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.		009784	1	193

(2) BUFFALO RIVER & MILL CREEK STRS. & APPRS. (S)

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

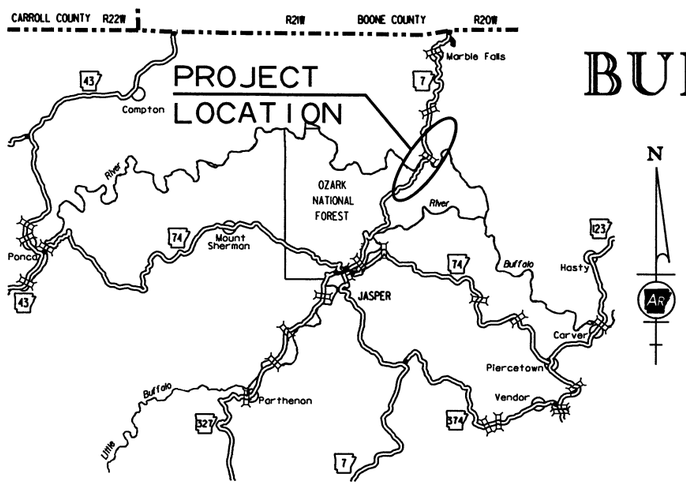
BUFFALO RIVER & MILL CREEK STRS. & APPRS. (S)

NEWTON COUNTY

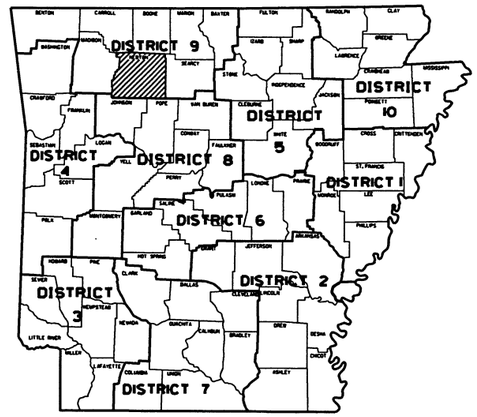
ROUTE 7 SECTION 18

JOB 009784

FED. AID PROJ. NHPP-STPB-0051(13)



VICINITY MAP



ARK. HWY. DIST. NO. 9

STA. 99+94.25
BEGIN CO. RD. 213
LOG MILE 0.00

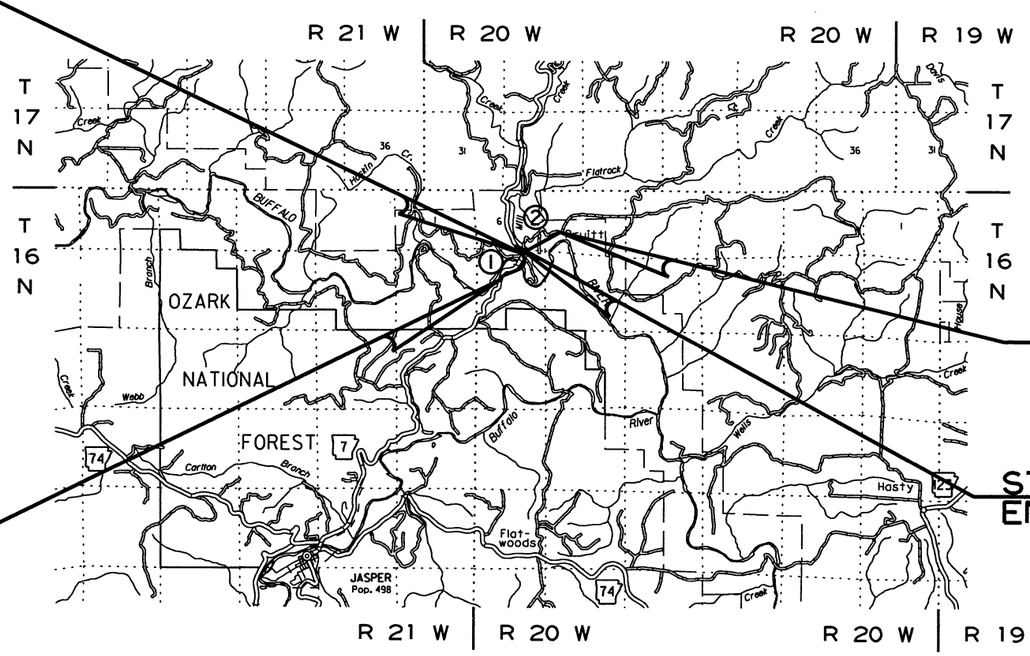
BRIDGE DATA

(1) BR. END STA. 151+48.87
BRIDGE NO. 07423
40'-0" CLEAR ROADWAY
702'-2 1/2" TOTAL LENGTH
250'-0" CONT. COMP. PLATE GIRDER UNIT (125', 125')
450'-0" CONT. COMP. PLATE GIRDER UNIT (200', 250')
BR. END STA. 158+51.13

(2) BR. END STA. 101+97.92
BRIDGE NO. 04940
24'-0" CLEAR ROADWAY
302'-2" TOTAL LENGTH
300'-0" CONT. COMP. W-BEAM UNIT (70', 80', 80', 70')
BR. END STA. 105+00.08

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

NOT TO SCALE



STA. 110+00.00
END CO. RD. 213

STA. 167+40.07
END JOB 009784

•DESIGN TRAFFIC DATA HWY. 7•

DESIGN YEAR	2039
2019 ADT	2800
2039 ADT	3100
2039 DHV	341
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	7%
DESIGN SPEED (HWY. 7)	50 MPH
DESIGN SPEED (CO. RD. 213)	20 MPH

N

APPROVED

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
M. E. BANKS

11-16-18

DEPUTY DIRECTOR AND CHIEF ENGINEER

LENGTH OF PROJECT CALCULATED ALONG C.L. HWY.7

GROSS LENGTH OF	PROJECT	3245.09	FEET	OR	0.615	MILES
NET	" "	ROADWAY	2542.83	"	"	0.482	"
NET	" "	BRIDGES	702.26	"	"	0.133	"
NET	" "	PROJECT	3245.09	"	"	0.615	"

LENGTH OF PROJECT CALCULATED ALONG C.L. CO. RD. 213

GROSS LENGTH OF	PROJECT	1005.75	FEET	OR	0.190	MILES
NET	" "	ROADWAY	703.59	"	"	0.133	"
NET	" "	BRIDGES	302.16	"	"	0.057	"
NET	" "	PROJECT	1005.75	"	"	0.190	"

BEGIN PROJECT
LAT. = N 36°03'28"
LONG.= W 93°08'33"

MIDPOINT
LAT. = N 36°03'39"
LONG.= W 93°08'18"

END PROJECT
LAT. = N 36°03'47"
LONG.= W 93°08'16"

3/11/2016

R009784.DGN

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

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STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-28-18

BRIDGE STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
55000	STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS	02-27-14
55001	STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES	02-27-14
55002	STANDARD DETAILS FOR CONCRETE RIPRAP	02-27-14
55005	STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS 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	01-17-17
55011	STANDARD DETAILS FOR TYPE C BRIDGE NAME PLATE	02-27-14
55020	STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS	03-24-16
55030A	STANDARD DETAILS FOR TYPE A APPROACH GUTTERS	09-02-15

ROADWAY STANDARD DRAWINGS

DRWG.NO.	TITLE	DATE
CDP-1	CONCRETE DITCH PAVING	12-08-16
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
GR-8	GUARD RAIL DETAILS	11-16-17
GR-8A	GUARD RAIL DETAILS	11-16-17
GR-9	GUARD RAIL DETAILS	04-17-08
GR-9A	GUARD RAIL DETAILS	04-17-08
GR-10	GUARD RAIL DETAILS	11-16-17
GR-11	GUARD RAIL DETAILS	11-16-17
GR-12	GUARD RAIL DETAILS	11-16-17
GRT-1	GUARD RAIL DETAILS	11-16-17
MB-1	MAILBOX DETAILS	11-18-04
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
PM-1	PAVEMENT MARKING DETAILS	06-01-17
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-16
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	10-18-96
SHS-1	STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES	09-12-13
SHS-2	U-CHANNEL POST ASSEMBLIES	02-27-14
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	10-18-96
SI-1	DETAILS OF SPECIAL ITEMS	10-25-18
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	04-13-17
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	09-02-15
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	09-02-15
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-2	TEMPORARY EROSION CONTROL DEVICES	06-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94

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01-11-19				JOB NO.		009784	3	193
				(2) GOVERNING SPECIFICATIONS & 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 - TRAINING PROGRAM - JOB 009784
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
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
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
605-1_____	CONCRETE DITCH PAVING
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
617-1_____	GUARDRAIL TERMINAL (TYPE 2)
620-1_____	MULCH COVER
621-1_____	FILTER SOCKS
723-1_____	GENERAL REQUIREMENTS FOR SIGNS
800-1_____	STRUCTURES
802-3_____	CONCRETE FOR STRUCTURES
808-1_____	INSTALLATION OF ELASTOMERIC BEARINGS
808-2_____	ELASTOMERIC BEARINGS
JOB 009784__	ARCHITECTURAL FINISH
JOB 009784__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 009784__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 009784__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 009784__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 009784__	CAVE DISCOVERY
JOB 009784__	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB 009784__	CLEARING
JOB 009784__	COMPACTED EMBANKMENT
JOB 009784__	COMPOSTED NATIVE STONE RIPRAP
JOB 009784__	CONSTRUCTION PROJECT INFORMATION SIGN
JOB 009784__	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 009784__	DETAILS FOR SAFETY OF STREAM TRAFFIC
JOB 009784__	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 009784__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 009784__	DRILLED SHAFT FOUNDATIONS
JOB 009784__	EROSION CONTROL MATTING
JOB 009784__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 009784__	MAINTENANCE OF TRAFFIC
JOB 009784__	MANDATORY ELECTRONIC CONTRACT
JOB 009784__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 009784__	NATIVE STONE FOR DITCH LINER
JOB 009784__	NESTING SITES OF MIGRATORY BIRDS
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JOB 009784__	RESTRAINING CONDITIONS
JOB 009784__	ROCK FILL
JOB 009784__	RUMBLE STRIPS
JOB 009784__	SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS
JOB 009784__	SELECT GRANULAR BACKFILL
JOB 009784__	SETTLEMENT AGREEMENTS
JOB 009784__	SHORING FOR CULVERTS
JOB 009784__	SOIL STABILIZATION
JOB 009784__	SPECIAL CLEARING REQUIREMENTS
JOB 009784__	SPECIAL SEEDING REQUIREMENTS
JOB 009784__	STAINING CONCRETE SURFACES
JOB 009784__	STORM WATER POLLUTION PREVENTION PLAN
JOB 009784__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 009784__	UTILITY ADJUSTMENTS
JOB 009784__	VALUE ENGINEERING
JOB 009784__	VEGETATED BUFFER ZONE
JOB 009784__	WARM MIX ASPHALT
JOB 009784__	WATER POLLUTION CONTROL
JOB 009784__	WORKING DAY WITH IMMEDIATE WORK ORDER

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-11-19

GENERAL NOTES

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

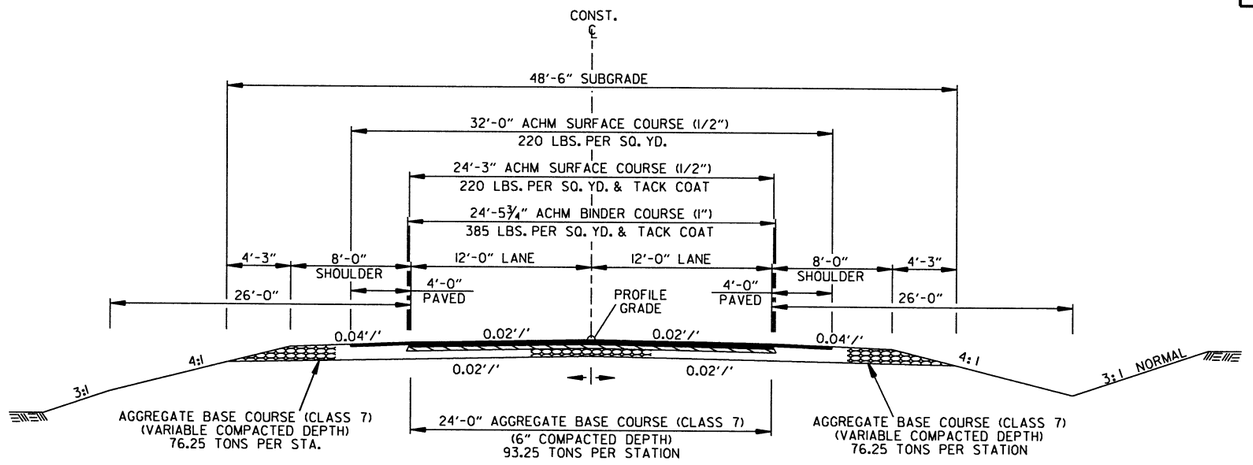
5/30/2018

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(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-16-18



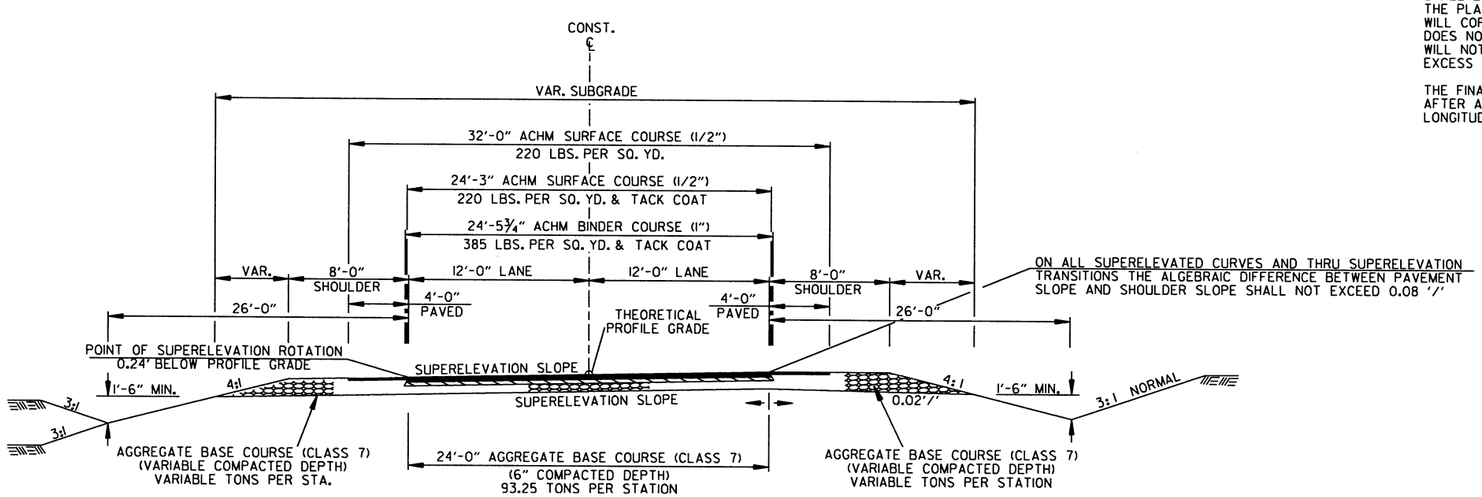
HWY. 7 - TANGENT

STA. 148+40.45 TO STA. 148+45.00

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 DEFECENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERAIL 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.



HWY. 7 - SUPERELEVATION

STA. 134+94.98 TO STA. 148+40.45
STA. 148+45.00 TO STA. 151+48.87
STA. 158+51.13 TO STA. 167+40.07

1/4/2017

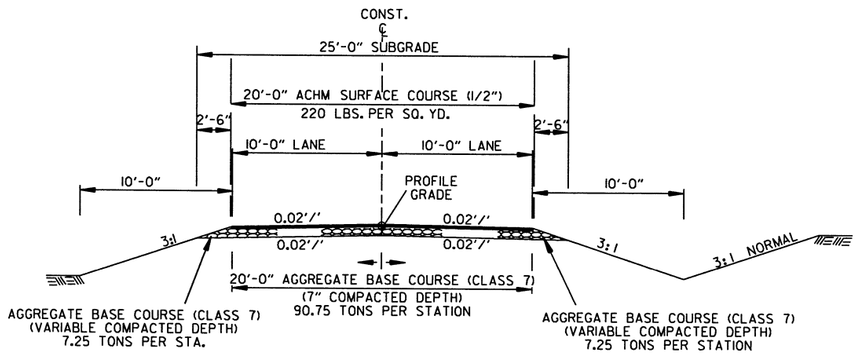
R009784.DGN

HWY. 7
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	5	193

(2) TYPICAL SECTIONS OF IMPROVEMENT

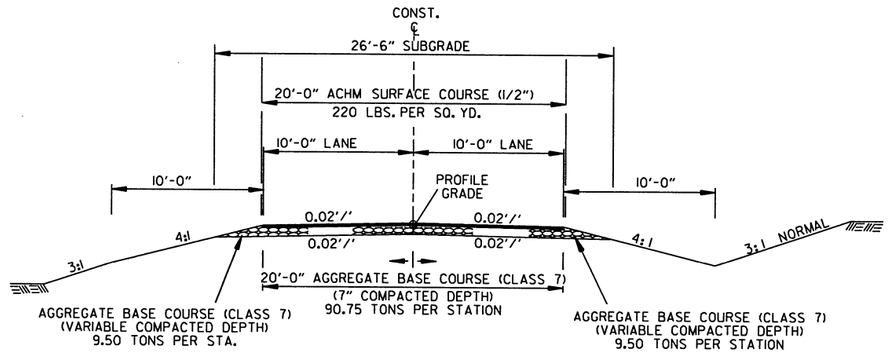
STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18



SIDE ROAD - TANGENT

BNP DRIVE
STA. 300+12.00 TO STA. 304+20.00

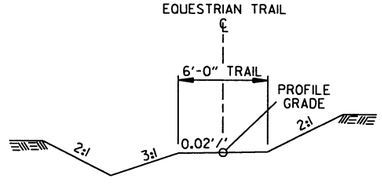
BNP WELL DRIVE
STA. 400+11.26 TO STA. 401+71.33



SIDE ROAD/CO. RD. - TANGENT

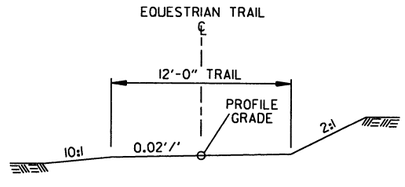
CO. RD. 80
STA. 500+12.28 TO STA. 504+37.11

CO. RD. 472
STA. 600+22.82 TO STA. 604+45.00



TYPICAL SECTION OF IMPROVEMENT
EQUESTRIAN TRAIL

STA. 20+00.00 TO STA. 21+60.00
STA. 23+15.00 TO STA. 24+85.00



TYPICAL SECTION OF IMPROVEMENT
EQUESTRIAN TRAIL

STA. 22+10.00 TO STA. 22+65.00

TRANSITION FROM 6' TO 12' EQUESTRIAN TRAIL
STA. 21+60.00 TO STA. 22+10.00
STA. 22+65.00 TO STA. 23+15.00

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 DEFECENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERAIL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

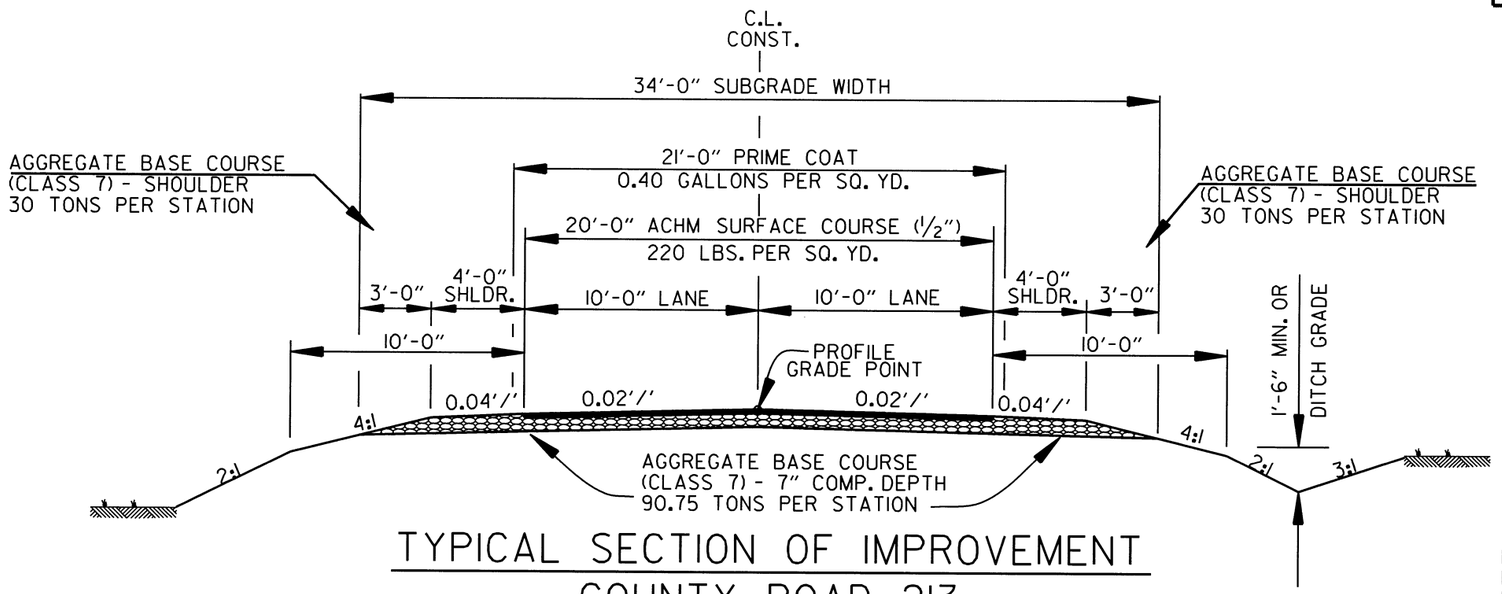
THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

R009784.DGN 1/4/2017

HWY. 7
TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	6	193

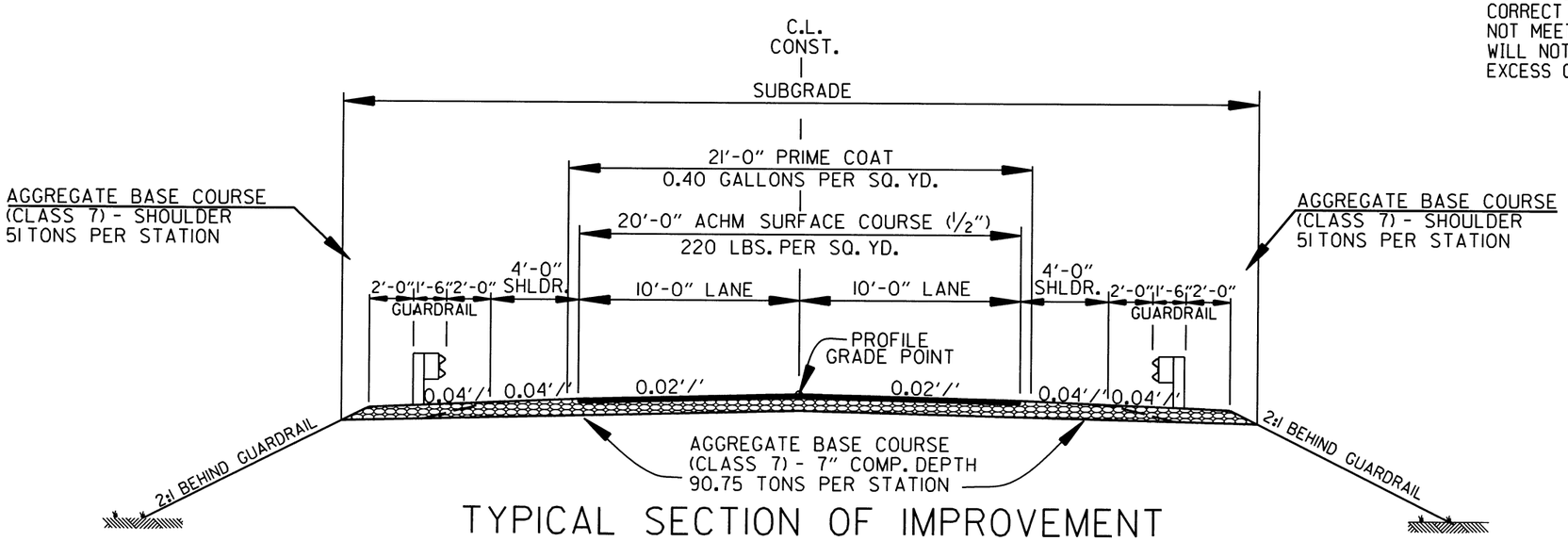
(4) TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT
COUNTY ROAD 213

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

THE THICKNESS OF AGG. 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.



TYPICAL SECTION OF IMPROVEMENT
GUARDRAIL ON BOTH SIDES
COUNTY ROAD 213

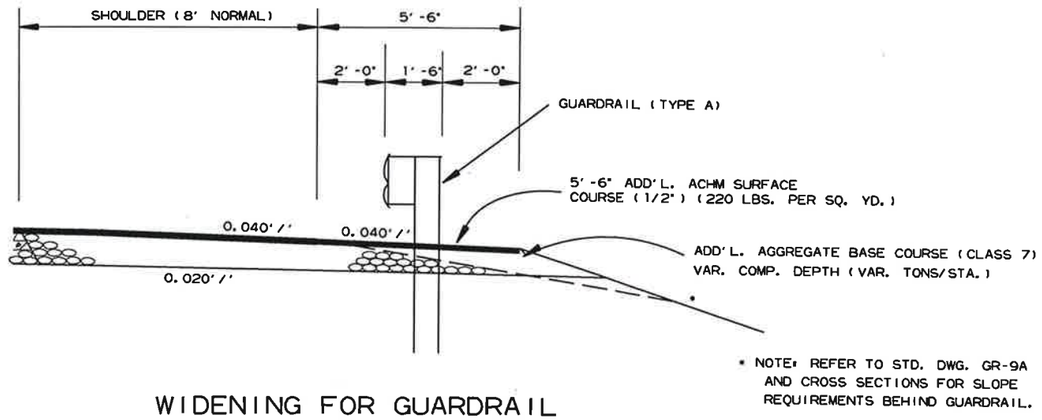
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
7-25-18
CLAUDE KLINCK

COUNTY ROAD 213
TYPICAL SECTIONS OF IMPROVEMENT

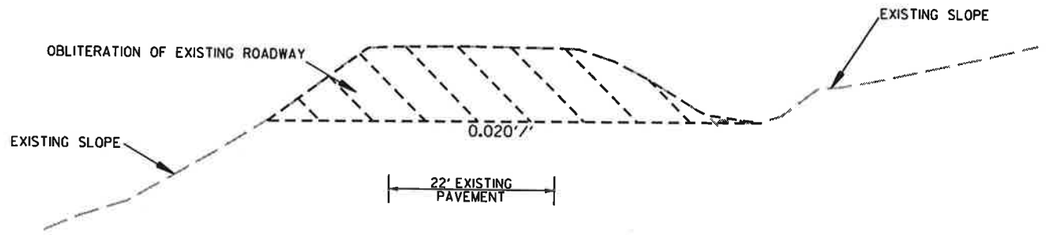
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
01-09-19				6	ARK.			
				JOB NO.		009784	7	193

(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-9-19

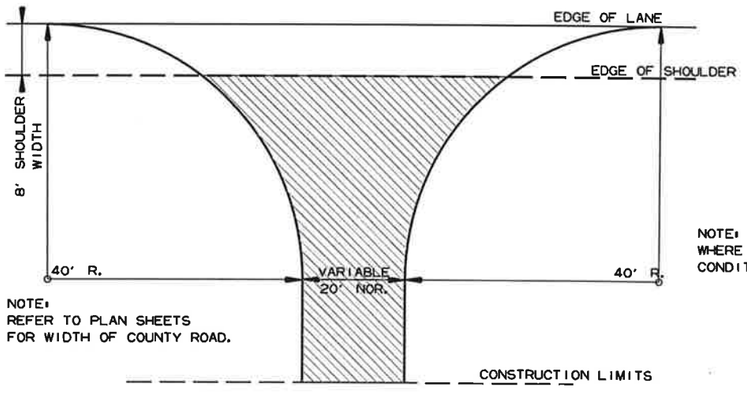


WIDENING FOR GUARDRAIL



OBLITERATION OF EXISTING ROADWAY

STA. 141+25.00 - STA. 146+20.00
STA. 149+80.00 - STA. 153+90.00

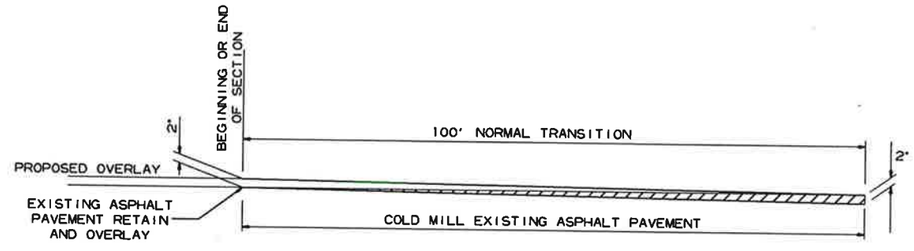


NOTE:
REFER TO PLAN SHEETS FOR WIDTH OF COUNTY ROAD.

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 COUNTY ROAD TURNOUTS
OPEN SHOULDER SECTION



DETAIL FOR TRANSITIONS

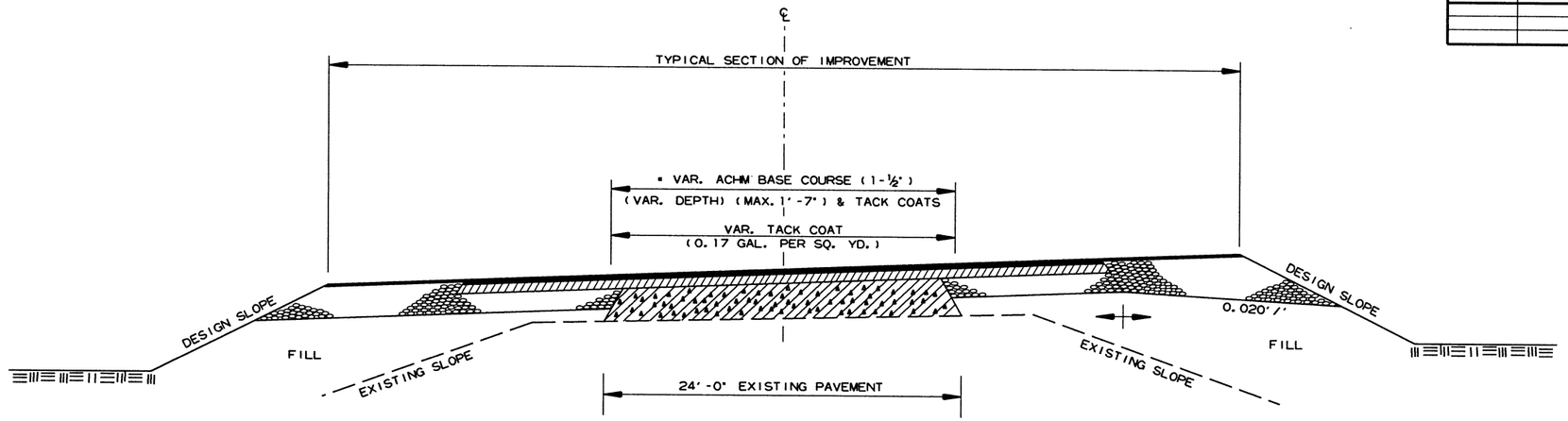
5/24/2018

R009784.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.		009784	8	193

(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18



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

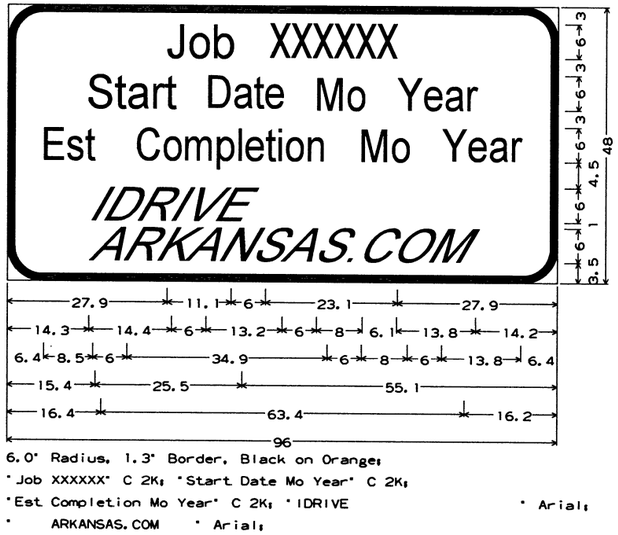
METHOD OF RAISING GRADE

NOTES:

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

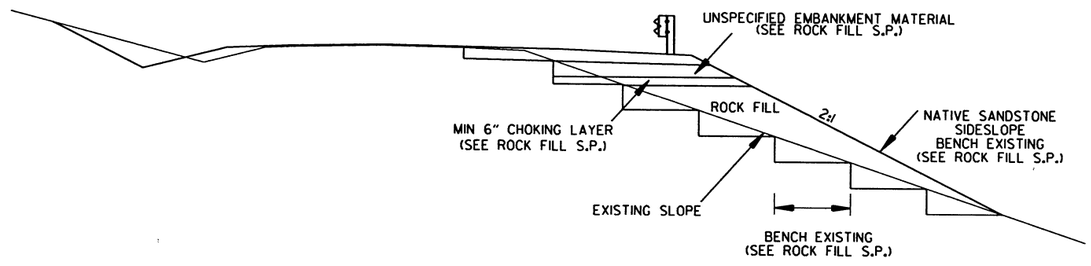
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS.



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

CONSTRUCTION PROJECT INFORMATION SIGN



TYPICAL 2:1 EMBANKMENT CONSTRUCTION

STA. 162+13.11 RT. - STA. 178+00.00 RT.
STA. 204+26.00 RT. - STA. 208+55.00 RT.
STA. 226+15.00 RT. - STA. 226+91.00 RT.
STA. 230+35.10 RT. - STA. 232+00.00 RT.

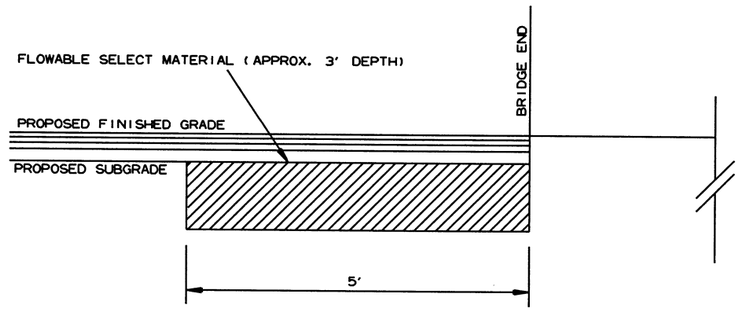
5/24/2018

R009784.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.		009784	9	193

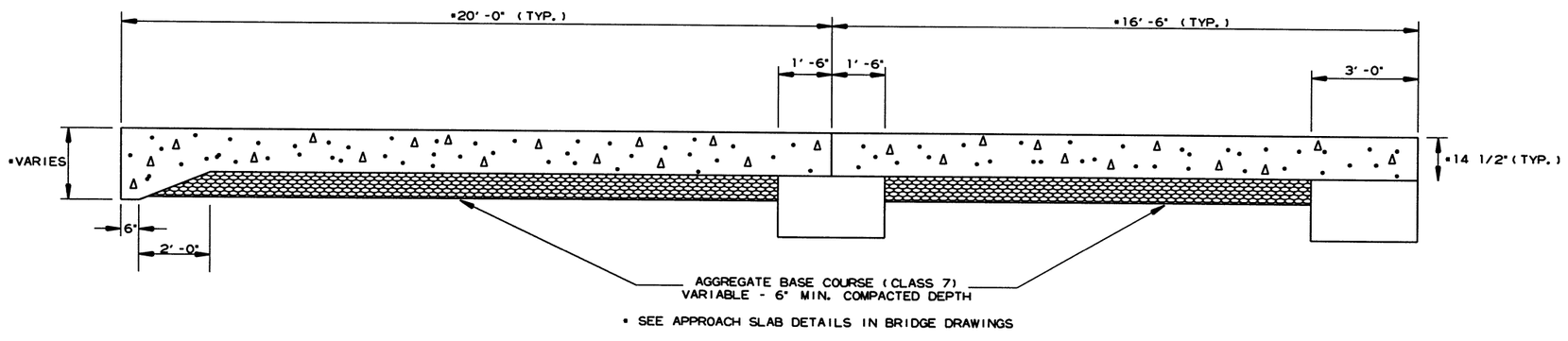
(2) SPECIAL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18



NOTE: EXCAVATION FOR PLACING FLOWABLE SELECT MATERIAL WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT SHALL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS BID ITEMS.

FLOWABLE SELECT MATERIAL AT BRIDGE ENDS



* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS

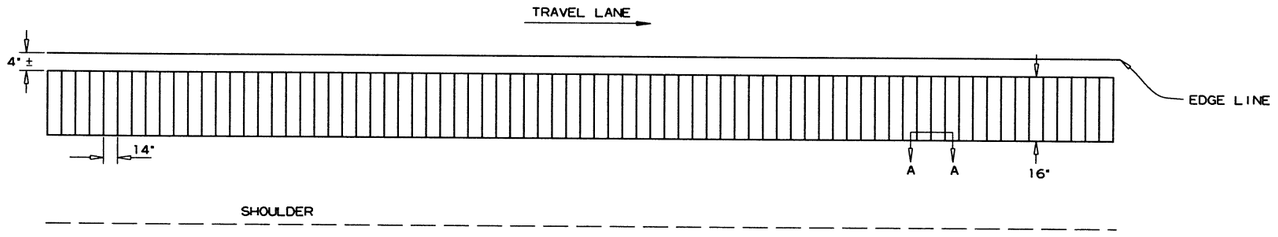
SECTION OF APPROACH SLAB

5/24/2018

R009784.DGN

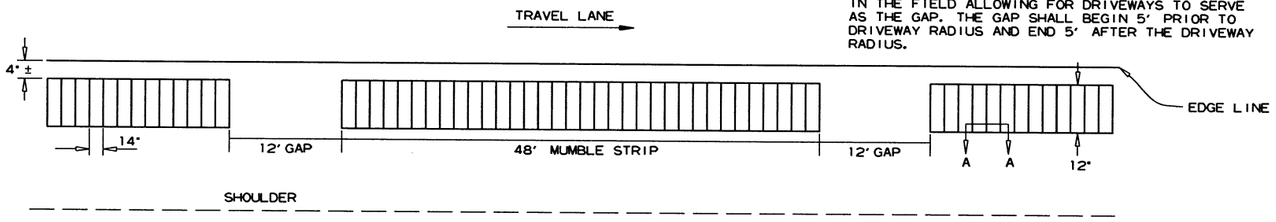
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				6	ARK.			
				JOB NO.		009784	10	193

(2) SPECIAL DETAILS

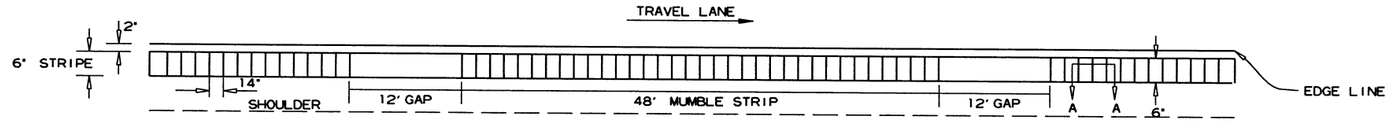


MUMBLE STRIPS (TYPE 1)

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP. THE GAP SHALL BEGIN 5' PRIOR TO DRIVEWAY RADIUS AND END 5' AFTER THE DRIVEWAY RADIUS.



MUMBLE STRIPS (TYPE 2)

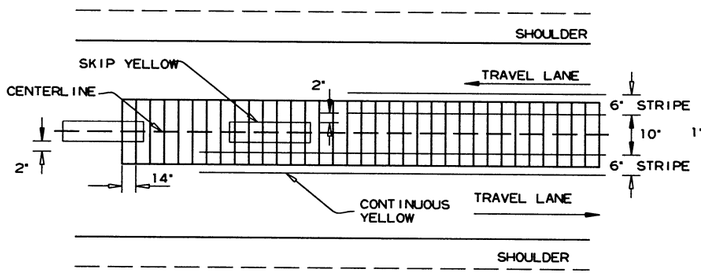


NOTE: IF SHOULDER IS GREATER THAN 4', GAPS SHALL BE PLACED FOR ACCOMMODATION OF BICYCLES.

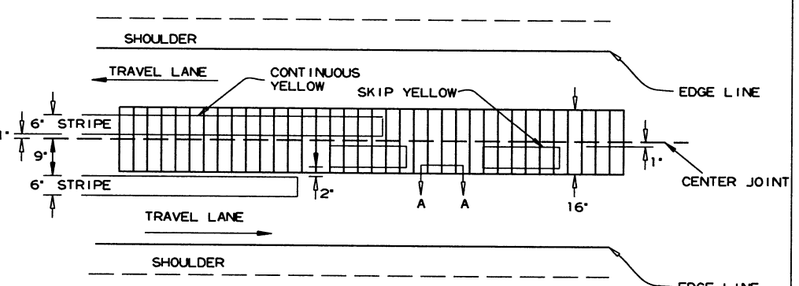
NOTE: STRIPING IS TO BE PLACED AFTER MUMBLE STRIPES HAVE BEEN CONSTRUCTED.

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP. THE GAP SHALL BEGIN 5' PRIOR TO DRIVEWAY RADIUS AND END 5' AFTER THE DRIVEWAY RADIUS.

MUMBLE STRIPES



ASPHALT PAVEMENT



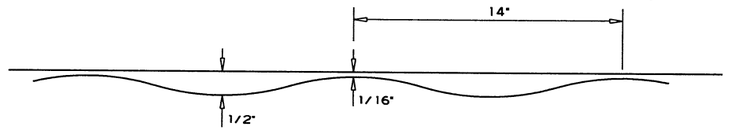
CONCRETE PAVEMENT

NOTE: STRIPING IS TO BE PLACED AFTER MUMBLE STRIPES HAVE BEEN CONSTRUCTED.

NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP. THE GAP SHALL BEGIN 5' PRIOR TO DRIVEWAY RADIUS AND END 5' AFTER THE DRIVEWAY RADIUS.

CENTERLINE MUMBLE STRIPES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18



SECTION A-A

DETAIL OF MUMBLE STRIP(E)

NOTES FOR MUMBLE STRIPS (LOW NOISE RUMBLE STRIPS) (TYPE 1 AND 2)

1. MUMBLE STRIPS SHALL NOT BE INSTALLED ON CURB SECTIONS, BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. MUMBLE STRIPS SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. THE 4" OFFSET FROM THE EDGE LINE MAY BE INCREASED TO AVOID LONGITUDINAL JOINTS. IN ALL CASES, THE LATERAL DEVIATION FROM THE PLANNED OFFSET SHOULD BE KEPT TO A MINIMUM.
4. MUMBLE STRIPS SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH MUMBLE STRIPS HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE MUMBLE STRIPS HAVE NOT BEEN CONSTRUCTED.
5. ALIGNMENT OF MUMBLE STRIPS SHALL GENERALLY BE STRAIGHT AND OFFSET APPROXIMATELY 4" FROM THE OUTER EDGE OF THE EDGE LINE. THIS OFFSET MAY BE ADJUSTED TO ACCOMMODATE VARIATIONS IN THE EDGE LINE AS WELL AS TO AVOID EXISTING LONGITUDINAL JOINTS.
6. THE ½" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE MUMBLE STRIP LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

NOTES FOR MUMBLE STRIPES (LOW NOISE RUMBLE STRIPES)

1. MUMBLE STRIPES SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. MUMBLE STRIPES SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. THE 2" OFFSET FROM THE EDGE LINE MAY BE INCREASED TO AVOID LONGITUDINAL JOINTS. IN ALL CASES, THE LATERAL DEVIATION FROM THE PLANNED OFFSET SHOULD BE KEPT TO A MINIMUM.
4. MUMBLE STRIPES SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH MUMBLE STRIPES HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE MUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.
5. THE ½" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 6" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

NOTES FOR CENTERLINE MUMBLE STRIPES (LOW NOISE RUMBLE STRIPES)

1. CENTERLINE MUMBLE STRIPES SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. CENTERLINE MUMBLE STRIPES SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE CENTERLINE.
3. THE ½" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 16" LENGTH. SOME VARIATION TO SUIT SLOPE BREAKS MAY BE NECESSARY.
4. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE CENTERLINE ON WHICH MUMBLE STRIPS HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE MUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.

SPECIAL DETAILS

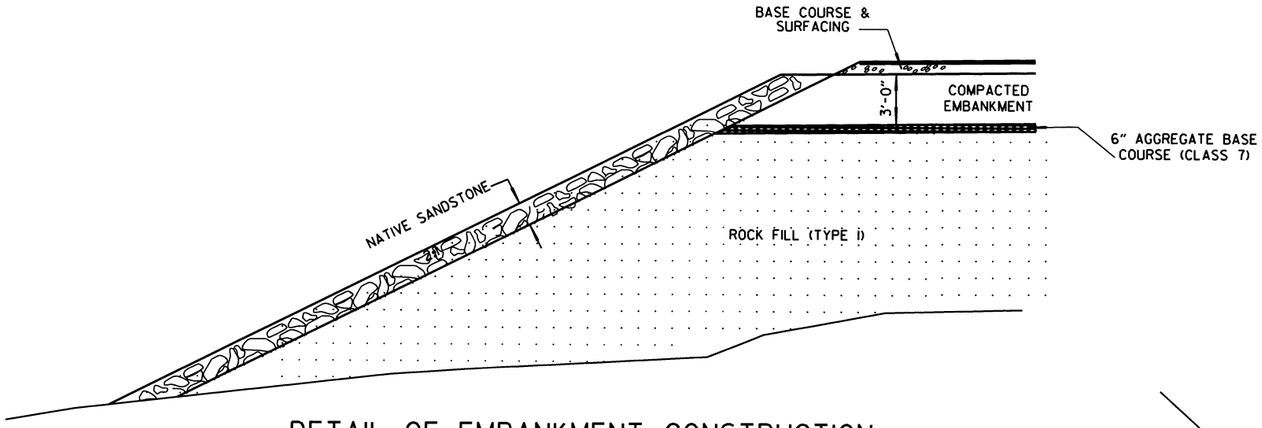
5/24/2018

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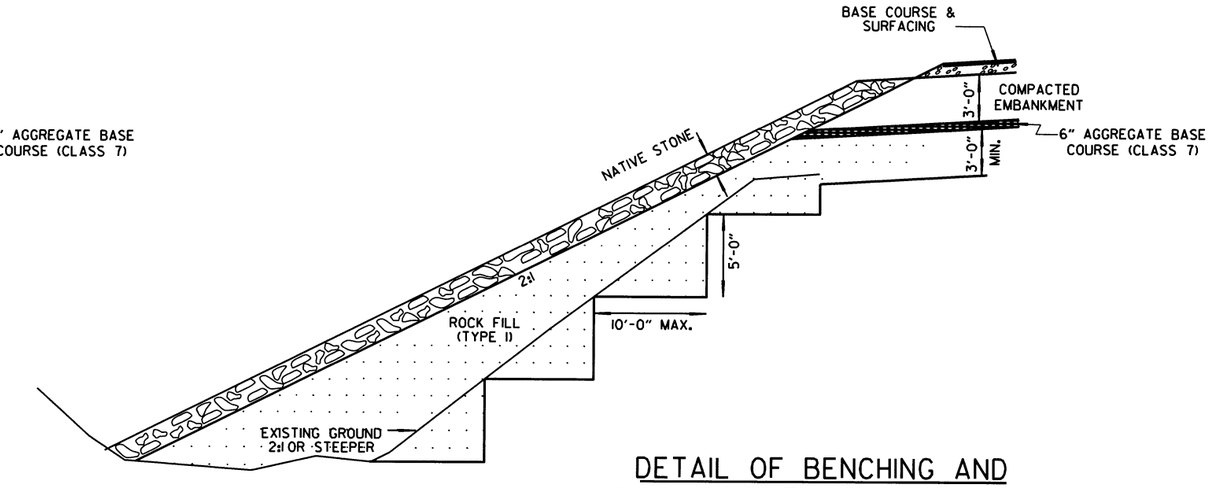
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				6	ARK.			
				JOB NO.		009784	11	192

(4) SPECIAL DETAILS

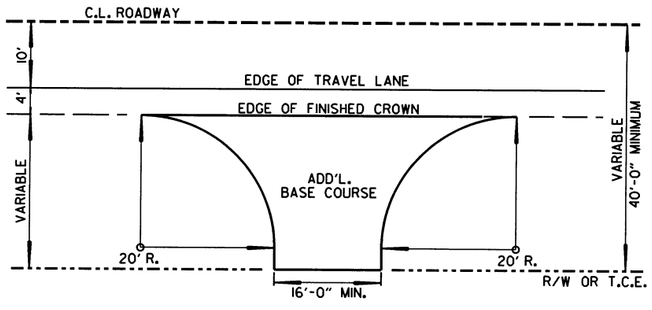
NOTES:
REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.



DETAIL OF EMBANKMENT CONSTRUCTION
COUNTY ROAD 213

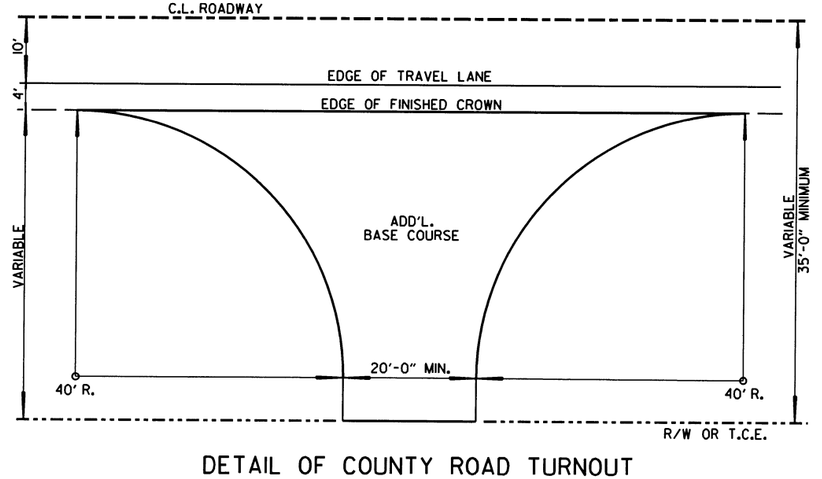


DETAIL OF BENCHING AND EMBANKMENT CONSTRUCTION
COUNTY ROAD 213



DETAIL OF PRIVATE ENTRANCES

NOTE: THE ABOVE DETAIL MAY BE MODIFIED TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.



DETAIL OF COUNTY ROAD TURNOUT

NOTE: THE ABOVE DETAIL MAY BE MODIFIED TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
CLAUDE KLINCK
7-25-18

COUNTY ROAD 213
SPECIAL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	12	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

CLEARING & GRUBBING

ROCK DITCH CHECKS (E-6)
14 LOCATIONS = 42 CU. YD.

SILT FENCE (E-11)
4 LOCATION = 2077 LIN. FT.

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

HWY. 7
CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS

12/11/2018

R009784.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.		009784	13	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

CLEARING & GRUBBING

FILTER SOCK (E-3)
3 LOCATIONS = 652 LIN. FT.

ROCK DITCH CHECKS (E-6)
20 LOCATIONS = 60 CU. YD.

SILT FENCE (E-11)
9 LOCATION = 2739 LIN. FT.

SEDIMENT BASIN (E-14)
2 LOCATIONS = 306 CU. YD.

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

12/11/2018

R009784.DGN

HWY. 7
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
6	ARK.			
JOB NO.		009784	14	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-27-18

CLEARING & GRUBBING

ROCK DITCH CHECKS (E-6)
3 LOCATIONS = 9 CU. YD.

SILT FENCE (E-11)
1 LOCATION = 153 LIN. FT.

SEDIMENT BASIN (E-14)
1 LOCATION = 37 CU. YD.

165+25.00
425.00'

P.I. 503+41.3

T.C.E.

163+25.00
144.92'

PROPOSED R/W

E-11

165

P.T. 165+15.07

167+75.00
168.00'

168+40.07
40.35'

170

POE 171+67.22

EXISTING R/W

E-6

HWY. 7

N 34°29'15" W

EXISTING R/W

101+09
135'

167+62.66
127.88'

.5' CUFT.

E-14

164+00.00
90.00'

100+73.00
110'

102+00
160'

102+60
206'

102.23
263'

103+00
110'

N 51°25'49.7" E
639.08'

STA. 167+40.07
END JOB 009784

TCE

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- E-3 = FILTER SOCK
- E-6 = ROCK DITCH CHECKS
- E-11 = SILT FENCE
- E-14 = SEDIMENT BASIN (XX CU FT)

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

105+60
364'

11/21/2018

R009784.DGN

HWY. 7
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
				6	ARK.			
				JOB NO.		009784	15	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

STAGE I

ROCK DITCH CHECKS (E-6)
8 LOCATIONS = 24 CU. YD.

SILT FENCE (E-11)
2 LOCATION = 98 LIN. FT.

SEDIMENT BASIN (E-14)
2 LOCATIONS = 93 CU. YD.

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) XX CU FT = SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

HWY. 7
STAGE I
TEMPORARY EROSION CONTROL DETAILS

12/11/2018

R009784.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.		009784	16	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

STAGE I

ROCK DITCH CHECKS (E-6)
15 LOCATIONS = 45 CU. YD.

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

12/11/2018

R009784.DGN

HWY. 7
STAGE I
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	17	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-27-18

165+25.00
425.00'

CONST. LIMITS

P.I. 504+41.37

T.C.E.

163+25.00
144.92'

PROPOSED R/W

167+75.00
167.00'

STA. 147+50.00 HWY. 7 =
STA. 600+00.00 CO. RD. 472
= 60° 00' 00"

165

170

P.T. 165+15.07

158+40.07
40.35'

EXISTING R/W

POE 171+67.22

HWY. 7

N 34°29'15" W

POS 34.82.21

EXISTING R/W
101+09
135'

CONST. LIMITS

167+62.66
127.88'

37 CU.FT.

164+00.00
90.00'

PROPOSED R/W

168+40.07
75.00'-59.65'

CO. RD. 213

100+73.00
110'

102+00
160'

102+23
263'

102+60
206'

TCE

PROPOSED R/W

STAGE I

ROCK DITCH CHECKS (E-6)
2 LOCATIONS = 6 CU. YD.

103+00
110'

N 5°05'49" E
639.08'

STA. 167+40.07
END JOB 009784

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

105+60
364'

11/21/2018

R009784.DGN

HWY. 7
STAGE I
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	18	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

STAGE 2

SILT FENCE (E-11)
1LOCATION = 1200 LIN. FT.

OBLITERATION OF SEDIMENT BASIN
2 LOCATIONS = 93 CU. YD.

REVISIONS

DATE OF REVISION	REVISION

INSTALL SILT FENCE (E-11) AT TOE OF EXCAVATION FOR OBLITERATION OF EXISTING ROADWAY

P.I. 141+16.30

135 140 145 150

PROPOSED R/W
EXISTING R/W
CONST. LIMITS
EXISTING
E-14 .46 CU.FT.
E-3
E-6
E-11

POB 133+80.00
134+00.00 39.13
134+25.00 65.00'
N 8°09'15" E
134+00.00 40.81'
P.C. 134+94.98
134+35.00 110.00'
138+00.00 135.00'
140+00.00 109.33'
140+00.00 120.00'
141+00.00 146.39'
140+00.00 101.33'
138+00.00 135.00'
142+00.00 100.00'
141+10.00 155.00'
144+00.00 140.00'
146+14.65 103.12'
147+55.00 77.19'
146+10.00 230.00'
146+00.00 203.36'
P.C. 401+69.33
P.I. 401+69.33
146+80.00 205.00'
146+75.00 185.82'
P.C. 401+90.16
145+90.00 193.84'
P.I. 401+45.36
146+00.00 77.64'
147+20.00 93.81'
N 88°52'26" W
P.I. 301+28.50
POB 400+00.00
P.I. 301+56.88
STA. 147+50.00 HWY. 7 = STA. 600+00.00 CO. RD. 472 = 60° 00' 00"
P.C. 302+72.90
P.I. 302+19.40
149+50.00 122.23'
N 42°28'19" E
N 3°48'19" E
148+50.00 64.80'
P.C. 300+63.49
N 11°13'02" W
POB 300+00.00
N 69°46'49" E
149+75.00 65.00'
P.I. 303+60.34
151+10.00 310.00'
POE 304+88.29
T.C.E.
T.C.E.
20' C.E.
400
500
HWY. 7
STAGE 2
TEMPORARY EROSION CONTROL DETAILS

12/11/2018
R009784.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.		009784	19	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

INSTALL SILT FENCE (E-11) AT TOE OF EXCAVATION FOR OBLITERATION OF EXISTING ROADWAY

STAGE 2

SILT FENCE (E-11)
LOCATION = 620 LIN. FT.

OBLITERATION OF SEDIMENT BASIN
2 LOCATIONS = 306 CU. YD.

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) XX CU FT = SEDIMENT BASIN

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

12/11/2018

R009784.DGN

HWY. 7
STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	20	193

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
LICENSED
PROFESSIONAL
ENGINEER
No. 11425
TRINITY D. SMITH
11-27-18

163+25.00
144.92'

PROPOSED R/W

165

CONST. LIMITS

P.T. 165+45.07

167+75.00
160.00'

STA. 147+50.00 HWY. 7 =
STA. 600+00.00 CO. RD. 472
= 60° 00' 00"

170

168+40.07
40.35'

EXISTING R/W

POE 171+67.22

N 34°29'15" W

EXISTING R/W
101+09
135'

167+62.66
127.88'

37 CU.FT.

101+09
135'

168+40.07
75.00'-59.65'

164+00.00
90.00'

PROPOSED R/W

100+73.00
110'

PROPOSED R/W

STAGE 2

OBLITERATION OF SEDIMENT BASIN
ILOCATIONS = 37 CU. YD.

103+00
110'

STA. 167+40.07
END JOB 009784

102+00
160'

102+23
263'

102+00
160'

102+60
206'

PROPOSED R/W

TCE

TCE

TCE

TCE

105+60
364'

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-3) = FILTER SOCK
- (E-6) = ROCK DITCH CHECKS
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

NOTE: PERIMETER CONTROLS SHALL BE PLACED AS CLEARING AND GRUBBING OPERATIONS ARE STARTED.

11/21/2018

R009784.DGN

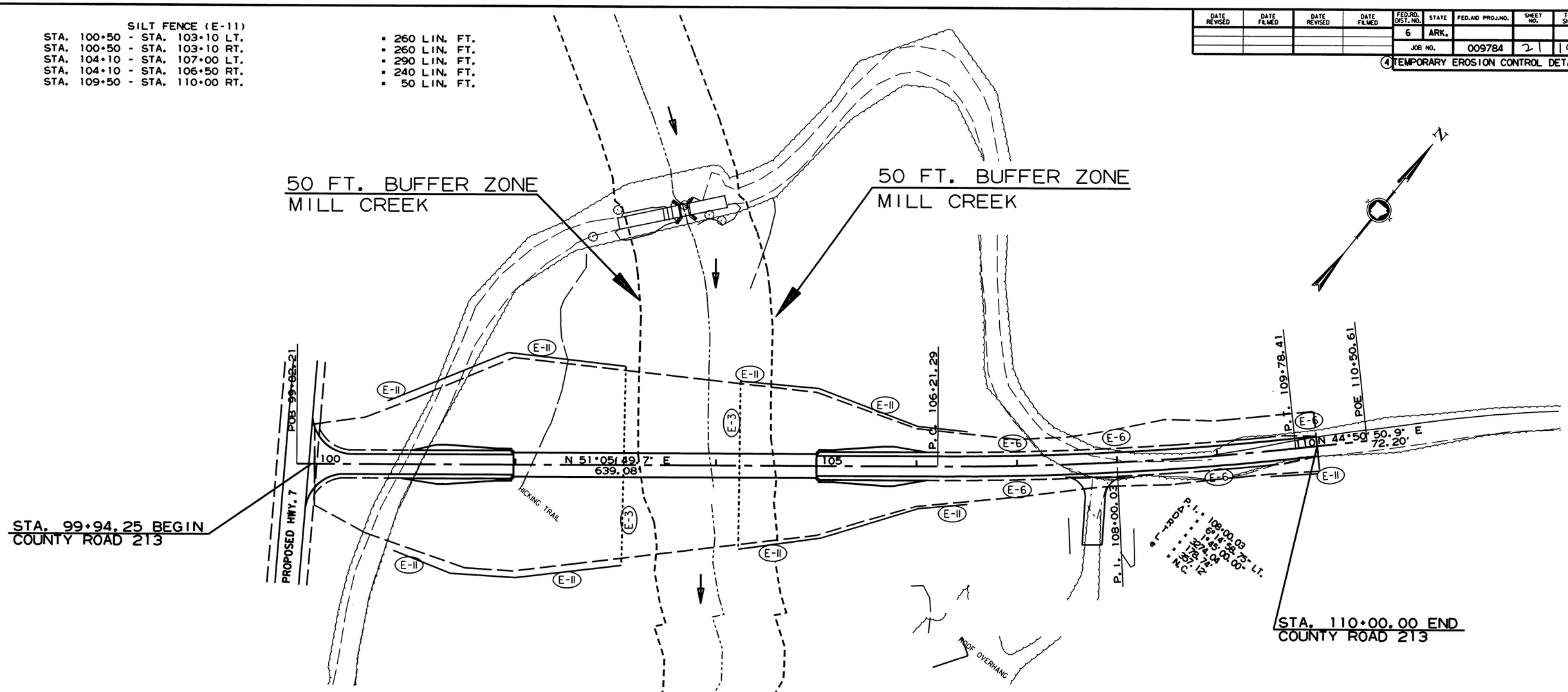
HWY. 7
STAGE 2
TEMPORARY EROSION CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	21	193

(4) TEMPORARY EROSION CONTROL DETAILS

SILT FENCE (E-11)

STA. 100+50 - STA. 103+10 LT.	=	260 LIN. FT.
STA. 100+50 - STA. 103+10 RT.	=	260 LIN. FT.
STA. 104+10 - STA. 107+00 LT.	=	290 LIN. FT.
STA. 104+10 - STA. 106+50 RT.	=	240 LIN. FT.
STA. 109+50 - STA. 110+00 RT.	=	50 LIN. FT.



FILTER SOCKS (12") (E-3)

STA. 103+07.00	OFFSET LT. & RT. 110'	PERPENDICULAR OF CENTERLINE	= 28 @ 220 FT. EACH WITH 4 FT. SPACING
STA. 104+36.00	OFFSET LT. & RT. 75'	PERPENDICULAR OF CENTERLINE	= 24 & 150 FT. EACH WITH 4 FT. SPACING

ROCK DITCH CHECKS (E-6)

STA. 107+00	LT. & RT.	= 12 CU. YDS.
STA. 108+00	LT.	= 6 CU. YDS.
STA. 108+50	RT.	= 6 CU. YDS.
STA. 109+00	RT.	= 6 CU. YDS.
STA. 110+00	LT.	= 6 CU. YDS.

REVISIONS

DATE	REVISION

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
CLAUDE KLINCK
7-25-18

COUNTY ROAD 213
TEMPORARY EROSION CONTROL DETAILS

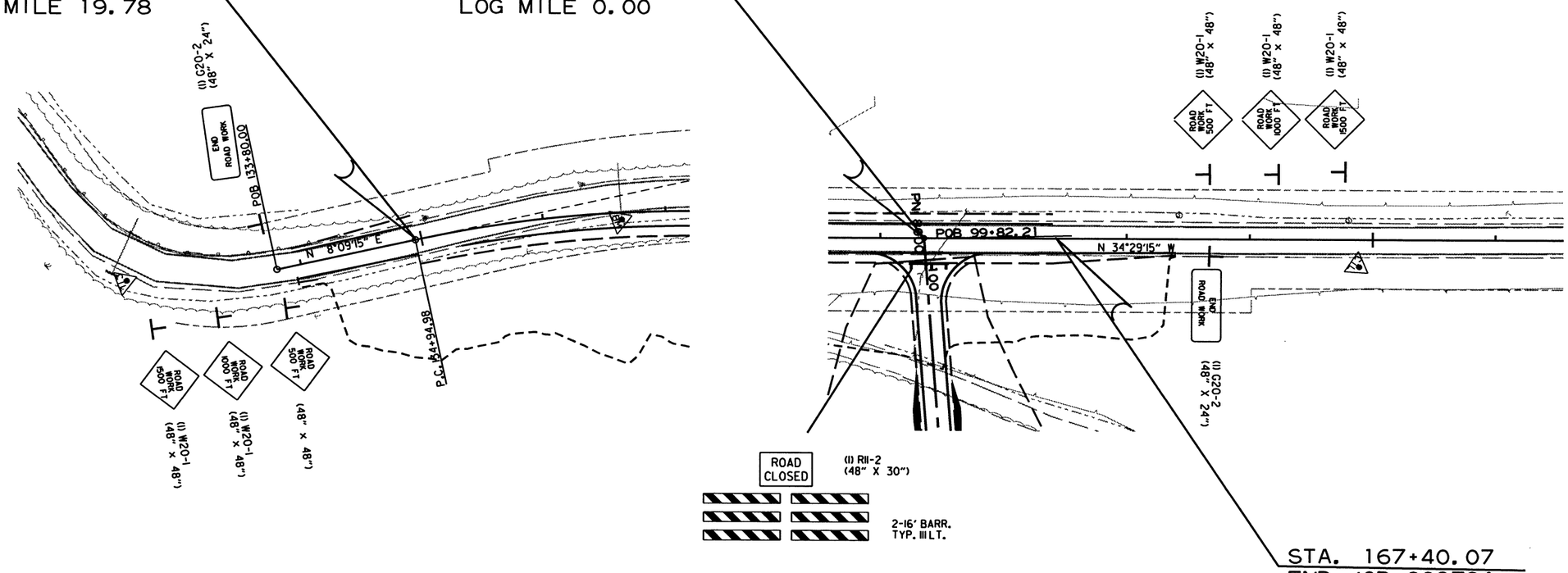
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	22	193

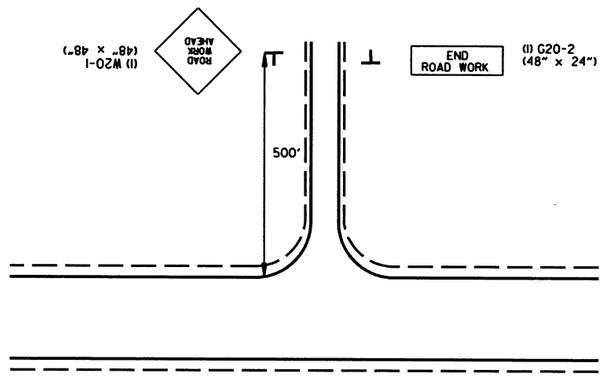
(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

STA. 99+94.25
BEGIN CO. RD 213
LOG MILE 0.00





ADVANCE WARNING SIGNS

CO. RD. 80 & CO. RD. 472

10/11/2018

R009784.DGN

HWY. 7 & CO. RD. 213
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.		009784	23	193

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CLOSE CO. RD. 213
CONSTRUCT HWY. 7, CO. RD. 213, CO. RD. 80, & CO. RD. 472 NEW LOCATION.
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISES.
CONSTRUCT TURNOUTS ON RT.

STAGE 2:
MOVE HWY. 7 TRAFFIC TO NEW LOCATION.
CONSTRUCT TURNOUTS ON LT.
REMOVE EXISTING PAVEMENT.
REMOVE EXISTING BRIDGES.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.

STAGE I
SIGNS = 230 SQ.FT.
TYPE III BARRICADES LT. (16')= 32 LIN. FT.
TYPE III BARRICADES RT. (16')= 192 LIN. FT.
TRAFFIC DRUMS = 156 EACH
CONSTRUCTION PAVEMENT MARKINGS = 12,980 LIN. FT.

135 HWY. 7 140 145 150

TRAFFIC DRUMS @ 40' O.C.

POB 133+80.00

N 8°09'15" E

P.C. 134+94.98

ROAD CLOSED

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

2-16' BARR. TYP. III RT.

CONST. LIMITS

P.I. 141+16.30

TRAFFIC DRUMS @ 40' O.C.

POE 401+69.67

P.I. 401+45.36

P.C. 401+10.36

N 12°33'50" W

BNP WELL DRIVE

N 88°52'26" W

P.I. 301+28.50

POB 400+00.00

P.I. 301+56.88

POE 304+88.88

STA. 301+10.09 BNP DRIVE = STA. 400+00.00 BNP WELL DRIVE = 60° 00' 00"

P.C. 302+12.90

P.I. 302+59.40

N 3°48'19" E

N 82°28'19" E

P.C. 300+63.49

BNP DRIVE

POB 300+08.00

N 69°46'49" E

P.I. 303+60.34

P.I. 151+24.84

P.I. 146+15.45

STA. 147+50.00 HWY. 7 = STA. 300+00.00 BNP DRIVE = 90° 00' 00"

HWY. 7
STAGE I
MAINTENANCE OF TRAFFIC DETAILS

10/11/2018

R009784.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.		009784	24	193

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

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

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

BNP WELL N 88°52'26" W
P.I. 301+28.50
P.O.B. 400+00.00
P.T. 301+56.68
N 15°11'02" W
STA. 301+10.09 BNP DRIVE = STA. 400+00.00 BNP WELL DRIVE = 60° 00' 00"
N 82°28'19" E BNP DRIVE
P.C. 300+53.34
N 69°46'49" E
P.C. 302+72.90
P.T. 303+04.19
P.O.E. 304+88.39
N 3°48'19" E
TRAFFIC DRUMS @ 40' O.C.
P.I. 303+60.34
P.C. 151+24.84
STA. 147+50.00 HWY. 7 = STA. 300+00.00 BNP DRIVE = 90° 00' 00"
155
HWY. 7
OLD ROADBED
20
P.C. 22+26.64
P.T. 22+03.49
P.I. 21+85.44
P.C. 21+67.80
P.I. 21+31.73
N 30°17'05" W
P.C. 20+93.26
P.O.E. 19+81.10
P.I. 161+07.36
505
P.O.E. 504+12.11
P.I. 503+92.44
P.I. 503+41.23
N 48°00'00" W
P.C. 502+90.08
N 88°02'05" W CO. RD. 80
STA. 147+50.00 HWY. 7 = STA. 500+00.00 CO. RD. 80 = 78° 03' 12"
25
165
P.I. 165+15.01
P.I. 24+67.37
TRAFFIC DRUMS @ 40' O.C.
P.O.E. 25+50.74
P.C. 24+30.10
P.I. 24+49.41
P.I. 23+76.61
160
N 29°40'41" E
N 1°39'45" W
P.O.B. 500+00.00
P.O.B. 600+00.00
600
P.C. 600+35.49
P.I. 601+06.43
P.T. 601+71.89
STA. 147+50.00 HWY. 7 = STA. 600+00.00 CO. RD. 472 = 60° 00' 00"
TRAFFIC DRUMS @ 40' O.C.
P.I. 603+09.32
P.C. 602+62.26
P.T. 603+56.17
CO. RD. 472
P.O.E. 604+47
ROAD CLOSED
(I) RII-2 (48" X 30")
2-16' BARR. TYP. III LT.

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CLOSE CO. RD. 213
CONSTRUCT HWY. 7, CO. RD. 213, CO. RD. 80, & CO. RD. 472 NEW LOCATION.
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISES.
CONSTRUCT TURNOUTS ON RT.

STAGE 2:
MOVE HWY. 7 TRAFFIC TO NEW LOCATION.
CONSTRUCT TURNOUTS ON LT.
REMOVE EXISTING PAVEMENT.
REMOVE EXISTING BRIDGES.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.

10/11/2018
R009784.DGN

HWY. 7
STAGE 1
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.		009784	25	193

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CLOSE CO. RD. 213
CONSTRUCT HWY. 7, CO. RD. 213, CO. RD. 80, & CO. RD. 472 NEW LOCATION.
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISES.
CONSTRUCT TURNOUTS ON RT.

STAGE 2:
MOVE HWY. 7 TRAFFIC TO NEW LOCATION.
CONSTRUCT TURNOUTS ON LT.
REMOVE EXISTING PAVEMENT.
REMOVE EXISTING BRIDGES.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.

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

TRAFFIC DRUMS @ 40' O.C.

P.I. 504+12.11
P.I. 503+41.33
N 10°08'48" E

STA. 166+35.47 HWY. 7 =
STA. 99+94.25 CO. RD. 213
= 85° 35' 05"

165
170

P.T. 165+15.07
P.I. 100+00.00
POB 99+82.21
HWY. 7
N 34°29'15" W
POE 171+67.22

N 51°05'42" E
639.08'

STA. 167+40.07
END JOB 009784

STA. 99+94.25
BEGIN CO. RD. 213
LOG MILE 0.00

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HWY. 7
STAGE 1
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.		009784	26	193

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

ROAD CLOSED
(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
2-16' BARR. TYP. III LT.

TRAFFIC DRUMS @ 40' O.C.

POB 133+80.00
N 8°09'15" E
P.C. 134+94.98
CONST. LIMITS
HWY. 7

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CLOSE CO. RD. 213
CONSTRUCT HWY. 7, CO. RD. 213, CO. RD. 80, & CO. RD. 472 NEW LOCATION.
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISES.
CONSTRUCT TURNOUTS ON RT.

STAGE 2:
MOVE HWY. 7 TRAFFIC TO NEW LOCATION.
CONSTRUCT TURNOUTS ON LT.
REMOVE EXISTING PAVEMENT.
REMOVE EXISTING BRIDGES.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.

STAGE 2
SIGNS = 66 SQ.FT.
TYPE III BARRICADES RT. (16')= 160 LIN. FT.
TRAFFIC DRUMS = 116 EACH

ROAD CLOSED
(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
2-16' BARR. TYP. III LT.

= OBLITERATE

P.I. 141+16.30

TRAFFIC DRUMS @ 40' O.C.

CONST. LIMITS

HWY. 7

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

P.C. 401+69.53
P.I. 401+45.36
P.C. 401+10.36
TRAFFIC DRUMS @ 20' O.C.
P.I. 301+28.50
P.I. 301+56.68
POB 400+00.00
N 88°52'28" W
BNP WELL DRIVE
STA. 301+10.09 BNP DRIVE =
STA. 400+00.00 BNP WELL DRIVE
= 60° 00' 00"
P.C. 302+12.90
P.I. 302+59.40
POE 302+88.29
N 3°48'19" E
BNP DRIVE
P.C. 300+63.49
N 69°46'49" E
POB 300+06.00
P.I. 303+60.34
P.I. 146+15.45
P.I. 150+
STA. 147+50.00 HWY. 7 =
STA. 300+00.00 BNP DRIVE
= 90° 00' 00"

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

HWY. 7
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

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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.		009784	27	193

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

= OBLITERATE

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

ROAD CLOSED
(1) RII-2 (48" X 30")
(1) WI-6 (48" X 24")
2-16' BARR. TYP. III LT.

TRAFFIC DRUMS @ 20' O.C.

TRAFFIC DRUMS @ 40' O.C.

STA. 147+50.00 HWY. 7 = STA. 300+00.00 BNP DRIVE = 90° 00' 00"

STA. 147+50.00 HWY. 7 = STA. 500+00.00 CO. RD. 80 = 78° 03' 12"

STA. 147+50.00 HWY. 7 = STA. 600+00.00 CO. RD. 472 = 60° 00' 00"

STA. 301+10.09 BNP DRIVE = STA. 400+00.00 BNP WELL DRIVE = 60° 00' 00"

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CLOSE CO. RD. 213
CONSTRUCT HWY. 7, CO. RD. 213, CO. RD. 80, & CO. RD. 472 NEW LOCATION.
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISES.
CONSTRUCT TURNOUTS ON RT.

STAGE 2:
MOVE HWY. 7 TRAFFIC TO NEW LOCATION.
CONSTRUCT TURNOUTS ON LT.
REMOVE EXISTING PAVEMENT.
REMOVE EXISTING BRIDGES.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.

10/11/2018

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HWY. 7 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.		009784	28	193

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-12-18

ROAD CLOSED
(1) R11-2 (48" X 30")
(1) W1-6 (48" X 24")
2-16' BARR. TYP. III LT.

TRAFFIC DRUMS @ 40' O.C.

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING ROADWAY.
CLOSE CO. RD. 213
CONSTRUCT HWY. 7, CO. RD. 213, CO. RD. 80, & CO. RD. 472 NEW LOCATION.
CONSTRUCT BRIDGES.
CONSTRUCT LEVELING & GRADE RAISES.
CONSTRUCT TURNOUTS ON RT.

STAGE 2:
MOVE HWY. 7 TRAFFIC TO NEW LOCATION.
CONSTRUCT TURNOUTS ON LT.
REMOVE EXISTING PAVEMENT.
REMOVE EXISTING BRIDGES.
PLACE FINAL SURFACE COURSE.
PLACE PERMANENT PAVEMENT MARKINGS.

STA. 166+35.47 HWY. 7 =
STA. 99+94.25 CO. RD. 213
= 85° 35' 05"

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

165
170
CONST. LIMITS
P.I. 165+45.07
POE 171+67.22
POB 99+82.21
N 34°29'15" W
HWY. 7
POC 100
N 51°05'49" E 639.08'
= OBLITERATE

STA. 167+40.07
END JOB 009784

STA. 99+94.25
BEGIN CO. RD. 213
LOG MILE 0.00

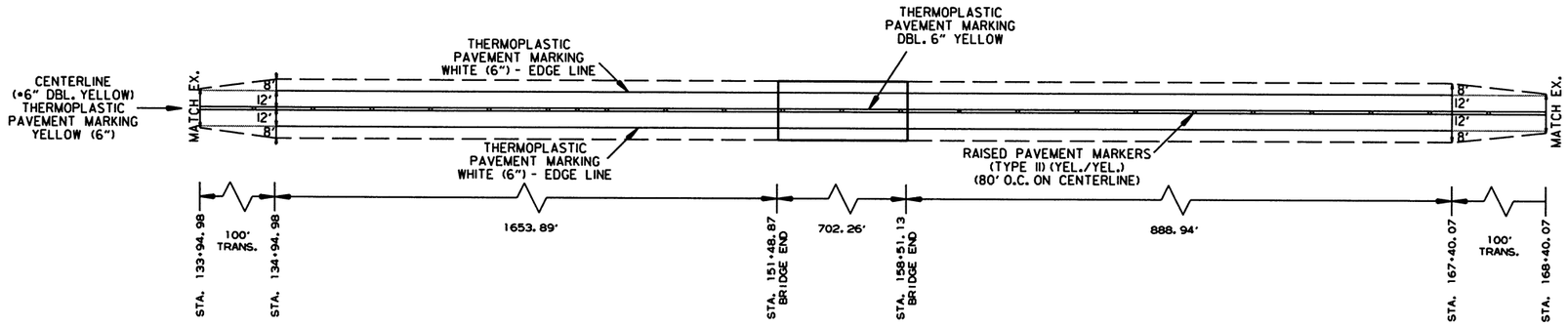
10/11/2018
R009784.DGN

HWY. 7
STAGE 2
MAINTENANCE OF TRAFFIC DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	29	193

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-16-18



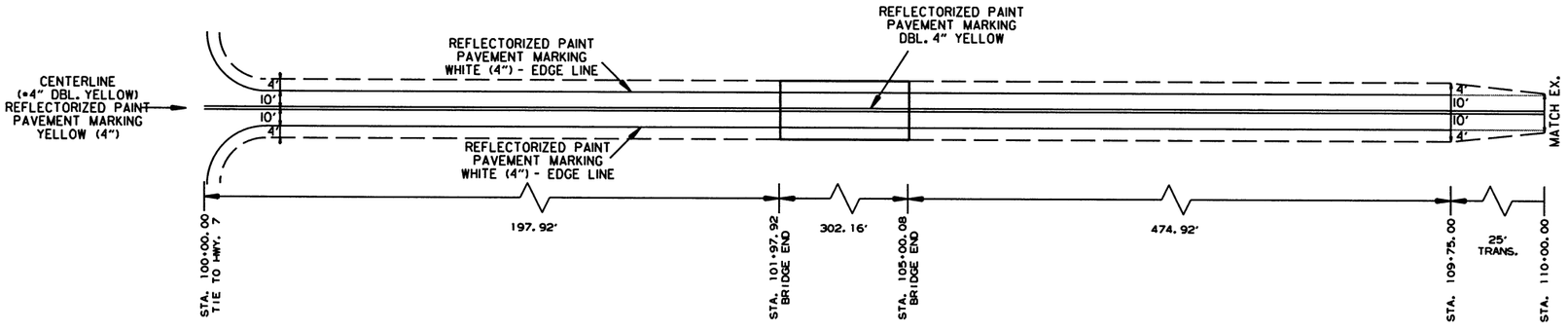
HWY. 7 - PERMANENT PAVEMENT MARKING LAYOUT

PERMANENT PAVEMENT MARKINGS:

THERMOPLASTIC PAVEMENT MARKING:
RT. AND LT. EDGE LINES = 6890 LIN. FT. WHITE
DBL. CENTERLINE = 6890 LIN. FT. YELLOW

RAISED PAVEMENT MARKERS:
TYPE II (YEL./YEL.) 80' O.C. ON CENTERLINE = 69 EACH

•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.



CO. RD. 213 - PERMANENT PAVEMENT MARKING LAYOUT

PERMANENT PAVEMENT MARKINGS:

REFLECTORIZED PAINT PAVEMENT MARKING:
RT. AND LT. EDGE LINES = 2000 LIN. FT. WHITE
DBL. CENTERLINE = 2000 LIN. FT. YELLOW

•THE 4" 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.

7/25/2018

R009784.DGN

HWY. 7 & CO. RD. 213
PERMANENT PAVEMENT MARKING 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.		009784	30	193

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

ADVANCE WARNING SIGNS AND DEVICES - NHPP-0051(13)

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		CONSTRUCTION PROJECT INFORMATION SIGN UPDATE	TRAFFIC DRUMS	BARRICADES (TYPE III)	
										RIGHT	LEFT
			LIN. FT. - EACH			NO.	SQ. FT.	EACH		LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	3		3	3	48.0				
W20-1	ROAD WORK 1000 FT.	48"x48"	3		3	3	48.0				
W20-1	ROAD WORK 500 FT.	48"x48"	3		3	3	48.0				
W20-1	ROAD WORK AHEAD	48"x48"	3		3	3	48.0				
G20-2	END ROAD WORK	48"x24"	5		5	5	40.0				
R11-2	ROAD CLOSED	48"x30"	8	5	8	8	80.0				
W1-6	LARGE ARROW	48"x24"		2	2	2	16.0				
* 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				
SPECIAL	CONSTRUCTION PROJECT INFORMATION SIGN	48"x96"	2	2	2	2	64.0				
	CONSTRUCTION PROJECT INFORMATION SIGN UPDATE							10			
	WARNING! BRIDGE CONSTRUCTION DOWNSTREAM	60"x36"	1		1	1	15.0				
	BRIDGE CONSTRUCTION AHEAD	48"x48"	2		2	2	32.0				
	BRIDGE CONSTRUCTION PORTAGE RIGHT	48"x48"	1		1	1	16.0				
	WARNING! STAY WITHIN NAVIGATION CHANNEL	60"x36"	2		2	2	30.0				
	TRAFFIC DRUMS		143	116	143				143		
	TYPE III BARRICADE-RT. (16')		13	9	13					208	
	TYPE III BARRICADE-LT. (16')		4		4						64
TOTALS:							**513.0**	**10**	**143**	**208**	**64**

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
* QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STD. SPECS.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS - NHPP-0051(13)

DESCRIPTION	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKING	
			TYPE II	6"	
			(YEL/YEL)	WHITE	YELLOW
	LIN. FT. - EACH	LIN. FT.	EACH	LIN. FT.	
CONSTRUCTION PAVEMENT MARKINGS	12980	12980			
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)	41		41		
THERMOPLASTIC PAVEMENT MARKING WHITE (6")	6890			6890	
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	6890				6890
TOTALS:		**12980**	**41**	**6890**	**6890**

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

5/9/2018
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HWY. 7
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	31	193

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-28-18

REMOVAL AND DISPOSAL OF ITEMS - NHPP-0051(13)

STATION	STATION	LOCATION	PROPANE TANK	FOUNDATIONS	GUARDRAIL	BUILDINGS
			EACH	SQ. YD.	LIN. FT.	EACH
149+00	150+00	MAIN LANES - HWY. 7		265		2
150+00	151+00	MAIN LANES - HWY. 7	1			
151+55	153+86	MAIN LANES - HWY. 7			280	
152+00	153+00	MAIN LANES - HWY. 7				1
TOTALS:			1	265	280	3

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.

REMOVAL AND DISPOSAL OF CULVERTS - NHPP-0051(13)

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
136+64	24" x 46' C.M. PIPE CULVERT	1
140+82	36" x 68' C.M. PIPE CULVERT	1
145+67	36" x 54' C.M. PIPE CULVERT	1
149+91	18" x 152' R.C. PIPE CULVERT	1
162+81	24" x 64' C.M. PIPE CULVERT	1
166+52	24" x 63' C.M. PIPE CULVERT	1
TOTAL:		6

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

COLD MILLING ASPHALT PAVEMENT - NHPP-0051(13)

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
133+94.98	134+94.98	MAIN LANES	21.00	233.33
167+40.07	168+40.07	MAIN LANES	21.00	233.33
TOTAL:				466.66

NOTE: AVERAGE MILLING DEPTH 1".

CLEARING AND GRUBBING - NHPP-0051(13)

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
134+95	167+40	MAIN LANES - HWY. 7	33	33
TOTALS:			33	33

SOIL LOG - NHPP-0051(13)

STATION	LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
		FEET				
138+00	CL	0-5	33	17	A-2-6(1)	RED
138+00	15' LT	0-5	31	17	A-6(6)	RED
138+00	CL	0-5	25	9	A-2-4(0)	RED
163+00	7' LT	0-5	ND	NP	A-2-4(0)	RED
163+00	6' RT	0-5	ND	NP	A-2-4(0)	BROWN
168+00	22' LT	0-1	Z	NP	A-2-4(0)	BROWN
168+00	5' LT	0-5	ND	NP	A-2-4(0)	BROWN

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

TOPSOIL FURNISHED AND PLACED- NHPP-0051(13)

STATION	STATION	LOCATION / DESCRIPTION	*TOPSOIL FURNISHED AND PLACED
			CU. YD.
141+25.00	146+20.00	STAGE 2-HWY. 7	460
149+80.00	153+90.00	STAGE 2-HWY. 7	380
TOTALS:			840

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

EROSION CONTROL - NHPP-0051(13)

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL								
			SPECIAL SEEDING	LIME	SPECIAL MULCH COVER	WATER	SPECIAL SECOND SEEDING APPLICATION	TEMPORARY SEEDING	SPECIAL MULCH COVER	WATER	FILTER SOCK (12")	ROCK DITCH CHECKS	SILT FENCE	SEDIMENT BASIN	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
											(E-3)	(E-6)	(E-11)	(E-14)		
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	LIN. FT.	CU.YD.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING						16.63	16.63	339.3	652	111	4969	343		564
ENTIRE	PROJECT	STAGE 1	5.15	10.30	5.15	525.3	5.15	5.15	5.15	105.1		75	98	93		122
ENTIRE	PROJECT	STAGE 2	2.00	4.00	2.00	204.0	2.00	2.00	2.00	40.8			1820		436	67
TOTALS:			7.15	14.30	7.15	729.3	7.15	23.78	23.78	485.2	652	186	6887	436	436	753

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING
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.

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

5/9/2018

R009784.DGN

HWY. 7
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
01-09-19				6	ARK.			
				JOB NO.		009784	32	193

(2) QUANTITIES

EARTHWORK - NHPP-0051(13)

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	ROCK FILL	* SOIL STABILIZATION	* REMOVING & REPLACING TOPSOIL
			CU. YD.			TON	CU. YD.
ENTIRE	PROJECT	STAGE 1-HWY. 7	62979	16252			
ENTIRE	PROJECT	STAGE 2-HWY. 7	7275	600			
134+94.98	137+00.00	STAGE 2-HWY. 7 LT.			2933		
162+76.00	163+00.00	STAGE 1-HWY. 7 RT.			113		
166+00.00	168+00.00	STAGE 1-HWY. 7 RT.			2857		
601+00.00	604+35.00	STAGE 1-CO. RD. 472			3016		
300+12.00	302+00.00	STAGE 1-BNP DRIVE	403	133			
302+00.00	304+20.00	STAGE 2-BNP DRIVE	488	281			
400+11.26	401+00.00	STAGE 1-BNP WELL DRIVE	362				
401+00.00	401+71.33	STAGE 2-BNP WELL DRIVE	263	13			
500+12.28	503+00.00	STAGE 1-CO. RD. 80	2080	93			
503+00.00	504+37.11	STAGE 2-CO. RD. 80	3751				
600+22.82	604+45.00	CO. RD. 472	80	3640			
20+00.00	23+50.00	STAGE 1-EQUESTRIAN TRAIL	6989	1			
23+50.00	25+00.00	STAGE 2-EQUESTRIAN TRAIL	1601	1			
ENTIRE	PROJECT	OBLITERATION OF EXISTING ROADWAY	42512				
* ENTIRE	PROJECT	TO BE USED IF AND WHERE				100	6500
		DIRECTED BY THE ENGINEER					
TOTALS:			128783	21014	8919	100	6500

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

CONCRETE DITCH PAVING - NHPP-0051(13)

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	NATIVE STONE FOR DITCH LINER	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	TON	SQ. YD.	M. GAL.
* 134+94.98	148+00.00	HWY. 7 - RT	1305.02	6.00		493.01		
* 141+00.00	143+82.00	HWY. 7 - LT	282.00	6.00		106.53		
* 144+15.00	148+00.00	HWY. 7 - LT	385.00	6.00		145.44		
163+30.00	164+00.00	HWY. 7 - LT	70.00	6.00	46.67		31.11	0.39
166+80.00	168+00.00	HWY. 7 - LT	120.00	6.00	80.00		53.33	0.67
166+80.00	168+00.00	HWY. 7 - RT	120.00	6.00	80.00		53.33	0.67
* 300+50.00	300+65.41	BNP - LT	15.41	6.00		5.82		
* 300+65.41	302+65.06	BNP - RT	199.65	6.00		75.42		
501+00.00	504+00.00	CO. RD. 80 - RT	300.00	6.00	200.00		133.33	1.68
502+00.00	504+00.00	CO. RD. 80 - LT	200.00	6.00	133.33		88.89	1.12
601+25.00	603+00.00	CO. RD. 472 - RT	175.00	6.00	116.67		77.78	0.98
TOTALS:					656.67	826.22	437.77	5.51

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

* SOLID SODDING SHALL NOT BE USED INSIDE THE PARK BOUNDARY.

STRUCTURES - NHPP-0051(13)

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 24"	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 36"	SIDE DRAIN 24"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 24"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 36"	SOLID SODDING	WATER	STD. DWG. NOS.
		LIN. FT.			EACH		SQ.YD.	M.GAL.	
* 136+64	24" x 46' C.M. PIPE CULVERT - HWY. 7	46			2		16	0.20	PCC-1, FES-1, FES-2
* 140+65	36" x 86' R.C. PIPE CULVERT - HWY. 7		86			2	34	0.43	PCC-1, FES-1, FES-2
* 143+44	36" x 142' R.C. PIPE CULVERT - HWY. 7		142			2	34	0.43	PCC-1, FES-1, FES-2
147+60	24" x 60' SIDE DRAIN - HWY. 7			60					PCC-1
163+00	36" x 98' C.M. PIPE CULVERT - HWY. 7		98			2	34	0.43	PCC-1, FES-1, FES-2
166+87	36" x 76' C.M. PIPE CULVERT - HWY. 7		76			2	34	0.43	PCC-1, FES-1, FES-2
300+90	24" x 72' SIDE DRAIN - BNP DRIVE			72					PCC-1
TOTALS:		46	402	132	2	8	152	1.92	

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

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

* SOLID SODDING SHALL NOT BE USED INSIDE THE PARK BOUNDARY.

ACHM PATCHING OF EXISTING ROADWAY - NHPP-0051(13)

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

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-9-19

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC - NHPP-0051(13)

LOCATION	TON	TACK COAT GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	15	30
DIRECTED BY THE ENGINEER		
TOTALS:	15	30

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

SELECTED PIPE BEDDING - NHPP-0051(13)

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

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

EROSION CONTROL MATTING - NHPP-0051(13)

STATION	STATION	LOCATION	LENGTH	CLASS 2
			LIN. FT.	SQ. YD.
134+94.98	148+00.00	HWY. 7 - RT. (ALONG NATIVE STONE DITCH LINER)	1305.02	1160.02
136+64.00	136+64.00	HWY. 7 - FLARED END SECTIONS		16.00
140+65.00	140+65.00	HWY. 7 - FLARED END SECTIONS		34.00
141+00.00	143+82.00	HWY. 7 - LT. (ALONG NATIVE STONE DITCH LINER)	282.00	250.67
143+44.00	143+44.00	HWY. 7 - FLARED END SECTIONS		34.00
144+15.00	148+00.00	HWY. 7 - LT. (ALONG NATIVE STONE DITCH LINER)	385.00	342.22
300+50.00	300+65.41	HWY. 7 - LT. (ALONG NATIVE STONE DITCH LINER)	15.41	13.70
300+65.41	302+65.06	HWY. 7 - LT. (ALONG NATIVE STONE DITCH LINER)	199.65	177.47
TOTAL:				2028.08

NOTE: AVERAGE WIDTH = 8'-0"

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

STATION	LOCATION	WIDTH	LENGTH	TON
		FEET		
162+81	HWY. 7	8.50	28	13
166+52	HWY. 7	8.50	28	13
TOTAL:				26

AVG. DEPTH = 9"

5/9/2018

R009784.DGN

HWY. 7
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	33	193

(2) QUANTITIES

STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
12-5-18

MUMBLE STRIPS IN ASPHALT SHOULDERS - NHPP-0051(13)

STATION	STATION	LOCATION	* MUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
134+95	151+49	HWY. 7	3308
158+51	167+40	HWY. 7	1778
TOTAL:			5086

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

CENTERLINE MUMBLE STRIPES - NHPP-0051(13)

STATION	STATION	LOCATION	*CENTERLINE MUMBLE STRIPES
			LIN.FT.
134+95	151+49	HWY. 7	1654
158+51	167+40	HWY. 7	889
TOTAL:			2543

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

DUMPED RIPRAP AND FILTER BLANKET - NHPP-0051(13)

STATION	STATION	LOCATION	COMPOSTED NATIVE STONE RIPRAP	FILTER BLANKET
			CU. YD.	SQ. YD.
	136+64	HWY. 7 - 24" x 46' PIPE CULVERT AROUND F.E.S. LT.	4	8
	162+81	HWY. 7 - 24" x 64' PIPE CULVERT AROUND F.E.S. RT.	4	8
	166+52	HWY. 7 - 24" x 63' PIPE CULVERT AROUND F.E.S. RT.	4	8
134+94.98	147+50.00	HWY. 7 - RT.	4115	8188
161+88.00	166+00.00	HWY. 7 - RT.	461	924
400+11.26	401+00.00	BNP WELL DRIVE - LT.	66	133
500+67.00	504+72.00	CO. RD. 80 - RT. & LT.	806	1611
600+25.00	602+00.00	CO. RD. 472 - RT. & LT.	318	555
604+00.00	604+35.00	CO. RD. 472 - RT. & LT.	65	131
20+00.00	25+00.00	EQUESTRIAN TRAIL - RT. & LT.	1154	2307
* ENTIRE	PROJECT	TO BE USED IF AND WHERE	200	22
		DIRECTED BY THE ENGINEER		
TOTALS:			7197	13895

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

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

GUARDRAIL - NHPP-0051(13)

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
149+13.69	151+32.44	RT. SIDE	150	1	1
150+38.69	151+32.44	LT. SIDE	75	1	1
158+75.56	159+69.31	RT. SIDE	75	1	1
158+75.56	160+94.31	LT. SIDE	150	1	1
TOTALS:			450	4	4

4" PIPE UNDERDRAIN - NHPP-0051(13)

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

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

BENCH MARKS - NHPP-0051(13)

STATION	LOCATION	BENCH MARKS
		EACH
151+45	HWY. 7 - 20 RT.	1
TOTAL:		1

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

APPROACH SLABS - NHPP-0051(13)

STATION	STATION	LOCATION	APPROACH SLABS (TYPE SPECIAL)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	POUND	TON
151+11.37	151+48.87	APPROACH SLAB - TYPE 1	88.80	11387	18.80
158+51.13	158+95.13	APPROACH SLAB - TYPE 2	109.90	13363	18.80
TOTALS:			198.70	24750	37.60

MAILBOXES - NHPP-0051(13)

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	
ENTIRE PROJECT	1	1
TOTALS:	1	1

SELECT GRANULAR BACKFILL - NHPP-0051(13)

LOCATION	*SELECT GRANULAR BACKFILL
	CU. YDS.
ENTIRE PROJECT	171
TOTAL:	171

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

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HWY. 7
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	34	193

(2) QUANTITIES

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

BASE AND SURFACING - NHPP-0051(13)

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	TOTAL PG 64-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																										
133+94.98	134+94.98	HWY. 7 - TRANSITION	100.00			22.00	244.44	0.17	41.55													30.00	333.33	220.00	36.67	36.67
134+94.98	138+00.00	HWY. 7 - NOTCH AND WIDEN	305.02	VAR.	604.16	48.73	1651.51	0.05	82.58					24.48	829.65	385.00	159.71	24.25	821.86	220.00	90.40	32.00	1084.52	220.00	119.30	209.70
138+00.00	151+11.37	HWY. 7 - FULL DEPTH	1311.37	245.75	3222.69	48.73	7100.34	0.05	355.02					24.48	3566.93	385.00	686.63	24.25	3533.41	220.00	388.68	32.00	4662.65	220.00	512.89	901.57
158+95.13	166+50.00	HWY. 7 - FULL DEPTH	754.87	245.75	1855.09	48.73	4087.20	0.05	204.36					24.48	2053.25	385.00	395.25	24.25	2033.96	220.00	223.74	32.00	2683.98	220.00	295.24	518.98
166+50.00	167+40.07	HWY. 7 - NOTCH AND WIDEN	90.07	152.50	137.36	48.73	487.68	0.05	24.38					24.48	244.99	385.00	47.16	24.25	242.69	220.00	26.70	32.00	320.25	220.00	35.23	61.93
167+40.07	168+40.07	HWY. 7 - TRANSITION	100.00			22.00	244.44	0.17	41.55													30.00	333.33	220.00	36.67	36.67
300+12.00	300+52.00	BNP DRIVE - TURN OUT	40.00	VAR.	81.28													VAR.	207.41	220.00	22.82					22.82
300+52.00	304+19.40	BNP DRIVE - FULL DEPTH	367.40	105.25	386.69													20.00	816.44	220.00	89.81					89.81
ENTIRE	PROJECT	BNP DRIVE - CIRCLE DRIVE & PARKING	VAR.	VAR.	837.75	VAR.	2052.00	0.05	102.60									VAR.	2052.00	220.00	225.72					225.72
400+00.00	400+54.10	BNP WELL DRIVE - TURN OUT	54.10	VAR.	51.07													VAR.	130.52	220.00	14.36					14.36
400+54.10	401+71.33	BNP WELL DRIVE - FULL DEPTH	117.23	105.25	123.38													20.00	260.51	220.00	28.66					28.66
500+03.71	500+56.66	CO. RD. 80 - TURN OUT	52.95	VAR.	88.50													VAR.	216.70	220.00	23.84					23.84
500+56.66	504+72.11	CO. RD. 80 - FULL DEPTH	415.45	109.75	455.96													20.00	923.22	220.00	101.55					101.55
600+00.00	601+06.69	CO. RD. 472 - TURN OUT	106.69	VAR.	151.75													VAR.	371.37	220.00	40.85					40.85
601+06.69	604+45.00	CO. RD. 472 - FULL DEPTH	338.31	109.75	371.30													20.00	751.80	220.00	82.70					82.70
ADDITIONAL FOR LEVELING																										
134+94.98	138+00.00	HWY. 7	305.02			VAR.	679.00	0.17	115.43									VAR.	679.00	220.00	225.00					225.00
166+50.00	167+40.07	HWY. 7	90.07			VAR.	220.00	0.17	37.40									VAR.	220.00	220.00	125.00					125.00
ADDITIONAL FOR METHOD OF RAISING GRADE																										
164+00.00	166+50.00	HWY. 7	250.00			22.00	611.11	0.17	103.89	22.00	611.11	VAR.	224.87													
ADDITIONAL FOR GUARDRAIL WIDENING																										
148+70.69	149+03.69	HWY. 7 RT	33.00	11.63	3.84													2.75	10.08	220.00	1.11					1.11
149+03.69	149+13.69	HWY. 7 RT	10.00	23.25	2.33													5.50	6.11	220.00	0.67					0.67
149+13.69	150+88.69	HWY. 7 RT	175.00	18.38	32.17													4.50	87.50	220.00	9.63					9.63
150+88.69	151+32.44	HWY. 7 RT	43.75	13.50	5.91													3.50	17.01	220.00	1.87					1.87
149+65.69	150+28.69	HWY. 7 LT	63.00	22.75	14.33													5.25	36.75	220.00	4.04					4.04
150+28.69	150+38.69	HWY. 7 LT	10.00	45.50	4.55													10.50	11.67	220.00	1.28					1.28
150+38.69	150+88.69	HWY. 7 LT	50.00	36.88	18.44													8.50	47.22	220.00	5.19					5.19
150+88.69	151+32.44	HWY. 7 LT	43.75	28.25	12.36													6.50	31.60	220.00	3.48					3.48
158+75.56	159+19.31	HWY. 7 RT	43.75	16.25	7.11													3.50	17.01	220.00	1.87					1.87
159+19.31	159+69.31	HWY. 7 RT	50.00	32.50	16.25													5.50	30.56	220.00	3.36					3.36
159+69.31	159+79.31	HWY. 7 RT	10.00	14.50	1.45													7.50	8.33	220.00	0.92					0.92
159+79.31	160+24.31	HWY. 7 RT	45.00	13.50	6.08													3.75	18.75	220.00	2.06					2.06
158+75.56	159+19.31	HWY. 7 LT	43.75	28.25	12.36													6.50	31.60	220.00	3.48					3.48
159+19.31	160+94.31	HWY. 7 LT	175.00	32.63	57.10													7.50	145.83	220.00	16.04					16.04
160+94.31	161+04.31	HWY. 7 LT	10.00	16.50	1.65													8.50	9.44	220.00	1.04					1.04
161+04.31	161+55.31	HWY. 7 LT	51.00	8.25	4.21													4.25	24.08	220.00	2.65					2.65
ADDITIONAL FOR SUPERELEVATION																										
134+94.98	137+94.98	HWY. 7	300.00	51.50	154.50																					
137+94.98	145+40.45	HWY. 7	745.47	103.00	767.83																					
145+40.45	148+40.45	HWY. 7	300.00	51.50	154.50																					
148+45.00	151+45.00	HWY. 7	300.00	56.50	169.50																					
151+45.00	164+40.07	HWY. 7	1295.07	113.00	1463.43																					
164+40.07	167+40.07	HWY. 7	300.00	56.50	169.50																					
TOTALS:					**11446.38**		**17377.72**		**1108.76**		**611.11**		**224.87**		**6694.82**		**1288.75**		**13794.43**		**1768.52**		**9418.06**		**1036.00**	**2804.52**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.5% MIN. AGGR.....4.5% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.9% MIN. AGGR.....4.1% ASPHALT BINDER
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.

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HWY. 7
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	35	193

④ QUANTITIES

TRAFFIC CONTROL DEVICES - STPB-0051(13)

DESCRIPTION	W20-3 (ROAD CLOSED XXXX) 1500 FT. NO.	1500 FT. SQ. FT.	1000 FT. NO.	1000 FT. SQ. FT.	500 FT. NO.	500 FT. SQ. FT.	G20-2 NO.	G20-2 SQ. FT.	R11-2 (ROAD CLOSED) NO.	R11-2 SQ. FT.	R11-3A (ROAD CLOSED TO THRU TRAFFIC) NO.	R11-3A SQ. FT.	BARRICADES (TYPE III)* LIN. FT.	STANDARD DRAWING NUMBER
ENTIRE PROJECT							1	8.00			2	12.50		TC-1, TC-2, TC-3
BEGIN PROJECT CO. RD. 213									1	8.00			20	TC-1, TC-2, TC-3
END PROJECT CO. RD. 213	1	16.00	1	16.00	1	16.00			1	8.00			20	TC-1, TC-2, TC-3
BEGIN PROJECT PROPOSED RD.									1	8.00			32	TC-1, TC-2, TC-3
TOTALS:	**1**	**16.00**	**1**	**16.00**	**1**	**16.00**	**1**	**8.00**	**3**	**24.00**	**2**	**12.50**	**72***	

NOTE: LOCATION OF THE TRAFFIC CONTROL DEVICES TO BE AS DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.
NOTE: THIS IS A LOW TRAFFIC ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2014 EDITION.

*NOTE: ESTIMATED QUANTITY. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

EROSION CONTROL - STPB-0051(13)

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL LIME	SPECIAL SEEDING	SPECIAL MULCH COVER	WATER
			TONS	ACRES	ACRES	M. GALS.
100+00	110+50	ENTIRE PROJECT	4	2.03	2.03	206.6
0.30 MILES OF CO. RD. 213		ENTIRE LENGTH OF OBLITERATION	2	0.58	0.58	59.4
TOTALS:			**6**	**2.61**	**2.61**	**266.0**

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

REFLECTORIZED PAINT PAVEMENT MARKING - STPB-0051(13)

LOCATION	YELLOW 4" CONTINUOUS	WHITE 4" CONTINUOUS	STANDARD DRAWING NUMBER
	LIN. FT.	LIN. FT.	
100+00.00 TO 110+00.00	2000	2000	PM-1 & PM-2
TOTALS:	**2000**	**2000**	

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

CLEARING AND GRUBBING - STPB-0051(13)

STATION	STATION	CLEARING	GRUBBING
		STATION	STATION
100+00	110+00	10	10
TOTALS:		**10**	**10**

TEMPORARY EROSION CONTROL - STPB-0051(13)

STATION	STATION	LOCATION	TEMPORARY SEEDING	MULCH COVER	WATER	FILTER SOCK (12")	SILT FENCE (E-11)	ROCK DITCH CHECKS (E-6)	SEDIMENT REMOVAL AND DISPOSAL
			ACRES	ACRES	M. GALS	LIN. FT.	LIN. FT.	CU. YDS.	CU. YDS.
100+50	103+10	LT. & RT.	2.03	2.03	41.3				
100+50	103+10	LT. & RT.					520		17.2
103+07	103+07	OFFSET LT. & RT. 110' PERPENDICULAR TO CENTERLINE				6160.0			203.3
104+36	104+36	OFFSET LT. & RT. 75' PERPENDICULAR TO CENTERLINE				3600.0			118.8
104+10	107+00	LT.					290		9.6
104+10	106+50	RT.					240		7.9
107+00	107+00	LT. & RT.						12	12.0
108+00	108+00	LT.						6	6.0
108+50	108+50	RT.						6	6.0
109+00	109+00	RT.						6	6.0
109+50	110+00	RT.					50		1.7
110+00	110+00	LT.						6	6.0
TOTALS:			**2.03**	**2.03**	**41.3**	**9760.0**	**1100**	**36**	**394.5**

BASIS OF ESTIMATE:
WATER..... 20.4 M.G. / ACRE OF TEMPORARY SEEDING

NOTE: TEMPORARY EROSION CONTROL DEVICES 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.

NOTE: EROSION CONTROL ITEMS ARE SUBJECT TO IMMEDIATE PLACEMENT AS DIRECTED BY THE ENGINEER. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

NOTE: ALL TEMPORARY EROSION CONTROL QUANTITIES ARE ESTIMATED. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

STANDARD HIGHWAY SIGNS AND SUPPORT ASSEMBLIES - STPB-0051(13)

STATION	SIDE	STANDARD SIGN NO. OM-3L	STANDARD SIGN NO. OM-3R	SUPPORT ASSEMBLY TYPE C	STANDARD DRAWING NUMBER
		SQ. FT.		EACH	
BRIDGE BEGINNIING	RT.		3.00	1	SHS-1, SHS-2
BRIDGE BEGINNIING	LT.	3.00		1	SHS-1, SHS-2
BRIDGE END	LT.	3.00		1	SHS-1, SHS-2
BRIDGE END	RT.		3.00	1	SHS-1, SHS-2
TOTALS:		**6.00**	**6.00**	**4**	

NOTES: ALL STANDARD SIGN BLANKS TO BE 0.080" THICK. REFER TO STANDARD DRAWING SHS-2 FOR CHANNEL POST SPLICING DETAILS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
CLAUDE KLINCK
9-20-18

COUNTY ROAD 213
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	36	193
				(4)	QUANTITIES			

SURFACING QUANTITIES - STPB-0051(13)

STATION	STATION	LOCATION	LENGTH	PRIME COAT			AGGREGATE BASE COURSE (CLASS 7)		ACHM SURFACE COURSE (1/2")*		
				AVG. WIDTH	SQ. YDS.	GALLONS	TONS/STA.	TONS	AVG. WIDTH	SQ. YDS.	TON
				FEET					FEET		
100+00.00	101+97.92	MAIN LANES	197.92	21.00	461.8	184.7	150.75	298.4	20.00	439.8	48.4
101+97.92	105+00.08	BRIDGE	302.16								
105+00.08	110+50.61	MAIN LANES	550.53	21.00	1284.6	513.8	150.75	829.9	20.00	1223.4	134.6
107+75.00	107+75.00	DRIVEWAY ON RT.			49.6	19.8	150.75	60.3		49.6	5.5
100+87.00	101+96.00	GUARDRAIL WIDEING	109.00				192.75	210.1			
105+00.00	101+96.00	GUARDRAIL WIDEING	109.00				192.75	210.1			
MAINTENANCE OF TRAFFIC								200.0**			
TOTALS:					**1796.0**	**718.3**		**1808.8**			**188.5**

BASIS OF ESTIMATE:
BASIS OF ESTIMATE:

PRIME COAT_____ 0.40 GALLONS PER SQ. YD.
AGGREGATE BASE COURSE (CL. 7) MAIN LANE_____ 150.75 TONS/STA.
AGGREGATE BASE COURSE (CL. 7) GUARDRAIL WIDENING _____ 192.75 TONS/STA.
ACHM SURFACE COURSE _____ 220 LBS./SQ. YD.

PROPORTION BY WEIGHT:

ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")_____ 5.5%
MINERAL AGGREGATE_____ 94.5%

*Nmax=115
**ESTIMATED QUANTITIY. TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

APPROACH GUTTERS (TYPE A) - STPB-0051(13)

STATION	STATION	SIDE	CONCRETE	REINFORCING STEEL - RDWY. (GR. 60)
			CU. YD.	LB.
101+88	101+98	LT. & RT.	8.5	720
105+00	105+10	LT. & RT.	8.5	720
TOTALS:			**17**	**1440**

W = 4'

GUARDRAIL - STPB-0051(13)

STATION	STATION	SIDE	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL (TYPE A)	TERMINAL ANCHOR POST (TYPE 1)
			EACH	LIN. FT.	EACH
101+29	101+98	LT. & RT.	2	100	2
105+00	105+69	LT. & RT.	2	100	2
TOTALS:			**4**	**200**	**4**

EARTHWORK - STPB-0051(13)

STATION	STATION	LOCATION / DESCRIPTION	ROCK FILL	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CUBIC YARDS		
100+00	101+98	MAIN LANE APPROACH TO BEGINNING OF BRIDGE	33181		968
100+00	101+98	MAIN LANE SIDESLOPES ALONG APPROACH	1971		
105+00	110+00	MAIN LANE APPROACH FROM END OF BRIDGE	8950	991	1238
105+00	110+00	MAIN LANE SIDESLOPES ALONG APPROACH	946		
0.3 MILES OF CO. RD. 213		ENTIRE LENGTH OF OBLITERATION		1026	
107+75	107+75	DRIVEWAY ON RIGHT			105
TOTALS:			**45048**	**2017**	**2311**

NOTE: CHANNEL CHANGE EXCAVATION, IF DEEMED SUITABLE BY THE ENGINEER, TO BE USED AS ROADWAY EMBANKMENT.
EXCAVATION DEEMED UNSUITABLE SHALL BE DISPOSED OF AS APPROVED BY THE ENGINEER.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
CLAUDE KLINCK
9-28-18

COUNTY ROAD 213
QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12/28/2018				6	ARK.			
				JOB NO.		009784	37	193
				① 07423 & 04940 - QUANTITIES - 60123				

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 009784

BRIDGE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO. / ITEM / UNIT	205 REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. _) LUMP SUM	801 UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE CU. YD.	SS & 802 CLASS S CONCRETE-BRIDGE CU. YD.	SP, SS, & 802 ② CLASS S(AE) CONCRETE-BRIDGE CU. YD.	803 CLASS 2 PROTECTIVE SURFACE TREATMENT SQ. YD.	804 REINFORCING STEEL-BRIDGE (GRADE 60) LB.	804 EPOXY COATED REINFORCING STEEL (GRADE 60) LB.	SS & 805 ③ STEEL PILING (HP 14X73) LIN. FT.	SS & 805 ③ STEEL PILING (HP 14X89) LIN. FT.	SS & 805 PREBORING LIN. FT.	806 METAL BRIDGE RAILING (TYPE P-1) LIN. FT.	806 METAL BRIDGE RAILING (TYPE M-1) LIN. FT.	SP, SS, & 807 STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W) LB.	SP, SS, & 807 STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GRADE 50W) LB.	SS & 807 ④ PAINTING STRUCTURAL STEEL TON	SS & 808 ELASTOMERIC BEARINGS CU. IN.	SS & 809 ARMORED JOINT WITH NEOPRENE STRIP SEAL LIN. FT.
07423 HIGHWAY 7 OVER BUFFALO RIVER	BENT 1				84.95		5.0	12,039	648		132	125	19	32		310	0.1	3,263	
	BENT 2				114.95			25,215										6,779	
	BENT 3				129.94			27,400										11,756	
	BENT 4				177.39			34,981										10,800	
	BENT 5			73	128.57		5.0	14,325	742		21	19	25	44		310	0.1	9,563	
	250'-0" CONT. COMP. PLATE GIRDER UNIT					425.91	1,245.6		117,340				242	500		455,670	19.2		100
	450'-0" CONT. COMP. PLATE GIRDER UNIT					792.29	2,249.2		208,630				435	900		1,826,930	44.3		50
	SITE NO. 1 (BR. NO. 01689)		1																
	TOTALS FOR BRIDGE NO. 07423 [NHPP-0051(13)]			73	635.80	1,218.20	3,504.8	113,960	327,360		153	144	721	1,476		2,283,220	63.7	42,161	150
04940 COUNTY ROAD 213 OVER MILL CREEK	BENT 1				27.22		2.7	3,337		232		224			460		0.3	⚠ ~~2,496~~ 1,248	
	BENT 2			167	104.55			13,807										⚠ ~~2,610~~ 1,305	
	BENT 3			154	103.54			13,678										⚠ ~~2,610~~ 1,305	
	BENT 4			109	93.50			12,299										⚠ ~~2,610~~ 1,305	
	BENT 5				26.49		2.7	3,329		136		128			460		0.3	⚠ ~~2,496~~ 1,248	
	300'-0" CONT. COMP. W-BEAM UNIT					260.60	800.0		60,130						212,870		4.0		
	SITE NO. 2		1																
	TOTALS FOR BRIDGE NO. 04940 [STPB-0051(13)]			430	355.30	260.60	805.4	46,450	60,130	368		352			213,790		4.6	⚠ ~~12,822~~ 6,411	
TOTALS FOR JOB NO. 009784				①503	991.10	1,478.80	4,310.2	160,410	387,490	368	153	496	721	1,476	213,790	2,283,220	68.3	⚠ ~~54,983~~ 48,572	150

BRIDGE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO. / ITEM / UNIT	SS & 809 SILICONE JOINT SEALANT LIN. FT.	812 BRIDGE NAME PLATE (TYPE C) EACH	812 BRIDGE NAME PLATE (TYPE D) EACH	816 FILTER BLANKET SQ. YD.	816 DUMPED RIPRAP CU. YD.	SP JOB 009784 DRILLED SHAFT (96" DIA.) LIN. FT.	SP JOB 009784 PERMANENT STEEL CASING (108" DIA.) LIN. FT.	SP JOB 009784 CROSSHOLE SONIC LOGGING (96" DIA.) EACH	SP JOB 009784 DRILLED SHAFT (48" DIA.) LIN. FT.	SP JOB 009784 CROSSHOLE SONIC LOGGING (48" DIA.) EACH	SP JOB 009784 CORING DRILLED SHAFT LIN. FT.	SP JOB 009784 ARCHITECTURAL FINISH SQ. FT.	SP JOB 009784 STAINING CONCRETE SURFACES SQ. FT.
07423 HIGHWAY 7 OVER BUFFALO RIVER	BENT 1					390	230								
	BENT 2							79	47	2			40	80	472
	BENT 3							74	42	2			37		1,560
	BENT 4							74	34	2			37		1,637
	BENT 5										40	1	8	110	2,433
	250'-0" CONT. COMP. PLATE GIRDER UNIT			1										1,229	643
	450'-0" CONT. COMP. PLATE GIRDER UNIT													2,214	5,484
	SITE NO. 1 (BR. NO. 01689)														9,441
	TOTALS FOR BRIDGE NO. 07423 [NHPP-0051(13)]			1		390	230	227	123	6	40	1	122	3,633	21,670
04940 COUNTY ROAD 213 OVER MILL CREEK	BENT 1														
	BENT 2													23	237
	BENT 3														859
	BENT 4														1,174
	BENT 5														985
	300'-0" CONT. COMP. W-BEAM UNIT		54	1										23	256
	SITE NO. 2 (EXISTING LOW WATER STRUCTURE)													750	5,449
	TOTALS FOR BRIDGE NO. 04940 [STPB-0051(13)]		54	1											
TOTALS FOR JOB NO. 009784			54	1	1	390	230	227	123	6	40	1	122	796	8,960
														4,429	30,630

⚠ Revised quantity for elastomeric bearings - BHS 12/28/2018
Checked by: DKS Date: 1/2/2019

JIM POOL
DESIGN SECTION SUPERVISOR

① Includes approx. 139 Cu. Yd. of rock excavation.

② No deviations from the pouring sequences shown will be allowed.

③ All steel piling shall be Grade 50 and are required to have approved driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP 14x__)". All piles shall conform to Standard Drawing No. 55020.

④ All Grade 50W structural steel, except galvanized members and surfaces in contact with concrete, within ten feet and five feet of bridge deck expansion joints for Bridge Nos. 07423 & 04940, respectively, shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close to Fed. Std. 595 B, Color Chip No. 30070 and as approved by the Engineer. The finish system may be applied in the shop.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18
COUNTY ROAD 213

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 5/16/2017 FILENAME: b009784_ql.dgn
CHECKED BY: DKS DATE: 9-6-2018 SCALE: No Scale
DESIGNED BY: — DATE: —

BRIDGE NO. 07423 & 04940 DRAWING NO. 60123

PRINT DATE: 1/2/2019

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	NHPP-0051(13) QUANTITY	STPB-0051(13) QUANTITY	TOTAL QUANTITY	UNIT
SP & 201	CLEARING	33	10	43	STATION
SP & 201	GRUBBING	33	10	43	STATION
202	REMOVAL AND DISPOSAL OF FOUNDATIONS	265		265	SQ. YD.
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	6		6	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	280		280	LIN. FT.
202	REMOVAL AND DISPOSAL OF BUILDINGS	3		3	EACH
202	REMOVAL AND DISPOSAL OF PROPANE TANK	1		1	EACH
SP & 210	UNCLASSIFIED EXCAVATION	128783	2017	130800	CU. YD.
SP	SELECT GRANULAR BACKFILL	171		171	CU. YD.
SP & 210	COMPACTED EMBANKMENT	21014	2311	23325	CU. YD.
SP & 210	ROCK FILL	8919	45048	53967	CU. YD.
SP	REMOVING AND REPLACING TOPSOIL	6500		6500	CU. YD.
SP & 210	SOIL STABILIZATION	100		100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	11484	1809	13293	TON
SS & 401	PRIME COAT		718	718	GAL.
SS & 401	TACK COAT	1101		1101	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	216		216	TON
SP, SS, & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")	9		9	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	1231		1231	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	58		58	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	2651	179	2830	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	154	10	164	TON
412	COLD MILLING ASPHALT PAVEMENT	467		467	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	15		15	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	50		50	TON
504	APPROACH SLABS	198.70		198.70	CU. YD.
504	APPROACH GUTTERS		17.00	17.00	CU. YD.
601	MOBILIZATION	0.75	0.25	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	0.75	0.25	1.00	EACH
603	MAINTENANCE OF TRAFFIC	0.75	0.25	1.00	LUMP SUM
SP, SS, & 604	SIGNS	513	93	606	SQ. FT.
SP, SS, & 604	CONSTRUCTION PROJECT INFORMATION SIGN UPDATE	10		10	EACH
SS & 604	BARRICADES	272	72	344	LIN. FT.
SS & 604	TRAFFIC DRUMS	143		143	EACH
604	CONSTRUCTION PAVEMENT MARKINGS	12980		12980	LIN. FT.
SS &605	CONCRETE DITCH PAVING (TYPE B)	657		657	SQ. YD.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	46		46	LIN. FT.
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	402		402	LIN. FT.
SP, SS, & 606	24" SIDE DRAIN	132		132	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2		2	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	8		8	EACH
606	SELECTED PIPE BEDDING	50		50	CU. YD.
SS & 611	4" PIPE UNDERDRAINS	1000		1000	LIN. FT.
SS & 611	UNDERDRAIN OUTLET PROTECTORS	4		4	EACH
615	PAVEMENT REPAIR OVER CULVERTS (ASPHALT)	26		26	TON
SS & 617	GUARDRAIL (TYPE A)	450	200	650	LIN. FT.
SS & 617	TERMINAL ANCHOR POSTS (TYPE 1)		4	4	EACH
SS & 617	GUARDRAIL TERMINAL (TYPE 2)	4		4	EACH
SS & 617	THRIE BEAM GUARDRAIL TERMINAL	4	4	8	EACH
620	LIME	14	6	20	TON
SP & 620	SPECIAL SEEDING	7.15	2.61	9.76	ACRE
SS & 620	MULCH COVER		2.03	2.03	ACRE
SP, SS, & 620	SPECIAL MULCH COVER	30.93	2.61	33.54	ACRE
620	WATER	1221.9	307.3	1529.2	M. GAL.
621	TEMPORARY SEEDING	23.78	2.03	25.81	ACRE
621	SILT FENCE	6887	1100	7987	LIN. FT.
621	SEDIMENT BASIN	436		436	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	436		436	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	753	395	1148	CU. YD.
621	ROCK DITCH CHECKS	186	36	222	CU. YD.
SS & 621	FILTER SOCK (12")	652	9760	10412	LIN. FT.
SP & 623	SPECIAL SECOND SEEDING APPLICATION	7.15		7.15	ACRE
624	SOLID SODDING	590		590	SQ. YD.
SP & 626	EROSION CONTROL MATTING (CLASS 2)	2028		2028	SQ. YD.
SP & 628	TOPSOIL FURNISHED AND PLACED	840		840	CU. YD.
635	ROADWAY CONSTRUCTION CONTROL	0.75	0.25	1.00	LUMP SUM
637	MAILBOXES	1		1	EACH
637	MAILBOX SUPPORTS (SINGLE)	1		1	EACH
SP & 642	MUMBLE STRIPS IN ASPHALT SHOULDERS	5086		5086	LIN. FT.
SP & 642	CENTERLINE MUMBLE STRIPES IN ASPHALT ROADWAYS	2543		2543	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (4")		2000	2000	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (4")		2000	2000	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")	6890		6890	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	6890		6890	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	41		41	EACH
SS & 726	STANDARD SIGN		12.00	12.00	SQ. FT.
729	CHANNEL POST SIGN SUPPORT (TYPE C)		4	4	EACH
804	REINFORCING STEEL-ROADWAY (GRADE 60)	24750	1440	26190	POUND
816	FILTER BLANKET	13895		13895	SQ. YD.
SP	NATIVE STONE FOR DITCH LINER	826		826	TON
SP	COMPOSTED NATIVE STONE RIPRAP	7197		7197	CU. YD.
	STRUCTURES OVER 20' SPAN				
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00		1.00	LUMP SUM
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2)		1.00	1.00	LUMP SUM
SP & 636	BRIDGE CONSTRUCTION CONTROL	0.75	0.25	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	73	430	503	CU. YD.
SS & 802	CLASS S CONCRETE-BRIDGE	635.80	355.30	991.10	CU. YD.
SP, SS, & 802	CLASS S(AE) CONCRETE-BRIDGE	1218.20	260.60	1478.80	CU. YD.
SP	ARCHITECTURAL FINISH	3633	796	4429	SQ. FT.
SP	STAINING CONCRETE SURFACES	21670	8960	30630	SQ. FT.
803	CLASS 2 PROTECTIVE SURFACE TREATMENT	3504.8	805.4	4310.2	SQ. YD.
804	REINFORCING STEEL-BRIDGE (GRADE 60)	113960	46450	160410	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)	327360	60130	387490	POUND
SS & 805	STEEL PILING (HP 14X73)		368	368	LIN. FT.
SS & 805	STEEL PILING (HP 14X89)	153		153	LIN. FT.
SP	CORING DRILLED SHAFT	122		122	LIN. FT.
SP	DRILLED SHAFT (48" DIAMETER)	40		40	LIN. FT.
SP	DRILLED SHAFT (96" DIAMETER)	227		227	LIN. FT.
SP	PERMANENT STEEL CASING (108" DIAMETER)	123		123	LIN. FT.
SS & 805	PREBORING	144	352	496	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (48" DIAMETER)	1		1	EACH
SP	CROSSHOLE SONIC LOGGING (96" DIAMETER)	6		6	EACH
806	METAL BRIDGE RAILING (TYPE P-1)	721		721	LIN. FT.
806	METAL BRIDGE RAILING (TYPE M-1)	1476		1476	LIN. FT.
SP, SS, & 807	STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W)		213790	213790	POUND
SP, SS, & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)	2283220		2283220	POUND
SS & 807	PAINTING STRUCTURAL STEEL	63.7	4.6	68.3	TON
SS & 808	ELASTOMERIC BEARINGS	42161	6411	48572	CU. IN.
SS & 809	ARMORED JOINT WITH NEOPRENE STRIP SEAL	150		150	LIN. FT.
SS & 809	SILICONE JOINT SEALANT		54	54	LIN. FT.
812	BRIDGE NAME PLATE (TYPE C)		1	1	EACH
812	BRIDGE NAME PLATE (TYPE D)	1		1	EACH
816	FILTER BLANKET	390		390	SQ. YD.
816	DUMPED RIPRAP	230		230	CU. YD.

REVISIONS

DATE	REVISION	SHEET NUMBER
12/20/2018	ADDED "CLEARING" AND "WORKING DAY WITH IMMEDIATE WORK ORDER" SPECIAL PROVISIONS.	3 & 38
12/28/2018	REVISED "ELASTOMERIC BEARINGS" QUANTITIES.	37 & 38
1/9/2019	ADDED "OBLITERATION OF EXISTING ROADWAY" SPECIAL DETAIL. REVISED QUANTITIES FOR "24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)", "36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)", "24" FLARED END SECTIONS FOR REINFORCED PIPE CULVERTS", "36" FLARED END SECTIONS FOR REINFORCED PIPE CULVERTS", "WATER", AND "SOLID SODDING".	7, 32, & 38
1/11/2019	ADDED "MAINTENANCE OF TRAFFIC" SPECIAL PROVISION.	3 & 38

SUMMARY OF QUANTITIES & REVISIONS

DATE REVISED	DATE FILMED
12-20-18	
12-28-18	
01-09-19	
	01-11-19

② SUMMARY OF QUANTITIES & REVISIONS

FED.RD. DIV.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.		38	193

JOB NO. 009784

PRINCIPAL PROFESSIONAL ENGINEER

STATE OF ARKANSAS

1-11-19

Project Name: 009784
Date: 9/9/2014
Coordinate System: Arkansas State Plane Coordinates
Based on AHTD GPS PTS : *510009-510009A*
Projected to Ground Coordinates
Units: U.S. Survey Foot

COORDINATES LISTED BELOW ARE GROUND (Localized) COORDINATES !!!!

Point No.	Northing	SY	Easting	SX	Elevation	SZ	Feature Code	Point Description
1	629958.8018	0.0100	974755.0463	0.0100	896.756	0.006	CTL	PD:T 1 REBAR CAP
2	632004.9226	0.0100	975892.8869	0.0100	880.971	0.005	CTL	PD:T 2 REBAR CAP
3	632952.7471	0.0100	975420.5284	0.0100	905.567	0.005	CTL	PD:T 3 REBAR CAP
4	633812.2104	0.0100	975289.2999	0.0100	901.409	0.005	CTL	PD:T 4 REBAR CAP
5	634749.3200	0.0100	975382.1675	0.0100	894.406	0.005	CTL	PD:T 5 REBAR CAP
6	635225.5530	0.0100	975043.4232	0.0100	872.895	0.005	CTL	PD:T 6 REBAR CAP
7	635505.3478	0.0100	975266.6907	0.0100	881.547	0.005	CTL	PD:T 7 REBAR CAP
8	635859.1554	0.0100	975402.1808	0.0100	883.153	0.005	CTL	PD:T 8 REBAR CAP
9	636097.3759	0.0100	975993.4561	0.0100	881.266	0.004	CTL	PD:T 9 REBAR CAP
10	636669.7343	0.0100	976141.4352	0.0100	879.758	0.004	CTL	PD:T 10 REBAR CAP
11	621845.9039	0.0100	968428.4164	0.0100	884.328	0.015	CTL	PD:T 11 REBAR CAP JOB 090169
12	622730.1718	0.5100	968287.8046	0.5100	920.344	0.015	CTL	PD:T 12 REBAR CAP JOB 090169
13	623093.0578	0.0100	968044.2785	0.0100	940.347	0.015	CTL	PD:T 13 REBAR CAP JOB 090169
14	623727.3647	0.0100	968000.3160	0.0100	957.431	0.014	CTL	PD:T 14 REBAR CAP JOB 090169
15	624820.1162	0.0100	969247.6795	0.0100	1042.387	0.013	CTL	PD:T 15 REBAR CAP JOB 090169
16	625159.2467	0.0100	969596.8670	0.0100	1074.716	0.013	CTL	PD:T 16 REBAR CAP JOB 090169
17	625255.1661	0.0100	970196.8237	0.0100	1116.481	0.012	CTL	PD:T 17 REBAR CAP JOB 090169
18	625654.7823	0.0100	970616.6986	0.0100	1145.719	0.011	CTL	PD:T 18 REBAR CAP JOB 090169
19	626001.6473	0.0100	971503.4808	0.0100	1171.555	0.011	CTL	PD:T 19 REBAR CAP JOB 090169
20	626304.1869	0.0100	972171.6017	0.0100	1166.558	0.011	CTL	PD:T 20 REBAR CAP JOB 090169
21	626538.6356	0.0050	972656.0713	0.0050	1160.958	0.01	CTL	PD:T 21 REBAR CAP JOB 090169
22	626993.0761	0.5100	972980.0791	0.5100	1130.567	0.01	CTL	PD:T 22 REBAR CAP JOB 090169
23	627521.0213	0.0100	973549.0320	0.0100	1076.604	0.009	CTL	PD:T 23 REBAR CAP JOB 090169
24	628056.5090	0.0100	973553.5086	0.0100	1049.232	0.008	CTL	PD:T 24 REBAR CAP JOB 090169
25	628299.1090	0.0100	973709.7364	0.0100	1034.520	0.008	CTL	PD:T 25 REBAR CAP JOB 090169
26	628547.4115	0.0100	974177.0999	0.0100	1010.874	0.007	CTL	PD:T 26 REBAR CAP JOB 090169
27	628961.2633	0.0100	974209.3976	0.0100	983.920	0.006	CTL	PD:T 27 REBAR CAP JOB 090169
28	629147.4477	0.0100	974347.9989	0.0100	968.786	0.005	CTL	PD:T 28 REBAR CAP JOB 090169
29	629214.9253	0.0100	974578.2644	0.0100	952.802	0.005	CTL	PD:T 29 REBAR CAP JOB 090169
100	630481.1897	0.0001	975703.2298	0.0001	820.179	0.002	GPS	PD:AHTD GPS 510009A
101	631309.2073	0.0001	976262.3690	0.0001	841.974	0.004	GPS	PD:AHTD GPS 510009
900	638792.5694	0.5000	976330.3004	0.5000	844.190	0.002	BM	PD:NGS POINT N 18
901	636627.8151	0.0100	976098.7844	0.0100	881.878	0.004	BM	PD:TBM 901 CH SQ HDW
902	635932.4780	0.0100	975574.7329	0.0100	882.050	0.005	BM	PD:TBM 902 CH SQ HDW
903	633998.6246	0.0100	975279.1678	0.0100	900.567	0.005	BM	PD:TBM 903 CH SQ HDW
904	632198.5960	0.0100	975712.8469	0.0100	900.270	0.005	BM	PD:TBM 904 CH SQ HDW
905	633041.0316	9999.0000	968062.7465	9999.0000	832.673	0.003	BM	PD:TBM 905 CH SQ END CONC
906	630401.3525	0.0100	975182.9856	0.0100	847.331	0.004	BM	PD:TBM 906 CH SQ HDW
907	629609.9597	0.0100	974671.1994	0.0100	920.563	0.006	BM	PD:TBM 907 CH SQ HDW
908	630719.9151	0.0100	975892.6680	0.0100	820.740	0.002	BM	PD:NGS POINT P 18
970	627666.2192	100.0000	973686.8431	100.0000	1132.179	0.002	BM	PD:NGS POINT 1134
971	629994.0281	100.0000	982336.2497	100.0000	845.996	0.002	BM	PD:NGS POINT T 130
972	621861.0289	100.0000	968526.5606	100.0000	886.660	0.002	BM	PD:NGS POINT Q 18
973	629260.1075	100.0000	993742.4310	100.0000	1290.854	0.002	BM	PD:NGS POINT R 130
974	648354.9812	100.0000	977456.4354	100.0000	997.423	0.002	BM	PD:NGS POINT M 18
975	612327.2660	100.0000	962333.5112	100.0000	834.110	0.002	BM	PD:NGS POINT R 18
976	630171.2016	100.0000	1003031.4611	100.0000	1371.388	0.002	BM	PD:NGS POINT Q 130
977	615952.1629	100.0000	955311.4830	100.0000	1479.633	0.002	BM	PD:NGS POINT V 152

*Standard Primary Control Monument - Rebar and Cap - Standard - 5/8"x 24" Rebar with 2"Aluminum Cap stamped: *"(include all common information here)"* plus other

**Standard GPS Control Point Monument - 5/8" x 48" Rebar with 2.5"Aluminum Cap stamped: *"JOB:009784, T-#"*point description of the individual point. These

SX, SY, SZ – Represents the standard error estimate of the coordinate values of each point at the 67% confidence level (one sigma) based on the least squares analysis of

Reference Control points (1500 series) shall be used to re-establish horizontal datum if the primary control has been destroyed. These reference control points shall not

All additional project control shall be occupied, measured, and adjusted with direct survey ties to at least two of the control points listed in the table above. New

Positional Accuracy:
Horizontal - GPS (1.0 cm± 1PPM) *PN: 100-101*
Horizontal - Primary (2.0cm± 20PPM): *PN:1-29*
Horizontal - Secondary (3 cm ± 50PPM): *PN:N/A*
Vertical - NGS 1st Order (±4mm x Vdist in km) *N/A*
Vertical - NGS 2nd Order (±6mm x Vdist in km) *PN:900,908, 970-977*
Vertical - NGS 3rd Order (±8mm x Vdist in km) *PN:901-907*

Horizontal Datum: NAD 1983 (1997) State Plane Zone: 0301 - North Zone
The adjustment year is based on metadata in the SDMS Control file
A project CAF of: 0.999935183 has been used to compute the above coordinates.
The project CAF shall have a minimum precision of 9 digits right of the decimal.
This CAF is intended for use within the project limits only.
Grid Distance = Ground Distance X CAF
If Coordinates are listed as Ground:
To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X=0 & Y=0
If Coordinates are listed as Grid:
To compute Ground Coordinates, divide the Grid Coordinates by CAF about the origin of X=0 & Y=0

Vertical Datum: NAVD 1988 based NGS BM:
A project Elevation Factor of: 0.9999431681 has been computed and incorporated in the above CAF.
This is based on the average elevation of the project: 1188.19 Feet
3-Wire Leveling techniques have been used to establish elevations on
Points: 1-105, 900-928 From NGS BM: N 18

Basis of Bearing: Grid Bearings based on AHTD GPS points: *230017 - 230017A, 230032 - 230032A, 230033 - 230033A*
Convergence Angle is: 0°39'42.38" Left at PN: 101
LT: 36-03-44 N LG: 93-08-14 W
Grid Azimuth = Astronomical Azimuth - Convergence Angle

STATE OF ARKANSAS
TIMOTHY D. SMITH
LICENSED PROFESSIONAL ENGINEER
No. 11425
10-5-18

SURVEY CONTROL DETAILS
HWY. 7

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FEDERAL DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	009784	39	193

2 SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	40	193

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

HWY. 7

POINT NAME	TYPE	STATION	NORTHING	EASTING
8080	POB	133+80.00	629332.7530	974611.9548
8081	P.C.	134+94.98	629446.5665	974628.2627
8083	P.T.	146+15.45	630276.3522	975299.4245
8084	P.C.	151+24.84	630452.4068	975777.4195
8086	P.T.	165+15.07	631601.8366	976143.0653
8087	POE	171+67.22	632139.3700	975773.8020

BNP DRIVE

POINT NAME	TYPE	STATION	NORTHING	EASTING
8010	POB	300+00.00	630322.8552	975425.6818
8011	P.C.	300+63.49	630382.4294	975403.7395
8013	P.T.	301+56.68	630451.9516	975445.7212
8014	P.C.	302+72.90	630572.9588	975546.9573
8016	P.T.	304+19.40	630565.8777	975653.4233
8017	POE	304+88.39	630634.7112	975658.0015

BNP WELL DRIVE

POINT NAME	TYPE	STATION	NORTHING	EASTING
8020	POB	400+00.00	630427.2805	975408.0212
8021	P.C.	401+10.36	630473.6543	975298.5493
8023	P.T.	401+69.57	630464.3544	975255.3251
8024	POE	401+71.33	630466.0709	975254.9557

CO. RD. 80

POINT NAME	TYPE	STATION	NORTHING	EASTING
8030	POB	500+00.00	631301.6885	976265.7647
8031	P.C.	502+90.08	631311.6358	975975.8552
8033	P.T.	503+92.44	631308.7485	975873.6034
8034	POE	504+72.11	631301.5277	975794.2607

CO. RD. 472

POINT NAME	TYPE	STATION	NORTHING	EASTING
8030	POB	600+00.00	631301.6885	976265.7647
8040	P.C.	600+35.49	631289.5397	976299.11
8042	P.T.	601+71.89	631204.516	976402.4174
8043	P.C.	602+62.26	631127.1409	976449.1085
8045	P.T.	603+56.17	631051.0585	976503.9894
8046	POE	604+45.00	630983.5145	976561.6774

EQUESTRIAN TRAIL

POINT NAME	TYPE	STATION	NORTHING	EASTING
8054	P.O.B.	19+81.10	630796.4406	976424.2893
8055	P.C.	20+93.26	630893.2545	976367.6747
8057	P.T.	21+58.85	630916.2008	976311.1683
8058	P.C.	21+67.80	630961.9974	976289.1946
8060	P.T.	22+03.49	630916.8365	976267.7357
8061	P.C.	22+26.64	630926.7727	976246.8246
8063	P.T.	22+40.48	630881.6117	976225.3657
8064	P.C.	22+68.50	630935.5703	976206.037
8066	P.T.	23+75.97	631011.705	976143.5223
8067	P.C.	24+30.70	631066.4118	976145.1101
8068	P.T.	24+67.37	631064.2359	976220.0785
8070	P.O.E.	25+50.74	631173.799	976196.1927

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HWY. 7
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	41	193

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

STA. 134+94.98
BEGIN JOB 009784
LOG MILE 19.78

SURVEY BASELINE N 04°27'45" E 415.11'

PN#27 PD1" 27 REBAR CAP

SURVEY BASELINE N 36°39'54" E 232.11'

PN#28 PD1" 28 REBAR CAP

SURVEY BASELINE N 73°40'02" E 239.95'

PN#29 PD1" 29 REBAR CAP

135

POB 134+00.00

N 8°09'15" E 808'

8080

P.C. 134+94.98

PN#5 PDSP SPIKE

PN#4 PDSP SPIKE

PN#3 PDSP SPIKE

PN#2 PDSP SPIKE

SURVEY BASELINE N 13°22'06" E 764.59'

HWY. 7

PN#1 PD1" 1REBAR CAP

HWY. 7
P.I. = 141+16.30
Δ = 61°37'34" RT.
D = 5°30'00"
T = 621.32'
L = 1120.48'
P.C. = 134+94.98
P.T. = 146+15.45
e = 0.088 '/'
Ls = 300'

140

P.I. 141+16.30

PN#107 PDSP SPIKE

PN#101 PDSP SPIKE

145

P.T. 401+69.57

8023

N 12°30'33" W 80.23'

P.C. 401+10.36

P.T. 401+45.36

8021 BNP WELL DRIVE

N 88°52'26" W

BNP WELL DRIVE
P.I. = 401+45.36
Δ = 76°43'53" RT.
D = 129°35'21"
T = 35.00'
L = 59.21'
P.C. = 401+10.36
P.T. = 401+69.57
NO SUPER

P.I. 303+60.34

P.I. 301+28.50

POB 400+00.00

P.I. 301+56.68

8020

8011

8013 BNP DRIVE

N 82°28'19" E

BNP DRIVE
P.I. = 303+60.34
Δ = 78°40'01" LT.
D = 53°41'51"
T = 87.44'
L = 146.50'
P.C. = 302+72.90
P.T. = 304+19.40
NO SUPER

STA. 301+10.09 BNP DRIVE =
STA. 400+00.00 BNP WELL DRIVE
= 60° 00' 00"

P.C. 302+72.90

P.T. 304+19.40

150

N 3°48'19" E

8016

8017

POE 304+88.29

HWY. 7
P.I. = 161+07.36
Δ = 104°16'04" LT.
D = 7°30'00"
T = 982.53'
L = 1390.24'
P.C. = 151+24.84
P.T. = 165+15.07
e = 0.099 '/'
Ls = 300'

SURVEY BASELINE N 61°08'53" E 1082.56'

300

8083

8010

N 13°11'02" W 63.11'

P.C. 300+63.49

POB 300+00.00

400

N 69°46'49" E

P.T. 146+15.45

P.I. 303+60.34

PN#100 PDNAIL? GPS 5100094

HWY. 7

P.C. 151+24.84

8084

BNP DRIVE
P.I. = 301+28.50
Δ = 102°41'30" RT.
D = 110°11'14"
T = 65.01'
L = 93.20'
P.C. = 300+63.49
P.T. = 301+56.68
NO SUPER

STA. 147+50.00 HWY. 7 =
STA. 300+00.00 BNP DRIVE
= 90° 00' 00"

HWY. 7
SURVEY CONTROL DETAILS

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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.		009784	42	193

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
TRINITY D. SMITH
LICENSED PROFESSIONAL ENGINEER
No. 11425
10-5-18

BNP DRIVE
P.I. = 303+60.34
Δ = 78°40'01" LT.
D = 53°41'51"
T = 87.44'
L = 146.50'
P.C. = 302+72.90
P.T. = 304+19.40
NO SUPER

STA. 301+10.09 BNP DRIVE =
STA. 400+00.00 BNP WELL DRIVE
= 60° 00' 00"

BNP DRIVE
P.I. = 301+28.50
Δ = 102°41'30" RT.
D = 110°11'14"
T = 65.01'
L = 93.20'
P.C. = 300+63.49
P.T. = 301+56.68
NO SUPER

STA. 147+50.00 HWY. 7 =
STA. 300+00.00 BNP DRIVE
= 90° 00' 00"

HWY. 7
P.I. = 161+07.36
Δ = 104°16'04" LT.
D = 7°30'00"
T = 982.53'
L = 1390.24'
P.C. = 151+24.84
P.T. = 165+15.07
e = 0.099 '/'
Ls = 300'

CO. RD. 80
P.I. = 503+41.35
Δ = 7°09'55" LT.
D = 7°00'00"
T = 51.25'
L = 102.36'
P.C. = 502+90.08
P.T. = 503+92.44
NO SUPER

STA. 147+50.00 HWY. 7 =
STA. 500+00.00 CO. RD. 80
= 78° 03' 12"

EQUESTRIAN TRAIL
P.I. = 23+33.81
Δ = 82°06'16" RT.
D = 76°23'40"
T = 65.32'
L = 107.47'
P.C. = 22+68.50
P.T. = 23+75.97
NO SUPER

EQUESTRIAN TRAIL
P.I. = 24+49.47
Δ = 28°00'56" RT.
D = 76°23'40"
T = 18.71'
L = 36.67'
P.C. = 24+30.70
P.T. = 24+67.37
NO SUPER

EQUESTRIAN TRAIL
P.I. = 22+33.60
Δ = 15°51'26" LT.
D = 114°35'30"
T = 6.96'
L = 13.84'
P.C. = 22+26.64
P.T. = 22+40.48
NO SUPER

EQUESTRIAN TRAIL
P.I. = 21+86.44
Δ = 40°53'41" LT.
D = 114°35'30"
T = 18.64'
L = 35.69'
P.C. = 21+67.80
P.T. = 22+03.49
NO SUPER

EQUESTRIAN TRAIL
P.I. = 21+31.73
Δ = 75°09'41" LT.
D = 114°35'30"
T = 38.48'
L = 65.59'
P.C. = 20+93.26
P.T. = 21+58.85
NO SUPER

CO. RD. 472
P.I. = 601+06.43
Δ = 38°52'24" RT.
D = 28°30'00"
T = 70.94'
L = 136.40'
P.C. = 600+35.49
P.T. = 601+71.89
NO SUPER

CO. RD. 472
P.I. = 603+09.32
Δ = 9°23'30" LT.
D = 10°00'00"
T = 47.06'
L = 93.92'
P.C. = 602+62.26
P.T. = 603+56.17
NO SUPER

SURVEY BASELINE N 34°01'49" E 999.12'

SURVEY BASELINE N 27°38'19" W 787.74'

HWY. 7 PDH-5PWE

CO. RD. 80 PDH-8PWE

CO. RD. 472 PDH-11D GPS PDH-3PWE

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HWY. 7
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	43	193

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

HWY. 7
P.I. = 161+07.36
Δ = 104°16'04" LT.
D = 7°30'00"
T = 982.53'
L = 1390.24'
P.C. = 151+24.84
P.T. = 165+15.07
e = 0.099 '/'
Ls = 300'

165

170

P.T. 165+15.07

POE 171+67.22

SURVEY BASELINE N 27°58'19" W
787.74'

HWY POB 99+82.21

8086

8087

N 34°29'15" W

CONC. MONUMENT 2 REBAR CAP

SURVEY BASELINE N 26°29'23" W
1059.01'

STA. 166+35.47 HWY. 7 =
STA. 99+94.25 CO. RD. 213
= 85° 35' 05"

N 51°05'49" E
639.08'

STA. 167+40.07
BEGIN JOB 009784

9/26/2018

R009784.DGN

HWY. 7
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	44	193
				④	SURVEY CONTROL DETAILS			

ARKANSAS STATE PLANE, NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.

NAME	EASTING	NORTHING	ELEVATION	FEATURE	DESCRIPTION
1	976278.06762	631290.36039	841.02	SU	2" ALUM. CAP
2	976264.73186	631549.89212	835.05	SU	2" ALUM. CAP
3	976166.85912	631718.74846	827.87	SU	2" ALUM. CAP
4	976118.43398	632008.78676	793.79	SU	2" ALUM. CAP
5	976253.66794	632183.14576	786.92	SU	2" ALUM. CAP
6	976299.30220	632421.67752	815.42	SU	2" ALUM. CAP
7	976435.76445	632363.06072	829.66	SU	2" ALUM. CAP
8	976594.66605	632184.24553	843.36	SU	2" ALUM. CAP
9	976747.86328	632234.00946	853.31	SU	2" ALUM. CAP
100	975703.22977	630481.18965	N/A	GPS	GPS ALUM. CAP 510009A
101	976262.36901	631309.20732	841.98	GPS	GPS MON. 510009
1500	976314.48799	631234.37277	N/A	SU	8" SPIKE NAIL
1501	976199.69435	631249.88027	N/A	SU	8" SPIKE NAIL
1502	976249.39427	631372.84444	N/A	SU	8" SPIKE NAIL
1503	976292.87008	631371.22094	N/A	SU	8" SPIKE NAIL
1504	976292.65247	631447.63629	N/A	SU	8" SPIKE NAIL
1505	976264.09582	631446.60122	N/A	SU	8" SPIKE NAIL
1506	976214.64031	631590.05942	N/A	SU	8" SPIKE NAIL
1507	976240.16967	631602.88765	N/A	SU	8" SPIKE NAIL
1508	976213.28123	631649.38257	N/A	SU	8" SPIKE NAIL
1509	976193.35223	631639.80624	N/A	SU	8" SPIKE NAIL
1510	976149.57980	631794.32066	N/A	SU	8" SPIKE NAIL
1511	976165.94756	631803.08593	N/A	SU	8" SPIKE NAIL
1512	976135.58259	631935.03978	N/A	SU	8" SPIKE NAIL
1513	976111.44062	631928.79088	N/A	SU	8" SPIKE NAIL
1514	976154.41401	632087.55967	N/A	SU	8" SPIKE NAIL
1515	976172.45848	632072.02386	N/A	SU	8" SPIKE NAIL
1516	976235.80269	632154.67452	N/A	SU	8" SPIKE NAIL
1517	976215.52877	632164.56806	N/A	SU	8" SPIKE NAIL
1518	976261.67086	632266.39566	N/A	SU	8" SPIKE NAIL
1519	976281.93988	632261.21742	N/A	SU	8" SPIKE NAIL
1520	976287.24562	632344.61373	N/A	SU	8" SPIKE NAIL
1521	976262.98615	632346.22023	N/A	SU	8" SPIKE NAIL
1522	976382.41049	632415.16880	N/A	SU	8" SPIKE NAIL
1523	976372.06292	632388.30986	N/A	SU	8" SPIKE NAIL
1524	976388.18916	632379.85181	N/A	SU	8" SPIKE NAIL
1525	976399.27618	632406.14562	N/A	SU	8" SPIKE NAIL
1526	976475.01679	632317.74049	N/A	SU	8" SPIKE NAIL
1527	976457.93208	632302.28168	N/A	SU	8" SPIKE NAIL
1528	976520.98877	632237.41058	N/A	SU	8" SPIKE NAIL
1529	976539.63988	632253.78724	N/A	SU	8" SPIKE NAIL
1530	976579.74076	632206.04985	N/A	SU	8" SPIKE NAIL
1531	976694.83424	632186.88310	N/A	SU	8" SPIKE NAIL
1532	976708.81124	632199.30531	N/A	SU	8" SPIKE NAIL
1533	976698.26096	632216.00469	N/A	SU	8" SPIKE NAIL
1534	976781.61486	632283.26545	N/A	SU	8" SPIKE NAIL
1535	976800.16147	632268.44679	N/A	SU	8" SPIKE NAIL

USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999351834 HAS BEEN USED TO COMPUTE THE ABOVE COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME BR5102G1.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88
REFERENCES POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL
IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED.
REFERENCE POINTS HAVE BEEN ESTABLISHED BY RESECTION.
REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL.

BASIS OF BEARINGS
GRID NORTH BASED ON GPS CONTROL AT POINT NUMBER 100,
ARKANSAS STATE PLANE GRID COORDINATES NORTH- ZONE,
NORTHING 630440.3240, EASTING 975639.9880.
CONVERGENCE ANGLE 0° 39' 46.3" LEFT
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.
NORTH ARROW SYMBOL/BEARING STATEMENT

Note for north arrow
BEARINGS ARE GRID

COUNTY ROAD 213 CONSTRUCTION CENTERLINE

POINT NAME	TYPE	STATION	NORTHING	EASTING
8000	POB	98+82.21	631701.0716	976074.8950
8002	P.C.	106+21.29	632102.4157	976572.2352
8004	P.T.	109+78.41	632341.3874	976837.3824
8005	POE	110+50.61	632392.5750	976888.2982

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
7-15-19
CLAUDE KLINCK

COUNTY ROAD 213
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	45	193

4 SURVEY CONTROL DETAILS

BEGIN STA. 99+94.25
COUNTY ROAD 213

POB 99+82.21
PN: 8000
100
N 51°05'49.7" E
639.08'
105
PC. 106+21.29
PN: 8002
P.I. 108+00.03
P.I. 108+00.03
Δ=16°38'.73" Lt.
D=45°00.00"
T=174.04
L=327.12
P.T. 109+78.41
PN: 8004
110
N 44°50'50.9" E
172.20'
POE 110+50.61
PN: 8005

PN6 PD2" ALUM.CAP
PN1527 PD18" SPIKE NAIL
PN1523 PD18" SPIKE NAIL
PN1522 PD18" SPIKE NAIL
PN1521 PD18" SPIKE NAIL
PN1520 PD18" SPIKE NAIL
PN1525 PD18" SPIKE NAIL
PN7 PD2" ALUM.CAP
PN1524 PD18" SPIKE NAIL
PN1519 PD18" SPIKE NAIL
PN1002 PD2" ALUM.CAP
PN5 PD2" ALUM.CAP
PN1517 PD18" SPIKE NAIL
PN1514 PD18" SPIKE NAIL
PN1516 PD18" SPIKE NAIL
PN1515 PD18" SPIKE NAIL
PN4 PD2" ALUM.CAP
PN1003 PD2" ALUM.CAP
PN1513 PD18" SPIKE NAIL
PN1512 PD18" SPIKE NAIL
PN1526 PD18" SPIKE NAIL
PN1527 PD18" SPIKE NAIL
PN1528 PD18" SPIKE NAIL
PN1529 PD18" SPIKE NAIL
PN8 PD2" ALUM.CAP
PN1530 PD18" SPIKE NAIL
PN1533 PD18" SPIKE NAIL
PN1534 PD18" SPIKE NAIL
PN1531 PD18" SPIKE NAIL
PN1532 PD18" SPIKE NAIL
PN9 PD2" ALUM.CAP
PN1535 PD18" SPIKE NAIL
PN1511 PD18" SPIKE NAIL
PN1510 PD18" SPIKE NAIL
PN3 PD12" ALUM.CAP
PN1506 PD18" SPIKE NAIL
PN1509 PD18" SPIKE NAIL
PN1508 PD18" SPIKE NAIL
PN1507 PD18" SPIKE NAIL
PN1504 PD12" ALUM.CAP
PN1506 PD18" SPIKE NAIL
PN2 PD27" ALUM.CAP
PN1005 PD12" ALUM.CAP
PN1505 PD18" SPIKE NAIL
PN1504 PD18" SPIKE NAIL
PN1503 PD18" SPIKE NAIL
PN10 PD2" ALUM.CAP
P.I. 108+00.03
REBAR

BEGIN STA. 99+94.25
COUNTY ROAD 213

END STA. 110+00.00
COUNTY ROAD 213

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
7-25-18
CLAUDE KLINCK

COUNTY ROAD 213
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	46	193

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-2-18

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

STA. 136+64 - IN PLACE
24" x 46' CM PIPE CULVERT
REMOVE & CONSTRUCT
24" X 82' R.C. PIPE CULVERT
W/FES LT. & RT.
(CLASS III) (TYPE 3 BEDDING)
D.A. = 4.6 ACRES, Q50 = 31 CFS

100' TRANS.
+94.98
+94.98
134+25.00
65.00'
POB 133+80.00
134+00.00
39.15'
N 8°09'15" E
HWY. 7
134+00.00
40.38'
P.C. 134+94.98
134+35.00
100.00'
PROPOSED R/W
PROPOSED R/W
PROPOSED R/W
138+00.00
135.00'
140+00.00
109.33'
EXISTING
CONST. LIMITS
CONST. LIMITS
140+00.00
120.00'

EXISTING R/W
P.I. = 141+16.30
Δ = 61°37'34" RT.
D = 5°30'00"
T = 621.32'
L = 1120.48'
P.C. = 134+94.98
P.T. = 146+15.45
e = 0.088 '/'
Ls = 300'

STA. 134+94.98 BEGIN SUPERELEVATION
STA. 137+94.98 MAX. SUPERELEVATION (0.088 FT./FT.)
STA. 145+40.45 MAX. SUPERELEVATION (0.088 FT./FT.)
STA. 148+40.45 END SUPERELEVATION

STA. 134+94.98
BEGIN JOB 009784
L.M. 19.78

P.V.I. 133+94.98
942.42'
-7.19%
P.V.I. 134+94.98
935.22'
-6.90%
P.V.I. 137+00.00
921.08'
P.V.C. 136+00.00
927.98' RT.
136+00.00
922.92
RT. D.C. +64
-10.81%
RT. D.C.
-7.48%
136+64.00 RT.
916.00
136+85.00 RT.
916.73
VC= 200'
e= -0.28'
K= 181.82
P.V.T. 138+00.00
913.08'
-8.00%
P.V.C. 138+50.00
909.08'
VC= 200'
e= 0.36'
K= 137.68
P.V.I. 139+50.00
901.08'
RT. D.C.
-9.91%
139+65.00 RT.
894.91

STA. 136+64
INLET = 916.00 RT.
OUTLET = 915.08 LT.

950 940 930 920 910 900 890 880 870 860
125+00 130+00 135+00 140+00

8/23/2018
R009784.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.		009784	47	193

(2) PLAN AND PROFILE SHEETS

OBLITERATION OF EXISTING PAVEMENT

STA. 140+82 - IN PLACE
36"x 68' CM PIPE CULVERT
REMOVE

STA. 301+10.09 - CONSTRUCT
BNP WELL DRIVE TURNOUT ON LT. = 13 CU. YD.

STA. 147+50 - INSTALL
24" X 60' PIPE CULVERT
LT. SIDE DRAIN

STA. 300+90 - INSTALL
24" X 72' PIPE CULVERT
SIDE DRAIN

STA. 300+10.09 BNP DRIVE =
STA. 400+00.00 BNP WELL DRIVE
= 60° 00' 00"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

P.I. 141+16.30
Δ = 61°37'34" RT.
D = 5°30'00"
T = 621.32'
L = 1120.48'
P.C. = 134+94.98
P.T. = 146+15.45
e = 0.088 '/'
Ls = 300'

PROPOSED R/W
EXISTING R/W
CONST. LIMITS
HWY. 7
BOC
POB 300+06.00
POB 400+00.00
P.I. 301+28.50
P.T. 301+56.68
BNP WELL DRIVE
BNP RANGER STATION
BNP DAY USE AREA
BEGIN BRIDGE STA. 151+46.87

STA. 140+65 - CONSTRUCT
36" X 86' R.C. PIPE CULVERT
W/FES LT. & RT.
(CLASS III) (TYPE 3 BEDDING)
D.A. = 3.7 ACRES, 050 = 25 CFS

STA. 143+44 - CONSTRUCT
36" X 142' R.C. PIPE CULVERT
@ 45° LT. FWD. SKEW
W/FES LT. & RT.
(CLASS III) (TYPE 3 BEDDING)
D.A. = 2.7 ACRES, 050 = 19 CFS

STA. 145+67 - IN PLACE
36"x 54' CM PIPE CULVERT
REMOVE

STA. 147+50.00 - CONSTRUCT
BNP DRIVE TURNOUT ON LT. = 414 CU. YD.

STA. 147+50.00 HWY. 7 =
STA. 300+00.00 BNP DRIVE
= 90° 00' 00"

STA. 149+91 - IN PLACE
18"x 152' RC PIPE CULVERT
LT. SIDE DRAIN
REMOVE

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

STA. 134+94.98 BEGIN SUPERELEVATION
STA. 137+94.98 MAX. SUPERELEVATION (0.088 FT./FT.)
STA. 145+40.45 MAX. SUPERELEVATION (0.088 FT./FT.)
STA. 148+40.45 END SUPERELEVATION

STA. 148+45.00 BEGIN SUPERELEVATION
STA. 151+45.00 MAX. SUPERELEVATION (0.099 FT./FT.)
STA. 164+40.07 MAX. SUPERELEVATION (0.099 FT./FT.)
STA. 167+40.07 END SUPERELEVATION

P.V.C. 138+50.00
909.08'

VC= 200'
e= -0.28'
K= 181.82

VC= 200'
e= 0.36'
K= 137.68

VC= 200'
e= -0.11'
K= 441.87

VC= 925'
e= 11.11'
K= 96.25

-8.00%
-6.55%
-7.00%
RT. D.G. -9.91%
RT. D.G. 5.88%
RT. D.G. 24.90%
LT. D.G. -8.00%
LT. D.G. -1.33%
LT. D.G. -11.63%
LT. D.G. -2.22%
LT. D.G. -4.56%

P.V.T. 138+00.00 913.08'
P.V.I. 139+50.00 901.08'
139+65.00 RT. 894.91
P.V.T. 140+50.00 894.53'
140+65.00 RT. 885.00
140+90.00 RT. 886.47
P.V.C. 141+56.67 887.55'
P.V.T. 142+56.67 881.00'
142+50.00 RT. 875.89
142+90.00 RT. 870.00
143+00.00 RT. 872.49
P.V.T. 143+56.67 874.00'
144+15.00 LT. 867.99
144+29.00 LT. 864.00
144+50.00 LT. 865.54
P.V.C. 146+97.24 850.16'
146+50.00 LT. 849.93
147+22.00 LT. 841.55
147+82.00 LT. 840.22
148+50.00 LT. 837.12

STA. 140+65
INLET = 885.00 RT.
OUTLET = 884.00 LT.

STA. 143+44
INLET = 870.00 RT.
OUTLET = 864.80 LT.

910 900 890 880 870 860 850 840 830 820

135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00 146+00 147+00 148+00 149+00 150+00

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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.		009784	48	193

(2) PLAN AND PROFILE SHEETS

OBLITERATION OF EXISTING PAVEMENT

STA. 150+51 - IN PLACE
24"× 40' CM PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 153+53.32 - STA. 158+68.55 - IN PLACE
375'-0" X 20'-0" CONT. THRU STEEL TRUSS
BRIDGE NO. 01689
REMOVE AS EXISTING BRIDGE STRUCTURE
(SITE NO. 1) = 1.00 LUMP SUM

BR. END STA. 151+48.90
BRIDGE NO. 07423
40'-0" CLEAR ROADWAY
702'-2 1/2" TOTAL LENGTH
250'-0" CONT. COMP. PLATE GIRDER UNIT (125', 125')
450'-0" CONT. COMP. PLATE GIRDER UNIT (200', 250')
BR. END STA. 158+51.10

STA. 161+88.33 - CONSTRUCT CO. RD. 80 TURNOUT = 93 CU. YD.

P.I. = 161+07.36
Δ = 104°16'04" LT.
D = 7°30'00"
T = 982.53'
L = 1390.24'
P.C. = 151+24.84
P.T. = 165+15.07
e = 0.099 '/'
Ls = 300'

EQUESTRIAN TRAIL
P.I. = 24+49.41
Δ = 28°00'56" RT.
D = 76°23'40"
R = 75'
T = 18.71'
L = 36.67'
P.C. = 24+30.70
P.T. = 24+67.37

EQUESTRIAN TRAIL
P.I. = 23+33.81
Δ = 82°06'16" RT.
D = 76°23'40"
R = 75'
T = 65.32'
L = 107.47'
P.C. = 22+68.50
P.T. = 23+75.97

EQUESTRIAN TRAIL
P.I. = 22+33.60
Δ = 15°51'26" LT.
D = 114°35'30"
R = 50'
T = 6.96'
L = 13.84'
P.C. = 22+26.64
P.T. = 22+40.48

STA. 158+11.63 HWY. 7 =
STA. 22+35.20 EQUESTRIAN TRAIL
= 87° 19' 57"

EQUESTRIAN TRAIL
P.I. = 21+86.44
Δ = 40°53'41" RT.
D = 114°35'30"
R = 50'
T = 18.64'
L = 35.69'
P.C. = 21+67.80
P.T. = 22+03.49

EQUESTRIAN TRAIL
P.I. = 21+31.73
Δ = 75°09'41" LT.
D = 114°35'30"
R = 50'
T = 38.48'
L = 65.39'
P.C. = 20+93.26
P.T. = 21+58.85

STA. 147+50.00 HWY. 7 =
STA. 500+00.00 CO. RD. 80
= 78° 03' 12"

STA. 147+50.00 HWY. 7 =
STA. 600+00.00 CO. RD. 472
= 60° 00' 00"

STA. 162+81 - IN PLACE
24"× 64'CM PIPE CULVERT
REMOVE
STA. 163+00 - CONSTRUCT
36" X 98' R.C. PIPE CULVERT
@ 15° LT. FWD. SKEW
W/FES LT. & RT.
(CLASS III) (TYPE 2 BEDDING)
D.A. = 6.4 ACRES, Q50 = 44 CFS

STA. 161+88.33 - CONSTRUCT
CO. RD. 472 TURNOUT = 3640 CU. YD.

EQUESTRIAN TRAIL BARRIER
BY OTHERS

GUARDRAIL

STA.	STA.	SIDE	GUARDRAIL (TYPE A) LIN. FT.	GUARDRAIL TERMINAL (TYPE 2) EACH	THRIE BEAM GUARDRAIL TERMINAL EACH
149+13.69	151+32.44	RT.	150		
150+38.69	151+32.44	LT.	75		
158+75.56	159+69.31	RT.	75		
158+75.56	160+94.31	LT.	150		

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-12-18

12/11/2018

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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.		009784	49	193

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-16-18

STA. 148+45.00 BEGIN SUPERELEVATION
STA. 151+45.00 MAX. SUPERELEVATION (0.099 FT./FT.)
STA. 164+40.07 MAX. SUPERELEVATION (0.099 FT./FT.)
STA. 167+40.07 END SUPERELEVATION

VC= 925'
e= 11.11'
K= 96.25

BR. END STA. 151+48.87
ELEV. 829.14'

P.V.I. 151+59.74
817.78'

P.V.T. 156+22.24
829.86'

050 DESIGN H.W.
ELEVATION 801.20'

BR. END STA. 158+51.13
ELEV. 835.83'

158+20.00 RT.
833.00

158+20.00 LT.
830.15

159+60.00 LT.
832.75

160+50.00 LT.
835.00

161+50.00 RT.
840.70

161+65.20 LT.
838.84

162+33.54 LT.
839.16

153+20.00 LT.
836.75

163+30.00 LT.
836.75

164+00.00 LT.
845.00

P.V.C. 163+87.34
849.83'

VC= 430'
e= 2.36'
K= 97.96

2.61%
RT. D.G. 2.33%
LT. D.G. 1.86%
LT. D.G. 2.50%
LT. D.G. 3.33%
LT. D.G. -2.79%
LT. D.G. 0.00%
LT. D.G. 11.79%
LT. D.G. 3.71%

STA. 163+26 INLET = 836.75 LT.
STA. 162+85 OUTLET = 833.00 RT.

BUFFALO RIVER
AT STA. 154+60 - STA. 157+90 IS CLASSIFIED AS 5 CFS. THE TOP OF CHANNEL ELEVATION IS 798 FT. MSL. REFER TO SECTION 110.05(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

890 880 870 860 850 840 830 820 810 800 790 780 770 760 750 740

150+00 151+00 152+00 153+00 154+00 155+00 156+00 157+00 158+00 159+00 160+00 161+00 162+00 163+00 164+00 165+00

R009784.DGN 11/14/2018

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.		009784	50	193

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

P.I. = 161+07.36
Δ = 104°16'04" LT.
D = 7°30'00"
T = 982.53'
L = 1390.24'
P.C. = 151+24.84
P.T. = 165+15.07
e = 0.099 '/'
Ls = 300'

T.C.E.

163+25.00
144.92'

PROPOSED R/W

165

CONST. LIMITS

P.T. 165+15.07

167+75.00
160.00'

STA. 166+35.47 HWY. 7 =
STA. 99+94.25 CO. RD. 213
= 85° 35' 05"

170

168+40.07
40.35'

EXISTING R/W

+40.07

100' TRANS.

POE 171+67.22

HWY. 7

POB 99+82.21

N 34°29'15" W
111.39'

12'

8'

100' LT.

CONST. LIMITS

EXISTING R/W
101+02
135'

164+00.00
90.00'

167+62.66
127.88'

101+09
135'

168+40.07
75.00'-59.65'

OBLITERATION OF EXISTING PAVEMENT

PROPOSED R/W

100' LT.

101+73.00

STA. 166+52 - IN PLACE
24"× 63' CM PIPE CULVERT
REMOVE
STA. 166+87 - CONSTRUCT
36" X 76' R.C. PIPE CULVERT
@ 20° RT. FWD. SKEW
W/FES LT. & RT.
(CLASS III) (TYPE 3 BEDDING)
D.A. = 7.3 ACRES, Q50 = 50 CFS

PROPOSED

CO. RD. 213

T.C.E.

STA. 167+40.07
END JOB 009784

102+00
160'

102+23
263'

102+50
160'

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

STA. 148+45.00 BEGIN SUPERELEVATION
STA. 151+45.00 MAX. SUPERELEVATION (0.099 FT./FT.)
STA. 164+40.07 MAX. SUPERELEVATION (0.099 FT./FT.)
STA. 167+40.07 END SUPERELEVATION

920
910
900
890
880
870
860
850
840
830

VC= 430'
e= 2.36'
K= 97.96

P.V.I. 168+17.34
870.49'
P.V.I. 168+40.07
872.08'

1.00%

LT. D.G. 9.08%

LT. D.G. 3.00%

LT. D.G. 3.00%

P.V.I. 166+02.35
855.44'

166+65.00 LT.
854.83

166+80.00 LT.
854.83

168+00.00 LT.
865.73

STA. 166+87
INLET = 854.83 LT.
OUTLET = 850.00 RT.

165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00 174+00 175+00 176+00 177+00 178+00 179+00 180+00

9/25/2018

R009784.DGN

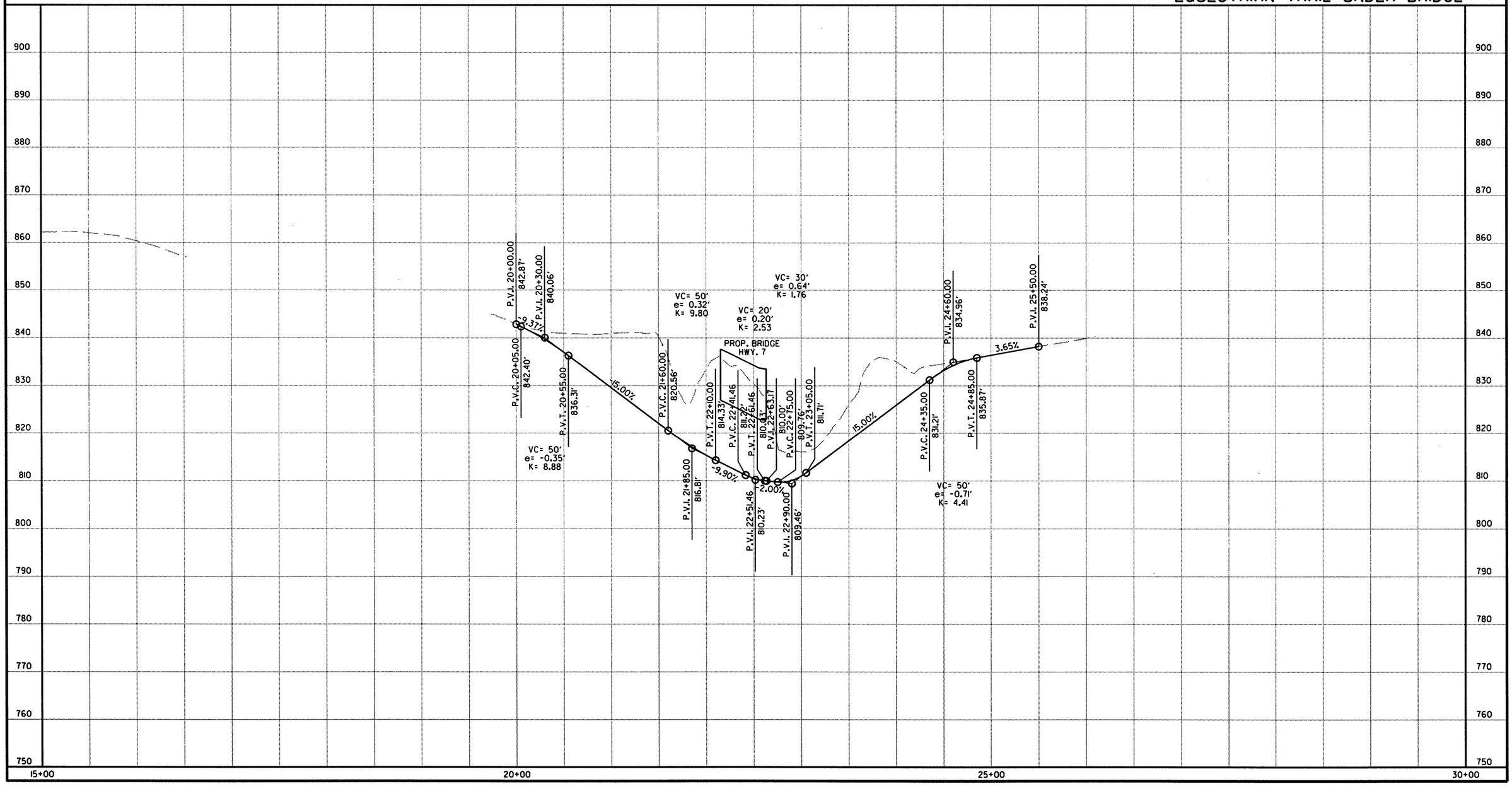
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	51	193

(2) PLAN AND PROFILE SHEETS

EQUESTRIAN TRAIL BARRIER
BY OTHERS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

EQUESTRIAN TRAIL UNDER BRIDGE



9/25/2018

R009784.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.		009784	52	193

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-3-18

STA. 300+90 - INSTALL 24" X 72' PIPE CULVERT @ 10° RT. FWD. SKEW LT. SIDE DRAIN

STA. 303+34 - IN PLACE 30" X 157' PIPE CULVERT LT. SIDE DRAIN RETAIN

P. I. = 303+60.34
Δ = 78°40'01" LT.
D = 53°41'51"
T = 87.44'
L = 146.50'
PC = 302+72.90
PT = 304+19.40
NO SUPER

P. I. = 301+28.50
Δ = 102°41'30" RT.
D = 110°11'14"
T = 65.01'
L = 93.20'
PC = 300+63.49
PT = 301+56.68
NO SUPER

STA. 300+12.00
BEGIN BNP DRIVE =
STA 147+50.00
HWY. 7 12.00' LT.
Δ = 90°00'00"

STA. 304+20.00
END BNP DRIVE

BNP DRIVE

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

P. I. = 401+45.36
Δ = 76°43'53" RT.
D = 129°35'21"
T = 35.00'
L = 59.21'
PC = 401+10.36
PT = 401+69.57
NO SUPER

STA. 401+71.33
END BNP WELL DRIVE

STA. 400+11.26
BEGIN BNP WELL DRIVE =
STA. 301+05.36 BNP
DRIVE 10.01' LT.
Δ = 60°00'00"

BNP WELL DRIVE

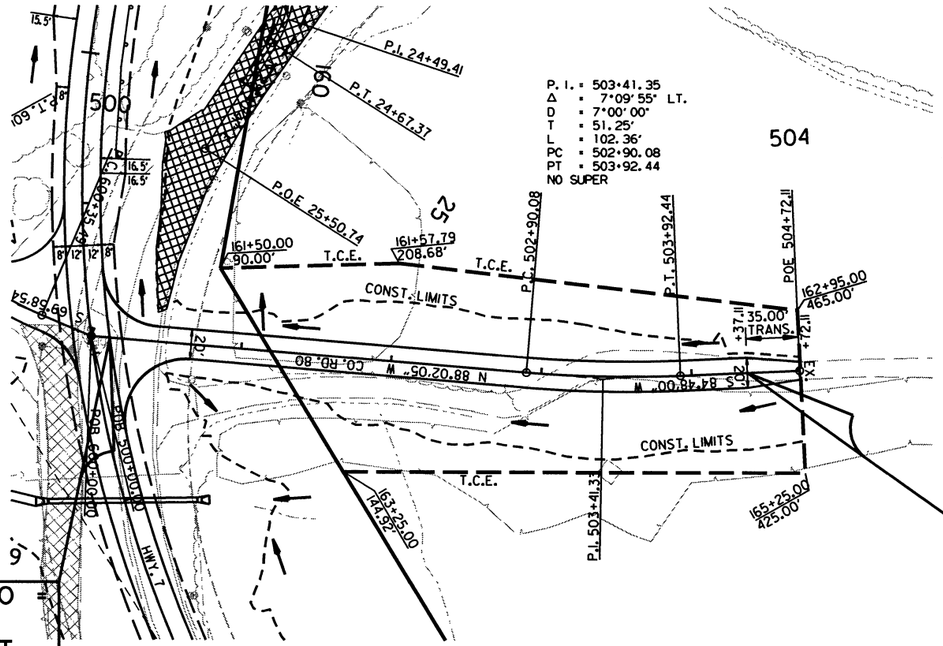
8/23/2018

R009784.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.		009784	53	193

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18

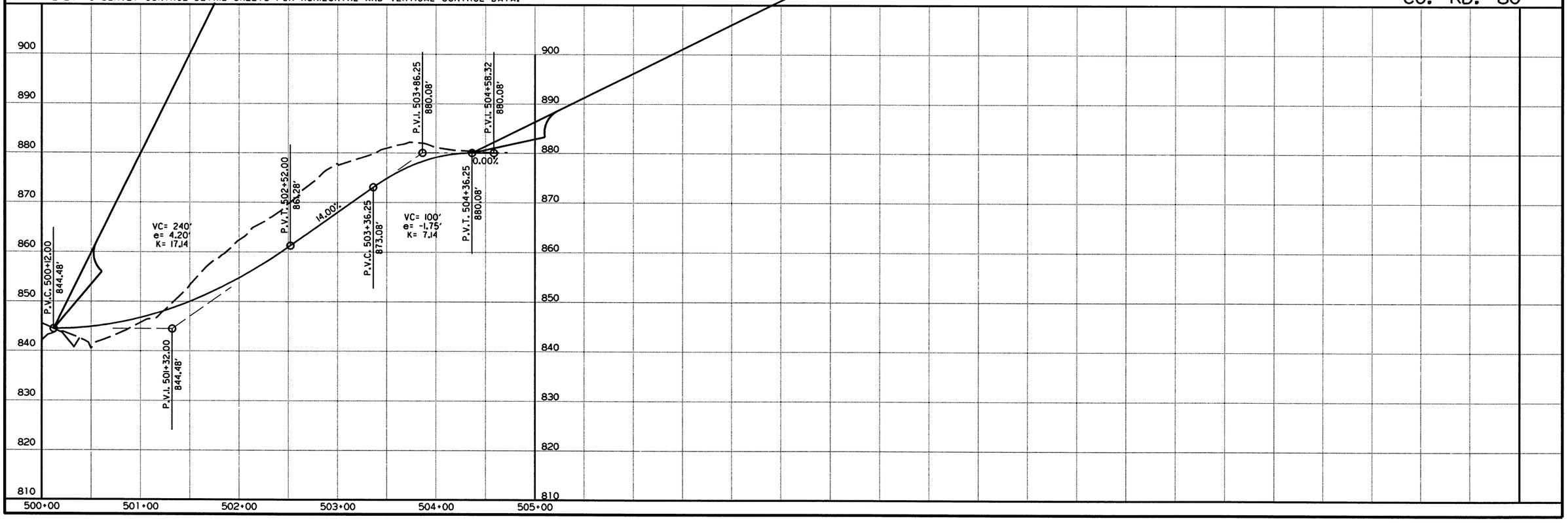


STA. 500+12.28
BEGIN CO. RD. 80
STA. 161+90.91
HWY. 7 12.00' LT.
Δ = 78°03' 12"

STA. 504+37.11
END CO. RD. 80

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

CO. RD. 80



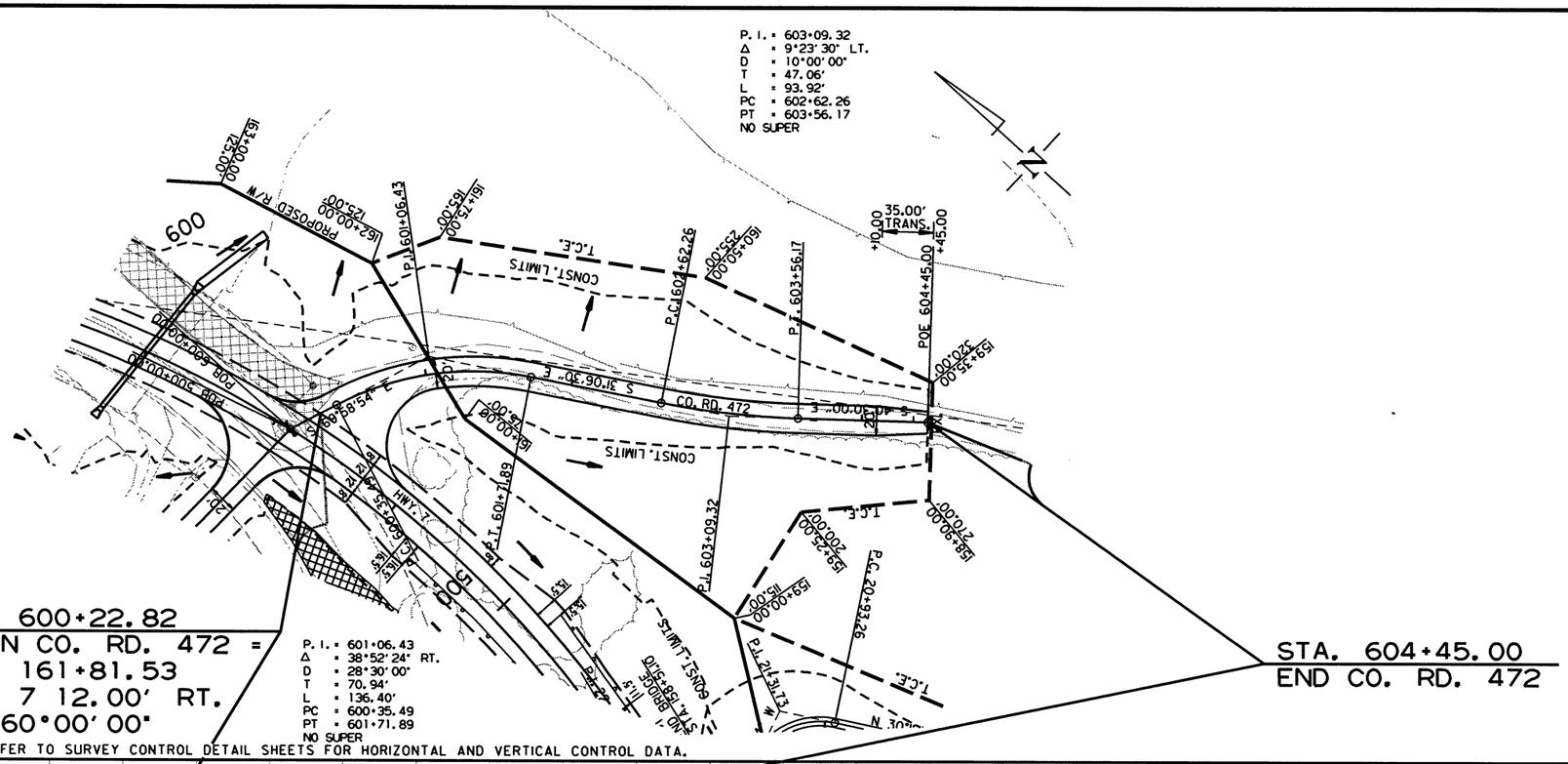
8/23/2018

R009784.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.		009784	54	193

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-5-18


P. I. = 603+09.32
Δ = 9°23' 30" LT.
D = 10°00' 00"
T = 47.06'
L = 93.92'
PC = 602+62.26
PT = 603+56.17
NO SUPER
600
PROPOSED R/W
162+00.00
125.00'
163+00.00
125.00'
161+06.43
165.00'
161+75.00
T.C.E.
CONST. LIMITS
P.C. 601+62.26
160+50.00
235.00'
P.T. 603+56.17
35.00'
TRANS.
+10.00
+45.00
POE 604+45.00
158+35.00
320.00'
POE 600+00.00
POE 600+00.00
S 31°06'30" E
CO. RD. 472
S 40°30'00" E
P.C. 600+35.49
P.T. 601+71.89
HWY. 7
12'
16'
12'
20'
15'
15'
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.		009784	55	193

(4) PLAN & PROFILE SHEET

TRAFFIC CONTROL DEVICES ENTIRE PROJECT:

W20-3 (END OF PROJECT) CO. RD. 213 = 48.0 S.F.

G20-2 (ENTIRE PROJECT) PROPOSED ROAD = 8.0 S.F.

R11-3A ROAD CLOSED (ENTIRE PROJECT) = 12.5 L.F.

BARRICADES (TYPE III) AT BEGINNING AND END OF COUNTY ROAD 213 WITH R11-2 ROAD CLOSED (ON TOP BARRICADES) STA 102+00
PROPOSED ROADWAY BARRICADES (TYPE III) = 32 L.F.
(2) R11-2 = 20 L.F.

STA. 166+35.47 HIGHWAY 7 =
STA. 99+94.25 COUNTY ROAD 213
(MILL CREEK)
= 85° 35' 05"

GUARDRAIL TYPE (A) & THRIE BEAM
STA. 101+29 TO STA. 101+98
STA. 105+00 TO STA. 105+69

REMOVE EXISTING BRIDGE STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM

REMOVE BRIDGE NUMBER 586 APPROXIMATELY BETWEEN STAS. 103+02.00 TO 103+96.00 ON COUNTY ROAD 213. THE STRUCTURE CONSISTS OF A SINGLE CONCRETE SPAN WITH FLARED CONCRETE WINGWALLS AND THREE CORRUGATED METAL PIPES ENCASED IN CONCRETE.

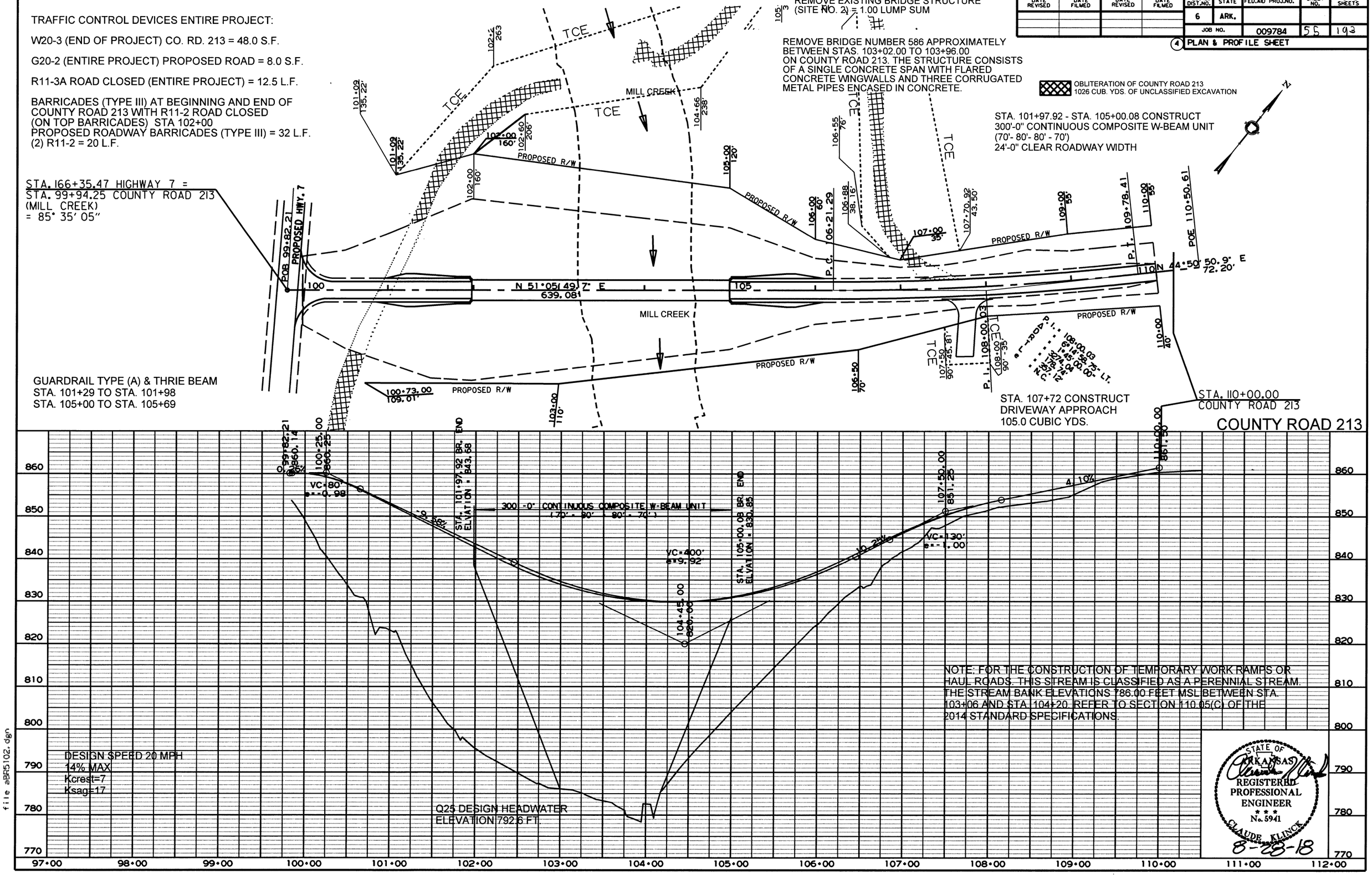
OBLITERATION OF COUNTY ROAD 213
1026 CUB. YDS. OF UNCLASSIFIED EXCAVATION

STA. 101+97.92 - STA. 105+00.08 CONSTRUCT
300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
(70'- 80'- 80' - 70')
24'-0" CLEAR ROADWAY WIDTH

STA. 107+72 CONSTRUCT
DRIVEWAY APPROACH
105.0 CUBIC YDS.

STA. 110+00.00
COUNTY ROAD 213

COUNTY ROAD 213



DESIGN SPEED 20 MPH
14% MAX
Kcrest=7
Ksag=17

Q25 DESIGN HEADWATER ELEVATION 792.6 FT.

NOTE: FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS A PERENNIAL STREAM. THE STREAM BANK ELEVATIONS 786.00 FEET MSL BETWEEN STA. 103+06 AND STA. 104+20. REFER TO SECTION 110.05(C) OF THE 2014 STANDARD SPECIFICATIONS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
CLAUDE KLINCK
8-28-18

file aBR5102.dgn

DATE REVISED	DATE FILED	DATE REVISED	DATE FILED	FED.AID DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	56	193
				④ PLAN SHEET				

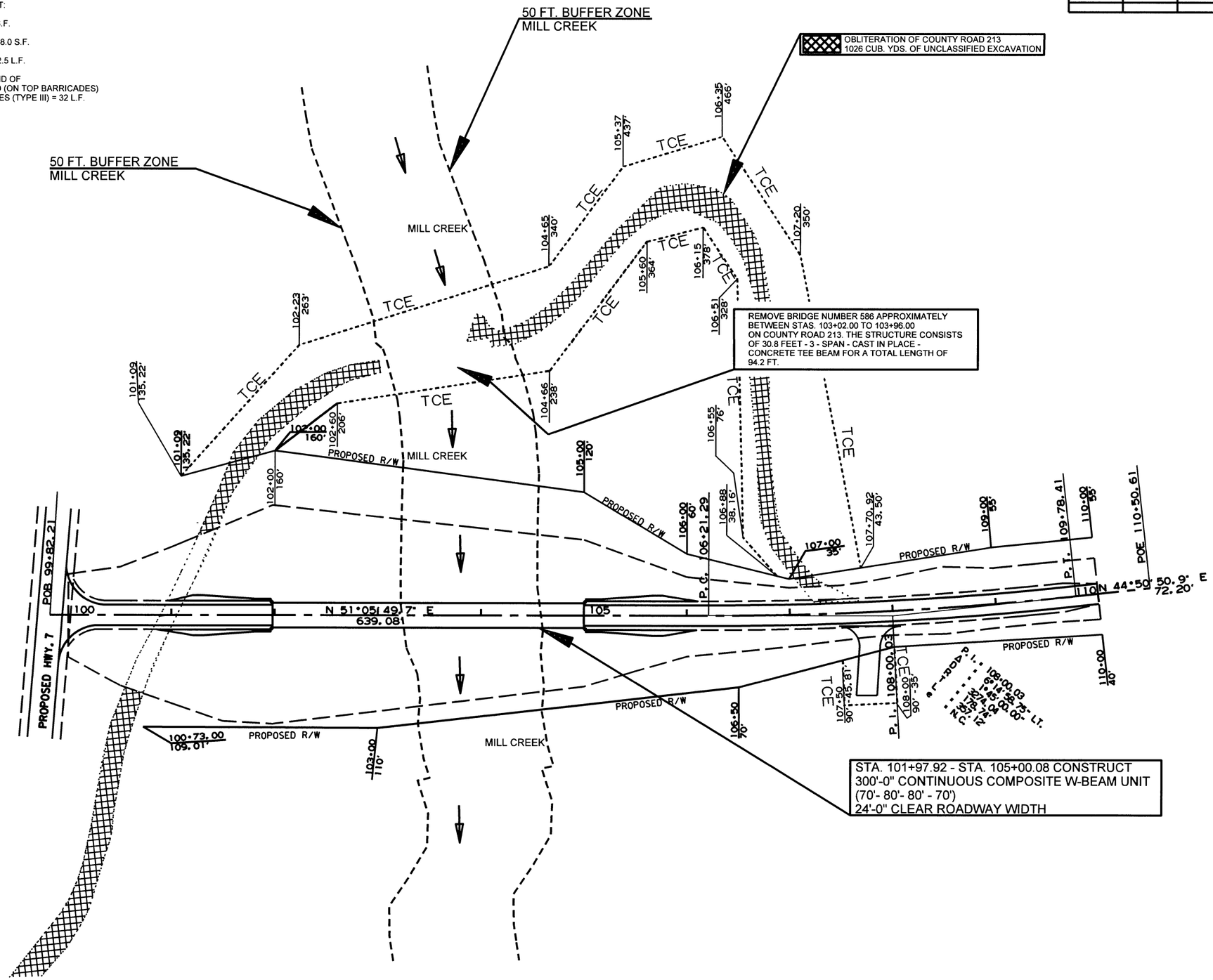
TRAFFIC CONTROL DEVICES ENTIRE PROJECT:

W20-3 (END OF PROJECT) CO. RD. 213 = 48.0 S.F.

G20-2 (ENTIRE PROJECT) PROPOSED ROAD = 8.0 S.F.

R11-3A ROAD CLOSED (ENTIRE PROJECT) = 12.5 L.F.

BARRICADES (TYPE III) AT BEGINNING AND END OF
COUNTY ROAD 213 WITH R11-2 ROAD CLOSED (ON TOP BARRICADES)
STA 102+00 PROPOSED ROADWAY BARRICADES (TYPE III) = 32 L.F.
(2) R11-2 = 20 L.F.



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5941
CLAUDE FLINCK
8-28-18

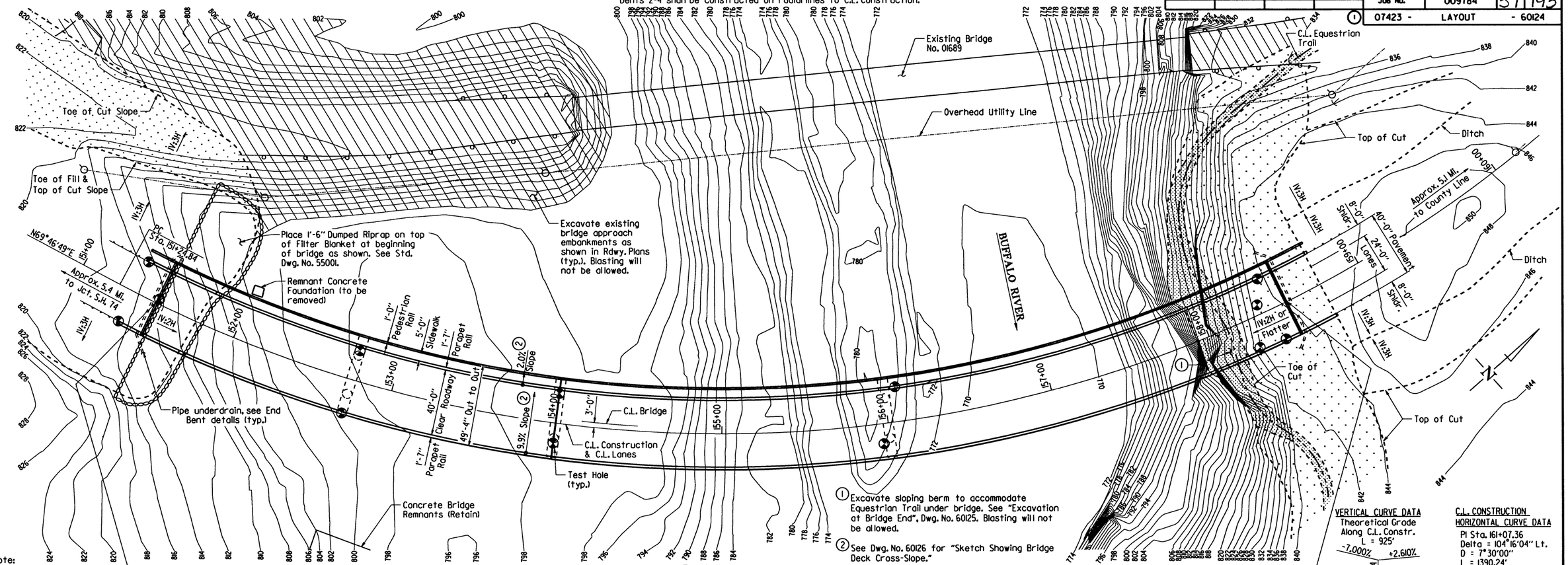
COUNTY ROAD 213
PLAN SHEET

FOR R/W DATA, SEE RDWY. PLANS

Note: Place Type 1 Special Approach Slab at beginning of bridge and Type 2 Special Approach Slab at end of bridge. See Dwg. Nos. 60176-60177 and 60178-60179, respectively.

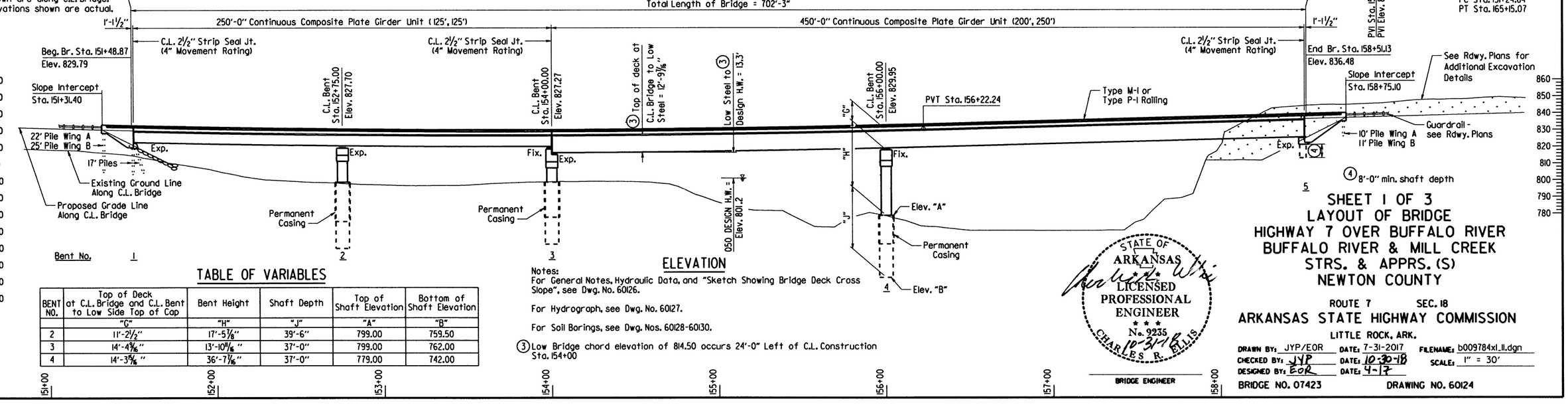
Note: C.L. Construction is on a 7° 30' curve left. C.L. girders and the longitudinal lines of both the bridge and approach slabs shall be constructed on curves concentric with C.L. Construction. C.L. Joints and C.L. Bearings of end bents and C.L. Caps and C.L. Bearings of bents 2-4 shall be constructed on radial lines to C.L. Construction.

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.		009784	57	193
				① 07423 -		LAYOUT		- 60124



PLAN

Note:
All stations are shown along C.L. Construction. All elevations shown are along C.L. Bridge. Elevations shown are actual.



ELEVATION

TABLE OF VARIABLES

BENT NO.	Top of Deck at C.L. Bridge and C.L. Bent to Low Side Top of Cap	Bent Height	Shaft Depth	Top of Shaft Elevation	Bottom of Shaft Elevation
	"C"	"H"	"J"	"A"	"B"
2	11'-2½"	17'-5⅛"	39'-6"	799.00	759.50
3	14'-4⅜"	13'-10⅛"	37'-0"	799.00	762.00
4	14'-3⅝"	36'-7⅛"	37'-0"	779.00	742.00

Notes:
For General Notes, Hydraulic Data, and "Sketch Showing Bridge Deck Cross Slope", see Dwg. No. 60126.

For Hydrograph, see Dwg. No. 60127.

For Soil Borings, see Dwg. Nos. 60128-60130.

③ Low Bridge chord elevation of 814.50 occurs 24'-0" Left of C.L. Construction Sta. 154+00

VERTICAL CURVE DATA
Theoretical Grade Along C.L. Constr.
L = 925'
-7.000% +2.610%
PVI Sta. 151+59.74
PVI Elev. 817.78

C.L. CONSTRUCTION HORIZONTAL CURVE DATA
PI Sta. 161+07.36
Delta = 104°16'04" Lt.
D = 7°30'00"
L = 1390.24'
T = 982.53'
R = 763.94'
PC Sta. 151+24.84
PT Sta. 165+15.07

PRINT DATE: 10/30/2018

SHEET 1 OF 3
LAYOUT OF BRIDGE
HIGHWAY 7 OVER BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18

ARKANSAS STATE HIGHWAY COMMISSION

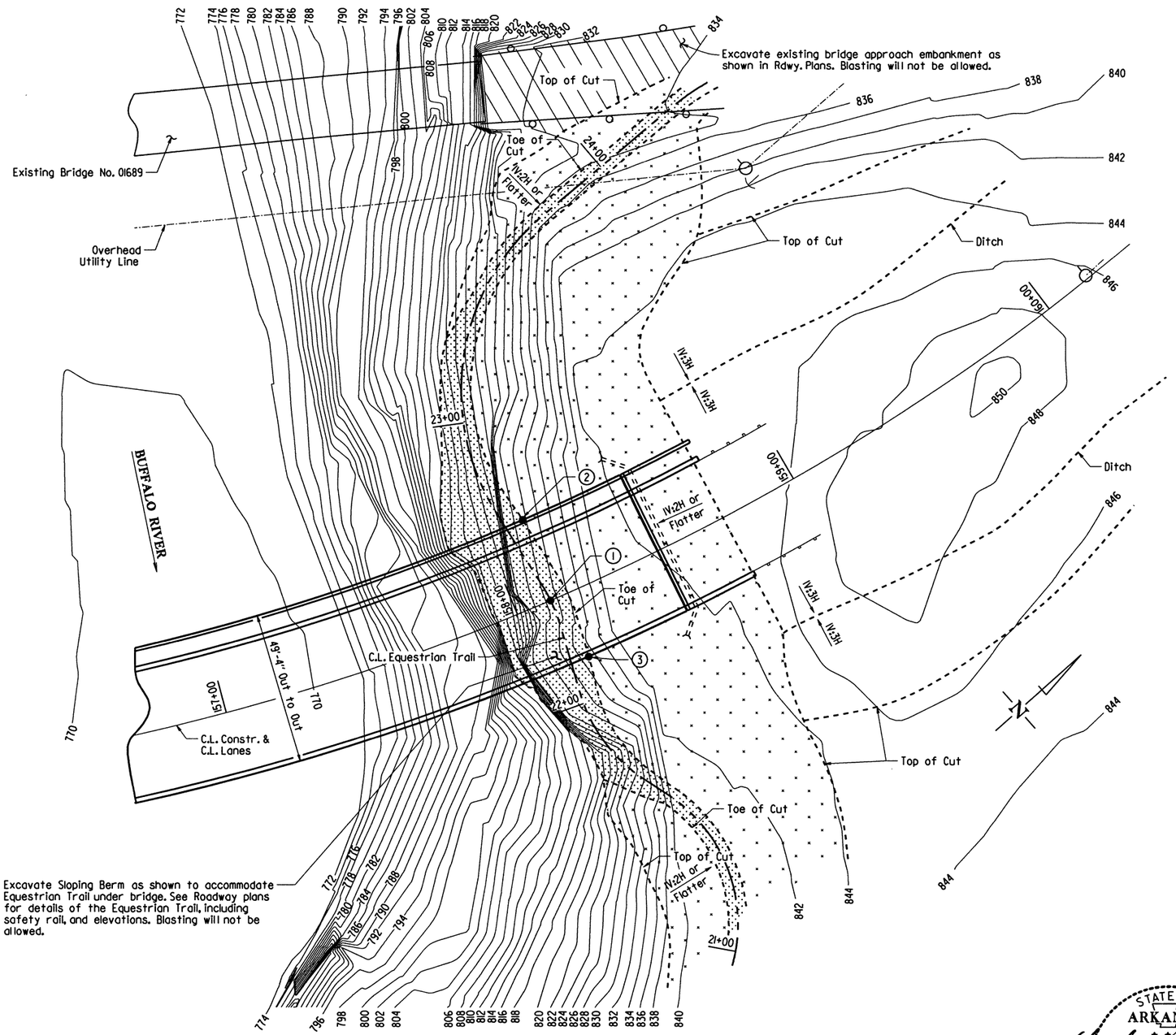
LITTLE ROCK, ARK.

STATE OF ARKANSAS
CHARLES R. ELLIS
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-31-18
BRIDGE ENGINEER

DRAWN BY: JYP/EOR DATE: 7-31-2017 FILENAME: b009784xl_11.dgn
CHECKED BY: JYP DATE: 10-30-18 SCALE: 1" = 30'
DESIGNED BY: EOR DATE: 4-17

BRIDGE NO. 07423 DRAWING NO. 60124

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.		009784	58	193
				① 07423 -		LAYOUT		- 60125



EXCAVATION AT BRIDGE END

① C.L. Construction Sta. 158+11.63 = C.L. Equestrian Trail Sta. 22+35.20

② C.L. Construction Sta. 158+14.00, 27.7' LT. - Excavate to Elev. 810.0

③ C.L. Construction Sta. 158+16.00, 21.7' RT. - Excavate to Elev. 814.0

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 3
LAYOUT OF BRIDGE
HIGHWAY 7 OVER BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 7-31-2017 FILENAME: b009784x1_11.dgn
CHECKED BY: JYP DATE: 9-5-18 SCALE: 1" = 30'
DESIGNED BY: EOR DATE: 4-17

BRIDGE NO. 07423 DRAWING NO. 60125

PRINT DATE: 9/5/2018

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.		009784	59	193
				(1) 07423 -		LAYOUT	- 60126	

GENERAL NOTES

BENCH MARK: Vertical Control Data is shown in the Survey Control Data Sheets.

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

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

LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 1 S_{D1} = 0.07 SITE CLASS: B

MATERIALS AND STRENGTHS

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi

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

STEEL PILING: All piling shall be HP 14x89 (Grade 50) and shall be driven with an approved air, steam or diesel hammer to a minimum safe bearing capacity of 160 tons per pile and into the material designated as Sandstone on the boring legend. Piling shall be driven after embankment to bottom of cap or wing footing is in place. At Bent 1, minimum penetration shall be 10' below natural ground. At Bent 5, minimum penetration shall be 8' below bottom of wing footing. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Actual pile lengths to be determined in the field. The Contractor shall use approved steel H-pile driving points on all piles.

PREBORING: Preboring is required for all piling. Preboring shall be to a minimum depth of 3' into material designated as Sandstone on the boring legend, or to a depth sufficient to provide the specified minimum pile penetration, whichever is greater. The actual size and depth of preboring are to be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free from debris prior to backfilling which may require casings or other methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete to the top of rock and the remaining length backfilled in accordance with Subsection 805.08(a). Any cost associated with achieving the minimum pile penetration, including any backfill and casings, shall not be paid for directly but shall be considered subsidiary to the item "STEEL PILING (HP 14x89)".

DRILLED SHAFTS: Drilled shafts at Bents 2 thru 5 shall be constructed in accordance with Special Provision Job No. 009784 "Drilled Shaft Foundations". Drilled shafts shall be socketed a minimum of 16' at Bents 2 and 3, 20' at Bent 4, and 8' at Bent 5 into competent rock designated as Sandstone or Dolostone on the boring legend. No adjustment to plan tip elevations shall be made without prior approval from the Engineer.

CROSSHOLE SONIC LOGGING: Nondestructive testing shall be performed in accordance with Special Provision Job No. 009784 "Nondestructive Testing of Drilled Shafts".

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

PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway and sidewalk surfaces.

STAINING CONCRETE SURFACES: A concrete penetrating stain shall be applied to bridge surfaces as specified in Special Provision Job No. 009784 "Staining Concrete Surfaces". The concrete penetrating stain shall not be applied on surfaces where Class 2 Protective Surface Treatment is applied. The color of the stain shall be as specified in Special Provision Job No. 009784 "Staining Concrete Surfaces".

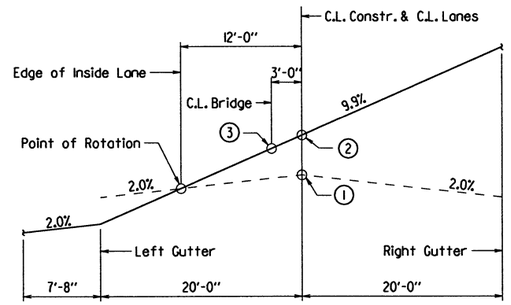
PAINTING: All Grade 50W structural steel, except galvanized members and surfaces in contact with concrete, within ten feet of bridge deck expansion joints shall be painted as specified in Subsection 807.75. The color of paint shall be Brown equal or close to Fed. Std. 595 B, Color Chip No. 30070 and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

DETAIL DRAWINGS:	DRAWING NO.
Details of Bent 1	60131-60134
Details of Bents 2 thru 4	60135-60140
Details of Bent 5	60141-60144
Elastomeric Bearings	60146
250'-0" Continuous Plate Girder Unit	60147-60153
450'-0" Continuous Plate Girder Unit	60154-60168
Common Details of Plate Girder Units	60169-60170
Type M-1 Railing	60171-60172
Type P-1 Railing	60173-60174
Type 1 Special Approach Slab	60176-60177
Type 2 Special Approach Slab	60178-60179
Standard General Notes	55006
Standard Details for Steel Bridge Structures	55007

EXISTING BRIDGE: Existing Bridge No. 01689, (L.M. 20.15) is 21.3' wide and 375' long and consists of a reinforced concrete deck girder approach span and three thru-truss main spans supported by concrete columns on spread footings.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing Bridge No. 01689 shall be removed in accordance with Section 205. The remnant concrete structure shown on Dwg. No. 60124 shall also be removed at the direction of the Engineer. Payment for this work shall be considered incidental to "Removal of Existing Bridge Structure (Site No. 1)". This material and all material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.



SKETCH SHOWING BRIDGE DECK CROSS-SLOPE

Looking Ahead

(1) Theoretical Grade Line at C.L. Constr. & C.L. Lanes

(2) Actual Elevation at C.L. Constr. & C.L. Lanes

(3) Actual Elevation at C.L. Bridge

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	(4) NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	FEET	FEET
Design	50	74,000	801.0	801.2
Base	100	88,100	803.7	804.0
Extreme	500	124,100	809.6	810.1
Overtopping	>500	N/A	N/A	N/A

(4) Unconstricted water surface without structure or roadway approaches.

Q100 backwater elevation for existing structure = 803.8
Proposed Low Bridge Chord Elev. = 814.50

Drainage area = 190 square miles
Historical H.W. Elev = 800.4

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
12-3-18

BRIDGE ENGINEER

SHEET 3 OF 3
LAYOUT OF BRIDGE
HIGHWAY 7 OVER BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18

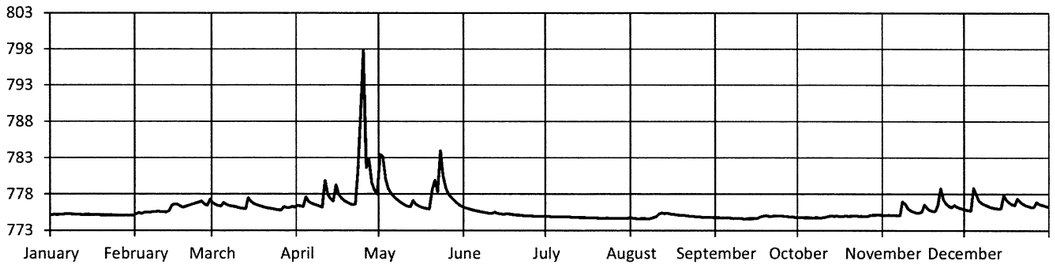
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: JNP DATE: 12-4-18 SCALE: No Scale
DESIGNED BY: EOR DATE: 4-17

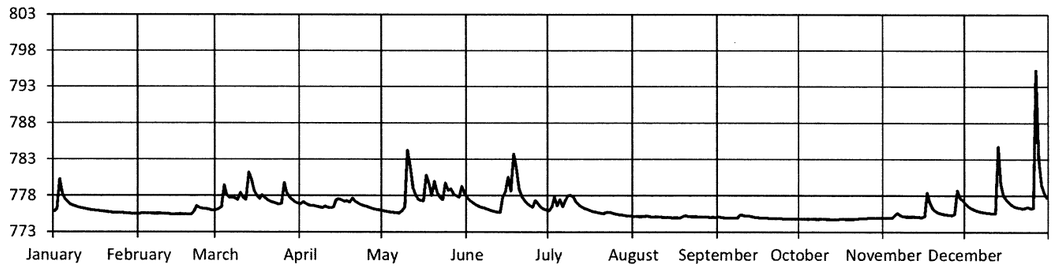
BRIDGE NO. 07423 DRAWING NO. 60126

PRINT DATE: 12/4/2018

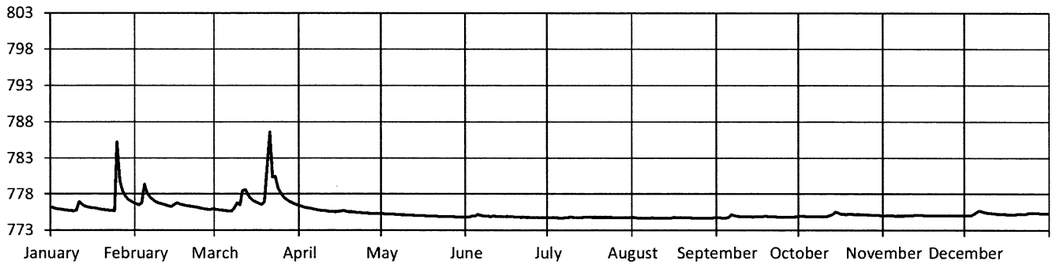
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				6	ARK.			
				JOB NO.		009784	60	193
				(1) 07423 -		HYDROGRAPH		- 60127



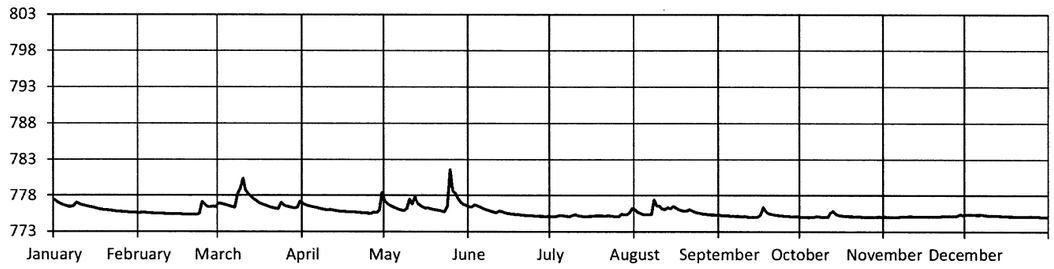
DAILY STAGES FOR JANUARY THRU DECEMBER 2011



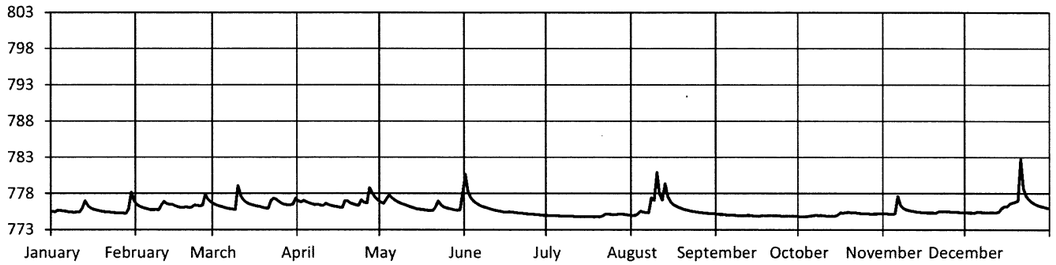
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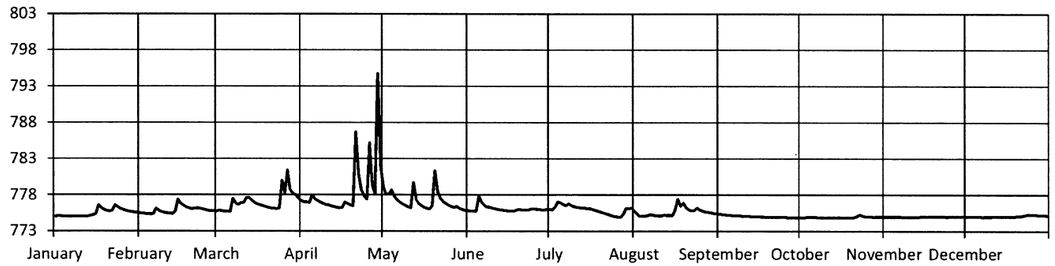
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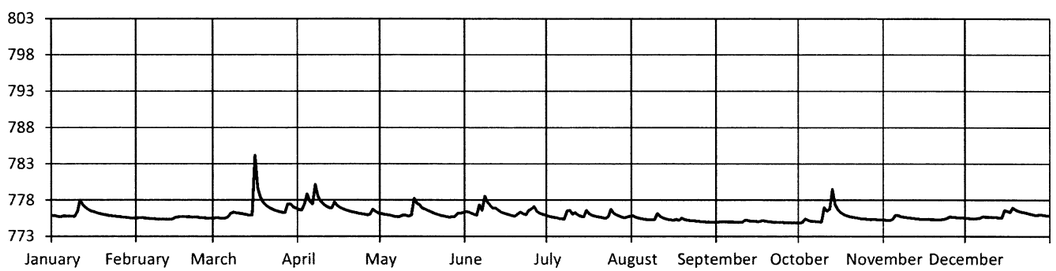
DAILY STAGES FOR JANUARY THRU DECEMBER 2016



DAILY STAGES FOR JANUARY THRU DECEMBER 2013



DAILY STAGES FOR JANUARY THRU DECEMBER 2017



DAILY STAGES FOR JANUARY THRU DECEMBER 2014

This Stage Hydrograph was obtained from the United States Geological Survey Division and was plotted by the Arkansas Department of Transportation.

Gage No. 07055680
Location: Latitude 36°03'33"N, Longitude 93°08'16"W, Buffalo River at Pruitt.

This hydrograph is for information only.

STATE OF ARKANSAS
CHARLES R. ELLIS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
BRIDGE ENGINEER

HYDROGRAPH - BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE SEC.

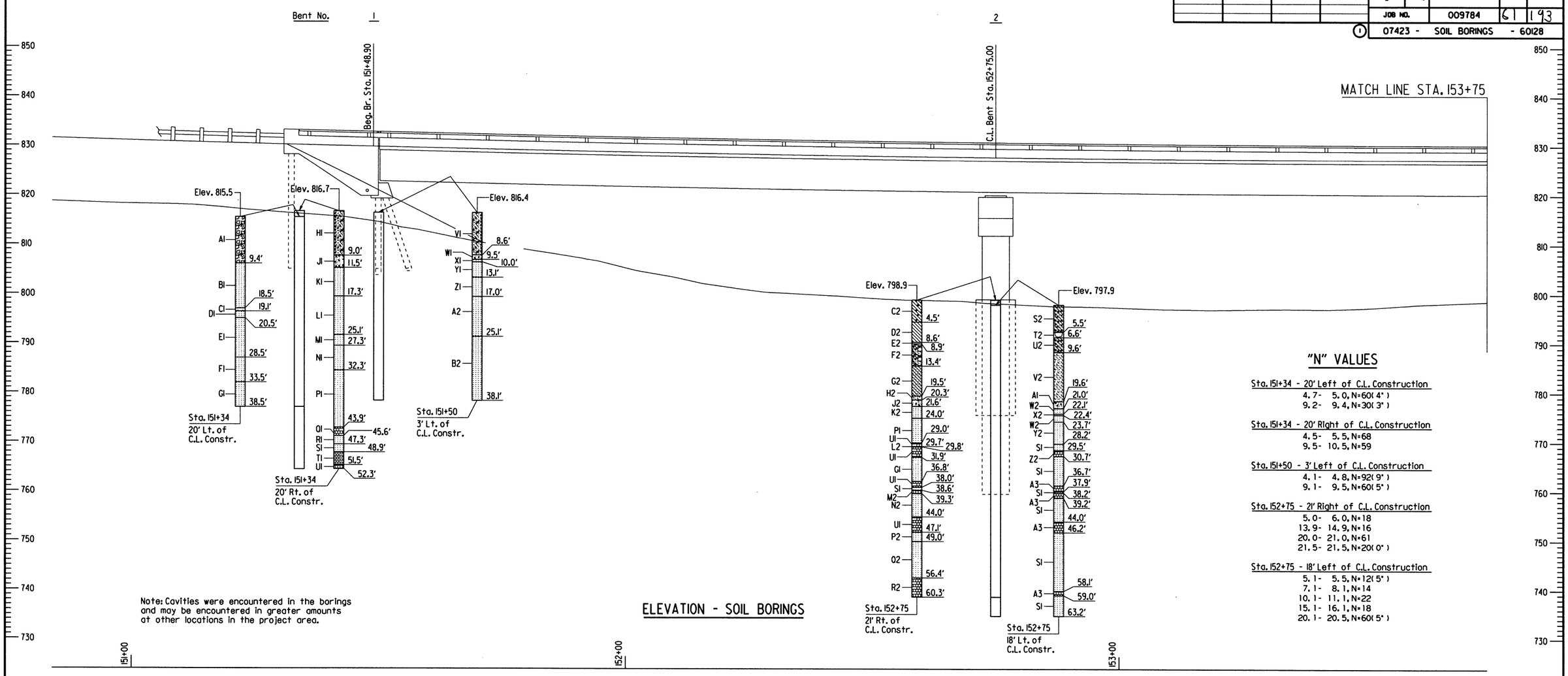
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: JHP DATE: 8-29-18 SCALE: No Scale
DESIGNED BY: — DATE: —

BRIDGE NO. 07423 DRAWING NO. 60127

PRINT DATE: 8/29/2018

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				6	ARK.			
				JOB NO.		009784	61	193
				(1) 07423 - SOIL BORINGS - 60128				



Note: Cavities were encountered in the borings and may be encountered in greater amounts at other locations in the project area.

ELEVATION - SOIL BORINGS

"N" VALUES

Sta. 151+34 - 20' Left of C.L. Construction
4.7- 5.0, N=60(4")
9.2- 9.4, N=30(3")

Sta. 151+34 - 20' Right of C.L. Construction
4.5- 5.5, N=68
9.5- 10.5, N=59

Sta. 151+50 - 3' Left of C.L. Construction
4.1- 4.8, N=92(9")
9.1- 9.5, N=60(5")

Sta. 152+75 - 21' Right of C.L. Construction
5.0- 6.0, N=18
13.9- 14.9, N=16
20.0- 21.0, N=61
21.5- 21.5, N=20(0")

Sta. 152+75 - 18' Left of C.L. Construction
5.1- 5.5, N=12(5")
7.1- 8.1, N=14
10.1- 11.1, N=22
15.1- 16.1, N=18
20.1- 20.5, N=60(5")

BORING LEGEND - STA. 151+34 thru STA. 152+75

A1-Moist, Very Dense, Brown and Gray Sand with Gravel(Rock Fragments)
B1-SANDSTONE - Weathered, Poorly Cemented, Frequent Fractures, Light Gray
C1-CHERT- Weathered, Hard, Fractured, Gray
D1-SANDSTONE - Weathered, Poorly Cemented, Occasional Fractures, White and Light Gray
E1-SANDSTONE - Slightly Weathered, Poorly Cemented, Occasional Fractures, White and Light Gray
F1-SANDSTONE - Unweathered, Well Cemented, Occasional Fractures, White and Light Gray
G1-SANDSTONE - Unweathered, Well Cemented, White and Light Gray
H1-Moist, Very Dense, Reddish Brown Clayey Sand with Gravel(Chert Fragments)
J1-Moist, Very Dense, Brown and Gray Sand with Gravel(Chert Fragments)
K1-SANDSTONE - Weathered, Poorly Cemented, Frequent Fractures, White and Light Gray
L1-SANDSTONE - Weathered, Cemented, Occasional Fractures, White and Brown
M1-SANDSTONE - Weathered with Slighty Weathered Layers, Cemented, Calcareous in Part, White and Light Gray
N1-SANDSTONE - Slightly Weathered, Well Cemented with Cemented Layers, Calcareous in Part, White and Light Gray
P1-SANDSTONE - Unweathered, Well Cemented, Calcareous in Part, White and Light Gray
Q1-DOLOSTONE - Weathered, Moderately Hard, Light Gray
R1-SANDSTONE - Unweathered, Well Cemented, White and Light Gray
S1-SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray
T1-SANDSTONE WITH INTERBEDDED DOLOSTONE AND CHERT- Unweathered, Well Cemented, White and Light Gray
U1-DOLOSTONE - Slightly Weathered, Moderately Hard, Light Gray
V1-Moist, Very Dense, Brown and Gray Clayey Sand and Gravel(Chert Fragments)
W1-Moist, Very Dense, Brown and Gray Sand with Gravel(Chert Fragments)
X1-SANDSTONE
Y1-SANDSTONE - Weathered, Poorly Cemented, Frequent Fractures, Light Gray and Brown
Z1-SANDSTONE - Weathered, Poorly Cemented, Light Gray and Brown
A2-SANDSTONE - Weathered with Occasional Highly Weathered Layers, Cemented with Poorly Cemented Layers, Light Gray and Brown
B2-SANDSTONE - Slightly Weathered, Well Cemented, Calcareous in Part, Light Gray and White
C2-Moist, Very Stiff, Brown Clay with Organic Matter
D2-Moist, Very Stiff, Brown Clay
E2-Sandstone Boulder
F2-Clayey Sand with Gravel, Cobbles, and Boulders
G2-Wet, Medium Dense, Brown Clayey Sand
H2-Moist, Very Dense, Gray Clayey Sand
J2-Moist, Very Dense, Gray Sand with Gravel(Rock Fragments)
K2-SANDSTONE - Unweathered with Highly Weathered Layers, Well Cemented with Poorly Cemented Layers, Calcareous in Part, Light Gray
L2-Cavity
M2-DOLOSTONE - Unweathered, Moderately Hard, Light Gray
N2-SANDSTONE - Unweathered, Well Cemented with Poorly Cemented Layers, Occasionally Friable, Calcareous, White and Light Gray
P2-SANDSTONE - Slightly Weathered, Well Cemented with Occasional Poorly Cemented Layers, Light Gray
Q2-SANDSTONE - Slightly Weathered, Cemented, White and Light Gray
R2-DOLOSTONE - Slightly Weathered, Cemented, Occasional Fractures, Gray
S2-Moist, Medium Stiff, Brown and Gray Sandy Clay with Gravel(Rock Fragments)
T2-Chert Boulder
U2-Moist, Stiff, Brown and Gray Sandy Clay with Gravel(Rock Fragments)
V2-Moist, Medium Dense, Brown to Dark Brown Clayey Sand
W2-SANDSTONE - Weathered, Cemented, White and Light Gray
X2-Fracture/Void
Y2-SANDSTONE - Slightly Weathered, Cemented, Calcareous, White and Light Gray
Z2-DOLOSTONE - Unweathered, Moderately Hard, Light Gray
A3-DOLOSTONE - Unweathered, Moderately Hard, Light Gray

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 3
SOIL BORINGS - BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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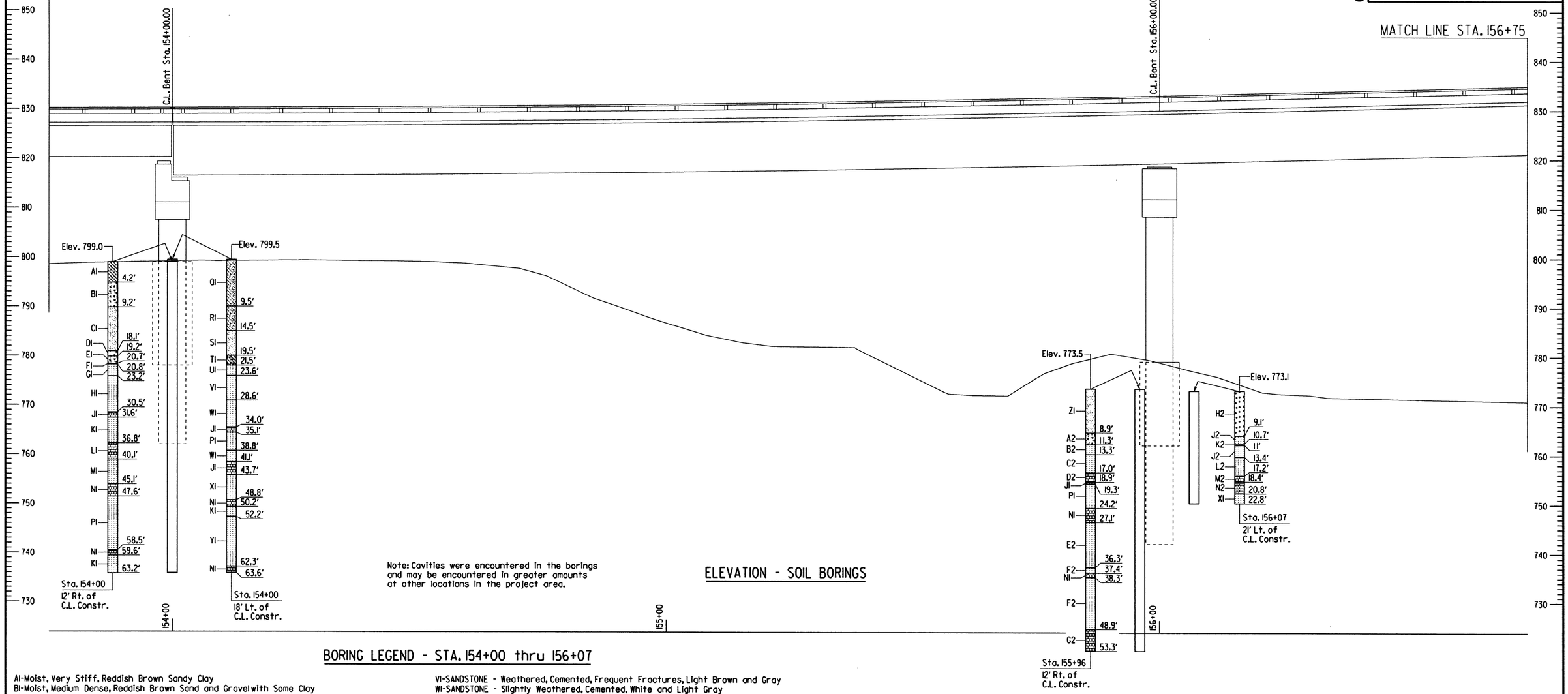
BRIDGE NO. 07423 DRAWING NO. 60128

PRINT DATE: 9/4/2018

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				6	ARK.			
				JOB NO.		009784	62	193
				① 07423 - SOIL BORINGS			- 60129	

MATCH LINE STA. 153+75

MATCH LINE STA. 156+75



Note: Cavities were encountered in the borings and may be encountered in greater amounts at other locations in the project area.

ELEVATION - SOIL BORINGS

BORING LEGEND - STA. 154+00 thru 156+07

AI-Moist, Very Stiff, Reddish Brown Sandy Clay
BI-Moist, Medium Dense, Reddish Brown Sand and Gravel with Some Clay
CI-Moist, Medium Dense, Reddish Brown Sand
DI-Gravel (Sandstone Fragments)
EI-Moist, Very Dense, Reddish Brown and Light Gray Sand with Gravel (Sandstone Fragments)
FI-CEMENTED SANDSTONE
GI-SANDSTONE - Weathered, Poorly Cemented, Occasional Fractures, Light Gray
HI-SANDSTONE - Weathered, Cemented, Calcareous, Light Gray
JI-DOLOSTONE - Slightly Weathered, Moderately Hard, Light Gray
KI-SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray
LI-DOLOSTONE WITH INTERBEDDED SANDSTONE - Unweathered, Moderately Hard, Light Gray
MI-SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray
NI-DOLOSTONE - Unweathered, Moderately Hard, Light Gray
PI-SANDSTONE - Slightly Weathered, Well Cemented, Calcareous, White and Light Gray
QI-Moist, Medium Dense, Reddish Brown Clayey Sand
RI-Moist, Loose, Reddish Brown Clayey Sand
SI-Moist, Medium Dense, Brown Sand with Some Gravel (Rock Fragments)
TI-Moist, Very Dense, Brown to Light Brown Sand with Gravel (Rock Fragments)
UI-SANDSTONE - Highly Weathered, Poorly Cemented, Frequent Fractures, Light Brown and Gray
VI-SANDSTONE - Weathered, Cemented, Frequent Fractures, Light Brown and Gray
WI-SANDSTONE - Slightly Weathered, Cemented, White and Light Gray
XI-SANDSTONE - Slightly Weathered, Cemented, Calcareous, White and Light Gray
YI-SANDSTONE - Unweathered, Well Cemented, Occasional Calcareous Layer, White and Light Gray
ZI-Wet, Loose, Brown Sand with Some Gravel
A2-Wet, Medium Dense, Brown Sand with Gravel (Rock Fragments)
B2-SANDSTONE - Weathered, Cemented, Calcareous, Occasional Fractures, Light Gray
C2-SANDSTONE - Weathered, Cemented, Calcareous in Part, Frequent Fractures, Light Gray
D2-LIMESTONE - Slightly Weathered, Moderately Hard, Frequent Fractures, Light Gray
E2-SANDSTONE - Unweathered, Well Cemented, White and Light Gray
F2-SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray
G2-LIMESTONE - Unweathered, Moderately Hard, Light Gray
H2-Wet, Brown Gravel
J2-SANDSTONE - Weathered, Cemented, Frequent Fractures, Calcareous, Light Gray
K2-Cavity (10.7'-11.0')
L2-SANDSTONE - Slightly Weathered, Cemented, Calcareous in Part, White and Light Gray
M2-LIMESTONE - Slightly Weathered, Moderately Hard, Light Gray
N2-SANDSTONE WITH INTERBEDDED LIMESTONE - Slightly Weathered, Well Cemented, Calcareous, Light Gray

"N" VALUES

Sta. 154+00 - 12' Right of C.L. Construction
4.7- 5.7, N=16
9.7- 10.7, N=17
14.7- 15.7, N=21
19.7- 20.7, N=91

Sta. 154+00 - 18' Left of C.L. Construction
5.0- 6.0, N=11
10.0- 11.0, N=9
15.0- 16.0, N=25
20.0- 21.0, N=84

Sta. 155+96 - 12' Right of C.L. Construction
4.4- 5.4, N=8
9.4- 10.4, N=30

STATE OF ARKANSAS
CHARLES R. ELLIS
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No. 9235
9-5-18
BRIDGE ENGINEER

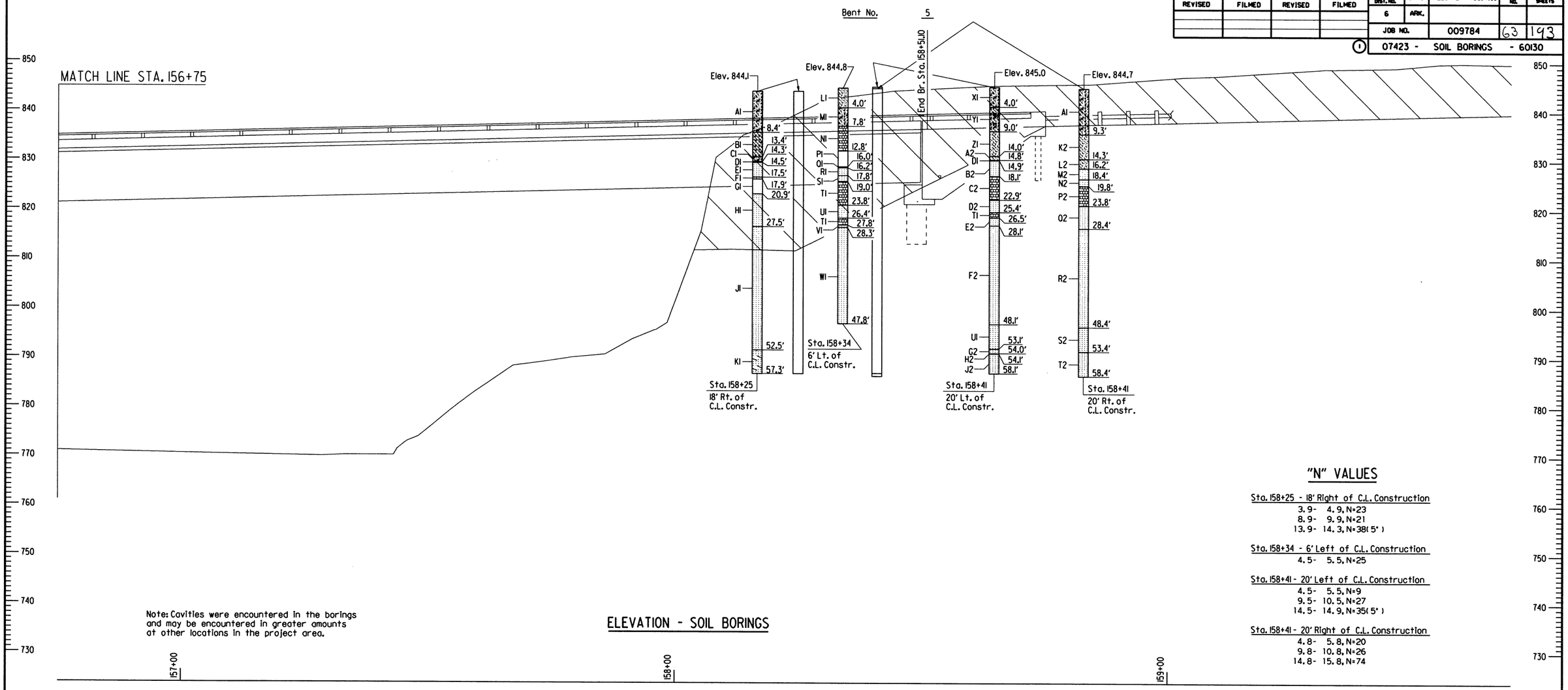
SHEET 2 OF 3
SOIL BORINGS - BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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				6	ARK.			
				JOB NO.		009784	63	193
				①	07423 -	SOIL BORINGS	- 60130	



Note: Cavities were encountered in the borings and may be encountered in greater amounts at other locations in the project area.

ELEVATION - SOIL BORINGS

"N" VALUES

Sta. 158+25 - 18' Right of C.L. Construction
3.9- 4.9, N=23
8.9- 9.9, N=21
13.9- 14.3, N=38(5")

Sta. 158+34 - 6' Left of C.L. Construction
4.5- 5.5, N=25

Sta. 158+41 - 20' Left of C.L. Construction
4.5- 5.5, N=9
9.5- 10.5, N=27
14.5- 14.9, N=35(5")

Sta. 158+41 - 20' Right of C.L. Construction
4.8- 5.8, N=20
9.8- 10.8, N=26
14.8- 15.8, N=74

BORING LEGEND - STA. 158+25 thru 158+41

A1-Moist, Medium Dense, Brown and Gray Clayey Sand with Gravel (Rock Fragments)
B1-Moist, Very Stiff, Brown and Gray Sandy Clay with Gravel (Rock Fragments)
C1-Moist, Very Dense, Brown and Gray Clayey Sand with Gravel (Sandstone Fragments)
D1-SANDSTONE
E1-SANDSTONE - Slightly Weathered, Cemented, Light Gray
F1-SANDSTONE - Slightly Weathered, Cemented, Calcareous In Part, Gray
G1-Clay Filled Cavity with Rock Fragments (17.9' to 20.9')
H1-SANDSTONE - Slightly Weathered, Cemented, Calcareous In Part, Frequent Vertical Fractures, Gray
J1-SANDSTONE - Slightly Weathered, Poorly Cemented, Frequent Fractures, White and Light Gray
K1-SANDSTONE - Slightly Weathered, Poorly Cemented, Frequent Fractures, Occasional Clay Seams, Light Gray
L1-Moist, Medium Dense, Reddish Brown Clayey Sand
M1-Moist, Medium Dense, Reddish Brown Clayey Sand with Gravel (Rock Fragments)
N1-SANDY LIMESTONE - Slightly Weathered, Moderately Hard, Occasional Vertical Fractures, Gray
P1-Clay-Filled Cavity (12.8' to 16.0')
Q1-Gravel (Sandstone Fragments)
R1-SANDSTONE - Slightly Weathered, Poorly Cemented, White
S1-SANDSTONE - Slightly Weathered, Well Cemented, White
T1-LIMESTONE - Slightly Weathered, Moderately Hard, Gray
U1-SANDSTONE - Slightly Weathered, Cemented, White
V1-SANDSTONE - Slightly Weathered, Cemented, Calcareous, White and Light Gray
W1-SANDSTONE - Slightly Weathered, Cemented, Frequent Fractures, White and Light Gray
X1-Moist, Loose, Reddish Brown Clayey Sand with Gravel (Sandstone Fragments)
Y1-Moist, Loose, Brown Clayey Sand with Gravel (Sandstone Fragments) and Organic Matter
Z1-Moist, Medium Dense, Red Clayey Sand with Some Gravel
A2-Moist, Very Dense, Reddish Brown Clayey Sand
B2-SANDSTONE - Slightly Weathered, Well Cemented, Occasional Fractures, White and Gray
C2-SANDY LIMESTONE - Slightly Weathered, Moderately Hard, Gray
D2-SANDSTONE - Slightly Weathered, Well Cemented, Calcareous In Part, White and Light Gray
E2-SANDSTONE - Slightly Weathered, Well Cemented, Calcareous In Part, Frequent Fractures, White and Light Gray
F2-SANDSTONE - Slightly Weathered, Poorly Cemented, Frequent Fractures, White
G2-SANDSTONE - Slightly Weathered with Occasional Weathered Layers, Cemented, Occasional Fractures, White and Light Gray
H2-Soil Filled Cavity (54.0' to 54.1')
J2-SANDSTONE - Slightly Weathered, Cemented, Occasional Fractures, White and Light Gray
K2-Moist, Medium Dense, Brown and Gray Clayey Sand
L2-Moist, Very Dense, Brown and Gray Clayey Sand
M2-SANDSTONE - Weathered, Cemented, Frequent Fractures, Gray
N2-SANDSTONE - Weathered, Cemented, Calcareous, Gray
P2-SANDY LIMESTONE - Slightly Weathered, Cemented, Moderately Hard, Gray
Q2-SANDSTONE - Slightly Weathered, Well Cemented, Gray
R2-SANDSTONE - Slightly Weathered, Poorly Cemented, Frequent Fractures, Light Gray
S2-SANDSTONE - Slightly Weathered, Well Cemented, Frequent Fractures, Light Gray
T2-SANDSTONE - Slightly Weathered with Occasional Highly Weathered Seams, Well Cemented, Light Gray

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

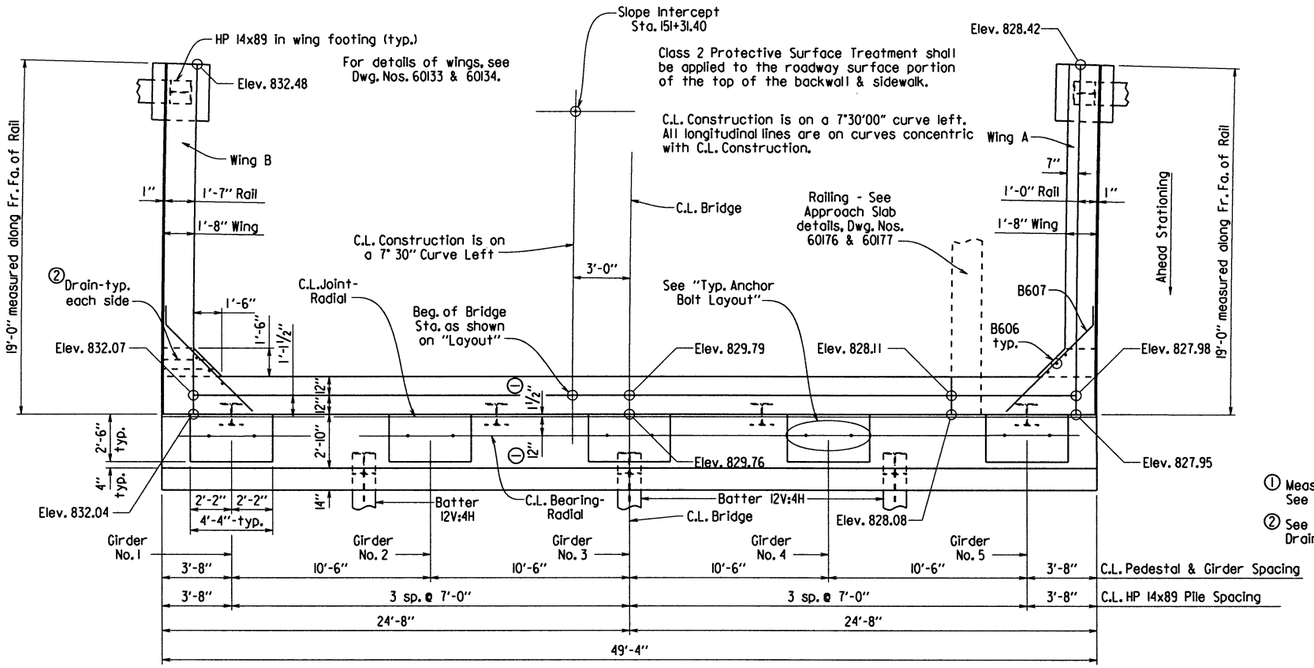
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SOIL BORINGS - BUFFALO RIVER
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

ROUTE 7 SEC. 18
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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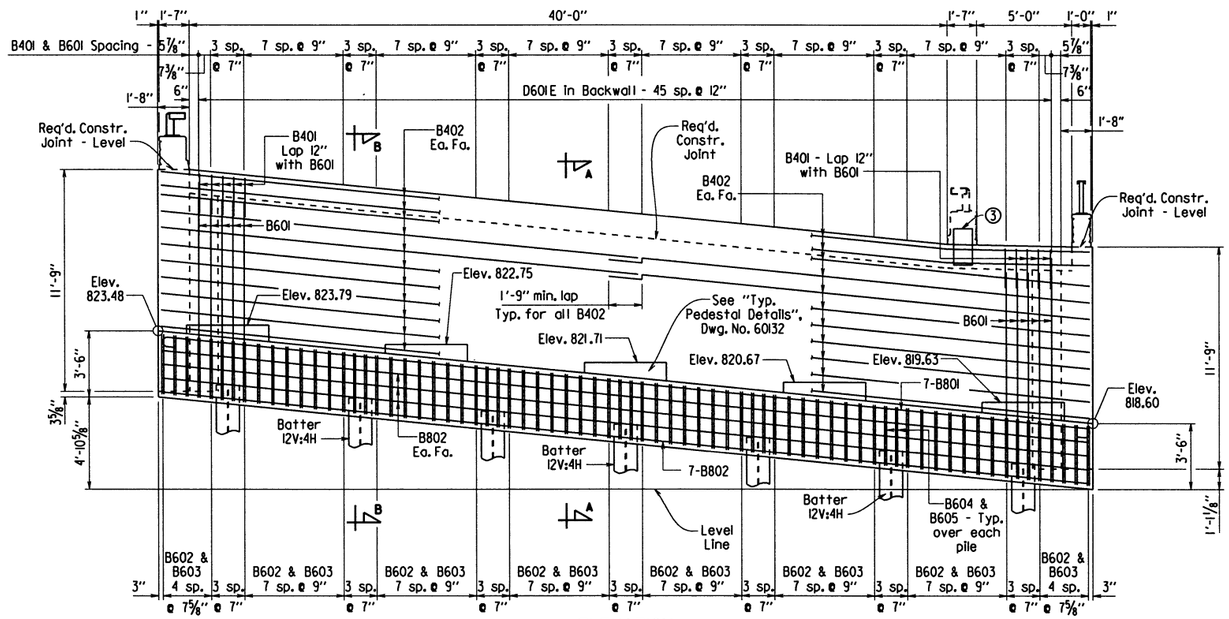
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				JOB NO.		009784	64	193
				① 07423 - BENT 1 - 60131				



PLAN

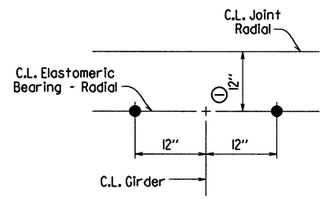
Scale: 1/4" = 1'-0"



ELEVATION

Looking Back
Scale: 1/4" = 1'-0"

For details of elastomeric bearings, see Dwg. No. 60146.



TYP. ANCHOR BOLT LAYOUT

No Scale

BEARING DISTANCES ALONG GIRDERS

Girder No. 1	12 5/16"
Girder No. 2	12 1/8"
Girder No. 3	11 15/16"
Girder No. 4	11 13/16"
Girder No. 5	11 5/8"

① Measured along C.L. Construction. See "Bearing Distances Along Girders".

② See "Details of Backfill and Drainage - Bent 1", Dwg. No. 60145.

③ For reinforcing steel from top of backwall to interior rail on approach slab, see Dwg. No. 60177.

GENERAL NOTES

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

For details of Steel H-Piling, See Dwg. No. 60132.

For all "Sections", see Dwg. No. 60132.

No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation At End Bents" note, see Dwg. No. 60169. No heavy construction equipment or backfill shall be allowed directly behind the backwall until the concrete for the span has been completed.

For additional information, see Layout.

STATE OF ARKANSAS
CHARLES R. ELLIS
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9-5-18
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF BENT 1
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

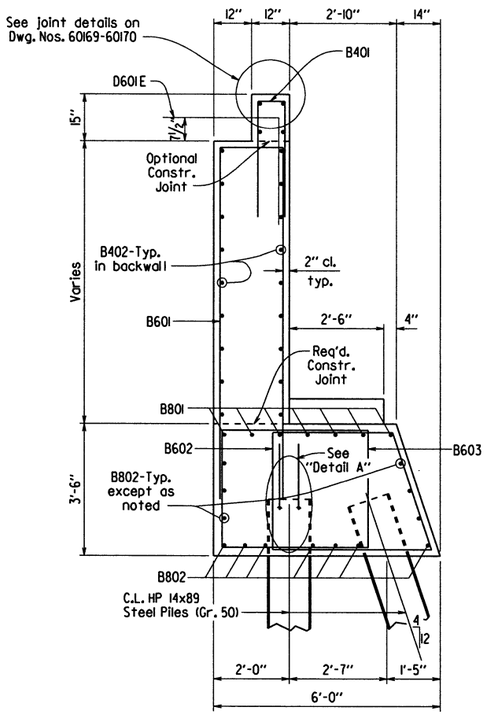
LITTLE ROCK, ARK.

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BRIDGE NO. 07423 DRAWING NO. 60131

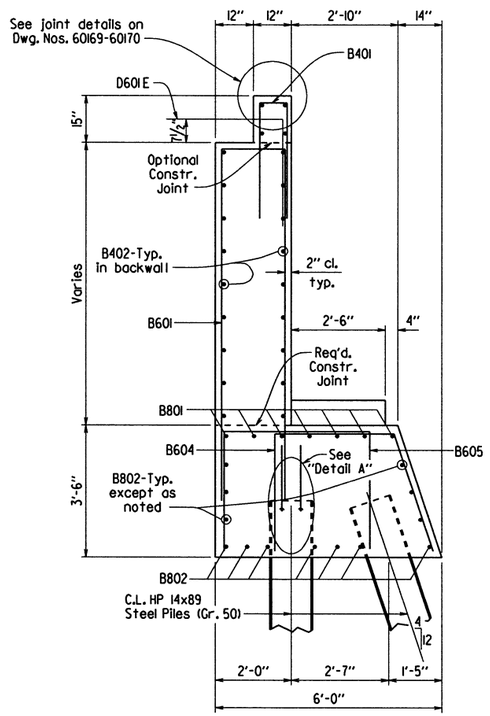
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				JOB NO.		009784	65	193
				①	07423 -	BENT 1	- 60132	



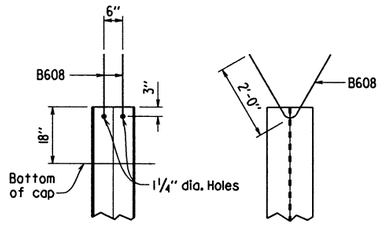
SECTION A-A

Scale: ½" = 1'-0"



SECTION B-B

Scale: ½" = 1'-0"



DETAIL A

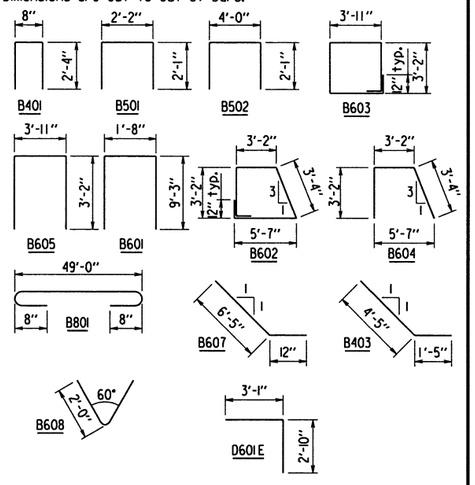
Scale: ½" = 1'-0"

BAR LIST - CAP AND BACKWALL

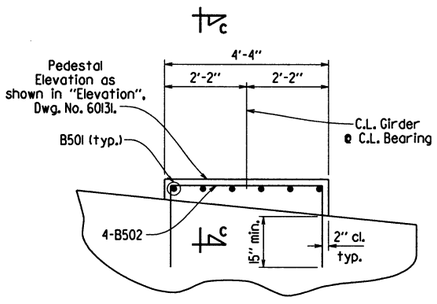
MARK	NO. REQ'D.	LENGTH	P.D.
B401	66	5'-2"	2"
B402	44	25'-5"	Str.
B403	6	5'-7"	2"
B501	30	6'-2"	2½"
B502	20	8'-0"	2½"
B601	66	19'-10"	4½"
B602	58	16'-5"	4½"
B603	58	15'-4"	4½"
B604	14	9'-4"	4½"
B605	14	9'-11"	4½"
B606	6	10'-2"	Str.
B607	22	7'-5"	4½"
B608	8	4'-0"	4½"
B801	7	50'-10"	6"
B802	13	49'-0"	Str.
D601E	46	5'-9"	4½"

BENDING DIAGRAMS

Dimensions are out to out of bars.

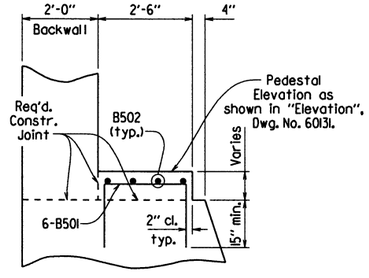


Note: Bars designated with an "E" suffix shall be epoxy coated.



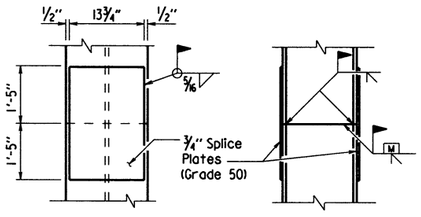
TYP. PEDESTAL DETAILS

Looking Back
Scale: ½" = 1'-0"



SECTION C-C

Scale: ½" = 1'-0"



Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile in wings only. Minimum spacing between splices shall be 5 feet. Cap piles shall not be spliced.

TYPICAL SPLICE DETAILS

No Scale

GENERAL NOTES FOR STEEL H-PILES

Steel H-Piles shall conform to AASHTO M 270, Grade 50.

See Bridge Layout for driving information.

Pile tips, driving points, splicing, and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling (HP 14x89)".

H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a 5/16" fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifcations for Highway Construction (2014 Edition).

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF BENT 1
BUFFALO RIVER

ROUTE SEC.

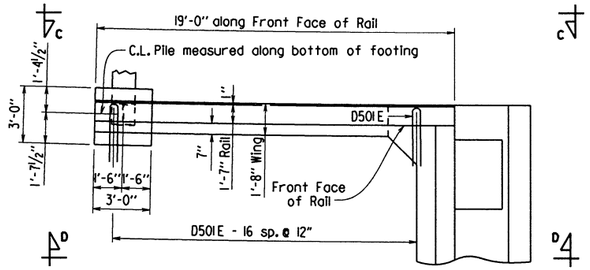
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: MAR. 2018 FILENAME: b009784x1_bl.dgn
CHECKED BY: BHS DATE: 9/5/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 3-2018

BRIDGE NO. 07423 DRAWING NO. 60132

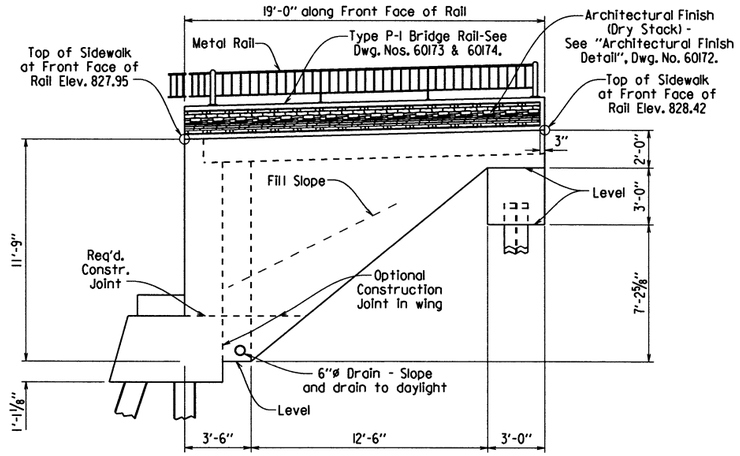
PRINT DATE: 9/5/2018

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.		009784	66	193
				①	07423 - BENT 1 - 60133			



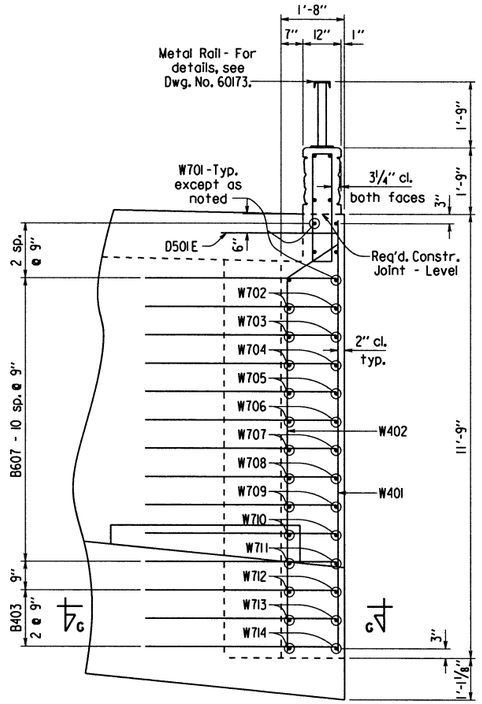
PLAN - WING A

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



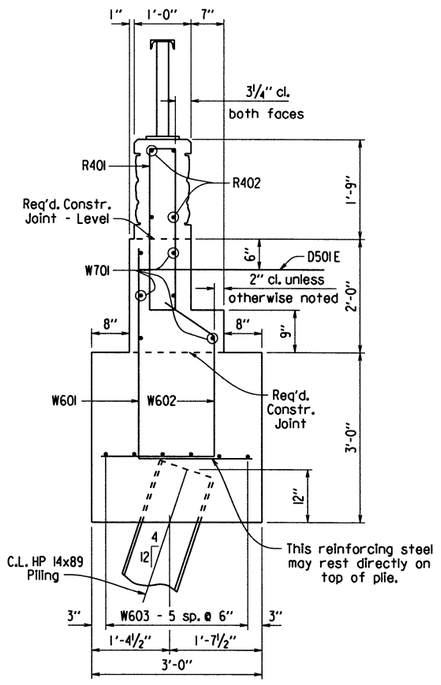
VIEW C-C

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



VIEW E-E

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

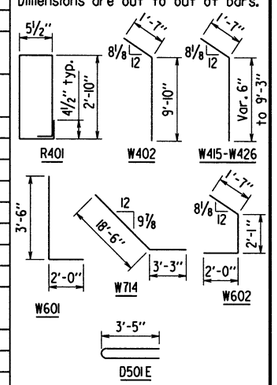


SECTION F-F

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

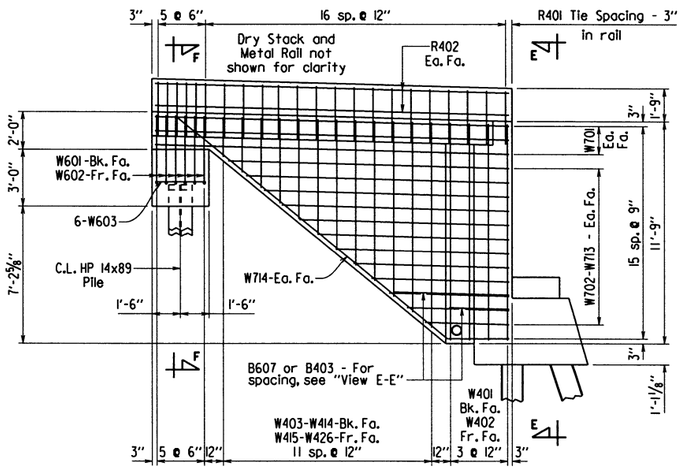
BAR LIST - WING A

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
W401	4	11'-5"	Str.	Dimensions are out to out of bars.
W402	4	11'-5"	3"	
W403-W414	1 each	Var. 2'-1" to 10'-10"	Str.	
W415-W426	1 each	Var. 2'-1" to 10'-10"	3"	
R401	22	6'-11"	2"	
R402	4	18'-8"	Str.	
W601	6	5'-4"	4½"	
W602	6	5'-5"	4½"	
W603	6	2'-8"	Str.	
W701	6	18'-8"	Str.	
W702-W713	2 each	Var. 4'-5" to 14'-10"	Str.	
W714	2	21'-8"	5¼"	
D501E	17	7'-1"	3¾"	



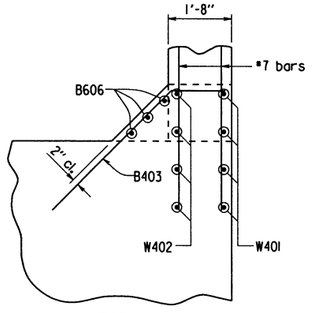
Note: Bars designated with an "E" suffix shall be epoxy coated.

Note: For details of Steel H-Piles, See Dwg. No. 60132.



VIEW D-D

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



SECTION G-G

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

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF BENT 1
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

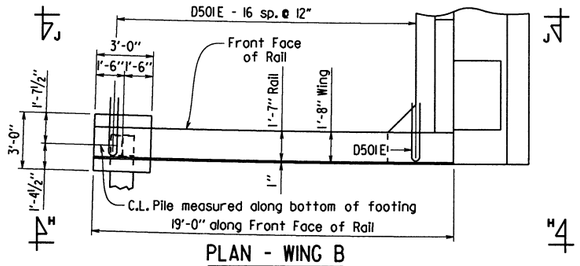
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: FEB. 2018 FILENAME: b009784x1_bl.dgn
CHECKED BY: BKS DATE: 9/4/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 2-2018

BRIDGE NO. 07423 DRAWING NO. 60133

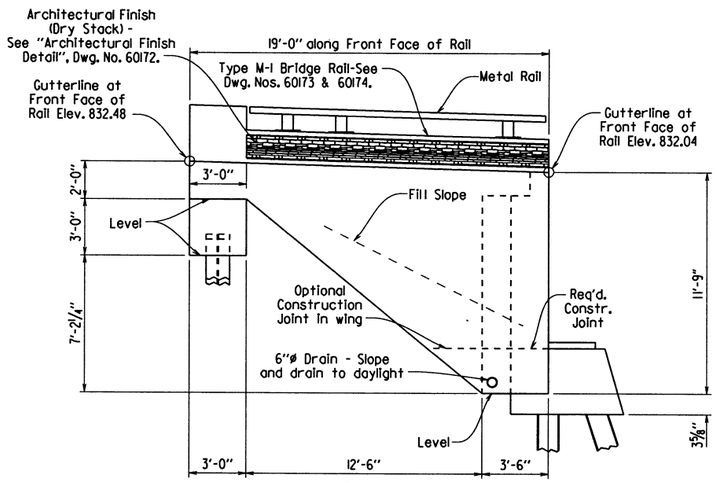
PRINT DATE: 9/4/2018

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.		009784	67	193
				07423 - BENT 1 - 60134				



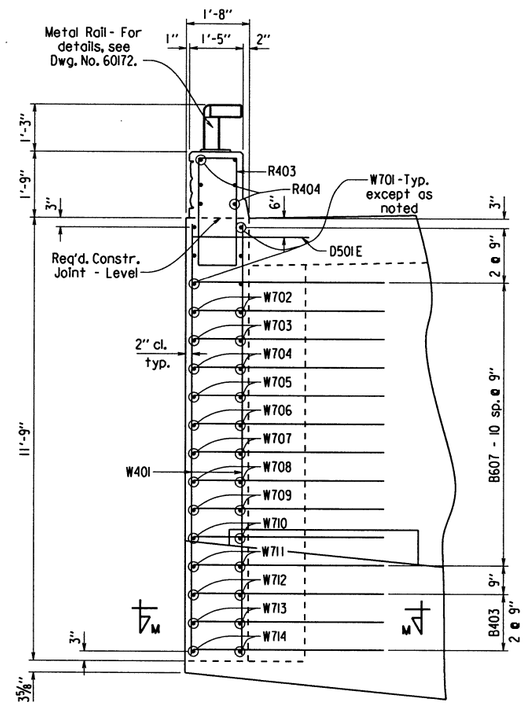
PLAN - WING B

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



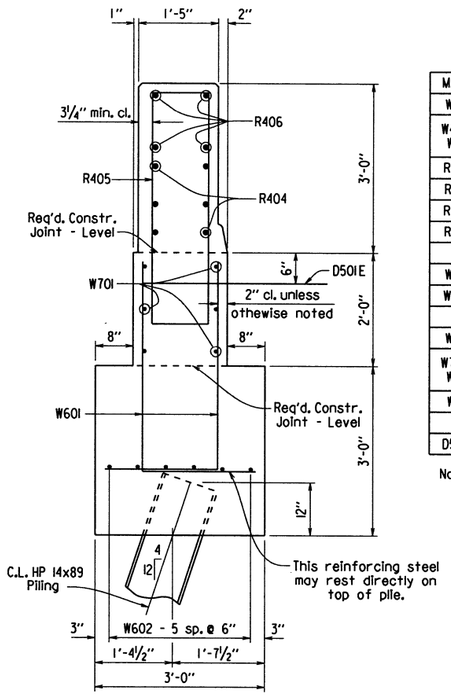
VIEW H-H

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



VIEW K-K

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

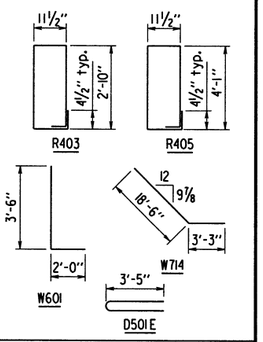


SECTION L-L

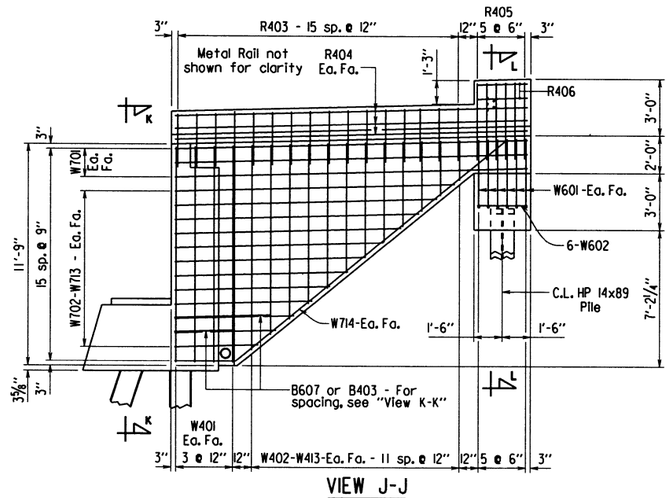
Scale: 3/4" = 1'-0"

BAR LIST - WING B

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
W401	8	11'-5"	Str.	Dimensions are out to out of bars.
W402-W413	2 each	Var. 2'-1" to 10'-10"	Str.	
R403	16	7'-11"	2"	
R404	6	18'-8"	Str.	
R405	6	10'-5"	2"	
R406	4	2'-8"	Str.	
W601	12	5'-4"	4½"	
W602	6	2'-8"	Str.	
W701	6	18'-8"	Str.	
W702-W713	2 each	Var. 4'-5" to 14'-10"	Str.	
W714	2	21'-9"	5¼"	
D501E	17	7'-1"	3¾"	

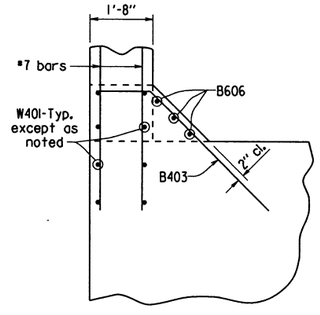


Note: Bars designated with an "E" suffix shall be epoxy coated.



VIEW J-J

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



SECTION M-M

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

Notes:
For placement of Type D name plate on rail, See Dwg. No. 60171.

For details of Steel H-Piles, See Dwg. No. 60132.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF BENT 1
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

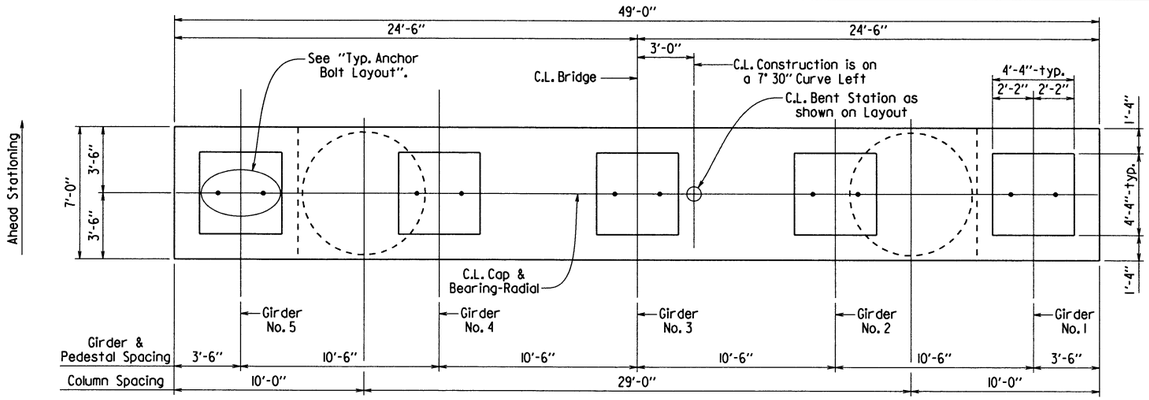
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: FEB. 2018
CHECKED BY: BWS DATE: 9/4/18
DESIGNED BY: LJB DATE: 2-2018
FILENAME: b009784x1_bt.dgn
SCALE: AS NOTED

BRIDGE NO. 07423 DRAWING NO. 60134

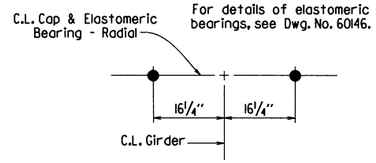
PRINT DATE: 9/4/2018

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.		009784	68	193
				① 07423 -		BENT 2		- 60135



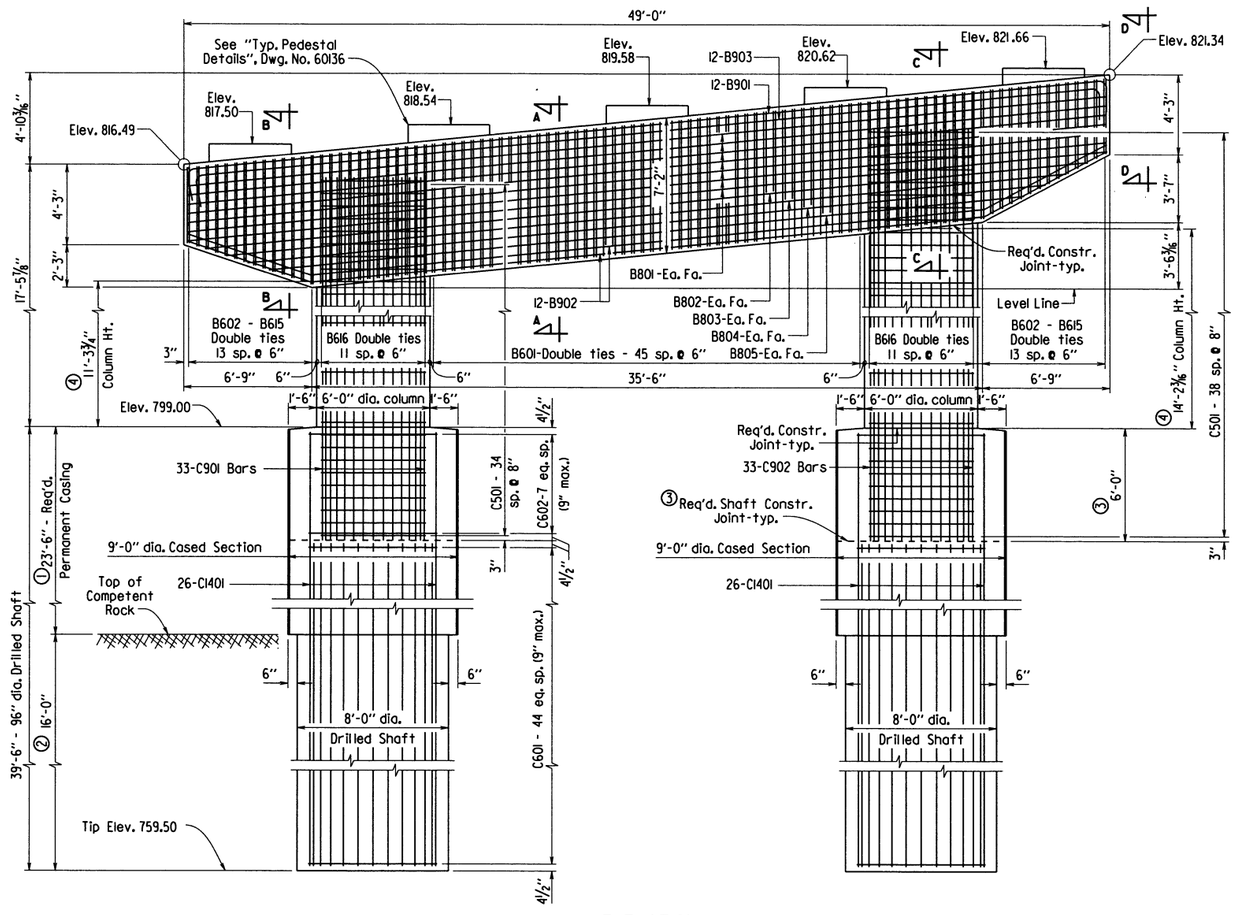
PLAN

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



TYP. ANCHOR BOLT LAYOUT

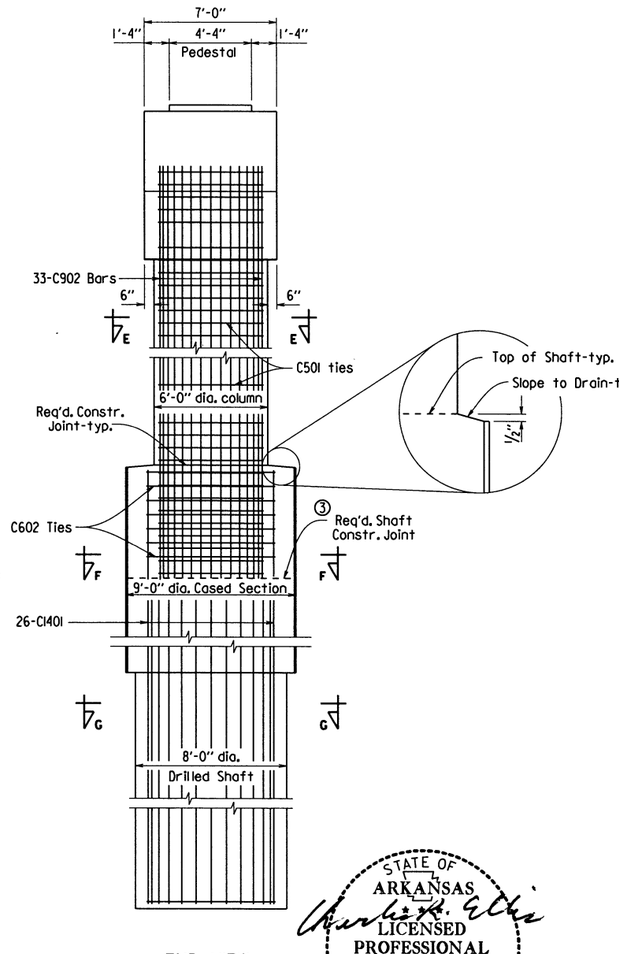
No Scale



ELEVATION

Looking Ahead

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



END VIEW

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

GENERAL NOTES

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

For all "Sections", see Dwg. No. 60136.

For add'l. information, see Layout.

1. Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 009784 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.
2. Minimum penetration into competent rock below permanent casing.
3. Remove sediment, laitance & weak concrete to sound concrete prior to setting column reinforcement. For addtional information, see Special Provision Job No. 009784 "Drilled Shaft Foundations".
4. Column Height measured at C.L. Column.

STATE OF ARKANSAS
CHARLES R. ELLIS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 2
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

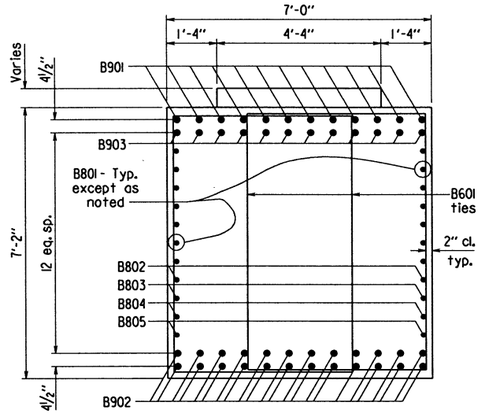
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: JAN. 2018 FILENAME: b009784x1_b2.dgn
CHECKED BY: BHS DATE: 9/4/18 SCALE: AS NOTED
DESIGNED BY: LSB DATE: 11-2017

BRIDGE NO. 07423 DRAWING NO. 60135

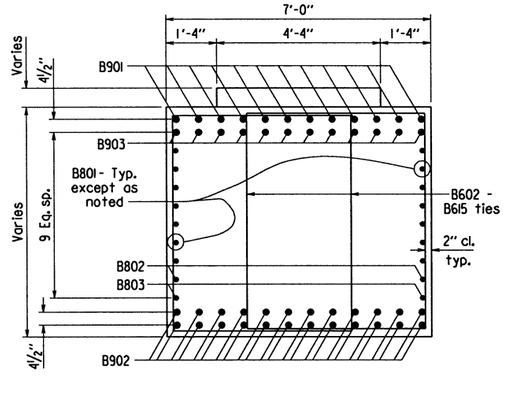
PRINT DATE: 9/5/2018

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.		009784	69	193
				① 07423 -		BENT 2		- 60136



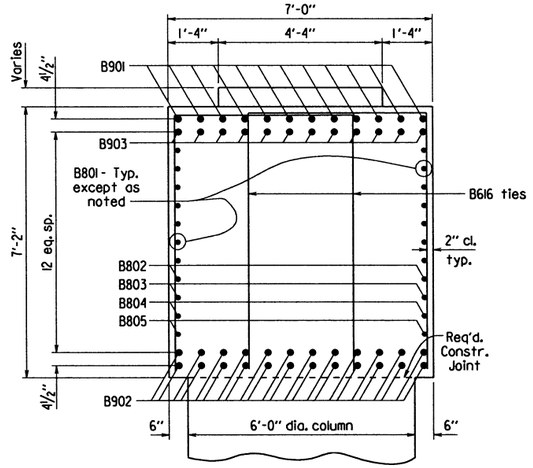
SECTION A-A

Scale: ½" = 1'-0"



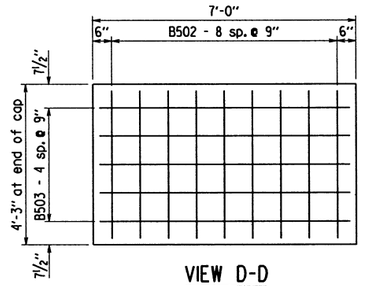
SECTION B-B

Scale: ½" = 1'-0"



SECTION C-C

Scale: ½" = 1'-0"

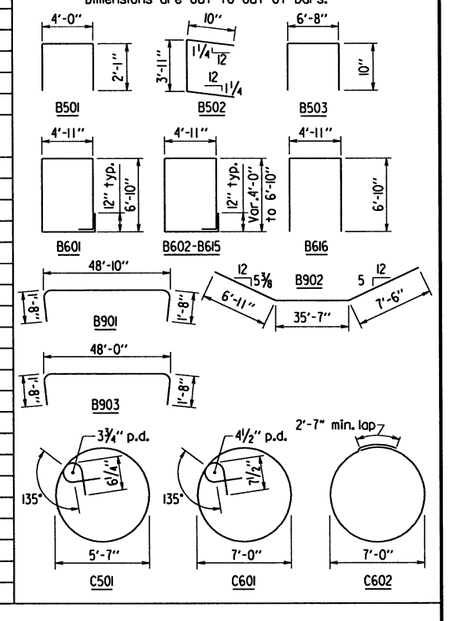


VIEW D-D

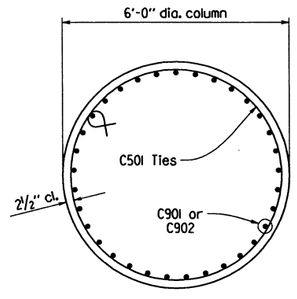
Typ. both ends of cap
Scale: ½" = 1'-0"

BAR LIST

	MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
	B501	60	8'-0"	2½"	Dimensions are out to out of bars.
	B502	18	5'-4"	3¾"	
	B503	10	8'-1"	3¾"	
	C501	74	18'-11"	3¾"	
	B601	92	24'-8"	4½"	
	B602-B615	4 each	Var. 19'-1" to 24'-8"	4½"	
	B616	48	18'-3"	4½"	
①	C601	90	23'-8"	4½"	
①	C602	16	24'-7"	4½"	
	B801	14	48'-10"	Str.	
	B802	2	46'-11"	Str.	
	B803	2	44'-8"	Str.	
	B804	2	42'-5"	Str.	
	B805	2	40'-2"	Str.	
	B901	12	51'-8"	9"	
	B902	24	50'-0"	9"	
	B903	12	50'-10"	9"	
	C901	33	23'-2"	Str.	
	C902	33	25'-9"	Str.	
①	C1401	52	39'-0"	Str.	

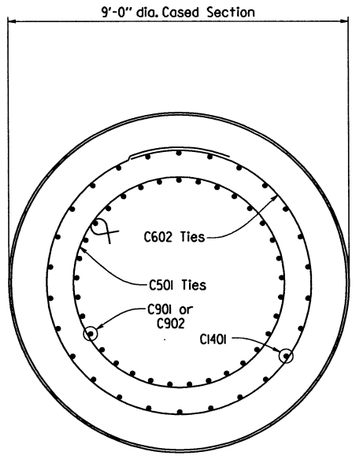


① Non-pay item - Subsidiary to the pay item "Drilled Shaft (96" Dia.)".



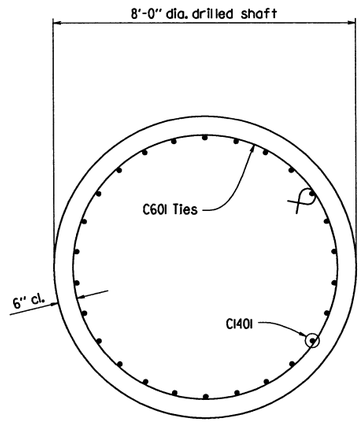
SECTION E-E

Scale: ½" = 1'-0"



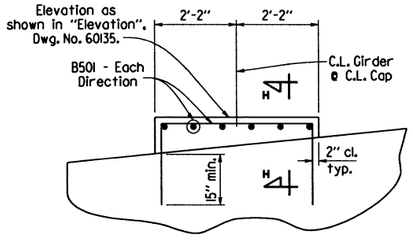
SECTION F-F

Scale: ½" = 1'-0"



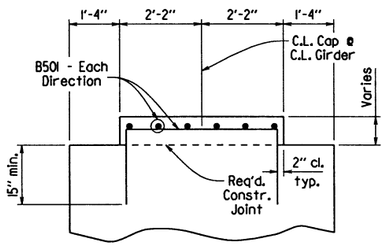
SECTION G-G

Scale: ½" = 1'-0"



TYP. PEDESTAL DETAILS

Scale: ½" = 1'-0"



SECTION H-H

Scale: ½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-23-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 2
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

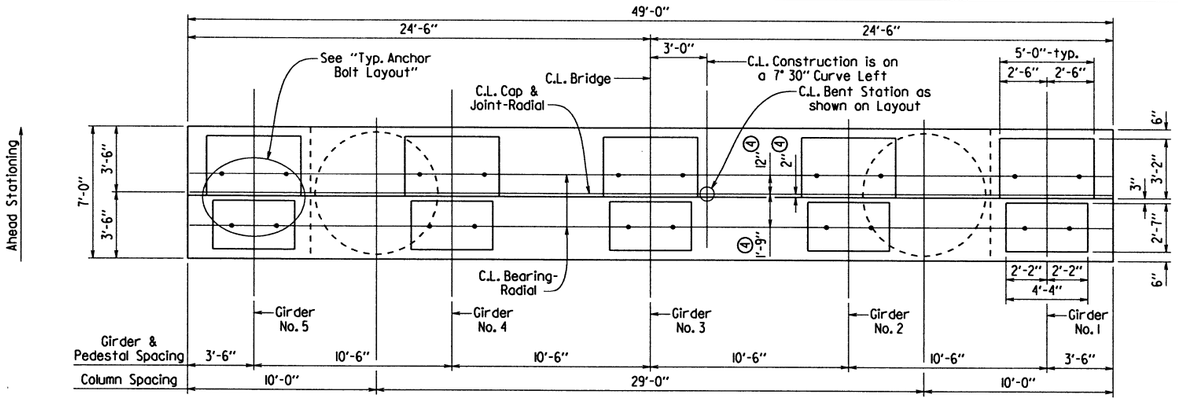
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: JAN. 2018 FILENAME: b009784x1_b2.dgn
CHECKED BY: BHS DATE: 10/23/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 11-2017

BRIDGE NO. 07423 DRAWING NO. 60136

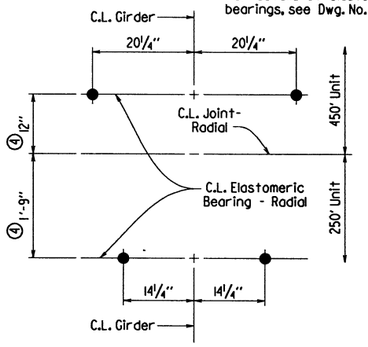
PRINT DATE: 10/22/2018

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.		009784	70	193
				(1) 07423 -		BENT 3		- 60137



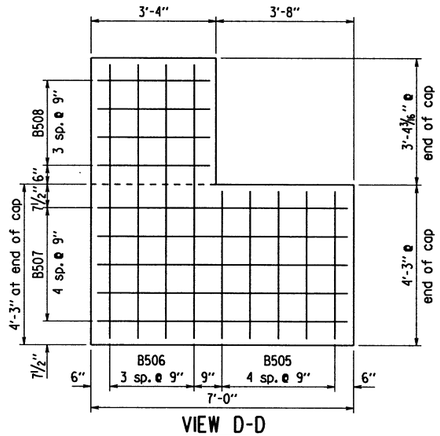
PLAN

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



TYP. ANCHOR BOLT LAYOUT

No Scale

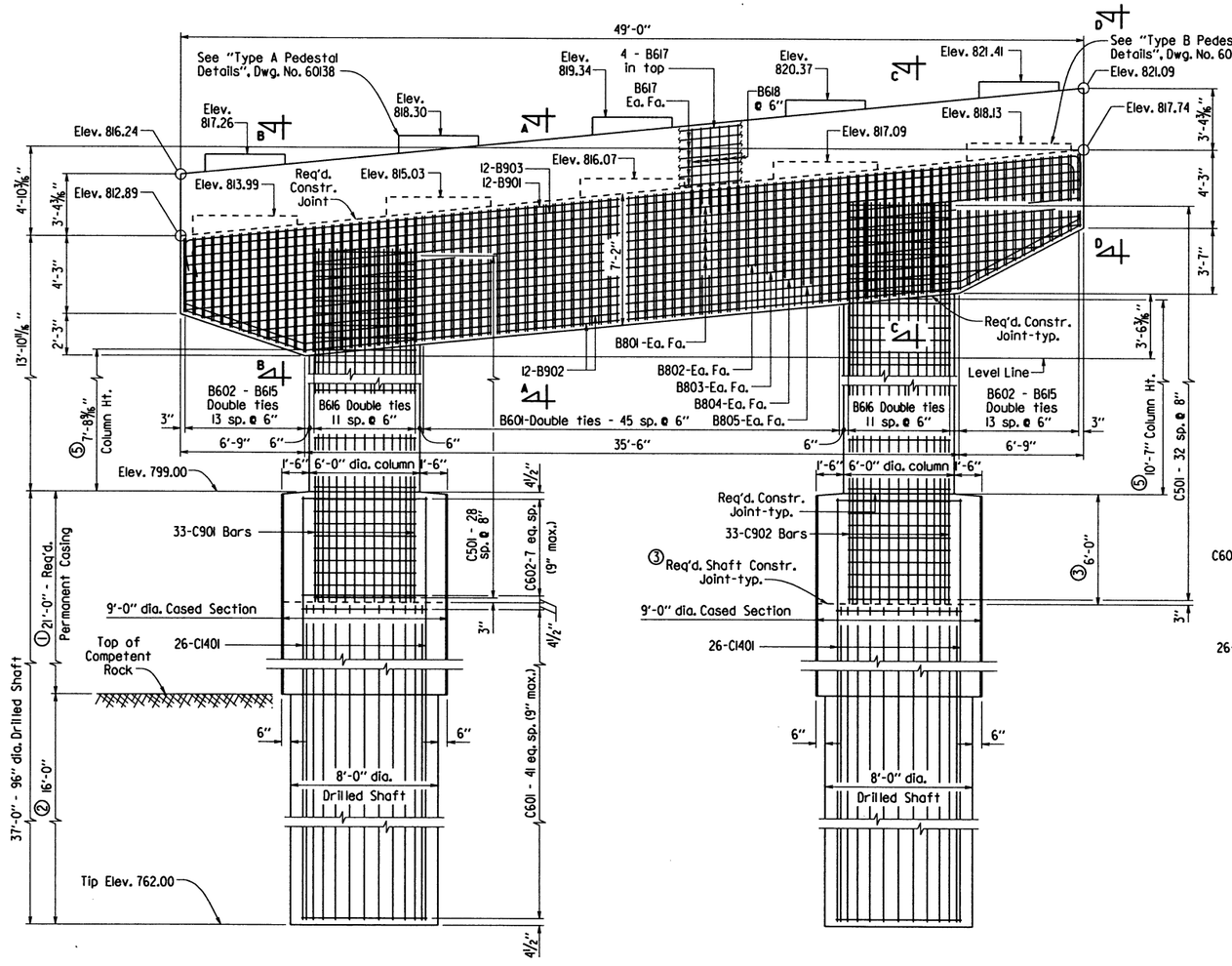


VIEW D-D

Typ. both ends of cap
Scale: 1/2" = 1'-0"

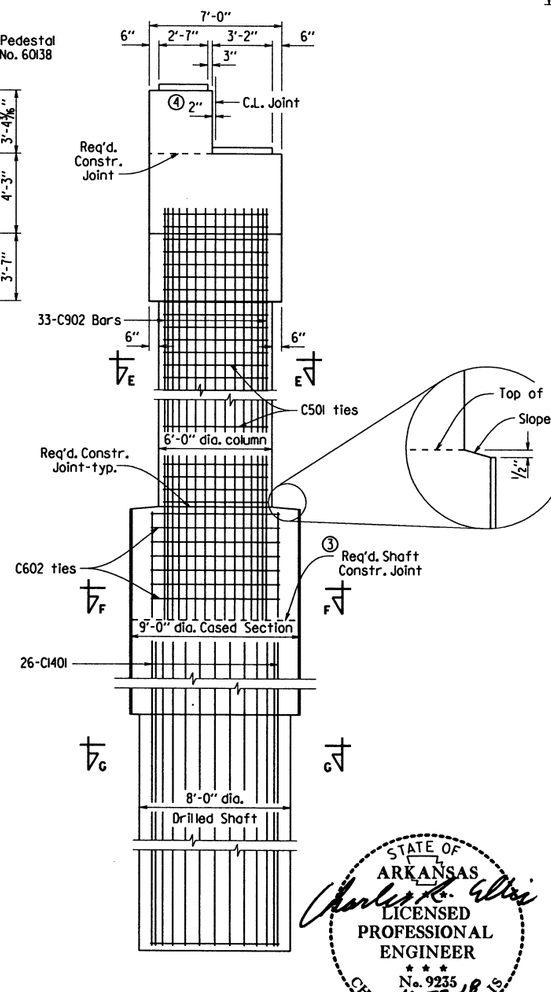
BEARING DISTANCES ALONG GIRDERS

Girder No.	250' Unit	450' Unit
1	1'-9½"	12⅝"
2	1'-9⅜"	12⅛"
3	1'-8⅝"	11⅝"
4	1'-8⅝"	11⅝"
5	1'-8⅝"	11⅝"



ELEVATION

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



END VIEW

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-23-18
CHARLES R. ELLIS
BRIDGE ENGINEER

GENERAL NOTES

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

For all "Sections", see Dwg. No. 60138.

For add'l. information, see Layout.

(1) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 009784 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

(2) Minimum penetration into competent rock below permanent casing.

(3) Remove sediment, laitance & weak concrete to sound concrete prior to setting column reinforcement. For addtional information, see Special Provision Job No. 009784 "Drilled Shaft Foundations".

(4) Measured along C.L. Construction. See "Bearing Distances Along Girders".

(5) Column Height measured at C.L. Column

SHEET 1 OF 2
DETAILS OF BENT 3
BUFFALO RIVER

ROUTE SEC.

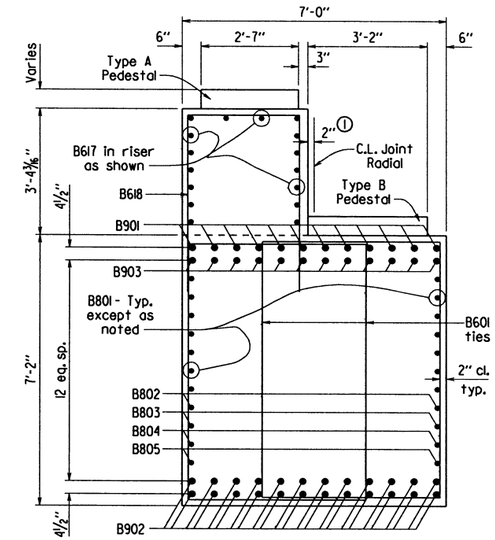
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: JAN. 2018 FILENAME: b009784xl_b3.dgn
CHECKED BY: BWS DATE: 10/23/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 11-2017

BRIDGE NO. 07423 DRAWING NO. 60137

PRINT DATE: 10/22/2018

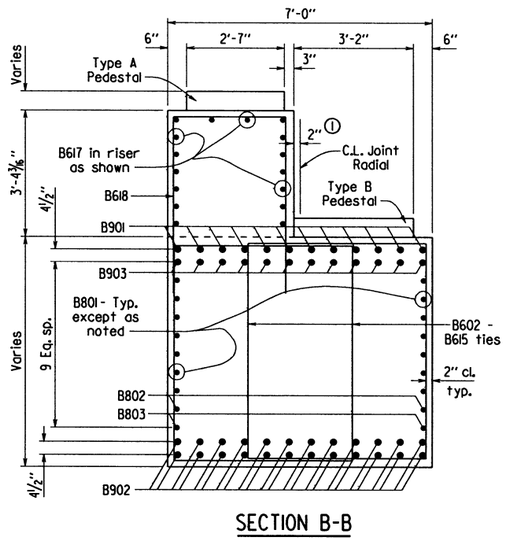
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	71	193
				① 07423 -		BENT 3	- 60138	



SECTION A-A

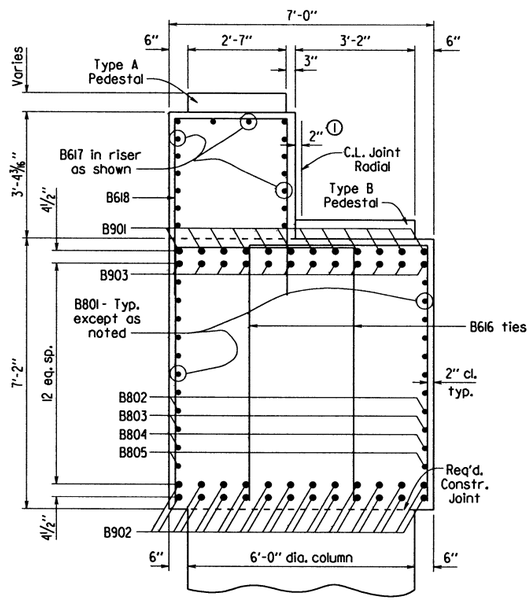
Scale: ½" = 1'-0"

① Measured along C.L. Construction



SECTION B-B

Scale: ½" = 1'-0"



SECTION C-C

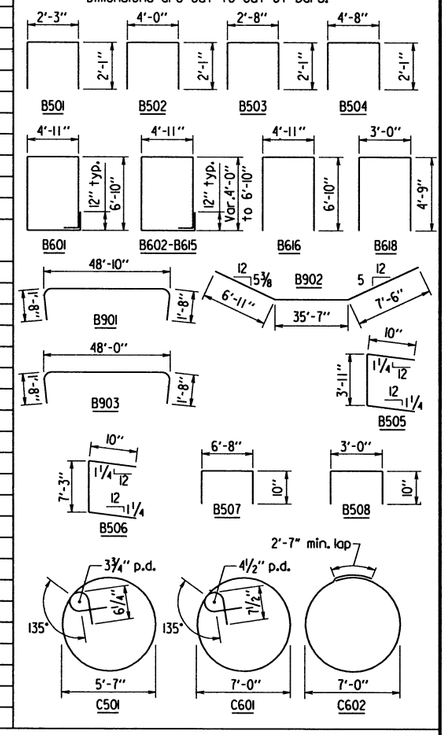
Scale: ½" = 1'-0"

BAR LIST

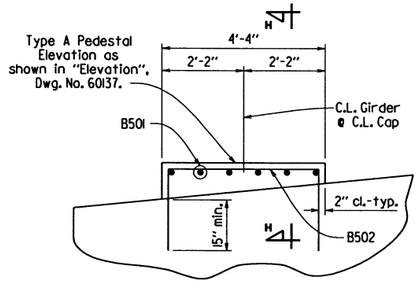
	MARK	NO. REQ'D.	LENGTH	P.D.
	B501	30	6'-2"	2½"
	B502	20	8'-0"	2½"
	B503	35	6'-7"	2½"
	B504	20	8'-8"	2½"
	B505	10	5'-4"	3¾"
	B506	8	8'-8"	3¾"
	B507	10	8'-1"	3¾"
	B508	8	4'-5"	3¾"
	C501	62	18'-11"	3¾"
	B601	92	24'-8"	4½"
	B602-B615	4 each	Var. 19'-1" to 24'-8"	4½"
	B616	48	18'-3"	4½"
	B617	16	48'-10"	Str.
	B618	98	12'-2"	4½"
②	C601	84	23'-8"	4½"
②	C602	16	24'-7"	4½"
	B801	14	48'-10"	Str.
	B802	2	46'-11"	Str.
	B803	2	44'-8"	Str.
	B804	2	42'-5"	Str.
	B805	2	40'-2"	Str.
	B901	12	51'-8"	9"
	B902	24	50'-0"	9"
	B903	12	50'-10"	9"
	C901	33	19'-2"	Str.
	C902	33	21'-10"	Str.
②	C1401	52	36'-6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.

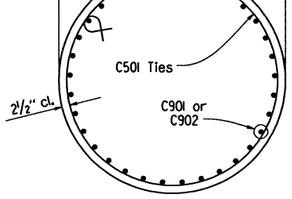


② Non-pay item - Subsidiary to the pay item "Drilled Shaft (96" Dia.)".



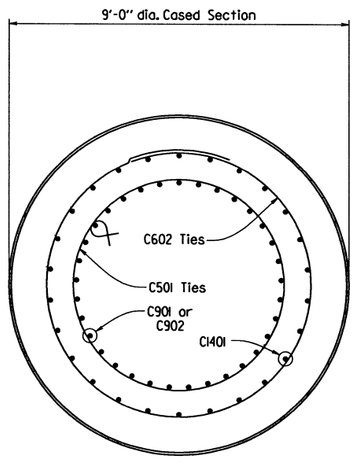
TYPE A PEDESTAL DETAILS

Looking Ahead
Scale: ½" = 1'-0"



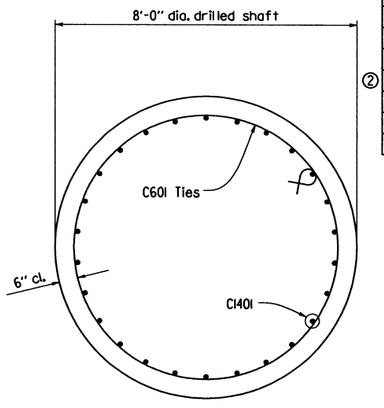
SECTION E-E

Scale: ½" = 1'-0"



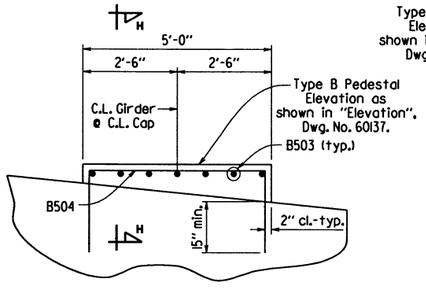
SECTION F-F

Scale: ½" = 1'-0"



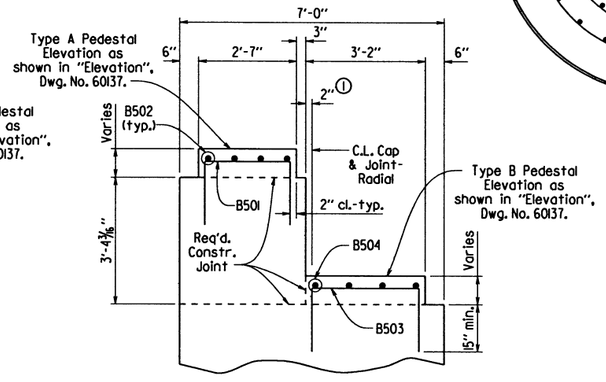
SECTION G-G

Scale: ½" = 1'-0"



TYPE B PEDESTAL DETAILS

Looking Back
Scale: ½" = 1'-0"



SECTION H-H

Scale: ½" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-23-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 3
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

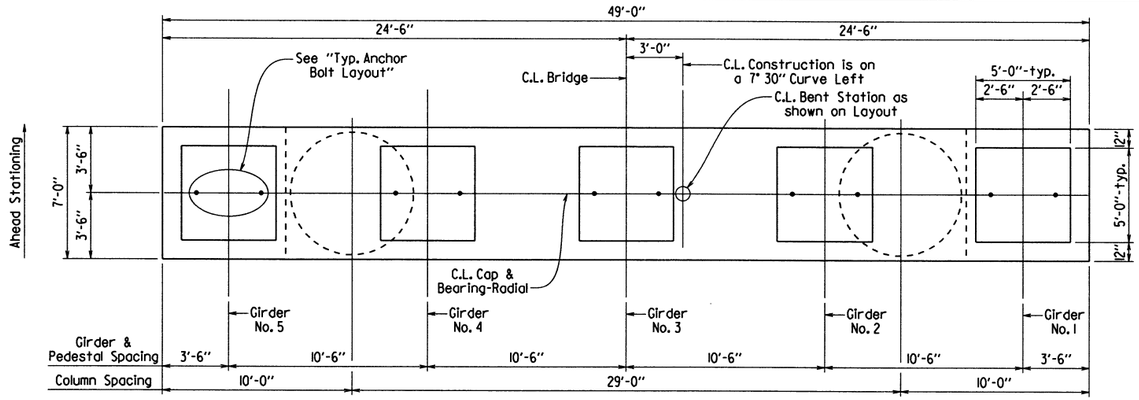
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: JAN. 2018 FILENAME: b009784x1_b3.dgn
CHECKED BY: BWS DATE: 10/23/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 11-2017

BRIDGE NO. 07423 DRAWING NO. 60138

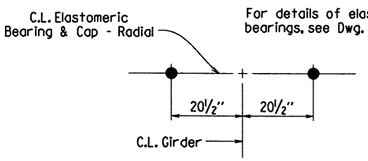
PRINT DATE: 10/22/2018

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.		009784	72	193
				① 07423 -		BENT 4		- 60139



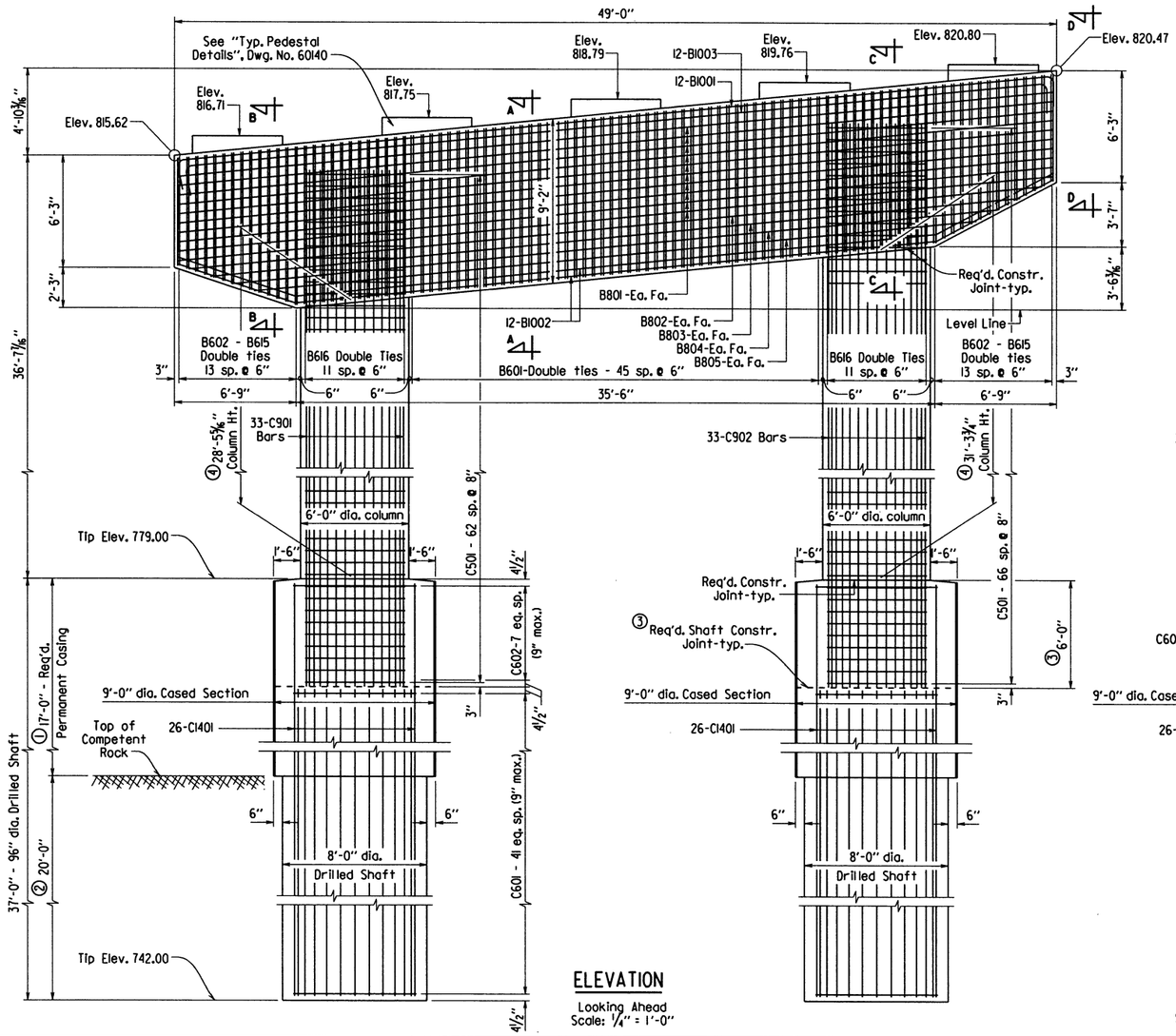
PLAN

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



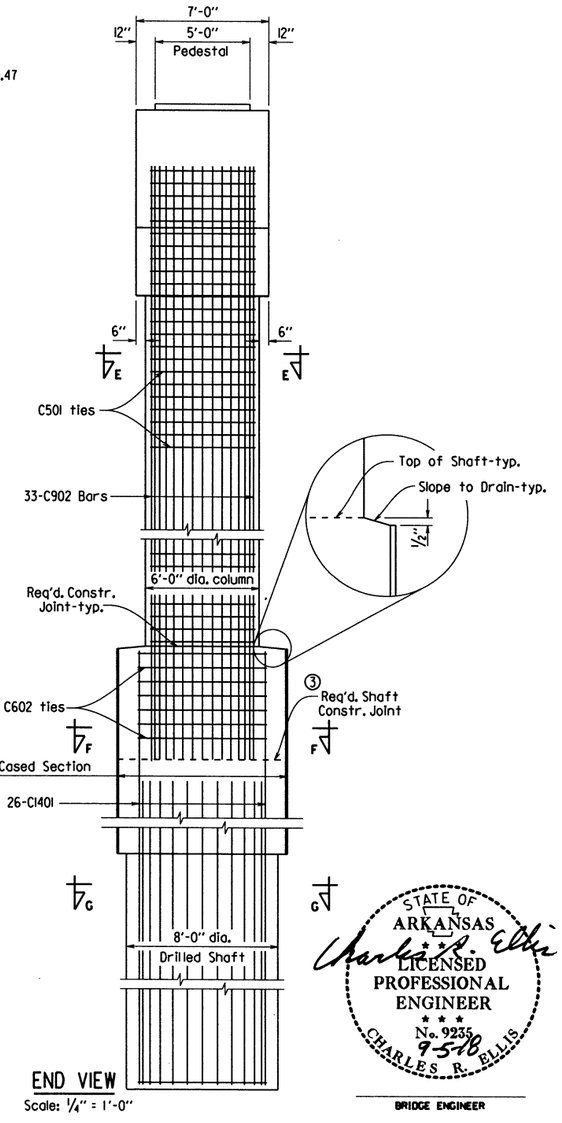
TYP. ANCHOR BOLT LAYOUT

No Scale



ELEVATION

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



END VIEW

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

GENERAL NOTES

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

For all "Sections", see Dwg. No. 60140.

For add'l. information, see Layout.

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job No. 009784 "Drilled Shaft Foundations". Permanent casing shall not extend below top of competent rock without approval from the Engineer.

② Minimum penetration into competent rock below permanent casing.

③ Remove sediment, laitance & weak concrete to sound concrete prior to setting column reinforcement. For addtional information, see Special Provision Job No. 009784 "Drilled Shaft Foundations".

④ Column Height measured at C.L. Column

SHEET 1 OF 2
DETAILS OF BENT 4
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

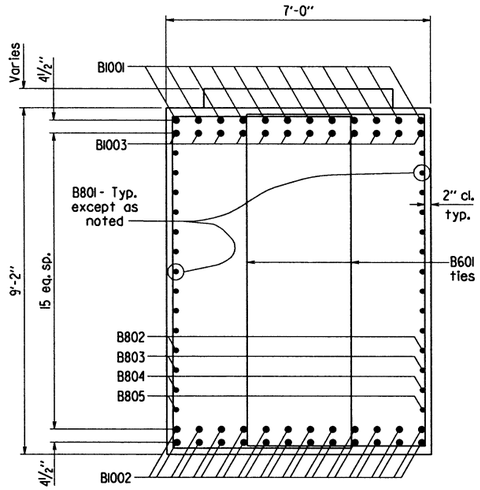
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: JAN. 2018 FILENAME: b009784x1_b4.dgn
CHECKED BY: BHS DATE: 9/4/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 11-2017

BRIDGE NO. 07423 DRAWING NO. 60139

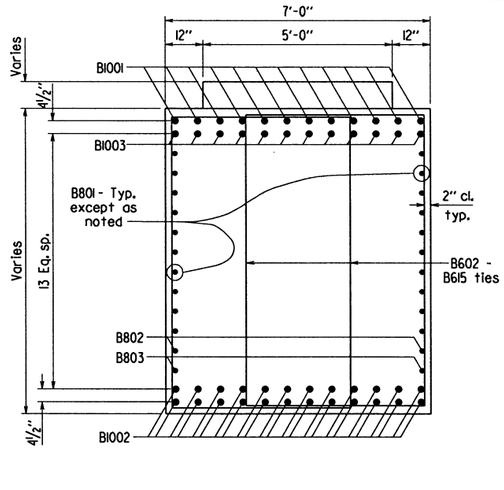
PRINT DATE: 9/4/2018

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.		009784	73	193
				①	07423 -	BENT 4	- 60140	



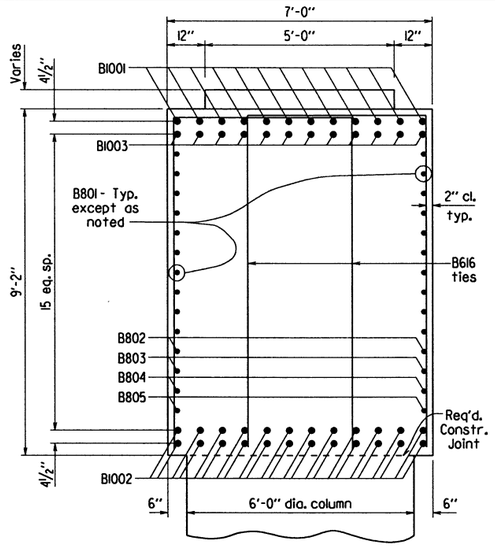
SECTION A-A

Scale: ½" = 1'-0"



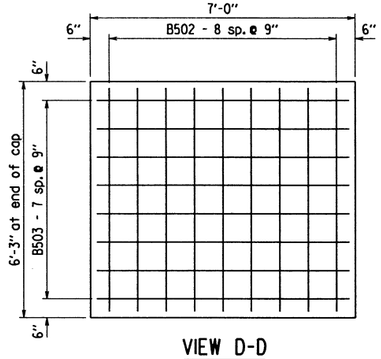
SECTION B-B

Scale: ½" = 1'-0"



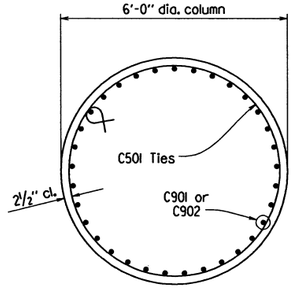
SECTION C-C

Scale: ½" = 1'-0"



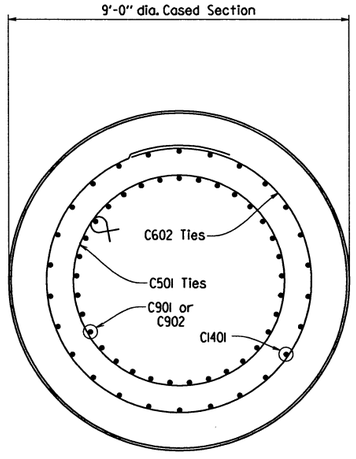
VIEW D-D

Typ. both ends of cap
Scale: ½" = 1'-0"



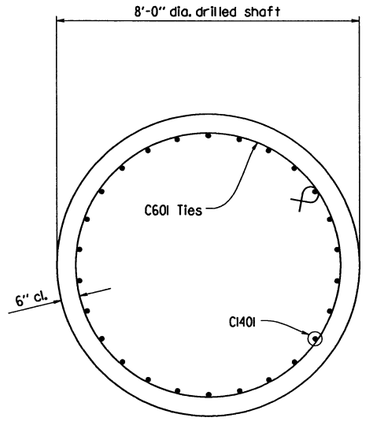
SECTION E-E

Scale: ½" = 1'-0"



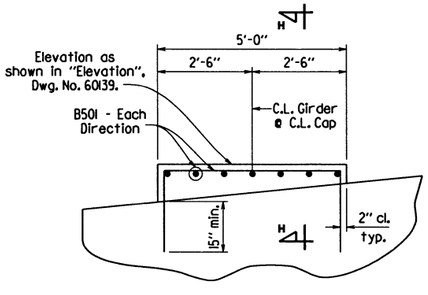
SECTION F-F

Scale: ½" = 1'-0"



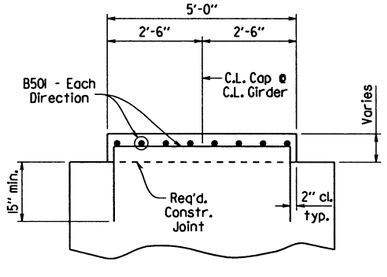
SECTION G-G

Scale: ½" = 1'-0"



TYP. PEDESTAL DETAILS

Scale: ½" = 1'-0"



SECTION H-H

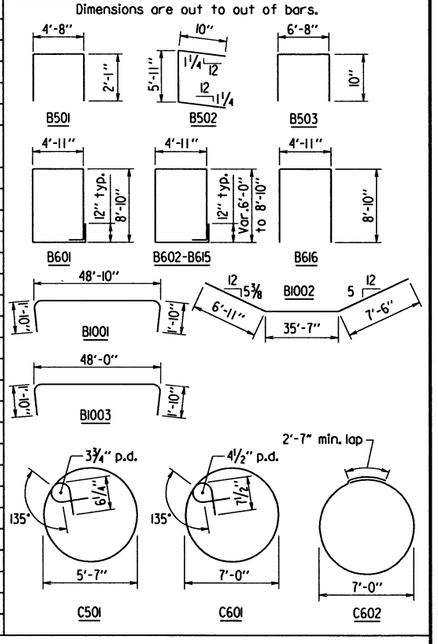
Scale: ½" = 1'-0"

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B501	75	8'-8"	2½"
B502	18	7'-4"	3¾"
B503	16	8'-1"	3¾"
C501	130	18'-11"	3¾"
B601	92	28'-8"	4½"
B602-B615	4 each	Var. 23'-1" to 28'-8"	4½"
B616	48	22'-3"	4½"
③ C601	84	23'-8"	4½"
③ C602	16	24'-7"	4½"
B801	20	48'-10"	Str.
B802	2	47'-7"	Str.
B803	2	45'-2"	Str.
B804	2	42'-9"	Str.
B805	2	40'-3"	Str.
C901	33	41'-10"	Str.
C902	33	44'-6"	Str.
B1001	12	52'-0"	10"
B1002	24	50'-0"	10"
B1003	12	51'-2"	10"
③ C1401	52	36'-6"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



③ Non-pay item - Subsidiary to the pay item "Drilled Shaft (96" Dia.)".

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-23-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 4
BUFFALO RIVER

ROUTE SEC.

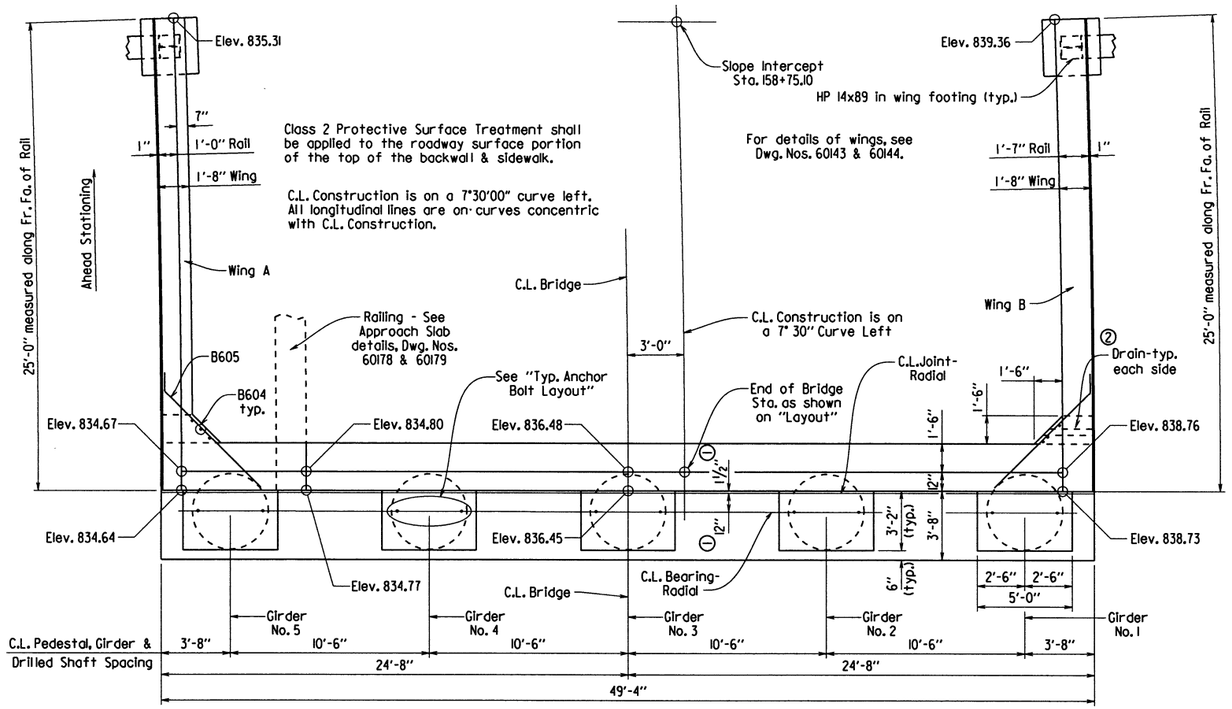
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: JAN. 2018 FILENAME: b009784x1_b4.dgn
CHECKED BY: BWS DATE: 10/23/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 11-2017

BRIDGE NO. 07423 DRAWING NO. 60140

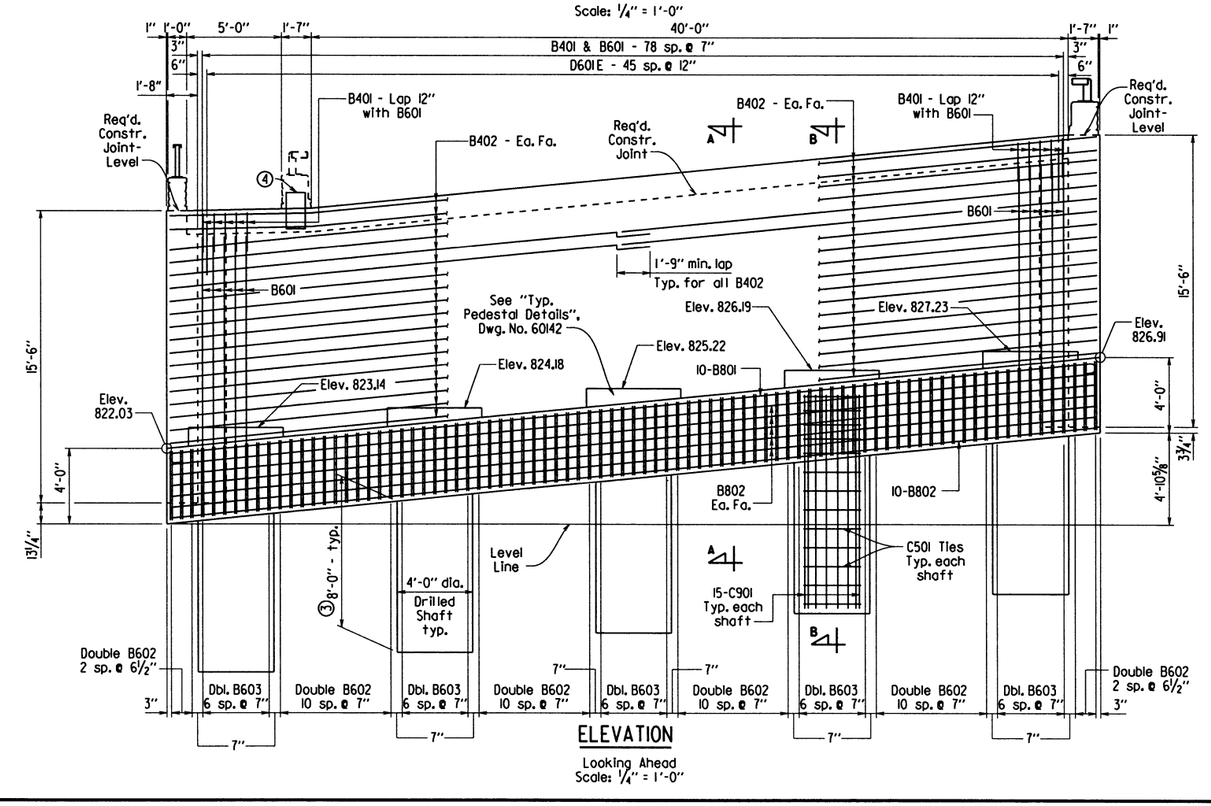
PRINT DATE: 10/22/2018

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.		009784	74	193
				① 07423 -		BENT 5		- 60141



PLAN

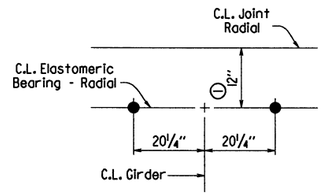
Scale: 1/4" = 1'-0"



ELEVATION

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

For details of elastomeric bearings, see Dwg. No. 60146



TYP. ANCHOR BOLT LAYOUT

No Scale

BEARING DISTANCES ALONG GIRDERS

Girder No. 1	12⅝"
Girder No. 2	12⅛"
Girder No. 3	11⅝"
Girder No. 4	11⅛"
Girder No. 5	11⅝"

① Measured along C.L. Construction. See "Bearing Distances Along Girders".

② See "Details of Backfill and Drainage - Bent 5", Dwg. No. 60145.

③ Minimum penetration into competent rock. See Special Provision Job No. 009784 "Drilled Shaft Foundations" for additional information.

④ For reinforcing steel from top of backwall to interior rail on approach slab, see Dwg. No. 60179.

GENERAL NOTES

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

For details of Steel H-Piles, see Dwg. No. 60132.

For all "Sections", see Dwg. No. 60142.

No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the deck pour has been made. Refer to the "Expansion Device Installation at End Bents" note, see Dwg. No. 60169. No heavy construction equipment or backfill shall be allowed directly behind the backwall until the concrete for the span has been completed.

For additional information, see Layout.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF BENT 5
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

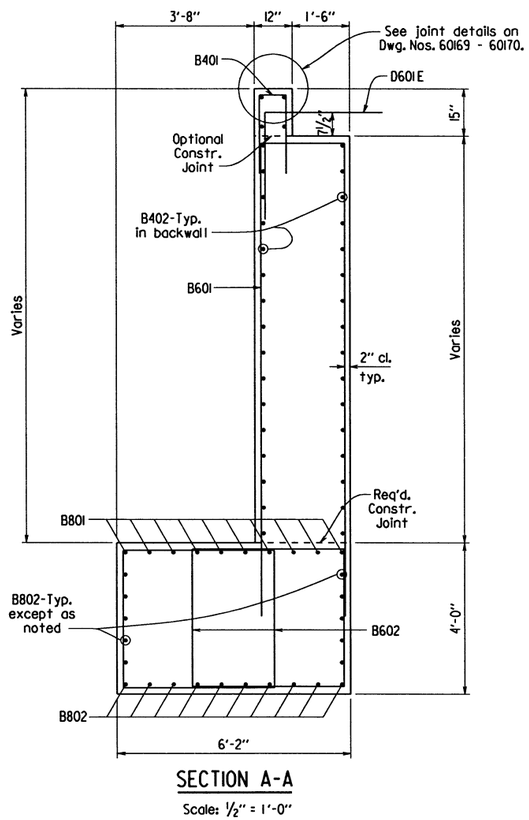
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: FEB. 2018 FILENAME: b009784x1_b5.dgn
CHECKED BY: BHS DATE: 9/4/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 1-2018

BRIDGE NO. 07423 DRAWING NO. 60141

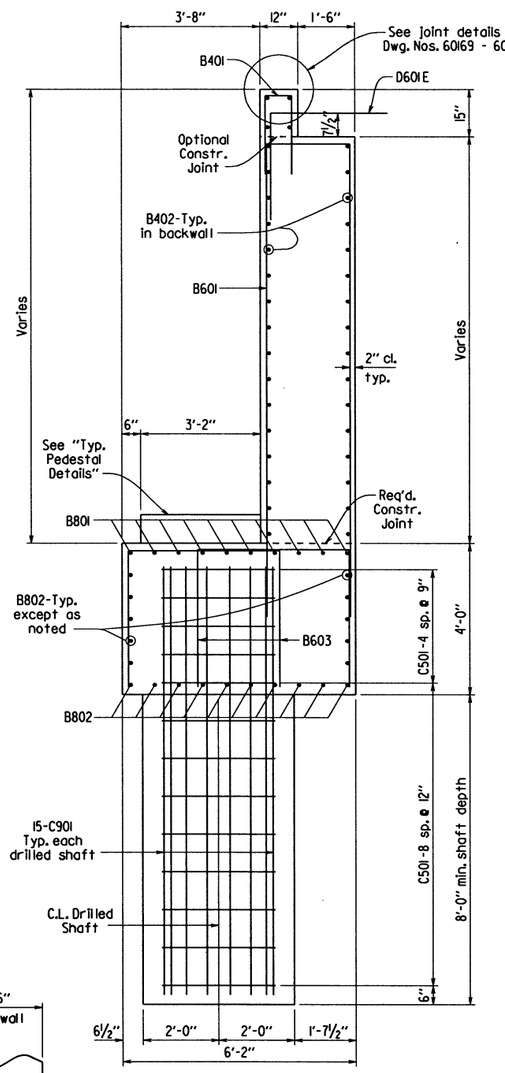
PRINT DATE: 9/4/2018

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.		009784	75	193
				① 07423 -		BENT 5	- 60142	



SECTION A-A

Scale: ½" = 1'-0"



SECTION B-B

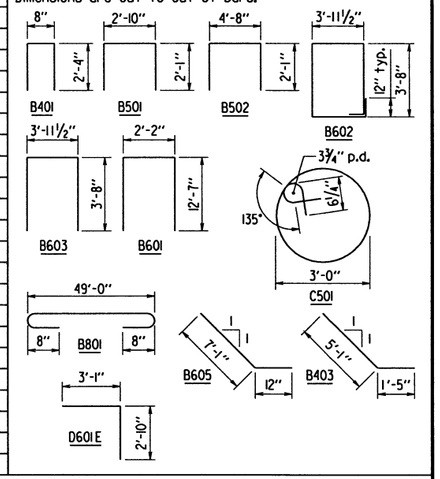
Scale: ½" = 1'-0"

BAR LIST - CAP, SHAFT AND BACKWALL

	MARK	NO. REQ'D.	LENGTH	P.D.
	B401	79	5'-2"	2"
	B402	72	25'-6"	Str.
	B403	6	6'-6"	2"
	B501	35	6'-10"	2½"
	B502	25	8'-8"	2½"
①	C501	65	10'-10"	3¾"
	B601	79	27'-0"	4½"
	B602	100	16'-5"	4½"
	B603	70	10'-0"	4½"
	B604	6	13'-11"	Str.
	B605	32	8'-1"	4½"
	B801	10	50'-10"	6"
	B802	10	49'-0"	Str.
①	C901	75	11'-6"	Str.
	D601E	46	5'-9"	4½"

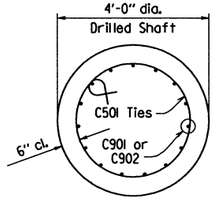
BENDING DIAGRAMS

Dimensions are out to out of bars.



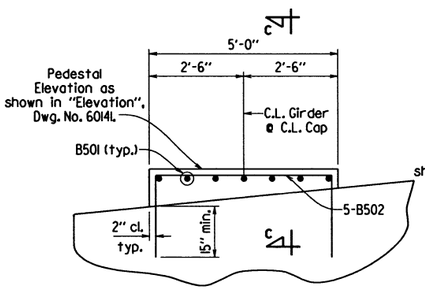
Note: Bars designated with an "E" suffix shall be epoxy coated.

① Non-pay item - Subsidiary to the pay item "Drilled Shaft (48" Dia.)".



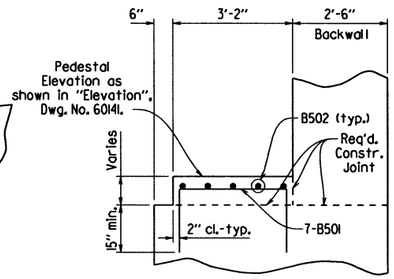
TYP. SECTION THRU SHAFT

Scale: ½" = 1'-0"



TYP. PEDESTAL DETAILS

Looking Ahead
Scale: ½" = 1'-0"



SECTION C-C

Scale: ½" = 1'-0"

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF BENT 5
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

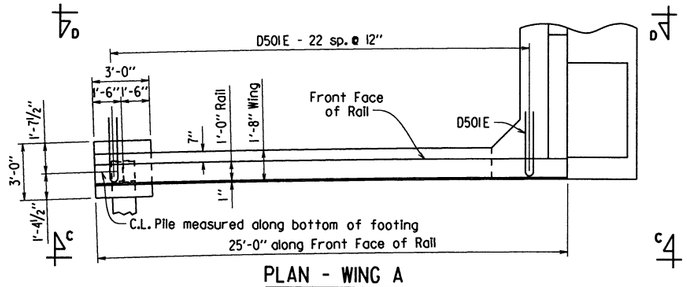
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: FEB. 2018 FILENAME: b009784x1.b5.dgn
CHECKED BY: CRE DATE: 10/23/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 1-2018

BRIDGE NO. 07423 DRAWING NO. 60142

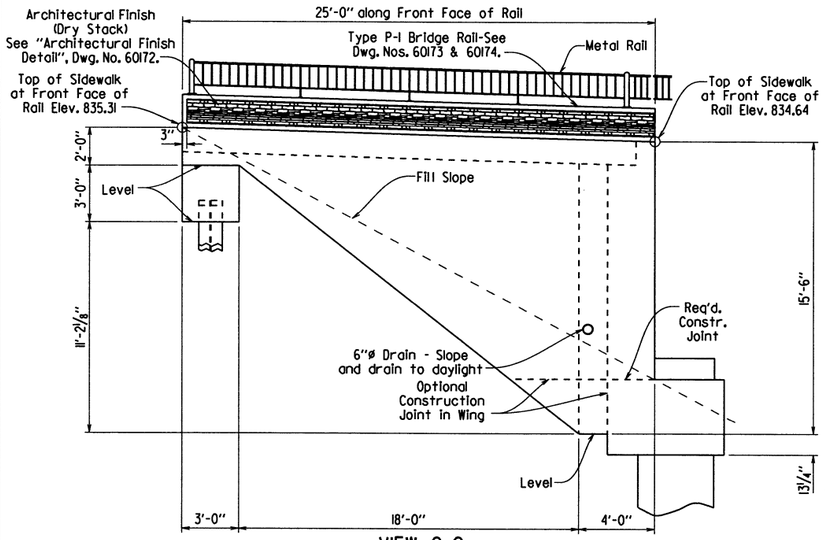
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				JOB NO.		009784	76	193
				1	07423 -	BENT 5	- 60143	



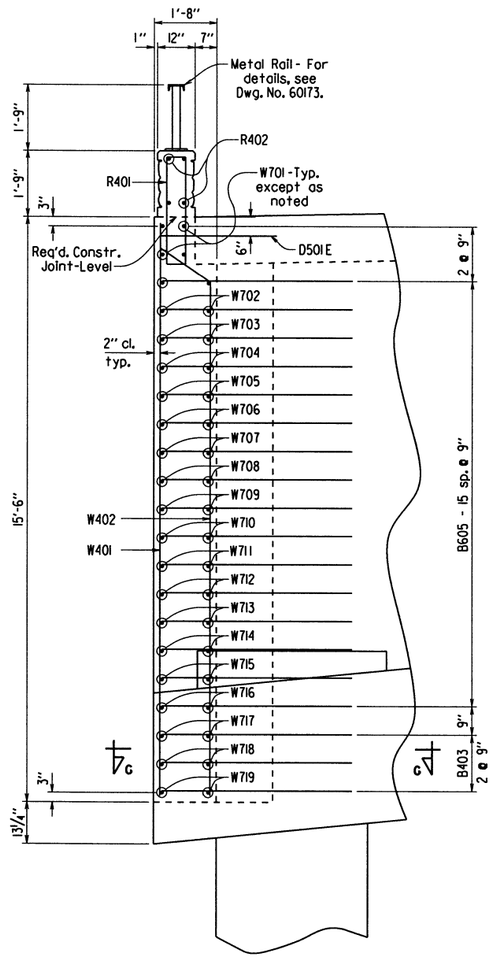
PLAN - WING A

Scale: ¼" = 1'-0"



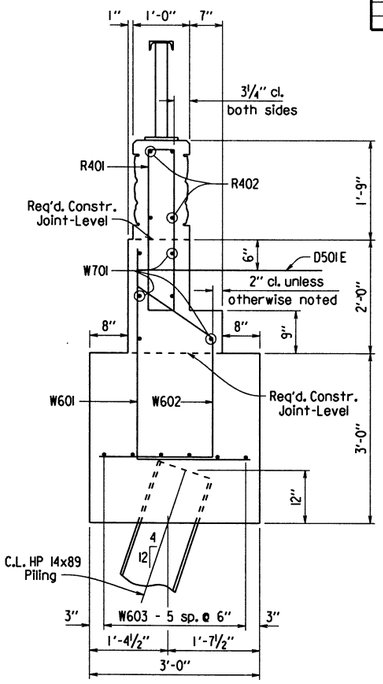
VIEW C-C

Scale: ¼" = 1'-0"



VIEW E-E

Scale: ½" = 1'-0"

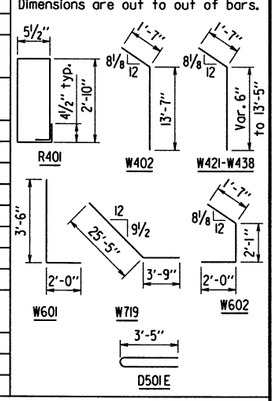


SECTION F-F

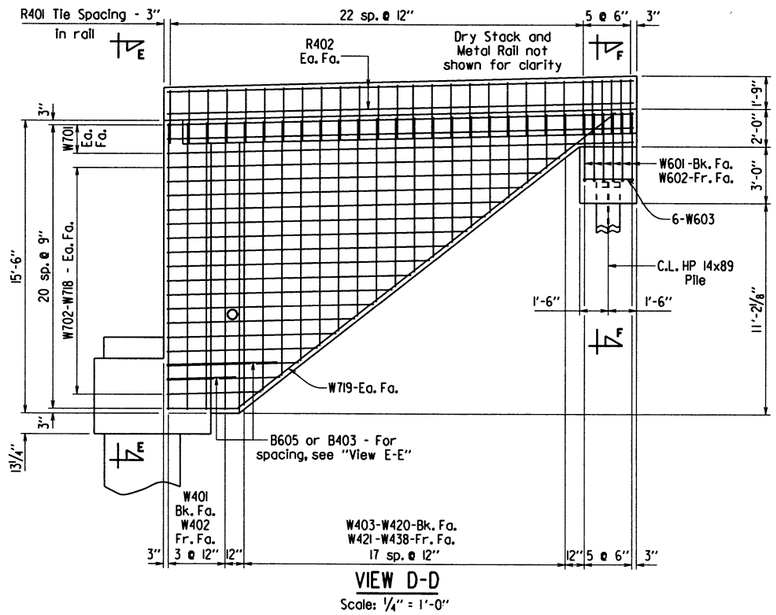
Scale: ¾" = 1'-0"

BAR LIST - WING A

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
W401	4	15'-2"	Str.	Dimensions are out to out of bars.
W402	4	15'-2"	3"	
W403-W420	1 each	Var. 2'-1" to 15'-0"	Str.	
W421-W438	1 each	Var. 2'-1" to 15'-0"	3"	
R401	28	6'-11"	2"	
R402	4	24'-8"	Str.	
W601	6	5'-4"	4½"	
W602	6	5'-5"	4½"	
W603	6	2'-8"	Str.	
W701	6	24'-8"	Str.	
W702-W718	2 each	Var. 5'-0" to 20'-9"	Str.	
W719	2	29'-2"	5¼"	
D501E	23	7'-1"	3¾"	

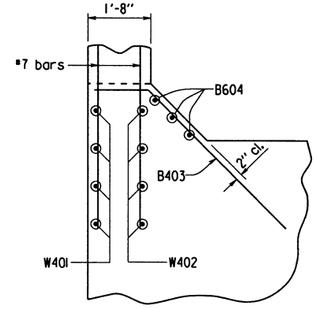


Note: Bars designated with an "E" suffix shall be epoxy coated.



VIEW D-D

Scale: ¼" = 1'-0"



SECTION G-G

Scale: ½" = 1'-0"

Note: For details of Steel H-Piles, See Dwg. No. 60132.

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF BENT 5
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

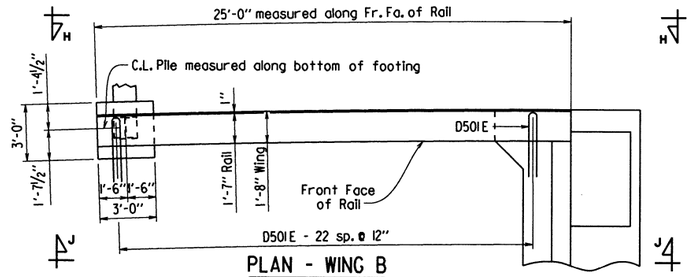
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: FEB. 2018 FILENAME: b009784x1_b5.dgn
CHECKED BY: BHS DATE: 9/4/18 SCALE: AS NOTED
DESIGNED BY: LJS DATE: 1-2018

BRIDGE NO. 07423 DRAWING NO. 60143

PRINT DATE: 9/4/2018

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.		009784	77	193
				07423 -		BENT 5		- 60144

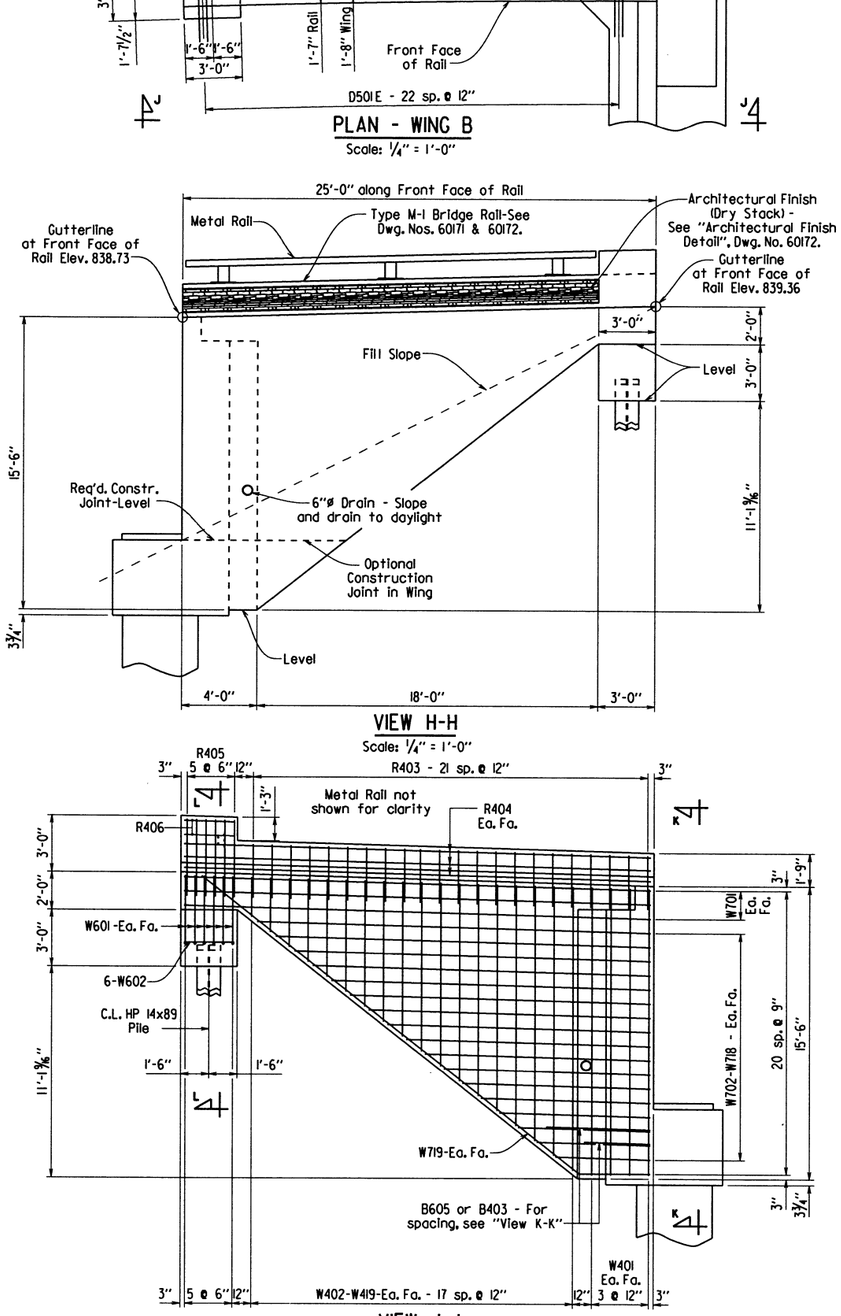


PLAN - WING B

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

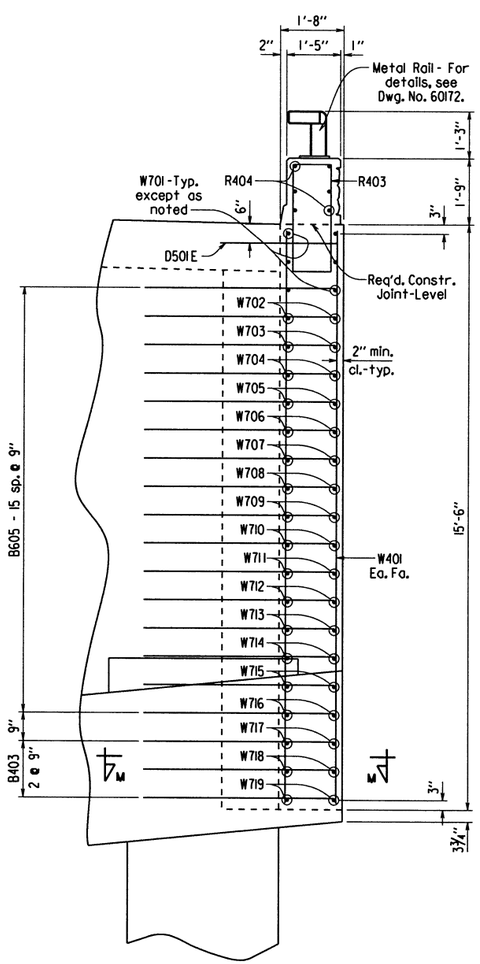
VIEW H-H

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



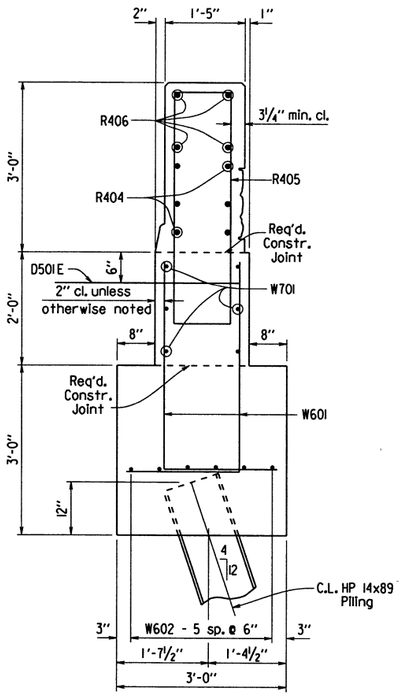
VIEW J-J

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



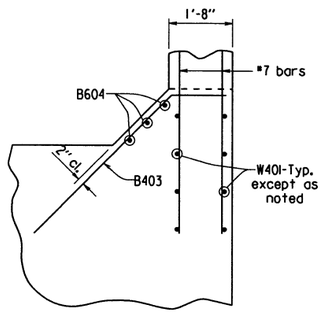
VIEW K-K

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



SECTION L-L

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

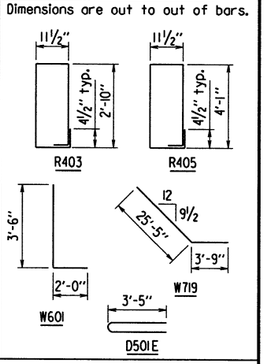


SECTION M-M

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

BAR LIST - WING B

MARK	NO. REQ'D.	LENGTH	P.D.	BENDING DIAGRAMS
W401	8	15'-2"	Str.	Dimensions are out to out of bars.
W402-W419	2 each	Var. 2'-1" to 15'-0"	Str.	
R403	22	7'-11"	2"	
R404	6	24'-8"	Str.	
R405	6	10'-5"	2"	
R406	4	2'-8"	Str.	
W601	12	5'-4"	4½"	
W602	6	2'-8"	Str.	
W701	6	24'-8"	Str.	
W702-W718	2 each	Var. 5'-0" to 20'-9"	Str.	
W719	2	29'-2"	5¼"	
D501E	23	7'-1"	3¾"	



Note: Bars designated with an "E" suffix shall be epoxy coated.

Note: For details of Steel H-Piles, See Dwg. No. 60132.

STATE OF ARKANSAS
CHARLES R. ELLIS
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No. 9235
9-5-18
BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF BENT 5
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

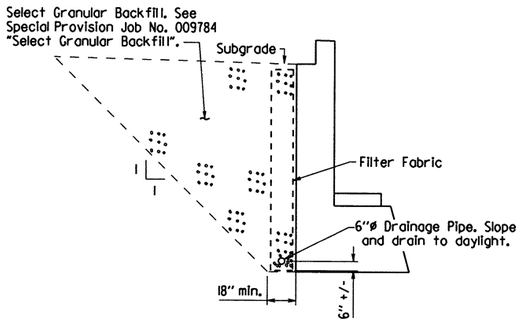
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CHECKED BY: BHS DATE: 9/4/18 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 8-2018

BRIDGE NO. 07423 DRAWING NO. 60144

PRINT DATE: 9/4/2018

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.		009784	78	193

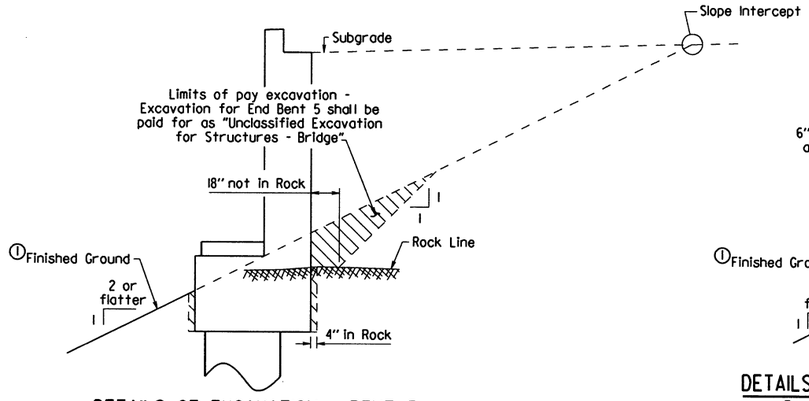
① 07423 - EXCAV. & BACKFILL - 60145



DETAILS OF BACKFILL AND DRAINAGE - BENT 1

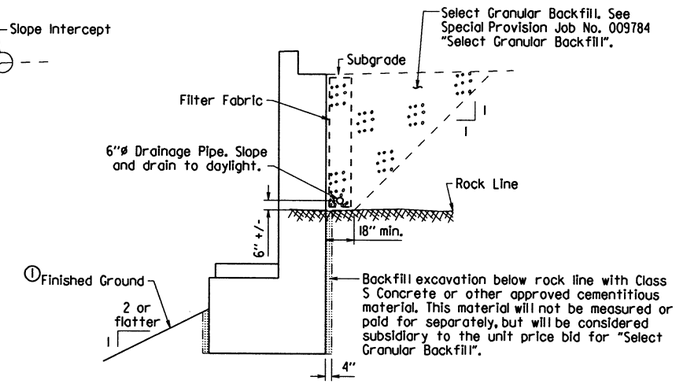
For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Select Granular Backfill".

1" Polystyrene Foam Board, Filter Fabric and Granular Material shall not be paid for directly, but shall be considered subsidiary to the various bid items.



DETAILS OF EXCAVATION - BENT 5

① For more information, see "Excavation at Bridge End", Dwg. No. 60125.



DETAILS OF BACKFILL AND DRAINAGE - BENT 5

For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Select Granular Backfill".

1" Polystyrene Foam Board, Filter Fabric and Granular Material shall not be paid for directly, but shall be considered subsidiary to the various bid items.

STATE OF ARKANSAS
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9-5-18
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BRIDGE ENGINEER

SUPPLEMENTAL DETAILS OF EXCAVATION AND BACKFILL FOR BENT NOS. 1 & 5 BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

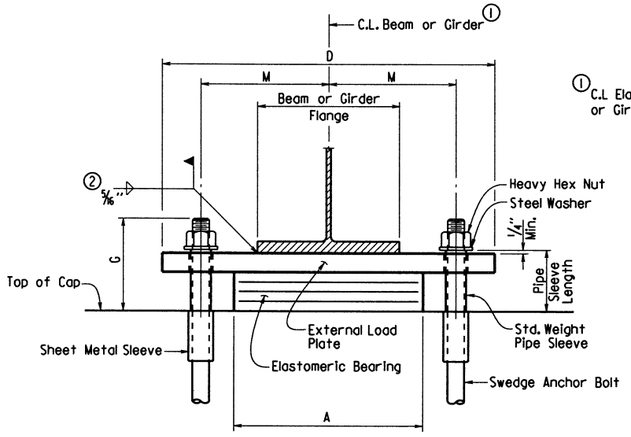
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: MAR. 2018 FILENAME: b009784x1_b5.dgn
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DESIGNED BY: L.J.B DATE: 1-2018

BRIDGE NO. 07423 DRAWING NO. 60145

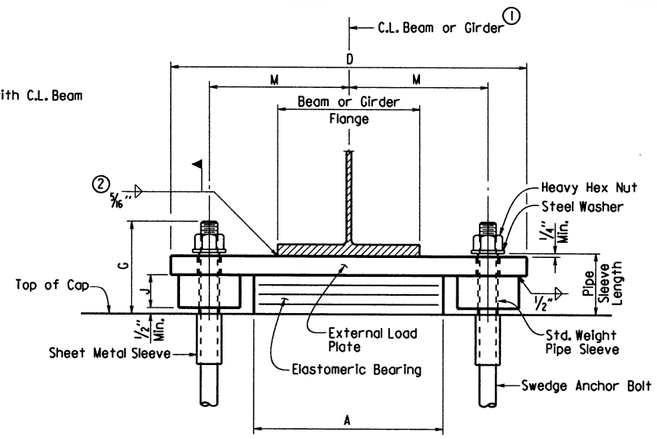
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				6	ARK.			
				JOB NO.		009784	79	193
				①		07423 - ELASTO BRGS. - 60146		

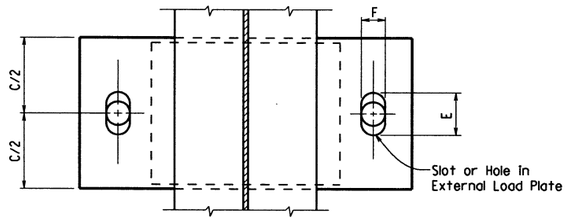


FRONT VIEW - AT BENT NO. 1

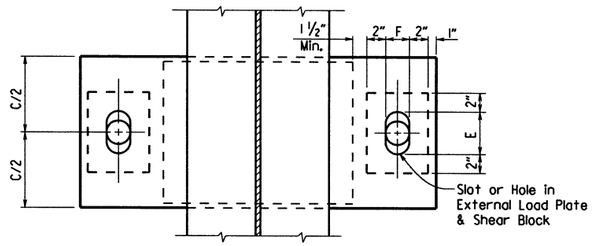
① C.L Elastomeric Pad shall be aligned with C.L. Beam or Girder.



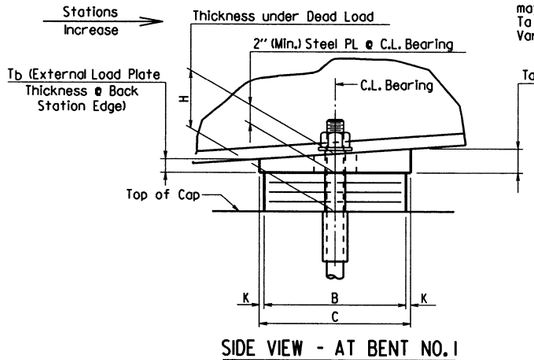
FRONT VIEW - AT BENT NOS. 2-5



PLAN VIEW - AT BENT NO. 1



PLAN VIEW - AT BENT NOS. 2-5

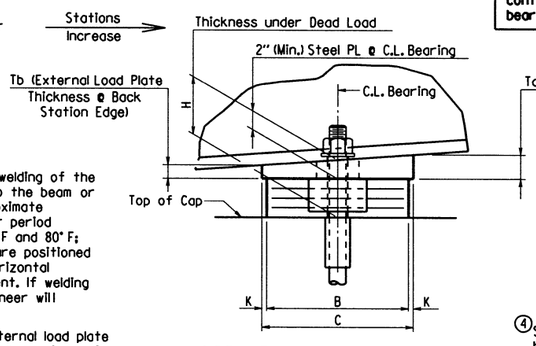


SIDE VIEW - AT BENT NO. 1

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

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

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



SIDE VIEW - AT BENT NOS. 2-5

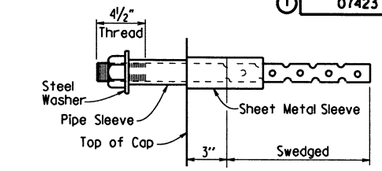
Prior to erection of the beams or girders, the Contractor shall verify the orientation of the bearing with respect to Ta and Tb.

④ Shear blocks 4 inches or thicker may be fabricated from built-up plates with a 5/16" groove weld on all sides. No plate shall be less than 2" nominal thickness.

TABLE OF FABRICATOR VARIABLES

③ Maximum Design Load = Service I Limit State

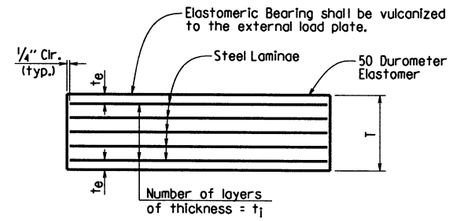
BRIDGE NO.	LOCATION: BENT NO.(S).	LOCATION: BEAM OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD: A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE: C	D	E	F	④ J	K	M	T_a	T_b	ANCHOR BOLT: (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07423	1	All	Exp	5	214	8 7/8"	5 9/16"	18"	10"	5	1/2"	1/4"	6 @ 12 ga.	3 5/8"	11"	30 1/2"	6 7/8"	3 1/8"	NA	1/2"	12"	1.87"	2.13"	2" x 39"	55	2 1/2" x 5 7/8"	4" x 18"	3 3/4"
	2	All	Exp	5	619	8 7/8"	5 9/16"	22"	17"	5	1/2"	1/4"	6 @ 12 ga.	3 5/8"	18"	41 3/4"	5 1/8"	3 1/8"	3 1/16"	1/2"	16 1/4"	1.91"	2.09"	2" x 39"	55	2 1/2" x 5 7/8"	4" x 18"	3 3/4"
	3 Back	All	Fix	5	214	7 5/8"	4 3/8"	18"	10"	3	1/2"	1/4"	4 @ 12 ga.	2 7/16"	11"	37 3/4"	3 1/8"	3 1/8"	1 7/8"	1/2"	14 1/4"	2.02"	1.98"	2" x 38"	55	2 1/2" x 4 5/8"	4" x 18"	3 3/4"
	3 Ahead	All	Exp	5	335	9 1/2"	6 3/16"	30"	15"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	16"	49 3/4"	6 7/8"	3 1/8"	3 7/16"	1/2"	20 1/4"	2.02"	1.98"	2" x 40"	55	2 1/2" x 6 1/2"	4" x 18"	3 3/4"
	4	All	Fix	5	1354	8 3/4"	5"	30"	24"	4	1/2"	1/4"	5 @ 12 ga.	3"	25"	50 3/4"	3 3/4"	3 3/4"	2 1/2"	1/2"	20 1/2"	2.30"	1.70"	2 1/2" x 44"	55	3" x 5 1/4"	4" x 18"	4 1/2"
	5	All	Exp	5	543	9 1/2"	6 3/16"	30"	15"	6	1/2"	1/4"	7 @ 12 ga.	4 1/4"	16"	49 3/4"	6 7/8"	3 1/8"	3 7/16"	1/2"	20 1/4"	2.21"	1.79"	2" x 40"	55	2 1/2" x 6 1/2"	4" x 18"	3 3/4"



ANCHOR BOLT DETAIL

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

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



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

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 AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A500, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or ASTM B695, Class 50.

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

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Plate Girder Spans (M270, Gr. 50W)". External load plates and shear blocks will not be measured or paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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

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DETAILS OF ELASTOMERIC BEARINGS BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

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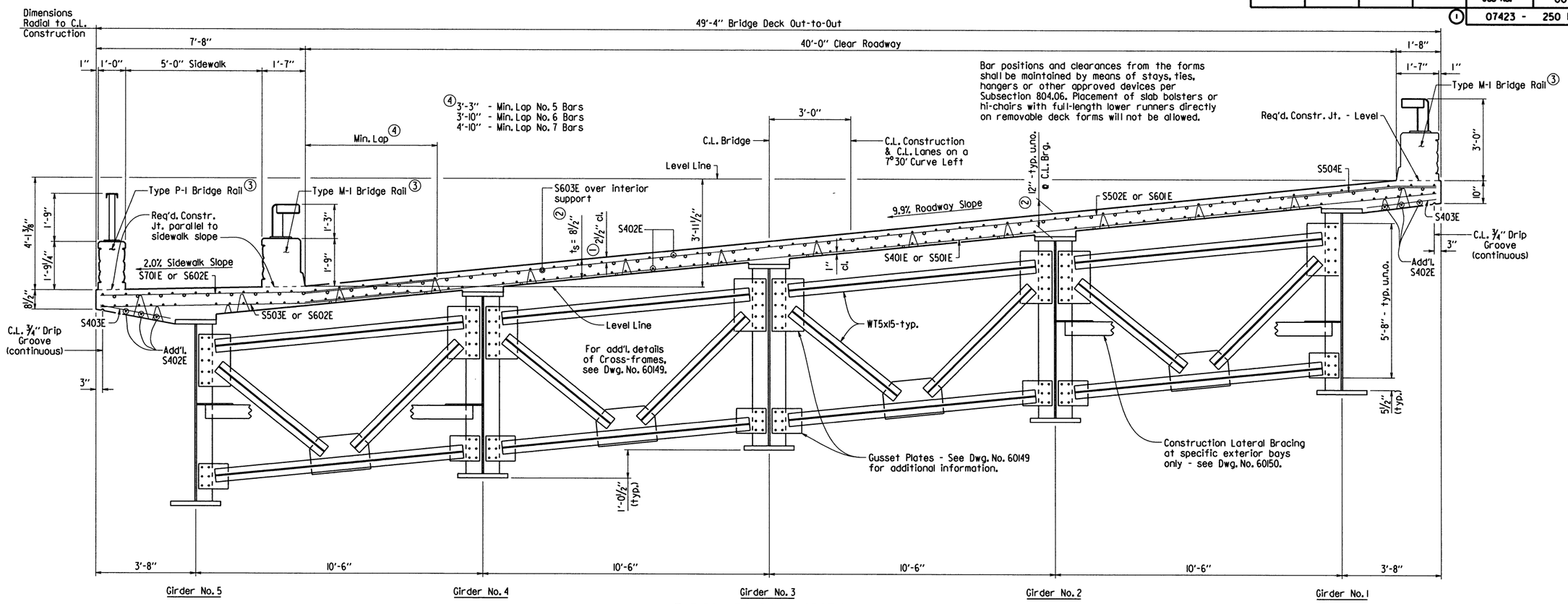
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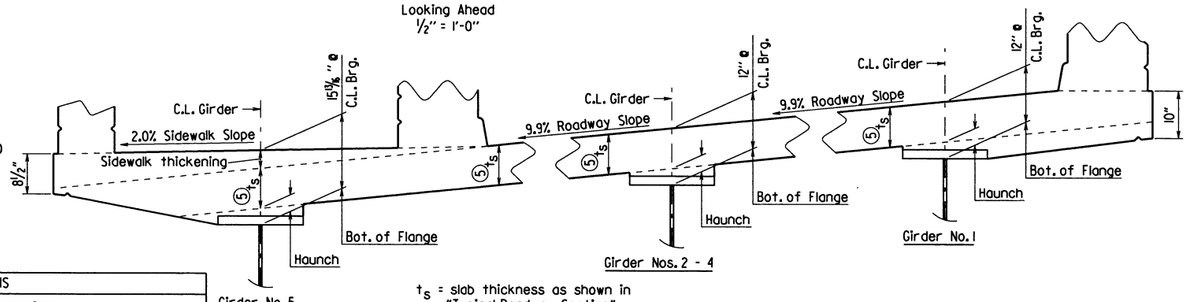
BRIDGE NO. 07423 DRAWING NO. 60146

PRINT DATE: 8/29/2018

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.		009784	80	193
				① 07423 -		250 FT. UNIT	- 60147	



TYPICAL ROADWAY SECTION



t_s = slab thickness as shown in "Typical Roadway Section"

Slab Reinforcing:

Longitudinal: S402E Top and Bottom placed as shown
S603E placed as shown over int. supports, See "Reinforcing Plan and Slab Pouring Sequence", Dwg. No. 60153.

Lap
- Transverse: (Roadway) S502E @ 12" o.c. in top, S501E @ 12" o.c. in bottom — Alternate
  S601E @ 12" o.c. in top, S401E @ 12" o.c. in bottom — Alternate
  S504E @ 6" in top of right overhang (bundled with No. 5 & No. 6 bars)
  S403E @ 12" o.c. in bottom of each overhang
- Transverse: (Sidewalk) S602E @ 12" o.c. in top and bottom — Alternate
  S701E @ 12" o.c. in top, S503E @ 12" o.c. in bottom

BAR LIST

MARK	NO. REQ'D.	"A"	LENGTH	P.D.	BENDING DIAGRAMS
S401E	249	-	41'-8"	Str.	Dimensions are out to out of bars.
S402E	1,071	-	38'-11"	Str.	
S403E	500	-	2'-7"	Str.	
S501E	250	-	41'-8"	Str.	
S502E	250	40'-2"	41'-8"	3¾"	"A" 1'-6" 1¼ 12 — S502E, S504E & S601E
S503E	249	3'-3"	10'-9"	3¾"	
S504E	499	4'-0"	5'-6"	3¾"	
S601E	249	40'-2"	41'-8"	4½"	
S602E	500	3'-10"	11'-4"	4½"	1 12 — 7'-6" "A" — S503E, S602E & S701E
S603E	168	-	51'-6"	Str.	
S701E	249	4'-10"	12'-4"	5¼"	
					Bars designated with an "E" suffix are epoxy coated.

See Dwg. Nos. 60171 and 60173 for Bar List and Bending Diagrams of Type M-1 and Type P-1 Bridge Rails, respectively.

⑤ Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:
Haunch dimension shall equal 3½" +/- 1½" to maintain the grade and slab thickness tolerance. The top flange shall not interfere with bottom mat of reinforcing steel. 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 Dwg. No. 60180 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

All structural steel shall be Gr. 50W unless otherwise noted and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)". See Std. Dwg. Nos. 55006 and 55007 for additional notes and details.

NOTES:

Class 2 Protective Surface Treatment shall be applied to the Roadway and Sidewalk Surface.

① Tolerance: Minus = ¼";
Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

② See "Adjustment for Slab Thickness Tolerance".

③ See Dwg. Nos. 60171-60172 and 60173-60174 for details of Type M-1 and Type P-1 Bridge Rails, respectively.

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SHEET 1 OF 7
DETAILS OF 250'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

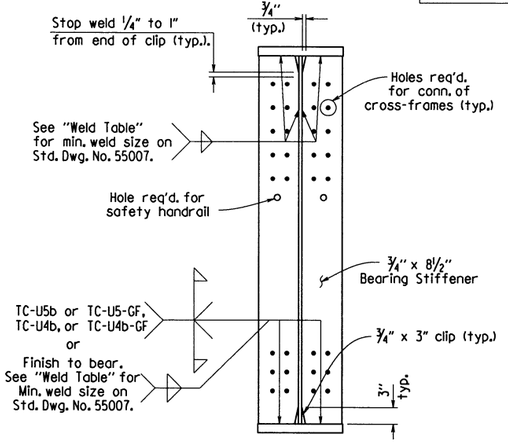
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CHECKED BY: JNP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017
BRIDGE NO. 07423 DRAWING NO. 60147

PRINT DATE: 8/29/2018

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.		009784	81	193
				① 07423 - 250' UNIT - 60148				

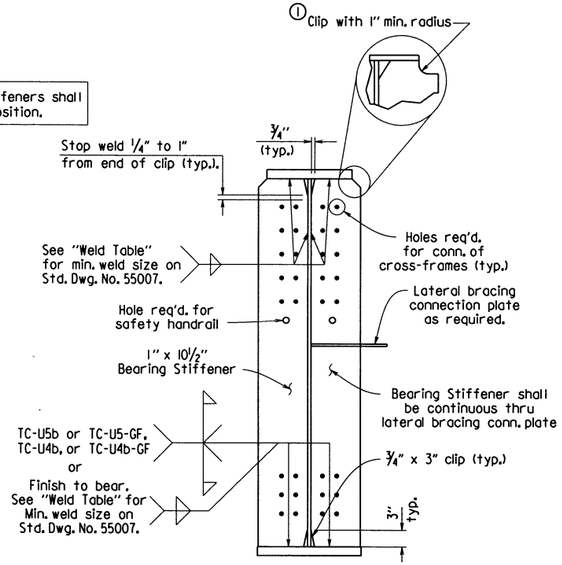
① If permanent steel bridge deck forms are used, the Fabricator shall clip plates as necessary to accommodate the deck form supports.

NOTE: All Bearing stiffeners shall be vertical in final position.



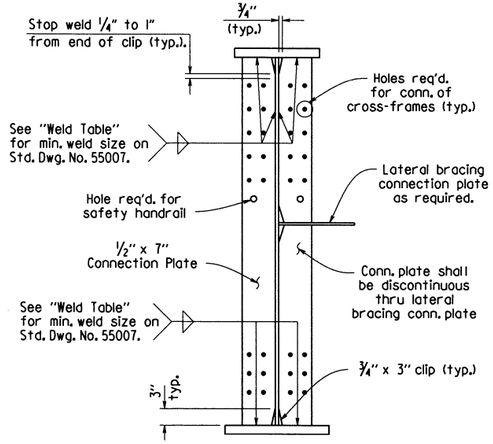
BEARING STIFFENER DETAILS

Typ. at Bents 1 & 3
3/4" = 1'-0"



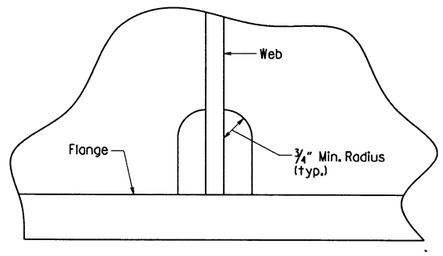
BEARING STIFFENER DETAILS

Typ. at Bent 2
3/4" = 1'-0"



CROSS-FRAME CONNECTION DETAILS

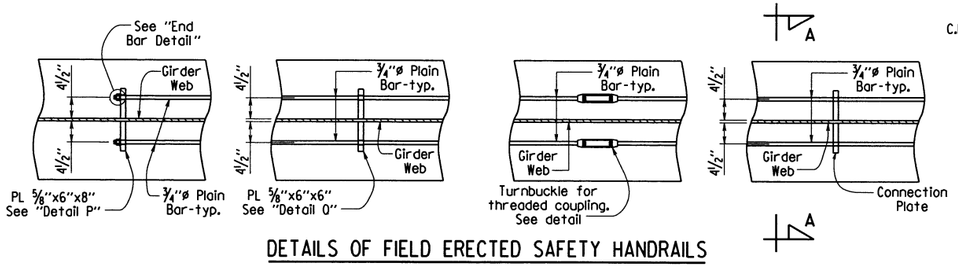
3/4" = 1'-0"



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

ALTERNATE CLIP DETAIL

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



DETAILS OF FIELD ERECTED SAFETY HANDRAILS

No Scale

Handrails shall be erected on the inside of the Exterior Girders and on both sides of the interior Girders.

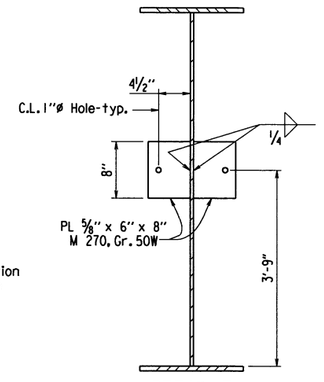
Unless otherwise noted, all structural steel in safety handrails shall conform to the requirements of AASHTO M 270, Gr. 36 and Section 807.

Structural steel, including 3/4" ø plain bar and support plates, shall be measured and paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)". Turnbuckles shall not be paid for directly but shall be subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

The 3/4" ø plain bar, turnbuckles and accessories shall be galvanized according to AASHTO M 232, Class C or ASTM B695, Class 50. All galvanizing will not be paid for directly, but will be subsidiary to the item of "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

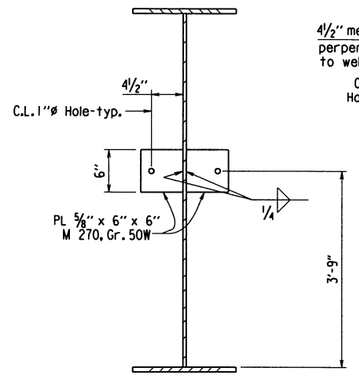
Plain bar should be furnished in 20' - 25' lengths, with 6" minimum of cut threads at each end.

For locations and other information not shown, see "Framing Plan", Dwg. No. 60150.



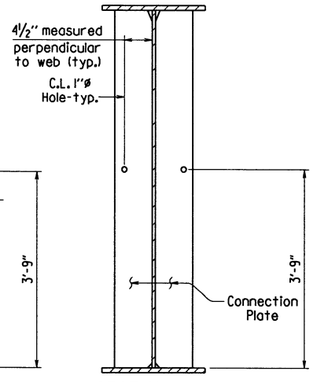
DETAIL P

No Scale



DETAIL Q

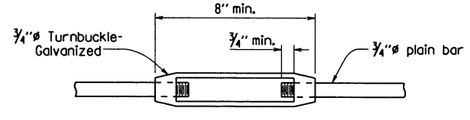
No Scale



SECTION A-A

No Scale

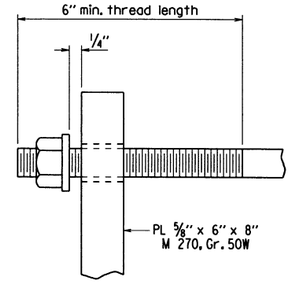
Note: All safety handrails shall be 3/4"ø plain bars made continuous by using turnbuckle couplings.



Turnbuckle to conform to ASTM F1145

TURNBUCKLE FOR THREADED COUPLING

No Scale



END BAR DETAIL

No Scale

3/4"ø Heavy hex nuts with standard washer. After gap width has been set, tack weld heavy hex nut to plain bar.

Gap width shall be set after slab has been poured.

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SHEET 2 OF 7
DETAILS OF 250'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

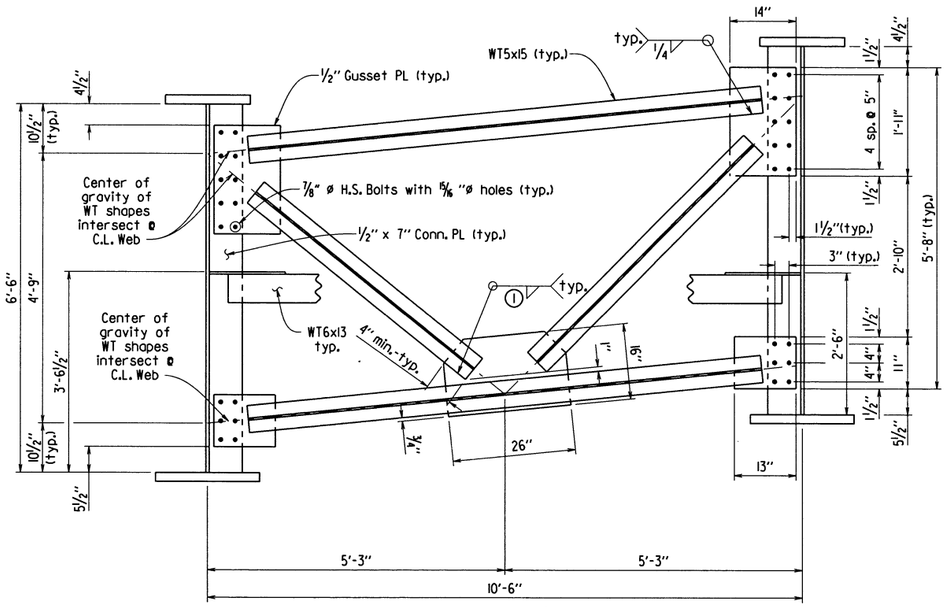
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LITTLE ROCK, ARK.

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DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60148

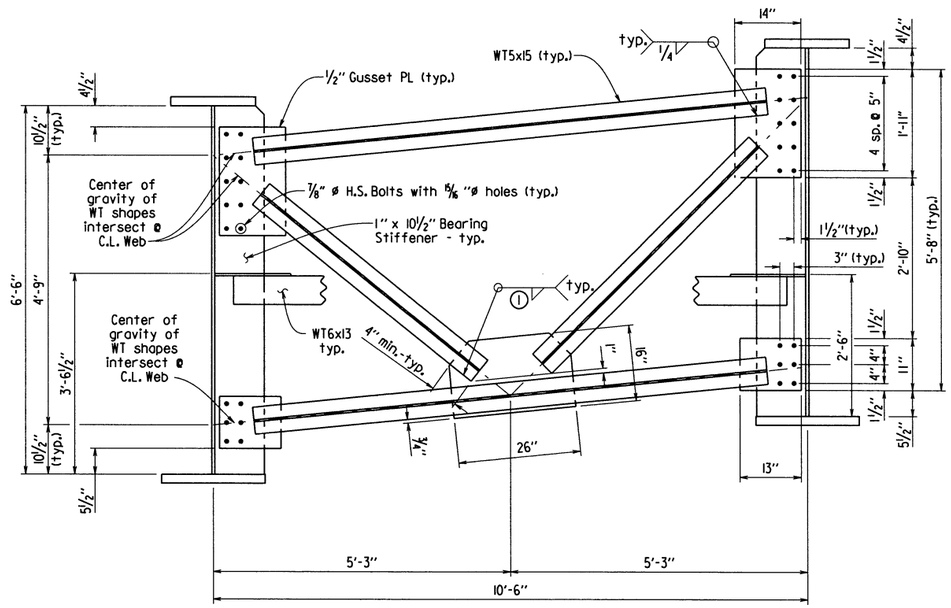
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		009784	82	193
				①		07423 - 250' UNIT - 60149		



DETAILS OF CROSS-FRAMES AT CONNECTION PLATES

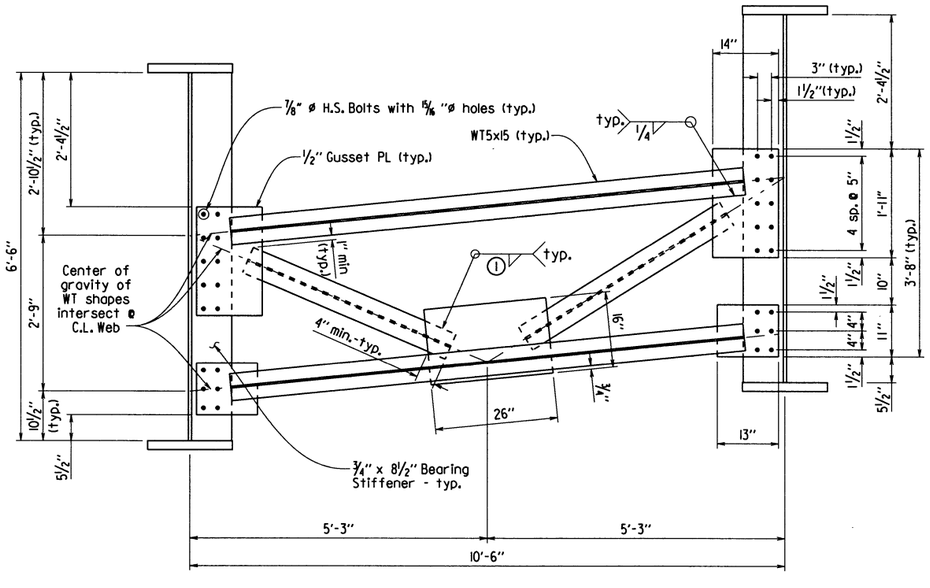
3/4" = 1'-0"



DETAILS OF CROSS-FRAMES AT BENT 2

3/4" = 1'-0"

① See "Weld Table", Std. Dwg. No. 55007.



DETAILS OF CROSS-FRAMES AT BENTS 1 & 3

3/4" = 1'-0"

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SHEET 3 OF 7
DETAILS OF 250'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

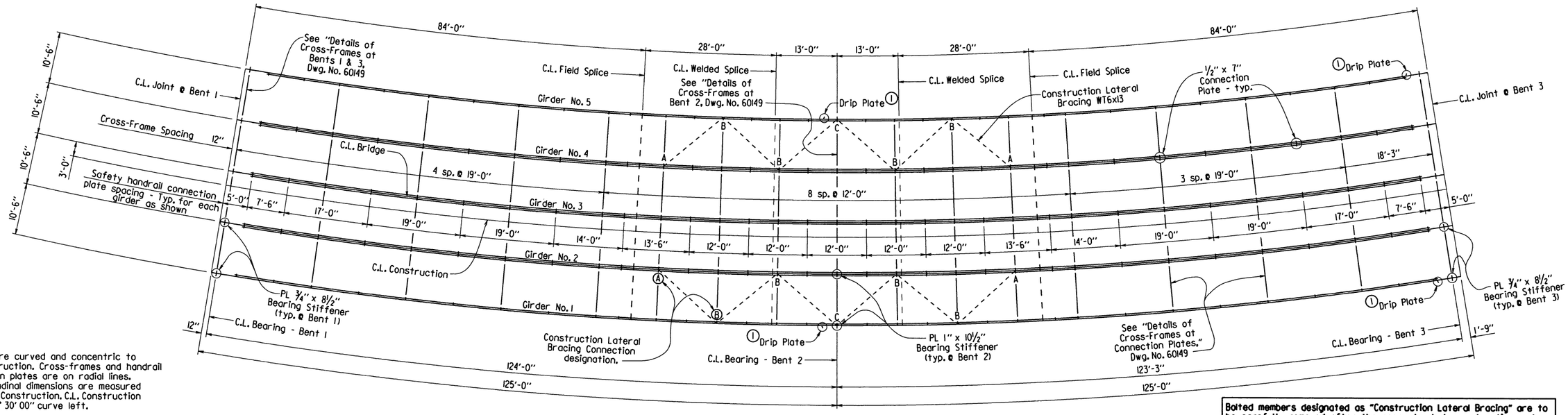
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BRIDGE NO. 07423 DRAWING NO. 60149

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				6	ARK.			
				JOB NO.		009784	83	193
				① 07423 -		250' UNIT		- 60150



FRAMING PLAN

3/32" = 1'-0"

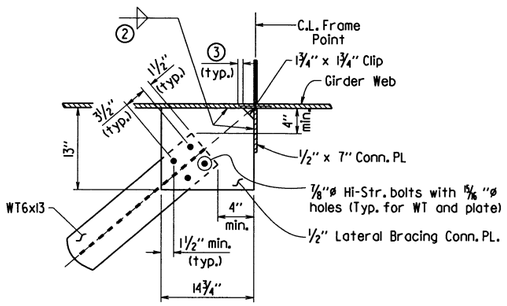
Note:
Girders are curved and concentric to C.L. Construction. Cross-frames and handrail connection plates are on radial lines. All longitudinal dimensions are measured along C.L. Construction. C.L. Construction is on a 7° 30' 00" curve left.

Bolted members designated as "Construction Lateral Bracing" are to be carefully removed after the concrete deck construction and curing is complete and shall become property of the Contractor.

① Drip plate welded to the outer side of the bottom flange of the exterior girders. Locate drip plates 5'-0" from C.L. Bearing at Bents 2 and 3 as shown. See "Bottom Flange Drip Plate", Std. Dwg. No. 55007 for additional details. Stop drip plate weld 1" from face of web.

② See "Weld Table", Std. Dwg. No. 55007.

③ Stop Weld 1/4" to 1" from end of clip.



LATERAL BRACING CONNECTION A

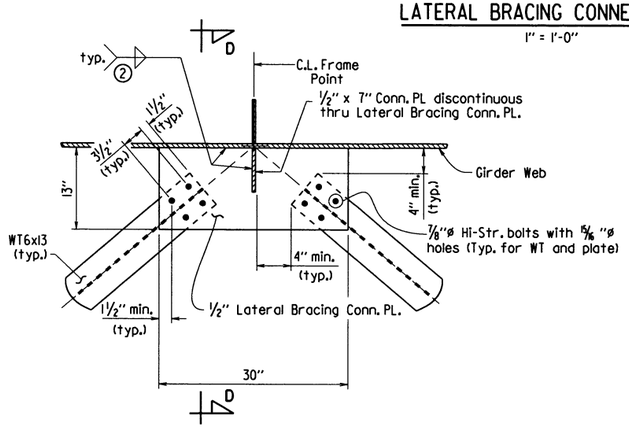
1" = 1'-0"

Lateral Bracing Connection Notes:

7/8"ø H.S. Bolts shall be used in all lateral bracing connections.

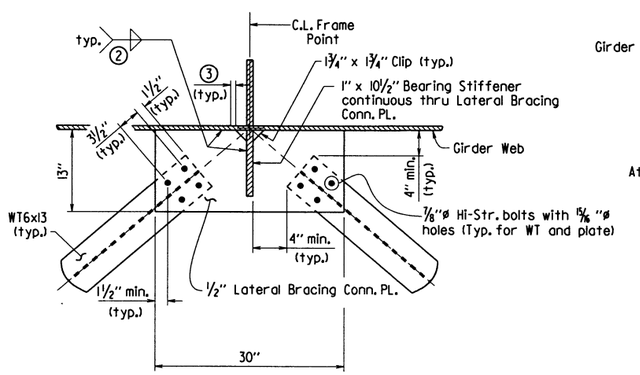
The ends of lateral bracing members shall be a minimum of 4" clear from the web or any stiffener or connection plate.

At the Contractor's option, holes in one end of the WT may be field drilled. Minimum clearance from C.L. Bolt to edge of plate is 1 1/2".



LATERAL BRACING CONNECTION B

1" = 1'-0"

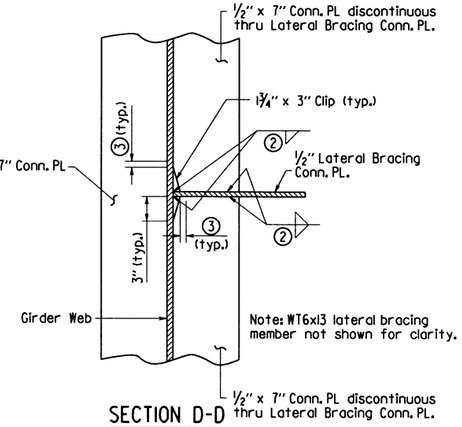


LATERAL BRACING CONNECTION C

With Bearing Stiffener at Bent 2

1" = 1'-0"

Note: 1/2" lateral bracing connection plate shall be notched at these locations to allow for the 1" bearing stiffeners as required.



SECTION D-D

At Lateral Bracing Connection "B"
No Scale

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

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

Bolted members designated as "Construction Lateral Bracing" are designed only to assist the girder system in resisting Strength Limit State Wind Loads prior to completing the deck construction.

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

For additional notes, see Std. Dwg. No. 55006.

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SHEET 4 OF 7
DETAILS OF 250'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

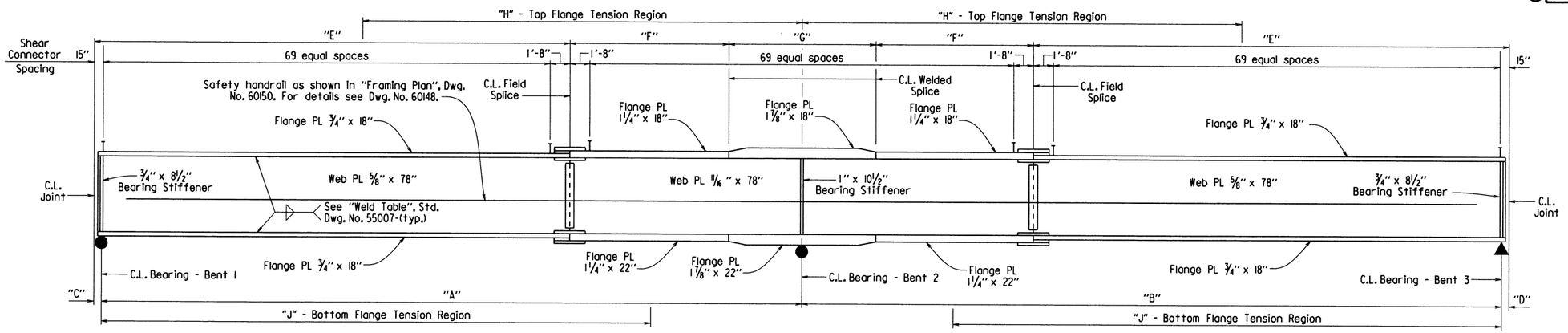
LITTLE ROCK, ARK.

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CHECKED BY: SYP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60150

PRINT DATE: 9/4/2018

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.		009784	84	143
				①	07423 -	250' UNIT	- 60151	



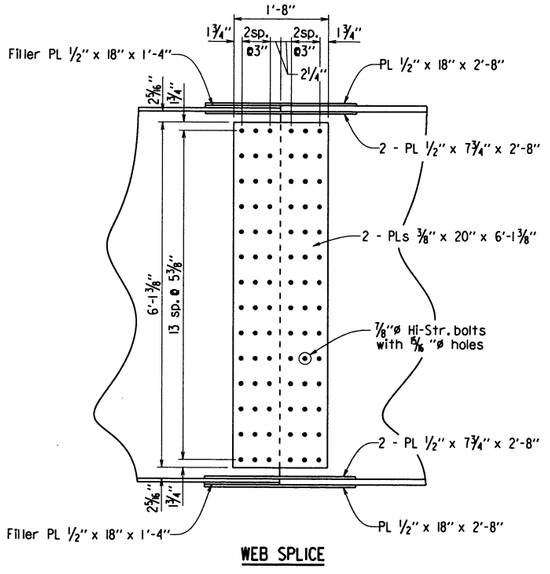
GIRDER ELEVATION

No Scale

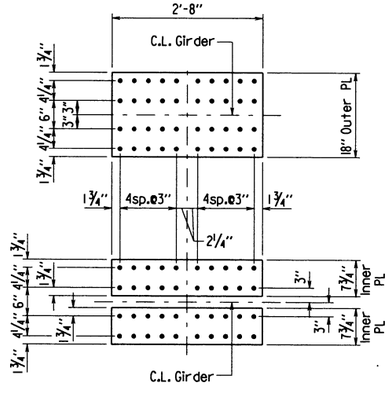
For "Details of Welded Splices for Plate Girders", see Std. Dwg. No. 55007.

TABLE OF VARIABLES

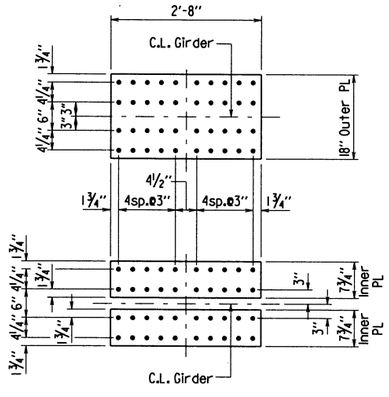
Girder No.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"
1	126'-11 1/16"	126'-1 7/8"	12 5/16"	1'-9 1/2"	85'-11 3/4"	28'-7 5/8"	26'-7 3/8"	68'-0"	100'-0"
2	125'-2 5/8"	124'-5 1/2"	12 1/8"	1'-9 3/16"	84'-9 7/8"	28'-3 5/16"	26'-3 1/16"	63'-0"	99'-0"
3	123'-6 3/16"	122'-9 3/16"	11 5/16"	1'-8 5/16"	83'-8 1/16"	27'-10 11/16"	25'-10 3/4"	59'-0"	97'-0"
4	121'-9 11/16"	121'-0 7/8"	11 3/16"	1'-8 5/8"	82'-6 3/16"	27'-6 1/16"	25'-6 1/2"	57'-0"	94'-0"
5	120'-1 1/4"	119'-4 5/16"	11 5/8"	1'-8 5/16"	81'-4 5/16"	27'-1 7/16"	25'-2 3/16"	56'-0"	92'-0"



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

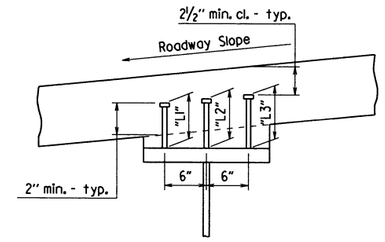
FIELD SPLICE DETAILS

3/4" = 1'-0"

All field splice bolts shall be 7/8"ø Hi-Str. bolts.

All holes for splice bolts shall be 15/16"ø.

All field splice plates shall be AASHTO M 270 Gr. 50W.



SHEAR CONNECTOR DETAIL

No Scale

All stud shear connectors shall be 7/8" ø and automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer.

Girder No.	Top Flange Thickness								
	3/4"			1 1/4"			1 1/8"		
	"L1"	"L2"	"L3"	"L1"	"L2"	"L3"	"L1"	"L2"	"L3"
1 - 4	6"	7"	7"	6"	6"	7"	5"	6"	6"
5	10"	11"	11"	10"	10"	10"	9"	9"	10"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
9-5-18

BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 250'-0" CONTINUOUS PLATE GIRDER UNIT BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: OCT. 2017 FILENAME: b009784x1_sl.dgn
CHECKED BY: JYP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LSB DATE: 9-2017

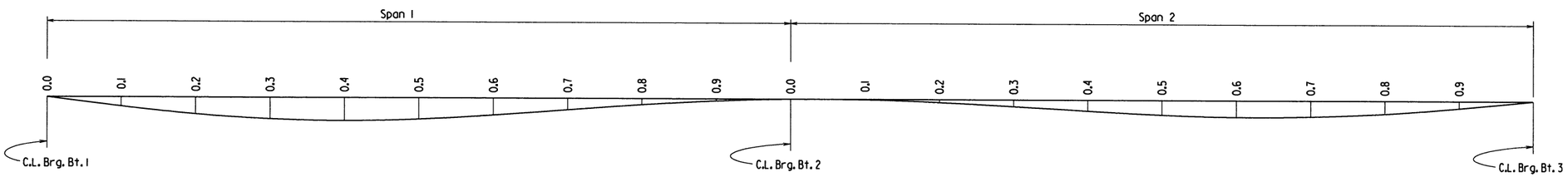
BRIDGE NO. 07423 DRAWING NO. 60151

PRINT DATE: 8/31/2018

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.		009784	85	193
				①		07423 - 250' UNIT - 60152		

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel					Structural Steel + Slab + Sidewalk					Structural Steel + Slab + Sidewalk + Railing				
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5
1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.180	0.166	0.154	0.143	0.128	1.088	1.006	0.933	0.873	0.793	1.175	1.044	0.951	0.900	0.849
	0.2	0.326	0.301	0.280	0.258	0.232	1.981	1.836	1.707	1.584	1.444	2.140	1.906	1.740	1.633	1.545
	0.3	0.407	0.378	0.356	0.329	0.295	2.508	2.332	2.195	2.036	1.851	2.713	2.423	2.238	2.100	1.983
	0.4	0.432	0.406	0.383	0.353	0.317	2.705	2.539	2.386	2.209	2.008	2.927	2.639	2.433	2.279	2.152
	0.5	0.391	0.373	0.349	0.323	0.289	2.507	2.374	2.219	2.059	1.864	2.716	2.468	2.263	2.125	2.001
	0.6	0.305	0.291	0.273	0.252	0.226	2.007	1.901	1.778	1.642	1.488	2.176	1.977	1.813	1.695	1.600
	0.7	0.197	0.189	0.178	0.163	0.147	1.344	1.277	1.194	1.097	0.995	1.459	1.329	1.217	1.132	1.072
	0.8	0.098	0.095	0.090	0.082	0.074	0.722	0.687	0.641	0.586	0.531	0.783	0.714	0.653	0.604	0.572
	0.9	0.028	0.027	0.026	0.024	0.022	0.249	0.236	0.219	0.199	0.180	0.267	0.244	0.222	0.204	0.192
2	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.028	0.028	0.026	0.024	0.021	0.038	0.048	0.051	0.053	0.055	0.055	0.055	0.054	0.058	0.068
	0.2	0.099	0.096	0.090	0.082	0.074	0.305	0.315	0.310	0.297	0.288	0.363	0.340	0.321	0.315	0.330
	0.3	0.198	0.189	0.178	0.163	0.147	0.733	0.729	0.710	0.675	0.641	0.844	0.778	0.732	0.711	0.720
	0.4	0.305	0.291	0.274	0.251	0.225	1.228	1.206	1.166	1.108	1.039	1.392	1.279	1.200	1.162	1.153
	0.5	0.393	0.374	0.350	0.324	0.289	1.662	1.622	1.558	1.488	1.385	1.865	1.713	1.601	1.555	1.525
	0.6	0.434	0.408	0.384	0.353	0.317	1.901	1.824	1.758	1.668	1.556	2.116	1.921	1.805	1.739	1.702
	0.7	0.408	0.379	0.357	0.329	0.295	1.826	1.728	1.666	1.582	1.471	2.024	1.817	1.710	1.648	1.605
	0.8	0.327	0.302	0.281	0.260	0.233	1.492	1.400	1.330	1.264	1.177	1.645	1.468	1.364	1.315	1.279
	0.9	0.181	0.166	0.154	0.144	0.128	0.831	0.778	0.735	0.706	0.652	0.914	0.815	0.754	0.734	0.708
	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



DEAD LOAD DEFLECTION DIAGRAM

NOTE: Camber for Dead Load Deflection plus vertical curve +/- 1/4" tolerance. Deflections shown are along C.L. Girder from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above plane.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
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SHEET 6 OF 7
DETAILS OF 250'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

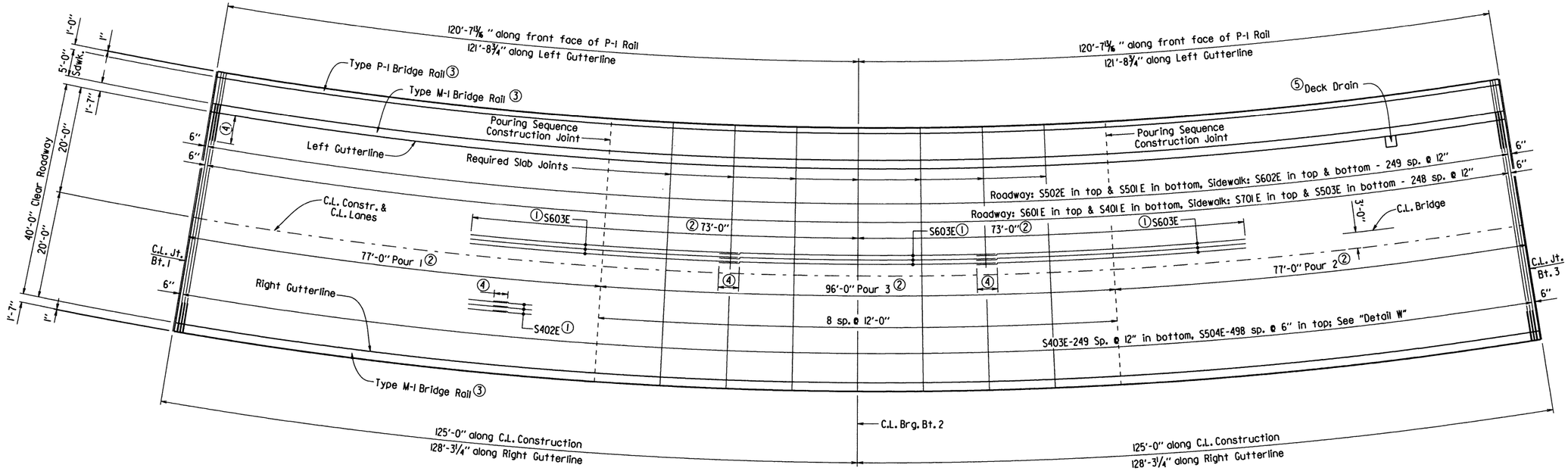
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DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60152

PRINT DATE: 8/29/2018

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.		009784	86	193
① 07423 -		250' UNIT	- 60153	



REINFORCING PLAN AND SLAB POURING SEQUENCE

3/32" = 1'-0"

NOTES:

C.L. Construction is on a 7°30'00" curve left. Unless noted otherwise all longitudinal dimensions are along C.L. Construction and C.L. Lanes. All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Construction and C.L. Lanes.

All transverse reinforcing steel shall be placed on radial lines to C.L. Construction & C.L. Lanes. Spacing shown is measured along C.L. Construction & C.L. Lanes.

① Placed as shown in "Typical Roadway Section," Dwg. No. 60147.

② Measured Along C.L. Construction.

③ See Dwg. Nos. 60171-06172 and 60173-60174 for details of Type M-1 and Type P-1 Bridge Rails, respectively.

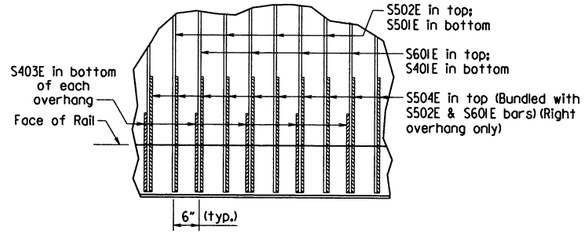
④ Minimum Lap for Bars:
2'-7" - Min. Lap No. 4 Bars
3'-3" - Min. Lap No. 5 Bars
3'-10" - Min. Lap No. 6 Bars
4'-10" - Min. Lap No. 7 Bars

⑤ See Dwg. No. 60175 for details and locations of Deck Drains.

SLAB POURING SEQUENCE NOTES:

Pour (1) must be placed before Pour (2) can be placed. Pour (2) must be placed before Pour (3) can be placed. 48 hours shall elapse between the end of Pour (1) and the start of Pour (2). 72 hours shall elapse between the end of Pour (2) and the start of Pour (3). A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. **No deviations from the pouring sequence shown will be allowed.**

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



DETAIL W
No Scale

STATE OF ARKANSAS
CHARLES R. ELLIS
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9-5-18
BRIDGE ENGINEER

SHEET 7 OF 7
DETAILS OF 250'-0" CONTINUOUS PLATE GIRDER UNIT BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

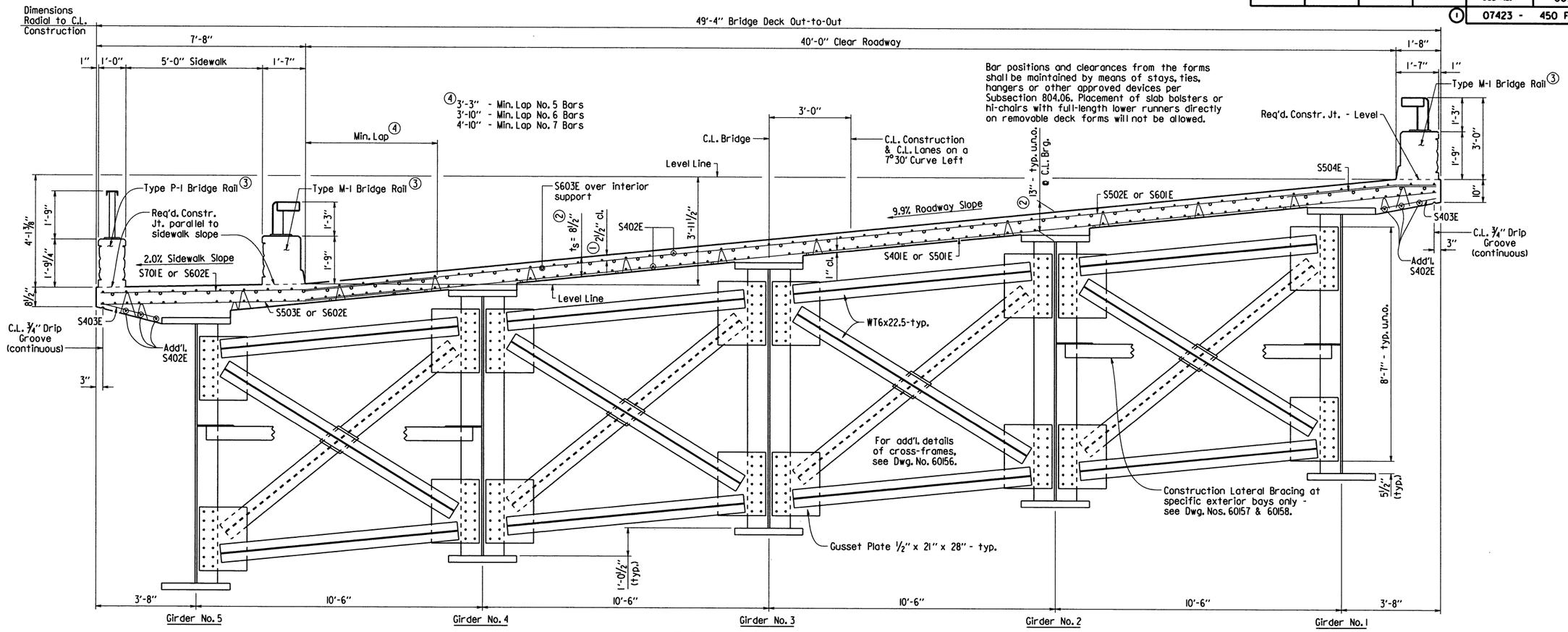
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DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60153

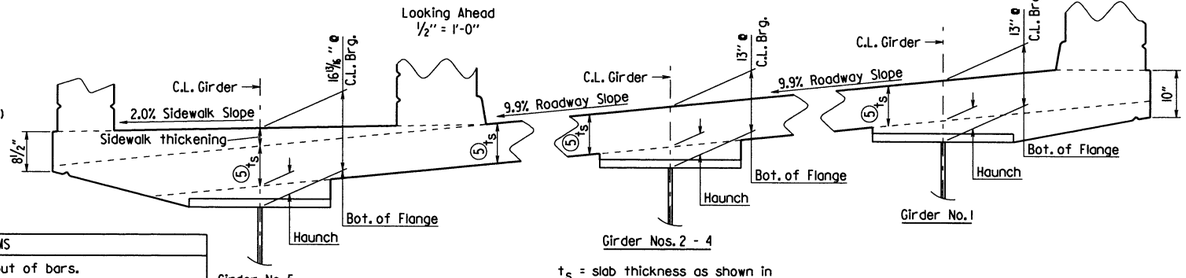
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6	ARK.			
JOB NO.		009784	87	193
① 07423 -	450 FT. UNIT		- 60154	



TYPICAL ROADWAY SECTION



t_s = slab thickness as shown in "Typical Roadway Section"

⑤ Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:
Haunch dimension shall equal 4½" +/- 1½" to maintain the grade and slab thickness tolerance. The top flange shall not interfere with bottom mat of reinforcing steel. 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 Dwg. No. 60180 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

Slab Reinforcing:

Longitudinal: S402E Top and Bottom placed as shown
S603E placed as shown over int. supports. See "Reinforcing Plan and Slab Pouring Sequence", Dwg. Nos. 60167 & 60168.

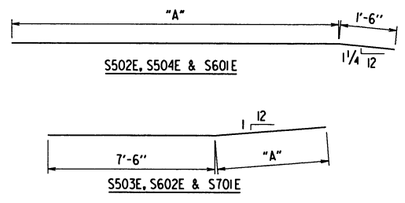
Lap
- Transverse: (Roadway) S502E @ 12" o.c. in top, S501E @ 12" o.c. in bottom — Alternate
  S601E @ 12" o.c. in top, S401E @ 12" o.c. in bottom
  S504E @ 6" in top of right overhang (bundled with No. 5 & No. 6 bars)
  S403E @ 12" o.c. in bottom of each overhang
- Transverse: (Sidewalk) S602E @ 12" o.c. in top and bottom — Alternate
  S701E @ 12" o.c. in top, S503E @ 12" o.c. in bottom

BAR LIST

MARK	NO. REQ'D.	"A"	LENGTH	P.D.
S401E	449	-	41'-8"	Str.
S402E	1,989	-	37'-11"	Str.
S403E	900	-	2'-1"	Str.
S501E	450	-	41'-8"	Str.
S502E	450	40'-2"	41'-8"	3¾"
S503E	449	3'-3"	10-9"	3¾"
S504E	899	4'-0"	5'-6"	3¾"
S601E	449	40'-2"	41'-8"	4½"
S602E	900	3'-10"	11'-4"	4½"
S603E	280	-	49'-4"	Str.
S701E	449	4'-10"	12'-4"	5¼"

BENDING DIAGRAMS

Dimensions are out to out of bars.



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

See Dwg. Nos. 60171 and 60173 for Bar List and Bending Diagrams of Type M-1 and Type P-1 Bridge Rails, respectively.

All structural steel shall be Gr. 50W unless otherwise noted and shall be paid for as "Structural Steel in Plate Girder Spans (W 270, Gr. 50W)". See Std. Dwg. Nos. 55006 and 55007 for additional notes and details.

NOTES:

Class 2 Protective Surface Treatment shall be applied to the Roadway and Sidewalk Surface.

① Tolerance: Minus = ¼";
Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

② See "Adjustment for Slab Thickness Tolerance".

③ See Dwg. Nos. 60171-60172 and 60173-60174 for details of Type M-1 and Type P-1 Bridge Rails, respectively.

STATE OF ARKANSAS
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SHEET 1 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

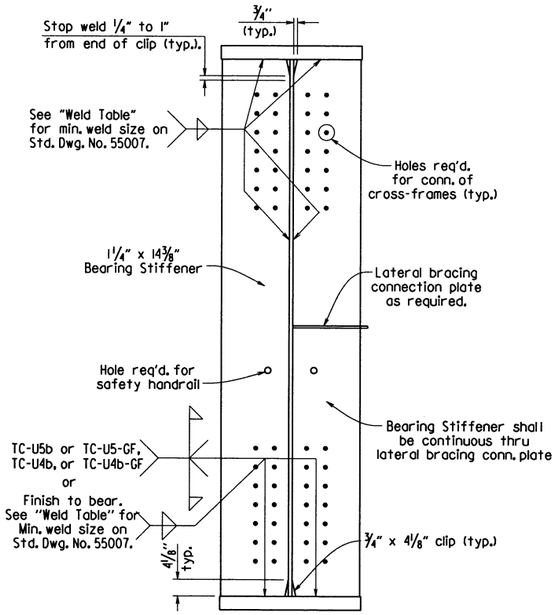
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BRIDGE NO. 07423 DRAWING NO. 60154

PRINT DATE: 8/29/2018

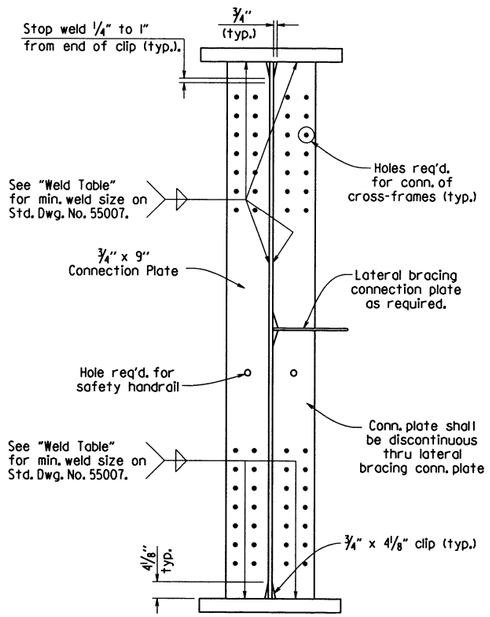
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				6	ARK.			
				JOB NO.		009784	88	193
				①		07423 - 450' UNIT - 60155		

NOTE: All Bearing stiffeners shall be vertical in final position.



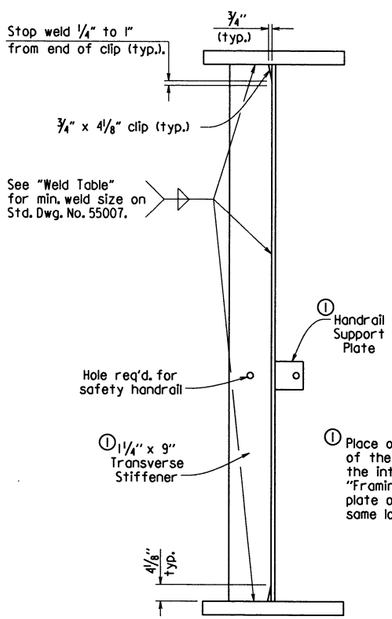
BEARING STIFFENER DETAILS

Typ. at Bents 3, 4 & 5
3/4" = 1'-0"



CROSS-FRAME CONNECTION DETAILS

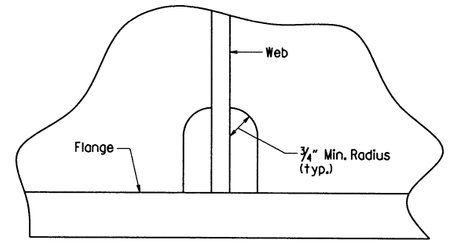
3/4" = 1'-0"



TRANSVERSE STIFFENER DETAILS

3/4" = 1'-0"

① Place one transverse stiffener on the inside face of the exterior girders, and on only one face of the interior girders at the location shown on the "Framing Plan", Dwg. No. 60158. Place a handrail support plate on the opposite side of the girder at the same location.

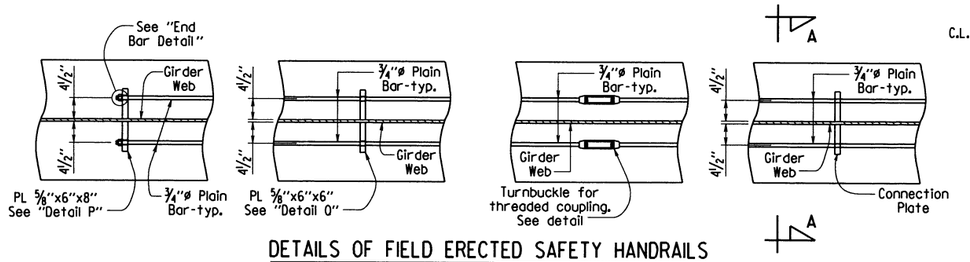


Height and width of clip shall be as noted in other details.

ALTERNATE CLIP DETAIL

(For Bearing Stiffeners, Transverse Stiffeners, and Cross-frame Connection Plates)

No Scale



DETAILS OF FIELD ERECTED SAFETY HANDRAILS

No Scale

Handrails shall be erected on the inside of the Exterior Girders and on both sides of the Interior Girders.

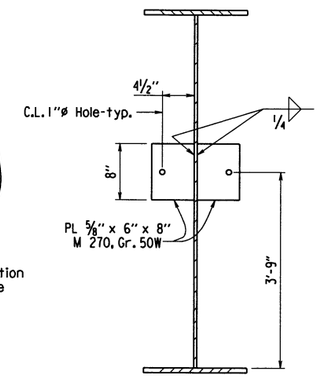
Unless otherwise noted, all structural steel in safety handrails shall conform to the requirements of AASHTO M 270, Gr. 36 and Section 807.

Structural steel, including 3/4" ø plain bar and support plates, shall be measured and paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)". Turnbuckles shall not be paid for directly but shall be subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

The 3/4" ø plain bar, turnbuckles and accessories shall be galvanized according to AASHTO M 232, Class C or ASTM B695, Class 50. All galvanizing will not be paid for directly, but will be subsidiary to the item of "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

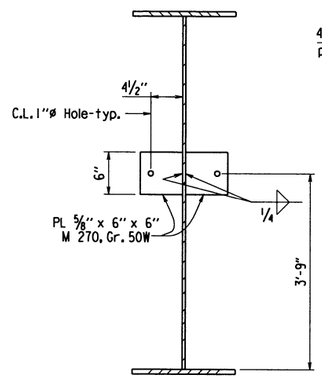
Plain bar should be furnished in 20' - 25' lengths, with 6" minimum of cut threads at each end.

For locations and other information not shown, see "Framing Plan", Dwg. Nos. 60157 & 60158.



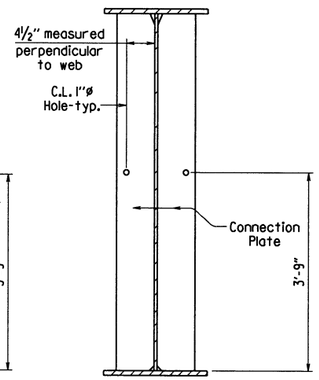
DETAIL P

No Scale



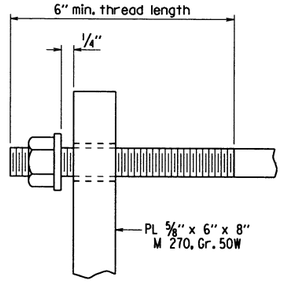
DETAIL Q

No Scale



SECTION A-A

No Scale



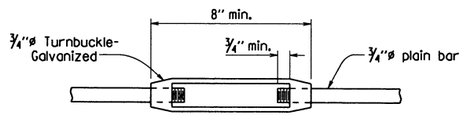
END BAR DETAIL

No Scale

3/4"ø Heavy hex nuts with standard washer. After gap width has been set, tack weld heavy hex nut to plain bar.

Gap width shall be set after slab has been poured.

Note: All safety handrails shall be 3/4"ø plain bars made continuous by using turnbuckle couplings.



Turnbuckle to conform to ASTM F1145

TURNBUCKLE FOR THREADED COUPLING

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

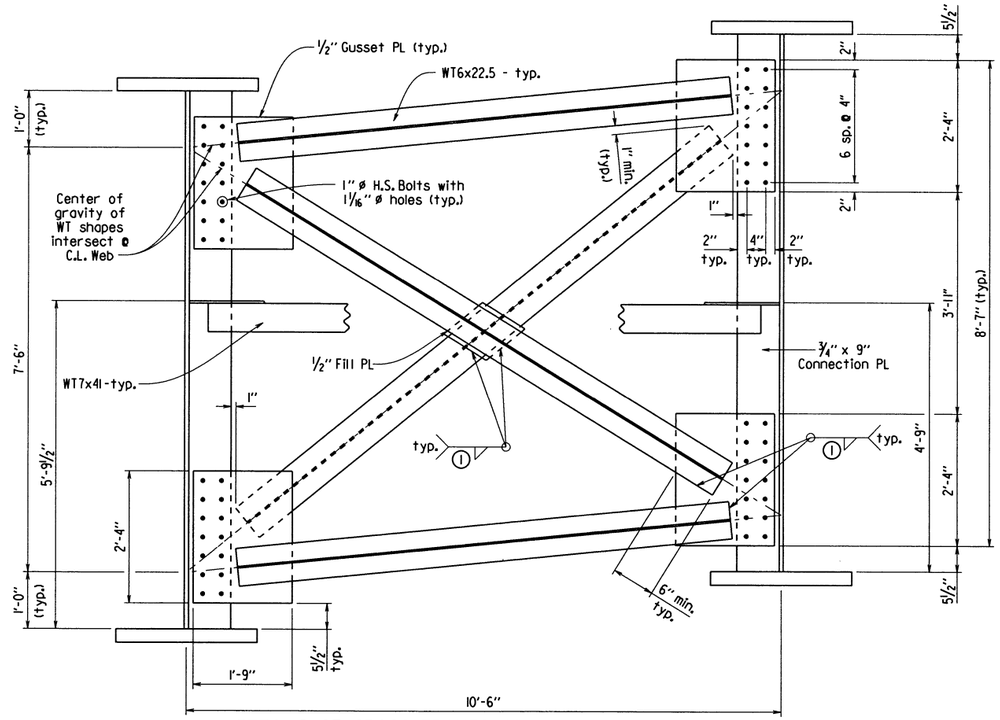
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CHECKED BY: JHP DATE: 8-29-18
DESIGNED BY: LJB DATE: 9-2017
FILENAME: b009784x1_s2.dgn
SCALE: As Shown

BRIDGE NO. 07423

DRAWING NO. 60155

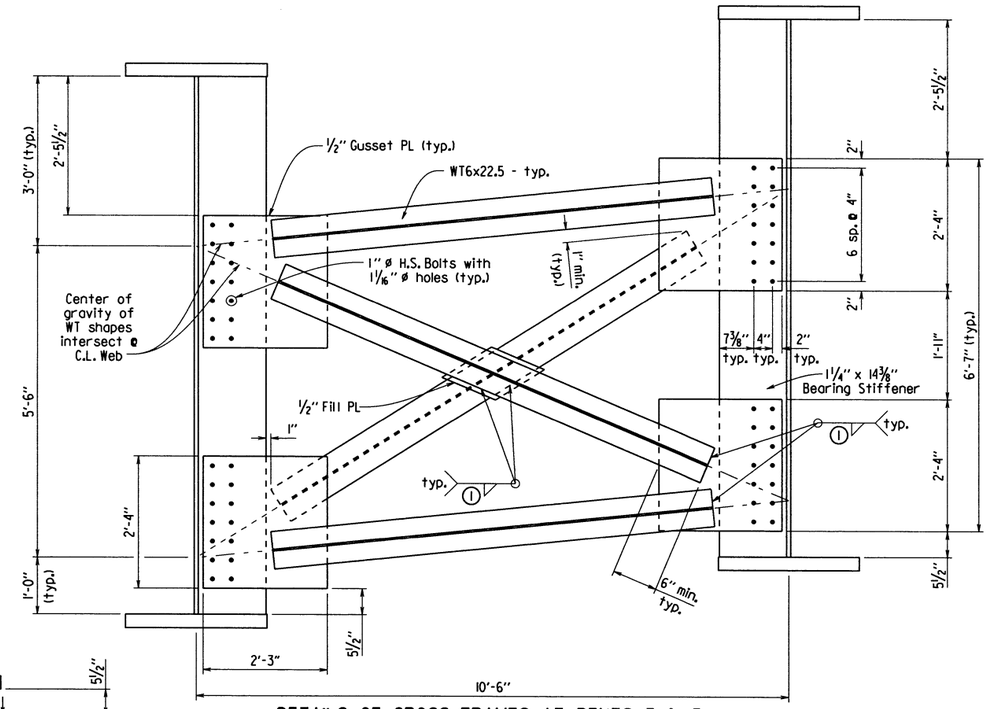
PRINT DATE: 8/29/2018

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.		009784	89	193
				①	07423 - 450' UNIT - 60156			



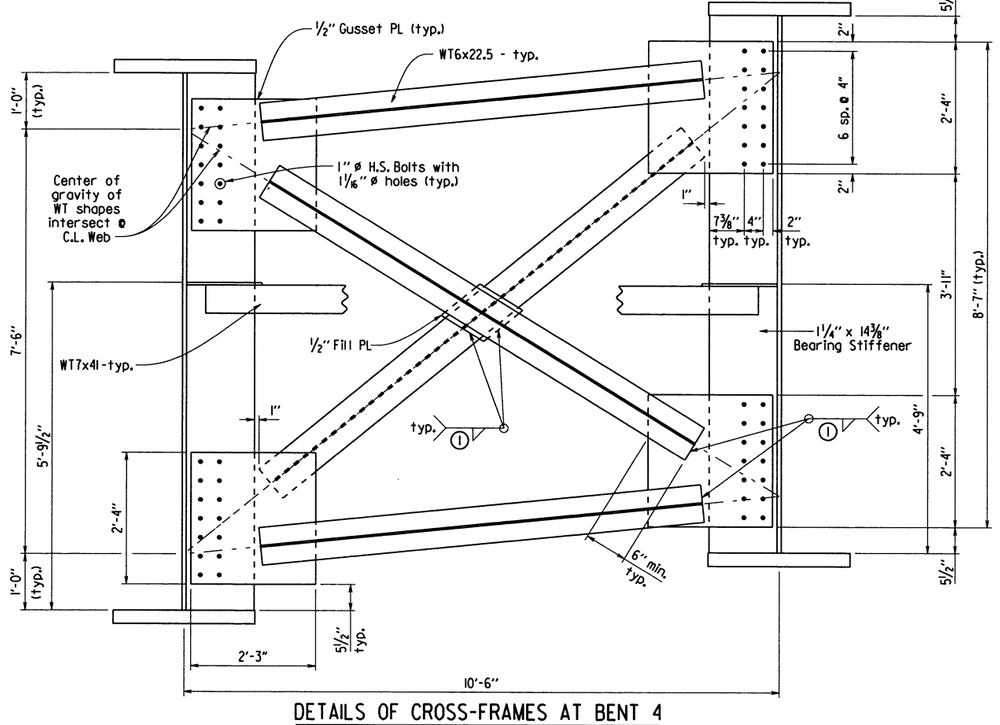
DETAILS OF CROSS-FRAMES AT CONNECTION PLATES

¾" = 1'-0"



DETAILS OF CROSS-FRAMES AT BENTS 3 & 5

Bent 3 Shown
Bent 5 Similar
¾" = 1'-0"



DETAILS OF CROSS-FRAMES AT BENT 4

¾" = 1'-0"

① See "Weld Table", Std. Dwg. No. 55007.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
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9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

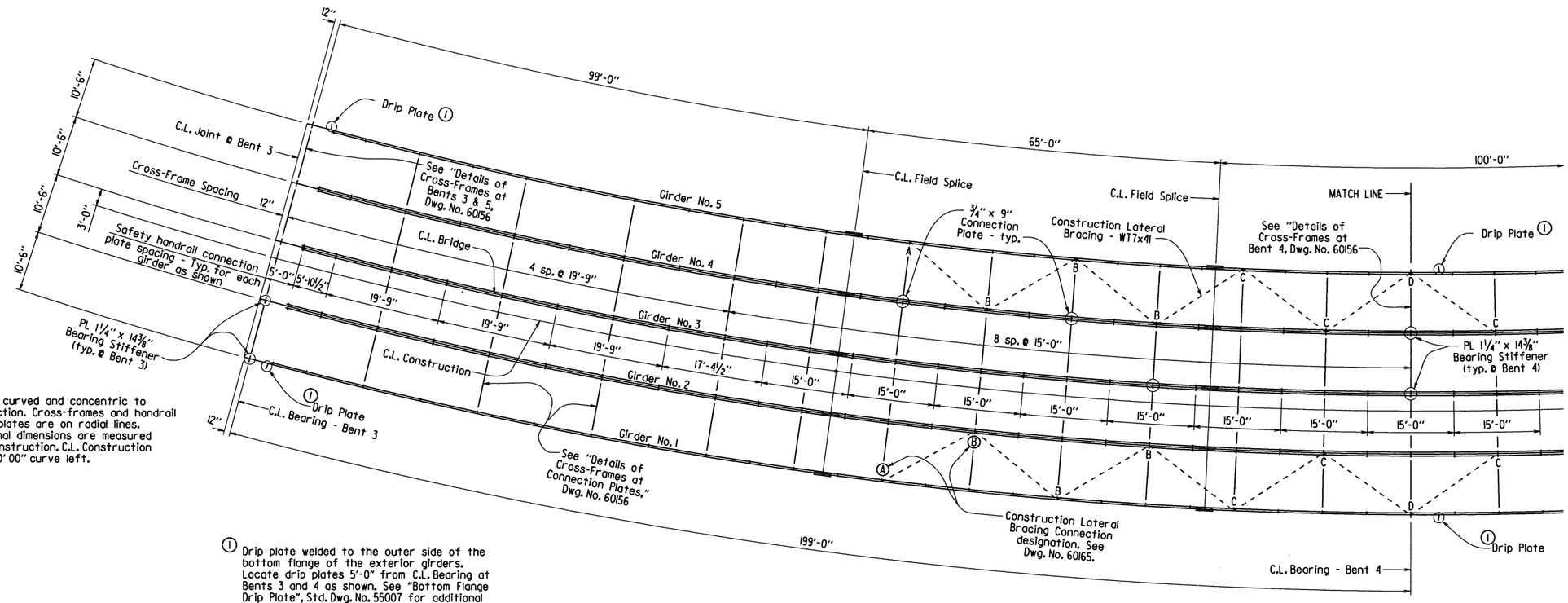
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: JNP DATE: 9-5-18 SCALE: As Shown
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BRIDGE NO. 07423 DRAWING NO. 60156

PRINT DATE: 9/5/2018

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				6	ARK.			
				JOB NO.		009784	90	193
				(1)	07423 -	450' UNIT		- 60157



FRAMING PLAN

1/32" = 1'-0"

Note:
Girders are curved and concentric to C.L. Construction. Cross-frames and handrail connection plates are on radial lines. All longitudinal dimensions are measured along C.L. Construction. C.L. Construction is on a 7° 30' 00" curve left.

(1) Drip plate welded to the outer side of the bottom flange of the exterior girders. Locate drip plates 5'-0" from C.L. Bearing at Bents 3 and 4 as shown. See "Bottom Flange Drip Plate", Std. Dwg. No. 55007 for additional details. Stop drip plate weld 1" from face of web.

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

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

Bolted members designated as "Construction Lateral Bracing" are designed only to assist the girder system in resisting Strength Limit State Wind Loads prior to completing the deck construction.

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

For additional notes, see Std. Dwg. No. 55006.

Bolted members designated as "Construction Lateral Bracing" are to be carefully removed after the concrete deck construction and curing is complete and shall become property of the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

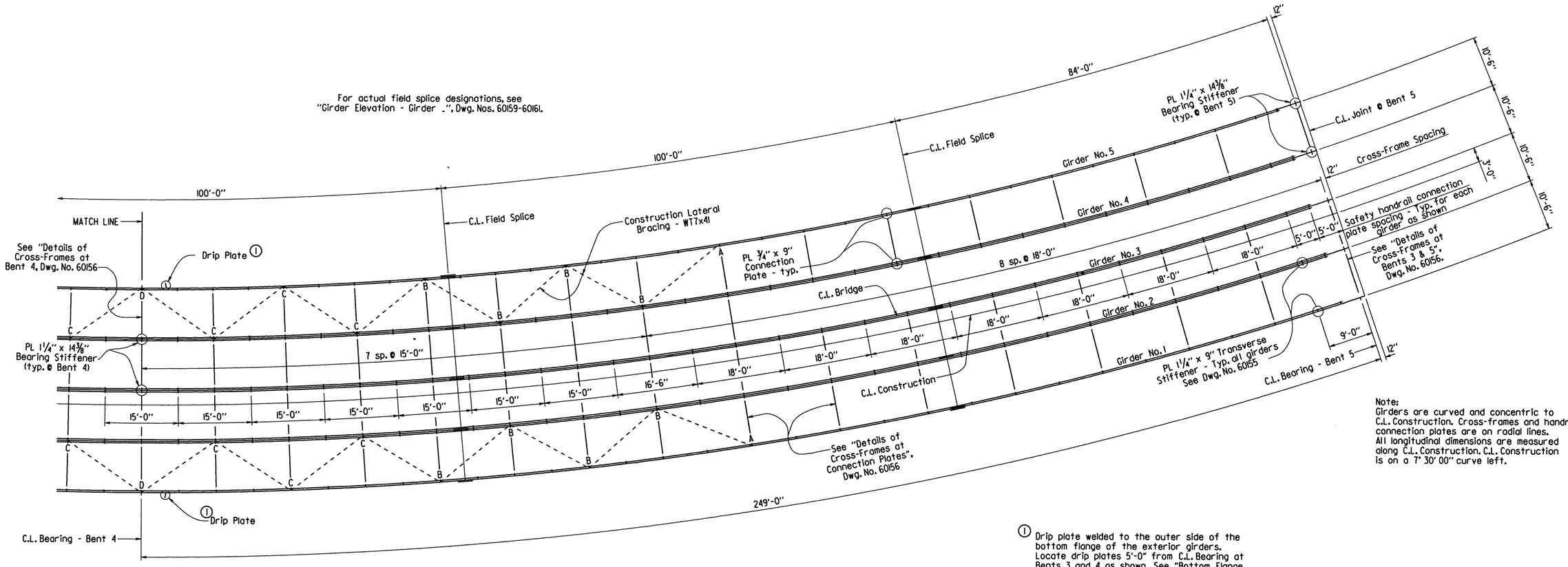
LITTLE ROCK, ARK.

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CHECKED BY: JYP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60157

PRINT DATE: 9/4/2018

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.		009784	91	193
				① 07423 -		450' UNIT		- 60158



FRAMING PLAN

3/32" = 1'-0"

Note:
Girders are curved and concentric to C.L. Construction. Cross-frames and handrail connection plates are on radial lines. All longitudinal dimensions are measured along C.L. Construction. C.L. Construction is on a 7° 30' 00" curve left.

① Drip plate welded to the outer side of the bottom flange of the exterior girders. Locate drip plates 5'-0" from C.L. Bearing at Bents 3 and 4 as shown. See "Bottom Flange Drip Plate", Std. Dwg. No. 55007 for additional details. Stop drip plate weld 1" from face of web.

Bolted members designated as "Construction Lateral Bracing" are to be carefully removed after the concrete deck construction and curing is complete and shall become property of the Contractor.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
9-5-18

BRIDGE ENGINEER

SHEET 5 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

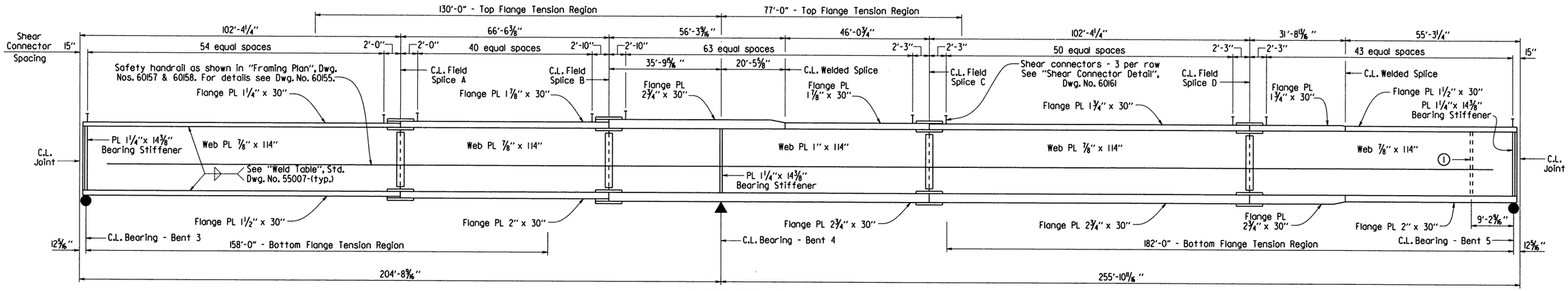
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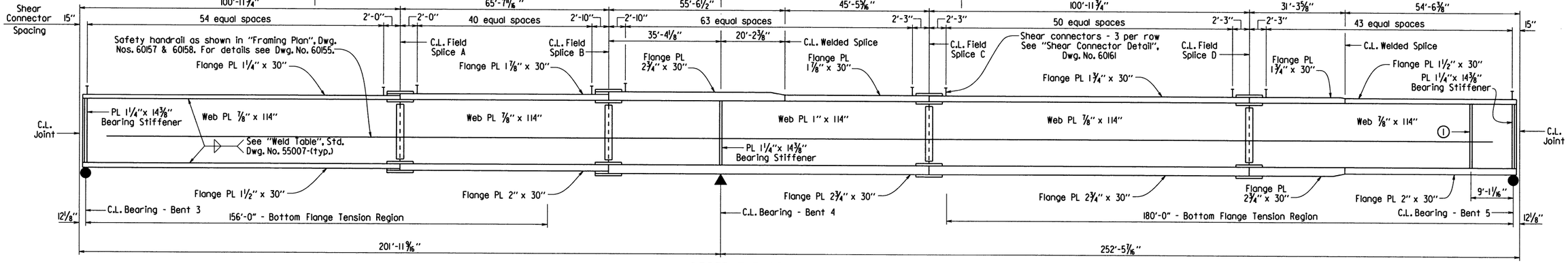
PRINT DATE: 9/4/2018

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				6	ARK.			
				JOB NO.		009784	92	193
				①	07423 -	450' UNIT	- 60159	



GIRDER ELEVATION - GIRDER 1

No Scale



GIRDER ELEVATION - GIRDER 2

No Scale

For "Details of Welded Splices for Plate Girders", see Dwg. No. 55007.

① PL 1¼"x 9" Transverse Stiffener, see Dwg. No. 60155.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 6 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT BUFFALO RIVER

ROUTE SEC.

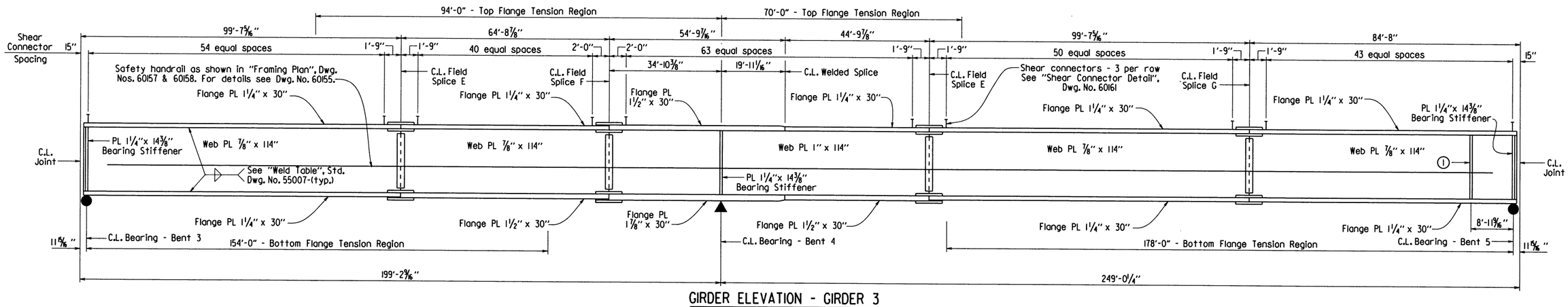
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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FILENAME: b009784x1_s2.dgn
SCALE: As Shown

BRIDGE NO. 07423
DRAWING NO. 60159

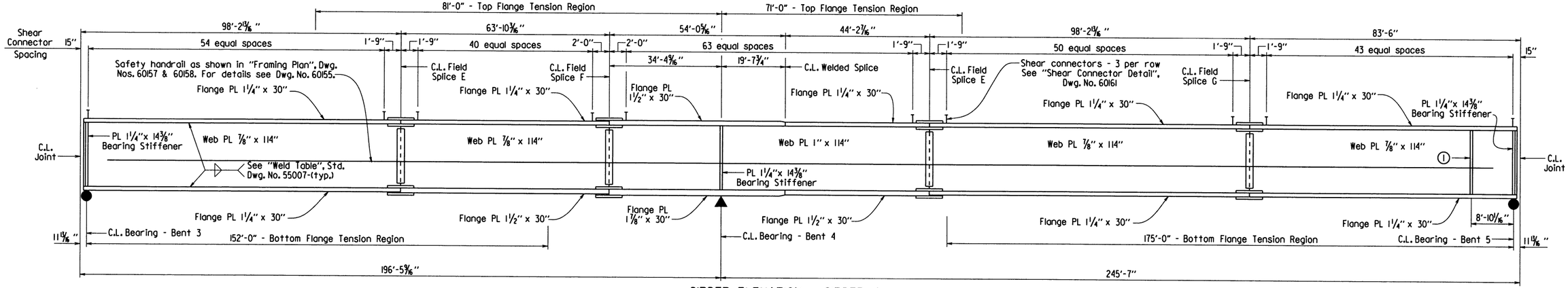
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				6	ARK.			
				JOB NO.		009784	93	193
				① 07423 -		450' UNIT	- 60160	



GIRDER ELEVATION - GIRDER 3

No Scale



GIRDER ELEVATION - GIRDER 4

No Scale

For "Details of Welded Splices for Plate Girders", see Dwg. No. 55007.

① PL 1¼"x 9" Transverse Stiffener, see Dwg. No. 60155.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 7 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

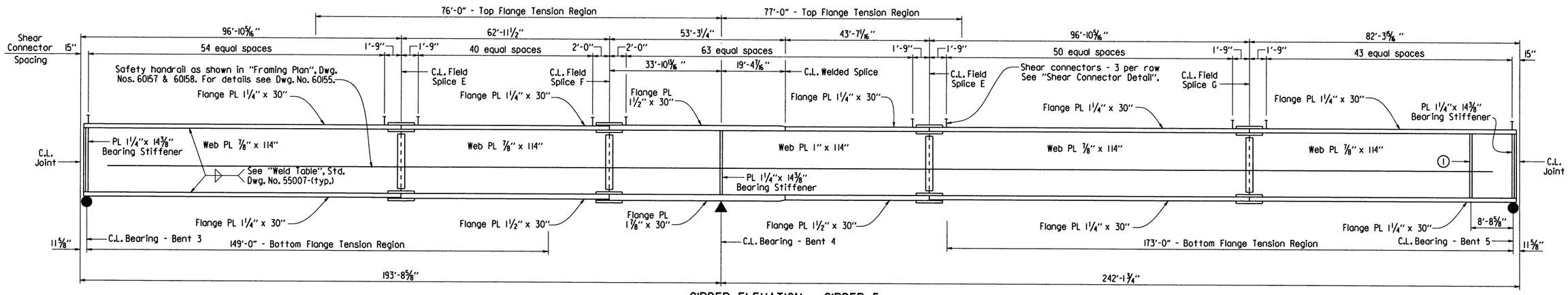
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BRIDGE NO. 07423 DRAWING NO. 60160

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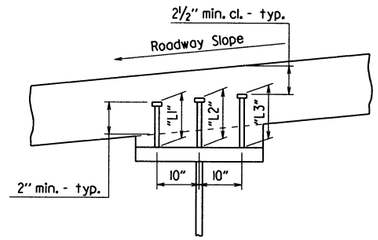


GIRDER ELEVATION - GIRDER 5

No Scale

For "Details of Welded Splices for Plate Girders", see Dwg. No. 55007.

① PL 1¼"x 9" Transverse Stiffener, see Dwg. No. 60155.



SHEAR CONNECTOR DETAIL

No Scale

All stud shear connectors shall be ⅞" ø and automatically end welded to the beam or girder flange in accordance with the recommendations of the Manufacturer.

Girder No.	Top Flange Thickness														
	1¼"			1½"			1¾"			1⅞"			2¾"		
	"L1"	"L2"	"L3"	"L1"	"L2"	"L3"	"L1"	"L2"	"L3"	"L1"	"L2"	"L3"	"L1"	"L2"	"L3"
1 - 2	6"	7"	8"	6"	7"	8"	6"	7"	8"	6"	7"	8"	5"	6"	7"
3 - 4	6"	7"	8"	6"	7"	8"	-	-	-	-	-	-	-	-	-
5	11"	11"	11"	11"	11"	11"	-	-	-	-	-	-	-	-	-

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 8 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

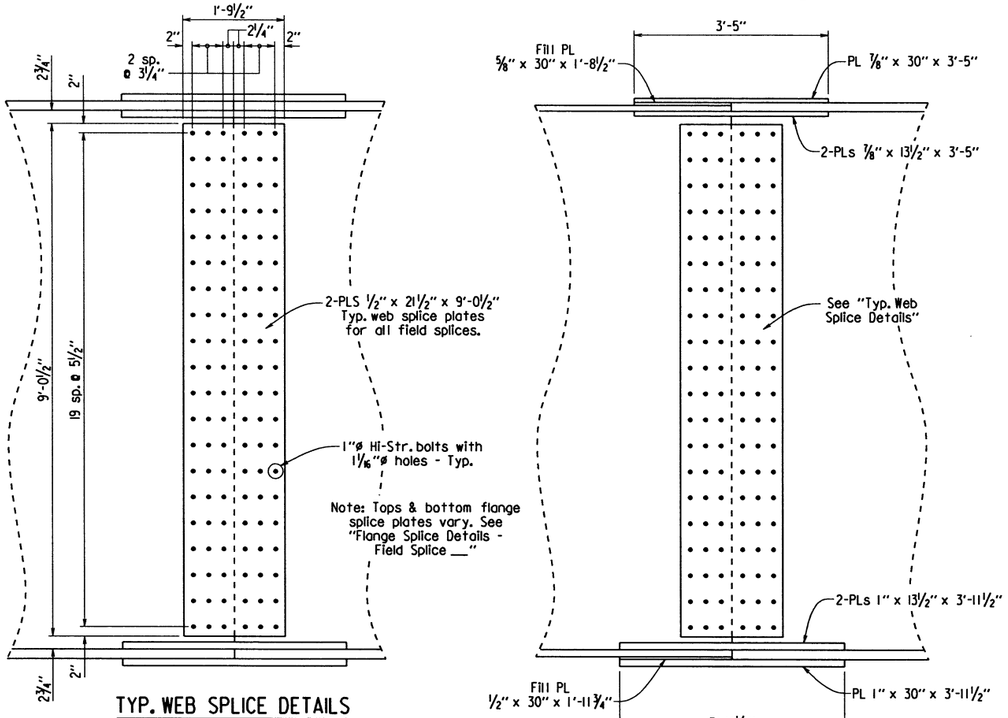
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LITTLE ROCK, ARK.

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PRINT DATE: 8/31/2018

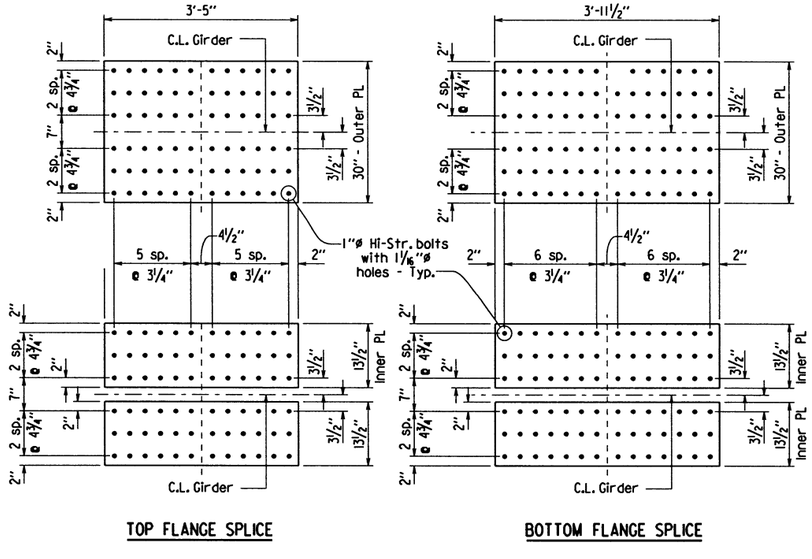
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				6	ARK.			
				JOB NO.		009784	9S	192
				07423 -		450' UNIT	- 60162	



TYP. WEB SPLICE DETAILS

¾" = 1'-0"

SPLICE ELEVATION

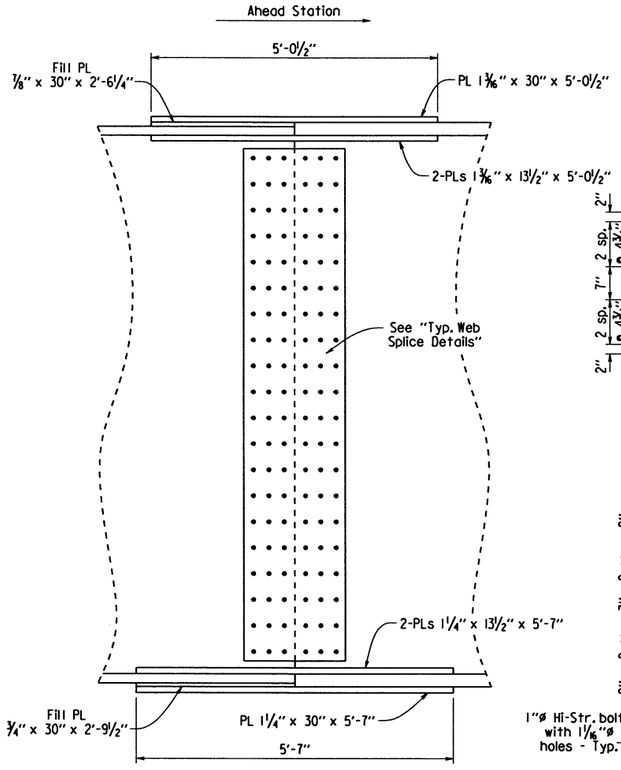


TOP FLANGE SPLICE

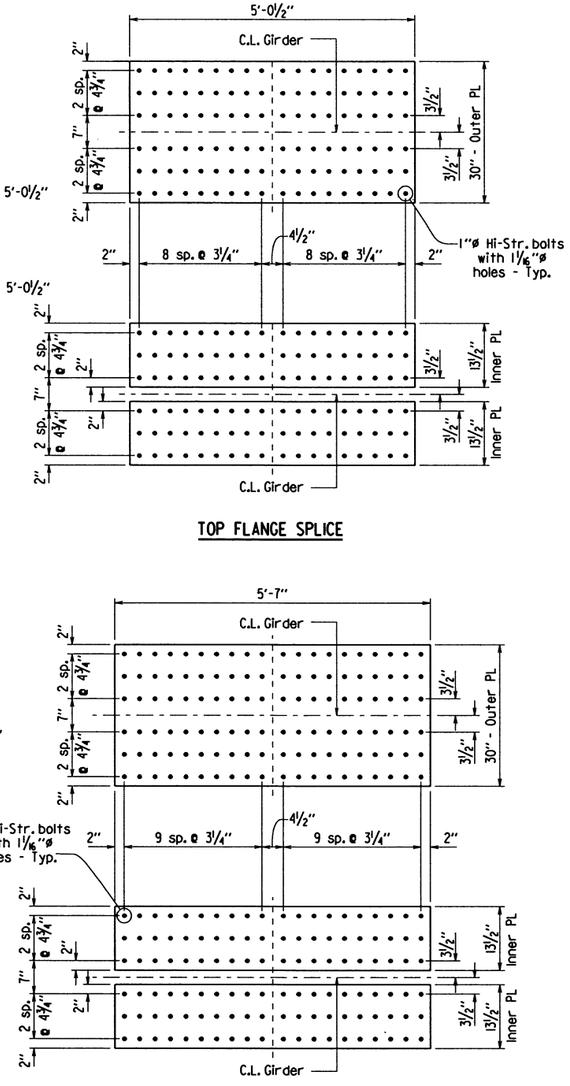
BOTTOM FLANGE SPLICE

FLANGE SPLICE DETAILS - FIELD SPLICE A

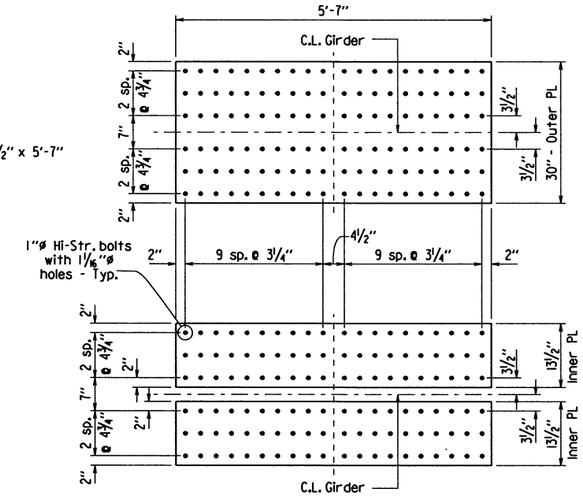
¾" = 1'-0"



SPLICE ELEVATION



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

FLANGE SPLICE DETAILS - FIELD SPLICE B

¾" = 1'-0"

All field splice bolts shall be 1"ø Hi-Str. bolts.

All holes for splice bolts shall be 1⅛"ø.

All field splice plates shall be AASHTO M 270 Gr. 50W.

STATE OF ARKANSAS
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No. 9235
10-23-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 9 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

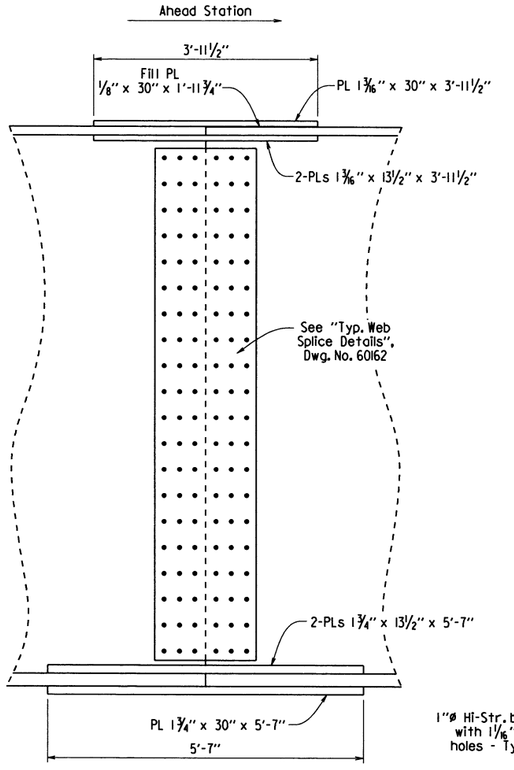
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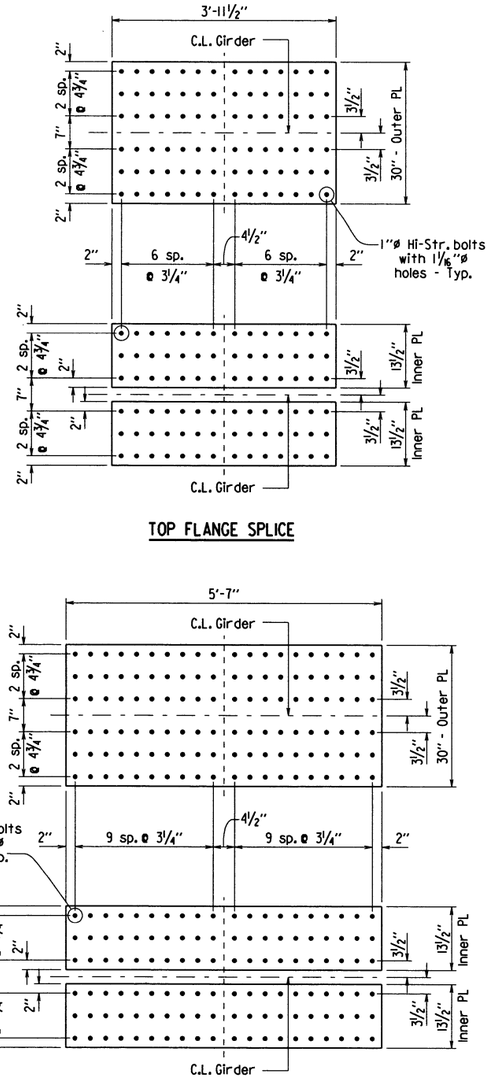
BRIDGE NO. 07423 DRAWING NO. 60162

PRINT DATE: 10/22/2018

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				JOB NO.		009784	96	193
				(1) 07423 -		450' UNIT	- 60163	



SPLICE ELEVATION

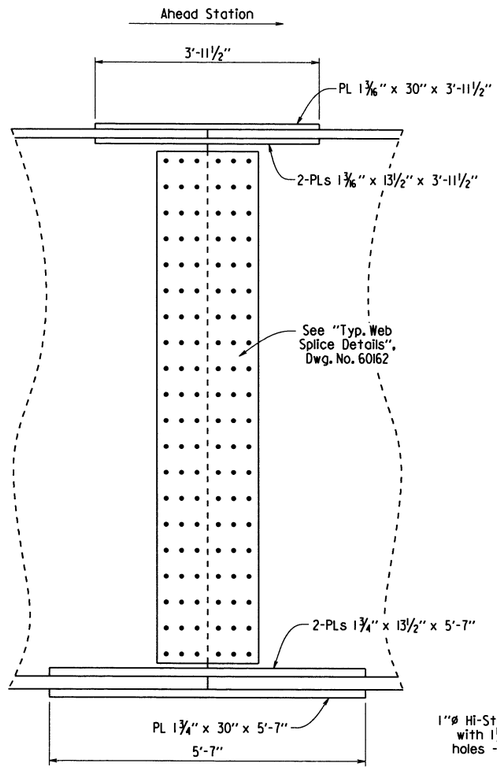


TOP FLANGE SPLICE

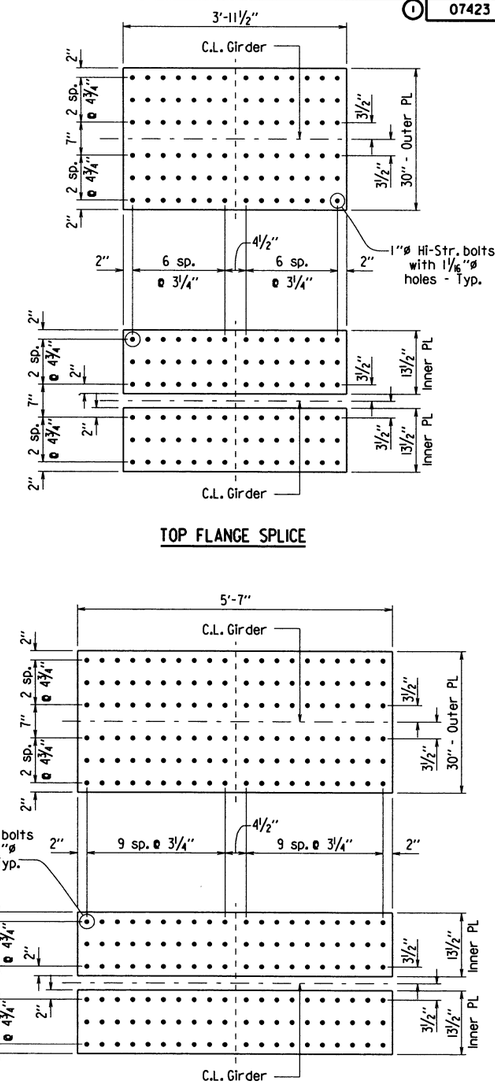
BOTTOM FLANGE SPLICE

FLANGE SPLICE DETAILS - FIELD SPLICE C

¾" = 1'-0"



SPLICE ELEVATION



TOP FLANGE SPLICE

BOTTOM FLANGE SPLICE

FLANGE SPLICE DETAILS - FIELD SPLICE D

¾" = 1'-0"

All field splice bolts shall be 1"ø Hi-Str. bolts.

All holes for splice bolts shall be 1⅛"ø.

All field splice plates shall be AASHTO M 270 Gr. 50W.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 10 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

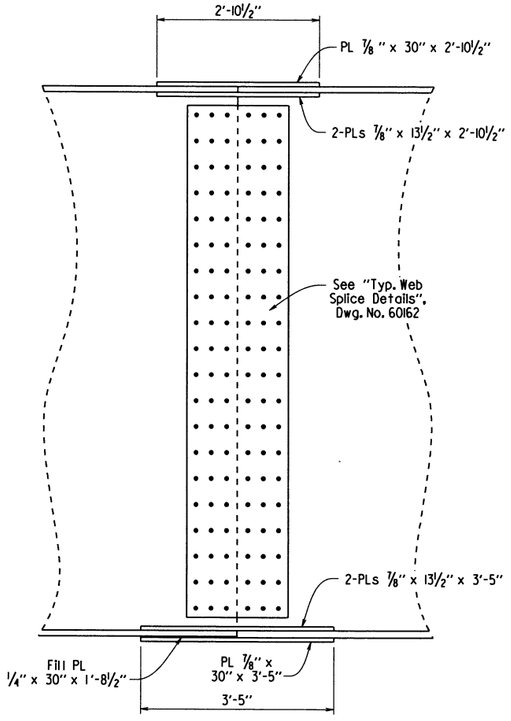
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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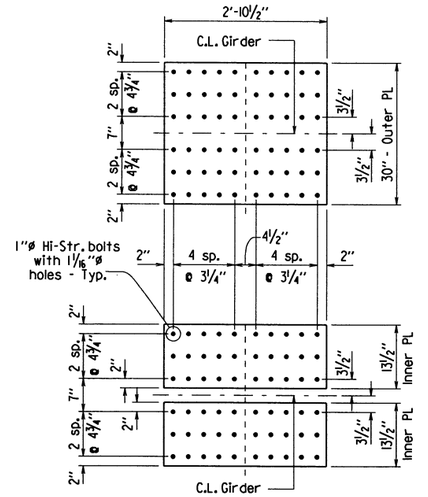
BRIDGE NO. 07423 DRAWING NO. 60163

PRINT DATE: 8/29/2018

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				07423 -		450' UNIT	- 60164	



SPLICE ELEVATION

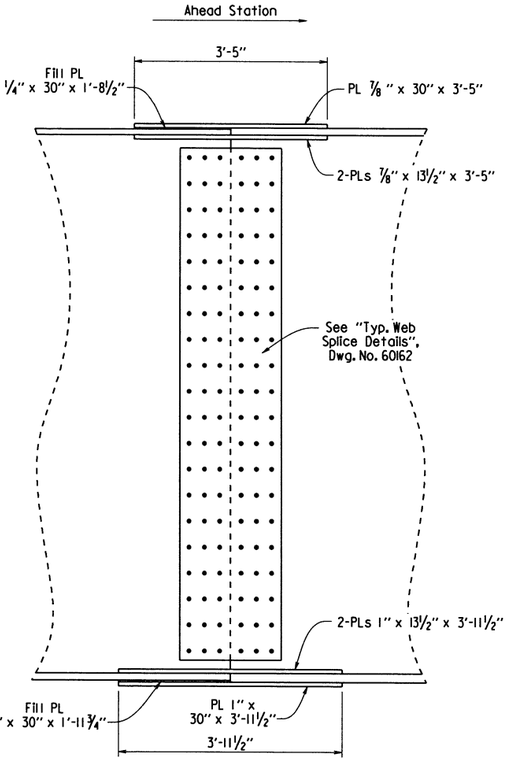


TOP FLANGE SPLICE

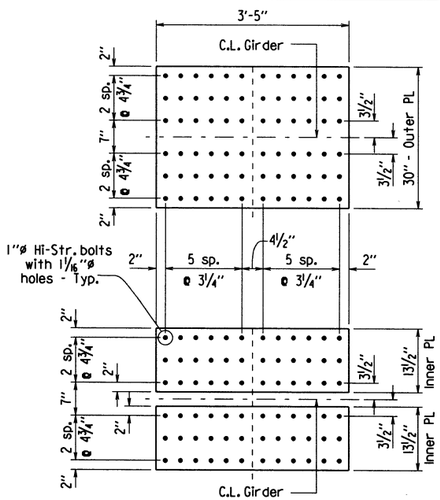
BOTTOM FLANGE SPLICE

FLANGE SPLICE DETAILS - FIELD SPLICE E

¾" = 1'-0"



SPLICE ELEVATION



TOP FLANGE SPLICE

BOTTOM FLANGE SPLICE

FLANGE SPLICE DETAILS - FIELD SPLICE F

¾" = 1'-0"

All field splice bolts shall be 1"ø Hi-Str. bolts.

All holes for splice bolts shall be 1 1/16"ø.

All field splice plates shall be AASHTO M 270 Gr. 50W.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 11 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

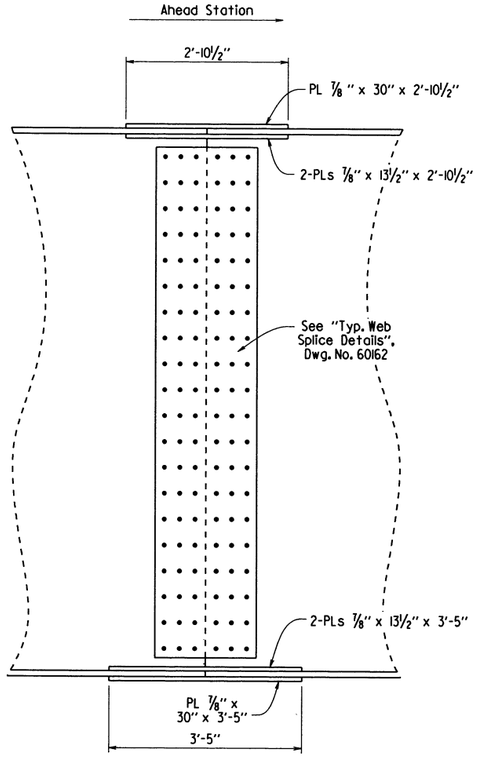
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: JWT DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017

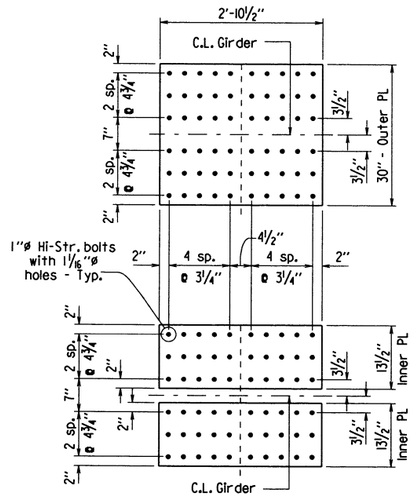
BRIDGE NO. 07423 DRAWING NO. 60164

PRINT DATE: 8/29/2018

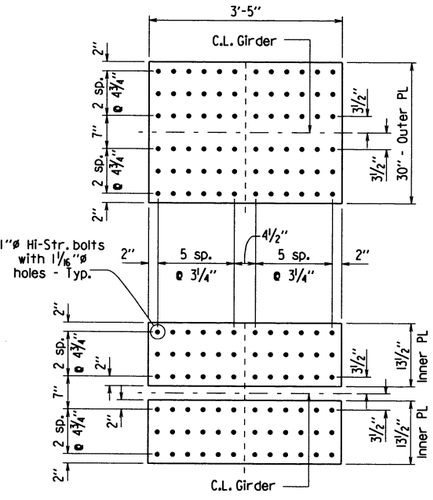
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				6	ARK.			
				JOB NO.		009784	98	193
				① 07423 -		450' UNIT	- 60165	



SPLICE ELEVATION



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

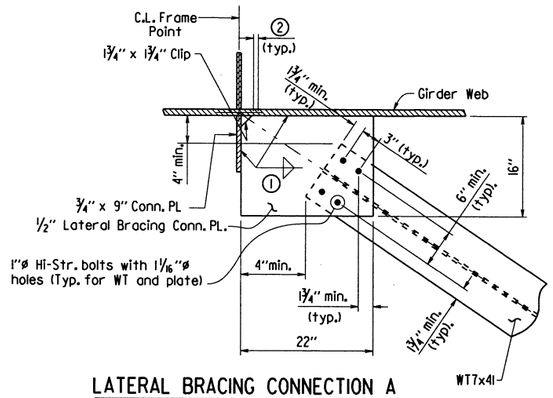
FLANGE SPLICE DETAILS - FIELD SPLICE G

¾" = 1'-0"

All field splice bolts shall be 1"ø Hi-Str. bolts.

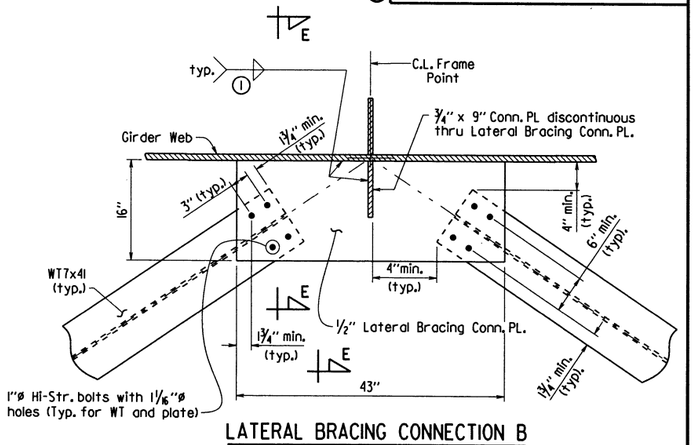
All holes for splice bolts shall be 1⅛"ø.

All field splice plates shall be AASHTO M 270 Gr. 50W.



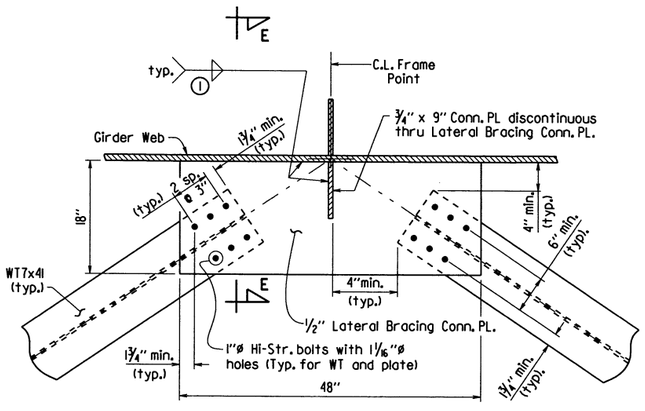
LATERAL BRACING CONNECTION A

1" = 1'-0"



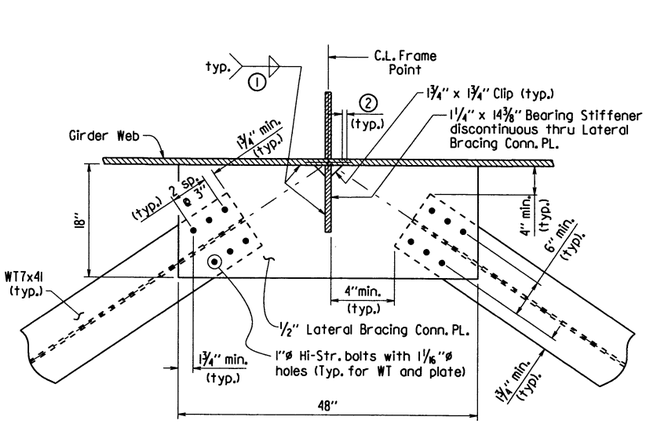
LATERAL BRACING CONNECTION B

1" = 1'-0"



LATERAL BRACING CONNECTION C

1" = 1'-0"

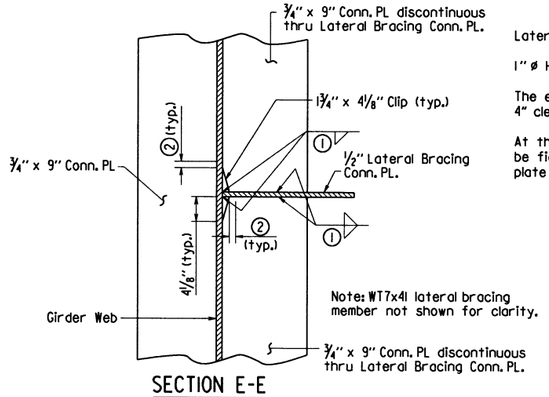


LATERAL BRACING CONNECTION D

With Bearing Stiffener at Bent 4

1" = 1'-0"

Note: ½" lateral bracing connection plate shall be notched at these locations to allow for the 1¼" bearing stiffeners as required.



SECTION E-E

At Lateral Bracing Connections "B" and "C"
No Scale

Lateral Bracing Connection Notes:

1" ø H.S. Bolts shall be used in all lateral bracing connections.

The ends of lateral bracing members shall be a minimum of 4" clear from the web or any stiffener or connection plate.

At the Contractor's option, holes in one end of the WT may be field drilled. Minimum clearance from C.L. Bolt to edge of plate is 1¾".

① See "Weld Table", Std. Dwg. No. 55007.

② Stop Weld ¼" to 1" from end of clip.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 12 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: OCT. 2017 FILENAME: b009784xl_s2.dgn
CHECKED BY: JNP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017

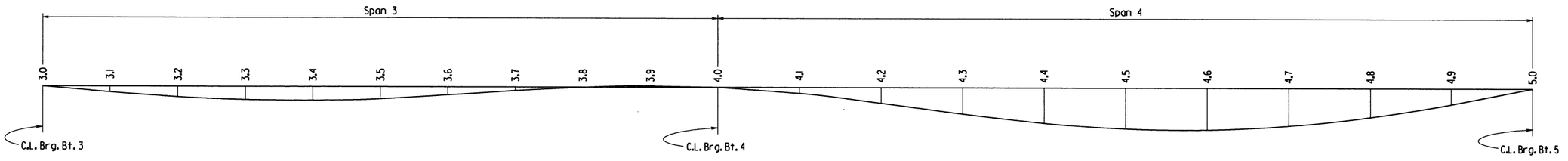
BRIDGE NO. 07423 DRAWING NO. 60165

PRINT DATE: 8/29/2018

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				6	ARK.			
				JOB NO.		009784	99	193
				①	07423 - 450' UNIT - 60166			

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel					Structural Steel + Slab + Sidewalk					Structural Steel + Slab + Sidewalk + Railing				
		Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5
3	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.183	0.221	0.268	0.315	0.353	0.793	0.843	0.920	0.997	1.051	0.866	0.886	0.951	1.034	1.106
	0.2	0.289	0.376	0.468	0.559	0.635	1.335	1.469	1.622	1.775	1.885	1.462	1.545	1.677	1.841	1.983
	0.3	0.273	0.414	0.554	0.687	0.805	1.470	1.714	1.961	2.190	2.383	1.622	1.805	2.027	2.272	2.506
	0.4	0.121	0.318	0.508	0.681	0.836	1.130	1.507	1.871	2.191	2.465	1.274	1.592	1.934	2.273	2.593
	0.5	-0.109	0.132	0.363	0.569	0.751	0.479	0.974	1.449	1.859	2.204	0.587	1.035	1.494	1.927	2.319
	0.6	-0.349	-0.085	0.163	0.382	0.580	-0.249	0.314	0.839	1.290	1.685	-0.193	0.339	0.856	1.331	1.772
	0.7	-0.533	-0.276	-0.039	0.168	0.357	-0.862	-0.309	0.197	0.626	1.009	-0.860	-0.322	0.185	0.637	1.059
	0.8	-0.582	-0.371	-0.182	-0.016	0.136	-1.151	-0.698	-0.299	0.041	0.348	-1.189	-0.737	-0.331	0.027	0.361
	0.9	-0.412	-0.292	-0.192	-0.096	-0.007	-0.889	-0.637	-0.435	-0.241	-0.066	-0.932	-0.675	-0.467	-0.263	-0.075
4	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.1	0.877	0.727	0.575	0.431	0.290	2.063	1.790	1.508	1.242	0.982	2.204	1.904	1.599	1.320	1.054
	0.2	2.019	1.706	1.395	1.094	0.801	4.846	4.291	3.736	3.194	2.668	5.191	4.566	3.957	3.384	2.845
	0.3	3.189	2.711	2.253	1.810	1.373	7.748	6.902	6.099	5.317	4.539	8.310	7.347	6.457	5.625	4.822
	0.4	4.161	3.546	2.971	2.424	1.877	10.187	9.095	8.098	7.153	6.185	10.931	9.682	8.570	7.558	6.553
	0.5	4.757	4.054	3.417	2.812	2.208	11.711	10.453	9.359	8.325	7.272	12.570	11.126	9.898	8.786	7.688
	0.6	4.848	4.130	3.489	2.884	2.277	11.990	10.695	9.59	8.557	7.493	12.871	11.380	10.136	9.022	7.912
	0.7	4.384	3.731	3.147	2.594	2.042	10.888	9.695	8.672	7.705	6.715	11.686	10.311	9.159	8.119	7.089
	0.8	3.373	2.864	2.400	1.971	1.548	8.410	7.467	6.629	5.860	5.087	9.023	7.935	6.995	6.171	5.370
	0.9	1.841	1.558	1.304	1.069	0.843	4.602	4.069	3.605	3.181	2.771	4.936	4.322	3.801	3.348	2.925
	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



DEAD LOAD DEFLECTION DIAGRAM

NOTE: Camber for Dead Load Deflection plus vertical curve +/- 1/4" tolerance. Deflections shown are along C.L. Girder from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above plane. Vertical curve corrections not included.

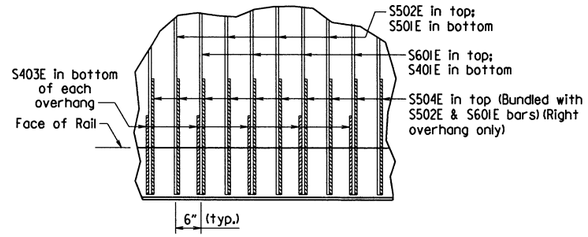
STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 13 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

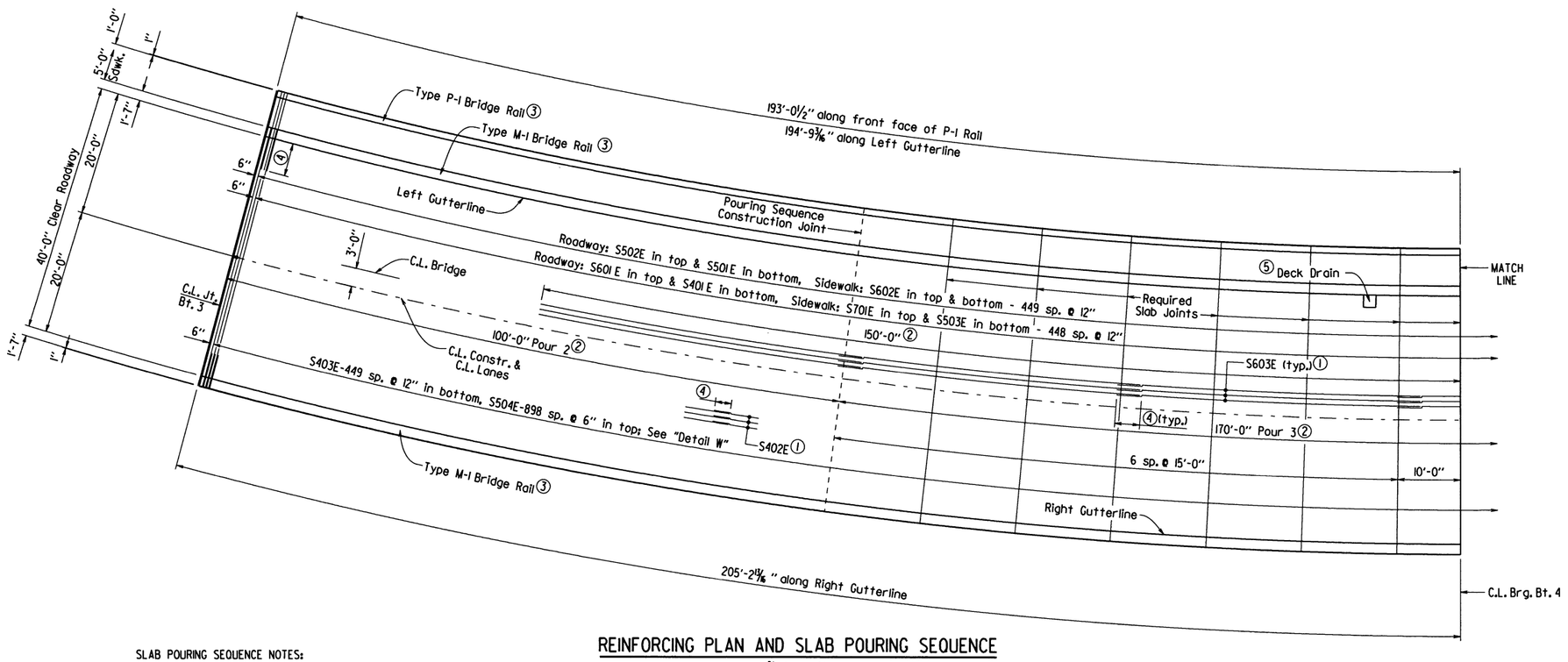
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CHECKED BY: JHP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017
BRIDGE NO. 07423 DRAWING NO. 60166

PRINT DATE: 8/29/2018

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.		009784	100	193
				① 07423 -		450' UNIT	- 60167	



DETAIL W
No Scale



REINFORCING PLAN AND SLAB POURING SEQUENCE
½" = 1'-0"

SLAB POURING SEQUENCE NOTES:

Pour (1) must be placed before Pour (2) can be placed. Pour (2) must be placed before Pour (3) can be placed. 48 hours shall elapse between the end of a Pour (1) and the start of Pour (2). 72 hours shall elapse between the end of Pour (2) and the start of Pour (3). A minimum of 72 hours shall elapse between completion of the slab and the pouring of the bridge railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. **No deviations from the pouring sequence shown will be allowed.**

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

NOTES:

C.L. Construction is on a 7°30'00" curve left. Unless noted otherwise all longitudinal dimensions are along C.L. Construction and C.L. Lanes. All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Construction and C.L. Lanes.

All transverse reinforcing steel shall be placed on radial lines to C.L. Construction & C.L. Lanes. Spacing shown is measured along C.L. Construction & C.L. Lanes.

① Placed as shown in "Typical Roadway Section," Dwg. No. 60154.

② Measured Along C.L. Construction.

③ See Dwg. Nos. 60171-60172 and 60173-60174 for details of Type M-1 and Type P-1 Bridge Rails, respectively.

④ Minimum Lap for Bars:
2'-7" - Min. Lap No. 4 Bars
3'-3" - Min. Lap No. 5 Bars
3'-10" - Min. Lap No. 6 Bars
4'-10" - Min. Lap No. 7 Bars

⑤ See Dwg. No. 60175 for details and locations of Deck Drains.

STATE OF ARKANSAS
Charles R. Ellis
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9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 14 OF 15
DETAILS OF 450'-0" CONTINUOUS PLATE GIRDER UNIT BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

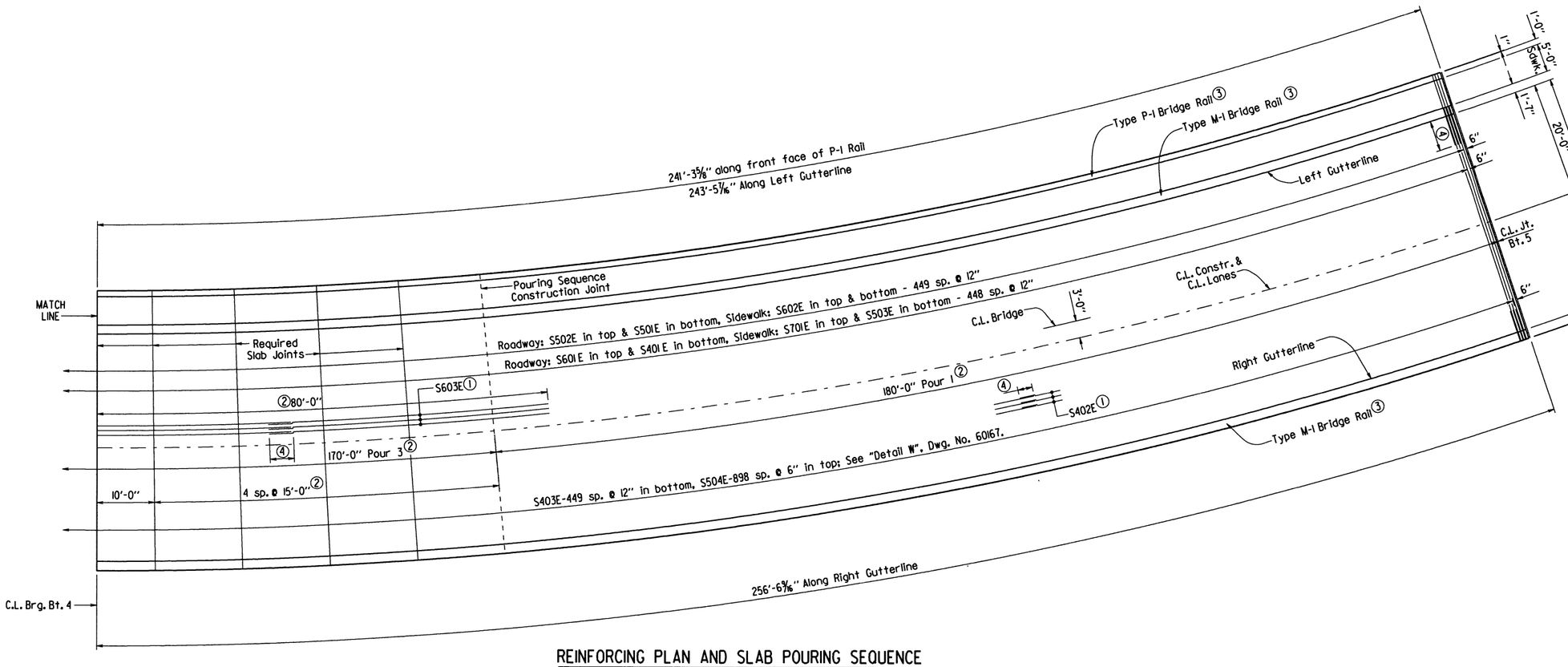
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CHECKED BY: JWP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60167

PRINT DATE: 8/29/2018

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.		009784	101	193
① 07423 -		450' UNIT	- 60168	



REINFORCING PLAN AND SLAB POURING SEQUENCE

$\frac{1}{12}$" = 1'-0"

① Placed as shown in "Typical Roadway Section," Dwg. No. 60154.

② Measured Along C.L. Construction.

③ See Dwg. Nos. 60171-60172 and 60173-60174 for details of Type M-1 and Type P-1 Bridge Rails, respectively.

④ Minimum Lap for Bars:
- 2'-7" - Min. Lap No. 4 Bars
- 3'-3" - Min. Lap No. 5 Bars
- 3'-10" - Min. Lap No. 6 Bars
- 4'-10" - Min. Lap No. 7 Bars

⑤ See Dwg. No. 60175 for details and locations of Deck Drains.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 15 OF 15
DETAILS OF 450'-0"
CONTINUOUS PLATE GIRDER UNIT
BUFFALO RIVER

ROUTE SEC.

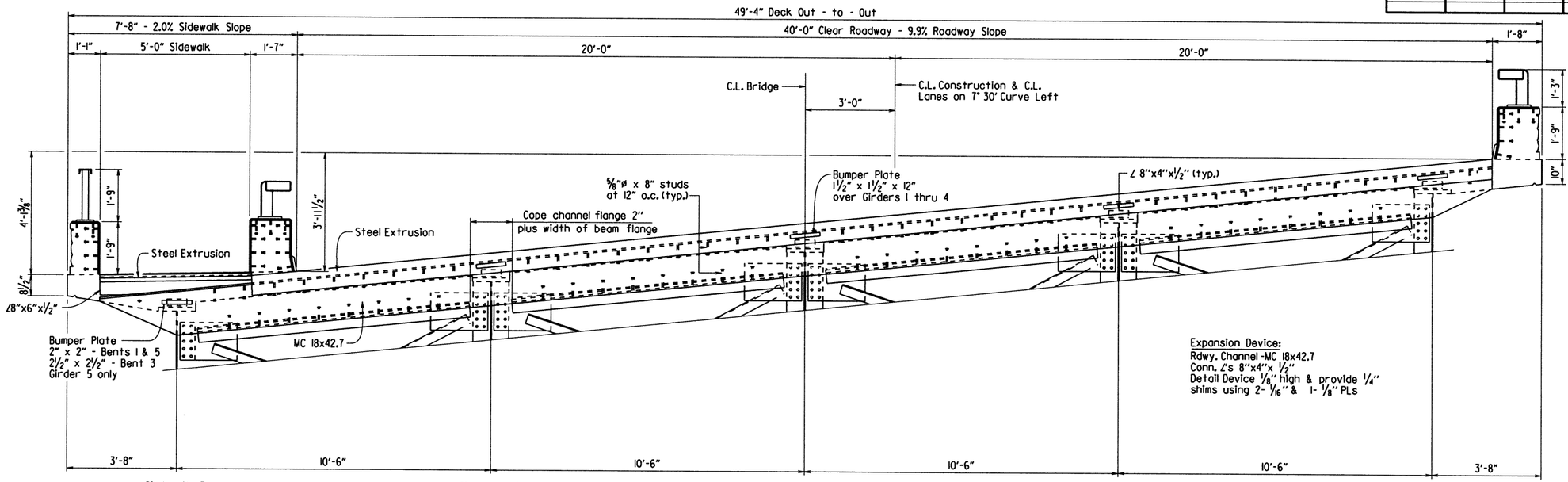
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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BRIDGE NO. 07423 DRAWING NO. 60168

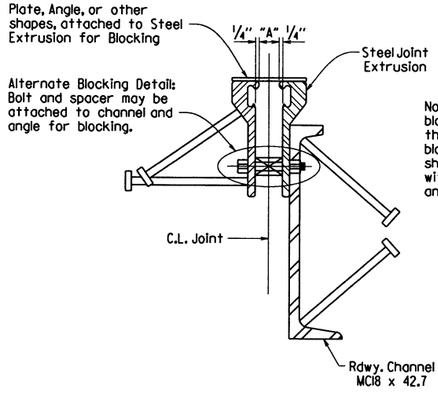
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				6	ARK.			
				JOB NO.		009784	102	193
				①		07423 - COMMON - 60169		



TYPICAL ROADWAY SECTION NEAR JOINT

Looking Ahead
½" = 1'-0"



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

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

No Scale

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The steel extrusion material (D.S. Brown SSPA or approved equal), neoprene strip seal material (D.S. Brown L2-400 or approved equal) and installation shall be in accordance with Section 809.

The expansion device shall provide for the movement rating(s) shown in the "TABLE OF STRIP SEAL JOINT DATA" in the plan details. The expansion joint shall be capable of sealing the deck surface and parapet area to prevent moisture and other contaminants from descending through the joint.

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

All structural steel shall conform to AASHTO M 270, Grade 50W and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Structural Steel shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)."

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:

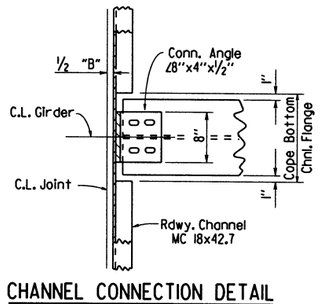
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing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

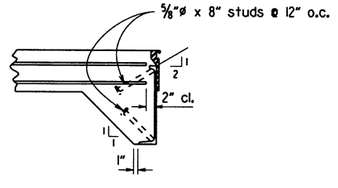
After all girders on each side of the joint are erected the blocked expansion device shall be installed and adjusted for grade. Deck concrete shall be placed for the entire unit or span on one side of the joint before deck concrete on the other side is placed. Connection bolts for the first side to have 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.



CHANNEL CONNECTION DETAIL

No Scale



DETAILS OF ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCING

No Scale

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
COMMON DETAILS OF CONTINUOUS PLATE GIRDER UNITS BUFFALO RIVER

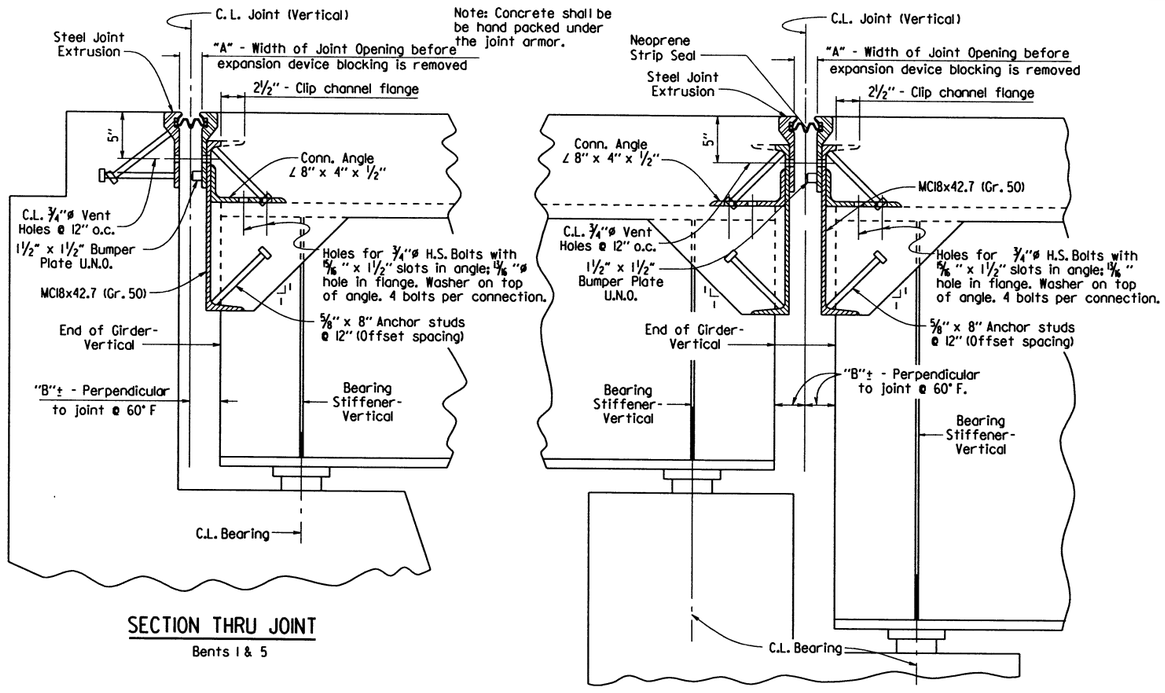
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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DESIGNED BY: LJB DATE: 9-2017
BRIDGE NO. 07423 DRAWING NO. 60169

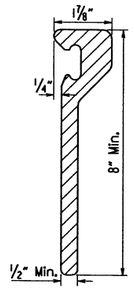
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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	103	193
				07423 - COMMON - 60170				

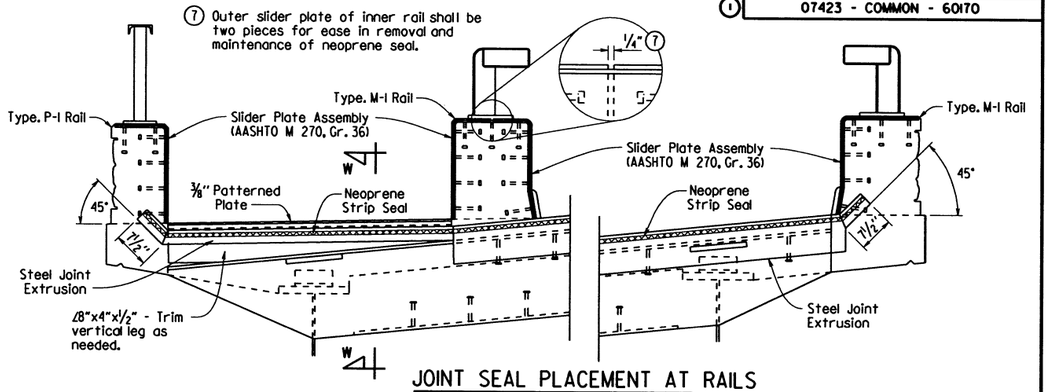


SECTION THRU JOINT
Bents 1 & 5

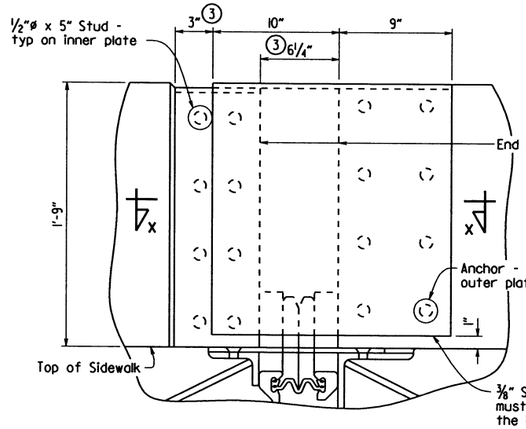
SECTION THRU JOINT
Bent 3



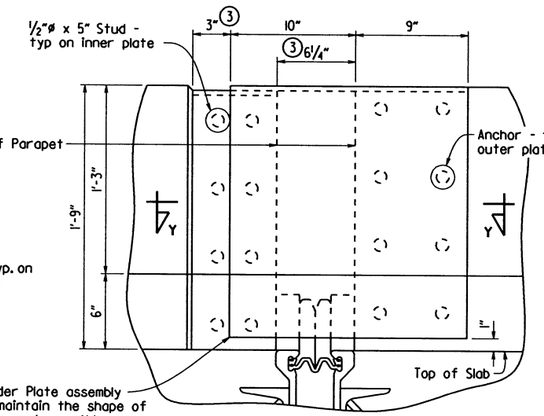
STEEL EXTRUSION



JOINT SEAL PLACEMENT AT RAILS

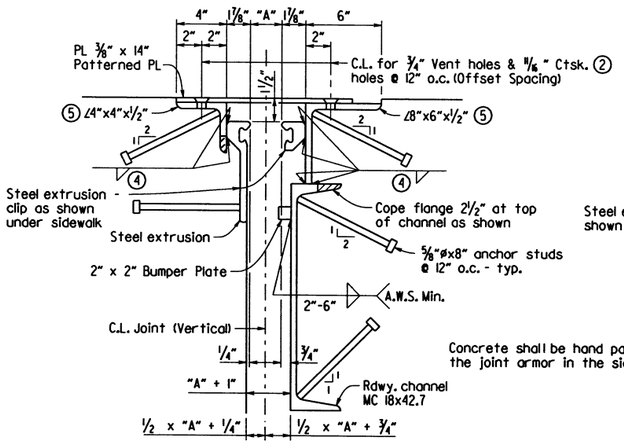


ELEVATION OF SLIDER PLATE ASSEMBLY
Type P-I Rail

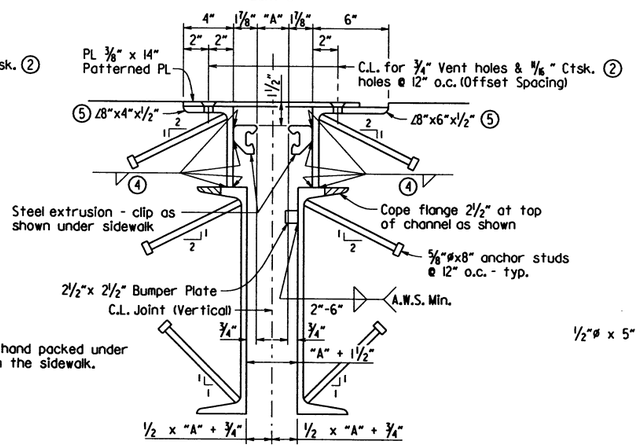


ELEVATION OF SLIDER PLATE ASSEMBLY
Type M-I Rail

All Sections taken perpendicular to C.L. Joint

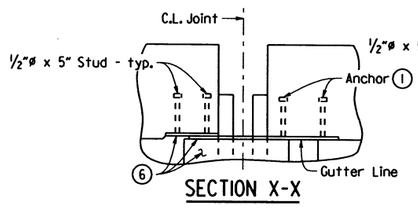


SECTION W-W
Bents 1 & 5

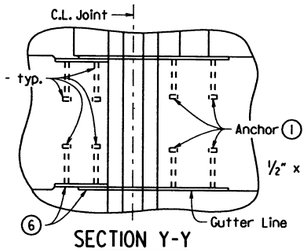


Concrete shall be hand packed under the joint armor in the sidewalk.

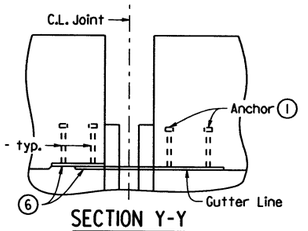
SECTION W-W
Bent 3



SECTION X-X



SECTION Y-Y
Low Side



SECTION Y-Y
High Side

STRIP SEAL JOINT DATA

Bent No.	Movement Rating	"A" - Width perpendicular to joint at 24 hour average temperature of: 40°F	60°F	80°F	"B" - Width perpendicular to joint at 24 hour average temperature of: 60°F
1	4"	2⅞"	2½"	2⅛"	3¼"
3	4"	2¾"	2½"	2⅜"	3¼"
5	4"	2⅞"	2½"	2⅛"	3¼"

The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary. Installation is limited to 40° F min. and 80° F max. The temperature limitations by the lubricant-adhesive manufacturer shall be observed.

① The method of attachment of the cover slider plate assembly or similar device must be such that it may be removed in order to provide for future replacement of the neoprene seal.

Anchors will not be paid for directly but will be considered subsidiary to "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

② Countersink ⅞" ø holes in ⅜" Patterned Plate. Tap leg of angles for ASTM A449 ⅝" ø screws @ 12" o.c. Install screws in the shop and ship as a unit. Screws on the span side at bents 1 & 5 and ahead side of joint at bent 3 shall be removed. Screws on backwall side at bents 1 & 5 and back side of joint at bent 3 to remain in place after erection. See "Expansion Device Installation" notes, Dwg. No. 60169.

③ Dimension shown @ 60° F.

④ See "Weld Table", Std. Dwg. No. 55007.

⑤ Trim vertical legs of angles as needed.

⑥ Joint slider plates shall be AASHTO M 270, Gr. 36, 50, or 50W and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)." The surfaces of the plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638, or as directed by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting shall not be paid for directly, but will be considered subsidiary to "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)."

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
12-3-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
COMMON DETAILS OF CONTINUOUS PLATE GIRDER UNITS BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

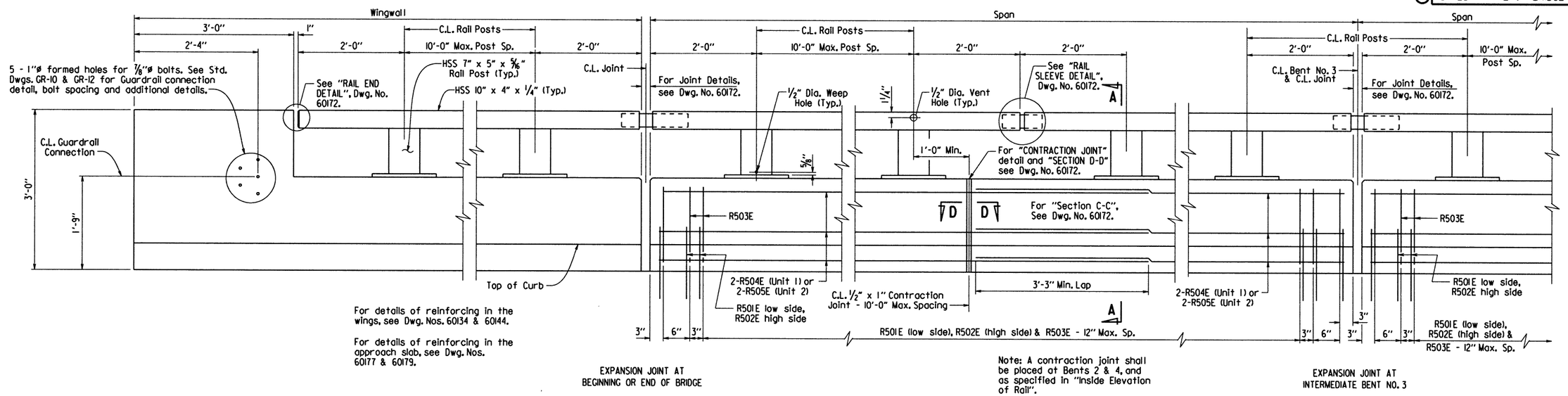
DRAWN BY: BHS DATE: 5/10/2018 FILENAME: b009784xl_jl.dgn
CHECKED BY: JHP DATE: 12/4/18 SCALE: No Scale
DESIGNED BY: LJB DATE: 9-2017

BRIDGE NO. 07423 DRAWING NO. 60170

PRINT DATE: 12/4/2018

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.		009784	104	193

(1) 07423 - TYPE M-I BRIDGE RAIL - 60171



For details of reinforcing in the wings, see Dwg. Nos. 60134 & 60144.

For details of reinforcing in the approach slab, see Dwg. Nos. 60177 & 60179.

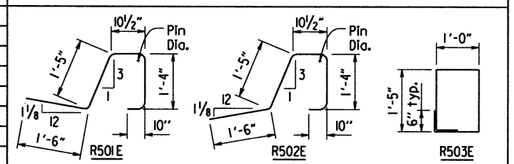
EXPANSION JOINT AT BEGINNING OR END OF BRIDGE

Note: A contraction joint shall be placed at Bents 2 & 4, and as specified in "Inside Elevation of Rail".

EXPANSION JOINT AT INTERMEDIATE BENT NO. 3

BAR LIST

Mark	No. Req'd.	Length	Pin Dia.	BENDING DIAGRAMS
R501E	689	5'-11"	2 1/2"	
R502E	725	5'-11"	2 1/2"	
R503E	1414	5'-4"	3 3/4"	
R504E	60	53'-11"	Str.	
R505E	108	54'-2"	Str.	



Dimensions are out to out of bars.

Bars with "E" designation shall be epoxy coated.

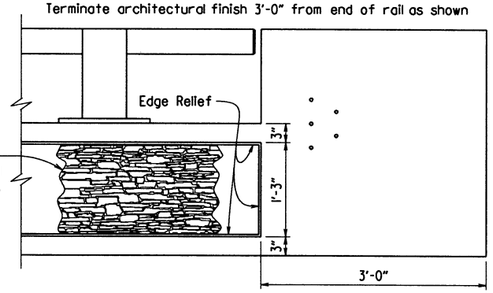
INSIDE ELEVATION OF RAIL

1" = 1'-0"

RAIL MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350

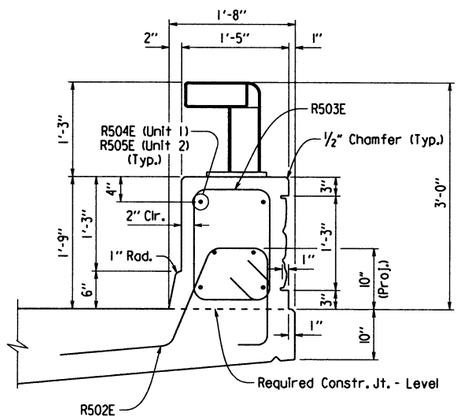
All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Construction.

All transverse reinforcing steel shall be placed on radial lines to C.L. Construction. Spacing shown is measured along Gutterline.



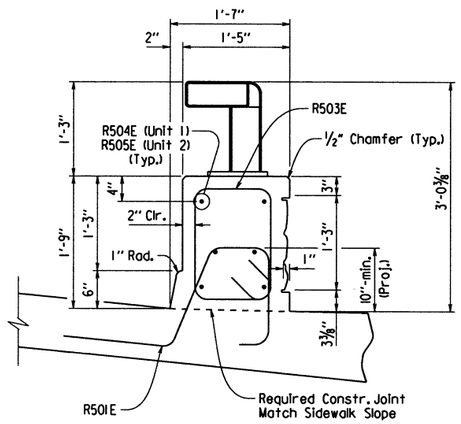
ARCHITECTURAL ENHANCEMENT AT END BENT

1" = 1'-0"



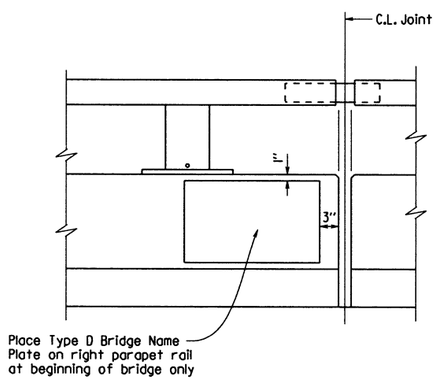
SECTION A-A

High Side
1" = 1'-0"



SECTION A-A

Low Side
1" = 1'-0"



NAME PLATE DETAIL

1" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF TYPE M-I BRIDGE RAIL
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: NOV. 2017 FILENAME: b009784x1_r1.dgn

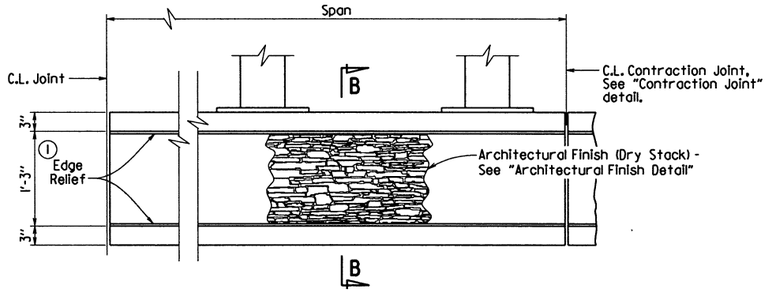
CHECKED BY: JHP DATE: 8-29-18 SCALE: As Shown

DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60171

PRINT DATE: 8/29/2018

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.		009784	105	193
				① 07423 - TYPE M-1 BRIDGE RAIL - 60172				



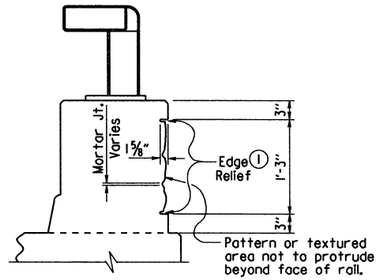
DETAILS OF RAIL ENHANCEMENT

High Side Shown
Low Side Similar
1" = 1'-0"

Rail enhancement shall be applied to the outside face of the rail.

Slip forming of bridge rail shall not be permitted.

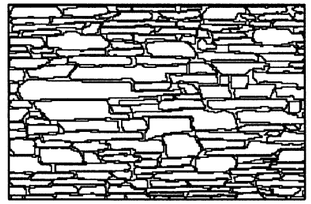
① Provide edge relief around perimeter of texture. Edge relief dimensions shall match manufacturer edge distance.



SECTION B-B

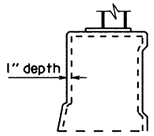
High Side Shown
Low Side Similar
1" = 1'-0"

NOTE: Architectural finish shall be applied to the outside face of the rail. See "Details of Rail Enhancement".



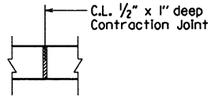
ARCHITECTURAL FINISH DETAIL

Dry Stack
No Scale



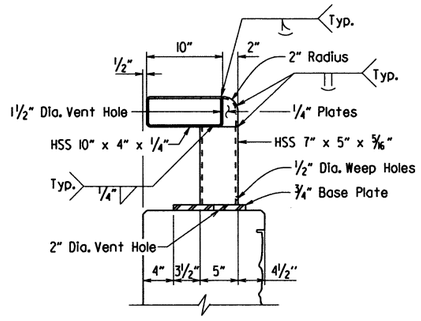
CONTRACTION JOINT

No Scale



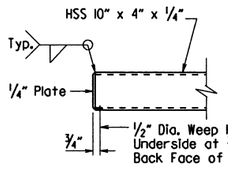
SECTION D-D

No Scale



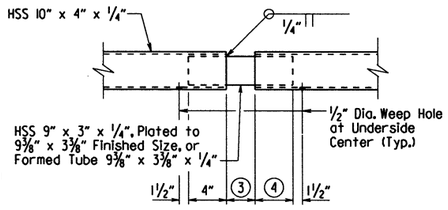
STRUCTURAL TUBE RAIL DETAIL

1" = 1'-0"



RAIL END DETAIL

No Scale

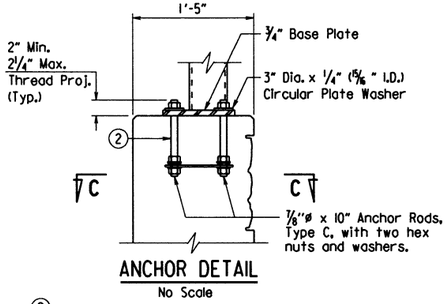


RAIL SLEEVE DETAIL

No Scale

③ 1" at railing joints
1" larger than gap in expansion joints

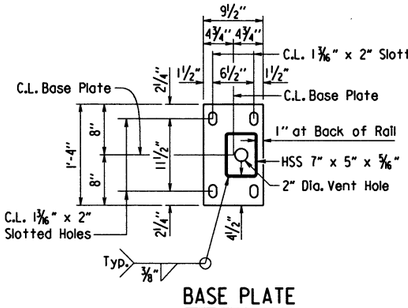
④ 5" at railing joint and 8" at expansion joints



ANCHOR DETAIL

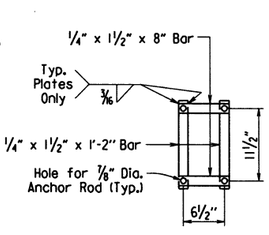
No Scale

② Substitution of chemical anchor rods for cast-in-place anchorage is not permitted.



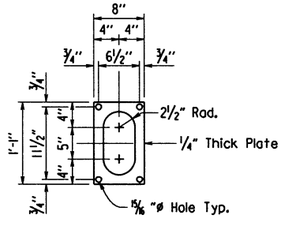
BASE PLATE

No Scale



SECTION C-C

ANCHOR BAR ALTERNATE
No Scale



SECTION C-C

ANCHOR PLATE ALTERNATE
No Scale

GENERAL NOTES

Maximum spacing of concrete rail posts and maximum spacing of contraction joints shall be 10'-0".

Rail layout shall conform to vertical and horizontal alignment of bridge. All posts shall be vertical. Base plates and anchorages shall not be placed upon areas that are improperly finished, deformed or irregular. Finish all edges of rail with ½" chamfer, except where otherwise noted.

All concrete for bridge railing shall be Class S(AE) with a minimum 28 day compression strength f'c = 4,000 psi. A concrete penetrating stain shall be applied to all exposed surfaces of railing as specified in Special Provision Job No. 009784 "Staining Concrete Surfaces". Concrete shall be paid for in accordance with Section 802.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. All reinforcing steel shall be epoxy coated and shall be paid for in accordance with Section 804.

Structural steel tubes and posts shall conform to AASHTO M 270, Gr. 50 or ASTM A500, Grade B.

Structural steel and plate washers shall meet the requirements of AASHTO M 270 and shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50. Provide sheet and strip for high strength, low-alloy columbium-vanadium steel meeting the requirements of ASTM A1011/A1011M, for Grade 50 Class 1.

Steel rail members, including railing end caps and accessories, shall be galvanized in accordance with AASHTO M 111 after fabrication and shall receive a powder coating process after galvanizing. Galvanizing shall not interfere with the powder coating process. Galvanized surfaces shall be prepared in accordance with Subsection 807.87 and the manufacturer's recommendations before application of the powder coating process.

The powder coating process shall be a two coat system applied using electrostatic spray. The base coat shall be a thermosetting epoxy powder with a minimum thickness of 2 - 4 mils. The top coat shall be tough polyester powder with a minimum thickness of 2 - 4 mils. Color shall be Brown equal to or close to Federal Standard 595B, Color Chip No. 20108, and as approved by the Engineer. Coated galvanized framework shall have a salt spray resistance of 3000 hours using ASTM B117 without loss of adhesion. The powder coating process shall be in accordance with manufacturer recommendations. Any damage to the powder coated finish shall be repaired with a compatible touch-up system in accordance with manufacturer's recommendations and to the satisfaction of the Engineer at the Contractor's expense.

Cast in place anchor rods shall be of high strength steel and shall conform to ASTM F1554, Grade 105, Type 2A with supplementary requirement S3 for permanent grade identification and supplementary requirement S5 for Charpy impact testing. Provide nuts and washers as recommended in ASTM F1554 for Grade 105 anchor rods. Do not make an anchorage cage by tack-welding Type C anchor rods or welding anchor rods to other material. Hold Type C anchor rods in place mechanically using methods approved by the Engineer.

Bolts, nuts and washers shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50, Type 1.

Threads on bolts, screws, and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series).

Shop drawings showing details of railing shall be submitted and approval secured prior to fabrication.

Bridge railing shall be paid for in accordance with Section 806 at the contract unit price bid per linear foot for "Metal Bridge Rail (Type M-1)". Powdered coating finish and repair of powdered coating finish shall be considered subsidiary to "Metal Bridge Rail (Type M-1)".

An architectural finish (Dry Stack or approved equivalent) shall be applied to the face(s) of the rail as shown. See Special Provision Job No. 009784 "Architectural Finish".

This rail was evaluated based on the results of previous crash tests and approved for a NCHRP Report 350 TL-4 rating.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF TYPE M-1 BRIDGE RAIL
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: NOV. 2017 FILENAME: b009784x1_r1.dgn
CHECKED BY: JHP DATE: 8-29-18 SCALE: AS NOTED
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60172

PRINT DATE: 8/29/2018

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.		009784	106	193

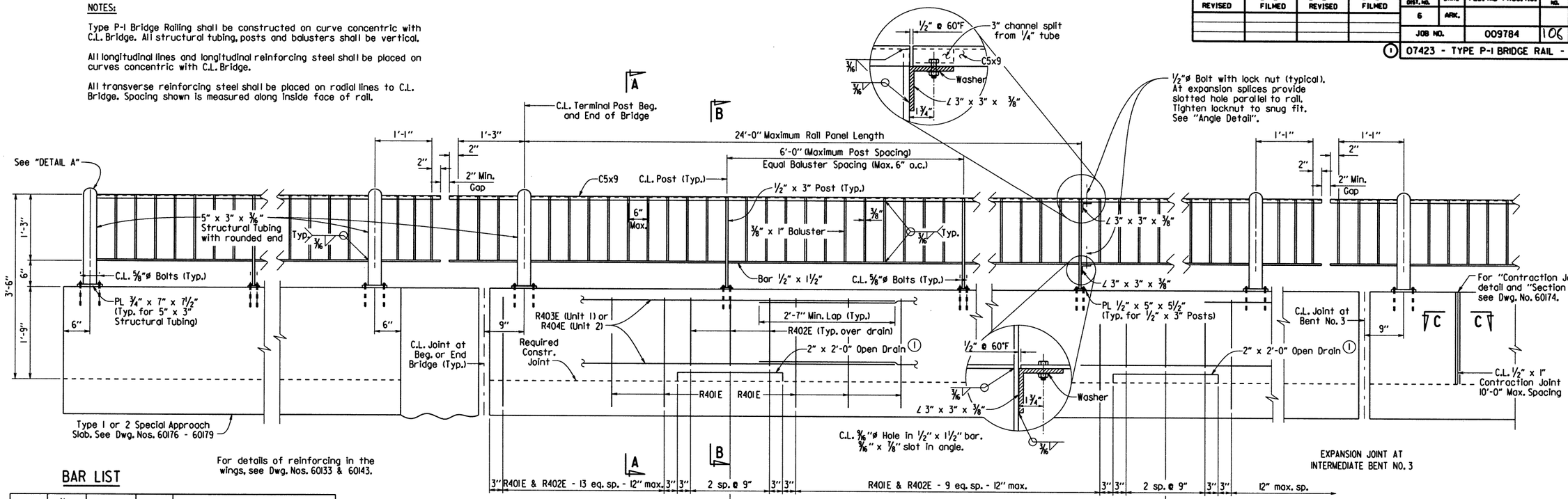
① 07423 - TYPE P-I BRIDGE RAIL - 60173

NOTES:

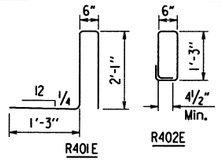
Type P-I Bridge Railing shall be constructed on curve concentric with C.L. Bridge. All structural tubing, posts and balusters shall be vertical.

All longitudinal lines and longitudinal reinforcing steel shall be placed on curves concentric with C.L. Bridge.

All transverse reinforcing steel shall be placed on radial lines to C.L. Bridge. Spacing shown is measured along inside face of rail.



BAR LIST

Mark	No. Req'd.	Length	Dia.	BENDING DIAGRAMS
R401E	596	5'-8"	2"	
R402E	171	3'-10"	2"	
R403E	24	42'-4"	Str.	
R404E	44	41'-10"	Str.	

Dimensions are out to out of bars.

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

For "Details of Post Anchor System", "Details of Alternate Post Anchor System", "Details of Base Plates", "Materials Notes", and "General Notes for Bridge Railing", see Dwg. No. 60174.

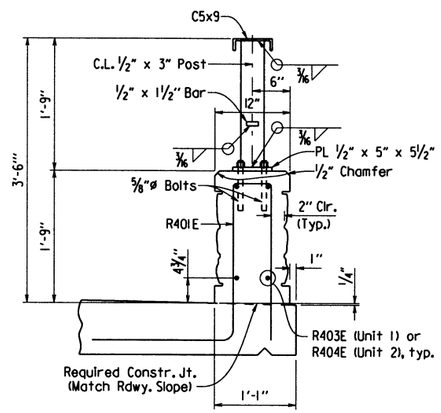
ELEVATION OF RAIL

1" = 1'-0"

Horizontal dimensions are along face of rail and do not include a vertical curve correction.

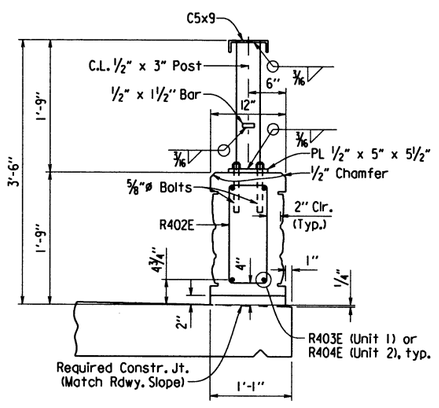
① Open drains shall be centered between each construction joint between approx. Sta. 151+60 to Sta. 157+80, EXCEPT for the area between 10 ft. either side of a bent.

A construction joint shall be placed at Bents 2 & 4 and as specified in "Elevation of Rail".



SECTION A-A

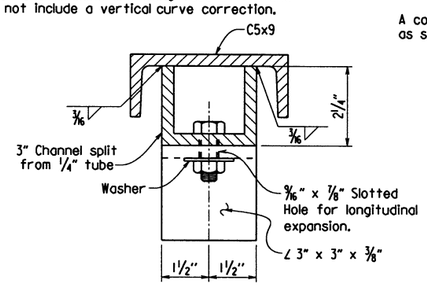
1" = 1'-0"



SECTION B-B

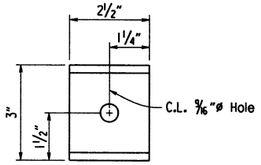
1" = 1'-0"

For "Details of Rail Enhancement" and "Architectural Finish Detail", see Dwg. No. 60174.



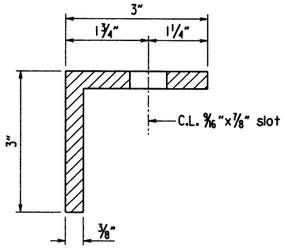
PANEL CONNECTION DETAIL

1" = 1'-0"



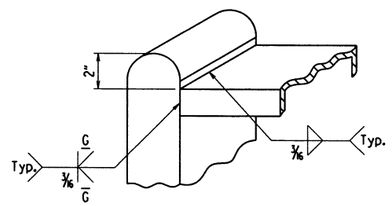
DETAIL OF 3" CHANNEL SPLIT FROM ¼" TUBE

1" = 1'-0"



ANGLE DETAIL

No Scale



DETAIL A

No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

Charles R. Ellis

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF TYPE P-I BRIDGE RAIL
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: NOV. 2017 FILENAME: b009784xl_r2.dgn

CHECKED BY: JYP DATE: 8-29-18 SCALE: As Shown

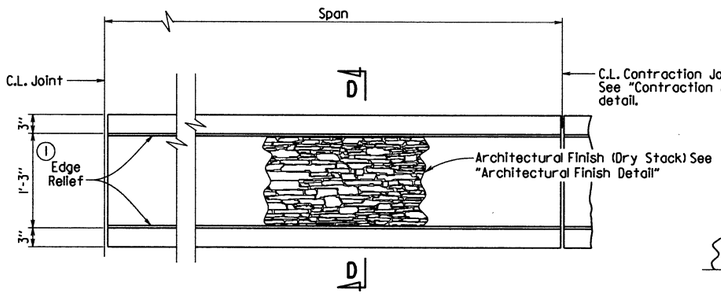
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60173

PRINT DATE: 8/29/2018

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.		009784	107	193

(1) 07423 - TYPE P-I BRIDGE RAIL - 60174



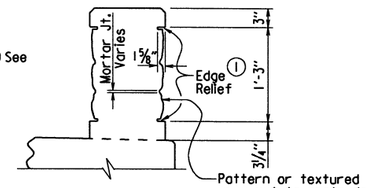
DETAILS OF RAIL ENHANCEMENT

1" = 1'-0"

Rail enhancement shall be applied to both faces of the rail.

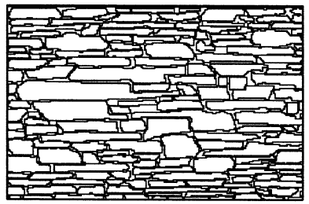
Slip forming of bridge rail shall not be permitted.

(1) Provide edge relief around perimeter of texture. Edge relief dimensions shall match manufacturer edge distance.



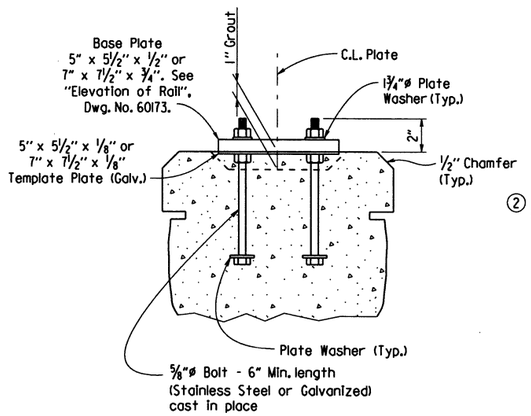
SECTION D-D

1" = 1'-0"



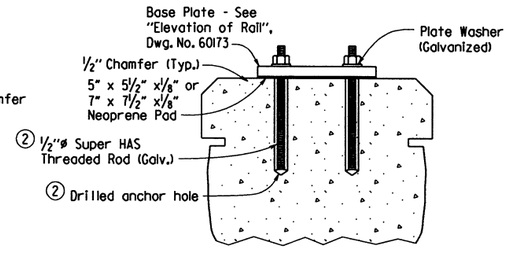
ARCHITECTURAL FINISH DETAIL

Dry Stack
No Scale



DETAILS OF POST ANCHOR SYSTEM (CAST-IN-PLACE ANCHORS)

No Scale

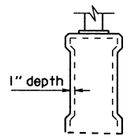


(2) HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or an approved equal.

The HILTI Epoxy Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.

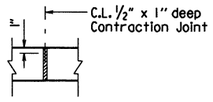
DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

No Scale



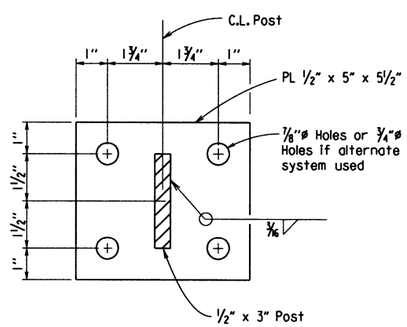
CONTRACTION JOINT

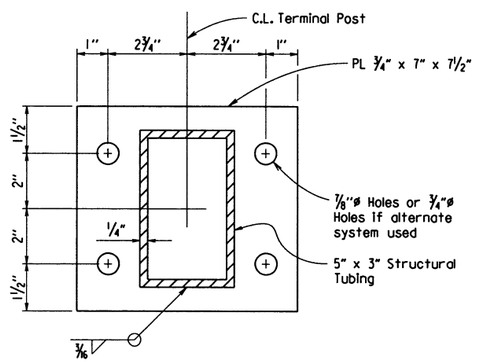
No Scale



SECTION C-C

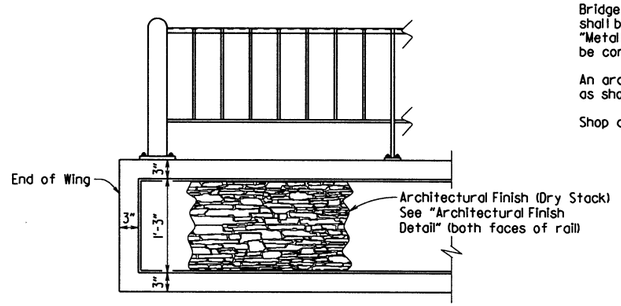
No Scale





DETAILS OF BASE PLATES

No Scale



ARCHITECTURAL ENHANCEMENT AT END BENT

1" = 1'-0"

MATERIALS NOTES:

All concrete for bridge railing shall be Class S(AE) with a minimum 28 day compression strength f'c = 4,000 psi. A concrete penetrating stain shall be applied to all exposed surfaces of railing as specified in Special Provision Job No. 009784 "Staining Concrete Surfaces". Concrete shall be paid for in accordance with Section 802.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. All reinforcing steel shall be epoxy coated and shall be paid for in accordance with Section 804.

Rail tubing, posts, end caps, and base plates shall conform to AASHTO M 270, Gr. 36 or ASTM A500-Grade B, and shall be galvanized after fabrication in accordance with Subsection 806.02(c). When required elsewhere in the plans, steel rail members and base plates shall receive a powder coating process after galvanizing. Galvanized surfaces shall be prepared in accordance with Subsection 807.87 and the manufacturer's recommendations prior to application of the powder coating process.

The powder coating process shall be a two coat system applied using electrostatic spray. The base coat shall be a thermosetting epoxy powder with a minimum thickness of 2 to 4 mils. The top coat shall be tough polyester powder with a minimum thickness of 2 to 4 mils. Unless otherwise specified in the plans, the color shall be Brown equal to or close to Federal Standard 595B, Color Chip No. 20108 and as approved by the Engineer. Coated galvanized framework shall have a salt spray resistance of 3000 hours using ASTM B117 without loss of adhesion. The powder coating process shall be in accordance with manufacturer's recommendations. Any damage to the powder coated finish shall be repaired with a compatible touch-up system in accordance with manufacturer's recommendations and to the satisfaction of the Engineer at the Contractor's expense.

Cast-in-place anchor bolts, nuts, washers, and bolts shall be galvanized, high-strength steel or stainless steel. Mixing of galvanized fasteners and stainless steel will not be permitted.

High-Strength Steel:
Cast-in-place anchor bolts shall conform to ASTM A325, Type 1.
Nuts shall conform to ASTM A563, Grade DH or AASHTO M 292, Grade 2H.
Washers shall conform to ASTM F436.
Plate Washers shall conform to AASHTO M 270, Gr. 36.
Anchor bolts, nuts, washers, plate washers, and bolts shall be galvanized in accordance with AASHTO M 232, Class C or ASTM B695, Class 50.

Stainless Steel:
Cast-in-place anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi.
Nuts shall conform to AASHTO M 292, Grade 8 or ASTM A563.
Washers shall conform to ASTM A240, Type 302.
Plate Washers shall conform to ASTM A240, Type 302.
Bolts at splices shall conform to ASTM A193 or A320-Grade B8.

Threads on bolts and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1. Plate washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series). Neoprene pads shall conform to the requirements of Subsection 807.15(b).

GENERAL NOTES FOR BRIDGE RAILING:

Rail layout shall conform to vertical and horizontal alignment of bridge. All posts shall be vertical. Base plates and anchorages shall not be placed upon areas that are improperly finished, deformed or irregular.

Bridge railing, including structural tubing, posts, template and base plates, fasteners, and neoprene pads shall be paid for in accordance with Section 806 at the contract unit price bid per linear foot for "Metal Bridge Railing (Type P-1)". Powdered coating finish and repair of powdered coating finish shall be considered subsidiary to the item "Metal Bridge Railing (Type P-1)".

An architectural finish (Dry Stack or approved equivalent) shall be applied to both faces of the rail as shown. See Special Provision Job No. 009784 "Architectural Finish".

Shop drawings showing details of railing shall be submitted and approval secured prior to fabrication.

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF TYPE P-I BRIDGE RAIL
BUFFALO RIVER

ROUTE SEC.

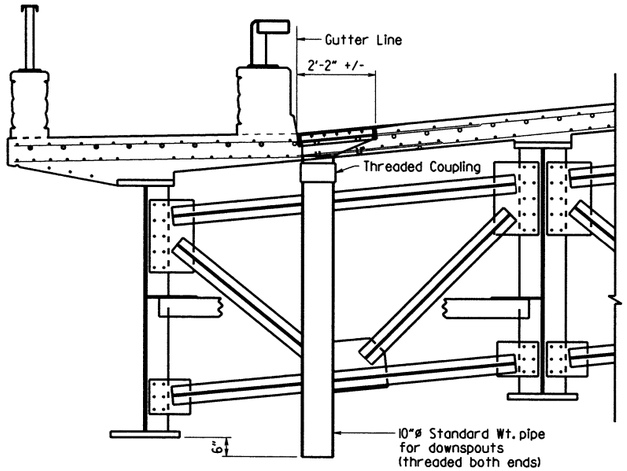
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: NOV. 2017 FILENAME: b009784xl_r2.dgn
CHECKED BY: JAP DATE: 8-29-18 SCALE: As Shown
DESIGNED BY: STD. DATE: —

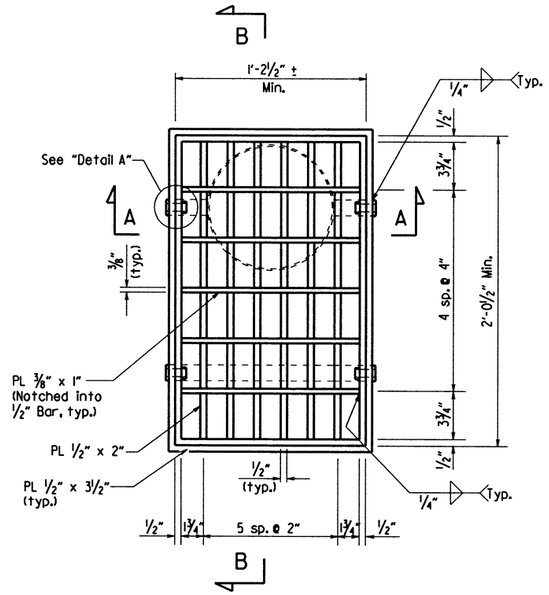
BRIDGE NO. 07423 DRAWING NO. 60174

PRINT DATE: 8/29/2018

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.		009784	108	193
				①		07423 - DECK DRAINS - 60175		



SECTION AT DECK DRAIN



PLAN

Deck Drain Locations
Sta. 152+90
Sta. 153+61
Sta. 153+71
Sta. 153+81
Sta. 155+75

GENERAL NOTES:

Drain location may be adjusted to clear cross-frame or diaphragm connections and avoid reinforcing bars.

Standard weight pipe for deck drains shall conform to ASTM A501. All other structural steel shall be AASHTO M 270, Grade 36. After fabrication, all structural steel in drains shall be galvanized in accordance with AASHTO M 111. Steel fasteners shall be galvanized in accordance with AASHTO M 232 or M 298, Class 40 or 50.

Structural steel in deck drains shall not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Grade 50W)".

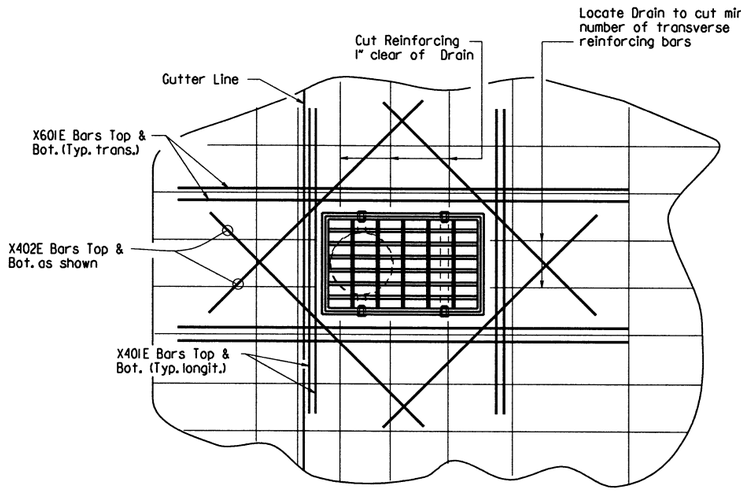
Top longitudinal reinforcing steel in the slab shall be cut as required to install the deck drains. Two additional No. 4 x 5'-6" straight bars shall be placed longitudinally on each side of the drain.

Top and bottom transverse reinforcing steel in the slab shall be cut as required (up to a maximum of three bars per mat) to install the deck drain. Two additional No. 6 x 9'-6" straight bars shall be placed transversely per mat on each side of the drain.

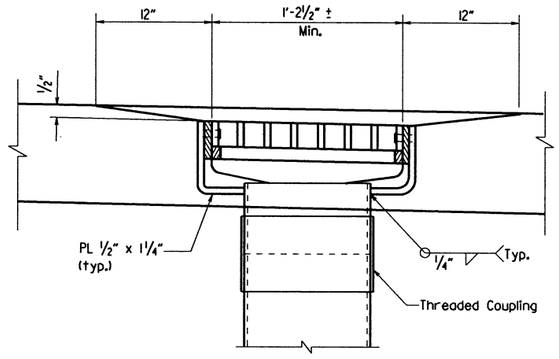
One additional No. 4 x 4'-0" straight bar shall be placed at a 45° angle to each corner in both top and bottom mats.

Repair all cut or damaged epoxy bars in accordance with the Standard Specifications.

All additional reinforcing steel placed around deck drains shall be epoxy-coated and shall be paid for at the unit price bid for "Epoxy Coated Reinforcing Steel (Grade 60)."

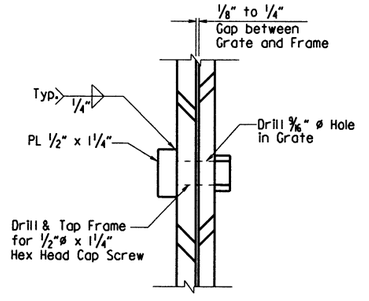


PLAN OF REINFORCING AT DECK DRAINS

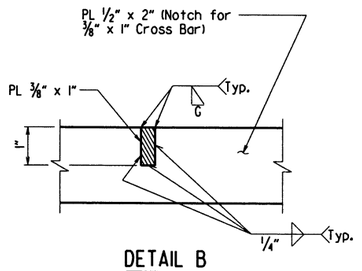


SECTION A-A

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



DETAIL A



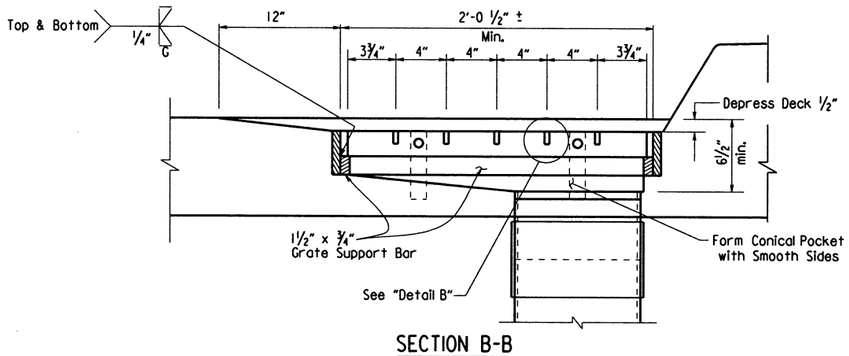
DETAIL B

BAR LIST FOR ONE DRAIN

(For Information Only)

Mark	No. Req'd.	Length
X401E	8	4'-0"
X402E	8	5'-6"
X601E	8	9'-6"

Bars designated with an "E" Suffix shall be epoxy coated.



SECTION B-B

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
9-5-18

BRIDGE ENGINEER

DETAILS OF DECK DRAINS
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 02-01-16 FILENAME: b009784xl_dr.dgn

CHECKED BY: SYP DATE: 9-5-18 SCALE: No Scale

DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60175

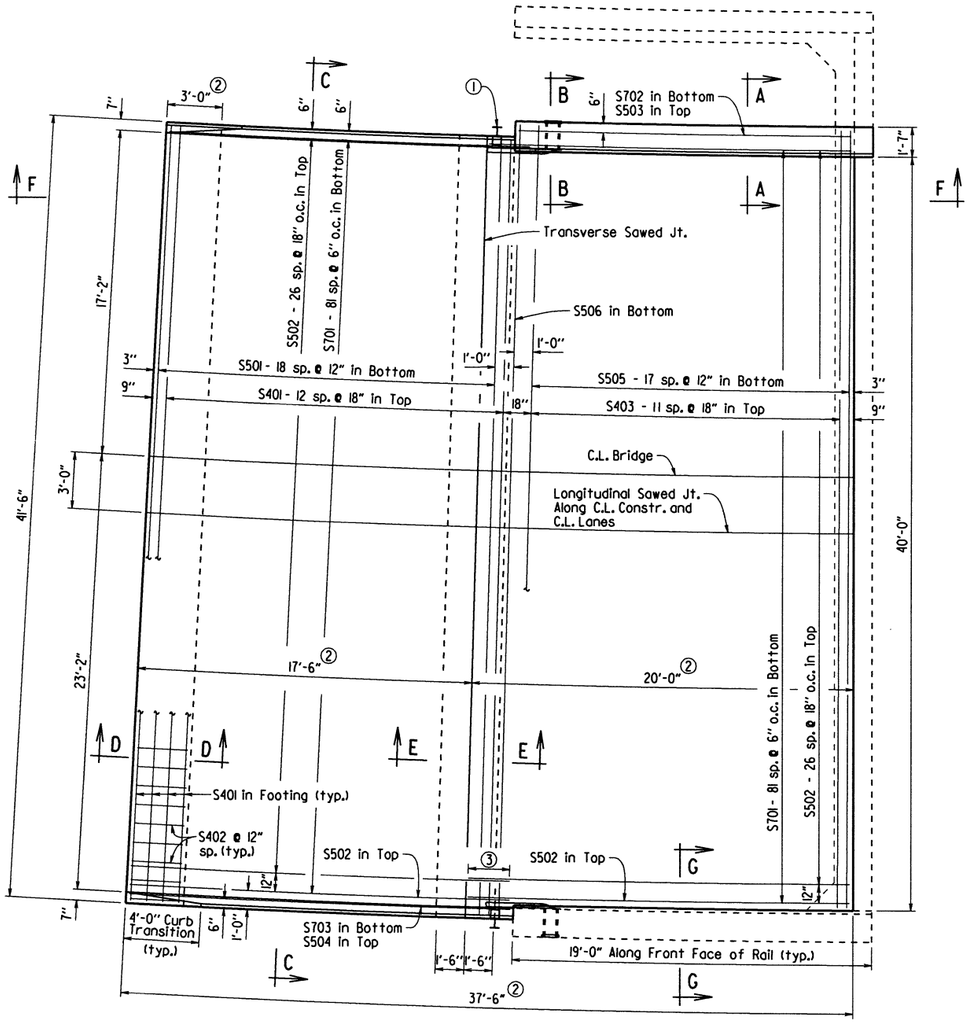
PRINT DATE: 9/5/2018

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				6	ARK.			
				JOB NO.		009784	109	143
				①	07423 -	APPR. SLAB	- 60176	

① See Std. Dwgs. GR-10 and GR-12 for post and connector plate details.

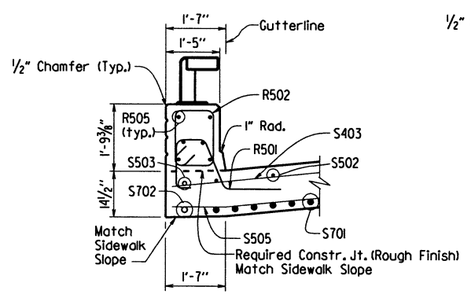
② Measured Along C.L. Constr. and C.L. Lanes.

③ Min. Lap of 2'-2" for No. 5 bar.
Min. Lap of 3'-3" for No. 7 bar.

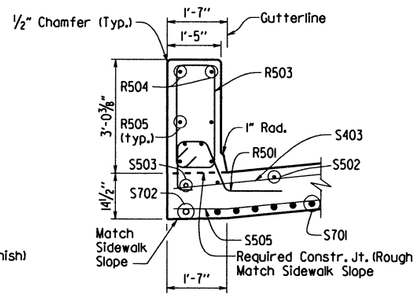


PLAN OF TYPE I SPECIAL APPROACH SLAB

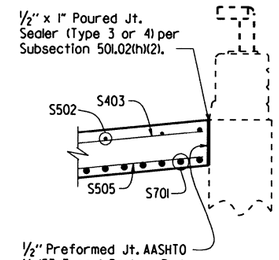
Approach Slab At Beginning of Bridge
1/4" = 1'-0"



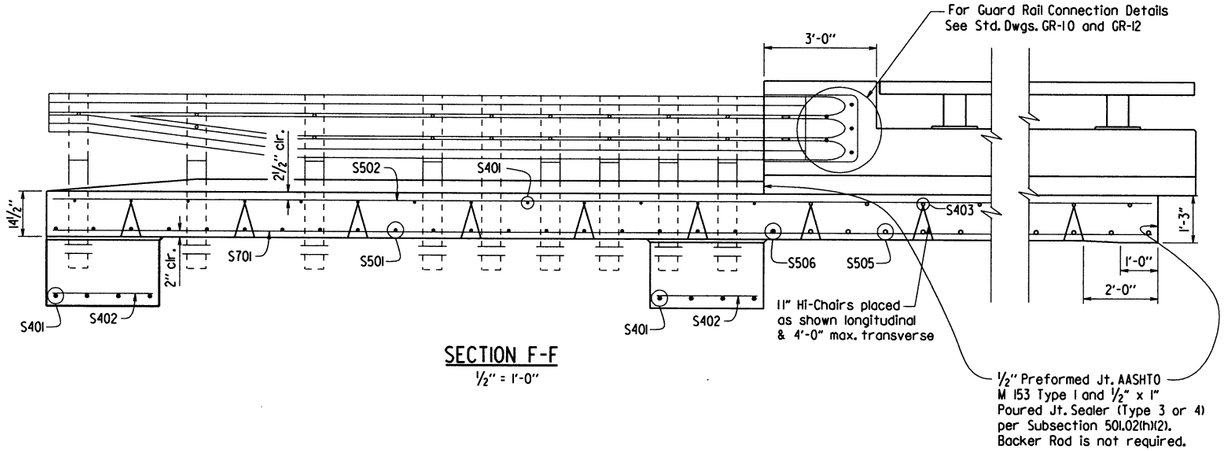
SECTION A-A
½" = 1'-0"



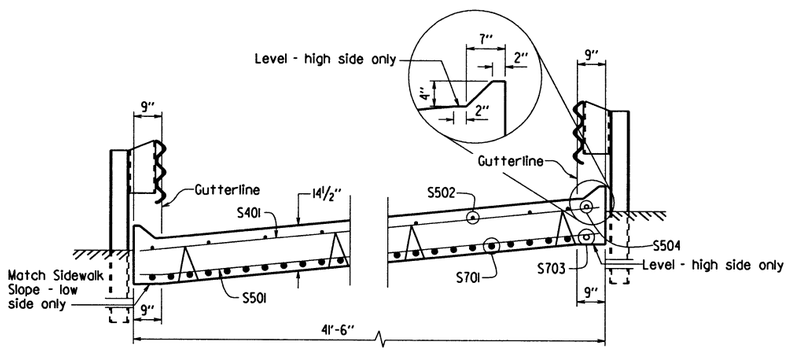
SECTION B-B
½" = 1'-0"



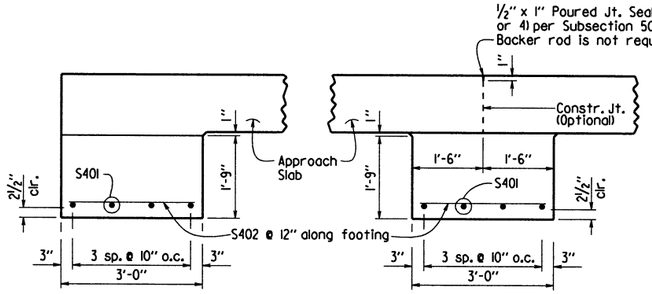
SECTION G-G
½" = 1'-0"



SECTION F-F
½" = 1'-0"



SECTION C-C
½" = 1'-0"



SECTION D-D
⅝" = 1'-0"

SECTION E-E
⅝" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF TYPE I SPECIAL APPROACH SLAB BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

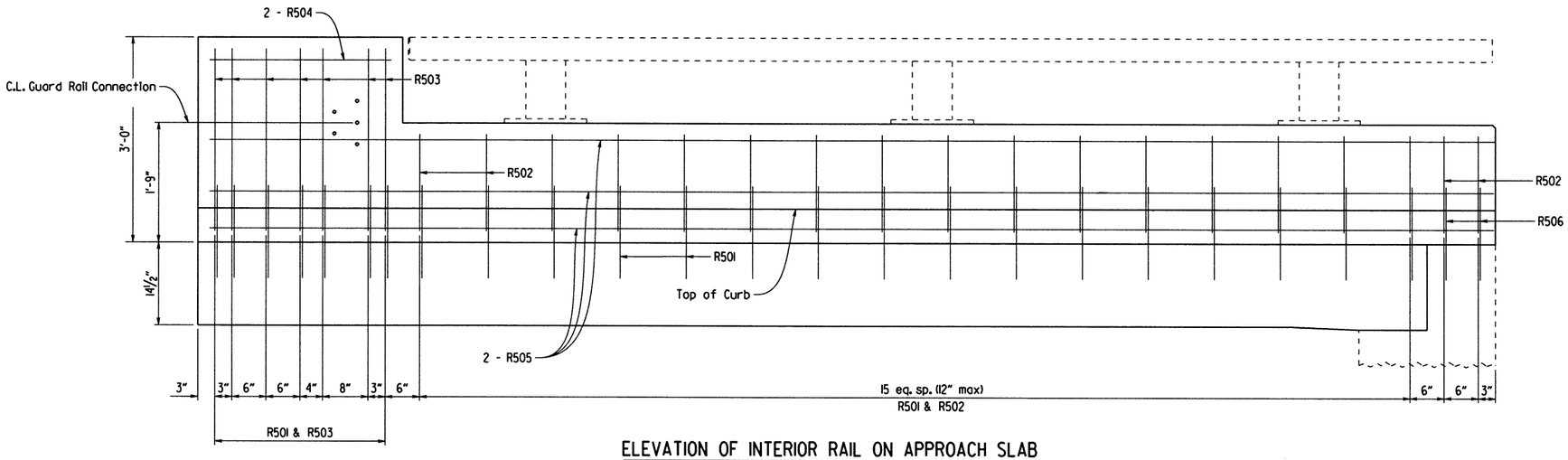
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CHECKED BY: JMP DATE: 9-5-18
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SCALE: as noted

BRIDGE NO. 07423 DRAWING NO. 60176

PRINT DATE: 9/5/2018

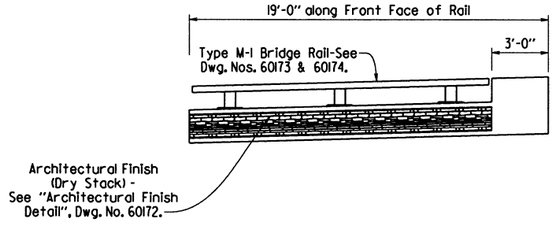
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	110	193
				①	07423 -	APPR. SLAB	- 60177	

For additional rail details, see Dwgs. No. 60171 and 60172.



ELEVATION OF INTERIOR RAIL ON APPROACH SLAB

1" = 1'-0"



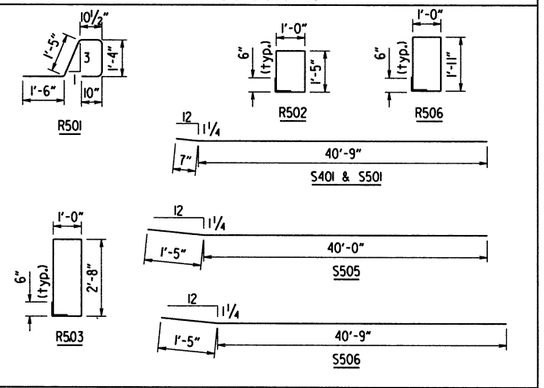
ELEVATION OF EXTERIOR RAIL ON APPROACH SLAB

No Scale

BAR LIST FOR TYPE I SPECIAL APPROACH SLAB

Mark	No. Req'd.	Length	Pin Dia.
S401	21	41'-4"	2"
S402	84	2'-8"	Str.
S403	12	41'-5"	Str.
S501	19	41'-4"	2½"
S502	56	20'-2"	Str.
S503	1	17'-7"	Str.
S504	1	20'-2"	Str.
S505	18	41'-5"	2½"
S506	1	42'-2"	2½"
S701	164	20'-9"	Str.
S702	1	17'-7"	Str.
S703	1	20'-2"	Str.
R501	23	5'-11"	3¾"
R502	18	5'-4"	2½"
R503	7	7'-10"	2½"
R504	2	2'-8"	Str.
R505	6	18'-7"	Str.
R506	2	6'-4"	2½"

BENDING DIAGRAMS



Dimensions are out to out of bars.

QUANTITIES FOR TYPE I SPECIAL APPROACH SLAB

Reinforcing Steel (lbs.)	Concrete (cubic yards)
11,387	88.8

GENERAL NOTES

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

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. Fabricate bar lengths to provide 2" minimum cover at each end.

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.

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

Bridge railing shall be paid for in accordance with Section 806 at the contract unit price bid per linear foot for "Metal Bridge Rail (Type M-1)". Powdered coating finish and repair of powdered coating finish shall be subsidiary to "Metal Bridge Rail (Type M-1)".

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF TYPE I SPECIAL APPROACH SLAB BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: DKS DATE: 4-6-18 FILENAME: b009784_asl.dgn
CHECKED BY: JHP DATE: 8-29-18 SCALE: as noted
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60177

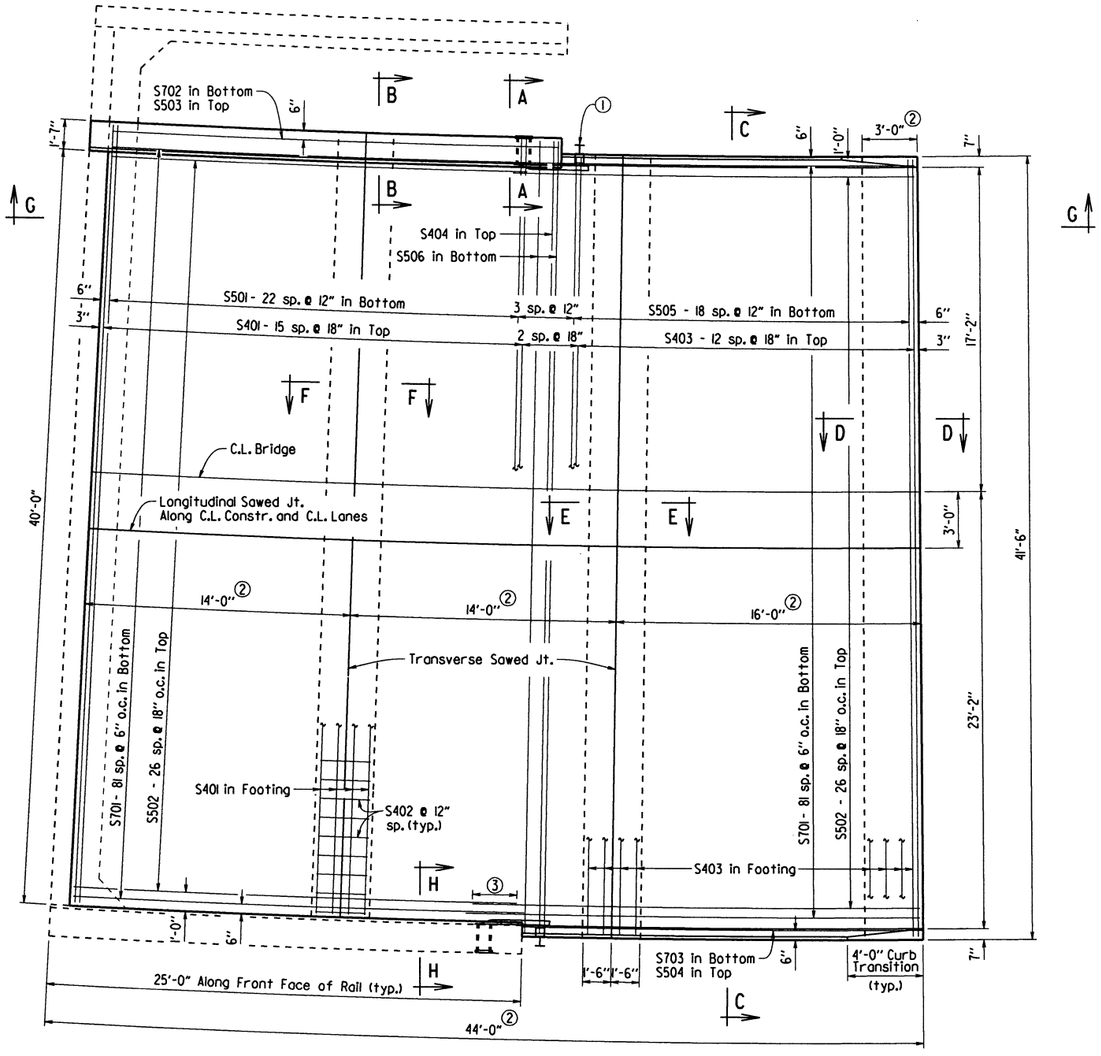
PRINT DATE: 8/29/2018

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.		009784	111	193
				①	07423 -	APPR. SLAB	- 60178	

① See Std. Dwgs. GR-10 and GR-12 for post and connector plate details.

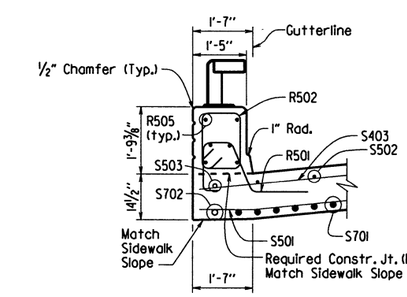
② Measured Along C.L. Constr. and C.L. Lanes.

③ Min. Lap of 2'-2" for No. 5 bar.
Min. Lap of 3'-3" for No. 7 bar.



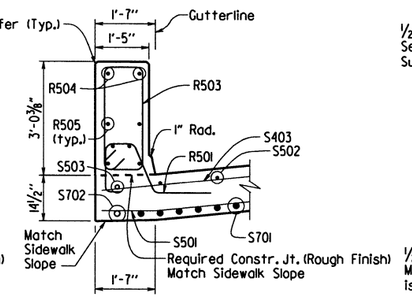
PLAN OF TYPE 2 SPECIAL APPROACH SLAB

Approach Slab At End of Bridge
1/4" = 1'-0"



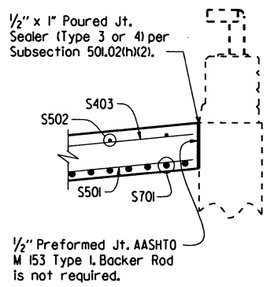
SECTION A-A

½" = 1'-0"



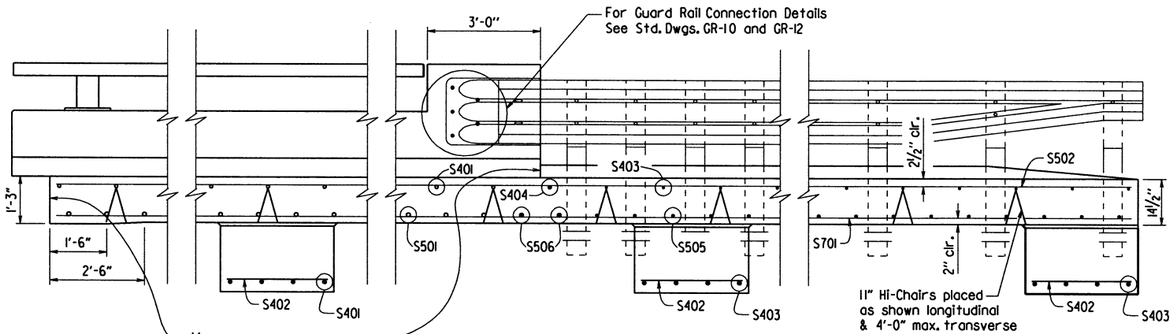
SECTION B-B

½" = 1'-0"



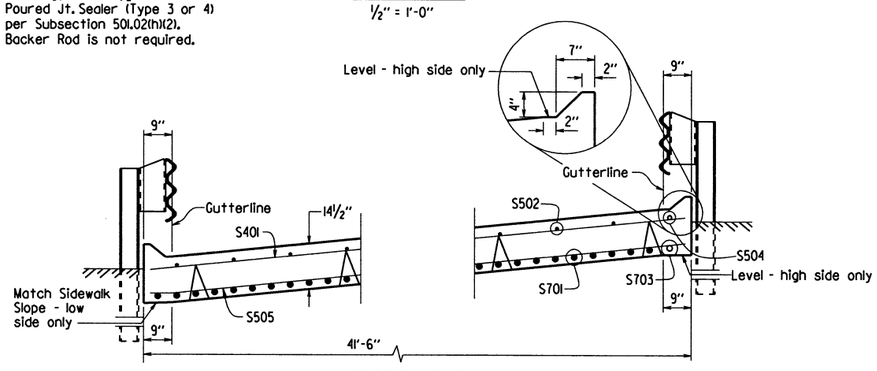
SECTION H-H

½" = 1'-0"



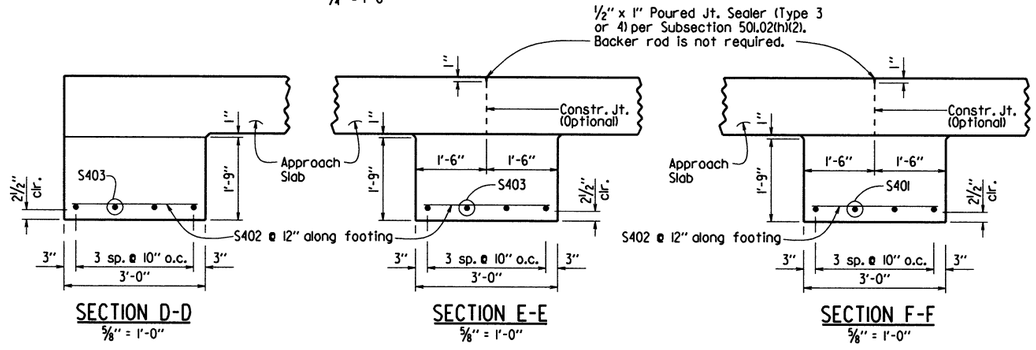
SECTION G-G

½" = 1'-0"



SECTION C-C

½" = 1'-0"



SECTION D-D

⅝" = 1'-0"

SECTION E-E

⅝" = 1'-0"

SECTION F-F

⅝" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF TYPE 2 SPECIAL APPROACH SLAB BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

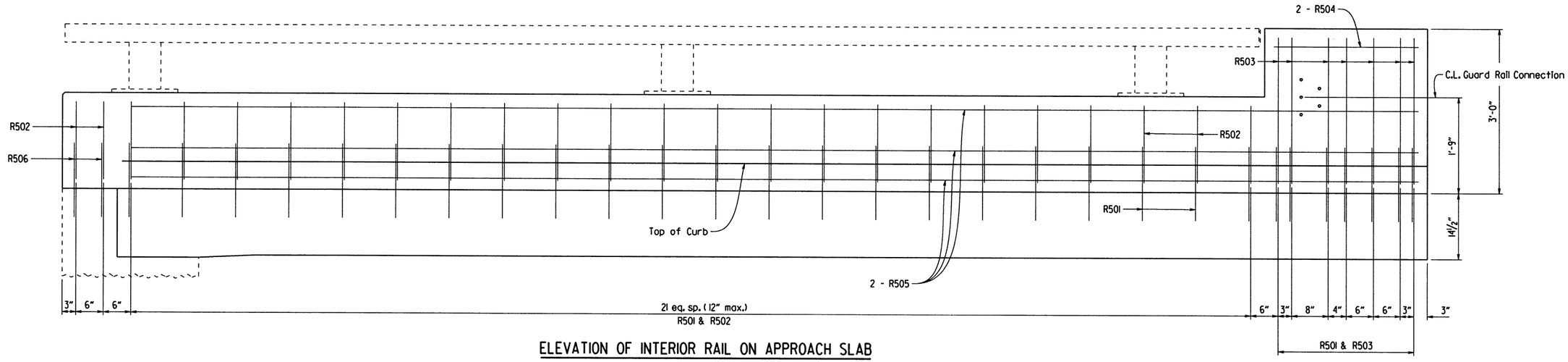
DRAWN BY: DKS DATE: 4-6-18 FILENAME: b009784_as2.dgn
CHECKED BY: JWP DATE: 9-5-18 SCALE: as noted
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60178

PRINT DATE: 9/5/2018

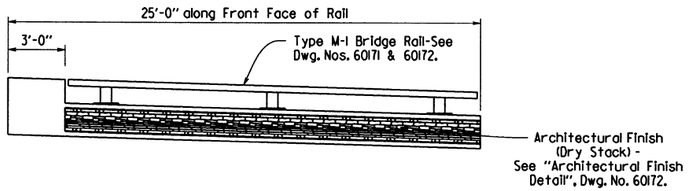
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	112	193
				①	07423 -	APPR. SLAB	- 60179	

For additional rail details, see Dwgs. No. 60171 and 60172.



ELEVATION OF INTERIOR RAIL ON APPROACH SLAB

1" = 1'-0"

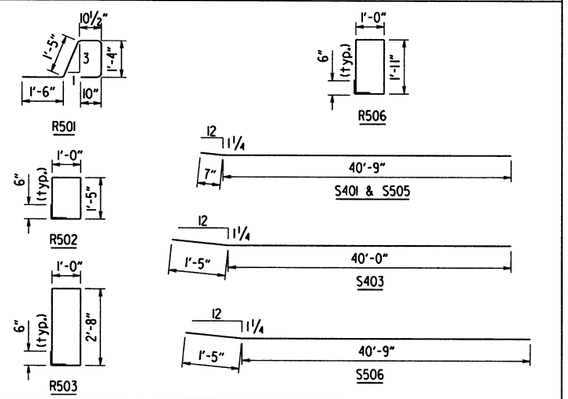


ELEVATION OF EXTERIOR RAIL ON APPROACH SLAB

No Scale

BAR LIST FOR TYPE 2 SPECIAL APPROACH SLAB

Mark	No. Req'd.	Length	No. Req'd.	BENDING DIAGRAMS
S401	20	41'-4"	2"	
S402	126	2'-8"	Str.	
S403	21	41'-5"	2"	
S404	1	42'-2"	Str.	
S501	23	41'-5"	2½"	
S502	54	23'-6"	Str.	
S503	1	23'-7"	Str.	
S504	1	20'-10"	Str.	
S505	19	41'-4"	2½"	
S506	2	42'-2"	2½"	
S701	164	24'-1"	Str.	
S702	1	23'-7"	Str.	
S703	1	20'-10"	Str.	
R501	29	5'-11"	3¾"	
R502	24	5'-4"	2½"	
R503	7	7'-10"	2½"	
R504	2	2'-8"	Str.	
R505	6	24'-7"	Str.	
R506	2	6'-4"	2½"	



Dimensions are out to out of bars.

QUANTITIES FOR TYPE 2 SPECIAL APPROACH SLAB

Reinforcing Steel (lbs.)	Concrete (cubic yards)
13,363	109.9

GENERAL NOTES

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

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A, with mill test reports. Fabricate bar lengths to provide 2" minimum cover at each end.

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.

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

Bridge railing shall be paid for in accordance with Section 806 at the contract unit price bid per linear foot for "Metal Bridge Rail (Type M-1)". Powdered coating finish and repair of powdered coating finish shall be subsidiary to "Metal Bridge Rail (Type M-1)".

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

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF TYPE 2 SPECIAL APPROACH SLAB
BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

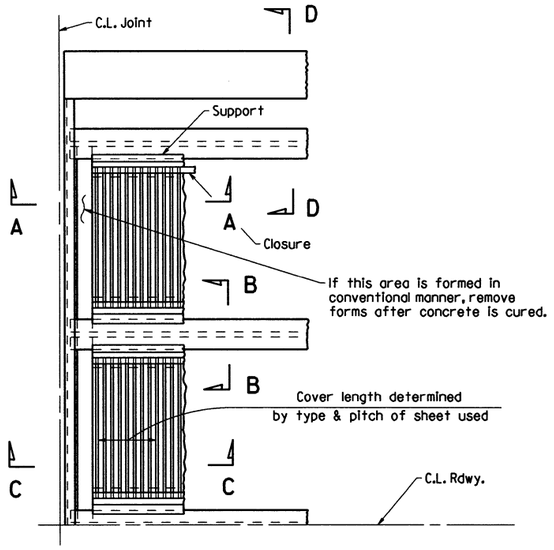
LITTLE ROCK, ARK.

DRAWN BY: DKS DATE: 4-6-18 FILENAME: b009784_as2.dgn
CHECKED BY: JHP DATE: 8-29-18 SCALE: as noted
DESIGNED BY: SSD. DATE: —

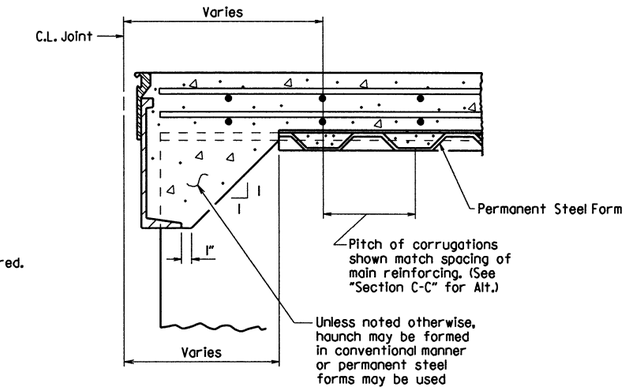
BRIDGE NO. 07423 DRAWING NO. 60179

PRINT DATE: 8/29/2018

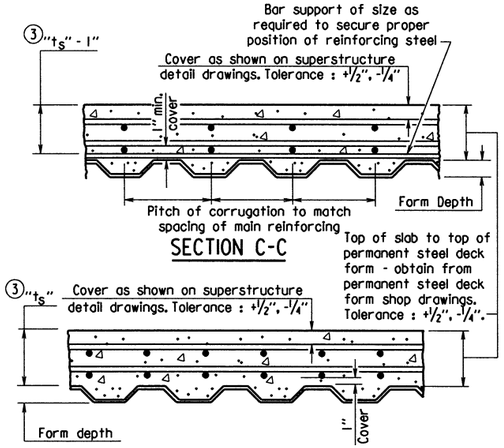
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	113	193
				①	07423 -	DECK FORMS	- 60180	



PART PLAN - SQUARE SPAN



SECTION A-A



SECTION C-C

SECTION C-C - ALTERNATE

(Applicable when corrugations do not match spacing of main reinforcement)

③ t_s = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

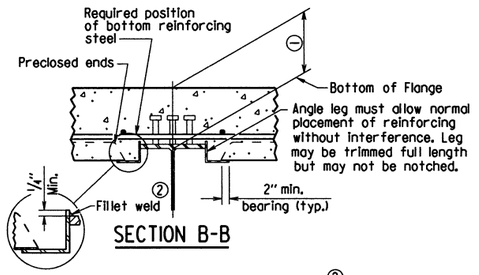
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

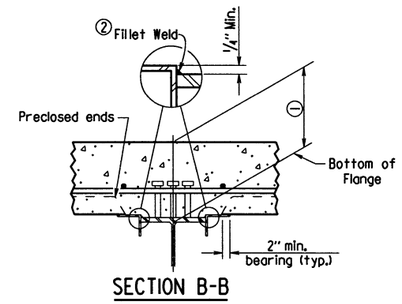
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.



SECTION B-B

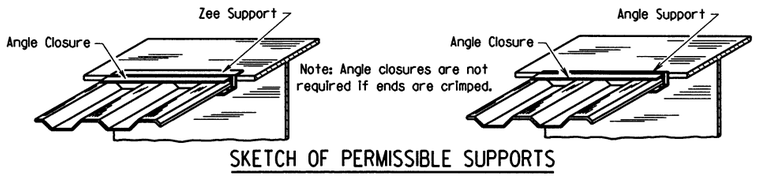
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)

② Minimum weld: ⅛" x 1" @ 12". More weld may be required; maximum length per weld = 1½" (typ.)

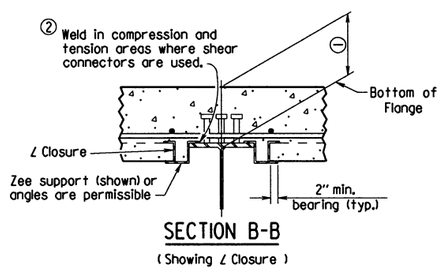


SECTION B-B

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



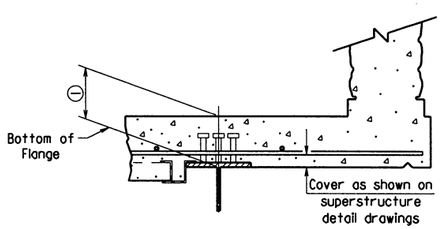
SKETCH OF PERMISSIBLE SUPPORTS



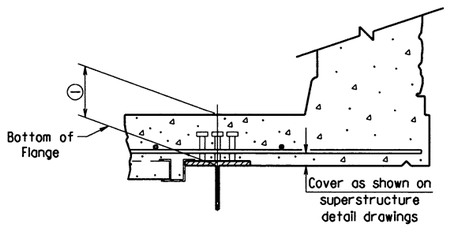
SECTION B-B

(Showing ∠ Closure)

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 limits shown in the notes for "Adjustment for Slab Thickness Tolerance" on Dwg. Nos. 60147 & 60154 or when either the top flange or the support angle leg contacts the bottom reinforcing steel. See "Section C-C" for slab thickness tolerance between adjacent girder flanges.



(Low Side)



(High Side)

SECTION D-D

Note: Only Bottom Reinforcing is shown.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS BUFFALO RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 5-22-18 FILENAME: b009784xl.dl.dgn
CHECKED BY: BWS DATE: 8-29-18 SCALE: No Scale
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07423 DRAWING NO. 60180

PRINT DATE: 8/29/2018

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.		009784	114	193
				①		04940 - LAYOUT - 60181		

Notes:

For R/W Data, see Roadway Plans.

Use Type A Approach Gutters ("W" = 2'-0") bridge. See Std. Dwg. No. 55030A.

For limits of Rock Fill, see Roadway Plans and Special Provision Job No. 009784 "Rock Fill".

Care shall be exercised when placing rock fill adjacent to bent columns.

HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	DISCHARGE	② NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER	
	YEARS	CFS	FEET	③ FEET	④ FEET
DESIGN	25	10,220	792.2	792.6	795.9
BASE	100	15,810	795.3	795.6	801.2
EXTREME	500	24,800	799.6	800.7	807.1
OVERTOPPING	>500	N/A	N/A	N/A	N/A

② Unconstricted water surface without structure or roadway approaches.

Q100 backwater elevation for existing structure = 795.3
Proposed Low Bridge Chord Elevation = 825.81
Drainage Area = 21.1 square miles

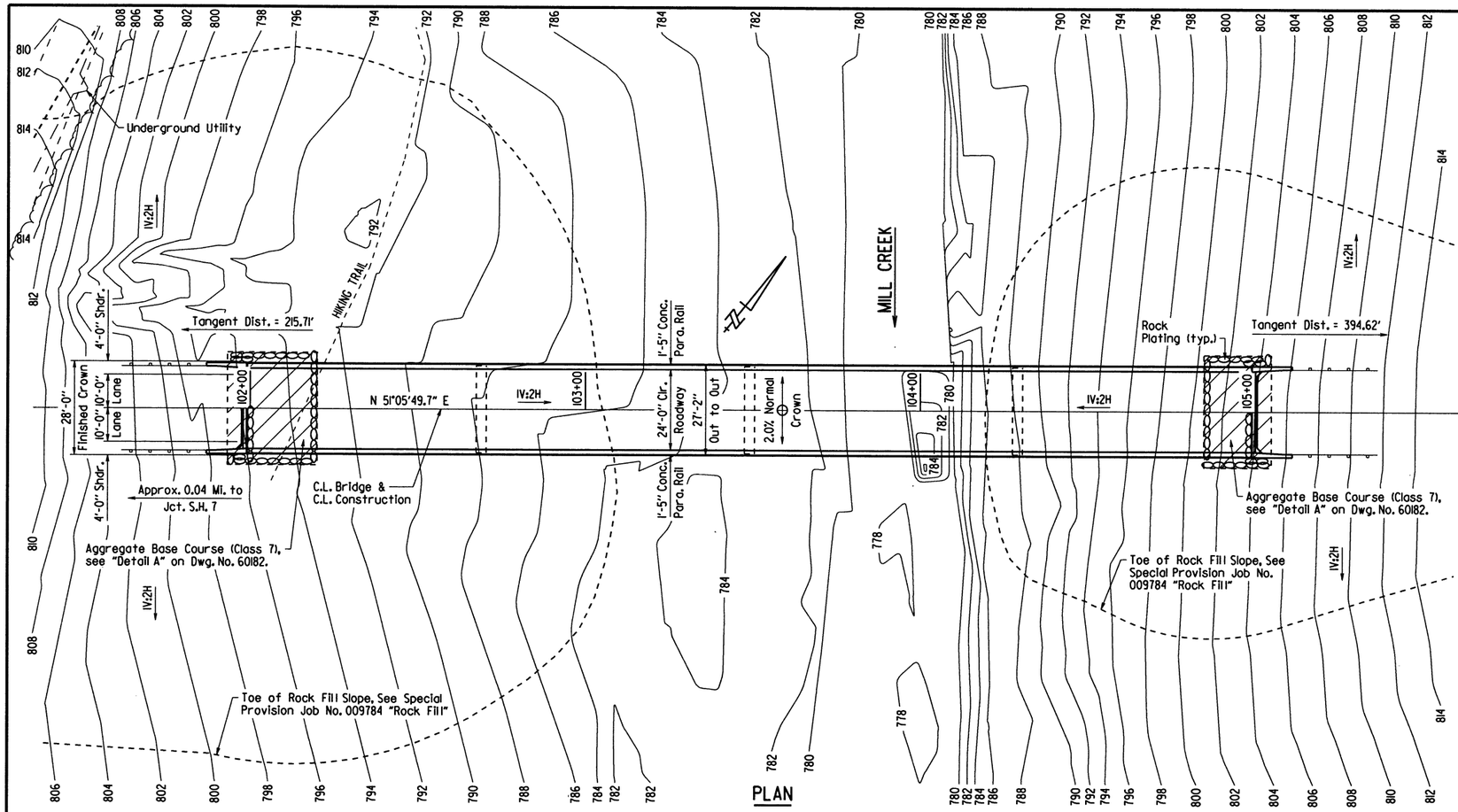
③ Without influence from Buffalo River
④ With influence from Buffalo River

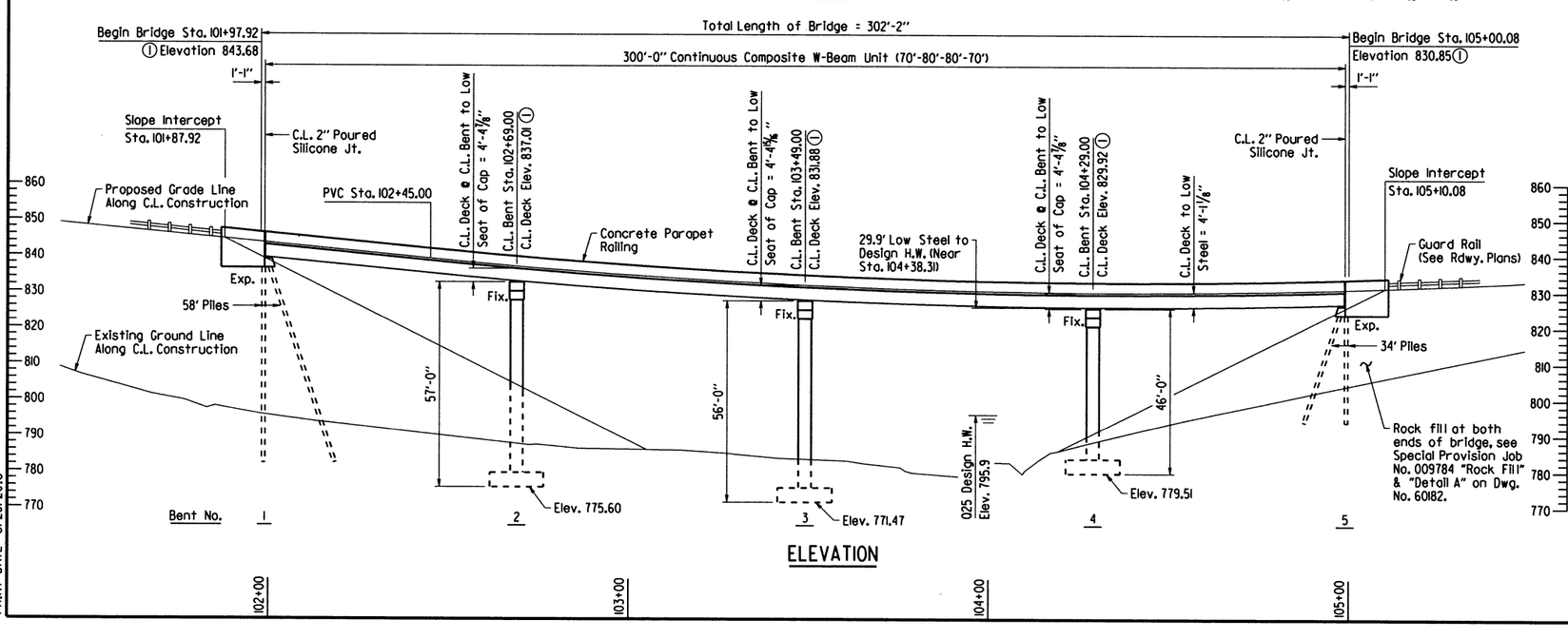
VERTICAL CURVE DATA

Along C.L. Construction
L = 400'

-9.583% +10.246%

PVI Sta. 104+45.00
Elev. 820.00





Notes:

Stations and elevations shown are along C.L. Construction & C.L. Bridge.

① Elevations shown are at working point, see "Rounding Detail" on Std. Dwg. No. 55007.

For Soil Borings and General Notes, see Dwg. No. 60182.

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE
COUNTY ROAD 213 OVER MILL CREEK
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

COUNTY ROAD 213
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: EOR DATE: 6/30/17
CHECKED BY: JYP DATE: 8-29-18
DESIGNED BY: EOR DATE: 6/2017
FILENAME: b009784x2_1l.dgn
SCALE: 1" = 20'

BRIDGE NO. 04940 DRAWING NO. 60181

PRINT DATE: 8/29/2018

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.		009784	115	193
				①		04940 - LAYOUT - 60182		

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, Sixth Edition (2012) with 2013 interims.

LIVE LOADING: HL-93

SEISMIC ZONE: 1 S_{D1}:0.07 Site Class: B

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi

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

STEEL PILING:
All piling shall be HP 14x73 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 130 tons per pile and into the material designated as limestone or sandstone on the boring legend. Piling in end bents shall be driven after embankment to bottom of cap is in place. Lengths shown are for estimating quantities and for use in determining payment for cutoff and build-up in accordance with Section 805. The Contractor shall use approved steel H-Pile driving points on all piles.

FOOTINGS:
Footings shall be set a minimum of 2'-0" into material designated as limestone or sandstone on the boring legend and shall have a minimum cover above the top of the footing of 2'-0" as determined by the lowest surface elevation within the footprint of the footing. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of the existing ground in accordance with Subsection 801.08.

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

PROTECTIVE SURFACE TREATMENT:
Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the roadway face and top of the concrete parapet rail.

STAINING CONCRETE SURFACES: A concrete penetrating stain shall be applied to bridge surfaces as specified in Special Provision Job No. 009784 "Staining Concrete Surfaces". The concrete penetrating stain shall not be applied on surfaces where Class 2 Protective Surface Treatment is applied. The color of the stain shall be as specified in Special Provision Job No. 009784 "Staining Concrete Surfaces".

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

DETAIL DRAWINGS:	DRAWING NOS.
End Bents	60183-60184
Intermediate Bents	60185
Elastomeric Bearings	60186
300'-0" Continuous Comp. W-Beam Unit	60187-60189
Standard General Notes for Steel Bridge Structures	55006
Standard Details for Steel Bridge Structures	55007
Standard Details for Poured Silicone Joints	55008
Standard Details for Steel H-Piles and Pile Encasements	55020
Standard Details for Type A Approach Gutters	55030A

EXISTING BRIDGE:
The existing low-water structure consists of a single concrete span with flared concrete wingwalls and three corrugated metal pipes encased in concrete. The existing structure is located approximately 250 feet upstream from the proposed bridge.

REMOVAL AND SALVAGE:
After the new bridge is open to traffic, the Contractor shall remove the existing low water structure in accordance with Section 205. All material from the existing structure shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC:
See Roadway Plans.

"N" VALUES

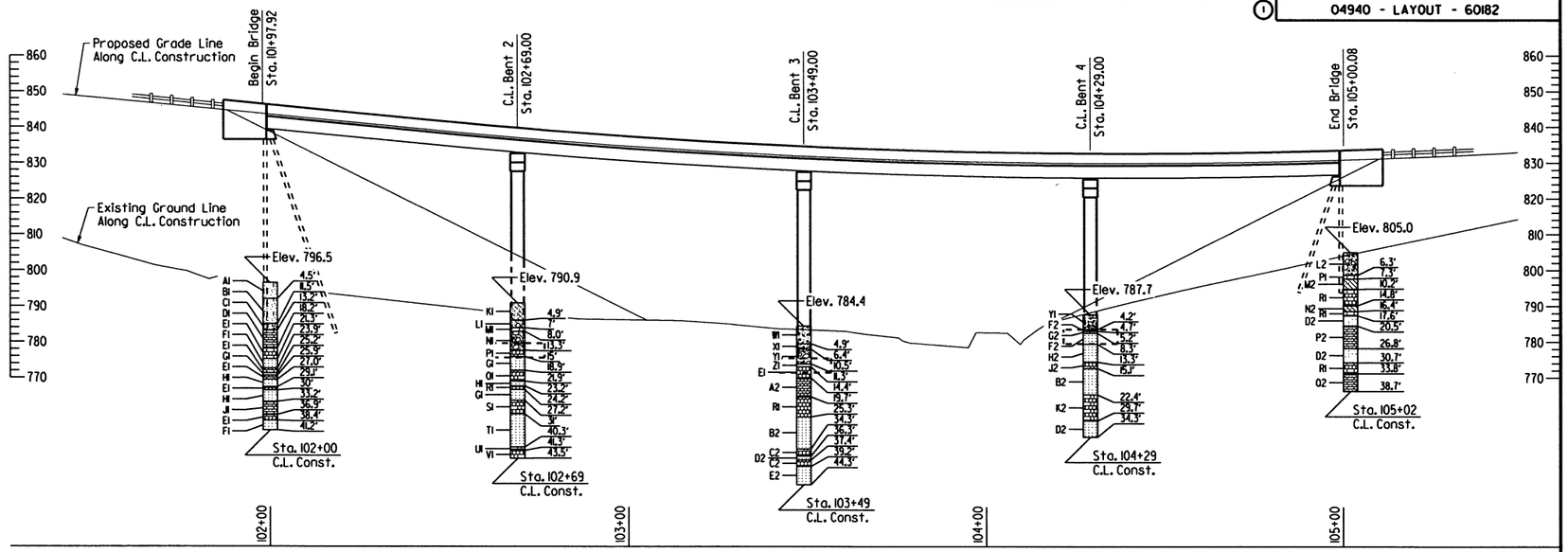
Sta. 102+00 - Centerline Construction
5.0- 6.0, N=19
10.0- 11.0, N=21

Sta. 102+69 - Centerline Construction
5.4- 6.4, N=31

Sta. 103+49 - Centerline Construction
5.4- 6.4, N=7
10.5- 10.5, N=10(0")

Sta. 104+29 - Centerline Construction

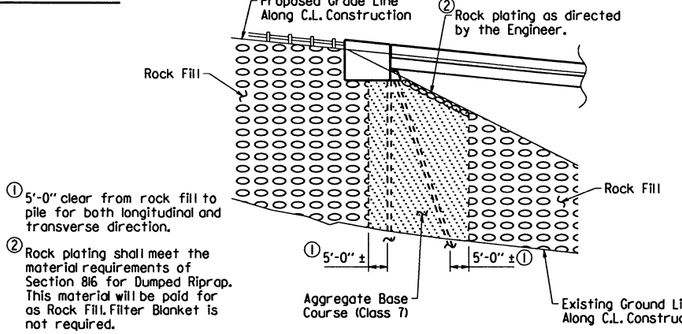
Sta. 105+02 - Centerline Construction
5.4- 6.1, N=74(8")



ELEVATION OF SOIL BORINGS

BORING LEGEND

AI-Sand with Silt
BI-Moist, Medium Dense, Brown Sand with Silt
CI-Gravel and Cobbles
DI-SANDSTONE INTERBEDDED WITH LIMESTONE - Slightly Weathered, Cemented, Occasional Clay Seams, Light Gray
EI-LIMESTONE - Unweathered, Moderately Hard, Light Gray
FI-SANDSTONE - Unweathered, Well Cemented, Calcareous in Part, Occasional Fractures, Light Gray
GI-SANDSTONE - Unweathered, Well Cemented, Calcareous in Part, Light Gray
HI-SANDSTONE - Unweathered, Well Cemented, Calcareous, Light Gray
JI-SANDSTONE WITH FREQUENT LIMESTONE LAYERS - Unweathered, Well Cemented, Light Gray
KI-Clayey Sand
LI-Moist, Dense, Brown Clayey Sand with Gravel and Cobbles (Rock Fragments)
MI-Boulder
NI-Brown Sandy Clay with Gravel and Cobbles (Rock Fragments)
PI-LIMESTONE - Slightly Weathered, Hard, Light Gray
QI-LIMESTONE -Unweathered, Hard, Occasional Fractures, Light Gray
RI-LIMESTONE - Unweathered, Hard, Light Gray
SI-DOLOSTONE WITH OCCASIONAL SANDSTONE LAYERS - Unweathered, Hard, Gray
TI-SANDSTONE - Unweathered, Cemented to Well Cemented, Calcareous in Part, Occasional Fractures, Light Gray
UI-DOLOSTONE - Unweathered, Hard, Frequent Dolomite Veins, Occasional Vugs, Gray
VI-LIMESTONE WITH OCCASIONAL SANDSTONE LAYERS - Unweathered, Hard, Light Gray
WI-Sand with Gravel
XI-Wet, Loose, Brown Sand with Gravel and Cobbles (Rock Fragments)
YI-Sand with Gravel and Cobbles
ZI-SANDSTONE - Slightly Weathered, Cemented, Light Gray
A2-SANDSTONE WITH INTERBEDDED LIMESTONE - Unweathered, Well Cemented, Light Gray
B2-SANDSTONE - Unweathered, Well Cemented, Occasional Fractures, Light Gray
C2-DOLOSTONE - Unweathered, Hard, Frequent Dolomite and Sphalerite Veins, Occasional Vugs, Gray
D2-SANDSTONE - Unweathered, Well Cemented, Light Gray
E2-SANDSTONE - Unweathered, Well Cemented, Frequent Fractures, Light Gray
F2-SANDSTONE - Highly Weathered to Weathered, Poorly Cemented to Cemented, Brown and Light Gray
G2-Soil-Filled Cavity (4.7' to 5.2')
H2-SANDSTONE - Slightly Weathered with Frequent Highly Weathered Layers, Cemented with Frequent Poorly Cemented Layers, Brown and Light Gray
J2-LIMESTONE - Unweathered, Hard, Frequent Fractures, Light Gray
K2-LIMESTONE WITH OCCASIONAL SANDSTONE LAYERS - Unweathered, Hard, Occasional Fractures, Light Gray
L2-Sand with Gravel, Cobbles, and Boulders
M2-Soil-Filled (Reddish Brown Sandy Clay) Cavity (7.3'-10.2')
N2-Sand-Filled (Brown Sandy Clay) Cavity (14.8'-16.4')
P2-LIMESTONE INTERBEDDED WITH SANDSTONE - Unweathered, Hard, Light Gray
Q2-SANDSTONE INTERBEDDED WITH LIMESTONE - Unweathered, Well Cemented, Light Gray



Where rock fill is used for embankment construction, aggregate base course (Class 7) in accordance with Subsection 303.02, shall be placed as shown in areas where piling will be located. Rock plating and aggregate base course (Class 7) shall be paid for as "Rock Fill".

At the Contractor's option, preboring or other methods as approved by the Engineer may be used to facilitate pile installation through the aggregate base course (Class 7) material at these locations. Preboring or other methods used for installation of piles, where rock fill is used for embankment construction, will not be paid for separately but shall be included in the item "Steel Piling".

DETAIL A

Bent 1 Shown, Bent 5 Similar

STATE OF ARKANSAS
Charles R. Ellis
LICENSED PROFESSIONAL ENGINEER
No. 9235
10-23-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE
COUNTY ROAD 213 OVER MILL CREEK
BUFFALO RIVER & MILL CREEK
STRS. & APPRS. (S)
NEWTON COUNTY

COUNTY ROAD 213
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

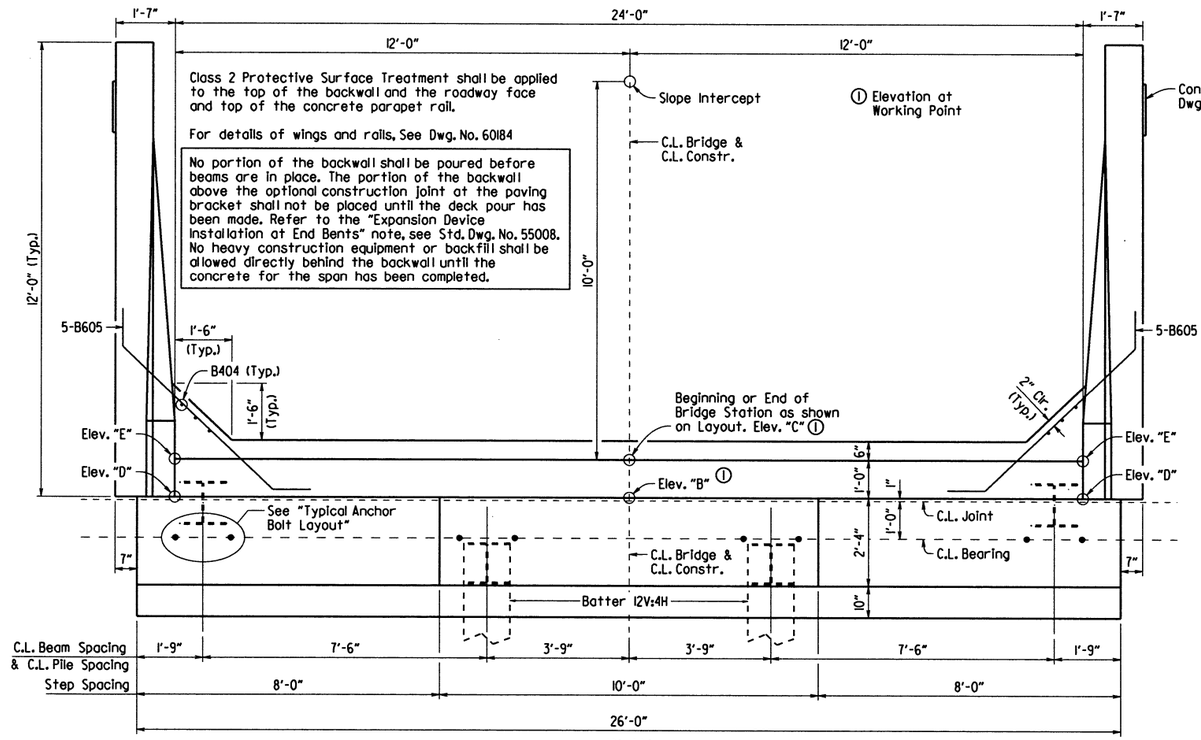
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DESIGNED BY: EOR DATE: 6/17

BRIDGE NO. 04940 DRAWING NO. 60182

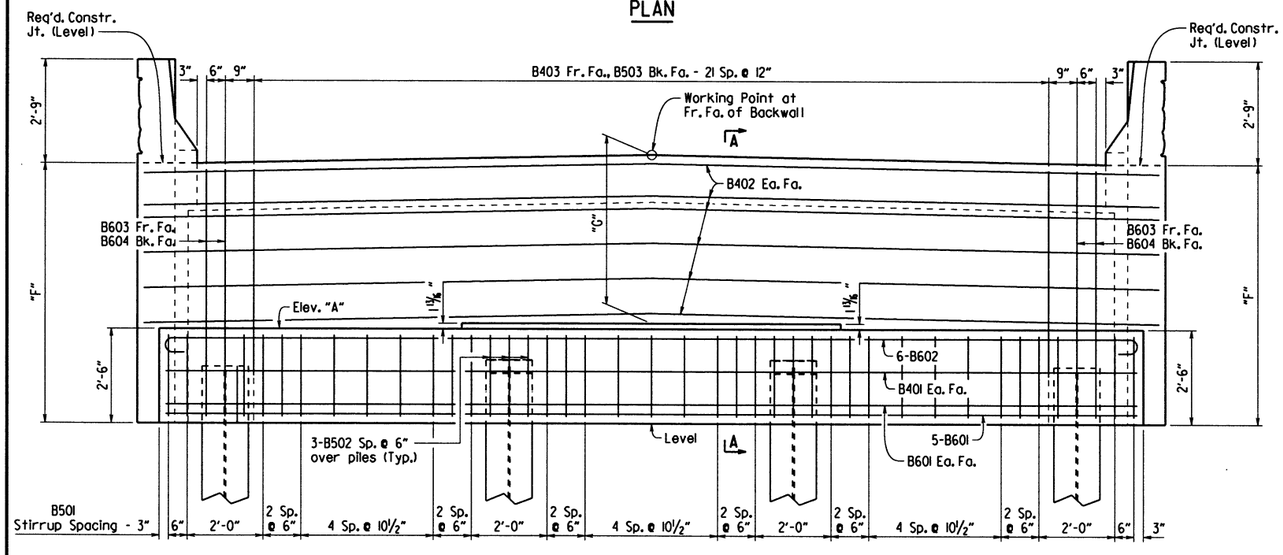
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				6	ARK.			
				JOB NO.		009784	116	193

① 04940 - END BENT DETAILS - 60183



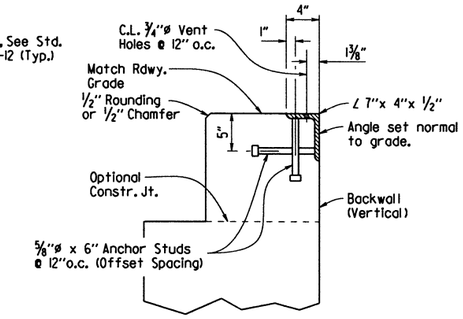
PLAN



ELEVATION

TABLE OF VARIABLES

Bent	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	"F"	"G"
1	838.97	843.58	843.68	843.34	843.44	6'-10 1/16"	4'-5 1/2"
5	826.28	830.82	830.85	830.58	830.61	6'-9 5/8"	4'-4 11/16"

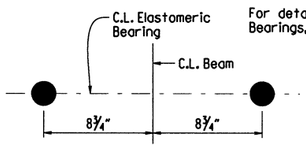


For additional Joint Details See Std. Dwg. No. 55008.

Concrete shall be hand packed under the joint armor in the backwall.

JOINT DETAIL

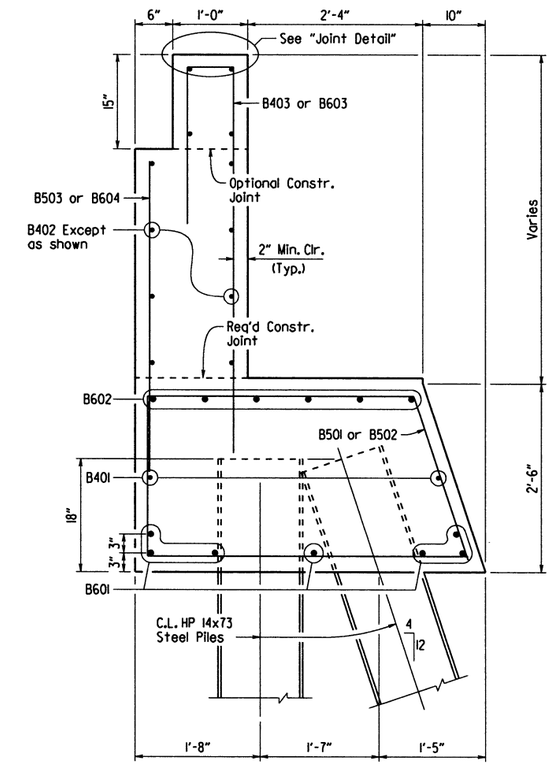
No Scale



For details of Elastomeric Bearings, See Dwg. No. 60186.

TYPICAL ANCHOR BOLT LAYOUT

No Scale



SECTION A-A

1" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF END BENTS
MILL CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

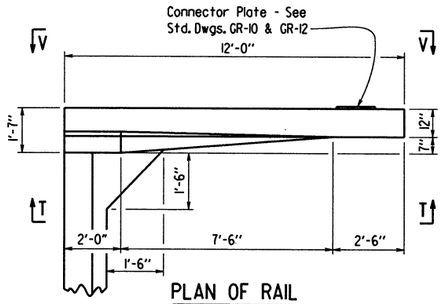
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BRIDGE NO. 04940 DRAWING NO. 60183

PRINT DATE: 9/5/2018

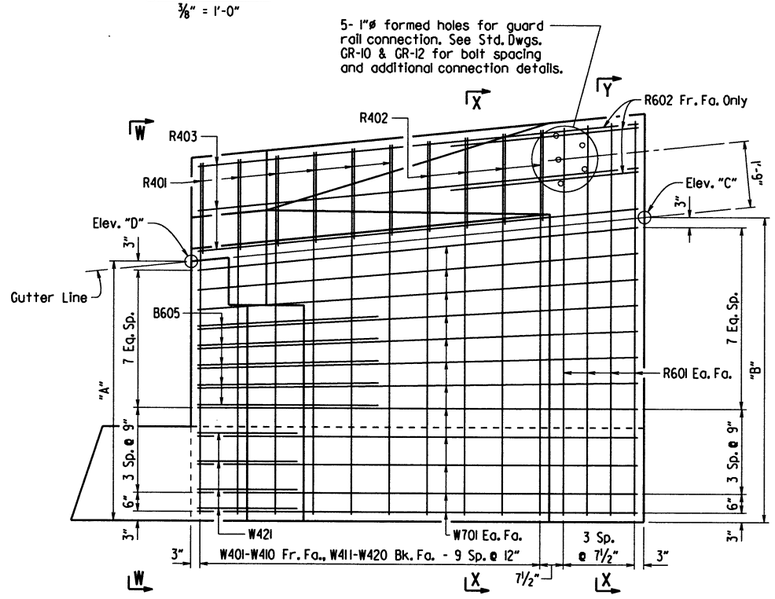
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				6	ARK.			
				JOB NO.		009784	117	193

① 04940 - END BENT DETAILS - 60184



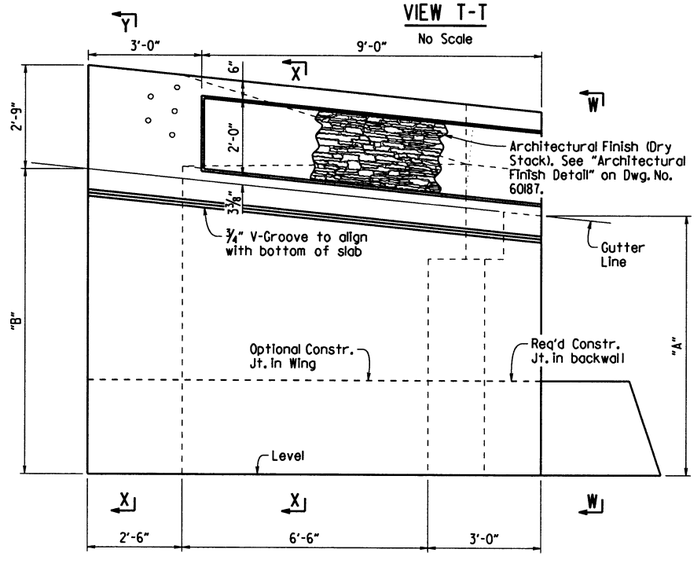
PLAN OF RAIL

3/8" = 1'-0"



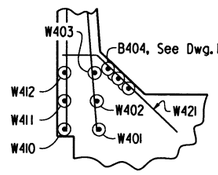
VIEW T-T

No Scale



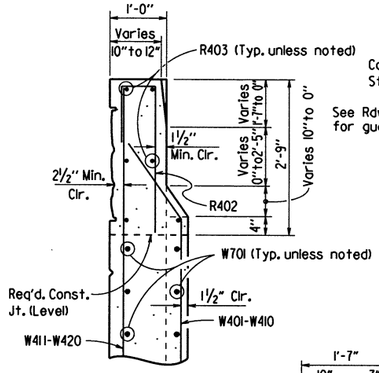
VIEW V-V

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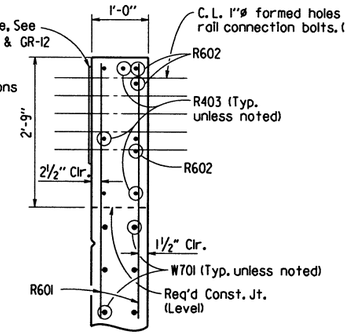


SECTION Z-Z

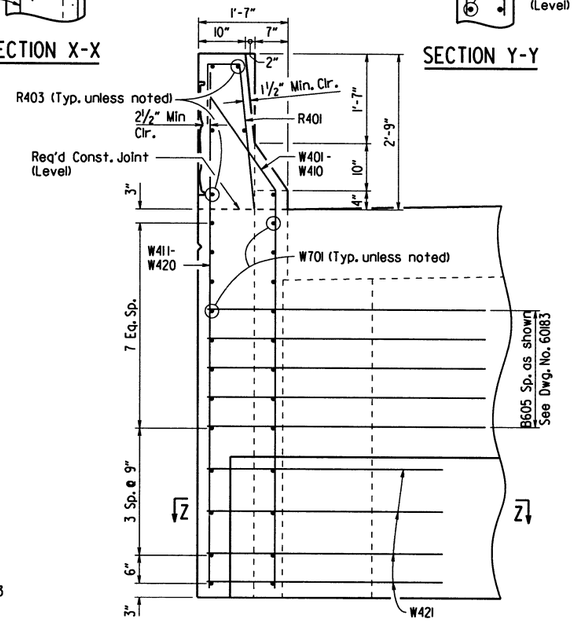
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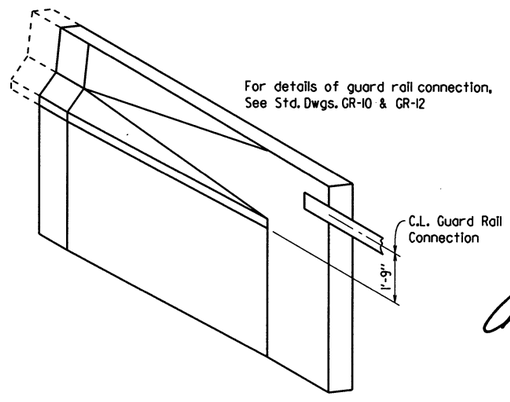
SECTION X-X



SECTION Y-Y



VIEW W-W



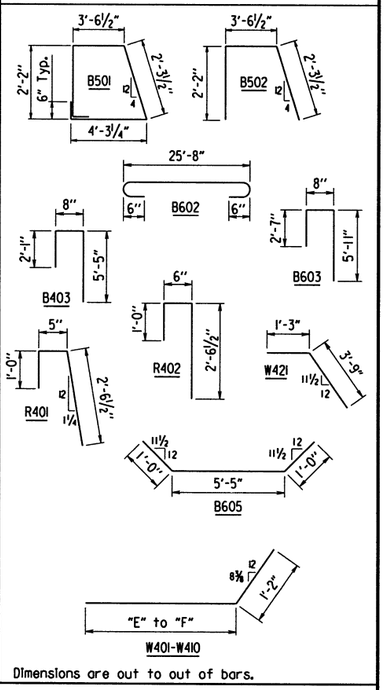
THREE DIMENSIONAL VIEW OF RAIL

No Scale

BAR LIST-PER BENT

Mark	No. Req'd.	Length	Pin Dia.
B401	2	25'-8"	Str.
B402	12	26'-10"	Str.
B403	22	8'-0"	2"
B404	6	4'-11"	Str.
B501	28	12'-10"	2½"
B502	12	7'-9"	2½"
B503	22	5'-3"	Str.
B601	7	25'-8"	Str.
B602	6	27'-0"	6"
B603	4	8'-10"	4½"
B604	4	4'-8"	Str.
B605	10	7'-5"	4½"
R401	12	3'-10'	2"
R402	8	3'-11"	2"
R403	12	11'-8"	Str.
R601	16	4'-5"	Str.
R602	6	5'-0"	Str.
W401-W410	2 ea.	"G" to "H"	2"
W411-W420	2 ea.	"J" to "K"	Str.
W421	8	5'-0"	2"
W701	48	11'-8"	Str.

Bending Diagram



Dimensions are out to out of bars.

TABLE OF VARIABLES

Bent	"A"	"B"	Elev. "C"	Elev. "D"	"E"	"F"	"G"	"H"	"J"	"K"
1	6'-10 7/16"	8'-0 1/4"	844.49	843.34	6'-11"	7'-10"	8'-1"	9'-0"	9'-3"	10'-2"
5	6'-9 5/8"	7'-2 3/8"	830.98	830.58	6'-10"	7'-2"	8'-0"	8'-4"	9'-2"	9'-6"

General Notes:

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

For details of steel piling, See Std. Dwg. No. 55020.

All piling shall be Grade 50.

See Std. Dwg. No. 55006 for additional notes.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF END BENTS
MILL CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

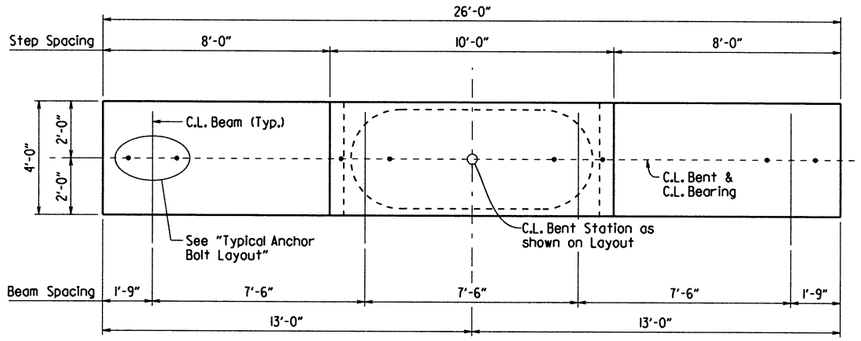
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DESIGNED BY: BHS DATE: 1/2018

BRIDGE NO. 04940 DRAWING NO. 60184

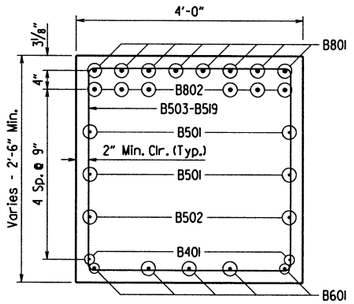
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				6	ARK.			
				JOB NO.		009784	118	193

(1) 04940 - INT. BENT DETAILS - 60185

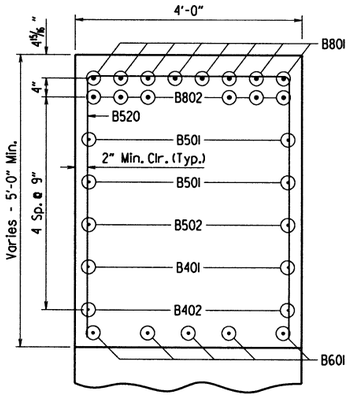


PLAN



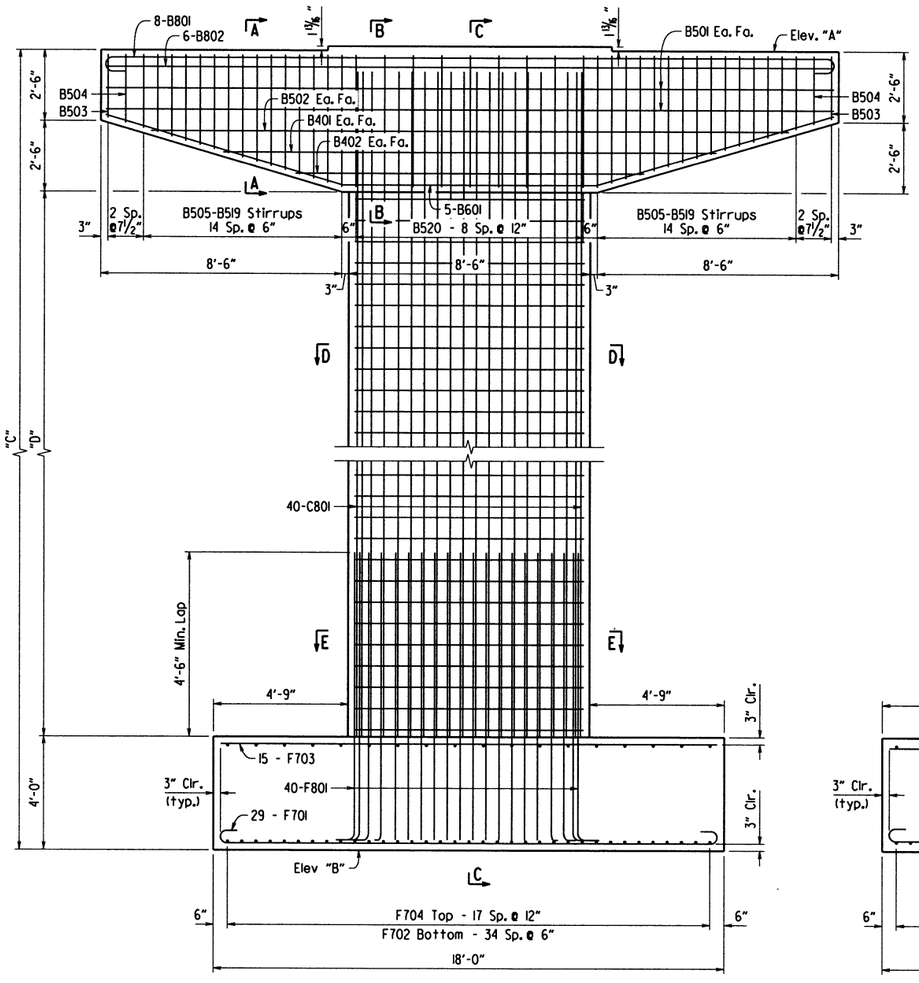
SECTION A-A

3/4" = 1'-0"

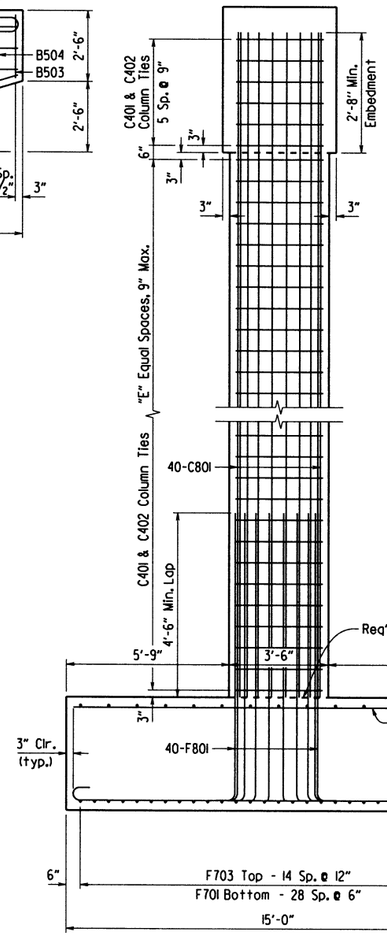


SECTION B-B

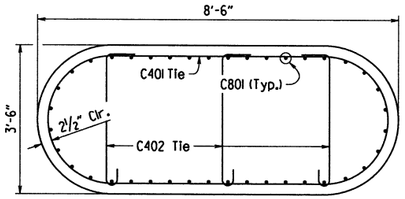
3/4" = 1'-0"



ELEVATION

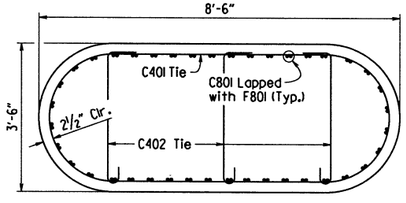


SECTION C-C



SECTION D-D

No Scale



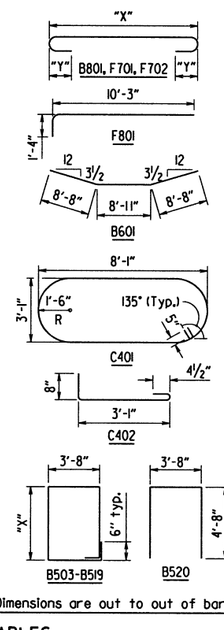
SECTION E-E

No Scale

BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	"X"	"Y"	P.D.
B401	2	17'-4"			Str.
B402	2	12'-3"			Str.
B501	4	25'-8"			Str.
B502	2	22'-5"			Str.
B503-B519	2 Ea.	12'-2" to 17'-2"	2'-2" to 4'-8"		2 1/2"
B520	9	13'-9"			2 1/2"
B601	5	26'-3"			4 1/2"
B801	8	27'-6"	25'-8"	8"	6"
B802	6	25'-8"			Str.
C401	"F"	20'-9"			2"
C402	"G"	4'-2"			2"
C801	40	"H"			Str.
F701	29	19'-2"	17'-6"	7"	5 1/4"
F702	35	16'-2"	14'-6"	7"	5 1/4"
F703	15	17'-6"			Str.
F704	18	14'-6"			Str.
F801	40	11'-5"			6"

BENDING DIAGRAMS

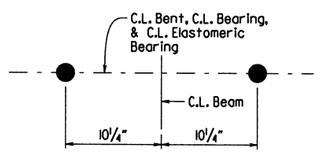


Dimensions are out to out of bars.

TABLE OF VARIABLES

Bent	Elev. "A"	Elev. "B"	"C"	"D"	"E"	"F"	"G"	"H"
2	832.60	775.60	57'-0"	48'-0"	64	71	213	52'-3"
3	827.47	771.47	56'-0"	47'-0"	63	70	210	51'-3"
4	825.51	779.51	46'-0"	37'-0"	49	56	168	41'-3"

For details of Elastomeric Bearings, See Dwg. No. 60186.



TYPICAL ANCHOR BOLT LAYOUT

1 1/2" = 1'-0"

General Notes:

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

For additional information, See Layout.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF INTERMEDIATE BENTS MILL CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 12/27/2017 FILENAME: b009784x2.b2.dgn

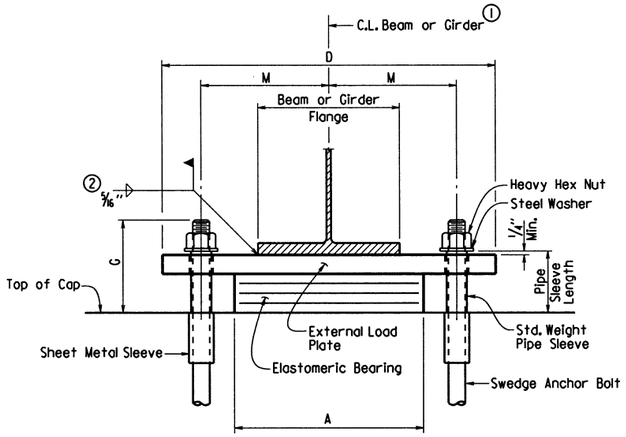
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DESIGNED BY: BHS DATE: 12/2017

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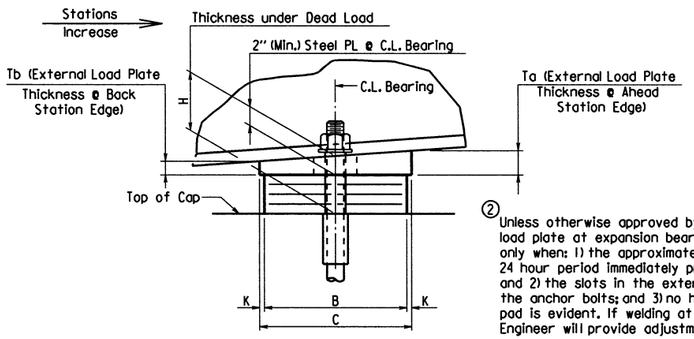
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				6	ARK.			
				JOB NO.		009784	119	193
				①		04940 - ELASTO BRGS. - 60186		



FRONT VIEW

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

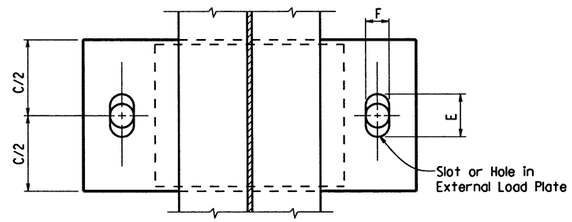


SIDE VIEW

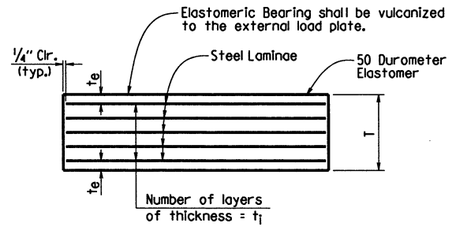
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".

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

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



PLAN VIEW



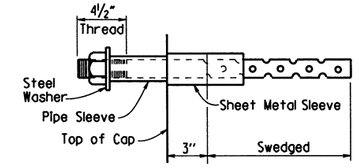
t_e = Thickness of elastomer cover on top and bottom of pad

t_l = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_l

ELASTOMERIC BEARING

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



ANCHOR BOLT DETAIL

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

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

TABLE OF FABRICATOR VARIABLES

③ Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION		BEARING TYPE	NO. of BEARINGS EACH BENT	③ MAXIMUM DESIGN LOAD (KIPS)	ELASTOMERIC PAD							EXTERNAL LOAD PLATE								ANCHOR BOLT				
	BENT NO (S).	BEAM OR GIRDER NO.				G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	C	D	E	F	K	M	T_a	T_b	ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
04940	1	All	Exp	4	99	7 3/4"	4 15/16"	13"	8"	4	1/2"	1/4"	5 @ 12 ga.	3"	9"	23"	4 5/8"	2 1/4"	1/2"	8 3/4"	1.57"	2.43"	1 1/2" x 23"	55	1 1/2" x 5 1/4"	3" x 6"	3"
	2	All	Fix	4	212	7"	3 3/4"	15"	12"	2	1/2"	1/4"	3 @ 12 ga.	1 13/16"	13"	27"	3 1/8"	3 1/8"	1/2"	10 1/4"	1.45"	2.55"	2" x 27"	55	2 1/2" x 4"	4" x 9"	3 3/4"
	3	All	Fix	4	206	7 1/8"	3 13/16"	15"	12"	2	1/2"	1/4"	3 @ 12 ga.	1 13/16"	13"	27"	3 1/8"	3 1/8"	1/2"	10 1/4"	1.71"	2.29"	2" x 28"	55	2 1/2" x 4 1/8"	4" x 9"	3 3/4"
	4	All	Fix	4	212	7"	3 3/4"	15"	12"	2	1/2"	1/4"	3 @ 12 ga.	1 13/16"	13"	27"	3 1/8"	3 1/8"	1/2"	10 1/4"	1.97"	2.03"	2" x 27"	55	2 1/2" x 4"	4" x 9"	3 3/4"
	5	All	Exp	4	99	7 3/4"	4 15/16"	13"	8"	4	1/2"	1/4"	5 @ 12 ga.	3"	9"	23"	4 5/8"	2 1/4"	1/2"	8 3/4"	2.13"	1.87"	1 1/2" x 23"	55	1 1/2" x 5 1/4"	3" x 6"	3"

GENERAL NOTES

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

External load plates shall conform to AASHTO M 270, 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 shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. The surface in contact with the elastomeric bearing shall be cleaned in accordance with Subsection 808.03. Other surfaces shall be blast cleaned in accordance with Subsection 807.84(b) for painted steel and 807.84(e) for unpainted Grade 50W steel.

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M 270, Gr. 50W)". External load plates will not be measured and paid for separately, but will be considered incidental to the unit price bid for "Elastomeric Bearings".

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

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS MILL CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 8/2017 FILENAME: b009784x2_el.dgn

CHECKED BY: DKS DATE: 8/29/18 SCALE: None

DESIGNED BY: BHS DATE: 8/2017

BRIDGE NO. 04940 DRAWING NO. 60186

PRINT DATE: 8/29/2018

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.		009784	120	193
				①		04940 - SPAN DETAILS - 60187		

Slab Reinforcing:

Longitudinal: S402E as shown
S601E as shown over int. supports, see "Half Reinforcing Plan and Pouring Sequence", Dwg. No. 60189.

Transverse: S502E @ 12" o.c. bent up over beams — Alternate
S501E @ 12" o.c. in top, S401E @ 12" o.c. in bottom
S503E @ 6" in top of overhangs (bundled with No. 5 bars)

For Bar List, See Dwg. No. 60189.

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

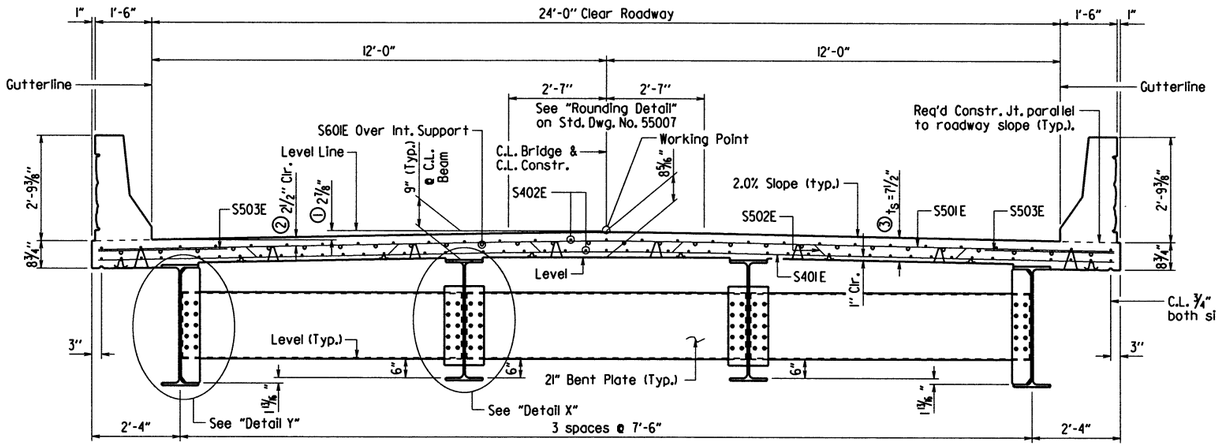
At the Contractor's option, two straight epoxy coated No. 5 bars may be substituted for bar S502E. Payment for reinforcing will be based on the weight of bar S502E.

① Working point to gutterline.

② Tolerance: Minus = 1/4"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance" on Std. Dwg. No. 55007.

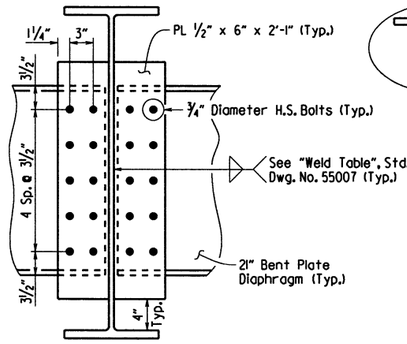
③ See "Adjustment for Slab Thickness Tolerance" on Std. Dwg. No. 55007.

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

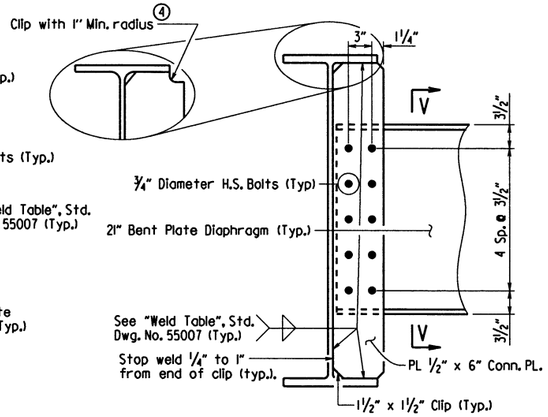


TYPICAL ROADWAY SECTION

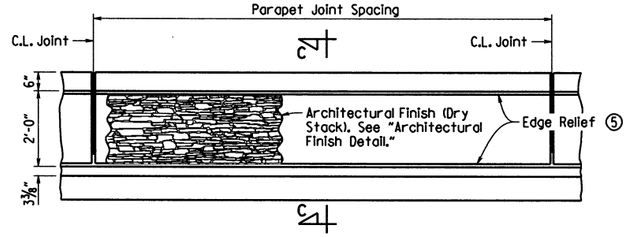
Bar positions and clearances from the forms shall be maintained by means of stays, ties, hangers or other approved devices per Subsection 804.06. Placement of slab bolsters or hi-chairs with full-length lower runners directly on removable deck forms will not be allowed.



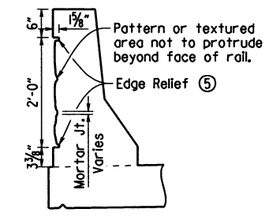
DETAIL X
No Scale



DETAIL Y
No Scale



DETAILS OF PARAPET ENHANCEMENT
Outside Face Of Rail
No Scale

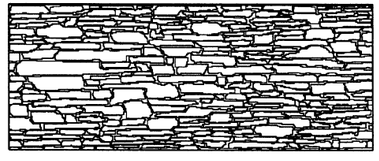


SECTION C-C
No Scale

Rail enhacement shall be applied to the outside face of the rail.

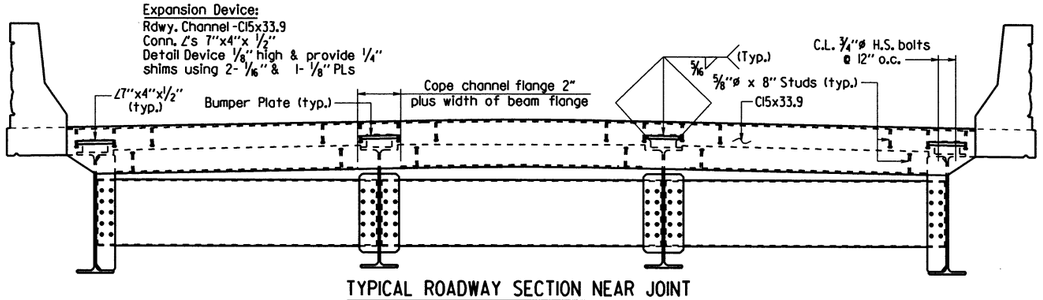
Slip forming of bridge rail shall not be permitted.

⑤ Provide edge relief around perimeter of texture. Edge relief dimensions shall match manufacturer edge distance.



ARCHITECTURAL FINISH DETAIL
(Dry Stack)
No Scale

Expansion Device:
Rdwy. Channel - C15x33.9
Conn. ∠'s 7"x4"x ½"
Detail Device ⅛" high & provide ¼" shims using 2- 1/16" & 1- ⅛" PLs

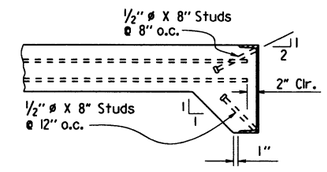


TYPICAL ROADWAY SECTION NEAR JOINT
Looking Ahead Bent 1
Looking Back Bent 4

SILICONE JOINT DATA

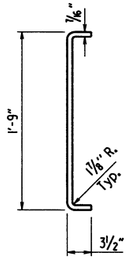
"A" Width Perpendicular to Joint at 24 Hour Average Temperature of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size
40°F	60°F	80°F		
2¼"	2"	1¾"	2¼"±	1" x 1" x 12"

For details of poured silicone joint, See Std. Dwg. No. 55008.



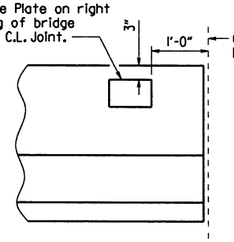
As an alternate to 5/8" ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of 5/8"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT
No Scale



SECTION V-V
No Scale

Place Type C Bridge Name Plate on right parapet rail at beginning of bridge approximately 1'-0" from C.L. Joint.



NAME PLATE DETAIL
No Scale

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
MILL CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

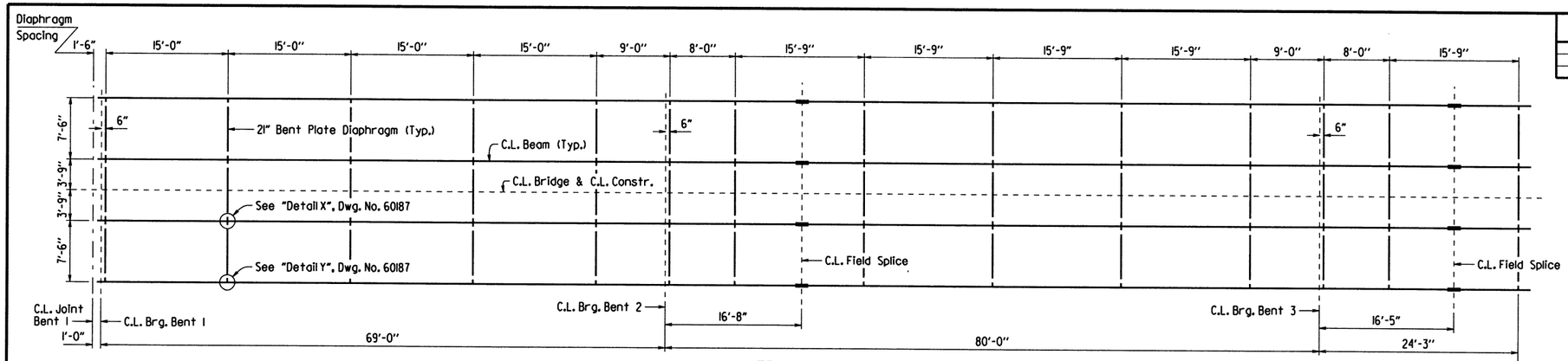
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CHECKED BY: DKS DATE: 8/29/18
DESIGNED BY: BHS DATE: 8/2017
FILENAME: b009784x2_sl.dgn
SCALE: ½" = 1'-0" or As Shown

BRIDGE NO. 04940
DRAWING NO. 60187

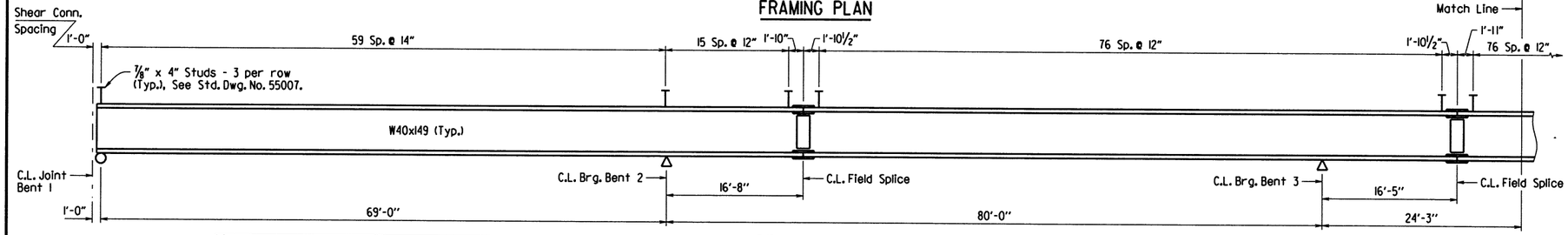
PRINT DATE: 8/29/2018

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.		009784	121	193

① 04940 - SPAN DETAILS - 60188

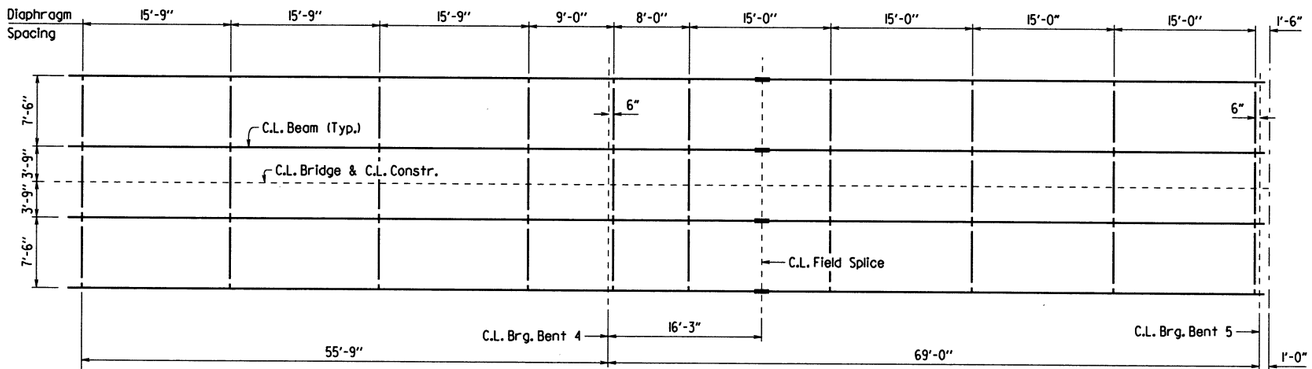


FRAMING PLAN

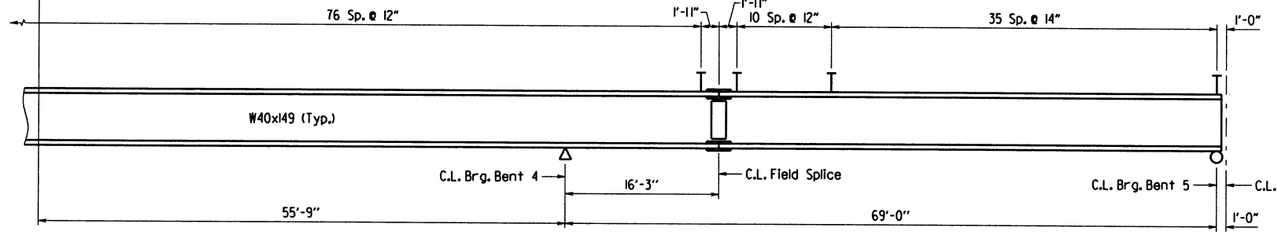


BEAM ELEVATION
No Scale

Note: All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". See Std. Dwg. Nos. 55006 & 55007 for additional notes and details.



FRAMING PLAN



BEAM ELEVATION
No Scale

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

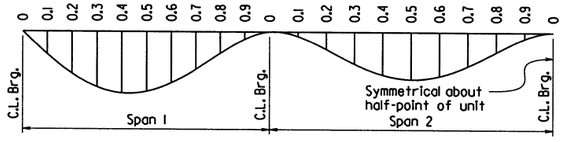
Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Parapet	
		Int. Beam	Ext. Beam	Int. Beam	Ext. Beam	Int. Beam	Ext. Beam
1	0	0	0	0	0	0	0
	0.1	0.051	0.048	0.293	0.243	0.328	0.280
	0.2	0.095	0.088	0.542	0.449	0.606	0.517
	0.3	0.125	0.116	0.714	0.591	0.799	0.681
	0.4	0.139	0.128	0.791	0.655	0.886	0.755
	0.5	0.135	0.125	0.770	0.638	0.861	0.735
	0.6	0.116	0.107	0.660	0.547	0.738	0.630
	0.7	0.085	0.078	0.484	0.400	0.541	0.461
	0.8	0.049	0.045	0.279	0.231	0.312	0.266
	0.9	0.017	0.016	0.096	0.080	0.107	0.092
2	0	0	0	0	0	0	0
	0.1	0.010	0.009	0.058	0.048	0.065	0.055
	0.2	0.039	0.036	0.224	0.186	0.251	0.213
	0.3	0.072	0.066	0.410	0.339	0.459	0.391
	0.4	0.096	0.089	0.551	0.456	0.615	0.526
	0.5	0.106	0.099	0.608	0.503	0.679	0.581
	0.6	0.099	0.092	0.566	0.469	0.633	0.540
	0.7	0.077	0.071	0.437	0.362	0.489	0.417
	0.8	0.045	0.041	0.255	0.211	0.285	0.243
	0.9	0.014	0.013	0.081	0.067	0.091	0.077
	0	0	0	0	0	0	0

Symmetrical about half-point of unit

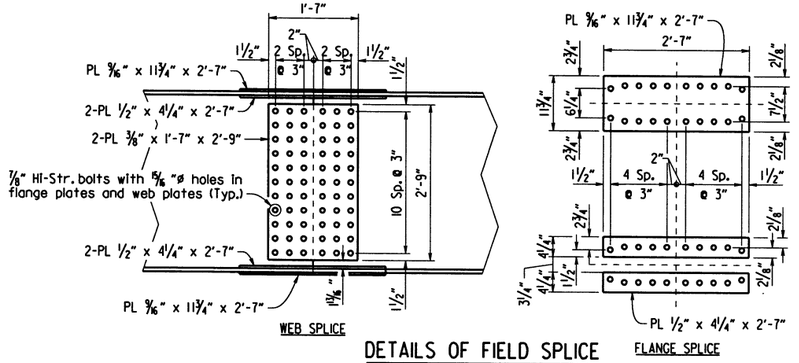
Notes:
Camber for dead load deflection plus vertical curve +/- ¼" tolerance. Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections not included.

Bolted field splices may 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.

All field splice bolts shall be ⅞" Hi-str. bolts.
All holes for splice bolts shall be 15/16 "ø.
All field splice plates shall be AASHTO M 270, Gr. 50W



DEAD LOAD DEFLECTION DIAGRAM
No Scale



DETAILS OF FIELD SPLICE
¾" = 1'-0"

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
9-5-18
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
MILL CREEK

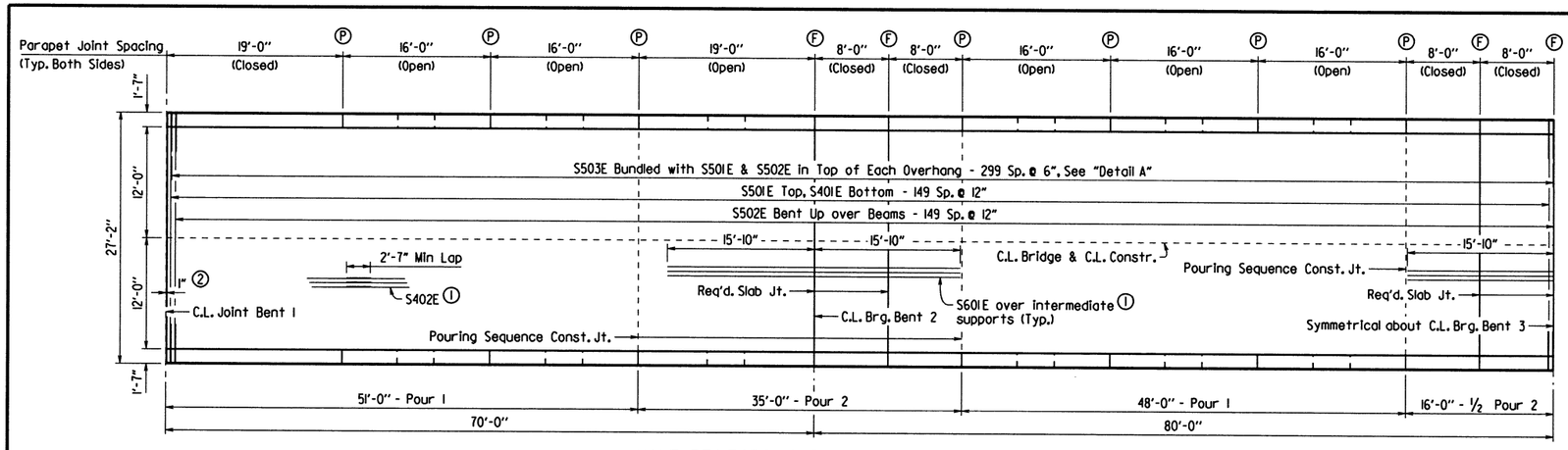
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: BHS DATE: 8/2017
CHECKED BY: DLS DATE: 9/29/18
DESIGNED BY: BHS DATE: 8/2017
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SCALE: ⅛" = 1'-0" or As Shown
BRIDGE NO. 04940
DRAWING NO. 60188

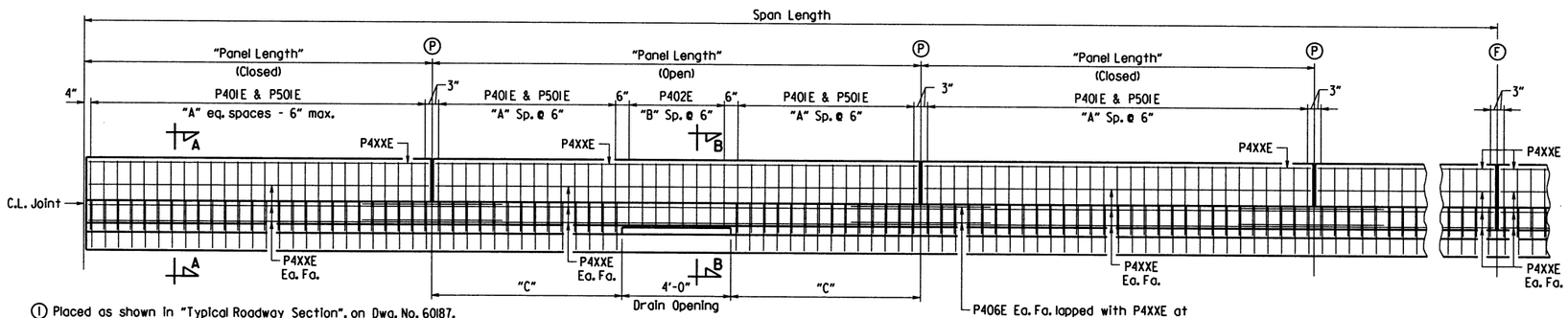
PRINT DATE: 8/29/2018

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.		009784	122	193
				①		04940 - SPAN DETAILS - 60189		



HALF REINFORCING PLAN AND POURING SEQUENCE

1/8" = 1'-0"



① Placed as shown in "Typical Roadway Section", on Dwg. No. 60187.

② Measured from C.L. Jt. to front face of roadway channel

Ⓕ C.L. Full-Depth Parapet Joint (1/4" to 1" max.) as shown in "Half Reinforcing Plan & Pouring Sequence". Stop 4" from top of slab.

Ⓟ C.L. Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Half Reinforcing Plan & Pouring Sequence". Stop 1'-2" from top of slab.

Required slab joints and pouring sequence construction joints shall align with open joints in parapet rail at the gutter line.

For details of Architectural Finish, See Dwg. No. 60187.

PARAPET RAIL REINFORCING

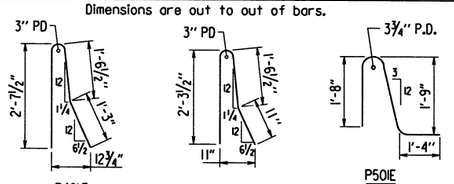
3/8" = 1'-0"

BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
P401E	1,008	5'-6"	2"
P402E	192	4'-10"	2"
P403E	112	7'-8"	Str.
P404E	140	15'-8"	Str.
P405E	56	17'-8"	Str.
P406E	112	5'-6"	Str.
P501E	1,008	4'-10"	3¾"
S401E	300	26'-10"	Str.
S402E	608	39'-10"	Str.
S501E	300	26'-10"	Str.
S502E	299	27'-4"	3"
S503E	1,198	4'-1"	Str.
S601E	84	31'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



③ ½" Over tolerance
No Under tolerance

All bars with an "E" suffix shall be Epoxy Coated.

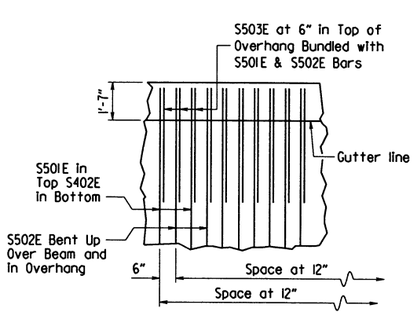
Slab Pouring Sequence Notes:
Pours with the same number may be place simultaneously or separately. All Pours (1) must be placed before pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between adjacent pours. **No deviations from the pouring sequence shown will be allowed.**

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

A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer.

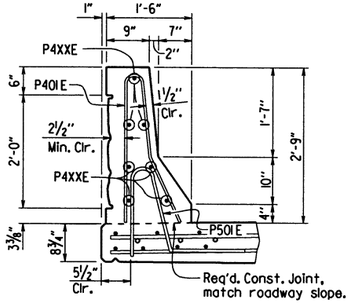
TABLE OF VARIABLES

Panel Length	Panel Type	"A"	"B"	"C"	P4XXE Bar
8'-0"	Closed	15	-	-	P403E
16'-0"	Open	11	7	6'-0"	P404E
19'-0"	Open	14	7	7'-6"	P405E
19'-0"	Closed	37	-	-	P405E



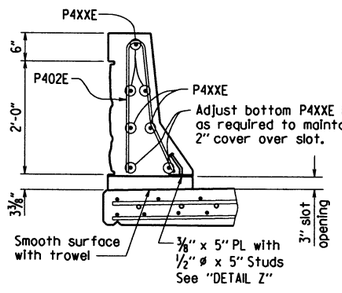
DETAIL A

No Scale



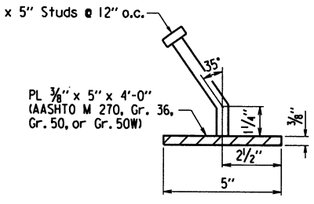
SECTION A-A

¾" = 1'-0"



SECTION B-B

¾" = 1'-0"



DETAIL Z

No Scale

The surfaces of the ⅜" plates which will not be in contact with concrete shall be painted with aluminum epoxy paint in accordance with Section 638, or as approved by the Engineer. Only one coat is required and shall be applied in the fabricator's shop. Painting will not be paid for directly, but will be considered subsidiary to "Structural Steel in Beam Spans (M 270, Gr. 50W)."

Parapet studs shall be 5" long, granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)."

STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
9-5-18
BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF 300'-0" CONTINUOUS COMPOSITE W-BEAM UNIT
MILL CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

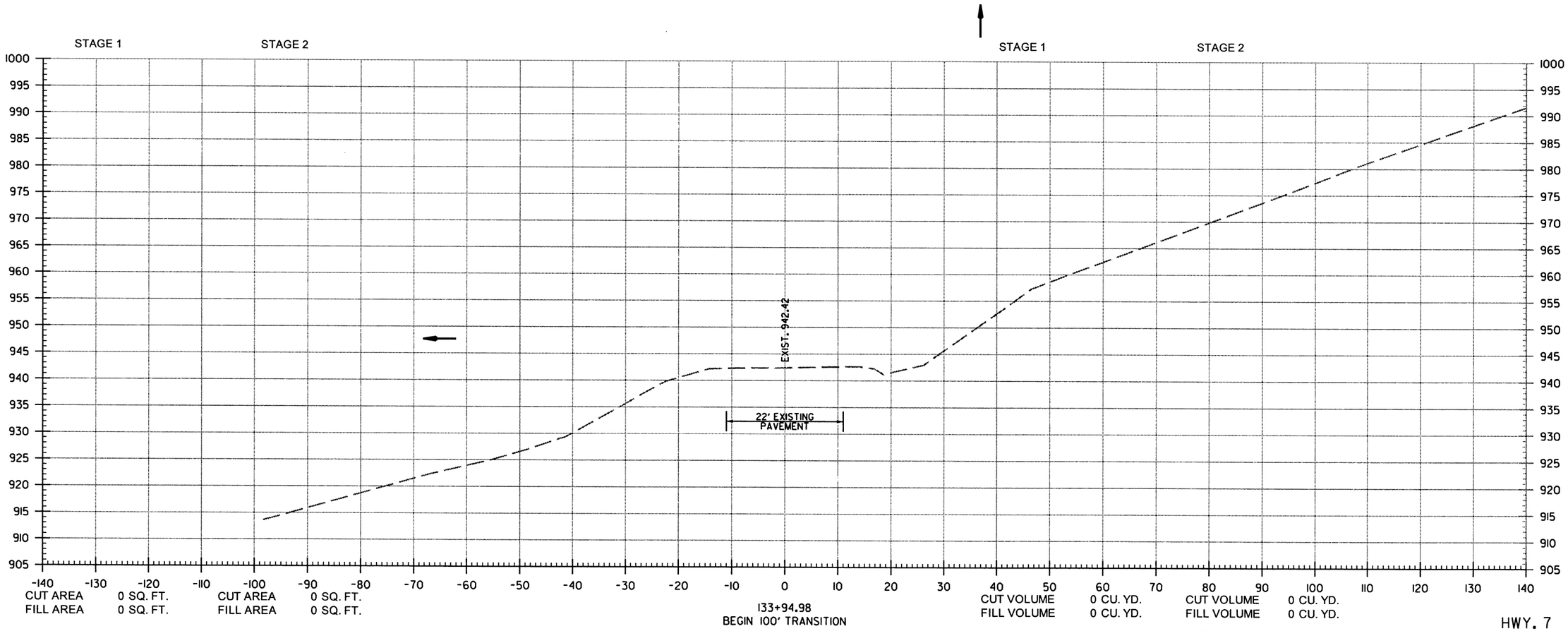
DRAWN BY: BHS DATE: 8/2017 FILENAME: b009784x2_sl.dgn
CHECKED BY: DKS DATE: 8/29/18 SCALE: As Shown
DESIGNED BY: BHS DATE: 8/2017

BRIDGE NO. 04940 DRAWING NO. 60189

PRINT DATE: 8/29/2018

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.		009784	123	193

(2) CROSS SECTIONS



HWY. 7

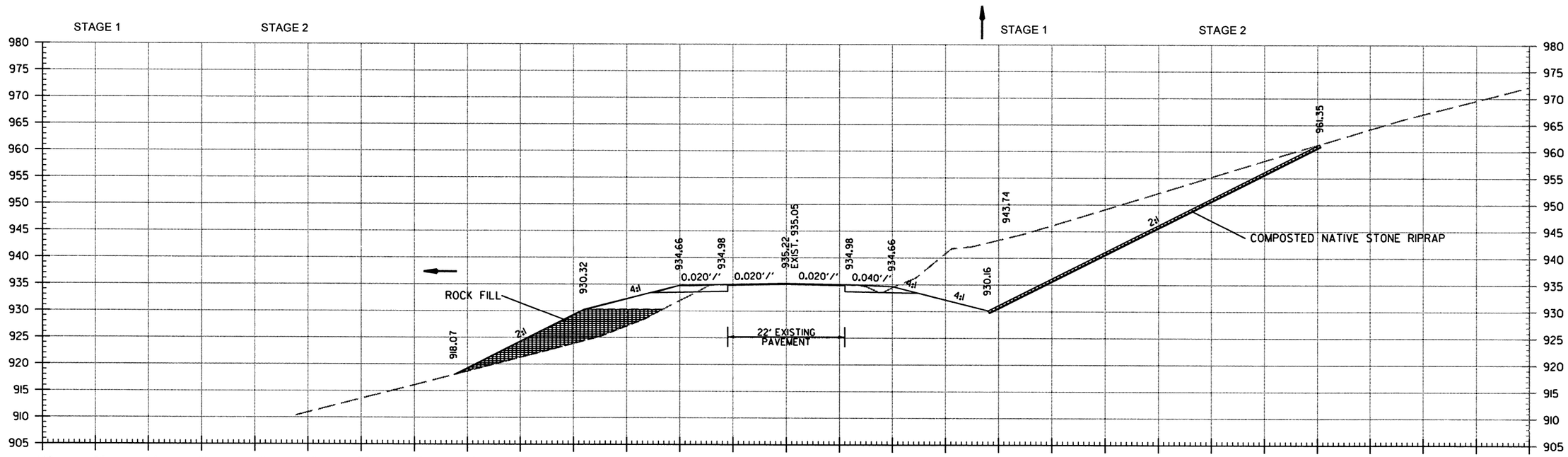
CROSS SECTION STA. 133+95 TO STA. 133+95

8/8/2017

R009784.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.		009784	124	193

(2) CROSS SECTIONS



CUT AREA 521 SQ. FT.
FILL AREA 1 SQ. FT.

CUT AREA 6 SQ. FT.
FILL AREA 36 SQ. FT.
ROCK FILL 121 SQ. FT.

134+94.98
BEGIN JOB 009784
END 100' TRANSITION

CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.
ROCK FILL VOLUME 0 CU. YD.

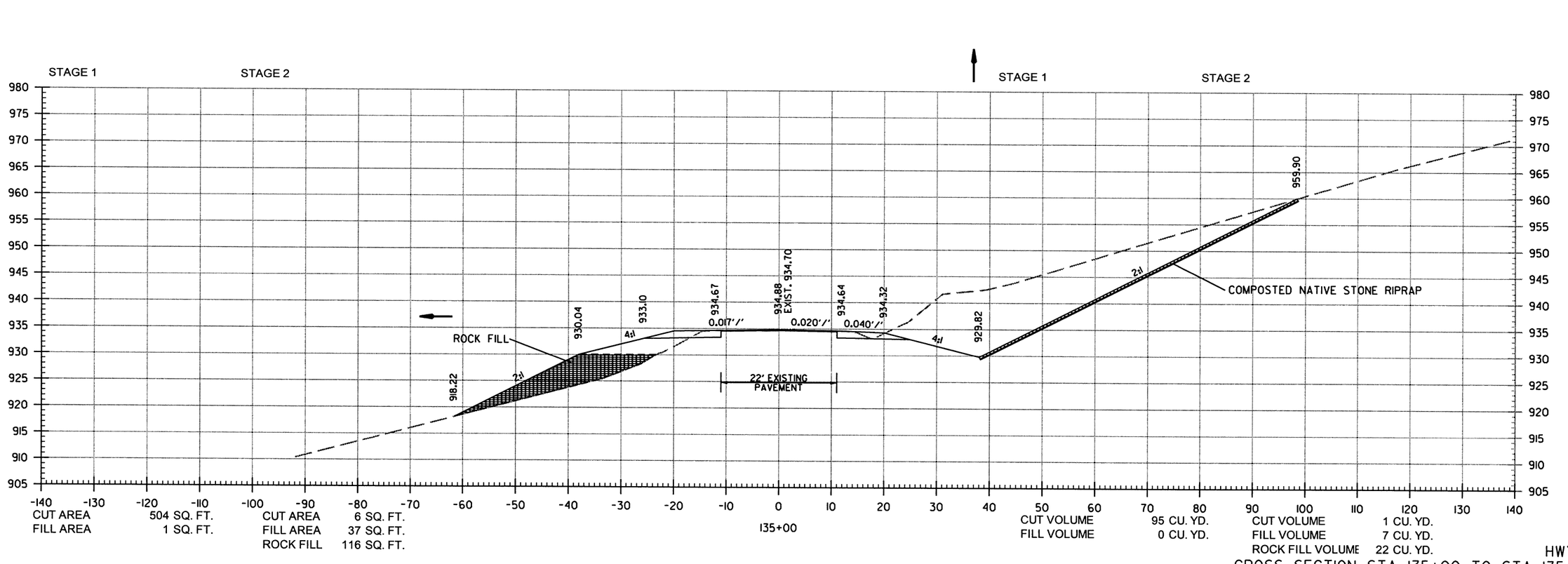
HWY. 7
CROSS SECTION STA. 134+95 TO STA. 134+95

8/8/2017

R009784.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.		009784	125	193

(2) CROSS SECTIONS



CUT AREA	504 SQ. FT.	CUT AREA	6 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	37 SQ. FT.
		ROCK FILL	116 SQ. FT.

CUT VOLUME	95 CU. YD.	CUT VOLUME	1 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	7 CU. YD.
		ROCK FILL VOLUME	22 CU. YD.

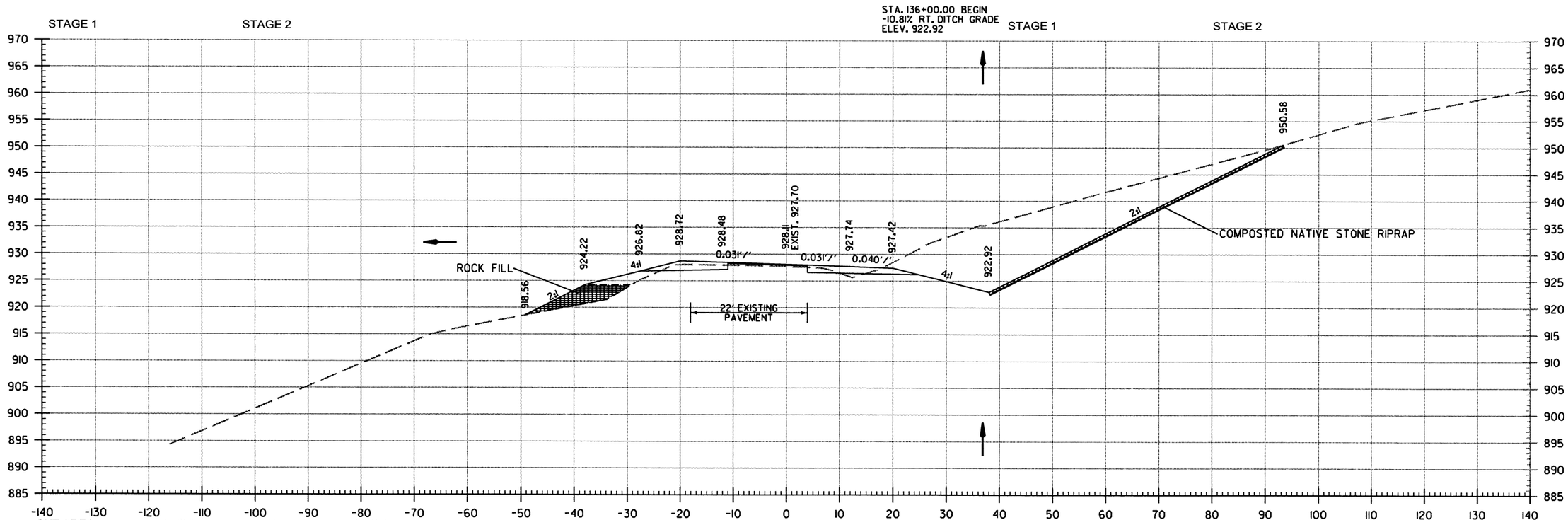
HWY. 7
CROSS SECTION STA. 135+00 TO STA. 135+00

8/8/2017

R009784.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.		009784	126	193

(2) CROSS SECTIONS



CUT AREA	495 SQ. FT.	CUT AREA	11 SQ. FT.
FILL AREA	2 SQ. FT.	FILL AREA	55 SQ. FT.
		ROCK FILL	40 SQ. FT.

CUT VOLUME	1849 CU. YD.	CUT VOLUME	31 CU. YD.
FILL VOLUME	6 CU. YD.	FILL VOLUME	171 CU. YD.
		ROCK FILL VOLUME	289 CU. YD.

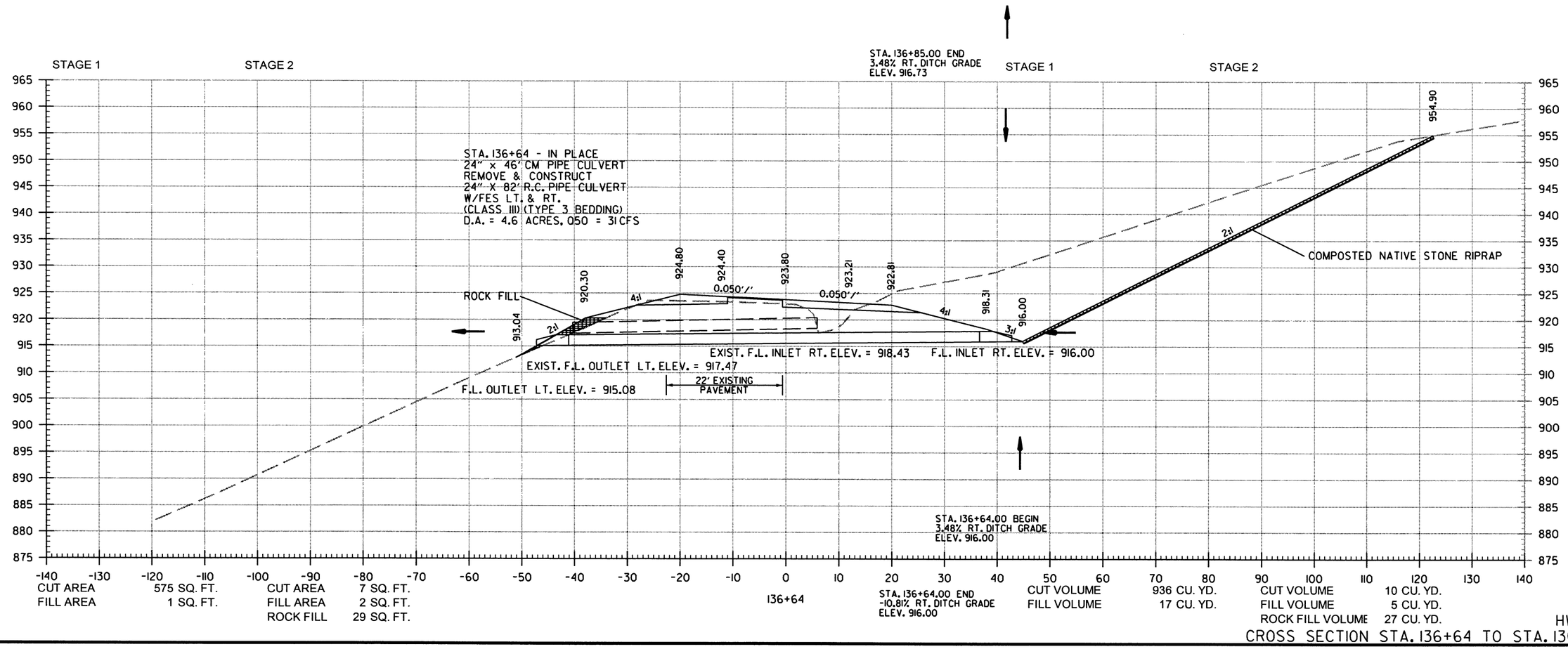
8/8/2017

R009784.DGN

HWY. 7
CROSS SECTION STA. 136+00 TO STA. 136+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.		009784	127	193

(2) CROSS SECTIONS



CUT AREA	575 SQ. FT.	CUT AREA	7 SQ. FT.
FILL AREA	1 SQ. FT.	FILL AREA	2 SQ. FT.
		ROCK FILL	29 SQ. FT.

STA. 136+64.00 END
-10.81% RT. DITCH GRADE
ELEV. 916.00

CUT VOLUME	936 CU. YD.	CUT VOLUME	10 CU. YD.
FILL VOLUME	17 CU. YD.	FILL VOLUME	5 CU. YD.
		ROCK FILL VOLUME	27 CU. YD.

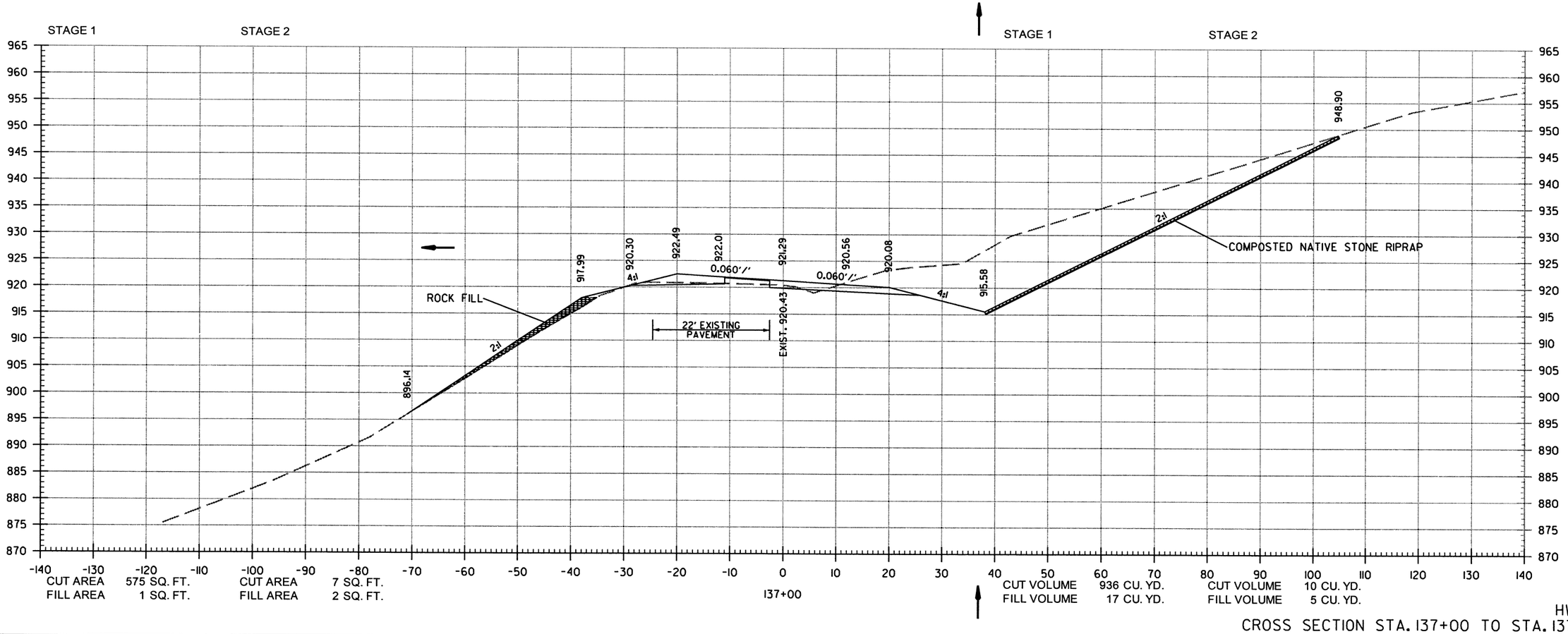
HWY. 7
CROSS SECTION STA. 136+64 TO STA. 136+64

8/8/2017

R009784.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.		009784	128	193

(2) CROSS SECTIONS



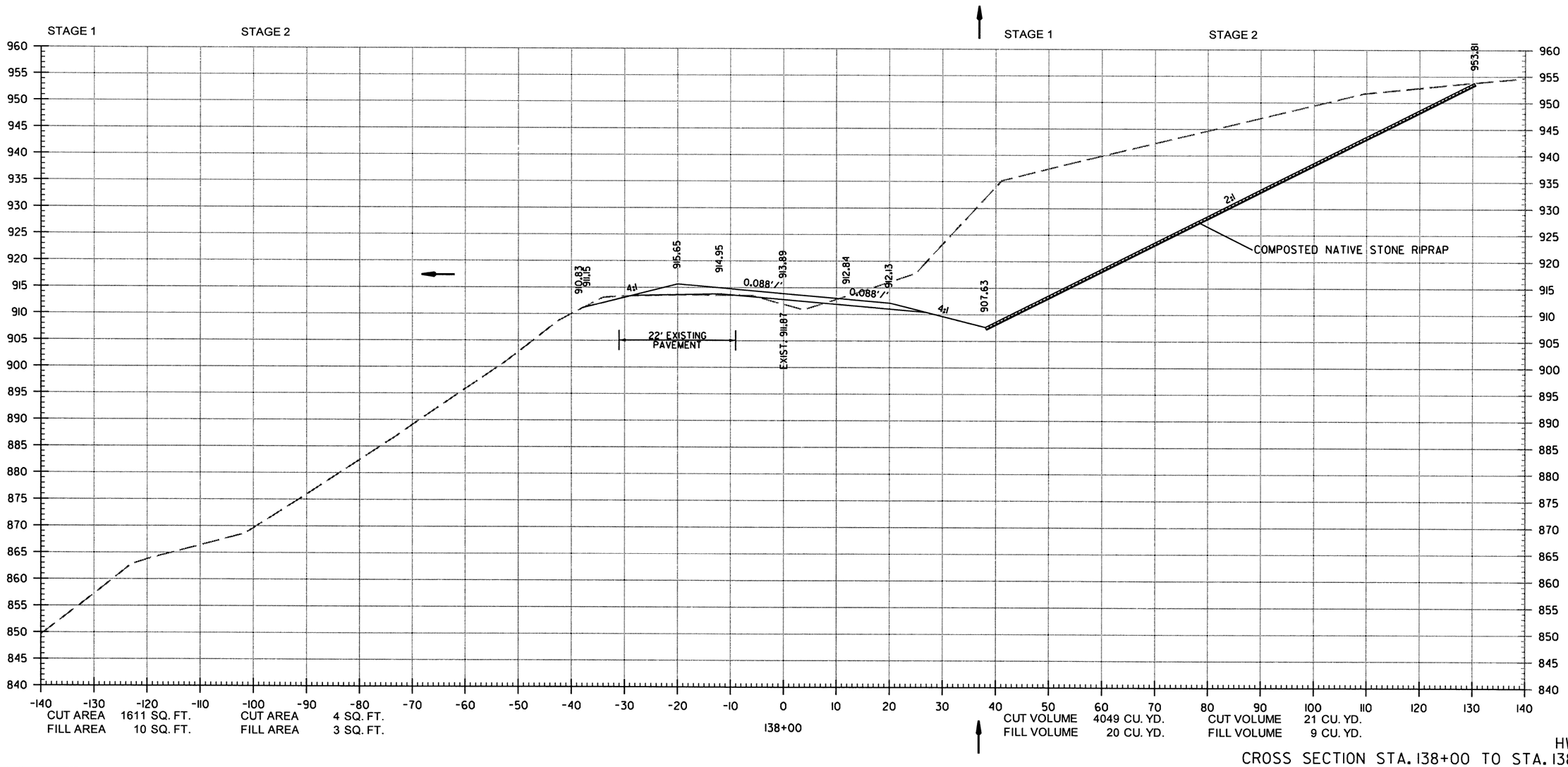
HWY. 7
CROSS SECTION STA. 137+00 TO STA. 137+00

8/8/2017

R009784.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.		009784	129	193

(2) CROSS SECTIONS



HWY. 7

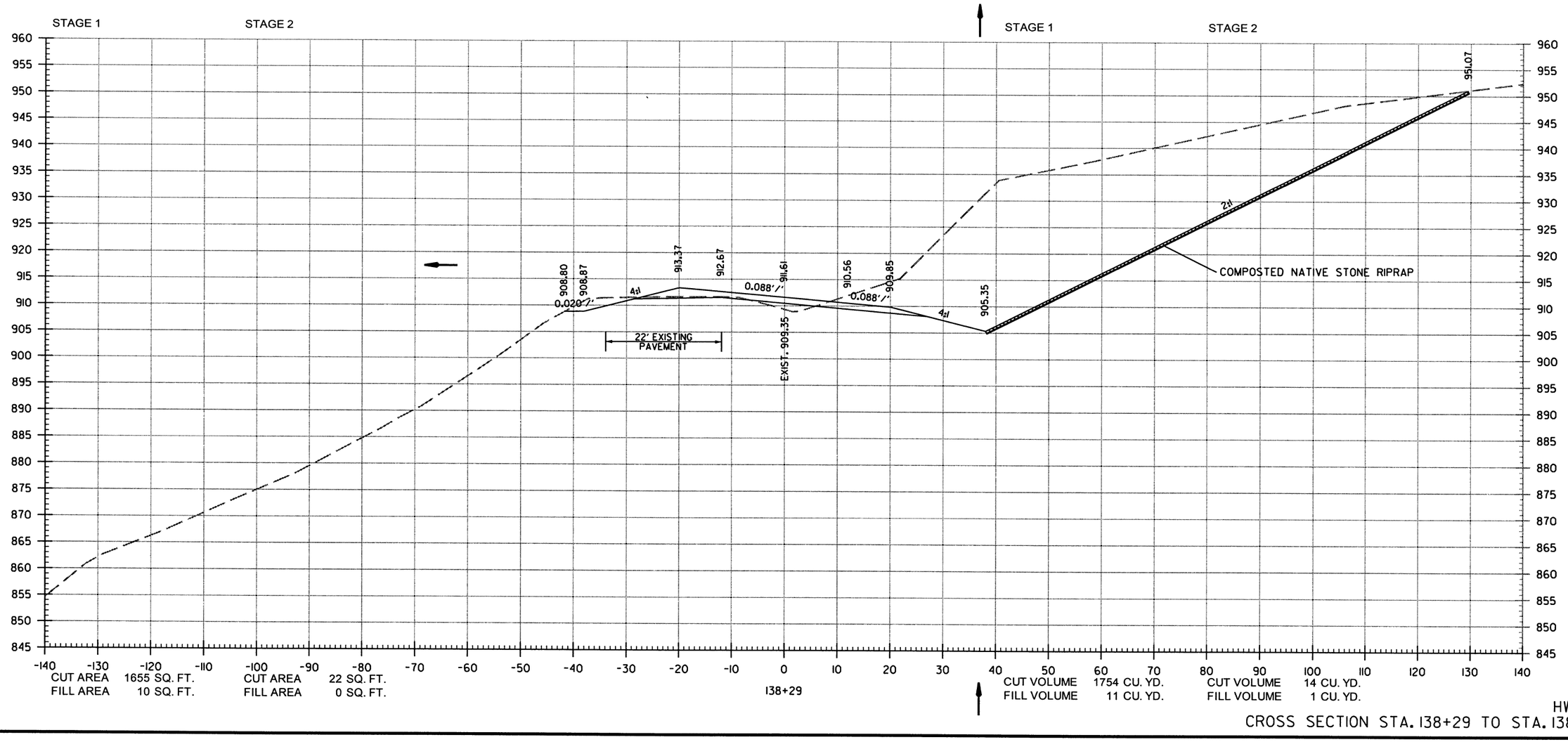
CROSS SECTION STA. 138+00 TO STA. 138+00

8/8/2017

R009784.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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(2) CROSS SECTIONS



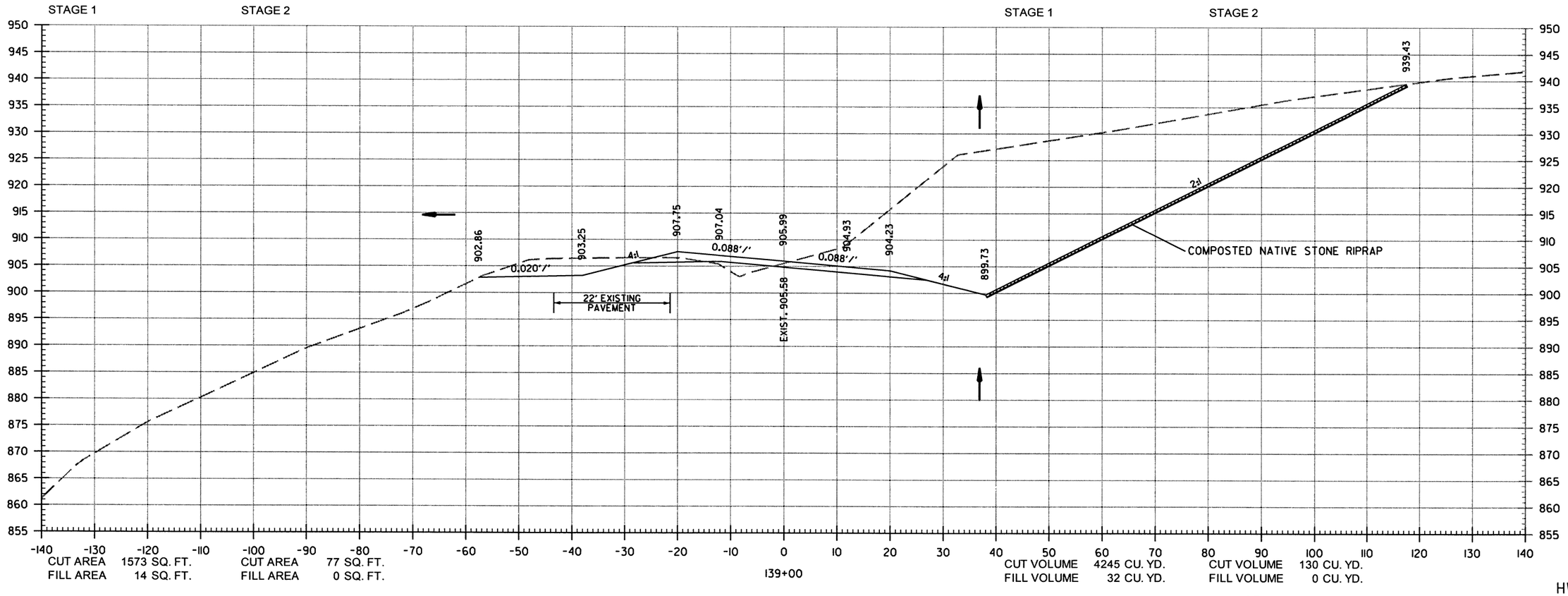
HWY. 7
CROSS SECTION STA. 138+29 TO STA. 138+29

8/8/2017

R009784.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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(2) CROSS SECTIONS



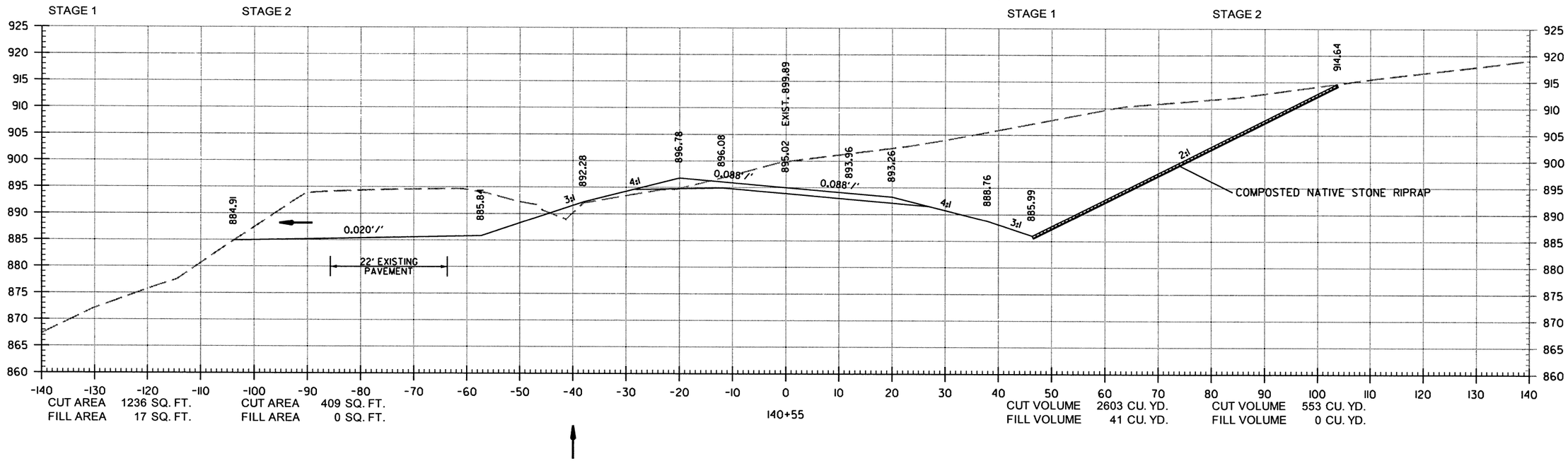
HWY. 7
CROSS SECTION STA. 139+00 TO STA. 139+00

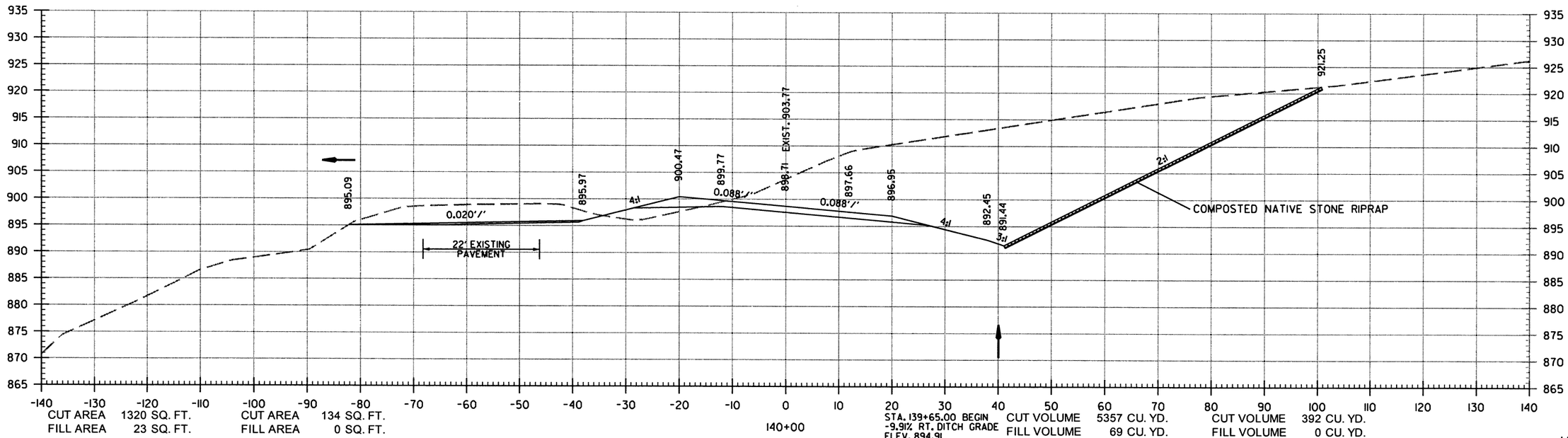
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R009784.DGN

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(2) CROSS SECTIONS





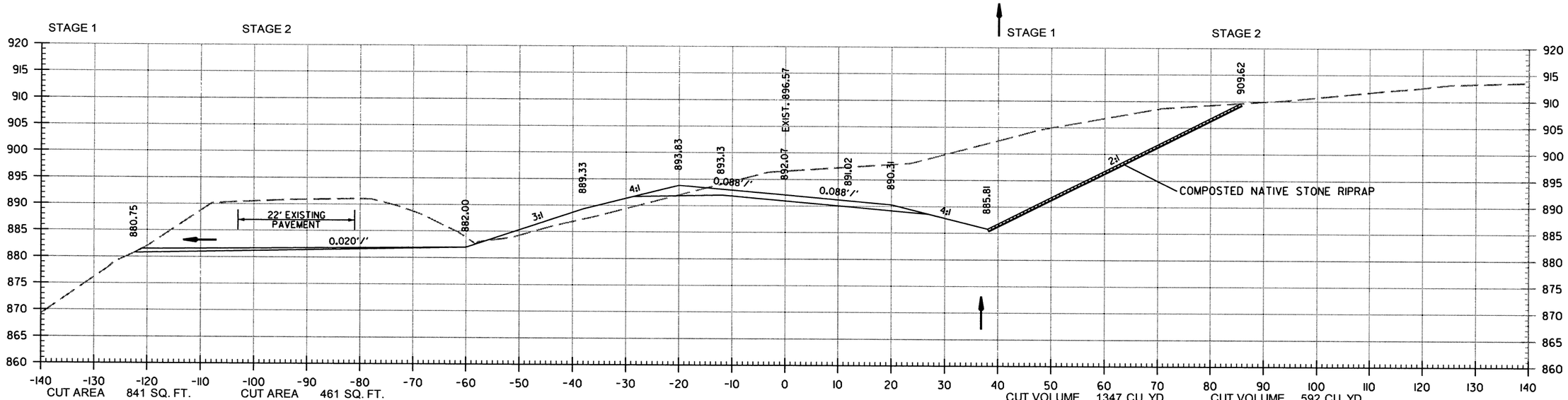
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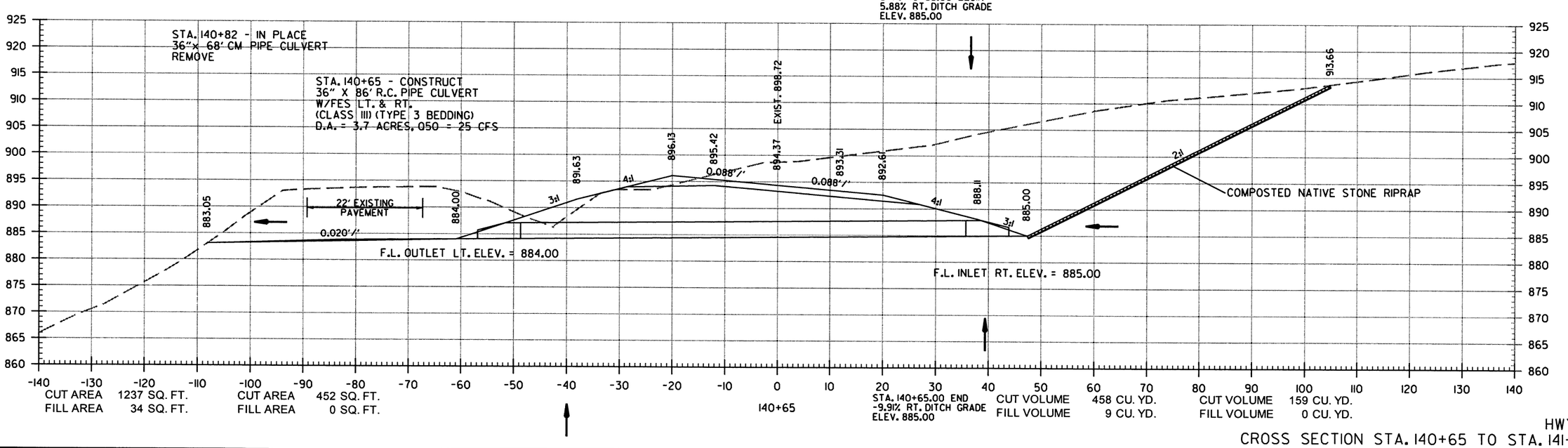
R009784.DGN

HWY. 7
CROSS SECTION STA. 140+00 TO STA. 140+55

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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(2) CROSS SECTIONS





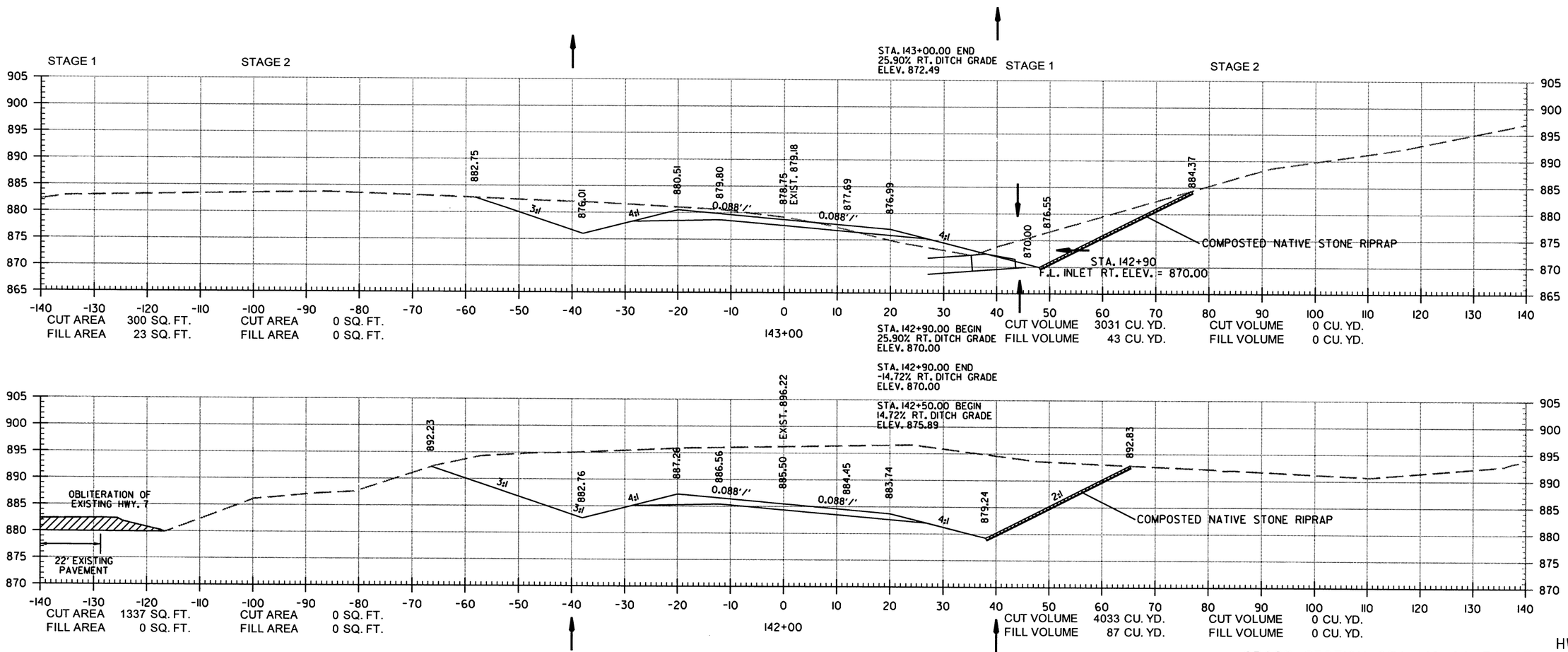
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R009784.DGN

HWY. 7
CROSS SECTION STA. 140+65 TO STA. 141+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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(2) CROSS SECTIONS



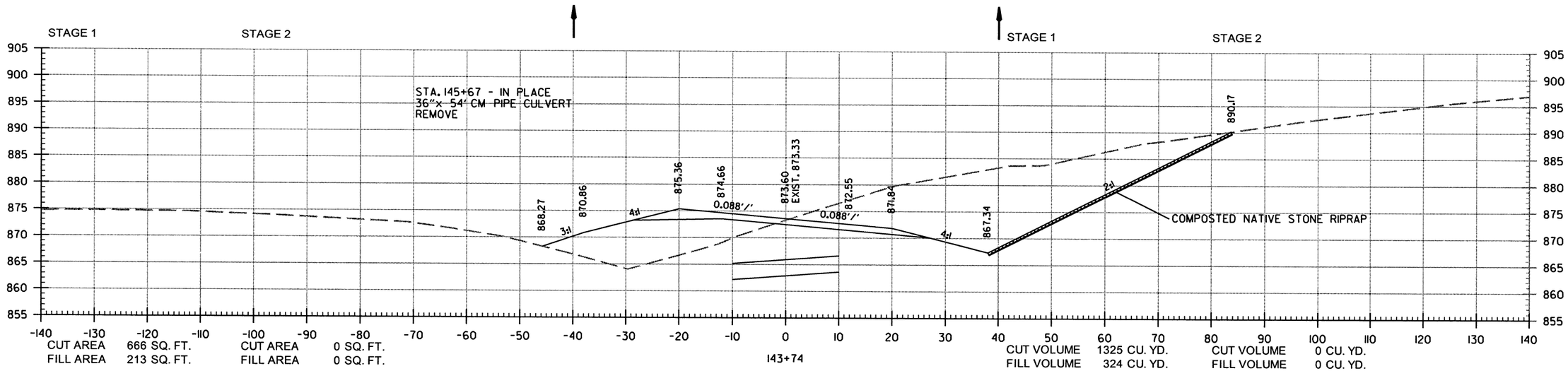
8/8/2017

R009784.DGN

HWY. 7
CROSS SECTION STA. 142+00 TO STA. 143+00

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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(2) CROSS SECTIONS



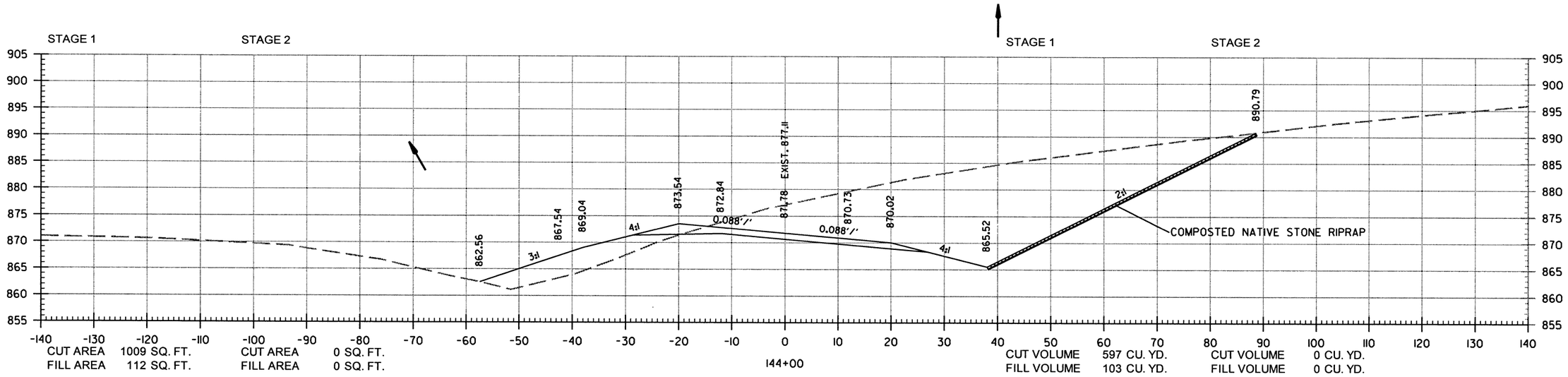
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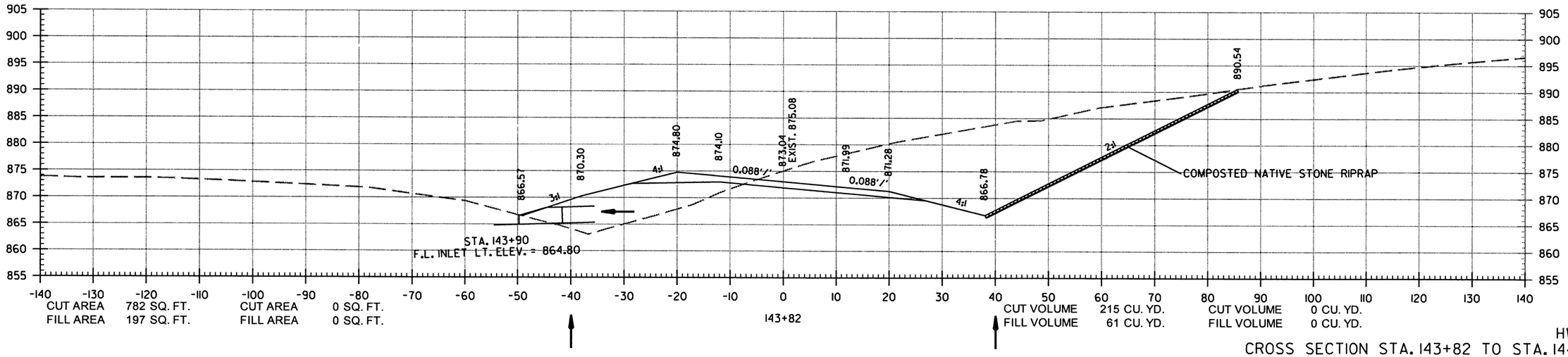
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HWY. 7
CROSS SECTION STA. 143+18 TO STA. 143+74

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.		009784	136	193

(2) CROSS SECTIONS





8/8/2017

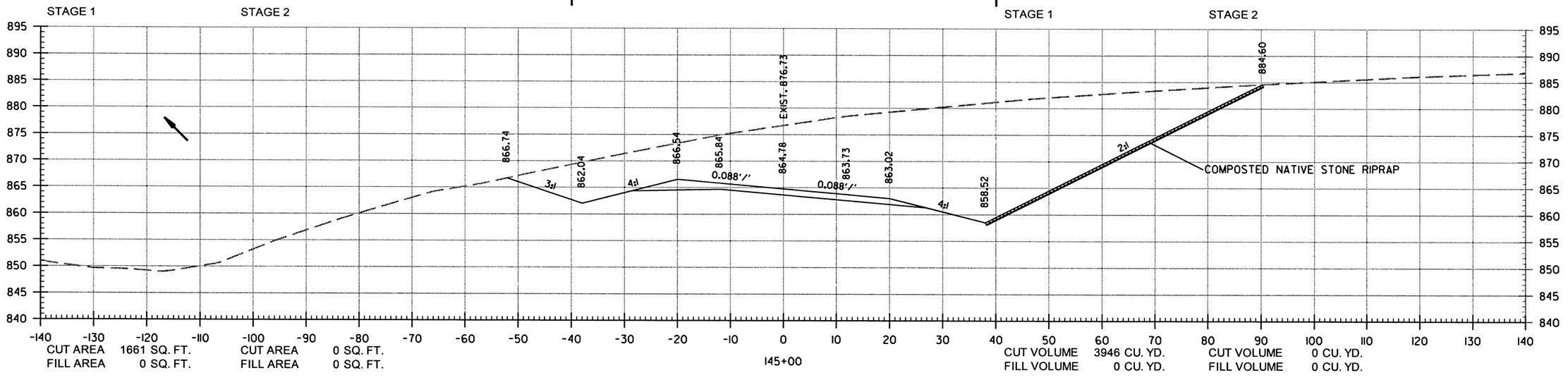
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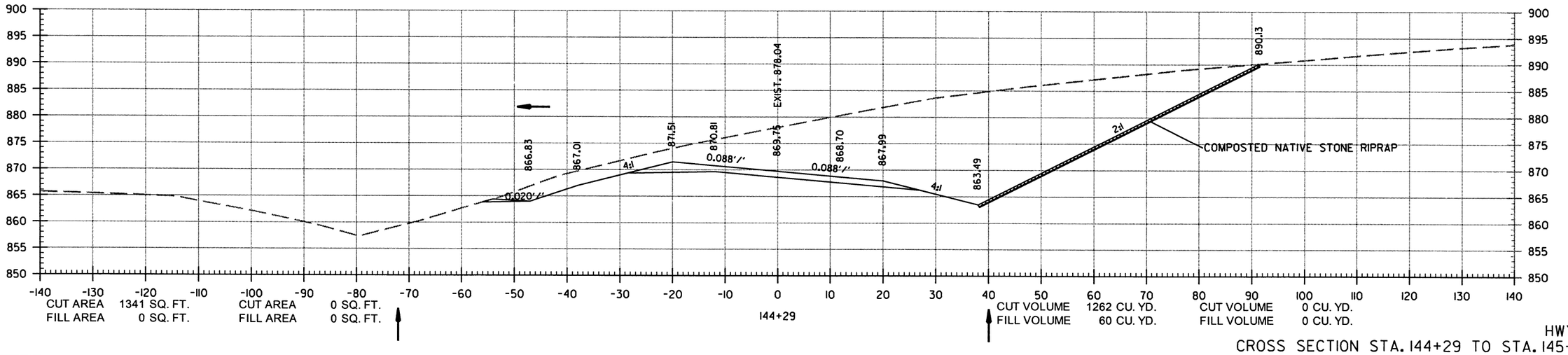
HWY. 7

CROSS SECTION STA. 143+82 TO STA. 144+00

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				JOB NO.		009784	137	193

(2) CROSS SECTIONS





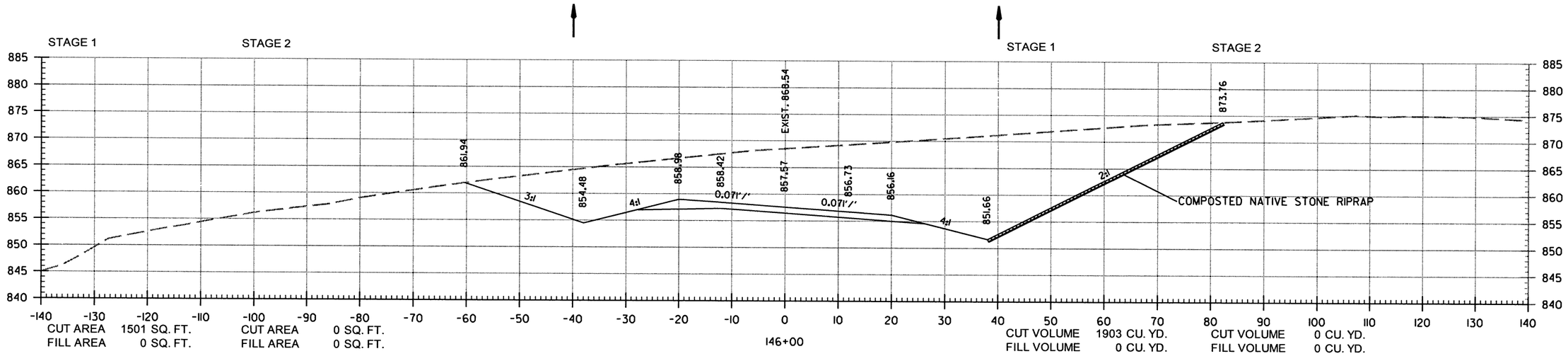
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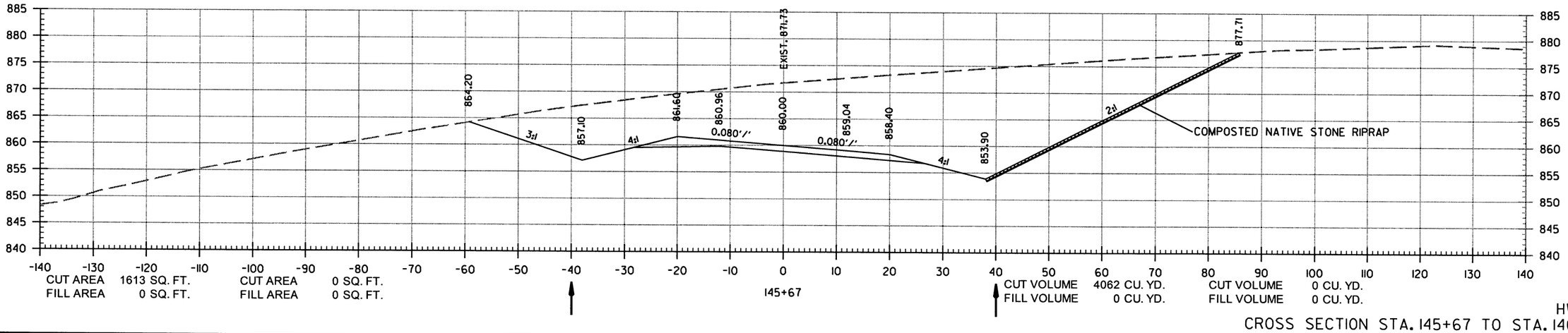
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HWY. 7
CROSS SECTION STA. 144+29 TO STA. 145+00

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.		009784	138	193

(2) CROSS SECTIONS





8/8/2017

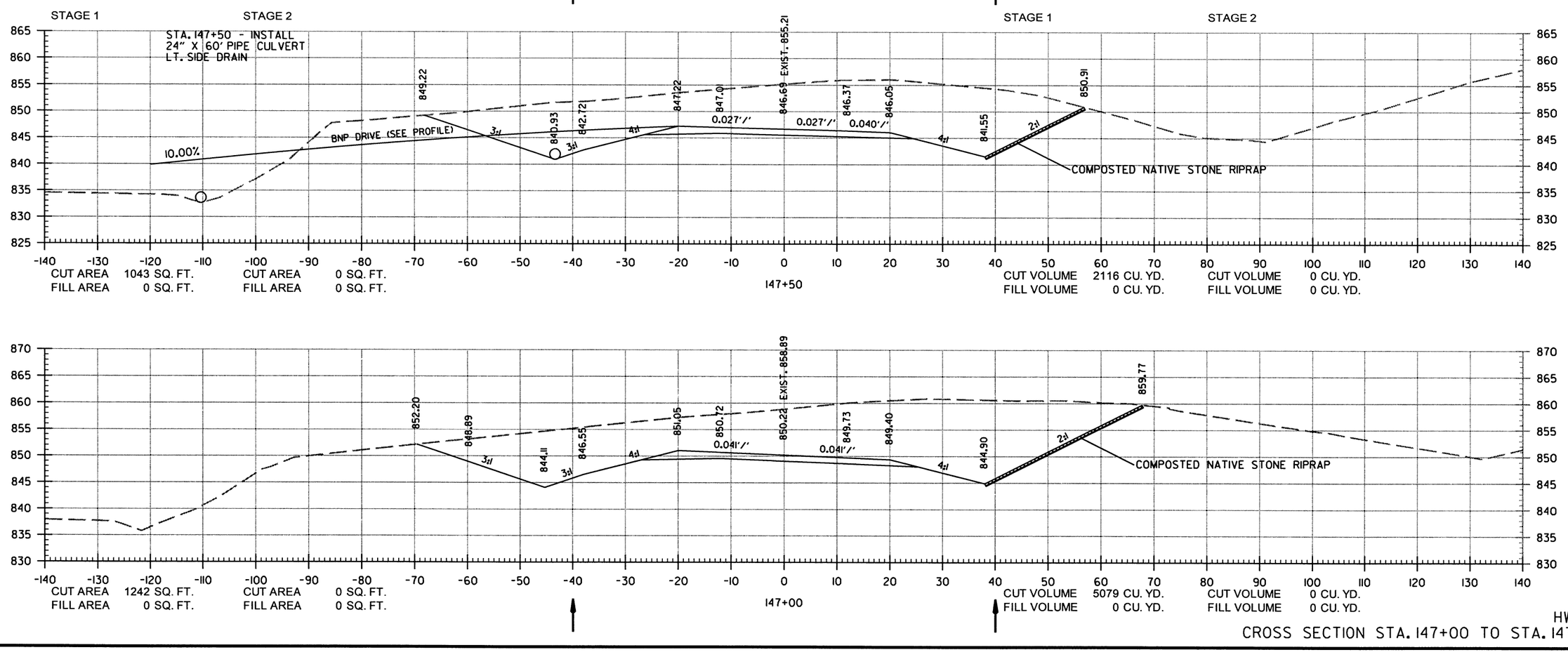
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HWY. 7

CROSS SECTION STA. 145+67 TO STA. 146+00

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.		009784	139	193

(2) CROSS SECTIONS



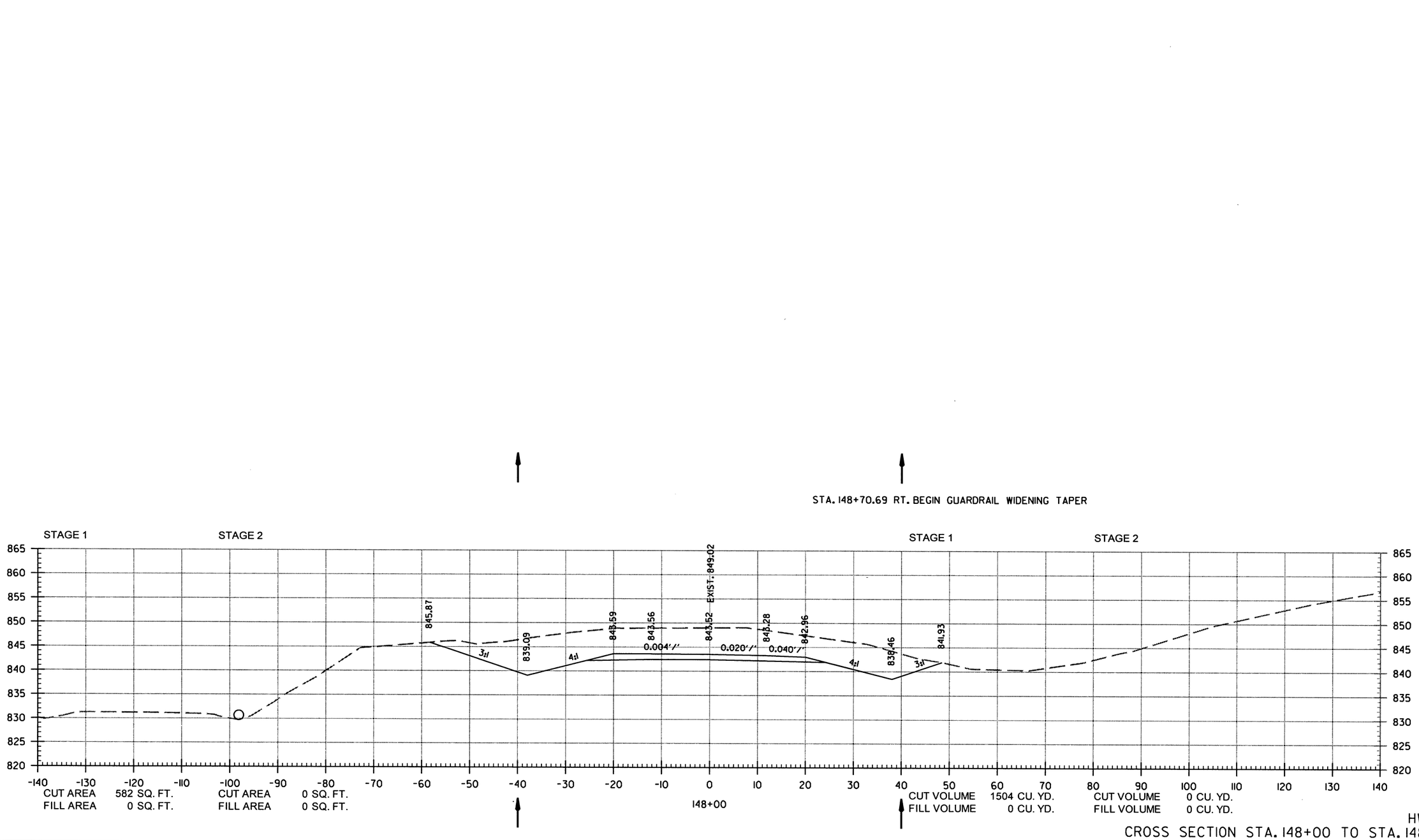
HWY. 7
CROSS SECTION STA. 147+00 TO STA. 147+50

8/8/2017

R009784.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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(2) CROSS SECTIONS



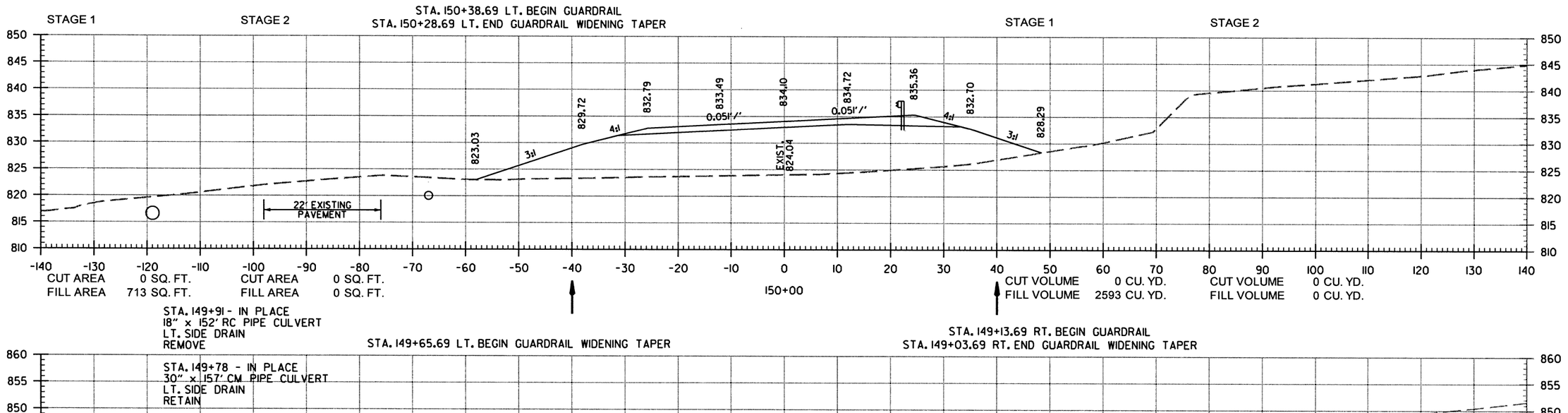
HWY. 7
CROSS SECTION STA. 148+00 TO STA. 148+00

8/8/2017

R009784.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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(2) CROSS SECTIONS



8/8/2017

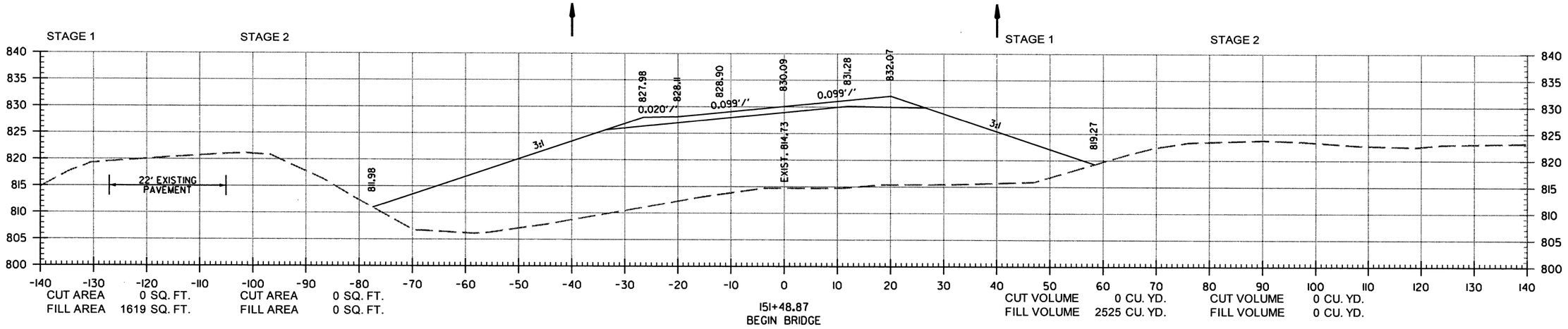
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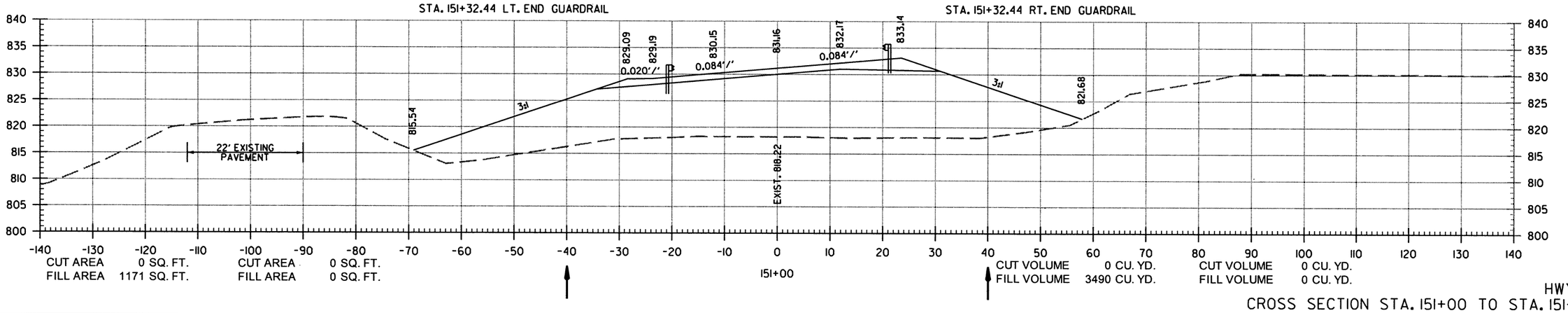
HWY. 7

CROSS SECTION STA. 149+00 TO STA. 150+00

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.		009784	142	193

(2) CROSS SECTIONS





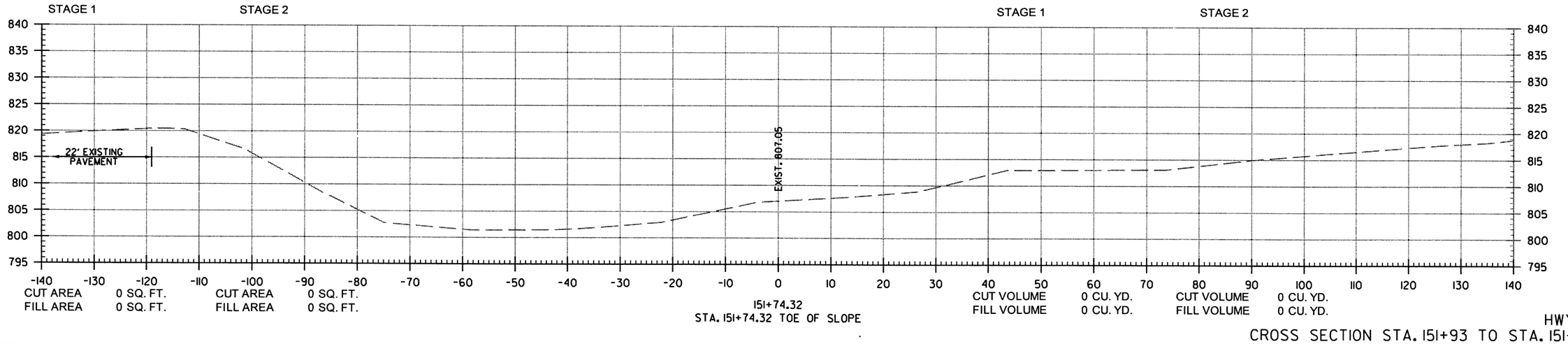
HWY. 7
CROSS SECTION STA. 151+00 TO STA. 151+49

8/8/2017

R009784.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	143	193

(2) CROSS SECTIONS



HWY. 7

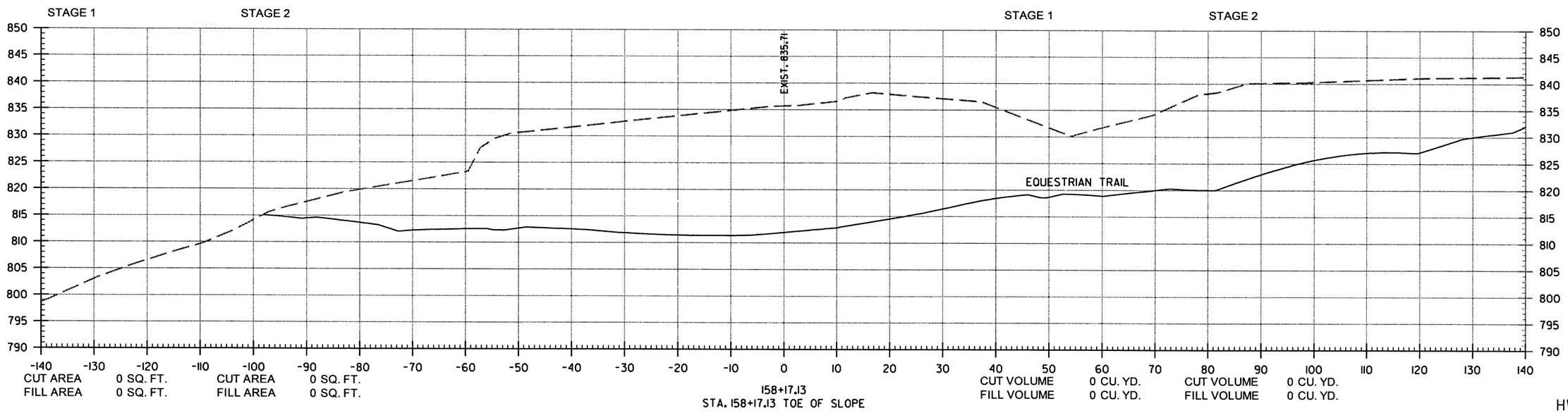
CROSS SECTION STA. 151+93 TO STA. 151+93

8/8/2017

R009784.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	144	193

(2) CROSS SECTIONS



HWY. 7
CROSS SECTION STA. 158+17 TO STA. 158+17

8/8/2017

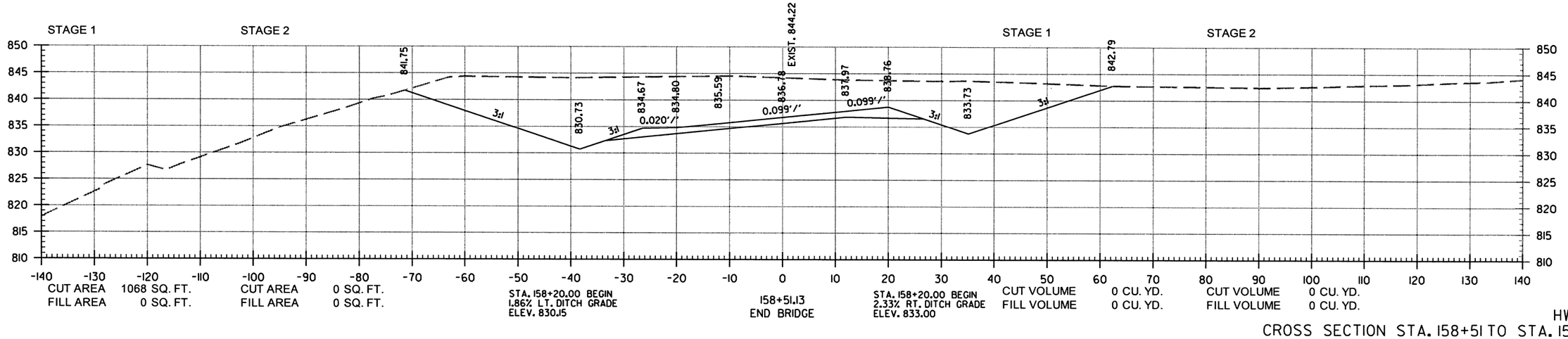
R009784.DGN

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.		009784	145	193

(2) CROSS SECTIONS

STA. 158+75.56 LT. BEGIN GUARDRAIL

STA. 158+75.56 RT. BEGIN GUARDRAIL



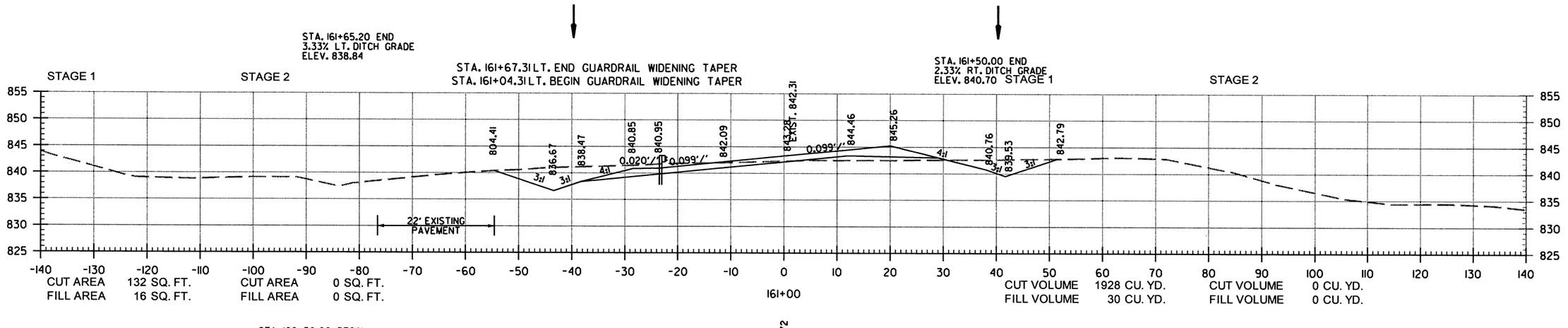
HWY. 7
CROSS SECTION STA. 158+51 TO STA. 158+51

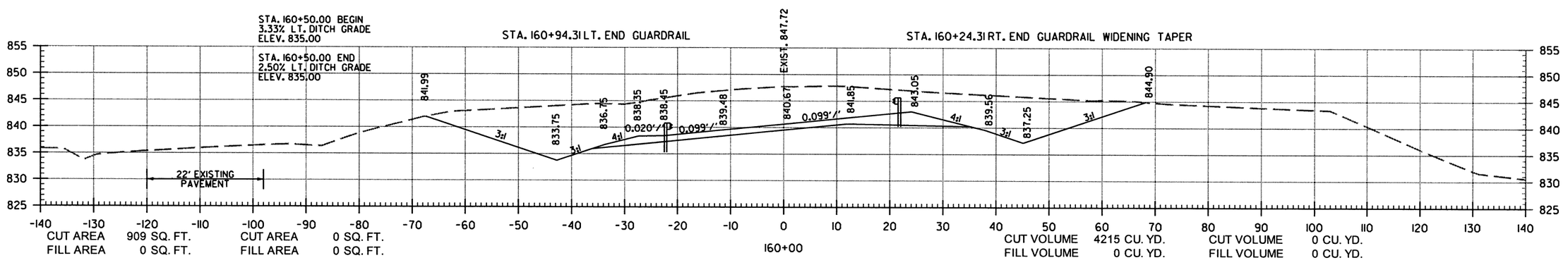
8/8/2017

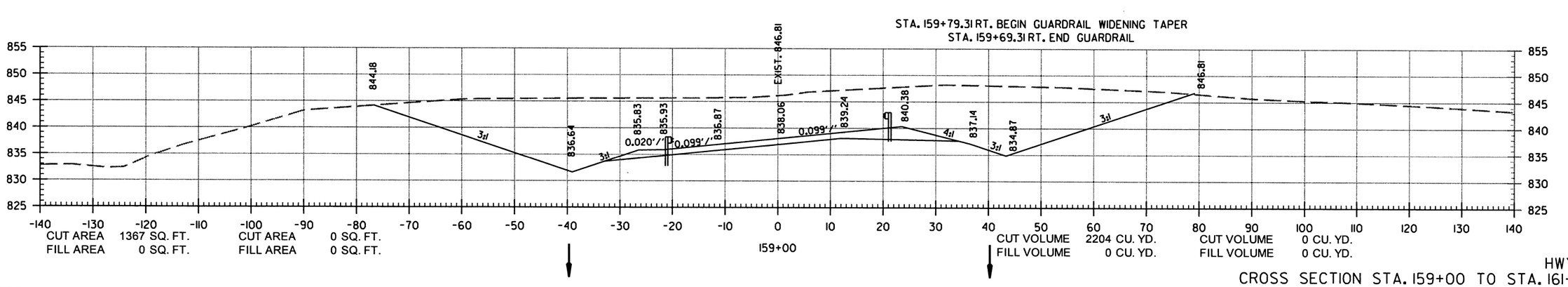
R009784.DGN

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.		009784	146	193

(2) CROSS SECTIONS







8/8/2017

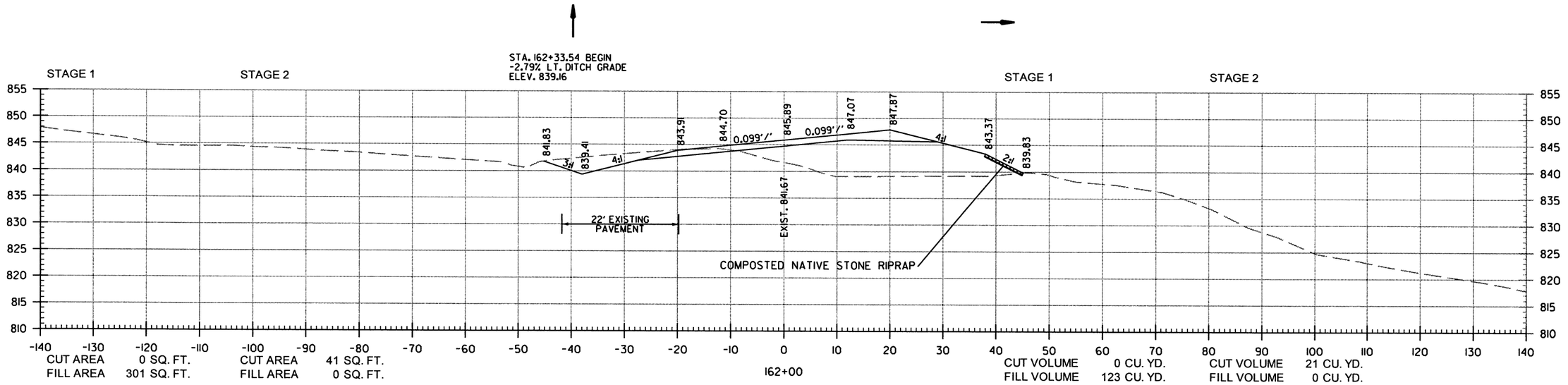
R009784.DGN

HWY. 7

CROSS SECTION STA. 159+00 TO STA. 161+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.		009784	147	193

(2) CROSS SECTIONS



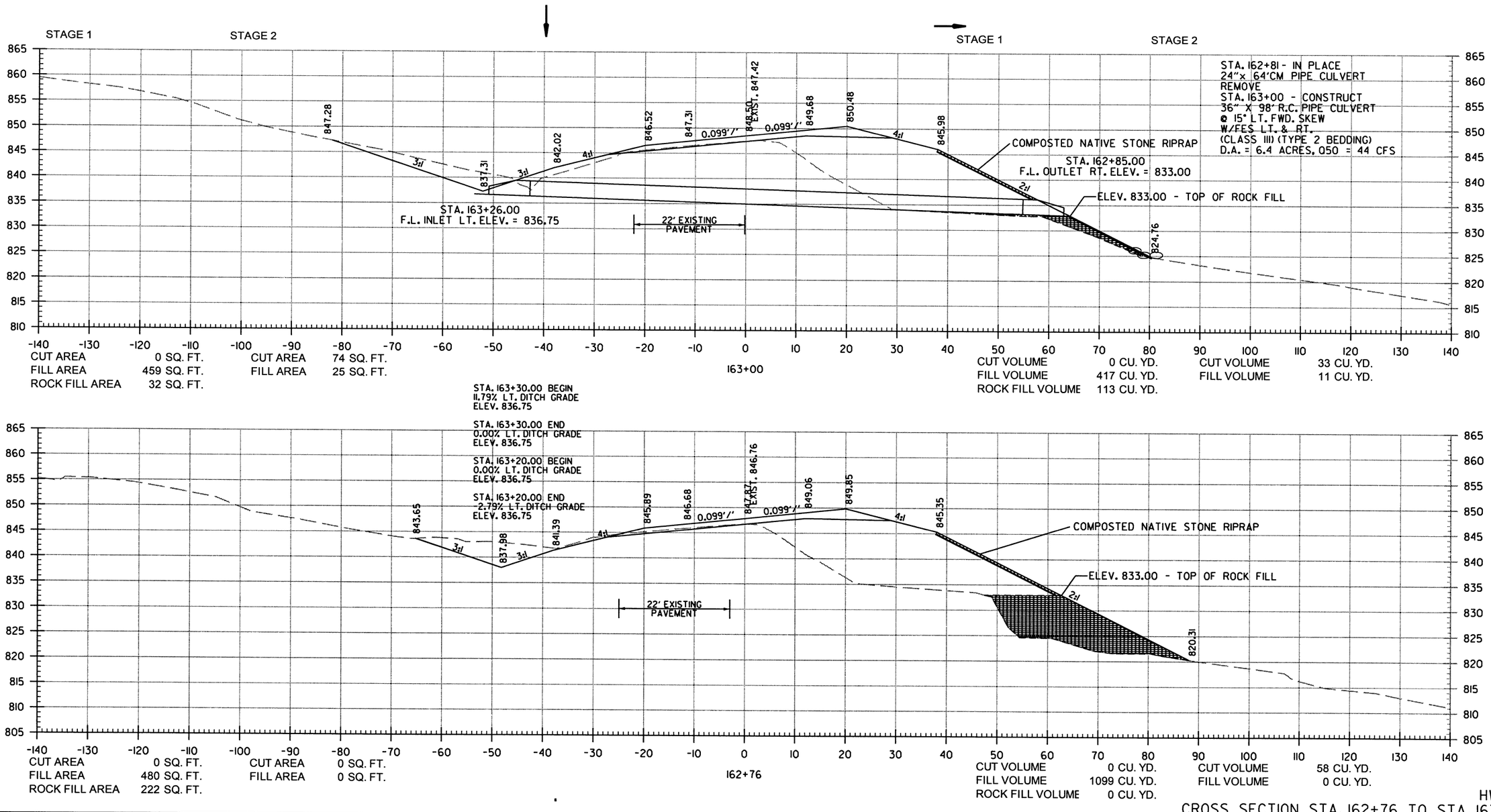
HWY. 7
CROSS SECTION STA. 161+88 TO STA. 162+00

8/8/2017

R009784.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.		009784	148	193

(2) CROSS SECTIONS



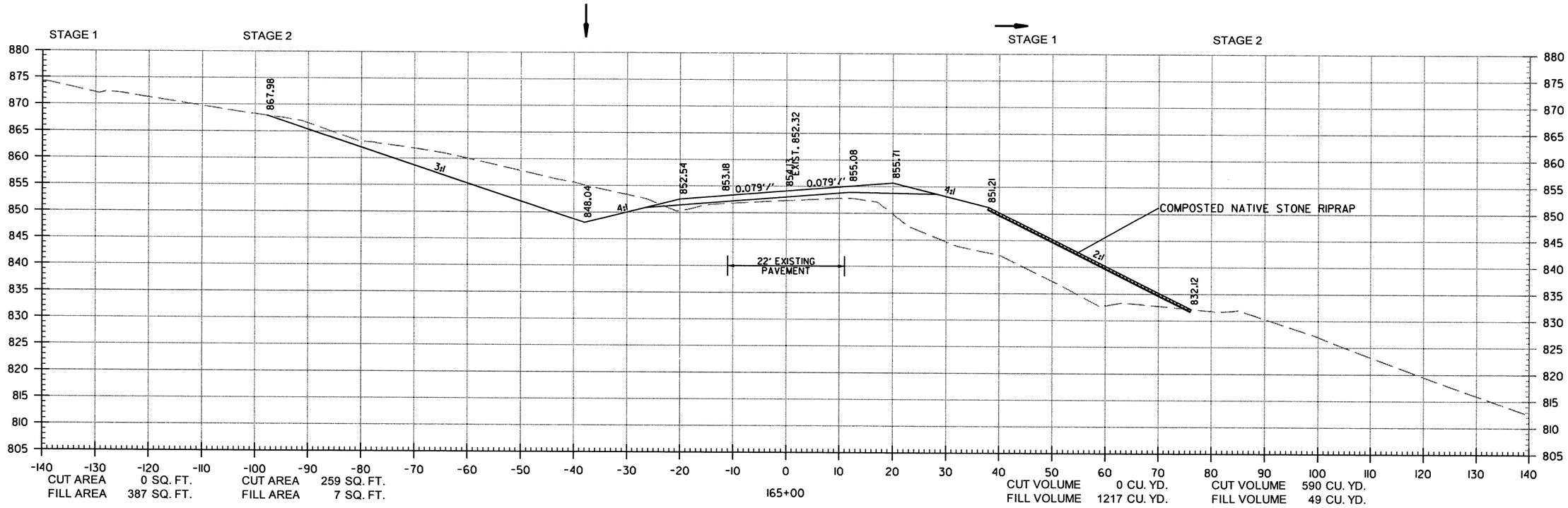
HWY. 7
CROSS SECTION STA. 162+76 TO STA. 163+00

8/8/2017

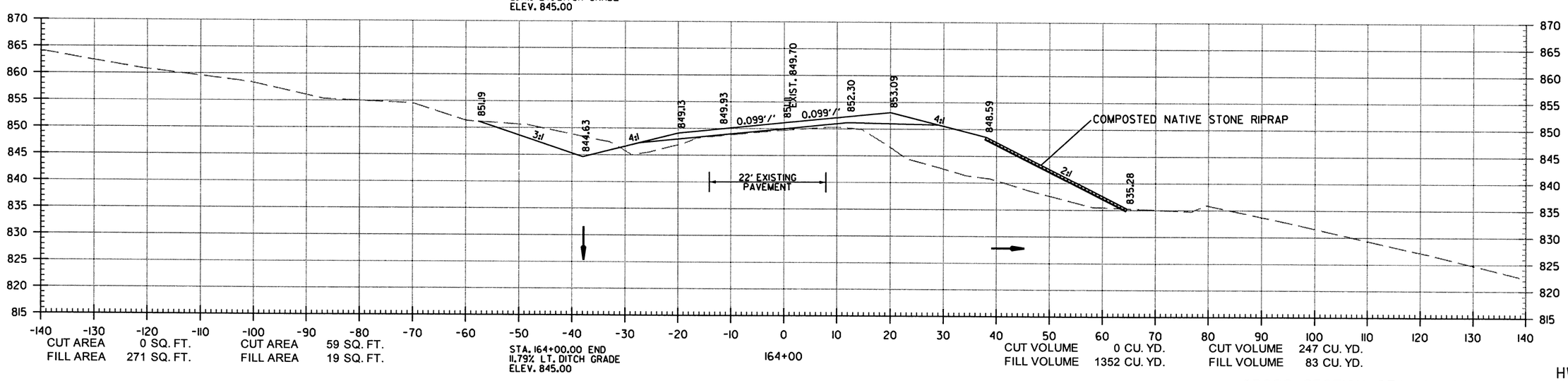
R009784.DGN

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.		009784	149	193

(2) CROSS SECTIONS



STA. 164+00.00 BEGIN
3.71% LT. DITCH GRADE
ELEV. 845.00



STA. 164+00.00 END
11.79% LT. DITCH GRADE
ELEV. 845.00

8/8/2017

R009784.DGN

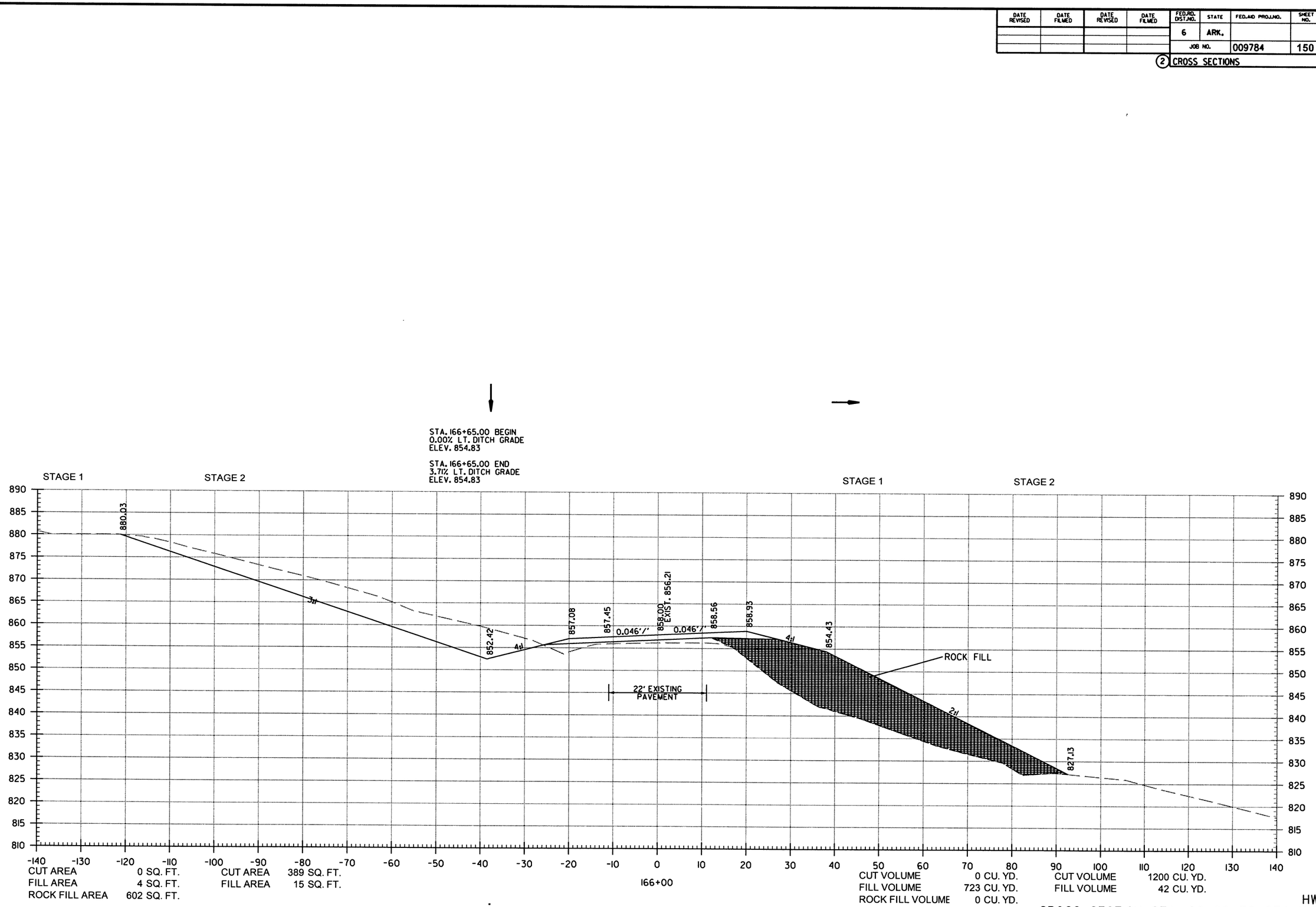
HWY. 7
CROSS SECTION STA. 164+00 TO STA. 165+00

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.		009784	150	193

(2) CROSS SECTIONS

STA. 166+65.00 BEGIN
0.00% LT. DITCH GRADE
ELEV. 854.83

STA. 166+65.00 END
3.71% LT. DITCH GRADE
ELEV. 854.83



CUT AREA	0 SQ. FT.	CUT AREA	389 SQ. FT.
FILL AREA	4 SQ. FT.	FILL AREA	15 SQ. FT.
ROCK FILL AREA	602 SQ. FT.		

CUT VOLUME	0 CU. YD.	CUT VOLUME	1200 CU. YD.
FILL VOLUME	723 CU. YD.	FILL VOLUME	42 CU. YD.
ROCK FILL VOLUME	0 CU. YD.		

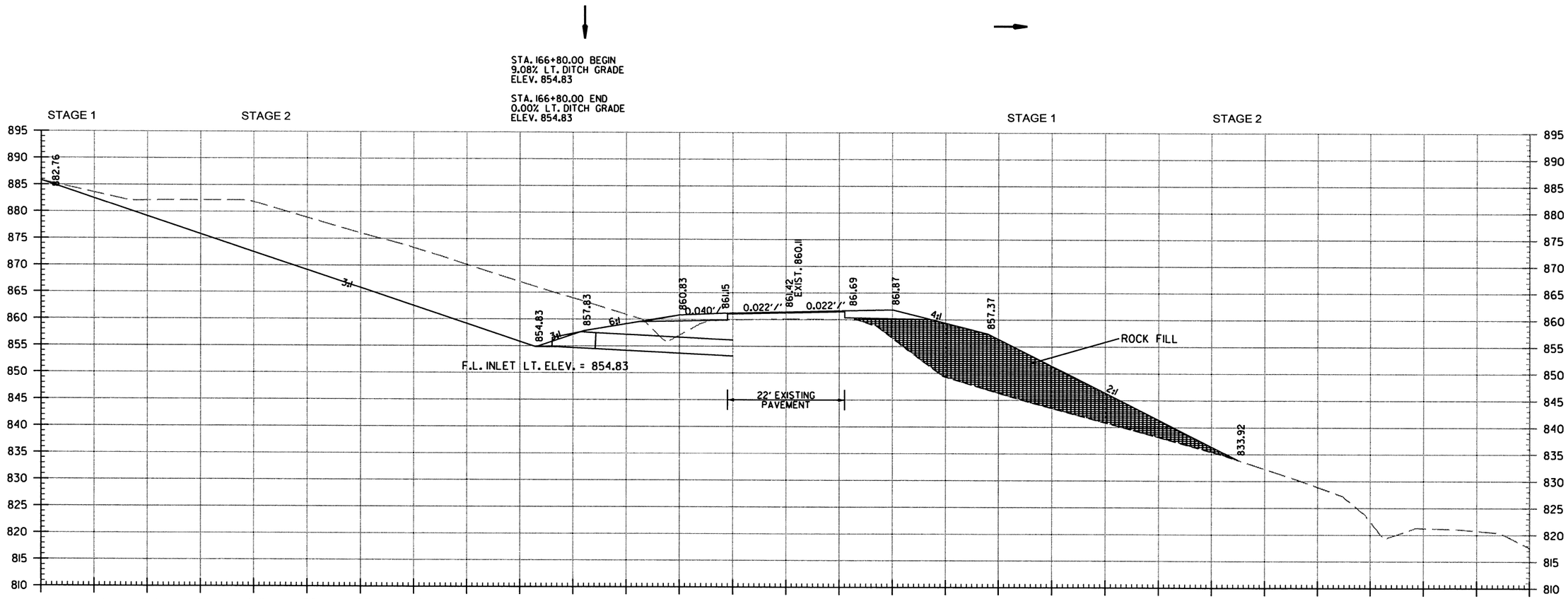
HWY. 7
CROSS SECTION STA. 166+00 TO STA. 166+00

8/8/2017

R009784.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.		009784	151	193

(2) CROSS SECTIONS



CUT AREA	0 SQ. FT.	CUT AREA	814 SQ. FT.
FILL AREA	2 SQ. FT.	FILL AREA	23 SQ. FT.
ROCK FILL AREA	408 SQ. FT.		

CUT VOLUME	0 CU. YD.	CUT VOLUME	1603 CU. YD.
FILL VOLUME	8 CU. YD.	FILL VOLUME	52 CU. YD.
ROCK FILL VOLUME	1348 CU. YD.		

HWY. 7
CROSS SECTION STA. 166+72 TO STA. 166+72

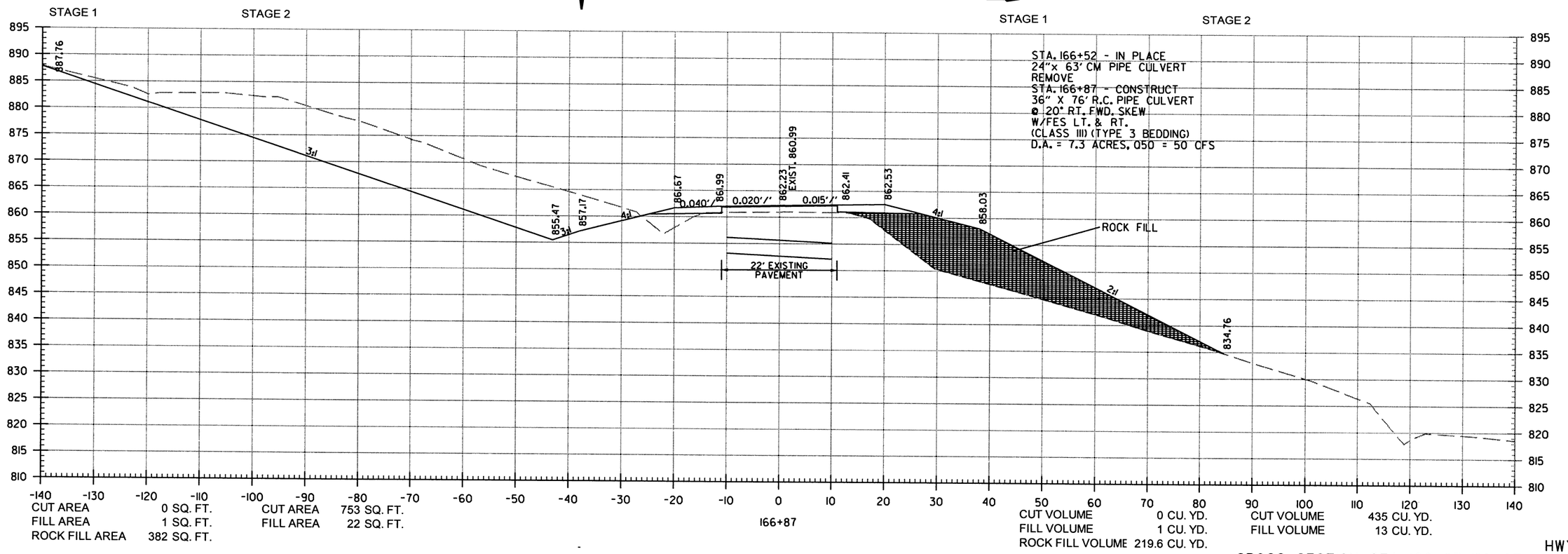
8/8/2017

R009784.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.		009784	152	193

(2) CROSS SECTIONS



8/8/2017

R009784.DGN

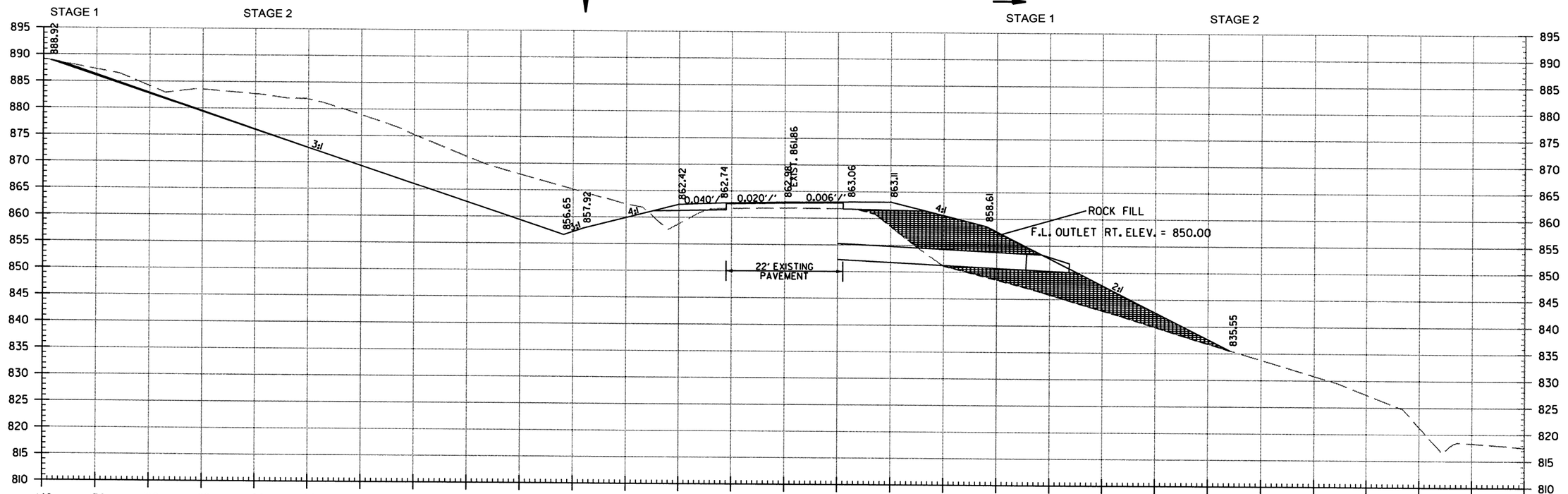
HWY. 7

CROSS SECTION STA. 166+87 TO STA. 166+87

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.		009784	153	193

(2) CROSS SECTIONS



CUT AREA 0 SQ. FT.
FILL AREA 1 SQ. FT.
ROCK FILL AREA 287 SQ. FT.

CUT AREA 687 SQ. FT.
FILL AREA 20 SQ. FT.

CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.
ROCK FILL VOLUME 161.2 CU. YD.

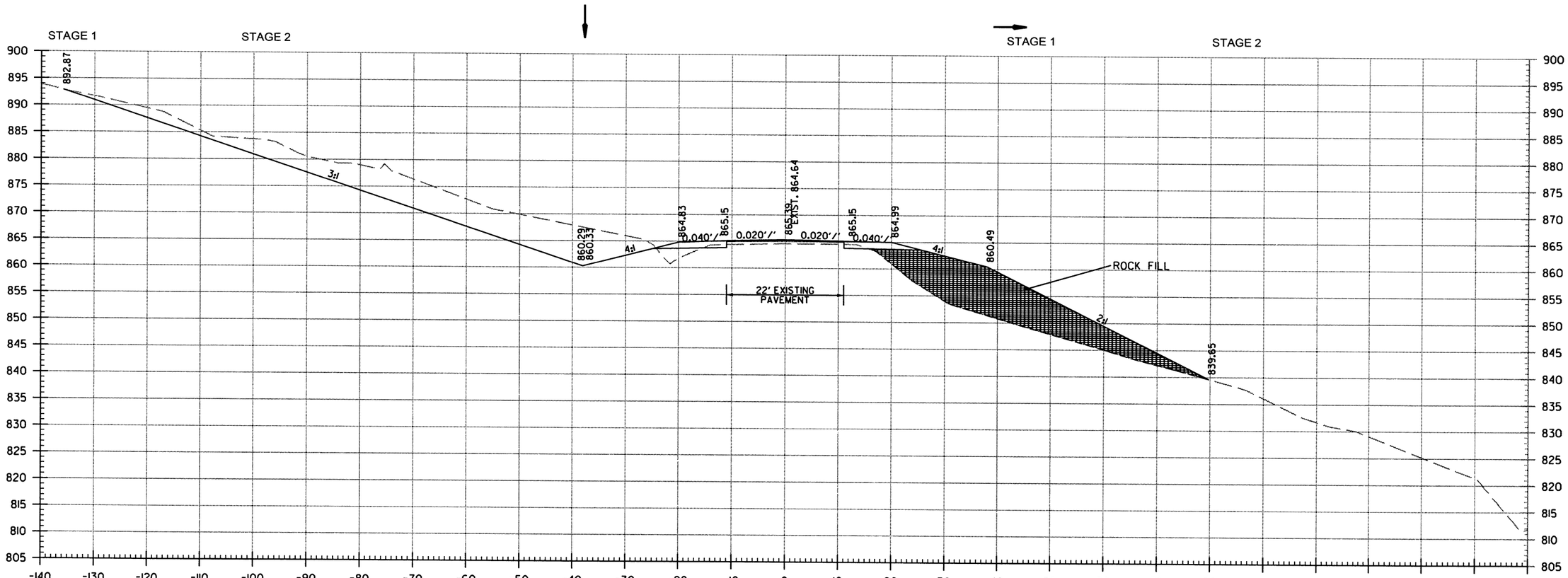
CUT VOLUME 347 CU. YD.
FILL VOLUME 10 CU. YD.

HWY. 7
CROSS SECTION STA. 167+00 TO STA. 167+00

8/8/2017
R009784.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.		009784	154	193

(2) CROSS SECTIONS



CUT AREA 3 SQ. FT.
FILL AREA 0 SQ. FT.
ROCK FILL AREA 333 SQ. FT.

CUT AREA 411 SQ. FT.
FILL AREA 13 SQ. FT.

167+40.07
BEGIN 100' TRANSITION
END JOB 009784

CUT VOLUME 2 CU. YD.
FILL VOLUME 1 CU. YD.
ROCK FILL VOLUME 459.9 CU. YD.

CUT VOLUME 815 CU. YD.
FILL VOLUME 24 CU. YD.

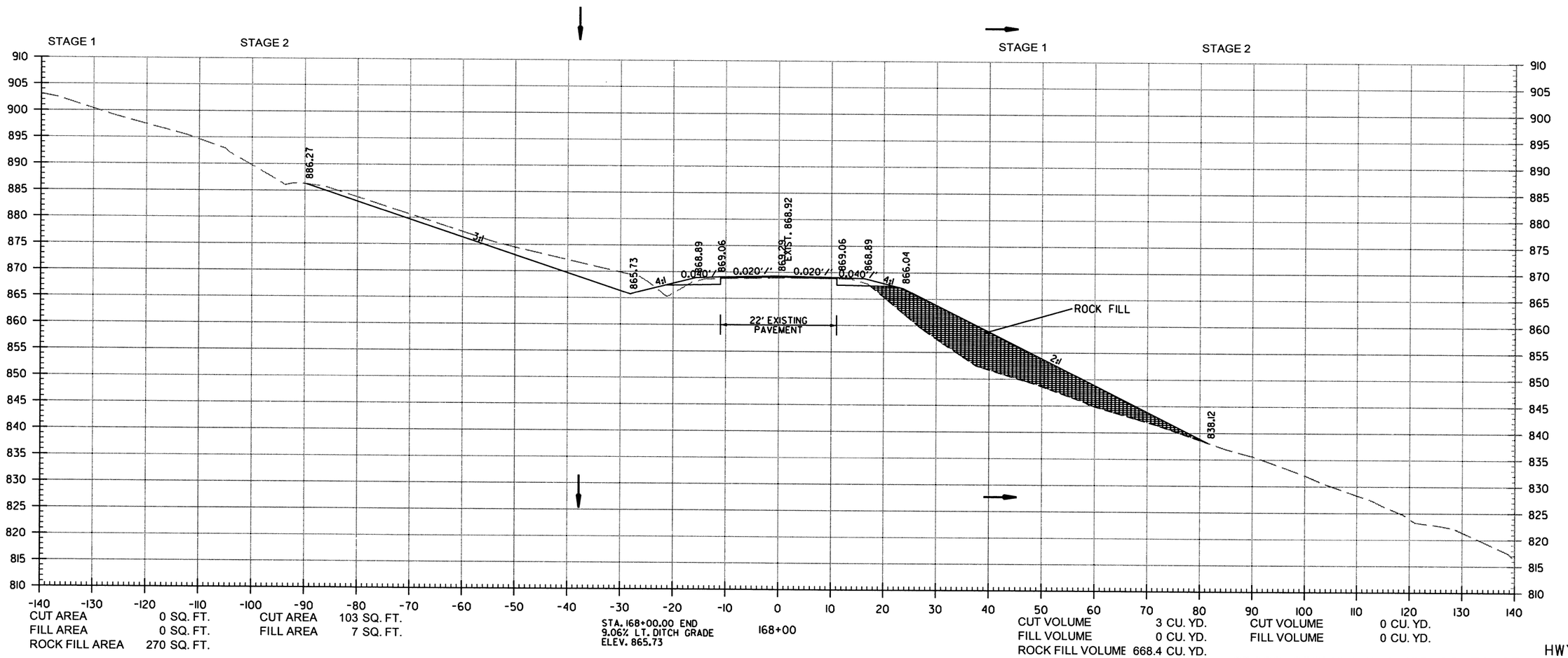
HWY. 7
CROSS SECTION STA. 167+40 TO STA. 167+40

8/8/2017

R009784.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.		009784	155	193

(2) CROSS SECTIONS



CUT AREA	0 SQ. FT.	CUT AREA	103 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	7 SQ. FT.
ROCK FILL AREA	270 SQ. FT.		

STA. 168+00.00 END
9.06% LT. DITCH GRADE
ELEV. 865.73

168+00

CUT VOLUME	3 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.
ROCK FILL VOLUME	668.4 CU. YD.		

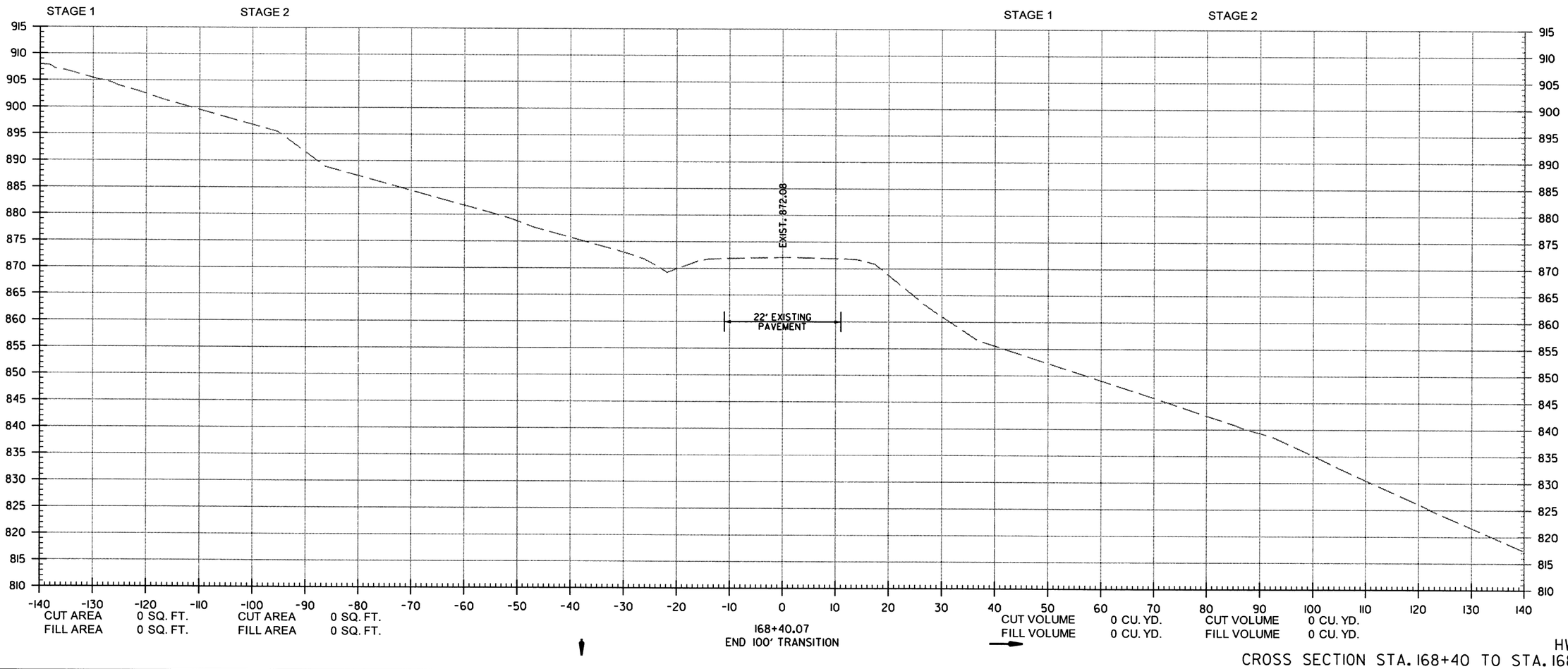
HWY. 7
CROSS SECTION STA. 168+00 TO STA. 168+00

8/8/2017

R009784.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	156	193

(2) CROSS SECTIONS



HWY. 7

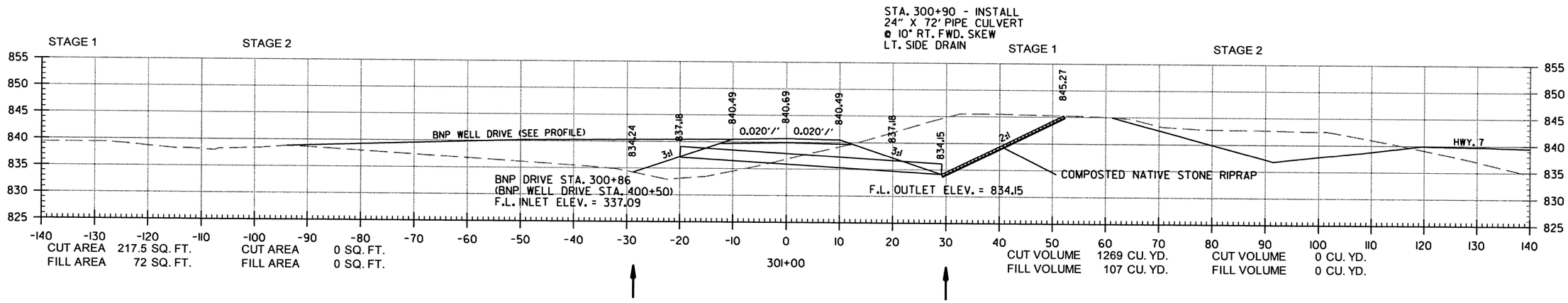
CROSS SECTION STA. 168+40 TO STA. 168+40

8/8/2017

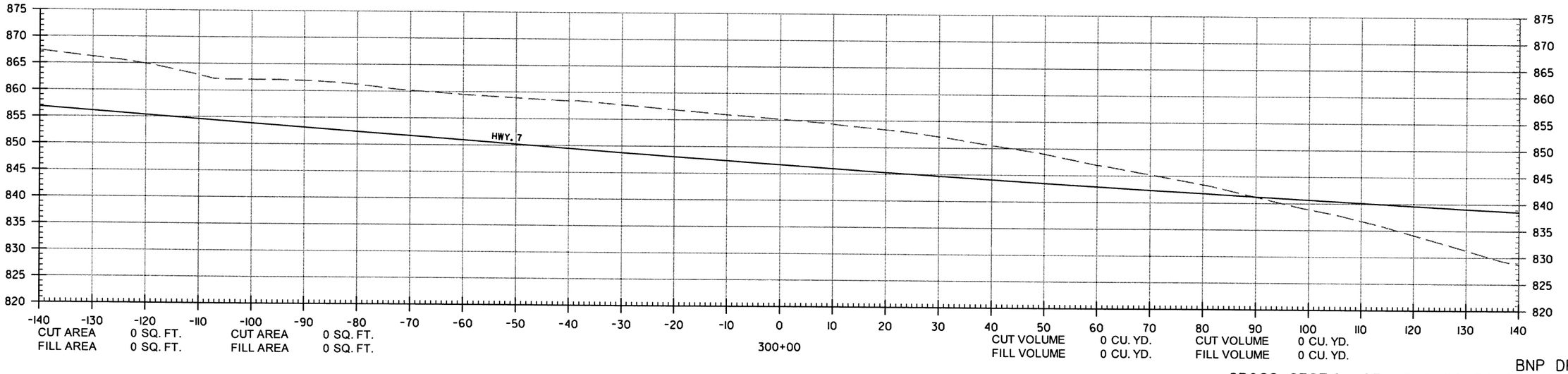
R009784.DGN

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.		009784	157	193

(2) CROSS SECTIONS



STA. 300+90 - INSTALL
24" X 72' PIPE CULVERT
@ 10° RT. FWD. SKEW
LT. SIDE DRAIN



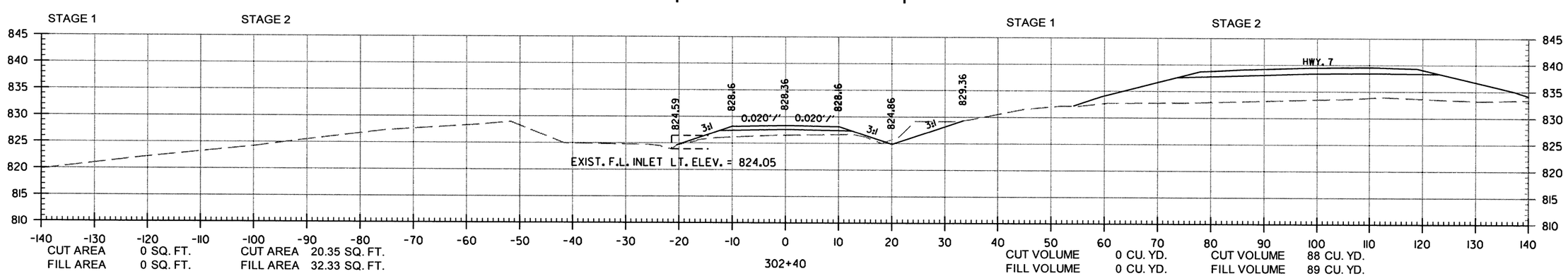
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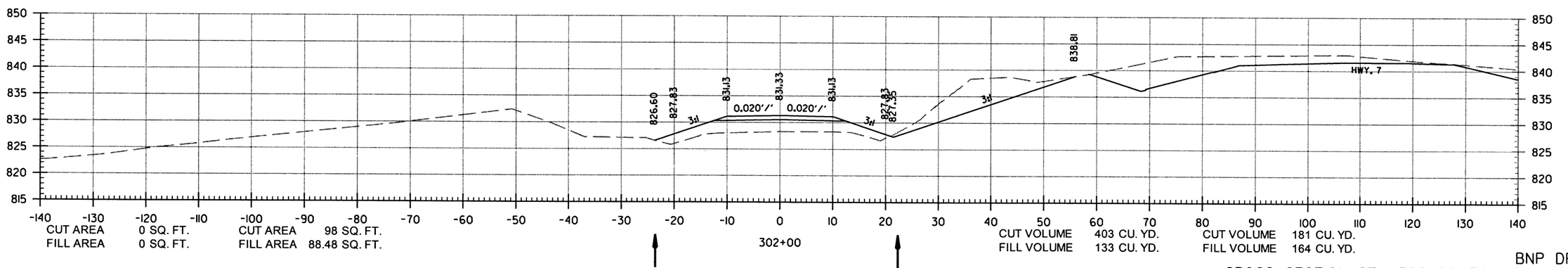
R009784.DGN

BNP DRIVE
CROSS SECTION STA. 300+00 TO STA. 301+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.		009784	158	193

(2) CROSS SECTIONS



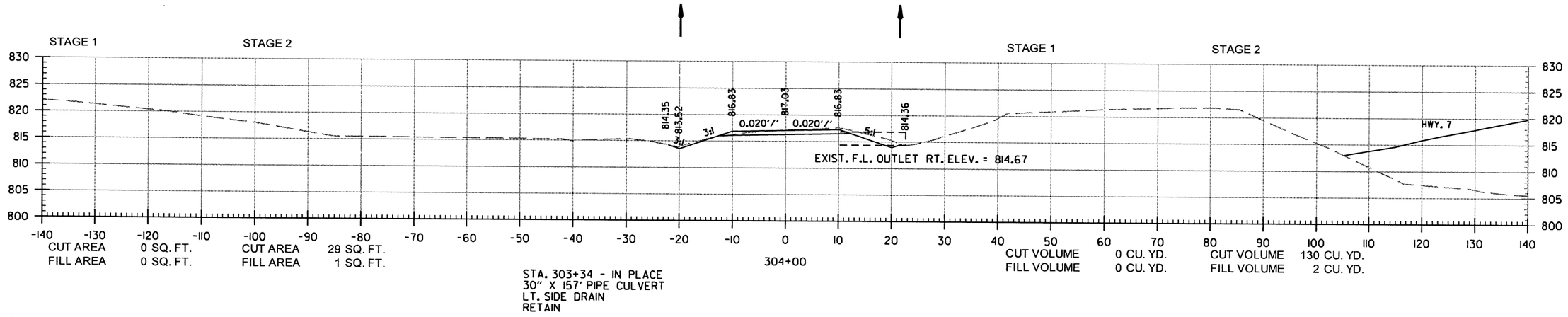


BNP DRIVE
CROSS SECTION STA. 302+00 TO STA. 302+65

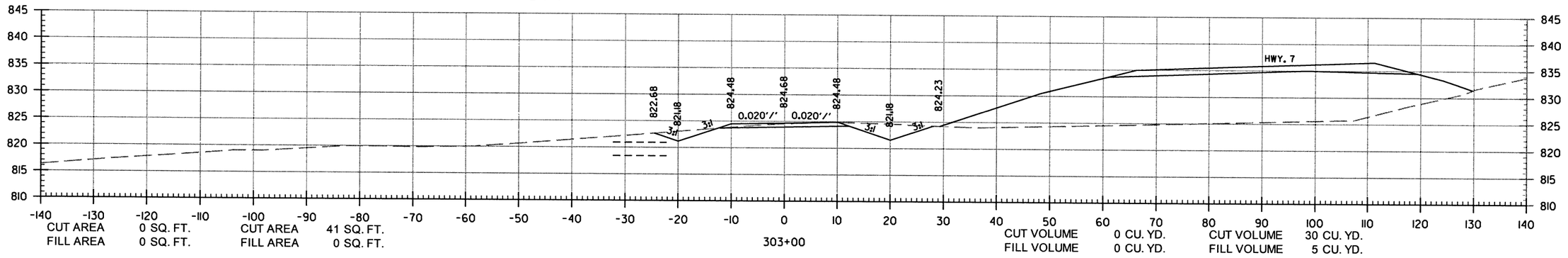
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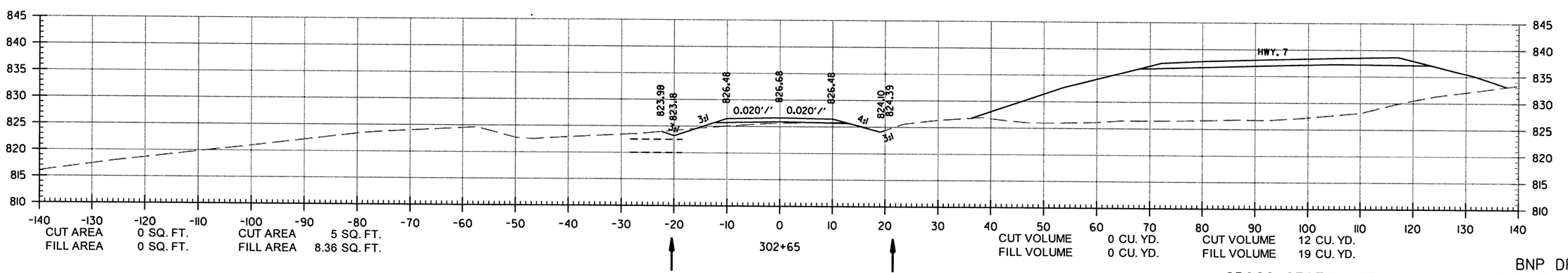
R009784.DGN

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.		009784	159	193
				(2) CROSS SECTIONS				



STA. 303+34 - IN PLACE
30" X 157' PIPE CULVERT
LT. SIDE DRAIN
RETAIN





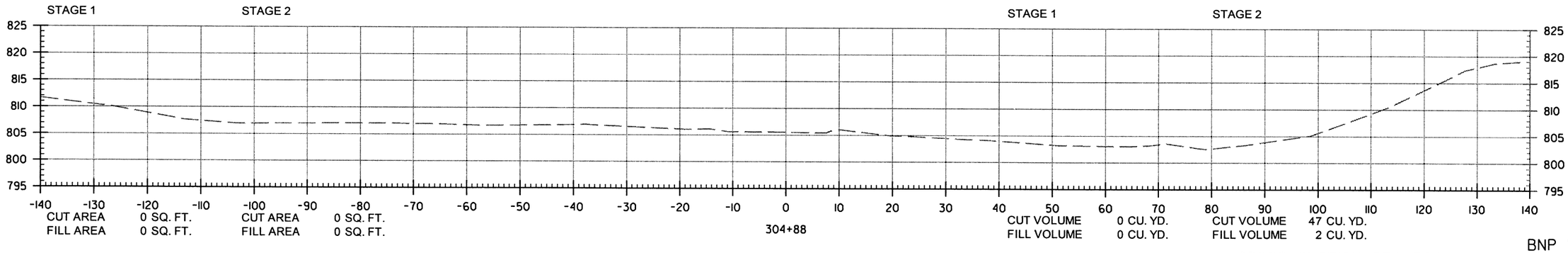
BNP DRIVE
CROSS SECTION STA. 302+65 TO STA. 304+00

8/8/2017

R009784.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.		009784	160	193

(2) CROSS SECTIONS



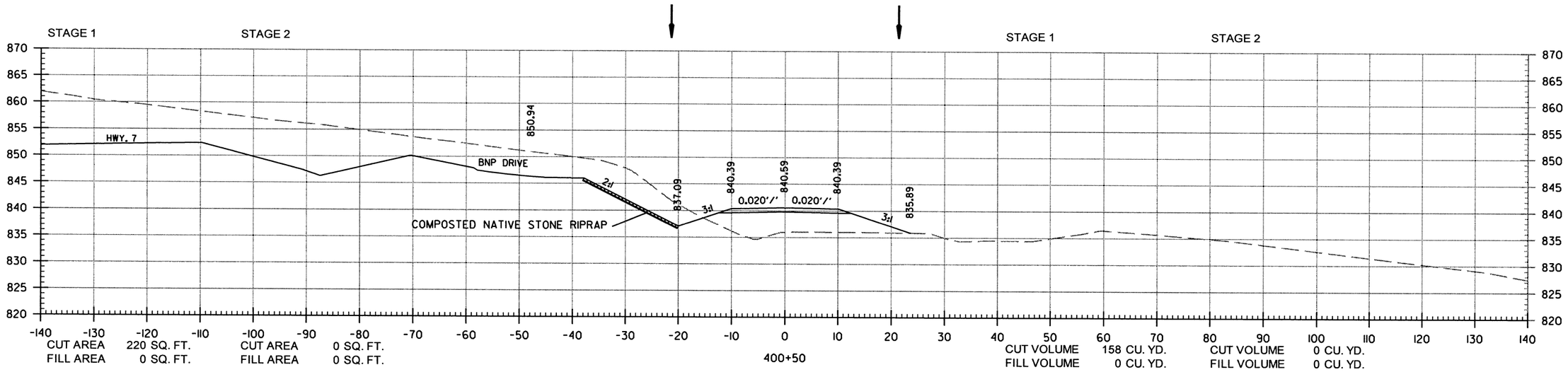
BNP DRIVE
CROSS SECTION STA. 304+88 TO STA. 304+88

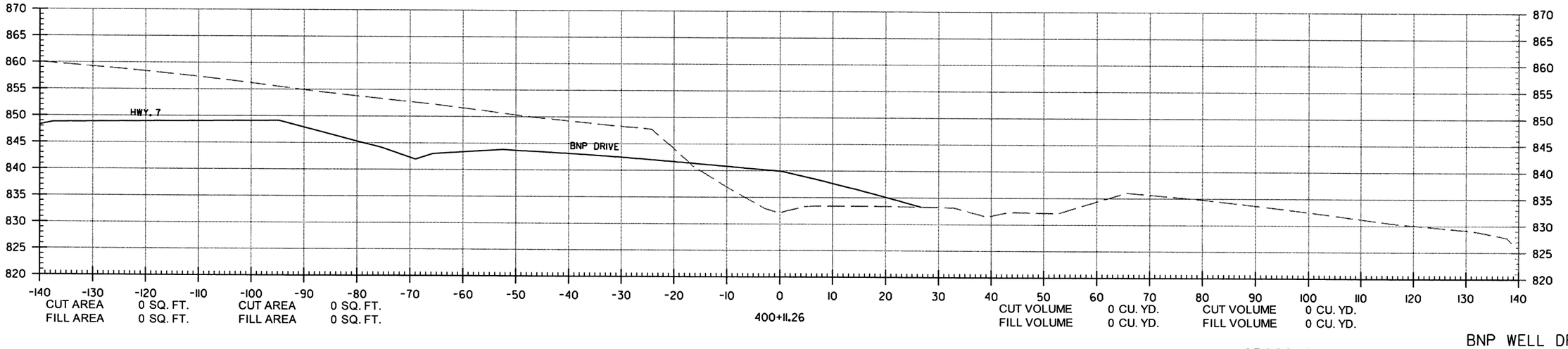
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R009784.DGN

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.		009784	161	193

(2) CROSS SECTIONS





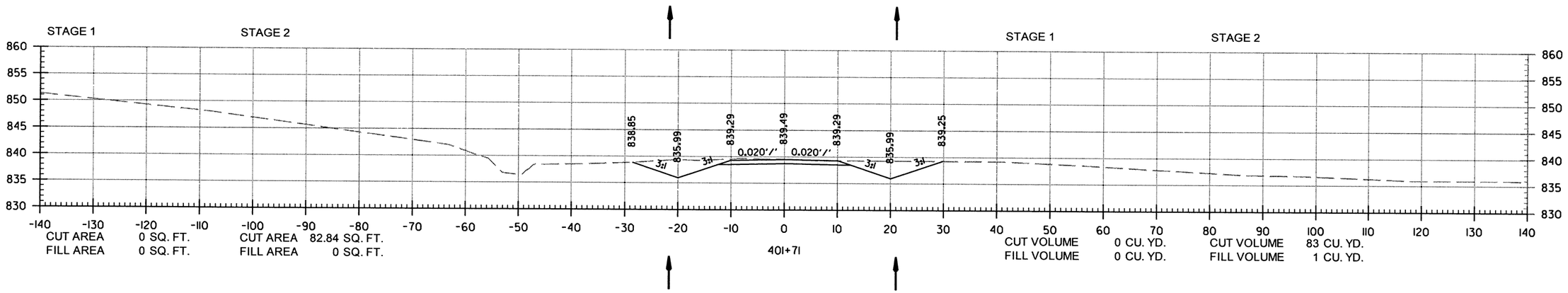
BNP WELL DRIVE
CROSS SECTION STA. 400+11 TO STA. 400+50

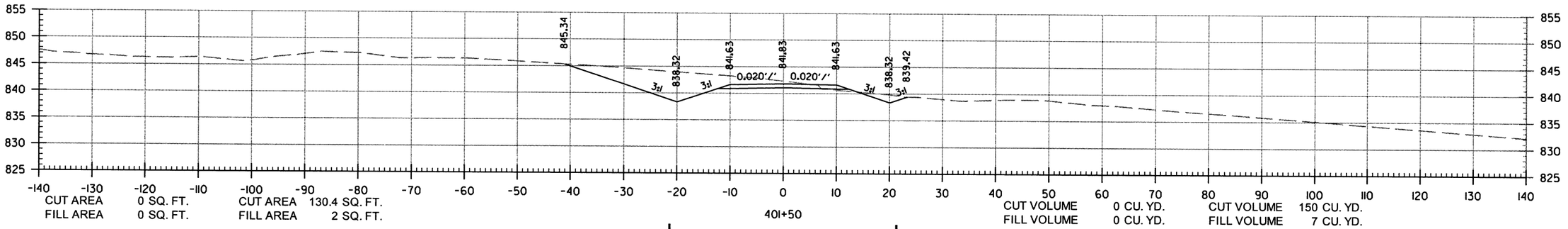
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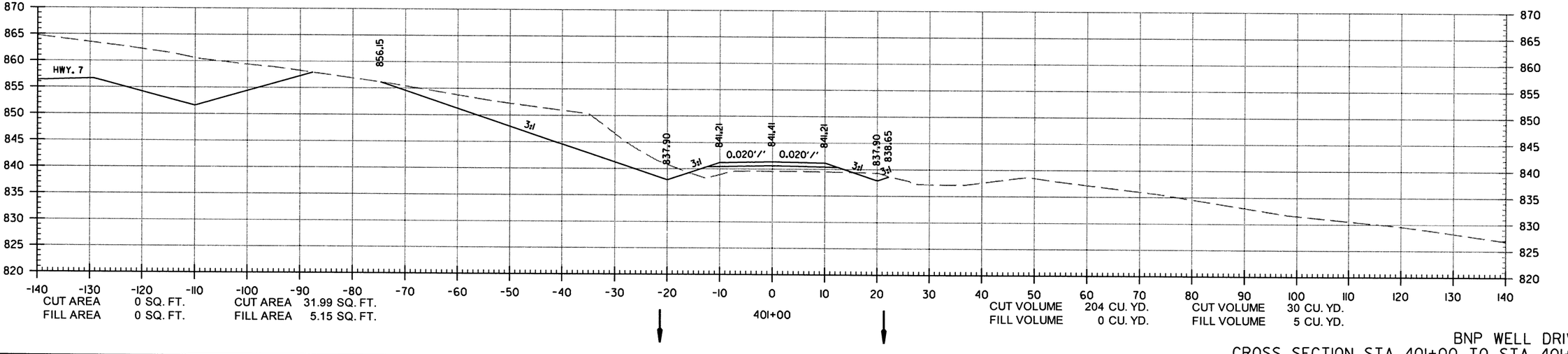
R009784.DGN

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.		009784	162	193

(2) CROSS SECTIONS







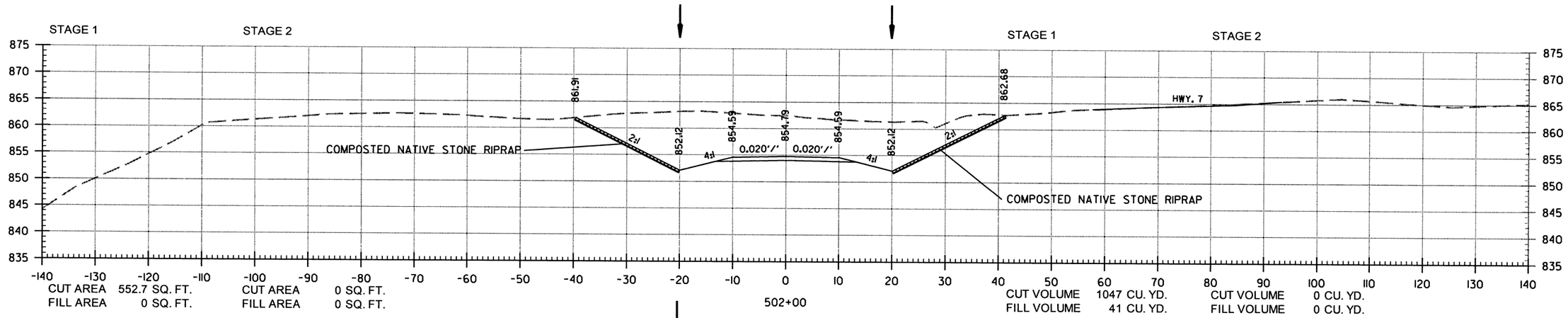
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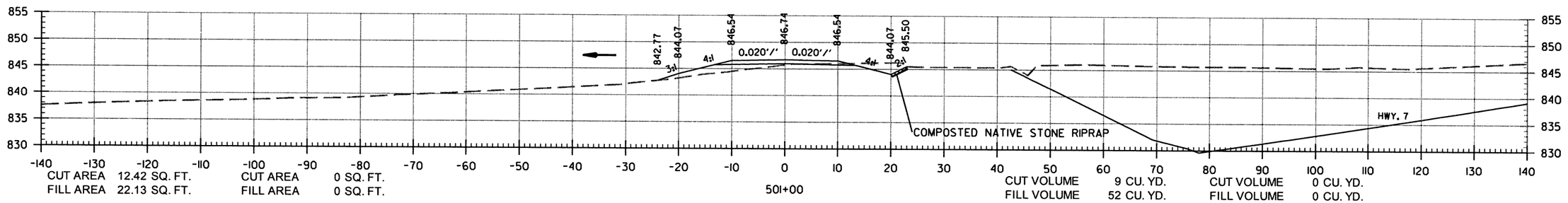
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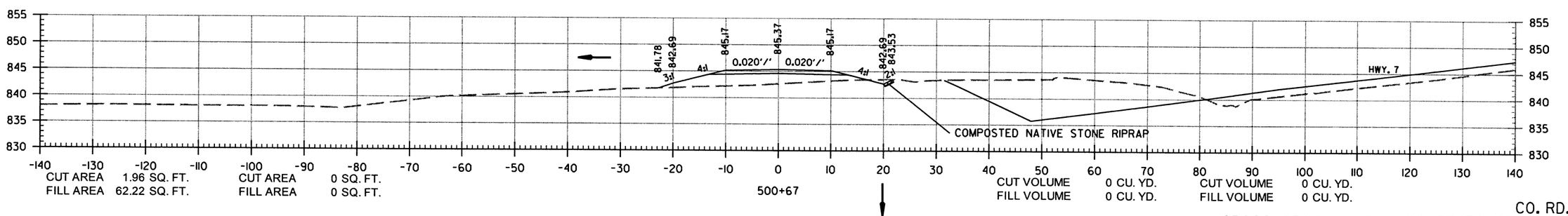
BNP WELL DRIVE
CROSS SECTION STA. 401+00 TO STA. 401+71

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.		009784	163	193

(2) CROSS SECTIONS







8/8/2017

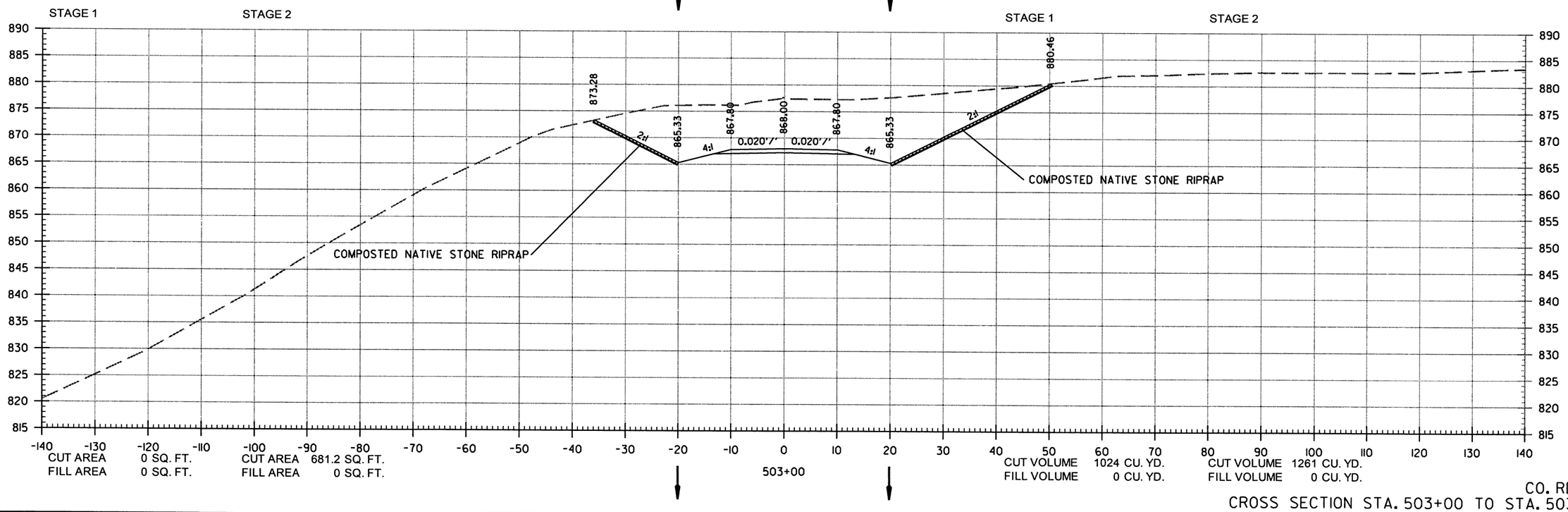
R009784.DGN

CO. RD. 80
CROSS SECTION STA. 500+67 TO STA. 502+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.		009784	164	193

(2) CROSS SECTIONS



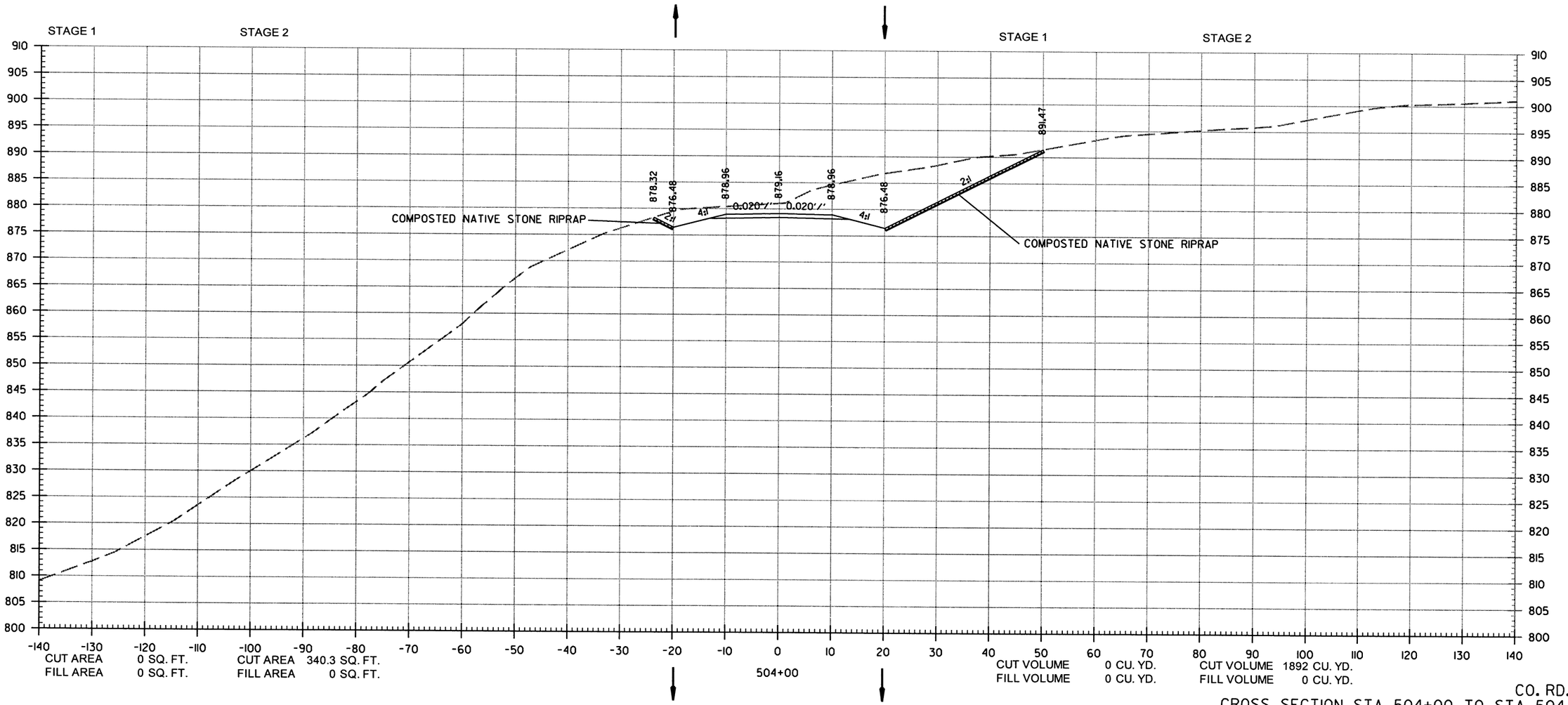
CO. RD. 80
CROSS SECTION STA. 503+00 TO STA. 503+00

8/8/2017

R009784.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.		009784	165	193

(2) CROSS SECTIONS



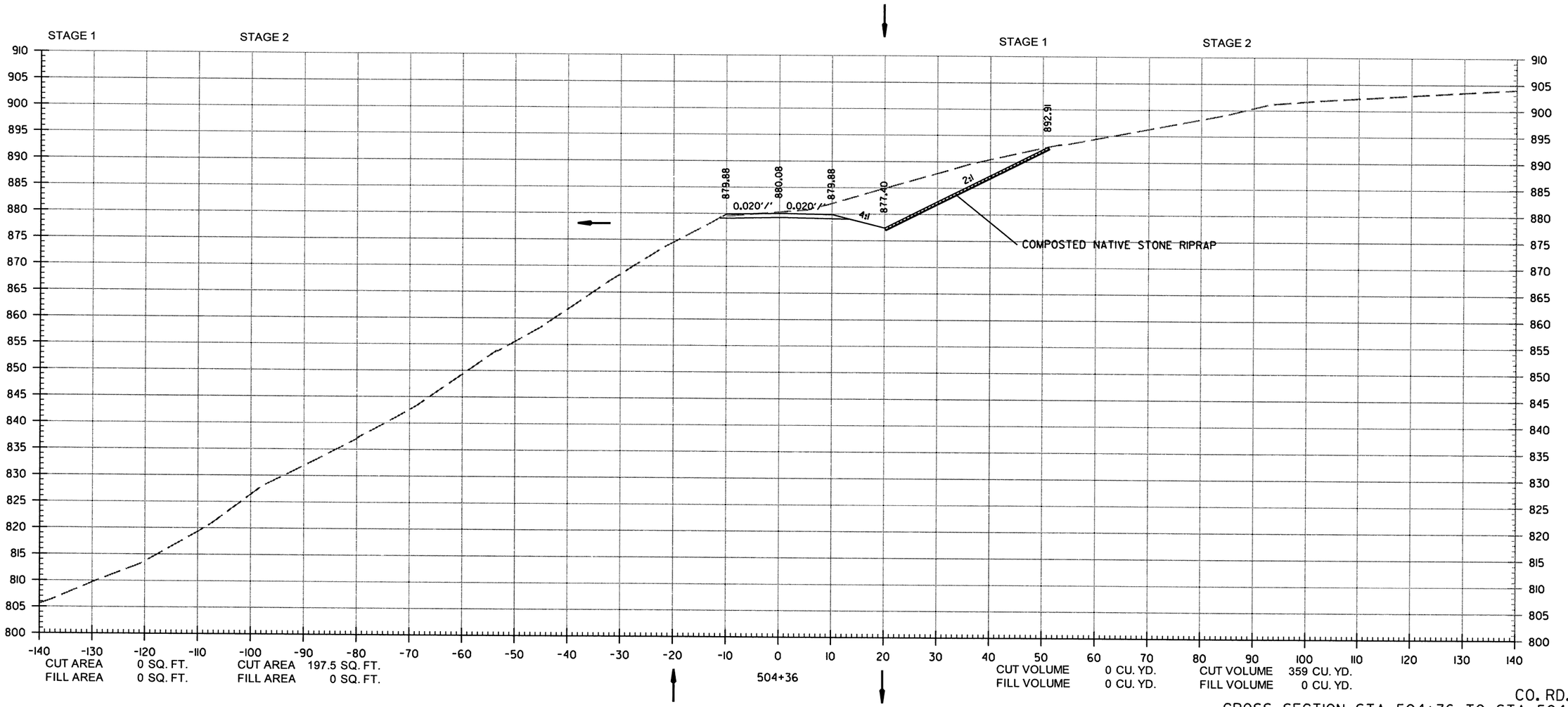
CO. RD. 80
CROSS SECTION STA. 504+00 TO STA. 504+00

8/8/2017

R009784.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.		009784	166	193

(2) CROSS SECTIONS



CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT.

CUT AREA 197.5 SQ. FT.
FILL AREA 0 SQ. FT.

CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD.

CUT VOLUME 359 CU. YD.
FILL VOLUME 0 CU. YD.

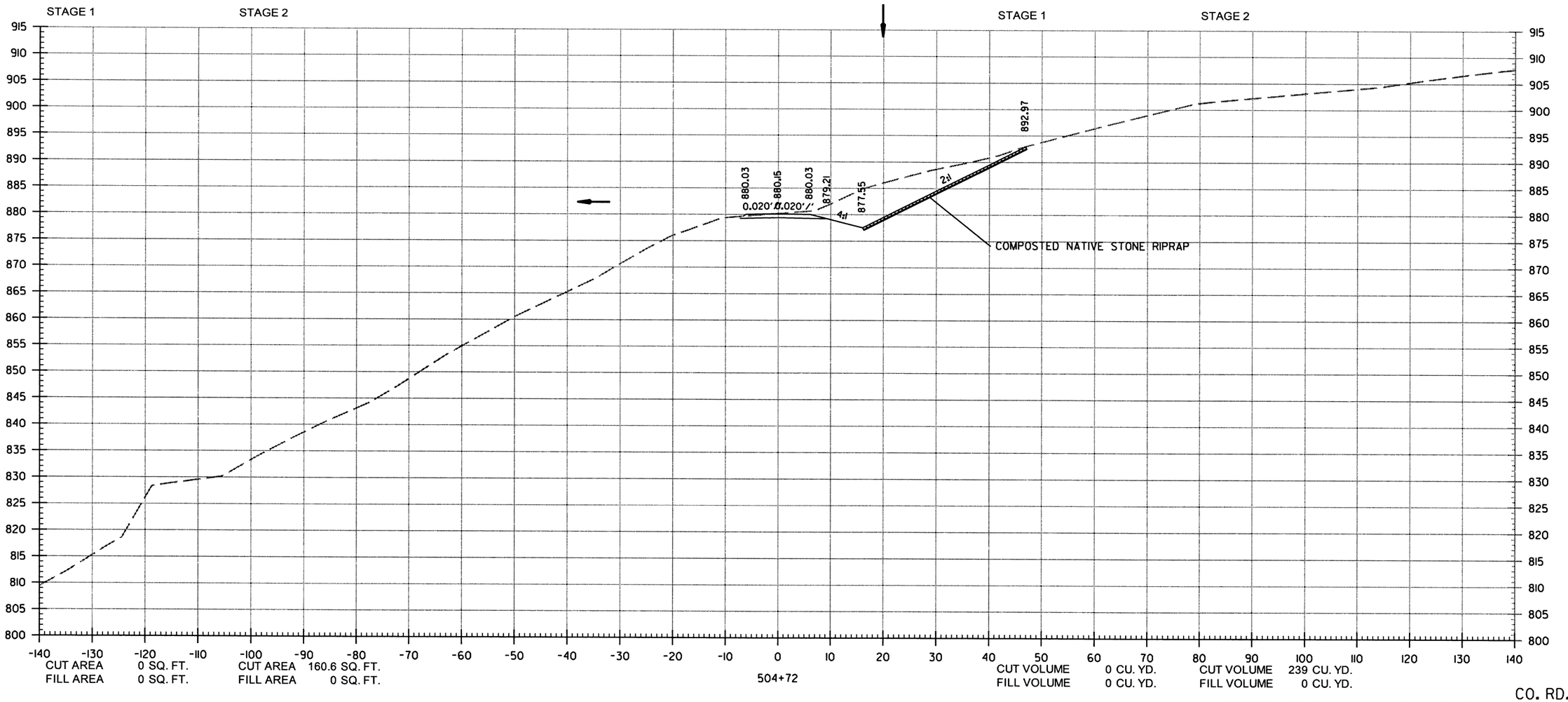
CO. RD. 80
CROSS SECTION STA. 504+36 TO STA. 504+36

8/8/2017

R009784.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.		009784	167	193

(2) CROSS SECTIONS



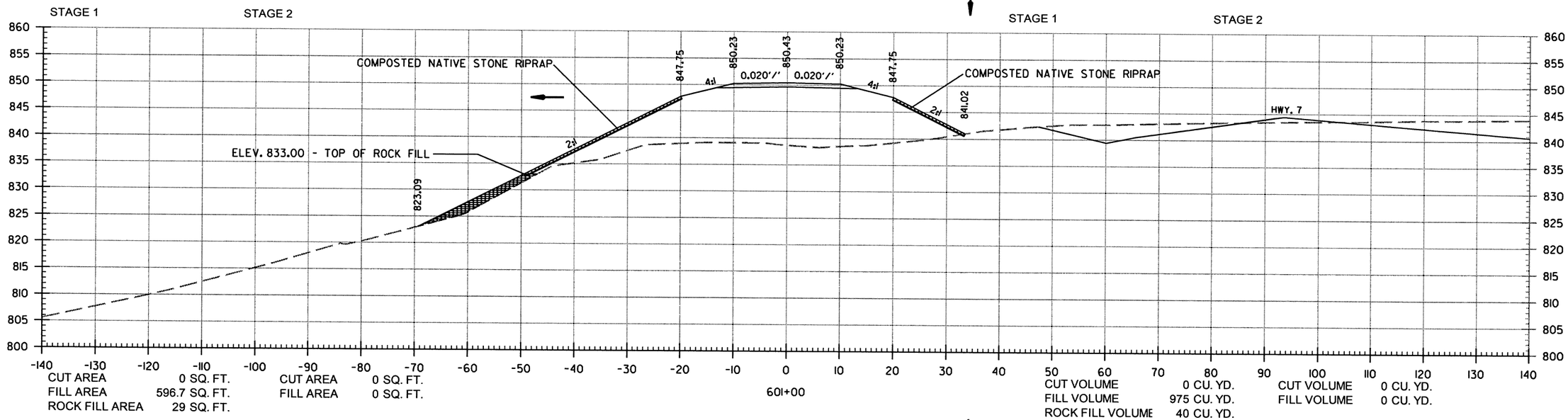
CO. RD. 80
CROSS SECTION STA. 504+72 TO STA. 504+72

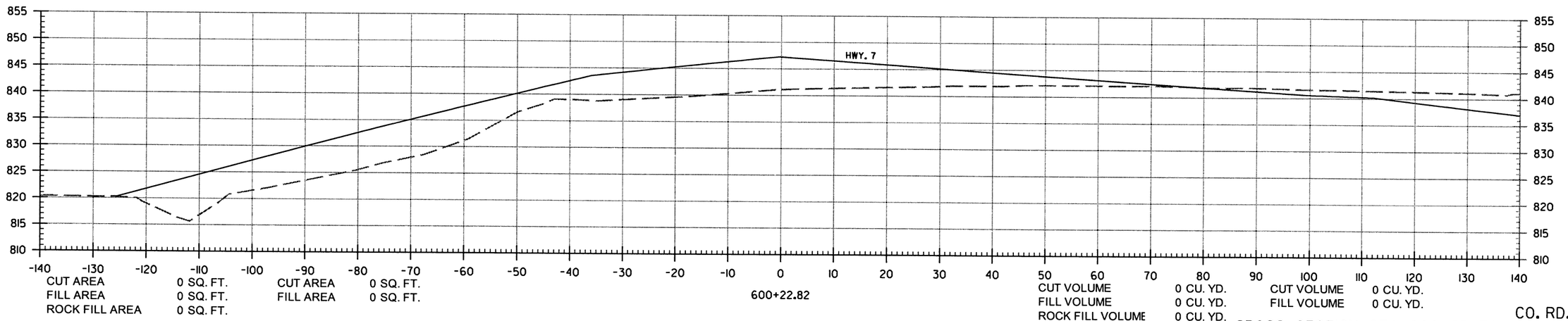
8/8/2017

R009784.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.		009784	168	193

(2) CROSS SECTIONS





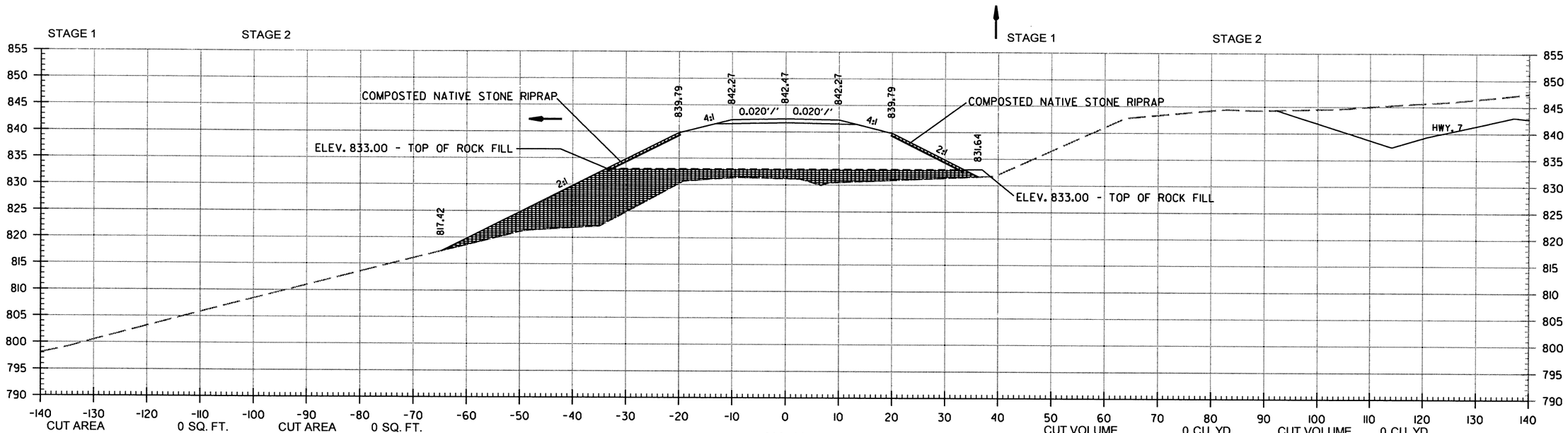
CO. RD. 472
CROSS SECTION STA. 600+23 TO STA. 601+00

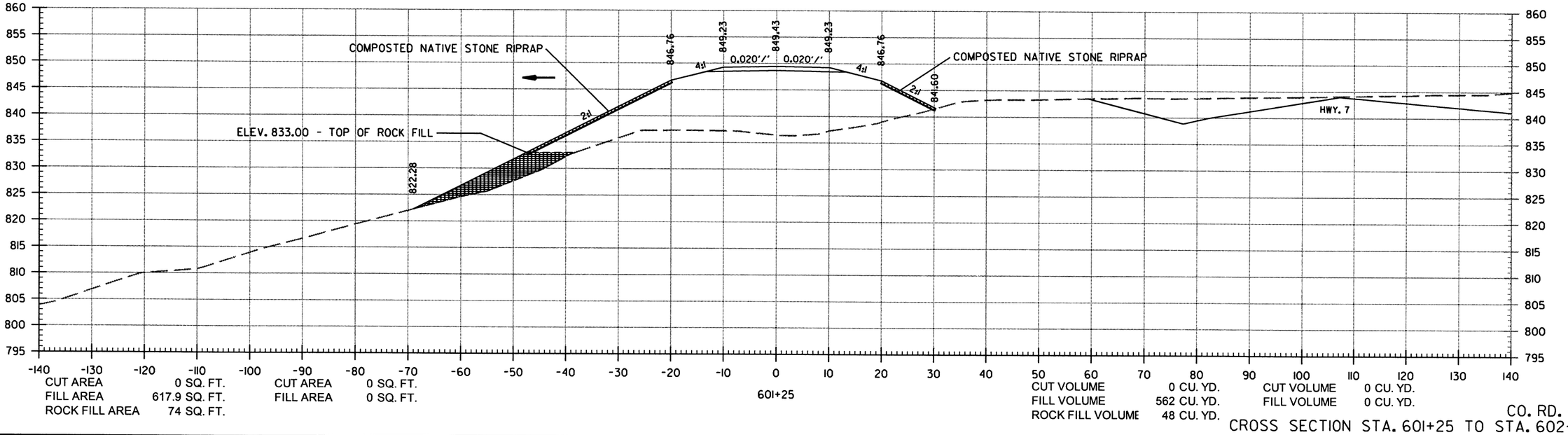
8/8/2017

R009784.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.		009784	169	193

(2) CROSS SECTIONS





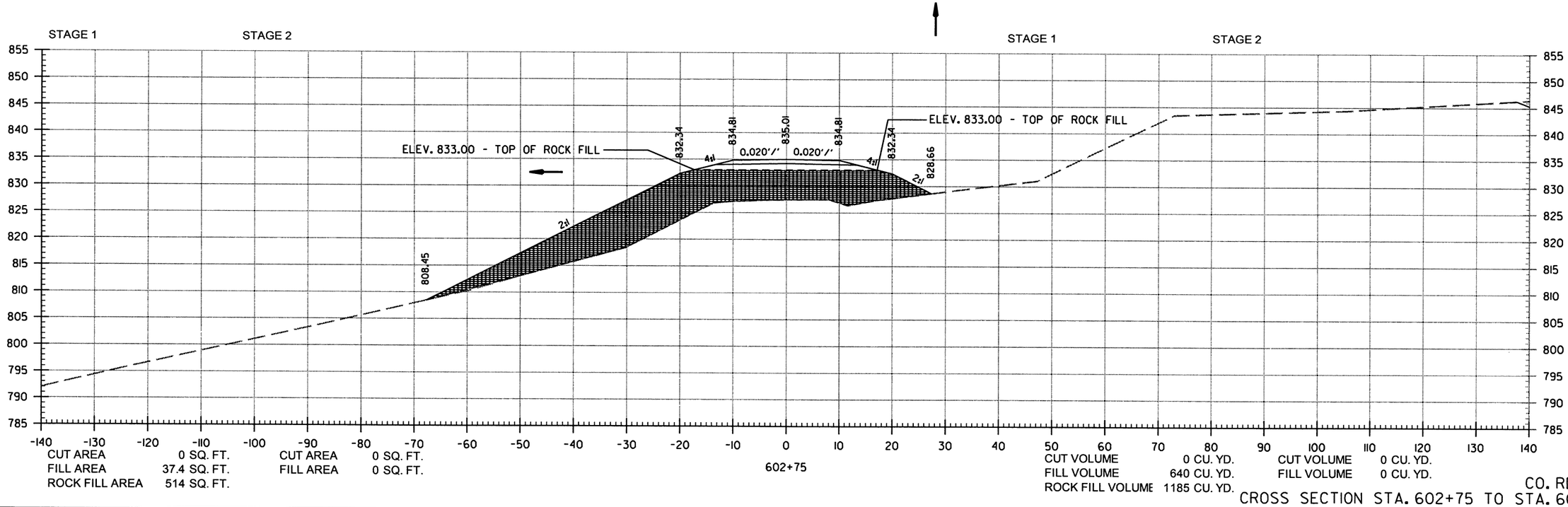
CO. RD. 472
CROSS SECTION STA. 601+25 TO STA. 602+00

8/8/2017

R009784.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.		009784	170	193

(2) CROSS SECTIONS



CUT AREA	0 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	37.4 SQ. FT.	FILL AREA	0 SQ. FT.
ROCK FILL AREA	514 SQ. FT.		

CUT VOLUME	0 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	640 CU. YD.	FILL VOLUME	0 CU. YD.
ROCK FILL VOLUME	1185 CU. YD.		

CO. RD. 472
CROSS SECTION STA. 602+75 TO STA. 602+75

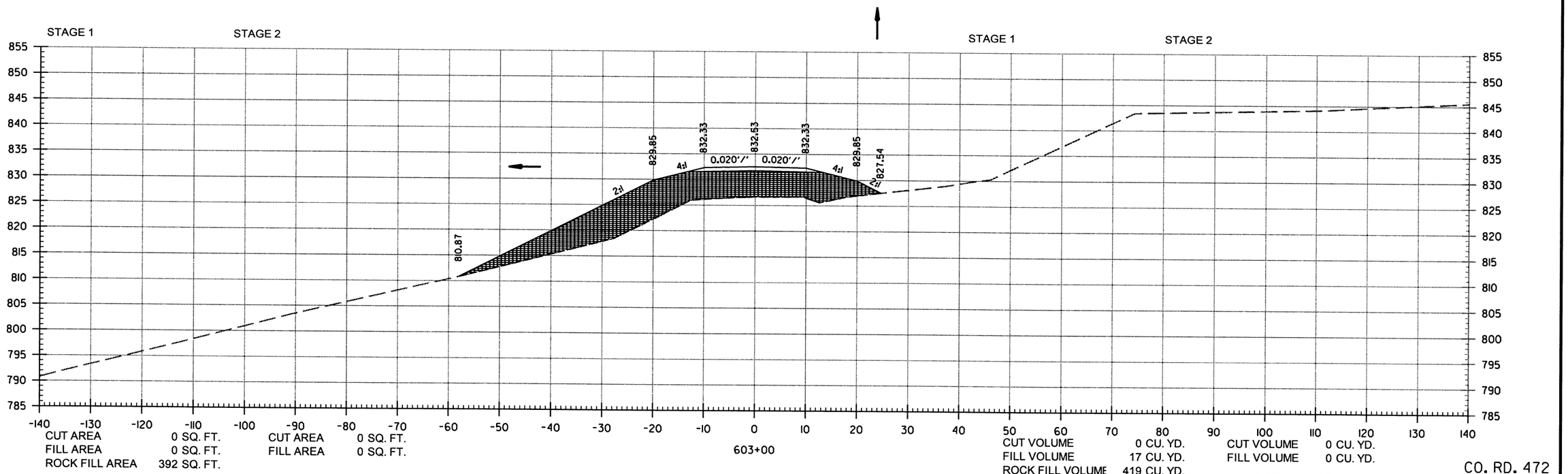
8/8/2017

R009784.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.		009784	171	193

(2) CROSS SECTIONS



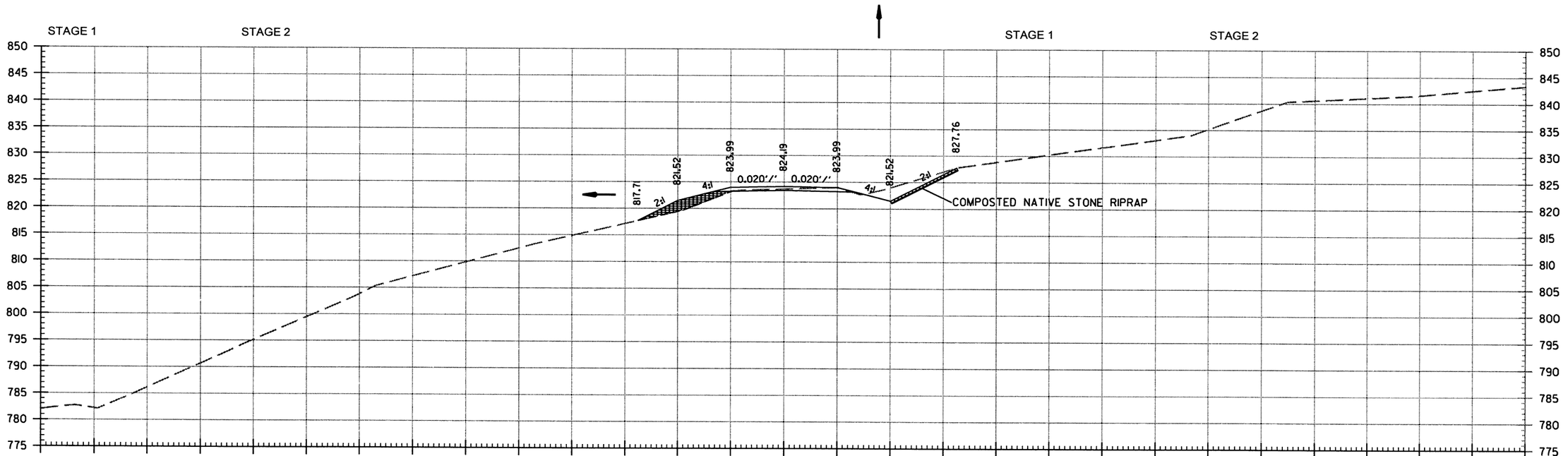
CO. RD. 472
CROSS SECTION STA. 603+00 TO STA. 603+00

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R009784.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.		009784	172	193

(2) CROSS SECTIONS



CUT AREA	22 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.
ROCK FILL AREA	22 SQ. FT.		

CUT VOLUME	41 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.
ROCK FILL VOLUME	767 CU. YD.		

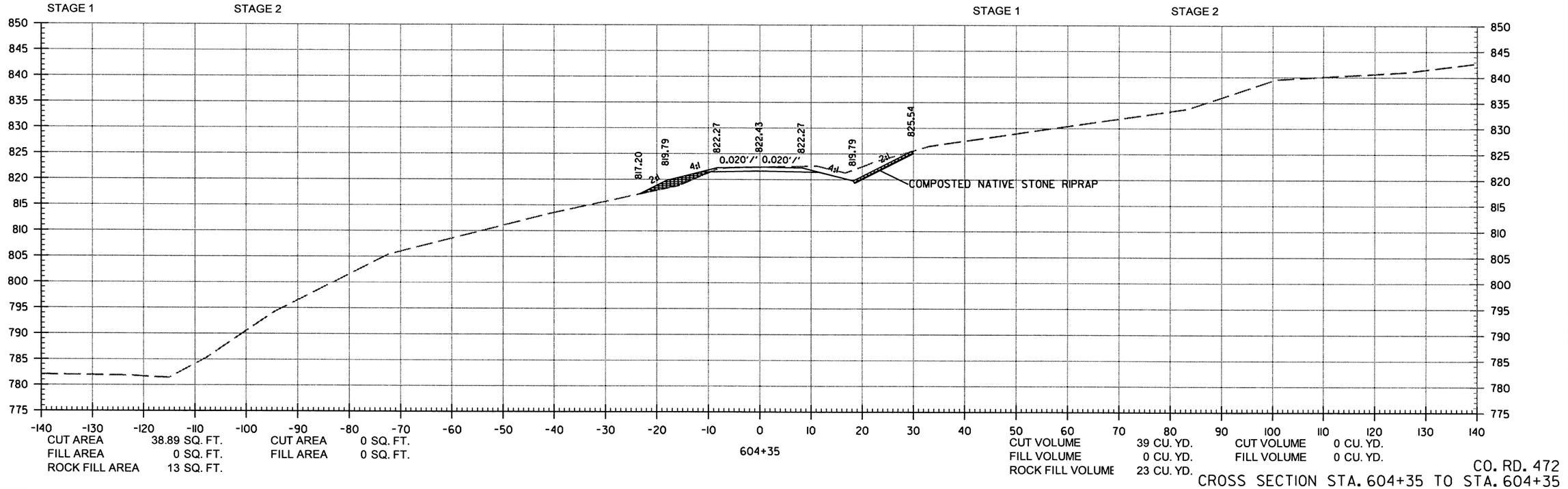
CO. RD. 472
CROSS SECTION STA. 604+00 TO STA. 604+00

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R009784.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.		009784	173	193

(2) CROSS SECTIONS



CUT AREA	38.89 SQ. FT.	CUT AREA	0 SQ. FT.
FILL AREA	0 SQ. FT.	FILL AREA	0 SQ. FT.
ROCK FILL AREA	13 SQ. FT.		

CUT VOLUME	39 CU. YD.	CUT VOLUME	0 CU. YD.
FILL VOLUME	0 CU. YD.	FILL VOLUME	0 CU. YD.
ROCK FILL VOLUME	23 CU. YD.		

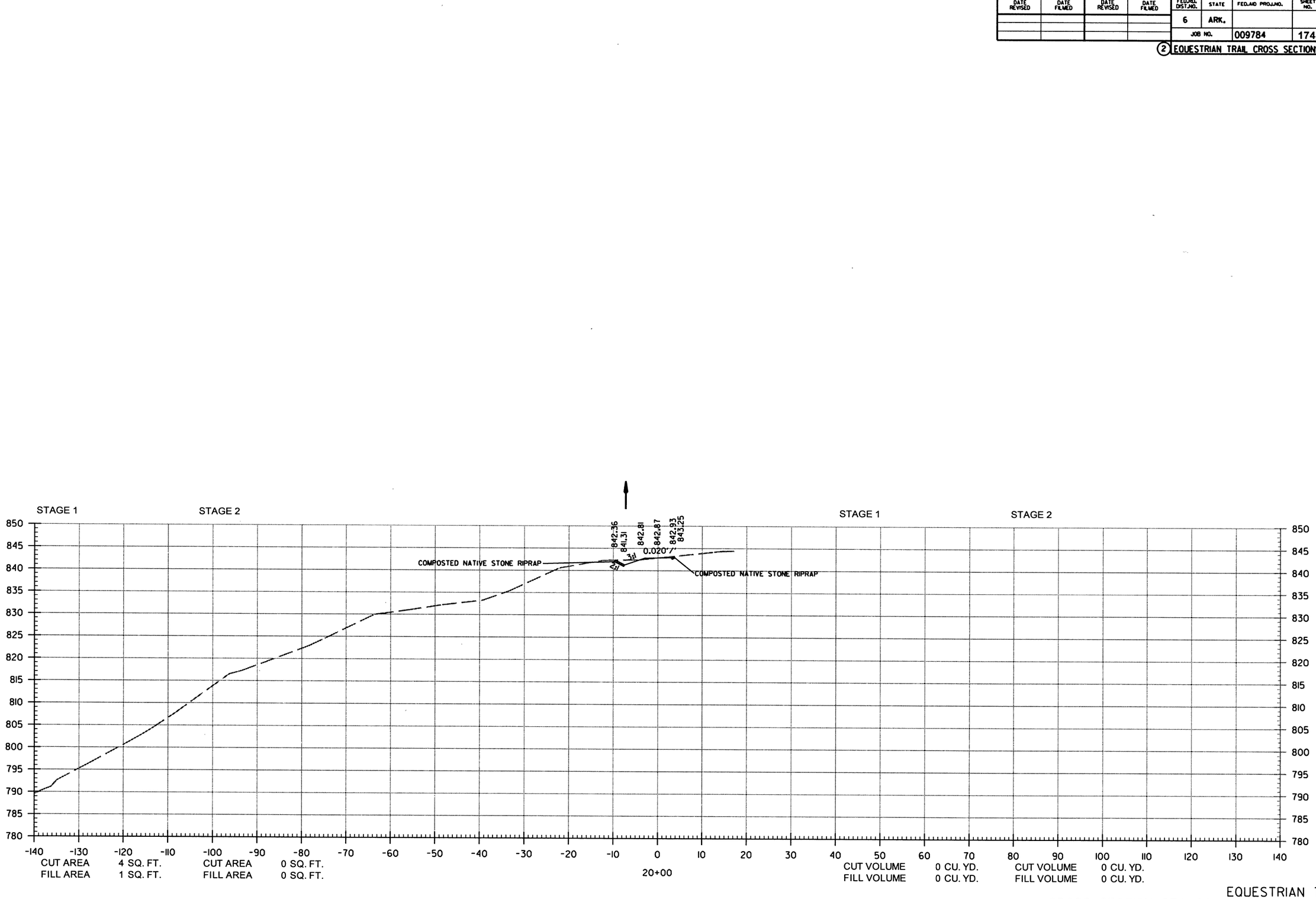
CO. RD. 472
CROSS SECTION STA. 604+35 TO STA. 604+35

8/8/2017

R009784.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.		009784	174	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS



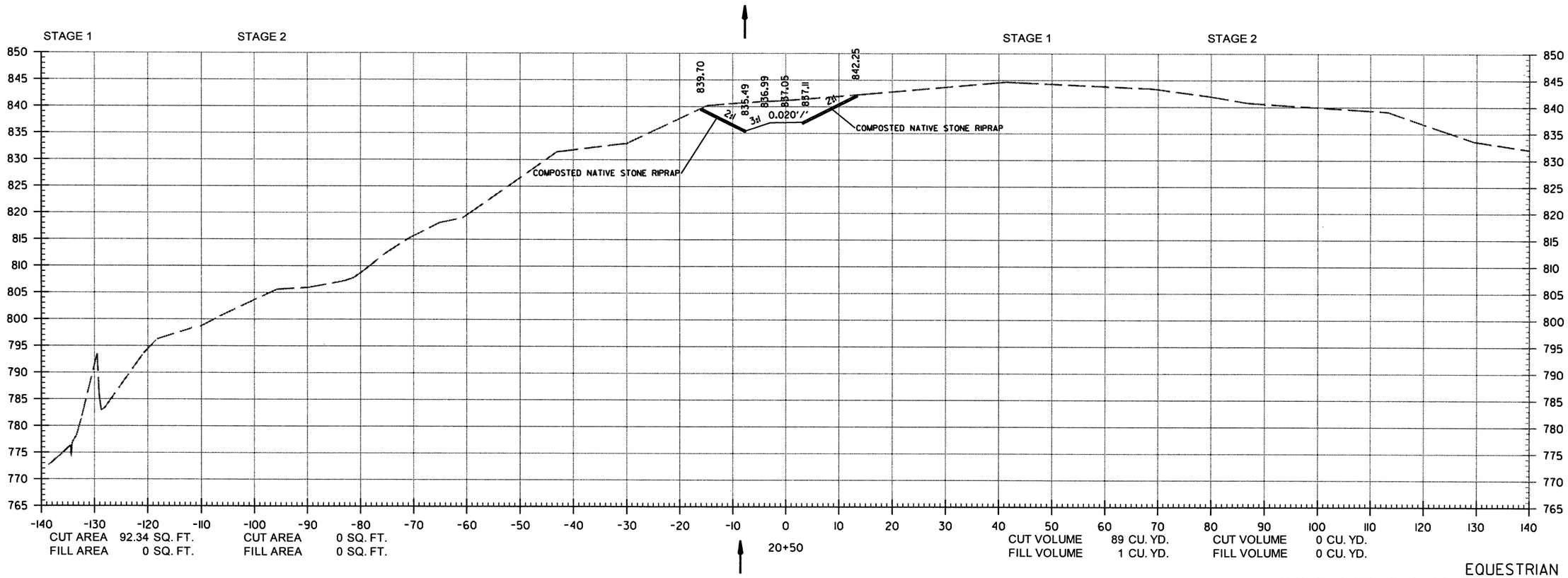
EQUESTRIAN TRAIL
CROSS SECTION STA. 20+00 TO STA. 20+00

8/8/2017

R009784.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.		009784	175	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS



CUT AREA 92.34 SQ. FT. CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT. FILL AREA 0 SQ. FT.

CUT VOLUME 89 CU. YD. CUT VOLUME 0 CU. YD.
FILL VOLUME 1 CU. YD. FILL VOLUME 0 CU. YD.

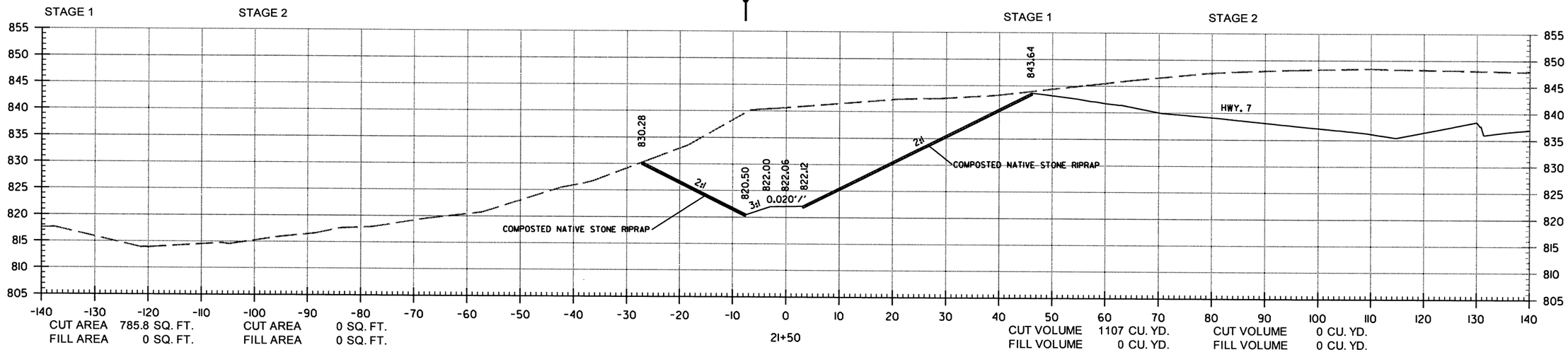
EQUESTRIAN TRAIL
CROSS SECTION STA. 20+50 TO STA. 20+50

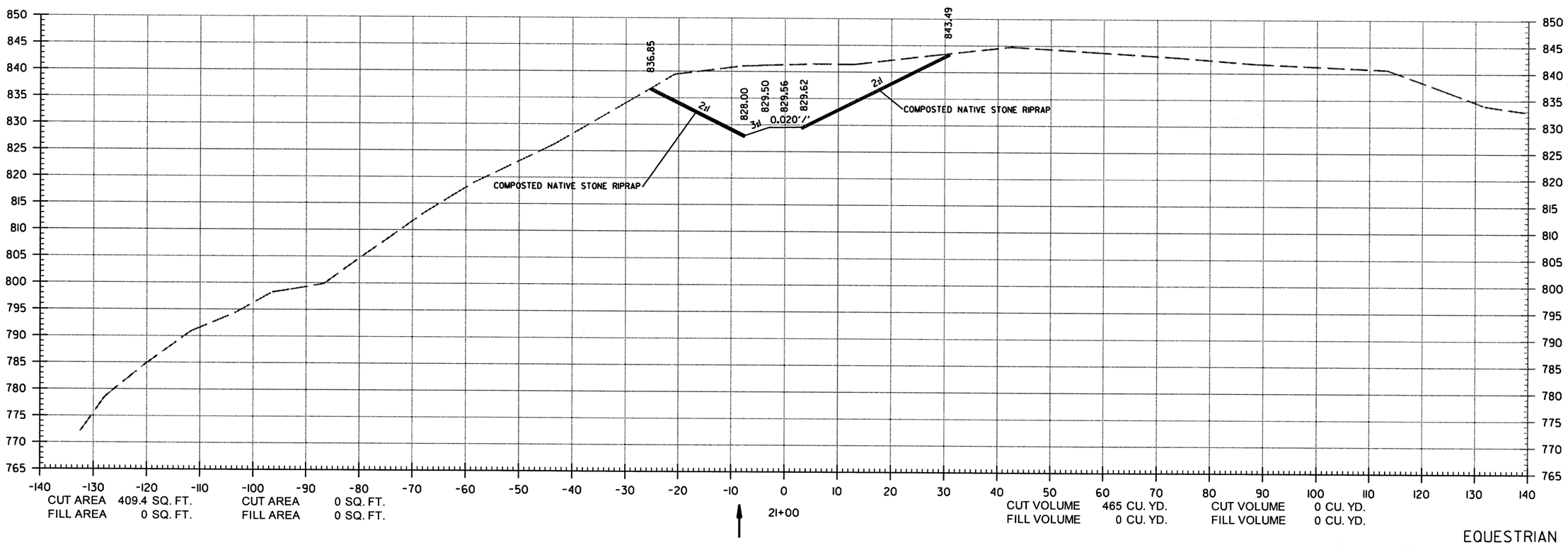
8/8/2017

R009784.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.		009784	176	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS





EQUESTRIAN TRAIL
CROSS SECTION STA. 21+00 TO STA. 21+50

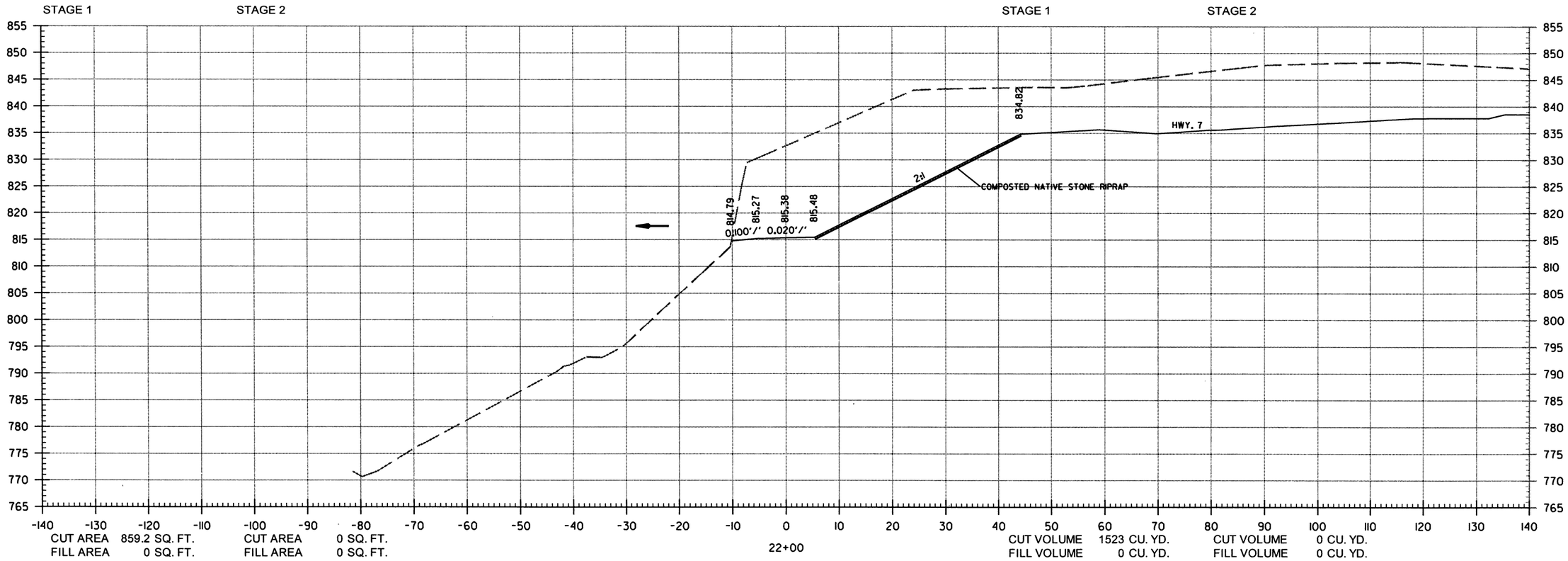
8/8/2017

R009784.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.		009784	177	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS

EQUESTRIAN TRAIL BARRIER
BY OTHERS



EQUESTRIAN TRAIL
CROSS SECTION STA. 22+00 TO STA. 22+00

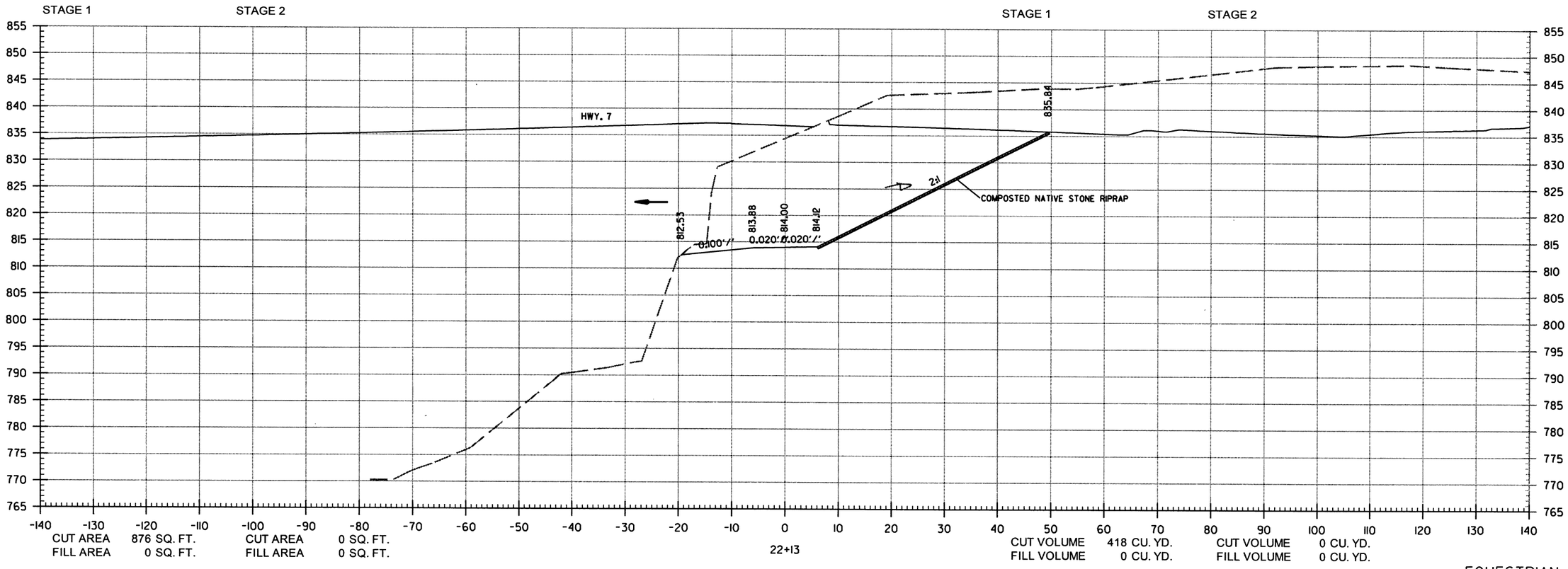
8/8/2017

R009784.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.		009784	178	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS

EQUESTRIAN TRAIL BARRIER
BY OTHERS



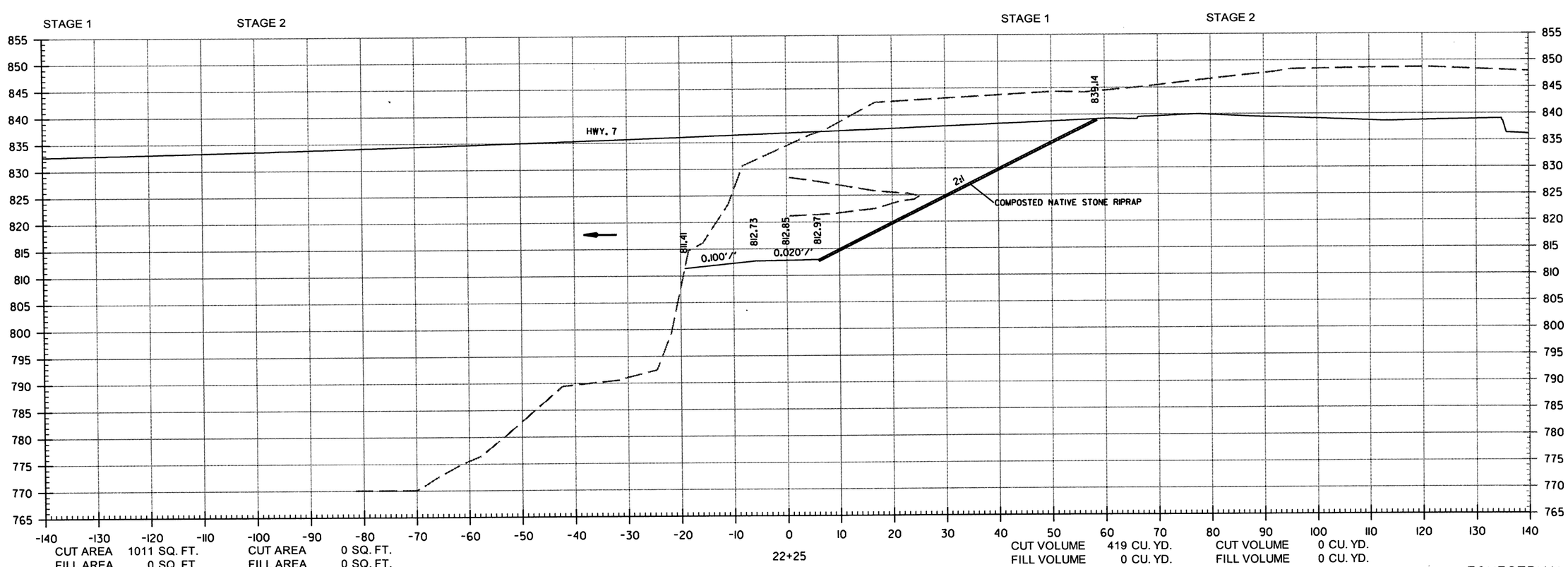
EQUESTRIAN TRAIL
CROSS SECTION STA. 22+13 TO STA. 22+13

8/8/2017

R009784.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.		009784	179	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS



EQUESTRIAN TRAIL
CROSS SECTION STA. 22+25 TO STA. 22+25

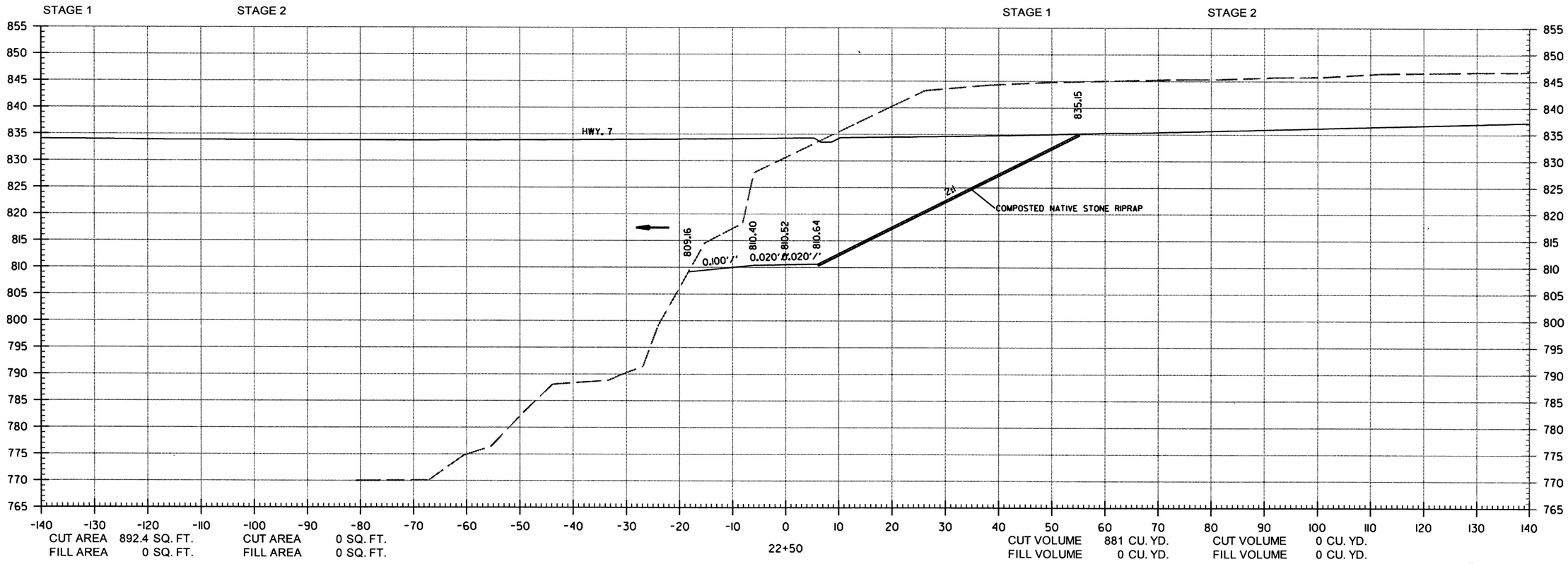
8/8/2017

R009784.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.		009784	180	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS

EQUESTRIAN TRAIL BARRIER
BY OTHERS



EQUESTRIAN TRAIL
CROSS SECTION STA. 22+50 TO STA. 22+50

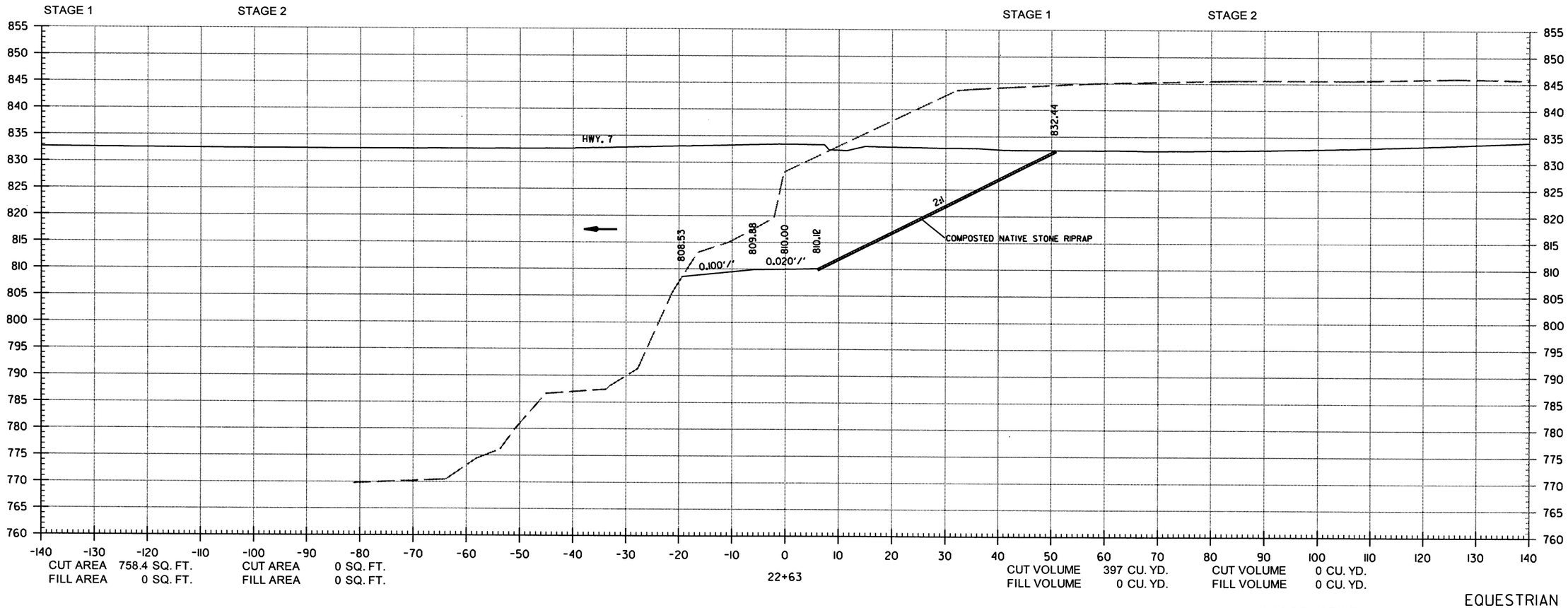
8/8/2017

R009784.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.		009784	181	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS

EQUESTRIAN TRAIL BARRIER
BY OTHERS



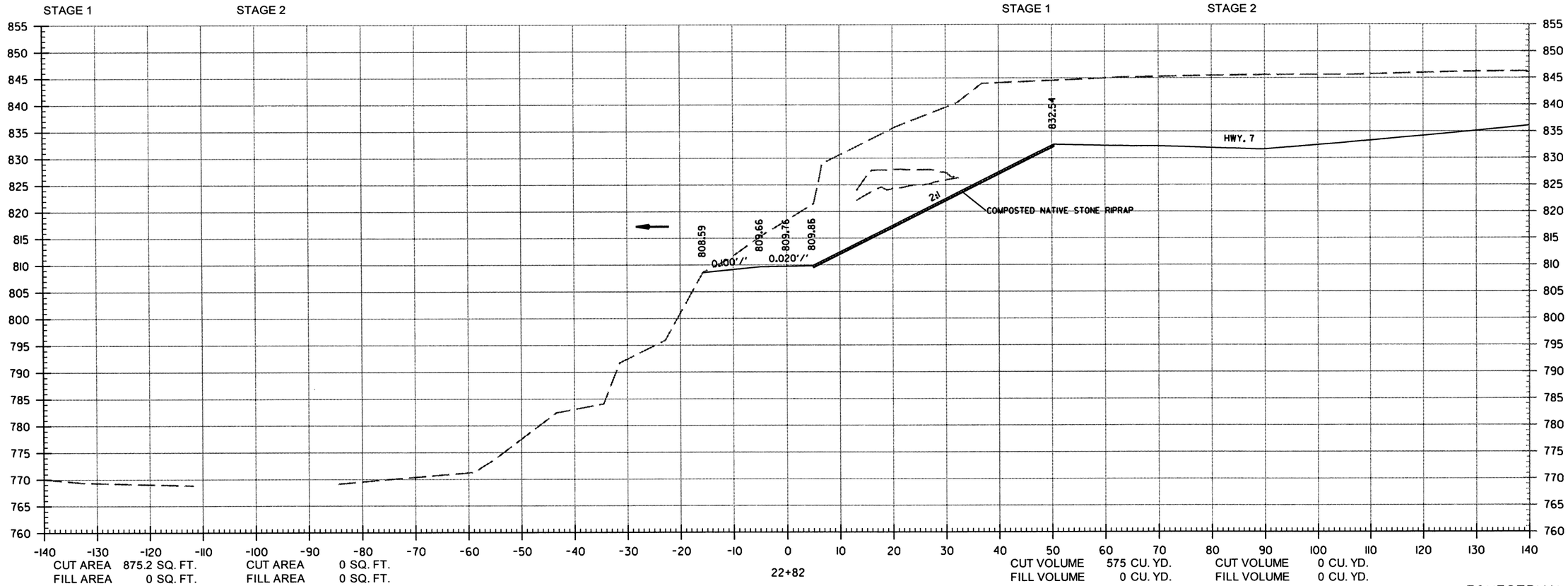
EQUESTRIAN TRAIL
CROSS SECTION STA. 22+63 TO STA. 22+63

8/8/2017

R009784.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.		009784	182	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS



CUT AREA 875.2 SQ. FT. | CUT AREA 0 SQ. FT.
FILL AREA 0 SQ. FT. | FILL AREA 0 SQ. FT.

CUT VOLUME 575 CU. YD. | CUT VOLUME 0 CU. YD.
FILL VOLUME 0 CU. YD. | FILL VOLUME 0 CU. YD.

EQUESTRIAN TRAIL
CROSS SECTION STA. 22+82 TO STA. 22+82

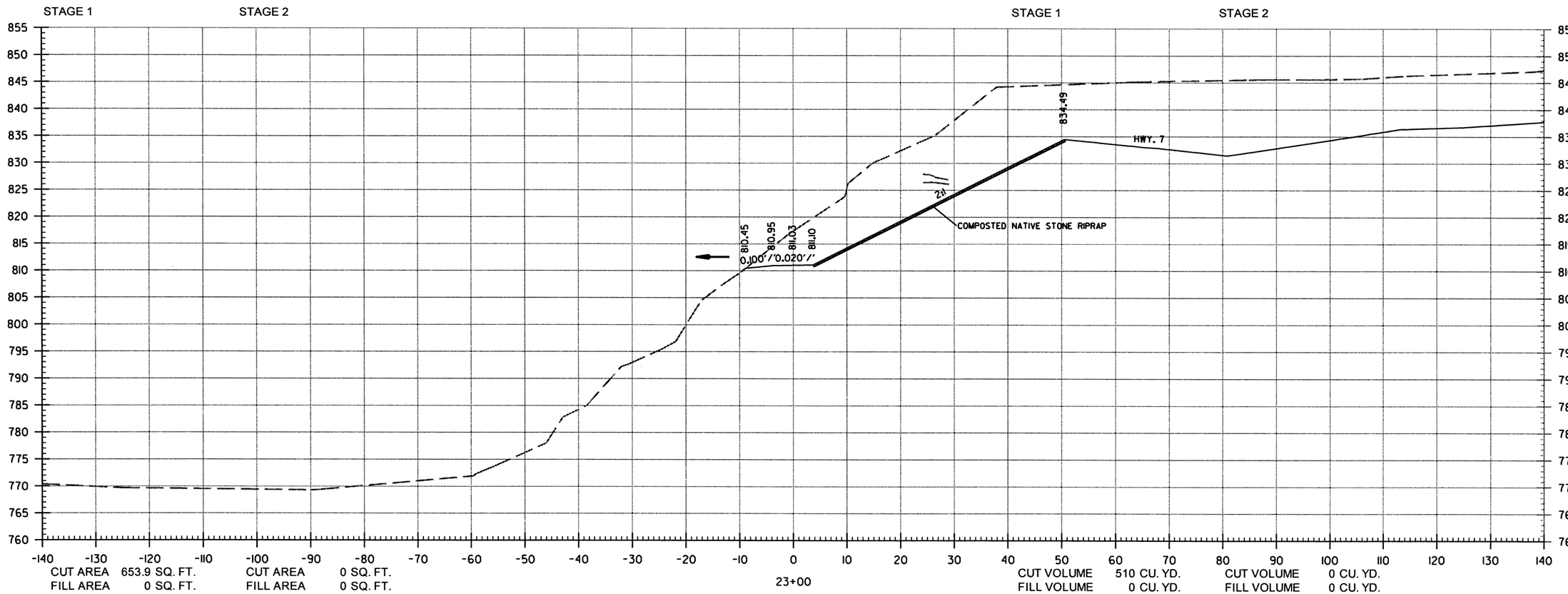
8/8/2017

R009784.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.		009784	183	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS

EQUESTRIAN TRAIL BARRIER
BY OTHERS



EQUESTRIAN TRAIL
CROSS SECTION STA. 23+00 TO STA. 23+00

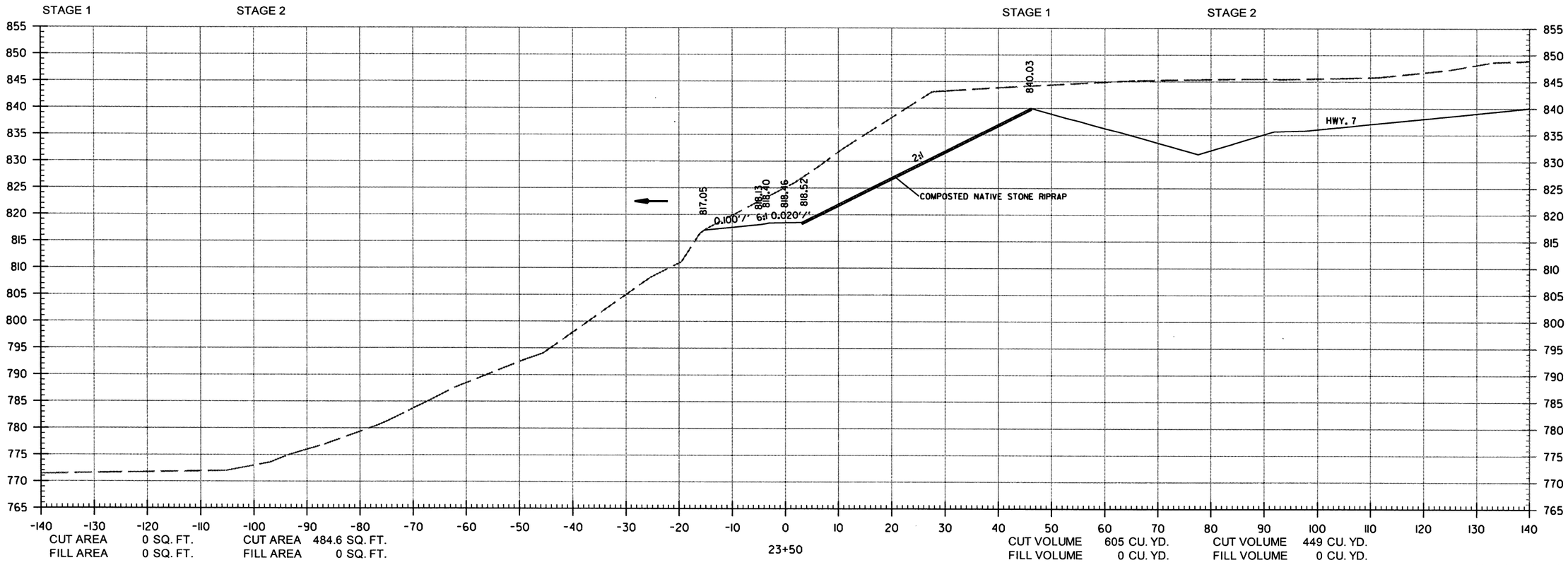
8/8/2017

R009784.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.		009784	184	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS

EQUESTRIAN TRAIL BARRIER
BY OTHERS



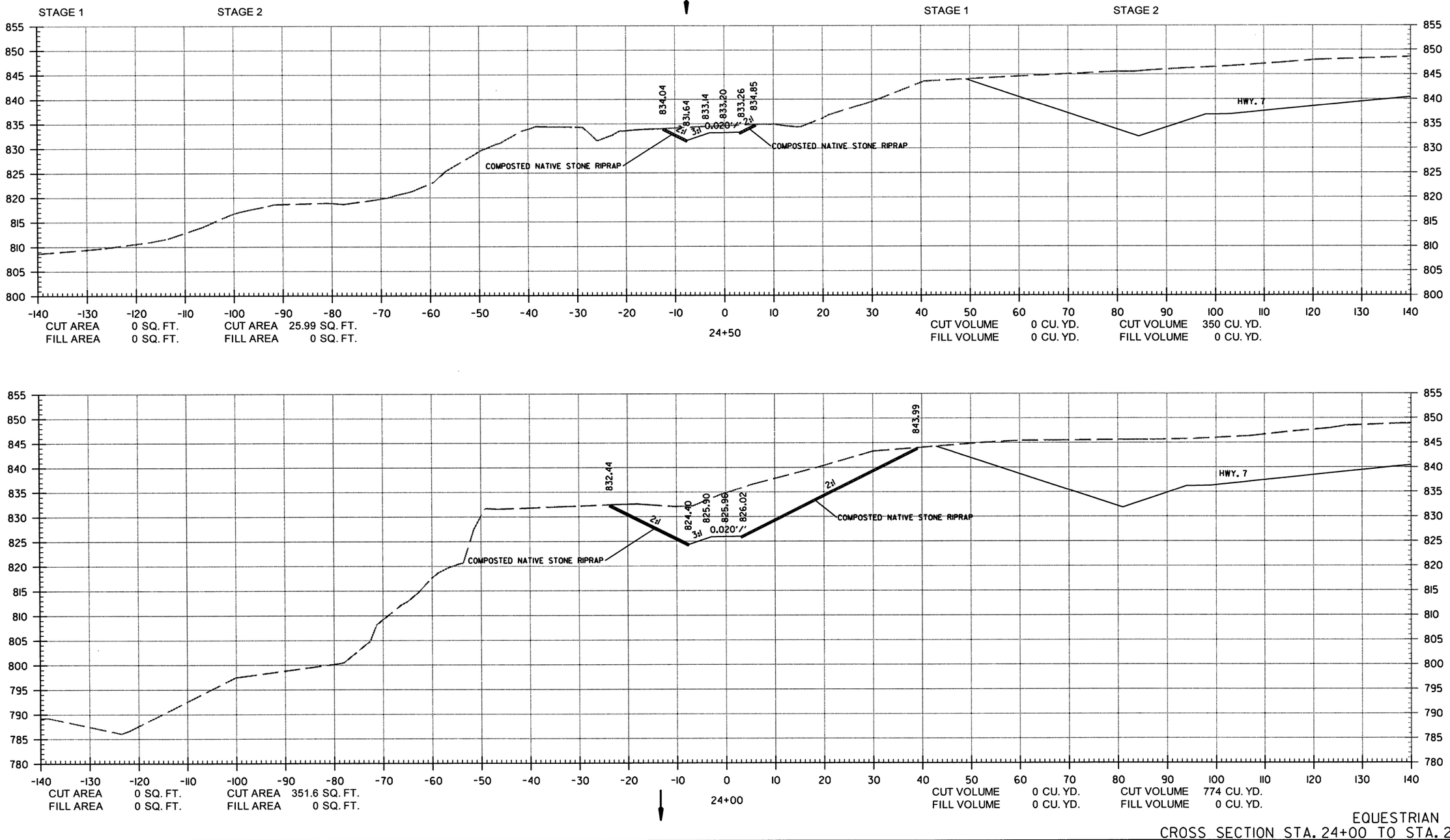
EQUESTRIAN TRAIL
CROSS SECTION STA. 23+50 TO STA. 23+50

8/8/2017

R009784.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.		009784	185	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS



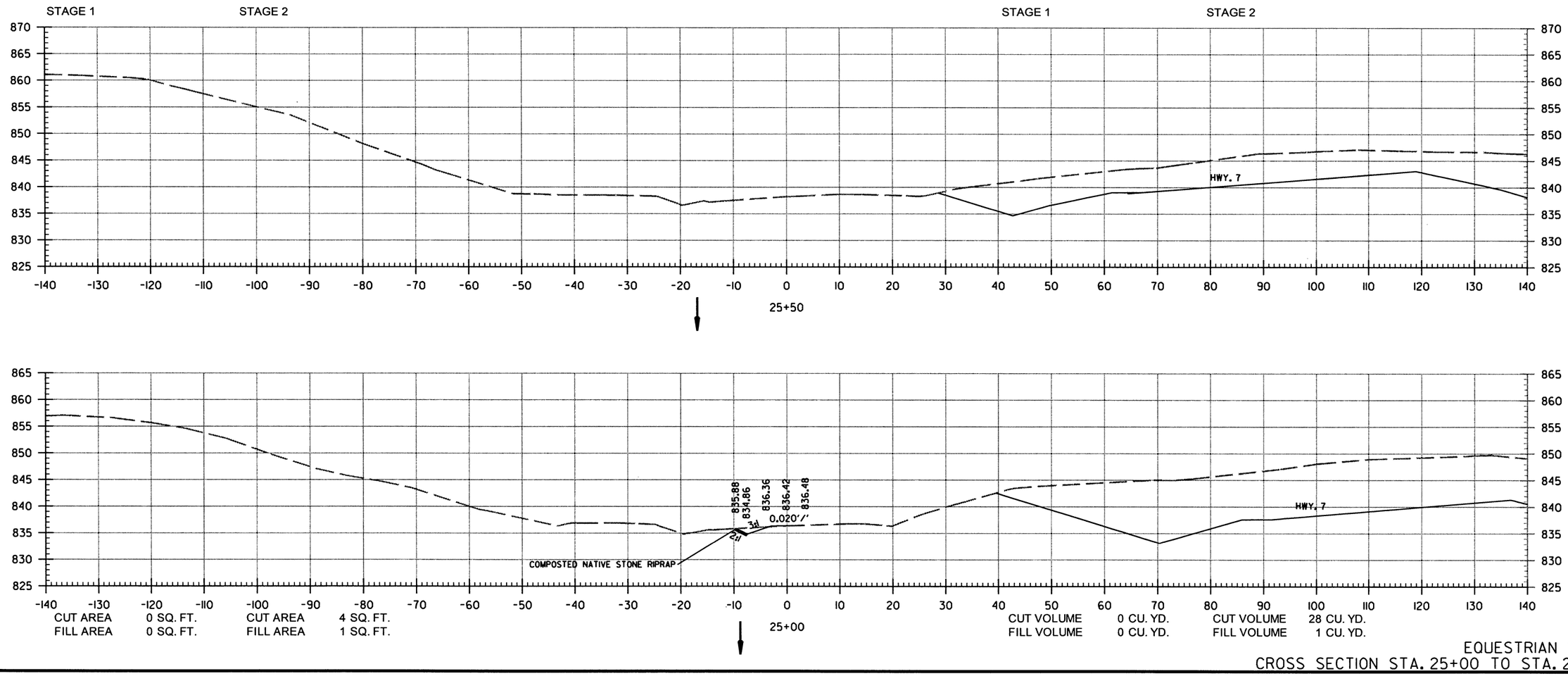
EQUESTRIAN TRAIL
CROSS SECTION STA. 24+00 TO STA. 24+50

8/8/2017

R009784.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.		009784	186	193

(2) EQUESTRIAN TRAIL CROSS SECTIONS



EQUESTRIAN TRAIL
CROSS SECTION STA. 25+00 TO STA. 25+50

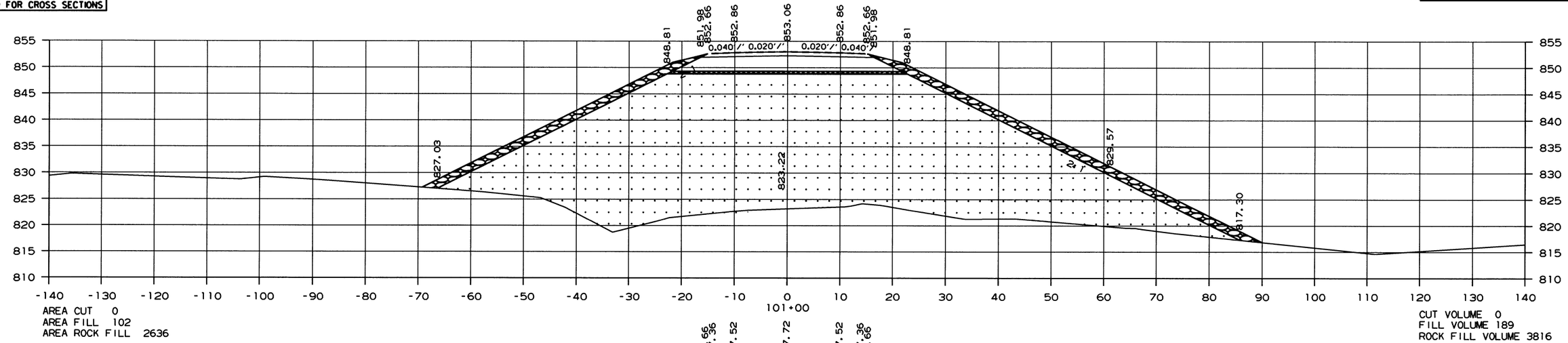
8/8/2017

R009784.DGN

ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS

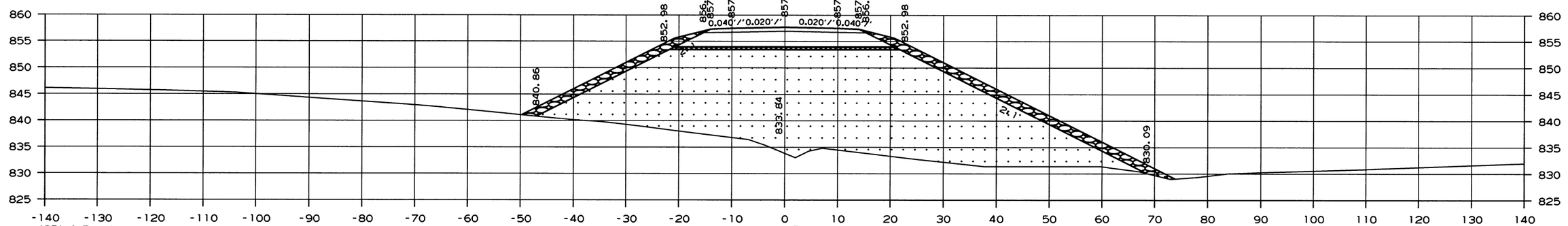
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		009784	187	193

④ CROSS SECTIONS



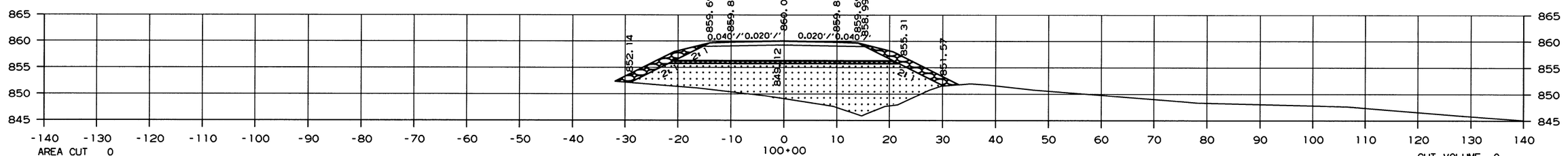
AREA CUT 0
AREA FILL 102
AREA ROCK FILL 2636

CUT VOLUME 0
FILL VOLUME 189
ROCK FILL VOLUME 3816



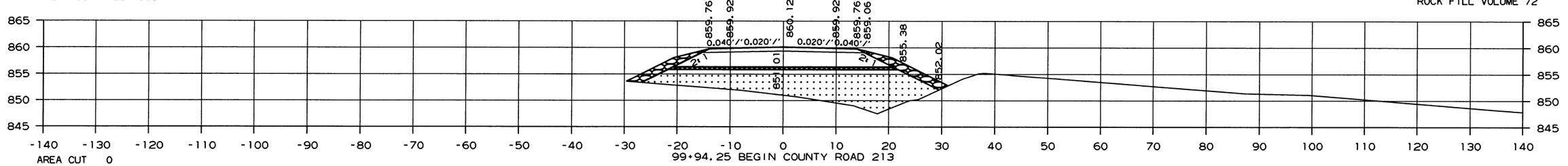
AREA CUT 0
AREA FILL 102
AREA ROCK FILL 1485

CUT VOLUME 0
FILL VOLUME 189
ROCK FILL VOLUME 1714



AREA CUT 0
AREA FILL 102
AREA ROCK FILL 366

CUT VOLUME 0
FILL VOLUME 23
ROCK FILL VOLUME 72



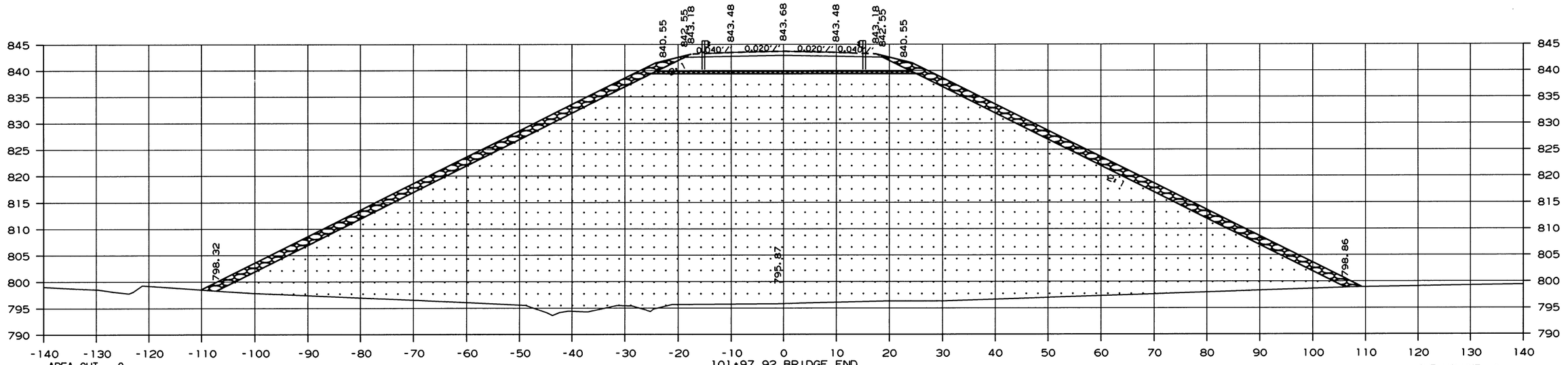
AREA CUT 0
AREA FILL 101
AREA ROCK FILL 278

COUNTY ROAD 213
CROSS SECTION STA. 99+94.25 TO STA. 101+00

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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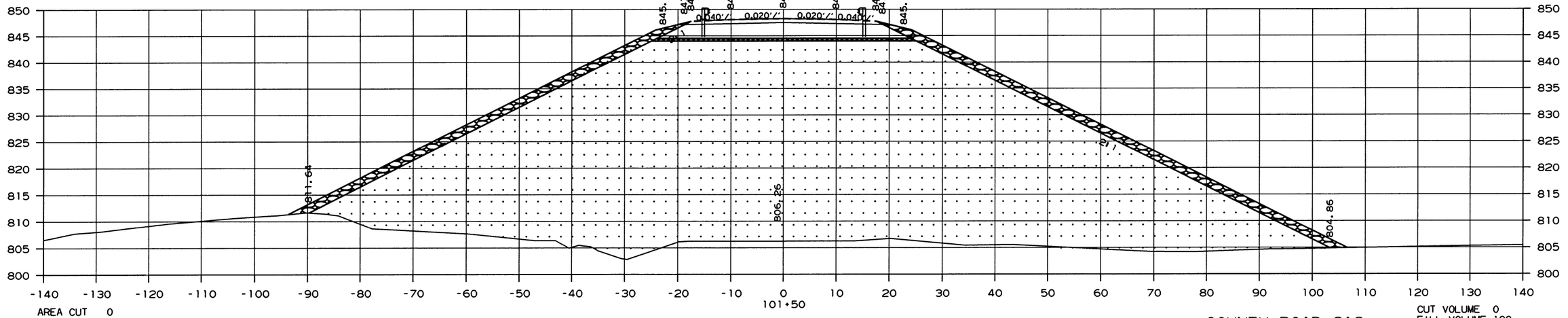
4 CROSS SECTIONS

ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS



AREA CUT 0
AREA FILL 102
AREA ROCK FILL 5816

CUT VOLUME 0
FILL VOLUME 180
ROCK FILL VOLUME 9399



AREA CUT 0
AREA FILL 101
AREA ROCK FILL 4775

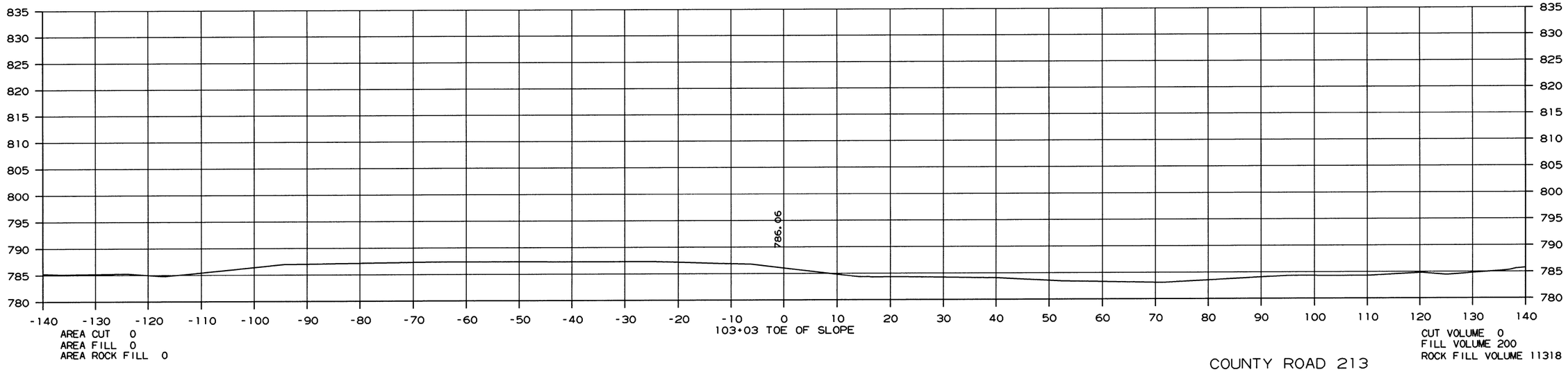
CUT VOLUME 0
FILL VOLUME 188
ROCK FILL VOLUME 6862

COUNTY ROAD 213
CROSS SECTION STA. 101+50 TO STA. 101+98

ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS

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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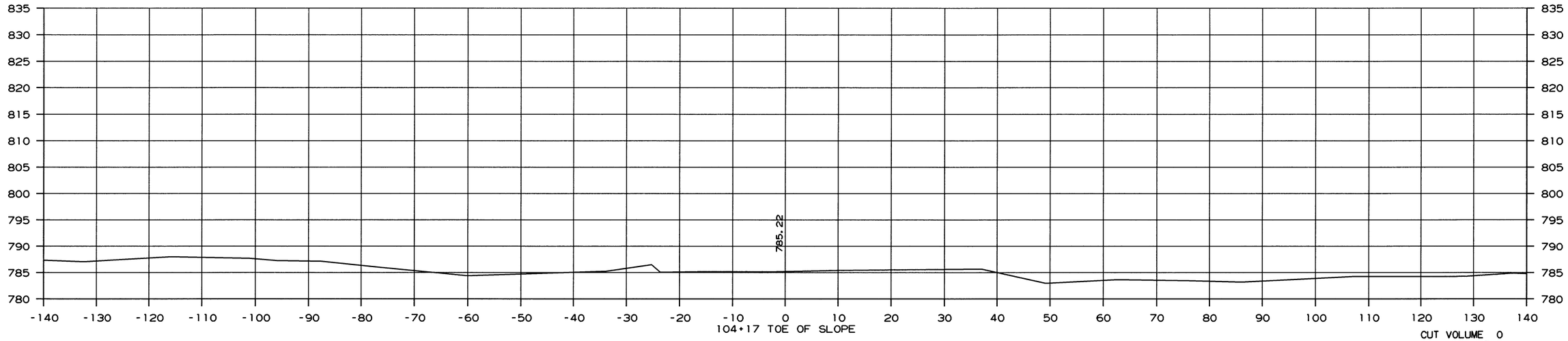
④ CROSS SECTIONS



COUNTY ROAD 213
CROSS SECTION STA. 103+03

ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS

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.		009784	190	193
				(4)	CROSS SECTIONS			



AREA CUT 0
AREA FILL 0
AREA ROCK FILL 0

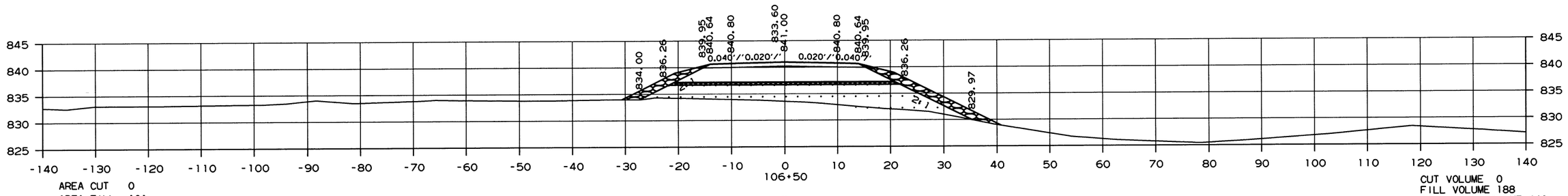
CUT VOLUME 0
FILL VOLUME 0
ROCK FILL VOLUME 0

COUNTY ROAD 213
CROSS SECTION STA. 104+17

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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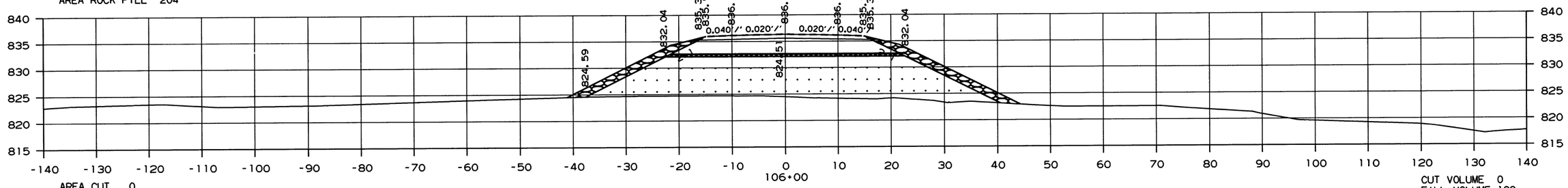
④ CROSS SECTIONS

ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS



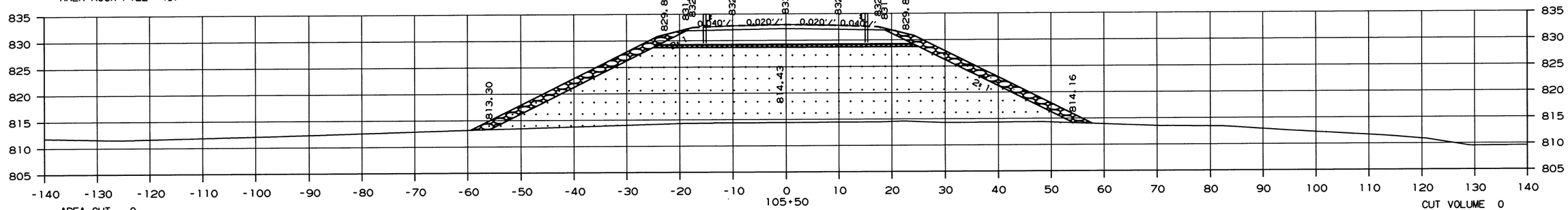
AREA CUT 0
AREA FILL 101
AREA ROCK FILL 204

CUT VOLUME 0
FILL VOLUME 188
ROCK FILL VOLUME 649



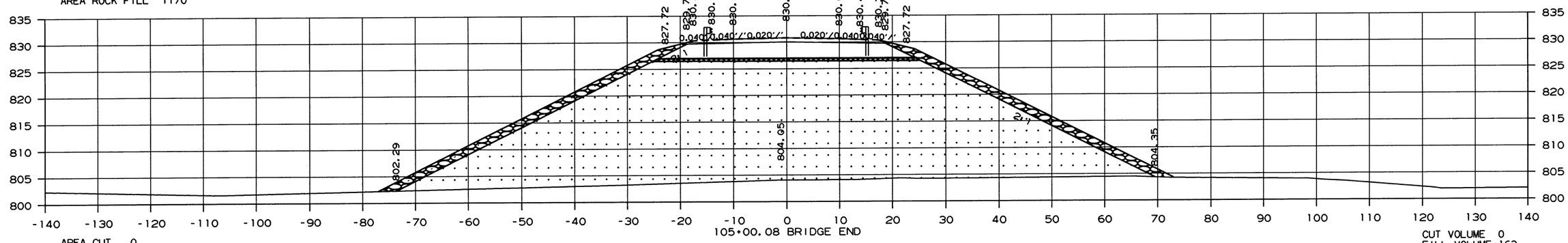
AREA CUT 0
AREA FILL 102
AREA ROCK FILL 497

CUT VOLUME 0
FILL VOLUME 189
ROCK FILL VOLUME 1544



AREA CUT 0
AREA FILL 102
AREA ROCK FILL 1170

CUT VOLUME 0
FILL VOLUME 192
ROCK FILL VOLUME 3118



AREA CUT 0
AREA FILL 106
AREA ROCK FILL 2203

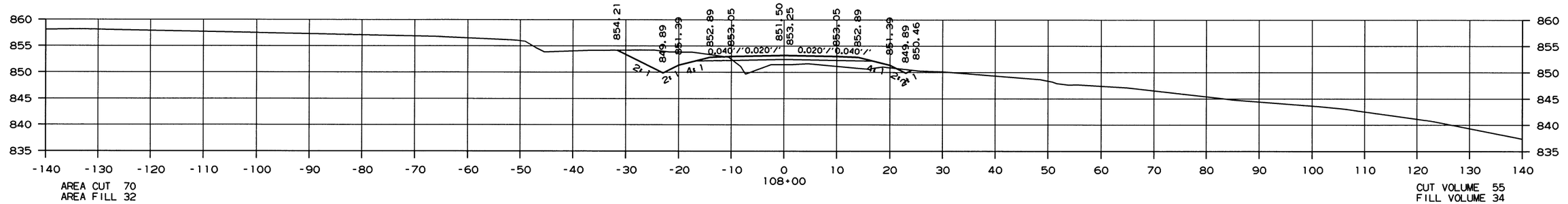
CUT VOLUME 0
FILL VOLUME 163
ROCK FILL VOLUME 3389

COUNTY ROAD 213
CROSS SECTION STA. 105+00 TO STA. 106+50

ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS

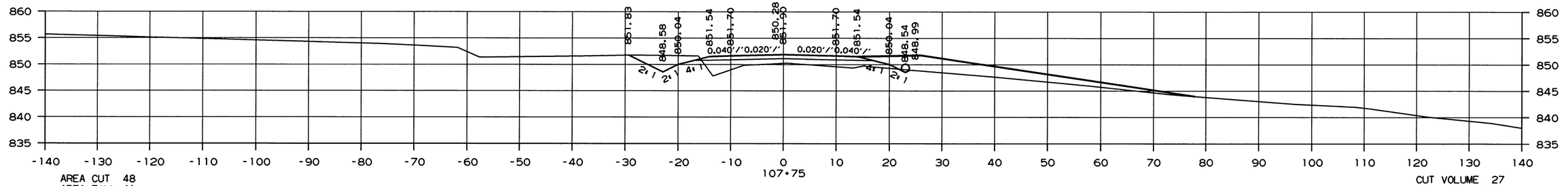
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④ CROSS SECTIONS



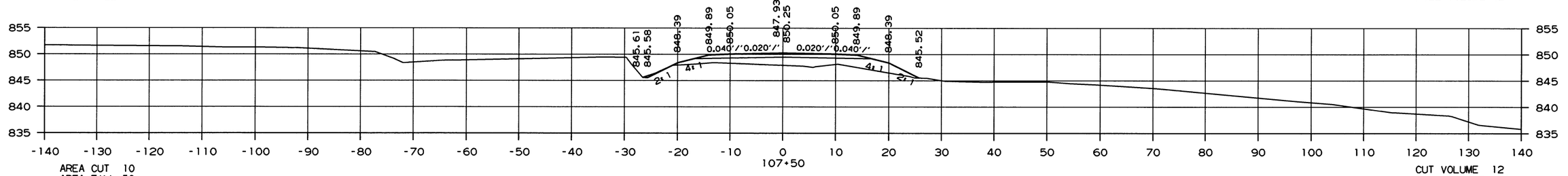
AREA CUT 70
AREA FILL 32

CUT VOLUME 55
FILL VOLUME 34



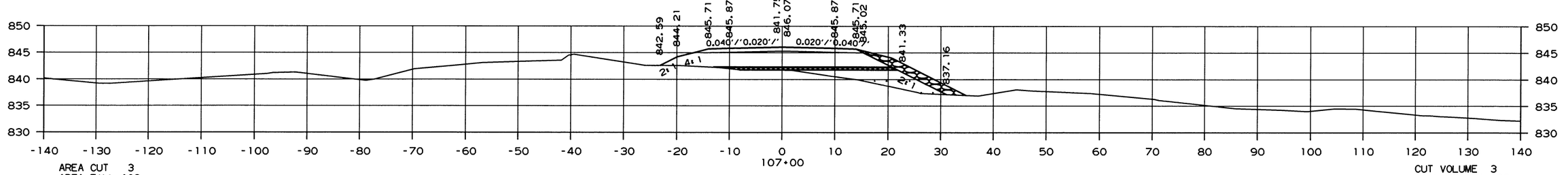
AREA CUT 48
AREA FILL 41

CUT VOLUME 27
FILL VOLUME 42



AREA CUT 10
AREA FILL 50

CUT VOLUME 12
FILL VOLUME 141



AREA CUT 3
AREA FILL 102
AREA ROCK FILL 66

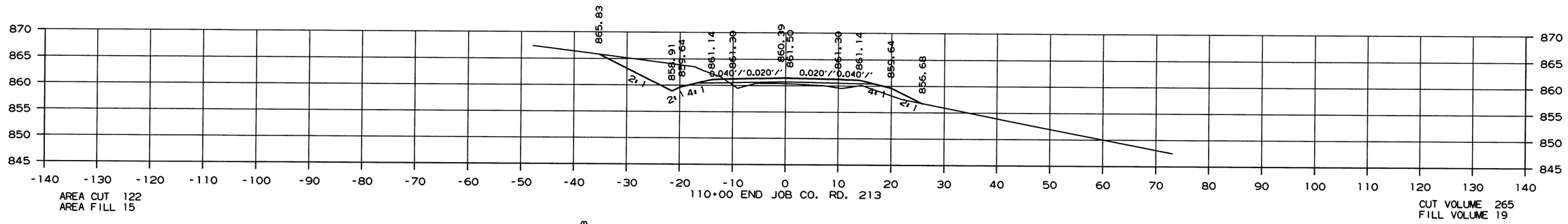
CUT VOLUME 3
FILL VOLUME 188
ROCK FILL VOLUME 250

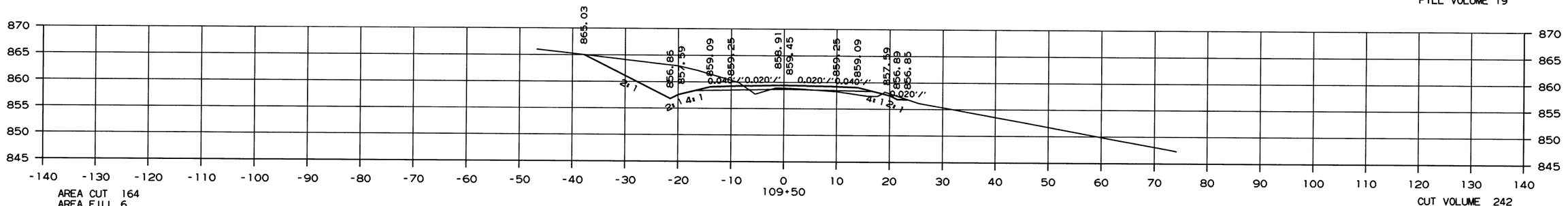
COUNTY ROAD 213
CROSS SECTION STA. 107+00 TO STA. 108+00

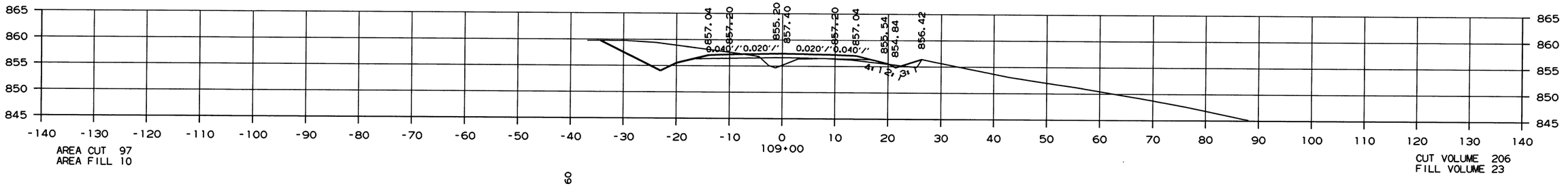
ROCK FILL
NATIVE STONE
AGGREGATE BASE COURSE (CLASS 7)
LEGEND FOR CROSS SECTIONS

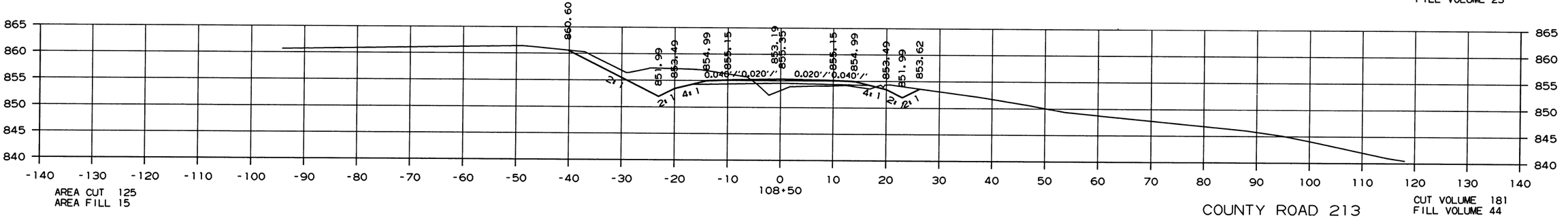
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				JOB NO.		009784	193	193

④ CROSS SECTIONS



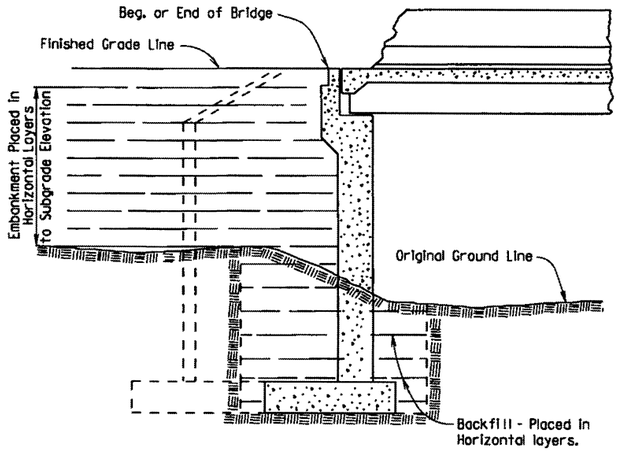




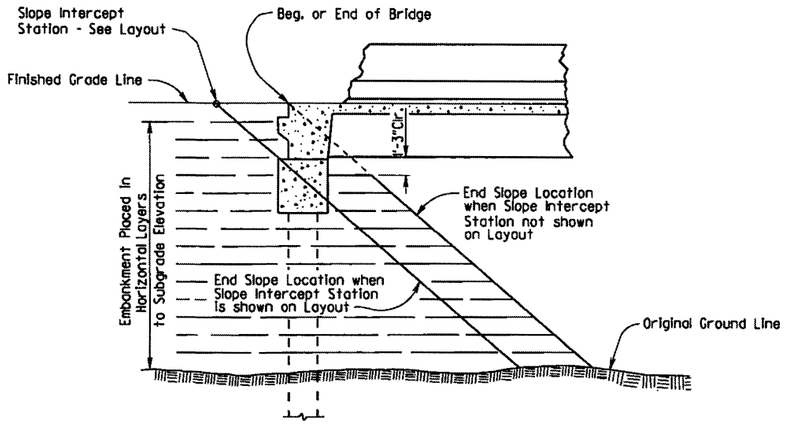


COUNTY ROAD 213
CROSS SECTION STA. 108+50 TO STA. 110+00

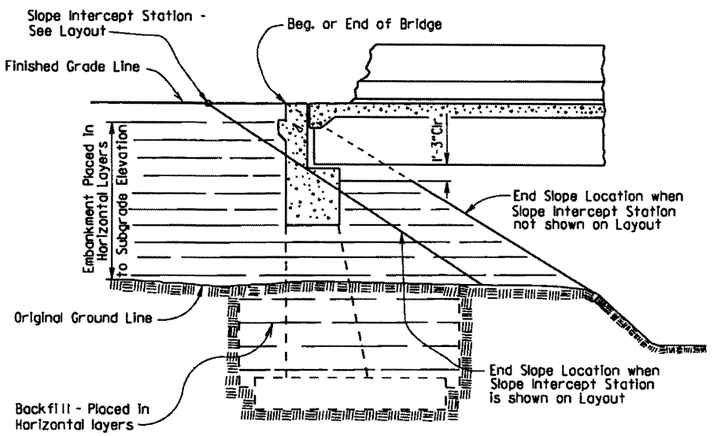
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				(1)	EMBANKMENT & BACKFILL 55000			



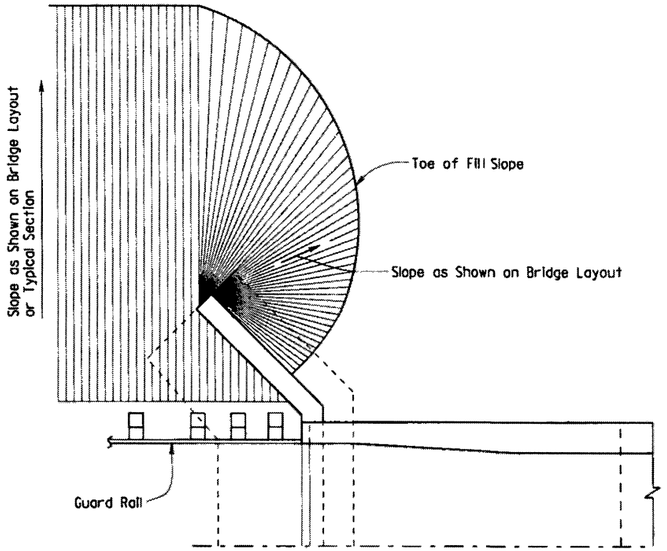
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



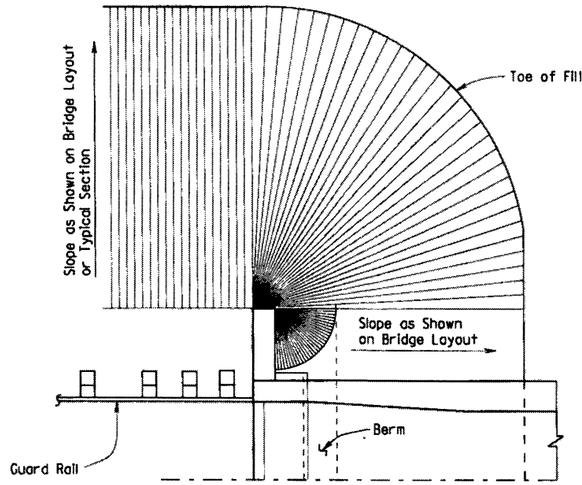
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



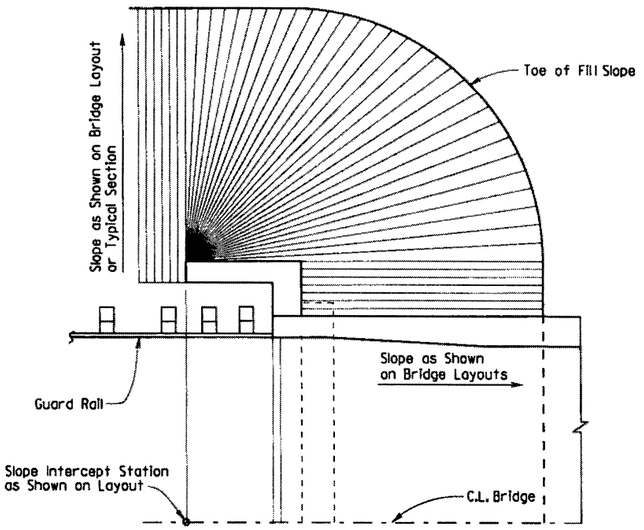
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



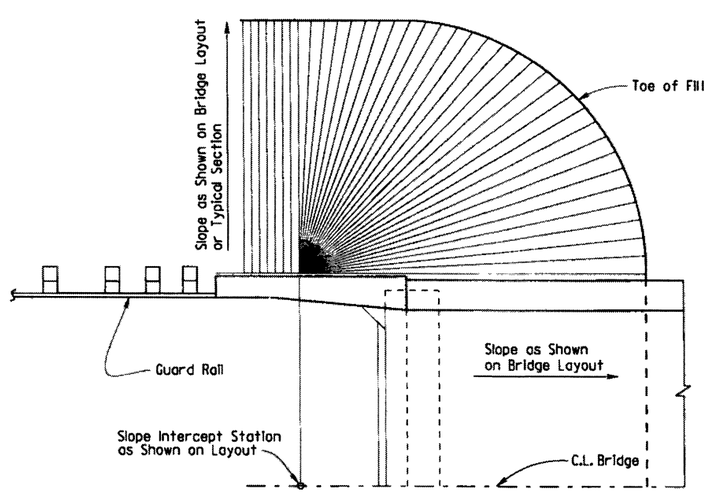
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

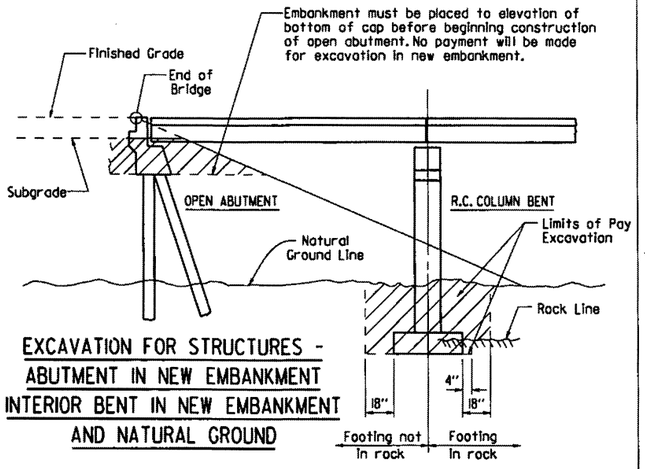
STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

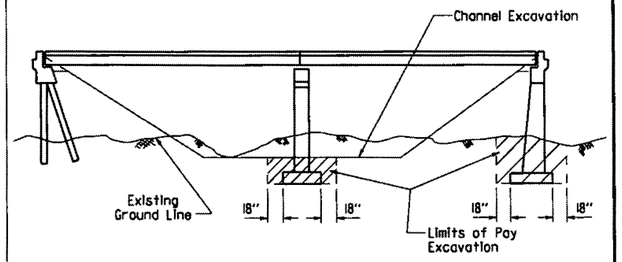
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DESIGNED BY: STD. DATE: -

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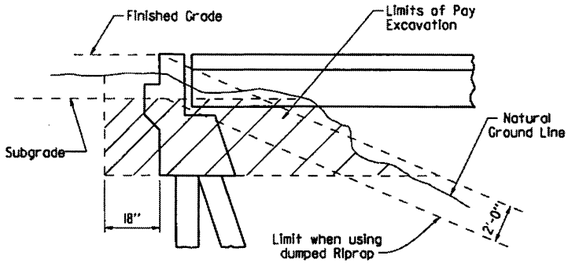
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				6	ARK.			
				JOB NO.				
				①	RIPRAP & EXCAV. 55001			



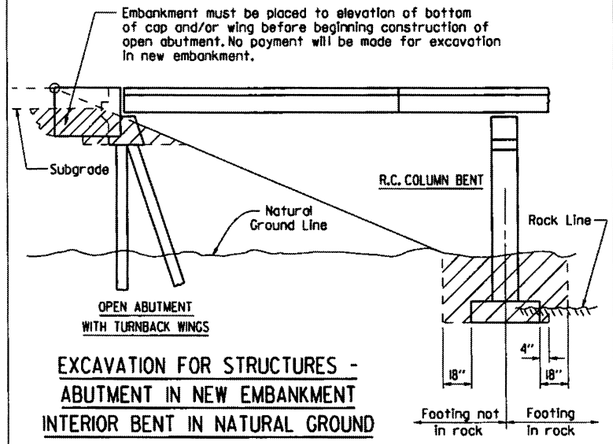
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



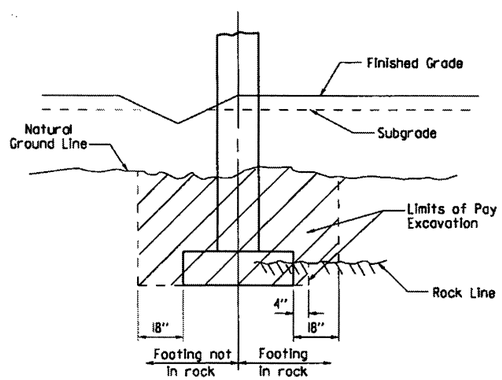
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



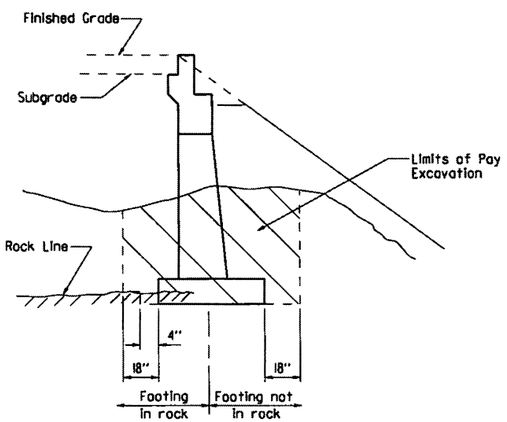
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



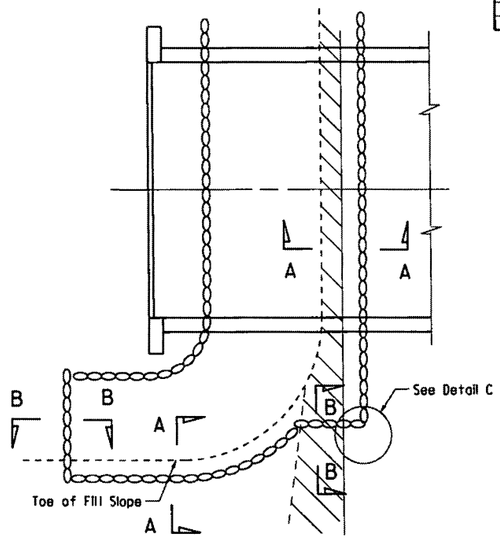
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



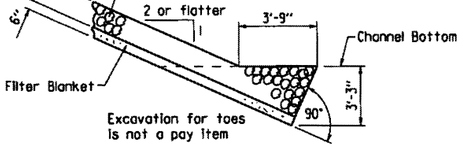
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

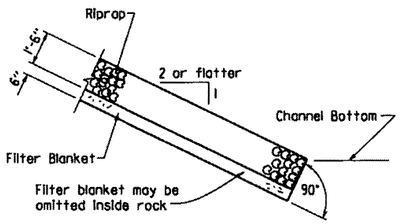


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



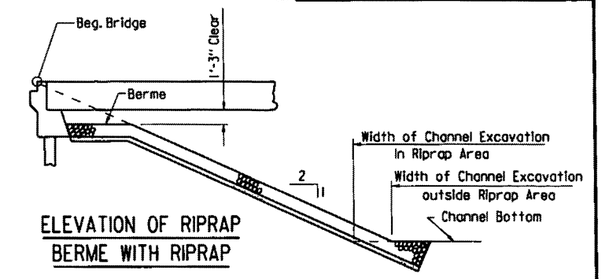
SECTION A-A

(Toe Excavation in Rock)

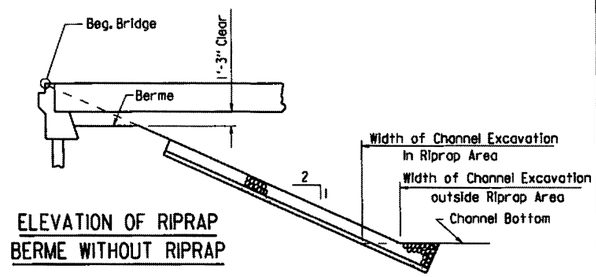
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

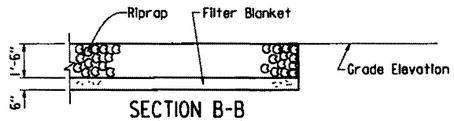
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



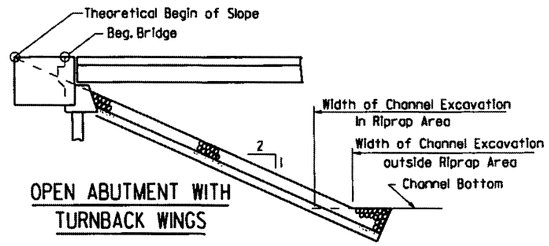
ELEVATION OF RIPRAP BERME WITH RIPRAP



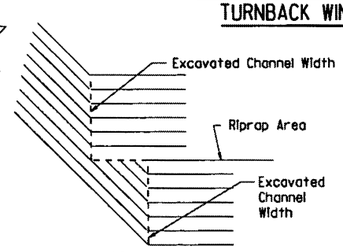
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

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

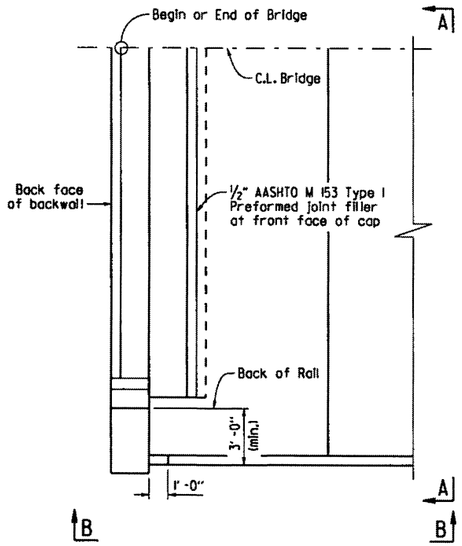
DESIGNED BY: STD. DATE:

DRAWING NO. 55001

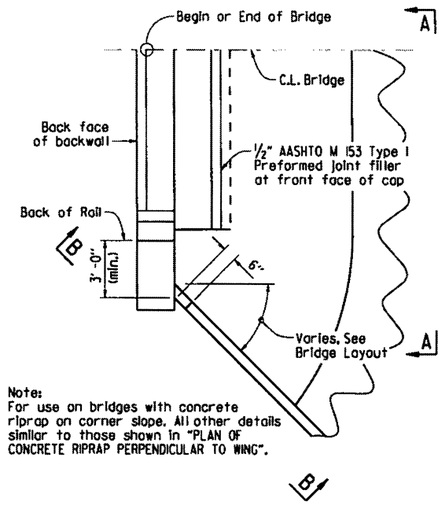
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				6	ARK.			
				JOB NO.				

① CONCRETE RIPRAP 55002

Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



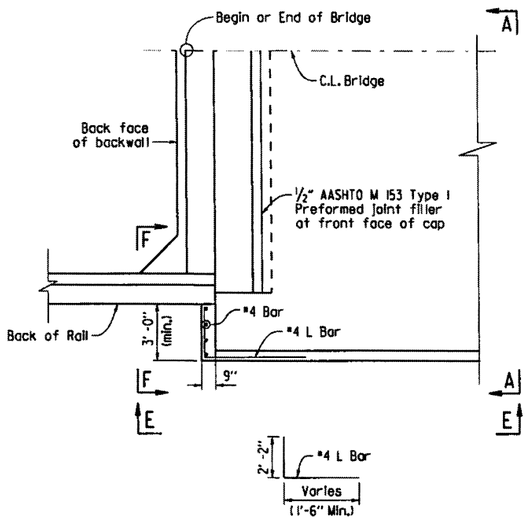
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO WING
¼" = 1'-0"



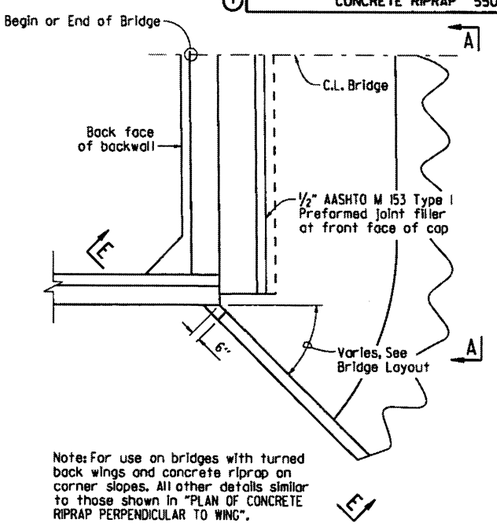
Note:
For use on bridges with concrete riprap on corner slope. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP
AT ANGLE TO WING
¼" = 1'-0"

Note:
For use on bridges with turned back wings. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".



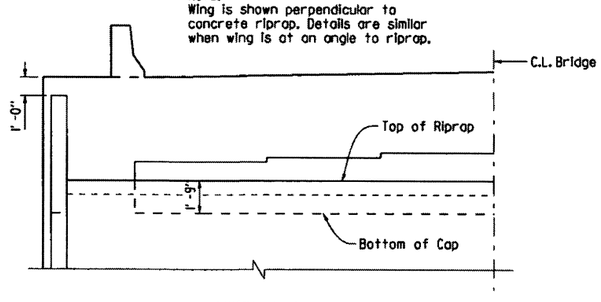
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO TURNED BACK WING
¼" = 1'-0"



Note: For use on bridges with turned back wings and concrete riprap on corner slopes. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

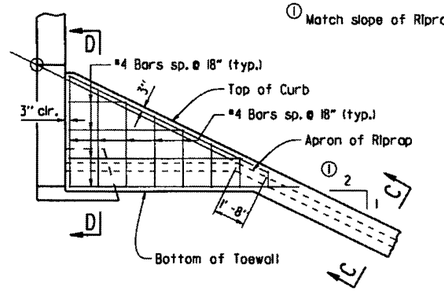
PLAN OF CONCRETE RIPRAP
AT ANGLE FROM TURNED BACK WING
¼" = 1'-0"

Note:
Wing is shown perpendicular to concrete riprap. Details are similar when wing is at an angle to riprap.

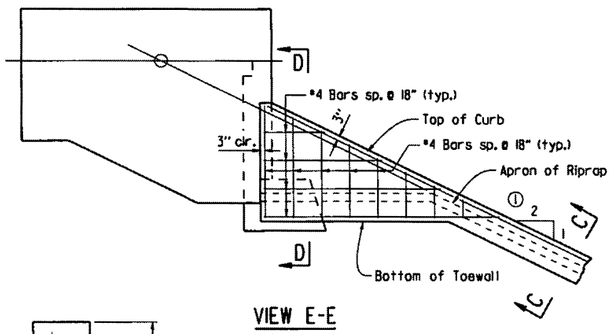


VIEW A-A
¼" = 1'-0"

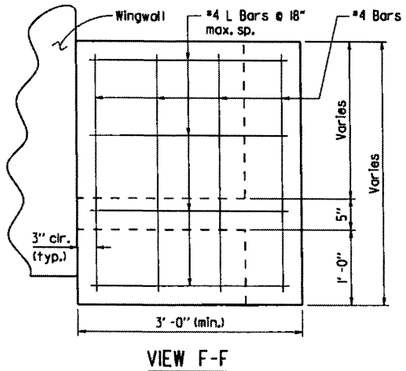
① Match slope of Riprap Apron.



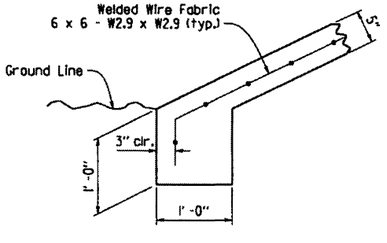
VIEW B-B
¼" = 1'-0"



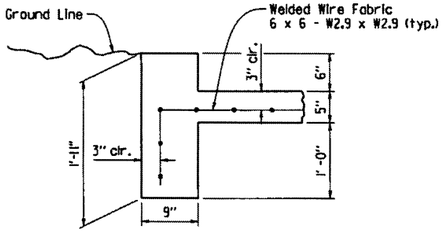
VIEW E-E
¼" = 1'-0"



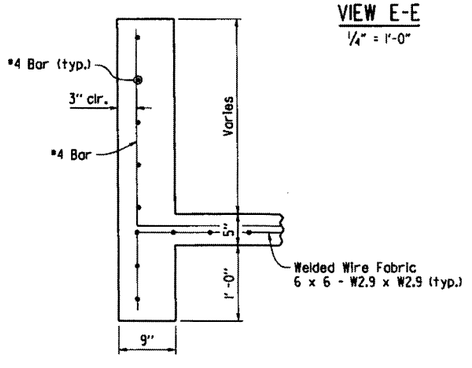
VIEW F-F
1" = 1'-0"



TOE OF CONCRETE RIPRAP
1" = 1'-0"



SECTION C-C
1" = 1'-0"



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

GENERAL NOTES

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Welded wire fabric shall conform to AASHTO M55 or M221.

STANDARD DETAILS FOR CONCRETE RIPRAP

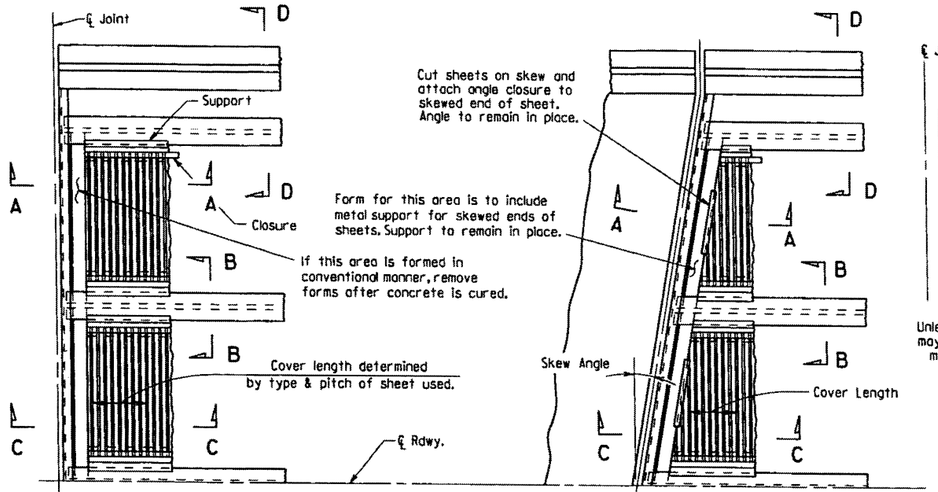
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY:	ACP	DATE:	2/27/2014	FILENAME:	b55002.dgn
CHECKED BY:	BEF	DATE:	2/27/2014	SCALE:	AS SHOWN
DESIGNED BY:	Std.	DATE:	---		

DRAWING NO. 55002

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				6	ARK.			
				JOB NO.				
				BRIDGE DECK FORMS		55005		

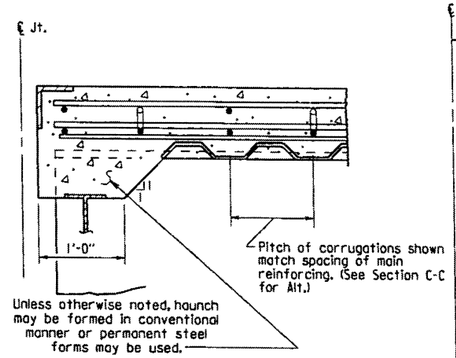


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

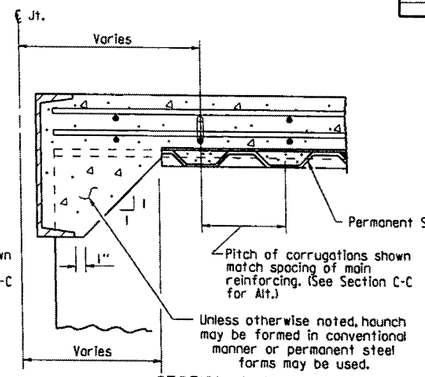
3/8" = 1'-0"



SECTION A-A

N.T.S.

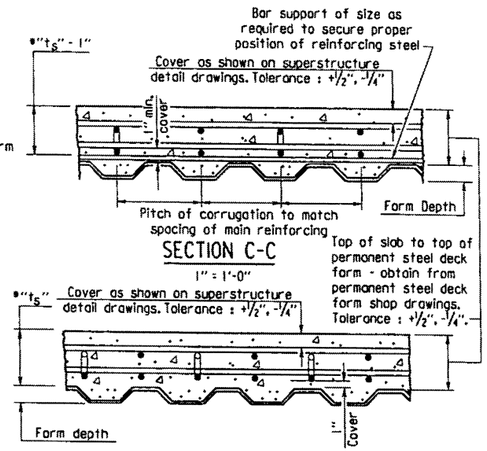
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



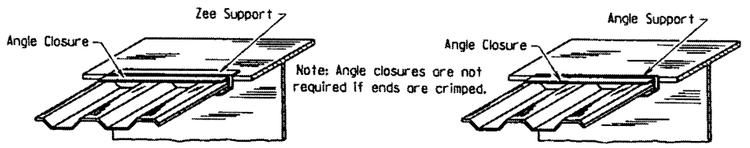
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

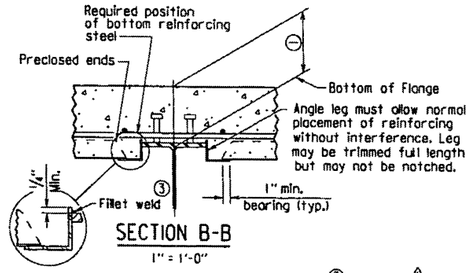
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.

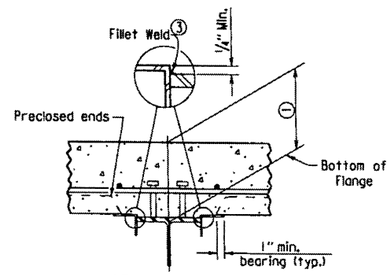


SECTION B-B

1" = 1'-0"

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

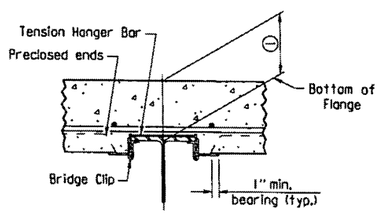
③ ⚠ Minimum weld: 1/8" x 1" @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

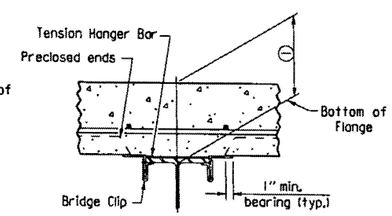
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

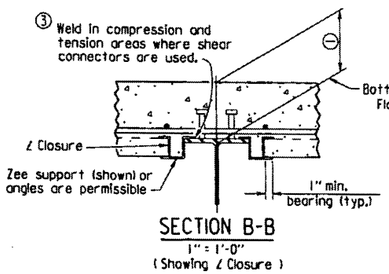
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

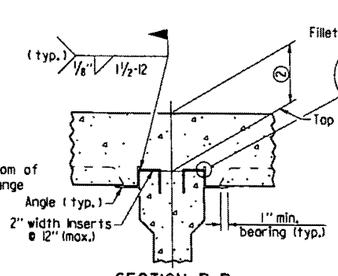
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

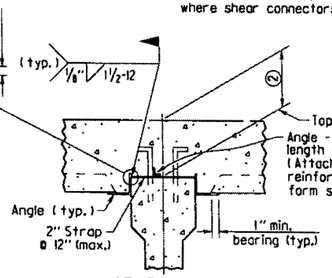


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

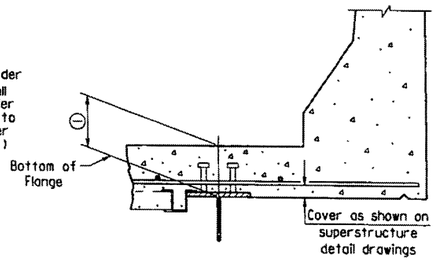


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_S + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

⚠ Revised weld dimension by KWY, Ck'd. by BEF, 3/24/16.

STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH	DATE: 2-27-2014	FILENAME: b55005.dgn
CHECKED BY: BEF	DATE: 2-27-2014	SCALE: NONE
DESIGNED BY: STD.	DATE: —	

DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	GENERAL NOTES		55006	

GENERAL NOTES

These GENERAL NOTES are applicable unless otherwise shown in the Plan Details, Special Provisions, or Supplemental Specifications.

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

DESIGN SPECIFICATIONS: See Bridge Layout(s).

SUPERSTRUCTURE NOTES:

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c = 4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M 31 or M 322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M 270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M 270, Gr. 50)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. 50W)	Fy = 50,000 psi
Structural Steel (AASHTO M 270, Gr. HPS70W)	Fy = 70,000 psi

See Plan Details for Grade(s) of Structural Steel required.

CONCRETE:

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted.

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

Use of a longitudinal screed is not permitted on any span of a bridge deck with horizontal curvature.

The concrete deck (roadway surface) shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Sidewalks shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6 Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam or girder. When permitted, the use of a longitudinal strike-off will require that a vertical camber adjustment be made in the strike-off to account for the future dead load deflection due to any railings, median barrier, and sidewalks.

REINFORCING STEEL:

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A, with mill test reports and shall be epoxy coated. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL (COMMON TO W-BEAMS AND PLATE GIRDERS):

Structural steel shall be AASHTO M 270 with grade and payment as specified in the plans. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Grade 36 and Grade 50 steel shall be painted unless otherwise noted and all exposed surfaces shall be cleaned in accordance with Subsection 807.84. Structural steel completely embedded in concrete may be AASHTO M 270, Gr. 36, Gr. 50 or Gr. 50W unless otherwise noted.

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

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

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Unless otherwise noted, field connections shall be bolted with ¾" ø high-strength bolts using 15/16" ø open holes. Holes for ¾" ø high-strength bolts may be 15/16" ø if a washer is supplied for use under both the nut and head of the bolt. The use of oversized holes will not be allowed on main members unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam or girder webs and on the bottom of the beam or girder flanges.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the Manufacturer.

When painting is required, all structural steel except galvanized steel and steel completely encased in concrete shall be painted in accordance with Subsection 807.75. The color of paint shall be as specified in the plans.

STRUCTURAL STEEL (W-BEAMS):

All beams and field splice plates, and all diaphragms and connection plates attached to horizontally curved beams are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M 270, Gr. ___)".

All beams in continuous units and simple spans with field splices shall be blocked in their true position in the shop in groups as specified in Subsection 807.54(b)(2) with the webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All beams in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

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

All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Bent plate diaphragms for horizontally curved beams shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight beams may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved beams.

Unless otherwise noted, diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

STRUCTURAL STEEL (PLATE GIRDERS):

All references to cross-frames shall include "X" or "K" types.

All girder web and flange plates, all field splice plates, and all diaphragms, cross-frames and connection plates attached to horizontally curved girders are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

All girders in continuous units and simple spans with field splices shall be assembled in the shop as specified in Subsection 807.54(b)(2) and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram.

All girders in simple spans without field splices shall be blocked in their true position with webs horizontal. The camber, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records.

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

Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment will be made for shop welded splices.

All girder dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Q.C. testing shall be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. ___)".

Bent plate diaphragms for horizontally curved girders shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses. Bent plate diaphragms for straight girders may be cut and fabricated in accordance with Subsection 807.35 or as required for horizontally curved girders.

Unless otherwise noted, cross-frames and diaphragms shall be installed as girders are erected. All bolts in cross-frames, diaphragms, and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck.

SUBSTRUCTURE NOTES:

CONCRETE:

Unless otherwise noted, concrete in caps, columns and footings (except seal footings) shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. Seal Concrete for footings shall have a minimum 28 day compressive strength f'c = 2,100 psi.

Concrete in drilled shafts shall be Class "S" as modified by Job SP "Drilled Shaft Foundations".

All exposed corners shall be chamfered ¾" unless otherwise noted.

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

Structural steel in end bents shall be AASHTO M 270 with grade and payment as specified in the plans.

FOR ADDITIONAL INFORMATION AND NOTES, SEE LAYOUT(S) AND PLAN DETAILS.

STANDARD GENERAL NOTES
FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

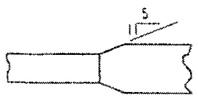
DRAWN BY: A.M.S. DATE: 9-2-2015 FILENAME: b55006.dgn
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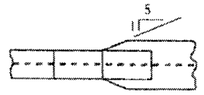
DRAWING NO. 55006

PRINT DATE: 9/21/2015

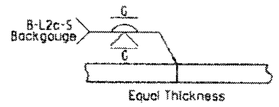
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

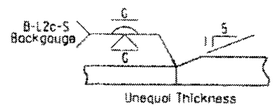
① STEEL BRIDGE STRUCTURES 55007



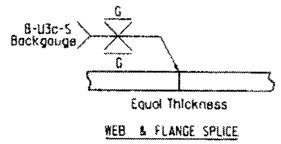


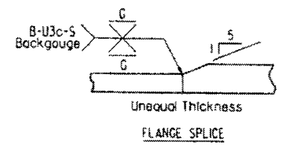
FLANGE SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS





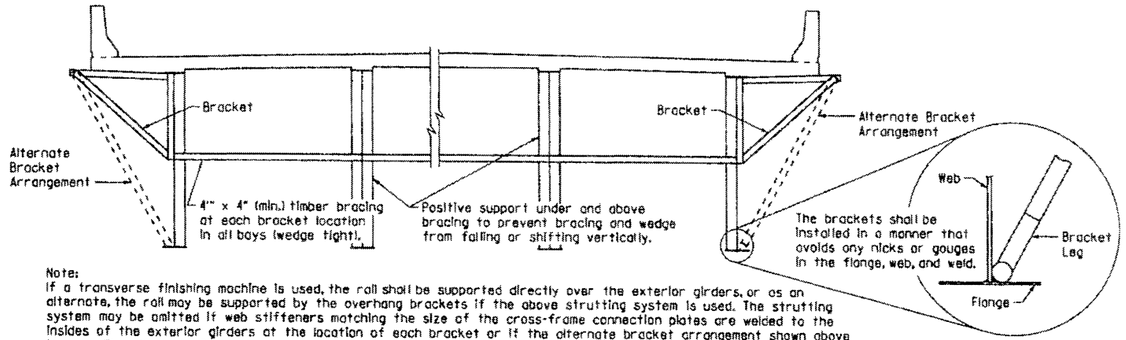
(Use when Base Metal Thickness is Equal to or Less than 2")





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

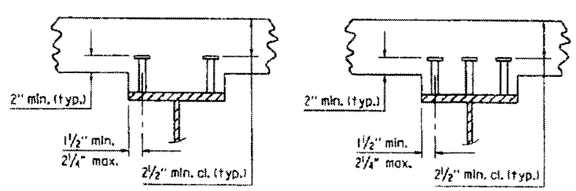
DETAILS OF WELDED SPLICES FOR PLATE GIRDERS



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 (___)".

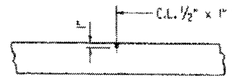
SCREED RAIL SUPPORT FOR PLATE GIRDERS

(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.

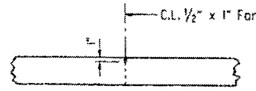
SHEAR CONNECTOR DETAIL



Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

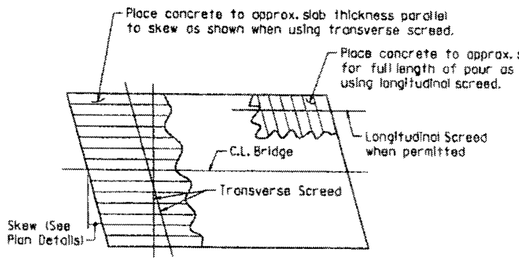
ADDITIONAL NOTES IF SIDEWALKS OR RAISED MEDIANS ARE REQUIRED:
Slab Joints shall be installed before the sidewalk or raised median is poured. After installation of the joint in the sidewalk or raised median and prior to pouring the parapet rail, the joint sealer shall be placed extending across the deck slab from gutterline to gutterline and acrosss the top of the sidwalk or raised median to the edge of the slab. No joint sealer shall be placed on the deck slab under the sidewalk or raised median.

TRANSVERSE SLAB JOINT DETAIL



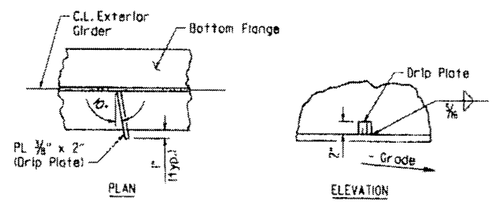
Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Seal color shall be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT



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

CONCRETE PLACEMENT PROCEDURE FOR BRIDGES WITH SKEW



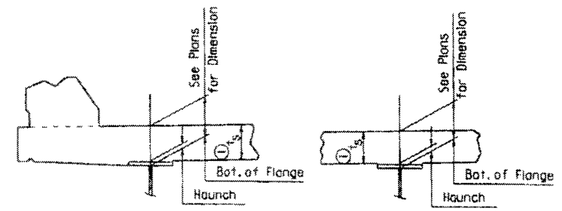
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

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

BOTTOM FLANGE DRIP PLATE

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

t_s = slab thickness. See "Typical Roadway Section" in the plans.

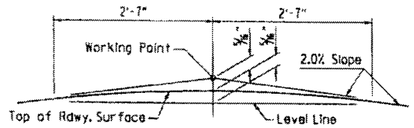


① Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1¾" unless otherwise noted in the plans. No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE



NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

BRIDGES IN NORMAL CROWN

WELD TABLE

Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	⅜"	

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.

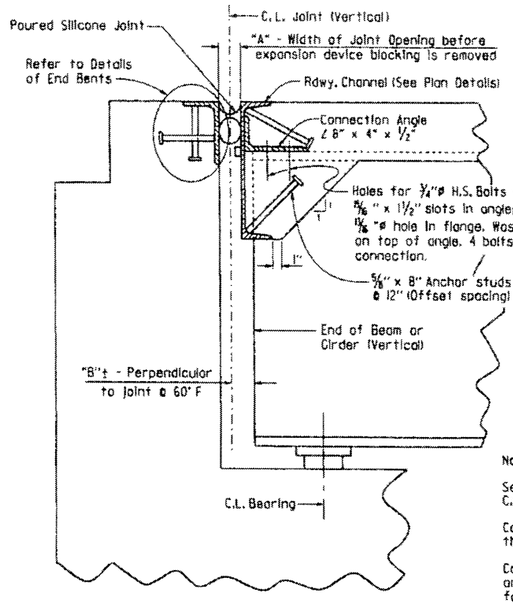
STANDARD DETAILS FOR STEEL BRIDGE STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

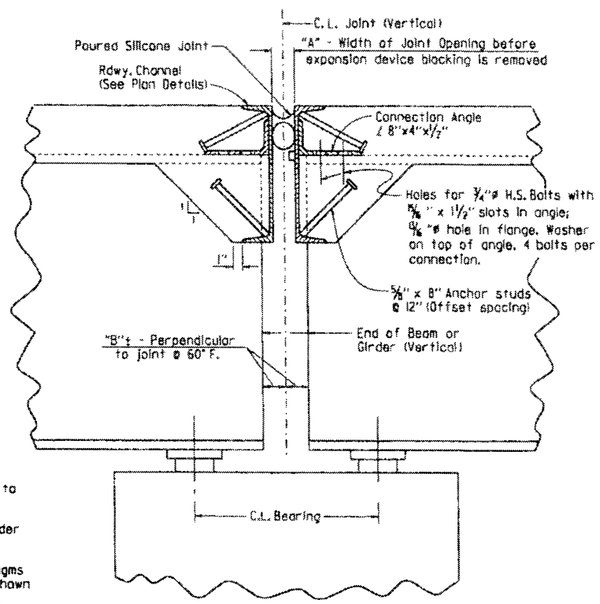
DRAWN BY: JYP DATE: 2/11/2016
CHECKED BY: AWS DATE: 2/11/2016
DESIGNED BY: STD. DATE: —
FILENAME: b55007.dgn
SCALE: No Scale

DRAWING NO. 55007

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				
				①	POURED SILICONE JOINT			55008



SECTION THRU JOINT AT END BENT



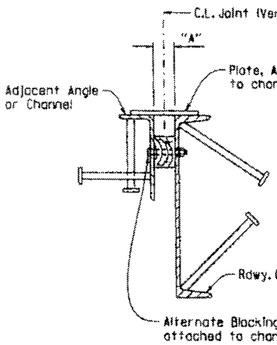
SECTION THRU JOINT AT INTERMEDIATE BENT

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.



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

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

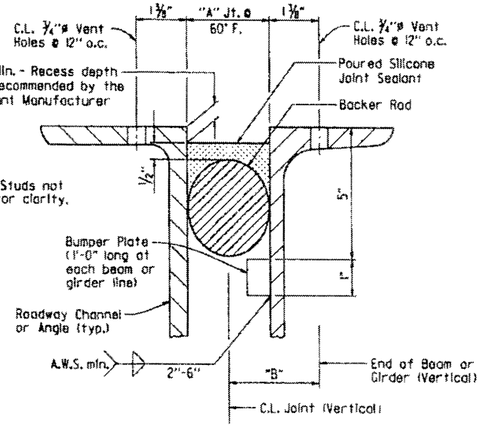
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams or girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior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

2) The backwall shall be poured to the optional construction joint after beams or girders are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

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

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



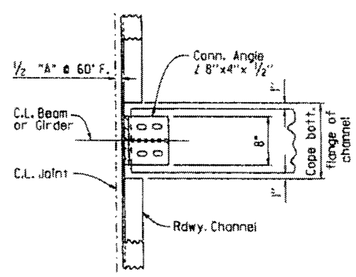
DETAIL OF POURED SILICONE JOINT

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

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

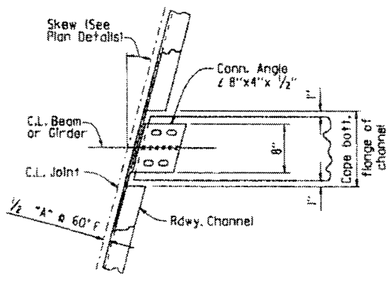
The Contractor shall verify separation of the backer rod from the joint material after the joint material has set.

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



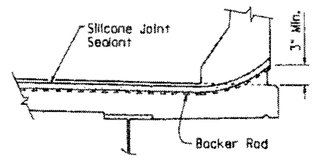
CHANNEL CONNECTION DETAIL

BENTS WITHOUT SKEW

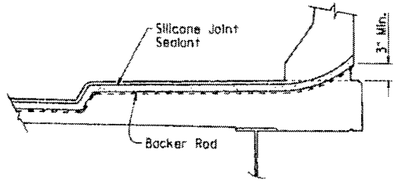


CHANNEL CONNECTION DETAIL

BENTS WITH SKEW



JOINT SEAL PLACEMENT AT RAIL



JOINT SEAL PLACEMENT AT SIDEWALK

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

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

STANDARD DETAILS FOR POURED SILICONE JOINTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.C.P. DATE: 2/11/2016 FILENAME: b55008.dgn

CHECKED BY: A.M.S. DATE: 2/11/2016 SCALE: No Scale

DESIGNED BY: STD. DATE: —

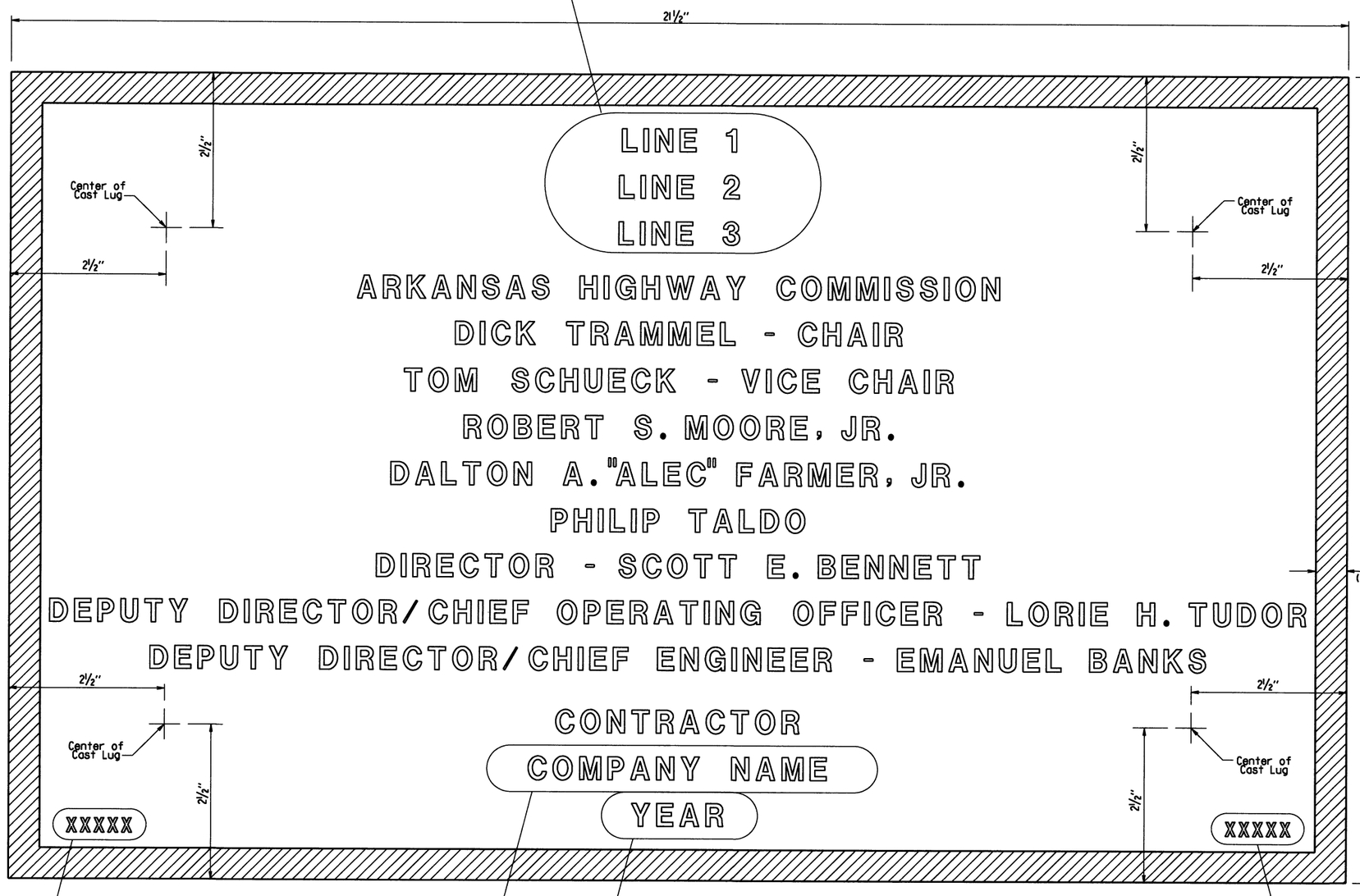
DRAWING NO. 55008

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.			
1-14-15				JOB NO.				
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 1/8" raised letters and numerals 3/8" high.

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



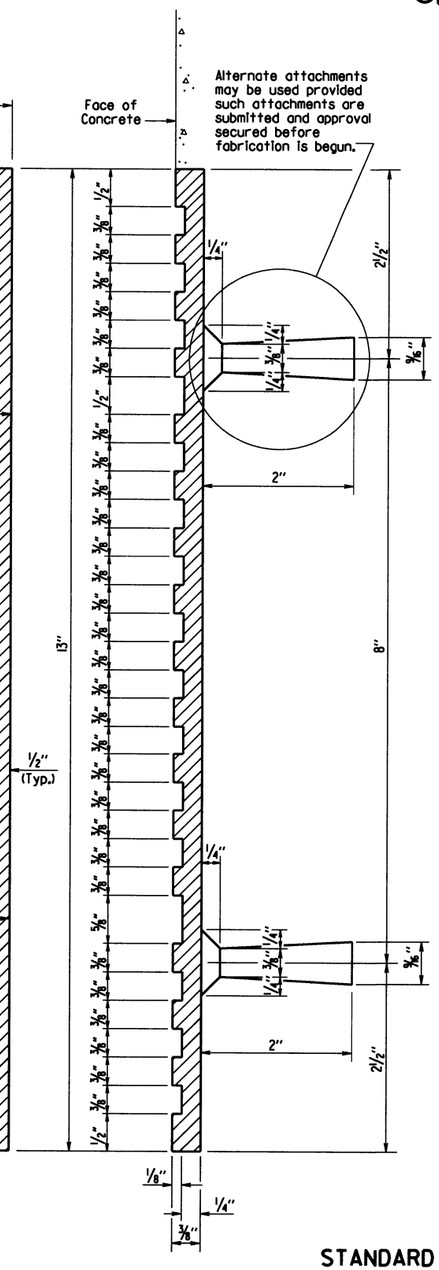
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

Place the Year in which Contract was awarded here using 1/8" 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



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 7/8" to 9/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

3 Added New Commissioner
1-17-17 KDH Checked By: CRE

2 Revised Chair and Vice Chair
Added New Commissioner
1-14-15 KDH Checked By: CRE

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

STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE

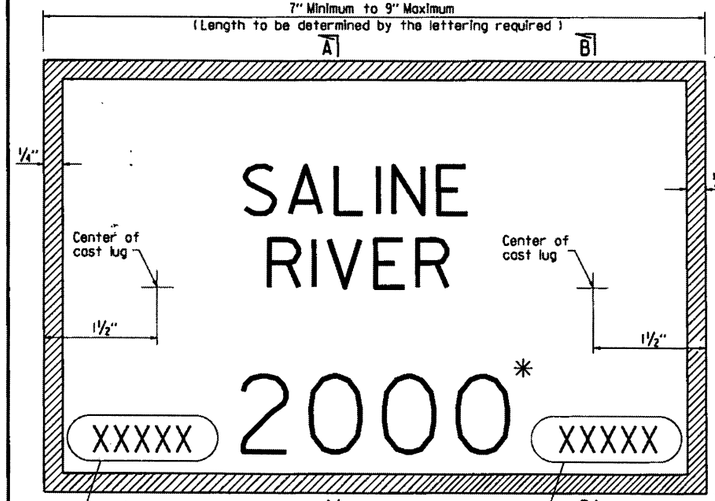
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

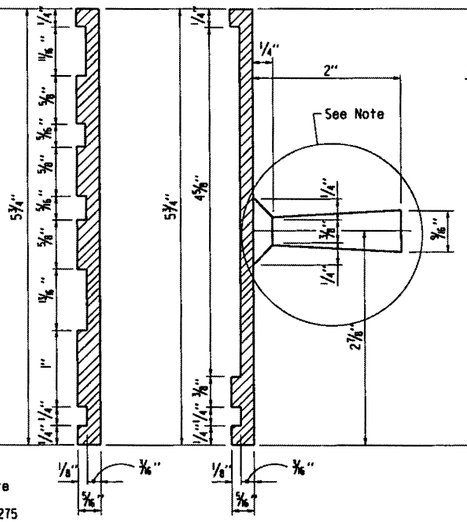
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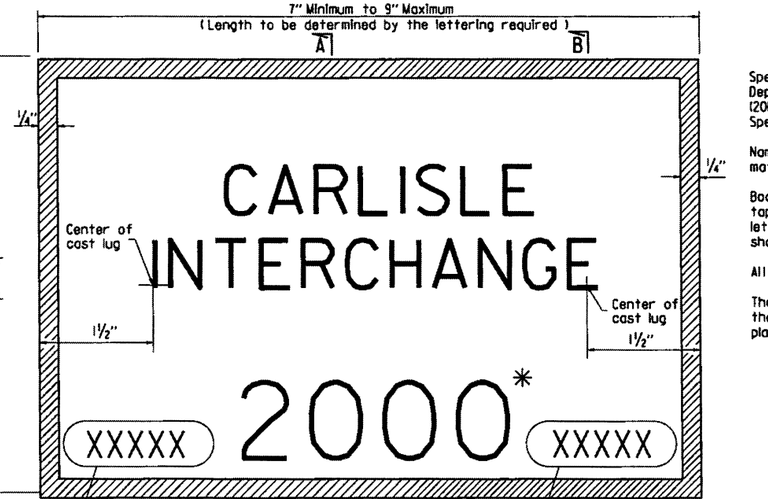
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.				

① TYPE C NAME PLATE 55011



TYPICAL BRIDGE NAME PLATE-STYLE 1 - FULL SIZE
STREAM CROSSINGS





TYPICAL BRIDGE NAME PLATE-STYLE 3 - FULL SIZE
GRADE SEPARATION STRUCTURES

GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

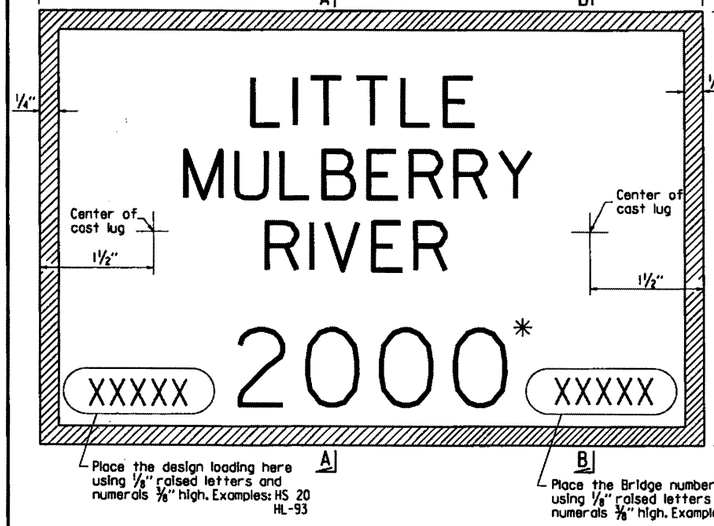
Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be ⅜" thick and shall include two tapering cone lugs ⅞" to ⅝"x 2" long. The border and all lettering shall be raised ⅛" above the face of plate and shall be polished.

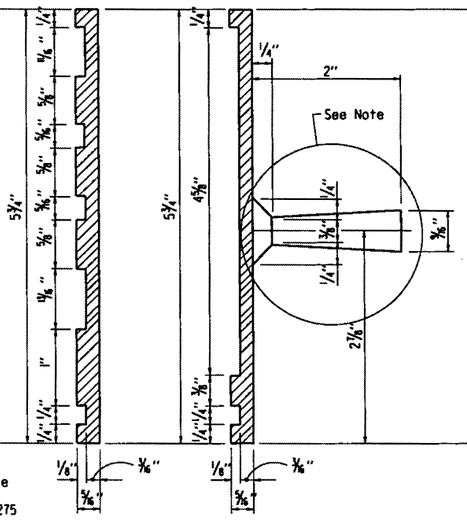
All lettering shall be plain gothic, square cut and not tapered.

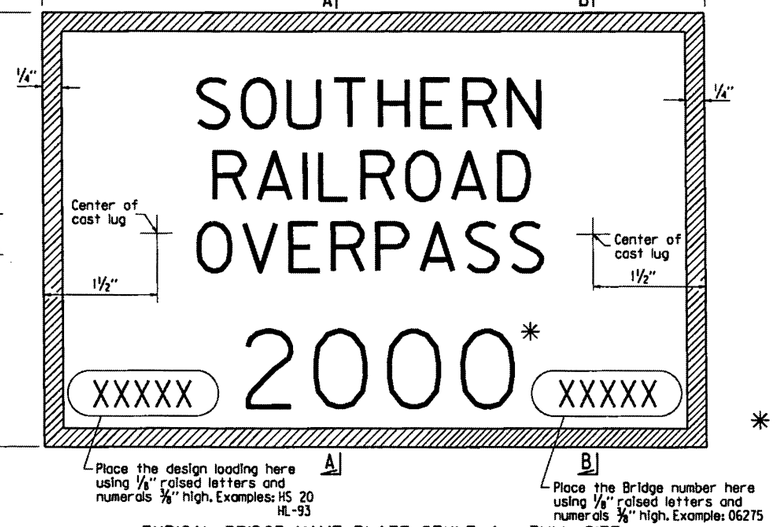
The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

Note: Alternate attachments may be used provided such attachments are submitted and approval secured before fabrication is begun.



TYPICAL BRIDGE NAME PLATE-STYLE 2 - FULL SIZE
STREAM CROSSINGS





TYPICAL BRIDGE NAME PLATE-STYLE 4 - FULL SIZE
GRADE SEPARATION STRUCTURES

* Year in which contract is awarded.

STANDARD DETAILS FOR TYPE C BRIDGE NAME PLATES

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55011.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55011

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3/24/16				8	ARK.			
				JOB NO.				
				①		STEEL H-PILES		55020

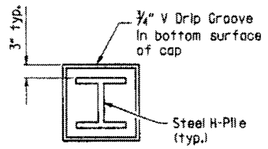
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

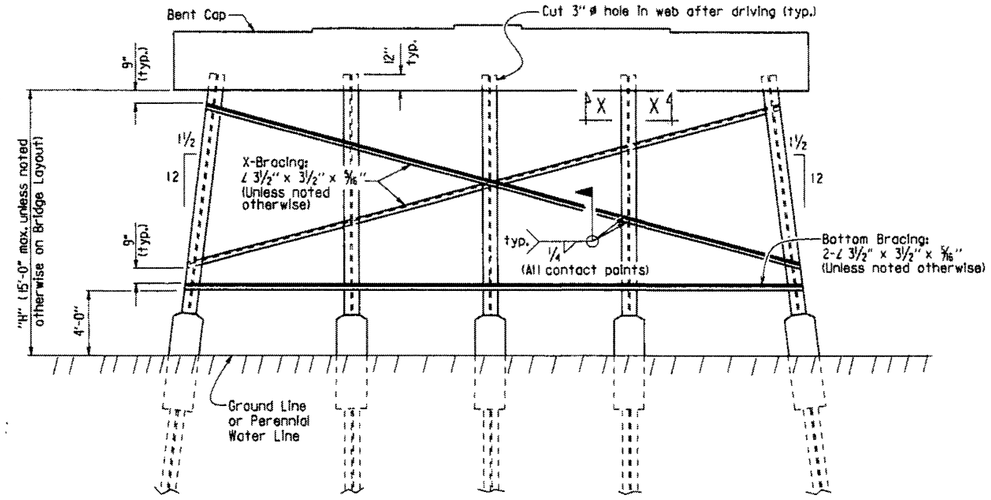
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



Notes:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

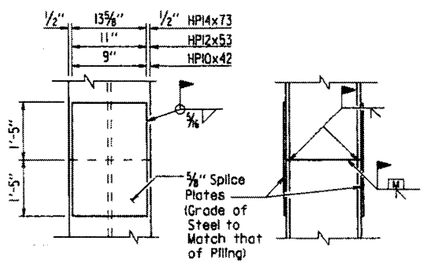
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)



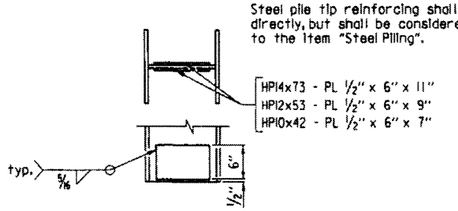
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

⚠ H-pile splicers manufactured by Associated Pile and Fitting Corporation, LB Foster Piling, Skyline Steel or equivalent may be used in lieu of the "Typical Splice Details" shown. H-pile splicers shall match the same grade of steel specified for the piling and shall be welded to the pile with a ⅝" fillet weld around the entire perimeter of the splice. Flanges shall be welded with a complete penetration groove weld complying with AASHTO/AWS Joint Designation B-U4a or B-U4b. All welding shall conform to Subsection 807.26 of the AHTD Standard Specifcations for Highway Construction (2014 Edition).

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

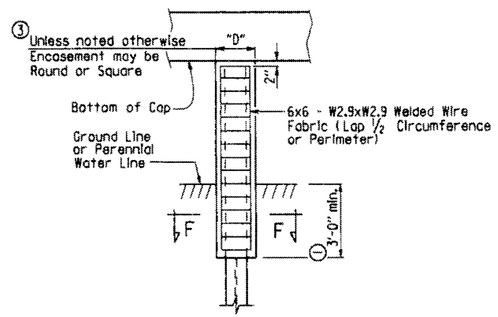
⚠ See Bridge Layout for additional notes, any pile encasement restrictions and required location of pile encasements.

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

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

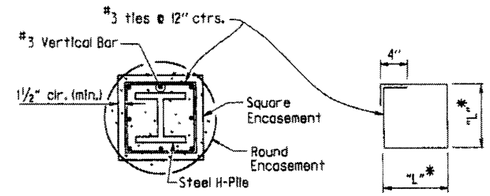
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

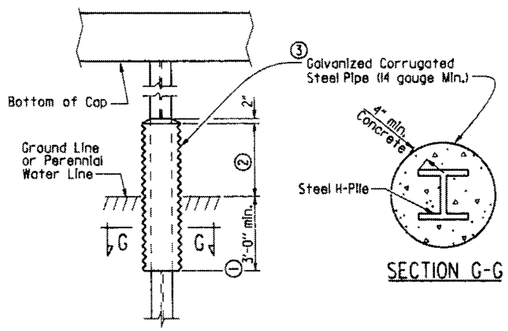


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HP10x42	1'-7"	2'-0"	1'-4"
HP12x53	1'-8"	2'-2"	1'-5"
HP14x73	1'-11"	2'-6"	1'-8"



SECTION G-G

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

⚠ Added alternate method of splicing H-piles and revised pile encasement note. 3/24/2016 AMS

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

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

BRIDGE ENGINEER

STANDARD DETAILS FOR STEEL H-PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

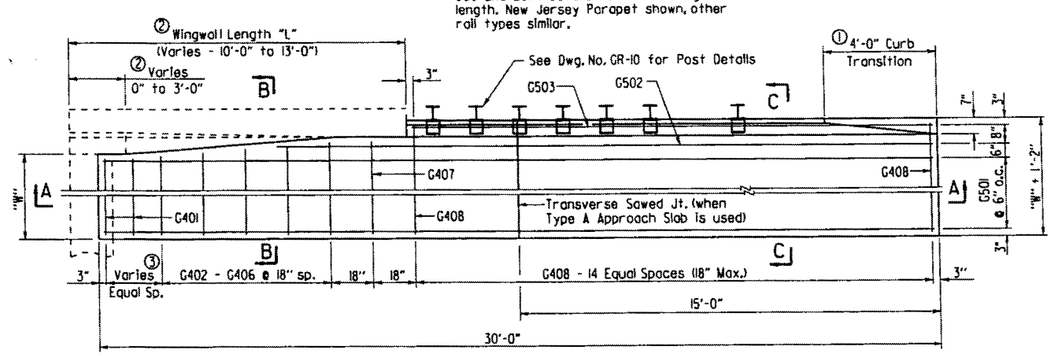
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CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

DRAWING NO. 55020

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9/2/15				6	ARK.			
				JOB NO.				

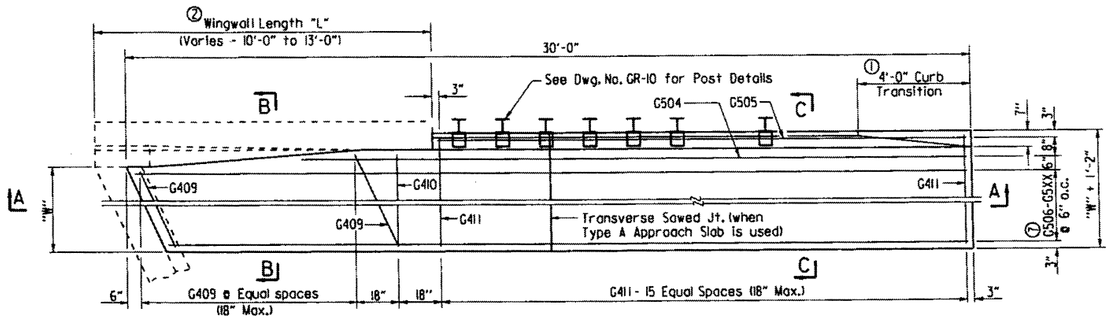
① TYPE A GUTTERS 55030A

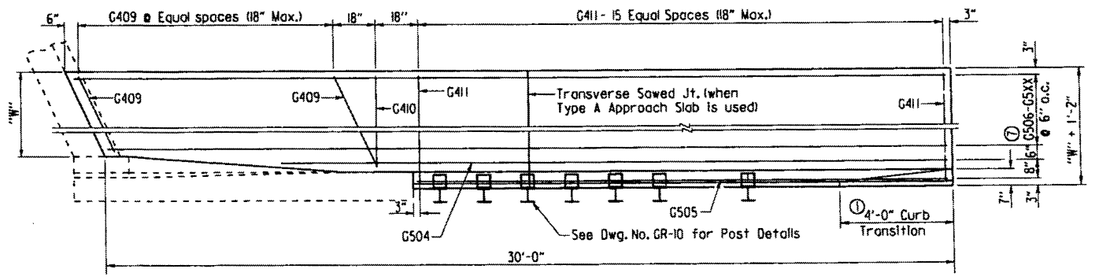
② See End Bent Details for actual wingwall length. New Jersey Parapet shown, other rail types similar.



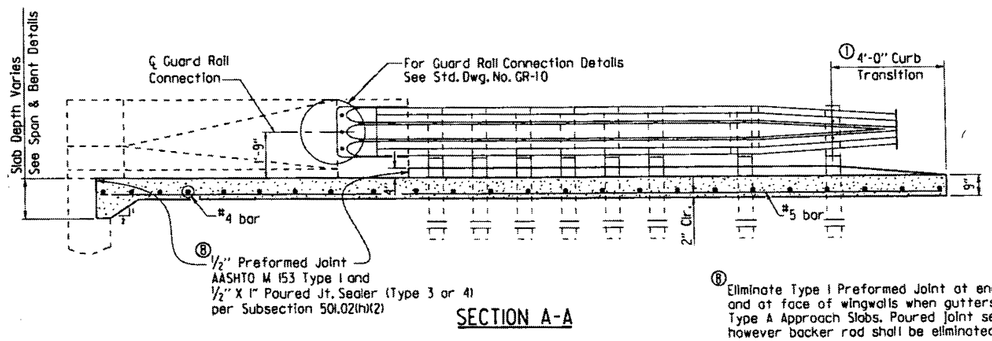
③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE





PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE

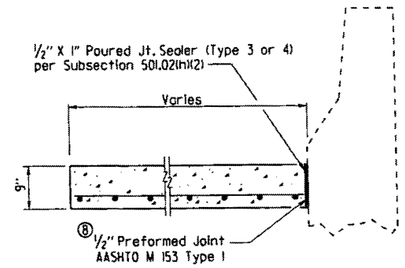


SECTION A-A

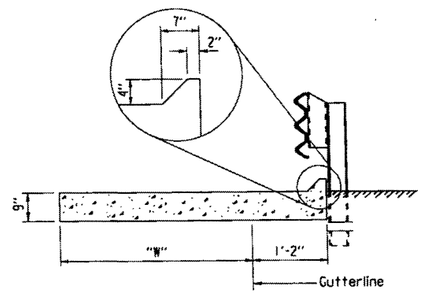
⑧ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type A Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

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

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



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

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.

BAR LIST FOR ONE TYPE A GUTTER

	Mark	⚠ No. Req'd. for Width "W" 2'-0"	3'-0"	4'-0"	6'-0"	8'-0"	Length
Square Bridge	G401	④	④	④	④	④	"W"- 4"
	G402-G406	1 each	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	1	"W"+3"
	G408	15	15	15	15	15	"W"+ 10"
	G501	4	6	8	12	16	29'-8"
	G502	1	1	1	1	1	(35'-5") - "L"
	G503	1	1	1	1	1	30'-8"-"L"
Skewed Bridge	G409	⑥	⑥	⑥	⑥	⑥	⑤
	G410	1	1	1	1	1	"W"+3"
	G411	16	16	16	16	16	"W"+ 10"
	G504	1	1	1	1	1	⑤
	G505	1	1	1	1	1	⑤
	G506 - G5XX ⑦	1 each	1 each	1 each	1 each	1 each	⑤

④ 0 for "L" = 10'
1 for "L" = 11'
2 for "L" = 12'
2 for "L" = 13'

⑦ G509 for "W" = 2' ⚠
G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ No. Req'd. varies with Skew and Wingwall length.

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

⚠	"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
	2	210	2.55
	3	285	3.40
	4	360	4.25
	6	515	5.90
	8	665	7.55

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

GENERAL NOTES

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

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

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

⚠ Revised to add "W" = 2'-0"; By LJB
Checked By: KWY 9/2/15

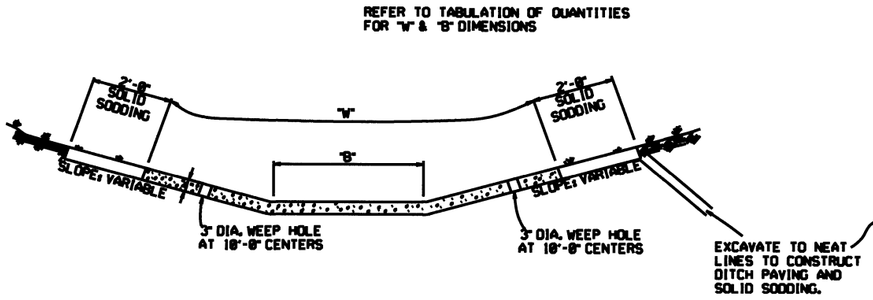
STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION

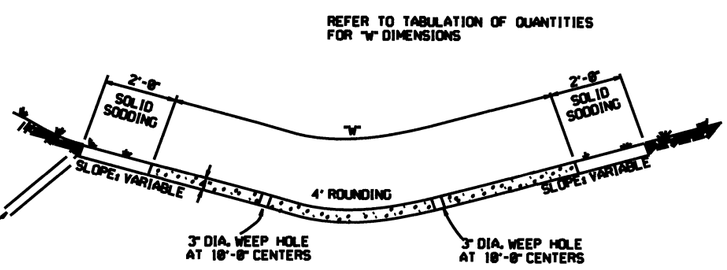
LITTLE ROCK, ARK.

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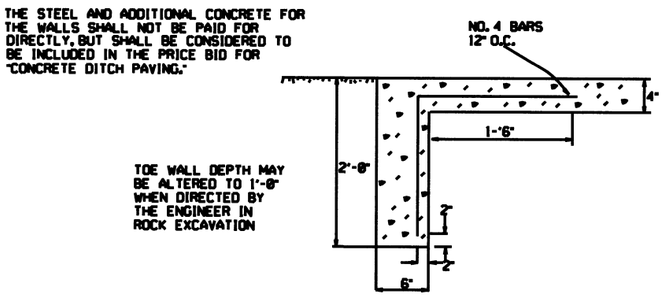
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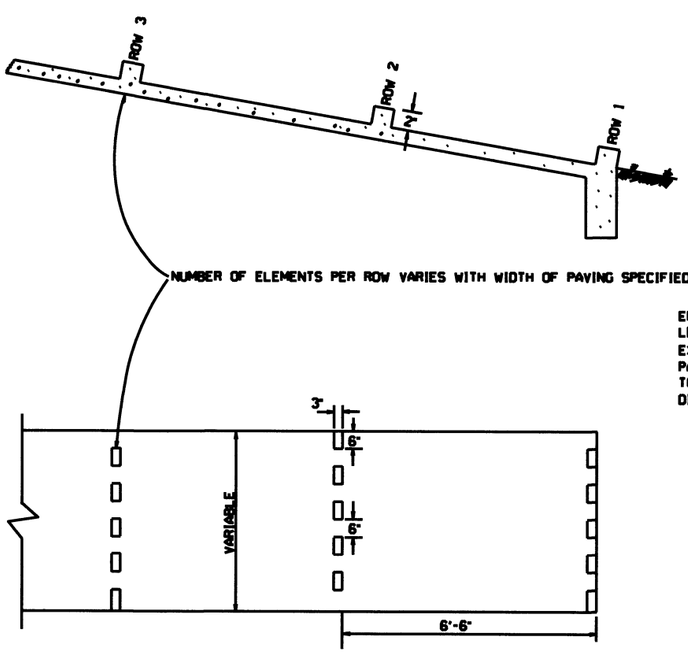
TYPE A



TYPE B



TOE WALL DETAIL FOR CONCRETE DITCH PAVING



ENERGY DISSIPATORS
(NO SCALE)

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

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

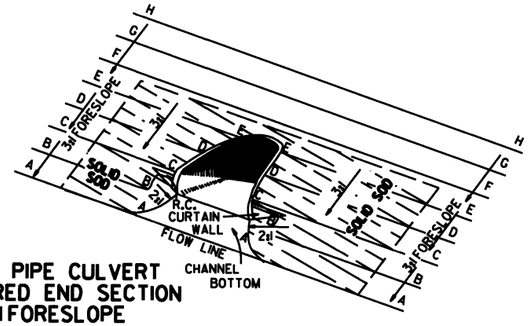
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
10-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
10-30-89	FLOW DEPTH MIN. RUNS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	661-7-15-88
4-1-87	REVISED ENERGY DISSIPATOR	671-4-1-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	542-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	499-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
10-1-84	EXCAVATION DETAILS ADDED TYPES A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

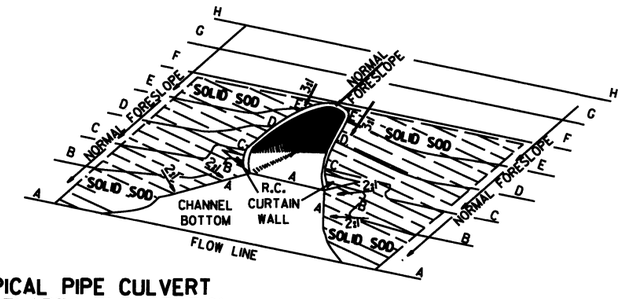
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

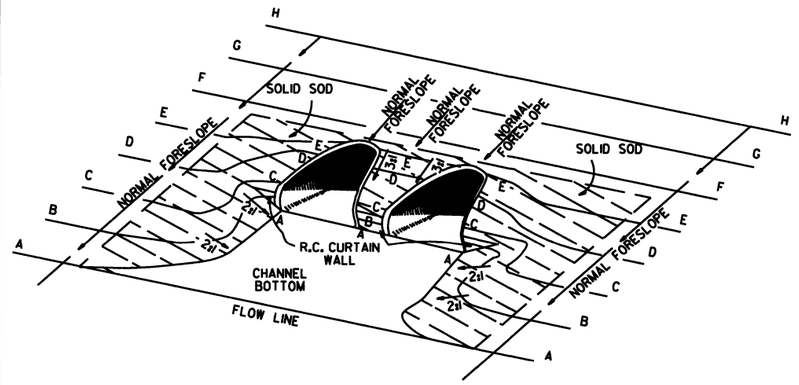
STANDARD DRAWING CDP-1



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



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

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

REINFORCING STEEL SCHEDULE

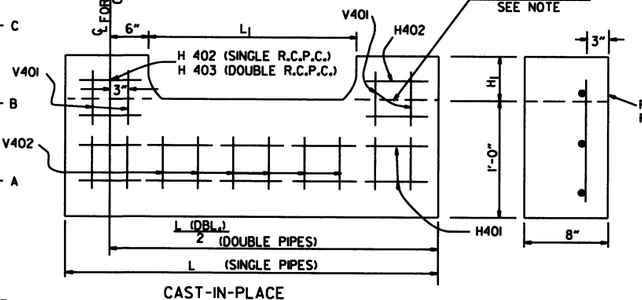
PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

PLAN VIEW
3:1 FORESLOPES

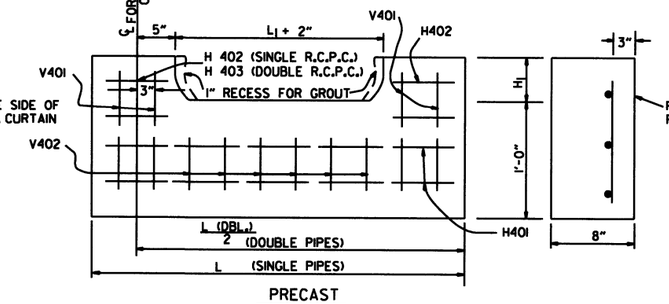
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES



CAST-IN-PLACE

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



PRECAST

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

R.C. CURTAIN WALL DETAILS

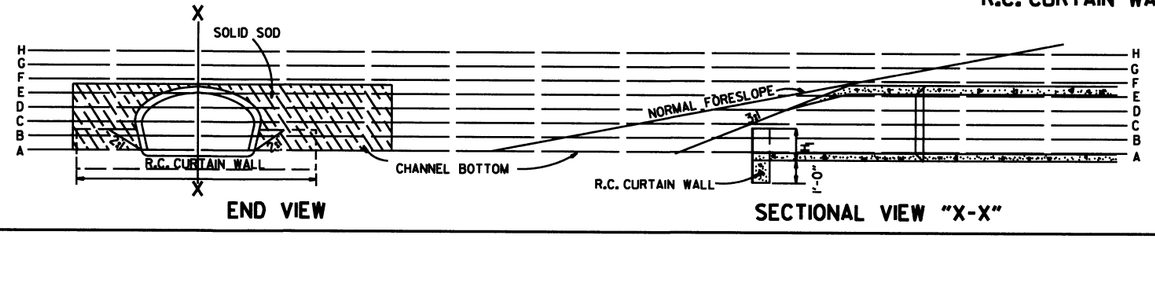
SOLID SODDING

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

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	
10-12-95	CORRECTED SPELLING	
11- 3-94	ADDED GENERAL NOTE NO. 4	
8-15-91	REV. CURTAIN WALL QUANT STEEL SCH. & SOLID SOD QUANT.	
3-2-81	ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES	
5-15-80	ADDED PRECAST WALL & GENERAL NOTES	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

STANDARD DRAWING FES-1

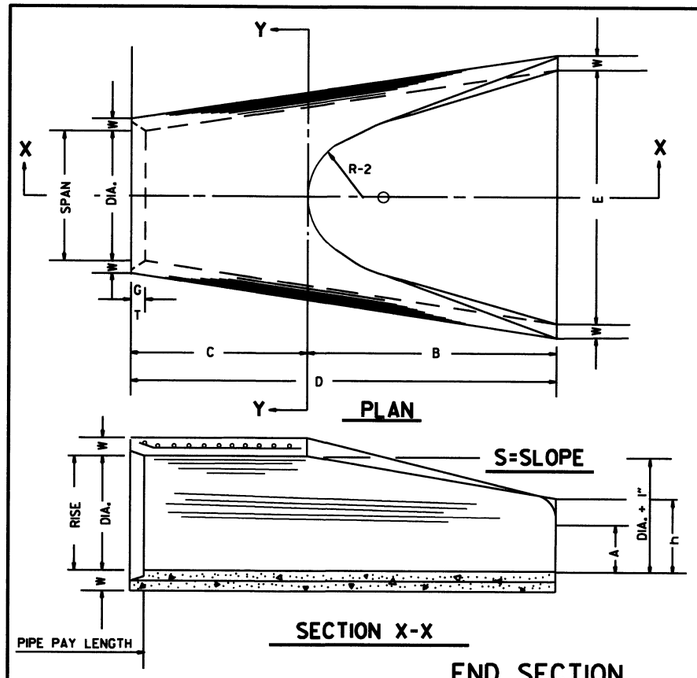
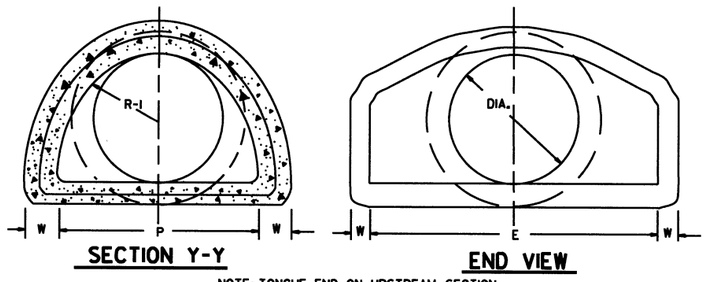


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3sl	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3sl	25"	33⅜"	16⅝"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3sl	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3sl	37"	47⅛"	24⅛"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3sl	43"	53½"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3sl	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3sl	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3sl	61"	72½"	36⅝"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3sl	73"	77⅝"	38⅝"	24"	5"	13250	4'-6"

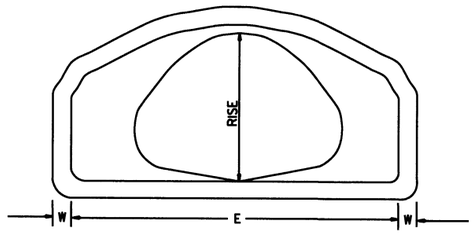


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

ARCH PIPE

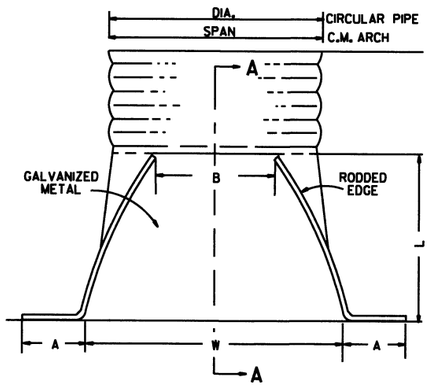
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½sl
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½sl
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½sl
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36⅛"	15"	2½"	2½sl
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47⅛"	20"	3"	2½sl
36	43¾	44	26⅞	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54⅛"	22"	3½"	2½sl
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½sl
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½sl
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72⅛"	24"	4¾"	2¼sl
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77⅝"	24"	5"	2¼sl

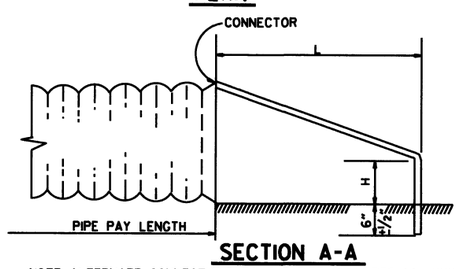
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

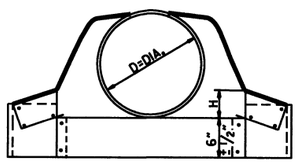


END VIEW
CONCRETE ARCH PIPE

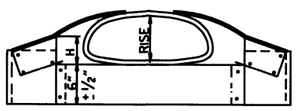
END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS







CIRCULAR PIPE



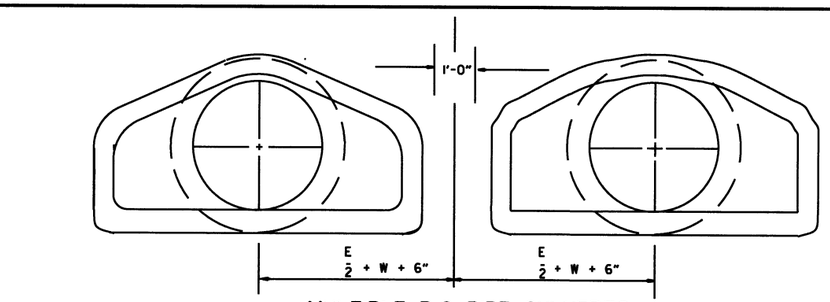
C.M. ARCH PIPE

CIRCULAR PIPE

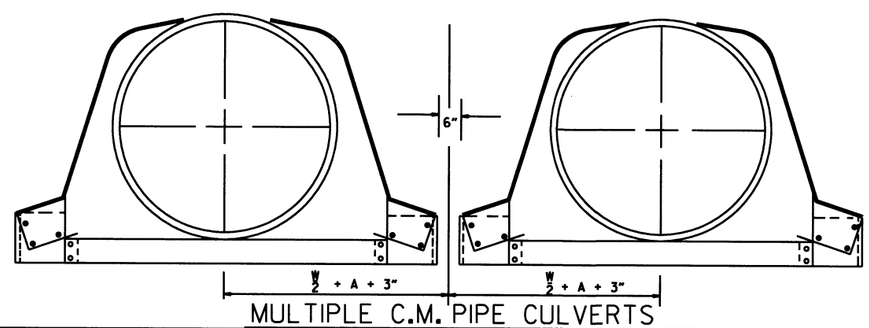
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½sl
15	16	7	8	6	26	30	2½sl
18	16	8	10	6	31	36	2½sl
21	16	9	12	6	36	42	2½sl
24	16	10	13	6	41	48	2½sl
30	14	12	16	8	51	60	2½sl
36	14	14	19	9	60	72	2½sl
42	12	16	22	11	69	84	2½sl
48	12	18	27	12	78	90	2½sl
54	12	18	30	12	84	102	2sl
60	12	18	33	12	87	114	1¾sl
66	12	18	36	12	87	120	1½sl
72	12	18	39	12	87	126	1 1/3sl

C.M. ARCH PIPE

EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½sl	16
18"	21	15	7	10	6	23	36	2½sl	16
21"	24	18	8	12	6	28	42	2½sl	16
24"	28	20	9	14	6	32	48	2½sl	16
30"	35	24	10	16	6	39	60	2½sl	14
36"	42	29	12	18	8	46	75	2½sl	14
42"	49	33	13	21	9	53	85	2½sl	12
48"	57	38	18	26	12	63	90	2½sl	12
54"	64	43	18	30	12	70	102	2¼sl	12
60"	71	47	18	33	12	77	114	2¼sl	12



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

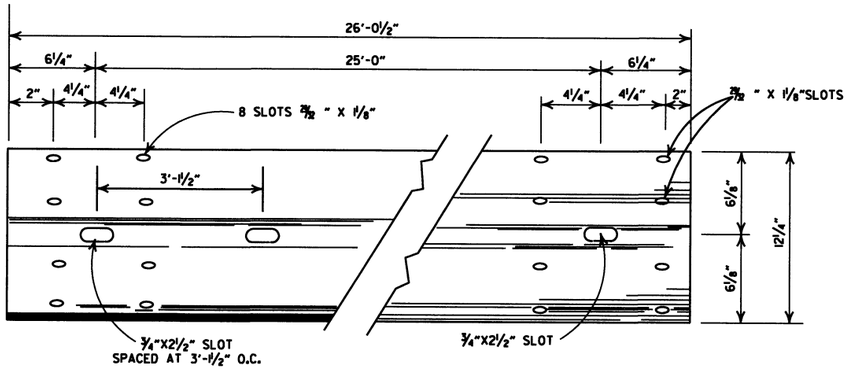
END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

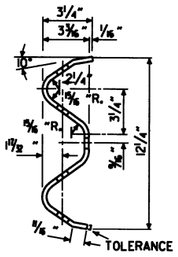
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
5-24-73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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

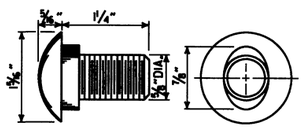
STANDARD DRAWING FES-2



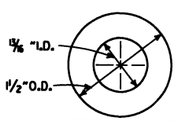


DETAILS OF W-BEAM GUARD RAIL

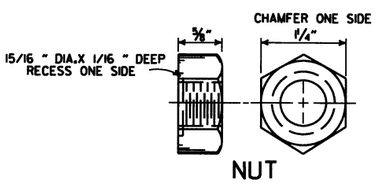
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



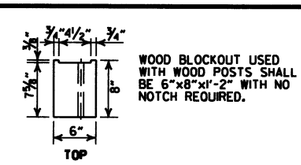
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



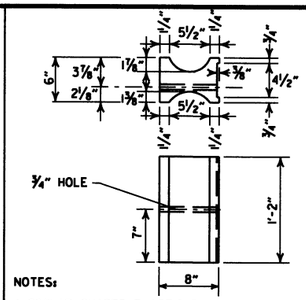
CUT STEEL WASHER



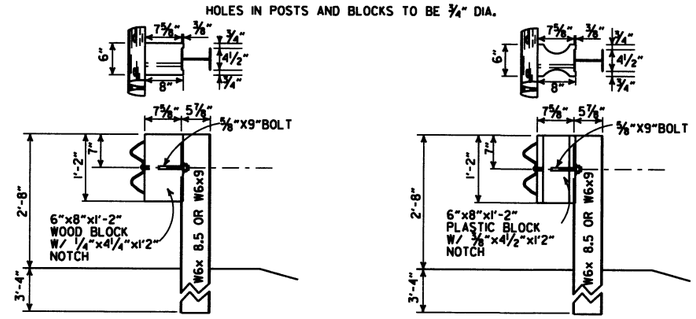
NUT



WOOD BLOCKOUT (W-BEAM)



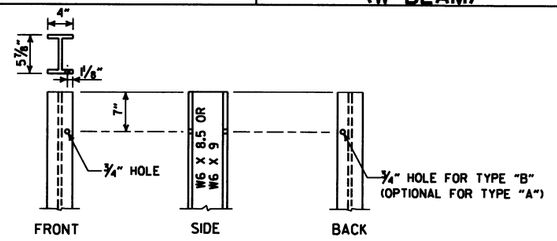
PLASTIC BLOCKOUT (W-BEAM)



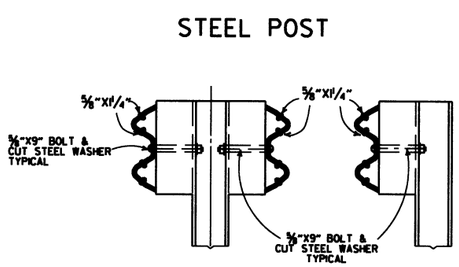
WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



STEEL POST



TYPE "B" TYPE "A"

DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

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

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

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

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

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

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

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

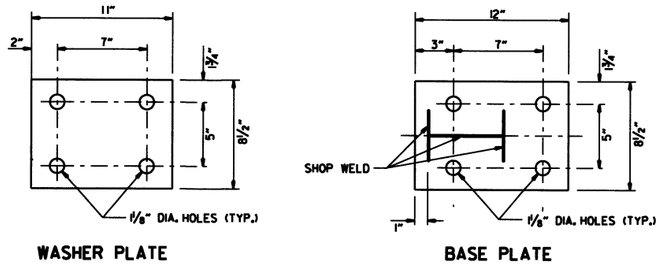
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

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

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

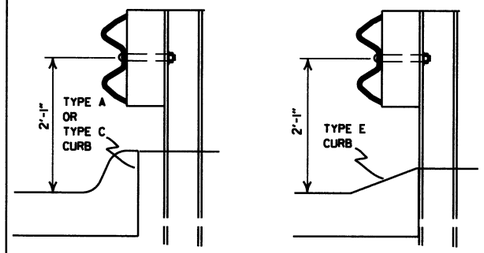
STANDARD DRAWING GR-8



WASHER PLATE

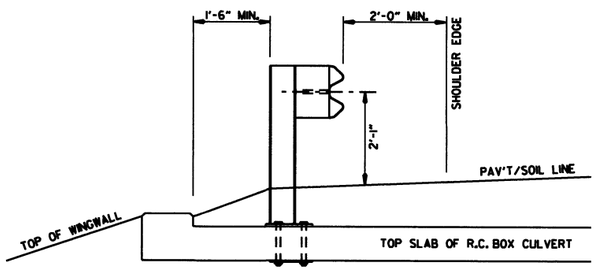
BASE PLATE

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

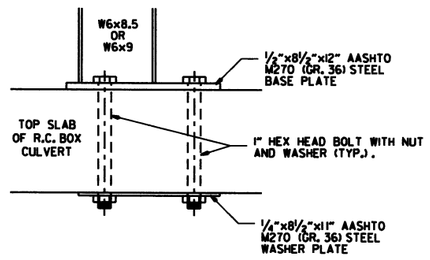


DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

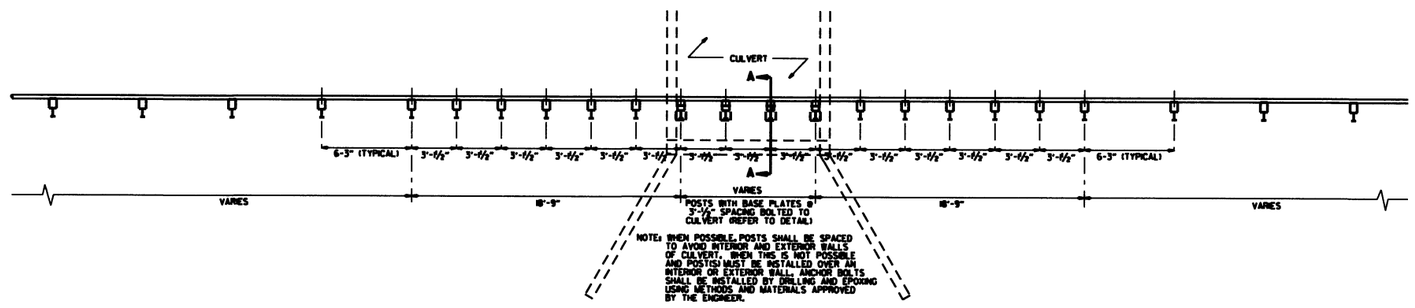
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



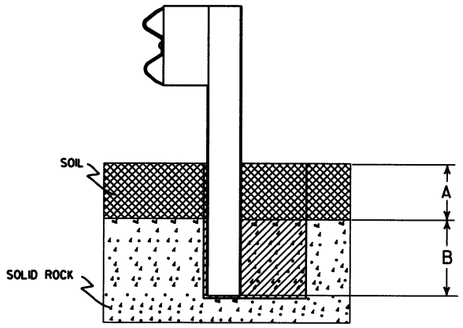
DETAIL OF CONNECTION



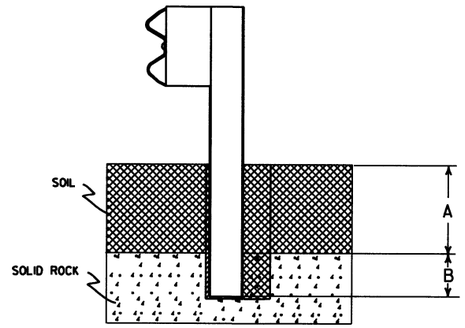
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

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

Case 1

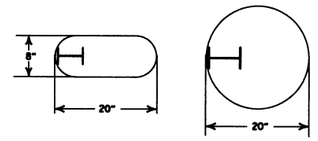


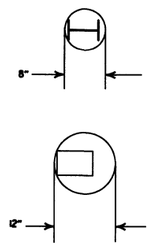
Case 2



Plan View Steel Posts

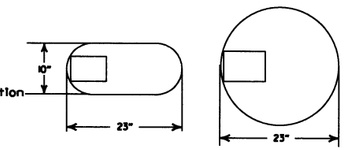
Either hole configuration acceptable





Plan View Wood Posts

Either hole configuration acceptable



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

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

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

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

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

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

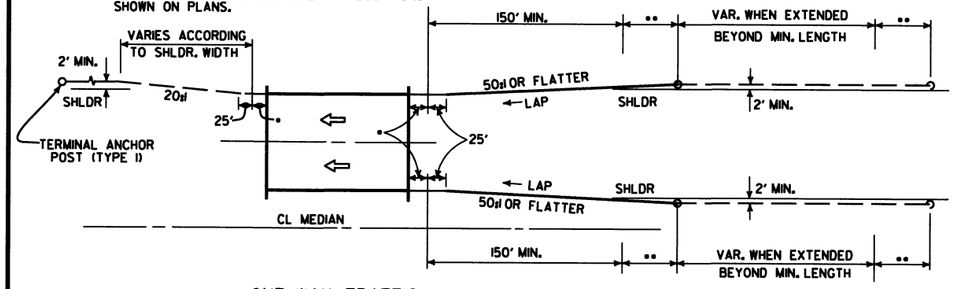
11-16-17	REVISED GUARD RAIL HEIGHT	
07-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
04-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURBS; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
03-30-00	REMOVED CONCRETE INSERT ANCHOR	
08-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT. ADDED DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T., DELETED DET. OF STEEL LINE POST CONN. & ADDED DET. OF GUARD RAIL 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
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

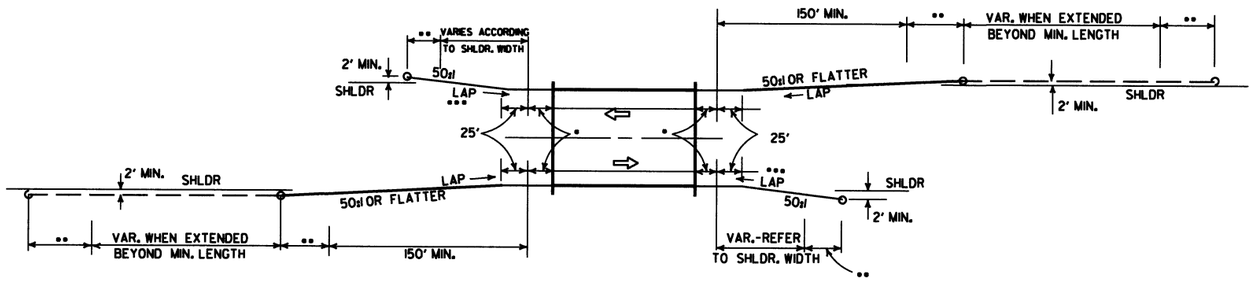
STANDARD DRAWING GR-8A

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



ONE-WAY TRAFFIC

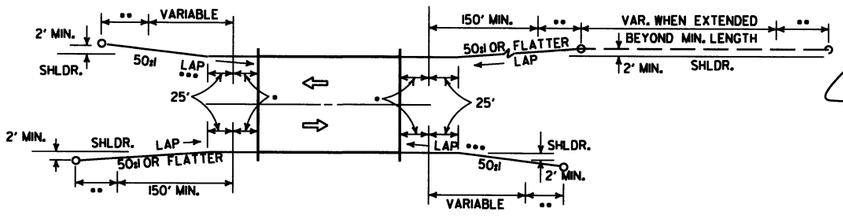
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

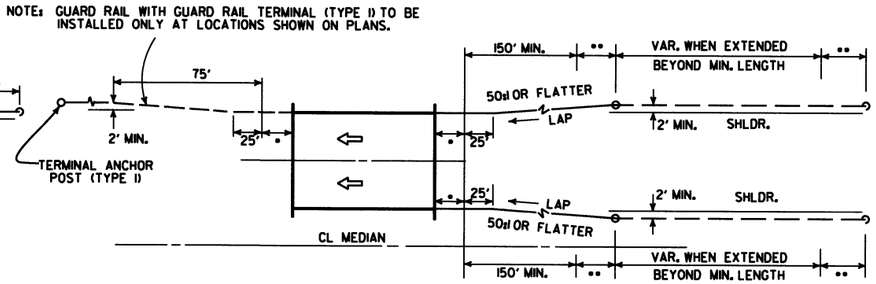
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

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



TWO-WAY TRAFFIC

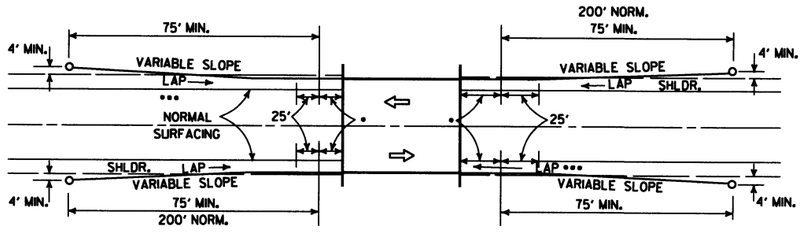
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

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

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



LEGEND

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

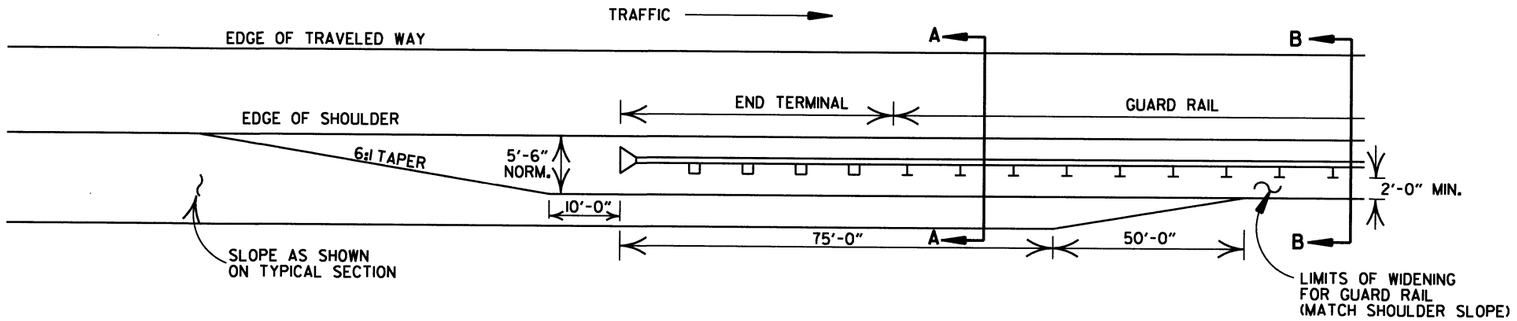
METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

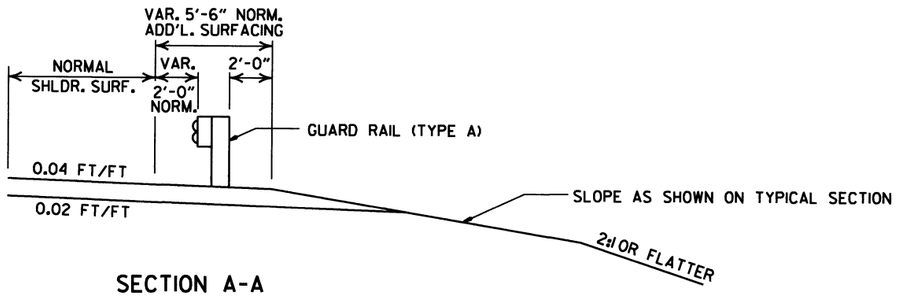
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87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

ARKANSAS STATE HIGHWAY COMMISSION

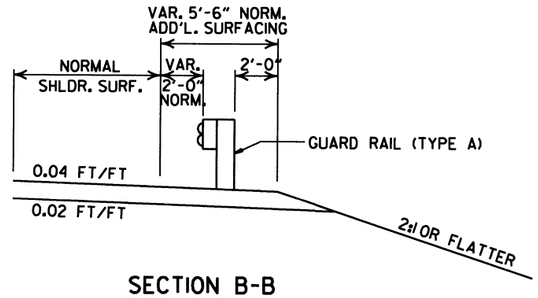
GUARD RAIL DETAILS

STANDARD DRAWING GR-9



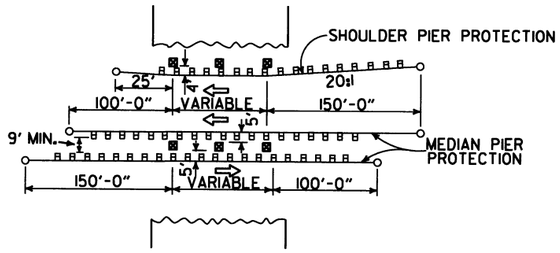


SECTION A-A



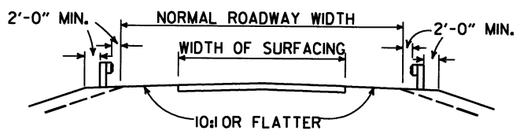
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

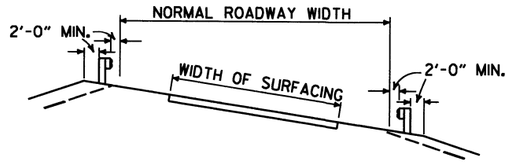


METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

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



SECTION ON TANGENT



SECTION ON CURVE

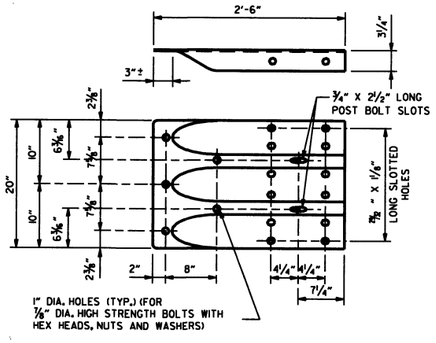
DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

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

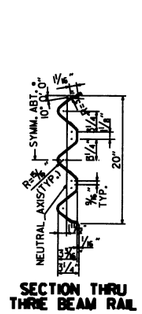
ARKANSAS STATE HIGHWAY COMMISSION

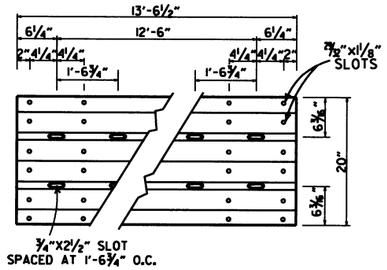
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

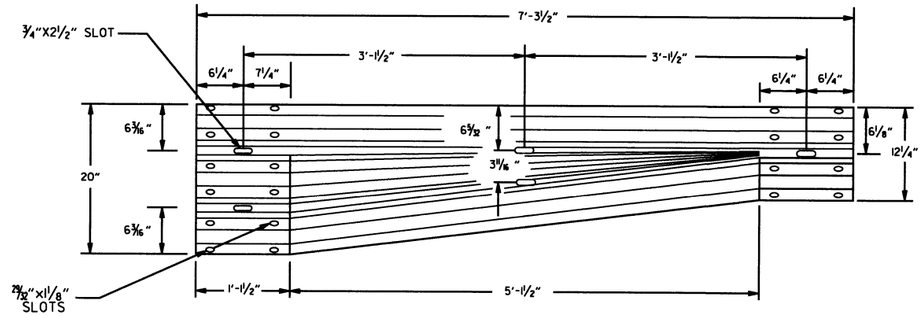


SPECIAL END SHOE

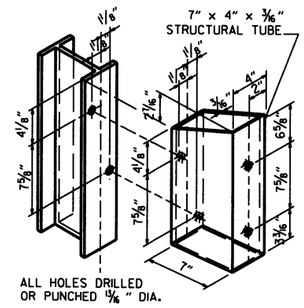




THRIE BEAM RAIL

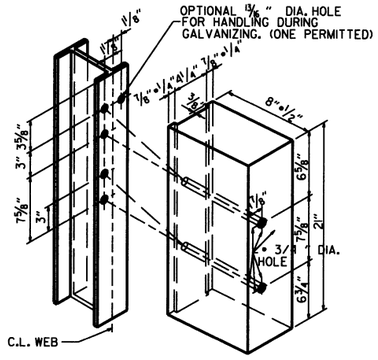


TRANSITION SECTION



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

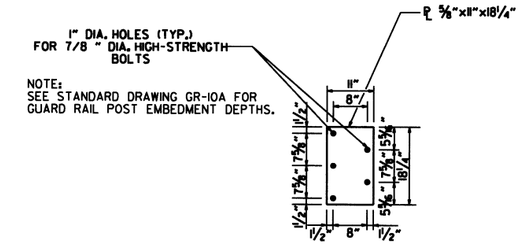
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL



ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

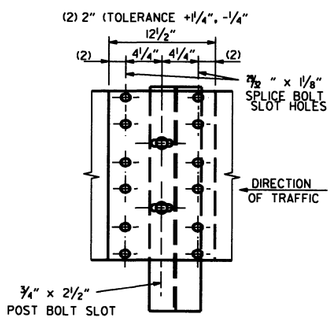
HOLE PUNCHING DETAIL FOR STEEL POST & WOOD OR PLASTIC BLOCKOUTS

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



CONNECTOR PLATE

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



THRIE BEAM RAIL SPLICE AT POST

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE 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-9 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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

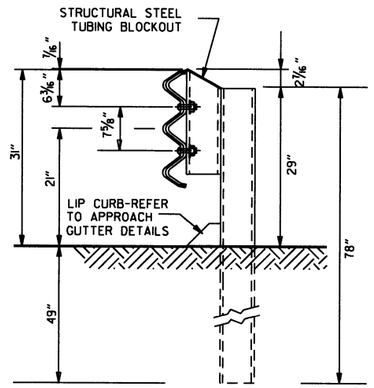
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-16-17	REVISED TRANSITION SECTION, GUARD RAIL HEIGHT, AND GENERAL NOTES; MOVED THRIE BEAM GUARD RAIL CONNECTIONS AT BRIDGES ENDS TO STD. DRWG. GR-12	
07-14-10	RAISED HEIGHT OF W-BEAM 1"	
11-29-07	ADDED PLASTIC BLOCKOUTS	
11-10-05	ADDED NOTE FOR ATTACHING STEEL BLOCKOUT	
11-18-04	REVISED GENERAL NOTES	
10-9-03	REVISED GENERAL NOTES	
04-10-03	REVISED GENERAL NOTES	
08-22-02	REVISED NOTE (2)	
06-29-00	MOVED DIMENSION LINES	
05-18-00	ADDED NOTE	
03-30-00	DRAWN & ISSUED	

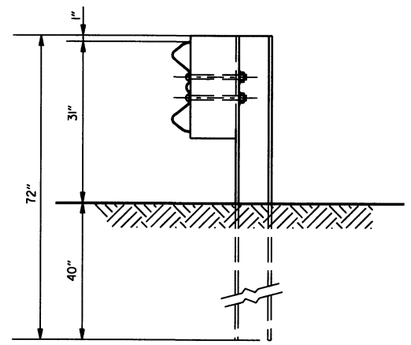
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

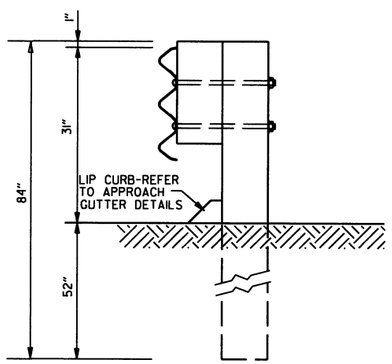
STANDARD DRAWING GR-10



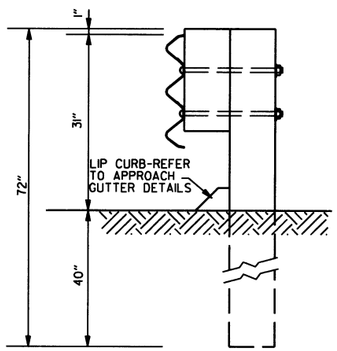
THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7



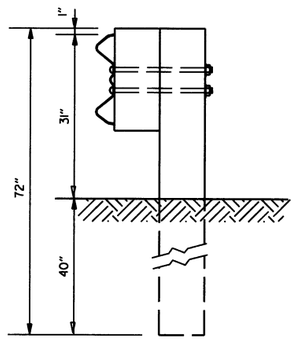
W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



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

GENERAL NOTES:

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

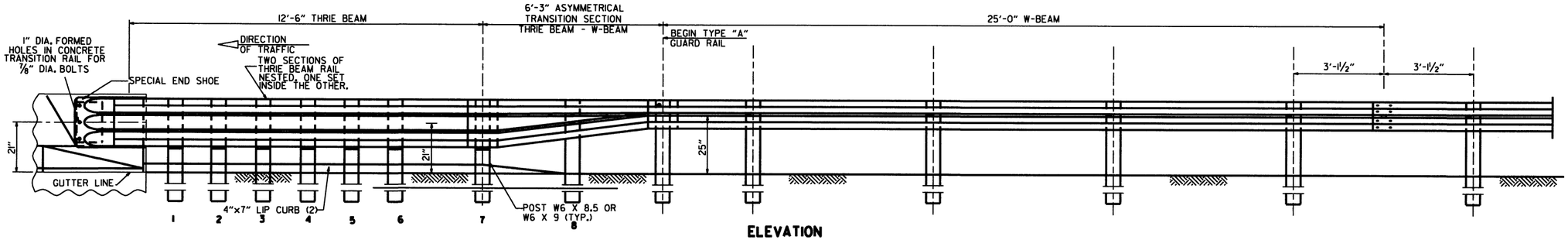
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-16-17	REVISED GUARD RAIL HEIGHT, CHANGED STD. DWG. NUMBER FROM GR-10A TO GR-11	
07-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
08-22-02	REVISED LIP CURB NOTE	
03-30-00	DRAWN & ISSUED	

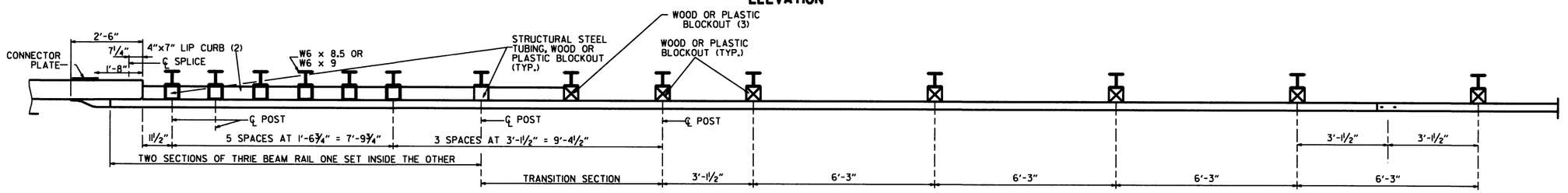
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

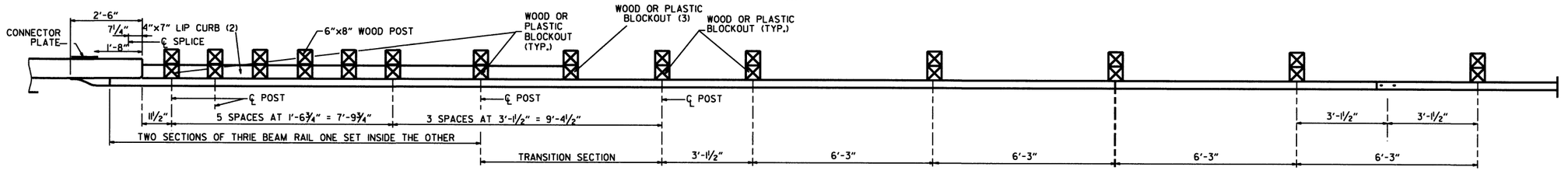
STANDARD DRAWING GR-11



ELEVATION



PLAN



PLAN

(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE 1.

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

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

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-13.

REFER TO STD. DRWG. GR-11 FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

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

POSTS SHALL BE PLACED AT THE MID-SPAN OF THE W-BEAM.

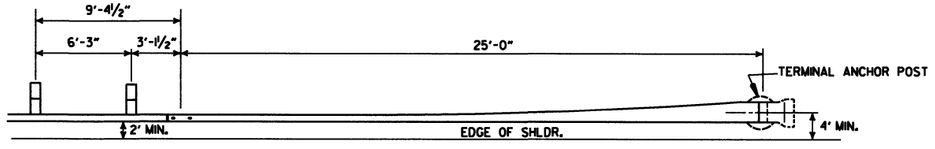
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	FILMED
11-16-17	RE-DRAWN FROM STD. DWG. GR-10 & ISSUED	

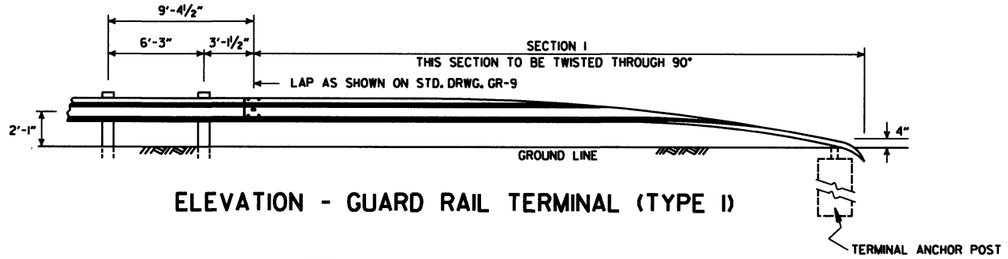
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-12

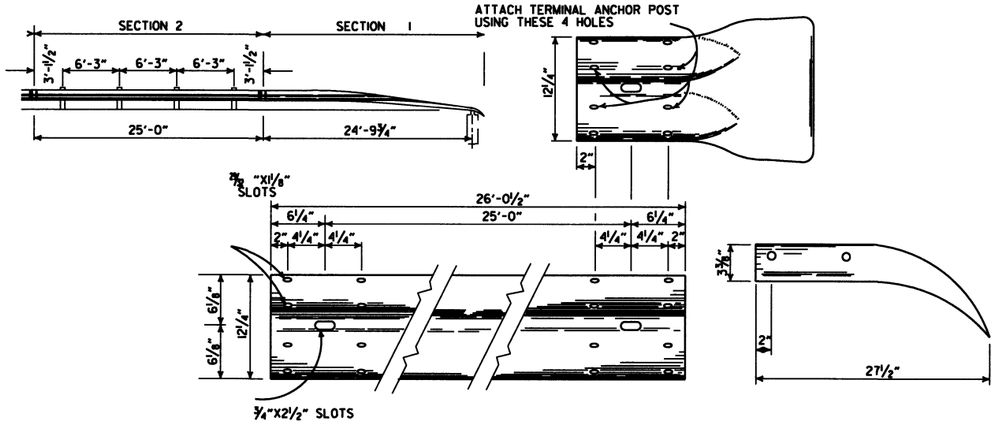


PLAN - GUARD RAIL TERMINAL (TYPE I)



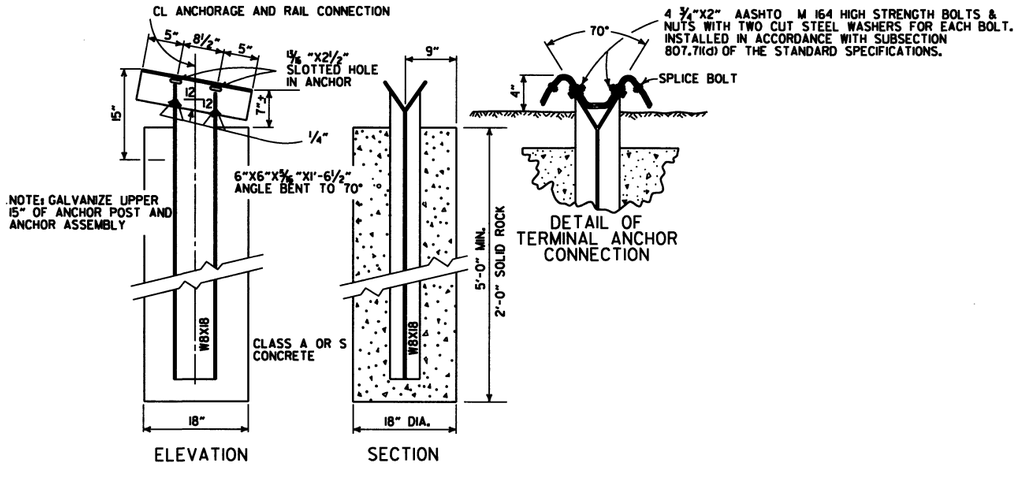
ELEVATION - GUARD RAIL TERMINAL (TYPE I)

NOTE:
SECTIONS I AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.



SECTION I

TERMINAL SECTION



NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

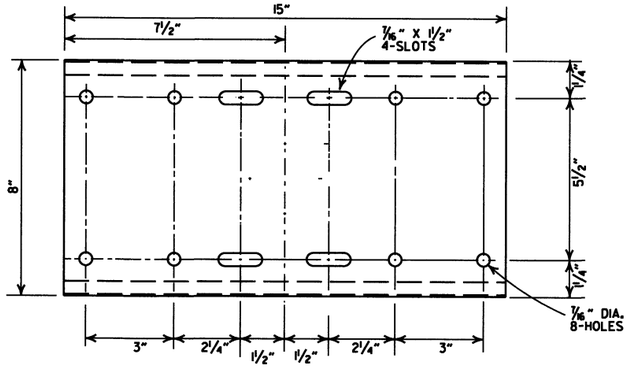
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

DATE	REVISION	FILMED
11-16-17	REVISED GUARD RAIL HEIGHT AND LOCATION OF POSTS	
07-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
06-26-97	REVISED LAP NOTE	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-03-94	DIMENSION TERMINAL DETAIL	
11-11-92	ADDED NOTE FOR PAYMENT	11-11-92
10-01-92	DRAWN & ISSUED	10-1-92

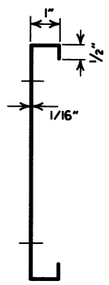
ARKANSAS STATE HIGHWAY COMMISSION

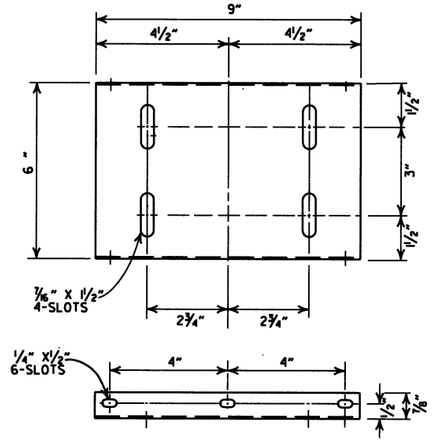
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

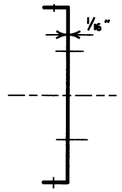


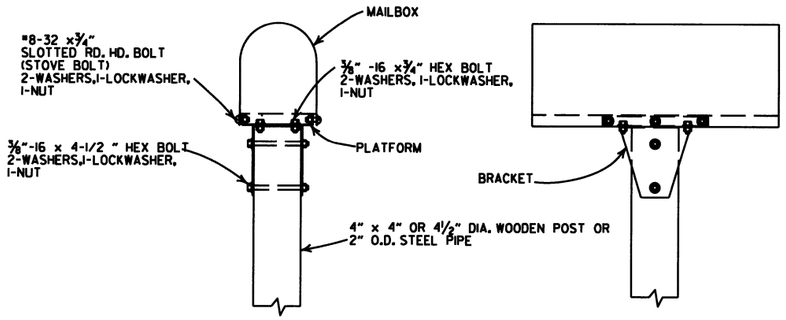
SHELF



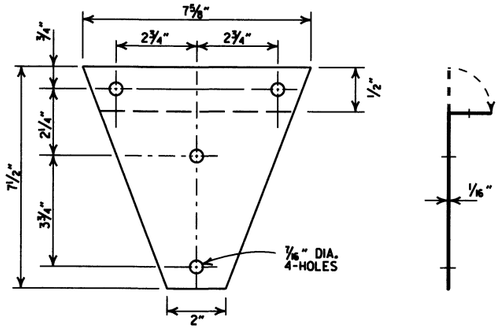


PLATFORM





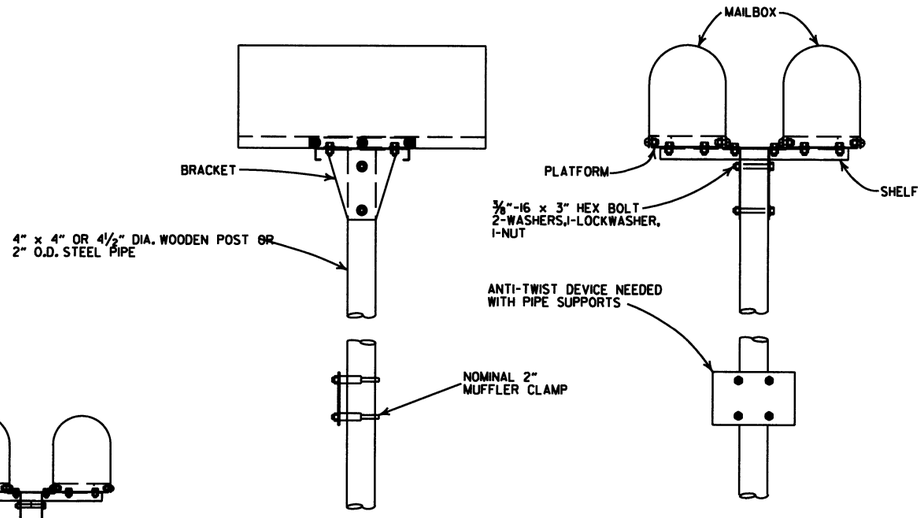
SINGLE INSTALLATION



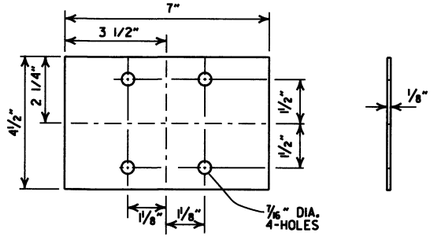
BRACKET

GENERAL NOTES

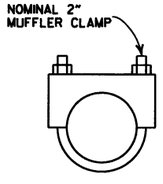
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



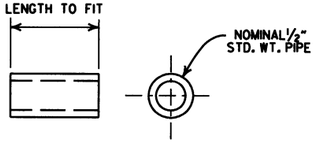
DOUBLE INSTALLATION



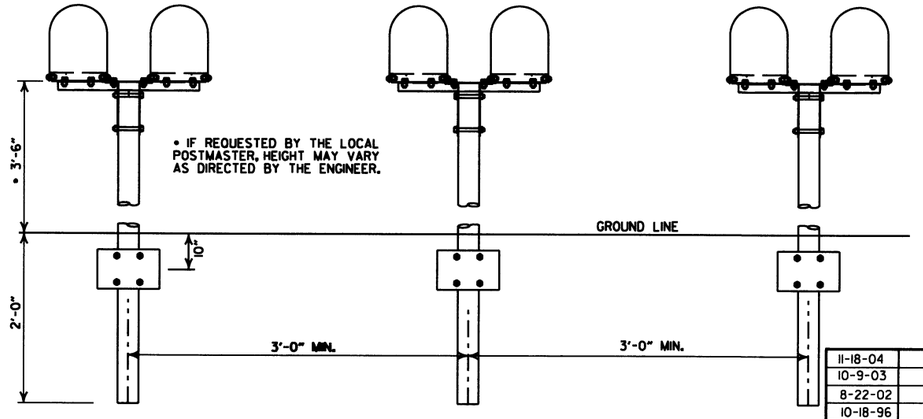
ANTI-TWIST PLATE



CLAMP



SPACER



SPACING FOR MULTIPLE POST INSTALLATION

DATE	FILMED	REVISION
11-18-04		REVISED NOTES
10-9-03		REVISED NOTE 6
8-22-02		REVISED NOTE 6
10-18-96		CORRECTED AASHTO
10-1-92		CORRECTED SPELLING
9-26-91		NEW PHONE NUMBER
8-15-91		ADDED NOTE
11-30-89		ADJUSTED HEIGHT & ADDED NOTE
2-16-89		DELETED SLOTS FROM SHELF & PLTF
11-17-88	10-1-92	ADJUSTED DIMENSIONS OF STEEL POSTS
7-15-88	20-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31 11/16	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

CONSTRUCTION SEQUENCE

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

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

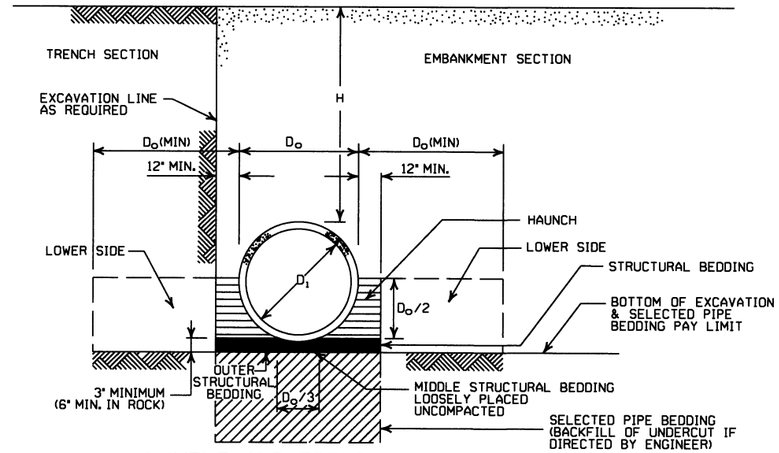
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL

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

* SM-3 WILL NOT BE ALLOWED.

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



EMBANKMENT AND TRENCH INSTALLATIONS

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

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170. R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

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

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

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

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

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

CORRUGATED STEEL PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS (INCHES)				
		0.064	0.079	0.109	0.138	0.168
2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM						
12	1	84	91			
15	1	67	73			
18	1	56	61			
24	1	42	46	59		
30	2	34	36	47		
36	2		30	39	41	
42	2		43	67	70	73
48	2		37	58	61	64
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM						
36	1	48	60	88	111	118
42	1	41	51	72	90	102
48	1	36	45	64	77	85
54	2	32	40	59	71	79
60	2	29	36	53	64	71
66	2	26	33	47	58	64
72	2	24	30	44	53	59
78	2		28	41	49	54
84	2		26	38	45	51
90	2		24	35	43	45
96	2		22	33	40	44
102	2			31	38	42
108	2			30	35	39
114	2			28	34	37
120	2			27	32	35

CORRUGATED ALUMINUM PIPE (ROUND)

PIPE DIAMETER (INCHES)	① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CONSTRUCTION SEQUENCE

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

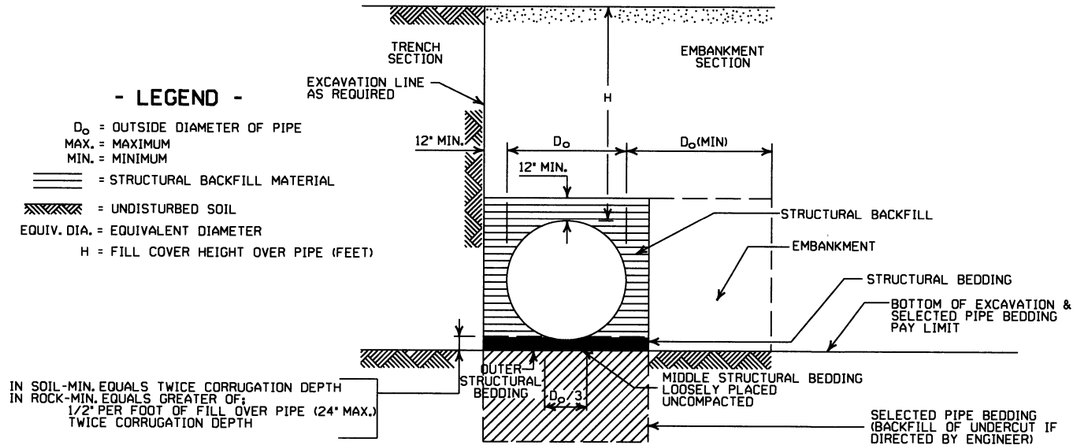
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

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

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

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



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

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

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION	INSTALLATION			
				TYPE 2 / TYPE 1	TYPE 2 / TYPE 1			
36	40x31	5	0.079	3 / 2	12 / 15			
42	46x36	6	0.079	3 / 2	13 / 15			
48	53x41	7	0.079	3 / 2	13 / 15			
54	60x46	8	0.079	3 / 2	13 / 15			
60	66x51	9	0.079	3 / 2	13 / 15			
66	73x55	12	0.079	3 / 2	15 / 15			
72	81x59	14	0.079	3 / 2	15 / 15			
78	87x63	14	0.079	3 / 2	15 / 15			
84	95x67	16	0.109	3 / 2	15 / 15			
90	103x71	16	0.109	3 / 2	15 / 15			
96	112x75	18	0.109	3 / 2	15 / 15			
102	117x79	18	0.109	3 / 2	15 / 15			
108	128x83	18	0.138	3 / 2	15 / 15			

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

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

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

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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 HDPE PIPE.

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

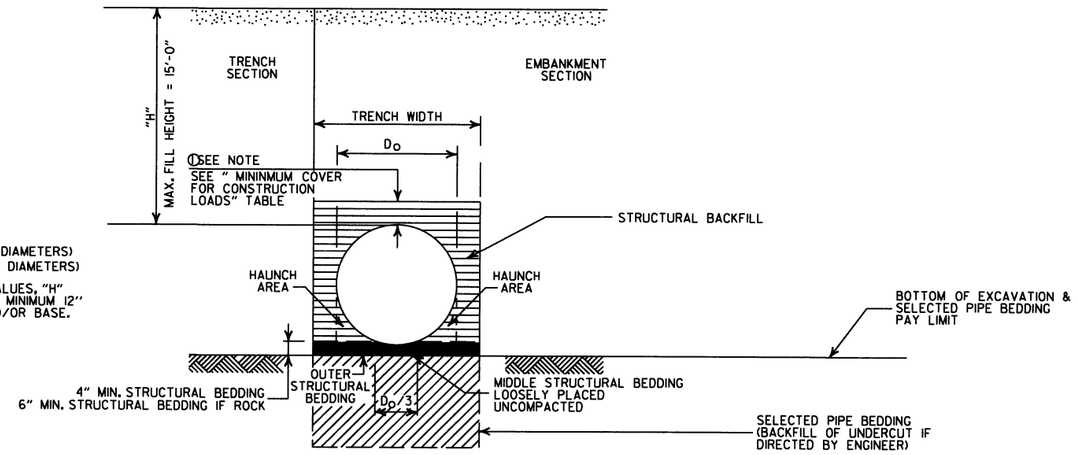
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

•• STRUCTURAL BEDDING MATERIAL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 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"

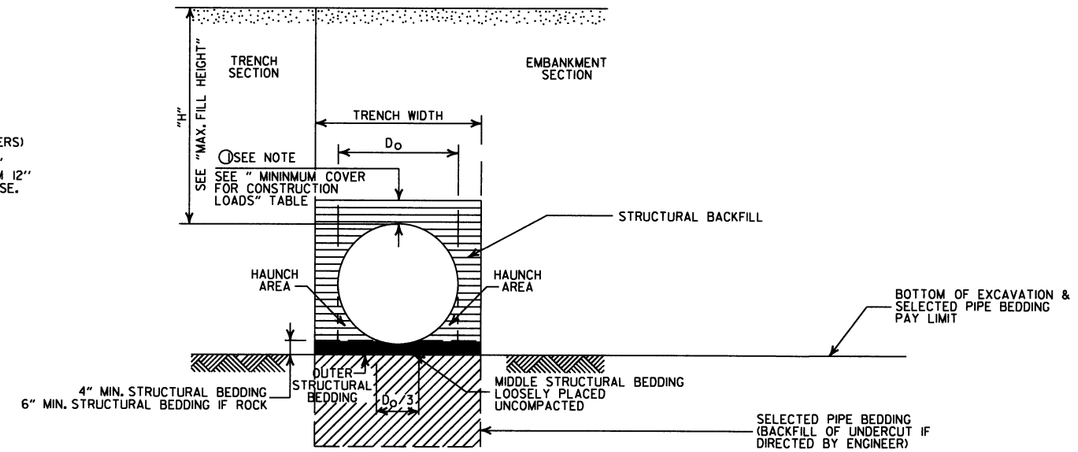
MULTIPLE INSTALLATION OF PVC PIPES

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.

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

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

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

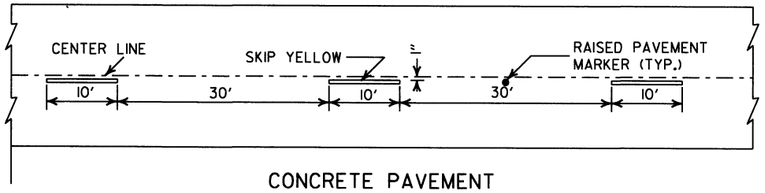
DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

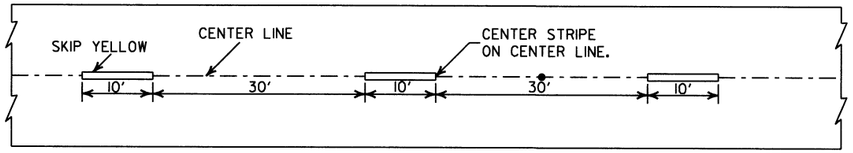
PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

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

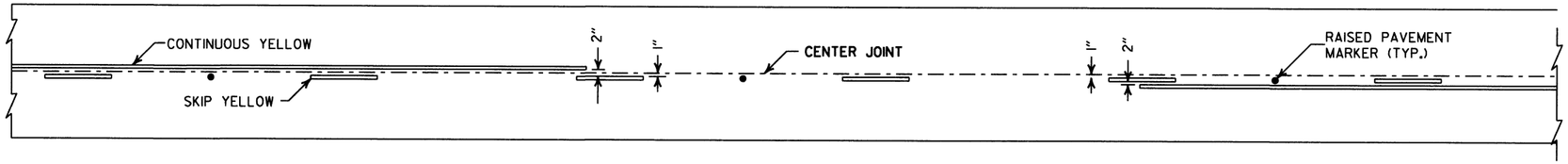


CONCRETE PAVEMENT

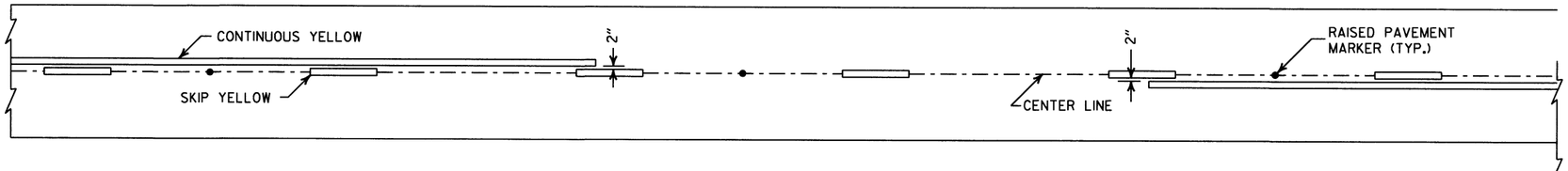


ASPHALT PAVEMENT

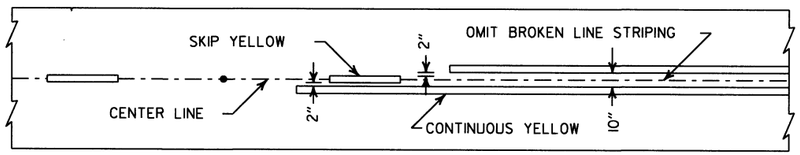
BROKEN LINE STRIPING



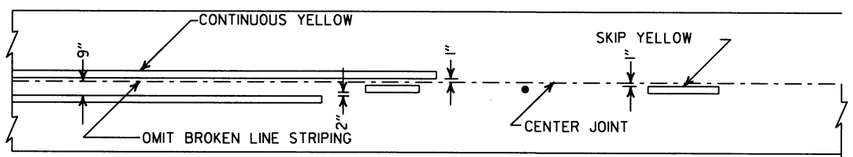
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

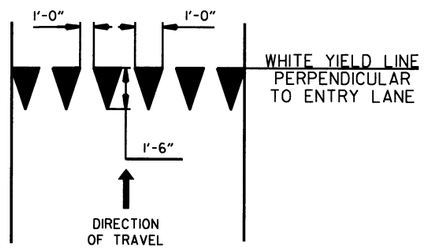


ASPHALT PAVEMENT

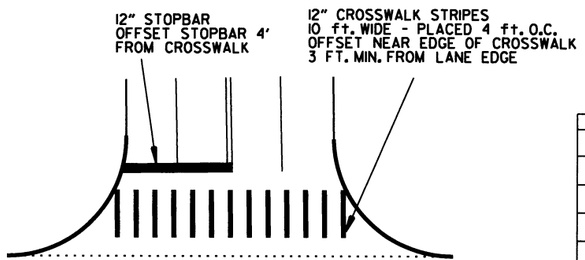


CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING LANES

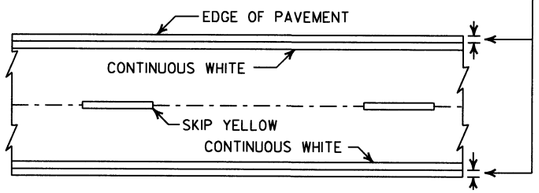


YIELD LINE DETAIL



CROSSWALK AND STOPBAR DETAILS

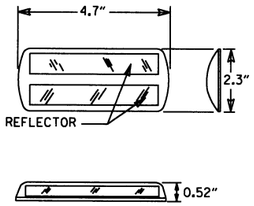
2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



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



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

DETAIL OF STANDARD RAISED PAVEMENT MARKERS

DATE	REVISION	FILMED
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

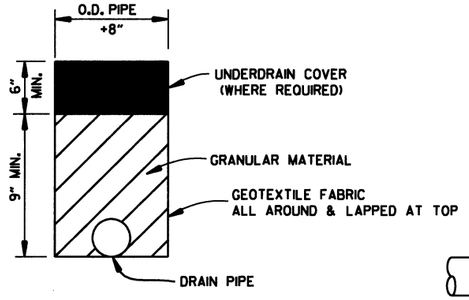
PAVEMENT MARKING DETAILS

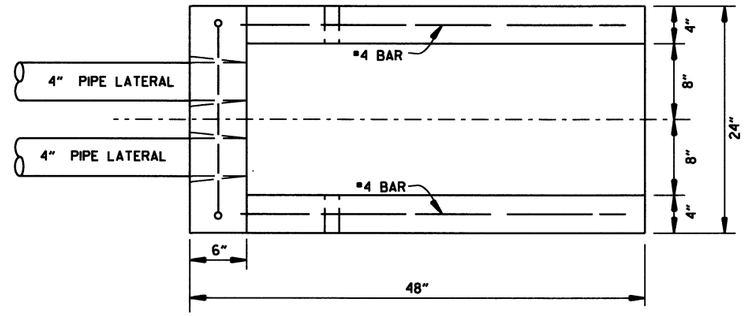
STANDARD DRAWING PM-1

NOTE:

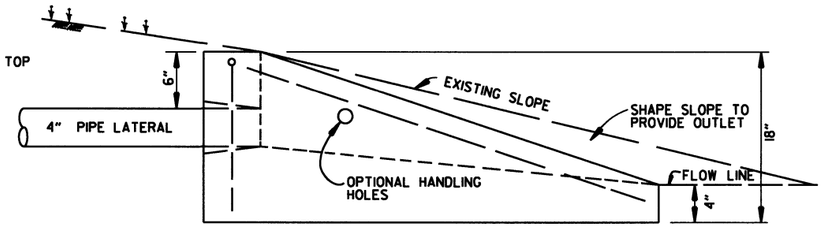
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.

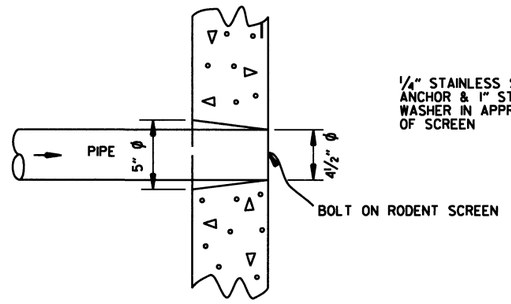




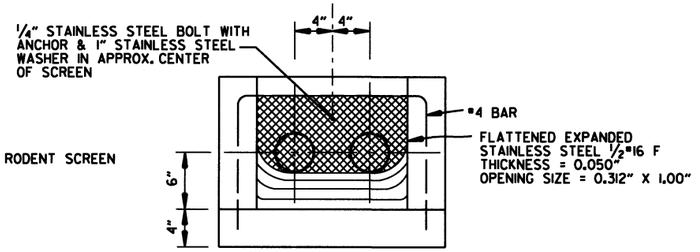
PLAN VIEW



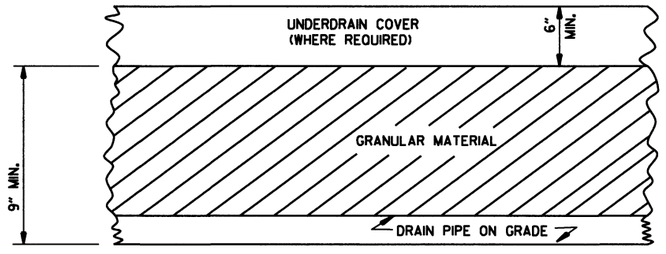
SIDE VIEW



DETAIL OF HOLE FOR 4" PIPE



FRONT VIEW
(DETAIL OF RODENT SCREEN)



DETAILS OF PIPE UNDERDRAIN

NOTES FOR PIPE UNDERDRAINS

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF SECTION 625 FOR TYPE I. PAYMENT FOR GEOTEXTILE FABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE BID PER LIN. FT. FOR "4" PIPE UNDERDRAINS" IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

2. 4" NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN HEREON. LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 611 OF THE STANDARD SPECIFICATIONS.

3. EXISTING 4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP INLETS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP INLETS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR "4" PIPE UNDERDRAINS."

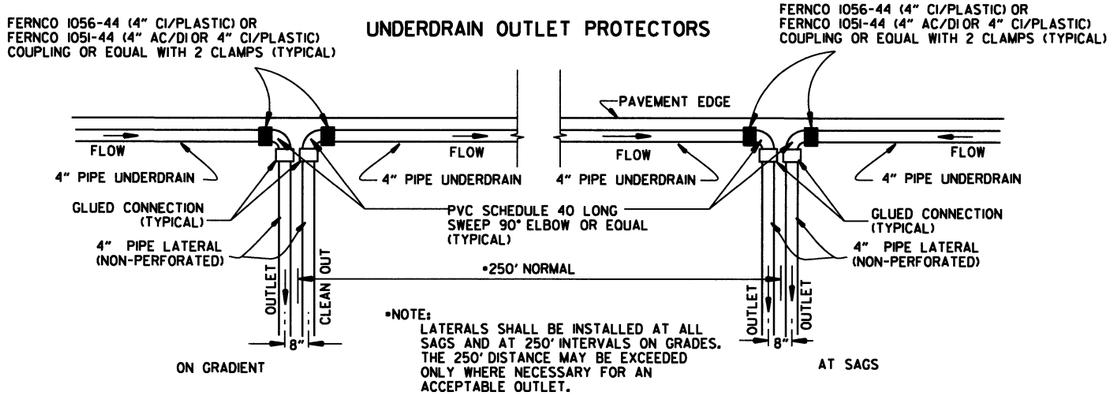
4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH 4" X 12" PERMANENT PAVEMENT MARKING TAPE (TYPE III WHITE) AT THE OUTSIDE EDGE OF THE SHOULDER, PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

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

6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS. EXISTING UNDERDRAIN OUTLET PROTECTORS SHALL BE REMOVED UNDER THE ITEM "REMOVAL AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS."

7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: 1. INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GROUT THE UNUSED HOLE OR 2. INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

DATE	REVISION	DATE FILMED
12-8-16	ADDED NOTES FOR PIPE UNDERDRAINS, REVISED RODENT SCREEN DETAIL AND NOTES, REMOVED NOTE 1 FOR GRANULAR MATERIAL, ADDED NOTE FOR GEOTEXTILE FABRIC	
4-10-03	REVISED NOTE 3	
1-12-00	REVISED DETAIL OF UNDERDRAIN LATERALS	
11-18-98	REVISED NOTE	
10-18-96	REVISED MIN. DEPTH & GEOTEXTILE FABRIC	
4-26-96	ADDED LATERAL NOTE; 5½" TO 5"	
11-22-95	REVISED LATERALS	
7-20-95	REVISED LATERALS & ADDED NOTE	
11- 3-94	REVISED FOR DUAL LATERALS	11- 3-94
10- 1-92	SUBSTITUTED GEOTEXTILE	10- 1-92
8-15-91	ADDED POLYEDTHYLENE PIPE	8-15-91
11- 8-90	DELETED ALTERNATE NOTE	11- 8-90
1-25-90	ADDED 4" SNAP ADAPTER	1-25-90
11-30-89	DEL. (SUBGRADE); ADDED (WHERE REQUIRED)	11-30-89
7-15-88	ISSUED P.L.M.	647-7-15-88

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH			40 MPH			50 MPH			55 MPH			60 MPH			70 MPH		
	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
0° 15'	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30'	N.C.			N.C.			N.C.			N.C.			N.C.			0.028		
0° 45'	N.C.			N.C.			R.C.			0.022			0.023			0.037	275	300
1° 00'	N.C.			N.C.			0.021			0.029			0.030			0.046		
1° 15'	N.C.			R.C.			0.026			0.032			0.037			0.054		
1° 30'	N.C.			0.021			0.031	200		0.037	225		0.043	250		0.062		
1° 45'	N.C.			0.025	175		0.036			0.043		300	0.049		300	0.070		
2° 00'	R.C.			0.028			0.040			0.048			0.055			0.078	300	350
2° 15'	R.C.			0.031			0.045		250	0.053			0.061			0.085	315	
2° 30'	0.021			0.034			0.049			0.058			0.067			0.091	335	
2° 45'	0.023			0.037			0.053			0.063			0.072			0.096	350	400
3° 00'	0.025			0.040			0.057			0.067	230		0.077	260		0.098	360	
3° 15'	0.027			0.043			0.061			0.072	245		0.082	275		0.100	360	
3° 30'	0.029			0.046			0.065	205		0.076	255		0.086	285				
3° 45'	0.031			0.049			0.069	215		0.080	265		0.090	295				
4° 00'	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30'	0.037			0.056			0.078	240		0.087	280		0.096	315				
5° 00'	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30'	0.043			0.066	185		0.088	260		0.094	300							
6° 00'	0.046			0.070	190		0.092	270		0.096	305							
6° 30'	0.050			0.074	200		0.095	280	300	0.098	315							
7° 00'	0.053			0.078	210		0.098	285		0.100	325							
7° 30'	0.056			0.081	215		0.099	290										
8° 00'	0.058			0.084	220		0.100	290										
8° 30'	0.061			0.087	225	250												
9° 00'	0.063			0.089	230													
10° 00'	0.068	160		0.094	245													
11° 00'	0.072	170		0.097	250													
12° 00'	0.076	175		0.099	250													
13° 00'	0.080	180		0.100	250													
14° 00'	0.083	190		D MAX = 13° 15'														
15° 00'	0.086	195																
16° 00'	0.089	200																
17° 00'	0.091	200																
18° 00'	0.093	205																
19° 00'	0.095	210																
20° 00'	0.097	215	250															
21° 00'	0.098	215																
22° 00'	0.099	215																
23° 00'	0.099	215																
24° 00'	0.100	220																

D MAX = 24° 45'

D MAX = 8° 15'

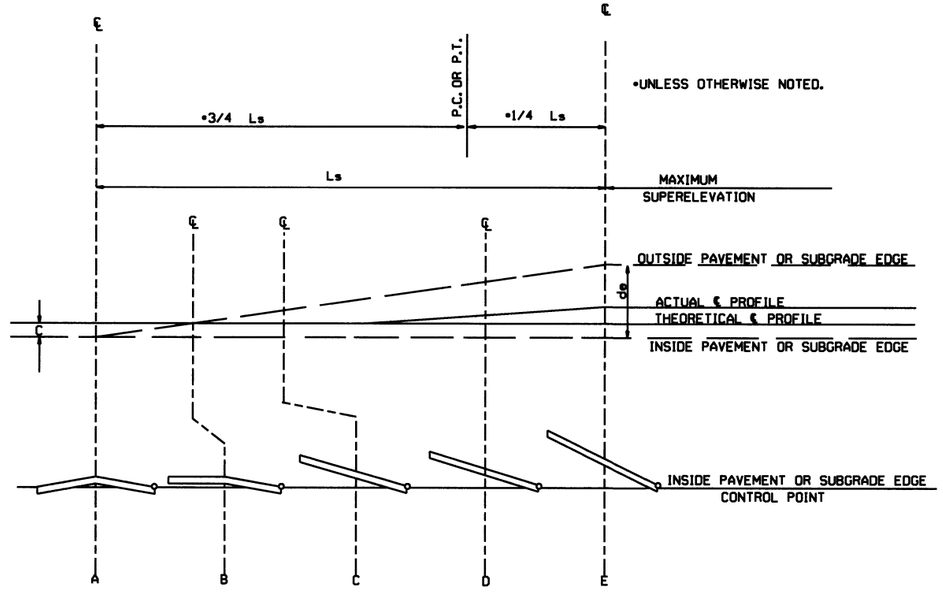
D MAX = 6° 30'

D MAX = 5° 15'

D MAX = 3° 30'

ABBREVIATIONS

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



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

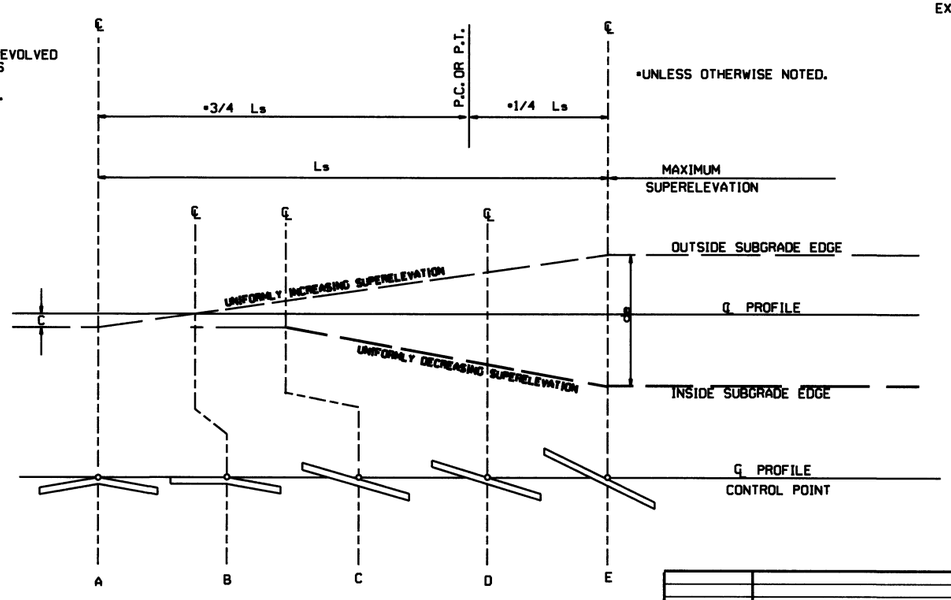
GENERAL NOTES

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

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

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.



STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

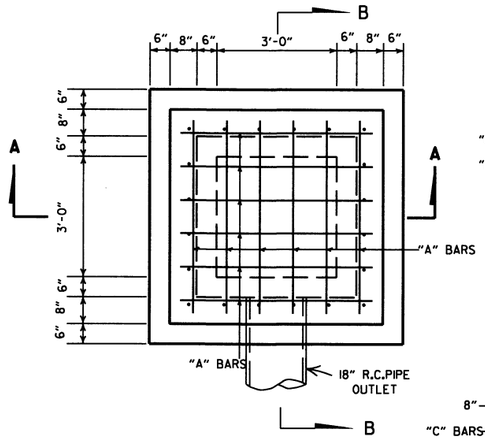
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

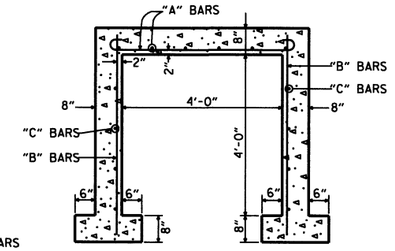
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

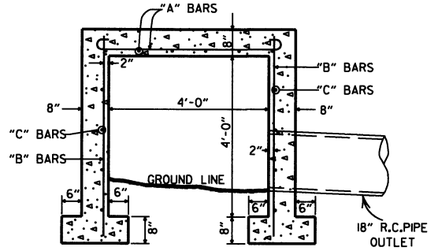
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2





SEC A-A



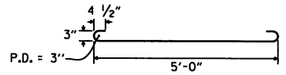
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



"A" BARS

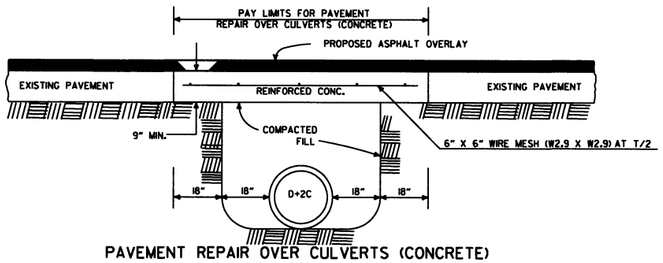
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

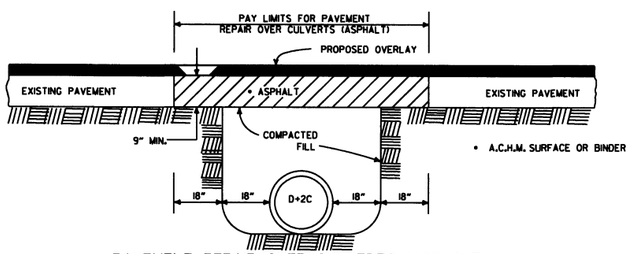
GENERAL NOTE:

THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



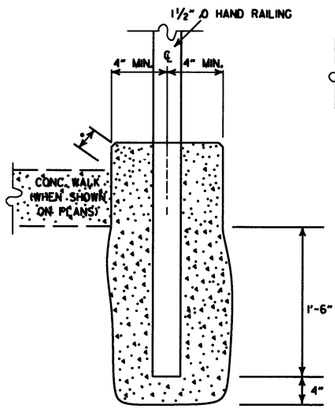
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



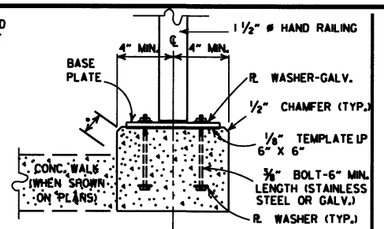
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

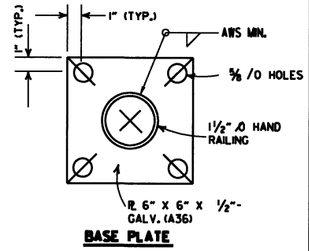
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

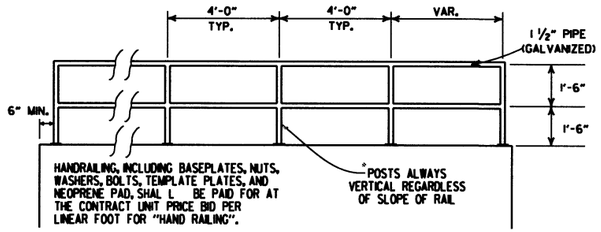


POST CONNECTION TO WALL

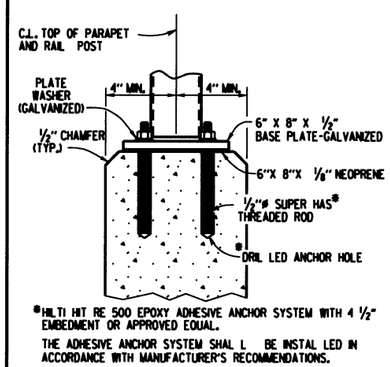


BASE PLATE

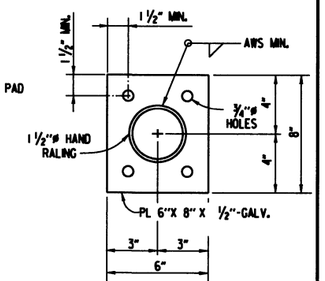
POST CONNECTION DETAILS



HAND RAILING SHALL CONFORM TO SECTION 633.



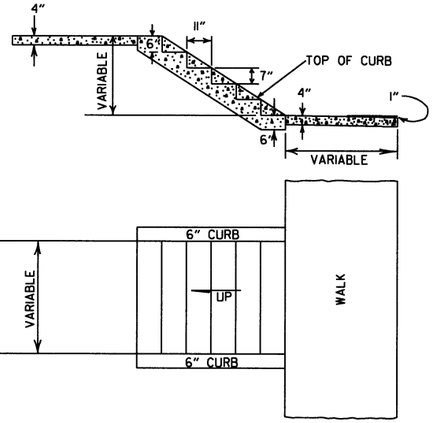
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
10-25-18	REVISED DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS	
9-12-13	REVISED REINFORCED CONCRETE SPRING BOX	
7-26-12	REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS	
4-17-08	REV. JOINT & FOOTING STEP DETAILS	
11-29-07	REVISED RETAINING WALL DRAINAGE	
5-25-06	REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX	
10-9-03	REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS	
4-10-03	REVISED RETAINING WALL DRAWING	
8-22-02	ADDED HAND RAILING DETAIL	
11-16-01	REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES	
11-18-98	ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS	
7-02-98	ENLARGED PIPE	
4-03-97	ADDED NOTE TO STEEL BAR SCHED.	
10-18-96	CORRECTED SPELLING	
4-26-96	ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL	
6-2-94	CHANGED CONST. TO CONTRACTION JOINT	
10-1-92	CHANGED MESH FABRIC TO WIRE MESH	10-1-92
8-15-91	DELETED HDWL MODIFICATION DETAIL	8-15-91
11-8-90	DELETED COLD MIX FROM CULV'T. REPAIR	11-8-90
11-30-89	REV. RETAINING WALL STEEL SCHEDULE	11-30-89
11-17-88	V. BARS BEHIND ARROW	665-11-17-88
7-15-88	REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS	649-7-15-88
11-1-84	REV. TRENCH FOR PIPE UNDERDRAIN	510-11-1-84
1-4-83	ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE	682-1-4-83
3-2-81	SPELLING OF "UNDERDRAIN"	721-3-2-81
4-20-79	REV. UNDERDRAIN DET& PAVEMENT REPAIR	674-4-20-79
2-2-76	12"MIN. GRAN. MAT'L. OVER PIPE	919-2-2-76
4-10-75	REM. SPECS. FOR GRAN. MAT'L.	568-4-10-75-853
5-22-74	GRANULAR MAT'L. TO BE SB-3	567-5-22-74-740
10-2-72	REVISED AND REDRAWN	564-10-16-72

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DETAILS OF SPECIAL ITEMS

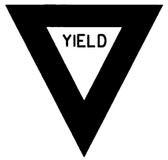
STANDARD DRAWING SI-1

R1-1



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

R1-2



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

R2-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

W3-5



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

W3-5a



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

R4-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



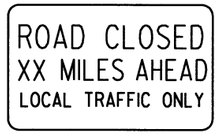
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



48"X30"

RII-3A



60"X30"

RII-4



60"X30"

W21-5a



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

WI-1



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

WI-2



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

WI-3



STD. 48"X48"

WI-4



STD. 48"X48"

WI-6



STD. 48"X24"
SPECIAL 60"X30"

WI-8



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

W3-1



STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7



EXPWY. 36"X36"
FWY. 48"X48"

W9-2



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

WI3-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD. 48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



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

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-11



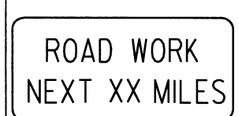
STD. 36"X36"
FWY. 48"X48"

W8-9



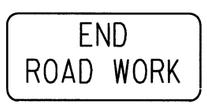
STD. 36"X36"
FWY. 48"X48"

G20-1



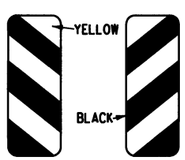
60"X24"

G20-2



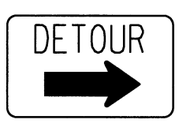
48"X24"

OM-3L OM-3R



12"X36"

M4-9



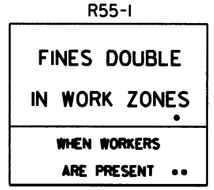
STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10



48"X18"

R55-1



36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

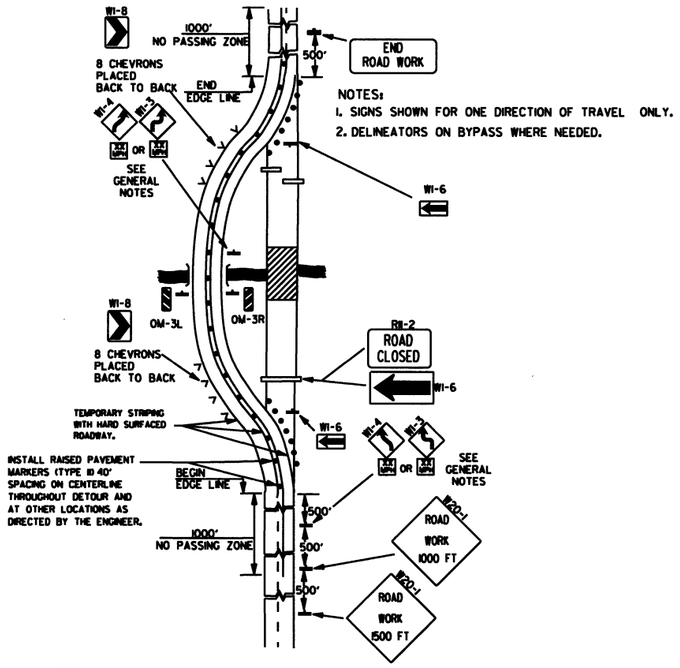
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

DATE	REVISION	FILMED
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	
8-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
8-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
8-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
8-18-98	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	

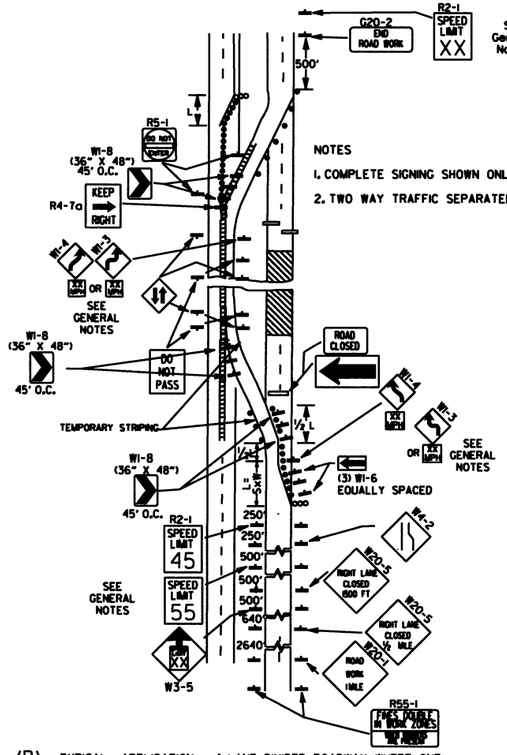
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

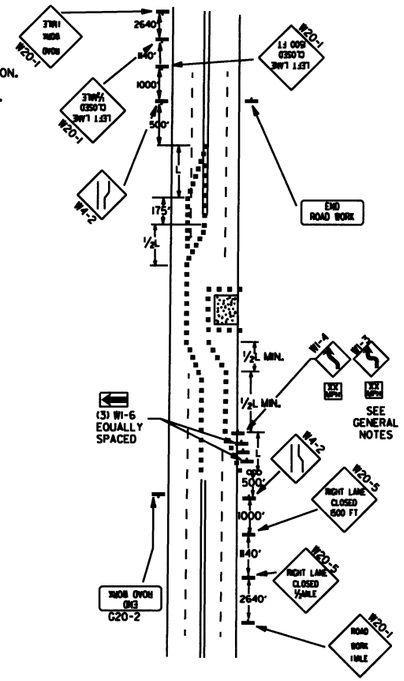
STANDARD DRAWING TC-1



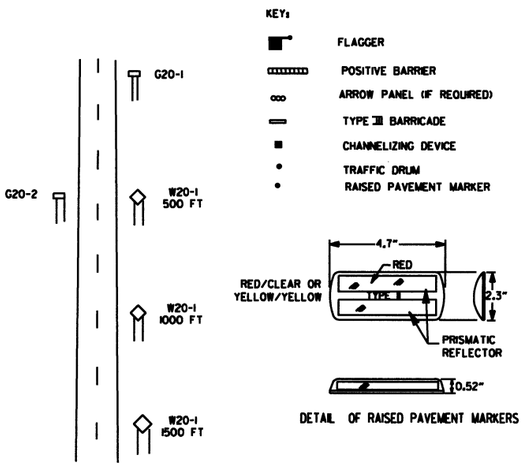
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



(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.



DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:

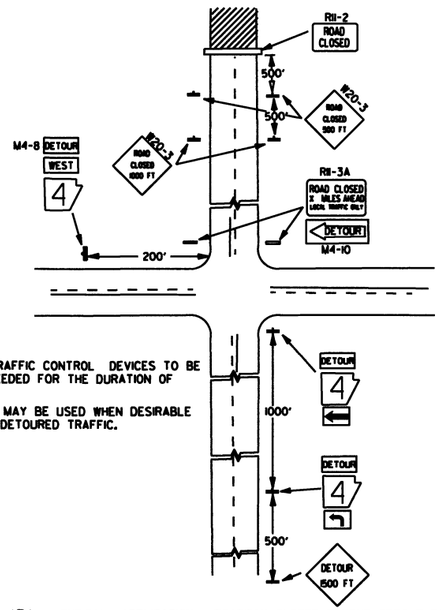
L= MINIMUM LENGTH OF TAPER.

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

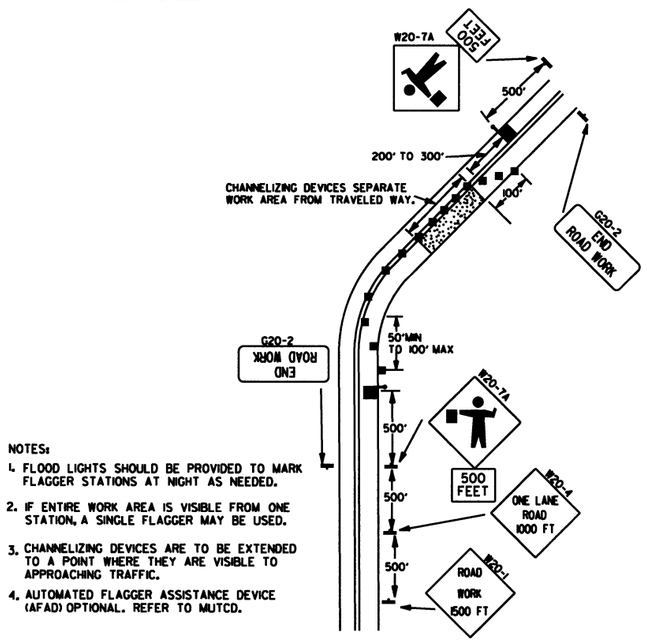
W= WIDTH OF OFFSET.

GENERAL NOTES:

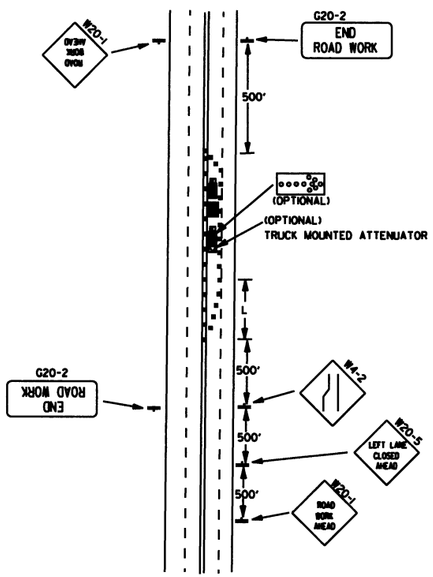
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-(K55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(KXX) 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-(K45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(KXX) 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 AHTD QUALIFIED PRODUCTS LIST.



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



(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



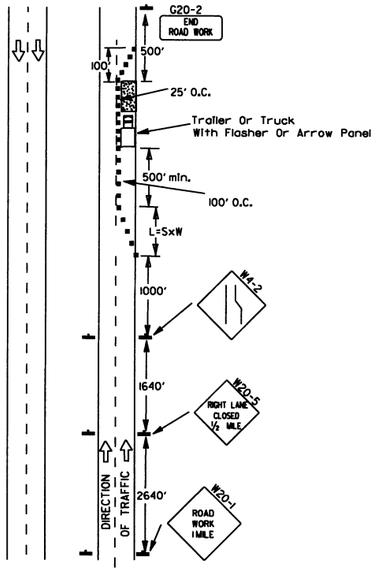
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

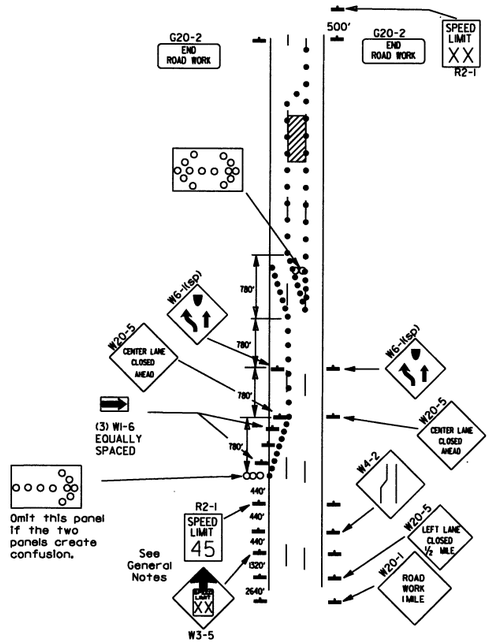
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

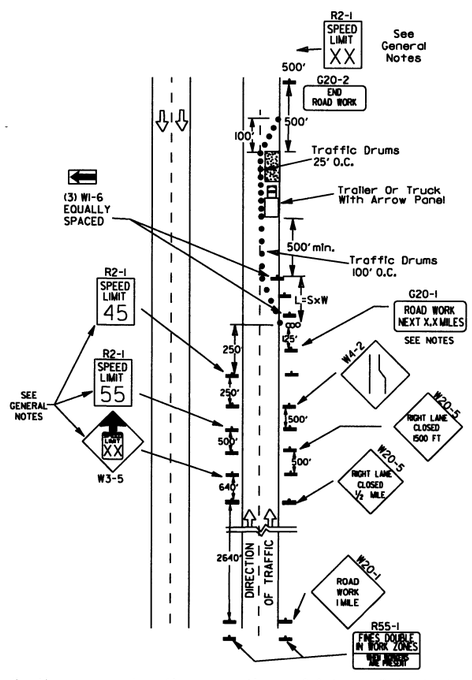
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



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

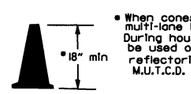
KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

GENERAL NOTES:

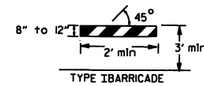
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



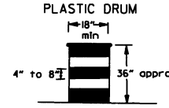
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

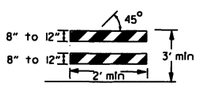
CONES



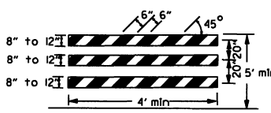
TYPE I BARRICADE

PLASTIC DRUM



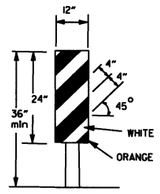


TYPE II BARRICADE



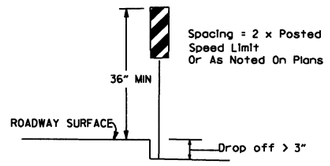
TYPE III BARRICADE

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



VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT

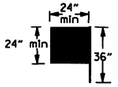


TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

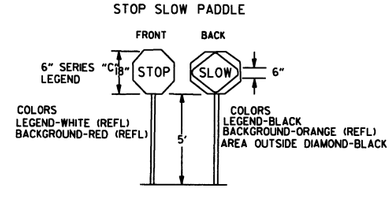
* When shown on the plans concrete barrier will be used.
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

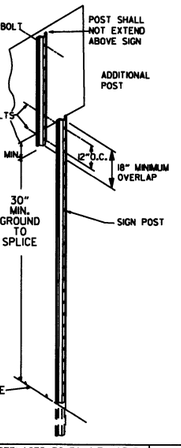


Flag shall be of good grade red material

STOP SLOW PADDLE



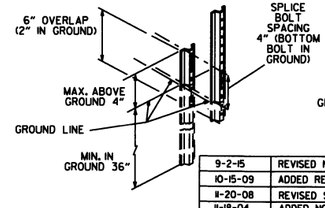
DETAIL OF SPLICES

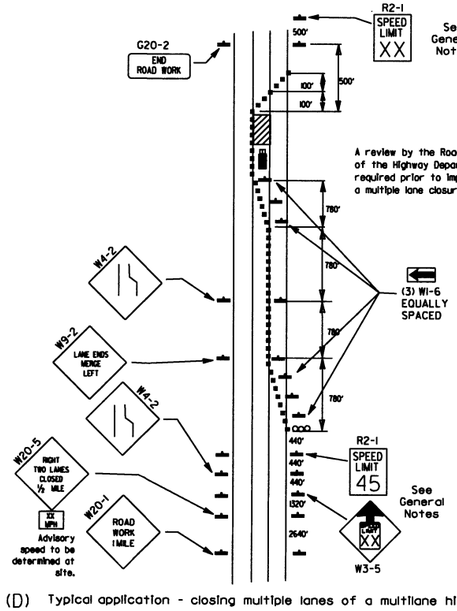


NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.





(D) Typical application - closing multiple lanes of a multilane highway.

9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1& REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED

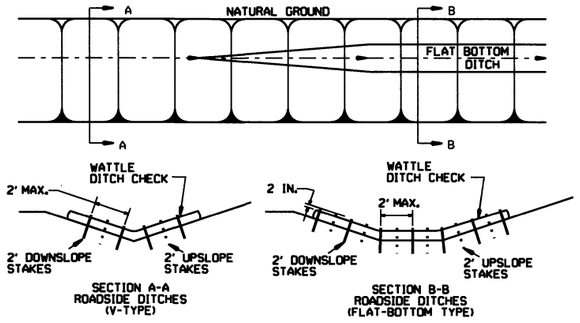
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

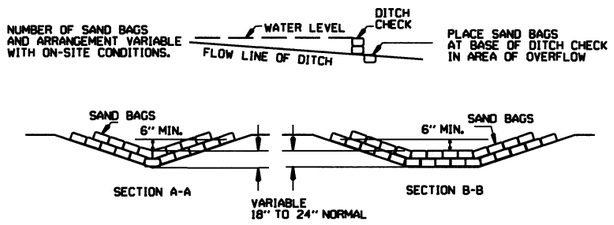
STANDARD DRAWING TC-3

GENERAL NOTES

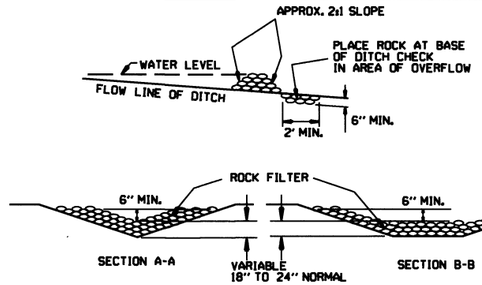
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



SAND BAG DITCH CHECK (E-5)

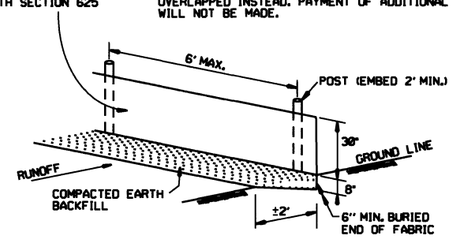


ROCK DITCH CHECK (E-6)

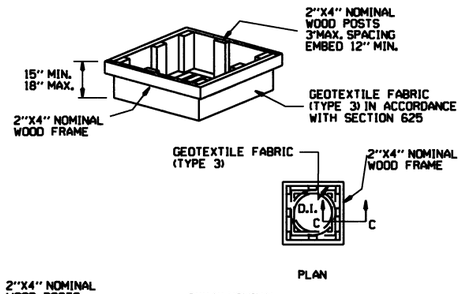
GENERAL NOTES

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625

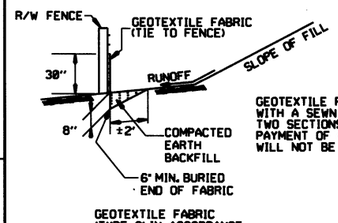
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



SILT FENCE (E-11)

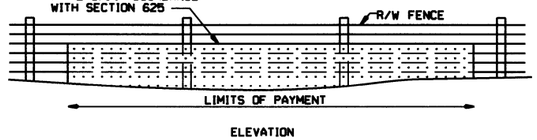


DROP INLET SILT FENCE (E-7)



GENERAL NOTES

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



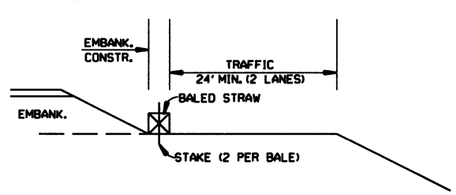
SILT FENCE ON R/W FENCE (E-4)

GENERAL NOTES

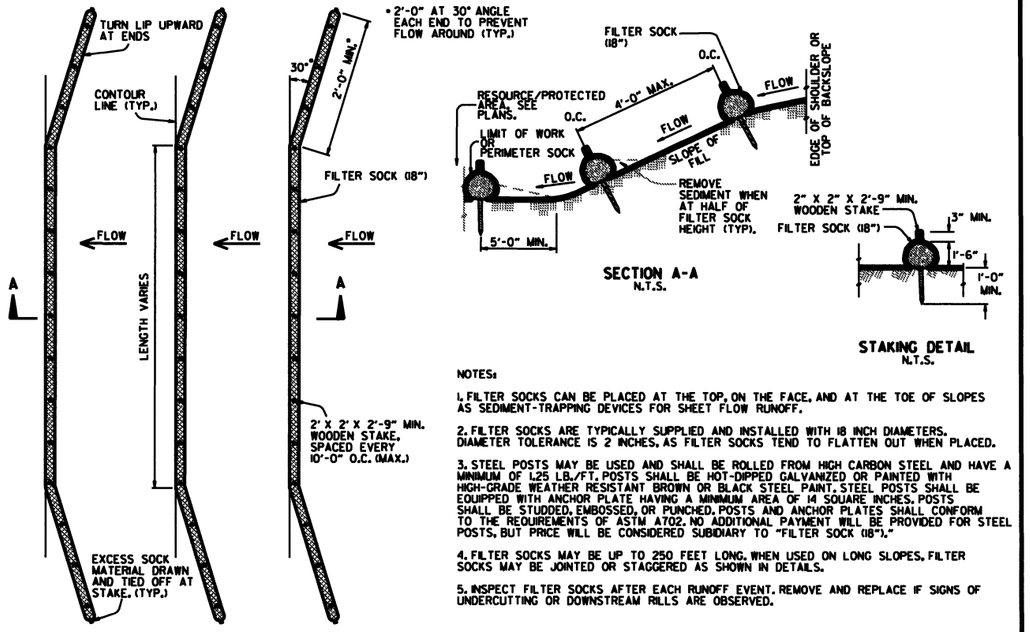
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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



BALED STRAW FILTER BARRIER (E-2)



NOTES:

1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.

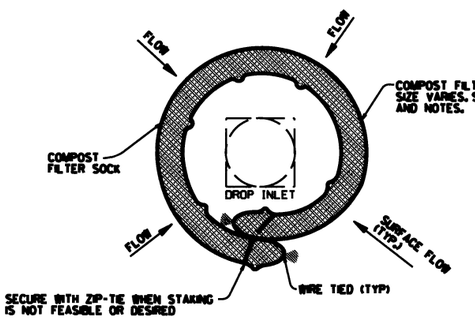
2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.

3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBSIDIARY TO "FILTER SOCK (18")."

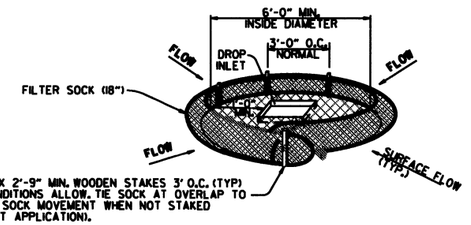
4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.

5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.

FILTER SOCK ALONG SLOPE (E-3)



DROP INLET PLAN VIEW
N.T.S.



DROP INLET PERSPECTIVE VIEW
N.T.S.

NOTES:

1. OVERLAP ENDS OF SOCK (1' MIN, 3' MAX.).

2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

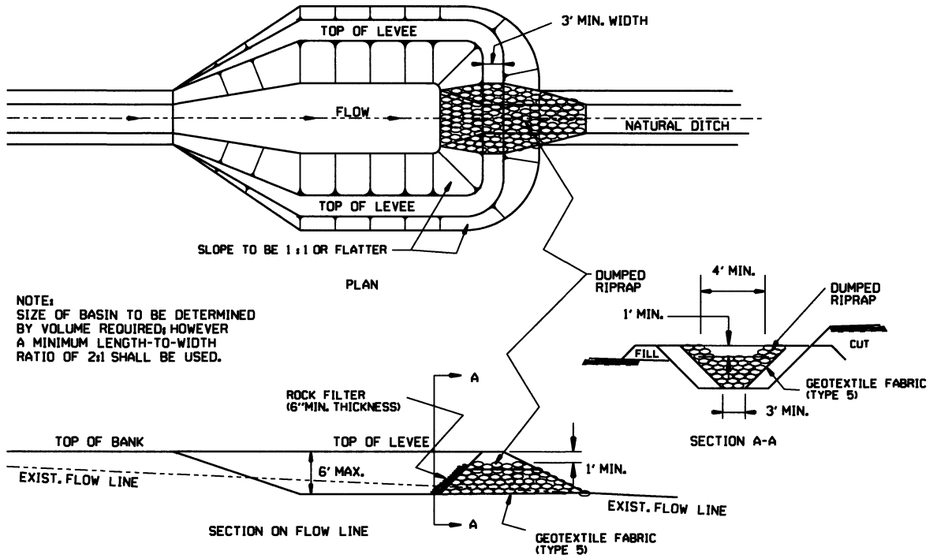
COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)

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

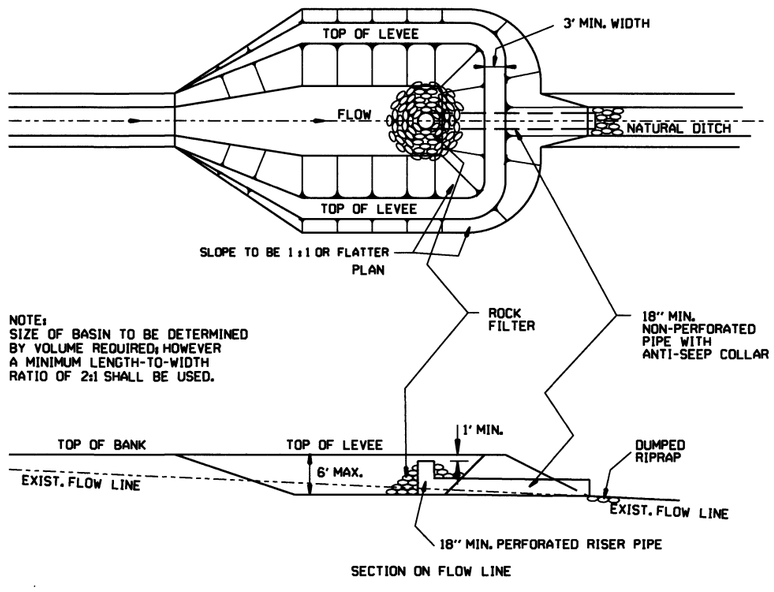
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

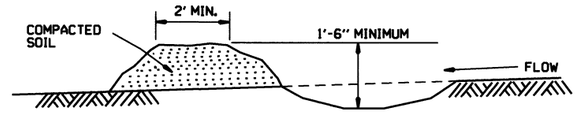
STANDARD DRAWING TEC-1



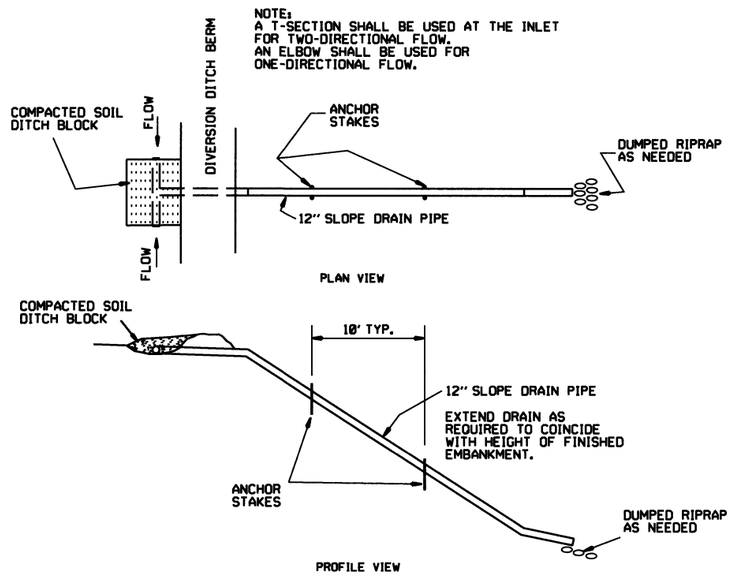
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



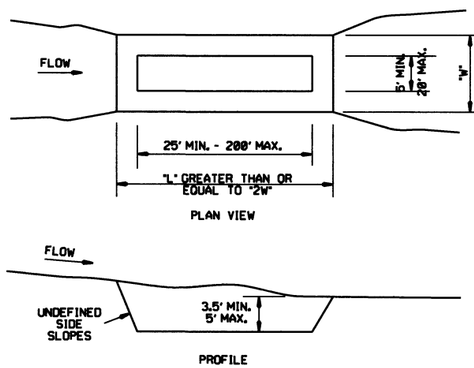
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

DATE	REVISION	FILMED
6-2-94	Revised E-8 & E-12; Added E-14 & Deleted E-13	
4-1-93	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

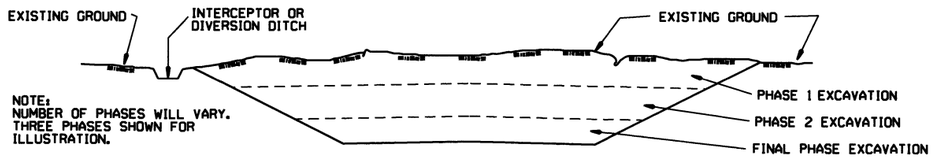
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



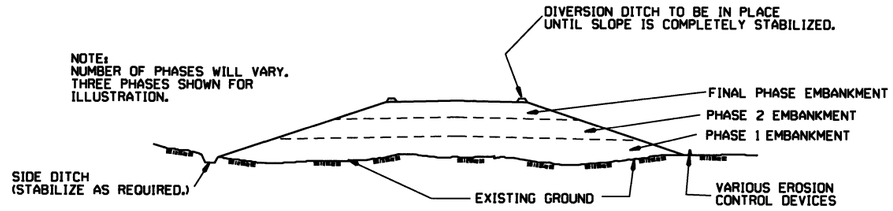
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3