

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. 100840	1	69

② DITCH NOS. 1 & 47 STRS. & APPRS. (S)

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

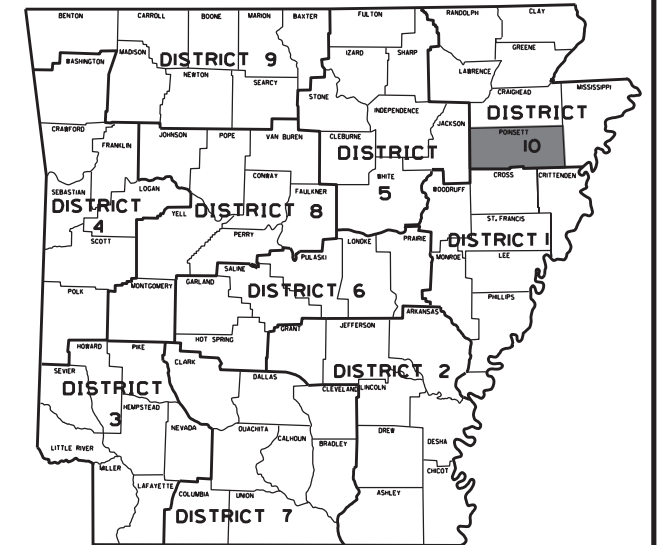
DITCH NOS. 1 & 47 STRS. & APPRS. (S)

POINSETT COUNTY
ROUTE 308 SECTION I

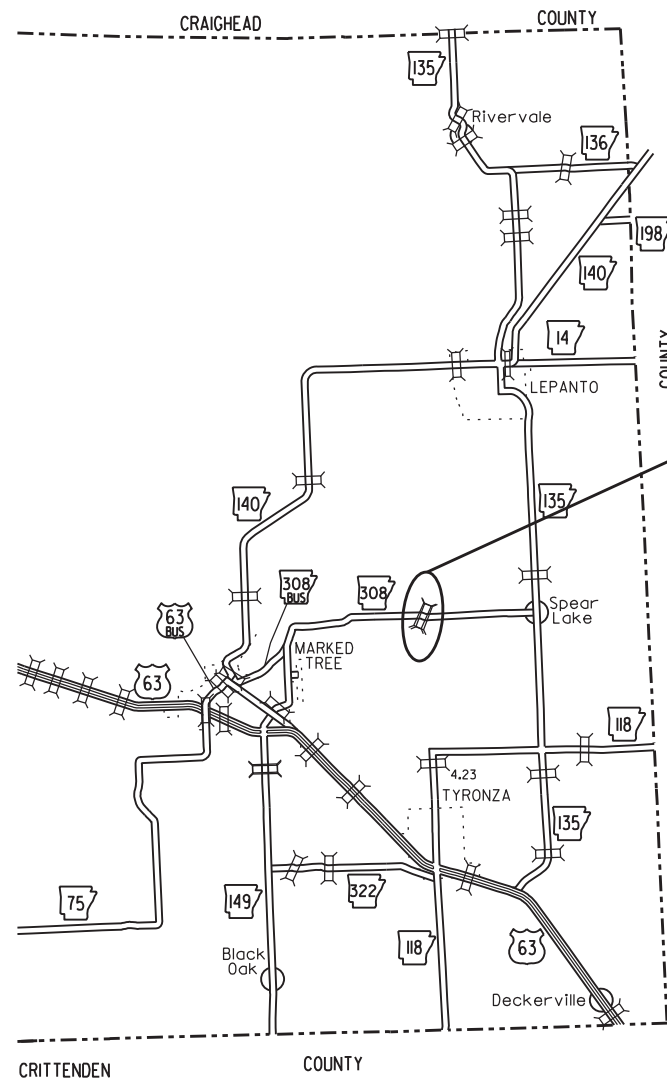
JOB 100840

FED. AID PROJ. NHPP-0056(36)

NOT TO SCALE



ARK. HWY. DIST. NO. 10

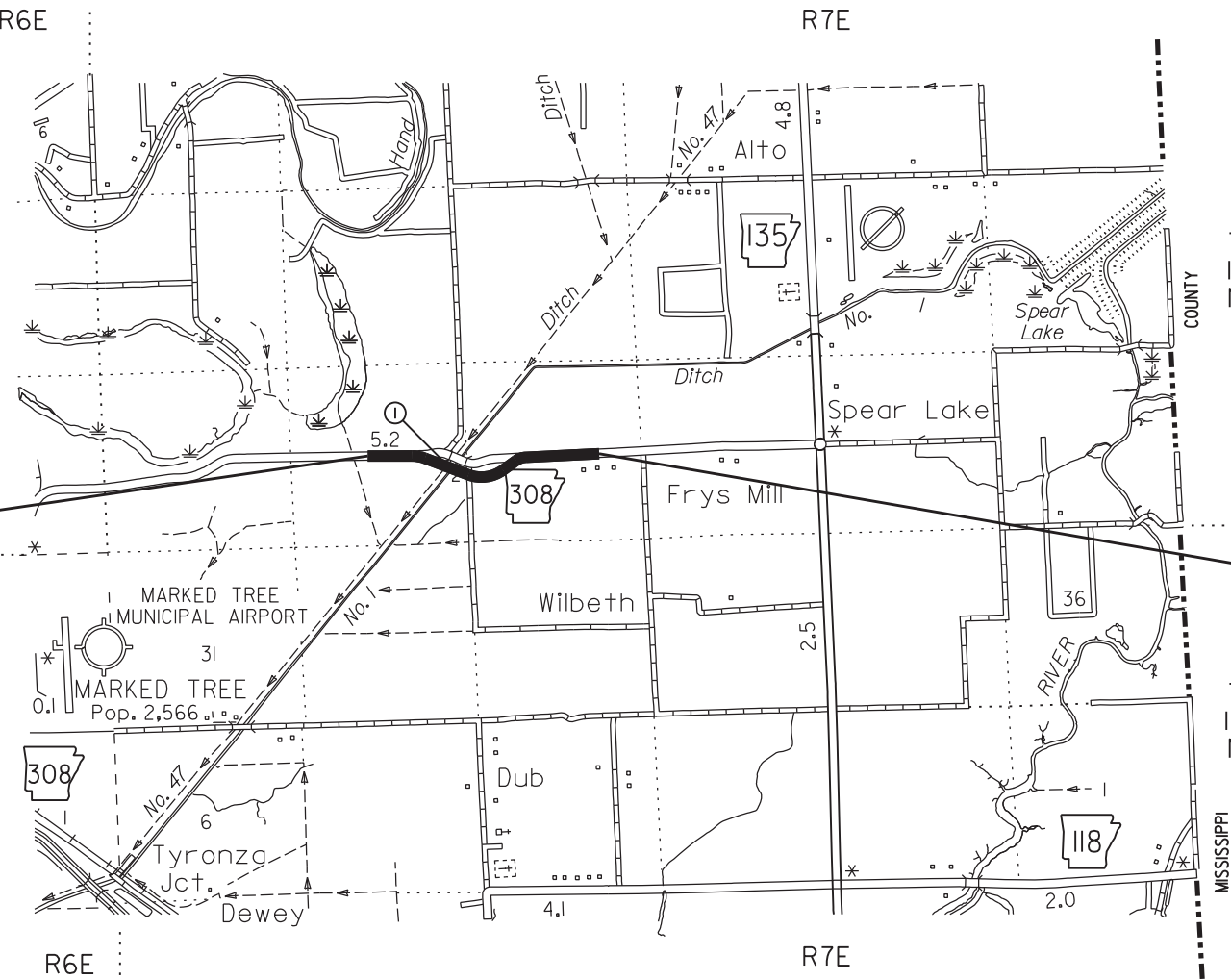


VICINITY MAP

STA. 202+00.00
BEGIN JOB NO. 100840
LOG MILE 4.17

BRIDGE DATA

- ① HWY. 308
302'-2 1/8" BRIDGE LENGTH
STA. 212+62.88 BR. END
30'-0" CLEAR ROADWAY
300'-0" CONTINUOUS COMPOSITE W-BEAM
UNIT (50', 50', 50', 50', 50', 50')
BR. NO. 07473
STA. 215+65.12 BR. END



STA. 229+33.71
END JOB 100840



APPROVED



DEPUTY DIRECTOR
AND CHIEF ENGINEER

	BEGINNING OF PROJECT	MID POINT OF PROJECT	END OF PROJECT
LATITUDE	N 35°32'55"	N 35°32'53"	N 35°32'52"
LONGITUDE	W 90°21'46"	W 90°21'32"	W 90°21'15"

	GROSS LENGTH OF PROJECT	2733.71	FEET	OR	0.518	MILES
NET	"	"	"	"	0.461	"
NET	"	"	"	"	0.057	"
NET	"	"	"	"	0.518	"

5/20/2020

RI00840.DGN

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06-04-20				6	ARK.			
06-18-20						JOB NO. 100840	2	69

2 INDEX OF SHEETS AND STANDARD DRAWINGS



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INDEX OF SHEETS

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50	DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 6 OF 7)	07473	61362
51	DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT (SHEET 7 OF 7)	07473	61363
52	DETAILS OF TYPE SPECIAL APPROACH GUTTER	07473	61364
53 - 69	CROSS SECTIONS		

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

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 FILTERBLANKET 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	03-24-20
55021	STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS	03-24-16
55040A	STANDARD DETAILS FOR TYPE A APPROACH SLAB	02-27-14

ROADWAY STANDARD DRAWINGS

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

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2 GOVERNING SPECIFICATIONS AND GENERAL NOTES

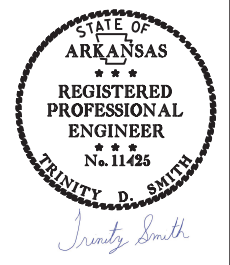
GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
100-4	DEPARTMENT NAME CHANGE
102-2	ISSUANCE OF PROPOSALS
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
110-1	PROTECTION OF WATER QUALITY AND WETLANDS
210-1	UNCLASSIFIED EXCAVATION
303-1	AGGREGATE BASE COURSE
306-1	QUALITY CONTROL AND ACCEPTANCE
400-1	TACK COATS
400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6	LIQUID ANTI-STRIP ADDITIVE
404-3	DESIGN OF ASPHALT MIXTURES
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
600-2	INCIDENTAL CONSTRUCTION
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
606-1	PIPE CULVERTS FOR SIDE DRAINS
617-1	GUARDRAIL TERMINAL (TYPE 2)
620-1	MULCH COVER
800-1	STRUCTURES
802-3	CONCRETE FOR STRUCTURES
804-2	REINFORCING STEEL FOR STRUCTURES
807-2	STEEL STRUCTURES
808-1	INSTALLATION OF ELASTOMERIC BEARINGS
808-2	ELASTOMERIC BEARINGS
JOB 100840	AIRPORT CLEARANCE REQUIREMENTS
JOB 100840	BIDDING REQUIREMENTS AND CONDITIONS
JOB 100840	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 100840	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 100840	CARGO PREFERENCE ACT REQUIREMENTS
JOB 100840	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 100840	COAL TAR EPOXY COATING
JOB 100840	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 100840	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 100840	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 100840	ESTABLISHING CONTRACT TIME - WORKING DAY CONTRACT
JOB 100840	EXTENSION FOR PIPE CULVERTS
JOB 100840	FLEXIBLE BEGINNING OF WORK
JOB 100840	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 100840	ISOLATION CASING
JOB 100840	MANDATORY ELECTRONIC CONTRACT
JOB 100840	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 100840	NESTING SITES OF MIGRATORY BIRDS
JOB 100840	PARTNERING REQUIREMENTS
JOB 100840	PLASTIC PIPE
JOB 100840	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 100840	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 100840	SHORING FOR CULVERTS
JOB 100840	SOIL STABILIZATION
JOB 100840	STORM WATER POLLUTION PREVENTION PLAN
JOB 100840	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 100840	UTILITY ADJUSTMENTS
JOB 100840	VALUE ENGINEERING
JOB 100840	WARM MIX ASPHALT

GENERAL NOTES

- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
- 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 FARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
- 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.
- 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.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
- 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.
- THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.



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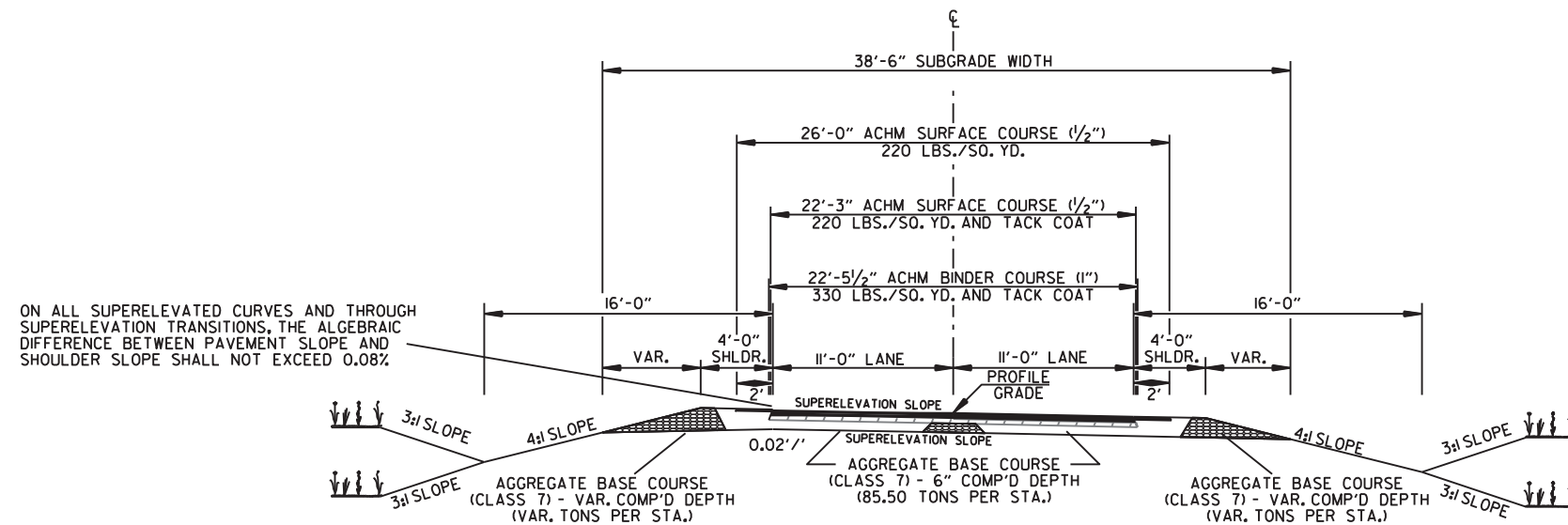
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② TYPICAL SECTIONS OF IMPROVEMENT



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HWY. 58 FULL DEPTH SECTION (SUPERELEVATION)

STA. 206+57.50 TO STA. 212+29.93
STA. 215+98.07 TO STA. 225+32.65

NOTES:

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

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

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

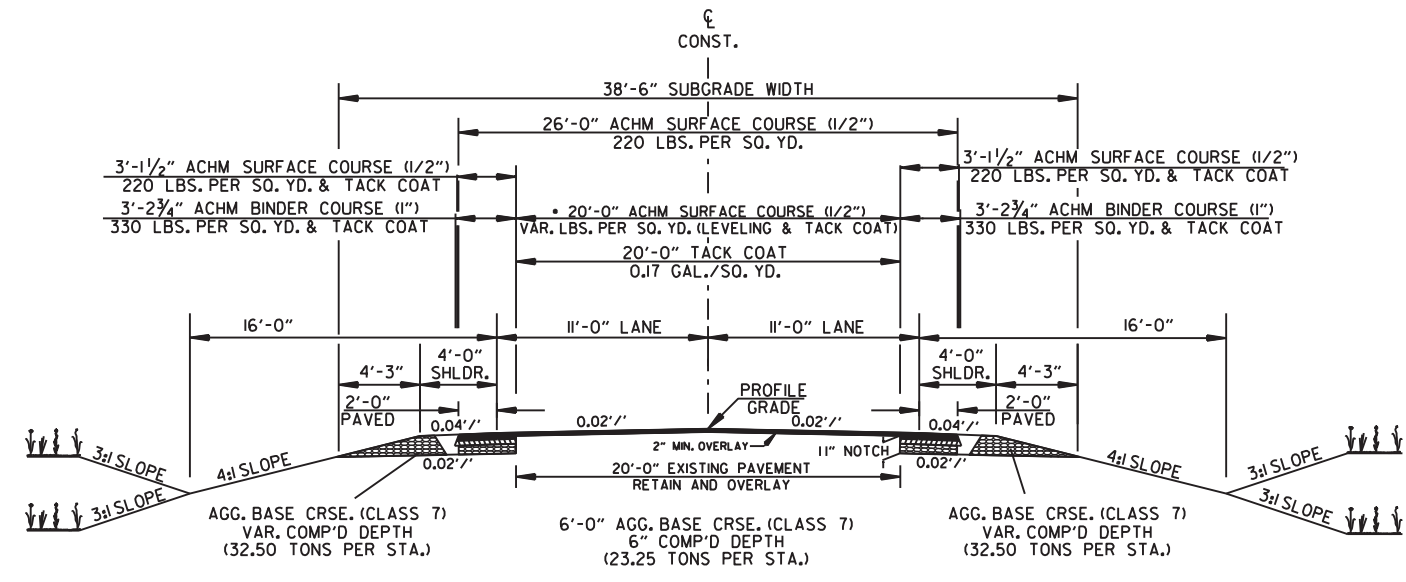
WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACHM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

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2 TYPICAL SECTIONS OF IMPROVEMENT



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HWY. 58 - NOTCH AND WIDEN SECTION

STA. 202+00.00 TO STA. 206+00.61
STA. 229+31.54 TO STA. 229+33.71

• TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

NOTES:

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

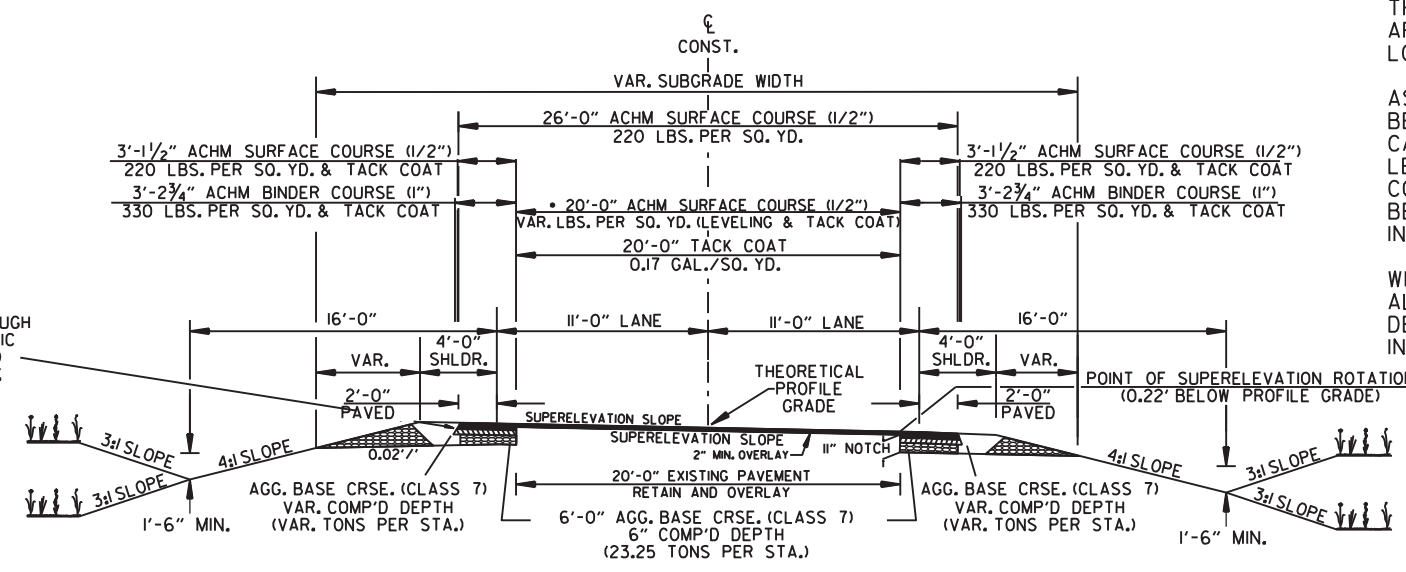
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

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

WITH 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.

ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08%



HWY. 58 - NOTCH AND WIDEN SECTION (SUPERELEVATION)

STA. 206+00.61 TO STA. 206+57.50
STA. 225+32.65 TO STA. 229+31.54

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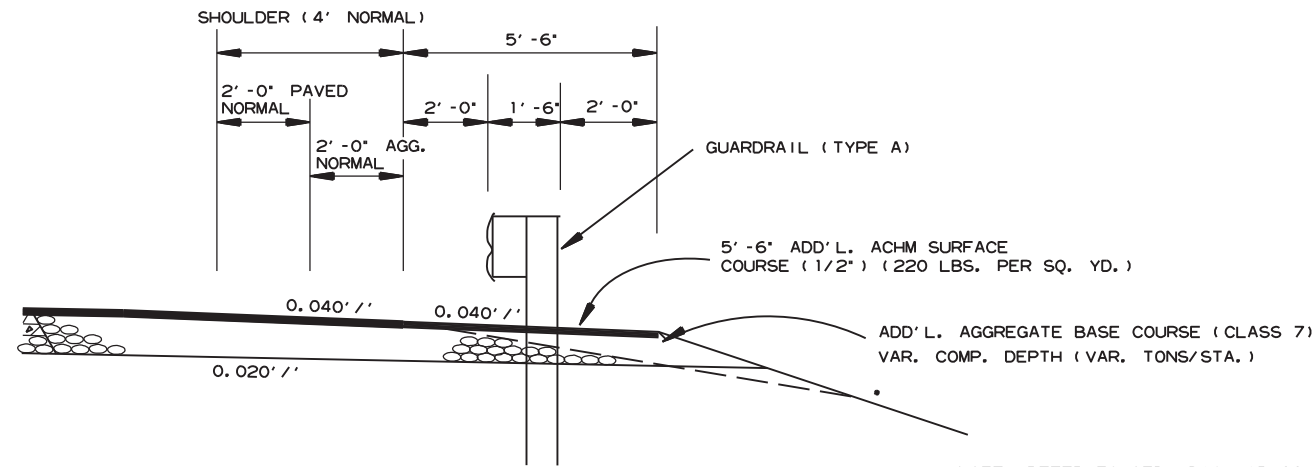
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2 SPECIAL DETAILS



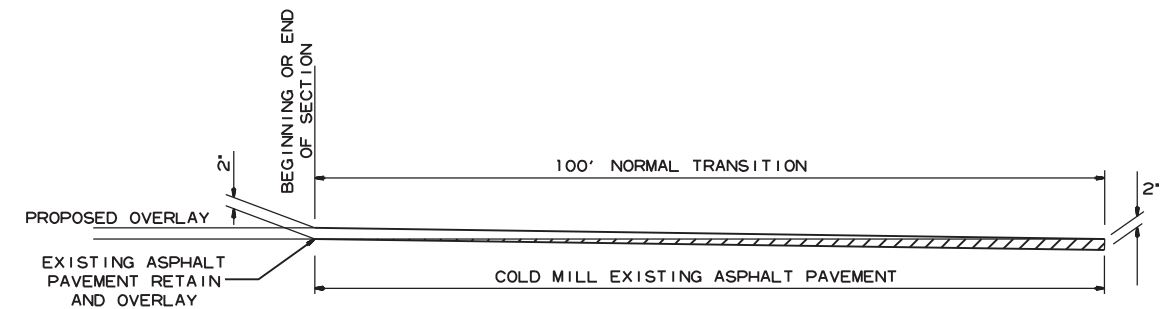
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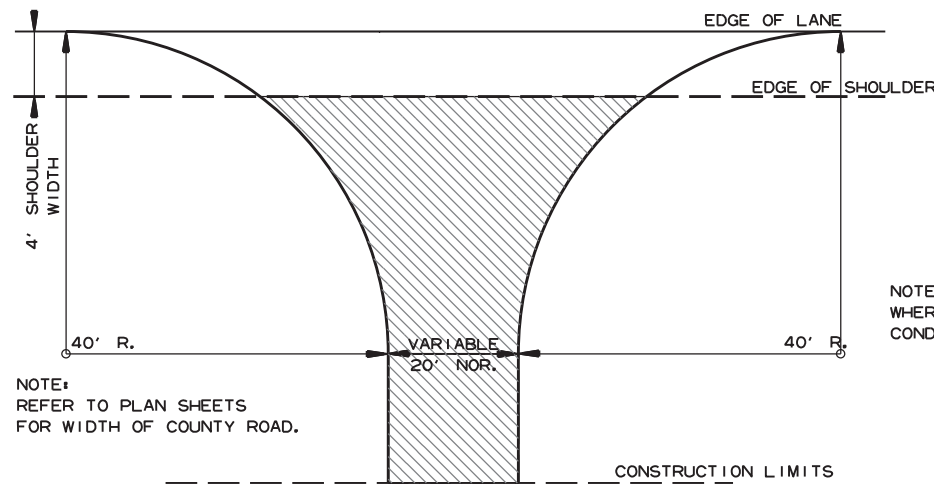


WIDENING FOR GUARDRAIL

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



DETAIL FOR TRANSITIONS

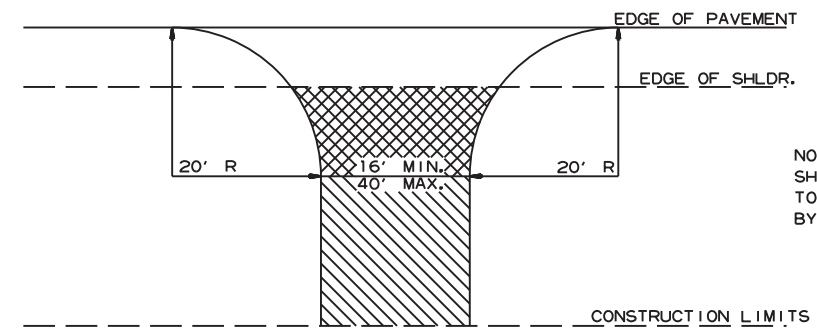


DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

NOTE: REFER TO PLAN SHEETS FOR WIDTH OF COUNTY ROAD.

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

ACHM SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH



DETAIL FOR DRIVEWAY TURNOUTS

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

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

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

SPECIAL DETAILS

5/20/2020

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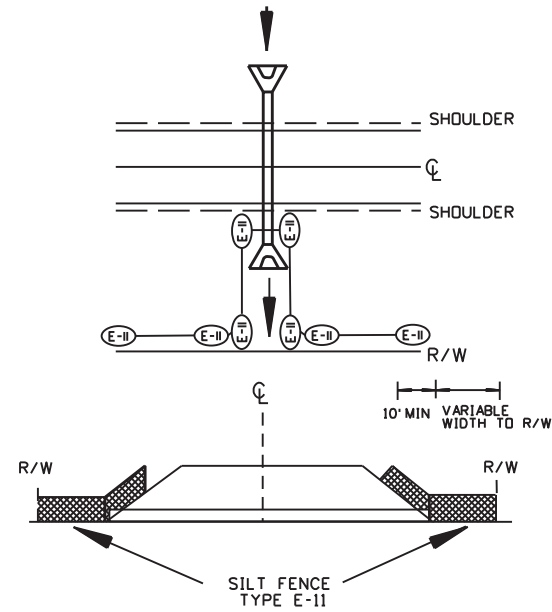
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② SPECIAL DETAILS

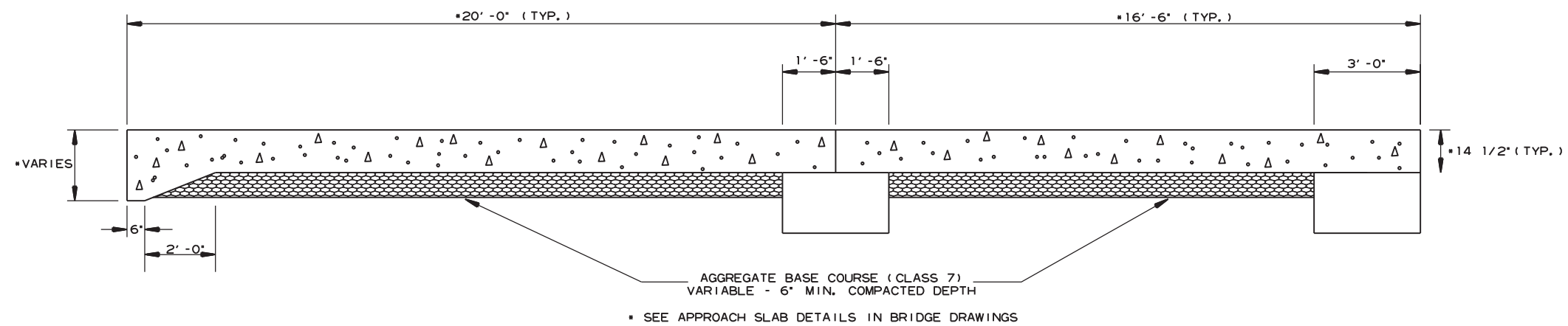


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DETAIL OF SILT FENCE
AT CROSS DRAINS



SECTION OF APPROACH SLAB

SPECIAL DETAILS

5/20/2020

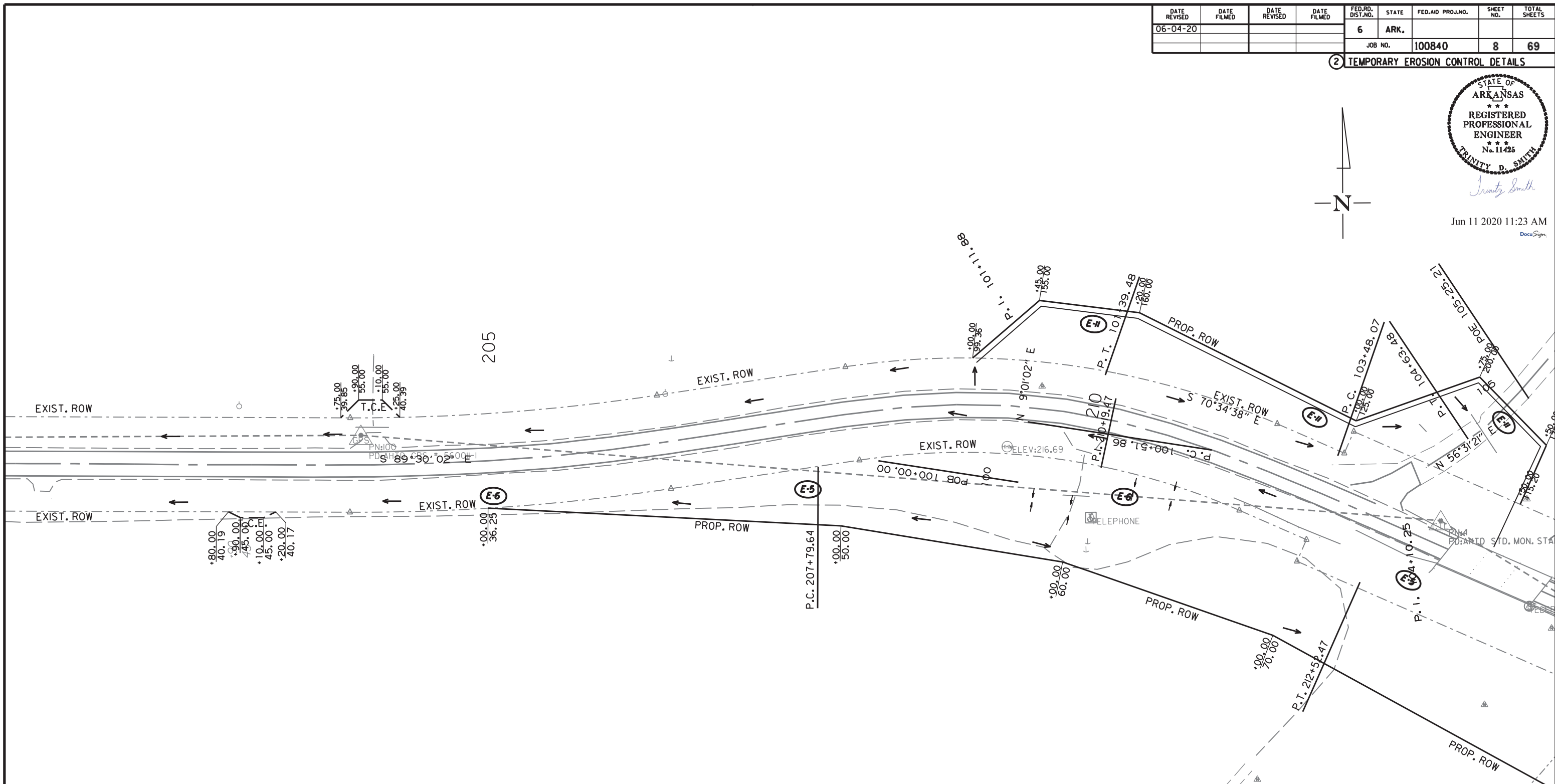
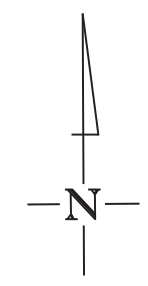
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2 TEMPORARY EROSION CONTROL DETAILS



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REVISIONS

DATE OF REVISION	REVISION

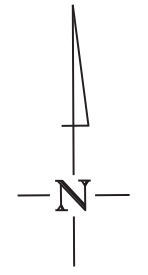
LEGEND

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

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

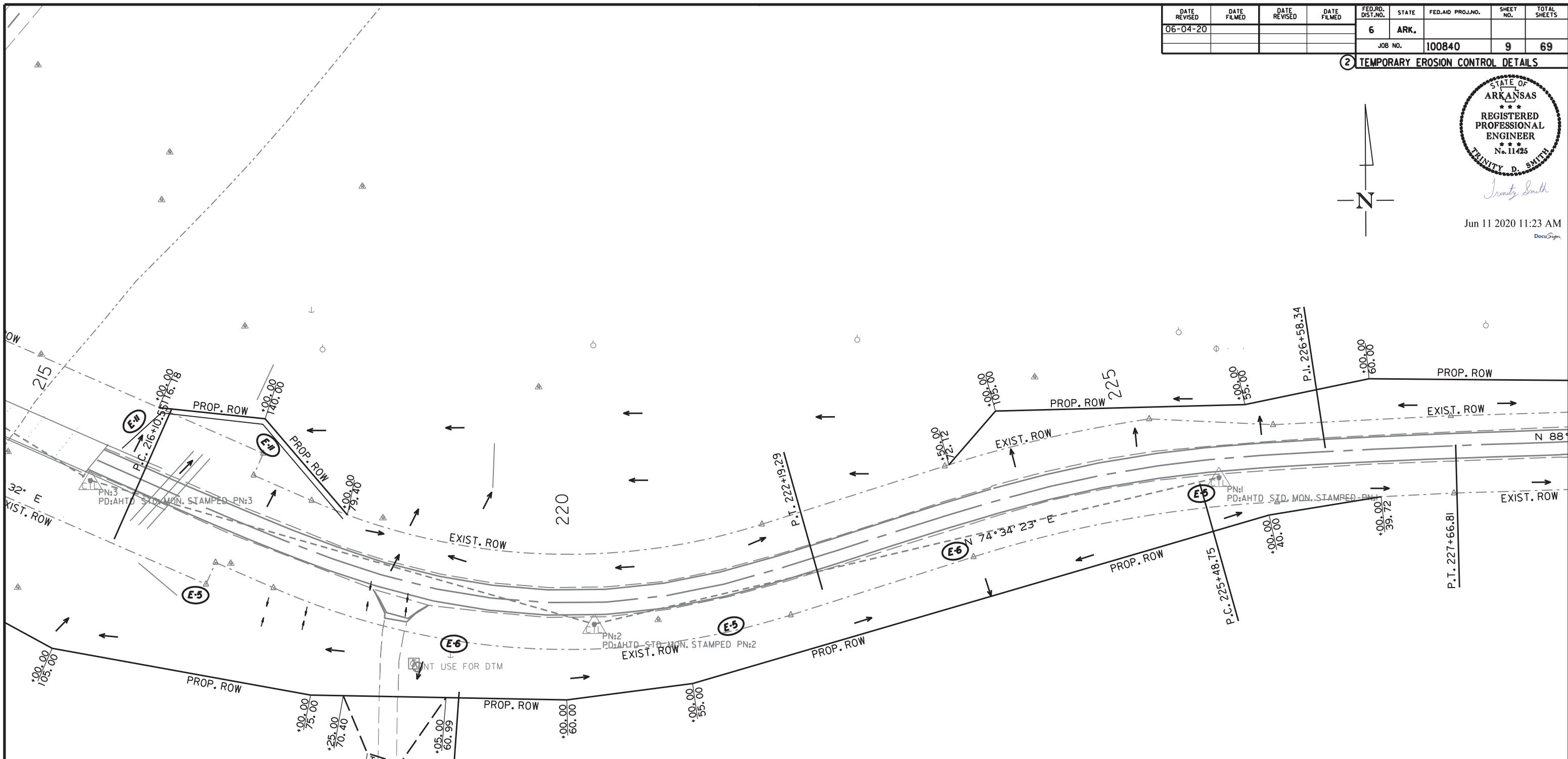
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06-04-20				6	ARK.		9	69
				JOB NO.		100840		

② TEMPORARY EROSION CONTROL DETAILS



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LEGEND

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

REVISIONS

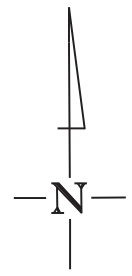
DATE OF REVISION	REVISION

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
06-04-20				6	ARK.		10	69
				JOB NO.		100840		

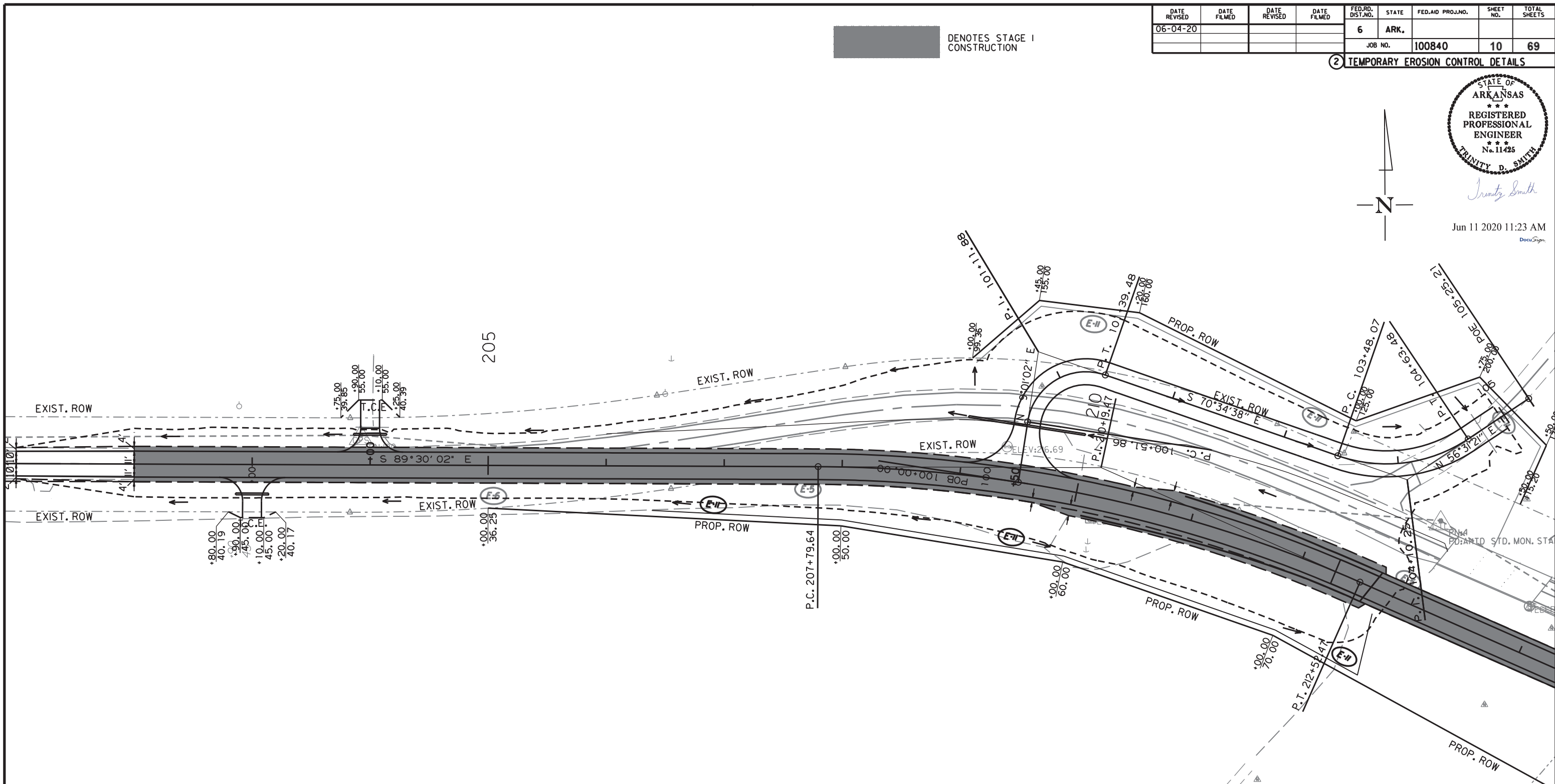
■ DENOTES STAGE I CONSTRUCTION

② TEMPORARY EROSION CONTROL DETAILS



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REVISIONS

DATE OF REVISION	REVISION

LEGEND

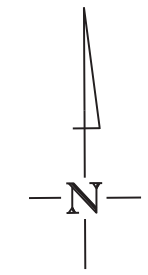
- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE

STAGE I
TEMPORARY EROSION CONTROL DETAILS

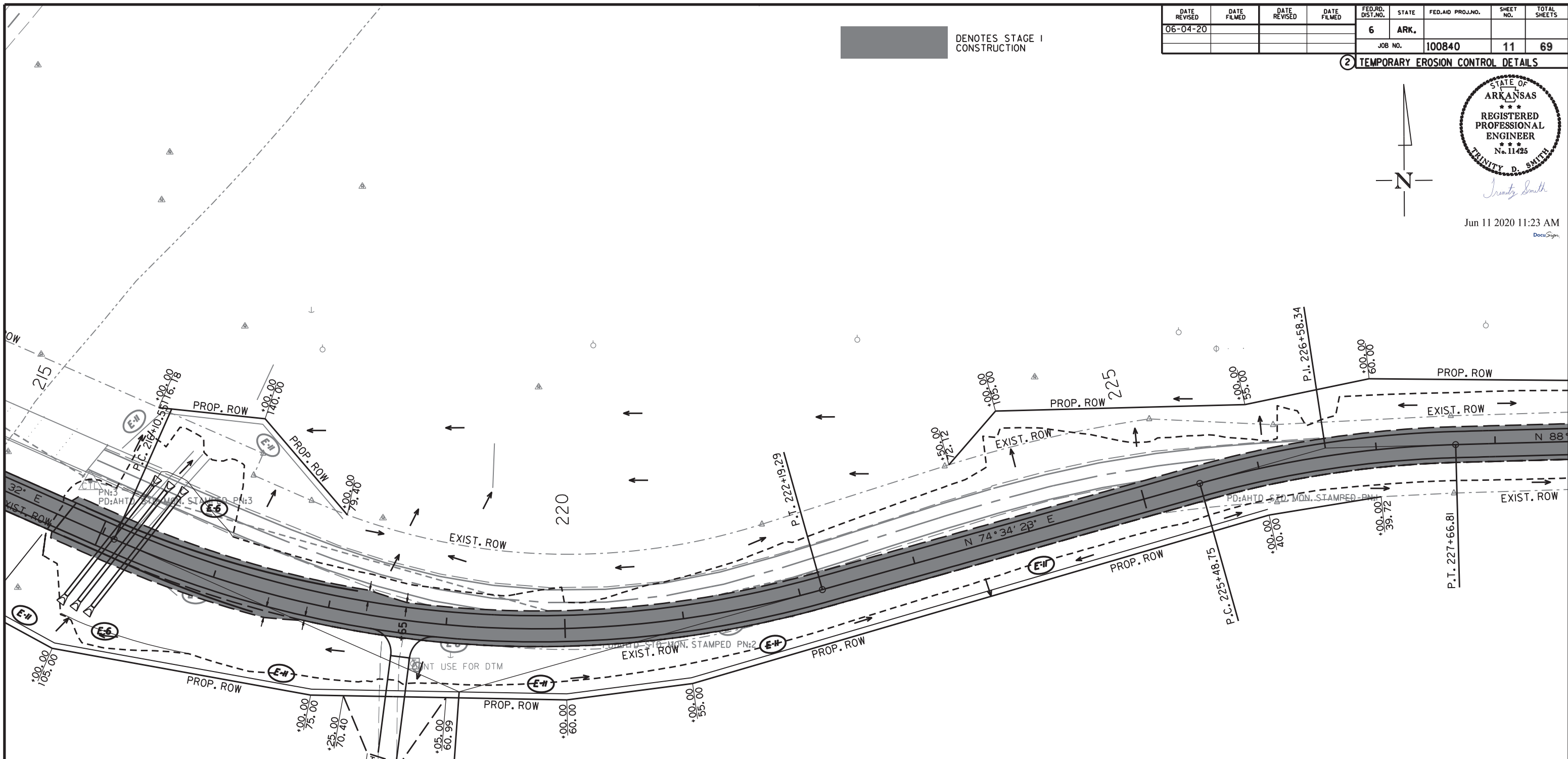
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06-04-20				6	ARK.		11	69
				JOB NO.		100840		

DENOTES STAGE I CONSTRUCTION

2 TEMPORARY EROSION CONTROL DETAILS



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REVISIONS

DATE OF REVISION	REVISION

LEGEND

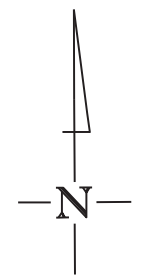
- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE

STAGE I
TEMPORARY EROSION CONTROL DETAILS

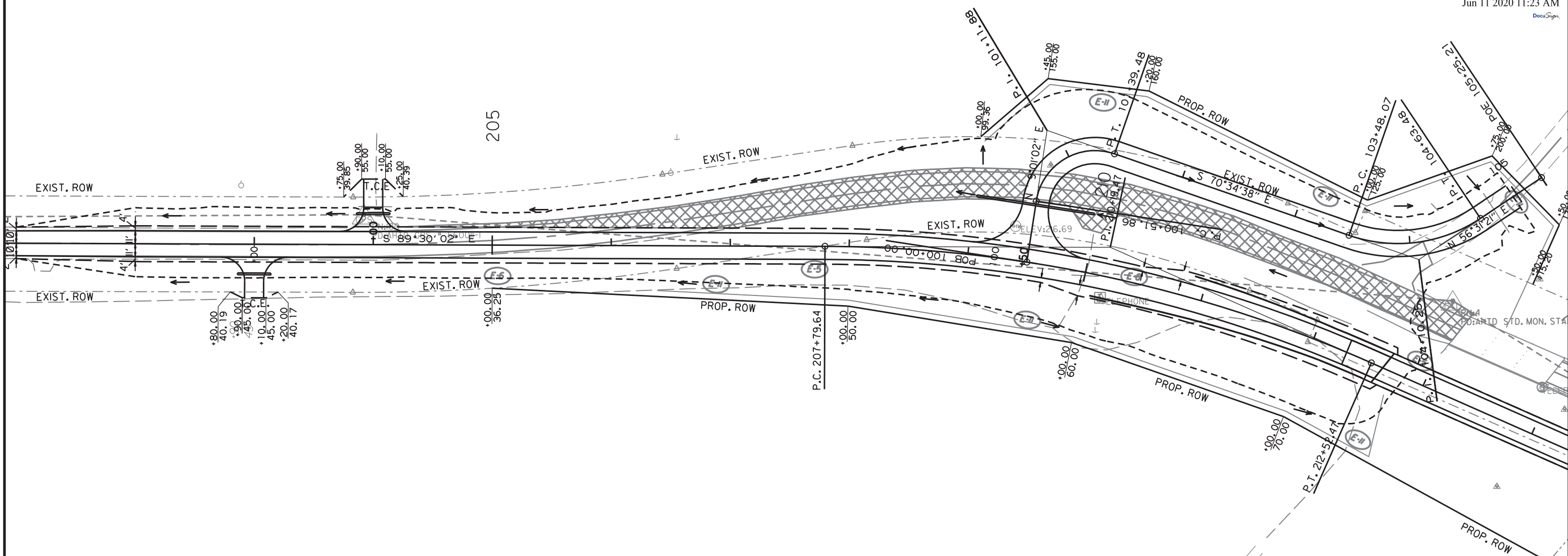
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06-04-20				6	ARK.		12	69
				JOB NO.	100840			

 DENOTES EXISTING ROADWAY TO BE EXCAVATED DURING STAGE 2

② TEMPORARY EROSION CONTROL DETAILS






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REVISIONS


DATE OF REVISION	REVISION

LEGEND

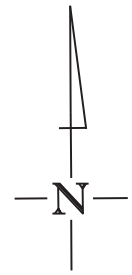
-  = SAND BAG DITCH CHECKS
-  = ROCK DITCH CHECKS
-  = SILT FENCE

STAGE 2
 TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
06-04-20				6	ARK.			
				JOB NO.	100840		13	69

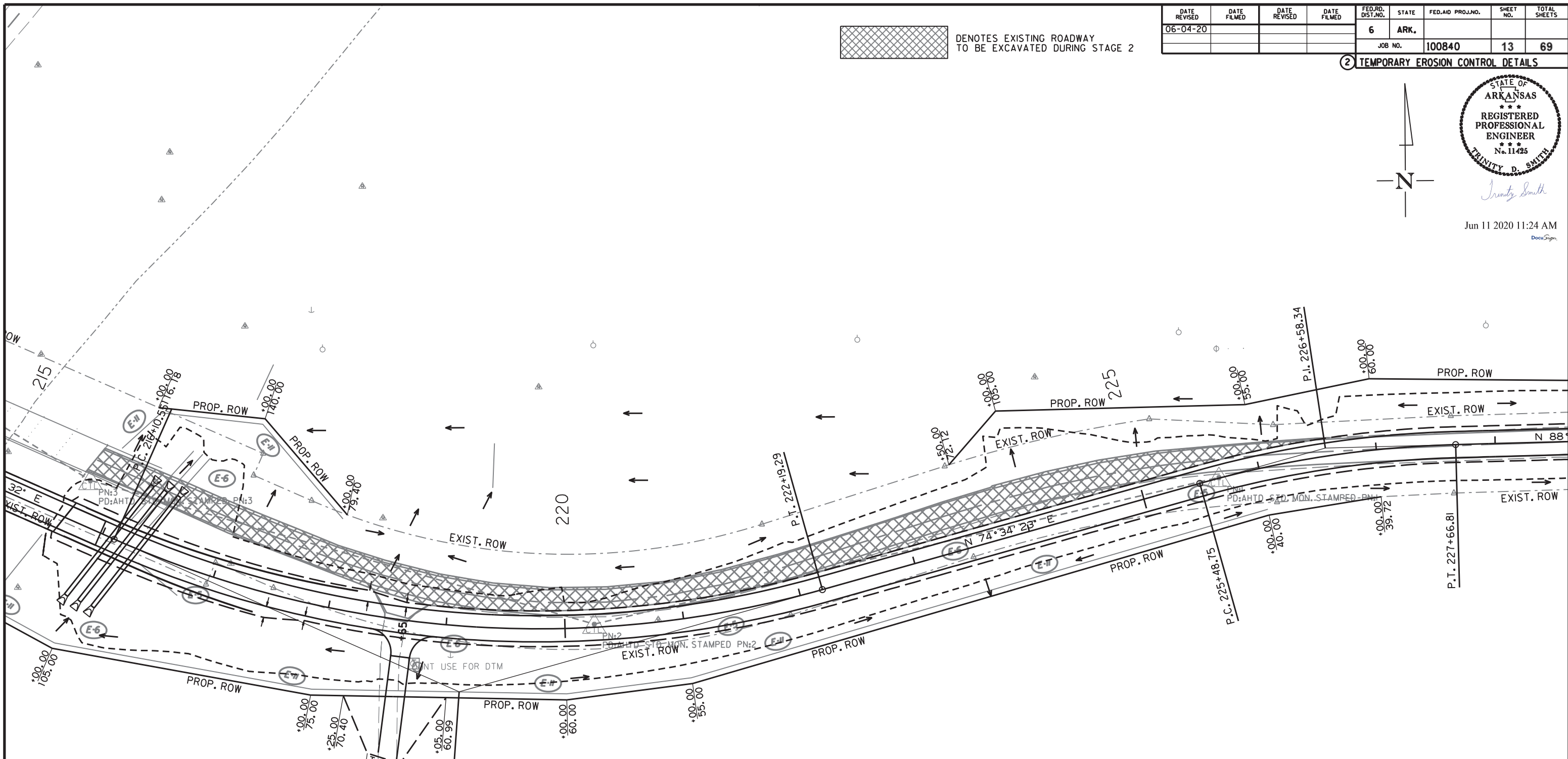
 DENOTES EXISTING ROADWAY TO BE EXCAVATED DURING STAGE 2

② TEMPORARY EROSION CONTROL DETAILS



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REVISIONS

DATE OF REVISION	REVISION

LEGEND

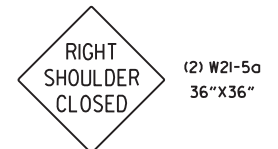
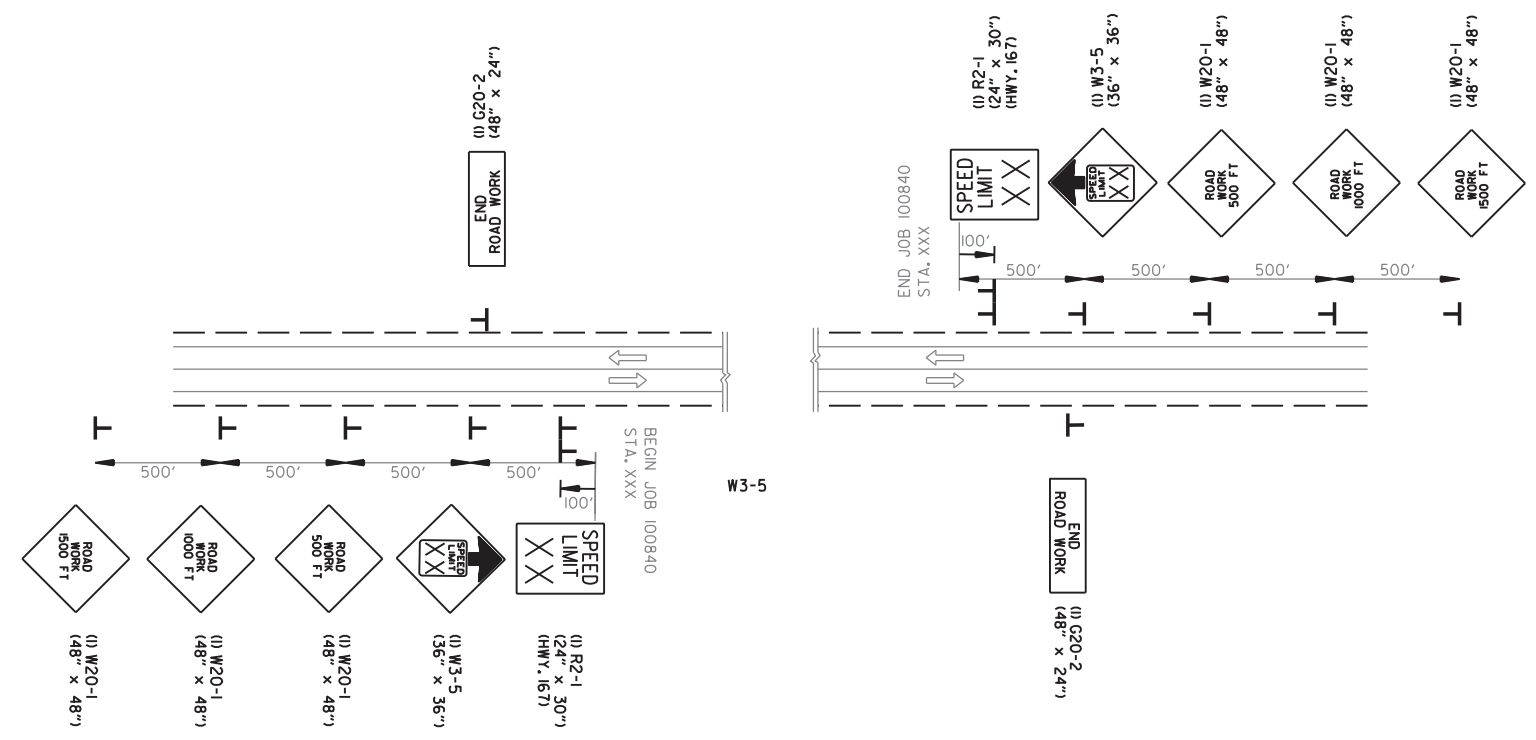
-  = SAND BAG DITCH CHECKS
-  = ROCK DITCH CHECKS
-  = SILT FENCE

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.						100840	14	69

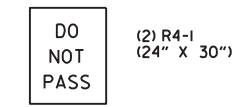
② MAINTENANCE OF TRAFFIC DETAILS



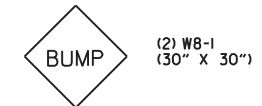
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ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

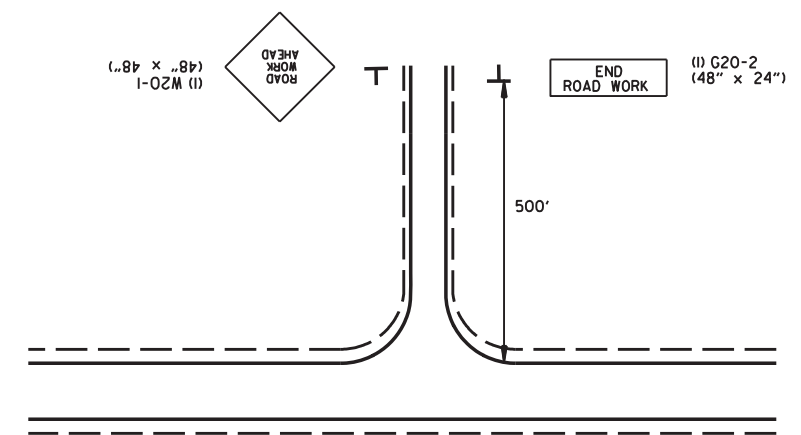


ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



ALL STAGES TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

ADVANCE WARNING (ALL STAGES)



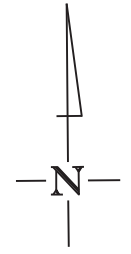
ADVANCE WARNING - SIDE ROADS (ALL STAGES)

STA. 209+50.00
NOTE: STATION BASED OFF PROPOSED CENTERLINE.

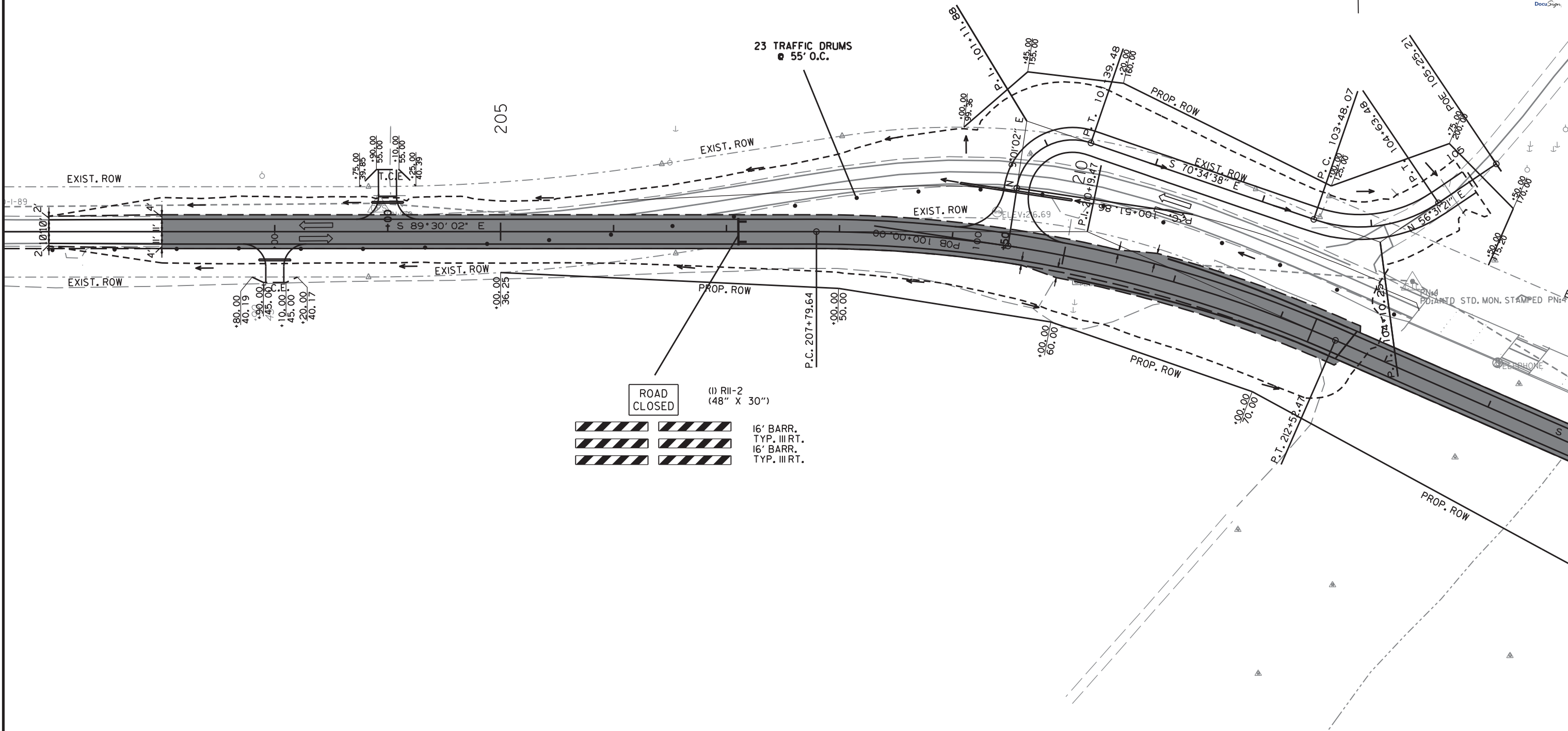
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				6	ARK.			
						JOB NO. 100840	15	69

 DENOTES STAGE I CONSTRUCTION

② MAINTENANCE OF TRAFFIC DETAILS







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ROAD CLOSED

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

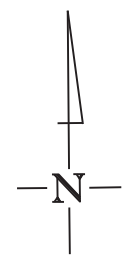
-  16' BARR. TYP. III RT.
-  16' BARR. TYP. III RT.
-  16' BARR. TYP. III RT.
-  16' BARR. TYP. III RT.

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R100840.DGN

STAGE I
MAINTENANCE OF TRAFFIC DETAILS

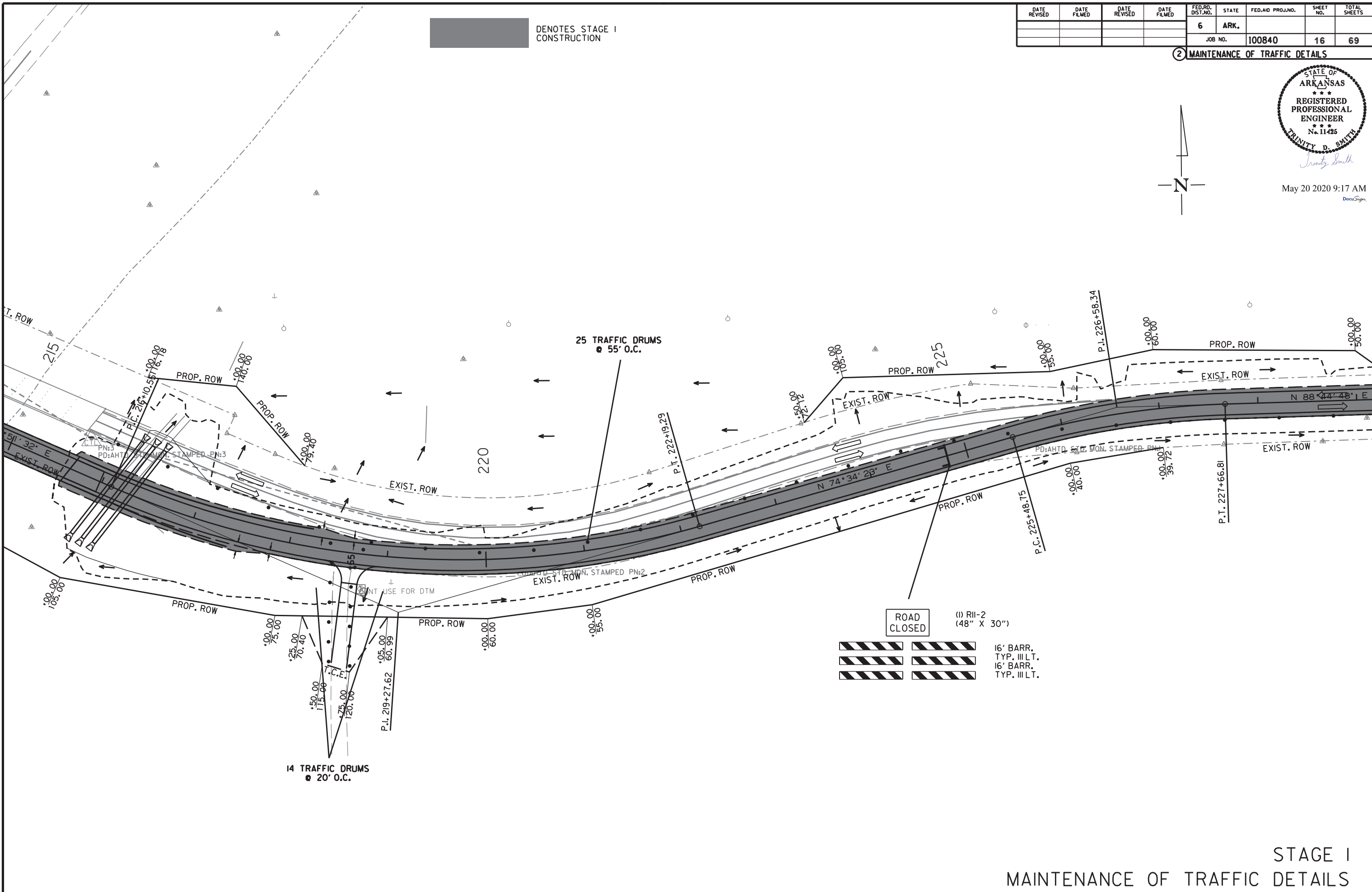
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				6	ARK.			
						JOB NO. 100840	16	69

② MAINTENANCE OF TRAFFIC DETAILS



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DENOTES STAGE I CONSTRUCTION



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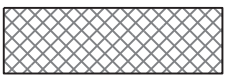
STAGE I
MAINTENANCE OF TRAFFIC DETAILS

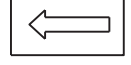
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				6	ARK.			
JOB NO. 100840							18	69





② MAINTENANCE OF TRAFFIC DETAILS

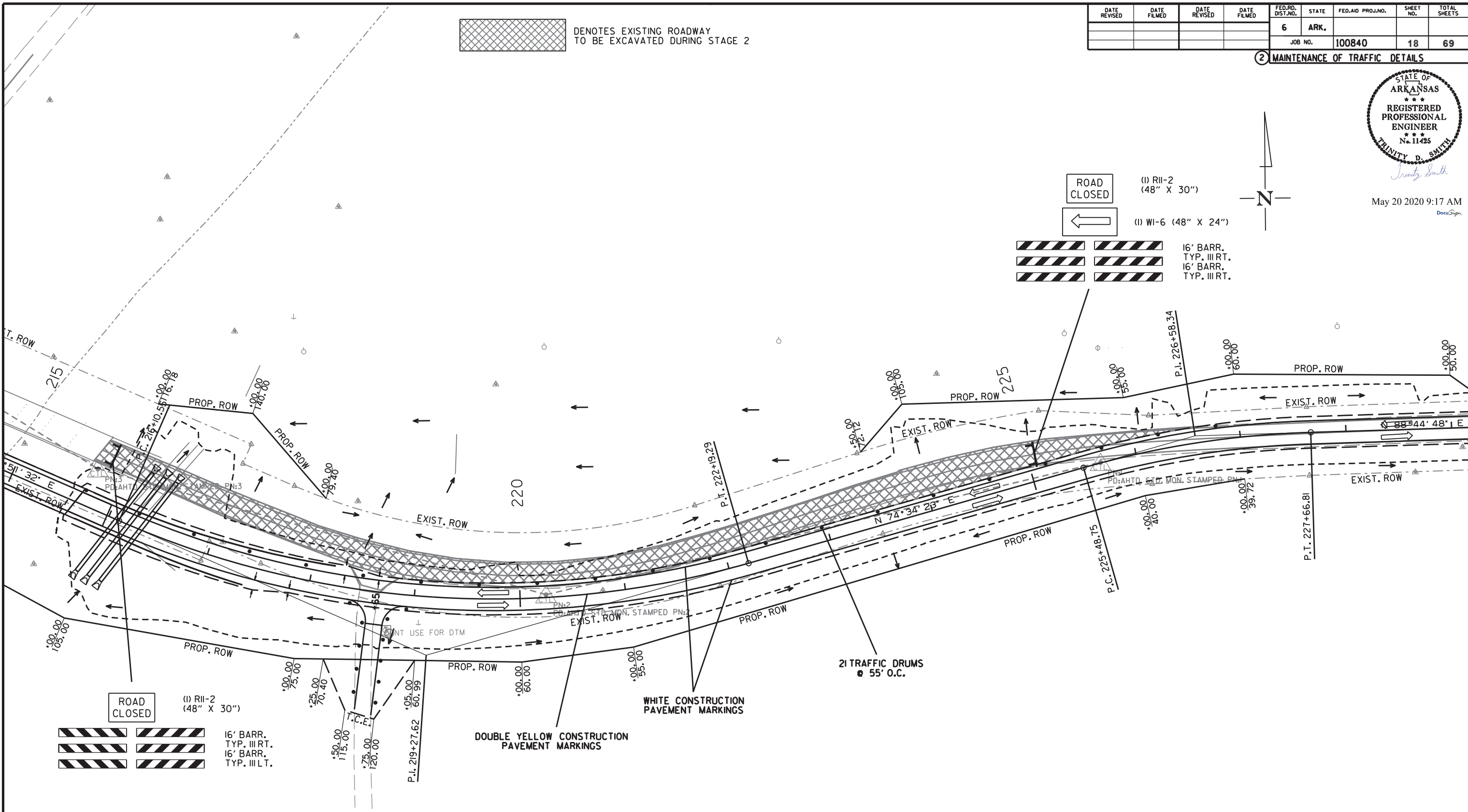
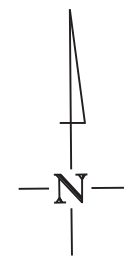


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 DENOTES EXISTING ROADWAY TO BE EXCAVATED DURING STAGE 2

ROAD CLOSED
 (I) R11-2 (48" X 30")
 (II) W1-6 (48" X 24")

 16' BARR. TYP. III RT.
 16' BARR. TYP. III RT.
 16' BARR. TYP. III RT.
 16' BARR. TYP. III RT.



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R100840.DGN

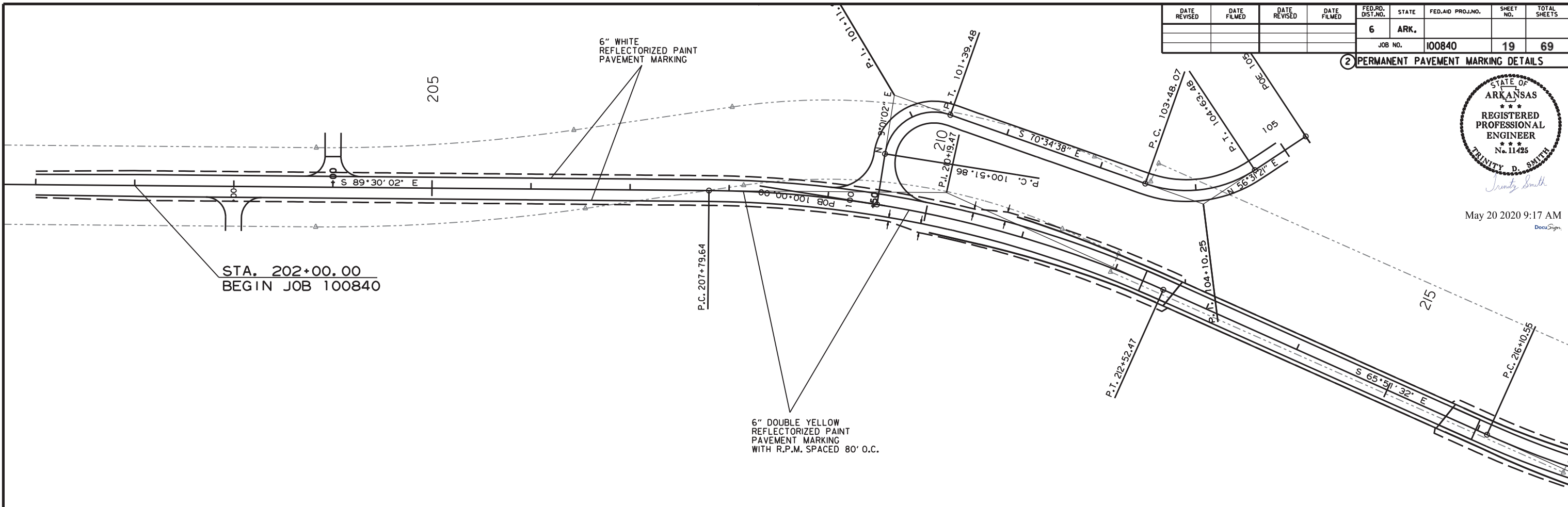
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 100840							19	69

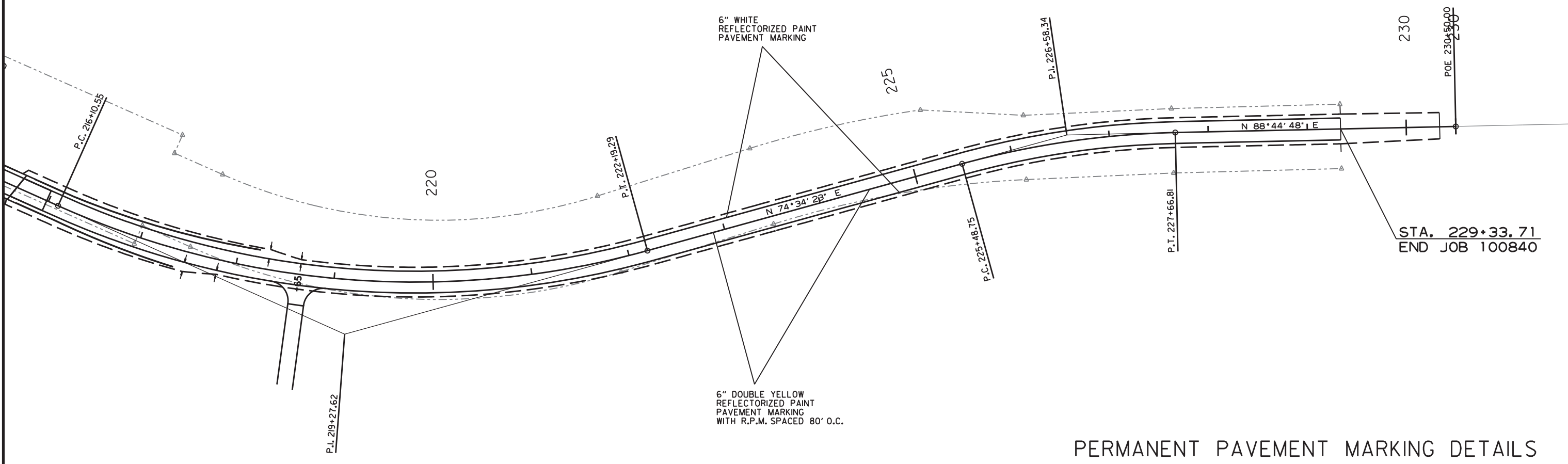
2 PERMANENT PAVEMENT MARKING DETAILS



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THE 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.



PERMANENT PAVEMENT MARKING DETAILS

5/20/2020
R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
06-04-20				6	ARK.			
				JOB NO.		I00840	20	69

2 QUANTITIES



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CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	REFLECTORIZED PAINT PAVEMENT MARKING	
				TYPE II (YELLOW/YELLOW)	WHITE	YELLOW
	LIN. FT. - EACH	LIN. FT.	EACH	LIN. FT.		
CONSTRUCTION PAVEMENT MARKINGS	11534		11534			
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)		73		73		
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")		5667			5667	
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")		5867				5867
TOTALS:			11534	73	5667	5867

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

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

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	BARRICADES (TYPE III)	
							NO.	SQ. FT.		RIGHT	LEFT
			LIN. FT. - EACH					EACH	LIN. FT.		
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2		2	2	32.0			
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2		2	2	32.0			
W20-1	ROAD WORK 500 FT.	48"x48"	2	2		2	2	32.0			
W20-1	ROAD WORK AHEAD	48"x48"	2	2		2	2	32.0			
G20-2	END ROAD WORK	48"x24"	3	3		3	3	24.0			
W13-1	SPEED LIMIT (ADVISORY)	24"x24"	2	2		2	2	8.0			
R11-2	ROAD CLOSED	48"x30"	2	6		6	6	60.0			
R4-1	DO NOT PASS	24"x30"	2	2		2	2	10.0			
W21-5a	RIGHT SHOULDER CLOSED	36"x36"	2	2		2	2	18.0			
W8-1	BUMP	30"x30"	2	2		2	2	12.5			
R2-1	SPEED LIMIT XX	24"x30"	2	2		2	2	10.0			
W3-5	REDUCED SPEED AHEAD	36"x36"	2	2		2	2	18.0			
	TRAFFIC DRUMS		62	108		108			108		
	TYPE III BARRICADE-RT. (16')		2	6		6				96	
	TYPE III BARRICADE-LT. (16')		2	6		6					96
TOTALS:								288.5	108	96	96

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

6/4/2020 R100840.DCN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
06-04-20				6	ARK.		21	69
				JOB NO.		I00840		

QUANTITIES



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CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
201+00	230+34	HWY. 308	30	30
TOTALS:			30	30

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
216+39	48" X 36" X 80. R.C. PIPE CULVERT	1
TOTAL:		1

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

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	GUARDRAIL
			LIN. FT.
212+32	213+07	HWY. 380 - RT.	75
212+63	213+12	HWY. 380 - LT.	50
213+93	214+18	HWY. 380 - RT.	25
214+00	214+25	HWY. 380 - LT.	25
215+66	216+16	HWY. 380 - RT.	50
215+74	216+49	HWY. 380 - LT.	75
TOTAL:			300

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE PROJECT		MAIN LANES	3355	24079	
ENTIRE PROJECT		APPROACHES		1855	
ENTIRE PROJECT		BRIDGE EXCAVATION	50		
ENTIRE PROJECT		TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			200
TOTALS:			3405	25934	200

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

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE SPECIAL)	APPROACH SLABS	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
212+29.93	212+59.93	HWY. 308 - RT.	4.00		321	4.67
212+29.93	212+65.83	HWY. 308 - LT.	4.00		321	5.58
212+29.93	212+62.88	HWY. 308		27.30	2110	28.19
215+65.12	215+98.07	HWY. 308		27.30	2110	28.19
215+62.17	215+98.07	HWY. 308 - RT.	4.00		321	5.58
215+68.07	215+98.07	HWY. 308 - LT.	4.00		321	4.67
TOTALS:			16.00	54.60	5504	76.88

NOTE: USE T=11" FOR 4' SHOULDER.

STRUCTURES

STATION	DESCRIPTION	PIPE CULVERT ALTERNATES		FLARED END SECTION ALTERNATES FOR PIPE CULVERT ALTERNATES	STD. DWG. NOS.
		ALT. 1 (CLASS IV)	ALT. 2, 3, 4, 5		
		42"	42"		
216+39	TRI. 42" X 118'	354	354	6	FES-1, FES-2, PCC-1, PCM-1, PCP-1
TOTALS:		354	354	6	

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.

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
212+63	HWY. 308 ON LT.	1
TOTAL:		1

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

SELECTED PIPE BEDDING

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

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

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			500	5
TOTALS:			500	5

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

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)			AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS	STANDARD DRAWINGS
				FEET	SQ. YD.	TON			
				TON	TON	TON			
203+00	RT.	HWY. 308	16	37.01	4.07	71.11	28	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3	
204+00	LT.	HWY. 308	16	37.01	4.07	38.57	28	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3	
209+50	LT.	HWY. 308	22	47.68	5.24	156.99	100	PCC-1, PCM-1, PCP-1, PCP-2, PCP-3	
218+65	RT.	HWY. 308	16	37.01	4.07	94.37		PCC-1, PCM-1, PCP-1, PCP-2, PCP-3	
ENTIRE PROJECT TEMPORARY DRIVES							40.00		
TOTALS:				158.71	17.45	401.04	156		

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

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

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.

6/4/2020 R100840.DCN

**ASPHALT CONCRETE PATCHING FOR
MAINTENANCE OF TRAFFIC**

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

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
201+00.00	202+00.00	MAIN LANES	23.00	255.56
229+33.71	230+33.71	MAIN LANES	23.00	255.56
TOTAL:				511.12

NOTE: AVERAGE MILLING DEPTH 1".

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
210+89.60	212+58.35	HWY. 308 -LT.	100	1	1
210+07.10	212+50.85	HWY. 308 - RT.	175	1	1
215+78.15	218+21.90	HWY. 308 - LT.	175	1	1
215+70.65	217+39.40	HWY. 308 - RT.	100	1	1
TOTALS:			550	4	4

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	10
TOTAL:	10

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

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC						
202+00	35	32	54.60	90	21	47.80	05 RT	0-5	57	40	A-7-6(31)	BR/GR
202+00	35	32	54.40	90	21	47.80	16 RT	0-5	51	34	A-7-6(21)	GR/BR
210+00	35	32	54.90	90	21	38.20	05 LT	0-5	42	29	A-7-6(15)	BR/GR
220+00	35	32	51.30	90	21	26.90	05 LT	0-5	46	31	A-7-6(19)	BR/GR
228+00	35	32	52.50	90	21	17.40	05 LT	0-5	40	28	A-6(12)	BR/GR
228+00	35	32	52.60	90	21	17.40	16 LT	0-5	38	24	A-6(13)	BR/GR
228+00	35	32	52.60	90	21	17.40	16 LT	0-5	41	26	A-7-6(12)	BR/GR

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

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL									
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	WATTLE (20") DITCH CHECKS (E-1)	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	SILT FENCE (E-11)	*SEDIMENT REMOVAL & DISPOSAL		
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	ACRE	ACRE	CU.YD.	CU.YD.	CU.YD.		
ENTIRE PROJECT	PROJECT	CLEARING AND GRUBBING								3.91	3.91	79.8		110	12	876	41
ENTIRE PROJECT	PROJECT	STAGE 1								7.38	7.38	150.6			6	1861	71
ENTIRE PROJECT	PROJECT	STAGE 2	6.67	13.34	6.67	680.3	6.67		9.29	9.29	189.5						
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.67	3.34	1.67	170.3	1.67		5.15	5.15	105.1	500	100	100	700	26	
TOTALS:			8.34	16.68	8.34	850.6	8.34		25.73	25.73	525.0	500	210	118	3437	138	

BASIS OF ESTIMATE:
LIME2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
WATTLE DITCH CHECKS.....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.

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.							100840	22	69

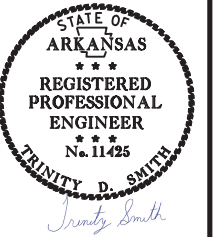
② QUANTITIES



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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
							JOB NO.	TOTAL SHEETS
							100840	23 69

QUANTITIES



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BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH FEET	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT						ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")						TOTAL PG 64-22 TON								
				TON / STATION	TON	(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)			TOTAL GALLONS	AVG. WID. FEET	SQ. YD.	POUND / SQ. YD.	PG 64-22 TON	AVG. WID. FEET	SQ. YD.	POUND / SQ. YD.	PG 64-22 TON	AVG. WID. FEET		SQ. YD.	POUND / SQ. YD.	PG 64-22 TON					
						TOTAL WID. FEET	SQ. YD.	GALLON	TOTAL WID. FEET	SQ. YD.	GALLON																			
MAIN LANES																														
201+00.00	202+00.00	TRANSITION	100.00	20.00	20.00					23.00	255.56	43.45	43.45													23.00	255.56	220.00	28.11	28.11
202+00.00	206+57.50	NOTCH AND WIDEN	457.50	88.25	403.74	36.92	1876.77	93.84				93.84	8.54	434.12	330.00	71.63	8.38	425.98	220.00	46.86	26.00	1321.67	220.00	145.38	192.24	220.00	181.91	337.58		
206+57.50	212+29.93	FULL DEPTH	572.43	150.50	861.51	64.71	4115.77	205.79				205.79	22.46	1428.53	330.00	235.71	22.25	1415.17	220.00	155.67	26.00	1553.69	220.00	181.91	337.58	220.00	296.99	554.00		
215+98.07	225+32.65	FULL DEPTH	934.58	150.50	1406.54	64.96	6745.59	337.28				337.28	22.46	2332.30	330.00	384.83	22.50	2336.45	220.00	257.01	26.00	2599.90	220.00	296.99	554.00	220.00	127.45	167.89		
225+32.65	229+33.71	NOTCH AND WIDEN	401.06	88.25	353.94	36.66	1633.65	81.68				81.68	8.41	374.77	330.00	61.84	8.25	367.64	220.00	40.44	26.00	1158.62	220.00	127.45	167.89	220.00	28.11	28.11		
229+33.71	230+33.71	TRANSITION	100.00	20.00	20.00					23.00	255.56	43.45	43.45												23.00	255.56	220.00	28.11	28.11	
ADDITIONAL FOR LEVELING																														
202+00.00	206+00.00	LEVELING	400.00							20.00	888.89	151.11	151.11				20.00	888.89	VAR.	160.38									160.38	
206+00.00	206+57.50	GRADE RAISE	57.50							20.00	127.78	21.72	21.72	20.00	127.78	VAR.	33.66													
225+32.65	227+00.00	GRADE RAISE	167.35							20.00	371.89	63.22	63.22	20.00	371.89	VAR.	15.84													
227+00.00	229+00.00	LEVELING	200.00							20.00	444.44	75.55	75.55				20.00	444.44	VAR.	180.18								180.18		
ADDITIONAL FOR GUARDRAIL WIDENING																														
209+64.10	209+97.10	GUARDRAIL WIDENING TRANSITION RT.	33.00	10.70	3.53																				2.75	10.08	220.00	1.11	1.11	
209+97.10	212+50.85	GUARDRAIL WIDENING RT.	253.75	21.39	54.27																				5.50	155.07	220.00	17.06	17.06	
210+46.60	210+79.60	GUARDRAIL WIDENING TRANSITION LT.	33.00	10.70	3.53																				2.75	10.08	220.00	1.11	1.11	
210+79.60	212+58.35	GUARDRAIL WIDENING LT.	178.75	21.39	38.23																				5.50	109.24	220.00	12.02	12.02	
215+70.65	217+49.40	GUARDRAIL WIDENING RT.	178.75	21.39	38.23																				5.50	109.24	220.00	12.02	12.02	
217+49.40	217+82.40	GUARDRAIL WIDENING TRANSITION RT.	33.00	10.70	3.53																				2.75	10.08	220.00	1.11	1.11	
215+78.15	218+31.90	GUARDRAIL WIDENING LT.	253.75	21.39	54.27																				5.50	155.07	220.00	17.06	17.06	
218+31.90	218+64.90	GUARDRAIL WIDENING TRANSITION LT.	33.00	10.70	3.53																				2.75	10.08	220.00	1.11	1.11	
TOTALS:					3264.85		14371.78	718.59			2344.12	398.50	1117.09		5069.39		803.51		5878.57		840.54		7913.94		870.55	1711.09				

BASIS OF ESTIMATE
 ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
 ACHM BINDER COURSE (1").....95.9% MIN. AGGR.....4.1% ASPHALT BINDER
 MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
 TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

5/20/2020

RI00840.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.		100840		
				07473		QUANTITIES		61341

SCHEDULE OF BRIDGE QUANTITIES - JOB. NO. 100840

BRIDGE NO.	NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SS & 802	SP, SS, & 802	803	SS & 804	SS & 804	SS & 805	SS & 805	SS & 805	SP, SS, & 807	SS & 807	SS & 808	SS & 809	812	816	816	SP JOB 100840	
			ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	CLASS 1 PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL SHELL PILING (18" DIA.)	STEEL SHELL PILING (24" DIA.)	PILE ENCASEMENT	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)	PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT	BRIDGE NAME PLATE (TYPE D)	FILTER BLANKET	DUMPED RIPRAP	ISOLATION CASING (42" DIA.)	
			UNIT	LUMP SUM	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	TON	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.	LIN. FT.	
07473	HIGHWAY 308 OVER DITCH NOS. 1 & 47	BENT NO. 1				34.85		0.2	8,129		425			815	1.2	2,040.0	34		228.0	126.0		
		BENT NO. 2				21.72			11,313				492	90		1,920.0						
		BENT NO. 3				20.85				11,313			③ 492			1,920.0						63.0
		BENT NO. 4				20.17				11,066			③ 492			1,920.0						63.0
		BENT NO. 5				20.36				11,066			492	114		1,920.0						
		BENT NO. 6				21.11				11,264			492	96		1,920.0						
		BENT NO. 7		24		35.34			0.2	8,129		425			815	1.2	2,040.0	34		23.0	39.0	
		300'-0" CONT. COMP. W-BEAM UNIT						324.20	24.9						191,280				1			
		SITE NO. 1 (EXISTING BR. NO. M4006)		1							78,820											
		SITE NO. 2 (EXISTING BR. NO. M4012)		1																		
TOTALS FOR JOB NO. 100840				24	174.40	324.20	25.3	72,280	78,820	850	2,460	300	192,910	2.4	13,680.0	68	1	251.0	165.0	126.0		

- ① Steel shell piles shall conform to ASTM A252, Grade 3, Fy = 45 ksi.
- ② The 24" steel shell piling shall have a nominal shell thickness, "T" = 5/8"
- ③ The upper 15' of the 24" Dia. Concrete Filled Steel Shell Piles at designated locations shall receive a coal tar epoxy coating in accordance with the Job 100840 SP "COAL TAR EPOXY COATING".
- ④ All Grade 50W structural steel, except galvanized members, surfaces in contact with concrete, and the expansion device, within five foot of bridge deck expansion joints shall be painted as specified in Subsection 807.75. For more information, See "GENERAL NOTES" on Dwg. No. 61343.

5/8/2020 8:43:23 AM
 heWilliams
 WORKSPACE: ARD001 - Bridge
 L:\2017\101596 - 100840 Ditch Nos L47 Strs-Apprs\Drawings\100840_S001_01.dgn
 REVISED DATE:



SCHEDULE OF BRIDGE QUANTITIES
DITCH NOS. 1 & 47 STRS. & APPRS. (S)
POINSETT COUNTY
 ROUTE 308 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: OCT. 2019 FILENAME: B100840_q1.dgn
 CHECKED BY: JHR DATE: OCT. 2019 SCALE: AS SHOWN
 DESIGNED BY: CSW DATE: OCT. 2019

BRIDGE NO. 07473 DRAWING NO. 61341

DIGITALLY SIGNED 5/8/2020
 BRIDGE ENGINEER

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	30	STATION
201	GRUBBING	30	STATION
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	1	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	300	LIN. FT.
SS & 210	UNCLASSIFIED EXCAVATION	3405	CU. YD.
210	COMPACTED EMBANKMENT	25934	CU. YD.
SP & 210	SOIL STABILIZATION	200	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	3743	TON
SS & 401	TACK COAT	1143	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	771	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	33	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1639	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	90	TON
412	COLD MILLING ASPHALT PAVEMENT	511	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	13	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	10	TON
504	APPROACH SLABS	54.60	CU. YD.
504	APPROACH GUTTERS	16.00	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
SS & 603	MAINTENANCE OF TRAFFIC	289	SQ. FT.
SS & 604	SIGNS	192	LIN. FT.
SS & 604	BARRICADES	108	EACH
SS & 604	TRAFFIC DRUMS	11534	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	354	LIN. FT.
606	42" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV)	354	LIN. FT.
606	42" ASPHALT COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	354	LIN. FT.
606	42" ALUMINUM COATED CORRUGATED STEEL PIPE CULVERTS (14 GAUGE)	354	LIN. FT.
606	42" POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE CULVERT (14 GAUGE)	354	LIN. FT.
SP & 606	42" HIGH DENSITY POLYETHYLENE PIPE	354	LIN. FT.
SP, SS, & 606	18" SIDE DRAIN	156	LIN. FT.
606	42" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	6	EACH
606	42" FLARED END SECTIONS FOR CORRUGATED STEEL PIPE CULVERTS	6	EACH
606	SELECTED PIPE BEDDING	50	CU. YD.
SS & 611	4" PIPE UNDERDRAINS	500	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	5	EACH
SS & 617	GUARDRAIL (TYPE A)	550	LIN. FT.
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	4	EACH
SS & 617	THREE BEAM GUARDRAIL TERMINAL	4	EACH
620	LIME	17	TON
620	SEEDING	8.34	ACRE
SS & 620	MULCH COVER	34.07	ACRE
620	WATER	1375.6	M. GAL.
621	TEMPORARY SEEDING	25.73	ACRE
621	SILT FENCE	3437	LIN. FT.
621	SAND BAG DITCH CHECKS	210	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	138	CU. YD.
621	ROCK DITCH CHECKS	118	CU. YD.
621	WATTLE (20")	500	LIN. FT.
623	SECOND SEEDING APPLICATION	8.34	ACRE
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")	5667	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")	5867	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	73	EACH
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	5504	POUND
STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	24	CU. YD.
SS & 802	CLASS 5 CONCRETE-BRIDGE	174.40	CU. YD.
SP, SS, & 802	CLASS 5(AE) CONCRETE-BRIDGE	324.20	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	25.3	GAL.
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	72280	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	78820	POUND
SS & 805	STEEL SHELL PILING (18" DIAMETER)	850	LIN. FT.
SS & 805	STEEL SHELL PILING (24" DIAMETER)	2460	LIN. FT.
SP	ISOLATION CASING (42" DIAMETER)	126.0	LIN. FT.
SS & 805	PILE ENCASUREMENT	300	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50V)	192910	POUND
SS & 807	PAINTING STRUCTURAL STEEL	2.4	TON
SS & 808	ELASTOMERIC BEARINGS	13680.0	CU. IN.
SS & 809	SILICONE JOINT SEALANT	68	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	251.0	SQ. YD.
816	DUMPED RIPRAP	165.0	CU. YD.

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER
6/4/2020	REVISED "ISOLATION CASING" AND "PLASTIC PIPE" SPECIAL PROVISIONS, REVISED TITLES ON INDEX OF SHEETS AND ROADWAY STANDARD DRAWINGS. REVISED TITLES FOR TEMPORARY EROSION CONTROL DETAILS, REMOVED "REMOVAL OF PERMANENT PAVEMENT MARKINGS" QUANTITY FROM CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS QUANTITY BOX. REVISED TITLE FOR REMOVAL AND DISPOSAL OF CULVERTS QUANTITY BOX. 8. ADDED "SP, SS, & " TO MINERAL AGGREGATE IN ACHM BINDER COURSE (1"), ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1"), MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2"), AND ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2"). ADDED "SS & " TO MAINTENANCE OF TRAFFIC, SIGNS, BARRICADES, TRAFFIC DRUMS, 4" PIPE UNDERDRAINS, UNDERDRAIN OUTLET PROTECTORS, AND REINFORCING STEEL-ROADWAY (GRADE 60) PAY ITEMS. REVISED "SP & " TO "SS & " FOR ELASTOMERIC BEARINGS PAY ITEMS. ADDED PAGE NUMBERS TO BRIDGE DETAILS. ADDED "FURNISHING FIELD OFFICE" QUANTITY.	2, 8-13, 20-21, 25, 30-52
6/18/2020	REVISED BRIDGE STANDARD DRAWINGS. ADDED "SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS" SPECIAL PROVISION, REVISED NOTES FOR PILE ENGAGEMENT ON BRIDGE DRAWING NO. 61343. REVISED NOTES ON BRIDGE DRAWING NO. 61353.	2-3, 25, 31, 41

2 SUMMARY OF QUANTITIES AND REVISIONS



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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						100840	26	69

2 SURVEY CONTROL DETAILS



Trinity D. Smith

May 20 2020 9:17 AM

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SURVEY CONTROL COORDINATES

Project Name: s100840
 Date: 11/9/2016
 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	446172.1312	1801589.2515	218.79	CTL	AHTD STD. MON. STAMPED PN# 1
2	446051.4347	1801063.6919	221.14	CTL	AHTD STD. MON. STAMPED PN# 2
3	446174.2746	1800640.8308	221.21	CTL	AHTD STD. MON. STAMPED PN# 3
4	446323.0277	1800402.4566	221.37	CTL	AHTD STD. MON. STAMPED PN# 4
5	446787.2077	1800747.1431	217.00	CTL	AHTD STD. MON. STAMPED PN# 5
6	447192.7555	1800862.0728	216.96	CTL	AHTD STD. MON. STAMPED PN# 6
7	446399.3975	1798481.2351	214.86	CTL	AHTD STD. MON. STAMPED PN# 7
100	446399.9499	1799487.7692	216.68	GPS	AHTD GPS # 560011-1
101	446371.4808	1797763.7624	215.30	GPS	AHTD GPS # 560011A-1
900	446421.6653	1799033.6485	214.30	TBM	2" ALUM CAP RBR/COE 0-10-1-89

*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 0.999930077520 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 s100840gi.ctb
 HORIZONTAL DATUM: NAD 83 (2011)
 VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
 ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
 DETERMINED FROM GPS CONTROL POINTS: 560011-1 & 560011A-1
 CONVERGENCE ANGLE: 00-57-09.90 RIGHT AT LAT 35-32-54.82 LON 090-21-45.67
 GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

HWY. 308

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	200+00.00	446378.2681	1799095.4587
8001	PC	207+79.64	446371.4736	1799875.0722
8003	PT	212+52.48	446271.2957	1800333.7500
8004	PC	216+10.55	446124.8503	1800660.5022
8006	PT	222+19.29	446079.5159	1801255.4932
8007	PC	225+48.76	446167.1572	1801573.0901
8009	PT	227+66.81	446198.7053	1801788.2900
8010	POE	230+50.00	446204.8993	1802071.4095

STATON LN.

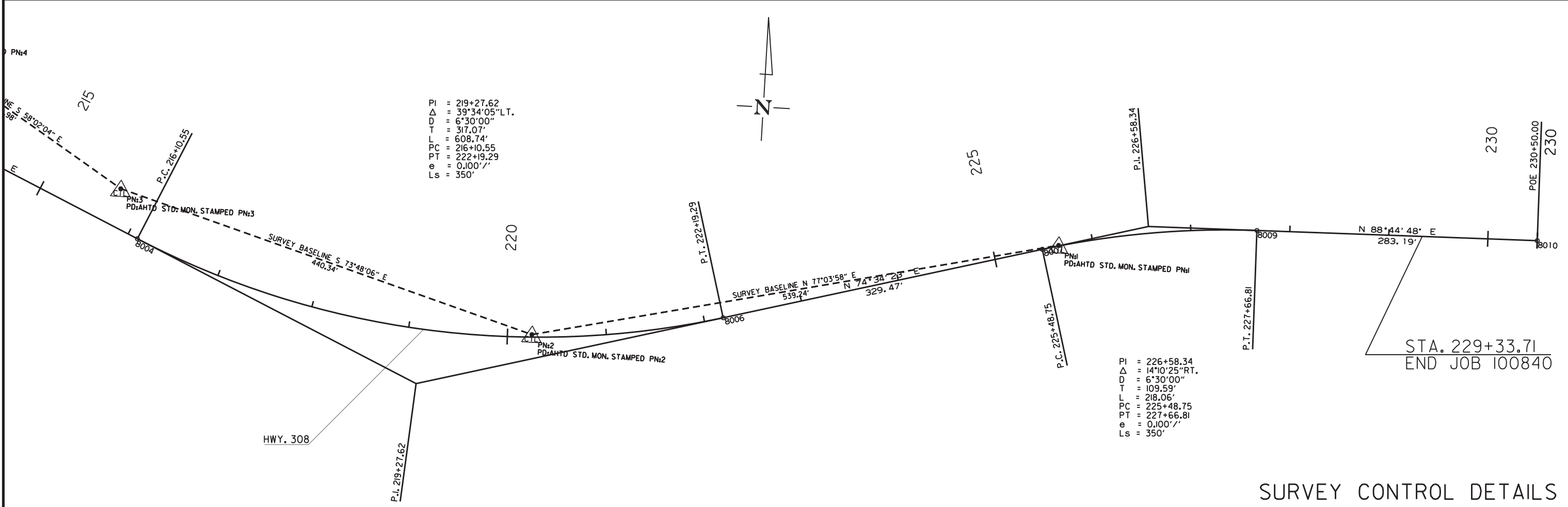
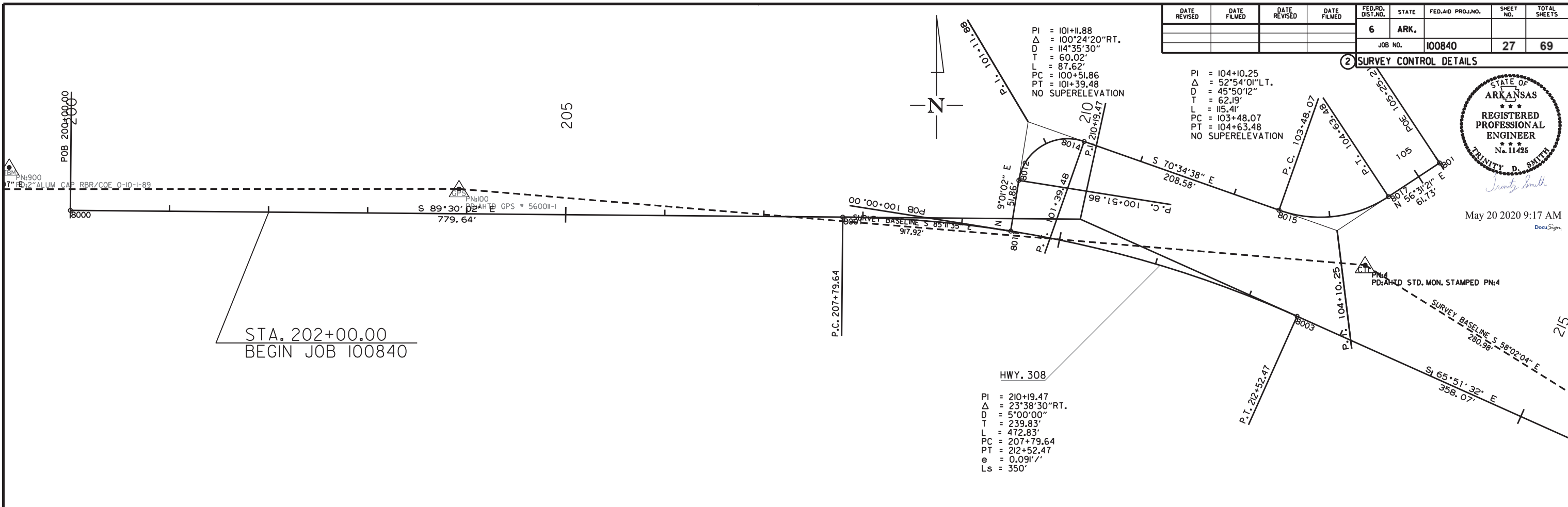
POINT NO.	TYPE	STATION	NORTHING	EASTING
8011	POB	100+00.00	446357.3552	1800044.6857
8012	PC	100+51.86	446408.5788	1800052.8145
8014	PT	101+39.48	446447.8969	1800118.8233
8015	PC	103+48.07	446378.5365	1800315.5338
8017	PT	104+63.48	446392.1600	1800426.0517
8018	POE	105+25.21	446426.2129	1800477.5441

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		27	69

2 SURVEY CONTROL DETAILS



May 20 2020 9:17 AM
DocuSign



SURVEY CONTROL DETAILS

5/20/2020
R100840.DGN

STA. 204+00 IN PLACE
 20" x 12" x 28' PIPE CULVERT
 LT. SIDE DRAIN
 REMOVE AND INSTALL
 18" x 28' PIPE CULVERT
 LT. SIDE DRAIN
 CONSTRUCT APPROACH = 25 CU. YD.

REMOVAL AND DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
212+32	213+07	RT.	75
212+63	213+12	LT.	50
213+33	214+18	RT.	85
214+00	214+25	LT.	25

PI = 101+11.88
 Δ = 100°24'20" RT.
 D = 114°35'30"
 T = 60.02'
 L = 87.62'
 PC = 100+51.86
 PT = 101+39.48
 NO SUPERELEVATION

STA. 209+50 CONSTRUCT
 18" x 100' PIPE CULVERT
 LT. SIDE DRAIN
 CONSTRUCT APPROACH = 795 CU. YD.
 -4.43% DRIVEWAY GRADE

STA. 213+09.55 - STA. 213+95.99 IN PLACE
 BRIDGE NO. M4006
 87.0' x 30.8' STEEL MULTI-BEAM
 REMOVE AS EXISTING BRIDGE
 SITE NO. 1 = 1.00 LUMP SUM 07

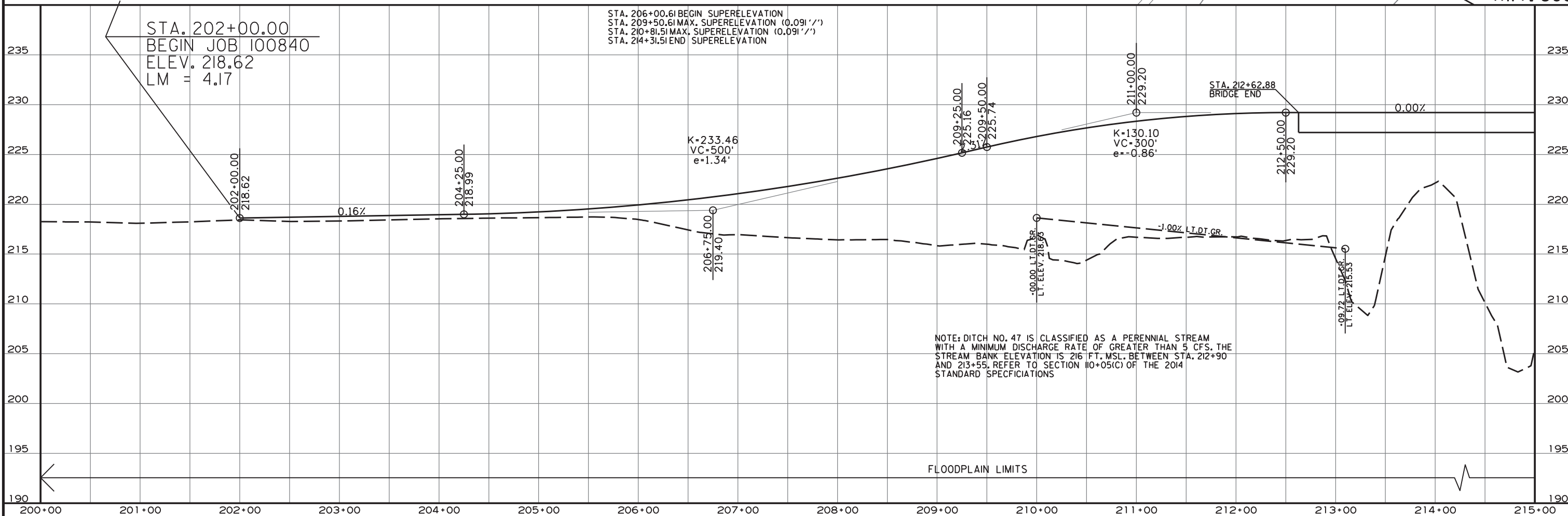
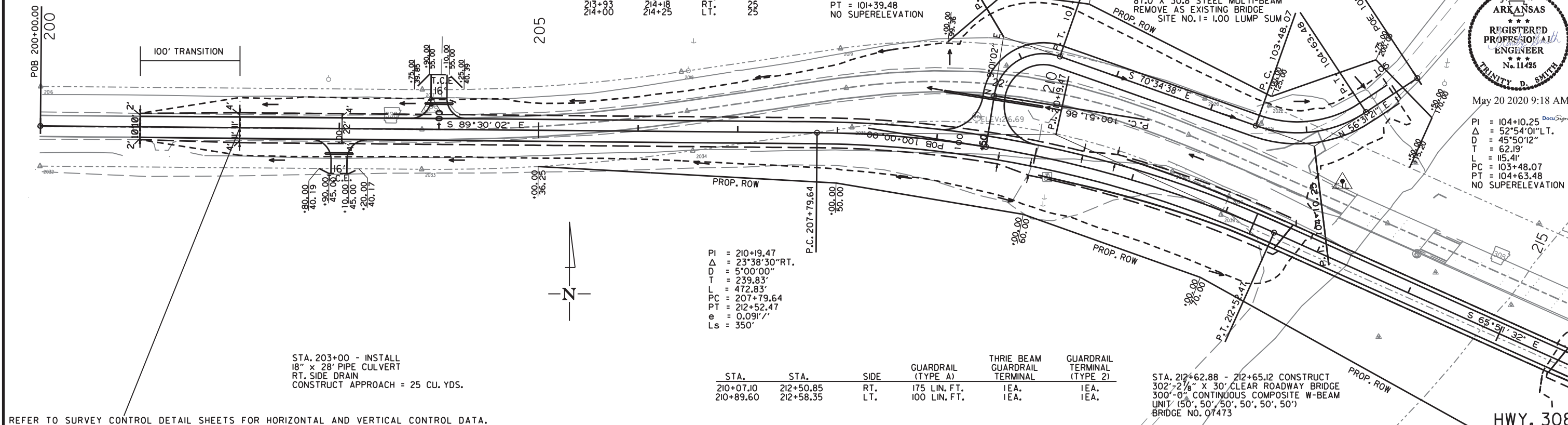
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		28	69

PLAN AND PROFILE SHEETS



May 20 2020 9:18 AM

PI = 104+10.25
 Δ = 52°54'01" LT.
 D = 45°50'12"
 T = 62.19'
 L = 115.41'
 PC = 103+48.07
 PT = 104+63.48
 NO SUPERELEVATION



STA. 214+25.07 - STA. 215+69.76 IN PLACE
 BRIDGE NO. M4012
 145.0' X 30.8' STEEL MULTI-BEAM
 REMOVE AS EXISTING BRIDGE SITE NO. 2 = 1.00 LUMP SUM

STA. 216+39 IN PLACE
 48" x 36" x 80' R.C. PIPE CULVERT
 WITH F.E.S. LT. AND RT.
 REMOVE AND CONSTRUCT STA. 216+20
 TRI. 42" x 118' PIPE CULVERT
 (CLASS IV) (TYPE 3 BEDDING)
 WITH F.E.S. LT. AND RT.

PI = 219+27.62
 Δ = 39°34'05" LT.
 D = 6°30'00"
 T = 317.07'
 L = 608.74'
 PC = 216+10.55
 PT = 222+19.29
 e = 0.100'/'
 Ls = 350'

REMOVAL AND DISPOSAL OF GUARDRAIL

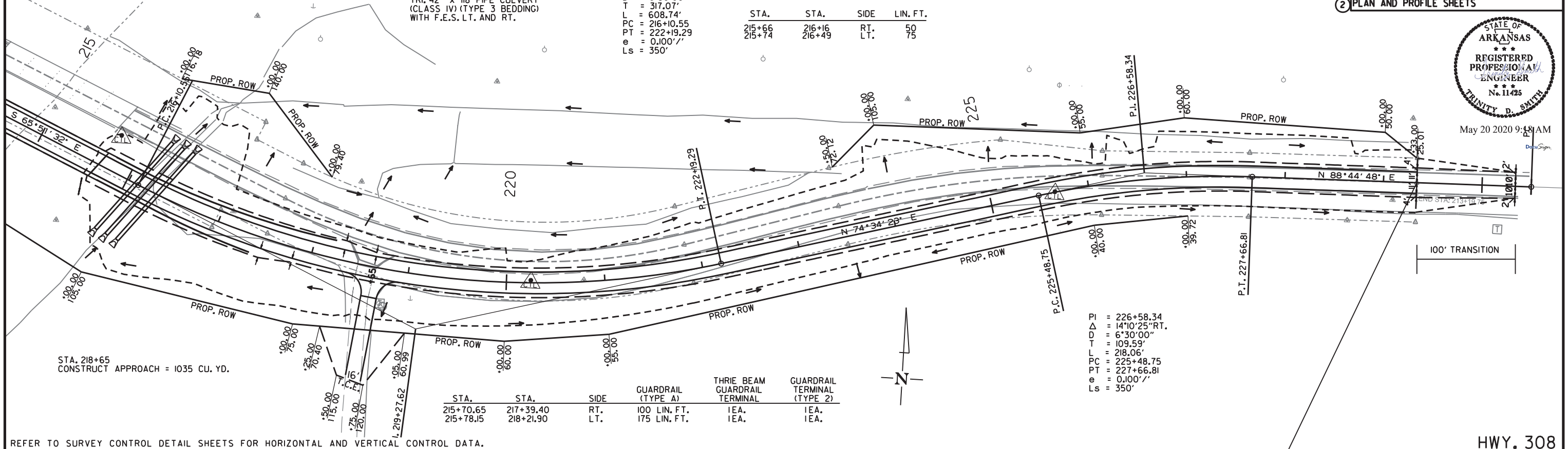
STA.	STA.	SIDE	LIN. FT.
215+66	216+16	RT.	50
215+74	216+49	LT.	75

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		29	69

2 PLAN AND PROFILE SHEETS



May 20 2020 9:48 AM

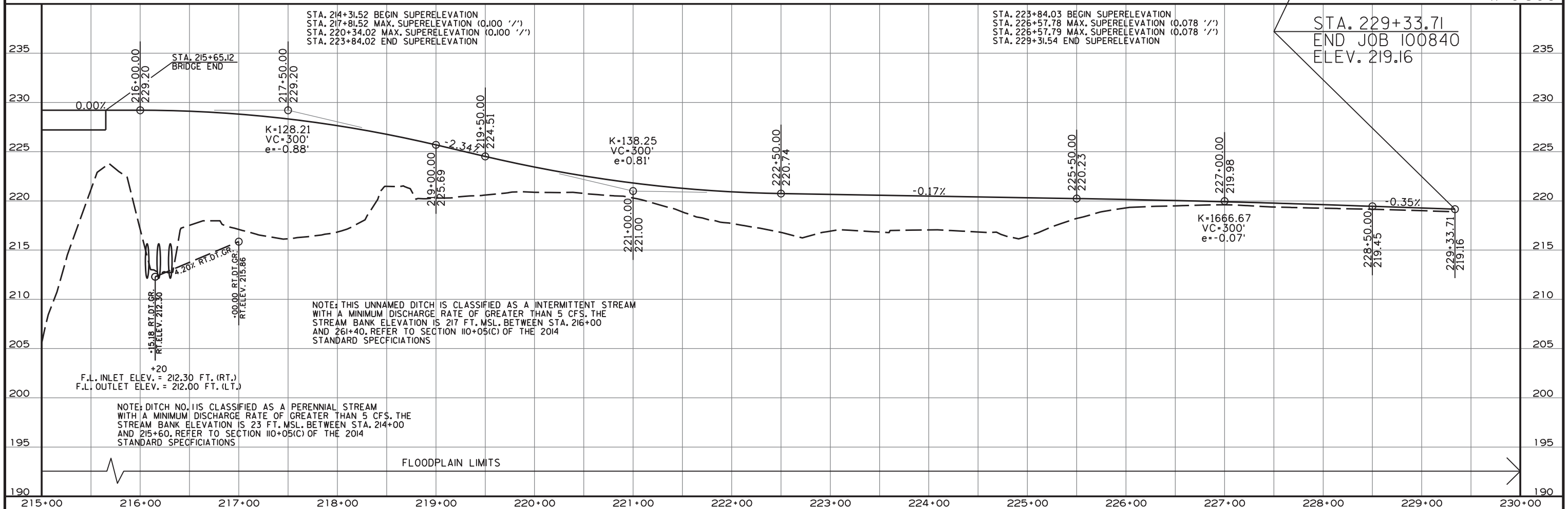


STA. 218+65
 CONSTRUCT APPROACH = 1035 CU. YD.

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
215+70.65	217+39.40	RT.	100 LIN. FT.	IEA.	IEA.
215+78.15	218+21.90	LT.	175 LIN. FT.	IEA.	IEA.

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

HWY. 308



STA. 214+31.52 BEGIN SUPERELEVATION
 STA. 217+81.52 MAX. SUPERELEVATION (0.100'/'')
 STA. 220+34.02 MAX. SUPERELEVATION (0.100'/'')
 STA. 223+84.02 END SUPERELEVATION

STA. 223+84.03 BEGIN SUPERELEVATION
 STA. 226+57.78 MAX. SUPERELEVATION (0.078'/'')
 STA. 226+57.79 MAX. SUPERELEVATION (0.078'/'')
 STA. 229+31.54 END SUPERELEVATION

STA. 229+33.71
 END JOB 100840
 ELEV. 219.16

NOTE: THIS UNNAMED DITCH IS CLASSIFIED AS A INTERMITTENT STREAM WITH A MINIMUM DISCHARGE RATE OF GREATER THAN 5 CFS. THE STREAM BANK ELEVATION IS 217 FT. MSL. BETWEEN STA. 216+00 AND 261+40. REFER TO SECTION 110+05(C) OF THE 2014 STANDARD SPECIFICATIONS

F.L. INLET ELEV. = 212.30 FT. (RT.)
 F.L. OUTLET ELEV. = 212.00 FT. (LT.)

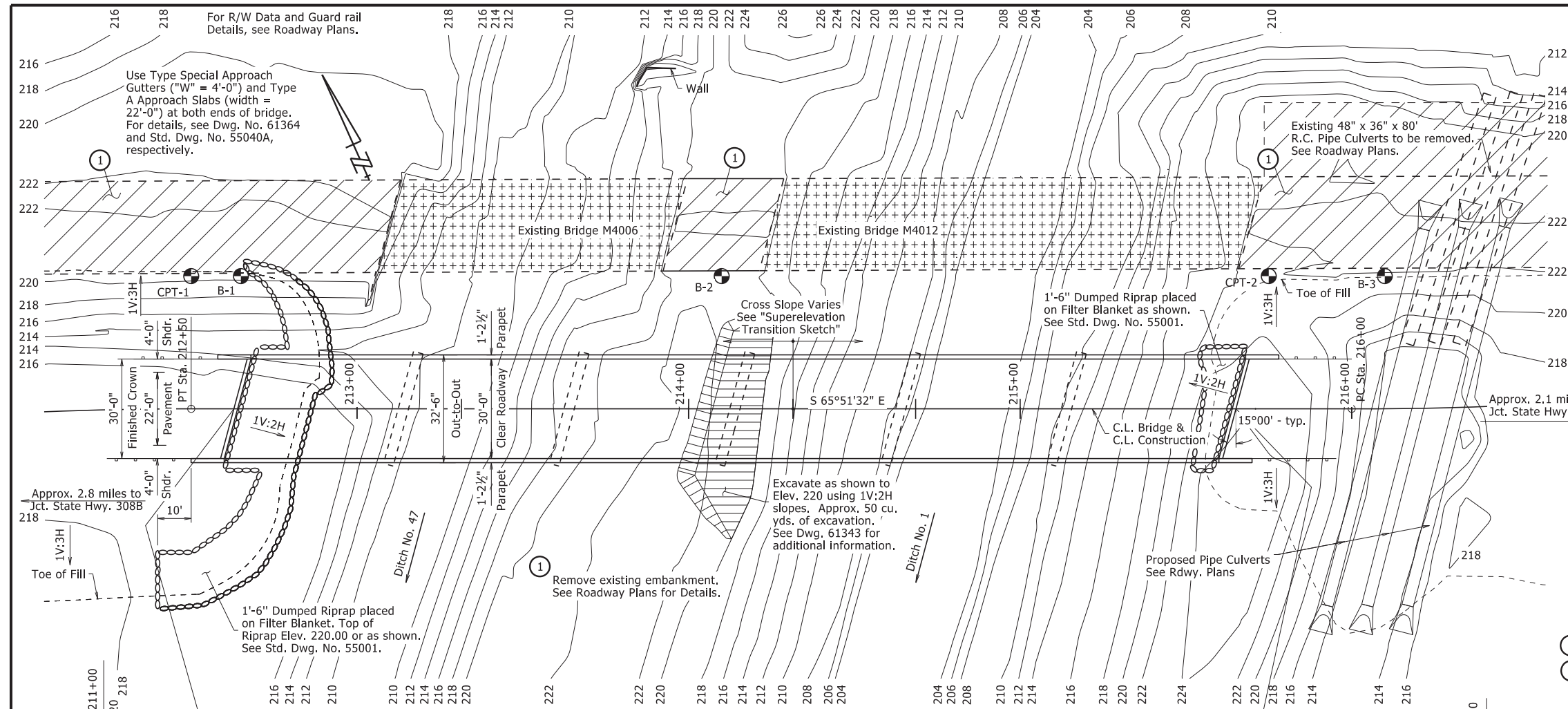
NOTE: DITCH NO. 115 IS CLASSIFIED AS A PERENNIAL STREAM WITH A MINIMUM DISCHARGE RATE OF GREATER THAN 5 CFS. THE STREAM BANK ELEVATION IS 23 FT. MSL. BETWEEN STA. 214+00 AND 215+60. REFER TO SECTION 110+05(C) OF THE 2014 STANDARD SPECIFICATIONS

FLOODPLAIN LIMITS

5/20/2020

RI00840.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.		100840	30	69
				①	07473 - LAYOUT			61342



HYDRAULIC DATA - DITCH 1

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION WITH BACKWATER
	YEARS	CFS	FEET	FEET
DESIGN	Q25	1460	219.0	219.0
BASE	Q100	1730	220.1	220.2
EXTREME	Q500	1990	221.1	221.1
OVERTOPPING	>Q500	-	-	-

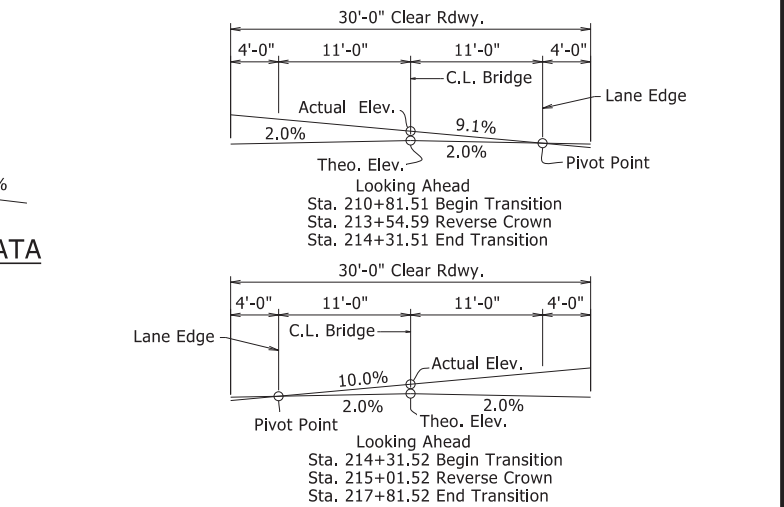
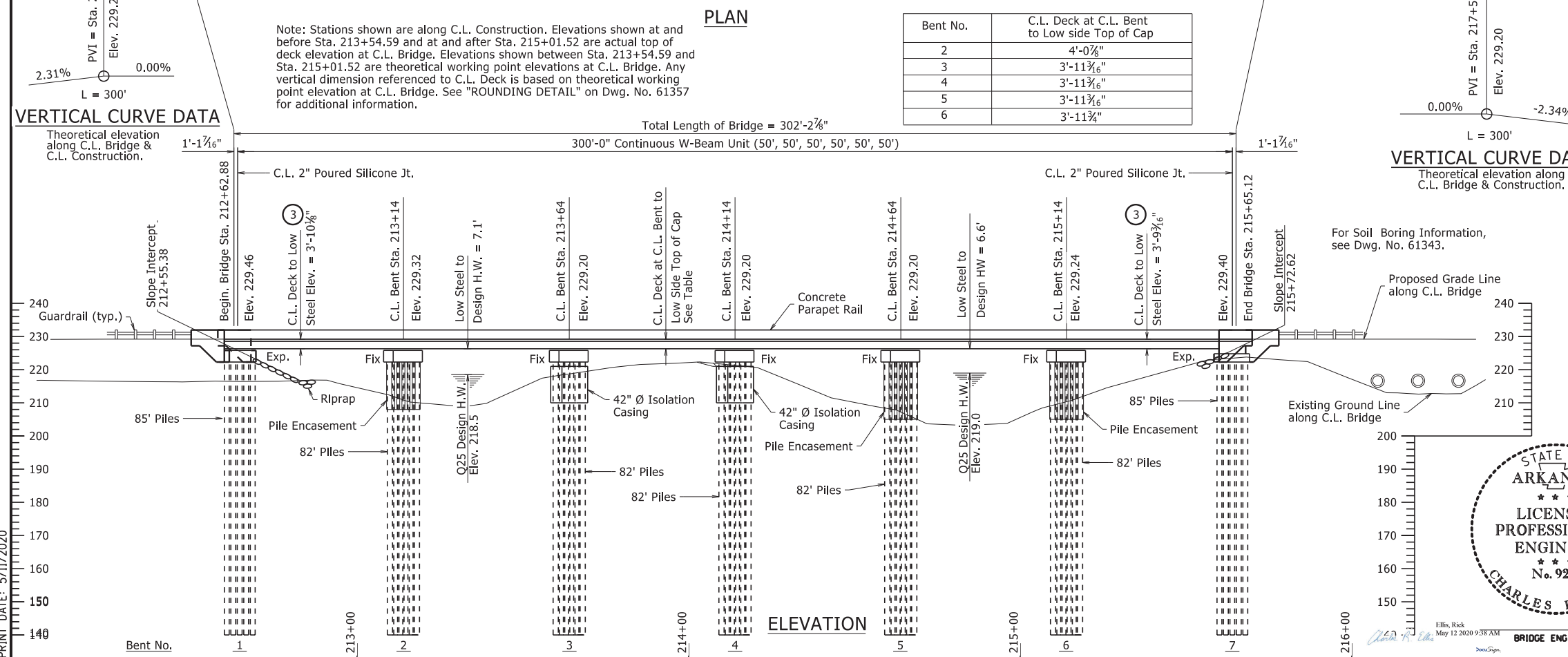
Q100 backwater elevation for existing structure = 220.1 feet.
Drainage Area = 47.8 sq. miles
Historical H.W. Elev. = n/a

HYDRAULIC DATA - DITCH 47

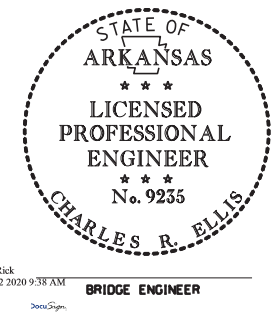
FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEVATION WITH BACKWATER
	YEARS	CFS	FEET	FEET
DESIGN	Q25	1270	219.3	219.4
BASE	Q100	1640	220.0	220.3
EXTREME	Q500	2050	220.6	220.9
OVERTOPPING	>Q500	-	-	-

Q100 backwater elevation for existing structure = 220.0 feet.
Drainage Area = 9.1 sq. miles
Historical H.W. Elev. = n/a

- ② Unconstricted water surface elevation without structure or roadway approaches.
- ③ Proposed Low Bridge Chord Elev. = 225.63 at Sta. 212+60.00 Over Ditch No. 47
Proposed Low Bridge Chord Elev. = 225.64 at Sta. 215+68.00 Over Ditch No. 1



SHEET 1 OF 2
LAYOUT OF BRIDGE
HIGHWAY 308 OVER DITCH NOS. 1 & 47
DITCH NOS. 1 & 47 STRS. & APPRS. (S)
POINSETT COUNTY
ROUTE 308 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MCB DATE: 09/28/2018 FILENAME: b100840.dgn
CHECKED BY: SWP DATE: 04/23/2020 SCALE: 1" = 20'-0"
DESIGNED BY: MCB DATE: 09/28/2018
BRIDGE NO. 07473 DRAWING NO. 61342



PRINT DATE: 5/11/2020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
06/18/2020				6	ARK.			
				JOB NO.	100840		31	69
				07473 - LAYOUT		- 61343		

GENERAL NOTES:

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

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 edition) with applicable Supplemental Specifications and Special Provisions. Section and Subsection refer to the Standard Construction Specifications unless otherwise noted in the Plans.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications Seventh Edition (2014) with 2016 Interim Revisions.

LIVE LOADING: HL-93

SEISMIC ZONE: 4 $S_{D1} = 0.952$ SITE CLASS = D

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

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

STEEL SHELL PILING: Piling in Bents 1 and 7 shall be 18" diameter concrete filled steel shell piles and shall be driven to meet the requirement of the PILE BEARING TABLE. Piling in Bents 2 thru 6 shall be 24" diameter concrete filled steel shell piles and shall be driven to meet the requirement of the PILE BEARING TABLE. All piling shall be driven with an approved air, steam, or diesel hammer to a minimum tip elevation of 140.0 or lower at Bents 1 and 7, and to a minimum tip elevation of 140.0 or lower at Bents 2 thru 6. Piling in the end bents shall be driven after embankment to the bottom of the cap is in place. Lengths of piling shown are assumed for estimating purposes only. Actual lengths are to be determined in the field. No additional payment will be made for cut-off or build-up. Test piles are not required, but test piles may be driven for the Contractor's information in accordance with Subsection 805.08(g).

Water jetting or other methods as approved by the Engineer may be required to achieve minimum penetration. This work shall not be paid for directly, but shall be considered incidental to the item "Steel Shell Piling (24" Dia.)".

PILE ENCASEMENT: Pile encasement for Bents No. 2, 5, and 6 shall extend from 3" below the bottom of the cap to 5' below natural ground. See Standard Drawing No. 55021 for additional information. Piles at Bents No. 3 and 4 shall be covered by 42" Dia. Isolation Casing in accordance with the Job 100840 SP "ISOLATION CASING". See Drawing No. 61354 for additional details.

DRIVING SYSTEM: The driving system approval and the ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b), "Method B - Wave Equation Analysis (WEAP)". It is estimated that the minimum rated hammer energy required to overcome the anticipated driving resistance for all piles at Bents 1 and 7 will be 50,000 foot pounds per blow and for all piles at Bents 2 thru 6 will be 70,000 foot pounds per blow. If the Contractor elects to use water jetting or other approved methods to obtain the minimum tip elevations shown while driving only to the required minimum ultimate bearing capacity, the minimum rated hammer energy required will be lower and shall be accounted for in the driving system chosen by the Contractor.

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

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

DETAIL DRAWINGS:	DRAWING NOS.
End Bents	61344 - 61347
Intermediate Bents	61348 - 61354
Elastomeric Bearings	61355 - 61356
300' Continuous W-Beam Unit	61357 - 61363
General Notes for Steel Bridge Structures	55006
Standard Details for Steel Bridge Structures	55007
Poured Silicone Joints	55008
Concrete Filled Steel Shell Piling	55021
Type Special Approach Gutters	61364
Type A Approach Slab	55040A

EXISTING BRIDGES: Existing Bridge No. M4006 (Log Mile 4.39) is 30.8' wide (28.0' clear roadway) and 87.0' long and consists of a concrete deck on steel I-beam spans supported by timber pile bents. Existing Bridge No. M4012 (Log Mile 4.41) is 30.8' wide (28.0' clear roadway) and 145.0' long and consists of a concrete deck on steel I-beam spans supported by timber pile bents. The existing bridges are located approximately 55' upstream from the proposed new bridge.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, the Contractor shall remove existing Bridge No. M4006 and Bridge No. M4012 in accordance with Section 205. All material from the existing bridges shall become the property of the Contractor.

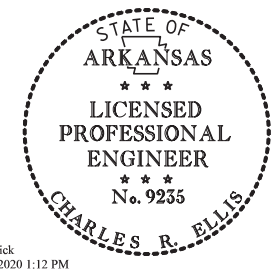
MAINTENANCE OF TRAFFIC: See Roadway Plans.

SHEET 2 OF 2
 LAYOUT OF BRIDGE
 HIGHWAY 308 OVER DITCH NOS. 1 & 47
 DITCH NOS. 1 & 47 STRS. & APPRS. (S)
 POINSETT COUNTY

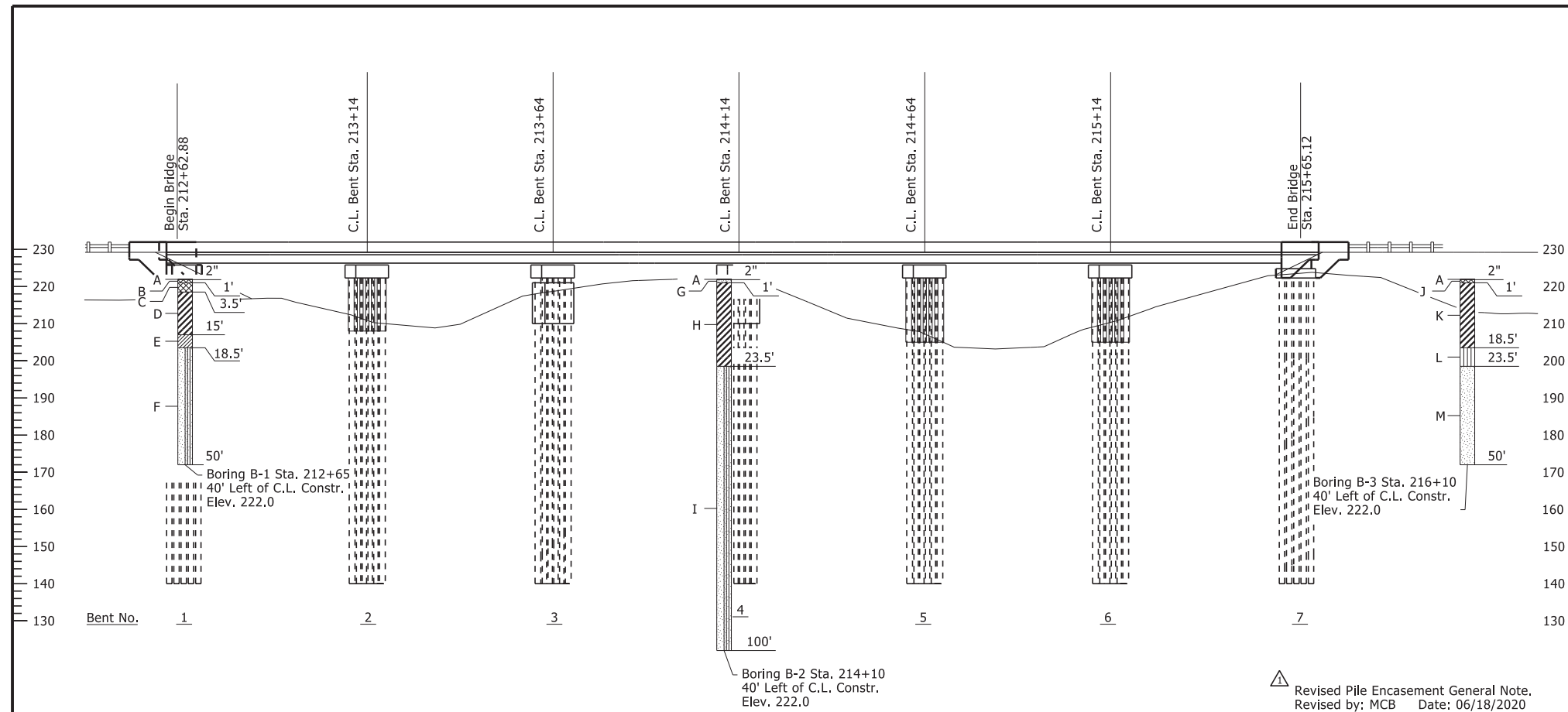
ROUTE 308 SEC. 1
 ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MCB DATE: 09/28/2018 FILENAME: b100840.dgn
 CHECKED BY: SWP DATE: 04/23/2020 SCALE: NO SCALE
 DESIGNED BY: MCB DATE: 09/28/2018
 BRIDGE NO. 07473 DRAWING NO. 61343



Ellis, Rick
 Jun 18 2020 1:12 PM
 Charles R. Ellis
 BRIDGE ENGINEER



SOIL BORING ELEVATION

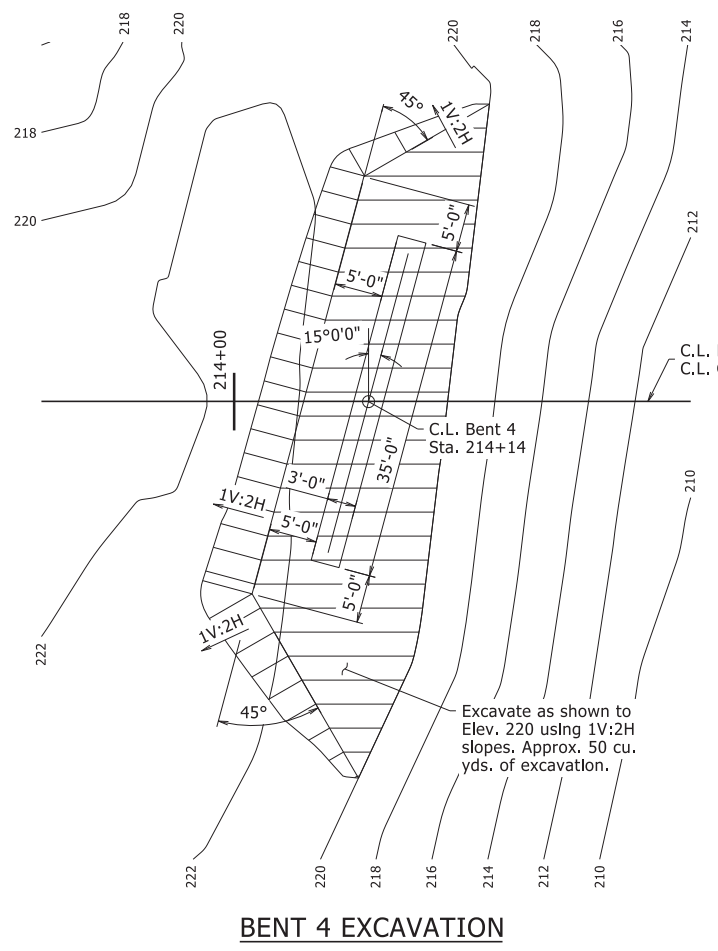
N VALUES

Depth Interval	Average	Boring B-1 (Sta. 212+65, 40' Left)			Boring B-2 (Sta. 214+10, 40' Left)			Boring B-3 (Sta. 216+10, 40' Left)		
		Interval	N	N	Interval	N	N	Interval	N	N
0-5	N=3	1.0-2.0	N=6	1.0-2.0	N=6	1.0-2.0	N=10	0-5	N=3	
5-10	N=3	4.0-5.0	N=4	4.0-5.0	N=7	4.0-5.0	N=6	5-10	N=3	
10-15	N=3	9.0-10.0	N=3	6.0-7.0	N=10	9.0-10.0	N=3	10-15	N=4	
15-20	N=5	14.0-15.0	N=5	9.0-10.0	N=8	14.0-15.0	N=5	15-20	N=7	
20-25	N=7	19.0-20.0	N=14	14.0-15.0	N=8	19.0-20.0	N=6	20-25	N=17	
25-30	N=23	24.0-25.0	N=16	19.0-20.0	N=9	24.0-25.0	N=25	25-30	N=20	
30-35	N=20	29.0-30.0	N=12	24.0-25.0	N=15	29.0-30.0	N=22	30-35	N=13	
35-40	N=23	34.0-35.0	N=34	29.0-30.0	N=20	34.0-35.0	N=23	35-40	N=20	
40-45	N=23	39.0-40.0	N=16	34.0-35.0	N=14	39.0-40.0	N=15	40-45	N=21	
45-50	N=33	44.0-45.0	N=24	39.0-40.0	N=14	44.0-45.0	N=19	45-50	N=20	
50-55	N=33	49.0-50.0	N=20	44.0-45.0	N=25	49.0-50.0	N=35	50-55	N=27	
55-60	N=20			49.0-50.0	N=21			55-60	N=30	
60-65	N=33			54.0-55.0	N=22			60-65	N=23	
65-70	N=33			59.0-60.0	N=18			65-70	N=27	
70-75	N=30			69.0-70.0	N=26			70-75	N=23	
75-80	N=33			79.0-80.0	N=33			75-80	N=29	
80-85	N=33			89.0-90.0	N=52			80-85	N=33	
85-90	N=33			99.0-100.0	N=32			85-90	N=33	
90-95	N=33							90-95	N=33	
95-100	N=33							95-100	N=33	

BORING LEGEND

- A - ASPHALT: 2 Inches
- B - FILL: Brown and red clayey sand (SC)
- C - FILL: Brown and red clayey gravel with sand (GC)
- D - Soft to medium stiff, gray and brown fat clay (CH)
- E - Stiff, gray and brown lean clay (CL)
- F - Medium dense to dense, gray sand with silt (SP-SM)
- G - Concrete
- H - Medium stiff to stiff, brown to brown and gray fat clay, silt seams (CH)
- I - Medium dense to very dense, brown to gray sand with silt (SP-SM)
- J - FILL: Brown silt (ML)
- K - Medium stiff, brown to gray fat clay (CH)
- L - Medium stiff, brown and gray silt, trace organics (ML)
- M - Medium dense to dense, gray sand (SP)

BENT 4 EXCAVATION



Excavate as shown to Elev. 220 using 1V:2H slopes. Approx. 50 cu. yds. of excavation.

"N-VALUES" shown for Cone Penetration Tests (CPT) are estimated based on correlations to conventional SPT blow counts as provided by the geotechnical consultant.

PILE BEARING TABLE

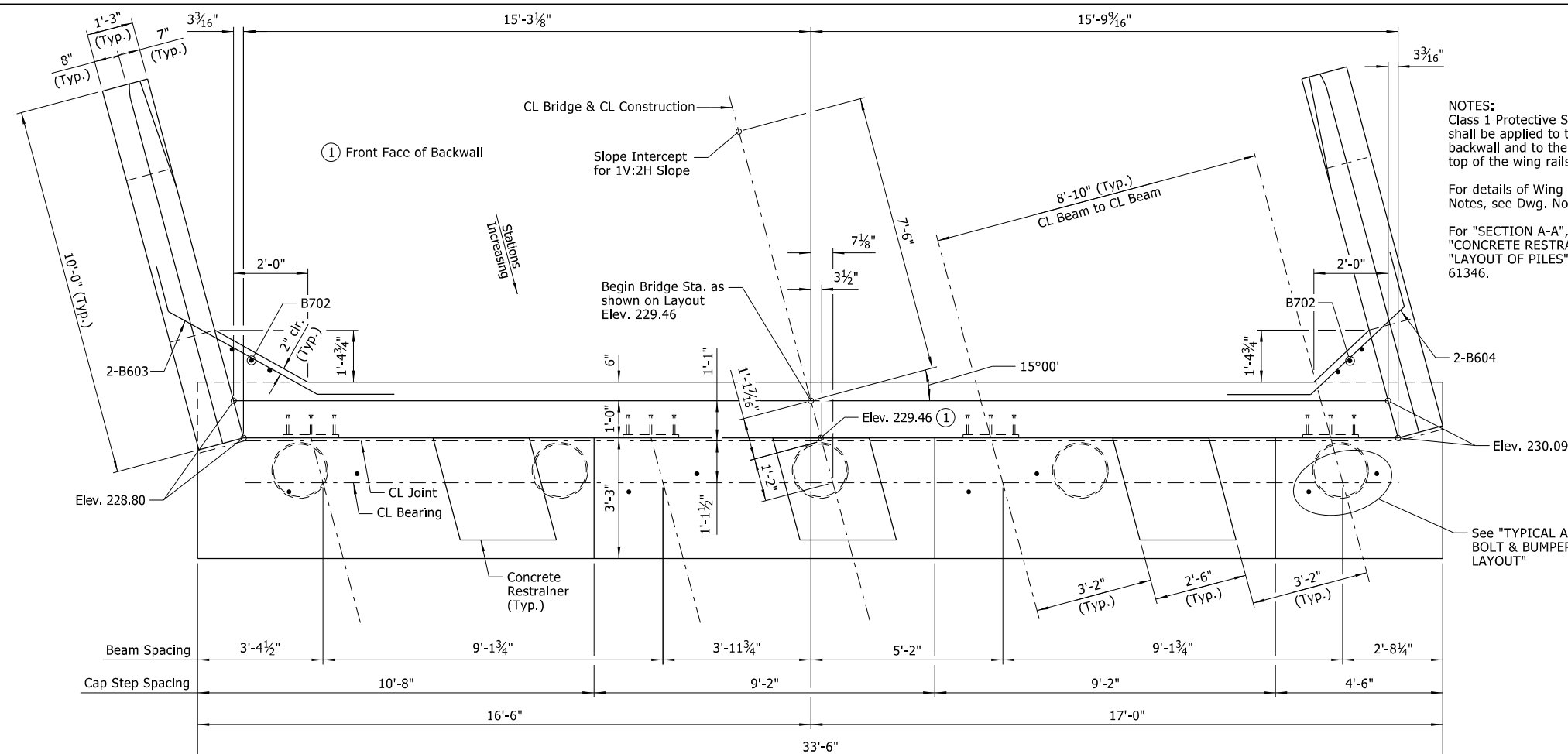
BENTS	REQUIRED MINIMUM ULTIMATE BEARING CAPACITY (TONS)	ANTICIPATED DRIVING RESISTANCE (TONS)
1 & 7	150	350
2 - 6	205	615

NOTE: Required minimum ultimate capacity corresponds to the minimum post driving capacity to be obtained after an allowance for water jetting or any other methods employed to facilitate pile installation.

Anticipated Drive Resistance corresponds to the resistance to be overcome to achieve minimum tip elevation without any water jetting or methods employed to facilitate pile installation.

PRINT DATE: 6/18/2020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO. 100840							32	69
07473							END BENTS	61344



PLAN - BENT NO. 1

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

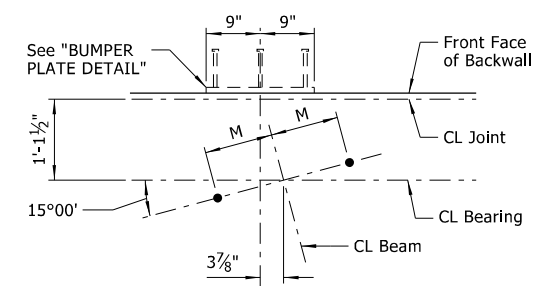
② See "PLAN OF VERTICAL BACKWALL REINFORCEMENT" on Dwg. No. 61347.

NOTES:
Class 1 Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the wing rails.

For details of Wing & Rail & General Notes, see Dwg. No. 61347.

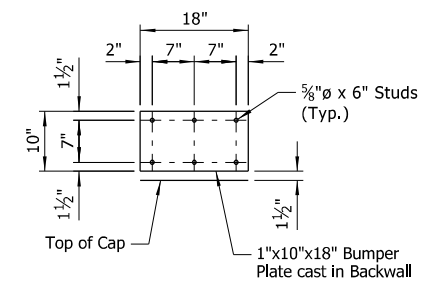
For "SECTION A-A", "BAR LIST", "CONCRETE RESTRAINER", and "LAYOUT OF PILES", see Dwg. No. 61346.

NOTE:
For Details of Elastomeric Bearings, see Dwg. Nos. 61355 and 61356.



TYPICAL ANCHOR BOLT & BUMPER PLATE LAYOUT

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

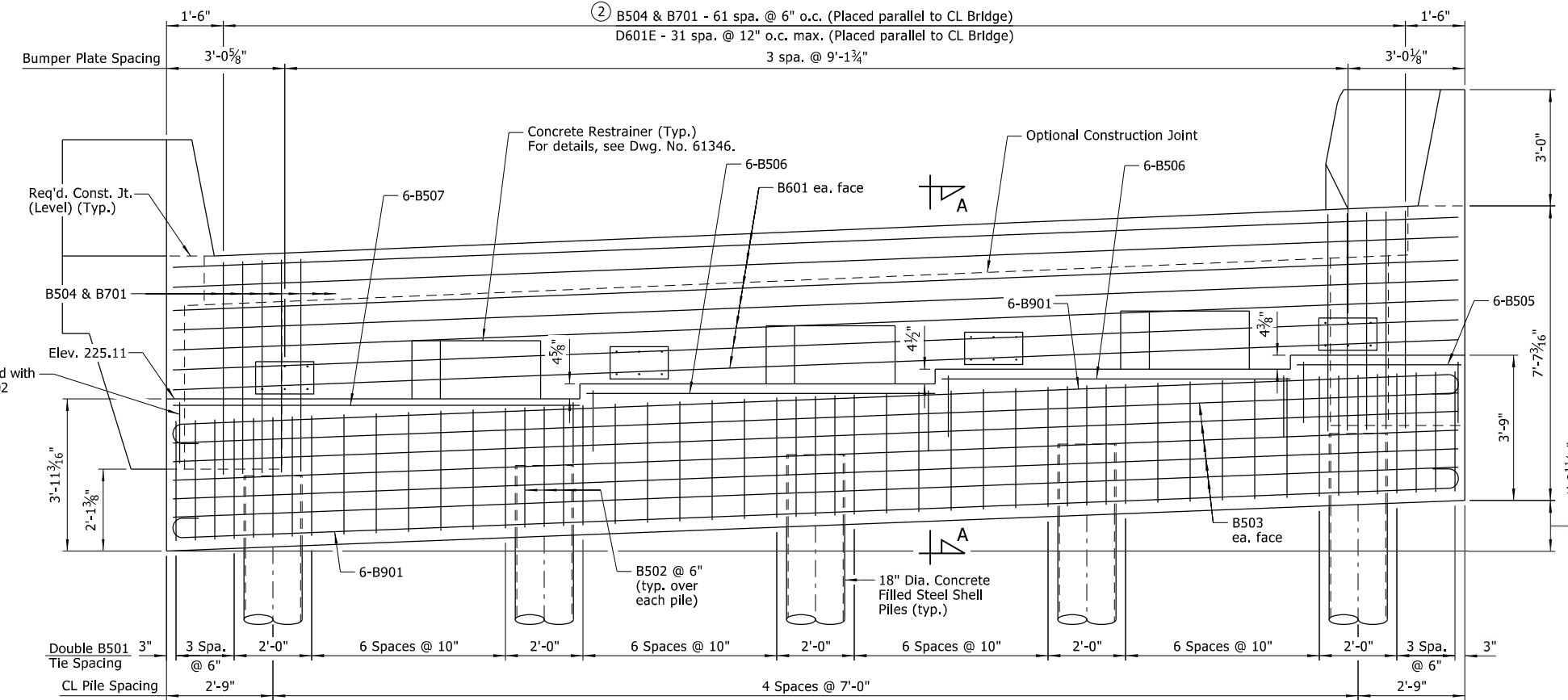


BUMPER PLATE DETAIL

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

NOTE:
The profile of the backwall angle for Bent No. 1 shall be established based on the superelevation in conjunction with the skew.

NOTE:
The backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Std. Dwg. No. 55008, "EXPANSION DEVICE INSTALLATION AT END BENTS", for additional information.
No heavy construction equipment shall be allowed within 10' of the backwall until the deck concrete placement for the adjacent span has been completed.



ELEVATION - BENT NO. 1

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

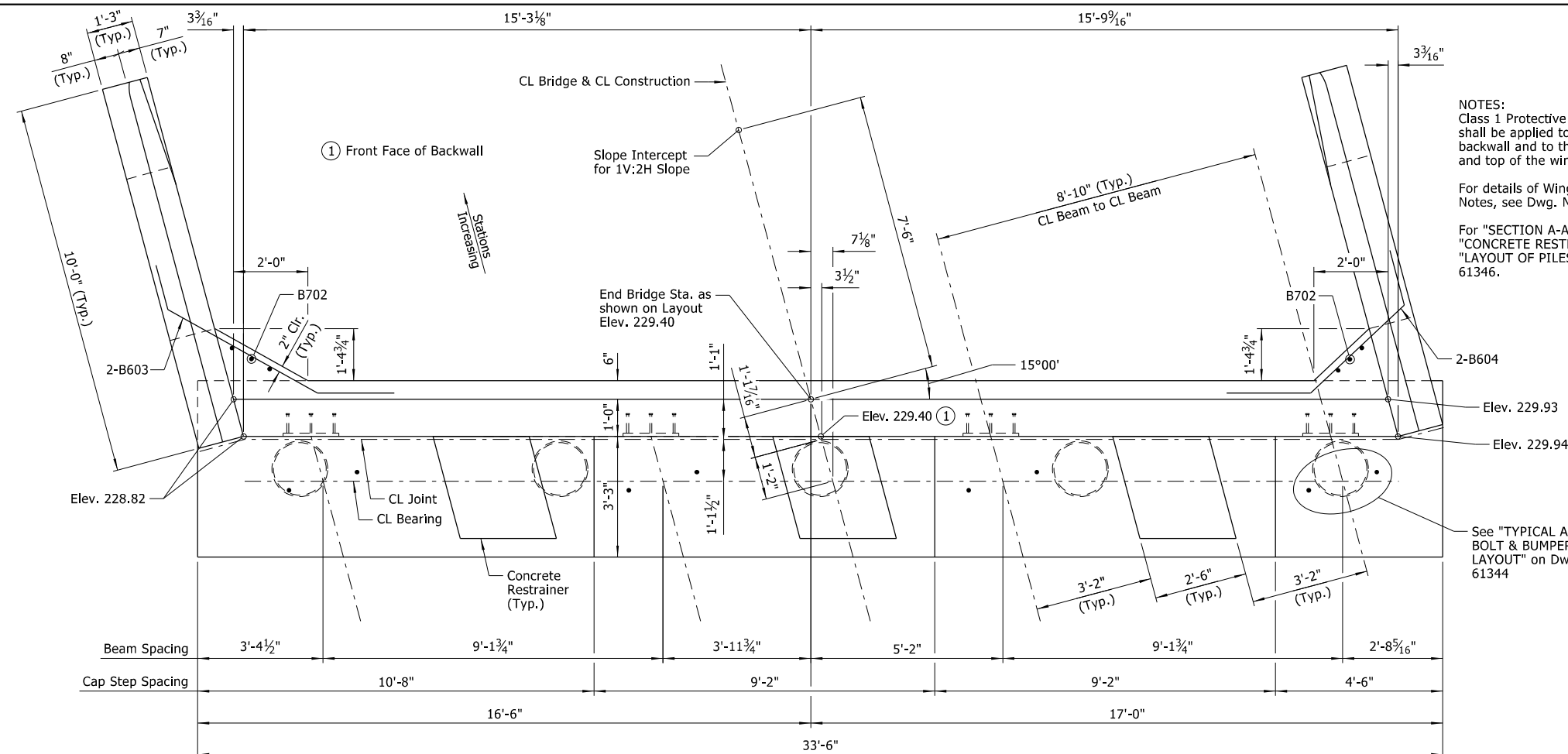


SHEET 1 OF 4
DETAILS OF END BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: SEP. 2019 FILENAME: b100840_a1.dgn
CHECKED BY: JHR DATE: OCT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: SEP. 2019
BRIDGE NO. 07473 DRAWING NO. 61344

4/24/2020 3:54:41PM
 WORKSPACE: ARB001_Bridge
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 REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100840	33	69
				07473		END BENTS		61345

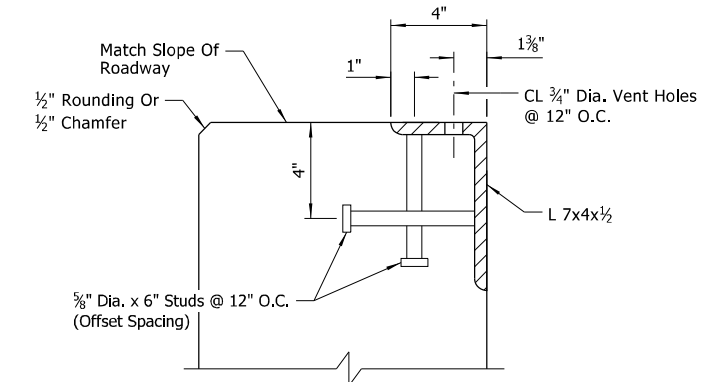


PLAN - BENT NO. 7

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

② See "PLAN OF VERTICAL BACKWALL REINFORCEMENT" on Dwg. No. 61347.

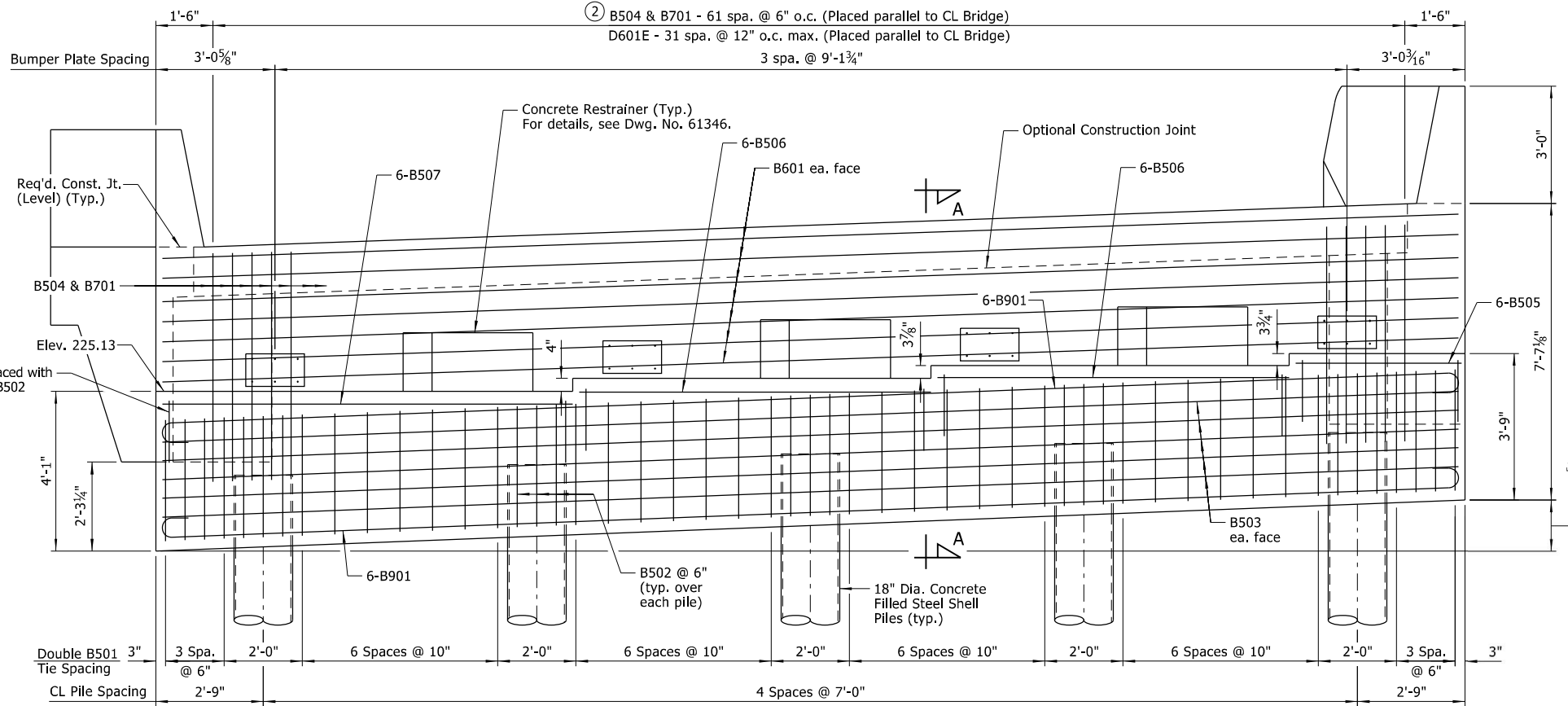
NOTES:
 Class 1 Protective Surface Treatment shall be applied to the top of the backwall and to the roadway face and top of the wing rails.
 For details of Wing & Rail & General Notes, see Dwg. No. 61347.
 For "SECTION A-A", "BAR LIST", "CONCRETE RESTRAINER", and "LAYOUT OF PILES", see Dwg. No. 61346.



END BENT WALL ARMOR DETAIL

No Scale

NOTES:
 Transverse spacing between vertical anchor studs and vent holes shall be 6".
 Concrete shall be hand packed under joint armor.
 Special care shall taken to properly and thoroughly consolidate the concrete in the vicinity of the expansion joint device in the backwall, see Subsection 802.09(a)(3).



ELEVATION - BENT NO. 7

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

NOTE:
 The profile of the backwall angle for Bent No. 7 shall be established based on the superelevation in conjunction with the skew.

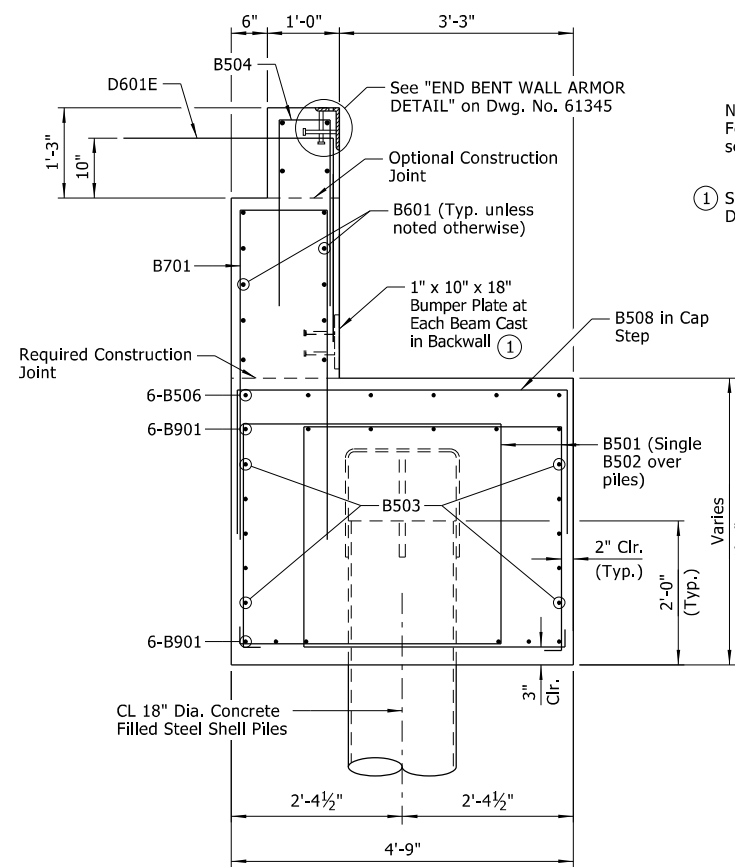
NOTE:
 The backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Std. Dwg. No. 55008, "EXPANSION DEVICE INSTALLATION AT END BENTS", for additional information.
 No heavy construction equipment shall be allowed within 10' of the backwall until the deck concrete placement for the adjacent span has been completed.



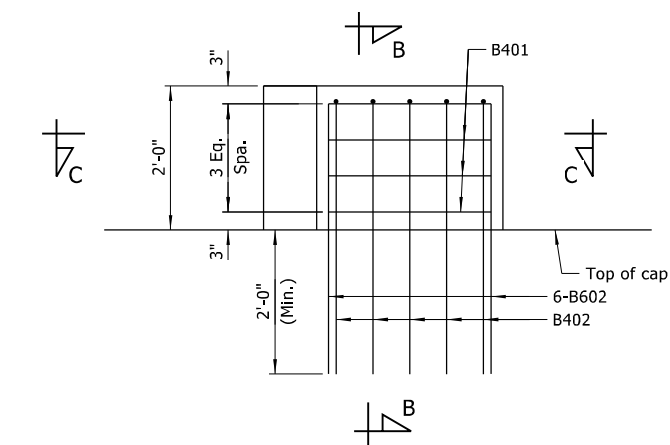
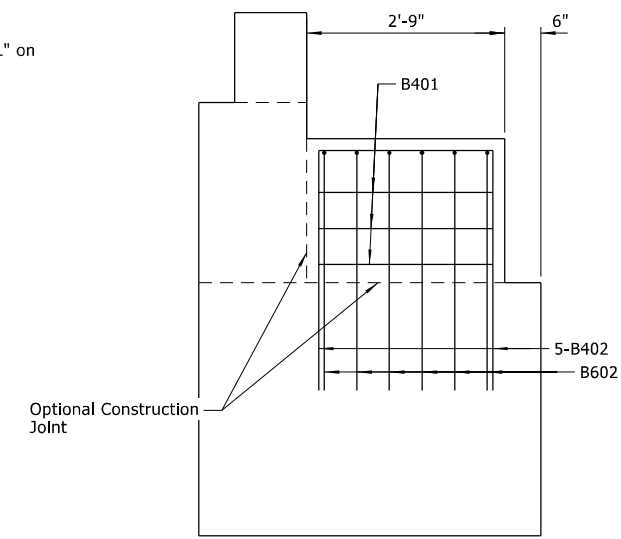
SHEET 2 OF 4
DETAILS OF END BENTS
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: CWT DATE: SEP. 2019 FILENAME: b100840_a2.dgn
 CHECKED BY: JHR DATE: OCT. 2019 SCALE: AS SHOWN
 DESIGNED BY: PCC DATE: SEP. 2019
 BRIDGE NO. 07473 DRAWING NO. 61345

4/24/2020 3:54:42 PM
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 REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100840	34	69
				07473		END BENTS		61346



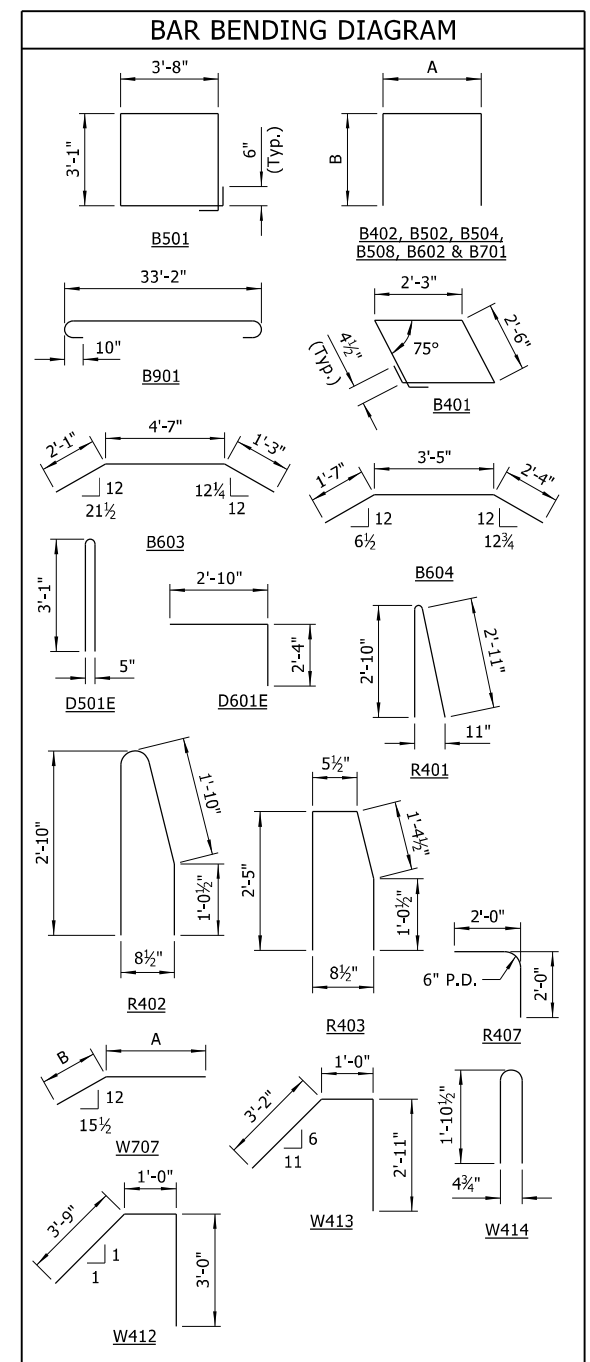
NOTE:
For details of piles and pile anchorage, see Std. Dwg. No. 55021.
① See "BUMPER PLATE DETAIL" on Dwg. No. 61344.



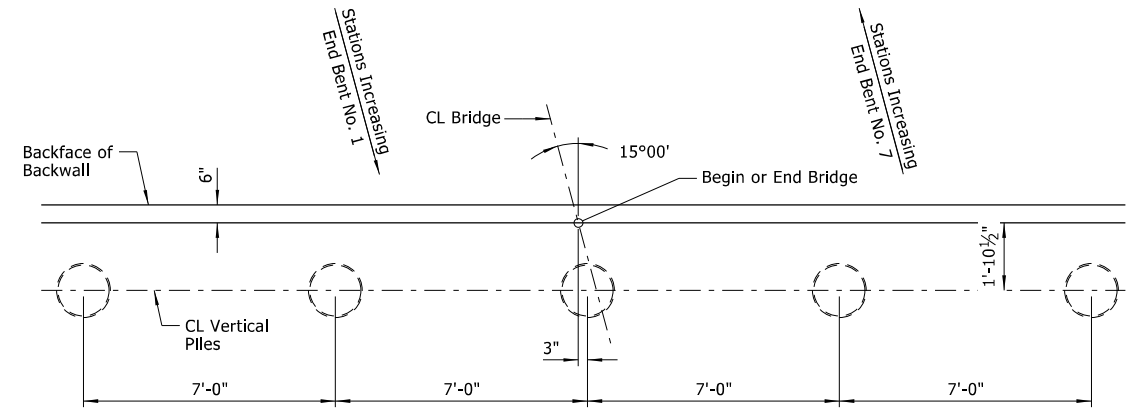
ELEVATION - CONCRETE RESTRAINER
Scale: 3/4" = 1'-0"

BAR LIST (PER BENT)					
MARK	NO. REQ'D	LENGTH	"A"	"B"	P.D.
B401	9	9'-10"			2"
B402	15	9'-10"	2'-4 1/2"	3'-10"	2"
B501	72	14'-0"			2 1/2"
B502	15	10'-4"	4'-5"	3'-1"	2 1/2"
B503	10	33'-2"			Str.
B504	62	5'-8"	0'-8"	2'-7"	2 1/2"
B505	6	4'-2"			Str.
B506	12	9'-0"			Str.
B507	6	10'-6"			Str.
B508	51	8'-3"	4'-5"	2'-0"	2 1/2"
B601	14	33'-2"			Str.
B602	18	9'-6"	2'-1 1/2"	3'-10"	4 1/2"
B603	4	7'-11"			4 1/2"
B604	4	7'-4"			4 1/2"
B701	62	10'-10"	1'-2"	5'-0"	5 1/4"
B702	6	3'-11"			Str.
B901	12	35'-8"			9"
D501E	16	6'-4"			3 3/4"
D601E	32	5'-0"			4 1/2"
R401	30	5'-11"			3 3/4"
R402	8	5'-10"			3 3/4"
R403	2	5'-2"			2"
R404	4	9'-4"			Str.
R405	12	9'-8"			Str.
R406	8	4'-0"			Str.
R407	4	3'-11"			6"
W401	24	5'-2"			Str.
W402	4 Ea.	4'-11"			Str.
W410		1'-10"			
W411	20	1'-8"			Str.
W412	3	7'-8"			3"
W413	3	6'-11"			3"
W414	40	3'-11"			3 3/4"
W701	12	9'-8"			Str.
W702	4 Ea.	6'-5"			Str.
W706		3'-6"			
W707	4	9'-9"	2'-9"	7'-0"	5 1/4"

② Bars D501E and D601E shall be included in the item "REINFORCING STEEL - BRIDGE (GRADE 60)".



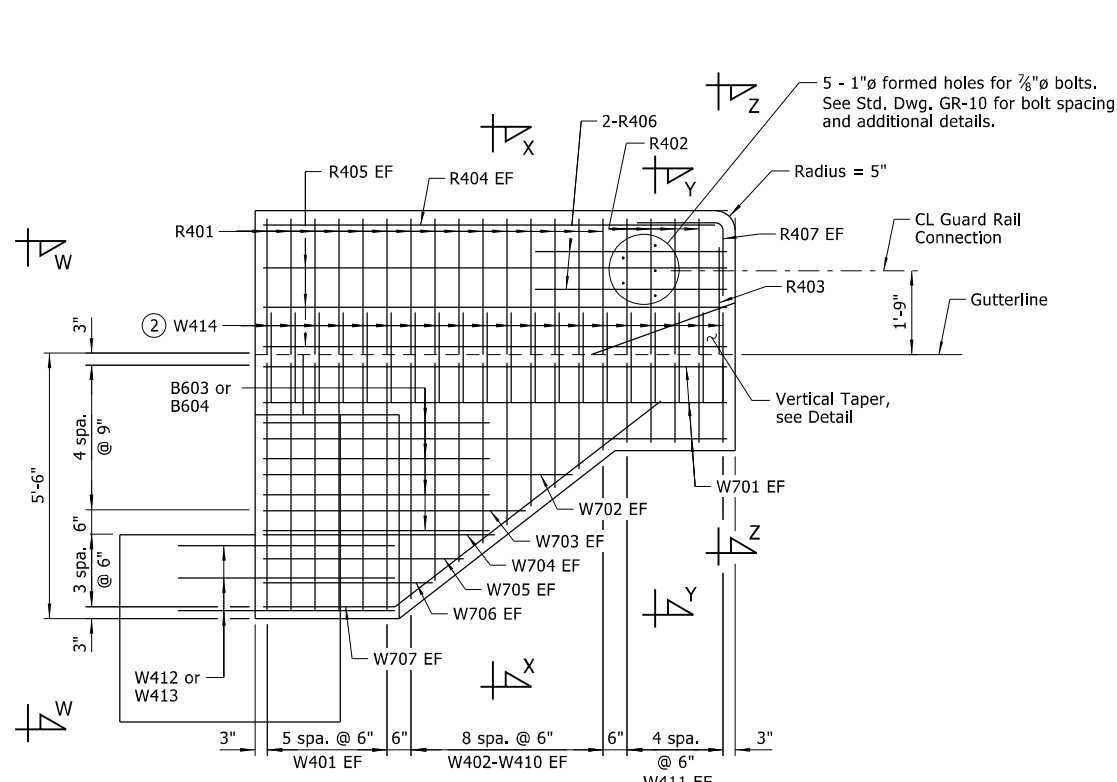
NOTE:
Dimensions of bars are out-to-out.
Bars designated with "E" suffix shall be epoxy coated.



SHEET 3 OF 4
DETAILS OF END BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CWT DATE: SEP. 2019 FILENAME: b100840_a3.dgn
CHECKED BY: JHR DATE: OCT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: SEP. 2019
BRIDGE NO. 07473 DRAWING NO. 61346

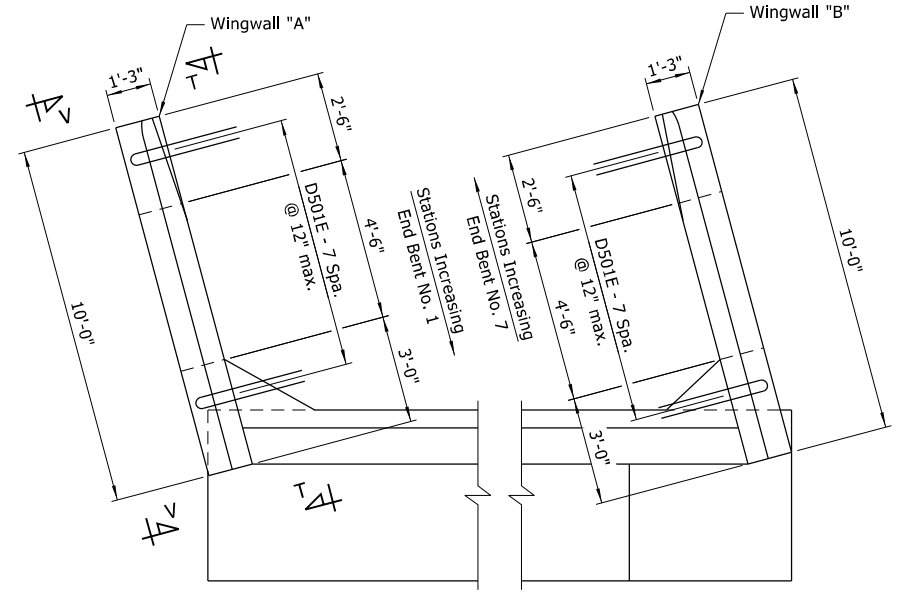
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 REVISED DATE:

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				6	ARK.	100840	35	69
JOB NO. 07473							END BENTS	61347

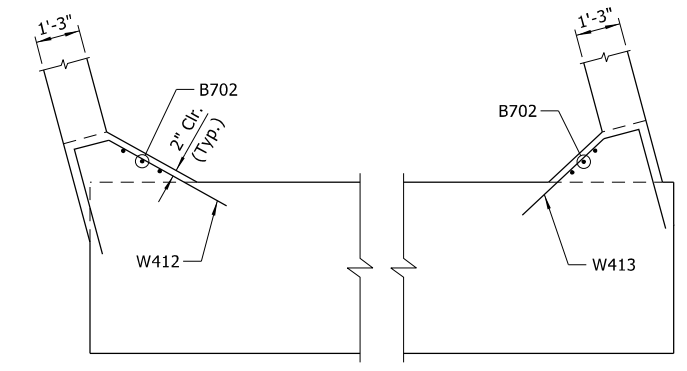


VIEW T-T
Scale: 1/2" = 1'-0"

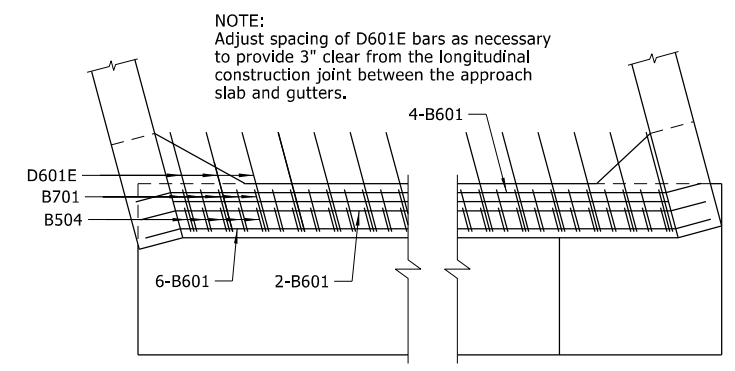
	END BENT NO. 1		END BENT NO. 7	
	Wingwall "A"	Wingwall "B"	Wingwall "A"	Wingwall "B"
Elev. "A"	228.79	230.15	228.81	230.01
Elev. "B"	228.80	230.09	228.82	229.94



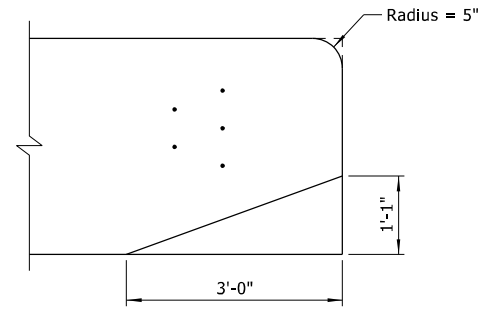
PLAN OF RAIL
Scale: 3/8" = 1'-0"



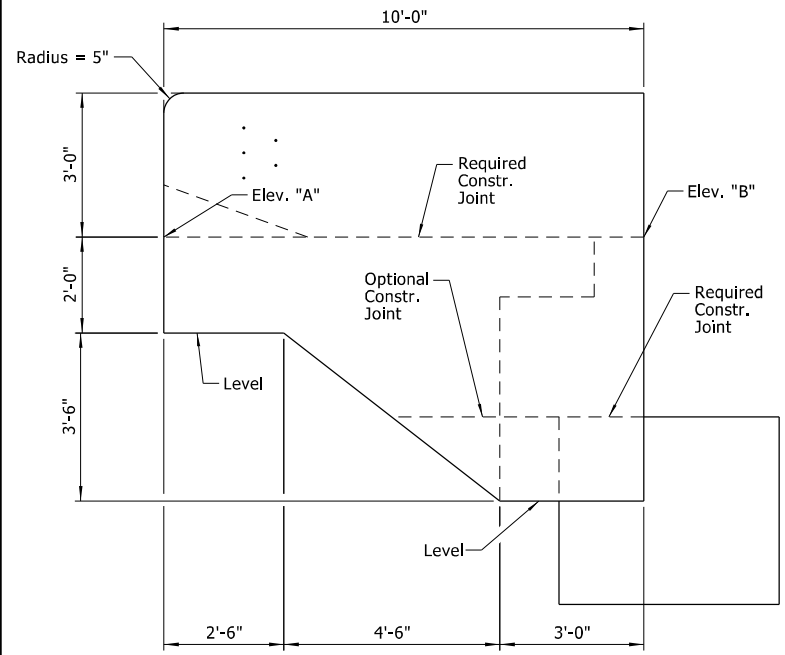
SECTION P-P
Scale: 3/8" = 1'-0"



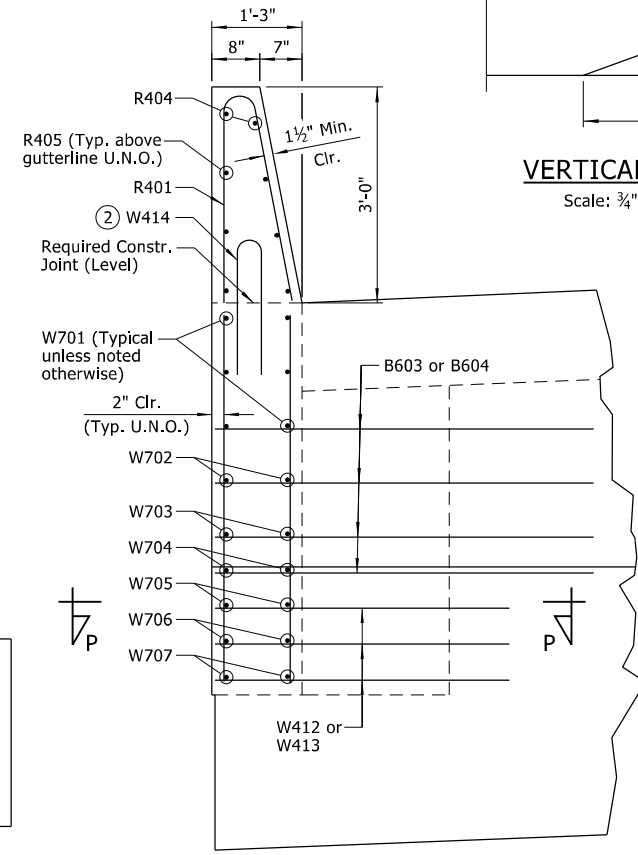
PLAN OF VERTICAL BACKWALL REINFORCEMENT
Scale: 3/8" = 1'-0"



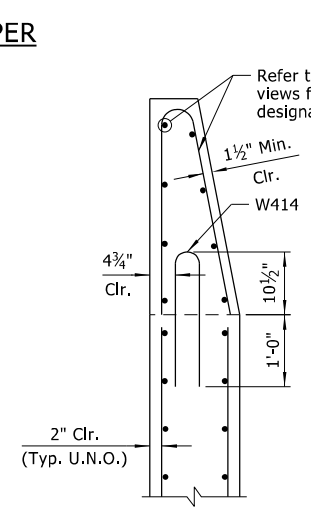
VERTICAL TAPER
Scale: 3/4" = 1'-0"



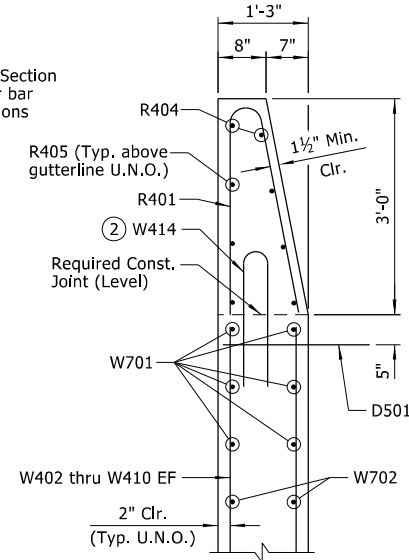
VIEW V-V
Scale: 1/2" = 1'-0"



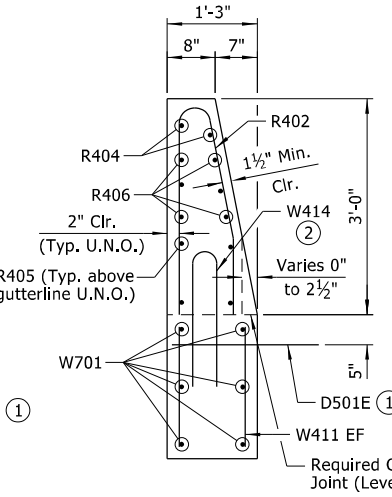
VIEW W-W
Scale: 3/4" = 1'-0"



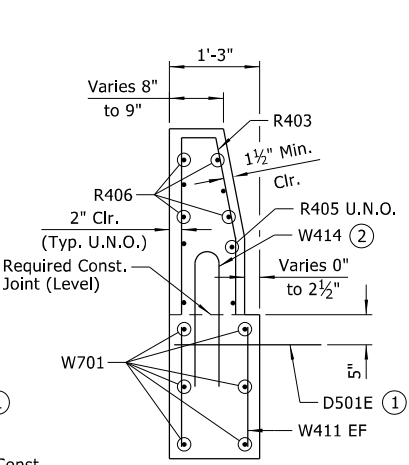
DETAIL A
Scale: 3/4" = 1'-0"



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



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



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

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

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

Top reinforcing bars and pile anchorage in cap shall be properly placed to avoid interference with anchor bolts.

Structural steel in end bents shall be ASTM A709, Gr. 50W and shall be paid for as "Structural Steel In Beam Spans (A709, Gr. 50W).

For additional information, see "Layout" on Dwg. Nos. 61342 and 61343.

NOTE:
Adjust W704 in order to maintain 2" cl. in the cap.

- ① See "PLAN OF RAIL" for spacing
- ② See "DETAIL A" for placement of Bars W414.

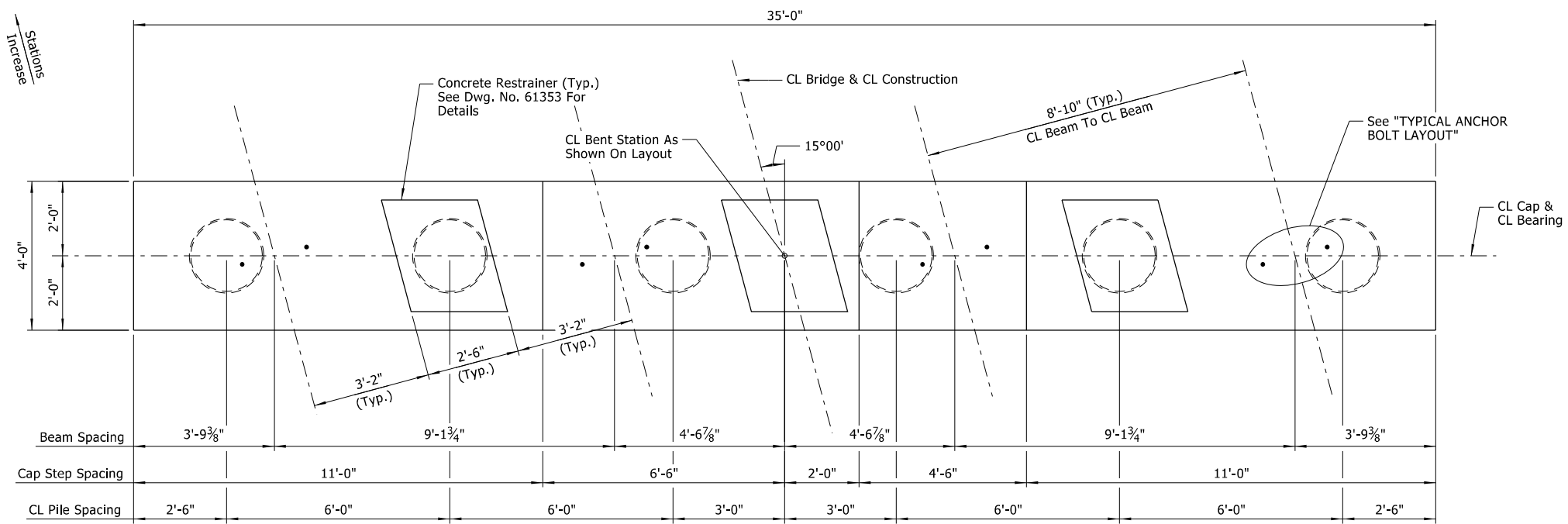


SHEET 4 OF 4
DETAILS OF END BENTS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CWT DATE: SEP. 2019 FILENAME: b100840_a4.dgn
CHECKED BY: JHR DATE: OCT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: SEP. 2019
BRIDGE NO. 07473 DRAWING NO. 61347

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 REVISED DATE:

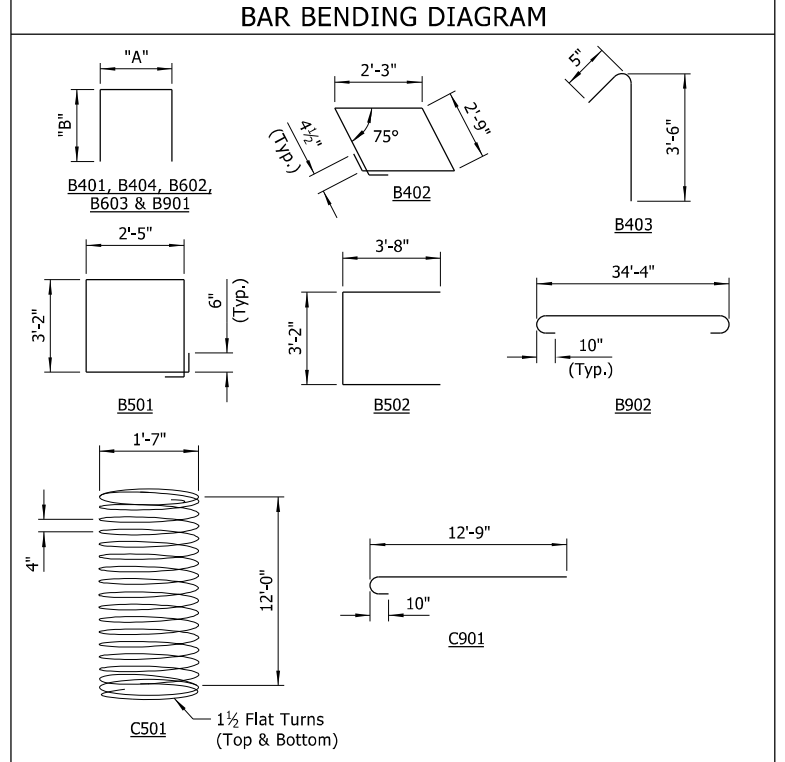
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				JOB NO.		100840	36	69
				① 07473		INT. BENT DETAILS	61348	



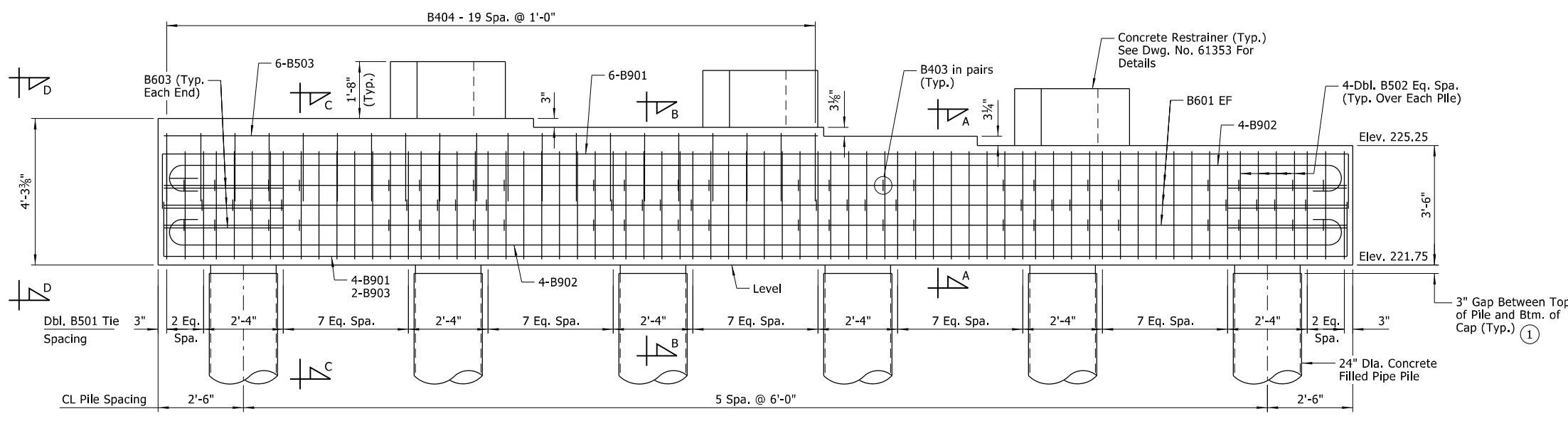
PLAN - BENT NO. 2
Scale: 1/2" = 1'-0"

NOTE:
For "SECTION A-A" Thru "SECTION C-C"
and "VIEW D-D", see Dwg. No. 61353.

BAR LIST - BENT NO. 2					
MARK	NO. REQ'D.	LENGTH	"A"	"B"	PIN. DIA.
B401	15	9'-6"	2'-8"	3'-6"	2"
B402	9	10'-4"			2"
B403	144	4'-0"			3"
B404	20	9'-6"	3'-8"	3'-0"	2"
B501	92	11'-8"			2 1/2"
B502	48	10'-4"			2 1/2"
B503	6	19'-2"			Str.
B601	6	34'-4"			Str.
B602	18	8'-11"	2'-2"	3'-6"	4 1/2"
B603	6	9'-2"	3'-6"	3'-0"	4 1/2"
B901	10	37'-4"	34'-8"	1'-7 1/4"	9"
B902	8	36'-10"			9"
B903	2	34'-8"			Str.
C501	6	187'-8"			17 3/4"
C901	96	14'-0"			9"



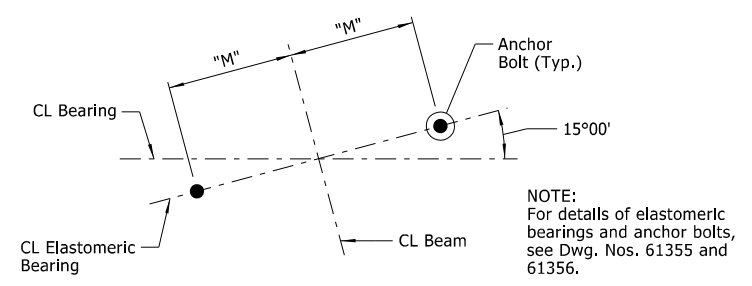
NOTES:
Dimension Of Bars Are Out-To-Out.
Bar Designations Ending With "E" Indicate Epoxy Coated Bars.



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

① Gap between top of pile and bottom of cap shall be 3" ± 1".
(Typ. all intermediate bents)

LEGEND
EF = Each Face



TYPICAL ANCHOR BOLT LAYOUT
No Scale

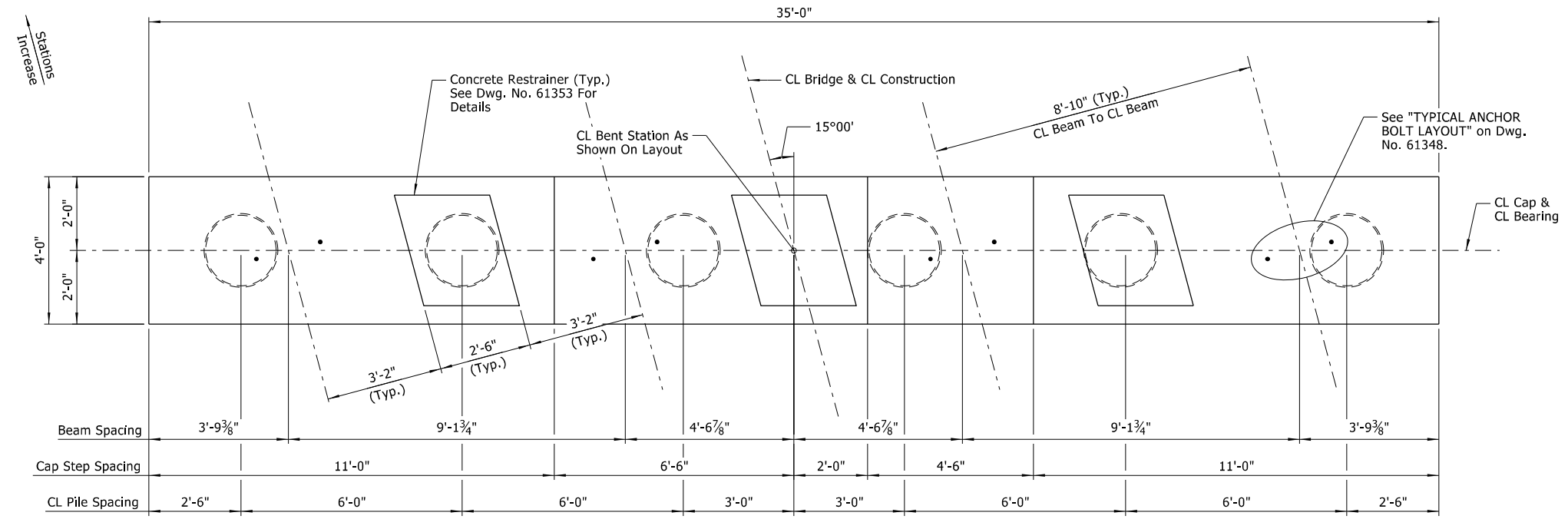
NOTES:
Concrete shall be Class "S" with a minimum 28 day compressive strength $f'_c = 3,500$ psi and shall be poured in the dry. All exposed corners shall be chamfered 3/4" unless noted otherwise.
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.
Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.
Piles at intermediate bents shall be 24" diameter concrete filled steel shell piles.
For additional information, see "Layout" on Dwg. Nos. 61342 and 61343.



SHEET 1 OF 7
INTERMEDIATE BENT DETAILS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_b1.dgn
CHECKED BY: JHR DATE: SEPT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: AUG. 2019
BRIDGE NO. 07473 DRAWING NO. 61348

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 REVISED DATE:

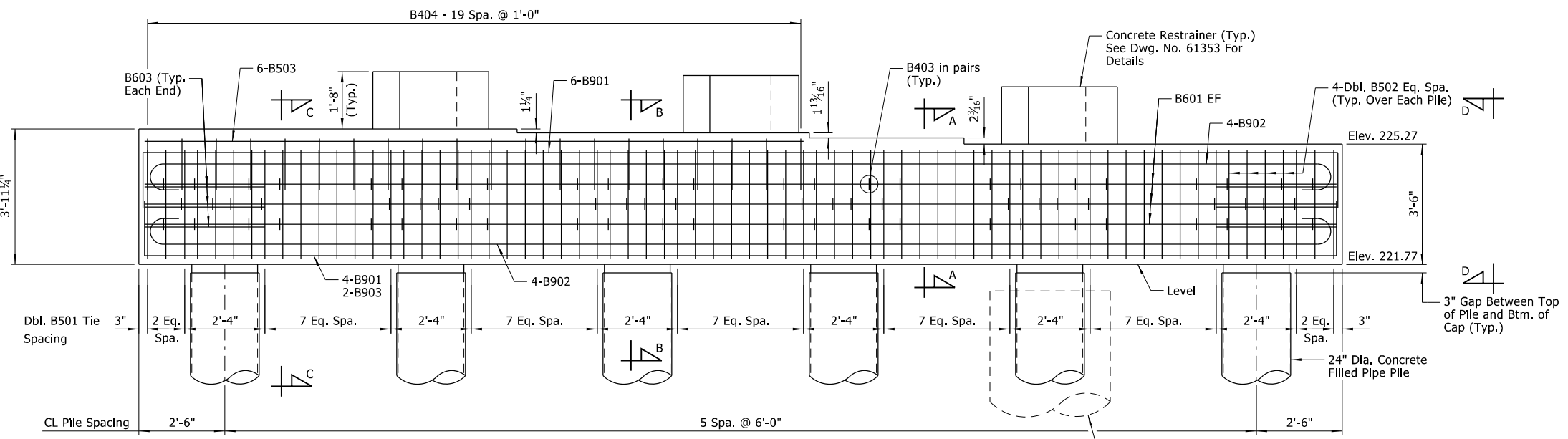
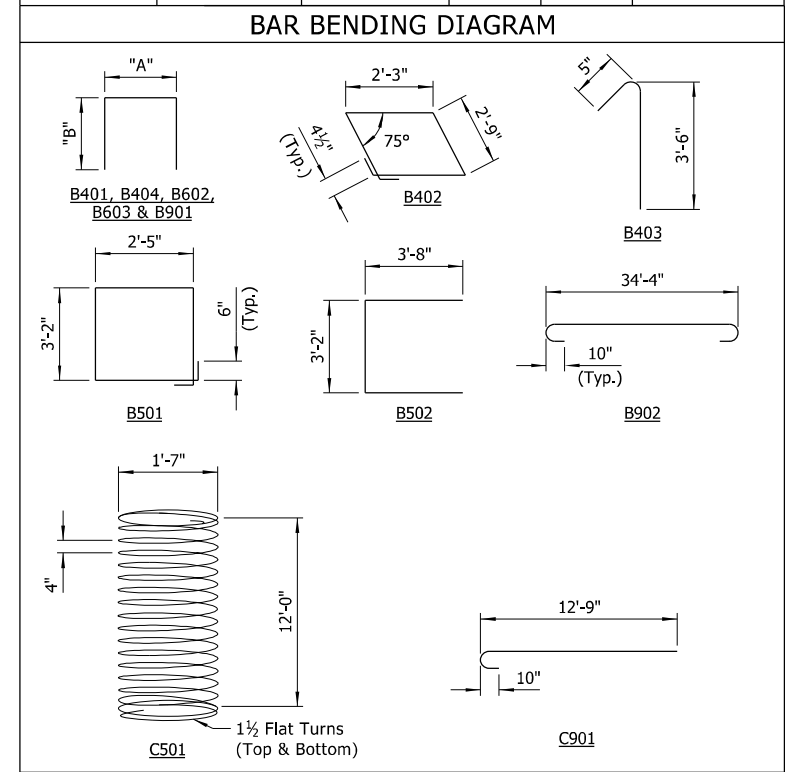
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				6	ARK.				
JOB NO.							100840	37	69
07473							INT. BENT DETAILS	61349	



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

Note:
For "SECTION A-A" Thru "SECTION C-C"
and "VIEW D-D", see Dwg. No. 61353.

MARK	NO. REQ'D.	LENGTH	"A"	"B"	PIN. DIA.
B401	15	9'-6"	2'-8"	3'-6"	2"
B402	9	10'-4"			2"
B403	144	4'-0"			3"
B404	20	9'-6"	3'-8"	3'-0"	2"
B501	92	11'-8"			2 1/2"
B502	48	10'-4"			2 1/2"
B503	6	19'-2"			Str.
B601	6	34'-4"			Str.
B602	18	8'-11"	2'-2"	3'-6"	4 1/2"
B603	6	9'-2"	3'-6"	3'-0"	4 1/2"
B901	10	37'-4"	34'-8"	1'-7 1/4"	9"
B902	8	36'-10"			9"
B903	2	34'-8"			Str.
C501	6	187'-8"			17 3/4"
C901	96	14'-0"			9"



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

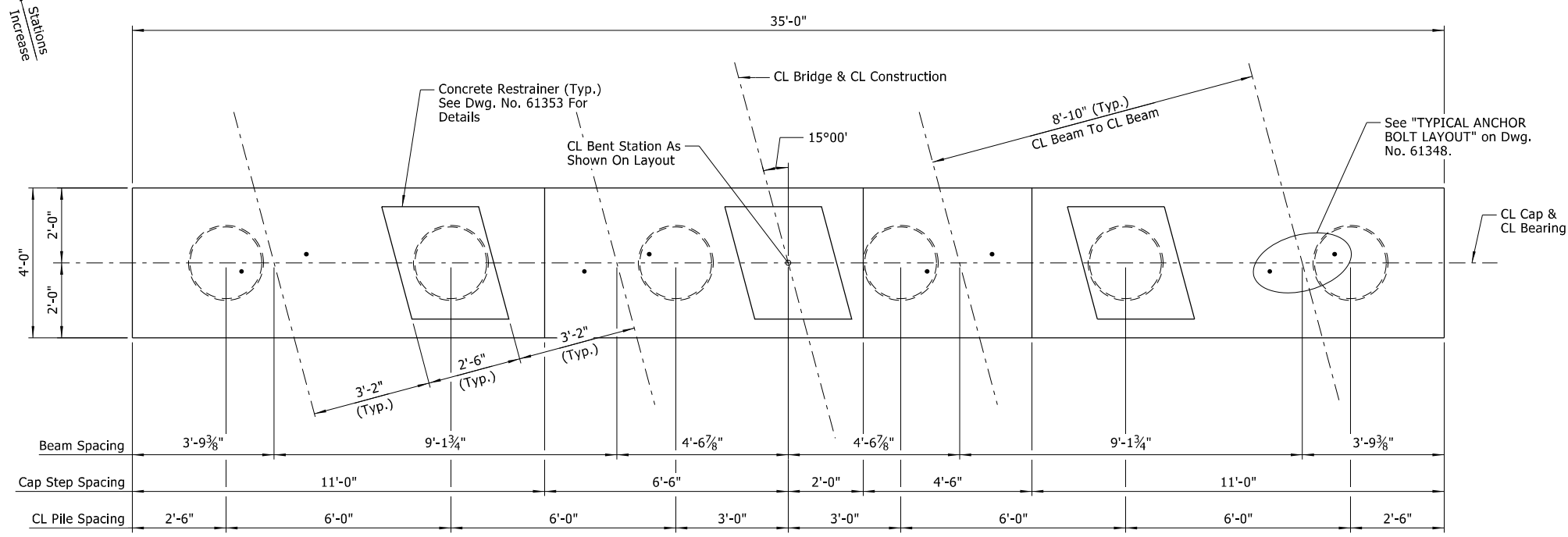
LEGEND
EF = Each Face

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 REVISED DATE:



SHEET 2 OF 7
INTERMEDIATE BENT DETAILS
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_b2.dgn
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 BRIDGE NO. **07473** DRAWING NO. **61349**

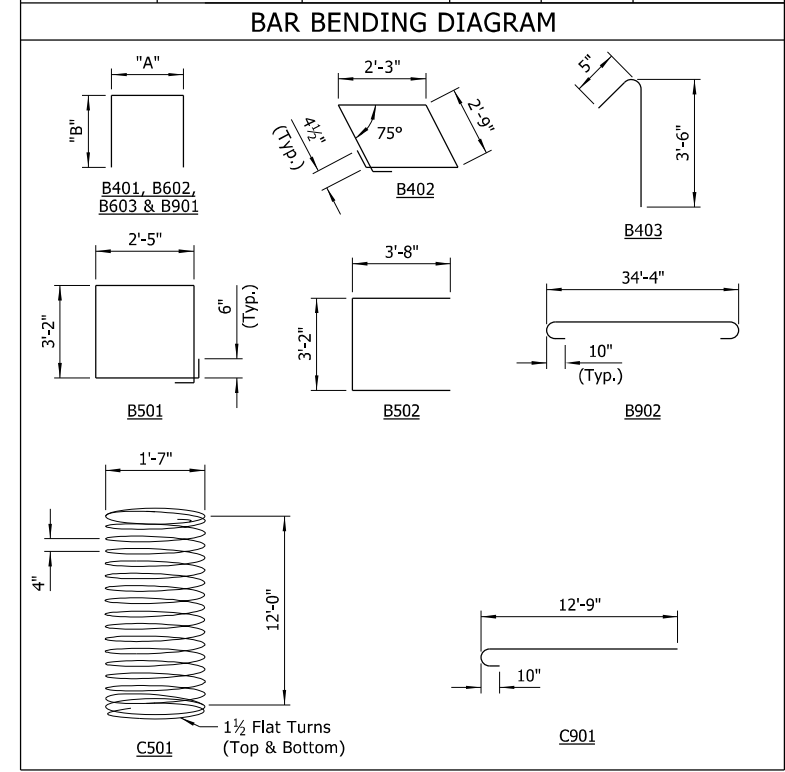
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				JOB NO.		100840	38	69
				07473	INT. BENT DETAILS			61350



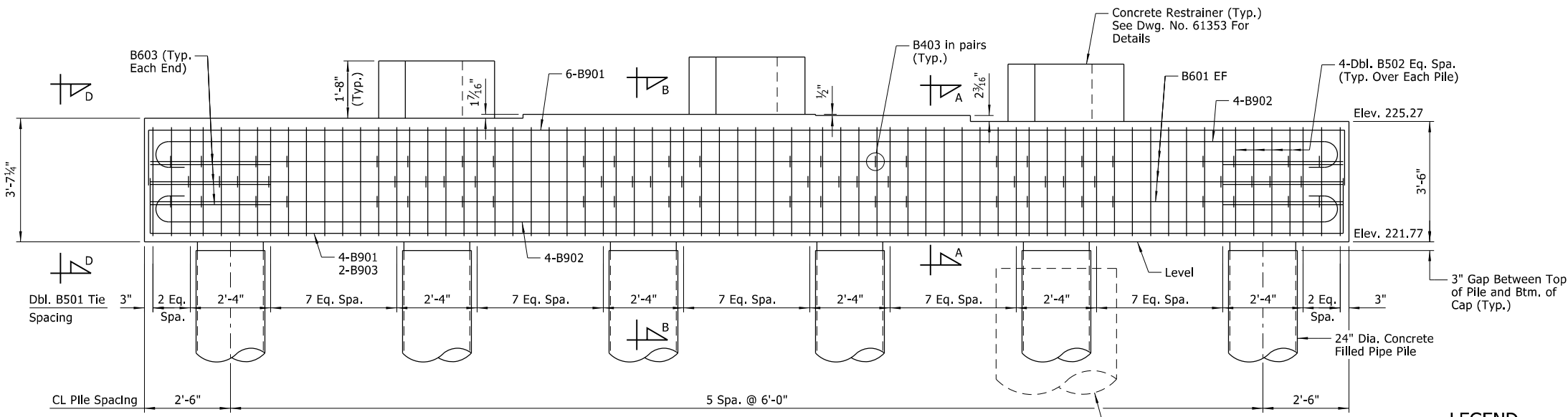
PLAN - BENT NO. 4
Scale: 1/2" = 1'-0"

Note:
For "SECTION A-A", "SECTION B-B"
and "VIEW D-D", see Dwg. No. 61353.

MARK	NO. REQ'D.	LENGTH	"A"	"B"	PIN. DIA.
B401	15	9'-6"	2'-8"	3'-6"	2"
B402	9	10'-4"			2"
B403	144	4'-0"			3"
B501	92	11'-8"			2 1/2"
B502	48	10'-4"			2 1/2"
B601	6	34'-4"			Str.
B602	18	8'-11"	2'-2"	3'-6"	4 1/2"
B603	6	9'-2"	3'-6"	3'-0"	4 1/2"
B901	10	37'-4"	34'-8"	1'-7 1/4"	9"
B902	8	36'-10"			9"
B903	2	34'-8"			Str.
C501	6	187'-8"			17 3/4"
C901	96	14'-0"			9"



NOTES:
Dimension Of Bars Are Out-To-Out.
Bar Designations Ending With "E" Indicate Epoxy Coated Bars.



ELEVATION - BENT NO. 4
(looking Ahead)
Scale: 1/2" = 1'-0"

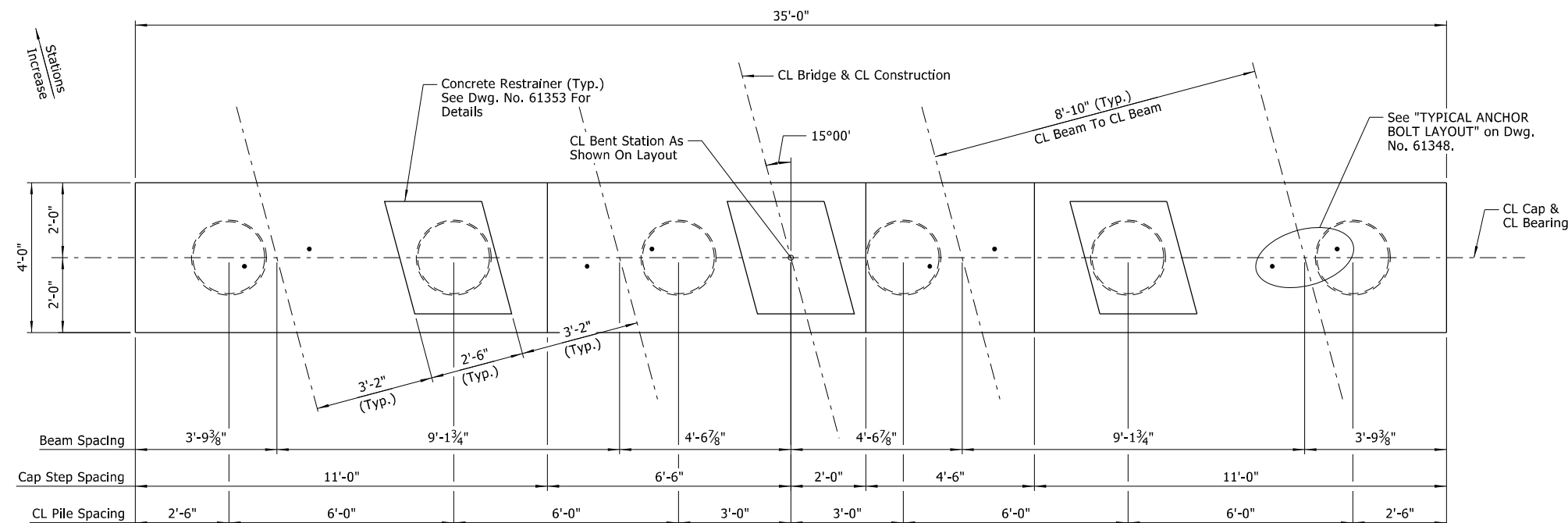
LEGEND
EF = Each Face



SHEET 3 OF 7
INTERMEDIATE BENT DETAILS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_b3.dgn
CHECKED BY: JHR DATE: SEPT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: AUG. 2019
BRIDGE NO. 07473 DRAWING NO. 61350

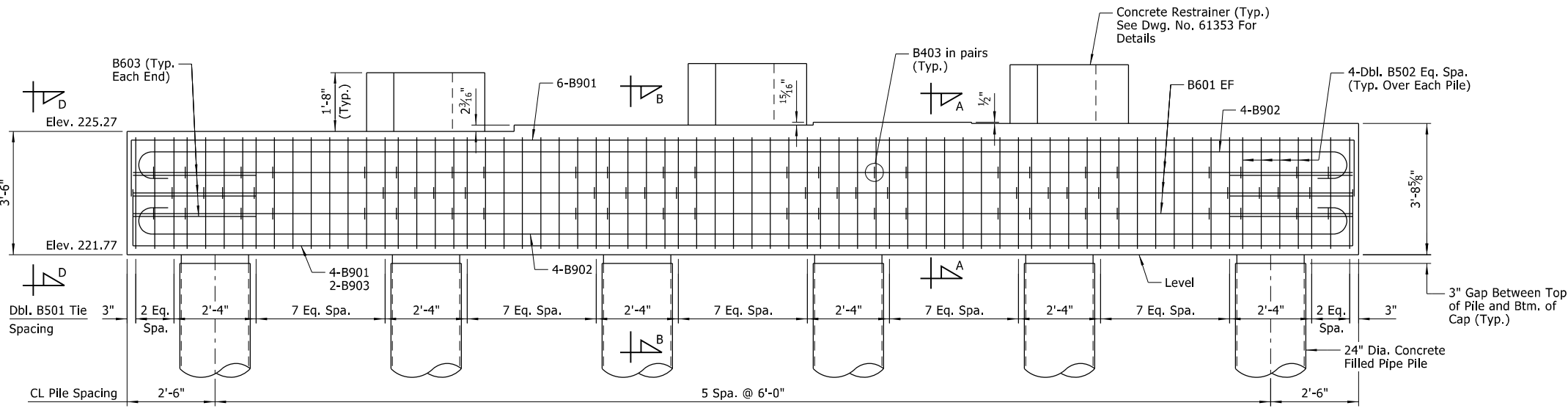
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 REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100840	39	69
				07473	INT. BENT DETAILS		61351	



PLAN - BENT NO. 5
Scale: 1/2" = 1'-0"

Note:
For "SECTION A-A", "SECTION B-B"
and "VIEW D-D", see Dwg. No. 61353.

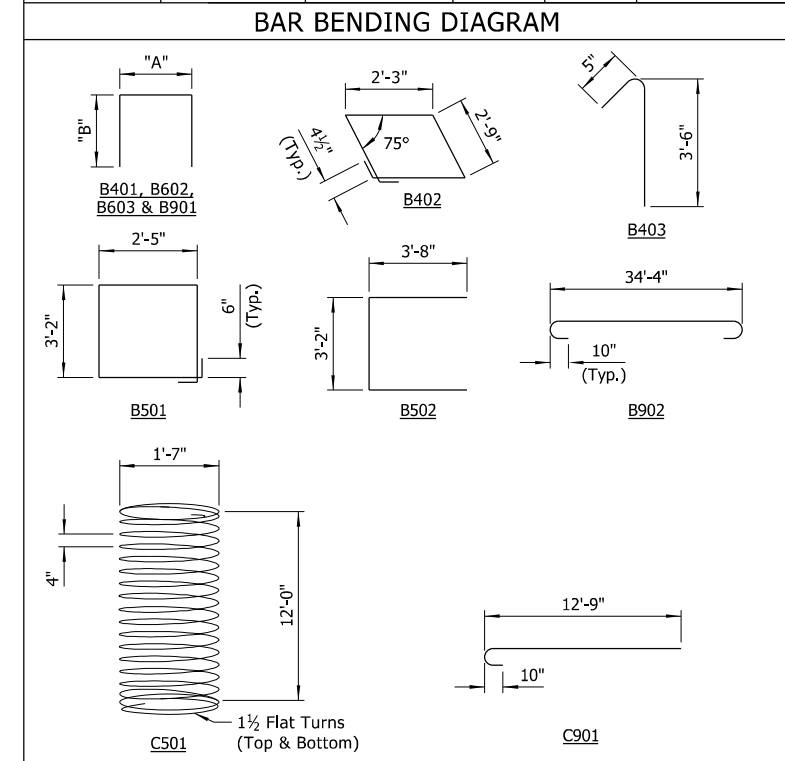


ELEVATION - BENT NO. 5
(Looking Ahead)
Scale: 1/2" = 1'-0"

LEGEND
EF = Each Face

BAR LIST - BENT NO. 5

MARK	NO. REQ'D.	LENGTH	"A"	"B"	PIN. DIA.
B401	15	9'-6"	2'-8"	3'-6"	2"
B402	9	10'-4"			2"
B403	144	4'-0"			3"
B501	92	11'-8"			2 1/2"
B502	48	10'-4"			2 1/2"
B601	6	34'-4"			Str.
B602	18	8'-11"	2'-2"	3'-6"	4 1/2"
B603	6	9'-2"	3'-6"	3'-0"	4 1/2"
B901	10	37'-4"	34'-8"	1'-7 1/4"	9"
B902	8	36'-10"			9"
B903	2	34'-8"			Str.
C501	6	187'-8"			17 3/4"
C901	96	14'-0"			9"



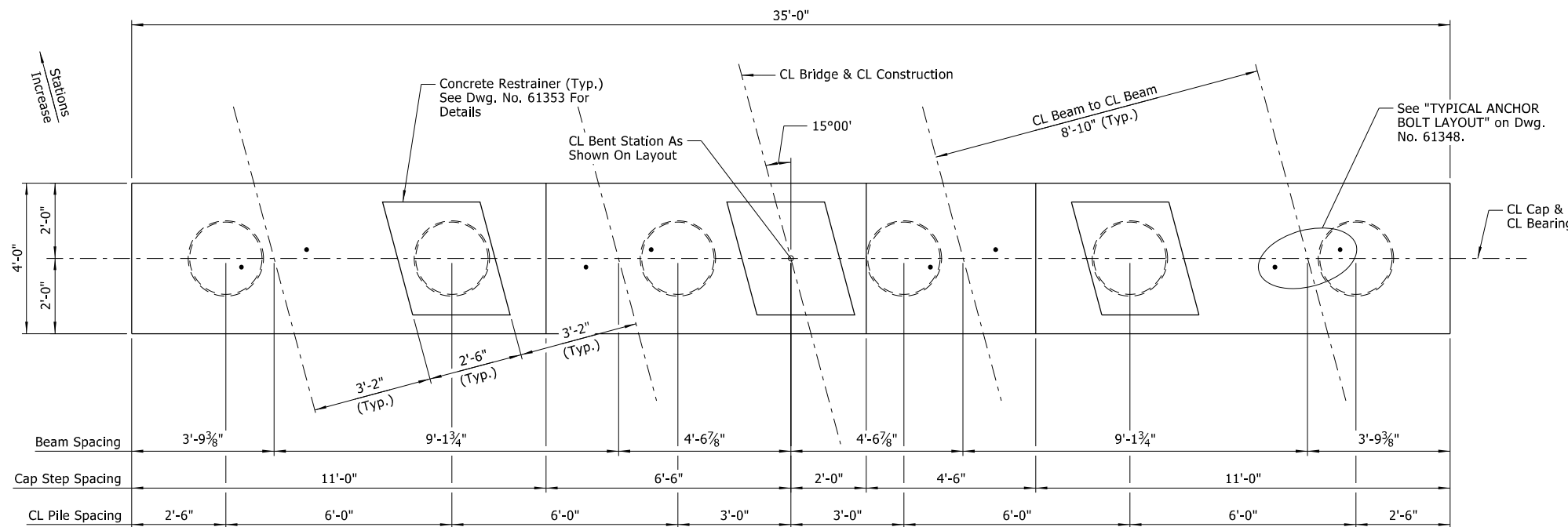
NOTES:
Dimension Of Bars Are Out-To-Out.
Bar Designations Ending With "E" Indicate Epoxy Coated Bars.

4/24/2020 3:54:46 PM
 WORKSPACE: ARB001_Bridge
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 REVISED DATE:



SHEET 4 OF 7
INTERMEDIATE BENT DETAILS
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_b4.dgn
 CHECKED BY: JHR DATE: SEPT. 2019 SCALE: AS SHOWN
 DESIGNED BY: PCC DATE: AUG. 2019
 BRIDGE NO. 07473 DRAWING NO. 61351

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.	100840	40	69	
				07473	INT. BENT DETAILS	61352		

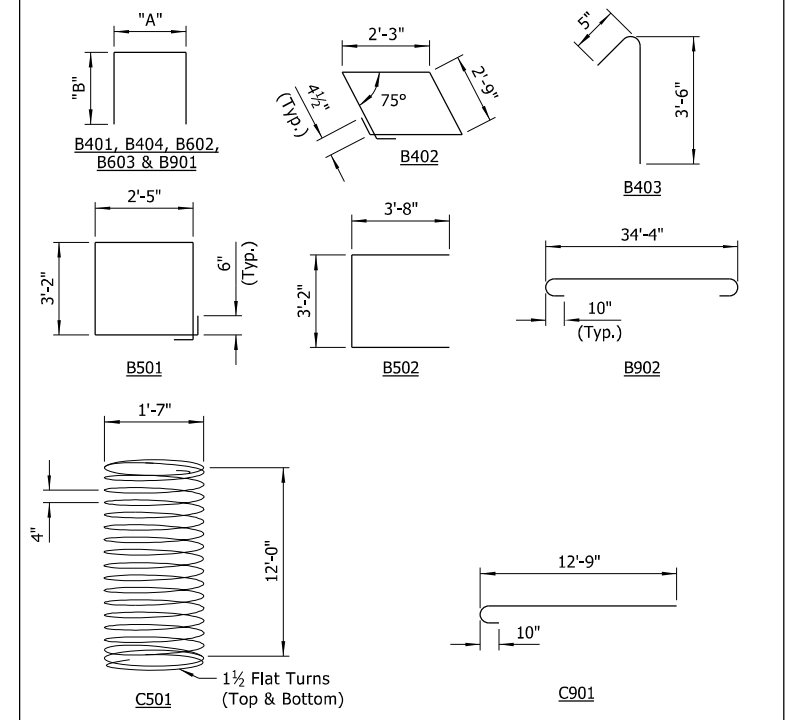


PLAN - BENT NO. 6
Scale: 1/2" = 1'-0"

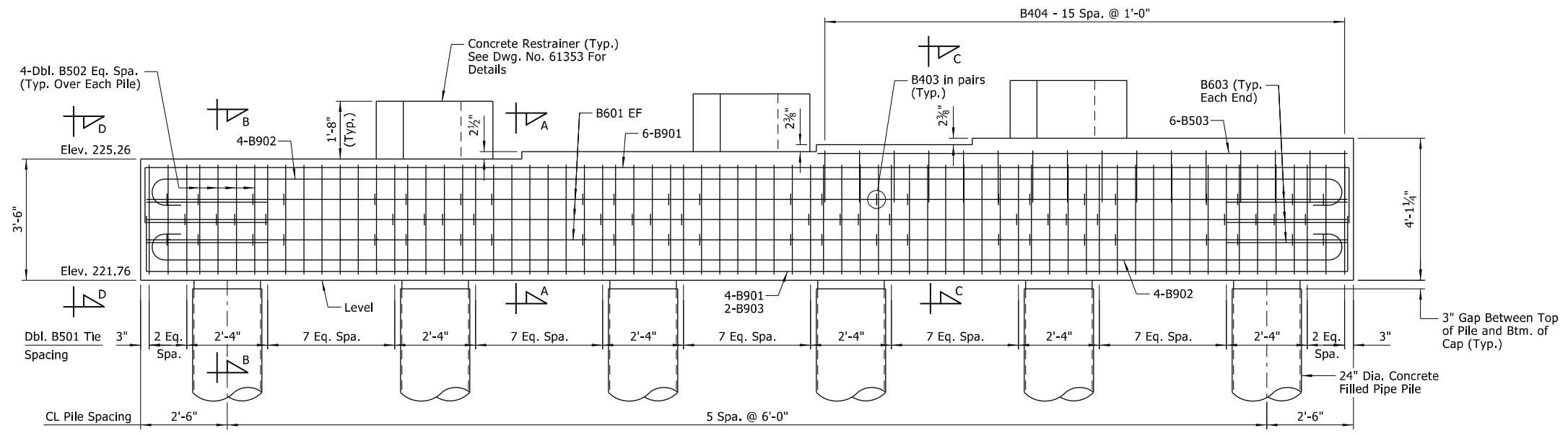
Note:
For "SECTION A-A" Thru "SECTION C-C"
and "VIEW D-D", see Dwg. No. 61353.

BAR LIST - BENT NO. 6					
MARK	NO. REQ'D.	LENGTH	"A"	"B"	PIN. DIA.
B401	15	9'-6"	2'-8"	3'-6"	2"
B402	9	10'-4"			2"
B403	144	4'-0"			3"
B404	16	9'-6"	3'-8"	3'-0"	2"
B501	92	11'-8"			2 1/2"
B502	48	10'-4"			2 1/2"
B503	6	15'-2"			Str.
B601	6	34'-4"			Str.
B602	18	8'-11"	2'-2"	3'-6"	4 1/2"
B603	6	9'-2"	3'-6"	3'-0"	4 1/2"
B901	10	37'-4"	34'-8"	1'-7 1/2"	9"
B902	8	36'-10"			9"
B903	2	34'-8"			Str.
C501	6	187'-8"			17 3/4"
C901	96	14'-0"			9"

BAR BENDING DIAGRAM



NOTES:
Dimension Of Bars Are Out-To-Out.
Bar Designations Ending With "E" Indicate Epoxy Coated Bars.



ELEVATION - BENT NO. 6
(Looking Ahead)
Scale: 1/2" = 1'-0"

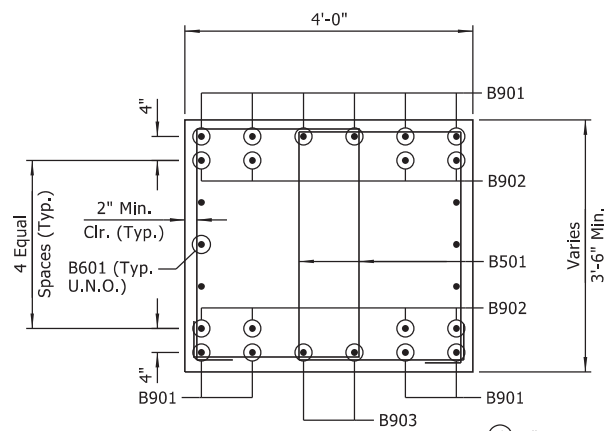
LEGEND
EF = Each Face



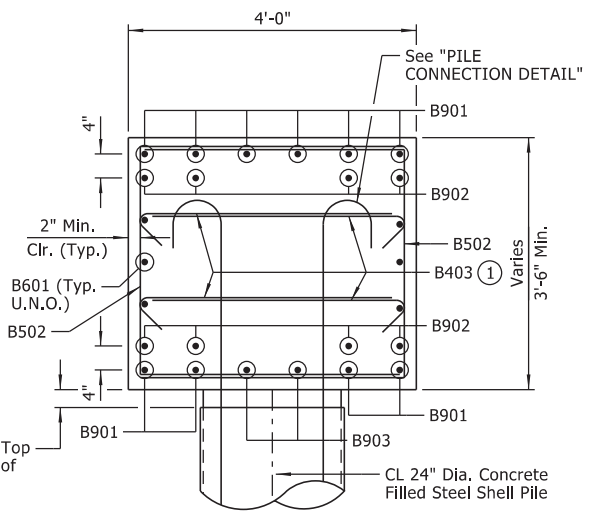
SHEET 5 OF 7
INTERMEDIATE BENT DETAILS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_b5.dgn
CHECKED BY: JHR DATE: SEPT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: AUG. 2019
BRIDGE NO. 07473 DRAWING NO. 61352

4/24/2020 3:54:46 PM
 WORKSPACE: ARB001_Bridge
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 REVISION DATE:

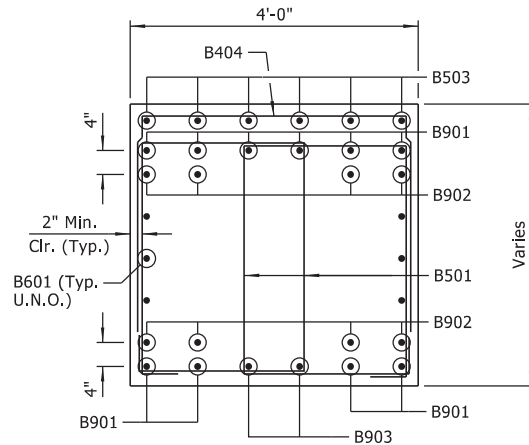
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6-18-2020				6	ARK.			
				JOB NO.		100840	41	69
				07473	INT. BENT DETAILS			61353



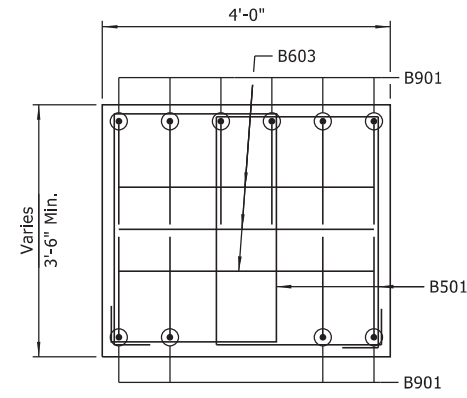
SECTION A-A
Scale: 3/4" = 1'-0"



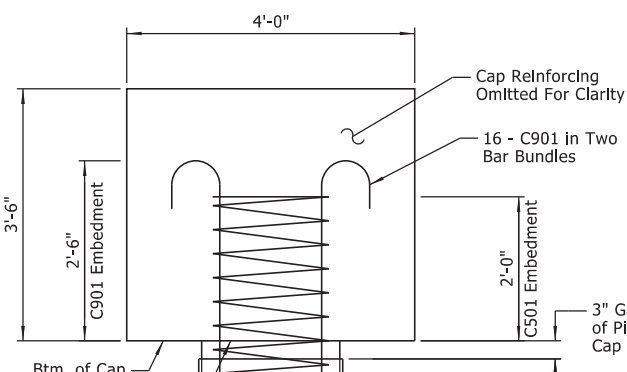
SECTION B-B
Scale: 3/4" = 1'-0"



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



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

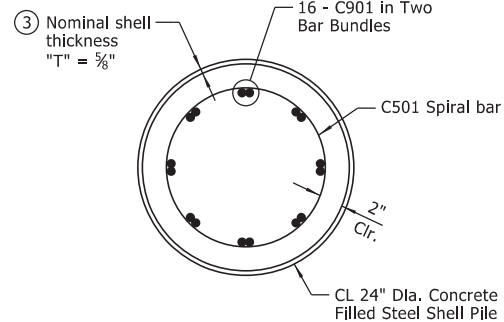


SECTION
Scale: 3/4" = 1'-0"

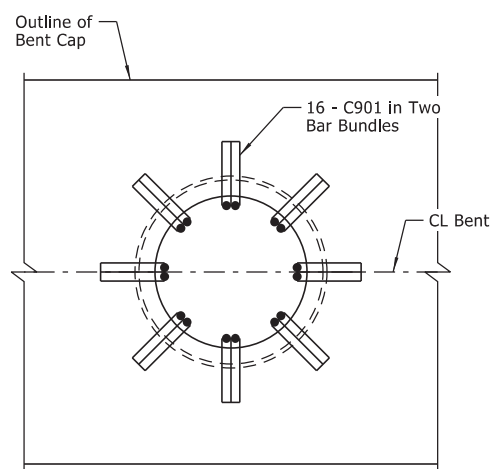
- ① See "ELEVATION" on Dwg. Nos. 61348 thru 61352 for locations and spacing.
- ② Pile connection details shown shall be used in lieu of the pile anchorage details shown on Std. Dwg. No. 55021.
- ③ The 24" Concrete Filled Steel Shell Piles shall have a nominal shell thickness of 3/8". For additional details and GENERAL NOTES, see Std. Dwg. No. 55021.
- ④ Gap between top of pile and bottom of cap shall be 3"±1". Pile Encasement at Bent Nos. 2, 5 & 6 shall stop 2" above the top of the pile and be sloped away in accordance with Std. Dwg. No. 55021.

LEGEND

U.N.O. = Unless Noted Otherwise

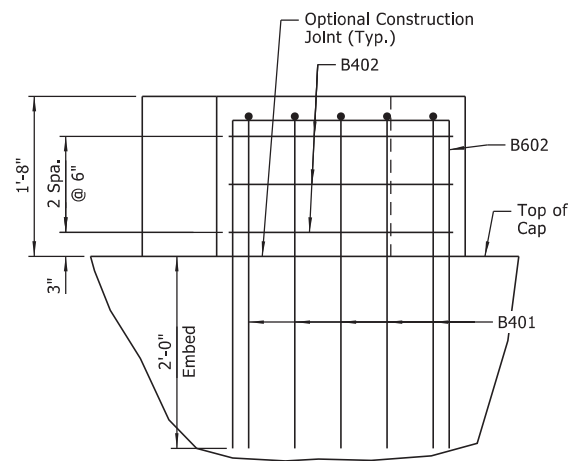


SECTION E-E
Scale: 1 1/2" = 1'-0"

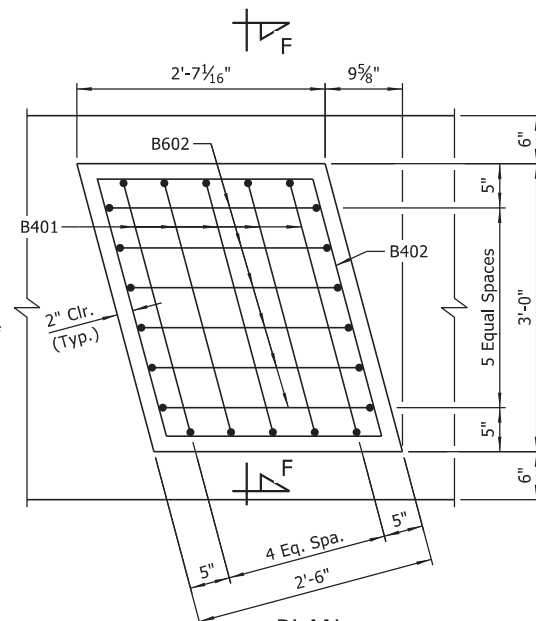


PLAN
Scale: 1" = 1'-0"

NOTE:
Orient C901 Bars as shown to facilitate placement of cap reinforcement.



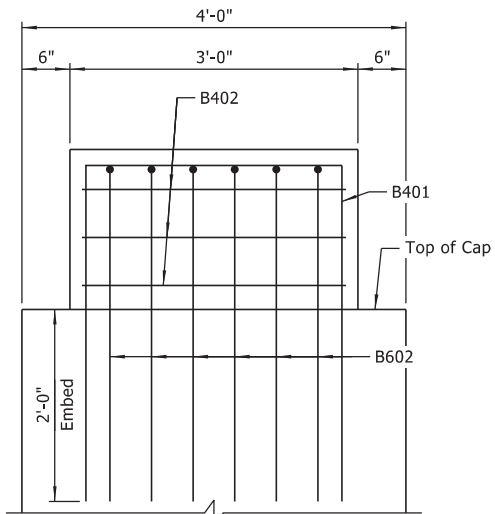
ELEVATION



PLAN

CONCRETE RESTRAINER
Scale: 1" = 1'-0"

① Added Construction Joint at top of pile and notes for pile encasement termination.
6-18-2020 JHR Checked by: JES



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

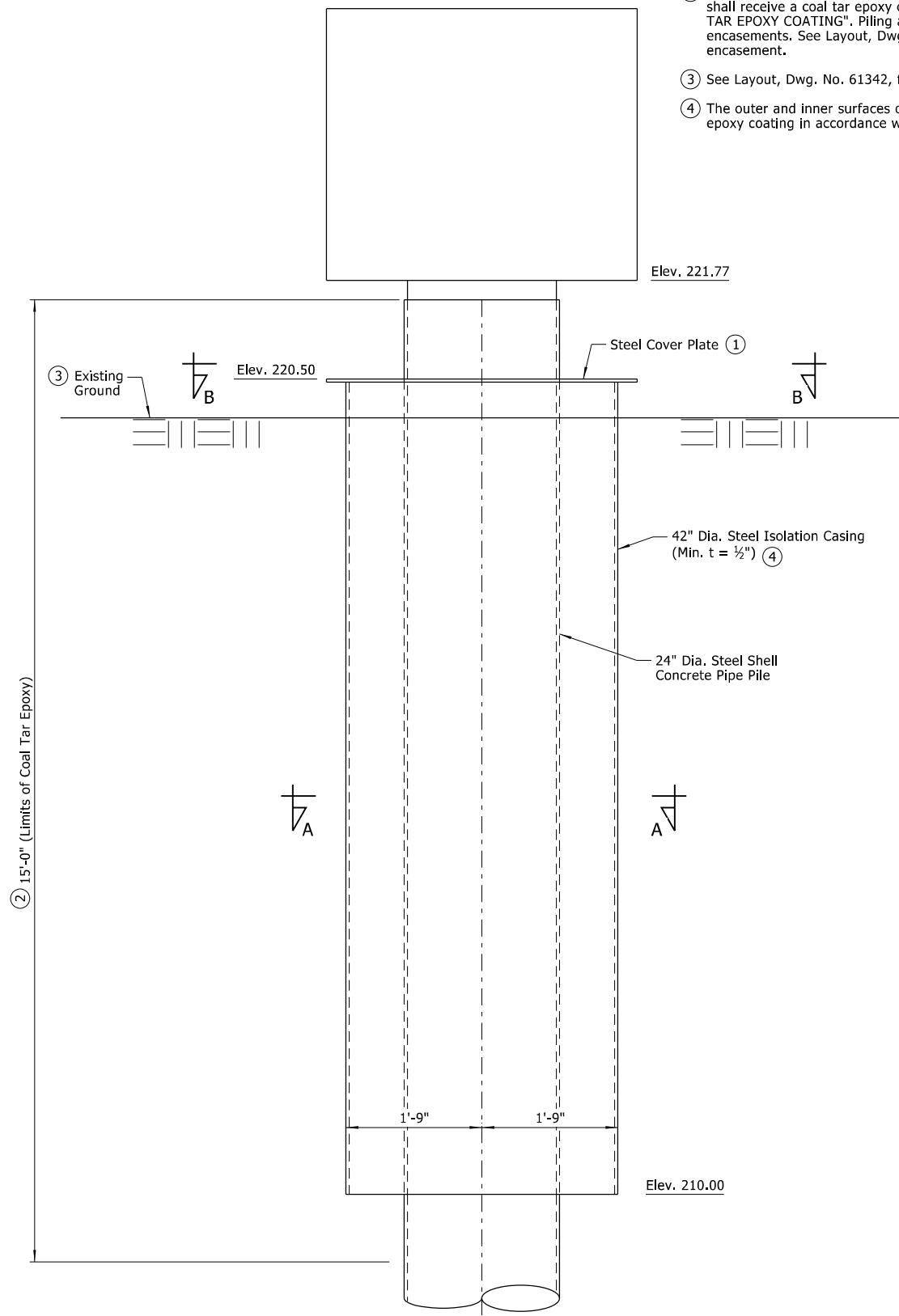


SHEET 6 OF 7
INTERMEDIATE BENT DETAILS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

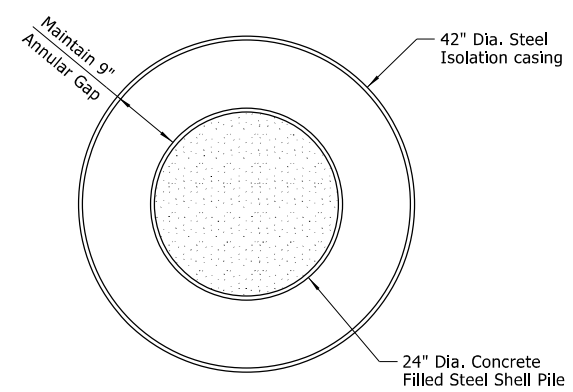
DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_b6.dgn
CHECKED BY: JHR DATE: SEPT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: AUG. 2019
BRIDGE NO. 07473 DRAWING NO. 61353

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		100840	42	69
				07473		INT. BENT DETAILS		61354

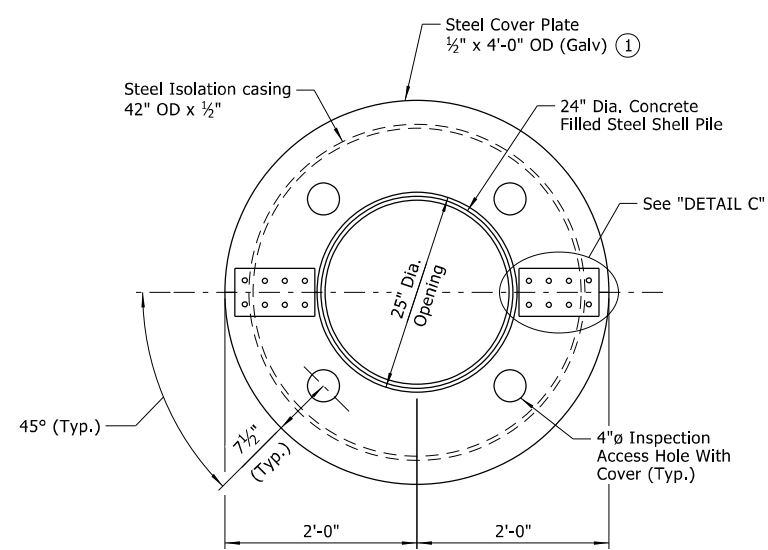
- ① Steel cover plate to be fabricated in two halves, and field assembled using splice plates. The steel cover plate and splice plates shall be preassembled to verify fit up before galvanization and shipping to the job site.
- ② The upper 15' of the 24" dia. concrete filled steel shell pile at Bent Nos. 3 and 4 shall receive a coal tar epoxy coating in accordance with Job 100840 SP "COAL TAR EPOXY COATING". Piling at Bent Nos. 2, 5 & 6 shall be fitted with pile encasements. See Layout, Dwg. No. 61342, for more information on limits of pile encasement.
- ③ See Layout, Dwg. No. 61342, for excavation at Bent No. 4.
- ④ The outer and inner surfaces of the isolation casing shall receive a coal tar epoxy coating in accordance with Job 100840 SP "COAL TAR EPOXY COATING".



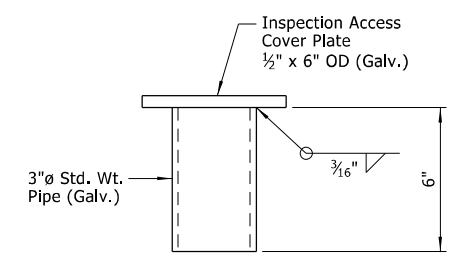
ISOLATION CASING DETAIL
(Bent Nos. 3 and 4)
Scale: 1" = 1'-0"



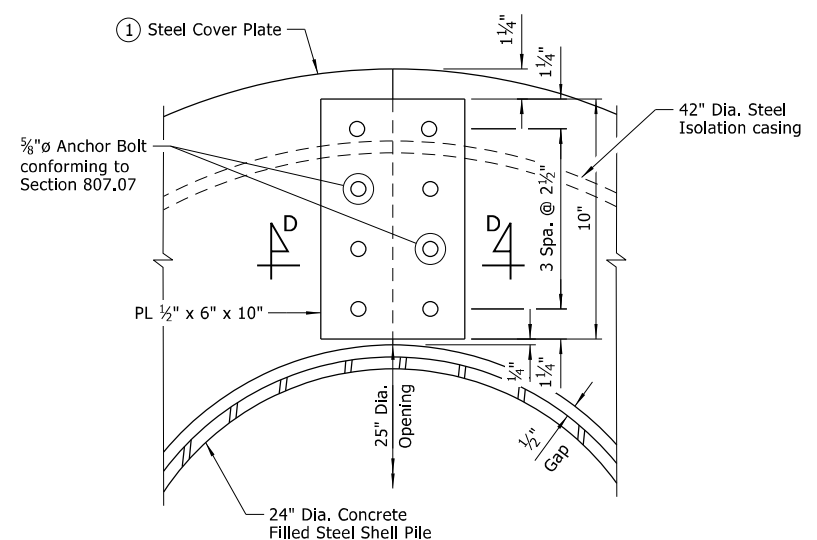
SECTION A-A
Scale: 1" = 1'-0"



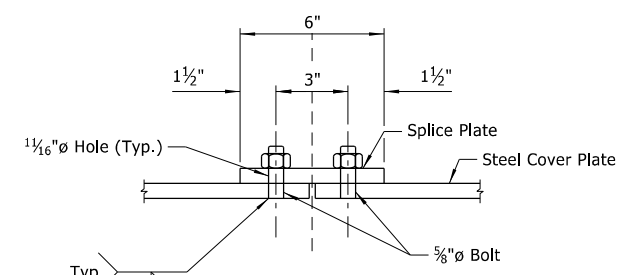
SECTION B-B
Scale: 1" = 1'-0"



INSPECTION ACCESS COVER
Scale: 3" = 1'-0"



DETAIL C
Scale: 3" = 1'-0"



SECTION D-D
Scale: 3" = 1'-0"

GENERAL NOTES FOR 42" DIA. ISOLATION CASING
Steel used to fabricate Isolation casing shall conform to ASTM A252, Grade 3 (45,000 psi).
Structural steel used in fabrication of the steel cover plate shall conform to ASTM A709, Grade 36 and shall be galvanized after fabrication in accordance with Subsection 807.19.
The cost of the steel cover plates and the coal tar epoxy coating shall be included in the unit price per linear foot of the item "ISOLATION CASING". For more information, see Job 100840 SP "ISOLATION CASING".

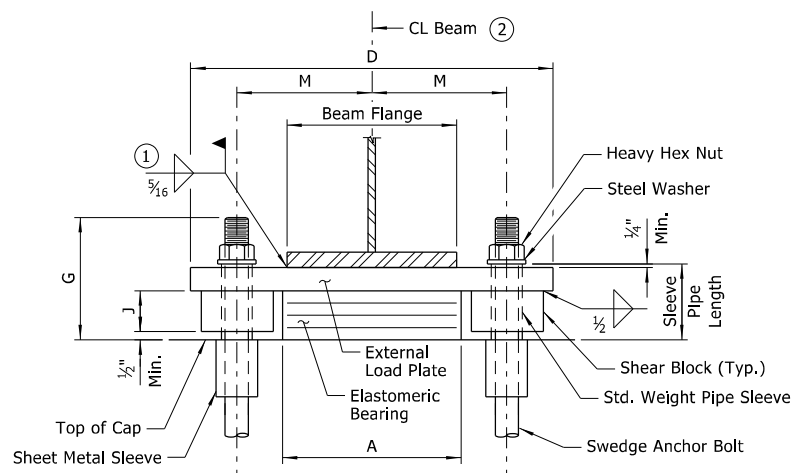


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BRIDGE ENGINEER

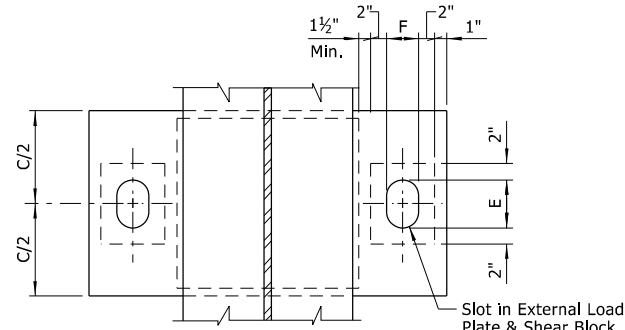
SHEET 7 OF 7
INTERMEDIATE BENT DETAILS
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: SEPT. 2019 FILENAME: b100840_b7.dgn
CHECKED BY: JHR DATE: SEPT. 2019 SCALE: AS SHOWN
DESIGNED BY: PCC DATE: AUG. 2019
BRIDGE NO. 07473 DRAWING NO. 61354

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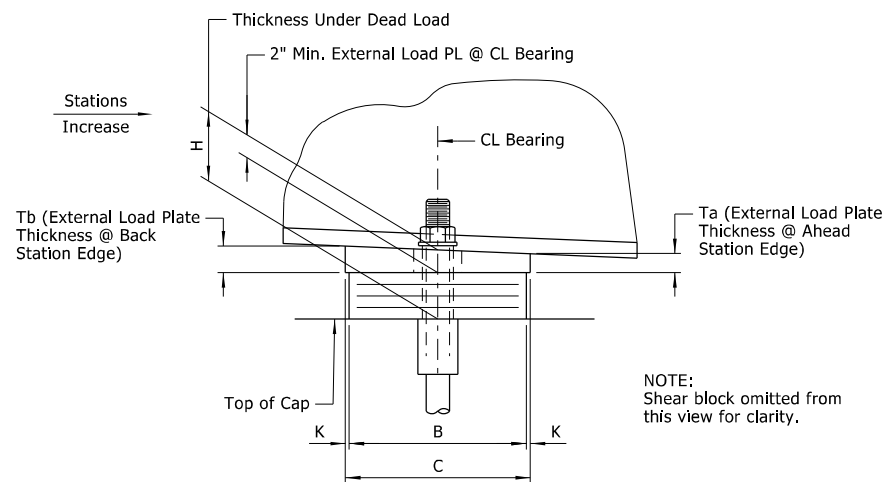
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100840	43	69
				07473	ELASTOMERIC BEARINGS			61355



FRONT VIEW - AT BENT NOS. 1 & 7



PLAN VIEW - AT BENT NOS. 1 & 7

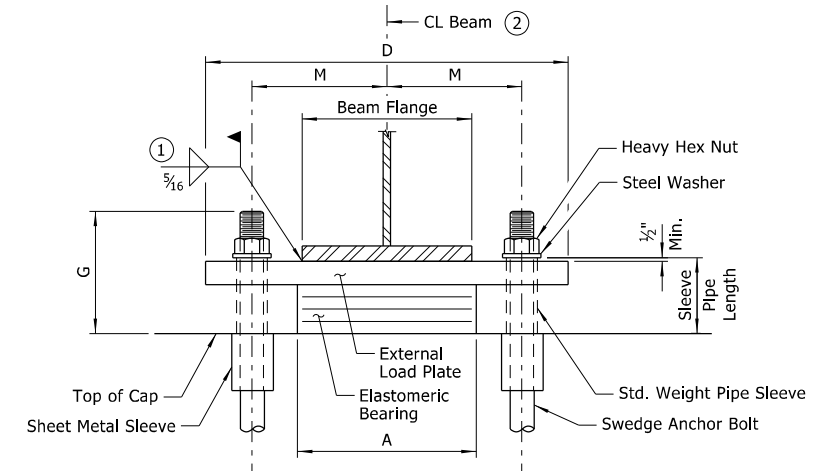


SIDE VIEW - AT BENT NOS. 1 & 7

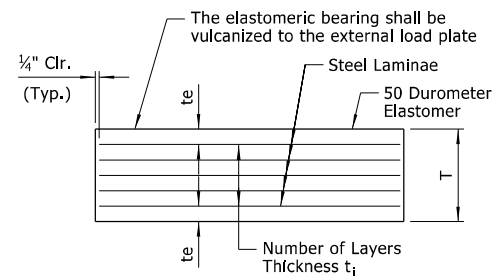
① Care shall be taken to ensure that the external load plate is in full and complete contact with the beam flange before welding begins.

Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the beam will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40°F and 80°F; and 2) the slots in the 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.

② Centerline elastomeric pad shall be aligned with centerline beam.

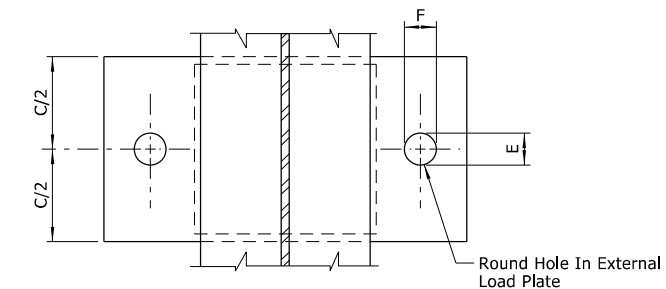


FRONT VIEW - AT BENT NOS. 2, 3, 4, 5 & 6

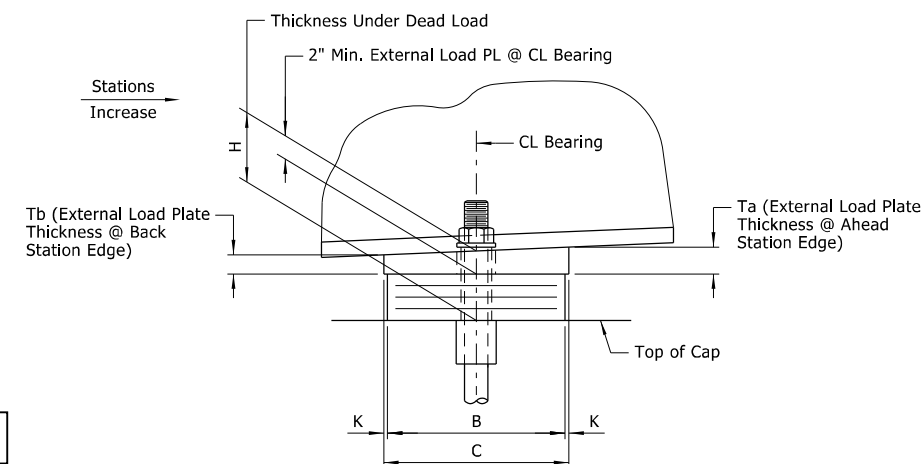


t_e = Thickness of elastomer cover on top and bottom of pad
 t_i = Thickness of elastomer between steel laminae
 N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING



PLAN VIEW - AT BENT NOS. 2, 3, 4, 5 & 6



SIDE VIEW - AT BENT NOS. 2, 3, 4, 5 & 6

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

NOTES:
 The direction of the bevel of the external load plate may not be accurately depicted with respect to T_a and T_b values shown in "TABLE OF FABRICATOR VARIABLES" on Dwg. No. 61356.

For "TABLE OF FABRICATOR VARIABLES", "ANCHOR BOLT DETAIL" and "GENERAL NOTES", see Dwg. No. 61356.



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

DRAWN BY: CSW DATE: SEP. 2019 FILENAME: b100840_e1.dgn
 CHECKED BY: JHR DATE: OCT. 2019 SCALE: NO SCALE
 DESIGNED BY: RHE DATE: AUG. 2019
 BRIDGE NO. 07473 DRAWING NO. 61355

TABLE OF FABRICATOR VARIABLES

Location		Bearing Type	No. Of Bearings Each Bent	① Maximum Design Load (Kips)	Elastomeric Pad										External Load Plate								Anchor Bolt				
Bent No.	Beam No.				G	H	A	B	N	t _i	t _e	No. & Thickness Of Steel Laminae	T	C	D	E	F	J	K	M	T _a	T _b	Anchor Bolt (Dia. x L)		Pipe Sleeve Size (Dia. x L)	Sheet Metal Sleeve Size (Dia. x L)	Steel Washer Size (O.D.)
1	1	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	1.97"	2.03"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
1	2	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	1.98"	2.02"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
1	3	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	1.99"	2.01"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
1	4	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	2.00"	2.00"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
2	1	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.97"	2.03"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
2	2	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.98"	2.02"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
2	3	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.99"	2.01"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
2	4	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.00"	2.00"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
3	1	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.96"	2.04"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 10"	3 3/4"
3	2	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.99"	2.01"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 10"	3 3/4"
3	3-4	Fix	2	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.00"	2.00"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 10"	3 3/4"
4	1	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.96"	2.04"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 7"	3 3/4"
4	2	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	1.99"	2.01"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 7"	3 3/4"
4	3-4	Fix	2	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.00"	2.00"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 7"	3 3/4"
5	1-2	Fix	2	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.00"	2.00"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 7"	3 3/4"
5	3	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.01"	1.99"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 7"	3 3/4"
5	4	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.04"	1.96"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 7"	3 3/4"
6	1	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.00"	2.00"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
6	2	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.01"	1.99"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
6	3	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.02"	1.98"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
6	4	Fix	1	185	8 3/16"	4 1 5/16"	16"	10"	4	1/2"	1/4"	5 @ 12 Ga.	3"	11"	28"	3 1/8"	3 1/8"	-	1/2"	10 3/4"	2.04"	1.96"	2" x 32"	55	2 1/2" x 5 3/16"	4" x 14"	3 3/4"
7	1	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	2.00"	2.00"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
7	2	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	2.01"	1.99"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
7	3	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	2.02"	1.98"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"
7	4	Exp.	1	95	9 1/16"	6 3/16"	12"	10"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	32 1/2"	6 1/4"	3 3/4"	3 1/16"	1/2"	11 3/8"	2.04"	1.96"	2 1/2" x 38"	55	3" x 6 1/16"	4" x 11"	4 1/2"

① Maximum Design Load = LRFD Service I Limit State

GENERAL NOTES

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

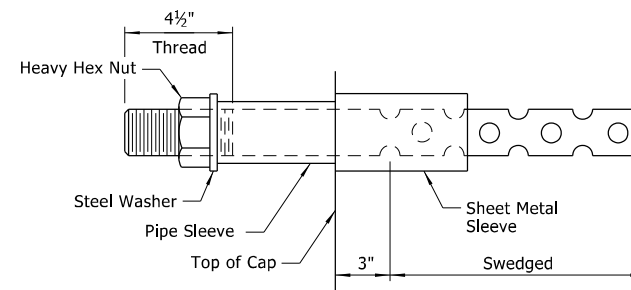
External load plates and shear blocks shall conform to ASTM A709, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

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

Anchor bolts, washers and nuts shall conform to Subsection 807.07. The anchor bolt grade of steel shall be as specified in the "TABLE OF FABRICATOR VARIABLES". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

Pipe sleeves, anchor bolts, washers and nuts shall be paid for at the unit price bid for "STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)". External load plates and shear blocks will not be measured or paid for separately but will be included in 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.



ANCHOR BOLT DETAIL

NOTE:
Anchor bolts may be cast in place or drilled and grouted into place. If anchor bolts are to be cast in place, the galvanized sheet metal sleeves will not be required.

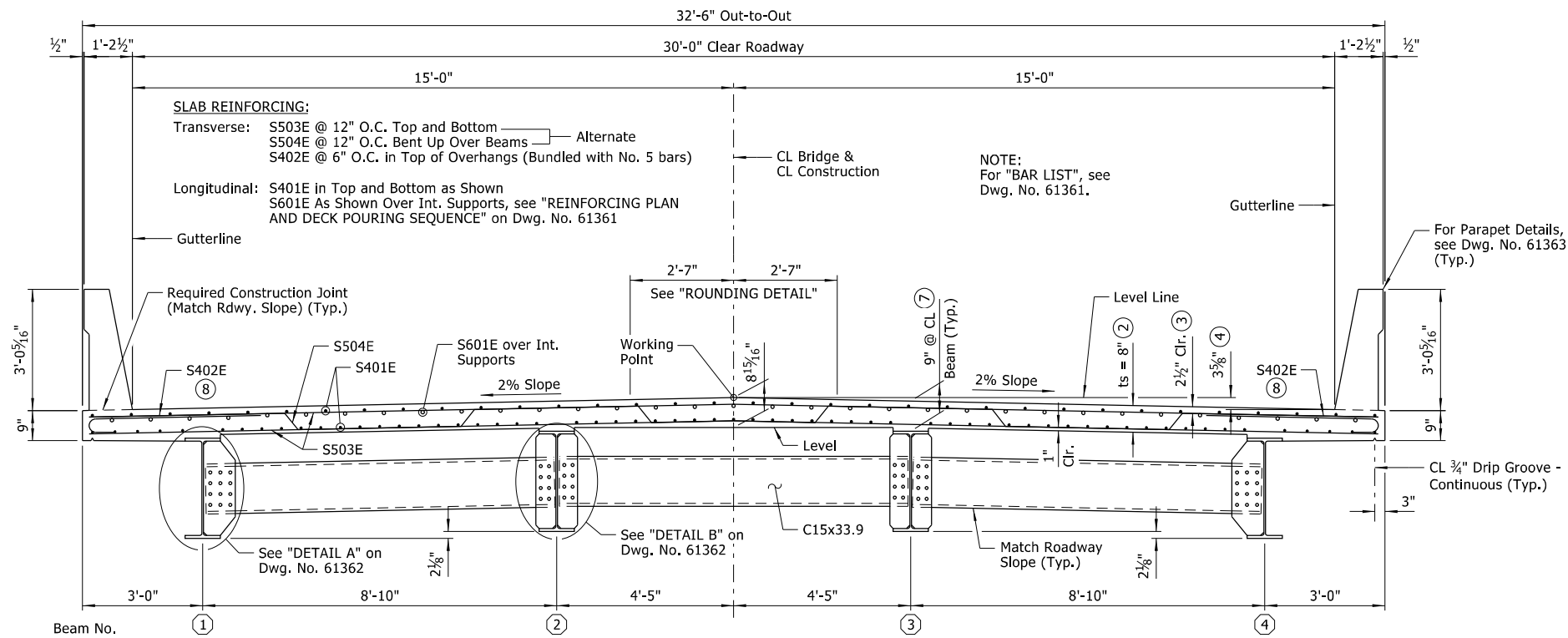
If anchor bolts are to be drilled and grouted in place, the galvanized sheet metal sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of the girder, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the concrete. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves shall meet the requirements of ASTM A653, CS Type B or approved equivalent, be of minimum 16 gage thickness, and be galvanized according to ASTM B695, Class 50. Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "STRUCTURAL STEEL IN BEAM SPANS (A709, GR. 50W)".



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

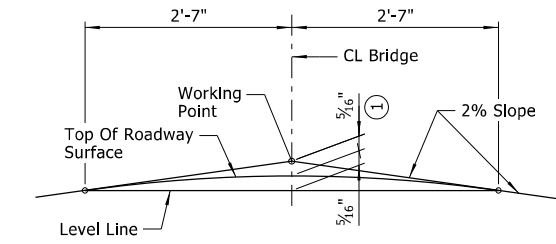
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CHECKED BY: JHR DATE: OCT. 2019 SCALE: NO SCALE
DESIGNED BY: RHE DATE: AUG. 2019
BRIDGE NO. 07473 DRAWING NO. 61356

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.		100840	45	69
				07473	300'-0" W-BEAM UNIT			61357



SLAB REINFORCING:
 Transverse: S503E @ 12" O.C. Top and Bottom
 S504E @ 12" O.C. Bent Up Over Beams — Alternate
 S402E @ 6" O.C. in Top of Overhangs (Bundled with No. 5 bars)
 Longitudinal: S401E in Top and Bottom as Shown
 S601E As Shown Over Int. Supports, see "REINFORCING PLAN AND DECK POURING SEQUENCE" on Dwg. No. 61361

NOTE:
 For "BAR LIST", see Dwg. No. 61361.



ROUNDING DETAIL
 No Scale

① Values shown are for 2% Normal Crown. Dimension for Working Point to Top of Roadway Surface Varies from 0" at Station 213+54.59 to 5/16" at Station 214+31.51 and from 5/16" at Station 214+31.52 to 0" at Station 215+01.52.

NOTE:
 Working Point matches Theoretical Profile Grade.

- ② See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.
- ③ Tolerance: Minus = 1/4"
 Plus = to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Std. Dwg. No. 55007.
- ④ Working Point to Gutterline
- ⑤ See "SUPERELEVATION TRANSITION SKETCH" on Dwg. No. 61342
- ⑥ See "ROUNDING DETAIL"
- ⑦ Measured from top of deck to top of beam flange. Dimension from top of deck to bottom of top flange = 9 3/8".
- ⑧ Bundle with No. 5 bars in top. Rotate S402E as needed to avoid interference with bottom mat of deck reinforcement.

LEGEND

U.N.O. = Unless Noted Otherwise

TYPICAL ROADWAY SECTION ⑤

(Sta. 214+31.51 To Sta. 214+31.52)
 (Looking Ahead)
 Scale: 1/2" = 1'-0"

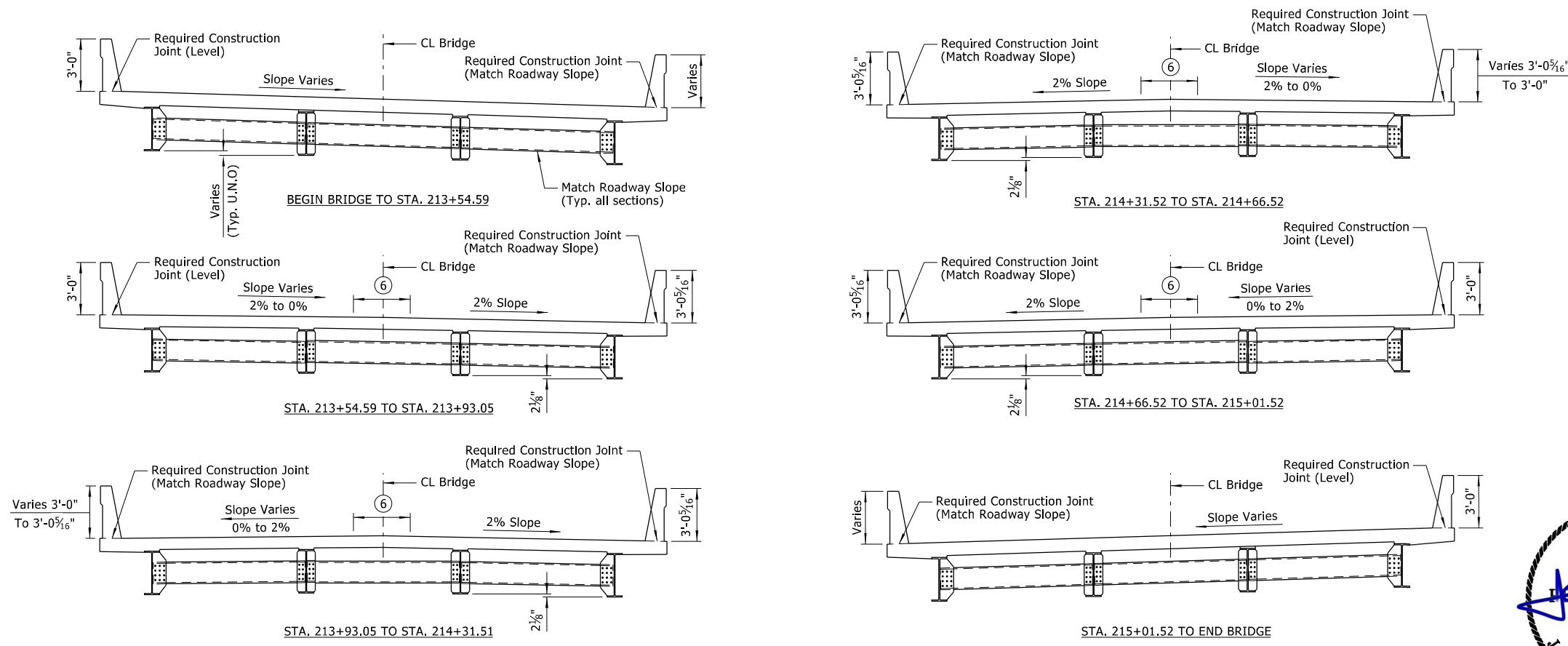
NOTES:

Class 1 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

At the Contractor's option, two straight epoxy coated No. 5 bars may be substituted for bar S504E. Payment for reinforcing will be based on the weight of bar S504E.

Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices sufficient in size and number to prevent displacement during construction, per Subsection 804.06. Placement of slab bolsters or hi-chairs with full-length lower runners directly on removable deck will not be allowed.

For Standard General Notes and Details, see Std. Dwg. Nos. 55006 & 55007.



SCHEMATIC SECTION VIEWS ⑤

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



SHEET 1 OF 7
 DETAILS OF 300'-0" CONTINUOUS
 COMPOSITE W-BEAM UNIT
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

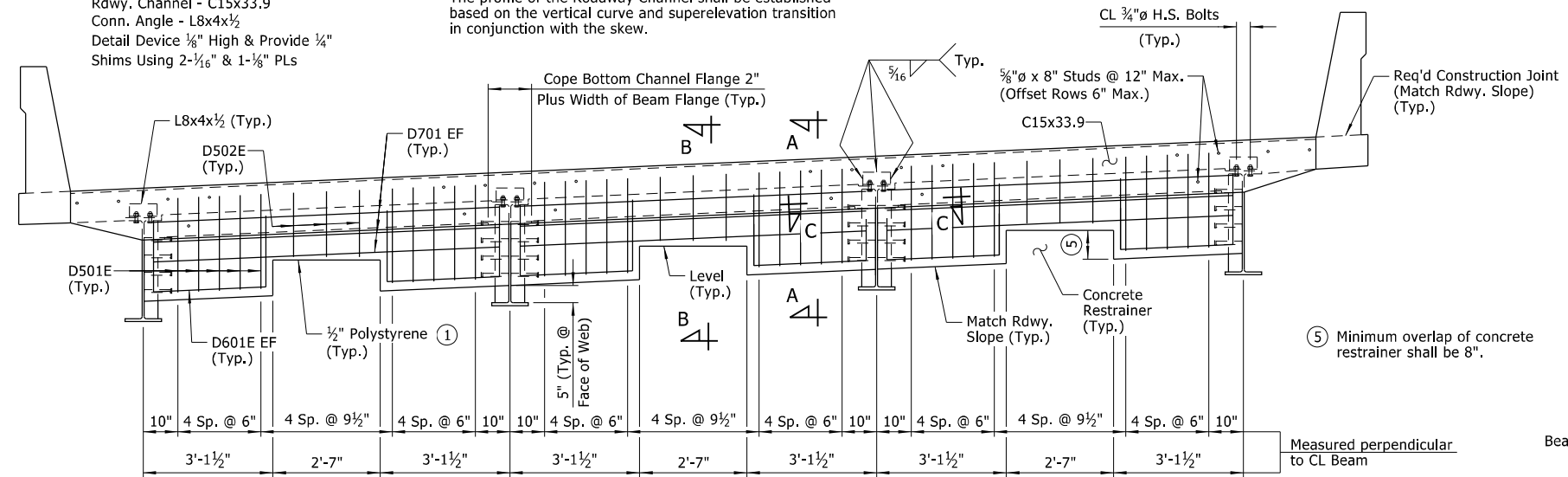
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 BRIDGE NO. 07473 DRAWING NO. 61357

4/24/2020 3:54:49 PM
 WORKSPACE: ARDOT_Bridge
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 REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS	
				6	ARK.				
JOB NO.							100840	46	69
① 07473							300'-0" W-BEAM UNIT	61358	

Expansion Device
 Rdwy. Channel - C15x33.9
 Conn. Angle - L8x4x½
 Detail Device ½" High & Provide ¼"
 Shims Using 2-½" & 1-½" PLS

NOTE:
 The profile of the Roadway Channel shall be established based on the vertical curve and superelevation transition in conjunction with the skew.



ROADWAY SECTION NEAR JOINT

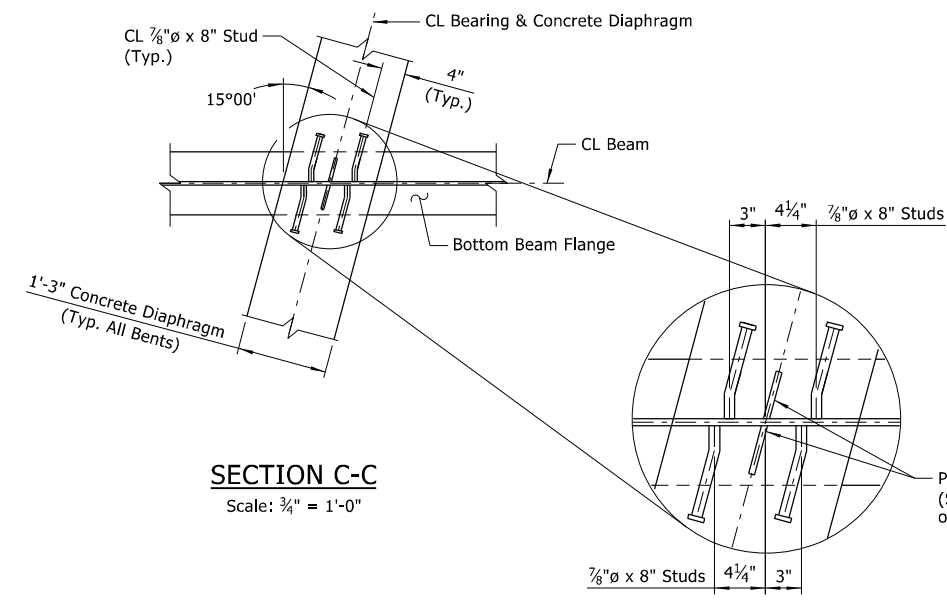
Looking Ahead - Bent 1,
 Bent 7 Similar
 No Scale

① ½" Polystyrene shall be used as a bond breaker between the concrete restrainer and the concrete diaphragm and may remain in place. Polystyrene will not be paid for directly but will be considered subsidiary to the item "CLASS S(AE) CONCRETE-BRIDGE".

"A" Width Perpendicular To Joint At 24 Hour Average Temperature Of:			"B" Perpendicular To Joint At 60°F	Bumper Plate Size
40°F	60°F	80°F		
2½"	2"	1¾"	2¼"	1" x 1" x 12"

③ The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

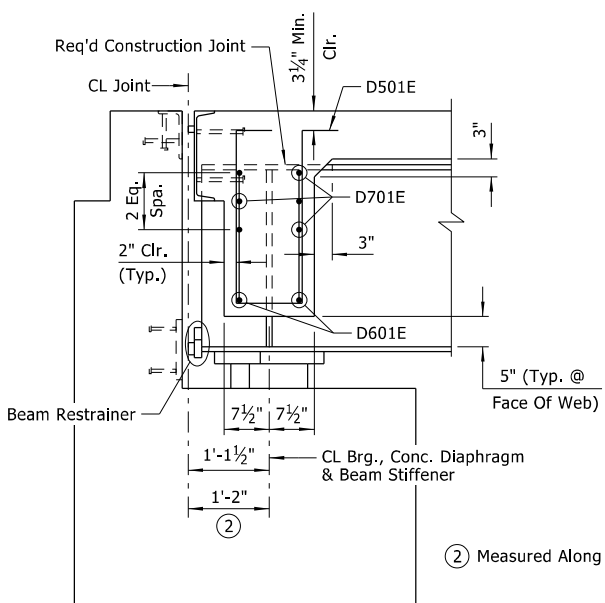
For Details of Poured Silicone Joint, see Std. Dwg. No. 55008.



SECTION C-C
 Scale: ¾" = 1'-0"

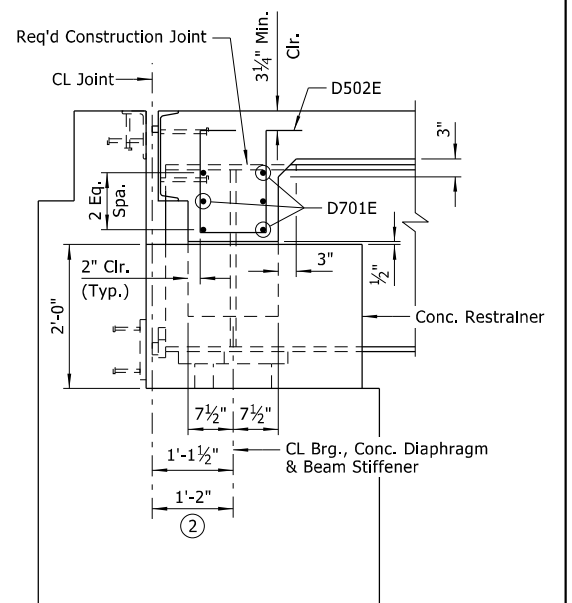
STUD DETAIL AT DIAPHRAGM
 No Scale

DETAILS OF ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT
 Scale: 1" = 1'-0"

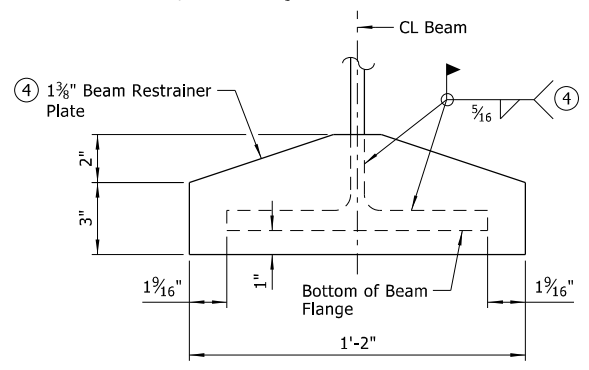


SECTION A-A
 Scale: ½" = 1'-0"

NOTE:
 "SECTION A-A" & "SECTION B-B" are taken normal to concrete diaphragm.



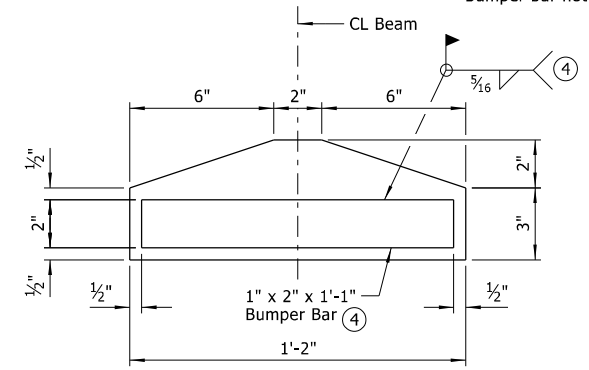
SECTION B-B
 Scale: ½" = 1'-0"



VIEW D-D
 No Scale

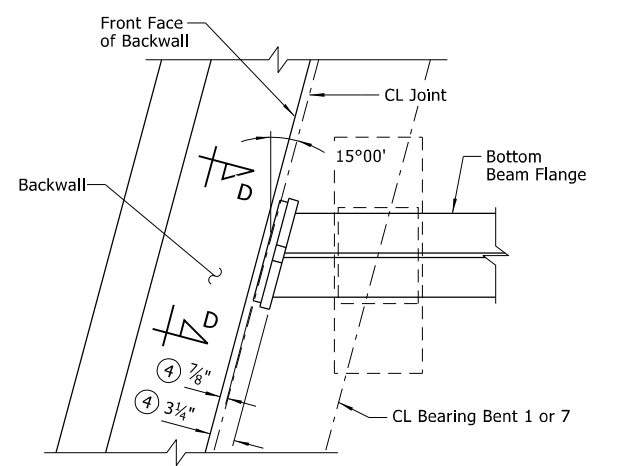
④ Thicknesses of Beam Restrainer Plate and Bumper Bar shown are based on theoretical gap of 3/4" between end of beam and face of backwall (7/8" between face of bumper bar as detailed and face of backwall at 60°F). Prior to installing the Beam Restrainer assembly, the actual gap shall be field measured and final plate dimensions submitted for review. In no case shall the actual plate thickness used in the assembly be less than ½".

NOTES:
 Beam restrainer plate shall be centered on each beam line.
 Bumper bar not shown in this view.



VIEW D-D
 No Scale

NOTE:
 Hidden lines of beam are not shown in this view.



PLAN OF BEAM RESTRAINER
 Scale: 1" = 1'-0"

LEGEND
 EF = Each Face



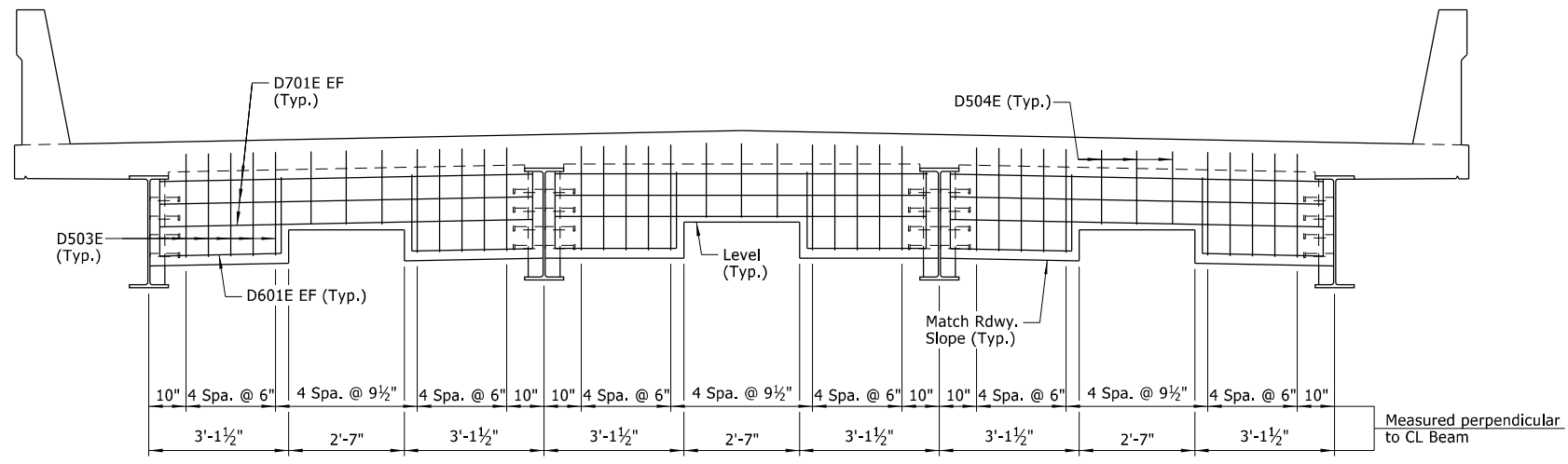
DIGITALLY SIGNED 5/8/2020
 BRIDGE ENGINEER

SHEET 2 OF 7
 DETAILS OF 300'-0" CONTINUOUS
 COMPOSITE W-BEAM UNIT
 ROUTE SEC.
 ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.

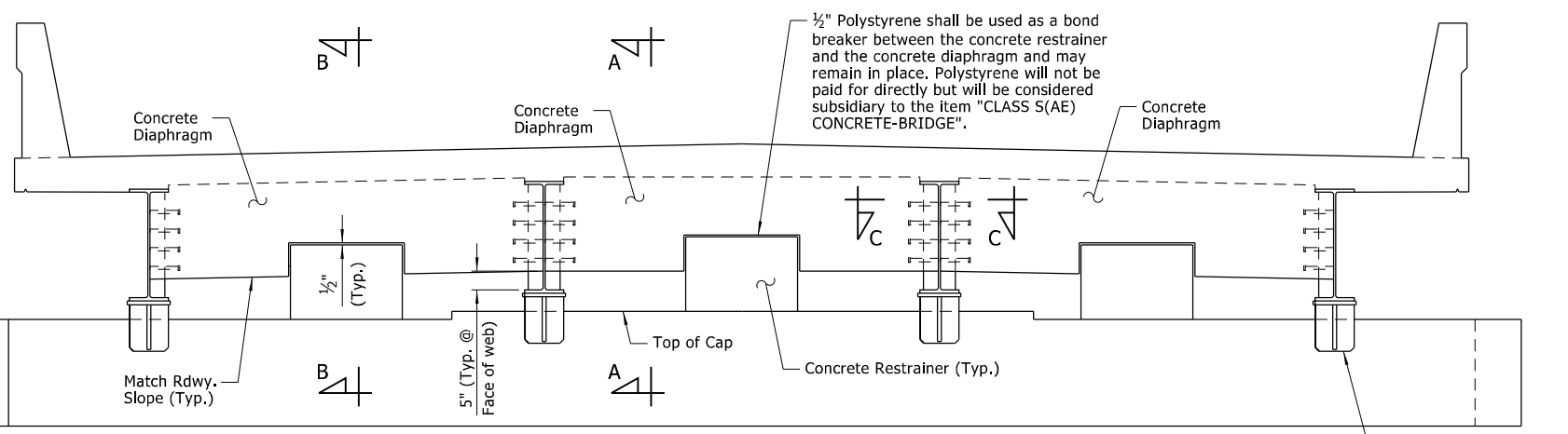
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 DESIGNED BY: PCC DATE: AUG. 2019
 BRIDGE NO. 07473 DRAWING NO. 61358

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 he.williams
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 REVISED DATE:

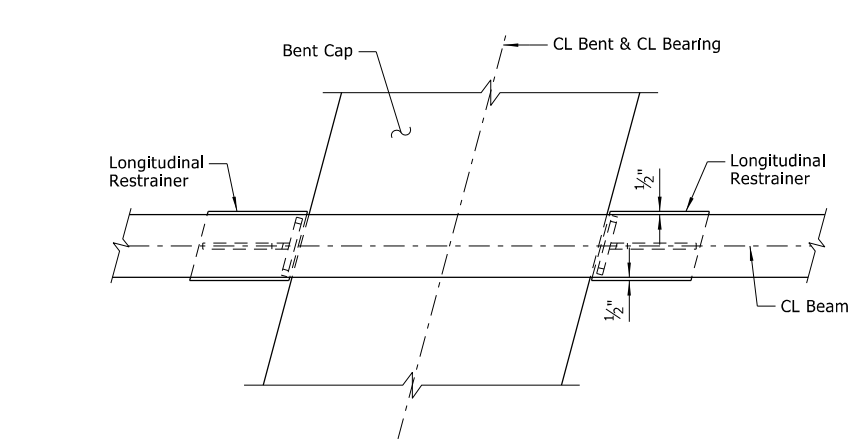
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				JOB NO.		100840	47	69
				07473		300'-0" W-BEAM UNIT		61359



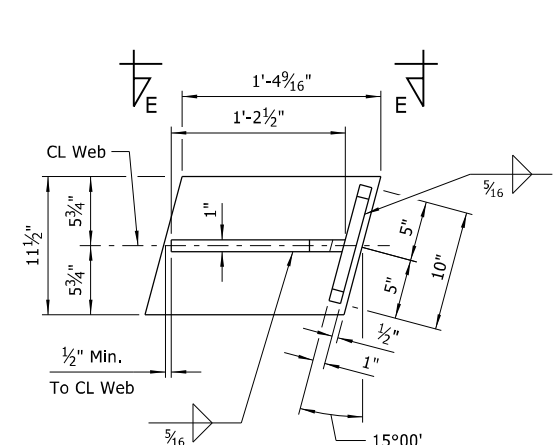
TYPICAL ROADWAY SECTION AT INTERMEDIATE BENTS
(Looking Ahead)
No Scale



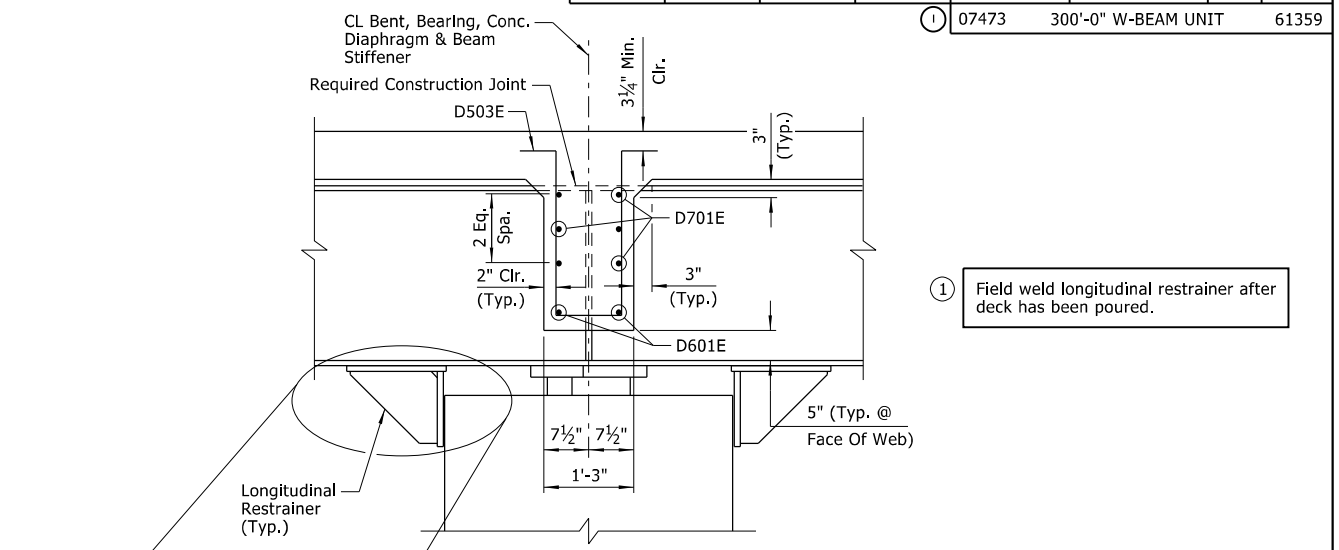
TYPICAL ROADWAY SECTION AT INTERMEDIATE BENTS SHOWING CONCRETE RESTRAINERS
(Looking Ahead)
No Scale



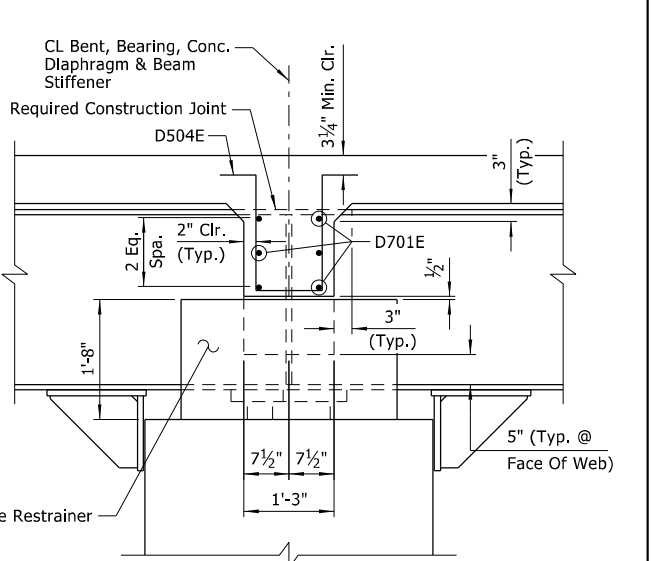
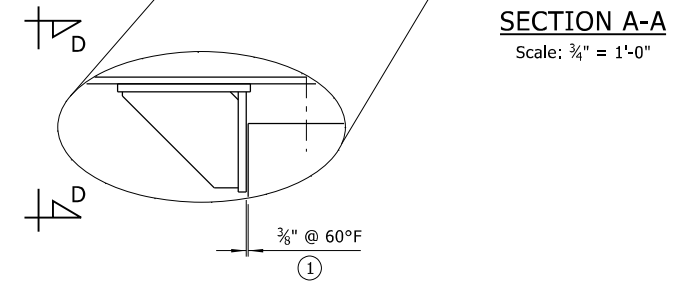
LONGITUDINAL RESTRAINER DETAILS
No Scale



LONGITUDINAL RESTRAINER DETAILS
(Plan View Looking Up)
Scale: 1 1/2" = 1'-0"



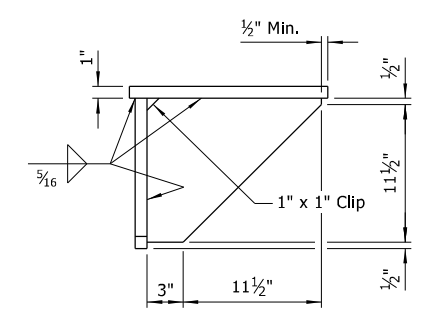
SECTION A-A
Scale: 3/4" = 1'-0"



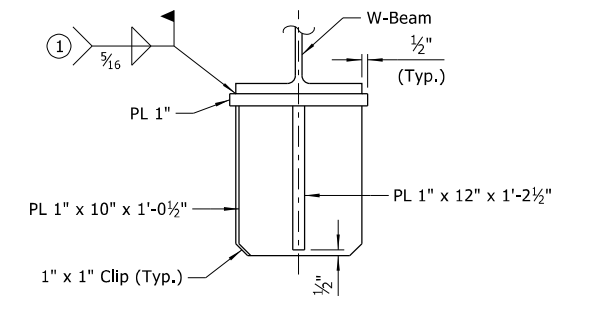
SECTION B-B
Scale: 3/4" = 1'-0"

NOTES:
"SECTION A-A" & "SECTION B-B" are taken normal to concrete diaphragm.
See Dwg. No. 61358 for "SECTION C-C" and "STUD DETAIL AT DIAPHRAGM".

LEGEND
EF = Each Face



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



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

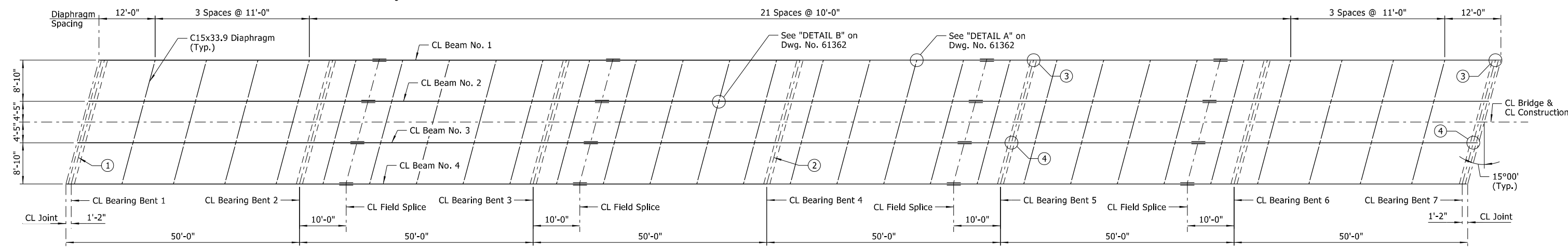


SHEET 3 OF 7
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: AUG. 2019 FILENAME: b100840_s3.dgn
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DESIGNED BY: PCC DATE: AUG. 2019
BRIDGE NO. **07473** DRAWING NO. **61359**

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he.williams
WORKSPACE: ARB001_Bridge
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REVISED DATE:

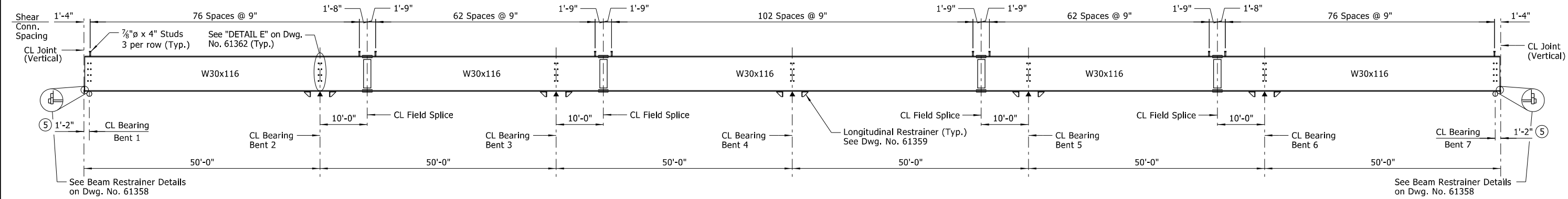
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				6	ARK.			
				JOB NO.		100840	48	69
				07473	300'-0" W-BEAM UNIT			61360

- ① CL Concrete Diaphragm - Typ. as shown at Bents 1 & 7. For details, see Dwg. No. 61358.
- ② CL Concrete Diaphragm - Typ. as shown at Bents 2 - 6. For details, see Dwg. No. 61359.
- ③ See "DETAIL C" and "DETAIL E" on Dwg. No. 61362 - Typ. at Bents 1-7
- ④ See "DETAIL D" and "DETAIL E" on Dwg. No. 61362 - Typ. at Bents 1-7

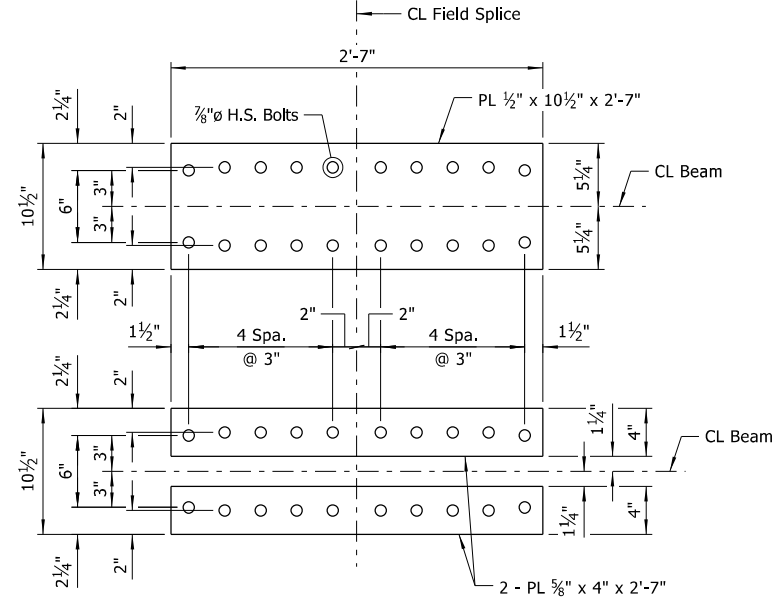
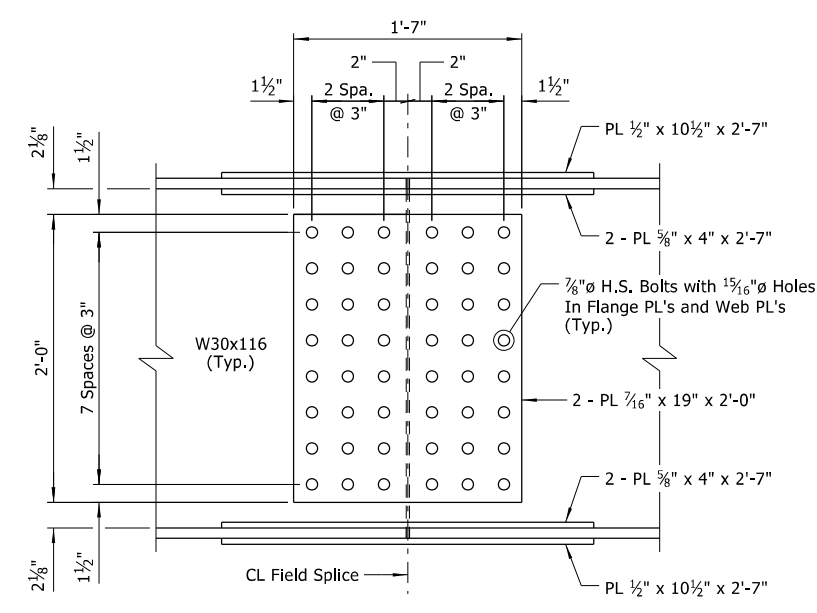


FRAMING PLAN
Scale: 3/32" = 1'-0"

⑤ Measured Along Beam

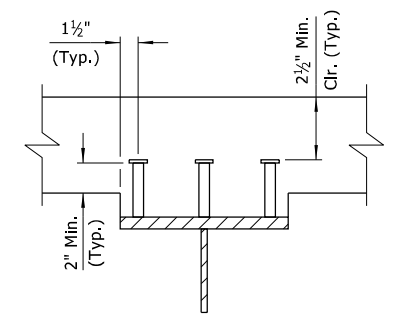


TYPICAL BEAM ELEVATION
No Scale



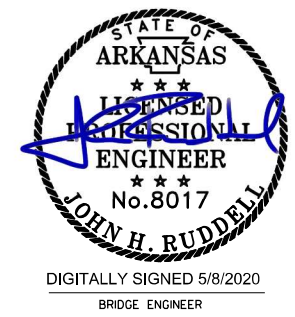
FIELD SPLICE DETAILS
Scale: 1/2" = 1'-0"

NOTES:
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)."
Bolted field splices may either be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.
For painting of girder ends, see "GENERAL NOTES" on Dwg. No. 61343.
For Standard General Notes and Details, see Std. Dwg. Nos. 55006.
For additional information, see "Layout".



SHEAR CONNECTOR DETAIL
No Scale

Stud shear connectors shown shall be 7/8" dia x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the flange in accordance with the recommendations of the Manufacturer.

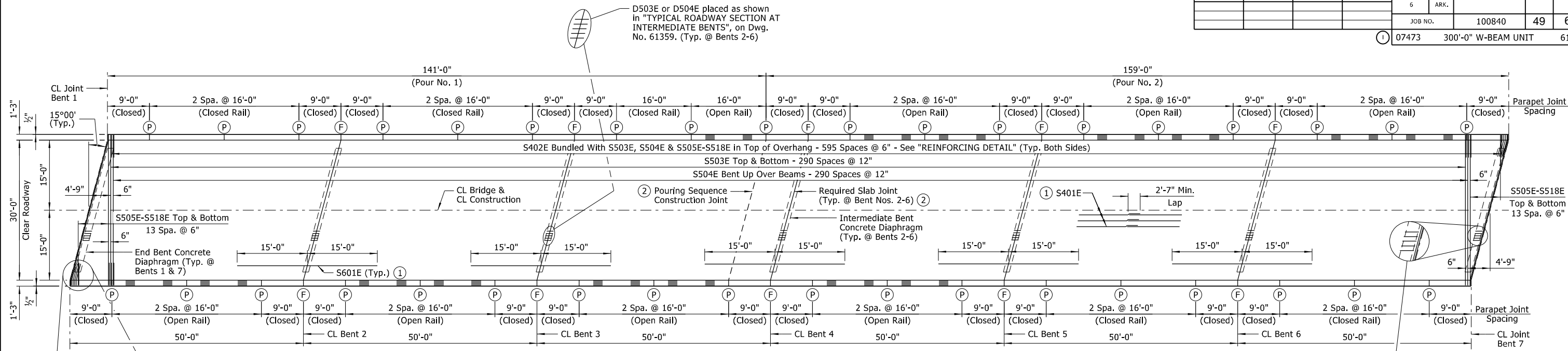


DIGITALLY SIGNED 5/8/2020
BRIDGE ENGINEER

SHEET 4 OF 7
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
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CHECKED BY: ABH DATE: OCT. 2019 SCALE: AS SHOWN
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BRIDGE NO. 07473 DRAWING NO. 61360

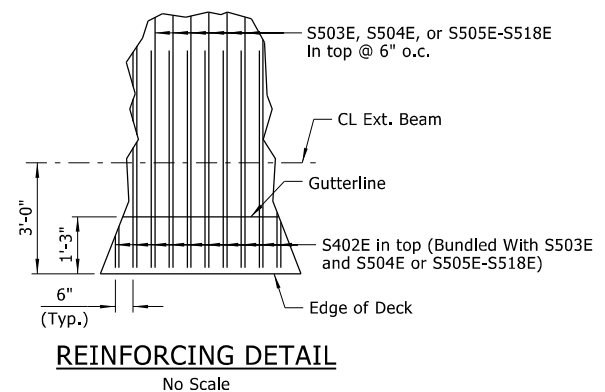
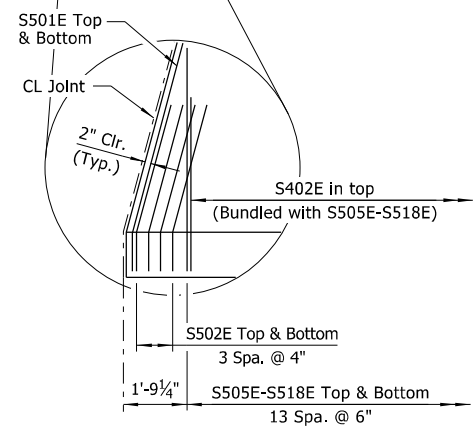
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				6	ARK.			
				JOB NO.		100840	49	69
				07473	300'-0" W-BEAM UNIT			61361



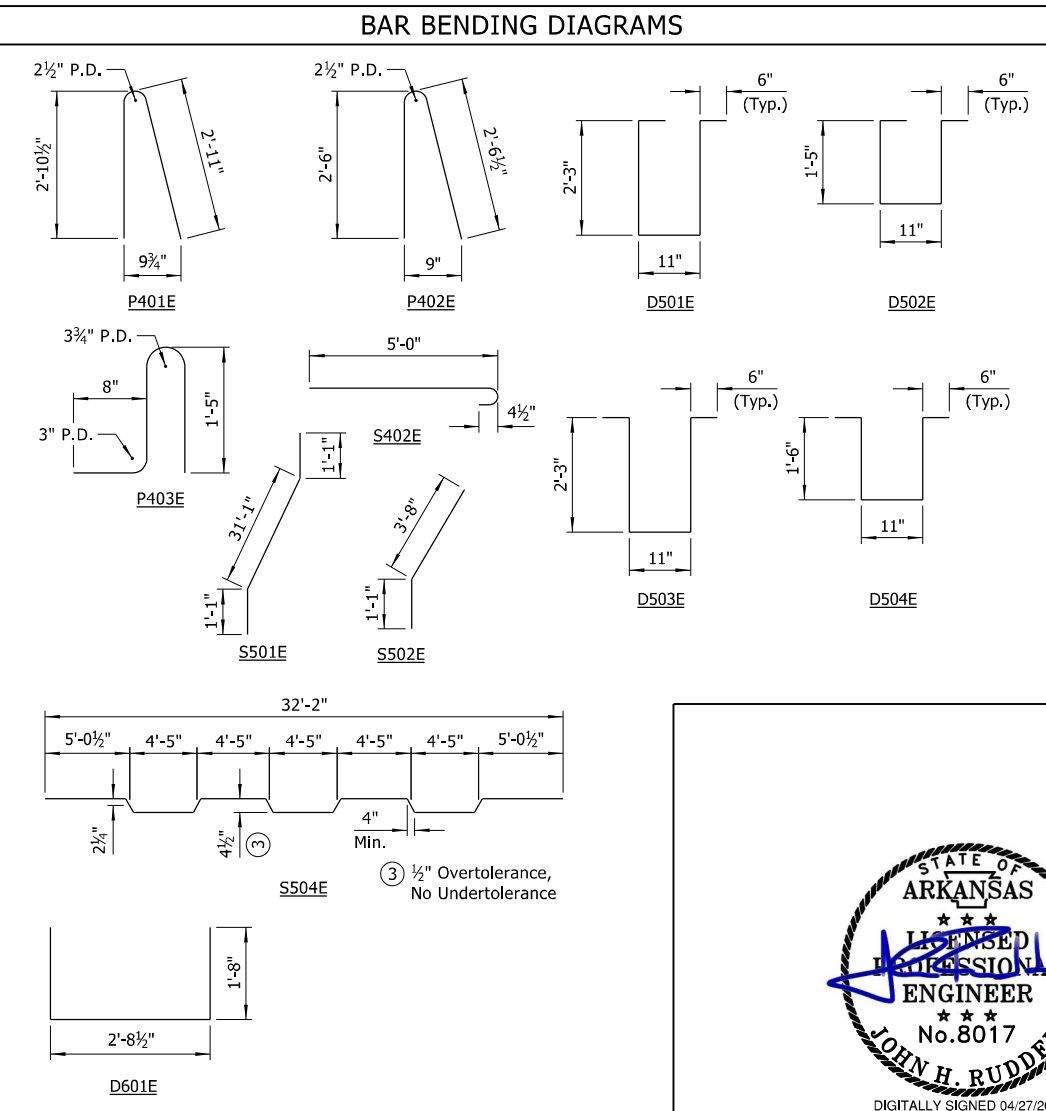
REINFORCING PLAN AND DECK POURING SEQUENCE
Scale: 3/32" = 1'-0"

D501E or D502E placed as shown in "ROADWAY SECTION NEAR JOINT" on Dwg. No. 61358 (Typ. @ Bents 1 & 7)



BAR LIST			
MARK	NO. REQ'D	LENGTH	P.D.
D501E	60	6'-0"	2 1/2"
D502E	18	4'-4"	2 1/2"
D503E	150	6'-0"	2 1/2"
D504E	45	4'-6"	2 1/2"
D601E	84	5'-8 1/2"	4 1/2"
D701E	126	8'-9"	Str.
P401E	1140	5'-11"	2 1/2"
P402E	120	5'-2"	2 1/2"
P403E	1140	3'-7"	3", 3 3/4"
P404E	144	5'-8"	Str.
P405E	192	8'-8"	Str.
P406E	192	15'-8"	Str.
S401E	760	40'-0"	Str.
S402E	1192	5'-6"	3"
S501E	4	33'-3"	3 3/4"
S502E	16	4'-9"	3 3/4"
S503E	582	32'-2"	Str.
S504E	291	32'-9 1/2"	3"
S505E	To	6'-9"	Str.
S518E	4 Ea.	To	Str.
S518E		31'-0"	
S601E	165	30'-0"	Str.

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



- ① Placed as shown in "TYPICAL ROADWAY SECTION" on Dwg. No. 61357.
- ② See "TRANSVERSE SLAB JOINT DETAIL" on Std. Dwg. No. 55007.
- Ⓣ CL Full-Depth Parapet Joint (1/4"-1" max.) Stop 4" from top of slab.
- Ⓟ CL Partial-Depth Parapet Joint (1/4"-1" max.) Stop 1'-4" from top of slab.

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.

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

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

No deviations from the pouring sequence shown will be allowed.

A minimum of 48 hours shall elapse between the end bent and intermediate bent diaphragm pours and the deck slab pours.

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

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

Unless noted otherwise, spacing shown for all transverse reinforcing is measured along CL Bridge.

For parapet reinforcing details, see Dwg. No. 61363.



SHEET 5 OF 7
DETAILS OF 300'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSW DATE: JUN. 2019 FILENAME: b100840_s5.dgn
CHECKED BY: ABH DATE: OCT. 2019 SCALE: AS SHOWN
DESIGNED BY: JJB DATE: MAY 2019
BRIDGE NO. 07473 DRAWING NO. 61361

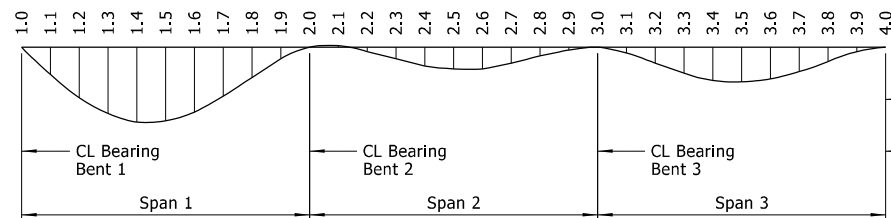
4/24/2020 3:54:52 PM
 WORKSPACE: ARDOT_Bridge
 L:\2017\101596 - 100840 Ditch Nos L47 \$Trs.Apprs.Dwg\Drawings\100840_S407_SB.dgn
 REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		100840	50	69
				07473	300'-0" W-BEAM UNIT			61362

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point Of Deflection	Structural Steel	Structural Steel & Slab	Structural Steel & Slab & Parapet
1	1.0	0.000	0.000	0.000
	1.1	0.022	0.179	0.192
	1.2	0.040	0.330	0.356
	1.3	0.053	0.438	0.472
	1.4	0.060	0.491	0.529
	1.5	0.059	0.485	0.523
	1.6	0.052	0.426	0.459
	1.7	0.039	0.323	0.348
	1.8	0.024	0.199	0.214
	1.9	0.010	0.080	0.086
2	2.0	0.000	0.000	0.000
	2.1	-0.001	-0.011	-0.012
	2.2	0.003	0.025	0.027
	2.3	0.009	0.077	0.083
	2.4	0.015	0.121	0.131
	2.5	0.017	0.143	0.154
	2.6	0.017	0.138	0.149
	2.7	0.013	0.106	0.114
	2.8	0.007	0.059	0.063
	2.9	0.002	0.015	0.016
3	3.0	0.000	0.000	0.000
	3.1	0.005	0.038	0.041
	3.2	0.013	0.104	0.112
	3.3	0.021	0.170	0.183
	3.4	0.026	0.216	0.233
	3.5	0.028	0.231	0.249
	3.6	0.026	0.211	0.228
	3.7	0.019	0.160	0.173
	3.8	0.011	0.092	0.099
	3.9	0.004	0.030	0.032
4.0	0.000	0.000	0.000	

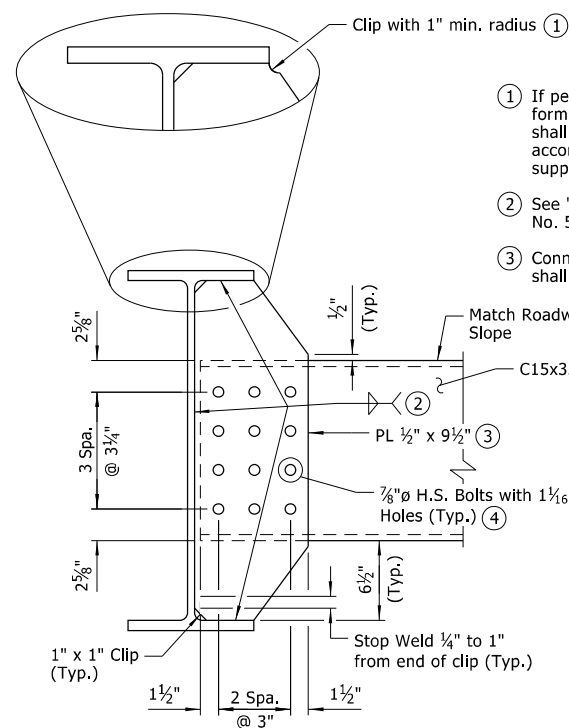
This table is symmetric about CL Unit.



DEAD LOAD DEFLECTION DIAGRAM

No Scale

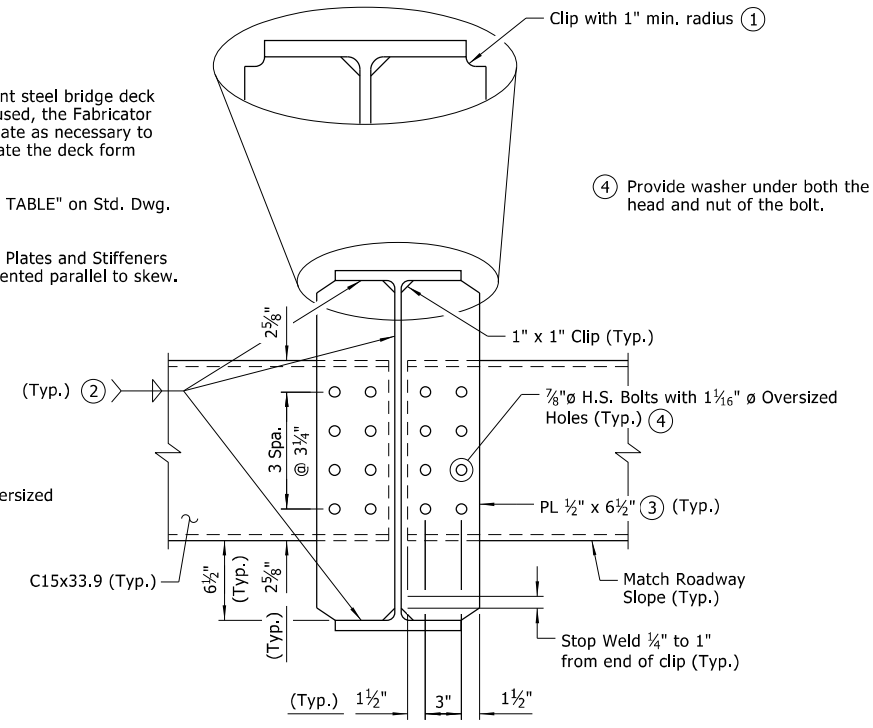
Camber for Dead Load Deflection plus +/- 1/4" tolerance. Deflections shown are along CL Beam from a chord from CL Bearing to CL Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections not included. Superelevation transition corrections not included.



DETAIL A

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

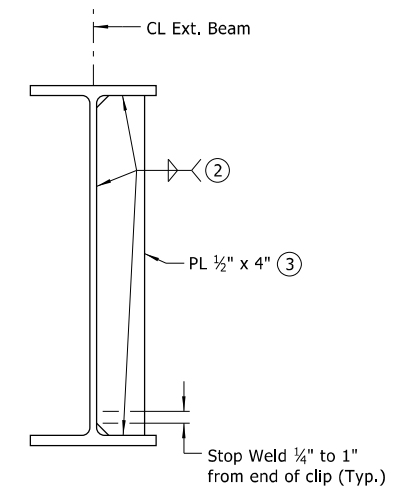
- ① If permanent steel bridge deck forms are used, the Fabricator shall clip plate as necessary to accommodate the deck form supports.
- ② See "WELD TABLE" on Std. Dwg. No. 55007.
- ③ Connection Plates and Stiffeners shall be oriented parallel to skew.



DETAIL B

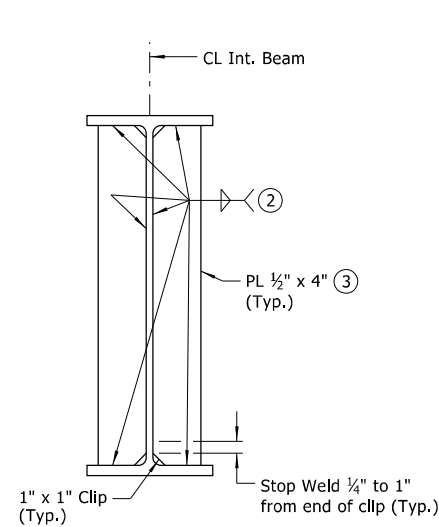
Scale: 1 1/2" = 1'-0"

- ④ Provide washer under both the head and nut of the bolt.



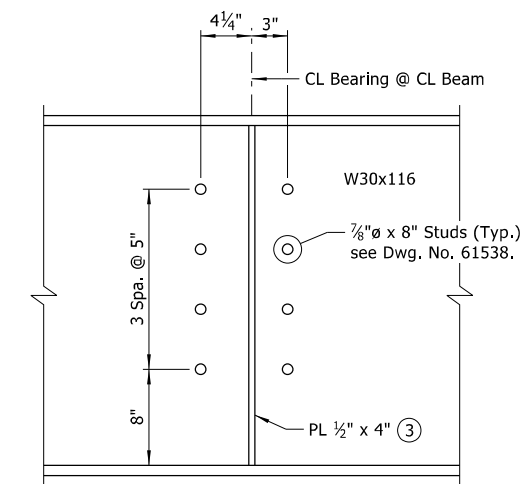
DETAIL C

(Ext. Beam Stiffener @ Bents 1-7)
Scale: 1 1/2" = 1'-0"



DETAIL D

(Int. Beam Stiffeners @ Bents 1-7)
Scale: 1 1/2" = 1'-0"

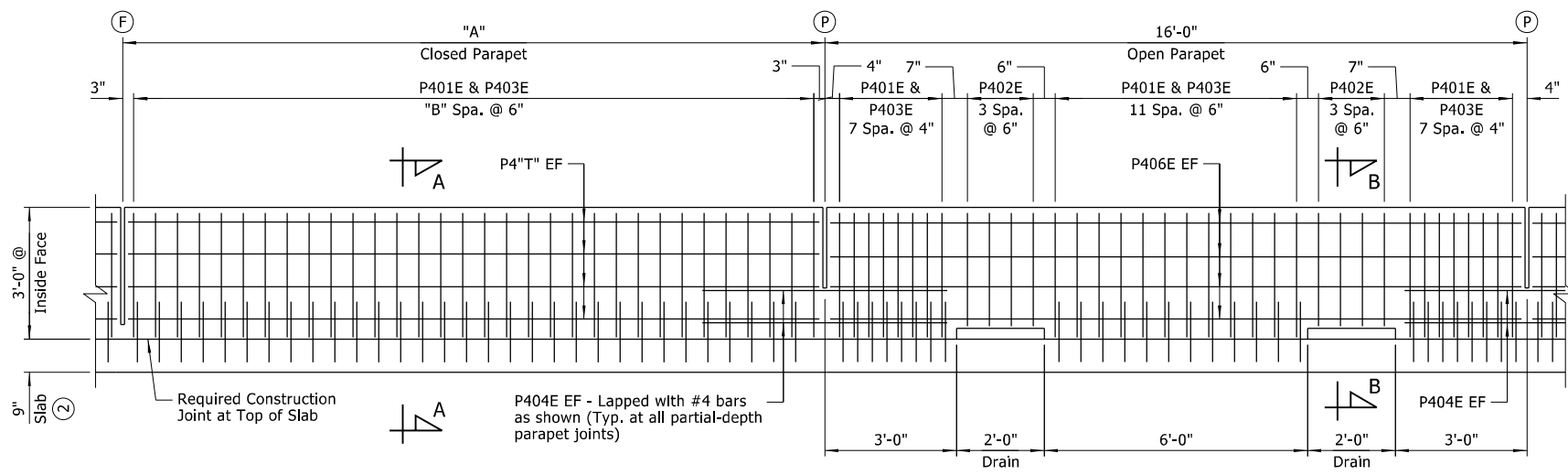


DETAIL E

(Beam Elevation @ Bents 1-7)
Scale: 1 1/2" = 1'-0"



SHEET 6 OF 7
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
 ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: CSW DATE: JUN. 2019 FILENAME: b100840_s6.dgn
 CHECKED BY: ABH DATE: OCT. 2019 SCALE: AS SHOWN
 DESIGNED BY: RHE DATE: JUN. 2019
 BRIDGE NO. 07473 DRAWING NO. 61362



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

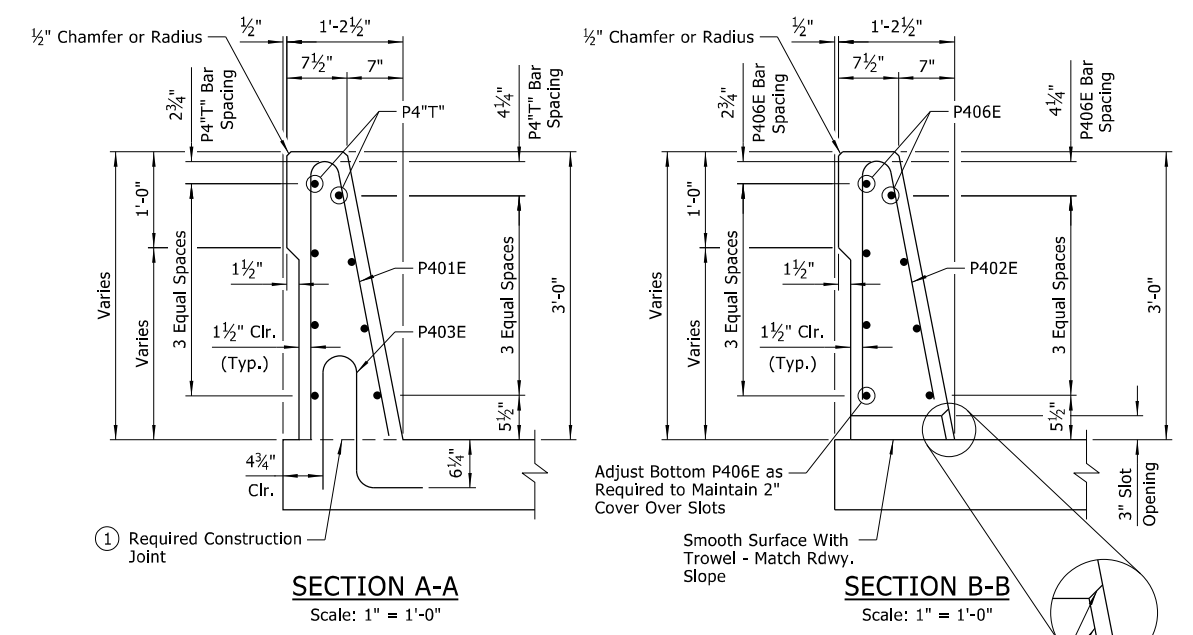
"A" CLOSED PARAPET	"B"	"T"
9'-0"	17	05E
16'-0"	31	06E

LEGEND
EF = Each Face

- (F) CL Full-Depth Parapet Joint (1/4"-1" max.) Stop 4" from Top of Slab.
- (P) CL Partial-Depth Parapet Joint (1/4"-1" max.) Stop 1'-4" from Top of Slab.

NOTE:
For locations of full-depth and partial-depth parapet joints, see "REINFORCING PLAN AND DECK POURING SEQUENCE" on Dwg. No. 61361.

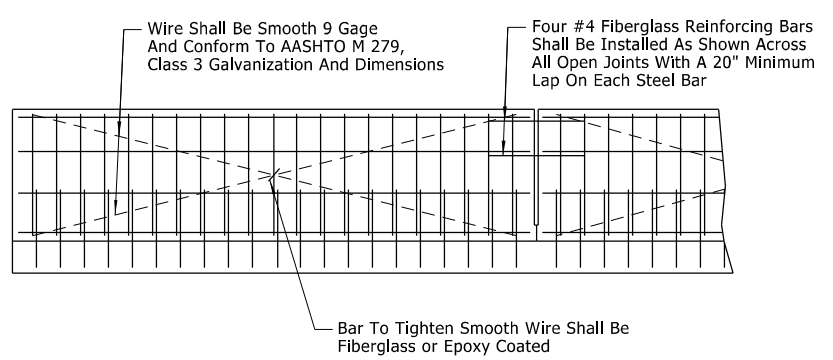
NOTE:
For locations of Open and Closed Parapet panels, see Dwg. No. 61361.



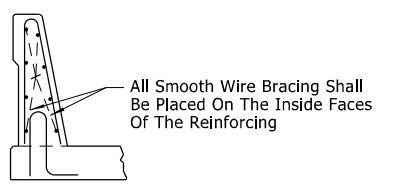
SECTION A-A
Scale: 1" = 1'-0"

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

- (1) Level Construction Joint on High Side of Deck. Match Roadway Slope on Low Side of Deck.

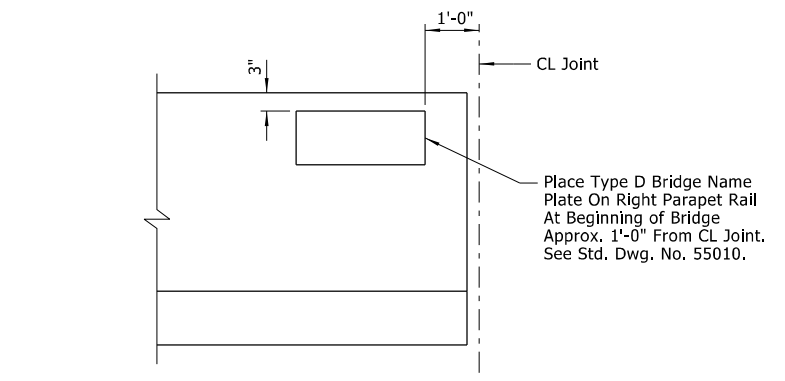


DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
No Scale



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

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



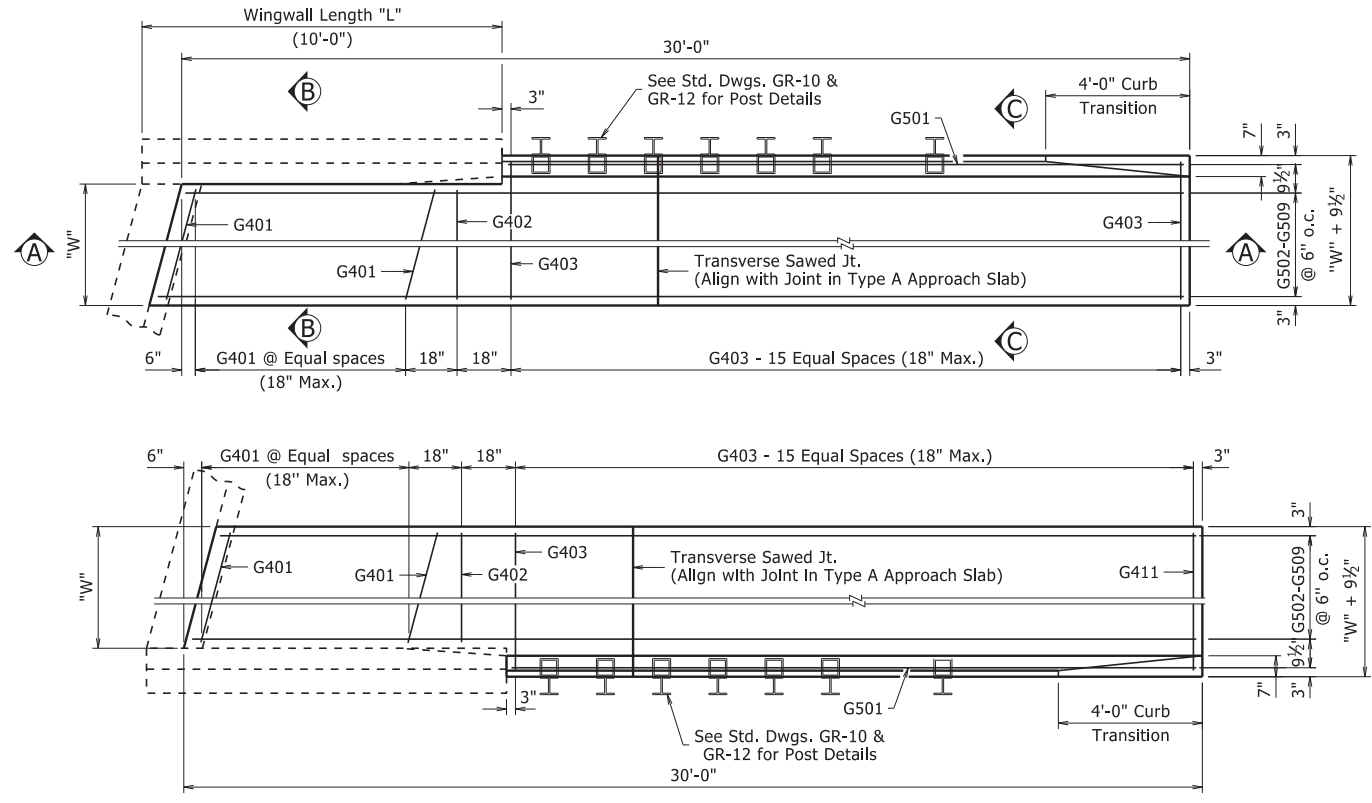
VIEW SHOWING LOCATION OF NAME PLATE
(Showing Inside Face Of Parapet)
No Scale



SHEET 7 OF 7
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: CSW DATE: JUN. 2019 FILENAME: b100840_s7.dgn
CHECKED BY: ABH DATE: OCT. 2019 SCALE: AS SHOWN
DESIGNED BY: CSW DATE: JUN. 2019
BRIDGE NO. 07473 DRAWING NO. 61363

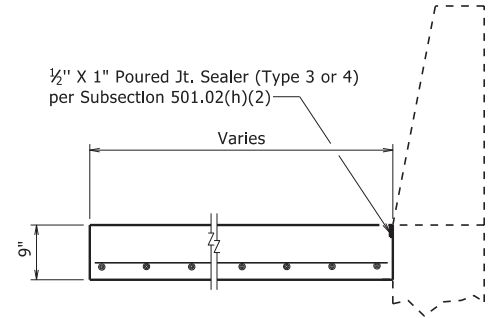
4/24/2020 3:54:53 PM
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 L:\2017\1701596 - 100840 Ditch Nos L47 \$Trs.Apprs.Drawings\100840_S409_MD.dgn
 REVISED DATE:

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	100840	52	69	
				07473 - APPR. GUTTER - 61364				



PLAN OF APPROACH GUTTERS

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



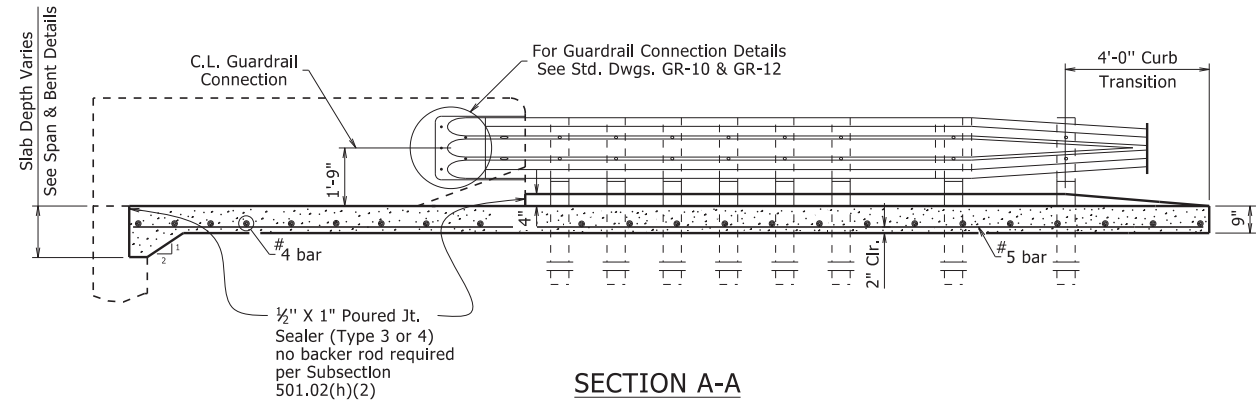
SECTION B-B
N.T.S.

BAR LIST FOR ONE TYPE SPECIAL APPROACH GUTTER

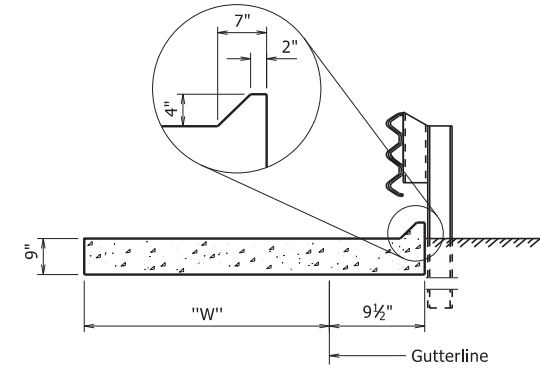
MARK	NO. REQ'D	LENGTH	P.D.
G401	4	3'-9"	Str.
G402	1	3'-8"	Str.
G403	15	4'-5"	Str.
G501	1	20'-8"	Str.
G502	1 EA	29'-7"	Str.
G509		28'-8"	Str.

QUANTITIES FOR ONE TYPE SPECIAL APPROACH GUTTER
(FOR INFORMATION ONLY)

"W"	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
Width (ft.)		
4	321	4.00



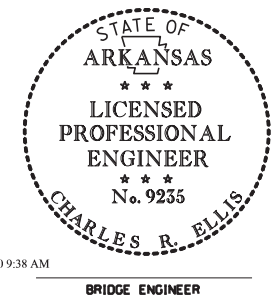
SECTION A-A



SECTION C-C
N.T.S.

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports.
Approach Gutters will be measured and paid for in accordance with Section 504.

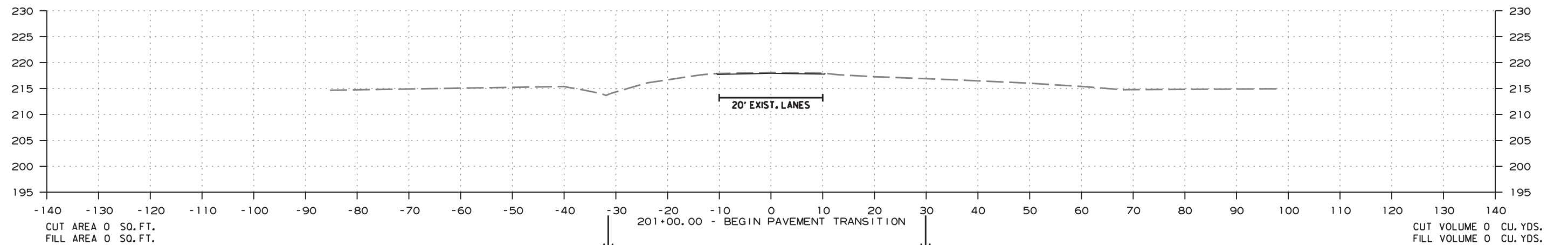
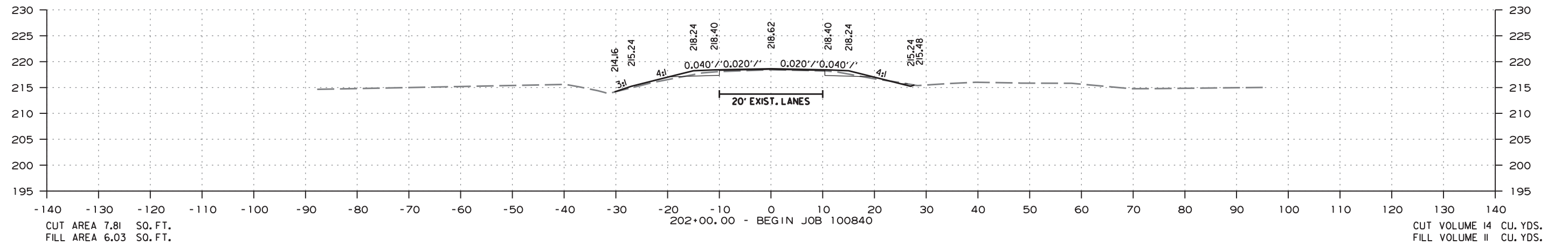
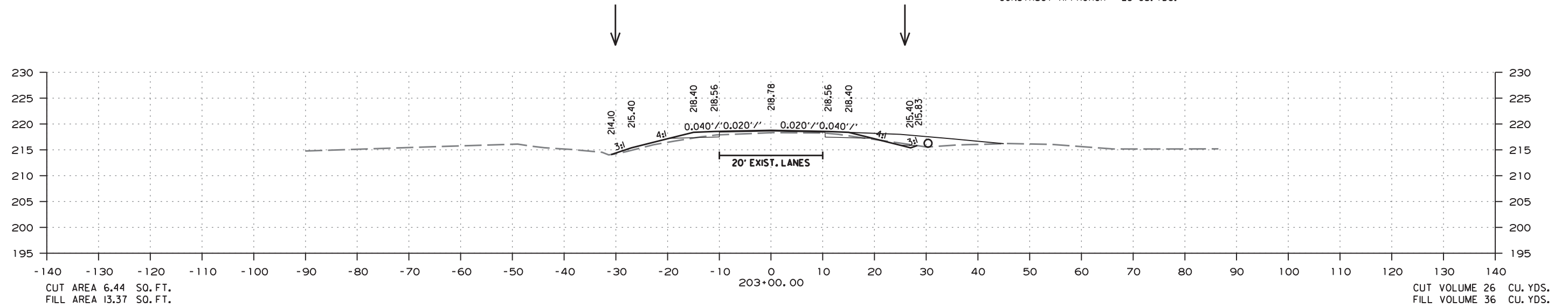


DETAILS OF TYPE SPECIAL APPROACH GUTTER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.
DRAWN BY: MCB DATE: 05/08/2020 FILENAME: b100840_ag.dgn
CHECKED BY: SWP DATE: 05/08/2020 SCALE: No Scale
DESIGNED BY: STD DATE:
BRIDGE NO. 07473 DRAWING NO. 61364

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.						100840	53	69

② CROSS SECTIONS

STA. 203+00 - INSTALL
18" x 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YDS.



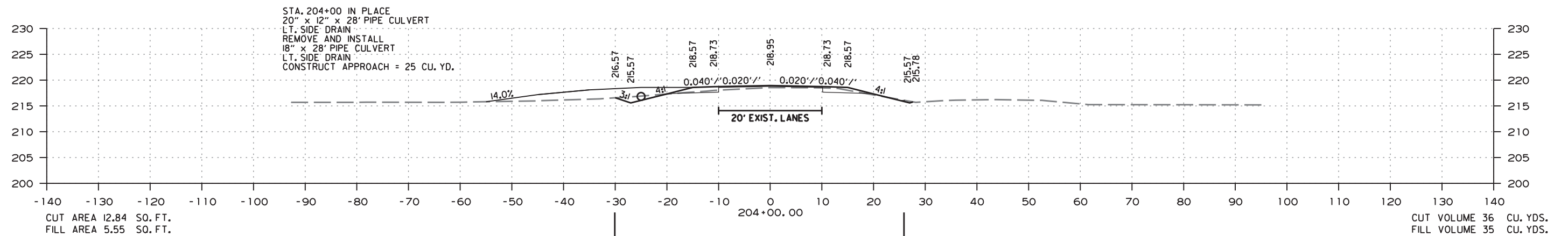
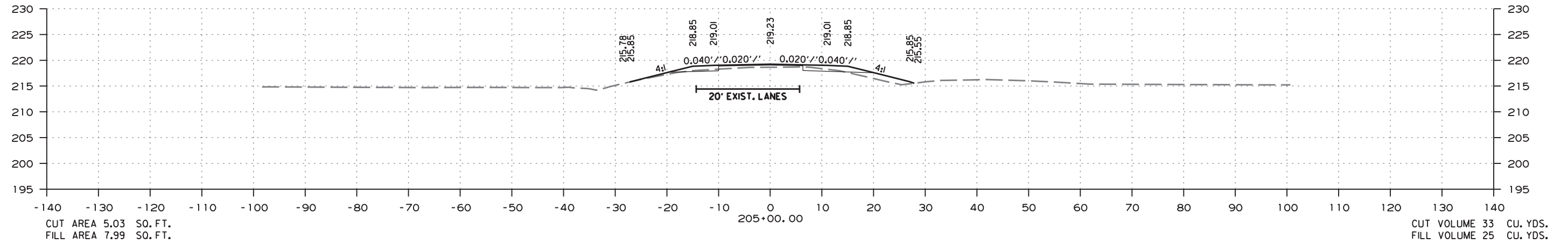
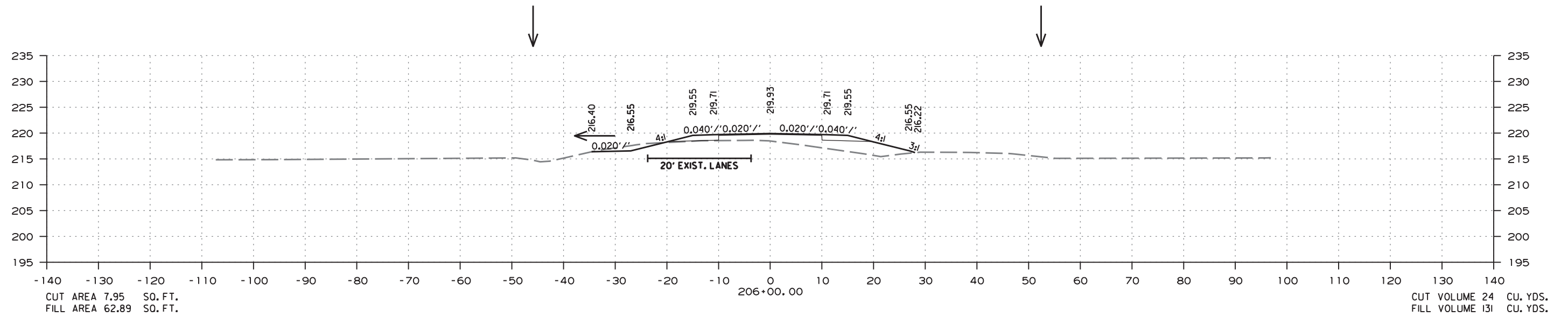
STA. 201+00.00 TO STA. 203+00.00

5/20/2020

RI00840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	54	69

② CROSS SECTIONS

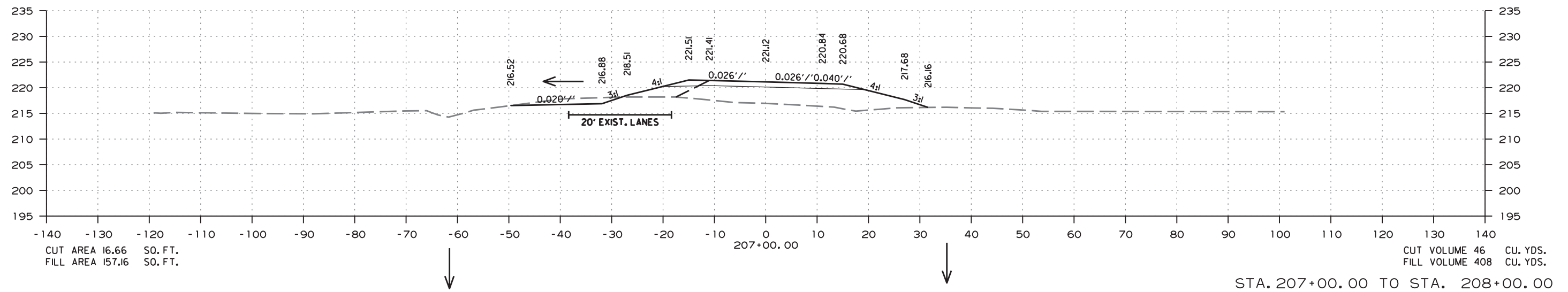
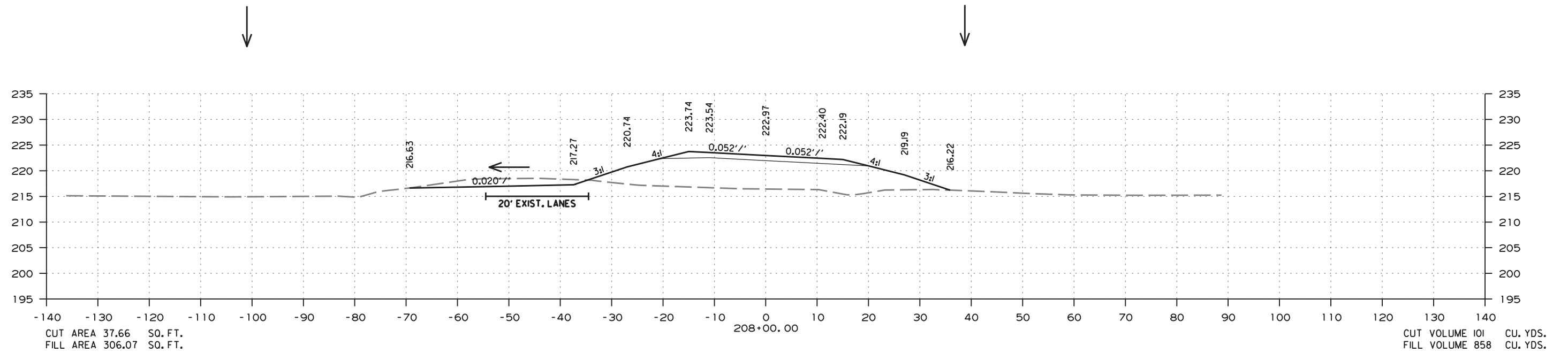


STA. 204+00 IN PLACE
20" x 12" x 28' PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH = 25 CU. YD.

STA. 204+00.00 TO STA. 206+00.00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						100840	55	69

② CROSS SECTIONS

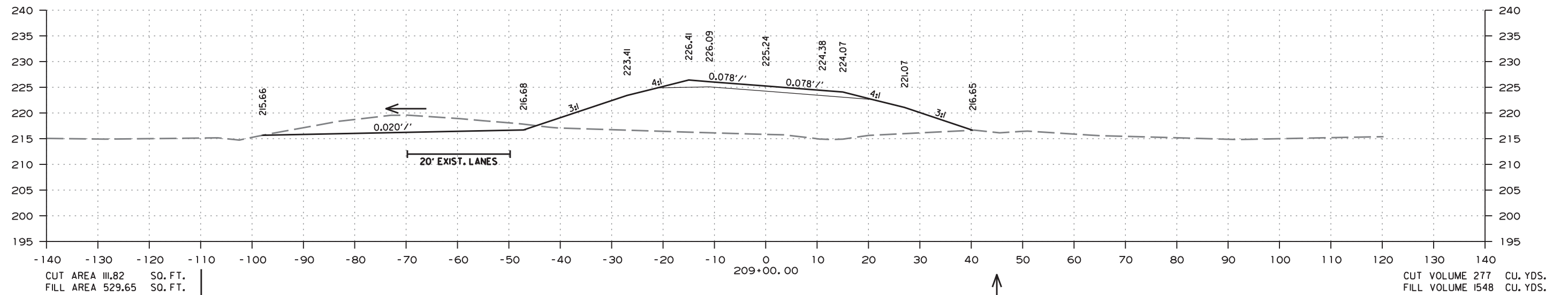
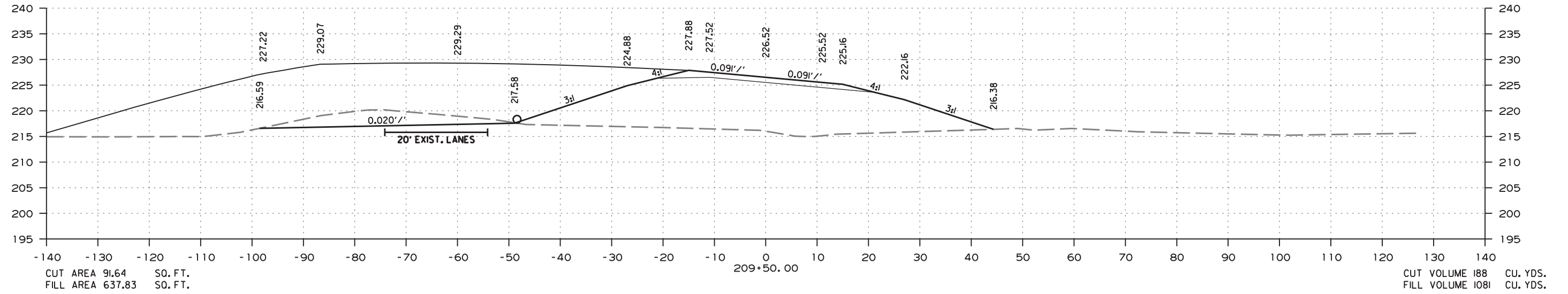


5/20/2020
R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	56	69

② CROSS SECTIONS

↓
 STA. 209+50 CONSTRUCT
 18" x 100' PIPE CULVERT
 LT SIDE DRAIN
 CONSTRUCT APPROACH = 795 CU. YD.
 -4.43% DRIVEWAY GRADE



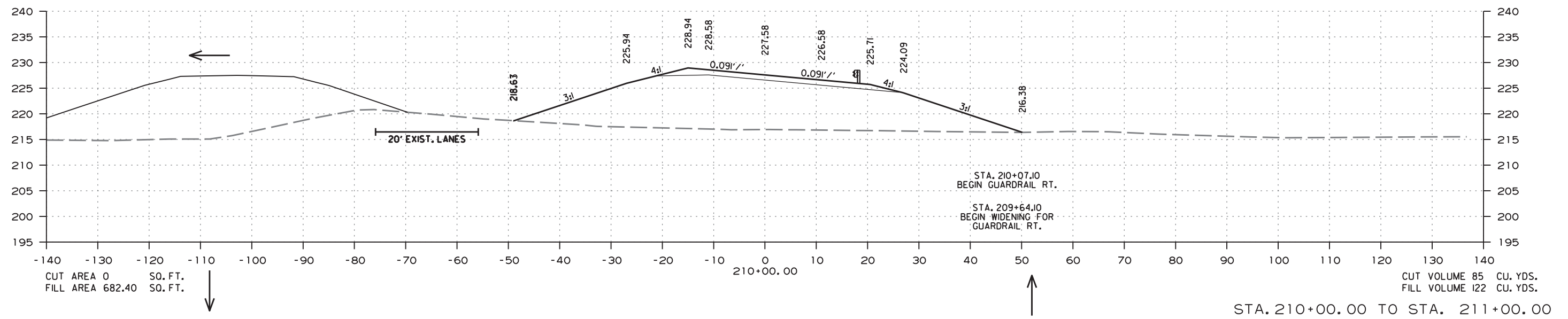
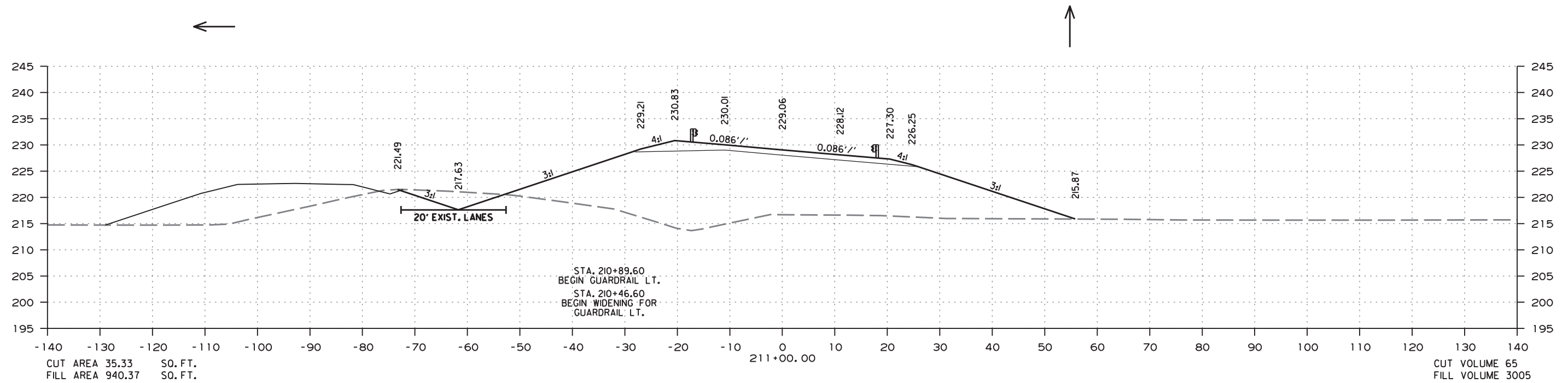
STA. 209+00.00 TO STA. 209+50.00

5/20/2020

R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						100840	57	69

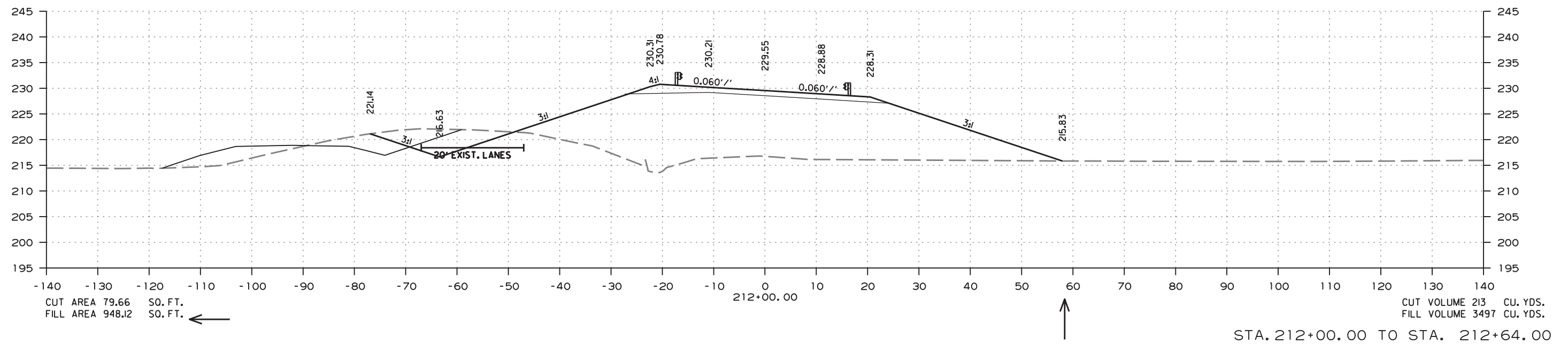
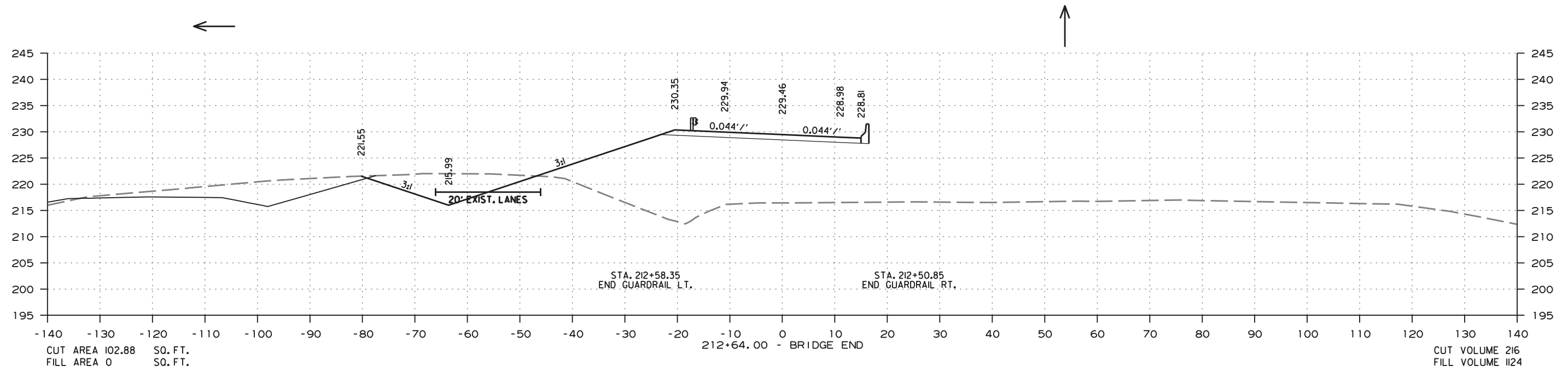
② CROSS SECTIONS



5/20/2020
R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	58	69

② CROSS SECTIONS

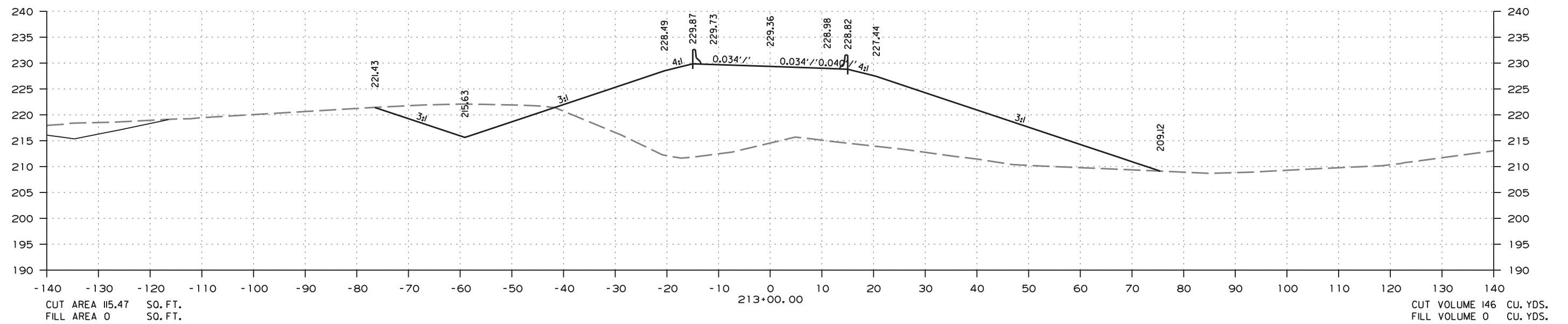
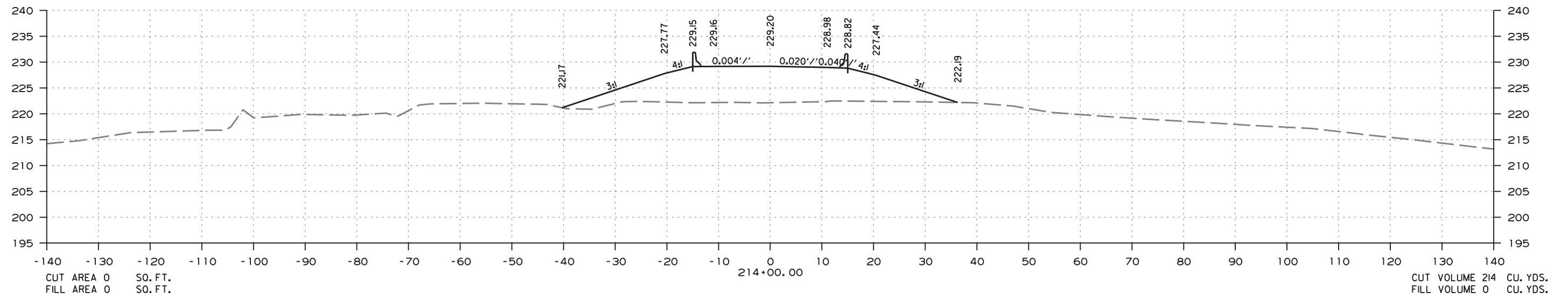


5/20/2020

R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	59	69

② CROSS SECTIONS



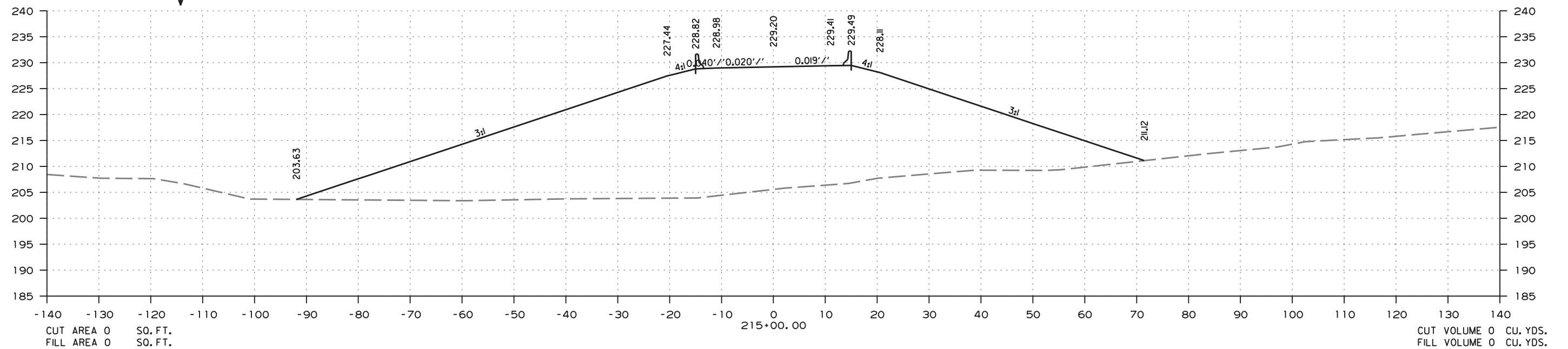
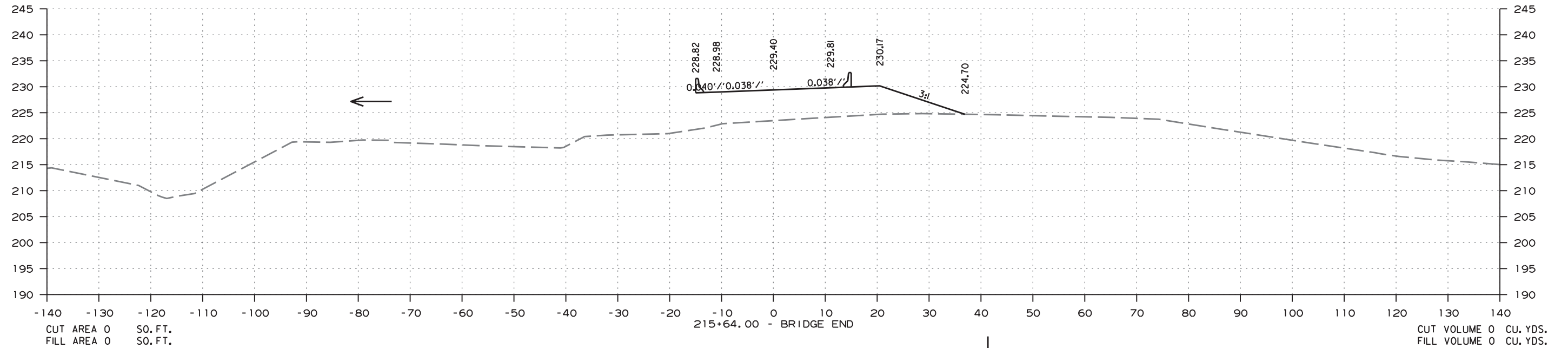
STA. 213+00.00 TO STA. 214+00.00

5/20/2020

R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	60	69

② CROSS SECTIONS



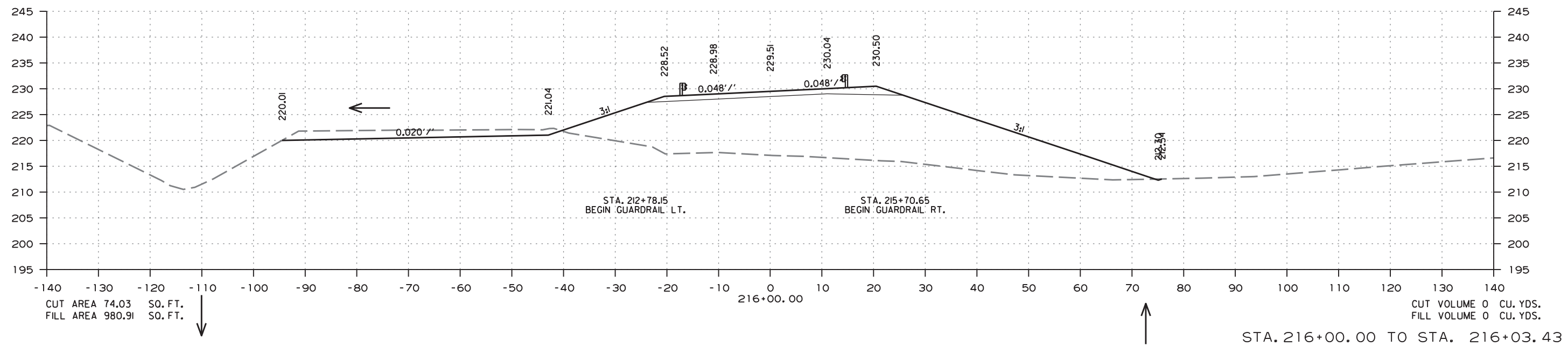
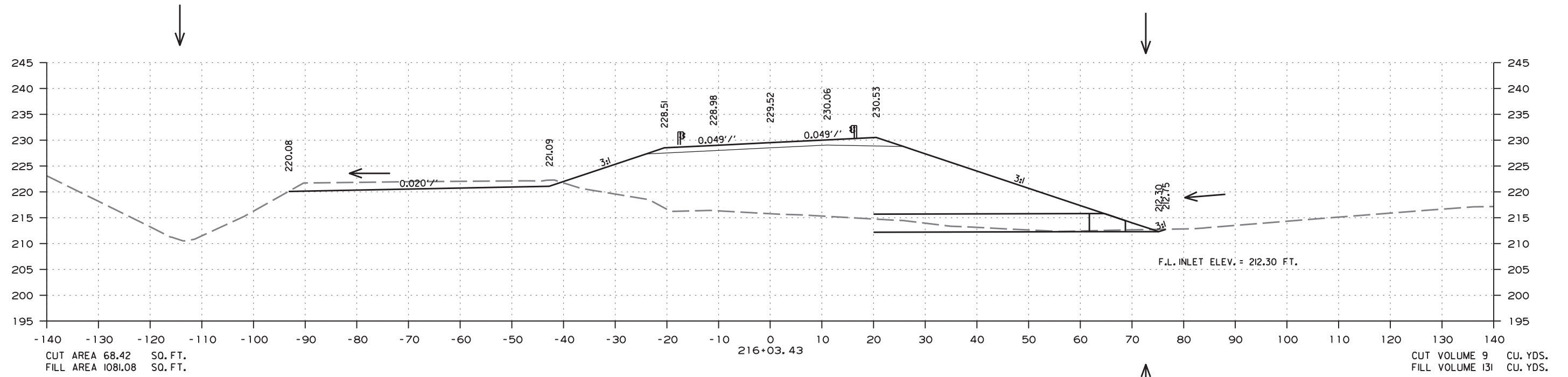
STA. 215+00.00 TO STA. 215+64.00

5/20/2020

RI00840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	61	69

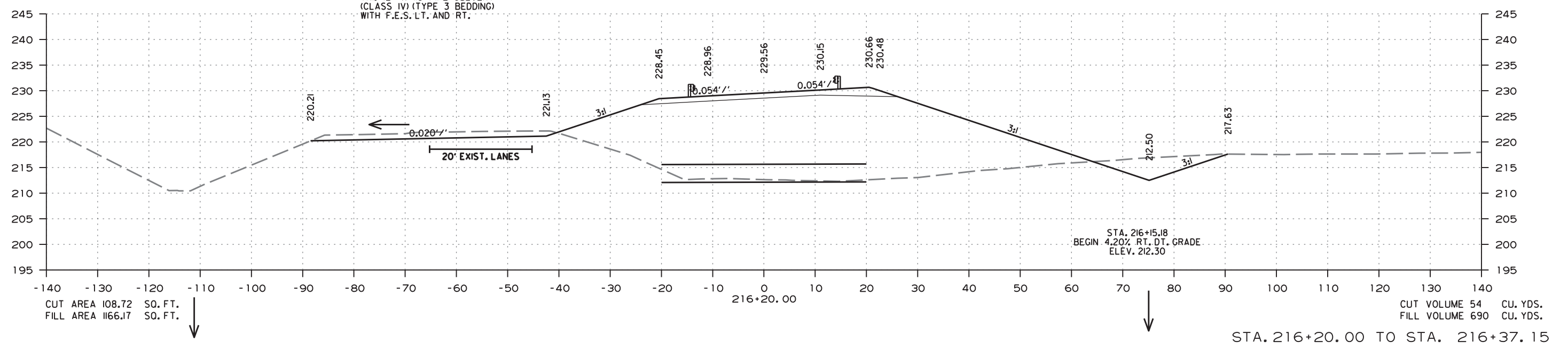
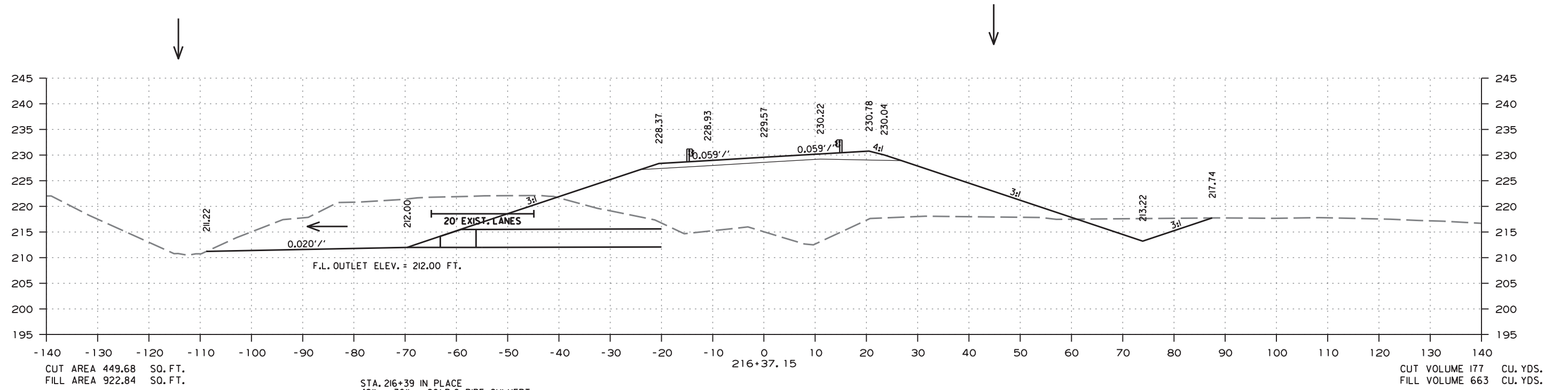
② CROSS SECTIONS



5/20/2020
R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	62	69

2 CROSS SECTIONS

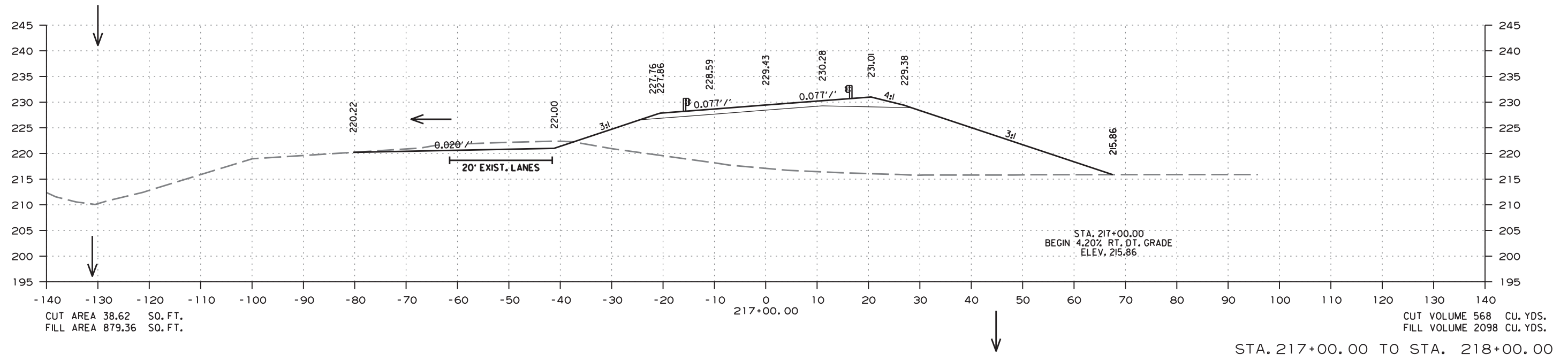
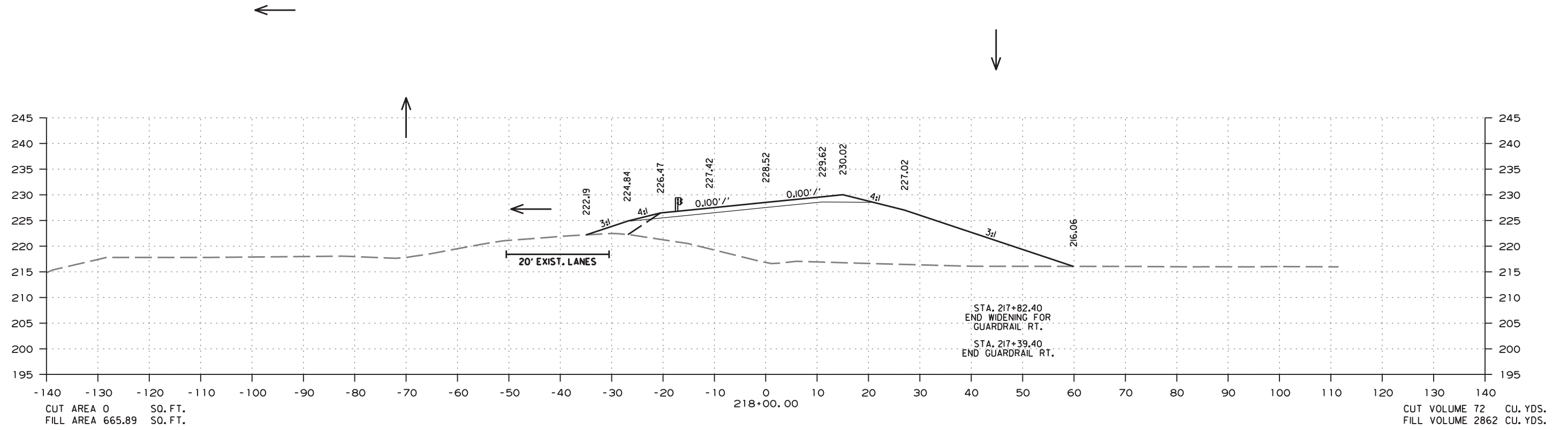


5/20/2020
R100840.DGN

STA. 216+20.00 TO STA. 216+37.15

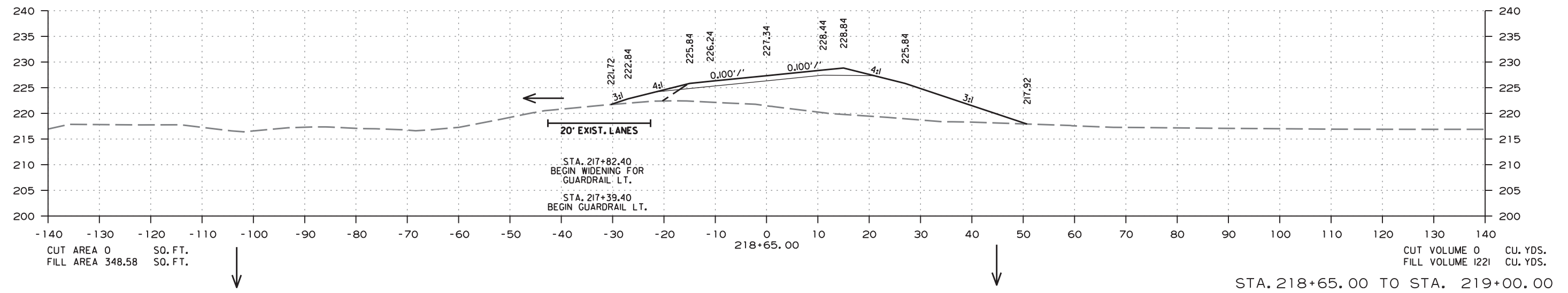
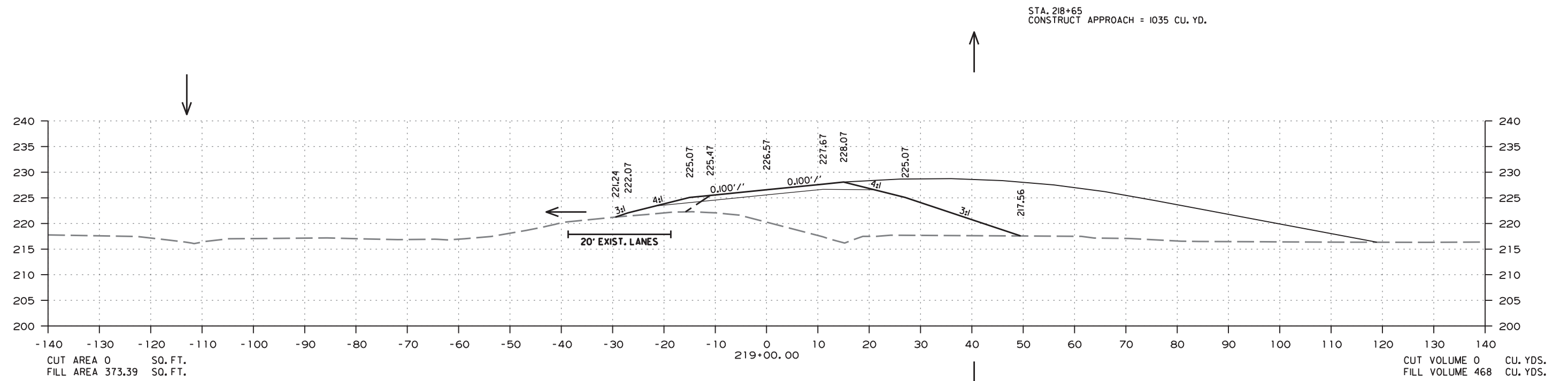
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	63	69

② CROSS SECTIONS



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. 100840	64	69

② CROSS SECTIONS

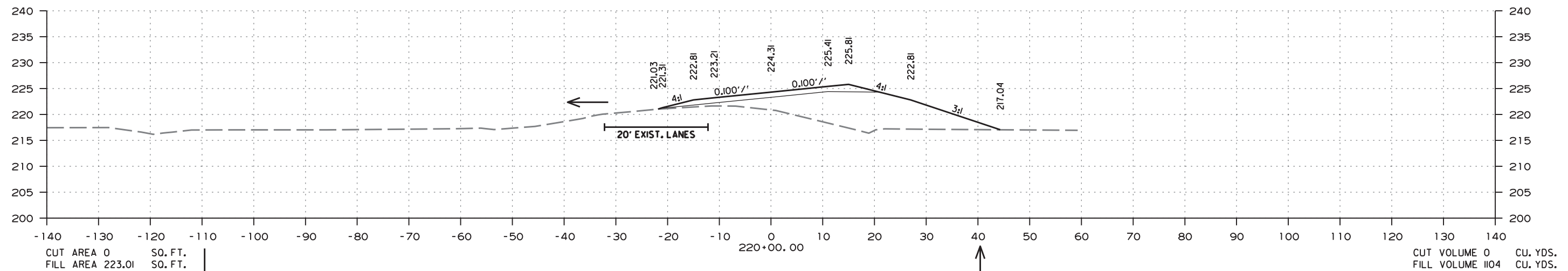
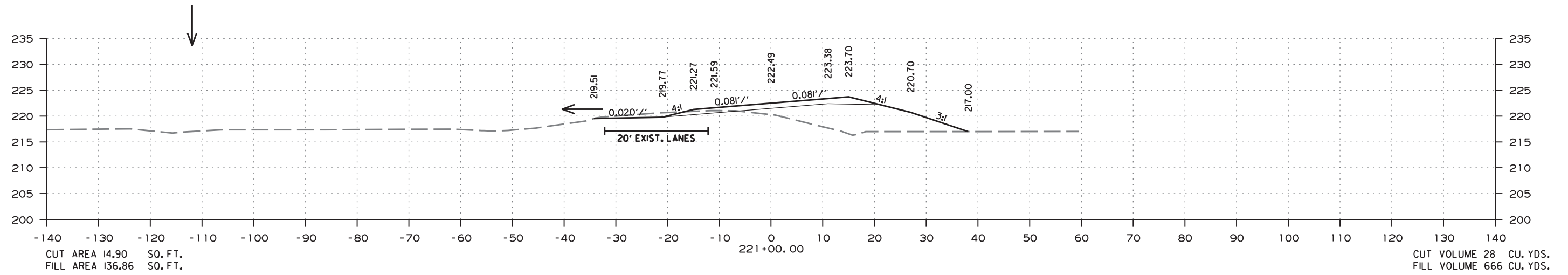
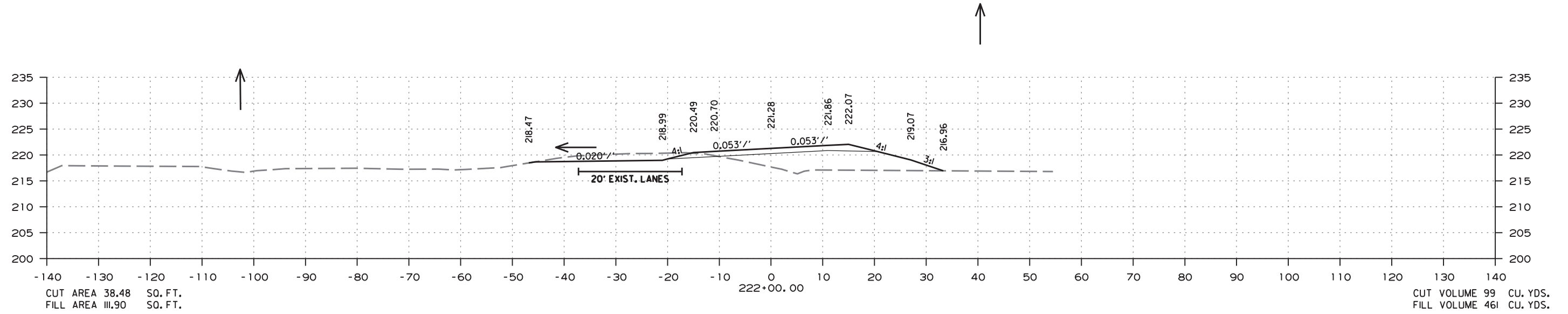


5/20/2020

RI00840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO. 100840	65	69

② CROSS SECTIONS



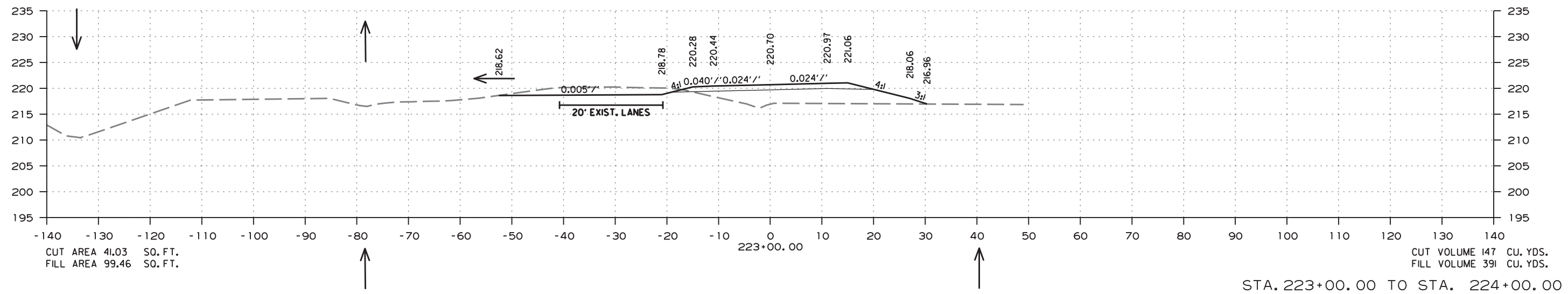
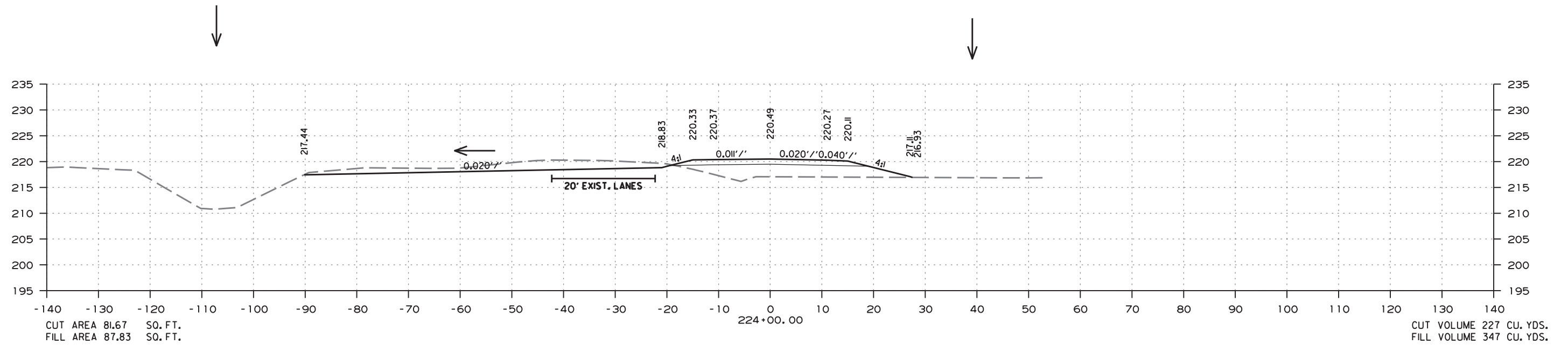
STA. 220+00.00 TO STA. 222+00.00

5/20/2020

R100840.DGN

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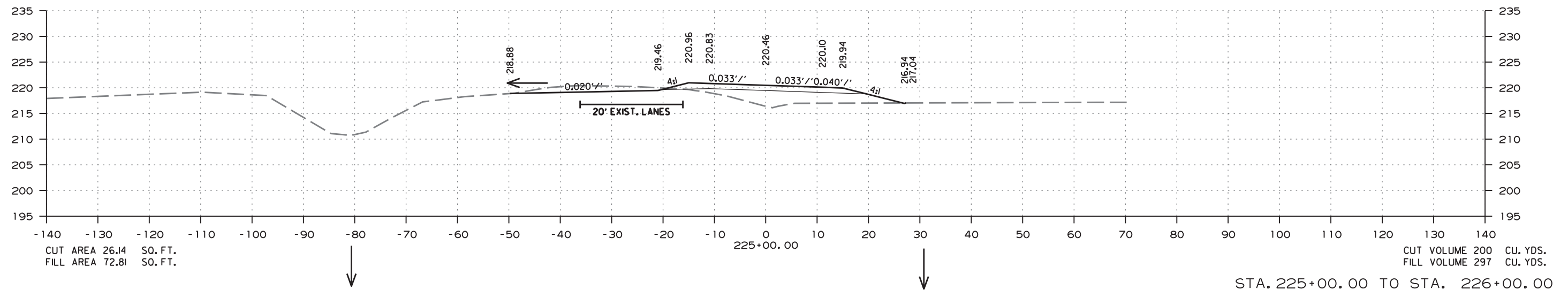
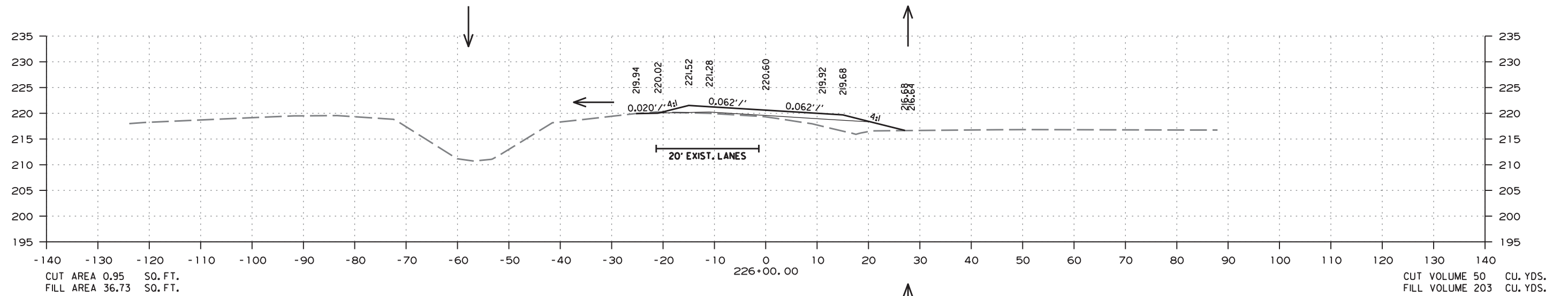
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5/20/2020
R100840.DGN

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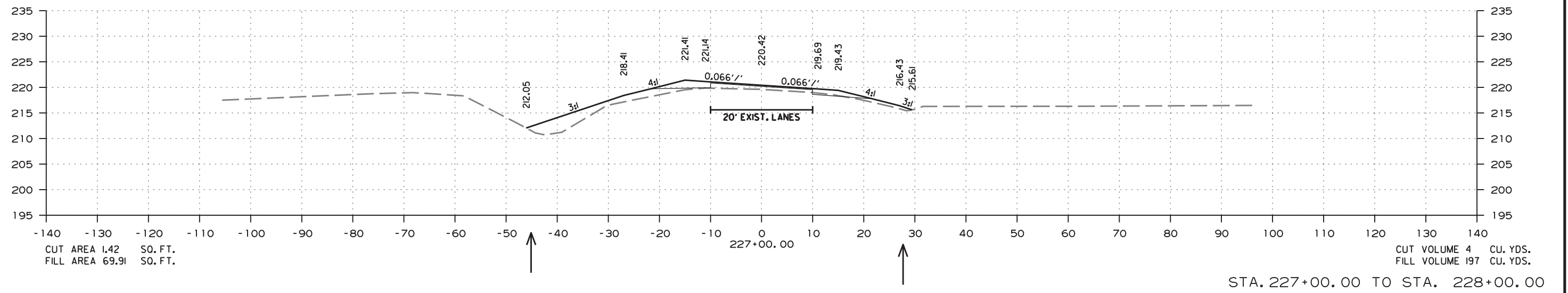
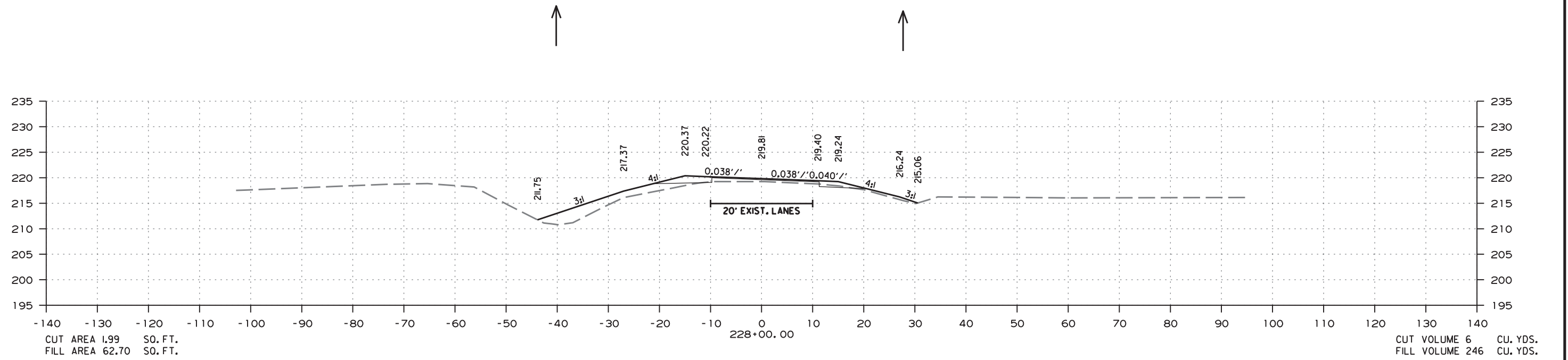
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STA. 225+00.00 TO STA. 226+00.00

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JOB NO.						100840	68	69

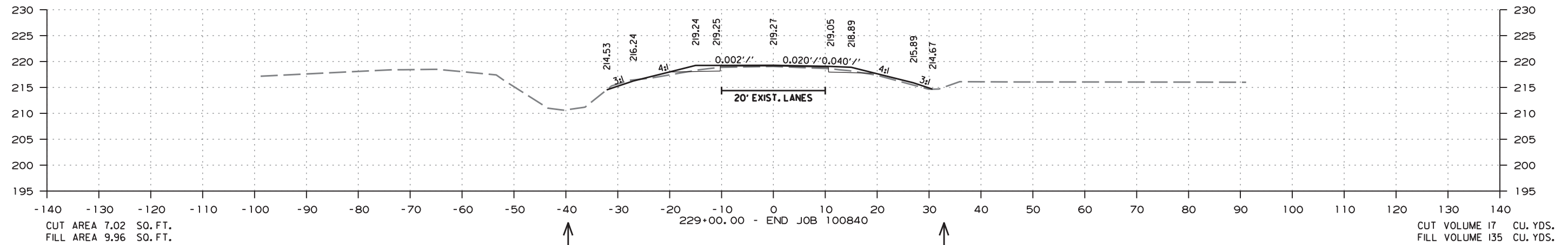
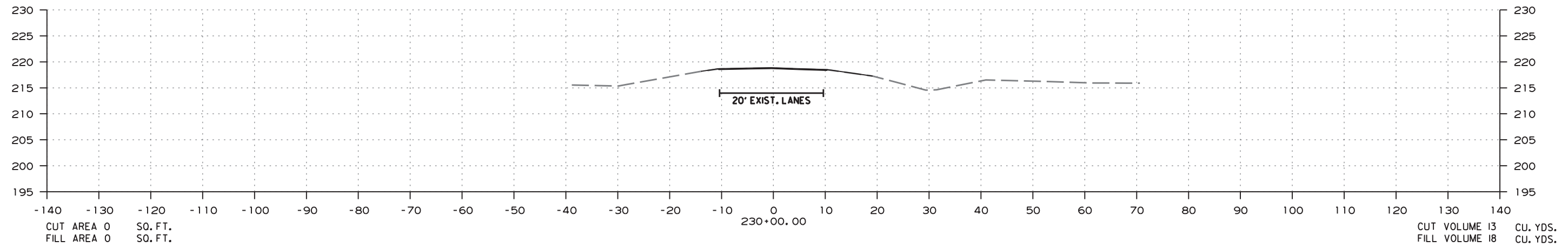
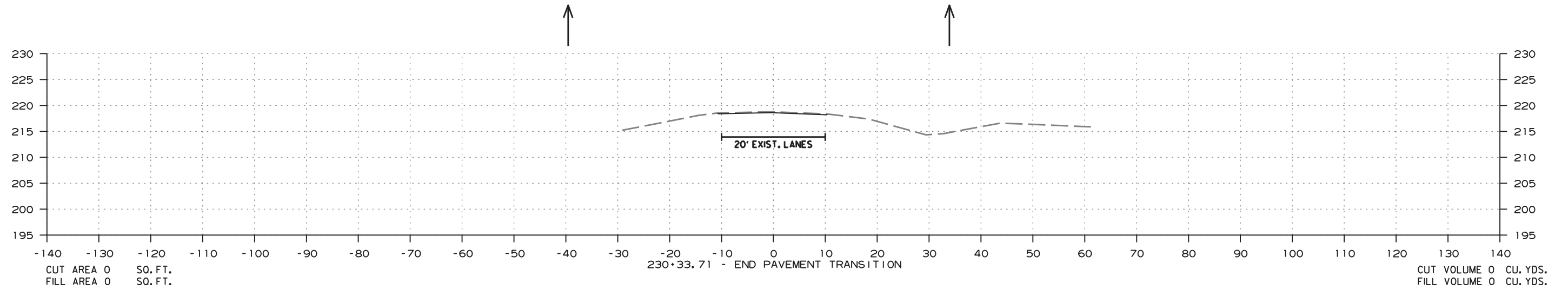
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5/20/2020
R100840.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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JOB NO.						100840	69	69

② CROSS SECTIONS

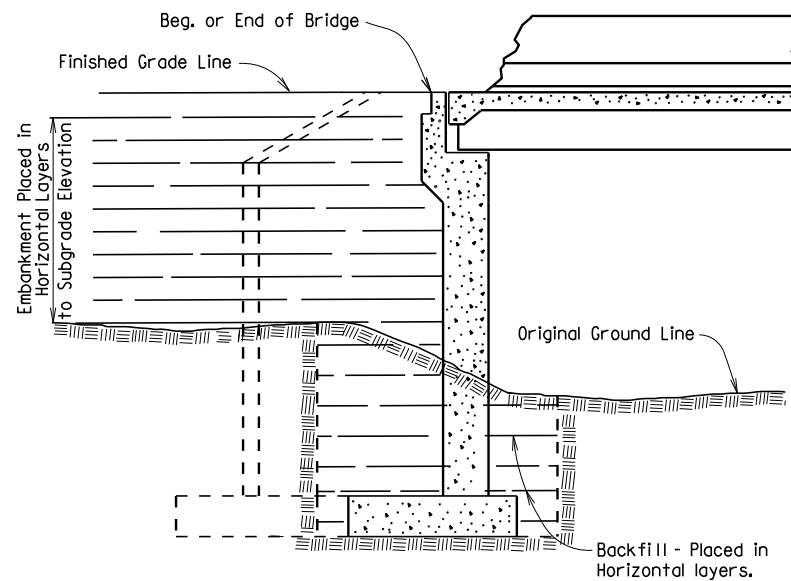


STA. 229+00.00 TO STA. 230+33.71

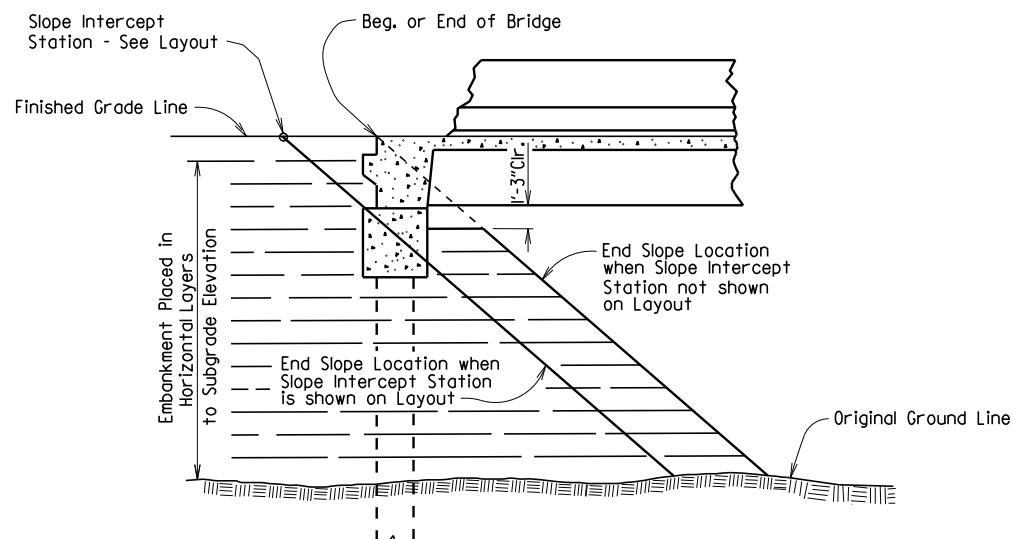
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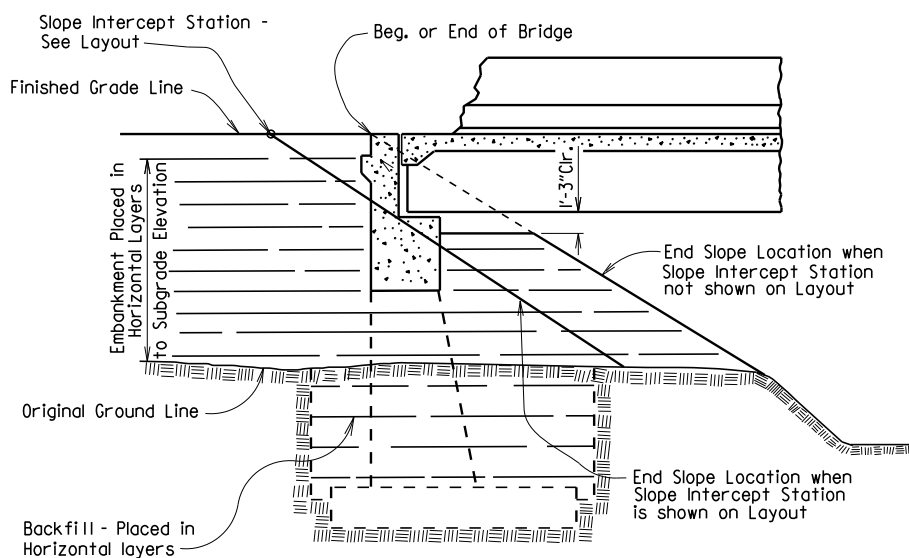
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JOB NO.							1	
EMBANKMENT & BACKFILL							55000	



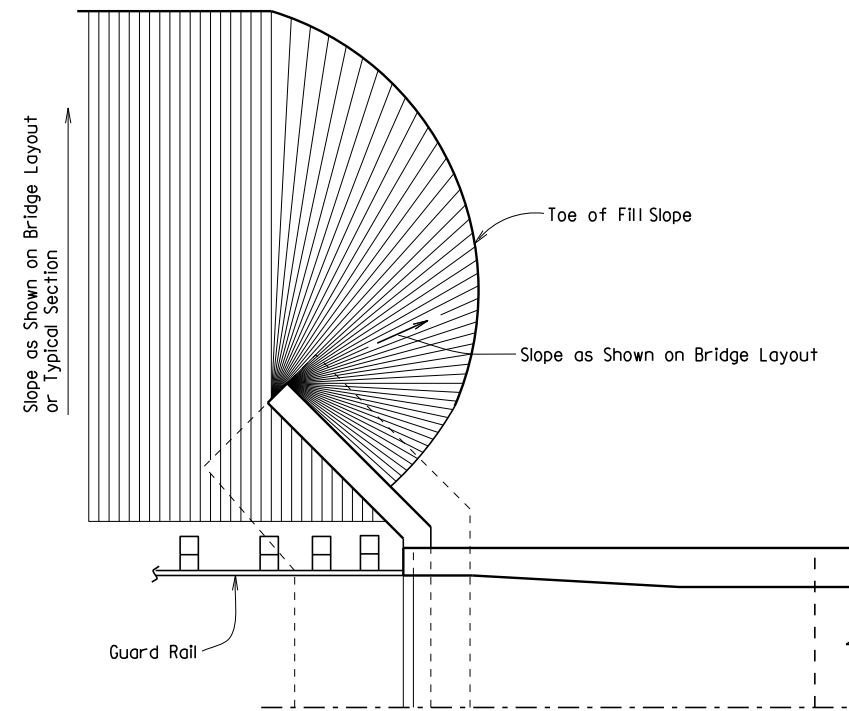
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



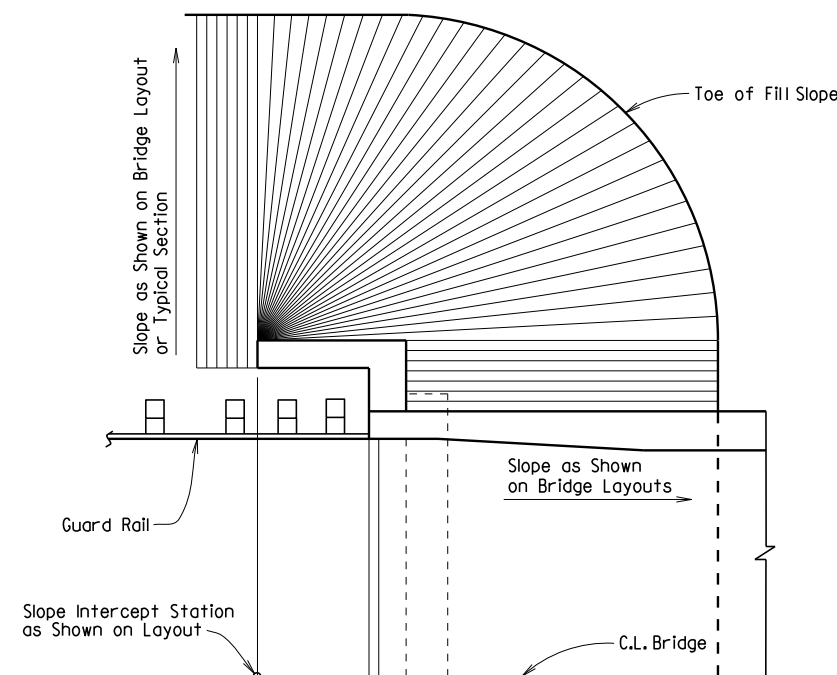
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



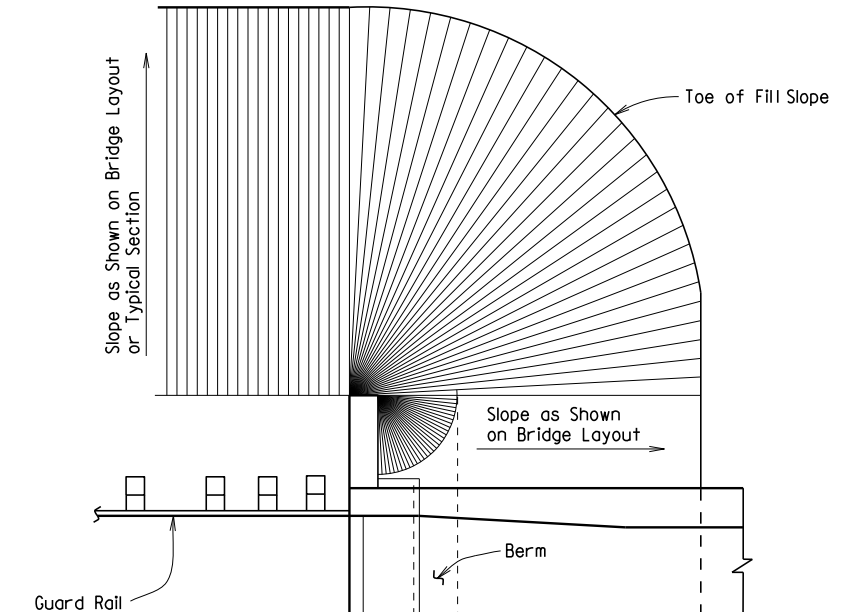
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



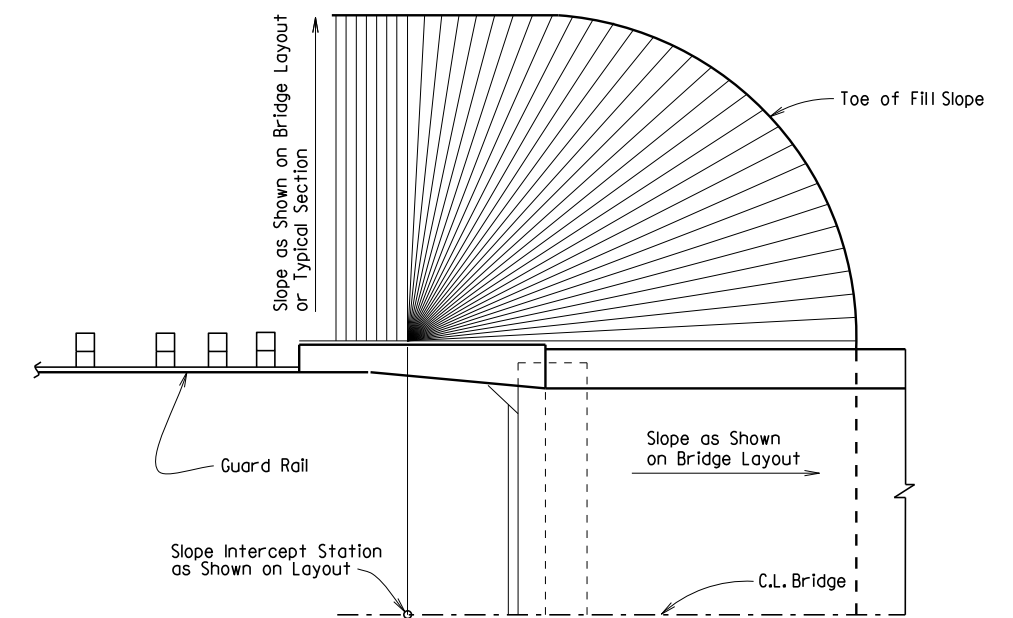
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

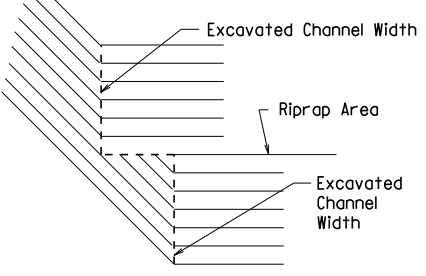
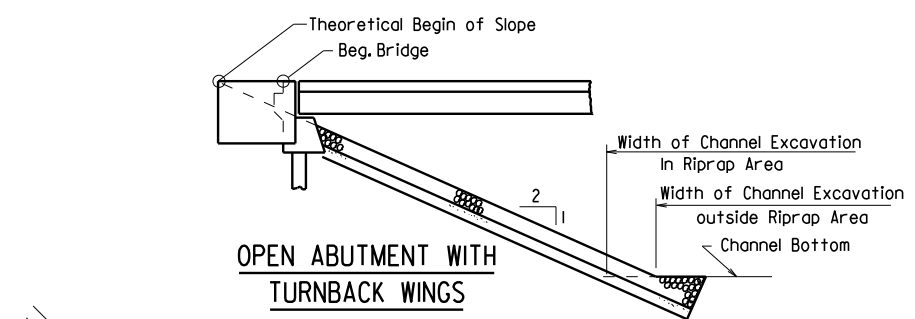
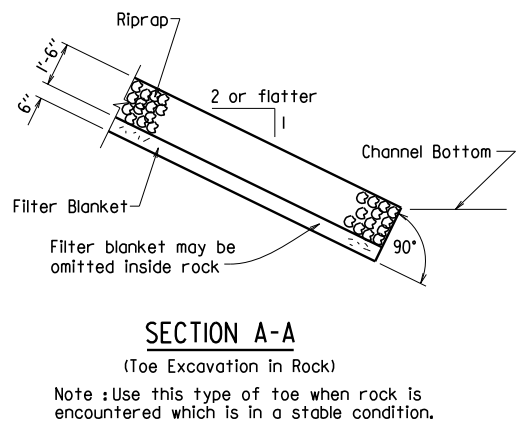
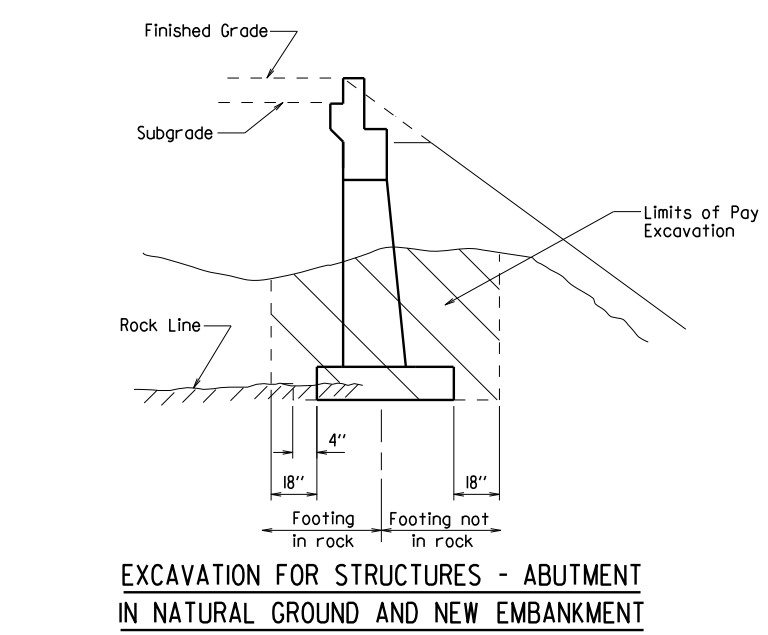
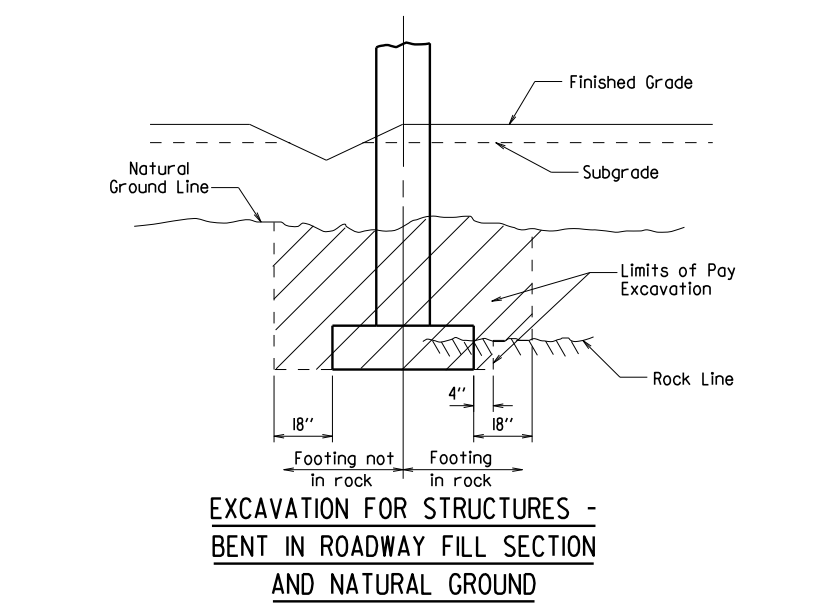
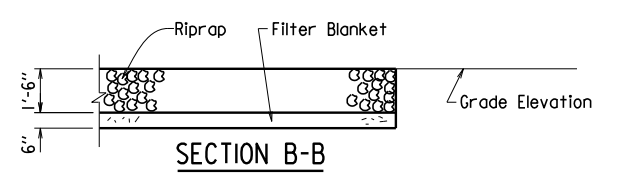
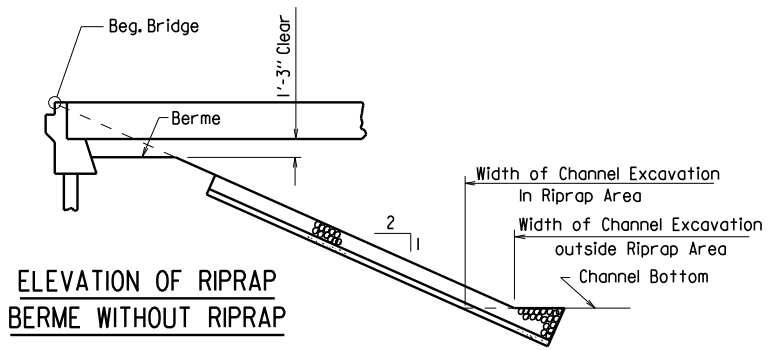
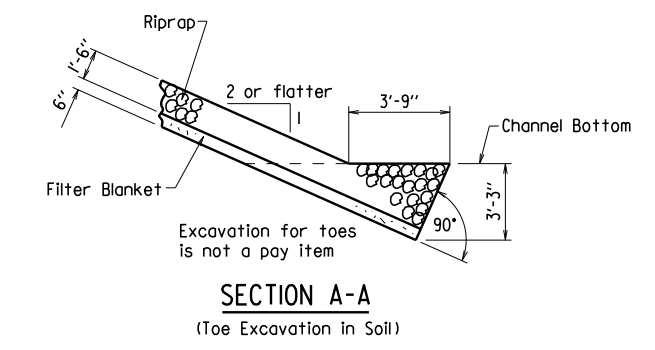
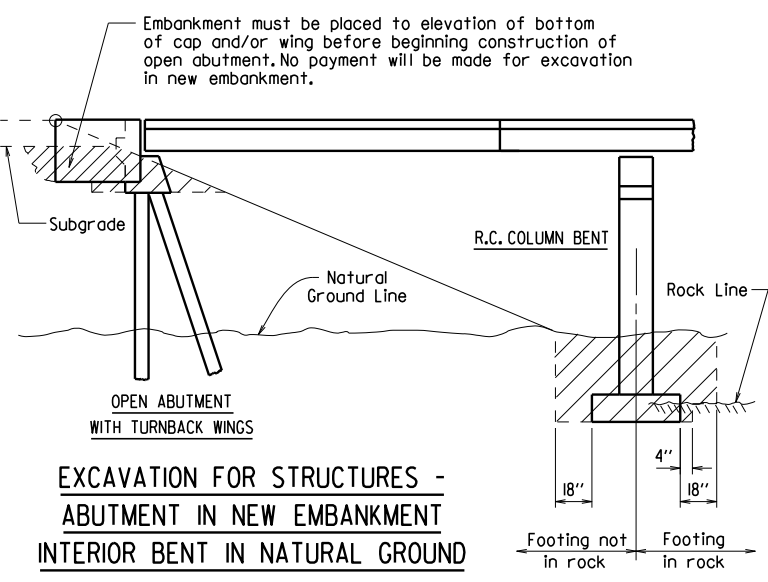
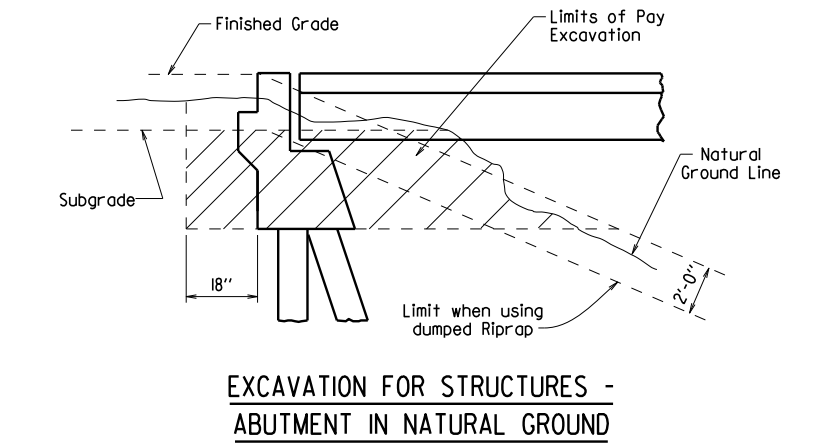
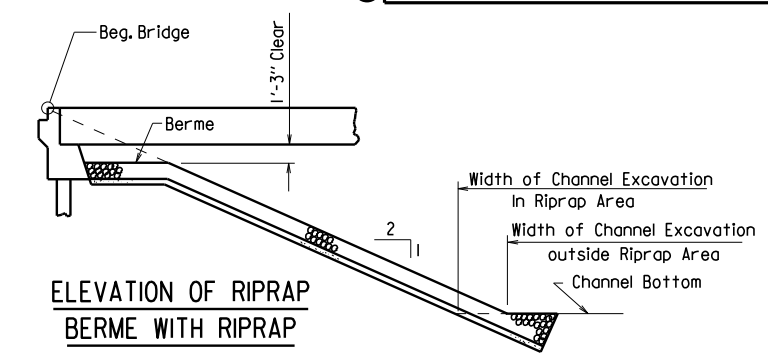
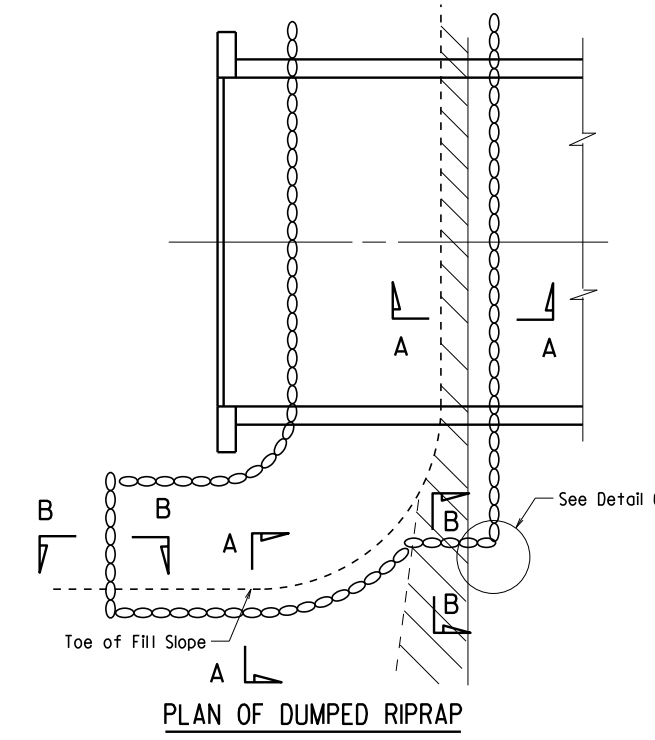
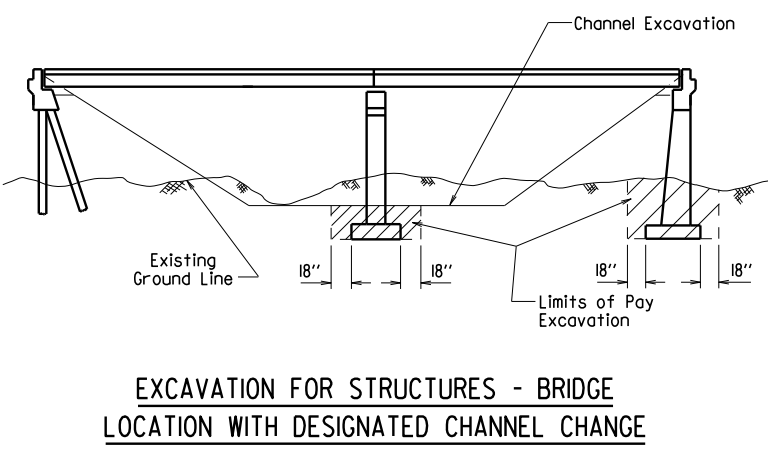
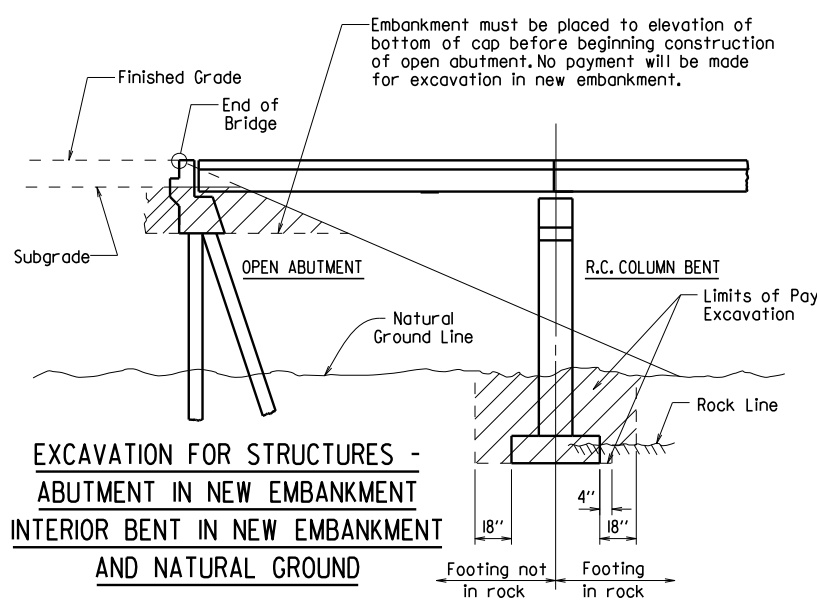
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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

DRAWING NO. 55000

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



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.

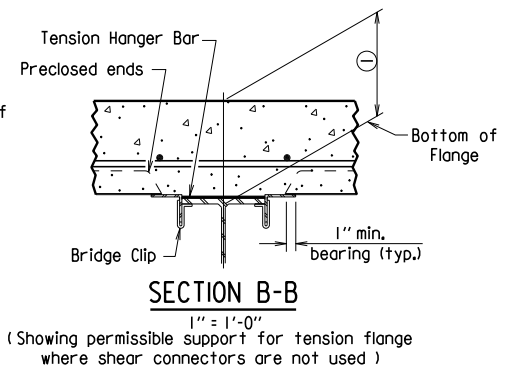
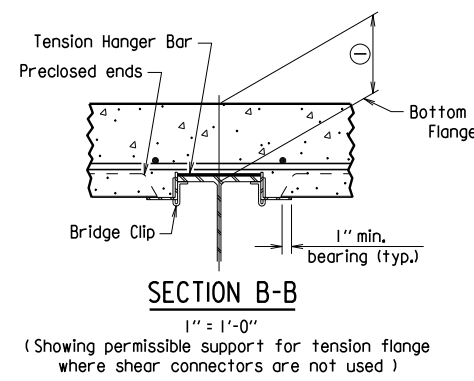
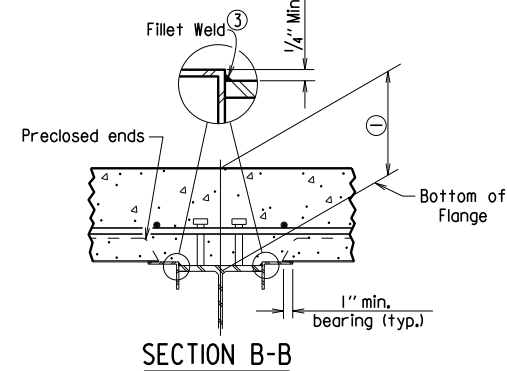
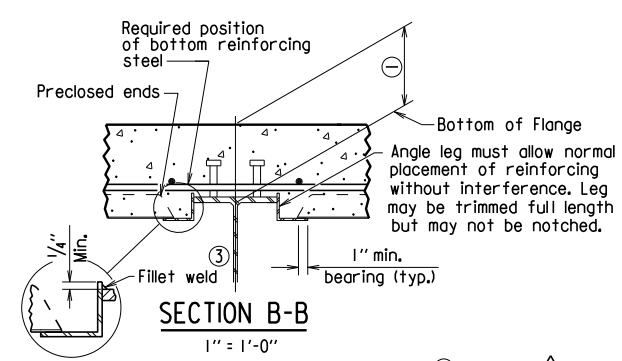
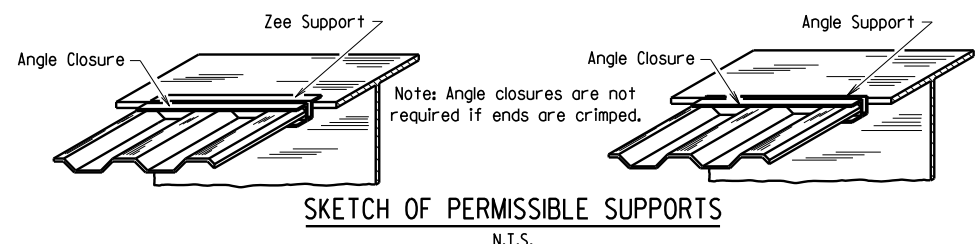
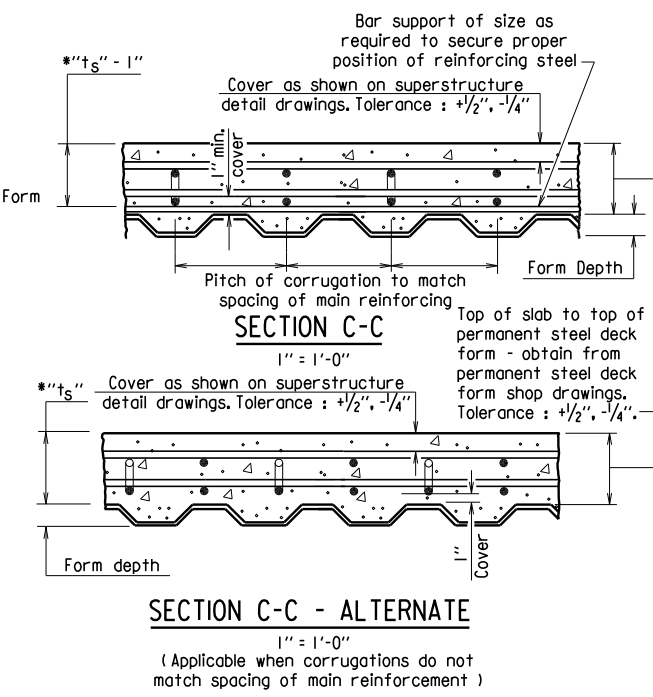
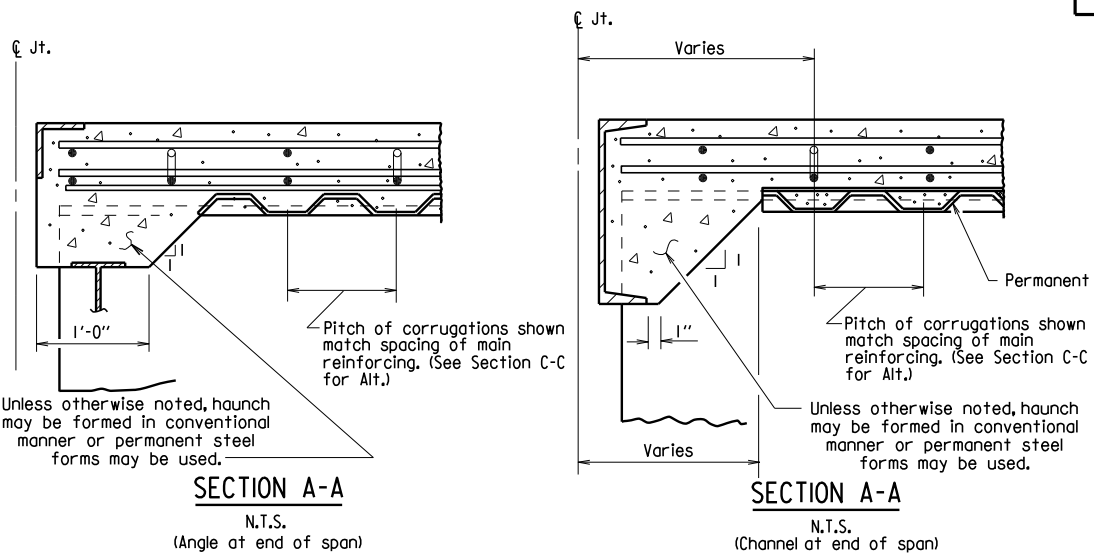
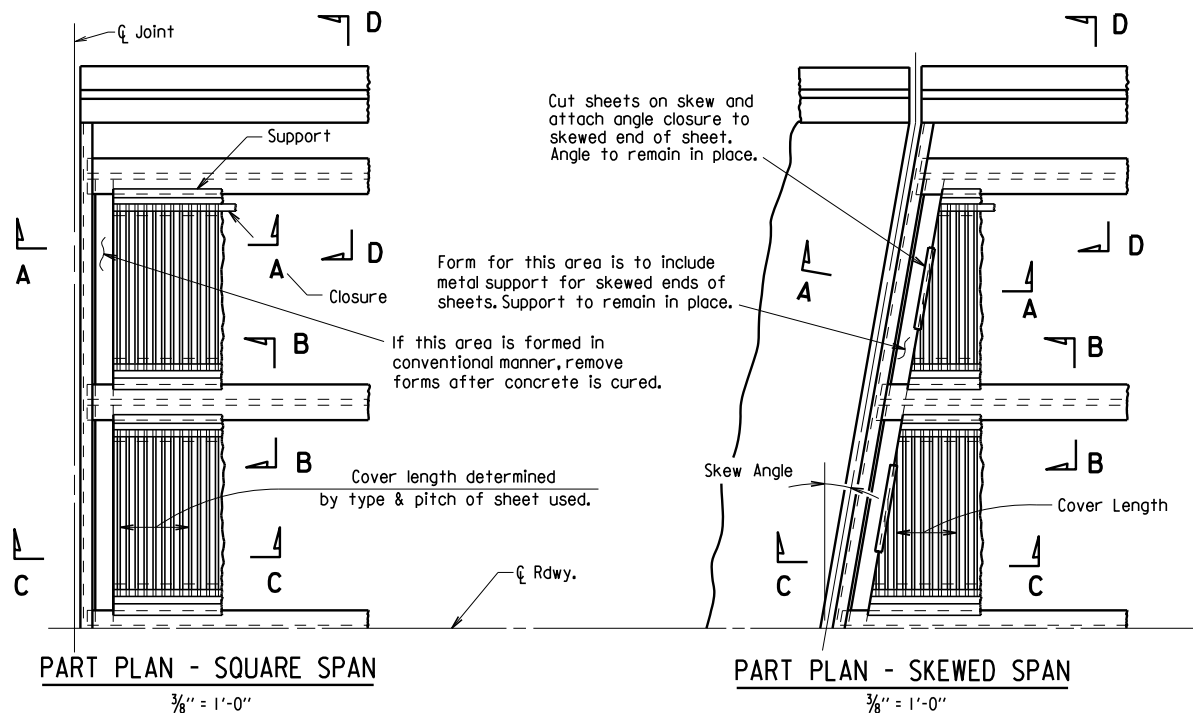
**STANDARD DETAILS FOR
DUMPED RIPRAP AND FILTER BLANKET
AND COMPUTING
EXCAVATION FOR STRUCTURES
ARKANSAS STATE HIGHWAY COMMISSION**

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.	
							BRIDGE DECK FORMS	55005



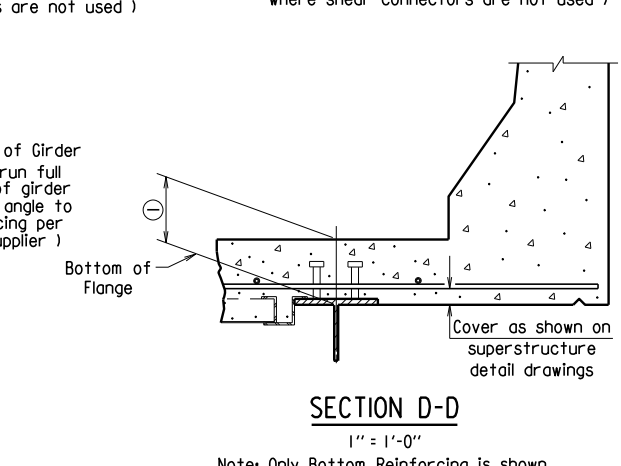
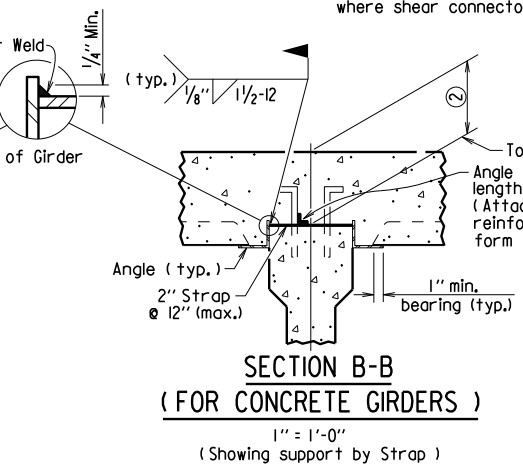
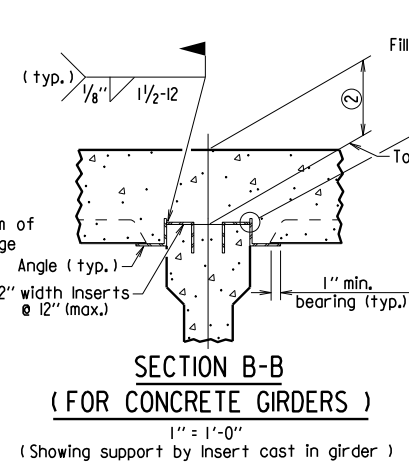
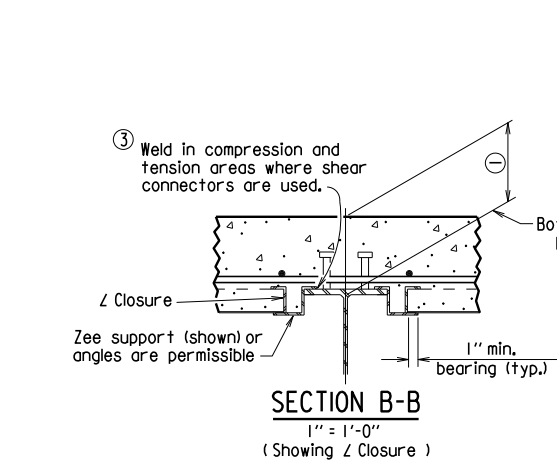
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

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

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

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

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



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 = $t_s + 1 1/4"$ + 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.

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 L 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

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 Gradets) 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 3/4" 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 tined 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 3/4" ø high-strength bolts using 1/8" ø open holes. Holes for 3/4" ø high-strength bolts may be 5/8" 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 1/4" +/- 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 1/4" +/- 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 3/4" 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

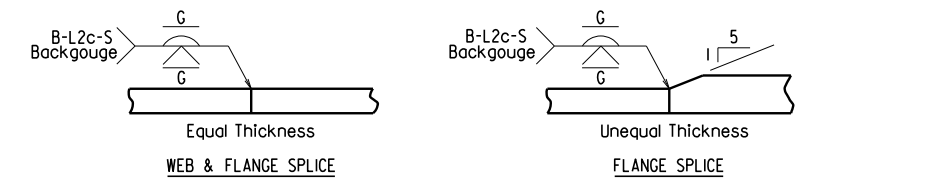
LITTLE ROCK, ARK.

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:			

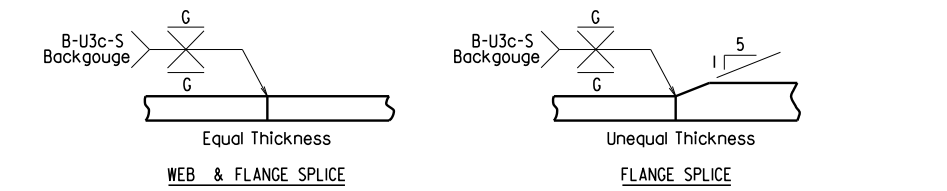
DRAWING NO. 55006

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 GENERAL NOTES								55006

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.		STEEL BRIDGE STRUCTURES 55007		

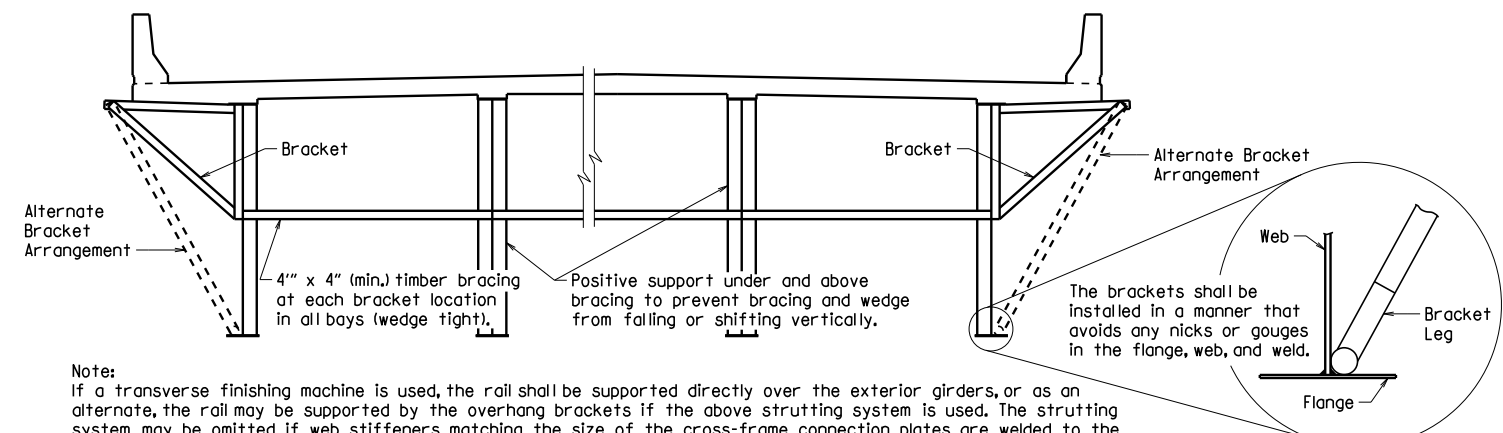


(Use when Base Metal Thickness is Equal to or Less than 2")



(Use when Base Metal Thickness is Greater than 2")

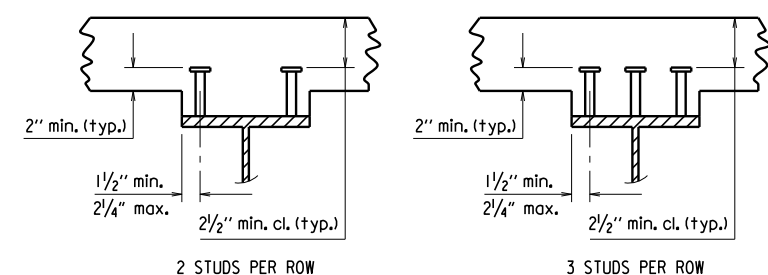
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



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 ()".

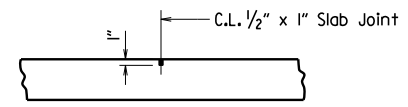
SCREED RAIL SUPPORT FOR PLATE GIRDERS

(USE WHEN WEB DEPTHS ARE 48" OR GREATER)



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.

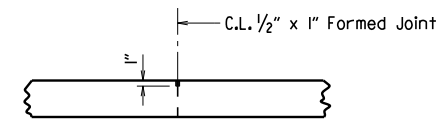
SHEAR CONNECTOR DETAIL



Use Type 3 or 4 Joint Sealer. See Subsections 50L02(h) and 50L05(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.

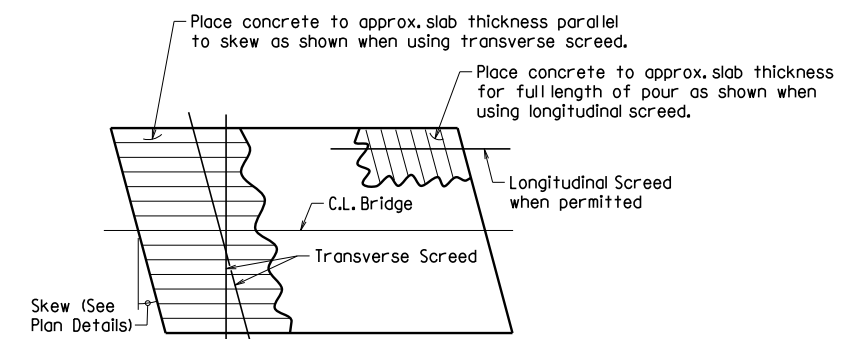
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED: Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and across the top of the sidewalk 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



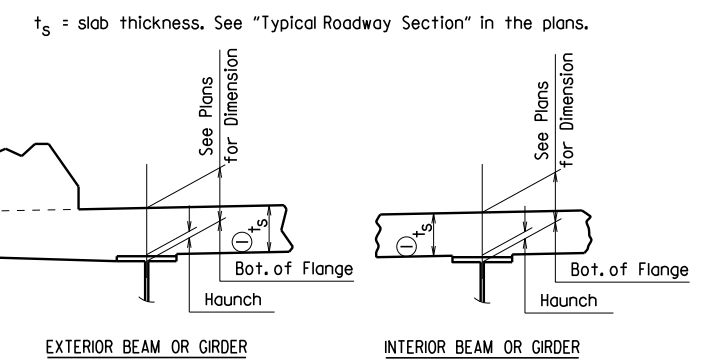
Use 1/2" x 1" Type 3 or 4 Joint Sealer. See Subsections 50L02(h) and 50L05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

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

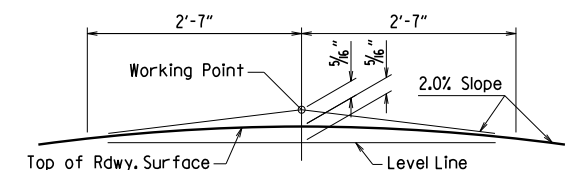


Tolerance when removable deck forming is used is + 1/2", - 1/4". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

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 1 3/4" 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 3/4" Inclusive	1/4"	Be Used
Over 3/4"	3/8"	

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).

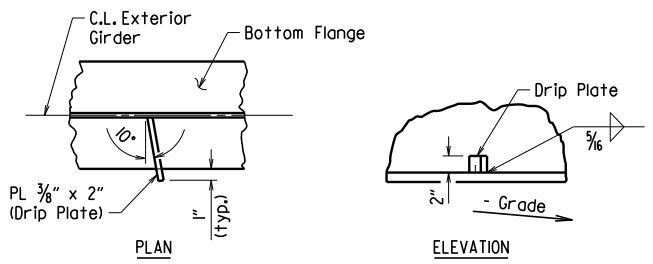
THESE DETAILS ARE APPLICABLE UNLESS OTHERWISE SHOWN IN THE PLAN DETAILS, SPECIAL PROVISIONS, OR SUPPLEMENTAL SPECIFICATIONS.

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



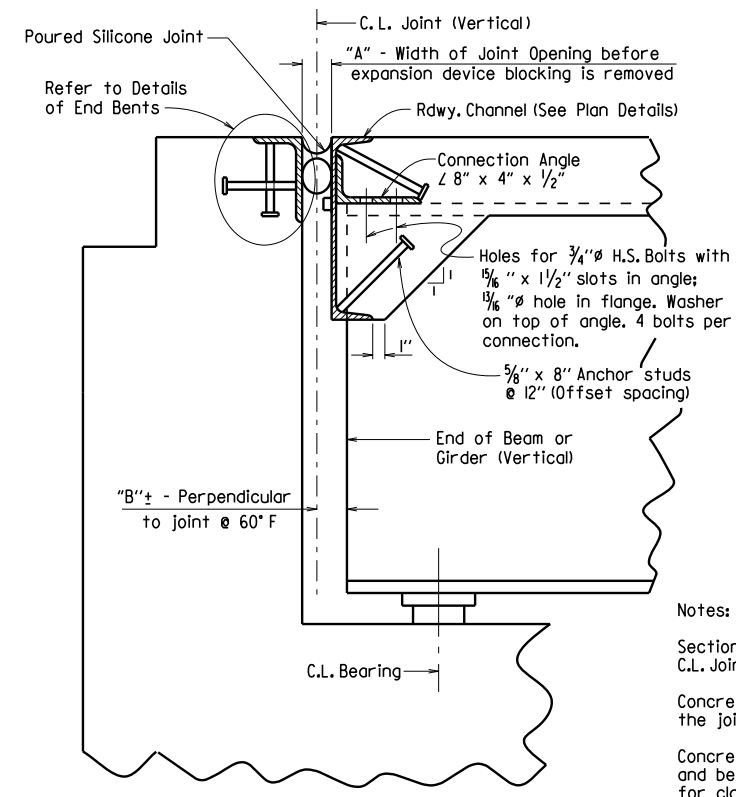
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each Bent, unless otherwise noted in the plans.

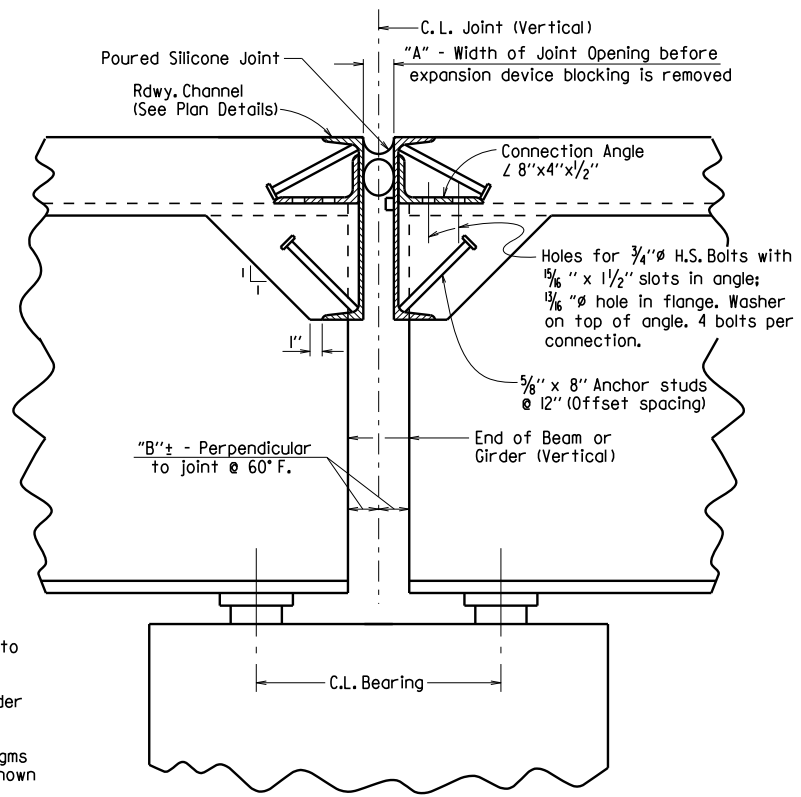
BOTTOM FLANGE DRIP PLATE

(USE WHEN WEB DEPTHS ARE 54" OR GREATER AND UNIT OR SPAN IS NOT IN LEVEL GRADE)

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

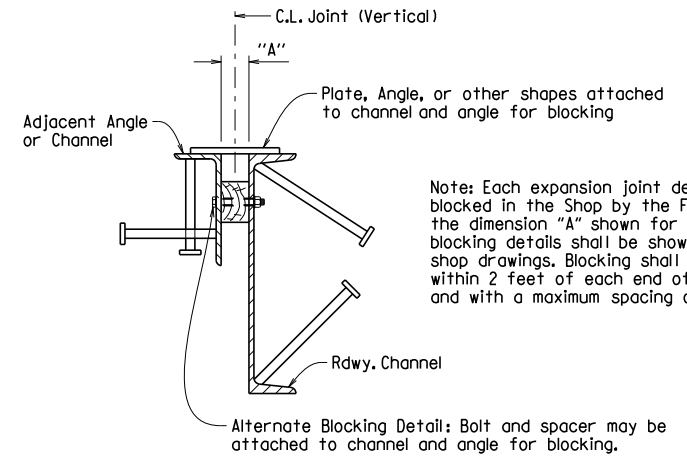


SECTION THRU JOINT AT END BENT



SECTION THRU JOINT AT INTERMEDIATE 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.



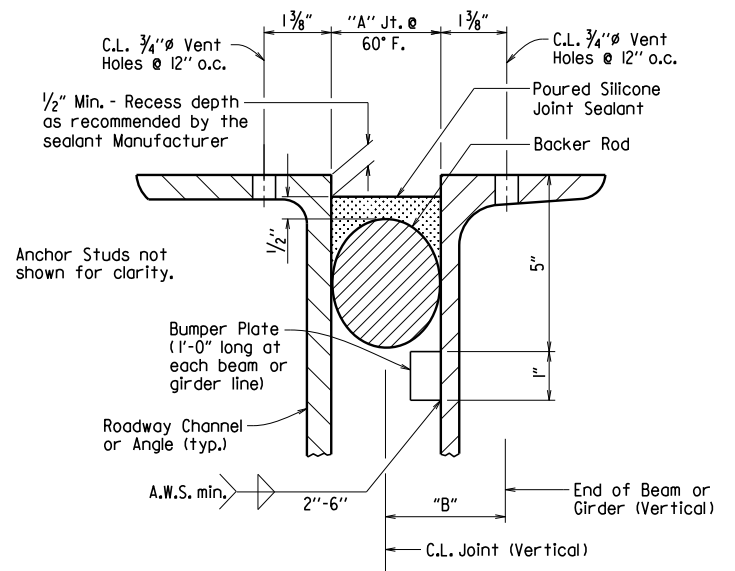
DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

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.

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.



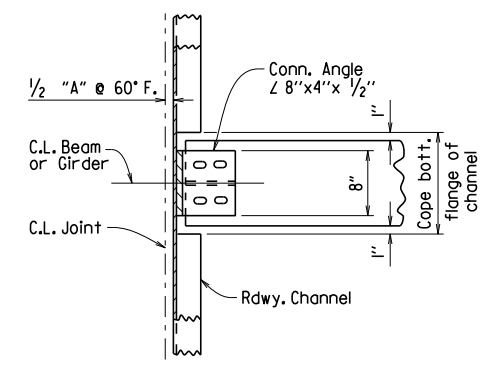
DETAIL OF POURED SILICONE JOINT

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.

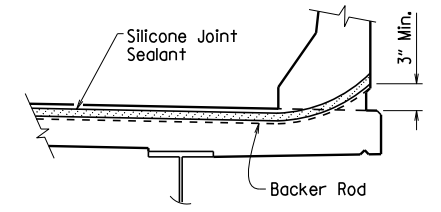
Use an appropriately sized backer rod at the depth shown in the Manufacturer's literature based on the joint width at the time of sealing. Unless otherwise noted, do not install more backer rod than can be sealed in the same day.

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

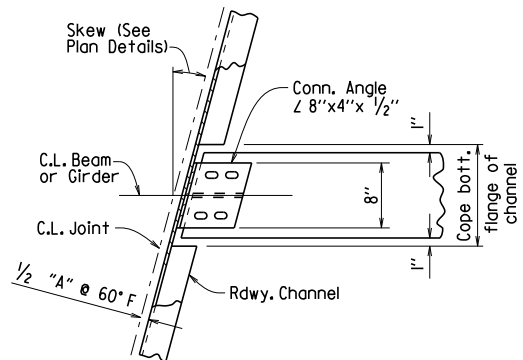
When bridge deck is constructed in stages, backer rods shall be extended beyond length of poured joint in initial construction stage so that the two pieces can be properly spliced together prior to installing sealant in subsequent stages. Manufacturer's recommendations shall be followed to prevent sealant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



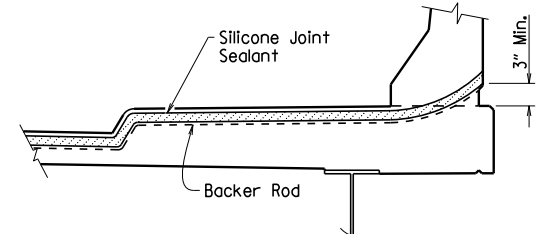
**CHANNEL CONNECTION DETAIL
BENTS WITHOUT SKEW**



JOINT SEAL PLACEMENT AT RAIL



**CHANNEL CONNECTION DETAIL
BENTS WITH SKEW**



JOINT SEAL PLACEMENT AT SIDEWALK

**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: —

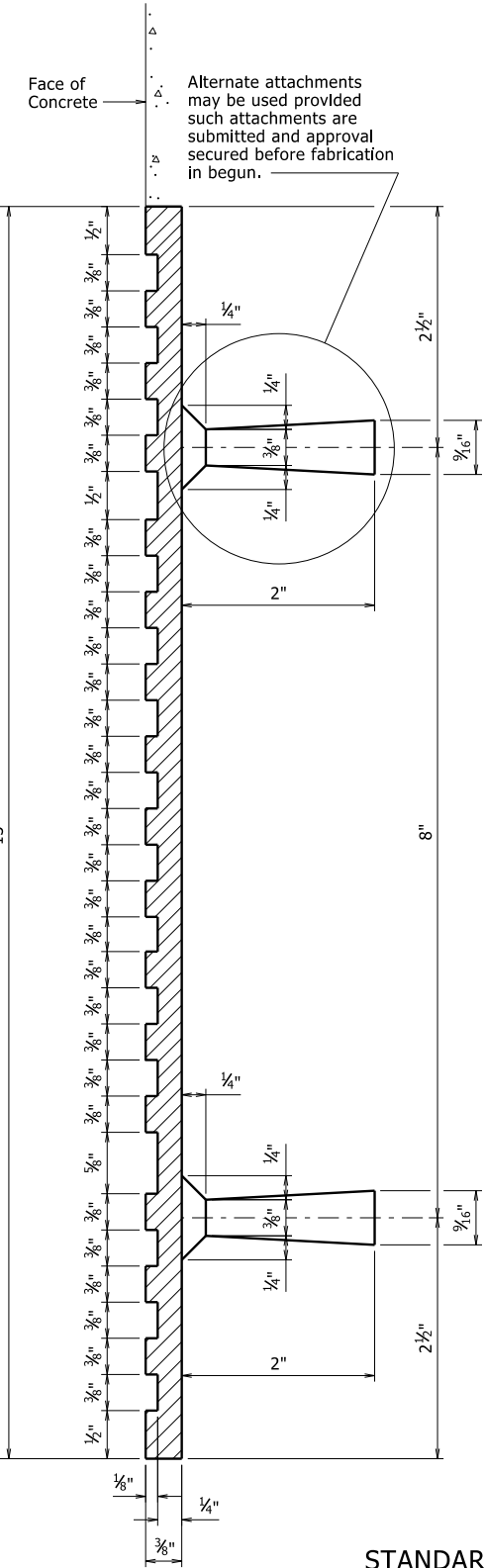
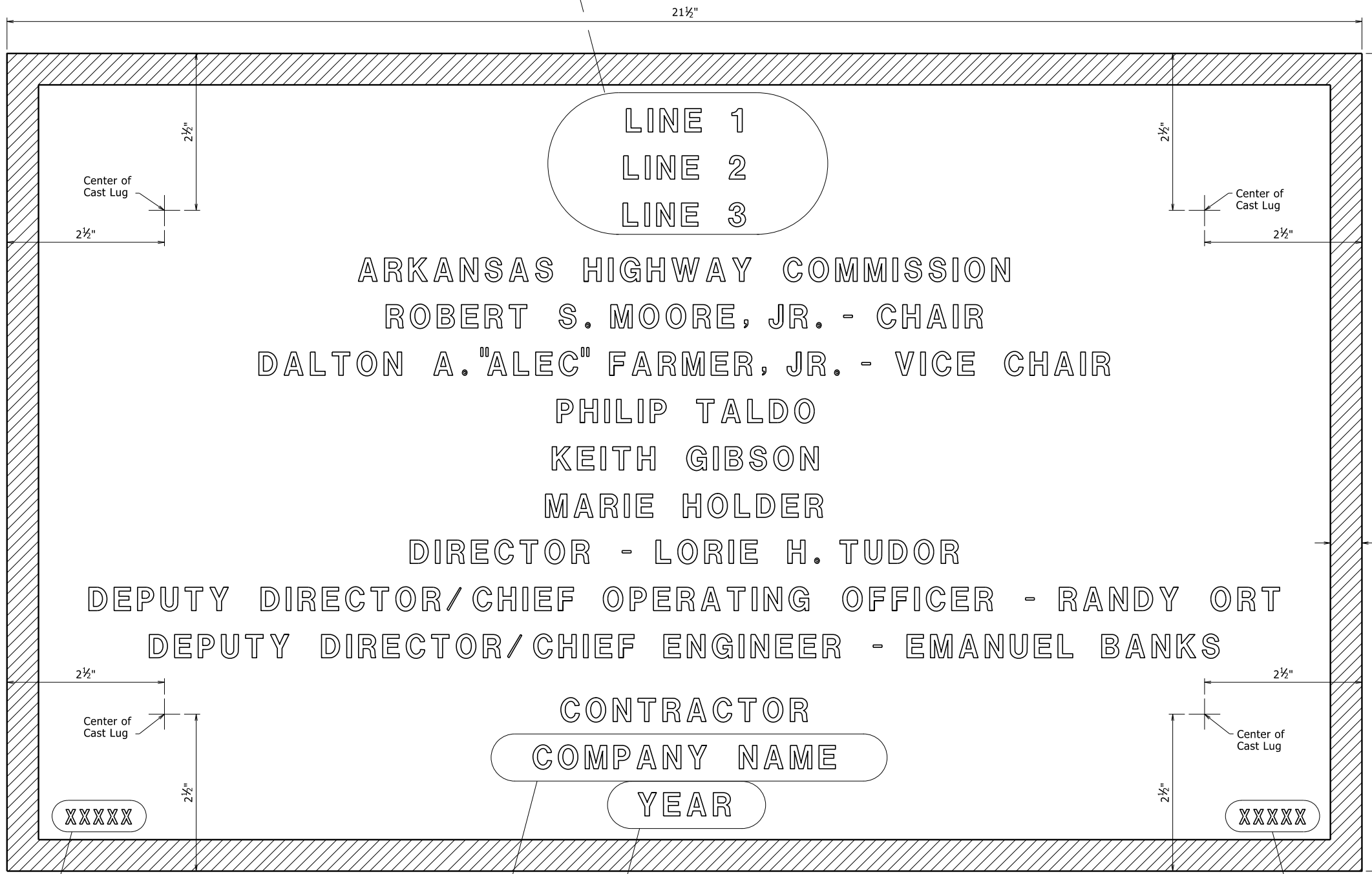
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14		1-15-19		6	ARK.			
1-14-15		3-24-2020						
1-17-17								

1 TYPE D NAME PLATE - 55010

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

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

GENERAL NOTES
 Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.
 Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.
 Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 5/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.
 All lettering shall be plain gothic, square cut and not tapered.
 The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.



- 5 Revised Director, Deputy Director/Chief Operating Officer, Chair, Vice Chair and added New Commissioner
3-24-2020 CGP Checked By: CRE
- 4 Revised Chair and Vice Chair Added New Commissioner
1-15-19 CGP Checked By: CRE
- 3 Added New Commissioner
1-17-17 KDH Checked By: CRE
- 2 Revised Chair and Vice Chair Added New Commssloner
1-14-15 KDH Checked By: CRE
- 1 Revised Deputy Director/Chief Engineer Added Deputy Director/Chief Operating Officer
12-1-14 KDH Checked By: CRE

Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples: HS20 HL-93

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

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

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

TYPICAL BRIDGE NAME PLATE

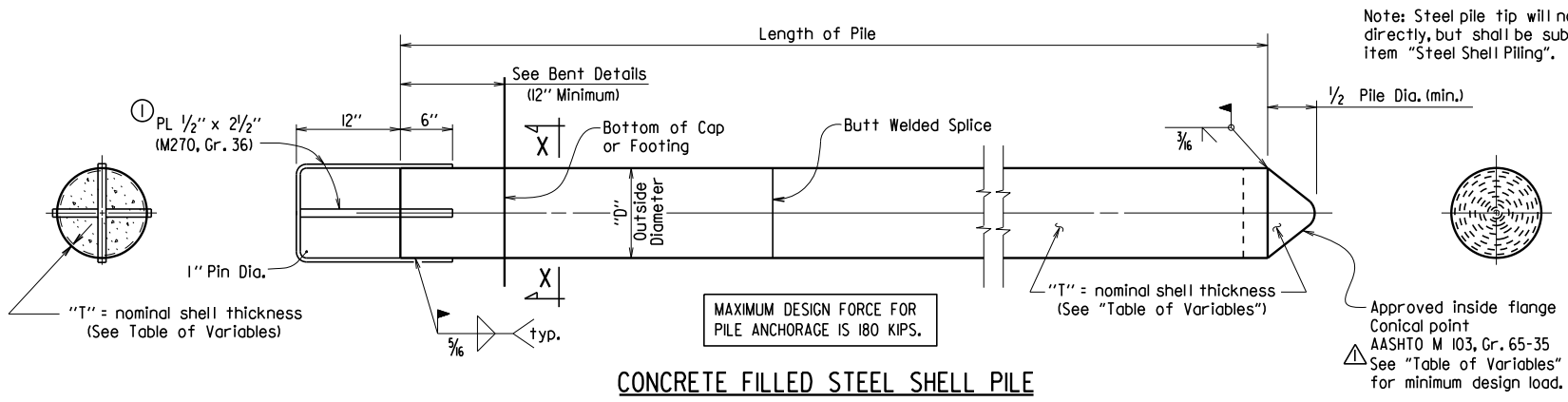
STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE

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

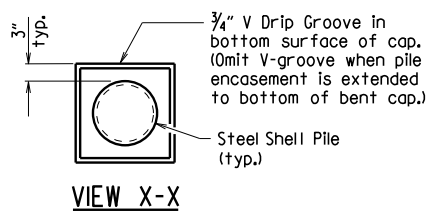
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
JOB NO.							STEEL SHELL PILES	55021



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

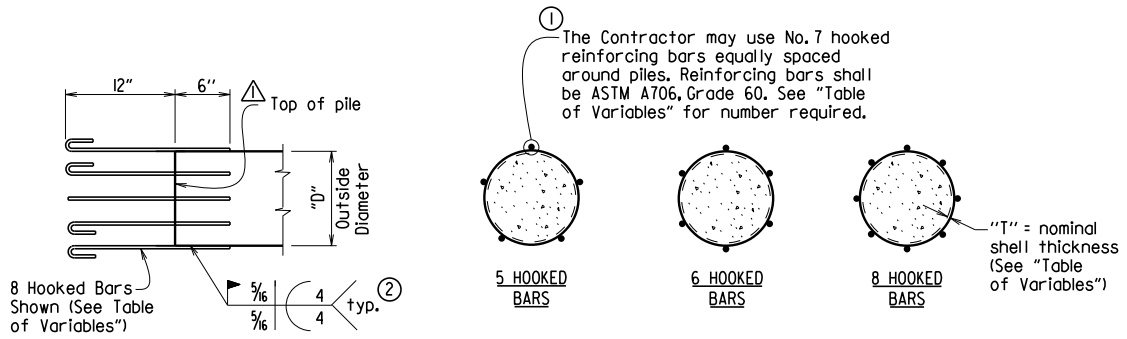
CONCRETE FILLED STEEL SHELL PILE

- ① Pile anchorage shall be placed to minimize interference with anchor bolts and reinforcing in cap or footing.
- ② Welding shall comply with ANSI/AWS D1.4 Structural Welding Code-Reinforcing Steel and applicable portions of ANSI/AWS D1.5 Bridge Welding Code.



GENERAL NOTES FOR CONCRETE FILLED STEEL SHELL PILES:

Steel shells shall conform ASTM A252, Grade 3 (Fy = 45,000 psi).
 Concrete used for filling of steel shell shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi, and shall be poured in the dry.
 Steel shell piling that extends above the ground and is not protected by pile encasement shall be painted in accordance with Subsection 805.02.
 See Bridge Layout for size and estimated length of steel shell piles and for driving information.
 Concrete, structural steel, reinforcing steel (including welding), and painting shall not be paid for directly, but shall be considered subsidiary to the item "Steel Shell Piling".



ALTERNATE PILE ANCHORAGE DETAIL

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

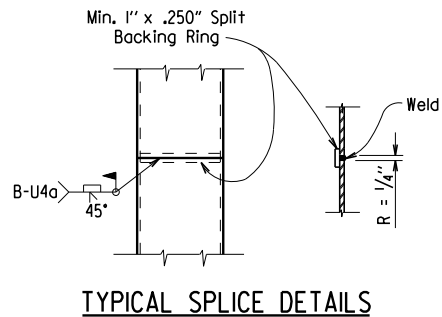
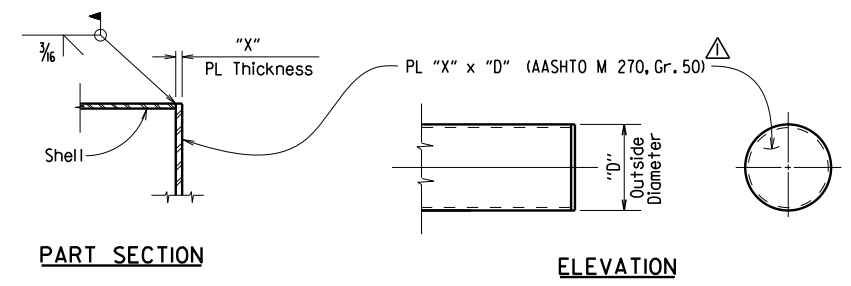
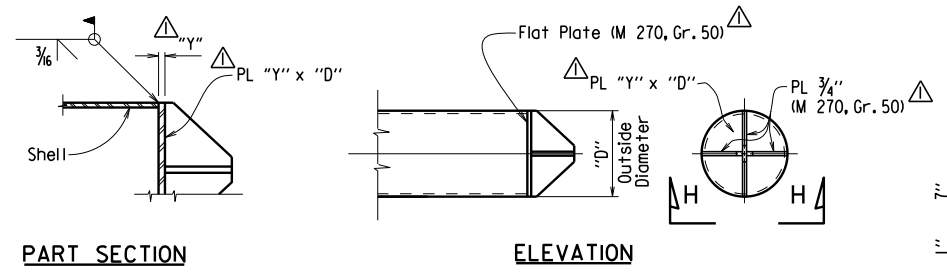


TABLE OF VARIABLES

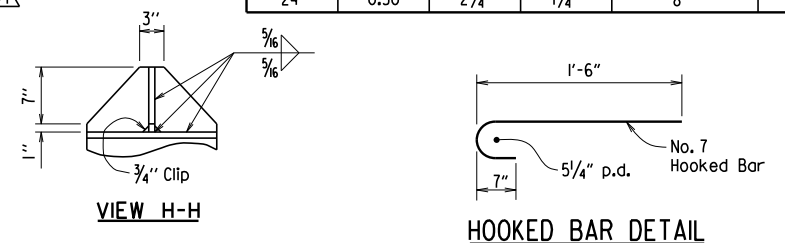
OUTSIDE DIAMETER "D"	NOMINAL SHELL THICKNESS "T"	PLATE THICKNESS "X"	PLATE THICKNESS "Y"	NO. OF HOOKED BARS FOR ALTERNATE PILE ANCHORAGE	MINIMUM CONICAL TIP DESIGN LOAD (KIPS)
14"	0.50"	2 1/4"	1 1/2"	5	859
16"	0.50"	2 1/4"	1 1/2"	5	986
18"	0.50"	2 1/2"	1 1/2"	6	1,114
20"	0.50"	2 1/2"	1 3/4"	6	1,241
24"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

ALTERNATE FLAT TIP DETAIL

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

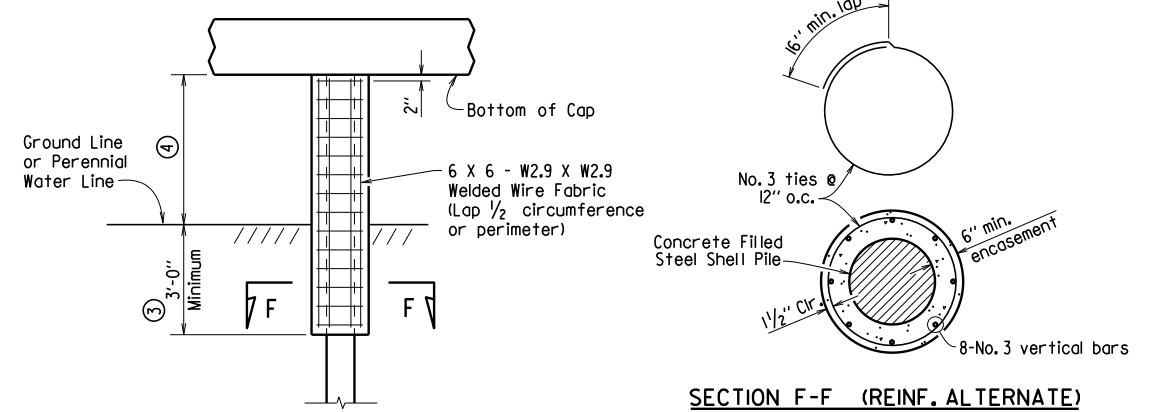


ALTERNATE VANED TIP DETAIL



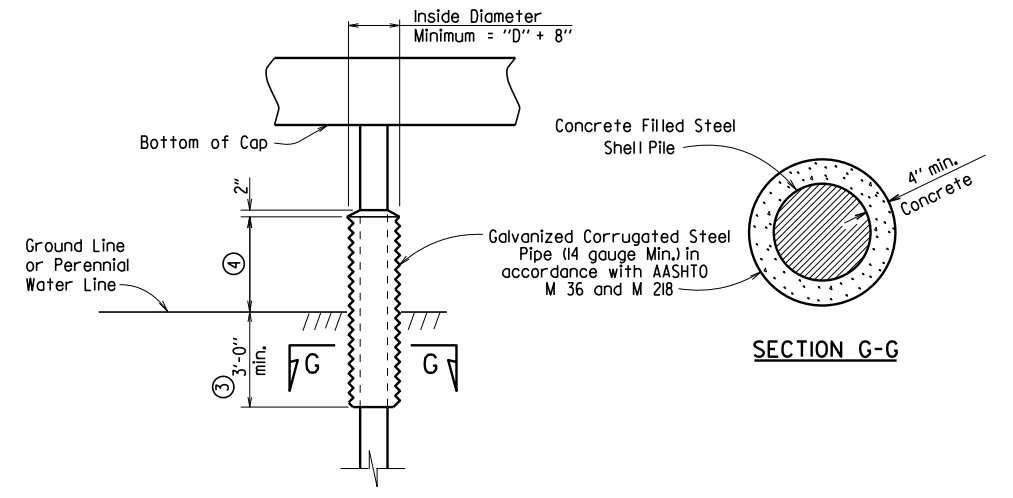
GENERAL NOTES FOR PILE ENCASEMENTS:

See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.
 Concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.
 Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.
 Welded wire fabric shall conform to AASHTO M 55 or M 221.
 Concrete, welded wire fabric or reinforcing steel, and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



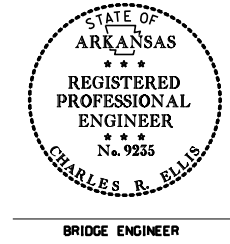
PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

- ③ Unless otherwise noted on Bridge Layout.
- ④ See Bridge Layout for height of pile encasement (3'-0" Minimum).
- ⑤ Pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the detail for partial height encasement.



ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL SHELL PILES

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.

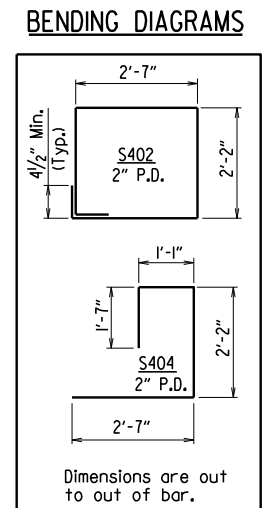
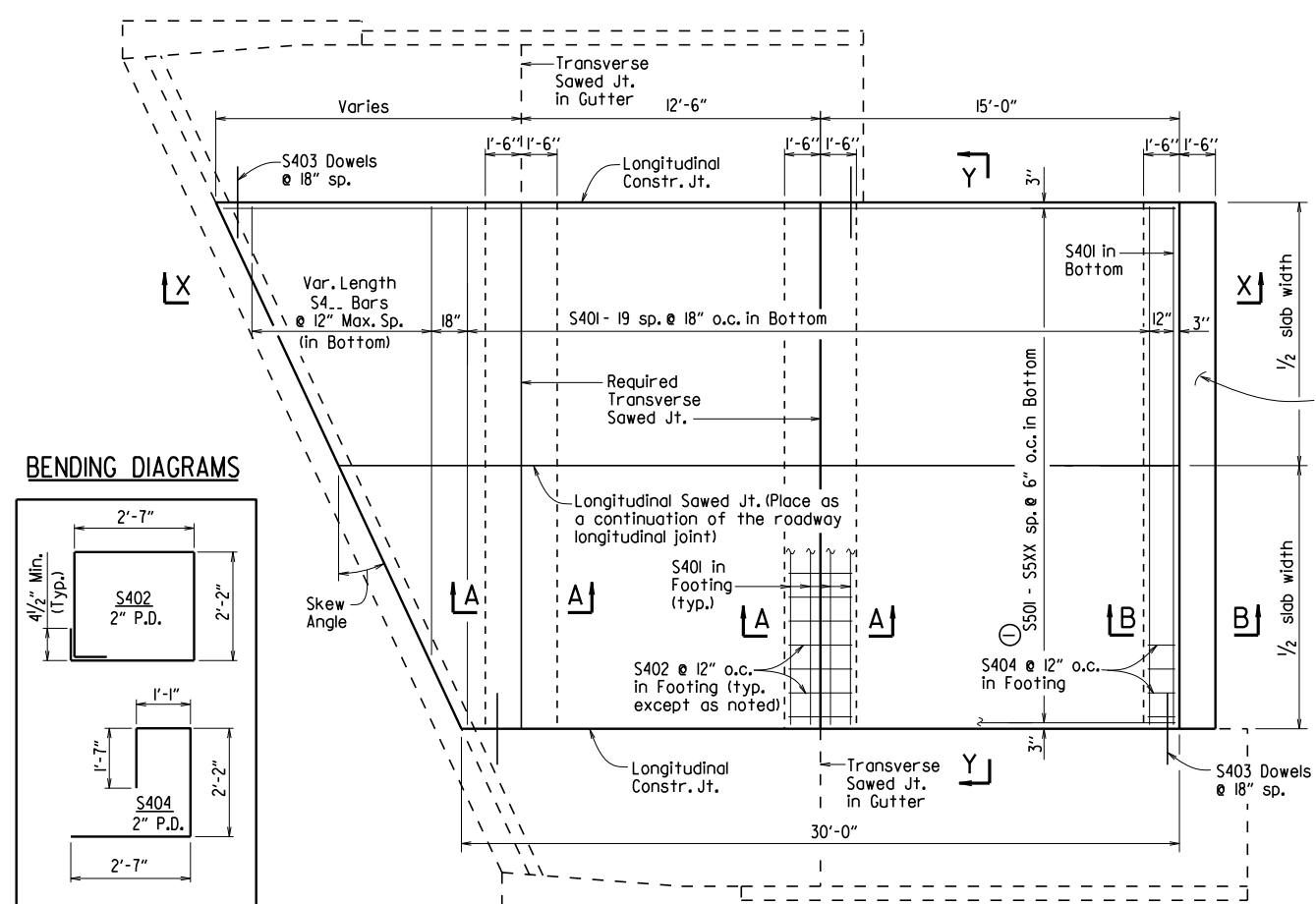


STANDARD DETAILS FOR CONCRETE FILLED STEEL SHELL PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION
 LITTLE ROCK, ARK.
 DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55021.dgn
 CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
 DESIGNED BY: STD. DATE: —
 BRIDGE ENGINEER
 DRAWING NO. 55021

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		TYPE A APPROACH SLAB		55040A

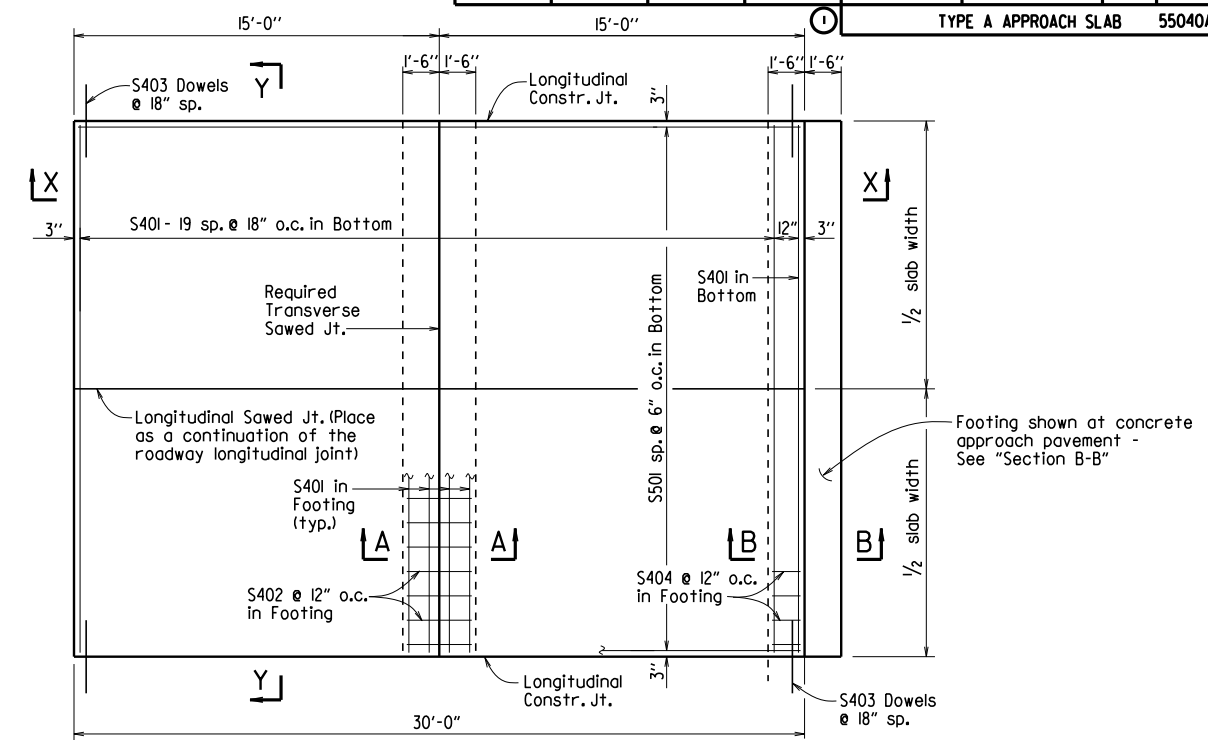


Notes:
The surface finish for Approach Slabs shall match that used on the bridge deck.

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.

Footing shown at concrete approach pavement - See "Section B-B"

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



PLAN - SQUARE APPROACH SLAB

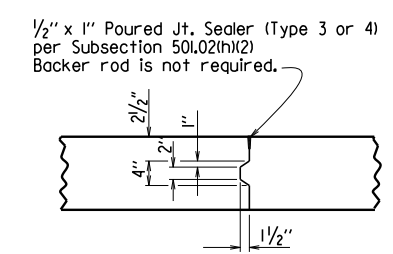
Footing shown at concrete approach pavement - See "Section B-B"

BAR LIST

(Square & Skewed Approach Slabs)

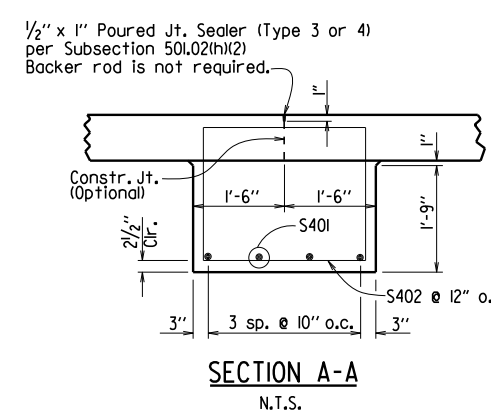
Slab Width	Square				Skewed					
	Mark	No. Req'd.	Length	No. Req'd.	Length	Mark	No. Req'd.	Length		
20'-0"	S401	29	19'-8"	33	19'-8"	S401	29	21'-8"		
	S402	20	9'-10"	40	9'-10"	S402	22	9'-10"		
	S403	40	3'-0"	*	3'-0"	S403	40	3'-0"		
	S404	20	7'-2"	20	7'-2"	S404	22	7'-2"		
	S4...	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.	S4...	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
22'-0"	S501	40	29'-8"	—	—	S501	44	29'-8"		
	S501 - S540	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 19.75' (tan skew angle)	S501 - S544	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 21.75' (tan skew angle)
	S401	29	21'-8"	33	21'-8"	S401	29	23'-8"		
	S402	22	9'-10"	44	9'-10"	S402	24	9'-10"		
	S403	40	3'-0"	*	3'-0"	S403	40	3'-0"		
24'-0"	S404	20	7'-2"	20	7'-2"	S404	24	7'-2"		
	S4...	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.	S4...	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	29'-8"	—	—	S501	48	29'-8"		
	S501 - S544	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 21.75' (tan skew angle)	S501 - S548	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 23.75' (tan skew angle)
	S401	29	23'-8"	33	23'-8"	S401	29	35'-8"		
36'-0"	S402	22	9'-10"	44	9'-10"	S402	36	9'-10"		
	S403	40	3'-0"	*	3'-0"	S403	40	3'-0"		
	S404	22	7'-2"	22	7'-2"	S404	36	7'-2"		
	S4...	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.	S4...	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	29'-8"	—	—	S501	72	29'-8"		
S501 - S544	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 21.75' (tan skew angle)	S501 - S572	—	—	1 Ea.	29.6' + 0.25' (tan skew angle) to 29.6' + 35.75' (tan skew angle)	

*Varies with skew angle



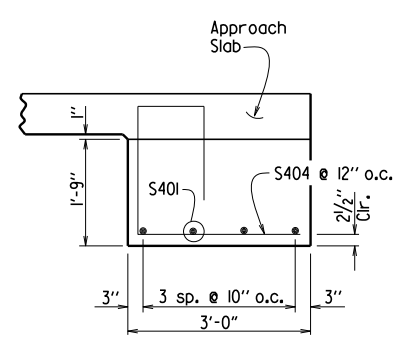
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT

1" = 1'-0"



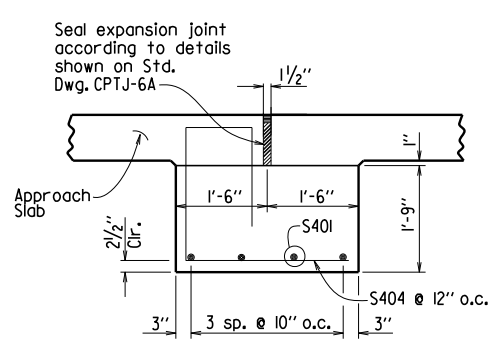
SECTION A-A

N.T.S.



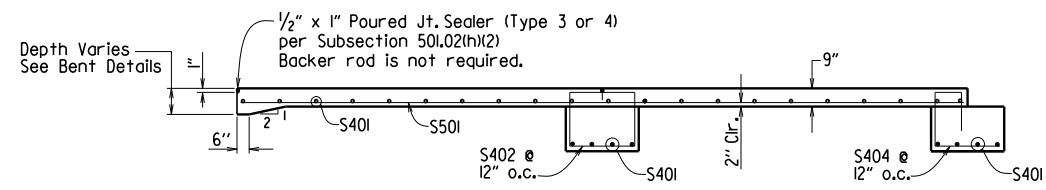
SECTION B-B

AT ASPHALT APPROACH PAVEMENT
N.T.S.



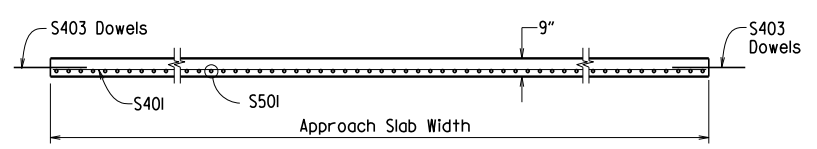
SECTION B-B

AT CONCRETE 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.)
20'-0"	1925	24.85
22'-0"	2110	27.30
24'-0"	2300	29.90
36'-0"	3410	44.85

GENERAL NOTES

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

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

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

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

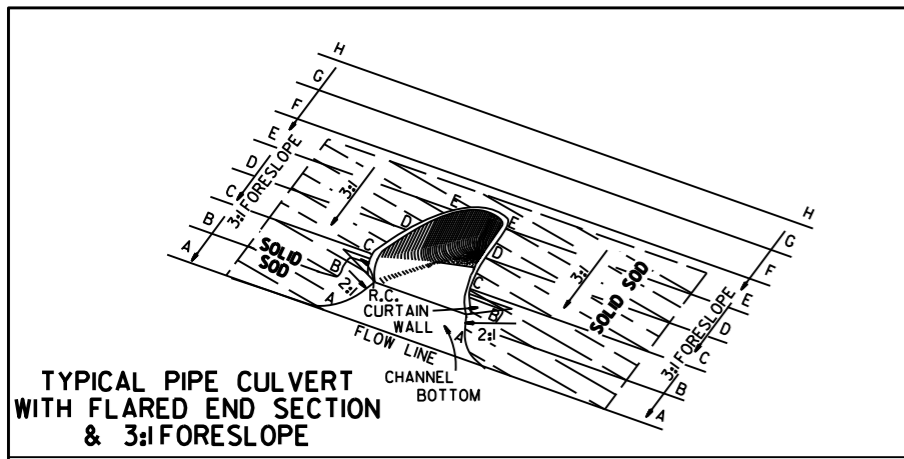
Approach Slabs will be measured and paid for in accordance with Section 504.

STANDARD DETAILS FOR TYPE A APPROACH SLAB
ARKANSAS STATE HIGHWAY COMMISSION

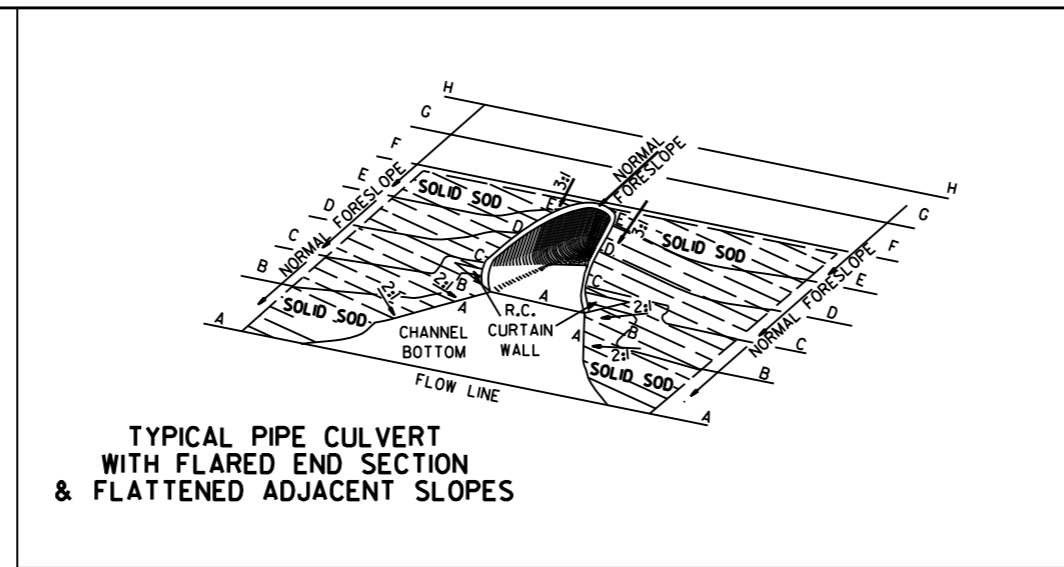
LITTLE ROCK, ARK.

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

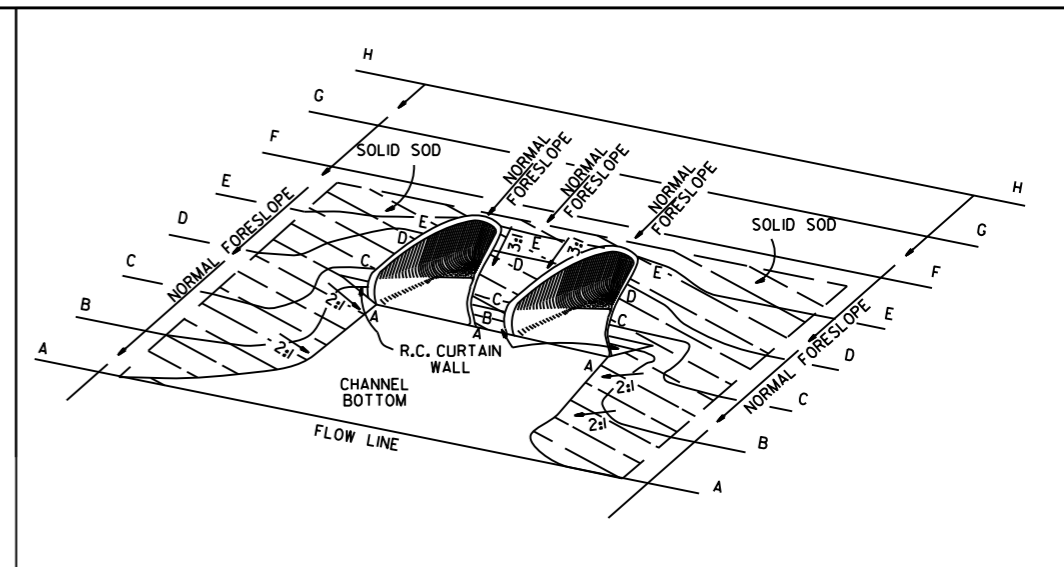
DRAWING NO. 55040A



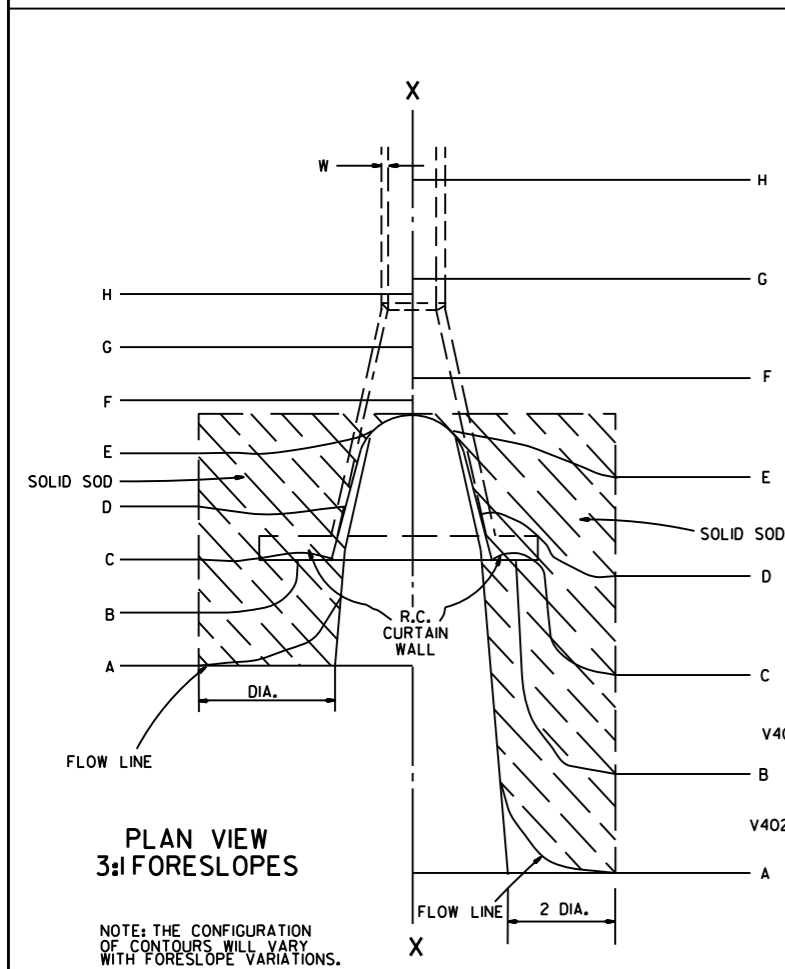
TYPICAL PIPE CULVERT WITH FLARED END SECTION & 3:1 FORESLOPE



TYPICAL PIPE CULVERT WITH FLARED END SECTION & FLATTENED ADJACENT SLOPES

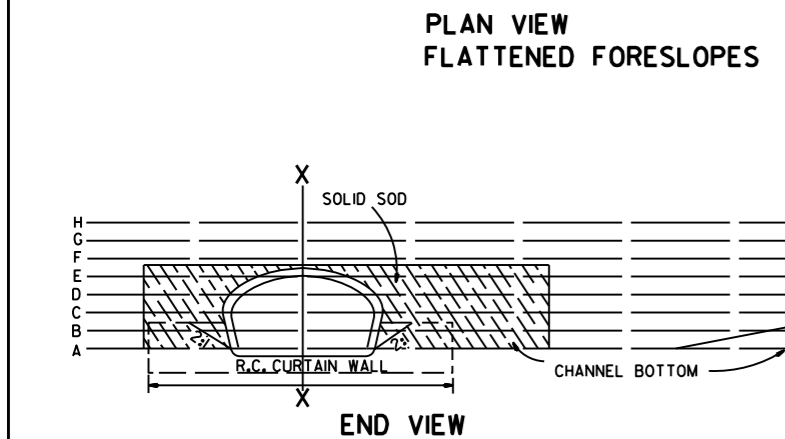


TYPICAL MULTIPLE PIPE CULVERT WITH FLARED END SECTIONS & FLATTENED ADJACENT SLOPES



PLAN VIEW 3:1 FORESLOPES

NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

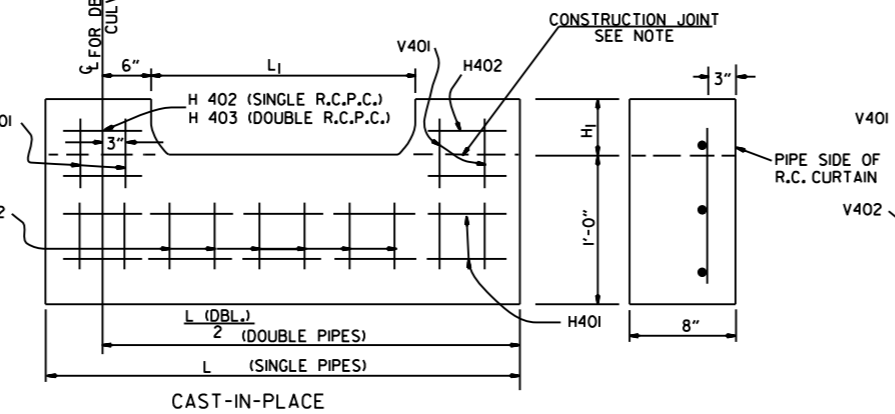


PLAN VIEW FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

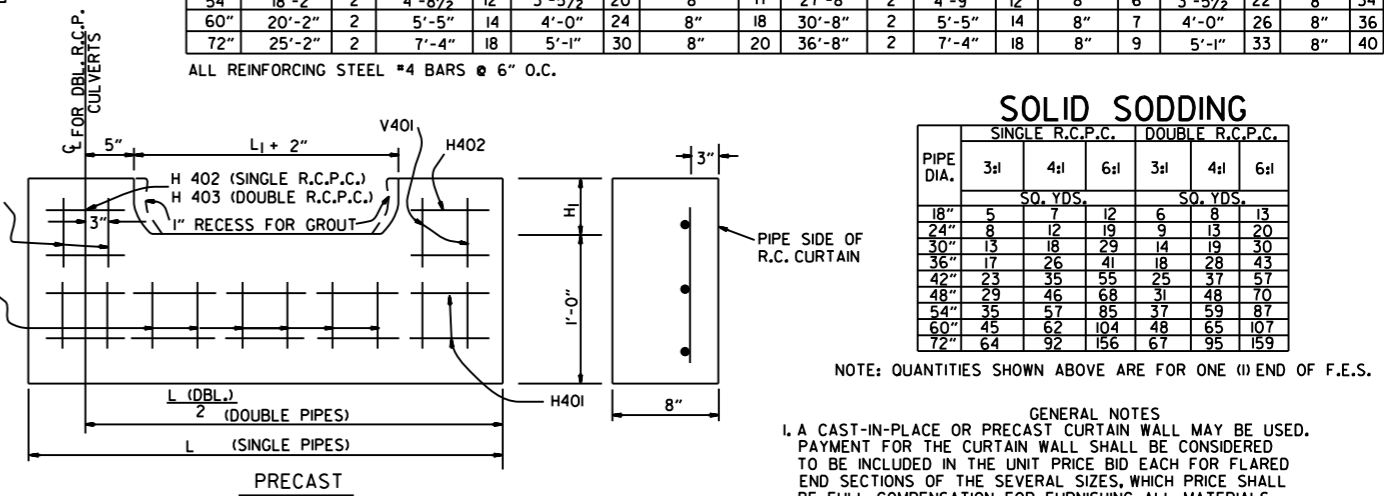
PIPE DIA.	H ₁	L ₁	L	L (DBL.) / 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC. CU. YDS.	REINF. STEEL LBS.	CONC. CU. YDS.	REINF. STEEL LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"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

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



R.C. CURTAIN WALL DETAILS

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.



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

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11 1/2"	4	1'-7 1/2"	8	8"	8	12'-2"	2	1'-11 1/2"	4	8"	2	1'-7 1/2"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8 1/2"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8 1/2"	12	8"	18
30"	10'-8"	2	2'-4 1/2"	4	1'-11 1/2"	10	8"	12	17'-8"	2	2'-4 1/2"	4	8"	2	1'-11 1/2"	14	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'-9 1/2"	8	2'-9 1/2"	16	8"	15	23'-8"	2	3'-9 1/2"	8	8"	4	2'-9 1/2"	18	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'-8 1/2"	12	3'-5 1/2"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5 1/2"	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

SOLID SODDING

PIPE DIA.	SINGLE R.C.P.C.			DOUBLE R.C.P.C.		
	3:1	4:1	6:1	3:1	4:1	6:1
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 3/4".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W/10 MAY BE USED IN LIEU OF REINFORCING BARS.

DATE	REVISION	FILMED	STANDARD DRAWING FES-1
10-18-96	ADDED NOTE TO SOLID SODDING		ARKANSAS STATE HIGHWAY COMMISSION
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		

FLARED END SECTION

STANDARD DRAWING FES-1

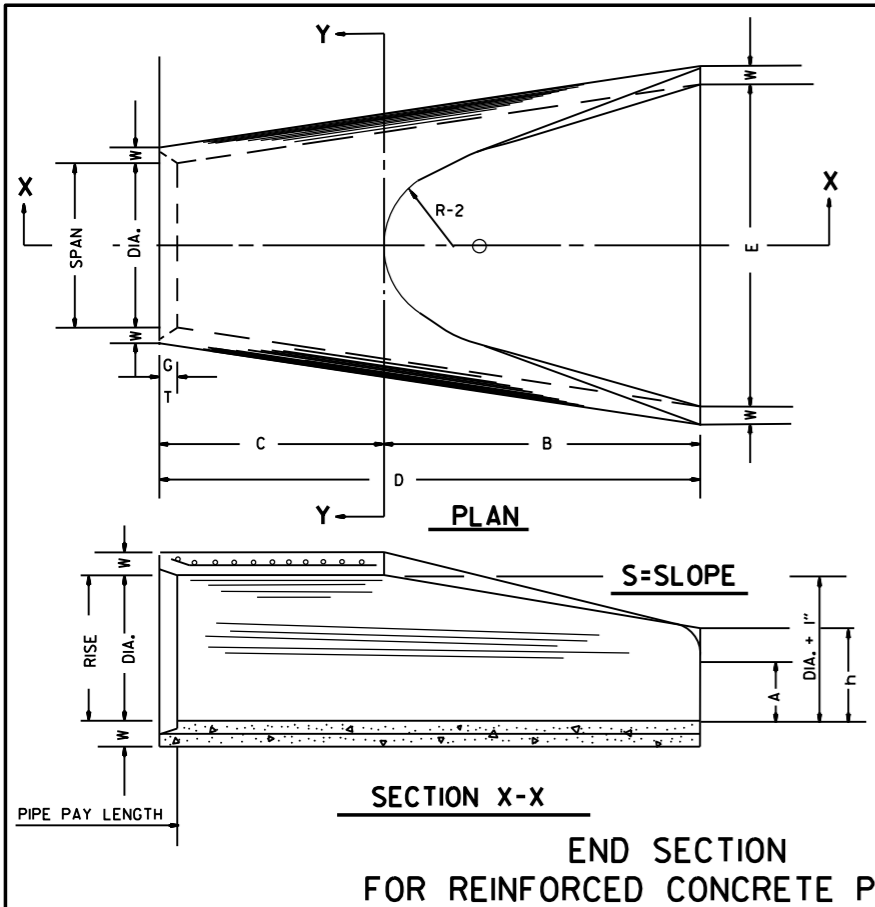
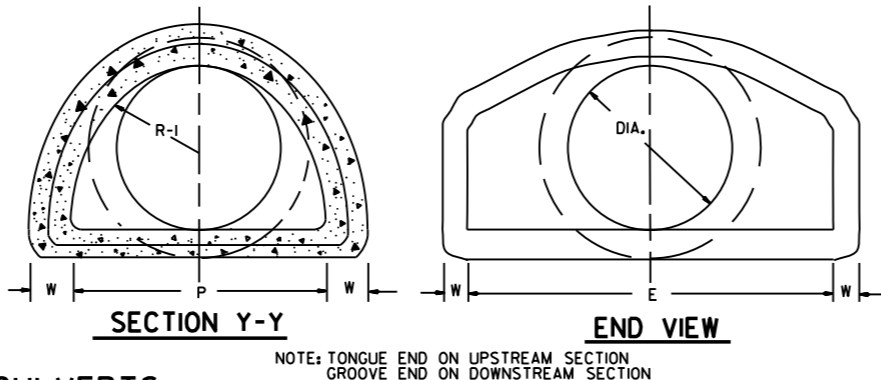


TABLE OF DIMENSIONS

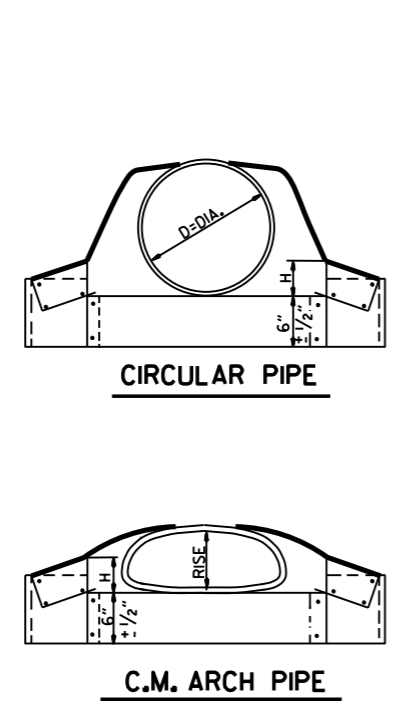
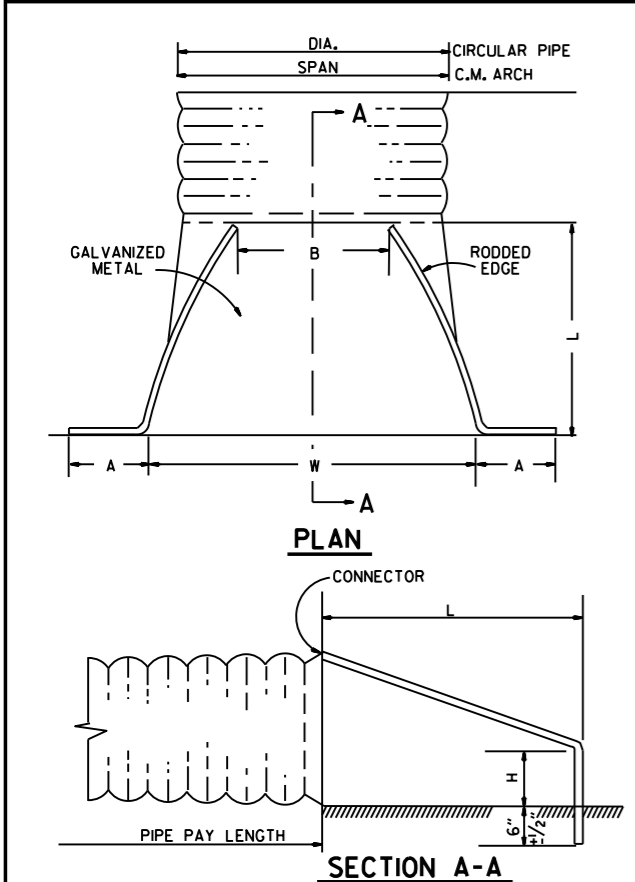
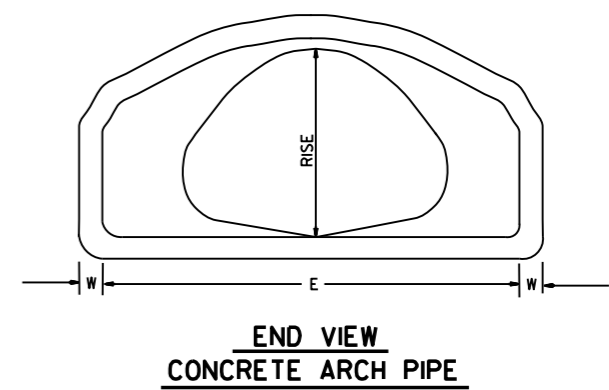
DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 1/8"	14"	2 1/2"	1600	1'-1 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	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 1/8"	24 1/8"	20"	3 1/2"	4100	1'-8"
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 3/8"	27 1/2"	22"	3 1/2"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 3/8"	24"	4"	8750	2'-10 1/2"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 3/8"	38 3/8"	24"	5"	13250	4'-6"



ARCH PIPE

EQUIV. DIA.	• SPAN		• RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
INCHES														
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1 1/2"	2 1/2:1
18	22	22	13 1/2	14	2 1/2"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 1/8"	13"	2 1/2"	2 1/2:1
21	26	26	15 1/2	16	2 3/4"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 1/8"	14"	2 1/2"	2 1/2:1
24	28 1/2	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 3/8"	15"	2 1/2"	2 1/2:1
30	36 1/4	36	22 1/2	23	3 1/2"	10"	3'-1"	3'-0 1/2"	6'-1 1/2"	6'-0"	47 1/8"	20"	3"	2 1/2:1
36	43 3/4	44	26 3/8	27	4"	10 1/2"	4'-0"	2'-11 1/2"	6'-1 1/2"	6'-6"	54 3/8"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 3/8	31	4 1/2"	11 1/2"	4'-7"	1'-10 1/4"	6'-5 1/4"	7'-2"	59 1/2"	23"	3 3/4"	2 1/2:1
48	58 1/2	59	36	36	5"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	7'-10"	70 3/8"	24"	4 1/4"	2 1/2:1
54	65	65	40	40	5 1/2"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/8"	24"	4 3/4"	2 1/2:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 3/8"	24"	5"	2 1/2:1

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

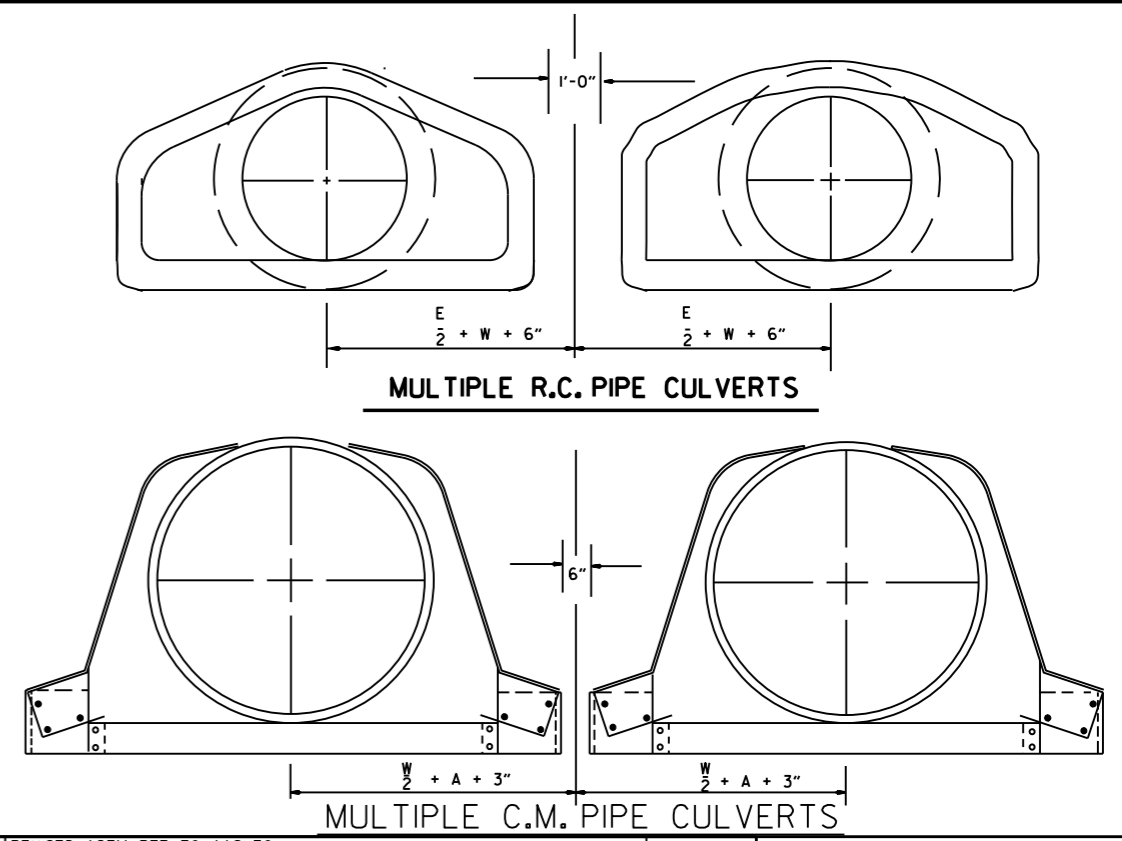


CIRCULAR PIPE

D. DIA.	GAUGE	A	B. MAX.	H	L	W	S
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	2 1/2:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1 3/4:1
66	12	18	36	12	87	120	1 1/2:1
72	12	18	39	12	87	126	1 1/3:1

C.M. ARCH PIPE

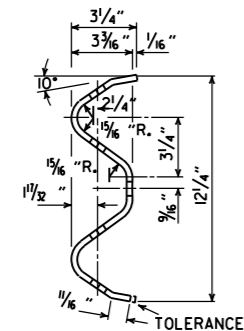
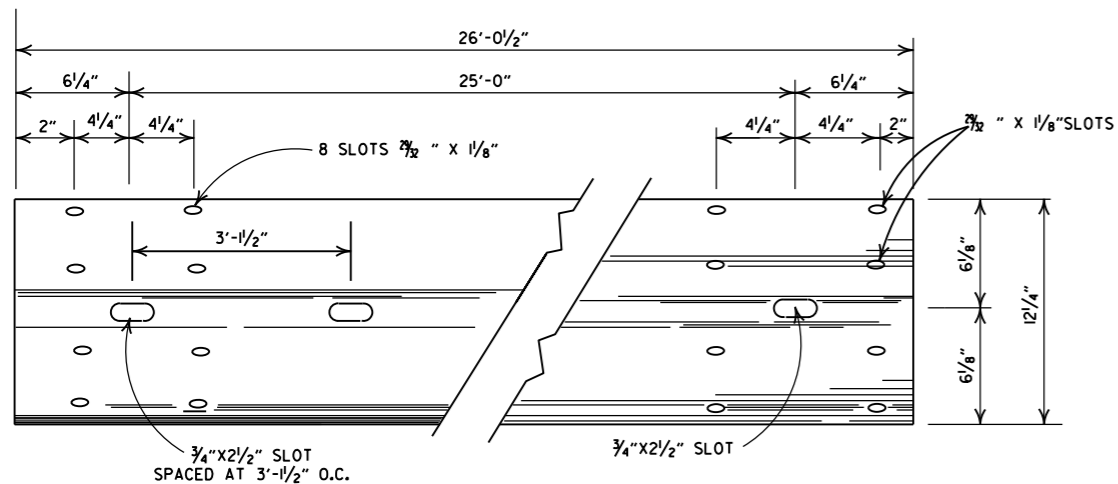
EQUIV. DIA.	SPAN	RISE	INCHES				S	GAUGE	
			A	B MAX.	H	L			
15"	17	13	7	9	6	19	30	2 1/2:1	16
18"	21	15	7	10	6	23	36	2 1/2:1	16
21"	24	18	8	12	6	28	42	2 1/2:1	16
24"	28	20	9	14	6	32	48	2 1/2:1	16
30"	35	24	10	16	6	39	60	2 1/2:1	14
36"	42	29	12	18	8	46	75	2 1/2:1	14
42"	49	33	13	21	9	53	85	2 1/2:1	12
48"	57	38	18	26	12	63	90	2 1/2:1	12
54"	64	43	18	30	12	70	102	2 1/4:1	12
60"	71	47	18	33	12	77	114	2 1/4:1	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.

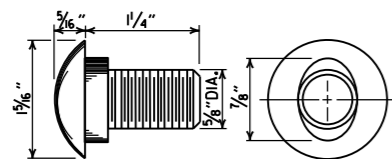
END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

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

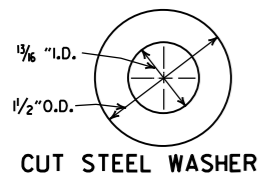


DETAILS OF W-BEAM GUARDRAIL

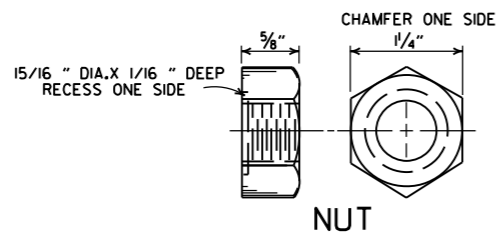
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



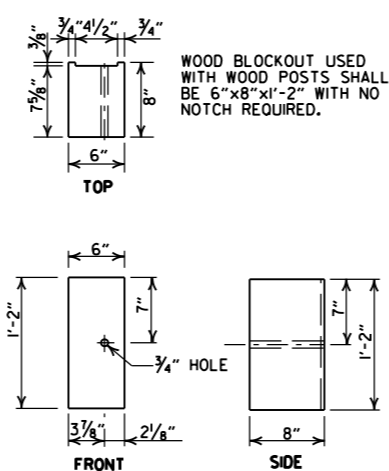
**SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH**



CUT STEEL WASHER

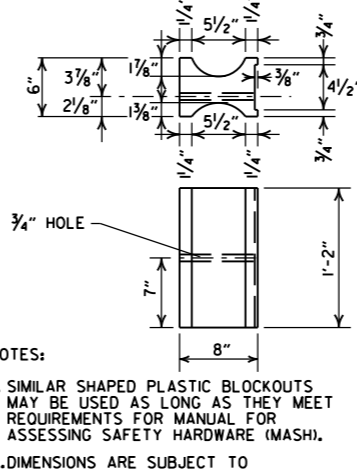


NUT



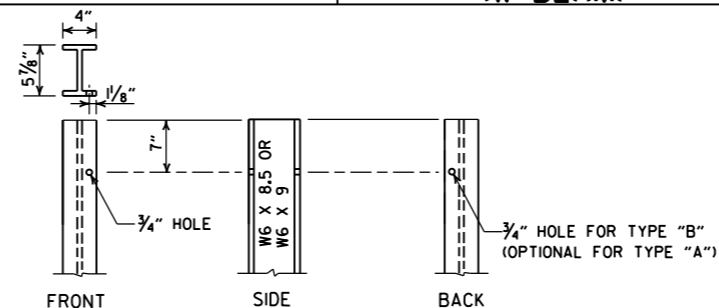
WOOD BLOCKOUT (W-BEAM)

WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"X8"X1'-2" WITH NO NOTCH REQUIRED.

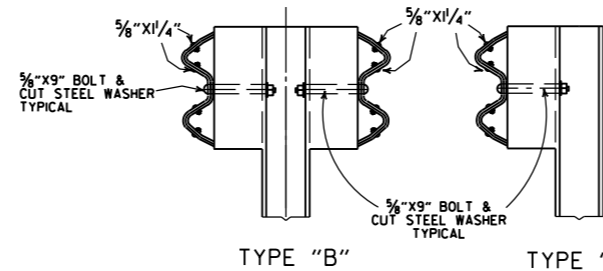


PLASTIC BLOCKOUT (W-BEAM)

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.



STEEL POST



DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

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

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

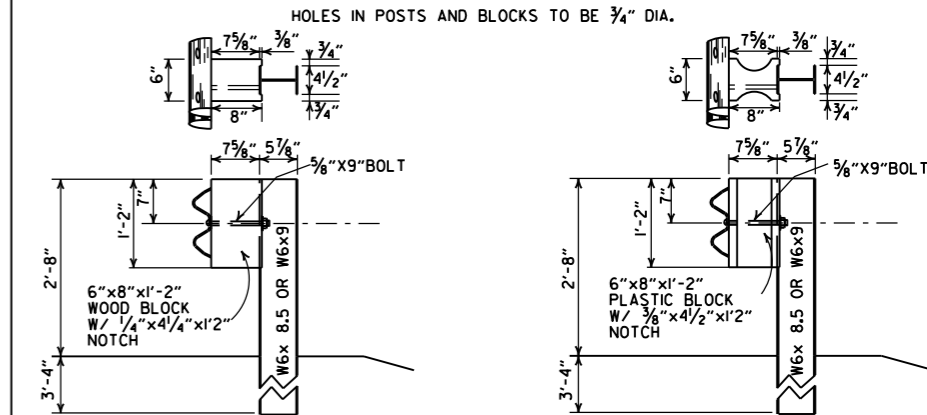
W-BEAM GUARDRAIL REPRESENTING INTERMEDIATE SECTIONS WILL BE MEASURED ALONG THE ROADWAY FACE FROM CENTERLINE OF POST TO CENTERLINE OF POST.

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

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

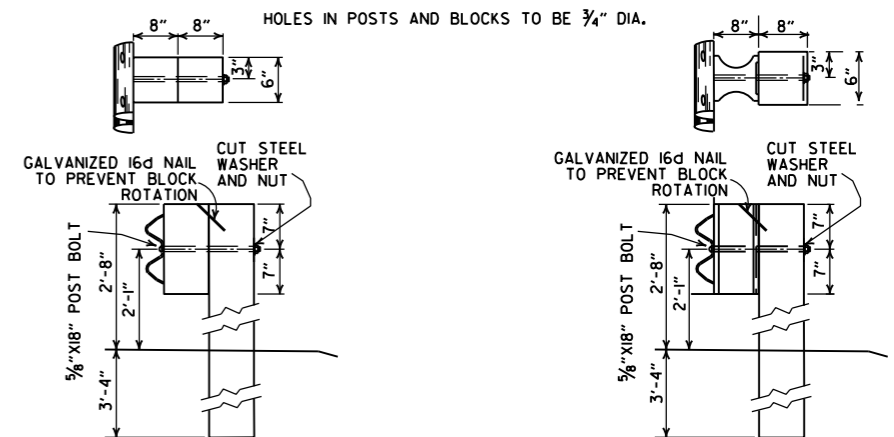
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

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



WOOD BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



WOOD BLOCKOUT CONNECTIONS

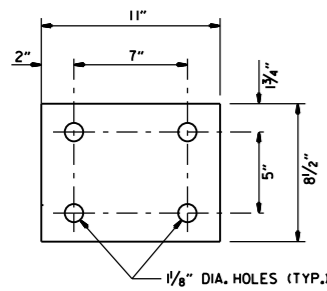
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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

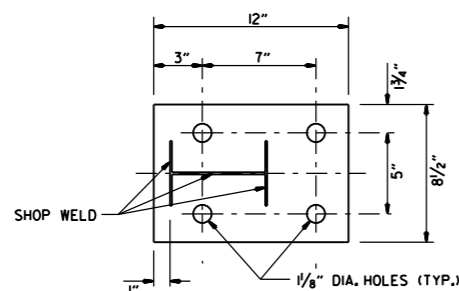
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

STANDARD DRAWING GR-6

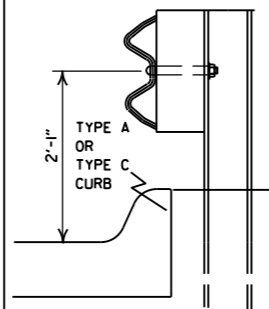


WASHER PLATE



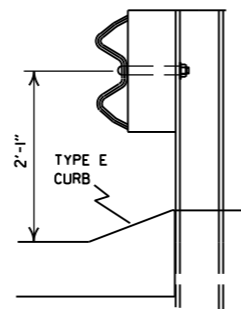
BASE PLATE

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



FOR DESIGN SPEEDS OF 50 MPH OR LESS

ALIGN FACE OF GUARDRAIL WITH FACE OF CURB.

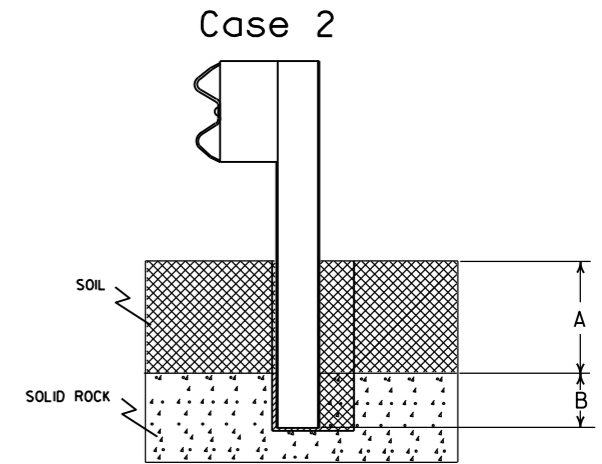
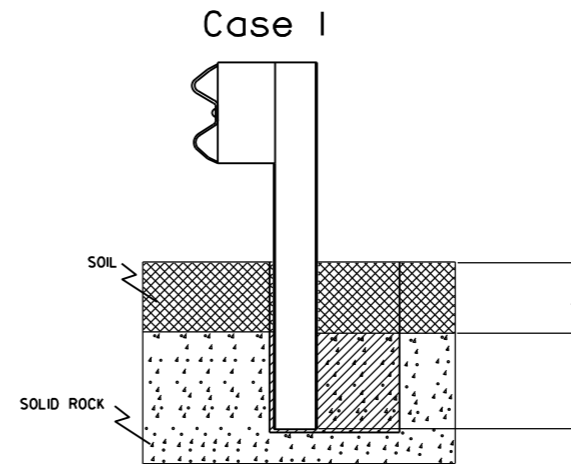


FOR DESIGN SPEEDS OF 55 MPH OR MORE

PLACE GUARDRAIL POSTS AGAINST BACK OF CURB.

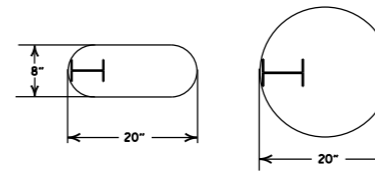
DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB (W-BEAM)

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



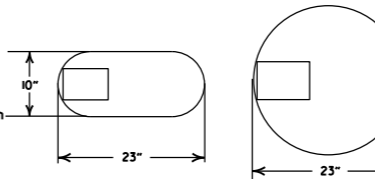
Plan View Steel Posts

Either hole configuration acceptable



Plan View Wood Posts

Either hole configuration acceptable



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

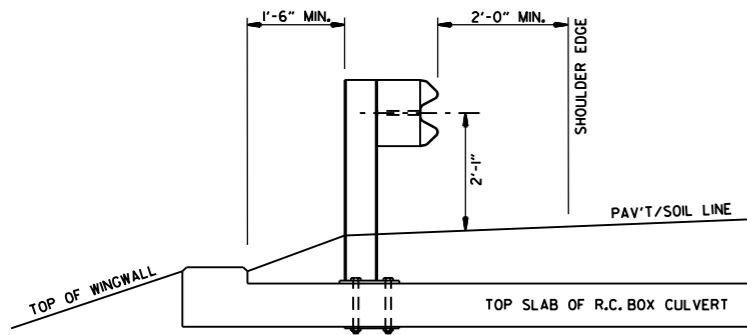
Zone A: Backfill according to Section 617.03(a).

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

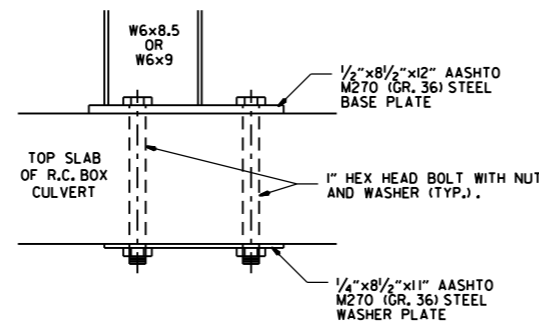
Notes: For overlying soil depths (A) ranging from 18" to 44", the depth of required drilling (B) is equal to either 12" or 44" minus the depth of soil whichever is less.

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

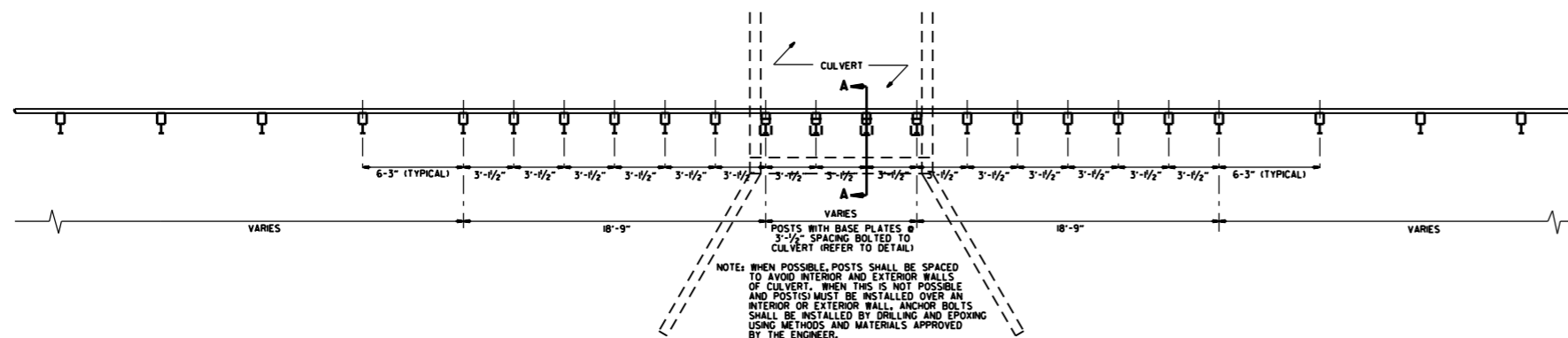
DETAIL OF POST PLACEMENT IN SOLID ROCK (W-BEAM)



SECTION A-A



DETAIL OF CONNECTION



PLAN LAYOUT OF TYPE A GUARDRAIL AT LOW-FILL CULVERTS

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

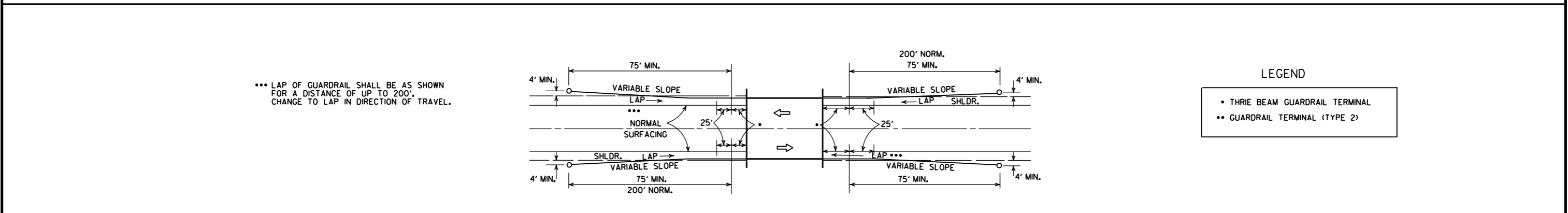
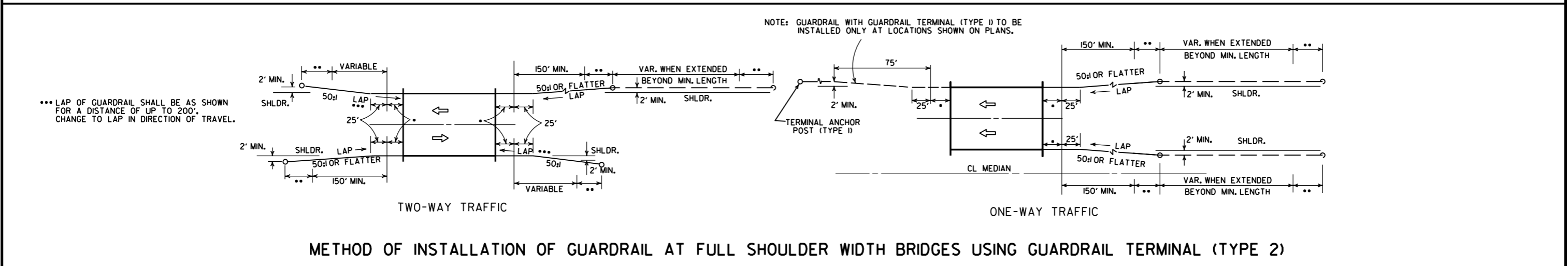
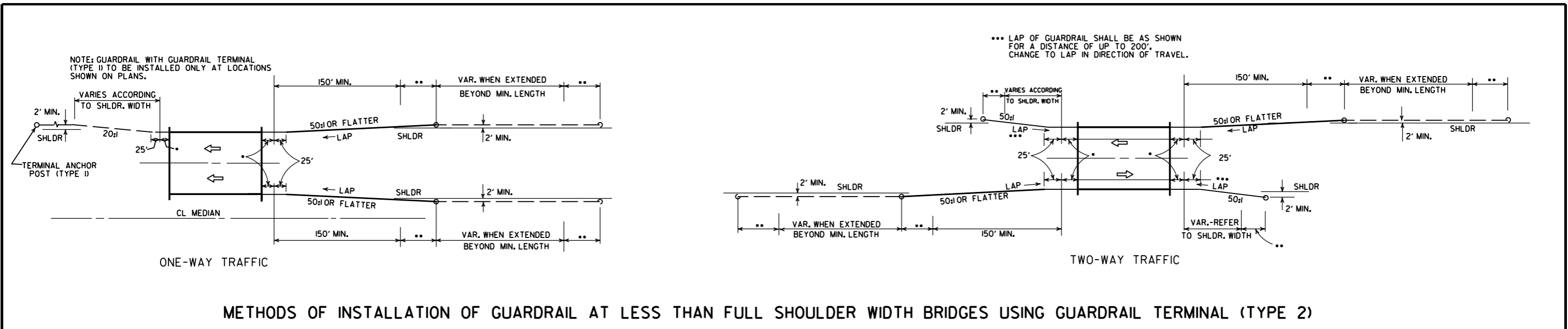
NOTE: WHEN POSSIBLE, POSTS SHALL BE SPACED TO AVOID INTERIOR AND EXTERIOR WALLS OF CULVERT. WHEN THIS IS NOT POSSIBLE AND POSTS MUST BE INSTALLED OVER AN INTERIOR OR EXTERIOR WALL, ANCHOR BOLTS SHALL BE INSTALLED BY DRILLING AND EPOXYING USING METHODS AND MATERIALS APPROVED BY THE ENGINEER.

DATE	REVISION	FILED
11-07-19	RENUMBERED, RENAMED, REVISED REFERENCE	
11-16-17	REVISED GUARDRAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARDRAIL 1"	
04-12-07	REVISED DETAIL OF GUARDRAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARDRAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARDRAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADDED DET. OF GUARDRAIL CONNECTION TO R.C. BOX CULVERT, 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

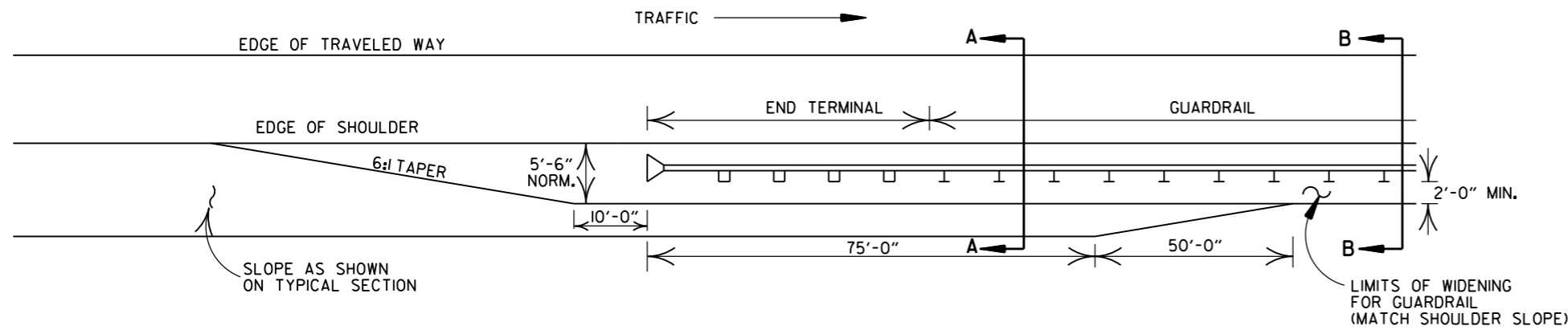


LEGEND

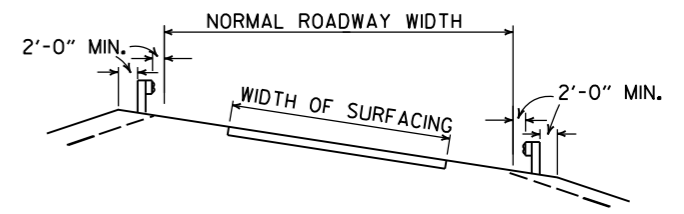
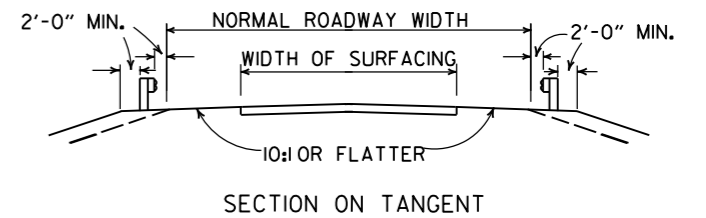
- THRE BEAM GUARDRAIL TERMINAL
- GUARDRAIL TERMINAL (TYPE 2)

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	
10-9-87	ADDED NOTE		
10-9-87	REDRAWN & REVISED		

ARKANSAS STATE HIGHWAY COMMISSION	
GUARDRAIL DETAILS	
STANDARD DRAWING GR-8	



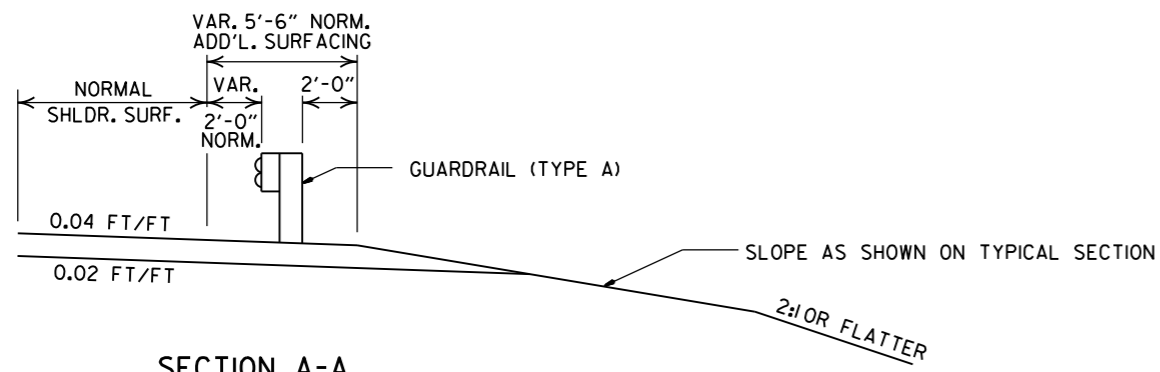
NOTE: NORMAL SECTION TO BE WIDENED APPROX. 5'-6" EACH SIDE TO SUPPORT GUARDRAIL.



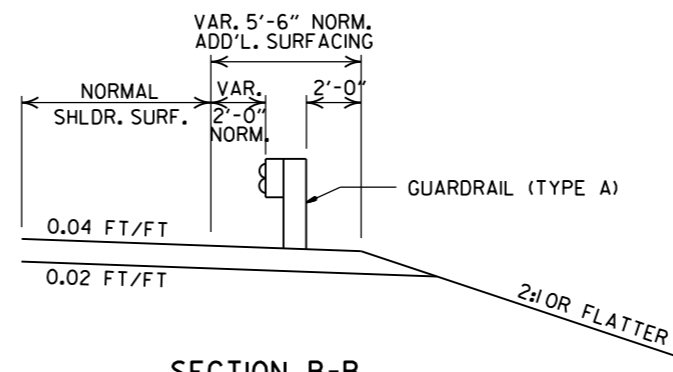
SECTION ON TANGENT

SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARDRAIL ON HIGHWAY

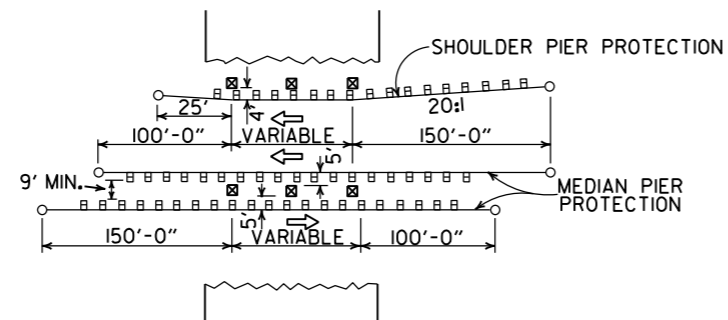


SECTION A-A



SECTION B-B

DETAILS OF WIDENING FOR GUARDRAIL



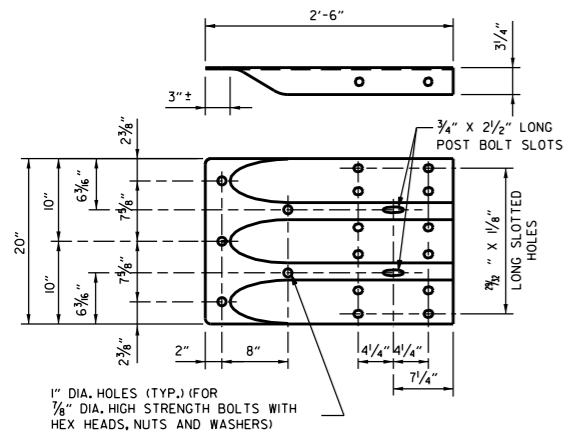
METHOD OF INSTALLATION OF GUARDRAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
11-07-19	RENUMBERED AND RENAMED	
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

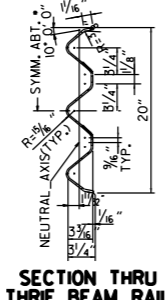
ARKANSAS STATE HIGHWAY COMMISSION

GUARDRAIL DETAILS

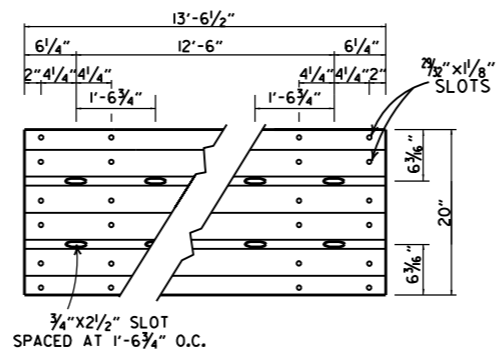
STANDARD DRAWING GR-9



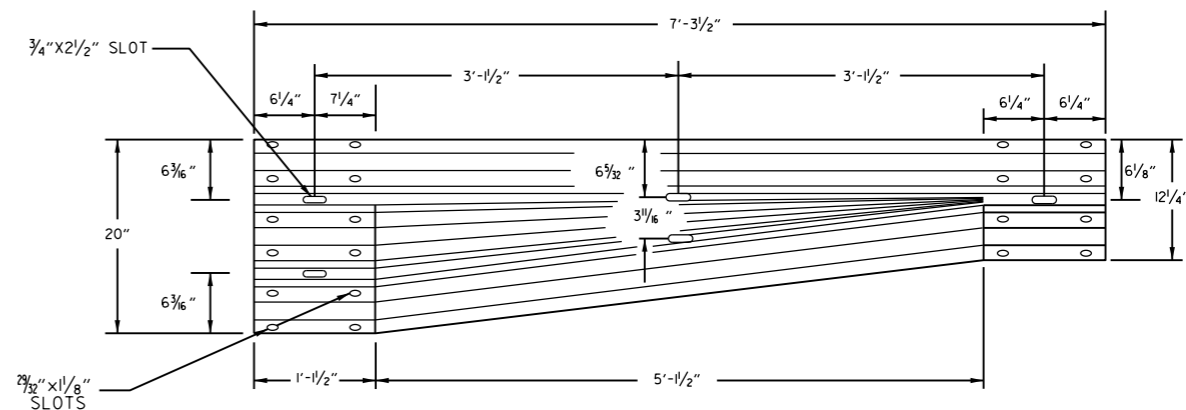
SPECIAL END SHOE



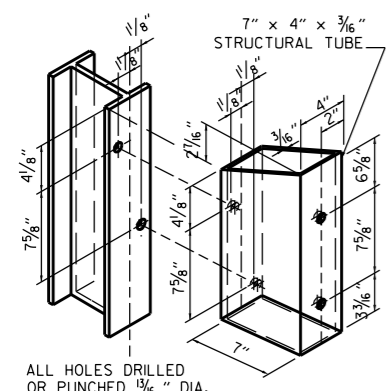
SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL

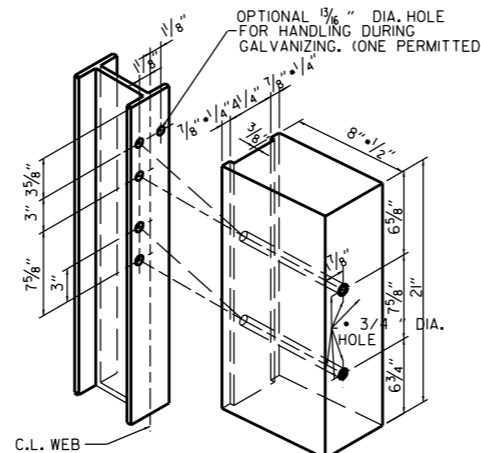


TRANSITION SECTION



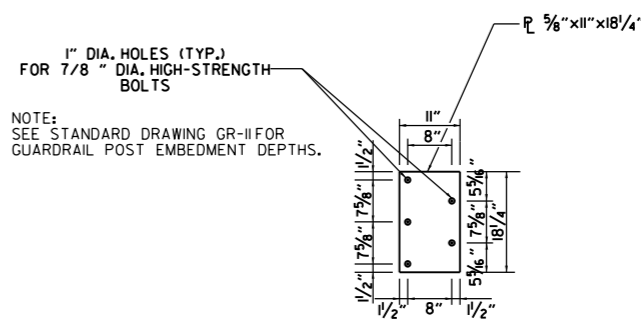
ATTACH BLOCKOUT TO POST USING 3/8" DIA. HEX HEAD BOLTS WITH 1 1/2" O.D. CUT STEEL WASHERS AND NUT.

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

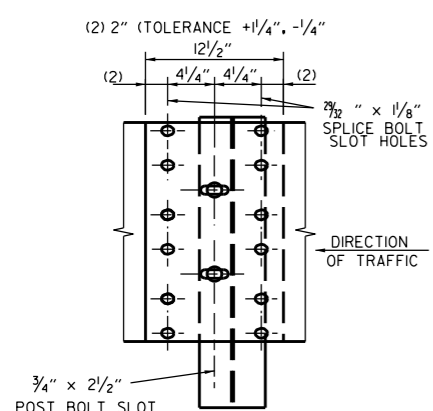
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.



NOTE: SEE STANDARD DRAWING GR-II 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 7/8" 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.

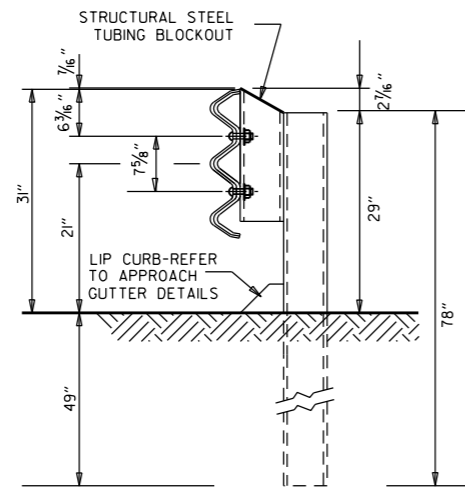


THRIE BEAM RAIL SPLICE AT POST

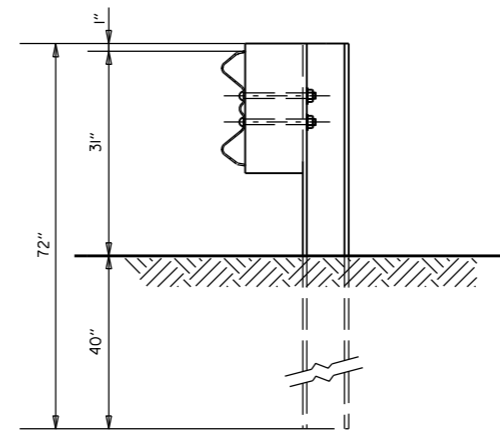
GENERAL NOTES:
 THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.
 RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.
 ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3"4" BEYOND IT.
 ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-8 & GR-13.
 REFER TO STD. DRWG. GR-II FOR POST DETAILS.
 USE THRIE BEAM GUARDRAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.
 THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.
 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
03-30-00	DRAWN & ISSUED	
05-18-00	ADDED NOTE	
06-29-00	MOVED DIMENSION LINES	
08-22-02	REVISED NOTE (2)	
04-10-03	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
11-18-04	REVISED GENERAL NOTES	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-29-07	ADDED PLASTIC BLOCKOUTS	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGE ENDS TO STD. DRWG. GR-12	
11-07-19	RENAMED AND REVISED REFERENCES	

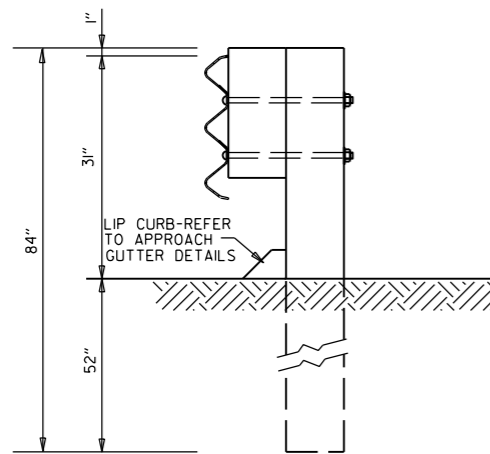
ARKANSAS STATE HIGHWAY COMMISSION
GUARDRAIL DETAILS
 STANDARD DRAWING GR-10



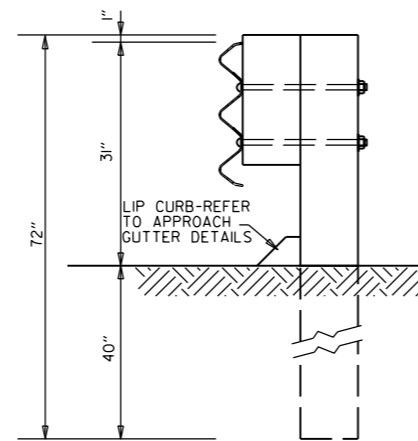
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



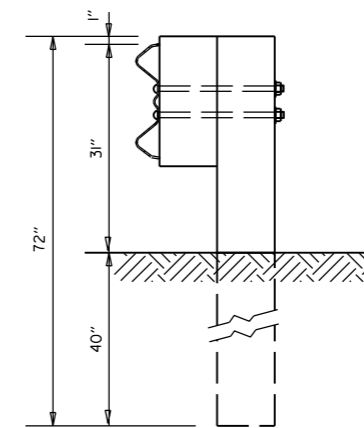
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



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

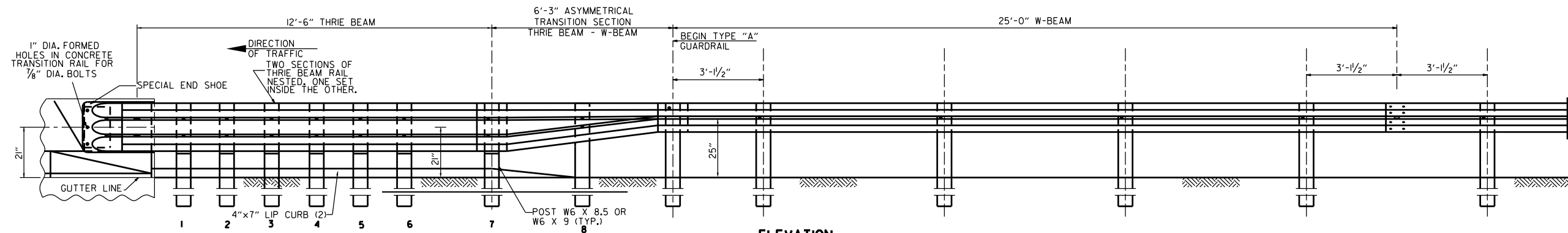


W-BEAM TO THRIE BEAM
TRANSITION RAIL WITH WOOD OR
PLASTIC BLOCKOUT & WOOD POST
POST 8

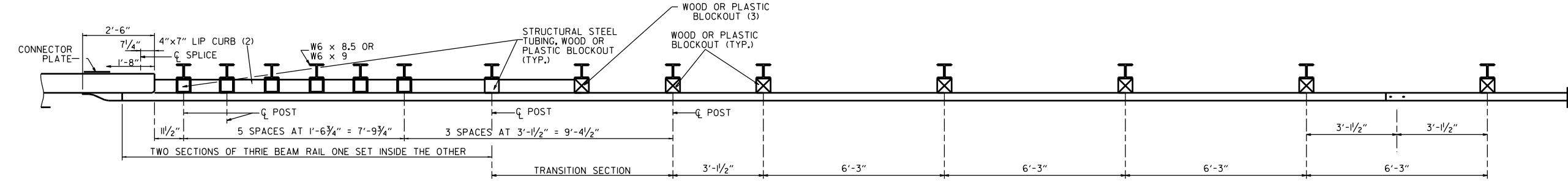
GENERAL NOTES:
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND
VERTICALLY IN CROSS SECTION.

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

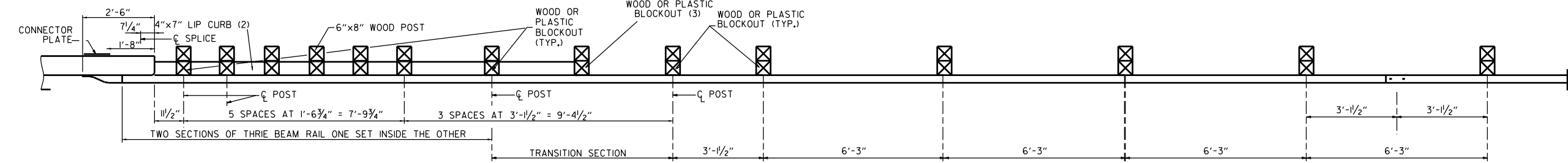
DATE	REVISION	FILMED	ARKANSAS STATE HIGHWAY COMMISSION
11-07-19	RENAMED		GUARDRAIL DETAILS
11-16-17	REVISED GUARDRAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-II		
07-14-10	REVISED POST 8 DIMENSIONS		STANDARD DRAWING GR-II
11-29-07	ADDED PLASTIC BLOCKOUTS		
08-22-02	REVISED LIP CURB NOTE		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



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-II FOR POST DETAILS.

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

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

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

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

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

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDDOT NOMINAL	AASHTO M 206	ARDDOT NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43¾	44	26¾	27
42	51½	51	31¾	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87½	87
120	154	154	96¾	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

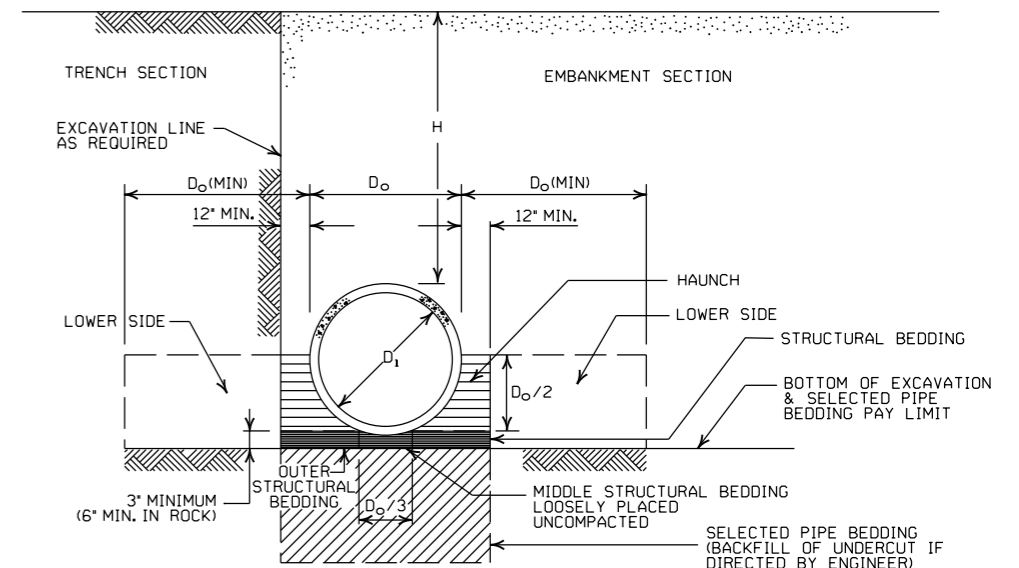
- LEGEND -

- D_i = NORMAL INSIDE DIAMETER OF PIPE
- D_o = OUTSIDE DIAMETER OF PIPE
- H = FILL COVER HEIGHT OVER PIPE (FEET)
- MIN. = MINIMUM
- [Symbol] = 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

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1



CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	73
42	2		43	67	70	
48	2		37	58	61	64
3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CONSTRUCTION SEQUENCE

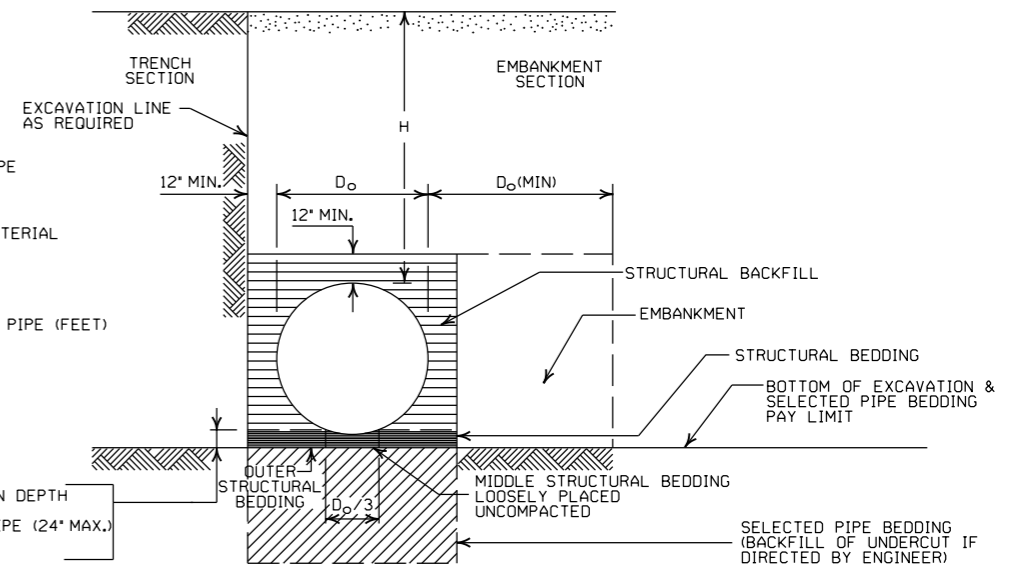
1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. COMPLETE STRUCTURAL BACKFILL OPERATION BY WORKING FROM SIDE TO SIDE OF THE PIPE. THE SIDE TO SIDE STRUCTURAL BACKFILL DIFFERENTIAL SHALL NOT EXCEED 24 INCHES OR 1/3 THE SIZE OF THE PIPE, WHICHEVER IS LESS.

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

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL ③

③ SM-3 WILL NOT BE ALLOWED.

- LEGEND -**
- D_o = OUTSIDE DIAMETER OF PIPE
 - MAX. = MAXIMUM
 - MIN. = MINIMUM
 - [Symbol] = STRUCTURAL BACKFILL MATERIAL
 - [Symbol] = UNDISTURBED SOIL
 - EQUIV. DIA. = EQUIVALENT DIAMETER
 - H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALLATION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2 3/8" X 1/2" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINIMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM						
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	34
30	2		18	31	32	
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

EQUIVALENT METAL THICKNESSES AND GAUGES

METAL THICKNESS IN INCHES			GAUGE NUMBER	
STEEL				
ZINC COATED	UNCOATED	ALUMINUM		
0.064	0.0598	0.060		16
0.079	0.0747	0.075		14
0.109	0.1046	0.105		12
0.138	0.1345	0.135		10
0.168	0.1644	0.164	8	

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINIMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)			
				INSTALLATION			INSTALLATION			
				TYPE 1	TYPE 1		TYPE 1	TYPE 1		
2 3/8 INCH BY 1/2 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM										
15	17x13	3	0.064	2	15	0.060	2	15		
18	21x15	3	0.064	2	15	0.060	2	15		
21	24x18	3	0.064	2,25	15	0.060	2,25	15		
24	28x20	3	0.064	2,5	15	0.075	2,5	15		
30	35x24	3	0.079	3	12	0.075	3	12		
36	42x29	3 1/2	0.079	3	12	0.105	3	12		
42	49x33	4	0.079	3	12	0.105	3	12		
48	57x38	5	0.109	3	13	0.135	3	13		
54	64x43	6	0.109	3	14	0.135	3	14		
60	71x47	7	0.138	3	15	0.135	3	14		
66	77x52	8	0.168	3	15	0.164	3	15		
72	83x57	9	0.168	3	15					
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM										
			INSTALLATION				INSTALLATION			
			TYPE 2	TYPE 1	TYPE 2	TYPE 1	TYPE 2	TYPE 1	TYPE 2	TYPE 1
36	40x31	5	0.079	3	2	12	15			
42	46x36	6	0.079	3	2	13	15			
48	53x41	7	0.079	3	2	13	15			
54	60x46	8	0.079	3	2	13	15			
60	66x51	9	0.079	3	2	13	15			
66	73x55	12	0.079	3	2	15	15			
72	81x59	14	0.079	3	2	15	15			
78	87x63	14	0.079	3	2	15	15			
84	95x67	16	0.109	3	2	15	15			
90	103x71	16	0.109	3	2	15	15			
96	112x75	18	0.109	3	2	15	15			
102	117x79	18	0.109	3	2	15	15			
108	128x83	18	0.138	3	2	15	15			

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

**METAL PIPE CULVERT
FILL HEIGHTS & BEDDING**

STANDARD DRAWING PCM-1

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

NOTE:
 18" MIN. (18" - 30" DIAMETERS)
 24" MIN. (36" - 48" DIAMETERS)
 MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

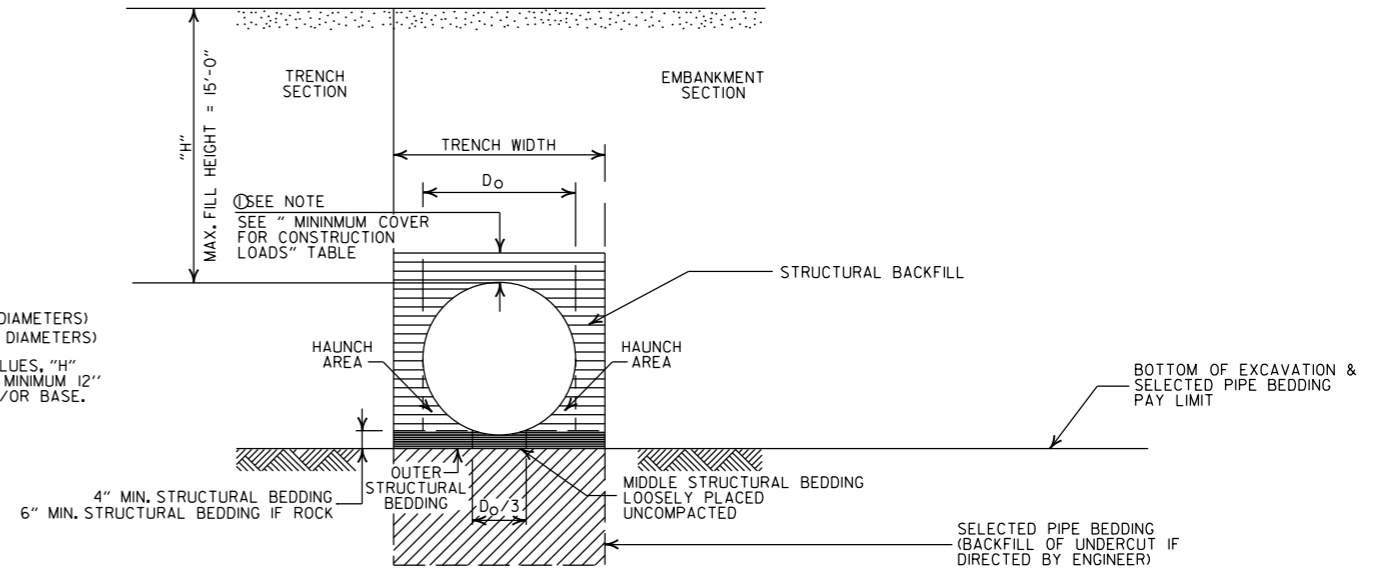
MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

- H = FILL HEIGHT (FT.)
- Do = OUTSIDE DIAMETER OF PIPE
- MAX. = MAXIMUM
- MIN. = MINIMUM
- [Hatched pattern] = STRUCTURAL BACKFILL MATERIAL
- [Diagonal lines pattern] = UNDISTURBED SOIL

GENERAL NOTES

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

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

ARKANSAS STATE HIGHWAY COMMISSION
**PLASTIC PIPE CULVERT
 (HIGH DENSITY POLYETHYLENE)**
 STANDARD DRAWING PCP-1

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

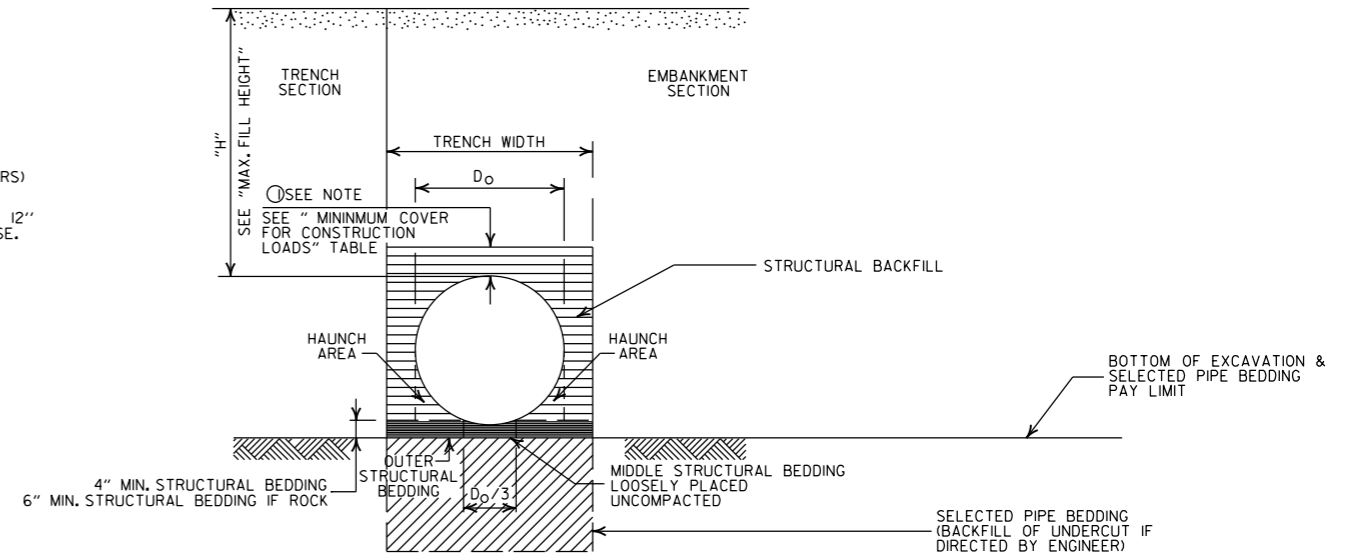
MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

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

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

GENERAL NOTES

- PIPE SHALL CONFORM TO ASTM F949, CELL CLASS I2454. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
- THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
- 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.
- 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."
- WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
- FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATED OR PROFILE VALLEY.
- PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT
(PVC F949)

STANDARD DRAWING PCP-2



INSTALLATION TYPE	**MATERIAL REQUIREMENTS FOR STRUCTURAL BACKFILL AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7)
TYPE 2	*SELECTED MATERIALS (CLASS SM-1, SM-2 OR SM-4) OR TYPE 1 INSTALLATION MATERIAL

* SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

MULTIPLE INSTALLATION OF POLYPROPYLENE PIPES

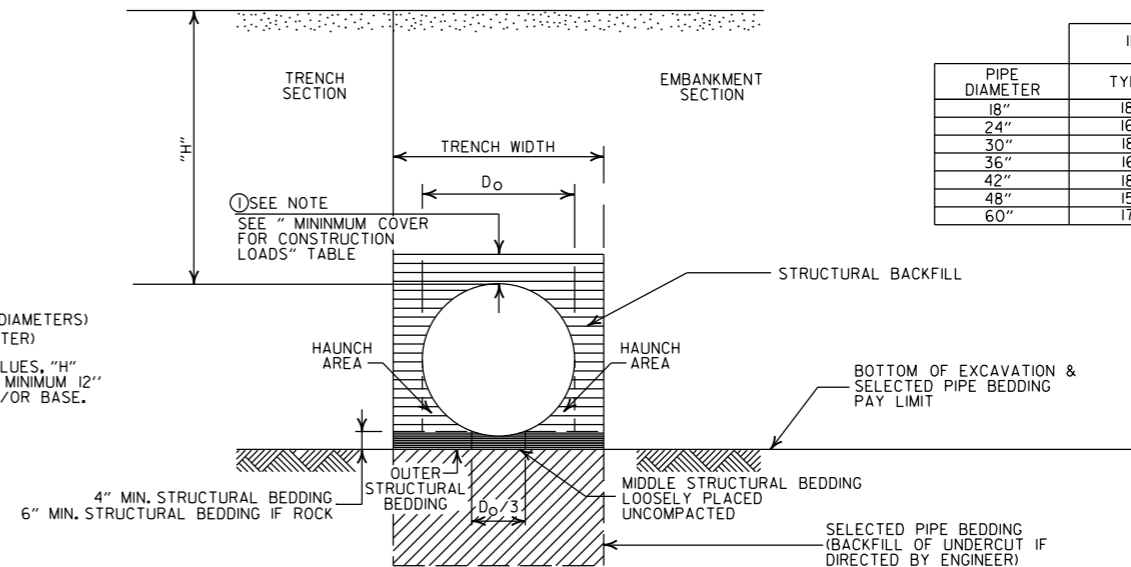
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"
60"	5'-0"

GENERAL NOTES

- PIPE SHALL CONFORM TO AASHTO M330, TYPE S. INSTALLATION SHALL CONFORM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
- PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION (2012) WITH 2013 INTERIMS.
- THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
- 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.
- 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."
- WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
- FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
- POLYPROPYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
- JOINTS FOR POLYPROPYLENE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN SECTION 26.4.2.4 AND 30.4.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS 3RD EDITION (2010) WITH 2012 INTERIMS. JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

MAXIMUM HEIGHT OF FILL "H"

PIPE DIAMETER	INSTALLATION TYPE	
	TYPE 1	TYPE 2
18"	18'	14'
24"	16'	12'
30"	18'	14'
36"	16'	12'
42"	18'	13'
48"	15'	11'
60"	17'	12'



EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

- LEGEND -

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

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

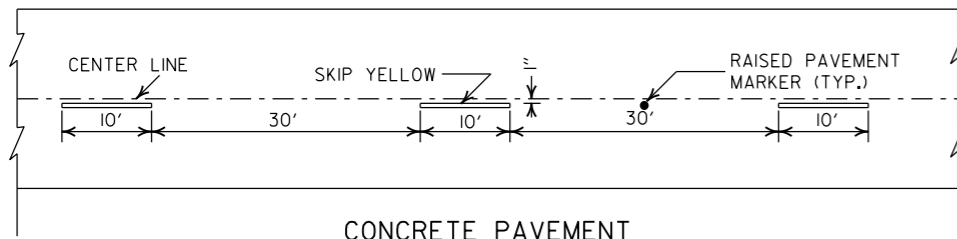
02-27-20	REVISED		
11-07-19	ISSUED		
DATE	REVISION	DATE FILMED	

ARKANSAS STATE HIGHWAY COMMISSION

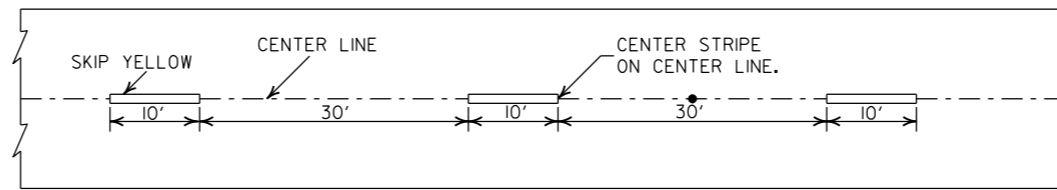
PLASTIC PIPE CULVERT
(POLYPROPYLENE)

STANDARD DRAWING PCP-3



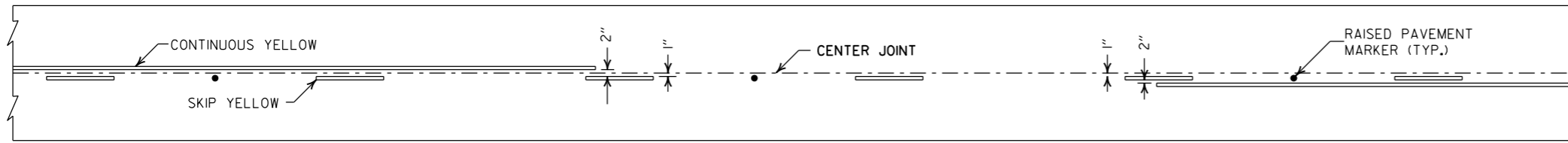


CONCRETE PAVEMENT

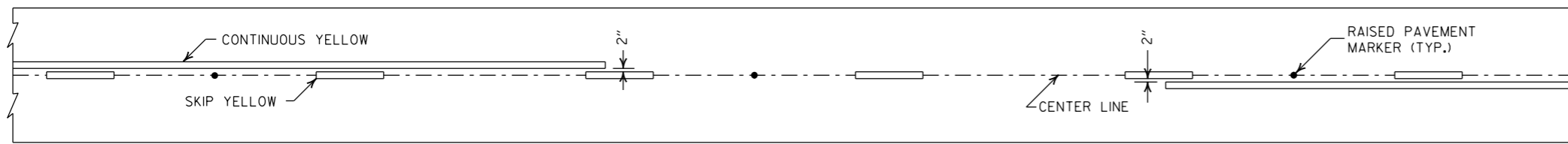


ASPHALT PAVEMENT

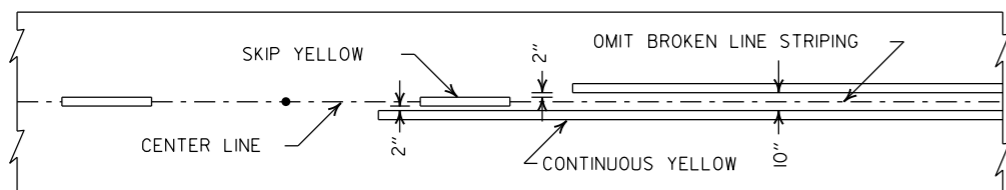
BROKEN LINE STRIPING



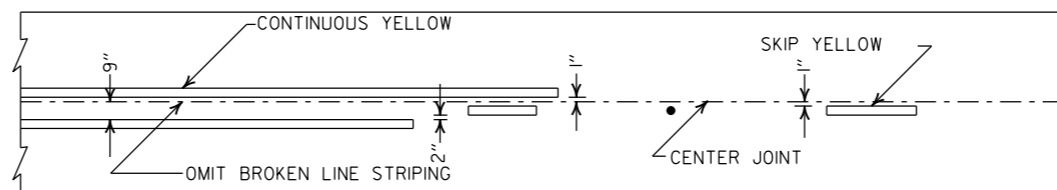
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

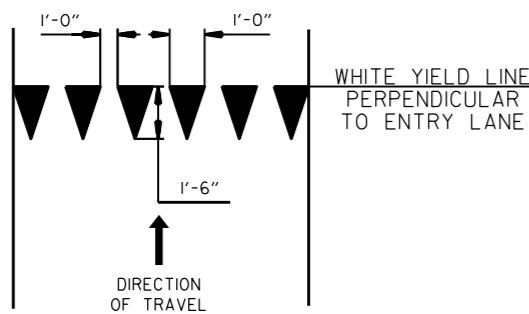


ASPHALT PAVEMENT

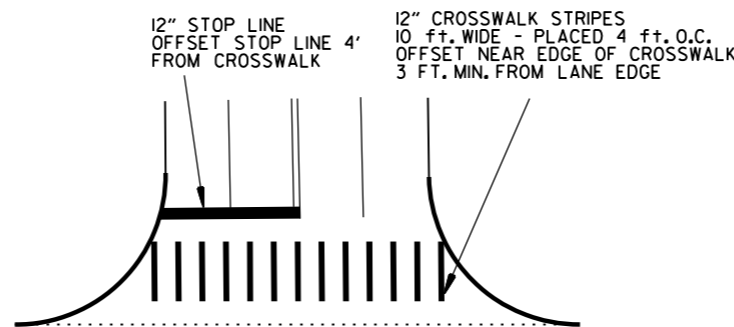


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES



YIELD LINE DETAIL

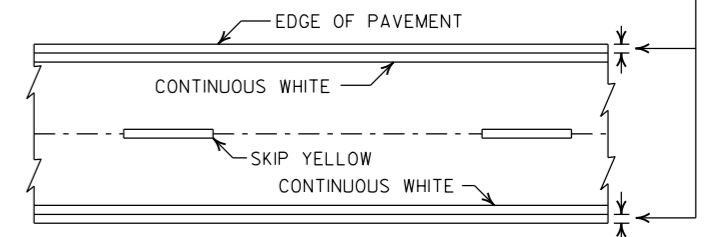


CROSSWALK AND STOP LINE DETAILS

NOTES:

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

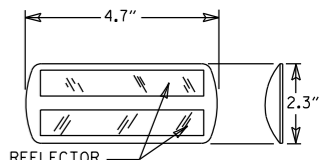
2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING

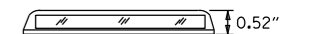
NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

TYPE II
RED/CLEAR OR
YELLOW/YELLOW



PRISMATIC REFLECTOR

NOTE:
DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

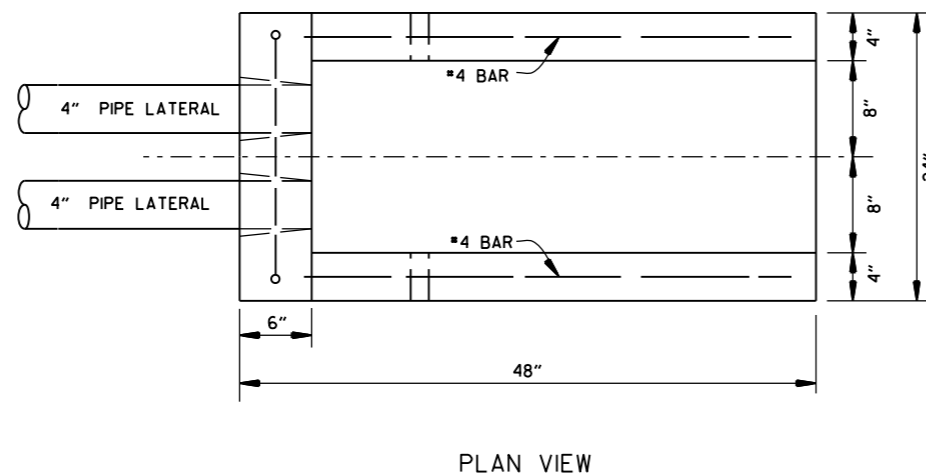
DATE	REVISION	FILMED
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02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

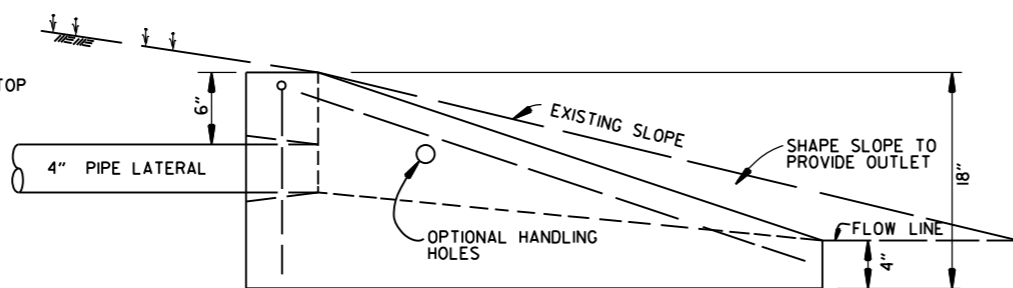
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

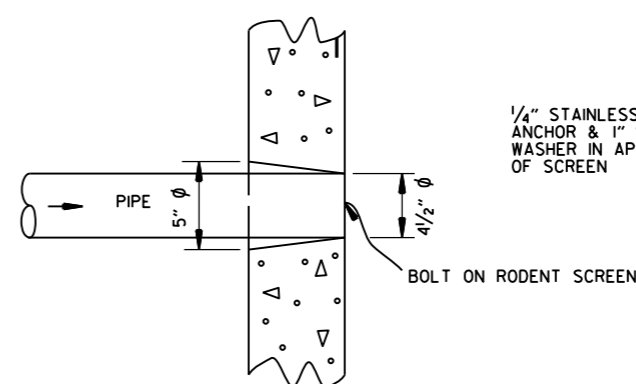
NOTE:
 1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
 2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC, LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



PLAN VIEW

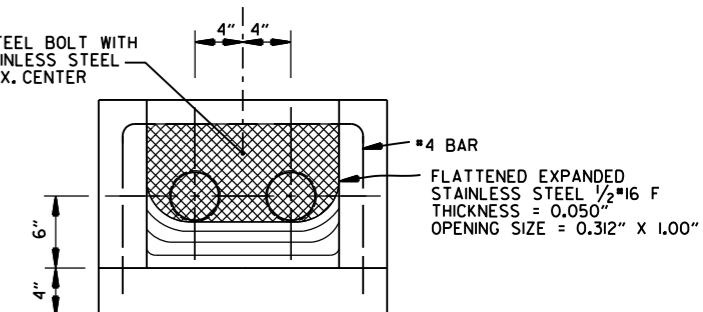


SIDE VIEW

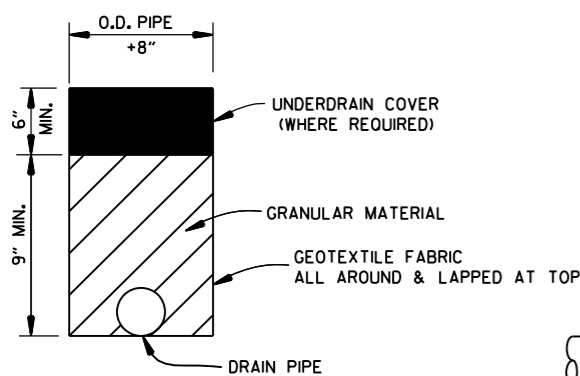


DETAIL OF HOLE FOR 4" PIPE

1/4" STAINLESS STEEL BOLT WITH ANCHOR & 1" STAINLESS STEEL WASHER IN APPROX. CENTER OF SCREEN



FRONT VIEW (DETAIL OF RODENT SCREEN)

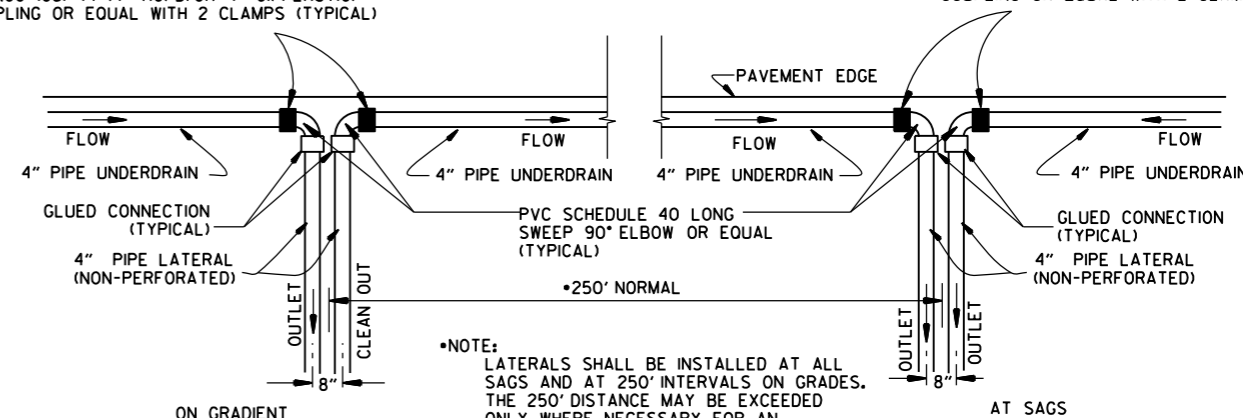


DETAILS OF PIPE UNDERDRAIN

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

UNDERDRAIN OUTLET PROTECTORS

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



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

- 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.
- 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.
- 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."
- 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.
- PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE BID PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."
- 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."
- 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.

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


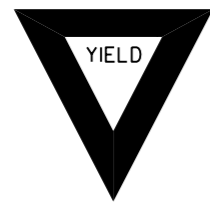







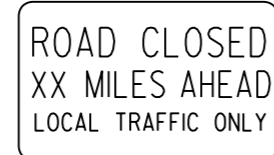
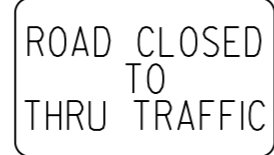

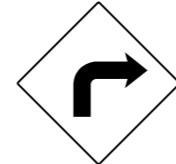



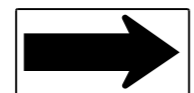

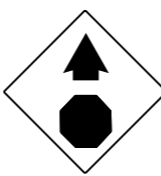
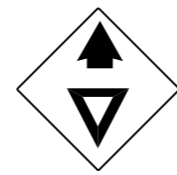
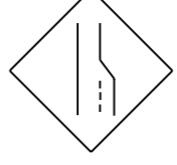

















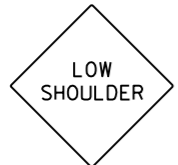
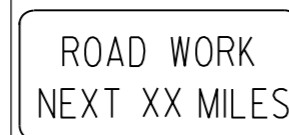
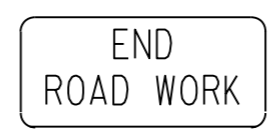
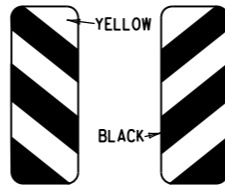


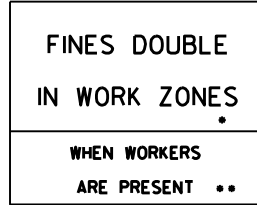
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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

<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>W3-5</p>  <p>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</p>	<p>W3-5a</p>  <p>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>W21-5a</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>WI-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>WI-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	
<p>WI-3</p>  <p>STD. 48"x48"</p>	<p>WI-4</p>  <p>STD. 48"x48"</p>	<p>WI-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>WI-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>	<p>W20-3</p>  <p>STD. 48"x48"</p>
<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>18" 500 FEET 24" W16-2</p> <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>	<p>WI-4b</p>  <p>STD. 48"x48"</p>	<p>R56-1</p>  <p>STD. 18"x18"</p>
<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>	<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>	<p>R55-1</p>  <p>36"x60"</p> <p>• USE 6" C LETTERS •• USE 4" D LETTERS</p>

ADVANCE DISTANCES
(XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE AHEAD

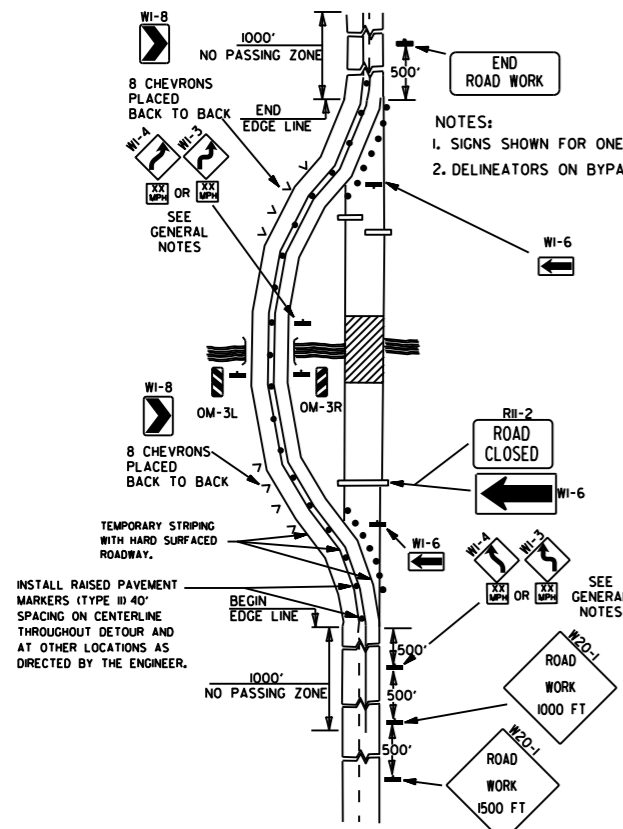
GENERAL NOTES:

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- 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.
- 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.

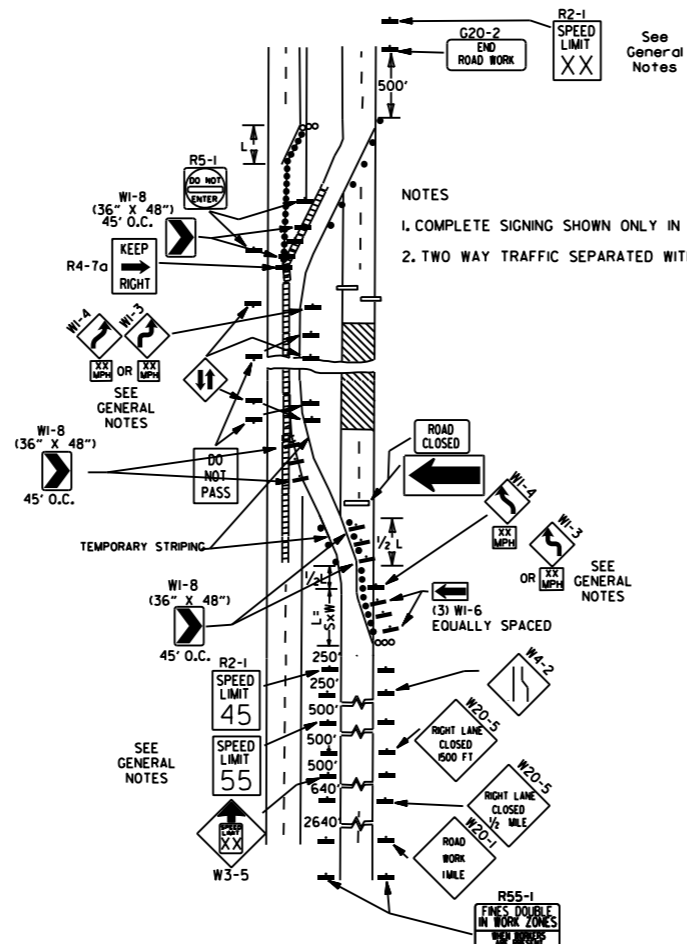
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

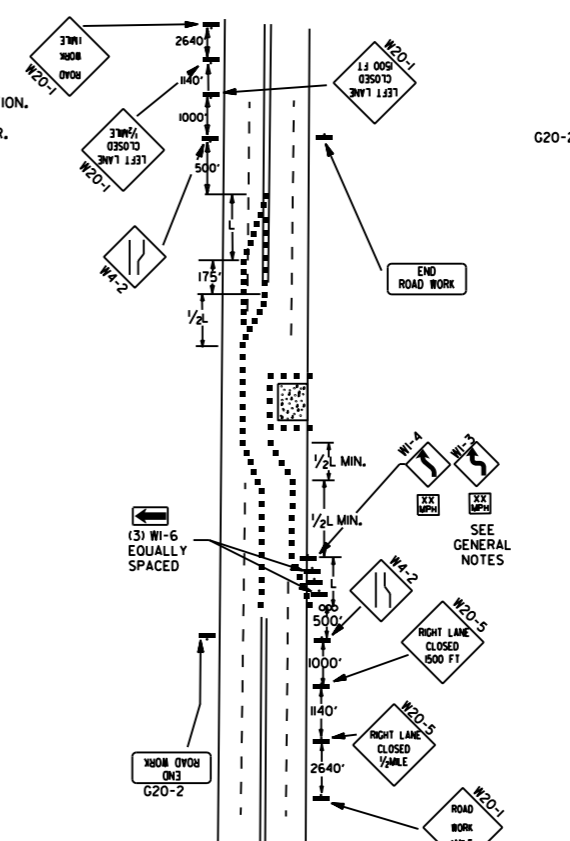
ARKANSAS STATE HIGHWAY COMMISSION
STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION
STANDARD DRAWING TC-1



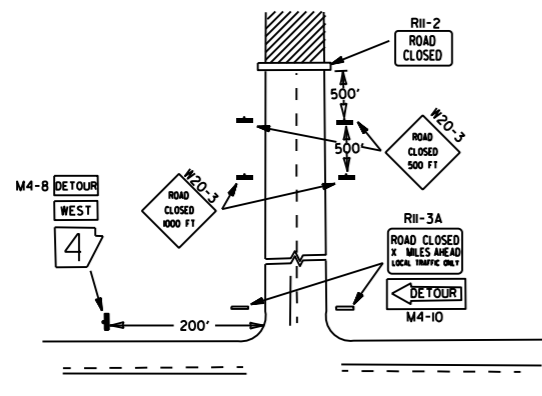
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



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

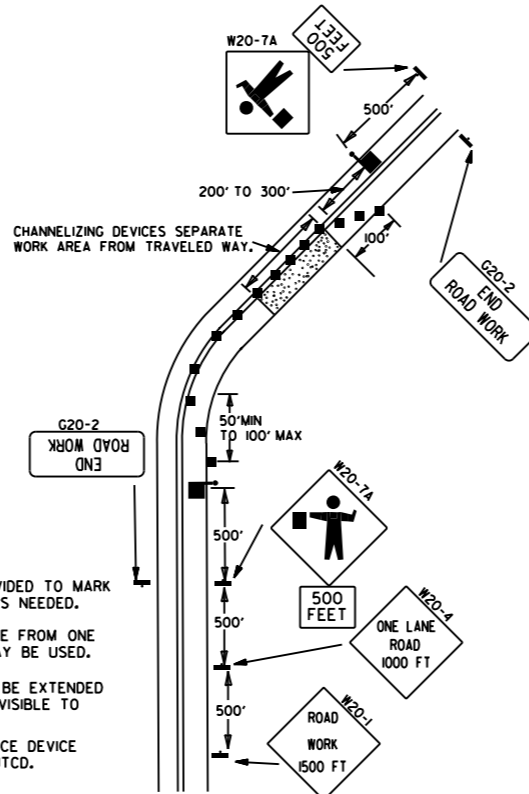


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



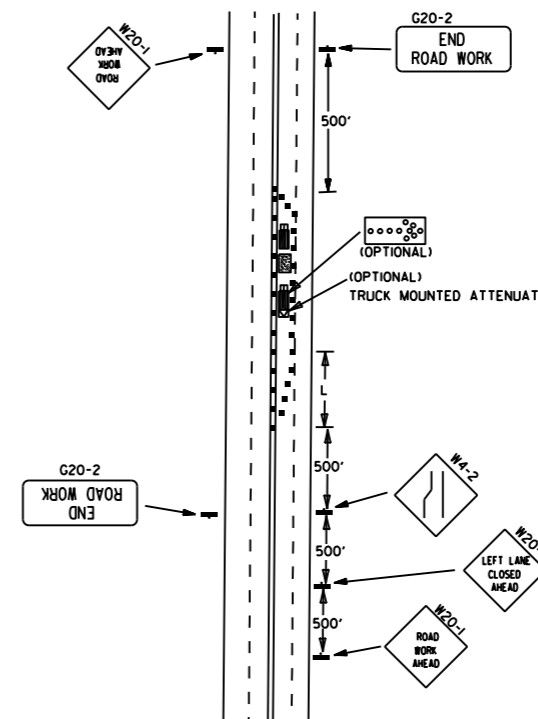
NOTES:
 1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
 2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



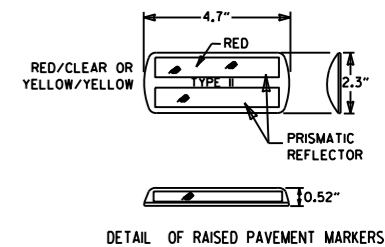
NOTES:
 1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
 2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
 3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
 4. AUTOMATED FLAGGER ASSISTANCE 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.

- KEY:
- FLAGGER
 - ▬ POSITIVE BARRIER
 - ∞ ARROW PANEL (IF REQUIRED)
 - ▬ TYPE III BARRICADE
 - CHANNELIZING DEVICE
 - TRAFFIC DRUM
 - RAISED PAVEMENT MARKER



TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

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

$L = \frac{W \times S^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:
 L = MINIMUM LENGTH OF TAPER.

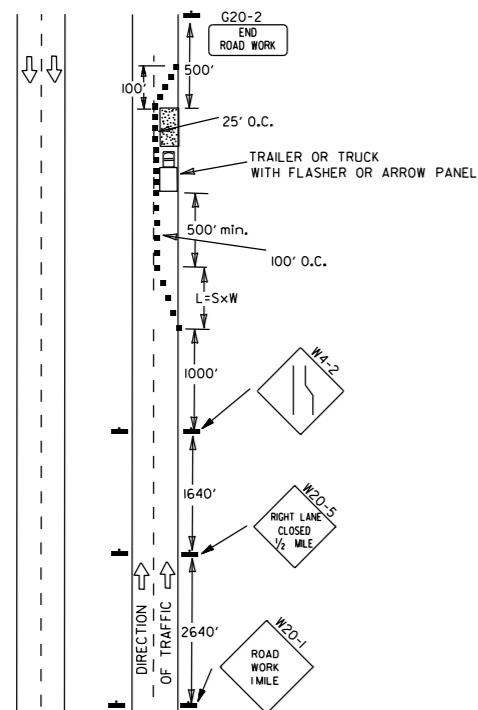
S = NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.

W = WIDTH OF OFFSET.

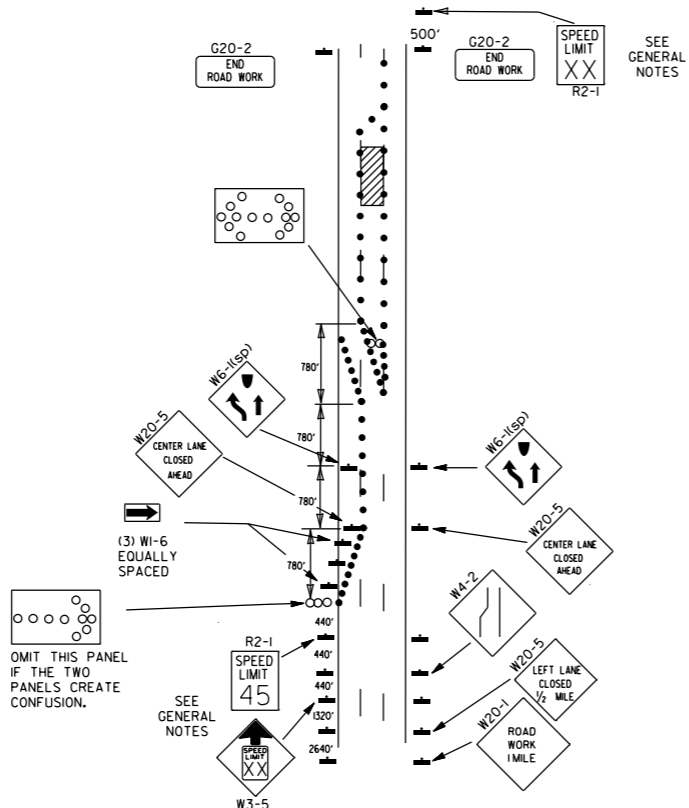
- GENERAL NOTES:
1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
 2. WHEN THE EXISTING 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(45) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
 3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(65) SHALL BE OMITTED. ADDITIONAL R2-1(55) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
 4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
 5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
 6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
 7. 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.
 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 ADOT 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).

DATE	REVISION	FILMED
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



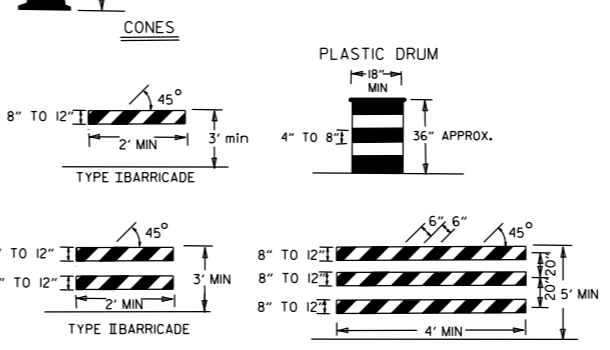
(A) TYPICAL APPLICATION - DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



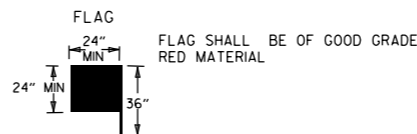
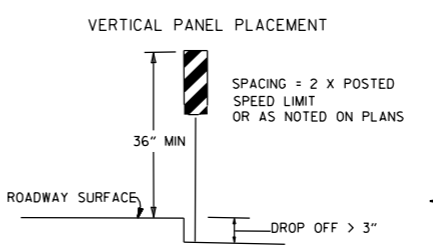
(B) TYPICAL APPLICATION - 3-LANE ONEWAY ROADWAY WHERE CENTER LANE IS CLOSED.

CHANNELIZING DEVICES

WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.



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



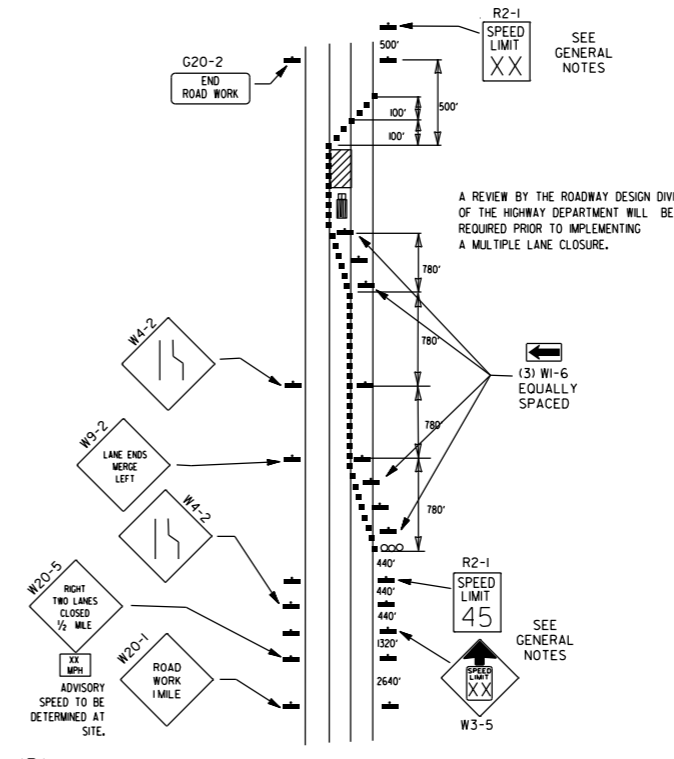
KEY:

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

GENERAL NOTES:

1. A SPEED LIMIT REDUCTION MAY BE IMPLEMENTED ONLY WHEN DESIGNATED IN THE PLAN OR WHEN RECOMMENDED BY THE ROADWAY DESIGN DIVISION.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(65) SHALL BE OMITTED. ADDITIONAL R2-1(55) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/2 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. THE G20-1 SIGN WILL BE REQUIRED ON JOBS OF OVER TWO MILES IN LENGTH. WHEN THE LANE CLOSURE IS NOT AT THE BEGINNING OF THE PROJECT, THE G20-1 SIGN SHALL BE ERECTED 125' IN ADVANCE OF THE JOB LIMIT. ADDITIONAL W20-1(1/2 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER, WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

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



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

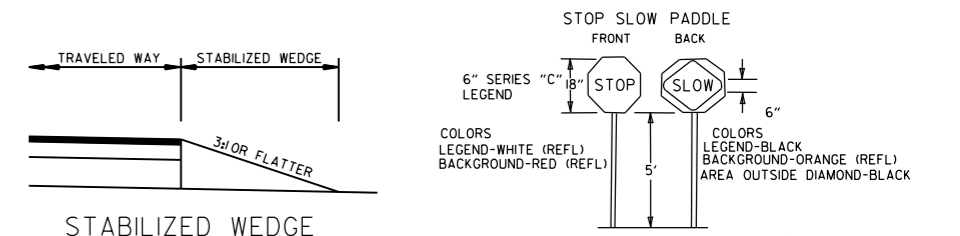
TRAFFIC CONTROL DEVICES

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

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

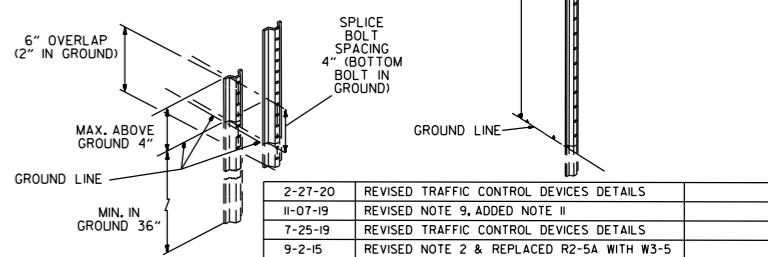
INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

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



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

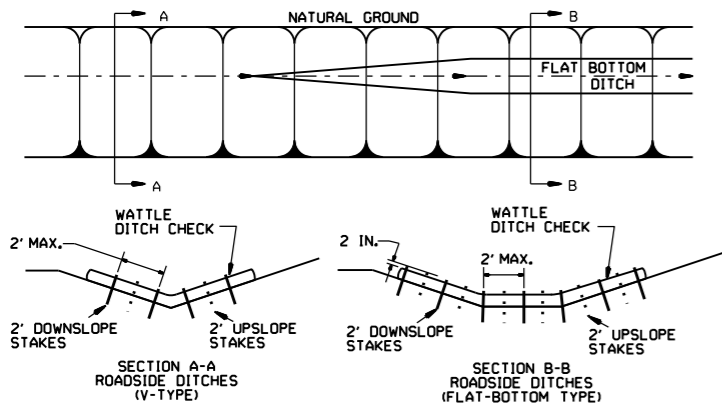
- NOTES:
- USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)
 - NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.
 - SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DATE	REVISION	FILMED
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE II	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-18 & 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	

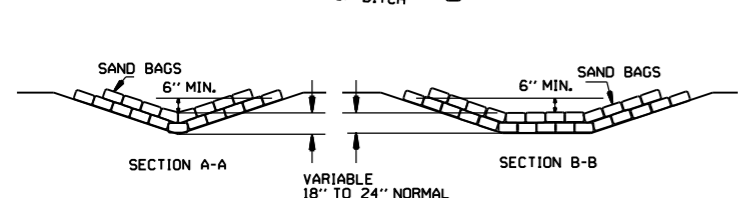
GENERAL NOTES

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

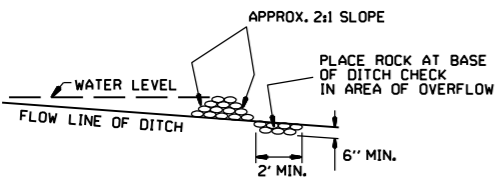


WATTLE DITCH CHECK (E-1)

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

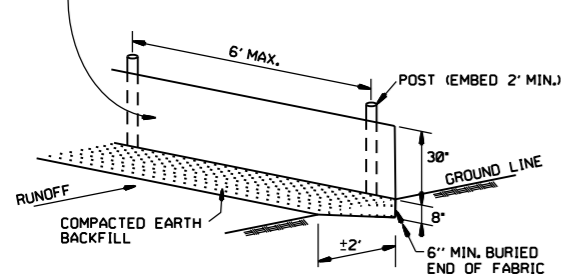


SAND BAG DITCH CHECK (E-5)

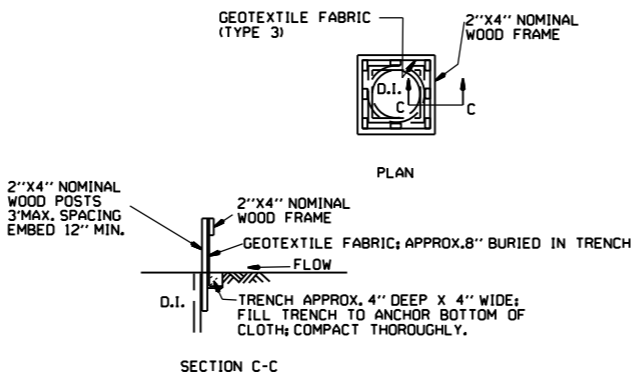
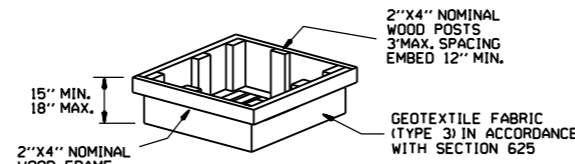


ROCK DITCH CHECK (E-6)

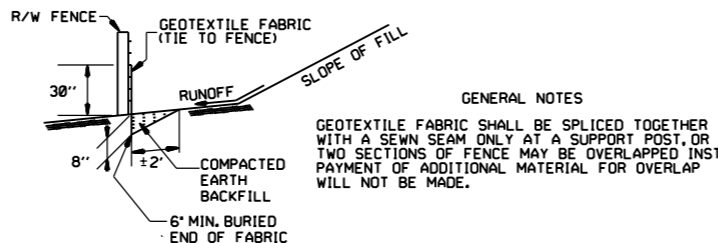
GENERAL NOTES
 GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625
 GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILTS FENCE (E-11)

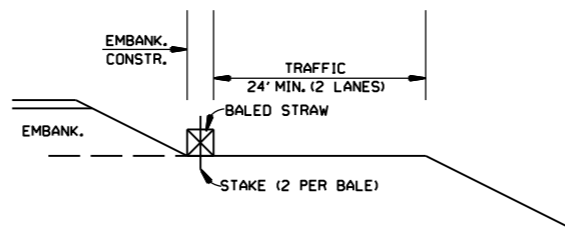


DROP INLET SILTS FENCE (E-7)

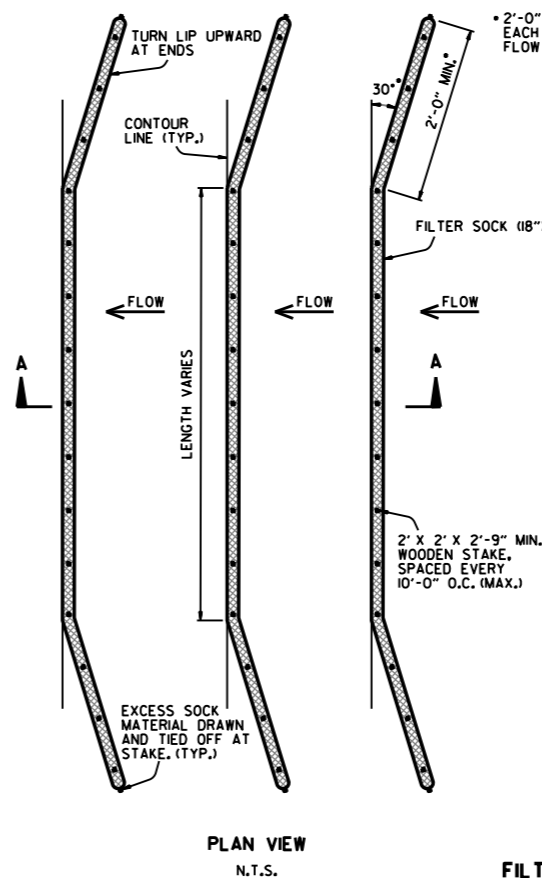


SILTS FENCE ON R/W FENCE (E-4)

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.

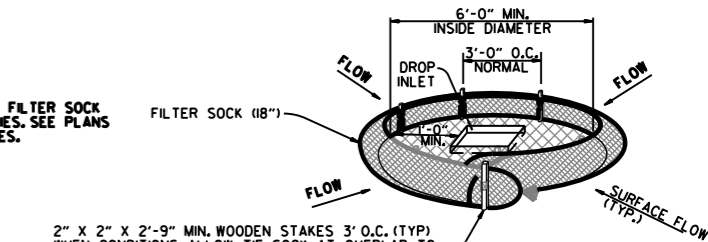


BALED STRAW FILTER BARRIER (E-2)

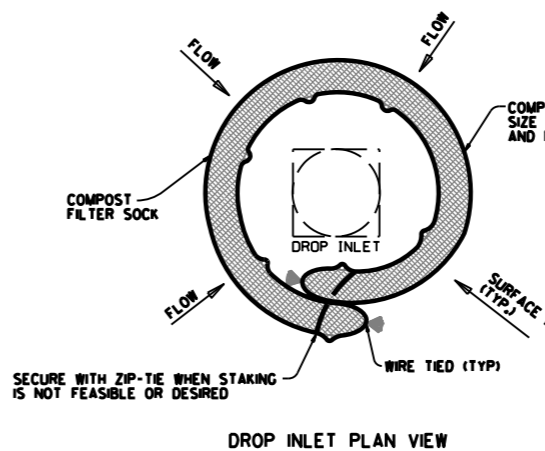


FILTER SOCK ALONG SLOPE (E-3)

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



DROP INLET PERSPECTIVE VIEW (E-13)



COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

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.

DATE	REVISION
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 SILTS FENCE E-4 AND E-11
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
04-01-93	REDRAWN
10-01-92	REDRAWN
08-02-76	ISSUED R.D.M.

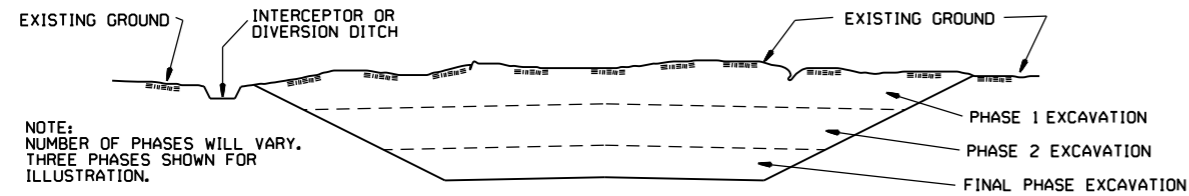
ARKANSAS STATE HIGHWAY COMMISSION
 TEMPORARY EROSION CONTROL DEVICES
 STANDARD DRAWING TEC-1

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

1. PLACE PERIMETER CONTROLS (I.E. SILT FENCES, DIVERSION DITCHES, SEDIMENT BASINS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION.

EXCAVATION



NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR
ILLUSTRATION.

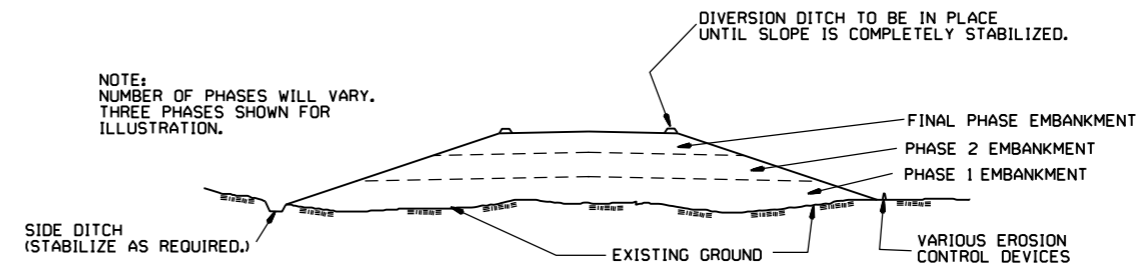
GENERAL NOTE

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



NOTE:
NUMBER OF PHASES WILL VARY.
THREE PHASES SHOWN FOR
ILLUSTRATION.

GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE

1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
3. PLACE PHASE 2 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD OF GREATER THAN 21 DAYS.
4. PLACE FINAL PHASE OF EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PLACE DIVERSION DITCHES AND SLOPE DRAINS AND MAINTAIN UNTIL ENTIRE SLOPE IS STABILIZED.

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