DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	1	99
		HWY. 23 STRS. & APPRS. (MADISON CO.) (S)				

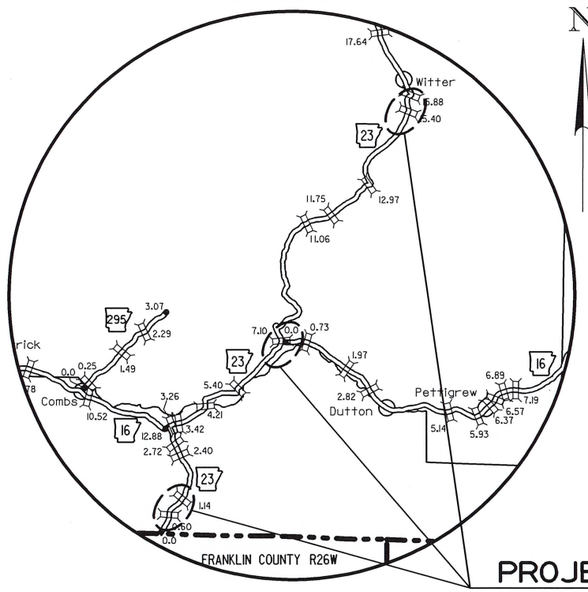
ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 23
STRS. & APPRS.
(MADISON CO.) (S)

MADISON COUNTY
ROUTE 23 SECTION 8

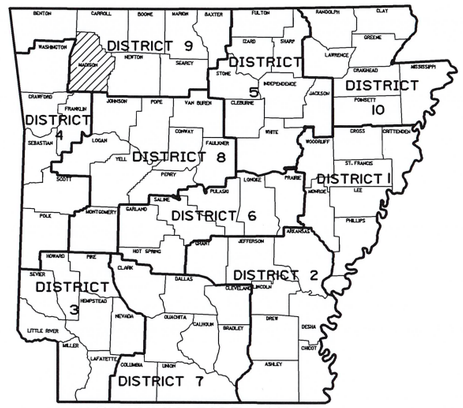
JOB 090579
FED. AID PROJ. NHPP-0044(36)

NOT TO SCALE

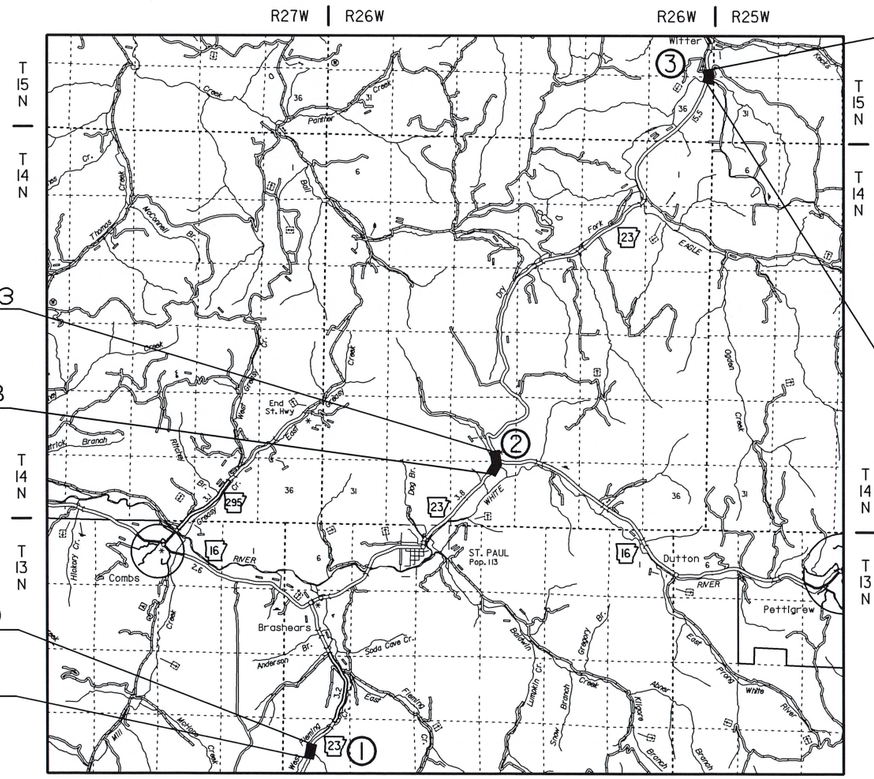


VICINITY MAP

PROJECT LOCATIONS



ARK. HWY. DIST. NO. 9


R27W | R26W
R26W | R25W
T 15 N
T 14 N
T 13 N
Witter
Combs
Brashears
ST. PAUL
Pop. 113
Dutton
Pettigrew
RIVER
Panther Creek
Mulberry
Fork
Eagle
Big Creek
Hickory Cr.
Dog Fork
White
Middle Fork
Anderson Br.
Solid Cove Cr.
Lincoln Cr.
Gregory Br.
Edge
Frogs
Hurst
Laggins
Snow Brand
Branch
Fleming
Hill
Mill
Michael
Cr.
End St. Hwy
Maple
Brick
Branch
Rocky
Ridge
Gap
Rd.
Ln.
Dr.
Cr.
Creek
Br.
Ridge
Fork

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	2	99
		INDEX OF SHEETS AND STANDARD DRAWINGS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

INDEX OF SHEETS

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.
1	TITLE SHEET		
2	INDEX OF SHEETS AND STANDARD DRAWINGS		
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES		
4 - 8	TYPICAL SECTIONS OF IMPROVEMENT		
9 - 19	SPECIAL DETAILS		
20 - 30	TEMPORARY EROSION CONTROL DETAILS		
31 - 39	MAINTENANCE OF TRAFFIC DETAILS		
40	PERMANENT PAVEMENT MARKING DETAILS		
41 - 44	QUANTITIES		
45	SCHEDULE OF BRIDGE QUANTITIES	07553	64164
46	SUMMARY OF QUANTITIES AND REVISIONS		
47 - 52	SURVEY CONTROL DETAILS		
53 - 59	PLAN AND PROFILE SHEETS		
60	LAYOUT OF BRIDGE HIGHWAY 23 OVER HAWKINS HOLLOW CREEK (SHEET 1 OF 2)	07553	64165
61	LAYOUT OF BRIDGE HIGHWAY 23 OVER HAWKINS HOLLOW CREEK (SHEET 2 OF 2)	07553	64166
62	DETAILS OF BENT 1	07553	64167
63	DETAILS OF BENT 4	07553	64168
64	DETAILS OF BENTS 1 & 4 (SHEET 1 OF 2)	07553	64169
65	DETAILS OF BENTS 1 & 4 (SHEET 2 OF 2)	07553	64170
66	DETAILS OF BENTS 2 & 3 (SHEET 1 OF 2)	07553	64171
67	DETAILS OF BENTS 2 & 3 (SHEET 2 OF 2)	07553	64172
68	DETAILS OF ELASTOMERIC BEARINGS	07553	64173
69	DETAILS OF 135'-0" CONTINOUS W-BEAM UNIT (SHEET 1 OF 6)	07553	64174
70	DETAILS OF 135'-0" CONTINOUS W-BEAM UNIT (SHEET 2 OF 6)	07553	64175
71	DETAILS OF 135'-0" CONTINOUS W-BEAM UNIT (SHEET 3 OF 6)	07553	64176
72	DETAILS OF 135'-0" CONTINOUS W-BEAM UNIT (SHEET 4 OF 6)	07553	64177
73	DETAILS OF 135'-0" CONTINOUS W-BEAM UNIT (SHEET 5 OF 6)	07553	64178
74	DETAILS OF 135'-0" CONTINOUS W-BEAM UNIT (SHEET 6 OF 6)	07553	64179
75	DETAILS FOR TYPE SPECIAL APPROACH GUTTERS	07553	64180
76 - 99	CROSS SECTIONS		

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

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
DR-2	DETAILS OF DRIVEWAYS & TURNOUTS	05-19-22
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
GR-6	GUARD RAIL DETAILS	05-19-22
GR-7	GUARD RAIL DETAILS	11-07-19
GR-8	GUARD RAIL DETAILS	11-07-19
GR-9	GUARD RAIL DETAILS	11-07-19
GR-10	GUARD RAIL DETAILS	11-07-19
GR-11	GUARD RAIL DETAILS	11-07-19
GR-12	GUARD RAIL DETAILS	05-14-20
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PM-1	PAVEMENT MARKING DETAILS	02-27-20
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-16
RCB-1	REINFORCED CONCRETE BOX CULVERT DETAILS	07-26-12
RCB-2	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	11-20-03
RCB-3	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS	10-12-95
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	11-07-19
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TC-4	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TC-5	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	11-07-19
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
WF-4	WIRE FENCE TYPE C AND D	08-22-02

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
55005	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & 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 SILICONE JOINTS	02-11-16
55010	STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE	04-14-23
55020	STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS	03-24-16
55040C1	STANDARD DETAILS FOR TYPE C1 APPROACH SLAB	02-27-14
55070	STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36	11-05-20

USER: jc5296
DESIGN FILE: G:\I9105001_090579x23\TRANSP\dgn\misc\r090579_INDX01.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:2
MODEL: Master

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
4/30/2024		6	ARK.	090579	3	99
		GOVERNING SPECIFICATIONS				

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTOR'S LICENSE
100-4_____	DEPARTMENT NAME CHANGE
102-2_____	ISSUANCE OF PROPOSALS
103-2_____	CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS
105-4_____	MAINTENANCE DURING CONSTRUCTION
107-2_____	RESTRAINING CONDITIONS
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
307-1_____	CEMENT
308-1_____	CEMENT
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
409-2_____	ASPHALT LABORATORY FACILITY
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2_____	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4_____	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
416-1_____	RECYCLED ASPHALT PAVEMENT
501-2_____	CEMENT
600-2_____	INCIDENTAL CONSTRUCTION
603-1_____	LANE CLOSURE NOTIFICATION
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3_____	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
605-1_____	CONCRETE DITCH PAVING
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
617-1_____	GUARDRAIL TERMINAL (TYPE 2)
617-2_____	GUARDRAIL DELINEATORS
620-1_____	MULCH COVER
621-1_____	FILTER SOCKS
734-1_____	BRIDGE END TERMINAL
800-1_____	STRUCTURES
802-3_____	CONCRETE FOR STRUCTURES
802-4_____	CEMENT
804-2_____	REINFORCING STEEL FOR STRUCTURES
807-2_____	STEEL STRUCTURES
808-1_____	INSTALLATION OF ELASTOMERIC BEARINGS
808-2_____	ELASTOMERIC BEARINGS
JOB 090579__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 090579__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 090579__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 090579__	BUY AMERICA - CONSTRUCTION MATERIALS
JOB 090579__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 090579__	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 090579__	COLD MILLING - COUNTY PROPERTY
JOB 090579__	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB 090579__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 090579__	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
JOB 090579__	DESIGN OF ASPHALT MIXTURES - AGGREGATES
JOB 090579__	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 090579__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 090579__	FLEXIBLE BEGINNING OF WORK - CALENDAR DAY CONTRACT
JOB 090579__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 090579__	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 090579__	MANDATORY ELECTRONIC CONTRACT

GOVERNING SPECIFICATIONS - CONTINUED

NUMBER	TITLE
JOB 090579__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 090579__	NESTING SITES OF MIGRATORY BIRDS
JOB 090579__	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB 090579__	PARTNERING REQUIREMENTS
JOB 090579__	PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS
JOB 090579__	PORTABLE TRAFFIC SIGNAL SYSTEM
JOB 090579__	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 090579__	PRICE ADJUSTMENT FOR FUEL
JOB 090579__	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 090579__	REMOVING AND REPLACING TOPSOIL
JOB 090579__	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 090579__	SEQUENCE OF CONSTRUCTION
JOB 090579__	SHORING FOR CULVERTS
JOB 090579__	SOIL STABILIZATION
JOB 090579__	SPECIAL CLEARING PUP SEASON REQUIREMENTS
JOB 090579__	STORM WATER POLLUTION PREVENTION PLAN
JOB 090579__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 090579__	UTILITY ADJUSTMENTS
JOB 090579__	VALUE ENGINEERING
JOB 090579__	WARM MIX ASPHALT
JOB 090579__	WATER POLLUTION CONTROL

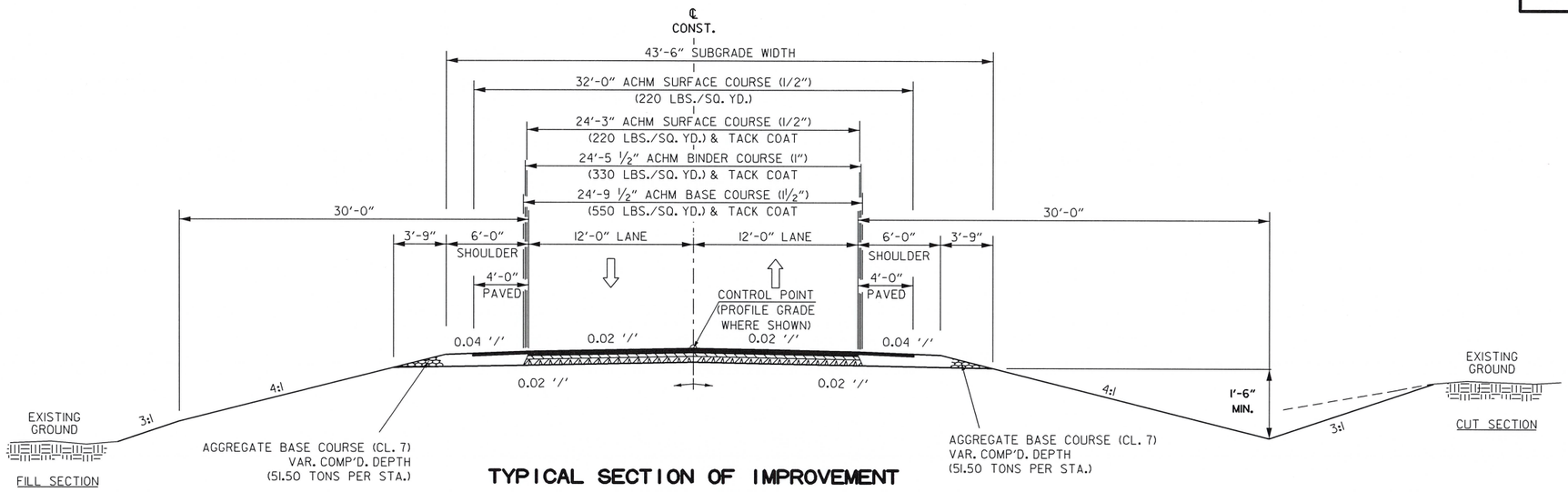
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-30-2024

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
7. THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.
8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
10. 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.

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\misc\r090579_INDX0l.dgn
PLOTTED: 4/30/2024 10:02
SCALE: 1:2
MODEL: Master

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	4	99
		TYPICAL SECTIONS OF IMPROVEMENT				

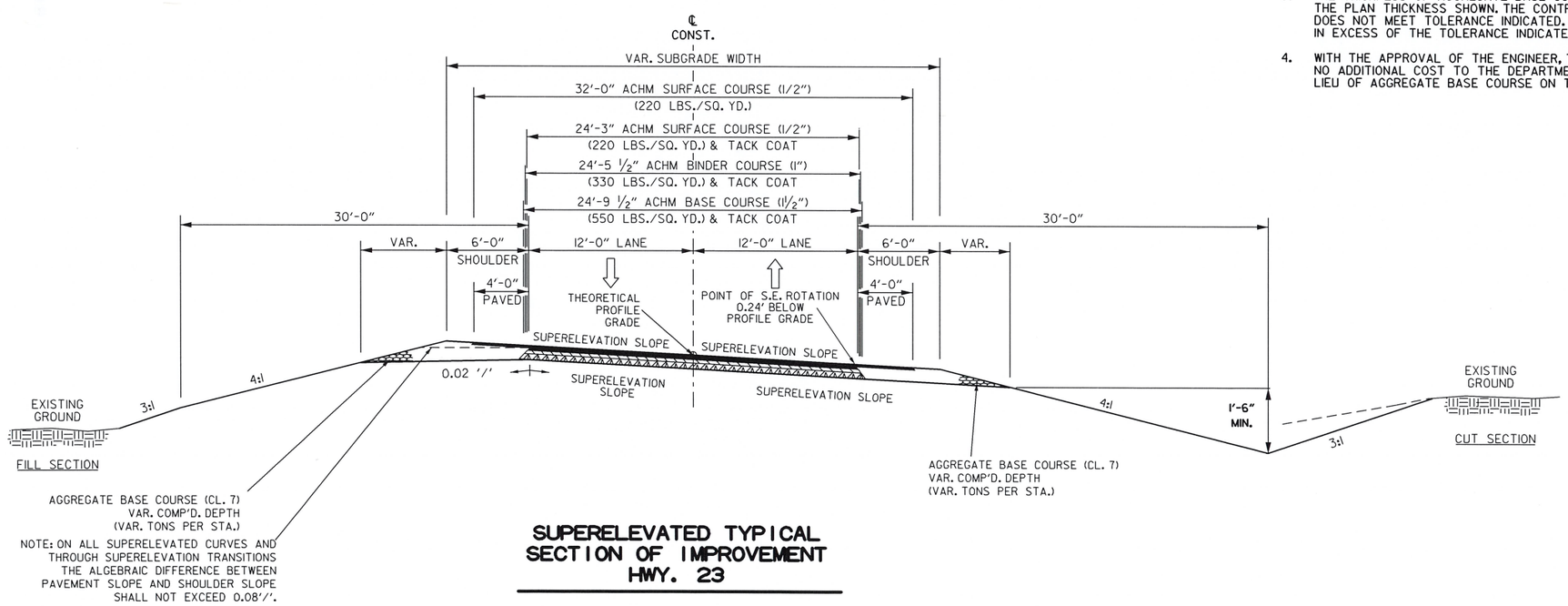


TYPICAL SECTION OF IMPROVEMENT
HWY. 23
STA. 116+35.00 TO STA. 117+70.00
STA. 328+85.00 TO STA. 329+65.00

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

TYPICAL SECTION NOTES:

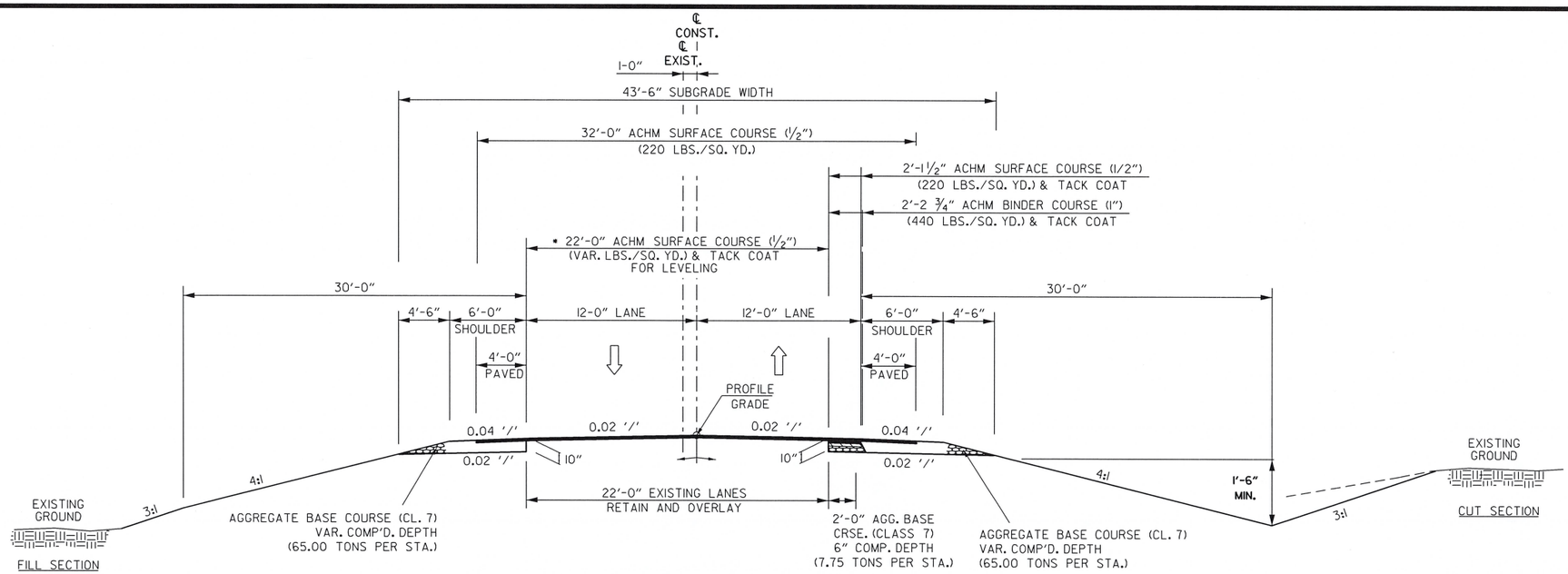
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
3. THE THICKNESS 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.
4. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



SUPERELEVATED TYPICAL SECTION OF IMPROVEMENT
HWY. 23

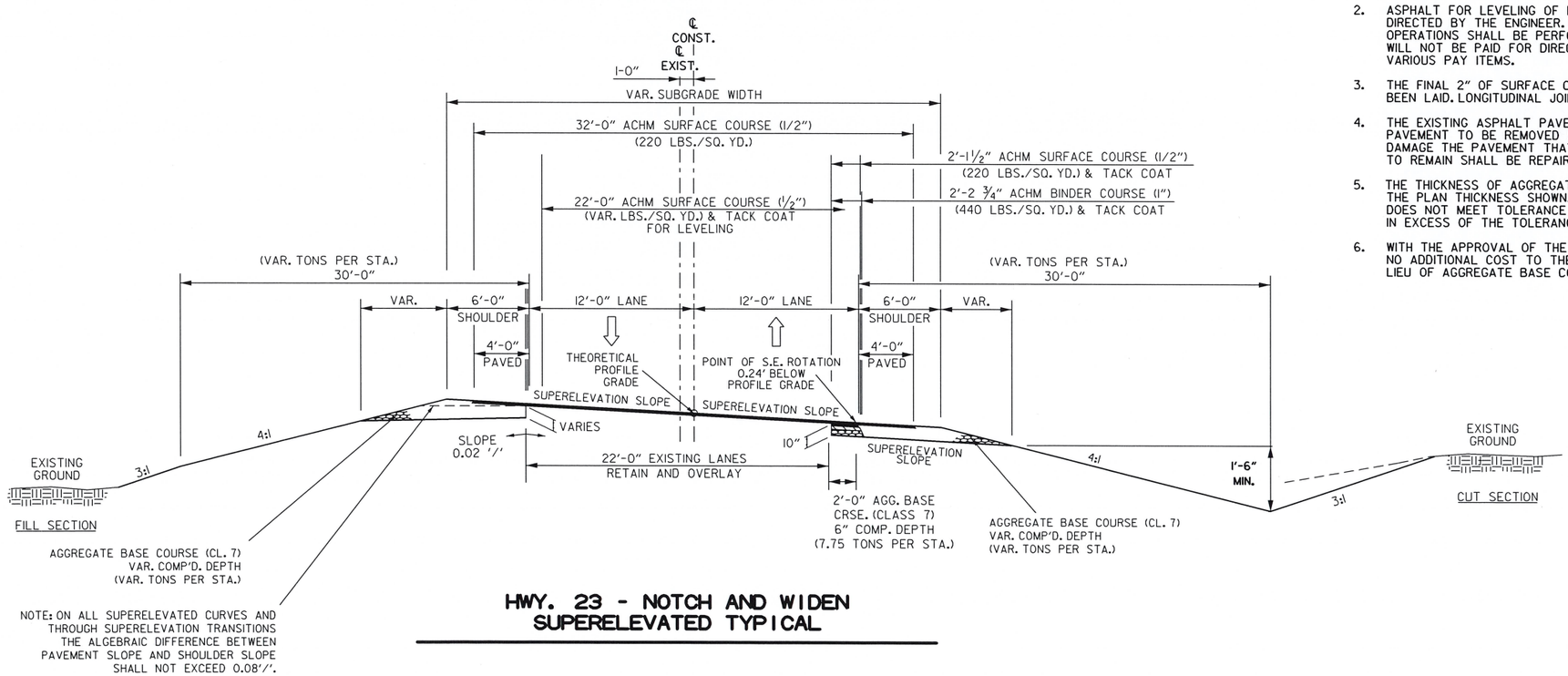
USER: jo5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\typical\090579_TYP0l.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1i0
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	5	99
		TYPICAL SECTIONS OF IMPROVEMENT				



* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

HWY. 23 - NOTCH AND WIDEN
STA. 207+30.68 TO STA. 210+00.00
STA. 221+05.00 TO STA. 223+26.53



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

HWY. 23 - NOTCH AND WIDEN SUPERELEVATED TYPICAL

TYPICAL SECTION NOTES:

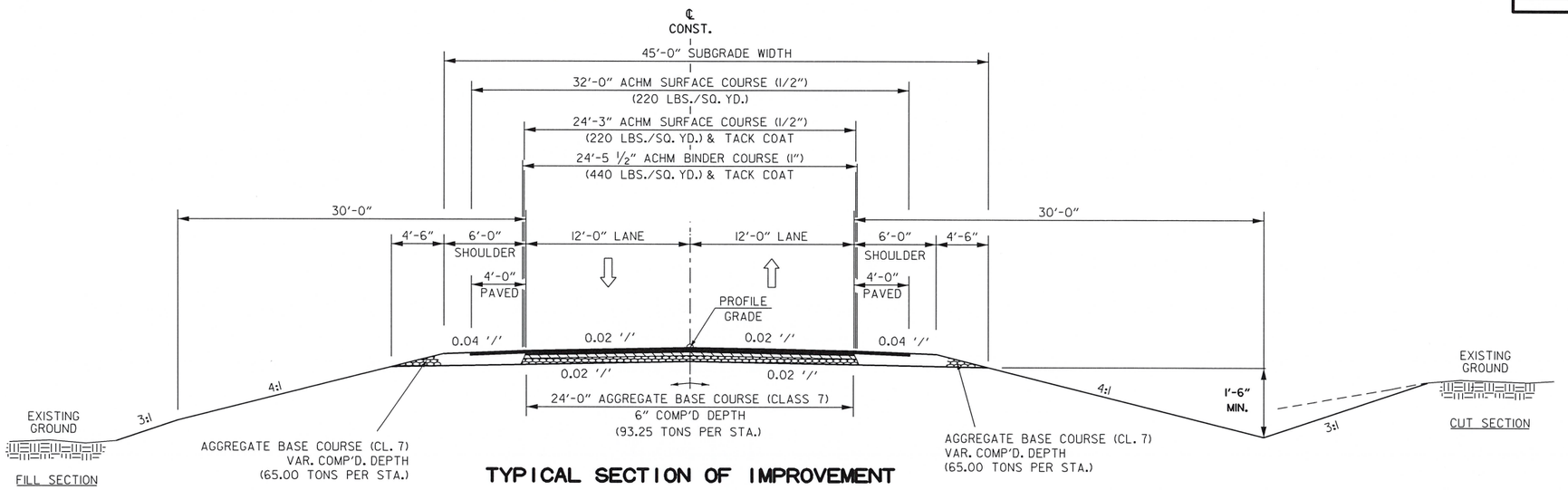
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND 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.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
4. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY 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 TO THE PAVMEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. 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.
6. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

TYPICAL SECTIONS OF IMPROVEMENT

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\typical\090579_TYP01.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:10
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	6	99
		TYPICAL SECTIONS OF IMPROVEMENT				

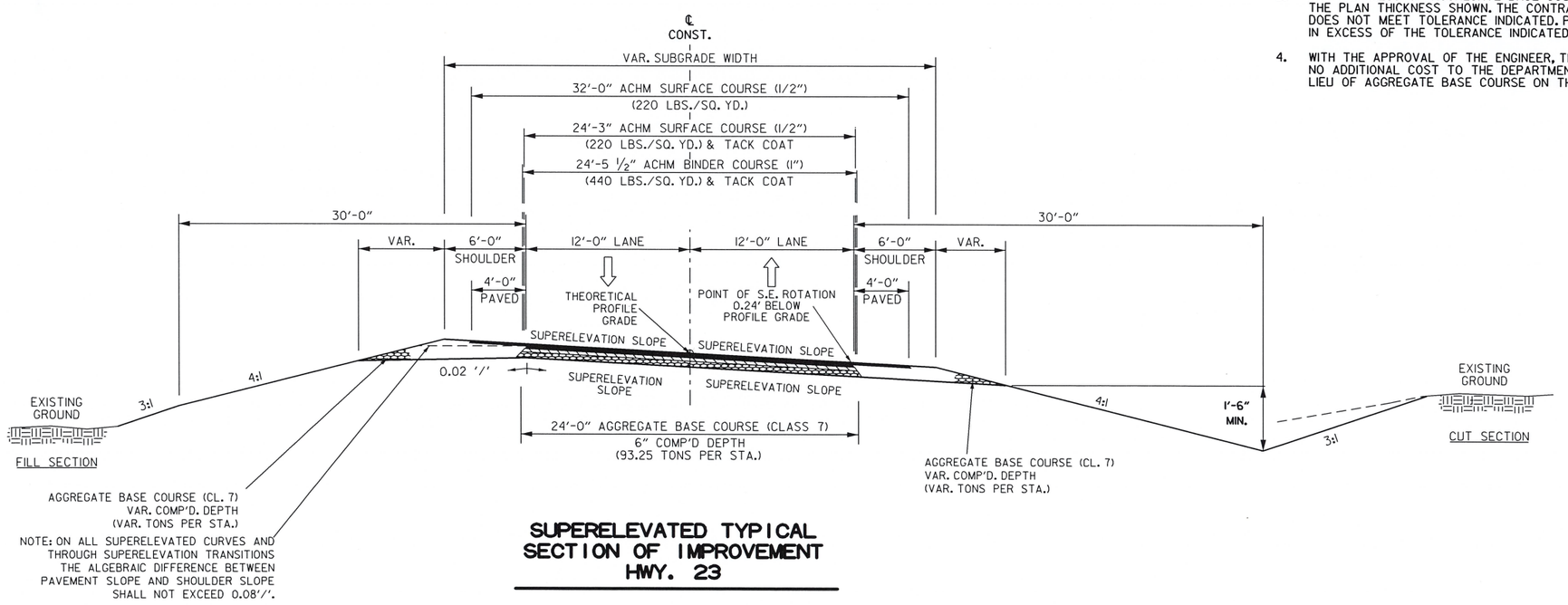


TYPICAL SECTION OF IMPROVEMENT
HWY. 23
STA. 210+00.00 TO STA. 221+05.00

STATE OF ARKANSAS
★ ★ ★
LICENSED PROFESSIONAL ENGINEER
★ ★ ★
NO. 15560
JEROME PAUL DAVIS
9-20-2023

TYPICAL SECTION NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
3. 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.
4. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.



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

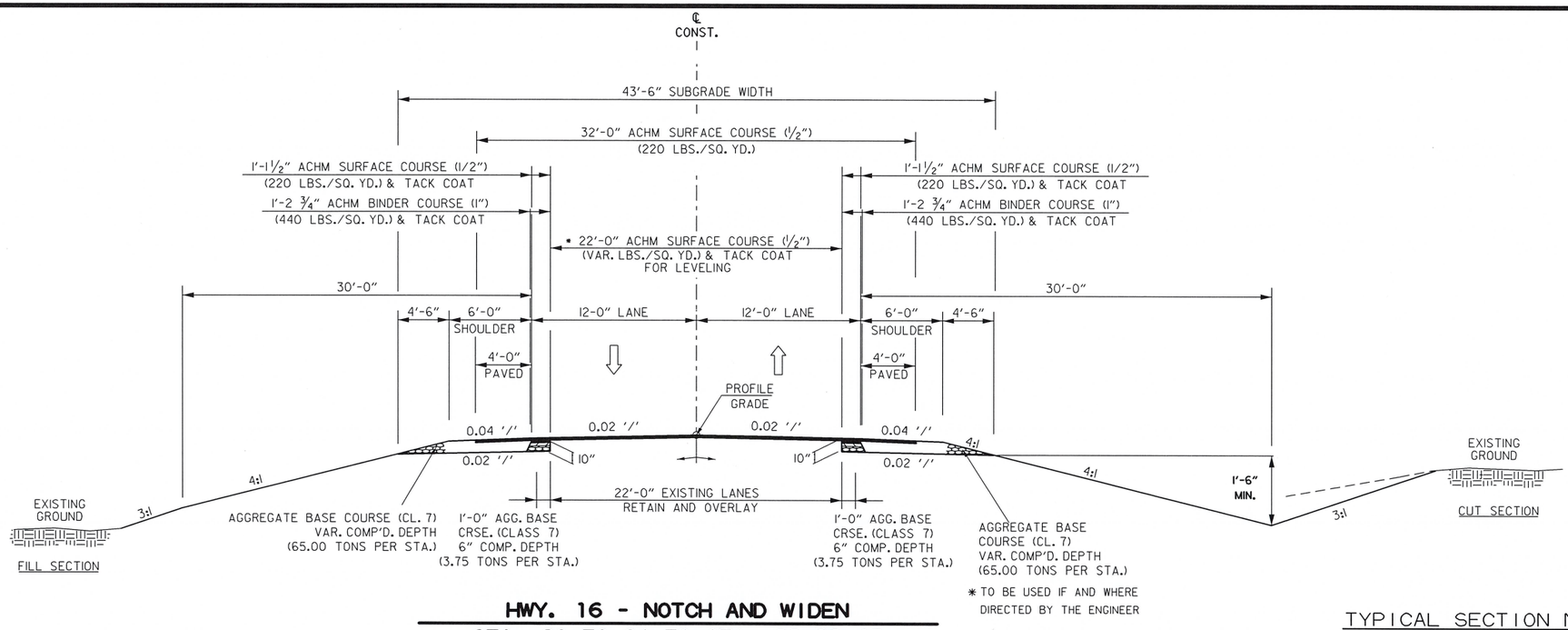
SUPERELEVATED TYPICAL SECTION OF IMPROVEMENT
HWY. 23

TYPICAL SECTIONS OF IMPROVEMENT

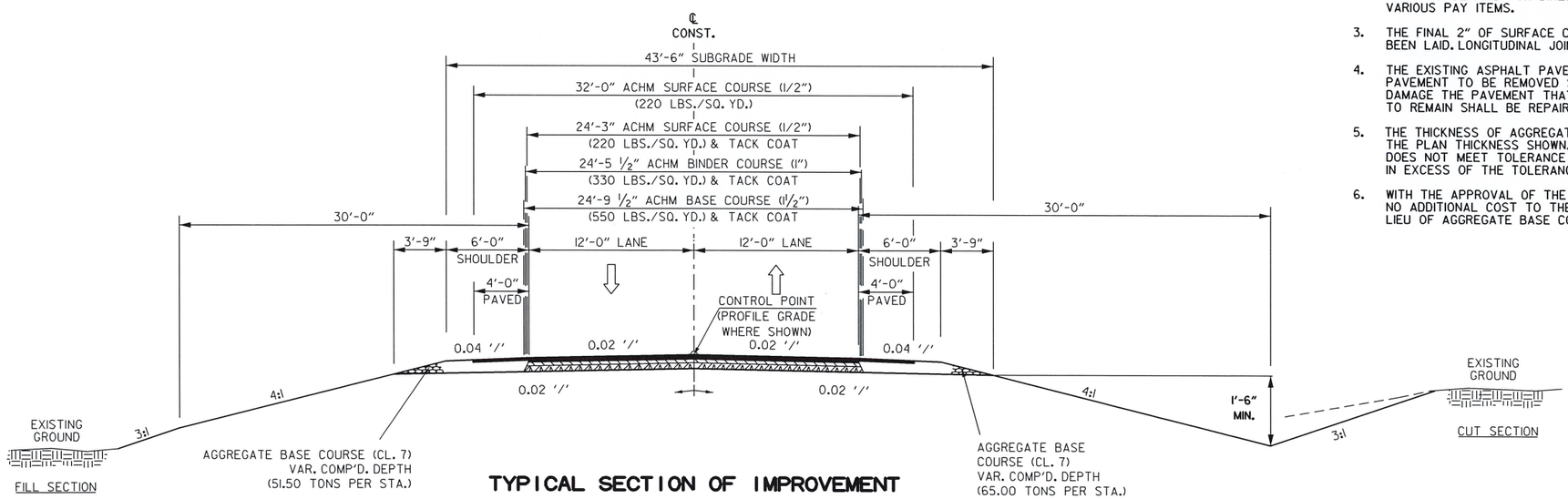
USER: jc5296
DESIGN FILE: G:\19I0500I_090579x23\TRANSP\dgn\typical\090579_TYP0I.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:10
MODEL: PROPOSED DESIGN

G:\19I0500I_090579x23\TRANSP\dgn\typical\090579_TYP0I.dgn 9/19/2023 07:22

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	7	99
		TYPICAL SECTIONS OF IMPROVEMENT				



HWY. 16 - NOTCH AND WIDEN
STA. 20+79.34 TO STA. 22+92.45



TYPICAL SECTION OF IMPROVEMENT
HWY. 16
STA. 20+12.00 TO STA. 20+79.34

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

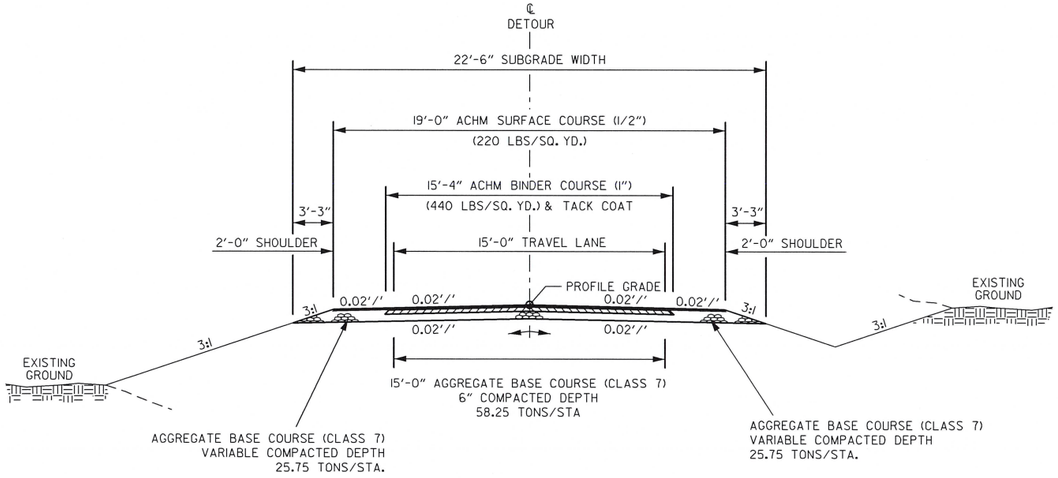
TYPICAL SECTION NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. 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.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
4. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY 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 TO THE PAVMEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. 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.
6. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

TYPICAL SECTIONS OF IMPROVEMENT

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\typical\090579_TYP01.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:10
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	8	99
		TYPICAL SECTIONS OF IMPROVEMENT				



ONE-WAY DETOUR

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

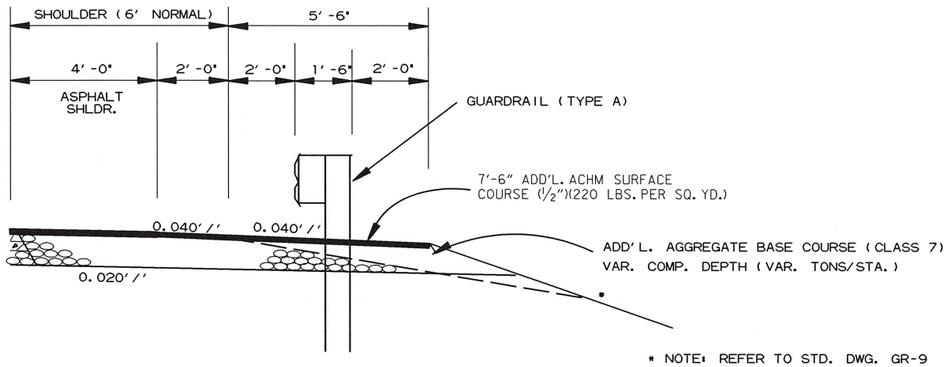
TYPICAL SECTION NOTES:

1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
3. 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.

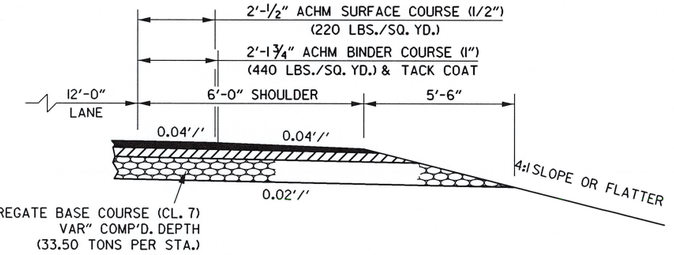
USER: jc5296
DESIGN FILE: G:\19I0500I_090579x23\TRANSP\dgn\typical\090579_TYP01.dgn
PLOTTED: 9/19/2023 07:22 SCALE: 1:10 MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	9	99
		SPECIAL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

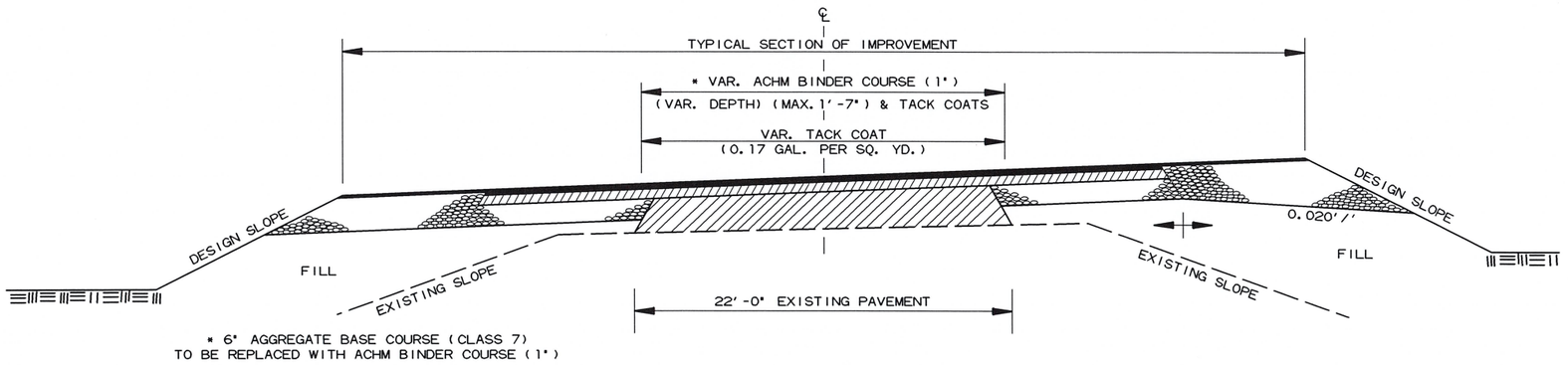


WIDENING FOR GUARDRAIL



FULL DEPTH SHOULDER FOR MAINTENANCE OF TRAFFIC
(SHOWN IN THE DIRECTION OF TRAFFIC)

SITE 2 - HWY. 23 STA. 207+30.68 TO STA. 210+21.78
& STA. 220+54.85 TO STA. 223+26.53 RT.



METHOD OF RAISING GRADE

NOTES:

(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

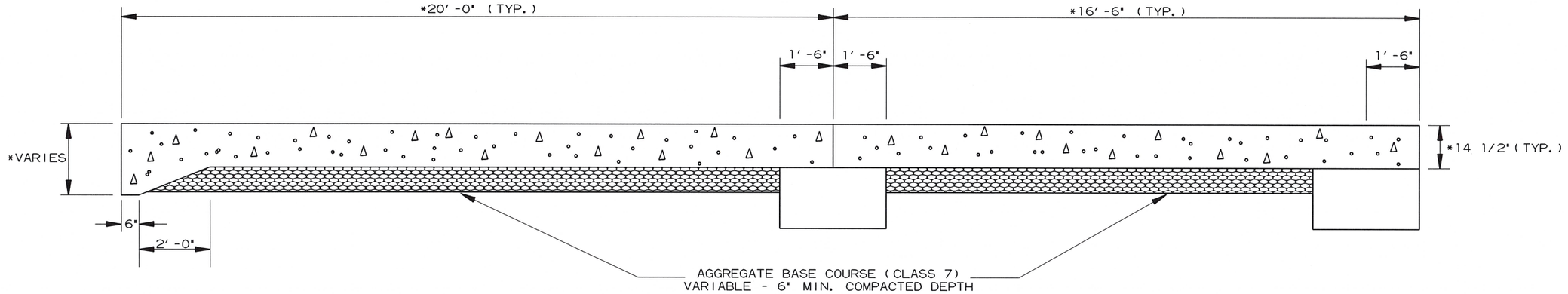
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

(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.

SPECIAL DETAILS

USER: jd5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\special_details\r090579 SpecialDetails.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:2
MODEL: SpecialDetails

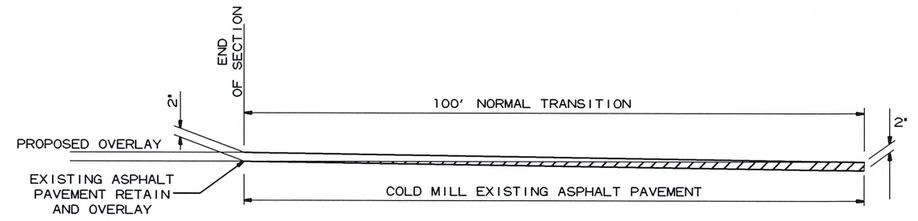
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	10	99
		SPECIAL DETAILS				



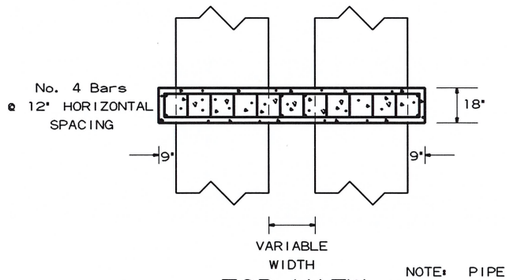
* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
9-20-2023
JEROME PAUL DAVIS

SECTION OF APPROACH SLAB



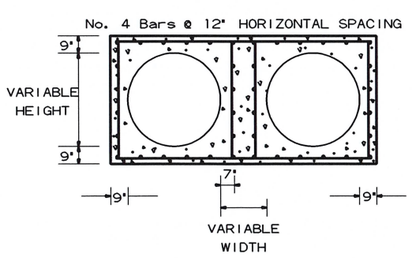
DETAIL FOR TRANSITIONS



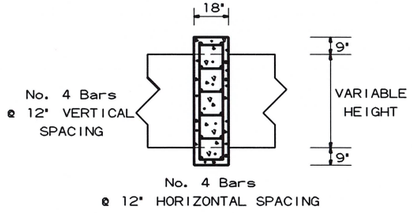
TOP VIEW

NOTE: PIPE COLLAR TO BE UTILIZED AS APPROVED BY THE ENGINEER.

MIN. 3" COVER



FRONT VIEW



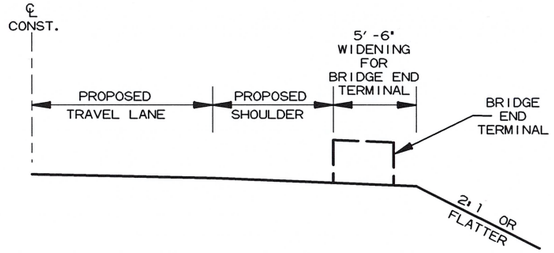
SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\special_details\r090579 SpecialDetails.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:2
MODEL: SpecialDetails

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	11	99
		SPECIAL DETAILS				

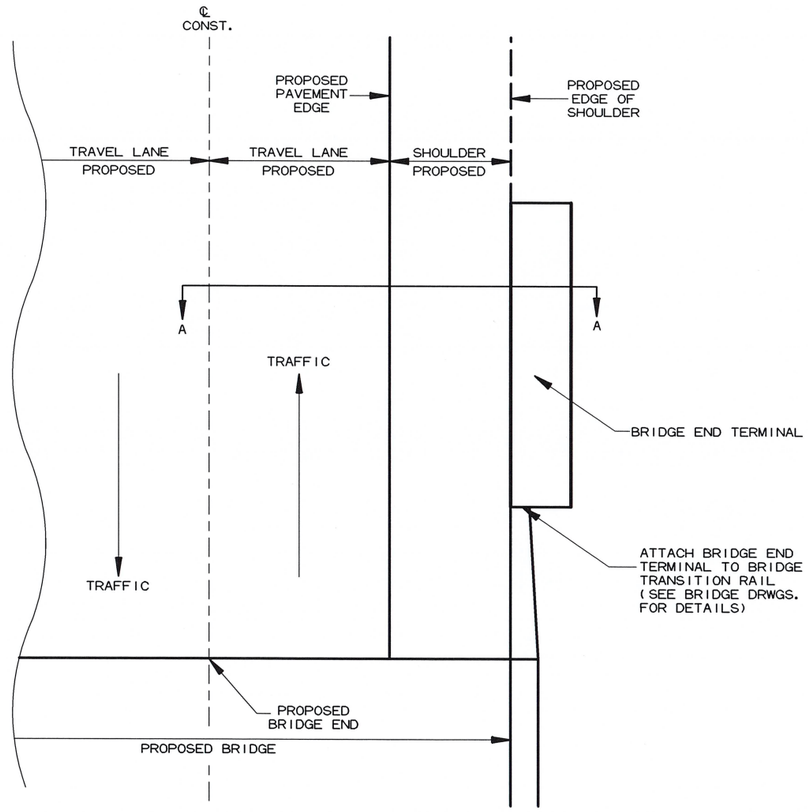
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023



SECTION A-A

NOTE:
ELIMINATE OR MODIFY APPROACH CURB SECTION TO FIT BRIDGE END TERMINAL. NO PAYMENT SHALL BE MADE FOR ELIMINATING OR MODIFYING THIS CURB, BUT SHALL BE CONSIDERED IN PAYMENT MADE FOR APPROACH GUTTERS OF THE TYPE SPECIFIED.

NOTE:
BRIDGE END TERMINAL SHALL CONFORM TO THE FOLLOWING:
- -MAXIMUM LENGTH: 20'
- -MAXIMUM HEIGHT: 2.75'
- -DESIGN SPEED: 60 MPH



PLAN VIEW

BRIDGE END TERMINAL DETAILS

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\special_details\r090579 SpecialDetails.dgn
PLOTTED: 9/19/2023 07:22
SCALE: 1:2
MODEL: SpecialDetails

SPECIAL DETAILS

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.		090579	12	99

SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
35'-6"	6'-0"	0'-9"	0'-8"	25	3:1	37'-10 5/8"	2'-0"	6'-10"	2'-0"	5	55	3'-2"	3'-3 7/8"	3'-9"	0'-6 7/8"	0'-5 3/8"	14'-6"	25'-0"	17'-11 3/8"	28'-5 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
11.55	1027

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY			F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS			F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS			F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY			F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS		REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	15	L	Min	3'-0"	-	-	-	L	-		-	-	-	L	-		4	18	4	Min 4'-10" / Max 9'-4"	4	18	4	14'-2"	4	18	10	L	Min	4'-9"	4	8	18'-9"	6	18	10	Min 2'-8" / Max 2'-10"	-	-	-	Min - Max -	4	2	14'-10"	4	2	15'-5"	6	12	6	L	3'-4"	396
					Max	7'-10"																									Max	9'-3"																						X	1'-8"	
				X	Min	0'-9"				X	-					X	-												X	Min	2'-4"																							
					Max	0'-11"																									Max	2'-4"																							
				Y	Min	2'-4"				Y	-					Y	-												Y	Min	2'-6"																							
					Max	7'-0"																									Max	7'-0"																							
WING B	4	12	25	L	Min	3'-1"	-	-	-	L	-		-	-	-	L	-		4	18	4	Min 8'-5" / Max 16'-3"	4	18	4	24'-8"	4	18	17	L	Min	4'-8"	4	8	29'-3"	6	18	17	Min 2'-8" / Max 3'-3"	-	-	-	Min - Max -	4	2	25'-0"	4	2	27'-5"	6	12	6	L	3'-4"	631
					Max	8'-3"																									Max	9'-3"																						X	1'-8"	
				X	Min	0'-9"				X	-					X	-												X	Min	2'-4"																							
					Max	1'-4"																									Max	2'-4"																							
				Y	Min	2'-5"				Y	-					Y	-												Y	Min	2'-5"																							
					Max	7'-0"																									Max	7'-0"																							

MID-SECTION BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 3 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

TABULAR DATA BY: KRM DATE: 09/23/2020
CHECKED BY: CAW DATE: 10/05/2020

INLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINF. "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	TOP SLAB REINF. "c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINF. "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	BOTTOM SLAB REINF. "f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D	SIDE WALL REINF. "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIB. REINF. "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIB. REINF. "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIB. REINF. "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH																																													
25	3:1	5	11	6	10'-3"	11	3	11	7	8	35'-6"	7'-10"	6	7	Max 35'-2" / Min 3'-8" / 35'-2"	26 / 4	6	6	Max 35'-2" / Min 3'-8" / 35'-2"	30 / 4	4	5	Max 35'-2" / Min 3'-8" / 35'-2"	36 / 5	4	6	Max 35'-2" / Min 3'-8" / 35'-2"	30 / 4	4	5	50	7'-6"	4	12	44	7'-6"	4	10	89	Max 18'-5" / Min 1'-10"	4	10	89	Max 18'-5" / Min 1'-10"	4	12	6 / 12	LONG 18'-2" / SHORT 2'-0" / LONG 12'-10" / SHORT 7'-5"	4	12	12	LONG 12'-10" / SHORT 7'-5"

CLASS "S" CONCRETE (Includes HDWL)	REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.
31.27	5403

"k1" HDWL BARS SIZE	"k1" HDWL BARS LENGTH	"k1" HDWL BARS NO. REQ'D	"k2" HDWL BARS SIZE	"k2" HDWL BARS LENGTH	"k2" HDWL BARS NO. REQ'D	"h" HDWL BARS SIZE	"h" HDWL BARS LENGTH	"h" HDWL BARS Y	"h" HDWL BARS NO. REQ'D
4	38'-10"	6	4	38'-10"	6	4	1'-10"	0'-10"	41

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

INLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINF. LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	"c" SPACING	"c" NO. REQ'D	BOTTOM SLAB REINF. LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	"f" SPACING	"f" NO. REQ'D	SIDE WALL REINF. "f0" LENGTH = OH - 4" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. "f1" LENGTH = OH - 4" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. "g" LENGTH = SL SPACING	"g" NO. REQ'D	BOTTOM SLAB DISTRIB. REINF. "e" LENGTH = SL SPACING	"e" NO. REQ'D	SIDE WALL DISTRIB. REINF. "d1" LENGTH = SL SPACING	"d1" NO. REQ'D	INTERIOR WALL DISTRIB. REINF. "d2" LENGTH = SL SPACING	"d2" NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																							

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	"h" HDWL BARS Y	"h" HDWL BARS LENGTH	"h" HDWL BARS NO. REQ'D

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
TOTAL	

Design Fill Depth	Range of Actual Fill Depth
2	0.0 ft - 2.0 ft
5	>2.0 ft - 5.0 ft
10	>5.0 ft - 10.0 ft
15	>10.0 ft - 15.0 ft
20	>15.0 ft - 20.0 ft
25	>20.0 ft - 25.0 ft
30	>25.0 ft - 30.0 ft
35	>30.0 ft - 35.0 ft
40	>35.0 ft - 40.0 ft

Data shown for Mid-Section, Slope Section(s), and Skewed End Section is based on the design fill depth shown in the table, see PLAN AND PROFILE SHEETS for actual fill depth.

MID-SECTION

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	TOP SLAB REINF. LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	"c" SPACING	"c" NO. REQ'D	BOTTOM SLAB REINF. LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	"f" SPACING	"f" NO. REQ'D	SIDE WALL REINF. "f0" LENGTH = OH - 4" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. "f1" LENGTH = OH - 4" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. "g" LENGTH = SL SPACING	"g" NO. REQ'D	BOTTOM SLAB DISTRIB. REINF. "e" LENGTH = SL SPACING	"e" NO. REQ'D	SIDE WALL DISTRIB. REINF. "d1" LENGTH = SL SPACING	"d1" NO. REQ'D	INTERIOR WALL DISTRIB. REINF. "d2" LENGTH = SL SPACING	"d2" NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																							
A	5	11	6	11	11	7	8	35'-6"	7'-10"	87.5	4	35'-2"	8	35'-9"	5	35'-2"	15	70	4	35'-2"	5	35'-8"	4	35'-2"	12	87	4	5	420	7'-6"	4	5	840	7'-6"	4	10	89	4	10	89	4	12	12	4	12	24

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
259.53	37581

SHEET 1 OF 2
DETAILS OF R.C. BOX CULVERT
TRIPLE BARREL BOX CULVERT
Sta. 117+05

SPECIAL DETAILS

Ver. 1.17 G:\1905001_090579x23\TRANSP\dgn\special_details\b090579_sl.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.		090579	13	99

SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/20

TABULAR DATA BY: KRM DATE: 09/23/2020
CHECKED BY: CAW DATE: 10/05/2020

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
35'-6"	6'-0"	0'-9"	0'-8"	25	3:1	37'-10 5/8"	2'-0"	6'-10"	2'-0"	5	55	3'-2"	3'-3 7/8"	3'-9"	0'-6 7/8"	0'-5 3/8"	14'-6"	25'-0"	17'-11 3/8"	28'-5 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
12.94	1027

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1 LENGTHS	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6 LENGTHS	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	12	15	L Min	3'-0"												Min								Min	4'-9"							Min																
				L Max	7'-10"												4'-10"								Max	9'-3"							2'-8"																
				X Min	0'-9"												Max								Min	2'-4"							Max																
				X Max	0'-11"	-	-	-	X -	-	-	-	X -	4	18	4	9'-4"	4	18	4	14'-2"	4	18	10	Max	2'-4"	4	8	18'-9"	6	18	10	2'-10"	-	-	-	-	4	2	14'-10"	4	2	15'-5"	6	12	6	L 3'-4"	396
				Y Min	2'-4"												2'-10"								Min	2'-6"							Max														X 1'-8"	
				Y Max	7'-0"				Y -				Y -				Max								Max	7'-0"							-														
WING B	4	12	25	L Min	3'-1"												Min								Min	4'-8"							Min																
				L Max	8'-3"												8'-5"								Max	9'-3"							2'-8"																
				X Min	0'-9"												Max								Min	2'-4"							Max																
				X Max	1'-4"	-	-	-	X -	-	-	-	X -	4	18	4	16'-3"	4	18	4	24'-8"	4	18	17	Max	2'-4"	4	8	29'-3"	6	18	17	3'-3"	-	-	-	-	4	2	25'-0"	4	2	27'-5"	6	12	6	L 3'-4"	631
				Y Min	2'-5"												3'-3"								Min	2'-5"							Max														X 1'-8"	
				Y Max	7'-0"				Y -				Y -				Max								Max	7'-0"							-														

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINF. "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	TOP SLAB REINF. "c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINF. "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	BOTTOM SLAB REINF. "f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D	SIDE WALL REINF. "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DIST. "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DIST. "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DIST. "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DIST. "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH																																									
25	3:1	5	11	6	10'-3"	11	3	11	7	8	35'-6"	7'-10"	6	7	Max 35'-2" Min 3'-8"	26	6	6	Max 35'-2" Min 3'-8"	30	4	5	Max 35'-2" Min 3'-8"	36	4	6	Max 35'-2" Min 3'-8"	30	4	5	50	7'-6"	4	12	44	7'-6"	4	10	89	Max 18'-5" Min 1'-10"	4	10	89	Max 18'-5" Min 1'-10"	4	12	6	LONG 18'-2" SHORT 2'-0"	4	12	12	LONG 12'-10" SHORT 7'-5"
															35'-2"	4			35'-2"	4			35'-2"	5			35'-2"	4																											

CLASS "S" CONCRETE (Includes HDWL)	① REINFORCING STEEL (GR 60) (Includes HDWL)
CU. YDS.	LBS.
31.27	5403

"k1" HDWL BARS SIZE	"k1" HDWL BARS LENGTH	"k1" HDWL BARS NO. REQ'D	"k2" HDWL BARS SIZE	"k2" HDWL BARS LENGTH	"k2" HDWL BARS NO. REQ'D	"h" HDWL BARS SIZE	"h" HDWL BARS LENGTH	"h" HDWL BARS Y	"h" HDWL BARS NO. REQ'D
4	38'-10"	6	4	38'-10"	6	4	1'-10"	0'-10"	41

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	TOP SLAB THK.	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	SECTION LENGTH (FT.)	LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	SPACING	NO. REQ'D	BOTTOM SLAB REINFORCING STEEL LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	SPACING	NO. REQ'D	SIDE WALL REINF. "f0" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	INTERIOR WALL REINF. "f1" LENGTH = OH - 4" SIZE	SPACING	NO. REQ'D	LENGTH	TOP SLAB DIST. "g" LENGTH = SL SIZE	SPACING	NO. REQ'D	BOTTOM SLAB DIST. "e" LENGTH = SL SIZE	SPACING	NO. REQ'D	SIDE WALL DIST. "d1" LENGTH = SL SIZE	SPACING	NO. REQ'D	INTERIOR WALL DIST. "d2" LENGTH = SL SIZE	SPACING	NO. REQ'D
	D	S	H	T	B	C	W	OW	OH	SL																																								

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	Y	LENGTH	NO. REQ'D

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
TOTAL	

The required number of bars and lengths shown are for estimating purpose only. The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
TRIPLE BARREL BOX CULVERT
Sta. 117+05

SPECIAL DETAILS

Ver. 1.117 G:\9105001.090579x23\TRANSP\dgn\special_details\b090579_cl.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.		090579	14	99

① SPECIAL DETAILS

INLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
51'-2"	7'-0"	0'-9"	0'-8"	0	3:1	51'-2"	2'-0"	7'-10"	2'-4"	30	30	3'-2"	3'-9 3/4"	3'-9 3/4"	0'-9"	0'-9"	19'-0"	19'-0"	23'-7 3/8"	23'-7 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
INLET	INLET
CU.YD	LBS.
12.87	1116

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	19	L	Min 3'-6"	4	12	4	L 3'-9"	-	-	-	L -	4	18	6	Min	4	18	4	18'-8"
					Max 9'-4"												3'-10"				
				X	Min 0'-9"				X 1'-4"				X -				Max				
					Max 1'-5"												14'-3"				
				Y	Min 2'-10"				Y 2'-6"				Y -				Min				
					Max 8'-0"												3'-4"				
WING B	4	12	19	L	Min 3'-6"	4	12	4	L 3'-9"	-	-	-	L -	4	18	6	Min	4	18	4	18'-8"
					Max 9'-4"												3'-10"				
				X	Min 0'-9"				X 1'-4"				X -				Max				
					Max 1'-5"												14'-3"				
				Y	Min 2'-10"				Y 2'-6"				Y -				Min				
					Max 8'-0"												3'-4"				

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	13	L Min 5'-1"		4	8	24'-5"	6	18	13	Min	-	-	-	Min	4	2	19'-4"	4	2	20'-6"	6	12	7	L 3'-4"	558
				Max 10'-3"								2'-8"				-											
	X	Min	2'-4"									Max				Max										X 1'-8"	
		Max	2'-4"									3'-4"				-											
	Y	Min	2'-10"																								
		Max	8'-0"																								
WING B	4	18	13	L Min 5'-1"		4	8	24'-5"	6	18	13	Min	-	-	-	Min	4	2	19'-4"	4	2	20'-6"	6	12	7	L 3'-4"	558
				Max 10'-3"								2'-8"				-											
	X	Min	2'-4"									Max				Max										X 1'-8"	
		Max	2'-4"									3'-4"				-											
	Y	Min	2'-10"																								
		Max	8'-0"																								

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

MID-SECTION
BAR LAP TABLE

# of Long. Laps Req'd.	SL = Section Length
0	< 40.0 ft
1	>40.0 ft - 78.0 ft
2	>78.0 ft - 116.0 ft
3	>116.0 ft - 154.0 ft
4	>154.0 ft - 192.0 ft
5	>192.0 ft - 230.0 ft
6	>230.0 ft - 268.0 ft
7	>268.0 ft - 306.0 ft
8	>306.0 ft -344.0 ft

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/16/20

TABULAR DATA BY: KRM DATE: 9/23/2020
CHECKED BY: CAW DATE: 10/05/2020

This drawing to be used in conjunction with
SHEET 1 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE',
SHEET 3 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF MULTI-BARREL R.C. BOX CULVERT',
SHEET 4 OF 4, "GENERAL DETAILS OF R.C. BOX CULVERT", 'DETAILS OF WINGWALLS', and
STANDARD DRAWING RCB-2.

For additional information and outlet sections, see Sheet 2 of 2.

INLET SKEWED END SECTION

| SKEW (DEGREE) | SLOPE | DESIGN FILL DEPTH (FT.) | CLEAR SPAN (FT.) | CLEAR HEIGHT (FT.) | SECTION LENGTH | TOP SLAB THK. | HDWL DEPTH | BOTTOM SLAB THK. | SIDE WALL THK. | INTERIOR WALL THK. | OVER ALL WIDTH | OVER ALL HEIGHT | TOP SLAB REINFORCING STEEL "a" SIZE | "a" SPACING | "a" LENGTHS VARY | "a" NO. REQ'D | TOP SLAB REINFORCING STEEL "c" SIZE | "c" SPACING | "c" LENGTHS VARY | "c" NO. REQ'D | BOTTOM SLAB REINFORCING STEEL "d" SIZE | "d" SPACING | "d" LENGTHS VARY | "d" NO. REQ'D | BOTTOM SLAB REINFORCING STEEL "f" SIZE | "f" SPACING | "f" LENGTHS VARY | "f" NO. REQ'D | SIDE WALL REINFORCING STEEL "f0" SIZE | "f0" SPACING | "f0" NO. REQ'D | "f0" LENGTH | INTERIOR WALL REINFORCING STEEL "f1" SIZE | "f1" SPACING | "f1" NO. REQ'D | "f1" LENGTH | TOP SLAB DISTRIBUTION REINFORCING STEEL "g" SIZE | "g" SPACING | "g" NO. REQ'D | "g" LENGTHS VARY | BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE | "e" SPACING | "e" NO. REQ'D | "e" LENGTHS VARY | SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE | "d1" SPACING | "d1" NO. REQ'D | "d1" LENGTH | INTERIOR WALL DISTRIBUTION REINFORCING STEEL "d2" SIZE | "d2" SPACING | "d2" NO. REQ'D | "d2" LENGTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

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.		090579	15	99

① SPECIAL DETAILS

STATE OF ARKANSAS
KENNETH RANDALL MILLER
LICENSED PROFESSIONAL ENGINEER
No. 16720
9/15/2023

TABULAR DATA BY: KRM DATE: 9/23/2020
CHECKED BY: CAW DATE: 10/05/2020

OUTLET WINGWALL TABLE

OVER ALL WIDTH	CLEAR HEIGHT	FOOTING THK.	WING WALL THK.	BOX SKEW (DEG.)	SLOPE	HDWL LENGTH	HEEL	WALL HEIGHT AT HDWL	WALL HEIGHT AT WING END	WINGWALL ANGLE (DEGREE) WING A	WINGWALL ANGLE (DEGREE) WING B	FOOTING WIDTH AT WALL END	WIDTH OF WING FOOTINGS AT HDWL WING A	WIDTH OF WING FOOTINGS AT HDWL WING B	FOOTING DIMENSION PARALLEL WITH HDWL WING A	FOOTING DIMENSION PARALLEL WITH HDWL WING B	LENGTH OF WINGWALLS WING A	LENGTH OF WINGWALLS WING B	LENGTH OF FOOTING HEEL WING A	LENGTH OF FOOTING HEEL WING B
OW	H	WB	CW	SK	SL	K	HL	WH1	WH2	AF1	AF2	WE	WF1	WF2	G1	G2	W1	W2	W3	W4
51'-2"	7'-0"	0'-9"	0'-8"	0	3:1	50'-0"	2'-0"	7'-10"	2'-4"	30	30	3'-2"	3'-9 3/4"	3'-9 3/4"	0'-9"	0'-9"	19'-0"	19'-0"	22'-5 3/8"	22'-5 3/8"

CLASS "S" CONCRETE (Includes apron)	REINFORCING STEEL (Includes apron and laps if required)
OUTLET	OUTLET
CU.YD	LBS.
14.30	1104

WING	F1 BAR SIZE	F1 MAX. SPACING	F1 NO. REQ'D	F1 LENGTHS VARY	F1	F2 BAR SIZE	F2 SPACING	F2 NO. REQ'D	F2 LENGTHS	F3 BAR SIZE	F3 SPACING	F3 NO. REQ'D	F3 LENGTHS	F4 BAR SIZE	F4 SPACING	F4 NO. REQ'D	F4 LENGTHS VARY	F5 BAR SIZE	F5 SPACING	F5 NO. REQ'D	F5 LENGTHS
WING A	4	12	19	L	Min 3'-6"	4	12	4	L 3'-9"	-	-	-	L -	4	18	6	Min	4	18	4	18'-8"
					Max 9'-4"												3'-10"				
				X	Min 0'-9"				X 1'-4"				X -				Max				
					Max 1'-5"												14'-3"				
				Y	Min 2'-10"				Y 2'-6"				Y -								
					Max 8'-0"																
WING B	4	12	19	L	Min 3'-6"	4	12	4	L 3'-9"	-	-	-	L -	4	18	6	Min	4	18	4	18'-8"
					Max 9'-4"												3'-10"				
				X	Min 0'-9"				X 1'-4"				X -				Max				
					Max 1'-5"												14'-3"				
				Y	Min 2'-10"				Y 2'-6"				Y -								
					Max 8'-0"																

WING	F6 BAR SIZE	F6 SPACING	F6 NO. REQ'D	F6 LENGTHS VARY	F6	F7 BAR SIZE	F7 NO. REQ'D	F7 LENGTHS	F8 BAR SIZE	F8 SPACING	F8 NO. REQ'D	F8 LENGTHS VARY	F9 BAR SIZE	F9 SPACING	F9 NO. REQ'D	F9 LENGTHS	F10 BAR SIZE	F10 NO. REQ'D	F10 LENGTHS	F11 BAR SIZE	F11 NO. REQ'D	F11 LENGTHS	F12 BAR SIZE	F12 SPACING	F12 NO. REQ'D	F12 LENGTHS	REINF. STEEL QTY. PER WING (LBS)
WING A	4	18	13	L Min 5'-1"		4	8	23'-3"	6	18	13	Min	-	-	-	Min	4	2	19'-4"	4	2	20'-6"	6	12	7	L 3'-4"	552
				Max 10'-3"								2'-8"				-											
				X Min 2'-4"								Max				Max										X 1'-8"	
				Max 2'-4"								3'-4"				-											
				Y Min 2'-10"																							
				Max 8'-0"																							
WING B	4	18	13	L Min 5'-1"		4	8	23'-3"	6	18	13	Min	-	-	-	Min	4	2	19'-4"	4	2	20'-6"	6	12	7	L 3'-4"	552
				Max 10'-3"								2'-8"				-											
				X Min 2'-4"								Max				Max										X 1'-8"	
				Max 2'-4"								3'-4"				-											
				Y Min 2'-10"																							
				Max 8'-0"																							

Min. Bar Lap Length	
#4	1'-9"
#5	2'-2"
#6	2'-7"
#7	3'-6"
#8	4'-7"

Bar Pin Dia. Table	
#4	3"
#5	3 3/4"
#6	4 1/2"
#7	5 1/4"
#8	6"

① Any Bar Lap Required for the Skewed End Section shall be considered subsidiary to the item "Reinforcing Steel - Roadway (Grade 60)."

OUTLET SKEWED END SECTION

SKEW (DEGREE)	SLOPE	DESIGN FILL DEPTH (FT.)	CLEAR SPAN (FT.)	CLEAR HEIGHT (FT.)	SECTION LENGTH	TOP SLAB THK.	HDWL DEPTH	BOTTOM SLAB THK.	SIDE WALL THK.	INTERIOR WALL THK.	OVER ALL WIDTH	OVER ALL HEIGHT	TOP SLAB REINF. "a" SIZE	"a" SPACING	"a" LENGTHS VARY	"a" NO. REQ'D	TOP SLAB REINF. "c" SIZE	"c" SPACING	"c" LENGTHS VARY	"c" NO. REQ'D	BOTTOM SLAB REINF. "d" SIZE	"d" SPACING	"d" LENGTHS VARY	"d" NO. REQ'D	BOTTOM SLAB REINF. "f" SIZE	"f" SPACING	"f" LENGTHS VARY	"f" NO. REQ'D
SK	SL	D	S	H	LL	T	HD	B	C	W	OW	OH																
															Max				Max				Max				Max	
															Min				Min				Min				Min	

SIDE WALL REINF. "f0" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH	INTERIOR WALL REINF. "f1" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. "g" SIZE	"g" SPACING	"g" NO. REQ'D	"g" LENGTHS VARY	BOTTOM SLAB DISTRIB. REINF. "e" SIZE	"e" SPACING	"e" NO. REQ'D	"e" LENGTHS VARY	SIDE WALL DISTRIB. REINF. "d1" SIZE	"d1" SPACING	"d1" NO. REQ'D	"d1" LENGTH	INTERIOR WALL DISTRIB. REINF. "d2" SIZE	"d2" SPACING	"d2" NO. REQ'D	"d2" LENGTH
											Max				Max				LONG				LONG
											Min				Min				SHORT				MID
																							SHORT

CLASS "S" CONCRETE (Includes HDWL) CU. YDS.	1 REINFORCING STEEL (GR 60) (Includes HDWL) LBS.

"k1" HDWL BARS SIZE	"k1" HDWL BARS LENGTH	"k1" HDWL BARS NO. REQ'D	"k2" HDWL BARS SIZE	"k2" HDWL BARS LENGTH	"k2" HDWL BARS NO. REQ'D	"h" HDWL BARS SIZE	"h" HDWL BARS LENGTH	"h" HDWL BARS Y	"h" HDWL BARS NO. REQ'D

OUTLET SLOPE SECTION(S)

R.C. BOX SECTION	DESIGN FILL DEPTH (FT.) D	CLEAR SPAN (FT.) S	CLEAR HEIGHT (FT.) H	TOP SLAB THK. T	BOTTOM SLAB THK B	SIDE WALL THK C	INTERIOR WALL THK. W	OVER ALL WIDTH OW	OVER ALL HEIGHT OH	SECTION LENGTH (FT.) SL	TOP SLAB REINF. LENGTH = OW - 4" + BENDS "a" SIZE	"a" L	Bent "b" SIZE	Bent "b" L	"c" SIZE	"c" L	"c" SPACING	"c" NO. REQ'D	BOTTOM SLAB REINF. LENGTH = OW - 4" + BENDS "d" SIZE	"d" L	Bent "b1" SIZE	Bent "b1" L	"f" SIZE	"f" L	"f" SPACING	"f" NO. REQ'D	SIDE WALL REINF. "f0" LENGTH = OH - 4" SIZE	"f0" SPACING	"f0" NO. REQ'D	"f0" LENGTH

INTERIOR WALL REINF. "f1" LENGTH = OH - 4" SIZE	"f1" SPACING	"f1" NO. REQ'D	"f1" LENGTH	TOP SLAB DISTRIB. REINF. "g" LENGTH = SL SIZE	"g" SPACING	"g" NO. REQ'D	BOTTOM SLAB DISTRIB. REINF. "e" LENGTH = SL SIZE	"e" SPACING	"e" NO. REQ'D	SIDE WALL DISTRIB. REINF. "d1" LENGTH = SL SIZE	"d1" SPACING	"d1" NO. REQ'D	INTERIOR WALL DISTRIB. REINF. "d2" LENGTH = SL SIZE	"d2" SPACING	"d2" NO. REQ'D

CLASS "S" CONCRETE CU. YDS.	REINFORCING STEEL (GR. 60) LBS.
TOTAL	
0.47	142

HDWL DEPTH HD	ADDITIONAL REINF. FOR HDWL LBS.	"h" HDWL BARS SIZE	"h" HDWL BARS Y	"h" HDWL BARS LENGTH	"h" HDWL BARS NO. REQ'D
3"	68	4	1'-1"	2'-1"	53

The required number of bars and lengths shown are for estimating purpose only.
The actual number and length required shall be determined in field.

Unless otherwise noted, all dimensions are in inches.

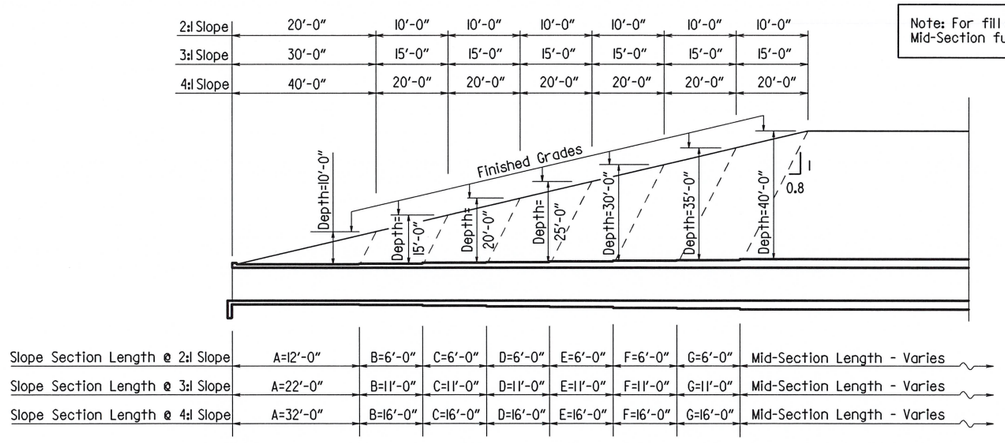
SHEET 2 OF 2
DETAILS OF R.C. BOX CULVERT
QUADRUPLE BARREL BOX CULVERT
Sta. 329+24

SPECIAL DETAILS

Ver. 1.1.17 G:\190500\090579x23\TRANSP\dgn\special_details\b090579_c2.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.		090579	16	99

(1) SPECIAL DETAILS

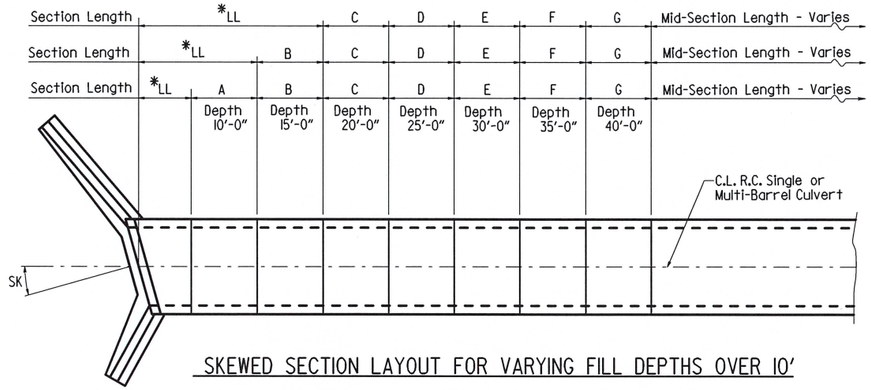


LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

Lengths for Non-Skewed Boxes

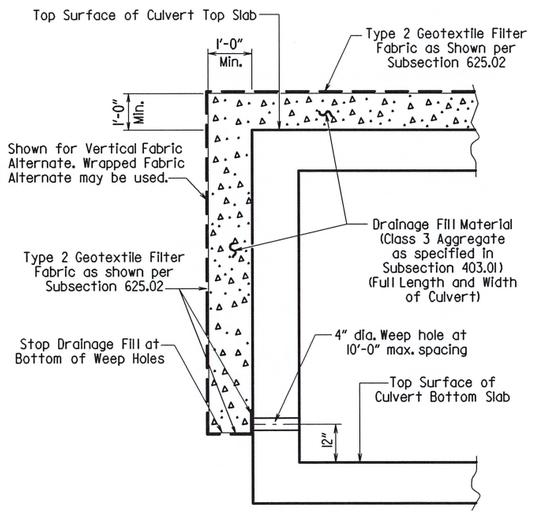
Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

*LL = Skewed End Section Length - See "Skewed End Section Details" Length LL varies with skew angle, overall box width and fill depth and may eliminate the need for some slope section lengths as shown.



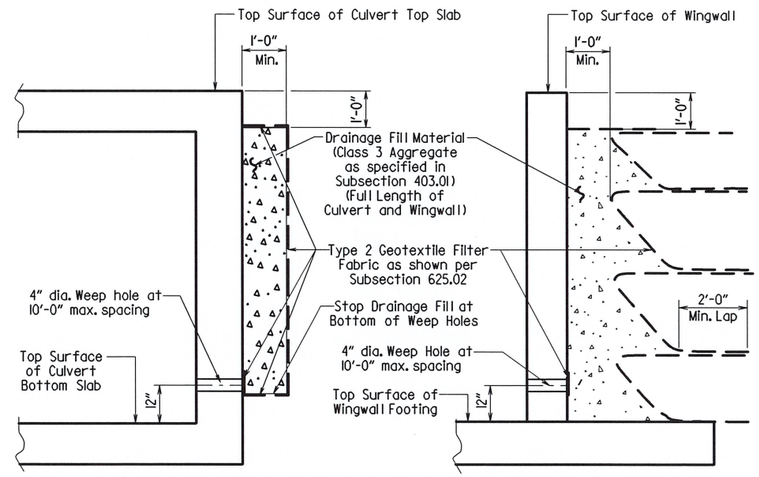
SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023



CULVERT DRAINAGE DETAIL FOR ROCK FILL

This detail shall be used when rock fill is specified for embankment construction.

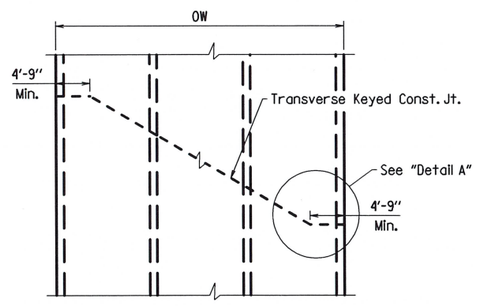


For Details of Excavation and Pay Limits, see Standard Drawing RCB-2.

VERTICAL FABRIC ALTERNATE
(Shown for Culvert, Similar for Wingwall)

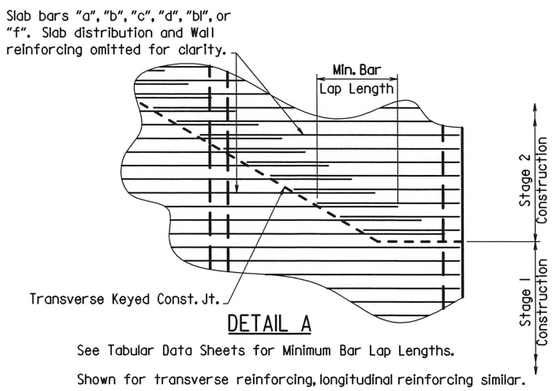
WRAPPED FABRIC ALTERNATE
(Shown for Wingwall, Similar for Culvert)

WINGWALL & CULVERT DRAINAGE DETAIL



SKEWED TRANSVERSE JOINT DETAIL

This detail shall be used to construct a skewed transverse joint only for Multi-Barrel Culverts and only when required by the Maintenance of Traffic Plans. Otherwise, transverse joints should be made normal to the centerline of the barrel.



DETAIL A

See Tabular Data Sheets for Minimum Bar Lap Lengths.

Shown for transverse reinforcing, longitudinal reinforcing similar.

GENERAL NOTES:

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 Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fifth Edition (2010) with 2010 interim revisions.

LIVE LOADING: HL-93

All concrete shall be Class S with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have ¾" chamfers.

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

Reinforcing Steel Tolerances: The tolerances for reinforcing steel shall meet those listed in 'Manual of Standard Practice' published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for truss bars such as Figure 3 on page 7-4 of the CRSI Manual shall be minus zero to plus 1/2 inch.

Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalls of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

Weep Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12" above the top of the bottom slab.

Weep Holes in wingwalls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to clear all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pours. For longer culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless superseded by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be keyed and shall be normal to the centerline of barrel except as noted. Reinforcing shall be continuous through joints unless noted otherwise. Reinforcing through stage construction joints shall provide the minimum bar lap length shown on the Tabular Data Sheets. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geotextile Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered subsidiary to Class S Concrete.

When the top slab of the box culvert serves as finished roadway surface, curing and finishing shall be in accordance with subsections 802.17 and 802.20 for bridge roadway surface and a tine finish shall be applied in accordance with subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Curing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class S Concrete-Roadway". Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 607. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.

SHEET 1 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS

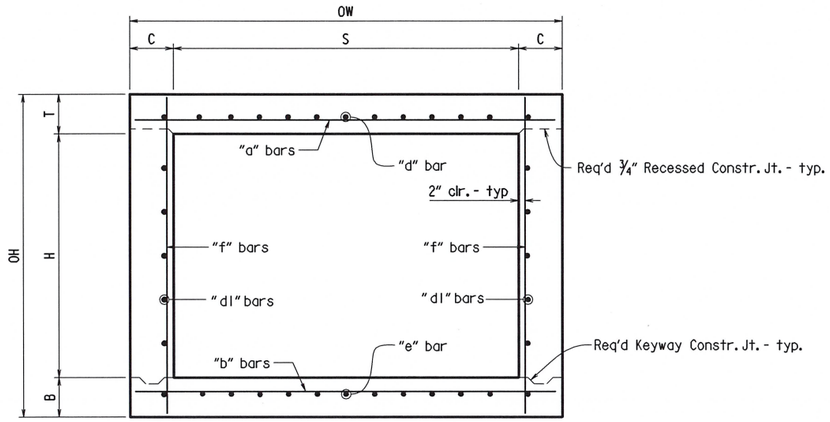
LRFD

V 1.1.7 G:\1910501_090579x23\TRANSP\dgn\special_details\b090579_culvert.dgn

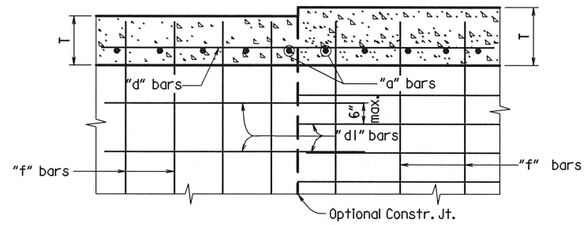
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090579	17	99

SPECIAL DETAILS

Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



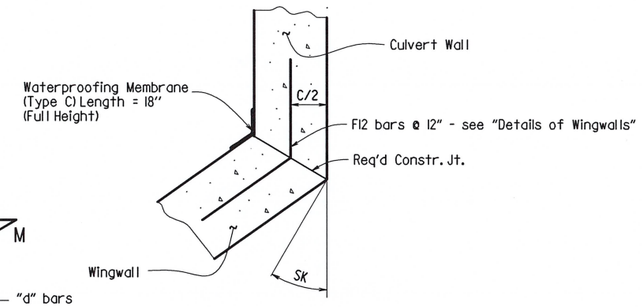
TYPICAL SECTION M-M



Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

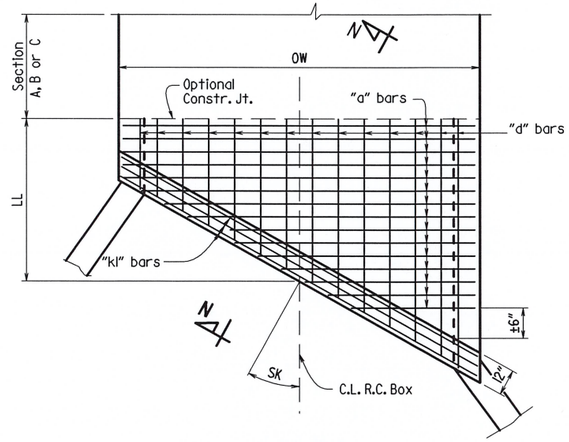
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

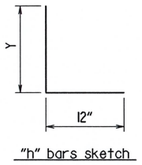


WINGWALL ATTACHMENT

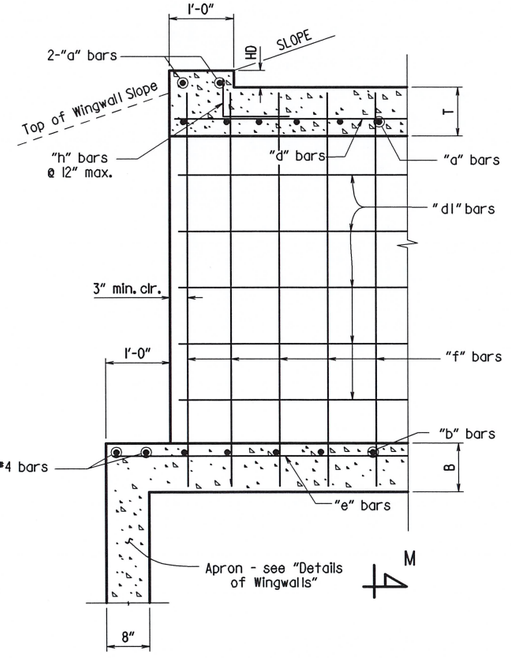
See "Details of Wingwalls" for additional information and wingwall details.



TOP SLAB REINFORCEMENT

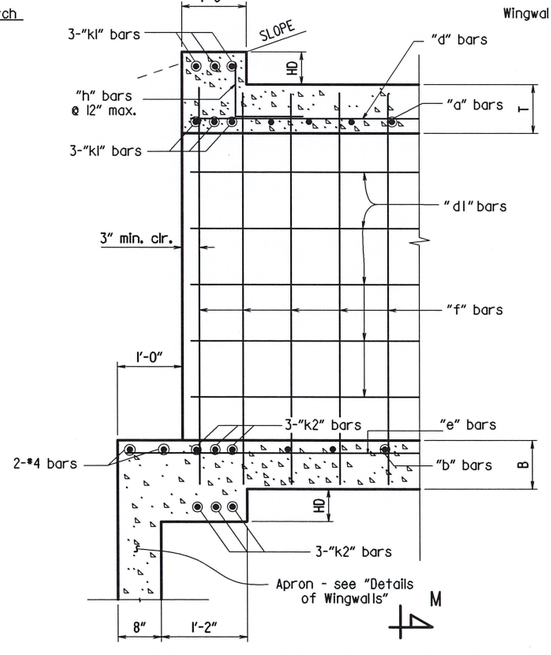


"h" bars sketch



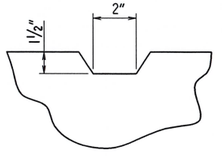
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



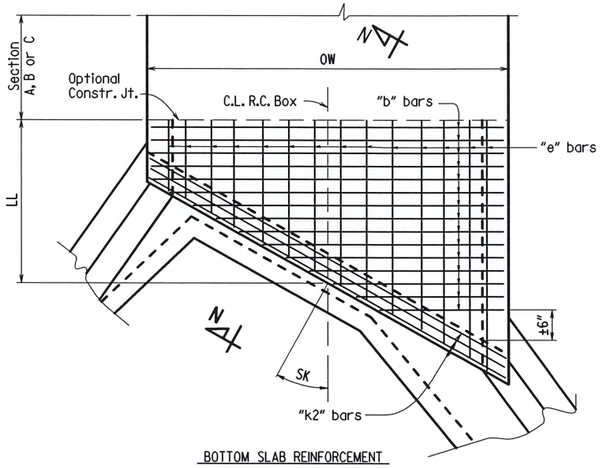
PART LONGITUDINAL SECTION N-N

(Skewed Ends)



TYPICAL KEYWAY DETAIL

(All Construction Joints)



BOTTOM SLAB REINFORCEMENT

SKEWED END SECTION DETAILS

SHEET 2 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL R.C. BOX CULVERT

SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
9/15/23
KENNETH RANDALL MILLER

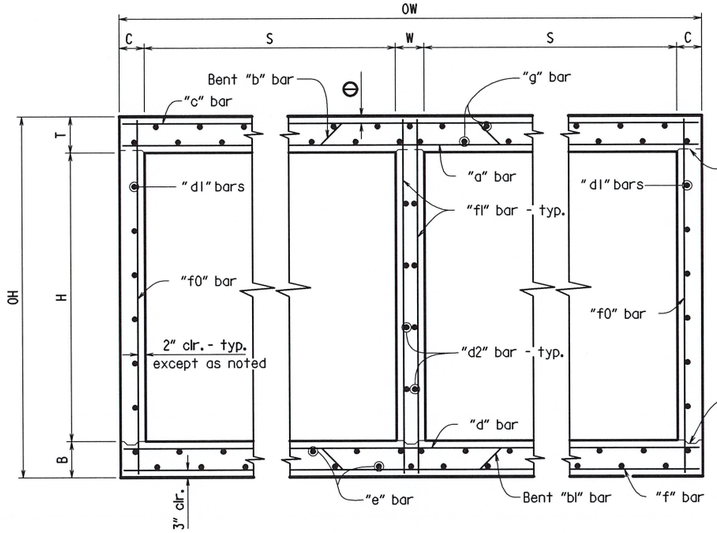
V 1.1.7 G:\1910500_090579x23\TRANSP\dgn\special_details\b090579_culvert.dgn

DATE REVISED	DATE FILMED	REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090579	18	99

① SPECIAL DETAILS

① 2" clr. for fill depth (D) greater than 2 ft.
2½" clr. for fill depth (D) equal to or less than 2 ft.

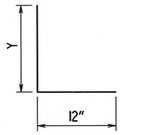
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



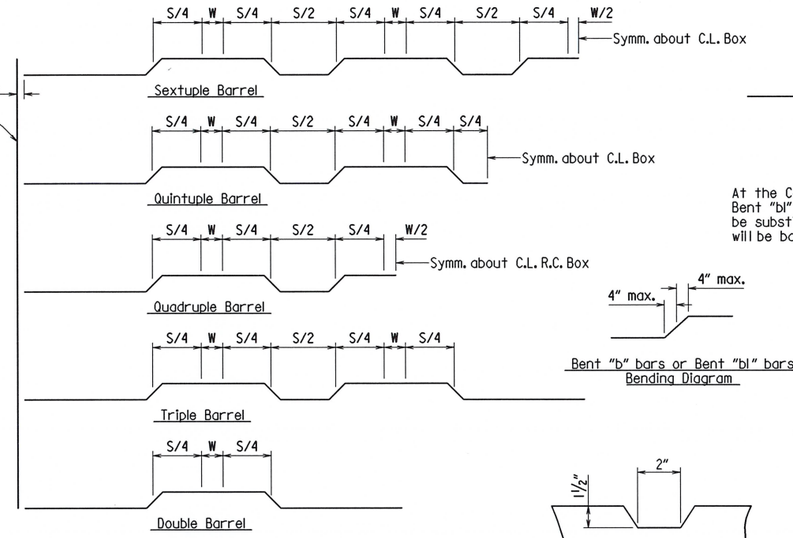
TYPICAL SECTION M-M

Top Slab
Straight "c" bars shall alternate with Bent "b" bars in top.
Straight "a" bars shall alternate with Bent "b" bars in bottom.

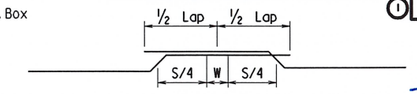
Bottom Slab
Straight "d" bars shall alternate with Bent "b1" bars in top.
Straight "f" bars shall alternate with Bent "b1" bars in bottom.



"h" bars sketch



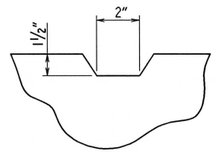
Bent "b" bars or Bent "b1" bars sketch



Lap Detail
For Bent "b" bars and Bent "b1" bars

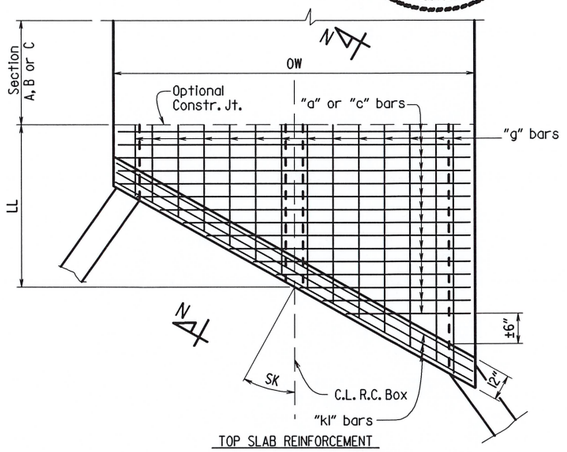
At the Contractor's option in lieu of providing Bent "b" or Bent "b1" bars, one bar top and bottom of equivalent size may be substituted for each bent bar. Payment for the reinforcing will be based on the weight of the "b" or "b1" bar.

Bent "b" bars or Bent "b1" bars
Bending Diagram

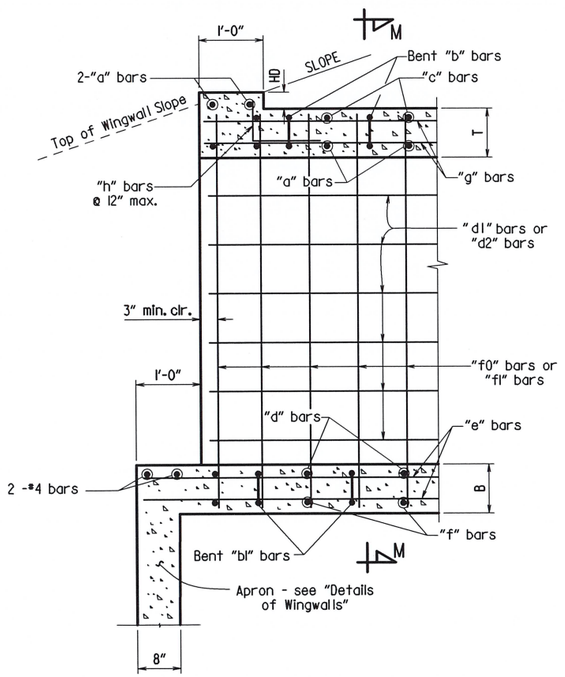


TYPICAL KEYWAY DETAIL

(All Construction Joints)

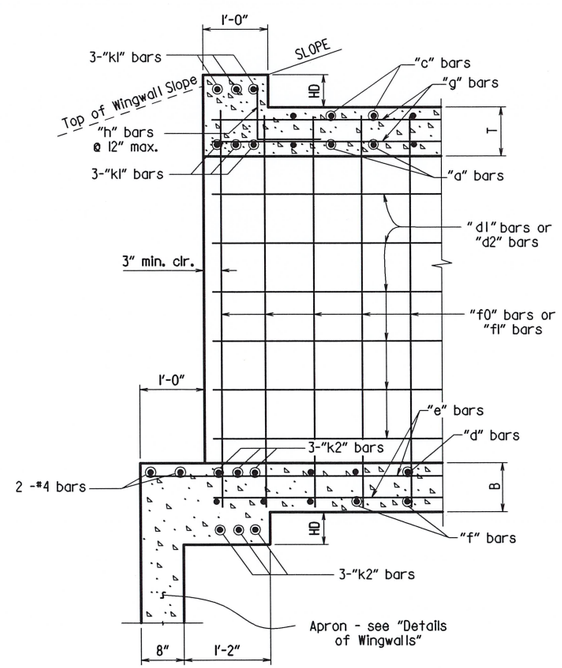


TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



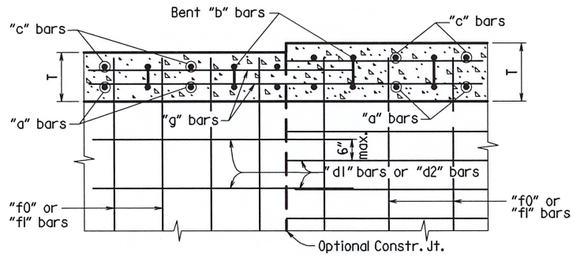
PART LONGITUDINAL SECTION

(Non-Skewed Ends)



PART LONGITUDINAL SECTION N-N

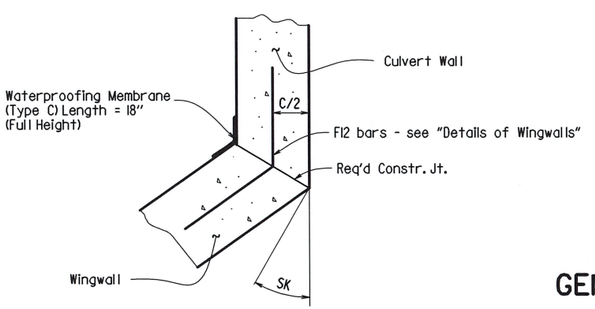
(Skewed Ends)



Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

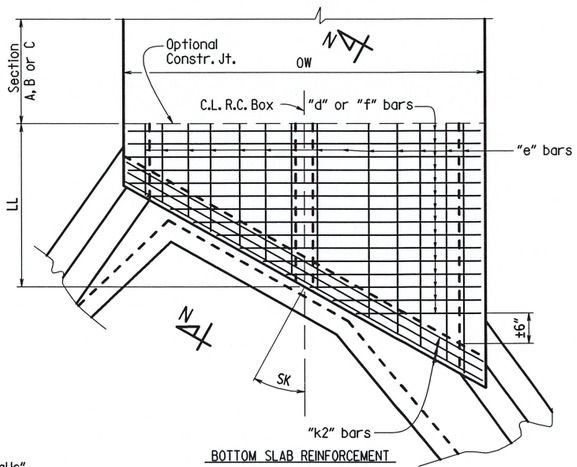
LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR



WINGWALL ATTACHMENT

See "Details of Wingwalls" for additional information and wingwall details.



BOTTOM SLAB REINFORCEMENT
Straight "d" bars in top.
Straight "f" bars in bottom.

SKEWED END SECTION DETAILS

SHEET 3 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF MULTI-BARREL R.C. BOX CULVERT

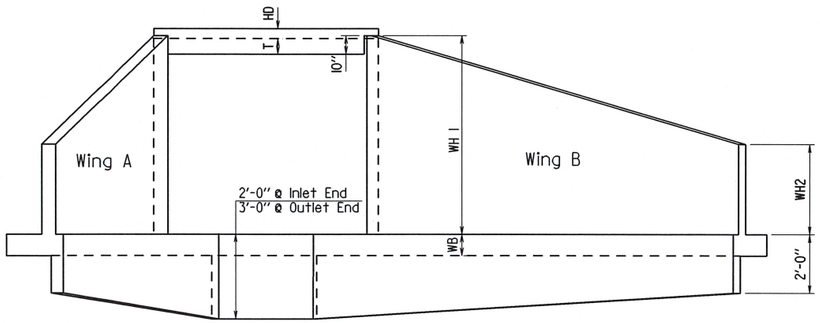
SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
KENNETH RANDALL MILLER
No. 16720
01/15/13

V 1.1.17 G:\V1905001_090579x23\TRANSPV.dgn\special_details\b090579_culvert.dgn

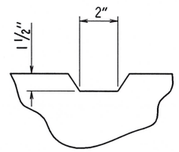
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090579	19	99

SPECIAL DETAILS



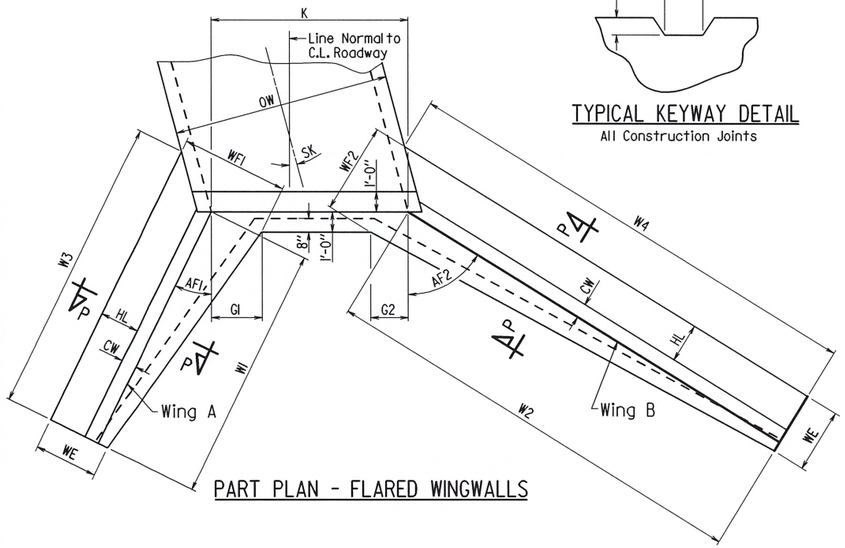
END ELEVATION

Flared Wingwalls Shown

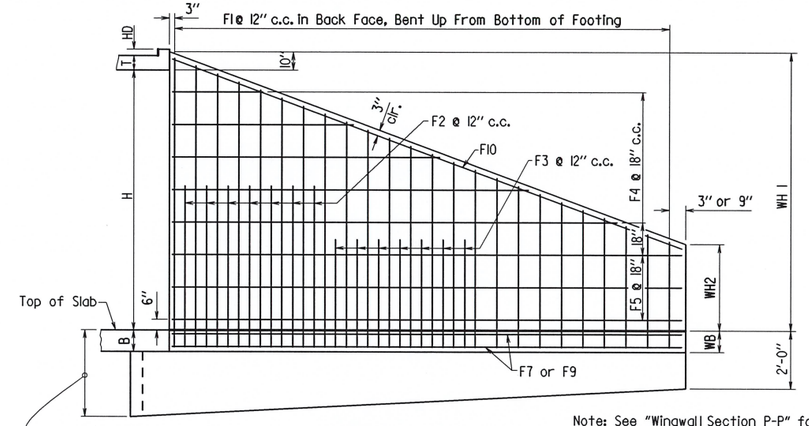


TYPICAL KEYWAY DETAIL

All Construction Joints



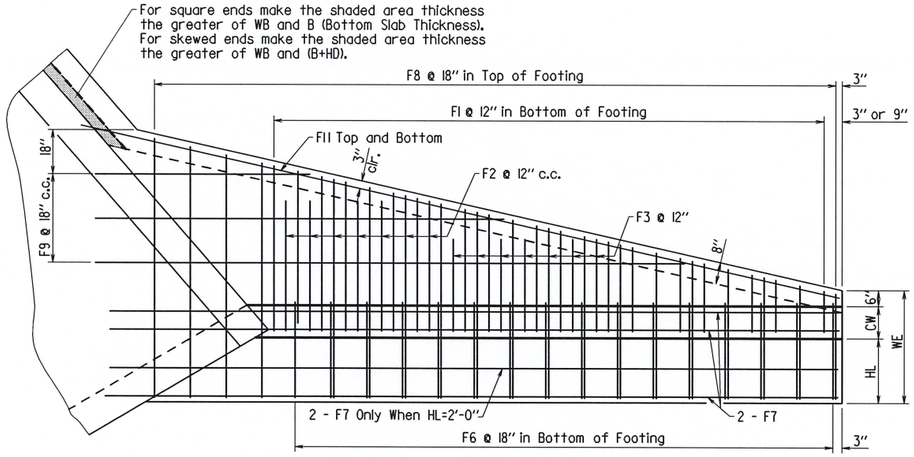
PART PLAN - FLARED WINGWALLS



WINGWALL ELEVATION

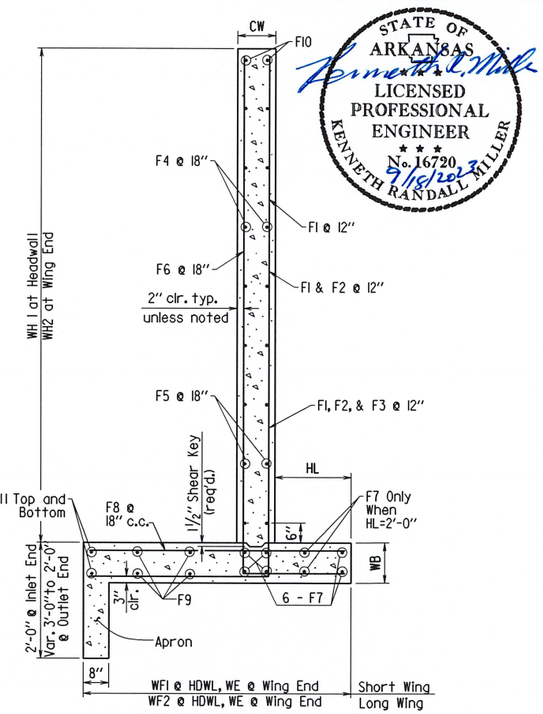
Showing Back Face Reinforcement

Note: See "Wingwall Section P-P" for additional details and reinforcing.

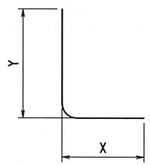


PLAN - FLARED WINGWALLS

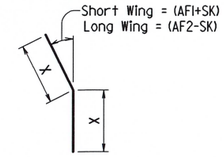
Showing Footing Reinforcement



WINGWALL SECTION P-P

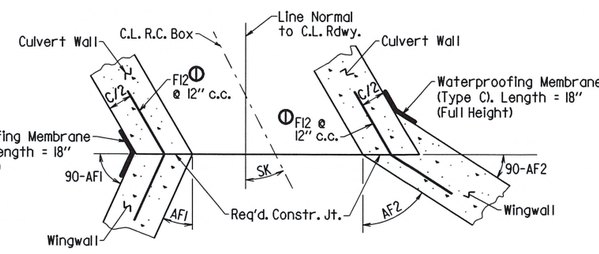


F1, F2, F3, & F6 BARS



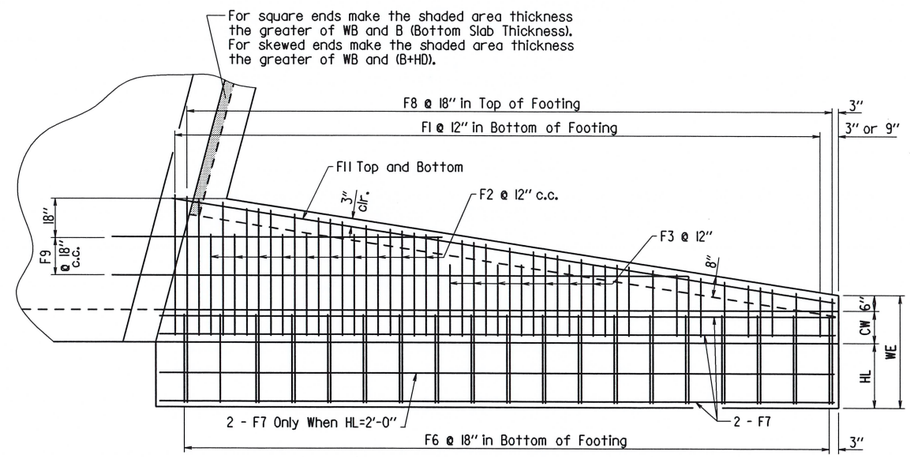
ΦF12 BAR

ΦF12 is a straight bar for parallel wingwalls



CONSTRUCTION JOINTS

Flared Wingwalls Shown



PART PLAN - PARALLEL WINGWALLS

PLAN - PARALLEL WINGWALLS

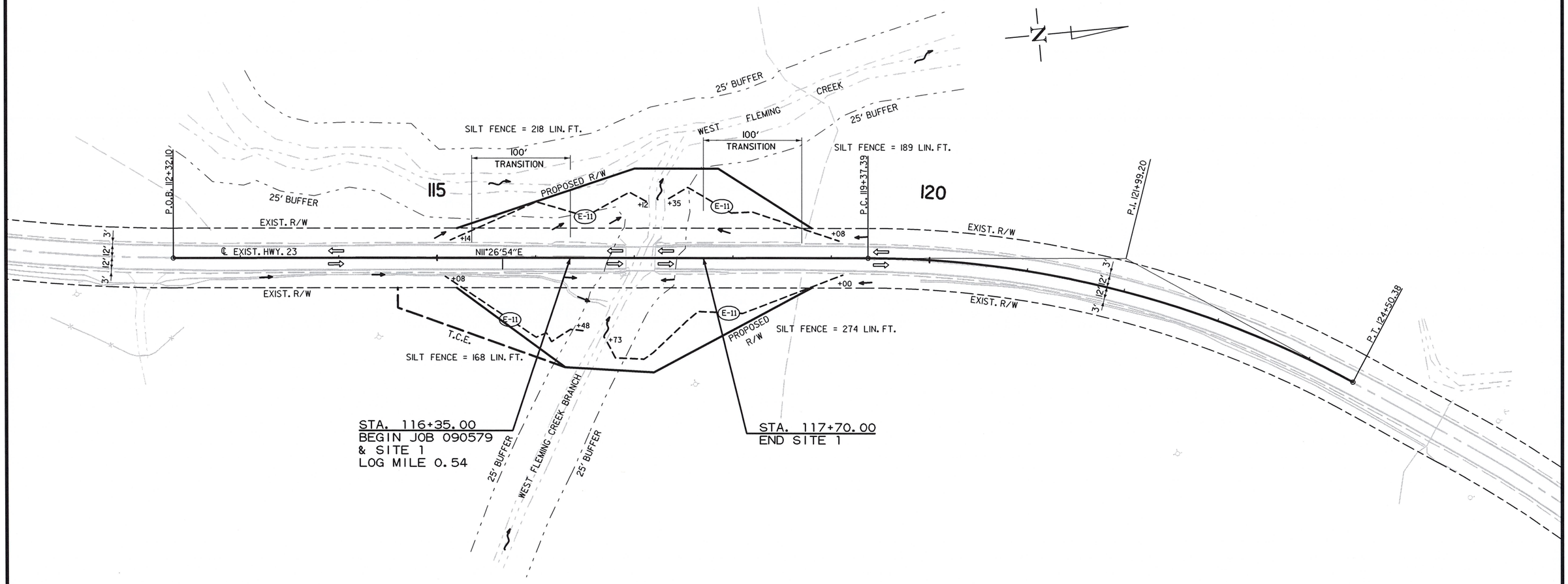
Showing Footing Reinforcement

SHEET 4 OF 4
GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF WINGWALLS
SPECIAL DETAILS

V 1.17 G:\1910500I_090579x23\TRANSP\dgn\special_details\b090579_culvert.dgn

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	20	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
* * *
LICENSED PROFESSIONAL ENGINEER
* * *
No. 15560
JEROME PAUL DAVIS
9-20-2023



REVISIONS

DATE	REVISION

LEGEND

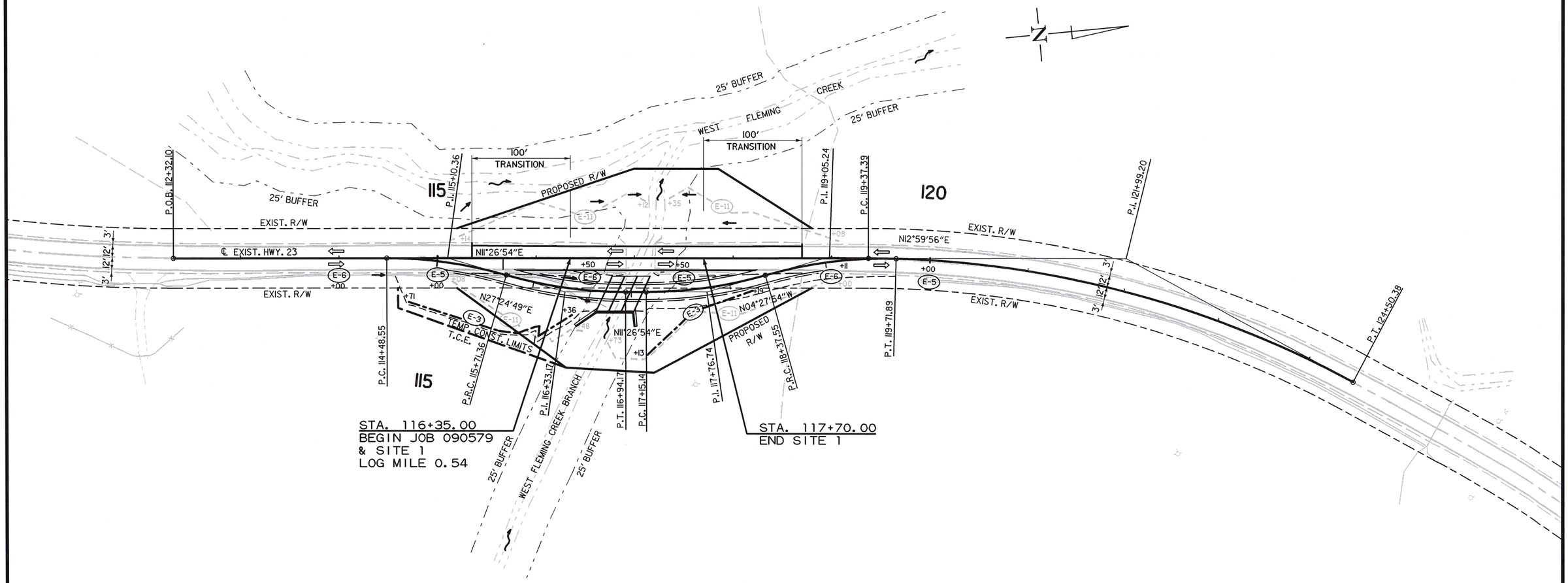
(E-11) = SILT FENCE

CLEARING AND GRUBBING SITE 1
TEMPORARY EROSION CONTROL DETAILS

USER: JC5296
DESIGN FILE: G:\I9105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 9/19/2023 07:24
SCALE: 1:100
MODEL: SITE DISTAGE 00 CLEARING AND GRUBBING

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	21	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
4-04-2024
JEROME PAUL DAVIS



REVISIONS

DATE	REVISION

LEGEND

(E-3) = FILTER SOCK (18")
(E-5) = SAND BAG DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

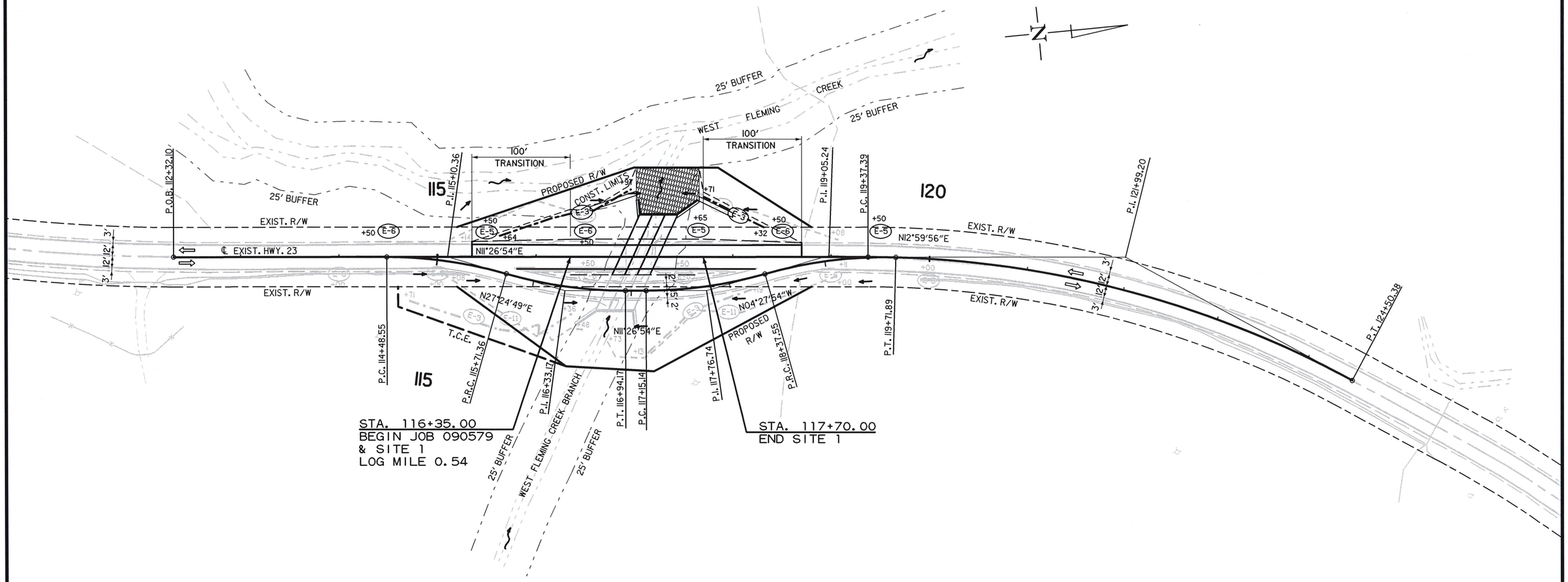
SITE 1 STAGE 3
TEMPORARY EROSION CONTROL DETAILS

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn MODEL: SITE 01STAGE 01
PLOTTED: 4/4/2024 09:53 SCALE: 1:100

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 4/4/2024 09:53

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	22	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
JEROME PAUL DAVIS
No. 15560
4-04-2024



REVISIONS

DATE	REVISION

LEGEND

(E-3) = FILTER SOCK (18")
(E-5) = SAND BAG DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

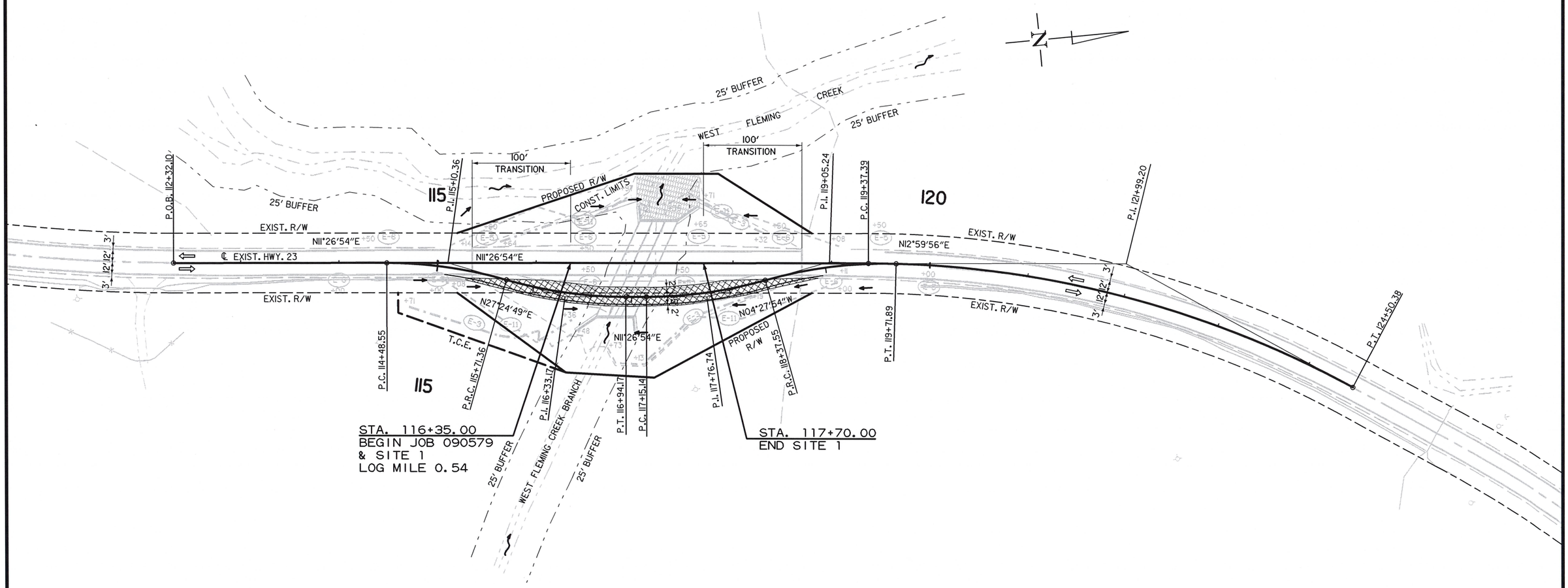
SITE 1 STAGE 4
TEMPORARY EROSION CONTROL DETAILS

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 01STAGE 02

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	23	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
* * *
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024



REVISIONS

DATE	REVISION

OBLITERATION OF PAVEMENT

LEGEND

(E-3) = FILTER SOCK (18")
(E-6) = ROCK DITCH CHECKS
(E-5) = SAND BAG DITCH CHECKS
(E-11) = SILT FENCE

SITE 1 STAGE 5
TEMPORARY EROSION CONTROL DETAILS

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 01STAGE 03

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	24	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
△ = 90°00'00"

STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10

STA. 23+92.45
END CONST.
HWY. 16

STA. 223+26.53
END SITE 2

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

DATE	REVISION

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 9/19/2023 07:24
SCALE: 1:100
MODEL: SITE 02 STAGE 00 CLEARING AND GRUBBING

CLEARING AND GRUBBING SITE 2
TEMPORARY EROSION CONTROL DETAILS

G:\1910500l_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 9/19/2023 07:24

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	25	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
Δ = 90°00'00"

205 210 215 220 225

EXIST. R/W
P.O.B. 204+45.89
N61°29'28"E
PROPOSED R/W
200' TRANSITION
P.T. 207+13.60
P.C. 207+47.77
N29°21'56"E
P.I. 205+83.37
STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10
℄ CONST. HWY. 23
℄ EXIST. HWY. 23
CONST. LIMITS
16'-0" GATE
SFHA
25' BUFFER
CREEK
HOLLOW
HAWKINS
N80°56'17"E
P.I. 21+06.26
P.I. 21+58.07
P.C. 22+59.94
S81°05'52"E
PRRRBBSED R/W
P.I. 24+28.53
P.I. 216+16.79
P.I. 25+84.17
S68°44'4
STA. 23+92.45
END CONST.
HWY. 16
100' TRANSITION
P.T. 223+26.53
P.C. 227+44.05
N29°50'18"W
S29°50'18"E
STA. 223+26.53
END SITE 2

LEGEND

(E-3) = FILTER SOCK (18")
(E-5) = SAND BAG DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

DATE	REVISION

SITE 2 STAGE 1
TEMPORARY EROSION CONTROL DETAILS

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 9/19/2023 07:24
SCALE: 1:100
MODEL: SITE 02 STAGE 01

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 9/19/2023 07:24

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	26	99

TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
△ = 90°00'00"

STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10

STA. 23+92.45
END CONST.
HWY. 16

STA. 223+26.53
END SITE 2

LEGEND

(E-3) = FILTER SOCK (18")
(E-5) = SAND BAG DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE
OBLITERATION OF PAVEMENT

DATE	REVISION

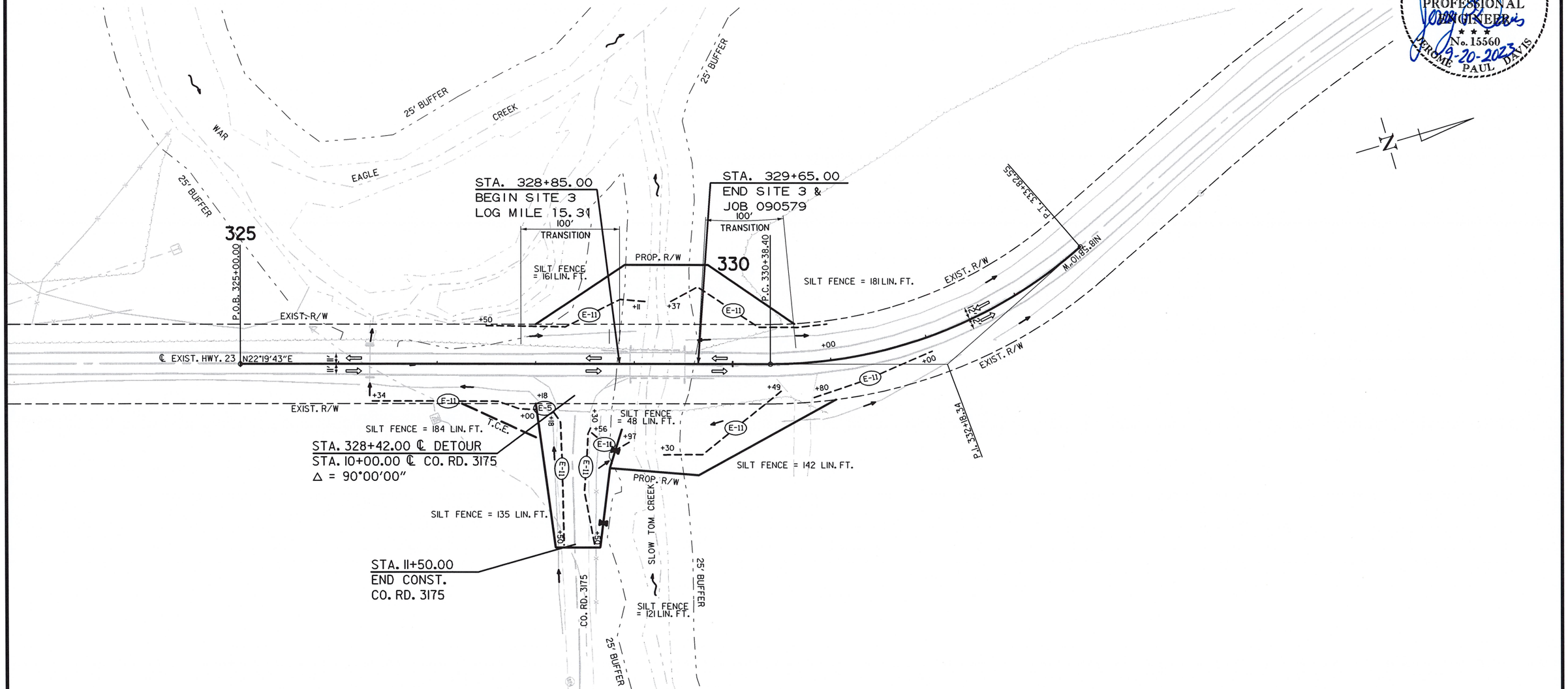
SITE 2 STAGE 2
TEMPORARY EROSION CONTROL DETAILS

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 9/19/2023 07:24

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 9/19/2023 07:24
SCALE: 1in00
MODEL: SITE 02 STAGE 02

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	27	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023



REVISIONS

DATE	REVISION

LEGEND

(E-5) = SAND BAG DITCH CHECKS (E-11) = SILT FENCE

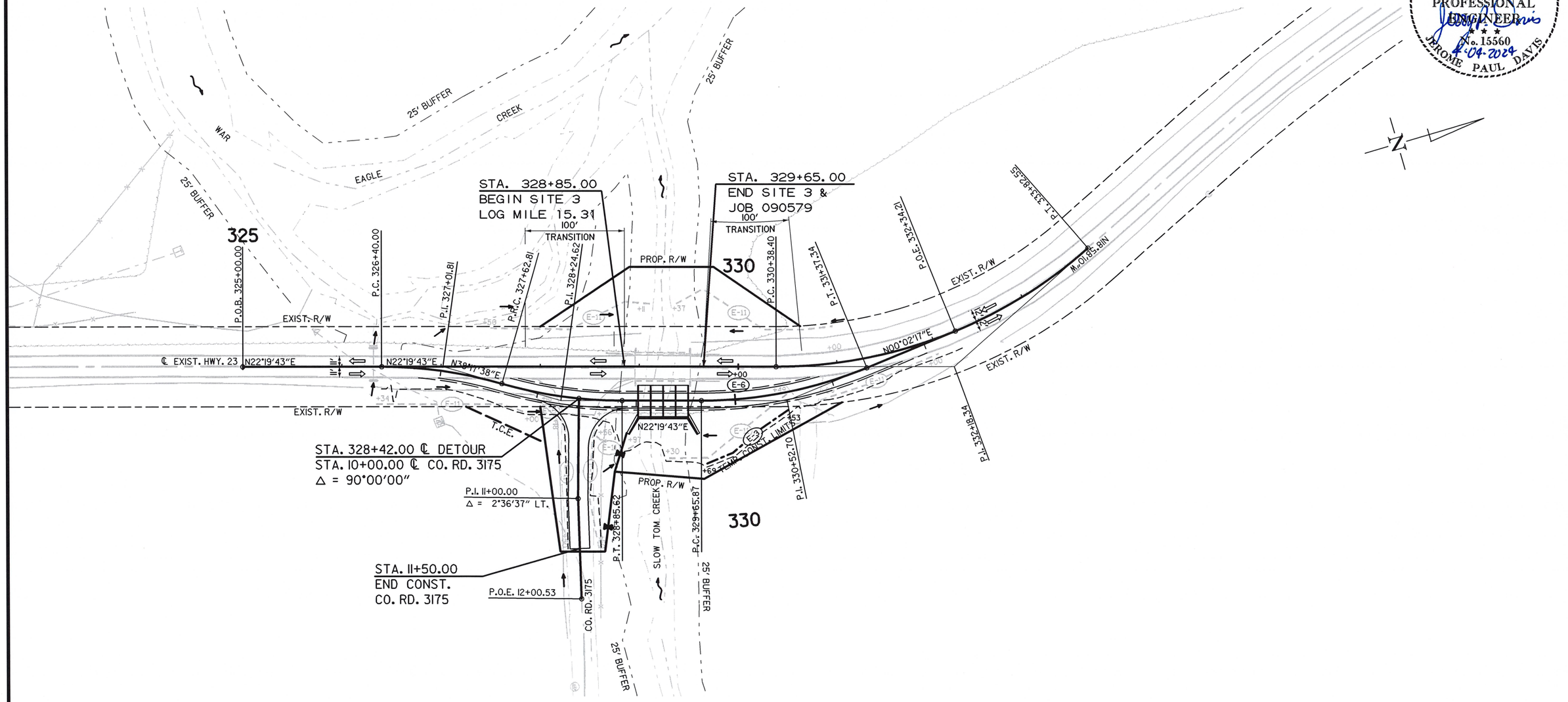
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 9/19/2023 07:24
SCALE: 1:100
MODEL: SITE 03 STAGE 00 CLEARING AND GRUBBING

CLEARING AND GRUBBING SITE 3
TEMPORARY EROSION CONTROL DETAILS

G:\1910500l_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 9/19/2023 07:24

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	28	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
4-04-2024
JEROME PAUL DAVIS



REVISIONS

DATE	REVISION

LEGEND

(E-3) = FILTER SOCK (18")
(E-5) = SAND BAG DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

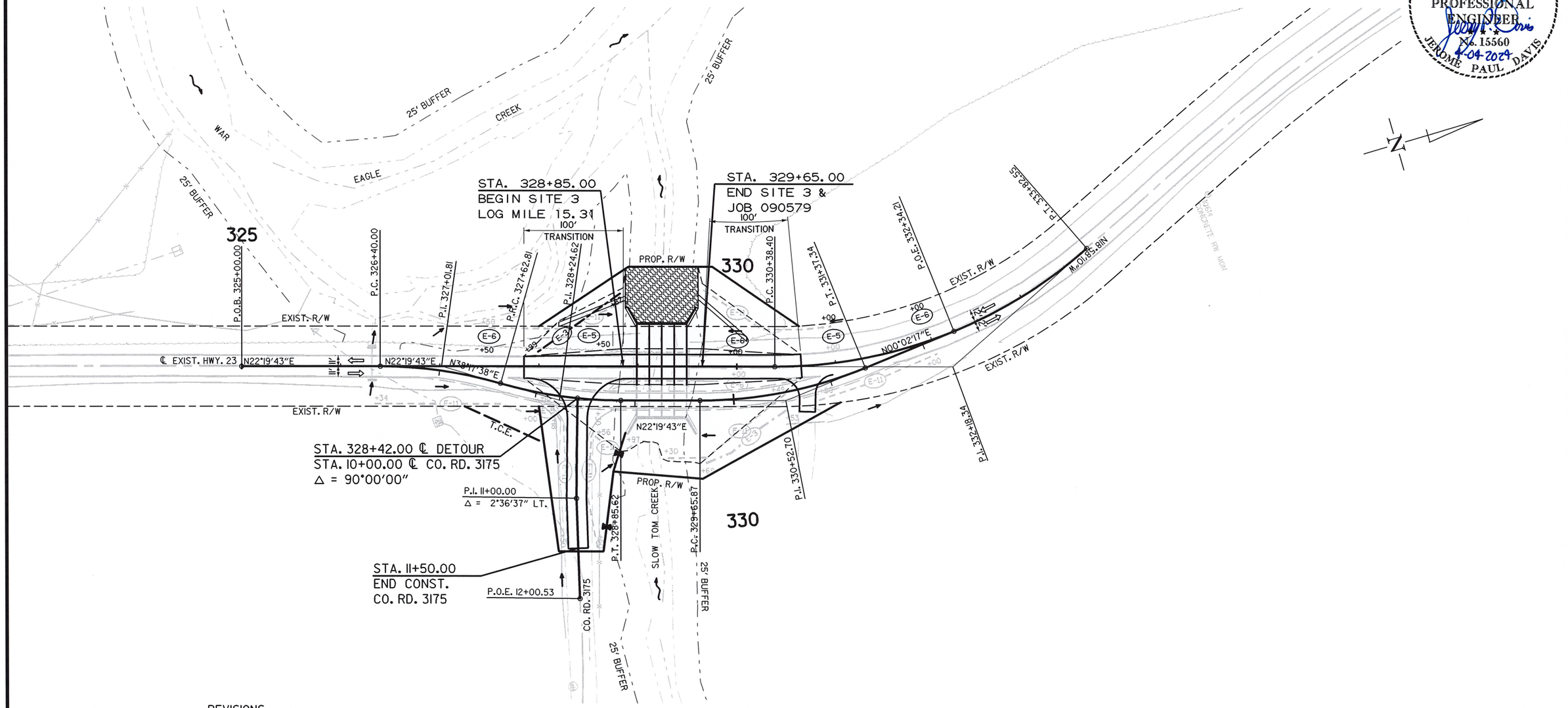
SITE 3 STAGE 3
TEMPORARY EROSION CONTROL DETAILS

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1i00
MODEL: SITE 03 STAGE 01

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	29	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024



REVISIONS

DATE	REVISION

LEGEND

E-3 = FILTER SOCK (18")
E-5 = SAND BAG DITCH CHECKS
E-6 = ROCK DITCH CHECKS
E-11 = SILT FENCE

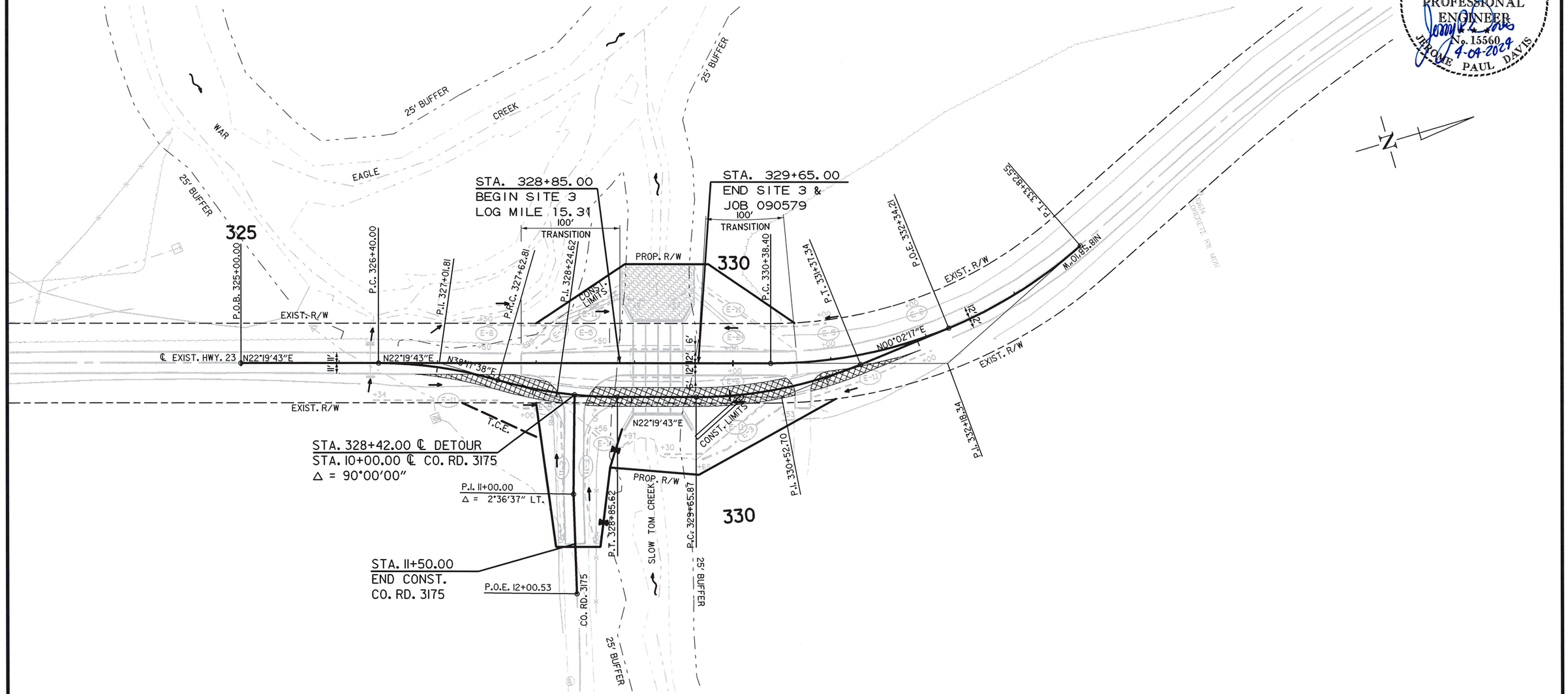
SITE 3 STAGE 4
TEMPORARY EROSION CONTROL DETAILS

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 03 STAGE 02

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	30	99
		TEMPORARY EROSION CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024



REVISIONS

DATE	REVISION

LEGEND

(E-3) = FILTER SOCK (18")
(E-5) = SAND BAG DITCH CHECKS
(E-6) = ROCK DITCH CHECKS
(E-11) = SILT FENCE

SITE 3 STAGE 5
TEMPORARY EROSION CONTROL DETAILS

G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\erosion\r090579_EC.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 03 STAGE 03

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	31	99
		MAINTENANCE OF TRAFFIC DETAILS				

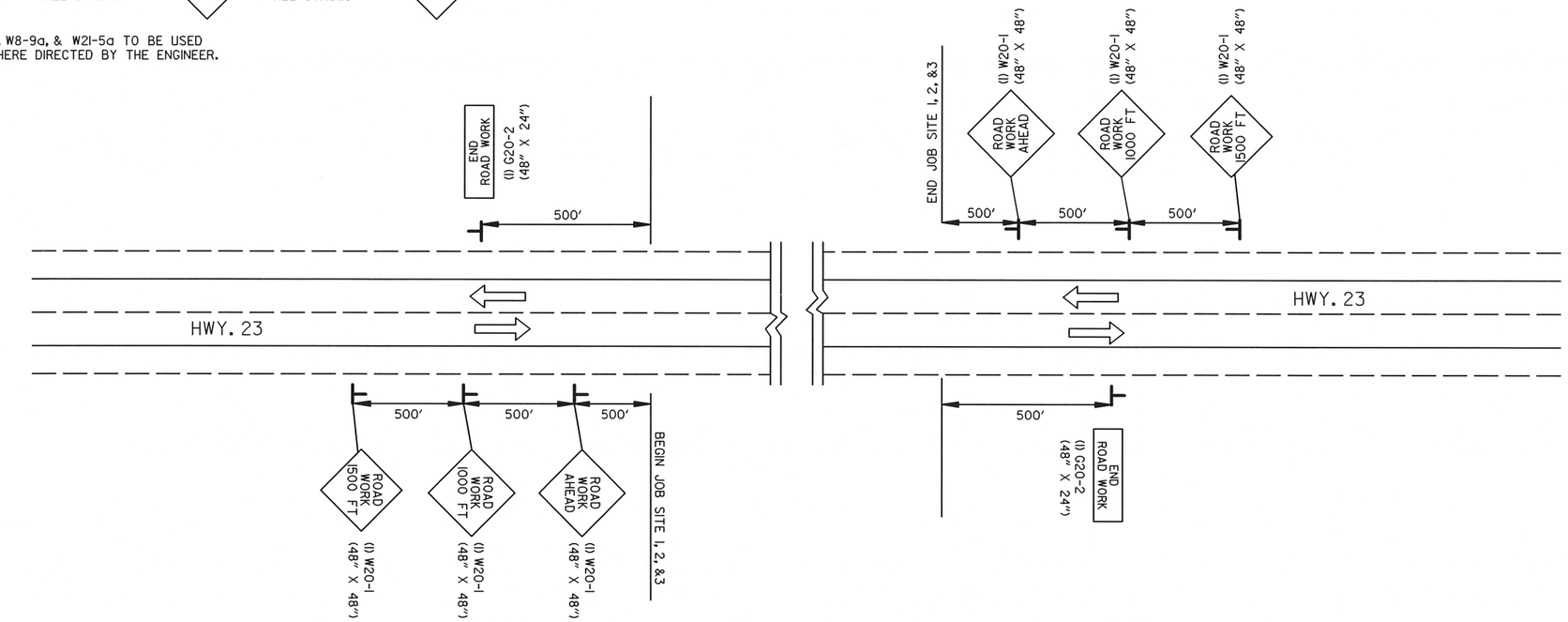
DO NOT PASS — (4) R4-1 (24" X 30") ALL STAGES

SHOULDER DROP-OFF — (4) W8-9a (36" X 36") ALL STAGES

RIGHT SHOULDER CLOSED — (5) W21-5a (36" X 36") ALL STAGES

BUMP — (2) W8-1 (30" X 30") ALL STAGES

R4-1, W8-1, W8-9a, & W21-5a TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.



ADVANCE SIGNS AT BEGINNING AND END OF SITE 1, SITE 2 & SITE 3 (SITE 2 INCLUDES HWY. 16 INTERSECTION)

SITE 1
STAGE 3:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT RIGHT SIDE OF NEW R.C. BOX CULVERT.

4) CONSTRUCT TEMPORARY DETOUR AT SITE 1.

STAGE 4:

1) INSTALL ADVANCE WARNING SIGNS FOR ONE-LANE TRAFFIC.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) FURNISH & INSTALL PORTABLE TRAFFIC SIGNAL SYSTEM.

4) SHIFT TRAFFIC TO TEMPORARY DETOUR AT SITE 1.

5) CONSTRUCT NEW ROADWAY AND LEFT SIDE NEW R.C. BOX CULVERT AT SITE 1.

STAGE 5:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT PAVEMENT WIDENING AT CONNECTION TO EXISTING ROADWAY. PLACE FINAL LIFT OF ASPHALT, PERMANENT PAVEMENT MARKINGS AT SITE 1.

4) SHIFT TRAFFIC TO NEW ROADWAY AND OBLITERATE ROADWAY SITE 1 DETOUR.

SITE 2
STAGE 1:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT NEW ROADWAY AND BRIDGE OVER HAWKINS HOLLOW CREEK WEST OF EXISTING BRIDGE AND ROADWAY ON LEFT SIDE.

STAGE 2:

1) MAINTAIN ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT PAVEMENT WIDENING AT CONNECTIONS TO EXIST ROADWAY. PLACE FINAL LIFT OF ASPHALT, PERMANENT PAVEMENT MARKING AND GUARDRAIL AT SITE 2.

4) SHIFT TRAFFIC TO NEW ROADWAY AND BRIDGE, REMOVE OLD BRIDGE AND ROADWAY.

SITE 3
STAGE 3:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT RIGHT SIDE OF NEW R.C. BOX CULVERT.

4) CONSTRUCT TEMPORARY DETOUR AT SITE 3.

STAGE 4:

1) INSTALL ADVANCE WARNING SIGNS FOR ONE-LANE TRAFFIC.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER

3) FURNISH & INSTALL PORTABLE TRAFFIC SIGNAL SYSTEM.

4) SHIFT TRAFFIC TO TEMPORARY DETOUR AT SITE 3.

5) CONSTRUCT NEW ROADWAY AND LEFT SIDE NEW R.C. BOX CULVERT AT SITE 3.

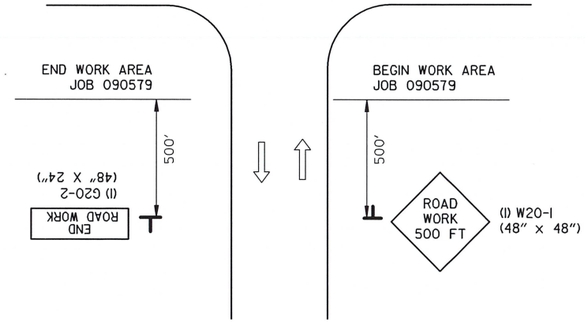
STAGE 5:

1) MAINTAIN ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT PAVEMENT WIDENING AT CONNECTION TO EXISTING ROADWAY. PLACE FINAL LIFT OF ASPHALT, PERMANENT PAVEMENT MARKINGS AT SITE 3.

4) SHIFT TRAFFIC TO NEW ROADWAY AND OBLITERATE ROADWAY SITE 3 DETOUR.



SIDE ROADS ALL STAGES

TOTAL NEEDED (ALL STAGES)
328+42.00 RT. - CO. RD. 3175

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024

USER: jc6296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: MOT DETAILS

ADVANCE WARNING MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	32	99
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 1
STAGE 3:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

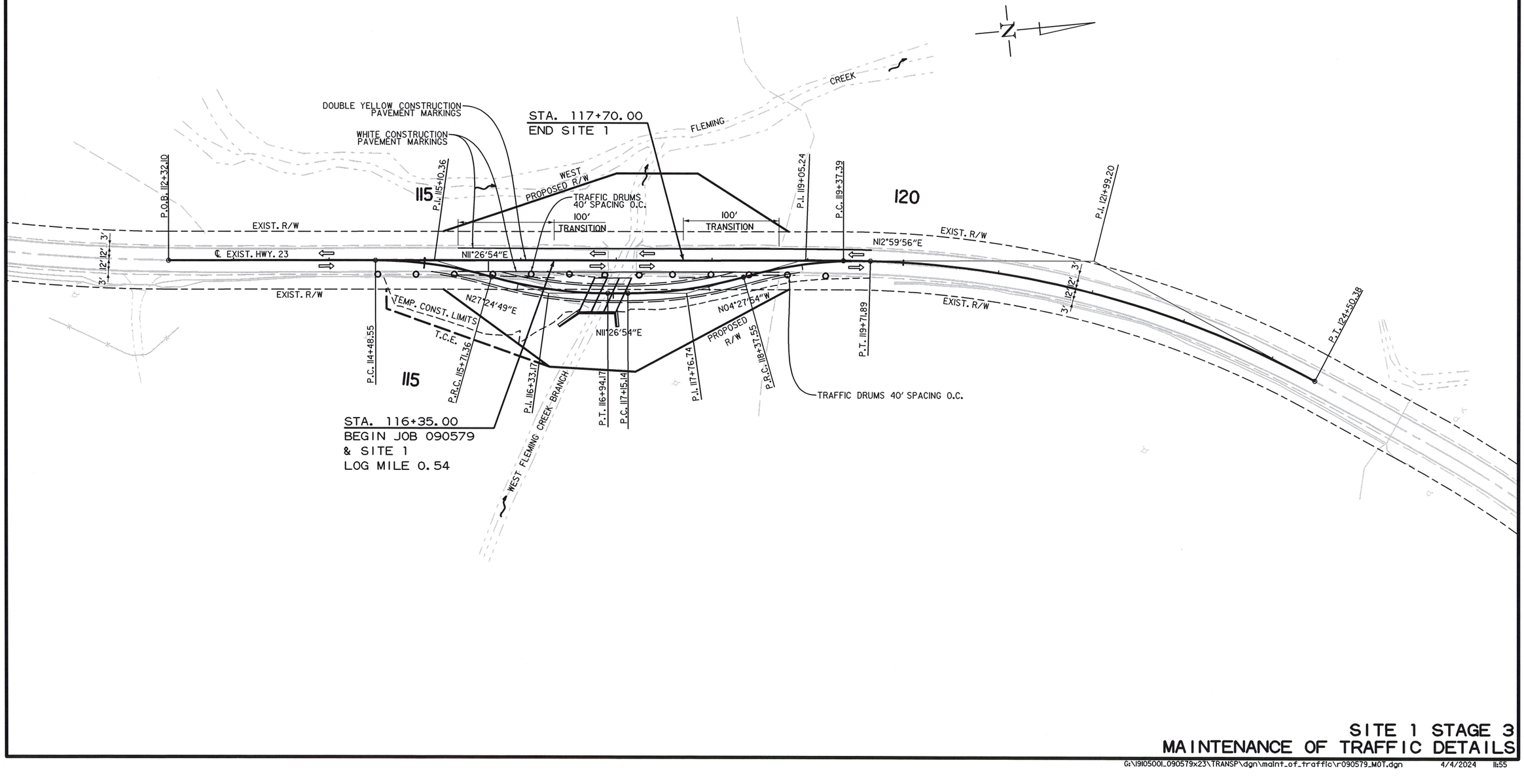
3) CONSTRUCT RIGHT SIDE OF NEW R.C. BOX CULVERT.

4) CONSTRUCT TEMPORARY DETOUR AT SITE 1.

MAINTENANCE OF TRAFFIC - STAGE 3 QUANTITIES

SIGNS = 112 SQ. FT.
TRAFFIC DRUMS = 13 EACH
CONSTRUCTION PAVEMENT MARKINGS = 1340 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 6 EACH

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024



SITE 1 STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

G:\I9105001_090579x23\TRANSP\dgn\maint_of_traffic\r090579_M0T.dgn 4/4/2024 11:55

USER: jc5296
DESIGN FILE: G:\I9105001_090579x23\TRANSP\dgn\maint_of_traffic\r090579_M0T.dgn
PLOTTED: 4/4/2024 11:55
SCALE: 1:100
MODEL: SITE 01STAGE 01

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	33	99
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 1:
STAGE 4:

1) INSTALL ADVANCE WARNING SIGNS FOR ONE-LANE TRAFFIC.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) FURNISH & INSTALL PORTABLE TRAFFIC SIGNAL SYSTEM.

4) SHIFT TRAFFIC TO TEMPORARY DETOUR AT SITE 1.

5) CONSTRUCT NEW ROADWAY AND LEFT SIDE NEW R.C. BOX CULVERT AT SITE 1.

MAINTENANCE OF TRAFFIC - STAGE 4 QUANTITIES

SIGNS = 407 SQ. FT.
TRAFFIC DRUMS = 15 EACH
CONSTRUCTION PAVEMENT MARKINGS = 915 LIN. FT.
REMOVAL OF PERMANENT MARKINGS = 808 LIN. FT.
REMOVABLE PAVEMENT MARKINGS = 874 LIN. FT.
FURNISH AND INSTALL P.C.C.B. = 234 LIN. FT. (INCLUDES 1 END UNIT)
TYPE III BARRICADES RT. 32 LIN. FT.
TYPE III BARRICADES LT. 32 LIN. FT.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
4-04-2024
JEROME PAUL DAVIS

(1) R11-2 (48" X 30") ROAD CLOSED
2-16' BARR. TYP. III LT.

(1) R11-2 (48" X 30") ROAD CLOSED
2-16' BARR. TYP. III RT.

N

CREEK

(1) W24-1L (48"×48")

XX M.P.H. (1) W13-1 (24" X 24")

STOP HERE ON RED (1) R10-6 (24" X 36")

PORTABLE TRAFFIC SIGNAL SYSTEM

STA. 117+70.00
END SITE 1

FLEMING

(2) OM-3L (12"X 36")

WHITE CONSTRUCTION PAVEMENT MARKINGS

115

P.I. 115+10.36

WEST PROPOSED R/W

CONST. LIMITS

100' TRANSITION

100' TRANSITION

200'

P.I. 119+05.24

P.C. 119+37.39

120

P.I. 121+99.20

EXIST. R/W

℄ EXIST. HWY. 23

N11°26'54"E

N12°59'56"E

EXIST. R/W

40'

3' 12' 12' 3'

P.O.B. 112+32.10

12" WHITE STOP LINE

40' 200'

EXIST. R/W

N27°24'49"E

T.C.E.

N11°26'54"E

N04°27'54"W

PROPOSED R/W

EXIST. R/W

12" WHITE STOP LINE

P.T. 119+71.89

P.I. 124+50.38

(1) R10-6 (24" X 36")

STOP HERE ON RED

(1) W24-1R (48"×48")

P.C. 114+48.55

115

P.R.C. 115+71.36

P.I. 116+33.11

P.I. 117+76.74

P.R.C. 118+37.55

(3) OM-3R (12"X 36")

P.T. 116+94.17

P.C. 117+15.14

TRAFFIC DRUMS 40' SPACING O.C.

WHITE CONSTRUCTION-PAVEMENT MARKINGS

PORTABLE TRAFFIC SIGNAL SYSTEM

XX M.P.H. (1) W13-1 (24" X 24")

STA. 116+35.00
BEGIN JOB 090579
& SITE 1
LOG MILE 0.54

WEST FLEMING CREEK BRANCH

140' 250' 250' 250' 250' 500' 500'

ADVANCE SIGN SERIES FOR ONE-LANE TRAFFIC

(2) W20-4 (48" X 48") ONE LANE ROAD 1/2 MILE
(2) W3-5 (36" X 36") SPEED LIMIT 45
(2) R2-1 (24" X 30") SPEED LIMIT 45
(2) W20-1 (48" X 48") ONE LANE ROAD 1500 FT
(2) W3-4 (36" X 36") BE PREPARED TO STOP
(2) W20-4 (48" X 48") ONE LANE ROAD 1000 FT.
(2) W3-3 (36" X 36")

SITE 1 STAGE 4
MAINTENANCE OF TRAFFIC DETAILS

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 01STAGE 02

G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn 4/4/2024 09:53

SITE 1:
STAGE 5:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT PAVEMENT WIDENING AT CONNECTION TO EXISTING ROADWAY. PLACE FINAL LIFT OF ASPHALT, PERMANENT PAVEMENT MARKINGS AT SITE 1.

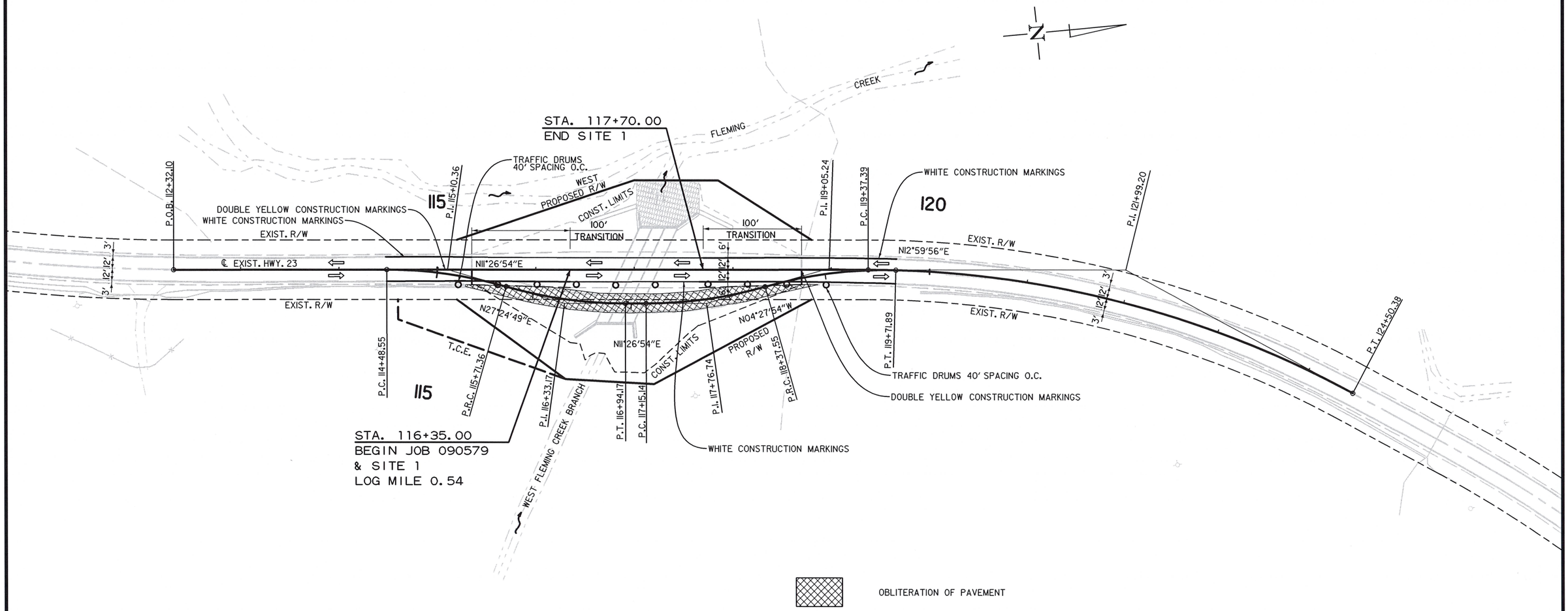
4) SHIFT TRAFFIC TO NEW ROADWAY AND OBLITERATE ROADWAY SITE 1 DETOUR.

MAINTENANCE OF TRAFFIC - STAGE 5 QUANTITIES

SIGNS = 112 SQ. FT.
TRAFFIC DRUMS = 10 EACH
CONSTRUCTION PAVEMENT MARKINGS = 2362 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 6 EACH

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	34	99
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024



SITE 1 STAGE 5
MAINTENANCE OF TRAFFIC DETAILS

G:\19105001_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 01STAGE 03

SITE 2
STAGE I:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT NEW ROADWAY AND BRIDGE OVER HAWKINS HOLLOW CREEK WEST OF EXISTING BRIDGE AND ROADWAY ON LEFT SIDE.

MAINTENANCE OF TRAFFIC - STAGE I QUANTITIES

SIGNS = 168 SQ. FT.
TRAFFIC DRUMS = 68 EACH
CONSTRUCTION PAVEMENT MARKINGS = 7428 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 29 EACH

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	35	99
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
4-04-2024
JEROME PAUL DAVIS

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
△ = 90°00'00"

205 210 215 220 225

EXIST. R/W
P.O.B. 204+45.89
N61°29'28"E
PROPOSED R/W
P.T. 207+13.60
P.C. 207+47.77
P.I. 205+83.37
N29°21'56"E
STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10
TRAFFIC DRUMS 40' SPACING O.C.
DBL. YELLOW CONSTRUCTION MARKINGS
WHITE CONSTRUCTION MARKINGS
CONST. LIMITS
16'-0" GATE
℄ CONST.
℄ EXIST. HWY. 23
HAWKINS HOLLOW CREEK
N60°56'17"E
P.I. 21+06.26
P.I. 21+58.07
3,81.05-62S
P.C. 22+59.94
HAWKINS HOLLOW
WHITE CONSTRUCTION MARKINGS

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
△ = 90°00'00"

P.I. 24+28.59
S68°44'42"E
P.I. 216+45.79
P.T. 25+84.17
P.C. 20+37.25
S29°50'18"E
P.T. 223+26.53
100' TRANSITION
P.C. 227+44.05
N29°50'18"W
P.T. 2I+58.07
P.I. 2I+06.26
P.C. 22+59.94
STA. 23+92.45
END CONST.
HWY. 16
STA. 223+26.53
END SITE 2

SITE 2 STAGE 1
MAINTENANCE OF TRAFFIC DETAILS

USER: apsibl
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 3/25/2024 10:33
SCALE: 1:100
MODEL: SITE 02 STAGE 01

G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn 3/25/2024 10:33

SITE 2:
STAGE 2:
1) MAINTAIN ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT PAVEMENT WIDENING AT CONNECTIONS TO EXIST ROADWAY. PLACE FINAL LIFT OF ASPHALT, PERMANENT PAVEMENT MARKING AND GUARDRAIL AT SITE 2.

4) SHIFT TRAFFIC TO NEW ROADWAY AND BRIDGE, REMOVE OLD BRIDGE AND ROADWAY.

MAINTENANCE OF TRAFFIC - STAGE 2 QUANTITIES

SIGNS = 188 SQ. FT.
TRAFFIC DRUMS = 75 EACH
CONSTRUCTION PAVEMENT MARKINGS = 3145 LIN. FT.
REMOVAL OF PERMANENT MARKINGS = 3328 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 29 EACH
TYPE III BARRICADES RT. 32 LIN. FT.
TYPE III BARRICADES LT. 32 LIN. FT.

OBLITERATION OF PAVEMENT

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	36	99
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
△ = 90°00'00"

(1) R11-2 (48" X 30") ROAD CLOSED
2-16' BARR. TYP. III RT.

205 210 215 220 225

EXIST. R/W
P.O.B. 204+45.89
N61°29'28"E
PROPOSED R/W
P.T. 207+13.60
P.C. 207+47.17
CONST. LIMITS
℄ CONST.
℄ EXIST. HWY. 23
N29°21'56"E
P.I. 205+83.37
STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10
TRAFFIC DRUMS 40' SPACING O.C.
WHITE CONSTRUCTION PAVEMENT MARKINGS
HAWKINS HOLLOW CREEK
16'-0" GATE
N80°56'17"E
P.C. 20+37.25
TRAFFIC DRUMS 20' SPACING O.C.
P.I. 21+06.26
P.T. 21+58.07
P.C. 22+59.94
3-8 | 05-62S
HAWKINS HOLLOW
P.I. 24+28.59
S68°44'43"W
P.I. 26+95.79
P.T. 25+84.17
S29°50'18"E
STA. 23+92.45
END CONST.
HWY. 16
P.T. 223+26.53
100' TRANSITION
P.C. 227+44.05
N29°50'18"W
STA. 223+26.53
END SITE 2

SITE 2 STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

USER: ap5181
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 3/25/2024 10:33
SCALE: 1:100
MODEL: SITE 02 STAGE 02

G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn 3/25/2024 10:33

SITE 3
STAGE 3:

1) INSTALL ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT RIGHT SIDE OF NEW R.C. BOX CULVERT.

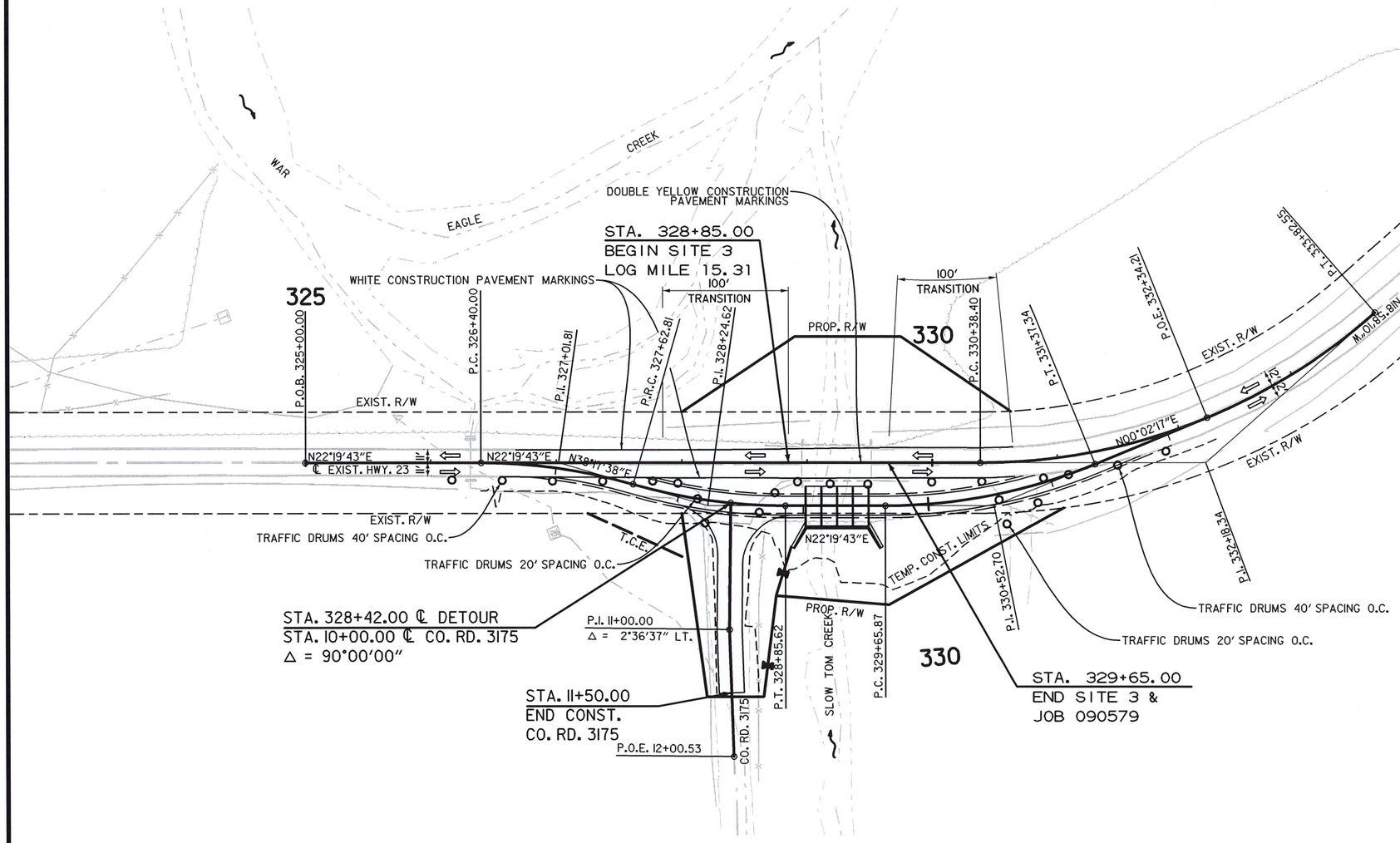
4) CONSTRUCT TEMPORARY DETOUR AT SITE 3.

MAINTENANCE OF TRAFFIC - STAGE 3 QUANTITIES

SIGNS = 146 SQ. FT.
TRAFFIC DRUMS = 21 EACH
CONSTRUCTION PAVEMENT MARKINGS = 1120 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 7 EACH

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	37	99
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024



SITE 3 STAGE 3
MAINTENANCE OF TRAFFIC DETAILS

G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn 4/4/2024 09:53

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 4/4/2024 09:53 SCALE: 1:100 MODEL: SITE 03 STAGE 01

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	38	99
		MAINTENANCE OF TRAFFIC DETAILS				

SITE 3:
STAGE 4:

1) INSTALL ADVANCE WARNING SIGNS FOR ONE-LANE TRAFFIC.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) FURNISH & INSTALL PORTABLE TRAFFIC SIGNAL SYSTEM.

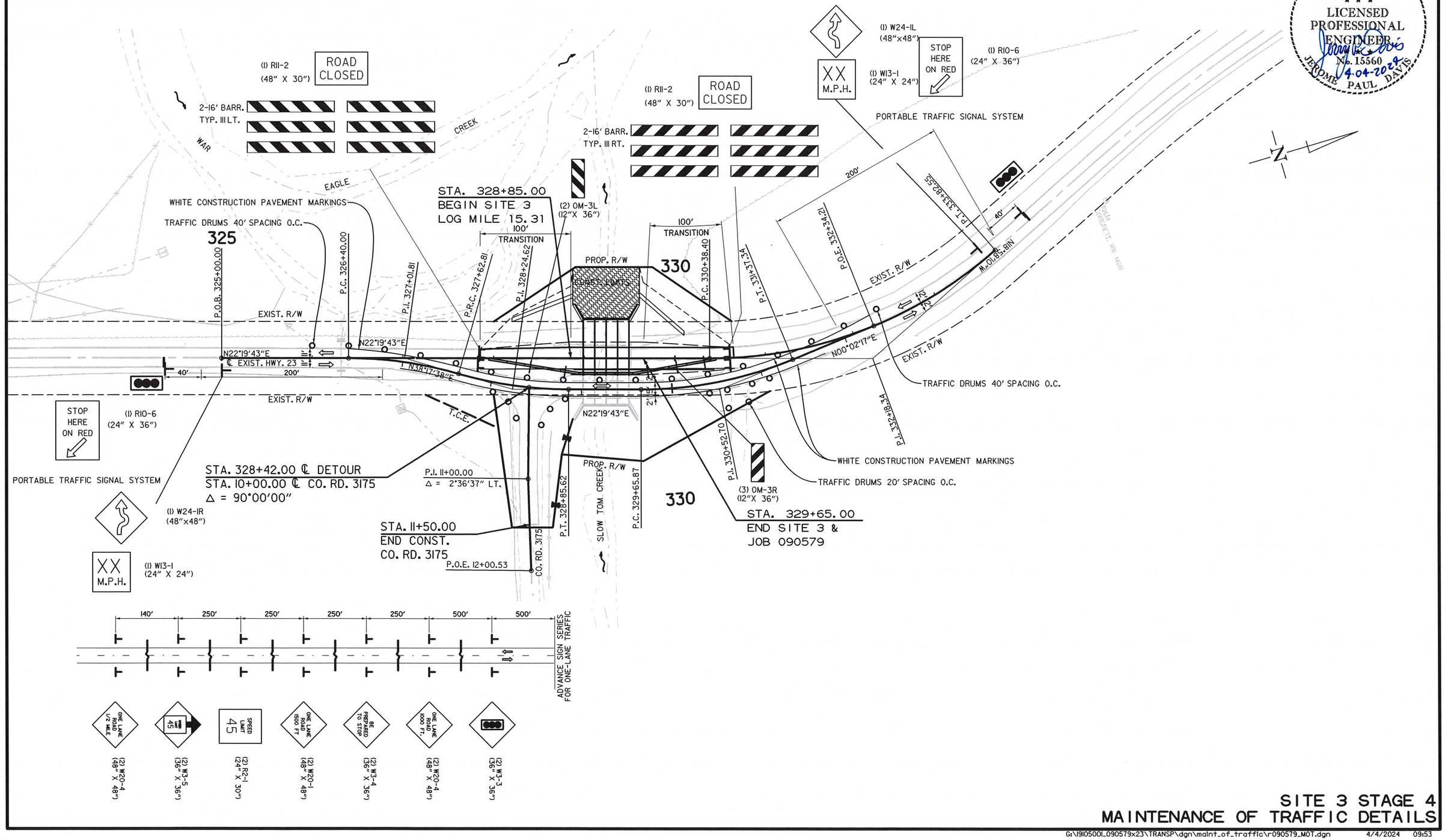
4) SHIFT TRAFFIC TO TEMPORARY DETOUR AT SITE 3.

5) CONSTRUCT NEW ROADWAY AND LEFT SIDE NEW R.C. BOX CULVERT AT SITE 3.

MAINTENANCE OF TRAFFIC - STAGE 4 QUANTITIES

SIGNS = 424 SQ. FT.
TRAFFIC DRUMS = 30 EACH
CONSTRUCTION PAVEMENT MARKINGS = 1073 LIN. FT.
REMOVAL OF PERMANENT MARKINGS = 597 LIN. FT.
REMOVABLE PAVEMENT MARKINGS = 826 LIN. FT.
FURNISH AND INSTALL P.C.C.B. = 253 LIN. FT. (INCLUDES 1 END UNIT)
TYPE III BARRICADES RT. 32 LIN. FT.
TYPE III BARRICADES LT. 32 LIN. FT.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
4-04-2024
JEROME PAUL DAVIS



USER: jc5296
DESIGN FILE: G:\1910500I_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 4/4/2024 09:53
SCALE: 1:100
MODEL: SITE 03 STAGE 02

SITE 3 STAGE 4
MAINTENANCE OF TRAFFIC DETAILS

SITE 3:
STAGE 5:

1) MAINTAIN ADVANCE WARNING SIGNS.

2) INSTALL CONSTRUCTION PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES AS DIRECTED BY THE ENGINEER.

3) CONSTRUCT PAVEMENT WIDENING AT CONNECTION TO EXISTING ROADWAY. PLACE FINAL LIFT OF ASPHALT, PERMANENT PAVEMENT MARKINGS AT SITE 3.

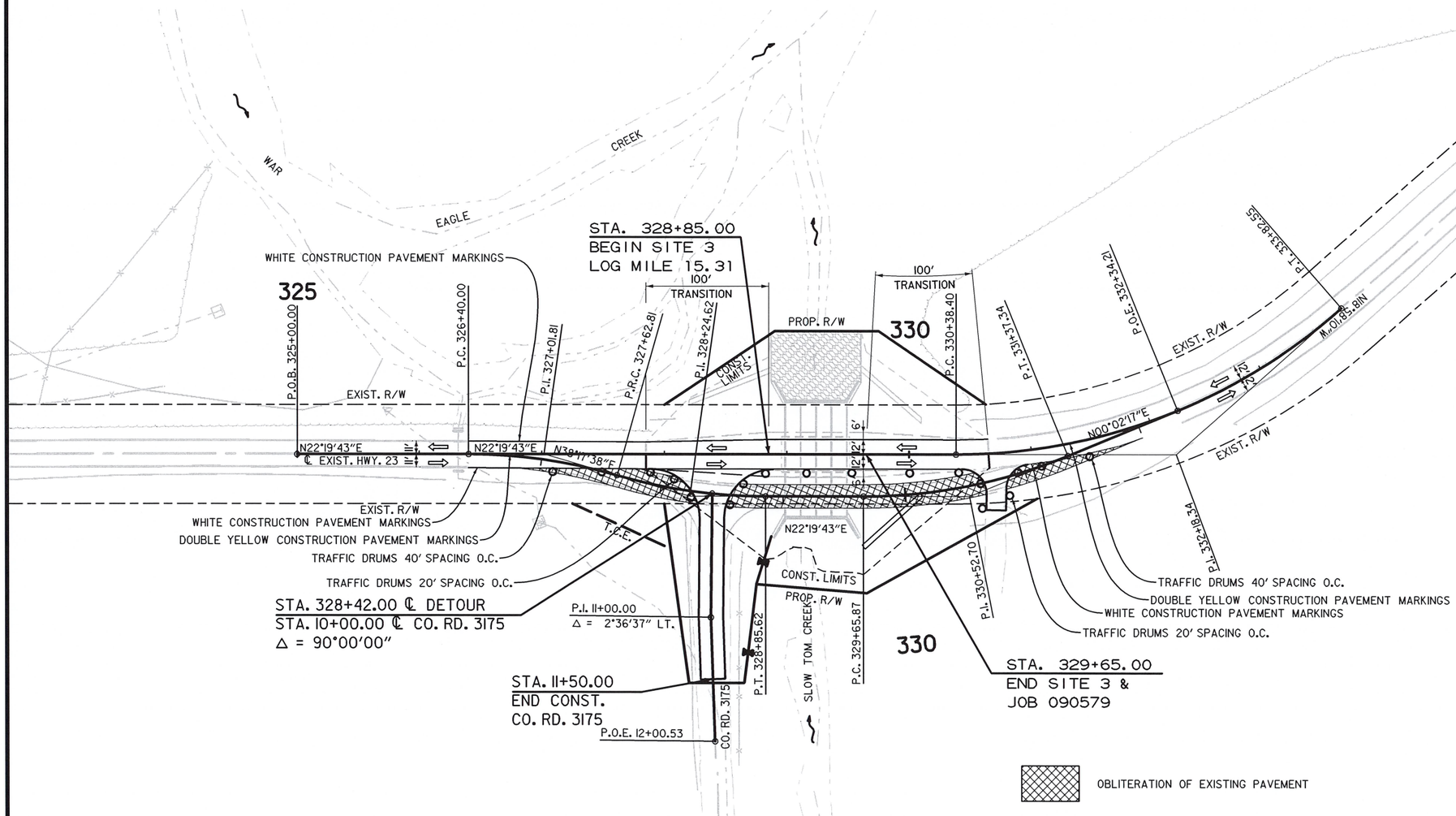
4) SHIFT TRAFFIC TO NEW ROADWAY AND OBLITERATE ROADWAY SITE 3 DETOUR.

MAINTENANCE OF TRAFFIC - STAGE 5 QUANTITIES

SIGNS = 146 SQ. FT.
TRAFFIC DRUMS = 18 EACH
CONSTRUCTION PAVEMENT MARKINGS = 2377 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 12 EACH

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	39	99
		MAINTENANCE OF TRAFFIC DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
4-04-2024
JEROME PAUL DAVIS



USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\maint_of_traffic\r090579_MOT.dgn
PLOTTED: 4/4/2024 09:54
SCALE: 1:100
MODEL: SITE 03 STAGE 03

SITE 3 STAGE 5
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	40	99
		PERMAMENT PAVEMENT MARKING DETAIL				

PERMANENT PAVEMENT MARKING

SITE 1:

THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 1047 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 1047 LIN. FT.
TYPE II (YELLOW/YELLOW) (80' O.C.) = 8 EACH

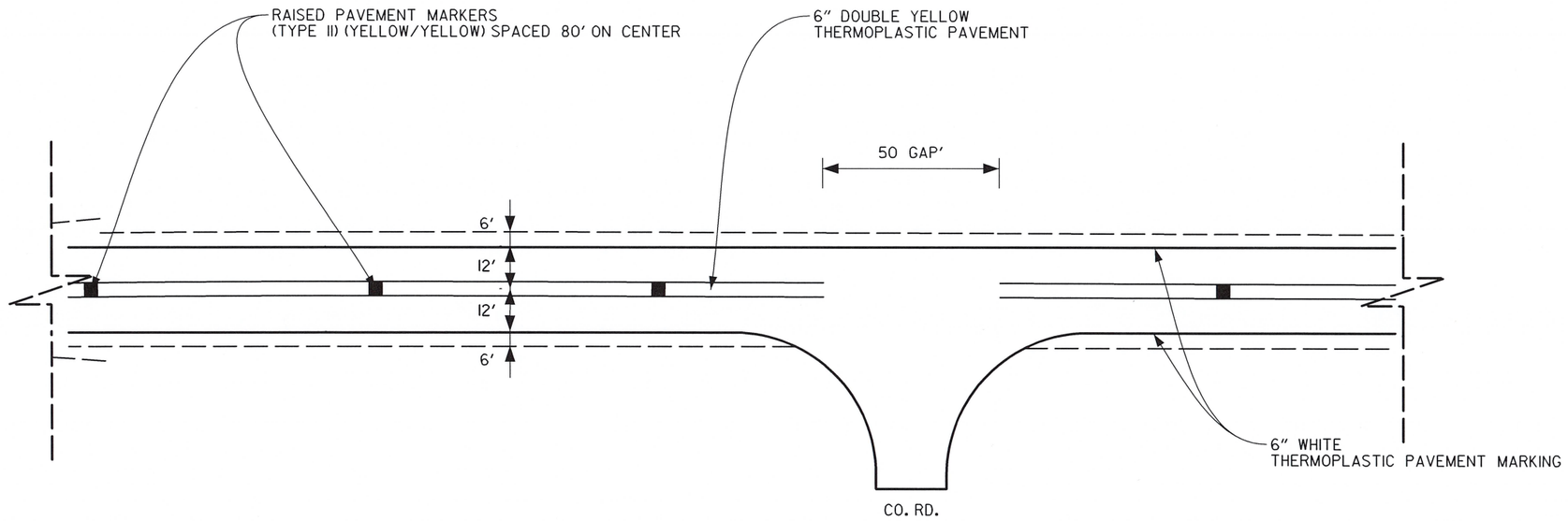
SITE 2:

THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 4378 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 4278 LIN. FT.
TYPE II (YELLOW/YELLOW) (80' O.C.) = 29 EACH

SITE 3:

THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 1188 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 1088 LIN. FT.
TYPE II (YELLOW/YELLOW) (80' O.C.) = 8 EACH

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023



TYPICAL 2-LANE PERMANENT PAVEMENT MARKING LAYOUT

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

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\misc\r090579_PPM.dgn
PLOTTED: 9/19/2023 07:24
SCALE: 1:40
MODEL: Sheet

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	41	99
		QUANTITIES				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER
												RIGHT	LEFT	
			LIN. FT. - EACH						NO.	SQ. FT.	EACH	LIN. FT.		LIN. FT.
W20-1	ROAD WORK 1500 FT.	48"x48"	3	3	4	4	5	5	5	80.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	3	3	4	4	5	5	5	80.0				
W20-1	ROAD WORK 500 FT.	48"x48"			1	1	1	1	1	16.0				
W20-1	ROAD WORK AHEAD	48"x48"	3	3	4	4	5	5	5	80.0				
G20-2	END ROAD WORK	48"x24"	3	3	5	5	5	5	5	40.0				
W24-1L	DOUBLE REVERSE CURVE RT.	48"x48"				4		4	4	64.0				
W24-1R	DOUBLE REVERSE CURVE LT.	48"x48"				4		4	4	64.0				
W13-1	SPEED LIMIT (ADVISORY)	24"x24"				4		4	4	16.0				
R11-2	ROAD CLOSED	48"x30"		2		4		4	4	40.0				
OM-3L	OBJECT MARKER	12"x36"				4		4	4	12.0				
OM-3R	OBJECT MARKER	12"x36"				6		6	6	18.0				
R4-1	DO NOT PASS	24"x30"	12	12	12	12	8	12	12	60.0				
W21-5A	RIGHT SHOULDER CLOSED	36"x36"	15	15	15	15	10	15	15	135.0				
W8-1	BUMP	30"x30"	6	6	6	6	4	6	6	37.5				
W8-9a	SHOULDER DROP-OFF	36"X36"	12	12	12	12	8	12	12	108.0				
W3-3	SIGNAL AHEAD	36"x36"				8		8	8	72.0				
W20-4	ONE LANE ROAD 1000 FT.	48"x48"				8		8	8	128.0				
W20-4	ONE LANE ROAD 1500 FT.	48"x48"				8		8	8	128.0				
W3-4	BE PREPARED TO STOP	36"x36"				8		8	8	72.0				
R2-1	SPEED LIMIT (45 M.P.H.)	24"x30"				8		8	8	40.0				
W3-5	SPEED REDUCTION AHEAD	36"x36"				8		8	8	72.0				
W20-4	ONE LANE ROAD 1/2 MILE	48"x48"				8		8	8	128.0				
R10-6	STOP HERE ON RED	24"x36"				8		8	8	48.0				
	TRAFFIC DRUMS		71	74	34	45	28	74			74			
	TYPE III BARRICADE-RT. (16')			2		4		4				64		
	TYPE III BARRICADE-LT. (16')			2		4		4					64	
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER					487		487						487
TOTALS:										**1538.5**	**74**	**64**	**64**	**487**

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

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING	
										TYPE II	6"	
										(YELLOW/YELLOW)	WHITE	YELLOW
	LIN. FT. - EACH						LIN. FT.		LIN. FT.	EACH	LIN. FT.	
REMOVAL OF PERMANENT PAVEMENT MARKINGS		1247		1403			2650					
CONSTRUCTION PAVEMENT MARKINGS	3289	2785	2460	1988				10522				
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS				1700					1700			
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)	42	29			18	45				134		
THERMOPLASTIC PAVEMENT MARKING WHITE (6")						5807					5807	
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")						5607						5607
TOTALS:							**2650**	**10522**	**1700**	**134**	**5807**	**5607**

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

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

NOTE: NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED UNTIL A MINIMUM OF 3 DAYS AFTER ALL MAIN LANE PAVING HAS BEEN COMPLETED. IN ADDITION,
NO PERMANENT PAVEMENT MARKINGS SHALL BE PLACED DURING THE TIME PERIOD FROM DECEMBER 21 TO MARCH 15, INCLUSIVE.

PORTABLE TRAFFIC SIGNAL

LOCATION	WEEKS
SITE 1	16
SITE 3	16
TOTAL:	32

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\quantities\r090579_Quantities.dgn
PLOTTED: 4/4/2024 11:55
SCALE: 12
MODEL: QUANTITIES
G:\1910500l_090579x23\TRANSP\dgn\quantities\r090579_Quantities.dgn 4/4/2024 11:55

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	42	99
		QUANTITIES				

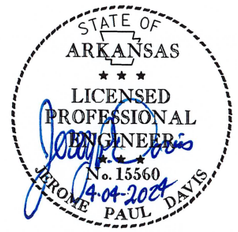
EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL							
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	FILTER SOCK (18")	SAND BAG DITCH CHECKS	ROCK DITCH CHECKS	SILT FENCE	*SEDIMENT REMOVAL & DISPOSAL
											(E-3)	(E-5)	(E-6)	(E-11)	
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	LIN. FT.	BAG	CU.YD.	LIN. FT.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING										154	15	5035	198
ENTIRE	PROJECT	STAGE 1 & 3	1.84	3.68	1.84	187.7	1.84	0.52	0.52	10.6	781	220	36		22
ENTIRE	PROJECT	STAGE 2 & 4	2.50	5.00	2.50	255.0	2.50	1.20	1.20	24.5	402	154	24		15
ENTIRE	PROJECT	STAGE 5	0.61	1.22	0.61	62.2	0.61	0.25	0.25	5.1					
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			2.50	5.00	2.50	255.0	2.50	1.00	1.00	20.4	126	66	27	500	19
TOTALS:			**7.45**	**14.90**	**7.45**	**759.9**	**7.45**	**2.97**	**2.97**	**60.6**	**1309**	**594**	**102**	**5535**	**254**

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
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING
FILTER SOCK (18").....9 LIN. FT. / LOCATION
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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



REMOVING AND REPLACING TOPSOIL

LOCATION	REMOVING & REPLACING TOPSOIL
	CU. YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	2010
ENGINEER	
TOTAL:	**2010**

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

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	GUARDRAIL
			LIN. FT.
115+68	116+92	HWY. 23 RT. - SITE 1	125
116+17	116+91	HWY. 23 LT. - SITE 1	75
117+21	117+96	HWY. 23 RT. - SITE 1	75
117+22	118+69	HWY. 23. LT. - SITE 1	148
215+08	215+35	HWY. 23 RT. - SITE 2	28
215+20	215+47	HWY. 23 LT. - SITE 2	28
216+43	216+70	HWY. 23 RT. - SITE 2	28
216+59	216+86	HWY. 23 LT. - SITE 2	28
328+66	328+94	HWY. 23 LT. - SITE 3	27
328+69	328+94	HWY. 23 RT. - SITE 3	26
329+53	329+81	HWY. 23 LT. - SITE 3	28
329+53	329+81	HWY. 23 RT. - SITE 3	28
TOTALS:			**644**

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.

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
117+10.00	117+60.00	HWY. 23 RT. - SITE 1	50.00	44.44
218+80.00	220+00.00	HWY. 23 RT. - SITE 33	120.00	106.67
TOTAL:				**151.11**

NOTE: AVERAGE WIDTH = 8'-0"

REMOVAL OF EXISTING BRIDGE STRUCTURE

STATION	STATION	LOCATION	LUMP SUM
116+91	117+21	HWY. 23 - SITE 1	1.00
328+95	329+52	HWY. 23 - SITE 3	1.00

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	9	18
DIRECTED BY THE ENGINEER		
TOTALS:	**9**	**18**

BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC...25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	50
DIRECTED BY THE ENGINEER	
TOTAL:	**50**

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

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.
116+55.00	117+02.00	HWY. 23 LT. - SITE 1	47.00	4.00	20.9	20.9	0.3
117+66.00	118+00.00	HWY. 23 LT. - SITE 2	34.00	4.00	15.1	15.1	0.2
328+20.00	328+87.00	HWY. 23 LT. - SITE 3	67.00	4.00	29.8	29.8	0.4
329+60.00	330+10.00	HWY. 23 RT. - SITE 3	50.00	4.00	22.2	22.2	0.3
329+60.00	330+10.00	HWY. 23 LT. - SITE 3	50.00	4.00	22.2	22.2	0.3
TOTALS:					**110.2**	**110.2**	**1.5**

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

FENCING

STATION	STATION	LOCATION	WIRE FENCE		* 16'-0" GATES
			(TYPE D)	(TYPE D-1)	
			LIN. FT.		EACH
206+30	215+44	HWY. 23 RT.- SITE 2		1089	1
208+25	215+44	HWY. 23 LT. - SITE 2		825	1
216+93	223+75	HWY. 23 LT. - SITE 2		686	
328+65	328+87	HWY. 23 RT. - SITE 3	121		
TOTALS:			**121**	**2600**	**2**

* DENOTES ALTERNATE BID ITEM.

4" PIPE UNDERDRAIN

	STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
				LIN. FT.	EACH
*	ENTIRE PROJECT TO BE USED IF AND			1000	4
	WHERE DIRECTED BY THE ENGINEER				
	TOTALS:			**1000**	**4**

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

SELECTED PIPE BEDDING

	LOCATION	SELECTED PIPE BEDDING
		CU.YD.
*	ENTIRE PROJECT TO BE USED IF	
	AND WHERE DIRECTED BY THE	50
	ENGINEER	
	TOTAL:	**50**

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

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
209+30.89	12"x18" ARCHED CMP	1
TOTALS:		**1**

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
114+49	119+37	HWY. 23. - SITE 1	5	5
205+40	224+20	HWY. 23. - SITE 2	19	19
326+40	332+34	HWY. 23. - SITE 3	6	6
TOTALS:			**30**	**30**

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
206+30	215+72	HWY. 23 RT. - SITE 2	974
208+22	215+34	HWY. 23 LT. - SITE 2	731
215+34	215+72	HWY. 23 RT. - SITE 3	84
215+77	216+69	HWY. 23 RT. - SITE 2	161
216+69	223+75	HWY. 23 LT. - SITE 2	706
328+61	328+67	HWY. 23 RT. - SITE 3	135
TOTAL:			**2791**

USER: jc5296
DESIGN FILE: G:\1910500L_090579x23\TRANSP\dgn\quantities\r090579_Quantities.dgn
PLOTTED: 4/4/2024 11:55
SCALE: 1:2
MODEL: QUANTITIES

QUANTITIES

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	43	99
		QUANTITIES				

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 36" LIN. FT.	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 36" EACH	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY CU.YD.	REINF. STEEL-ROADWAY (GRADE 60) POUND	UNCL.EXC. FOR STR.-ROADWAY CU.YD.	SOLID SODDING SQ.YD.	WATER M.GAL.	STD. DWG. NOS.
				LIN. FT.								
219+13	EXTEND DOUBLE 36" R.C. PIPE CULVERT - 66' LT.	134	2							18	0.2	FES-1, FES-2, PCC-1
SUBTOTALS:		**134**	**2**							**18**	**0.2**	
	STRUCTURES OVER 20' - 0" SPAN											
117+05	CONST. R.C.B. TRIPLE BOX CULV. (25° LT. FWD. SKEW) W/ 3:1 WINGS			11	6	108	346.56	50441	168.3	34	0.4	SPECIAL DETAILS, PCB-1, RCB-1, RCB-2
329+24	CONST. R.C.B. QUAD BOX CULV. W/ 3:1 WINGS			12	7	376	520.93	70685	258.6	39	0.5	SPECIAL DETAILS, PCB-1, RCB-1, RCB-2
SUBTOTALS:							**867.49**	**121126**	**426.9**	**73**	**0.9**	
TOTALS:		**134**	**2**				**867.49**	**121126**	**426.9**	**91**	**1.1**	

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.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (SPECIAL) CU.YD.	APPROACH SLABS CU.YD.	REINFORCING STEEL-RDWY. (GR. 60) POUND	AGGREGATE BASE CRS. (CLASS 7) TON
215+14.20	215+54.16	APPROACH GUTTER LT.	11.51		658	
214+97.84	215+43.77	APPROACH SLAB		59.28	6965	42.87
215+00.34	215+36.84	APPROACH GUTTER RT.	10.31		592	
216+88.16	217+24.66	APPROACH GUTTER LT.	10.31		592	
216+81.23	217+27.16	APPROACH SLAB		59.28	6965	42.87
216+70.84	217+07.34	APPROACH GUTTER RT.	11.51		658	
TOTALS:			**43.64**	**118.56**	**16430**	**85.74**

NOTE: USE T =14" FOR 6' SHOULDER.

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH FEET	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22) SQ. YD.	TON	AGGREGATE BASE COURSE (CLASS 7) TON
328+39	RT.	HWY. 23 - SITE 3	20	454.44	49.99	185.56
330+72	RT.	HWY. 23 - SITE 3	16	82.11	9.03	33.53
* ENTIRE PROJECT TEMPORARY DRIVES					25.00	200.00
TOTALS:				**536.55**	**84.02**	**419.09**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.0% MIN. AGGR.....6.0% ASPHALT BINDER
* QUANTITY ESTIMATED
SEE SECTION 104.03 OF THE STD. SPECS.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A) LIN. FT.	THRIE BEAM GUARDRAIL TERMINAL EACH	GUARDRAIL TERMINAL (TYPE 2) EACH	BRIDGE END TERMINAL EACH
213+04.90	215+23.65	HWY. 23 RT.	150	1	1	
214+00.43	215+44.18	HWY. 23 LT.	75	1	1	
216+80.86	217+15.43	HWY. 23 RT.				1
217+03.93	219+22.68	HWY. 23 LT.	150	1	1	
TOTALS:			**375**	**3**	**3**	**1**

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION CU. YD.	COMPACTED EMBANKMENT CU. YD.	* SOIL STABILIZATION TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	8530	20581	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	4359	3420	
ENTIRE	PROJECT	STAGE 3-MAIN LANES	3667	484	
ENTIRE	PROJECT	APPROACHES	110		
		STAGE 1 - HWY. 16	4	504	
		STAGE 2 - HWY. 16	3940	1491	
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			100
		DIRECTED BY THE ENGINEER			
TOTALS:			**20610**	**26480**	**100**

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

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP CU. YD.	FILTER BLANKET SQ. YD.
117+05	OUTLET OF R.C. BOX CULVERT	161	322
329+24	OUTLET OF R.C. BOX CULVERT	231	462
*ENTIRE	TO BE USED IF AND WHERE	80	160
PROJECT	DIRECTED BY THE ENGINEER		
TOTALS:		**472**	**944**

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

NOTE: FILTER BLANKET SHALL BE GEOTEXTILE FABRIC (TYPE 5).

BENCH MARKS

STATION	LOCATION	BENCH MARKS EACH
117+05	SITE 1 - BOX CULVERT	1
216+82	SITE 2 - BRIDGE END	1
329+24	SITE 3 - BOX CULVERT	1
TOTAL:		**3**

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

USER: jc5296
DESIGN FILE: G:\9105001_090579x23\TRANSP\dgn\quantities\r090579_quantities.dgn
PLOTTED: 4/4/2024 11:56
SCALE: 1:2
MODEL: QUANTITIES

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	44	99
		QUANTITIES				

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
115+35.00	116+35.00	HWY. 23 - SITE 1	22.00	244.44
117+70.00	118+70.00	HWY. 23 - SITE 1	22.00	244.44
205+30.68	206+30.68	HWY. 23 - SITE 2	22.00	244.44
223+26.53	224+26.53	HWY. 23 - SITE 2	22.00	244.44
22+95.45	23+95.45	HWY. 16 - SITE 2	22.00	244.44
327+85.00	328+85.00	HWY. 23 - SITE 3	22.00	244.44
329+65.00	330+65.00	HWY. 23 - SITE 3	22.00	244.44
TOTAL:				1711.08

NOTE: COORDINATE COLD MILLING STOCKPILE LOCATIONS WITH DISTRICT ENGINEER.
STOCKPILE LOCATIONS SHALL BE NO FURTHER THAN FIVE MILES FROM EACH SITE.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
4-04-2024

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE		TACK COAT							ACHM BASE COURSE (1 1/2")				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	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																												
115+35.00	116+35.00	HWY. 23 BEGIN TRANSITION	100.00	51.50	51.50				22.00	244.44	41.55	41.55													30.00	333.33	220.00	36.67	36.67
116+35.00	117+70.00	FULL DEPTH HWY. 23	135.00	103.00	139.05	73.50	1102.50	55.13				55.13	24.79	371.85	550.00	102.26	24.46	366.90	330.00	60.54	24.25	363.75	220.00	40.01	32.00	480.00	220.00	52.80	92.81
117+70.00	118+70.00	HWY. 23 END TRANSITION	100.00	51.50	51.50				22.00	244.44	41.55	41.55													30.00	333.33	220.00	36.67	36.67
205+30.68	207+30.68	HWY. 23 BEGIN TRANSITION	200.00	118.50	237.00				22.00	488.89	83.11	83.11													30.00	666.67	220.00	73.33	73.33
207+30.68	210+00.00	NOTCH AND WIDEN HWY. 23	269.32	99.00	266.63	15.85	474.30	23.72				23.72					8.03	240.29	440.00	52.86	7.82	234.01	220.00	25.74	32.00	957.58	220.00	105.33	131.07
210+00.00	215+00.69	FULL DEPTH HWY. 23	500.69	223.25	1117.79	48.71	2709.85	135.49				135.49					24.46	1360.76	440.00	299.37	24.25	1349.08	220.00	148.40	32.00	1780.23	220.00	195.83	344.23
217+26.01	221+05.00	FULL DEPTH HWY. 23	378.99	223.25	846.10	48.71	2051.18	102.56				102.56					24.46	1030.01	440.00	226.60	24.25	1021.17	220.00	112.33	32.00	1347.52	220.00	148.23	260.56
221+05.00	223+26.53	NOTCH AND WIDEN HWY. 23	221.53	100.50	222.64	13.33	328.11	16.41				16.41					6.77	166.64	440.00	36.66	6.56	161.47	220.00	17.76	32.00	787.66	220.00	86.64	104.40
223+26.53	224+26.53	HWY. 23 END TRANSITION	100.00	118.50	118.50				22.00	244.44	41.55	41.55													30.00	333.33	220.00	36.67	36.67
327+85.00	328+85.00	HWY. 23 BEGIN TRANSITION	100.00	51.50	51.50				22.00	244.44	41.55	41.55													30.00	333.33	220.00	36.67	36.67
328+85.00	329+65.00	FULL DEPTH HWY. 23	80.00	103.00	82.40	73.50	653.33	32.67				32.67	24.79	220.36	550.00	60.60	24.46	217.42	330.00	35.87	24.25	215.56	220.00	23.71	32.00	284.44	220.00	31.29	55.00
329+65.00	330+65.00	HWY. 23 END TRANSITION	100.00	51.50	51.50				22.00	244.44	41.55	41.55													30.00	333.33	220.00	36.67	36.67
20+12.00	20+79.34	FULL DEPTH ROUTE 16	67.34	223.25	150.34	73.50	549.94	27.50				27.50	24.79	185.48	550.00	51.01	24.46	183.02	330.00	30.20	24.25	181.44	220.00	19.96	32.00	239.43	220.00	26.34	46.30
20+79.34	22+92.45	NOTCH AND WIDEN ROUTE 16	213.11	96.50	205.65	28.79	681.72	34.09				34.09					15.02	355.66	440.00	78.25	13.77	326.06	220.00	35.87	32.00	757.72	220.00	83.35	119.22
22+92.45	23+92.45	ROUTE 16 END TRANSITION	100.00	110.00	110.00				22.00	244.44	41.55	41.55													30.00	333.33	220.00	36.67	36.67
ADDITIONAL FOR LEVELING AND RAISING THE GRADE																												
207+30.68	210+00.00	HWY. 23	269.32			44.00	1316.68	65.83	22.00	658.34	111.92	177.75	22.00	658.34	VAR.	435.38					22.00	658.34	220.00	72.42					72.42
221+05.00	223+26.53	HWY. 23	221.53			44.00	1083.04	54.15	22.00	541.52	92.06	146.21	22.00	541.52	VAR.	164.24					22.00	541.52	220.00	59.57					59.57
20+37.25	21+00.00	HWY. 16	62.75			22.00	153.39	7.67	22.00	153.39	26.08	33.75	22.00	153.39	VAR.	697.30					22.00	153.39	VAR.	25.32					25.32
ADDITIONAL FOR SUPERELEVATION																												
207+30.68	210+30.68	HWY. 23 BEGIN SUPER	300.00	28.50	85.50																							
210+30.68	220+26.53	HWY. 23 MAX SUPER	995.85	36.75	365.97																							
220+26.53	223+26.53	HWY. 23 END SUPER	300.00	23.75	71.25																							
22+09.40	22+75.00	HWY. 16 MATCH SUPER	65.60	12.25	8.04																							
WIDENING FOR GUARDRAIL																												
212+59.87	215+30.46	HWY. 23 RT.	270.59	20.50	55.47																				7.31	219.78	220.00	24.18	24.18
213+58.98	215+57.57	HWY. 23 LT.	198.59	19.50	38.73																				7.00	154.46	220.00	16.99	16.99
216+93.81	219+64.13	HWY. 23 LT.	270.32	20.00	54.06																				7.12	213.85	220.00	23.52	23.52
216+67.59	217+26.20	HWY. 23 RT.	58.61	19.50	11.43																				7.14	46.50	220.00	5.12	5.12
MAINTENANCE OF TRAFFIC																												
207+30.68	210+21.78	HWY. 23 RT.	291.10	33.50	97.52												2.15	69.54	440.00	15.30					2.50	80.86	220.00	8.89	8.89
220+54.85	223+26.53	HWY. 23 RT.	271.68	33.50	91.01												2.15	64.90	440.00	14.28					2.50	75.47	220.00	8.30	8.30
ADDITIONAL FOR DETOUR																												
114+48.55	119+71.89	HWY. 23 TEMP. 1 LANE BYPASS	523.34	109.75	574.37	15.33	891.42	44.57				44.57					15.33	891.42	440.00	196.11	19.00	1104.83	220.00	121.53					121.53
326+40.00	332+34.21	HWY. 23 TEMP. 1 LANE BYPASS	594.21	109.75	652.15	15.33	1012.14	50.61				50.61					15.33	1012.14	440.00	222.67	19.00	1254.44	220.00	137.99					137.99
TOTALS:					**5807.60**		**13007.60**	**650.40**		**3308.78**	**562.47**	**1212.87**		**2130.94**		**1510.79**		**5958.70**		**1268.71**		**7565.06**		**840.61**		**10092.15**		**1110.16**	**1950.77**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.0% MIN. AGGR.....6.0% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.5% MIN. AGGR.....4.5% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.9% MIN. AGGR.....4.1% ASPHALT BINDER
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

USER: jc5296
DESIGN FILE: G:\1910500L_090579x23\TRANSP\dgn\quantities\r-090579_Quantities.dgn
PLOTTED: 4/4/2024 09:54
SCALE: 1:2
MODEL: 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.		090579	45	99
				(1) 07553		QUANTITIES		64164

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 090579

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SS & 802	SP, SS, & 802	SP & 803	SS & 804	SS & 804	SS & 805	SS & 805	SP, SS, & 807	SS & 807	SS & 808	SS & 809	812	SS & 816	SS & 816
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO._)	(3) UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S (AE) CONCRETE-BRIDGE	CLASS 2 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	(1) STEEL PILING (HP 12X53)	PREBORING	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	(2) PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	SQ. YD.	LB.	LB.	LIN. FT.	LIN. FT.	LB.	TON	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.
07553	HIGHWAY 23 OVER HAWKINS HOLLOW CREEK																		
		BENT NO. 1				34.27			3,019	395	90	80			1,715.0			128	90
		BENT NO. 2			272	70.86			15,751						2,572.5				
		BENT NO. 3			112	68.76			15,021						2,572.5				
		BENT NO. 4				34.71			3,029	395	110	100		4.5	1,715.0			218	141
		135'-0" CONTINUOUS W-BEAM UNIT					159.40	705.2		45,470			125,250			89	1		
		SITE NO. 2 (EXISTING BR. NO. 02946)		1															
		TOTALS FOR JOB NO. 090579			384	208.60	159.40	705.2	36,820	46,260	200	180	125,250	4.5	8,575.0	89	1	346	231

(1) All piling shall be Grade 50, and shall have special driving points listed on the ARDOT QPL which shall not be paid for directly, but shall be considered subsidiary to the items "Steel Piling (HP __x__)."

(2) All Grade 50W structural steel, except galvanized members and surfaces in contact with concrete, within six 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 Fed. Std. 595 B, 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.

(3) Includes approx. 86 Cu. Yd. of rock excavation for Br. No. 07553.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

SCHEDULE OF BRIDGE QUANTITIES
HIGHWAY 23 OVER HAWKINS HOLLOW CREEK
HWY. 23 STRS. & APPRS. (MADISON CO.) (S)
MADISON COUNTY
ROUTE 23 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-30-21 FILENAME: b090579_q1.dgn
CHECKED BY: LDG DATE: 05-17-21 SCALE: NOT TO SCALE
DESIGNED BY: KRM DATE: 04-14-21
BRIDGE NO. 07553 DRAWING NO. 64164

USER: CTAUSER
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\bridge\b090579_q1.dgn
PLOTTED: 9/18/2023 2:17:09 PM SCALE: 2.0000 ' / In.

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
4/30/2024		6	ARK.	090579	46	99
		SUMMARY OF QUANTITIES REVISIONS				

SUMMARY OF QUANTITIES (BOX 1 OF 2)

	ITEM NUMBER	ITEM		QUANTITY	UNIT
	SP & 201	CLEARING		30	STATION
	201	GRUBBING		30	STATION
	202	REMOVAL AND DISPOSAL OF FENCE		2791	LIN. FT.
	202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		1	EACH
	202	REMOVAL AND DISPOSAL OF GUARDRAIL		644	LIN. FT.
	SP, SS, & 210	UNCLASSIFIED EXCAVATION		20610	CU. YD.
	SP & 210	COMPACTED EMBANKMENT		26480	CU. YD.
	SP	REMOVING AND REPLACING TOPSOIL		2010	CU. YD.
	SP & 210	SOIL STABILIZATION		100	TON
	SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)		6312	TON
	SS & 401	TACK COAT		1231	GAL.
	SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		1449	TON
	SP, SS, & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		62	TON
	SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1212	TON
	SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		57	TON
	SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		1913	TON
	SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		122	TON
	SP & 412	COLD MILLING ASPHALT PAVEMENT		1711	SQ. YD.
	SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		9	TON
	SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		50	TON
	SP, SS, & 504	APPROACH SLABS		118.56	CU. YD.
	SP, SS, & 504	APPROACH GUTTERS		43.64	CU. YD.
	601	MOBILIZATION		1.00	LUMP SUM
	SP & 602	FURNISHING FIELD OFFICE		1	EACH
	SS & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
	SS & 604	SIGNS		1539	SQ. FT.
	SS & 604	BARRICADES		128	LIN. FT.
	SS & 604	TRAFFIC DRUMS		74	EACH
	SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		487	LIN. FT.
	604	CONSTRUCTION PAVEMENT MARKINGS		10522	LIN. FT.
	604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		1700	LIN. FT.
	604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		2650	LIN. FT.
	SP, SS, & 605	CONCRETE DITCH PAVING (TYPE B)		110	SQ. YD.
	SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		134	LIN. FT.
	SS & 606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		2	EACH
	SS & 606	SELECTED PIPE BEDDING		50	CU. YD.
	SS & 611	4" PIPE UNDERDRAINS		1000	LIN. FT.
	SS & 611	UNDERDRAIN OUTLET PROTECTORS		4	EACH
	SS & 617	GUARDRAIL (TYPE A)		375	LIN. FT.
	SS & 617	GUARDRAIL TERMINAL (TYPE 2)		3	EACH
	SS & 617	THRIE BEAM GUARDRAIL TERMINAL		3	EACH
	SS & 619	WIRE FENCE (TYPE D)		121	LIN. FT.
	SS & 619	WIRE FENCE (TYPE D-1)		2600	LIN. FT.
*	SS & 619	16' STEEL GATES	(ALTERNATE NO. 1)	2	EACH
*	SS & 619	16' ALUMINUM GATES	(ALTERNATE NO. 2)	2	EACH
	620	LIME		15	TON
	620	SEEDING		7.45	ACRE
	SS & 620	MULCH COVER		10.42	ACRE
	620	WATER		823.1	M. GAL.
	621	TEMPORARY SEEDING		2.97	ACRE
	621	SILT FENCE		5535	LIN. FT.
	621	SAND BAG DITCH CHECKS		594	BAG
	621	SEDIMENT REMOVAL AND DISPOSAL		254	CU. YD.
	621	ROCK DITCH CHECKS		102	CU. YD.
	SS & 621	FILTER SOCK (18")		1309	LIN. FT.
	623	SECOND SEEDING APPLICATION		7.45	ACRE
	624	SOLID SODDING		201	SQ. YD.
	626	EROSION CONTROL MATTING (CLASS 3)		151	SQ. YD.
	635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
	SP	PORTABLE TRAFFIC SIGNAL SYSTEM - ACTUATED		32	WEEK
	719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")		5807	LIN. FT.
	719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")		5607	LIN. FT.
	721	RAISED PAVEMENT MARKERS (TYPE II)		134	EACH
	SS & 734	BRIDGE END TERMINAL		1	EACH
	SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)		16430	POUND
	SS & 816	FILTER BLANKET		944	SQ. YD.
	SS & 816	DUMPED RIPRAP		472	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAY
4-30-2024

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	STRUCTURES OVER 20' SPAN	QUANTITY	UNIT
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	384	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	426.9	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-ROADWAY	867.49	CU. YD.
SP, SS, & 802	CLASS S CONCRETE-BRIDGE	208.60	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	159.40	CU. YD.
SP & 803	CLASS 2 PROTECTIVE SURFACE TREATMENT	705.2	SQ. YD.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	121126	POUND
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	36820	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	46260	POUND
SS & 805	STEEL PILING (HP 12X53)	200	LIN. FT.
SS & 805	PREBORING	180	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	125250	POUND
SS & 807	PAINTING STRUCTURAL STEEL	4.5	TON
SS & 808	ELASTOMERIC BEARINGS	8575	CU. IN.
SS & 809	SILICONE JOINT SEALANT	89	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
SS & 816	FILTER BLANKET	346	SQ. YD.
SS & 816	DUMPED RIPRAP	231	CU. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER
4/30/2024	REMOVED "ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT" SP. REMOVED SP "FLEXIBLE BEGINNING OF WORK" AND ADDED SP "FLEXIBLE BEGINNING OF WORK - CALENDAR DAY CONTRACT"	3 & 46

USER: jc5296
DESIGN FILE: G:\I9I0500I_090579x23\TRANSP\dgn\quantities\r090579_Quantities.dgn
PLOTTED: 4/30/2024 09:43 SCALE: 1:2 MODEL: QUANTITIES

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	47	99
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

SITE 1

SURVEY CONTROL COORDINATES

Project Name: s090557
Date: 9/3/2019
Coordinate System: ARKANSAS STATE PLANE – NORTH ZONE BASED ON GPS CONTROL, F 93 – F 93A PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	529857.5470	779280.8066	1648.17	CTL	ARDOT STD. MON. STAMPED PN:1
2	530662.6929	779665.4777	1642.25	CTL	ARDOT STD. MON. STAMPED PN:2
3	531516.8698	779824.6607	1614.44	CTL	ARDOT STD. MON. STAMPED PN:3
4	531994.0278	780170.6345	1614.95	CTL	ARDOT STD. MON. STAMPED PN:4
5	532147.1978	780464.7356	1608.66	CTL	ARDOT STD. MON. STAMPED PN:5
100	530401.6932	779623.6666	1647.09	GPS	2ND ORDER NGS BM F 93
101	529269.6709	778926.0346	1657.68	GPS	ARDOT GPS #F 93A

*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 0.999867927557 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 s090557gi.CTL
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS – 0301–NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: F 93 – F 93A
CONVERGENCE ANGLE: 01 02 42.7946 LEFT AT PN:2 LT:35 46 39.81 LG:093 47 46.40
GRID AZIMUTH = ASTRONOMICAL AZIMUTH – CONVERGENCE ANGLE.

090579 CL - HIGHWAY 23 Site 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8007	P.O.B.	112+32.10	530614.3583	779638.5105
8008	P.C.	119+37.39	531305.6198	779778.4998
8010	P.T.	124+50.38	531763.7582	779997.5649

090579 CL - HIGHWAY 23 DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8019	P.C.	114+48.55	530826.5009	779681.4721
8021	P.R.C.	115+71.36	530941.9420	779722.1955
8023	P.T.	116+94.17	531057.3832	779762.9189
8024	P.C.	117+15.14	531077.9356	779767.0811
8026	P.R.C.	118+37.55	531199.7257	779774.5123
8028	P.T.	119+71.89	531333.1729	779784.4689

SITE 1
SURVEY CONTROL DETAILS

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn
PLOTTED: 9/19/2023 07:25
SCALE: 1:100
MODEL: Sheets

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	48	99
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

SITE 2

SURVEY CONTROL COORDINATES

Project Name: s090552
Date: 6/13/2019
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	553294.7417	795389.7173	1589.538	CTL	*STD ARDOT CAP STAMPED PN: 1
2	553727.2852	795692.8675	1573.696	CTL	*STD ARDOT CAP STAMPED PN: 2
3	554426.7806	795829.1769	1580.727	CTL	*STD ARDOT CAP STAMPED PN: 3
4	554170.3463	796085.3783	1596.373	CTL	*STD ARDOT CAP STAMPED PN: 4
5	554007.8729	796633.6708	1592.195	CTL	*STD ARDOT CAP STAMPED PN: 5
6	555142.8409	795101.4604	1594.516	CTL	*STD ARDOT CAP STAMPED PN: 6
7	556104.6530	795101.4604	1645.741	CTL	*STD ARDOT CAP STAMPED PN: 7
100	547319.6105	789350.6776	1513.091	GPS	*ARDOT GPS MON 440018
101	552661.6360	794648.2494	1577.845	GPS	*ARDOT GPS MON 440019
901	553100.0791	795056.8732	1577.025	TBM	*SQUARE CUT CNTR S HW
902	554294.5874	795327.2554	1580.800	TBM	*SQUARE CUT ON NE CRNR BR
904	555419.6241	795327.2554	1600.079	TBM	*SQUARE CUT CNTR OF E HW
999	554169.1923	796033.0913	1591.770	BM	*USC&G DISK A 51 1934

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999874207 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 s090552gi.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 - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 100 & 101
CONVERGENCE ANGLE: 01-00-52 LEFT AT LAT N 35-50-37 LON W 93-44-35
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

090579 CL - HWY. 23 SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8031	P.O.B.	204+45.89	553284.4177	795345.6981
8033	P.T.	207+13.60	553469.8479	795533.9211
8034	P.C.	207+47.77	553499.6226	795550.6747
8036	P.T.	223+26.53	555009.0696	795544.4474

090579 CL - HWY. 16 SITE 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8041	P.O.B.	20+00.00	554489.5147	795727.9228
8042	P.C.	20+37.25	554495.3812	795764.7046
8044	P.T.	21+58.07	554446.3846	795867.1985
8045	P.C.	22+59.94	554358.0130	795917.8877
8047	P.T.	25+84.17	554150.5889	796158.9716
8048	P.C.	27+74.81	554081.4797	796336.6456

SITE 2
SURVEY CONTROL DETAILS

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn
PLOTTED: 9/19/2023 07:25
SCALE: 1:100
MODEL: Sheets

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	49	99
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

SITE 3

SURVEY CONTROL COORDINATES

Project Name: s090553
Date: 4/5/2019
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	582538.5296	812983.3779	1455.113	CTL	*STD ARDOT CAP STAMPED:1
2	583444.1568	813478.5447	1436.693	CTL	*STD ARDOT CAP STAMPED:2
3	584302.5890	813840.6445	1438.828	CTL	*STD ARDOT CAP STAMPED:3
4	584990.1458	814162.2139	1433.101	CTL	*STD ARDOT CAP STAMPED:4
5	585758.0831	814005.6095	1424.277	CTL	*STD ARDOT CAP STAMPED:5
6	586680.5754	814017.8481	1430.235	CTL	*STD ARDOT CAP STAMPED:6
900	583436.4858	813466.5119	1436.129	TBM	*SQUARE CUT CNTR OF W HW
901	584207.9010	813798.3905	1439.028	TBM	*SQUARE CUT CNTR OF W HW
902	584895.9392	814115.0298	1430.805	TBM	*SQUARE CUT ON NE CRNR BR 13.0' E
903	585917.0912	813976.4826	1421.934	TBM	*SQUARE CUT CNTR OF W HW
904	587230.4350	814345.3336	1435.515	TBM	*AHTD DISK ON SE CRNR BR

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999889514 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 s09553gi.ctl
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM STATIC GPS OBSERVATIONS ON POINT 1.
CONVERGENCE ANGLE: 0-99-99.9 LEFT/RIGHT AT LAT N 35-55-36 LON W093-41-02
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

090579 CL - HWY. 23 SITE 3

POINT NO.	TYPE	STATION	NORTHING	EASTING
8054	P.O.B.	325+00.00	584485.6248	813931.0794
8055	P.C.	330+38.40	584983.6591	814135.6279
8057	P.T.	333+82.55	585320.2619	814145.4980

090579 CL - HWY. 23 SITE 3 DETOUR

POINT NO.	TYPE	STATION	NORTHING	EASTING
8072	P.C.	326+40.00	584615.1277	813984.2678
8074	P.R.C.	327+62.81	584720.8069	814046.0494
8076	P.T.	328+85.62	584826.4860	814107.8310
8077	P.C.	329+65.87	584900.7146	814138.3175
8079	P.T.	331+37.34	585067.8659	814171.3636
8080	P.O.E.	332+34.21	585164.7397	814171.4278

090579 CL - CO. RD. 3175

POINT NO.	TYPE	STATION	NORTHING	EASTING
8081	POB	10+00.00	584787.0212	814089.2907
8082	PI	11+00.00	584747.9493	814181.3417
8083	POE	12+00.53	584712.9261	814275.5716

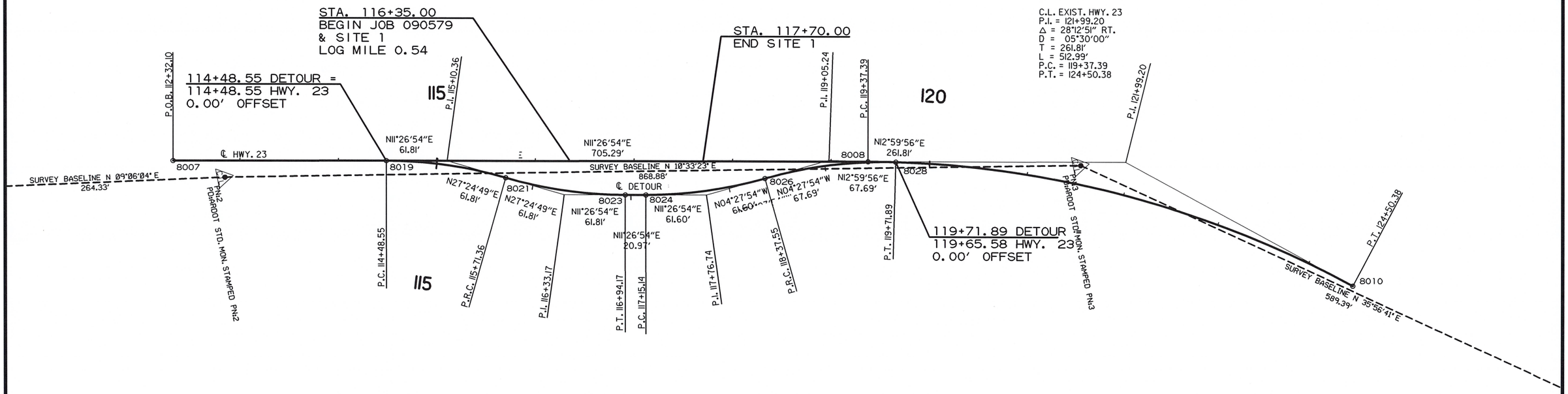
USER: jc5296
DESIGN FILE: G:\I910500l_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn
PLOTTED: 9/19/2023 07:25
SCALE: NOT TO SCALE
MODEL: Sheets

SITE 3
SURVEY CONTROL DETAILS

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	50	99
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

BEARINGS ARE GRID BASED ON GPS



C.L. TEMP. DETOUR
PI = 115+10.36
Δ = 15°57'55" RT.
D = 13°00'00"
T = 61.81'
L = 122.81'
P.C. = 114+48.55
P.R.C. = 115+71.36
NO SUPER

C.L. TEMP. DETOUR
PI = 116+33.17
Δ = 15°57'55" LT.
D = 13°00'00"
T = 61.81'
L = 122.81'
P.R.C. = 115+71.36
P.T. = 116+94.17
NO SUPER

C.L. TEMP. DETOUR
PI = 117+76.74
Δ = 15°54'48" LT.
D = 13°00'00"
T = 61.60'
L = 122.41'
P.C. = 117+15.14
P.R.C. = 118+37.55
NO SUPER

C.L. TEMP. DETOUR
PI = 119+05.24
Δ = 17°27'50" RT.
D = 13°00'00"
T = 67.69'
L = 134.34'
P.R.C. = 118+37.55
P.T. = 119+71.89
NO SUPER

SITE 1
SURVEY CONTROL DETAILS

USER: jo5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: Sheets

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	51	99
		SURVEY CONTROL DETAILS				

C.L. CONST. HWY. 23
P.I. = 205+83.37
Δ = 32°07'32" LT.
D = 12°00'00"
T = 137.48'
L = 267.71'
P.C. = 204+45.89
P.T. = 207+13.60

205

P.O.B. 204+45.89

8031

PNI
PDSTD ARDOT CAP STAMPED PNI

N61°29'28"E
137.48'

P.I. 205+83.37

SURVEY BASELINE N 35°01'30" E
528.20'

N29°21'56"E
137.48'

8033

N29°21'56"E
34.16'

8034

P.T. 207+13.60

P.C. 207+47.77

STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10

210

℄ HWY. 23

PNI2
PDSTD ARDOT CAP

N29°21'56"E
868.02'

C.L. CONST. HWY. 23
P.I. = 216+15.79
Δ = 59°12'14" LT.
D = 03°45'00"
T = 868.02'
L = 1578.76'
P.C. = 207+47.77
P.T. = 223+26.53
e = 0.080'/'
Ls = 300'

215

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
Δ = 90°00'00"

BEARINGS ARE GRID BASED ON GPS

SURVEY BASELINE N 45°27'45" W
1020.94'

8041

N80°56'17"E
37.25'

8042

P.C. 20+37.25

N80°56'17"E
69.02'

N29°18'50"W
868.02'

P.I. 21+06.26

S29°50'18"E
69.02'

8044

P.T. 21+58.07

P.I.= 21+06.26
Δ = 69°13'26" RT.
D = 57°17'45"
T = 69.02'
L = 120.82'
P.C. = 20+37.25
P.T. = 21+58.07
NO SUPER

PNI3
PDSTD ARDOT CAP STAMPED PNI3

S29°50'18"E
101.88'

8045

P.C. 22+59.94

P.I. =24+28.59
Δ = 38°54'27" LT.
D = 12°00'00"
T = 168.65'
L = 324.23'
P.C. = 22+59.94
P.T. = 25+84.17
e = 0.098'/'
Ls = 250'

P.I. 216+15.79

S29°50'18"E
168.65'

STA. 23+92.45
END CONST.
HWY. 16

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
5-20-2023

SURVEY BASELINE N 11°01'37" E
712.65'

C.L. CONST. HWY. 23
P.I. = 216+15.79
Δ = 59°12'14" LT.
D = 03°45'00"
T = 868.02'
L = 1578.76'
P.C. = 207+47.77
P.T. = 223+26.53
e = 0.080'/'
Ls = 300'

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
Δ = 90°00'00"

SURVEY BASELINE N 45°27'45" W
1020.94'

220

225

BEARINGS ARE GRID BASED ON GPS

8041

N80°56'17"E
37.25'

8042

P.T. 223+26.53

P.C. 20+37.25

N80°56'17"E
69.02'

℄ HWY. 23

PNI3
PDSTD ARDOT CAP STAMPED PNI3

S29°50'18"E
101.88'

8045

8044

S29°50'18"E
69.02'

N29°18'50"W
868.02'

8036

N29°18'50"W
417.52'

P.C. 22+59.94

P.T. 21+58.07

P.I. 21+06.26

P.I. 24+28.59

N29°21'56"E
868.02'

25

℄ HWY. 16

PNI4
PDSTD ARDOT CAP STAMPED PNI4

S68°44'44"E
190.64'

S68°44'44"E
168.65'

8047

P.T. 25+84.17

P.I. 216+15.79

P.I. =24+28.59
Δ = 38°54'27" LT.
D = 12°00'00"
T = 168.65'
L = 324.23'
P.C. = 22+59.94
P.T. = 25+84.17
e = 0.098'/'
Ls = 250'

STA. 23+92.45
END CONST.
HWY. 16

P.I.= 21+06.26
Δ = 69°13'26" RT.
D = 57°17'45"
T = 69.02'
L = 120.82'
P.C. = 20+37.25
P.T. = 21+58.07
NO SUPER

STA. 223+26.53
END SITE 2

8048

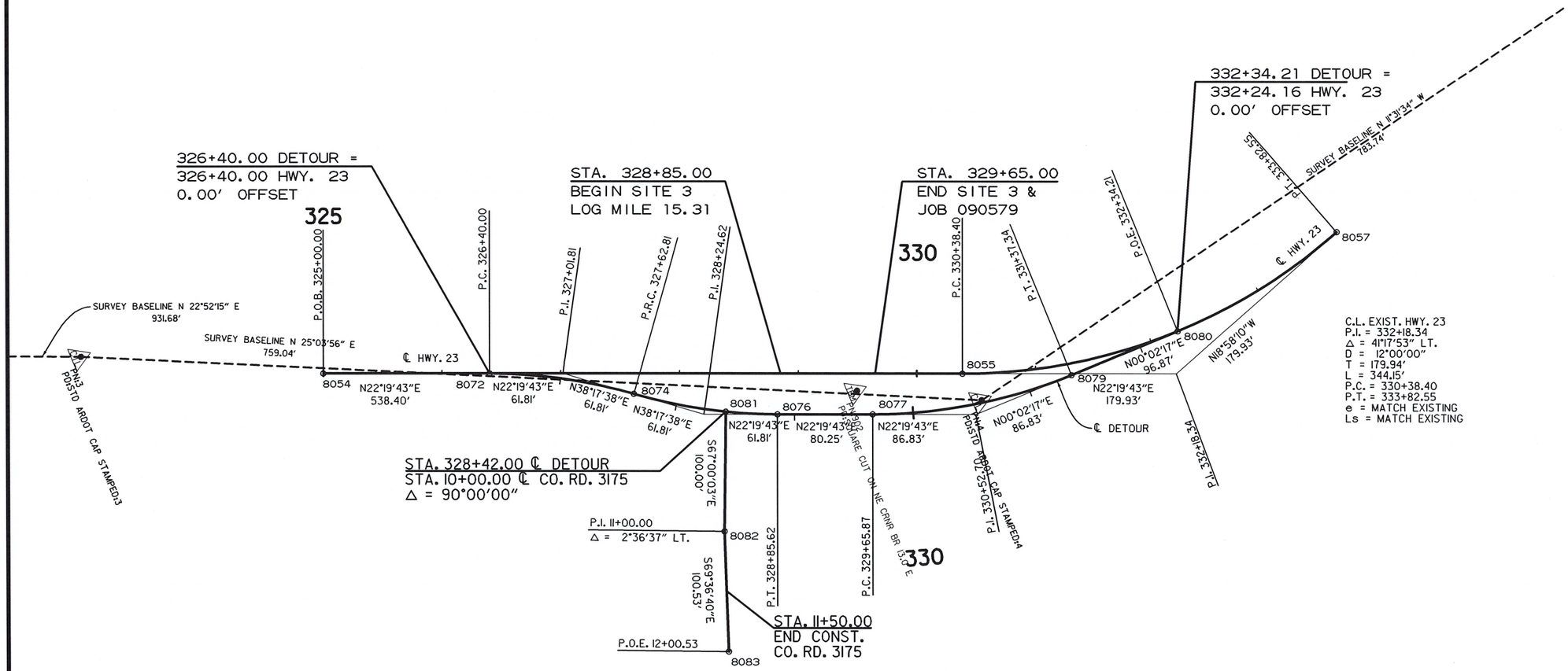
SITE 2
SURVEY CONTROL DETAILS

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: Sheets

G:\1910500l_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn 9/19/2023 07:26

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	52	99
		SURVEY CONTROL DETAILS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023



SITE 3
SURVEY CONTROL DETAILS

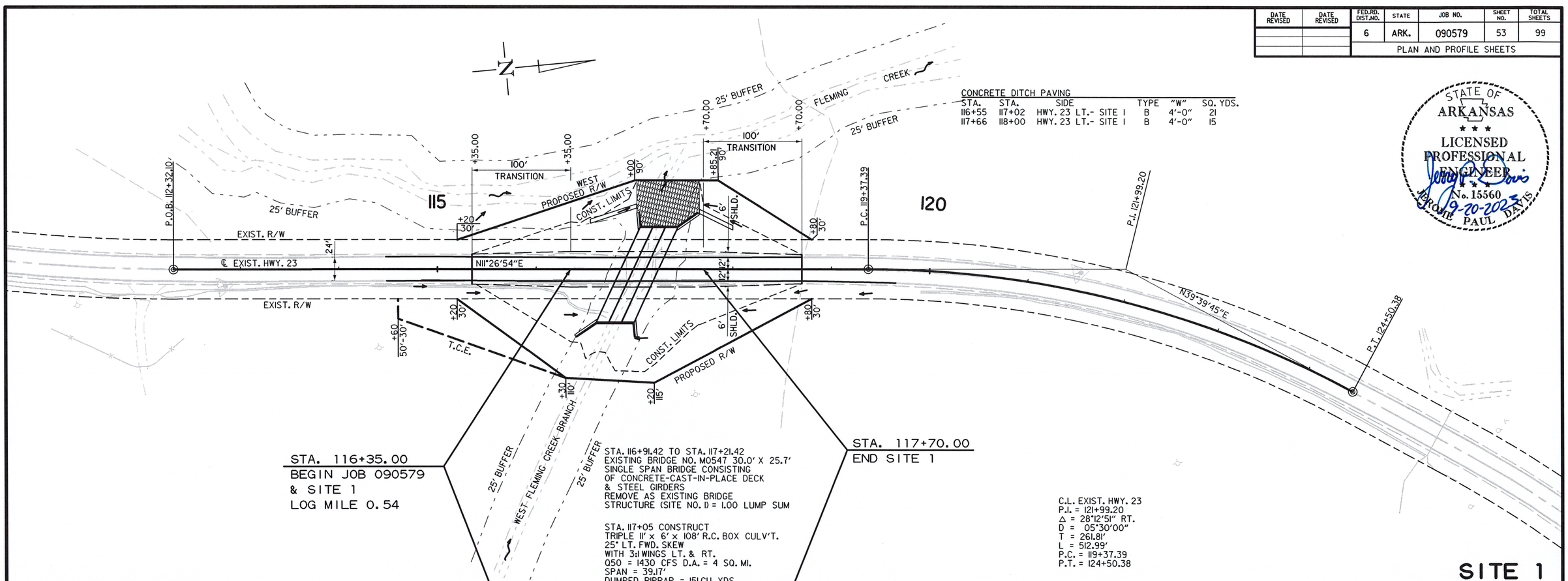
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\survey_ctl\r090579_SC.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1l00
MODEL: Sheets

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	53	99
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
9-20-2023
JEROME PAUL DAVIS

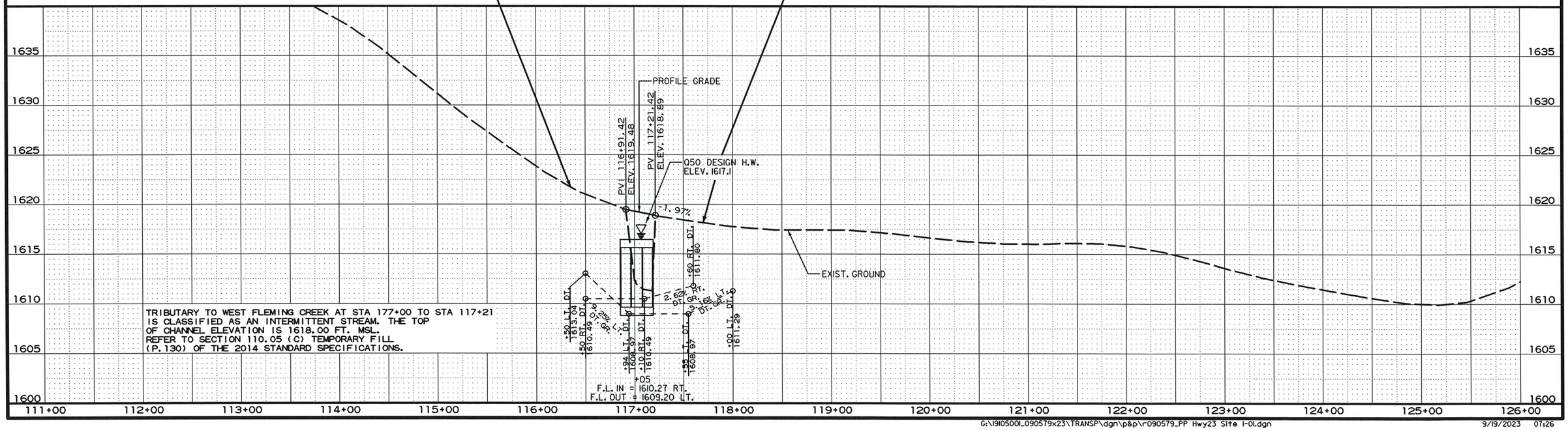
CONCRETE DITCH PAVING

STA.	STA.	SIDE	TYPE	"W"	SQ. YDS.
116+55	117+02	HWY. 23 LT.- SITE 1	B	4'-0"	21
117+66	118+00	HWY. 23 LT.- SITE 1	B	4'-0"	15



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

SITE 1
HWY. 23



TRIBUTARY TO WEST FLEMING CREEK AT STA 177+00 TO STA 117+21 IS CLASSIFIED AS AN INTERMITTENT STREAM. THE TOP OF CHANNEL ELEVATION IS 1618.00 FT. MSL. REFER TO SECTION 110.05 (C) TEMPORARY FILL (P. 130) OF THE 2014 STANDARD SPECIFICATIONS.

USER: jo5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 1-01.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 1-01.dgn 9/19/2023 07:26

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	54	99
		PLAN AND PROFILE SHEETS				

C.L. CONST. HWY. 23
P.I. = 205+83.37
Δ = 32°07'32" LT.
D = 12°00'00"
T = 137.48'
L = 267.71'
P.C. = 204+45.89
P.T. = 207+13.60

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)	BRIDGE END TERMINAL
213+04.90	215+23.65	HWY. 23 RT.	150 LIN.FT.	1 EACH	1 EACH	
214+00.43	215+44.18	HWY. 23 LT.	75 LIN.FT.	1 EACH	1 EACH	
217+03.93		HWY. 23 RT.				1 EACH
217+03.93	219+22.68	HWY. 23 LT.	150 LIN.FT.	1 EACH	1 EACH	

FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.	16' GATE
206+34	215+44	RT.	WIRE TYPE D-1	1090	1
208+25	215+44	LT.	WIRE TYPE D-1	821	1

REMOVAL AND DISPOSAL FENCE

STA.	STA.	SIDE	LIN. FT.
206+34	215+38	RT.	1089
208+22	215+38	LT.	730
215+84	216+69	RT.	163

STA. 215+43.77 BRIDGE END
CONSTRUCT BRIDGE NO. 07553
135'-0" CONTINUOUS W-BEAM UNIT
(45'-45'-45')
36'-0" CLEAR ROADWAY
30° LT. FWD. SKEW
137'-5 1/2" BRIDGE LENGTH
STA. 216+81.23 BRIDGE END

STA. 215+43.33 TO STA. 216+52.36
EXISTING BRIDGE NO. 02946 112.0'X28.5'
CONSISTING OF REINFORCED CONCRETE SLAB SPANS
REMOVE AS EXISTING BRIDGE
STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

C.L. CONST. HWY. 23
P.I. = 216+15.79
Δ = 59°12'14" LT.
D = 03°45'00"
T = 868.02'
L = 1578.76'
P.C. = 207+47.77
P.T. = 223+26.53
e = 0.080'/'
Ls = 300'

STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
Δ = 90°00'00"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

STA. 207+30.68
BEGIN SITE 2
LOG MILE 7.10

STA. 23+92.45
END CONST.
HWY. 16

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

SITE 2
HWY. 23

STA. 205+30.68 MATCH EXISTING SUPERELEVATION (.100'/')
STA. 207+30.68 END SUPERELEVATION

STA. 207+30.68 BEGIN SUPERELEVATION
STA. 210+30.68 MAX. SUPERELEVATION (0.080'/')
STA. 220+26.53 MAX. SUPERELEVATION (0.080'/')
STA. 223+26.53 END SUPERELEVATION

PVC 206+25.00
ELEV. 1584.67

680' V.C.
K = 115.25
e=5.02'

PROFILE GRADE

-4.14%

+30.68 LT. DT.
1574.30

-0.80% LT. DT. GR.

PVI 209+65.00
ELEV. 1570.58

EXIST. GROUND

PVT 213+05.00
ELEV. 1576.57

-0.24% LT. DT. GR.

+00 LT. DT.
1569.77

1.76%

STA. 215+43.77
BR. END

+50 LT. DT.
1569.17

050 DESIGN H.W.
ELEV. 1574.0

STA. 216+81.23
BR. END

PVC 217+00.00
ELEV. 1583.54

200' V.C.
K = 150.38
e=-0.33'

PVI 218+00.00
ELEV. 1585.30

0.43%

PVT 219+00.00
ELEV. 1585.73

1.45% LT. DT. GR.

+80 LT. DT.
1576.53

HAWKINS HOLLOW CREEK AT STA 216+25 TO STA 216+60 IS CLASSIFIED AS AN INTERMITTENT STREAM. THE TOP OF CHANNEL ELEVATION IS 1574.00 FT. MSL. REFER TO SECTION 110.05 (C) TEMPORARY FILL (P.130) OF THE 2014 STANDARD SPECIFICATIONS.

204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00 215+00 216+00 217+00 218+00 219+00

1590 1585 1580 1575 1570 1565 1560 1555

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\v&o\r090579_PP Hwy23 Site 2-0l.dgn MODEL: PROPOSED DESIGN
PLOTTED: 9/19/2023 07:26 SCALE: 1:100

G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 2-0l.dgn 9/19/2023 07:26

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	55	99
		PLAN AND PROFILE SHEETS				

C.L. CONST. HWY. 23
P.I. = 216+15.79
Δ = 59°12'14" LT.
D = 03°45'00"
T = 868.02'
L = 1578.76'
P.C. = 207+47.77
P.T. = 223+26.53
e = 0.080'/'
Ls = 300'

STA. 219+13 IN PLACE
DBL. 36" X 50' R.C. PIPE CULV'T.
WITH HDWL. LT. & RT.
(14°30' RT. FWD. SKEW)
REMOVE HDWL. LT. AND
EXTEND WESTERNMOST R.C. PIPE CULVERT 68' LT.
FOR COMPLETED LENGTH OF 118' W/ FES LT.
AND EXTEND EASTERNMOST R.C. PIPE CULVERT 66' LT.
FOR COMPLETED LENGTH OF 116' W/ FES LT.
Q50 = 30 CFS D.A. = 27.6 ACRES
36" R.C. PIPE = 142' LIN. FT.
36" FES = 2 EA.

FENCE				
STA.	STA.	SIDE	TYPE	LIN. FT.
216+94	223+75	LT.	WIRE TYPE D-1	683

REMOVAL AND DISPOSAL FENCE			
STA.	STA.	SIDE	LIN. FT.
216+69	223+74	LT.	706

C.L. CONST. HWY. 23
P.I. = 229+23.03
Δ = 14°14'41" RT.
D = 04°00'00"
T = 178.98'
L = 356.11'
P.C. = 227+44.05
P.T. = 231+00.16

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

25' BUFFER
HAWKINS HOLLOW CREEK
25' BUFFER
STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
Δ = 90°00'00"
220
225
230
SFHA
EXIST. R/W
CONST. LIMITS
PROPOSED R/W
6' SHLD.
℄ EXIST. HWY. 23
℄ CONST.
22'
100' TRANSITION
P.T. 223+26.53
P.C. 227+44.05
P.I. 229+23.03
P.T. 231+00.16
P.C. 20+37.25
N29°50'18"W
N15°35'36"W
P.I. 21+06.26
EXIST. R/W
PROPOSED R/W
STA. 223+26.53
END SITE 2

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

SITE 2
HWY. 23

STA. 207+30.68 BEGIN SUPERELEVATION
STA. 210+30.68 MAX. SUPERELEVATION (0.080'/')
STA. 220+26.53 MAX. SUPERELEVATION (0.080'/')
STA. 223+26.53 END SUPERELEVATION

PVI 218+00.00 ELEV. 1585.30
PVT 219+00.00 ELEV. 1585.73
PVC 220+35.00 ELEV. 1586.32
PVI 221+80.00 ELEV. 1586.95
PVT 223+25.00 ELEV. 1591.19
PVI 223+26.53 ELEV. 1591.23
PROFILE GRADE
EXIST. GROUND
1.76%
0.43%
2.92%
200' V.C.
K = 150.38
e=-0.33'
290' V.C.
K = 116.47
e=0.90'
1.45% LT. DT. GR.
2.80% LT. DT. GR.
+13 LT. DT. 1577.01
EXIST. F.L. IN = 1578.26 RT.
EXIST. F.L. OUT = 1577.88 LT.
F.L. IN = 1578.26 RT.
F.L. OUT = 1577.0 LT.

1600 1595 1590 1585 1580 1575 1570 1565
218+00 219+00 220+00 221+00 222+00 223+00 224+00 225+00 226+00 227+00 228+00 229+00 230+00 231+00 232+00

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 2-02.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 2-02.dgn 9/19/2023 07:26

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	56	99
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

P.I.= 21+06.26
Δ = 69°13'26" RT.
D = 57°17'45"
T = 69.02'
L = 120.82'
P.C. = 20+37.25
P.T. = 21+58.07
NO SUPER

P.I. =24+28.59
Δ = 38°54'27" LT.
D = 12°00'00"
T = 168.65'
L = 324.23'
P.C. = 22+59.94
P.T. = 25+84.17
e = 0.098'/'
Ls = 250'

PROPOSED R/W
CONST. LIMITS
EXIST. R/W
P.I. 21+06.26
P.T. 21+58.07
P.C. 22+59.94
P.I. 25+84.17
P.I. 26+18.79
100' TRANSITION
6' SHLD.
SFHA
S29°50'18"E
S68°44'44"E
R 90'
R 100'
R 40'
P.C. 20+37.25
N80°56'17"E
CREEK
HOLLOW
HAWKINS
25' BUFFER
16'-0" GATE
℄ CONST.
℄ EXIST. HWY. 23
STA. 23+92.45
END CONST.
HWY. 16
STA. 217+72.50 ℄ HWY. 23 =
STA. 20+00.00 ℄ HWY. 16
Δ = 90°00'00"
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA

SITE 2
HWY. 16

STA. 22+09.40 BEGIN SUPERELEVATION
STA. 22+75.00 MATCH EXIST. SUPERELEVATION (0.026'/')

PVC 20+18.00
ELEV. 1586.80
100' V.C.
K = 21.32
e=-0.59'
PVI 20+68.00
ELEV. 1589.30
PVT 21+18.00
ELEV. 1589.46
PVC 21+75.43
ELEV. 1589.64
PVI 22+50.43
ELEV. 1589.87
150' V.C.
K = 69.77
e=0.40'
PVT 23+25.43
ELEV. 591.72
PVI 23+92.45
ELEV. 1593.37
PROFILE GRADE
5.00%
0.31%
2.46%
EXIST. GROUND

1605 1600 1595 1590 1585 1580 1575 1570
20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00

USER: jc5296
DESIGN FILE: G:\1910500L_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy16 Site 2-03.dgn
PLOTTED: 9/19/2023 07:26
SCALE: H:100
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	57	99
		PLAN AND PROFILE SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

STA. 328+95.58 TO STA. 329+51.58
EXISTING BRIDGE NO. 02947 56.0' X 28.5'
CONSISTING OF REINFORCED CONCRETE SLAB SPANS
REMOVE AS EXISTING BRIDGE
STRUCTURE (SITE NO. 3) = 1.00 LUMP SUM

STA. 326+31.78 IN PLACE
24" X 34' PIPE CULV'T.
W/ HDWLS. LT. & RT.
RETAIN

STA. 329+24 CONSTRUCT
QUADRUPLE 12' x 7' x 94' R.C. BOX CULV'T.
WITH 3:1 WINGS LT. & RT.
Q50 = 1731 CFS D.A. = 1440.0 ACRES
SPAN = 51.17'
DUMPED RIPRAP = 216 CU. YDS.

CONCRETE DITCH PAVING

STA.	STA.	SIDE	TYPE	"W"	SQ. YD.
328+20	328+87	LT.	B	4	30
329+60	330+10	RT.	B	4	22
329+60	330+10	LT.	B	4	22

C.L. EXIST. HWY. 23
P.I. = 332+18.34
Δ = 41°17'53" LT.
D = 12°00'00"
T = 179.94'
L = 344.15'
P.C. = 330+38.40
P.T. = 333+82.55
e = MATCH EXISTING
Ls = MATCH EXISTING

FENCE

STA.	STA.	SIDE	TYPE	LIN. FT.
328+65	328+75	RT.	WIRE TYPE D	121

REMOVAL AND DISPOSAL FENCE

STA.	STA.	SIDE	LIN. FT.
328+61	328+67	RT.	135

STA 328+39
CONST. APPR. ON RT.
=90 CU. YDS.

STA 330+72
CONST. APPR. ON RT.
=20 CU. YDS.

STA. 328+85.00
BEGIN SITE 3
LOG MILE 15.31

STA. 329+65.00
END SITE 3 &
JOB 090579

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

SITE 3
HWY. 23

STA. 329+55.00 BEGIN SUPERELEVAT ON
STA. 330+10.00 MATCH EXIST. SUPERELEVATION (0.055'/')

PROFILE GRADE
PVI 328+95.58 ELEV. 1432.67 NO V.C.
PVI 329+51.58 ELEV. 1432.67 NO V.C.
0.00%
Q50 DESIGN H.W. ELEV. 1428.6
EXIST. GROUND

SLOW TOM HOLLOW CREEK AT STA 329+00 TO STA 329+30 IS CLASSIFIED AS AN INTERMITTENT STREAM. THE TOP OF CHANNEL ELEVATION IS 1428.50 FT. MSL. REFER TO SECTION 110.05 (C) TEMPORARY FILL (P.130) OF THE 2014 STANDARD SPECIFICATIONS.

F.L. IN = 1422.63 RT.
F.L. OUT = 1422.10 LT.

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 3-01.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 3-01.dgn 9/19/2023 07:26

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	58	99
		PLAN AND PLOTTED SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

114+48.55 DETOUR =
114+48.55 HWY. 23
0.00' OFFSET

119+71.89 DETOUR =
119+65.58 HWY. 23
0.00' OFFSET

STA. 114+48.55
BEGIN TEMP. DETOUR

STA. 119+71.89
END TEMP. DETOUR

C.L. TEMP. DETOUR
PI = 115+10.36
Δ = 15°57'55" RT.
D = 13°00'00"
T = 61.81'
L = 122.81'
P.C. = 114+48.55
P.R.C. = 115+71.36
NO SUPER

C.L. TEMP. DETOUR
PI = 116+33.17
Δ = 15°57'55" LT.
D = 13°00'00"
T = 61.81'
L = 122.81'
P.R.C. = 115+71.36
P.T. = 116+94.17
NO SUPER

C.L. TEMP. DETOUR
PI = 117+76.74
Δ = 15°54'48" LT.
D = 13°00'00"
T = 61.60'
L = 122.41'
P.C. = 117+15.14
P.R.C. = 118+37.55
NO SUPER

C.L. TEMP. DETOUR
PI = 119+05.24
Δ = 17°27'50" RT.
D = 13°00'00"
T = 67.69'
L = 134.34'
P.R.C. = 118+37.55
P.T. = 119+71.89
NO SUPER

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

SITE 1
TEMPORARY 1-LANE BYPASS
HWY. 23

PVI 114+48.55
ELEV. 635.28
-7.47%
PVC 115+10.00
ELEV. 1630.69
PROFILE GRADE
PVI 117+00.00
ELEV. 1616.50
380' V.C.
K = 49.61
e=3.64'
PVT 118+90.00
ELEV. 1616.87
0.19%
D.H.W. = 1617.1
EXIST. GROUND
PVI 119+71.89
ELEV. 1617.03

1640 1635 1630 1625 1620 1615 1610 1605

111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 1-DETOUR.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 1-DETOUR.dgn 9/19/2023 07:26

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	59	99
		PLAN AND PLOT SHEETS				

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9-20-2023

SITE 3
TEMPORARY 1-LANE BYPASS HWY. 23

326+40.00 DETOUR = 326+40.00 HWY. 23
0.00' OFFSET

332+34.21 DETOUR = 332+24.16 HWY. 23
0.00' OFFSET

STA. 326+40.00
BEGIN TEMP. DETOUR

STA. 332+34.21
END TEMP. DETOUR

C.L. EXIST. HWY. 23
P.I. = 332+18.34
Δ = 41°17'52" LT.
D = 12°00'00"
T = 179.93'
L = 344.15'
P.C. = 330+38.40
P.T. = 333+82.55
e = 0.120'/' (EXISTING)
Ls = 120' (EXISTING)

C.L. TEMP. DETOUR
P.I. = 327+01.81
Δ = 15°57'55" RT.
D = 13°00'00"
T = 61.81'
L = 122.81'
P.C. = 326+40.00
P.R.C. = 327+62.81
NO SUPER

C.L. TEMP. DETOUR
P.I. = 328+24.62
Δ = 15°57'55" LT.
D = 13°00'00"
T = 61.81'
L = 122.81'
P.R.C. = 327+62.81
P.T. = 328+85.62
NO SUPER

P.I. 11+00.00
Δ = 2°36'37" LT.

C.L. TEMP. DETOUR
P.I. = 330+52.70
Δ = 22°17'26" LT.
D = 13°00'00"
T = 86.83'
L = 171.47'
P.C. = 329+65.87
P.T. = 331+37.34
NO SUPER

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

CO. RD. 3175

PROFILE GRADE

EXIST. GROUND

PVI 10+11.54 ELEV. 1432.65
PVC 10+18.00 ELEV. 1432.74
PVT 10+50.00 ELEV. 1432.17
PVI 11+00.00 ELEV. 1431.27
PVT 11+50.00 ELEV. 1431.94
PVI 11+60.00 ELEV. 1432.08
PVC 326+40.00 ELEV. 1432.43
PVI 326+65.00 ELEV. 1432.12
PVT 327+65.00 ELEV. 1431.89
PVI 329+36.40 ELEV. 1431.50
PVC 330+20.00 ELEV. 1433.86
PVI 330+70.00 ELEV. 1434.25
PVT 331+20.00 ELEV. 1433.09
PVC 331+30.00 ELEV. 1432.86
PVI 331+80.00 ELEV. 1431.70
PVT 332+30.00 ELEV. 1431.23
PVI 332+34.21 ELEV. 1431.19

1.37% 1.80% 1.34% 1.24% 0.77% 2.32% 0.94%

100' V.C. K = 31.85 e=0.39'
100' V.C. K = 49.75 e=0.25'
100' V.C. K = 32.36 e=-0.39
100' V.C. K = 72.46 e=0.17'

+40 RT. DT. 1428.20
+88 RT. DT. 1422.76
+27 F.L. IN = 1422.63 RT. F.L. OUT = 1422.10 LT.
+66 RT. DT. 1422.76
+15 RT. DT. 1430.00
+45 RT. DT. 1430.46

9.43% RT. DT. GR.
9.75% RT. DT. GR.

1445 1440 1435 1430 1425 1420 1415 1410

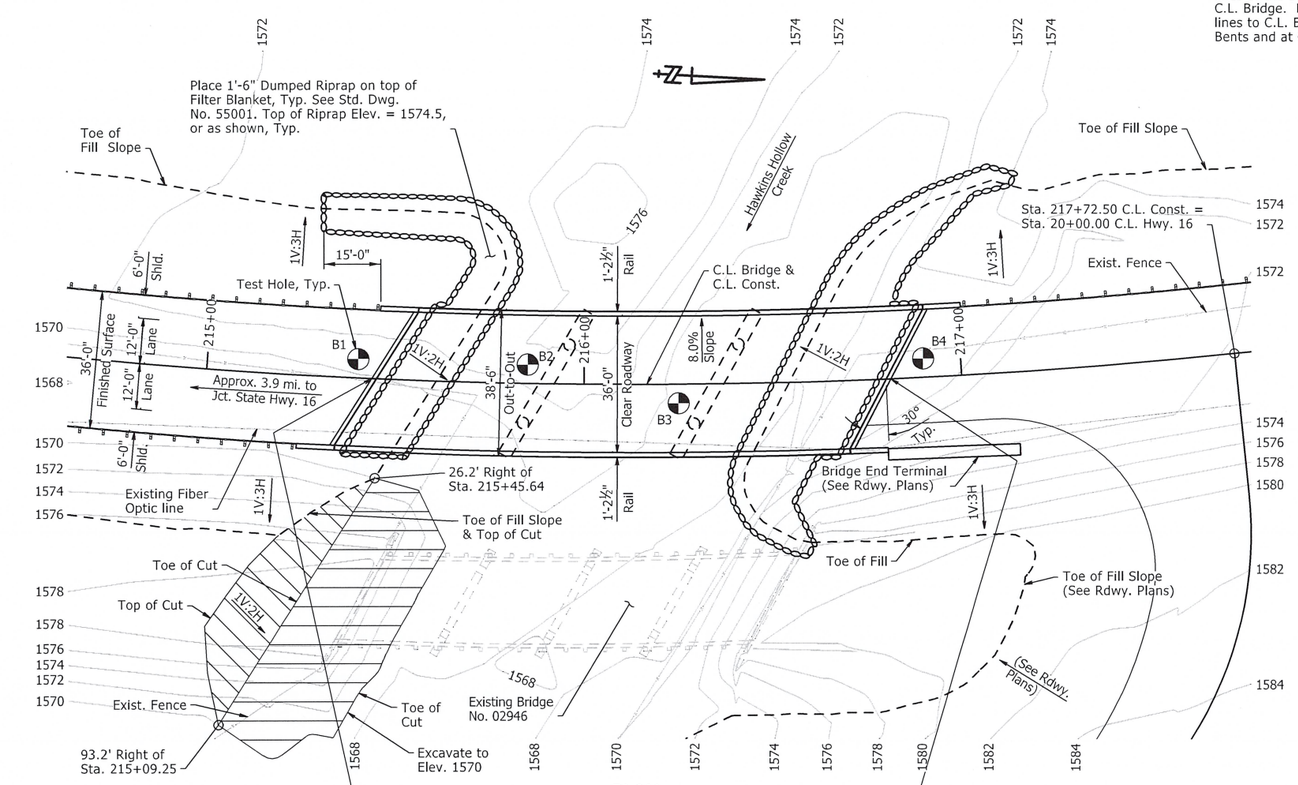
323+00 324+00 325+00 326+00 327+00 328+00 329+00 330+00 331+00 332+00 333+00 334+00 335+00 336+00 337+00 338+00

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 3-DETOUR.dgn
PLOTTED: 9/19/2023 07:26
SCALE: 1:100
MODEL: PROPOSED DESIGN

G:\19105001_090579x23\TRANSP\dgn\p&p\r090579_PP Hwy23 Site 3-DETOUR.dgn 9/19/2023 07:26

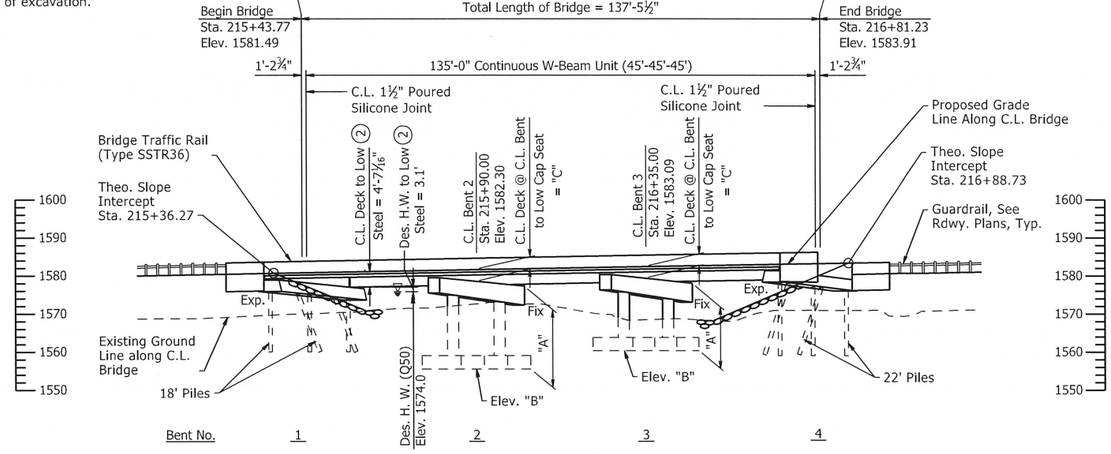
For R/W Data, See Roadway Plans.

Note: C.L. Bridge is on a 03°45'00" curve left. C.L. Beams and the longitudinal lines of the bridge shall be constructed on curves concentric with C.L. Bridge. Bents shall be constructed along lines skewed from radial lines to C.L. Bridge. Skew is measured at C.L. Bent for Intermediate Bents and at C.L. Joint for End Bents.



PLAN

Note: The Contractor shall remove the embankment at the existing bridge end as shown using IV:2H slopes. Cut to Elev. 1570.00 at beginning of bridge. Approx. 408 cu. yd. of excavation.



ELEVATION

NOTE: 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. See "CROSS SLOPE TRANSITION SKETCH" on Dwg. No. 64166 for more information.

HORIZONTAL CURVE DATA

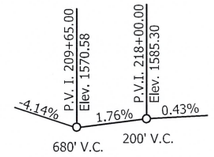
Along C.L. Const.

P.I. = 216+15.79
Δ = 59°12'14" LT.
D = 03°45'00"
T = 868.02'
L = 1578.76'
P.C. = 207+47.77
P.T. = 223+26.53

Note: Use Type Special Approach Gutters and Type C1 Approach Slabs at both ends of bridge. See Dwg. Nos. 64180 & 55040C1, respectively.

VERTICAL ALIGNMENT DATA

Theoretical Elev. Along C.L. Construction



HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(1) NATURAL W.S. ELEVATION	W.S. ELEVATION WITH BACKWATER
	YEARS	CFS	FEET	FEET
DESIGN	50	2055	1570.7	1574.0
BASE	100	2365	1570.9	1574.6
EXTREME	500	3155	1571.4	1575.4
OVERTOPPING	>500	---	---	---

(1) Unconstricted water surface elevation without structure or roadway approaches.

(2) Proposed Low Bridge Chord Elev. = 1577.1 feet at Station 215+55.81

100 yr. backwater elevation for existing structure = 1574.9 feet
Drainage Area = 2.9 sq. miles
Historical H.W. Elev. = N/A

TABLE OF VARIABLES

Location	A	B	C
Bent 2	22'-0"	1555.46	4'-10 1/16"
Bent 3	18'-0"	1560.25	4'-10 1/16"

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.		090579	60	99
				(1) 07553		LAYOUT		64165

GENERAL NOTES:

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

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 Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Eighth Edition (2017).

LIVE LOADING: HL-93

SIESMIC ZONE: 1 S_{D1}= 0.059 SITE CLASS: B SEISMIC OPERATIONAL CLASS: ESSENTIAL

MATERIALS AND STRENGTHS:

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

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

STEEL PILING: All piling shall be HP 12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 97 tons per pile and into the material designated as hard to moderately hard shale at Bent 1 and hard to moderately hard sandstone at Bent 4 on the boring legend. Minimum penetration shall be 10' below natural ground for all piles in Bents 1 and 4. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. The Contractor shall use approved steel H-Pile driving points on all piles.

PREBORING: Preboring is required for all piles in Bents 1 and 4. The depth of preboring shall be to a depth sufficient to provide the specified minimum penetration and to a minimum 3' depth into material designated as hard to moderately hard shale at Bent 1 and hard to moderately hard sandstone at Bent 4 on the boring legend, whichever is lower. The actual size and depth of preboring shall be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free of debris prior to driving piles and backfilling which may require the use of temporary casings or other approved methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete to the top of the rock and the remaining length backfilled in accordance with Subsection 805.08(a). Any related cost for backfilling and temporary casing will not be paid for directly, but shall be considered subsidiary to the item "Preboring".

SPREAD FOOTINGS: Footings shall be set a minimum of 2' into material designated as hard to moderately hard shale on the boring legend. The top of the footings at Bents 2 thru 3 shall be set a minimum 2' below the channel bottom as determined by the lowest channel elevation within the footprint of the footing. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of the existing ground in accordance with Subsection 801.08.

PAINTING: All Grade 50W structural steel, except galvanized members, surfaces in contact with concrete, and the expansion device, within six 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.

For Additional General Notes see Dwg. No. 64166.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11856
CHARLES A. WIPF
09/18/2023

SHEET 1 OF 2

LAYOUT OF BRIDGE
HIGHWAY 23 OVER HAWKINS HOLLOW CREEK
HWY. 23 STRS. & APPRS. (MADISON CO.) (S)
MADISON COUNTY
ROUTE 23 SEC. 8

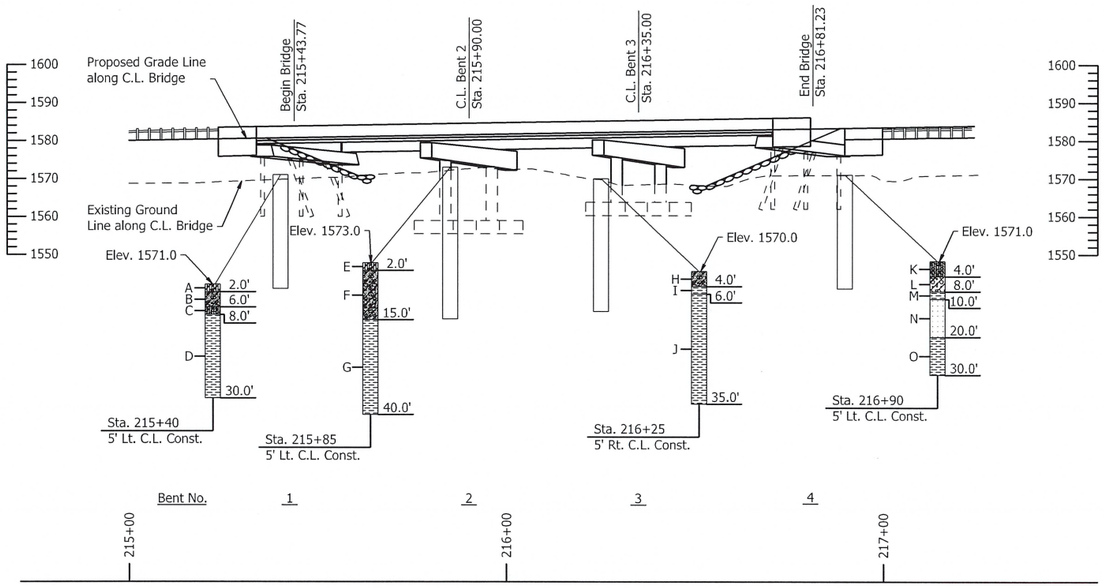
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-21-20 FILENAME: b090579_l1.dgn
CHECKED BY: CAW DATE: 04-22-20 SCALE: 1" = 20'
DESIGNED BY: KRM DATE: 04-21-20

BRIDGE NO. 07553 DRAWING NO. 64165

USER: CTAUSER
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\brIdge\b090579_ll.dgn SCALE: 40.0000 ' / in.
PLOTTED: 9/18/2023 2:17:12 PM

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.		090579	61	99
				(I) 07553		LAYOUT		64166



ELEVATION OF SOIL BORINGS

"N" VALUES

Sta. 215+40 - 5' Left of Const. C.L.	Sta. 215+85 - 5' Left of Const. C.L.	Sta. 216+25 - 5' Right of Const. C.L.	Sta. 216+90 - 5' Left of Const. C.L.
0.5-1.5, N=14	0.5-1.5, N=8	0.5-1.5, N=27	0.5-1.5, N=5
2.5-3.5, N=42	2.5-3.5, N=14	2.5-3.5, N=29	2.5-3.5, N=9
4.5-5.5, N=50/5"	4.5-5.5, N=22	4.5-5.5, N=50/5"	4.5-5.5, N=11
6.5-7.5, N=43	6.5-7.5, N=25		6.5-7.5, N=24
9.0-10.0, N=25/0"	9.0-10.0, N=25		9.0-10.0, N=50/3"
	14.0-15.0, N=50/6"		

BORING LEGEND

A. Stiff brown, red and gray silty clay w/crushed stone (fill)
B. Very stiff brown fine sandy clay w/sandstone fragments
C. Dense brown and tan silty fine sand w/numerous sandstone fragments (completely weathered sandstone)
D. Moderately hard to hard dark gray and gray shale, flat bedded w/very close sandstone partings, seams and layers
E. Firm reddish tan and brown silty clay w/crushed stone (fill)
F. Stiff brown fine sandy clay w/sandstone fragments
G. Hard dark gray shale, flat bedded w/very close interbedded fine-grained sandstone partings, seams and layers
H. Very stiff brown, reddish tan and red fine sandy clay w/numerous sandstone fragments
I. Moderately hard dark gray and yellowish tan highly weathered shale
J. Hard dark gray shale, flat bedded w/very close interbedded sandstone partings, seams and layers
K. Loose brown fine silty fine sand w/a little fine to coarse gravel and occasional cobbles (possible fill)
L. Medium dense brownish gray, reddish brown and gray clayey fine to coarse gravel w/occasional shale fragments
M. Moderately hard dark gray shale
N. Moderately hard to hard dark gray fine-grained sandstone w/interbedded shale seams and layers
O. Moderately hard to hard dark gray shale, flat bedded

GENERAL NOTES: (Cont'd)

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

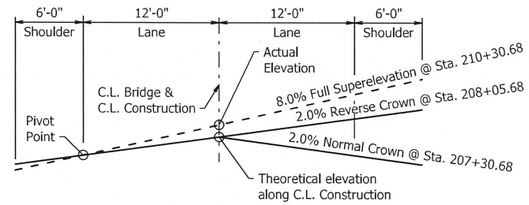
PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete rails in accordance with Section 803.

DETAIL DRAWINGS:	DRAWING NO(S).
End Bents	64167-64170
Intermediate Bents	64171-64172
Elastomeric Bearings	64173
135'-0" Continuous W-Beam Unit	64174-64179
General Notes For Steel Bridge Structures	55006
Details For Steel Bridge Structures	55007
Poured Silicone Joints	55008
Steel H-Piling	55020
Type Special Approach Gutters	64180
Type C1 Approach Slabs	55040C1
Bridge Traffic Rail	55070

EXISTING BRIDGE: Existing Bridge No. 02946 (Log Mile 7.1) is 28.5' wide (24.0' clear roadway) and 112.0' long and consists of reinforced concrete slab spans (4 spans total) supported by concrete columns on concrete footings. The existing bridge is located approximately 57' upstream from the proposed new bridge. Plans of the existing structure, if available, may be obtained upon request to the Construction Contract Development Section of the Program Management Division.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, the Contractor shall remove existing Bridge No. 02946, including dumped riprap, in accordance with Section 205. Removal of dumped riprap will not be paid for directly but shall be considered subsidiary to the item "Removal of Existing Bridge Structure (Site No.)". All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.



CROSS SLOPE TRANSITION SKETCH
(Looking Ahead)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11856
CHARLES A. WIPF
09/18/2023

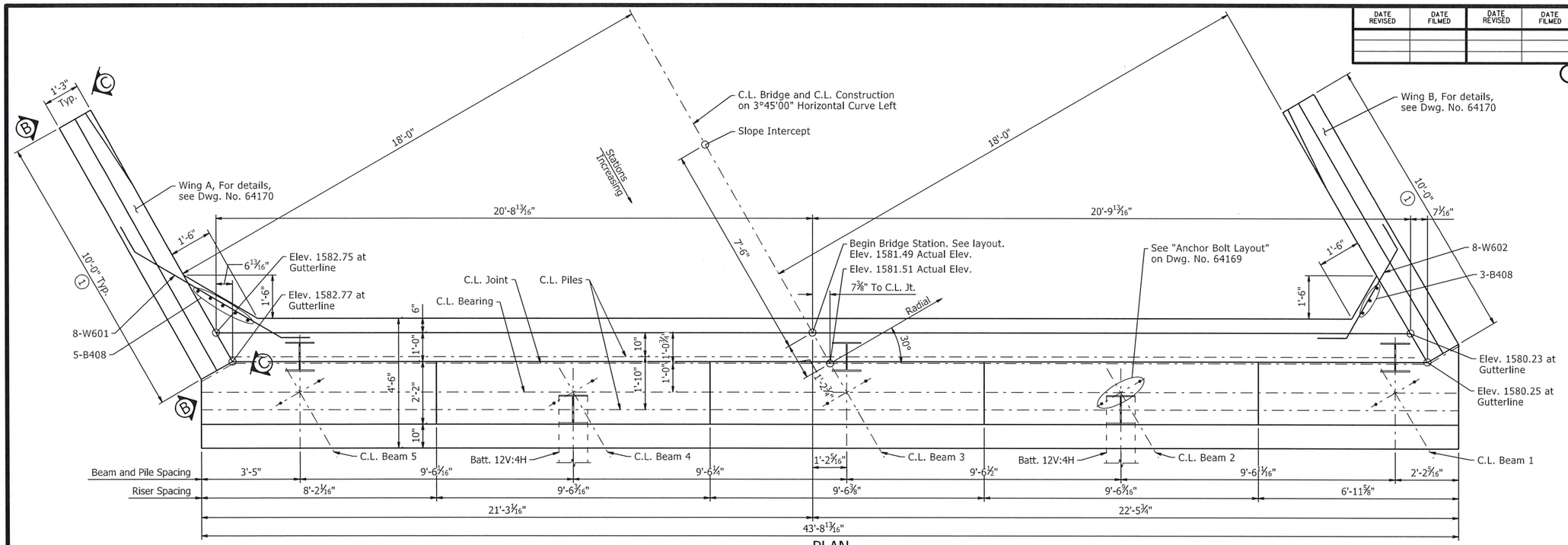
SHEET 2 OF 2
LAYOUT OF BRIDGE
HIGHWAY 23 OVER HAWKINS HOLLOW CREEK
HWY. 23 STRS. & APPRS. (MADISON CO.) (S)
MADISON COUNTY
ROUTE 23 SEC. 8
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-21-20 FILENAME: b090579_l2.dgn
CHECKED BY: CAW DATE: 04-22-20 SCALE: 1" = 20'
DESIGNED BY: KRM DATE: 04-21-20
BRIDGE NO. 07553 DRAWING NO. 64166

USER: CTAUSER
DESIGN FILE: G:\I910500I_090579x23\TRANSP\dgn\bridge\b090579_l2.dgn
PLOTTED: 9/18/2023 2:17:13 PM SCALE: 40.0000 ' / In.

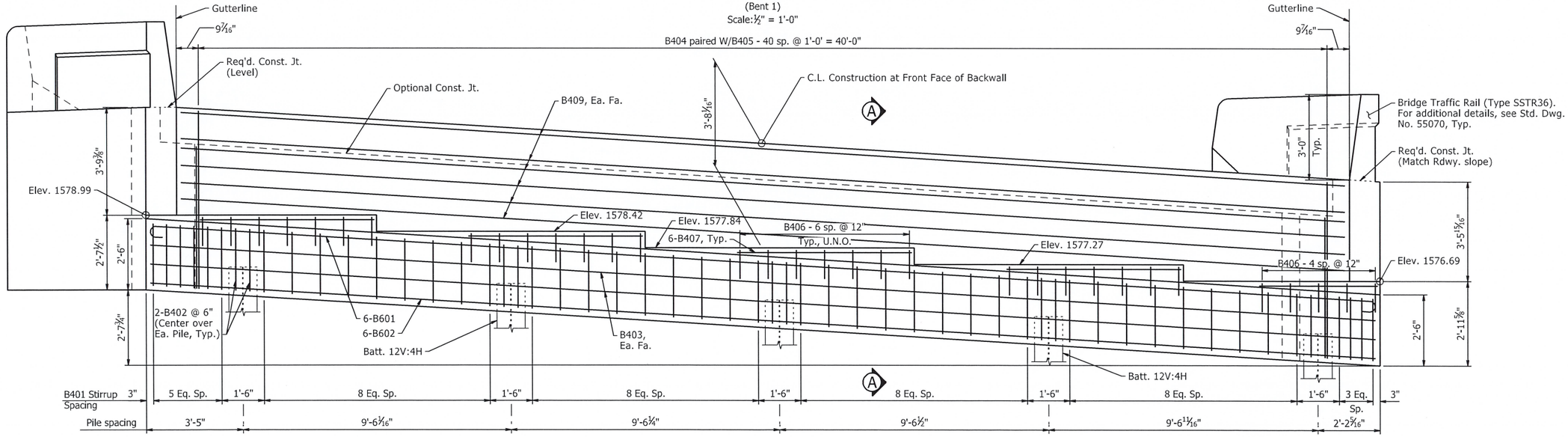
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090579	62	99
(1) 07553		END BENT DETAILS		64167



PLAN

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



ELEVATION

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

NOTES:

Class 2 Protective Surface Treatment shall be applied to the top of the Backwall and to the roadway face and top of the Rails.

For "SECTION A-A", Bar List, and Bending Diagram, see Dwg. No. 64169.

For "VIEW B-B" and "VIEW C-C", see Dwg No. 64170

For General Notes, see Std. Dwg. No. 55006.

For additional information, see Layout.

(1) Measured along gutterline. Construct wings on curves concentric with C.L. of Bridge & C.L. of Construction.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

DETAILS OF BENT 1

ROUTE SEC.

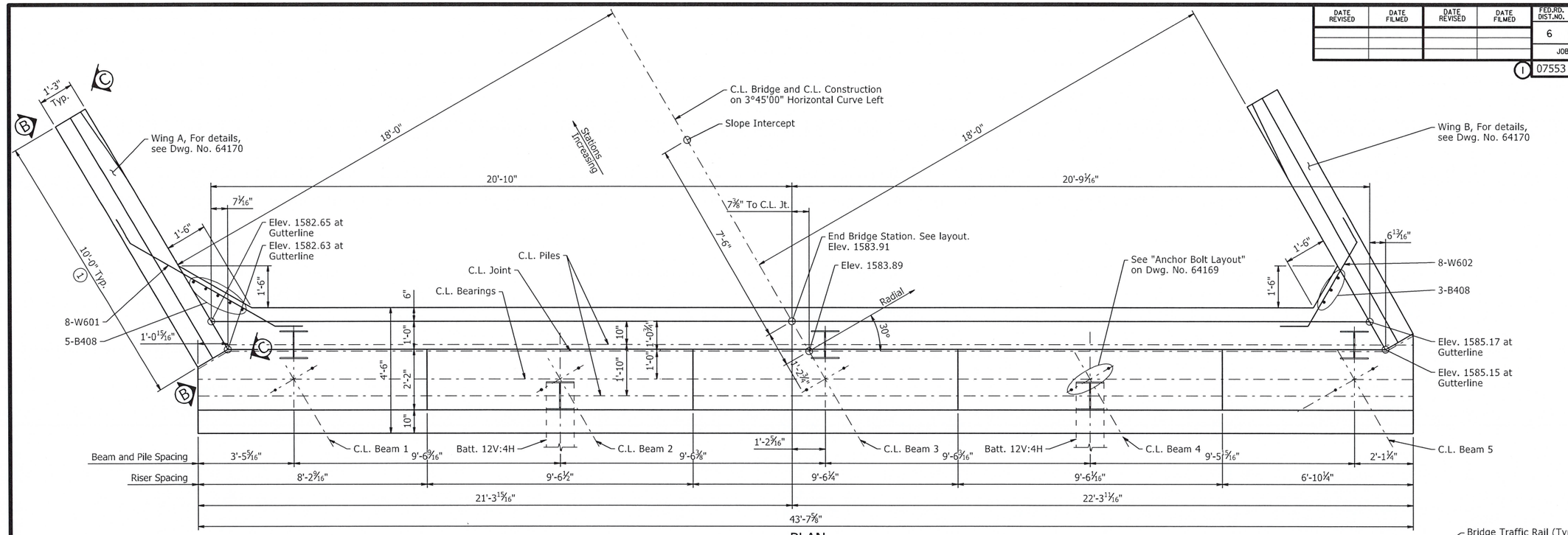
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-30-21 FILENAME: b090579_b11.dgn
CHECKED BY: CAW DATE: 05-10-21 SCALE: SEE DETAILS
DESIGNED BY: KRM DATE: 04-14-21

BRIDGE NO. 07553 DRAWING NO. 64167

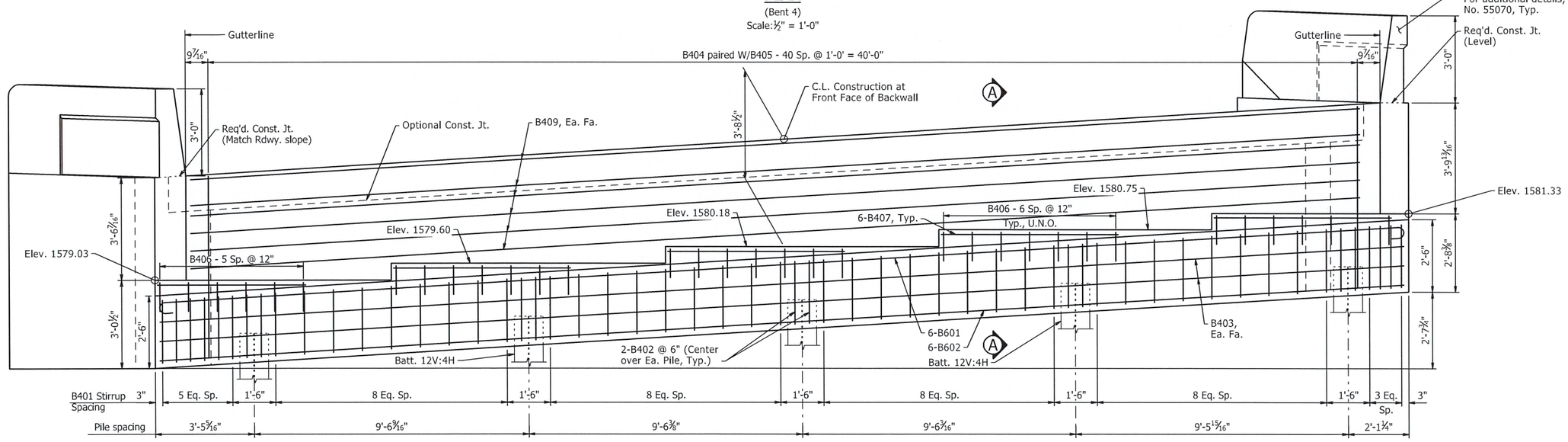
USER: CTAUSER
DESIGN FILE: G:\1910500L_090579x23\TRANSP\dgn\bridge\b090579_bll.dgn SCALE: 4.0000 ' / In.
PLOTTED: 9/18/2023 2:17:14 PM

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.		090579	63	99
				(I) 07553		END BENT DETAILS		64168



PLAN

(Bent 4)
Scale: 1/2" = 1'-0"



ELEVATION

(Bent 4 - Looking Ahead)
Scale: 1/2" = 1'-0"

NOTES:

Class 2 Protective Surface Treatment shall be applied to the top of the Backwall and to the roadway face and top of the Rails.

For "SECTION A-A", Bar List, and Bending Diagram, see Dwg. No. 64169.

For "VIEW B-B" and "VIEW C-C", see Dwg No. 64170

For General Notes, see Std. Dwg. No. 55006.

For additional information, see Layout.

(1) Measured along gutterline. Construct wings on curves concentric with C.L. of Bridge & C.L. of Construction.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

DETAILS OF BENT 4

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-30-21 FILENAME: b090579_b12.dgn
CHECKED BY: CAW DATE: 05-10-21 SCALE: SEE DETAILS
DESIGNED BY: KRM DATE: 04-14-21

BRIDGE NO. 07553 DRAWING NO. 64168

USER: CTAUSER
DESIGN FILE: G:\1910500I_090579x23\TRANSP\dgn\bridge\b090579_b12.dgn
PLOTTED: 9/18/2023 2:17:14 PM SCALE: 4.0000 ' / In.

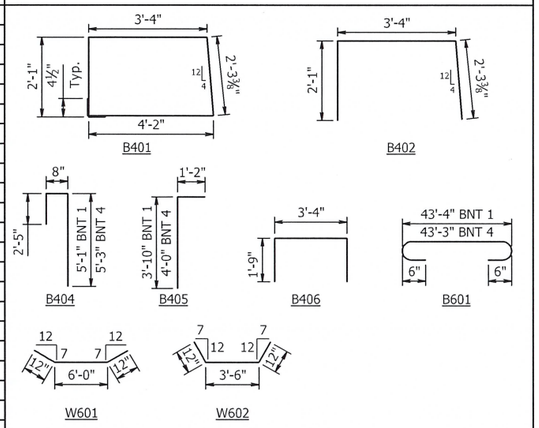
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090579	64	99
				(I) 07553		END BENT DETAILS		64169

BAR LIST - BENT 1

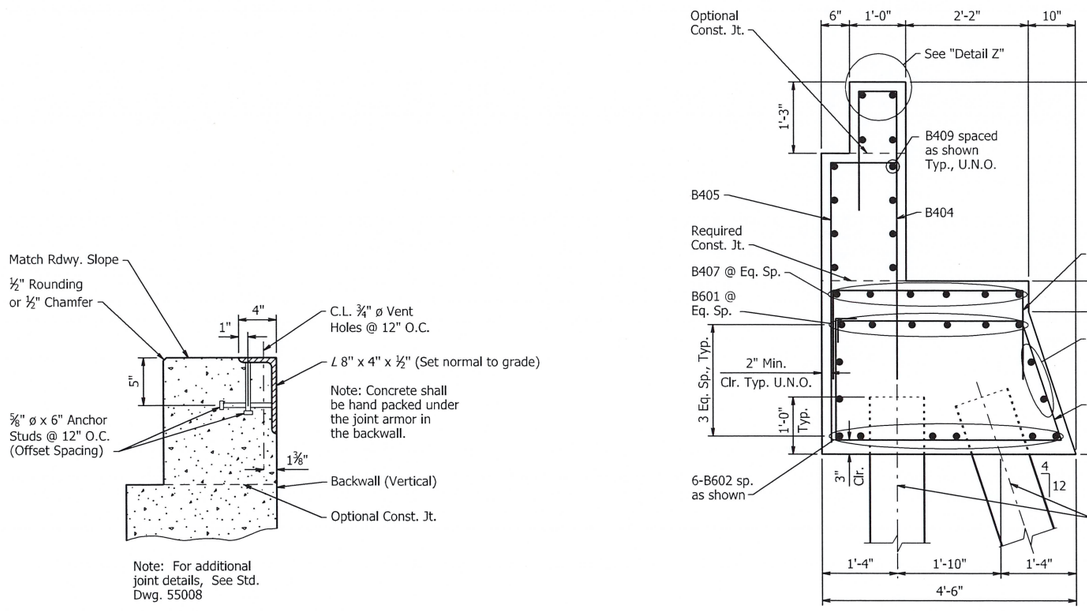
BAR LIST - BENT 4

Mark	No. Req'd.	Length	Pin Dia.	Mark	No. Req'd.	Length	Pin Dia.
B401	46	12'-2"	2"	B401	46	12'-2"	2"
B402	10	7'-6"	2"	B402	10	7'-6"	2"
B403	4	43'-4"	Str.	B403	4	43'-3"	Str.
B404	41	8'-0"	2"	B404	41	8'-2"	2"
B405	41	4'-11"	2"	B405	41	5'-1"	2"
B406	33	6'-8"	2"	B406	34	6'-8"	2"
B407	30	6'-0"	Str.	B407	30	6'-0"	Str.
B408	8	4'-8"	Str.	B408	8	4'-9"	Str.
B409	12	41'-3"	Str.	B409	12	41'-3"	Str.
B601	6	44'-8"	4½"	B601	6	44'-7"	4½"
B602	6	43'-4"	Str.	B602	6	43'-3"	Str.
R401E	40	5'-11"	2½"	R401E	40	5'-11"	2½"
R402E	8	5'-6"	Str.	R402E	8	5'-6"	Str.
R411E	16	9'-8"	Str.	R411E	16	9'-8"	Str.
W401E	40	3'-11"	3¾"	W401E	40	3'-11"	3¾"
W402	40	5'-10"	Str.	W402	40	5'-10"	Str.
W601	8	7'-9"	4½"	W601	8	7'-9"	4½"
W602	8	5'-3"	4½"	W602	8	5'-3"	4½"
W701	40	9'-8"	Str.	W701	40	9'-8"	Str.

Bending Diagrams



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



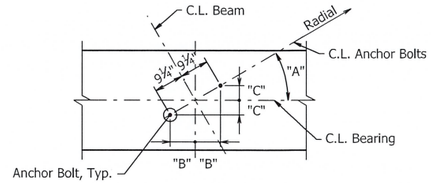
SECTION A-A

Scale: ¾" = 1'-0"

Note: For additional joint details, See Std. Dwg. 55008

DETAIL Z

No Scale



ANCHOR BOLT LAYOUT

No Scale

Note:
See Elastomeric Bearing Details on Dwg. No. 64173 for additional information.

Bent No.	Beam No.	"A"	"B"	"C"
1	1	30.41°	8"	4 1/16"
	2	30.22°	8"	4⅝"
	3	30.04°	8"	4⅝"
	4	29.87°	8"	4⅝"
	5	29.69°	8 1/16"	4 3/16"
4	1	30.32°	8"	4 1/16"
	2	30.14°	8"	4⅝"
	3	29.96°	8"	4⅝"
	4	29.78°	8"	4⅝"
	5	29.60°	8 1/16"	4 3/16"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
Kenneth R. Miller
9/18/2023

SHEET 1 OF 2

DETAILS OF BENTS 1 & 4

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

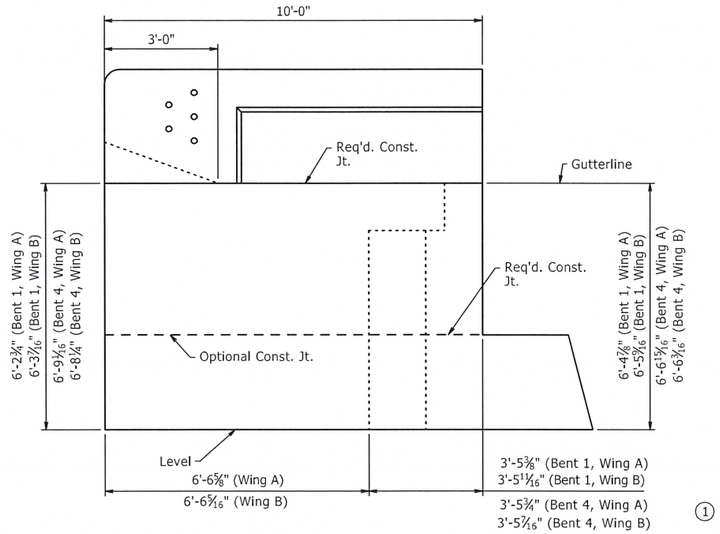
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-14-21 FILENAME: b090579_b13.dgn
CHECKED BY: CAW DATE: 05-10-21 SCALE: SEE DETAILS
DESIGNED BY: KRM DATE: 04-30-21

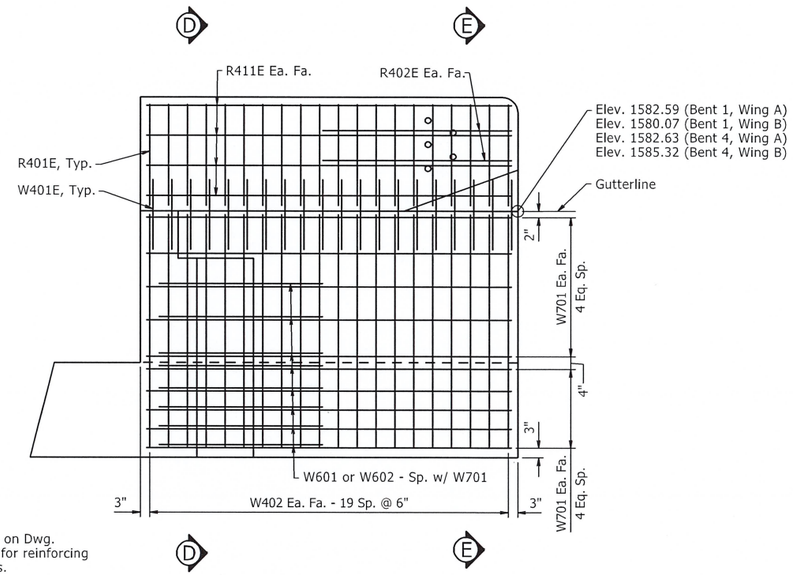
BRIDGE NO. 07553 DRAWING NO. 64169

USER: CTAUSER
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\br1dge\b090579_bl3.dgn
PLOTTED: 9/18/2023 2:17:15 PM SCALE: 2.6666 ' / In.

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.		090579	65	99
				(I) 07553		END BENT DETAILS		64170

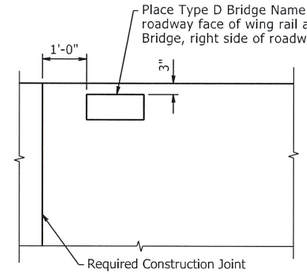


VIEW B-B
Scale: ½" = 1'-0"

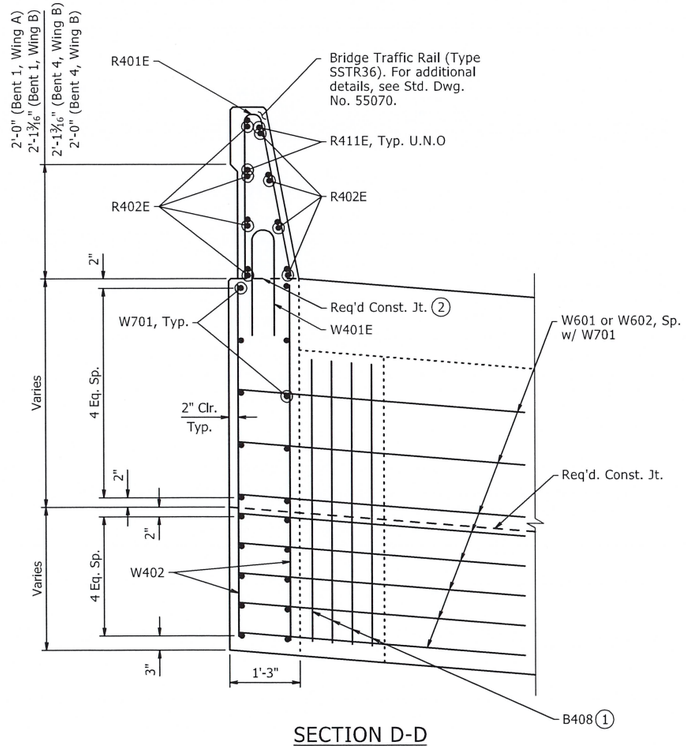


1. See End Bent Details on Dwg. Nos. 64167 & 64168 for reinforcing and additional details.
2. Level (high side of bridge) Match rdwy. slope (low side of bridge)

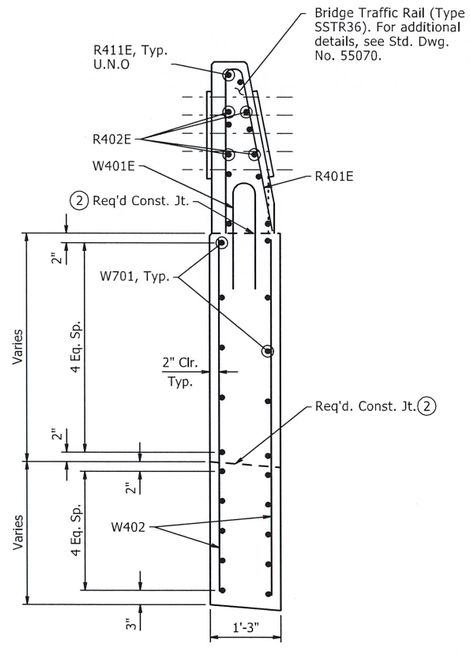
VIEW C-C
Scale: ½" = 1'-0"



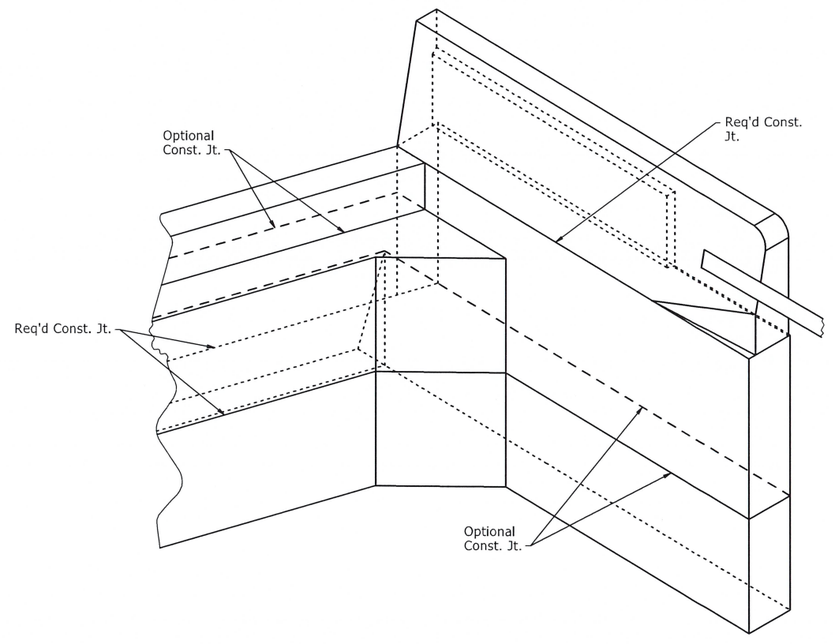
NAME PLATE DETAIL
No Scale



SECTION D-D
Scale: ¾" = 1'-0"



SECTION E-E
Scale: ¾" = 1'-0"



ISOMETRIC VIEW OF BENT
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
Kenneth R. Miller
9/18/2023

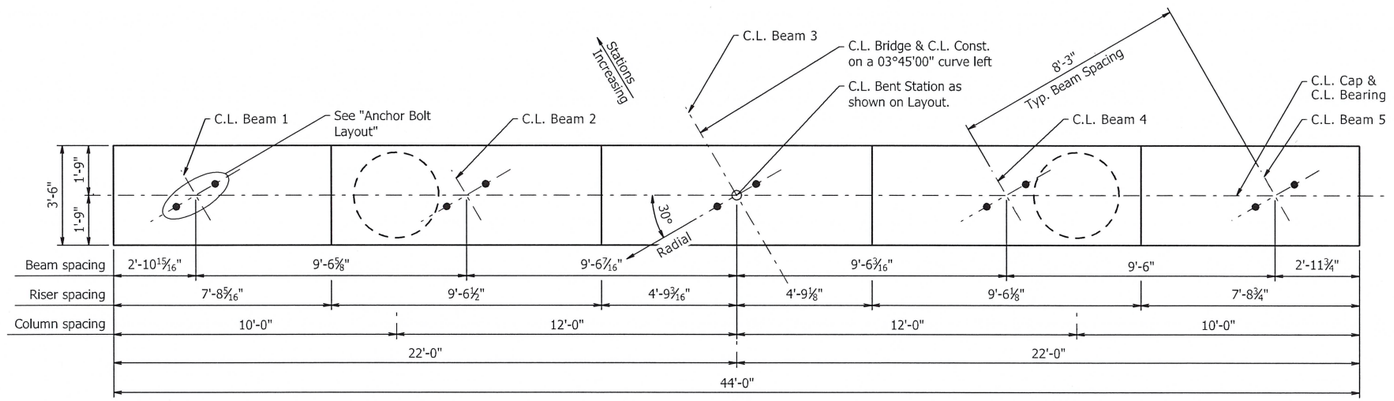
SHEET 2 OF 2
DETAILS OF BENTS 1 & 4
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY:	LDG	DATE:	05-05-21	FILENAME:	b090579_bl4.dgn
CHECKED BY:	CAW	DATE:	05-10-21	SCALE:	SEE DETAILS
DESIGNED BY:	LDG	DATE:	05-01-21		

BRIDGE NO. 07553 DRAWING NO. 64170

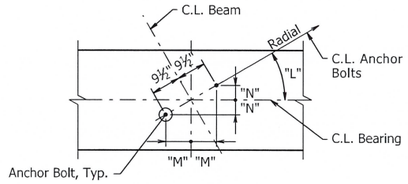
USER: CTAUSER
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\bridge\b090579_bl4.dgn
PLOTTED: 9/18/2023 2:17:15 PM SCALE: 4.0000 ' / In.

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.		090579	66	99
				I	07553	INT. BENTS		64171



PLAN

Scale: ⅜" = 1'-0"

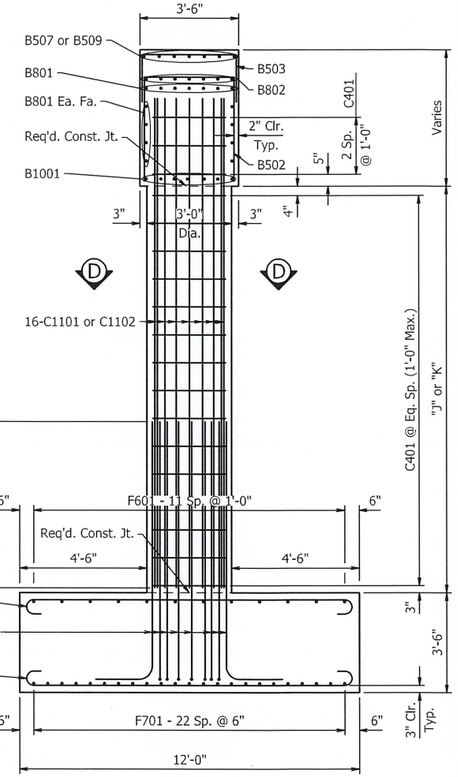


ANCHOR BOLT LAYOUT

(Bent 2 & Bent 3)
No Scale

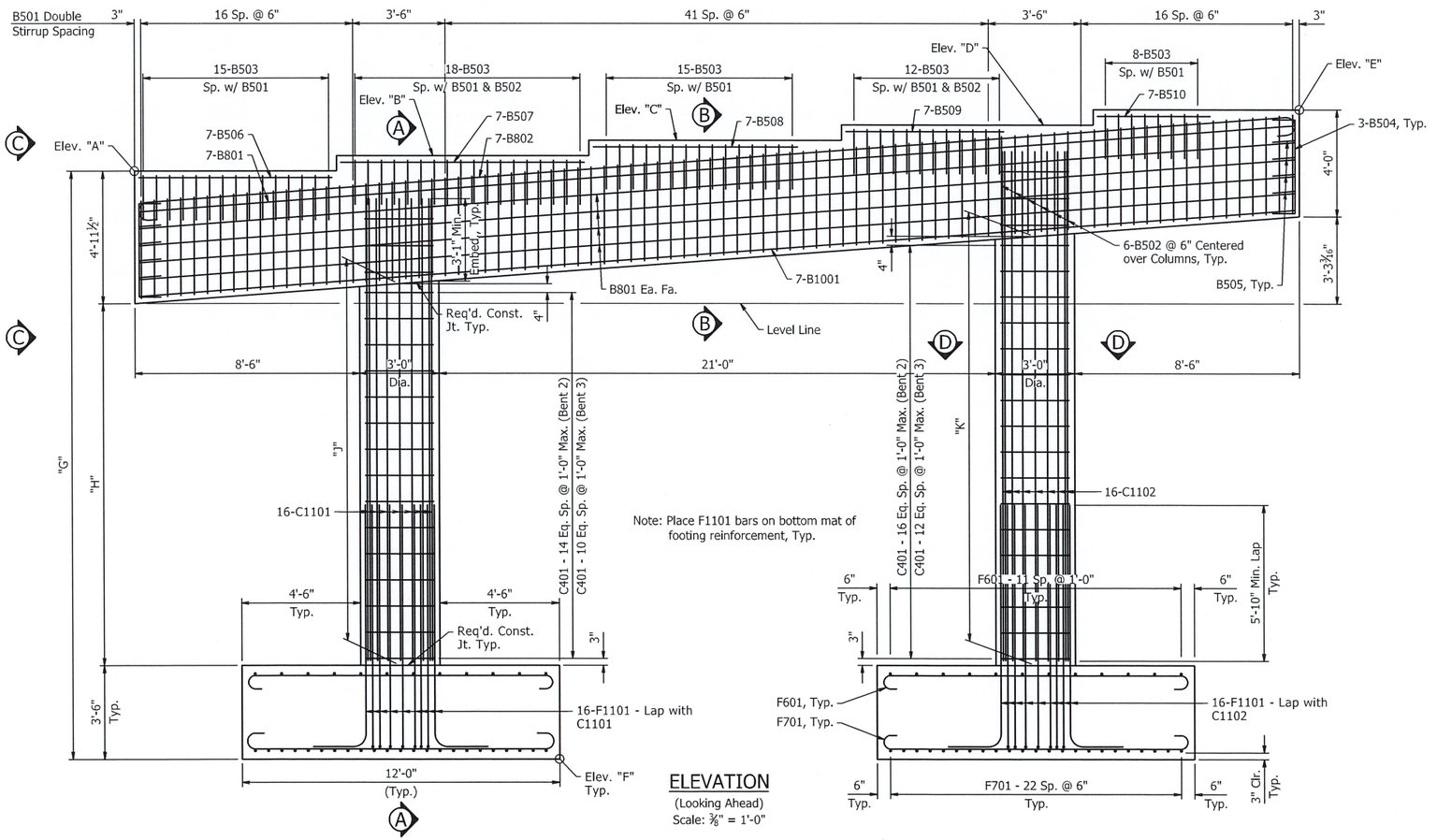
Note: See Elastomeric Bearing Details on Dwg. No. 64173 for additional information.

Beam No.	"L"	"M"	"N"
1	30.36°	8 5/16"	4 13/16"
2	30.18°	8 5/16"	4 3/4"
3	30.00°	8 1/4"	4 3/4"
4	29.82°	8 1/4"	4 3/4"
5	29.65°	8 1/4"	4 1/16"



SECTION A-A

Scale: ⅜" = 1'-0"



ELEVATION

(Looking Ahead)
Scale: ⅜" = 1'-0"

TABLE OF VARIABLES

Variable	Bent 2	Bent 3
"A"	1577.46	1578.25
"B"	1578.04	1578.83
"C"	1578.61	1579.40
"D"	1579.19	1579.98
"E"	1579.77	1580.56
"F"	1555.46	1560.25
"G"	22'-0"	18'-0"
"H"	13'-6½"	9'-6½"
"J"	14'-3⅜"	10'-3⅜"
"K"	16'-0¾"	12'-0¾"

GENERAL NOTES

For "SECTION B-B", "VIEW C-C", "SECTION D-D", Bending Diagram, and Bar List, see Dwg. No. 64172.

For additional General Notes, See Std. Dwg. No. 55006.

For additional information, See Layout.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
Kenneth R. Miller
9/18/2023

SHEET 1 OF 2

DETAILS OF BENTS 2 & 3

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

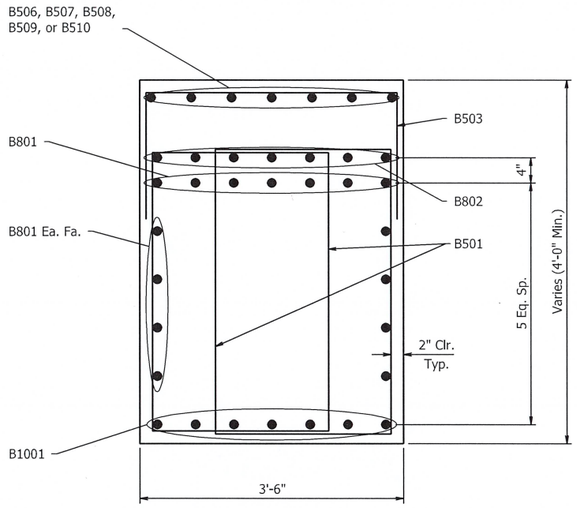
LITTLE ROCK, ARK.

DRAWN BY: KRM DATE: 5-4-21 FILENAME: b090579_b21.dgn
CHECKED BY: CAW DATE: 5-10-21 SCALE: SEE DETAILS
DESIGNED BY: LDG DATE: 5-1-21

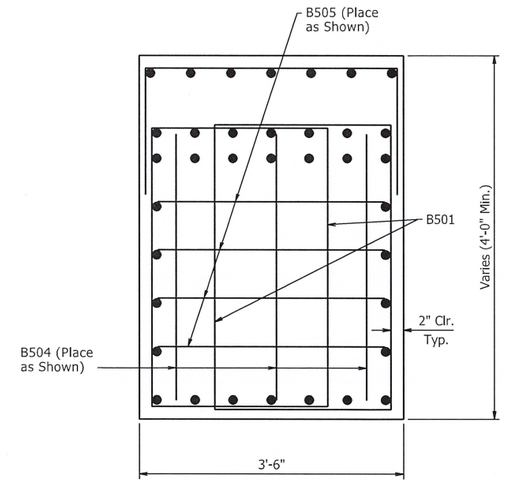
BRIDGE NO. 07553 DRAWING NO. 64171

USER: CTAUSER
DESIGN FILE: G:\I910500I_090579x23\TRANSP\dgn\bridge\b090579_b21.dgn SCALE: 5.3333 ' / in.
PLOTTED: 9/18/2023 2:17:16 PM

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.		090579	67	99
				(I) 07553		INT. BENTS		64172



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

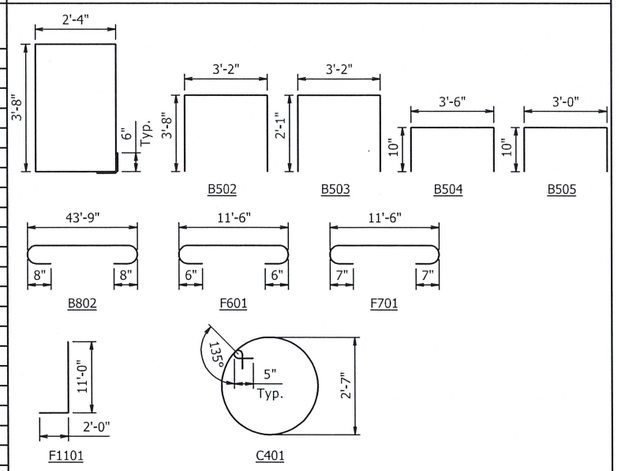


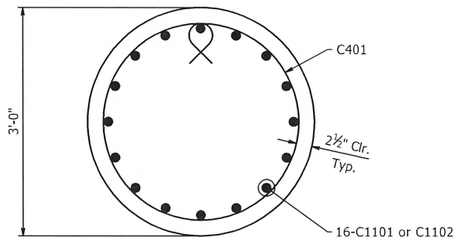
VIEW C-C
Scale: 1" = 1'-0"

BAR LIST

Bent 2				Bent 3			
Mark	No. Req'd.	Length	Pin Dia.	Mark	No. Req'd.	Length	Pin Dia.
B501	152	12'-6"	2½"	B501	152	12'-6"	2½"
B502	12	10'-4"	2½"	B502	12	10'-4"	2½"
B503	68	7'-2"	2½"	B503	68	7'-2"	2½"
B504	6	4'-11"	3¾"	B504	6	4'-11"	3¾"
B505	8	4'-5"	3¾"	B505	8	4'-5"	3¾"
B506	7	7'-4"	Str.	B506	7	7'-4"	Str.
B507	7	9'-3"	Str.	B507	7	9'-3"	Str.
B508	7	7'-9"	Str.	B508	7	7'-9"	Str.
B509	7	6'-0"	Str.	B509	7	6'-0"	Str.
B510	7	4'-4"	Str.	B510	7	4'-4"	Str.
B801	15	43'-9"	Str.	B801	15	43'-9"	Str.
B802	7	45'-8"	6"	B802	7	45'-8"	6"
B1001	7	43'-9"	Str.	B1001	7	43'-9"	Str.
C401	38	9'-4"	3"	C401	30	9'-4"	3"
C1101	16	17'-4"	Str.	C1101	16	13'-4"	Str.
C1102	16	19'-1"	Str.	C1102	16	15'-1"	Str.
F601	48	12'-10"	4½"	F601	48	12'-10"	4½"
F701	92	13'-2"	5¼"	F701	92	13'-2"	5¼"
F1101	32	12'-8"	11¼"	F1101	32	12'-8"	11¼"

Bending Diagrams
(Dimensions are out to out of Bars)





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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

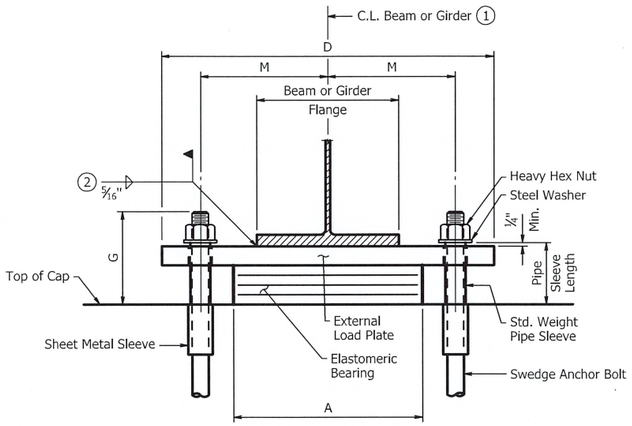
SHEET 2 OF 2
DETAILS OF BENTS 2 & 3
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LDG DATE: 05-05-21 FILENAME: b090579_b22.dgn
CHECKED BY: CAW DATE: 05-10-21 SCALE: 1" = 1'-0'
DESIGNED BY: LDG DATE: 05-01-21

BRIDGE NO. 07553 DRAWING NO. 64172

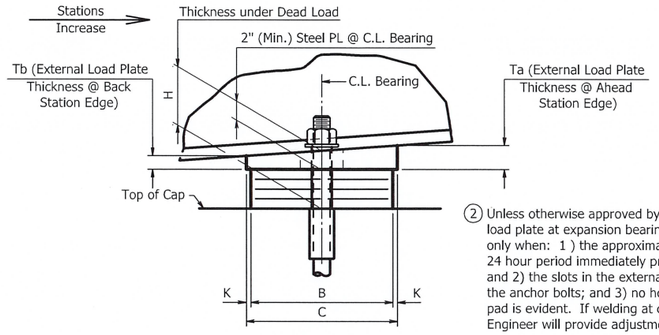
USER: CTAUSER
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\bridge\b090579_b22.dgn SCALE: 2.0000 ' / In.
PLOTTED: 9/18/2023 2:17:17 PM

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.		090579	68	99
				(1) 07553		BEARING DETAILS		64173



FRONT VIEW

(1) C.L Elastomeric Pad shall be aligned with C.L. Beam or Girder.



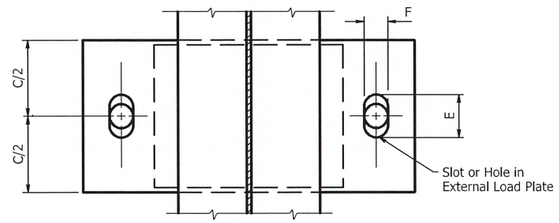
SIDE VIEW

The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".

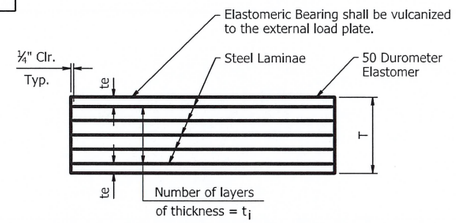
(2) Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the beam or girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40° F and 80° F; and 2) the slots in the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

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

Prior to erection of the Beams or Girders, the Contractor shall verify the orientation of the bearing with respect to Ta and Tb.



PLAN VIEW

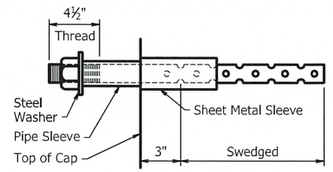


t_e = Thickness of elastomer cover on top and bottom of pad

t_i = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING



ANCHOR BOLT DETAIL

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 will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Beam Spans (A709, Gr. 50W)"

GENERAL NOTES

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

External load plates shall conform to ASTM A709, Gr. 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 shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (A709, Gr. 50W)". External load plates will not be measured and paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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

TABLE OF FABRICATOR VARIABLES

(3) Maximum Design Load = Service 1 Limit State

BRIDGE NO.	LOCATION BENT NO(S).	LOCATION BEAM OR GIRDER NO.	BEARING TYPE	NO. OF BEARINGS EACH BENT	MAXIMUM DESIGN LOAD (3) (KIPS)	G	H	ELASTOMERIC PAD A	B	N	T_i	T_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT ø X L	ANCHOR BOLT GRADE	PIPE SLEEVE SIZE (ø X L)	SHEET METAL SLEEVE SIZE (ø X L)	STEEL WASHER SIZE (O.D.)
07553	1	1-5	Exp.	5	79	7¾"	5"	14"	8"	4	½"	¼"	5 @ 12 Ga.	3 1/16"	9"	24"	3 7/16"	2¼"	½"	9¼"	2.08"	1.92"	1½" X 26"	55	1½" X 5¼"	3" X 9"	3"
	2	1-5	Fix	5	167	8"	5"	14"	12"	4	½"	¼"	5 @ 12 Ga.	3 1/16"	13"	25"	2⅝"	2⅝"	½"	9½"	2.11"	1.89"	1¾" X 29"	55	2" X 5¼"	4" X 9"	3 7/16"
	3	1-5	Fix	5	167	8"	5"	14"	12"	4	½"	¼"	5 @ 12 Ga.	3 1/16"	13"	25"	2⅝"	2⅝"	½"	9½"	2.11"	1.89"	1¾" X 29"	55	2" X 5¼"	4" X 9"	3 7/16"
	4	1-5	Exp.	5	79	7¾"	5"	14"	8"	4	½"	¼"	5 @ 12 Ga.	3 1/16"	9"	24"	3 7/16"	2¼"	½"	9¼"	2.08"	1.92"	1½" X 26"	55	1½" X 5¼"	3" X 9"	3"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-30-21 FILENAME: b090579_e1.dgn

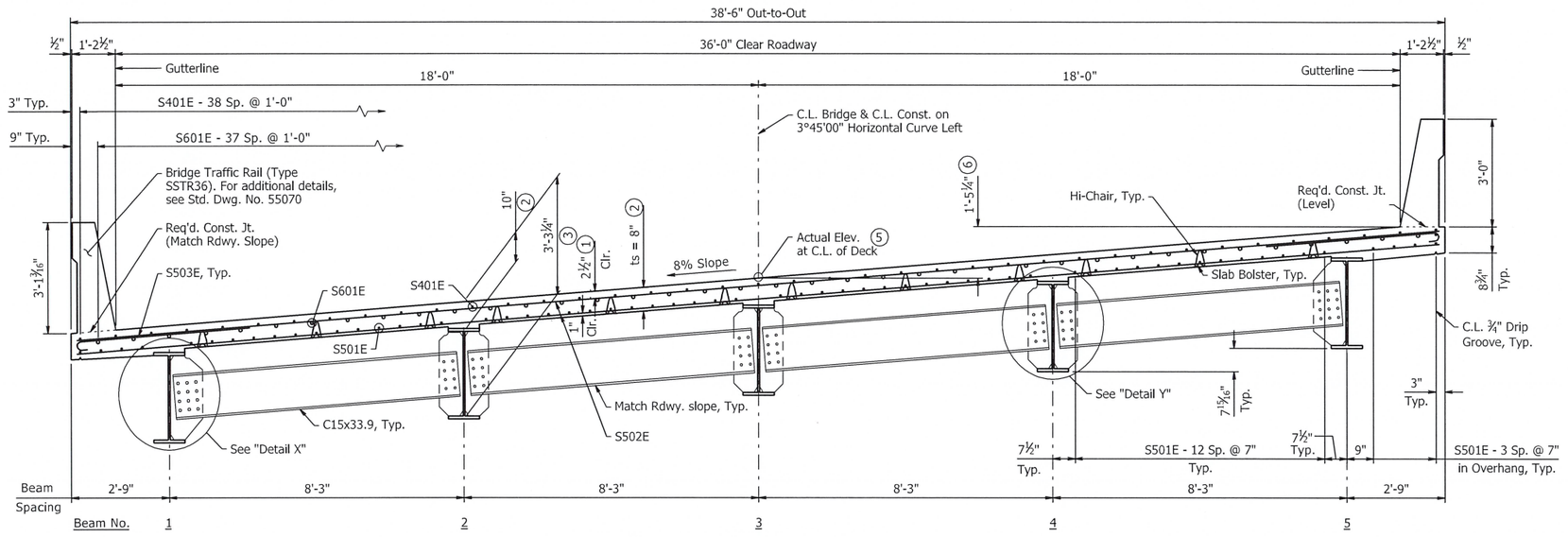
CHECKED BY: CAW DATE: 05-12-21 SCALE: NOT TO SCALE

DESIGNED BY: KRM DATE: 04-14-21

BRIDGE NO. 07553 DRAWING NO. 64173

USER: CTAUSER
DESIGN FILE: G:\I910500l_090579x23\TRANSP\dgn\bridge\b090579_e1.dgn SCALE: 2.0000 ' / In.
PLOTTED: 9/18/2023 2:17:17 PM

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.		090579	69	99
				(1) 07553		SPAN DETAILS		64174



TYPICAL ROADWAY SECTION

(Looking Ahead)
Scale: ½" = 1'-0"

Slab Reinforcing:
Longitudinal: S401E in Top (placed as shown)
S501E in Bottom (placed as shown)
S601E placed as shown in top over interior supports
(See Reinf. Plan and Pouring Sequence on Dwg. No. 64178)

Transverse: S502E @ 6" o.c. in Top and Bottom
S503E @ 6" o.c. in top, in overhangs

NOTES:

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 ARDOT Std. Dwg. No. 55005 for allowable modifications and for tolerances when permanent steel bridge deck forms are used.

See. Std. Dwg. No. 55007 for additional information.

Class 2 Protective Surface Treatment shall be applied to the roadway surface and roadway face and top of rail.

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

(1) Tolerances: 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

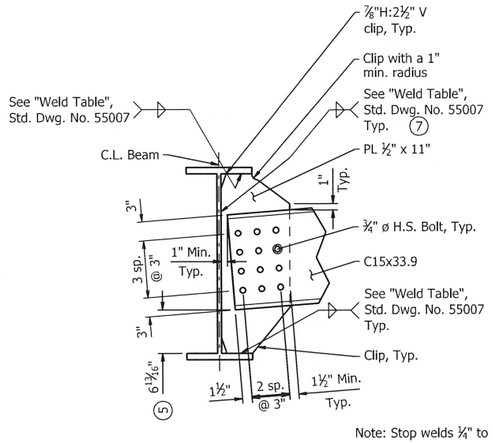
(3) Measured at C.L. Bearing and C.L. Beam, Typ.

(4) If permanent steel bridge deck forms are used, the Fabricator shall clip plate as necessary to accommodate the deck form supports.

(5) See "CROSS SLOPE TRANSITION SKETCH" on Dwg. No. 64166.

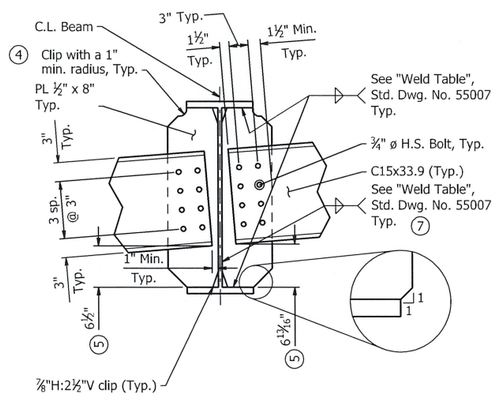
(6) Measured from C.L. Deck to Gutterline

(7) For web weld details at skewed bearing lines, see "CONNECTION DETAIL FOR SKEWED BEARING LINE DIAPHRAGMS".



DETAIL X

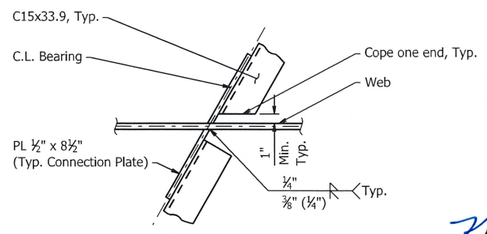
Scale: 1" = 1'-0"



Note: Stop welds ¼" to 1" from end of clip (Typ.)

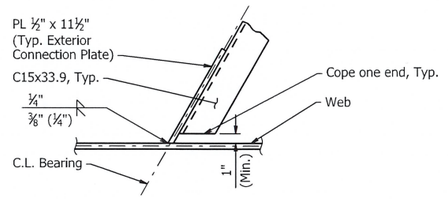
DETAIL Y

Scale: 1" = 1'-0"



CONNECTION DETAIL FOR SKEWED BEARING LINE DIAPHRAGMS

(Beams 2-4)
Scale: 1½" = 1'-0"



CONNECTION DETAIL FOR SKEWED BEARING LINE DIAPHRAGMS

(Beams 1 & 5)
Scale: 1½" = 1'-0"

STATE OF ARKANSAS
Kenneth R. Miller
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

SHEET 1 OF 6

DETAILS OF 135'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

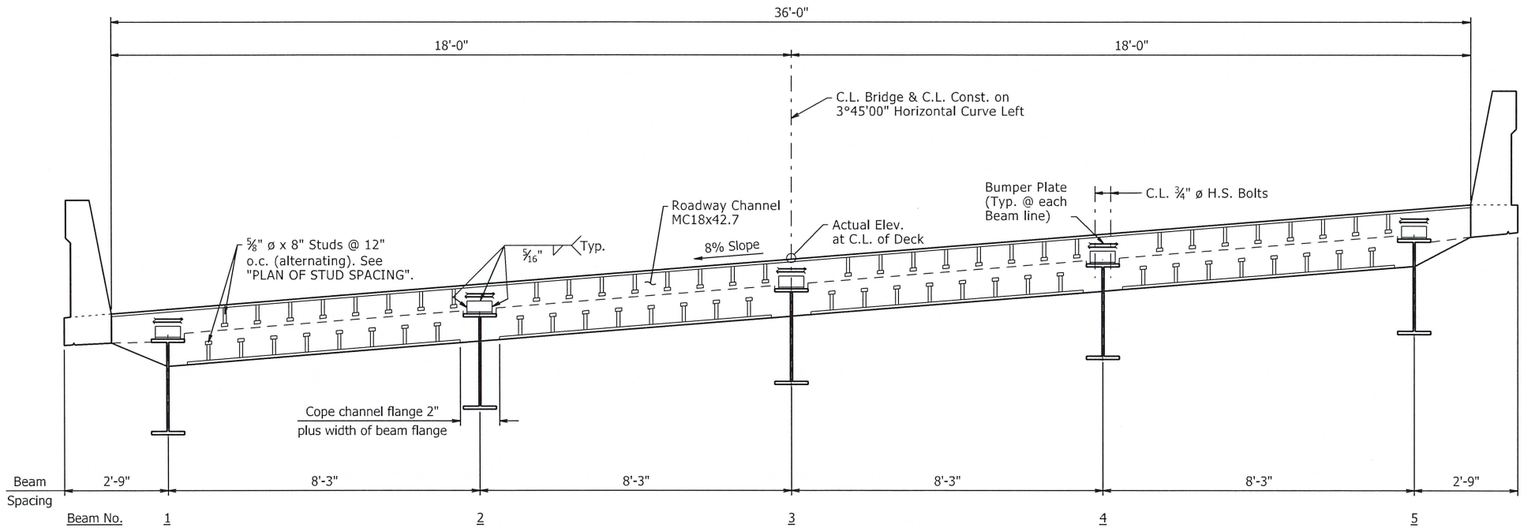
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-21-20 FILENAME: b090579_s1.dgn
CHECKED BY: CAW DATE: 04-22-20 SCALE: SEE DETAILS
DESIGNED BY: KRM DATE: 04-21-20

BRIDGE NO. 07553 DRAWING NO. 64174

USER: CTAUSER
DESIGN FILE: G:\I9I0500I_090579x23\TRANSP\dgn\bridge\b090579_s1.dgn SCALE: 4.0000 ' / In.
PLOTTED: 9/18/2023 2:17:18 PM

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.		090579	70	99
				(1) 07553		SPAN DETAILS		64175



SECTION THROUGH JOINT

(Looking Ahead at Bent 4, Bent 1 similar)
Scale: ½" = 1'-0"

Note: Dimensions are perpendicular to C.L. of Bridge

Expansion Device:

Roadway Channel - MC18x42.7
Connection L's - 8"x4"x½"
Detail Device ⅛" high & provide ¼" shims using 2 - 1/16" & 1 - ⅛" Plates

Notes:

For Roadway Channel Connection details and Silicone Joint details, See Dwg. No. 55008.

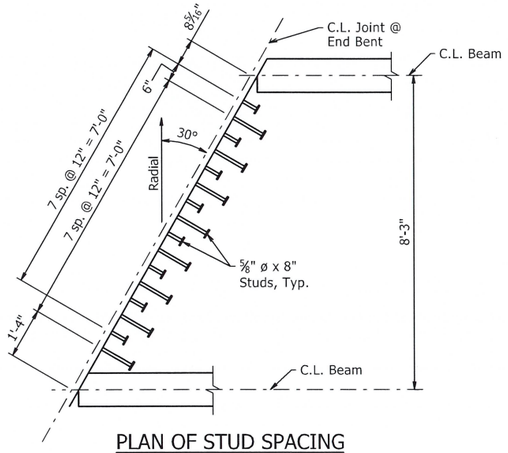
TABLE OF SILICONE JOINT DATA

"A" Width Perpendicular to Joint at 24 Hour Average Temperature (1)			"B" Perpendicular to Joint @ 60°F	Bumper Plate Size
40°F	60°F	80°F		
1 3/16"	1½"	1 1/16"	2"	¾" X 1"

(1) The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the Bolts are tightened. The Engineer shall establish the temperature.

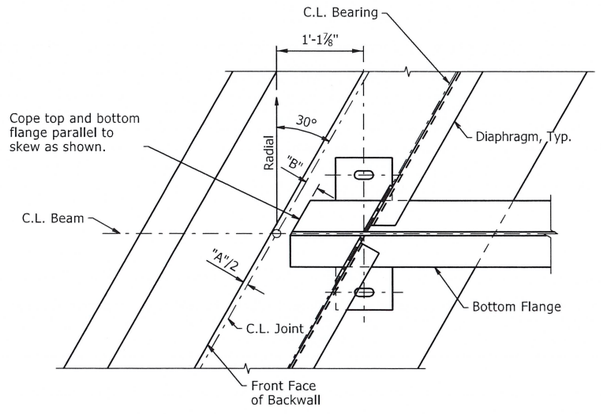
Installation is limited to 40°F, min. and 80°F, Max. interpolation of the table may be necessary.

For additional Poured Silicone Joint Details, see Std. Dwg. No. 55008.



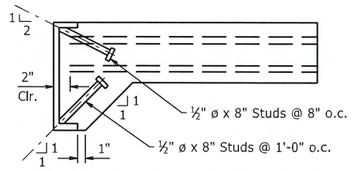
PLAN OF STUD SPACING

No Scale



BEARING PLAN AT END BENT

Scale: 1" = 1'-0"



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.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT

No Scale

STATE OF ARKANSAS
Kenneth R. Miller
LICENSED PROFESSIONAL ENGINEER
No. 16720
9/18/2023
KENNETH RANDALL MILLER

SHEET 2 OF 6

DETAILS OF 135'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BWC DATE: 04-30-21 FILENAME: b090579_s2.dgn
CHECKED BY: CAW DATE: 05-12-21 SCALE: SEE DETAILS
DESIGNED BY: KRM DATE: 04-14-21

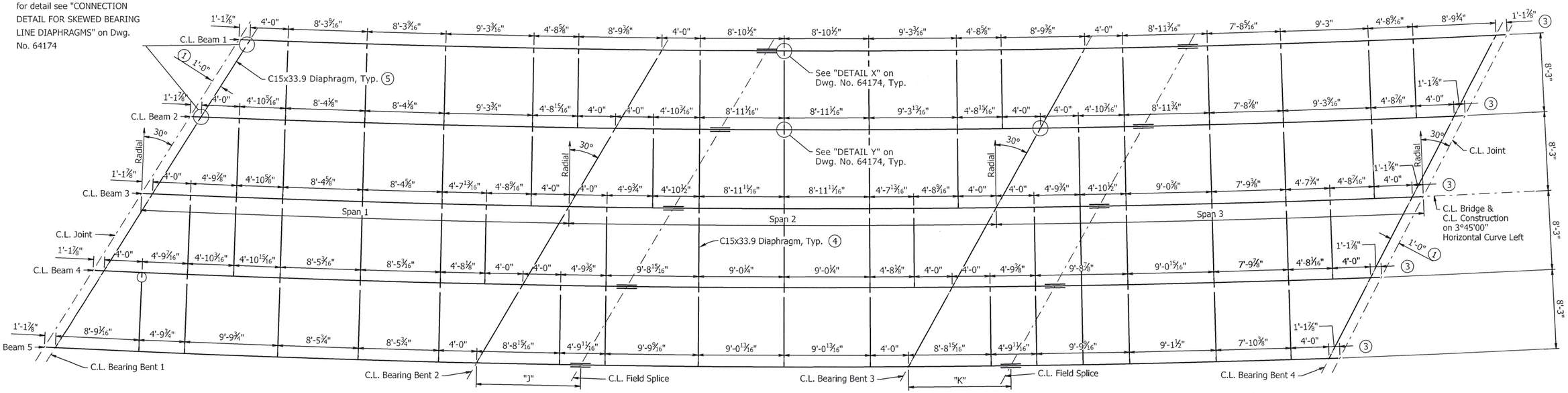
BRIDGE NO. 07553 DRAWING NO. 64175

USER: CTAUSER
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\bridge\b090579_s2.dgn
PLOTTED: 9/18/2023 2:17:19 PM SCALE: 4.0000 ' / in.

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.		090579	71	99
				(1) 07553		SPAN DETAILS		64176

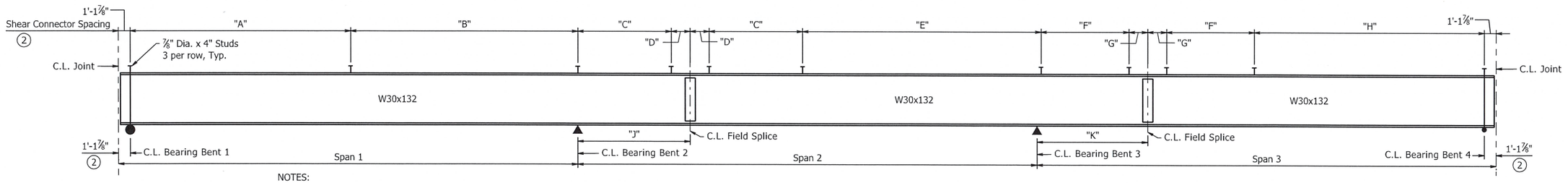
TABLE OF VARIABLES

BEAM	SPAN 1 (2)	SPAN 2 (2)	SPAN 3 (2)	"A"	"A" Stud Spacing	"B"	"B" Stud Spacing	"C"	"C" Stud Spacing	"D"	"E"	"E" Stud Spacing	"F"	"F" Stud Spacing	"G"	"H"	"H" Stud Spacing	"J"	"K"
1	44'-6 3/16"	44'-6 3/16"	44'-6 3/16"	21'-4"	24 Eq. Sp.	22'-0 5/16"	28 Eq. Sp.	9'-2 3/8"	16 Eq. Sp.	1'-10 5/16"	22'-9 1/2"	35 Eq. Sp.	8'-7 5/8"	14 Eq. Sp.	1'-10 5/16"	21'-11 5/8"	24 Eq. Sp.	11'-0 1/16"	10'-10 11/16"
2	44'-9 1/8"	44'-9 1/16"	44'-9 5/8"	21'-5 1/2"	23 Eq. Sp.	22'-1 3/4"	17 Eq. Sp.	9'-2 5/8"	11 Eq. Sp.	1'-10 5/16"	23'-0 15/16"	27 Eq. Sp.	8'-7 3/8"	8 Eq. Sp.	1'-10 1/4"	22'-3 1/16"	26 Eq. Sp.	11'-0 7/16"	10'-10 7/16"
3	45'-0"	45'-0"	45'-0"	21'-7"	22 Eq. Sp.	22'-3 1/16"	27 Eq. Sp.	9'-1 15/16"	9 Eq. Sp.	1'-10 1/4"	23'-4 9/16"	30 Eq. Sp.	8'-7 1/4"	8 Eq. Sp.	1'-10 1/4"	22'-6 1/2"	25 Eq. Sp.	11'-0 9/16"	10'-10 3/16"
4	45'-2 15/16"	45'-2 15/16"	45'-2 15/16"	21'-8 1/2"	21 Eq. Sp.	22'-4 7/8"	17 Eq. Sp.	9'-1 3/4"	10 Eq. Sp.	1'-10 3/16"	23'-7 3/4"	22 Eq. Sp.	8'-7 1/16"	9 Eq. Sp.	1'-10 3/16"	22'-9 7/8"	21 Eq. Sp.	10'-11 15/16"	10'-9 15/16"
5	45'-5 7/8"	45'-5 13/16"	45'-5 7/8"	21'-10"	21 Eq. Sp.	22'-6 1/16"	30 Eq. Sp.	9'-1 7/16"	9 Eq. Sp.	1'-10 3/16"	23'-11 1/8"	36 Eq. Sp.	8'-6 13/16"	8 Eq. Sp.	1'-10 1/8"	23'-1 5/16"	25 Eq. Sp.	10'-11 3/4"	10'-9 3/4"



FRAMING PLAN

Scale: 3/16" = 1'-0"



BEAM ELEVATION

No Scale

NOTES:

Beams are curved and concentric to CL Bridge and C.L. Construction.

All Structural Steel shall be ASTM A709, Gr. 50W unless otherwise noted, and shall be paid for as "Structural Steel in Beam spans (A709, Gr. 50W)."

For additional information, see Layout.

For General Notes, see Std. Dwg. No. 55006

For additional details, see Std. Dwg. No. 55007.

For Details of Field Splice, see Dwg. No. 64177.

(1) Measured perpendicular to C.L. Joint.

(2) Measured along C.L. Beam.

(3) Diaphragm spacing along C.L. Beam.

(4) Intermediate diaphragms are parallel to radial lines perpendicular to C.L. Bearings.

(5) End diaphragms along C.L. Bearing are parallel to skew.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

SHEET 3 OF 6

DETAILS OF 135'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY:	BWC	DATE:	04-30-21	FILENAME:	b090579_s3.dgn
CHECKED BY:	CAW	DATE:	05-12-21	SCALE:	SEE DETAILS
DESIGNED BY:	KRM	DATE:	4-14-21		

BRIDGE NO. 07553 DRAWING NO. 64176

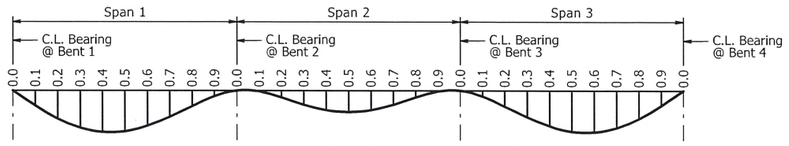
USER: CTAUSER
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\bridge\b090579_s3.dgn
PLOTTED: 9/18/2023 2:17:20 PM SCALE: 10.6667 ' / In.

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.		090579	72	99
				(I) 07553		SPAN DETAILS		64177

TABLE OF DEAD LOAD DEFLECTIONS - INCHES

SPAN	Point of Deflection	Beam 1			Beam 2			Beam 3			Beam 4			Beam 5		
		Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Bridge Rail	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Bridge Rail	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Bridge Rail	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Bridge Rail	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Bridge Rail
1	0.0	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
	0.1	0.023	0.094	0.101	0.025	0.113	0.121	0.026	0.115	0.123	0.026	0.116	0.124	0.027	0.116	0.125
	0.2	0.041	0.168	0.183	0.046	0.207	0.221	0.049	0.213	0.228	0.049	0.215	0.230	0.048	0.210	0.227
	0.3	0.054	0.222	0.241	0.060	0.268	0.288	0.064	0.280	0.300	0.065	0.285	0.306	0.063	0.274	0.297
	0.4	0.059	0.245	0.266	0.067	0.300	0.321	0.071	0.310	0.332	0.073	0.319	0.343	0.070	0.304	0.329
	0.5	0.059	0.242	0.264	0.066	0.294	0.315	0.070	0.307	0.329	0.071	0.313	0.335	0.069	0.298	0.322
	0.6	0.051	0.212	0.230	0.057	0.256	0.275	0.061	0.267	0.286	0.063	0.275	0.296	0.059	0.258	0.280
	0.7	0.039	0.161	0.176	0.043	0.194	0.209	0.047	0.204	0.219	0.048	0.210	0.226	0.045	0.197	0.214
	0.8	0.024	0.100	0.109	0.027	0.121	0.130	0.029	0.126	0.136	0.030	0.131	0.141	0.028	0.120	0.131
	0.9	0.010	0.041	0.045	0.011	0.050	0.054	0.012	0.052	0.057	0.012	0.054	0.059	0.012	0.051	0.055
2	0.0	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
	0.1	0.001	0.005	0.007	0.001	0.006	0.008	0.001	0.005	0.007	0.001	0.005	0.007	0.001	0.003	0.005
	0.2	0.006	0.024	0.029	0.006	0.029	0.034	0.006	0.029	0.034	0.006	0.029	0.034	0.006	0.025	0.030
	0.3	0.012	0.048	0.056	0.013	0.058	0.066	0.013	0.058	0.066	0.013	0.059	0.067	0.012	0.053	0.062
	0.4	0.016	0.064	0.074	0.018	0.080	0.090	0.017	0.079	0.089	0.018	0.082	0.092	0.017	0.075	0.085
	0.5	0.017	0.071	0.082	0.019	0.088	0.099	0.019	0.089	0.100	0.019	0.090	0.101	0.019	0.083	0.094
	0.6	0.015	0.064	0.074	0.017	0.079	0.090	0.017	0.079	0.089	0.018	0.082	0.092	0.017	0.074	0.085
	0.7	0.011	0.045	0.053	0.012	0.057	0.065	0.013	0.058	0.066	0.013	0.059	0.067	0.013	0.055	0.063
	0.8	0.005	0.021	0.026	0.006	0.028	0.033	0.006	0.029	0.034	0.006	0.029	0.034	0.006	0.027	0.033
	0.9	0.000	0.002	0.003	0.001	0.005	0.007	0.001	0.005	0.007	0.001	0.006	0.007	0.001	0.005	0.007
3	0.0	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
	0.1	0.011	0.045	0.049	0.012	0.040	0.056	0.012	0.053	0.057	0.012	0.053	0.058	0.011	0.048	0.053
	0.2	0.025	0.104	0.114	0.028	0.095	0.134	0.029	0.127	0.136	0.029	0.129	0.138	0.027	0.118	0.128
	0.3	0.042	0.171	0.186	0.045	0.153	0.216	0.046	0.205	0.220	0.046	0.207	0.223	0.044	0.191	0.208
	0.4	0.054	0.224	0.243	0.059	0.202	0.284	0.060	0.267	0.287	0.061	0.273	0.293	0.057	0.251	0.272
	0.5	0.063	0.258	0.280	0.067	0.230	0.323	0.070	0.309	0.331	0.070	0.313	0.336	0.066	0.288	0.312
	0.6	0.064	0.263	0.286	0.069	0.236	0.331	0.070	0.313	0.335	0.071	0.319	0.342	0.066	0.291	0.315
	0.7	0.058	0.238	0.258	0.062	0.213	0.299	0.064	0.284	0.304	0.064	0.286	0.306	0.060	0.264	0.286
	0.8	0.044	0.182	0.197	0.048	0.163	0.228	0.049	0.217	0.232	0.050	0.221	0.236	0.045	0.200	0.216
	0.9	0.024	0.100	0.108	0.026	0.089	0.125	0.027	0.119	0.127	0.027	0.121	0.129	0.025	0.111	0.120
	0.0	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

Note:
Camber for Dead Load Deflection ±1/4 inch tolerance. Deflections shown are along centerline of beam/girder from the plane perpendicular to the web extending from C. L. Bearing to C.L. Bearing. Negative sign (-) indicates point above plane. Vertical curve corrections not included. Superelevation transition corrections not included.



DEAD LOAD DEFLECTION DIAGRAM
No Scale

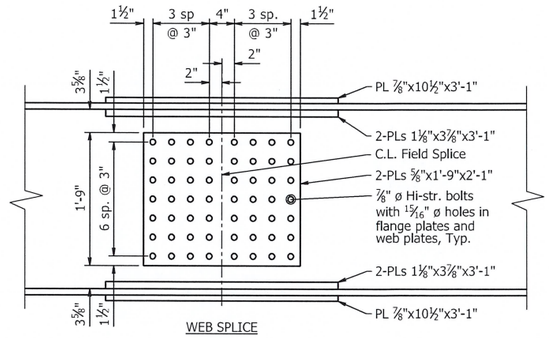
NOTES:

Beams are curved and concentric to C.L. Bridge.

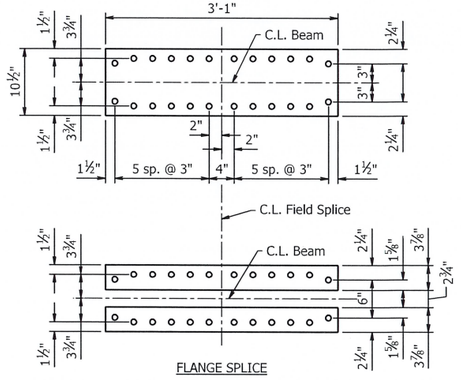
All Structural Steel shall be ASTM A709, Gr. 50W unless otherwise noted, and shall be paid for as "Structural Steel in Beam spans (A709, Gr. 50W)."

For additional information, see Dwg. No. 64176.

See Std. Dwg. No. 55006 for General Notes.



WEB SPLICE



FLANGE SPLICE

DETAILS OF FIELD SPLICE
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

SHEET 4 OF 6

DETAILS OF 135'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

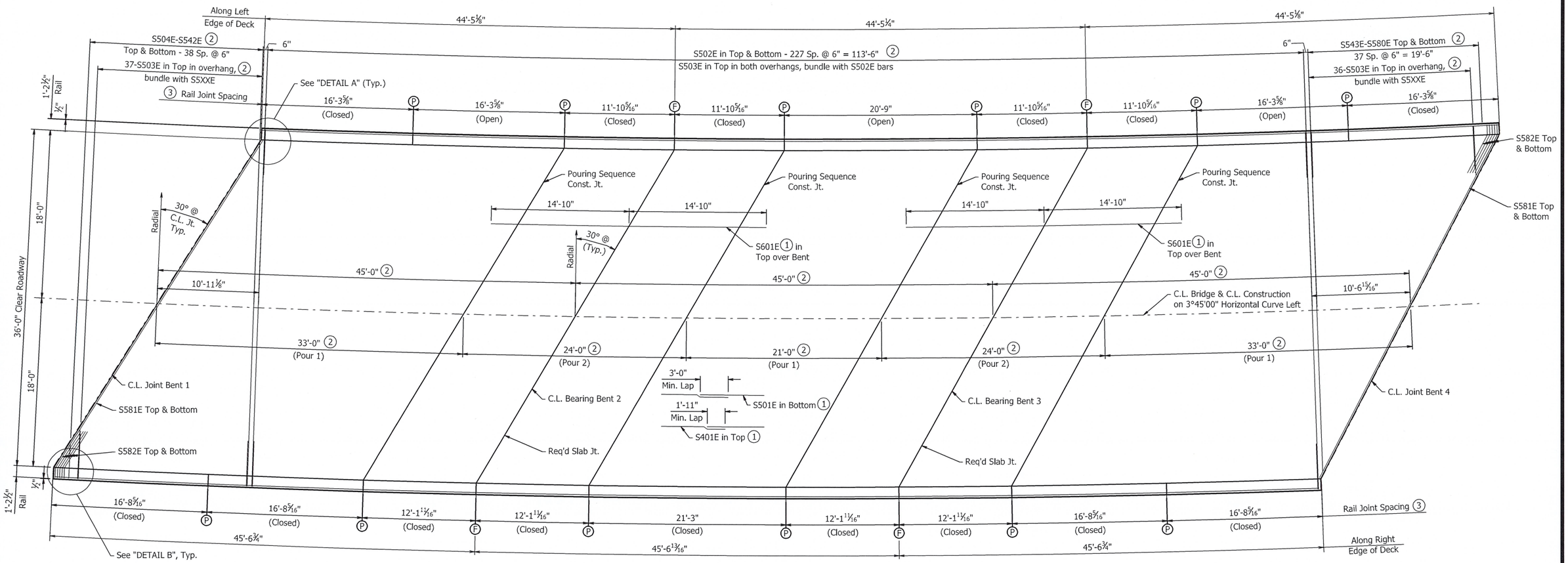
DRAWN BY:	BWC	DATE:	04-30-21	FILENAME:	b090579_s4.dgn
CHECKED BY:	CAW	DATE:	05-12-21	SCALE:	NOT TO SCALE
DESIGNED BY:	KRM	DATE:	04-14-21		

BRIDGE NO. 07553 DRAWING NO. 64177

USER: CTAUSER
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\bridge\b090579_s4.dgn
PLOTTED: 9/18/2023 2:17:21 PM SCALE: 2.0000 ' / In.

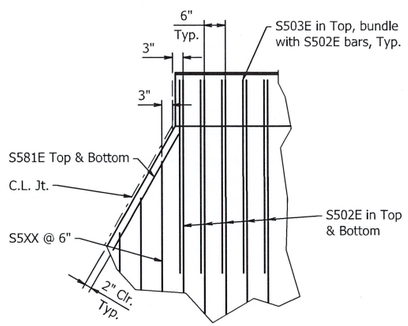
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		090579	73	99
I 07553		SPAN DETAILS		64178



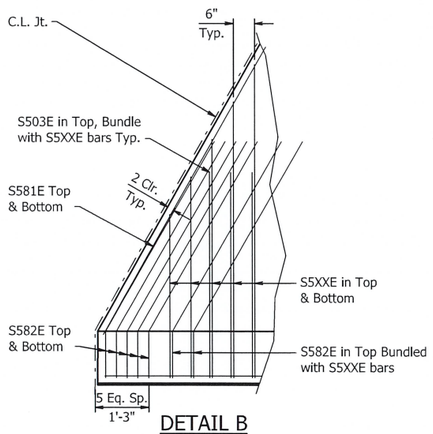
REINFORCING PLAN AND POURING SEQUENCE

Scale: ³⁄16" = 1'-0"



DETAIL A

Scale: ½" = 1'-0"



DETAIL B

Scale: ½" = 1'-0"

NOTES:

C.L. Bridge is on a 3°45'00" curve to the left. All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Bridge. All transverse reinforcing steel shall be placed on radial lines and shall be measured along C.L. Bridge.

For rail reinforcing details, see Std. Dwg. No. 55070 and Dwg. No. 64179.

Required slab joints and pouring sequence joints shall align with rail joints at the gutterline.

For "Transverse Slab Joint Detail", see Std. Dwg. No. 55007.

(P) Partial depth rail joint at this location.

(F) Full depth rail joint at this location.

(1) Place as shown in "TYPICAL ROADWAY SECTION", see Dwg. No. 64174.

(2) Measured along C.L. Bridge.

(3) Measured along Gutter Line.

Pouring Sequence Notes:

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

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing 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.

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.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

SHEET 5 OF 6

DETAILS OF 135'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY:	BWC	DATE:	04-30-21	FILENAME:	b090579_s5.dgn
CHECKED BY:	CAW	DATE:	05-12-21	SCALE:	SEE DETAILS
DESIGNED BY:	KRM	DATE:	04-14-21		

BRIDGE NO. 07553 DRAWING NO. 64178

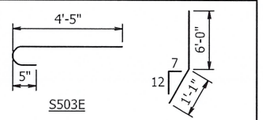
USER: CTAUSER
DESIGN FILE: G:\9I0500I_090579x23\TRANSP\dgn\bridge\b090579_s5.dgn
PLOTTED: 9/18/2023 2:17:22 PM SCALE: I0.6667 / / In.

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.		090579	74	99
(1) 07553		SPAN DETAILS		64179

BAR LIST

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams
R400E	24	5'-3"	2½"	
R401E	525	5'-11"	2½"	
R402E	48	5'-6"	Str.	
R403E	543	3'-6"	3¾"	
R404E	32	11'-6"	Str.	
R405E	32	11'-9"	Str.	
R406E	16	15'-11"	Str.	
R407E	32	16'-4"	Str.	
R408E	8	20'-11"	Str.	
R409E	16	15'-11"	Str.	
R410E	8	20'-5"	Str.	
S401E	156	35'-6"	Str.	
S501E	180	47'-5"	Str.	
S502E	456	38'-2"	Str.	
S503E	529	5'-0"	3¾"	
S504E to S542E	2 ea.	VAR. 36'-3" TO 3'-7"	Str.	
S543E to S580E	2 ea.	VAR. 36'-3" TO 3'-8"	Str.	
S581E	4	41'-7"	Str.	
S582E	24	7'-1"	3¾"	
S601E	76	29'-8"	Str.	



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

TABLE OF VARIABLES

Closed Rail Panels			Open Rail Panels						
Length	A	R4XXE	Panel Length	B	C	D	E	F	R4XXE
11'-10⁹⁄₁₆"	23	R404E	16'-3⅜"	5	8	3'-0"	12	6'-3⅝"	R409E
12'-1¹¹⁄₁₆"	24	R405E	20'-9"	5	8	3'-0"	21	10'-9"	R410E
16'-3⅜"	32	R406E							
16'-8⁵⁄₁₆"	33	R407E							
21'-3"	42	R408E							

Note:
For additional details, see Std. Dwg. No. 55070.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
9/18/2023

SHEET 6 OF 6

DETAILS OF 135'-0" CONTINUOUS W-BEAM UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

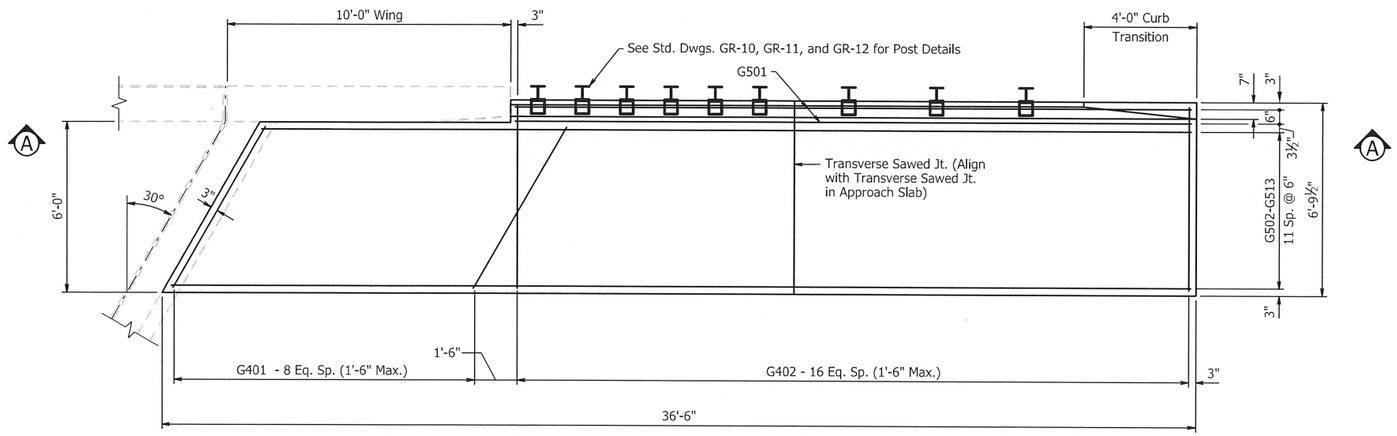
LITTLE ROCK, ARK.

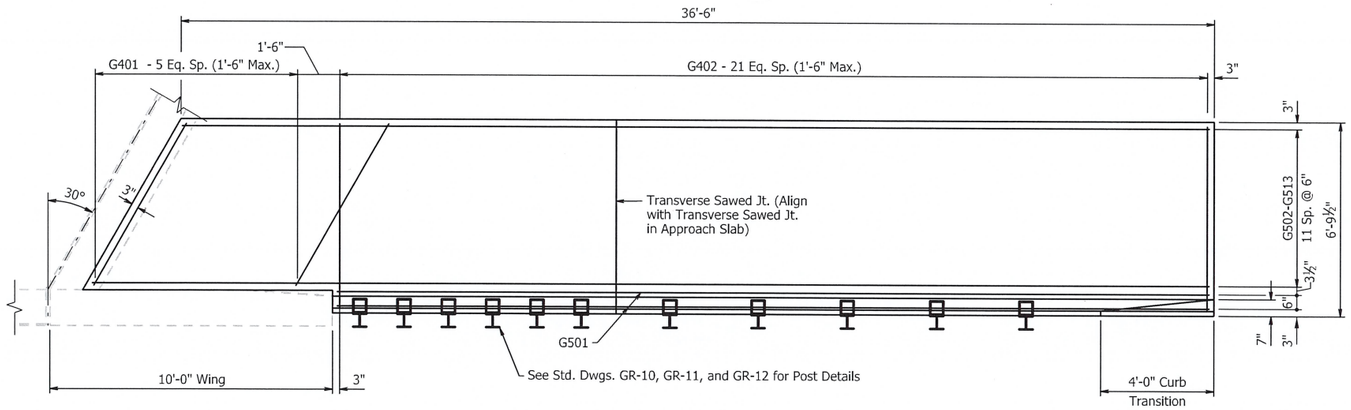
DRAWN BY: BWC DATE: 04-30-21 FILENAME: b090579_s6.dgn
CHECKED BY: CAW DATE: 05-12-21 SCALE: SEE DETAILS
DESIGNED BY: KRM DATE: 04-14-21

BRIDGE NO. 07553 DRAWING NO. 64179

USER: CTAUSER
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\bridge\b090579_s6.dgn
PLOTTED: 9/18/2023 2:17:22 PM SCALE: 10.6667 ' / In.

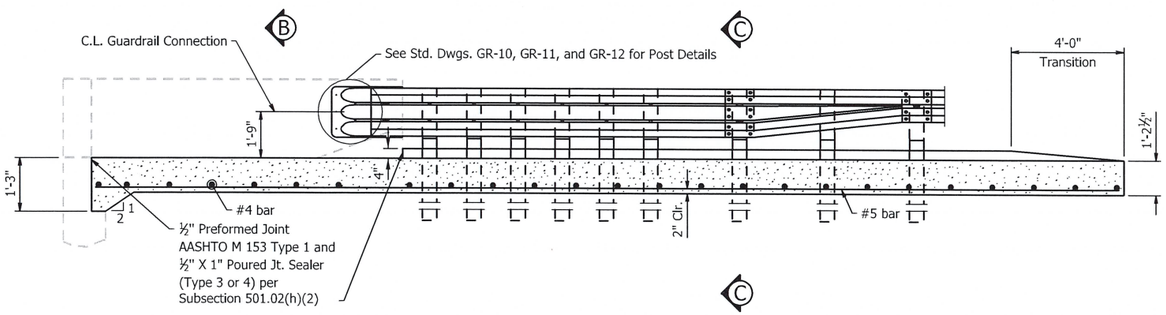
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		090579	75	99
				I 07553		APPROACH GUTTER		64180





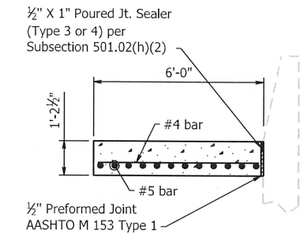
PLAN OF APPROACH GUTTERS

(Bent 4 Shown, Bent 1 Similar)
Scale: ⅜" = 1'-0"



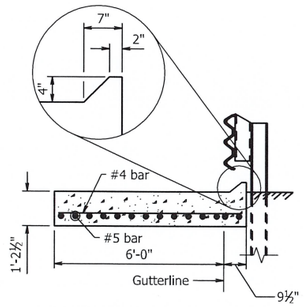
SECTION A-A

No Scale



SECTION B-B

No Scale



SECTION C-C

No Scale

BAR LIST FOR TYPE SPECIAL GUTTERS

	Mark	No. Req'd.	Length
Left Gutter	G401	9	6'-6"
	G402	17	6'-5"
	G501	2	23'-10"
	G502-G513	1 Ea.	Var. 32'-9" to 36'-0"
Right Gutter	G401	6	6'-6"
	G402	22	6'-5"
	G501	2	30'-9"
	G502-G513	1 Ea.	Var. 36'-3" to 39'-5"

QUANTITIES FOR TYPE SPECIAL GUTTERS

(For Information Only)

Location	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
Lt. Gutter	592	10.31
Rt. Gutter	658	11.51

GENERAL NOTES:

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

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

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

Eliminate or modify Approach Gutter curb to fit bridge end terminal. No additional payment will be made for this work.

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 16720
KENNETH RANDALL MILLER
Kenneth R. Miller
9/18/2023

DETAILS FOR TYPE SPECIAL APPROACH GUTTERS

ROUTE SEC.

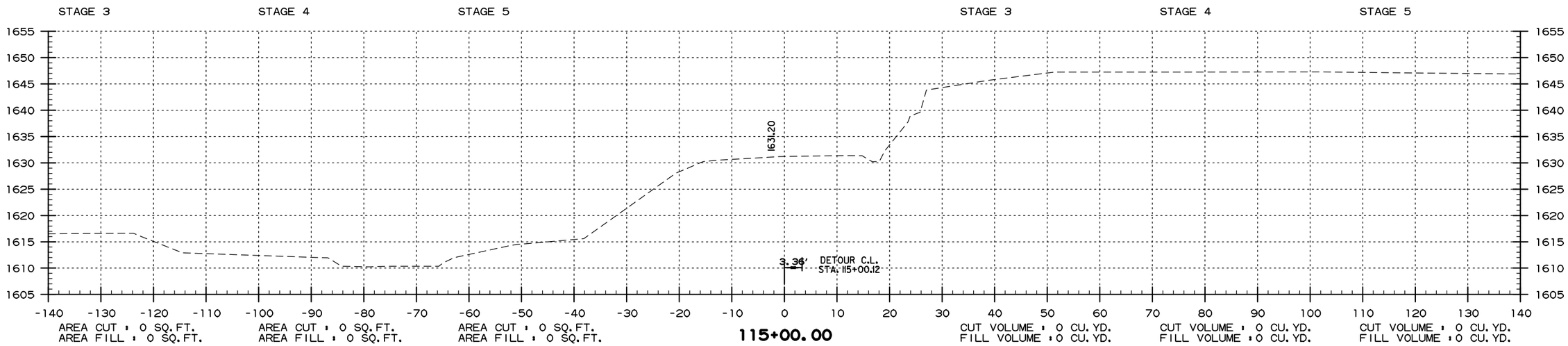
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

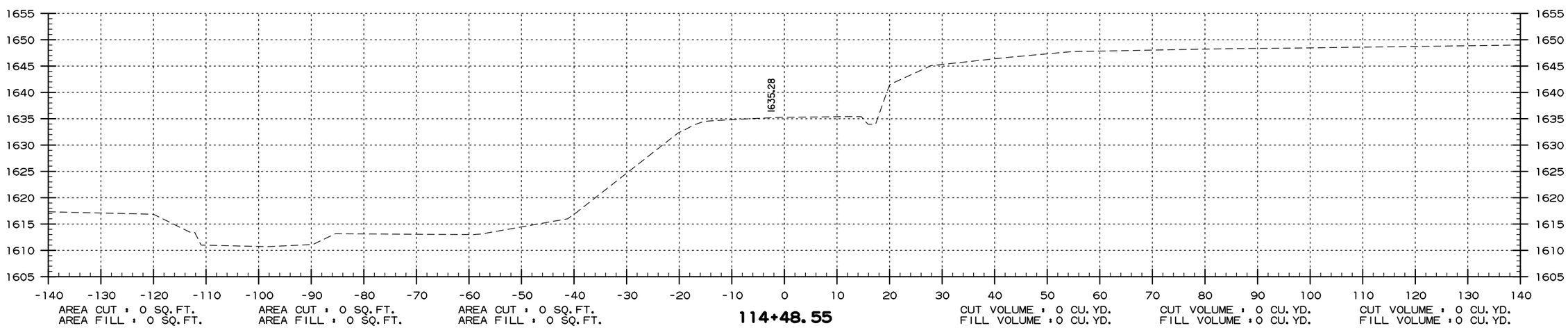
DRAWN BY: CAW DATE: 05-05-21 FILENAME: b090579_gl.dgn
CHECKED BY: KRM DATE: 05-05-21 SCALE: SEE DETAILS
DESIGNED BY: CAW DATE: 05-05-21

BRIDGE NO. 07553 DRAWING NO. 64180

USER: CTAUSER
DESIGN FILE: G:\I9105001_090579x23\TRANSP\dgn\bridge\b090579_gl.dgn SCALE: 5.3333 ' / in.
PLOTTED: 9/18/2023 2:17:23 PM

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	76	99
		CROSS SECTIONS				



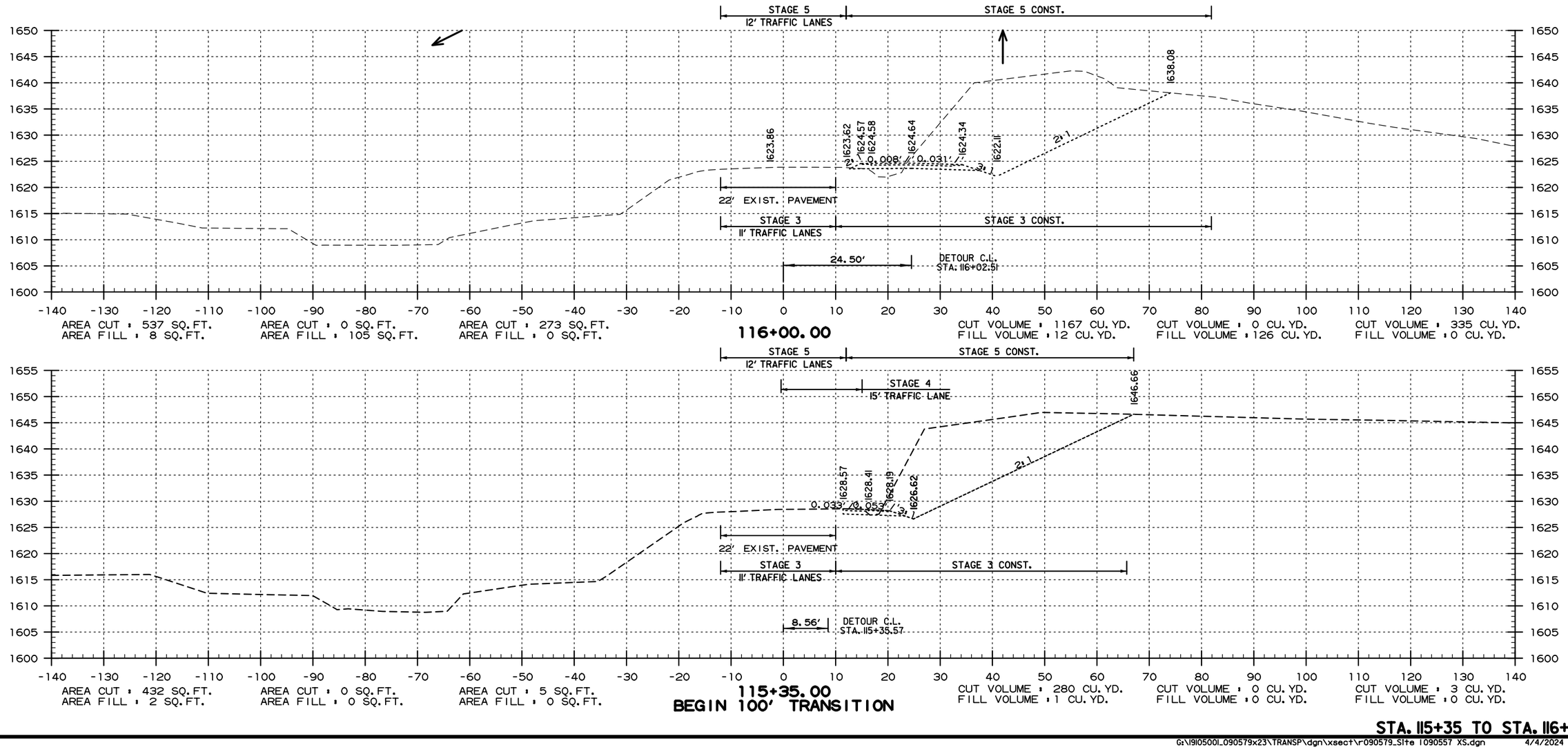


STA. 114+49 TO STA. 115+00

USER: jc5296
DESIGN FILE: G:\1910500I_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: H20

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	77	99
		CROSS SECTIONS				

STAGE 3 STAGE 4 STAGE 5 STAGE 3 STAGE 4 STAGE 5

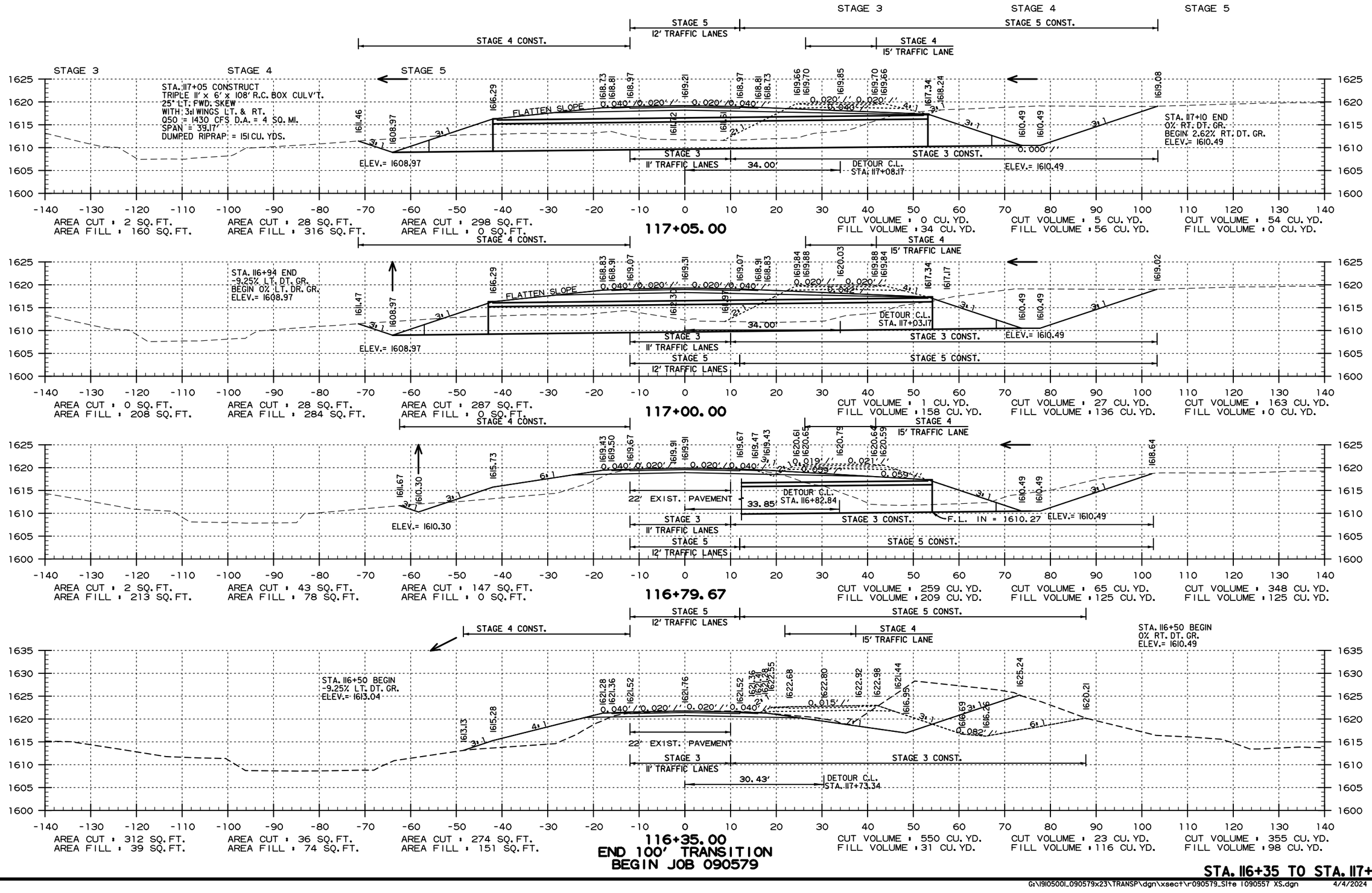


STA. 115+35 TO STA. 116+00

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: 1:20

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn 4/4/2024 10:29

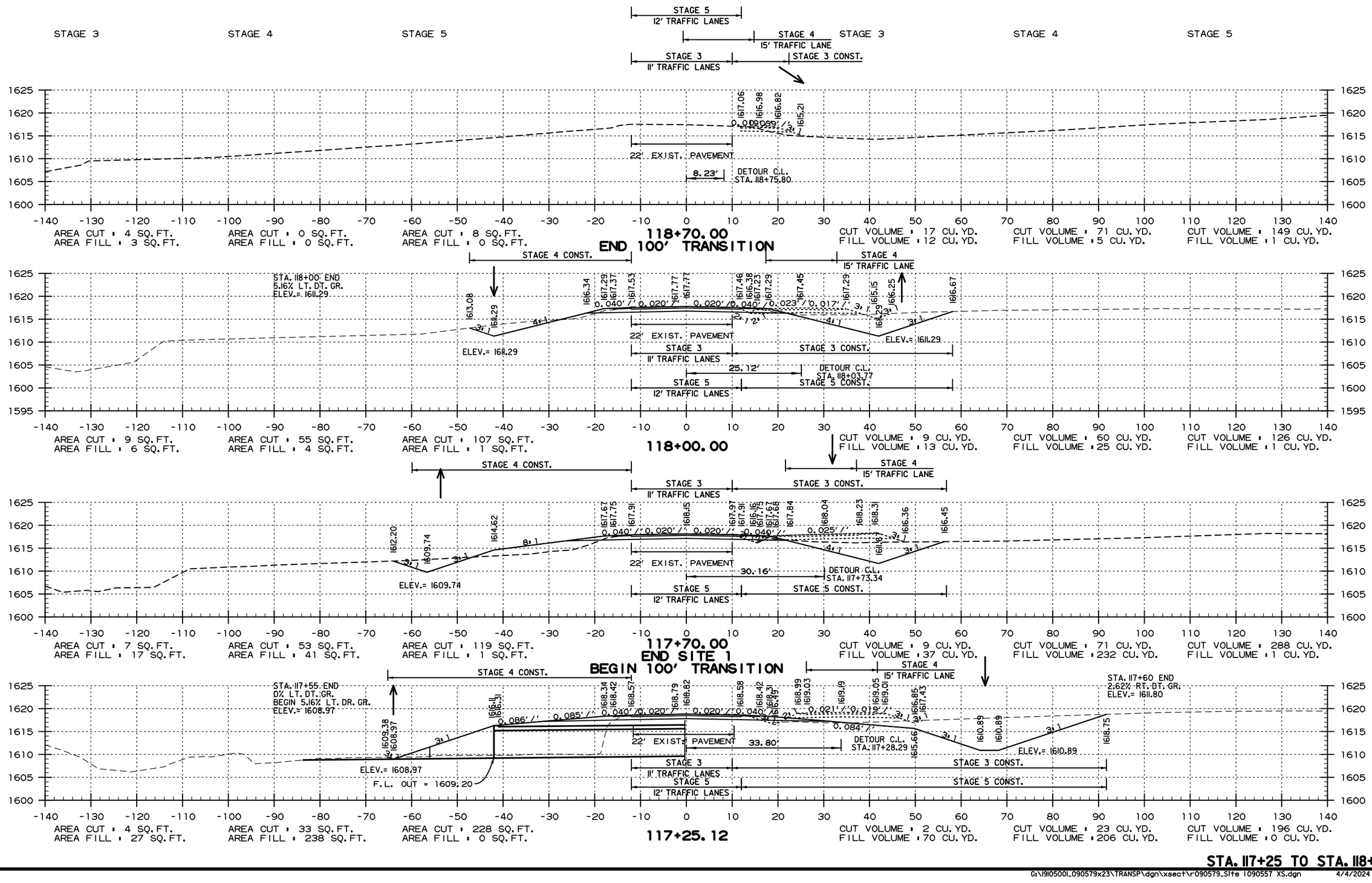
DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	78	99
		CROSS SECTIONS				



USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: h20

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	79	99
		CROSS SECTIONS				

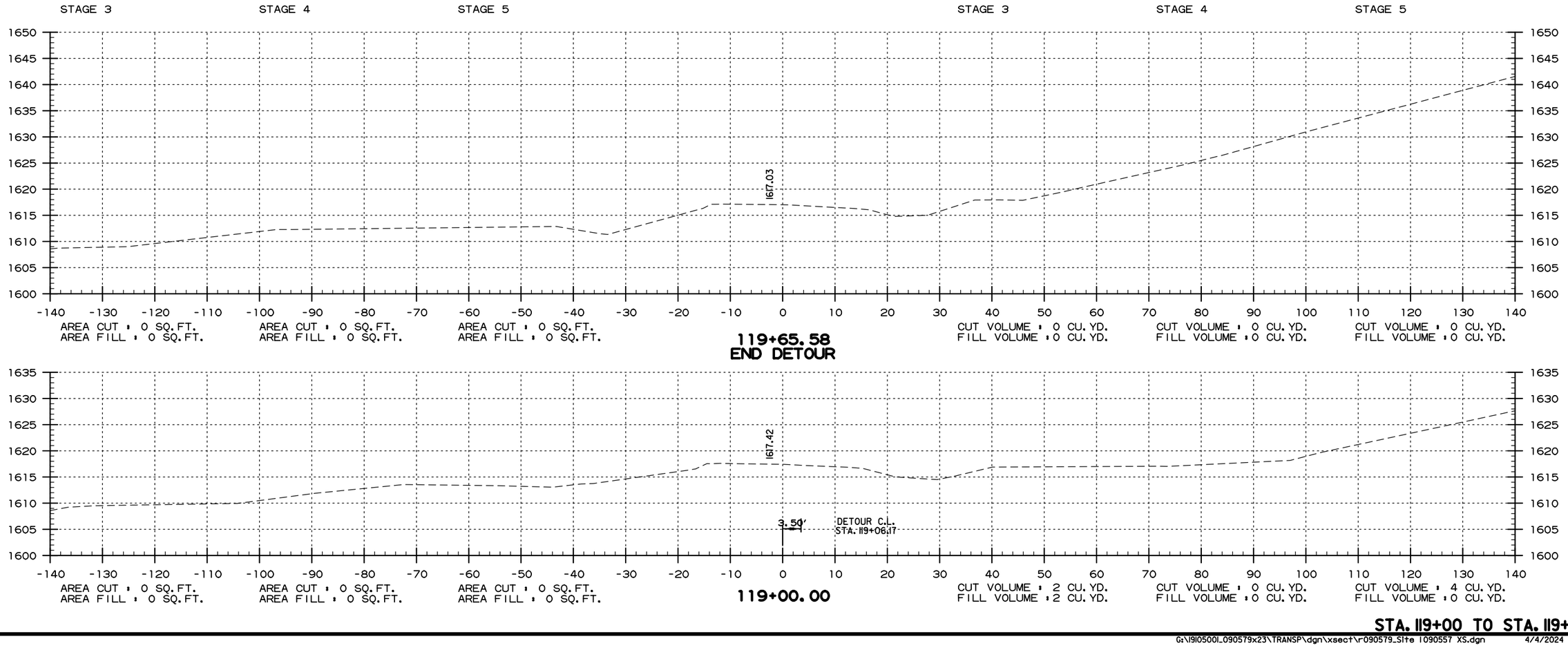


STA. 117+25 TO STA. 118+70

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn
PLOTTED: 4/4/2024 10:29
MODEL: PROPOSED DESIGN
SCALE: H:20

G:\1910500l_090579x23\TRANSP\dgn\xsect\r-090579_Site 1090557 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	80	99
		CROSS SECTIONS				

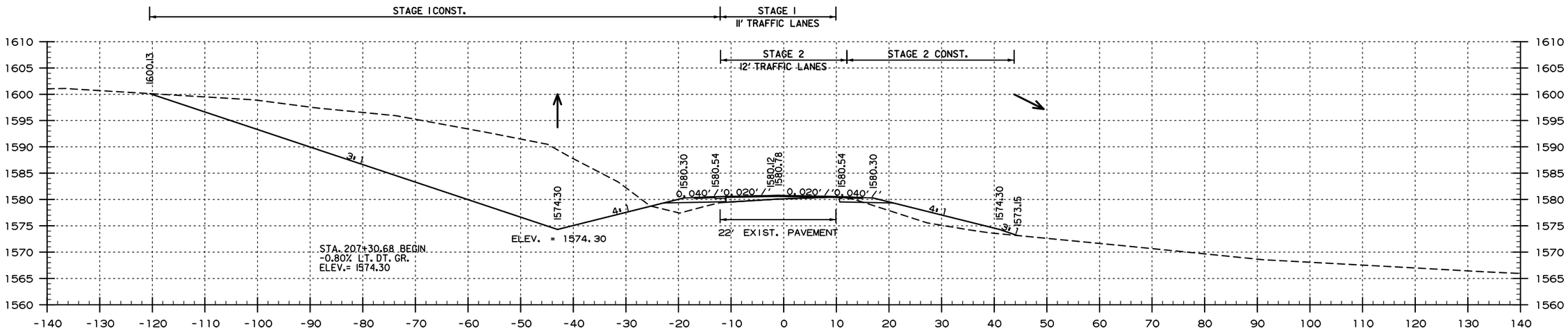


STA. 119+00 TO STA. 119+66

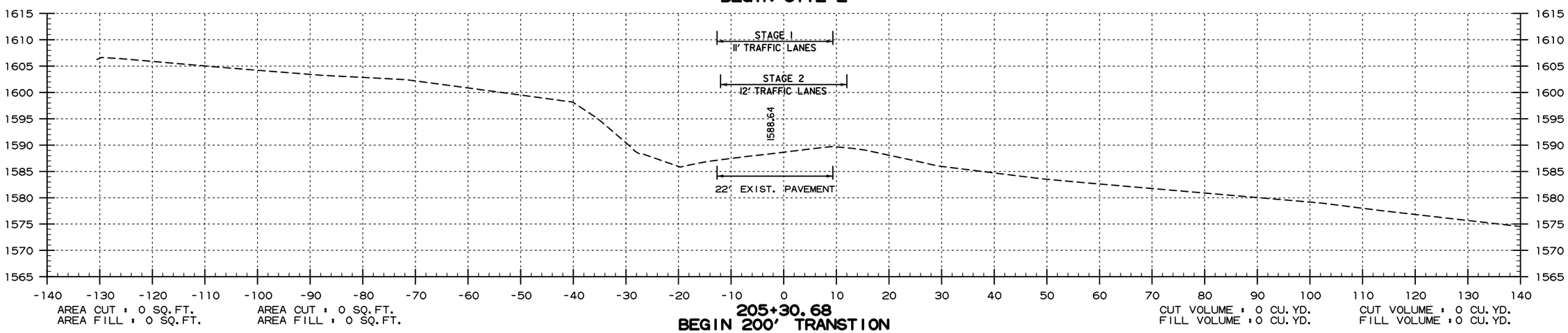
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 1090557 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: h20
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	81	99
		CROSS SECTIONS				

STAGE 1 STAGE 2



207+30.68
END 200' TRANSITION
BEGIN SITE 2



205+30.68
BEGIN 200' TRANSTION

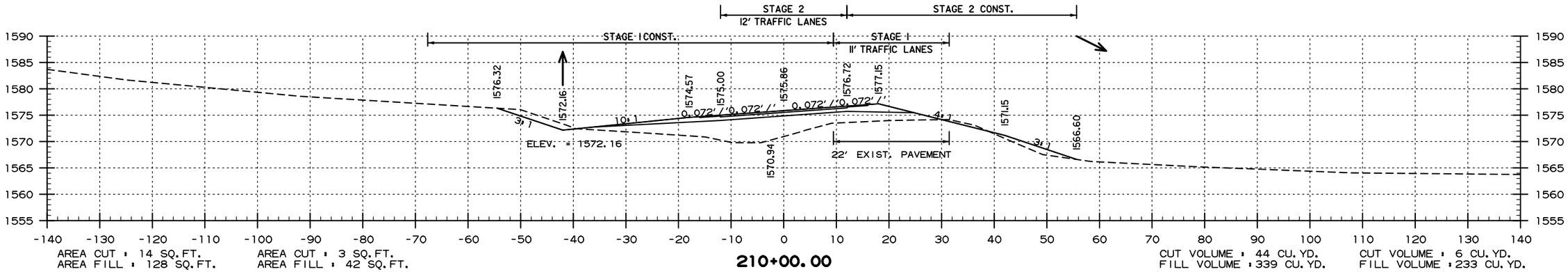
STA. 205+31 TO STA. 207+31

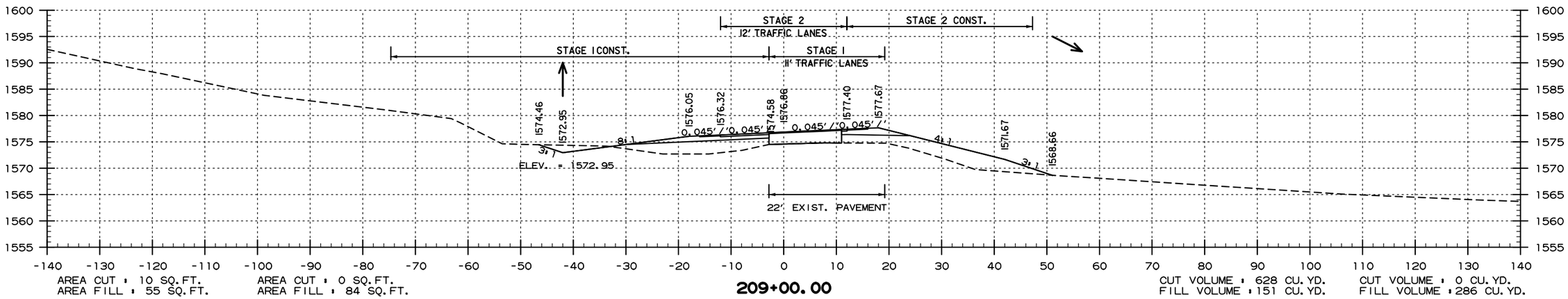
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: 1:20

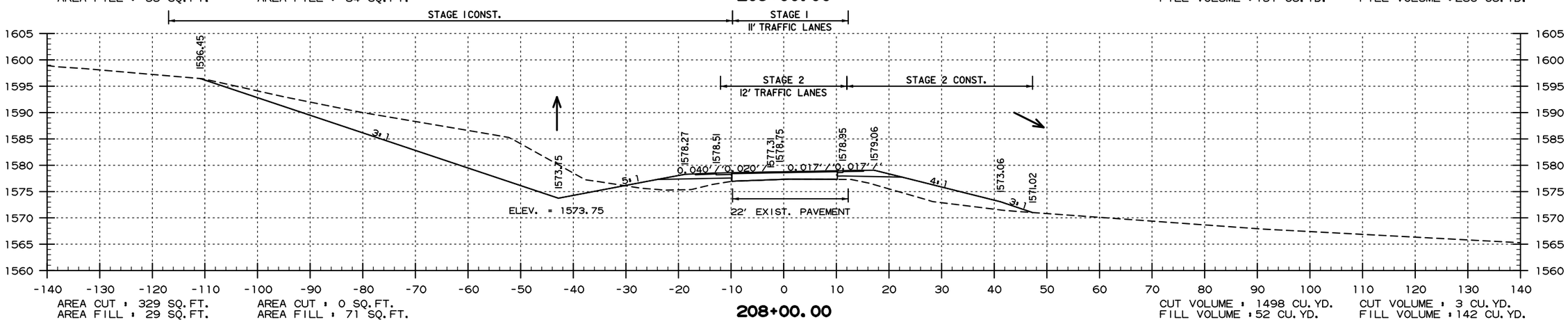
G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	82	99
		CROSS SECTIONS				

STAGE 1 STAGE 2 STAGE 1 STAGE 2





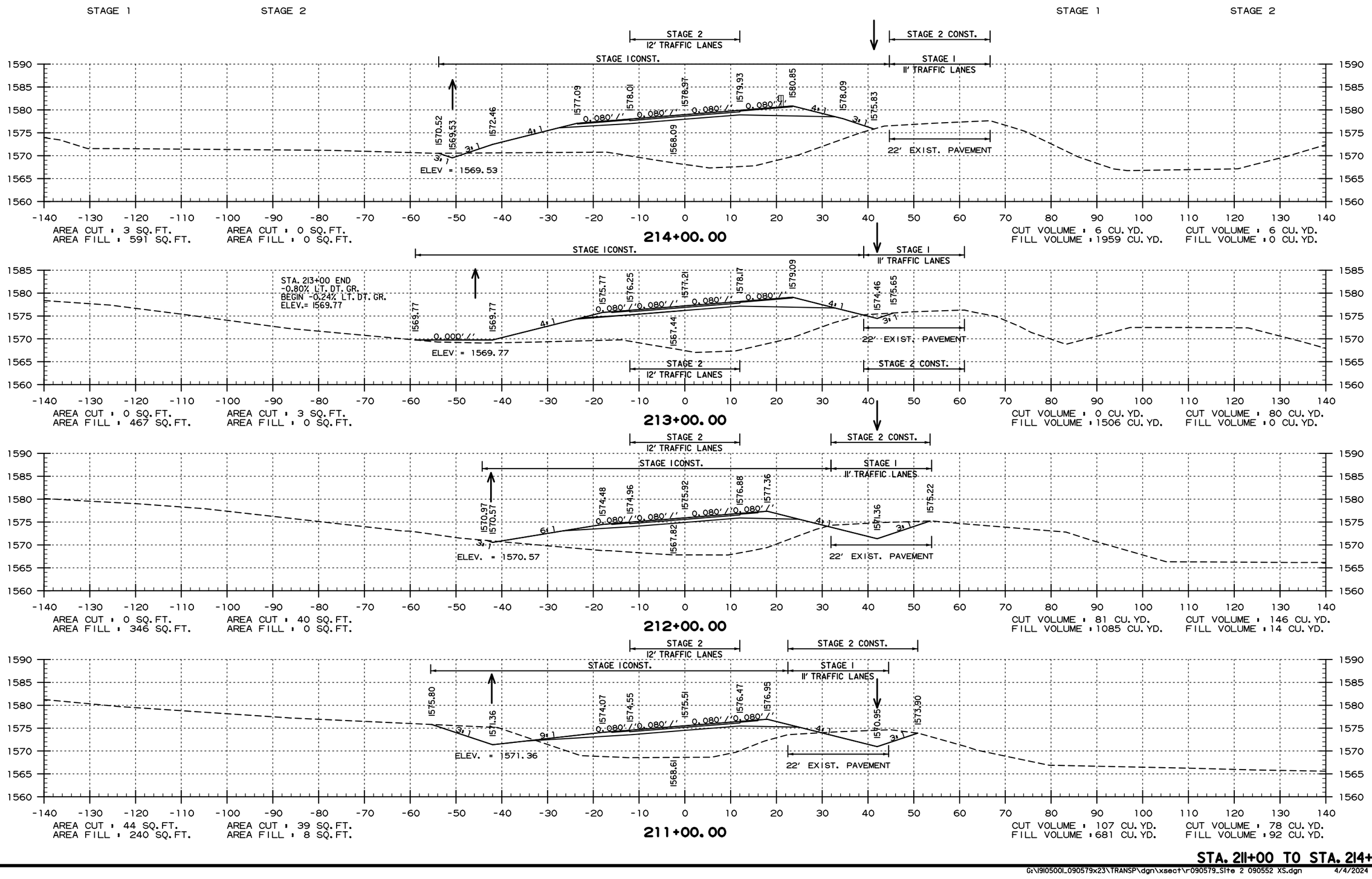


STA. 208+00 TO STA. 210+00

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: h20

G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	83	99
		CROSS SECTIONS				

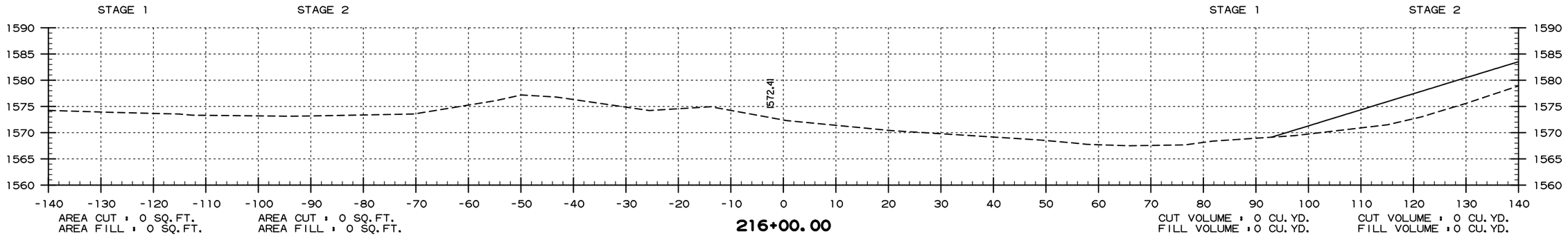


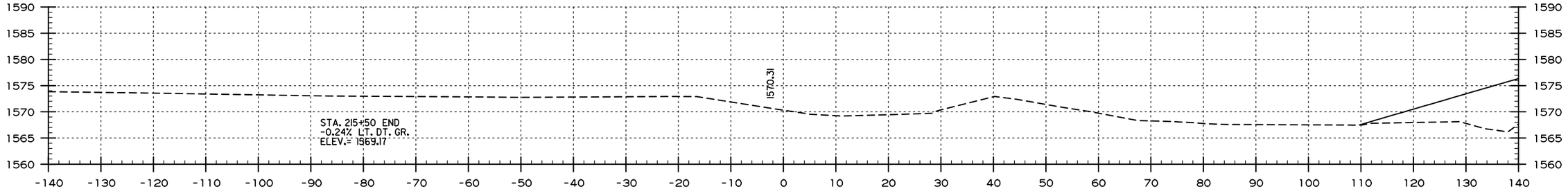
STA. 211+00 TO STA. 214+00

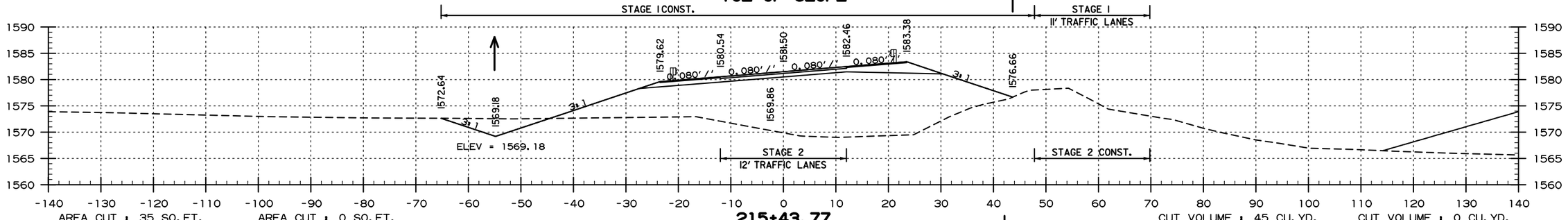
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

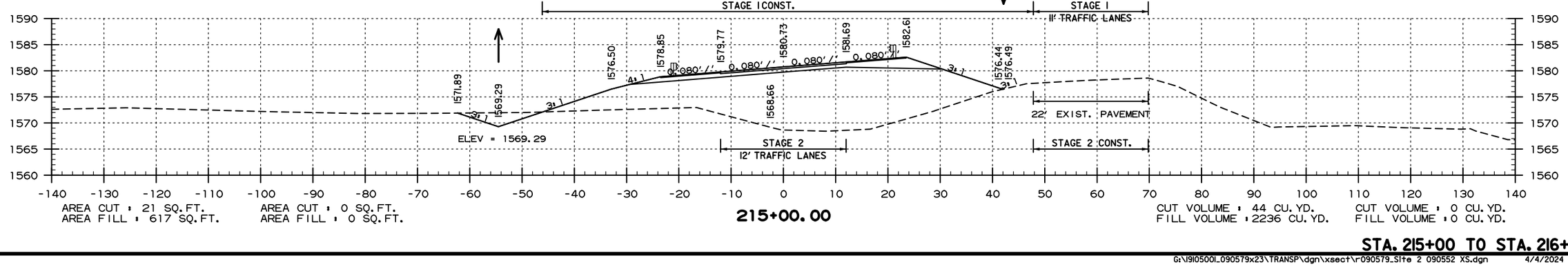
G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	84	99
		CROSS SECTIONS				









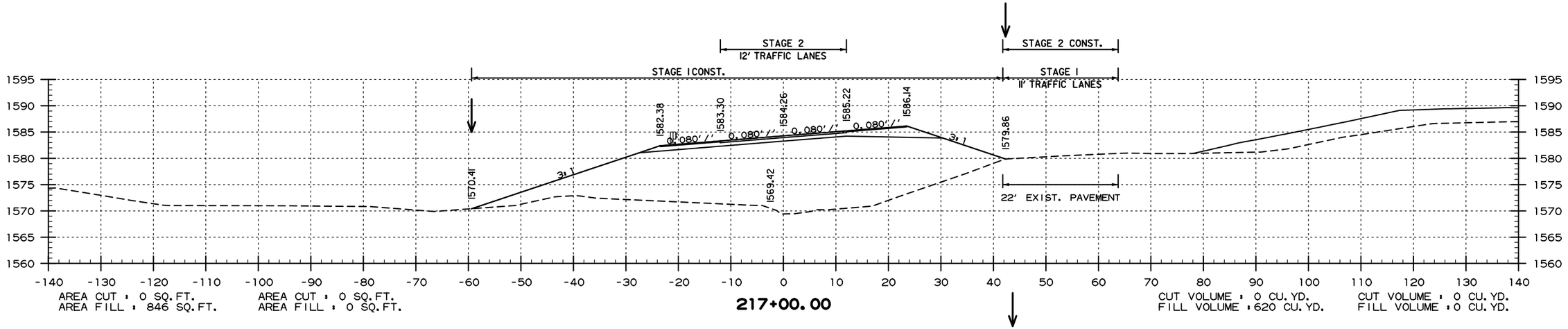
STA. 215+00 TO STA. 216+00

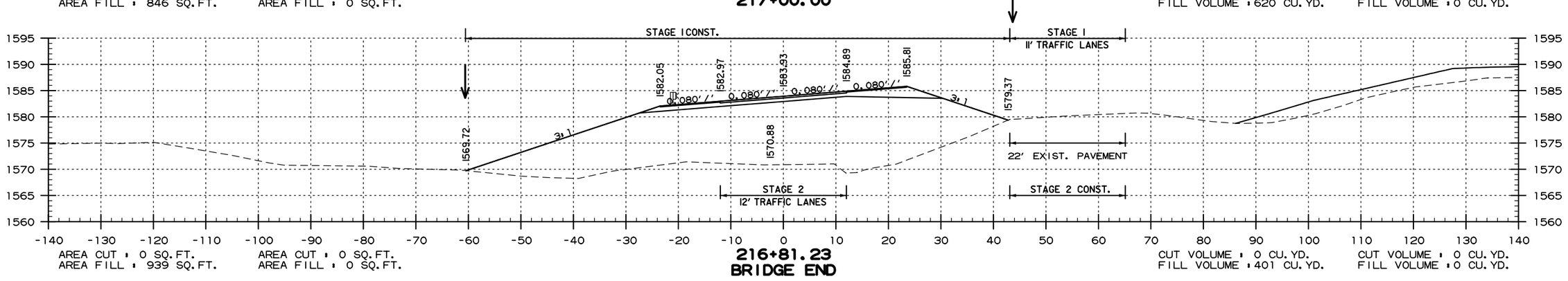
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

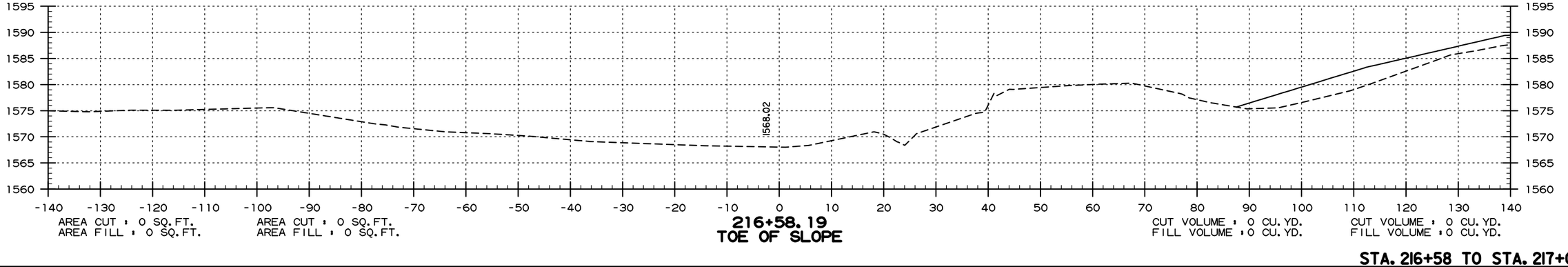
G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	85	99
		CROSS SECTIONS				

STAGE 1 STAGE 2 STAGE 1 STAGE 2





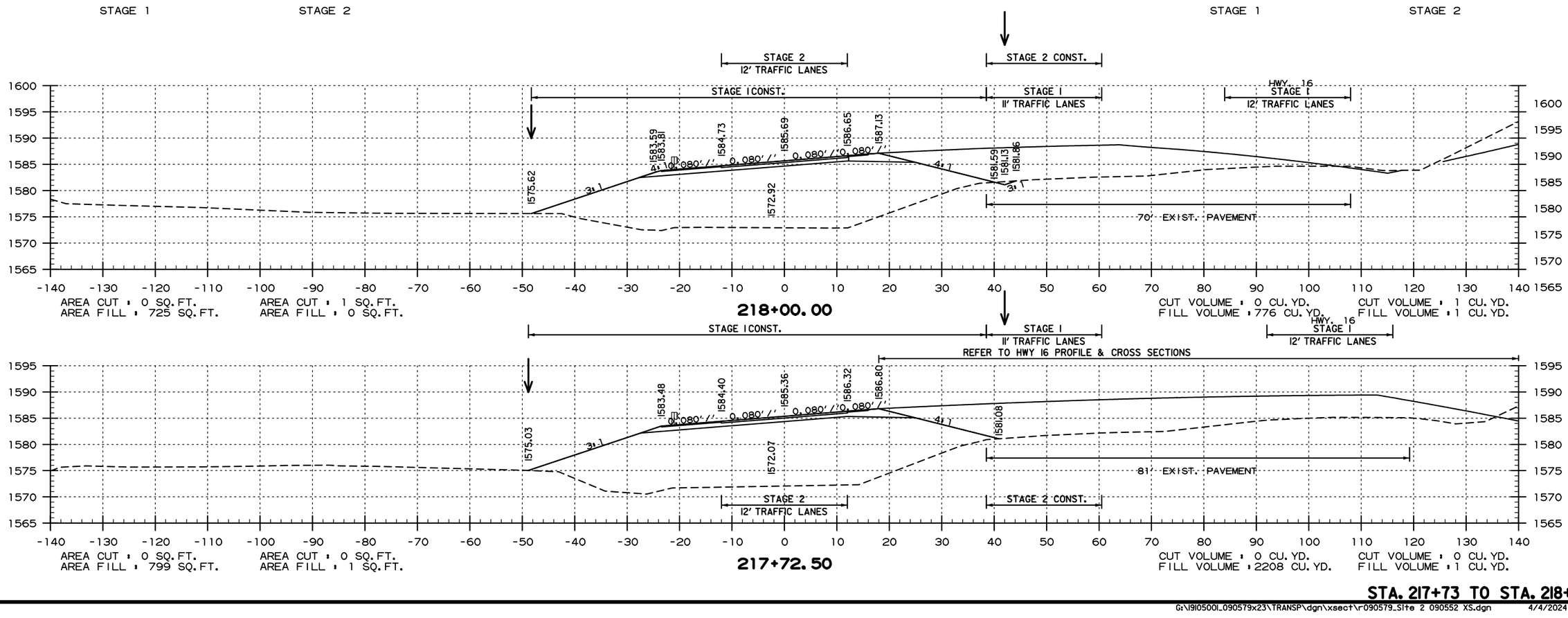


STA. 216+58 TO STA. 217+00

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	86	99
		CROSS SECTIONS				



STA. 217+73 TO STA. 218+00

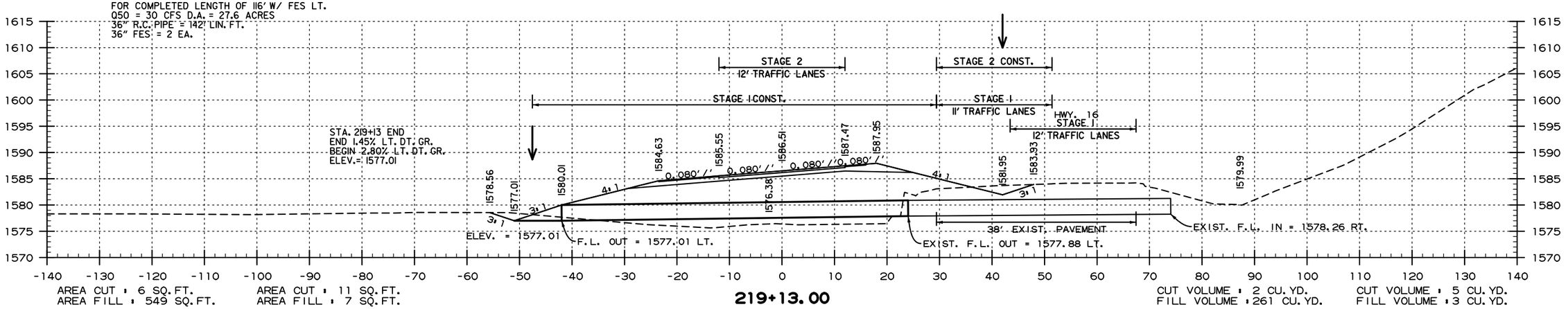
USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
MODEL: PROPOSED DESIGN
SCALE: 1:20

G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	87	99
		CROSS SECTIONS				

STAGE 1 STAGE 2

STA. 219+13 IN PLACE
DBL. 36" X 50' R.C. PIPE CULV'T.
WITH HDWL. LT. & RT.
(14°30' RT. FWD. SKEW) REMOVE HDWL. LT. AND
EXTEND WESTERNMOST R.C. PIPE CULVERT 68' LT.
FOR COMPLETED LENGTH OF 118' W/ FES LT.
AND EXTEND EASTERNMOST R.C. PIPE CULVERT 66' LT.
FOR COMPLETED LENGTH OF 116' W/ FES LT.
Q50 = 30 CFS D.A. = 27.6 ACRES
36" R.C. PIPE = 142' LIN. FT.
36" FES = 2 EA.



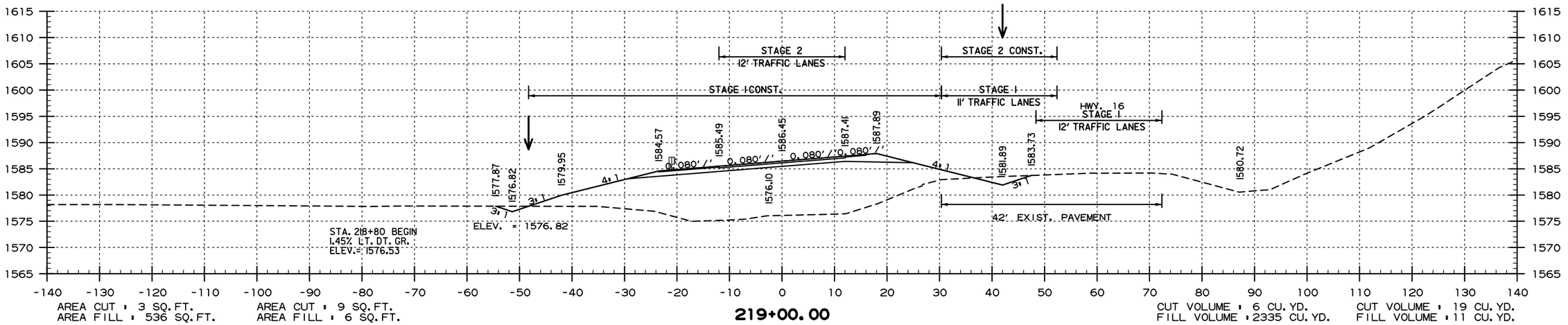
AREA CUT = 6 SQ. FT.
AREA FILL = 549 SQ. FT.

AREA CUT = 11 SQ. FT.
AREA FILL = 7 SQ. FT.

219+13.00

CUT VOLUME = 2 CU. YD.
FILL VOLUME = 261 CU. YD.

CUT VOLUME = 5 CU. YD.
FILL VOLUME = 3 CU. YD.



AREA CUT = 3 SQ. FT.
AREA FILL = 536 SQ. FT.

AREA CUT = 9 SQ. FT.
AREA FILL = 6 SQ. FT.

219+00.00

CUT VOLUME = 6 CU. YD.
FILL VOLUME = 2335 CU. YD.

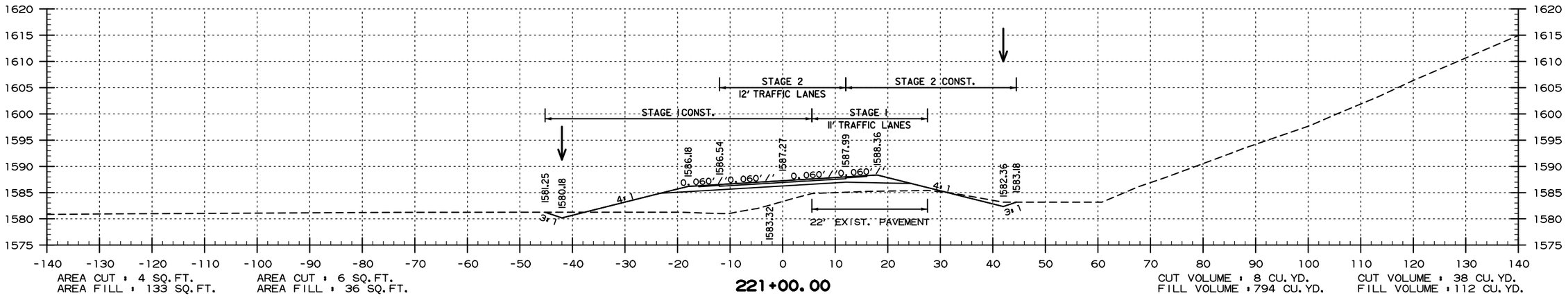
CUT VOLUME = 19 CU. YD.
FILL VOLUME = 11 CU. YD.

STA. 219+00 TO STA. 219+13

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	88	99
		CROSS SECTIONS				

STAGE 1 STAGE 2



AREA CUT = 4 SQ.FT.
AREA FILL = 133 SQ.FT.

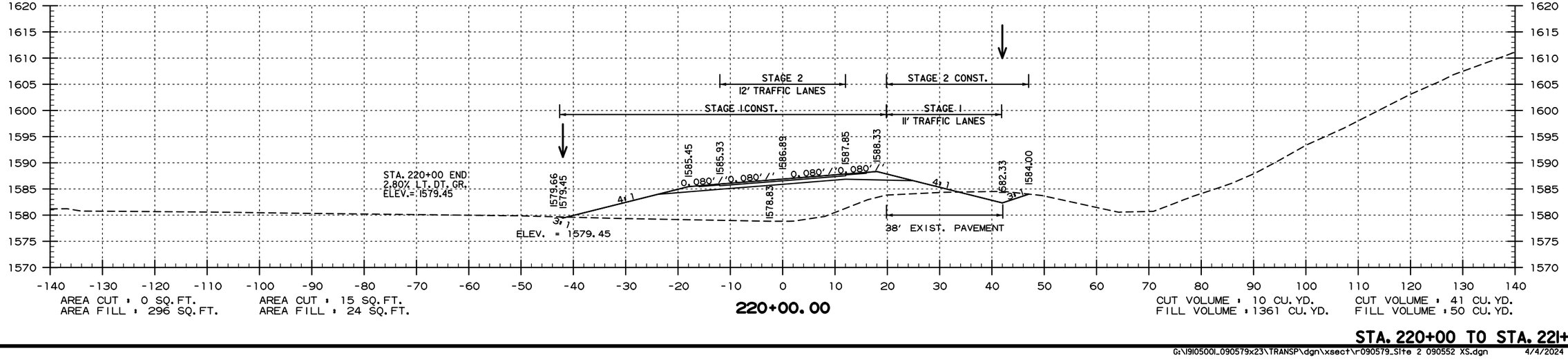
AREA CUT = 6 SQ.FT.
AREA FILL = 36 SQ.FT.

221+00.00

CUT VOLUME = 8 CU.YD.
FILL VOLUME = 794 CU.YD.

CUT VOLUME = 38 CU.YD.
FILL VOLUME = 112 CU.YD.

STAGE 1 STAGE 2



AREA CUT = 0 SQ.FT.
AREA FILL = 296 SQ.FT.

AREA CUT = 15 SQ.FT.
AREA FILL = 24 SQ.FT.

220+00.00

CUT VOLUME = 10 CU.YD.
FILL VOLUME = 1361 CU.YD.

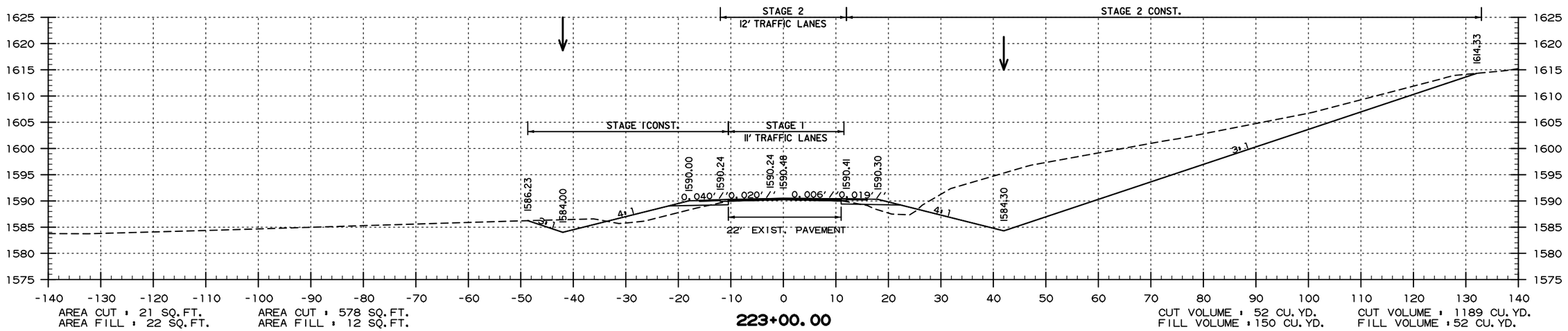
CUT VOLUME = 41 CU.YD.
FILL VOLUME = 50 CU.YD.

STA. 220+00 TO STA. 221+00

USER: jc5296
DESIGN FILE: G:\1910500I_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: 1:20

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	89	99
		CROSS SECTIONS				

STAGE 1 STAGE 2



AREA CUT = 21 SQ.FT.
AREA FILL = 22 SQ.FT.

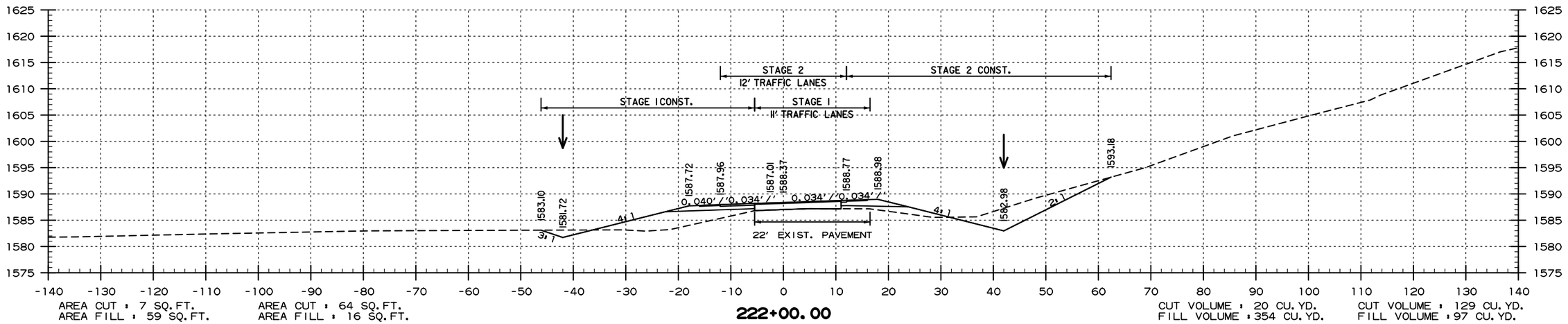
AREA CUT = 578 SQ.FT.
AREA FILL = 12 SQ.FT.

223+00.00

CUT VOLUME = 52 CU.YD.
FILL VOLUME = 150 CU.YD.

CUT VOLUME = 1189 CU.YD.
FILL VOLUME = 52 CU.YD.

STAGE 1 STAGE 2



AREA CUT = 7 SQ.FT.
AREA FILL = 59 SQ.FT.

AREA CUT = 64 SQ.FT.
AREA FILL = 16 SQ.FT.

222+00.00

CUT VOLUME = 20 CU.YD.
FILL VOLUME = 354 CU.YD.

CUT VOLUME = 129 CU.YD.
FILL VOLUME = 97 CU.YD.

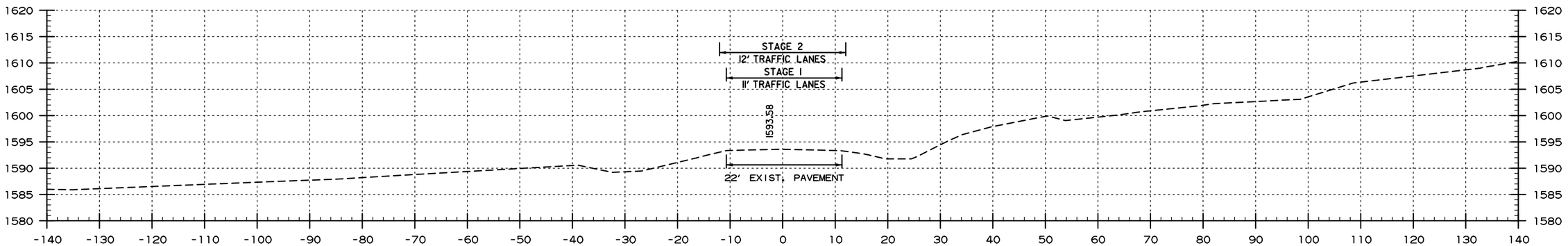
STA. 222+00 TO STA. 223+00

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	90	99
		CROSS SECTIONS				

STAGE 1 STAGE 2



AREA CUT = 0 SQ.FT.
AREA FILL = 0 SQ.FT.

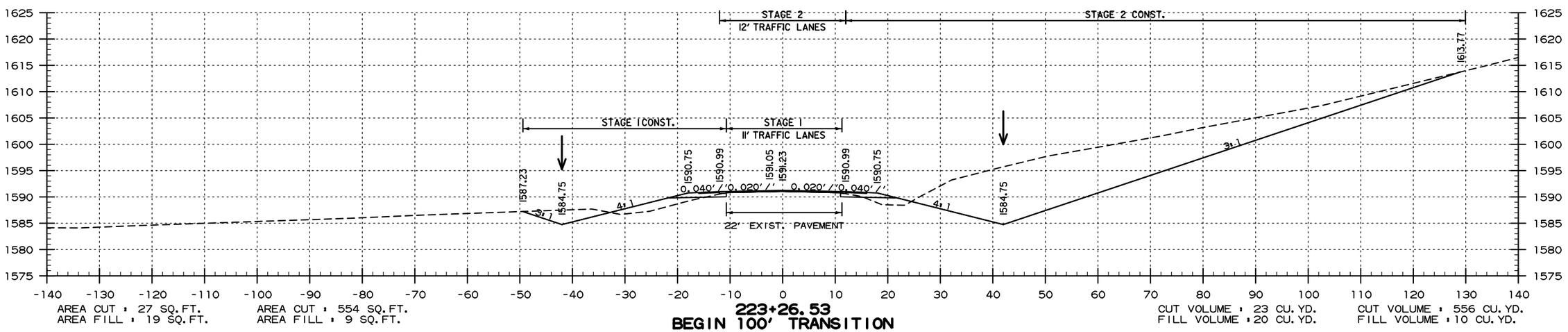
AREA CUT = 0 SQ.FT.
AREA FILL = 0 SQ.FT.

224+26.53
END 100' TRANSITION

CUT VOLUME = 49 CU.YD.
FILL VOLUME = 35 CU.YD.

CUT VOLUME = 1026 CU.YD.
FILL VOLUME = 17 CU.YD.

STAGE 1 STAGE 2



AREA CUT = 27 SQ.FT.
AREA FILL = 19 SQ.FT.

AREA CUT = 554 SQ.FT.
AREA FILL = 9 SQ.FT.

223+26.53
BEGIN 100' TRANSITION

CUT VOLUME = 23 CU.YD.
FILL VOLUME = 20 CU.YD.

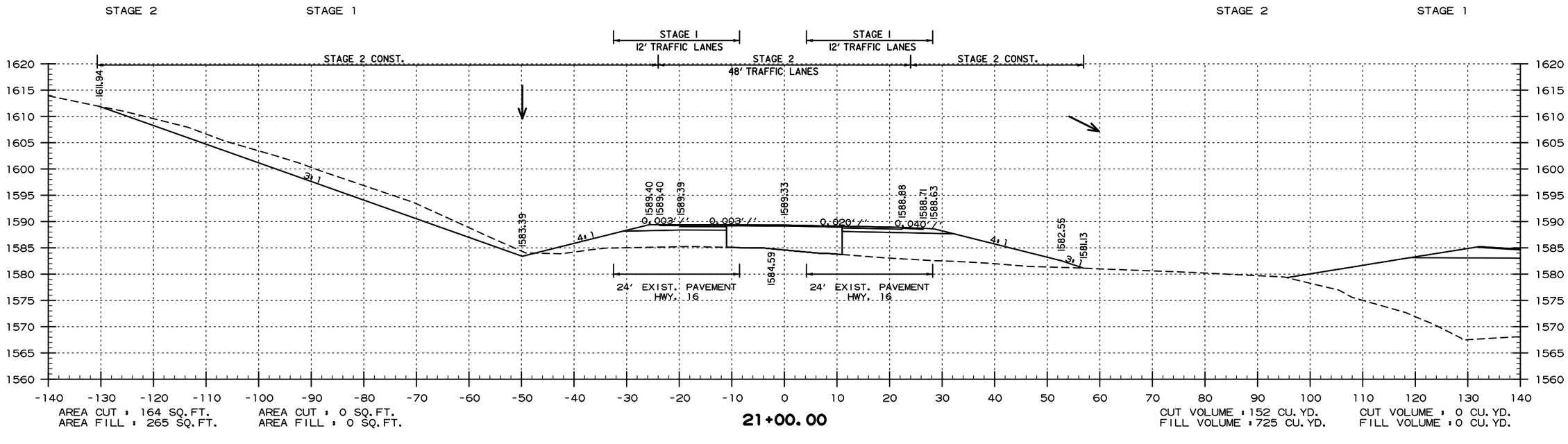
CUT VOLUME = 556 CU.YD.
FILL VOLUME = 10 CU.YD.

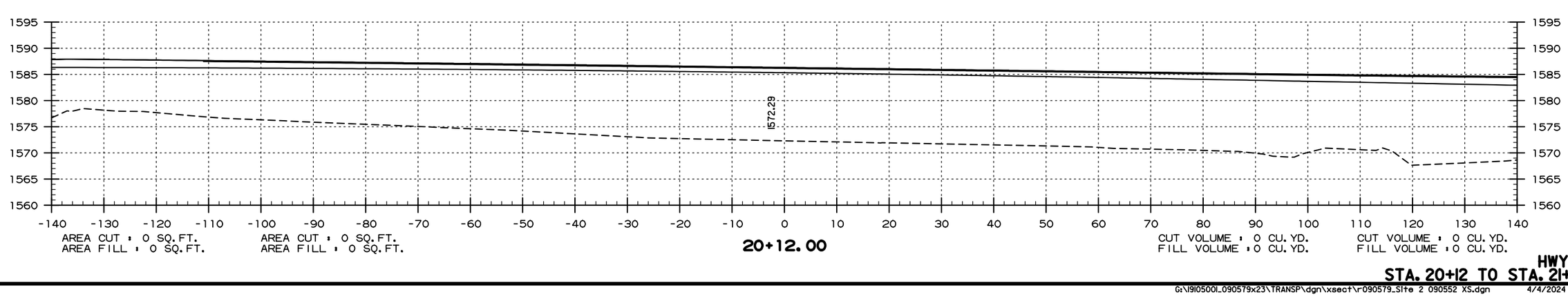
STA. 223+27 TO STA. 224+27

USER: jc6296
DESIGN FILE: G:\1910500I_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: H:20
MODEL: PROPOSED DESIGN

G:\1910500I_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	91	99
		CROSS SECTIONS				





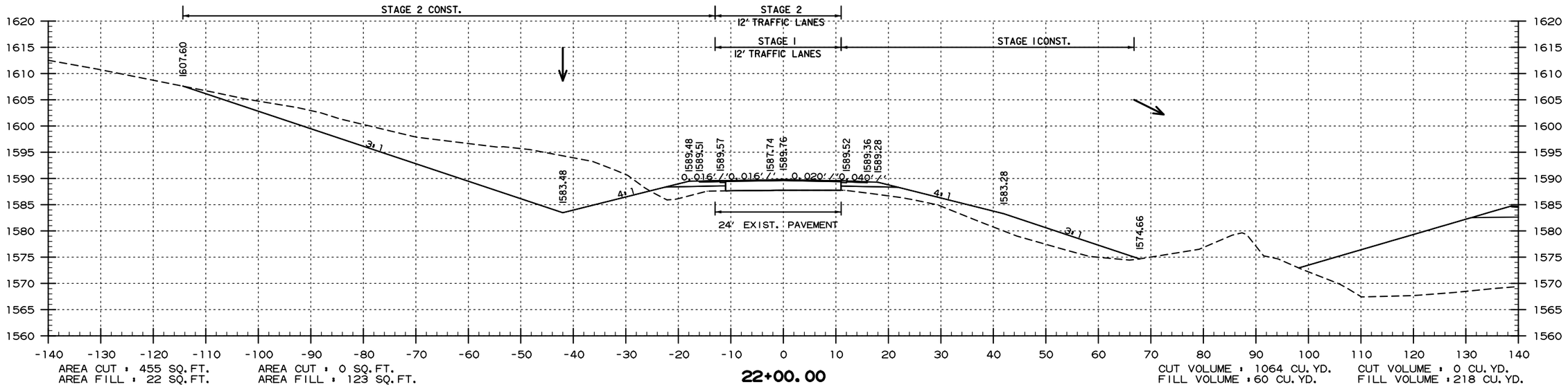
HWY. 16
STA. 20+12 TO STA. 21+00

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	92	99
		CROSS SECTIONS				

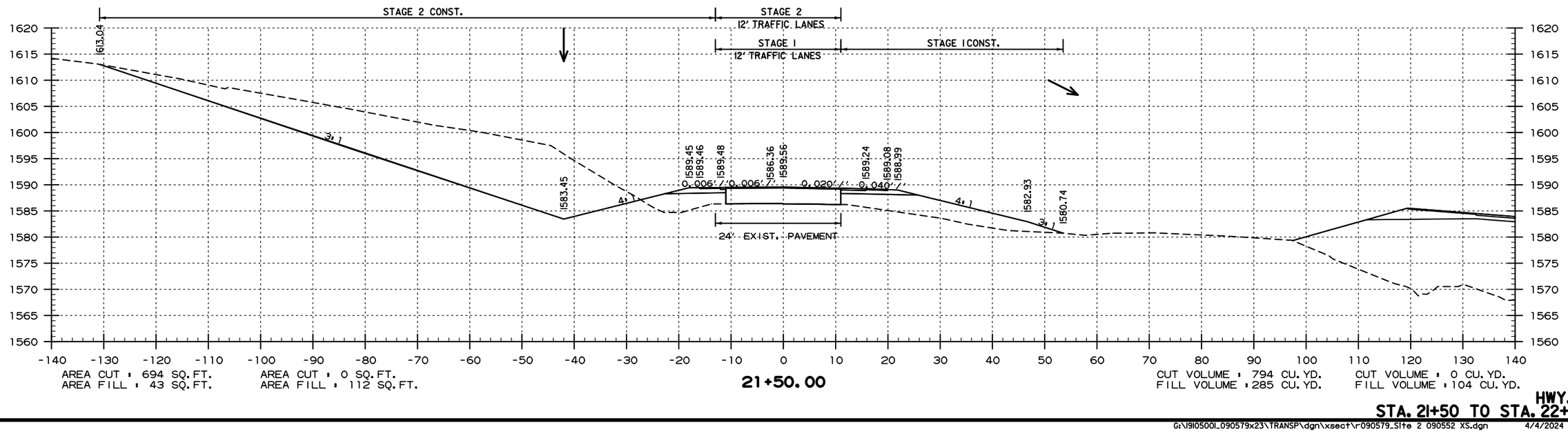
STAGE 2 STAGE 1 STAGE 2 STAGE 1



AREA CUT = 455 SQ.FT. AREA CUT = 0 SQ.FT.
AREA FILL = 22 SQ.FT. AREA FILL = 123 SQ.FT.

22+00.00

CUT VOLUME = 1064 CU.YD. CUT VOLUME = 0 CU.YD.
FILL VOLUME = 60 CU.YD. FILL VOLUME = 218 CU.YD.



AREA CUT = 694 SQ.FT. AREA CUT = 0 SQ.FT.
AREA FILL = 43 SQ.FT. AREA FILL = 112 SQ.FT.

21+50.00

CUT VOLUME = 794 CU.YD. CUT VOLUME = 0 CU.YD.
FILL VOLUME = 285 CU.YD. FILL VOLUME = 104 CU.YD.

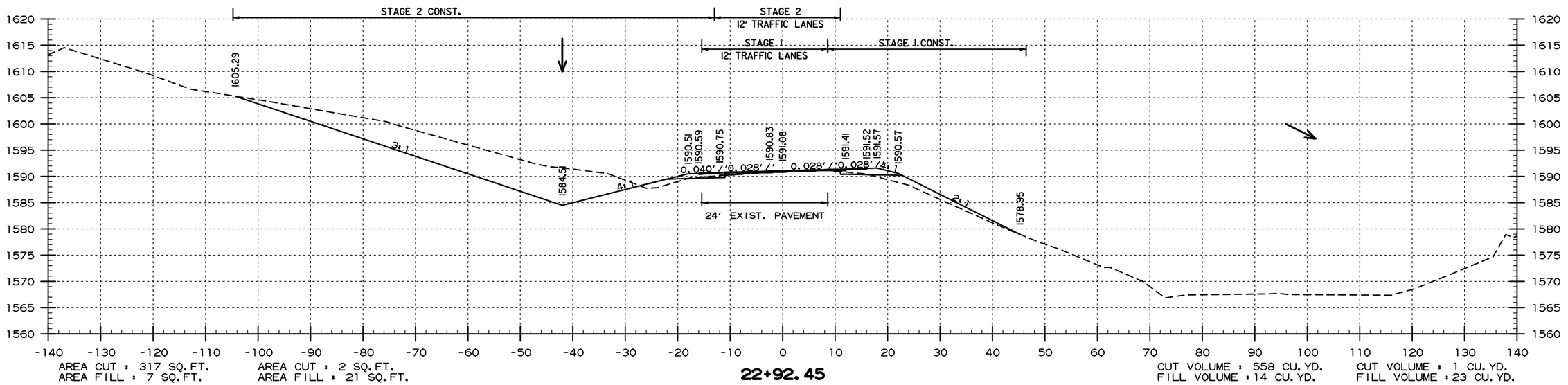
HWY. 16
STA. 21+50 TO STA. 22+00

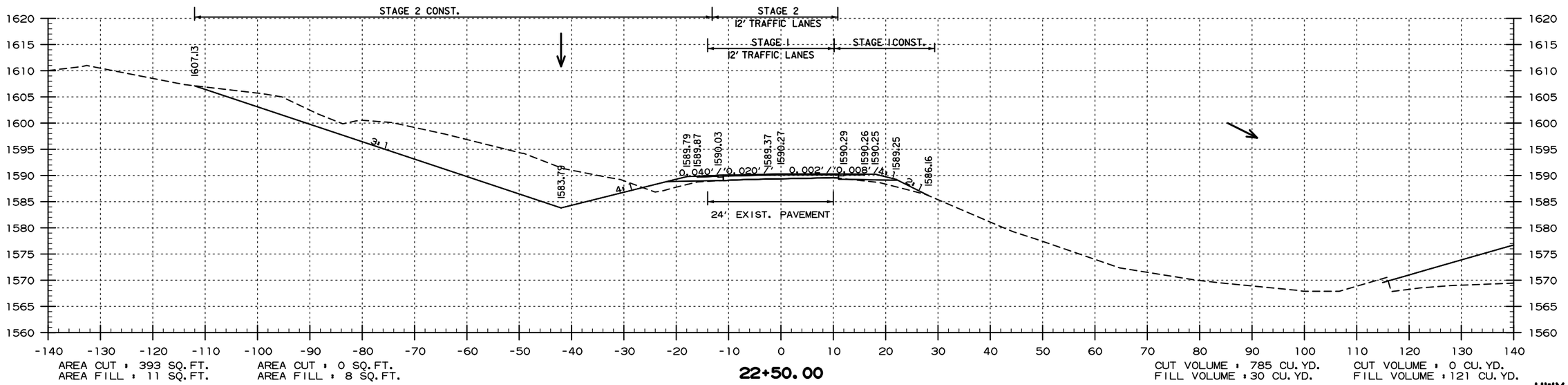
USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn
PLOTTED: 4/4/2024 10:29
MODEL: PROPOSED DESIGN
SCALE: 1:20

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	93	99
		CROSS SECTIONS				

STAGE 2 STAGE 1 STAGE 2 STAGE 1





HWY. 16
STA. 22+50 TO STA. 22+92

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: h20

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	94	99
		CROSS SECTIONS				

STAGE 2 STAGE 1 STAGE 2 STAGE 1

AREA CUT = 0 SQ.FT.
AREA FILL = 0 SQ.FT.

AREA CUT = 0 SQ.FT.
AREA FILL = 0 SQ.FT.

23+92.45
END HWY. 16 CONST.

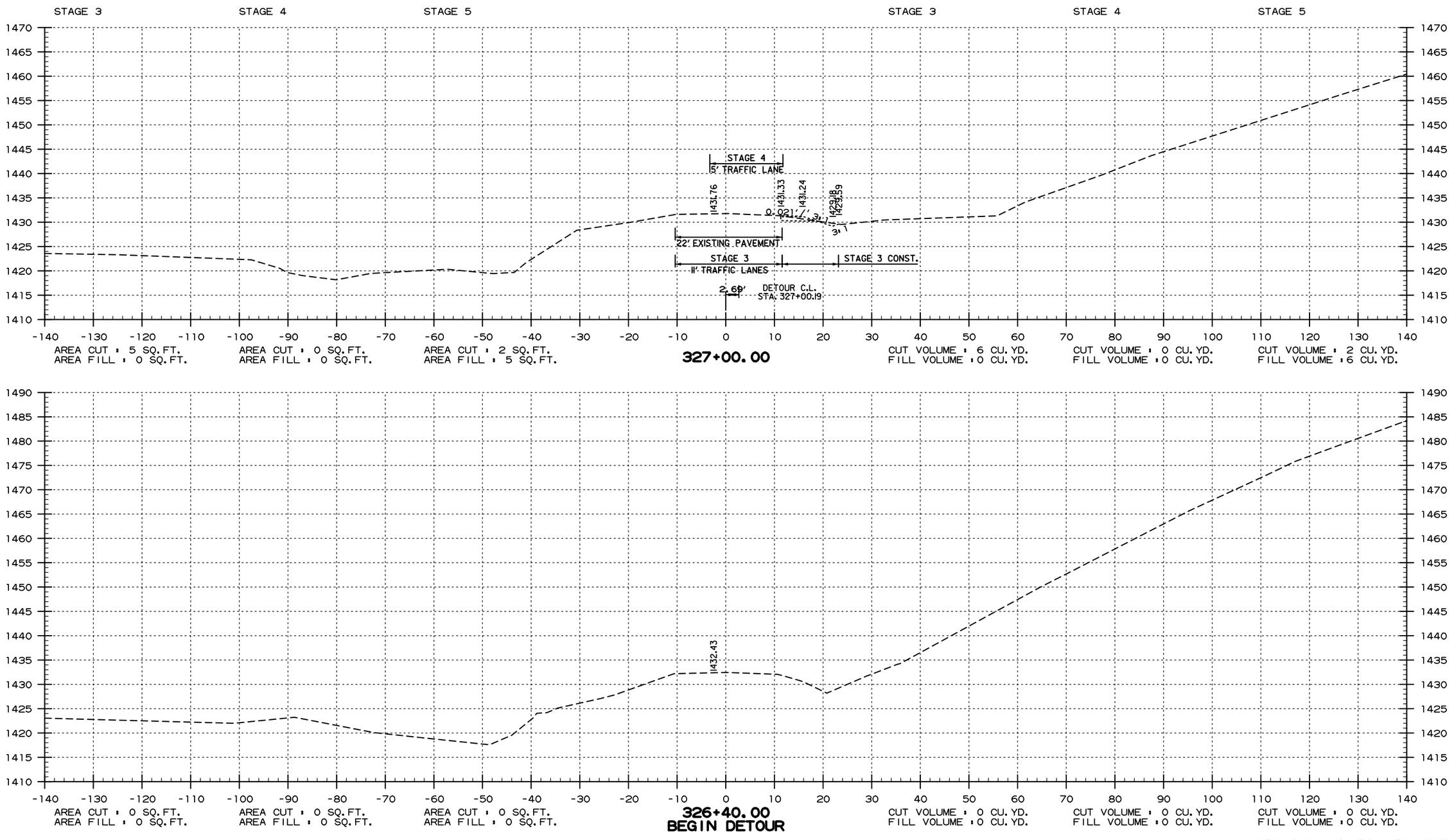
CUT VOLUME = 587 CU.YD.
FILL VOLUME = 13 CU.YD.

CUT VOLUME = 3 CU.YD.
FILL VOLUME = 39 CU.YD.

HWY. 16
STA. 23+92 TO STA. 23+92

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 2 090552 XS.dgn MODEL: PROPOSED DESIGN
PLOTTED: 4/4/2024 10:29 SCALE: 1:20

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	95	99
		CROSS SECTIONS				

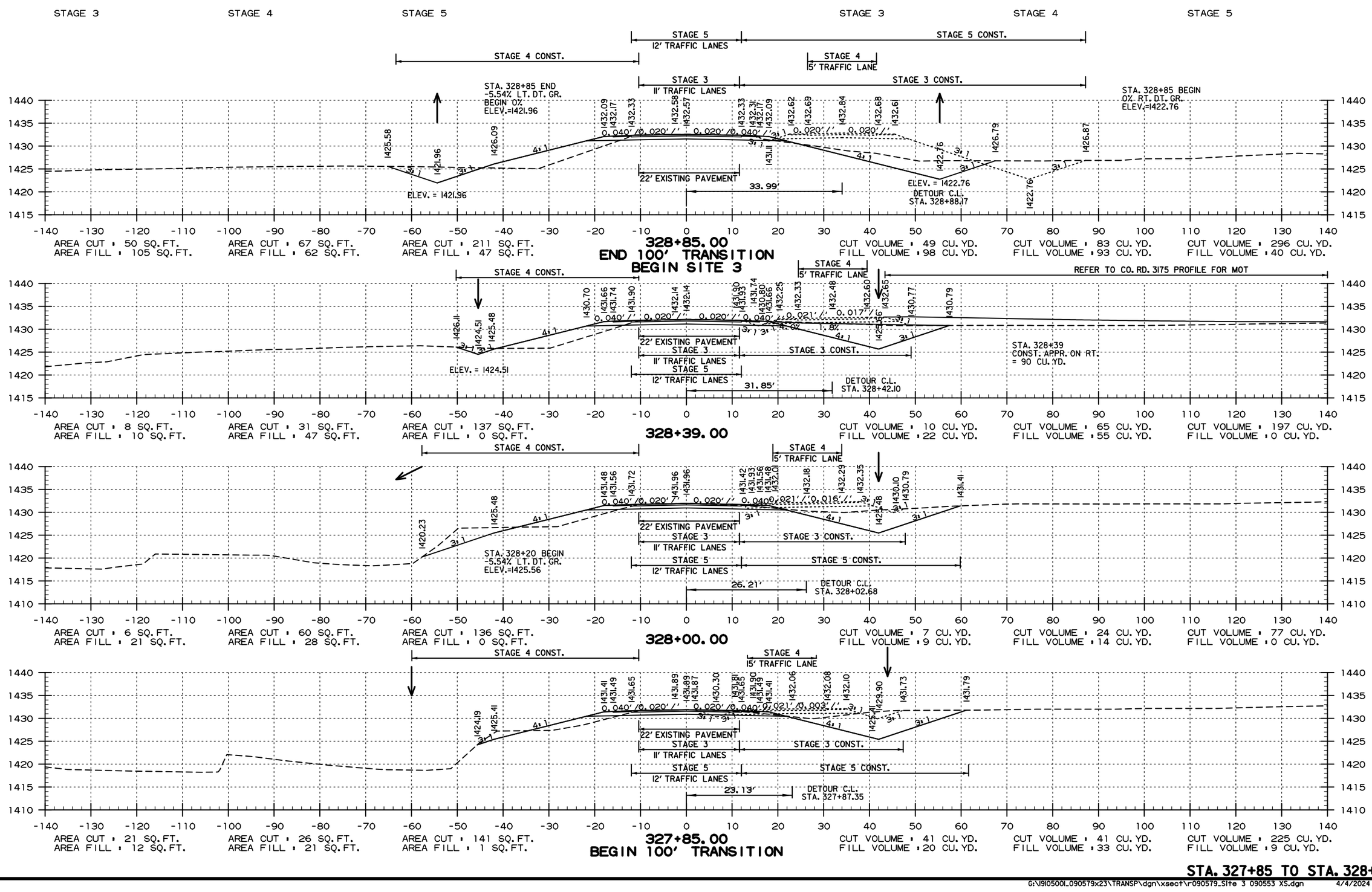


STA. 326+40 TO STA. 327+00

G:\I9105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn 4/4/2024 10:29

USER: jc5296
DESIGN FILE: G:\I9105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	96	99
		CROSS SECTIONS				

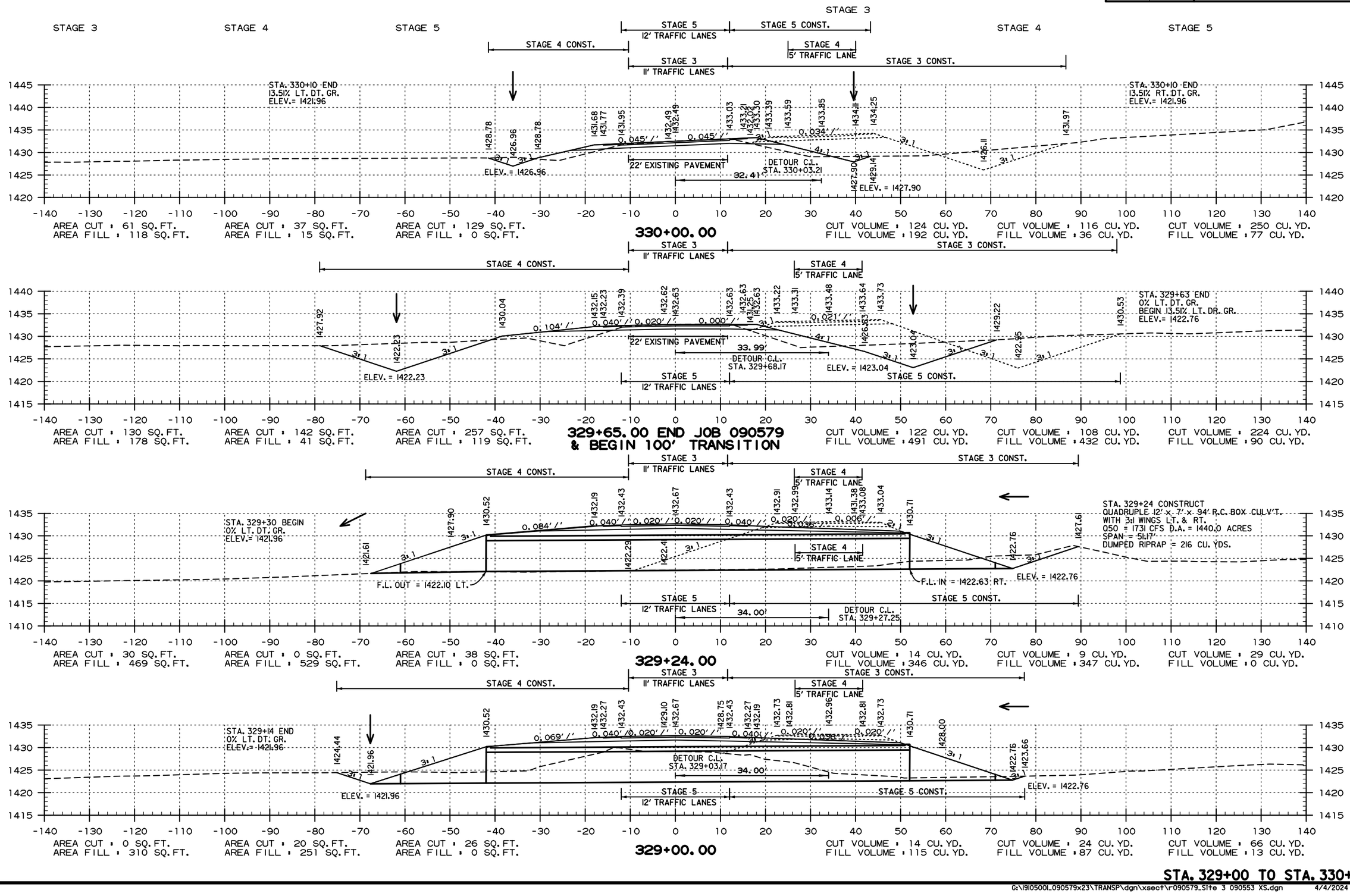


STA. 327+85 TO STA. 328+85

USER: jc5296
DESIGN FILE: G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

G:\1910500l_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	97	99
		CROSS SECTIONS				

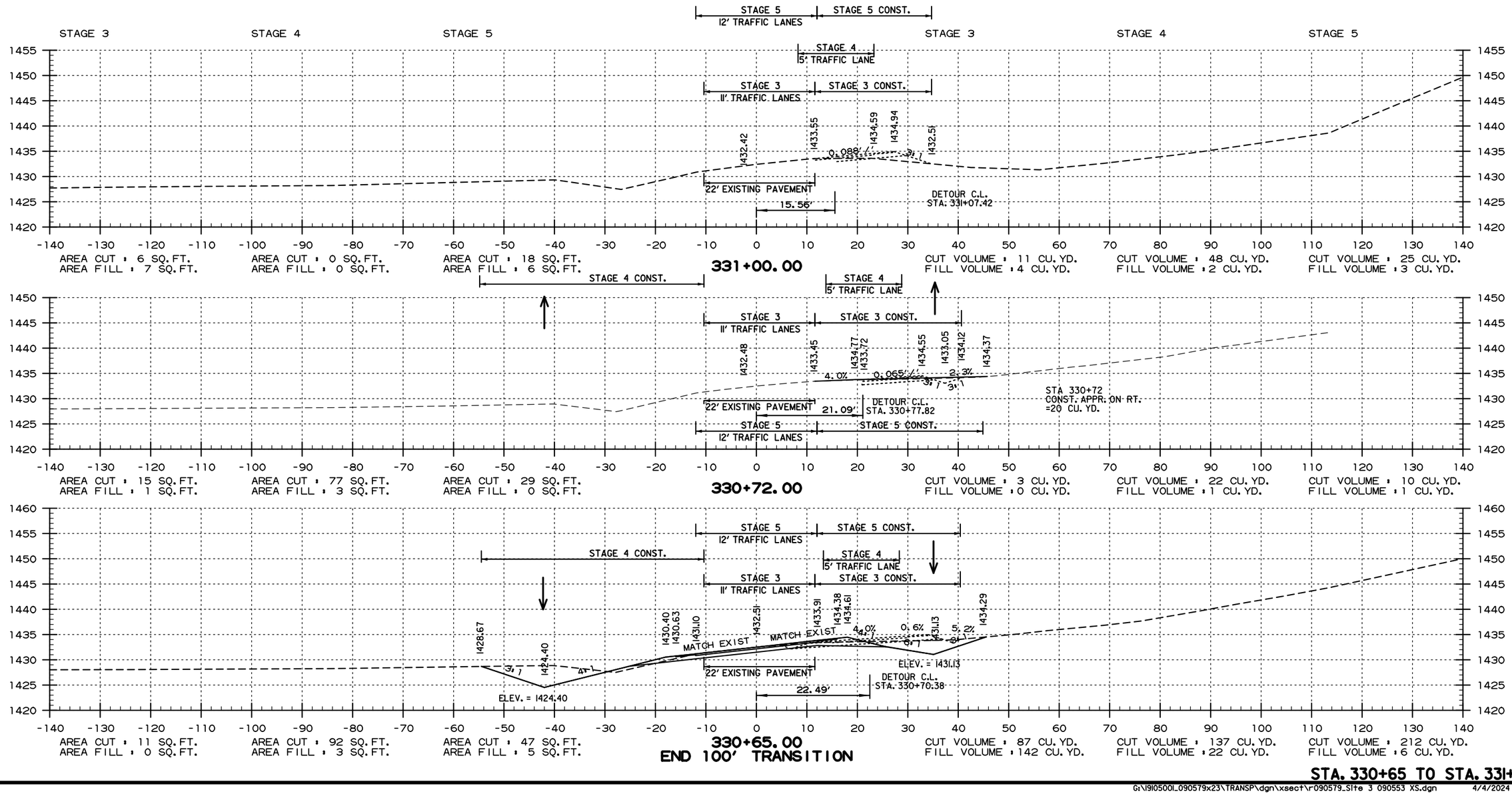


STA. 329+00 TO STA. 330+00

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	98	99
		CROSS SECTIONS				

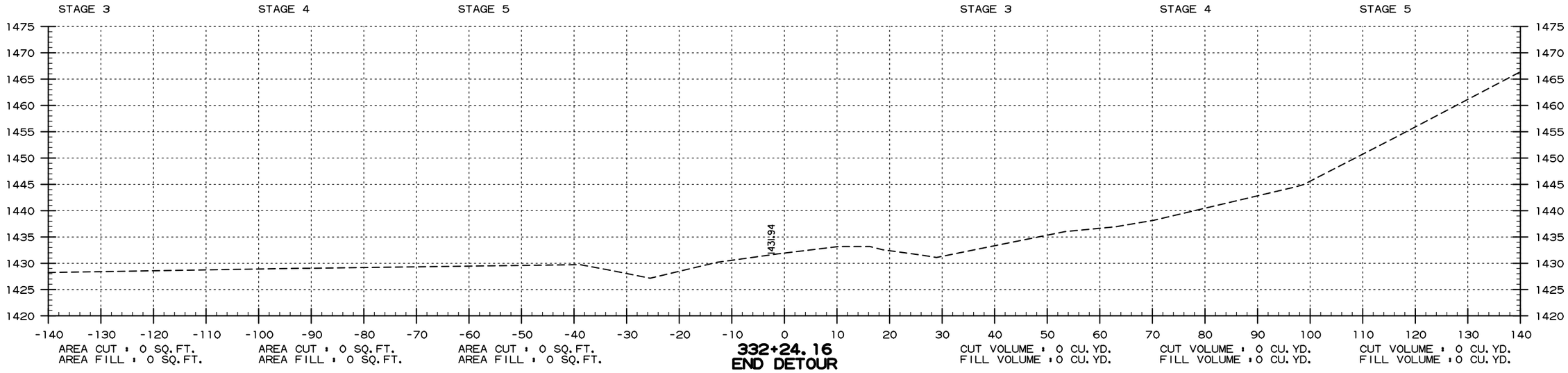


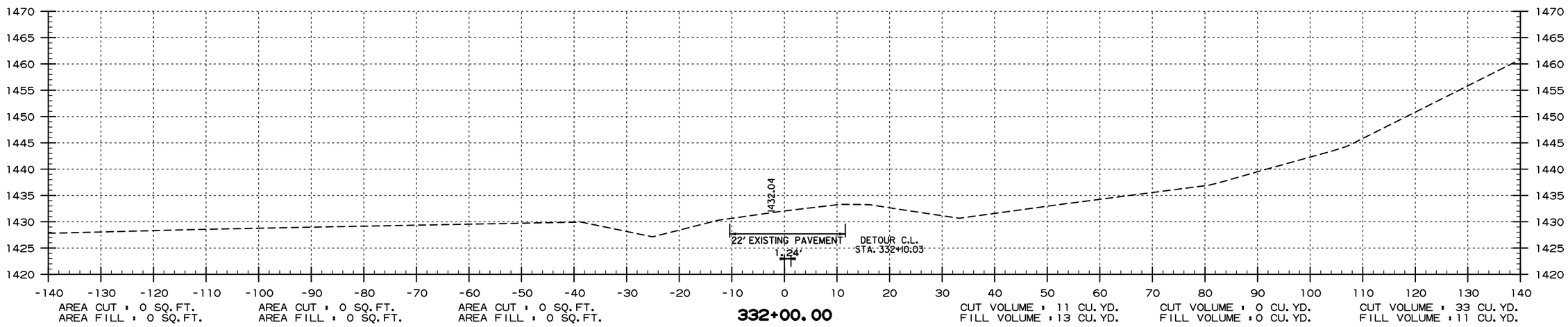
STA. 330+65 TO STA. 331+00

USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: 1:20
MODEL: PROPOSED DESIGN

G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn 4/4/2024 10:29

DATE REVISED	DATE REVISED	FED.RD. DIST.NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	090579	99	99
		CROSS SECTIONS				



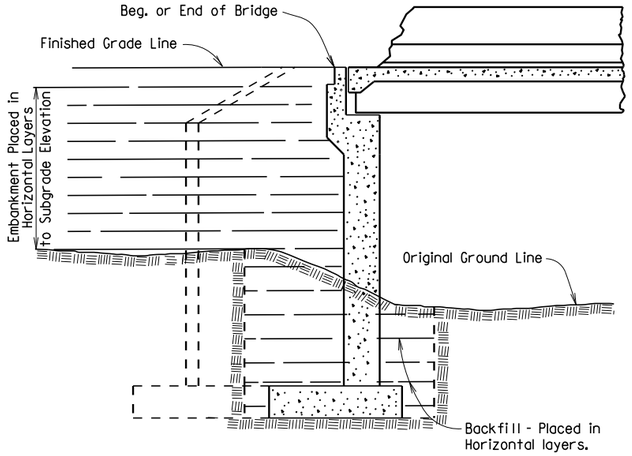


STA. 332+00 TO STA. 332+24

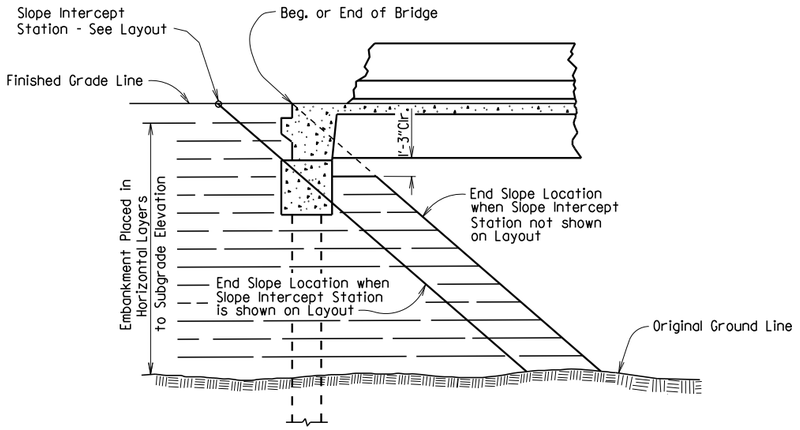
USER: jc5296
DESIGN FILE: G:\19105001_090579x23\TRANSP\dgn\xsect\r090579_Site 3 090553 XS.dgn
PLOTTED: 4/4/2024 10:29
SCALE: h20
MODEL: PROPOSED DESIGN

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.				

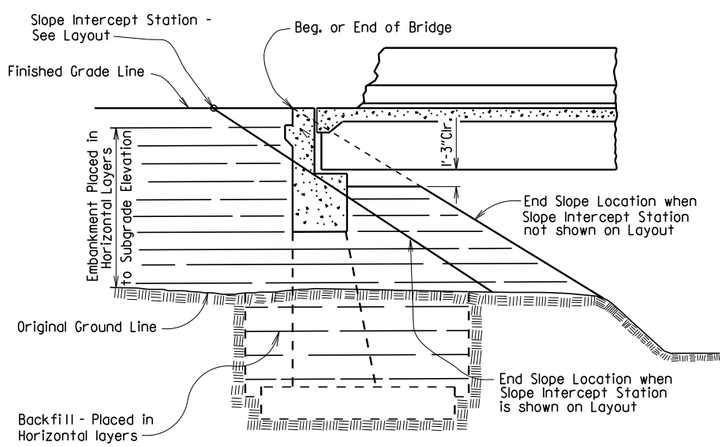
1 EMBANKMENT & BACKFILL 55000



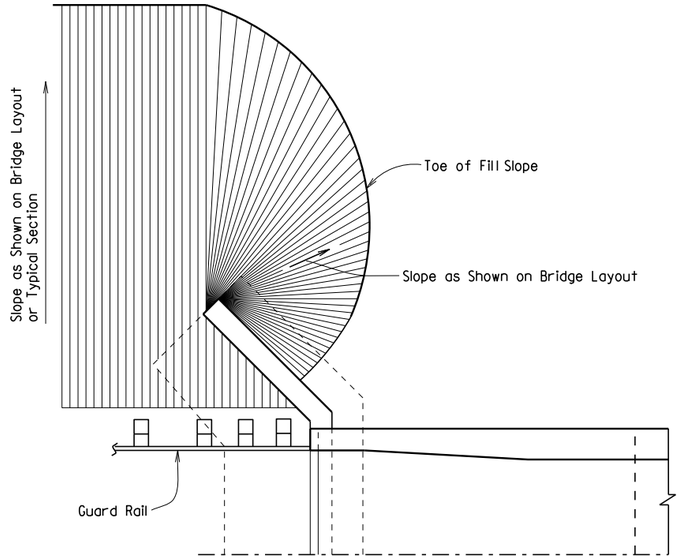
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



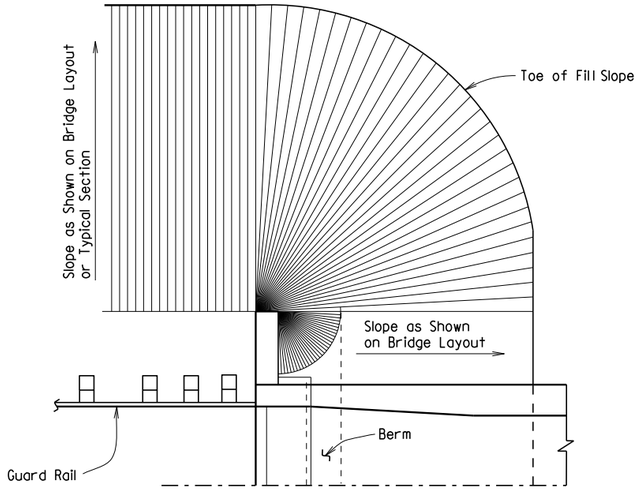
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



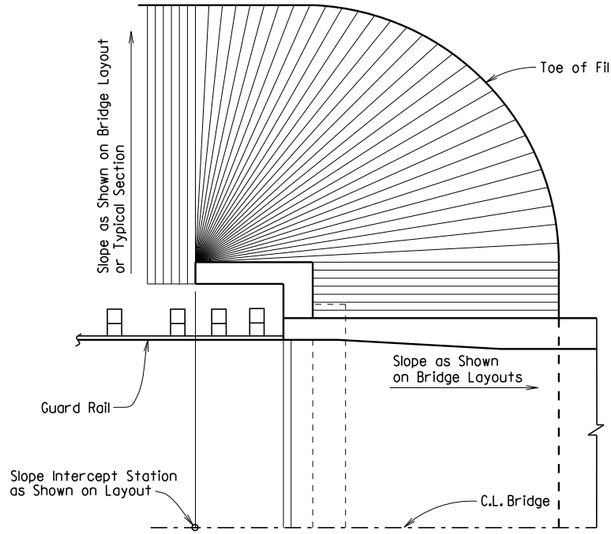
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



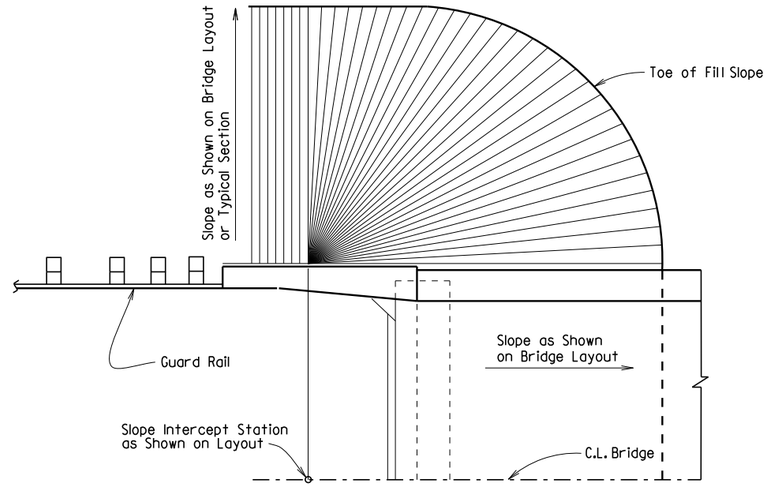
VERTICAL WALL ABUTMENTS



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

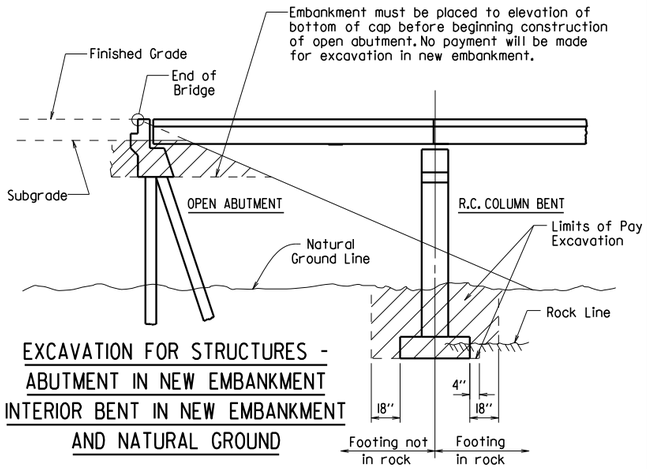
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: -

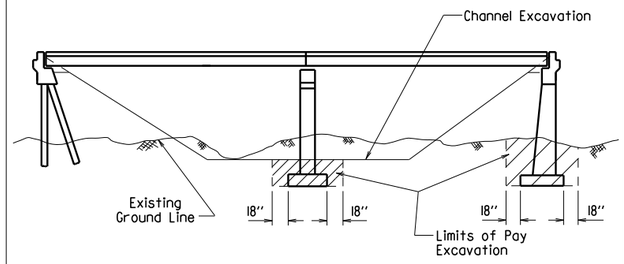
DRAWING NO. 55000

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.				

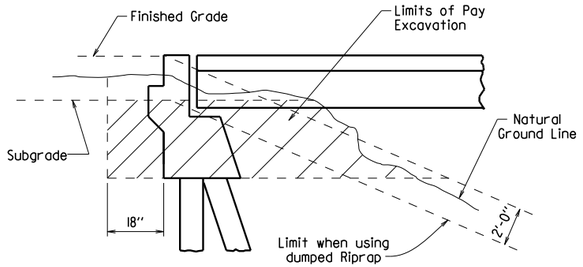
1 RIPRAP & EXCAV. 55001



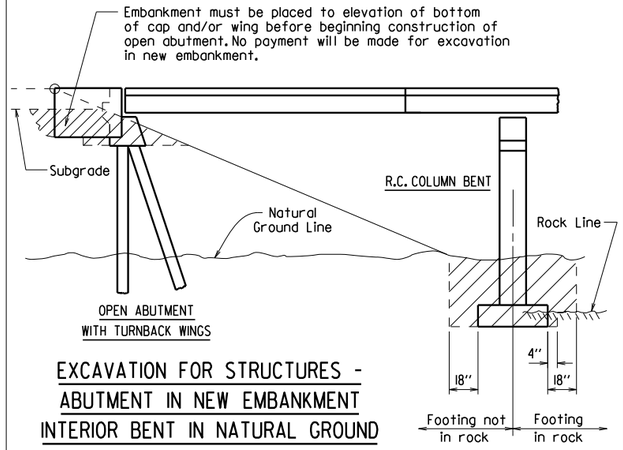
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



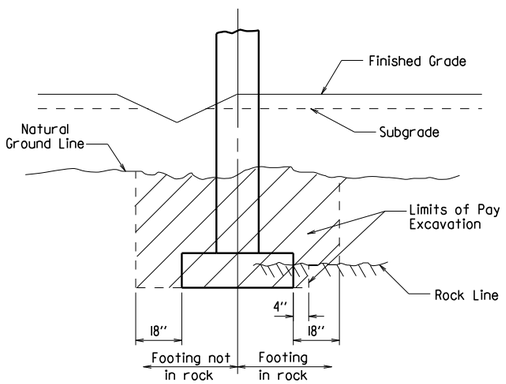
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



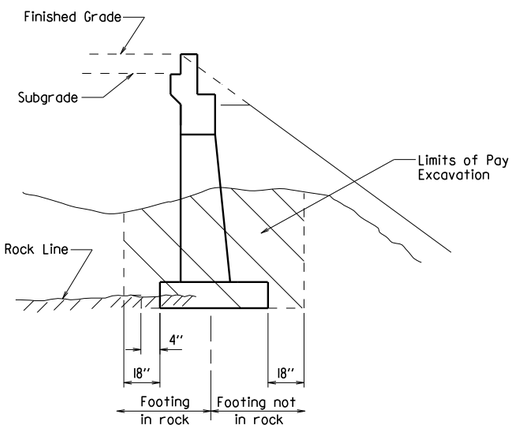
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



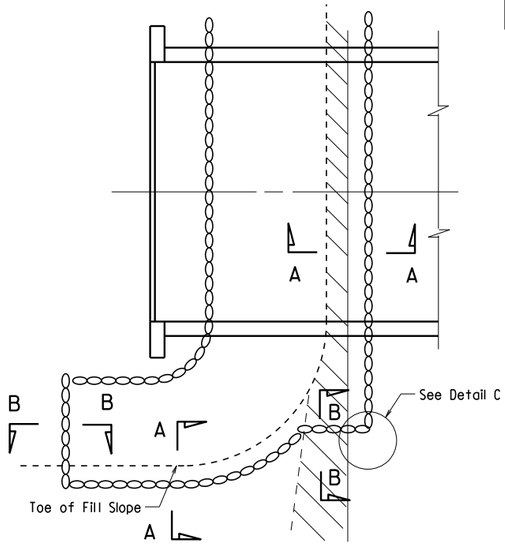
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



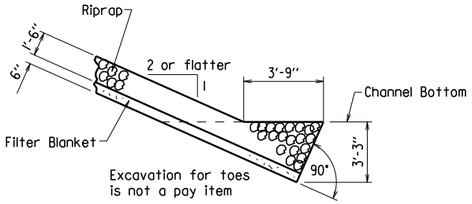
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

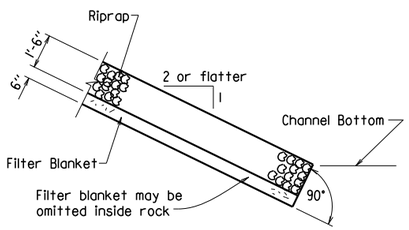


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



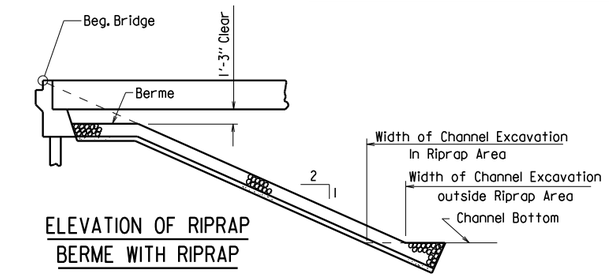
SECTION A-A

(Toe Excavation in Rock)

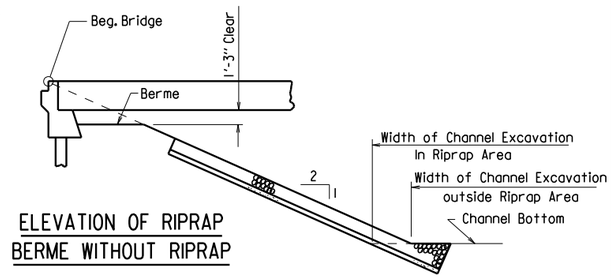
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

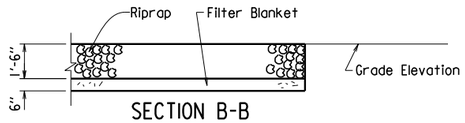
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



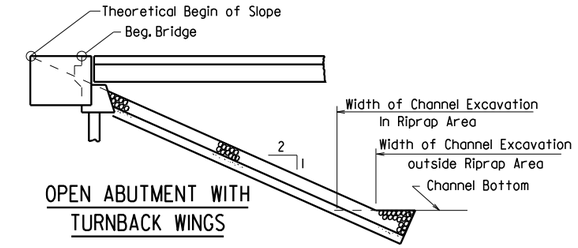
ELEVATION OF RIPRAP BERME WITH RIPRAP



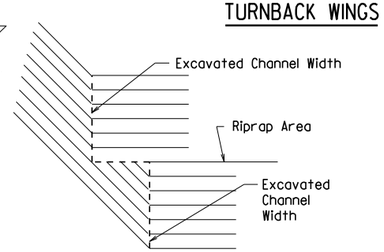
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



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

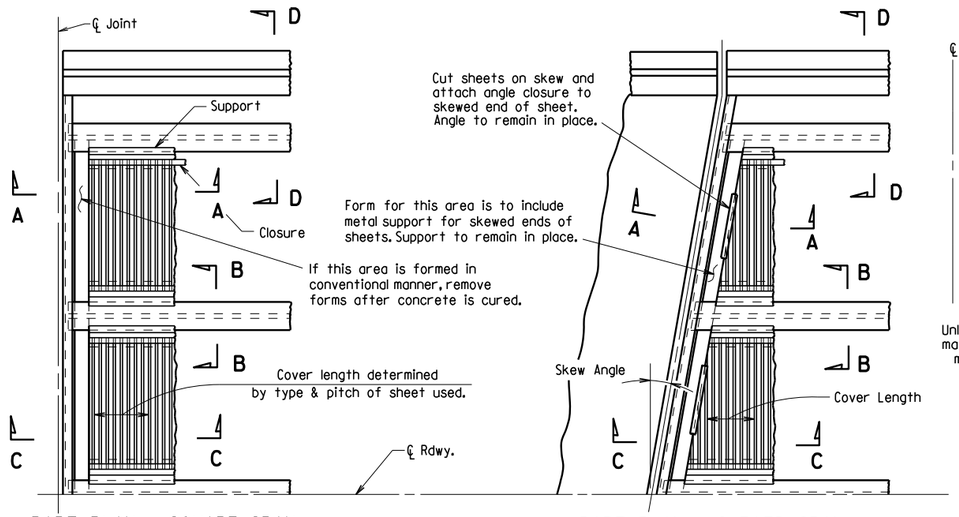
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

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
3/24/16				6	ARK.			
				JOB NO.				

① BRIDGE DECK FORMS 55005

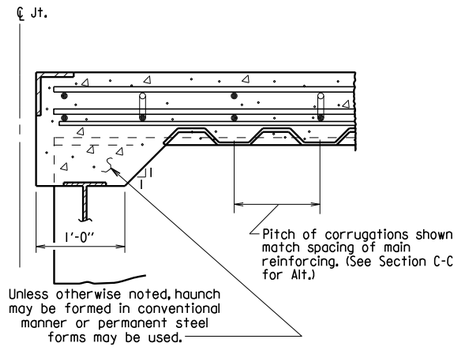


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

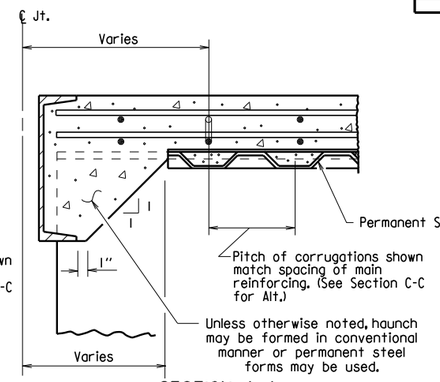
3/8" = 1'-0"



SECTION A-A

N.T.S.

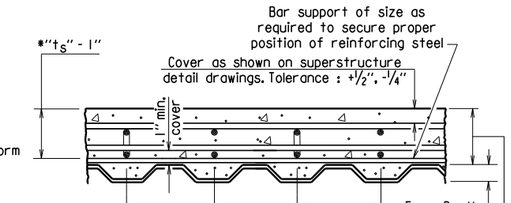
(Angle at end of span)



SECTION A-A

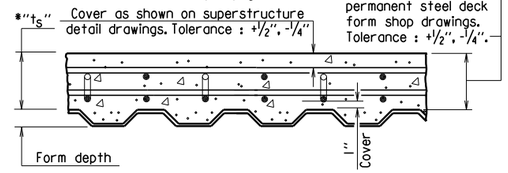
N.T.S.

(Channel at end of span)



SECTION C-C

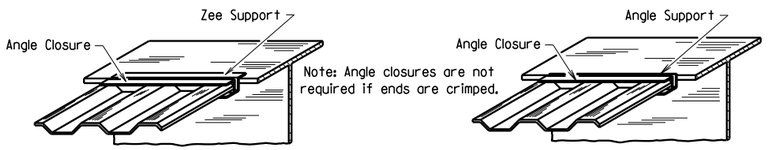
1" = 1'-0"



SECTION C-C - ALTERNATE

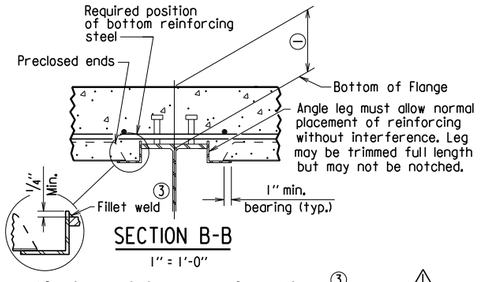
1" = 1'-0"

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



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

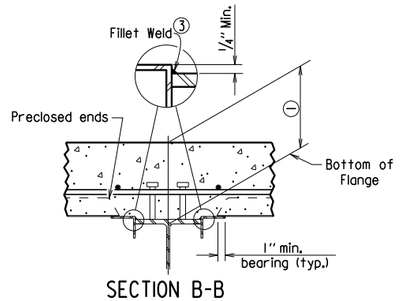


SECTION B-B

1" = 1'-0"

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

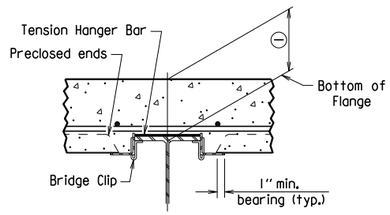
③ ⚠ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

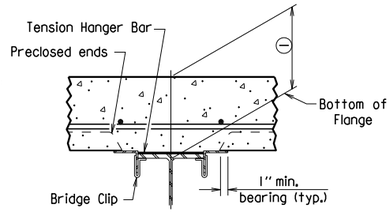
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

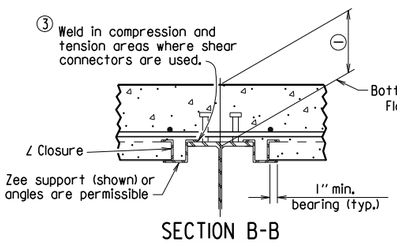
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

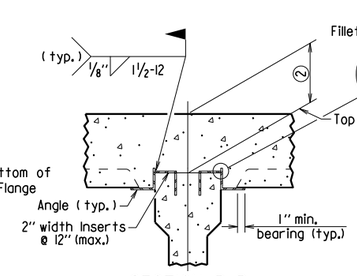
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

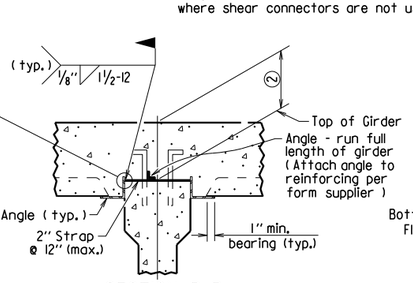


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Insert cast in girder)

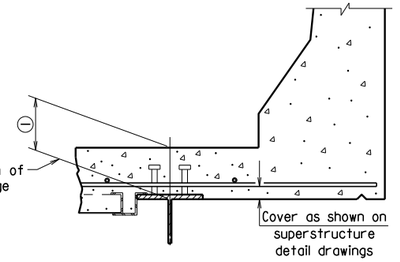


SECTION B-B

(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

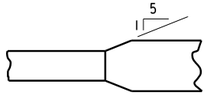
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

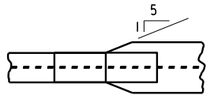
PRINT DATE: 11/7/2019

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			

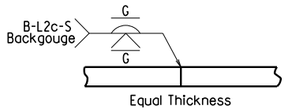


Plan-Unequal Width (Flg.)

FLANGE SPLICE

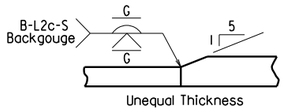


FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



Equal Thickness

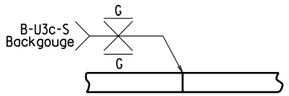
WEB & FLANGE SPLICE



Unequal Thickness

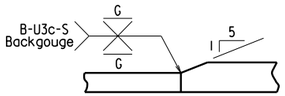
FLANGE SPLICE

(Use when Base Metal Thickness is Equal to or Less than 2")



Equal Thickness

WEB & FLANGE SPLICE

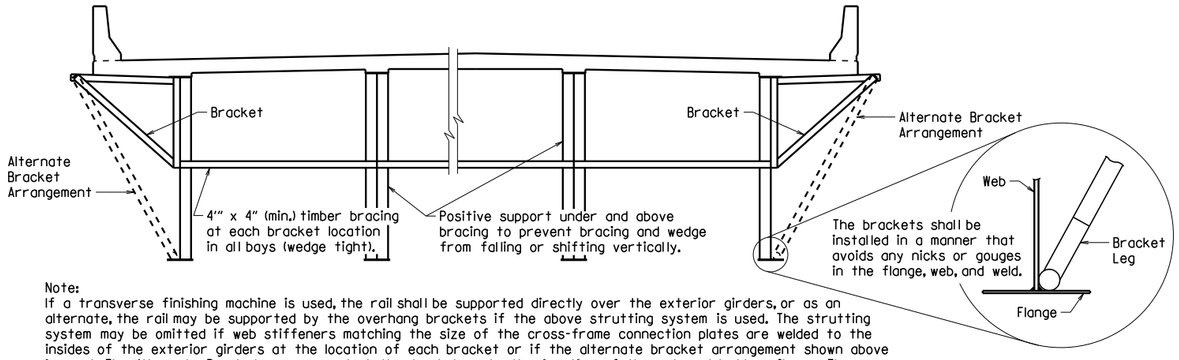


Unequal Thickness

FLANGE SPLICE

(Use when Base Metal Thickness is Greater than 2")

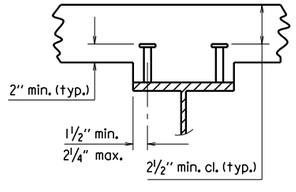
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



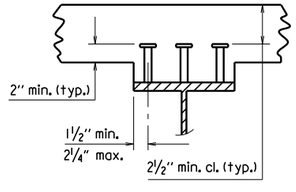
Note:
If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if web stiffeners matching the size of the 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)



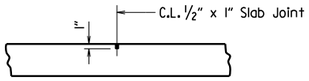
2 STUDS PER ROW



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.

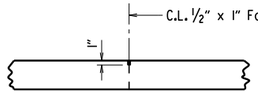
SHEAR CONNECTOR DETAIL



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.

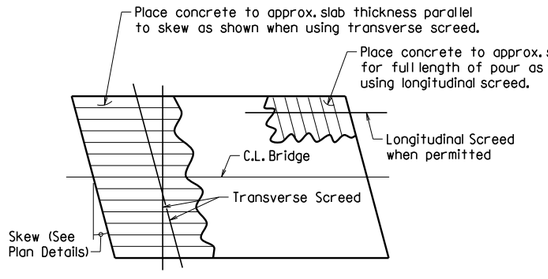
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck 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



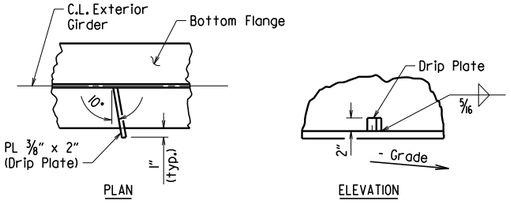
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

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

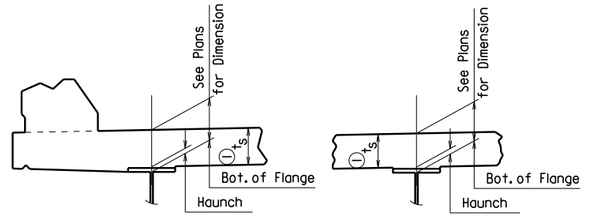
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

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

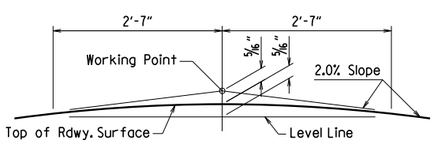
INTERIOR BEAM OR GIRDER

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.

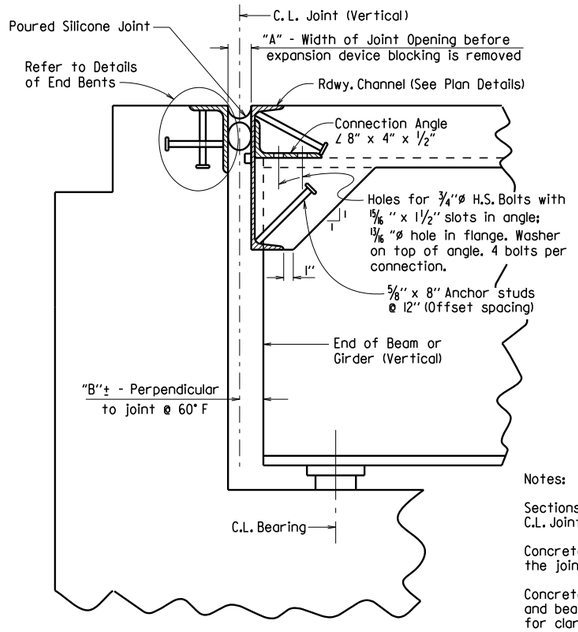
DRAWN BY: JYP DATE: 2/11/2016 FILENAME: b55007.dgn

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



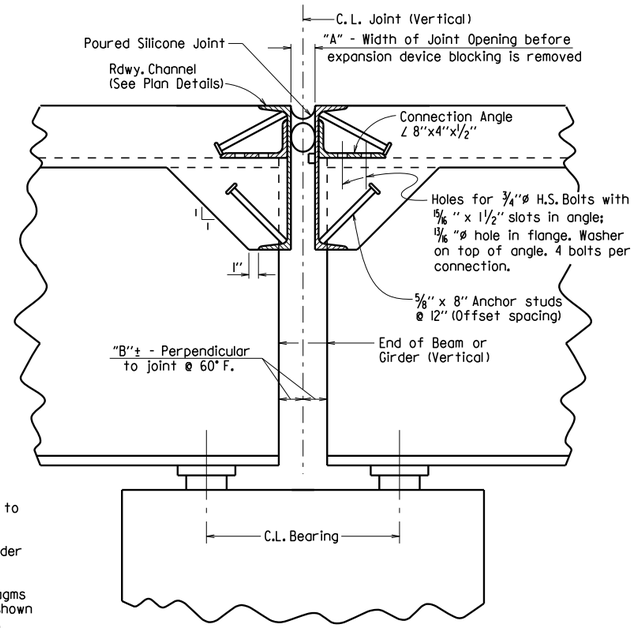
SECTION THRU JOINT AT END BENT

Notes:

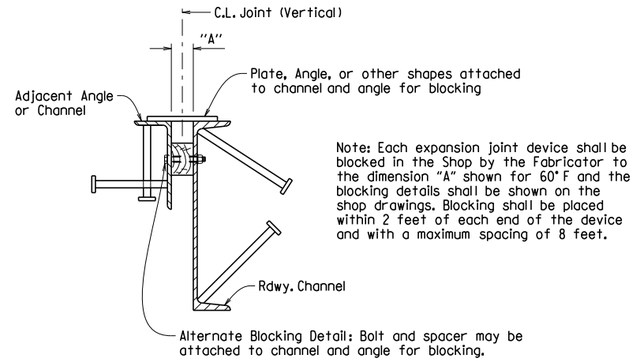
Sections are taken perpendicular to C.L. Joint.

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:

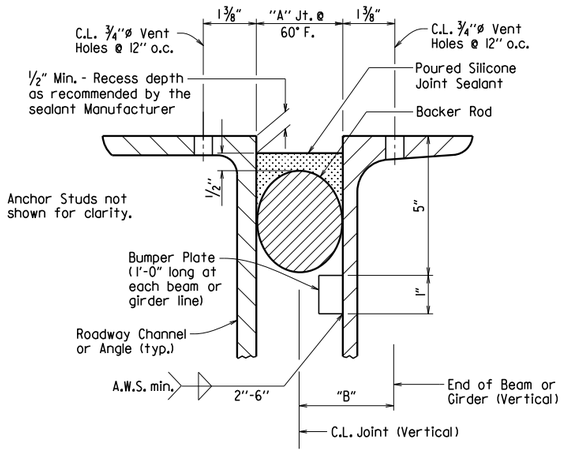
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior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



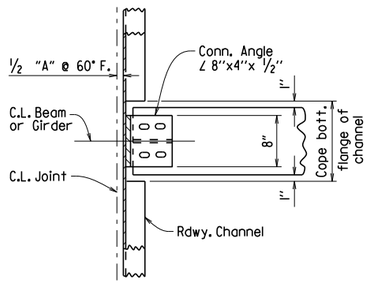
DETAIL OF POURED SILICONE JOINT

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.

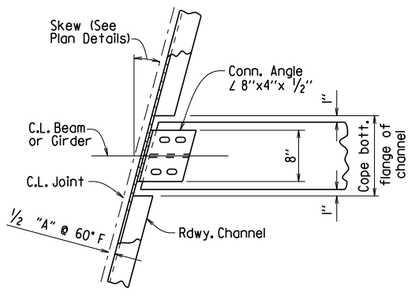
The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

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.



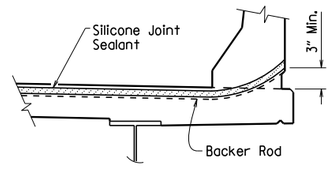
CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW

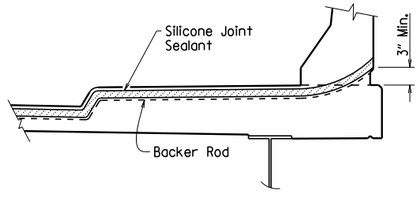


CHANNEL CONNECTION DETAIL

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

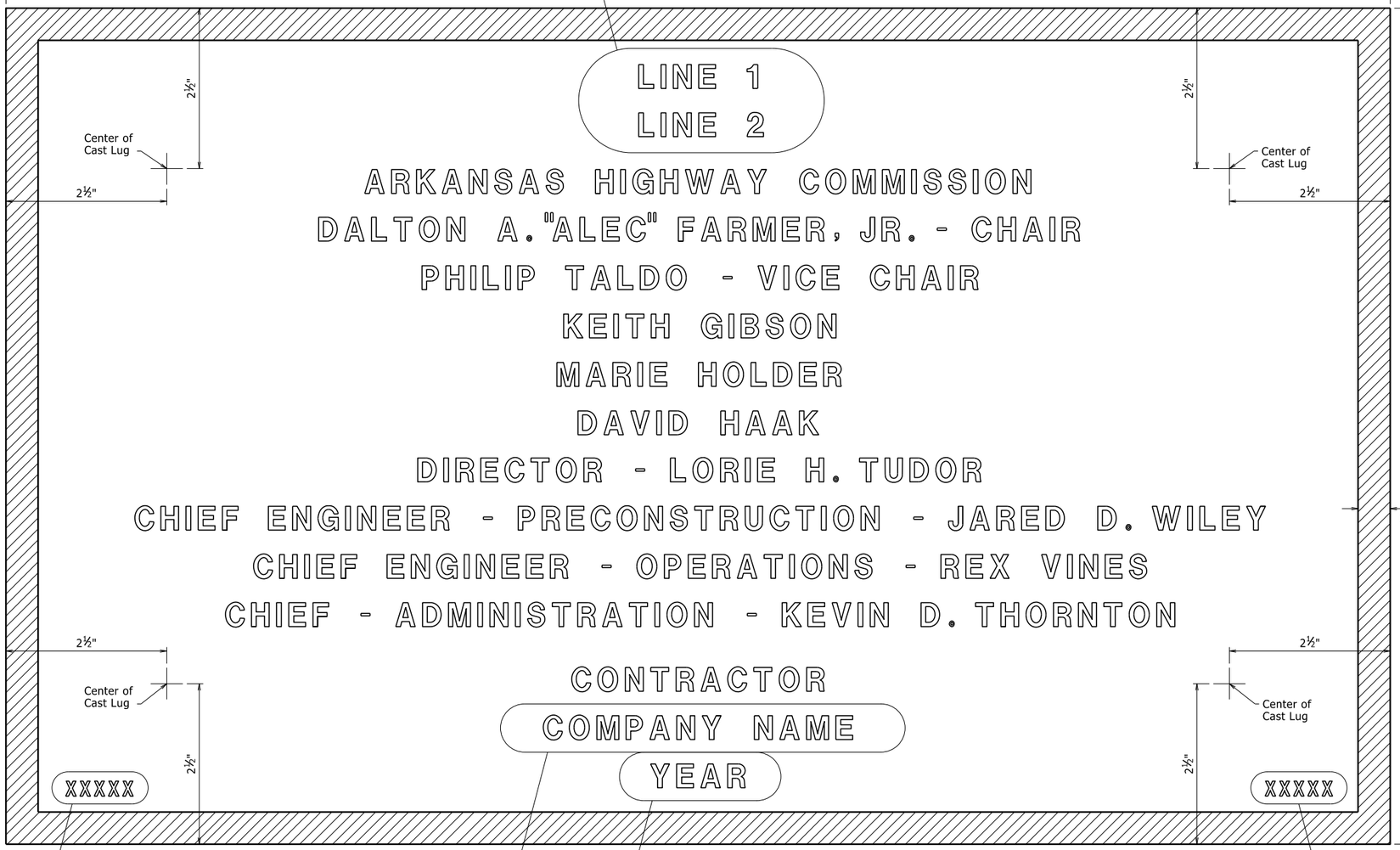
DESIGNED BY: STD. DATE: —

DRAWING NO. 55008

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
4-14-23		6	ARK.			
		TYPE D NAME PLATE - 55010				

The name of the bridge as shown on the plans shall be placed on Lines 1 & 2 using ⅛" raised letters and numerals ⅜" high.

	Example 1	Example 2	Example 3	Example 4
Line 1	RED RIVER	SOUTHERN RAILROAD	SALINE RIVER	HIGHWAY 5
Line 2	RELIEF	OVERPASS	RELIEF	



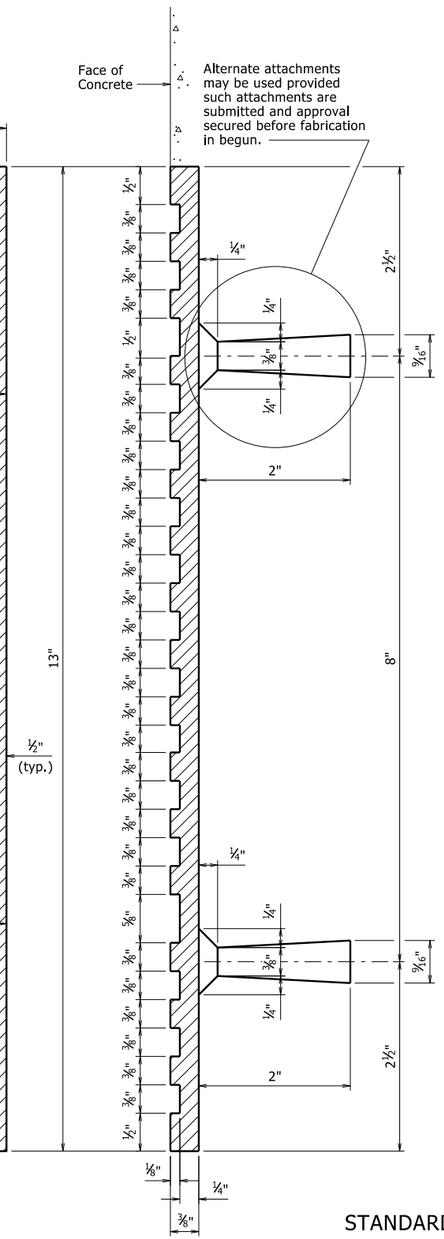
Place the design live loading here using ⅛" raised letters and numerals ¼" high. Examples: HS20, HL-93

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.

1 Revised and Redrawn
4-14-23 CGP 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: 4/20/2023

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 H-PILES		55020

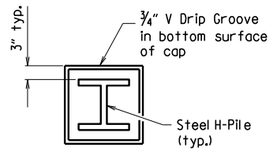
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

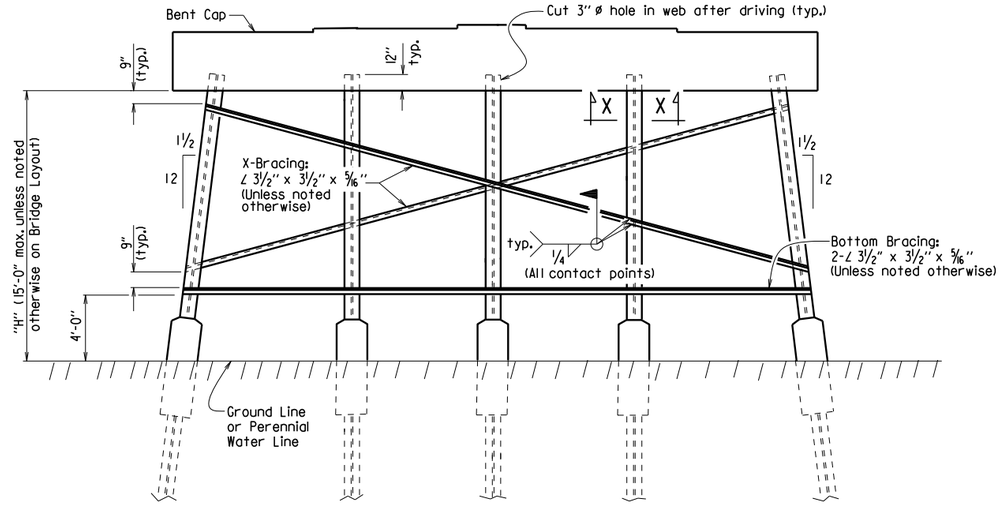
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



Notes:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

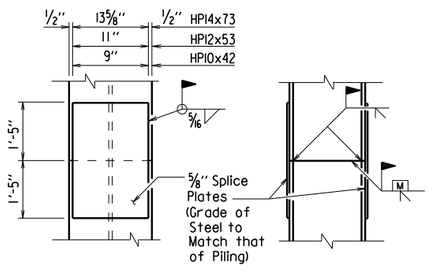
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)



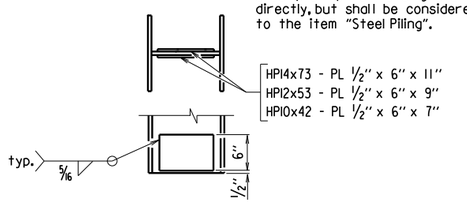
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

⚠ H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16" fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifcations for Highway Construction (2014 Edition).

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

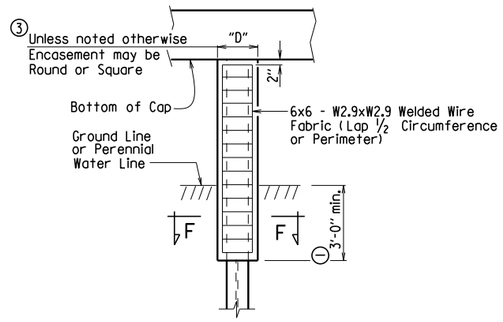
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

All 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.

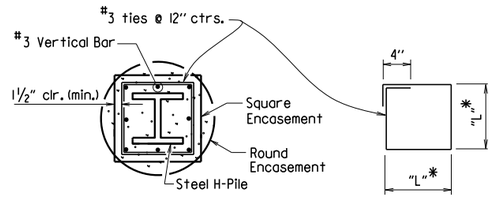
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

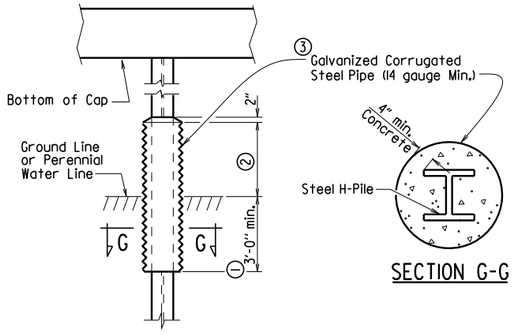


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HPI0x42	1'-7"	2'-0"	1'-4"
HPI2x53	1'-8"	2'-2"	1'-5"
HPI4x73	1'-11"	2'-6"	1'-8"



SECTION G-G

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

⚠ Added alternate method of splicing H-piles and revised pile encasement note.
3/24/2016 AMS

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 STEEL H-PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

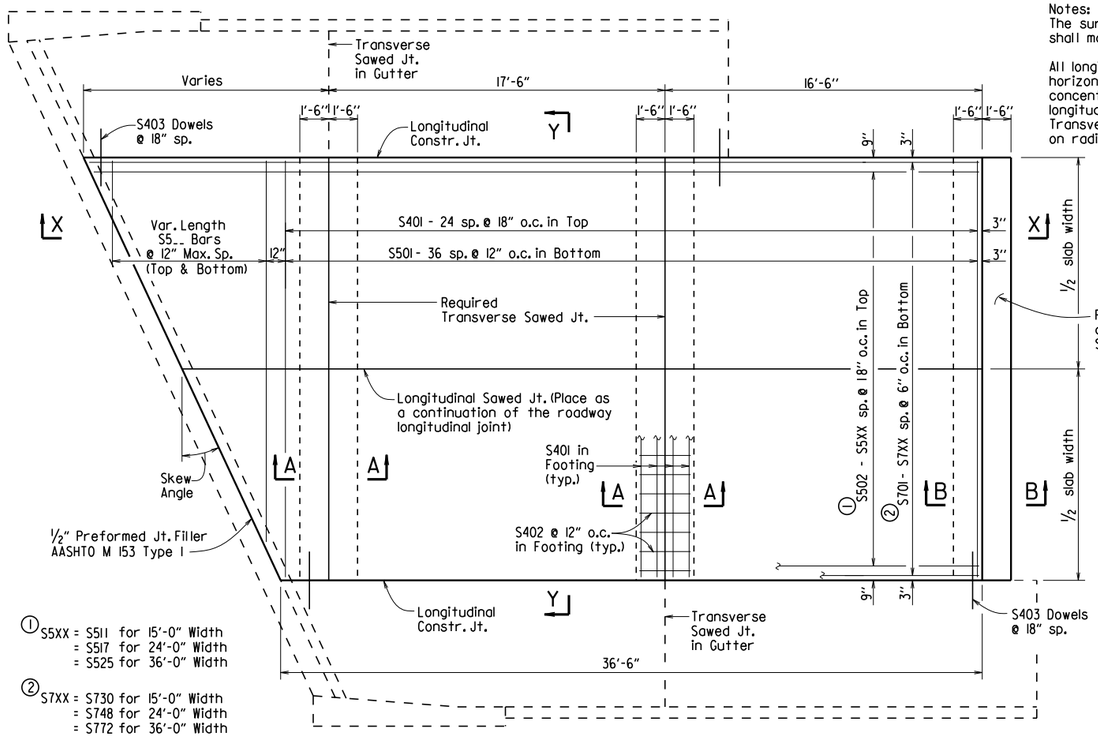
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.				

TYPE CI APPROACH SLAB 55040CI

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

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

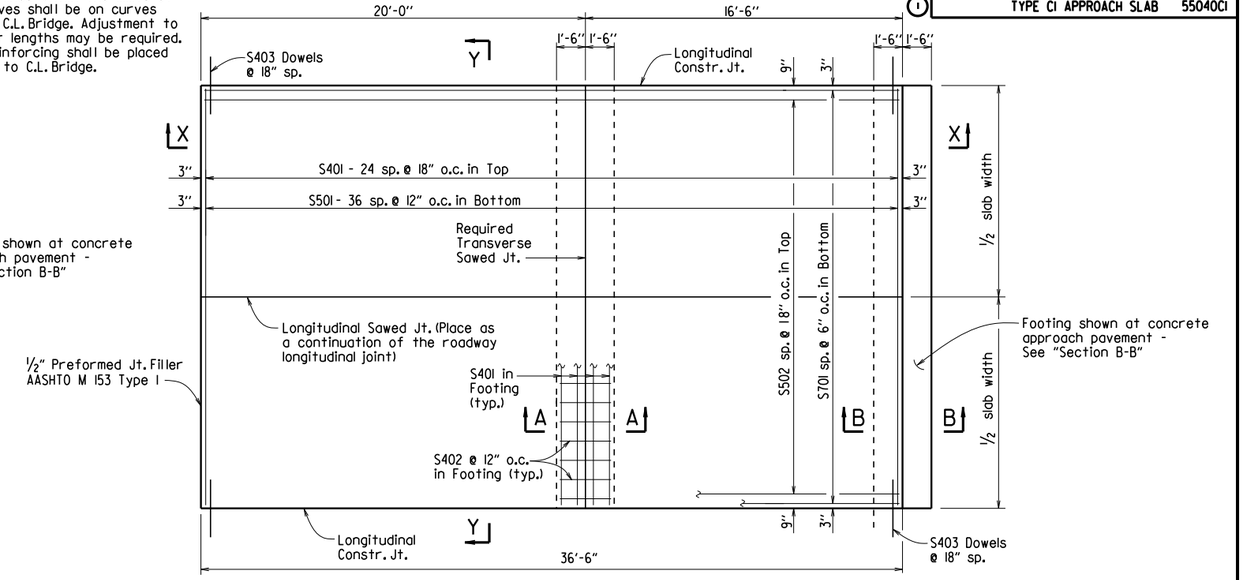


1 S5XX = S511 for 15'-0" Width
= S517 for 24'-0" Width
= S525 for 36'-0" Width

2 S7XX = S730 for 15'-0" Width
= S748 for 24'-0" Width
= S772 for 36'-0" Width

PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS

1/4" = 1'-0"



PLAN - SQUARE APPROACH SLAB

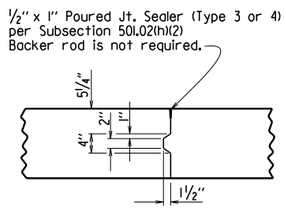
1/4" = 1'-0"

BAR LIST

(Square & Skewed Approach Slabs)

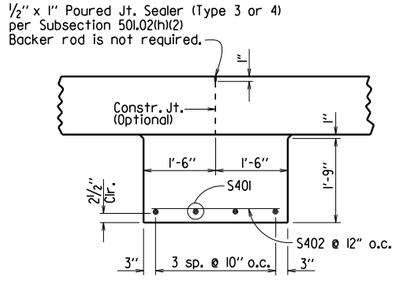
	Mark	Square No. Req'd.	Square Length	Skewed No. Req'd.	Skewed Length
15'-0" Slab Width	S401	33	14'-8"	37	14'-8"
	S402	30	2'-8"	45	2'-8"
	S403	50	3'-0"	*	3'-0"
	S501	37	14'-8"	37	14'-8"
	S502	10	36'-2"	—	—
	S502 - S511	—	—	1 Ea.	36.1' + 0.75' (tan skew angle) to 36.1' + 14.25' (tan skew angle)
	S5..	—	—	2 Ea.	14.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	30	36'-2"	—	—
	S701 - S730	—	—	1 Ea.	36.1' + 0.25' (tan skew angle) to 36.1' + 14.75' (tan skew angle)
24'-0" Slab Width	S401	33	23'-8"	37	23'-8"
	S402	48	2'-8"	72	2'-8"
	S403	50	3'-0"	*	3'-0"
	S501	37	23'-8"	37	23'-8"
	S502	16	36'-2"	—	—
	S502 - S517	—	—	1 Ea.	36.1' + 0.75' (tan skew angle) to 36.1' + 23.25' (tan skew angle)
	S5..	—	—	2 Ea.	23.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	48	36'-2"	—	—
	S701 - S748	—	—	1 Ea.	36.1' + 0.25' (tan skew angle) to 36.1' + 23.75' (tan skew angle)
36'-0" Slab Width	S401	33	35'-8"	37	35'-8"
	S402	72	2'-8"	108	2'-8"
	S403	50	3'-0"	*	3'-0"
	S501	37	35'-8"	37	35'-8"
	S502	24	36'-2"	—	—
	S502 - S525	—	—	1 Ea.	36.1' + 0.75' (tan skew angle) to 36.1' + 35.25' (tan skew angle)
	S5..	—	—	2 Ea.	35.7' - 0.75'/(tan skew angle) to 2'-0" Min.
	S701	72	36'-2"	—	—
	S701 - S772	—	—	1 Ea.	36.1' + 0.25' (tan skew angle) to 36.1' + 35.75' (tan skew angle)

* Varies with skew angle



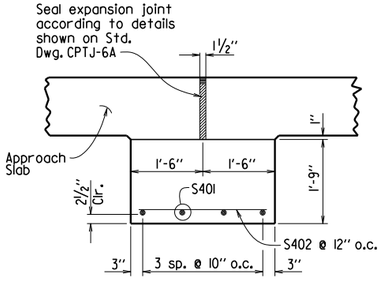
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

¾" = 1'-0"



SECTION A-A

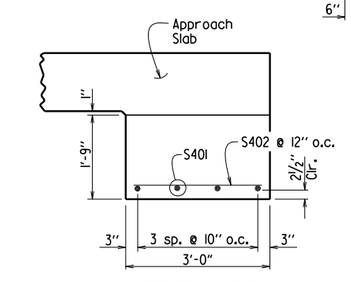
N.T.S.



SECTION B-B

AT CONCRETE APPROACH PAVEMENT

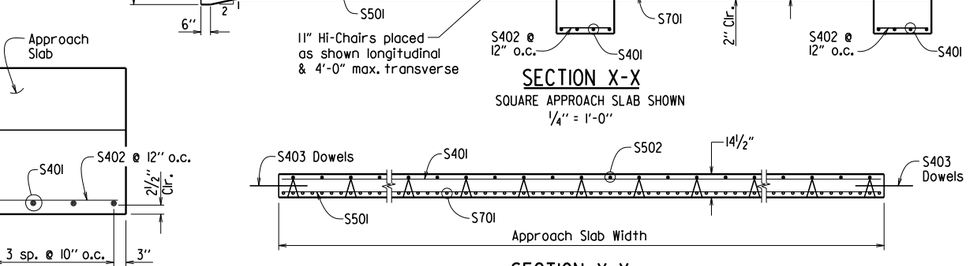
N.T.S.



SECTION B-B

AT ASPHALT APPROACH PAVEMENT

N.T.S.



SECTION X-X

SQUARE APPROACH SLAB SHOWN

1/4" = 1'-0"

SECTION Y-Y

N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
15'-0"	3640	30.75
24'-0"	5775	49.15
36'-0"	8620	73.75

GENERAL NOTES

This drawing shall be used for Approach Slabs in Seismic Performance Zone 1 and for the maximum skew angles shown below:

15'-0" Slab Width: Maximum Skew Angle = 50°
24'-0" Slab Width: Maximum Skew Angle = 40°
36'-0" Slab Width: Maximum Skew Angle = 30°

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

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

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

STANDARD DETAILS FOR TYPE CI APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

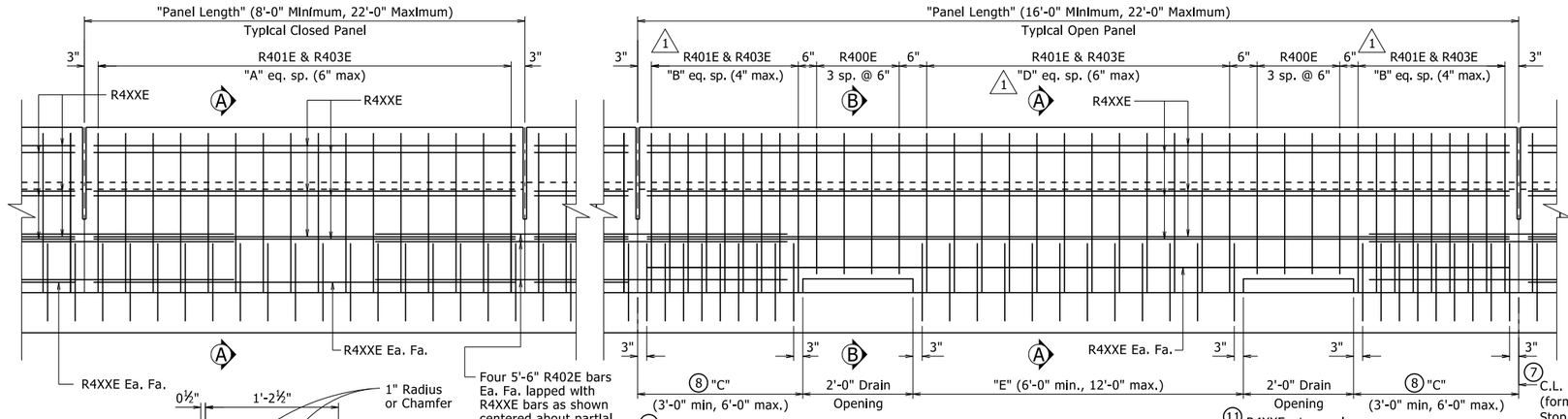
LITTLE ROCK, ARK.

DRAWN BY:	A.M.S.	DATE:	2/27/2014	FILENAME:	b55040ci.dgn
CHECKED BY:	K.W.Y.	DATE:	2/27/2014	SCALE:	AS SHOWN
DESIGNED BY:	STD.	DATE:			

DRAWING NO. 55040CI

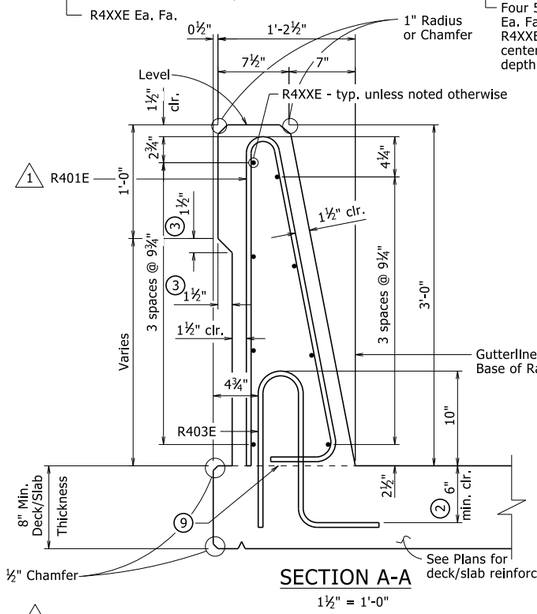
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
09/27/2022				6	ARK.			
				JOB NO.				

TYPE SSTR36 - 55070



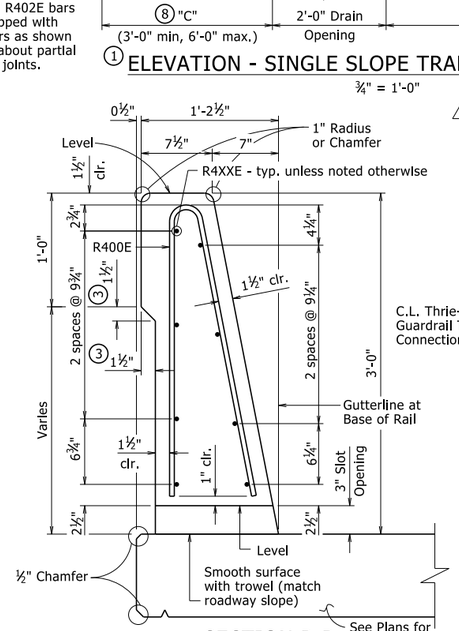
(1) ELEVATION - SINGLE SLOPE TRAFFIC RAIL

¾" = 1'-0"



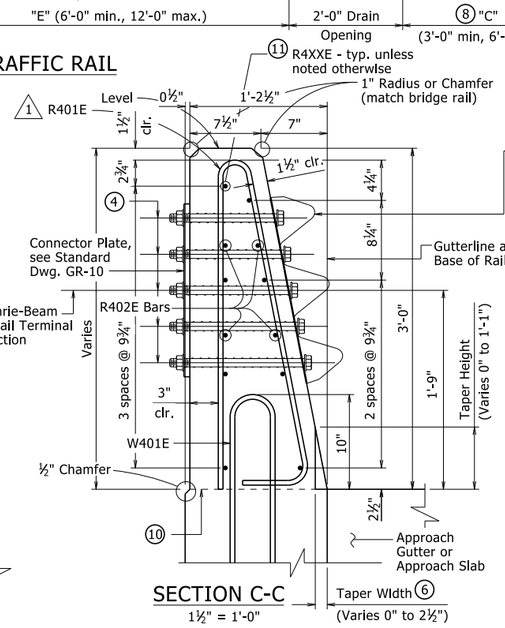
SECTION A-A

1½" = 1'-0"



SECTION B-B

1½" = 1'-0"



SECTION C-C

1½" = 1'-0"

(9) Required Construction Joint. Level where water flows away from rail, match roadway slope where water flows toward rail.

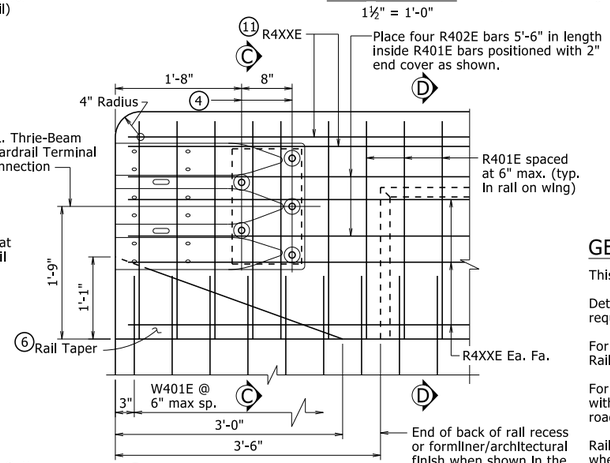
(10) Top of Abutment Wing & Required Construction Joint (match bridge deck/slab construction joint slope). See Plans for Wing reinforcing.

(11) These bars will not be included in the "Table of Variables". See Plans for details.

Bolt Special End Shoe to face of rail as shown. Tapered washers are not required between the head of the bolts and the sloped face of the rail. Tighten the five terminal connection bolts in a well distributed pattern to prevent damage or distortion of the thrie-beam connection. Cut bolts off after installation so as to extend no more than ¾" beyond nut. Paint ends of cut-off bolts with zinc-rich paint. This work and material will not be paid for directly but shall be considered subsidiary to associated contract items.

SECTION D-D

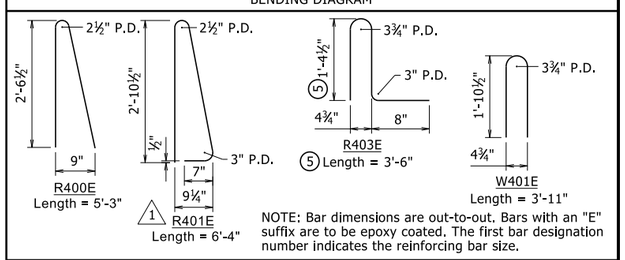
1½" = 1'-0"



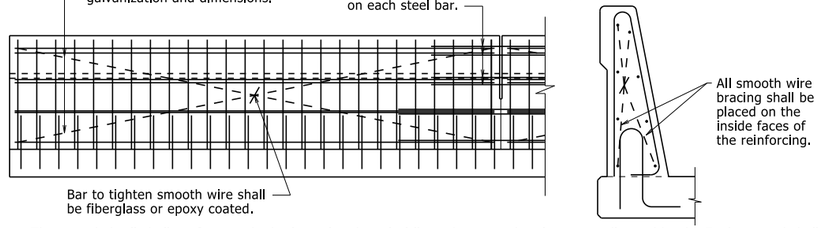
(1) RAIL TERMINUS DETAILS

1" = 1'-0"

BENDING DIAGRAM



NOTE: Bar dimensions are out-to-out. Bars with an "E" suffix are to be epoxy coated. The first bar designation number indicates the reinforcing bar size.



The extruded rail 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 Class 2, Rubbed Finish.

All panels shall be braced as required to prevent racking.

Slip forming will not be allowed on bridges where formliner with architectural treatment is used unless approval from the Engineer is obtained.

TABLE OF VARIABLES

Closed Rail Panels			Open Rail Panels					
Panel Length	A	R4XXE	Panel Length	B	C	D	E	R4XXE

See Plans for table with values.

GENERAL NOTES

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-4 criteria.

Details shown are general for bridges without sidewalks. See Plans for additional details and requirements specific to bridges with sidewalks.

For Table of Variables, Rail Bar List, locations of Full and Partial Depth Rail Joints, and Wing & Rail Bar Lists, see Plans.

For location of drain openings, see Plans. Drain openings shown are not applicable for bridges with sidewalks. Drain openings will not be allowed over Railroad Right of Way, travelled roadways, and protected waterways.

Rail Terminus details, including Rail Taper, are not applicable for bridges with sidewalks or when bridge railing is continuous with roadway railing.

Scales shown are for 22"x34" drawings. When using 11"x17" drawings, reduce scale by one half.

(1) Modified bending diagram and spacing for R401E bar.

By: CGP, Checked by: CMW 09/27/2022

No Scale

This document was originally issued and sealed by Charles R. Ellis, PE No. 9235, on November 5, 2020. This copy is not a signed and sealed document.

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

BRIDGE ENGINEER

THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

STANDARD DETAILS FOR BRIDGE TRAFFIC RAIL TYPE SSTR36

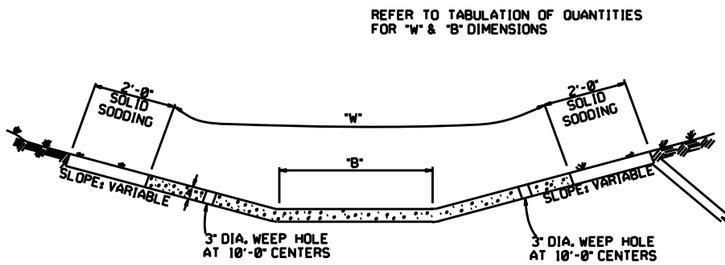
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 11/5/2020 FILENAME: b55070.dgn
CHECKED BY: LJB DATE: 11/5/2020 SCALE: As Noted
DESIGNED BY: STD. DATE: -----

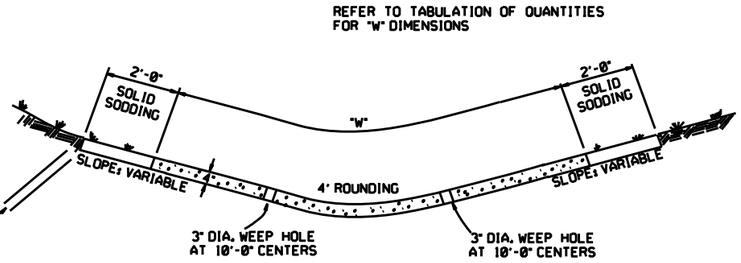
DRAWING NO. 55070

PRINT DATE: 10/6/2022



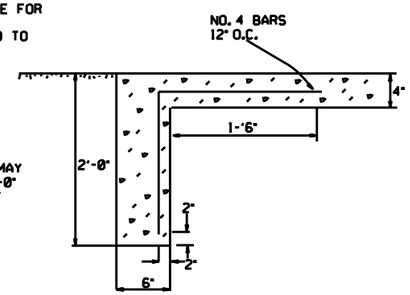
TYPE A

EXCAVATE TO NEAT LINES TO CONSTRUCT DITCH PAVING AND SOLID SODDING.



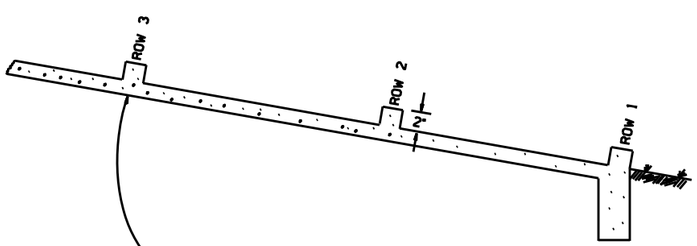
TYPE B

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."



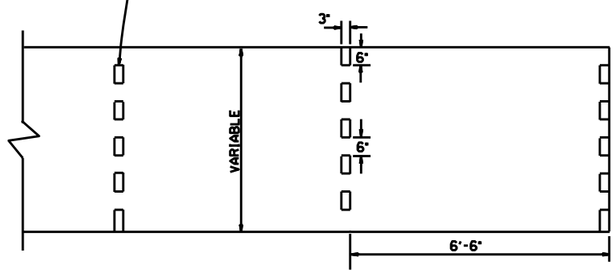
TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

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.

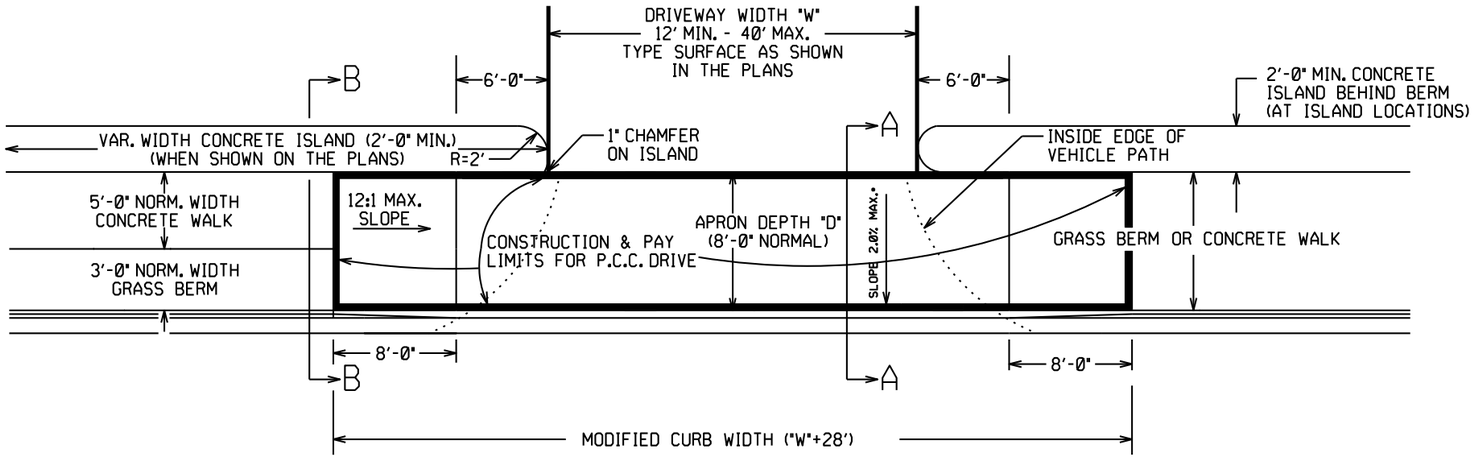
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45° INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

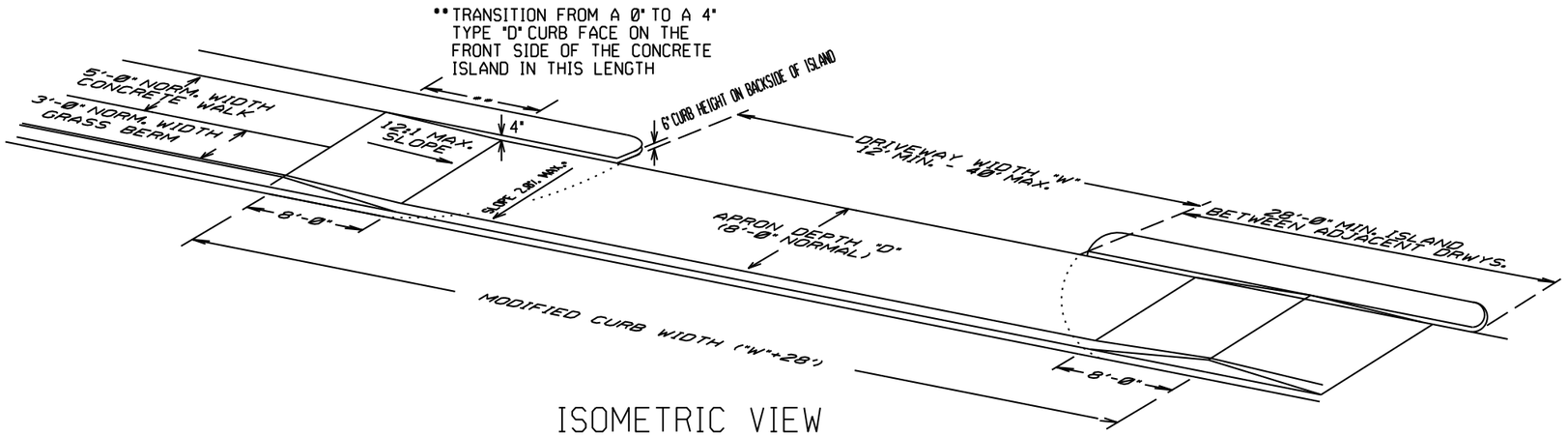
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

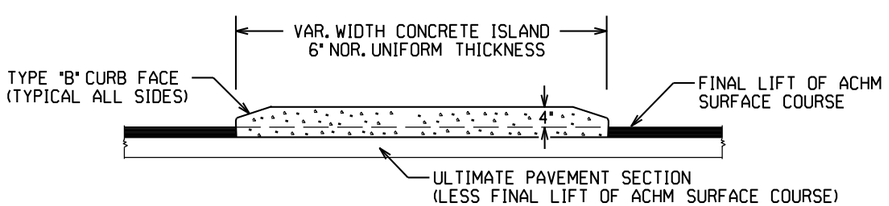
STANDARD DRAWING CDP-1



PLAN VIEW



ISOMETRIC VIEW

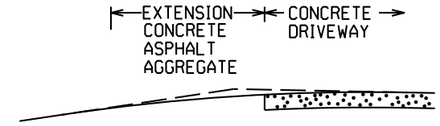


CURBED ISLANDS FOR CHANNELIZATION

CONCRETE ISLAND NOTES:

1. 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".

2. TRANSVERSE EXPANSION JOINTS, NOT LESS THAN 1/2" WIDE, SHALL BE PLACED AT MINIMUM INTERVAL OF 45'. TRANSVERSE JOINT SHALL BE CONSTRUCTED USING A JOINT FILLER COMPLYING WITH AASHTO M213.



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

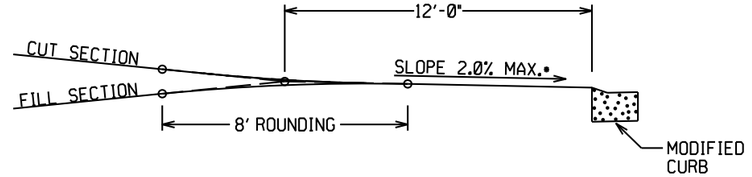
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE (1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

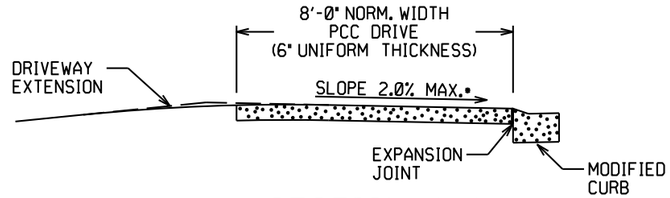
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

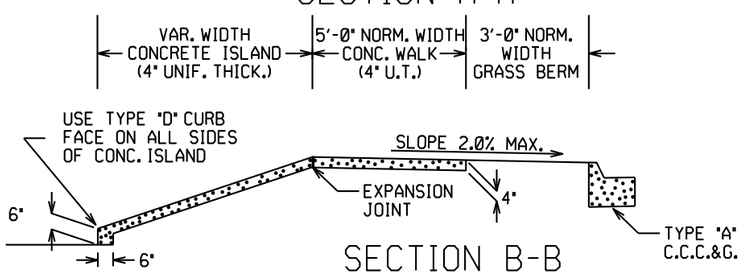


DRIVEWAY VERTICAL ALIGNMENT DETAILS

• NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



SECTION A-A



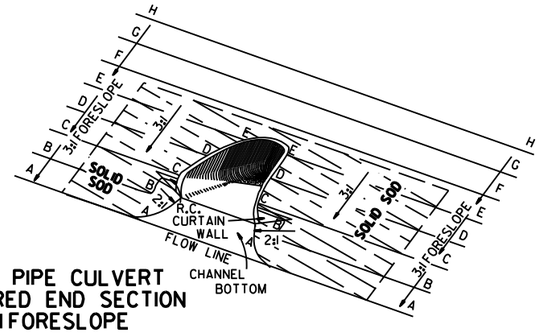
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
5-19-22		REVISED ISLAND NOTES
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

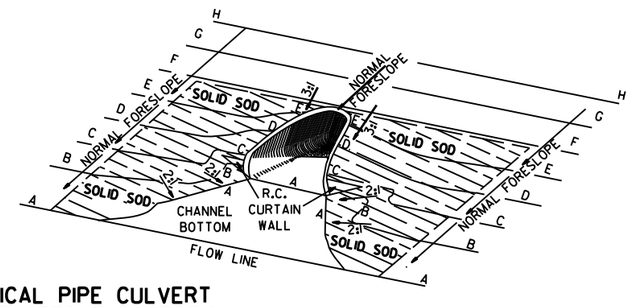
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & ISLANDS

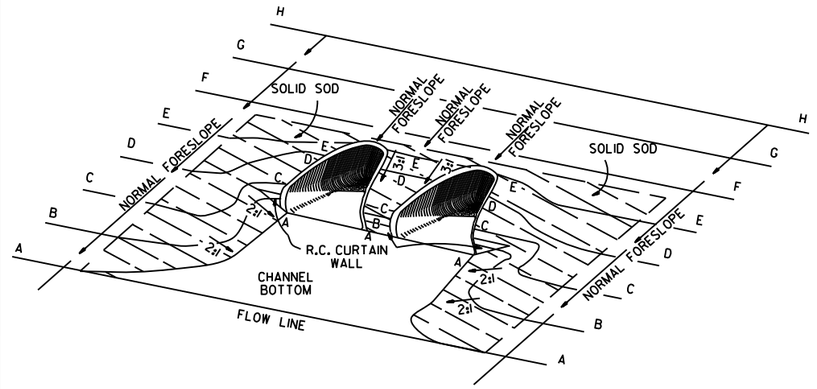
STANDARD DRAWING DR-1



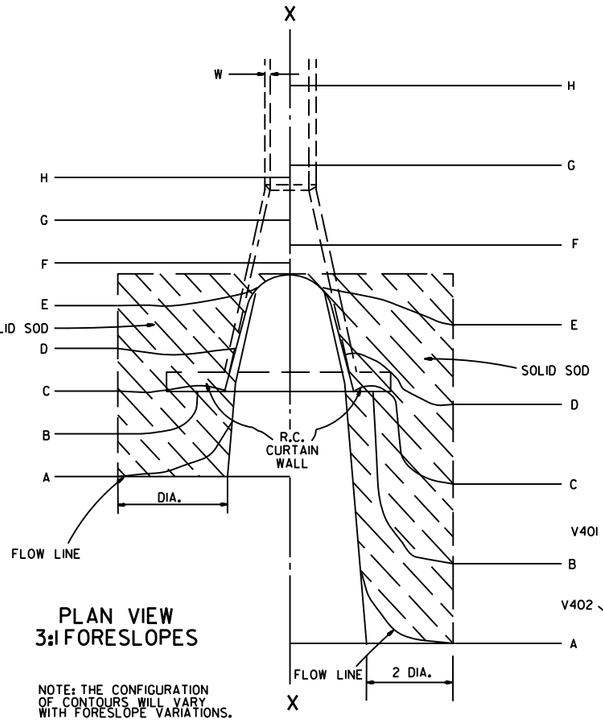
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

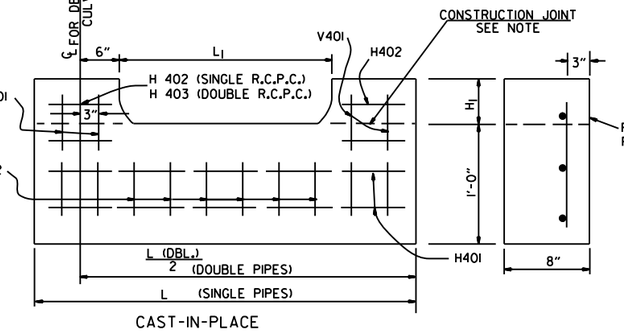
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

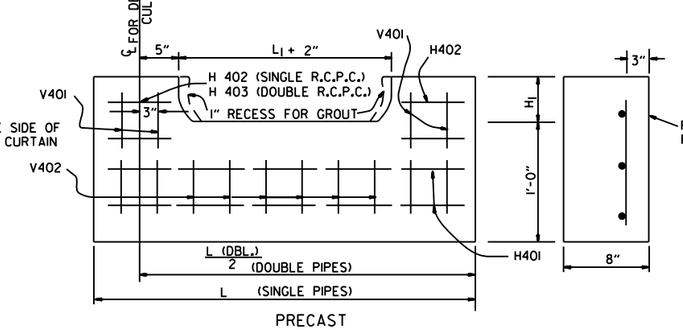
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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

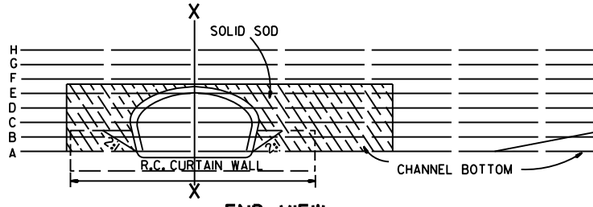
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



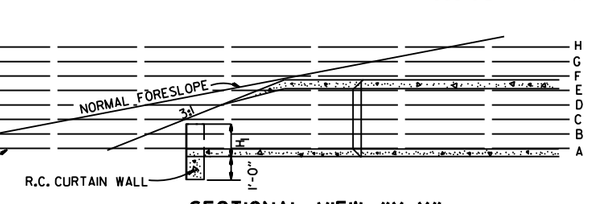
PRECAST

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



END VIEW



SECTIONAL VIEW "X-X"

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 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.

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

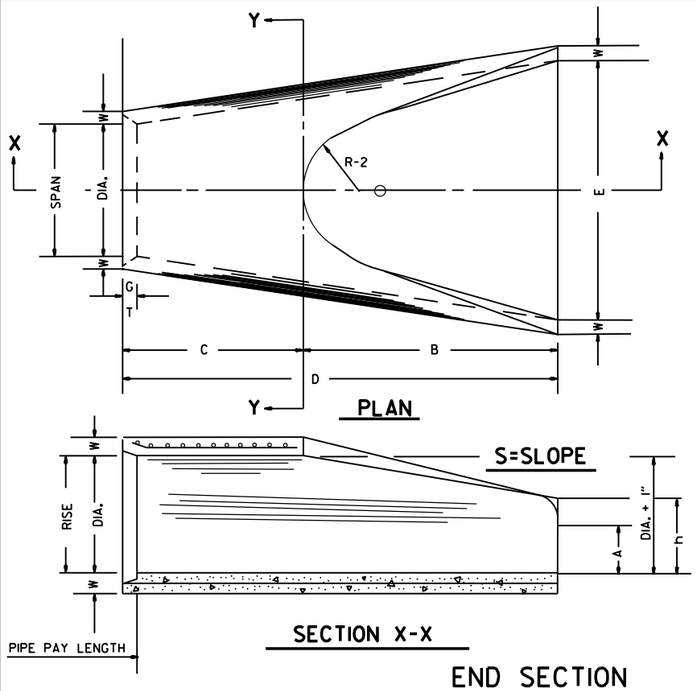
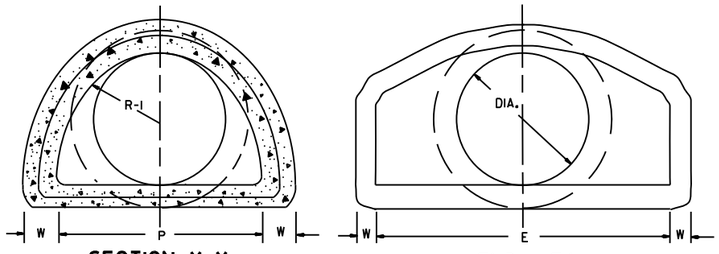


TABLE OF DIMENSIONS

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"

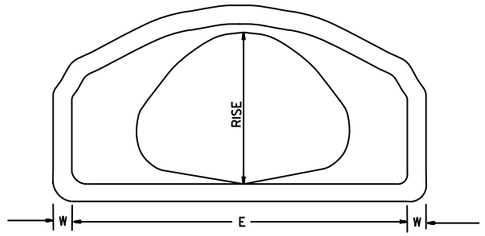


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE

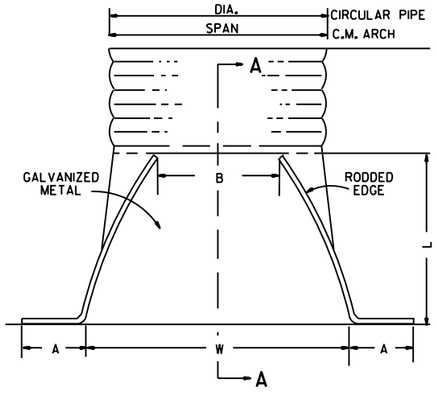
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	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

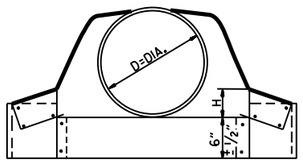
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

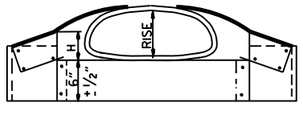


END VIEW
CONCRETE ARCH PIPE

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS







CIRCULAR PIPE

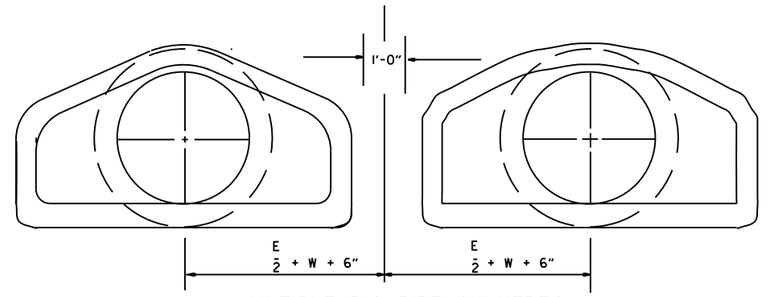
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	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

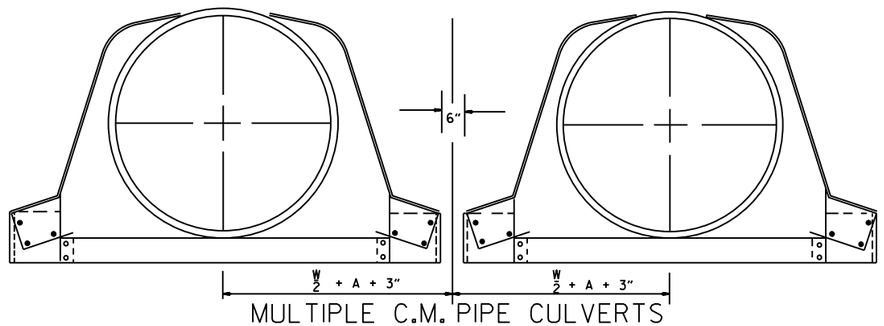
EQUIV. DIA.	SPAN	RISE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
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



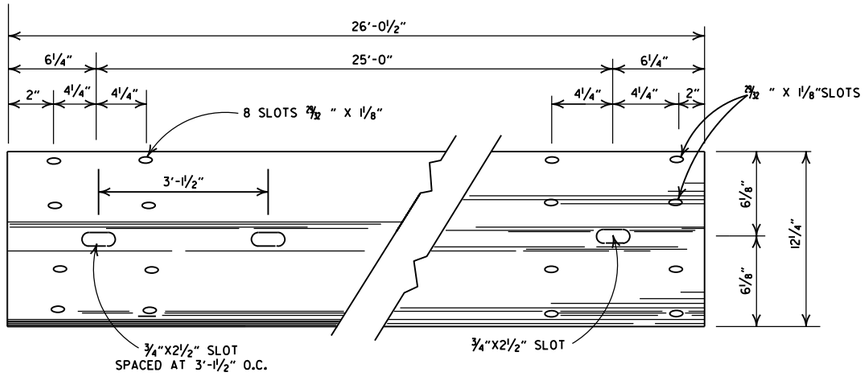
MULTIPLE C.M. PIPE CULVERTS

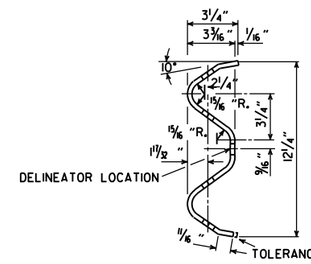
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73	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

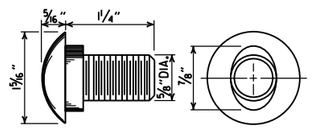
STANDARD DRAWING FES-2



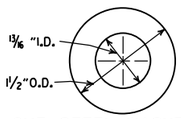


DETAILS OF W-BEAM GUARDRAIL

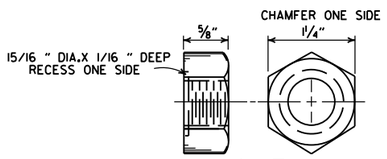
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



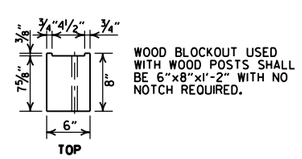
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

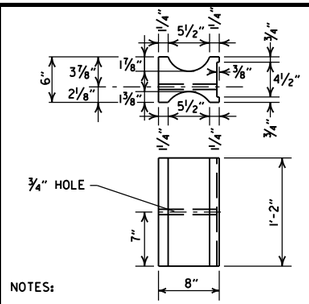


NUT



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

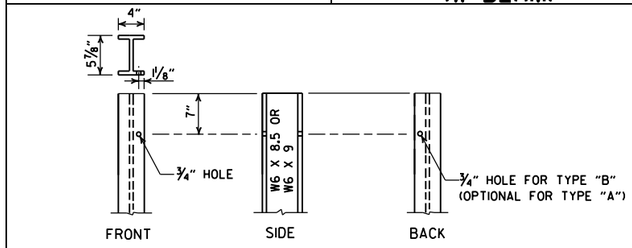
WOOD BLOCKOUT (W-BEAM)



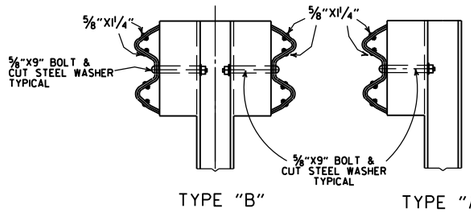
NOTES:

1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

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

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

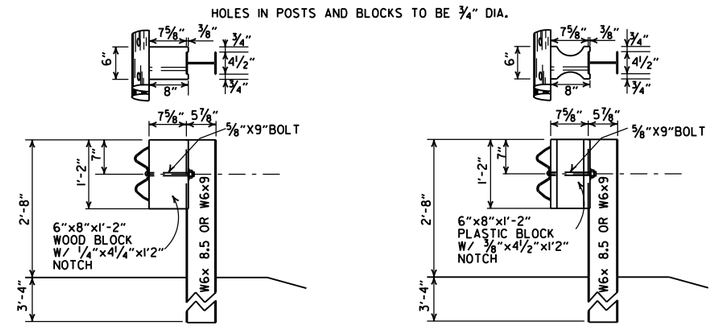
USE W-BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARDRAIL, W-BEAM GUARDRAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

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

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

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

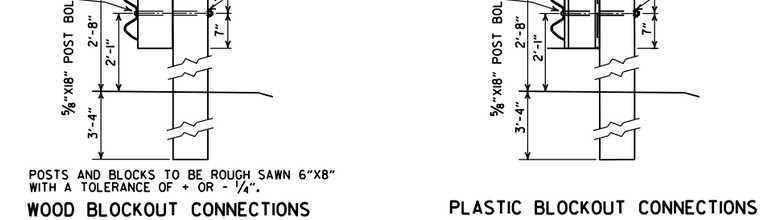
DELINEATORS SHALL BE MOUNTED AT 37.5' SPACING ON THE FRONT FACE OF THE GUARDRAIL. SPACING MAY BE REDUCED IN CURVES, AS DIRECTED BY THE ENGINEER. COLOR SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR DELINEATORS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID PER LIN. FT. FOR GUARDRAIL.



WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



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

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

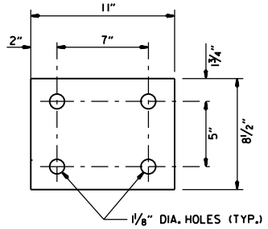
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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

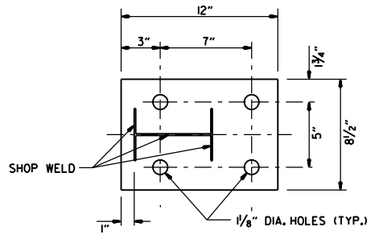
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-6

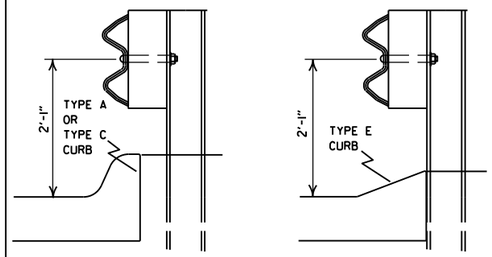


WASHER PLATE



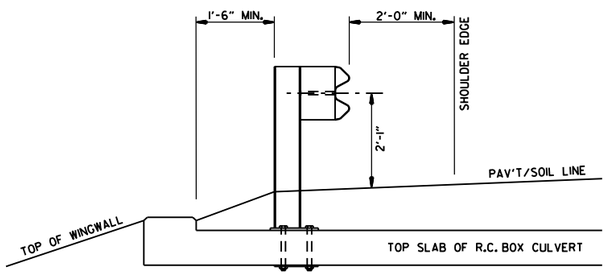
BASE PLATE

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

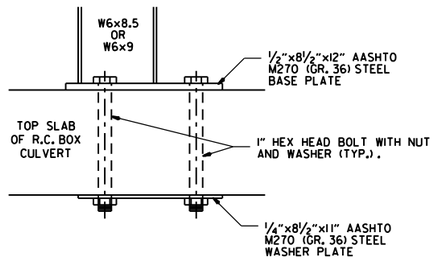


DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

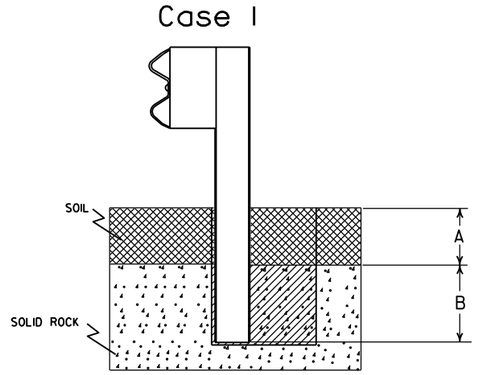
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.

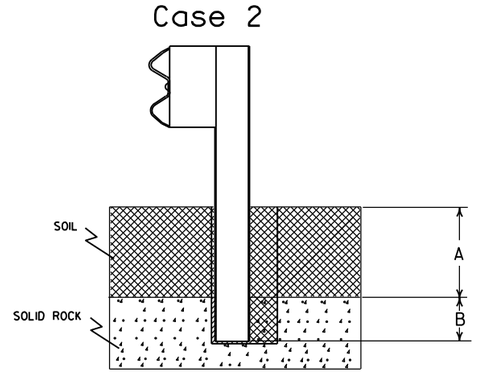


SECTION A-A



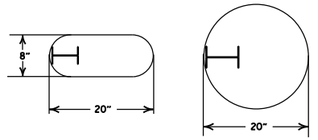
DETAIL OF CONNECTION

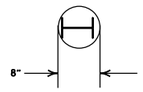




Plan View Steel Posts

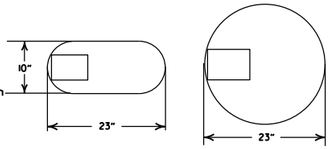
Either hole configuration acceptable

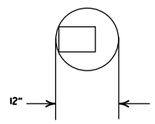




Plan View Wood Posts

Either hole configuration acceptable





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

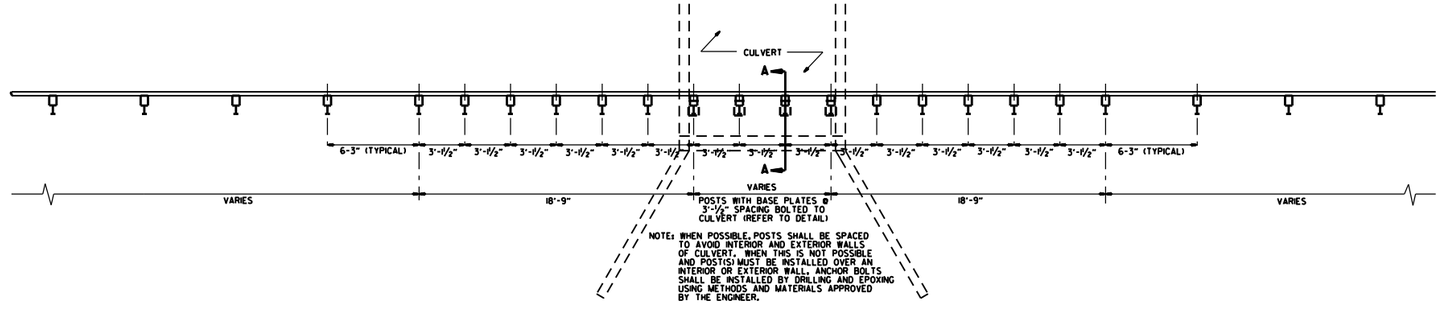
Zone A:
Backfill according to Section 617.03(a).

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

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

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

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



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

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

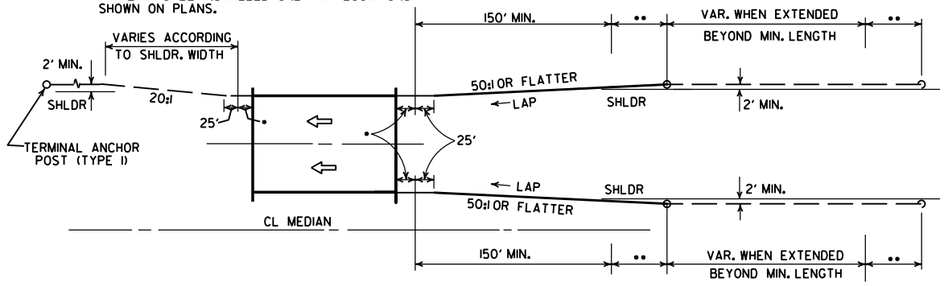
DATE	REVISION	FILMED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARDRAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARDRAIL CONNECTION TO R.C. BOX CULV'T., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARDRAIL PLACE. BEHIND CURB & DET. OF POSTPLACE. IN SOLID ROCK	
04-03-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
06-02-94	REVISED ALTERNATE POST SIZE	
08-05-93	REVISED STEEL POST SIZE	
10-01-92	REDRAWN & REVISED	10-1-92
08-02-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
07-15-88	CONFORMED TO 1988 SPECS	
03-04-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-09-87	REDRAWN & REVISED	803-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

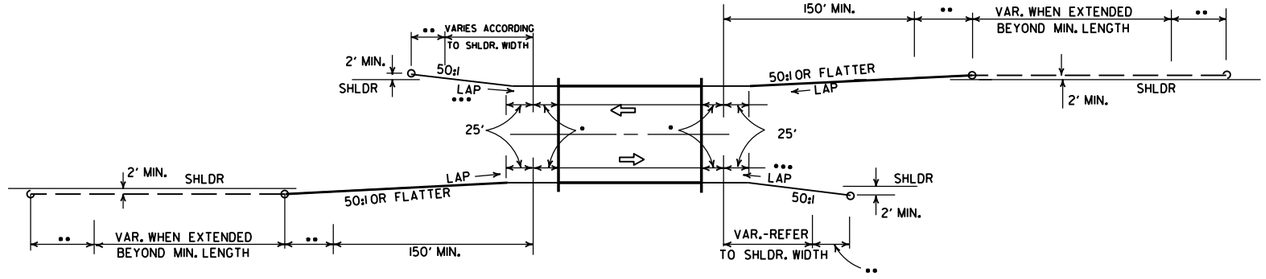
STANDARD DRAWING GR-7

NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

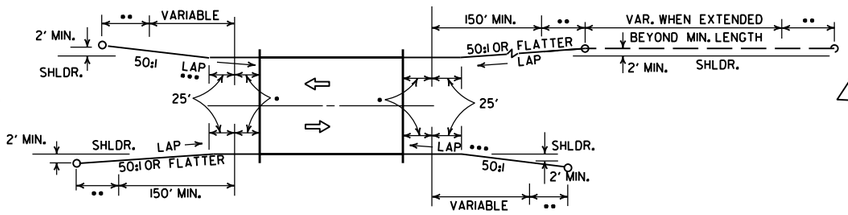
••• LAP OF GUARDRAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200'. CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

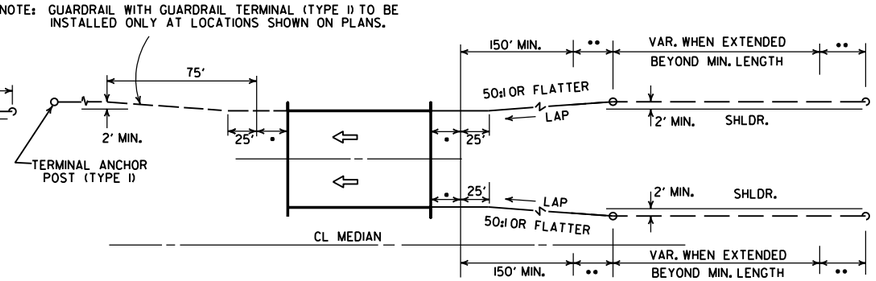
METHODS OF INSTALLATION OF GUARDRAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARDRAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

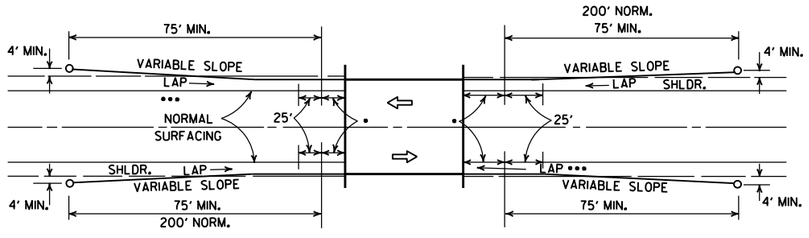
NOTE: GUARDRAIL WITH GUARDRAIL TERMINAL (TYPE 1) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

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



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

LEGEND

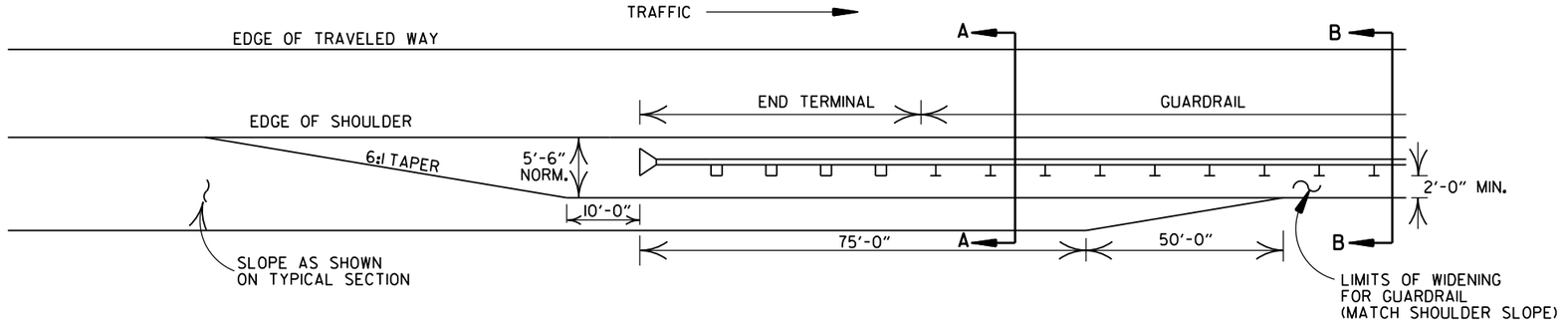
- • THRIE BEAM GUARDRAIL TERMINAL
- •• GUARDRAIL TERMINAL (TYPE 2)

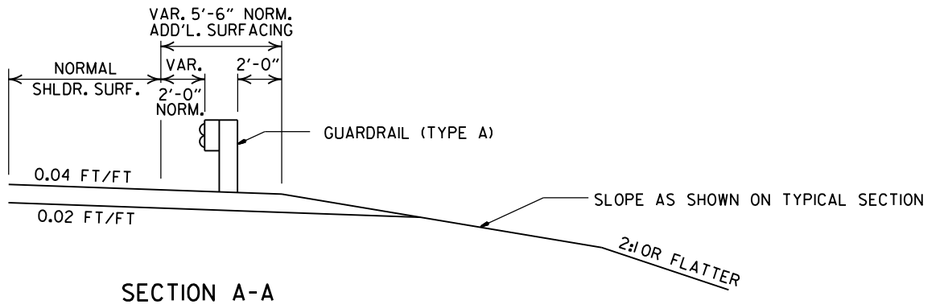
DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARDRAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARDRAIL USING GUARDRAIL TERM. (TY. 1)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED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

ARKANSAS STATE HIGHWAY COMMISSION

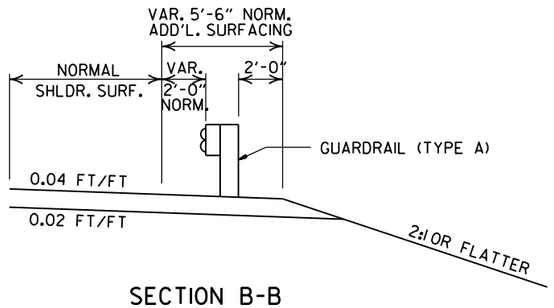
GUARDRAIL DETAILS

STANDARD DRAWING GR-8



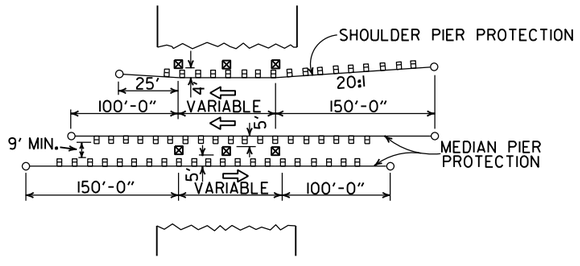


SECTION A-A



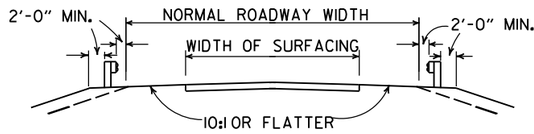
SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL

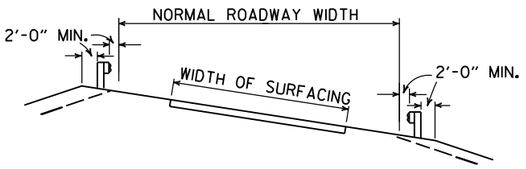


METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

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



SECTION ON TANGENT



SECTION ON CURVE

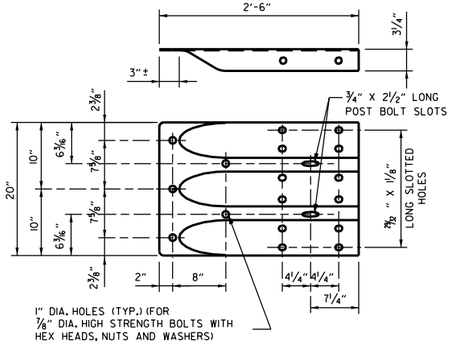
DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

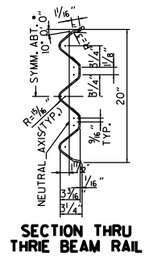
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

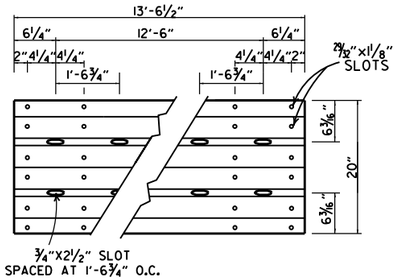
STANDARD DRAWING GR-9



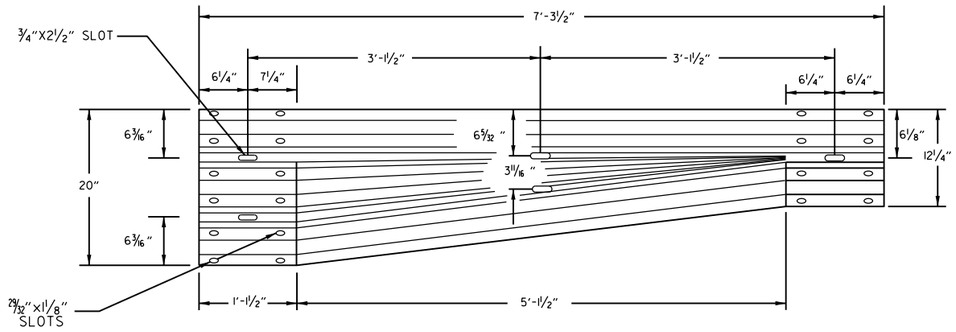
SPECIAL END SHOE



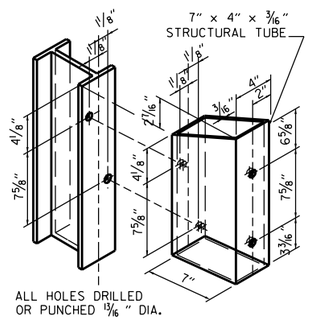
SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL

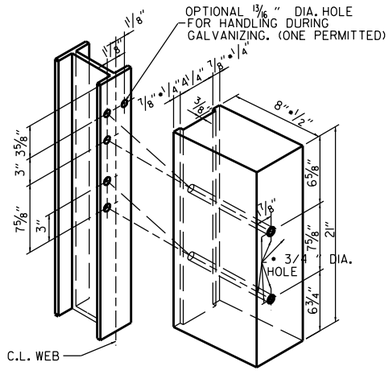


TRANSITION SECTION



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

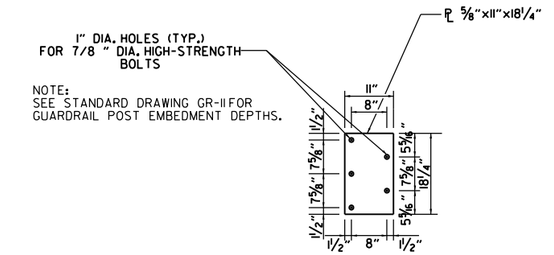
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

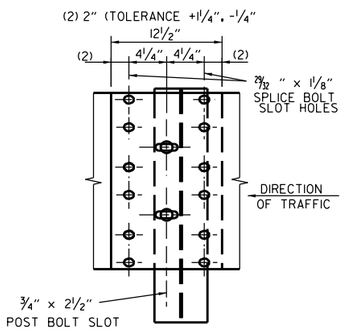
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



NOTE:
SEE STANDARD DRAWING GR-11 FOR GUARDRAIL POST EMBEDMENT DEPTHS.

CONNECTOR PLATE

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



THRIE BEAM RAIL SPLICE AT POST

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE 1.

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

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

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

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

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

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

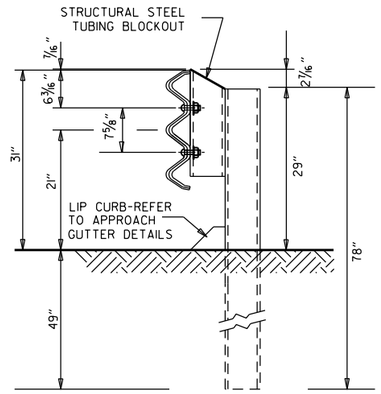
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-07-19	RENAMED AND REVISED REFERENCES	
11-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED NOTE (2)	
06-29-00	MOVED DIMENSION LINES	
05-18-00	ADDED NOTE	
03-30-00	DRAWN & ISSUED	

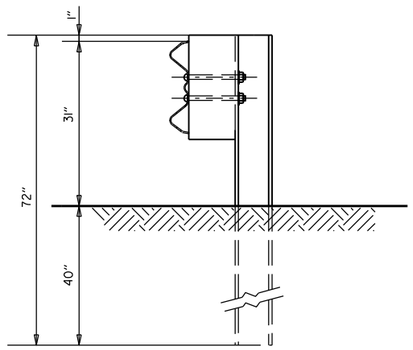
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

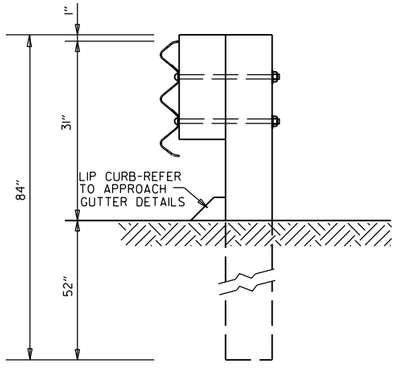
STANDARD DRAWING GR-10



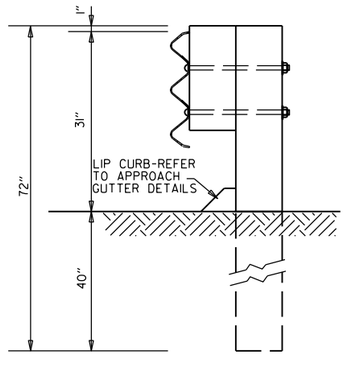
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



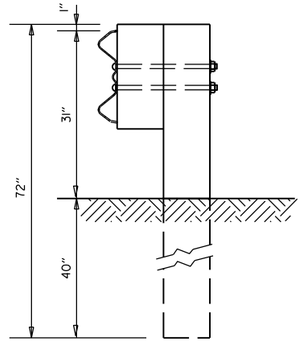
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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



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



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

GENERAL NOTES:

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

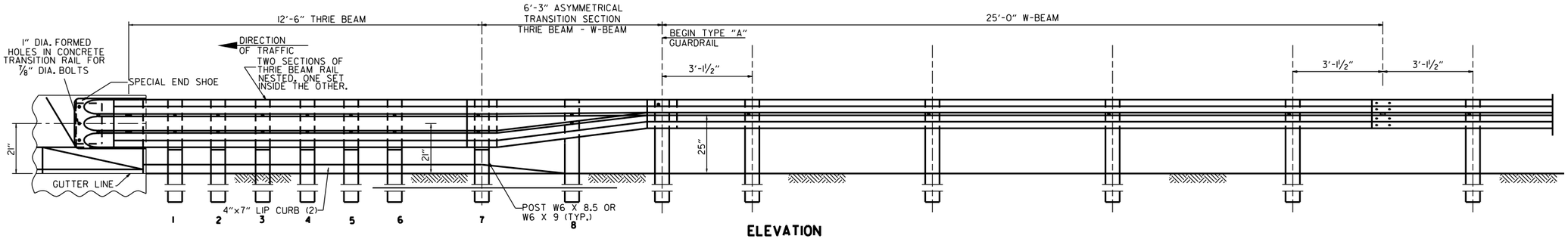
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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

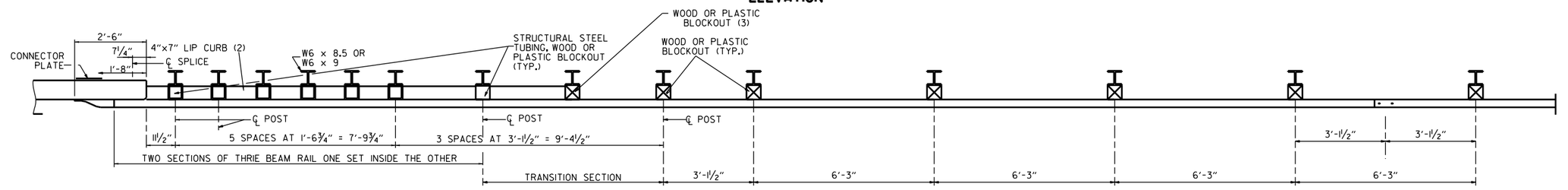
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

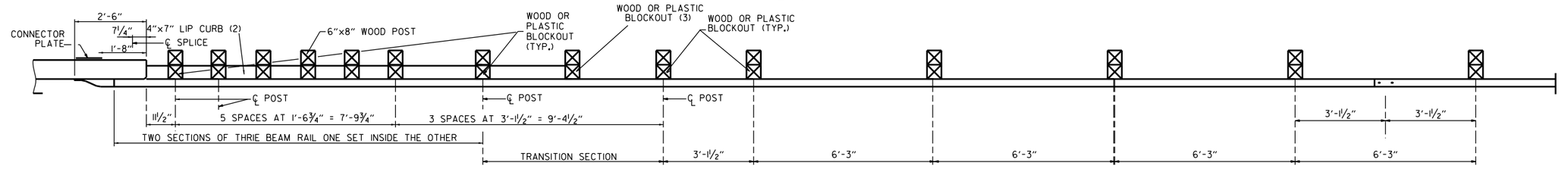
STANDARD DRAWING GR-11



ELEVATION



PLAN



PLAN

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

THRIE BEAM GUARDRAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

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

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

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

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

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

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

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

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

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

DATE	REVISION	FILMED
05-14-20	REVISED NOTES	
11-07-19	RENAMED & REVISED REFERENCES	
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-12

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.

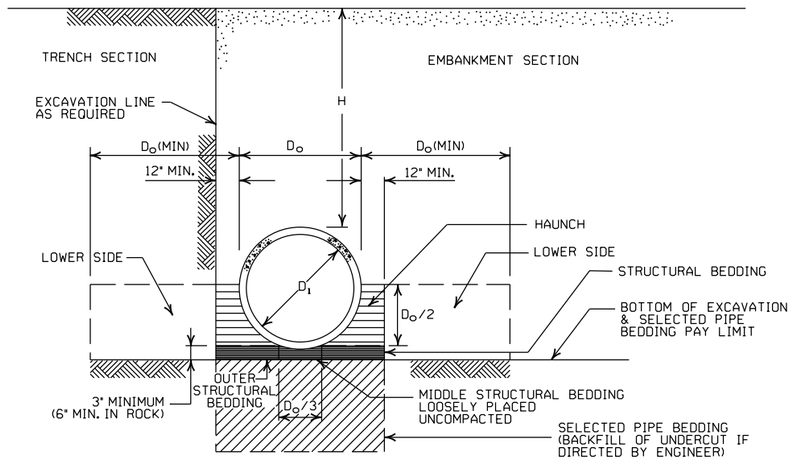
- LEGEND -

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.

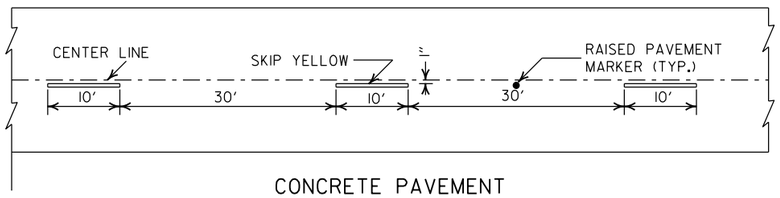
DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

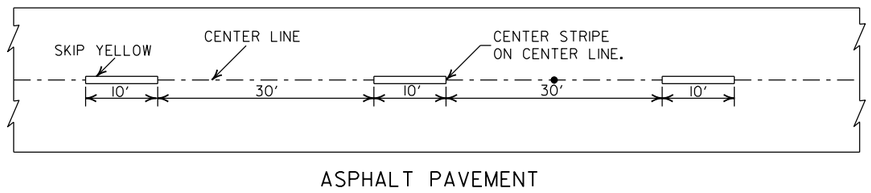
CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

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.

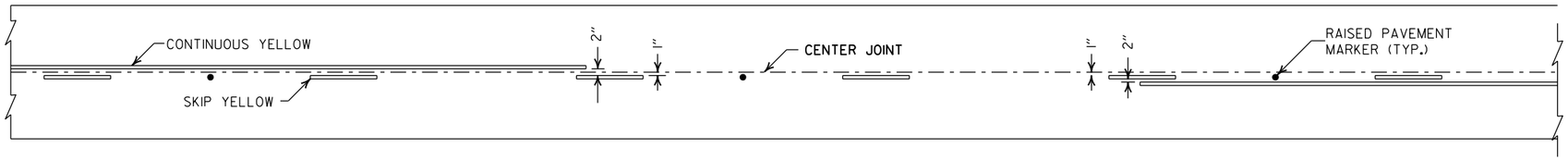


CONCRETE PAVEMENT

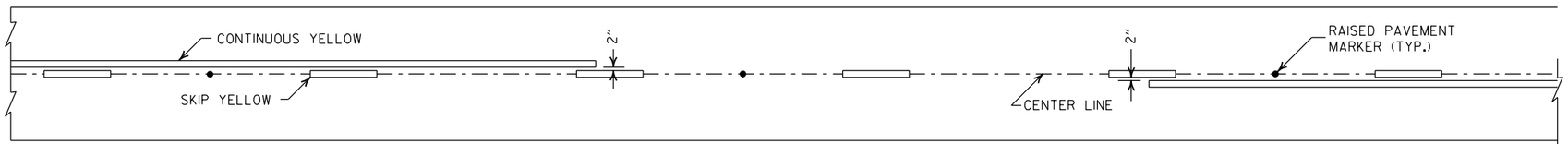


ASPHALT PAVEMENT

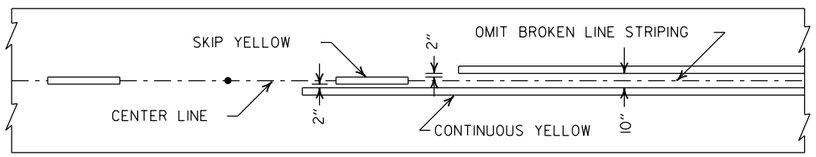
BROKEN LINE STRIPING



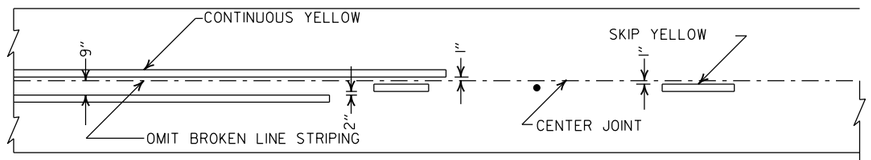
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

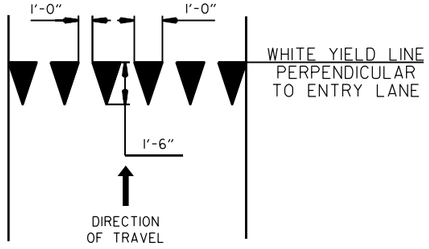


ASPHALT PAVEMENT

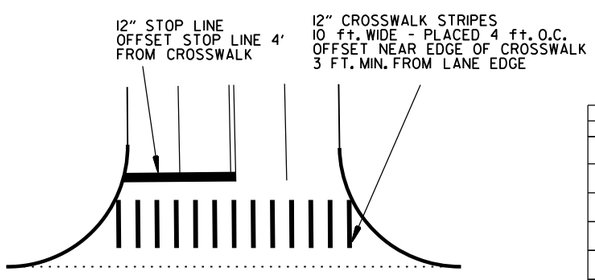


CONCRETE PAVEMENT

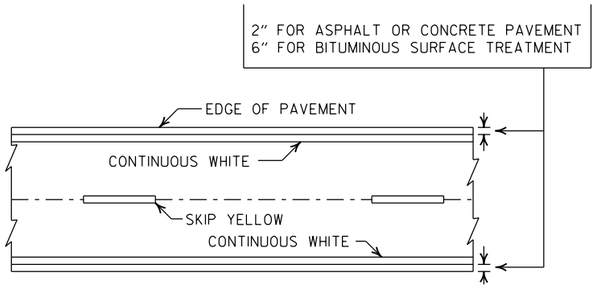
STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL



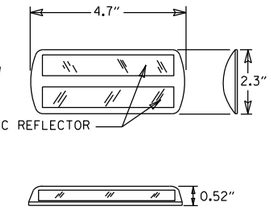
CROSSWALK AND STOP LINE DETAILS



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

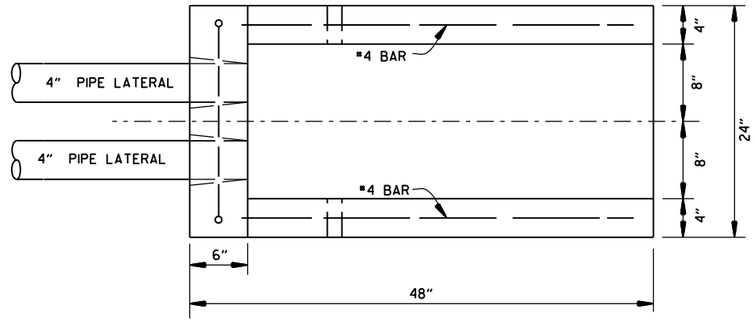
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

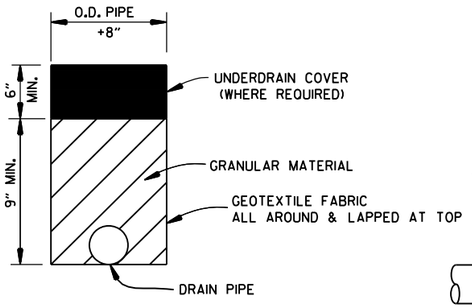
NOTE:

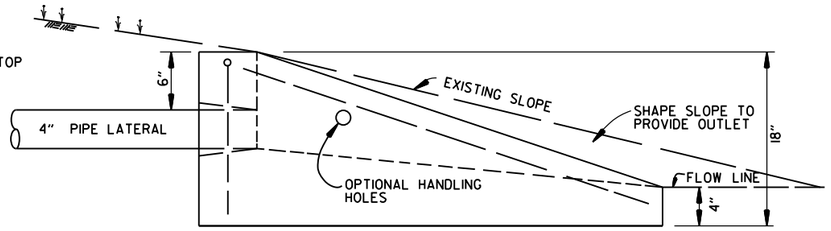
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.

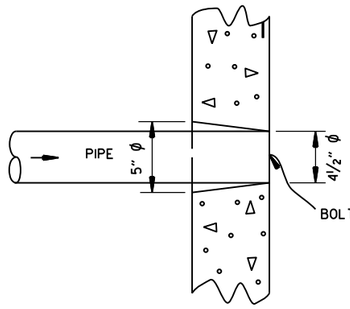


PLAN VIEW

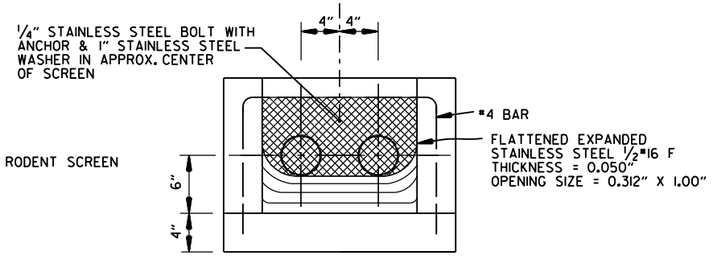




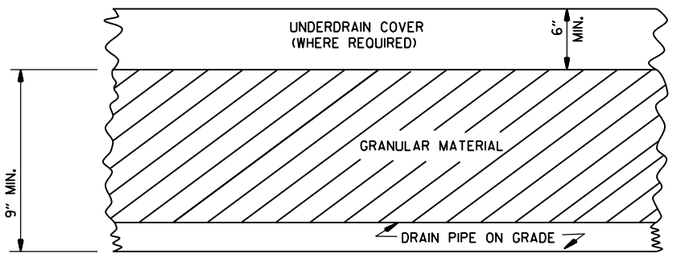
SIDE VIEW



DETAIL OF HOLE FOR 4" PIPE

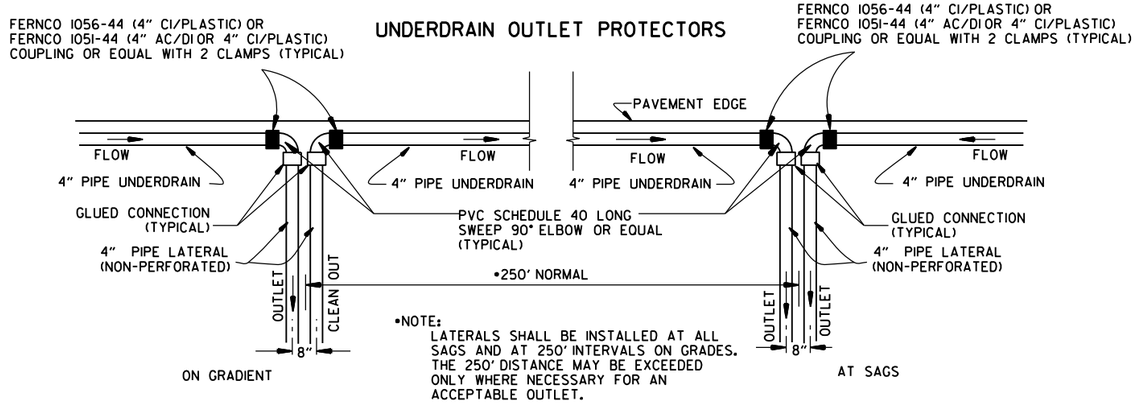


FRONT VIEW
(DETAIL OF RODENT SCREEN)



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

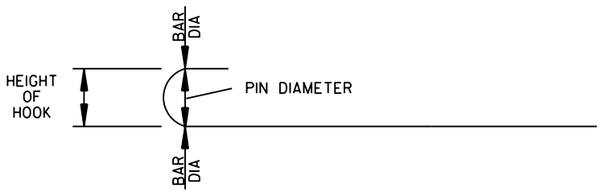
DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

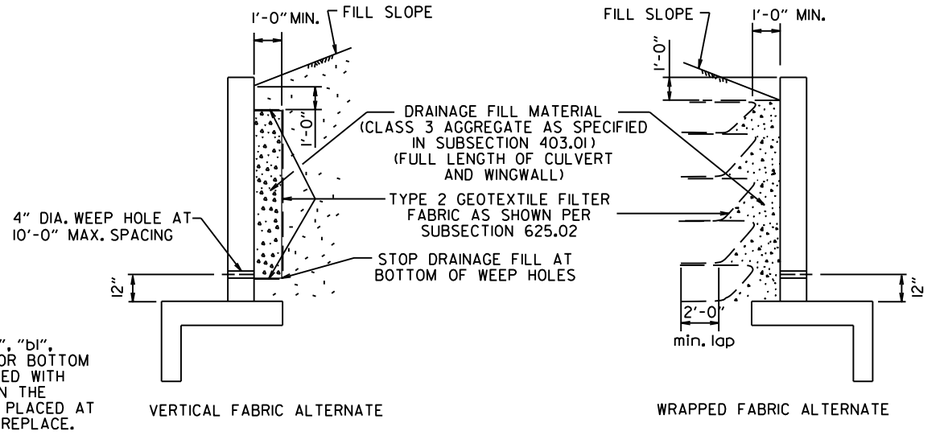
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

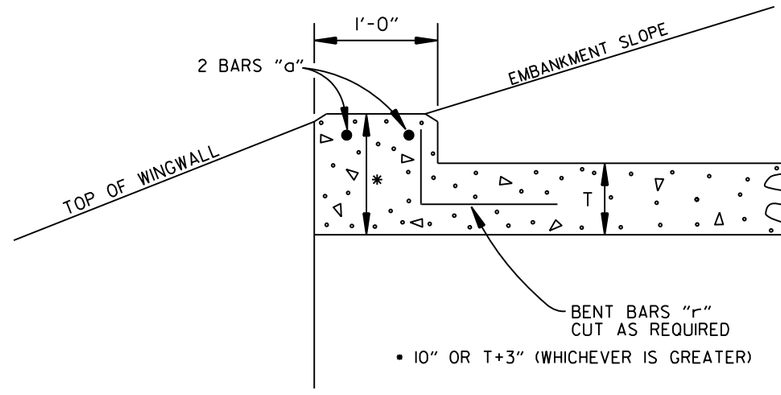
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

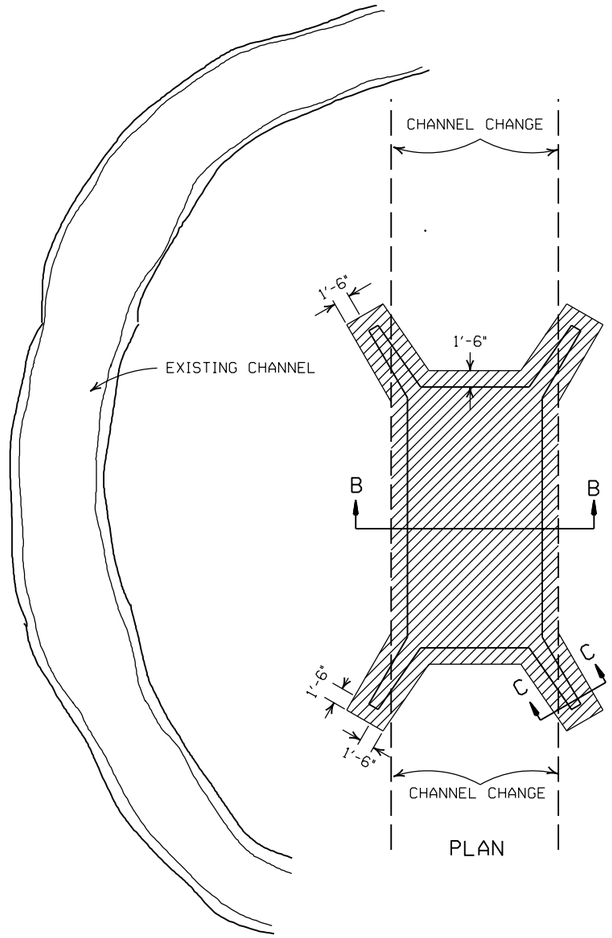
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

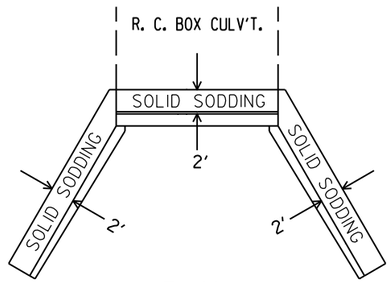
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

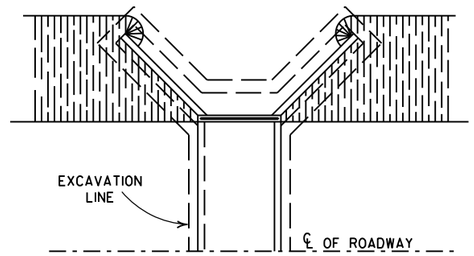
SOLID SODDING



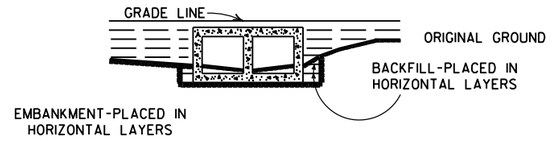
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

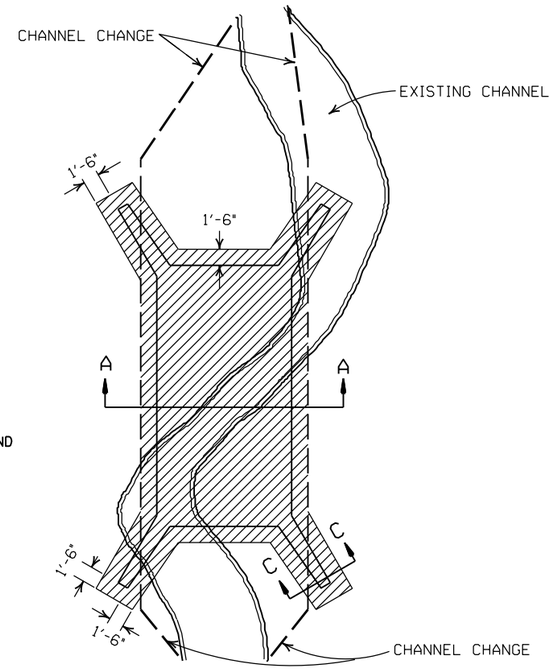


PLAN

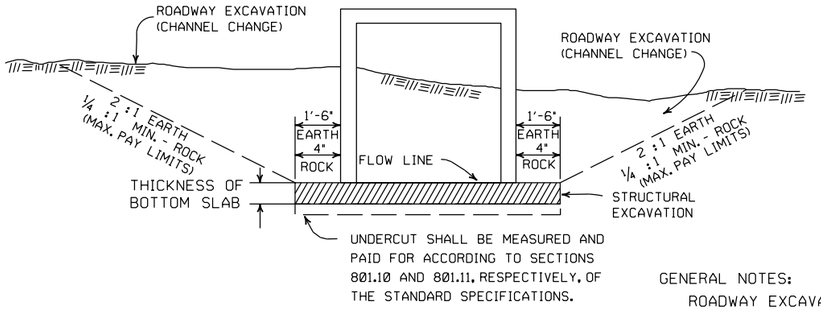


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

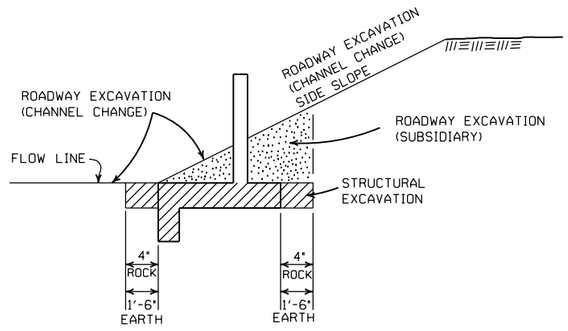


PLAN

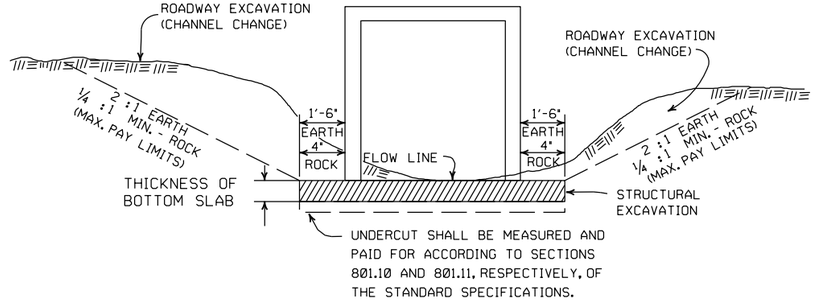


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

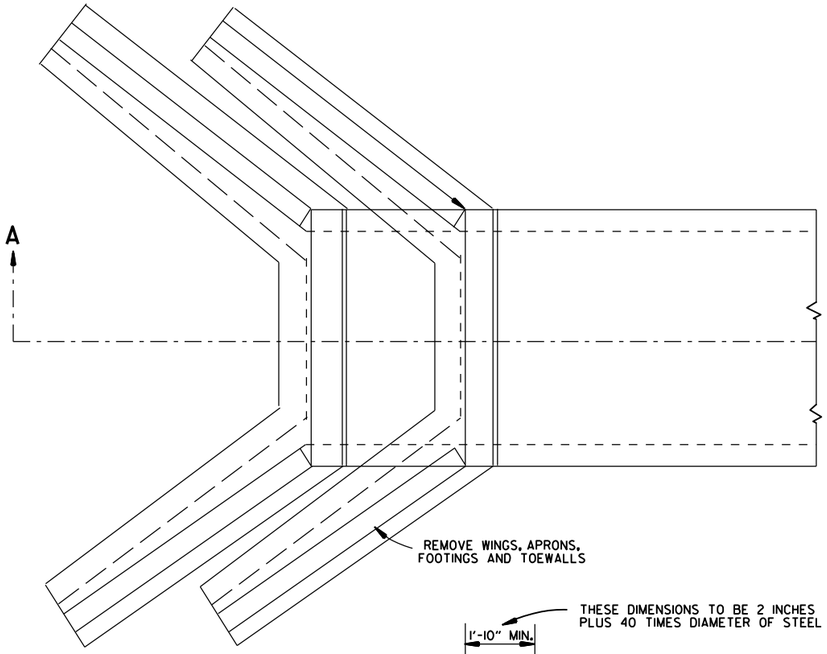
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

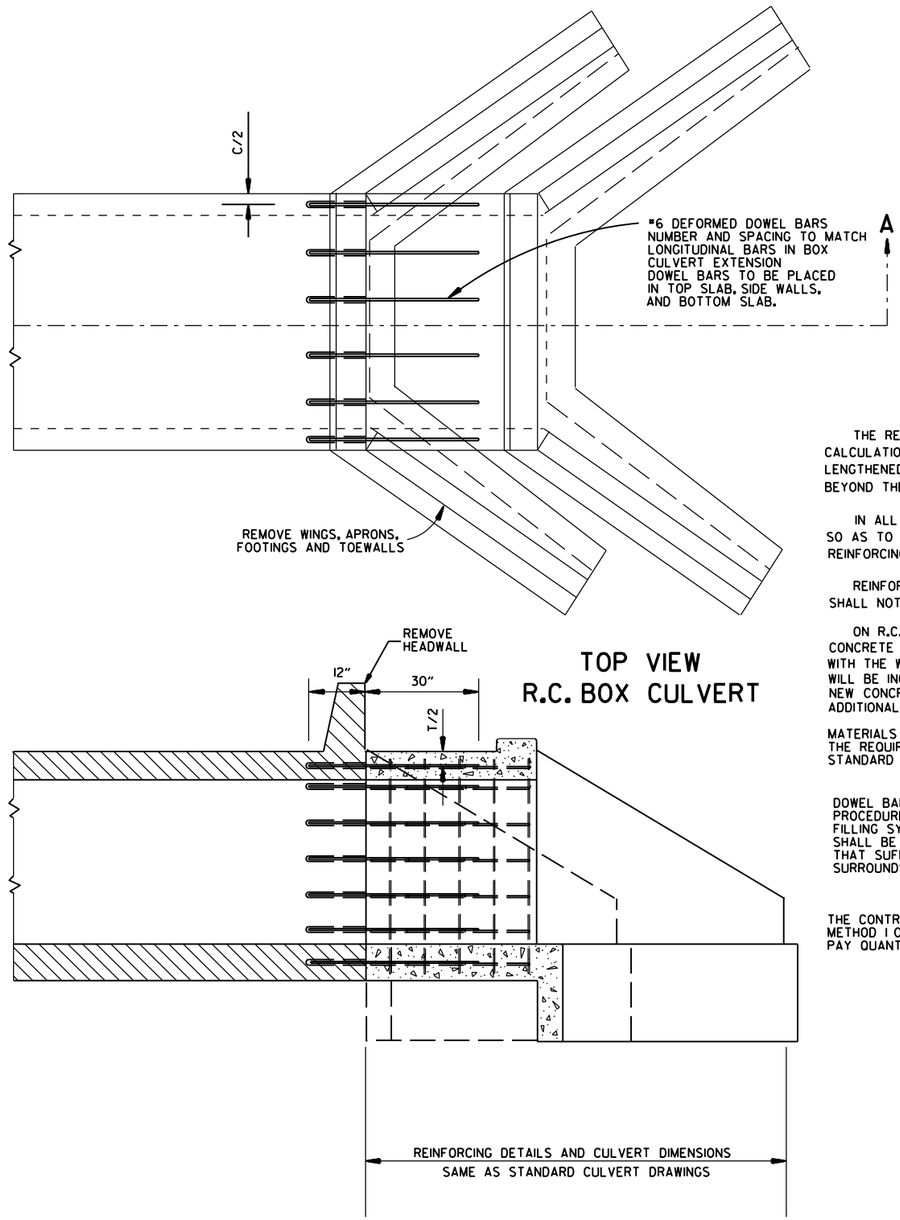
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER. THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER. AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			35 MPH			40 MPH			45 MPH			50 MPH			55 MPH			60 MPH			65 MPH			70 MPH			75 MPH		
	e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)		e	Ls (FT)	
		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE		MINIMUM	DESIRABLE
0° 15'	NC			NC			NC			NC			NC			NC			NC			NC			NC			NC		
0° 30'	NC			NC			NC			NC			NC			NC			RC	96		RC	96		RC	96		0.022	101	
0° 45'	NC			NC			NC			NC			RC	96		RC	96		0.024	106		0.026	110		0.030	120		0.032	125	
1° 00'	NC			NC			NC			RC	90		0.022	101		0.026	110		0.030	120		0.034	130		0.038	139	300	0.042	149	300
1° 15'	NC			NC			RC	84		0.022	95		0.028	115		0.032	125		0.038	139		0.042	149		0.046	158		0.052	173	
1° 30'	NC			RC	78		0.022	88		0.028	108		0.032	125		0.038	139		0.044	154		0.050	168	300	0.056	182		0.062	197	
1° 45'	RC	72		RC	78		0.026	97		0.030	113		0.036	134		0.044	154		0.050	168	300	0.056	182		0.064	202		0.070	216	
2° 00'	RC	72		0.024	86		0.028	101		0.034	122		0.042	149		0.048	163		0.056	182		0.064	202		0.070	216		0.080	240	
2° 15'	RC	72		0.026	90		0.032	109		0.038	131		0.046	158		0.054	178	300	0.062	197		0.070	216		0.078	235	350	0.088	259	350
2° 30'	0.022	75		0.028	94		0.034	113		0.042	140		0.050	168		0.058	187		0.068	211		0.076	230		0.086	254		0.096	278	
2° 45'	0.024	79		0.030	98		0.038	122		0.046	149	200	0.054	178		0.064	202		0.072	221		0.082	245		0.092	269		0.100	288	400
3° 00'	0.026	83		0.034	105		0.040	126		0.050	158		0.058	187	250	0.068	211		0.078	235		0.088	259		0.098	283	400	D MAX = 2° 45'		
3° 15'	0.028	86		0.036	109		0.044	134		0.052	162		0.062	197		0.072	221		0.082	245		0.092	269		0.100	288				
3° 30'	0.030	90		0.038	113		0.046	139	200	0.056	171		0.066	206		0.076	230		0.086	254		0.096	278	350	D MAX = 3° 30'					
3° 45'	0.032	93		0.040	117		0.050	147		0.058	176		0.070	216		0.080	240		0.090	264		0.098	283							
4° 00'	0.034	97		0.042	121	200	0.052	151		0.062	185		0.072	221		0.084	250		0.094	274	350	0.100	288							
4° 15'	0.036	100		0.044	125		0.054	155		0.064	189		0.076	230		0.086	254	350	0.096	278		D MAX = 4° 15'								
4° 30'	0.036	100	200	0.046	129		0.056	160		0.068	198		0.078	235		0.090	264		0.098	283										
4° 45'	0.038	104		0.048	133		0.060	168		0.070	203		0.082	245		0.092	269		0.100	288										
5° 00'	0.040	108		0.050	137		0.062	172		0.072	207		0.084	250		0.094	274		D MAX = 5° 15'										
5° 30'	0.044	115		0.054	144		0.066	181		0.078	221	250	0.088	259	300	0.098	283												
6° 00'	0.046	119		0.058	152		0.070	189		0.082	230		0.092	269		0.100	288												
6° 30'	0.050	126		0.062	160		0.074	198	250	0.086	239		0.096	278		D MAX = 6° 30'														
7° 00'	0.052	130		0.064	164		0.078	206		0.090	248		0.098	283																
7° 30'	0.054	133		0.068	172		0.080	210		0.092	252	300	0.100	288																
8° 00'	0.058	140		0.070	176		0.084	219		0.094	257		D MAX = 8° 25'																	
8° 30'	0.060	144		0.072	179		0.086	223	250	0.096	261																			
9° 00'	0.062	148		0.076	187		0.088	227		0.098	266																			
9° 30'	0.064	151		0.078	191		0.092	235		0.100	270																			
10° 00'	0.066	155		0.080	195		0.094	240		D MAX = 10° 30'																				
11° 00'	0.070	162		0.084	203		0.096	244																						
12° 00'	0.074	169		0.088	211	250	0.098	248																						
13° 00'	0.076	173		0.090	215		0.100	252	300																					
14° 00'	0.080	180		0.094	222		D MAX = 13° 45'																							
15° 00'	0.082	184		0.096	226																									
16° 00'	0.086	191		0.098	230																									
17° 00'	0.088	194		0.100	234																									
18° 00'	0.090	198	250	D MAX = 19° 30'																										
19° 00'	0.092	202																												
20° 00'	0.094	205																												
21° 00'	0.096	209																												
22° 00'	0.096	209																												
23° 00'	0.098	212																												
24° 00'	0.098	212																												
25° 00'	0.100	216																												

D MAX = 28° 30'

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%

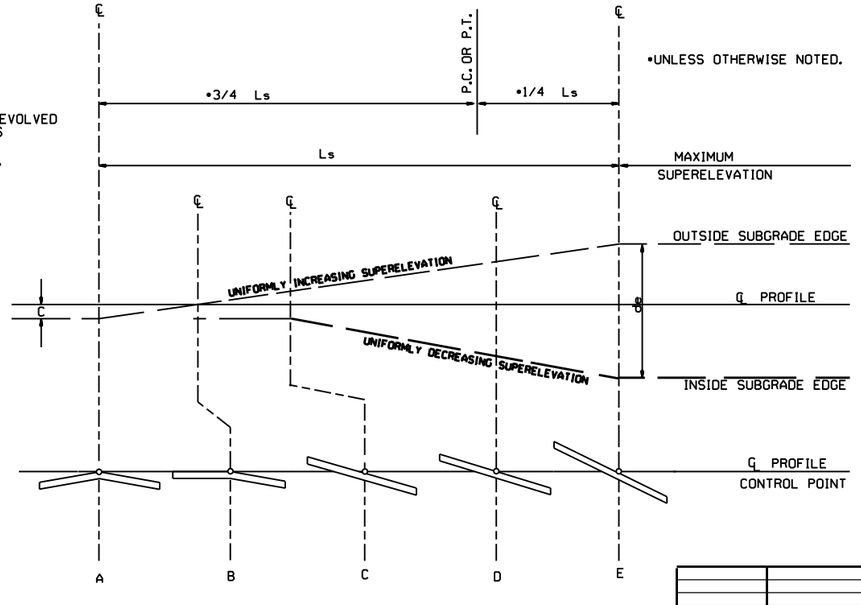
NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.

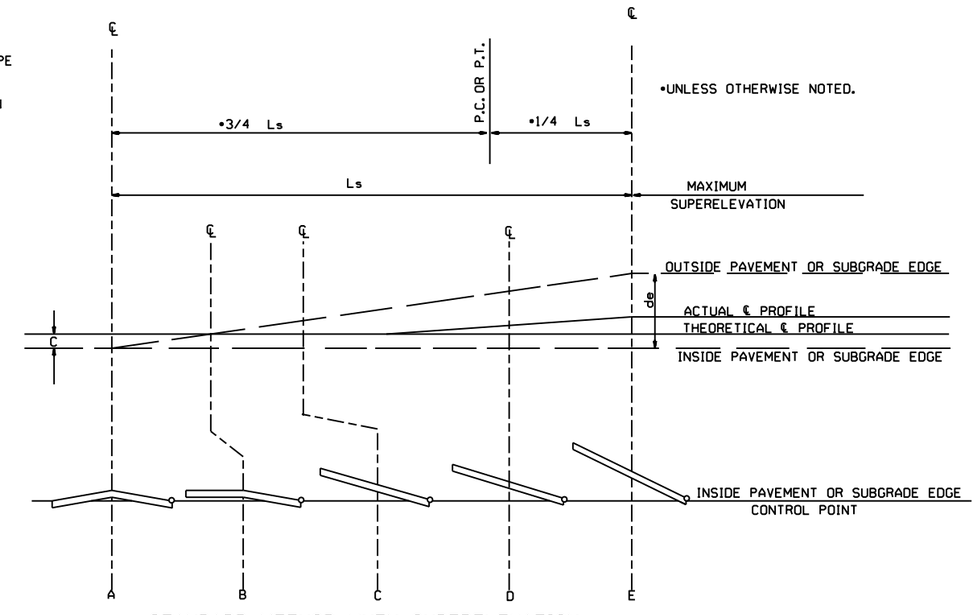
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

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 CENTER LINE



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

DATE	REVISION	DATE FILMED
11-07-19	REVISED SUPERELEVATION TABLE	
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

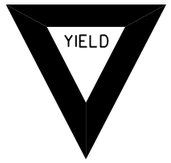
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

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"

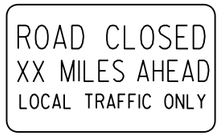
R5-1

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"

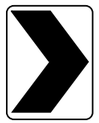
WI-4

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"

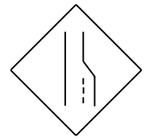
W3-1

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"

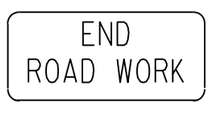
W8-9

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

G20-1

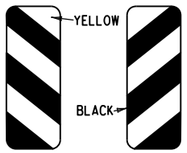
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

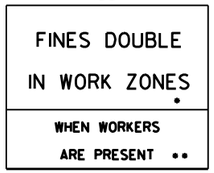
M4-9

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.

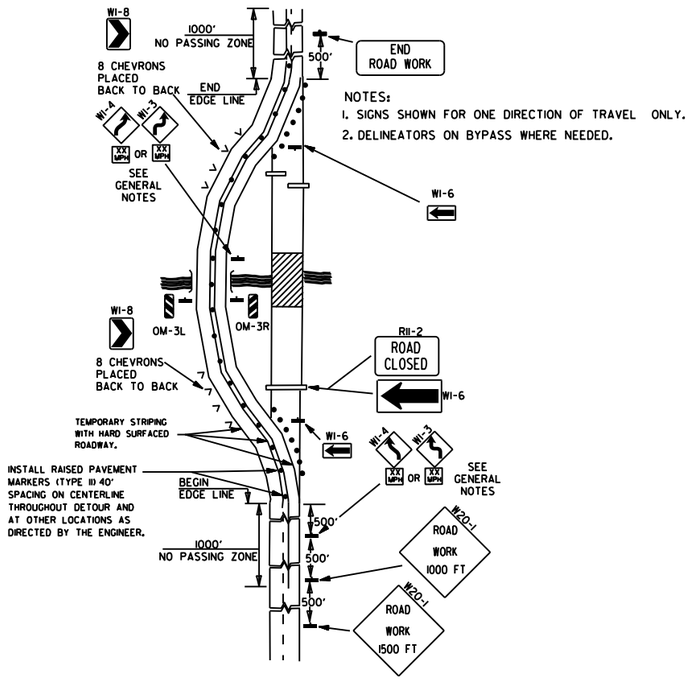
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

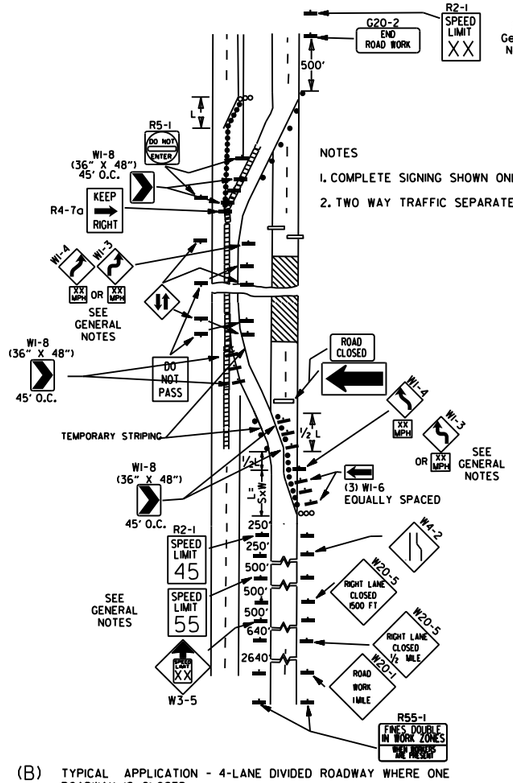
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



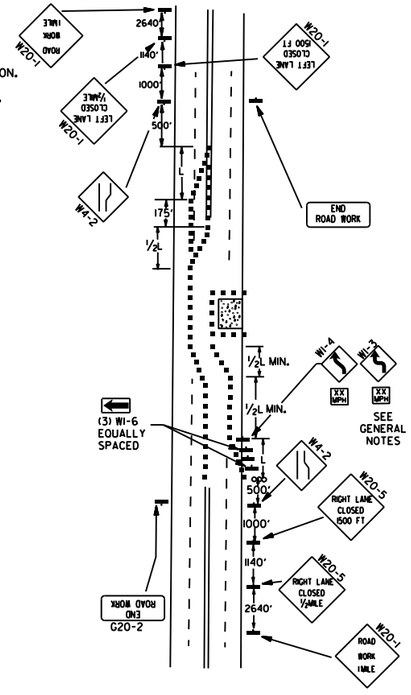
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

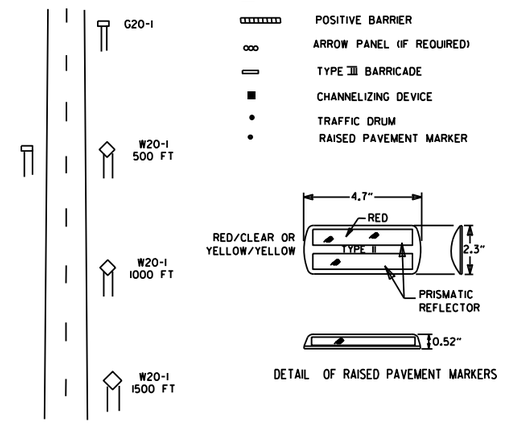


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

(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:

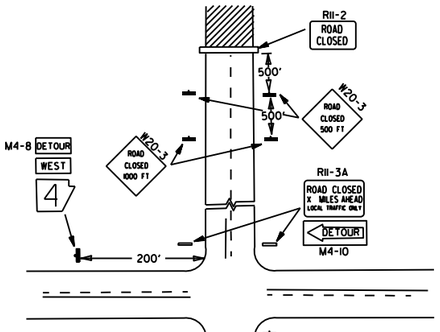
L=SXW FOR SPEEDS OF 45MPH OR MORE.

$L = \frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

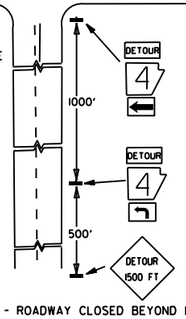
WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

GENERAL NOTES:

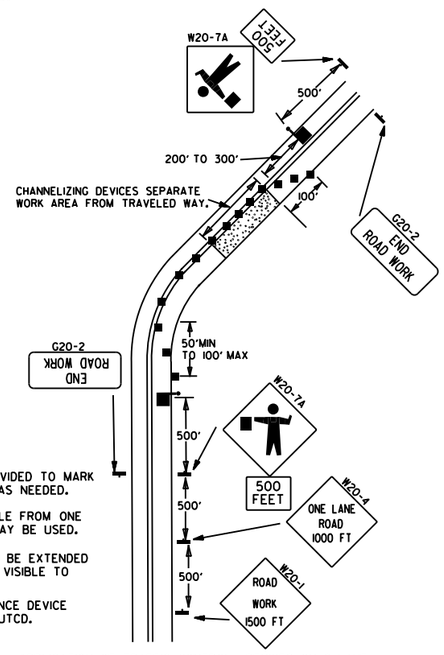
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS
2. WHEN THE EXISTING SPEED LIMIT 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.

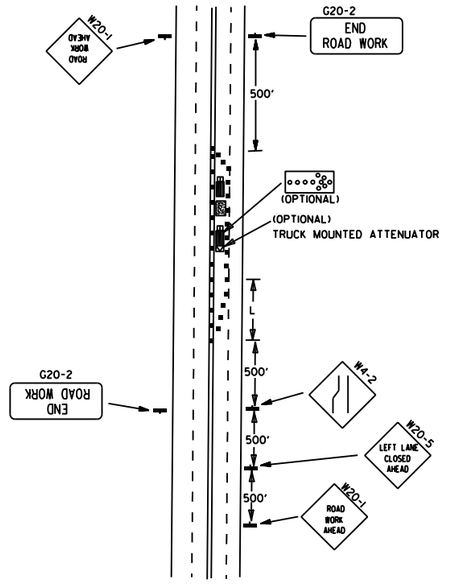


(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.



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.



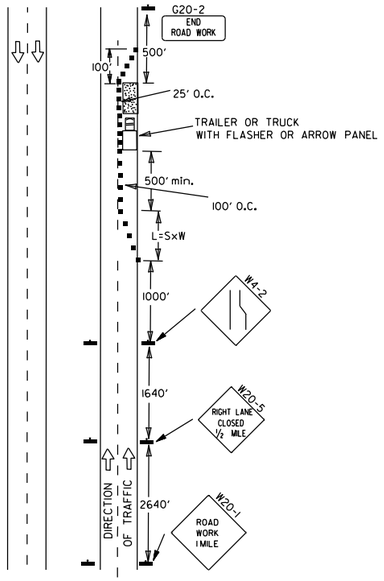
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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	

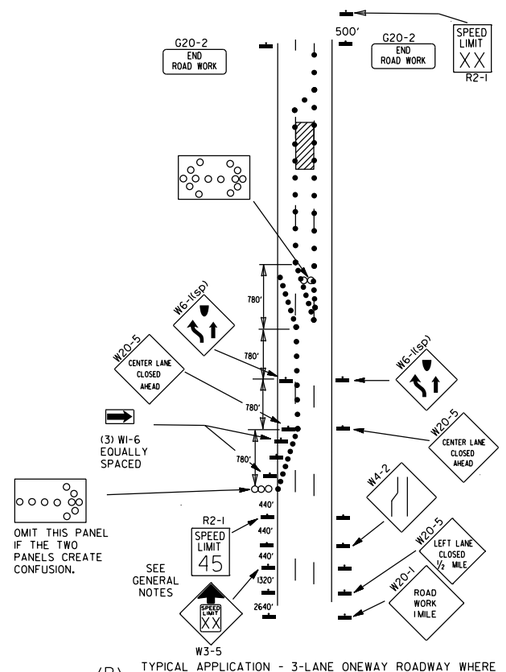
ARKANSAS STATE HIGHWAY COMMISSION

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.



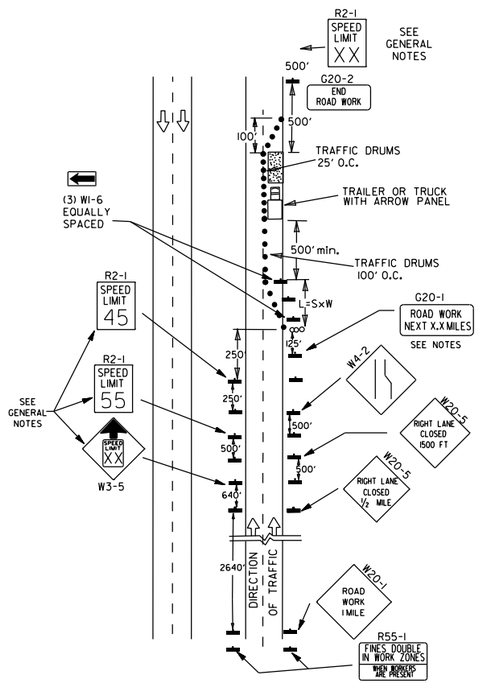
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

KEY:

- ARROW PANEL (IF REQUIRED)
- ■ CHANNELIZING DEVICE
- ● TRAFFIC DRUM

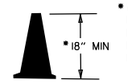
GENERAL NOTES:

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).



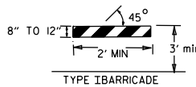
(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES



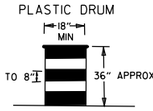
* WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

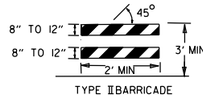
CONES



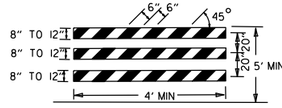
TYPE I BARRICADE

PLASTIC DRUM



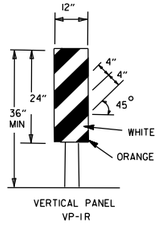


TYPE II BARRICADE



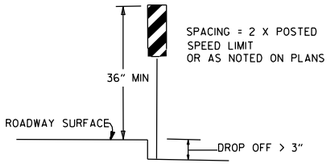
TYPE III BARRICADE

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

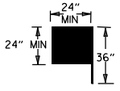


VERTICAL PANEL VP-1R

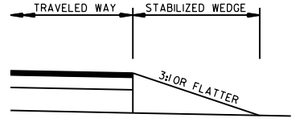
VERTICAL PANEL PLACEMENT



FLAG



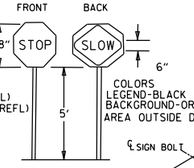
FLAG SHALL BE OF GOOD GRADE RED MATERIAL

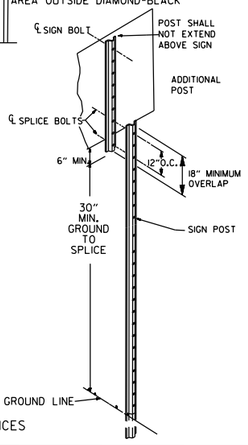


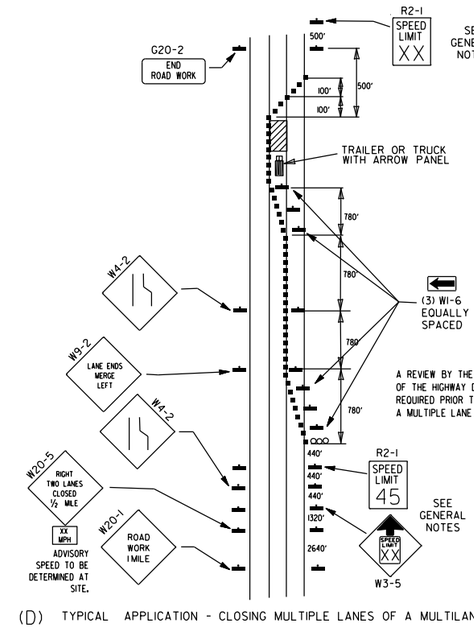
STABILIZED WEDGE

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

STOP SLOW PADDLE







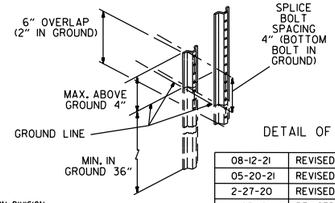
A REVIEW BY THE ROADWAY DESIGN DIVISION OF THE HIGHWAY DEPARTMENT WILL BE REQUIRED PRIOR TO IMPLEMENTING A MULTIPLE LANE CLOSURE.

(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	

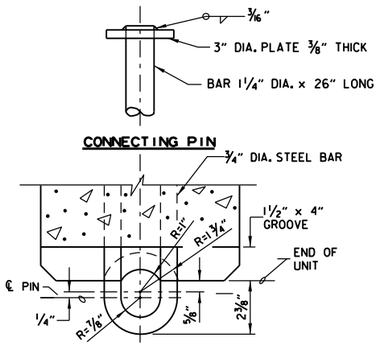
ARKANSAS STATE HIGHWAY COMMISSION

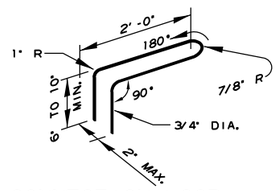
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

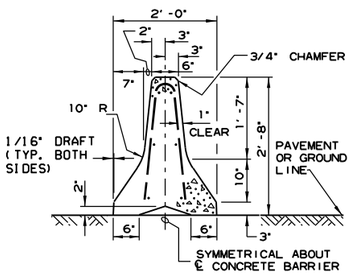
STANDARD DRAWING TC-3

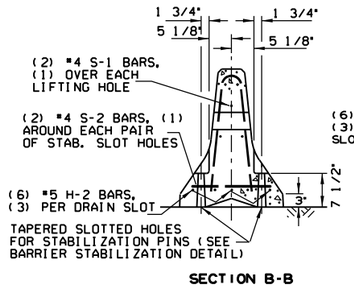
REINFORCING BAR TABLE PER BARRIER UNIT

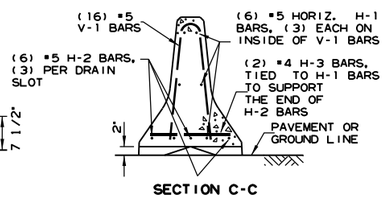
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. 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"

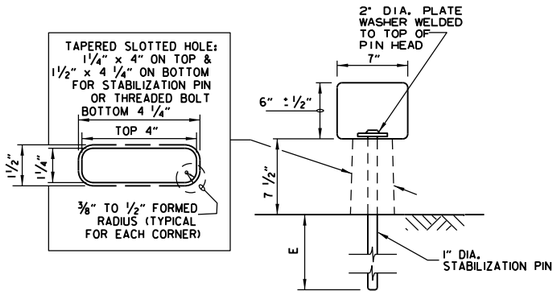




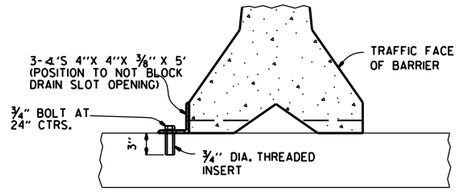






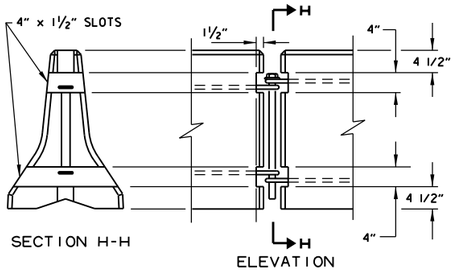


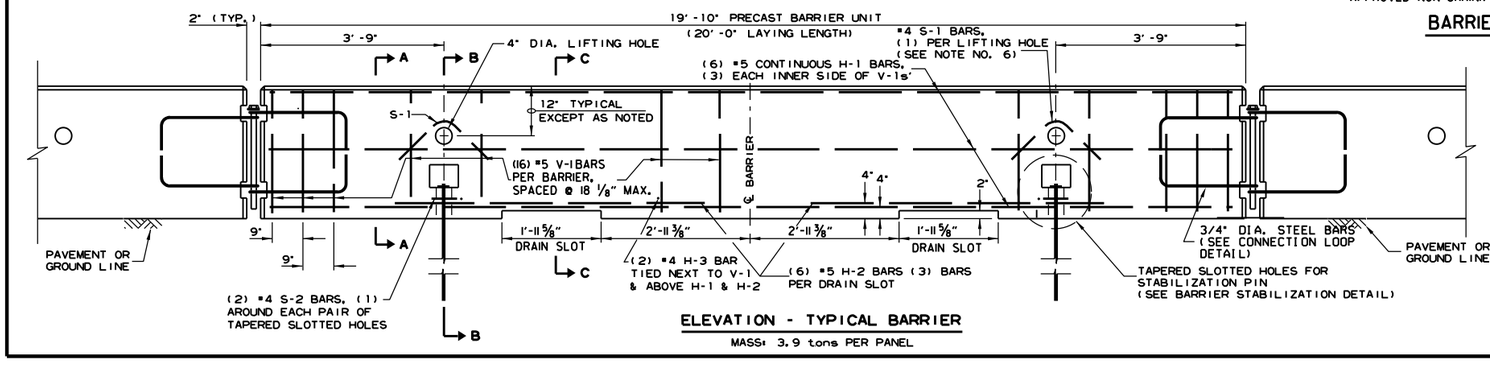
Ⓔ 4" - CONCRETE PAVEMENT
8" - ASPHALT PAVEMENT
12" - SHOULDER AREAS



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.

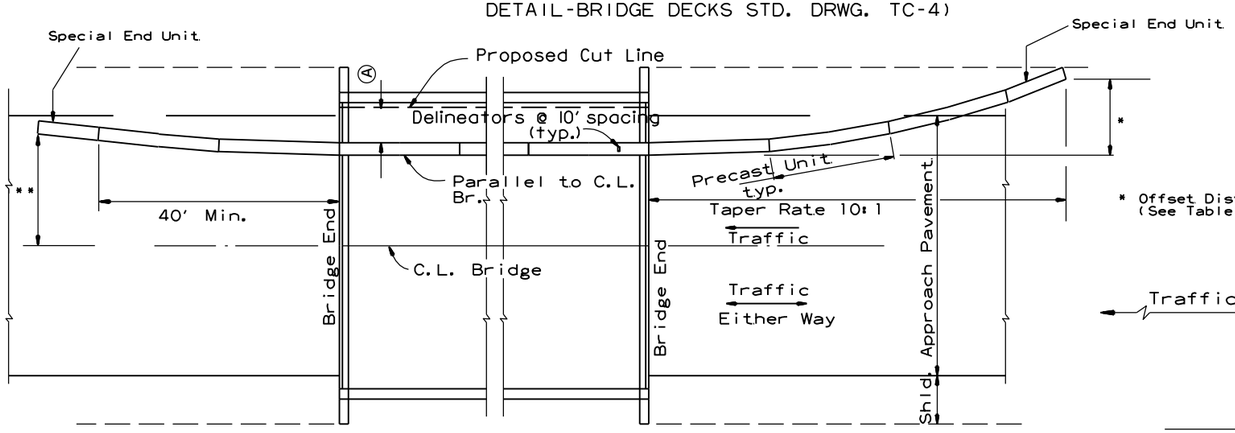
DATE	REVISION	FILMED
11-07-19	REVISED NOTE 3	
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO WASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED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

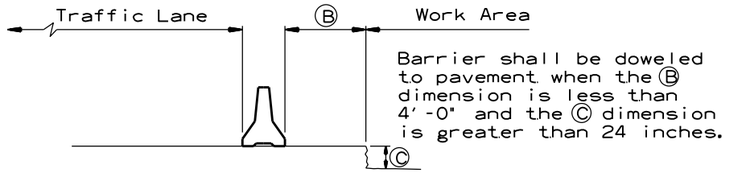
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

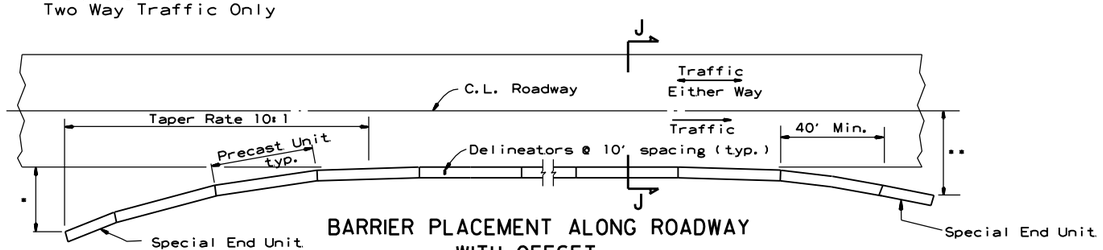
** Offset Distance for Two Way Traffic Only



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

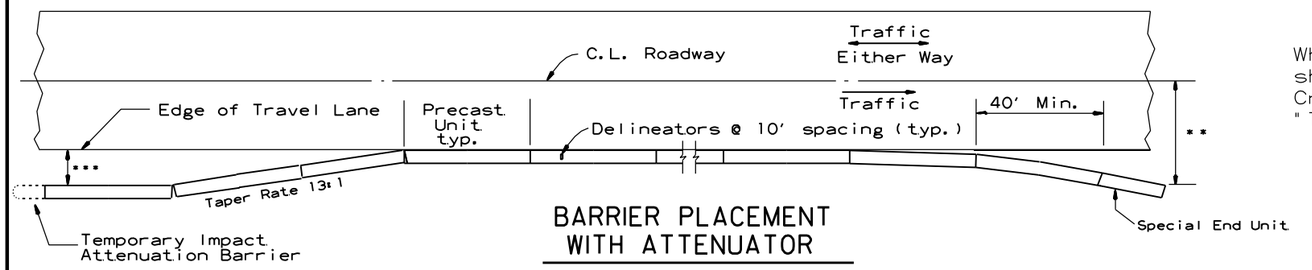
** Offset Distance For Two Way Traffic Only

* 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.

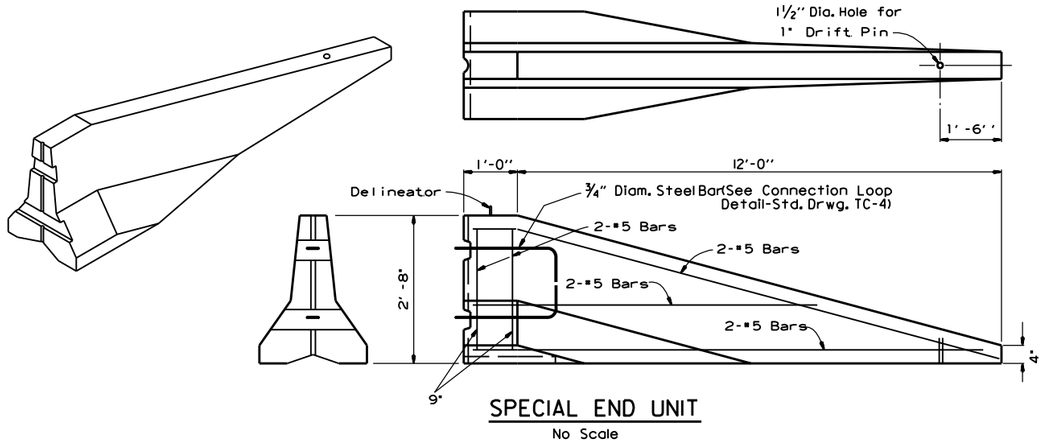


BARRIER PLACEMENT WITH ATTENUATOR

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	

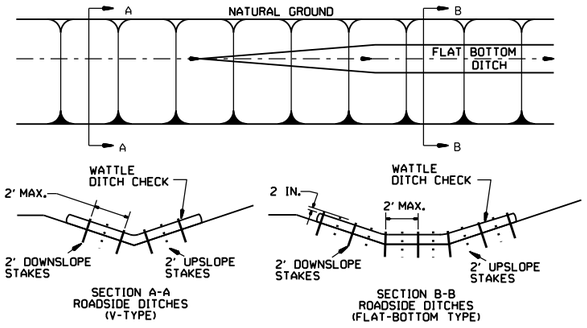
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

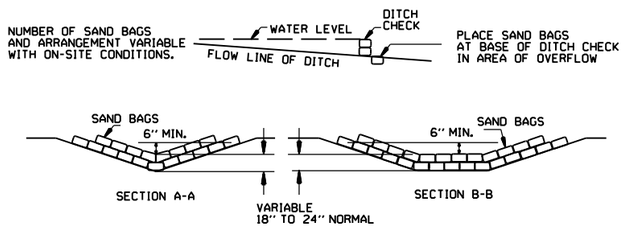
STANDARD DRAWING TC-5

GENERAL NOTES

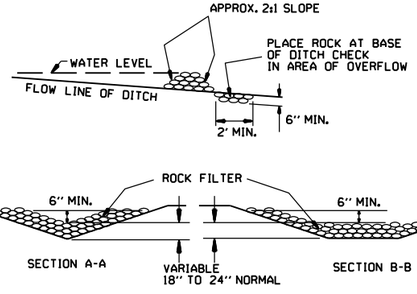
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

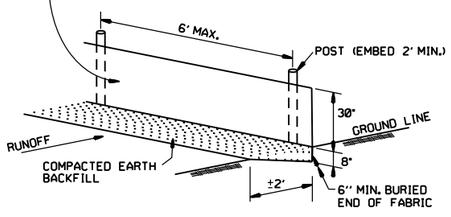


ROCK DITCH CHECK (E-6)

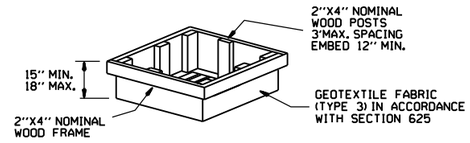
GENERAL NOTES

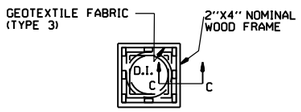
GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

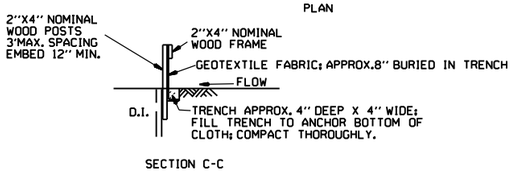
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



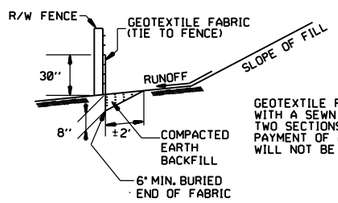
SILT FENCE (E-11)





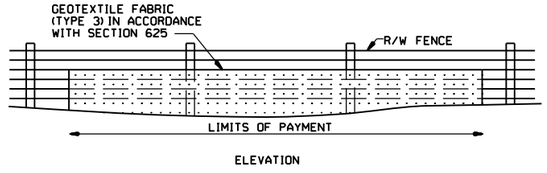


DROP INLET SILT FENCE (E-7)



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.



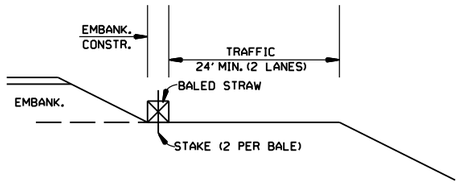
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

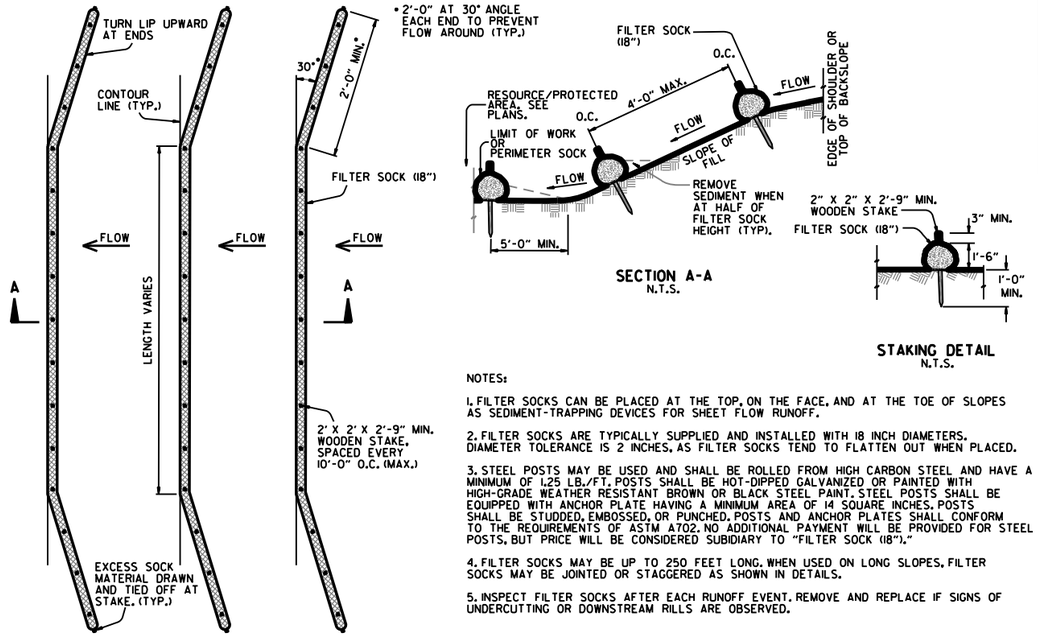
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

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.

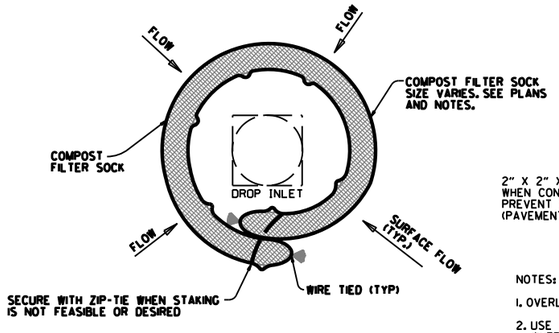
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

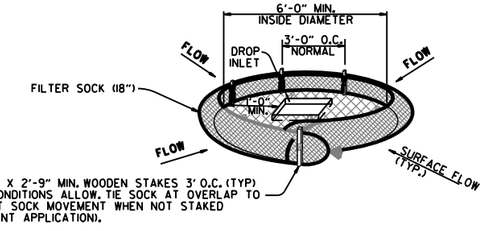
3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. 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.

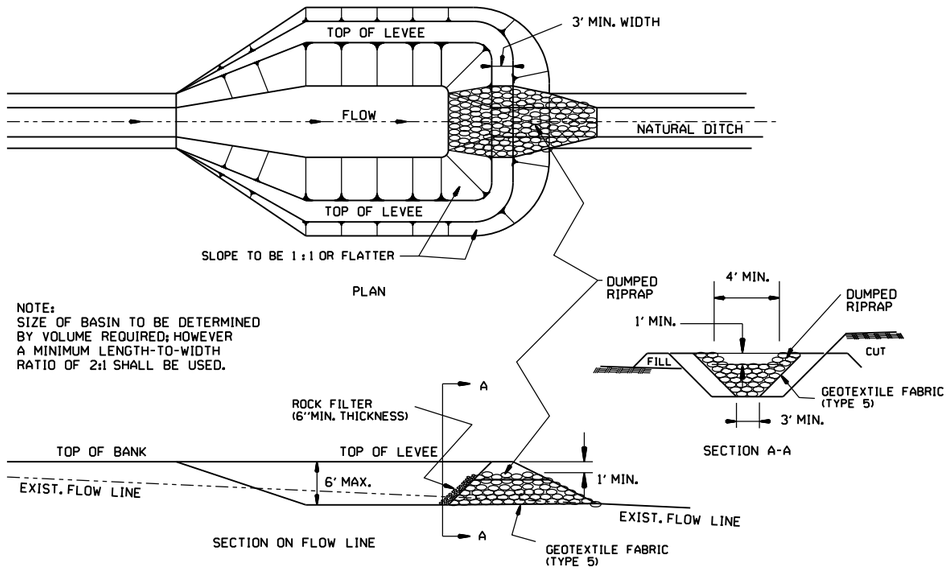
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

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

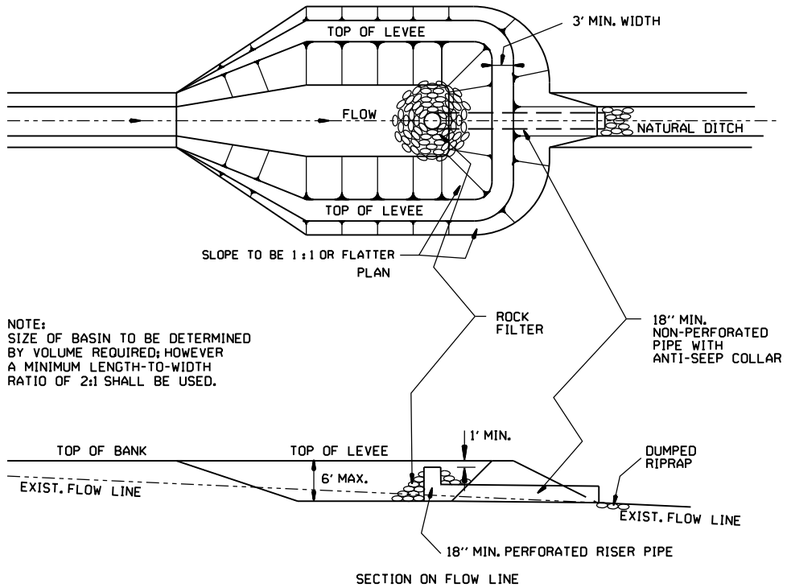
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

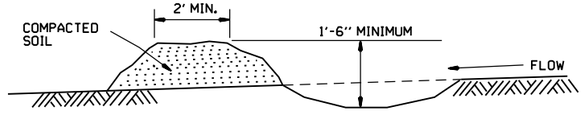
STANDARD DRAWING TEC-1



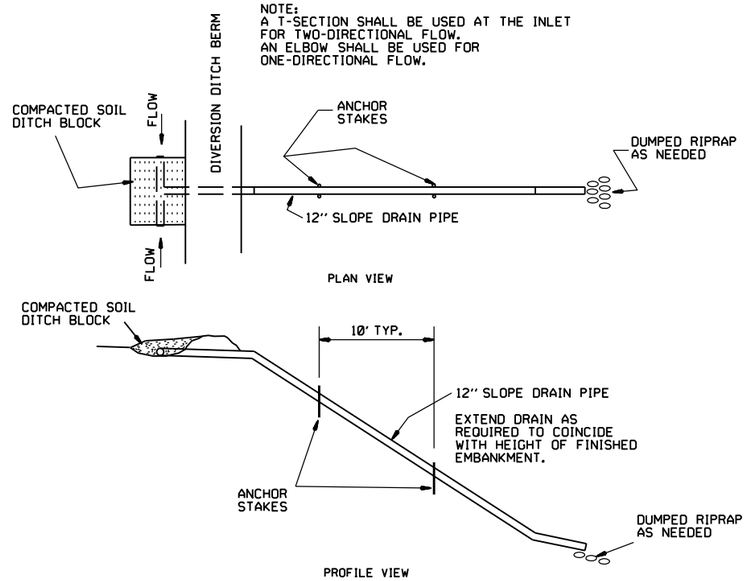
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



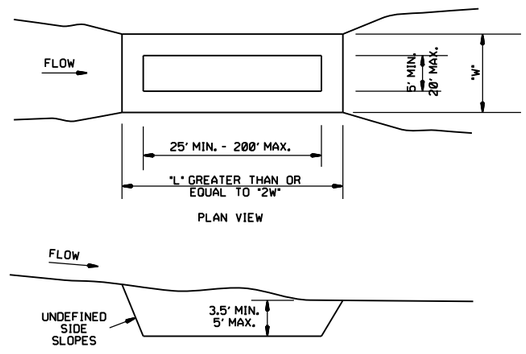
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

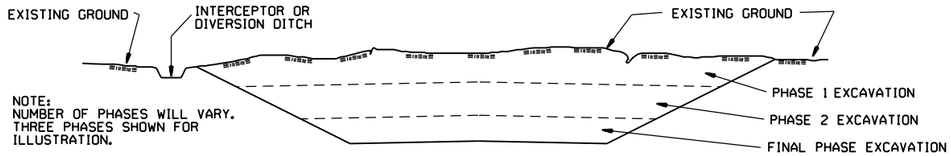
STANDARD DRAWING TEC-2

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



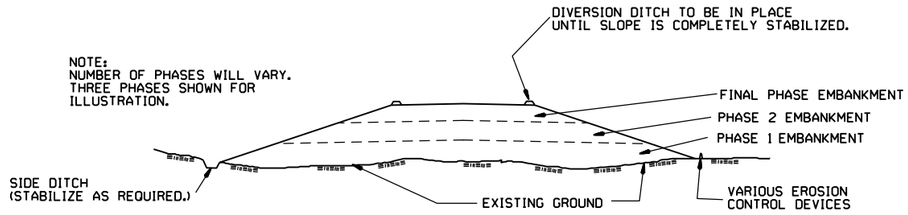
GENERAL NOTE

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

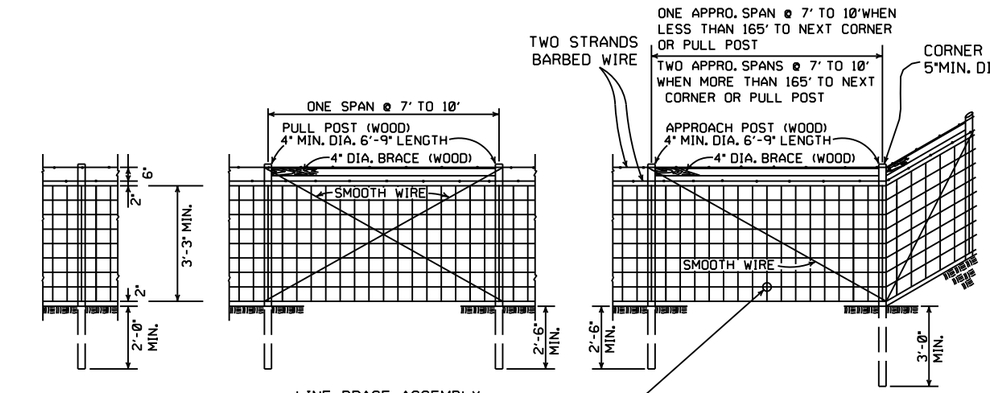
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD 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.

11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94
DATE	REVISION	FILMED

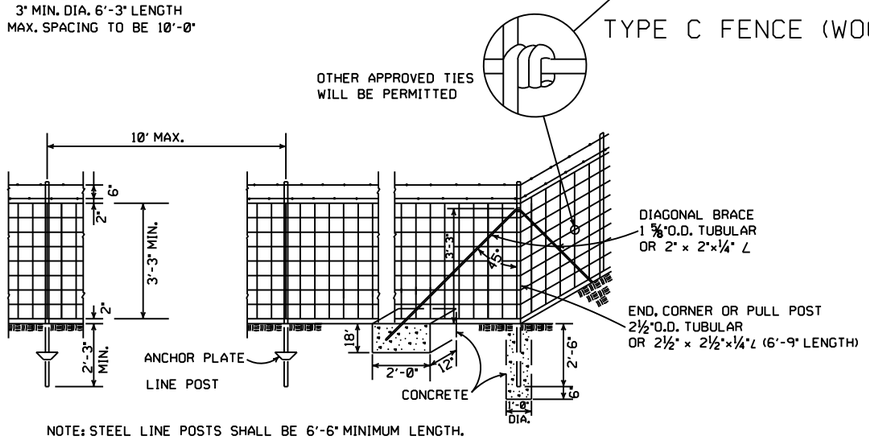
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

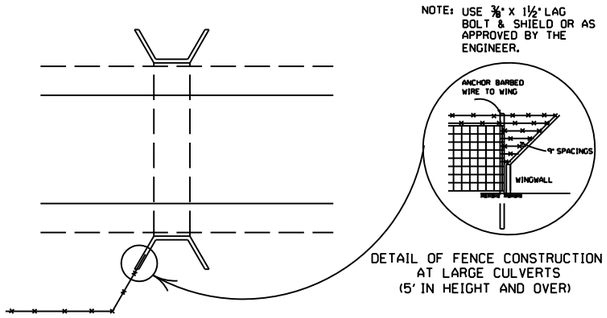


TYPE C FENCE (WOOD POSTS)



NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.

TYPE C FENCE (STEEL POSTS)



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

GENERAL NOTES:

STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED. TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

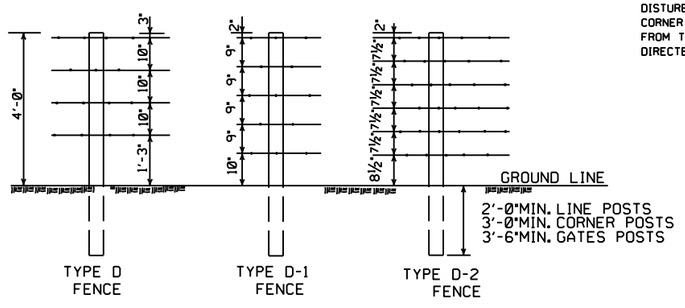
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED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

SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

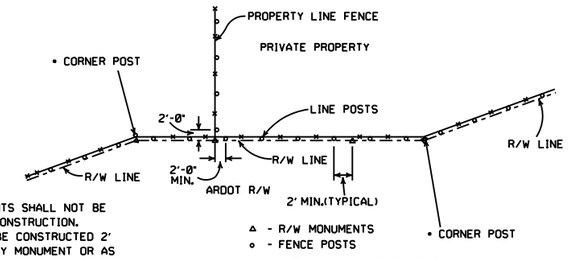
SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

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

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

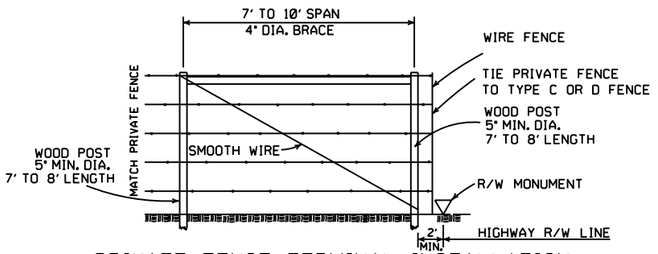


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



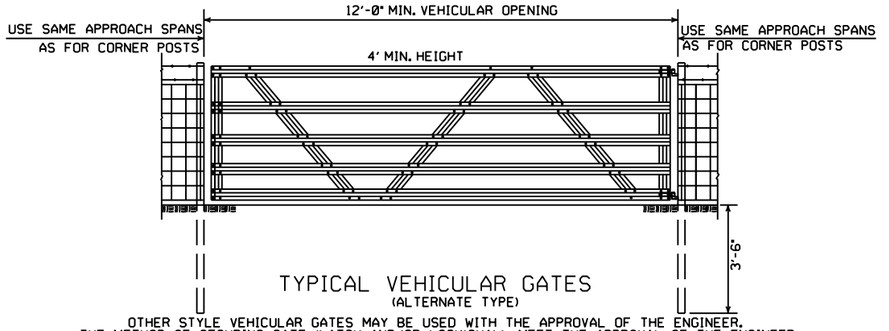
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION

WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

DATE	REVISION	FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	REVISED BARB WIRE AND ADDED CORNER POST NOTES	6-2-94
8-5-93	REVISED R/W INSTALLATION FENCE	8-5-93
10-1-92	ADDED STAPLE NOTE	10-1-92
8-15-91	ADDED TYPE D-2 FENCE	8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
7-15-88	ADDED SPLICE NOTE	700-7-15-88
10-30-87	GENERAL REVISIONS	549-10-30-87
11-1-84	MAX. POST SPACING MIN. WIRE GAUGE	507-11-1-84
1-4-83	MIN. DIA. LINE POST	648-1-4-83
3-2-81	TOLERANCE FOR POST LENGTH	722-3-2-81
12-1-72	ADDED D-1 & FENCE INSTALLATION	564-12-1-72
10-2-72	REVISED AND REDRAWN	540-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4