB. 2019

BRIDGE NO. 07452 DRAWING NO. 61240

abhall 6/5/2020 4:28:37 PM
WORKSPACE: ARDOT Bridge
L:\2017\17017590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278-S309-BD (240' Unit).dgn
REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

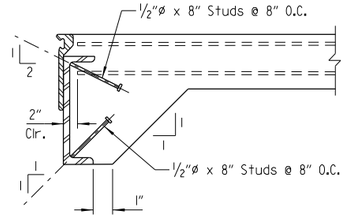
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	76	108
(1) 07452		440' PL GIRDER UNIT		61241



TYPICAL ROADWAY SECTION

(Looking Ahead)
Scale: ½" = 1'-0"

(5) Provide Type H Railing outside limits of curved chain link fence. See Std. Dwg. No. 55014 for details of Type H Railing.



DETAIL OF ALTERNATE ANCHORS

No Scale

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

(1) TOLERANCE:
Minus = ¼"
Plus = Amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.

(2) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.

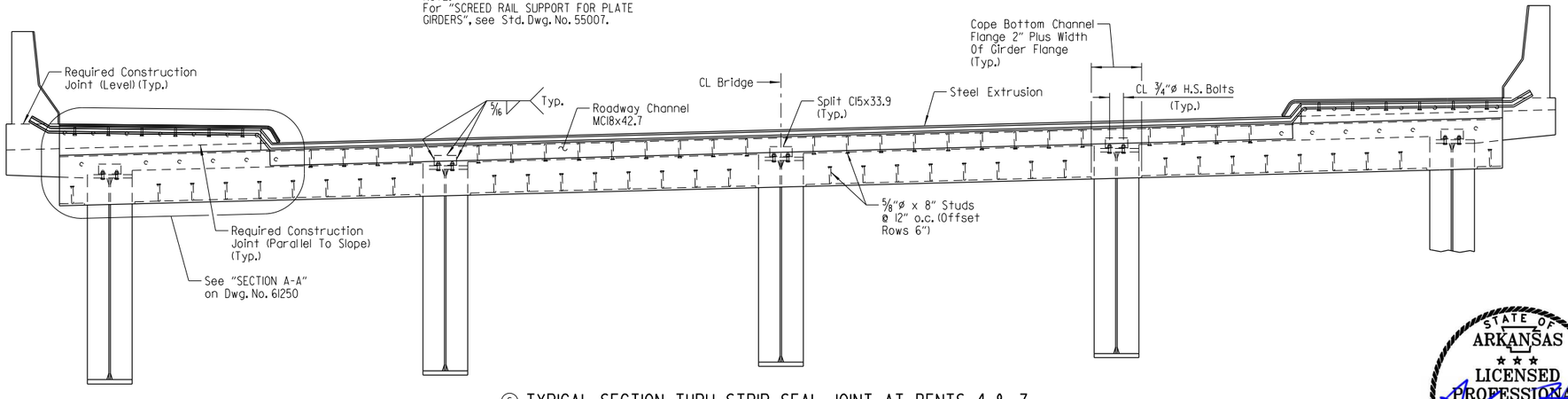
(3) See "SUPERELEVATION SKETCH" on Dwg. No. 61215.

(4) Bundle with S601E (Typ. in overhang). Rotate S503E as needed to provide clearance to hooks.

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

NOTE:
For "SCREED RAIL SUPPORT FOR PLATE GIRDERS", see Std. Dwg. No. 55007.

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



(6) TYPICAL SECTION THRU STRIP SEAL JOINT AT BENTS 4 & 7

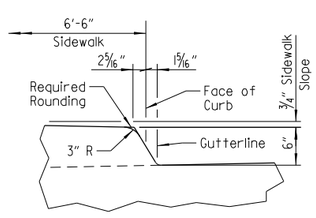
(Looking Ahead)
No Scale

NOTES:
For details of strip seal joint, see Dwg. Nos. 61249 & 61250.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

(6) This section is also applicable to strip seal joints within 240'-0" Continuous Plate Girder Unit.

EXPANSION DEVICE:
Rdwy. Channel MC18x42.7
Conn. Channels Split C15x33.9
Detail Device ⅛" High And Provide ¼" Shims Using 2 - 1/16" And 1 - ⅛" Plates



SIDEWALK CURB DETAIL

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 1 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

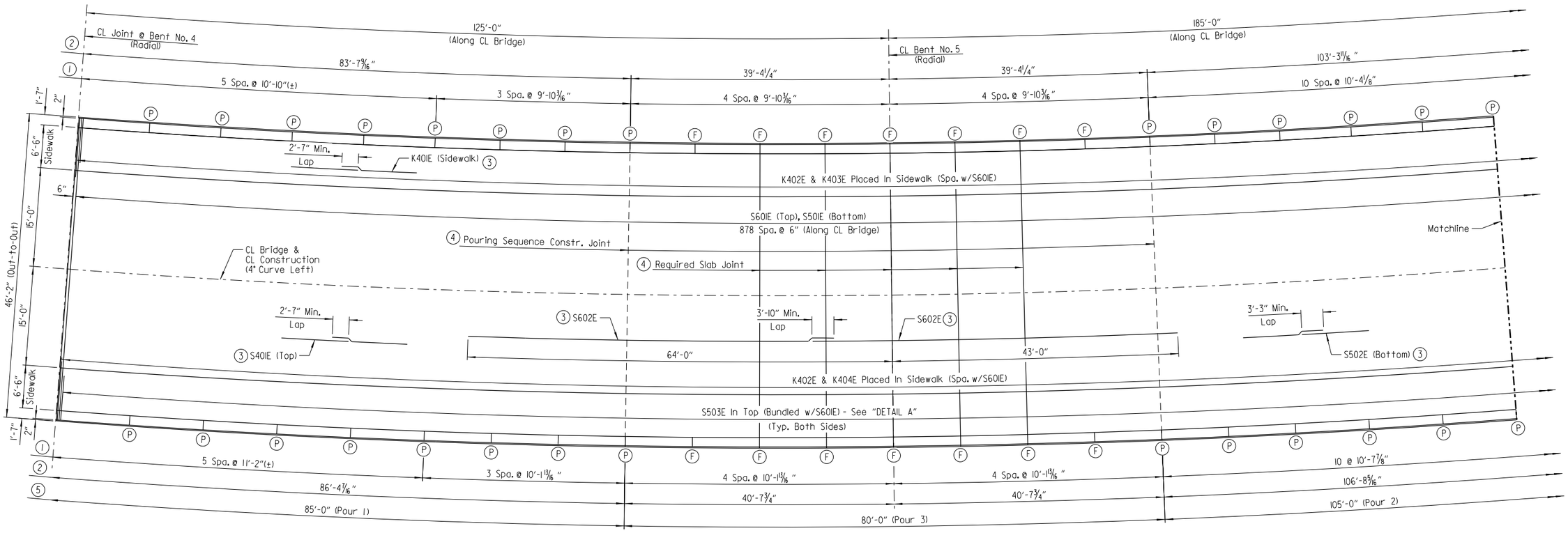
DRAWN BY: CWT DATE: JAN. 2019 FILENAME: b020590_s8.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: BWD DATE: JAN. 2019

BRIDGE NO. 07452 DRAWING NO. 61241

abhall 6/5/2020 4:28:37 PM
WORKSPACE: ARDOT Bridge
L:\2017\170759O - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S310-SX (440' Unit).dgn
REVISED DATE:

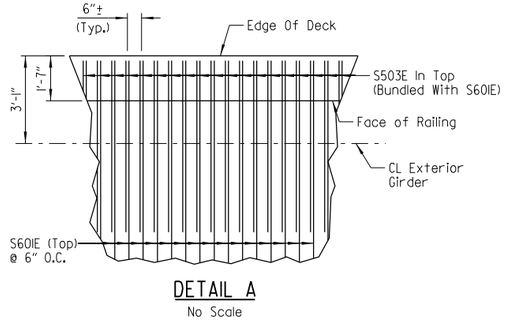
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	77	108
(1) 07452		440' PL GIRDER UNIT		61242



PART REINFORCING PLAN AND DECK POURING SEQUENCE

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



DETAIL A

No Scale

NOTES:
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3) 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 adjacent pours.

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.

72 hours shall elapse between the completion of the entire deck slab and the start of a sidewalk pour. 72 hours shall elapse between the completion of the entire sidewalk and the start of a railing pour. Any railing or sidewalk pours made before the entire slab unit has been placed must be approved by the Engineer.

No deviations from the pouring sequence shown will be allowed.

Required slab joints and pouring sequence joints shall align with the parapet joint at the front face of parapet.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

Unless noted otherwise, spacing shown for all transverse reinforcing is measured along CL Bridge. All transverse reinforcing shall be placed on lines radial to CL Bridge.

All longitudinal lines and longitudinal slab reinforcing shall be placed along curves concentric with CL Bridge.

For parapet reinforcing details, see Dwg. No. 61248.

For "BAR LIST" & "BAR BENDING DIAGRAMS", See Dwg. No. 61243.

(1) Parapet joint spacing (measured along roadway face of railing) - Parapet joints designated with symbol (F) shall be stopped 4" from top of sidewalk. All other parapet joints with symbol (P) shall be partial depth joints stopped 1'-2" from top of sidewalk.

(2) Measured along edge of deck

(3) Place as shown in "TYPICAL ROADWAY SECTION" on Dwg. No. 61241.

(4) See "TRANSVERSE SLAB JOINT DETAIL" on Std. Dwg. No. 55007.

(5) Pouring sequence (Measured along CL Bridge)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

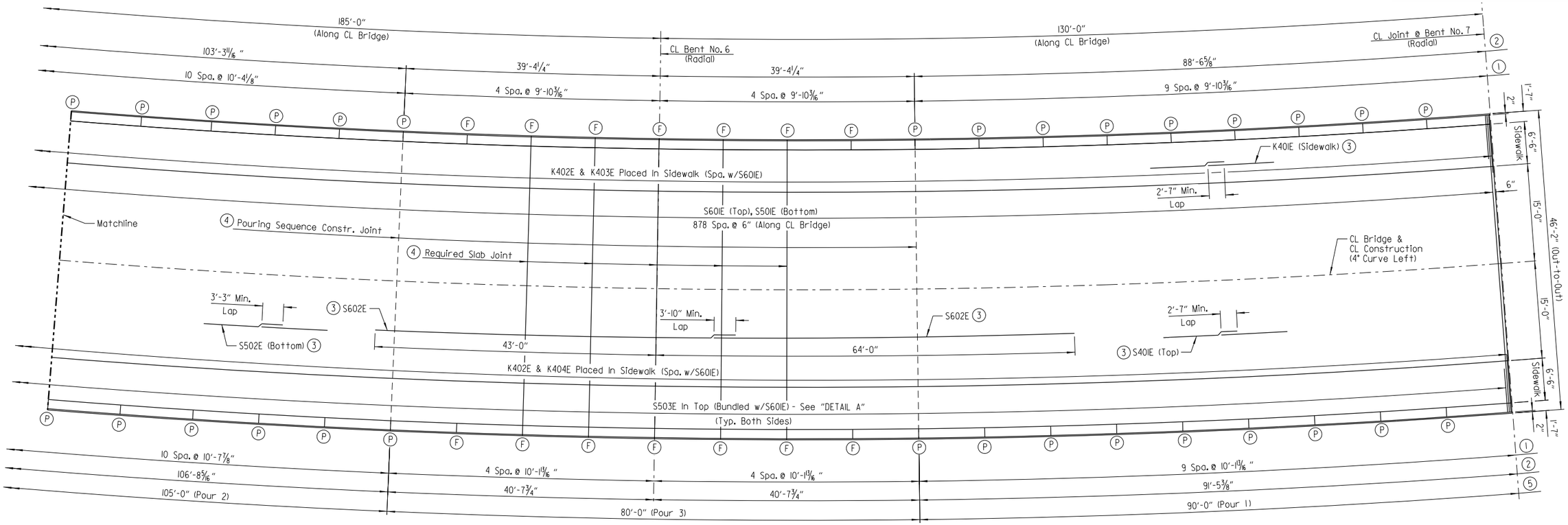
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020590_s9.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: BWD DATE: JAN. 2019

BRIDGE NO. 07452 DRAWING NO. 61242

abhall 6/5/2020 4:28:37 PM
WORKSPACE: ARDOT Bridge
L:\2017\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S3II-SB (440' Unit).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.		020590	78	108
				(1) 07452		440' PL GIRDER UNIT		61243

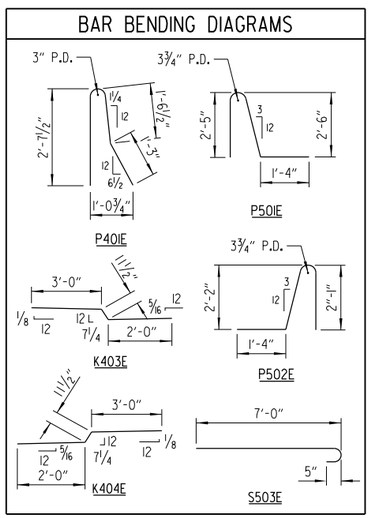


BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
S401E	600	39'-8"	Str.
S501E	879	45'-10"	Str.
S502E	416	58'-9"	Str.
S503E	1,758	7'-7"	3 3/4"
S601E	879	45'-10"	Str.
S602E	196	55'-6"	Str.
K401E	192	39'-8"	Str.
K402E	1,758	7'-8"	Str.
K403E	879	5'-11 1/2"	3"
K404E	879	5'-11 1/2"	3"
P401E	1,803	5'-6"	3"
P402E	224	5'-8"	Str.
P403E	196	9'-6"	Str.
P404E	196	9'-9"	Str.
P405E	35	10'-6"	Str.
P406E	35	10'-10"	Str.
P407E	70	10'-0"	Str.
P408E	70	10'-4"	Str.
P501E	880	6'-5"	3 3/4"
P502E	923	5'-9"	3 3/4"

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

BAR BENDING DIAGRAMS



PART REINFORCING PLAN AND DECK POURING SEQUENCE

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

NOTES:
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. All Pours (2) must be placed before Pours (3) 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 adjacent pours.

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.

72 hours shall elapse between the completion of the entire deck slab and the start of a sidewalk pour. 72 hours shall elapse between the completion of the entire sidewalk and the start of a railing pour. Any railing or sidewalk pours made before the entire slab unit has been placed must be approved by the Engineer.
No deviations from the pouring sequence shown will be allowed.

Required slab joints and pouring sequence joints shall align with the parapet joint at the front face of parapet.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

Unless noted otherwise, spacing shown for all transverse reinforcing is measured along CL Bridge. All transverse reinforcing shall be placed on lines radial to CL Bridge.

All longitudinal lines and longitudinal slab reinforcing shall be placed along curves concentric with CL Bridge.

For parapet reinforcing details, see Dwg. No. 61248.

For "DETAIL A", see Dwg. No. 61242.

(1) Parapet joint spacing (measured along roadway face of railing) - Parapet joints designated with symbol (F) shall be stopped 4" from top of sidewalk. All other parapet joints with symbol (P) shall be partial depth joints stopped 1'-2" from top of sidewalk.

(2) Measured along edge of deck

(3) Place as shown in "TYPICAL ROADWAY SECTION" on Dwg. No. 61241.

(4) See "TRANSVERSE SLAB JOINT DETAIL" on Std. Dwg. No. 55007.

(5) Pouring sequence (Measured along CL Bridge)

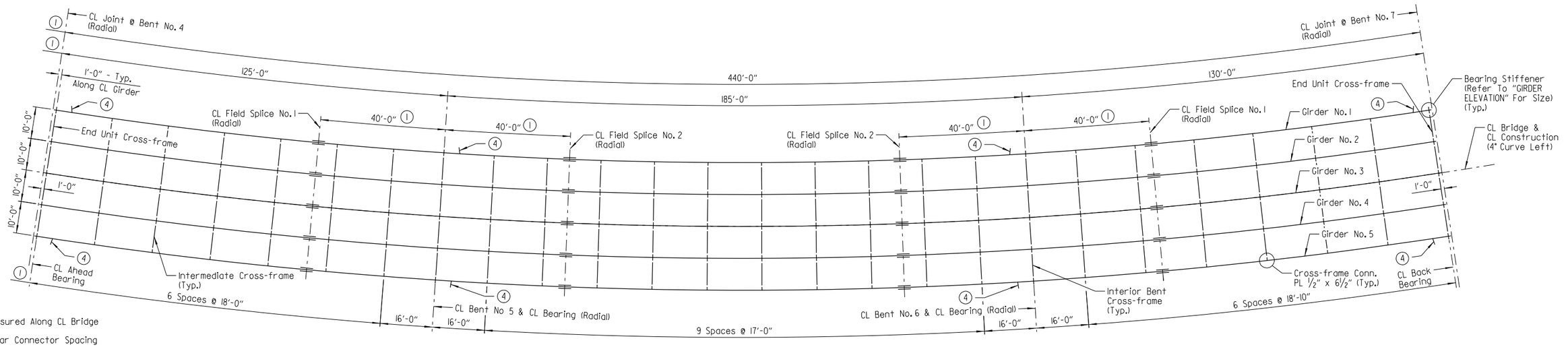
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 3 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020590_sl0.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: BWD DATE: JAN. 2019
BRIDGE NO. 07452 DRAWING NO. 61243

abhall 6/5/2020 4:28:38 PM
WORKSPACE: ARDOT Bridge
L:\2017\17017590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S32-SB (440' Unit)).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.		020590	79	108
				(1) 07452		440' PL GIRDER UNIT		61244



FRAMING PLAN

Scale: 1/16" = 1'-0"

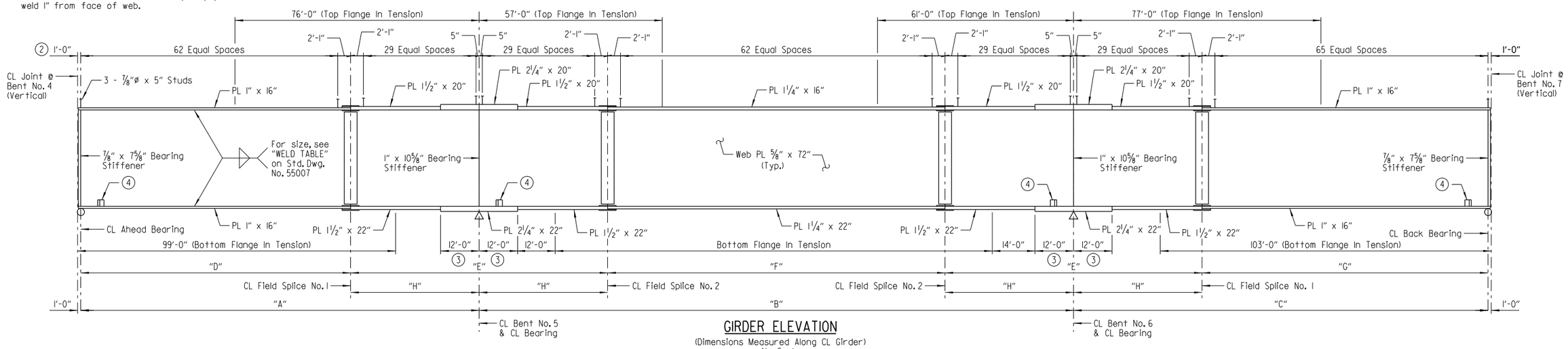
(1) Measured Along CL Bridge

(2) Shear Connector Spacing

(3) Typical, top and bottom flanges

(4) Drip plate welded to the outer side of the bottom flange of the exterior girders. Locate drip plates 5'-0" from CL Bearing at locations shown. See "BOTTOM FLANGE DRIP PLATE", Std. Dwg. No. 55007 for additional details. Stop drip plate weld 1" from face of web.

NOTE:
All longitudinal dimensions are measured along CL Bridge.



GIRDER ELEVATION

(Dimensions Measured Along CL Girder)
No Scale

NOTES:
All girders are oriented along curves concentric with CL Bridge.

All intermediate and interior bent cross-frames are oriented along lines radial to CL Bridge. End unit cross-frames are oriented parallel to CL Joint.

For "GENERAL NOTES", see Std. Dwg. No. 55006.

All structural steel shall be ASTM A709, Gr. 50W unless noted otherwise and shall be paid for at the unit price per pound bid for "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".

Bolted Field Splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the Plan Quantities.

For "DETAILS OF WELDED SPLICES FOR PLATE GIRDERS" and "SHEAR CONNECTOR DETAIL", see Std. Dwg. No. 55007.

For painting of girder ends, see "GENERAL NOTES" on Dwg. No. 61215.

TABLE OF VARIABLES

GIRDER NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
1	122'-3 1/16"	182'-5"	127'-2 1/4"	82'-9 3/4"	78'-10 5/8"	103'-6 1/16"	87'-8 15/16"	39'-5 5/16"
2	123'-1 1/2"	183'-8 1/2"	128'-1 1/8"	83'-4 7/8"	79'-5 5/16"	104'-3 3/16"	88'-4 7/16"	39'-8 5/8"
3	124'-0"	185'-0"	129'-0"	84'-0"	80'-0"	105'-0"	89'-0"	40'-0"
4	124'-10 1/2"	186'-3 1/2"	129'-10 7/8"	84'-7 1/8"	80'-6 11/16"	105'-8 13/16"	89'-7 9/16"	40'-3 3/8"
5	125'-8 5/16"	187'-1"	130'-9 3/4"	85'-2 1/4"	81'-1 3/8"	106'-5 5/16"	90'-3 1/16"	40'-6 11/16"

NOTES:
The erection of the structural steel shall be performed according to a plan permitting the steel to be erected plumb with bolts tightened while the steel is as close as possible to the no-load condition, so that the bolt holes can be aligned. This requirement may necessitate the use of large capacity cranes, temporary shoring or jacking frames.

The Contractor shall ensure that girders are stable throughout the erection process. The Contractor will be responsible for providing temporary bracing or stiffening devices to accommodate handling stresses in individual members or segments of the structure during erection.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 4 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: HEW DATE: JAN. 2019 FILENAME: b020590_sli.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: JAN. 2019
BRIDGE NO. 07452 DRAWING NO. 61244

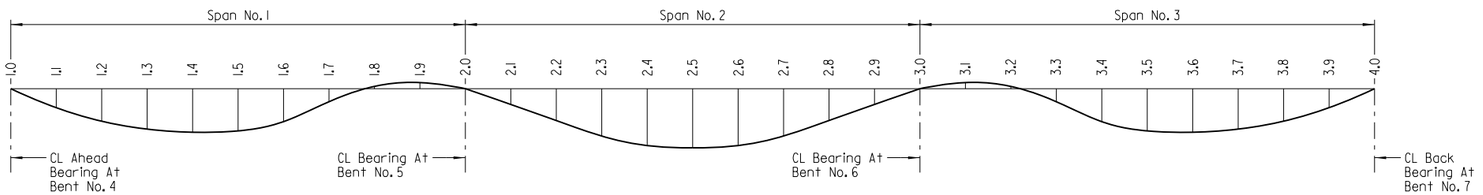
abhall 6/5/2020 4:28:38 PM
WORKSPACE: ARDOT Bridge
L:\2017\170T590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S3I3-SF (440' Unit).dgn
REVISED DATE:

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.		020590	80	108
(1) 07452		440' PL GIRDER UNIT		61245

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

	Point Of Deflection	Girder 1			Girder 2			Girder 3			Girder 4			Girder 5		
		Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet + Sidewalk
SPAN NO. 1	1.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1.1	0.074	0.478	0.570	0.077	0.539	0.620	0.077	0.574	0.648	0.074	0.579	0.653	0.070	0.567	0.645
	1.2	0.131	0.862	1.027	0.135	0.971	1.116	0.134	1.034	1.167	0.128	1.042	1.173	0.120	1.018	1.156
	1.3	0.158	1.091	1.297	0.162	1.227	1.406	0.159	1.304	1.466	0.150	1.316	1.477	0.139	1.288	1.458
	1.4	0.156	1.150	1.366	0.157	1.289	1.473	0.151	1.368	1.533	0.140	1.379	1.542	0.126	1.347	1.521
	1.5	0.126	1.039	1.233	0.123	1.160	1.321	0.115	1.231	1.374	0.101	1.234	1.374	0.085	1.197	1.347
	1.6	0.075	0.773	0.915	0.068	0.862	0.975	0.058	0.912	1.009	0.043	0.909	1.004	0.025	0.865	0.966
	1.7	0.020	0.448	0.528	0.011	0.500	0.559	0.000	0.526	0.572	-0.014	0.516	0.560	-0.032	0.471	0.517
	1.8	-0.024	0.141	0.163	-0.034	0.157	0.166	-0.044	0.161	0.162	-0.055	0.149	0.148	-0.071	0.109	0.107
	1.9	-0.035	-0.023	-0.031	-0.041	-0.025	-0.039	-0.048	-0.031	-0.048	-0.055	-0.041	-0.060	-0.064	-0.062	-0.082
SPAN NO. 2	2.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2.1	0.149	0.439	0.547	0.166	0.484	0.591	0.182	0.522	0.632	0.197	0.552	0.668	0.213	0.576	0.700
	2.2	0.366	1.175	1.456	0.405	1.295	1.572	0.440	1.392	1.673	0.475	1.465	1.759	0.509	1.518	1.833
	2.3	0.588	1.957	2.414	0.648	2.159	2.610	0.703	2.318	2.773	0.755	2.432	2.908	0.808	2.520	3.030
	2.4	0.749	2.535	3.120	0.825	2.800	3.377	0.894	3.004	3.586	0.958	3.147	3.754	1.026	3.266	3.917
	2.5	0.806	2.741	3.372	0.888	3.029	3.651	0.961	3.249	3.876	1.030	3.403	4.057	1.102	3.532	4.233
	2.6	0.746	2.525	3.109	0.822	2.788	3.363	0.890	2.991	3.571	0.954	3.133	3.738	1.021	3.250	3.898
	2.7	0.583	1.940	2.395	0.643	2.140	2.588	0.698	2.298	2.750	0.749	2.409	2.881	0.801	2.494	3.000
	2.8	0.361	1.155	1.433	0.399	1.274	1.547	0.434	1.369	1.645	0.467	1.437	1.726	0.500	1.487	1.797
	2.9	0.145	0.423	0.529	0.161	0.465	0.569	0.177	0.502	0.609	0.192	0.531	0.643	0.206	0.552	0.672
	3.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SPAN NO. 3	3.1	-0.029	0.007	0.004	-0.035	0.007	-0.002	-0.041	0.005	-0.007	-0.048	-0.003	-0.016	-0.056	-0.022	-0.037
	3.2	-0.005	0.233	0.274	-0.014	0.256	0.282	-0.023	0.267	0.286	-0.034	0.261	0.278	-0.048	0.226	0.243
	3.3	0.051	0.592	0.701	0.043	0.658	0.745	0.034	0.696	0.771	0.021	0.695	0.767	0.005	0.657	0.732
	3.4	0.119	0.983	1.166	0.115	1.096	1.250	0.107	1.163	1.301	0.095	1.173	1.308	0.079	1.140	1.283
	3.5	0.181	1.302	1.548	0.182	1.455	1.668	0.177	1.546	1.739	0.166	1.567	1.758	0.152	1.542	1.744
	3.6	0.213	1.424	1.694	0.217	1.592	1.828	0.215	1.695	1.912	0.207	1.723	1.939	0.197	1.709	1.938
	3.7	0.211	1.343	1.600	0.217	1.501	1.727	0.217	1.599	1.808	0.212	1.630	1.839	0.205	1.621	1.843
	3.8	0.172	1.059	1.265	0.177	1.179	1.359	0.178	1.257	1.425	0.176	1.285	1.454	0.171	1.277	1.456
	3.9	0.097	0.585	0.699	0.100	0.654	0.755	0.101	0.696	0.790	0.100	0.711	0.805	0.098	0.709	0.809
	4.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



DEAD LOAD DEFLECTION DIAGRAM

No Scale

NOTES:
Camber for dead load deflection plus vertical curve +/- 1/4" tolerance. Deflections shown are along CL Girder from the plane perpendicular to the web extending from CL Bearing to CL Bearing. Vertical curve corrections are not included. Negative sign (-) indicates point above chord.

Dead load deflections shown include an assumed loading of 18 psf to account for stay-in-place metal deck forms.

Revision to the deflection tables may be necessary upon review of the Contractor's submitted forming details.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.14498
ADAM B. HALL

Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

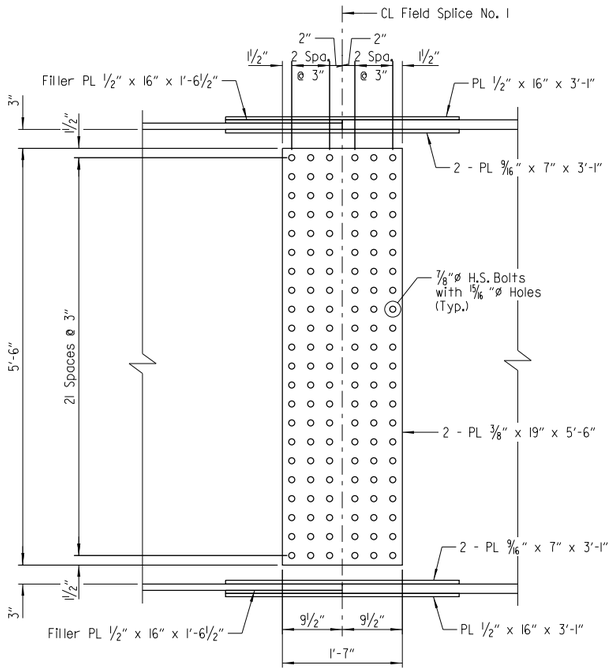
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

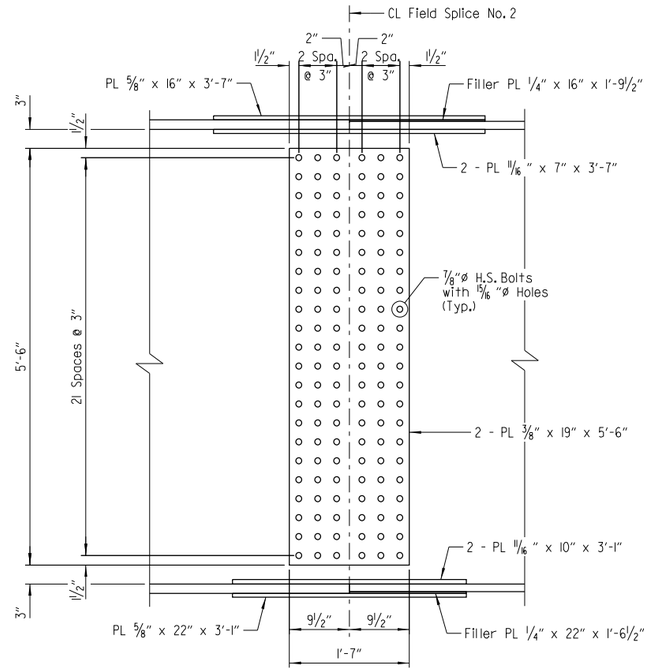
DRAWN BY: CWT DATE: FEB. 2019 FILENAME: b020590_sl2.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: FEB. 2019
BRIDGE NO. 07452 DRAWING NO. 61245

abhall 6/5/2020 4:28:38 PM
WORKSPACE: ARDOT Bridge
L:\2017\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S3I4-DF (440' Unit).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.		020590	81	108
				①	07452	440' PL GIRDER UNIT		61246

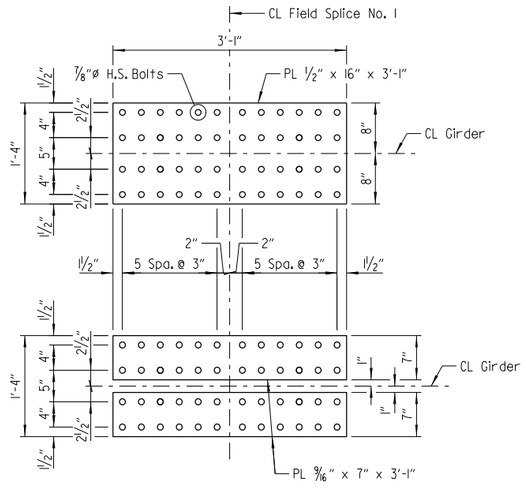


ELEVATION OF FIELD SPLICE NO. 1
Scale: 1" = 1'-0"

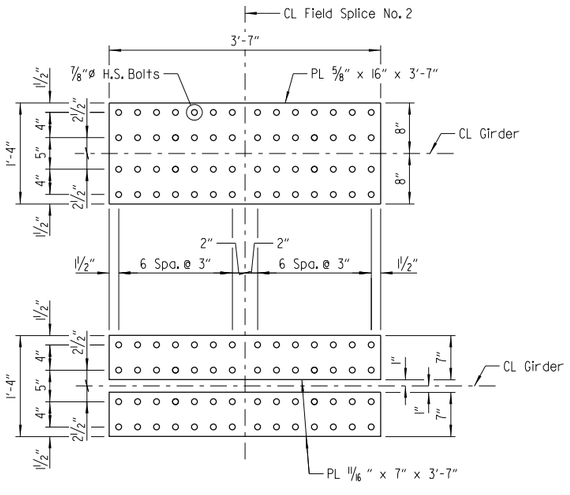


ELEVATION OF FIELD SPLICE NO. 2
Scale: 1" = 1'-0"

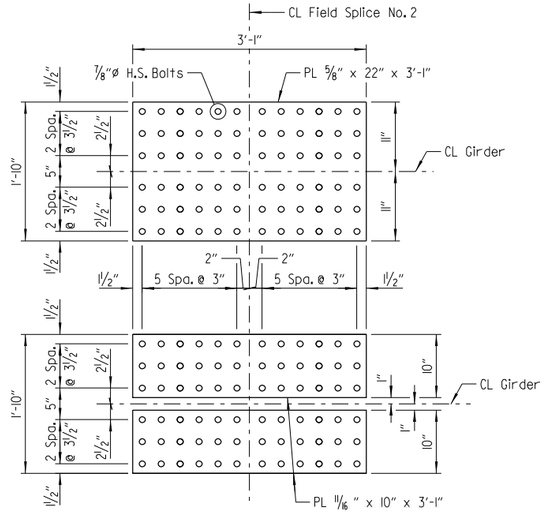
NOTES:
All field connections shall be bolted with 7/8"ø high-strength bolts using 15/16 "ø open holes.



TOP & BOTTOM FLANGES - FIELD SPLICE NO. 1
Scale: 1" = 1'-0"



TOP FLANGE - FIELD SPLICE NO. 2
Scale: 1" = 1'-0"



BOTTOM FLANGE - FIELD SPLICE NO. 2
Scale: 1" = 1'-0"

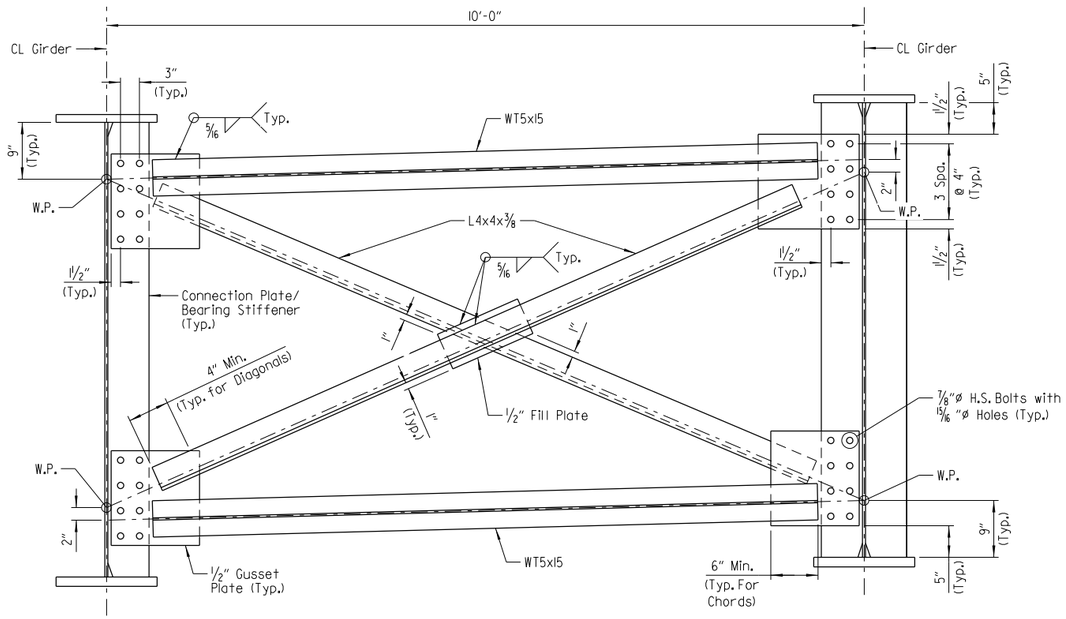
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 6 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RH DATE: FEB. 2019 FILENAME: b020590_sl3.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: FEB. 2019
BRIDGE NO. 07452 DRAWING NO. 61246

abhall 6/5/2020 4:28:39 PM
WORKSPACE: ARDOT Bridge
L:\2017\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S3I5-SD (440' Unit).dgn
REVISED DATE:

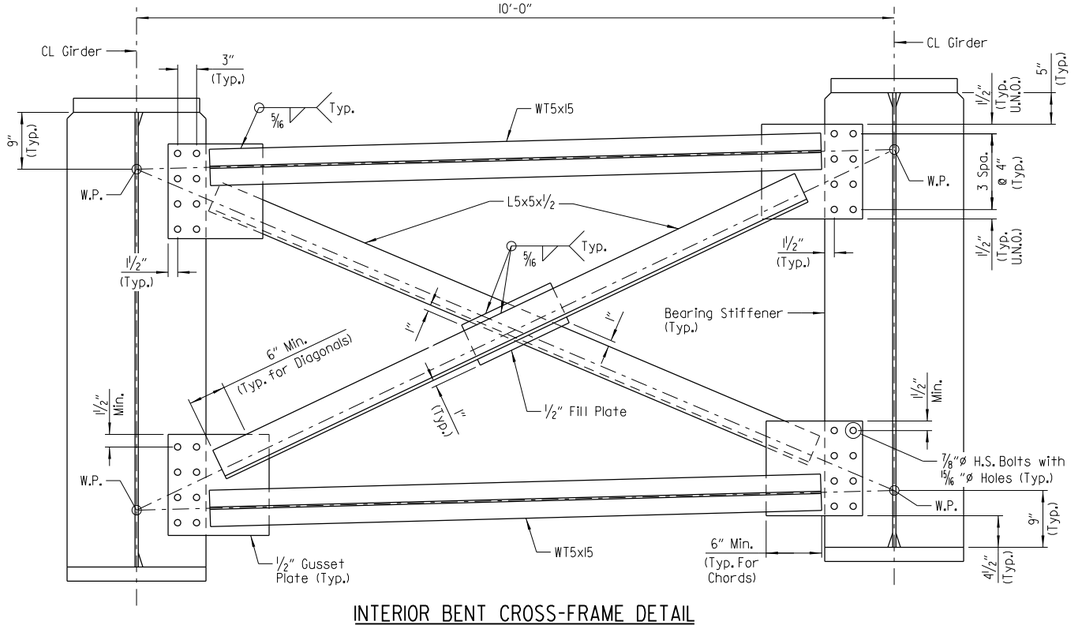
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	82	108
				(1) 07452		440' PL GIRDER UNIT		61247



END UNIT AND INTERMEDIATE CROSS-FRAME DETAIL

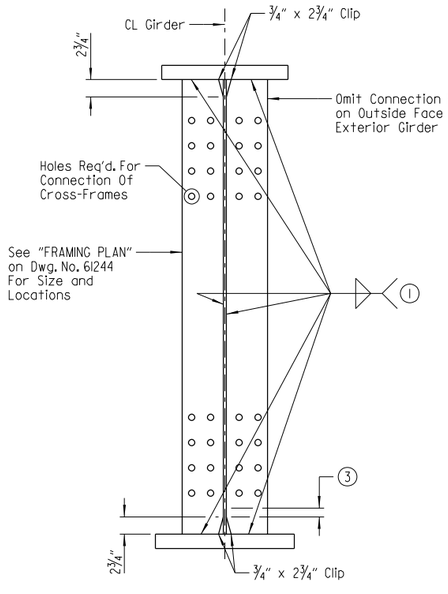
Scale: 1" = 1'-0"

NOTE:
End unit cross-frames shall be fabricated such that the horizontal stems of the WT chord members point away from CL Joint.



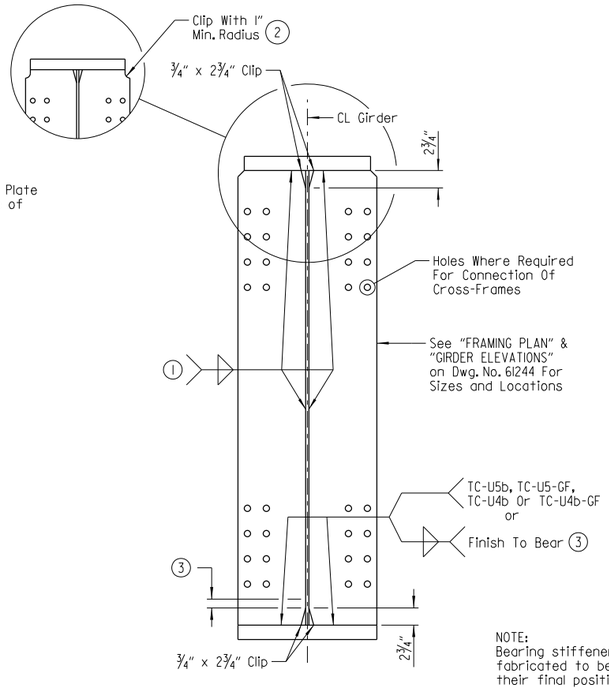
INTERIOR BENT CROSS-FRAME DETAIL

Scale: 1" = 1'-0"



CONNECTION PLATE DETAIL

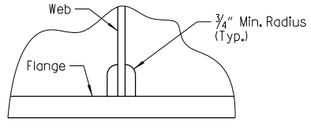
Scale: 1" = 1'-0"



BEARING STIFFENER DETAIL

Scale: 1" = 1'-0"

NOTE:
Bearing stiffeners shall be fabricated to be vertical in their final positions.



Height and width of clip shall be as noted in other details.

ALTERNATE CLIP DETAIL

(For Bearing Stiffeners and Cross-frame Connection Plates)
No Scale

LEGEND

U.N.O. = Unless Noted Otherwise

NOTES:
All field connections shall be bolted with 7/8"ø high strength bolts using 15/16 "ø open holes.

(1) See "WELD TABLE" on Std. Dwg. No. 55007 For Min. Weld Size.

(2) If permanent deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form supports.

(3) Stop weld 1/4" to 1" from end of clip (Typ.)

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 7 OF 7
DETAILS OF 440'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

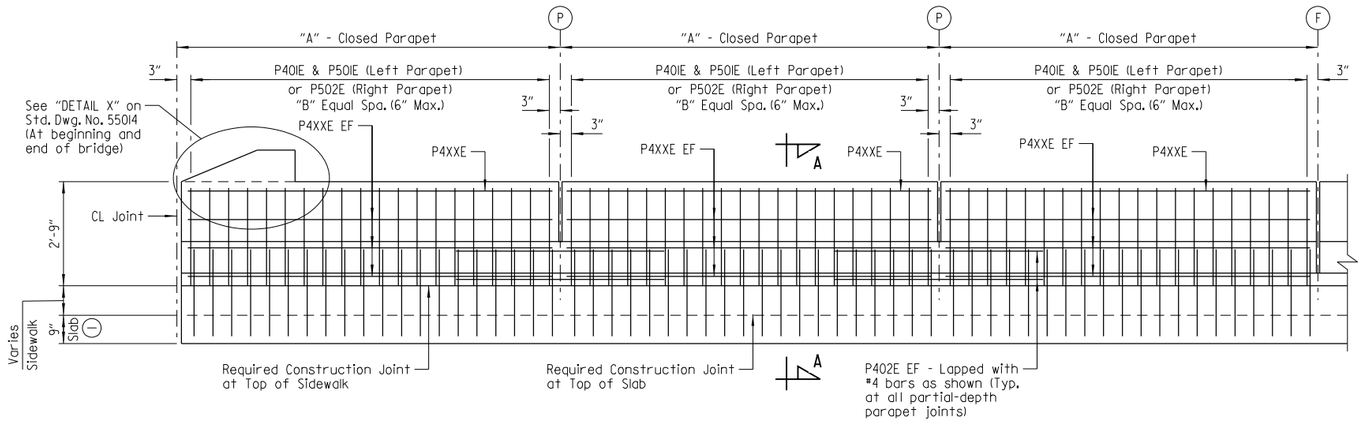
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: FEB. 2019 FILENAME: b020590_sl4.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: RH DATE: FEB. 2019

BRIDGE NO. 07452 DRAWING NO. 61247

abhall 6/5/2020 4:28:39 PM
WORKSPACE: ARDOT Bridge
L:\2017\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S316-SD (440' Unit).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.		020590	83	108
				(1) 07452		COMMON SUPERSTR. DETAILS		61248



(1) Measured at Edge of Deck

DETAILS OF PARAPET RAIL

No Scale

TABLE OF PARAPET RAIL VARIABLES		
"A" Closed Parapet	"B"	P4XX Bar
9'-10 3/16"	19	P403E
10'-1 13/16"	20	P404E
10'-10"	21	P405E
11'-2"	22	P406E
10'-4 1/8"	20	P407E
10'-7 7/8"	21	P408E

NOTE:
All parapet panels shall be closed. For location of parapet panels, see "REINFORCING PLAN AND DECK POURING SEQUENCE" on Dwg. No. 61236 and "PART REINFORCING PLAN AND DECK POURING SEQUENCE" on Dwg. Nos. 61242 & 61243.

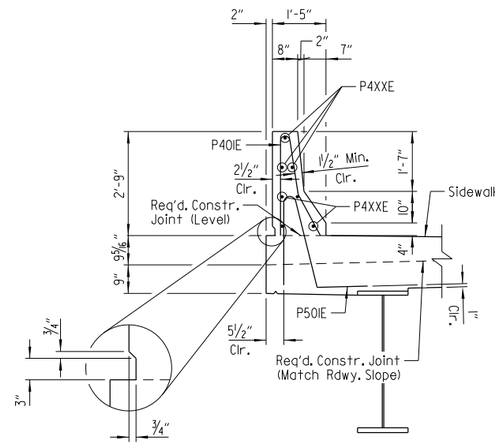
(F) CL Full-Depth Parapet Joint (1/4" to 1" max.) Stop 4" from top of sidewalk.

(P) CL Partial-Depth Parapet Joint (1/4" to 1" max.) Stop 1'-2" from top of sidewalk.

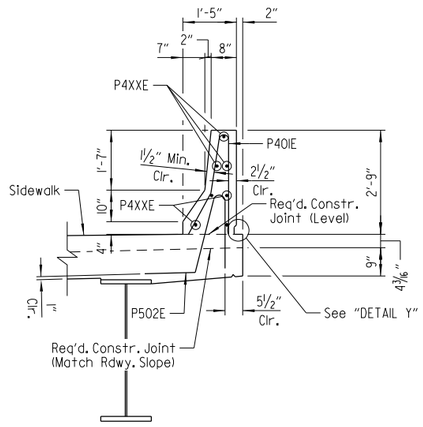
NOTE:
For locations of full-depth and partial-depth parapet joints, see "REINFORCING PLAN AND DECK POURING SEQUENCE" on Dwg. No. 61236 and "PART REINFORCING PLAN AND DECK POURING SEQUENCE" on Dwg. Nos. 61242 & 61243.

LEGEND

EF = Each Face



DETAIL Y

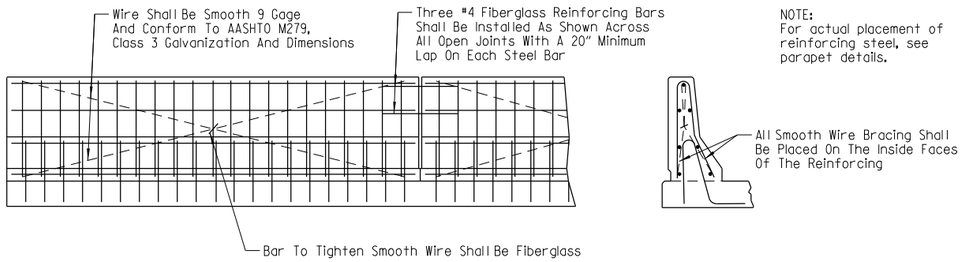


LEFT PARAPET

RIGHT PARAPET

SECTION A-A

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



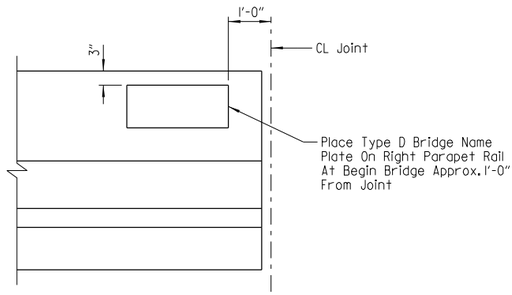
NOTE:
For actual placement of reinforcing steel, see parapet details.

NOTE:
All panels shall be braced as shown to prevent racking. All parapet 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.

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



VIEW SHOWING LOCATION OF NAME PLATE

(Showing Inside Face Of Parapet)
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

DETAILS COMMON TO ALL UNITS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

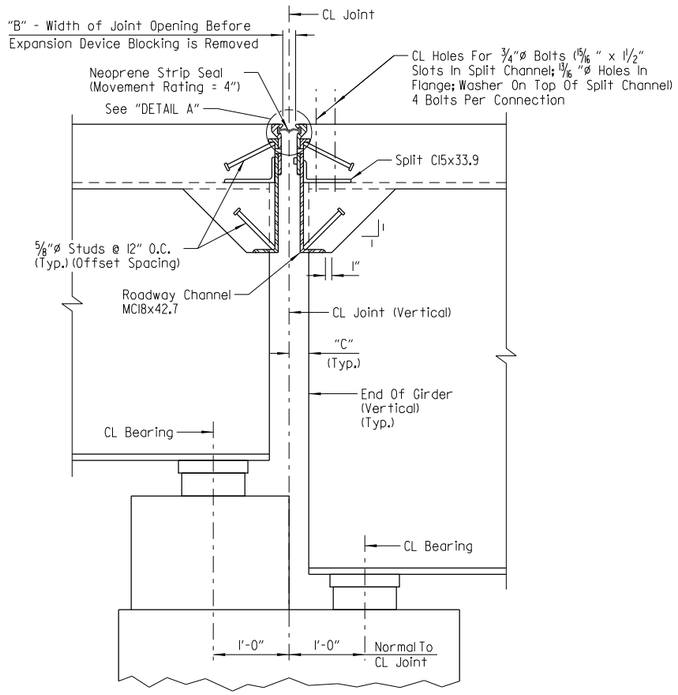
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: OCT. 2017 FILENAME: b020590_sl5.dgn
CHECKED BY: ABH DATE: APR. 2018 SCALE: As Shown
DESIGNED BY: BWD DATE: OCT. 2017

BRIDGE NO. 07452 DRAWING NO. 61248

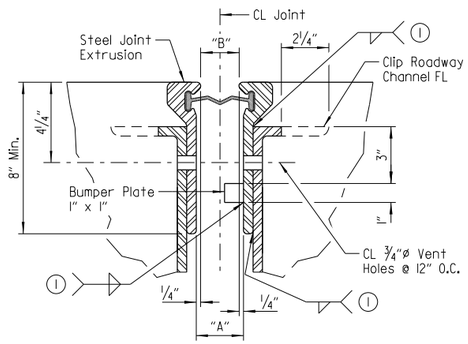
abhall 6/5/2020 4:28:41 PM
WORKSPACE: ARDOT Bridge
L:\2017\170\7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S401-PT (Parapet).dgn
REVISED DATE:

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.		020590	84	108
				(1) 07452		STRIP SEAL JOINT		61249



SECTION THRU JOINT AT BENT NOS. 4 & 7

(Section Taken Normal To CL Joint)
Scale: 1" = 1'-0"



DETAIL A

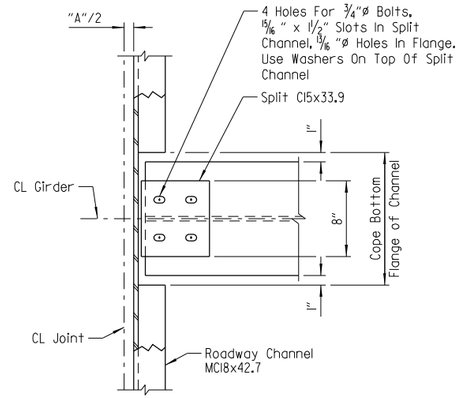
Scale: 3" = 1'-0"

(1) See "WELD TABLE", Std. Dwg. No. 55007 for min. weld size.

NOTES:
Sections are taken perpendicular to CL Joint.

Concrete shall be hand packed under the joint armor.

Steel cross-frames and bearing stiffeners are not shown for clarity. See plans for details.



CHANNEL CONNECTION DETAIL

No Scale

GENERAL NOTES

The steel extrusion material (DS Brown SSPA or approved equal) and neoprene strip seal material (DS Brown L2-400 or approved equal) and installation shall be in accordance with Section 809.

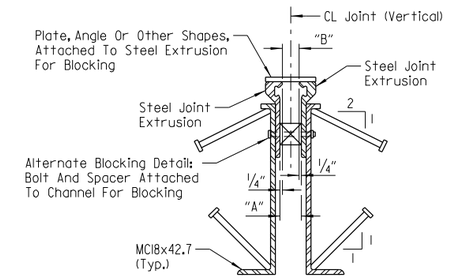
The expansion device shall provide a movement of 4" as shown in the "STRIP SEAL JOINT DATA" table. The expansion joint shall be capable of sealing the deck surface and parapet area to prevent moisture and other contaminants from descending through the joint.

Unless noted otherwise, all structural steel shall be ASTM A709, Gr. 50W, and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e).

All structural steel, except for the steel extrusion for the strip seal, shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)". The steel extrusion and neoprene strip seal shall be paid for in accordance with Section 809.

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

Parapet slider plates and sidewalk patterned plates shall be ASTM A709, Gr. 36, 50 or 50W steel and shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)". The surfaces of the plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly but will be considered subsidiary to "STRUCTURAL STEEL IN PLATE GIRDER SPANS (A709, GR. 50W)".



NOTE:
Each expansion joint device shall be blocked in the shop by the fabricator to the dimension shown for 60°F, and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2' of each end of the device and with a maximum spacing of 8'.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

After all 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 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.

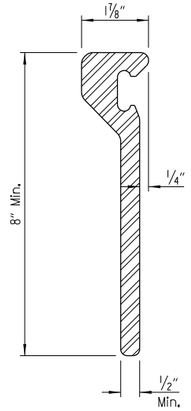
Connection bolts on the second side shall remain loose until the concrete pour adjacent to the joint is to be placed. Immediately prior to pouring the span concrete on the second side, the blocking shall be removed, the joint adjusted for temperature and grade, and the connection bolts tightened.

STRIP SEAL JOINT DATA

Bent No.	Movement Rating	"A" Width Perpendicular To Joint At 24 Hour Average Temperature * Of:			"B" Width Perpendicular To Joint At 24 Hour Average Temperature * Of:			"C" Perpendicular To Joint At 24 Hour Average Temperature Of 60°F
		40°F	60°F	80°F	40°F	60°F	80°F	
4	4"	3 3/8"	3"	2 5/8"	2 7/8"	2 1/2"	2 1/8"	3 1/2"±
7	4"	3 3/8"	3"	2 5/8"	2 7/8"	2 1/2"	2 1/8"	3 1/2"±

* 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.

Installation is limited to 40°F min. and 80°F max. Interpolation of the table may be necessary. The temperature limitations of the lubricant-adhesive Manufacturer shall be observed.



STEEL EXTRUSION DETAIL

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

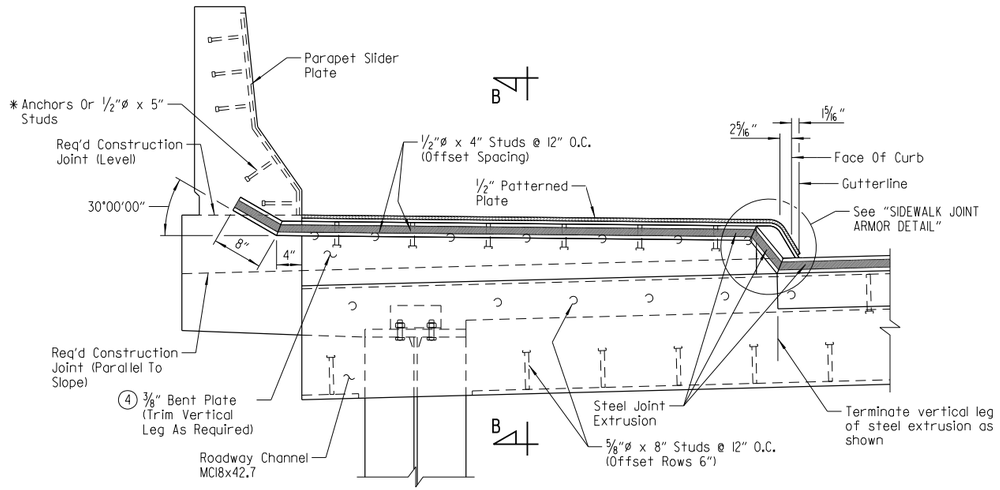
SHEET 1 OF 2
DETAILS OF NEOPRENE STRIP SEAL JOINT
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUNE 2019 FILENAME: b020590_sl6.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: DRG DATE: JUNE 2019
BRIDGE NO. 07452 DRAWING NO. 61249

abnail 6/5/2020 4:28:41PM
WORKSPACE: ARDOT Bridge
L:\20\7\07I7590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S402-JT (Joint).dgn
REVISED DATE:

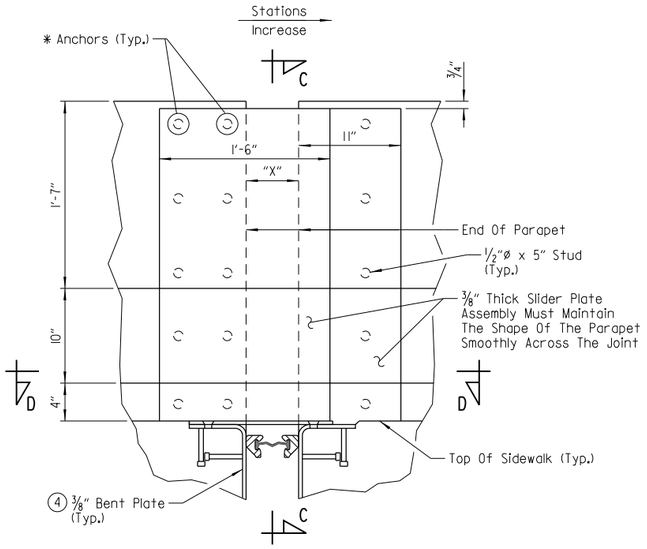
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	85	108
				(1) 07452		STRIP SEAL JOINT		61250



SECTION A-A

Scale: 1" = 1'-0"

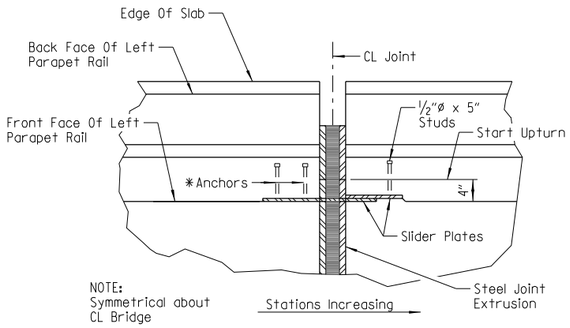
NOTE:
Concrete shall be hand packed under joint armor.



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

ELEVATION - STRIP SEAL AT PARAPET CURB

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

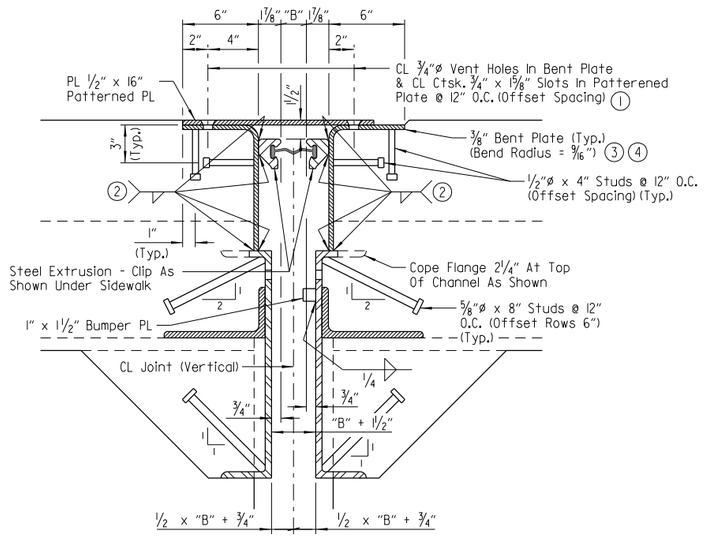


SECTION D-D

Scale: 1" = 1'-0"

* The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seal. Anchors will not be paid for directly but will be considered subsidiary to "ARMORED JOINT WITH NEOPRENE STRIP SEAL".

Method of installation and fabrication shall be determined by the Manufacturer.



SECTION B-B

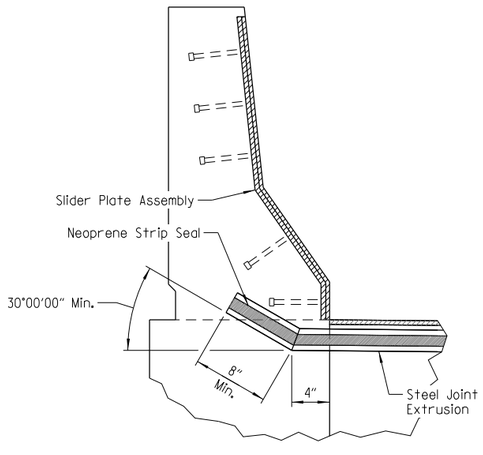
No Scale

(1) Ctsk. 3/4" x 1 5/8" Slots in 1/2" Patterned Plate. Tap horizontal leg of bent plates for ASTM A449 5/8"ø flat head cap screws @ 12" O.C. Install screws in the shop and ship as a unit. Screws on the ahead side of joint at Bents 4 & 7 to be removed. Screws on the back side of joint at Bents 4 & 7 to remain in place after erection. See "DETAILS FOR BLOCKING EXPANSION JOINT DEVICE" on Dwg. No. 61249.

(2) See "WELD TABLE", Std. Dwg. No. 55007 for min. weld size.

(3) Trim vertical legs of bent plates as needed.

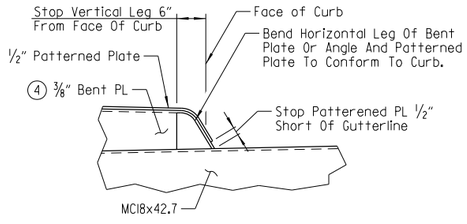
(4) L6x6x1/2 may be substituted for Bent PL on right sidewalk.



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

SECTION C-C

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



SIDEWALK JOINT ARMOR DETAIL

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF NEOPRENE STRIP SEAL JOINT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

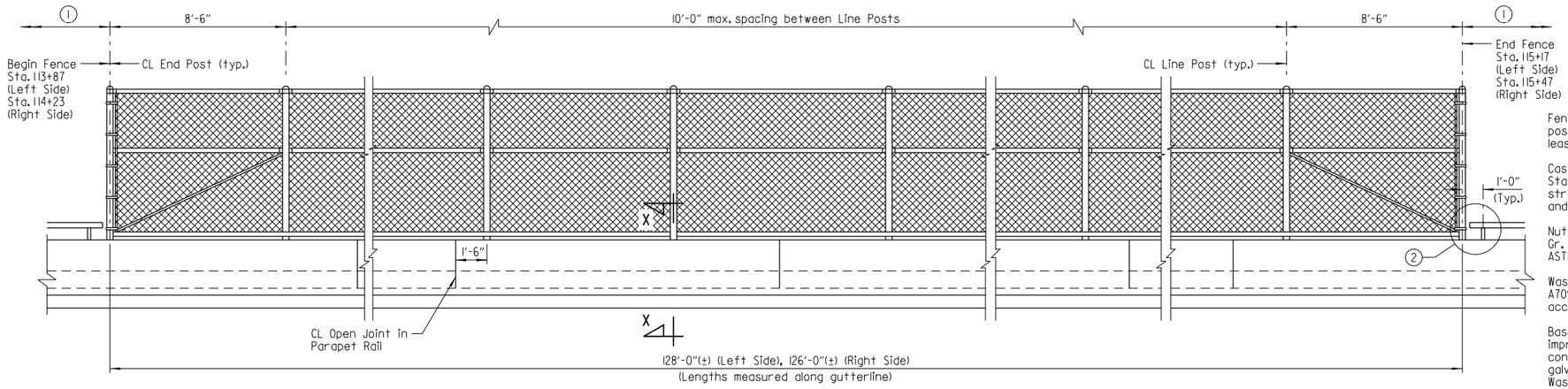
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: JUNE 2019 FILENAME: b020590_sl7.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: DRG DATE: JUNE 2019

BRIDGE NO. 07452 DRAWING NO. 61250

abhall 6/5/2020 4:28:42 PM
WORKSPACE: ARDOT Bridge
L:\2017\1701590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S403-JT (Joint).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.		020590	86	108
				(I) 07452		FENCE DETAILS		61251



LONGITUDINAL VIEW OF CHAIN LINK FENCE

No Scale

GENERAL NOTES

Fence layout shall conform to the vertical and horizontal bridge alignments. Fence posts shall be set plumb (true vertical position). Parapet rail concrete shall be at least 7 days old before stretching and securing fabric to posts.

Cast in place anchor bolts shall be of stainless steel or high strength steel. Stainless steel anchor bolts shall conform to ASTM A193 Grade B8 with minimum yield strength of 80,000 psi. High strength steel anchor bolts shall conform to ASTM F3125 and galvanized in accordance with AASHTO M 232, or ASTM B695.

Nuts: Nuts shall be stainless steel and conform to the requirements of AASHTO M 292, Gr. 8A, or shall be high strength steel galvanized in accordance with AASHTO M 232 or ASTM B695 and ASTM A563.

Washers: Washers shall be stainless steel and conform to the requirements of ASTM A709, Gr. 36, or high strength steel conforming to ASTM F436 and galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50.

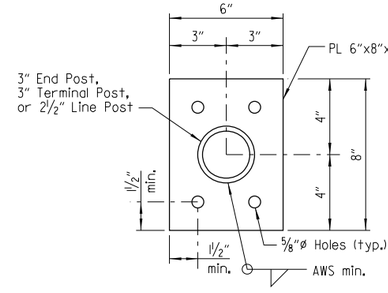
Base plates shall be galvanized and shall not be placed upon areas that are improperly finished, deformed, or irregular. Plate Washers shall be stainless steel and conform to the requirements of ASTM A276-Type 302 or ASTM A709, Gr. 36, or galvanized in accordance with AASHTO M 232 or ASTM B695, Class 40 or 50. Plate Washers shall have dimensions meeting the requirements of ANSI/ASME b18.22.1, Type A plain washer (Wide Series).

Chain Link Fence attached to bridge shall be paid for as "5' STEEL CHAIN LINK FENCE". Material for chain link fence shall comply with AASHTO M181 Type I, Class D; Type II; or Type III. Steel members for posts, rails, expansion sleeves, and gate frames may be either Grade 1 or Grade 2. Hardware and fittings shall comply with ASTM F 626. Any miscellaneous hardware or fittings not mentioned shall be galvanized according to AASHTO M 111 or M 232. For additional details of Chain Link Fence, see Standard Drawing WF-3 and Section 619. Neoprene pad, template plates, and anchor systems shall not be paid for directly, but shall be considered incidental to the unit price bid for item "5' STEEL CHAIN LINK FENCE".

Mixing of stainless steel and galvanized assembly components will not be permitted.

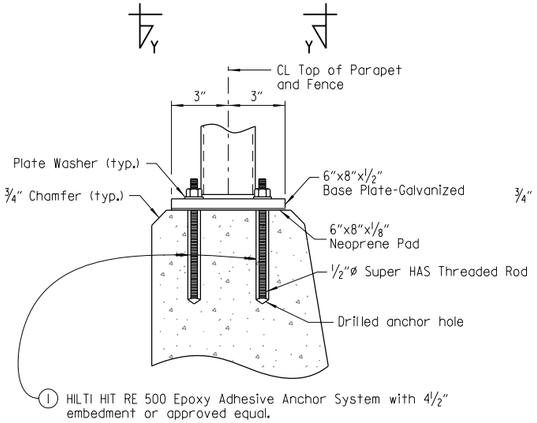
(I) Provide Type H Railing outside the limits of the chain link fence. See Std. Dwg. No. 55014 for details of Type H Railing

(2) See "DETAILS OF RAIL TERMINUS AT FENCE POST" on Std. Dwg. No. 55014 (Typ.)



VIEW Y-Y

No Scale



(I) HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or approved equal.

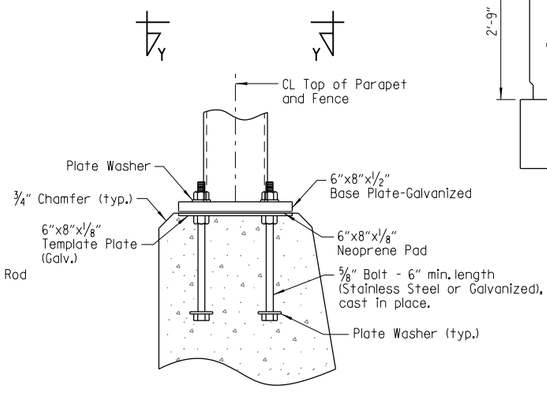
(I) The HILTI Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.

SECTION X-X

No Scale

DETAILS OF ALTERNATE POST ANCHOR SYSTEM

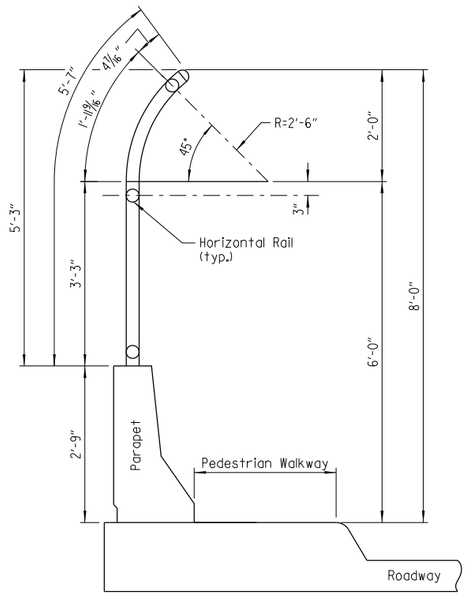
(EPOXY ADHESIVE ANCHORS)



SECTION X-X

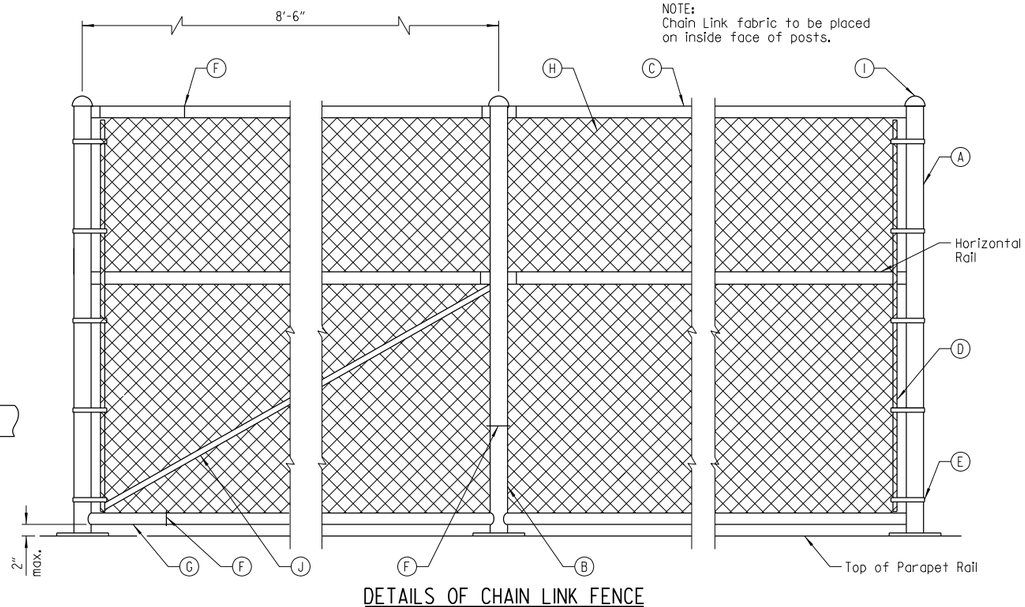
No Scale

DETAILS OF POST ANCHOR SYSTEM



CURVED CHAIN LINK FENCE

No Scale



DETAILS OF CHAIN LINK FENCE

No Scale

NOTE:
Chain Link fabric to be placed on inside face of posts.

(A) END POST: 3" O.D.

(B) LINE POST: 2½" O.D.

(C) HORIZONTAL TOP RAIL: 1⅝" O.D.

(D) TENSION BAR: 3/16" x ¾" Bar

(E) TENSION BAR BAND: ¾" x 0.074 w/⅝"ø x 1¼" Bolt (1 Band Top and Bottom w/15" max. spaces)

(F) TIE WIRE: 9 Ga. Aluminum

(G) HORIZONTAL BOTTOM RAIL: 1⅝" O.D.

(H) FABRIC: 9 Ga. 2" Mesh w/Knuckle or Twisting Selvage

(I) CAPS: All posts shall be capped and shall conform to ASTM F 626

(J) TRUSS ROD: Min. of ⅝" round with Tighteners and Fittings

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14498
ADAM B. HALL
Digitally Signed 06/08/2020
BRIDGE ENGINEER

DETAILS OF CURVED CHAIN LINK FENCE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

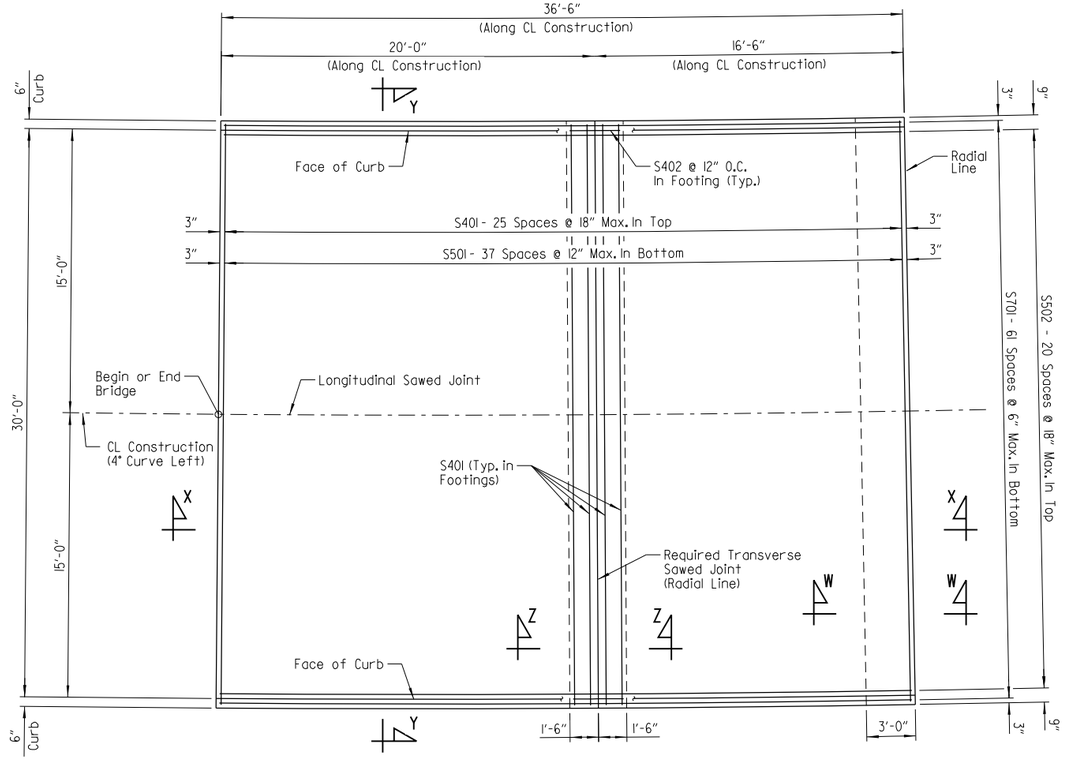
DRAWN BY: CWT DATE: JUNE 2019 FILENAME: b020590_sl8.dgn
CHECKED BY: BWD DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: ABH DATE: JUNE 2019

BRIDGE NO. 07452 DRAWING NO. 61251

abhall 6/5/2020 4:28:42 PM
WORKSPACE: ARDOT Bridge
L:\20\T\T01\T590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HWY278-S404-MD (Fence).dgn
REVISED DATE:

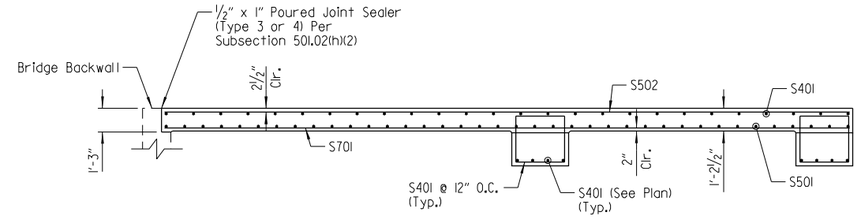
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	87	108
(1) 07452	TYPE SPECIAL APP. SLAB			61252



PLAN - TYPE SPECIAL APPROACH SLAB

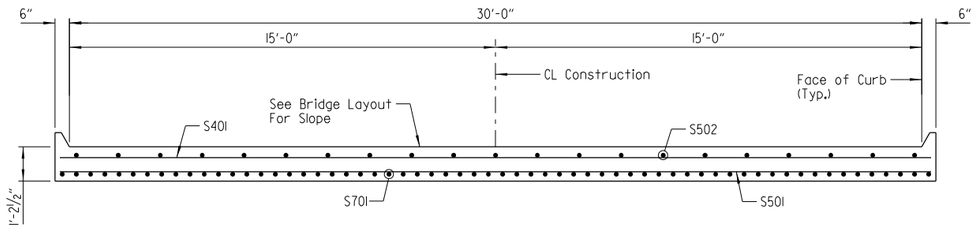
Scale: 1/4" = 1'-0"



SECTION X-X

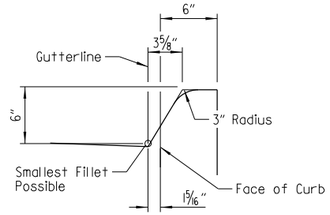
No Scale

NOTE:
Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06.



SECTION Y-Y

No Scale



TYPICAL CURB DETAIL

No Scale

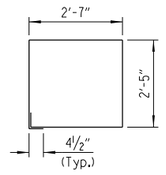
TABLE OF QUANTITIES FOR ONE APPROACH SLAB

(FOR INFORMATION ONLY)

Reinforcing Steel (lbs)	Concrete (Cu. Yds.)
7,695 lb.	64.34

BAR LIST - TYPE SPECIAL APPROACH SLAB			
Mark	No. Req'd.	Length	Pin. Dia.
S401	33	30'-8"	Str.
S402	62	10'-4"	2"
S501	38	30'-8"	Str.
(1) S502	21	36'-2"	Str.
(1) S701	62	36'-2"	Str.

BAR BENDING DIAGRAM



S402

NOTES:
Dimensions of bars in bending diagram are out-to-out.

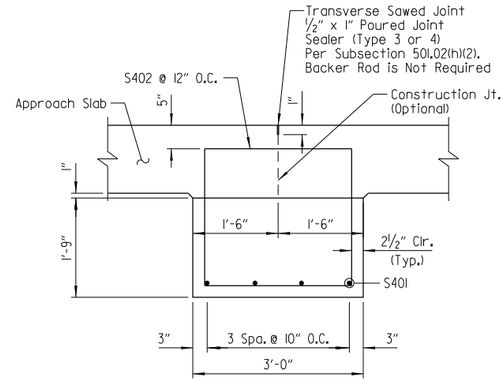
Number of bars shown is for one Type Special Approach Slab. Two Type Special Approach Slabs required.

NOTES:
All transverse reinforcing shall be placed on lines radial to CL Construction. Spacing is measured along CL Construction.

All longitudinal lines and longitudinal slab reinforcing shall be placed along curves concentric with CL Construction.

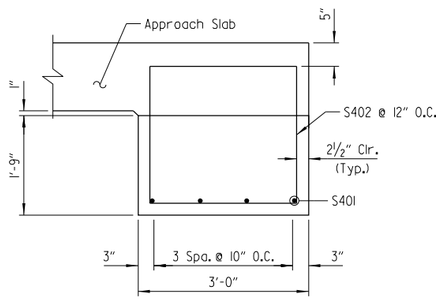
(1) Longitudinal bar lengths shown are based on approach slab length along CL Construction. Actual bar lengths will vary due to curvature of approach slab. Fabricate bar lengths to provide 2" minimum cover at each end.

Top of approach slab shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish.



SECTION Z-Z

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



SECTION W-W

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

GENERAL NOTES

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

Reinforcement Steel shall conform to AASHTO M 31 or M 322 Type A, Grade 60 (fy = 60,000 psi), with mill test reports.

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No.14498
ADAM B. HALL

Digitally Signed 06/08/2020

BRIDGE ENGINEER

DETAILS OF TYPE SPECIAL APPROACH SLAB

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BWD DATE: JUNE 2019 FILENAME: b020590_sl9.dgn
CHECKED BY: ABH DATE: AUG. 2019 SCALE: As Shown
DESIGNED BY: CJS DATE: JUNE 2019

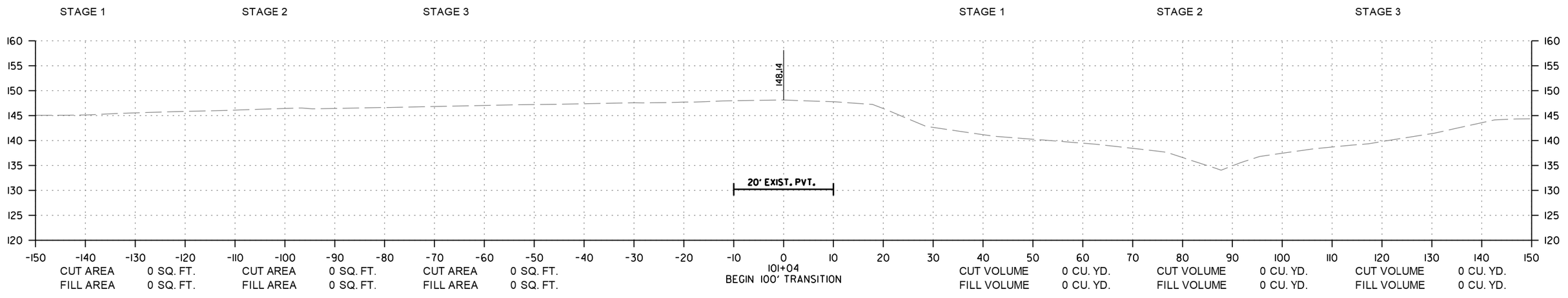
BRIDGE NO. 07452 DRAWING NO. 61252

abnall 6/5/2020 4:28:42 PM
WORKSPACE: ARDOT Bridge
L:\20IT\17017590 - Hwy 278 over UPRR Bridge Replacement\Drawings\HW278-SS01-AS.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.		020590	88	108

(2) CROSS SECTIONS

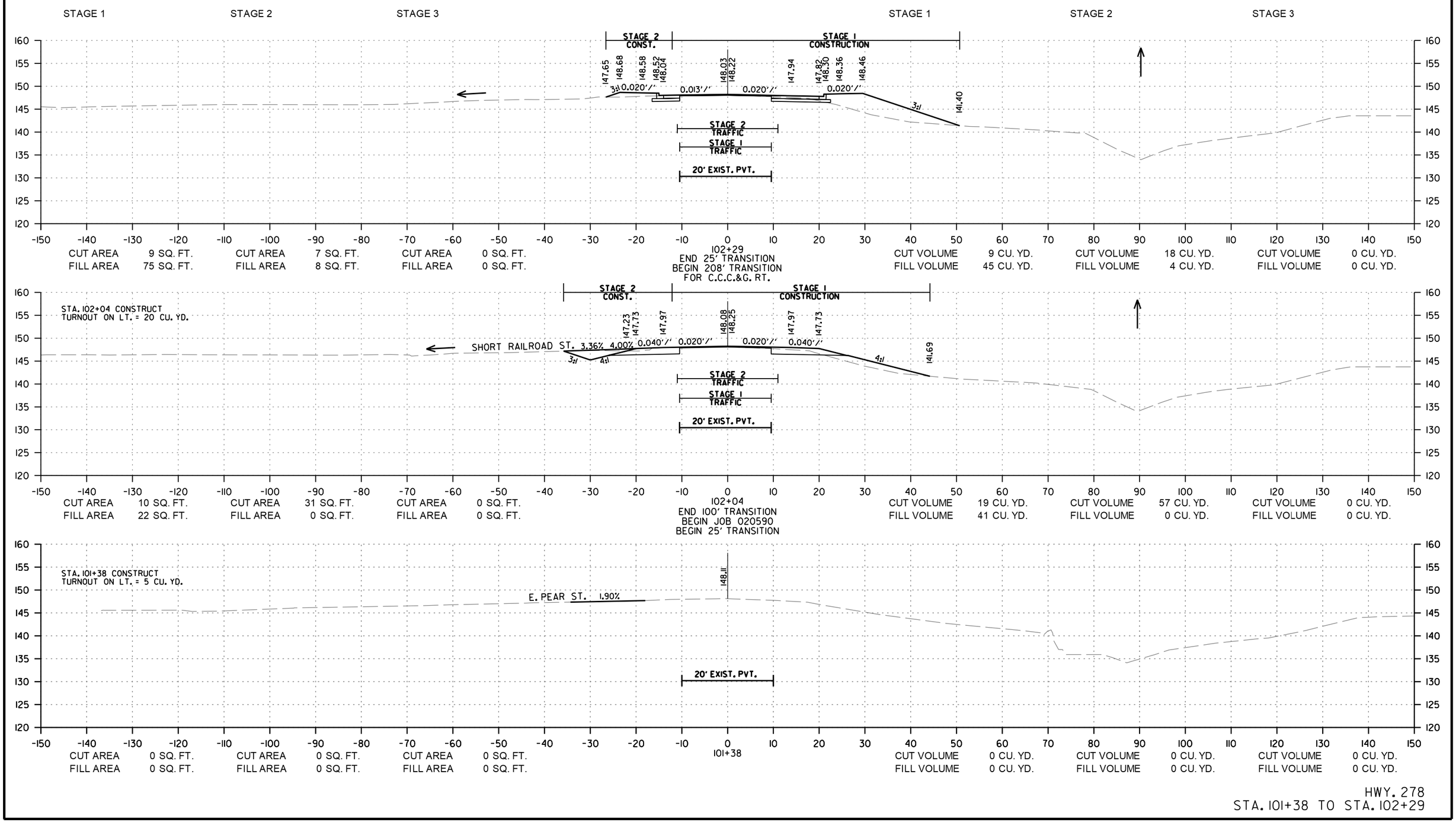


HWY. 278
STA. 101+04 TO STA. 101+04

HT39710 6/11/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	89	108

(2) CROSS SECTIONS



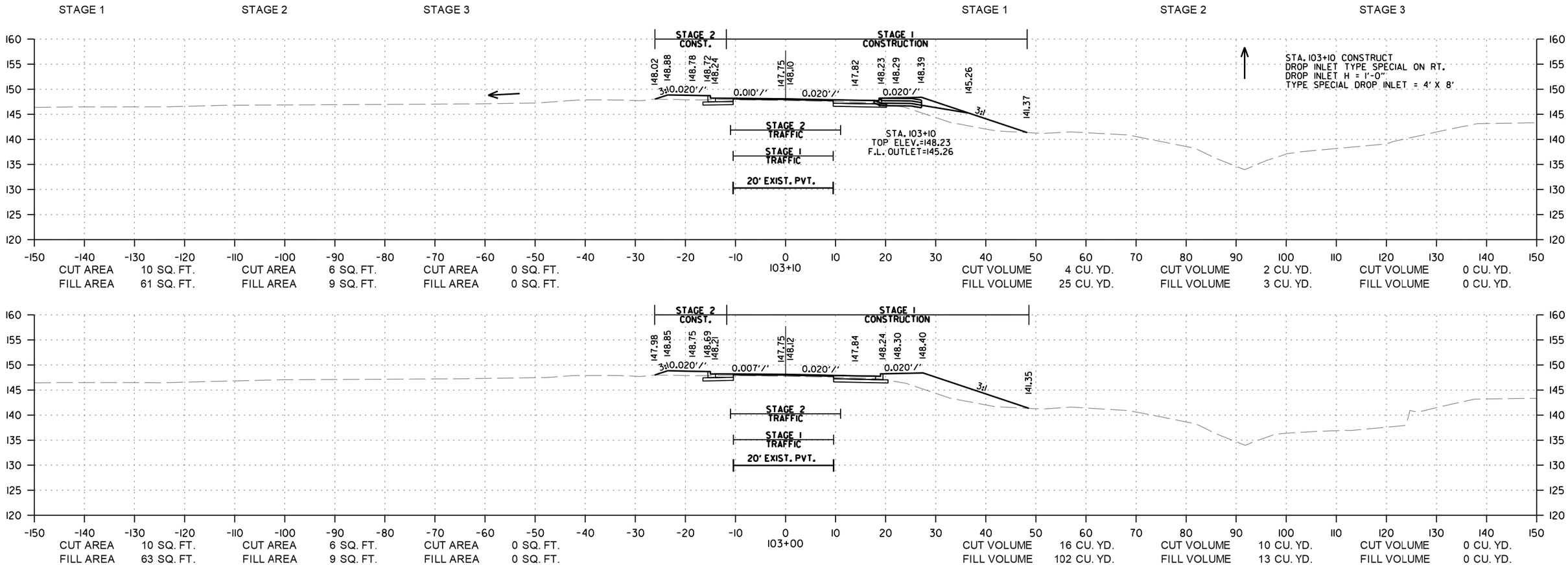
HWY. 278
STA. 101+38 TO STA. 102+29

6/11/2020

R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	90	108

(2) CROSS SECTIONS



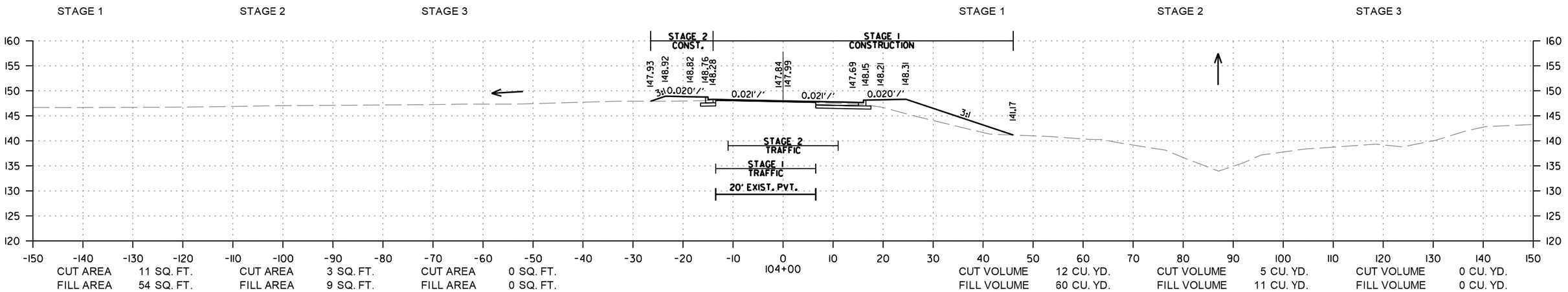
HWY. 278
STA. 102+60 TO STA. 103+10

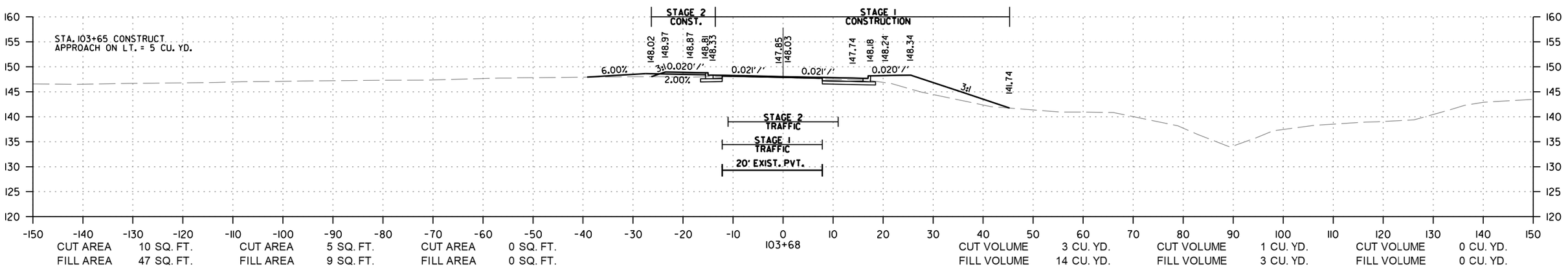
6/11/2020

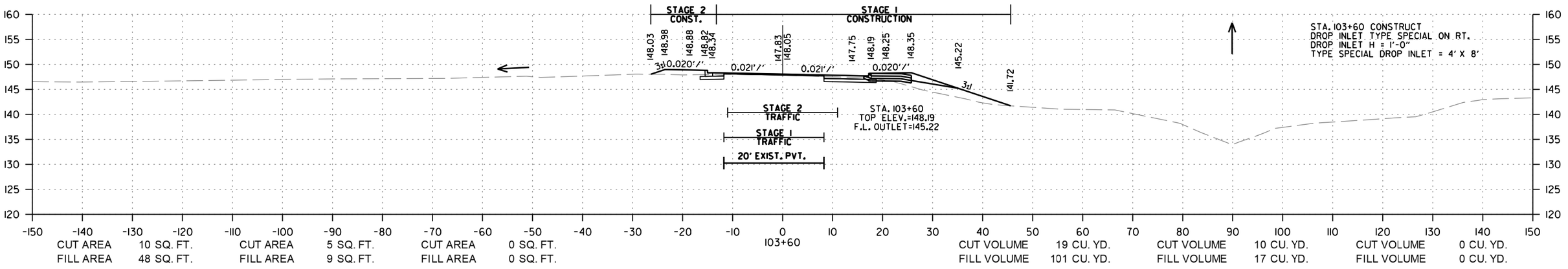
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	91	108

(2) CROSS SECTIONS







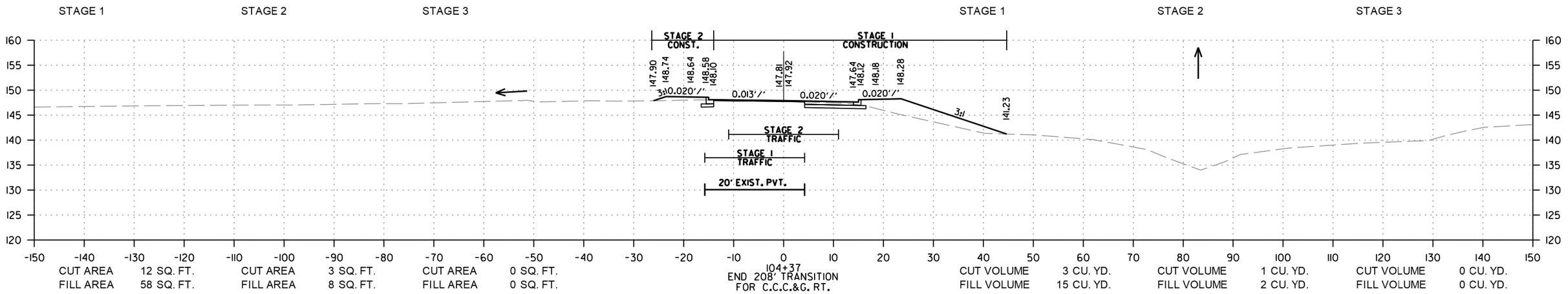
HWY. 278
STA. 103+60 TO STA. 104+00

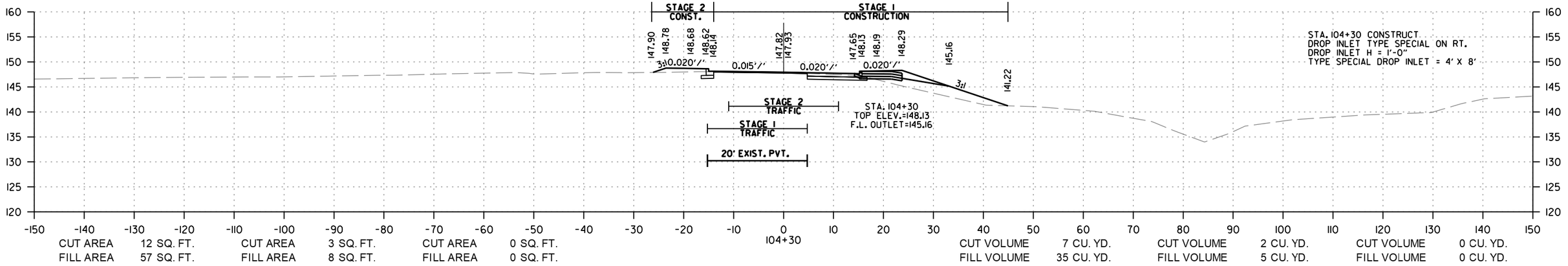
6/11/2020

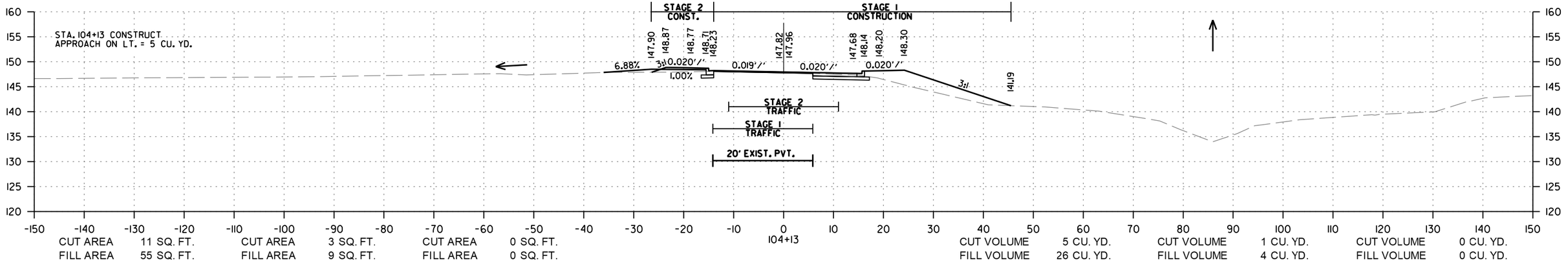
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	92	108

(2) CROSS SECTIONS







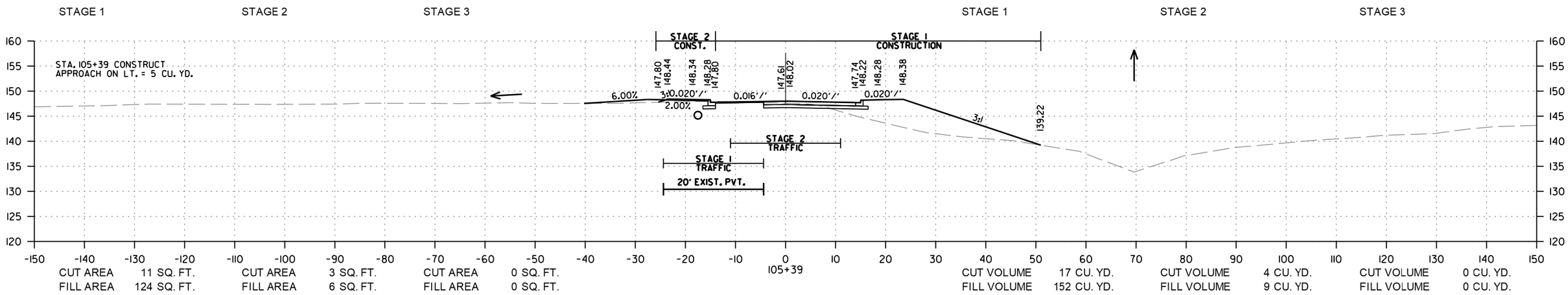
HWY. 278
STA. 104+13 TO STA. 104+37

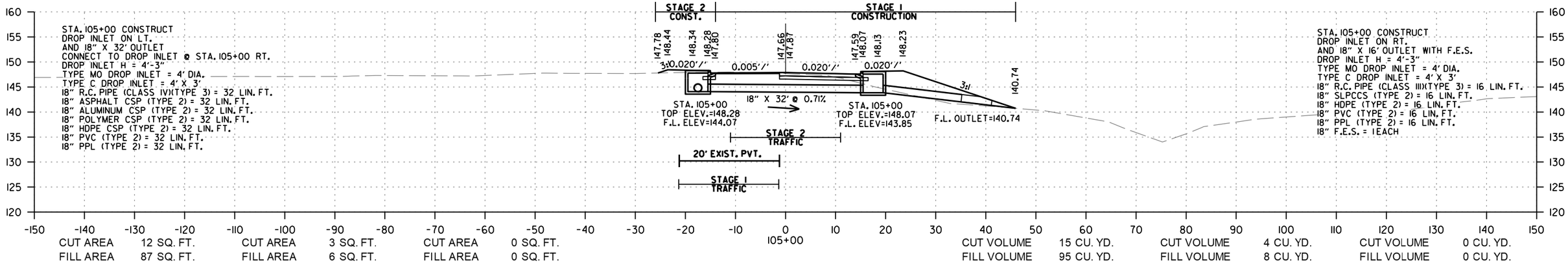
6/11/2020

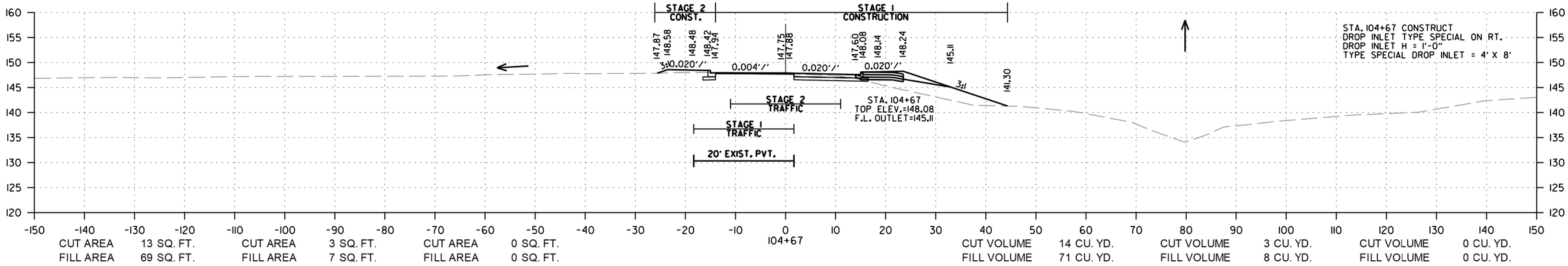
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	93	108

(2) CROSS SECTIONS







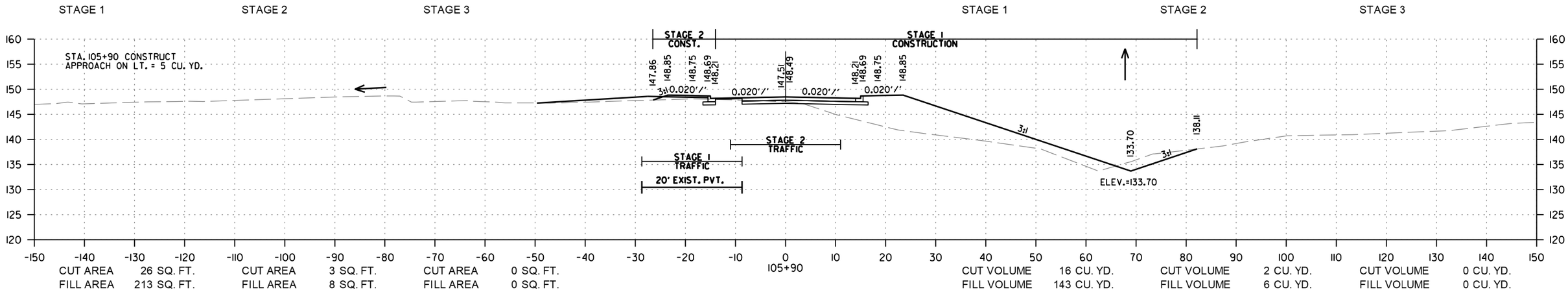
6/11/2020

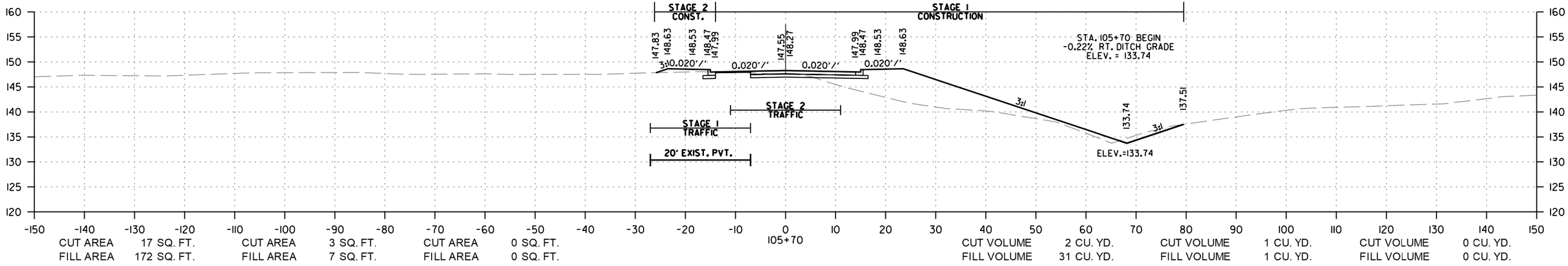
R020590.DGN

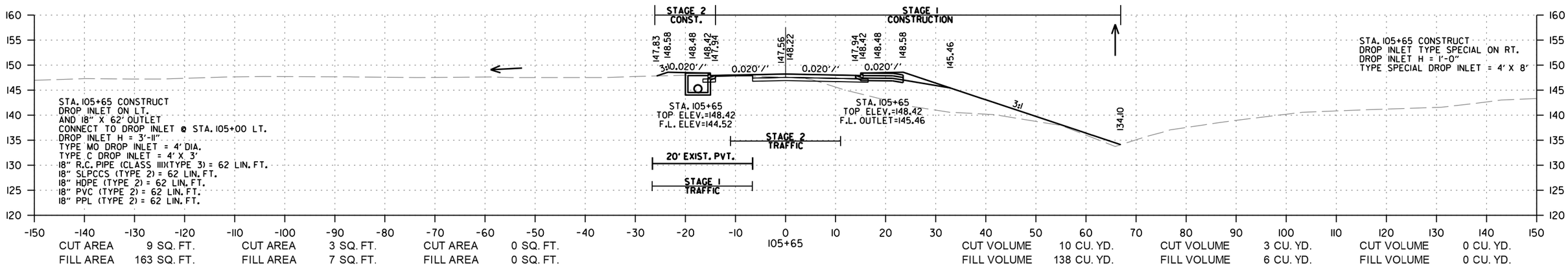
HWY. 278
STA. 104+67 TO STA. 105+39

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.		020590	94	108

(2) CROSS SECTIONS







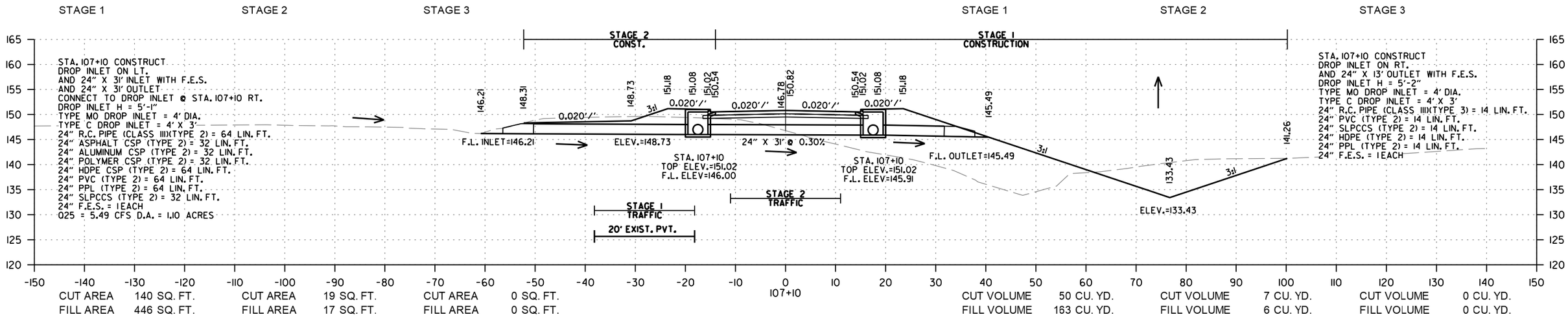
HWY. 278
STA. 105+65 TO STA. 105+90

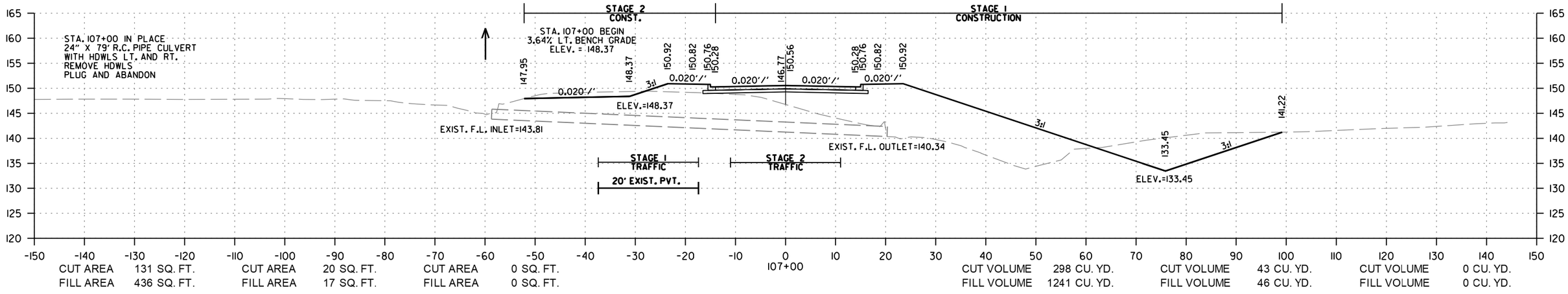
6/11/2020

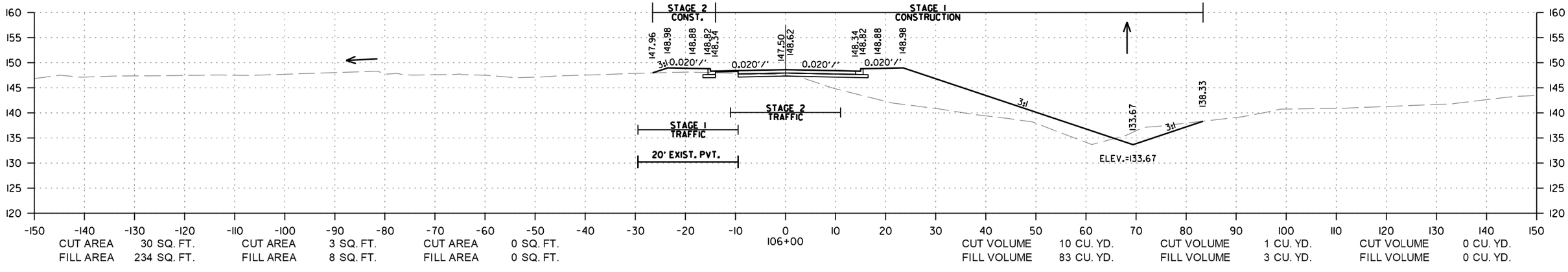
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	95	108

(2) CROSS SECTIONS







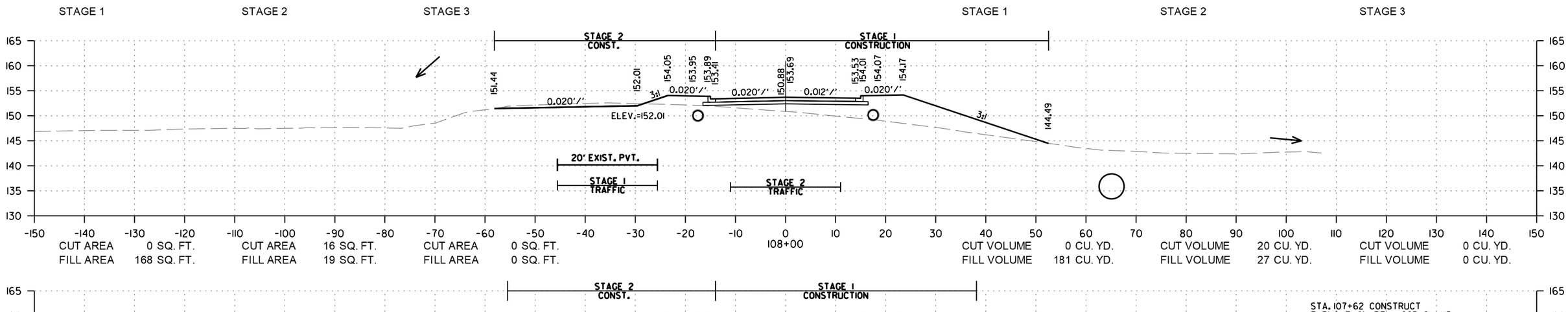
6/11/2020

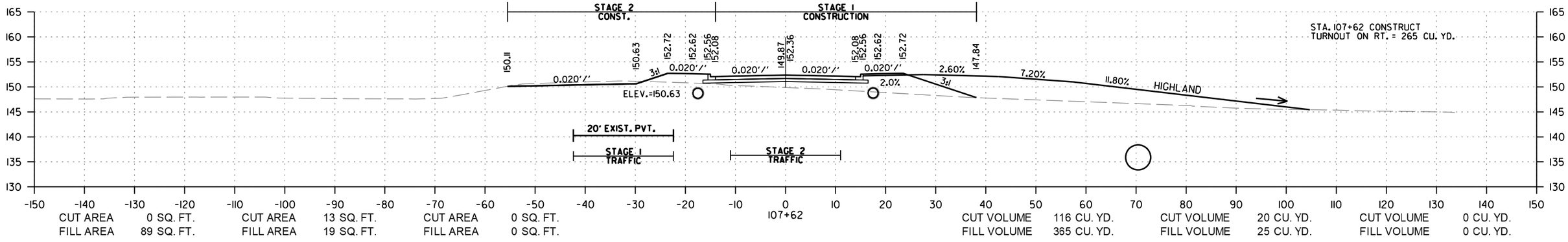
R020590.DGN

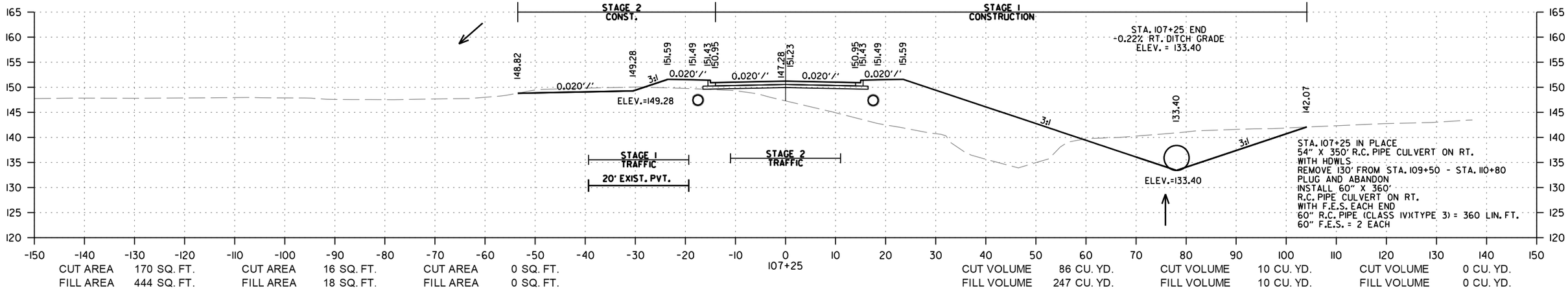
HWY. 278
STA. 106+00 TO STA. 107+10

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.		020590	96	108

(2) CROSS SECTIONS







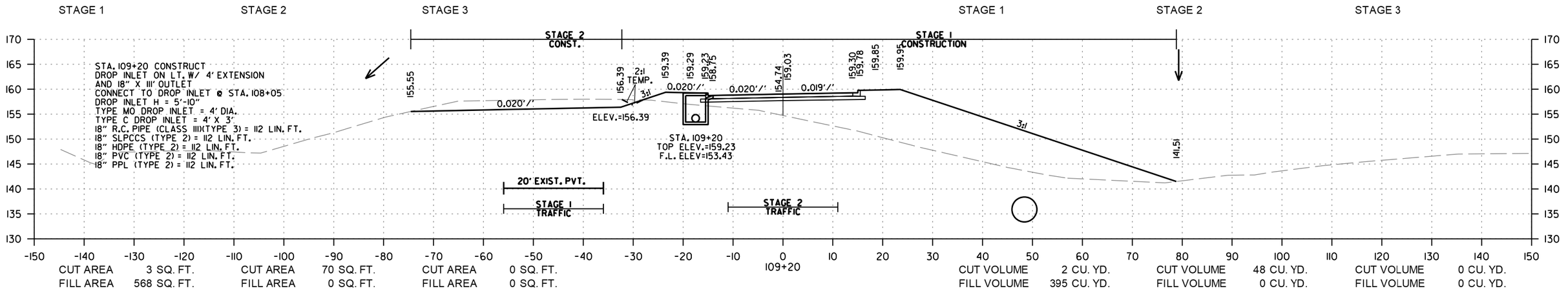
6/11/2020

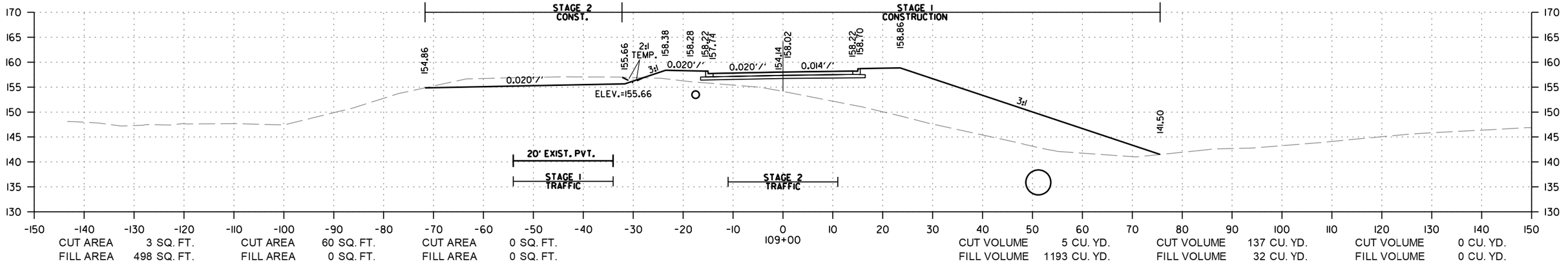
R020590.DGN

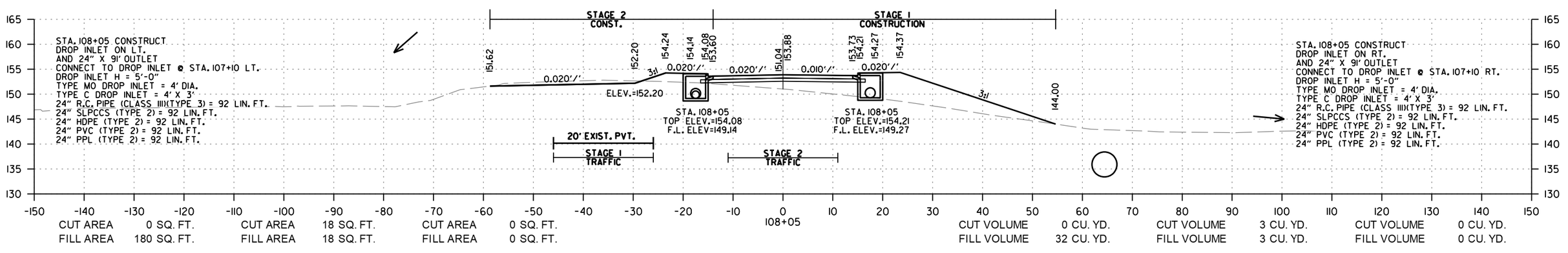
HWY. 278
STA. 107+25 TO STA. 108+00

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.		020590	97	108

(2) CROSS SECTIONS







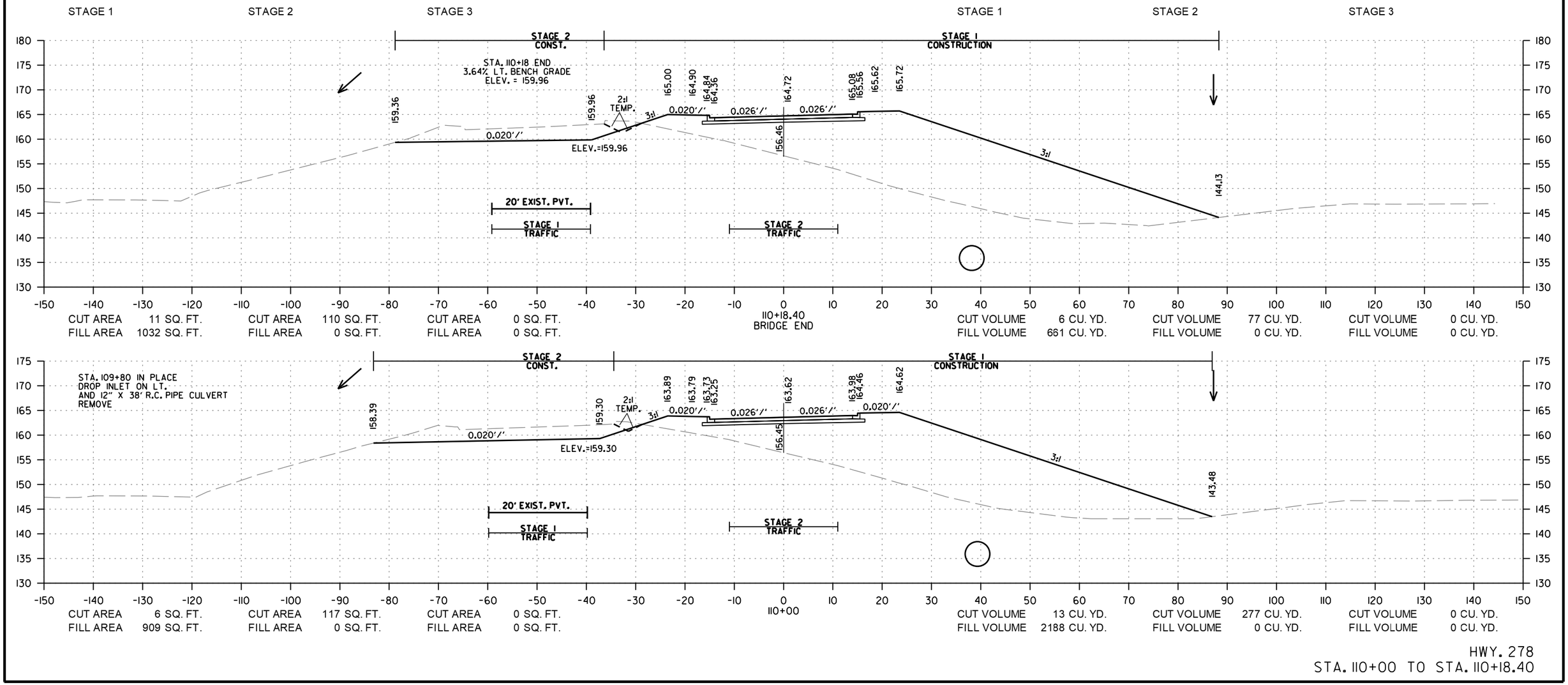
6/11/2020

R020590.DGN

HWY. 278
STA. 108+05 TO STA. 109+20

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.		020590	98	108

(2) CROSS SECTIONS



HWY. 278
STA. 110+00 TO STA. 110+18.40

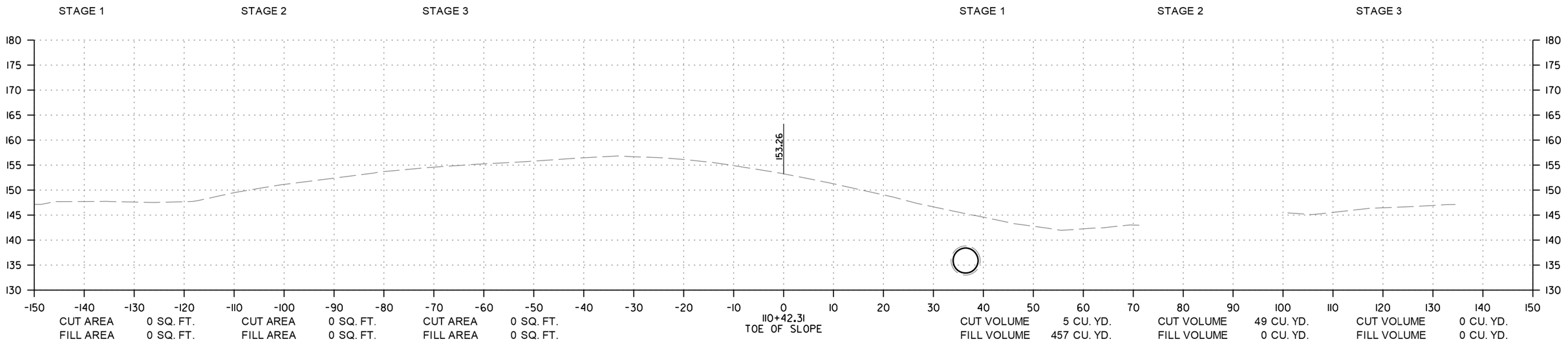
6/11/2020

R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		020590	99	108

(2) CROSS SECTIONS

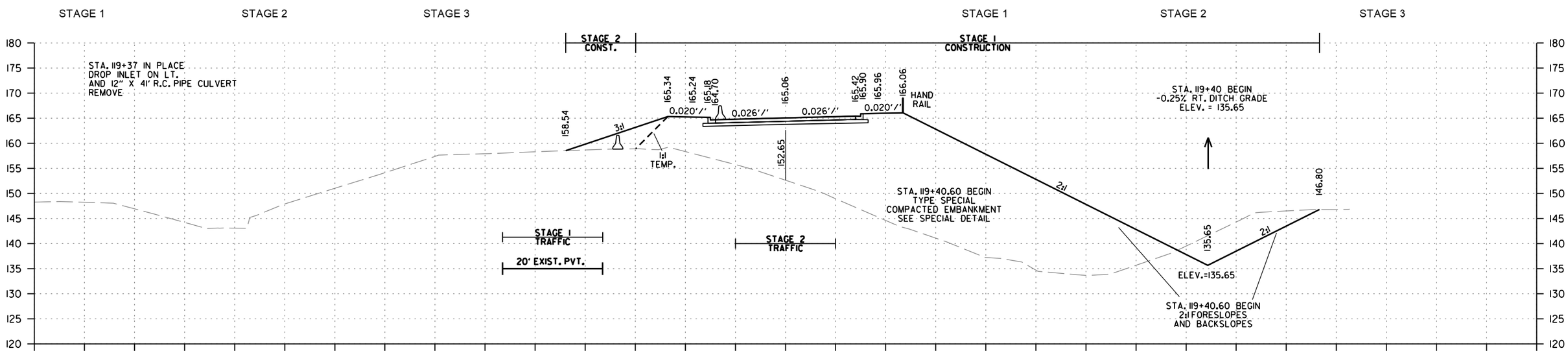


HWY. 278
STA. 110+42.31 TO STA. 110+42.31

HT39710 6/11/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	100	108

(2) CROSS SECTIONS

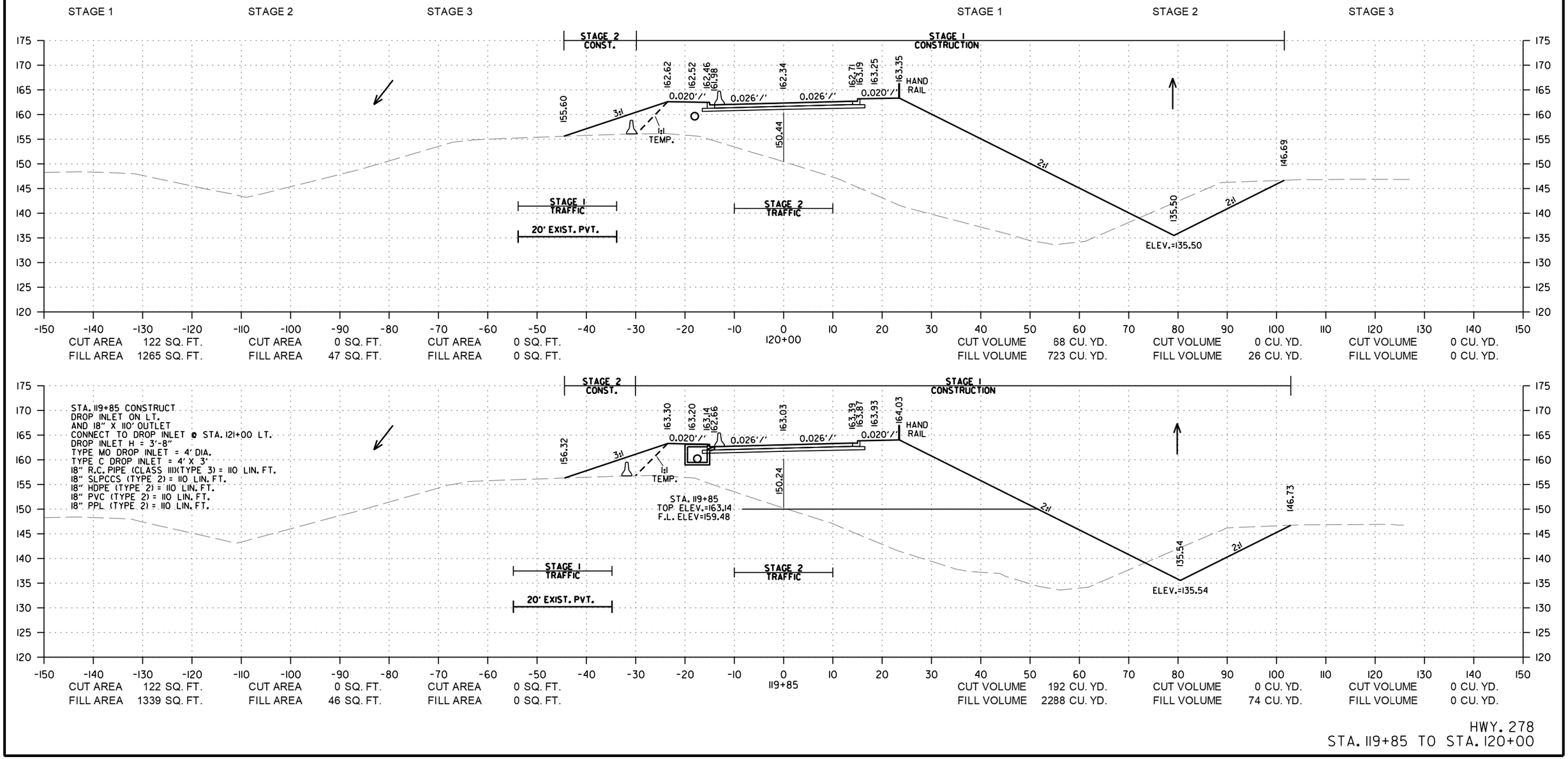


HWY. 278
STA. 119+13 TO STA. 119+40.60

HT39710 6/11/2020
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	101	108

(2) CROSS SECTIONS



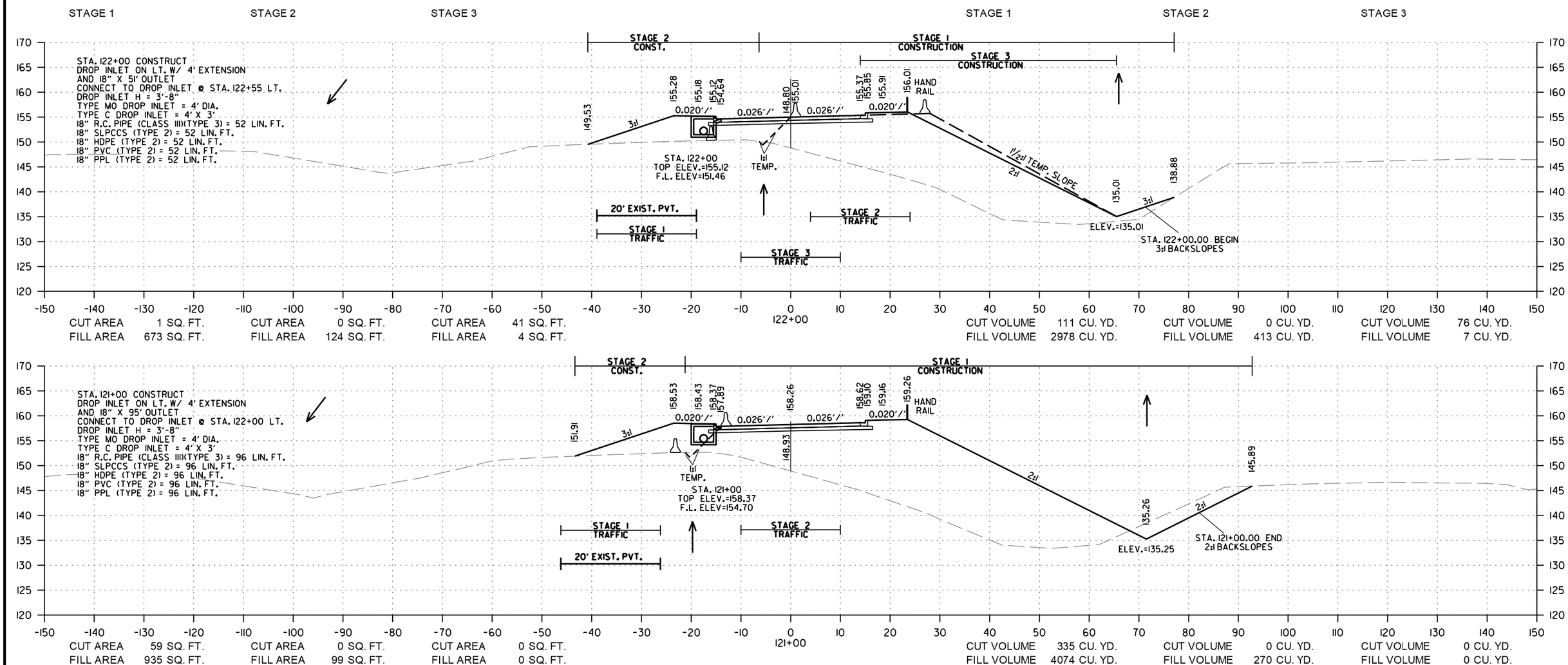
6/11/2020

R020590.DGN

HWY. 278
STA. 119+85 TO STA. 120+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.		020590	102	108

(2) CROSS SECTIONS



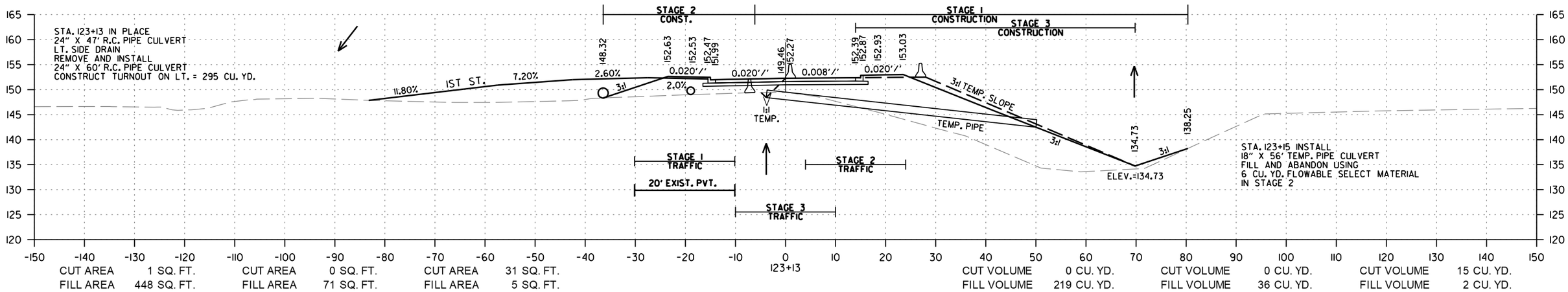
6/11/2020

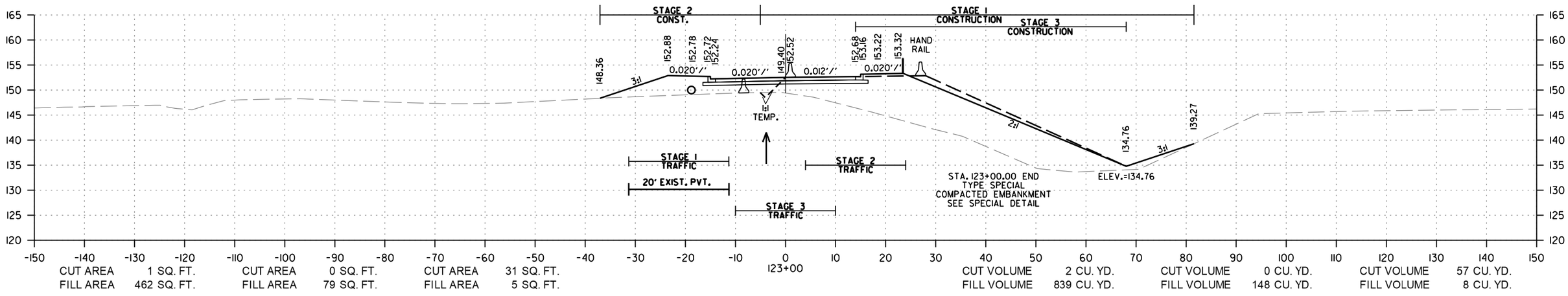
R020590.DGN

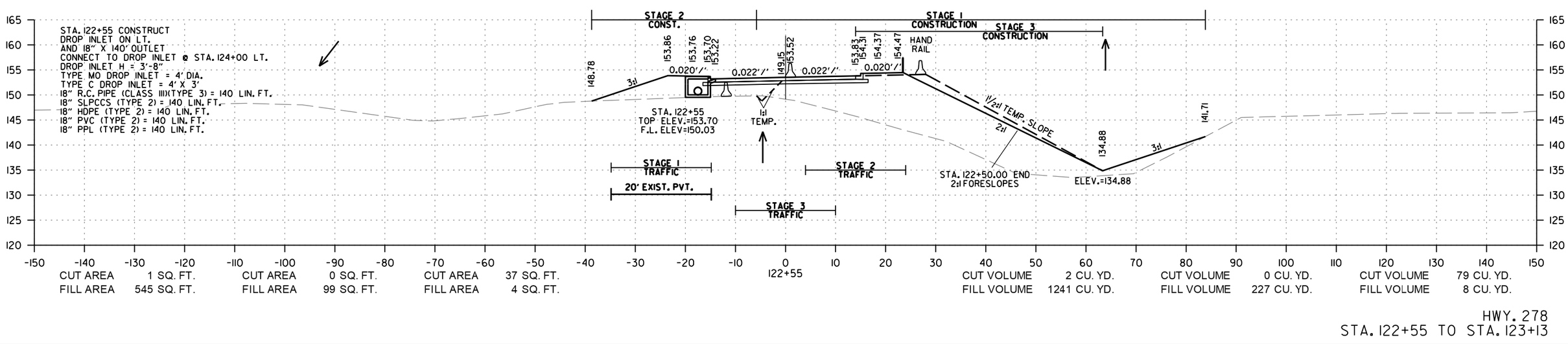
HWY. 278
STA. 121+00 TO STA. 122+00

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.		020590	103	108

(2) CROSS SECTIONS







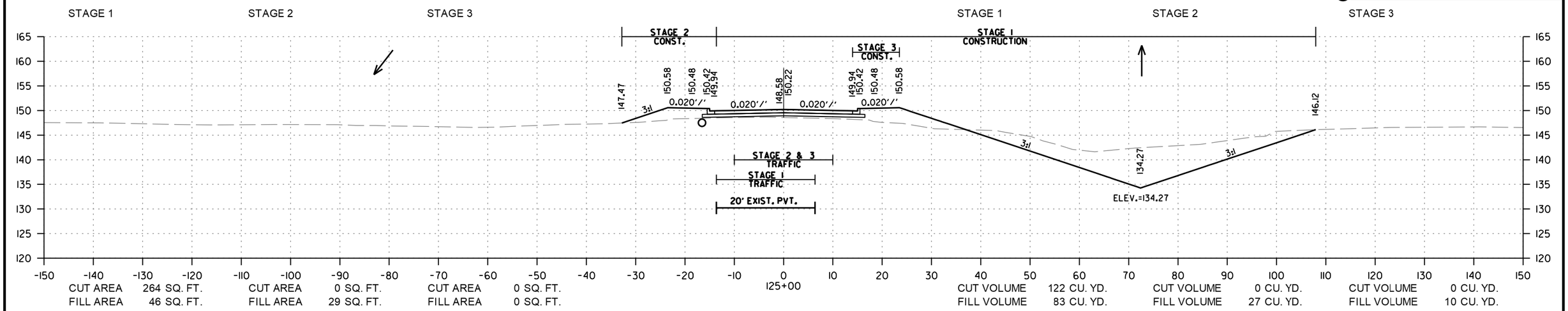
HWY. 278
STA. 122+55 TO STA. 123+13

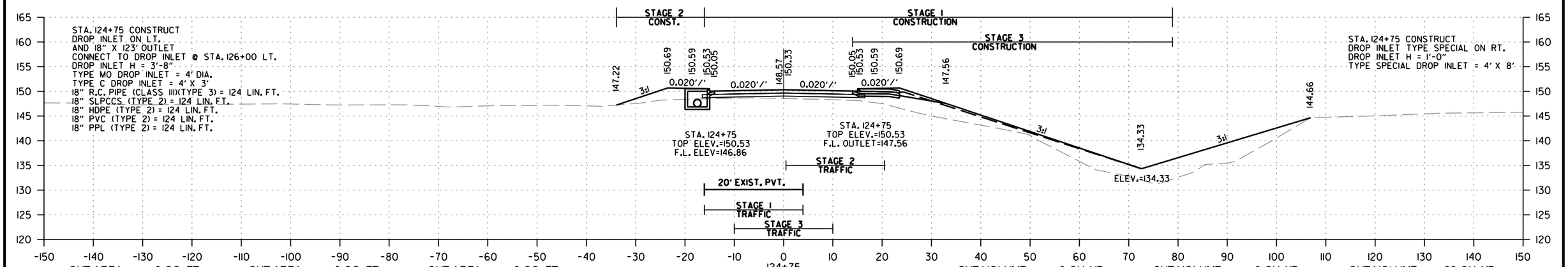
6/12/2020

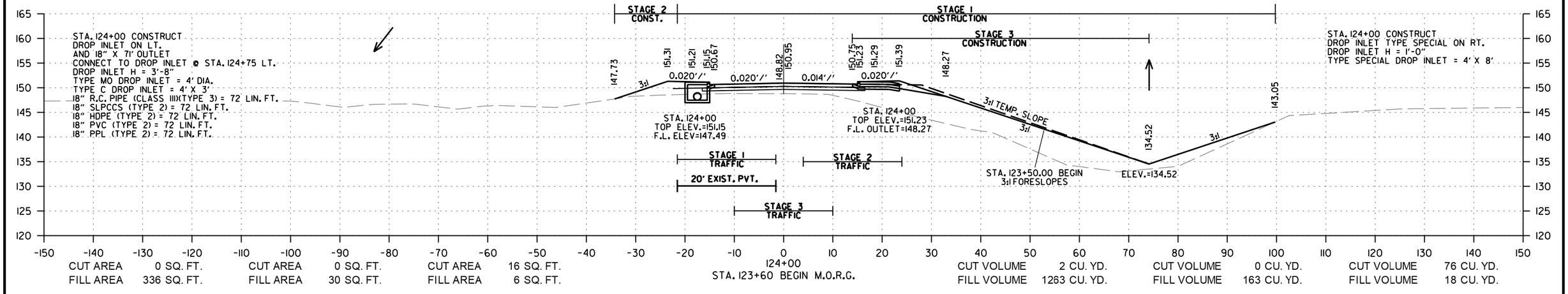
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	104	108

(2) CROSS SECTIONS







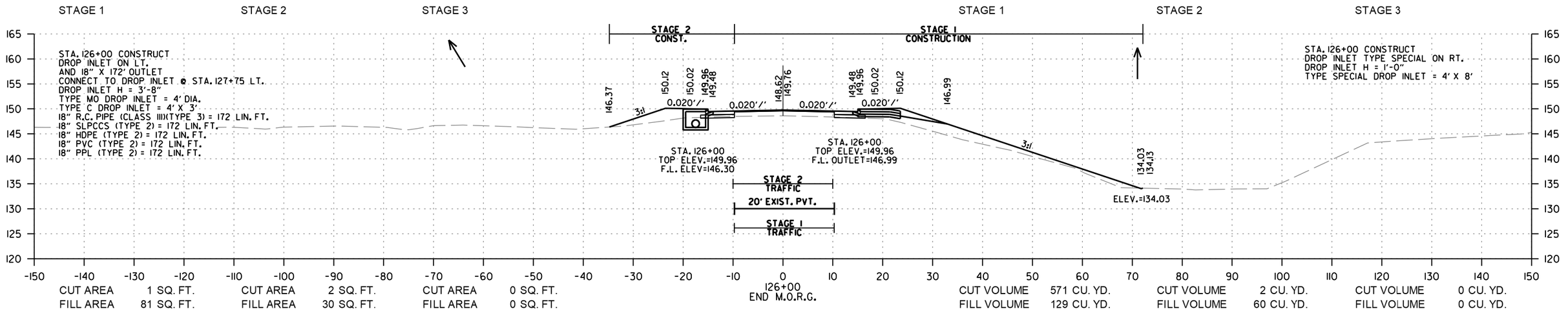
7/6/2020

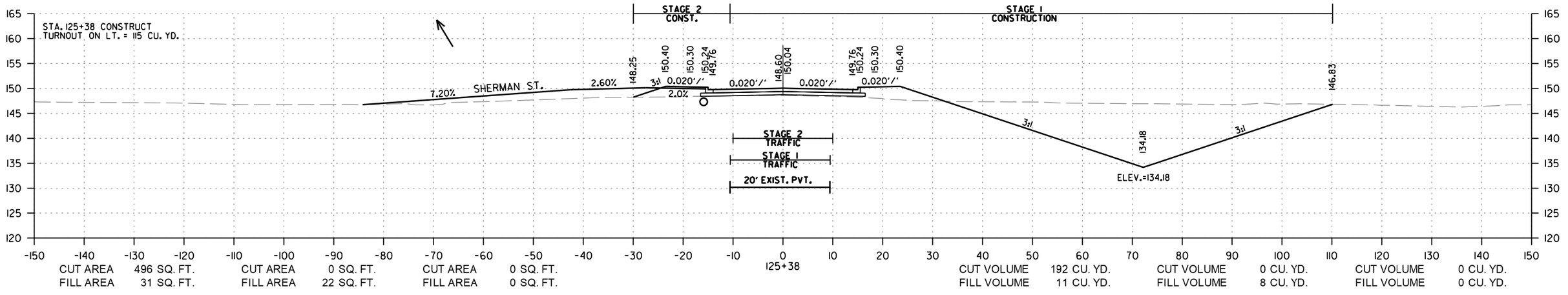
R020590.DGN

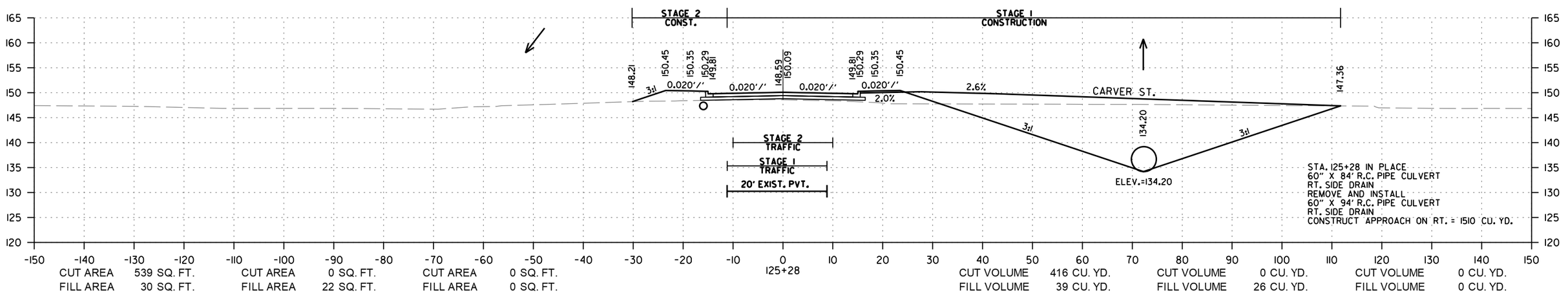
HWY. 278
STA. 124+00 TO STA. 125+00

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.		020590	105	108

(2) CROSS SECTIONS







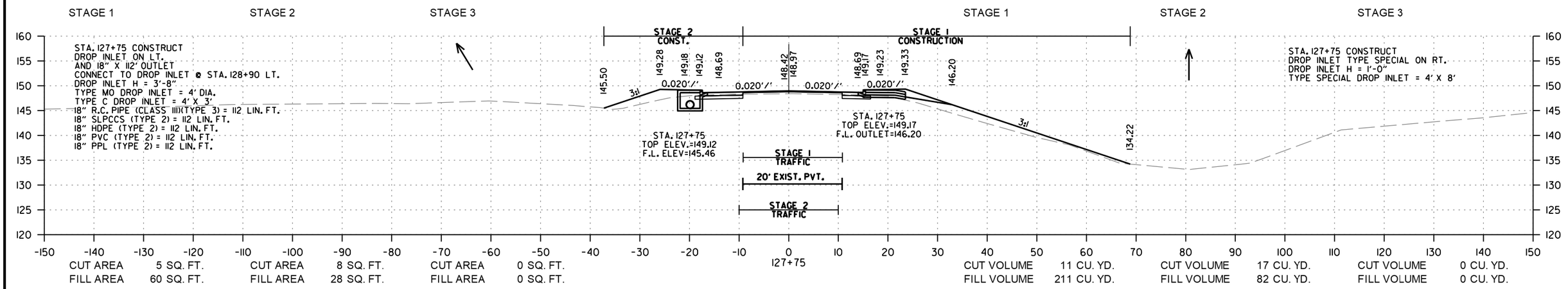
6/11/2020

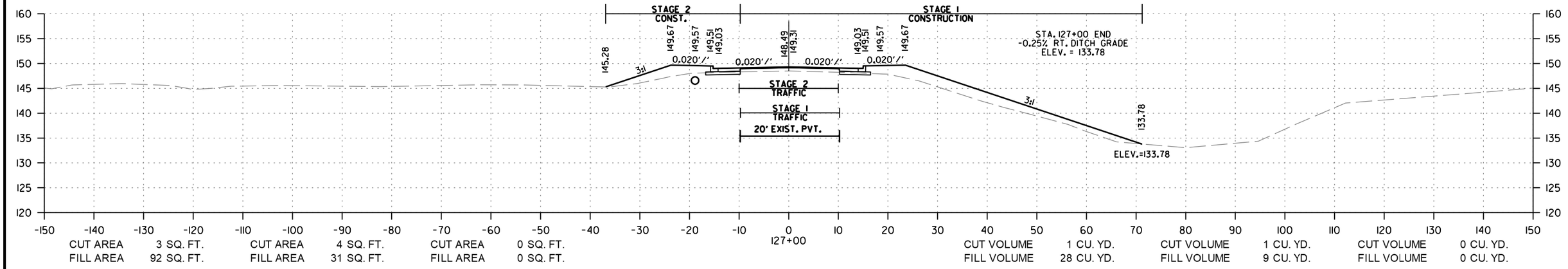
R020590.DGN

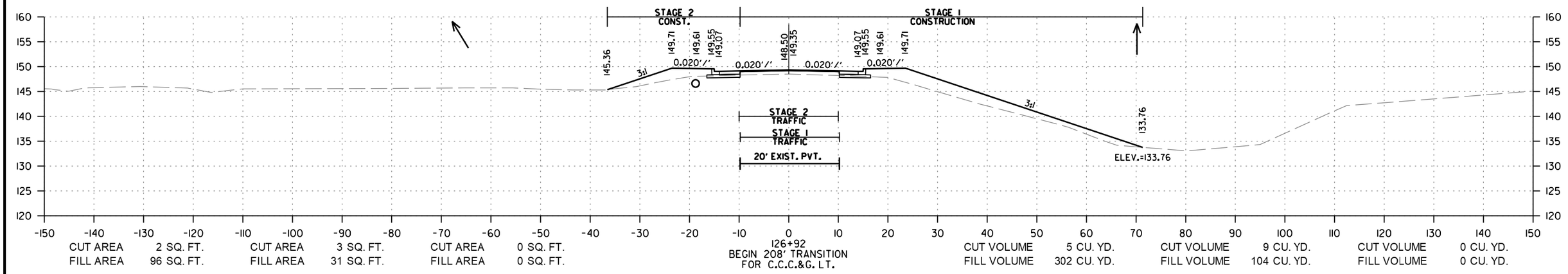
HWY. 278
STA. 125+28 TO STA. 126+00

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.		020590	106	108

(2) CROSS SECTIONS







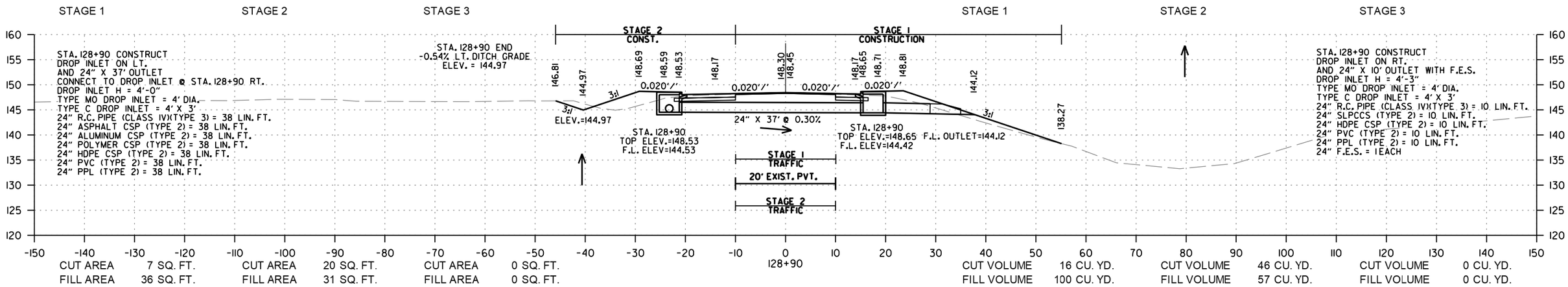
HWY. 278
STA. 126+92 TO STA. 127+75

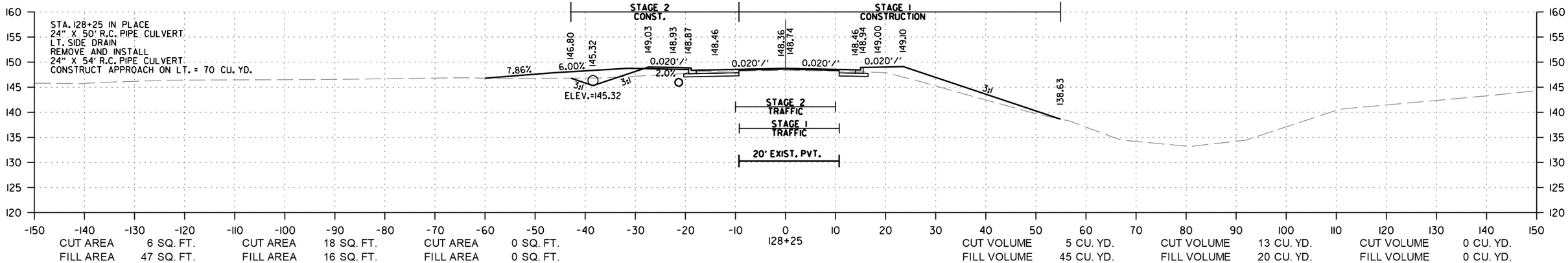
6/11/2020

R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	107	108

(2) CROSS SECTIONS





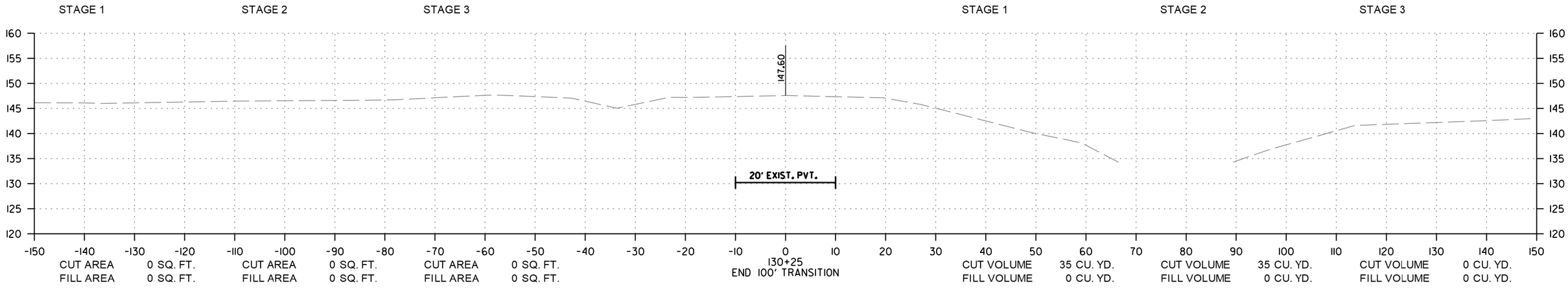
HWY. 278
STA. 128+00 TO STA. 128+90

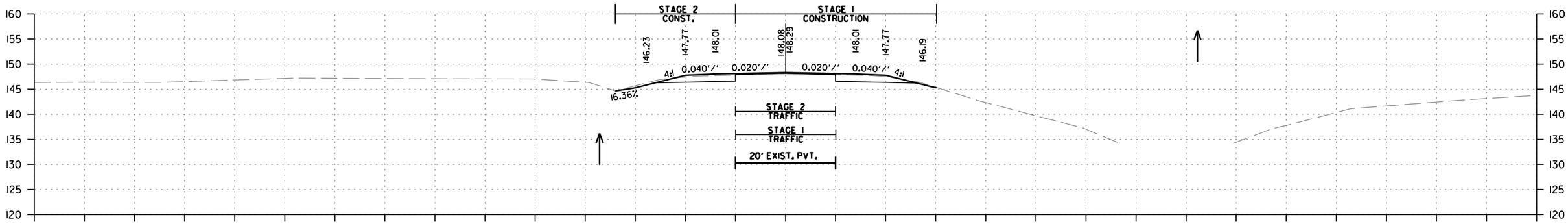
6/11/2020

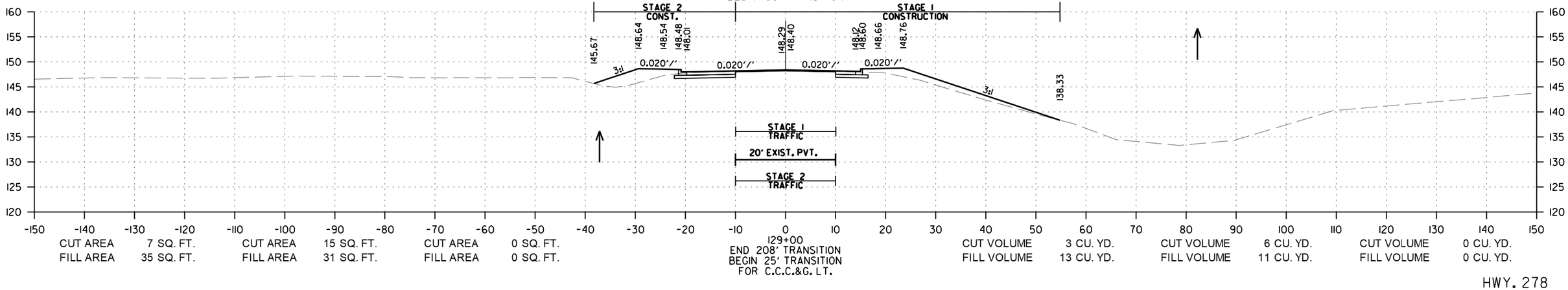
R020590.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		020590	108	108

(2) CROSS SECTIONS







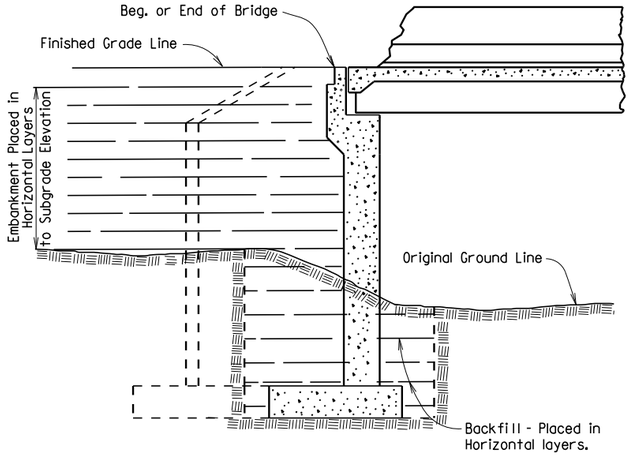
HWY. 278
STA. 129+00 TO STA. 130+25

6/11/2020

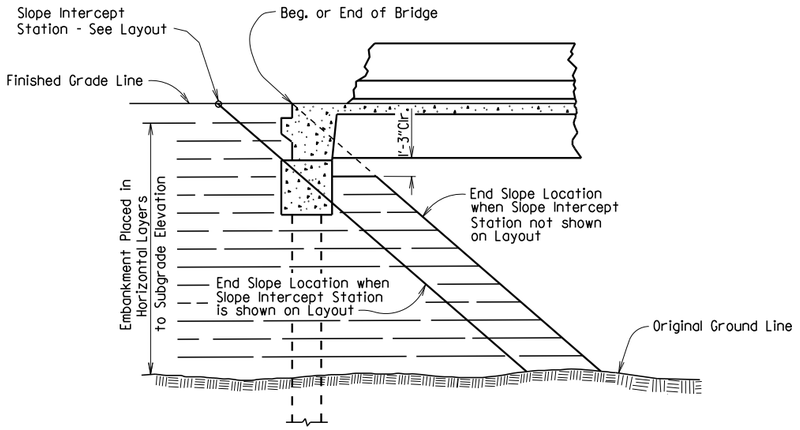
R020590.DGN

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

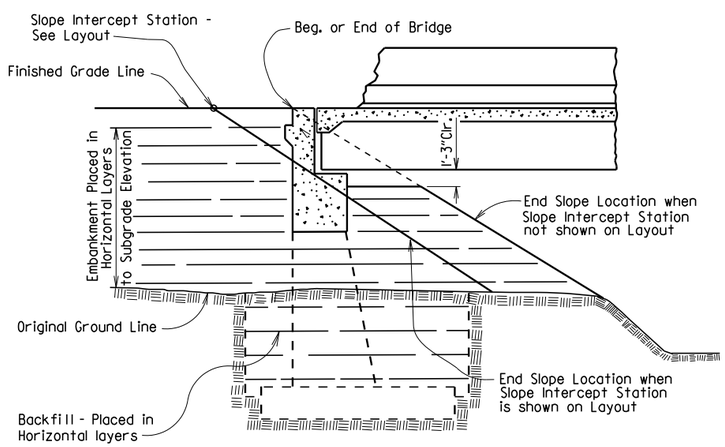
1 EMBANKMENT & BACKFILL 55000



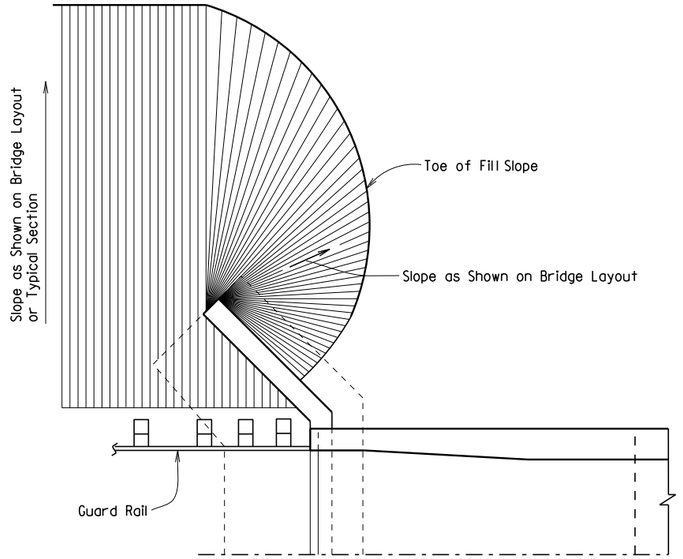
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



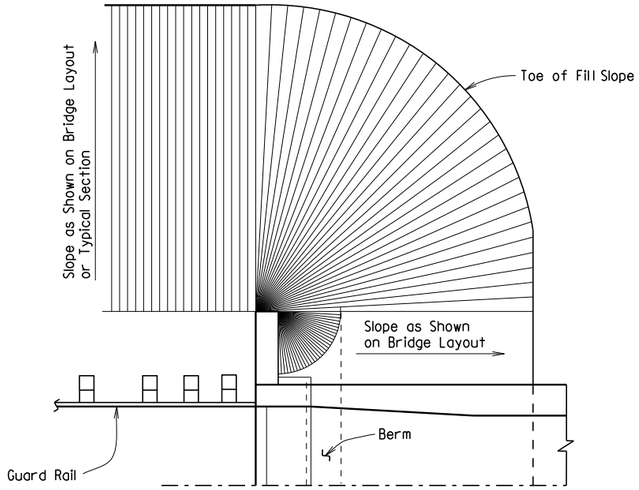
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



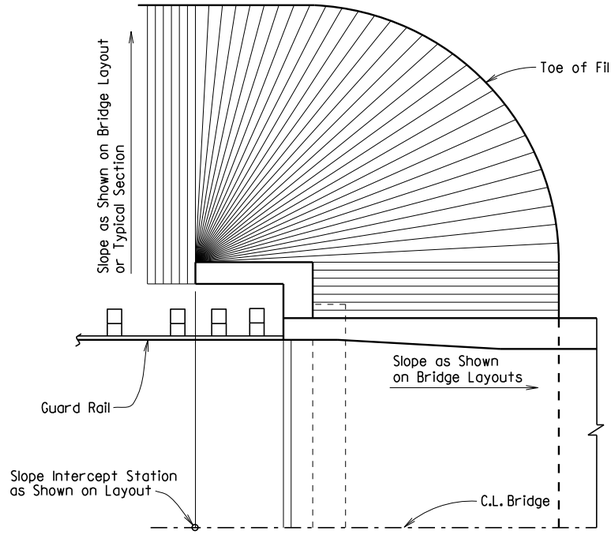
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



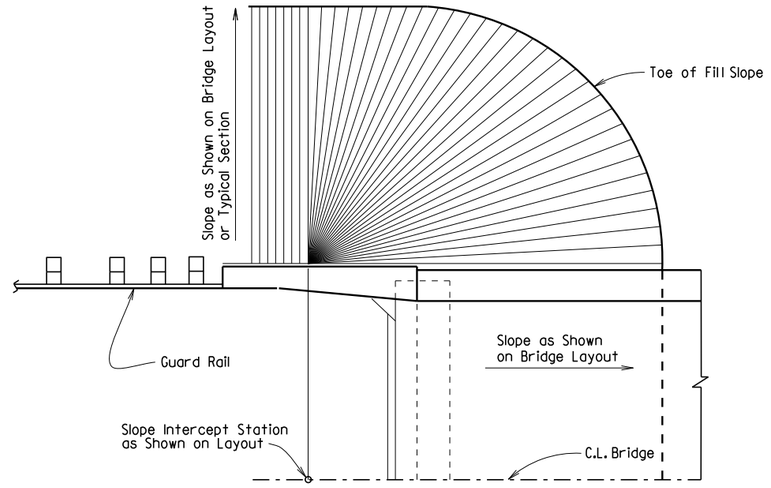
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn

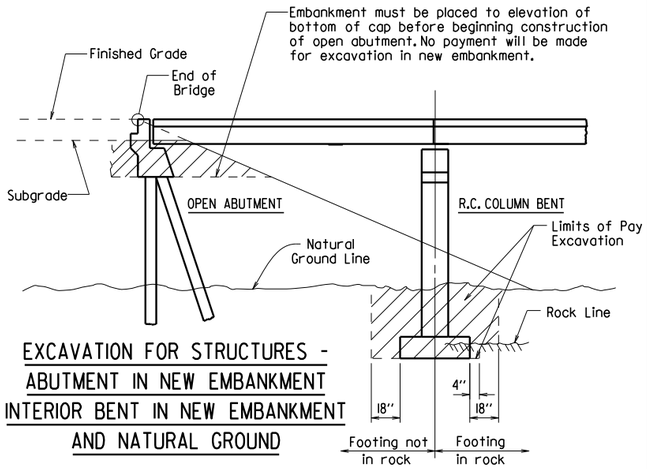
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: -

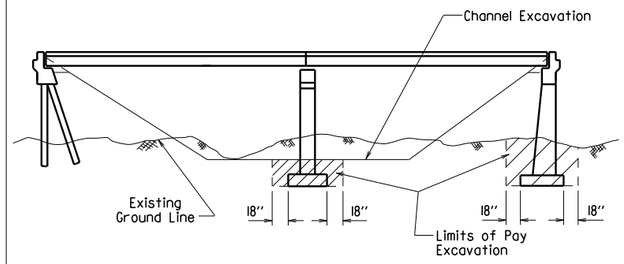
DRAWING NO. 55000

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

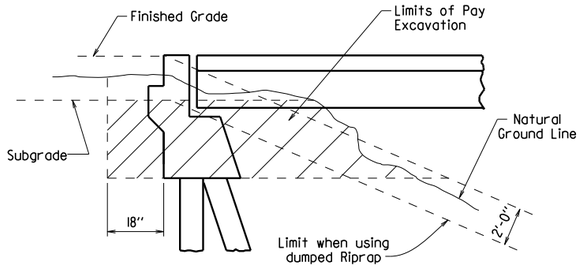
1 RIPRAP & EXCAV. 55001



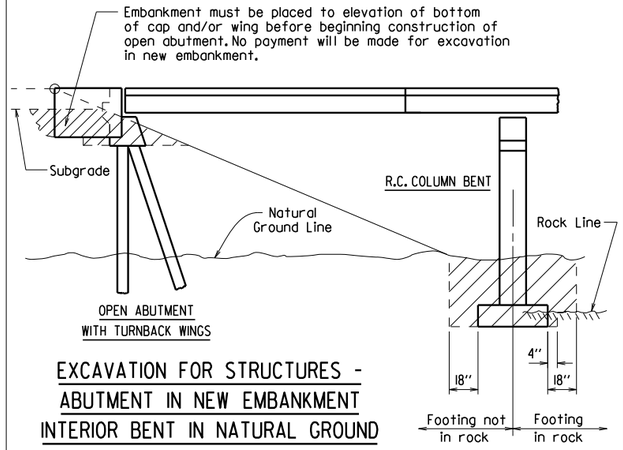
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



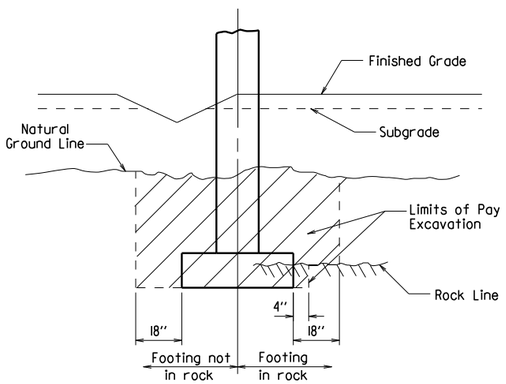
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



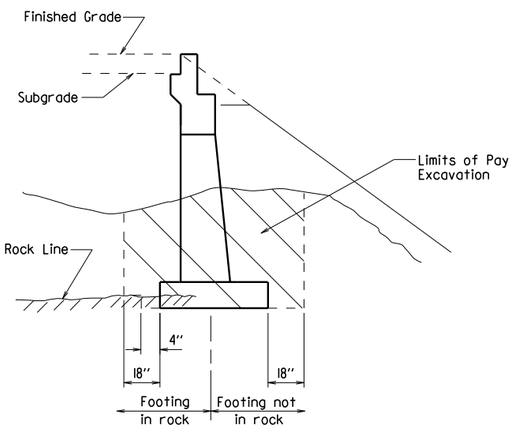
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



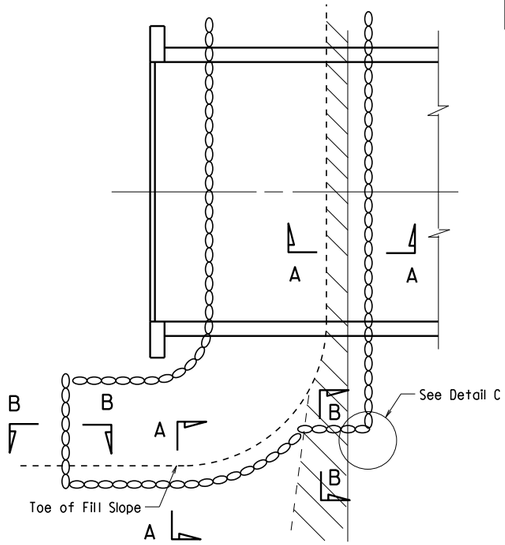
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



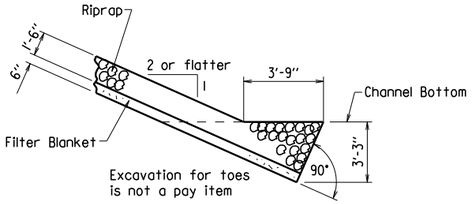
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

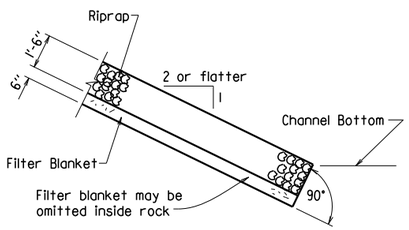


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



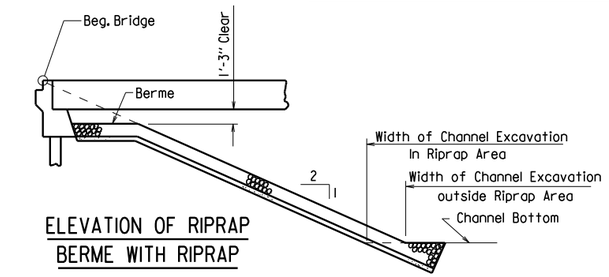
SECTION A-A

(Toe Excavation in Rock)

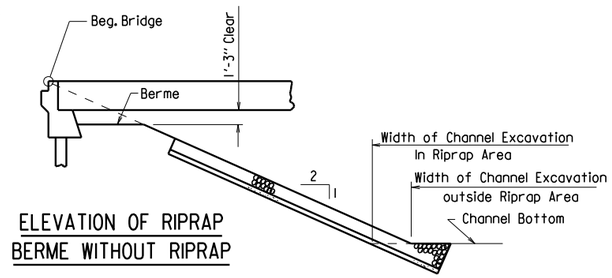
Note : Use this type of toe when rock is encountered which is in a stable condition.

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

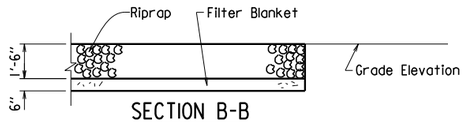
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



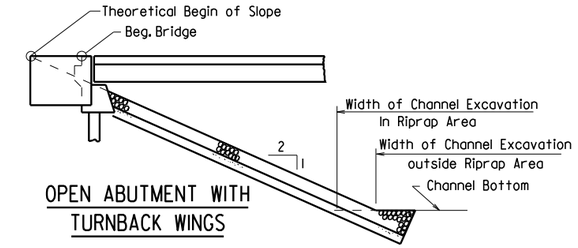
ELEVATION OF RIPRAP BERME WITH RIPRAP



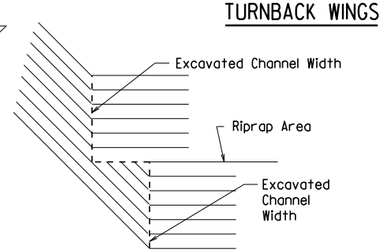
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

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

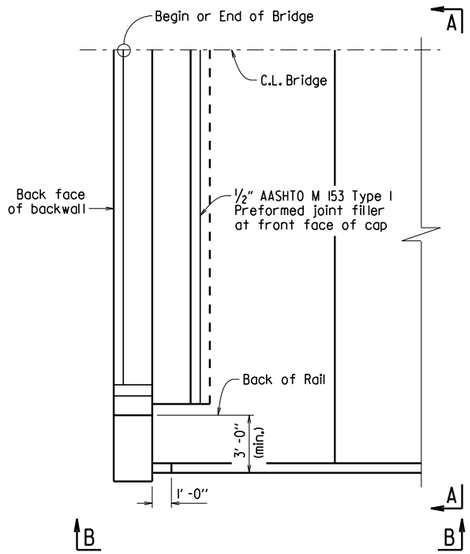
DESIGNED BY: STD. DATE:

DRAWING NO. 55001

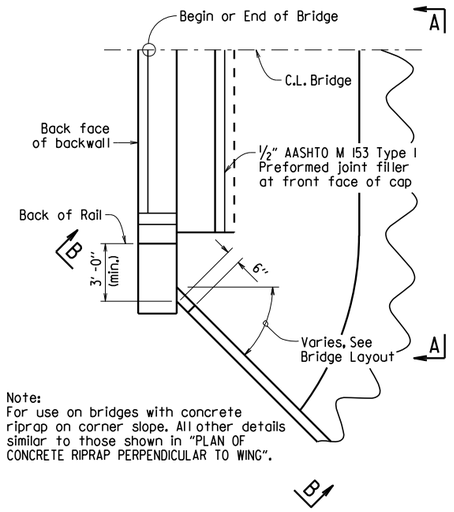
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

① CONCRETE RIPRAP 55002

Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



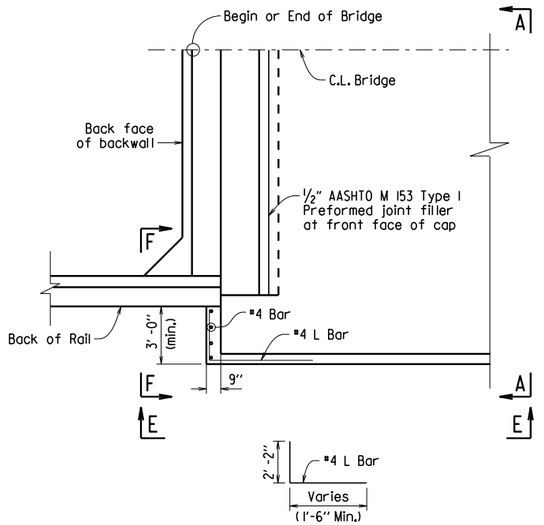
PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING
¼" = 1'-0"



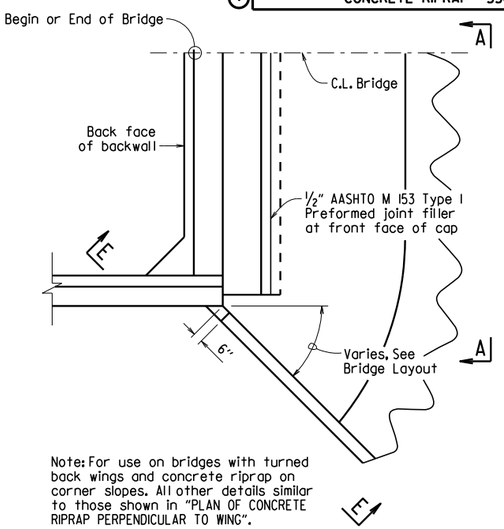
Note:
For use on bridges with concrete riprap on corner slope. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP AT ANGLE TO WING
¼" = 1'-0"

Note:
For use on bridges with turned back wings. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".



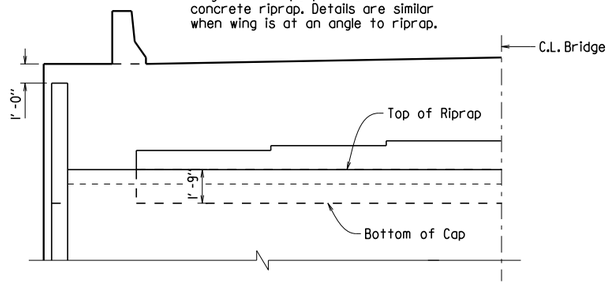
PLAN OF CONCRETE RIPRAP PERPENDICULAR TO TURNED BACK WING
¼" = 1'-0"



Note: For use on bridges with turned back wings and concrete riprap on corner slopes. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

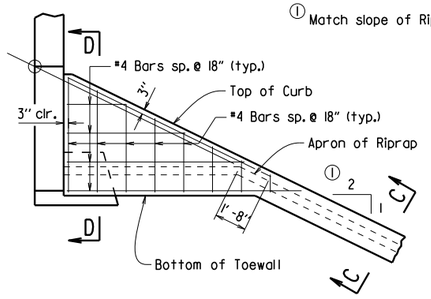
PLAN OF CONCRETE RIPRAP AT ANGLE FROM TURNED BACK WING
¼" = 1'-0"

Note:
Wing is shown perpendicular to concrete riprap. Details are similar when wing is at an angle to riprap.

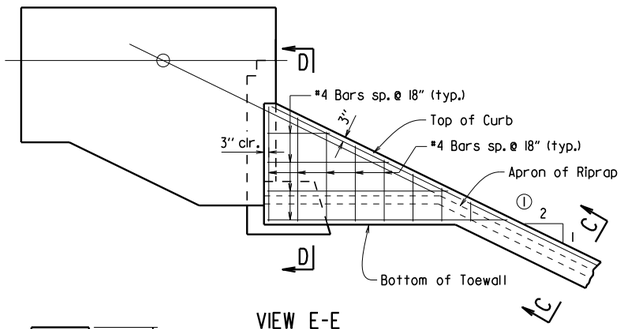


VIEW A-A
¼" = 1'-0"

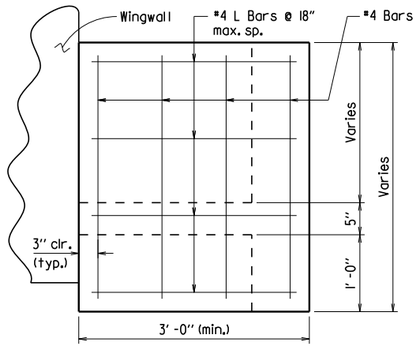
① Match slope of Riprap Apron.



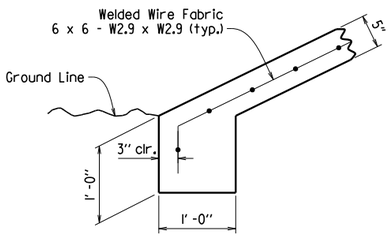
VIEW B-B
¼" = 1'-0"



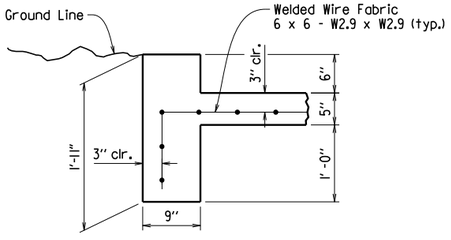
VIEW E-E
¼" = 1'-0"



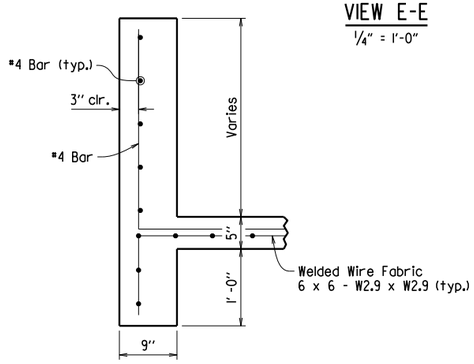
VIEW F-F
1" = 1'-0"



TOE OF CONCRETE RIPRAP
1" = 1'-0"



SECTION C-C
1" = 1'-0"



SECTION D-D
1" = 1'-0"

GENERAL NOTES

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Welded wire fabric shall conform to AASHTO M55 or M221.

STANDARD DETAILS FOR CONCRETE RIPRAP

ARKANSAS STATE HIGHWAY COMMISSION

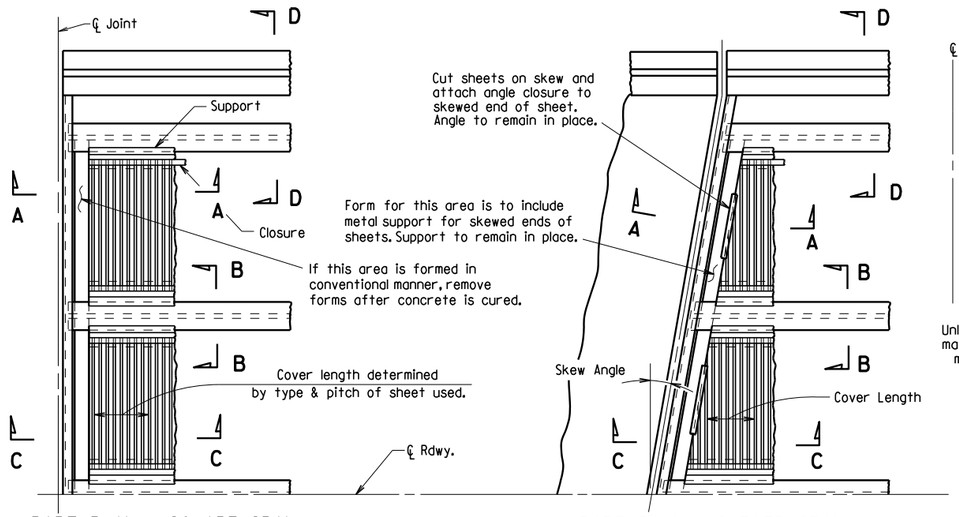
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 2/27/2014
CHECKED BY: BEF DATE: 2/27/2014
DESIGNED BY: Std. DATE: ---
FILENAME: b55002.dgn
SCALE: AS SHOWN

DRAWING NO. 55002

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.				

① BRIDGE DECK FORMS 55005

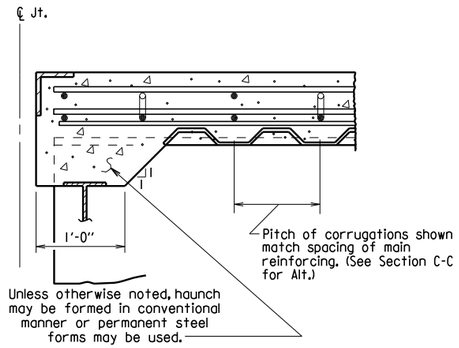


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

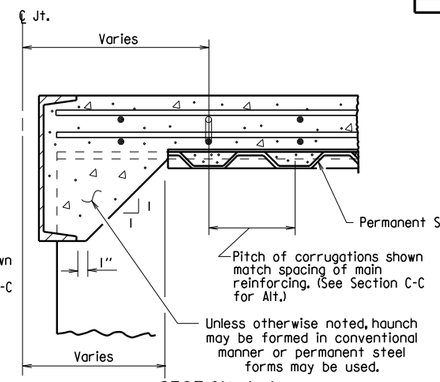
3/8" = 1'-0"



SECTION A-A

N.T.S.

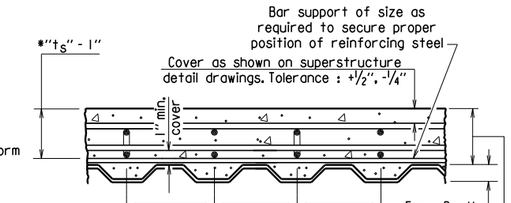
(Angle at end of span)



SECTION A-A

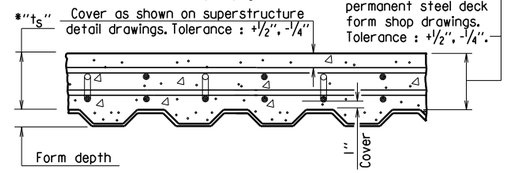
N.T.S.

(Channel at end of span)



SECTION C-C

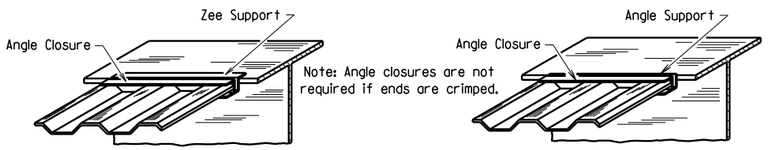
1" = 1'-0"



SECTION C-C - ALTERNATE

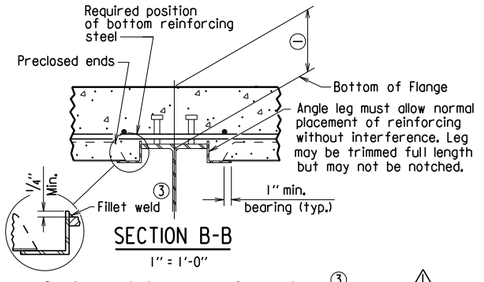
1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

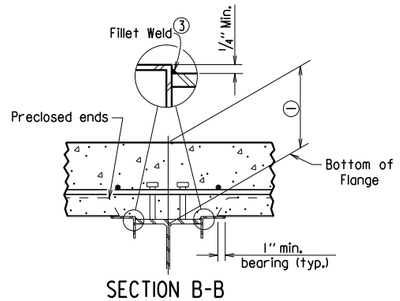


SECTION B-B

1" = 1'-0"

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

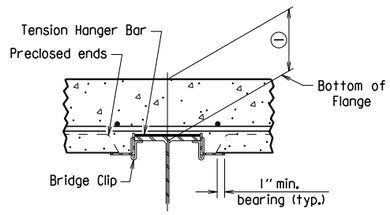
③ ⚠ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

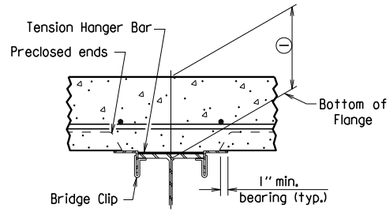
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

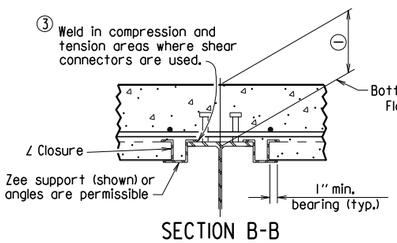
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

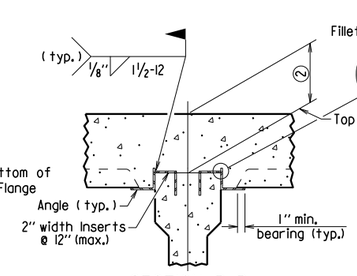
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

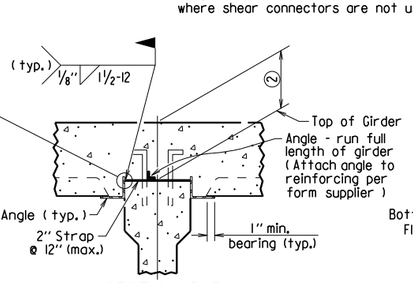


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

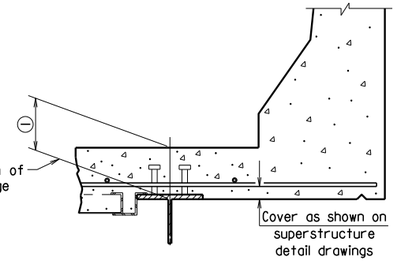


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

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

DESIGNED BY: STD. DATE: —

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
						GENERAL NOTES		55006

GENERAL NOTES

These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.

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

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy =	60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy =	36,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy =	50,000 psi
Structural Steel (AASHTO M 270, Gr. HPS70W)	Fy =	70,000 psi

See Plan Details for Grade(s) of Structural Steel required.

CONCRETE:

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

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

Use of a longitudinal screed is not permitted on any span of a bridge deck with horizontal curvature.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. 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)".

STRUCTURAL STEEL (COMMON TO W-BEAMS AND PLATE GIRDERS):

Structural steel shall be AASHTO M 270 with grade and payment as specified in the plans. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Grade 36 and Grade 50 steel shall be painted unless otherwise noted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36, Gr. 50 or Gr. 50W unless otherwise noted.

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

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

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

Unless otherwise noted, field connections shall be bolted with ¾" ø high-strength bolts using 13/16 " ø open holes. Holes for ¾" ø high-strength bolts may be 15/16 " ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

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

When painting is required, all structural steel except galvanized steel and steel completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be as specified in the plans.

STRUCTURAL STEEL (W-BEAMS):

All beams and field splice plates, and all diaphragms and connection plates attached to horizontally curved beams are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. ___)".

All beams in continuous units and simple spans with field splices shall be blocked in their true position in the shop in groups as specified in Subsection 807.54(b)(2) with the webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All beams in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

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

All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Bent plate diaphragms for horizontally curved beams shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

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

STRUCTURAL STEEL (PLATE GIRDERS):

All references to cross-frames shall include "X" or "K" types.

All girder web and flange plates, all field splice plates, and all diaphragms, cross-frames and connection plates attached to horizontally curved girders are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

All girders in continuous units and simple spans with field splices shall be assembled in the shop as specified in Subsection 807.54(b)(2) and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All girders in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

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

Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment will be made for shop welded splices.

All girder dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Q.C. testing shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

Bent plate diaphragms for horizontally curved girders shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

Unless otherwise noted, cross-frames and diaphragms shall be installed as girders are erected. All bolts in cross-frames, diaphragms, and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

SUBSTRUCTURE NOTES:

CONCRETE:

Unless otherwise noted, concrete in caps, columns and footings (except seal footings) shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. Seal Concrete for footings shall have a minimum 28 day compressive strength f'c = 2,100 psi.

Concrete in drilled shafts shall be Class "S" as modified by Job SP "Drilled Shaft Foundations".

All exposed corners shall be chamfered ¾" unless otherwise noted.

REINFORCING STEEL:

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.

STRUCTURAL STEEL:

Structural steel in end bents shall be AASHTO M 270 with grade and payment as specified in the plans.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

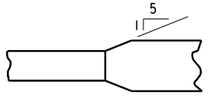
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9-2-2015 FILENAME: b55006.dgn
CHECKED BY: B.E.F. DATE: 9-2-2015 SCALE: NO SCALE
DESIGNED BY: STD. DATE:

DRAWING NO. 55006

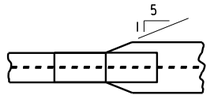
PRINT DATE: 11/7/2019

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	STEEL BRIDGE STRUCTURES 55007			

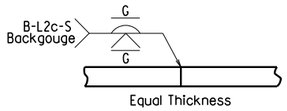


Plan-Unequal Width (Flg.)

FLANGE SPLICE

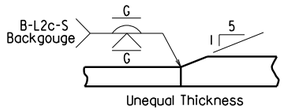


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

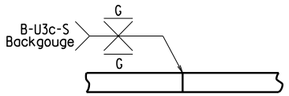
WEB & FLANGE SPLICE



Unequal Thickness

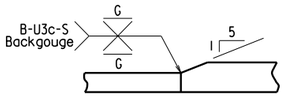
FLANGE SPLICE

(Use when Base Metal Thickness is Equal to or Less than 2")



Equal Thickness

WEB & FLANGE SPLICE

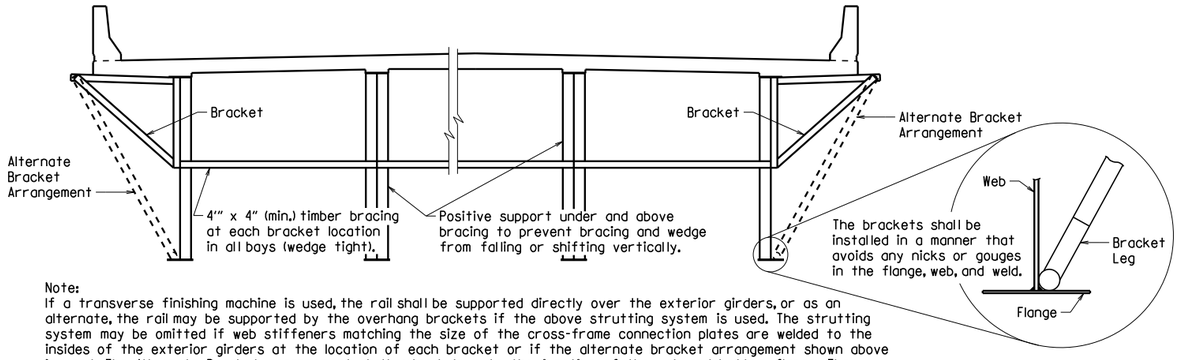


Unequal Thickness

FLANGE SPLICE

(Use when Base Metal Thickness is Greater than 2")

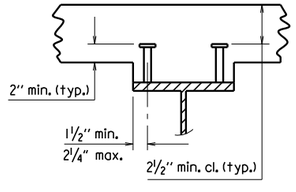
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



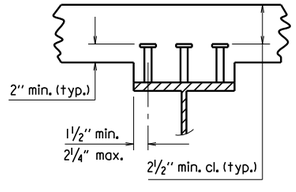
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the cross-frame connection plates are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for cross frame connection plates shown on the plans. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (___)".

SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)



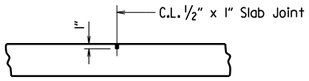
2 STUDS PER ROW



3 STUDS PER ROW

Stud Shear Connectors shall be automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer. See plan details for number and size.

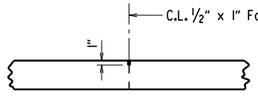
SHEAR CONNECTOR DETAIL



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 and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

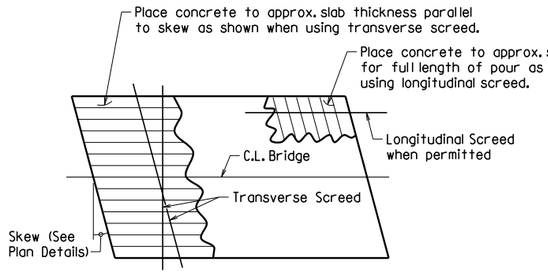
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and acrosss the top of the sidwalk or raised median to the edge of the slab. No joint sealer shall be placed on the deck slab under the sidewalk or raised median.

TRANSVERSE SLAB JOINT DETAIL



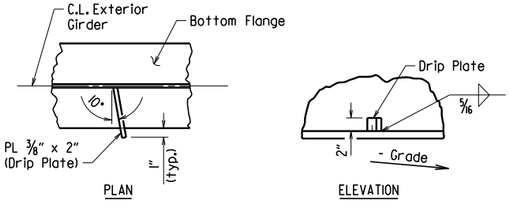
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT



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

CONCRETE PLACEMENT PROCEDURE FOR BRIDGES WITH SKEW



PLAN

ELEVATION

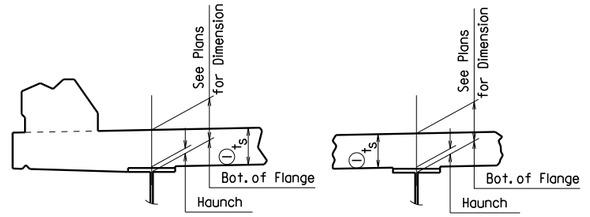
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

BOTTOM FLANGE DRIP PLATE

(USE WHEN WEB DEPTHS ARE 54" OR GREATER AND UNIT OR SPAN IS NOT IN LEVEL GRADE)

t_s = slab thickness. See "Typical Roadway Section" in the plans.



EXTERIOR BEAM OR GIRDER

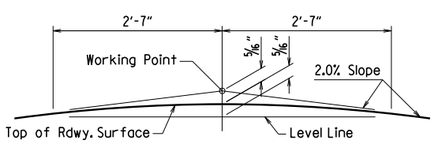
INTERIOR BEAM OR GIRDER

① Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

WELD TABLE

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	⅝"	

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

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.

STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

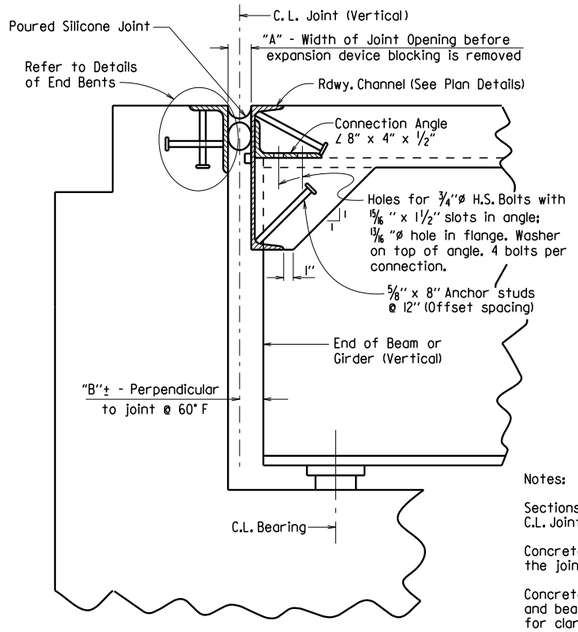
DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55007.dgn

CHECKED BY: AMS DATE: 2/11/2016 SCALE: No Scale

DESIGNED BY: STD. DATE: —

DRAWING NO. 55007

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		POURED SILICONE JOINT		55008



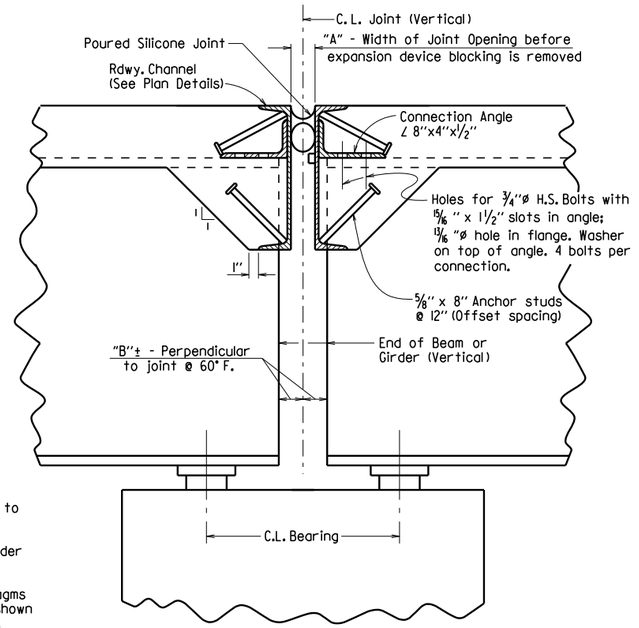
SECTION THRU JOINT AT END BENT

Notes:

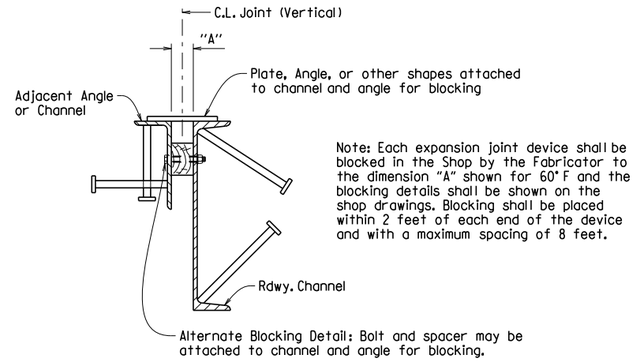
Sections are taken perpendicular to C.L. Joint.

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



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

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:

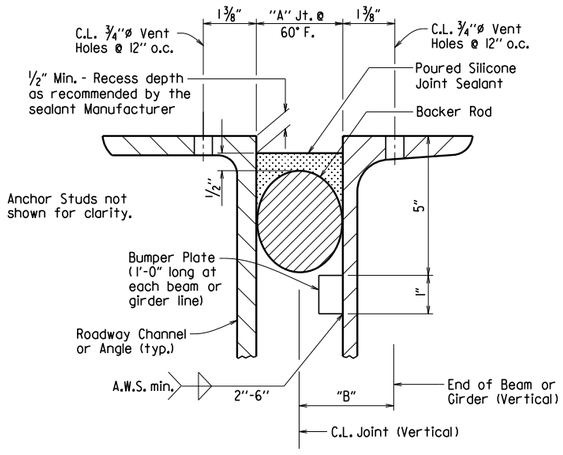
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior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



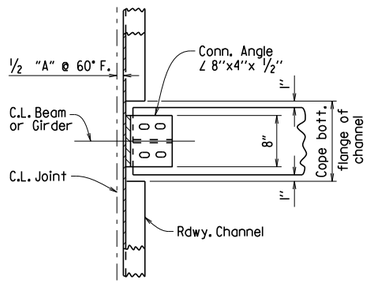
DETAIL OF POURED SILICONE JOINT

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.

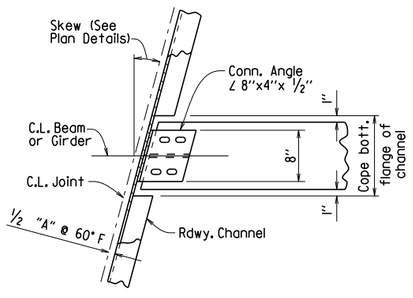
The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

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.



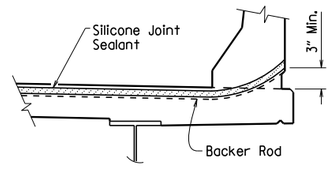
CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW

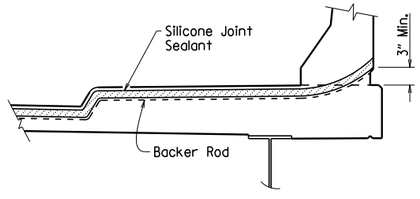


CHANNEL CONNECTION DETAIL

BENTS WITH SKEW



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

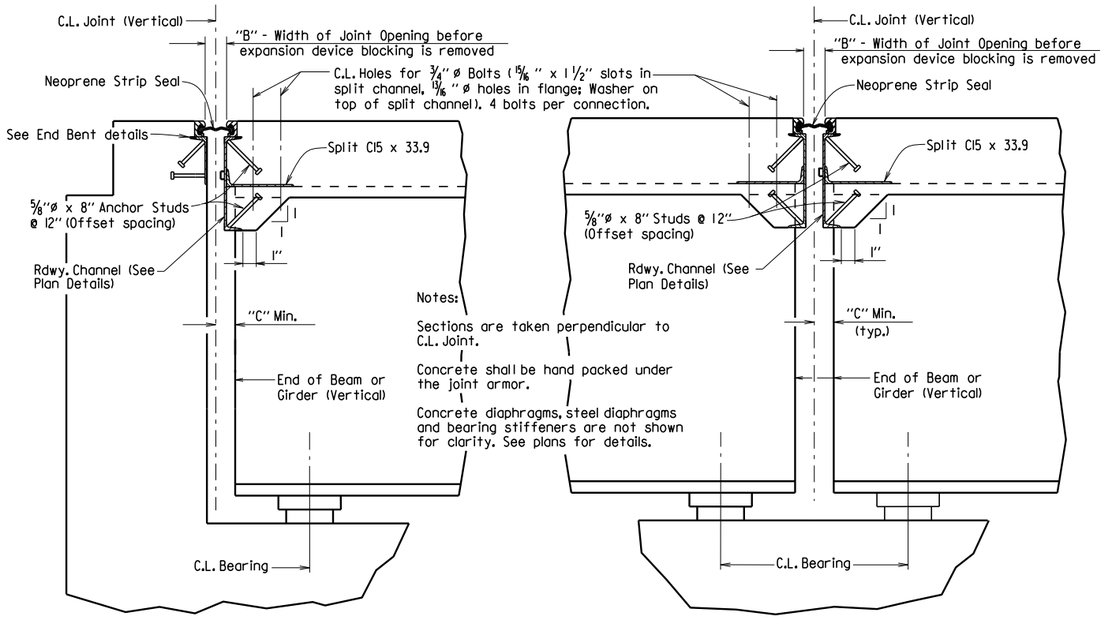
CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale

DESIGNED BY: STD. DATE: —

DRAWING NO. 55008

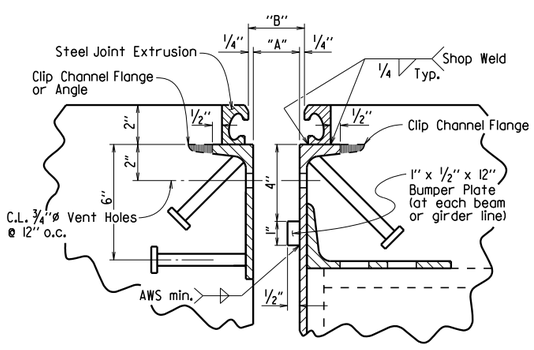
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

1 STRIP SEAL JOINT 55009



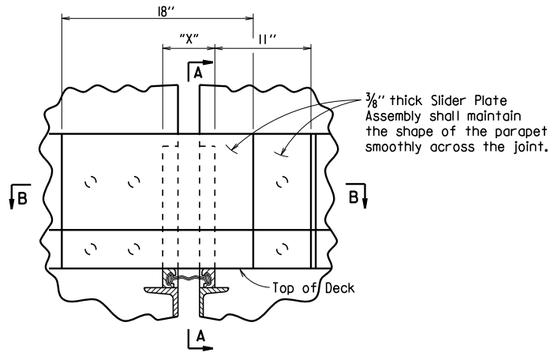
SECTION THRU JOINT AT END BENT

SECTION THRU JOINT AT INTERMEDIATE BENT



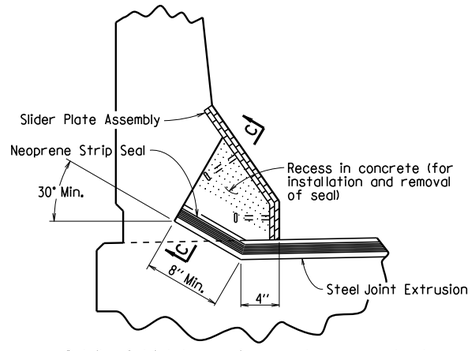
DETAIL OF STRIP SEAL JOINT

Detail shown at End Bent,
Details similar at Intermediate Bent



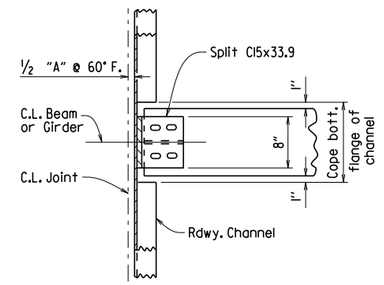
Dimension "X" equals the width of opening in parapet to allow for removal or repair of joint.

DETAIL OF PARAPET SLIDER PLATES



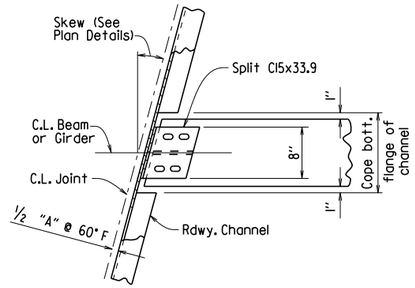
Details of Joint turn-up in parapet are general and show basic design controls only. See plan details for joint installation at sidewalks.

SECTION A-A



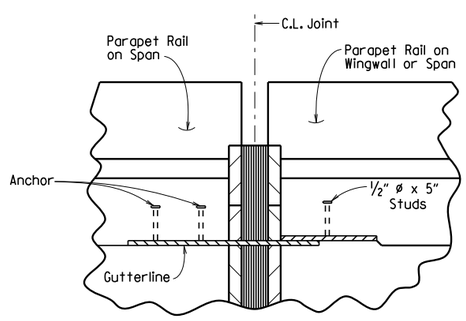
CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW



CHANNEL CONNECTION DETAIL

BENTS WITH SKEW

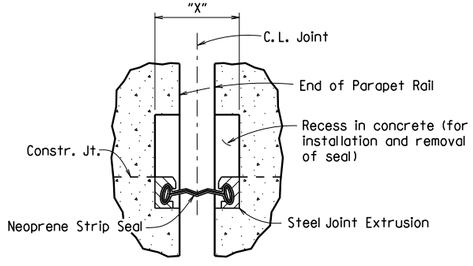


The method of attachment of the slider plate assembly shall allow for removal to provide for future replacement of the neoprene seal. Anchors shall not be paid for directly, but shall be considered subsidiary to the item "Armored Joint with Neoprene Strip Seal".

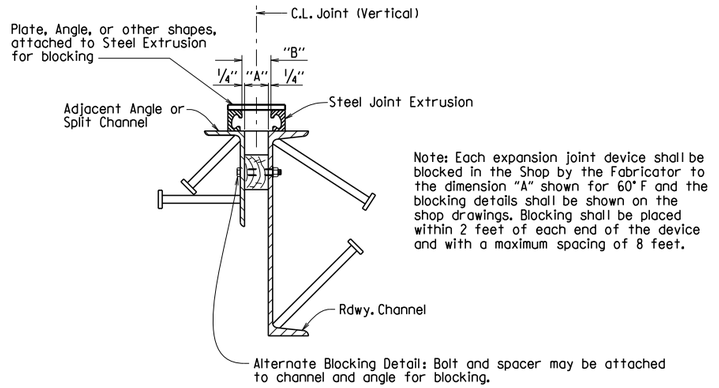
Method of installation and fabrication shall be determined by the Manufacturer.

SECTION B-B

BENTS WITHOUT SKEW SHOWN



SECTION C-C



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

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.

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The steel extrusion and neoprene strip seal material and installation shall be in accordance with Section 809.

The expansion device shall provide for the movement rating(s) shown in the "TABLE OF STRIP SEAL JOINT DATA" in the plan details. The expansion joint shall be capable of sealing the deck surface and parapet area to prevent moisture and other contaminants from descending through the joint.

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

All structural steel shall conform to AASHTO M 270, Grade 50W and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). The parapet slider plates and structural steel completely embedded in concrete shall conform to AASHTO M 270, Grade 36, 50 or 50W steel. Unless otherwise noted in the plans, all exposed surfaces of the parapet slider plates shall be cleaned and painted in accordance with Section 638. Painting shall not be paid for directly and structural steel completely embedded in concrete need not be painted. Payment for structural steel shall be as specified in the plans.

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 STRIP SEAL JOINT DATA" IN PLAN DETAILS FOR VARIABLES "A", "B", AND "C".

STANDARD DETAILS FOR NEOPRENE STRIP SEAL JOINTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: L.J.B. DATE: 2/11/2016 FILENAME: b55009.dgn
CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale
DESIGNED BY: STD. DATE: —

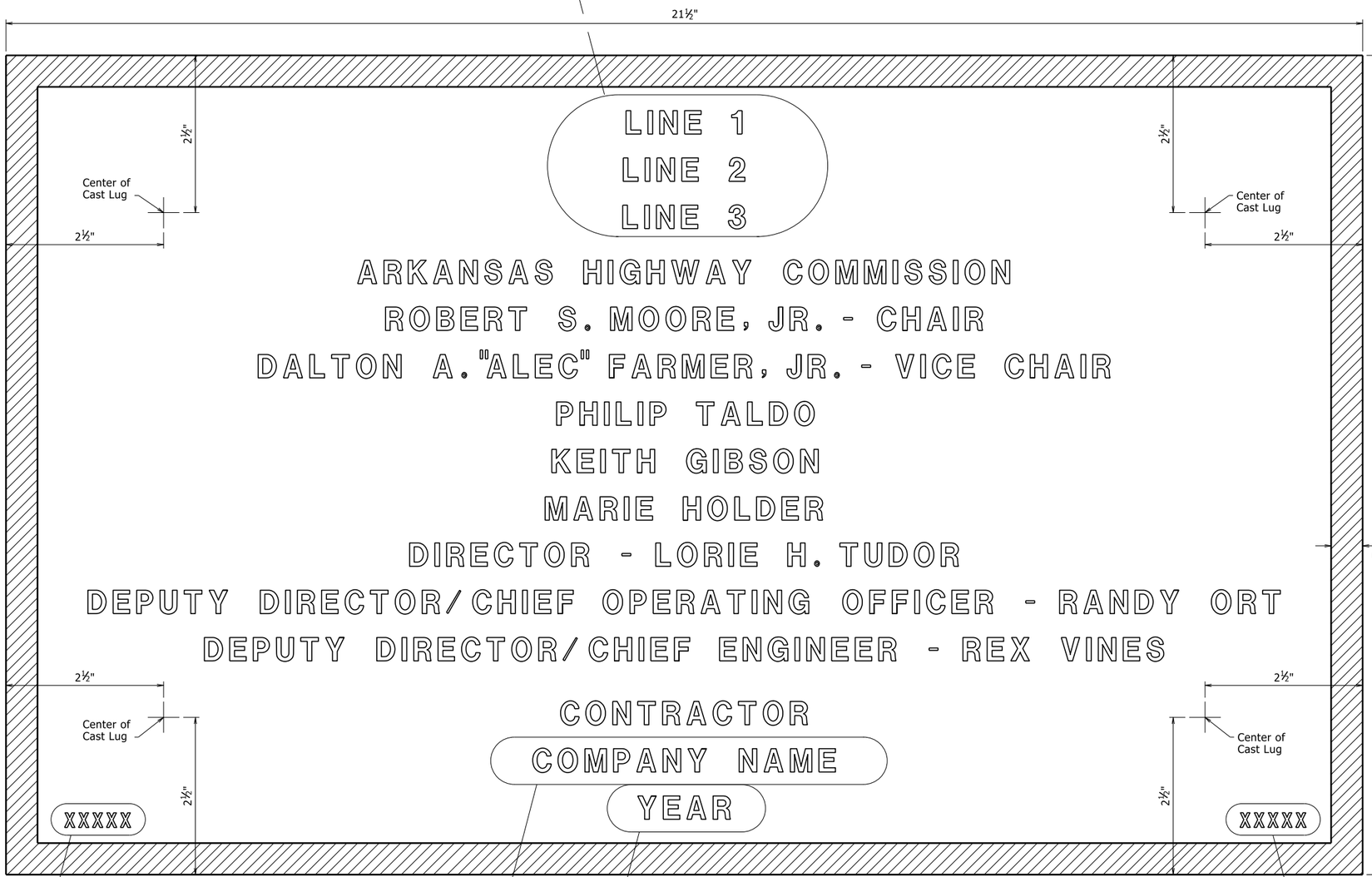
DRAWING NO. 55009

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14		1-15-19		6	ARK.			
1-14-15		3-24-2020		JOB NO.				
1-17-17		5-11-2021						

1 TYPE D NAME PLATE - 55010

The name of the bridge as shown on the plans shall be placed on Lines 1-3 using ⅛" raised letters and numerals ⅜" high.

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



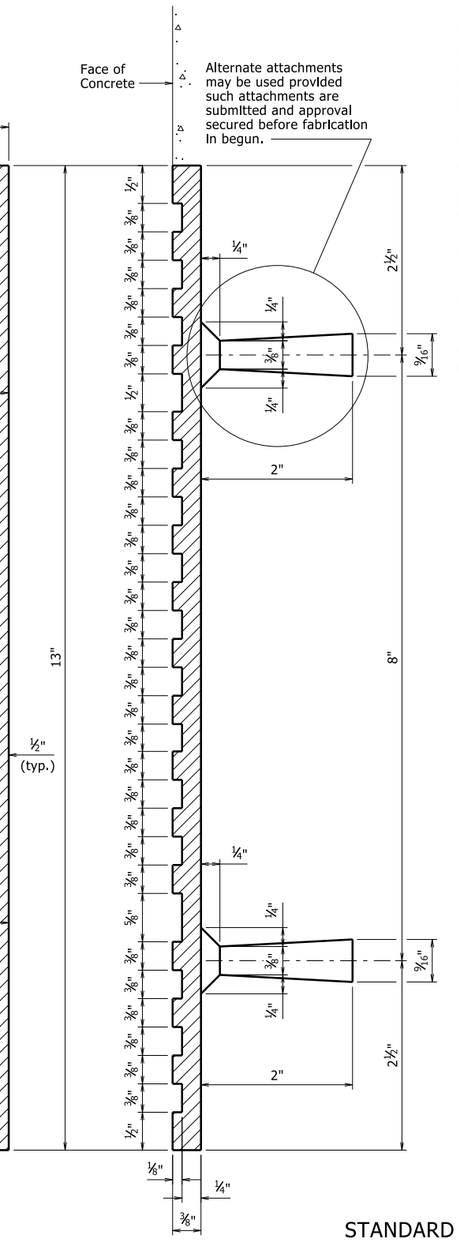
Place the design live loading here using ⅛" raised letters and numerals ¼" high. Examples: HS20, HL-93

Place the Year in which Contract was awarded here using ⅛" raised numerals ⅜" high. Example: 2001

Place the name of the company awarded the construction contract here using ⅛" raised letters and numerals ⅜" high. Example: ABCD CONSTRUCTION, INC.

Place the Bridge number here using ⅛" raised letters and numerals ¼" high. Examples: A1234, 05432

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

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

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

Body of plate shall be ¼" thick and shall include four tapering cone lugs ⅜" to 9/16" x 2" long. The border and all lettering shall be raised ⅛" above the face of plate and shall be polished.

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

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

6 Revised Deputy Director/ Chief Engineer
5-11-2021 CGP Checked By: CRE

5 Revised Director, Deputy Director/Chief Operating Officer, Chair, Vice Chair and added New Commissioner
3-24-2020 CGP Checked By: CRE

4 Revised Chair and Vice Chair Added New Commissioner
1-15-19 CGP Checked By: CRE

3 Added New Commissioner
1-17-17 KDH Checked By: CRE

2 Revised Chair and Vice Chair Added New Commissioner
1-14-15 KDH Checked By: CRE

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

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ROUTE SEC.

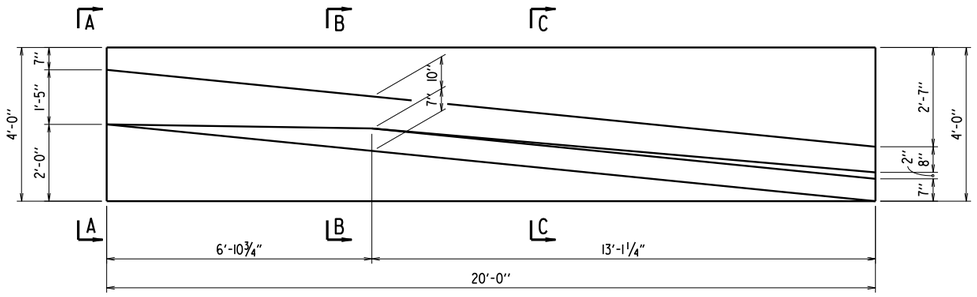
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

DRAWING NO. 55010

PRINT DATE: 5/11/2021

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	TRANSITIONAL RAIL		55013	



PLAN OF TRANSITIONAL APPROACH RAILING

(RAILINGS ON EACH SIDE OF ROADWAY ARE OPPOSITE HAND TO EACH OTHER)
½" = 1'-0"

GENERAL NOTES

Transitional Approach Railing shall be placed at locations shown in the plans.

All 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 to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports.

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

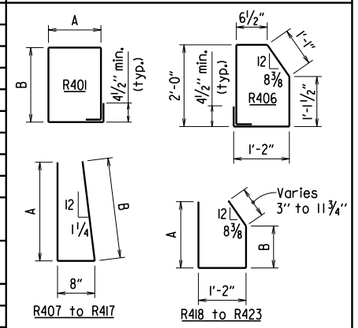
Unless otherwise required in the plans, curing and finishing shall be in accordance with Subsection 806.05(c) and the surface finish type and areas of application shall match that used on the adjacent bridge railing or concrete barrier wall. See Subsection 802.19(3) for Class 3 Textured Coating Finish or Subsections 803.03(a) or 803.03(b) for Class 1 or 2 Protective Surface Treatment, respectively. Payment for surface finishes shall not be paid for directly, but shall be considered incidental to the unit price bid for "Transitional Approach Railing".

When alternate surface and/or architectural finishes are specified in the plans, no direct payment will be made, and the alternate finish shall be considered incidental to the unit price bid for "Transitional Approach Railing". See plan details for additional information when architectural finishes are specified.

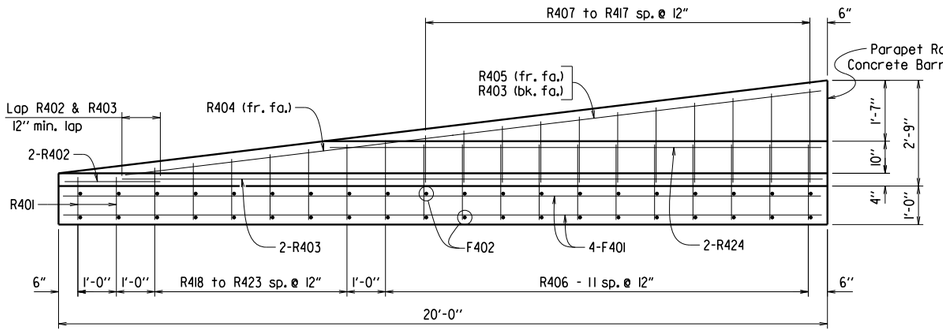
Transitional Approach Railing shall be paid for at the contract unit price bid for "Transitional Approach Railing". See Section 806 for additional information.

BAR LIST - ONE TRANSITIONAL RAIL

Mark	No. Req'd	Length	A	B	Pin Dia.	Bending Diagrams
F401	8	19'-8"			Str.	
F402	40	3'-8"			Str.	
R401	2	4'-10"	1'-2"	1'-1"	2"	
R402	2	3'-0"			Str.	
R403	3	17'-9"			Str.	
R404	1	5'-0"			Str.	
R405	1	12'-9"			Str.	
R406	12	6'-3"			2"	
R407 to R417	1 ea.	3'-0" to 5'-5"	1'-3" to 2'-5½"	1'-3" to 2'-5½"	2"	
R418 to R423	1 ea.	3'-9" to 5'-1"	1'-4" to 1'-11¼"	1'-1½"	2"	
R424	2	12'-0"			Str.	



Dimensions are out to out of bars.



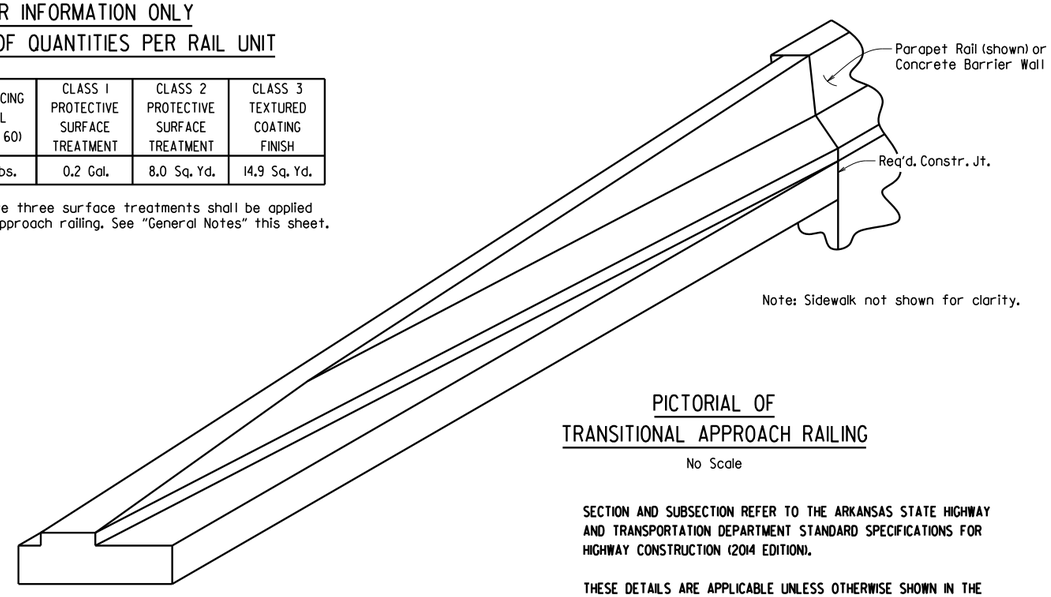
ELEVATION OF TRANSITIONAL APPROACH RAILING

½" = 1'-0"

FOR INFORMATION ONLY
SCHEDULE OF QUANTITIES PER RAIL UNIT

CLASS "S" CONCRETE	REINFORCING STEEL (GRADE 60)	CLASS 1 PROTECTIVE SURFACE TREATMENT	CLASS 2 PROTECTIVE SURFACE TREATMENT	CLASS 3 TEXTURED COATING FINISH
4.20 Cu. Yds.	376 Lbs.	0.2 Gal.	8.0 Sq. Yd.	14.9 Sq. Yd.

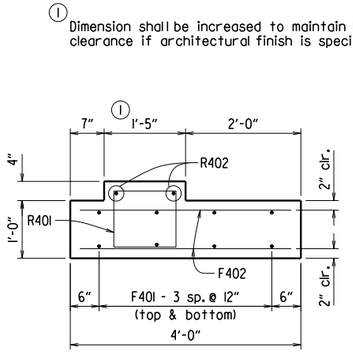
Only one of the above three surface treatments shall be applied to the transitional approach railing. See "General Notes" this sheet.



Note: Sidewalk not shown for clarity.

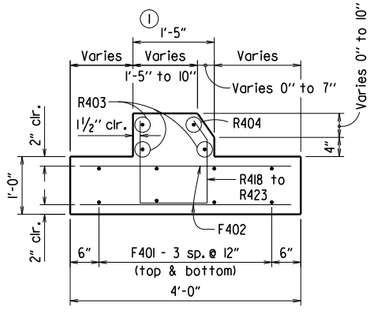
PICTORIAL OF TRANSITIONAL APPROACH RAILING

No Scale



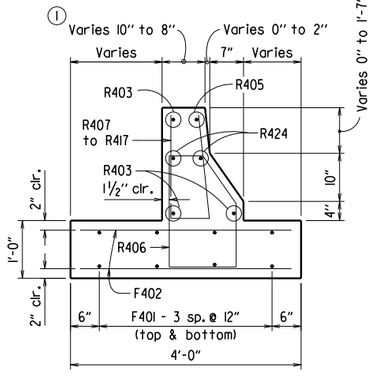
VIEW A-A

¾" = 1'-0"



SECTION B-B

¾" = 1'-0"



SECTION C-C

¾" = 1'-0"

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.

STANDARD DETAILS FOR TRANSITIONAL APPROACH RAILING

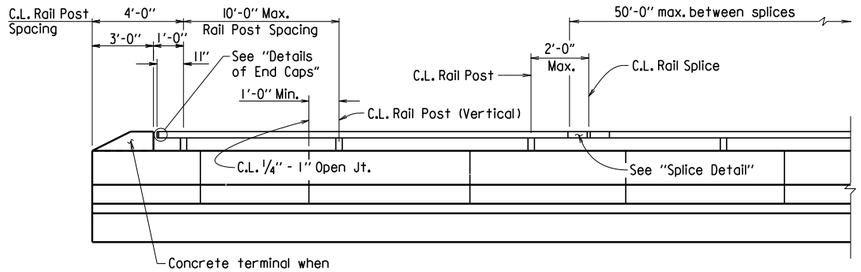
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55013.dgn
CHECKED BY: AMS DATE: 2/11/2016 SCALE: As Noted
DESIGNED BY: STD. DATE: —

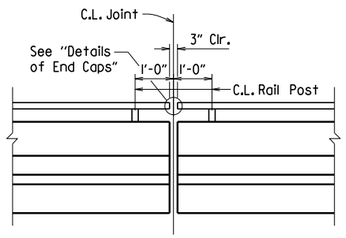
DRAWING NO. 55013

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 H RAILING		55014	

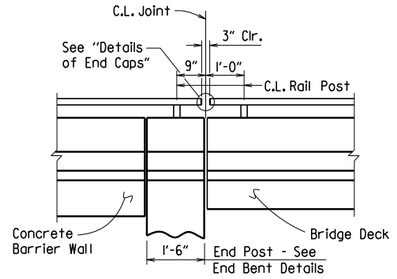


RAIL POST SPACING DETAIL

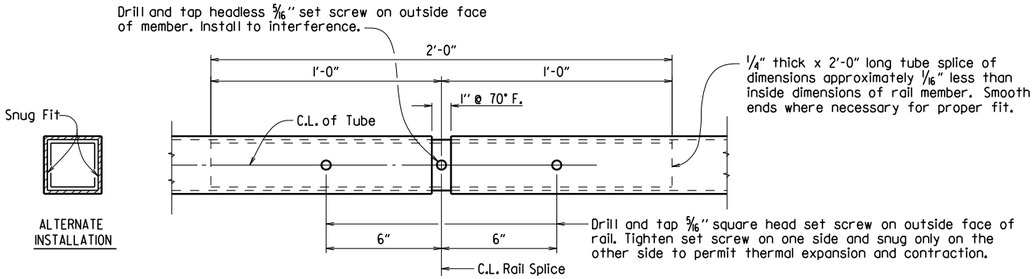
(Horizontal dimensions are along face of rail)



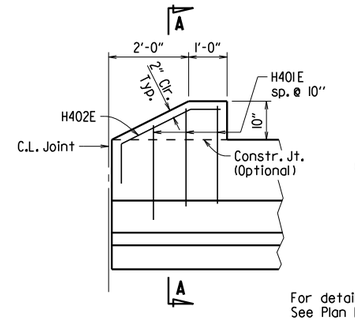
RAIL POST SPACING AT EXPANSION JOINTS



RAIL POST SPACING AT BRIDGE ENDS WITH CONCRETE BARRIER WALL

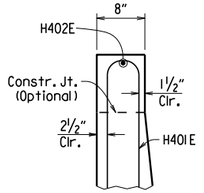


SPLICE DETAIL

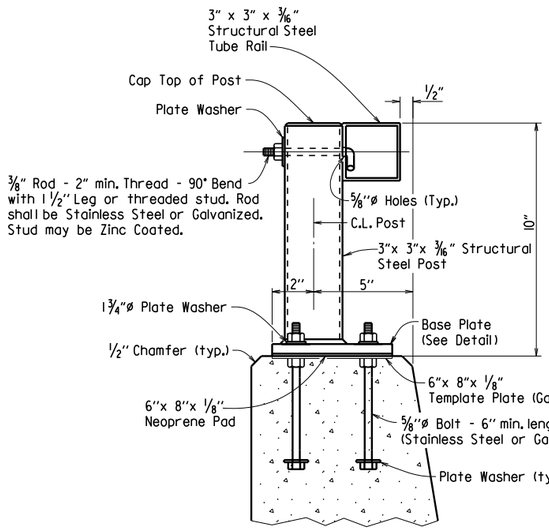


DETAIL X

For details of reinforcing steel, See Plan Details.

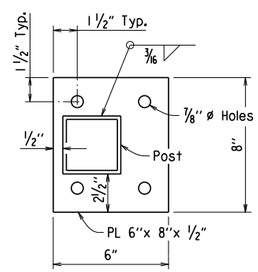


SECTION A-A

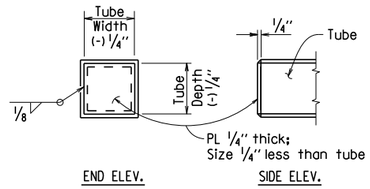


DETAILS OF POST ANCHOR SYSTEM

(CAST-IN-PLACE BOLTS)

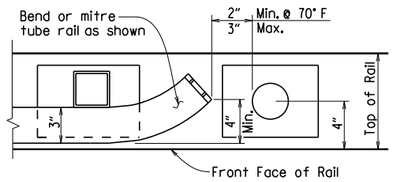


BASE PLATE



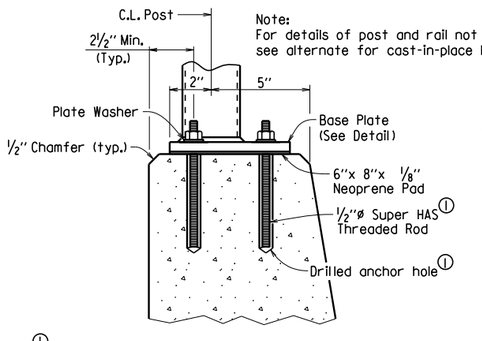
END ELEV. SIDE ELEV.

DETAILS OF END CAPS



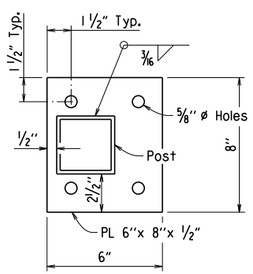
DETAILS OF RAIL TERMINUS AT FENCE POST

(When Chain Link Fence is required)



① HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4 1/2" embedment or an approved equal.

The HILTI Epoxy Adhesive Anchor System (or approved equal) shall be installed in accordance with Manufacturer's recommendations.



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM

(EPOXY ADHESIVE ANCHORS)

MATERIALS:

Rail tubing, posts, end caps, and base plates shall conform to AASHTO M 270, Gr. 36 or ASTM A 500-Grade B, and shall be galvanized after fabrication in accordance with Subsection 806.02(c). When required elsewhere in the plans, steel rail members shall receive a powder coating process after galvanizing. Galvanized surfaces shall be prepared in accordance with Subsection 807.87 and the manufacturer's recommendations prior to application of the powder coating process.

The powder coating process shall be a two coat system applied using electrostatic spray. The base coat shall be a thermosetting epoxy powder with a minimum thickness of 2 to 4 mils. The top coat shall be tough polyester powder with a minimum thickness of 2 to 4 mils. The color shall be as shown in the plans. Coated galvanized framework shall have a salt spray resistance of 3000 hours using ASTM B 117 without loss of adhesion. The powder coating process shall be in accordance with manufacturer's recommendations. Any damage to the powder coated finish shall be repaired with a compatible touch-up system in accordance with manufacturer's recommendations and to the satisfaction of the Engineer at the Contractor's expense.

Cast-in-place anchor bolts, nuts, washers, and set screws shall be galvanized high-strength steel or stainless steel. Mixing of galvanized fasteners and stainless steel will not be permitted.

High-Strength Steel:
Cast-in-place anchor bolts shall conform to ASTM A325, Type 1.
Nuts shall conform to ASTM A563, Grade DH or AASHTO M 292, Grade 2H.
Washers shall conform to ASTM F436.
Plate Washers shall conform to AASHTO M 270, Gr. 36.
Splice Set Screws shall conform to AASHTO M 270, Grade 36.
Anchor bolts, nuts, washers, plate washers, and set screws shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50.

Stainless Steel:
Cast-in-place anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi.
Nuts shall conform to AASHTO M 292, Grade 8 or ASTM A563.
Washers shall conform to ASTM A240, Type 302.
Plate Washers shall conform to ASTM A240, Type 302.
Splice Set Screws shall conform to ASTM A193 or A320-Grade B8.

Threads on bolts, screws, and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series). Neoprene pads shall conform to the requirements of Subsection 807.15(b).

GENERAL NOTES FOR BRIDGE RAILING:

Rail layout shall conform to vertical and horizontal alignment of bridge. All posts shall be vertical.

Maximum post spacing = 10'-0". Minimum distance from centerline post to centerline open or contraction joints in parapet rail = 1'-0".

Splices in rail tubing shall be at 50' maximum spacing. The centerline of splices shall be located a maximum of 2 feet from centerline of post. Rail sections shall be fabricated to attach to at least three posts.

Base plates shall not be placed upon areas that are improperly finished, deformed or irregular.

Bridge railing, including posts, template and base plates, fasteners, and neoprene pads shall be paid for at the contract unit price bid per linear foot for "Metal Bridge Railing (Type H)". When required elsewhere in the plans, powdered coating finish and repair of powdered coating finish shall be considered subsidiary to the item "Metal Bridge Railing (Type H)".

Shop drawings showing details of railing shall be submitted and approval secured prior to fabrication.

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.

STANDARD DETAILS FOR TYPE H RAILING

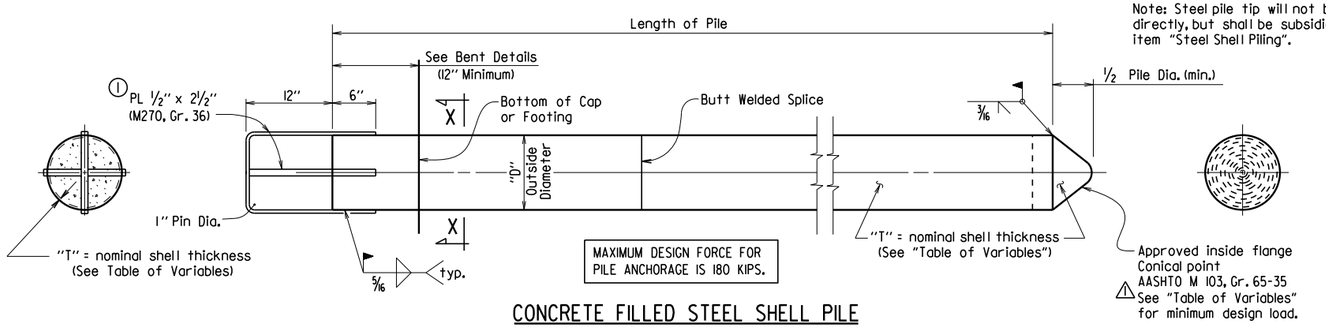
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.C.P. DATE: 2/11/2016 FILENAME: b55014.dgn
CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale
DESIGNED BY: STD. DATE: ——
BRIDGE NO. DRAWING NO. 55014

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.				

(1) STEEL SHELL PILES 55021

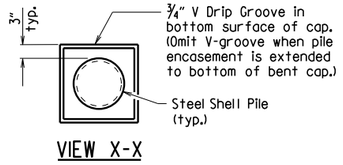


Note: Steel pile tip will not be paid for directly, but shall be subsidiary to the item "Steel Shell Piling".

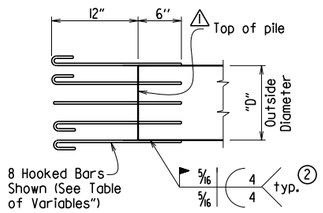
CONCRETE FILLED STEEL SHELL PILE

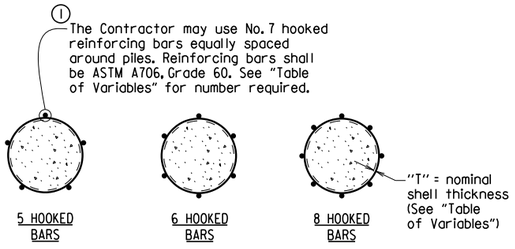
(1) Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.

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



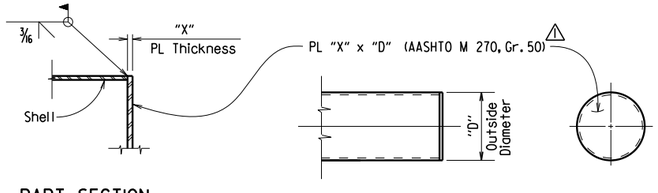
VIEW X-X





ALTERNATE PILE ANCHORAGE DETAIL

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

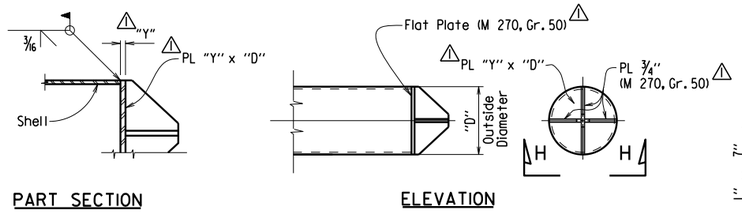


PART SECTION

ELEVATION

ALTERNATE FLAT TIP DETAIL

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



PART SECTION

ELEVATION

VIEW H-H

ALTERNATE VANED TIP DETAIL

GENERAL NOTES FOR CONCRETE FILLED STEEL SHEEL PILES:

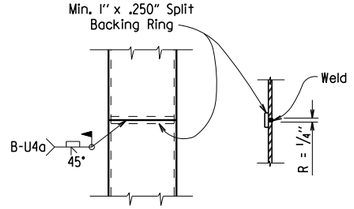
Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi.)

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

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

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

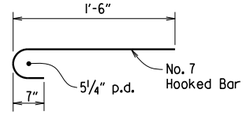
Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".



TYPICAL SPLICE DETAILS

TABLE OF VARIABLES

OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	⚠ PLATE THICKNESS "X"	⚠ 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



HOOKED BAR DETAIL

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

GENERAL NOTES FOR PILE ENCASEMENTS:

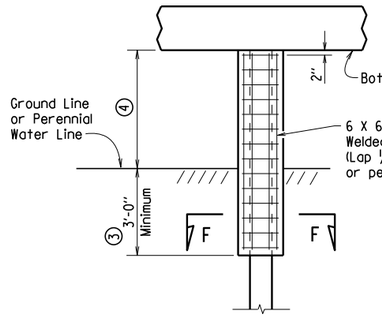
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

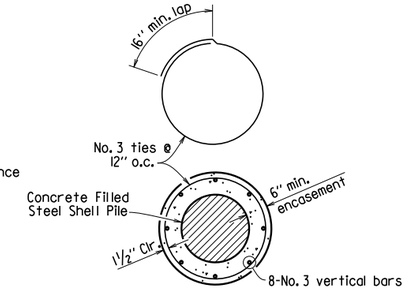
Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

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".





SECTION F-F (REINF. ALTERNATE)

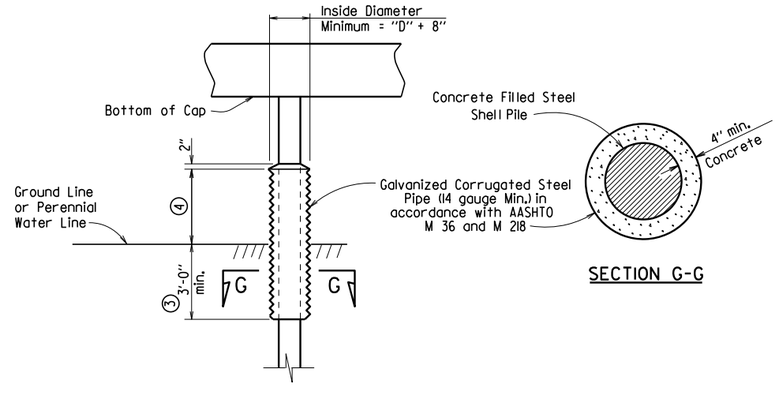
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

(5) (Shown with Encasement to Bottom of Cap)

(3) Unless otherwise noted on Bridge Layout.

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

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



SECTION G-G

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.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS

BRIDGE ENGINEER

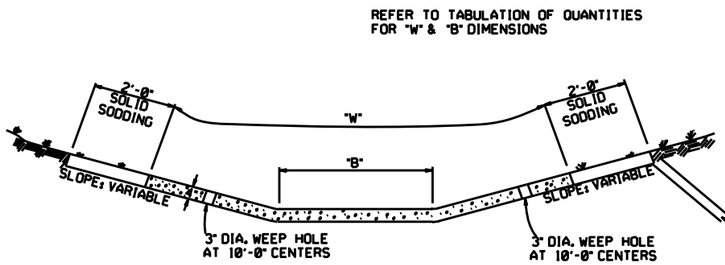
STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

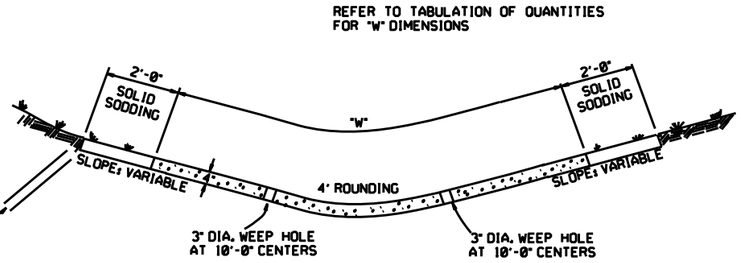
DRAWN BY:	A.M.S.	DATE:	2/27/2014	FILENAME:	b55021.dgn
CHECKED BY:	B.E.F.	DATE:	2/27/2014	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:	—		

DRAWING NO. 55021



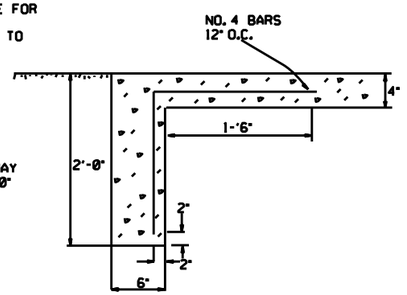
EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.

TYPE A



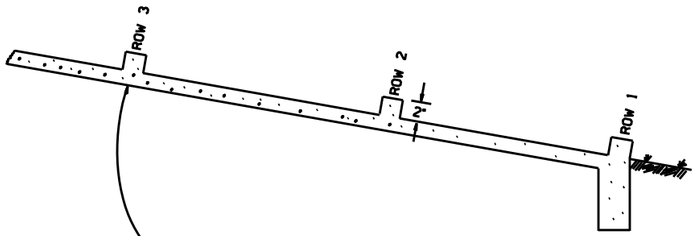
TYPE B

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

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



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.

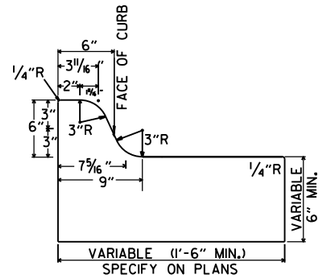
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45° INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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	
11-30-8	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.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

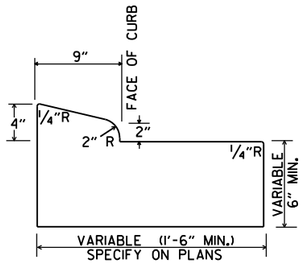
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

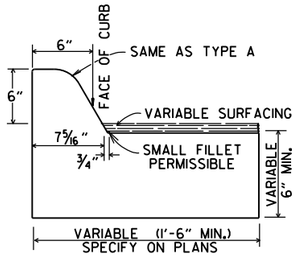
STANDARD DRAWING CDP-1



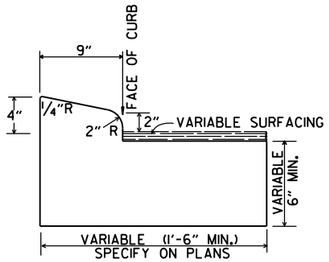
TYPE A



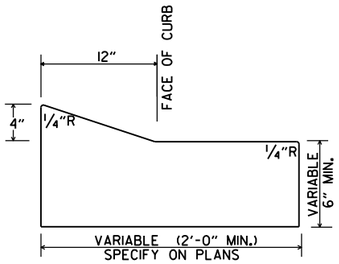
TYPE B-1



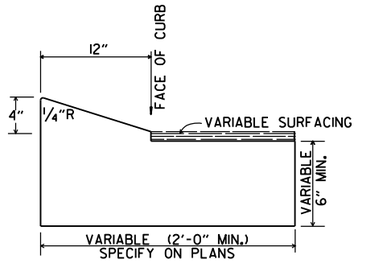
TYPE C



TYPE B-2

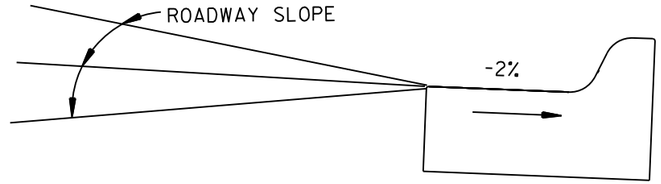


TYPE E-1



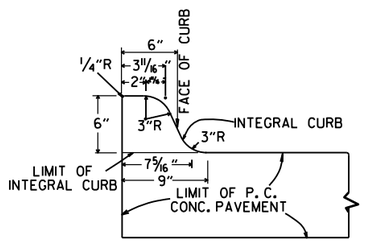
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

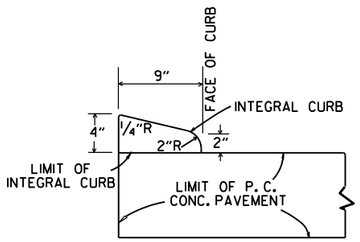


DETAIL OF GUTTER SLOPE

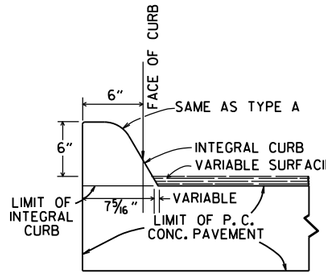
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

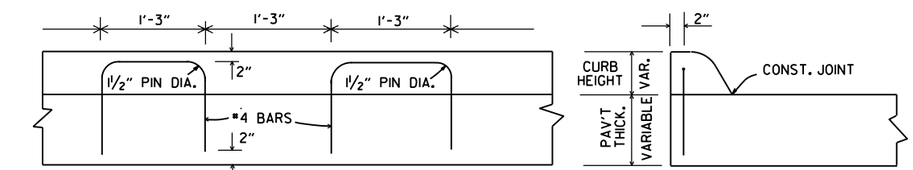


TYPE B



TYPE C

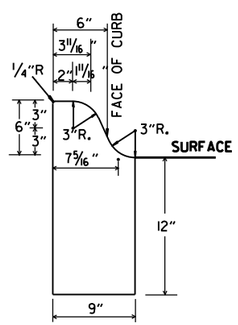
INTEGRAL CURB



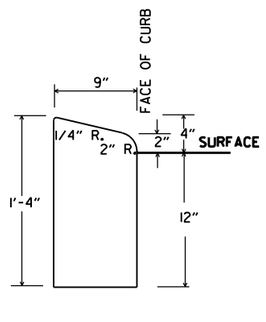
LONGITUDINAL SECTION

ELEVATION

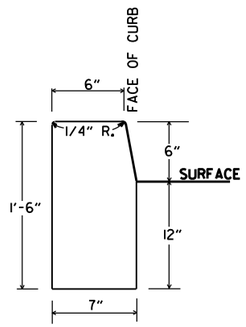
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



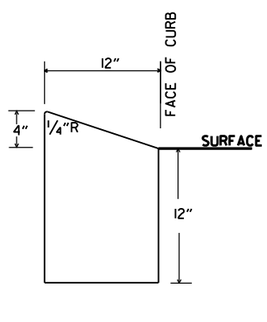
TYPE A



TYPE B

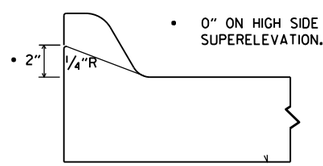


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

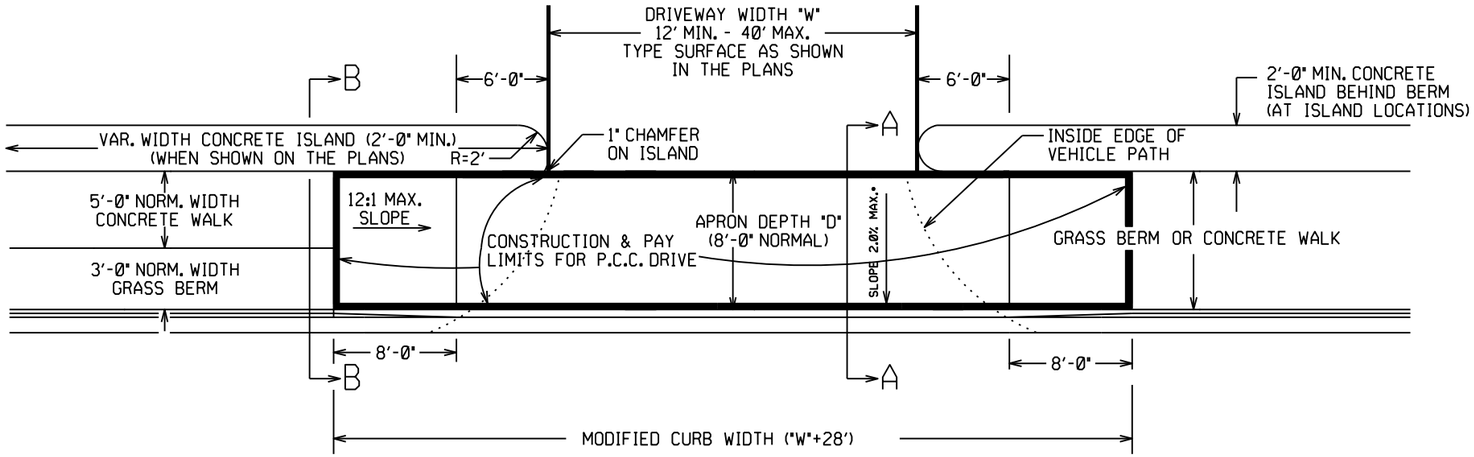
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

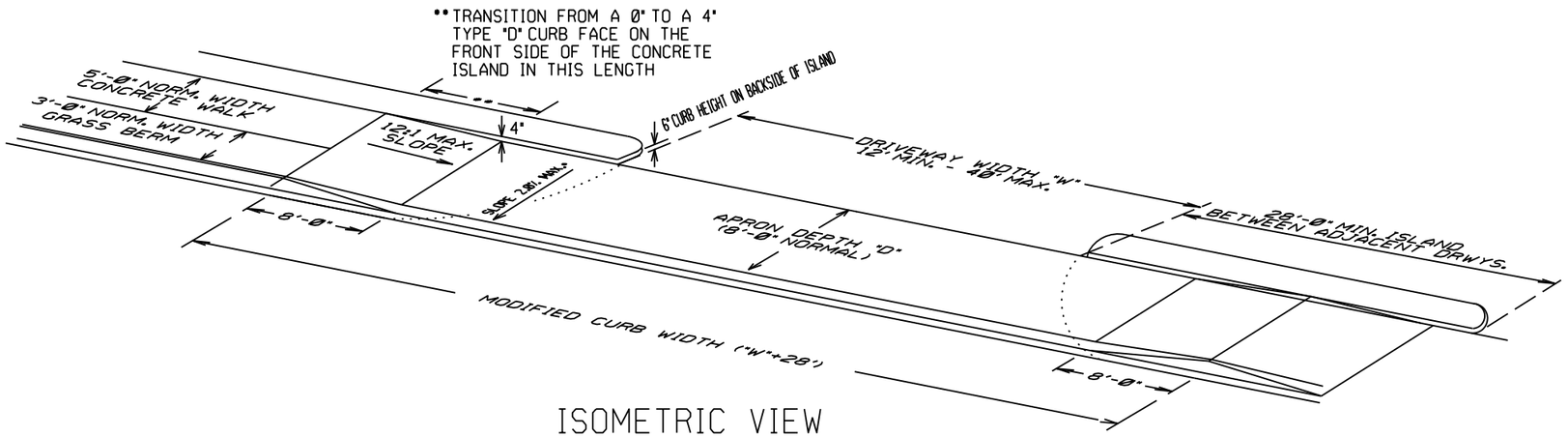
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

STANDARD DRAWING CG-1

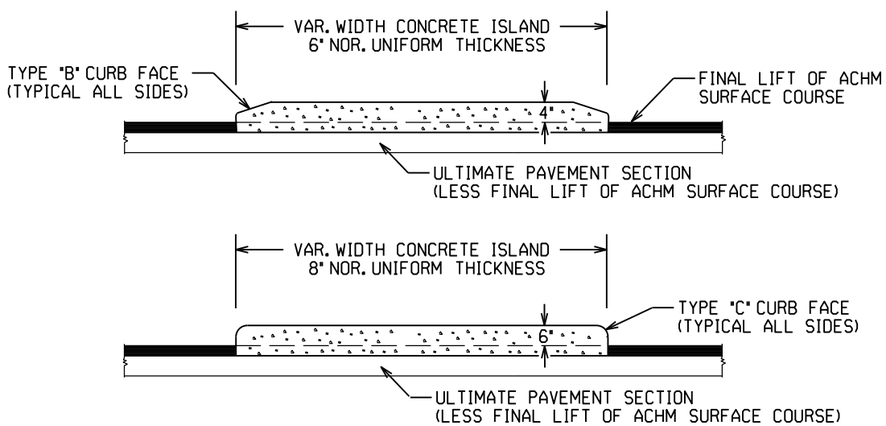


PLAN VIEW

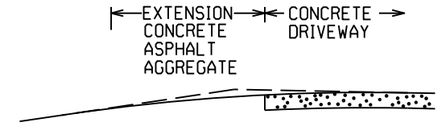


ISOMETRIC VIEW

REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".



CURBED ISLANDS FOR CHANNELIZATION



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

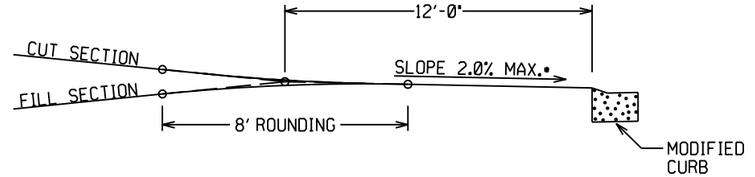
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE (1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

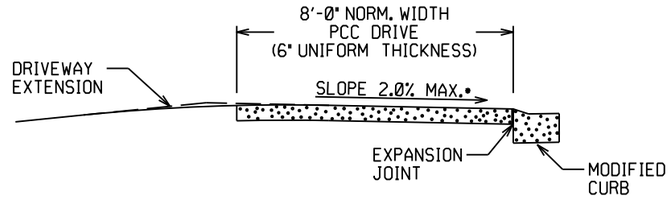
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

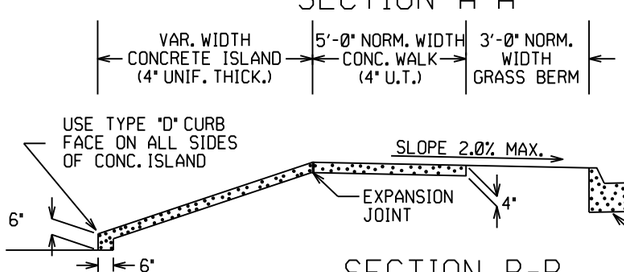


DRIVEWAY VERTICAL ALIGNMENT DETAILS

• NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



SECTION A-A



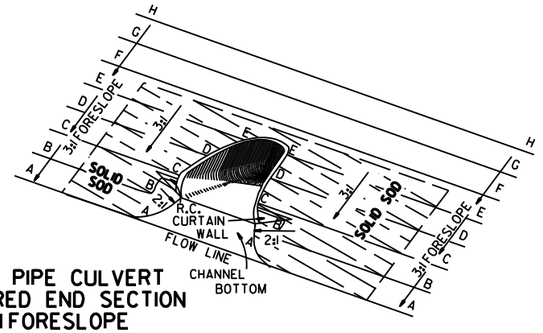
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
11-07-19		REVISED WALK DETAILS
2-27-14		REVISED PLAN & ISOMETRIC VIEW
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

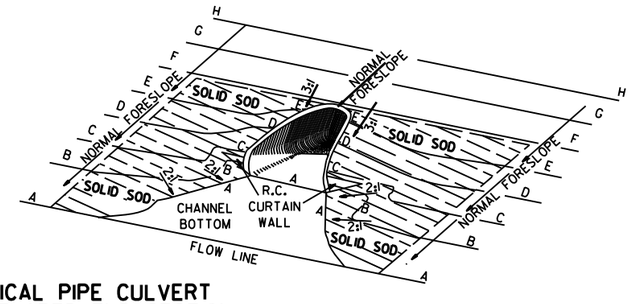
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & ISLANDS

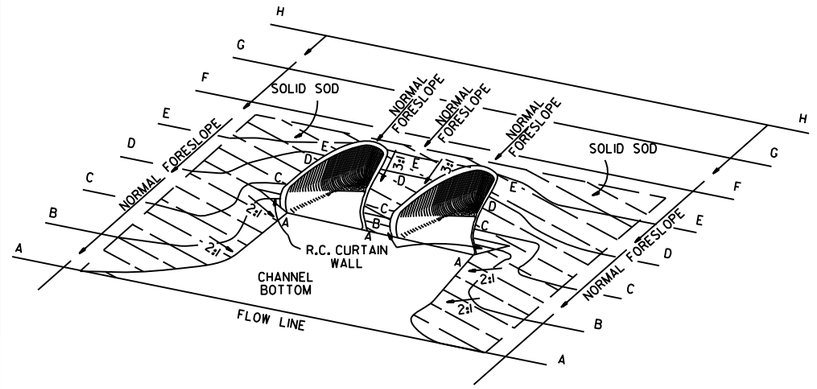
STANDARD DRAWING DR-1



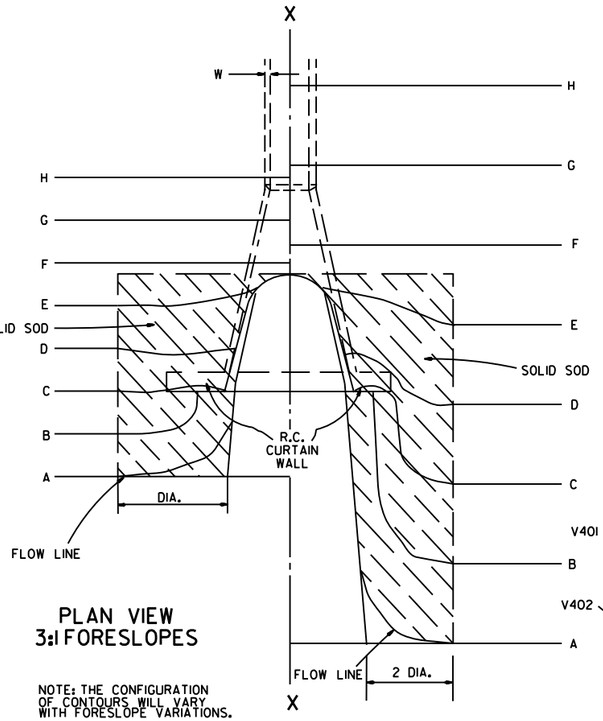
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



TYPICAL MULTIPLE PIPE CULVERT
WITH FLARED END SECTIONS
& FLATTENED ADJACENT SLOPES



PLAN VIEW
3:1 FORESLOPES

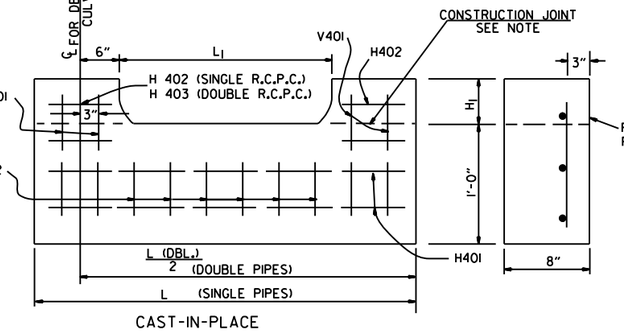
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

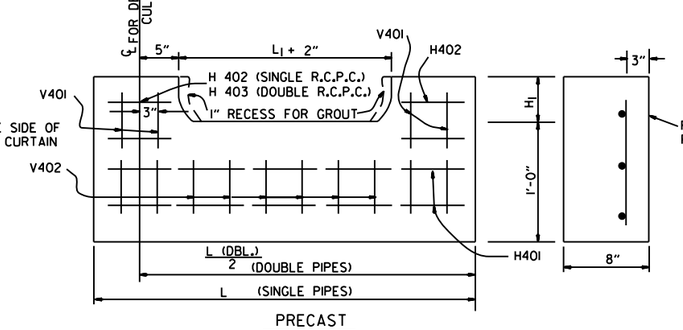
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC. CU. YDS.	SINGLE R.C.P.C. REINF. STEEL LBS.	DOUBLE R.C.P.C. CONC. CU. YDS.	DOUBLE R.C.P.C. REINF. STEEL LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	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'-9½"	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.



CAST-IN-PLACE

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.



PRECAST

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.

R.C. CURTAIN WALL DETAILS

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	V401 L	NO.	V402 L	NO.	DOUBLE R.C. PIPE CULVERT H401 L	NO.	H402 L	NO.	H403 L	NO.	V401 L	NO.	V402 L	NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

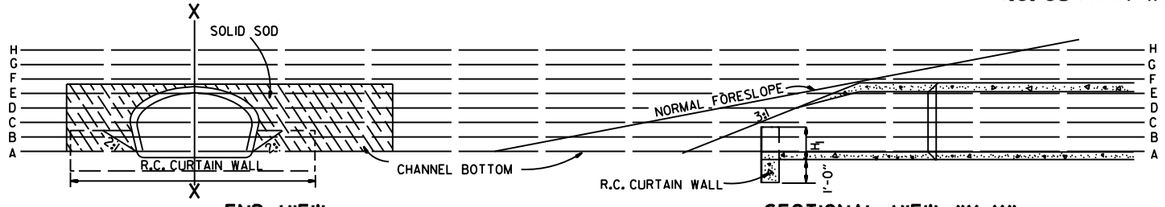
SOLID SODDING

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

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 ¾".
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 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	
10-12-95	CORRECTED SPELLING	
11- 3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	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	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

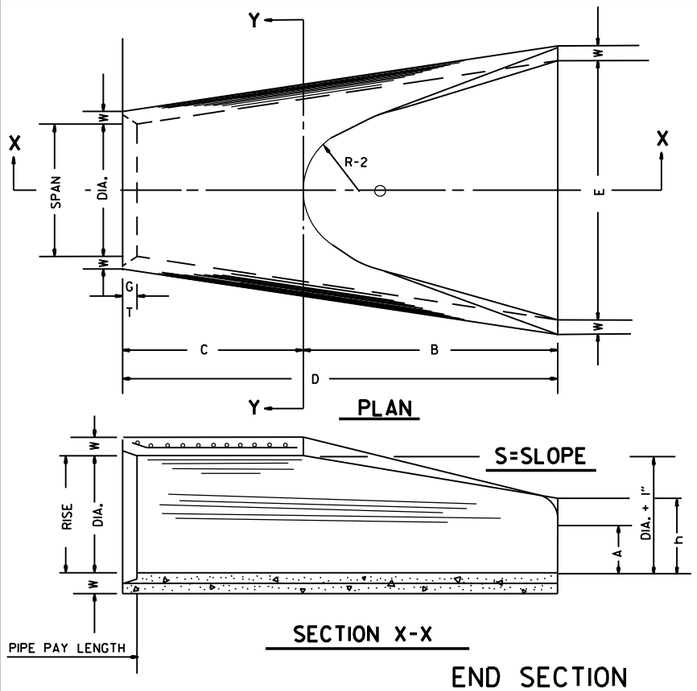
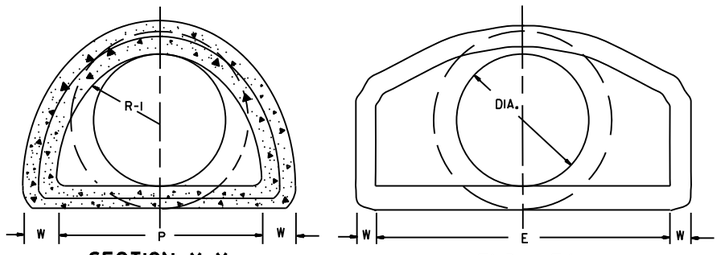


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 15/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 13/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 11/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 15/16"	24"	5"	13250	4'-6"

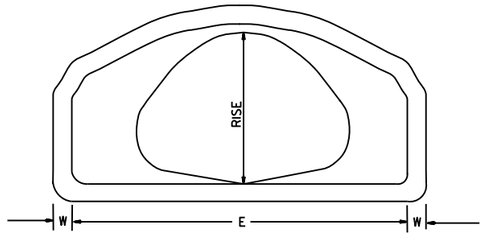


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE

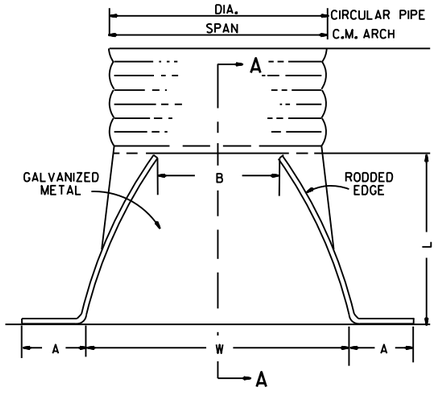
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 11/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 11/16"	20"	3"	2½:1
36	43¾	44	26⅜	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54 5/16"	22"	3½"	2½:1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70 5/16"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 1/16"	24"	5"	2¼:1

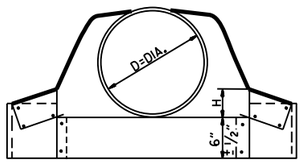
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

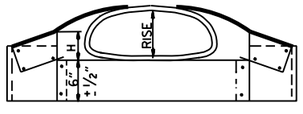


END VIEW
CONCRETE ARCH PIPE

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS







CIRCULAR PIPE

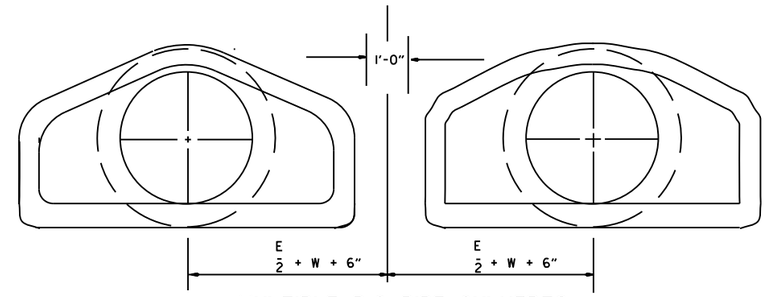
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1¾:1
66	12	18	36	12	87	120	1½:1
72	12	18	39	12	87	126	1 1/3:1

C.M. ARCH PIPE

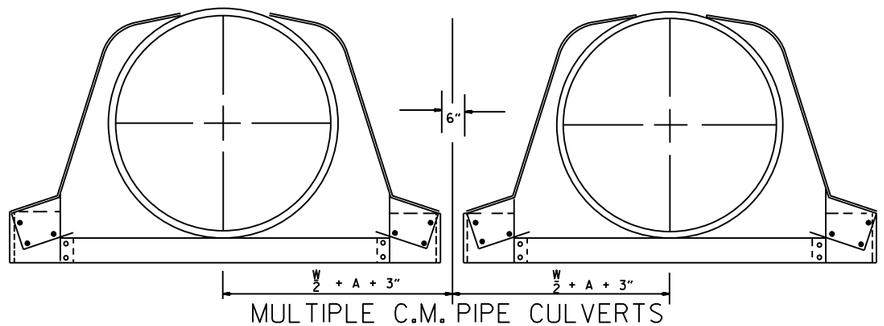
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	12

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



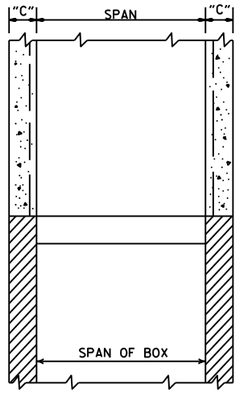
MULTIPLE C.M. PIPE CULVERTS

DATE	REVISION	BY	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO		
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
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

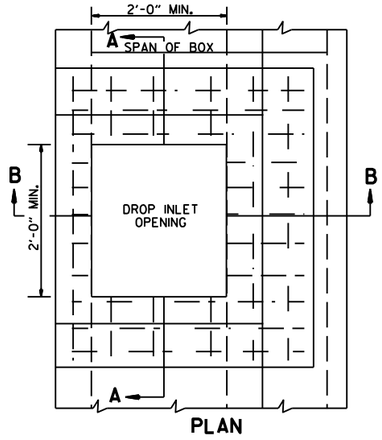
ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

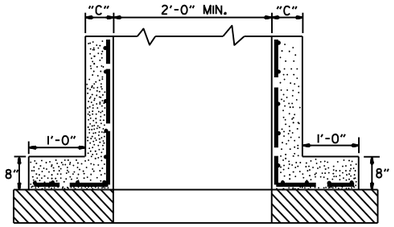
STANDARD DRAWING FES-2



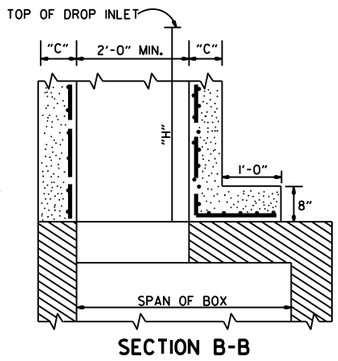
SECTION B-B



PLAN

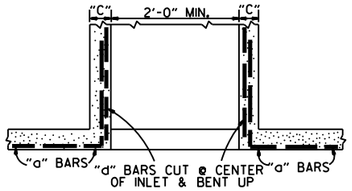


SECTION A-A

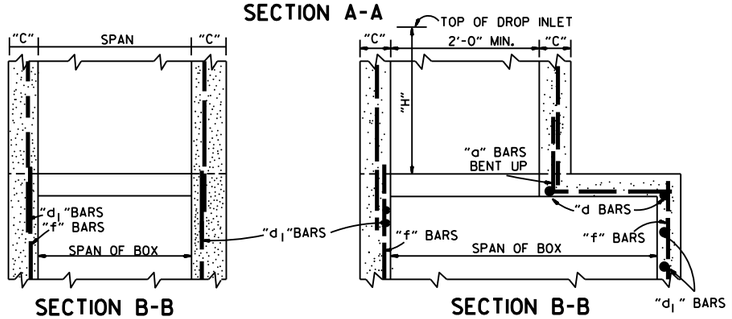


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



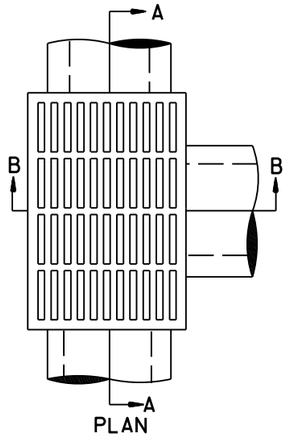
SECTION A-A



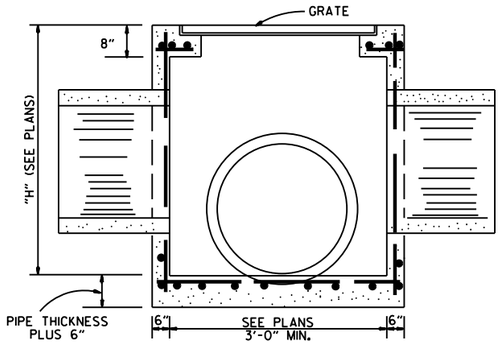
SECTION B-B SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.

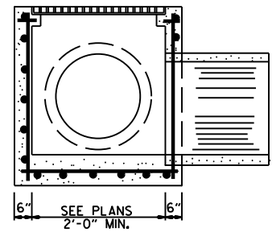


PLAN



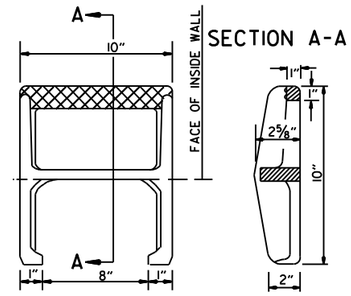
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.



SECTION B-B

DROP INLET (TYPE E)



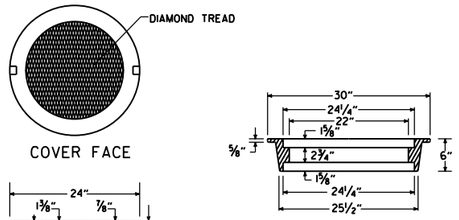
SECTION A-A

APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

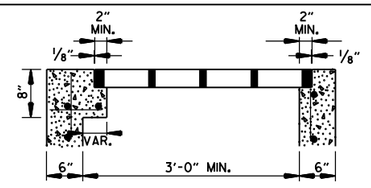
DETAIL OF STEP FOR DROP INLET



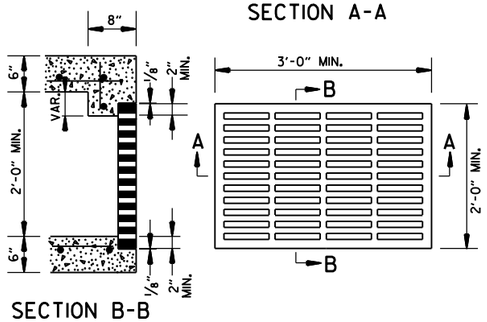
COVER SECTION RING SECTION

APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



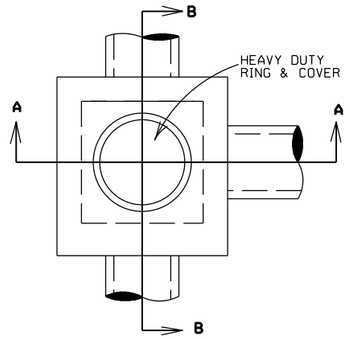
SECTION A-A



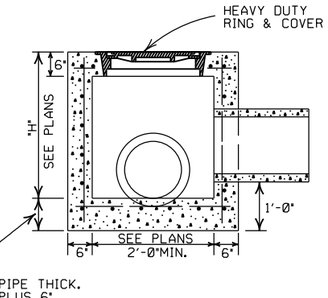
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

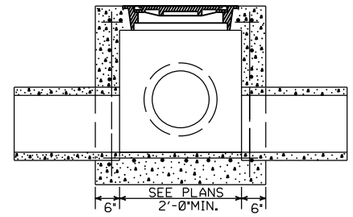


PLAN



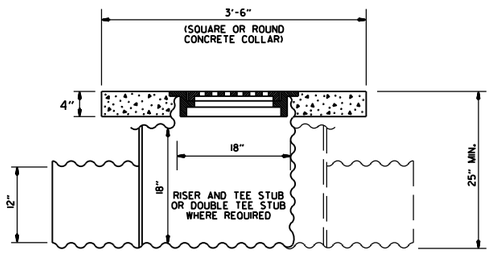
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

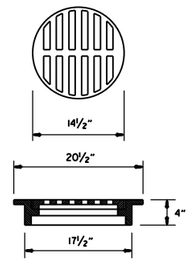


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL. DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

STANDARD DRAWING FPC-9

4'-0" LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0" CLASS A CONC.	HEIGHT 5'-0" REINF. STEEL	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL
		CU. YDS.	POUNDS	CU. YDS.	POUNDS
18"	2'-6"	1.77	156	0.28	22
24"	2'-6"	1.79	156	0.28	22
30"	3'-2"	2.39	205	0.30	26
36"	3'-8"	2.63	236	0.32	28
42"	4'-4"	2.95	250	0.34	30
48"	4'-10"	3.21	265	0.36	32

NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

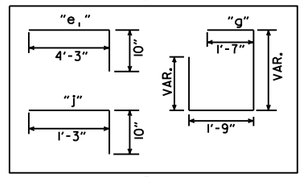
DROP INLET EXTENSION

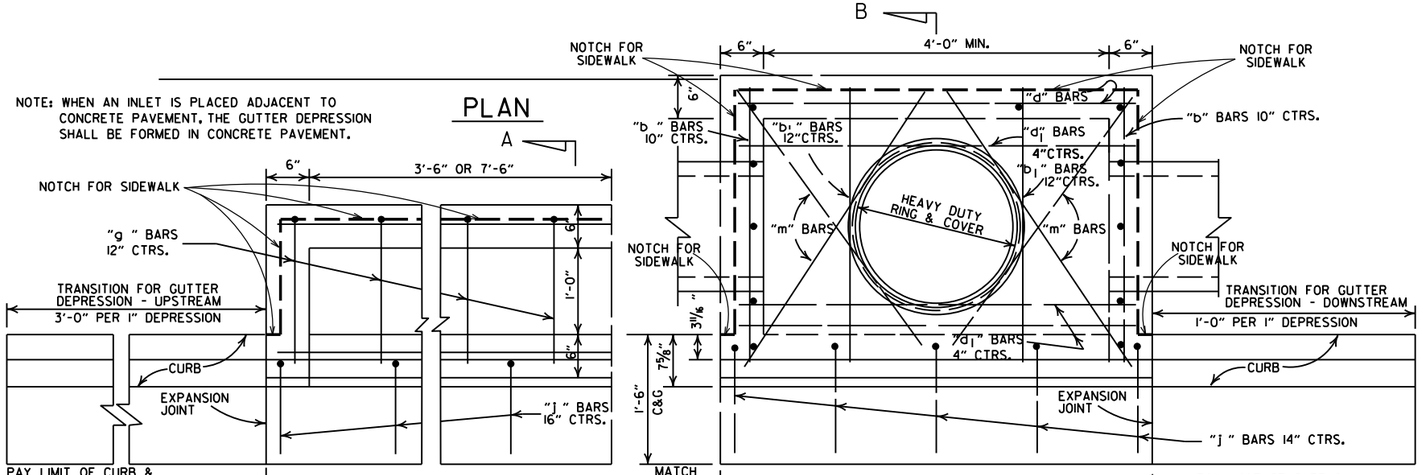
4'-0" CLASS A CONC.	4'-0" REINF. STEEL	8'-0" CLASS A CONC.	8'-0" REINF. STEEL
CU. YDS.	POUNDS	CU. YDS.	POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

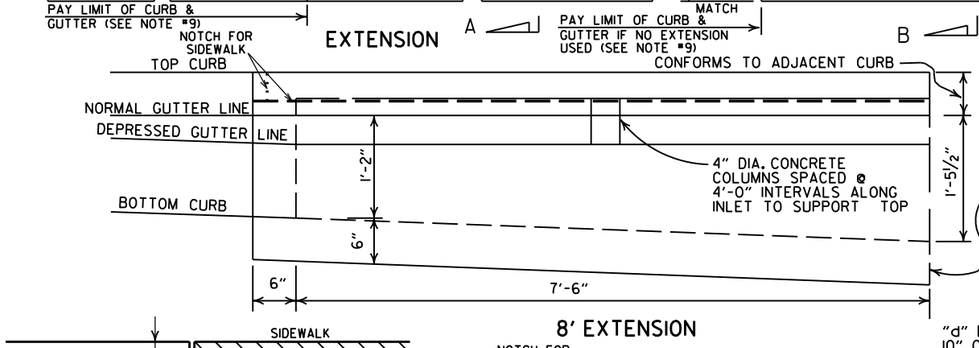
DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET

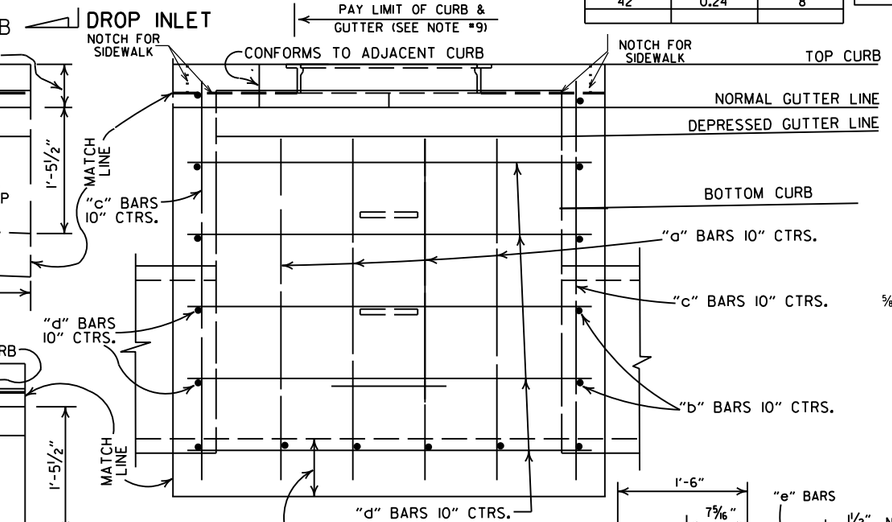
INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

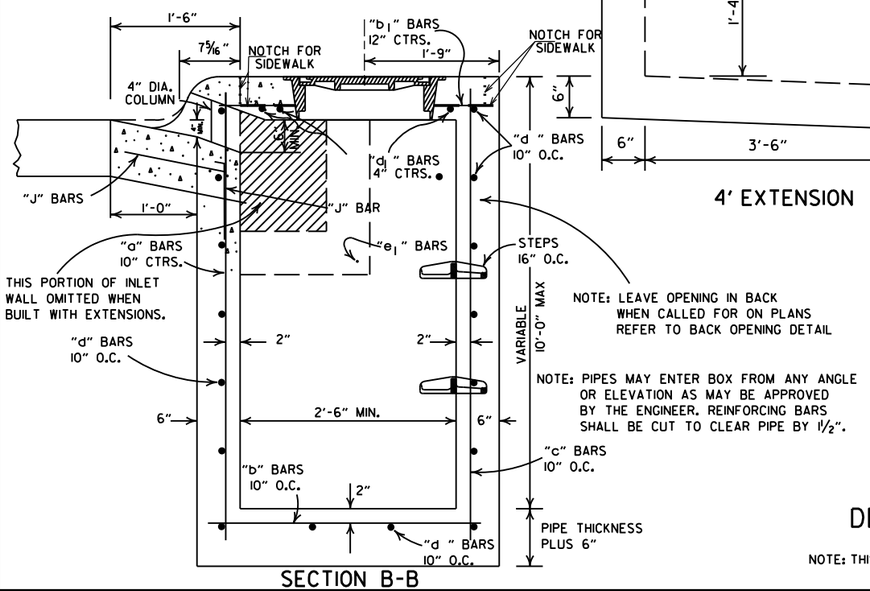
BAR DIAMETER

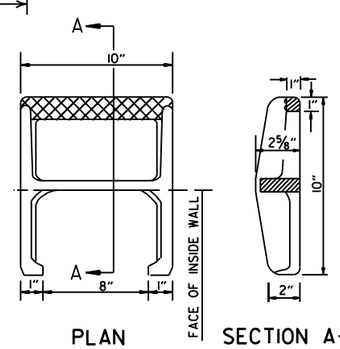


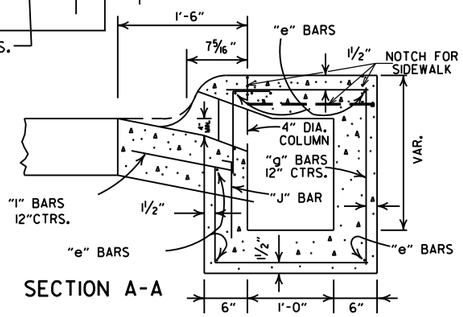


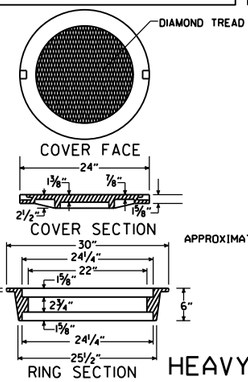






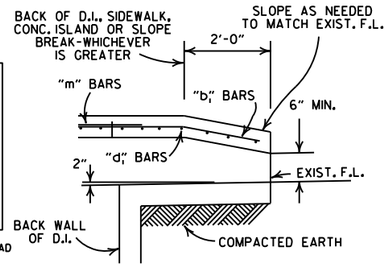






APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).

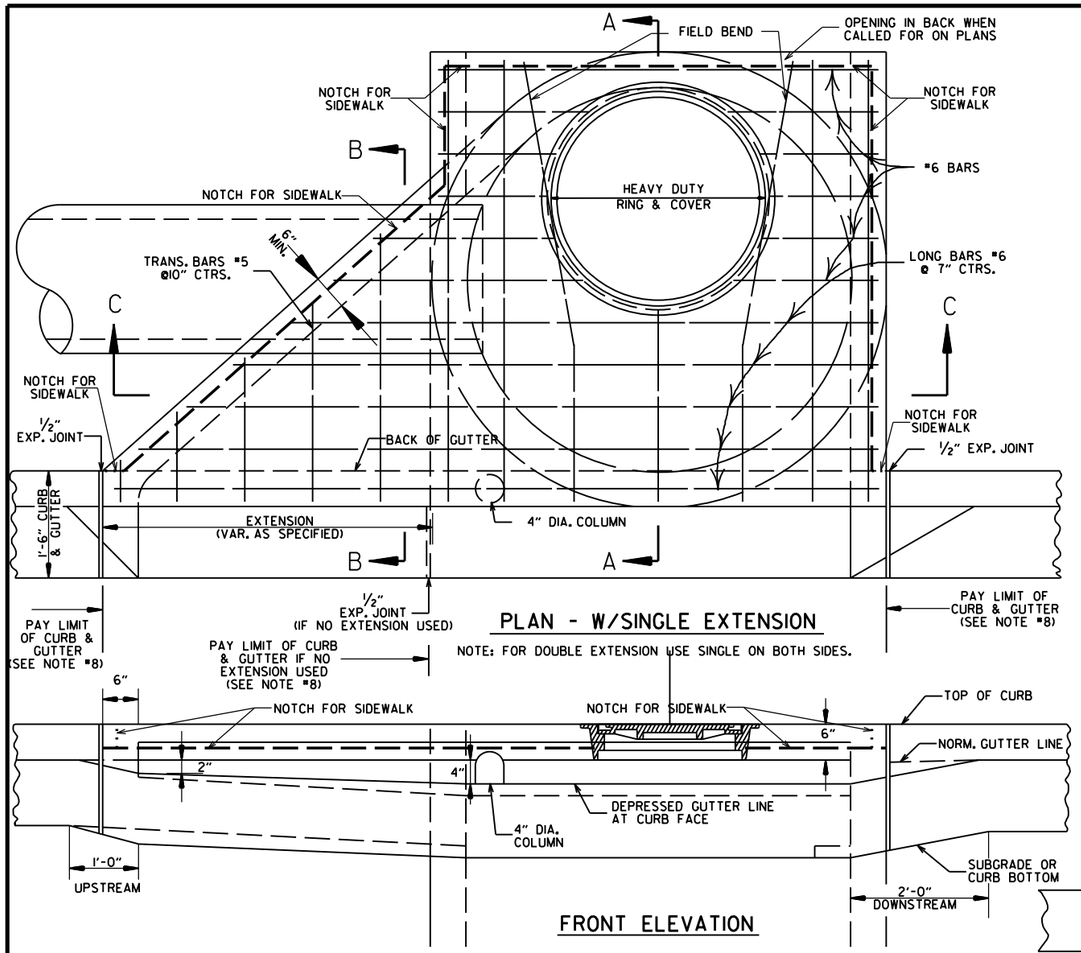
GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (FPC-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"×2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11	
10-18-96	CORRECTED SPELLING	
4-26-96	ADDED NOTE 8 & REVISED (4')(8') EXTENSION TITLES	10-18-96
4-1-93	REVISED BACK OPENING & NOTE	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

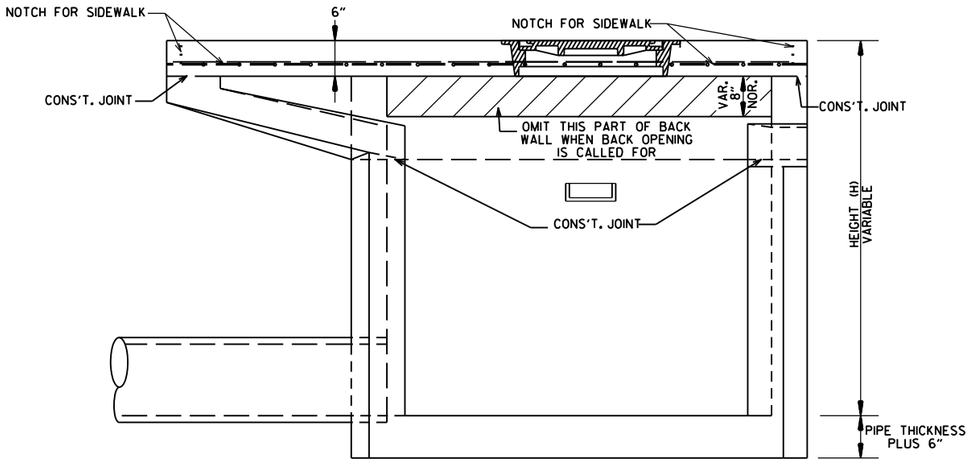
DETAILS OF DROP INLETS (TYPE C)

STANDARD DRAWING FPC-9E

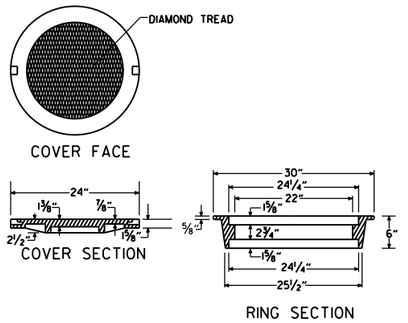


PLAN - W/SINGLE EXTENSION

FRONT ELEVATION



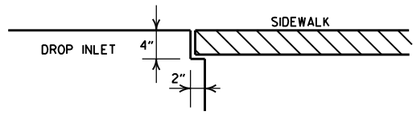
SECTION C-C



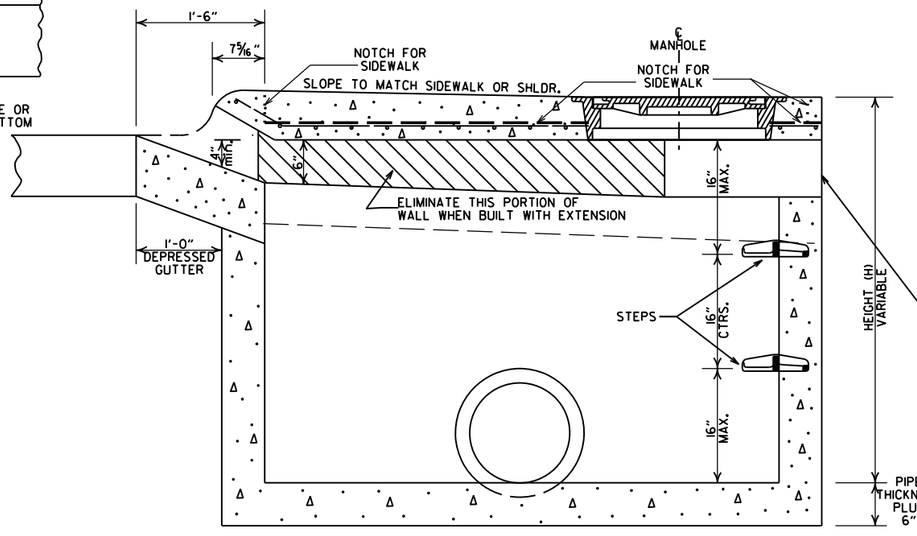
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

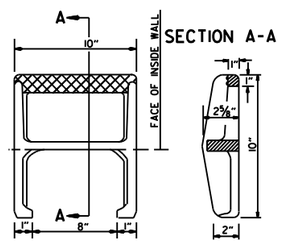
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.



DETAIL OF NOTCH FOR SIDEWALKS



SECTION A-A

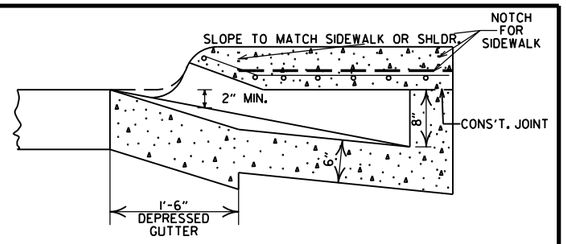


APPROX. WEIGHT = 11LBS. (CAST IRON)

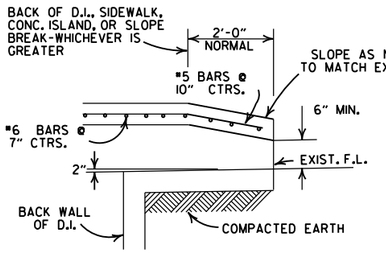
PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET



SECTION B-B



BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1½" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS	
		CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 11, ADJ. OPENING DIMENSION	
10-12-95	CORRECTED #6 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
4-27-95	TYPE C TO MO (OPEN, BACK DETAIL)	
11-3-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN. DETAIL & NOTE	4-1-93
8-16-91	REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL	8-15-91
11-30-89	ADDED NOTE NO. 12	11-30-89
5-23-89	ADDED NOTE & MINIMUM WALL THICKNESS	513-5-23-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	628-7-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-12-87

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M

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	43⅜	44	26⅝	27
42	51⅛	51	31⅜	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

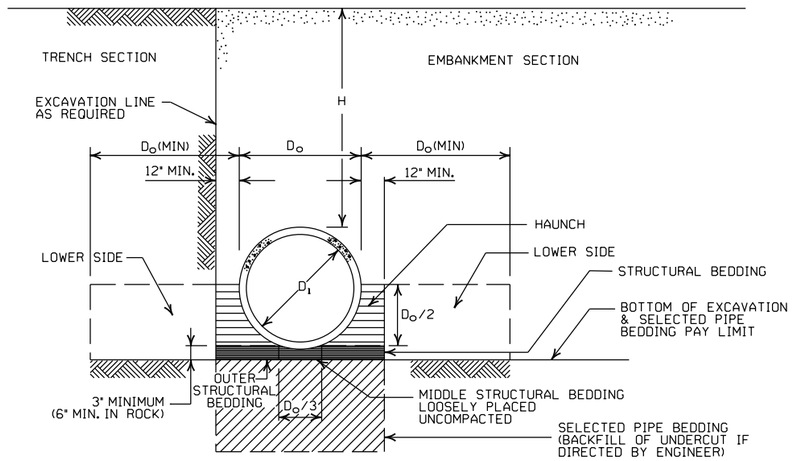
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_O = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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.

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

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

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

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

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

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

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

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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

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

CORRUGATED ALUMINUM PIPE (ROUND)

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

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

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

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

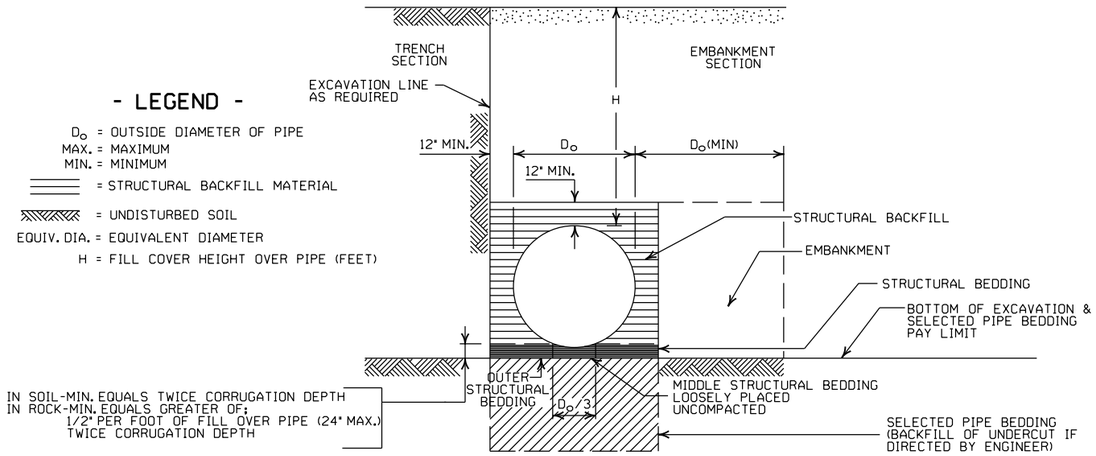
EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)	MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION TYPE 1	INSTALLATION TYPE 1		INSTALLATION TYPE 1	INSTALLATION TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION TYPE 2	INSTALLATION TYPE 1		INSTALLATION TYPE 2	INSTALLATION TYPE 1
36	40x31	5	0.079	3	2		12	15
42	46x36	6	0.079	3	2		13	15
48	53x41	7	0.079	3	2		13	15
54	60x46	8	0.079	3	2		13	15
60	66x51	9	0.079	3	2		13	15
66	73x55	12	0.079	3	2		15	15
72	81x59	14	0.079	3	2		15	15
78	87x63	14	0.079	3	2		15	15
84	95x67	16	0.109	3	2		15	15
90	103x71	16	0.109	3	2		15	15
96	112x75	18	0.109	3	2		15	15
102	117x79	18	0.109	3	2		15	15
108	128x83	18	0.138	3	2		15	15

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

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

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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."

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1INCH. 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.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

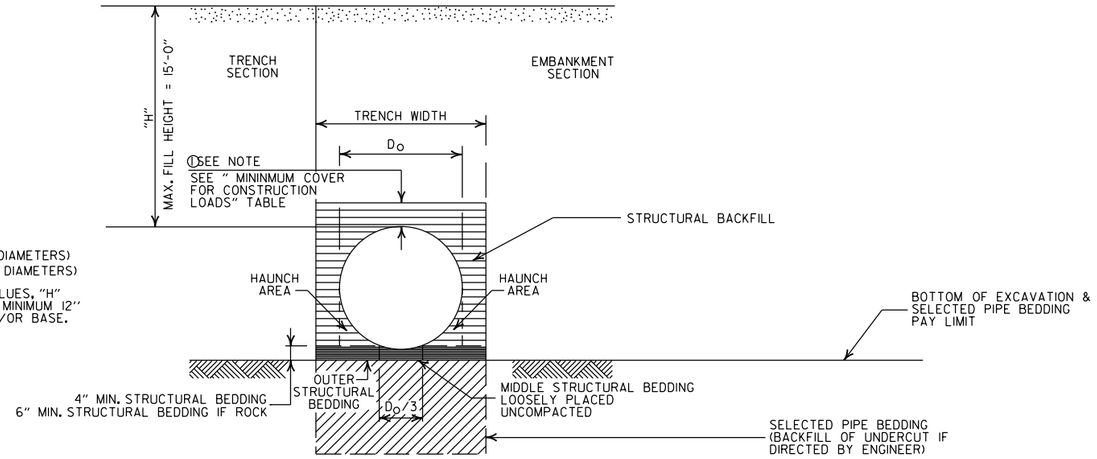
PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"H" >OR= 10'-0"
18"	4'-6"	4'-6"
24"	5'-0"	6'-0"
30"	5'-6"	7'-6"
36"	6'-0"	9'-0"
42"	7'-0"	10'-6"
48"	8'-0"	12'-0"

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)
MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

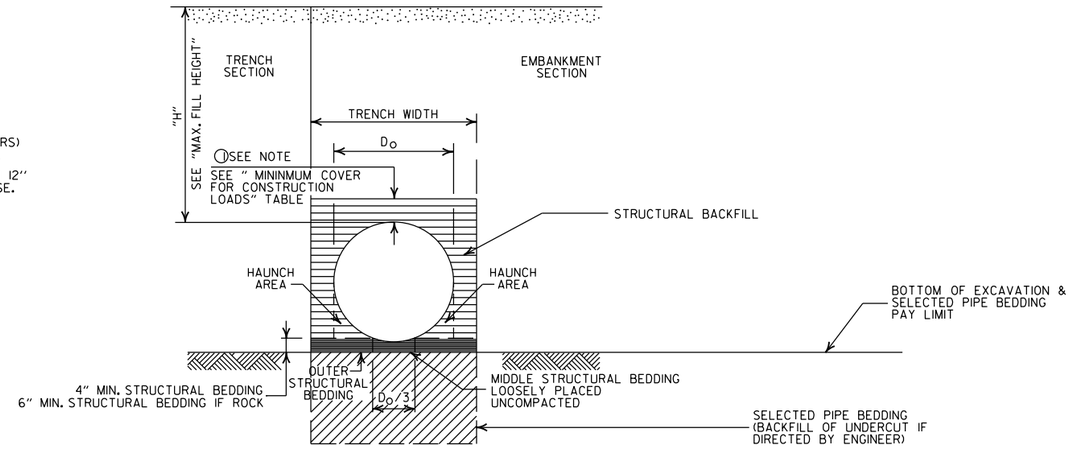
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL 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. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

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 1INCH. 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"

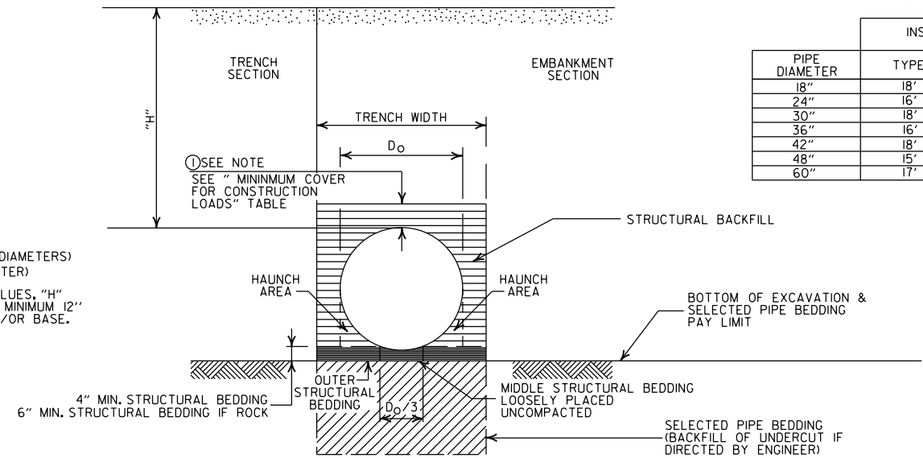
MINIMUM COVER FOR CONSTRUCTION LOADS

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"

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

①NOTE:
12" MIN. (18" - 42" DIAMETERS)
24" MIN. (60" DIAMETER)

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



MAXIMUM HEIGHT OF FILL "H"

PIPE DIAMETER	INSTALLATION TYPE	
	TYPE 1	TYPE 2
18"	18'	14'
24"	16'	12'
30"	18'	14'
36"	16'	12'
42"	18'	13'
48"	15'	11'
60"	17'	12'

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 SPECIFICIATIONS 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

= UNDISTURBED SOIL

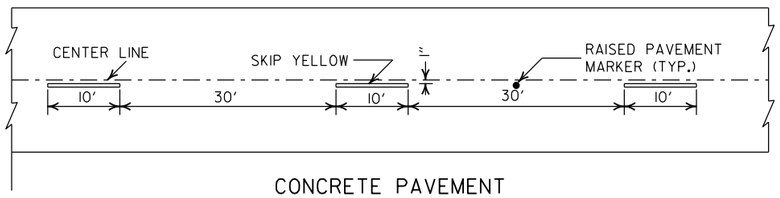
DATE	REVISION	DATE FILMED
02-27-20	REVISED	
11-07-19	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

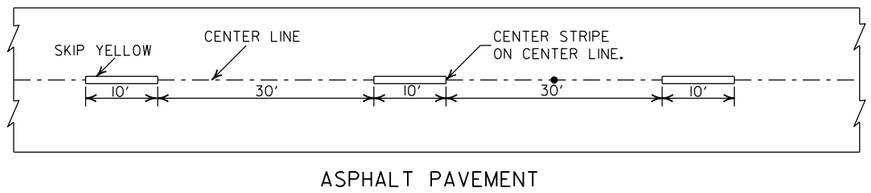
PLASTIC PIPE CULVERT (POLYPROPYLENE)

STANDARD DRAWING PCP-3

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.

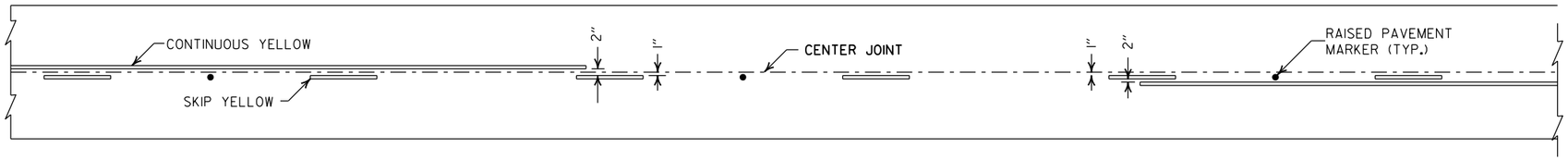


CONCRETE PAVEMENT

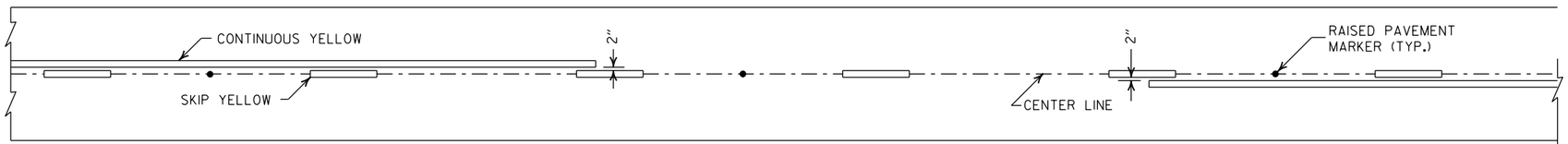


ASPHALT PAVEMENT

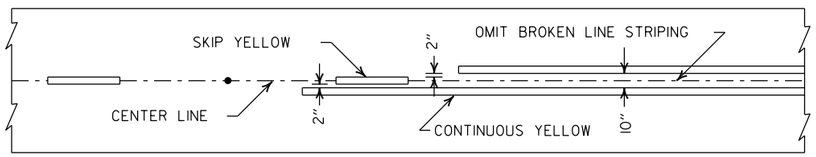
BROKEN LINE STRIPING



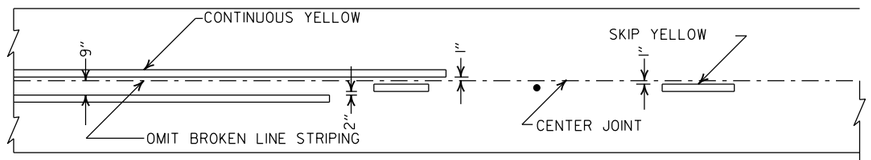
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

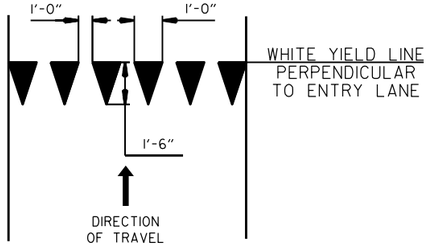


ASPHALT PAVEMENT

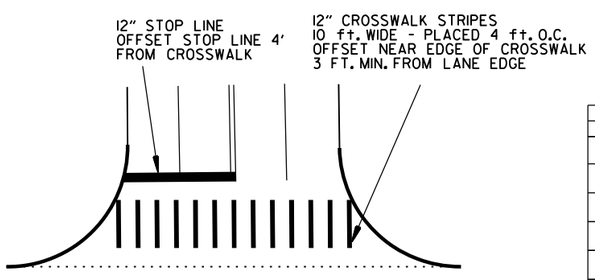


CONCRETE PAVEMENT

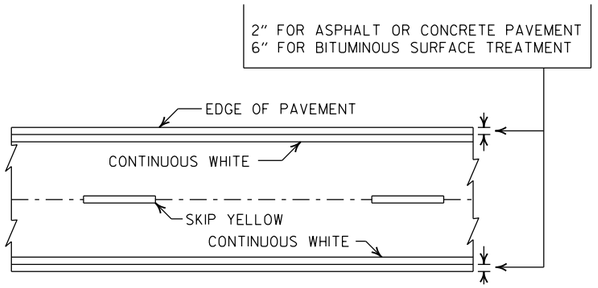
STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL



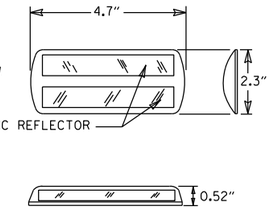
CROSSWALK AND STOP LINE DETAILS



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



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

DATE	REVISION	FILMED
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

ARKANSAS STATE HIGHWAY COMMISSION

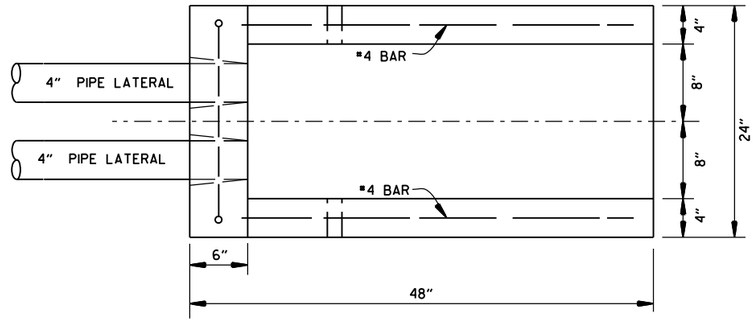
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

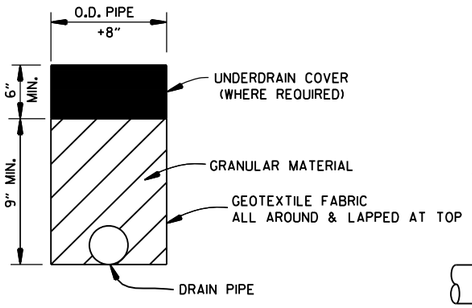
NOTE:

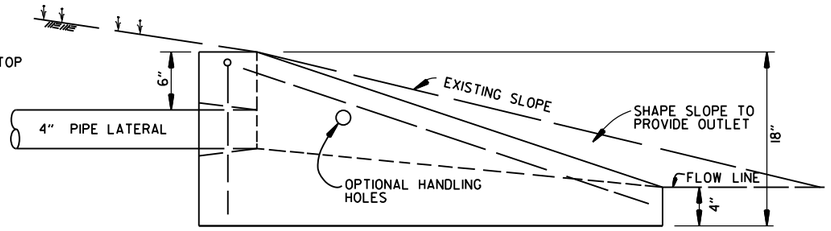
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.

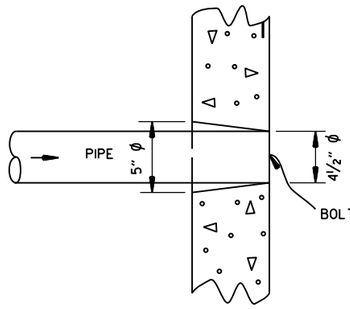


PLAN VIEW

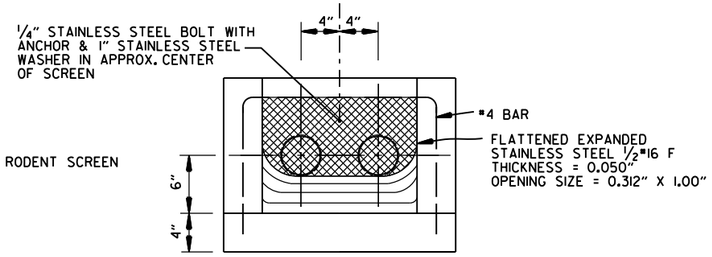




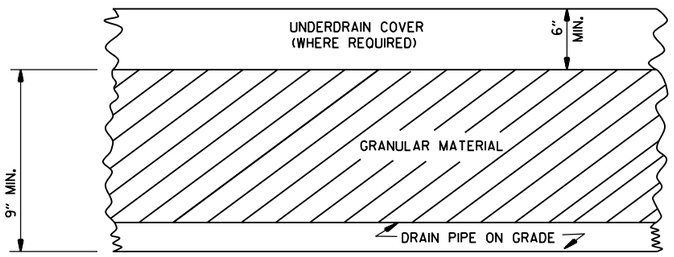
SIDE VIEW



DETAIL OF HOLE FOR 4" PIPE

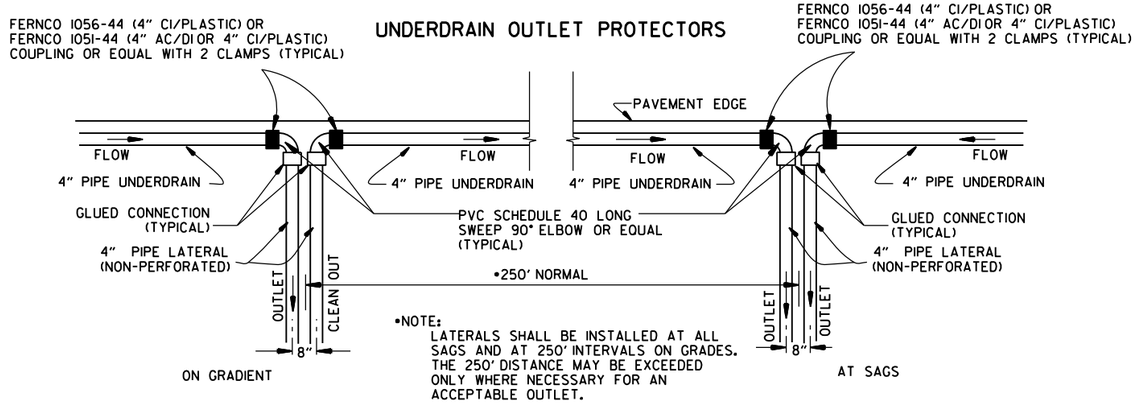


FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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.

DATE	REVISION	DATE FILMED
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; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

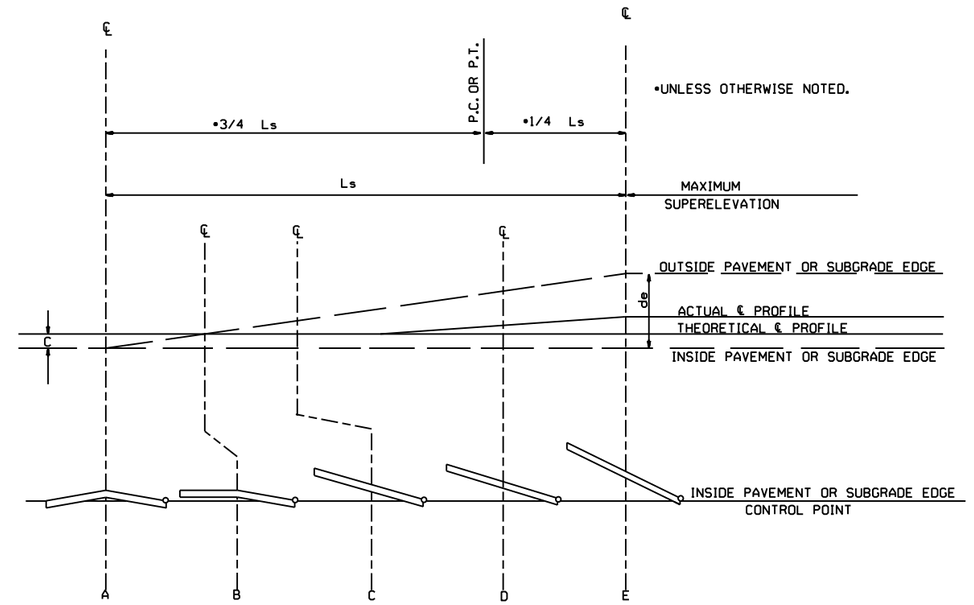
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC (4% MAXIMUM)

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	DEGREE OF CURVE	35 MPH e	35 MPH Ls (FT) MINIMUM	35 MPH Ls (FT) DESIRABLE	DEGREE OF CURVE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	DEGREE OF CURVE	45 MPH e	45 MPH Ls (FT) MINIMUM	45 MPH Ls (FT) DESIRABLE
0° 15'	NC			0° 15'	NC			0° 15'	NC			0° 15'	NC		
0° 30'				0° 30'				0° 30'				0° 30'			
0° 45'				0° 45'				0° 45'				0° 45'			
1° 00'				1° 00'				1° 00'				1° 00'	RC	90	125
1° 15'				1° 15'				1° 15'				1° 15'			
1° 30'				1° 30'				1° 30'	RC	84	100	1° 30'	0.022	95	
1° 45'				1° 45'				1° 45'				1° 45'	0.024	99	
2° 00'				2° 00'	RC	78	100	2° 00'	0.022	88		2° 00'	0.026	104	
2° 15'				2° 15'				2° 15'	0.024	92		2° 15'			
2° 30'	RC	72		2° 30'	0.022	82		2° 30'	0.026	97		2° 30'	0.028	108	
2° 45'				2° 45'				2° 45'				2° 45'	0.030	113	
3° 00'				3° 00'	0.024	86		3° 00'				3° 00'			
3° 15'	0.022	75		3° 15'				3° 15'	0.028	101	125	3° 15'	0.032	117	
3° 30'				3° 30'				3° 30'				3° 30'			
3° 45'				3° 45'	0.026	90		3° 45'				3° 45'			
4° 00'	0.024	79	100	4° 00'				4° 00'	0.030	105		4° 00'	0.034	122	150
4° 15'				4° 15'				4° 15'				4° 15'			
4° 30'				4° 30'	0.028	94	125	4° 30'	0.032	109		4° 30'	0.036	126	
4° 45'				4° 45'				4° 45'				4° 45'			
5° 00'	0.026	83		5° 00'	0.030	98		5° 00'	0.034	113		5° 00'	0.038	131	
5° 30'				5° 30'				5° 30'				5° 30'			
6° 00'				6° 00'	0.032	101		6° 00'	0.036	118		6° 00'	0.040	135	
6° 30'	0.028	86		6° 30'				6° 30'			150				
7° 00'				7° 00'				7° 00'	0.038	122					
7° 30'	0.030	90		7° 30'	0.034	105		7° 30'							
8° 00'				8° 00'				8° 00'	0.040	126					
8° 30'	0.032	93		8° 30'	0.036	109									
9° 00'				9° 00'			150								
9° 30'				9° 30'											
10° 00'	0.034	97		10° 00'	0.038	113									
10° 30'				10° 30'											
11° 00'			125	11° 00'											
11° 30'				11° 30'	0.040	117									
12° 00'															
12° 30'	0.036	100													
13° 00'															
13° 30'															
14° 00'															
14° 30'	0.038	104													
15° 00'															
15° 30'															
16° 00'															
16° 30'	0.040	108	150												

D MAX = 22° 45' | D MAX = 15° 15' | D MAX = 10° 30' | D MAX = 8° 00'

ABBREVIATIONS

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

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

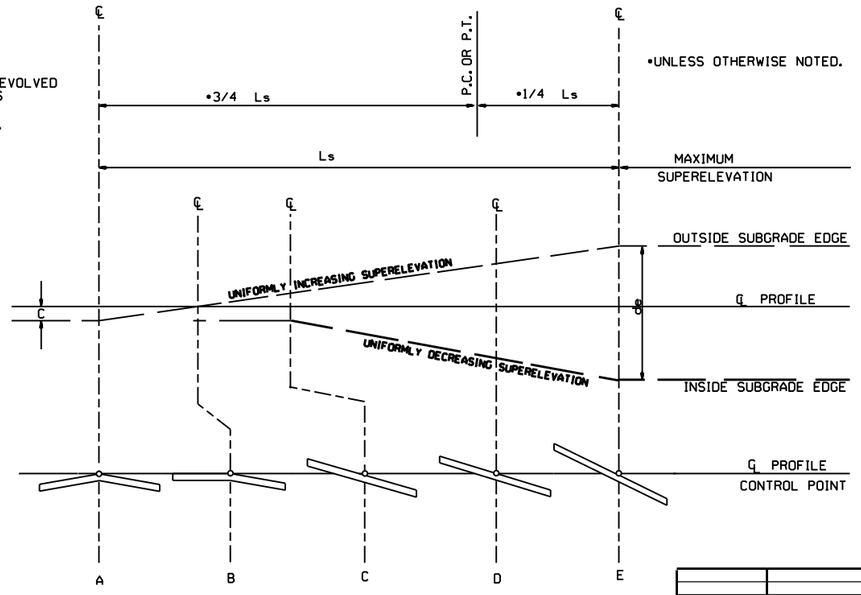
GENERAL NOTES

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

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

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



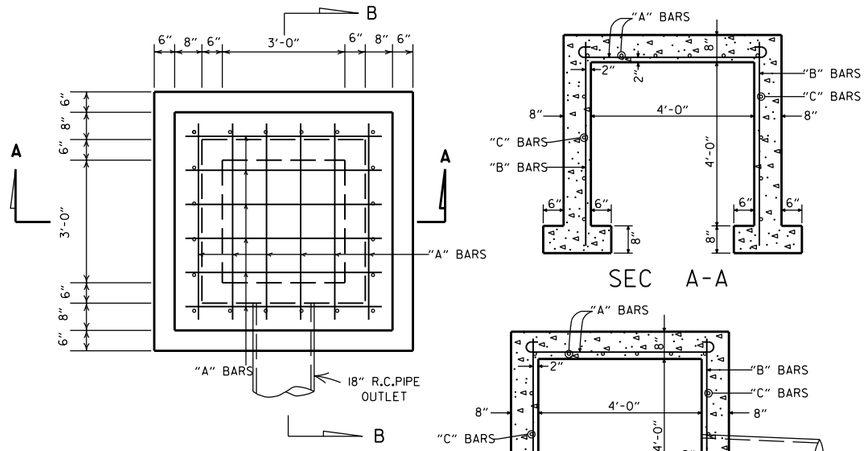
STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

11-07-19	ISSUED	
DATE	REVISION	DATE FILMED

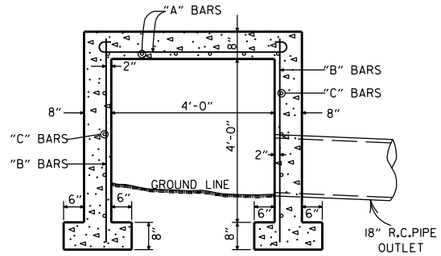
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC (4% MAXIMUM)

STANDARD DRAWING SE-3



SEC A-A



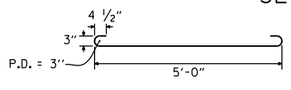
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



"A" BARS

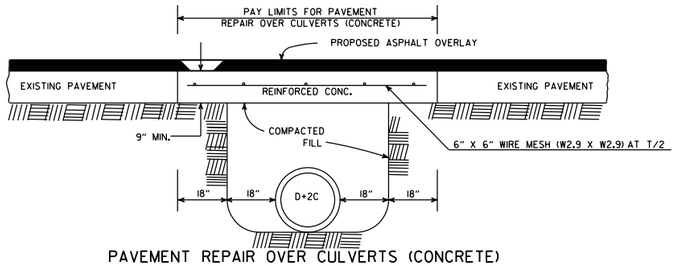
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

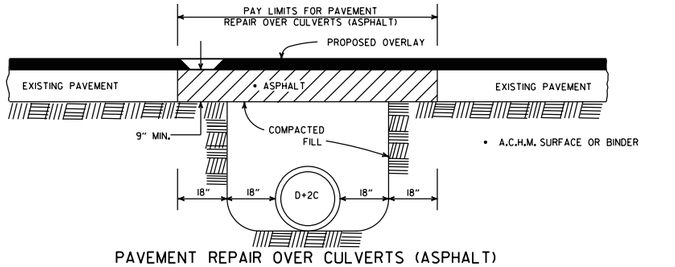
GENERAL NOTE:

THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



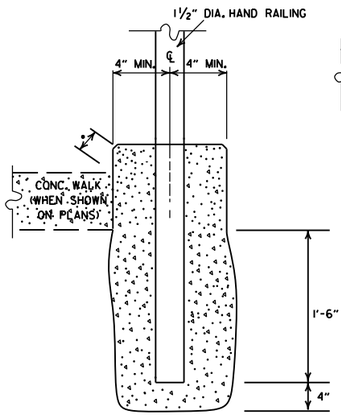
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



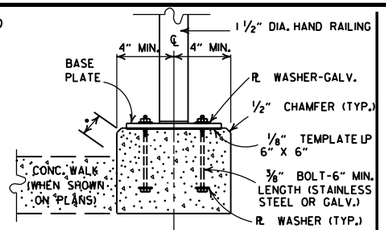
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

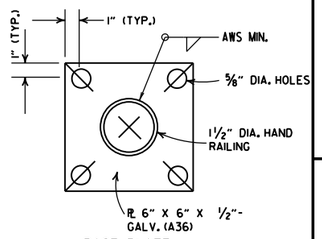
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

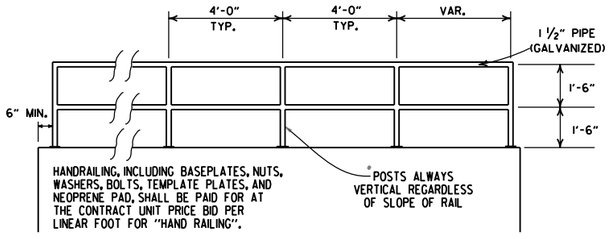


POST CONNECTION TO WALL

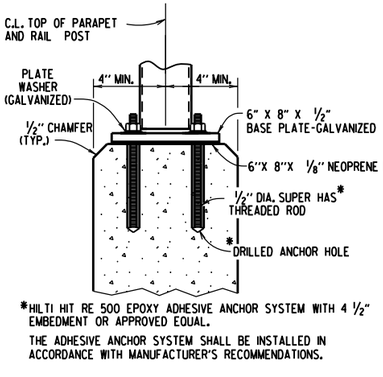


BASE PLATE

POST CONNECTION DETAILS



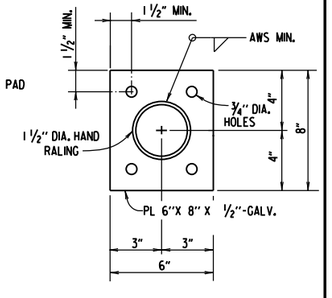
HAND RAILING SHALL CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

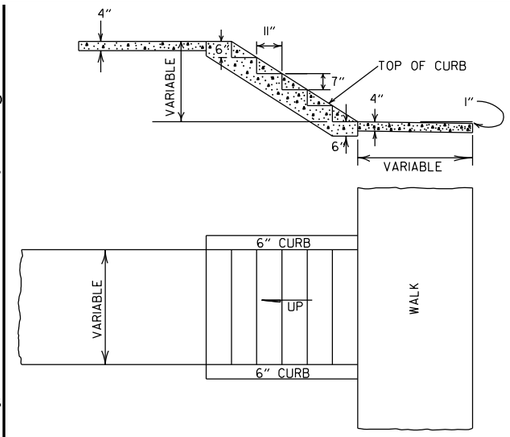
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
10-25-18	REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS	
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-94	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF SPECIAL ITEMS

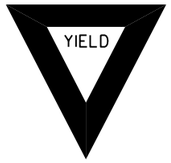
STANDARD DRAWING SI - 1

R1-1



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

R1-2



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

R2-1



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"

R4-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



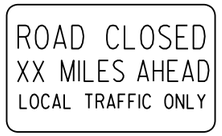
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



48"X30"

RII-3A



60"X30"

RII-4



60"X30"

W21-5a



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

WI-1



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

WI-2



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

WI-3



STD. 48"X48"

WI-4



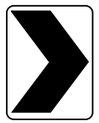
STD. 48"X48"

WI-6



STD. 48"X24"
SPECIAL 60"X30"

WI-8



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

W3-1



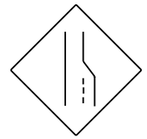
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



EXPWY. 36"X36"
FWY. 48"X48"

W9-2



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

WI3-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



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

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-11



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

W8-9



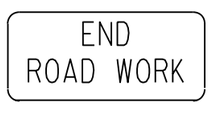
STD. 36"X36"
FWY. 48"X48"

G20-1



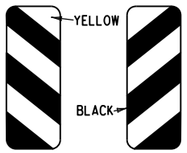
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

M4-9



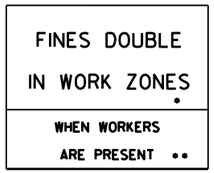
STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10



48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ 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.

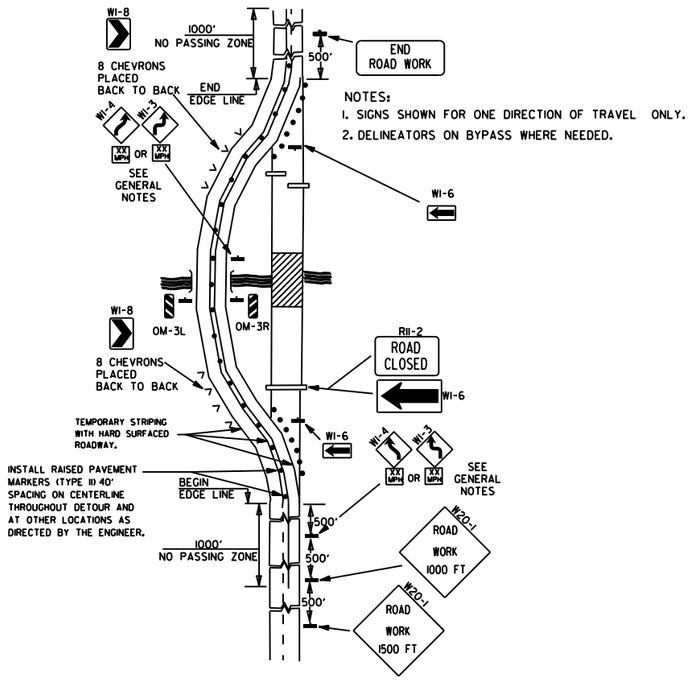
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W21-5a	
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	

ARKANSAS STATE HIGHWAY COMMISSION

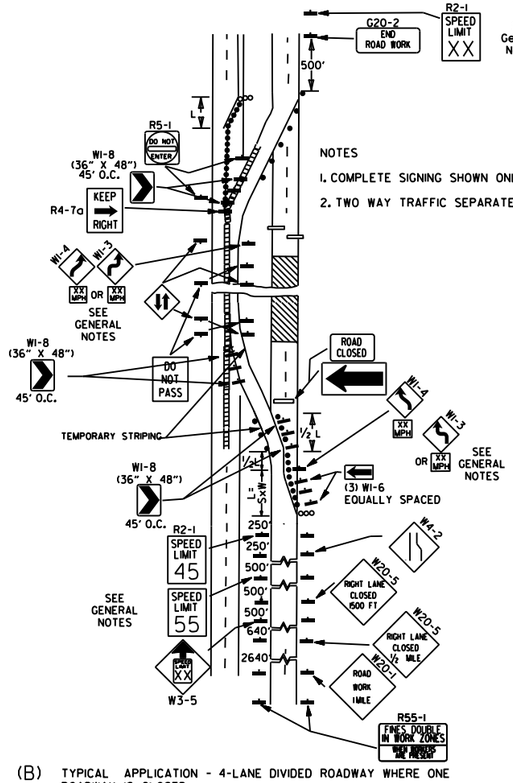
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



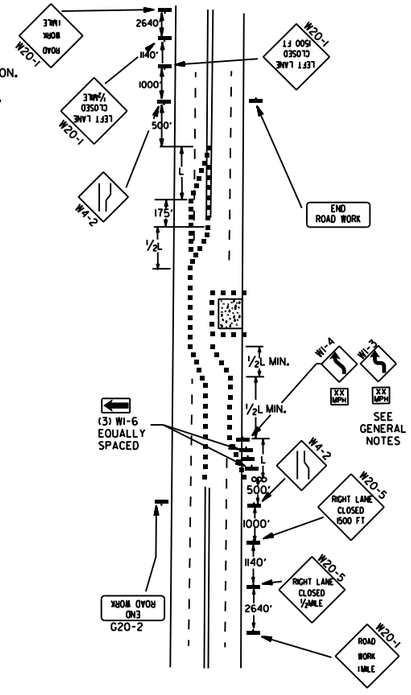
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

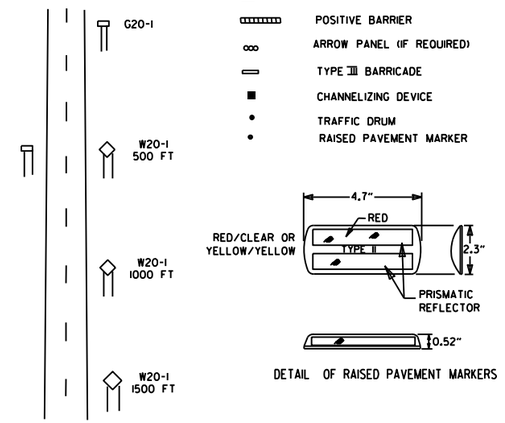


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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



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



DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

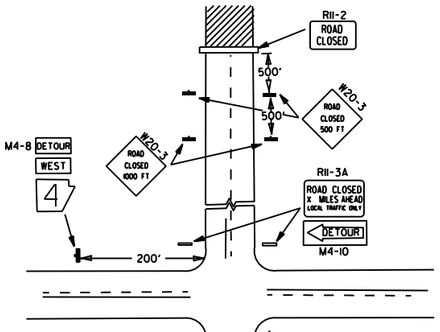
L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

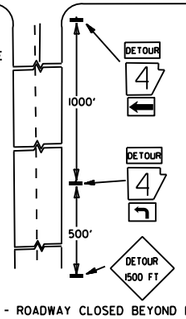
WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

GENERAL NOTES:

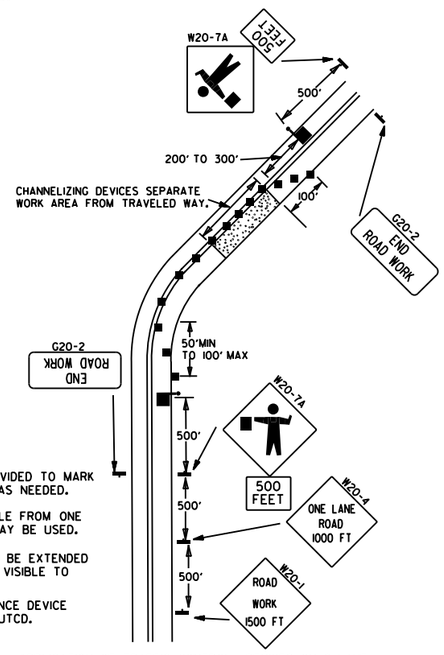
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS
2. WHEN THE EXISTING SPEED LIMIT 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 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
8. 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.
9. 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).



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

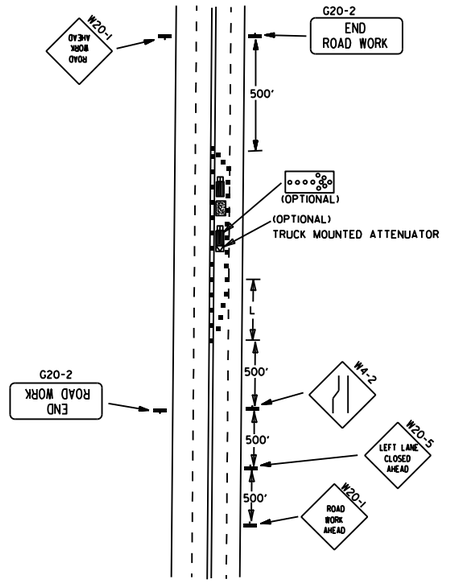


(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL. REFER TO MUTCD.

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



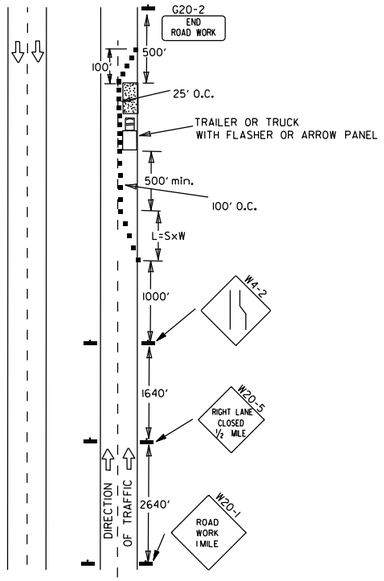
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
05-20-21	REVISED NOTE 7	
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	

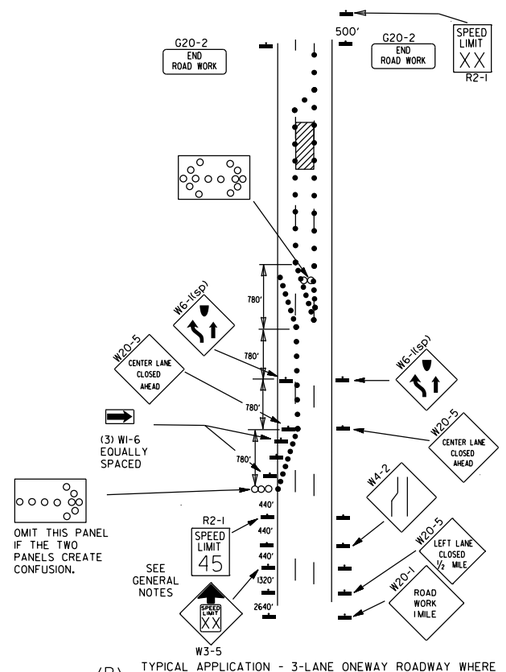
ARKANSAS STATE HIGHWAY COMMISSION

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.



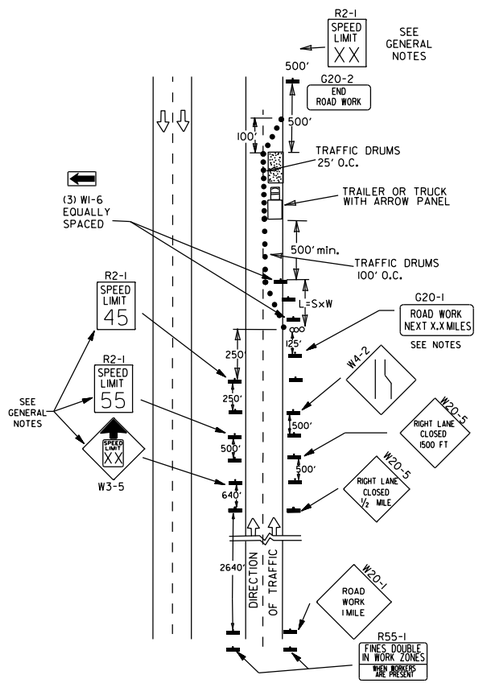
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

KEY:

- ARROW PANEL (IF REQUIRED)
- ■ CHANNELIZING DEVICE
- ● TRAFFIC DRUM

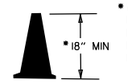
GENERAL NOTES:

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 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS, AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1 (1 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF 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. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
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).



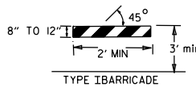
(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES



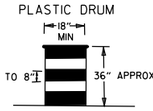
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

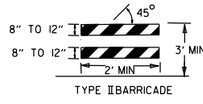
CONES



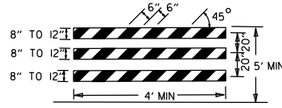
TYPE I BARRICADE

PLASTIC DRUM



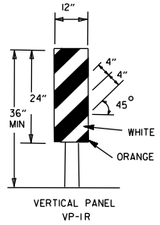


TYPE II BARRICADE



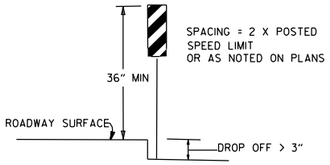
TYPE III BARRICADE

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

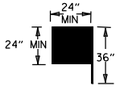


VERTICAL PANEL VP-1R

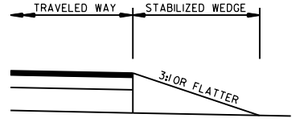
VERTICAL PANEL PLACEMENT



FLAG



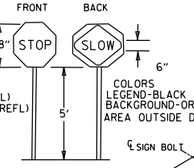
FLAG SHALL BE OF GOOD GRADE RED MATERIAL

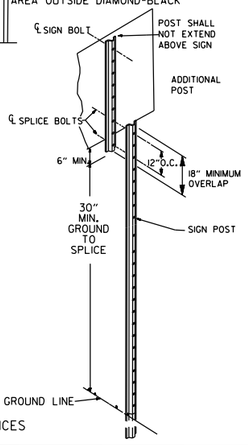


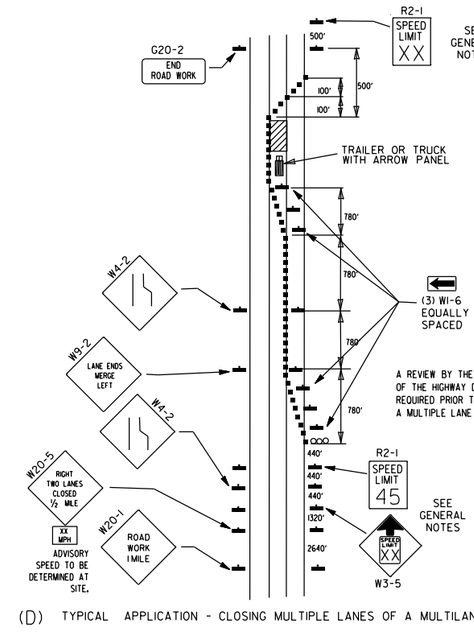
STABILIZED WEDGE

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

STOP SLOW PADDLE







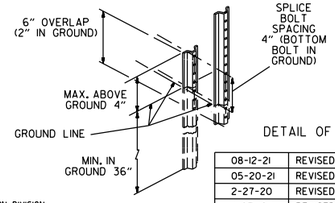
A REVIEW BY THE ROADWAY DESIGN DIVISION OF THE HIGHWAY DEPARTMENT WILL BE REQUIRED PRIOR TO IMPLEMENTING A MULTIPLE LANE CLOSURE.

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

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DETAIL OF SPLICES

TRAFFIC CONTROL DEVICES

NON-INTERSTATE

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE[6]	STANDARD LANE CLOSURE[6]
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS[1]	W8-9 AND TRAFFIC DRUMS[1]
> 3" ≤ 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[1]
> 6" ≤ 18"	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]
> 18" ≤ 24"	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
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 3" ≤ 6"	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.
3. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
4. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
6. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

DATE	REVISION	FILMED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE 11	
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	

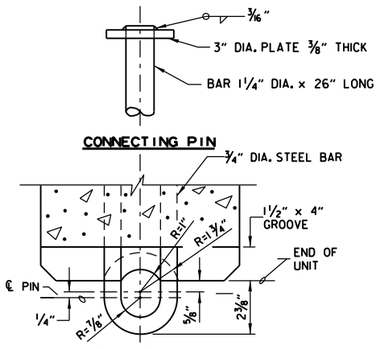
ARKANSAS STATE HIGHWAY COMMISSION

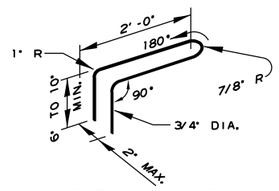
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

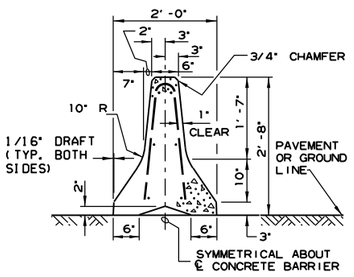
STANDARD DRAWING TC-3

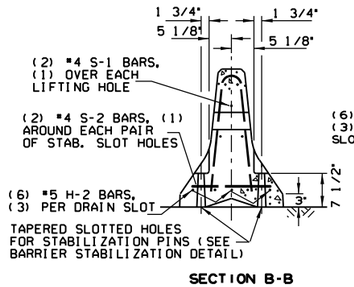
REINFORCING BAR TABLE PER BARRIER UNIT

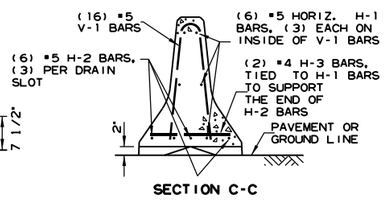
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ.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

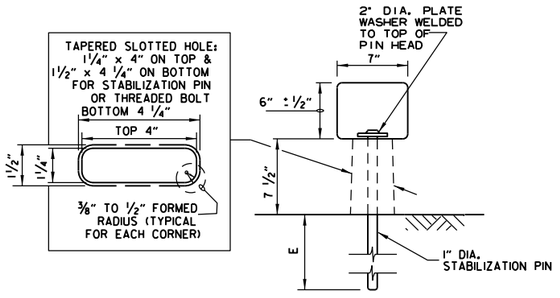




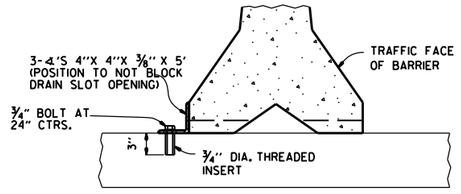








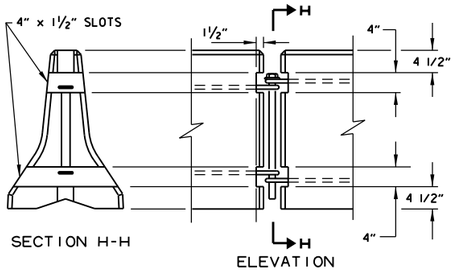
Ⓔ 4" - CONCRETE PAVEMENT
8" - ASPHALT PAVEMENT
12" - SHOULDER AREAS

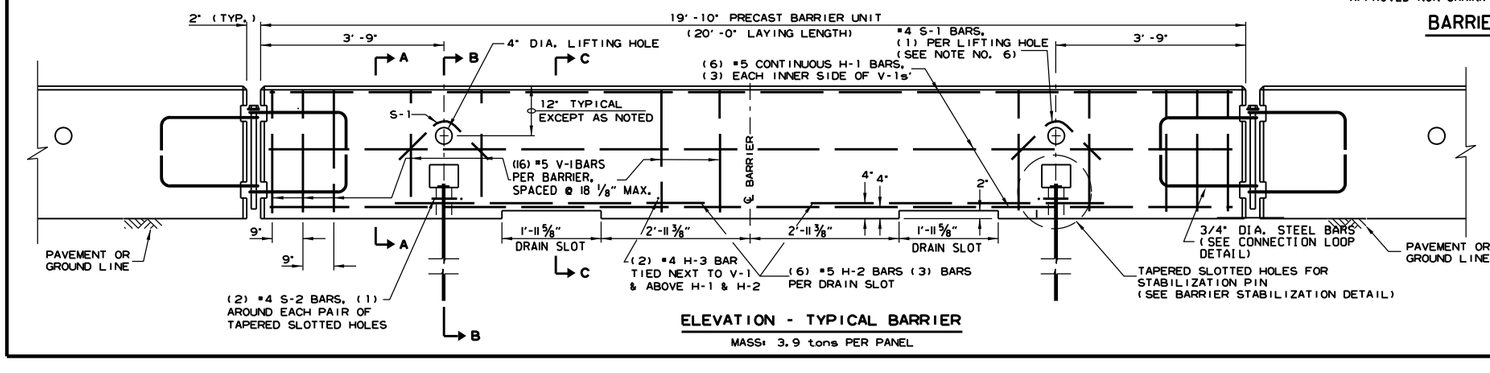


NOTE: " THREADED INSERTS SHALL BE CAST IN PLACE FOR ALL NEW BRIDGE DECKS AND DRILLED AND GROUTED FOR EXISTING BRIDGE DECKS. INSERTS SHALL HAVE A MINIMUM ULTIMATE LOAD CAPACITY OF 8000 LBS. IN TENSION. AFTER REMOVAL OF BARRIER, BOLTS, AND ANGLES, THE INSERTS SHALL BE FILLED WITH APPROVED NON-SHRINK EPOXY.

BARRIER STABILIZATION DETAIL
BRIDGE DECKS







MASS: 3.9 tons PER PANEL

GENERAL NOTES

1. THE CONTRACTOR SHALL FURNISH THE PRECAST CONCRETE BARRIER UNITS AND SHALL BE RESPONSIBLE FOR THE MANUFACTURE, SHIPMENT, STORAGE, PLACEMENT AND REMOVAL. AT THE COMPLETION OF THE PROJECT, THE PRECAST UNITS WILL REMAIN THE PROPERTY OF THE CONTRACTOR.

2. MATERIALS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
   CONCRETE: 2500 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
   REINFORCING STEEL: AASHTO M 31 OR M 53, GRADE 60
   STRUCTURAL STEEL: AASHTO-M270 GRADE 36 SHALL BE USED FOR THE CONNECTION PIN, CONNECTION LOOPS, AND STABILIZATION PINS. A ONE PIECE PIN WITH A 3" ROUNDED TOP MAY BE USED IN PLACE OF THE DETAILED CONNECTION PIN.
   DELINEATORS: DELINEATORS SHALL BE MOUNTED AT 10' SPACING ON TOP OF PRECAST BARRIER.

   IN APPLICATIONS WHERE BARRIER WALL IS WITHIN 6 FEET OF A TRAFFIC LANE, ADDITIONAL DELINEATORS SHALL BE PLACED ON THE BARRIER AT 10' SPACING APPROXIMATELY ONE (1) FOOT FROM THE TOP OF THE BARRIER. DELINEATORS SHALL BE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR CONSTRUCTION CONCRETE BARRIER MARKERS.
   DELINEATOR COLOR SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
   PAYMENT FOR DELINEATORS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID PER LIN. FT. FOR "FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER". THE CONTRACTOR SHALL CERTIFY TO THE ENGINEER THAT THE MATERIAL AND THE DESIGN USED IN THE PRECAST BARRIER UNITS MEETS THE REQUIREMENTS AS SHOWN ON THIS STANDARD DRAWING.

3. OTHER PRECAST CONCRETE BARRIERS THAT HAVE BEEN CRASH TESTED AND APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION TO MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) WILL BE ACCEPTED IN LIEU OF THE BARRIER SHOWN. DRAIN SLOTS SHALL BE PROVIDED AS NEEDED OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH A CERTIFICATION OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) COMPLIANCE FOR ANY OTHER TYPES OF PRECAST BARRIER TO BE USED. THE CERTIFICATION SHALL STATE THAT THE PRECAST CONCRETE BARRIER MEETS THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH). MIXING OF SHAPES WILL NOT BE ALLOWED IN A CONTINUOUS LINE OF UNITS.

4. DOWEL HOLES IN PAVEMENT OR BRIDGE SLABS THAT ARE TO REMAIN IN PLACE SHALL BE FILLED. HOLES IN CONCRETE PAVEMENT AND BRIDGE SLABS SHALL BE FILLED WITH AN APPROVED NON-SHRINK EPOXY GROUT. HOLES IN ASPHALT PAVEMENT SHALL BE FILLED WITH AN APPROVED ASPHALT JOINT FILLER. PAYMENT FOR DRILLING AND FILLING HOLES TO BE INCLUDED IN THE PRICE FOR VARIOUS BARRIER ITEMS.

5. ATTACH UNITS TO ROADWAY SURFACE WITH STABILIZATION PINS AND TO DECK SLABS USING BOLTS WHEN REQUIRED.

6. A 4" WHITE PVC SLEEVE MAY BE USED TO FORM THE LIFTING HOLE AND IF USED THE SLEEVE IS TO BE LEFT IN PLACE.

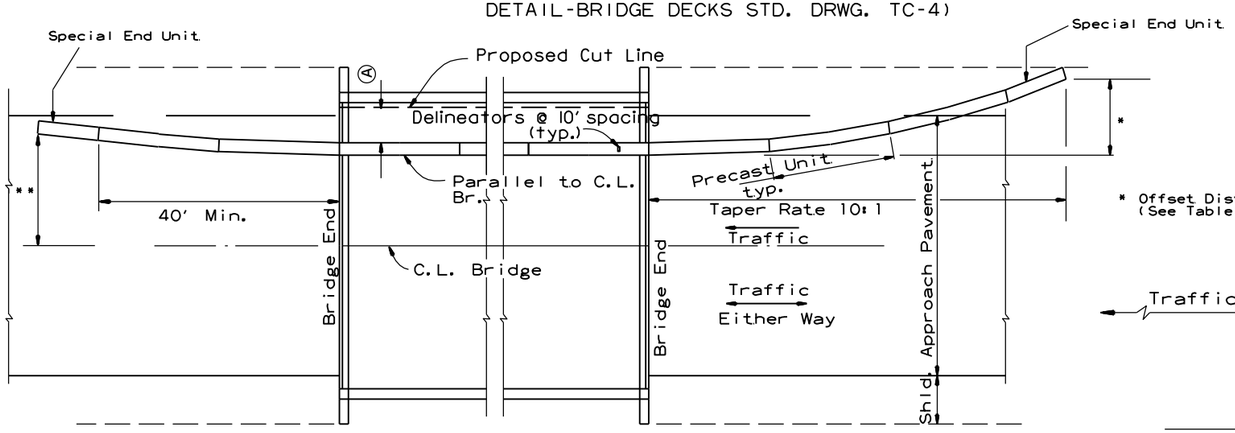
DATE	REVISION	FILMED
11-07-19	REVISED NOTE 3	
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO WASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED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

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

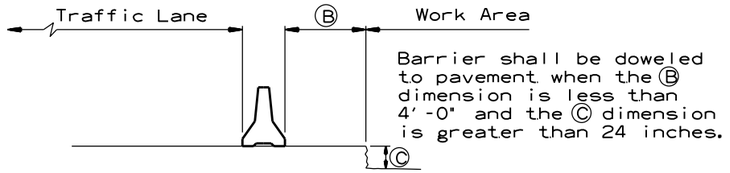
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

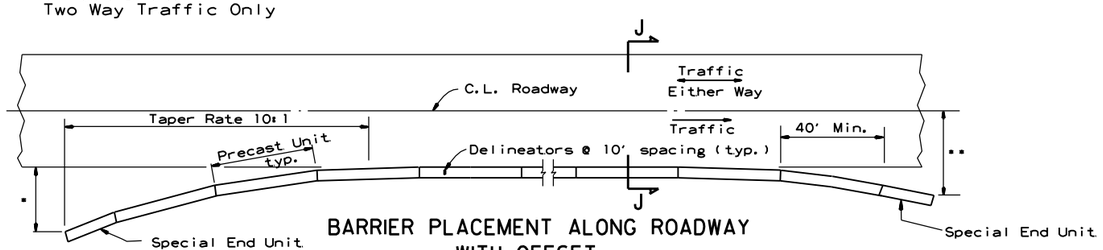
** Offset Distance for Two Way Traffic Only



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

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

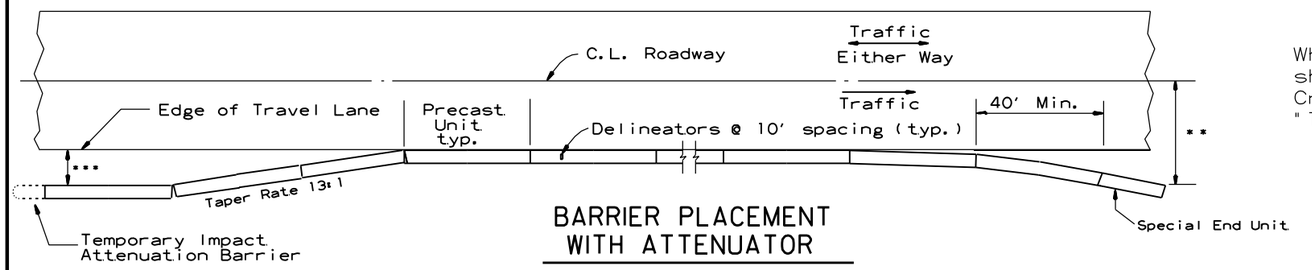
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

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

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

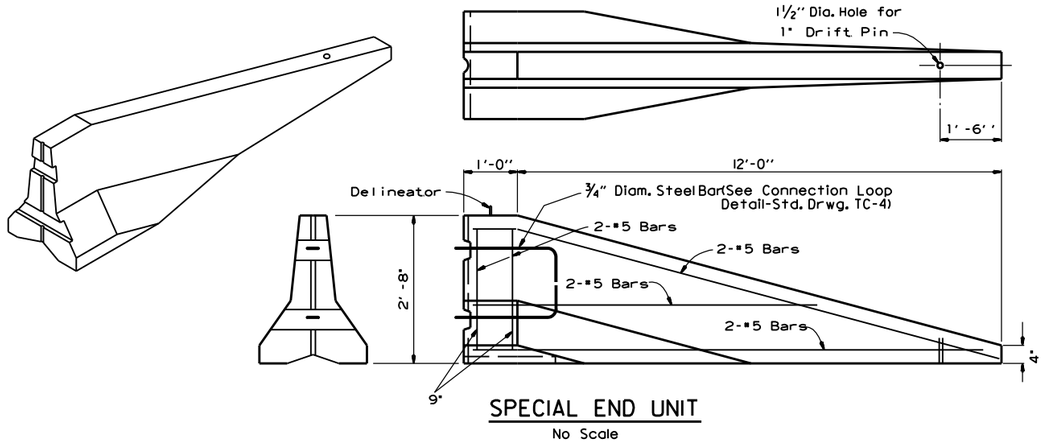


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

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

** Offset Distance For Two Way Traffic Only



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with 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."

DATE	REVISION	FILMED
11-07-19	REVISED NOTE	
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

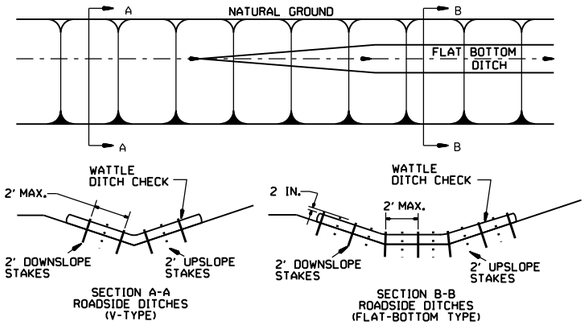
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

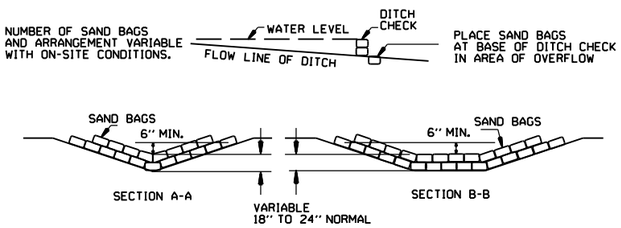
STANDARD DRAWING TC-5

GENERAL NOTES

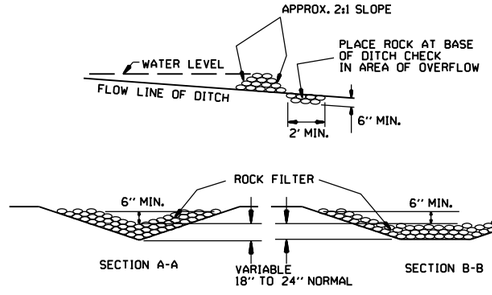
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

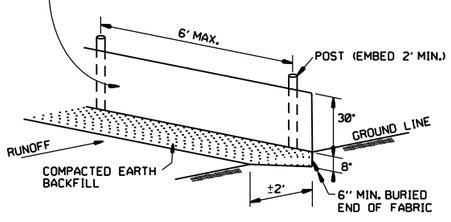


ROCK DITCH CHECK (E-6)

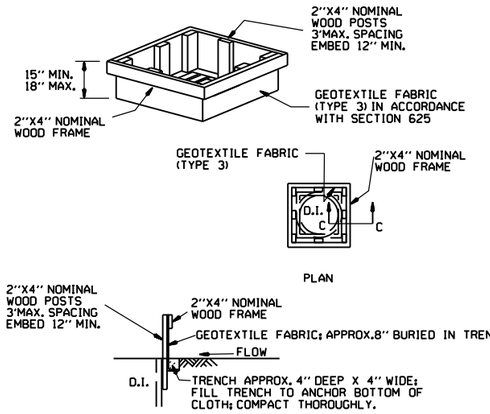
GENERAL NOTES

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

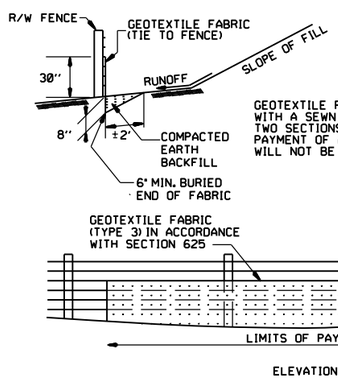
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILT FENCE (E-11)

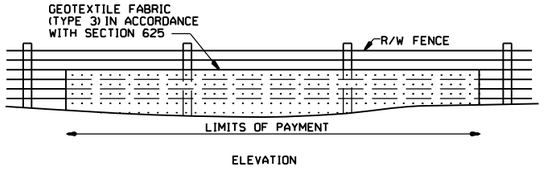


DROP INLET SILT FENCE (E-7)



GENERAL NOTES

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



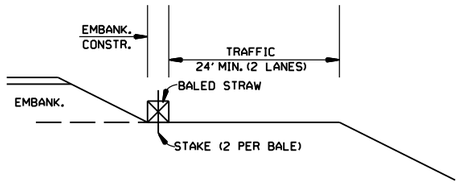
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

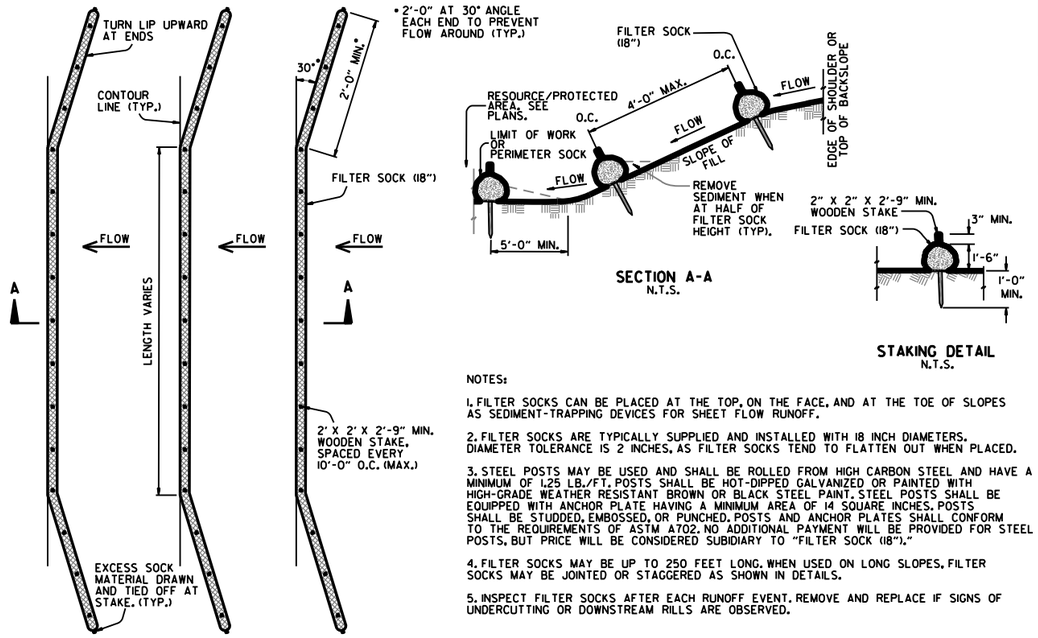
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

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)



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.

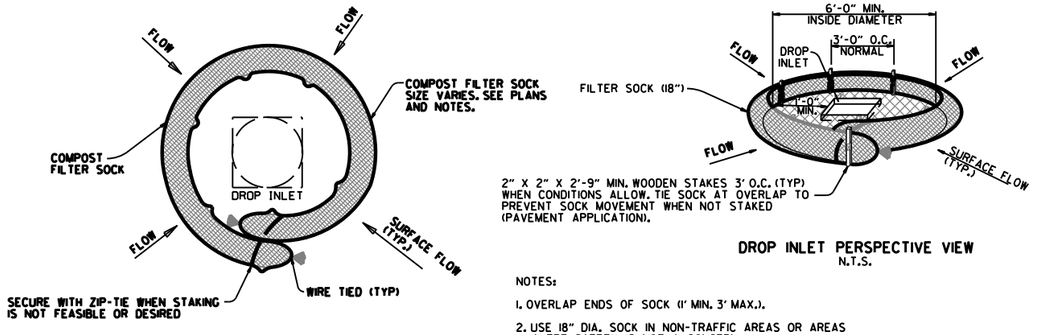
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

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 SUBIDIARY 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.

FILTER SOCK ALONG SLOPE (E-3)



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.

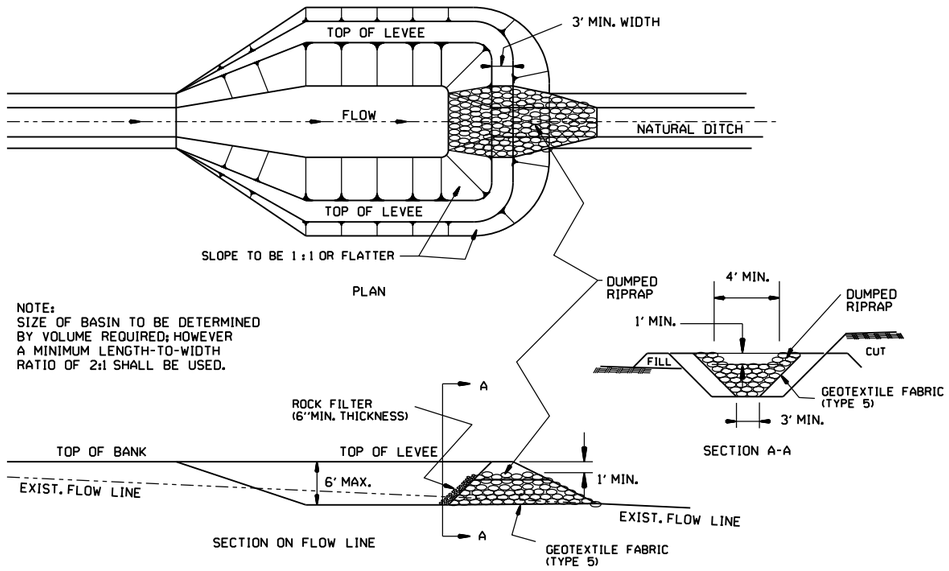
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

DATE	REVISION	FILMED
11-16-17	ADDED FILTER SOCK E-3 AND E-13	
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	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" BURIED END OF FABRIC	
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.D.M.	298-7-28-76

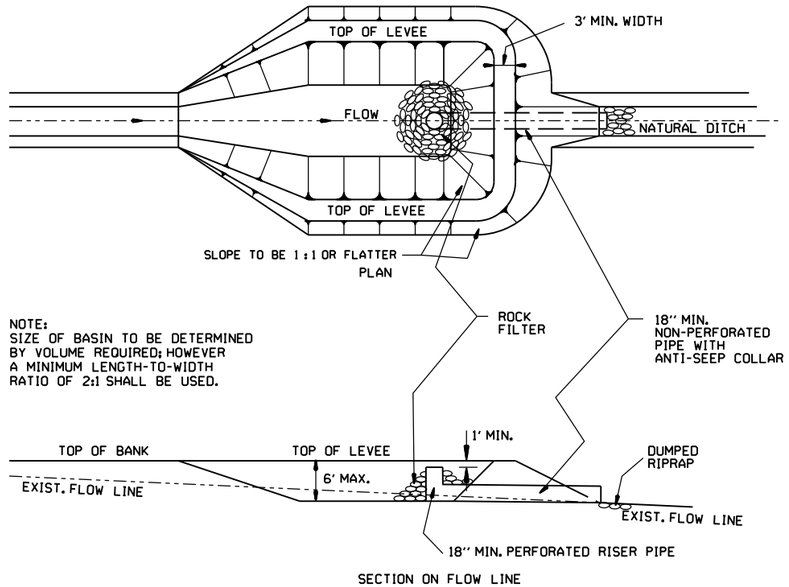
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

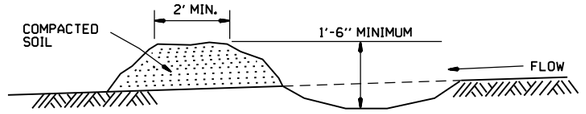
STANDARD DRAWING TEC-1



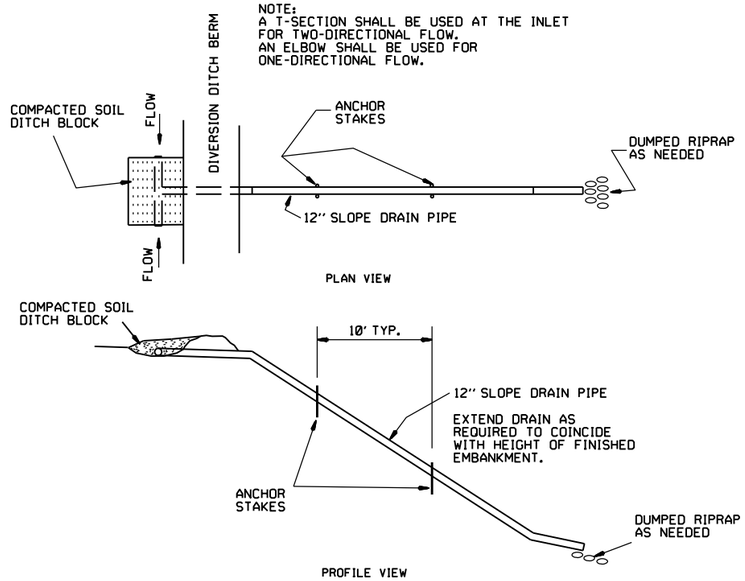
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



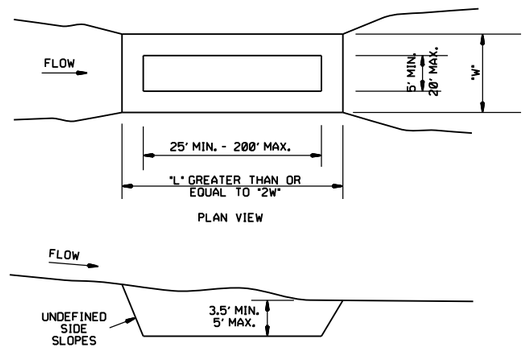
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

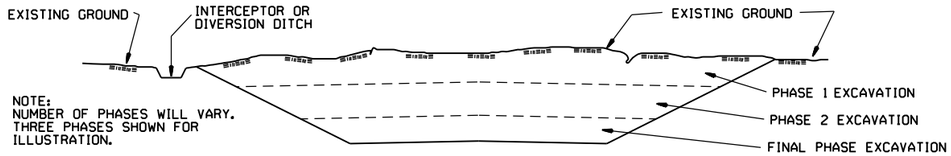
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES , DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



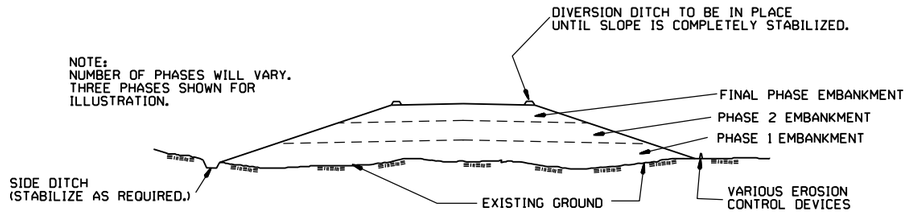
GENERAL NOTE

ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

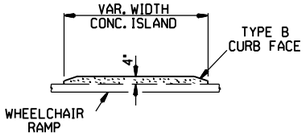
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

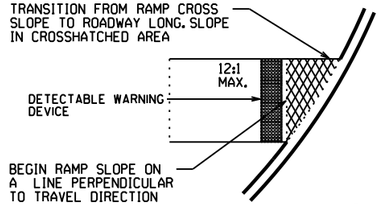
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

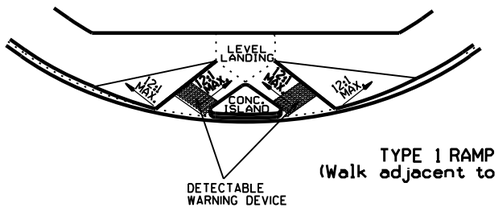
STANDARD DRAWING TEC-3



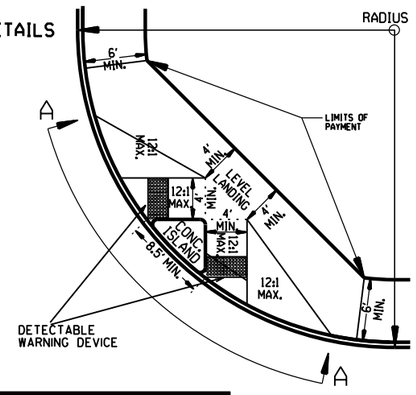
CONCRETE ISLAND DETAIL

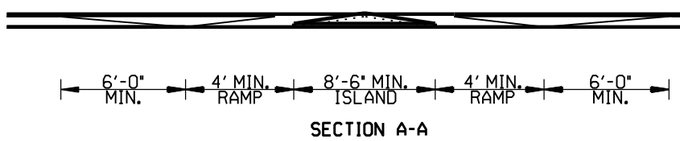


SLOPE TRANSITION DETAILS



TYPE 1 RAMP
(Walk adjacent to curb)

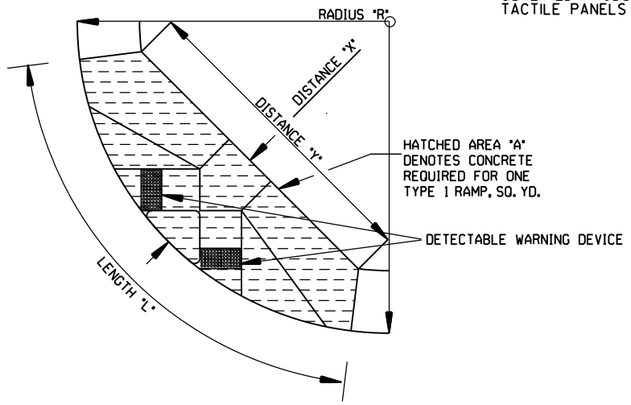




SECTION A-A

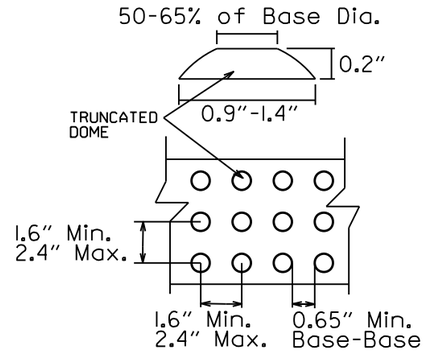
TYPE 1 RAMP DIMENSIONS AND QUANTITIES

RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80



GENERAL NOTES FOR DETECTABLE WARNING DEVICES

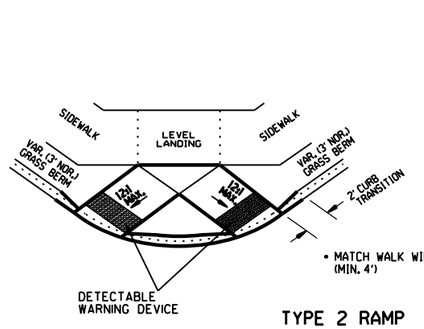
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE ARDOT QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).



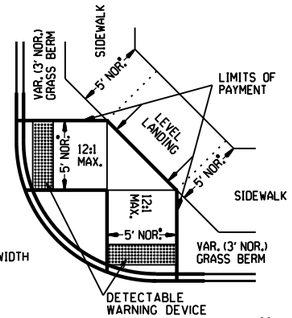
DETECTABLE WARNING DEVICE DETAIL

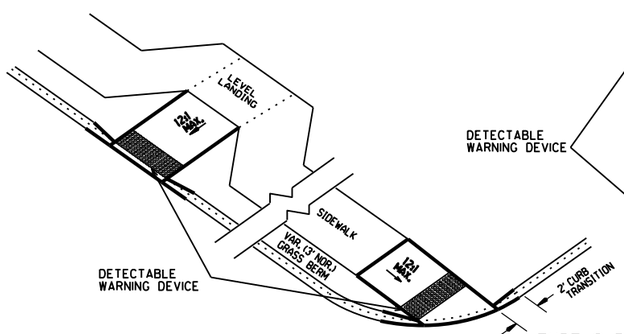
GENERAL NOTES:

IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.
THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.
RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.

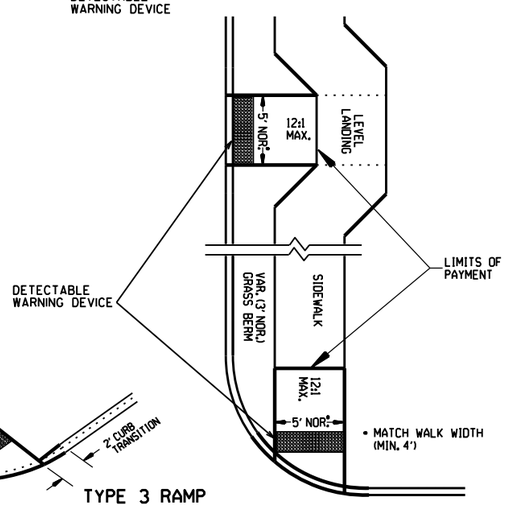


TYPE 2 RAMP

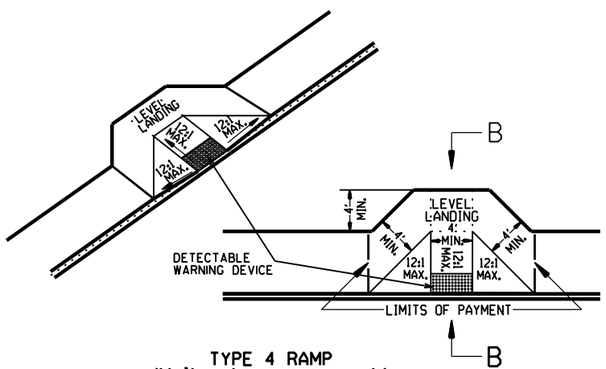




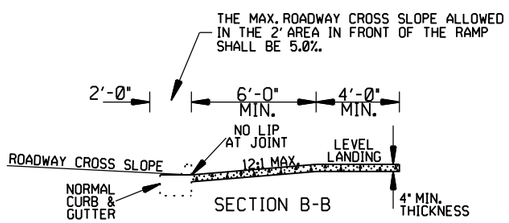
TYPE 3 RAMP



NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.



TYPE 4 RAMP
(Walk adjacent to curb)



SECTION B-B

RAMP SELECTION CRITERIA

FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD.SLOPE TRANS. & REV. ISL. DIMS.	
11-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM8#TO12#MAX.SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD."CONC. ISLD."IN PAY ITEM	------
6-02-76	ISSUED-P.M.D.	299-7-28-76

ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS

STANDARD DRAWING WR-1