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.		070282	1	190
				(2)	OUACHITA RIVER STR. & APPRS. (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

OUACHITA RIVER STR. & APPRS. (S)

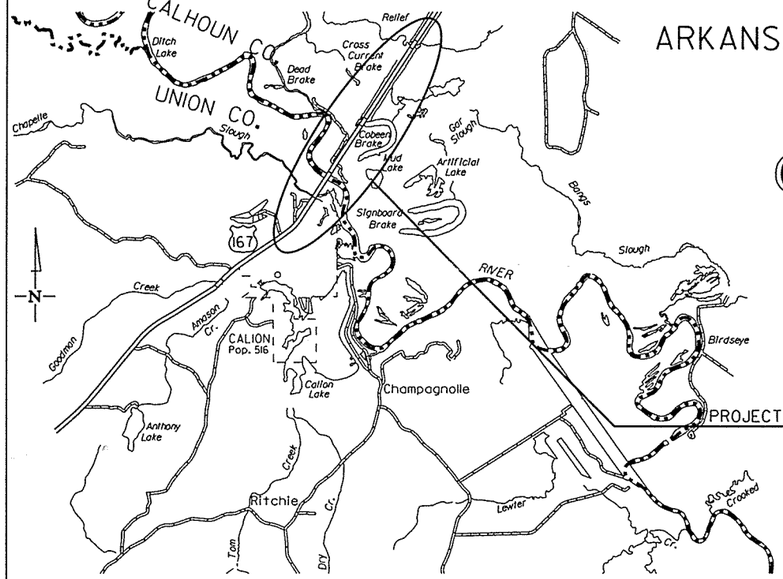
UNION AND CALHOUN COUNTIES

ROUTE 167 SECTIONS 2 & 3

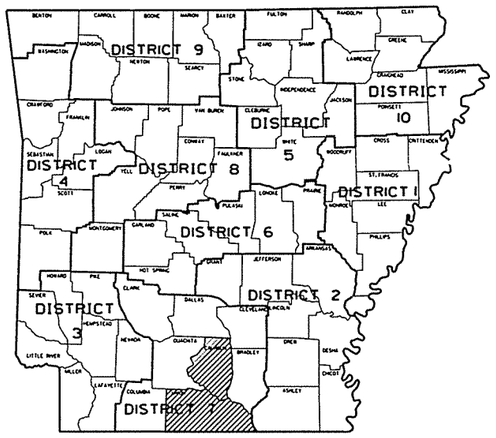
FEDERAL AID PROJ. : NHPP-7007(1)

JOB 070282

NOT TO SCALE



VICINITY MAP

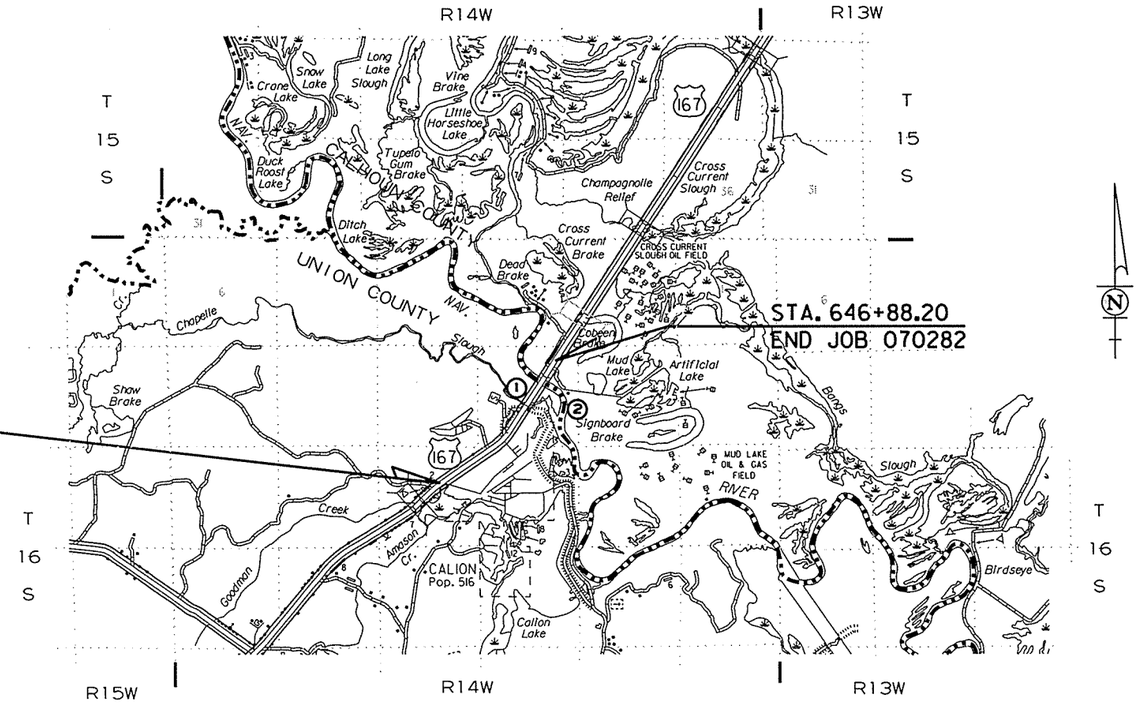


ARK. HWY. DIST. NO. 7

BRIDGE DATA

(1) STA. 596+17.67 BRIDGE END - IN PLACE
BRIDGE NO. 06362
CONT. STEEL MULTI-BEAM
40' CLEAR ROADWAY
3206' BRIDGE LENGTH
STA. 628+20.83 BRIDGE END
RETAIN
L.M. 0.00

(2) STA. 596+16.71 BRIDGE END
BRIDGE NO. A6362
3205' - 7 1/8" BRIDGE LENGTH
4 - 373'-0" CONT. COMP. PRESTRESSED
CONCRETE GIRDER UNIT (91'-6", 2 @ 95'-0", 91'-6")
2 - 468'-0" CONT. COMP. PRESTRESSED
CONCRETE GIRDER UNIT (91'-6", 3 @ 95'-0", 91'-6")
1 - 775'-0" CONT. COMP. PLATE GIRDER
UNIT (235'-0", 305'-0", 235'-0")
38'-0" CLEAR ROADWAY
STA. 628+22.30 BRIDGE END



DESIGN TRAFFIC DATA

DESIGN YEAR	2034
2014 ADT	4300
2034 ADT	5000
2034 DHV	550
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	20%
DESIGN SPEED	60 MPH

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 33°20'02"	N 33°20'45"	N 33°21'15"
LONGITUDE	W 92°32'42"	W 92°31'55"	W 92°31'30"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF PROJECT			9283.72	FEET	OR	1.758	MILES
NET	.	. ROADWAY	6078.13	.		1.151	MILES
NET	.	. BRIDGES	3205.59	.		0.607	MILES
NET	.	. PROJECT	9283.72	FEET	OR	1.758	MILES

P.E. JOB 070373

APPROVED

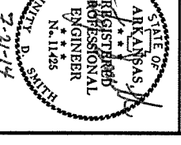
STATE OF ARKANSAS
7-22-14
REGISTERED PROFESSIONAL ENGINEER
No. 4215
RALPH J. HALL

Ralph J. Hall
DEPUTY DIRECTOR
AND CHIEF ENGINEER

r070282.dgn 07/14/2014

INDEX OF SHEETS

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



DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	070282	2	190

(2) INDEX OF SHEETS

JOB NO.

INDEX OF SHEETS

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				6	ARK.			
				JOB NO.		070282	3	190

(2) GOVERNING SPECIFICATIONS AND GEN. NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-24-14

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 070282
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
108-1_____	LIQUIDATED DAMAGES
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
620-1_____	MULCH COVER
JOB 070282__	ARCHEOLOGICAL MONITORING
JOB 070282__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 070282__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 070282__	CLEARANCE GAUGES
JOB 070282__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 070282__	CULVERT CLEAN OUT
JOB 070282__	DETAILS FOR BOATER SAFETY
JOB 070282__	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 070282__	EMBANKMENT CONSTRUCTION (BORROW DITCHES)
JOB 070282__	EXCAVATION AND EMBANKMENT (CLAY FILL)
JOB 070282__	GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION
JOB 070282__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 070282__	HIGH PERFORMANCE PAVEMENT MARKING
JOB 070282__	MANDATORY USE OF INTERNET BIDDING
JOB 070282__	NAVIGATION LIGHTING SYSTEM
JOB 070282__	NESTING SITES OF MIGRATORY BIRDS
JOB 070282__	PARTNERING REQUIREMENTS
JOB 070282__	PLASTIC PIPE
JOB 070282__	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 070282__	RETAINING WALLS
JOB 070282__	REQUIREMENTS OF U.S. COAST GUARD PERMIT
JOB 070282__	SECTION 404 LETTER OF PERMISSION PERMIT REQUIREMENTS
JOB 070282__	SHORING
JOB 070282__	SOIL STABILIZATION
JOB 070282__	SPECIAL FACILITIES AT SITE
JOB 070282__	STORM WATER POLLUTION PREVENTION PLAN
JOB 070282__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 070282__	UNPAINTED WEATHERING STRUCTURAL STEEL
JOB 070282__	UTILITY ADJUSTMENTS
JOB 070282__	VALUE ENGINEERING
JOB 070282__	WARM MIX ASPHALT
JOB 070282__	WELLHEAD PROTECTION

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO 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. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

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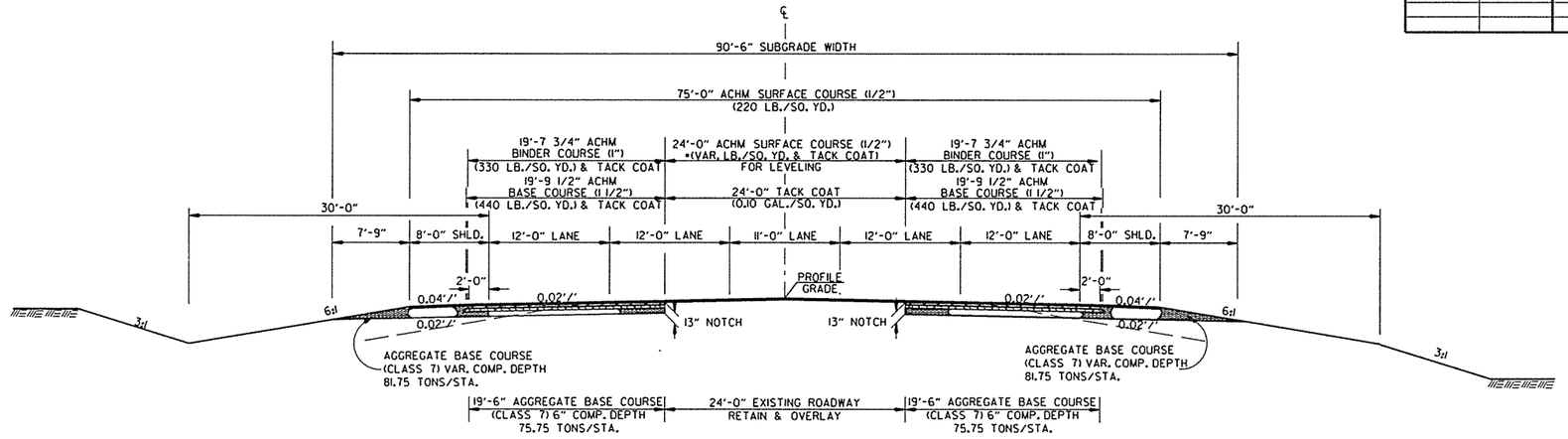
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



TYPICAL SECTION OF IMPROVEMENT
5 LANE UNDIVIDED
CENTERED NOTCH AND WIDEN
TANGENT SECTION
STA. 554+04.48-565+63.56

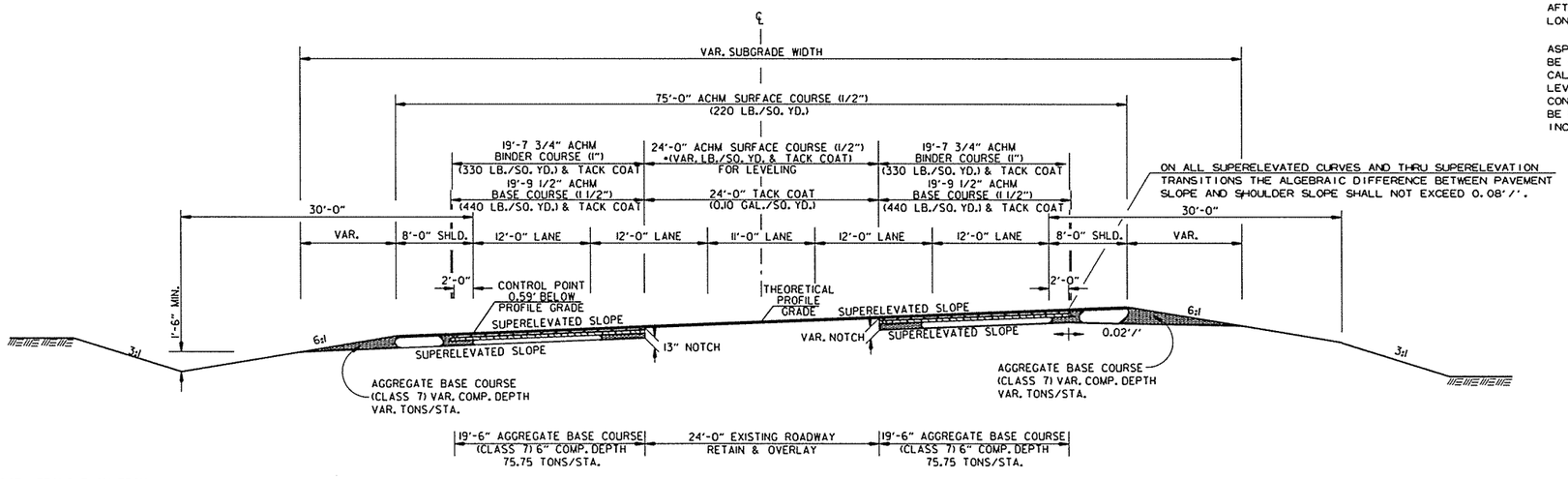
* TO BE USED IF & WHERE DIRECTED BY THE ENGINEER.

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

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

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

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



TYPICAL SECTION OF IMPROVEMENT
5 LANE UNDIVIDED
NOTCH AND WIDEN
SUPERELEVATED SECTION
STA. 565+63.56-570+57.98

* TO BE USED IF & WHERE DIRECTED BY THE ENGINEER.

STA. 570+57.98-579+09.22 (C.L. EXIST. HWY. 167) TRANSITION FROM 5 LANE UNDIVIDED NOTCH AND WIDEN SUPERELEVATED SECTION TO 4 LANE DIVIDED OVERLAY LEFT LANES SUPERELEVATED SECTION.

STA. 570+57.98-579+03.66 (RT. MAIN LANES) TRANSITION FROM 5 LANE UNDIVIDED NOTCH AND WIDEN SUPERELEVATED SECTION TO 4 LANE DIVIDED OVERLAY LEFT LANES SUPERELEVATED SECTION.

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TYPICAL SECTIONS OF IMPROVEMENT

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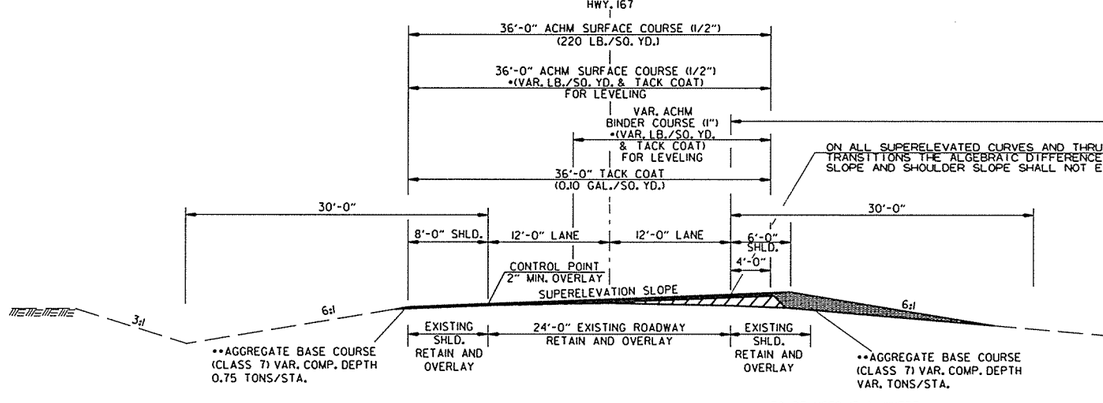
(2) TYPICAL SECTIONS OF IMPROVEMENT

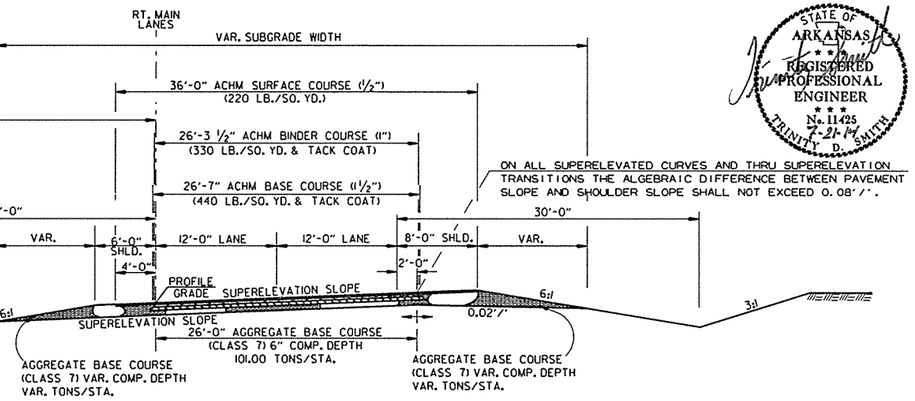
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
7-21-14
TRINITY D. SMITH



C.L. EXIST. HWY. 167
STA. 579+09.22-585+60.05

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

••AGGREGATE BASE COURSE SHALL BE UNIFORMLY COMPACTED, STABLE AND FREE OF SEGREGATED AREAS. THE DENSITY REQUIREMENTS OF SECTION 303 ARE WAIVED.



RT. MAIN LANES
STA. 579+03.66-586+43.61

STA. 570+57.98-579+09.22 (C.L. EXIST. HWY. 167) TRANSITION FROM 5 LANE UNDIVIDED NOTCH AND WIDEN SUPERELEVATED SECTION TO 4 LANE DIVIDED OVERLAY LEFT LANES SUPERELEVATED SECTION.

STA. 570+57.98-579+03.66 (RT. MAIN LANES) TRANSITION FROM 5 LANE UNDIVIDED NOTCH AND WIDEN SUPERELEVATED SECTION TO 4 LANE DIVIDED OVERLAY LEFT LANES SUPERELEVATED SECTION.

TYPICAL SECTION OF IMPROVEMENT
4 LANE DIVIDED
OVERLAY LEFT LANES
SUPERELEVATED SECTION

NOTES:
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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.

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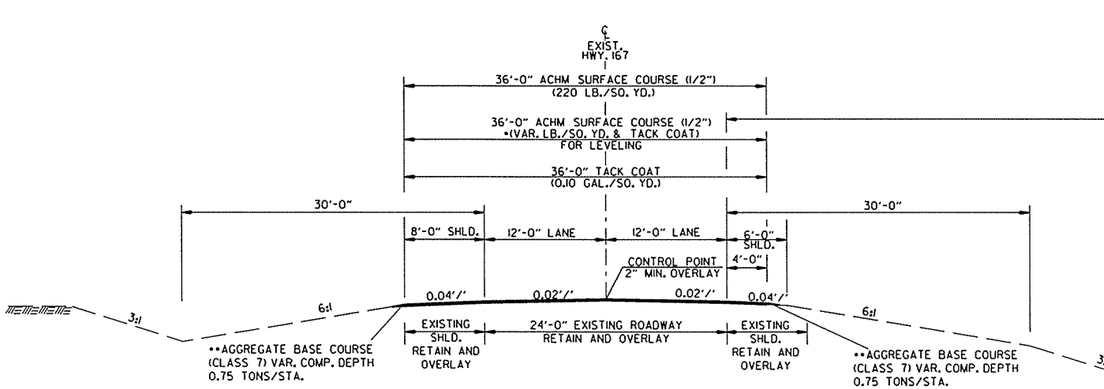

C.L. EXIST. HWY. 167
STA. 585+60.05-596+17.67

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

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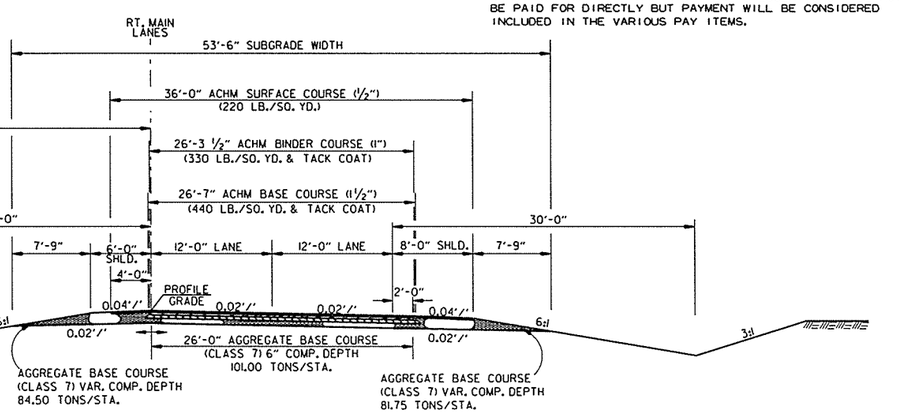

RT. MAIN LANES
STA. 586+43.61-596+16.68

TYPICAL SECTION OF IMPROVEMENT
4 LANE DIVIDED
OVERLAY LEFT LANES
TANGENT SECTION

7/14/2014

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TYPICAL SECTIONS OF IMPROVEMENT

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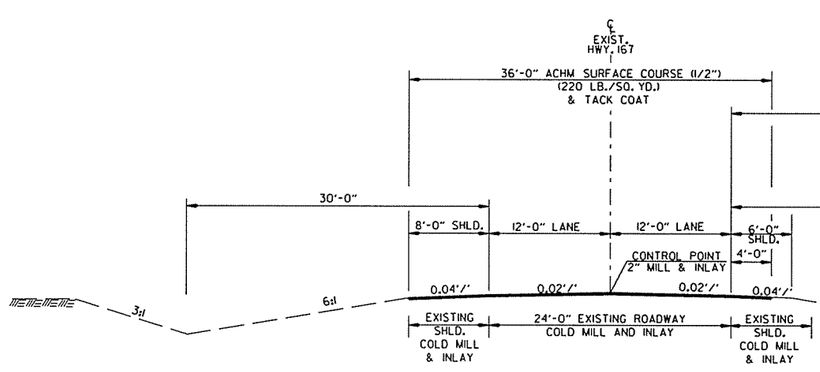
				JOB NO.		070282	6	190

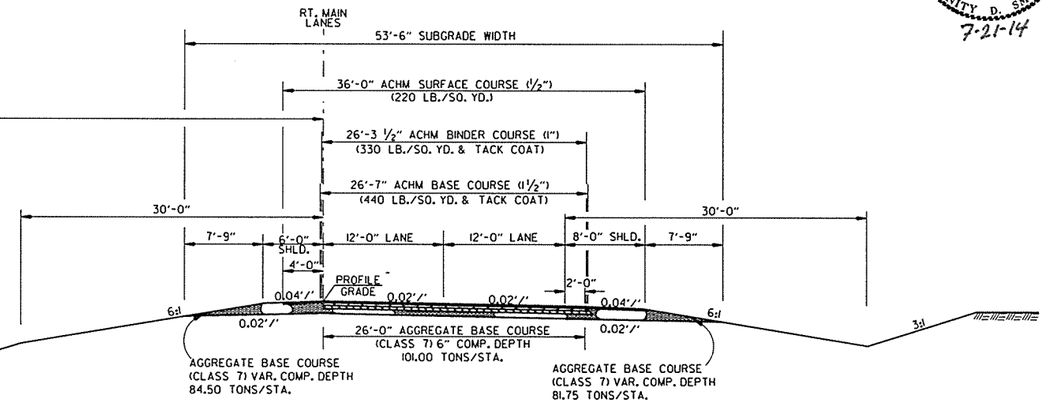
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



C.L. EXIST. HWY. 167
STA. 628+20.83-631+82.37

LT. LANES NORTH TRANSITION
STA. 631+82.37-638+92.60



RT. MAIN LANES
STA. 628+22.32-638+93.30

TYPICAL SECTION OF IMPROVEMENT
4 LANE DIVIDED
COLD MILL & INLAY LT. LANES
TANGENT SECTION

STA. 638+92.60 (LT. LANES NORTH TRANSITION)-646+88.20 TRANSITION
FROM 4 LANE DIVIDED COLD MILL & INLAY LT. LANES
TO 4 LANE UNDIVIDED COLD MILL & INLAY.

STA. 638+93.30 (RT. MAIN LANES)-646+88.20 TRANSITION
FROM 4 LANE DIVIDED COLD MILL & INLAY LT. LANES
TO 4 LANE UNDIVIDED COLD MILL & INLAY.

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

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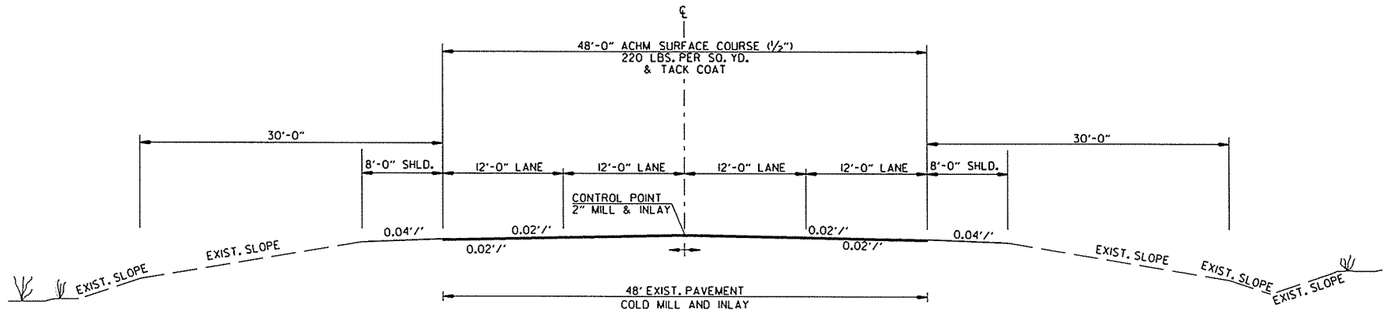

TYPICAL SECTION OF
IMPROVEMENT
4 LANE UNDIVIDED
COLD MILL & INLAY
TANGENT SECTION
STA. 646+88.20-651+27.37

7/14/2014

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TYPICAL SECTIONS OF IMPROVEMENT

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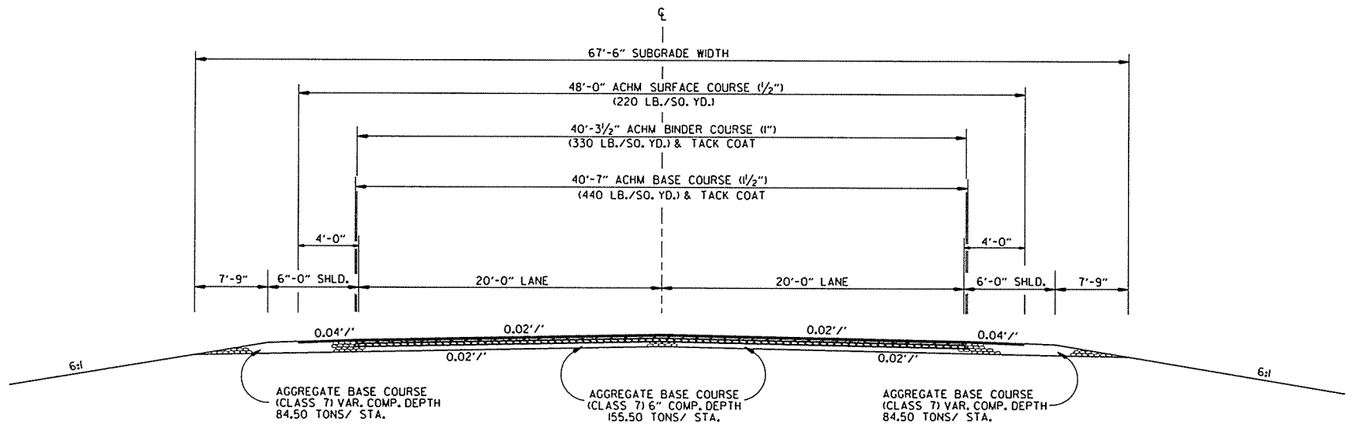
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



MEDIAN TURNAROUND & ST. HWY. & COUNTY ROAD CROSSING TYPICAL

NOTE:
CROSSINGS ON SKEW WILL INCREASE WIDTH OF PAVEMENT.

NOTES:
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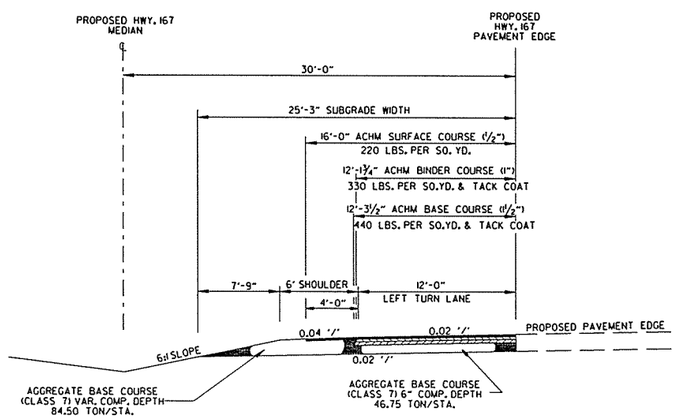

HWY. 167 - LEFT TURN LANE
(SHOWN IN DIRECTION OF TRAFFIC)

7/14/2014

R070282.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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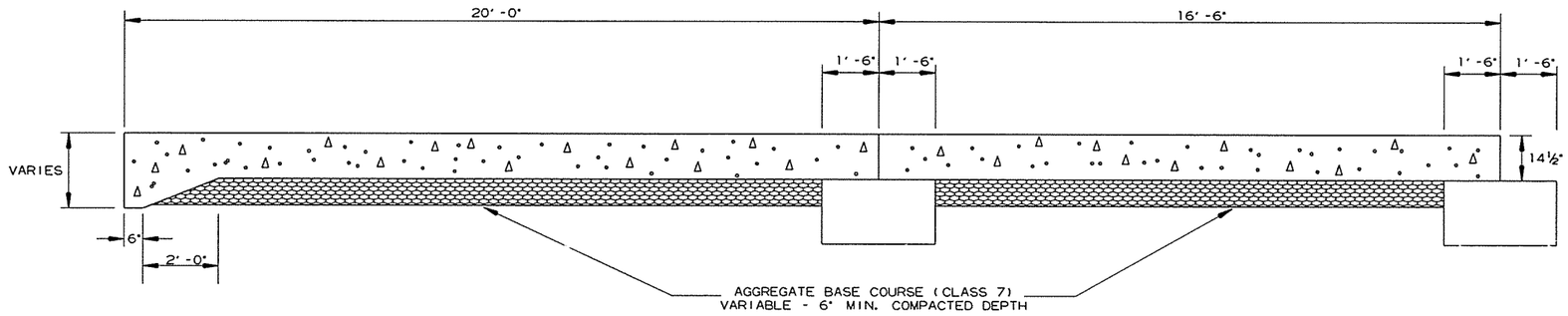
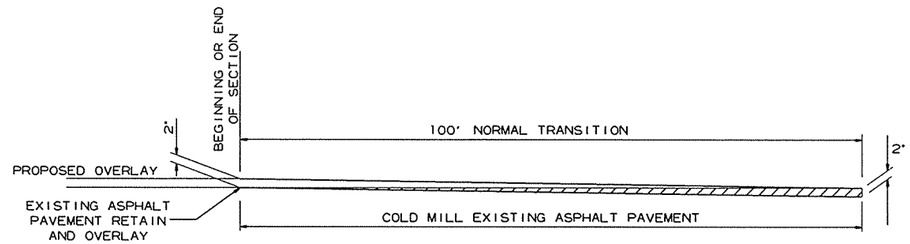
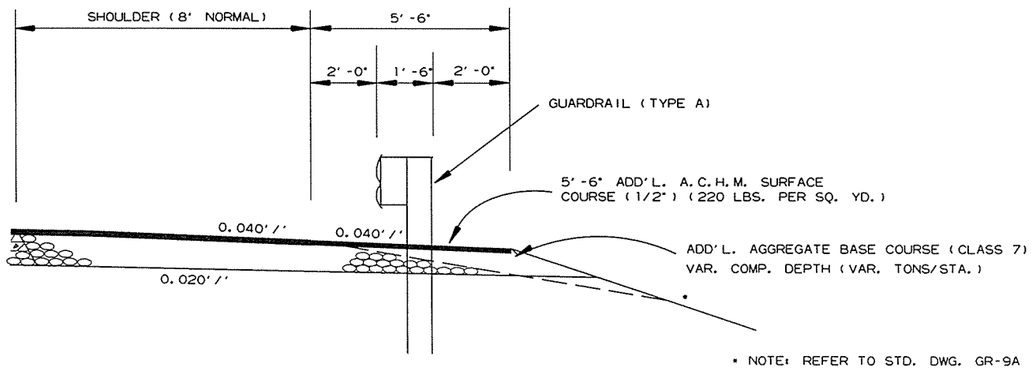
(2) SPECIAL DETAILS



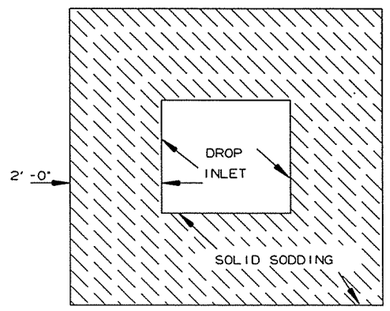
SECTION OF APPROACH SLAB



DETAIL FOR TRANSITIONS



WIDENING FOR GUARDRAIL



DETAIL FOR SOLID SODDING AROUND DROP INLETS

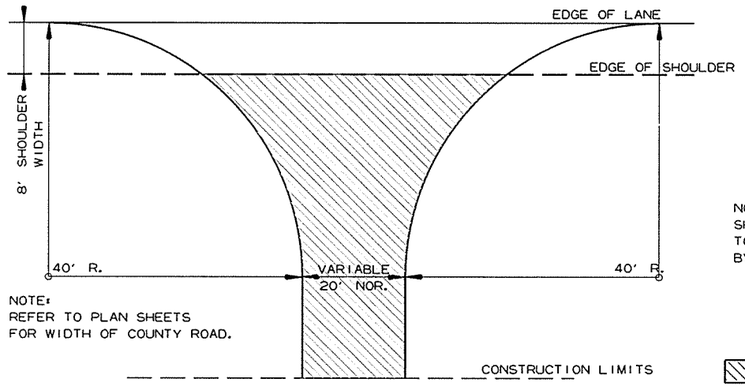
7/18/2014

R070282.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.		070282	9	190

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

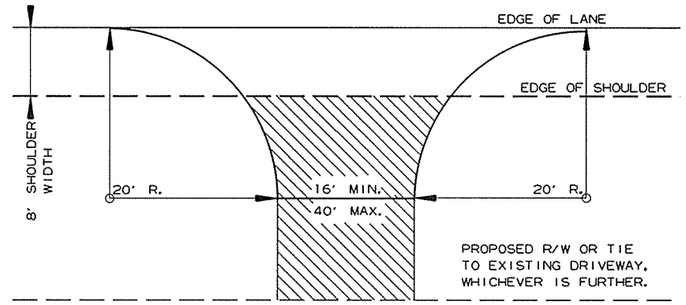


NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

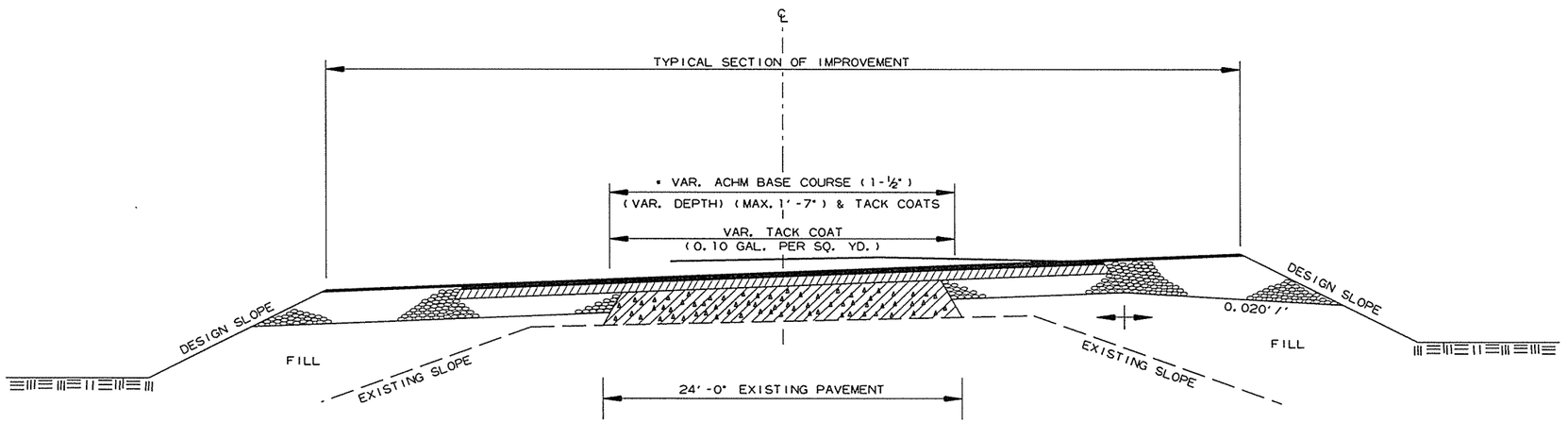
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

A.C.H.M SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH IF ASPHALT OR GRAVEL DRIVE EXISTING; OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.

DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION



DETAIL FOR DRIVEWAY TURNOUTS OPEN SHOULDER SECTION



* 7" AGGREGATE BASE COURSE (CLASS 7) TO BE REPLACED WITH A.C.H.M. 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, EDITION OF 2014.

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SPECIAL DETAILS

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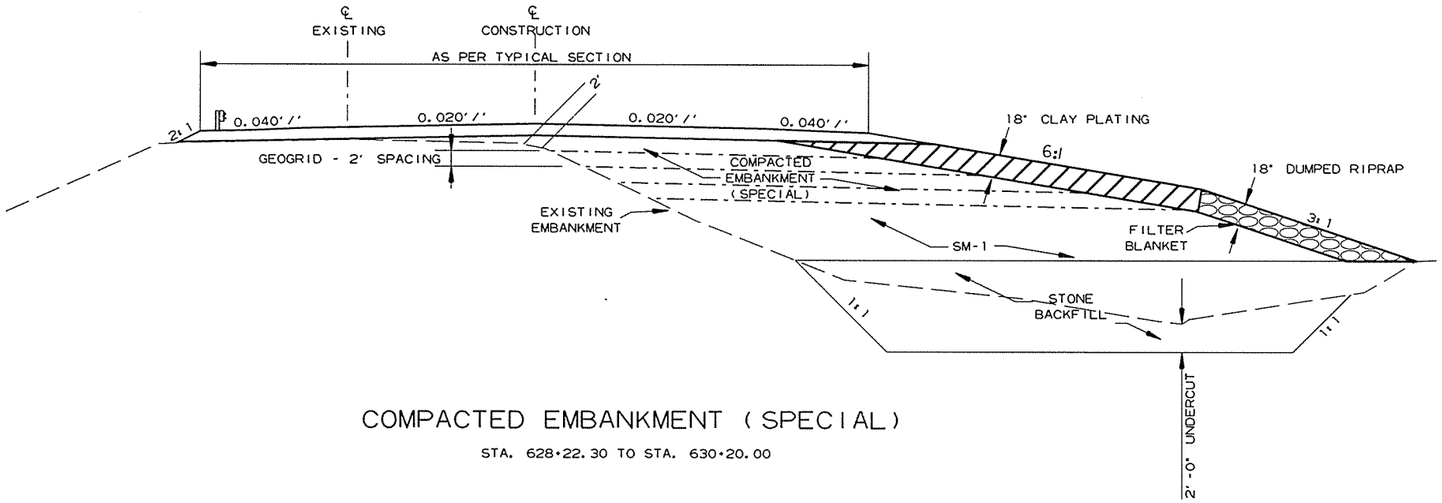
				6	ARK.			
				JOB NO.		070282	10	190

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

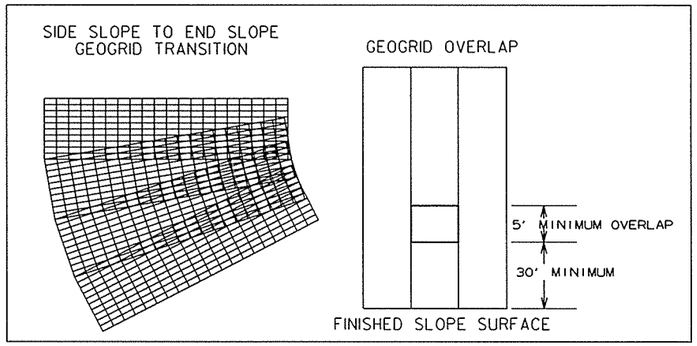


COMPACTED EMBANKMENT (SPECIAL)

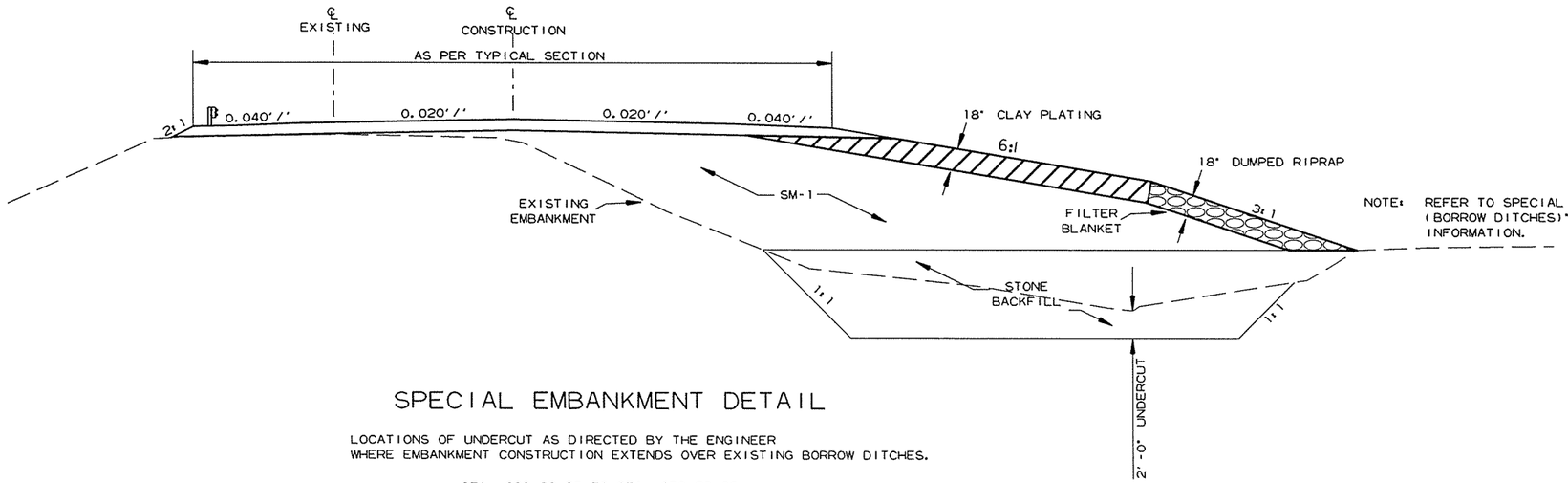
STA. 628+22.30 TO STA. 630+20.00

NOTE: REFER TO SPECIAL PROVISIONS "GEOSYNTHETIC INTERNAL REINFORCED EMBANKMENT CONSTRUCTION" & "EMBANKMENT CONSTRUCTION (BORROW DITCHES)" AND CROSS SECTIONS FOR ADDITIONAL INFORMATION.

NOTE: SELECTED MATERIAL (CLASS SM-1) AND CLAY PLATING MATERIAL WILL BE PAID FOR IN ACCORDANCE WITH SUBSECTION 210.13 OF THE STANDARD SPECIFICATIONS.



GEOGRID SPECIAL DETAILS



SPECIAL EMBANKMENT DETAIL

LOCATIONS OF UNDERCUT AS DIRECTED BY THE ENGINEER WHERE EMBANKMENT CONSTRUCTION EXTENDS OVER EXISTING BORROW DITCHES.

STA. 628+22.30 TO STA. 630+20.00

NOTE: REFER TO SPECIAL PROVISION "EMBANKMENT CONSTRUCTION (BORROW DITCHES)" AND CROSS SECTIONS FOR ADDITIONAL INFORMATION.

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R070282.DGN

SPECIAL DETAILS

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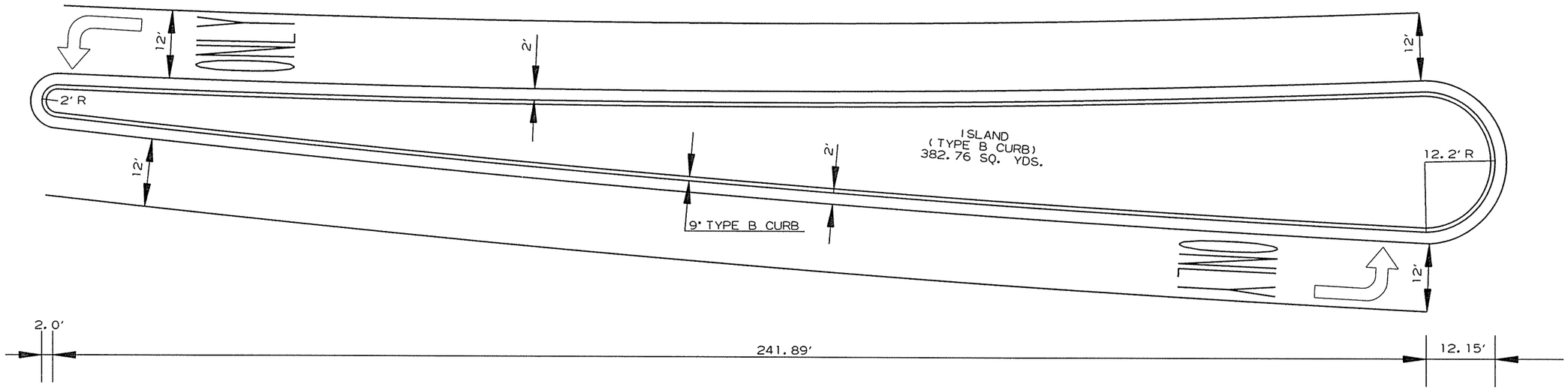
				6	ARK.			
				JOB NO.		070282	11	190

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



CONCRETE ISLAND DETAIL

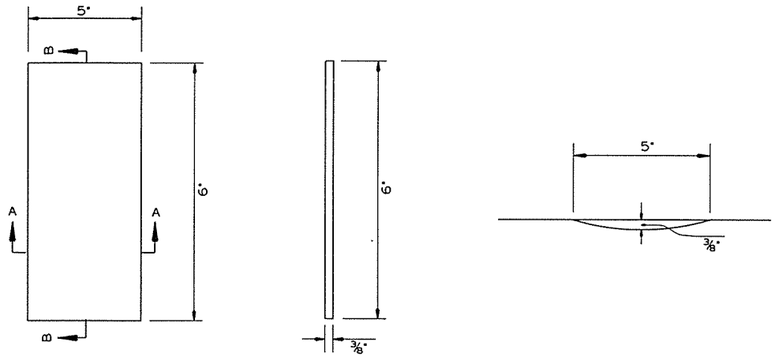
R070282.DGN 7/14/2014

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.		070282	12	190

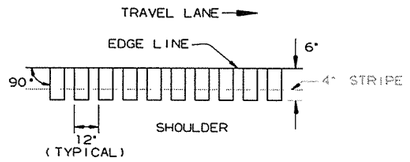
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

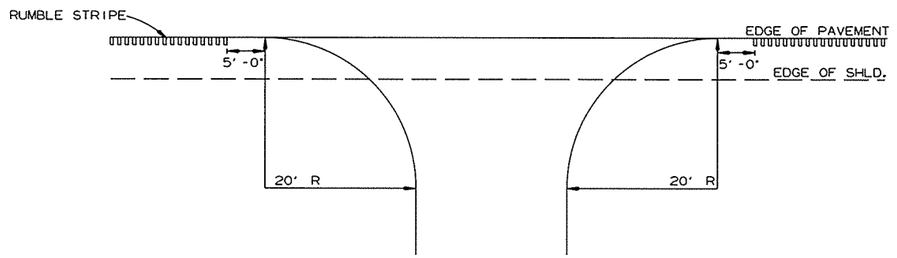


PLAN SECTION B-B SECTION A-A

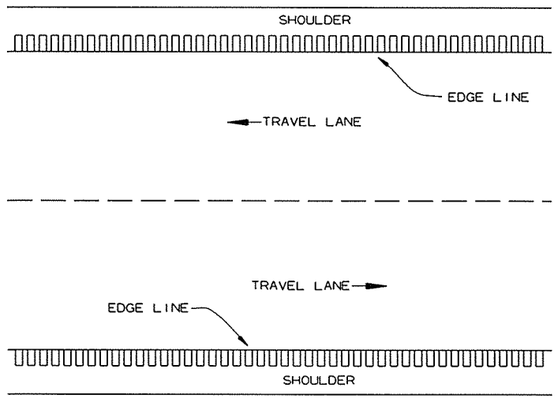
DETAILS OF RUMBLE STRIPE



LOCATION PLAN OF RUMBLE STRIPE
LEFT OR RIGHT SHOULDER



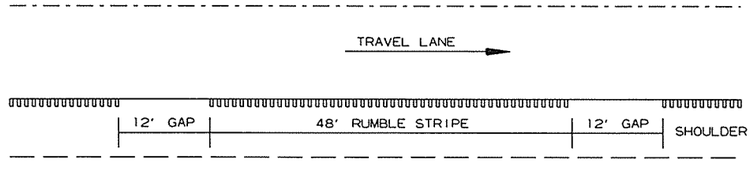
DETAIL FOR RUMBLE STRIPE GAP
AT DRIVEWAY TURNOUTS



PLAN VIEW

GENERAL NOTES

1. RUMBLE STRIPES SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS.
2. RUMBLE 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. RUMBLE STRIPES SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPES HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPES HAVE NOT BEEN CONSTRUCTED.
4. THE 3/8" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 6" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.



NOTE: GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER IN THE FIELD ALLOWING FOR DRIVEWAYS TO SERVE AS THE GAP.

DETAIL FOR GAP PATTERN RUMBLE STRIPE

7/14/2014

R070282.DGN

SEQUENCE OF CONSTRUCTION
CLEARING AND GRUBBING STAGE:
MAINTAIN TRAFFIC ON EXISTING LANES.
CLEAR AND GRUBB LT. & RT. OF MAIN LANES
INSTALL DITCH CHECKS.
INSTALL SILT FENCE
PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
CONSTRUCT NEW LANES ON RT.
INSTALL SILT FENCE.
EXTEND R.C. BOX CULVERT.
INSTALL SIDE DRAINS ON RIGHT.
INSTALL DITCH CHECKS.

PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 2:
SHIFT TRAFFIC TO NEW LOCATION ON RT.
INSTALL SILT FENCE.
INSTALL DITCH CHECKS.
INSTALL SIDE DRAIN ON LT.
PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 3:
SHIFT TRAFFIC TO FINAL LOCATION.
PLACE PERMANENT EROSION CONTROL ITEMS.

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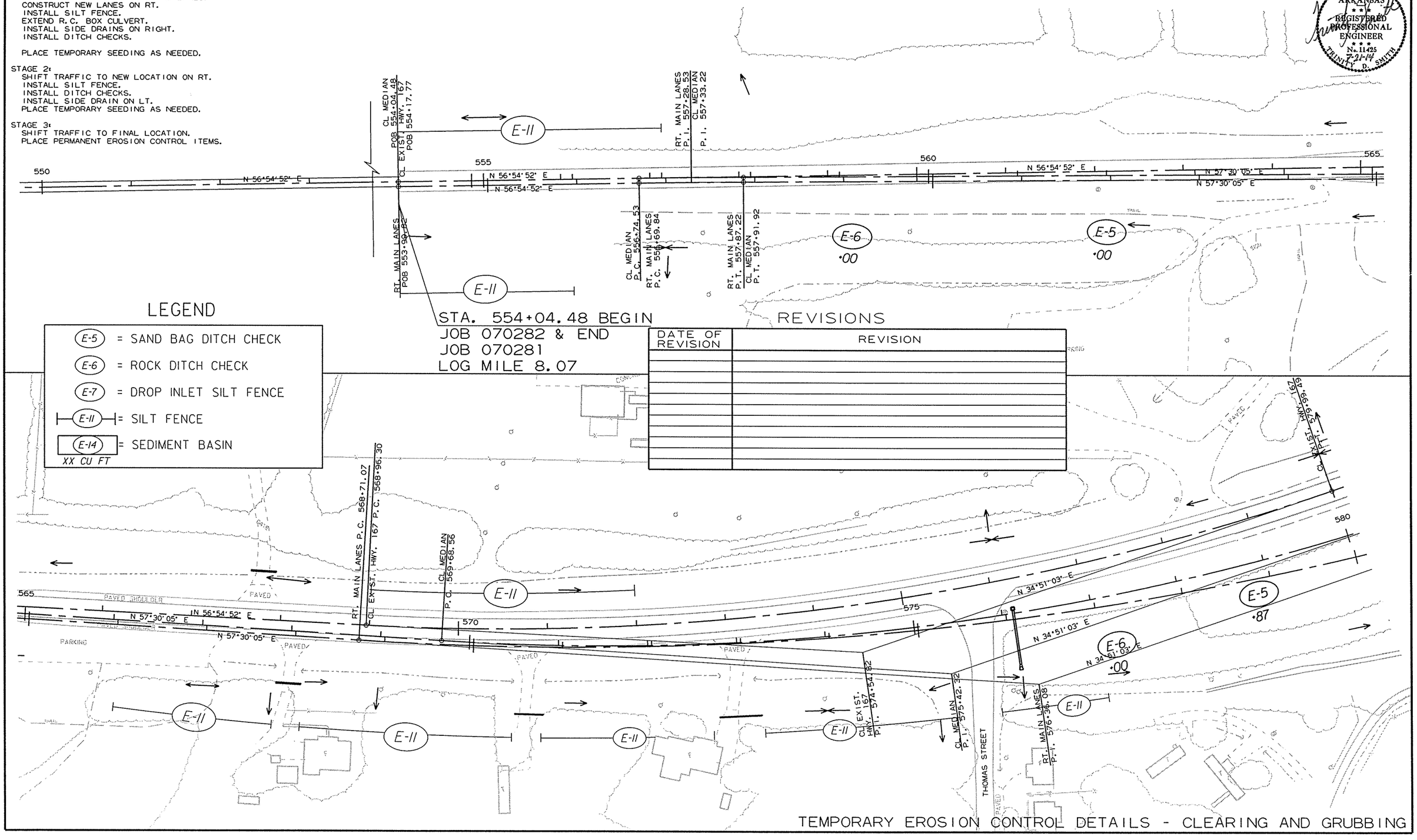
				JOB NO.		070282	13	190

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
7-21-14
TRINITY D. SMITH



LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) XX CU FT = SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS - CLEARING AND GRUBBING

7/14/2014

R070282.DGN

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				JOB NO.		070282	14	190

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

CL EX 1ST. HWY. 167
P.T. 579+99.49

E-11 E-11 E-11

PAVED PAVED PAVED

PAVED SHOULDER

PAVED SHOULDER

N 34°51'03" E

580 585 590 595

E-6

00

CL MEDIAN
P.T. 581+01.10

RT. MAIN LANES
P.T. 583+81.11

N 34°51'03" E

N 34°51'03" E

E-11

CONCRETE PARKING

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN
  XX CU FT

REVISIONS

DATE OF REVISION	REVISION

PIPEL

595 600 605 610

N 34°51'03" E

N 34°51'03" E

N 34°51'03" E

E-11

TEMPORARY EROSION CONTROL DETAILS - CLEARING AND GRUBBING

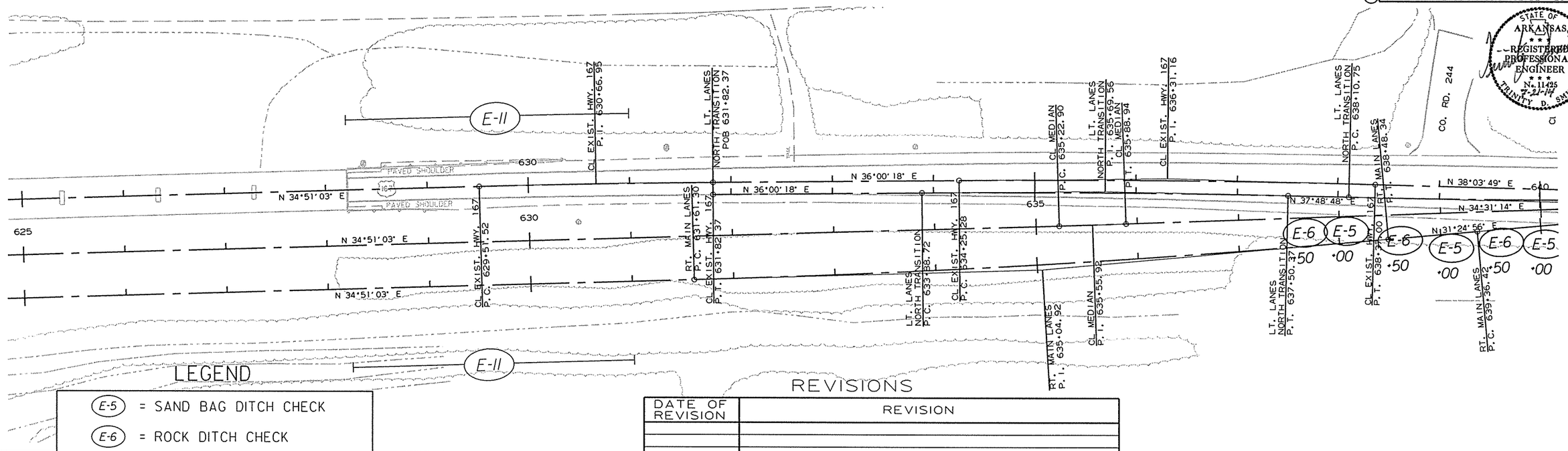
7/14/2014

R070282.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.		070282	15	190

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11495
7-21-14
TRINITY D. SMITH

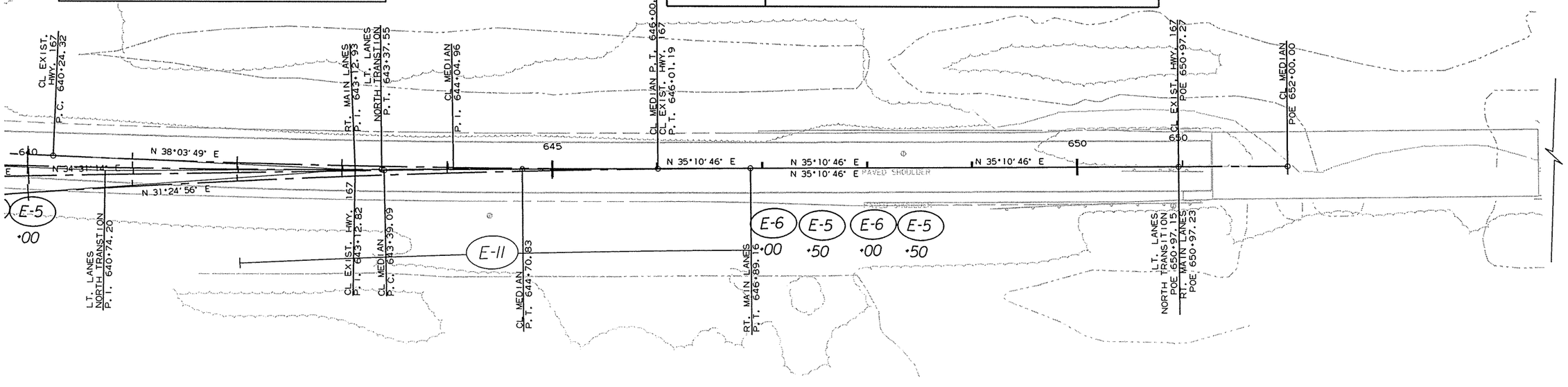


LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN
  XX CU FT

REVISIONS

DATE OF REVISION	REVISION



7/14/2014

R070282.DGN

TEMPORARY EROSION CONTROL DETAILS - CLEARING AND GRUBBING

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.		070282	16	190

(2) TEMPORARY EROSION CONTROL DETAILS

SEQUENCE OF CONSTRUCTION

CLEARING AND GRUBBING STAGE:
- MAINTAIN TRAFFIC ON EXISTING LANES.
- CLEAR AND GRUBB LT. & RT. OF MAIN LANES
- INSTALL DITCH CHECKS.
- INSTALL SILT FENCE
- PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 1:
- MAINTAIN TRAFFIC ON EXISTING LANES.
- CONSTRUCT NEW LANES ON RT.
- INSTALL SILT FENCE.
- EXTEND R.C. BOX CULVERT.
- INSTALL SIDE DRAINS ON RIGHT.
- INSTALL DITCH CHECKS.

PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 2:
- SHIFT TRAFFIC TO NEW LOCATION ON RT.
- INSTALL SILT FENCE.
- INSTALL DITCH CHECKS.
- INSTALL SIDE DRAIN ON LT.
- PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 3:
- SHIFT TRAFFIC TO FINAL LOCATION.
- PLACE PERMANENT EROSION CONTROL ITEMS.

LEGEND

- E-5 = SAND BAG DITCH CHECK
- E-6 = ROCK DITCH CHECK
- E-7 = DROP INLET SILT FENCE
- E-11 = SILT FENCE
- E-14 = SEDIMENT BASIN XX CU FT

STA. 554+04.48 BEGIN
JOB 070282 & END
JOB 070281
LOG MILE 8.07

CL MEDIAN
PI = 557+33.22
Δ = 00°35'13" RT.
D = 00°30'00"
T = 58.69'
L = 117.38'
PC = 556+74.53
PT = 557+91.92
NO SUPER

RT. MAIN LANES
PI = 557+28.53
Δ = 00°35'13" RT.
D = 00°30'00"
T = 58.69'
L = 117.38'
PC = 556+69.84
PT = 557+87.22
NO SUPER

CL EXIST. HWY. 167
PI = 574+54.82
Δ = 22°03'50" LT.
D = 02°00'00"
T = 558.51'
L = 1103.19'
PC = 568+96.30
PT = 579+99.49
e = 0.055'/'
Ls = 540'-350'

EQUATIONS:
CL MEDIAN STA. 570+57.98 BACK =
CL EXIST. STA. 570+70.94 (17.50' LT.) AHEAD

CL MEDIAN
PI = 575+42.32
Δ = 22°39'02" LT.
D = 02°00'00"
T = 573.76'
L = 1132.53'
PC = 569+68.56
PT = 581+01.10
e = 0.055'/'
Ls = 540'-350'

EQUATIONS:
CL MEDIAN STA. 575+69.74 BACK =
RT. MAIN LANES STA. 575+65.59
(5.50' RT.) AHEAD

RT. MAIN LANES
PI = 576+36.08
Δ = 22°39'02" LT.
D = 01°30'00"
T = 765.01'
L = 1510.04'
PC = 568+71.07
PT = 583+81.11
e = 0.043'/'
Ls = 540'-350'

REVISIONS

DATE OF REVISION	REVISION

7/15/2014

R070282.DGN

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

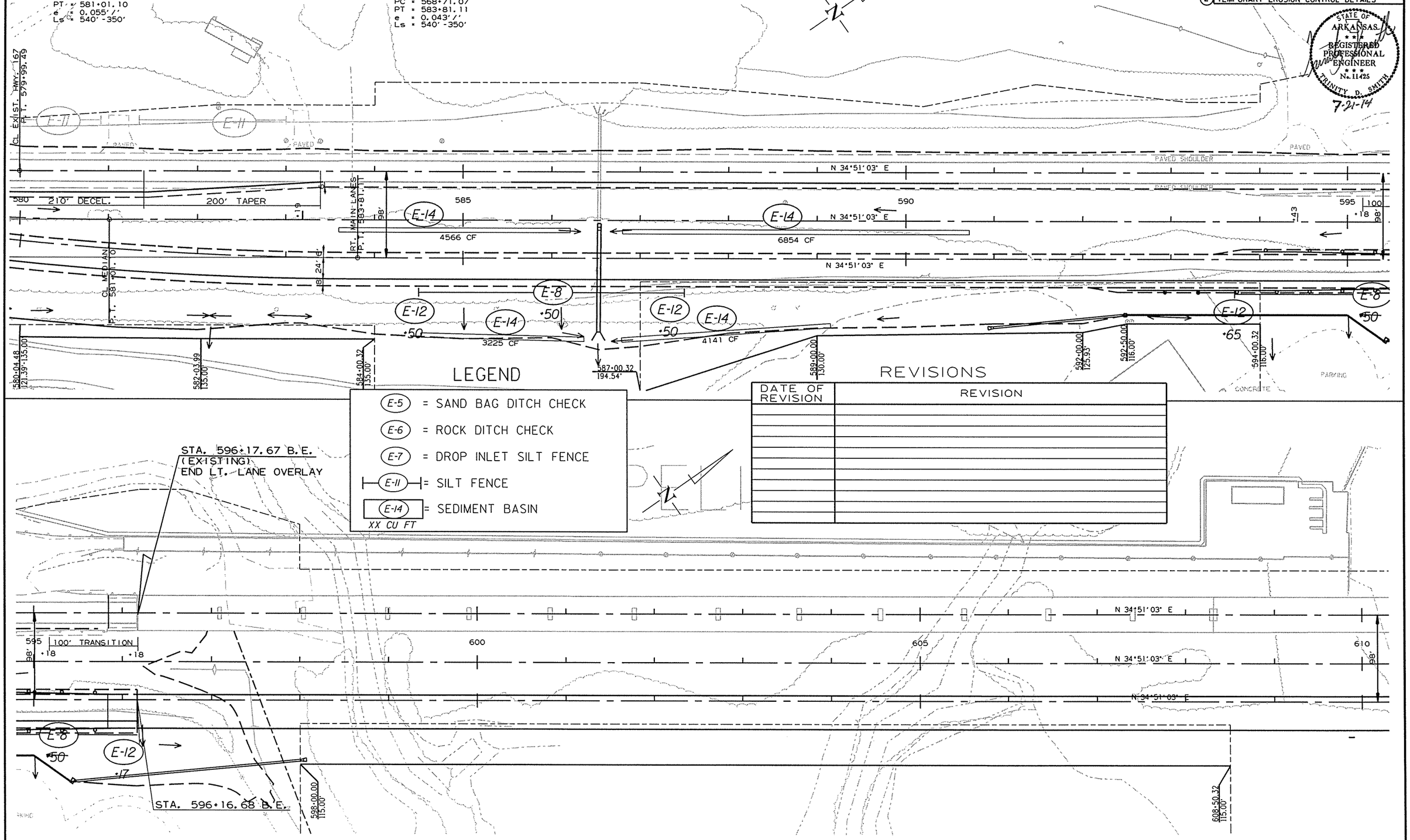
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	17	190

(2) TEMPORARY EROSION CONTROL DETAILS

CL MEDIAN
PI = 575+42.32
Δ = 22°39'02" LT.
D = 02°00'00"
T = 573.76'
L = 1132.53'
PC = 569+68.56
PT = 581+01.10
e = 0.055'/'
Ls = 540'-350'

RT. MAIN LANES
PI = 576+36.08
Δ = 22°39'02" LT.
D = 01°30'00"
T = 765.01'
L = 1510.04'
PC = 568+71.07
PT = 583+81.11
e = 0.043'/'
Ls = 540'-350'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN
  XX CU FT

REVISIONS

DATE OF REVISION	REVISION

7/18/2014

R070282.DGN

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

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.		070282	18	190

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

CL EXIST. HWY. 167
PI = 630+66.95
Δ = 01°09'15" RT.
D = 00°30'00"
T = 115.43'
L = 230.85'
PC = 629+51.52
PT = 631+82.37
NO SUPER

CL MEDIAN
PI = 635+55.92
Δ = 00°19'49" LT.
D = 00°30'00"
T = 33.02'
L = 66.04'
PC = 635+22.90
PT = 635+88.94
NO SUPER

CL EXIST. HWY. 167
PI = 636+31.16
Δ = 02°03'31" RT.
D = 00°30'00"
T = 205.88'
L = 411.72'
PC = 634+25.28
PT = 638+37.00
NO SUPER

STA. 628+20.83 B.E.
(EXISTING)
BEGIN LT. LANE INLAY

EQUATIONS:
CL EXIST. STA. 633+88.72 BACK =
LT. LANES NORTHERN TRANSITION
STA. 633+88.72 (12.00' RT.) AHEAD

CO. RD. 244

RT. MAIN LANE
PI = 635+04.92
Δ = 03°26'07" LT.
D = 00°30'00"
T = 343.62'
L = 687.04'
PC = 631+61.30
PT = 638+48.34
NO SUPER

LT. LANE NORTHERN TRANSITION
PI = 635+69.56
Δ = 01°48'30" RT.
D = 00°30'00"
T = 180.84'
L = 361.65'
PC = 633+88.72
PT = 637+50.37
NO SUPER

LT. LANE NORTHERN TRANSITION
PI = 640+74.20
Δ = 02°38'02" LT.
D = 00°30'00"
T = 263.45'
L = 526.80'
PC = 638+10.75
PT = 643+37.55
NO SUPER

CL EXIST. HWY. 167
PI = 643+12.82
Δ = 02°53'04" LT.
D = 00°30'00"
T = 288.50'
L = 576.87'
PC = 640+24.32
PT = 646+01.19
NO SUPER

RT. MAIN LANE
PI = 643+12.93
Δ = 03°45'49" RT.
D = 00°30'00"
T = 376.51'
L = 752.74'
PC = 639+36.42
PT = 646+89.16
NO SUPER

CL MEDIAN
PI = 644+04.96
Δ = 00°39'31" RT.
D = 00°30'00"
T = 65.87'
L = 131.74'
PC = 643+39.09
PT = 644+70.83
NO SUPER

STA. 646+88.20 END
JOB 070282

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN, XX CU FT

7/18/2014

R070282.DGN

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

SEQUENCE OF CONSTRUCTION
CLEARING AND GRUBBING STAGE:
MAINTAIN TRAFFIC ON EXISTING LANES.
CLEAR AND GRUBB LT. & RT. OF MAIN LANES
INSTALL DITCH CHECKS.
INSTALL SILT FENCE
PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
CONSTRUCT NEW LANES ON RT.
INSTALL SILT FENCE.
EXTEND R.C. BOX CULVERT.
INSTALL SIDE DRAINS ON RIGHT.
INSTALL DITCH CHECKS.

PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 2:
SHIFT TRAFFIC TO NEW LOCATION ON RT.
INSTALL SILT FENCE.
INSTALL DITCH CHECKS.
INSTALL SIDE DRAIN ON LT.
PLACE TEMPORARY SEEDING AS NEEDED.

STAGE 3:
SHIFT TRAFFIC TO FINAL LOCATION.
PLACE PERMANENT EROSION CONTROL ITEMS.

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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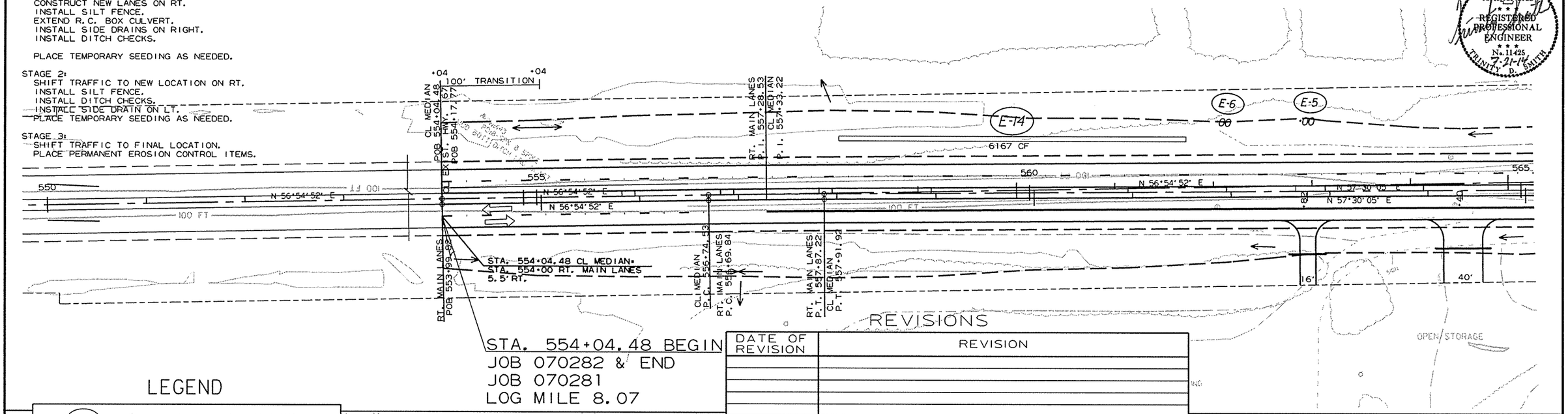
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
7-21-14
TRINITY D. SMITH



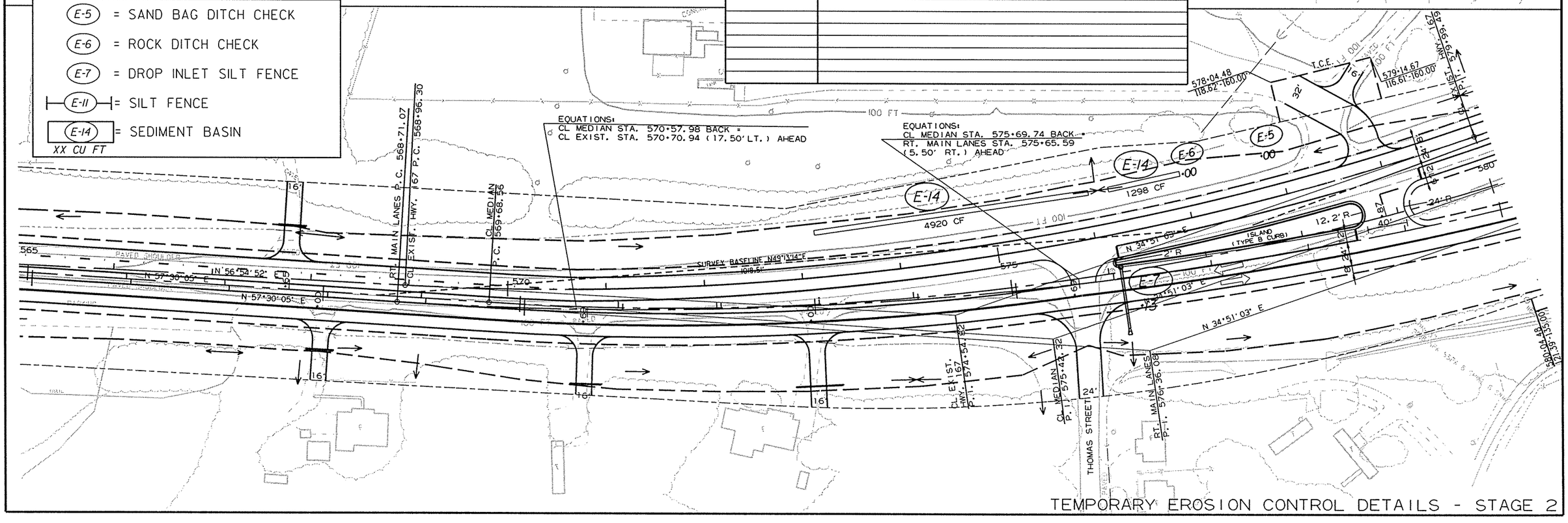
STA. 554+04.48 BEGIN
JOB 070282 & END
JOB 070281
LOG MILE 8.07

REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) XX CU FT = SEDIMENT BASIN



TEMPORARY EROSION CONTROL DETAILS - STAGE 2

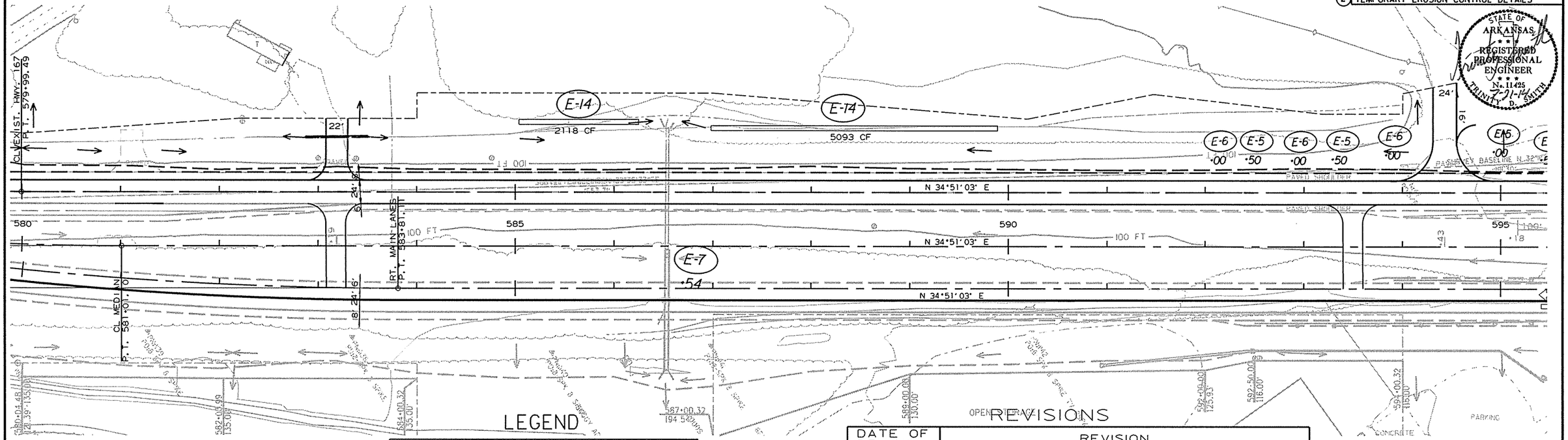
7/14/2014

R070282.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.		070282	20	190

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11495
TRINITY D. SMITH
7-21-14

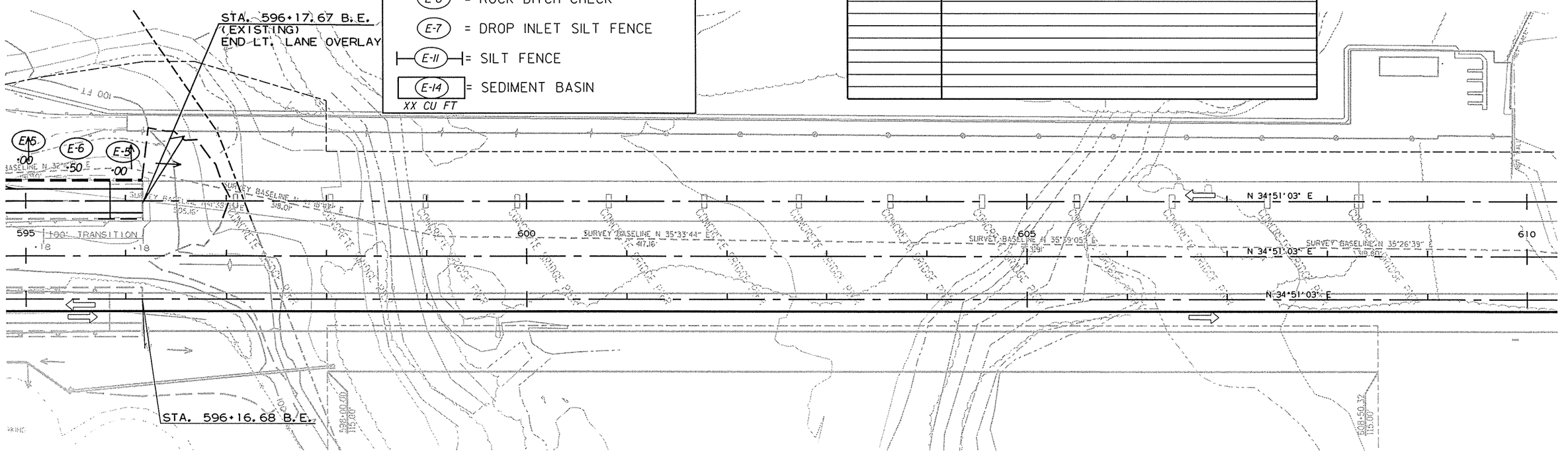


LEGEND

- (E-5) = SAND BAG DITCH CHECK
- (E-6) = ROCK DITCH CHECK
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN
  XX CU FT

REVISIONS

DATE OF REVISION	REVISION



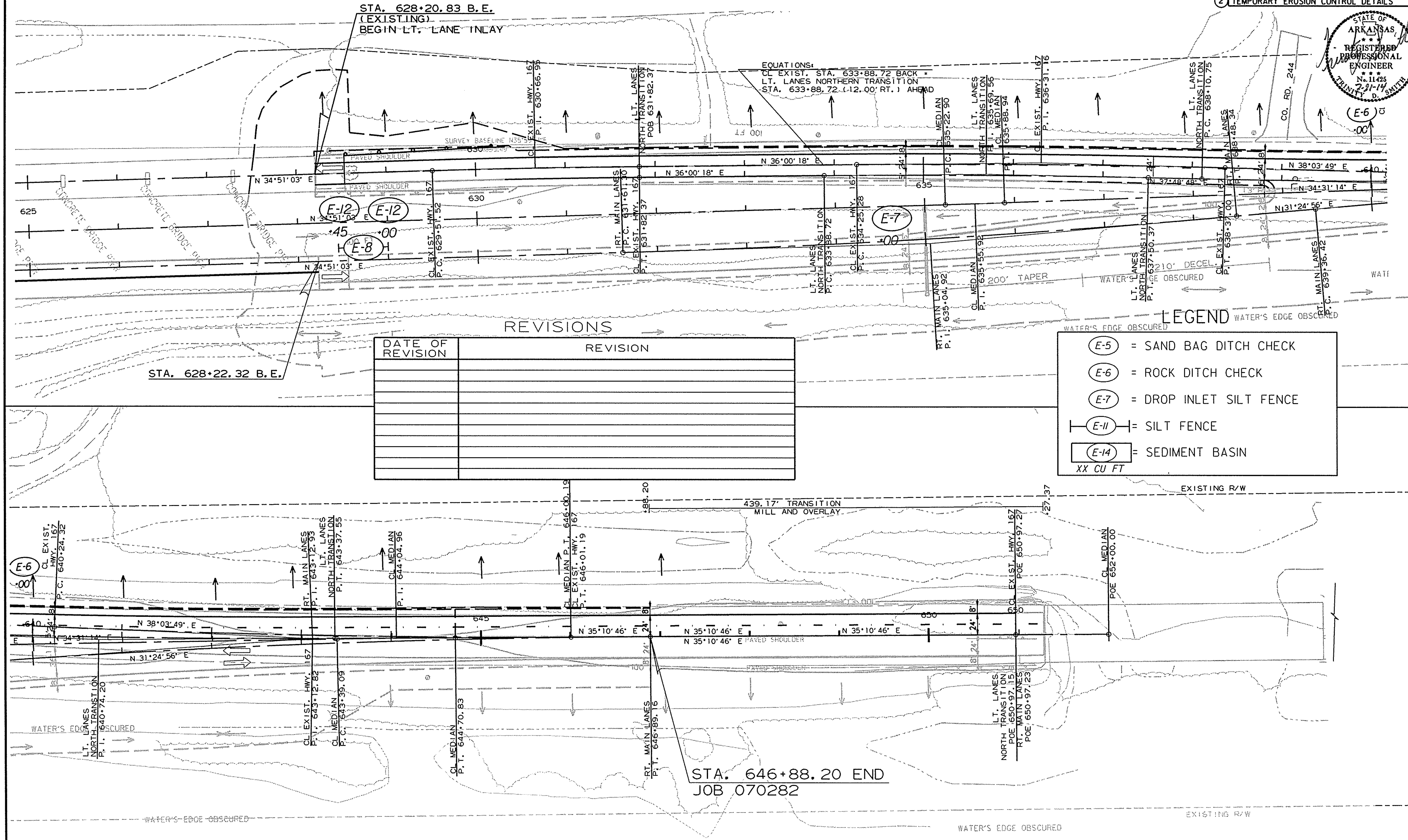
7/18/2014

R070282.DGN

TEMPORARY EROSION CONTROL DETAILS - STAGE 2

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.		070282	21	190

(2) TEMPORARY EROSION CONTROL DETAILS



REVISIONS

DATE OF REVISION	REVISION

LEGEND

Symbol	Description
E-5	= SAND BAG DITCH CHECK
E-6	= ROCK DITCH CHECK
E-7	= DROP INLET SILT FENCE
E-11	= SILT FENCE
E-14 (XX CU FT)	= SEDIMENT BASIN

TEMPORARY EROSION CONTROL DETAILS - STAGE 2

7/18/2014

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SEQUENCE OF CONSTRUCTION
STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
PLACE LEVELING ON EXISTING LANES.
PLACE CONSTRUCTION PAVEMENT MARKINGS.
WIDEN RT. OF EXISTING HWY. 167.
BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
EXTEND R.C. BOX CULVERT RT.
CONSTRUCT D.I. AND OUTLET RT. OF EXISTING LANES.
BUILD DRIVES AND TURNOUTS ON RT.
INSTALL SIDE DRAINS
PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
SHIFT TRAFFIC ONTO NEW LOCATION.
WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
MILL TRANSITIONS.
OVERLAY EXISTING LANES.
BUILD DRIVES ON LT.
INSTALL SIDE DRAINS ON LT.

STAGE 3:
PLACE FTNAL 2" OF ACHM SURFACE COURSE.
INSTALL FINAL STRIPING.
SHIFT TRAFFIC TO FINAL SURFACE.

CONSTRUCTION PAVEMENT MARKINGS = 24322 LIN. FT.

RAISED PAVEMENT MARKERS (TYPE II) (YELLOW/YELLOW) = 116 EACH

VERTICAL PANELS = 83 EACH (50' O.C.)
TRAFFIC DRUMS = 58 EACH (10' O.C.)
TRAFFIC DRUMS = 5 EACH (25' O.C.)
TRAFFIC DRUMS = 35 EACH (50' O.C.)

SIGNS = 386.00 SQ. YDS.

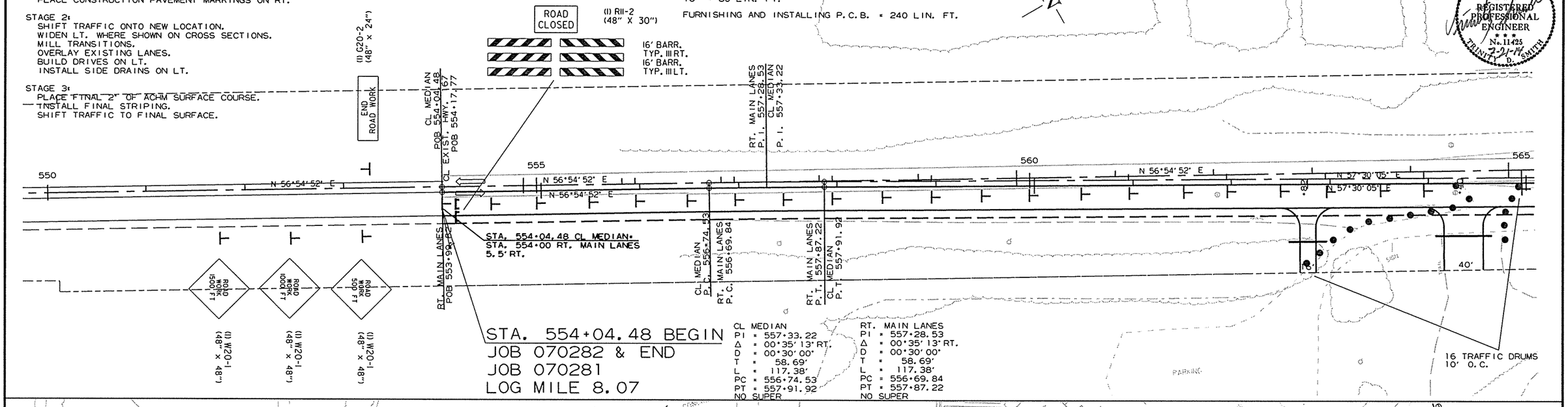
TYPE III BARRICADES
16' = 80 LIN. FT.

FURNISHING AND INSTALLING P.C.B. = 240 LIN. FT.

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.		070282	22	190

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



MAINTENANCE OF TRAFFIC - STAGE 1

7/14/2014

R070282.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.		070282	23	190

(2) MAINTENANCE OF TRAFFIC

CL MEDIAN
PI = 575+42.32
Δ = 22°39'02" LT.
D = 02°00'00"
T = 573.76'
L = 1132.53'
PC = 569+68.56
PT = 581+01.10
e = 0.055'/'
Ls = 540'-350'

RT. MAIN LANES
PI = 576+36.08
Δ = 22°39'02" LT.
D = 01°30'00"
T = 765.01'
L = 1510.04'
PC = 568+71.07
PT = 583+81.11
e = 0.043'/'
Ls = 540'-350'

SEQUENCE OF CONSTRUCTION
STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
PLACE LEVELING ON EXISTING LANES.
PLACE CONSTRUCTION PAVEMENT MARKINGS.
WIDEN RT. OF EXISTING HWY. 167.
BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
EXTEND R.C. BOX CULVERT RT.
CONSTRUCT D.I. AND OUTLET RT. OF EXISTING LANES.
BUILD DRIVES AND TURNOUTS ON RT.
INSTALL SIDE DRAINS
PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
SHIFT TRAFFIC ONTO NEW LOCATION.
WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
MILL TRANSITIONS.
OVERLAY EXISTING LANES.
~~BUILD DRIVES ON LT.~~
INSTALL SIDE DRAINS ON LT.

STAGE 3:
PLACE FINAL 2" OF ACHM SURFACE COURSE.
INSTALL FINAL STRIPING.
SHIFT TRAFFIC TO FINAL SURFACE.

STATE OF ARKANSAS
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TRINITY D. SMITH
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CL EXIST. HWY. 167
P.T. 579+99.49
PAVED
PAVED
PAVED SHOULDER
580
210' DECEL.
200' TAPER
19'
RT. MAIN LANES
P.T. 583+81.11
98'
585
590
595
N 34°51'03" E
43'
98'
CL MEDIAN
P.T. 581+01.10
(4) OM-3R
(12"X 36")
(3) OM-3L
(12"X 36")
FURNISHING AND INSTALLING
PRECAST CONCRETE BARRIER = 240 LIN. FT.
PARKING
CONCRETE

STA. 596+17.67 B.E.
(EXISTING)
END LT. LANE OVERLAY
PIPELINE
595
600
605
610
98'
N 34°51'03" E
STA. 596+16.68 B.E.

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MAINTENANCE OF TRAFFIC - STAGE 1

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.		070282	24	190

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION

STAGE 1:
- MAINTAIN TRAFFIC ON EXISTING LANES.
- PLACE LEVELING ON EXISTING LANES.
- PLACE CONSTRUCTION PAVEMENT MARKINGS.
- WIDEN RT. OF EXISTING HWY. 167.
- BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
- EXTEND R.C. BOX CULVERT RT.
- CONSTRUCT D. I. AND OUTLET RT. OF EXISTING LANES.
- BUILD DRIVES AND TURNOUTS ON RT.
- INSTALL SIDE DRAINS
- PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
- SHIFT TRAFFIC ONTO NEW LOCATION.
- WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
- MILL TRANSITIONS.
- OVERLAY EXTSTING LANES.
- BUILD DRIVES ON LT.
- INSTALL SIDE DRAINS ON LT.

STAGE 3:
- PLACE FINAL 2" OF ACHM SURFACE COURSE.
- INSTALL FINAL STRIPING.
- SHIFT TRAFFIC TO FINAL SURFACE.

CL EXIST. HWY. 167
PI = 630+66.95
Δ = 01°09'15" RT.
D = 00°30'00"
T = 115.43'
L = 230.85'
PC = 629+51.52
PT = 631+82.37
NO SUPER

CL MEDIAN
PI = 635+55.92
Δ = 00°19'49" LT.
D = 00°30'00"
T = 33.02'
L = 66.04'
PC = 635+22.90
PT = 635+88.94
NO SUPER

CL EXIST. HWY. 167
PI = 636+31.16
Δ = 02°03'31" RT.
D = 00°30'00"
T = 205.88'
L = 411.72'
PC = 634+25.28
PT = 638+37.00
NO SUPER

STA. 628+20.83 B.E.
(EXISTING)
BEGIN LT. LANE INLAY

STA. 628+22.30 B.E.

EQUATIONS:
CL EXIST. STA. 633+88.72 BACK =
LT. LANES NORTHERN TRANSITION
STA. 633+88.72 (12.00' RT.) AHEAD

(48" x 48")
I-02M (I)

ROAD WORK AHEAD

CO. RD. 244

STATE OF ARKANSAS
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No. 11425
TRINITY D. SMITH
7-21-14

RT. MAIN LANE
PI = 635+04.92
Δ = 03°26'07" LT.
D = 00°30'00"
T = 343.62'
L = 687.04'
PC = 631+61.30
PT = 638+48.34
NO SUPER

LT. LANE NORTHERN TRANSITION
PI = 635+69.56
Δ = 01°48'30" RT.
D = 00°30'00"
T = 180.84'
L = 361.65'
PC = 633+88.72
PT = 637+50.37
NO SUPER

ROAD CLOSED

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

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

LT. LANE NORTHERN TRANSITION
PI = 640+74.20
Δ = 02°38'02" LT.
D = 00°30'00"
T = 263.45'
L = 526.80'
PC = 638+10.75
PT = 643+37.55
NO SUPER

CL EXIST. HWY. 167
PI = 643+12.82
Δ = 02°53'04" LT.
D = 00°30'00"
T = 288.50'
L = 576.87'
PC = 640+24.32
PT = 646+01.19
NO SUPER

END ROAD WORK

(1) G20-2
(48" x 24")

STA. 646+88.20 END
JOB 070282

RT. MAIN LANE
PI = 643+12.93
Δ = 03°45'49" RT.
D = 00°30'00"
T = 376.51'
L = 752.74'
PC = 639+36.42
PT = 646+89.16
NO SUPER

CL MEDIAN
PI = 644+04.96
Δ = 00°39'31" RT.
D = 00°30'00"
T = 65.87'
L = 131.74'
PC = 643+39.09
PT = 644+70.83
NO SUPER

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MAINTENANCE OF TRAFFIC - STAGE 1

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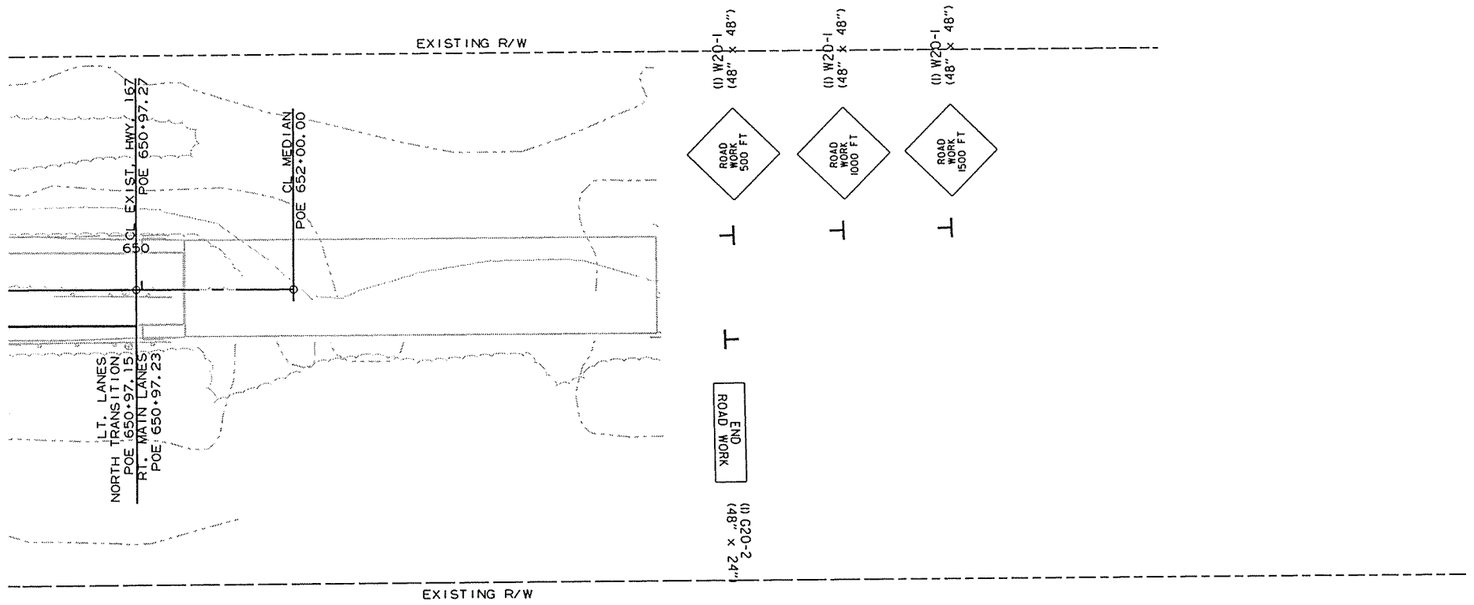
				6	ARK.			
				JOB NO.		070282	25	190

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION
STAGE 1:
- MAINTAIN TRAFFIC ON EXISTING LANES.
- PLACE LEVELING ON EXISTING LANES.
- PLACE CONSTRUCTION PAVEMENT MARKINGS.
- WIDEN RT. OF EXISTING HWY. 167.
- BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
- EXTEND R.C. BOX CULVERT RT.
- CONSTRUCT D. I. AND OUTLET RT. OF EXISTING LANES.
- BUILD DRIVES AND TURNOUTS ON RT.
- INSTALL SIDE DRAINS
- PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
- SHIFT TRAFFIC ONTO NEW LOCATION.
- WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
- MILL TRANSITIONS.
- OVERLAY EXISTING LANES.
- BUILD DRIVES ON LT.
- INSTALL SIDE DRAINS ON LT.

STAGE 3:
- PLACE FINAL 2" OF ACHM SURFACE COURSE.
- INSTALL FINAL STRIPING.
- SHIFT TRAFFIC TO FINAL SURFACE.



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

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MAINTENANCE OF TRAFFIC - STAGE 1

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.	070282	26	190

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 7-21-14 TRINITY D. SMITH

REMOVAL OF PERMANENT PAVEMENT MARKINGS	= 9106 LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	= 27696 LIN. FT.
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	= 12816 LIN. FT.
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	= 7080 LIN. FT.

RAISED PAVEMENT MARKERS (TYPE II)
(YELLOW/YELLOW) = 127 EACH

TRAFFIC DRUMS = 91 EACH (10' O.C.)
TRAFFIC DRUMS = 76 EACH (50' O.C.)
TRAFFIC DRUMS = 35 EACH (100' O.C.)

SIGNS = 397.0 SQ. YDS.

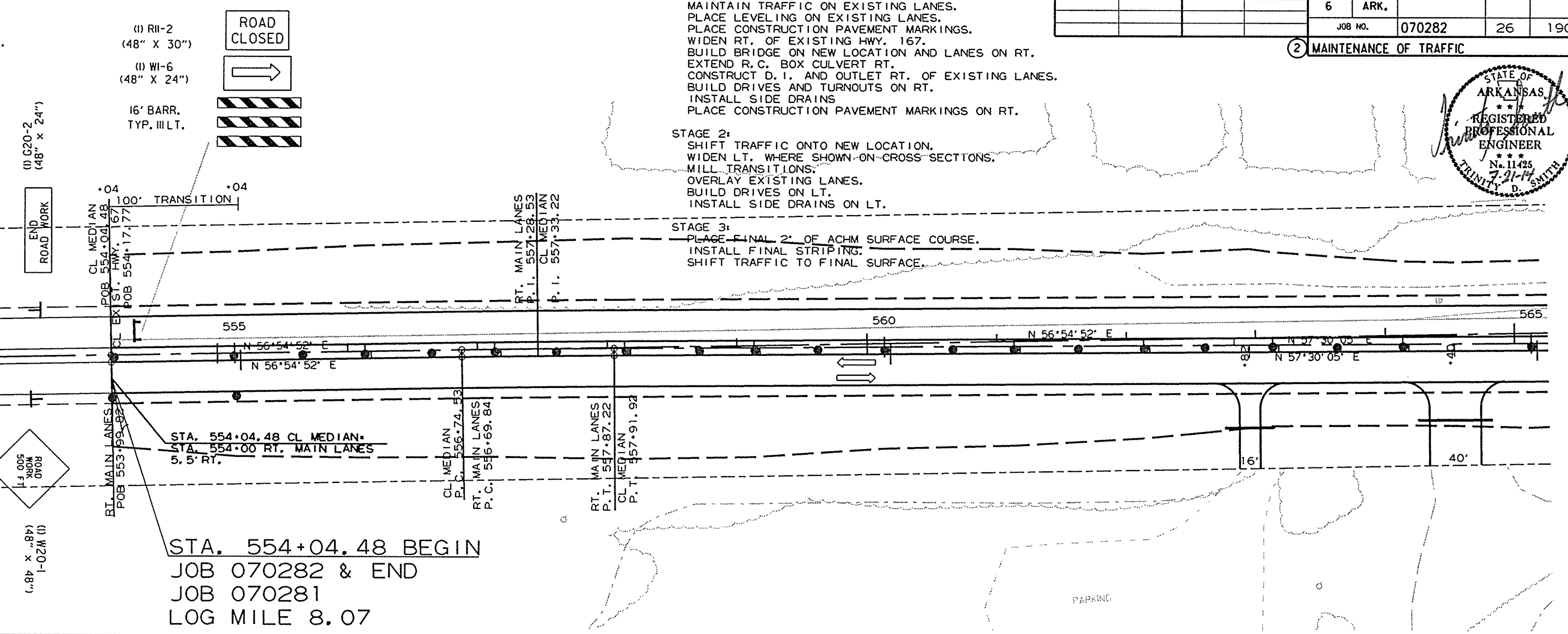
TYPE III BARRICADES
16' = 80 LIN. FT.

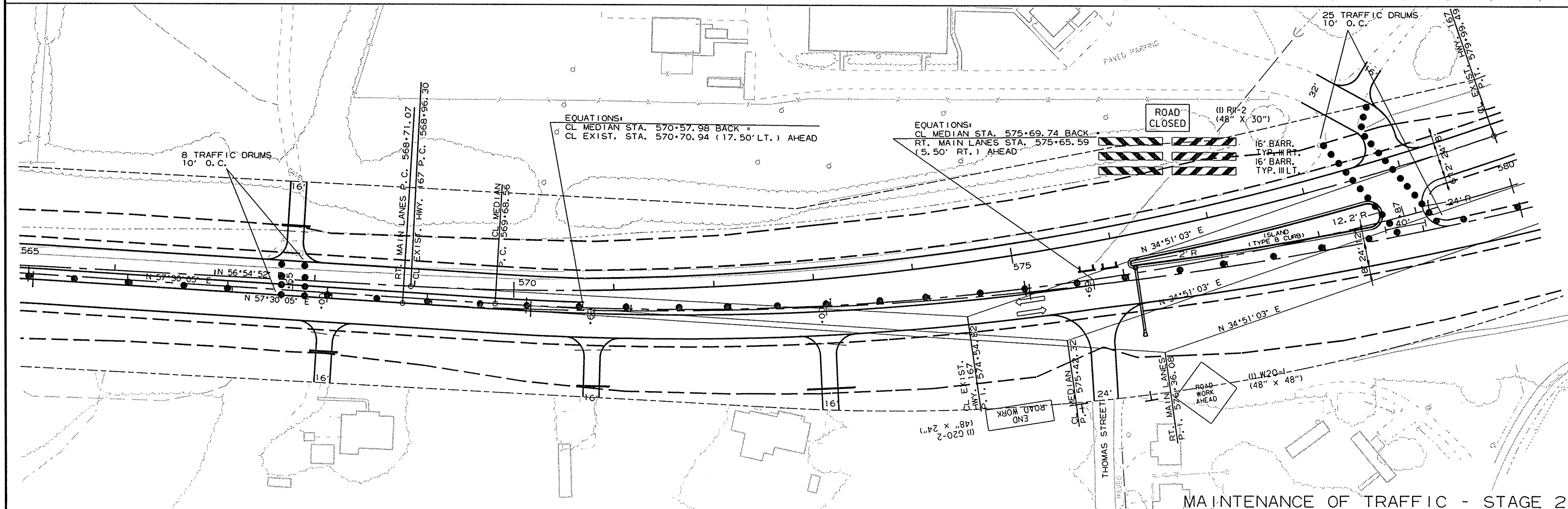
SEQUENCE OF CONSTRUCTION

STAGE 1:
- MAINTAIN TRAFFIC ON EXISTING LANES.
- PLACE LEVELING ON EXISTING LANES.
- PLACE CONSTRUCTION PAVEMENT MARKINGS.
- WIDEN RT. OF EXISTING HWY. 167.
- BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
- EXTEND R.C. BOX CULVERT RT.
- CONSTRUCT D.I. AND OUTLET RT. OF EXISTING LANES.
- BUILD DRIVES AND TURNOUTS ON RT.
- INSTALL SIDE DRAINS
- PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
- SHIFT TRAFFIC ONTO NEW LOCATION.
- WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
- MILL TRANSITIONS.
- OVERLAY EXISTING LANES.
- BUILD DRIVES ON LT.
- INSTALL SIDE DRAINS ON LT.

STAGE 3:
- PLACE FINAL 2" OF ACHM SURFACE COURSE.
- INSTALL FINAL STRIPING.
- SHIFT TRAFFIC TO FINAL SURFACE.





MAINTENANCE OF TRAFFIC - STAGE 2

7/14/2014

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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.		070282	27	190

(2) MAINTENANCE OF TRAFFIC

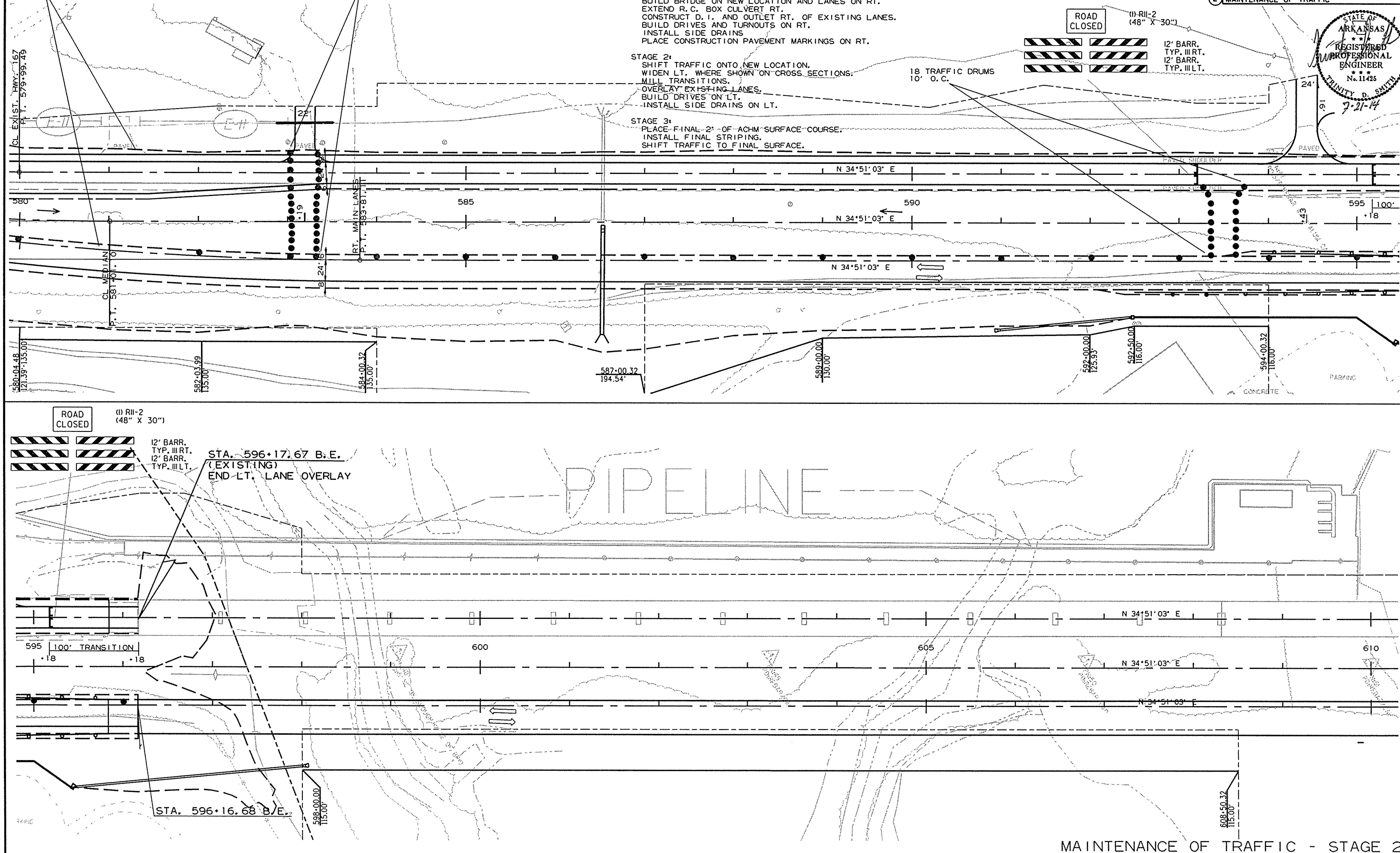
SEQUENCE OF CONSTRUCTION

STAGE 1:
- MAINTAIN TRAFFIC ON EXISTING LANES.
- PLACE LEVELING ON EXISTING LANES.
- PLACE CONSTRUCTION PAVEMENT MARKINGS.
- WIDEN RT. OF EXISTING HWY. 167.
- BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
- EXTEND R.C. BOX CULVERT RT.
- CONSTRUCT D.I. AND OUTLET RT. OF EXISTING LANES.
- BUILD DRIVES AND TURNOUTS ON RT.
- INSTALL SIDE DRAINS
- PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
- SHIFT TRAFFIC ONTO NEW LOCATION.
- WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
- MILL TRANSITIONS.
- OVERLAY EXISTING LANES.
- BUILD DRIVES ON LT.
- INSTALL SIDE DRAINS ON LT.

STAGE 3:
- PLACE FINAL 2" OF ACHM SURFACE COURSE.
- INSTALL FINAL STRIPING.
- SHIFT TRAFFIC TO FINAL SURFACE.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 7-21-14



MAINTENANCE OF TRAFFIC - STAGE 2

7/18/2014

R070282.DGN

SEQUENCE OF CONSTRUCTION
STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
PLACE LEVELING ON EXISTING LANES.
PLACE CONSTRUCTION PAVEMENT MARKINGS.
WIDEN RT. OF EXISTING HWY. 167.
BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
EXTEND R.C. BOX CULVERT RT.
CONSTRUCT D.I. AND OUTLET RT. OF EXISTING LANES.
~~BUILD DRIVES AND TURNOUTS ON RT.~~
INSTALL SIDE DRAINS
PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
SHIFT TRAFFIC ONTO NEW LOCATION.
WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
MILL TRANSITIONS.
~~OVERLAY EXISTING LANES.~~
BUILD DRIVES ON LT.
INSTALL SIDE DRAINS ON LT.

STAGE 3:
PLACE FINAL 2" OF ACHM SURFACE COURSE.
INSTALL FINAL STRIPING.
SHIFT TRAFFIC TO FINAL SURFACE.

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.		070282	28	190

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

STA. 628+20.83 B.E.
(EXISTING)
BEGIN LT. LANE INLAY

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

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

(I) W20-1 (48" X 48") ROAD WORK AHEAD

EQUATIONS:
℄ EXIST. STA. 633+88.72 BACK =
LT. LANES NORTHERN TRANSITION
STA. 633+88.72 (-12.00' RT.) AHEAD

E-11

℄ EXIST. HWY. 167 P.I. 630+66.95
LT. LANES NORTH TRANSITION POB 631+82.37
℄ EXIST. HWY. 167 P.I. 631+82.37
LT. MAIN LANES P.C. 631+61.30
℄ EXIST. HWY. 167 P.C. 629+51.52
LT. LANES NORTH TRANSITION P.C. 633+88.72
℄ EXIST. HWY. 167 P.C. 634+25.28
RT. MAIN LANES P.I. 635+04.92
℄ MEDIAN P.C. 635+22.90
℄ MEDIAN P.I. 635+55.92
LT. LANES NORTH TRANSITION P.T. 635+69.56
℄ MEDIAN P.T. 635+88.94
℄ EXIST. HWY. 167 P.T. 636+31.16
LT. LANES NORTH TRANSITION P.C. 638+10.75
LT. MAIN LANES P.C. 638+48.34
℄ EXIST. HWY. 167 P.I. 638+37.09
LT. LANES NORTH TRANSITION P.T. 637+60.37
℄ EXIST. HWY. 167 P.T. 638+37.09
RT. MAIN LANES P.C. 639+36.42

CO. RD. 244

N 34°51'03" E
N 36°00'18" E
N 32°48'48" E
N 38°03'49" E
N 31°31'14" E
N 31°24'56" E
625
630
635
640

200' TAPER
210' DECEL.

20 TRAFFIC DRUMS 10' O.C.

WATER'S EDGE OBSCURED

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

END ROAD WORK
(I) G20-2 (48" X 24")

℄ EXIST. HWY. 167 P.C. 640+24.32
LT. LANES NORTH TRANSITION P.I. 640+74.20
RT. MAIN LANES P.I. 643+72.93
LT. LANES NORTH TRANSITION P.T. 643+37.55
℄ EXIST. HWY. 167 P.I. 643+12.83
℄ MEDIAN P.C. 643+39.09
℄ MEDIAN P.I. 644+04.96
℄ MEDIAN P.T. 644+70.83
℄ MEDIAN P.T. 646+00.19
℄ EXIST. HWY. 167 P.T. 646+01.19
RT. MAIN LANES P.T. 646+89.16
+88.20
439.17' TRANSITION MILL AND OVERLAY
+27.37
℄ EXIST. HWY. 167 POE 650+97.27
LT. LANES NORTH TRANSITION POE 650+97.15
RT. MAIN LANES POE 650+97.23
℄ MEDIAN POE 652+00.00

EXISTING R/W

N 38°03'49" E
N 34°31'14" E
N 31°24'56" E
N 35°10'46" E
N 35°10'46" E PAVED SHOULDER
N 35°10'46" E
640

STA. 646+88.20 END
JOB 070282

WATER'S EDGE OBSCURED
WATER'S EDGE OBSCURED

EXISTING R/W

MAINTENANCE OF TRAFFIC - STAGE 2

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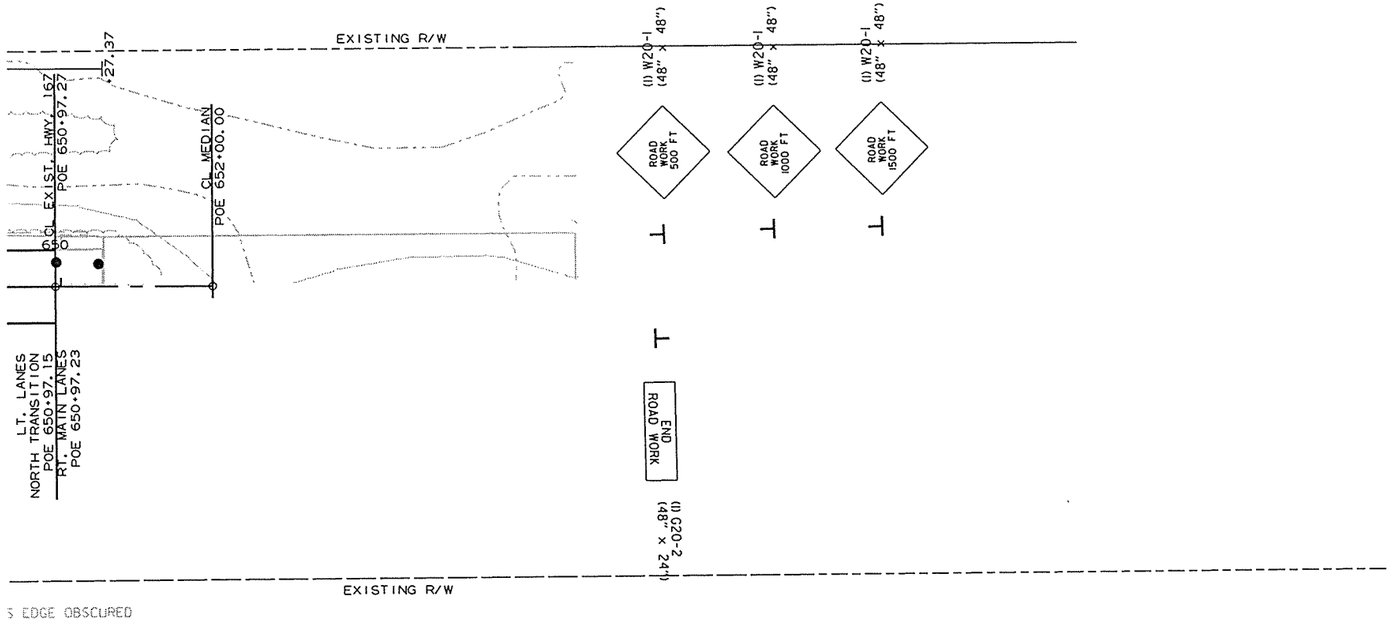
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	29	190

(2) MAINTENANCE OF TRAFFIC

SEQUENCE OF CONSTRUCTION
STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
PLACE LEVELING ON EXISTING LANES.
PLACE CONSTRUCTION PAVEMENT MARKINGS.
WIDEN RT. OF EXISTING HWY. 167.
BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
EXTEND R.C. BOX CULVERT RT.
CONSTRUCT D. I. AND OUTLET RT. OF EXISTING LANES.
BUILD DRIVES AND TURNOUTS ON RT.
INSTALL SIDE DRAINS
PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
SHIFT TRAFFIC ONTO NEW LOCATION.
WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
MILL TRANSITIONS.
OVERLAY EXISTING LANES.
BUILD DRIVES ON LT.
INSTALL SIDE DRAINS ON LT.

STAGE 3:
PLACE FINAL 2" OF ACHM SURFACE COURSE.
INSTALL FINAL STRIPING.
SHIFT TRAFFIC TO FINAL SURFACE.



S EDGE OBSCURED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

7/14/2014

R070282.DGN

MAINTENANCE OF TRAFFIC - STAGE 2

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.		070282	30	190

(2) PERMANENT PAVEMENT MARKING DETAILS

THERMOPLASTIC PAVEMENT MARKINGS
4" WHITE SOLID = 17460 LIN. FT.
4" WHITE SKIP = 3245 LIN. FT.
4" YELLOW SOLID = 12925 LIN. FT.
4" YELLOW SKIP = 830 LIN. FT.
4" DBL. YELLOW = 5990 LIN. FT.
8" YELLOW (ISLAND OUTLINE) = 542 LIN. FT.
WHITE WORDS = 3 EACH
WHITE ARROW = 3 EACH

REFLECTORIZED PAINT PAVEMENT MARKINGS
10" YELLOW (ON CURB) = 531 LIN. FT.

HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
4" WHITE SKIP = 436 LIN. FT.

RAISED PAVEMENT MARKERS (TYPE II)
WHITE/RED = 172 EACH (80' O.C.)
YELLOW/YELLOW = 88 EACH (80' O.C.)

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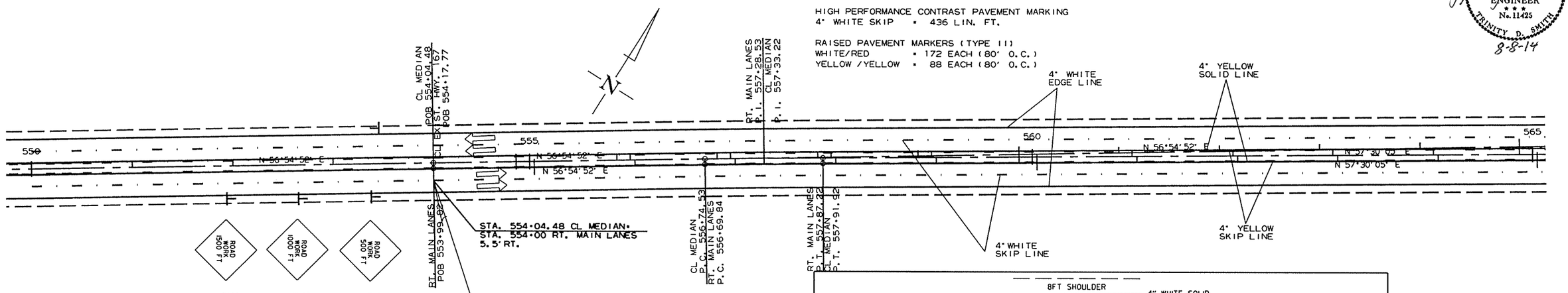


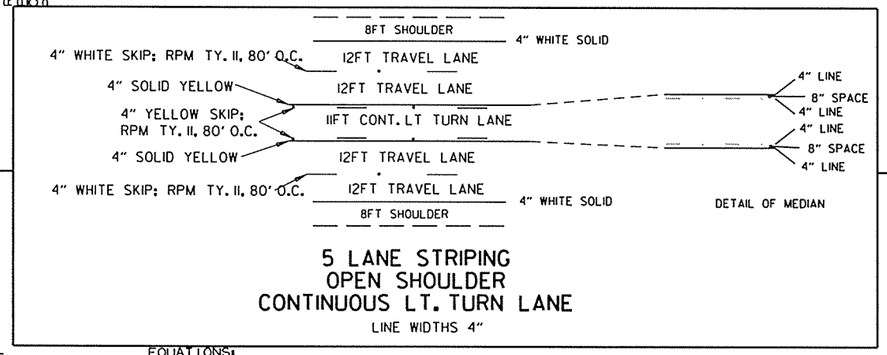
STA. 554+04.48 BEGIN
JOB 070282 & END
JOB 070281
LOG MILE 8.07

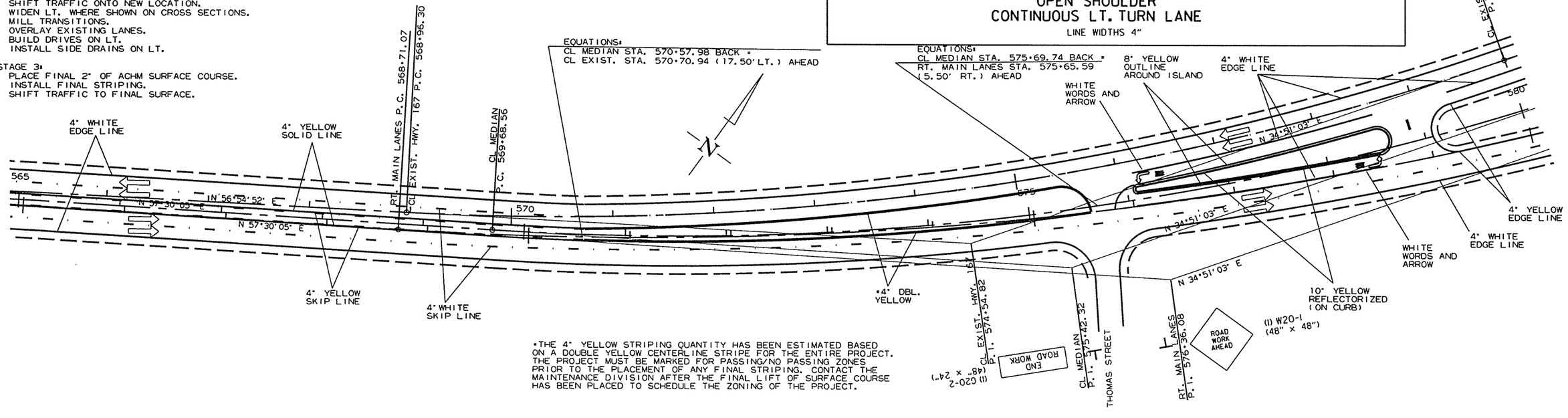
SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING LANES.
PLACE LEVELING ON EXISTING LANES.
PLACE CONSTRUCTION PAVEMENT MARKINGS.
WIDEN RT. OF EXISTING HWY. 167.
BUILD BRIDGE ON NEW LOCATION AND LANES ON RT.
EXTEND R.C. BOX CULVERT RT.
CONSTRUCT D.I. AND OUTLET RT. OF EXISTING LANES.
BUILD DRIVES AND TURNOUTS ON RT.
INSTALL SIDE DRAINS
PLACE CONSTRUCTION PAVEMENT MARKINGS ON RT.

STAGE 2:
SHIFT TRAFFIC ONTO NEW LOCATION.
WIDEN LT. WHERE SHOWN ON CROSS SECTIONS.
MILL TRANSITIONS.
OVERLAY EXISTING LANES.
BUILD DRIVES ON LT.
INSTALL SIDE DRAINS ON LT.

STAGE 3:
PLACE FINAL 2" OF ACHM SURFACE COURSE.
INSTALL FINAL STRIPING.
SHIFT TRAFFIC TO FINAL SURFACE.





•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.

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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.		070282	31	190

(2) PERMANENT PAVEMENT MARKING DETAILS

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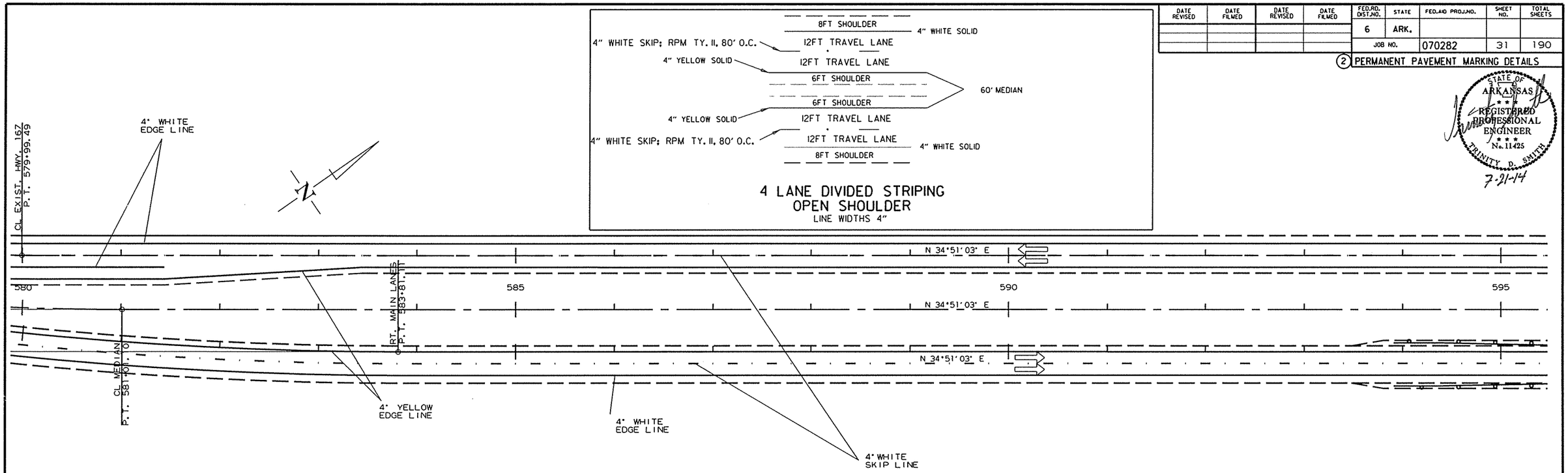

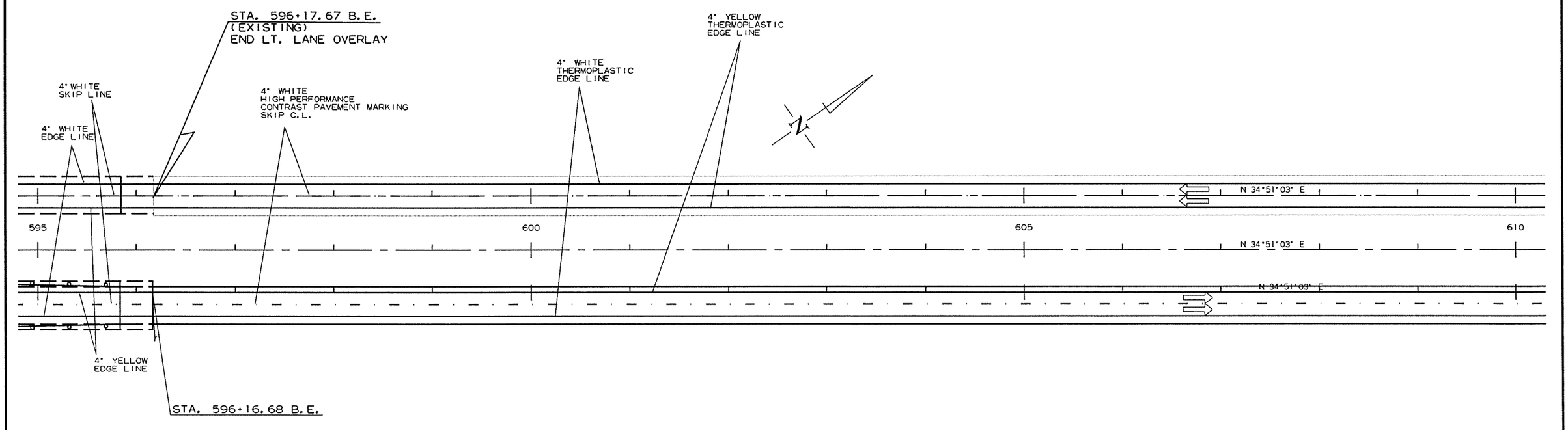

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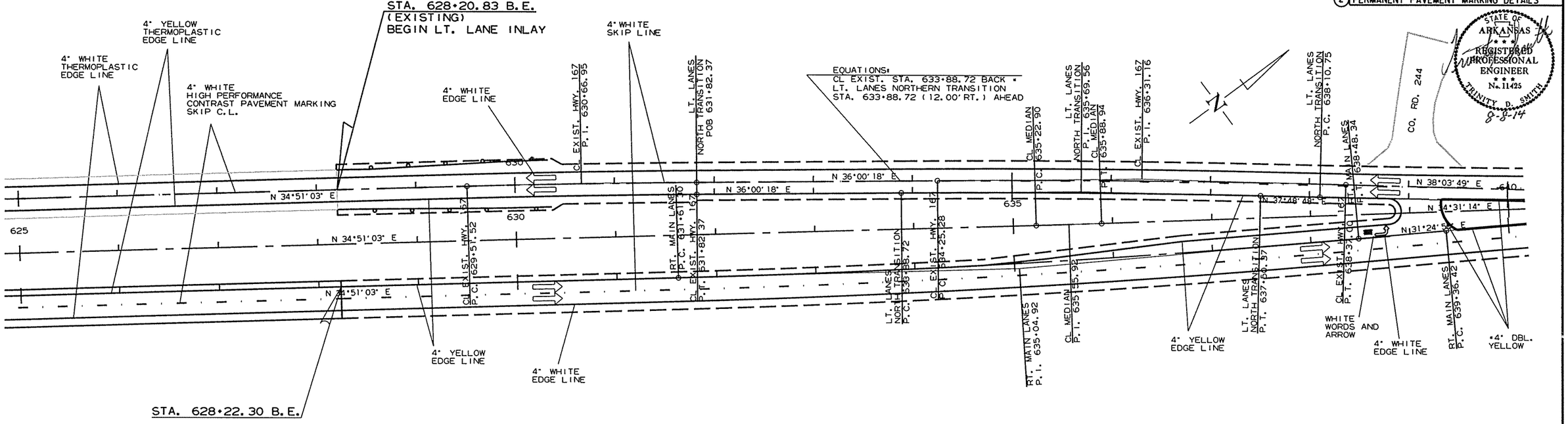
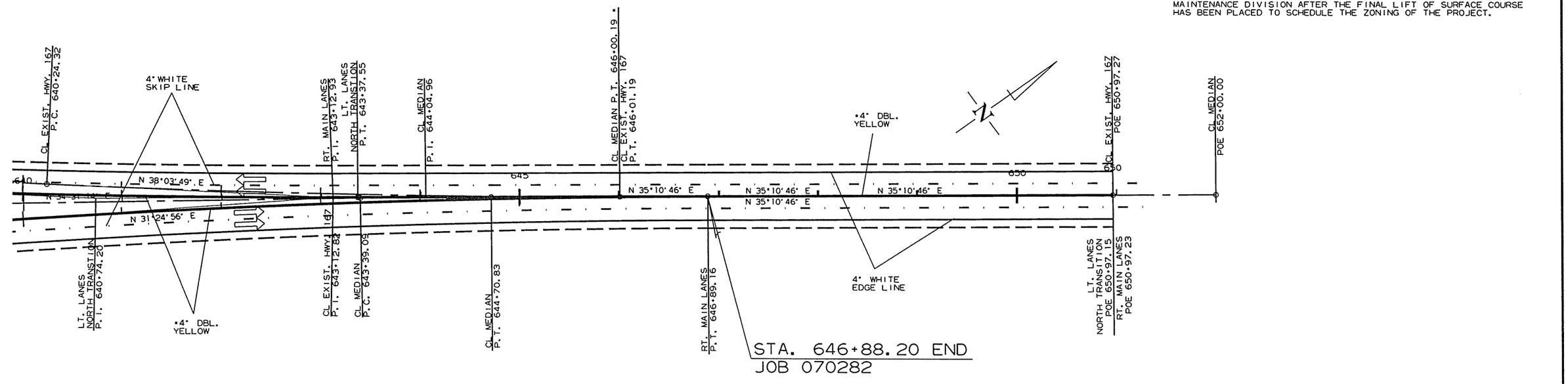
PERMANENT PAVEMENT MARKING DETAILS

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.		070282	32	190

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-8-14





*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.

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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.		070282	33	190

(2) PERMANENT PAVEMENT MARKING DETAILS

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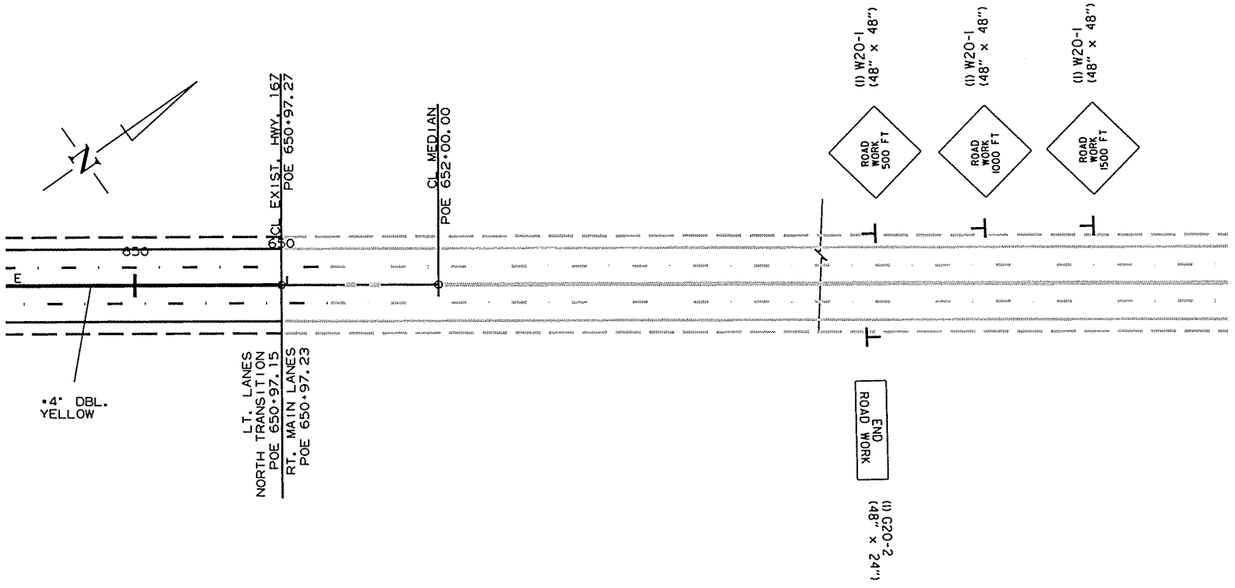
•THE 4" YELLOW STRIPING QUANTITY HAS BEEN ESTIMATED BASED ON A DOUBLE YELLOW CENTERLINE STRIPE FOR THE ENTIRE PROJECT. THE PROJECT MUST BE MARKED FOR PASSING/NO PASSING ZONES PRIOR TO THE PLACEMENT OF ANY FINAL STRIPING. CONTACT THE MAINTENANCE DIVISION AFTER THE FINAL LIFT OF SURFACE COURSE HAS BEEN PLACED TO SCHEDULE THE ZONING OF THE PROJECT.



8/8/2014

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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.		070282	34	190

(2) QUANTITIES

STATE OF ARKANSAS
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ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER
											RIGHT	LEFT	
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.		
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	2	32.0					
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0					
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0					
W20-1	ROAD WORK AHEAD	48"x48"	2	2	2	2	2	32.0					
G20-2	END ROAD WORK	48"x24"	4	4	4	4	4	32.0					
R11-2	ROAD CLOSED	48"x30"	5	6		6	6	60.0					
OM-3L	OBJECT MARKER	12"x36"	3			3	3	9.0					
OM-3R	OBJECT MARKER	12"x36"	4			4	4	12.0					
W1-6	LARGE ARROW	48"x24"		4		4	4	32.0					
R4-1	DO NOT PASS	24"x30"	8	8	8	8	8	40.0					
RSP-1	SHOULDER CLOSED	48"x30"	8	8	8	8	8	80.0					
W8-1	BUMP	30"x30"	2	2	4	4	4	25.0					
	VERTICAL PANELS		81			81			81				
	TRAFFIC DRUMS		98	202		202				202			
	TYPE III BARRICADE-RT. (16')		5	5		5					80		
	TYPE III BARRICADE-LT. (16')		5	5		5						80	
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		240			240							240
TOTALS:								418.0	81	202	80	80	240

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

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKINGS					REFLECTORIZED PAINT PAVEMENT MARKINGS	HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
								TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	8" YELLOW	WORDS	ARROWS	10" YELLOW	4" WHITE
	LIN. FT. - EACH			LIN. FT.		LIN. FT.		EACH		LIN. FT.			EACH		LIN. FT.	LIN. FT.
REMOVAL OF PERMANENT PAVEMENT MARKINGS		9106		9106												
CONSTRUCTION PAVEMENT MARKINGS	24322	27696			52018											
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		12816				12816										
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		7080					7080									
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)			172					172								
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)	116	127	88						331							
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")			20705							20705						
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")			19745								19745					
THERMOPLASTIC PAVEMENT MARKINGS WHITE (8")			542									542				
THERMOPLASTIC PAVEMENT MARKINGS WORDS			3										3			
THERMOPLASTIC PAVEMENT MARKINGS ARROWS			3											3		
REFLECTORIZED PAINT PAVEMENT MARKINGS YELLOW (10")			531												531	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")			436													436
TOTALS:				9106	52018	12816	7080	172	331	20705	19745	542	3	3	531	436

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

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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
10-20-14				6	ARK.			
10-27-14				JOB NO.		070282	35	190
				(2) QUANTITIES				

SOIL LOG

STATION	LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
555+00	18'RT	0-5	ND	NP	A-2-4(0)	BROWN
555+00	6'RT	0-5	ND	NP	A-2-4(0)	BROWN
563+00	24'LT	0-5	ND	NP	A-2-4(0)	BROWN
563+00	6'LT	0-5	ND	NP	A-2-4(0)	BROWN
563+00	24'LT	0-5	ND	NP	A-2-4(0)	BROWN
571+00	30'RT	0-5	ND	NP	A-2-4(0)	BROWN
571+00	18'RT	0-5	17	3	A-4(0)	BROWN
571+00	6'RT	0-5	17	3	A-4(0)	BROWN
575+00	18'LT	0-5	16	3	A-4(0)	BROWN
575+00	6'LT	0-5	18	4	A-4(0)	BROWN
579+00	68'RT	0-5	ND	NP	A-4(0)	BROWN
583+00	18'RT	0-5	19	1	A-2-4 (0)	BROWN
583+00	6'RT	0-5	18	3	A-4(0)	BROWN
587+00	90'RT	0-5	27	12	A-6(8)	BROWN
591+00	18'LT	0-5	ND	NP	A-4(0)	BR/GR
591+00	6'LT	0-5	ND	NP	A-4(0)	BROWN
595+00	90'RT	0-5	ND	NP	A-4(0)	BROWN
630+00	90'RT	0-5	31	13	A-6 (11)	BROWN
634+00	6'RT	0-5	23	10	A-4 (2)	BROWN
634+00	18'RT	0-5	18	2	A-4 (0)	BROWN
638+00	60'RT	0-5	28	12	A-6 (7)	BROWN
646+00	12'LT	0-5	ND	NP	A-2-4 (0)	BROWN
646+00	48'LT	0-5	ND	NP	A-2-4 (0)	BROWN
646+00	27'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

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND SQ.YD.
177+42	EXISTING HWY. 167	B	383
TOTAL:			383

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
554+04	610+75	LT. & RT. OF MAIN LANES	57	57
613+75	646+88	LT. & RT. OF MAIN LANES	34	34
TOTALS:			91	91

CULVERT CLEAN OUT

STATION	LOCATION	EACH
586+53	HWY. 167	1
TOTAL:		1

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	SIGN FOUNDATIONS	GUARDRAIL	SIGNS
			EACH	LIN. FT.	EACH
582+48.00		LT. OF EXISTING HWY. 167	1		1
592+58.00		RT. OF EXISTING HWY. 167	2		3
593+98.92	596+17.67	LT. OF EXISTING HWY. 167		218.75	
595+23.92	596+17.67	RT. OF EXISTING HWY. 167		93.75	
628+20.83	629+14.58	RT. OF EXISTING HWY. 167		93.75	
TOTAL:			3	406.25	4

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT			SELECT GRANULAR BACKFILL	STONE BACKFILL	* SOIL STABILIZATION
				NORMAL	BORROW DITCHES	(SPECIAL)			
			CU. YD.				CU. YD.	TON	TON
554+04.00	596+16.68	STAGE 1-RT. CL CONSTRUCTION	760	92412					
554+04.00	596+17.67	STAGE 2-LT. CL CONSTRUCTION	1010	9068					
627+45.00	642+00.00	STAGE 1-RT. CL CONSTRUCTION	525	13	49533	6106		44936	
627+45.00	642+00.00	CLAY PLATING ON SLOPES			20				
628+20.83	648+00.00	STAGE 2-LT. CL CONSTRUCTION	67						
642+00.00	648+00.00	STAGE 1-RT. CL CONSTRUCTION	284	221					
ENTIRE	PROJECT	APPROACHES		1260					
ENTIRE	PROJECT	TEMPORARY APPROACHES		90					
ENTIRE	PROJECT	RETAINING WALL	100				1475	888	
ENTIRE	PROJECT	BRIDGE END		2245					
* ENTIRE	PROJECT	TO BE USED IF AND WHERE							150
		DIRECTED BY THE ENGINEER							
TOTALS:			2746	105309	49553	6106	1475	45824	150

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

REMOVAL AND DISPOSAL OF CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS	BOX CULVERTS
		EACH	EACH
567+63	18"X29' CM PIPE CULVERT	1	
568+00	18"X29' CM PIPE CULVERT	1	
570+68	24"X37' CM PIPE CULVERT	1	
572+98	24"X39' CM PIPE CULVERT	1	
581+12	24"X47' CM PIPE CULVERT	1	
583+19	18"X39' CM PIPE CULVERT	1	
586+53	4'X3'X174' RC BOX CULVERT		1
593+57	24"X120' CM PIPE CULVERT	1	
TOTALS:		7	1

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

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10-27-14

10/20/2014
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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.		070282	36	190

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
554+04.48	596+16.68	MAIN LANES	2000	18
628+22.32	646+88.20	MAIN LANES	1000	9
* ENTIRE PROJECT TO BE USED IF AND				
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			3000	27

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

GUARDRAIL

STATION	STATION	LOCATION	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
			LIN. FT.	EACH	
593+88.53	596+07.28	LT. SIDE OF RT. MAIN LANES	150	1	1
592+38.52	596+07.28	RT. SIDE OF RT. MAIN LANES	300	1	1
628+30.23	630+48.98	LT. SIDE OF LT. MAIN LANES	150	1	1
628+30.23	630+48.98	RT. SIDE OF LT. MAIN LANES	150	1	1
TOTALS:			750	4	4

APPROACH GUTTERS AND SLABS

STATION	STATION	LOCATION	APPROACH GUTTER (TYPE B)	APPROACH SLABS (TYPE B)	REINFORCING STEEL-RDWY. (GR. 60)	AGGREGATE BASE CRS. (CLASS 7)
			CU.YD.	CU.YD.	POUND	TON
595+89.18	596+16.68	LT. SIDE	6.35		560	
595+89.18	596+16.68	RT. SIDE	8.20		730	
595+90.17	596+17.67	LT. SIDE	8.20		730	
595+90.17	596+17.67	RT. SIDE	6.35		560	
628+20.83	628+48.33	LT. SIDE	6.35		560	
628+20.83	628+48.33	RT. SIDE	8.20		730	
628+22.32	628+49.82	LT. SIDE	6.35		560	
628+22.32	628+49.82	RT. SIDE	8.20		730	
595+89.18	596+16.68	NEW BRIDGE END		31.90	2490	27.26
595+90.17	596+17.67	EXISTING BRIDGE END		31.90	2490	27.26
628+20.83	628+48.33	EXISTING BRIDGE END		31.90	2490	27.26
628+22.32	628+49.82	NEW BRIDGE END		31.90	2490	27.26
TOTALS:			58.20	127.60	15120	109.04

NOTE: USE T =15" FOR 6&8' SHOULDER.

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
574+00	575+00	RT. OF HWY. 167	100.0	88.9
575+81	577+00	RT. OF HWY. 167	119.0	105.8
576+00	578+00	LT. OF HWY. 167	200.0	177.8
581+12	583+00	RT. OF HWY. 167	188.0	167.1
583+00	584+00	RT. OF HWY. 167	100.0	88.9
585+00	586+53	RT. OF HWY. 167	153.0	136.0
594+39	596+00	RT. OF HWY. 167	161.0	143.1
628+22	630+00	MEDIAN	178.0	158.2
629+00	631+00	RT. OF HWY. 167	200.0	177.8
643+00	644+00	RT. OF HWY. 167	100.0	88.9
647+00	648+00	RT. OF HWY. 167	100.0	88.9
648+00	649+00	RT. OF HWY. 167	100.0	88.9
TOTAL:				1510.3

NOTE: AVERAGE WIDTH = 8'-0"

RUMBLE STRIPS IN ASPHALT SHOULDERS

STATION	STATION	LOCATION	* RUMBLE STRIPS IN ASPHALT SHOULDERS
			LIN.FT.
554+04.48	579+30.46	LT. & RT. OF C.L. CONSTRUCTION	5052
579+26.02	596+16.68	LT. & RT. OF C.L. RIGHT LANES	3381
579+35.08	596+17.67	LT. & RT. OF C.L. EXIST. LANES	3365
628+22.32	638+80.29	LT. & RT. OF C.L. RIGHT LANES	2116
628+20.83	638+80.30	LT. & RT. OF C.L. EXIST. LANES	2119
638+79.02	650+96.27	LT. & RT. OF C.L. CONSTRUCTION	2435
TOTAL:			18468

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
592+50.00	595+40.96	TOP SIDE OF RETAINING WALL - RT. OF MAIN LANES	290.96	4	129.32	64.66	0.81
TOTALS:					129.32	64.66	0.81

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

ACHM PATCHING OF EXISTING ROADWAY

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

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

7/14/2014

R070282.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.		070282	37	190

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-24-14

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
554+04.48	555+04.48	MAIN LANES	24	266.67
595+18.00	596+18.00	LT. MAIN LANES	24	266.67
646+88.20	651+27.37	MAIN LANES	48	2342.24
628+20.83	631+82.37	LT. MAIN LANES	24	964.11
631+82.37	638+96.60	LT. MAIN LANES	24	1904.61
TOTAL:				5744.30

NOTE: AVERAGE MILLING DEPTH 1".

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	29	58
DIRECTED BY THE ENGINEER		
TOTALS:	29	58

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

DUMPED RIPRAP AND FILTER BLANKET

STATION	STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
			CU. YDS.	SQ. YDS.
627+45	642+00	ALONG SLOPE	3626	7252
		TO BE USED IF AND WHERE		
		DIRECTED BY THE ENGINEER		
TOTALS:			3626	7252

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

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

RETAINING WALL

STATION	STATION	LOCATION	RETAINING WALL
			SQ.FT.
592+50.00	595+40.96	MAIN LANES - RT.	3500
TOTAL:			3500

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
586+53.00	HEADWALL ON RT.	1
628+22.30	BRIDGE END	1
630+20.00	BRIDGE END	1
TOTAL:		3

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

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	SIDE DRAINS		STANDARD DRAWINGS
							18"	24"	
			FEET	SQ. YD.	TON	TON	LIN. FT.		
562+82	RT.	HWY. 167	16	114.5	12.6	46.8		32	PCC-1, PCM-1, PCP-1, PCP-2
564+40	RT.	HWY. 167	40	280.9	30.9	114.7		52	PCC-1, PCM-1, PCP-1, PCP-2
568+00	LT.	HWY. 167	16	101.7	11.2	41.5		28	PCC-1, PCM-1, PCP-1, PCP-2
567+63	RT.	HWY. 167	16	122.1	13.4	49.9	28		PCC-1, PCM-1, PCP-1, PCP-2
570+68	RT.	HWY. 167	16	133.9	14.7	54.7		36	PCC-1, PCM-1, PCP-1, PCP-2
572+98	RT.	HWY. 167	16	148.4	16.3	60.6		42	PCC-1, PCM-1, PCP-1, PCP-2
575+69	RT.	HWY. 167	24	322.1	35.4	131.5			
578+87	LT.	HWY. 167	32	308.4	33.9	125.9			
578+87	LT.	OFF DRIVE	16	70.0	7.7	28.6			
583+19	LT.	HWY. 167	22	222.1	24.4	90.7	64		PCC-1, PCM-1, PCP-1, PCP-2
594+39	LT.	HWY. 167	24	270.9	29.8	110.6			
594+51	LT.	OFF DRIVE	16	39.4	4.3	16.1			
* ENTIRE PROJECT TEMPORARY DRIVES						500.0			
TOTALS:				2134.4	234.6	1371.6	92	190	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

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

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

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	70
ENGINEER	
TOTAL:	70

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

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION / DESCRIPTION	FENCE
			LIN. FT.
596+95	597+75	RT. OF EXISTING HWY. 167 - 6FT. CHAIN LINK	145
TOTAL:			145

7/23/2014

R070282.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.		070282	38	190

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL												
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	DIVERSION DITCH (E-8)	SLOPE DRAIN (E-12) PIPE FOR SLOPE DRAINS	SLOPE DRAIN (E-12) DUMPED RIPRAP	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	CU.YD.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING									154	24		4650						187
ENTIRE	PROJECT	STAGE 1	8.71	17.42	8.71	888.4	8.71	8.71	8.71	177.7	44	6	75	135	2227	636	18	95	95	107
ENTIRE	PROJECT	STAGE 2	2.29	4.58	2.29	233.6	2.29	2.29	2.29	46.7	132	21						41	41	54
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.00	2.00	1.00	102.0	1.00	2.75	2.75	56.1	88	15		500						28
TOTALS:			12.00	24.00	12.00	1224.0	12.00	13.75	13.75	280.5	418	66	75	5285	2227	636	18	136	136	376

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.
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III)	FLARED END SECTIONS FOR R.C. PIPE CULVERTS	DROP INLETS TYPE			SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
		24"	24"	RM	ST	TM									
		LIN. FT.	EACH	EACH			LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
576+12	CONSTRUCT D.I. W / R.C. PIPE OUTLET W/FES	64	1		1								8	0.10	FES-1, FES-2, FPC-9S, PCC-1
586+53	CONSTRUCT D.I. IN TOP & EXTEND R.C. BOX CULVERT					1	4	3	124	42.43	4337	28	12	0.15	R-100X-X1, W-X003-1, PBC-1, RCB-1, RCB-2, RCB-3, FPC-9, FPC-9D
592+49	CONSTRUCT D.I. W/R.C. PIPE OUTLET W/FES @ RETAINING WALL	148	1	1									8	0.10	FES-1, FES-2, FPC-9D, PCC-1
595+51	CONSTRUCT D.I. W/R.C. PIPE OUTLET W/FES @ RETAINING WALL	258	1	1									8	0.10	FES-1, FES-2, FPC-9D, PCC-1
635+00	CONSTRUCT D.I. W / R.C. PIPE OUTLET W/FES	90	1	1									8	0.10	FES-1, FES-2, FPC-9D, PCC-1
TOTALS:		560	4	3	1	1				42.43	4337	28	44	0.55	

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.

7/18/2014

R070282.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.		070282	39	190

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

BASE AND SURFACING

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	TOTAL 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
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON
MAIN LANES																					
554+04.48	570+57.98	C.L. HWY. 167 - NOTCH AND WIDEN	1653.50	315.00	5208.53	78.90	14495.68	0.03	434.87	39.60	7275.40	440.00	1600.59	39.30	7220.28	330.00	1191.35	75.00	13779.17	220.00	1515.71
570+57.98	579+09.22	TRANSITION 5 LANE UNDIVIDED TO 4 LANES DIVIDED	851.24	79.13	673.59	36.00	3404.96	0.10	340.50									36.00	3404.96	220.00	374.55
579+09.22	596+17.28	LT. MAIN LANES - NOTCH AND WIDEN	1708.06	1.50	25.62	37.70	7154.87	0.10	715.49	9.90	1878.87	440.00	413.35	18.80	3567.95	330.00	588.71	36.00	6832.24	220.00	751.55
579+03.66	596+16.68	RT. MAIN LANES - FULL DEPTH	1713.02	182.75	3130.54	52.90	10068.75	0.03	302.06	26.60	5062.93	440.00	1113.84	26.30	5005.83	330.00	825.96	36.00	6852.08	220.00	753.73
628+20.83	631+82.37	LT. MAIN LANES - INLAY	361.54			36.00	1446.16	0.10	144.62									36.00	1446.16	220.00	159.08
628+22.32	638+93.30	RT. MAIN LANES - FULL DEPTH	1070.98	267.25	2862.19	52.90	6294.98	0.03	188.85	26.60	3165.34	440.00	696.37	26.30	3129.64	330.00	516.39	36.00	4283.92	220.00	471.23
631+82.37	638+92.60	LT. MAIN LANES - INLAY	710.23			36.00	2840.92	0.10	284.09									36.00	2840.92	220.00	312.50
638+92.60	646+88.20	TRANSITION LT. MAIN LANES - INLAY TO 4 LANES UNDIVIDED - OVERLAY	795.60			34.00	3005.60	0.10	300.56									50.00	4420.00	220.00	486.20
638+93.30	646+88.20	TRANSITION RT. MAIN LANES TO 4 LANES UNDIVIDED	794.90	133.63	1062.22	26.50	2340.54	0.10	234.05	13.30	1174.69	440.00	258.43	13.10	1157.02	330.00	190.91	34.00	3002.96	220.00	330.33
646+88.20	651+27.37	C.L. HWY. 167 - INLAY	439.17			48.00	2342.24	0.10	234.22									48.00	2342.24	220.00	257.65
ADDITIONAL FOR MEDIAN TURNAROUND & LT. TURN LANES																					
578+66.31	579+06.31	MEDIAN TURNAROUND	40.00	324.50	129.80	48.00	213.33	0.03	6.40	48.00	213.33	440.00	46.93	48.00	213.33	330.00	35.20	48.00	213.33	220.00	23.47
576+12.00	581+44.06	LT. TURN LANE	532.06	46.75	248.74	12.00	709.41	0.03	21.28	12.00	709.41	440.00	156.07	12.00	709.41	330.00	117.05	12.00	709.41	220.00	78.04
581+44.06	583+44.06	LT. TURN LANE - TRANSITION	200.00	23.38	46.76	6.00	133.33	0.03	4.00	6.00	133.33	440.00	29.33	6.00	133.33	330.00	22.00	6.00	133.33	220.00	14.67
634+69.50	636+69.50	LT. TURN LANE - TRANSITION	200.00	23.38	46.76	6.00	133.33	0.03	4.00	6.00	133.33	440.00	29.33	6.00	133.33	330.00	22.00	6.00	133.33	220.00	14.67
636+69.50	638+78.42	LT. TURN LANE	208.92	46.75	97.67	12.00	278.56	0.03	8.36	12.00	278.56	440.00	61.28	12.00	278.56	330.00	45.96	12.00	278.56	220.00	30.64
ADDITIONAL FOR LEVELING																					
554+04.48	570+57.98	C.L. HWY. 167 - NOTCH AND WIDEN	1653.50			24.00	4409.33	0.10	440.93									24.00	4409.33	275.00	606.28
570+57.98	579+09.22	TRANSITION 5 LANE UNDIVIDED TO 4 LANES DIVIDED	851.24			30.00	2837.47	0.10	283.75									30.00	2837.47	275.00	390.15
579+09.22	596+17.28	LT. MAIN LANES - NOTCH AND WIDEN	1708.06			36.00	6832.24	0.10	683.22					VAR	149.90	VAR.	24.73	36.00	6832.24	275.00	939.43
628+20.83	648+00.00	LT. MAIN LANES	1979.17															36.00	7916.68	275.00	1088.54
ADDITIONAL FOR SUPERELEVATION																					
565+63.56	570+57.98	C.L. HWY. 167 - NOTCH AND WIDEN	494.42	4.00	19.78																
570+57.98	579+09.22	TRANSITION 5 LANE UNDIVIDED TO 4 LANES DIVIDED	851.24	173.50	1476.90																
579+10.05	585+60.05	LT. MAIN LANES - NOTCH AND WIDEN	650.00	93.75	609.38																
579+03.66	586+43.61	RT. MAIN LANES - FULL DEPTH	739.95	15.50	114.69																
TOTALS:					**15753.17**		**68941.70**		**4631.25**		**20025.19**		**4405.52**		**21698.58**		**3580.26**		**72668.33**		**8598.42**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.6% MIN. AGGR.....4.4% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.1% MIN. AGGR.....3.9% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

7/14/2014

R070282.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	40	190
				① A6362 - QUANTITIES - 54927				

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 070282

BRIDGE NO. A6362
CODE NO. X071
NAME PLATE TITLE: OUACHITA RIVER

ITEM NO. / UNIT OF STRUCTURE	801 UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	801 COFFERDAM	802 CLASS S CONCRETE -BRIDGE	802 CLASS S(AE) CONCRETE -BRIDGE	802 SEAL CONCRETE -BRIDGE	802 PRESTRESSED CONCRETE GIRDERS (TYPE IV)	803 CLASS I PROTECTIVE SURFACE TREATMENT	SP & 804 REINFORCING STEEL-BRIDGE (GRADE 60)	804 EPOXY COATED REINFORCING STEEL (GRADE 60)	805 ①STEEL PILING (HP 14 X 117)	805 ①TEST PILE (HP 14 X 117)	805 ②CONCRETE PILING (18" SQ.)	805 ②TEST PILE (18" SQ.)	SP & 807 STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270, GR. 50W)	808 ELASTOMERIC BEARINGS	809 ARMORED JOINT WITH NEOPRENE STRIP SEAL	812 BRIDGE NAME PLATE (TYPE D)	816 FILTER BLANKET	816 DUMPED RIPRAP	SP JOB 070282 CLEARANCE GAUGES	SP JOB 070282 NAVIGATION LIGHTING SYSTEM
UNIT	CU. YD.	EACH	CU. YD.	CU. YD.	CU. YD.	LIN. FT.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LB.	CU. IN.	LIN. FT.	EACH	SQ. YD.	CU. YD.	LUMP SUM	LUMP SUM
BENT NO. 1			54.70				0.4	6,420	505			280	45	622	3,298.75	40					
BENT NO. 2	214		127.58					29,055				1,045	60		3,298.75						
BENT NO. 3	168		158.06					39,350				1,045	60		3,298.75						
BENT NO. 4	145		191.32					46,793				1,045	60		3,298.75						
BENT NO. 5	330		253.51					52,078				1,265	60		6,597.50	40					
BENT NO. 6	230		246.49					53,683				1,265	60		3,298.75						
BENT NO. 7	233		257.36					55,657				1,265	60		3,298.75						
BENT NO. 8	227		261.53					56,259				1,265	60		3,298.75						
BENT NO. 9	254		275.27					56,005				1,495	70		7,166.25	40					
BENT NO. 10	214		301.10					65,951				1,495	70		4,436.25						
BENT NO. 11	201		307.27					67,011				1,495	70		3,298.75						
BENT NO. 12	212		310.39					67,681				1,495	70		3,298.75						
BENT NO. 13	204		311.93					67,927				1,495	70		4,436.25						
BENT NO. 14	420		448.34					92,155				2,015	70		10,247.50						
PIER NO. 1	2,635	1	773.70		620.00			149,715		4,180	400				4,972.50				350		
PIER NO. 2	2,119	1	773.70		620.00			149,715		4,180	400				4,972.50						
BENT NO. 15	402		448.34					92,155				1,550	55		10,247.50						
BENT NO. 16	199		318.26					68,988				1,150	55		4,436.25						
BENT NO. 17	209		313.53					68,072				1,150	55		3,298.75						
BENT NO. 18	233		277.17					58,983				1,150	55		3,298.75						
BENT NO. 19	209		265.73					57,004				1,150	55		4,436.25						
BENT NO. 20	206		269.67					55,016				1,495	70		7,166.25	40					
BENT NO. 21	214		250.53					54,280				1,495	70		3,298.75						
BENT NO. 22	251		241.18					52,697				1,495	70		3,298.75						
BENT NO. 23	241		230.80					50,728				1,495	70		3,298.75						
BENT NO. 24	222		230.45					47,763				1,265	60		6,597.50	40					
BENT NO. 25	138		166.32					42,048				1,045	60		3,298.75						
BENT NO. 26	149		158.06					39,350				1,045	60		3,298.75						
BENT NO. 27	139		146.71					35,702				1,045	60		3,298.75						
BENT NO. 28			54.70				0.4	6,420	505			350	55	622	3,298.75	40		1,245	645		
4-373' CONT. PRESTRESSED CONC. GIRDER UNITS				2,007.30		7,380.0	149.2	24,245	442,121					27,920			1				
2-468' CONT. PRESTRESSED CONC. GIRDER UNITS				1,255.70		4,626.7	93.6	14,934	279,807					32,567							
1-775' CONT. COMP. PLATE GIRDER UNIT				1,046.30			77.5		253,142					1,810,969							
TOTALS FOR JOB NO. 070282	10,618	2	8,423.70	4,309.30	1,240.00	12,006.7	321.1	1,823,840	976,080	8,360	800	34,845	1,735	1,872,700	135,090.0	240	1	1,245	995	③ 1	1

① These piles are A572-Grade 50.

② All concrete piling shall be prestressed conforming to Std. Dwg. No. 55022.

③ Includes clearance gauge on existing Bridge No. 06362.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
OUACHITA RIVER STR. & APPRS. (S)
UNION & CALHOUN COUNTIES

ROUTE 167 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 09-26-12 FILENAME: b070282_gl.dgn
CHECKED BY: AMS DATE: 7/11/14 SCALE: NONE
DESIGNED BY: DATE:

BRIDGE NO. A6362 DRAWING NO. 54927

PRINT DATE: 7/11/2014

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
201	CLEARING	91	STATION
201	GRUBBING	91	STATION
202	REMOVAL AND DISPOSAL OF FENCE	145	LIN. FT.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS	3	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	7	EACH
202	REMOVAL AND DISPOSAL OF BOX CULVERTS	1	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL	406	LIN. FT.
202	REMOVAL AND DISPOSAL OF SIGNS	4	EACH
SP & 207	STONE BACKFILL	45824	TON
210	UNCLASSIFIED EXCAVATION	2746	CU. YD.
SP	SELECT GRANULAR BACKFILL	1475	CU. YD.
SP & 210	COMPACTED EMBANKMENT	154862	CU. YD.
SP & 210	COMPACTED EMBANKMENT (SPECIAL)	6106	CU. YD.
SP & 210	SOIL STABILIZATION	150	TON
303	AGGREGATE BASE COURSE (CLASS 7)	17234	TON
401	TACK COAT	4689	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	4234	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")	172	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	3422	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	158	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	8365	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	468	TON
412	COLD MILLING ASPHALT PAVEMENT	5744	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	29	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY	50	TON
504	APPROACH SLABS	127.60	CU. YD.
504	APPROACH GUTTERS	58.20	CU. YD.
601	MOBILIZATION	1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE	1	EACH
603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
604	SIGNS	418	SQ. FT.
604	BARRICADES	160	LIN. FT.
604	TRAFFIC DRUMS	202	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	240	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS	52018	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	7080	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	12816	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	9106	LIN. FT.
604	VERTICAL PANELS	81	EACH
605	CONCRETE DITCH PAVING (TYPE B)	129	SQ. YD.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	560	LIN. FT.
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
SP & 606	18" SIDE DRAIN	92	LIN. FT.
SP & 606	24" SIDE DRAIN	190	LIN. FT.
606	SELECTED PIPE BEDDING	70	CU. YD.
609	DROP INLETS (TYPE RM)	3	EACH
609	DROP INLETS (TYPE ST)	1	EACH
609	DROP INLETS (TYPE TM)	1	EACH
611	UNDERDRAIN OUTLET PROTECTORS	27	EACH
611	4" PIPE UNDERDRAINS	3000	LIN. FT.
617	GUARDRAIL (TYPE A)	750	LIN. FT.
617	GUARDRAIL TERMINAL (TYPE 2)	4	EACH
617	THRIE BEAM GUARDRAIL TERMINAL	4	EACH
620	LIME	24	TON
620	SEEDING	12.00	ACRE
SS & 620	MULCH COVER	25.75	ACRE
620	WATER	1505.9	M.GAL.
621	TEMPORARY SEEDING	13.75	ACRE
621	SILT FENCE	5285	LIN. FT.
621	SAND BAG DITCH CHECKS	418	BAG
621	DIVERSION DITCH	2227	LIN. FT.
621	DROP INLET SILT FENCE	75	LIN. FT.
621	SEDIMENT BASIN	136	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	136	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	376	CU. YD.
621	PIPE FOR SLOPE DRAINS	636	LIN. FT.
621	ROCK DITCH CHECKS	66	CU. YD.
623	SECOND SEEDING APPLICATION	12.00	ACRE
624	SOLID SODDING	109	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	1510	SQ. YD.
632	CONCRETE ISLAND	383	SQ. YD.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
642	RUMBLE STRIPS IN ASPHALT SHOULDERS	18468	LIN. FT.
718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")	531	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	20705	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	19745	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (8")	542	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	3	EACH
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	3	EACH
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4") (ALTERNATE NO. 1)	436	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4") (ALTERNATE NO. 2)	436	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	503	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	28	CU. YD.
802	CLASS S CONCRETE-ROADWAY	42.43	CU. YD.
SP	RETAINING WALL	3500	SQ. FT.
804	REINFORCING STEEL-ROADWAY (GRADE 60)	19457	POUND
SP & 816	FILTER BLANKET	7252	SQ. YD.
SP & 816	DUMPED RIPRAP	3644	CU. YD.
SP	CULVERT CLEAN OUT	1	EACH
	STRUCTURES OVER 20' SPAN		
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	10618	CU. YD.
801	COFFERDAM	2	EACH
802	CLASS S CONCRETE-BRIDGE	8423.70	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE	4309.30	CU. YD.
802	SEAL CONCRETE-BRIDGE	1240.00	CU. YD.
802	PRESTRESSED CONCRETE GIRDERS (TYPE IV)	12006.7	LIN. FT.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	321.1	GAL.
SP & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	1823840	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)	976080	POUND
805	STEEL PILING (HP 14X117)	8360	LIN. FT.
805	TEST PILE (HP 14X117)	800	LIN. FT.
805	CONCRETE PILING (18" SQUARE)	34845	LIN. FT.
805	TEST PILE (18" SQUARE)	1735	LIN. FT.
SP & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)	1872700	POUND
808	ELASTOMERIC BEARINGS	135090.0	CU. IN.
809	ARMORED JOINT WITH NEOPRENE STRIP SEAL	240	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	FILTER BLANKET	1245	SQ. YD.
816	DUMPED RIPRAP	995	CU. YD.
SP	CLEARANCE GAUGES	1.00	LUMP SUM
SP	NAVIGATION LIGHTING SYSTEM	1.00	LUMP SUM

*DENOTES ALTERNATE BID ITEMS

REVISIONS

DATE	REVISION	SHEET NUMBER
10/20/2014	REVISED STONE BACKFILL QUANTITY.	35 & 41
10/27/2014	REVISED COMPACTED EMBANKMENT (SPECIAL) QUANTITY AND CROSS SECTIONS	35, 41, 181-184, & 186

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TIMOTHY D. SMITH 10-27-14

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE PLANS	DATE REVISED	DATE PLANS
10-20-14			
10-27-14			

FED.RD DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.	070282	41	190

JOB NO.

SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	42	190

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-9-14

SURVEY CONTROL COORDINATES

Project Name: s070282
Date: 11/18/2011
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
40	1553027.8288	1142491.9170	113.42	CTL	*5/8" REBAR W/ 2" ALUM CAP
41	1553775.6136	1143384.6142	100.63	CTL	*5/8" REBAR W/ 2" ALUM CAP
42	1554475.1038	1144198.4012	100.18	CTL	*5/8" REBAR W/ 2" ALUM CAP
43	1555107.9491	1145137.5308	99.87	CTL	*5/8" REBAR W/ 2" ALUM CAP
44	1555715.2790	1146067.4579	100.35	CTL	*5/8" REBAR W/ 2" ALUM CAP
45	1556300.3809	1146991.5898	99.36	CTL	*5/8" REBAR W/ 2" ALUM CAP
46	1556965.6172	1147762.8361	102.65	CTL	*5/8" REBAR W/ 2" ALUM CAP
47	1558343.1512	1148677.8031	106.89	CTL	*5/8" REBAR W/ 2" ALUM CAP
48	1558720.6586	1149013.4790	79.28	CTL	*5/8" REBAR W/ 2" ALUM CAP
49	1559060.0118	1149256.0937	82.87	CTL	*5/8" REBAR W/ 2" ALUM CAP
50	1559347.5951	1149462.3726	78.69	CTL	*5/8" REBAR W/ 2" ALUM CAP
51	1559608.1281	1149647.8262	86.28	CTL	*5/8" REBAR W/ 2" ALUM CAP
52	1559921.3932	1149916.4051	87.00	CTL	*5/8" REBAR W/ 2" ALUM CAP
53	1560345.1371	1150147.6688	86.55	CTL	*5/8" REBAR W/ 2" ALUM CAP
54	1560641.3525	1150255.4955	84.55	CTL	*5/8" REBAR W/ 2" ALUM CAP
55	1561979.0965	1151227.3299	100.21	CTL	*5/8" REBAR W/ 2" ALUM CAP
56	1562804.5993	1151823.6469	97.88	CTL	*5/8" REBAR W/ 2" ALUM CAP
100	1558505.0472	1148779.7162	111.73	GPS	*AHTD GPS *700022
101	1561161.5689	1150633.8685	112.94	GPS	AHTD GPS *70004

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped *(standard markings common to all caps), or as indicated (other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999933467 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME. s070282gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 700022-70004
CONVERGENCE ANGLE: 00-17-49.4 LEFT AT LT: 33-20-52.3 LG: 92-31-50.1
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

C.L. MEDIAN

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	554+04.48	1555601.4346	1145866.1796
8001	PC	556+74.53	1555748.8501	1146092.4404
8003	PT	557+91.92	1555812.4239	1146191.1181
8004	PC	569+68.56	1556444.6109	1147183.5101
8006	PT	581+01.10	1557223.7293	1147995.2910
8007	PC	635+22.90	1561673.0905	1151093.5354
8009	PT	635+88.94	1561727.3966	1151131.1188
8010	PC	643+39.09	1562345.4625	1151556.2313
8012	PT	644+70.83	1562453.5757	1151631.5118
8013	POE	652+00.00	1563049.5615	1152051.6115

RT. MAIN LANES

POINT NO.	TYPE	STATION	NORTHING	EASTING
8014	POB	553+99.82	1555596.8263	1145869.1820
8015	PC	556+69.84	1555744.2265	1146095.4192
8017	PT	557+87.22	1555807.8003	1146194.0969
8018	PC	568+71.07	1556390.1252	1147108.2165
8020	PT	583+81.11	1557428.9497	1148190.5911
8021	PC	631+61.30	1561351.7720	1150922.1882
8023	PT	638+48.34	1561927.0173	1151297.6614
8024	PC	639+36.42	1562002.1869	1151343.5732
8026	PT	646+89.16	1562631.2392	1151756.7436
8027	POE	650+97.23	1562964.7744	1151991.8466

CL EXIST HWY. 167

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	554+17.77	1555601.4346	1145866.1796
8028	PC	568+96.30	1556408.5502	1147104.9814
8030	PT	579+99.49	1557171.7752	1147892.0929
8031	PC	629+51.52	1561235.6194	1150721.8885
8033	PT	631+82.37	1561423.7242	1150855.7059
8034	PC	634+25.28	1561620.2300	1150998.5023
8036	PT	638+37.00	1561948.8771	1151246.4651
8037	PC	640+24.32	1562096.3595	1151361.9552
8039	PT	646+01.19	1562559.3045	1151706.0381
8027	POE	650+97.27	1562964.7744	1151991.8466

LT. LANE NORTHERN TRANSITION

POINT NO.	TYPE	STATION	NORTHING	EASTING
8040	POB	631+82.37	1561416.6699	1150865.4134
8041	PC	633+88.72	1561583.6009	1150986.7185
8043	PT	637+50.37	1561872.7601	1151203.8981
8044	PC	638+10.75	1561920.4576	1151240.9139
8046	PT	643+37.55	1562343.9146	1151554.2137
8027	POE	650+97.15	1562964.7744	1151991.8466

7/14/2014
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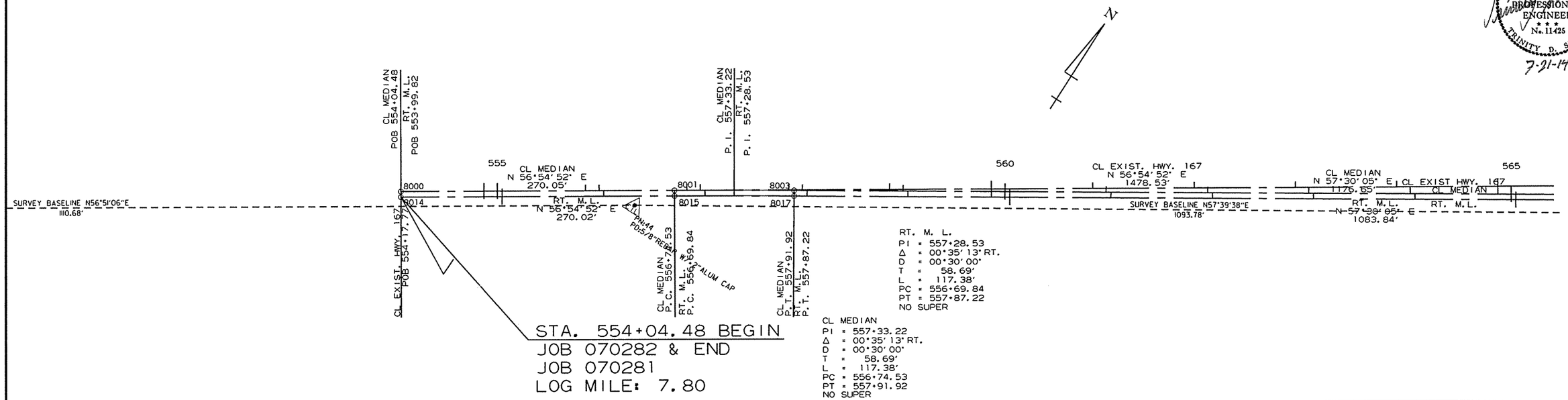
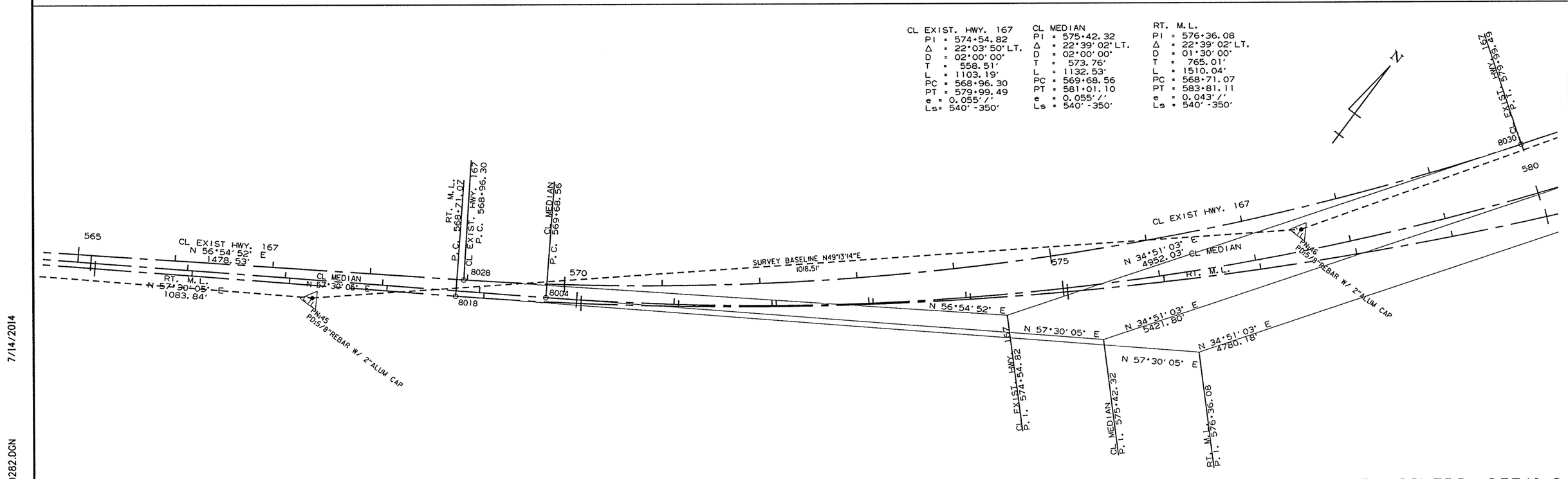
SURVEY CONTROL DETAILS

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.		070282	43	190

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14





SURVEY CONTROL DETAILS

7/14/2014

R070282.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.		070282	44	190

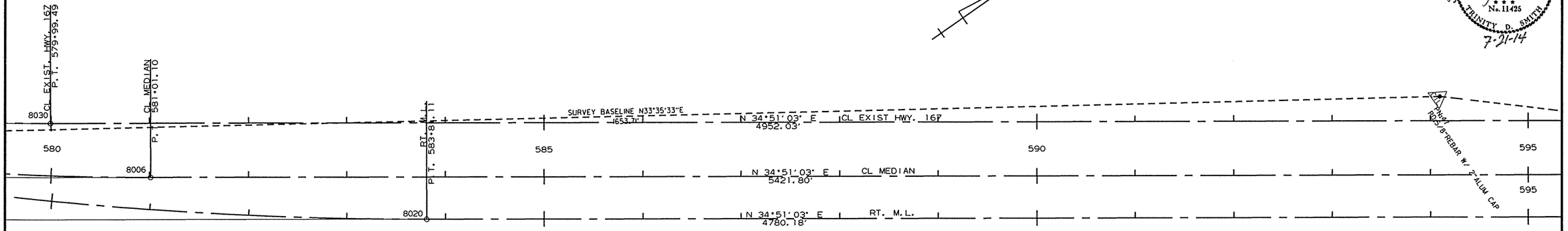
(2) SURVEY CONTROL DETAILS

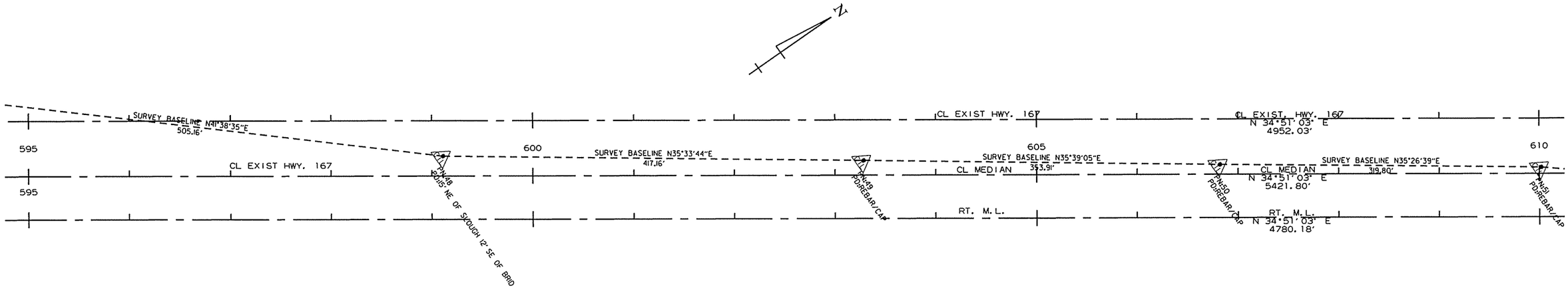
CL EXIST. HWY. 167
PI = 574+54.82
Δ = 22°03'50" LT.
D = 02°00'00"
T = 558.51'
L = 1103.19'
PC = 568+96.30
PT = 579+99.49
e = 0.055'/'
Ls = 540'-350'

CL MEDIAN
PI = 575+42.32
Δ = 22°39'02" LT.
D = 02°00'00"
T = 573.76'
L = 1132.53'
PC = 569+68.56
PT = 581+01.10
e = 0.055'/'
Ls = 540'-350'

RT. M. L.
PI = 576+36.08
Δ = 22°39'02" LT.
D = 01°30'00"
T = 765.01'
L = 1510.04'
PC = 568+71.07
PT = 583+81.11
e = 0.043'/'
Ls = 540'-350'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14





7/18/2014

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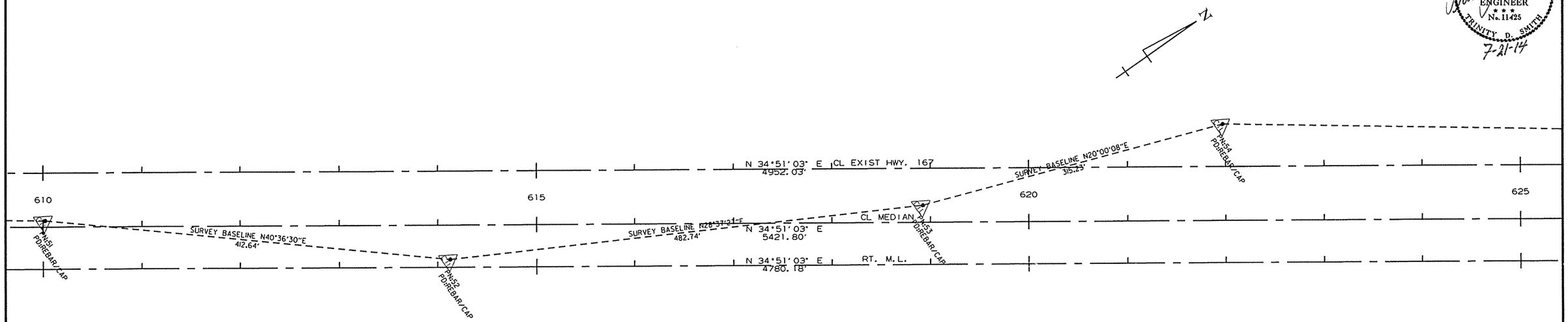
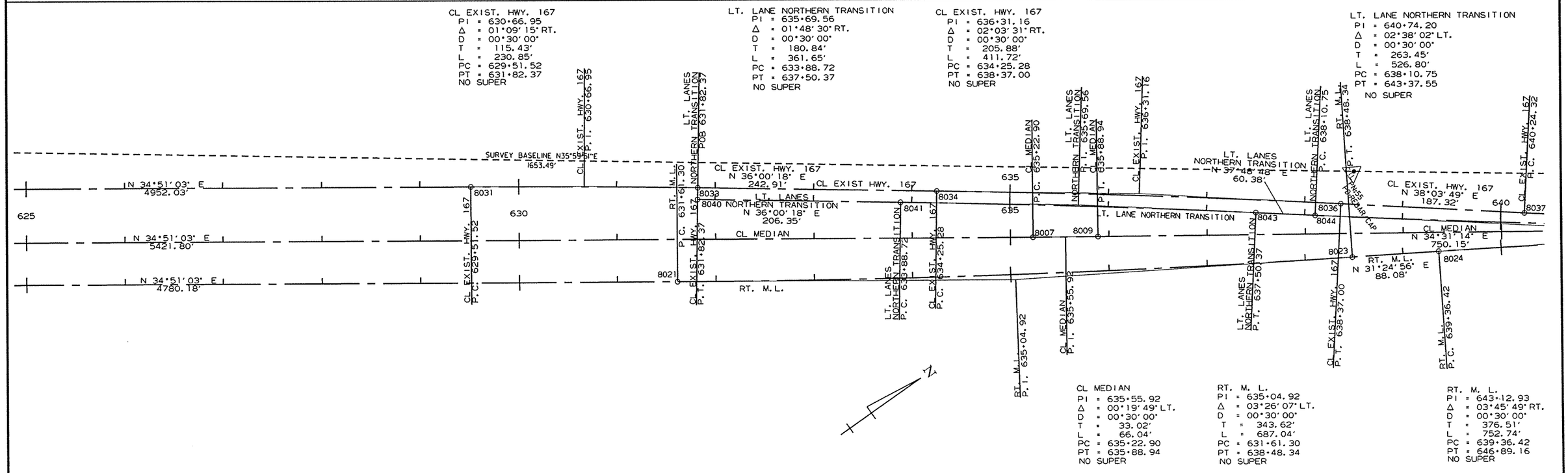
SURVEY CONTROL DETAILS

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.		070282	45	190

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14





CL MEDIAN
PI = 635+55.92
Δ = 00°19'49" LT.
D = 00°30'00"
T = 33.02'
L = 66.04'
PC = 635+22.90
PT = 635+88.94
NO SUPER

RT. M. L.
PI = 635+04.92
Δ = 03°26'07" LT.
D = 00°30'00"
T = 343.62'
L = 687.04'
PC = 631+61.30
PT = 638+48.34
NO SUPER

RT. M. L.
PI = 643+12.93
Δ = 03°45'49" RT.
D = 00°30'00"
T = 376.51'
L = 752.74'
PC = 639+36.42
PT = 646+89.16
NO SUPER

SURVEY CONTROL DETAILS

7/14/2014

R070282.DGN

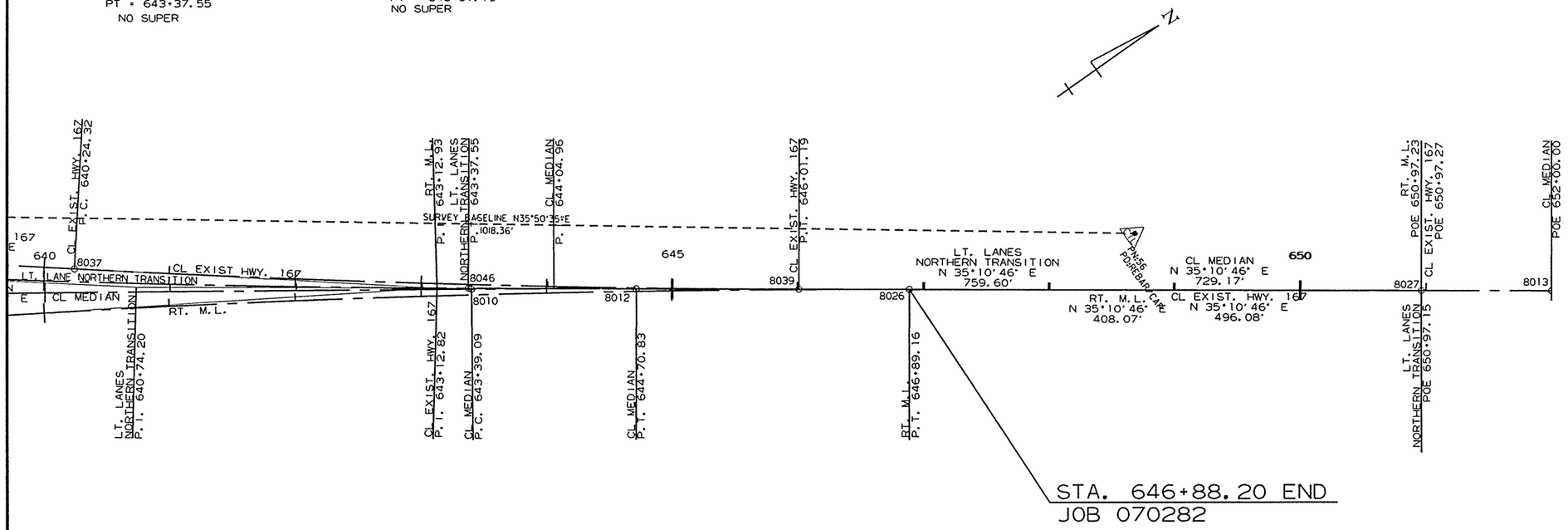
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	46	190

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

LT. LANE NORTHERN TRANSITION
PI = 640+74.20
Δ = 02°38'02" LT.
D = 00°30'00"
T = 263.45'
L = 526.80'
PC = 638+10.75
PT = 643+37.55
NO SUPER

CL EXIST. HWY. 167
PI = 643+12.82
Δ = 02°53'04" LT.
D = 00°30'00"
T = 288.50'
L = 576.87'
PC = 640+24.32
PT = 646+01.19
NO SUPER



RT. M. L.
PI = 643+12.93
Δ = 03°45'49" RT.
D = 00°30'00"
T = 376.51'
L = 752.74'
PC = 639+36.42
PT = 646+89.16
NO SUPER

CL MEDIAN
PI = 644+04.96
Δ = 00°39'31" RT.
D = 00°30'00"
T = 65.87'
L = 131.74'
PC = 643+39.09
PT = 644+70.83
NO SUPER

7/14/2014

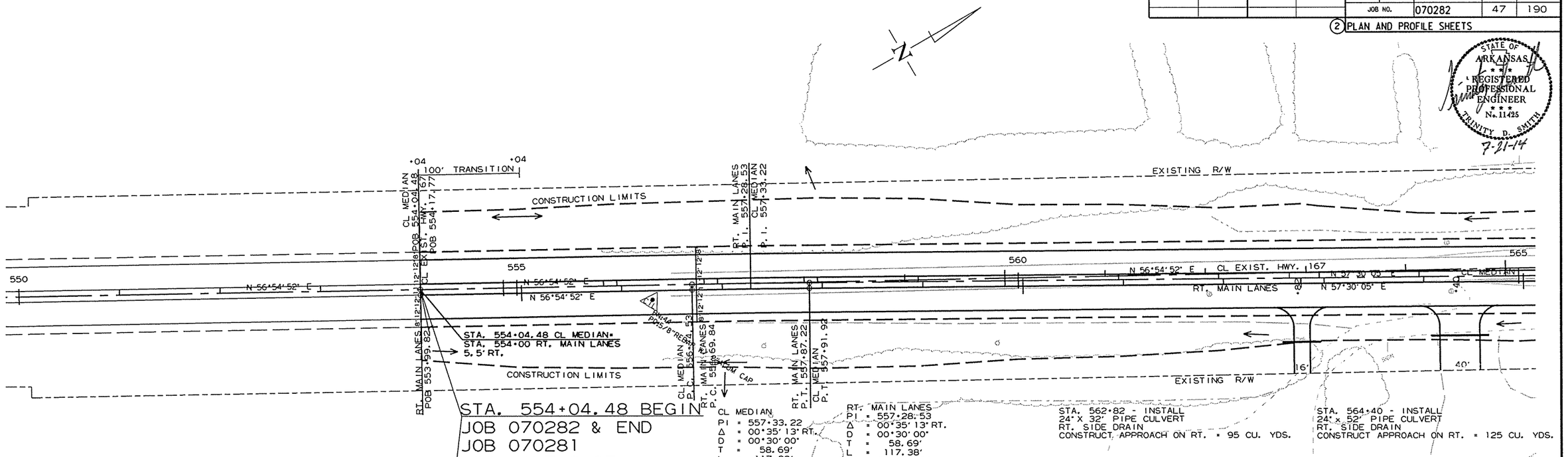
R070282.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	47	190

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14



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				6	ARK.			
				JOB NO.		070282	48	190

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
7-21-14

STA. 567+63 - IN PLACE
18" X 29' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL @ +65
18" x 28' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH ON LT. = 50 CU. YDS.

CL EXIST. HWY. 167
PI = 574+54.82
Δ = 22°03'50" LT.
D = 02°00'00"
T = 558.51'
L = 1103.19'
PC = 568+96.30
PT = 579+99.49
e = 0.055'/'
Ls = 540'-350'

CL MEDIAN
PI = 575+42.32
Δ = 22°39'02" LT.
D = 02°00'00"
T = 573.76'
L = 1132.53'
PC = 569+68.56
PT = 581+01.10
e = 0.055'/'
Ls = 540'-350'

RT. MAIN LANES
PI = 576+36.08
Δ = 22°39'02" LT.
D = 01°30'00"
T = 765.01'
L = 1510.04'
PC = 568+71.07
PT = 583+81.11
e = 0.043'/'
Ls = 540'-350'

STA. 578+87 - CONSTRUCT APPROACH ON LT. = 195 CU. YDS. EMB.

STA. 578+87 (135' LT.) - CONSTRUCT APPROACH ON LT. = 25 CU. YDS.

EQUATIONS:
CL MEDIAN STA. 570+57.98 BACK =
CL EXIST. STA. 570+70.94 (17.50' LT.) AHEAD

EQUATIONS:
CL MEDIAN STA. 575+69.74 BACK =
RT. MAIN LANES STA. 575+65.89 (5.50' RT.) AHEAD

EXISTING R/W
CONSTRUCTION LIMITS
CL EXIST. HWY. 167
RT. MAIN LANES
P.C. 568+96.30
P.C. 569+68.56
565
570
575
N 57°30'05" E
N 56°54'52" E
N 57°30'05" E (PAVED)
N 34°51'03" E
200' TAPER
DECEL. 54
+00
+00 BK
+00 AH
24' R
12.2' R
40'
32'
6'
16'
24'
N 34°51'03" E
CL MEDIAN
RT. MAIN LANES
CL EXIST. HWY. 167
P.I. 574+54.82
CL MEDIAN P.I. 575+42.32
RT. MAIN LANES P.I. 576+36.08
THOMAS STREET
578+04.48
118.62'-160.00'
579+14.67
116.61'-160.00'
T.C.E.
DECEL.
N 34°51'03" E
2' R
CL MEDIAN
RT. MAIN LANES
(TYPE 'C' CURB)
5/8" REBAR W/ CAP
PAVED PARKING

STA. 568+00 - IN PLACE
18" X 29' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" X 28' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH ON RT. = 55 CU. YDS.

STA. 570+68 - IN PLACE
24" X 37' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +69
24" X 36' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH ON RT. = 125 CU. YDS.

STA. 572+98 - IN PLACE
24" X 39' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL @ +00
24" x 42' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH ON RT. = 140 CU. YDS.

STA. 575+69 - CONSTRUCT TURNOUT ON RT. = 235 CU. YDS.

STA. 575+69 (174' RT.) - IN PLACE
18" X 57' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 576+12 - CONSTRUCT TYPE ST DROP INLET IN MEDIAN (3'-0" X 3'-0" H=4'-0") WITH 24" X 64' R.C. PIPE OUTLET ON RT. (CLASS III) (TYPE 3 BEDDING) W/ F.E.S. ON RT.

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

CL MEDIAN STA. 565+63.56 BEGIN SUPER
CL MEDIAN STA. 571+03.56 MAX SUPER (0.055 '/')

RT. LANES
STA. 564+66.07 BEGIN SUPER
STA. 570+06.07 MAX SUPER (0.043 '/')

LT. LANES
STA. 579+10.05 MAX SUPER (-0.055 '/')
STA. 582+60.05 END SUPER (-0.020 '/')
STA. 585+60.05 END TRANSITION (N.C.)

LT. LANES SOUTHERN TRANSITION

K 403.67
VC=200'
e=0.12'

P.V.I. 567+00.00
ELEV. 100.90

K 600.00
VC=100'
e=-0.02'

0.35%
0.18%

570+57.98 BACK (LT. LANES ONLY)
ELEV. 101.56

P.V.I. 570+70.94 AHEAD
ELEV. 101.21

0.18%

K 17135.45
VC=200'
e=0.00'

P.V.I. 572+25.00
ELEV. 101.49

0.20%

P.V.I. 573+00.00
ELEV. 102.00

K 2137.92
VC=150'
e=-0.01'

P.V.I. 574+40.89
ELEV. 101.91

0.12%

P.V.I. 575+16.13
ELEV. 102.01
END LT. LANES PROFILE GRADE AND BEGIN OVERLAY

RT. LANES SOUTHERN TRANSITION

0.18%

0.06%

P.V.I. 579+00.00
ELEV. 104.54

ELEV. 102.90

RT. DITCH GRADE -1.23%

570+00.00 RT.
94.29

571+00.00 RT.
93.06

571+04.00 AHEAD
P.V.I. 571+04.00
ELEV. 103.08

571+04.00 BACK (RT. LANES ONLY)
ELEV. 101.64

RT. DITCH GRADE -0.57%

572+89.00 RT.
91.74

574+00.00 RT.
91.11

K 3243.24
VC=400'
e=-0.06'

+12 D.I. IN MEDIAN
TOP = 103.69
FL. INLET = 99.69
FL. OUTLET = 98.69

RT. DITCH GRADE -0.16%

577+00.00 RT.
90.66

K 709.73
VC=500'
e=-0.44'

150
140
130
120
110
100
90
80
70
60

120
110
100
90
80

565+00 566+00 567+00 568+00 569+00 570+00 571+00 572+00 573+00 574+00 575+00 576+00 577+00 578+00 579+00 580+00

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				6	ARK.			
				JOB NO.		070282	49	190

PLAN AND PROFILE SHEETS

CL MEDIAN
PI = 575+42.32
Δ = 22°39'02" LT.
D = 02°00'00"
T = 573.76'
L = 1132.53'
PC = 569+68.56
PT = 581+01.10
e = 0.055'/'
Ls = 540'-350'

STA. 581+12 IN PLACE
24" X 47' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

RT. MAIN LANES
PI = 576+36.08
Δ = 22°39'02" LT.
D = 01°30'00"
T = 765.01'
L = 1510.04'
PC = 568+71.07
PT = 583+81.11
e = 0.043'/'
Ls = 540'-350'

STA. 583+19 IN PLACE
18" x 39' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 64' PIPE CULVERT
LT. SIDE DRAIN
CONSTRUCT APPROACH ON LT. = 115 CU. YDS.

GUARDRAIL

STA.	STA.	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
593+97.93	596+16.68	150' LT.	1	1
592+38.52	596+16.68	300' RT.	1	1

STA. 594+39 - CONSTRUCT APPROACH ON LT. = 75 CU. YDS.

STA. 594+51 - CONSTRUCT APPROACH ON LT. = 25 CU. YDS.

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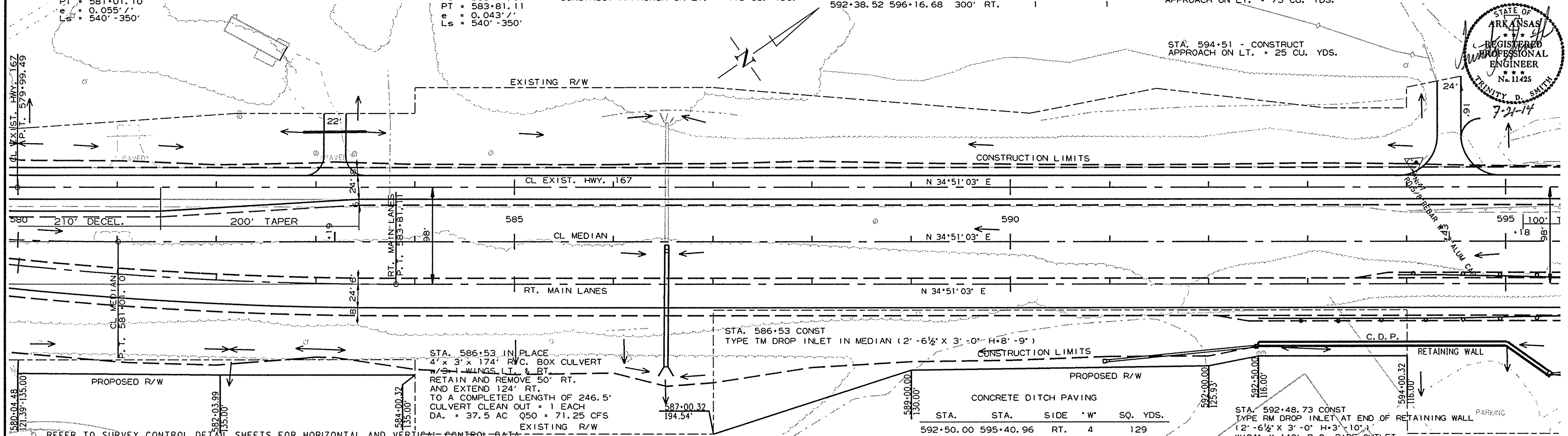


STA. 586+53 IN PLACE
4' x 3' x 174' R.C. BOX CULVERT
W/3:1 WINGS LT. & RT.
RETAIN AND REMOVE 50' RT.
AND EXTEND 124' RT.
TO A COMPLETED LENGTH OF 246.5'
CULVERT CLEAN OUT = 1 EACH
DA. = 37.5 AC Q50 = 71.25 CFS

STA. 586+53 CONST
TYPE TM DROP INLET IN MEDIAN (2'-6½" X 3'-0" H=8'-9")

CONCRETE DITCH PAVING

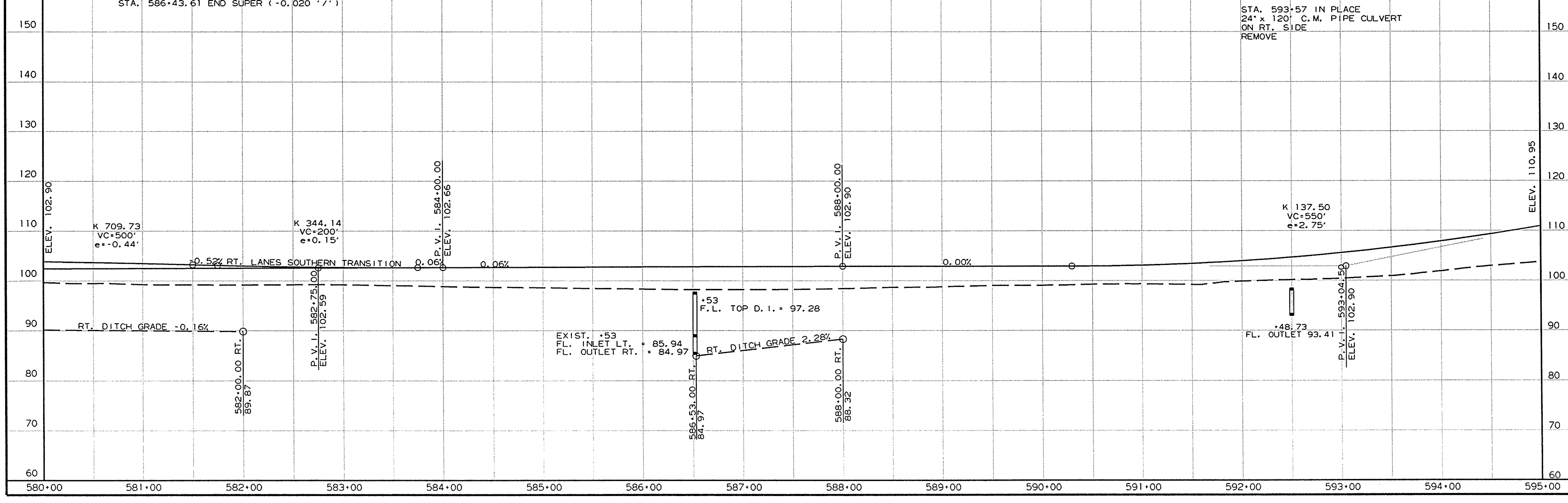
STA.	STA.	SIDE	"W"	SQ. YDS.
592+50.00	595+40.96	RT.	4	129

STA. 592+48.73 CONST
TYPE RM DROP INLET AT END OF RETAINING WALL
(2'-6½" X 3'-0" H=3'-10")
W/24" X 148' R.C. PIPE OUTLET
W/FES
(TYPE 3 BEDDING) (CLASS III)

STA. 593+57 IN PLACE
24" x 120' C.M. PIPE CULVERT
ON RT. SIDE
REMOVE

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

RT. LANES
STA. 582+93.61 FULL SUPER (+0.055 '/')
STA. 586+43.61 END SUPER (-0.020 '/')



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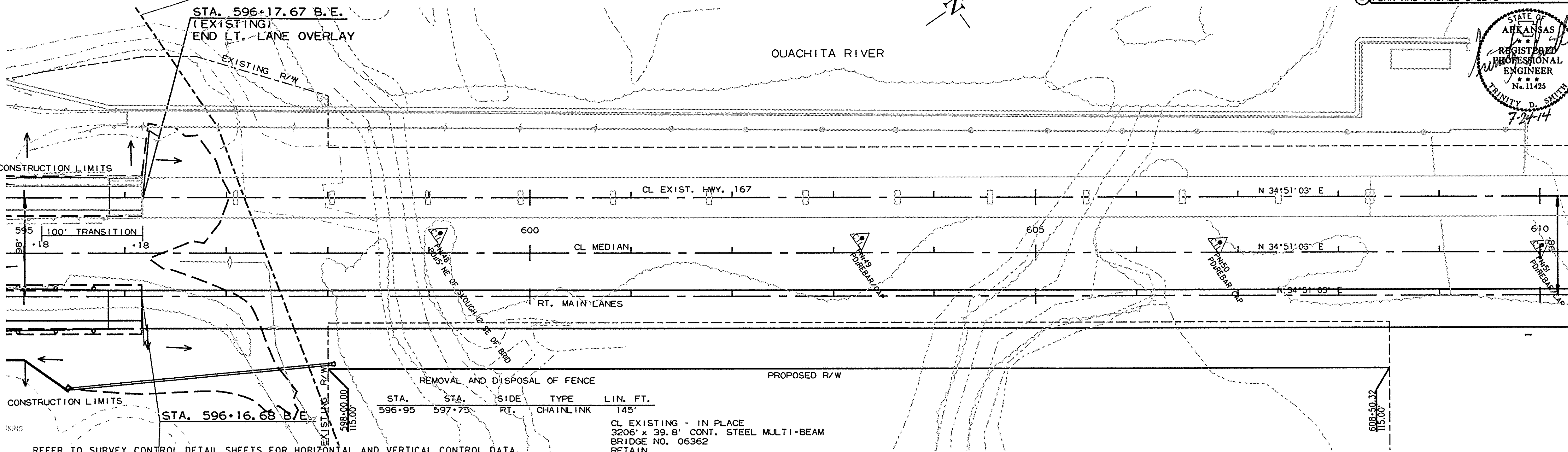
				6	ARK.			
				JOB NO.		070282	50	190

② PLAN AND PROFILE SHEETS

REMOVAL AND DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
593+98.92	596+17.67	LT.	218.75
595+23.92	596+17.67	RT.	93.75

CL EXISTING - IN PLACE
3206' x 39.8' CONT. STEEL MULTI-BEAM
BRIDGE NO. 06362
RETAIN



REMOVAL AND DISPOSAL OF FENCE

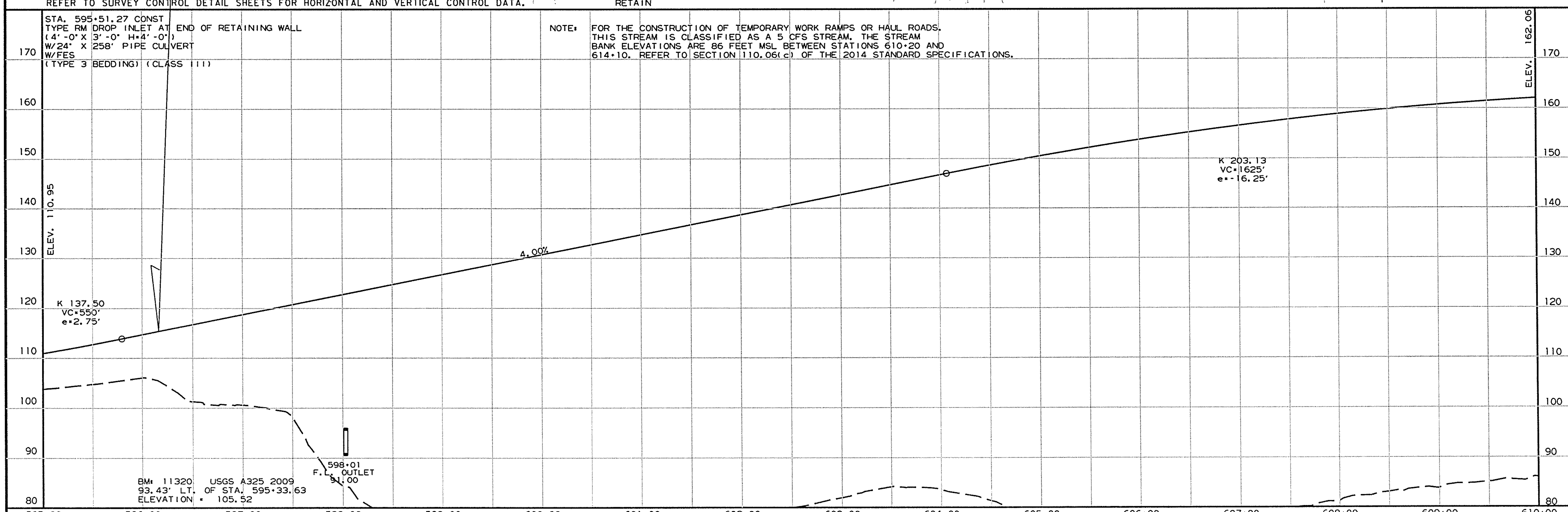
STA.	STA.	SIDE	TYPE	LIN. FT.
596+95	597+75	RT.	CHAINLINK	145'

CL EXISTING - IN PLACE
3206' x 39.8' CONT. STEEL MULTI-BEAM
BRIDGE NO. 06362
RETAIN

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

STA. 595+51.27 CONST
TYPE RM DROP INLET AT END OF RETAINING WALL
(4'-0" X 3'-0" H=4'-0")
W/24" X 258' PIPE CULVERT
W/FES
(TYPE 3 BEDDING) (CLASS III)

NOTE: FOR THE CONSTRUCTION OF TEMPORARY WORK RAMPS OR HAUL ROADS. THIS STREAM IS CLASSIFIED AS A 5 CFS STREAM. THE STREAM BANK ELEVATIONS ARE 86 FEET MSL BETWEEN STATIONS 610+20 AND 614+10. REFER TO SECTION 110.06(c) OF THE 2014 STANDARD SPECIFICATIONS.



BM: 11320 USGS A325 2009
93.43' LT. OF STA. 595+33.63
ELEVATION = 105.52

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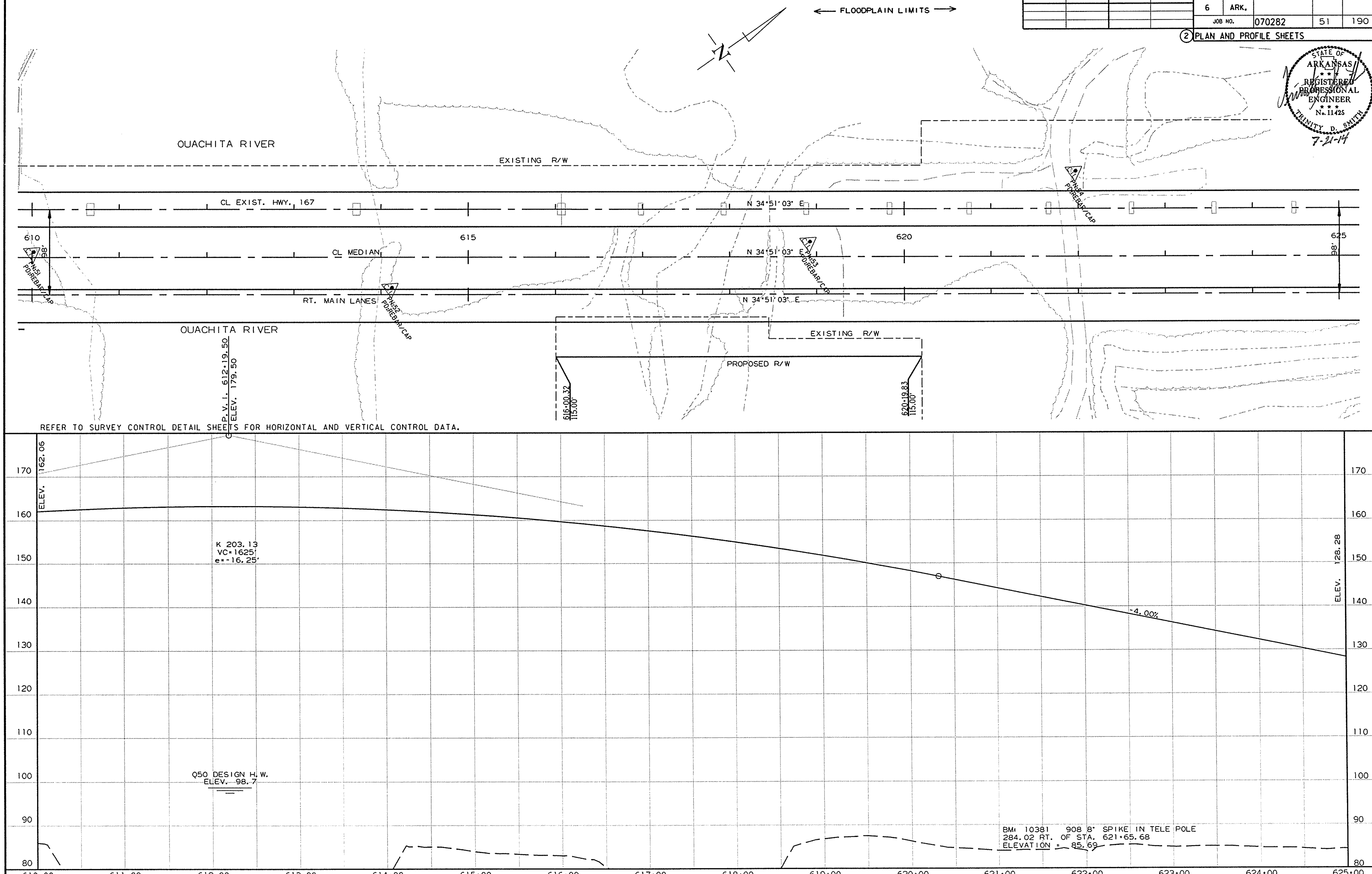
				6	ARK.			
					JOB NO.	070282	51	190

(2) PLAN AND PROFILE SHEETS



FLOODPLAIN LIMITS
N
OUACHITA RIVER
EXISTING R/W
CL EXIST. HWY. 167
N 34°51'03" E
610
615
620
625
98'
CL MEDIAN
RT. MAIN LANES
OUACHITA RIVER
EXISTING R/W
PROPOSED R/W
P.V.I. 612+19.50
ELEV. 179.50
616+00.32
115.00'
620+19.83
115.00'
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
ELEV. 162.06
ELEV. 128.28
K 203.13
VC=1625'
e=-16.25'
-4.00%
Q50 DESIGN H.W.
ELEV. 98.7
BM: 10381 908 8" SPIKE IN TELE POLE
284.02 RT. OF STA. 621+65.68
ELEVATION = 85.69
170
160
150
140
130
120
110
100
90
80
610+00
611+00
612+00
613+00
614+00
615+00
616+00
617+00
618+00
619+00
620+00
621+00
622+00
623+00
624+00
625+00

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				6	ARK.			
				JOB NO.		070282	52	190

(2) PLAN AND PROFILE SHEETS

GUARDRAIL

STA.	STA.	SIDE	GUARDRAIL (TYPE A)	THRIE BEAM GUARDRAIL TERMINAL	GUARDRAIL TERMINAL (TYPE 2)
628+20.83	630+39.58	LT.	150'	1	1
628+20.83	630+39.58	RT.	150'	1	1

REMOVAL AND DISPOSAL OF GUARDRAIL

STA.	STA.	SIDE	LIN. FT.
628+20.83	630+39.58	LT.	218.75
628+20.83	629+14.58	RT.	93.75

CL EXIST. HWY. 167
PI = 630+66.95
Δ = 01°09'15" RT.
D = 00°30'00"
T = 115.43'
L = 230.85'
PC = 629+51.52
PT = 631+82.37
NO SUPER

CL MEDIAN
PI = 635+55.92
Δ = 00°19'49" LT.
D = 00°30'00"
T = 33.02'
L = 66.04'
PC = 635+22.90
PT = 635+88.94
NO SUPER

CL EXIST. HWY. 167
PI = 636+31.16
Δ = 02°03'31" RT.
D = 00°30'00"
T = 205.88'
L = 411.72'
PC = 634+25.28
PT = 638+37.00
NO SUPER

STA. 628+20.83 B.E.
(EXISTING)
BEGIN LT. LANE INLAY

FLOODPLAIN LIMITS

EQUATIONS:
CL EXIST. STA. 633+88.72 BACK =
LT. LANES NORTHERN TRANSITION
STA. 633+88.72 (-12.00' RT.) AHEAD

EXISTING R/W

CONSTRUCTION LIMITS

CL EXIST. HWY. 167

CL MEDIAN

RT. MAIN LANES

N 34°51'03" E

N 36°00'18" E

N 38°03'49" E

N 37°48'48" E

N 34°31'14" E

N 31°24'56" E

CO. RD. 244

STA. 628+22.30 B.E.

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

STA. 635+00 CONST
TYPE RM DROP INLET IN MEDIAN (4'-0" X 3'-0" H=3'-0")
WITH 24" X 90' R.C. PIPE OUTLET ON RT.
(CLASS III) (TYPE 3 BEDDING) W/ F.E.S. ON RT.

3210' DECEL

200' TAPER

RT. MAIN LANE
PI = 635+04.92
Δ = 03°26'07" LT.
D = 00°30'00"
T = 343.62'
L = 687.04'
PC = 631+61.30
PT = 638+48.34
NO SUPER

LT. LANE NORTHERN TRANSITION
PI = 635+69.56
Δ = 01°48'30" RT.
D = 00°30'00"
T = 180.84'
L = 361.65
PC = 633+88.72
PT = 637+50.37
NO SUPER

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LT. LANES NORTHERN TRANSITION

P.V.I. 638+99.70
ELEV. 101.79
BEGIN END INLAY AND PROFILE GRADE

-0.27%

K 189.18
VC=100'
e=-0.07'

-4.00%

K 140.86
VC=600'
e=3.19'

P.V.I. 632+10.52
ELEV. 99.86

0.26%

K 206.95
VC=100'
e=0.06'

0.74%

P.V.I. 636+00.00
ELEV. 100.87

P.V.I. 638+80.00
ELEV. 102.95

K 194.81
VC=300'
e=-0.58'

.00
D.I. IN MEDIAN
FL. TOP = 96.09
FL. INLET = 93.09
FL. OUTLET = 92.09

ELEV.

128.28

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				JOB NO.		070282	53	190

(2) PLAN AND PROFILE SHEETS

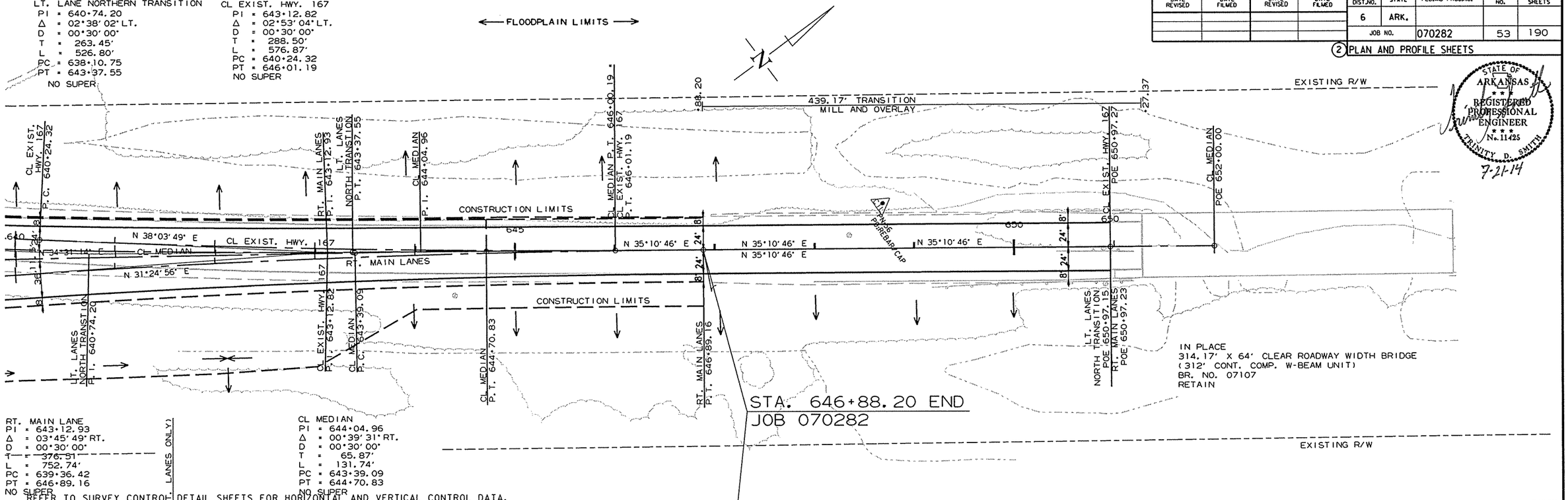
LT. LANE NORTHERN TRANSITION
PI = 640+74.20
Δ = 02°38'02" LT.
D = 00°30'00"
T = 263.45'
L = 526.80'
PC = 638+10.75
PT = 643+37.55
NO SUPER

CL EXIST. HWY. 167
PI = 643+12.82
Δ = 02°53'04" LT.
D = 00°30'00"
T = 288.50'
L = 576.87'
PC = 640+24.32
PT = 646+01.19
NO SUPER

RT. MAIN LANE
PI = 643+12.93
Δ = 03°45'49" RT.
D = 00°30'00"
T = 376.51'
L = 752.74'
PC = 639+36.42
PT = 646+89.16
NO SUPER

CL MEDIAN
PI = 644+04.96
Δ = 00°39'31" RT.
D = 00°30'00"
T = 65.87'
L = 131.74'
PC = 643+39.09
PT = 644+70.83
NO SUPER

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



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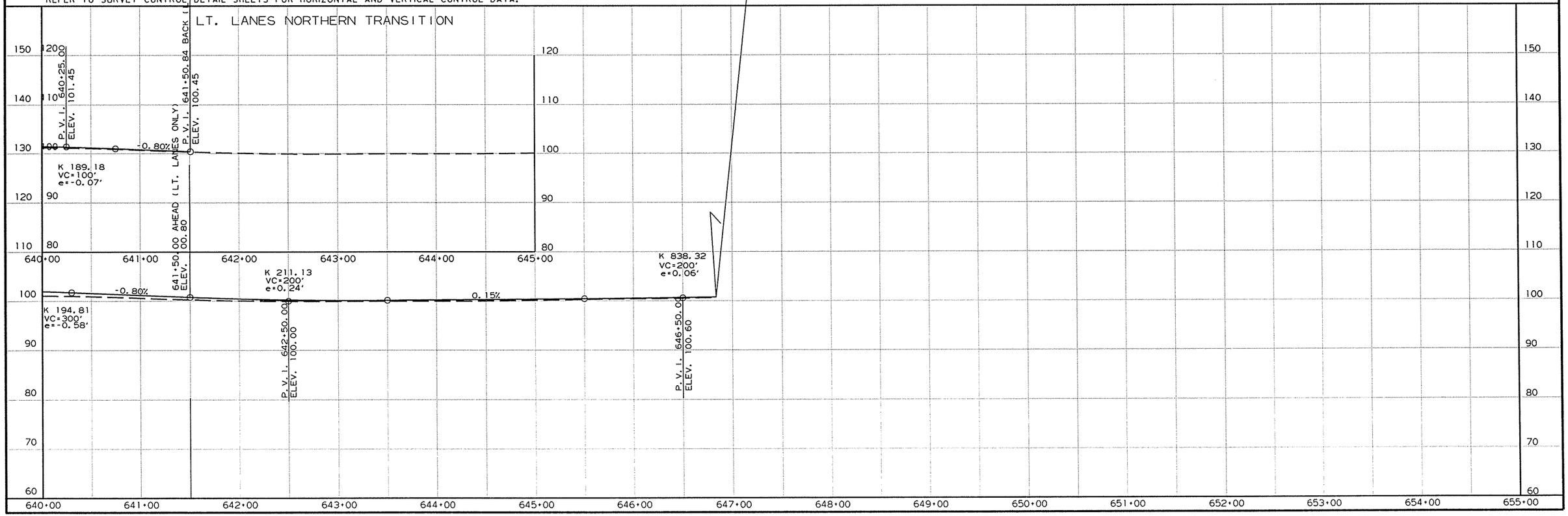

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(2) CULVERT DIAGRAMS

STATE OF ARKANSAS
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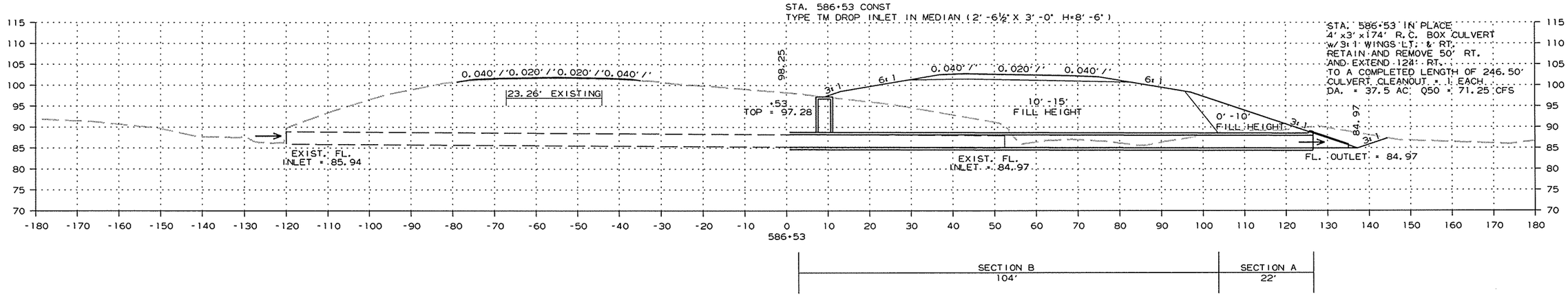

QUANTITIES - R.C. BOX STA. 586+53

SECTION	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
	LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
1 - A	4	3	22	6.86	652.00	16.00			R-100X-X1, PBC-1, RCB-1, RCB-2, RCB-3
1 - B	4	3	102	32.45	3534.00	98.00			R-100X-X1, PBC-1, RCB-1, RCB-2, RCB-3
3 LAP @ 13.36					40.00				
HEADWALLS, APRONS & WINGS				3.12	111.00		12	0.15	W-X003-1
TOTALS				42.43	4337.00	114.00	12	0.15	

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				6	ARK.			
				JOB NO.		070282	55	190
				(1)		A6362 - LAYOUT - 54928		

Notes: Use Type B Approach Gutters ("W" = 6'-0" & "W" = 8'-0") at both ends of bridge - Dwg. No. 55030B

Use Type B Approach Slab at both ends of bridge - Dwg. No. 55040B

Note: For R/W Data, See Rdwy. Plans

Existing Pipeline

Existing Bents or Piers (typ.)

Ex. Br. No. 06362 (To Be Retained)

Toe of Fill Slope

GRADE BREAK

RAMP

N 34° 51' 03" E

C.L. Median

Profile Grade Line

C.L. Lanes

1'-5" Parapet Rail

56'-0"

6'-0" Shldr.

24'-0" Lanes

38'-0" Cr. Rdwy.

8'-0" Shldr.

IV:3H

V:3H

13'-0"

41'-2" Out to Out

2.0% Slope

1'-0"

Tan. Dist. Over 500'

Approx. 3.71 mi. to Jct. SH 335

Retaining Wall See Dwg. Nos. 54936 & 54937

*Level Fill Elev. 101.0

Top of Fill Slope

PARKING

Toe of Fill Slope

Existing Levee

C.L. Bridge

Proposed Bents or Piers (typ.)

The proposed work within the Calion Protection Works Levee shall be conducted in accordance with US Army Corps of Engineers District Regulation 1130-2-530. Prior to beginning any work within the levee area, the Contractor shall contact Mr. Jeffrey Maxey of the Southeast Arkansas Project Office at (870) 265-5309.

PLAN

Total Length of Bridge = 3205'-7 1/8"

1'-3 3/16" | 373'-0" Cont. Comp. Prestressed Concrete Girder Unit (91'-6", 2 @ 95'-0", 91'-6") | 373'-0" Cont. Comp. Prestressed Concrete Girder Unit (91'-6", 2 @ 95'-0", 91'-6") | 468'-0" Cont. Comp. Prestressed Concrete Girder Unit (91'-6", 3 @ 95'-0", 91'-6")

Beg. Bridge Sta. 596+16.71
Elev. = 115.13

Slope Intercept
Sta. 596+01.71

For Guard Rail, see Rdwy. Plans

*Level Fill Elev. 101.0

Concrete Parapet Rail

C.L. Bt. Sta. 597+09.50 Elev. = 118.84

C.L. Bt. Sta. 598+04.50 Elev. = 122.64

C.L. Bt. Sta. 598+99.50 Elev. = 126.44

C.L. Bt. Sta. 599+91.00 Elev. = 130.10

C.L. Bt. Sta. 600+82.50 Elev. = 133.76

C.L. Deck to Low Concrete = 5'-7 7/8"

C.L. Bt. Sta. 601+77.50 Elev. = 137.56

C.L. Bt. Sta. 602+72.50 Elev. = 141.36

C.L. Bt. Sta. 603+64.00 Elev. = 145.02

C.L. Bt. Sta. 604+55.50 Elev. = 149.62

C.L. Bt. Sta. 605+50.50 Elev. = 151.97

C.L. Bt. Sta. 606+45.50 Elev. = 154.88

C.L. Bt. Sta. 607+40.50 Elev. = 157.34

C.L. Bt. Sta. 608+32.00 Elev. = 159.29

C.L. 5" Finger Plate Joint

+4.00%

"G"

"H"

14'-0"

Elev. "J"

PVC = Sta. 604+07.00 Elev. 146.74

Exp. / Fix

Existing Ground Line Along C.L. Bridge

Proposed Grade Line Along C.L. Bridge

40' Piles 45' Test Pile

Bent No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		55' Piles 60' Test Pile	55' Piles 60' Test Pile	55' Piles 60' Test Pile	55' Piles 60' Test Pile	55' Piles 60' Test Pile	55' Piles 60' Test Pile	55' Piles 60' Test Pile	65' Piles 70' Test Pile	65' Piles 70' Test Pile	65' Piles 70' Test Pile	65' Piles 70' Test Pile	65' Piles 70' Test Pile	65' Piles 70' Test Pile

595+00 596+00 597+00 598+00 599+00 600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00 608+00 609+00

(1) C.L. 2 1/2" Strip Seal Jt. (4" max. movement rating)

ELEVATION

Note: See "Table of Variables" on Dwg. No. 54929 for C.L. Deck to Low Seat of Cap, Bent Heights and Footing Elevations.

*Note: Fill area as shown to Elev. 101.0 using IV:3H slope in accordance with SP Job 070282 "Excavation and Embankment (Clay Fill)". Approx. 2,245 cy of fill. For "Section X-X", see Sheet 4 of 7.

Note: Bridge Stations shown are along C.L. Median. Elevations shown are actual elevations along C.L. Bridge.

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
7-19-14
CHARLES R. ELLIS
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SHEET 1 OF 7

LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
UNION AND CALHOUN COUNTIES

ROUTE 167 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION

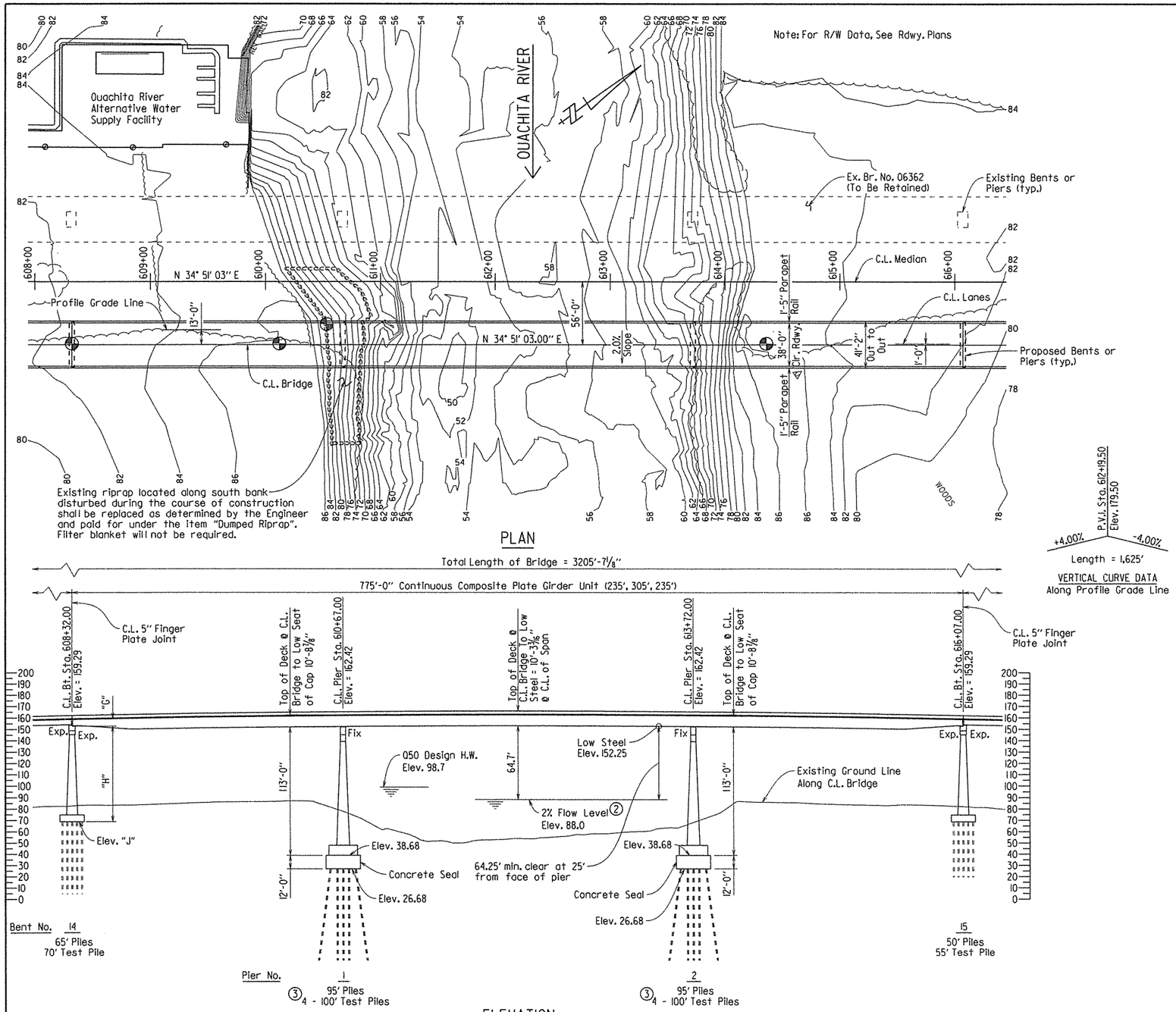
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-12 FILENAME: b070282_11.dgn
CHECKED BY: AMS DATE: 11/6/12 SCALE: 1" = 50'
DESIGNED BY: PGT DATE: 6/12

BRIDGE NO. A6362 DRAWING NO. 54928

PRINT DATE: 7/11/2014

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.		070282	56	190
				(1)		A6362 - LAYOUT - 54929		



PLAN

VERTICAL CURVE DATA
Along Profile Grade Line

ELEVATION

Note: Bridge Stations shown are along C.L. Median. Elevations shown are actual elevations along C.L. Bridge.

② Approximately 296' min. horizontal clearance between face of piers @ 2% flow level

③ Estimated length of test piles left in place. Assumed for estimating quantities only.

TABLE OF VARIABLES

Bent No.	C.L. Deck @ C.L. Bridge to Low Seat of Cap	Low Seat of Cap to Bottom of Footing	Bottom of Footing Elevation
	"O"	"H"	"J"
2	5'-11 7/8"	26'-0"	86.85
3	5'-11 7/8"	40'-0"	76.65
4	5'-11 7/8"	53'-6"	66.95
5	6'-1 11/16"	56'-6"	67.46
6	5'-11 7/8"	57'-6"	70.27
7	5'-11 7/8"	61'-6"	70.07
8	5'-11 7/8"	63'-0"	72.37
9	6'-1 9/16"	64'-6"	74.39
10	6'-0 3/8"	76'-6"	66.09
11	5'-11 3/4"	78'-6"	67.49
12	5'-11 3/4"	79'-6"	69.40
13	6'-0 1/4"	80'-0"	71.32
14	7'-1 9/16"	83'-6"	68.66
15	7'-1 9/16"	83'-6"	68.66
16	6'-0 1/4"	82'-0"	69.32
17	5'-11 3/4"	80'-6"	68.40
18	5'-11 3/4"	68'-6"	77.49
19	6'-0 3/8"	64'-6"	78.09
20	6'-1 9/16"	62'-6"	76.39
21	5'-11 7/8"	59'-0"	76.37
22	5'-11 7/8"	55'-6"	76.07
23	5'-11 7/8"	51'-6"	76.27
24	6'-1 11/16"	47'-6"	76.46
25	5'-11 7/8"	43'-6"	76.95
26	5'-11 7/8"	40'-0"	76.65
27	5'-11 7/8"	35'-0"	77.85

STATE OF ARKANSAS
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No. 9235
7-14-14
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SHEET 2 OF 7
LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
UNION AND CALHOUN COUNTIES

ROUTE 167 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-12 FILENAME: b070282_11.dgn
CHECKED BY: AHS DATE: 11/6/12 SCALE: 1" = 50'
DESIGNED BY: BGS DATE: 6/12
BRIDGE NO. A6362 DRAWING NO. 54929

PRINT DATE: 7/11/2014

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.		070282	57	190

(1) A6362 - LAYOUT - 54930

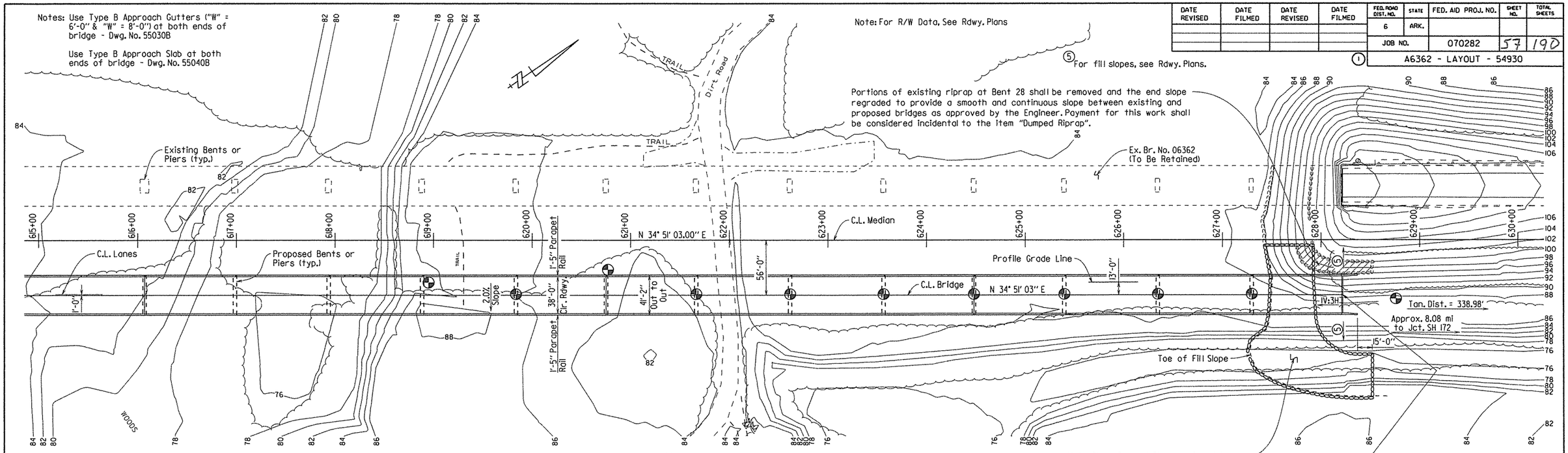
Notes: Use Type B Approach Gutters ("W" = 6'-0" & "W" = 8'-0") at both ends of bridge - Dwg. No. 55030B

Use Type B Approach Slab at both ends of bridge - Dwg. No. 55040B

Note: For R/W Data, See Rdwy. Plans

(5) For fill slopes, see Rdwy. Plans.

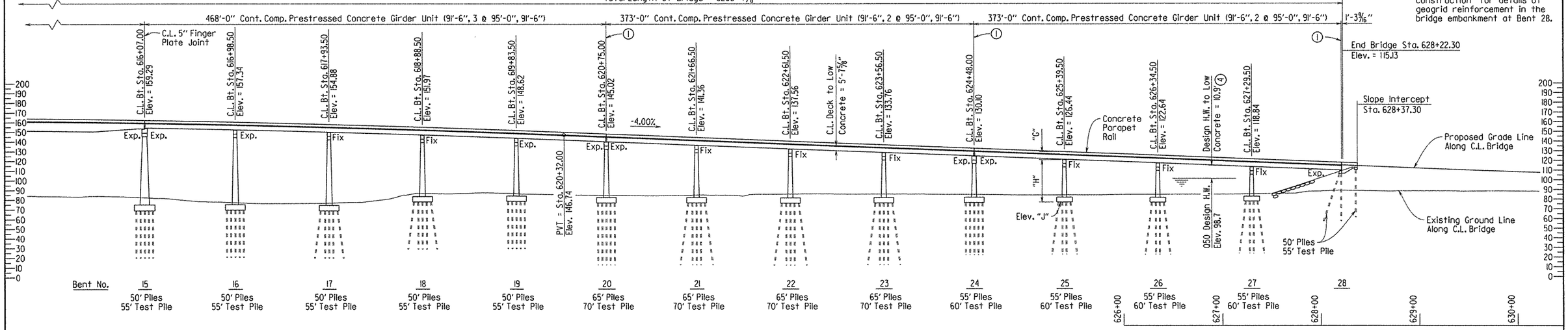
Portions of existing riprap at Bent 28 shall be removed and the end slope regraded to provide a smooth and continuous slope between existing and proposed bridges as approved by the Engineer. Payment for this work shall be considered incidental to the item "Dumped Riprap".



PLAN

Note: Place Dumped Riprap 1'-6" thick on Filter Blanket. Top of Riprap Elev. 100.00. For Details, see Std. Dwg. No. 55001.

NOTE: See Special Provision Job 070282 "Geosynthetic Internal Reinforced Embankment Construction" for details of geogrid reinforcement in the bridge embankment at Bent 28.



ELEVATION

Note: See "Table of Variables" on Dwg. No. 54929 for C.L. Deck to Low Seat of Cap, Bent Heights and Footing Elevations.

(1) C.L. 2½" Strip Seal Jt. (4" max. movement rating)

(4) Low Concrete occurs 17'-2" right of C.L. Bridge @ Stations 596+18.50 and 628+20.50.

Note: Bridge Stations shown are along C.L. Median. Elevations shown are actual elevations along C.L. Bridge.

PRINT DATE: 7/11/2014

STATE OF ARKANSAS Charles R. Ellis REGISTERED PROFESSIONAL ENGINEER No. 9235 7-14-14 CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 7

LAYOUT OF BRIDGE OVER OUACHITA RIVER OUACHITA RIVER STR. & APPRS. (S) UNION AND CALHOUN COUNTIES

ROUTE 167 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-12 FILENAME: b070282_11.dgn

CHECKED BY: AMS DATE: 11/4/12 SCALE: 1" = 50'

DESIGNED BY: PGT DATE: 6/12

BRIDGE NO. A6362 DRAWING NO. 54930

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.		070282	58	190
				①	A6362 - LAYOUT - 54931			

GENERAL NOTES

BENCH MARK: AHTD GPS #70004, 84.92' Lt. of Sta. 628+40.45, Elevation = 112.94.

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, Section and Subsection refer to the Construction Specifications.

DESIGN SPECIFICATIONS: 2012 AASHTO LRFD Bridge Design Specifications with 2013 Interim Revisions and 2009 Guide Specifications for Vessel Collision Design of Highway Bridges with 2010 Interim Revisions.

LIVE LOADING: HL93
SEISMIC PERFORMANCE ZONE: 2

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Class S (Prestressed Girders)	f'c = 6,000 psi
Seal Concrete (substructure)	f'c = 2,100 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 Programs and Contracts Division.

CONCRETE PILING: All piling in Bents 1 thru 28 shall be 18" square prestressed concrete piling and shall be driven to an ultimate bearing capacity of 240 tons per pile with an approved air, steam or diesel hammer. Piling in end bents shall be driven after embankment to bottom of cap is in place. Piling shall be driven to the tip elevations shown below or lower:

Bents 1, Minimum Tip Elev. = 67.0
Bents 2 thru 27, Minimum Tip Elev. = 35.0
Bent 28, Minimum Tip Elev. = 60.0

Lengths of piling shown are assumed for estimating quantities only. Actual lengths are to be determined in the field. Payment for cut-off or build-up shall be in accordance with the Standard Specifications. Drive one test pile in each bent in accordance with Subsection 805.09(b)(1). Detail drawings for Bents 2 thru 27 show the location of the test pile.

STEEL H-PILING: All piling in Piers 1 and 2 shall be HP14x117 (Grade 50) and shall be driven to an ultimate bearing capacity of 410 tons per pile with an approved air, steam or diesel hammer. Steel piling shall be driven to a minimum penetration of 30' below bottom of seal. Four piles in each pier designated as long piles in the Standard Specifications shall be driven without a follower and shall serve as test piles to establish the tip elevation of the production piles. Detail drawings show the location of the test piles.

Lengths of piling shown are assumed for estimating quantities only. The lengths of the test piling shown are the estimated length of the test piles to be left in place. Actual lengths to be determined in the field. Payment for test piles and production piles will be based on the actual accepted length left in place. No payment will be made for cut-off or build-up of the test piles or production piles.

DRIVING SYSTEM: The driving system approval and ultimate bearing capacity determination for piling shall be based on the requirements of Subsection 805.09(b) "Method B-Wave Equation Analysis (WEAP)". The estimated minimum rated hammer energy in foot pounds per blow required to obtain the required ultimate bearing capacities are as shown below:

Bent or Pier No(s).	Minimum Rated Hammer Energy
Bents 1 thru 28	40,000
Piers 1 & 2	125,000

FOOTINGS: The top of the footings in Bents 2 thru 13 and Bents 16 thru 27 shall be set a minimum of 2 feet below natural ground. The top of the footings for Bents 14 and 15 shall be set a minimum of 5 feet below natural ground. The top of the footings for Piers 1 and 2 shall be set a minimum of 1'-6" below the lowest channel bottom elevation. Foundations for footings shall be prepared in accordance with Subsection 801.04.

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.

DETAIL DRAWINGS	DRAWING NOS.
Hydrograph - Ouachita River	54935
Retaining Wall	54936 & 54937
End Bents	54938-54940
Intermediate Bents 2 thru 15	54941-54954
Piers 1 and 2	54955 & 54956
Intermediate Bents 16 thru 27	54957-54968
Elastomeric Bearings	54969 & 54970
Common Details of Prestressed Conc. Girder Units	54971-54976
373'-0" Prestressed Concrete Girder Units	54977
468'-0" Prestressed Concrete Girder Units	54978 & 54979
Parapet Details	54980
775'-0" Plate Girder Unit	54981-54988
Finger Joint	54989
Clearance Gauges	54990
Concrete Piles	55022
Type B Approach Slab	55030B
Type B Approach Gutters	55040B

EXISTING BRIDGE: Existing Bridge No. 06362 (Log Mile 0.0) is 42.83' wide and 3,205.57' long and consists of prestressed concrete girder approach spans and a 775' long plate girder unit over the main channel. It is supported by concrete hammerhead columns on pile footings. The existing bridge is located approximately 110' upstream of the proposed bridge and shall remain in place.

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

⑥ HYDRAULIC DATA

FLOOD DESCRIPTION	FREQUENCY	**TOTAL DISCHARGE	DISCHARGE THIS SITE	*NATURAL WATER SURFACE ELEVATION	WATER SURFACE ELEV. WITH BACKWATER
	YEARS	CFS	CFS	FEET	FEET
Design	50	234,500	168,117	98.3	98.7
Base	100	269,800	197,128	99.8	100.1
Extreme	500	380,000	239,858	104.7	105.1
Overtopping	75	258,500	188,060	99.3	99.7

*Unconstricted water surface without structure or roadway approaches.

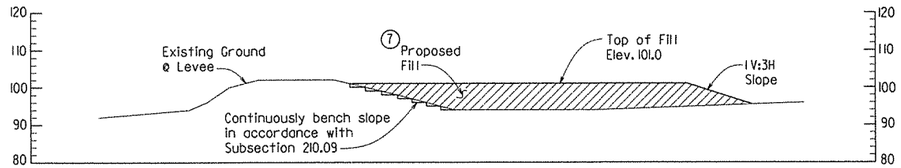
**Includes flow at this site and relief structures located at log miles 1.14, 2.24 and 4.32, Section 3, Route 167.

Total Drainage Area = 6,533 square miles
Historical Highwater Elev. = 100.0
Q100 Backwater Elevation for existing structures = 100.1

Proposed Low Bridge Chord Elev. = 109.55

⑥ Hydraulic Data provided by the Department's Hydraulics Section

⑦ Proposed fill in Levee area shall meet the requirements of SP Job 070282 "Excavation and Embankment (Clay Fill)". See Sheet 1 of 7 for additional information.



SECTION X-X

(Looking Ahead @ Sta. 596+75)
Scale: 1" = 20'

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 4 OF 7
LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
UNION AND CALHOUN COUNTIES

ROUTE 167 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

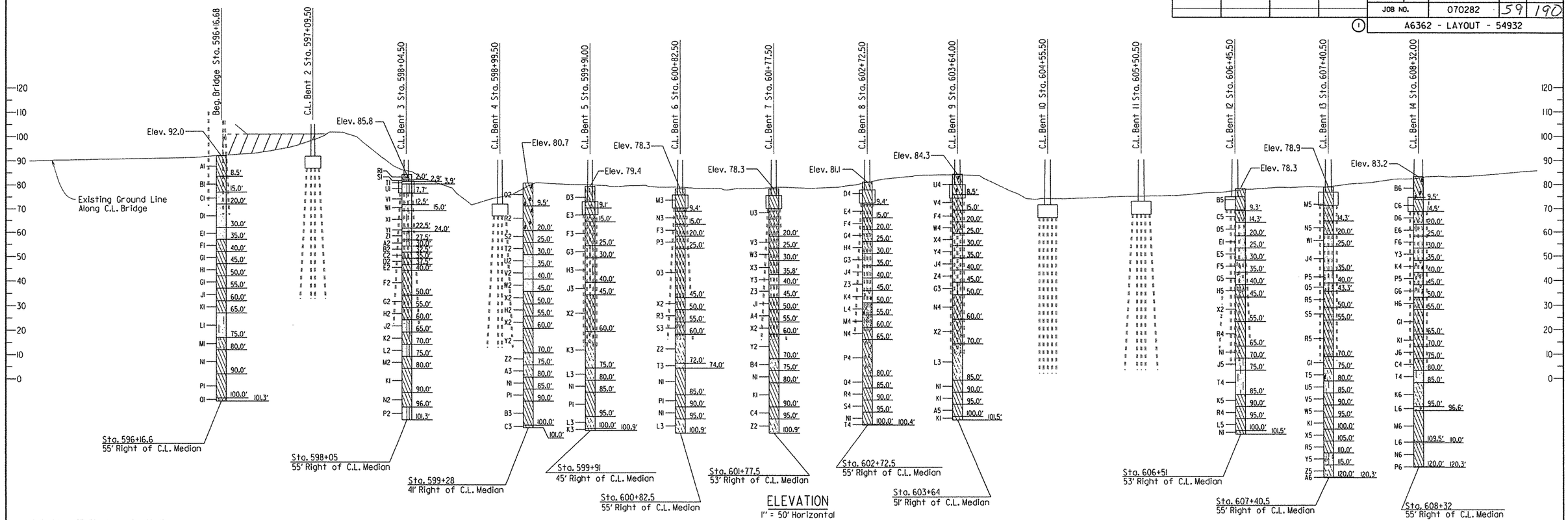
DRAWN BY: PGT DATE: 6-12 FILENAME: b070282_11.dgn
CHECKED BY: AMS DATE: 11/6/12 SCALE: as noted
DESIGNED BY: PGT DATE: 6/12

BRIDGE NO. A6362 DRAWING NO. 54931

PRINT DATE: 7/11/2014

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.		070282	59	190

(1) A6362 - LAYOUT - 54932



ELEVATION
1" = 50' Horizontal
1" = 20' Vertical

Sta. 596+16.6 - 55' Right of C.L. Median

4.0- 5.0	N=10
9.0- 10.0	N=12
15.5- 16.5	N=21
20.5- 21.5	N=15
25.5- 26.5	N=25
30.5- 31.5	N=10
35.5- 36.5	N=64
40.5- 41.5	N=25
45.5- 46.5	N=26
50.5- 51.5	N=27
55.5- 56.5	N=30
60.5- 61.5	N=33
65.5- 66.5	N=62
70.5- 71.5	N=50
75.5- 76.5	N=67
80.5- 81.5	N=56
85.5- 86.5	N=45
90.5- 91.5	N=47
95.5- 96.5	N=41
100.5-101.3	N=97(10")

Sta. 598+05 - 55' Right of C.L. Median

2.5- 3.5	N=9
4.4- 5.4	N=5
8.4- 9.4	N=2
10.9- 11.9	N=1
13.0- 14.0	N=6
15.5- 16.5	N=7
18.0- 19.0	N=6
20.5- 21.5	N=8
23.0- 24.0	N=12
25.5- 26.5	N=9
28.0- 29.0	N=4
30.5- 31.5	N=7
33.0- 34.0	N=28
35.5- 36.5	N=21
38.0- 39.0	N=20
40.5- 41.5	N=18
45.5- 46.5	N=20
50.5- 51.5	N=33
55.5- 56.5	N=29
60.5- 61.5	N=43
65.5- 66.5	N=53
70.5- 71.5	N=49
75.5- 76.5	N=51
80.5- 81.5	N=31
85.5- 86.5	N=41
90.5- 91.5	N=41
95.5- 96.5	N=65
100.5-101.4	N=97(10")

Sta. 599+28 - 41' Right of C.L. Median

5.0- 6.0	N=6
10.0- 11.0	N=4
20.5- 21.5	N=11
25.5- 26.5	N=3
30.5- 31.5	N=7
35.5- 36.5	N=11
40.5- 41.5	N=13
45.5- 46.5	N=28
50.5- 51.5	N=25
55.5- 56.5	N=28
60.5- 61.5	N=56
65.5- 66.5	N=54
70.5- 71.5	N=53
75.5- 76.5	N=45
80.5- 81.5	N=40
85.5- 86.5	N=42
90.5- 91.5	N=44
95.5- 96.5	N=62
100.5-101.0	N=60(6")

Sta. 599+91 - 45' Right of C.L. Median

5.0- 6.0	N=6
10.0- 11.0	N=4
20.5- 21.5	N=11
25.5- 26.5	N=3
30.5- 31.5	N=7
35.5- 36.5	N=11
40.5- 41.5	N=13
45.5- 46.5	N=28
50.5- 51.5	N=25
55.5- 56.5	N=28
60.5- 61.5	N=56
65.5- 66.5	N=54
70.5- 71.5	N=53
75.5- 76.5	N=45
80.5- 81.5	N=40
85.5- 86.5	N=42
90.5- 91.5	N=44
95.5- 96.5	N=62
100.5-101.0	N=60(6")

Sta. 600+82.5 - 55' Right of C.L. Median

4.9- 5.9	N=5
9.9- 10.9	N=10
15.5- 16.5	N=12
20.5- 21.5	N=6
25.5- 26.5	N=0
30.5- 31.5	N=0
35.5- 36.5	N=0
40.5- 41.5	N=0
45.5- 46.5	N=21
50.5- 51.5	N=28
55.5- 56.5	N=25
60.5- 61.5	N=51
65.5- 66.5	N=53
70.5- 71.5	N=62
75.5- 76.5	N=55
80.5- 81.5	N=47
85.5- 86.5	N=44
90.5- 91.5	N=37
95.5- 96.1	N=113(7")
100.5-100.9	N=60(5")

Sta. 601+77.5 - 53' Right of C.L. Median

4.8- 5.8	N=11
9.8- 10.8	N=15
15.5- 16.5	N=14
20.5- 21.5	N=16
25.5- 26.5	N=7
30.5- 31.5	N=0
35.5- 36.5	N=15
40.5- 41.5	N=19
45.5- 46.5	N=19
50.5- 51.5	N=22
55.5- 56.5	N=25
60.5- 61.5	N=46
65.5- 66.5	N=58
70.5- 71.5	N=60
75.5- 76.5	N=49
80.5- 81.5	N=46
85.5- 86.5	N=46
90.5- 91.5	N=41
95.5- 96.2	N=110(8")
100.5-100.8	N=58(4")

Sta. 602+72.5 - 55' Right of C.L. Median

4.9- 5.9	N=5
9.9- 10.9	N=12
15.5- 16.5	N=9
20.5- 21.5	N=3
25.5- 26.5	N=1
30.5- 31.5	N=6
35.5- 36.5	N=6
40.5- 41.5	N=14
45.5- 46.5	N=7
50.5- 51.5	N=16
55.5- 56.5	N=19
60.5- 61.5	N=15
65.5- 66.5	N=41
70.5- 71.5	N=44
75.5- 76.5	N=38
80.5- 81.5	N=37
85.5- 86.5	N=36
90.5- 91.5	N=70
95.5- 96.5	N=36
100.0-100.4	N=60(5")

Sta. 603+64 - 51' Right of C.L. Median

4.0- 5.0	N=7
9.0- 10.0	N=13
15.5- 16.5	N=12
20.5- 21.5	N=5
25.5- 26.5	N=4
30.5- 31.5	N=5
35.5- 36.5	N=8
40.5- 41.5	N=17
45.5- 46.5	N=4
50.5- 51.5	N=9
55.5- 56.5	N=29
60.5- 61.5	N=27
65.5- 66.5	N=26
70.5- 71.5	N=55
75.5- 76.5	N=54
80.5- 81.5	N=64
85.5- 86.5	N=40
90.5- 91.5	N=47
95.5- 96.5	N=62
100.5-101.5	N=40

Sta. 606+51 - 53' Right of C.L. of Median

4.8- 5.8	N=2
9.8- 10.8	N=0
14.8- 15.8	N=1
20.5- 21.5	N=6
25.5- 26.5	N=8
30.5- 31.5	N=14
35.5- 36.5	N=48
40.5- 41.5	N=24
45.5- 46.5	N=25
50.5- 51.5	N=30
55.5- 56.5	N=34
60.5- 61.5	N=33
65.5- 66.5	N=34
70.5- 71.5	N=48
75.5- 76.5	N=87
80.5- 81.5	N=83
85.5- 86.5	N=62
90.5- 91.5	N=55
95.5- 96.5	N=86
100.5-101.5	N=41

Sta. 607+40.5 - 55' Right of C.L. Median

4.8- 5.8	N=3
9.8- 10.8	N=4
14.8- 15.8	N=0
20.5- 21.5	N=10
25.5- 26.5	N=10
30.5- 31.5	N=6
35.5- 36.5	N=26
40.5- 41.5	N=28
45.5- 46.5	N=32
50.5- 51.5	N=29
55.5- 56.5	N=34
60.5- 61.5	N=44
65.5- 66.5	N=46
70.5- 71.5	N=30
75.5- 76.5	N=84
80.5- 81.5	N=87
85.5- 86.5	N=70
90.5- 90.8	N=40(4")
95.5- 96.5	N=59
100.5-101.5	N=49
105.5-106.5	N=55
110.0-110.3	N=60(4")
115.0-115.3	N=60(4")
120.0-120.3	N=60(4")

Sta. 608+32 - 55' Right of C.L. Median

5.0- 6.0	N=4
10.0- 11.0	N=5
15.0- 16.0	N=2
20.5- 21.5	N=5
25.5- 26.5	N=9
30.5- 31.5	N=13
35.5- 36.5	N=9
40.5- 41.5	N=13
45.5- 46.5	N=28
50.5- 51.5	N=30
55.5- 56.5	N=26
60.5- 61.5	N=28
65.5- 66.5	N=34
70.5- 71.5	N=34
75.5- 76.5	N=36
80.5- 81.5	N=57
85.5- 86.5	N=67
90.5- 91.5	N=62
95.0- 95.0	N=10(.01")
100.5-101.5	N=54
105.5-106.5	N=51
110.0-110.0	N=10(.01")
115.0-115.3	N=60(4")
120.0-120.3	N=60(4")

"N" VALUES

595+00 596+00 597+00 598+00 599+00 600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00 608+00 609+00

Note: For Boring Legend, see Dwg. No. 54933

PRINT DATE: 7/11/2014

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9335
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 5 OF 7
LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
UNION AND CALHOUN COUNTIES

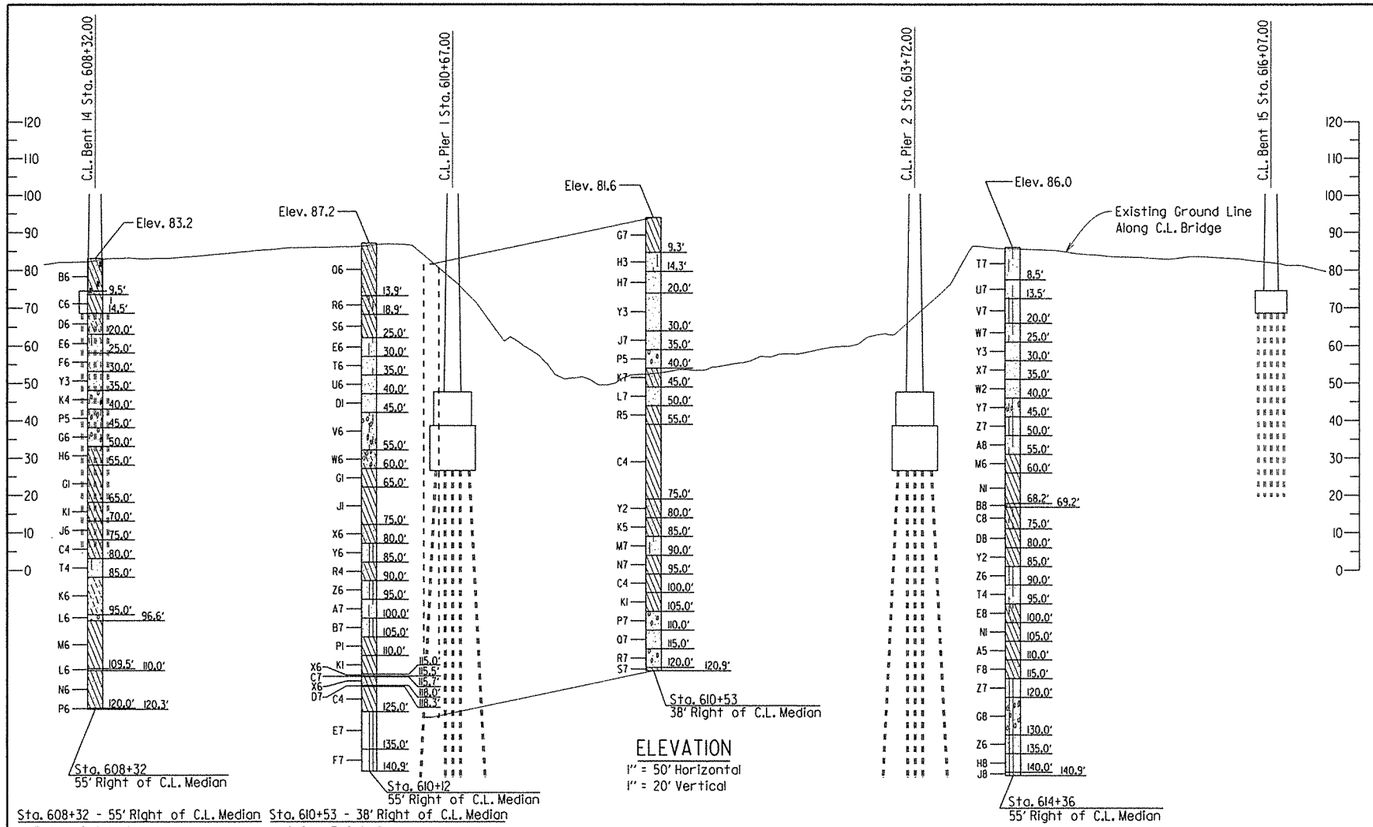
ROUTE 167 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-12
CHECKED BY: AMS DATE: 11/6/12
DESIGNED BY: SPCST DATE: 6/12
FILENAME: b070282_11.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54932

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.		070282	60	190

(1) A6362 - LAYOUT - 54933



ELEVATION

1" = 50' Horizontal
1" = 20' Vertical

Sta. 608+32 - 55' Right of C.L. Median

5.0- 6.0	N=4	4.8- 5.8	N=0
10.0- 11.0	N=5	9.8- 10.8	N=0
15.0- 16.0	N=2	14.8- 15.8	N=0
20.5- 21.5	N=5	20.5- 21.5	N=11
25.5- 26.5	N=9	25.5- 26.5	N=11
30.5- 31.5	N=13	30.5- 31.5	N=12
35.5- 36.5	N=9	35.5- 36.5	N=15
40.5- 41.5	N=13	40.5- 41.5	N=22
45.5- 46.5	N=28	45.5- 46.5	N=31
50.5- 51.5	N=29	50.5- 51.5	N=37
55.5- 56.5	N=26	55.5- 56.5	N=44
60.5- 61.5	N=28	60.5- 61.5	N=40
65.5- 66.5	N=34	65.5- 66.5	N=51
70.5- 71.5	N=34	70.5- 71.5	N=46
75.5- 76.5	N=36	75.5- 76.5	N=47
80.5- 81.5	N=57	80.5- 81.5	N=91
85.5- 86.5	N=67	85.5- 86.4	N=100(11")
90.5- 91.5	N=62	90.5- 91.5	N=59
95.0- 96.5	N=10(.01")	95.5- 96.5	N=51
100.5-101.5	N=54	100.5-101.5	N=53
105.5-106.5	N=51	105.0-105.4	N=60(5")
110.0-110.0	N=10(.01")	110.0-110.4	N=60(5")
115.0-115.3	N=60(4")	115.0-115.2	N=29(2")
120.0-120.3	N=60(4")	120.5-120.9	N=60(5")

Sta. 610+12 - 55' Right of C.L. Median

4.4- 5.4	N=3
9.4- 10.4	N=0
14.4- 15.4	N=0
19.4- 20.4	N=0
25.5- 26.5	N=9
30.5- 31.5	N=9
35.5- 36.5	N=14
40.5- 41.5	N=19
45.5- 46.5	N=17
50.5- 51.5	N=25
55.5- 56.5	N=12
60.5- 61.5	N=26
65.5- 66.5	N=28
70.5- 71.5	N=28
75.5- 76.5	N=32
80.5- 81.5	N=34
85.5- 86.5	N=50
90.5- 91.5	N=77
95.5- 96.5	N=85
100.5-101.5	N=67
105.5-106.5	N=53
110.5-111.5	N=50
115.5-116.5	N=51
120.5-121.5	N=42
125.5-125.8	N=60(4")
130.5-130.8	N=60(3")
135.5-135.8	N=60(4")
140.5-140.9	N=60(5")

Sta. 610+53 - 38' Right of C.L. Median

4.8- 5.8	N=0
9.8- 10.8	N=0
14.8- 15.8	N=0
20.5- 21.5	N=11
25.5- 26.5	N=11
30.5- 31.5	N=12
35.5- 36.5	N=15
40.5- 41.5	N=22
45.5- 46.5	N=31
50.5- 51.5	N=37
55.5- 56.5	N=44
60.5- 61.5	N=40
65.5- 66.5	N=51
70.5- 71.5	N=46
75.5- 76.5	N=47
80.5- 81.5	N=91
85.5- 86.4	N=100(11")
90.5- 91.5	N=59
95.5- 96.5	N=51
100.5-101.5	N=53
105.0-105.4	N=60(5")
110.0-110.4	N=60(5")
115.0-115.2	N=29(2")
120.5-120.9	N=60(5")

Sta. 614+36 - 55' Right of C.L. Median

4.0- 5.0	N=5
9.0- 10.0	N=0
14.0- 15.0	N=0
20.5- 21.5	N=13
25.5- 26.5	N=17
30.5- 31.5	N=15
35.5- 36.5	N=26
40.5- 41.5	N=32
45.5- 46.5	N=42
50.5- 51.5	N=27
55.5- 56.5	N=38
60.5- 61.5	N=33
65.5- 66.5	N=40
70.5- 71.5	N=55
75.5- 76.5	N=47
80.5- 81.5	N=47
85.5- 86.5	N=94
90.5- 91.5	N=74
95.5- 96.5	N=66
100.5-101.5	N=48
105.5-106.5	N=64
110.5-111.5	N=66
115.5-116.5	N=61
120.5-120.8	N=50(4")
130.5-131.2	N=102(9")
135.5-135.8	N=60(4")
140.5-140.8	N=60(4")

"N" VALUES

608+00 609+00 610+00 611+00 612+00 613+00 614+00 615+00 616+00

BORING LEGEND

A1-Moist, Stiff, Brown and Gray Clay with some Organic Matter
B1-Moist, Stiff, Reddish Brown and Light Gray Clay with some Organic Matter
C1-Wet, Medium Dense, Reddish Brown Sand
D1-Wet, Medium Dense, Light Gray Sand
E1-Wet, Loose, Light Gray Sand
F1-Moist, Very Hard, Dark Gray and Brown Clay with Sand
G1-Moist, Very Stiff, Dark Gray Clay with Sand Partings
H1-Moist, Very Stiff, Dark Gray Clay with Sand Partings and some Organic Matter
J1-Moist, Very Stiff, Dark Gray Clay
K1-Moist, Hard, Dark Gray Clay
L1-Moist, Very Dense to Dense, Gray Silty Sand
M1-Moist, Very Dense, Gray Silty Sand with Clay
N1-Moist, Hard, Gray Clay with Sand Partings
P1-Moist, Hard, Gray Clay
Q1-Moist, Very Hard, Gray Sandy, Silty Clay
R1-Moist, Stiff, Reddish Brown and Gray Sandy Silt with Organic Matter (Grassroots) and Trace of Gravel
S1-Moist, Loose, Reddish Brown and Gray Silt with Sand
T1-Moist, Loose, Brown Sand with some Organic Matter
U1-Moist, Loose, Brown Silt with Sand
V1-Wet, Very Loose, Light Brown Silty Sand
W1-Wet, Loose, Light Brown Sand
X1-Wet, Loose, Light Gray Silty Sand
Y1-Wet, Medium Dense, Light Gray Silty Sand with Trace of Gravel
Z1-Wet, Medium Dense, Light Gray Sandy Silt with Trace of Organic Matter
A2-Wet, Very Loose, Light Gray Sandy Silt
B2-Wet, Loose, Light Gray Silty Sand with Trace of Gravel
C2-Moist, Very Stiff, Gray and Brown Clay with some Sand
D2-Moist, Very Stiff, Gray Clay with some Sand and Trace of Organic Matter
E2-Moist, Very Stiff, Dark Brown Clay
F2-Moist, Very Stiff, Gray and Brown Clay
G2-Moist, Hard, Gray and Brown Clay with Sand and Trace of Cemented Sand
H2-Moist, Very Stiff, Gray Clay with some Sand
J2-Moist, Dense, Dark Gray Silt with Sand
K2-Moist, Hard, Gray Silty Clay
L2-Moist, Dense, Gray Silt with Sand
M2-Moist, Hard, Gray Clay with some Sand
N2-Moist, Hard, Dark Gray Clay with some Sand
P2-Moist to Wet, Very Dense, Dark Gray Silt with Sand
Q2-Moist, Medium Stiff, Brown Organic Matter (Wood) with Clay
R2-Moist, Soft, Gray Clay with Organic Matter (Wood)
S2-Wet, Stiff, Gray Clay
T2-Wet, Soft, Gray and Brown Sandy Clay
U2-Wet, Loose, Brown Sand with Trace of Clay
V2-Wet, Medium Dense, Brown Sand
W2-Wet, Medium Dense, Gray Sand with some Gravel
X2-Moist, Very Stiff, Gray Clay with Sand Partings
Y2-Moist, Hard, Gray Sandy Clay
Z2-Moist, Very Dense, Gray Sand with Clay
A3-Moist, Dense, Gray Clayey Sand with some Organic Matter
B3-Moist, Very Hard, Gray Clay with Sand
C3-Wet, Very Hard, Gray Sandy Clay
D3-Wet, Medium Stiff, Gray Clay with Gravel and some Organic Matter
E3-Wet, Stiff, Gray and Brown Clay with Sand and Iron Nodules
F3-Moist, Stiff, Gray and Brown Clay
G3-Wet, Loose, Gray Silty Sand
H3-Wet, Very Loose, Gray Silty Sand
J3-Wet, Loose, Gray and Brown Sand
K3-Wet, Very Dense, Gray Clayey Sand
L3-Moist, Very Dense, Gray Clayey Sand
M3-Moist, Medium Stiff, Gray and Brown Clay
N3-Moist, Stiff, Gray and Brown Clay with Iron Nodules
P3-Wet, Medium Stiff, Gray and Brown Clay
Q3-Wet, Very Soft, Gray Clay
R3-Wet, Very Stiff, Gray Sandy Clay with some Gravel
S3-Moist, Very Stiff, Gray Clay
T3-Moist, Very Dense, Gray Sand with Clay and Cemented Sand Seams
U3-Moist, Stiff, Brown and Gray Clay with Iron Nodules
V3-Moist, Very Stiff, Reddish Brown and Gray Clay
W3-Moist, Medium Stiff, Gray Clay with some Organic Matter
X3-Moist, Very Soft, Dark Gray Clay with some Organic Matter
Y3-Wet, Medium Dense, Gray Sand
Z3-Wet, Medium Dense, Gray Sand with Trace of Gravel
A4-Moist, Very Stiff, Gray Clay with some Gravel
B4-Moist, Very Dense, Gray Sand with Clay and Trace of Gravel
C4-Moist, Hard, Dark Gray Clay with Sand Partings
D4-Moist, Medium Stiff, Brown Clay
E4-Moist, Stiff, Brown Clay
F4-Wet, Stiff, Brown and Gray Clay
G4-Wet, Very Loose, Brown and Gray Clayey Sand
H4-Wet, Very Loose, Gray Clayey Sand
J4-Wet, Loose, Gray Sand
K4-Wet, Loose, Gray Sand with Gravel
L4-Wet, Medium Dense, Gray Clayey Sand with Gravel
M4-Wet, Medium Dense, Gray Sand with Gravel and Clay
N4-Moist, Stiff, Gray Clay with Sand Partings
P4-Moist, Hard, Gray Sandy Clay with Gravel
Q4-Moist, Hard, Gray Clay with Sand and some Gravel
R4-Moist, Hard, Gray Clay with Sand
S4-Moist, Very Hard, Gray Clay with Sand Partings
T4-Moist, Very Dense, Gray Silty Sand
U4-Moist, Medium Stiff, Brown and Gray Clay with Organic Matter (Wood)
V4-Moist, Stiff, Brown and Gray Clay
W4-Wet, Medium Stiff, Brown and Gray Silty Clay
X4-Wet, Very Loose, Brown and Gray Sand
Y4-Wet, Loose, Brown Sand
Z4-Wet, Medium Dense, Gray Sand with some Clay
A5-Moist, Very Hard, Dark Gray Clay
B5-Wet, Soft, Brown Clay with some Organic Matter
C5-Wet, Very Soft, Gray and Brown Clay with some Organic Matter
D5-Wet, Very Loose, Light Brown Sand
E5-Wet, Loose, Light Gray and Brown Sand
F5-Wet, Medium Dense, Light Gray Sand with Gravel
G5-Wet, Dense, Light Gray Sand with Gravel
H5-Wet, Very Stiff, Gray Clay with Gravel
J5-Moist, Dense, Gray Silty Sand
K5-Moist, Very Hard, Gray Sandy Clay
L5-Moist, Very Hard, Gray Clay with Sand Partings and Siltstone Seams
M5-Moist, Soft, Brown and Gray Clay with some Organic Matter
N5-Wet, Very Soft, Brown and Gray Clay with some Organic Matter
P5-Wet, Medium Dense, Gray Sand with Gravel
Q5-Gravel with Trace of Sand
R5-Moist, Hard, Dark Brown Clay with Sand Partings
S5-Moist, Very Stiff, Dark Brown Clay with Sand Partings
T5-Moist, Very Dense, Gray Clayey Sand with Organic Matter
U5-Wet, Very Dense, Gray Silty Sand
V5-Moist, Very Hard, Gray Clay with Sand Seams
W5-Moist, Very Hard, Gray Clay with Sand Partings and Cemented Silt Seams
X5-Moist, Hard, Dark Brown Clay with Trace of Organic Matter
Y5-Moist, Very Dense, Dark Gray Silty Sand with Cemented Sand Seams
Z5-Wet, Very Dense, Dark Gray Clayey Sand
A6-Wet, Very Dense, Dark Gray Silty Sand
B6-Moist, Soft, Brown Clay with Sand and Organic Matter (Wood)
C6-Wet, Medium Stiff, Reddish Brown and Gray Clay with some Organic Matter
D6-Wet, Very Loose, Reddish Brown Clayey Sand
E6-Wet, Loose, Reddish Brown and Gray Silty Sand
F6-Wet, Loose, Light Brown and Gray Sand
G6-Wet, Medium Dense, Gray Sand with Gravel and some Clay Seams
H6-Moist, Very Stiff, Gray Sandy Clay
J6-Moist, Hard, Dark Gray Clay with Trace of Sand
K6-Moist, Very Dense, Gray Sand with Clay Seams
L6-Moist, Very Dense, Gray Sand with Cemented Silt Seams
M6-Moist, Hard, Dark Brown Clay
N6-Moist, Very Hard, Dark Gray Sandy Clay
P6-Moist, Very Dense, Dark Gray Silty Sand
Q6-Moist, Soft, Brown Clay with Sand and some Organic Matter
R6-Moist, Very Soft, Brown and Gray Silty Clay with Sand
S6-Wet, Very Soft, Brown and Gray Clay
T6-Wet, Loose, Brown and Gray Sand with Silt
U6-Wet, Medium Dense, Brown and Gray Gray Sand
V6-Wet, Medium Dense, Light Gray Sand with Silt and Gravel
W6-Wet, Medium Dense, Light Gray Clayey Sand with Gravel
X6-Moist, Hard, Dark Gray Sandy Clay
Y6-Moist, Dense, Dark Gray Sandy Silt
Z6-Moist, Very Dense, Gray Sandy Silt
A7-Moist, Very Dense, Gray Silty Sand with Trace of Clay
B7-Moist, Very Hard, Gray Sandy Silt
C7-Hard, Gray Siltstone (115.5' to 115.7')
D7-Hard, Gray Cemented Sand (118.0' to 118.3')
E7-Moist, Very Dense, Dark Gray Sandy Silt
F7-Moist, Very Dense, Dark Gray Silt with Sand
G7-Wet, Very Soft, Gray Silty Clay with some Organic Matter
H7-Wet, Very Loose, Gray Sand
J7-Wet, Medium Dense, Gray Sand with some Organic Matter
K7-Moist, Very Stiff, Gray Clay with Sand and some Gravel
L7-Moist, Dense, Gray Sand
M7-Moist, Very Dense, Gray Silty Sand with Clay Partings
N7-Moist, Hard, Dark Gray Clay with Sand Partings with some Organic Matter
P7-Moist, Very Dense, Dark Gray Sand with Cemented Sand Seams
Q7-Moist, Very Dense, Gray Sand
R7-Moist, Very Dense, Gray Sand with Cemented Sand Seams
S7-Moist, Hard, Gray Sandy Clay with Trace of Cemented Sand
T7-Moist, Loose, Brown Silty Sand with some Organic Matter
U7-Wet, Very Loose, Brown Silty Sand with some Organic Matter
V7-Wet, Very Loose, Gray Sandy Silt
W7-Wet, Medium Dense, Gray Silty Sand with some Clay
X7-Wet, Medium Dense, Gray Sand with Trace of Organic Matter
Y7-Wet, Dense, Gray Sand with Silt and Gravel
Z7-Moist, Dense, Gray Sandy Silt
A8-Moist, Medium Dense, Gray Silty Sand with Trace of Clay
B8-Moist, Hard, Gray Clay with Cemented Sand Seams
C8-Moist, Hard, Dark Gray Silty Clay
D8-Moist, Hard, Dark Gray Clay with Sand
E8-Moist, Very Dense, Gray Sandy, Silty Clay
F8-Moist, Very Hard, Gray and Brown Sandy Clay
G8-Moist, Very Dense, Gray Sandy Silt with Cemented Sand Seams and Clay Partings
H8-Moist, Very Dense, Gray Sandy Silt with some Clay
J8-Moist, Very Dense, Gray Sandy Silt with Clay Partings
K8-Moist, Stiff, Reddish Brown and Gray Clay with some Organic Matter
L8-Wet, Soft, Reddish Brown and Gray Sandy Clay
M8-Wet, Loose, Reddish Brown and Gray Sand with some Clay
N8-Wet, Very Loose, Reddish Brown Silty Sand
P8-Wet, Dense, Gray Sand with Gravel and Trace of Clay
Q8-Moist, Very Hard, Dark Brown Clay with Sand Partings
R8-Moist, Hard, Dark Brown Clay with Sand
S8-Moist, Very Hard, Dark Gray Clay with Sand Partings
T8-Wet, Medium Stiff, Reddish Brown and Gray Sandy Clay
U8-Wet, Very Loose, Reddish Brown and Gray Silty Sand
V8-Wet, Very Loose, Reddish Brown Sand
W8-Moist, Hard, Gray Sandy Clay with Trace of Gravel
X8-Moist, Hard, Gray Clay with Sand Partings
Y8-Moist, Very Hard to Hard, Gray Clay with Sand Partings
Z8-Moist, Medium Stiff, Reddish Brown and Gray Clay with some Organic Matter and Concrete Fragments
A9-Moist, Medium Stiff, Reddish Brown and Gray Clay with some Organic Matter
B9-Wet, Very Soft, Reddish Brown and Gray Clay with some Organic Matter
C9-Wet, Very Loose, Gray Sand with Silt
D9-Wet, Loose, Gray Sand with Silt and some Clay
E9-Moist, Hard, Gray Clay with Sand Partings and Trace of Organic Matter
F9-Moist, Stiff, Gray and Brown Clay with some Organic Matter
G9-Moist, Stiff, Gray and Brown Clay with Sand and some Organic Matter
H9-Wet, Very Loose, Gray and Brown to Brown Sand with Silt
J9-Wet, Very Loose, Gray Sand with Silt and some Organic Matter
K9-Wet, Loose, Gray Sand with Silt and some Organic Matter
L9-Wet, Medium Dense, Gray Sand with some Clay and Trace of Organic Matter
M9-Moist, Medium Dense, Gray Sand with Clay
N9-Wet, Hard, Gray and Brown Clay with Sand
P9-Moist, Very Stiff, Gray Clay with Sand
Q9-Moist, Hard, Gray Clay with some Organic Matter
R9-Moist, Very Dense, Gray Sand with Cemented Sand
S9-Wet, Very Loose, Reddish Brown Sand with some Organic Matter
T9-Wet, Loose, Reddish Brown Sand with some Organic Matter
U9-Wet, Loose, Gray Sand with Trace of Clay and Gravel
V9-Wet, Medium Dense, Gray Sand with Clay
W9-Moist, Hard, Gray Clay with some Sand and Trace of Organic Matter
X9-Moist, Very Stiff to Hard, Gray Clay with some Sand
Y9-Moist, Hard, Gray Clay with some Brown Cemented Silt Seams
Z9-Moist, Dense, Gray Sand with Silt
A10-Moist, Very Dense, Gray Silt with Sand
B10-Moist, Dense, Gray Silty, Clayey Sand
C10-Wet, Very Soft, Light Gray Clay with some Organic Matter
D10-Wet, Loose, Reddish Brown Sand
E10-Wet, Loose, Light Gray Sand with some Clay and Gravel
F10-Wet, Loose, Light Gray Sand with Gravel
G10-Moist, Very Hard, Gray Clay with some Sand
H10-Moist, Very Hard, Gray Clay with Cemented Silt Seams
J10-Moist, Very Dense, Gray Silty, Clayey Sand
K10-Moist, Very Dense, Gray Sand with Silt
L10-Wet, Medium Dense, Light Gray Sand with Gravel, Organic Matter (Wood) and Trace of Clay
M10-Moist, Very Stiff, Gray Clay with Siltstone Fragments and Sand Partings
N10-Hard, Gray Cemented Sand
P10-Wet, Very Soft, Reddish Brown and Gray Silty Clay
Q10-Moist, Stiff, Gray Clay with Gravel, Sand Partings and some Organic Matter
R10-Moist, Very Stiff, Gray Clay with Sand Partings and Trace of Organic Matter
S10-Moist, Hard, Gray Clay with Trace of Organic Matter
T10-Moist, Loose, Reddish Brown Sand
U10-Wet, Very Loose, Reddish Brown and Gray Sand
V10-Wet, Loose to Very Loose, Light Gray Sand with Organic Matter
W10-Wet, Very Loose, Reddish Brown Sand with Clay and some Organic Matter
X10-Wet, Medium Dense, Reddish Brown and Gray Sand
Y10-Wet, Loose, Brown and Gray Sand with Organic Matter
Z10-Wet, Loose, Gray Sand with some Gravel and some Organic Matter
A11-Wet, Dense, Gray Sand with Gravel
B11-Gravel
C11-Moist, Hard, Gray Sandy Clay with Trace of Organic Matter
D11-Wet, Medium Stiff, Reddish Brown and Gray Clay
E11-Wet, Loose, Gray Sand with Organic Matter
F11-Wet, Medium Dense, Gray Sand with Trace of Gravel and Organic Matter
G11-Wet, Dense, Light Gray Sand with some Gravel
H11-Moist, Hard, Dark Brown Sandy Clay

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 6 OF 7
LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
UNION AND CALHOUN COUNTIES

ROUTE 167 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

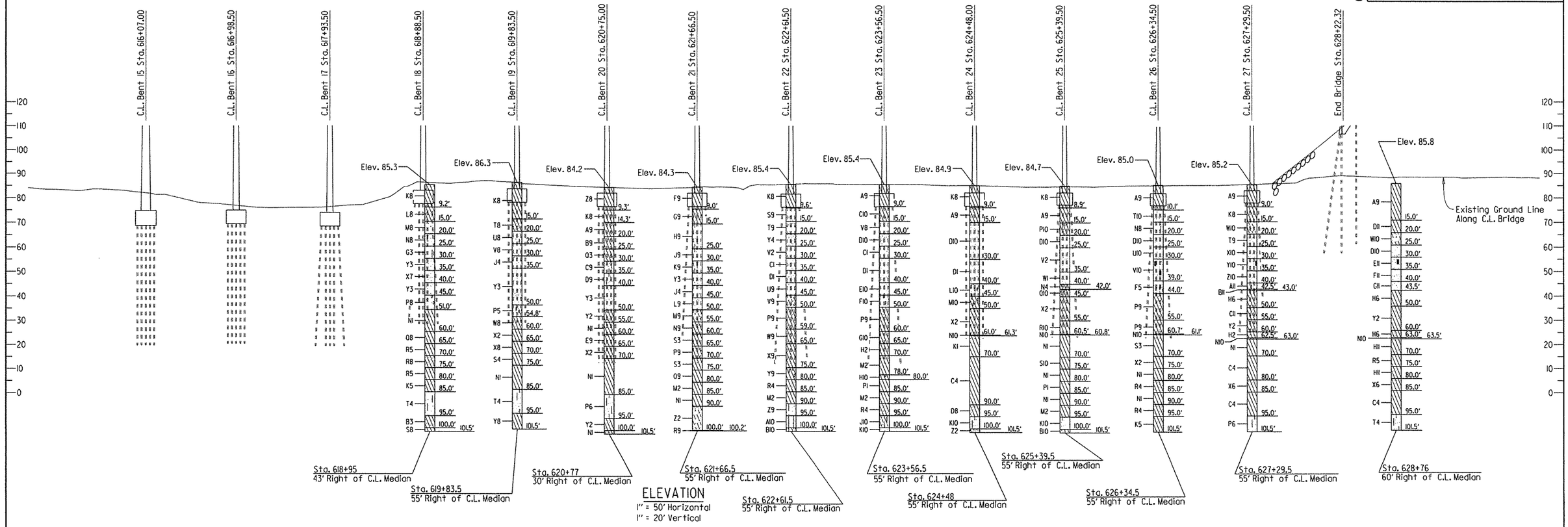
DRAWN BY: PGT DATE: 6-12 FILENAME: b070282_11.dgn
CHECKED BY: AMS DATE: 11/6/12 SCALE: as noted
DESIGNED BY: RGS DATE: 6/12

BRIDGE NO. A6362 DRAWING NO. 54933

PRINT DATE: 7/11/2014

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.		070282	61	190

(1) A6362 - LAYOUT - 54934



ELEVATION

1" = 50' Horizontal
1" = 20' Vertical

Sta. 618+95 - 43' Right of C.L. Median

4.7- 5.7, N=15	15.5- 16.5, N=7	30.5- 31.5, N=19	45.5- 46.5, N=36
9.7- 10.7, N=3	20.5- 21.5, N=4	35.5- 36.5, N=20	50.5- 51.5, N=33
15.5- 16.5, N=7	25.5- 26.5, N=7	40.5- 41.5, N=20	55.5- 56.5, N=36
20.5- 21.5, N=4	30.5- 31.5, N=19	45.5- 46.5, N=36	60.5- 61.5, N=35
25.5- 26.5, N=7	35.5- 36.5, N=20	50.5- 51.5, N=33	65.5- 66.5, N=43
30.5- 31.5, N=19	40.5- 41.5, N=20	55.5- 56.5, N=36	70.5- 71.5, N=42
35.5- 36.5, N=20	45.5- 46.5, N=36	60.5- 61.5, N=35	75.5- 76.5, N=45
40.5- 41.5, N=20	50.5- 51.5, N=33	65.5- 66.5, N=43	80.5- 81.5, N=84
45.5- 46.5, N=36	55.5- 56.5, N=36	70.5- 71.5, N=42	85.5- 86.5, N=94
50.5- 51.5, N=33	60.5- 61.5, N=35	75.5- 76.5, N=45	90.5- 91.5, N=86
55.5- 56.5, N=36	65.5- 66.5, N=43	80.5- 81.5, N=84	95.5- 96.5, N=92
60.5- 61.5, N=35	70.5- 71.5, N=42	85.5- 86.5, N=94	100.5-101.5, N=68
65.5- 66.5, N=43	75.5- 76.5, N=45	90.5- 91.5, N=86	
70.5- 71.5, N=42	80.5- 81.5, N=84	95.5- 96.5, N=92	
75.5- 76.5, N=45	85.5- 86.5, N=94	100.5-101.5, N=68	
80.5- 81.5, N=84	90.5- 91.5, N=86		
85.5- 86.5, N=94	95.5- 96.5, N=92		
90.5- 91.5, N=86	100.5-101.5, N=68		
95.5- 96.5, N=92			
100.5-101.5, N=68			

Sta. 620+77 - 30' Right of C.L. Median

4.8- 5.8, N=6	15.5- 16.5, N=5	30.5- 31.5, N=0	45.5- 46.5, N=14
9.8- 10.8, N=11	20.5- 21.5, N=0	35.5- 36.5, N=10	50.5- 51.5, N=39
14.8- 15.8, N=7	25.5- 26.5, N=0	40.5- 41.5, N=19	55.5- 56.5, N=31
20.5- 21.5, N=0	30.5- 31.5, N=0	45.5- 46.5, N=14	60.5- 61.5, N=34
25.5- 26.5, N=0	35.5- 36.5, N=10	50.5- 51.5, N=39	65.5- 66.5, N=29
30.5- 31.5, N=0	40.5- 41.5, N=19	55.5- 56.5, N=31	70.5- 71.5, N=38
35.5- 36.5, N=10	45.5- 46.5, N=14	60.5- 61.5, N=34	75.5- 76.5, N=35
40.5- 41.5, N=19	50.5- 51.5, N=39	65.5- 66.5, N=29	80.5- 81.5, N=39
45.5- 46.5, N=14	55.5- 56.5, N=31	70.5- 71.5, N=38	85.5- 86.5, N=72
50.5- 51.5, N=39	60.5- 61.5, N=34	75.5- 76.5, N=35	90.5- 91.5, N=97
55.5- 56.5, N=31	65.5- 66.5, N=29	80.5- 81.5, N=39	95.5- 96.5, N=51
60.5- 61.5, N=34	70.5- 71.5, N=38	85.5- 86.5, N=72	100.5-101.5, N=42
65.5- 66.5, N=29	75.5- 76.5, N=35	90.5- 91.5, N=97	
70.5- 71.5, N=38	80.5- 81.5, N=39	95.5- 96.5, N=51	
75.5- 76.5, N=35	85.5- 86.5, N=72	100.5-101.5, N=42	
80.5- 81.5, N=39	90.5- 91.5, N=97		
85.5- 86.5, N=72	95.5- 96.5, N=51		
90.5- 91.5, N=97	100.5-101.5, N=42		
95.5- 96.5, N=51			
100.5-101.5, N=42			

Sta. 622+61.5 - 55' Right of C.L. Median

4.7- 5.7, N=9	15.5- 16.5, N=5	30.5- 31.5, N=11	45.5- 46.5, N=16
9.7- 10.7, N=2	20.5- 21.5, N=6	35.5- 36.5, N=13	50.5- 51.5, N=28
15.5- 16.5, N=5	25.5- 26.5, N=11	40.5- 41.5, N=23	55.5- 56.5, N=28
20.5- 21.5, N=6	30.5- 31.5, N=15	45.5- 46.5, N=16	60.5- 61.0, N=23(6")
25.5- 26.5, N=11	35.5- 36.5, N=13	50.5- 51.5, N=28	65.5- 66.5, N=38
30.5- 31.5, N=15	40.5- 41.5, N=9	55.5- 56.5, N=28	70.5- 71.5, N=40
35.5- 36.5, N=13	45.5- 46.5, N=16	60.5- 61.0, N=23(6")	75.5- 76.5, N=48
40.5- 41.5, N=9	50.5- 51.5, N=23	65.5- 66.5, N=38	80.5- 81.5, N=39
45.5- 46.5, N=16	55.5- 56.5, N=30	70.5- 71.5, N=40	85.5- 86.5, N=41
50.5- 51.5, N=23	60.5- 61.5, N=33	75.5- 76.5, N=48	90.5- 91.5, N=36
55.5- 56.5, N=30	65.5- 66.5, N=29	80.5- 81.5, N=39	95.5- 96.5, N=73
60.5- 61.5, N=33	70.5- 71.5, N=32	85.5- 86.5, N=41	100.5-101.5, N=55
65.5- 66.5, N=29	75.5- 76.5, N=31	90.5- 91.5, N=36	
70.5- 71.5, N=32	80.5- 81.5, N=36	95.5- 96.5, N=73	
75.5- 76.5, N=31	85.5- 86.5, N=42	100.5-101.5, N=55	
80.5- 81.5, N=36	90.5- 91.5, N=40		
85.5- 86.5, N=42	95.5- 96.5, N=61		
90.5- 91.5, N=40	100.5-101.5, N=42		
95.5- 96.5, N=61			
100.5-101.5, N=42			

Sta. 624+48 - 55' Right of C.L. Median

4.5- 5.5, N=9	15.5- 16.5, N=5	30.5- 31.5, N=9	45.5- 46.5, N=22
9.5- 10.5, N=8	20.5- 21.5, N=9	35.5- 36.5, N=9	50.5- 51.5, N=26
15.5- 16.5, N=5	25.5- 26.5, N=8	40.5- 41.5, N=13	55.5- 56.5, N=26
20.5- 21.5, N=9	30.5- 31.5, N=11	45.5- 46.5, N=22	60.0- 60.4, N=10(5")
25.5- 26.5, N=8	35.5- 36.5, N=13	50.5- 51.5, N=26	65.5- 66.5, N=34
30.5- 31.5, N=11	40.5- 41.5, N=23	55.5- 56.5, N=26	70.5- 71.5, N=34
35.5- 36.5, N=13	45.5- 46.5, N=25	60.0- 60.4, N=10(5")	75.5- 76.5, N=42
40.5- 41.5, N=23	50.5- 51.5, N=28	65.5- 66.5, N=34	80.5- 81.5, N=37
45.5- 46.5, N=25	55.5- 56.5, N=26	70.5- 71.5, N=34	85.5- 86.5, N=38
50.5- 51.5, N=28	60.5- 60.7, N=30(2")	75.5- 76.5, N=42	90.5- 91.5, N=36
55.5- 56.5, N=26	65.5- 66.5, N=27	80.5- 81.5, N=37	95.5- 96.5, N=63
60.5- 60.7, N=30(2")	70.5- 71.5, N=29	85.5- 86.5, N=38	100.5-101.5, N=49
65.5- 66.5, N=27	75.5- 76.5, N=39	90.5- 91.5, N=36	
70.5- 71.5, N=29	80.5- 81.5, N=41	95.5- 96.5, N=63	
75.5- 76.5, N=39	85.5- 86.5, N=45	100.5-101.5, N=49	
80.5- 81.5, N=41	90.5- 91.5, N=36		
85.5- 86.5, N=45	95.5- 96.5, N=78		
90.5- 91.5, N=36	100.5-101.5, N=53		
95.5- 96.5, N=78			
100.5-101.5, N=53			

Sta. 626+34.5 - 55' Right of C.L. Median

4.5- 5.5, N=8	15.5- 16.5, N=4	30.5- 31.5, N=8	45.5- 46.5, N=25
9.5- 10.5, N=7	20.5- 21.5, N=5	35.5- 36.5, N=4	50.5- 51.5, N=28
15.5- 16.5, N=4	25.5- 26.5, N=4	40.5- 41.5, N=19	55.5- 56.5, N=26
20.5- 21.5, N=5	30.5- 31.5, N=8	45.5- 46.5, N=25	60.5- 60.7, N=30(2")
25.5- 26.5, N=4	35.5- 36.5, N=4	50.5- 51.5, N=28	65.5- 66.5, N=27
30.5- 31.5, N=8	40.5- 41.5, N=19	55.5- 56.5, N=26	70.5- 71.5, N=29
35.5- 36.5, N=4	45.5- 46.5, N=25	60.5- 60.7, N=30(2")	75.5- 76.5, N=39
40.5- 41.5, N=19	50.5- 51.5, N=28	65.5- 66.5, N=27	80.5- 81.5, N=41
45.5- 46.5, N=25	55.5- 56.5, N=26	70.5- 71.5, N=29	85.5- 86.5, N=45
50.5- 51.5, N=28	60.5- 60.7, N=30(2")	75.5- 76.5, N=39	90.5- 91.5, N=36
55.5- 56.5, N=26	65.5- 66.5, N=27	80.5- 81.5, N=41	95.5- 96.5, N=56
60.5- 60.7, N=30(2")	70.5- 71.5, N=29	85.5- 86.5, N=45	100.5-101.5, N=53
65.5- 66.5, N=27	75.5- 76.5, N=39	90.5- 91.5, N=36	
70.5- 71.5, N=29	80.5- 81.5, N=41	95.5- 96.5, N=56	
75.5- 76.5, N=39	85.5- 86.5, N=45	100.5-101.5, N=53	
80.5- 81.5, N=41	90.5- 91.5, N=36		
85.5- 86.5, N=45	95.5- 96.5, N=61		
90.5- 91.5, N=36	100.5-101.5, N=53		
95.5- 96.5, N=61			
100.5-101.5, N=53			

Sta. 628+76 - 60' Right of C.L. Median

4.4- 5.4, N=6	15.5- 16.5, N=6	30.5- 31.5, N=7	45.5- 46.5, N=28
9.4- 10.4, N=6	20.5- 21.5, N=4	35.5- 36.5, N=12	50.5- 51.5, N=33
15.5- 16.5, N=6	25.5- 26.5, N=10	40.5- 41.5, N=34	55.5- 56.5, N=32
20.5- 21.5, N=4	30.5- 31.5, N=7	45.5- 46.5, N=28	60.5- 61.5, N=29
25.5- 26.5, N=10	35.5- 36.5, N=12	50.5- 51.5, N=33	65.5- 66.5, N=31
30.5- 31.5, N=7	40.5- 41.5, N=34	55.5- 56.5, N=32	70.5- 71.5, N=32
35.5- 36.5, N=12	45.5- 46.5, N=28	60.5- 61.5, N=29	75.5- 76.5, N=36
40.5- 41.5, N=34	50.5- 51.5, N=33	65.5- 66.5, N=31	80.5- 81.5, N=39
45.5- 46.5, N=28	55.5- 56.5, N=32	70.5- 71.5, N=32	85.5- 86.5, N=38
50.5- 51.5, N=33	60.5- 61.5, N=29	75.5- 76.5, N=36	90.5- 91.5, N=39
55.5- 56.5, N=32	65.5- 66.5, N=31	80.5- 81.5, N=39	95.5- 96.5, N=64
60.5- 61.5, N=29	70.5- 71.5, N=32	85.5- 86.5, N=38	100.5-101.5, N=74
65.5- 66.5, N=31	75.5- 76.5, N=36	90.5- 91.5, N=39	
70.5- 71.5, N=32	80.5- 81.5, N=39	95.5- 96.5, N=64	
75.5- 76.5, N=36	85.5- 86.5, N=38	100.5-101.5, N=74	
80.5- 81.5, N=39	90.5- 91.5, N=39		
85.5- 86.5, N=38	95.5- 96.5, N=64		
90.5- 91.5, N=39	100.5-101.5, N=74		
95.5- 96.5, N=64			
100.5-101.5, N=74			

Note: For Boring Legend, see Dwg. No. 54933

Sta. 619+83.5 - 55' Right of C.L. Median

4.3- 5.3, N=14	15.5- 16.5, N=7	30.5- 31.5, N=10	45.5- 46.5, N=13
9.3- 10.3, N=15	20.5- 21.5, N=4	35.5- 36.5, N=15	50.5- 51.5, N=26
15.5- 16.5, N=7	25.5- 26.5, N=3	40.5- 41.5, N=20	55.5- 56.5, N=33
20.5- 21.5, N=4	30.5- 31.5, N=10	45.5- 46.5, N=13	60.5- 61.5, N=29
25.5- 26.5, N=3	35.5- 36.5, N=15	50.5- 51.5, N=26	65.5- 66.5, N=35
30.5- 31.5, N=10	40.5- 41.5, N=20	55.5- 56.5, N=33	70.5- 71.5, N=64
35.5- 36.5, N=15	45.5- 46.5, N=13	60.5- 61.5, N=29	75.5- 76.5, N=42
40.5- 41.5, N=20	50.5- 51.5, N=26	65.5- 66.5, N=35	80.5- 81.5, N=46
45.5- 46.5, N=13	55.5- 56.5, N=33	70.5- 71.5, N=64	85.5- 86.5, N=99
50.5- 51.5, N=26	60.5- 61.5, N=29	75.5- 76.5, N=42	90.5- 91.3, N=99(10")
55.5- 56.5, N=33	65.5- 66.5, N=35	80.5- 81.5, N=46	95.5- 96.5, N=68
60.5- 61.5, N=29	70.5- 71.5, N=64	85.5- 86.5, N=99	100.5-101.5, N=56
65.5- 66.5, N=35	75.5- 76.5, N=42	90.5- 91.3, N=99(10")	
70.5- 71.5, N=64	80.5- 81.5, N=46	95.5- 96.5, N=68	
75.5- 76.5, N=42	85.5- 86.5, N=99	100.5-101.5, N=56	
80.5- 81.5, N=46	90.5- 91.3, N=99(10")		
85.5- 86.5, N=99	95.5- 96.5, N=68		
90.5- 91.3, N=99(10")	100.5-101.5, N=56		
95.5- 96.5, N=68			
100.5-101.5, N=56			

Sta. 621+66.5 - 55' Right of C.L. Median

4.5- 5.5, N=9	15.5- 16.5, N=3	30.5- 31.5, N=5	45.5- 46.5, N=13
9.5- 10.5, N=9	20.5- 21.5, N=2	35.5- 36.5, N=15	50.5- 51.5, N=21
15.5- 16.5, N=3	25.5- 26.5, N=1	40.5- 41.5, N=8	55.5- 56.5, N=34
20.5- 21.5, N=2	30.5- 31.5, N=5	45.5- 46.5, N=13	60.5- 61.5, N=27
25.5- 26.5, N=1	35.5- 36.5, N=15	50.5- 51.5, N=21	65.5- 66.5, N=25
30.5- 31.5, N=5	40.5- 41.5, N=8	55.5- 56.5, N=34	70.5- 71.5, N=29
35.5- 36.5, N=15	45.5- 46.5, N=13	60.5- 61.2, N=73(8")	75.5- 76.5, N=31
40.5- 41.5, N=8	50.5- 51.5, N=21	65.5- 66.5, N=25	80.5- 81.5, N=36
45.5- 46.5, N=13	55.5- 56.5, N=34	70.5- 71.5, N=29	85.5- 86.5, N=37
50.5- 51.5, N=21	60.5- 61.5, N=27	75.5- 76.5, N=31	90.5- 91.5, N=57
55.5- 56.5, N=34	65.5- 66.5, N=25	80.5- 81.5, N=36	95.5- 96.5, N=52
60.5- 61.5, N=27	70.5- 71.5, N=29	85.5- 86.5, N=37	100.0-100.2, N=60(2")
65.5- 66.5, N=25	75.5- 76.5, N=31	90.5- 91.5, N=57	
70.5- 71.5, N=29	80.5- 81.5, N=36	95.5- 96.5, N=52	
75.5- 76.5, N=31	85.5- 86.5, N=37	100.0-100.2, N=60(2")	
80.5- 81.5, N=36	90.5- 91.5, N=57		
85.5- 86.5, N=37	95.5- 96.5, N=52		
90.5- 91.5, N=57	100.0-100.2, N=60(2")		
95.5- 96.5, N=52			
100.0-100.2, N=60(2")			

Sta. 623+56.5 - 55' Right of C.L. Median

4.5- 5.5, N=7	15.5- 16.5, N=4	30.5- 31.5, N=15	45.5- 46.5, N=10
9.5- 10.5, N=0	20.5- 21.5, N=8	35.5- 36.5, N=15	50.5- 51.5, N=22
15.5- 16.5, N=4	25.5- 26.5, N=12	40.5- 41.5, N=7	55.5- 56.5, N=30
20.5- 21.5, N=8	30.5- 31.5, N=15	45.5- 46.5, N=10	60.5- 61.2, N=73(8")
25.5- 26.5, N=12	35.5- 36.5, N=15	50.5- 51.5, N=22	65.5- 66.5, N=30
30.5- 31.5, N=15	40.5- 41.5, N=7	55.5- 56.5, N=30	70.5- 71.5, N=31
35.5- 36.5, N=15	45.5- 46.5, N=10	60.5- 61.2, N=73(8")	75.5- 76.5, N=36
40.5- 41.5, N=7	50.5- 51.5, N=22	65.5- 66.5, N=30	80.5- 81.5, N=37
45.5- 46.5, N=10	55.5- 56.5, N=30	70.5- 71.5, N=31	85.5- 86.5, N=35
50.5- 51.5, N=22	60.5- 61.2, N=73(8")	75.5- 76.5, N=36	90.5- 91.5, N=37
55.5- 56.5, N=30	65.5- 66.5, N=30	80.5- 81.5, N=37	95.5- 96.5, N=64
60.5- 61.2, N=73(8")	70.5- 71.5, N=31	85.5- 86.5, N=35	100.5-101.5, N=56
65.5- 66.5, N=30	75.5- 76.5, N=36	90.5- 91.5, N=37	
70.5- 71.5, N=31	80.5- 81.5, N=37	95.5- 96.5, N=64	
75.5- 76.5, N=36	85.5- 86.5, N=35	100.5-101.5, N=56	
80.5- 81.5, N=37	90.5- 91.5, N=37		
85.5- 86.5, N=35	95.5- 96.5, N=64		
90.5- 91.5, N=37	100.5-101.5, N=56		
95.5- 96.5, N=64			
100.5-101.5, N=56			

Sta. 625+39.5 - 55' Right of C.L. Median

4.4- 5.4, N=9	15.5- 16.5, N=0	30.5- 31.5, N=14	45.5- 46.5, N=22
9.4- 10.4, N=8	20.5- 21.5, N=9	35.5- 36.5, N=9	50.5- 51.5, N=26
15.5- 16.5, N=0	25.5- 26.5, N=14	40.5- 41.5, N=13	55.5- 56.5, N=26
20.5- 21.5, N=9	30.5- 31.5, N=14	45.5- 46.5, N=22	60.0- 60.4, N=10(5")
25.5- 26.5, N=14	35.5- 36.5, N=9	50.5- 51.5, N=26	65.5- 66.5, N=34
30.5- 31.5, N=14	40.5- 41.5, N=13	55.5- 56.5, N=26	70.5- 71.5, N=34
35.5- 36.5, N=9	45.5- 46.5, N=22	60.0- 60.4, N=10(5")	75.5- 76.5, N=42
40.5- 41.5, N=13	50.5- 51.5, N=26	65.5- 66.5, N=34	80.5- 81.5, N=37
45.5- 46.5, N=22	55.5- 56.5, N=26	70.5- 71.5, N=34	85.5- 86.5, N=38
50.5- 51.5, N=26	60.0- 60.4, N=10(5")	75.5- 76.5, N=42	90.5- 91.5, N=36
55.5- 56.5, N=26	65.5- 66.5, N=34	80.5- 81.5, N=37	95.5- 96.5, N=63
60.0- 60.4, N=10(5")	70.5- 71.5, N=34	85.5- 86.5, N=38	100.5-101.5, N=49
65.5- 66.5, N=34	75.5- 76.5, N=42	90.5- 91.5, N=36	
70.5- 71.5, N=34	80.5- 81.5, N=37	95.5- 96.5, N=63	
75.5- 76.5, N=42	85.5- 86.5, N=38	100.5-101.5, N=49	
80.5- 81.5, N=37	90.5- 91.5, N=36		
85.5- 86.5, N=38	95.5- 96.5, N=63		
90.5- 91.5, N=36	100.5-101.5, N=49		
95.5- 96.5, N=63			
100.5-101.5, N=49			

Sta. 627+29.5 - 55' Right of C.L. Median

4.5- 5.5, N=7	15.5- 16.5, N=4	30.5- 31.5, N=10	45.5- 46.5, N=28
9.5- 10.5, N=15	20.5- 21.5, N=7	35.5- 36.5, N=6	50.5- 51.5, N=32
15.5- 16.5, N=4	25.5- 26.5, N=13	40.5- 41.5, N=41	55.5- 56.5, N=37
20.5- 21.5, N=7	30.5- 31.5, N=10	45.5- 46.5, N=28	60.5- 61.5, N=22
25.5- 26.5, N=13	35.5- 36.5, N=6	50.5- 51.5, N=32	65.5- 66.5, N=33
30.5- 31.5, N=10	40.5- 41.5, N=41	55.5- 56.5, N=37	70.5- 71.5, N=37
35.5- 36.5, N=6	45.5- 46.5, N=28	60.5- 61.5, N=22	75.5- 76.5, N=35
40.5- 41.5, N=41	50.5- 51.5, N=32	65.5- 66.5, N=33	80.5- 81.5, N=36
45.5- 46.5, N=28	55.5- 56.5, N=37	70.5- 71.5, N=37	85.5- 86.5, N=44
50.5- 51.5, N=32	60.5- 61.5, N=22	75.5- 76.5, N=35	90.5- 91.5, N=40
55.5- 56.5, N=37	65.5- 66.5, N=33	80.5- 81.5, N=36	95.5- 96.5, N=61
60.5- 61.5, N=22	70.5- 71.5, N=37	85.5- 86.5, N=44	100.5-101.5, N=70
65.5- 66.5, N=33	75.5- 76.5, N=35	90.5- 91.5, N=40	
70.5- 71.5, N=37	80.5- 81.5, N=36	95.5- 96.5, N=61	
75.5- 76.5, N=35	85.5- 86.5, N=44	100.5-101.5, N=70	
80.5- 81.5, N=36	90.5- 91.5, N=40		
85.5- 86.5, N=44	95.5- 96.5, N=61		
90.5- 91.5, N=40	100.5-101.5, N=70		
95.5- 96.5, N=61			
100.5-101.5, N=70			

"N" VALUES

615+00 616+00 617+00 618+00 619+00 620+00 621+00 622+00 623+00 624+00 625+00 626+00 627+00 628+00 629+00 630+00

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 7 OF 7
LAYOUT OF BRIDGE OVER OUACHITA RIVER
OUACHITA RIVER STR. & APPRS. (S)
UNION AND CALHOUN COUNTIES

ROUTE 167 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 6-12 FILENAME: b070282_11.dgn
CHECKED BY: AHS DATE: 11/6/12 SCALE: as noted
DESIGNED BY: PGT DATE: 6/12
BRIDGE NO. A6362 DRAWING NO. 54934

PRINT DATE: 7/11/2014

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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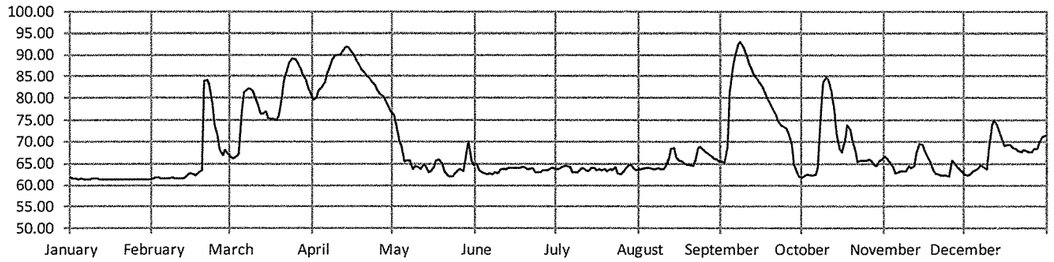
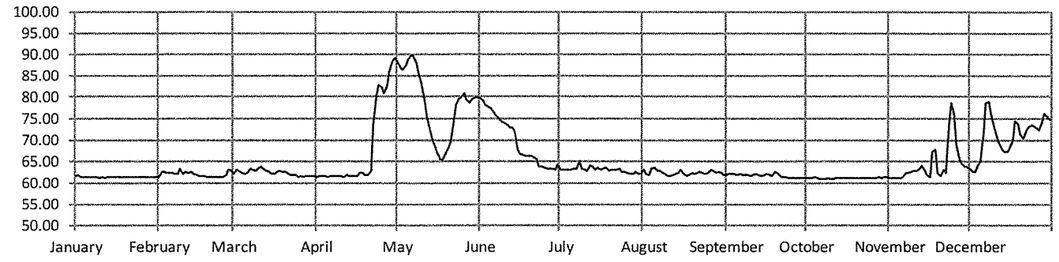
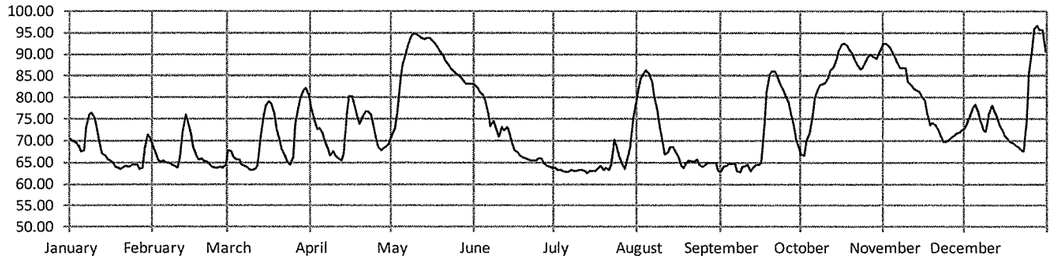
				JOB NO.		070282	62	190
				(1) A6362 -		HYDROGRAPH		- 54935



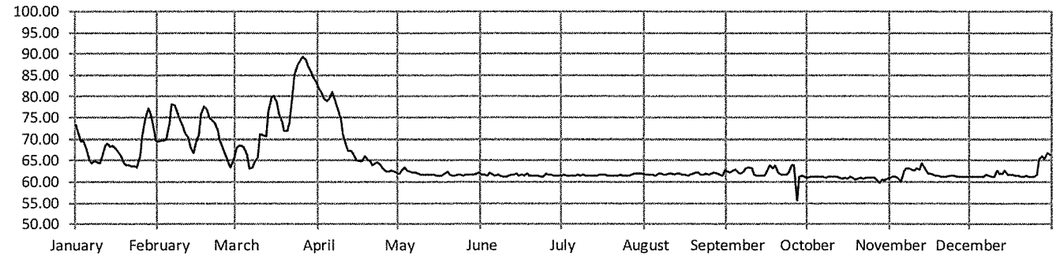
DAILY STAGES FOR JANUARY THRU DECEMBER 2008



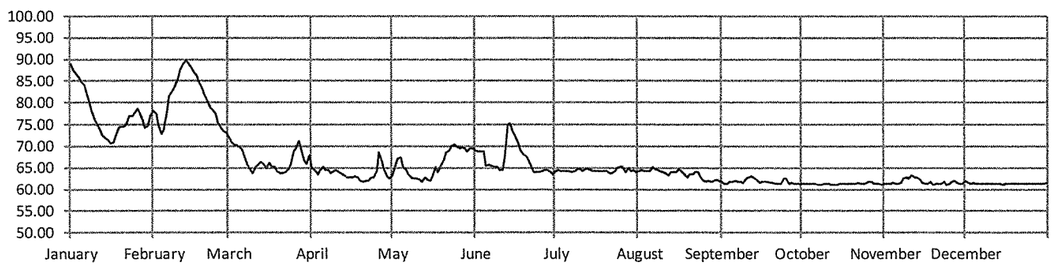
DAILY STAGES FOR JANUARY THRU DECEMBER 2011



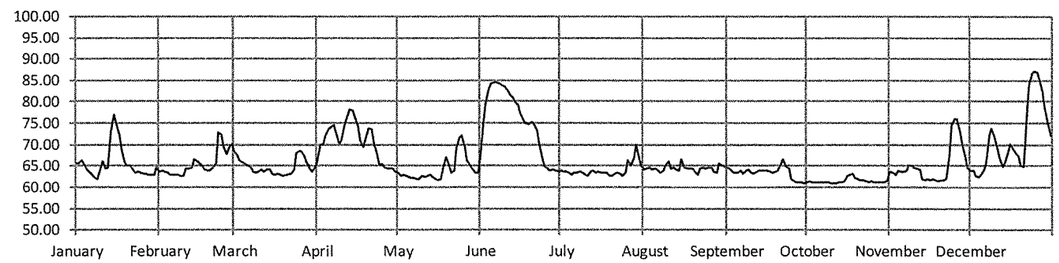
DAILY STAGES FOR JANUARY THRU DECEMBER 2009



DAILY STAGES FOR JANUARY THRU DECEMBER 2012



DAILY STAGES FOR JANUARY THRU DECEMBER 2010



DAILY STAGES FOR JANUARY THRU DECEMBER 2013

This Stage Hydrograph was obtained from the United States Army Corps of Engineers and was plotted by the Arkansas State Highway and Transportation Department.

Gage No. NGVD29
Location: Latitude 33°35'49", Longitude 92°49'05", Ouachita at Highway 79 bridge.

Elevations from above gage have been adjusted to represent those near the site.

This hydrograph is provided for information only.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

HYDROGRAPH
OUACHITA @ RIVER MILE 294.1

ROUTE SEC.

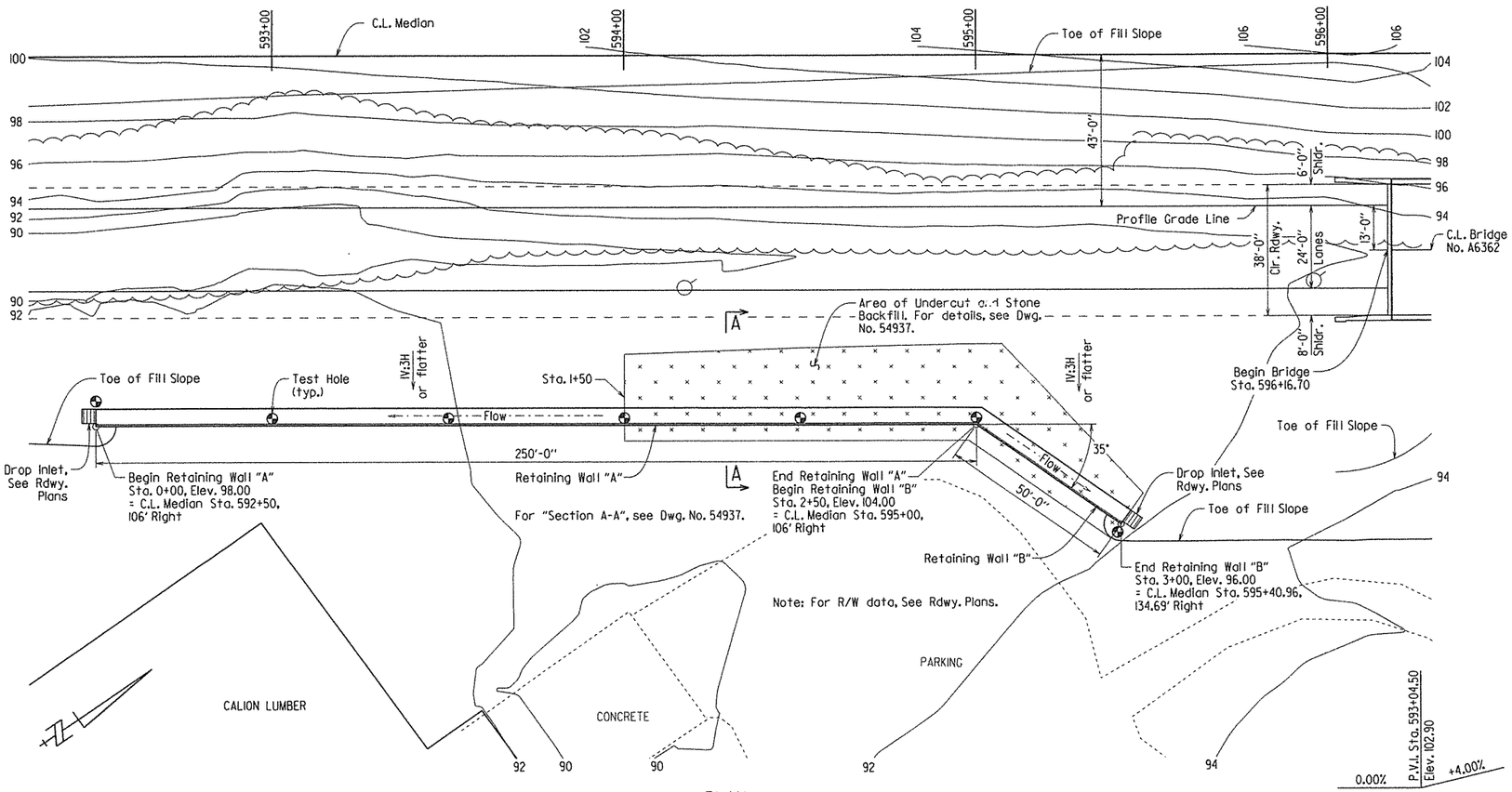
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JYP DATE: 4-4-14 FILENAME: b070282_hyg.dgn
CHECKED BY: AMS DATE: 4/7/14 SCALE: NONE
DESIGNED BY: --- DATE:

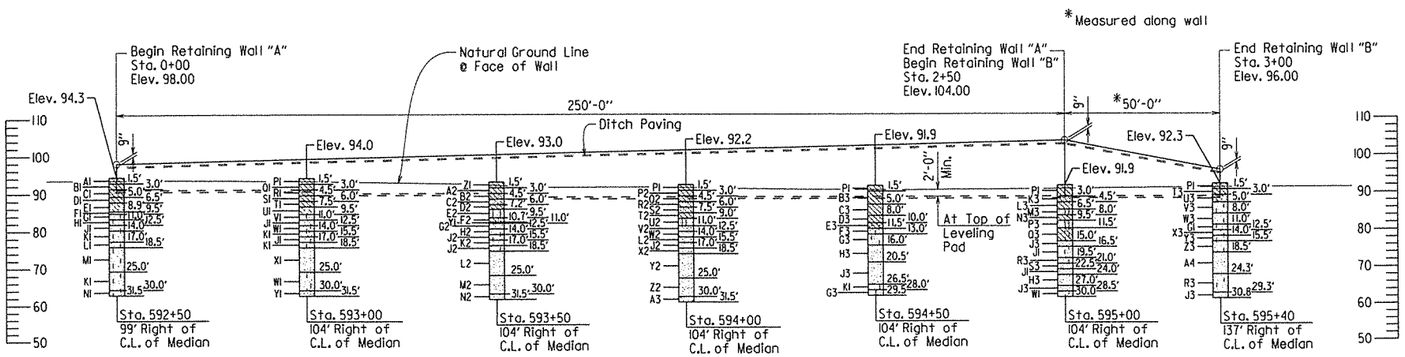
BRIDGE NO. A6362 DRAWING NO. 54935

PRINT DATE: 7/14/2014

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.		070282	63	190
				①		RETAINING WALLS - 54936		



PLAN



For additional boring information, see Dwg. No. 54937.

ELEVATION

Retaining Wall Station	Existing Ground Elev. @ Face of Wall
0+00	93.4
0+25	93.3
0+50	93.1
0+75	92.7
1+00	92.1
1+25	91.5
1+50	91.4
1+75	91.0
2+00	90.8
2+25	90.8
2+50	91.0
2+75	91.1
3+00	91.8

TABLE OF QUANTITIES

(FOR INFORMATION ONLY)

LOCATION	ITEM NO.	207	210	SP JOB 070282	SP JOB 070282
	ITEM	STONE BACKFILL	UNCLASSIFIED EXCAVATION	SELECT GRANULAR BACKFILL	RETAINING WALL
	UNIT	TON	CU. YD.	CU. YD.	SQ. FT.
WALL "A": STA. 0+00 TO STA. 1+50		—	100	495	1,495
WALL "A": STA. 1+50 TO STA. 2+50		623	—	750	1,430
WALL "B": STA. 2+50 TO STA. 3+00		265	—	230	575
TOTALS		888	100	1,475	3,500

GENERAL NOTES:

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications Sixth Edition (2012) with 2013 Interim Revisions.

Retaining Wall Stations are measured along outside vertical face of wall. Elevations shown are profile grade for top of wall. Wall and ground elevations are approximate. Wall dimensions may vary depending on wall design selected, and field conditions.

Existing material shall be undercut to a depth of 6 feet below existing ground from Retaining Wall Sta. 1+50 to 3+00 and replaced with Stone Backfill meeting the requirements of Section 207. Backfill in undercut areas will be measured and paid for at the unit price bid for "Stone Backfill" for the limits of pay shown.

The excavated material may be utilized at other locations within the project area if approved by the Engineer. Excavated material that cannot be utilized shall be disposed of by the Contractor in accordance with Subsection 210.08.

Boring logs may be obtained from the Programs and Contracts Division upon request.

Reinforcement placement and details for retaining walls may be affected by proposed roadway drainage structures. See Roadway Plans for locations and details of drainage structures.

For ditch paving, See Standard Dwg. No. CDP-1. Weep holes shall be eliminated.

Pipe Underdrains shall be used in the area of backfill as determined by the Engineer.

Preformed joint filler, joint sealer, polystyrene board, and pipe underdrains will not be paid for directly, but will be considered subsidiary to the item "Retaining Wall".

See Job Special Provision "Retaining Walls" for additional information.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9355
7-1944
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF RETAINING WALL

ROUTE 167 SEC. 3

ARKANSAS STATE HIGHWAY COMMISSION

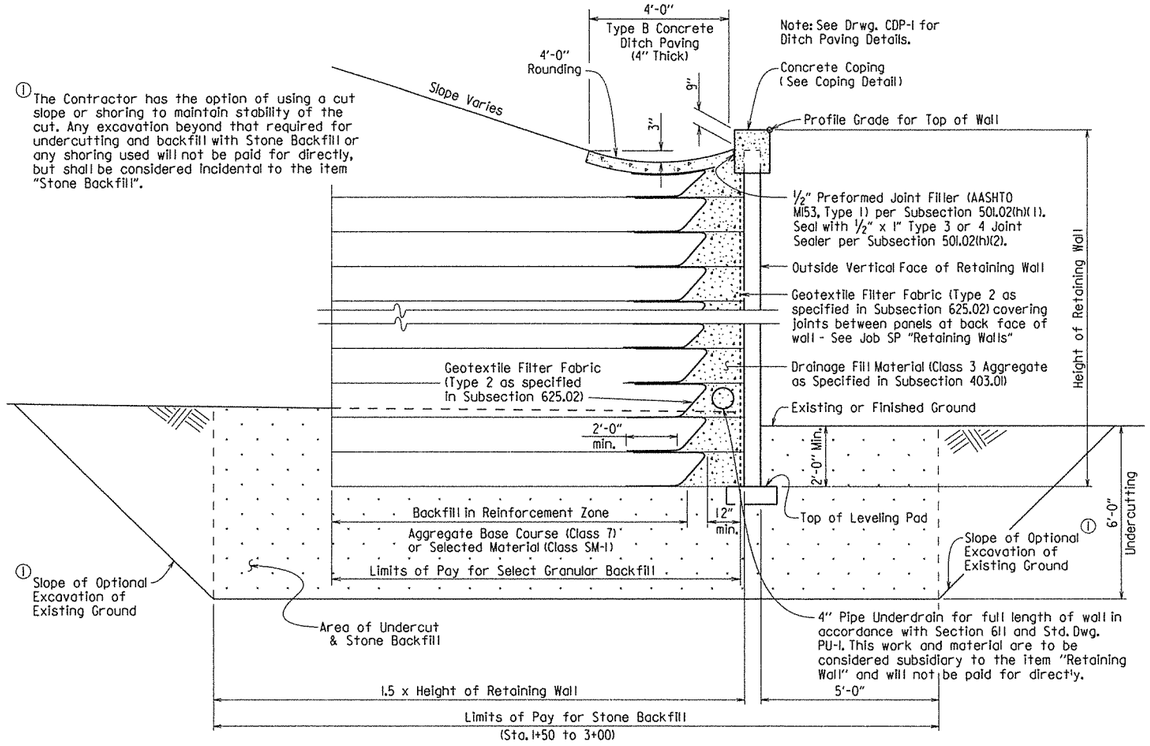
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 01/15/14 FILENAME: b070282_ri.dgn
CHECKED BY: ARS DATE: 4/7/14 SCALE: 1" = 20'-0"
DESIGNED BY: RDT DATE: 1/14

DRAWING NO. 54936

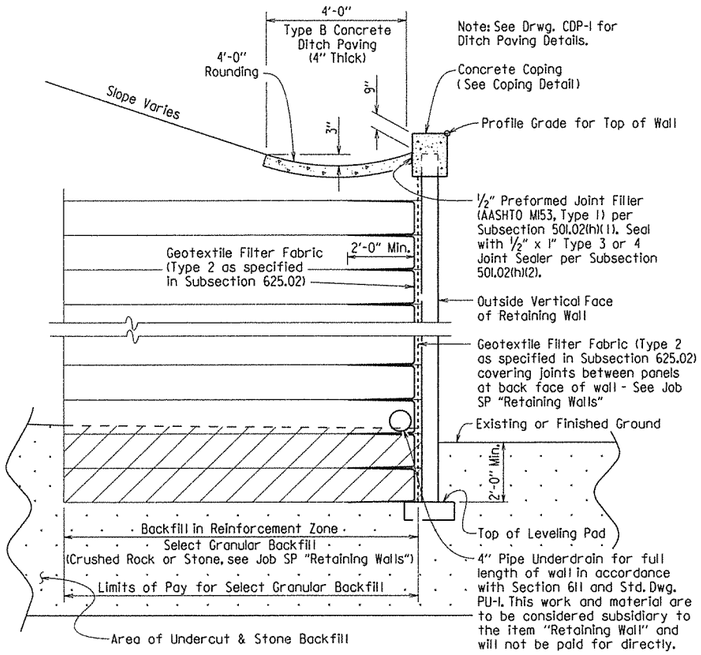
PRINT DATE: 7/9/2014

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.		070282	64	190
				①		RETAINING WALLS - 54937		



SECTION A-A
(BACKFILL METHOD A)

No Scale



SECTION A-A
(BACKFILL METHOD B)

No Scale

Note: For undercutting and details not shown above, see "Section A-A (Backfill Method A)".

"N" VALUES

Sta. 592+50 - 99' Right of C.L. of Median

0.5- 1.5,N=18
2.0- 3.0,N=16
5.5- 6.5,N=17
7.0- 8.0,N=15
8.5- 9.5,N=11
10.0- 11.0,N=9
11.5- 12.5,N=15
13.0- 14.0,N=8
14.5- 15.5,N=13
16.0- 17.0,N=12
17.5- 18.5,N=10
19.0- 20.0,N=12
25.5- 26.5,N=14
30.5- 31.5,N=19

Sta. 593+00 - 104' Right of C.L. of Median

0.5- 1.5,N=7
2.0- 3.0,N=11
3.5- 4.5,N=22
5.0- 6.0,N=15
6.5- 7.5,N=11
10.0- 11.0,N=12
11.5- 12.5,N=9
13.0- 14.0,N=10
14.5- 15.5,N=16
16.0- 17.0,N=10
17.5- 18.5,N=11
19.0- 20.0,N=14
25.5- 26.5,N=9
30.5- 31.5,N=15

Sta. 593+50 - 104' Right of C.L. of Median

0.5- 1.5,N=3
2.0- 3.0,N=6
3.5- 4.5,N=40
5.0- 6.0,N=26
6.5- 7.5,N=16
10.0- 11.0,N=20
11.5- 12.5,N=10
13.0- 14.0,N=10
14.5- 15.5,N=10
16.0- 17.0,N=11
17.5- 18.5,N=9
19.0- 20.0,N=5
25.5- 26.5,N=15
30.5- 31.5,N=14

Sta. 594+00 - 104' Right of C.L. of Median

0.5- 1.5,N=5
2.0- 3.0,N=4
3.5- 4.5,N=4
5.0- 6.0,N=17
6.5- 7.5,N=11
8.0- 9.0,N=11
11.5- 12.5,N=6
13.0- 14.0,N=10
14.5- 15.5,N=9
16.0- 17.0,N=10
17.5- 18.5,N=18
19.0- 20.0,N=11
25.5- 26.5,N=16
30.5- 31.5,N=18

Sta. 594+50 - 104' Right of C.L. of Median

0.5- 1.5,N=6
2.0- 3.0,N=13
5.5- 6.5,N=0
7.0- 8.0,N=3
10.5- 11.5,N=18
12.0- 13.0,N=0
13.5- 14.5,N=1
15.0- 16.0,N=3
16.5- 17.5,N=9
18.0- 19.0,N=10
19.5- 20.5,N=9
21.0- 22.0,N=3
22.5- 23.5,N=1
24.0- 25.0,N=3
25.5- 26.5,N=2
27.0- 28.0,N=12
28.5- 29.5,N=4

Sta. 595+00 - 104' Right of C.L. of Median

0.5- 1.5,N=7
2.0- 3.0,N=7
3.5- 4.5,N=3
7.0- 8.0,N=8
8.5- 9.5,N=13
12.0- 13.0,N=8
15.5- 16.5,N=2
17.0- 18.0,N=10
18.5- 19.5,N=10
20.0- 21.0,N=6
21.5- 22.5,N=5
23.0- 24.0,N=7
24.5- 25.5,N=7
26.0- 27.0,N=6
27.5- 28.5,N=3
29.0- 30.0,N=5

Sta. 595+40 - 137' Right of C.L. of Median

0.5- 1.5,N=5
2.0- 3.0,N=6
5.5- 6.5,N=8
7.0- 8.0,N=8
8.5- 9.5,N=8
10.0- 11.0,N=8
11.5- 12.5,N=9
13.0- 14.0,N=13
14.5- 15.5,N=11
16.0- 17.0,N=9
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19.0- 20.0,N=10
24.8- 25.8,N=9
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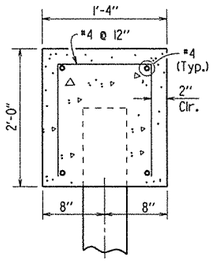


COPING DETAIL

No Scale

Notes:
Reinforcing steel and Class S(AE) Concrete for coping shall not be paid for directly, but will be considered subsidiary to the item "Retaining Wall."

Precast coping may be substituted for cast-in-place coping shown.

BORING LEGEND

A1-Moist, Very Stiff, Brown Clay with some Black Organic Matter
B1-Moist, Very Stiff, Brown Clay
C1-Moist, Very Stiff, Gray and Brown Clay with Sand
D1-Moist, Very Stiff, Light Brown Sandy Clay
E1-Moist, Medium Dense, Light Brown Sand with Clay
F1-Mois t, Medium Dense, Reddish Brown Silty Sand
G1-Wet, Loose, Gray Silty Sand
H1-Wet, Medium Dense, Gray Silty Sand
J1-Wet, Loose, Gray Sand with Silt
K1-Wet, Medium Dense, Gray Sand with Silt
L1-Wet, Loose, Gray and Brown Silty Sand
M1-Wet, Medium Dense, Gray and Reddish Brown Sand with Silt
N1-Wet, Medium Dense, Reddish Brown Sand with Silt
P1-Moist, Medium Stiff, Brown Clay with some Black Organic Matter
Q1-Moist, Stiff, Brown Sandy Clay
R1-Moist, Very Stiff, Brown and Gray Clay with Sand
S1-Moist, Stiff, Brown Clay with Sand
T1-Moist, Stiff, Gray and Brown Clay with Sand
U1-Moist, Medium Dense, Gray and Brown Clayey Sand
V1-Wet, Medium Dense, Light Brown Silty Sand
W1-Wet, Loose, Gray and Brown Sand with Silt
X1-Wet, Medium Dense, Gray Sand
Y1-Wet, Medium Dense, Reddish Brown Sand
Z1-Moist, Soft, Brown Clay with some Black Organic Matter
A2-Moist, Medium Stiff, Brown Sandy Clay
B2-Moist, Hard, Light Brown and Gray Clay with Sand
C2-Moist, Medium Dense, Light Brown to Reddish Brown Sand with Gray Clay
D2-Moist, Hard, Reddish Brown and Gray Clay with Sand
E2-Moist, Stiff, Reddish Brown and Gray Sandy Silt
F2-Moist to Wet, Loose, Gray Sand with Clay
G2-Wet, Loose, Reddish Brown Sand
H2-Wet, Loose, Light Brown and Gray Sand with Silt
J2-Wet, Loose, Light Brown Sand with Silt
K2-Wet, Medium Dense, Light Brown Sand with Silt
L2-Wet, Loose, Light Brown Sand
M2-Wet, Medium Dense, Light Brown Sand
N2-Wet, Medium Dense, Reddish Brown Sand with Silt and some Gravel
P2-Moist, Soft, Brown Sandy Clay
Q2-Moist, Soft, Reddish Brown Sandy Clay
R2-Moist, Medium Dense, Reddish Brown and Gray Sand with Clay
S2-Moist, Stiff, Reddish Brown and Gray Clayey Sand
T2-Moist, Stiff, Reddish Brown and Gray Sandy Clay
U2-Moist, Medium Dense, Gray Sandy Silt
V2-Wet, Loose, Reddish Brown Sand with Silt
W2-Wet, Loose, Light Brown and Gray Sand
X2-Wet, Medium Dense, Light Brown Sand with Silt
Y2-Wet, Medium Dense, Light to Reddish Brown Sand
Z2-Wet, Medium Dense, Light Brown and Gray Sand
A3-Wet, Medium Dense, Light Brown Sand with Large Gravel
B3-Moist, Stiff, Brown Clay
C3-Wet, Very Soft, Gray Sandy Clay
D3-Moist, Soft, Gray Sandy Clay
E3-Wet, Medium Dense, Gray Sandy, Silty Clay
F3-Wet, Very Loose, Gray Silty Sand
G3-Wet, Very Loose, Gray Sand with Silt
H3-Wet, Loose, Gray Sand
J3-Wet, Very Loose, Gray Sand
K3-Moist, Soft, Gray Clay with Sand
L3-Wet, Medium Stiff, Gray Clay with Sand
M3-Wet, Medium Stiff, Gray Sandy Silt with some Organic Matter
N3-Moist, Stiff, Gray Clay with Sand
P3-Moist, Medium Dense, Gray and Brown Sandy Silt
Q3-Wet, Medium Stiff, Gray Sandy, Silty Clay
R3-Wet, Loose, Brown and Gray Sand with Silt
S3-Wet, Loose, Brown and Gray Sand
T3-Moist, Medium Stiff, Brown Clay with some Black Organic Matter and Gravel
U3-Moist, Loose, Brown and Gray Clayey Sand
V3-Moist, Loose, Brown Silty Sand
W3-Wet, Loose, Brown Silty Sand
X3-Wet, Medium Dense, Brown and Gray Sand with Silt
Y3-Wet, Medium Dense, Brown Sand with Silt
Z3-Wet, Loose, Brown Sand with Silt
A4-Wet, Loose, Brown Sand

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF RETAINING WALL
ROUTE 167 SEC. 3
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 01/15/14 FILENAME: b070282_rl.dgn
CHECKED BY: AMS DATE: 4/7/14 SCALE: 1" = 20'-0"
DESIGNED BY: RCT DATE: 1/14

DRAWING NO. 54937

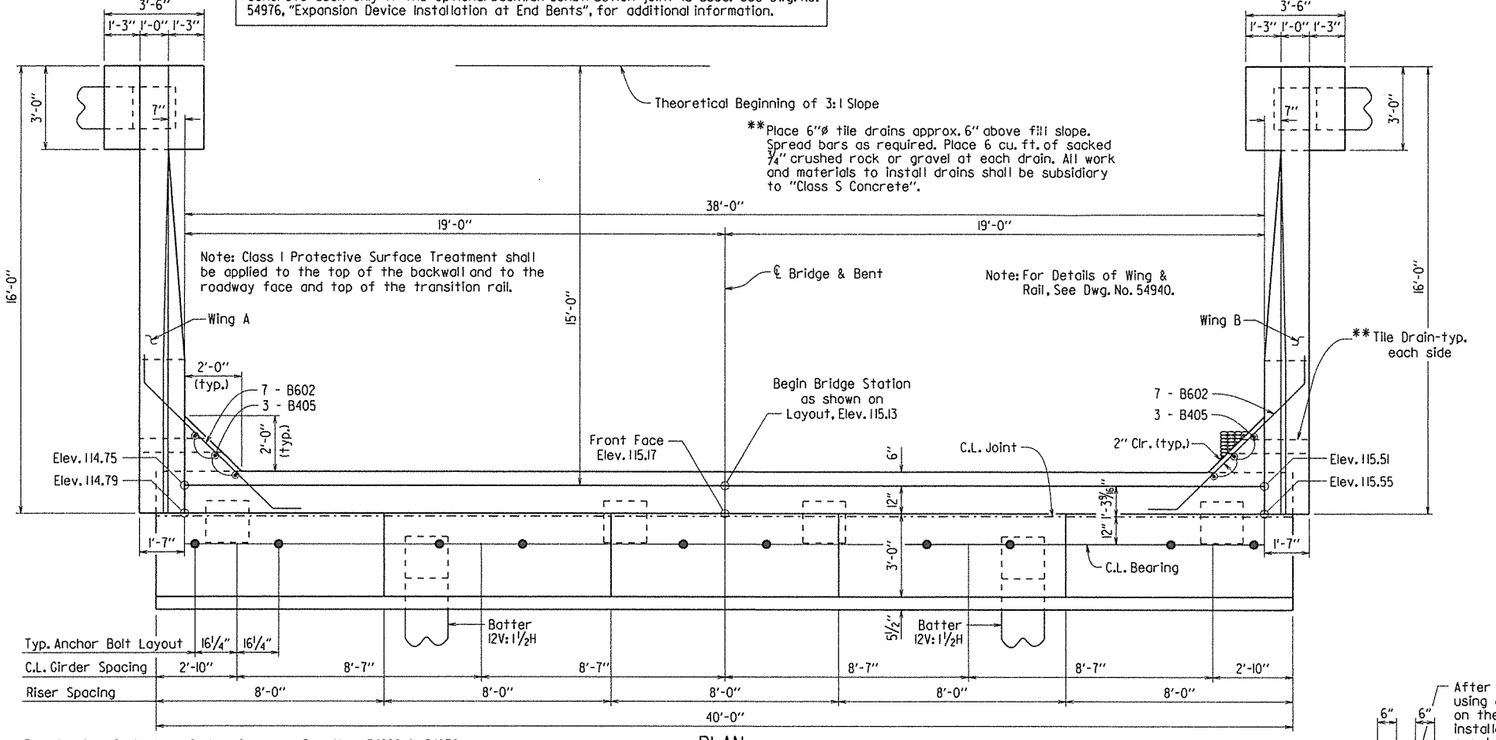
PRINT DATE: 7/9/2014

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.		070282	65	190

(1) A6362 - END BENT - 54938

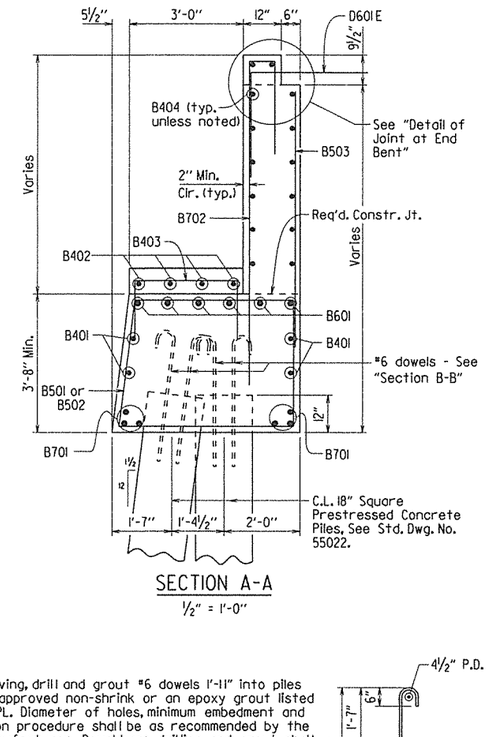
NOTE: The Backwall above the required construction joint shall not be poured until the girders are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 54976, "Expansion Device Installation at End Bents", for additional information.



PLAN

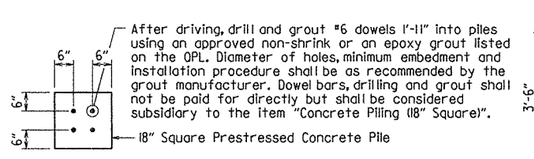
3/8" = 1'-0"

For details of elastomeric bearings, see Dwg. No's. 54969 & 54970.



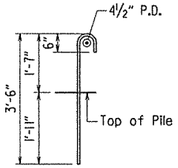
SECTION A-A

1/2" = 1'-0"



PILE ANCHORAGE DETAIL

No Scale



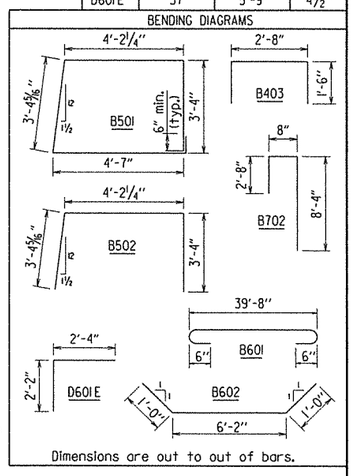
#6 DOWEL BAR

No Scale

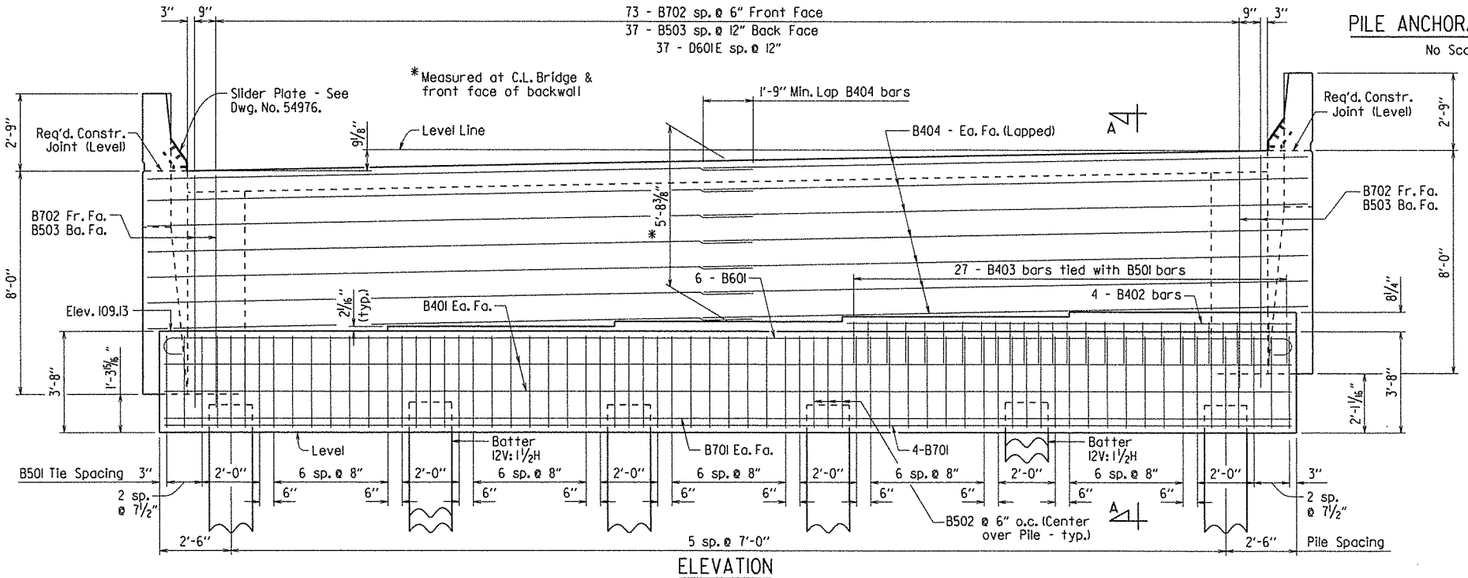
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	2	39'-8"	Str.
B402	4	15'-8"	Str.
B403	27	5'-6"	2"
B404	28	21'-4"	Str.
B405	6	6'-10"	Str.
B501	51	13'-6"	2 1/2"
B502	18	8'-4"	2 1/2"
B503	39	6'-11"	Str.
B601	6	41'-0"	4 1/2"
B602	14	8'-2"	4 1/2"
B701	6	39'-8"	Str.
B702	75	11'-4"	5 1/4"
D601E	37	5'-9"	4 1/2"

BENDING DIAGRAMS



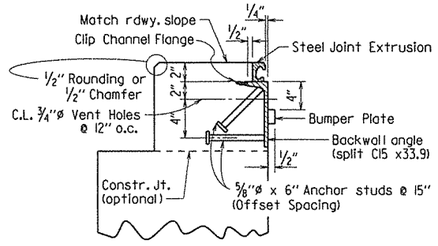
Dimensions are out to out of bars.



ELEVATION

Looking Back

3/8" = 1'-0"



Notes: For additional joint details, see Dwg. No. 54976.

Concrete shall be hand packed under the joint armor in the backwall.

DETAIL OF JOINT AT END BENT

No Scale

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28-Day compressive strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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

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

For additional information, See Layout.

STATE OF ARKANSAS
Charles B. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES B. ELLIS

BRIDGE ENGINEER

DETAILS OF END BENT 1
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

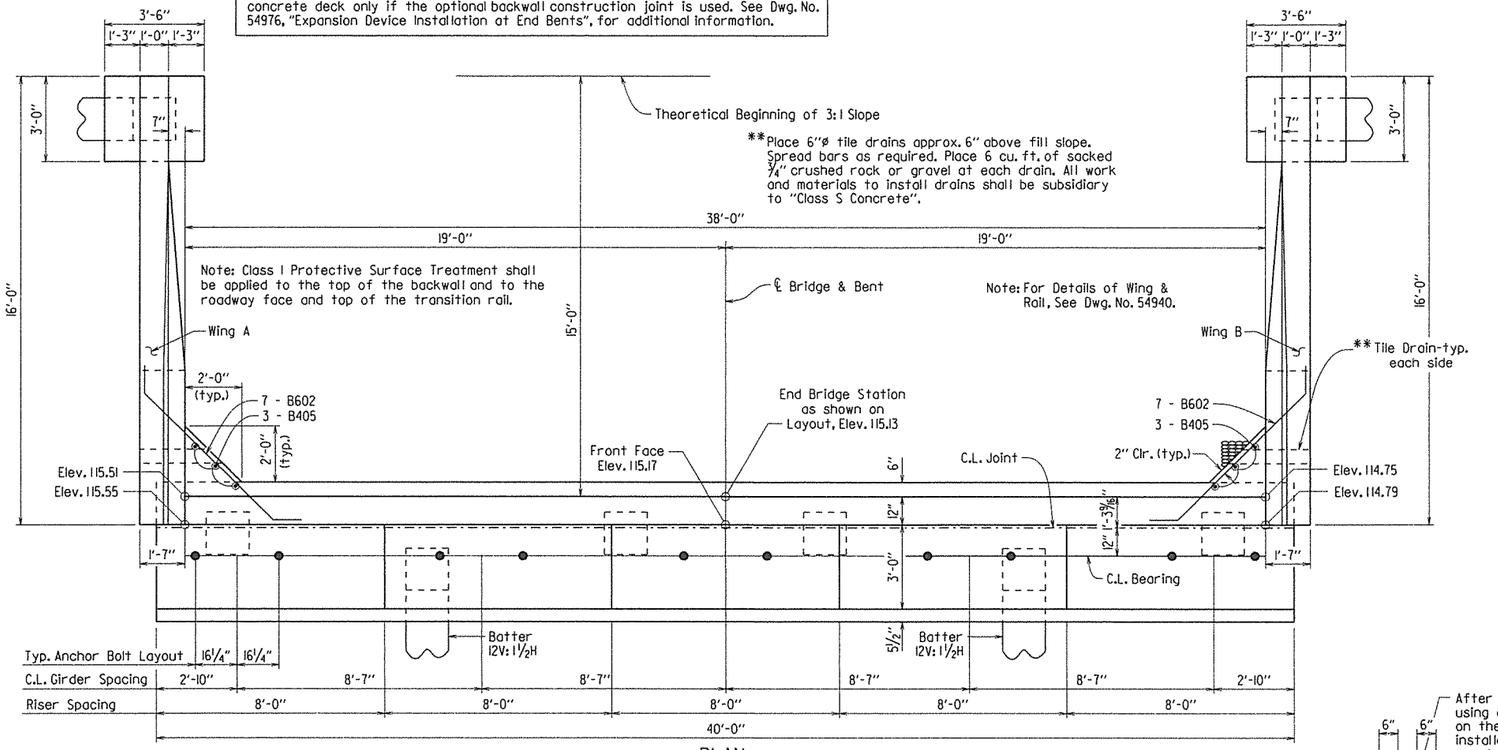
DRAWN BY: ACP	DATE: 02-26-13	FILENAME: b070282_b1.dgn	
CHECKED BY: PGT	DATE: 4/14	SCALE: As Noted	
DESIGNED BY: LWY	DATE: 2/13		

BRIDGE NO. A6362 DRAWING NO. 54938

PRINT DATE: 7/11/2014

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.		070282	66	190
				(1)	A6362 - END BENT - 54939			

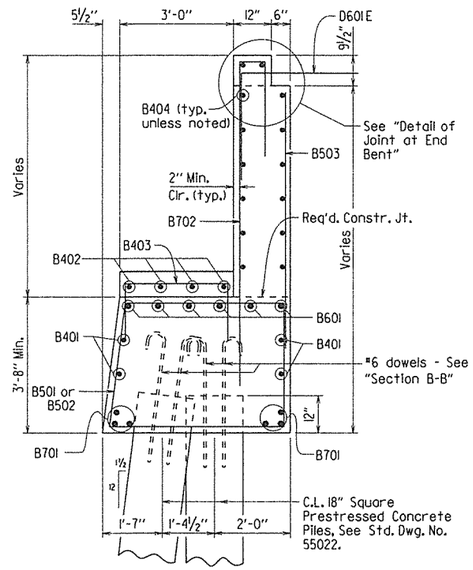
NOTE: The Backwall above the required construction joint shall not be poured until the girders are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 54976, "Expansion Device Installation at End Bents", for additional information.



PLAN

⅜" = 1'-0"

For details of elastomeric bearings, see Dwg. No's. 54969 & 54970.



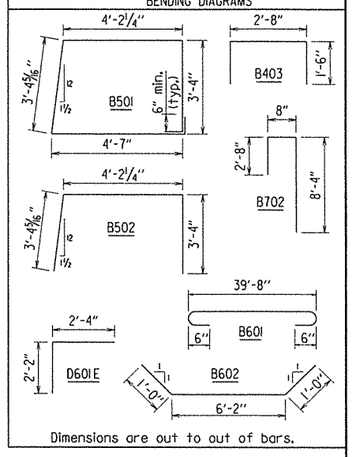
SECTION A-A

½" = 1'-0"

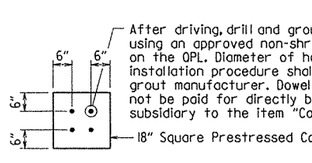
BAR LIST

MARK	NO. REQ'D.	LENGTH	P.D.
B401	2	39'-8"	Str.
B402	4	15'-8"	Str.
B403	27	5'-6"	2"
B404	28	21'-4"	Str.
B405	6	6'-10"	Str.
B501	51	13'-6"	2½"
B502	18	8'-4"	2½"
B503	39	6'-11"	Str.
B601	6	41'-0"	4½"
B602	14	8'-2"	4½"
B701	6	39'-8"	Str.
B702	75	11'-4"	5¼"
D601E	37	5'-9"	4½"

BENDING DIAGRAMS

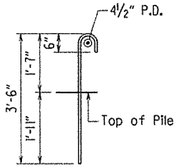


Dimensions are out to out of bars.



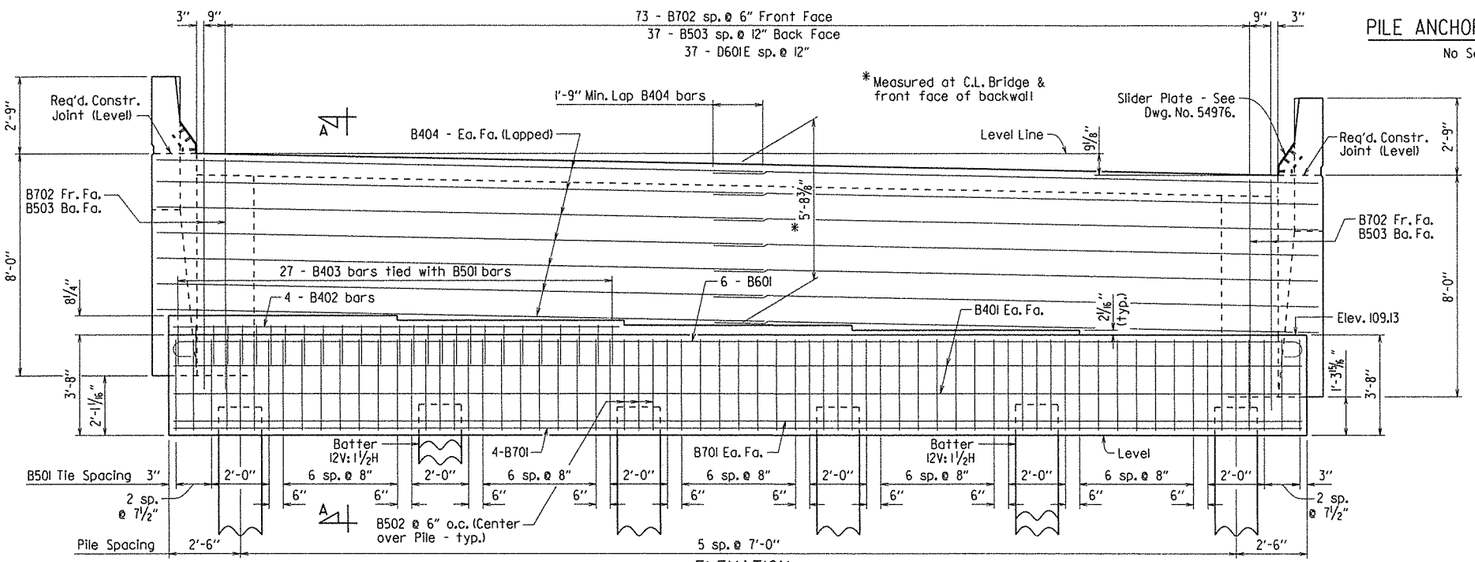
PILE ANCHORAGE DETAIL

No Scale



#6 DOWEL BAR

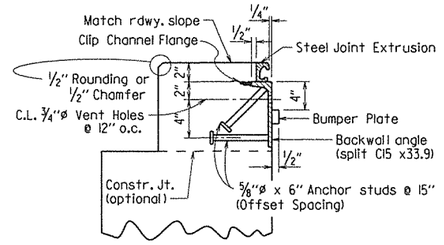
No Scale



ELEVATION

Looking Ahead

⅜" = 1'-0"



Notes: For additional joint details, see Dwg. No. 54976.

Concrete shall be hand packed under the joint armor in the backwall.

DETAIL OF JOINT AT END BENT

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28-Day compressive strength f'c=3500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

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

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

For additional information, See Layout.

DETAILS OF END BENT 28
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 02-26-13 FILENAME: b070282_bl.dgn

CHECKED BY: PGG DATE: 4/14 SCALE: As Noted

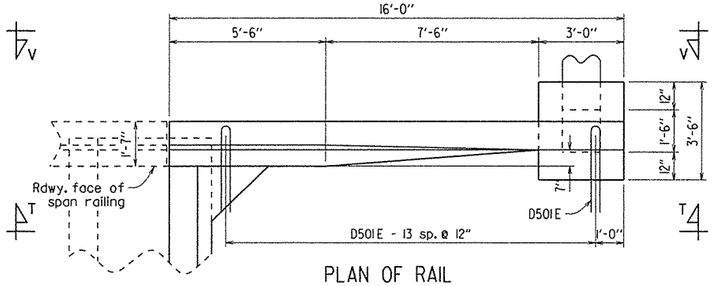
DESIGNED BY: KWW DATE: 4/13

BRIDGE NO. A6362 DRAWING NO. 54939

PRINT DATE: 7/11/2014

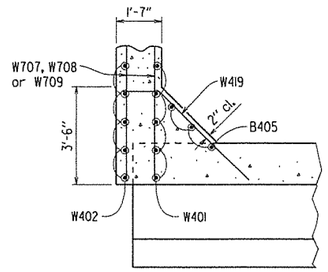
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	67	190

(1) A6362 - END BENTS - 54940



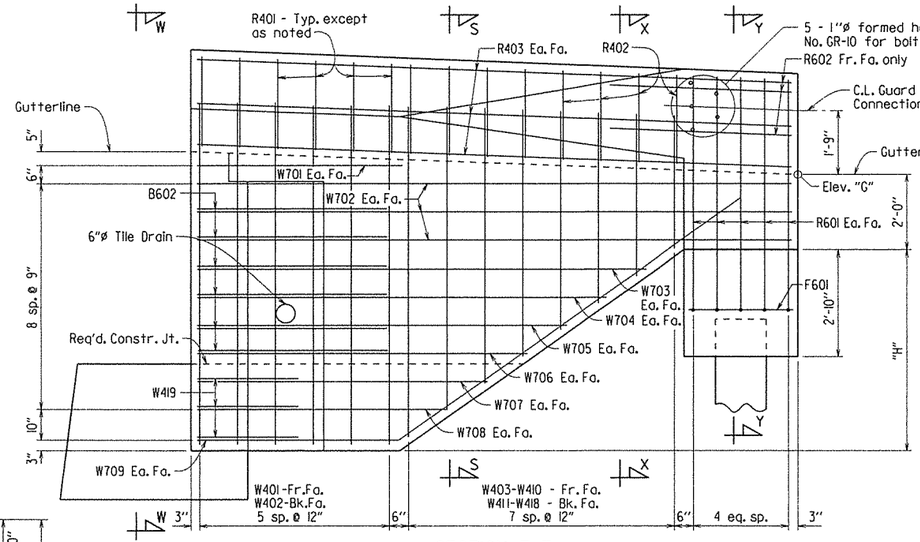
PLAN OF RAIL

3/8" = 1'-0"



SECTION Z-Z

3/8" = 1'-0"



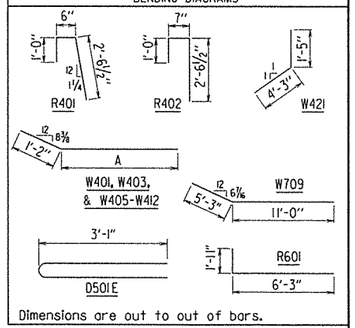
SECTION T-T

1/2" = 1'-0"

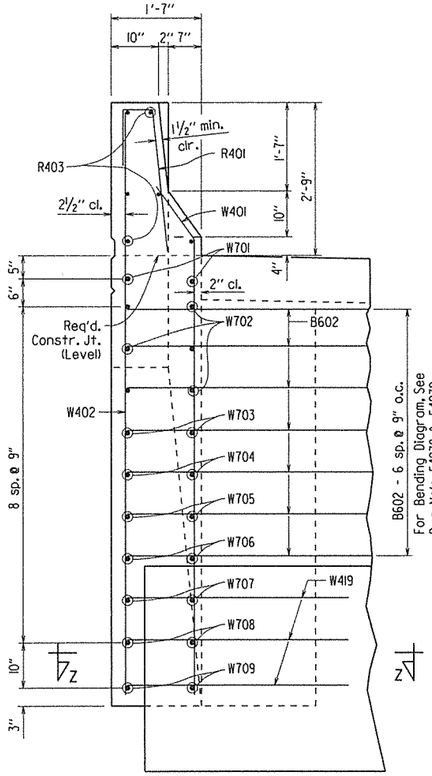
BAR LIST - PER BENT

MARK	NO. REQ'D.	LENGTH	A	P.D.
R401	20	3'-11"		2"
R402	8	3'-11"		2"
R403	12	15'-8"		Str.
R601	20	8'-0"		4 1/2"
R602	6	5'-6"		Str.
W401	12	9'-0"	7'-10"	2"
W402	12	10'-2"		Str.
W403-W410	2 each	Var. 8'-10" to 3'-5"	Var. 7'-8" to 2'-4"	2"
W411-W418	2 each	Var. 9'-11" to 4'-8"		Str.
W419	6	5'-8"		2"
W701	4	5'-5"		Str.
W702	12	15'-8"		Str.
W703-W708	4 each	Var. 11'-10" to 6'-7"		Str.
W709	4	16'-3"		5 1/4"
F601	14	2'-8"		Str.
D501E	28	6'-4"		3 3/4"

BENDING DIAGRAMS

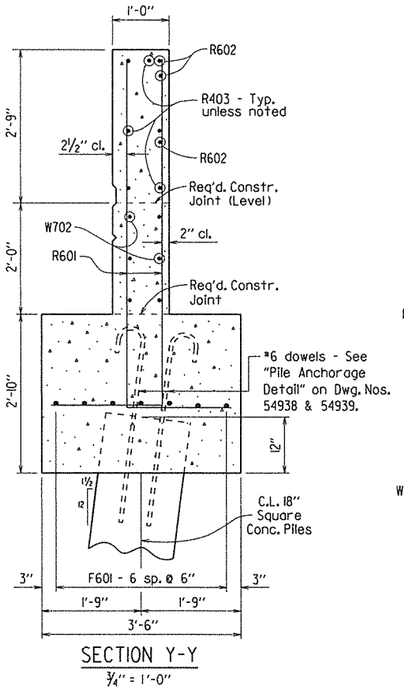


Dimensions are out to out of bars.



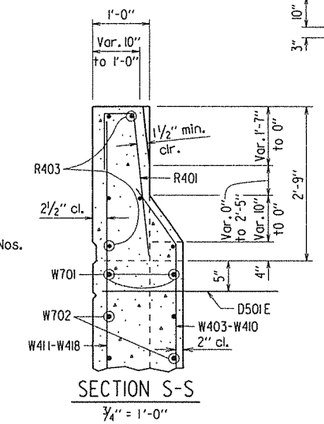
VIEW W-W

3/4" = 1'-0"



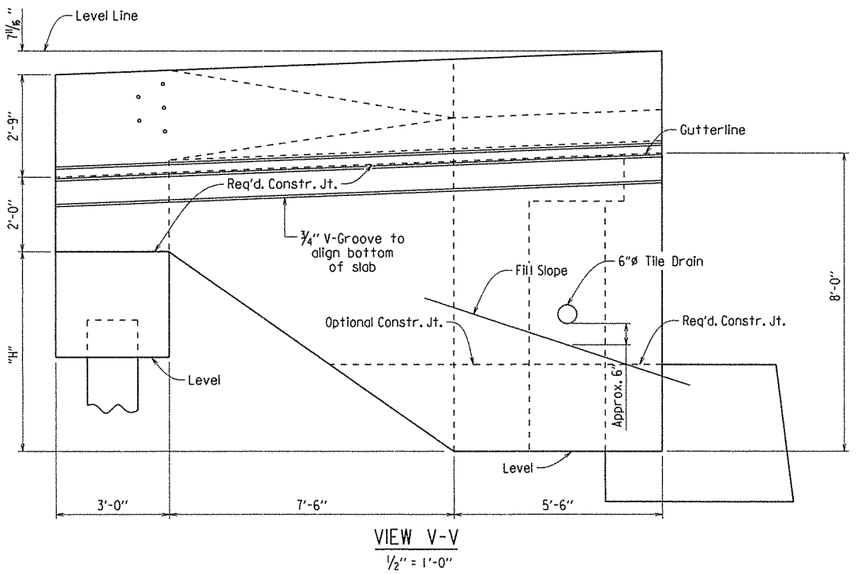
SECTION Y-Y

3/4" = 1'-0"



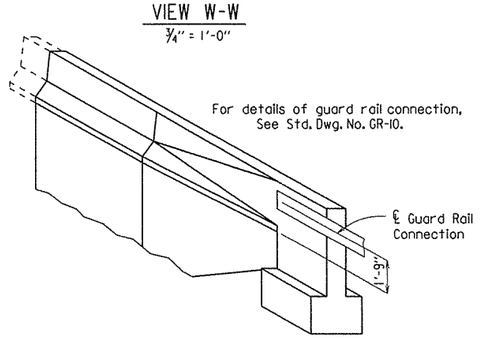
SECTION S-S

3/4" = 1'-0"



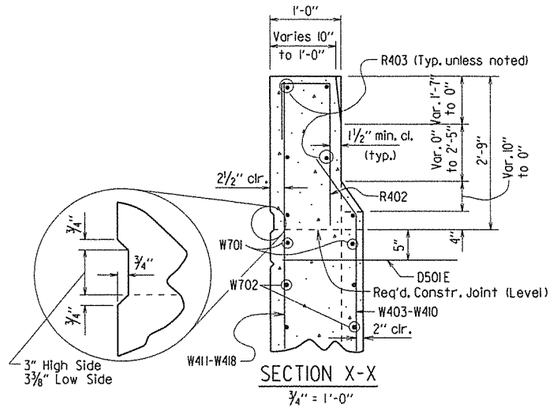
VIEW V-V

1/2" = 1'-0"



THREE DIMENSIONAL VIEW OF RAIL

No Scale



SECTION X-X

3/4" = 1'-0"

TABLE OF VARIABLES

Bent	Wing	"H"	Elev. "G"
1	A	5'-4 1/4"	114.15
	B	4'-7 1/8"	114.91
28	A	4'-7 1/8"	114.91
	B	5'-4 1/4"	114.15

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS COMMON TO END BENTS OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 02-26-12 FILENAME: b070282_bl.dgn

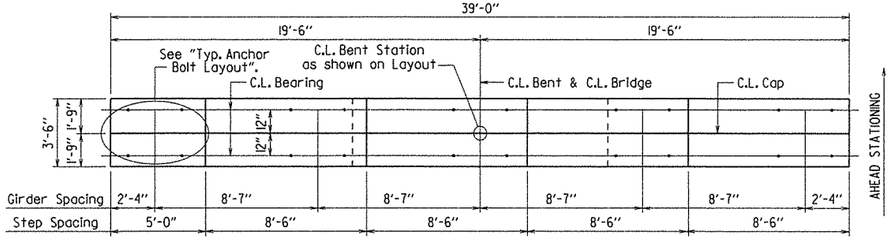
CHECKED BY: PGT DATE: 4/14 SCALE: As Noted

DESIGNED BY: KWY DATE: 2/13

BRIDGE NO. A6362 DRAWING NO. 54940

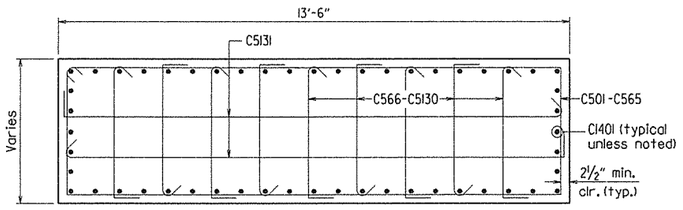
PRINT DATE: 7/11/2014

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.		070282	68	190
				①		A6362 - INT. BENT - 54941		



PLAN

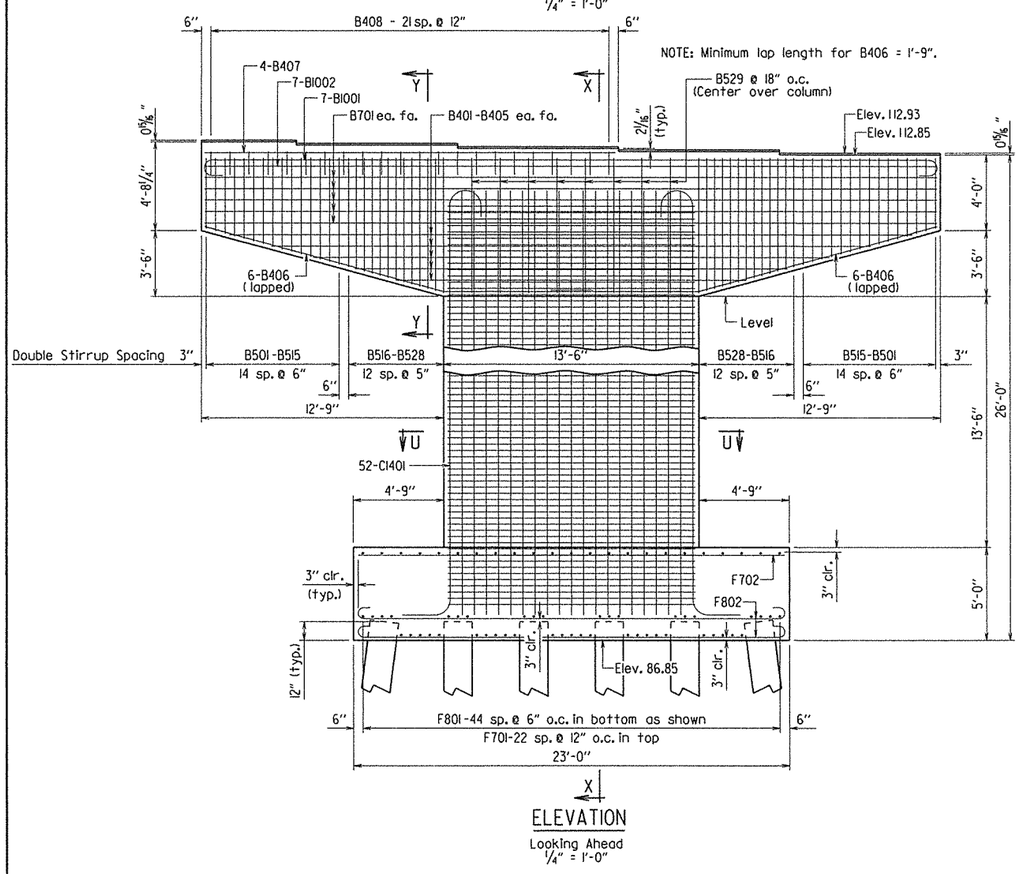
1/4" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

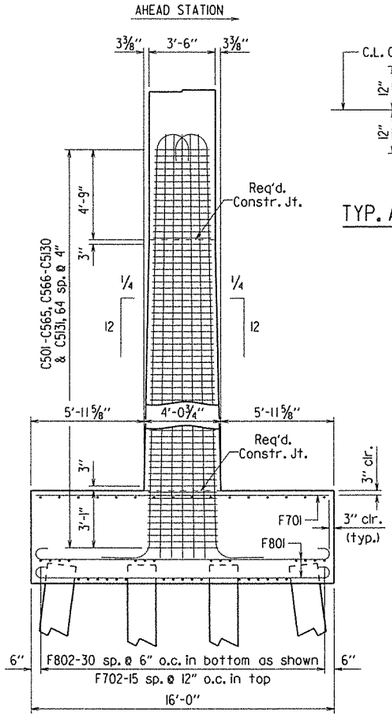
1/2" = 1'-0"



ELEVATION

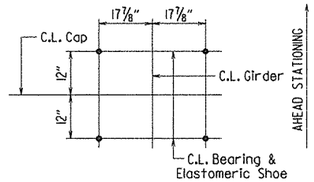
Looking Ahead

1/4" = 1'-0"



SECTION X-X

1/4" = 1'-0"



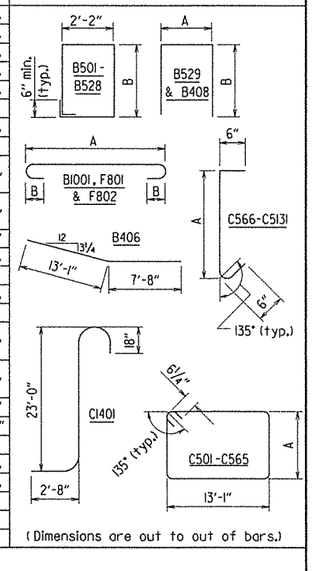
TYP. ANCHOR BOLT LAYOUT

No Scale

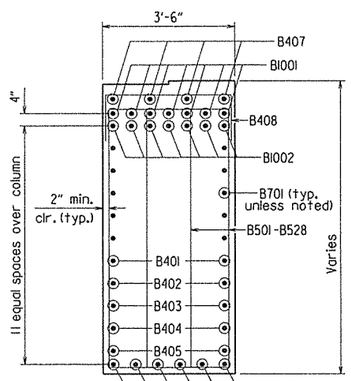
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C565	1 ea.	34'-5"-32'-7"	3'-9½"-2'-10½"		2½"
C566-C5130	9 ea.	4'-10"-3'-11"	3'-9½"-2'-10½"		2½"
C5131	130	14'-2"	13'-1"		2½"
C1401	52	27'-6"			18¼"
F701	23	15'-6"			Str.
F702	16	22'-6"			Str.
F801	45	17'-4"	15'-6"	8"	6"
F802	31	24'-4"	22'-6"	8"	6"

Bending Diagrams

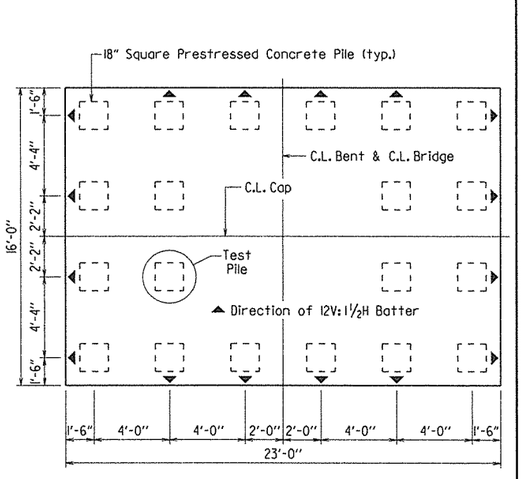


(Dimensions are out to out of bars.)



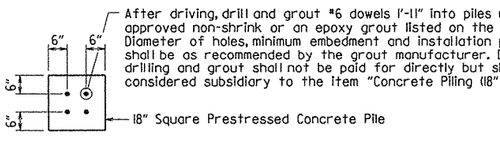
SECTION Y-Y

1/2" = 1'-0"



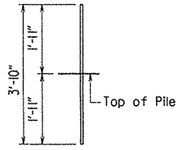
PLAN OF FOOTING

1/4" = 1'-0"



PILE ANCHORAGE DETAIL

No Scale



#6 DOWEL BAR

No Scale

GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, 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.

For additional information, see Layout.

For Details of Elastomeric Bearings, see Dwg. Nos. 54969 & 54970.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 2 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/28/13 FILENAME: b070282_b2.dgn

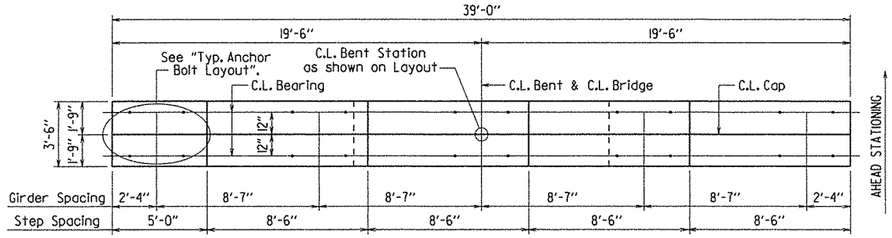
CHECKED BY: PGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 12/12

BRIDGE NO. A6362 DRAWING NO. 54941

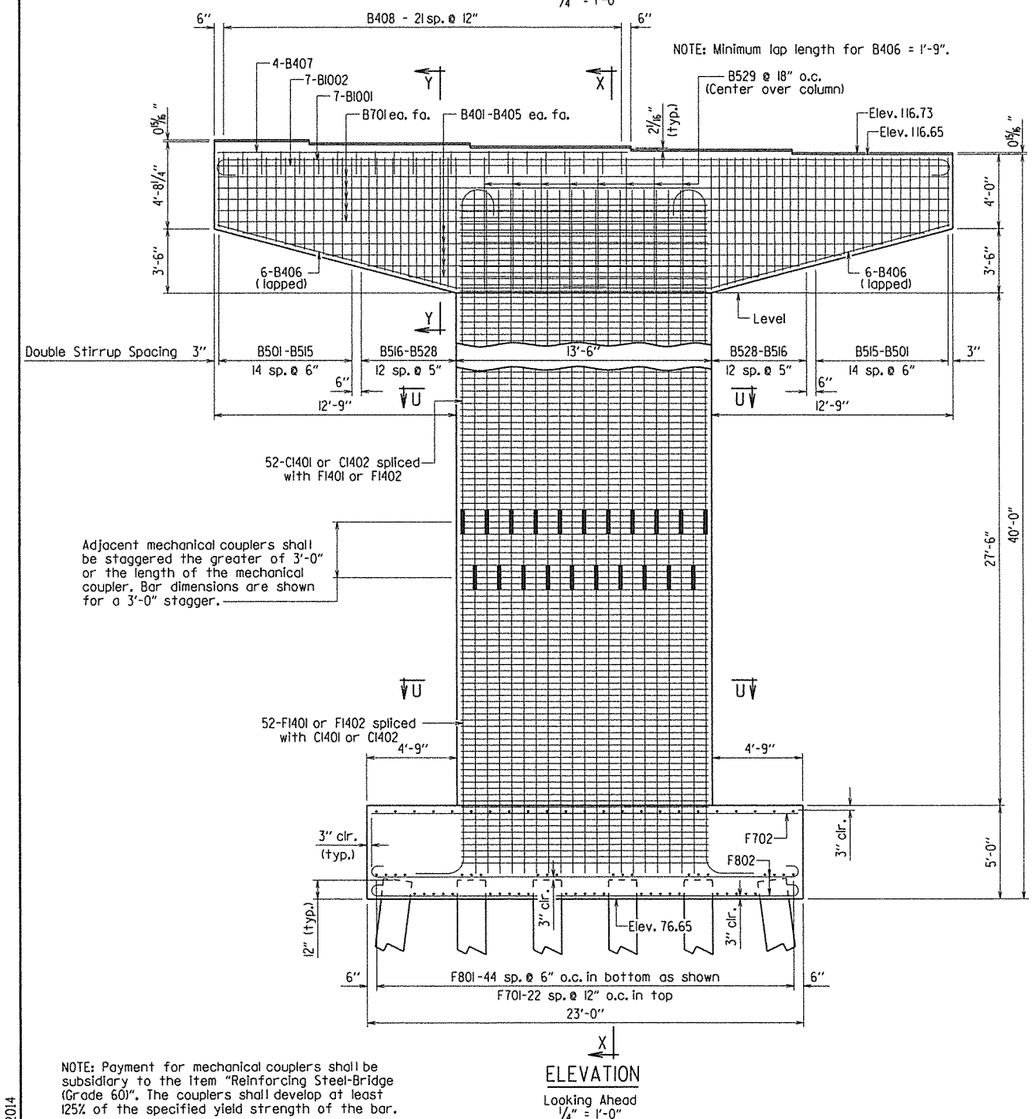
PRINT DATE: 7/11/2014

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.		070282	69	190
				①		A6362 - INT. BENT - 54942		



PLAN

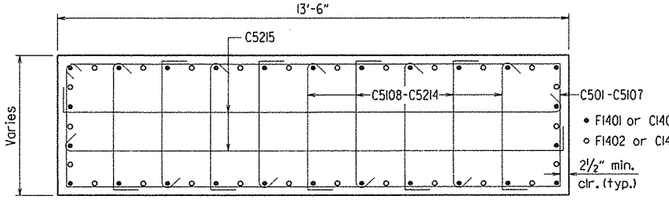
1/4" = 1'-0"



ELEVATION

Looking Ahead

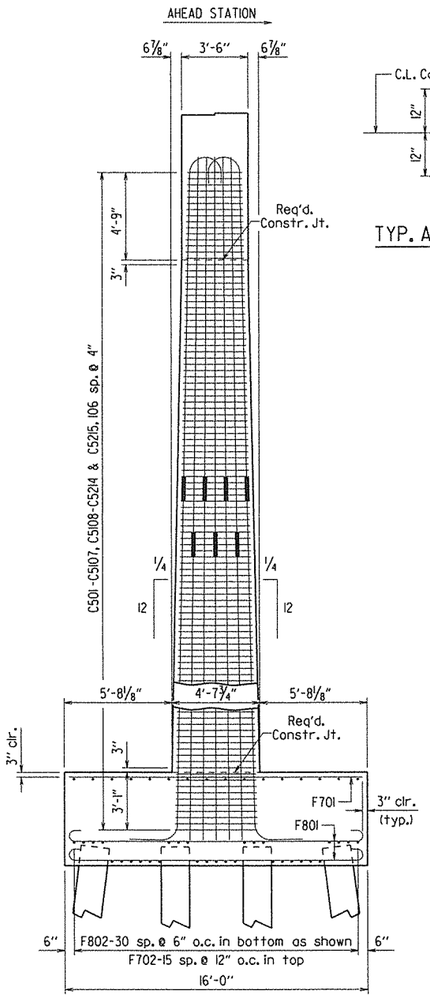
1/4" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

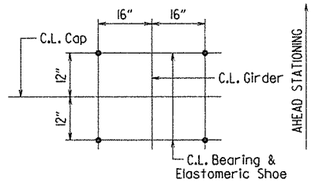
SECTION U-U

1/2" = 1'-0"



SECTION X-X

1/4" = 1'-0"



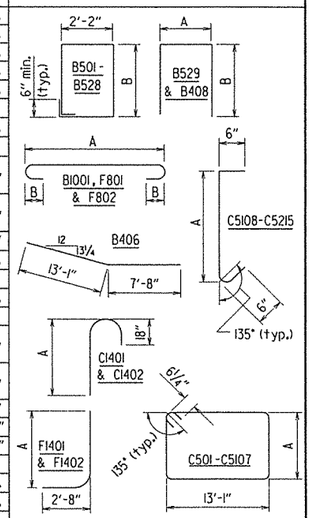
TYP. ANCHOR BOLT LAYOUT

No Scale

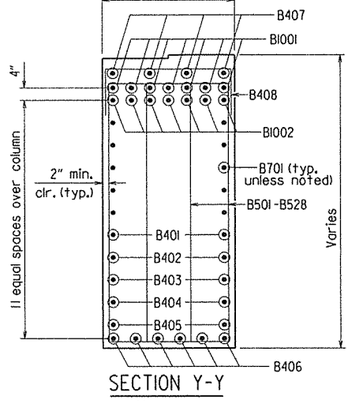
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2 1/2"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9 1/2"-7'-2"	2 1/2"
B529	8	17'-4"	3'-2"	7'-2"	2 1/2"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	7	38'-8"			Str.
C501-C5107	1 ea.	35'-7"-32'-7"	4'-4 1/2"-2'-10 1/2"		2 1/2"
C5108-C5214	9 ea.	5'-5"-3'-11"	4'-4 1/2"-2'-10 1/2"		2 1/2"
C5215	214	14'-2"	13'-1"		2 1/2"
C1401	26	20'-2"	17'-10"		18 1/4"
C1402	26	23'-2"	20'-10"		18 1/4"
F701	23	15'-6"			Str.
F702	16	22'-6"			Str.
F801	45	17'-4"	15'-6"	8"	6"
F802	31	24'-4"	22'-6"	8"	6"
F1401	26	21'-2"	19'-0"		18 1/4"
F1402	26	18'-2"	16'-0"		18 1/4"

Bending Diagrams

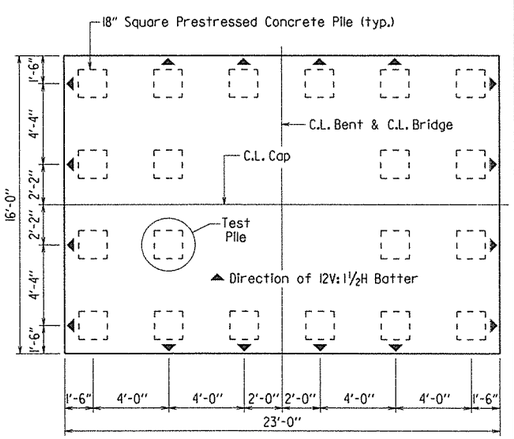


(Dimensions are out to out of bars.)



SECTION Y-Y

1/2" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

1/4" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 3
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/28/13 FILENAME: b070282_b3.dgn

CHECKED BY: RGT DATE: 4/14 SCALE: as noted

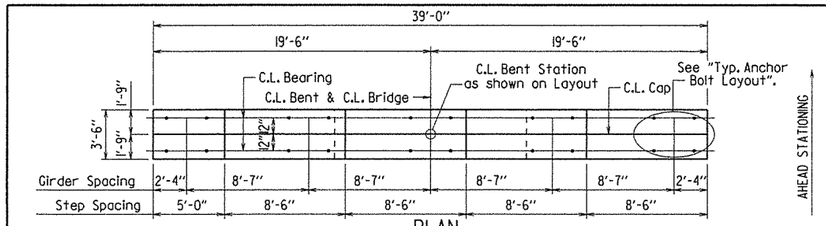
DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54942

PRINT DATE: 7/11/2014

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.		070282	70	190

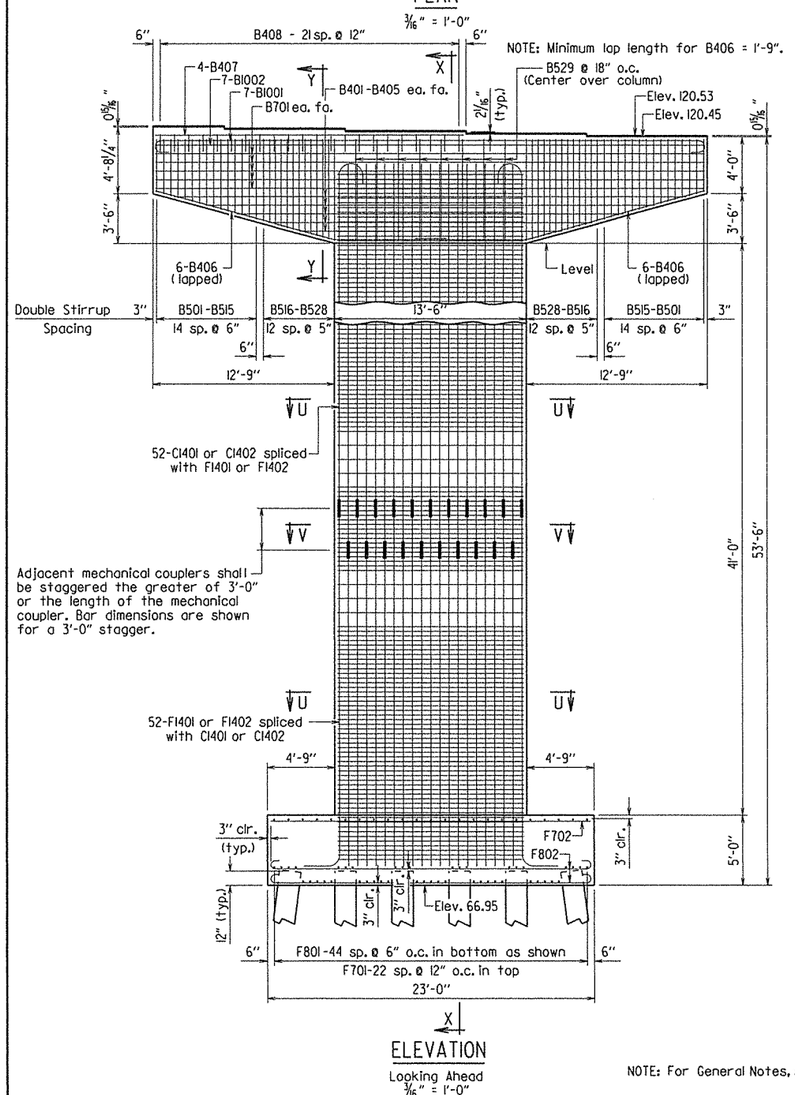
(1) A6362 - INT. BENT - 54943



PLAN

3/16" = 1'-0"

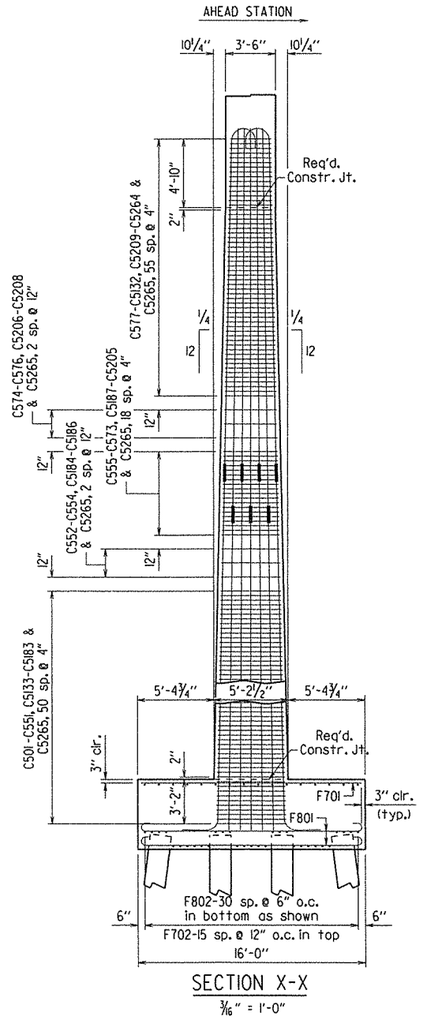
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

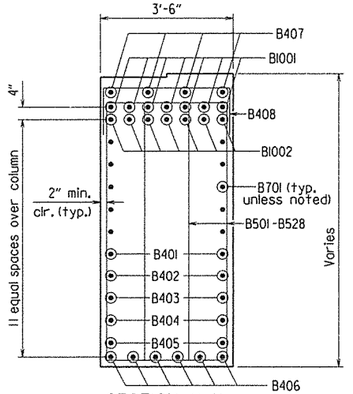
Looking Ahead

3/16" = 1'-0"



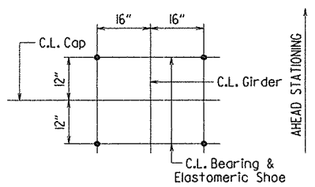
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

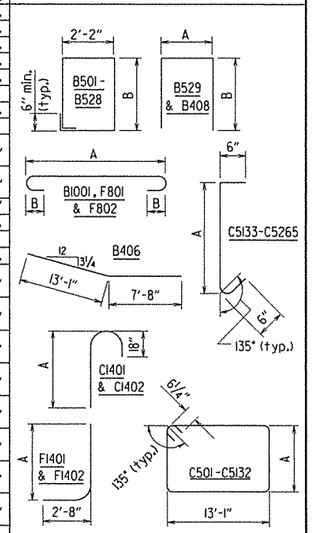
No Scale

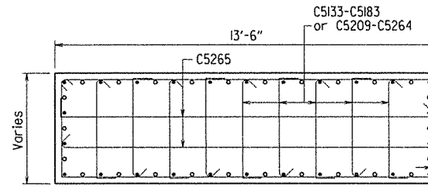
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C551	1 ea.	36'-8"-35'-4"	4'-11"-4'-3"		2½"
C552-C554	1 ea.	35'-3"-35'-1"	4'-2½"-4'-1½"		2½"
C555-C573	1 ea.	35'-0"-34'-6"	4'-1"-3'-10"		2½"
C574-C576	1 ea.	34'-5"-34'-3"	3'-9½"-3'-8½"		2½"
C577-C5132	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5133-C5183	9 ea.	6'-1"-5'-5"	4'-11"-4'-3"		2½"
C5184-C5186	3 ea.	5'-3"-5'-2"	4'-2½"-4'-1½"		2½"
C5187-C5205	3 ea.	5'-2"-4'-11"	4'-1"-3'-10"		2½"
C5206-C5208	3 ea.	4'-10"-4'-9"	3'-9½"-3'-8½"		2½"
C5209-C5264	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5265	239	14'-2"	13'-1"		2½"
C1401	26	26'-11"	24'-7"		18¼"
C1402	26	29'-11"	27'-7"		18¼"
F701	23	15'-6"			Str.
F702	16	22'-6"			Str.
F801	45	17'-4"	15'-6"	8"	6"
F802	31	24'-4"	22'-6"	8"	6"
F1401	26	27'-11"	25'-9"		18¼"
F1402	26	24'-11"	22'-9"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

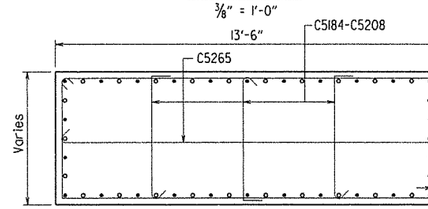




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

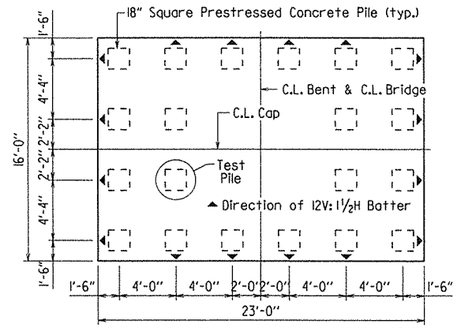
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9355
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 4 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/30/13 FILENAME: b070282_b4.dgn

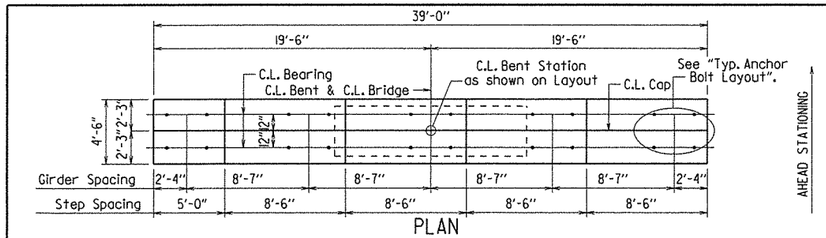
CHECKED BY: PGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54943

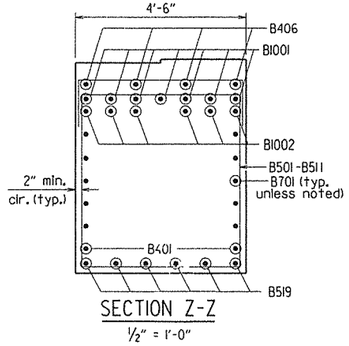
PRINT DATE: 7/11/2014

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.		070282	71	190
				①		A6362 - INT. BENT - 54944		



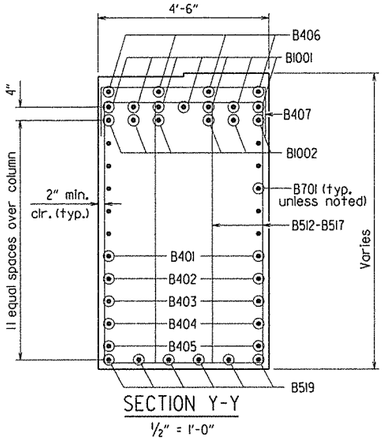
PLAN

3/16" = 1'-0"



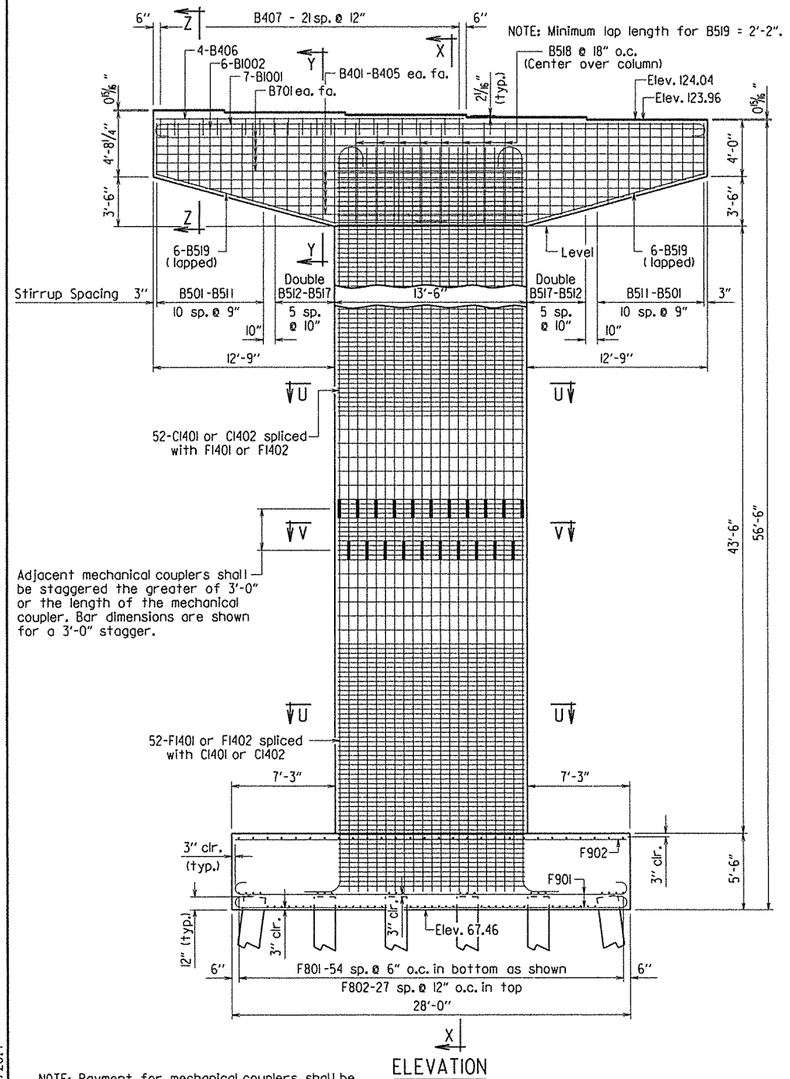
SECTION Z-Z

1/2" = 1'-0"



SECTION Y-Y

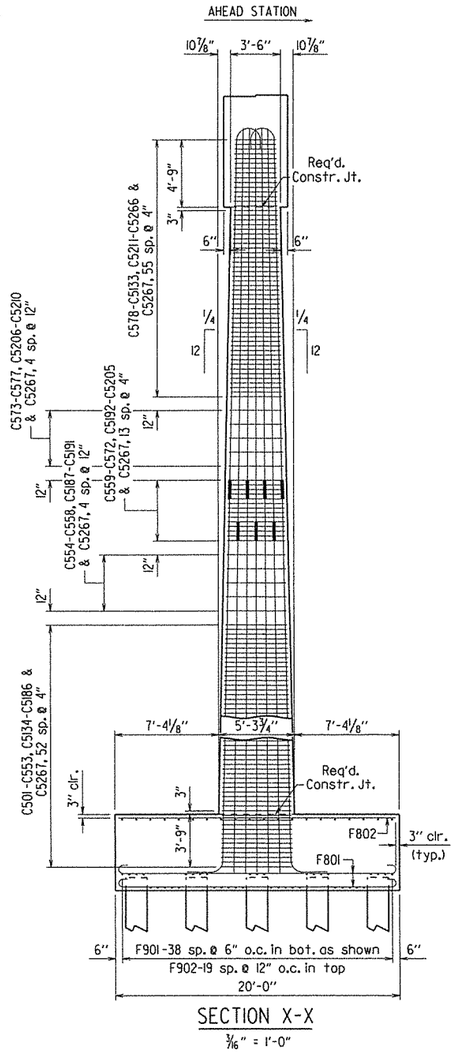
1/2" = 1'-0"



ELEVATION

Looking Ahead

3/16" = 1'-0"

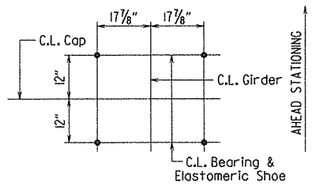


SECTION X-X

3/16" = 1'-0"

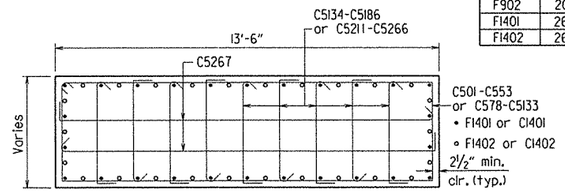
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.

NOTE: For General Notes, see Dwg. No. 54941.



TYP. ANCHOR BOLT LAYOUT

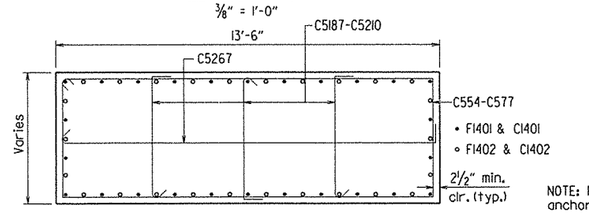
No Scale



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

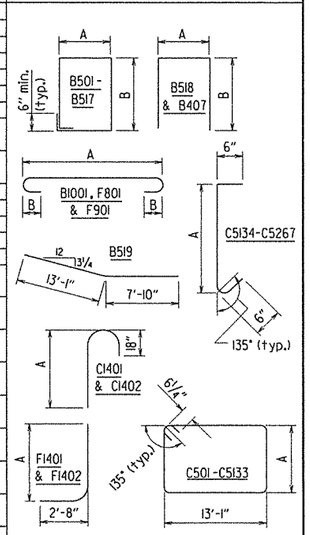
3/8" = 1'-0"

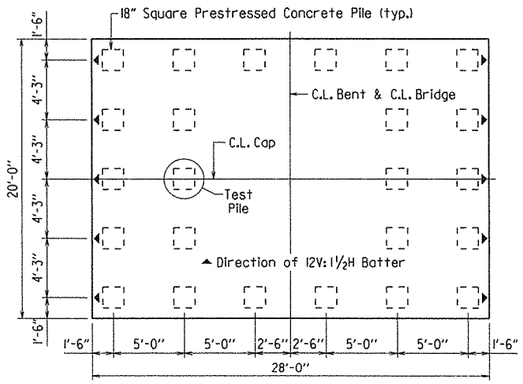
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	4	21'-8"			Str.
B407	22	6'-6"	4'-2"	1'-3"	2"
B501 - B511	2 ea.	16'-4" - 20'-5"	4'-2"	3'-9" - 5'-9 1/2"	2 1/2"
B512 - B517	4 ea.	18'-2" - 20'-6"	2'-10"	6'-0" - 7'-2"	2 1/2"
B518	8	18'-4"	4'-2"	7'-2"	2 1/2"
B519	12	20'-11"			3 3/4"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	6	38'-8"			Str.
C501 - C553	1 ea.	36'-11" - 35'-6"	5'-0 1/2" - 4'-4"		2 1/2"
C554 - C558	1 ea.	35'-5" - 35'-1"	4'-3 1/2" - 4'-1 1/2"		2 1/2"
C559 - C572	1 ea.	35'-0" - 34'-8"	4'-1" - 3'-11"		2 1/2"
C573 - C577	1 ea.	34'-7" - 34'-3"	3'-10 1/2" - 3'-8 1/2"		2 1/2"
C578 - C5133	1 ea.	34'-2" - 32'-7"	3'-8" - 2'-10 1/2"		2 1/2"
C5134 - C5186	9 ea.	6'-1" - 5'-6"	5'-0 1/2" - 4'-4"		2 1/2"
C5187 - C5191	3 ea.	5'-4" - 5'-2"	4'-3 1/2" - 4'-1 1/2"		2 1/2"
C5192 - C5205	3 ea.	5'-2" - 5'-0"	4'-1" - 3'-11"		2 1/2"
C5206 - C5210	3 ea.	4'-11" - 4'-9"	3'-10 1/2" - 3'-8 1/2"		2 1/2"
C5211 - C5266	9 ea.	4'-9" - 3'-11"	3'-8" - 2'-10 1/2"		2 1/2"
C5267	242	14'-2"	13'-1"		2 1/2"
C1401	26	28'-2"	25'-10"		18 1/4"
C1402	26	31'-2"	28'-10"		18 1/4"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	29'-8"	27'-6"		18 1/4"
F1402	26	26'-8"	24'-6"		18 1/4"

(Dimensions are out to out of bars.)

Bending Diagrams





NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

DETAILS OF BENT 5 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS Charles R. Ellis REGISTERED PROFESSIONAL ENGINEER No. 9235 7-14-14 CHARLES R. ELLIS

BRIDGE ENGINEER

DRAWN BY: KWY DATE: 8/30/13 FILENAME: b070282_b5.dgn

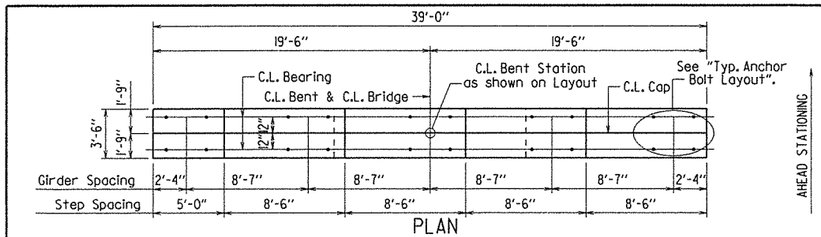
CHECKED BY: PCG DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54944

PRINT DATE: 7/11/2014

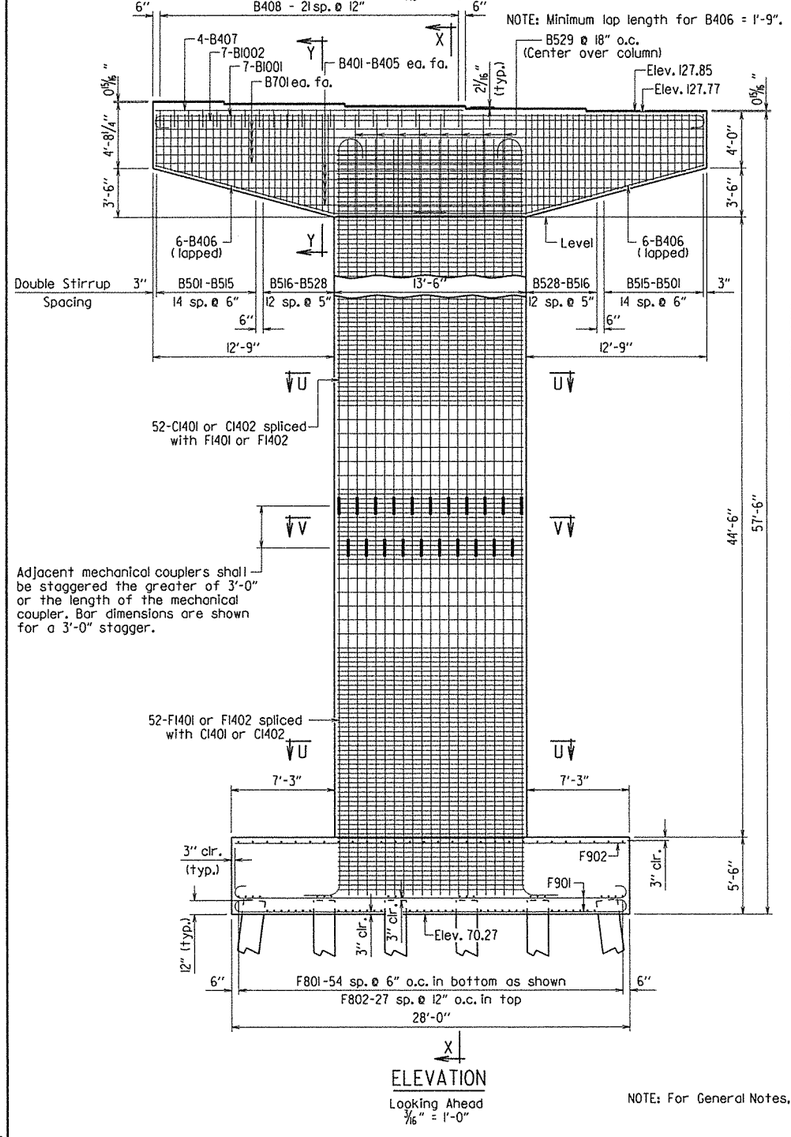
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	72	190
				①		A6362 - INT. BENT - 54945		



PLAN

3/16" = 1'-0"

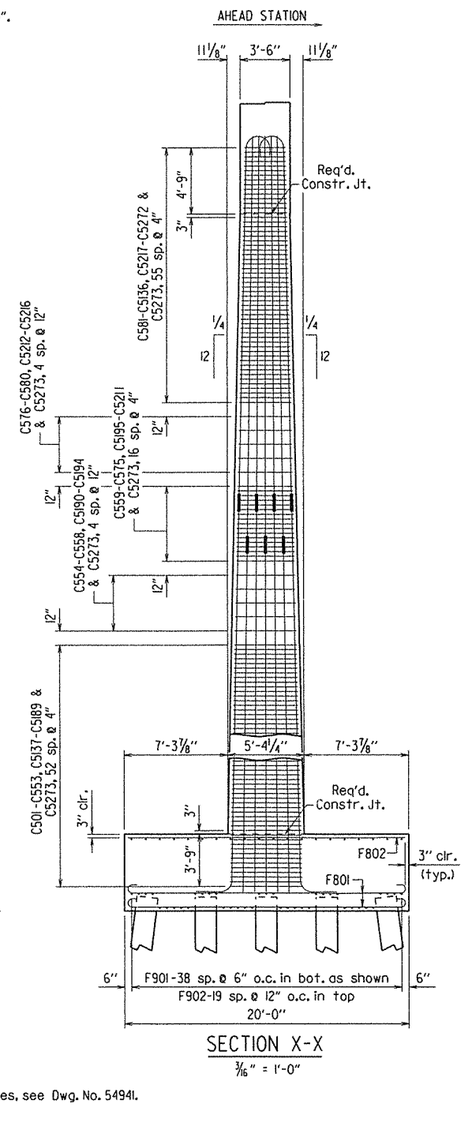
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

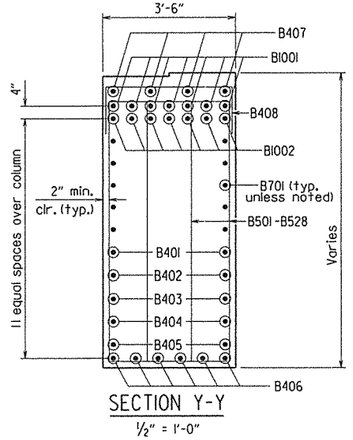
Looking Ahead

3/16" = 1'-0"



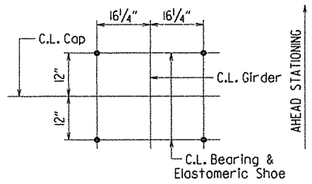
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



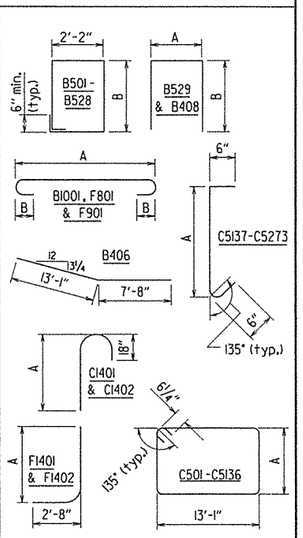
TYP. ANCHOR BOLT LAYOUT

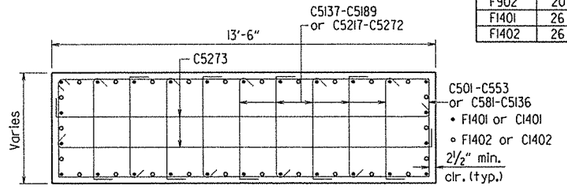
No Scale

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	37'-0"-35'-7"	5'-1"-4'-4½"		2½"
C554-C558	1 ea.	35'-6"-35'-2"	4'-4"-4'-2"		2½"
C559-C575	1 ea.	35'-1"-34'-8"	4'-1½"-3'-11"		2½"
C576-C580	1 ea.	34'-7"-34'-3"	3'-10½"-3'-8½"		2½"
C581-C5136	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5137-C5189	9 ea.	6'-2"-5'-5"	5'-1"-4'-4½"		2½"
C5190-C5194	3 ea.	5'-5"-5'-3"	4'-4"-4'-2"		2½"
C5195-C5211	3 ea.	5'-2"-5'-0"	4'-1½"-3'-11"		2½"
C5212-C5216	3 ea.	4'-11"-4'-9"	3'-10½"-3'-8½"		2½"
C5217-C5272	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5273	245	14'-2"	13'-1"		2½"
C1401	26	28'-8"	26'-4"		18¼"
C1402	26	31'-8"	29'-4"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	30'-2"	28'-0"		18¼"
F1402	26	27'-2"	25'-0"		18¼"

(Dimensions are out to out of bars.)

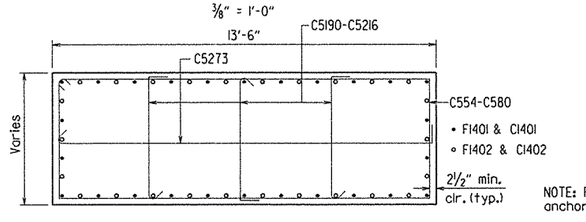




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

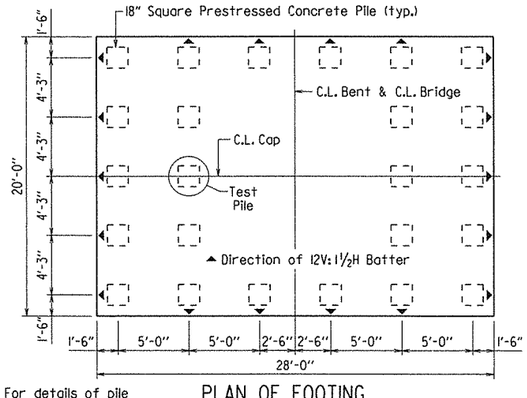
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 6 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/5/13 FILENAME: b070282_b6.dgn

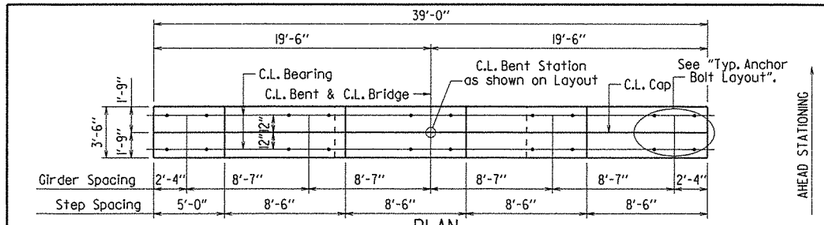
CHECKED BY: RGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54945

PRINT DATE: 7/11/2014

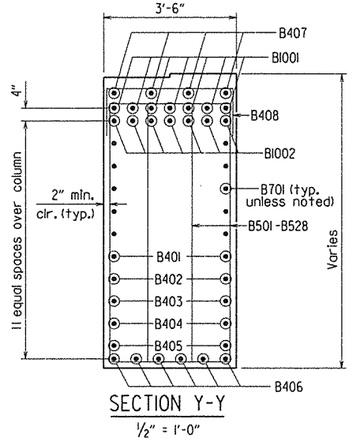
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	73	190
				①		A6362 - INT. BENT - 54946		



PLAN

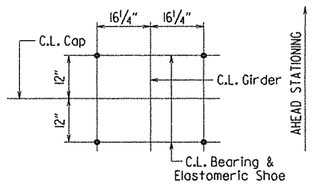
3/16" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

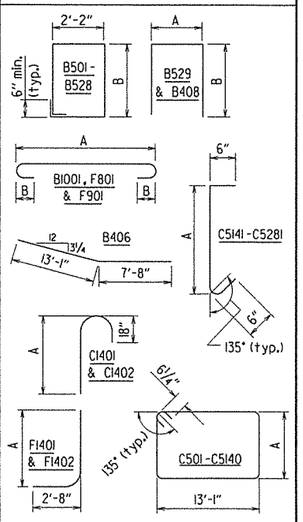
No Scale

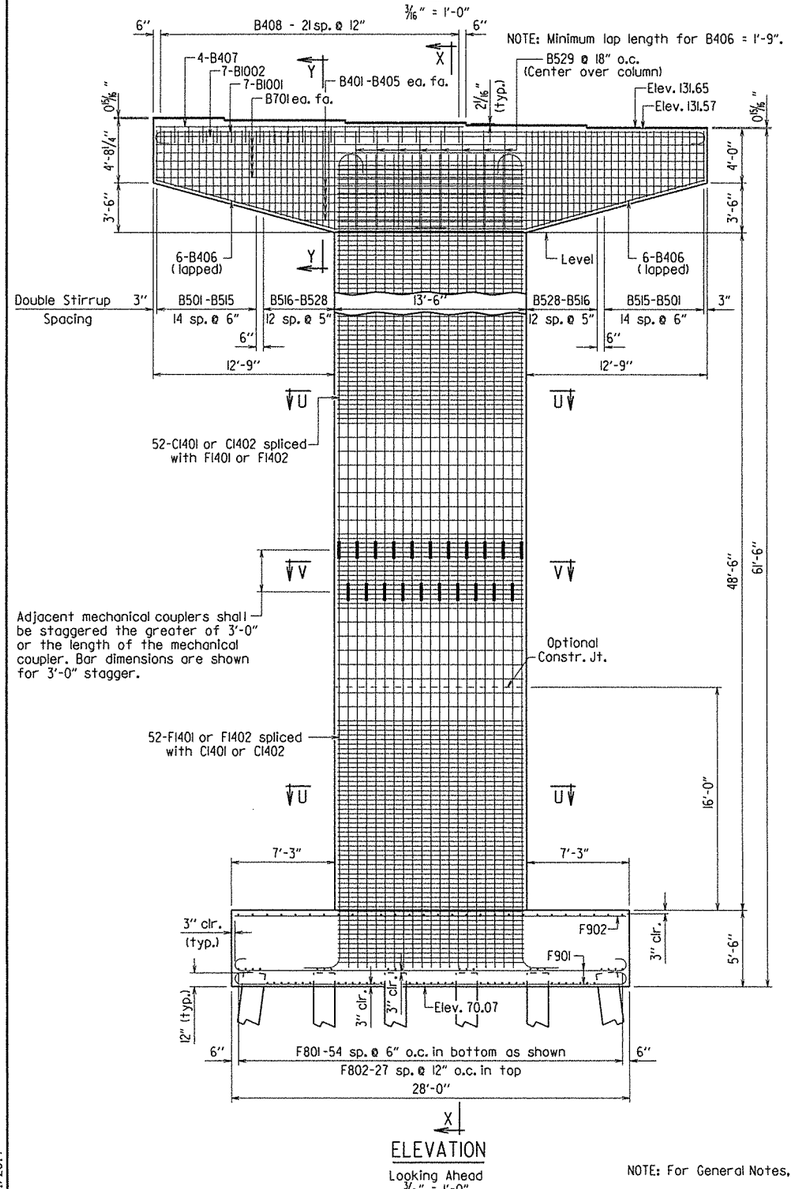
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	37'-4"-35'-11"	5'-3"-4'-6½"		2½"
C554-C560	1 ea.	35'-10"-35'-4"	4'-6"-4'-3"		2½"
C561-C577	1 ea.	35'-3"-34'-10"	4'-2½"-4'-0"		2½"
C578-C584	1 ea.	34'-9"-34'-3"	3'-11½"-3'-8½"		2½"
C585-C5140	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5141-C5193	9 ea.	6'-4"-5'-7"	5'-3"-4'-6½"		2½"
C5194-C5200	3 ea.	5'-7"-5'-4"	4'-6"-4'-3"		2½"
C5201-C5217	3 ea.	5'-3"-5'-1"	4'-2½"-4'-0"		2½"
C5218-C5224	3 ea.	5'-0"-4'-9"	3'-11½"-3'-8½"		2½"
C5225-C5280	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5281	249	14'-2"	13'-1"		2½"
C1401	26	30'-8"	28'-4"		18¼"
C1402	26	33'-8"	31'-4"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	32'-2"	30'-0"		18¼"
F1402	26	29'-2"	27'-0"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

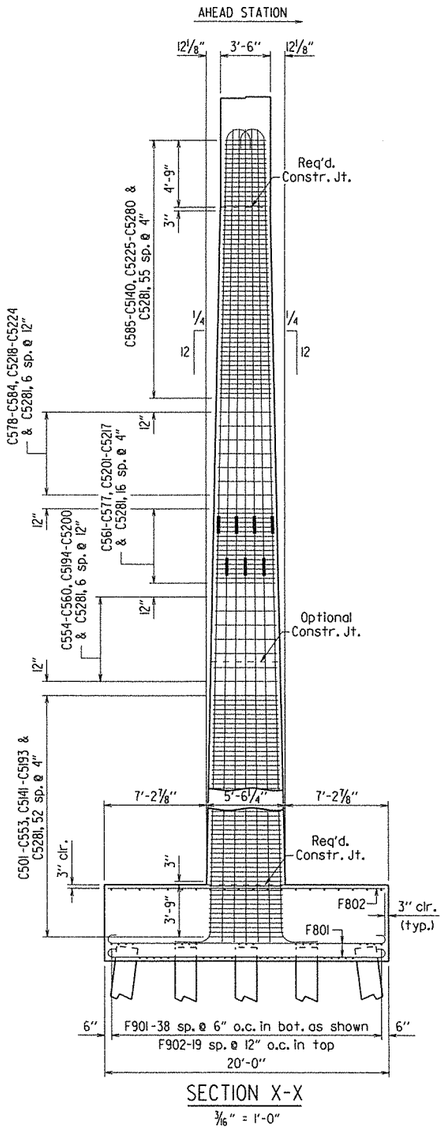




ELEVATION

Looking Ahead

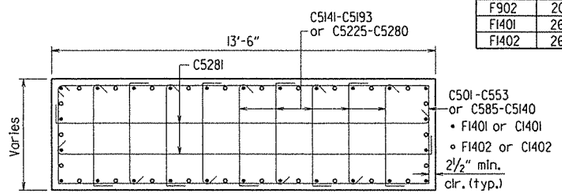
3/16" = 1'-0"



SECTION X-X

3/16" = 1'-0"

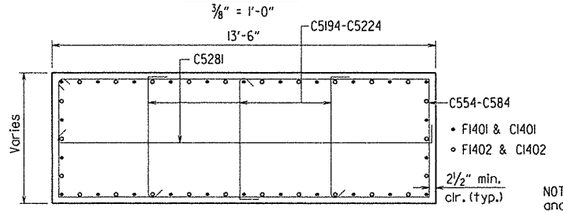
NOTE: For General Notes, see Dwg. No. 54941.



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

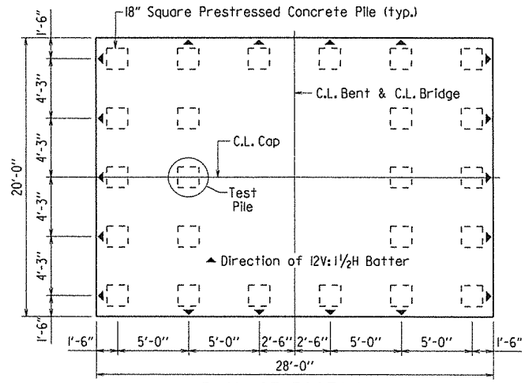
⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

⅜" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 7 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/6/13 FILENAME: b070282_b7.dgn

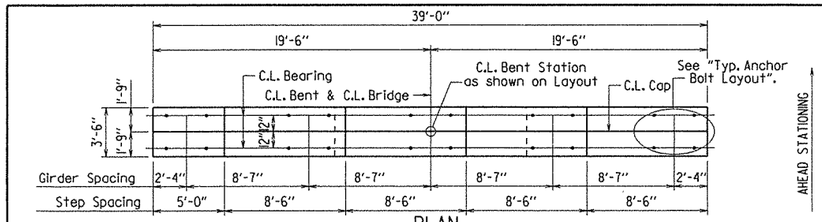
CHECKED BY: RGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 4/13

BRIDGE NO. A6362 DRAWING NO. 54946

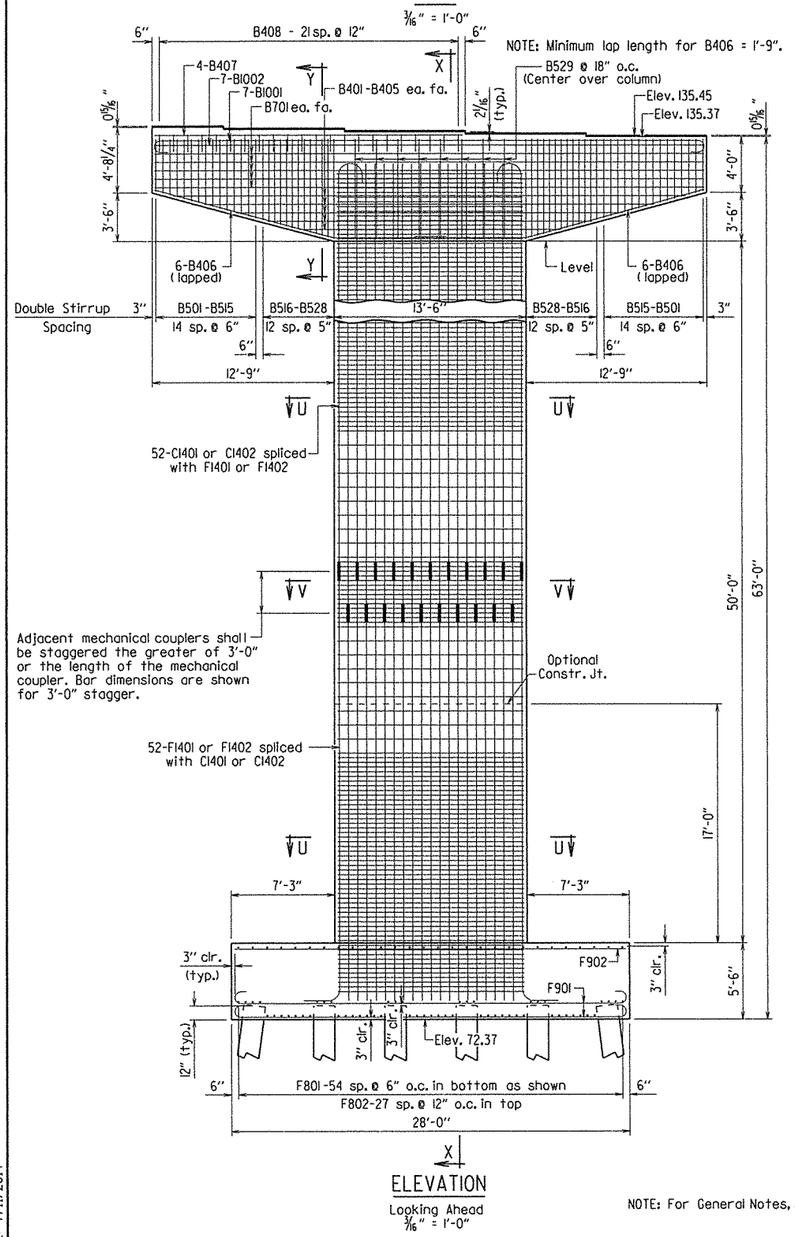
PRINT DATE: 7/11/2014

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.		070282	74	190
				①		A6362 - INT. BENT - 54947		



PLAN

3/16" = 1'-0"



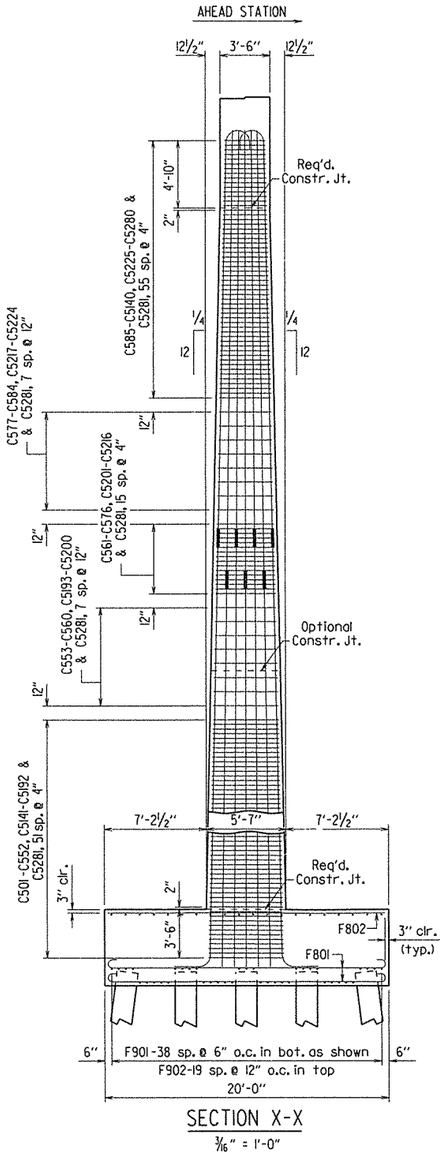
ELEVATION

Looking Ahead

3/16" = 1'-0"

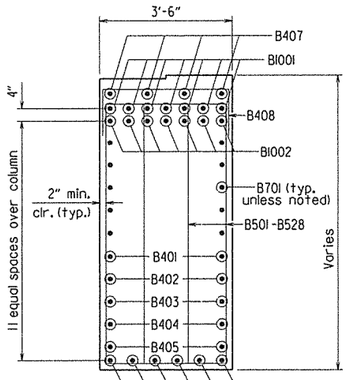
NOTE: For General Notes, see Dwg. No. 54941.

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



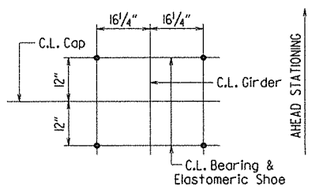
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

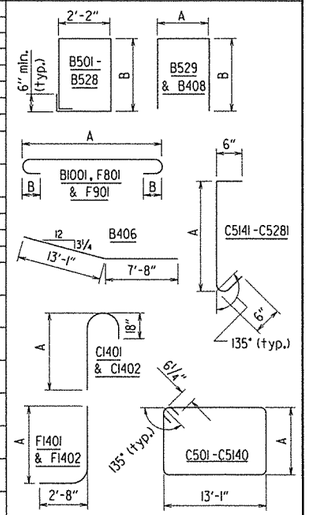
No Scale

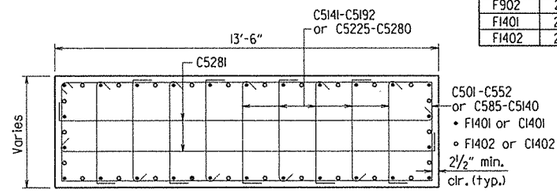
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2 1/2"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9 1/2"-7'-2"	2 1/2"
B529	8	17'-4"	3'-2"	7'-2"	2 1/2"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	7	38'-8"			Str.
C501-C552	1 ea.	37'-6"-36'-1"	5'-4"-4'-7 1/2"		2 1/2"
C553-C560	1 ea.	36'-0"-35'-5"	4'-7"-4'-3 1/2"		2 1/2"
C561-C576	1 ea.	35'-4"-34'-11"	4'-3"-4'-0 1/2"		2 1/2"
C577-C584	1 ea.	34'-10"-34'-3"	4'-0"-3'-8 1/2"		2 1/2"
C585-C5140	1 ea.	34'-2"-32'-7"	3'-8"-2'-10 1/2"		2 1/2"
C5141-C5192	9 ea.	6'-5"-5'-8"	5'-4"-4'-7 1/2"		2 1/2"
C5193-C5200	3 ea.	5'-8"-5'-5"	4'-7"-4'-3 1/2"		2 1/2"
C5201-C5216	3 ea.	5'-5"-5'-2"	4'-3"-4'-0 1/2"		2 1/2"
C5217-C5224	3 ea.	5'-1"-4'-9"	4'-0"-3'-8 1/2"		2 1/2"
C5225-C5280	9 ea.	4'-9"-3'-11"	3'-8"-2'-10 1/2"		2 1/2"
C5281	248	14'-2"	13'-1"		2 1/2"
C1401	26	31'-5"	29'-1"		18 1/4"
C1402	26	34'-5"	32'-1"		18 1/4"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	32'-11"	30'-9"		18 1/4"
F1402	26	29'-11"	27'-9"		18 1/4"

(Dimensions are out to out of bars.)

Bending Diagrams

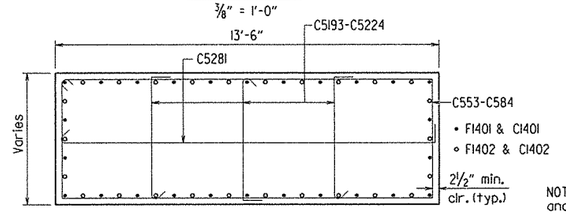




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

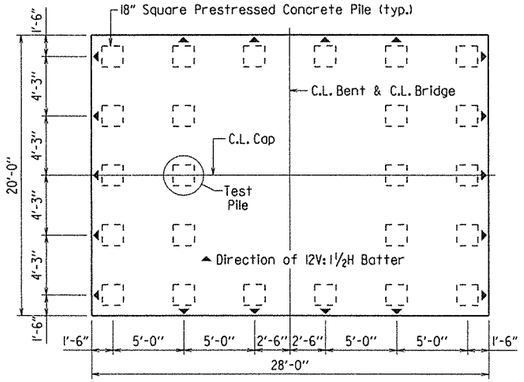
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 8 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/6/13 FILENAME: b070282_b8.dgn

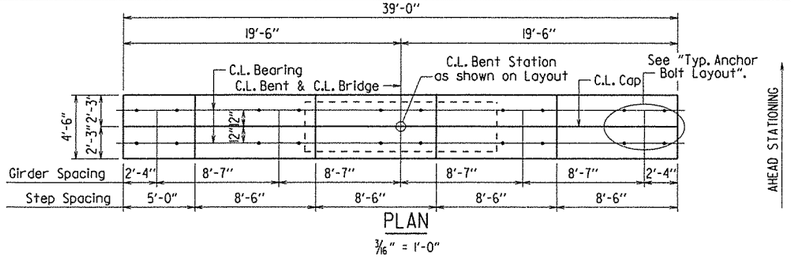
CHECKED BY: RCT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54947

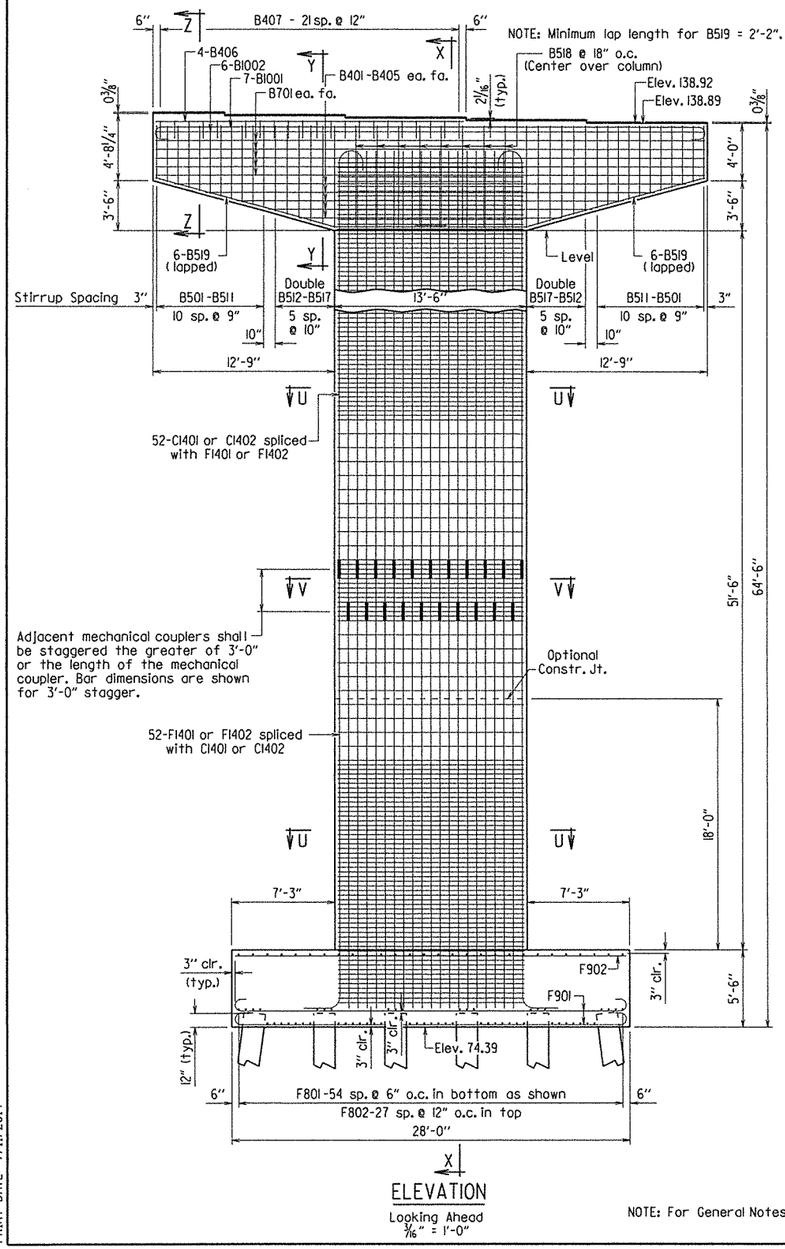
PRINT DATE: 7/11/2014

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.		070282	75	190
				①		A6362 - INT. BENT - 54948		



PLAN

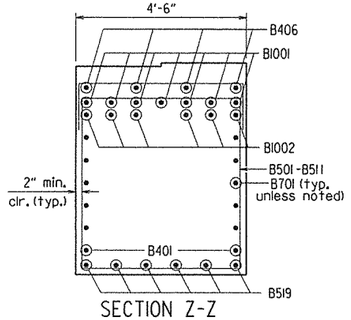
3/16" = 1'-0"



ELEVATION

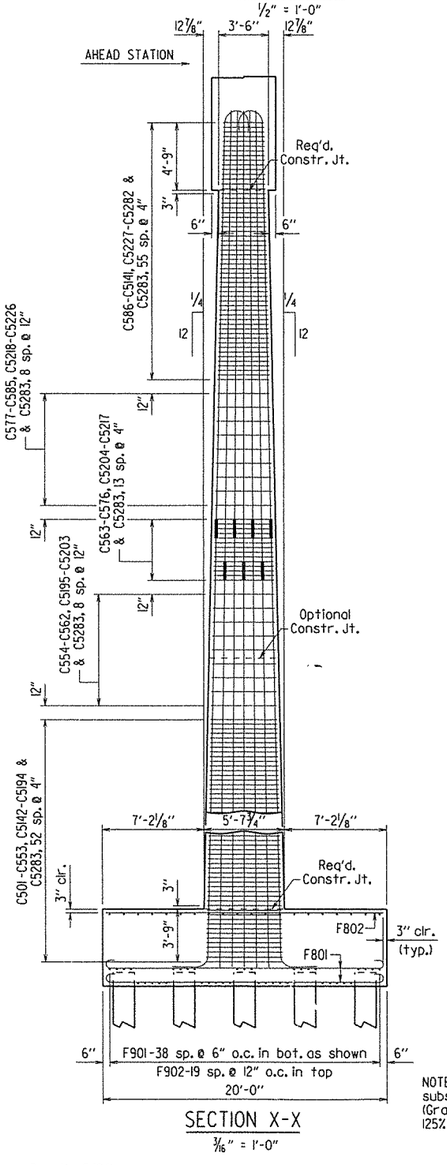
Looking Ahead

3/16" = 1'-0"



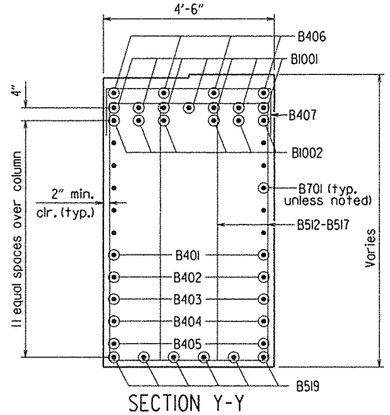
SECTION Z-Z

1/2" = 1'-0"



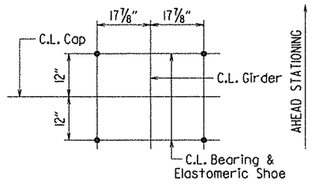
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

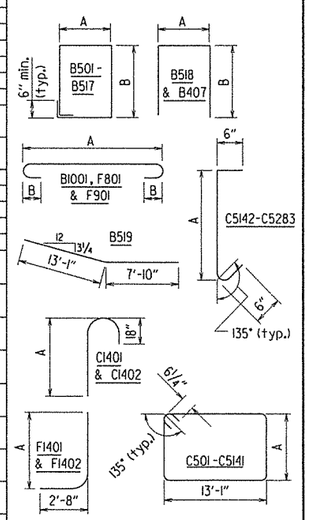
No Scale

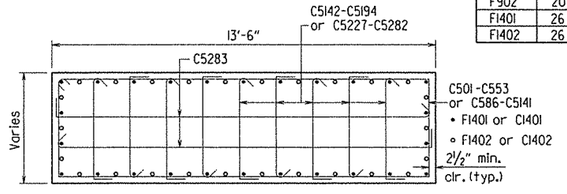
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	4	21'-8"			Str.
B407	22	6'-6"	4'-2"	1'-3"	2"
B501-B511	2 ea.	16'-4"-20'-5"	4'-2"	3'-9"-5'-9 1/2"	2 1/2"
B512-B517	4 ea.	18'-2"-20'-6"	2'-10"	6'-0"-7'-2"	2 1/2"
B518	8	18'-4"	4'-2"	7'-2"	2 1/2"
B519	12	20'-11"			3 1/4"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	6	38'-8"			Str.
C501-C553	1 ea.	37'-7"-36'-2"	5'-4 1/2"-4'-8"		2 1/2"
C554-C562	1 ea.	36'-1"-35'-5"	4'-7 1/2"-4'-3 1/2"		2 1/2"
C563-C576	1 ea.	35'-4"-35'-0"	4'-3"-4'-1"		2 1/2"
C577-C585	1 ea.	34'-11"-34'-3"	4'-0 1/2"-3'-8 1/2"		2 1/2"
C586-C5141	1 ea.	34'-2"-32'-7"	3'-8"-2'-10 1/2"		2 1/2"
C5142-C5194	9 ea.	6'-5"-5'-9"	5'-4 1/2"-4'-8"		2 1/2"
C5195-C5203	3 ea.	5'-8"-5'-4"	4'-7 1/2"-4'-3 1/2"		2 1/2"
C5204-C5217	3 ea.	5'-4"-5'-2"	4'-3"-4'-1"		2 1/2"
C5218-C5226	3 ea.	5'-1"-4'-9"	4'-0 1/2"-3'-8 1/2"		2 1/2"
C5227-C5282	9 ea.	4'-9"-3'-11"	3'-8"-2'-10 1/2"		2 1/2"
C5283	250	14'-2"	13'-1"		2 1/2"
C1401	26	32'-2"	29'-10"		18 1/4"
C1402	26	35'-2"	32'-10"		18 1/4"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	33'-8"	31'-6"		18 1/4"
F1402	26	30'-8"	28'-6"		18 1/4"

(Dimensions are out to out of bars.)

Bending Diagrams

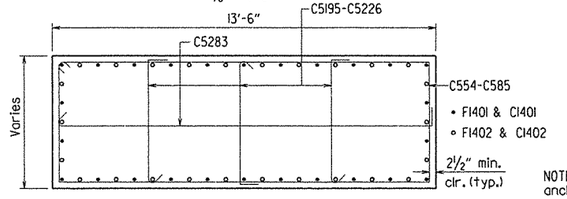




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

3/8" = 1'-0"

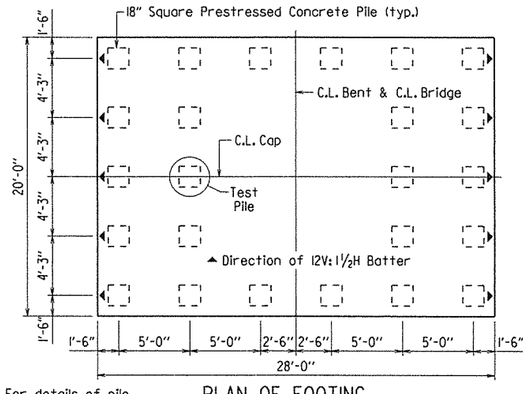


NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 9 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/9/13 FILENAME: b070282_b9.dgn

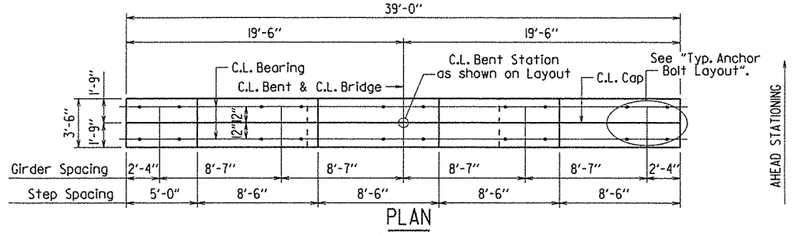
CHECKED BY: PGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54948

PRINT DATE: 7/11/2014

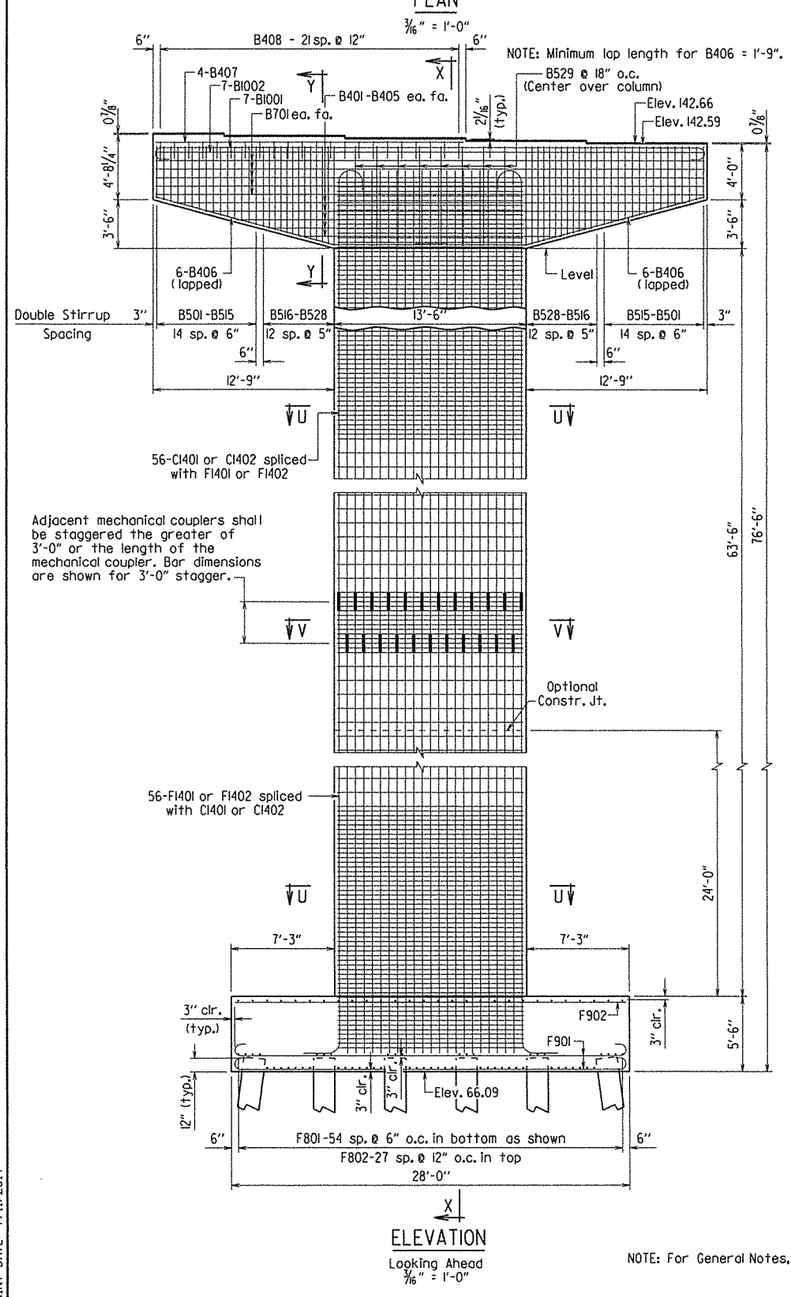
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	76	190
				①		A6362 - INT. BENT - 54949		



PLAN

3/16" = 1'-0"

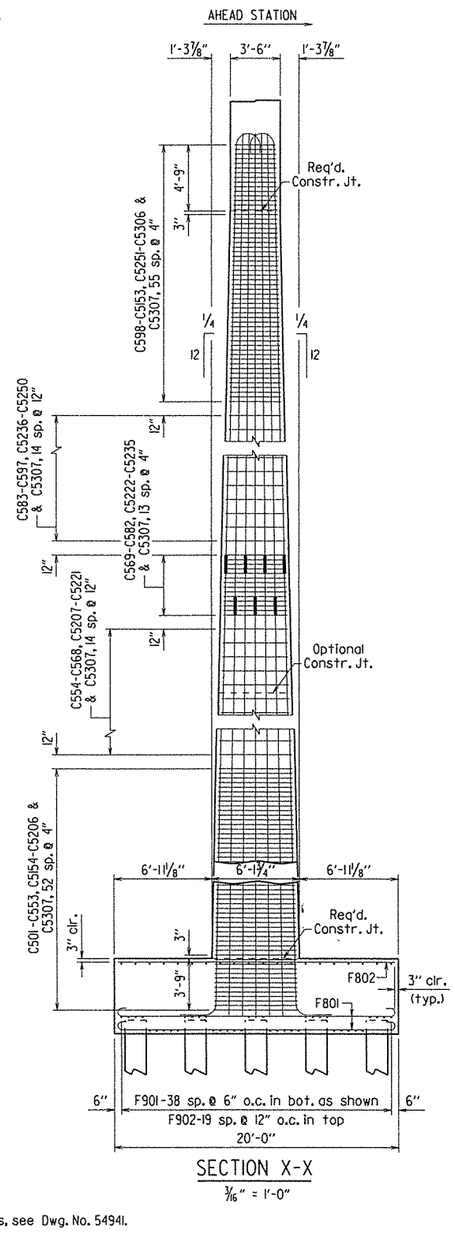
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

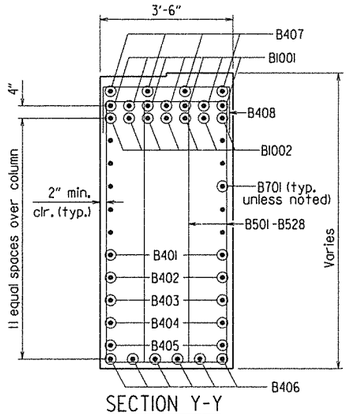
Looking Ahead

3/16" = 1'-0"



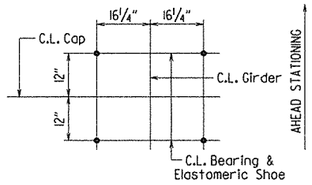
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

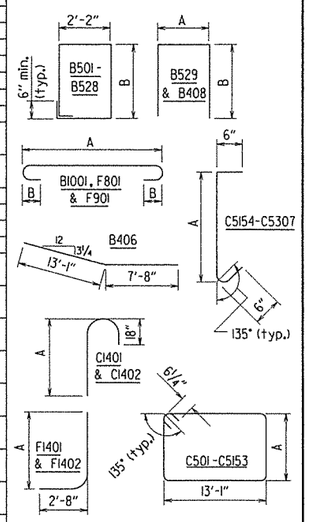
No Scale

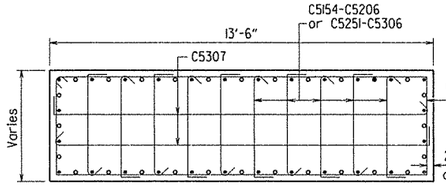
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	38'-7"-37'-2"	5'-10½"-5'-2"		2½"
C554-C568	1 ea.	37'-1"-35'-11"	5'-1½"-4'-6½"		2½"
C569-C582	1 ea.	35'-10"-35'-6"	4'-6"-4'-4"		2½"
C583-C597	1 ea.	35'-5"-34'-3"	4'-3½"-3'-8½"		2½"
C598-C5153	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5154-C5206	10 ea.	6'-11"-6'-3"	5'-10½"-5'-2"		2½"
C5207-C5221	3 ea.	6'-2"-5'-7"	5'-1½"-4'-6½"		2½"
C5222-C5235	3 ea.	5'-7"-5'-5"	4'-6"-4'-4"		2½"
C5236-C5250	3 ea.	5'-4"-4'-9"	4'-3½"-3'-8½"		2½"
C5251-C5306	10 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5307	262	14'-2"	13'-1"		2½"
C1401	28	38'-2"	35'-10"		18¼"
C1402	28	41'-2"	38'-10"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	28	39'-8"	37'-6"		18¼"
F1401	28	36'-8"	34'-6"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

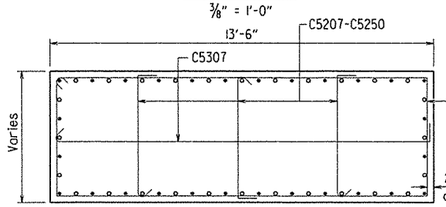




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

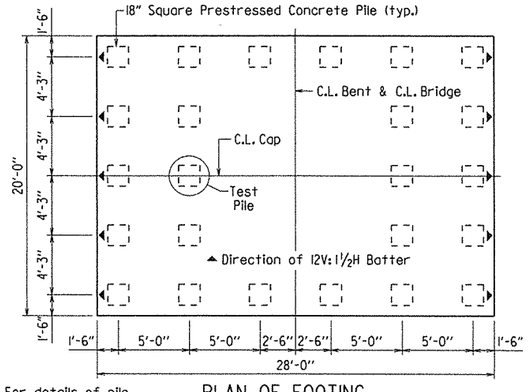
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 10 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/10/13 FILENAME: b070282_b10.dgn

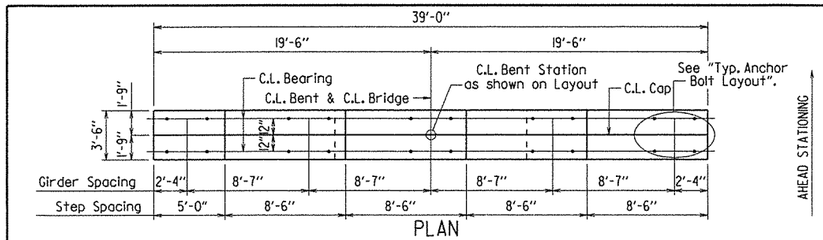
CHECKED BY: PGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54949

PRINT DATE: 7/11/2014

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.		070282	77	190
				①		A6362 - INT. BENT - 54950		

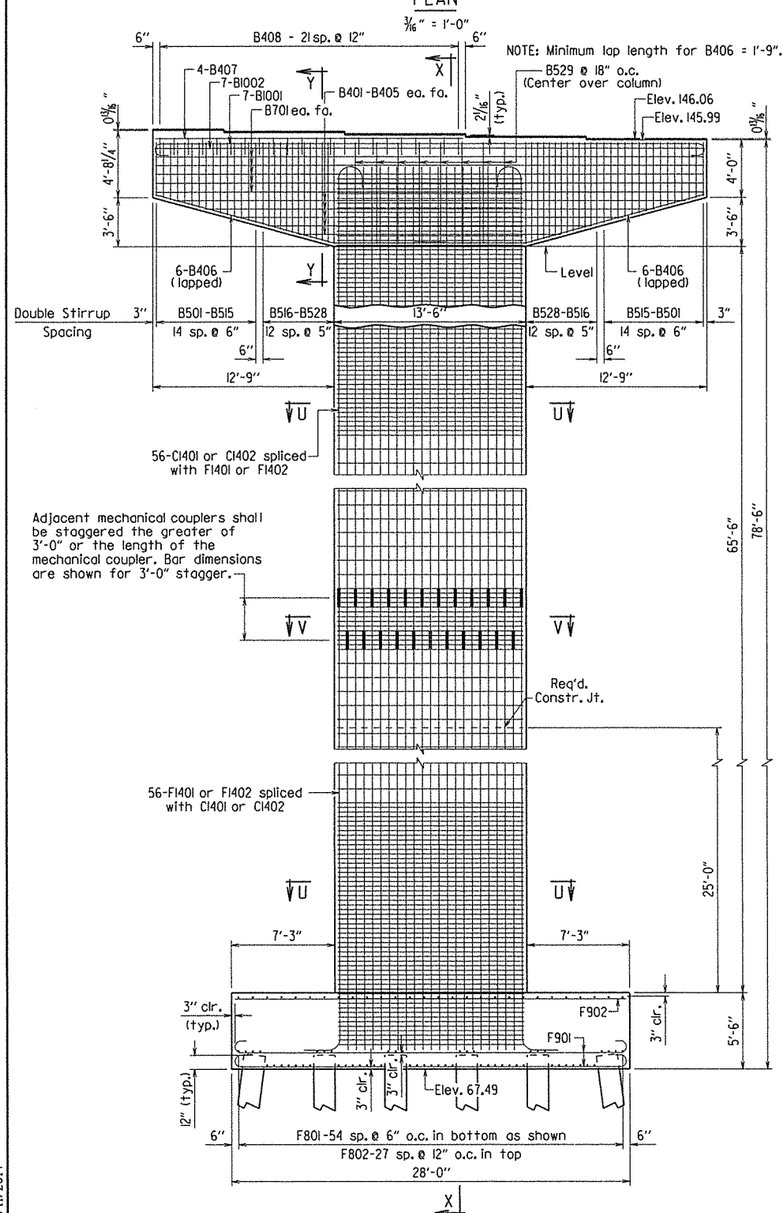


PLAN

3/16" = 1'-0"

AHEAD STATIONING

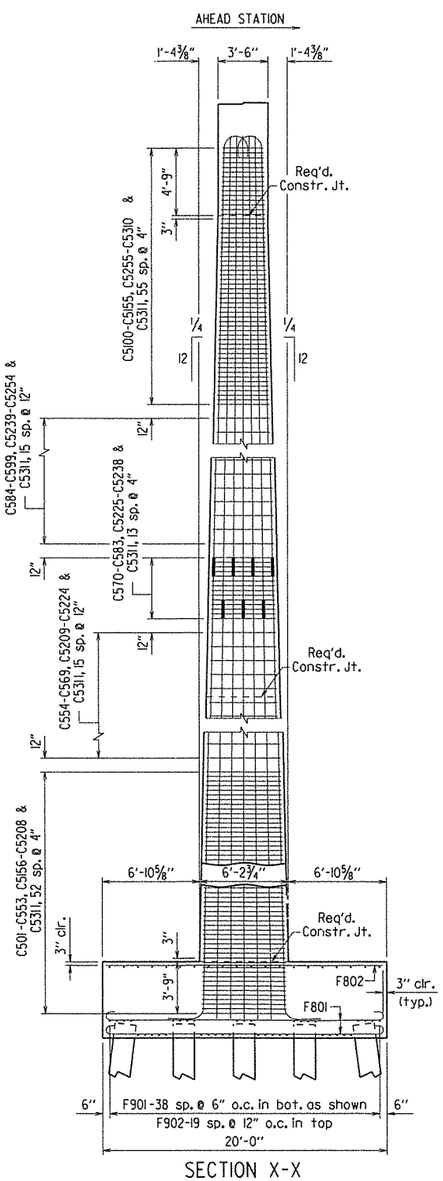
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

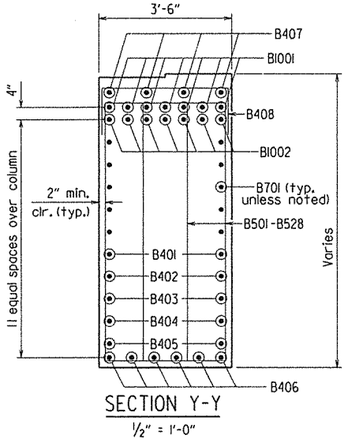
Looking Ahead

3/16" = 1'-0"



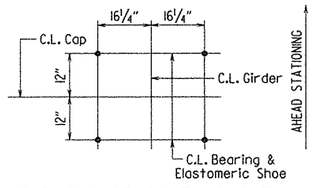
SECTION X-X

3/16" = 1'-0"



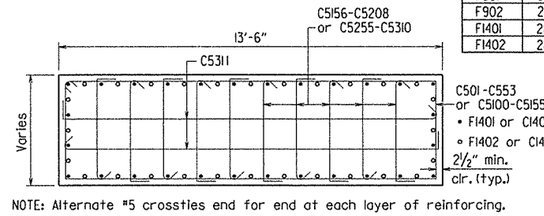
SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

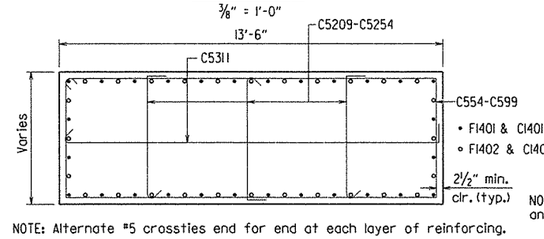
No Scale



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

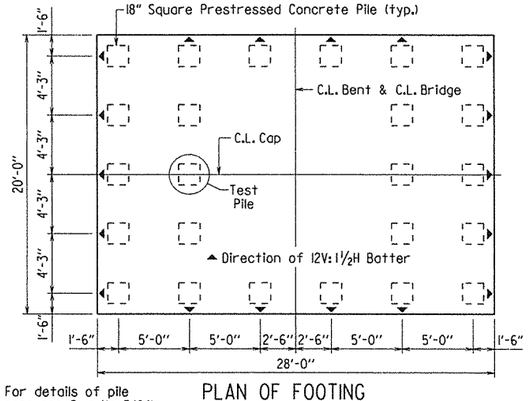
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

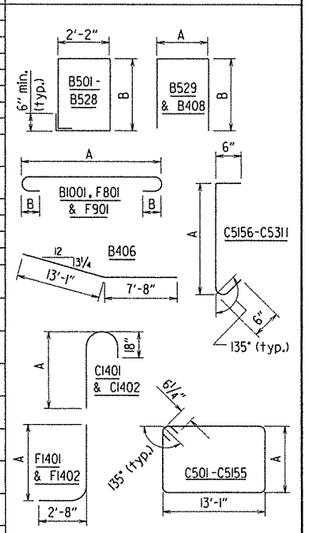
BRIDGE ENGINEER

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	38'-9"-37'-4"	5'-11½"-5'-3"		2½"
C554-C569	1 ea.	37'-3"-36'-0"	5'-2½"-4'-7"		2½"
C570-C583	1 ea.	35'-11"-35'-7"	4'-6½"-4'-4½"		2½"
C584-C599	1 ea.	35'-6"-34'-3"	4'-4"-3'-8½"		2½"
C5100-C5155	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5156-C5208	10 ea.	7'-0"-6'-4"	5'-11½"-5'-3"		2½"
C5209-C5224	3 ea.	6'-3"-5'-8"	5'-2½"-4'-7"		2½"
C5225-C5238	3 ea.	5'-7"-5'-5"	4'-6½"-4'-4½"		2½"
C5239-C5254	3 ea.	5'-5"-4'-9"	4'-4"-3'-8½"		2½"
C5255-C5310	10 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5311	264	14'-2"	13'-1"		2½"
C1401	28	39'-2"	36'-10"		18¼"
C1402	28	42'-2"	39'-10"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	28	40'-8"	38'-6"		18¼"
F1402	28	37'-8"	35'-6"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams



DETAILS OF BENT 11
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/10/13 FILENAME: b070282_b11.dgn

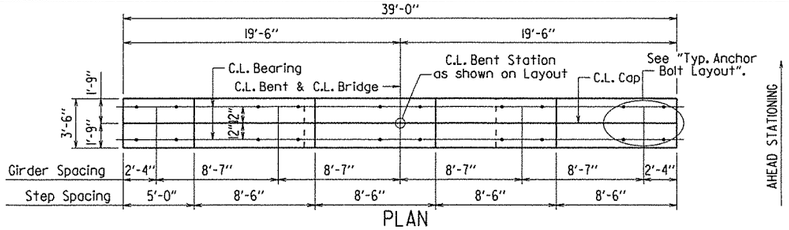
CHECKED BY: RGT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54950

PRINT DATE: 7/11/2014

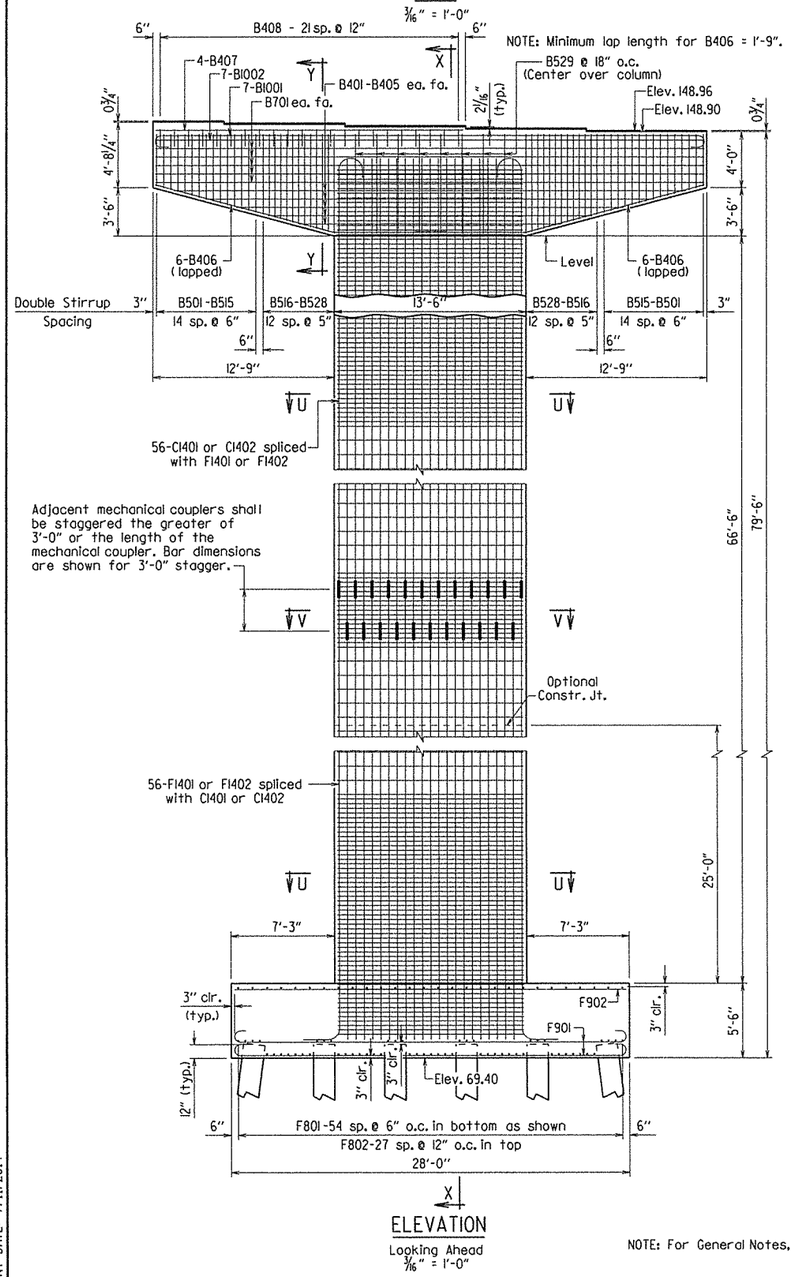
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	78	190
				①		A6362 - INT. BENT - 54951		



PLAN

3/16" = 1'-0"

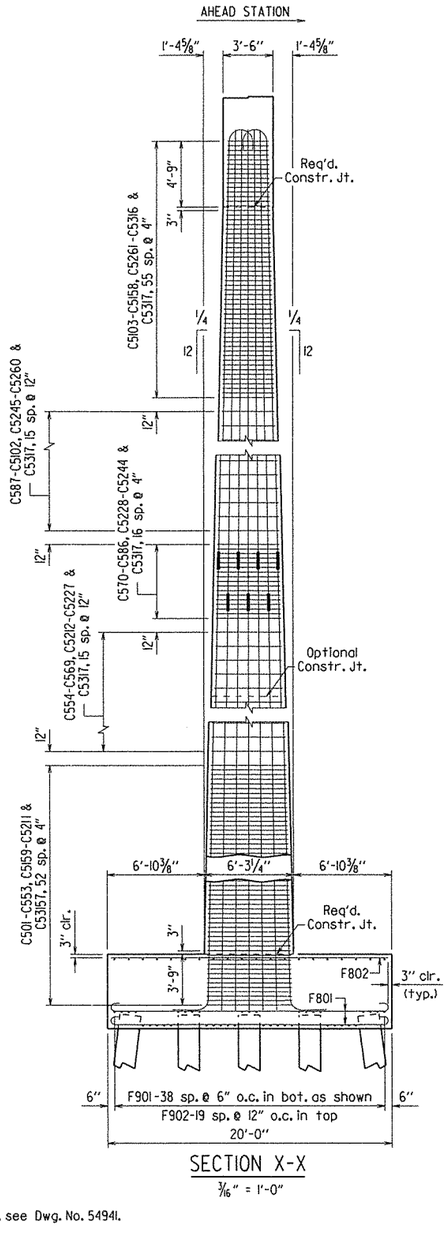
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

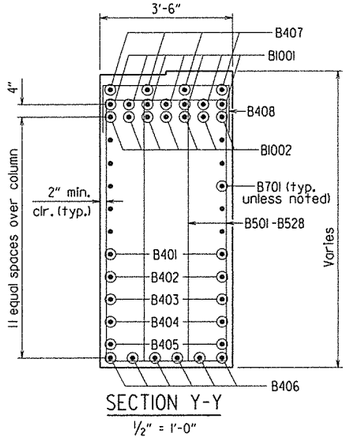
Looking Ahead

3/16" = 1'-0"



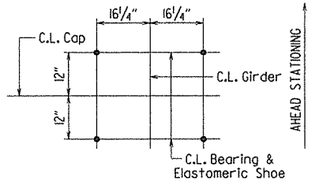
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

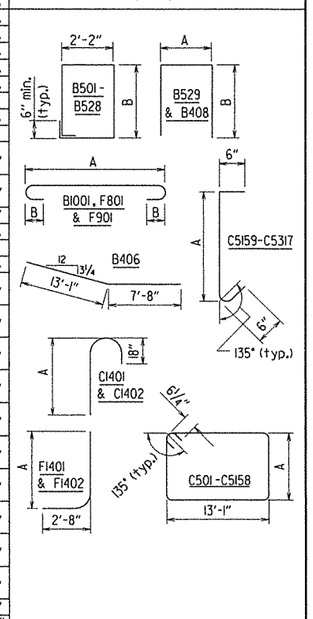
No Scale

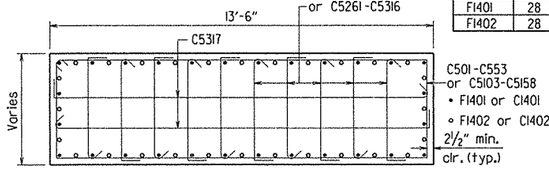
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	38'-10"-37'-5"	6'-0"-5'-3½"		2½"
C554-C569	1 ea.	37'-4"-36'-1"	5'-3"-4'-7½"		2½"
C570-C586	1 ea.	36'-0"-35'-7"	4'-7"-4'-4½"		2½"
C587-C5102	1 ea.	35'-6"-34'-3"	4'-4"-3'-8½"		2½"
C5103-C5158	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5159-C5211	10 ea.	7'-1"-6'-4"	6'-0"-5'-3½"		2½"
C5212-C5227	3 ea.	6'-4"-5'-8"	5'-3"-4'-7½"		2½"
C5228-C5244	3 ea.	5'-8"-5'-5"	4'-7"-4'-4½"		2½"
C5245-C5260	3 ea.	5'-5"-4'-9"	4'-4"-3'-8½"		2½"
C5261-C5316	10 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5317	267	14'-2"	13'-1"		2½"
C1401	28	39'-8"	37'-4"		18¼"
C1402	28	42'-8"	40'-4"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	28	41'-2"	39'-0"		18¼"
F1402	28	38'-2"	36'-0"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

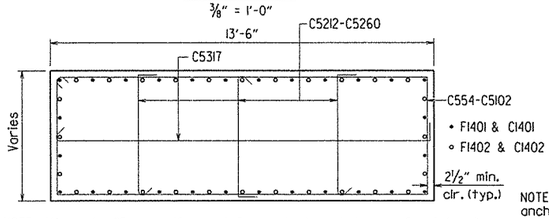




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

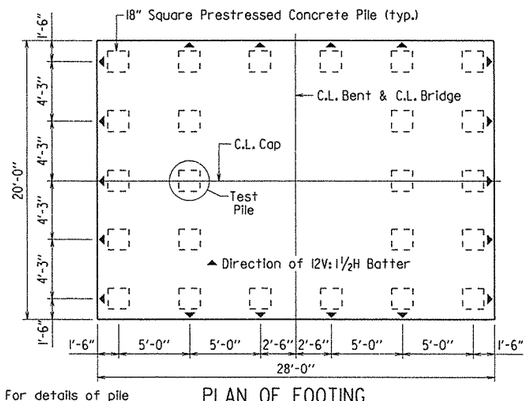
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-11-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 12 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 3/11/13 FILENAME: b070282_b12.dgn

CHECKED BY: PCT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54951

PRINT DATE: 7/11/2014

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.		070282	79	190

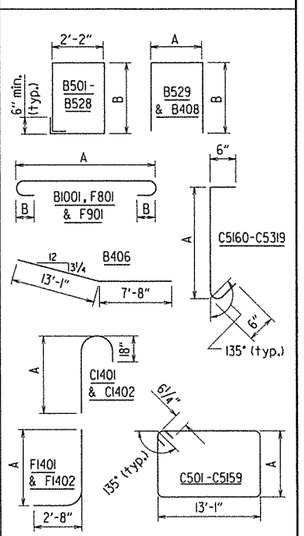
(1) A6362 - INT. BENT - 54952

BAR LIST

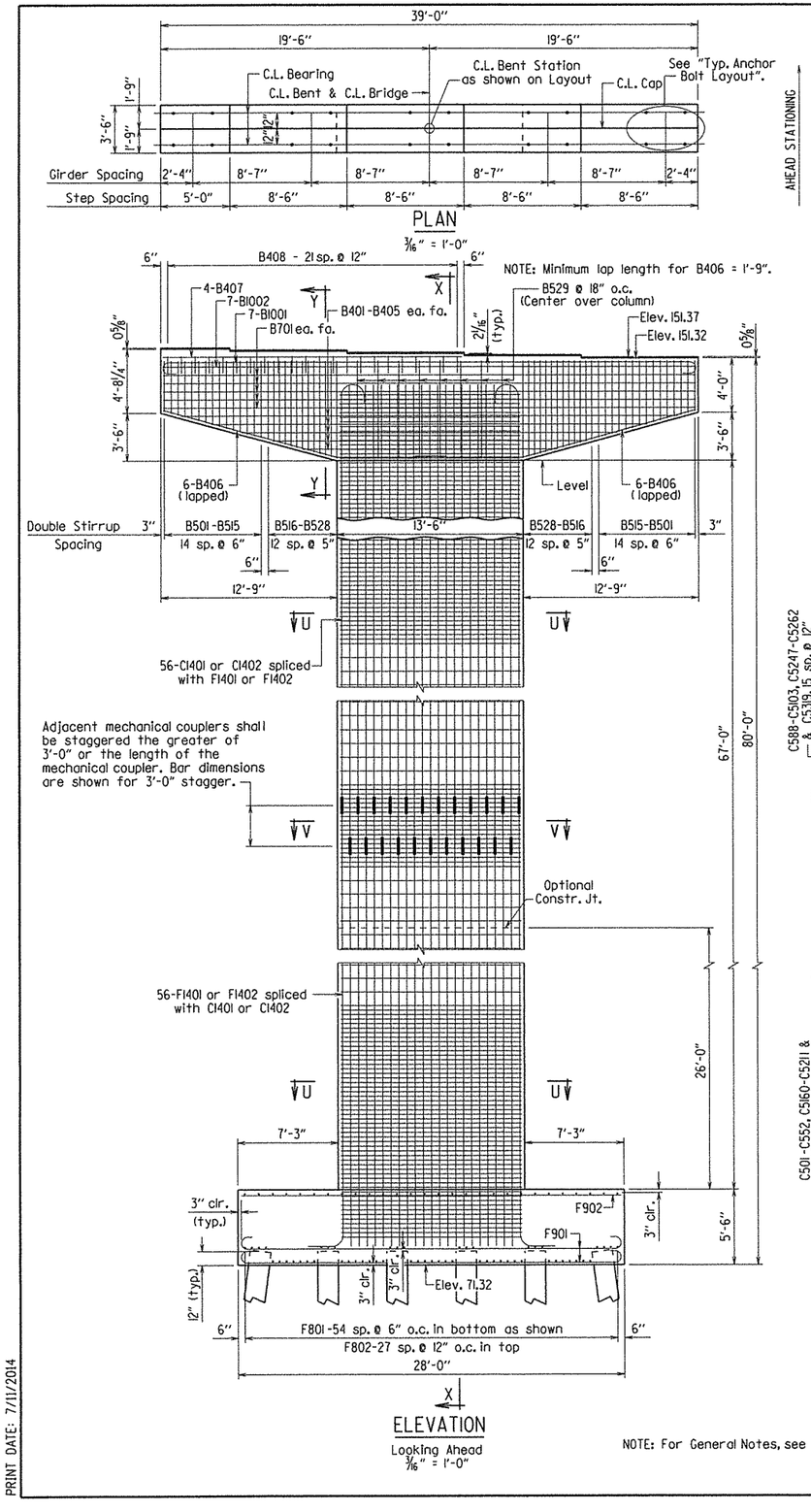
Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C552	1 ea.	38'-11"-37'-6"	6'-0½"-5'-4"		2½"
C553-C568	1 ea.	37'-5"-36'-2"	5'-3½"-4'-8"		2½"
C569-C587	1 ea.	36'-1"-35'-7"	4'-7½"-4'-4½"		2½"
C588-C5103	1 ea.	35'-6"-34'-3"	4'-4"-3'-8½"		2½"
C5104-C5159	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5160-C5211	10 ea.	7'-1"-6'-5"	6'-0½"-5'-4"		2½"
C5212-C5227	3 ea.	6'-4"-5'-9"	5'-3½"-4'-8"		2½"
C5228-C5246	3 ea.	5'-8"-5'-5"	4'-7½"-4'-4½"		2½"
C5247-C5262	3 ea.	5'-5"-4'-9"	4'-4"-3'-8½"		2½"
C5263-C5318	10 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5319	267	14'-2"	13'-1"		2½"
C1401	28	39'-11"	37'-7"		18¼"
C1402	28	42'-11"	40'-7"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	28	41'-5"	39'-3"		18¼"
F1402	28	38'-5"	36'-3"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams



NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.

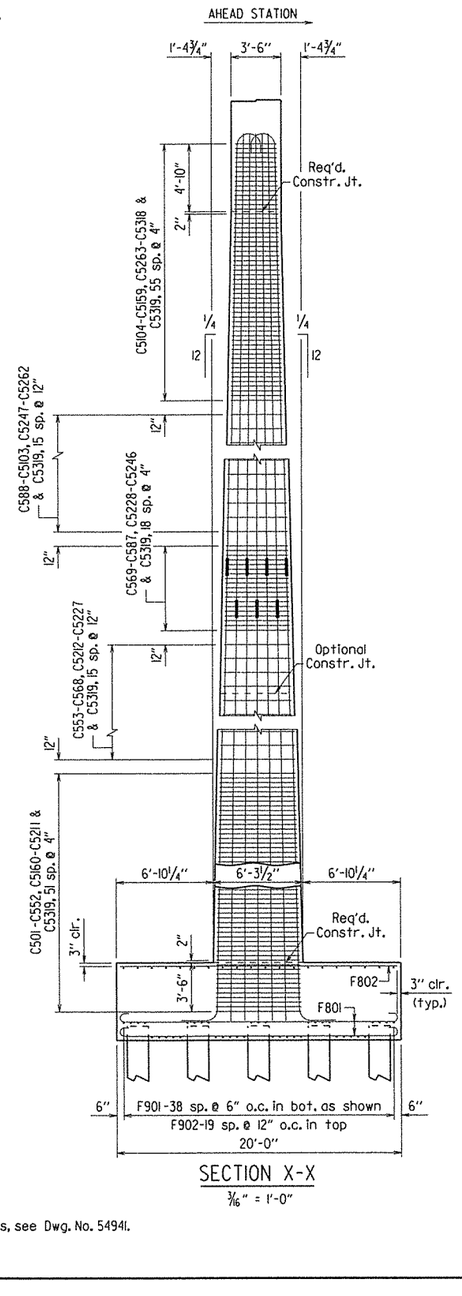


PLAN

3/16" = 1'-0"

ELEVATION

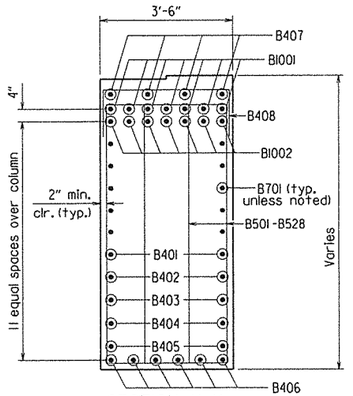
Looking Ahead
3/16" = 1'-0"



SECTION X-X

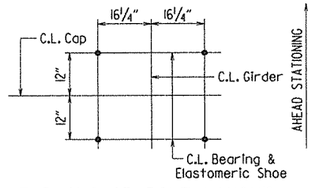
3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.



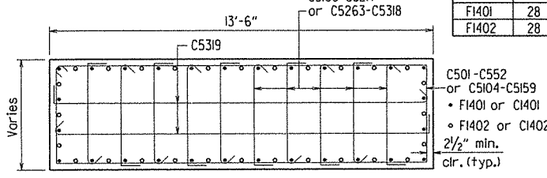
SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

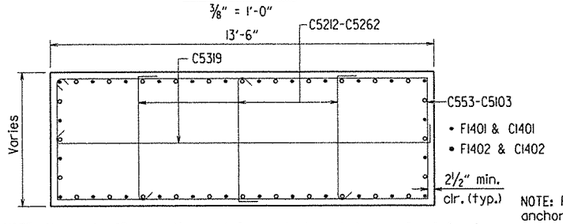
No Scale



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

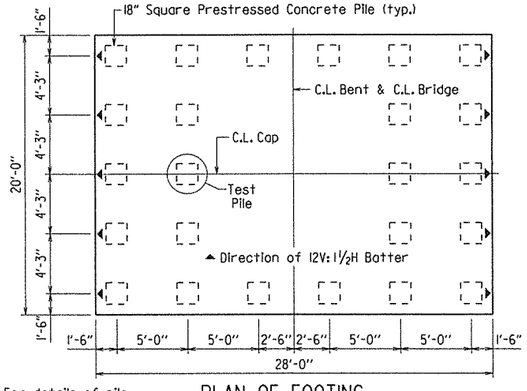
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 13 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

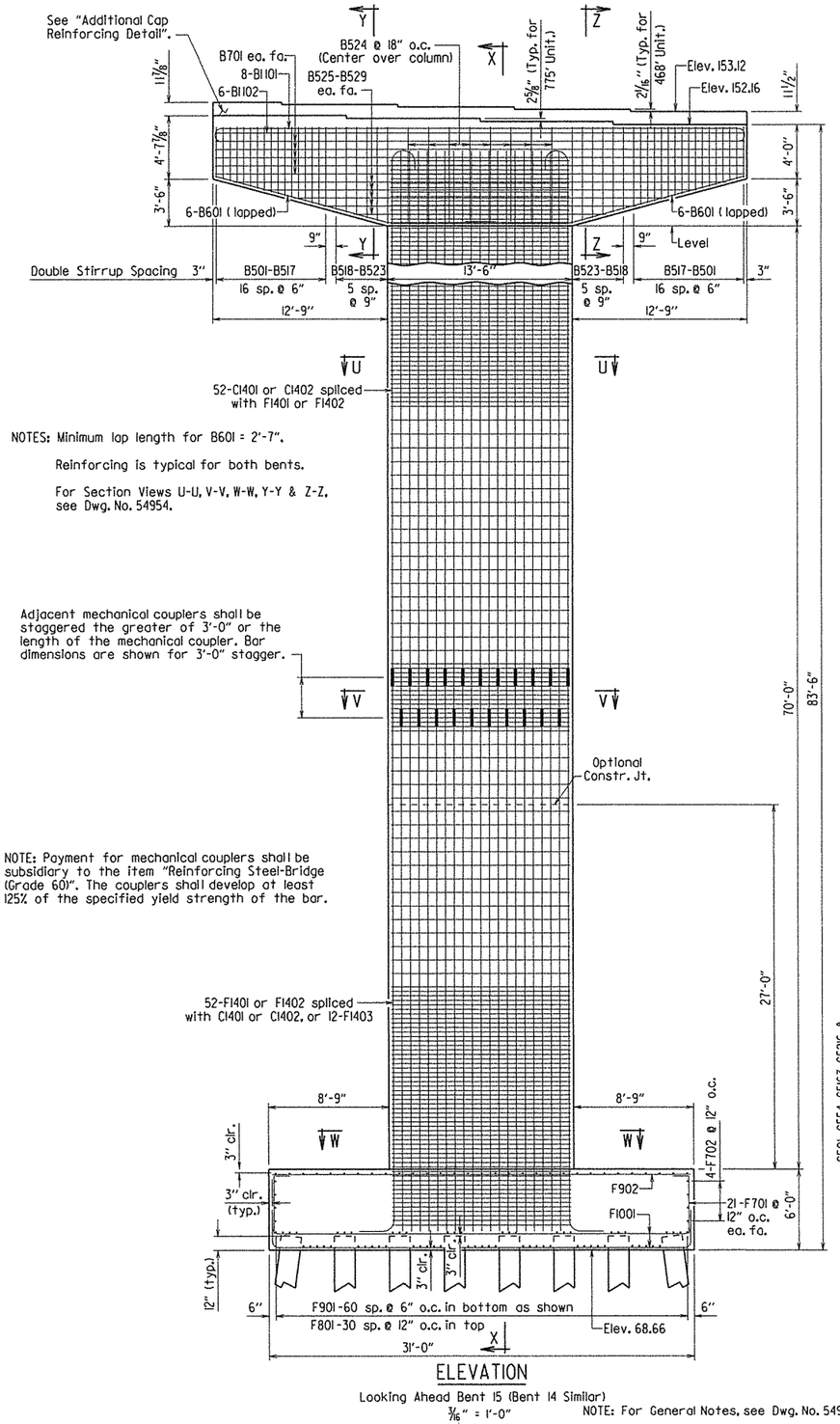
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/11/13 FILENAME: b070282_bl3.dgn
CHECKED BY: PLT DATE: 4/14 SCALE: as noted
DESIGNED BY: KWY DATE: 9/13

BRIDGE NO. A6362 DRAWING NO. 54952

PRINT DATE: 7/11/2014

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.		070282	80	190
				①		A6362 - INT. BENTS - 54953		



ELEVATION

Looking Ahead Bent 15 (Bent 14 Similar)

3/16" = 1'-0"

NOTES: Minimum lap length for B601 = 2'-7".

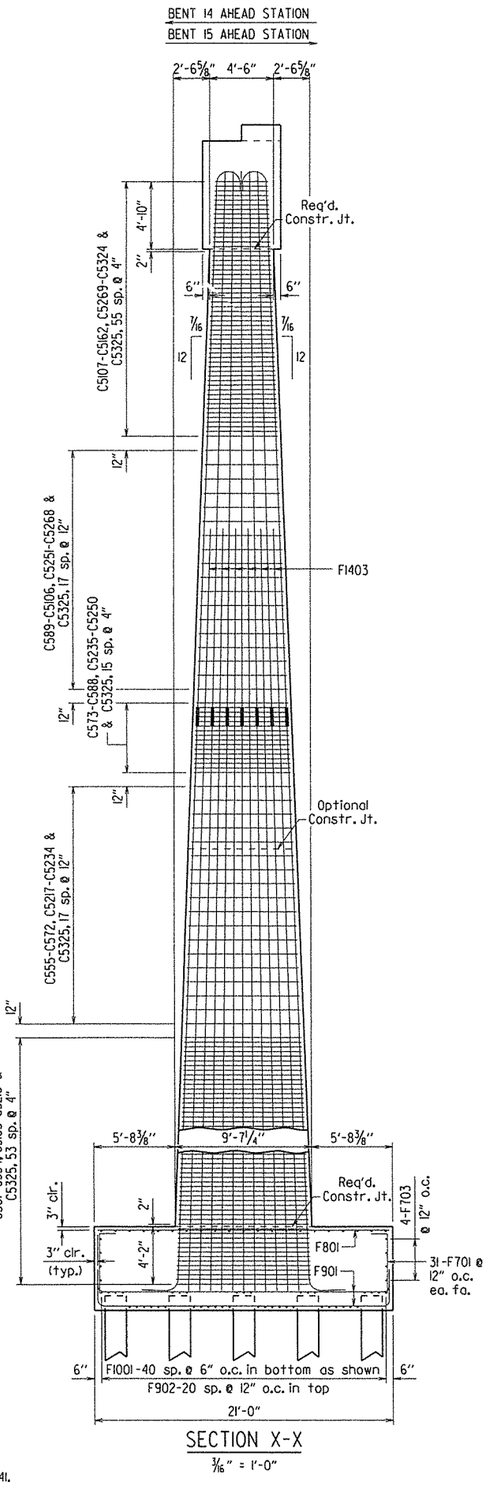
Reinforcing is typical for both bents.

For Section Views U-U, V-V, W-W, Y-Y & Z-Z, see Dwg. No. 54954.

Adjacent mechanical couplers shall be staggered the greater of 3'-0" or the length of the mechanical coupler. Bar dimensions are shown for 3'-0" stagger.

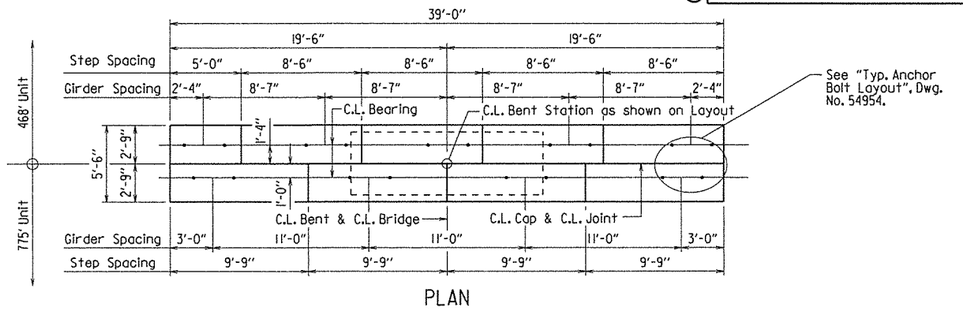
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.

NOTE: For General Notes, see Dwg. No. 54941.



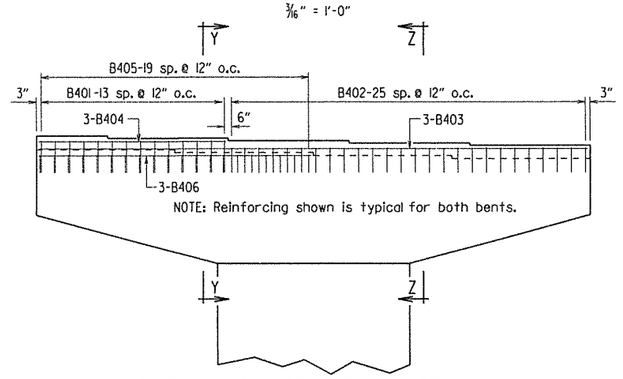
SECTION X-X

3/16" = 1'-0"



PLAN

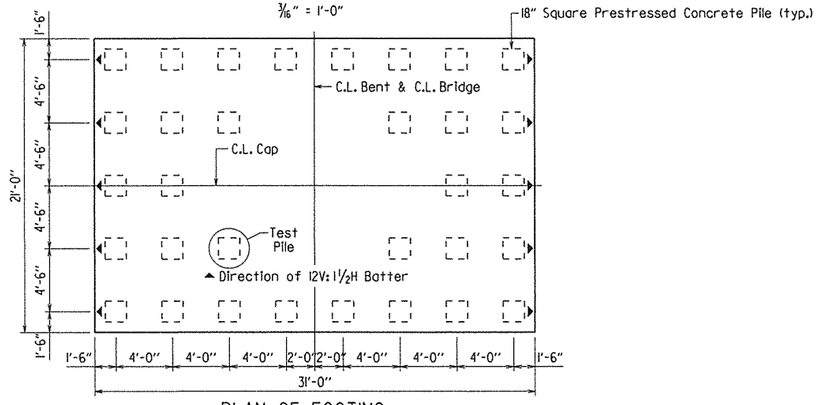
3/16" = 1'-0"



ADDITIONAL CAP REINFORCING DETAIL

Looking Ahead Bent 14 (Bent 15 Similar)

3/16" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 14 & 15
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/11/13
CHECKED BY: YGT DATE: 4/14
DESIGNED BY: KWY DATE: 10/12

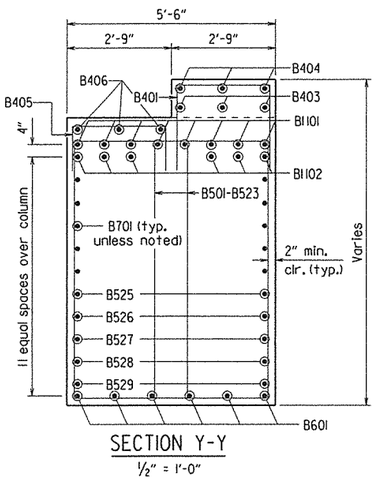
FILENAME: b070282_bl4.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54953

PRINT DATE: 7/11/2014

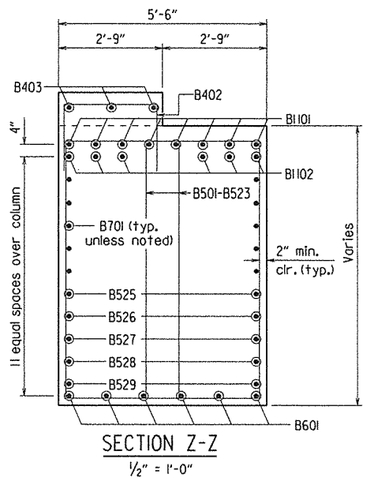
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	81	190

A6362 - INT. BENTS - 54954



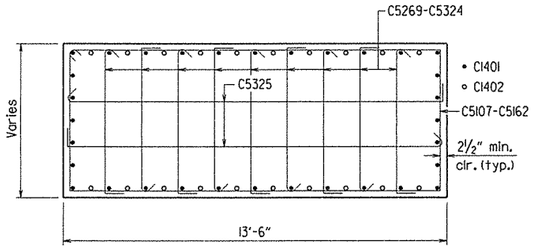
SECTION Y-Y

½" = 1'-0"



SECTION Z-Z

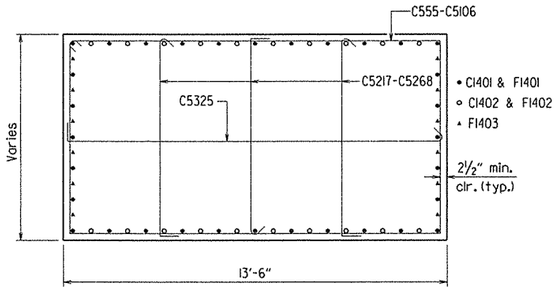
½" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

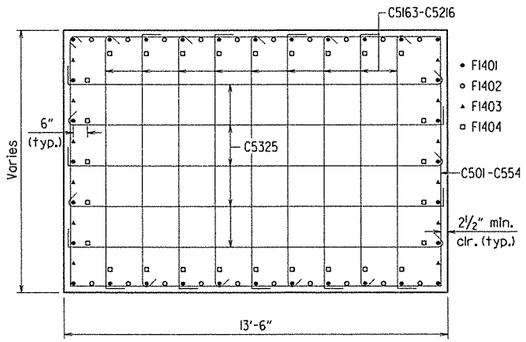
⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

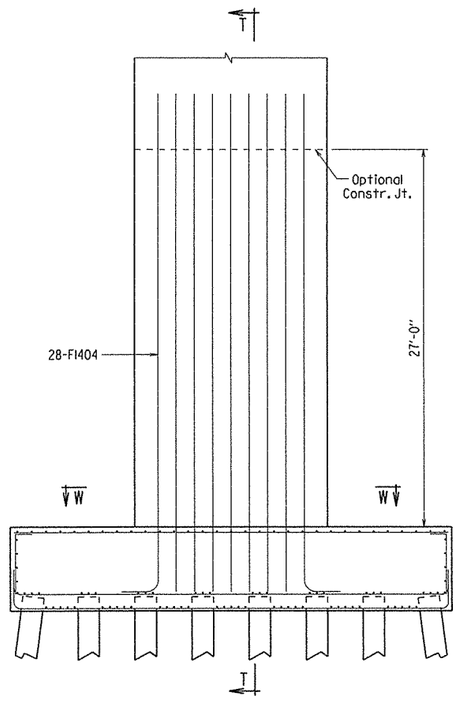
⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION W-W

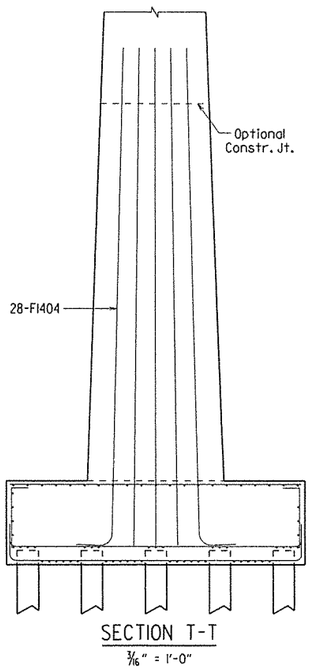
⅜" = 1'-0"



ELEVATION

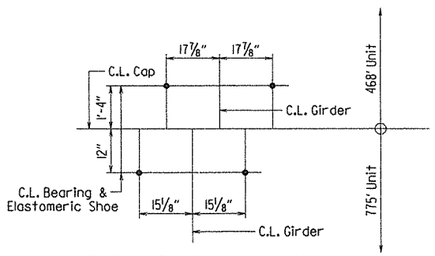
Showing Inner Layer of Column Reinforcing

3/16" = 1'-0"



SECTION T-T

3/16" = 1'-0"



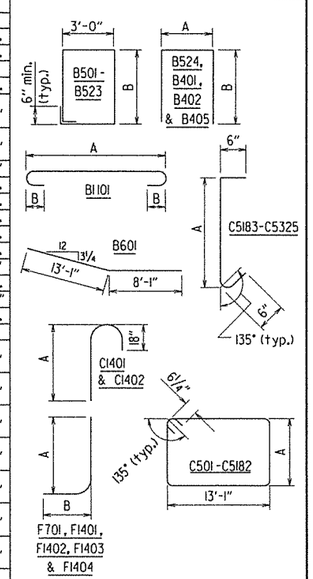
TYP. ANCHOR BOLT LAYOUT

No Scale

BAR LIST (PER BENT)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	14	6'-11"	2'-5"	2'-4"	2"
B402	26	5'-11"	2'-5"	1'-10"	2"
B403	3	38'-8"			Str.
B404	3	13'-2"			Str.
B405	20	4'-11"	2'-5"	1'-4"	2"
B406	3	19'-2"			Str.
B501-B517	4 ea.	14'-0"-18'-4"		3'-9"-5'-11"	2½"
B518-B523	4 ea.	18'-10"-20'-10"		6'-2"-7'-2"	2½"
B524	8	19'-4"	5'-2"	7'-2"	2½"
B525	2	36'-0"			Str.
B526	2	31'-8"			Str.
B527	2	27'-3"			Str.
B528	2	22'-10"			Str.
B529	2	18'-5"			Str.
B601	12	21'-2"			4½"
B701	10	38'-8"			Str.
B1101	8	41'-8"	38'-8"	12½"	11¼"
B1102	6	38'-8"			Str.
C501-C554	1 ea.	45'-10"-43'-3"	9'-6"-8'-2½"		2½"
C555-C572	1 ea.	43'-1"-40'-8"	8'-1½"-6'-11"		2½"
C573-C588	1 ea.	40'-6"-39'-9"	6'-10"-6'-5½"		2½"
C589-C5106	1 ea.	39'-7"-37'-2"	6'-4½"-5'-2"		2½"
C5107-C5162	1 ea.	37'-0"-34'-4"	5'-1"-3'-9"		2½"
C5163-C5216	9 ea.	10'-7"-9'-3"	9'-6"-8'-2½"		2½"
C5217-C5234	3 ea.	9'-2"-8'-0"	8'-1½"-6'-11"		2½"
C5235-C5250	3 ea.	7'-11"-7'-6"	6'-10"-6'-5½"		2½"
C5251-C5268	3 ea.	7'-5"-6'-3"	6'-4½"-5'-2"		2½"
C5269-C5324	9 ea.	6'-2"-4'-10"	5'-1"-3'-9"		2½"
C5325	434	14'-2"	13'-1"		2½"
C1401	32	41'-5"	39'-1"		18¼"
C1402	20	44'-5"	42'-1"		18¼"
F701	104	5'-7"	4'-7"	1'-2"	5¼"
F702	8	20'-6"			Str.
F703	8	30'-6"			Str.
F801	31	20'-6"			Str.
F901	61	21'-10"	20'-6"	19¼"	9"
F902	21	30'-6"			Str.
F1001	41	32'-0"	30'-6"	21½"	10"
F1401	32	43'-5"	41'-3"	2'-8"	18¼"
F1402	20	40'-5"	38'-3"	2'-8"	18¼"
F1403	12	56'-11"	54'-9"	2'-8"	18¼"
F1404	28	37'-11"	35'-9"	2'-8"	18¼"

Bending Diagrams



(Dimensions are out to out of bars.)

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF BENTS 14 & 15

OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/11/13

CHECKED BY: PLAT DATE: 4/14

DESIGNED BY: KWY DATE: 10/12

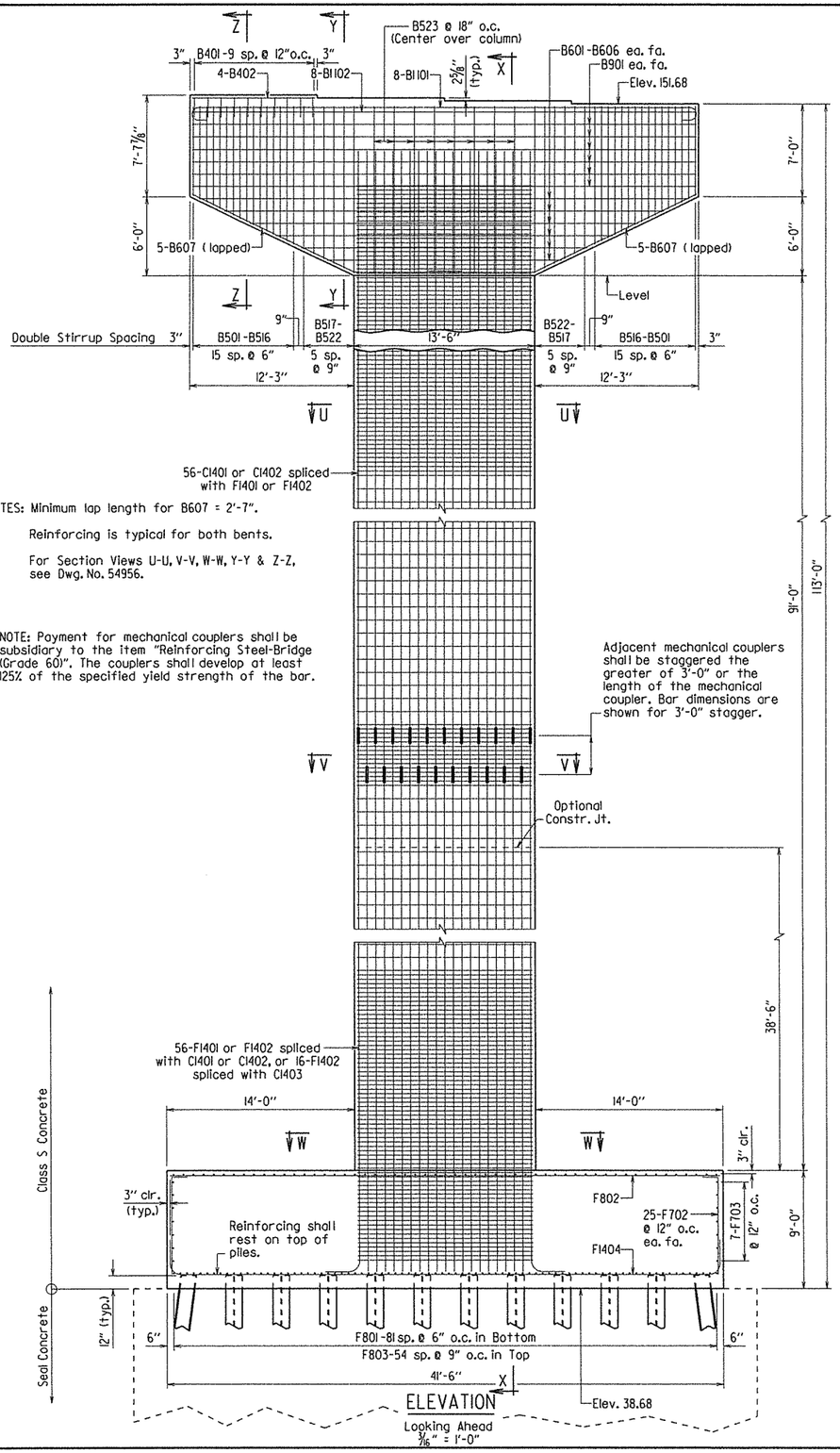
FILENAME: b070282_b14.dgn

SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54954

PRINT DATE: 7/11/2014

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.		070282	B2	190
				(1) A6362	-	PIERS	-	54955



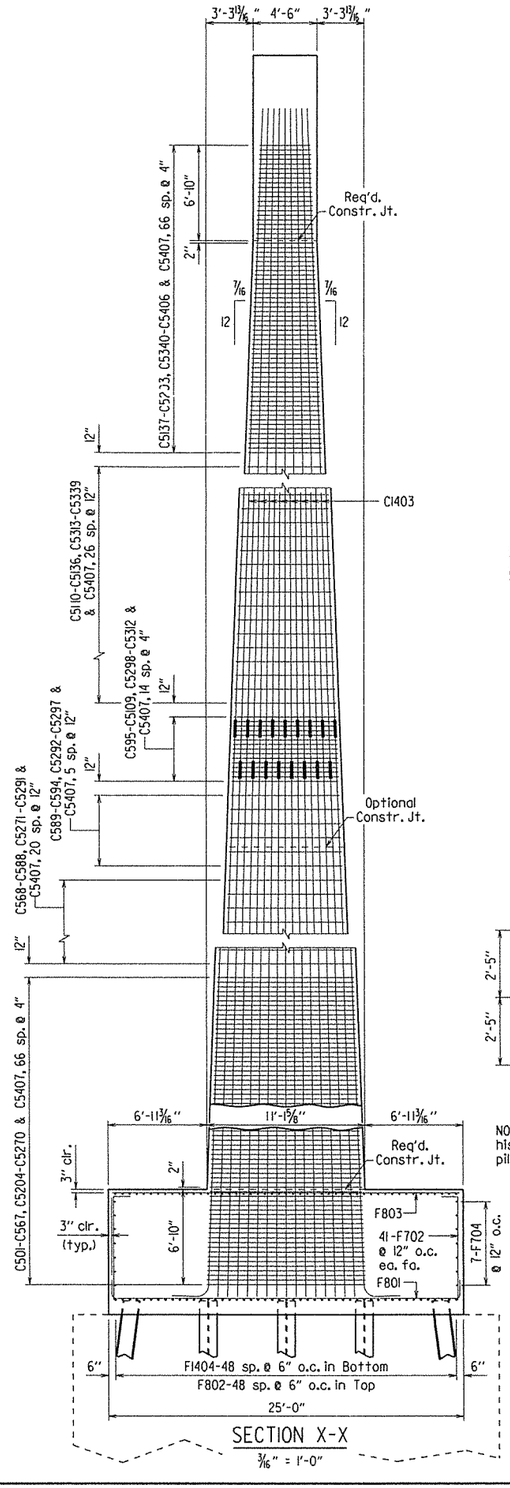
ELEVATION
Looking Ahead
3/16" = 1'-0"

NOTES: Minimum lap length for B607 = 2'-7".

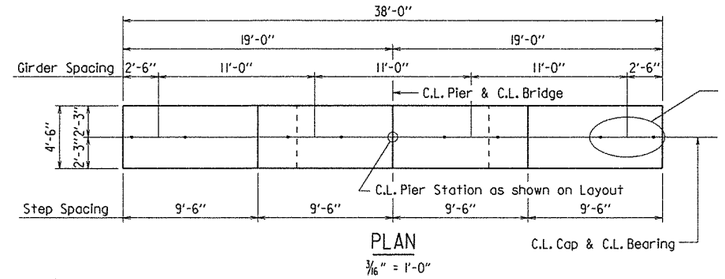
Reinforcing is typical for both bents.

For Section Views U-U, V-V, W-W, Y-Y & Z-Z, see Dwg. No. 54956.

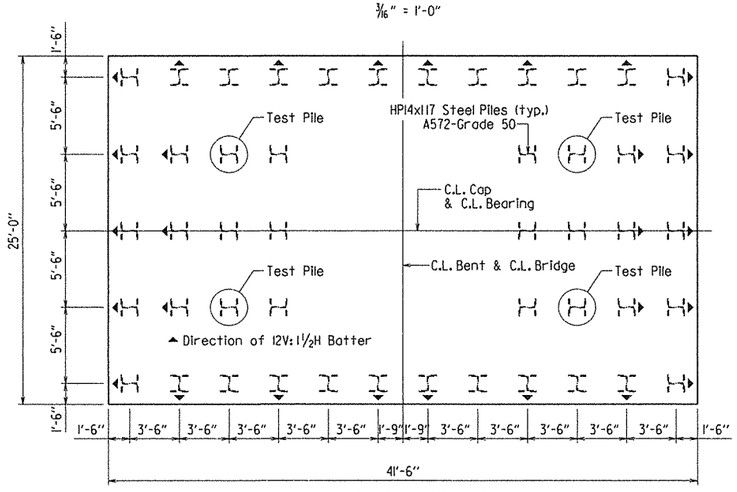
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



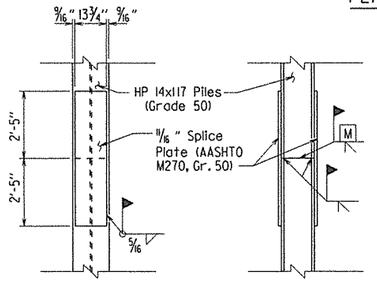
SECTION X-X
3/16" = 1'-0"



PLAN
3/16" = 1'-0"

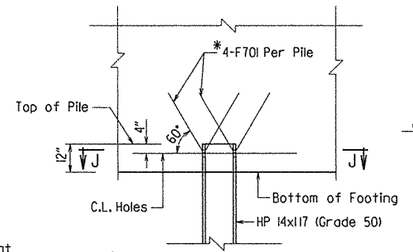


PLAN OF FOOTING
3/16" = 1'-0"



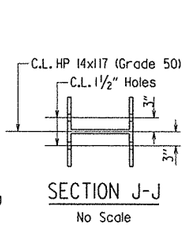
NOTE: The Contractor may for his convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

PILE SPLICE DETAIL
No Scale



*Tie or wedge this reinforcing to bear at top of holes.

PILE ANCHORAGE DETAIL
No Scale



SECTION J-J
No Scale

NOTE: For dimensions of seal footing, see Dwg. No. 54956.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-19-13
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF PIERS 1 & 2
OUACHITA RIVER

ROUTE SEC.

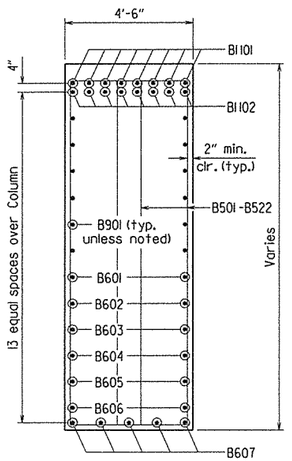
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/20/13 FILENAME: b070282_pl.dgn
CHECKED BY: PLoT DATE: 4/14 SCALE: as noted
DESIGNED BY: KWY DATE: 10/12

BRIDGE NO. A6362 DRAWING NO. 54955

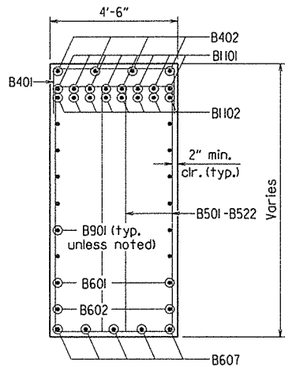
PRINT DATE: 7/11/2014

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.		070282	83	190
				①	A6362 - PIERS - 54956			



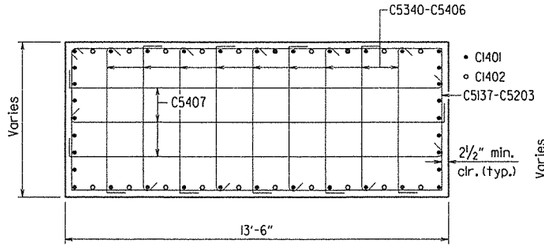
SECTION Y-Y

3/8" = 1'-0"



SECTION Z-Z

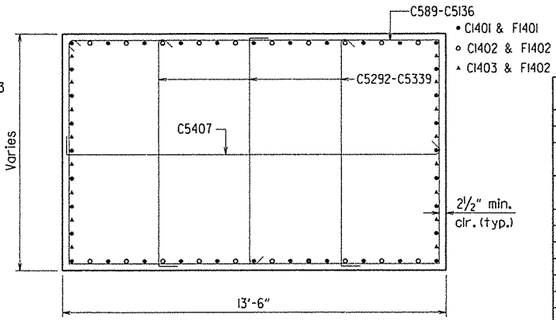
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

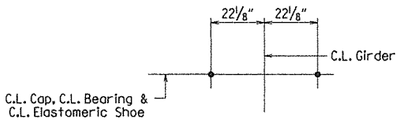
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

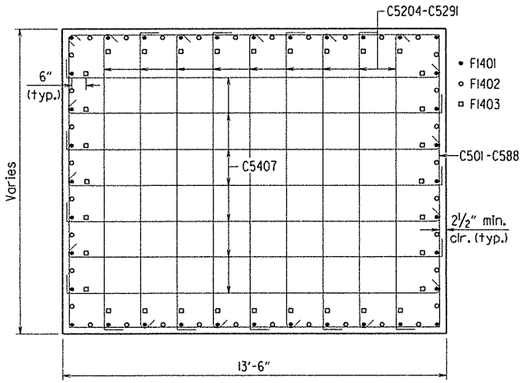
SECTION V-V

3/8" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

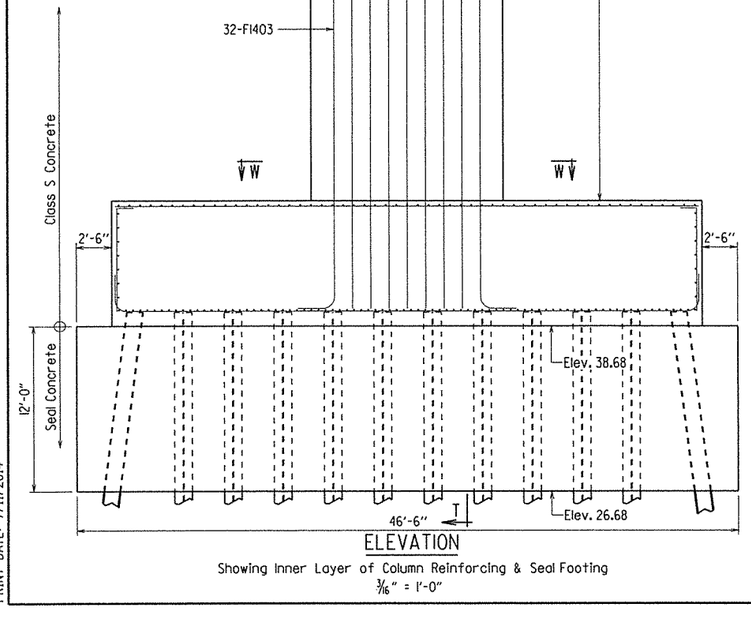
No Scale



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION W-W

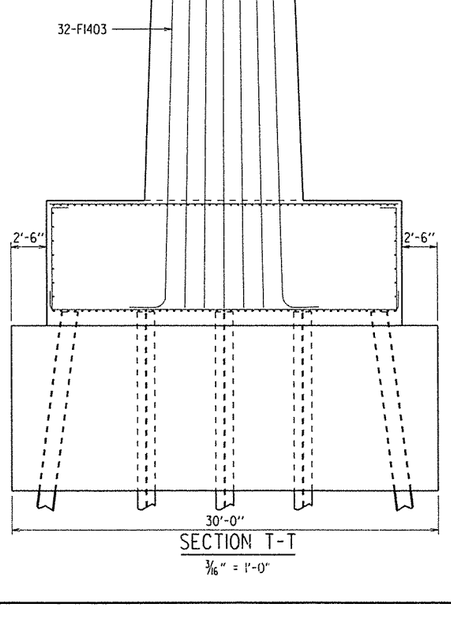
3/8" = 1'-0"



ELEVATION

Showing Inner Layer of Column Reinforcing & Seal Footing

3/16" = 1'-0"



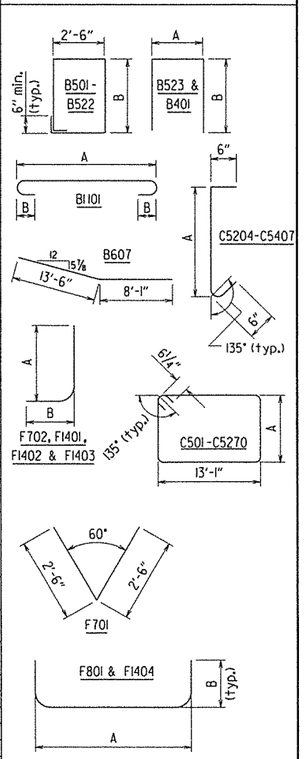
SECTION T-T

3/16" = 1'-0"

BAR LIST (PER PIER)

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	10	7'-4"	4'-2"	1'-8"	2"
B402	4	9'-2"			Str.
B501-B516	4 ea.	19'-0"-26'-5"		6'-9"-10'-5½"	2½"
B517-B522	4 ea.	27'-2"-30'-10"		10'-10"-12'-8"	2½"
B523	8	29'-4"	4'-2"	12'-8"	2½"
B601	2	36'-7"			Str.
B602	2	32'-10"			Str.
B603	2	29'-0"			Str.
B604	2	25'-2"			Str.
B605	2	21'-4"			Str.
B606	2	17'-7"			Str.
B607	10	21'-7"			4½"
B901	12	37'-8"			Str.
B1101	8	40'-8"	37'-8"	12½"	11¼"
B1102	8	37'-8"			Str.
C501-C567	1 ea.	49'-3"-46'-0"	11'-2½"-9'-7"		2½"
C568-C588	1 ea.	45'-11"-43'-0"	9'-6½"-8'-1"		2½"
C589-C594	1 ea.	42'-10"-42'-1"	8'-0"-7'-7½"		2½"
C595-C5109	1 ea.	42'-0"-41'-3"	7'-7"-7'-2½"		2½"
C5110-C5136	1 ea.	41'-2"-37'-4"	7'-2"-5'-3"		2½"
C5137-C5203	1 ea.	37'-2"-34'-0"	5'-2"-3'-7"		2½"
C5204-C5270	9 ea.	12'-3"-10'-8"	11'-2½"-9'-7"		2½"
C5271-C5291	9 ea.	10'-7"-9'-2"	9'-6½"-8'-1"		2½"
C5292-C5297	3 ea.	9'-1"-8'-8"	8'-0"-7'-7½"		2½"
C5298-C5312	3 ea.	8'-8"-8'-3"	7'-7"-7'-2½"		2½"
C5313-C5339	3 ea.	8'-3"-6'-4"	7'-2"-5'-3"		2½"
C5340-C5406	9 ea.	6'-3"-4'-4"	5'-2"-3'-7"		2½"
C5407	865	14'-2"	13'-1"		2½"
C1401	36	53'-6"			Str.
C1402	20	56'-6"			Str.
C1403	16	20'-0"			Str.
F701	192	4'-10"			5¼"
F702	132	8'-7"	7'-7"	1'-2"	5¼"
F703	14	24'-6"			Str.
F704	14	41'-0"			Str.
F801	82	26'-9"	24'-6"	1'-4"	6"
F802	49	41'-0"			Str.
F803	55	24'-6"			Str.
F1401	36	56'-11"	54'-9"	2'-8"	18¼"
F1402	36	53'-11"	51'-9"	2'-8"	18¼"
F1403	32	48'-11"	46'-9"	2'-8"	18¼"
F1404	49	45'-4"	41'-0"	2'-8"	18¼"

Bending Diagrams



(Dimensions are out to out of bars.)

GENERAL NOTES

All Class S Concrete shall be poured in the dry. All exposed corners to be chamfered ¾" unless otherwise noted.

28 Day Compressive strength of Class S Concrete, f'c = 3,500 psi.
28 Day Compressive strength of Seal Concrete, f'c = 2,100 psi.

All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, 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.

For dewatering cofferdam, maximum water surface elevation is 82.0 for seal size shown.

For additional information, see Layout.

For Details of Elastomeric Bearings, see Dwg. Nos. 54969 & 54970.

¾" ø Anchors shall be placed in pier column for clearance gauge. For locations, see Dwg. No. 54990.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9355
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF PIERS 1 & 2
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

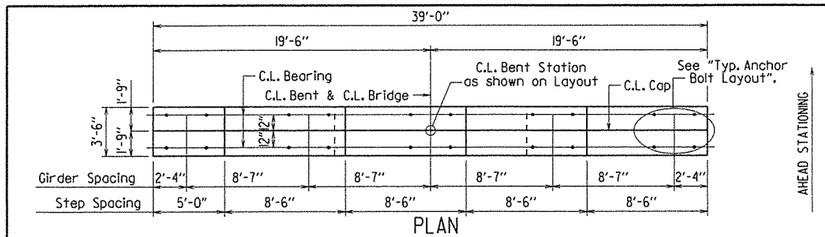
DRAWN BY: KWY DATE: 9/23/13
CHECKED BY: RGT DATE: 4/14
DESIGNED BY: KWY DATE: 10/12

FILENAME: b070282_pl.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54956

PRINT DATE: 7/11/2014

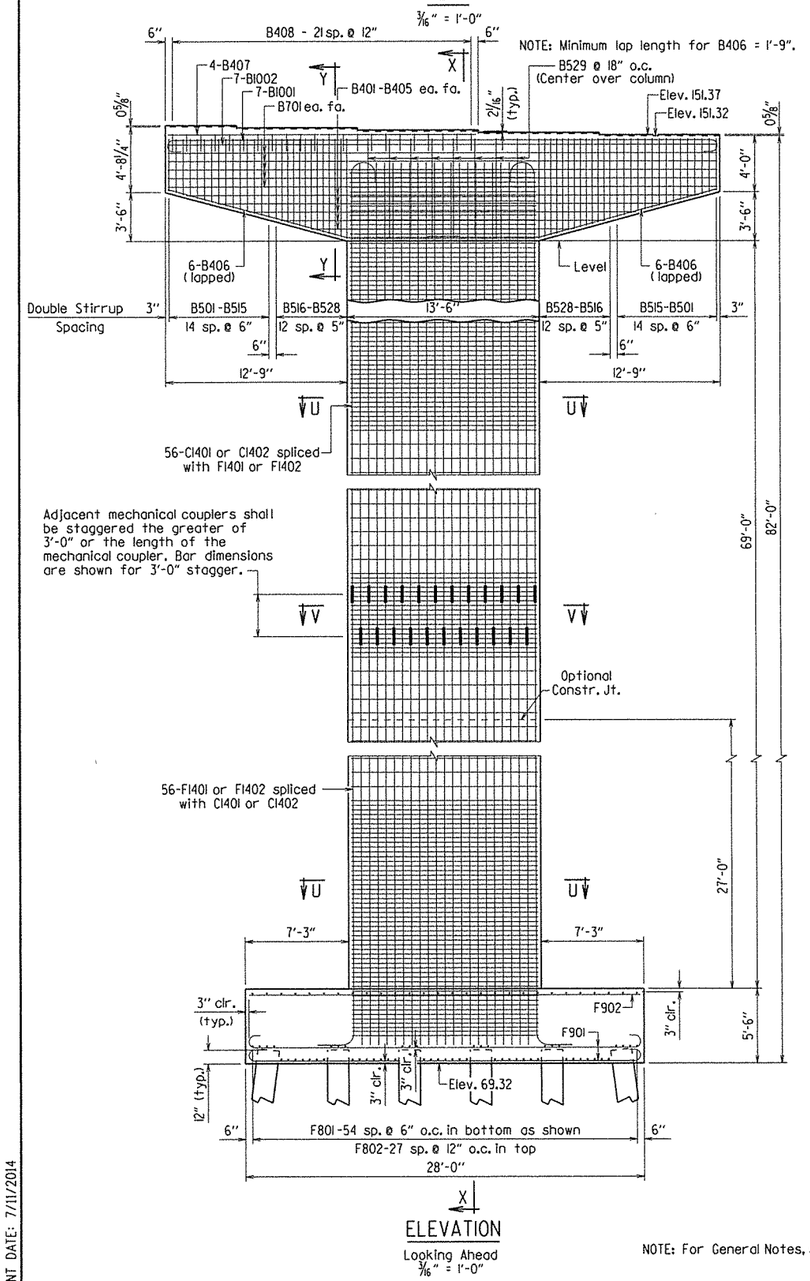
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	84	190
				①		A6362 - INT. BENT - 54957		



PLAN

3/16" = 1'-0"

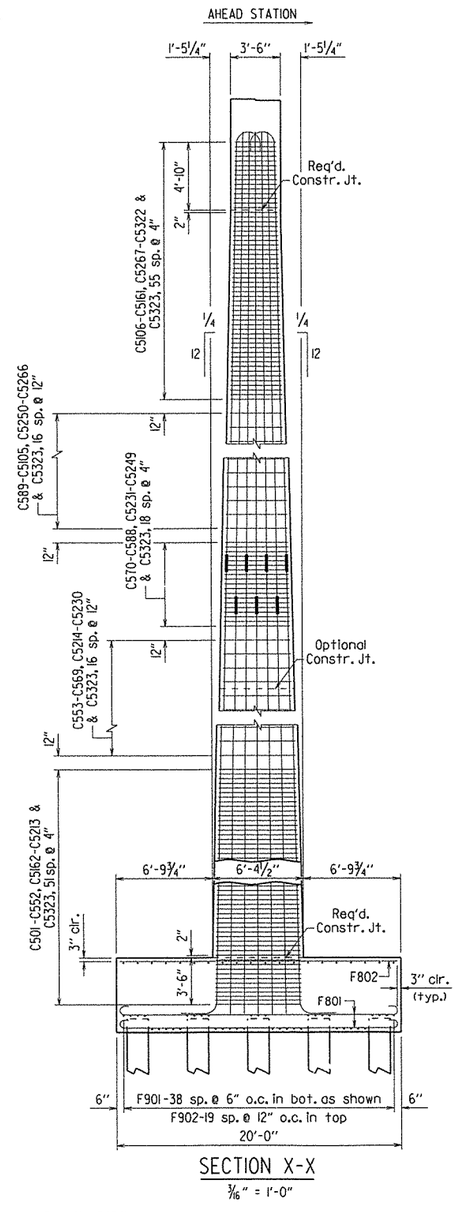
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

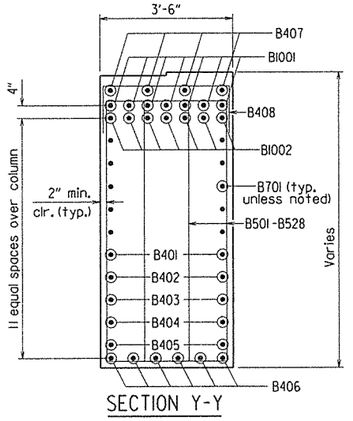
Looking Ahead

3/16" = 1'-0"



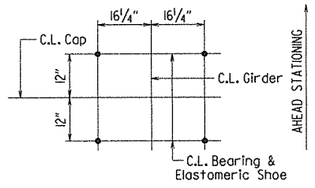
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



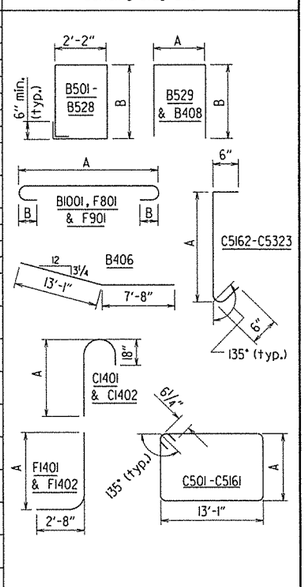
TYP. ANCHOR BOLT LAYOUT

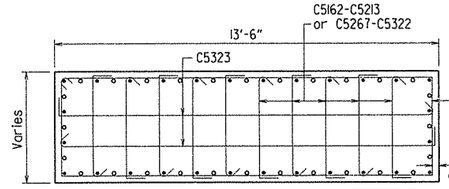
No Scale

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.	Bending Diagrams
B401	2	36'-0"			Str.	
B402	2	31'-7"			Str.	
B403	2	27'-3"			Str.	
B404	2	22'-10"			Str.	
B405	2	18'-5"			Str.	
B406	12	20'-9"			3"	
B407	4	21'-8"			Str.	
B408	22	5'-6"	3'-2"	1'-3"	2"	
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"	
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"	
B529	8	17'-4"	3'-2"	7'-2"	2½"	
B701	10	38'-8"			Str.	
B1001	7	41'-6"	38'-8"	11½"	10"	
B1002	7	38'-8"			Str.	
C501-C552	1 ea.	39'-1"-37'-8"	6'-1½"-5'-5"		2½"	
C553-C569	1 ea.	37'-7"-36'-3"	5'-4½"-4'-8½"		2½"	
C570-C588	1 ea.	36'-2"-35'-8"	4'-8"-4'-5"		2½"	
C589-C5105	1 ea.	35'-7"-34'-3"	4'-4½"-3'-8½"		2½"	
C5106-C5161	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"	
C5162-C5213	10 ea.	7'-2"-6'-6"	6'-1½"-5'-5"		2½"	
C5214-C5230	3 ea.	6'-5"-5'-9"	5'-4½"-4'-8½"		2½"	
C5231-C5249	3 ea.	5'-9"-5'-6"	4'-8"-4'-5"		2½"	
C5250-C5266	3 ea.	5'-5"-4'-9"	4'-4½"-3'-8½"		2½"	
C5267-C5322	10 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"	
C5323	269	14'-2"-13'-1"			2½"	
C1401	28	40'-11"	38'-7"		18¼"	
C1402	28	43'-11"	41'-7"		18¼"	
F801	55	21'-4"-19'-6"		8"	6"	
F802	28	19'-6"			Str.	
F901	39	30'-0"-27'-6"		10"	9"	
F902	20	27'-6"			Str.	
F1401	28	42'-5"-40'-3"			18¼"	
F1402	28	39'-5"-37'-3"			18¼"	

(Dimensions are out to out of bars.)

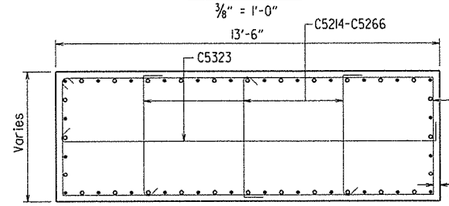




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

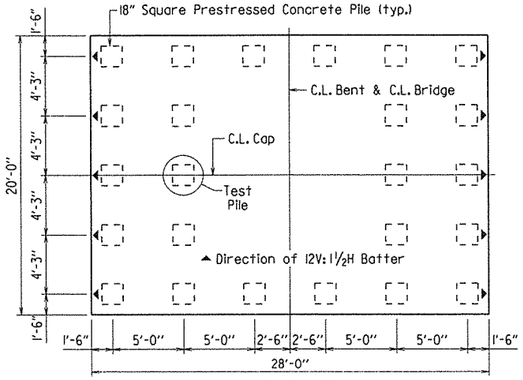
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 16 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/13/13 FILENAME: b070282_b16.dgn

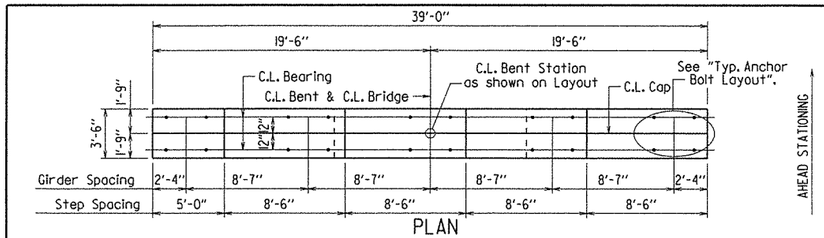
CHECKED BY: RCT DATE: 9/14 SCALE: as noted

DESIGNED BY: KWY DATE: 9/13

BRIDGE NO. A6362 DRAWING NO. 54957

PRINT DATE: 7/11/2014

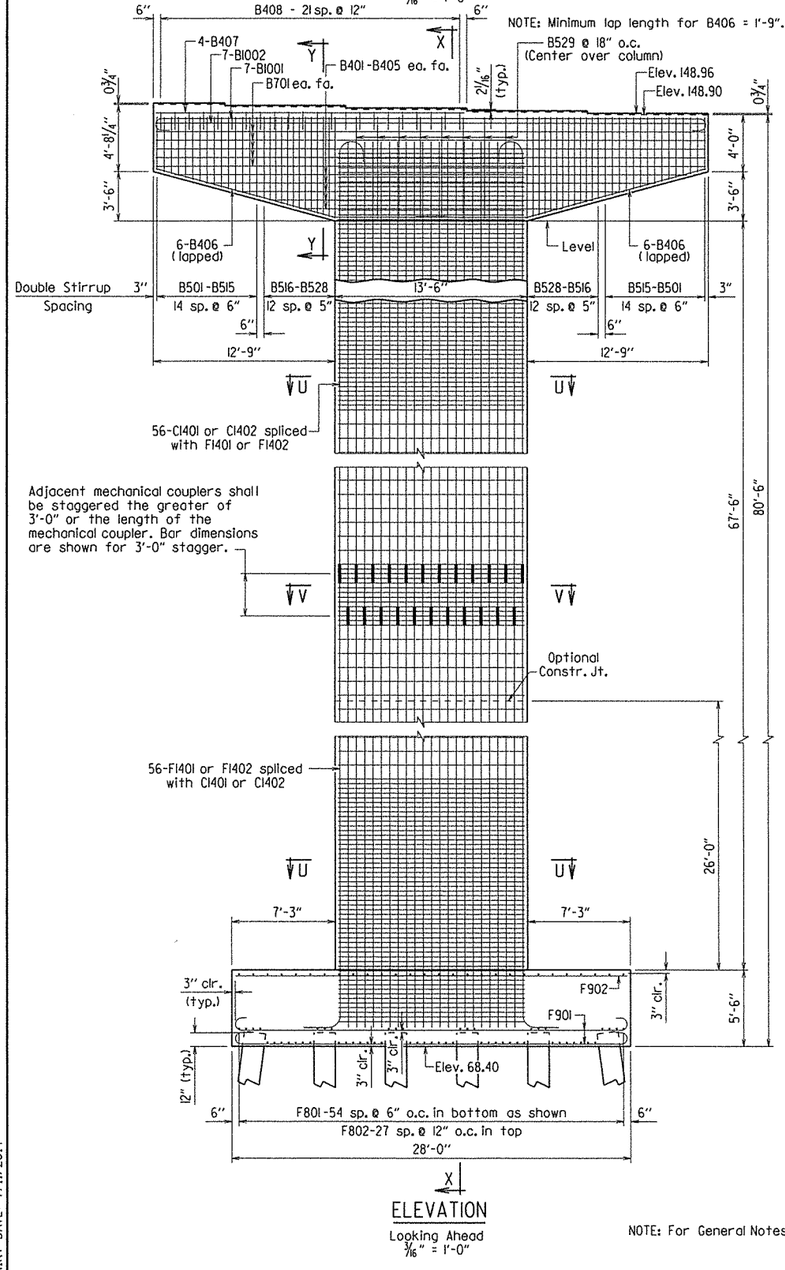
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	85	190
				①		A6362 - INT. BENT - 54958		



PLAN

3/16" = 1'-0"

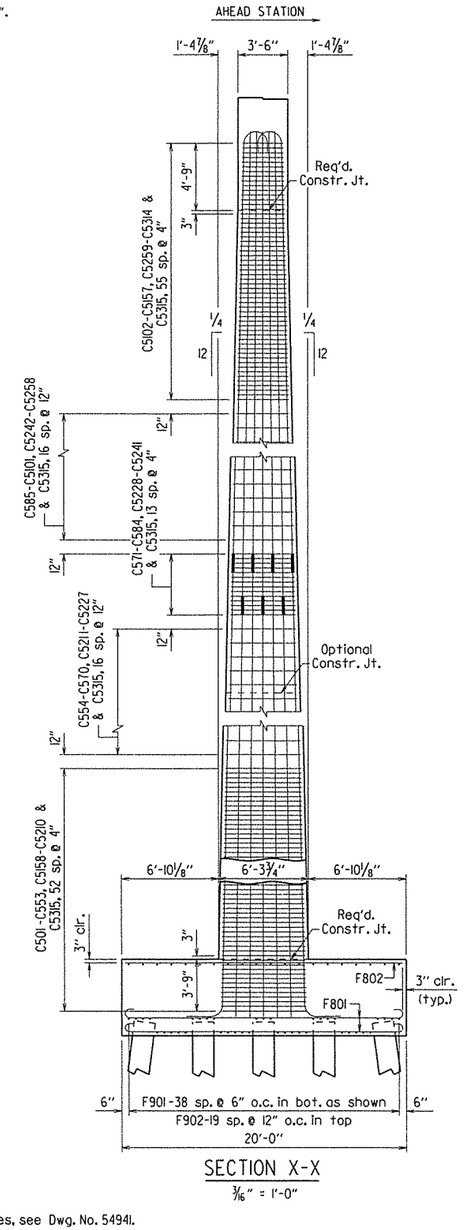
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

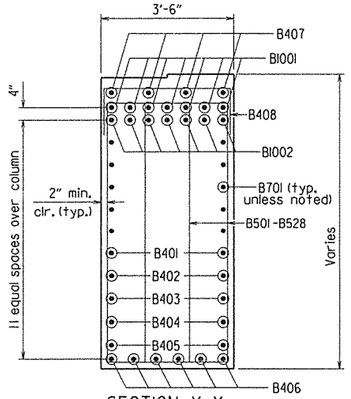
Looking Ahead

3/16" = 1'-0"



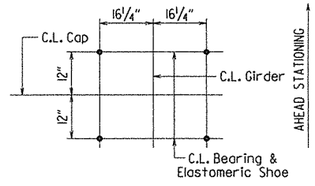
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

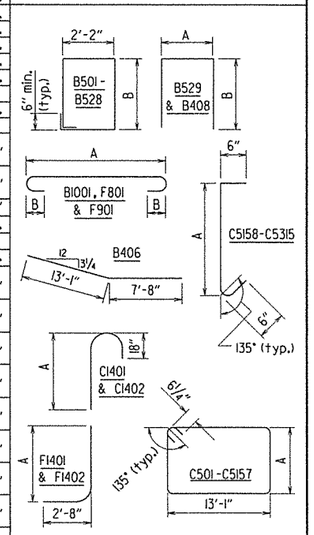
No Scale

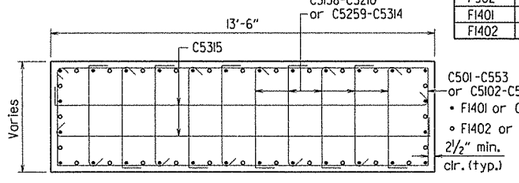
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	38'-11"-37'-6"	6'-0½"-5'-4"		2½"
C554-C570	1 ea.	37'-5"-36'-1"	5'-3½"-4'-7½"		2½"
C571-C584	1 ea.	36'-0"-35'-8"	4'-7"-4'-5"		2½"
C585-C5101	1 ea.	35'-7"-34'-3"	4'-4½"-3'-8½"		2½"
C5102-C5157	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5158-C5210	10 ea.	7'-1"-6'-5"	6'-0½"-5'-4"		2½"
C5211-C5227	3 ea.	6'-4"-5'-8"	5'-3½"-4'-7½"		2½"
C5228-C5241	3 ea.	5'-8"-5'-6"	4'-7"-4'-5"		2½"
C5242-C5258	3 ea.	5'-5"-4'-9"	4'-4½"-3'-8½"		2½"
C5259-C5314	10 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5315	266	14'-2"	13'-1"		2½"
C1401	28	40'-2"	37'-10"		18¼"
C1402	28	43'-2"	40'-10"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	28	41'-8"	39'-6"		18¼"
F1402	28	38'-8"	36'-6"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

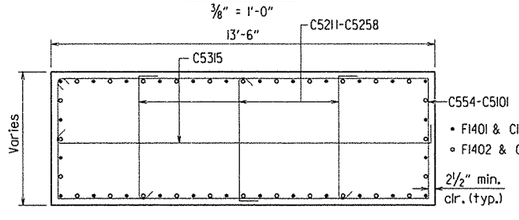




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

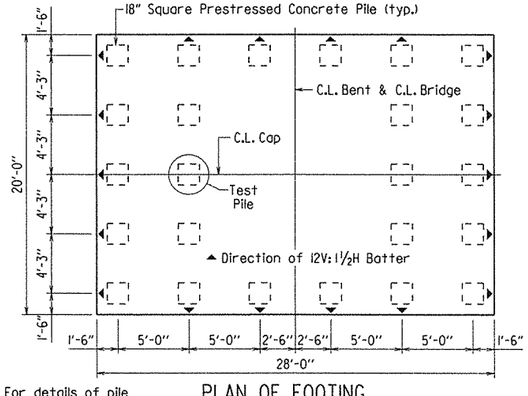
⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

⅜" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 17 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/13/13 FILENAME: b070282_b17.dgn

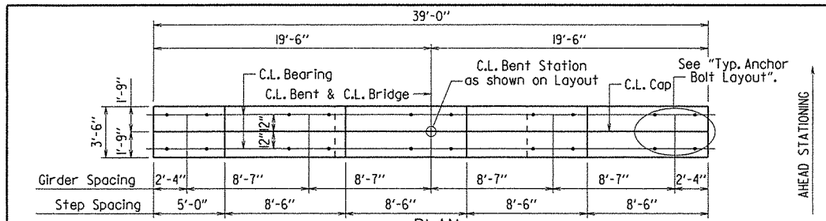
CHECKED BY: RLoT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 2/13

BRIDGE NO. A6362 DRAWING NO. 54958

PRINT DATE: 7/11/2014

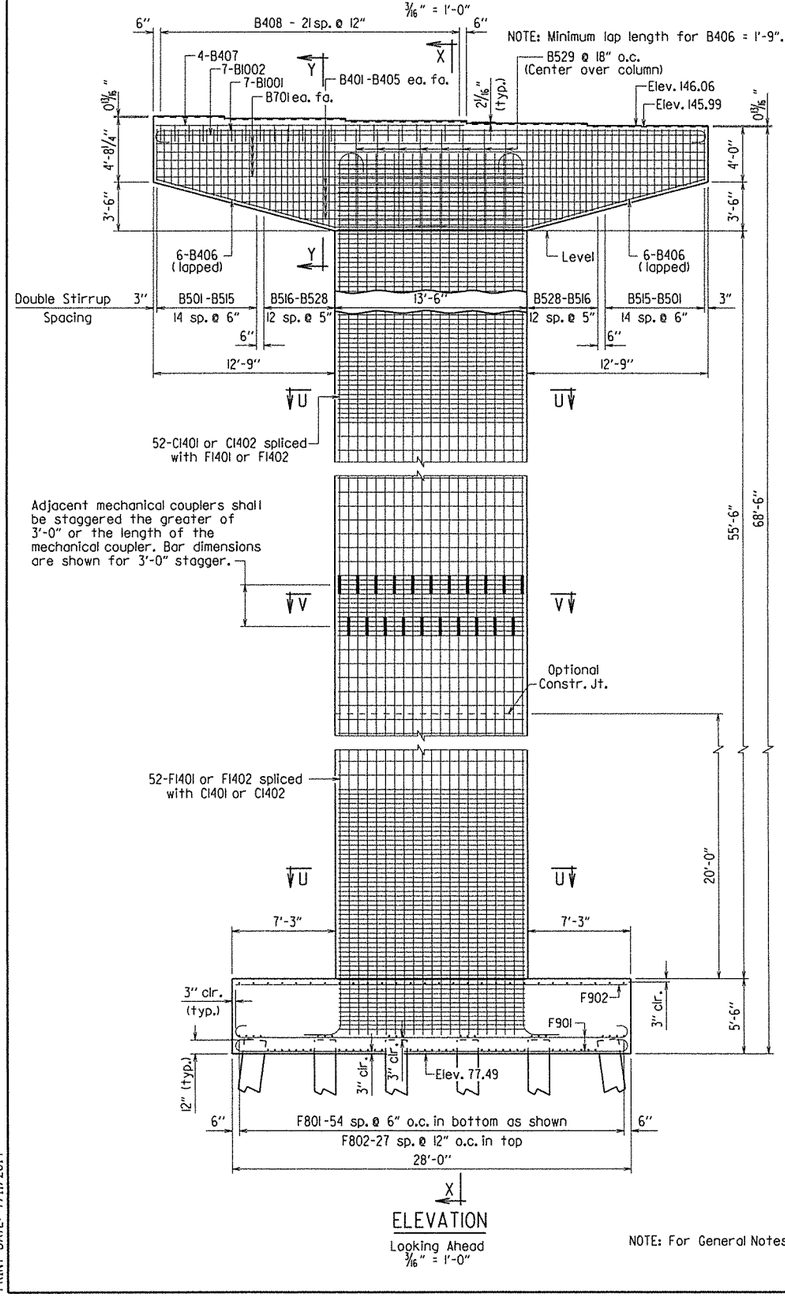
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	86	190
				①		A6362 - INT. BENT - 54959		



PLAN

3/16" = 1'-0"

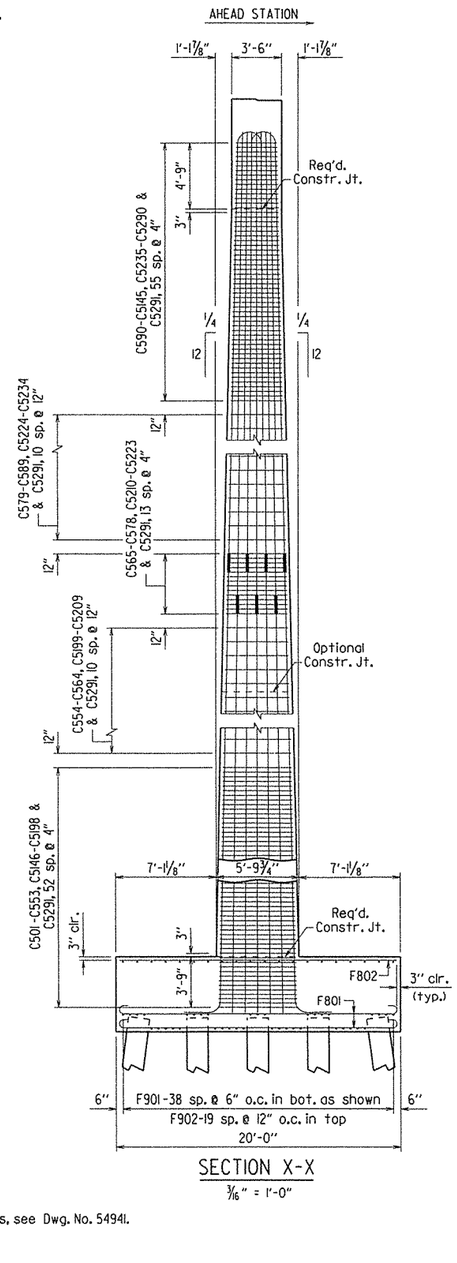
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

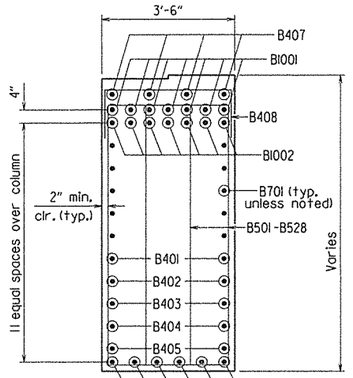
Looking Ahead

3/16" = 1'-0"



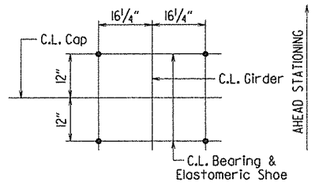
SECTION X-X

3/16" = 1'-0"



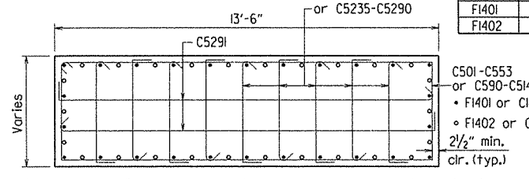
SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

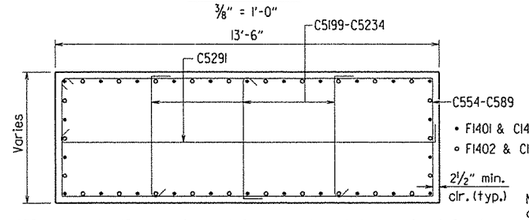
No Scale



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

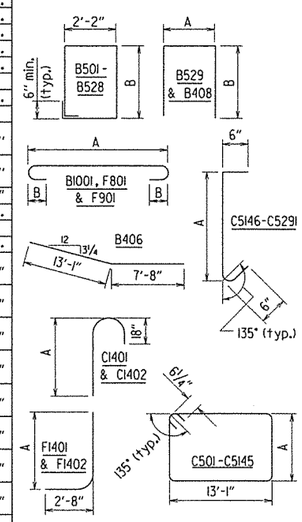
⅜" = 1'-0"

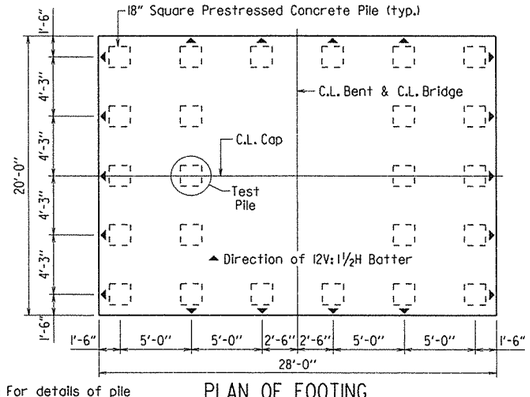
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	37'-11"-36'-6"	5'-6½"-4'-10"		2½"
C554-C564	1 ea.	36'-5"-35'-7"	4'-9½"-4'-4½"		2½"
C565-C578	1 ea.	35'-6"-35'-2"	4'-4"-4'-2"		2½"
C579-C589	1 ea.	35'-1"-34'-3"	4'-1½"-3'-8½"		2½"
C590-C5145	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5146-C5198	9 ea.	6'-7"-5'-11"	5'-6½"-4'-10"		2½"
C5199-C5209	3 ea.	5'-10"-5'-5"	4'-9½"-4'-4½"		2½"
C5210-C5223	3 ea.	5'-5"-5'-3"	4'-4"-4'-2"		2½"
C5224-C5234	3 ea.	5'-2"-4'-9"	4'-1½"-3'-8½"		2½"
C5235-C5290	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5291	254	14'-2"	13'-1"		2½"
C1401	26	34'-2"	31'-10"		18¼"
C1402	26	37'-2"	34'-10"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	35'-8"	33'-6"		18¼"
F1402	26	32'-8"	30'-6"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams





NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-11-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 18 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

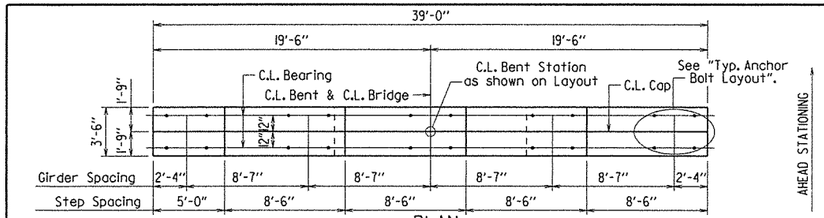
DRAWN BY: KWY DATE: 9/16/13
CHECKED BY: PLT DATE: 4/14
DESIGNED BY: KWY DATE: 7/13

FILENAME: b070282_b18.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54959

PRINT DATE: 7/11/2014

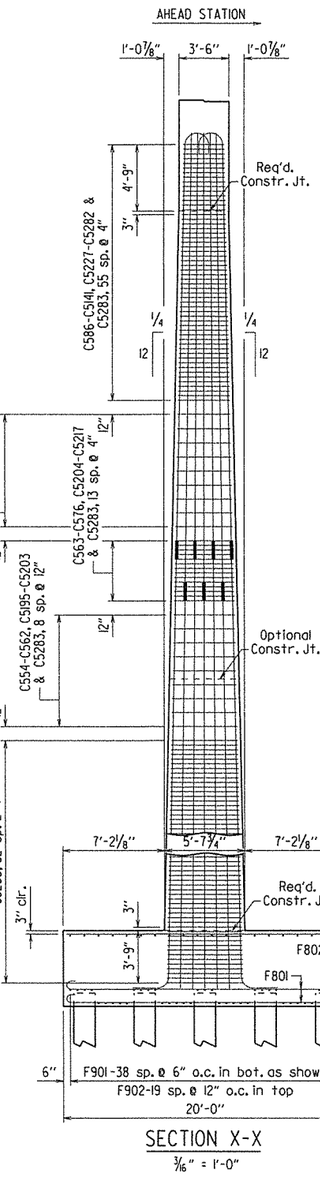
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	87	190
				①		A6362 - INT. BENT - 54960		



PLAN

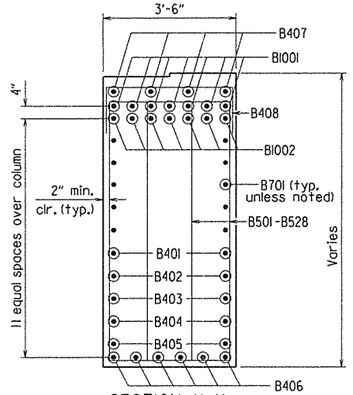
3/16" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



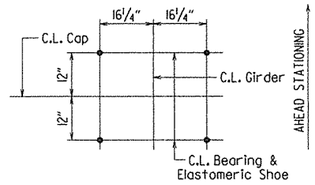
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

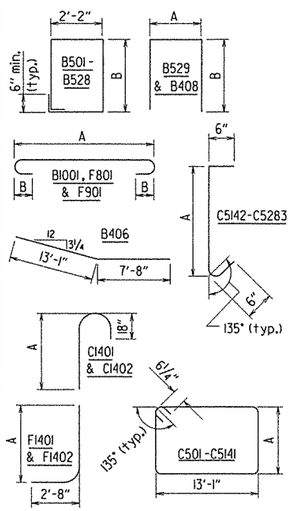
No Scale

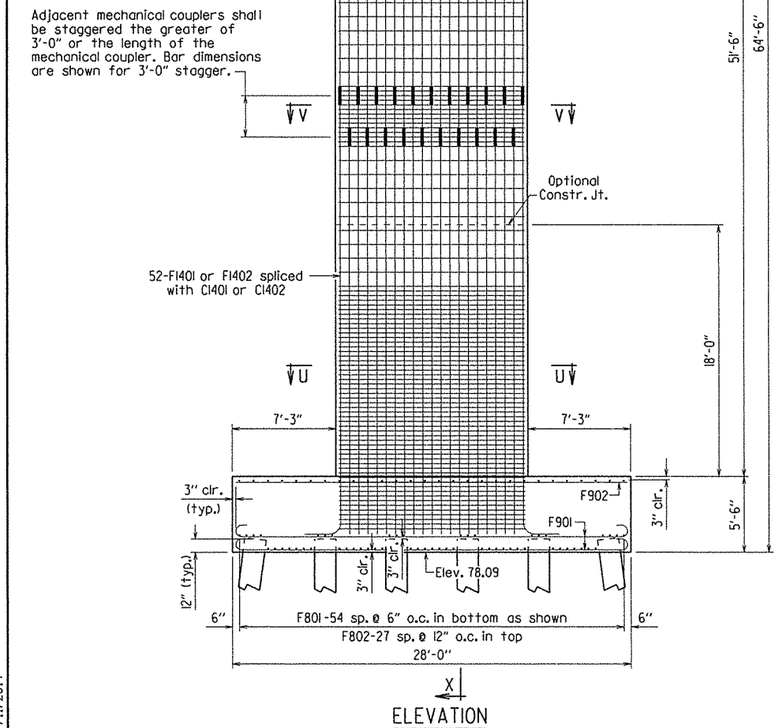
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	37'-7"-36'-2"	5'-4½"-4'-8"		2½"
C554-C562	1 ea.	36'-1"-35'-5"	4'-7½"-4'-3½"		2½"
C563-C576	1 ea.	35'-4"-35'-0"	4'-3"-4'-1"		2½"
C577-C585	1 ea.	34'-1"-34'-3"	4'-0½"-3'-8½"		2½"
C586-C5141	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5142-C5194	9 ea.	6'-5"-5'-9"	5'-4½"-4'-8"		2½"
C5195-C5203	3 ea.	5'-8"-5'-4"	4'-7½"-4'-3½"		2½"
C5204-C5217	3 ea.	5'-4"-5'-2"	4'-3"-4'-1"		2½"
C5218-C5226	3 ea.	5'-1"-4'-9"	4'-0½"-3'-8½"		2½"
C5227-C5282	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5283	250	14'-2"	13'-1"		2½"
C1401	26	32'-2"	29'-10"		18¼"
C1402	26	35'-2"	32'-10"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	33'-8"	31'-6"		18¼"
F1402	26	30'-8"	28'-6"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams



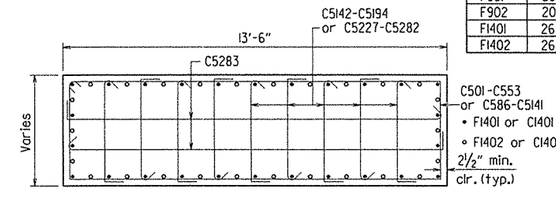


ELEVATION

Looking Ahead

3/16" = 1'-0"

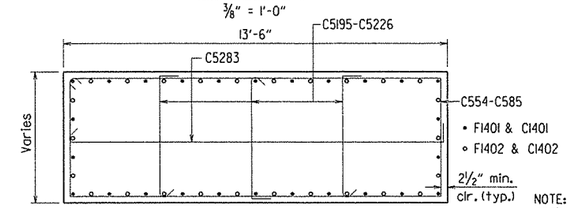
NOTE: For General Notes, see Dwg. No. 54941.



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

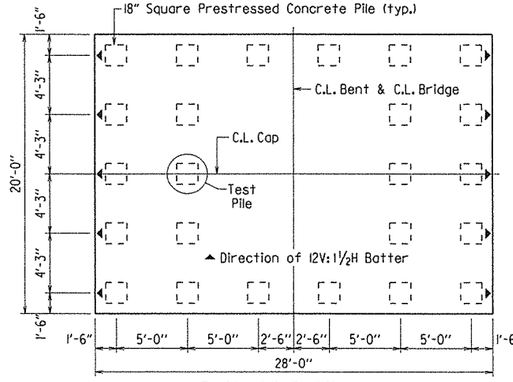
⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

⅜" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

DETAILS OF BENT 19 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

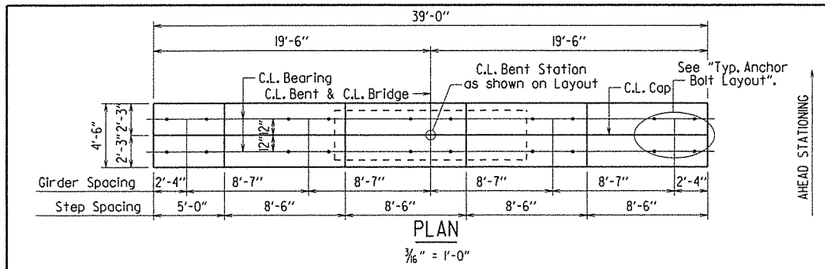
DRAWN BY: KWY DATE: 9/16/13
CHECKED BY: RGT DATE: 7/14
DESIGNED BY: KWY DATE: 9/13

FILENAME: b070282_b19.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54960

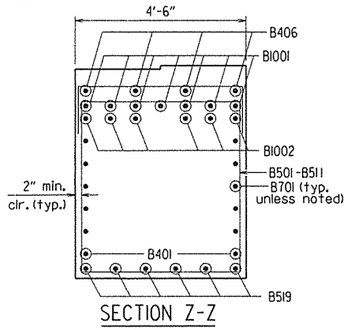
PRINT DATE: 7/11/2014

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.		070282	89	190
				①		A6362 - INT. BENT - 54961		



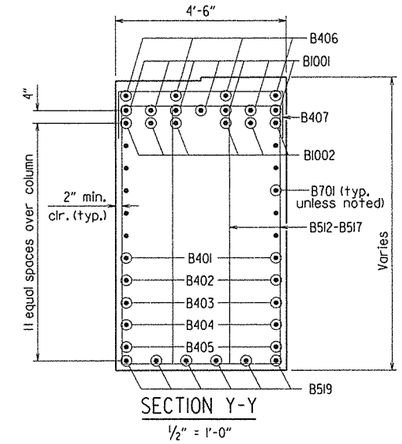
PLAN

3/16" = 1'-0"



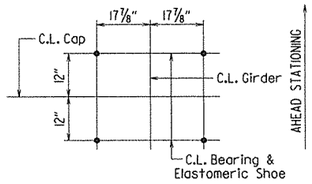
SECTION Z-Z

1/2" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

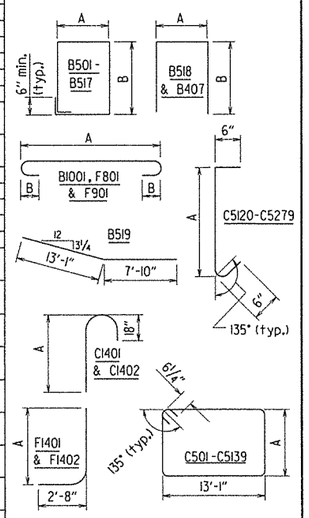
No Scale

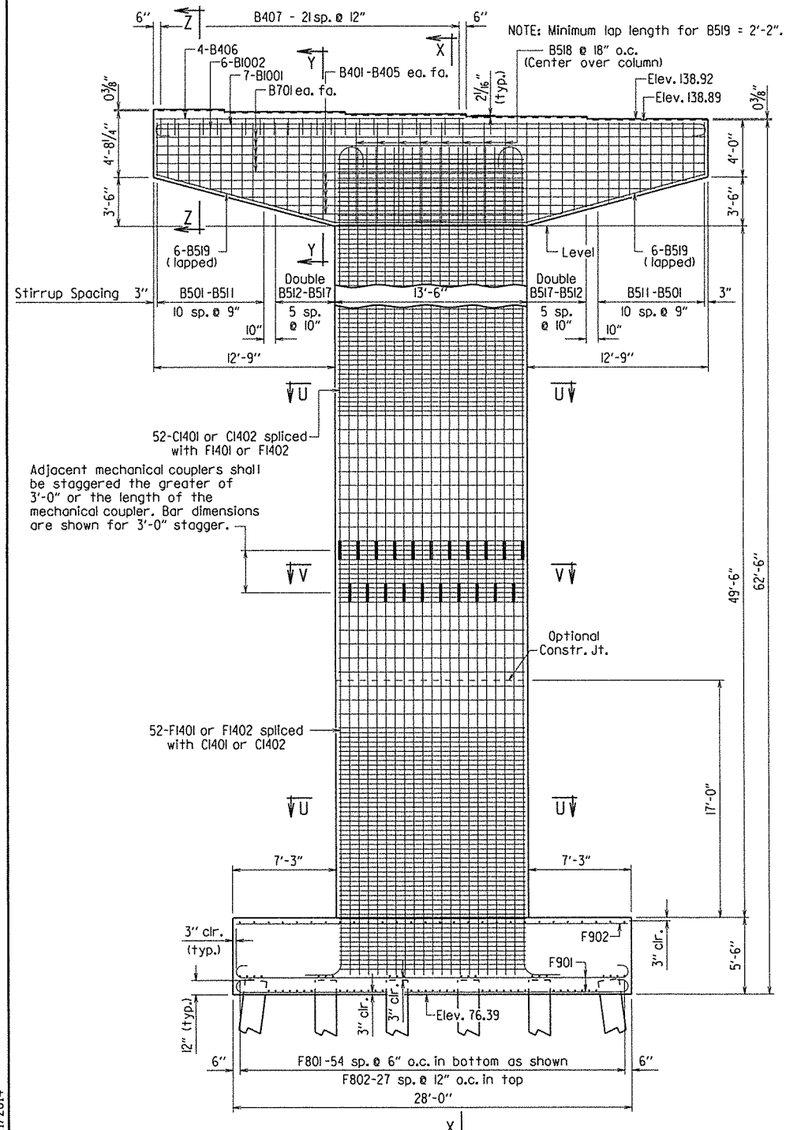
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	4	21'-8"			Str.
B407	22	6'-6"	4'-2"	1'-3"	2"
B501-B511	2 ea.	16'-4"-20'-5"	4'-2"	3'-9"-5'-9 1/2"	2 1/2"
B512-B517	4 ea.	18'-2"-20'-6"	2'-10"	6'-0"-7'-2"	2 1/2"
B518	8	18'-4"	4'-2"	7'-2"	2 1/2"
B519	12	20'-11"			3 3/4"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	6	38'-8"			Str.
C501-C553	1 ea.	37'-5"-36'-0"	5'-3 1/2"-4'-7"		2 1/2"
C554-C561	1 ea.	35'-11"-35'-4"	4'-6 1/2"-4'-3"		2 1/2"
C562-C575	1 ea.	35'-3"-34'-11"	4'-2 1/2"-4'-0 1/2"		2 1/2"
C576-C583	1 ea.	34'-10"-34'-3"	4'-0"-3'-8 1/2"		2 1/2"
C584-C5139	1 ea.	34'-2"-32'-7"	3'-8"-2'-10 1/2"		2 1/2"
C5140-C5192	9 ea.	6'-4"-5'-8"	5'-3 1/2"-4'-7"		2 1/2"
C5193-C5200	3 ea.	5'-7"-5'-4"	4'-6 1/2"-4'-3"		2 1/2"
C5201-C5214	3 ea.	5'-3"-5'-1"	4'-2 1/2"-4'-0 1/2"		2 1/2"
C5215-C5222	3 ea.	5'-1"-4'-9"	4'-0"-3'-8 1/2"		2 1/2"
C5223-C5278	9 ea.	4'-9"-3'-11"	3'-8"-2'-10 1/2"		2 1/2"
C5279	248	14'-2"	13'-1"		2 1/2"
C1401	26	31'-2"	28'-10"		18 1/4"
C1402	26	34'-2"	31'-10"		18 1/4"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	32'-8"	30'-6"		18 1/4"
F1402	26	29'-8"	27'-6"		18 1/4"

(Dimensions are out to out of bars.)

Bending Diagrams

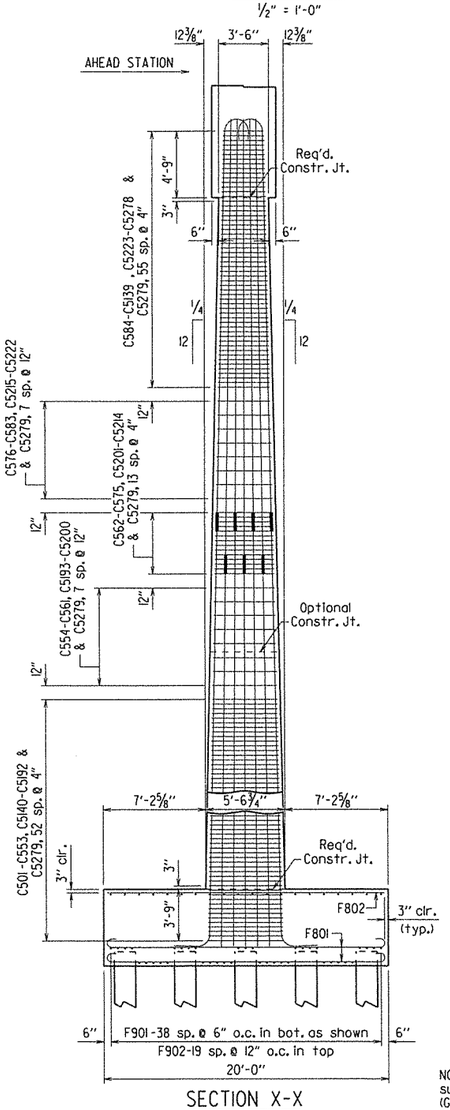




ELEVATION

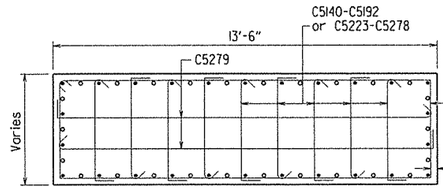
Looking Ahead

3/16" = 1'-0"



SECTION X-X

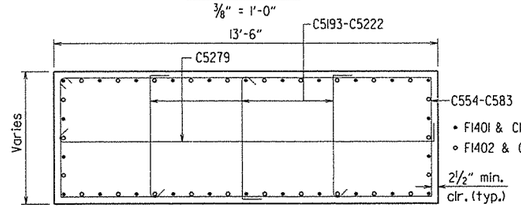
3/16" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

3/8" = 1'-0"

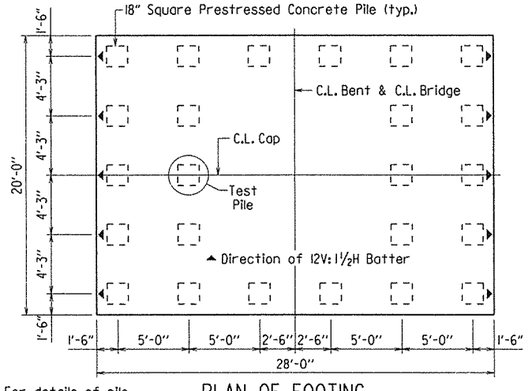


NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 20 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

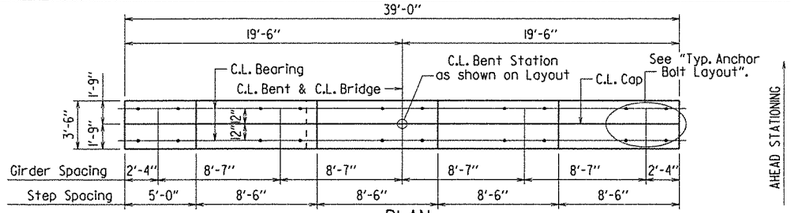
DRAWN BY: KWY DATE: 9/16/13
CHECKED BY: RCT DATE: 9/14
DESIGNED BY: KWY DATE: 9/13

FILENAME: b070282_b20.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54961

PRINT DATE: 7/11/2014

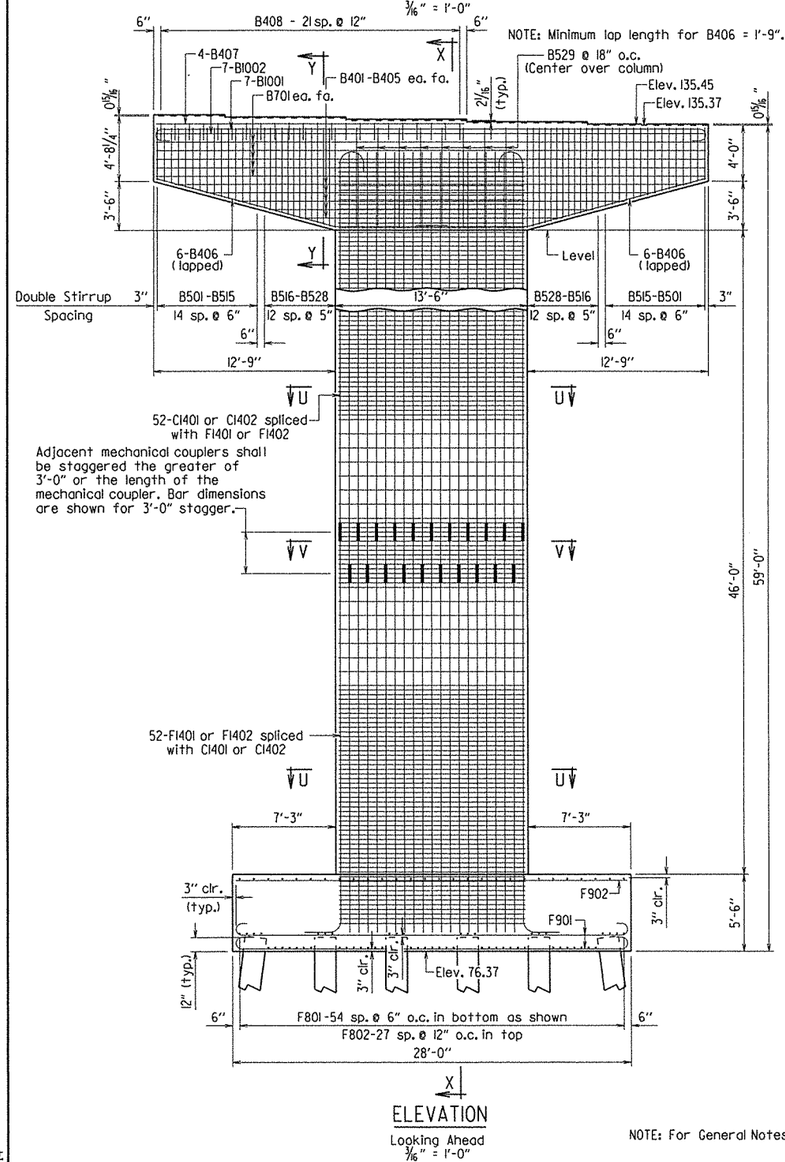
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	89	190
				①		A6362 - INT. BENT - 54962		



PLAN

3/16" = 1'-0"

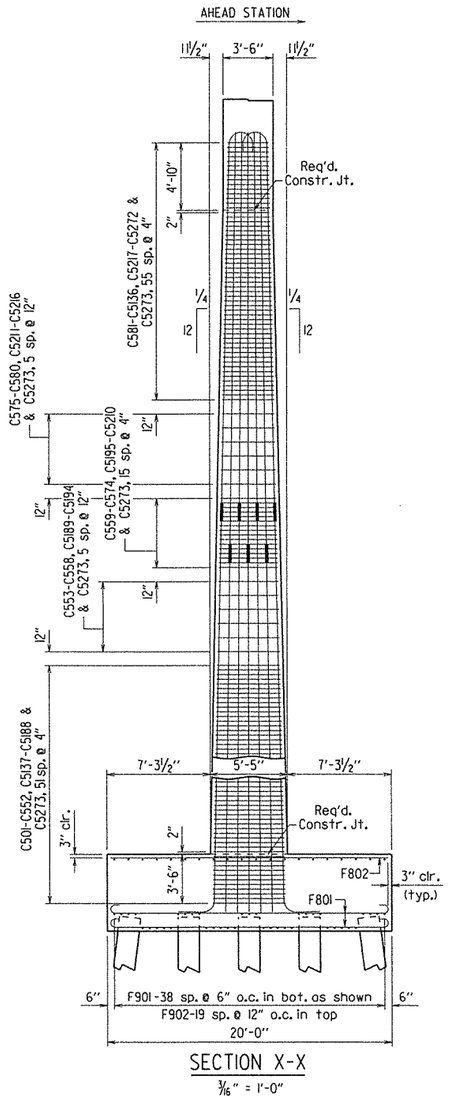
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

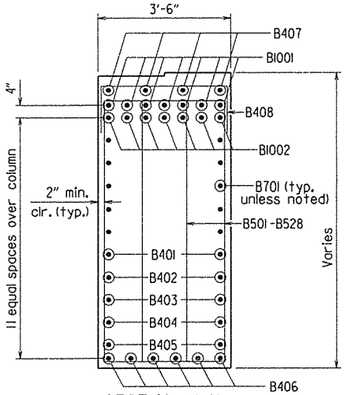
Looking Ahead

3/16" = 1'-0"



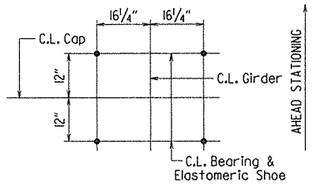
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

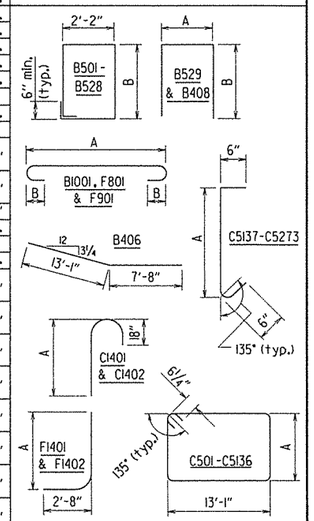
No Scale

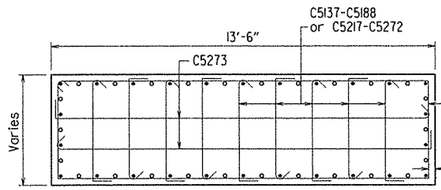
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C552	1 ea.	37'-2"-35'-9"	5'-2"-4'-5½"		2½"
C553-C558	1 ea.	35'-8"-35'-3"	4'-5"-4'-2½"		2½"
C559-C574	1 ea.	35'-2"-34'-9"	4'-2"-3'-11½"		2½"
C575-C580	1 ea.	34'-8"-34'-3"	3'-11"-3'-8½"		2½"
C581-C5136	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5137-C5188	9 ea.	6'-3"-5'-6"	5'-2"-4'-5½"		2½"
C5189-C5194	3 ea.	5'-6"-5'-3"	4'-5"-4'-2½"		2½"
C5195-C5210	3 ea.	5'-3"-5'-0"	4'-2"-3'-11½"		2½"
C5211-C5216	3 ea.	5'-0"-4'-9"	3'-11"-3'-8½"		2½"
C5217-C5272	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5273	244	14'-2"	13'-1"		2½"
C1401	26	29'-5"	27'-1"		18¼"
C1402	26	32'-5"	30'-1"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	30'-11"	28'-9"		18¼"
F1402	26	27'-11"	25'-9"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

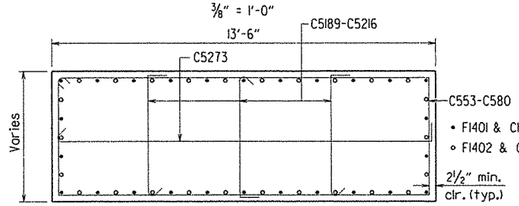




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

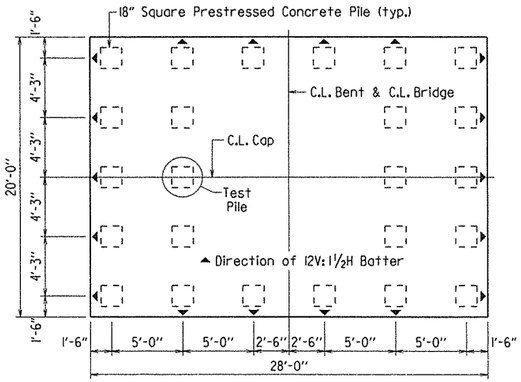
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 21 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

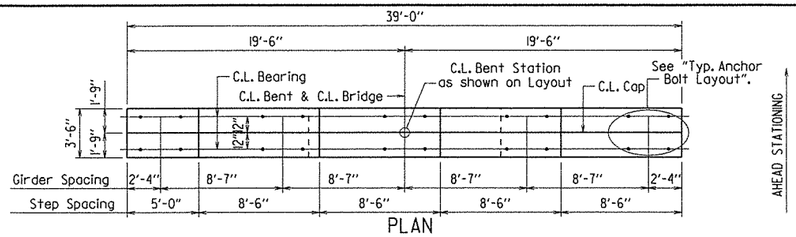
DRAWN BY: KWY DATE: 9/6/13
CHECKED BY: RGT DATE: 4/14
DESIGNED BY: KWY DATE: 1/13

FILENAME: b070282_b21.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54962

PRINT DATE: 7/11/2014

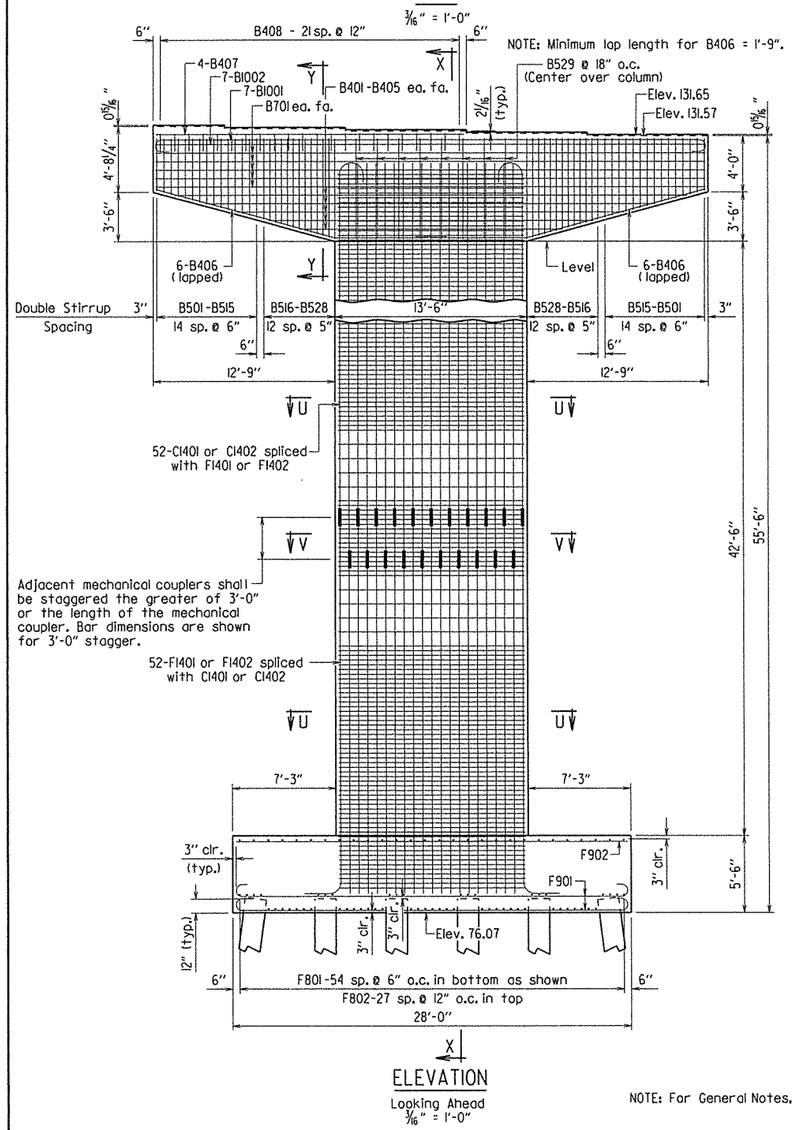
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	90	190
				(1)		A6362 - INT. BENT - 54963		



PLAN

3/16" = 1'-0"

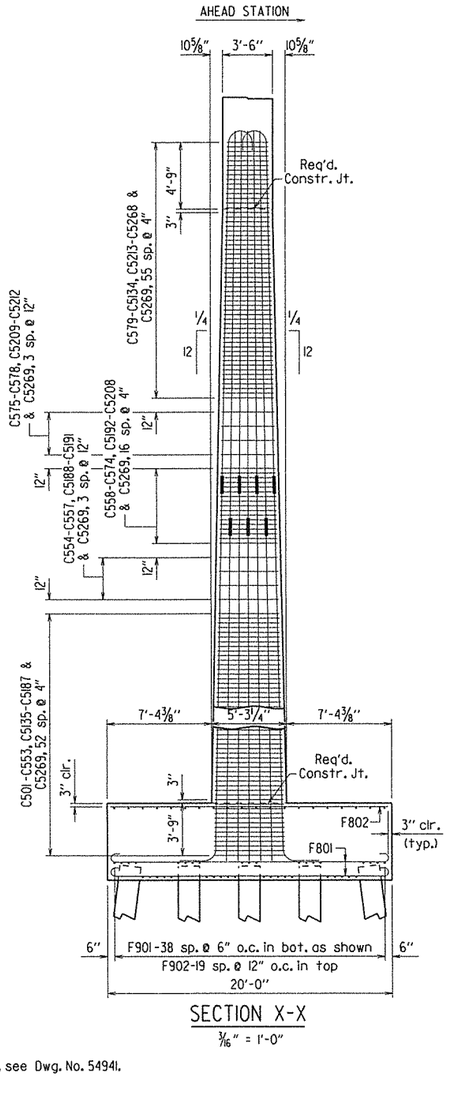
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



ELEVATION

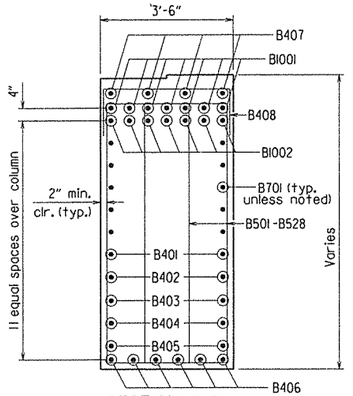
Looking Ahead

3/16" = 1'-0"



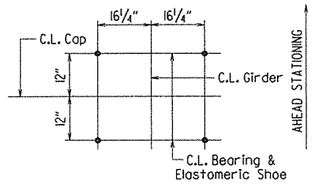
SECTION X-X

3/16" = 1'-0"



SECTION Y-Y

½" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

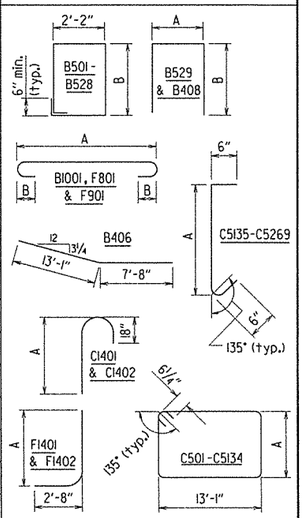
No Scale

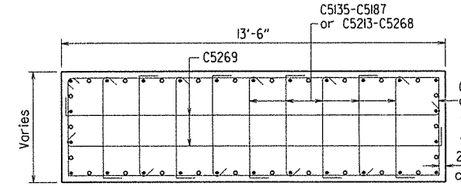
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2½"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9½"-7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	36'-10"-35'-5"	5'-0"-4'-3½"		2½"
C554-C557	1 ea.	35'-4"-35'-1"	4'-3"-4'-1½"		2½"
C558-C574	1 ea.	35'-0"-34'-7"	4'-1"-3'-10½"		2½"
C575-C578	1 ea.	34'-6"-34'-3"	3'-10"-3'-8½"		2½"
C579-C5134	1 ea.	34'-2"-32'-7"	3'-8"-2'-10½"		2½"
C5135-C5187	9 ea.	6'-1"-5'-4"	5'-0"-4'-3½"		2½"
C5188-C5191	3 ea.	5'-4"-5'-2"	4'-3"-4'-1½"		2½"
C5192-C5208	3 ea.	5'-2"-4'-11"	4'-1"-3'-10½"		2½"
C5209-C5212	3 ea.	4'-11"-4'-9"	3'-10"-3'-8½"		2½"
C5213-C5268	9 ea.	4'-9"-3'-11"	3'-8"-2'-10½"		2½"
C5269	243	14'-2"	13'-1"		2½"
C1401	26	27'-8"	25'-4"		18¼"
C1402	26	30'-8"	28'-4"		18¼"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	29'-2"	27'-0"		18¼"
F1402	26	26'-2"	24'-0"		18¼"

(Dimensions are out to out of bars.)

Bending Diagrams

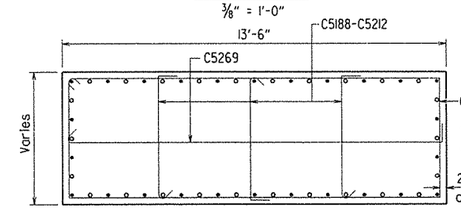




NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

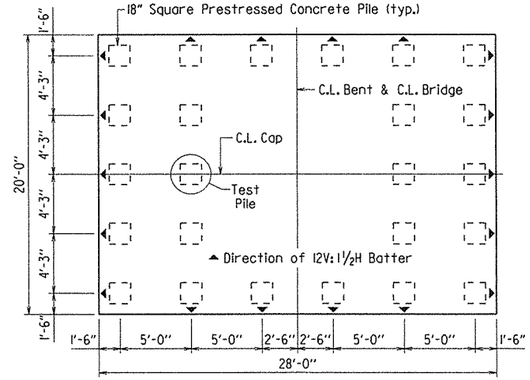
⅜" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

⅜" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 22 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 9/6/13 FILENAME: b070282_b22.dgn

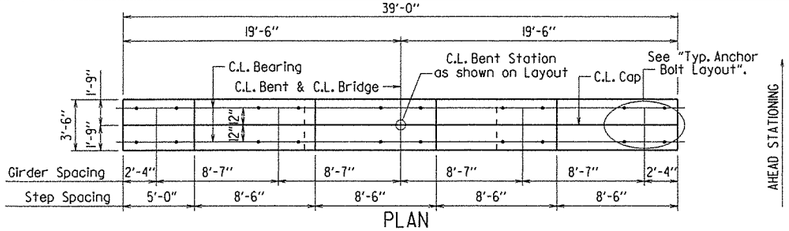
CHECKED BY: PLOT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54963

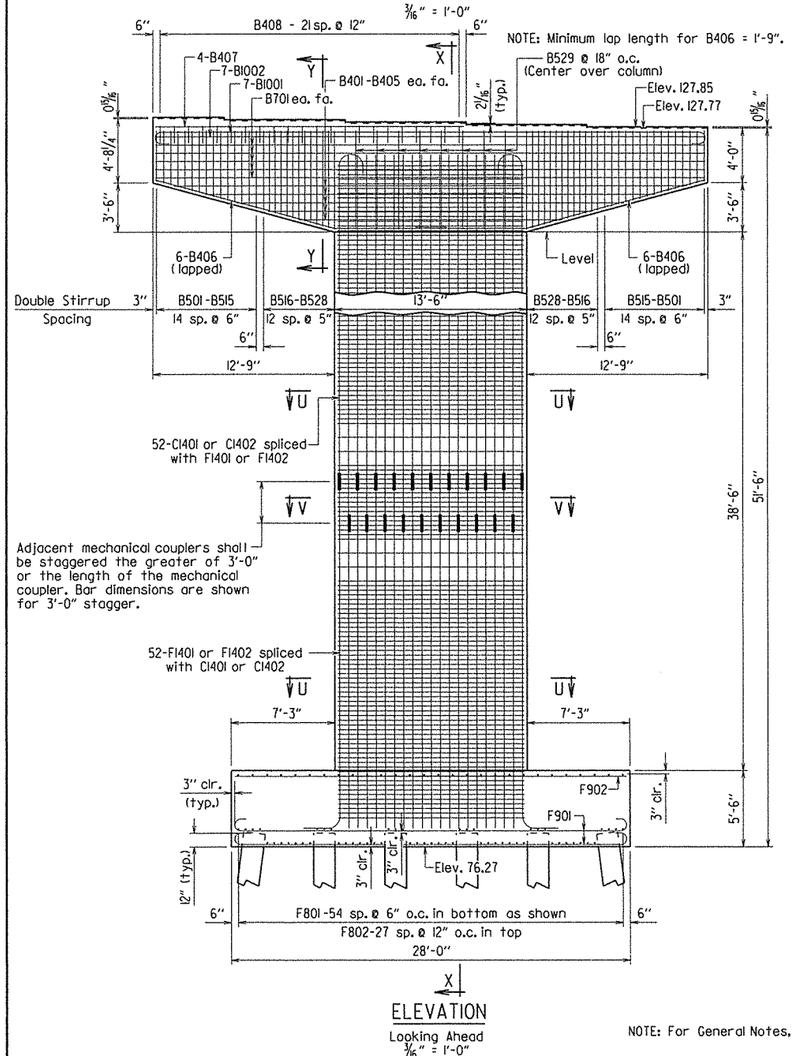
PRINT DATE: 7/11/2014

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.		070282	91	190
				①		A6362 - INT. BENT - 54964		



PLAN

3/16" = 1'-0"



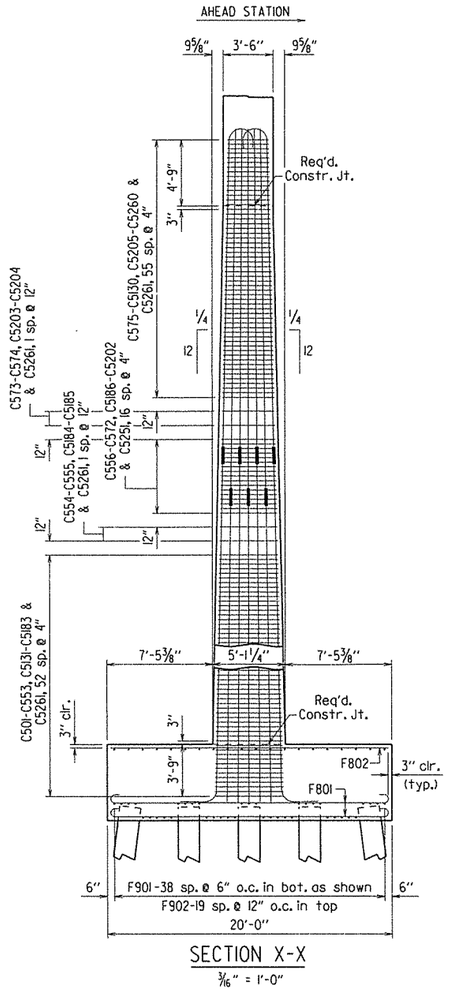
ELEVATION

Looking Ahead

3/16" = 1'-0"

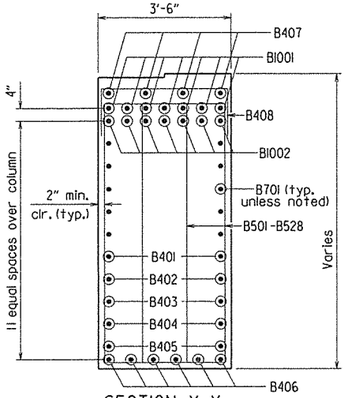
NOTE: For General Notes, see Dwg. No. 54941.

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



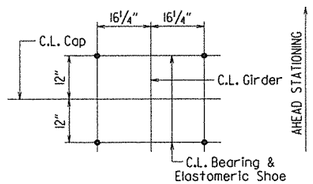
SECTION X-X

3/16" = 1'-0"



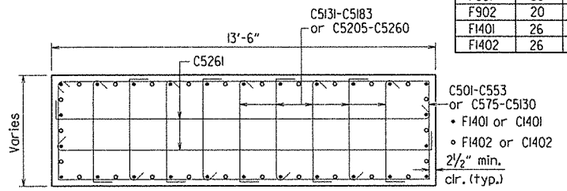
SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

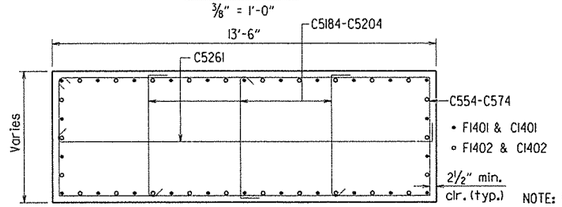
No Scale



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

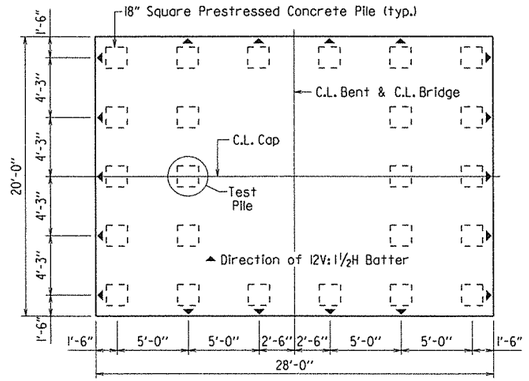
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

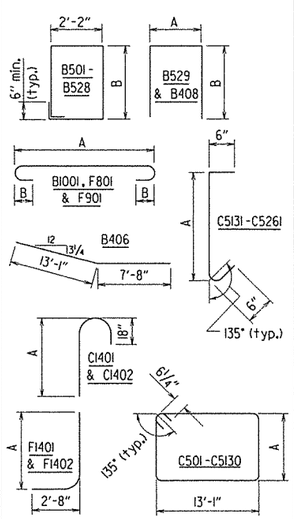
PLAN OF FOOTING

3/16" = 1'-0"

BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2 1/2"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9 1/2"-7'-2"	2 1/2"
B529	8	17'-4"	3'-2"	7'-2"	2 1/2"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	7	38'-8"			Str.
C501-C553	1 ea.	36'-6"-35'-1"	4'-10"-4'-1 1/2"		2 1/2"
C554-C555	1 ea.	35'-0"-34'-11"	4'-1"-4'-0 1/2"		2 1/2"
C556-C572	1 ea.	34'-10"-34'-5"	4'-0"-3'-9 1/2"		2 1/2"
C573-C574	1 ea.	34'-4"-34'-3"	3'-9"-3'-8 1/2"		2 1/2"
C575-C5130	1 ea.	34'-2"-32'-7"	3'-8"-2'-10 1/2"		2 1/2"
C5131-C5183	9 ea.	5'-1"-5'-2"	4'-10"-4'-1 1/2"		2 1/2"
C5184-C5185	3 ea.	5'-2"-5'-1"	4'-1"-4'-0 1/2"		2 1/2"
C5186-C5202	3 ea.	5'-1"-4'-10"	4'-0"-3'-9 1/2"		2 1/2"
C5203-C5204	3 ea.	4'-10"-4'-9"	3'-9"-3'-8 1/2"		2 1/2"
C5205-C5260	9 ea.	4'-9"-3'-11"	3'-8"-2'-10 1/2"		2 1/2"
C5261	239	14'-2"	13'-1"		2 1/2"
C1401	26	25'-8"	23'-4"		18 1/4"
C1402	26	28'-8"	26'-4"		18 1/4"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	27'-2"	25'-0"		18 1/4"
F1402	26	24'-2"	22'-0"		18 1/4"

(Dimensions are out to out of bars.)



STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 23 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

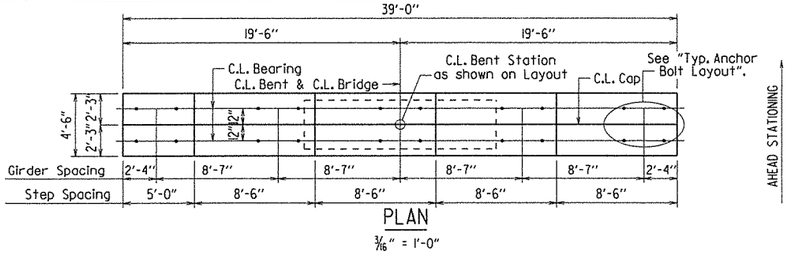
DRAWN BY: KWY DATE: 9/16/13
CHECKED BY: RLoT DATE: 4/14
DESIGNED BY: KWY DATE: 1/13

FILENAME: b070282_b23.dgn
SCALE: as noted

BRIDGE NO. A6362 DRAWING NO. 54964

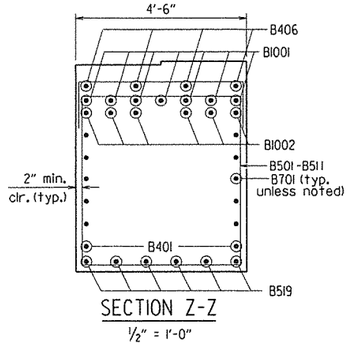
PRINT DATE: 7/11/2014

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.		070282	92	190
				(1)		A6362 - INT. BENT - 54965		



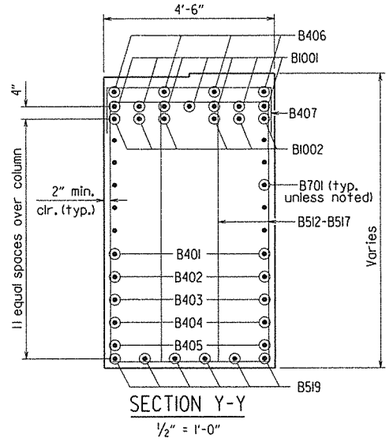
PLAN

3/16" = 1'-0"



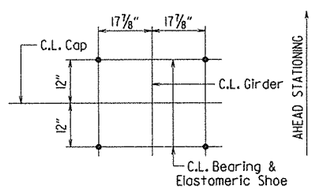
SECTION Z-Z

1/2" = 1'-0"



SECTION Y-Y

1/2" = 1'-0"



TYP. ANCHOR BOLT LAYOUT

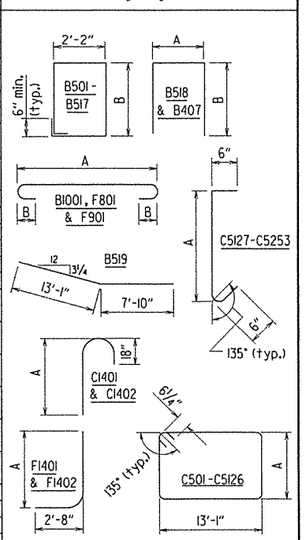
No Scale

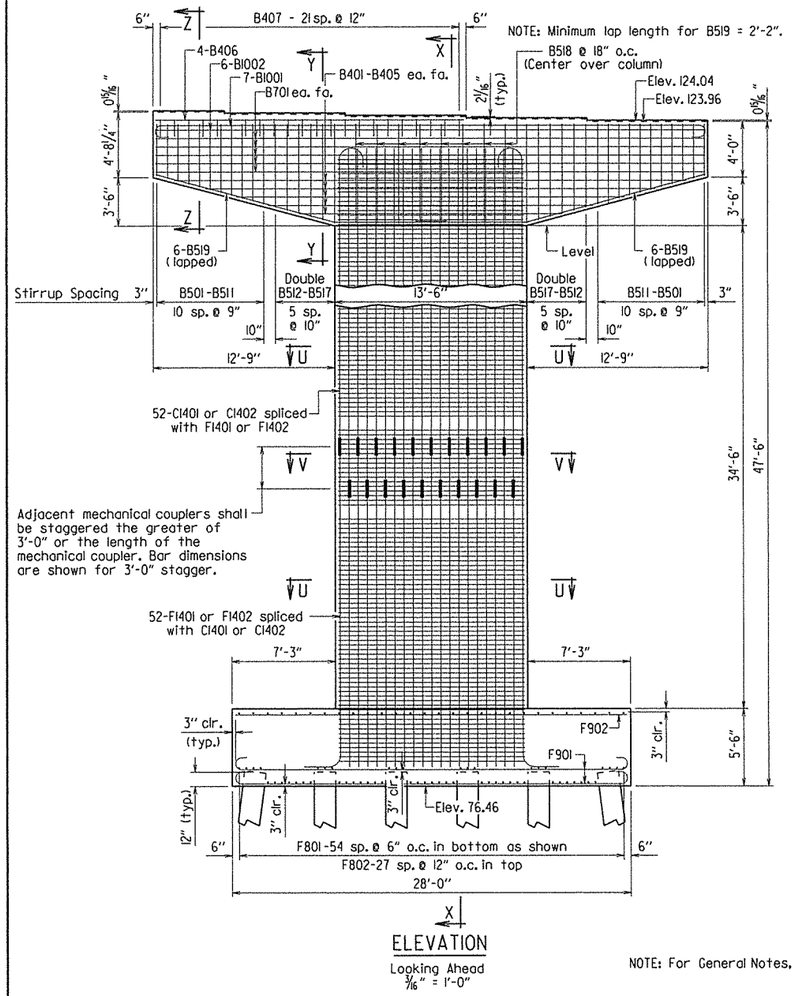
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	4	21'-8"			Str.
B407	22	6'-6"	4'-2"	1'-3"	2"
B501 - B511	2 ea.	16'-4" - 20'-5"	4'-2"	3'-9" - 5'-9 1/2"	2 1/2"
B512 - B517	4 ea.	18'-2" - 20'-6"	2'-10"	6'-0" - 7'-2"	2 1/2"
B518	8	18'-4"	4'-2"	7'-2"	2 1/2"
B519	12	20'-11"			3 3/4"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	6	38'-8"			Str.
C501 - C553	1 ea.	36'-2" - 34'-9"	4'-8" - 3'-11 1/2"		2 1/2"
C554 - C570	1 ea.	34'-8" - 34'-3"	3'-11" - 3'-8 1/2"		2 1/2"
C571 - C5126	1 ea.	34'-2" - 32'-7"	3'-8" - 2'-10 1/2"		2 1/2"
C5127 - C5179	9 ea.	5'-9" - 5'-0"	4'-8" - 3'-11 1/2"		2 1/2"
C5180 - C5196	3 ea.	5'-0" - 4'-9"	3'-11" - 3'-8 1/2"		2 1/2"
C5197 - C5252	9 ea.	4'-9" - 3'-11"	3'-8" - 2'-10 1/2"		2 1/2"
C5253	235	14'-2"	13'-1"		2 1/2"
C1401	26	23'-8"	21'-4"		18 1/4"
C1402	26	26'-8"	24'-4"		18 1/4"
F801	55	21'-4"	19'-6"	8"	6"
F802	28	19'-6"			Str.
F901	39	30'-0"	27'-6"	10"	9"
F902	20	27'-6"			Str.
F1401	26	25'-2"	23'-0"		18 1/4"
F1402	26	22'-2"	20'-0"		18 1/4"

(Dimensions are out to out of bars.)

Bending Diagrams

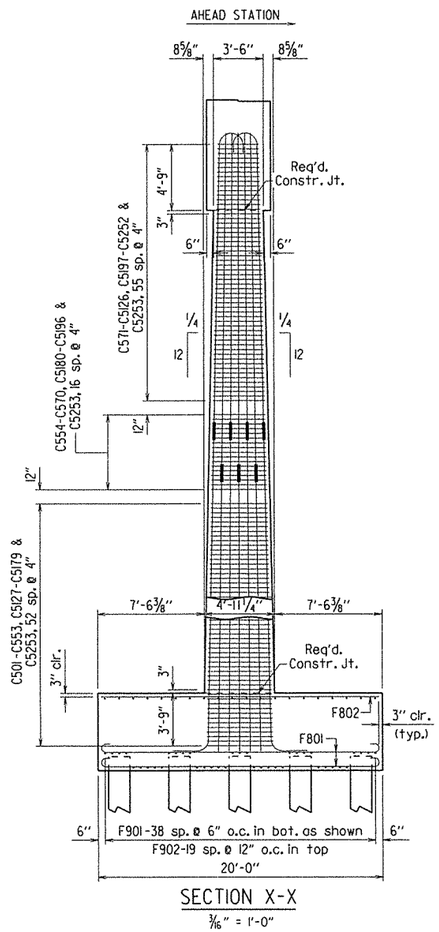




ELEVATION

Looking Ahead

3/16" = 1'-0"

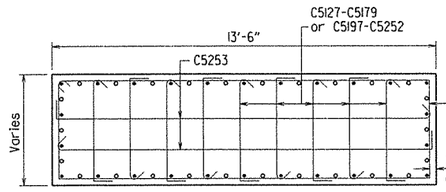


SECTION X-X

3/16" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

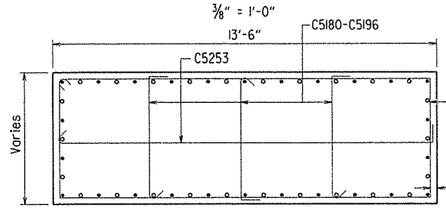
NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION U-U

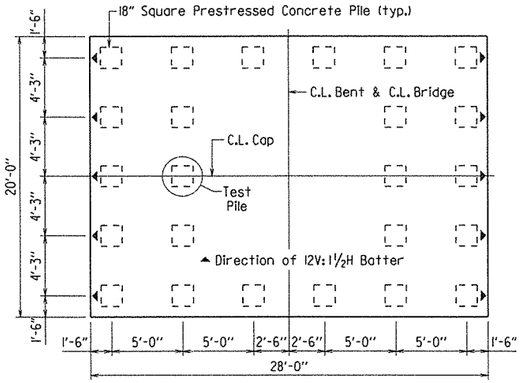
3/8" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

SECTION V-V

3/8" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

3/16" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 24 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/30/13 FILENAME: b070282_b24.dgn

CHECKED BY: PLO DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54965

PRINT DATE: 7/11/2014

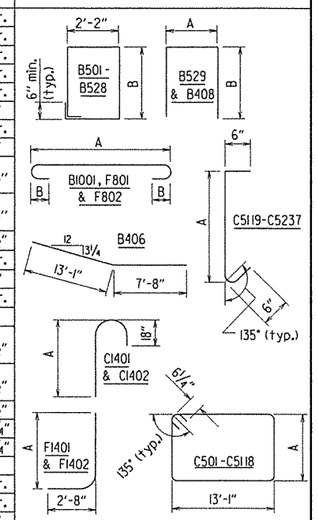
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	93	190

(1) A6362 - INT. BENT - 54966

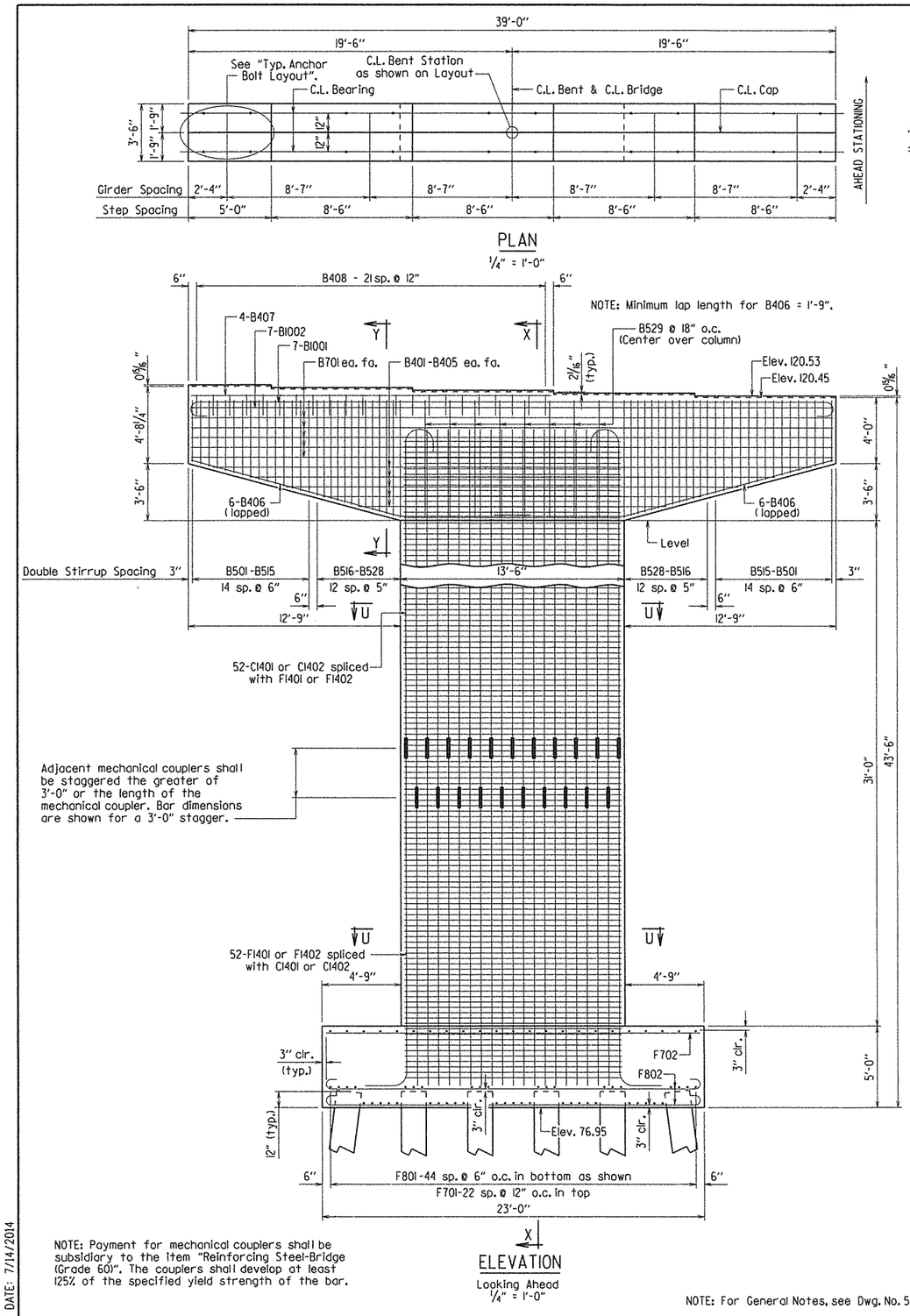
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501 - B515	4 ea.	12'-4"- 16'-2"		3'-9"- 5'-8"	2½"
B516- B528	4 ea.	16'-5"- 19'-2"		5'-9½"- 7'-2"	2½"
B529	8	17'-4"	3'-2"	7'-2"	2½"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11½"	10"
B1002	7	38'-8"			Str.
C501 - C5118	1 ea.	35'-10"- 32'-7"	4'-6"- 2'-10½"		2½"
C5119- C5236	9 ea.	5'-7"- 3'-11"	4'-6"- 2'-10½"		2½"
C5237	236	14'-2"	13'-1"		2½"
C1401	26	21'-11"	19'-7"		18¼"
C1402	26	24'-11"	22'-7"		18¼"
F701	23	15'-6"			Str.
F702	16	22'-6"			Str.
F801	45	17'-4"	15'-6"	8"	6"
F802	31	24'-4"	22'-6"	8"	6"
F1401	26	22'-11"	20'-9"		18¼"
F1402	26	19'-11"	17'-9"		18¼"

Bending Diagrams



(Dimensions are out to out of bars.)



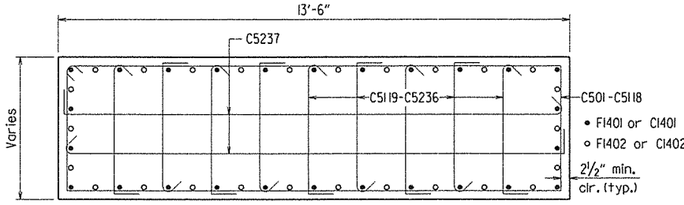
PLAN

1/4" = 1'-0"

ELEVATION

Looking Ahead

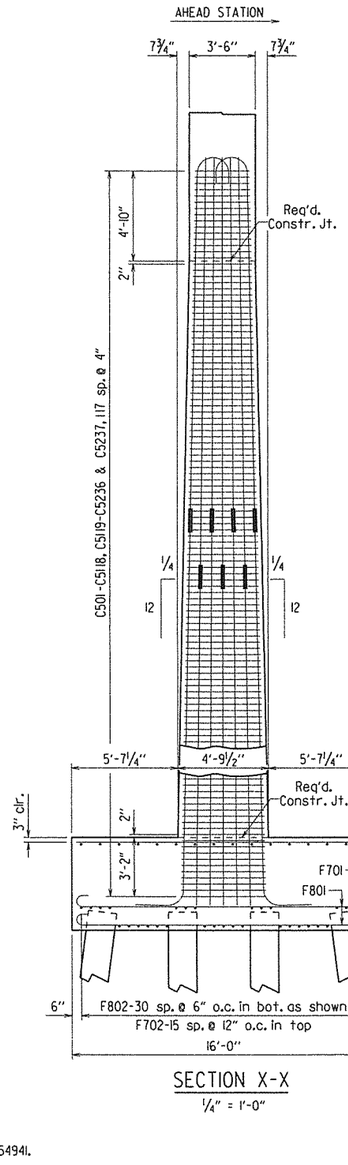
1/4" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

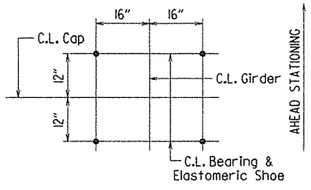
SECTION U-U

1/2" = 1'-0"



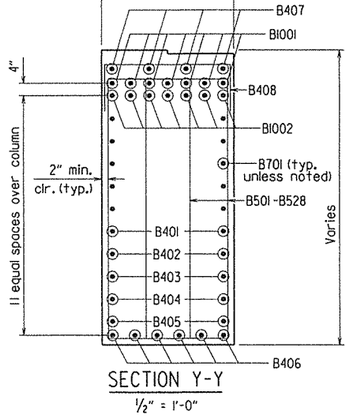
SECTION X-X

1/4" = 1'-0"



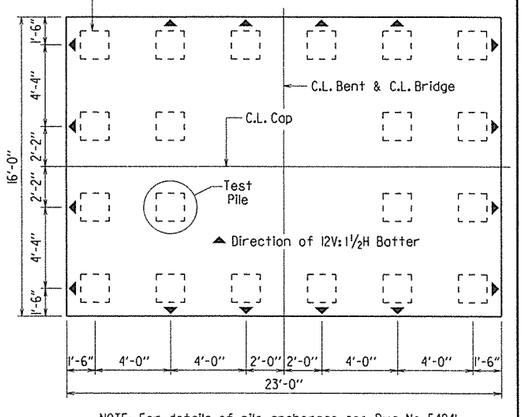
TYP. ANCHOR BOLT LAYOUT

No Scale



SECTION Y-Y

1/2" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

1/4" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 25 OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/30/13 FILENAME: b070282_b25.dgn

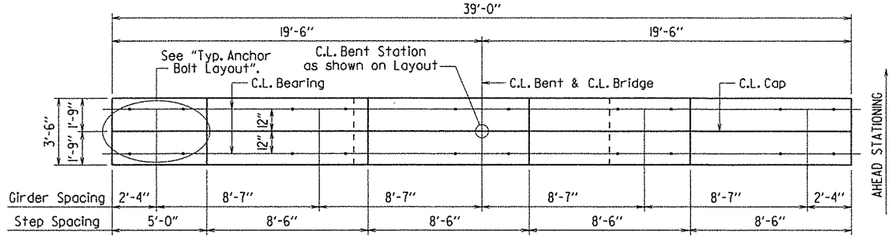
CHECKED BY: PGT DATE: 9/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54966

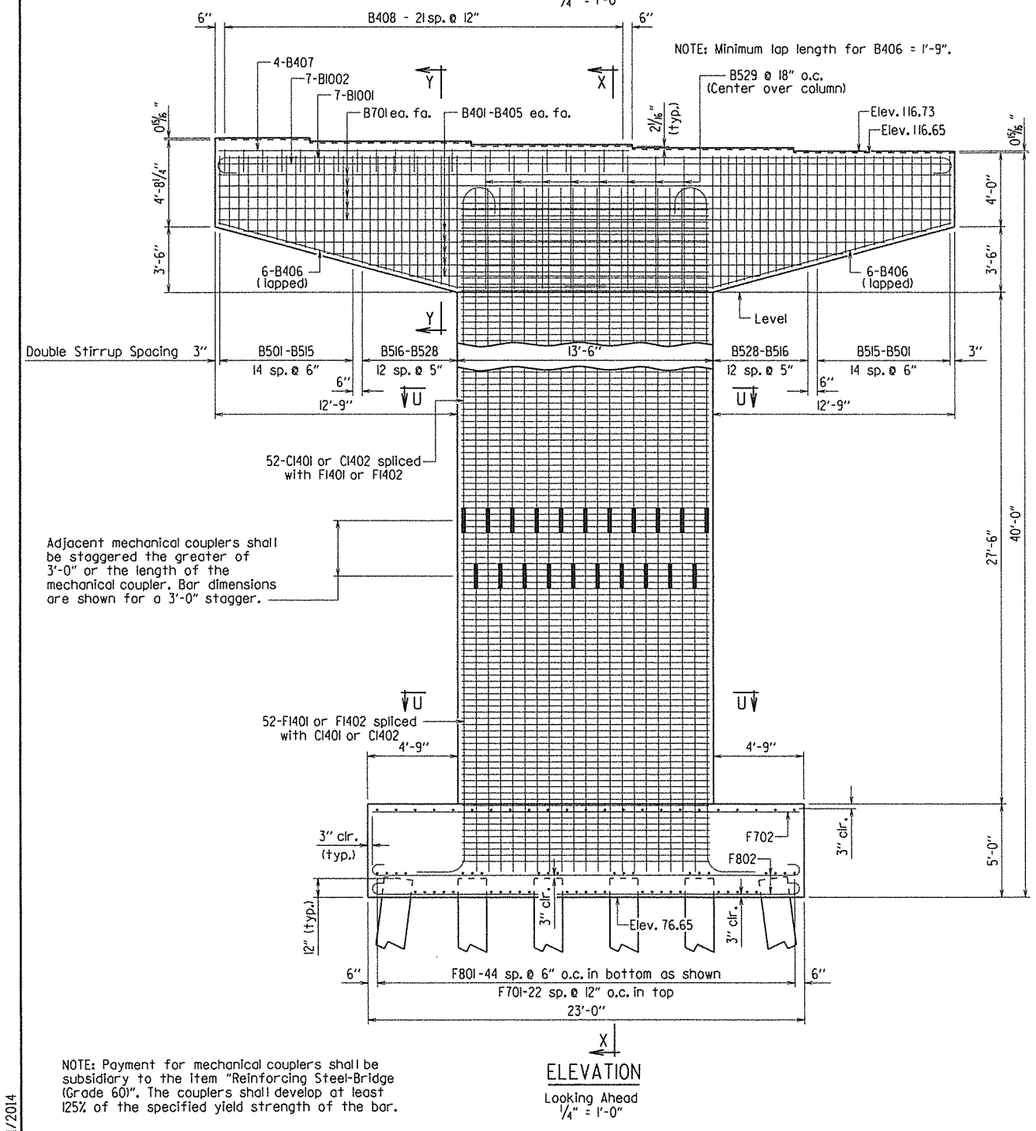
PRINT DATE: 7/14/2014

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.		070282	94	190
				①		A6362 - INT. BENT - 54967		



PLAN

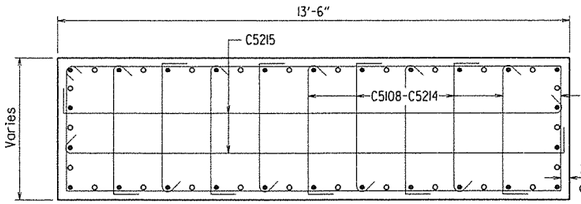
1/4" = 1'-0"



ELEVATION

Looking Ahead

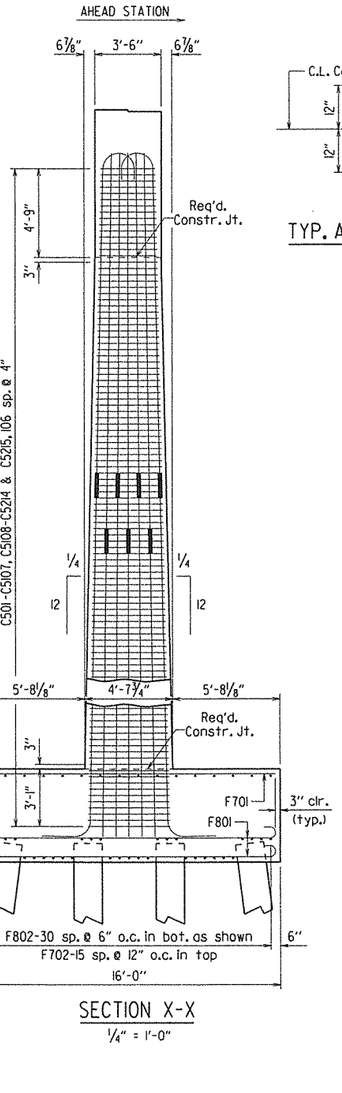
1/4" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

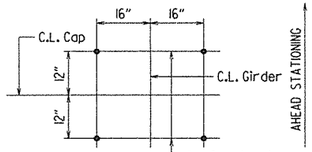
SECTION U-U

1/2" = 1'-0"



SECTION X-X

1/4" = 1'-0"



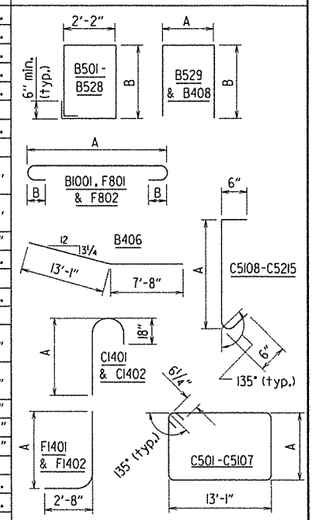
TYP. ANCHOR BOLT LAYOUT

No Scale

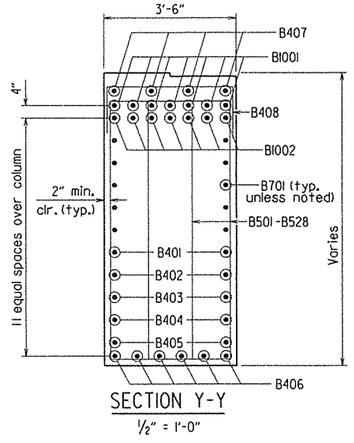
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2 1/2"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9 1/2"-7'-2"	2 1/2"
B529	8	17'-4"	3'-2"	7'-2"	2 1/2"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	7	38'-8"			Str.
C501-C5107	1 ea.	35'-7"-32'-7"	4'-4 1/2"-2'-10 1/2"		2 1/2"
C5108-C5214	9 ea.	5'-5"-3'-11"	4'-4 1/2"-2'-10 1/2"		2 1/2"
C5215	214	14'-2"	13'-1"		2 1/2"
C1401	26	20'-2"	17'-10"		18 1/4"
C1402	26	23'-2"	20'-10"		18 1/4"
F701	23	15'-6"			Str.
F702	16	22'-6"			Str.
F801	45	17'-4"	15'-6"	8"	6"
F802	31	24'-4"	22'-6"	8"	6"
F1401	26	21'-2"	19'-0"		18 1/4"
F1402	26	18'-2"	16'-0"		18 1/4"

Bending Diagrams

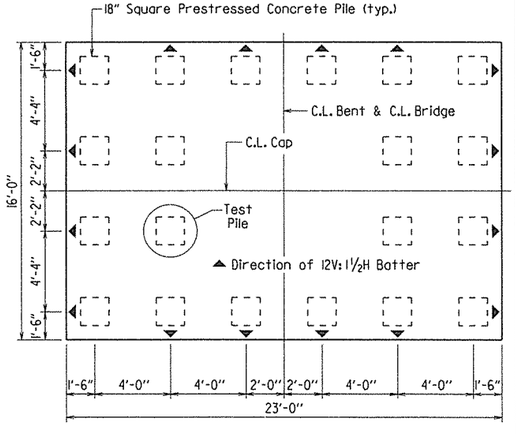


(Dimensions are out to out of bars.)



SECTION Y-Y

1/2" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

1/4" = 1'-0"

NOTE: Payment for mechanical couplers shall be subsidiary to the item "Reinforcing Steel-Bridge (Grade 60)". The couplers shall develop at least 125% of the specified yield strength of the bar.

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 26
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/28/13 FILENAME: b070282_b26.dgn

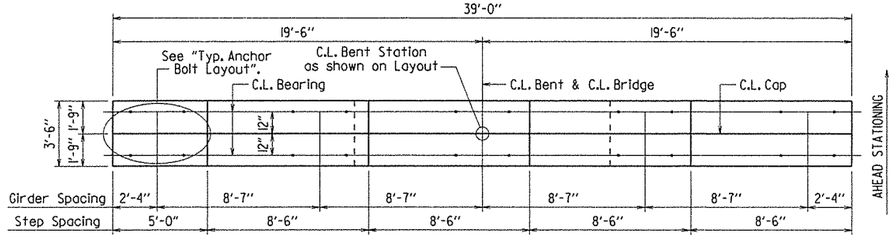
CHECKED BY: PLOT DATE: 4/14 SCALE: as noted

DESIGNED BY: KWY DATE: 1/13

BRIDGE NO. A6362 DRAWING NO. 54967

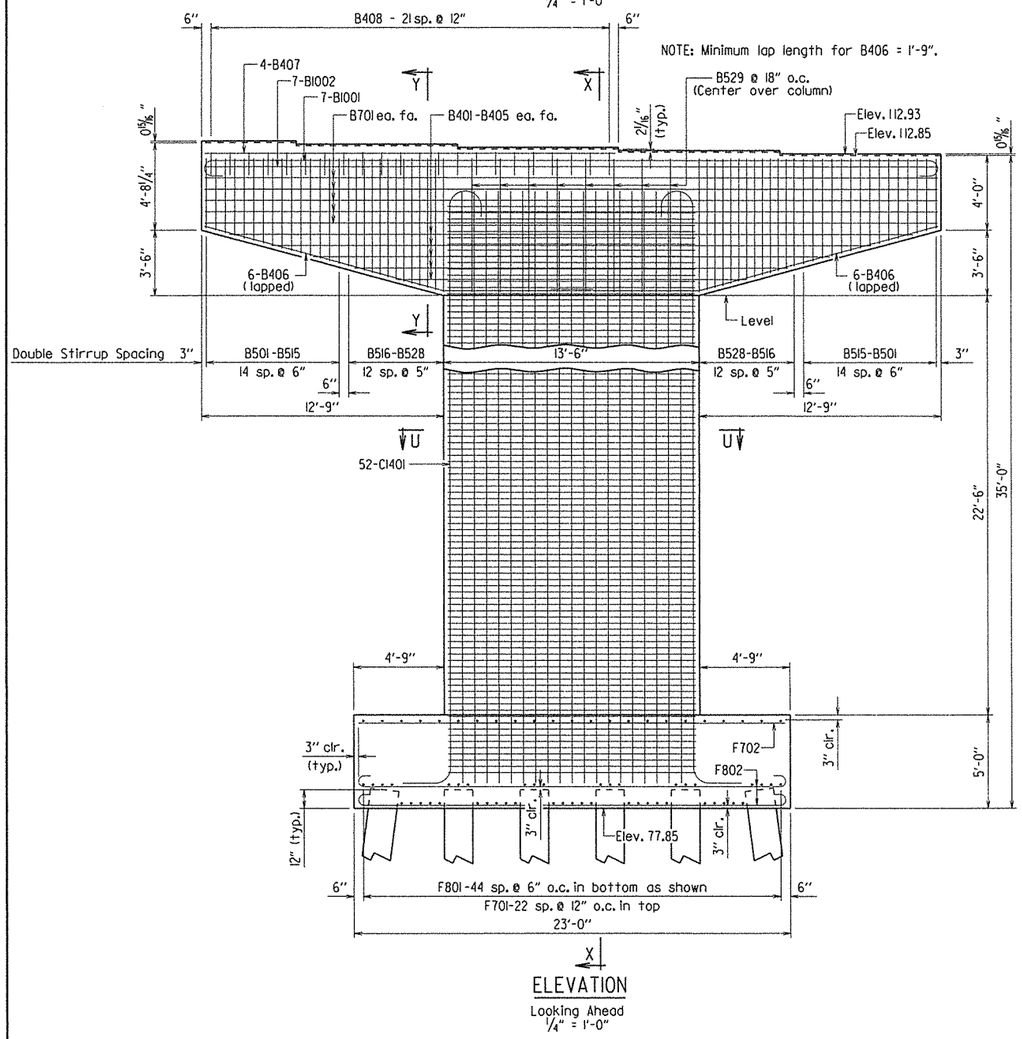
PRINT DATE: 7/11/2014

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.		070282	95	190
				①		A6362 - INT. BENT - 54968		



PLAN

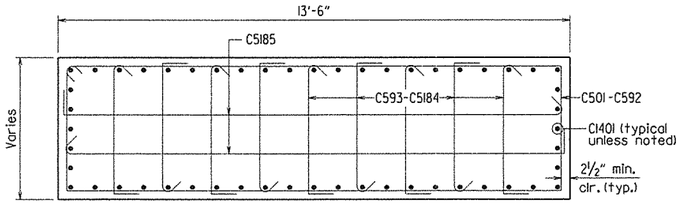
1/4" = 1'-0"



ELEVATION

Looking Ahead

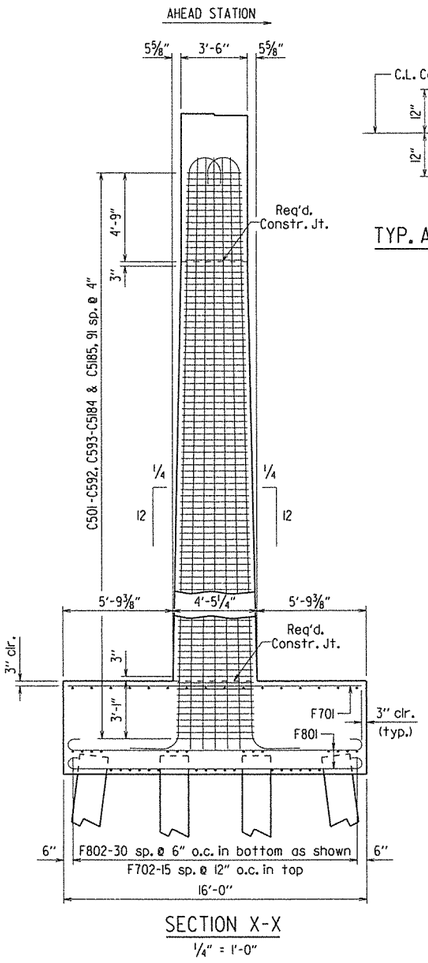
1/4" = 1'-0"



NOTE: Alternate #5 crossties end for end at each layer of reinforcing.

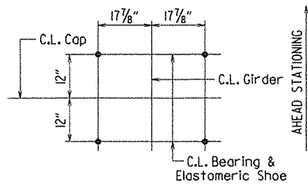
SECTION U-U

1/2" = 1'-0"



SECTION X-X

1/4" = 1'-0"



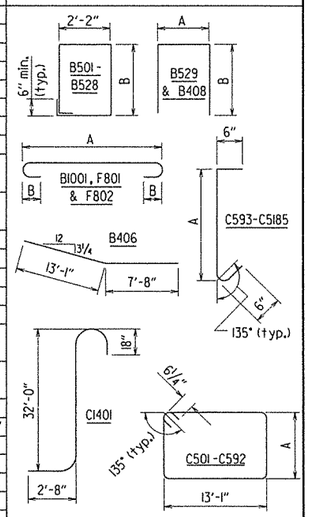
TYP. ANCHOR BOLT LAYOUT

No Scale

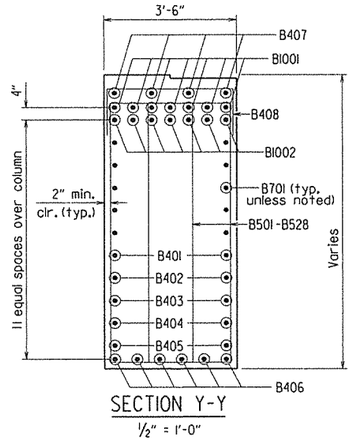
BAR LIST

Mark	No. Req'd.	Length	A	B	Pin Dia.
B401	2	36'-0"			Str.
B402	2	31'-7"			Str.
B403	2	27'-3"			Str.
B404	2	22'-10"			Str.
B405	2	18'-5"			Str.
B406	12	20'-9"			3"
B407	4	21'-8"			Str.
B408	22	5'-6"	3'-2"	1'-3"	2"
B501-B515	4 ea.	12'-4"-16'-2"		3'-9"-5'-8"	2 1/2"
B516-B528	4 ea.	16'-5"-19'-2"		5'-9 1/2"-7'-2"	2 1/2"
B529	8	17'-4"	3'-2"	7'-2"	2 1/2"
B701	10	38'-8"			Str.
B1001	7	41'-6"	38'-8"	11 1/2"	10"
B1002	7	38'-8"			Str.
C501-C592	1 ea.	35'-2"-32'-7"	4'-2"-2'-10 1/2"		2 1/2"
C593-C5184	9 ea.	5'-3"-3'-11"	4'-2"-2'-10 1/2"		2 1/2"
C5185	184	14'-2"	13'-1"		2 1/2"
C1401	52	36'-6"			18 1/4"
F701	23	15'-6"			Str.
F702	16	22'-6"			Str.
F801	45	17'-4"	15'-6"	8"	6"
F802	31	24'-4"	22'-6"	8"	6"

Bending Diagrams

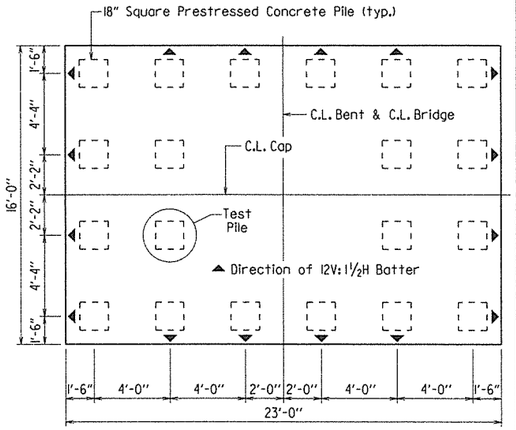


(Dimensions are out to out of bars.)



SECTION Y-Y

1/2" = 1'-0"



NOTE: For details of pile anchorage, see Dwg. No. 54941.

PLAN OF FOOTING

1/4" = 1'-0"

NOTE: For General Notes, see Dwg. No. 54941.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF BENT 27
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 8/29/13 FILENAME: b070282_b27.dgn

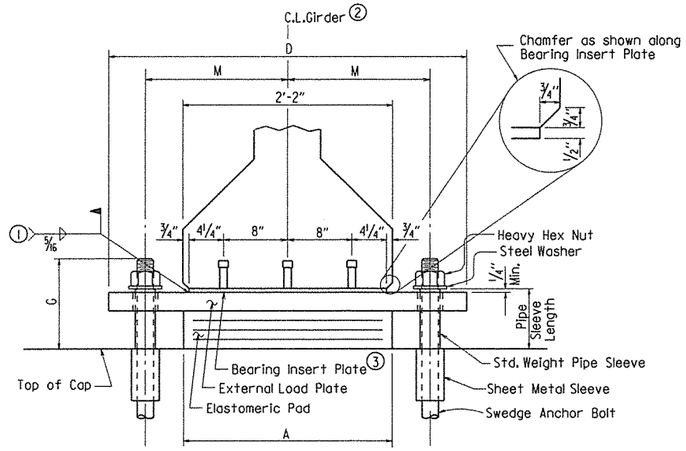
CHECKED BY: PLOT DATE: 9/14 SCALE: as noted

DESIGNED BY: KWY DATE: 9/13

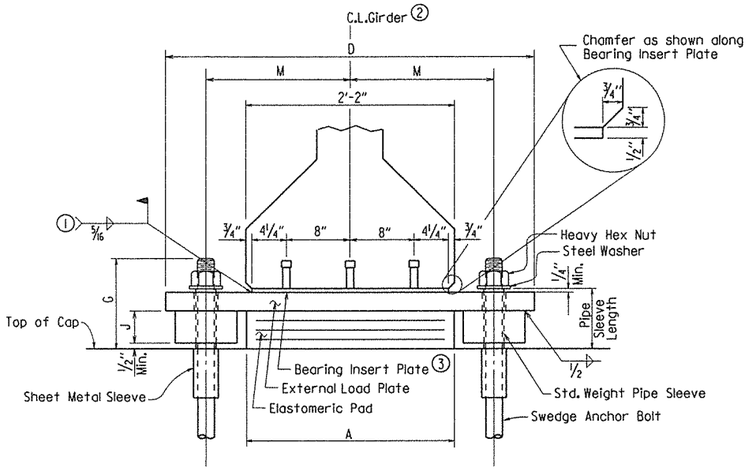
BRIDGE NO. A6362 DRAWING NO. 54968

PRINT DATE: 7/11/2014

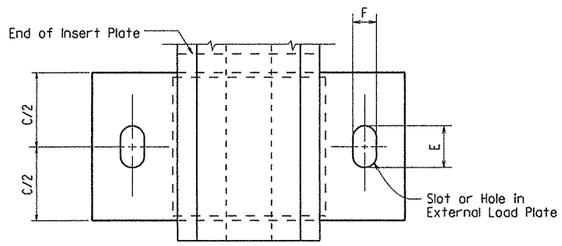
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	96	190
				①	A6362	- ELASTOMERIC BEARINGS -		54969



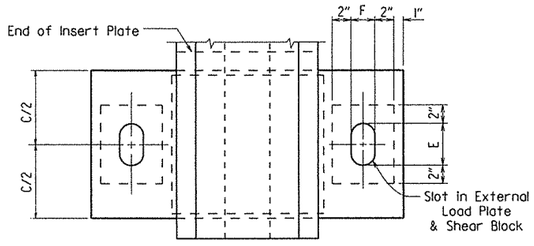
FRONT VIEW



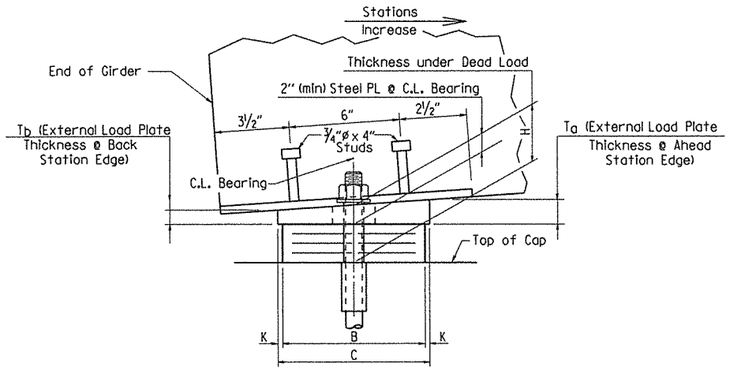
FRONT VIEW



PLAN VIEW



PLAN VIEW

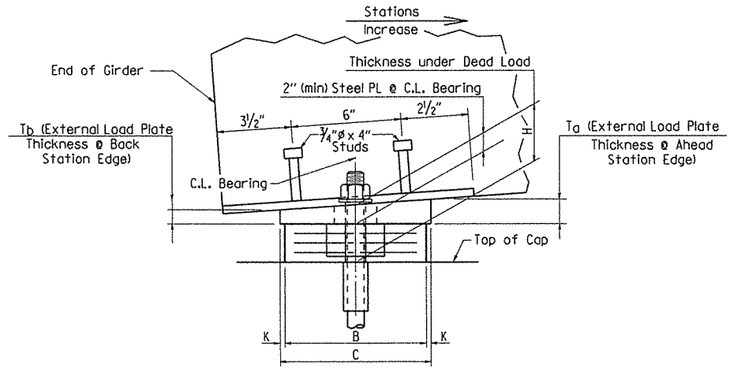


SIDE VIEW

ELASTOMERIC BEARINGS @ PRESTRESSED CONC. GIRDERS

WITHOUT SHEAR BLOCKS

BENT NOS. 1, 3, 4, 6, 7, 8, 10, 11, 12 AND 13
BENT NOS. 16, 17, 18, 19, 21, 22, 23, 25, 26 AND 28



SIDE VIEW

ELASTOMERIC BEARINGS @ PRESTRESSED CONC. GIRDERS

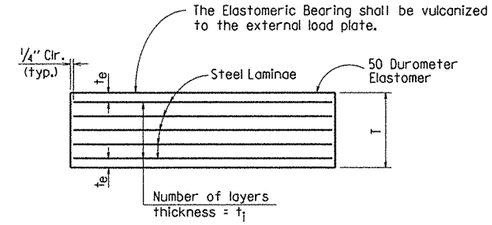
WITH SHEAR BLOCKS

BENT NOS. 2, 5, 9 AND 14-BACK
BENT NOS. 15-AHEAD, 20, 24 AND 27

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

② C.L. Elastomeric pad shall be aligned with C.L. Girder.

③ Bearing Insert Plate (M270, Gr. 50W) & Studs shall be considered subsidiary to the item "Prestressed Concrete Girders".



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

t_i = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

Notes:
For General Notes, Anchor Bolts details, and Fabricator Variables, see Dwg. No. 54970.

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" on Dwg. No. 54970.

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF ELASTOMERIC BEARINGS OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 10/15/13 FILENAME: b070282_el.dgn
CHECKED BY: C.W.Y DATE: 7/11/14 SCALE: No Scale
DESIGNED BY: J.V.P DATE: 5/13

BRIDGE NO. A6362 DRAWING NO. 54969

PRINT DATE: 7/8/2014

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.		070282	97	190
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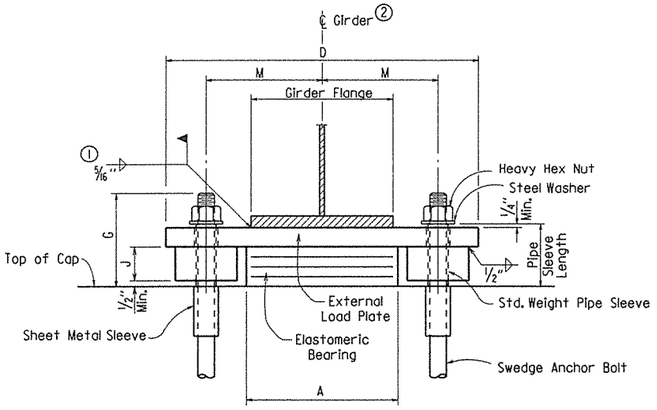
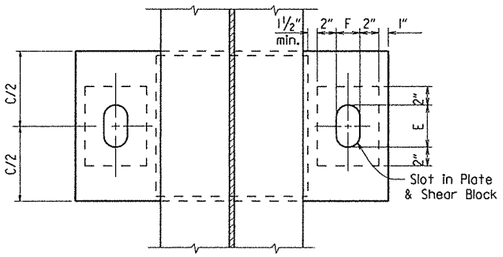


FRONT VIEW

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

(2) C.L Elastomeric pad shall be aligned with C.L. Girder.



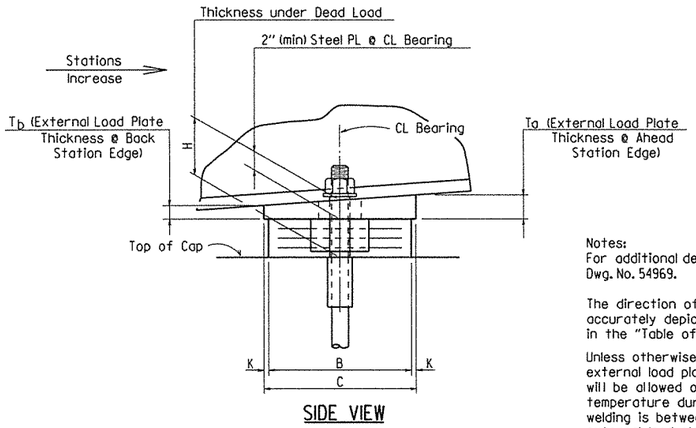
PLAN VIEW

*Shear blocks 4" 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.

**Maximum Design Load = LRFD Service I Limit State

TABLE OF FABRICATOR VARIABLES

LOCATION BENT/PIER NO(S).	BEARING TYPE	NO. of BEARINGS EACH BENT	**MAX. DESIGN LOAD (KIPS)	ELASTOMERIC PAD G	H	A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE C	D	E	F	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.)
1	Exp.	5	177	9 1/4"	5 1/2"	26"	7"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	8 1/2"	39 1/2"	5 1/4"	3 3/4"	—	3/4"	16 1/4"	2.17"	1.83"	2 1/2"x 37"	55	3"x 5 3/4"	4" x 12"	4 1/2"
2	Fix.	10	194	6 3/4"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	44 1/2"	2 5/8"	2 5/8"	1 1/4"	1/2"	17 7/8"	2.16"	1.84"	1 3/4"x 31"	55	2"x 4"	4" x 17"	3 3/8"
3 & 4	Fix.	10	194	7 1/4"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	3 1/8"	3 1/8"	—	1/2"	16"	2.16"	1.84"	2 1/4"x 35"	55	2 1/2"x 4"	4" x 17"	4"
5	Exp.	10	177	8 1/2"	5 1/2"	26"	7"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	44 1/2"	5"	2 5/8"	3"	2"	17 7/8"	2.22"	1.78"	1 3/4"x 31"	55	2"x 5 3/4"	4" x 17"	3 3/8"
6, 7, & 8	Fix.	10	194	7 1/2"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39 1/2"	3 3/4"	3 3/4"	—	1/2"	16 1/4"	2.16"	1.84"	2 1/2"x 37"	55	3"x 4"	4" x 17"	4 1/2"
9 Back	Exp.	5	177	8 1/2"	5 1/2"	26"	7"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	44 1/2"	5"	2 5/8"	3"	2"	17 7/8"	2.22"	1.78"	1 3/4"x 31"	55	2"x 5 3/4"	4" x 17"	3 3/8"
9 Ahead	Exp.	5	177	9 1/8"	6 1/8"	26"	7"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	44 1/2"	5"	2 5/8"	3 5/8"	2"	17 7/8"	2.22"	1.78"	1 3/4"x 31"	55	2"x 6 3/8"	4" x 17"	3 3/8"
10	Exp.	10	194	8 1/8"	4 3/8"	26"	7"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/16"	8 1/2"	39 1/2"	5 1/4"	3 3/4"	—	3/4"	16 1/4"	2.16"	1.84"	2 1/2"x 37"	55	3"x 4 5/8"	4" x 17"	4 1/2"
11	Fix.	10	194	7 1/2"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39 1/2"	3 3/4"	3 3/4"	—	1/2"	16 1/4"	2.13"	1.87"	2 1/2"x 37"	55	3"x 4"	4" x 17"	4 1/2"
12	Fix.	10	194	7 1/2"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39 1/2"	3 3/4"	3 3/4"	—	1/2"	16 1/4"	2.11"	1.89"	2 1/2"x 37"	55	3"x 4"	4" x 17"	4 1/2"
13	Exp.	10	194	8 1/8"	4 3/8"	26"	7"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/16"	8 1/2"	39 1/2"	5 1/4"	3 3/4"	—	3/4"	16 1/4"	2.10"	1.90"	2 1/2"x 37"	55	3"x 4 5/8"	4" x 17"	4 1/2"
14 Back	Exp.	5	177	9 1/8"	6 1/8"	26"	7"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	44 1/2"	5"	2 5/8"	3 5/8"	2"	17 7/8"	2.11"	1.89"	1 3/4"x 31"	55	2"x 6 3/8"	4" x 17"	3 3/8"
14 Ahead	Exp.	4	298	12 3/8"	9 1/8"	20"	11"	11	1/2"	1/4"	12 @ 12 Ga.	7 1/4"	15"	39 1/2"	9"	3 1/8"	*6 5/8"	2"	15 1/8"	2.14"	1.86"	2"x 37"	55	2 1/2"x 9 3/8"	4" x 17"	3 3/4"
Pier 1	Fix.	4	1003	7 7/8"	4 3/8"	34"	15"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/16"	16"	53 1/2"	3 1/8"	3 1/8"	1 7/8"	1/2"	22 1/8"	2.06"	1.94"	2 1/4"x 35"	55	2 1/2"x 4 5/8"	4" x 17"	4"
Pier 2	Fix.	4	1003	7 7/8"	4 3/8"	34"	15"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/16"	16"	53 1/2"	3 1/8"	3 1/8"	1 7/8"	1/2"	22 1/8"	1.94"	2.06"	2 1/4"x 35"	55	2 1/2"x 4 5/8"	4" x 17"	4"
15 Back	Exp.	4	298	12 3/8"	9 1/8"	20"	11"	11	1/2"	1/4"	12 @ 12 Ga.	7 1/4"	15"	39 1/2"	9"	3 1/8"	*6 5/8"	2"	15 1/8"	1.86"	2.14"	2"x 37"	55	2 1/2"x 9 3/8"	4" x 17"	3 3/4"
15 Ahead	Exp.	5	177	9 1/8"	6 1/8"	26"	7"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	44 1/2"	5"	2 5/8"	3 5/8"	2"	17 7/8"	1.89"	2.11"	1 3/4"x 31"	55	2"x 6 3/8"	4" x 17"	3 3/8"
16	Exp.	10	194	8 1/8"	4 3/8"	26"	7"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/16"	8 1/2"	39 1/2"	5 1/4"	3 3/4"	—	3/4"	16 1/4"	1.90"	2.10"	2 1/2"x 37"	55	3"x 4 5/8"	4" x 17"	4 1/2"
17	Fix.	10	194	7 1/2"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39 1/2"	3 3/4"	3 3/4"	—	1/2"	16 1/4"	1.89"	2.11"	2 1/2"x 37"	55	3"x 4"	4" x 17"	4 1/2"
18	Fix.	10	194	7 1/2"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39 1/2"	3 3/4"	3 3/4"	—	1/2"	16 1/4"	1.87"	2.13"	2 1/2"x 37"	55	3"x 4"	4" x 17"	4 1/2"
19	Exp.	10	194	8 1/8"	4 3/8"	26"	7"	3	1/2"	1/4"	4 @ 12 Ga.	2 1/16"	8 1/2"	39 1/2"	5 1/4"	3 3/4"	—	3/4"	16 1/4"	1.84"	2.16"	2 1/2"x 37"	55	3"x 4 5/8"	4" x 17"	4 1/2"
20 Back	Exp.	5	177	9 1/8"	6 1/8"	26"	7"	6	1/2"	1/4"	7 @ 12 Ga.	4 1/4"	11"	44 1/2"	5"	2 5/8"	3 5/8"	2"	17 7/8"	1.78"	2.22"	1 3/4"x 31"	55	2"x 6 3/8"	4" x 17"	3 3/8"
20 Ahead	Exp.	5	177	8 1/2"	5 1/2"	26"	7"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	44 1/2"	5"	2 5/8"	3"	2"	17 7/8"	1.78"	2.22"	1 3/4"x 31"	55	2"x 5 3/4"	4" x 17"	3 3/8"
21, 22 & 23	Fix.	10	194	7 1/2"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	39 1/2"	3 3/4"	3 3/4"	—	1/2"	16 1/4"	1.84"	2.16"	2 1/2"x 37"	55	3"x 4"	4" x 17"	4 1/2"
24	Exp.	10	177	8 1/2"	5 1/2"	26"	7"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	11"	44 1/2"	5"	2 5/8"	3"	2"	17 7/8"	1.78"	2.22"	1 3/4"x 31"	55	2"x 5 3/4"	4" x 17"	3 3/8"
25 & 26	Fix.	10	194	7 1/4"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	38 1/2"	3 1/8"	3 1/8"	—	1/2"	16"	1.84"	2.16"	2 1/4"x 35"	55	2 1/2"x 4"	4" x 17"	4"
27	Fix.	10	194	6 3/4"	3 3/4"	26"	7"	2	1/2"	1/4"	3 @ 12 Ga.	1 13/16"	8"	44 1/2"	2 5/8"	2 5/8"	1 1/4"	1/2"	17 7/8"	1.84"	2.16"	1 3/4"x 31"	55	2"x 4"	4" x 17"	3 3/8"
28	Exp.	5	177	9 1/4"	5 1/2"	26"	7"	5	1/2"	1/4"	6 @ 12 Ga.	3 5/8"	8 1/2"	39 1/2"	5 1/4"	3 3/4"	—	3/4"	16 1/4"	1.83"	2.17"	2 1/2"x 37"	55	3"x 5 3/4"	4" x 12"	4 1/2"



SIDE VIEW

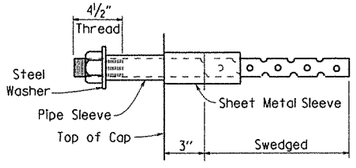
ELASTOMERIC BEARINGS @ PLATE GIRDERS WITH SHEAR BLOCKS

BENT NOS. 14-AHEAD AND 15-BACK
PIER NOS. 1 AND 2

Notes:
For additional details of the elastomeric bearing, see Dwg. No. 54969.

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

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



ANCHOR BOLT DETAIL

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

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

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 of the Standard Specifications 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 and will not be paid for separately, but will be included in the unit price bid for "Elastomeric Bearings". Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, 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 of the Standard Specifications. 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)".

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF ELASTOMERIC BEARINGS
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: AMS. DATE: 10/15/13 FILENAME: b070282_el.dgn
CHECKED BY: KWY DATE: 7/11/14 SCALE: No Scale
DESIGNED BY: PGT DATE: 7/12

BRIDGE NO. A6362 DRAWING NO. 54970

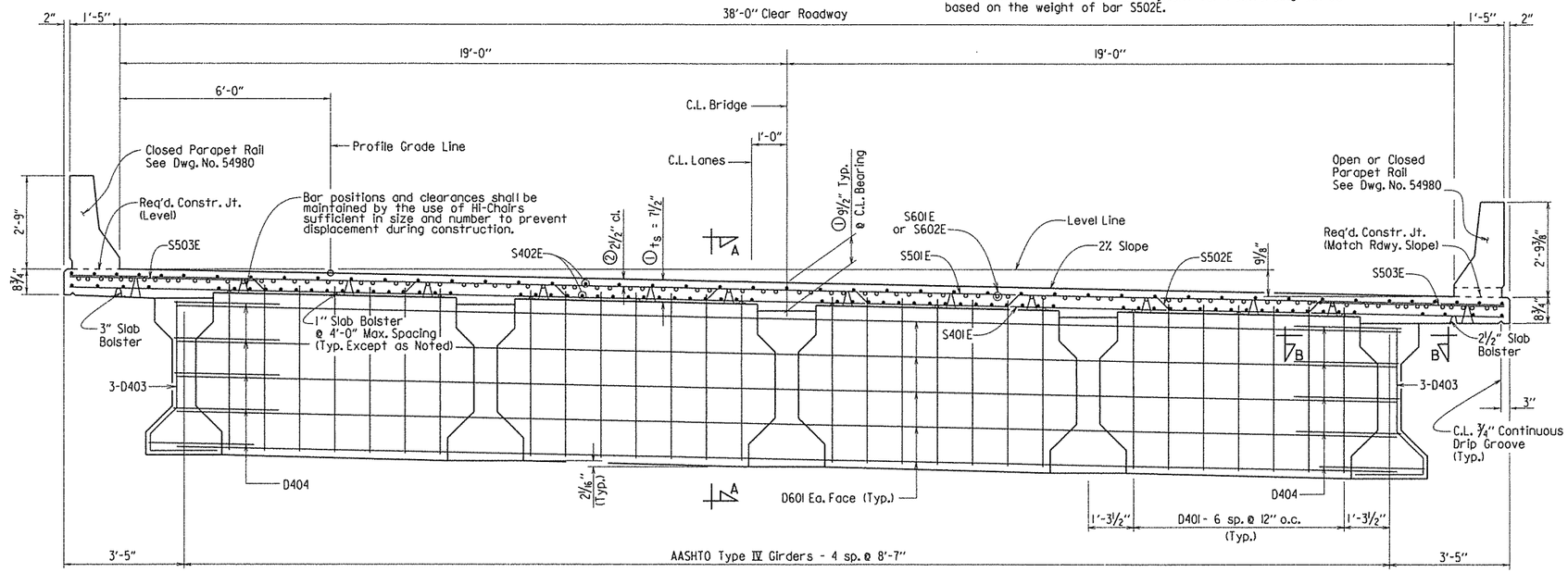
PRINT DATE: 7/8/2014

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.		070282	98	190
				(1) A6362	-	COMMON DETAILS	-	54971

Notes: Class I Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of the Concrete Parapet Rail.

All bars designated with an "E" suffix shall be Epoxy Coated.

At the Contractor's option, two straight epoxy coated #5 bars may be substituted for bar S502E. Payment for reinforcing will be based on the weight of bar S502E.



TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT

BENTS 2-4, 6-8, 10-13, 16-19, 21-23 AND 25-27
LOOKING AHEAD
½" = 1'-0"

SLAB REINFORCING:

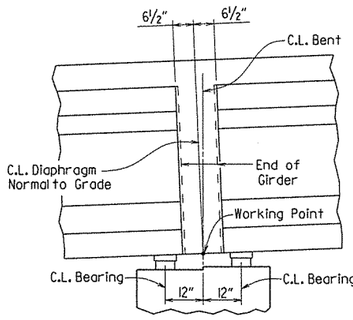
Transverse: S501E -Top , S401E -Bottom @ 12" o.c. — Alternate
S502E @ 12" o.c. Bent Up Over Beams
S503E @ 6" o.c. at Gutterline

Longitudinal: S402E in top & bott. (Place as shown)
S601E or S602E placed as shown over interior supports

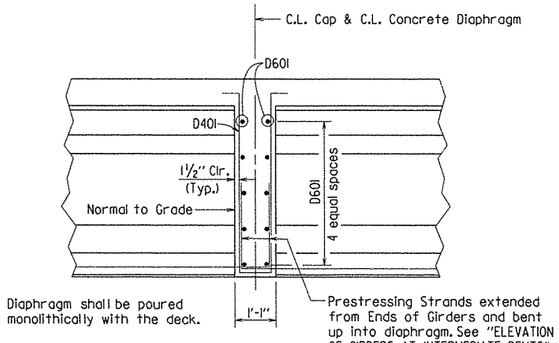
Note: For Typical Sections @ Mid-Span Diaphragms and Ends of Units, See Dwg. No. 54972.

①See "Adjustment for Slab Thickness Tolerance".

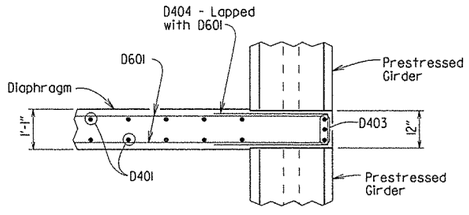
②Tolerance: Minus= ¼" ;
Plus = Equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".



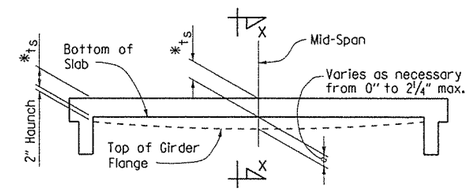
VIEW AT INTERMEDIATE BENT WITHOUT JOINT
½" = 1'-0"



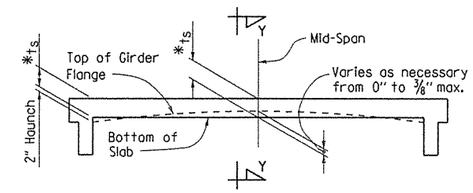
SECTION A-A
Intermediate Bent Diaphragm
½" = 1'-0"



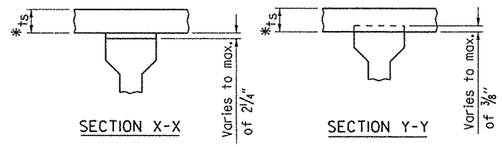
SECTION B-B
½" = 1'-0"



GIRDER ELEVATION



GIRDER ELEVATION



SECTION X-X SECTION Y-Y

NOTE:
ts = slab thickness as shown on superstructure details - See "Typical Section at Intermediate Bents Without Expansion Joint".

*Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance. See Dwg. No. 55005 for tolerances when permanent steel deck forms are used.

"Girder Elevation" sketches show the range of acceptability of the top of the Girder relative to bottom of slab after the placement of the slab. When the top of the Girder projects more than ⅜" into the slab, a raise in grade will be necessary. Girders shall be set in a sufficient number of spans over suitable increments so the revised grade line will produce a smooth riding surface. Variation of haunch height will be at the Contractor's expense.

ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 6
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

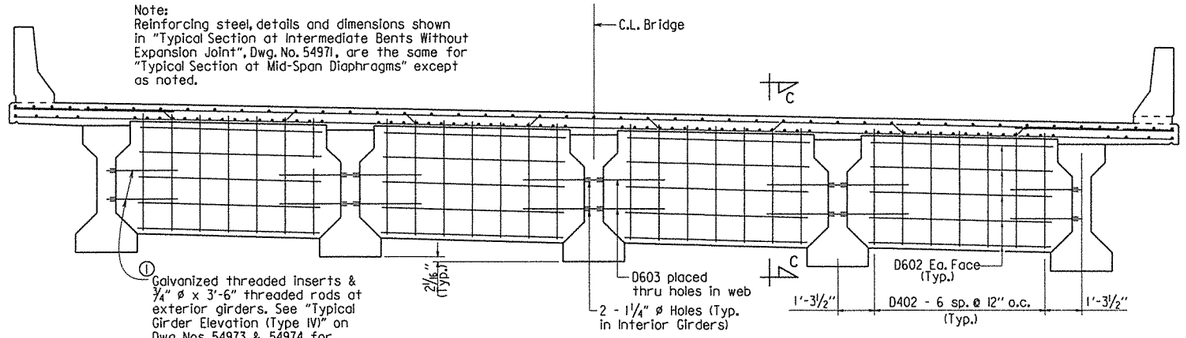
DRAWN BY: A.M.S. DATE: 7/18/12 FILENAME: b070282_cl.dgn
CHECKED BY: KWY DATE: 7/14/14 SCALE: As Noted
DESIGNED BY: JYP DATE: 5/12

BRIDGE NO. A6362 DRAWING NO. 54971

PRINT DATE: 7/11/2014

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.		070282	99	190
				(1) A6362	-	COMMON DETAILS	-	54972

Note:
Reinforcing steel, details and dimensions shown in "Typical Section at Intermediate Bents Without Expansion Joint", Dwg. No. 54971, are the same for "Typical Section at Mid-Span Diaphragms" except as noted.

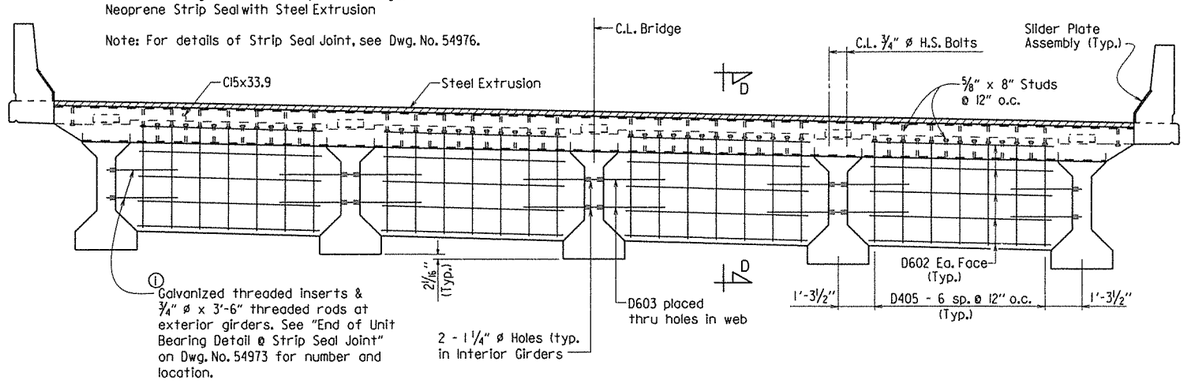


TYPICAL SECTION AT MID-SPAN DIAPHRAGMS

LOOKING AHEAD
⅜" = 1'-0"

EXPANSION DEVICE:
Roadway Channel - C15x33.9
Connection Angle - C15x33.9 (Cope one flange)
Neoprene Strip Seal with Steel Extrusion

Note: For details of Strip Seal Joint, see Dwg. No. 54976.

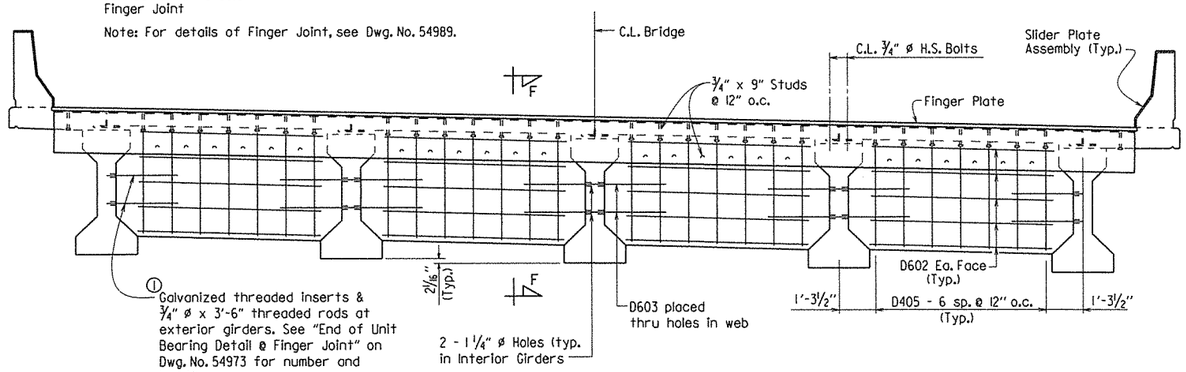


TYPICAL SECTION AT ENDS OF UNITS (STRIP SEAL JOINTS)

LOOKING AHEAD
BENTS 1, 5, 9, 20, 24 AND 28
⅜" = 1'-0"

EXPANSION DEVICE:
Roadway Channel - MC18x42.7 (Cope bottom flange)
Connection WT 8x38.5
Finger Joint

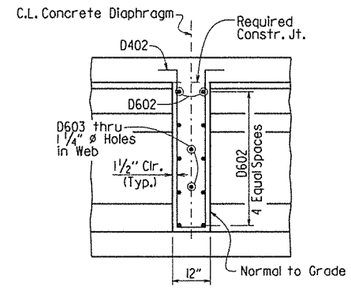
Note: For details of Finger Joint, see Dwg. No. 54989.



TYPICAL SECTION AT ENDS OF UNITS (FINGER JOINTS)

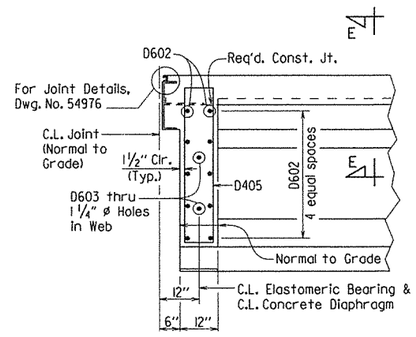
LOOKING AHEAD
BENTS 14 AND 15
⅜" = 1'-0"

(1) Galvanized Threaded Inserts shall be Dayton-Richmond F-42 Loop Ferule Inserts or approved equal. ¾" ø Galvanized Threaded Rods shall be AASHTO M 270, Grade 36 or Grade 60 (F_y = 60,000 psi) conforming to AASHTO M 31 or M 322, Type A with mill test reports. Galvanizing shall be in accordance with AASHTO M 232, Class C or AASHTO M 298, Class 50. These items will not be paid for directly, but shall be considered subsidiary to the item "Prestressed Concrete Girders (Type IV)".



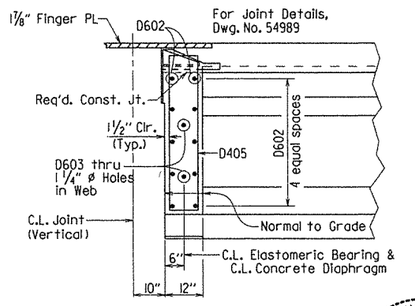
SECTION C-C

Midspan Diaphragm
½" = 1'-0"



SECTION D-D

End of Unit Diaphragm
@ Strip Seal Joints
½" = 1'-0"



SECTION F-F

End of Unit Diaphragm
@ Finger Joints
½" = 1'-0"

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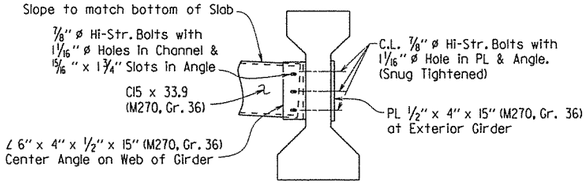
BRIDGE ENGINEER

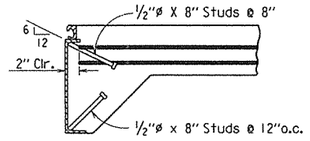


A standard washer shall be supplied under both the nut and the head of the ⅞" ø H.S. bolts. An additional plate washer shall cover the angle slots.

DETAILS OF ALTERNATE MID-SPAN DIAPHRAGM

No Scale

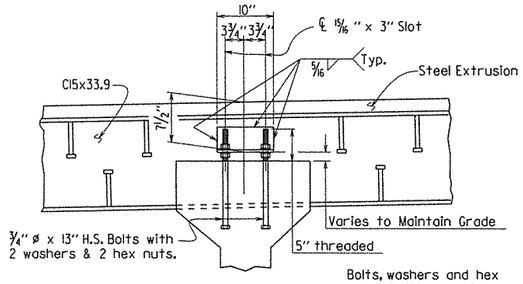
Note: Galvanized Steel Diaphragms may be used in place of Concrete at Mid-Span Diaphragms only. All components of the Alternate Steel Diaphragms shall be Galvanized. Payment will be based on concrete diaphragms.



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

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT @ STRIP SEAL JT.

No Scale



SECTION E-E

1" = 1'-0"

Bolts, washers and hex nuts shall be considered subsidiary to the item "Prestressed Concrete Girders".

SHEET 2 OF 6
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

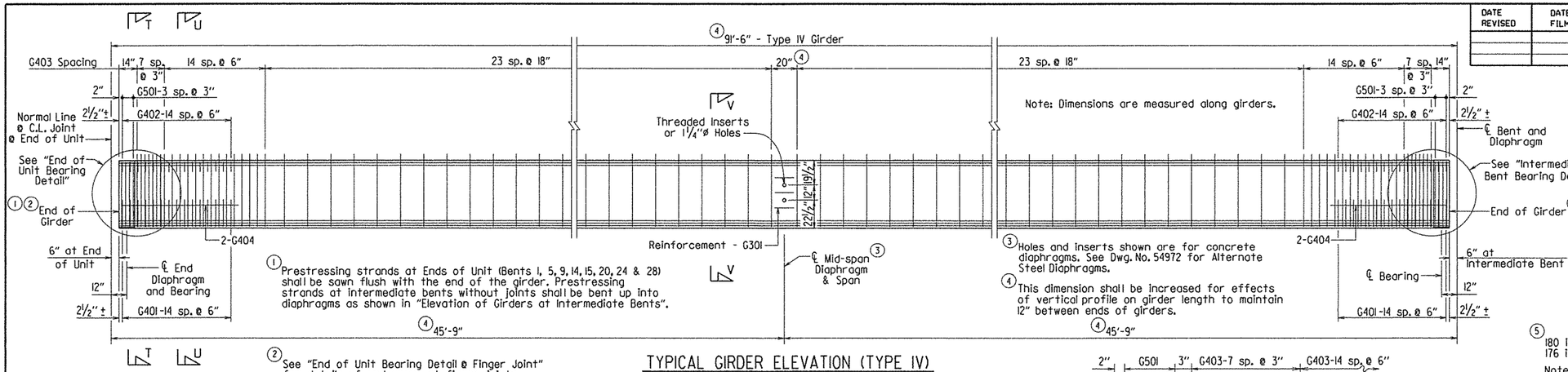
DRAWN BY: A.M.S. DATE: 7/18/12
CHECKED BY: K.W.Y DATE: 7/18/14
DESIGNED BY: J.N.P DATE: 5/12
FILENAME: b070282_cl.dgn
SCALE: As Noted

BRIDGE NO. A6362 DRAWING NO. 54972

PRINT DATE: 7/8/2014

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.		070282	100	190

(1) A6362 - COMMON DETAILS - 54973



(1) Prestressing strands at Ends of Unit (Bents 1, 5, 9, 14, 15, 20, 24 & 28) shall be sawn flush with the end of the girder. Prestressing strands at intermediate bents without joints shall be bent up into diaphragms as shown in "Elevation of Girders at Intermediate Bents".

(2) See "End of Unit Bearing Detail @ Finger Joint" for details of end spans at finger joints.

(3) Holes and inserts shown are for concrete diaphragms. See Dwg. No. 54972 for Alternate Steel Diaphragms.

(4) This dimension shall be increased for effects of vertical profile on girder length to maintain 12" between ends of girders.

TYPICAL GIRDER ELEVATION (TYPE IV)

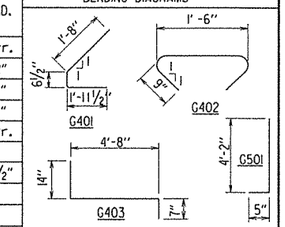
(2) (END SPAN WITH STRIP SEAL JOINT SHOWN)

¼" = 1'-0"

BAR LIST PER GIRDER

MARK	NO. REQ'D.	LENGTH	P.D.
G301	6	1'-3"	Str.
G401	60	4'-1"	2"
G402	30	3'-1"	3"
G403	(5)	6'-3"	2"
G404	4	7'-7"	Str.
G501	(6)	4'-6"	2½"

BENDING DIAGRAMS

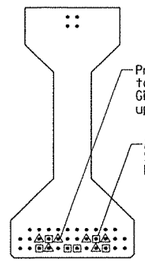


Dimensions are out to out of bars.

(5) 180 in Spans with Strip Seal Joint; 176 in Spans with Finger Joint

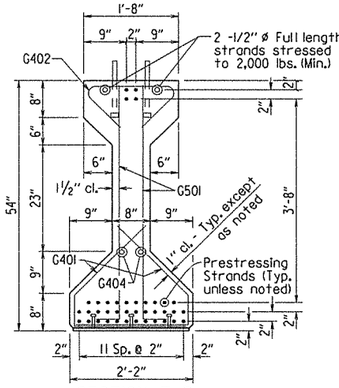
(6) 16 in Spans with Strip Seal Joint; 20 in Spans with Finger Joint

Note: All bars in BAR LIST shall be subsidiary to the item "Prestressed Concrete Girders (Type IV)". For Bar List of Span Reinforcing, See Dwg. Nos. 54977 & 54978.



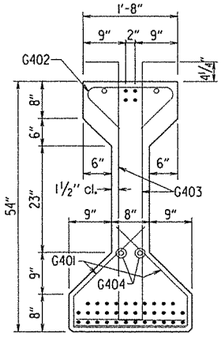
POSITIVE MOMENT CONNECTIONS

¾" = 1'-0"



SECTION T-T

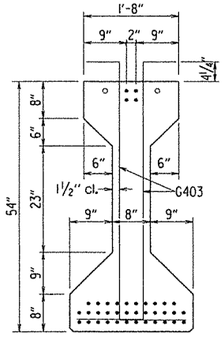
¾" = 1'-0"



Note: For dimensions not shown at "Section U-U" and "Section V-V", see "Section T-T".

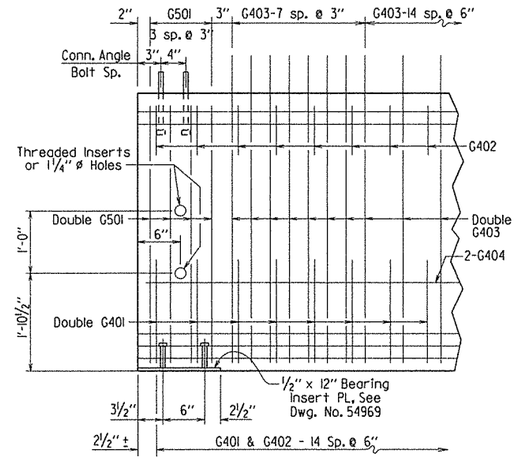
SECTION U-U

¾" = 1'-0"



SECTION V-V

¾" = 1'-0"

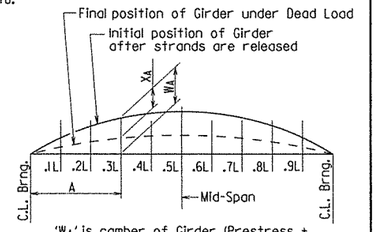


END OF UNIT BEARING DETAIL @ STRIP SEAL JOINT

Showing reinforcing in relation to bearing plate assembly and 1¼" ø holes

No Scale

Span Pt.	Inches	
	W_A	X_A
0.00	0.000	0.000
0.10	0.939	0.376
0.20	1.560	0.735
0.30	1.972	1.018
0.40	2.199	1.198
0.50	2.270	1.260
0.60	2.199	1.198
0.70	1.972	1.018
0.80	1.560	0.735
0.90	0.939	0.376
1.00	0.000	0.000



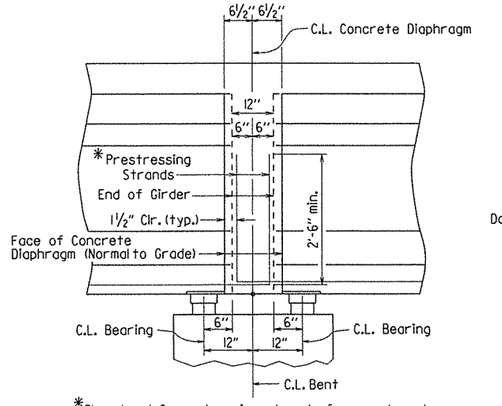
'W_A' is camber of Girder (Prestress + Dead Load of Girder @ 60 days after release)

'X_A' is Dead Load Deflection of Slab + Diaphragms + Composite Dead Load

CAMBER & DEFLECTIONS (INCHES)

No Scale

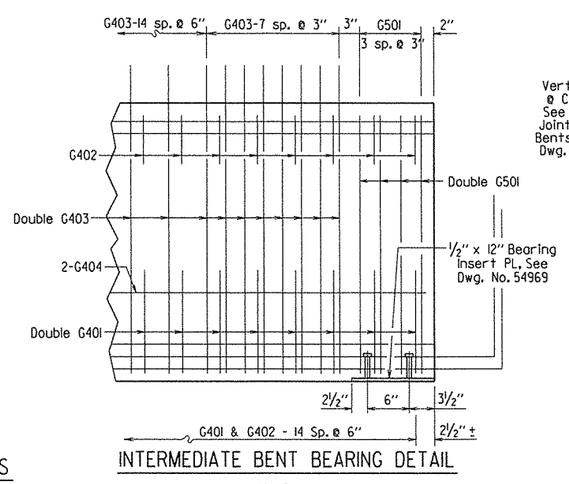
Note: 'W_A' & 'X_A' are based on the required minimum concrete strength and may vary from the dimension shown. 'W_A' & 'X_A' shall be measured along bottom of girders unless otherwise approved by the Engineer. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Dwg. No. 54971 for limitations of the girder final position under dead load. The Contractor is responsible for any adjustment necessary to meet slab thickness tolerance and to achieve an acceptable finished grade. No payment shall be made for any additional concrete in the haunches when camber is less than shown.



*Shop bend 6 prestressing strands from each end of girder into diaphragm as required. See "Positive Moment Connections" detail for alternating pattern.

ELEVATION OF GIRDERS AT INTERMEDIATE BENTS

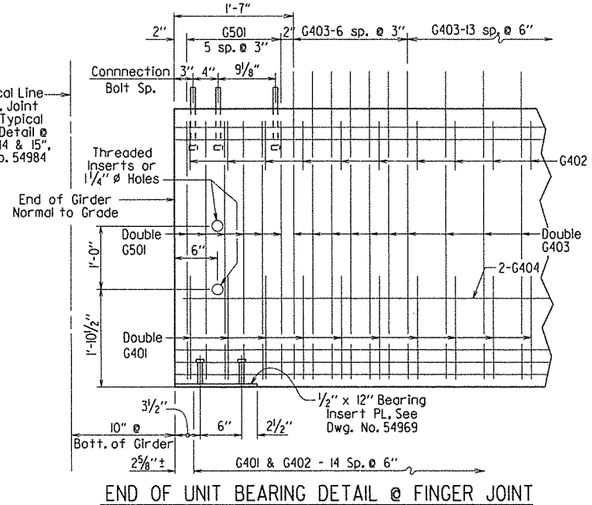
No Scale



INTERMEDIATE BENT BEARING DETAIL

No Scale

Showing reinforcing in relation to bearing plate assembly



END OF UNIT BEARING DETAIL @ FINGER JOINT

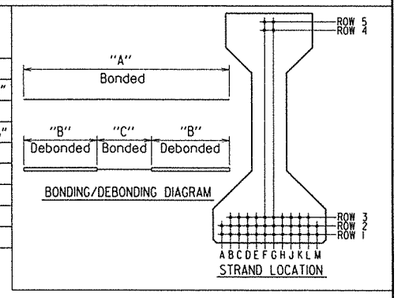
Showing reinforcing in relation to bearing plate assembly and 1¼" ø holes

No Scale

TABLE OF GIRDER VARIABLES

STRAND DESIGNATION		VARIABLES OF BONDING/DEBONDING		
ROW	LINE	"A"	"B"	"C"
1	B,E,H,L	—	8'	(8) 74'-6"
1	A,C,D,F,G,J,K,M	(7) 90'-6"	—	—
2	C,F,G,K	—	4'	(9) 82'-6"
2	A,B,D,E,H,J,L,M	(7) 90'-6"	—	—
3	B,C,D,E,F,G,H,J,K,L	(7) 90'-6"	—	—
4	F,G	(7) 90'-6"	—	—
5	F,G	(7) 90'-6"	—	—

For Girders adjacent to Finger Joint:
(7) 90'-2"
(8) 74'-2"
(9) 82'-2"



STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 6
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: AMS. DATE: 7/23/12 FILENAME: b070282_cl.dgn
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BRIDGE NO. A6362 DRAWING NO. 54973

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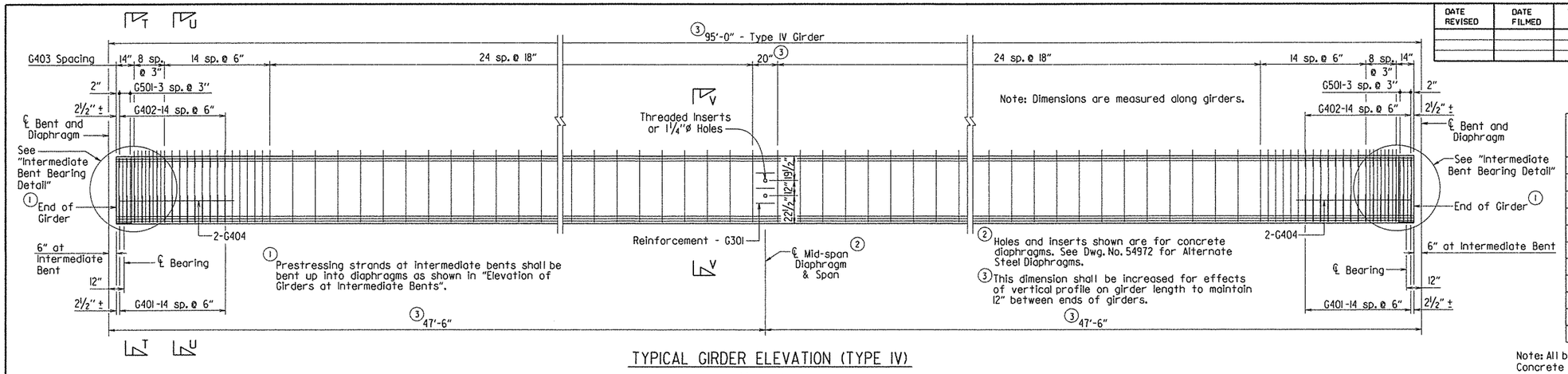
				6	ARK.			
				JOB NO.		070282	101	190
				(1) A6362 - COMMON DETAILS -			54974	



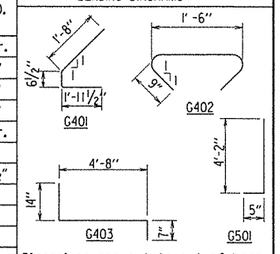
TYPICAL GIRDER ELEVATION (TYPE IV)

¼" = 1'-0"

BAR LIST PER GIRDER

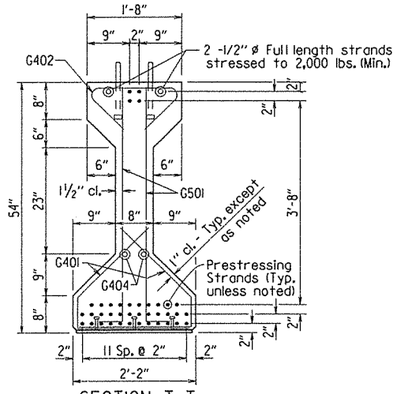
MARK	NO. REQ'D.	LENGTH	P.D.
G301	6	1'-3"	Str.
G401	60	4'-1"	2"
G402	30	3'-1"	3"
G403	188	6'-3"	2"
G404	4	7'-7"	Str.
G501	16	4'-6"	2½"

BENDING DIAGRAMS



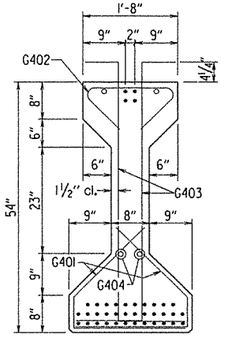
Dimensions are out to out of bars.

Note: All bars in BAR LIST shall be subsidiary to the item "Prestressed Concrete Girders (Type IV)". For Bar List of Span Reinforcing, See Dwg. No. 54978.



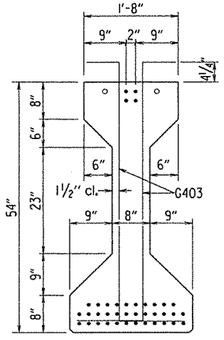
SECTION T-T

¾" = 1'-0"



SECTION U-U

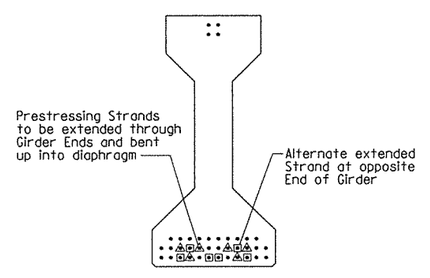
¾" = 1'-0"



SECTION V-V

¾" = 1'-0"

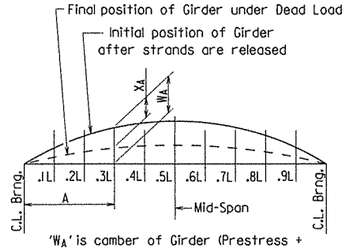
Note: For dimensions not shown at "Section U-U" and "Section V-V", see "Section T-T".



POSITIVE MOMENT CONNECTIONS

¾" = 1'-0"

Span Pt.	Inches W_A	Inches X_A
0.00	0.000	0.000
0.10	0.939	0.427
0.20	1.560	0.836
0.30	1.972	1.158
0.40	2.199	1.364
0.50	2.270	1.435
0.60	2.199	1.364
0.70	1.972	1.158
0.80	1.560	0.836
0.90	0.939	0.427
1.00	0.000	0.000



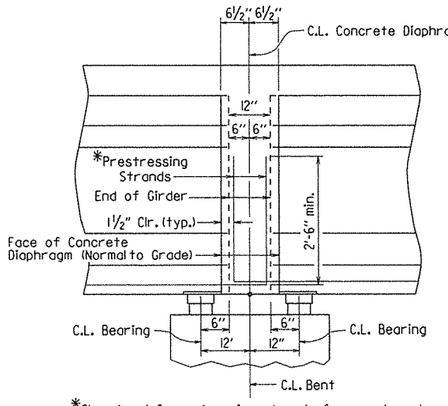
'W_A' is camber of Girder (Prestress + Dead Load of Girder @ 60 days after release)

'X_A' is Dead Load Deflection of Slab + Diaphragms + Composite Dead Load

CAMBER & DEFLECTIONS (INCHES)

No Scale

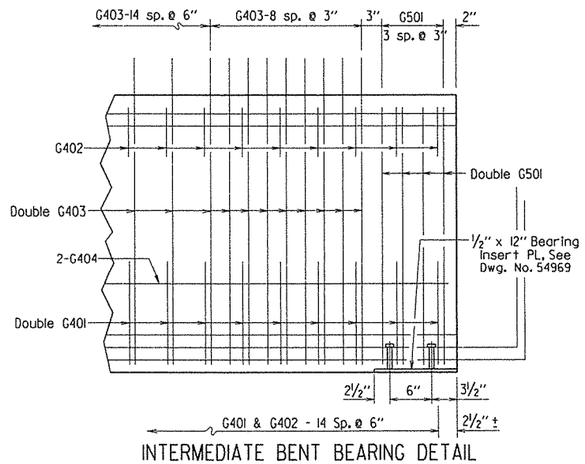
Note: 'W ' & 'X ' are based on the required minimum concrete strength and may vary from the dimension shown. 'W ' & 'X ' shall be measured along bottom of girders unless otherwise approved by the Engineer. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE" on Dwg. No. 54971 for limitations of the girder final position under dead load. The Contractor is responsible for any adjustment necessary to meet slab thickness tolerance and to achieve an acceptable finished grade. No payment shall be made for any additional concrete in the haunches when camber is less than shown.



*Shop bend 6 prestressing strands from each end of girder into diaphragm as required. See "Positive Moment Connections" detail for alternating pattern.

ELEVATION OF GIRDERS AT INTERMEDIATE BENTS

No Scale



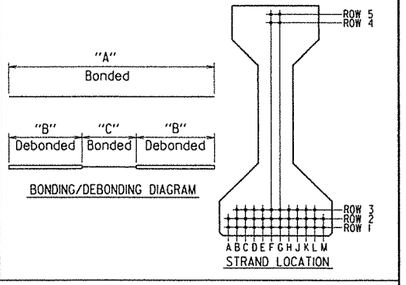
INTERMEDIATE BENT BEARING DETAIL

No Scale

Showing reinforcing in relation to bearing plate assembly

TABLE OF GIRDER VARIABLES

STRAND DESIGNATION		VARIABLES OF BONDING/DEBONDING		
ROW	LINE	"A"	"B"	"C"
1	B,E,H,L	—	8'	78'
1	A,C,D,F,G,J,K,M	94'	—	—
2	C,F,G,K	—	4'	86'
2	A,B,D,E,H,J,L,M	94'	—	—
3	B,C,D,E,F,G,H,J,K,L	94'	—	—
4	F,G	94'	—	—
5	F,G	94'	—	—



STATE OF ARKANSAS
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7-14-14
CHARLES R. ELLIS

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SHEET 4 OF 6
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: AMS. DATE: 7/23/12 FILENAME: b070282_cl.dgn
CHECKED BY: DATE: SCALE: AS NOTED
DESIGNED BY: JNP DATE: 5/12

BRIDGE NO. A6362 DRAWING NO. 54974

PRINT DATE: 7/8/2014

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.		070282	102	190
				(1) A6362	-	COMMON DETAILS	-	54975

PRESTRESSED GIRDERS GENERAL NOTES

Pretensioning steel shall be ½" dia. Low Relaxation strands with a minimum ultimate strength of 270 ksi, and shall conform to AASHTO M 203.

Distances from the forms and spacing of the Prestressing Steel shall be maintained by stays, ties, hangers, spacers, or other approved supports which shall be shown on the Shop Drawings.

Strands requiring debonding shall be blanketed over the regions shown with sheathing. Sheathing shall be either split plastic or solid plastic with a minimum wall thickness of 0.025 inch. To prevent concrete from contacting the strands within the debonded length, sheathing shall be thoroughly taped at each end. Split sheathing shall be additionally sealed along its entire length by thorough taping.

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

Concrete shall be Class S and shall have a minimum 28 day compressive strength, f'c = 6,000 psi. The initial tensile force applied to each ½" dia. strand shall be 31,000 lbs. except as noted. Transfer of this tensioning load to the girder shall not be done until the compressive strength of the concrete is 5,000 psi.

Dimensions shown are to the center of the strands.

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

The first 16" along the tops of the Girders at beginning and the end of unit shall have a smooth surface. The tops of the remaining length of the girders shall be rough floated at approximately the time of set. This portion of the tops of girders shall be scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding the slab.

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

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

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

The Contractor may submit alternate strand patterns with design calculations for review and approval.

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.

SUPERSTRUCTURE GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2014 edition, with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: 2012 AASHTO LRFD Bridge Design Specifications, Sixth Edition, with 2013 Interim Revisions.

LIVE LOADING: HL-93

REINFORCING STEEL: Reinforcing Steel shall be Grade 60 (fy = 60,000 psi.) conforming to AASHTO M31 or M322, Type A with mill test reports. Reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports sufficient in size and number 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 of "Epoxy Coated Reinforcing Steel (Grade 60)".

CONCRETE: Concrete in Slab, Parapet, and Diaphragms 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 end of unit and midspan diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured. Intermediate bent diaphragms shall be cast monolithically with the slab. Removable forms shall be used when pouring diaphragms. The slab and intermediate bent diaphragms for the Prestressed Concrete Girder Units shall not be poured until at least 90 days after the release of the Prestressing Strands.

All exposed corners to be chamfered ¾" unless otherwise noted.

The superstructure details shown are for when removable deck forming is used and are the basis for measurement of Class S (AE) Concrete. See Std. Dwg. No. 55005 for allowable modifications and for tolerances when permanent steel bridge deck forms are used.

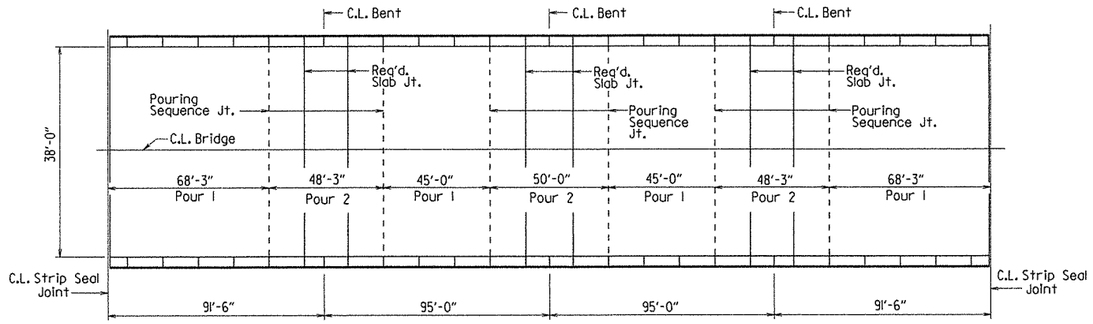
Concrete in bridge superstructure shall be placed, consolidated and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent. The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for a Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across the new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder.

STRUCTURAL STEEL: All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted and shall be paid for at the unit price bid for "Structural Steel in Plate Girder Spans (M270, Gr. 50W). All exposed surfaces to be cleaned in accordance with Subsection 807.84(e).

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.

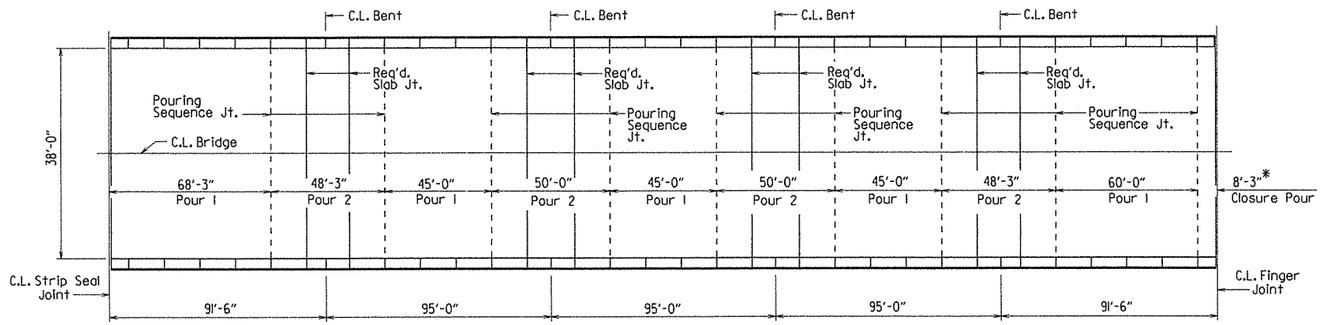
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval. All welding shall conform to Subsection 807.26.

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.



SLAB POURING SEQUENCE

373'-0" PRESTRESSED CONCRETE GIRDER UNIT



SLAB POURING SEQUENCE

468'-0" PRESTRESSED CONCRETE GIRDER UNIT

POURING SEQUENCE NOTES:

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

Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequences shown.

*After all incremental pours on both Units adjacent to Finger Joint are completed, closure pours on each side of Finger Joint shall be poured simultaneously. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

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SHEET 5 OF 6
COMMON DETAILS OF CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS

OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

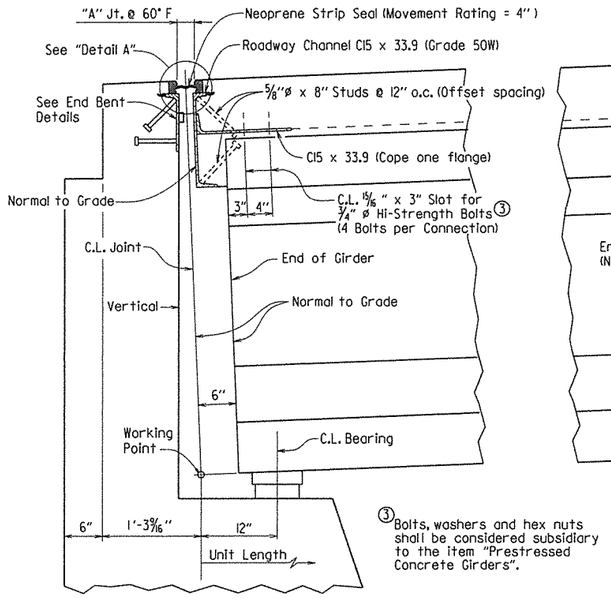
DRAWN BY: A.M.S. DATE: 7/18/12
CHECKED BY: K.W.Y DATE: 7/18/14
DESIGNED BY: J.N.P DATE: 5/12

FILENAME: b070282_cl.dgn
SCALE: No Scale

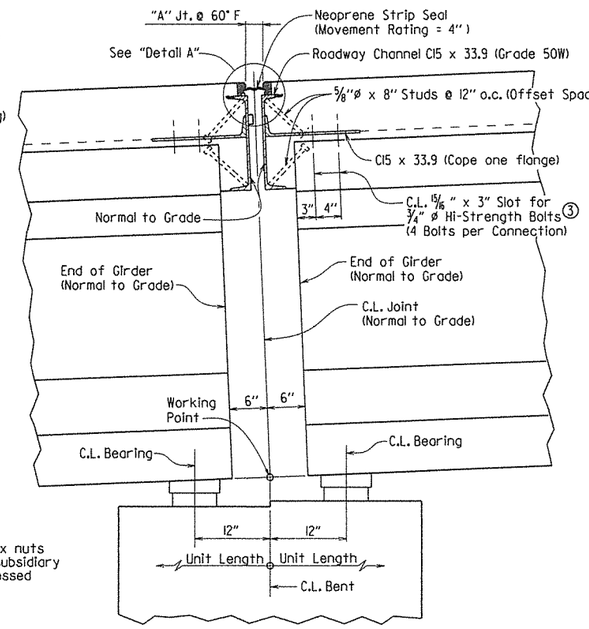
BRIDGE NO. A6362 DRAWING NO. 54975

PRINT DATE: 7/8/2014

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.		070282	103	190
				① A6362	-	COMMON DETAILS -	54976	

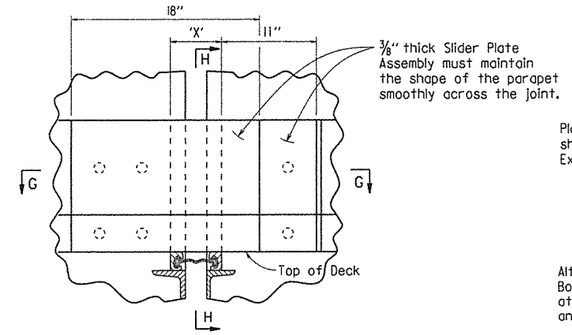


SECTION THRU JOINT AT END BENTS



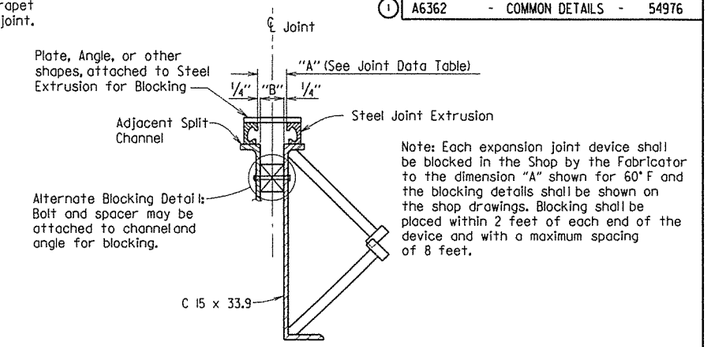
SECTION THRU JOINT
AT INT. BENT NOS. 5, 9, 20 AND 24

(See Dwg. No. 54989 for Joint Details at Bent Nos. 14 and 15



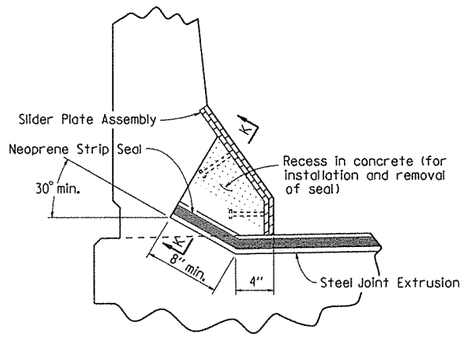
Note: Dimension 'X' equals the width of opening in parapet at curb to allow for removal or repair of joint.

DETAIL OF NEOPRENE STRIP SEAL AT CURB



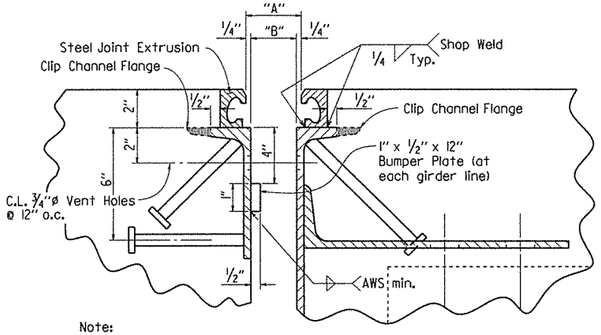
Note: Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" shown for 60° F and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE



Note: Details of Joint turn-up in curb and parapet are general and show basic design controls only.

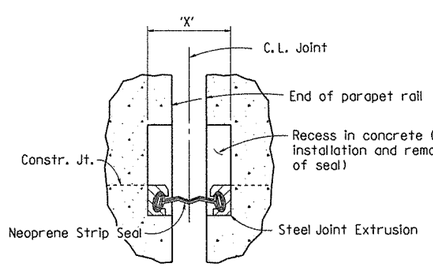
SECTION H-H



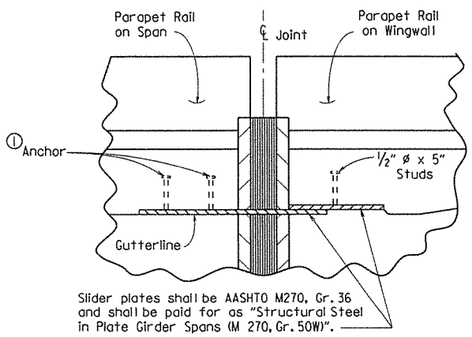
Note:
Concrete shall be hand packed under the joint armor. Care shall be taken to ensure that concrete completely fills the areas below the top channel flanges in the backwall and in the span.

DETAIL A

Detail is shown at End Bents.
Details at Intermediate Bents are similar.



SECTION K-K



Slider plates shall be AASHTO M270, Gr. 36 and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

SECTION G-G

① The method of attachment of the slider plate assembly must be such that it may be removed to provide for future replacement of the neoprene seal. Anchors will not be paid for directly, but shall be considered subsidiary to "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)".

Method of installation and fabrication shall be determined by the Manufacturer.

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 INTERIOR 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.

STRIP SEAL JOINT DATA

Bent No(s).	Movement Rating (inch)	"A" Width Perpendicular to Joint at 24 Hour Average Temperature② of:			"B" Width Perpendicular to Joint at 24 Hour Average Temperature② of:		
		40° F	60° F	80° F	40° F	60° F	80° F
1 & 28	4"	2 3/4"	2 1/2"	2 1/4"	2 1/4"	2"	1 3/4"
5 & 24	4"	3 1/16"	2 1/2"	1 15/16"	2 9/16"	2"	1 1/16"
9 & 20	4"	3 1/8"	2 1/2"	1 7/8"	2 5/8"	2"	1 3/8"

② The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

GENERAL NOTES FOR NEOPRENE STRIP SEAL JOINTS:

The expansion device shall provide for the movement rating(s) shown in the "STRIP SEAL JOINT DATA" table. The expansion joint shall be capable of sealing the deck surface and parapet area to prevent moisture and other contaminants from descending through the joint.

Details of proposed slider plate assembly shall be submitted to and approved by the Bridge Engineer prior to the fabrication of any structural steel at the expansion device.

All structural steel shall be Grade 50W except for the parapet slider plates which shall be Grade 36. Grade 50W steel shall not be painted and all exposed surfaces shall be cleaned in accordance with subsection 807.84(e). All exposed surfaces of the parapet slider plates shall be cleaned and painted in accordance with Section 638. Painting will not be paid for directly and structural steel completely embedded in concrete need not be painted. All structural steel shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)", except as noted.

The steel extrusion and neoprene strip seal shall be paid for in accordance with Section 809.

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SHEET 6 OF 6
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OUACHITA RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 7/18/12
CHECKED BY: K.W.Y DATE: 7/11/14
DESIGNED BY: J.W.P DATE: 5/12
FILENAME: b070282_cl.dgn
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PRINT DATE: 7/8/2014

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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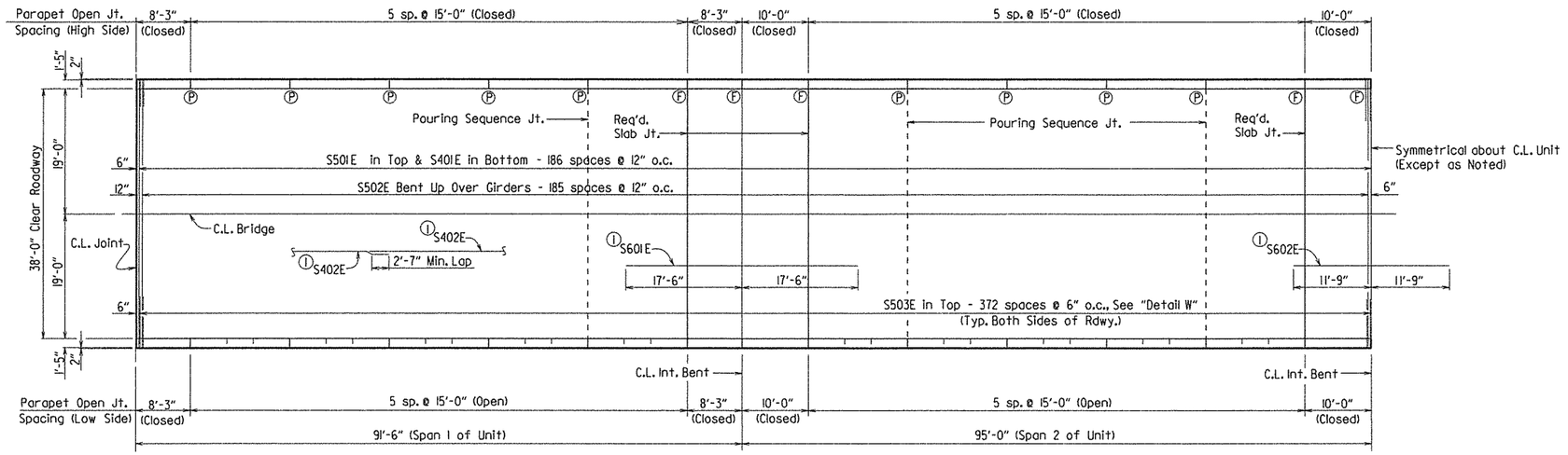
				(1) A6362		- 373' CONT. UNIT -		54977

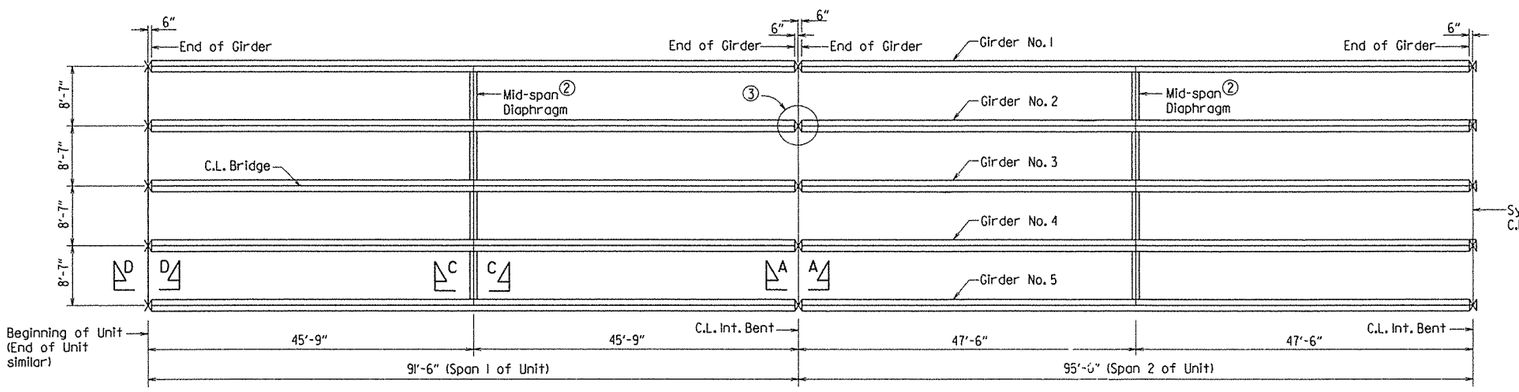
(1) Placed as Shown in "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT". See Dwg. No. 54971



HALF-REINFORCING PLAN - 373' UNIT

Scale: 1/32 " = 1'-0"

Note:
For "Section A-A", See Dwg. No. 54971
For "Section C-C" & "Section D-D", See Dwg. No. 54972



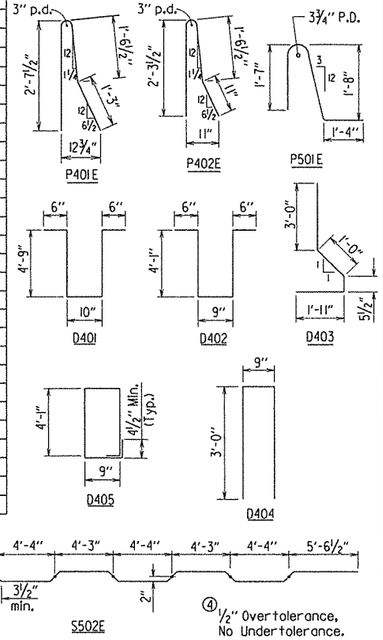
HALF-FRAMING PLAN - 373' UNIT

1/32 " = 1'-0"

BAR LIST - PER UNIT

Mark	No. Req'd.	Length	Pin Dia.
S401E	373	40'-10"	Str.
S402E	1190	39'-8"	Str.
S501E	373	40'-10"	Str.
S502E	372	41'-8"	3"
S503E	1490	5'-0"	Str.
S601E	184	35'-0"	Str.
S602E	92	23'-6"	Str.
P401E	1328	5'-6"	2"
P402E	160	4'-10"	2"
P403E	192	5'-6"	Str.
P404E	56	7'-11"	Str.
P405E	56	9'-8"	Str.
P406E	280	14'-8"	Str.
P501E	1328	4'-9"	3¾"
D401	84	11'-0"	2"
D402	112	9'-7"	2"
D403	18	6'-3"	2"
D404	30	6'-7"	2"
D405	56	10'-0"	2"
D601	30	34'-8"	Str.
D602	240	6'-5"	Str.
D603	36	5'-0"	Str.

Bending Diagrams (Dimensions are out to out of bars.)



All bars designated with an "E" suffix shall be Epoxy Coated.

Notes:
Required slab joints and pouring sequence construction joints shall align with parapet joints at gutterline.

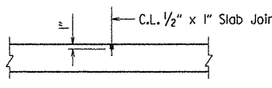
Location of full and partial depth parapet joints are similar for both sides of roadway.

(F) Full depth parapet joint at this location

(P) Partial depth parapet joint at this location

(2) For "Details of Alternate Mid-Span Diaphragm" see Dwg. No. 54972

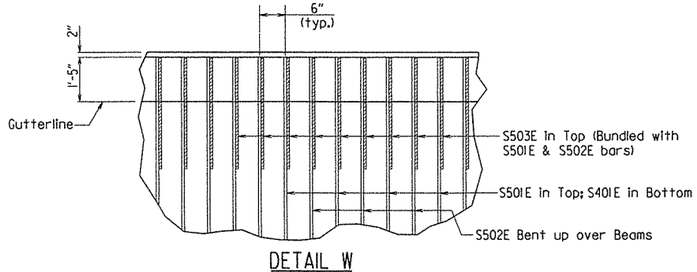
(3) After erection, the ends of girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps until all bearings are welded and diaphragms are poured.



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. 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 damaging 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.

SLAB JOINT DETAIL

No Scale



DETAIL W

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF 373'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT

OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 7/23/12 FILENAME: b070282_cl.dgn
CHECKED BY: K.W.W. DATE: 7/11/14 SCALE: As Noted
DESIGNED BY: J.W.P. DATE: 5/12

BRIDGE NO. A6362 DRAWING NO. 54977

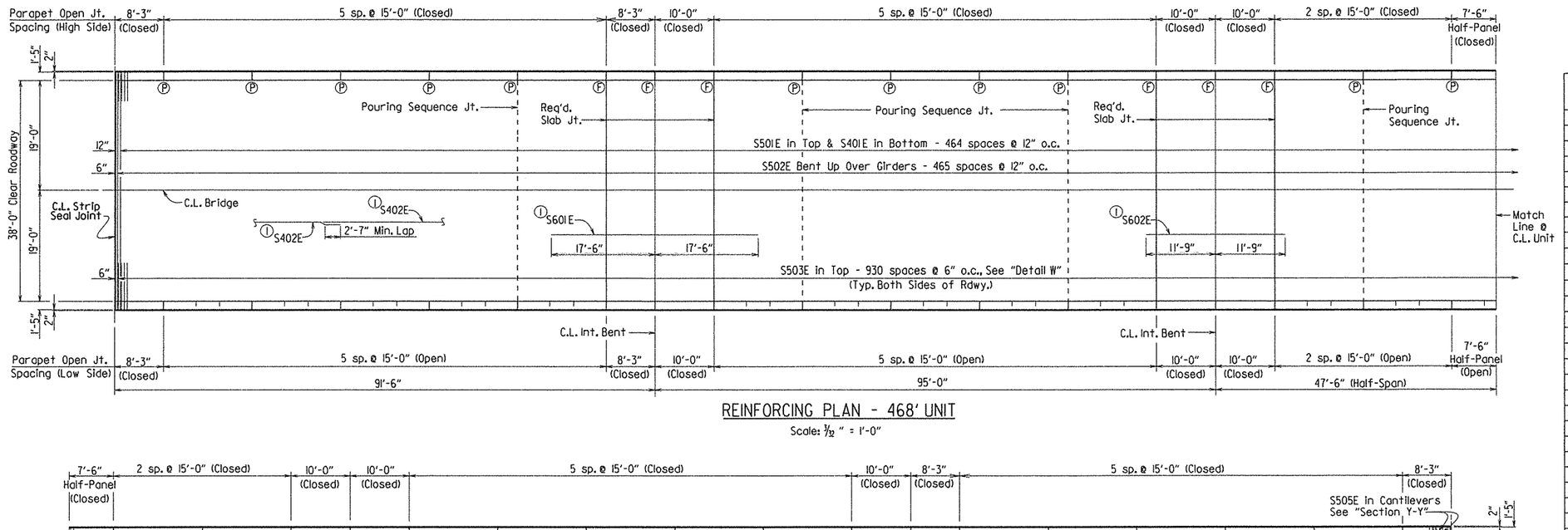
PRINT DATE: 7/8/2014

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.		070282	105	190

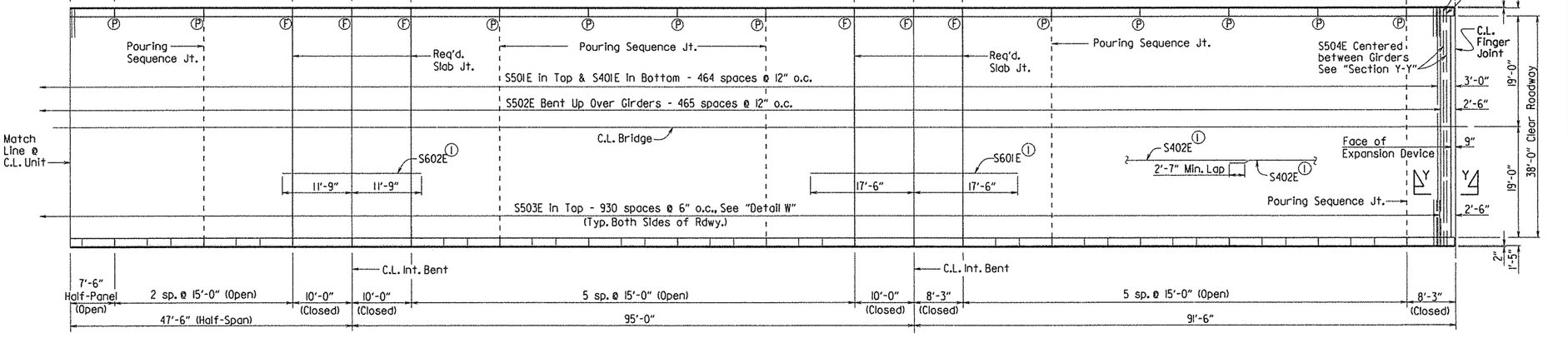
① A6362 - 468' CONT. UNIT - 54978

① Placed as Shown in "TYPICAL SECTION AT INTERMEDIATE BENTS WITHOUT EXPANSION JOINT", See Dwg. No. 54971.



REINFORCING PLAN - 468' UNIT

Scale: 1/32 " = 1'-0"



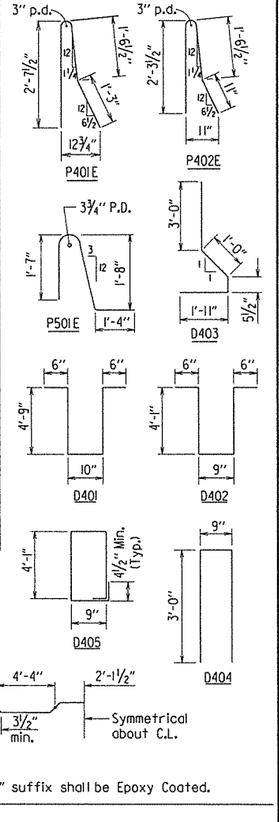
REINFORCING PLAN - 468' UNIT

Scale: 1/32 " = 1'-0"

BAR LIST - PER UNIT

Mark	No. Req'd.	Length	Pin Dia.
S401E	465	40'-10"	Str.
S402E	1547	39'-8"	Str.
S501E	465	40'-10"	Str.
S502E	466	41'-8"	3"
S503E	1862	5'-0"	Str.
S504E	12	7'-3"	Str.
S505E	6	2'-9"	Str.
S601E	184	35'-0"	Str.
S602E	184	23'-6"	Str.
P401E	1668	5'-6"	2"
P402E	200	4'-10"	2"
P403E	240	5'-6"	Str.
P404E	56	7'-11"	Str.
P405E	84	9'-8"	Str.
P406E	350	14'-8"	Str.
P501E	1668	4'-9"	3¾"
D401	112	11'-0"	2"
D402	140	9'-7"	2"
D403	24	6'-3"	2"
D404	40	6'-7"	2"
D405	56	10'-0"	2"
D601	40	34'-8"	Str.
D602	280	6'-5"	Str.
D603	42	5'-0"	Str.

Bending Diagrams (Dimensions are out to out of bars.)



② ½" Overtolerance, No Undertolerance.

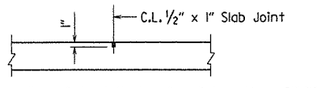
All bars designated with an "E" suffix shall be Epoxy Coated.

Notes:
Required slab joints and pouring sequence construction joints shall align with parapet joints at gutterline.

Location of full and partial depth parapet joints are similar for both sides of roadway.

Ⓕ Full depth parapet joint at this location

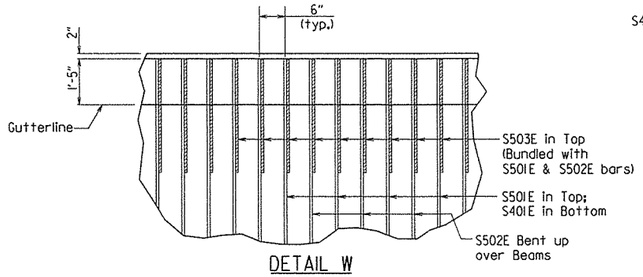
Ⓟ Partial depth parapet joint at this location



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. 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 damaging 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.

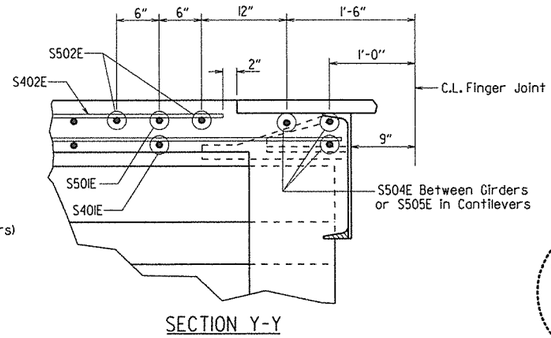
SLAB JOINT DETAIL

No Scale



DETAIL W

No Scale



SECTION Y-Y

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF 468'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

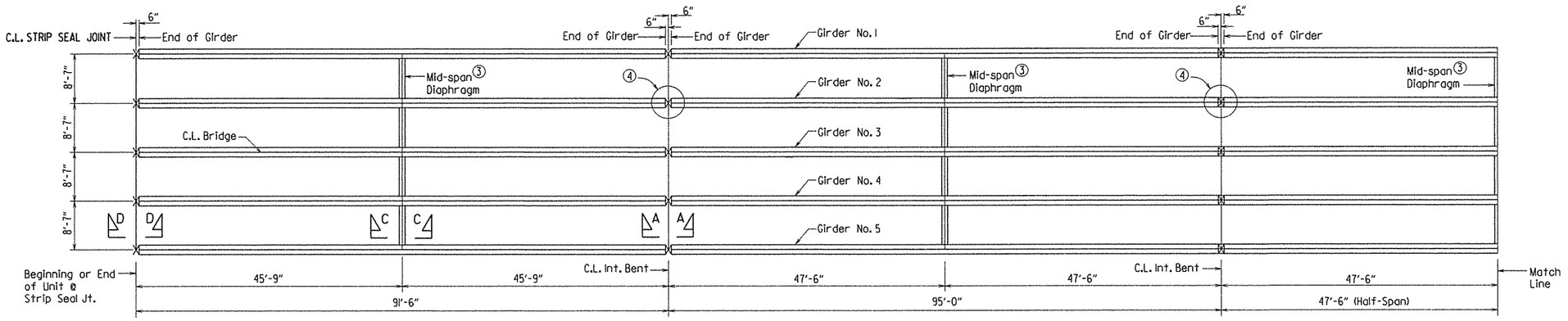
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 7/23/12 FILENAME: b070282_cl.dgn
CHECKED BY: KWV DATE: 7/11/14 SCALE: As Noted
DESIGNED BY: JYP DATE: 5/12

BRIDGE NO. A6362 DRAWING NO. 54978

PRINT DATE: 7/8/2014

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.		070282	106	190
				(1) A6362	- 468' CONT. UNIT -		54979	



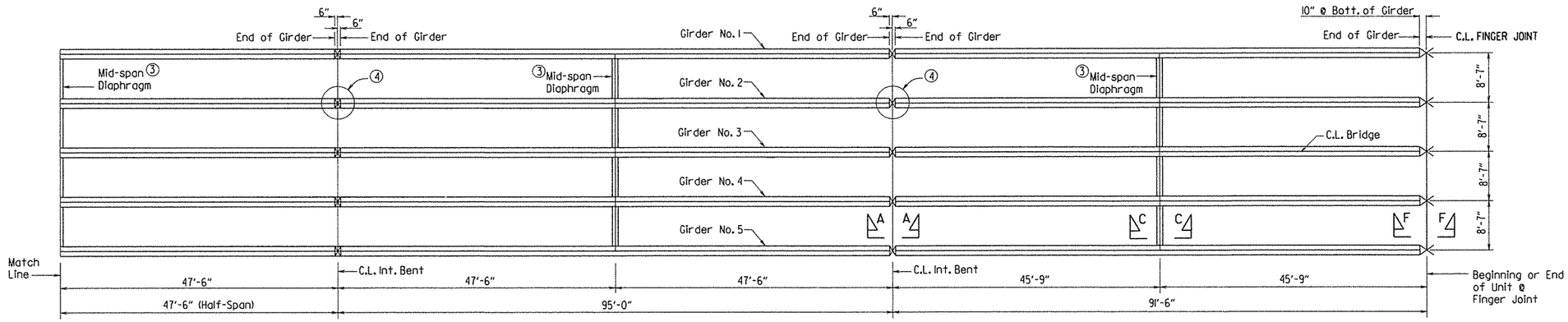
FRAMING PLAN - 468' UNIT

3/32 " = 1'-0"

Note:
For "Section A-A", See Dwg. No. 54971.
For "Section C-C", Section D-D" & "Section F-F", See Dwg. No. 54972.

③ For "Details of Alternate Mid-Span Diaphragm", See Dwg. No. 54972.

④ After erection, the ends of girders at all bents shall be blocked using temporary blocking to maintain proper location on bent caps until all bearings are welded and diaphragms are poured.



FRAMING PLAN - 468' UNIT

3/32 " = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF 468'-0" CONTINUOUS PRESTRESSED CONCRETE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

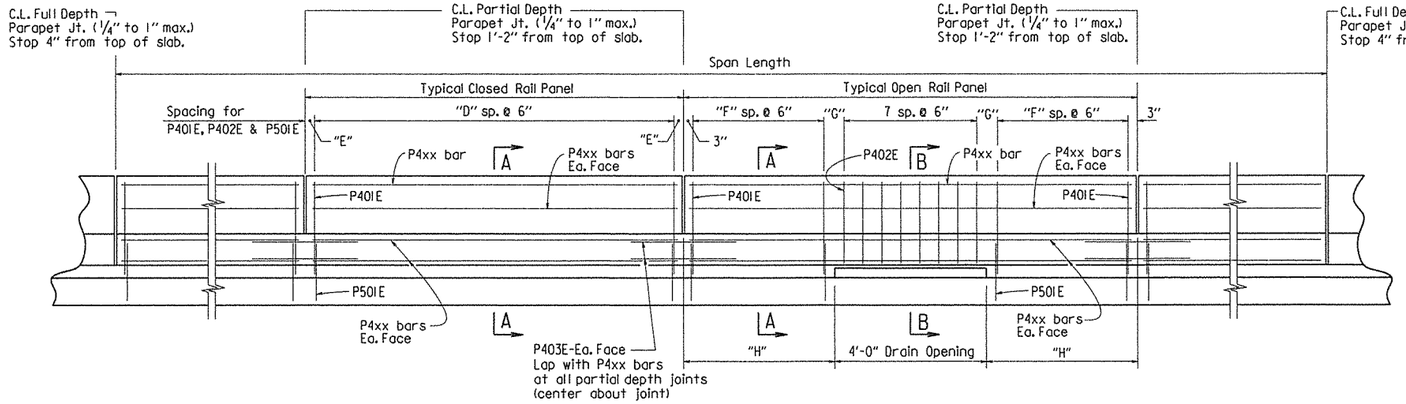
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 7/23/12 FILENAME: b070282_cl.dgn
CHECKED BY: K.W.Y DATE: 7/11/14 SCALE: As Noted
DESIGNED BY: J.N.P DATE: 5/12

BRIDGE NO. A6362 DRAWING NO. 54979

PRINT DATE: 7/8/2014

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.		070282	107	190
				(1) A6362		- PARAPET DETAILS -		54980



ELEVATION - CONCRETE PARAPET RAIL

Note:
For location of open and closed parapets, and full and partial depth joints, See:

Dwg. No. 54977 "HALF-REINFORCING PLAN - 373' UNIT"
Dwg. No. 54978 "REINFORCING PLAN - 468' UNIT"
Dwg. No. 54988 "HALF-REINFORCING PLAN & SLAB POURING SEQUENCE - 775' UNIT"

TABLE OF PARAPET RAIL VARIABLES

373' Prestressed Concrete Girder Unit

	Panel Length	P4xx Bar	"D"	"E"	"F"	"G"	"H"
Closed Parapet	8'-3"	P404E	15	4½"	—	—	—
	10'-0"	P405E	19	3"	—	—	—
	15'-0"	P406E	29	3"	—	—	—
Open Parapet	15'-0"	P406E	—	—	10	6"	5'-6"

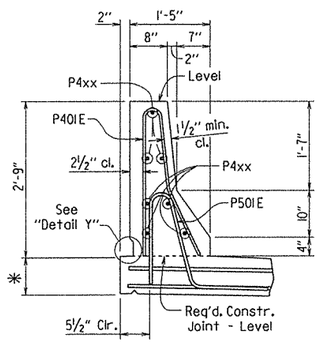
468' Prestressed Concrete Girder Unit

	Panel Length	P4xx Bar	"D"	"E"	"F"	"G"	"H"
Closed Parapet	8'-3"	P404E	15	4½"	—	—	—
	10'-0"	P405E	19	3"	—	—	—
	15'-0"	P406E	29	3"	—	—	—
Open Parapet	15'-0"	P406E	—	—	10	6"	5'-6"

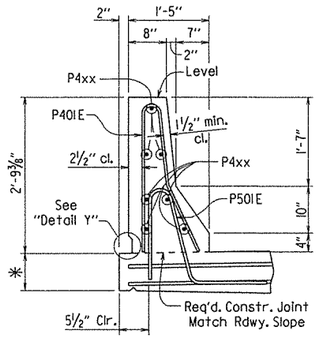
775' Plate Girder Unit

	Panel Length	P4xx Bar	"D"	"E"	"F"	"G"	"H"
Closed Parapet	12'-6"	P404E	24	3"	—	—	—
	14'-0"	P405E	27	3"	—	—	—
					—	—	—
Open Parapet	14'-0"	P405E	—	—	9	6"	5'-0"

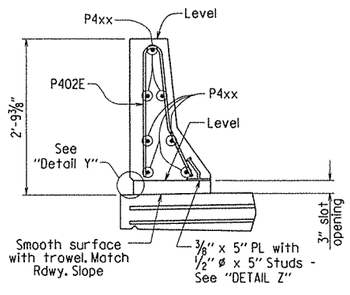
* 8¾" for 373' & 468' Prestressed Girder Units
9¼" for 775' Plate Girder Unit



SECTION A-A
(High Side)

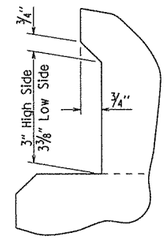


SECTION A-A
(Low Side)

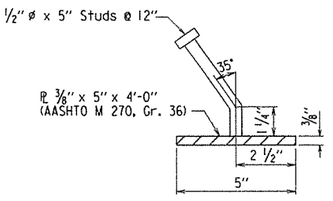


SECTION B-B
(Low Side)

Note: Longitudinal reinforcing in slab not shown.



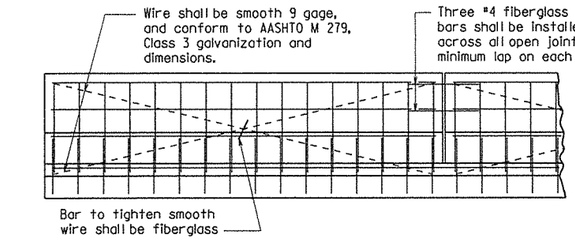
DETAIL Y



DETAIL Z

Note:
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 Plate Girder Spans (M270, Gr. 50W)."

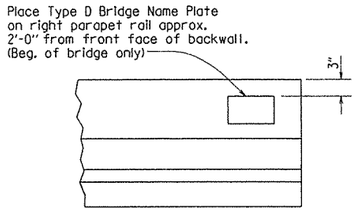
Parapet studs shall be 5" long, granular flux filled, solid fluxed or equal, and automatically end welded to the plate. Studs and plates shall meet the requirements of Section 807 and shall be measured and paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)."



All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL



NAME PLATE DETAIL

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

PARAPET DETAILS
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 5/3/12
CHECKED BY: K.W.Y DATE: 7/11/14
DESIGNED BY: J.W.P DATE: 5/12

FILENAME: b070282_cl.dgn
SCALE: No Scale

BRIDGE NO. A6362 DRAWING NO. 54980

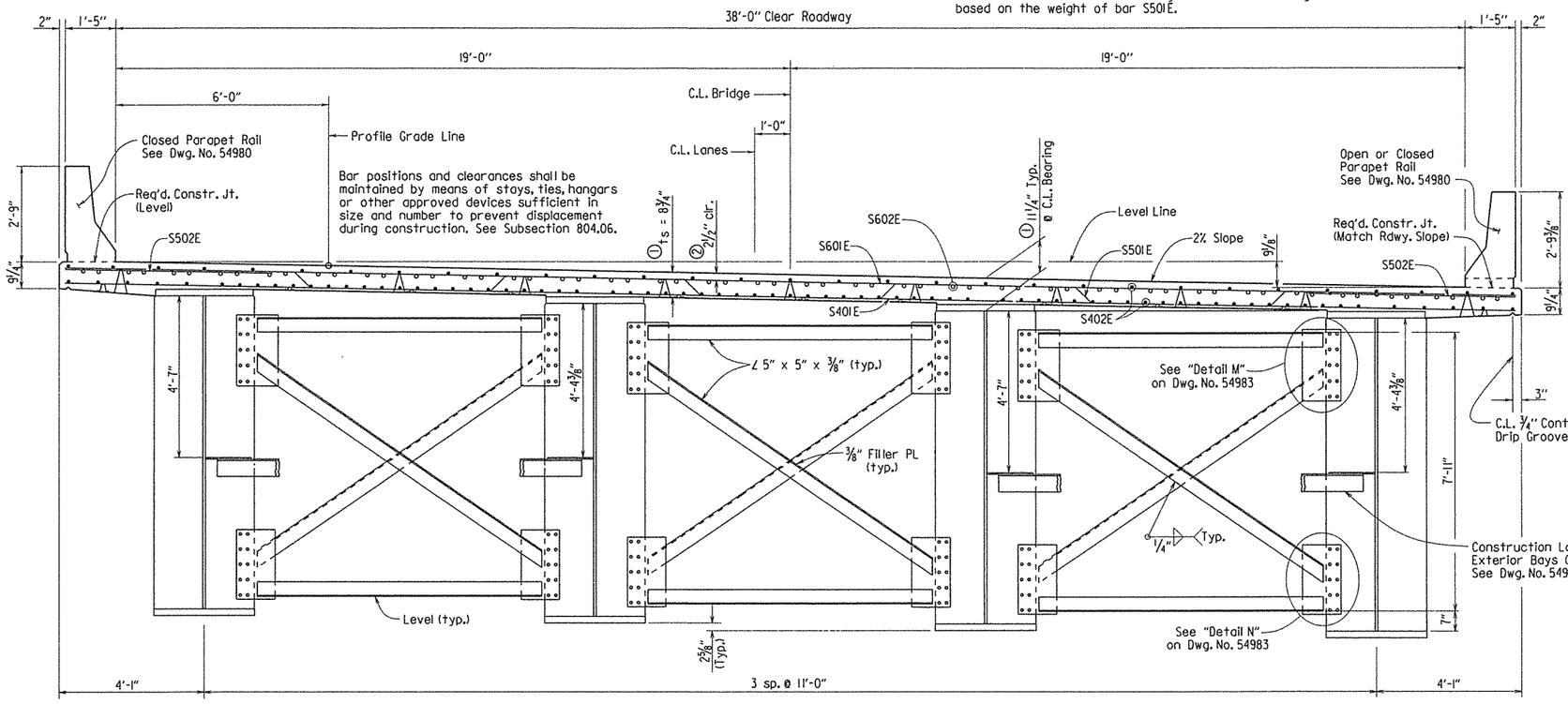
PRINT DATE: 7/8/2014

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.		070282	108	190
				(1) A6362	- 775' CONT. UNIT -		54981	

Notes: Class I Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of the Concrete Parapet Rail.

All bars designated with an "E" suffix shall be Epoxy Coated.

At the Contractor's option, two straight epoxy coated #5 bars may be substituted for bar S501E. Payment for reinforcing will be based on the weight of bar S501E.



TYPICAL SECTION AT PIERS 1 AND 2

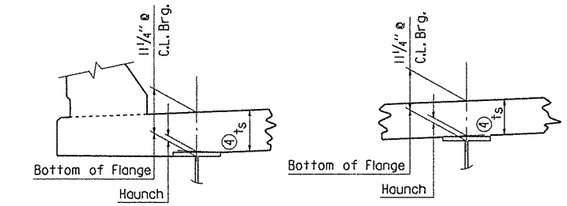
LOOKING AHEAD

½" = 1'-0"

SLAB REINFORCING:

Transverse: S601E -Top , S401E -Bottom @ 12" o.c. —Alternate
S501E @ 12" o.c. Bent Up Over Girders —Alternate
S502E @ 6" o.c. at Gutterline (Bundled)

Longitudinal: S402E in top & bott. (Place as shown)
S602E placed as shown over interior supports



t_s = slab thickness as shown in "Typical Section @ Piers 1 and 2"

EXTERIOR GIRDER	INTERIOR GIRDER

④Tolerance 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". 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.

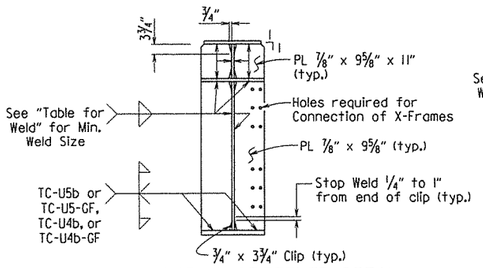
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

No Scale

TABLE FOR WELD

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"	5/16"	

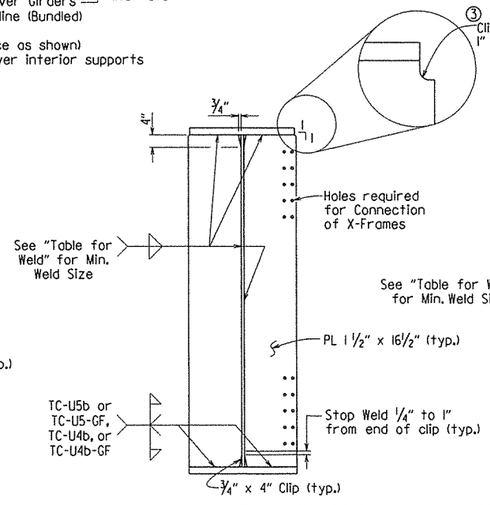
NOTE: When a fillet weld size, as shown on the plans, is larger than the minimum, the first pass shall be that specified for minimum size of fillet weld.



END BEARING STIFFENER DETAIL

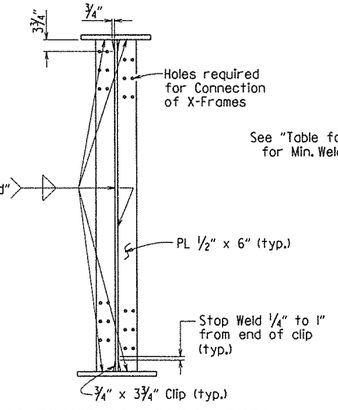
½" = 1'-0"

Note:
Bearing Stiffeners shall be vertical in final position.



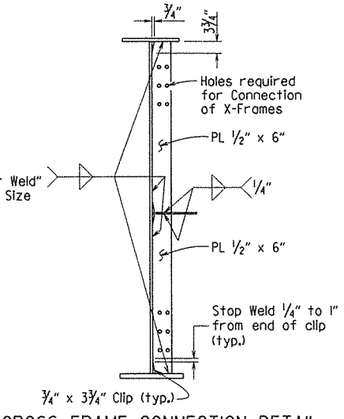
INT. BEARING STIFFENER DETAIL

½" = 1'-0"



CROSS FRAME CONNECTION DETAIL

½" = 1'-0"



CROSS FRAME CONNECTION DETAIL WITH LATERAL BRACING CONNECTION PLATE

½" = 1'-0"

Note:
For Typical Sections @ Ends of Unit and Intermediate Connections, See Dwg. Nos. 54982 & 54983

①See "Adjustment for Slab Thickness Tolerance".

②Tolerance: Minus= ¼" ;
Plus = Equal to the amount of slab thickening used to meet slab thickness tolerance. See "Adjustment for Slab Thickness Tolerance".

③If permanent steel bridge deck forms are used, the Fabricator shall clip the bearing stiffener plates as necessary to accomodate the deck form support.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

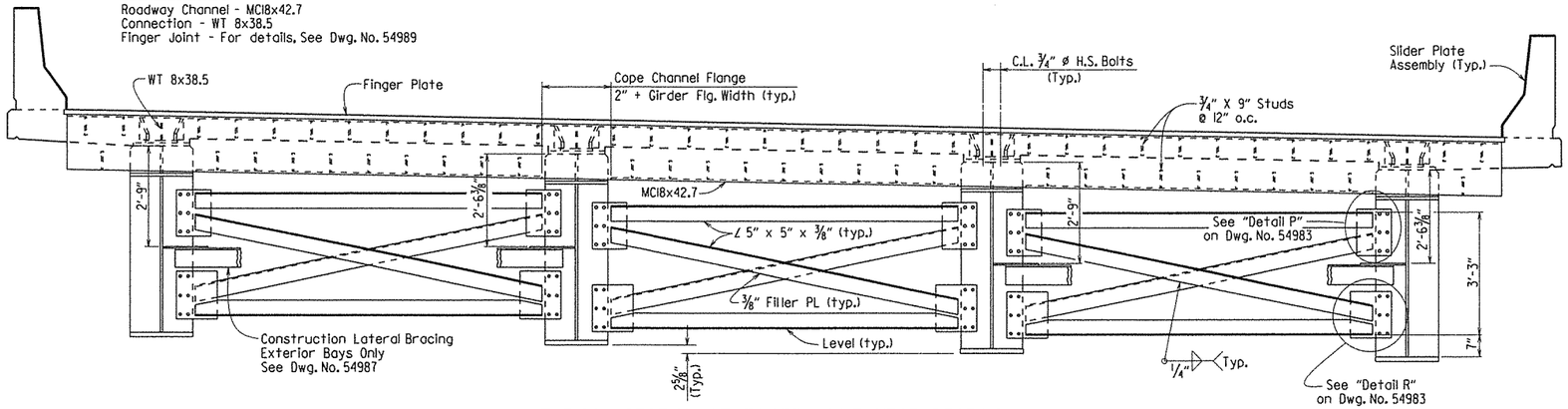
DRAWN BY: A.M.S. DATE: 9/4/12 FILENAME: b070282_sl.dgn
CHECKED BY: K.W.W. DATE: 7/14/14 SCALE: As Noted
DESIGNED BY: P.G.T. DATE: 7/12

BRIDGE NO. A6362 DRAWING NO. 54981

PRINT DATE: 7/8/2014

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.		070282	109	190
				(1)	A6362	- 775' CONT. UNIT -		54982

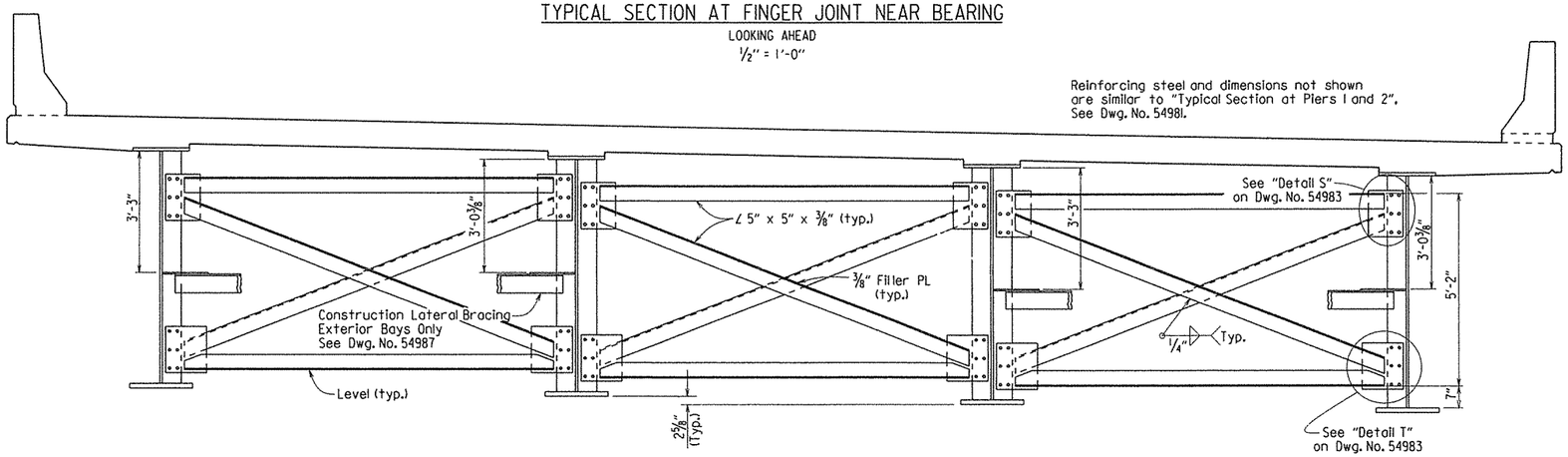
EXPANSION DEVICE:
Roadway Channel - MC18x42.7
Connection - WT 8x38.5
Finger Joint - For details, See Dwg. No. 54989



TYPICAL SECTION AT FINGER JOINT NEAR BEARING

LOOKING AHEAD
½" = 1'-0"

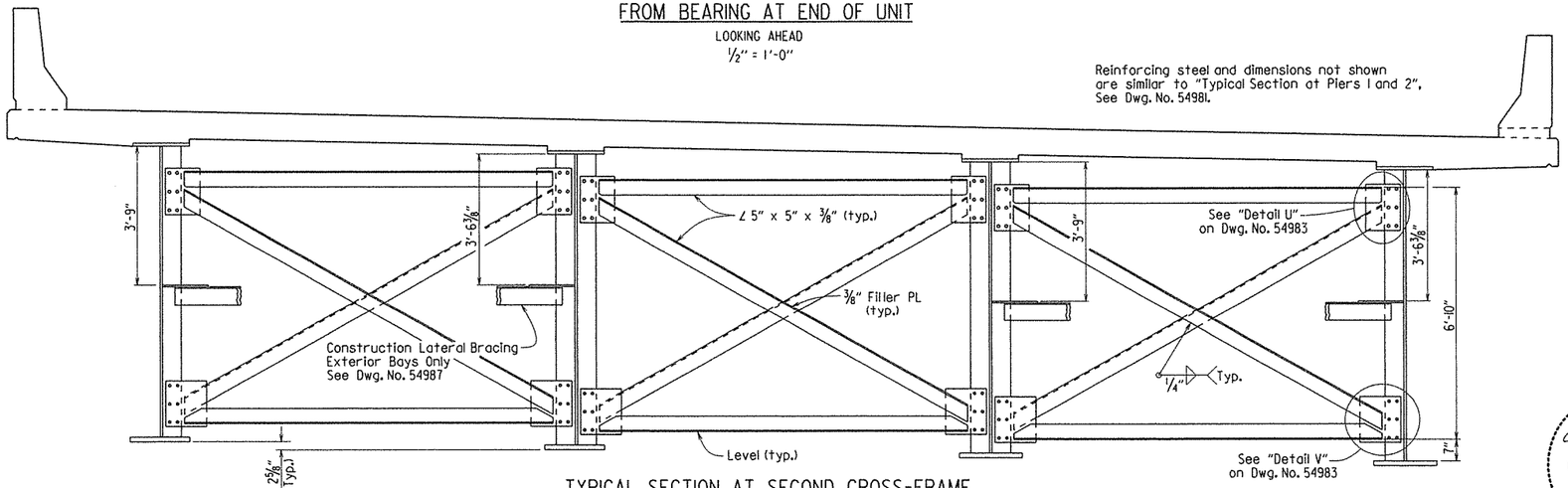
Reinforcing steel and dimensions not shown are similar to "Typical Section at Piers 1 and 2", See Dwg. No. 54981.



TYPICAL SECTION AT FIRST CROSS-FRAME FROM BEARING AT END OF UNIT

LOOKING AHEAD
½" = 1'-0"

Reinforcing steel and dimensions not shown are similar to "Typical Section at Piers 1 and 2", See Dwg. No. 54981.



TYPICAL SECTION AT SECOND CROSS-FRAME FROM BEARING AT END OF UNIT

LOOKING AHEAD
½" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
7-14-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9/4/12
CHECKED BY: KWY DATE: 7/11/14
DESIGNED BY: RET DATE: 7/12
FILENAME: b070282_sl.dgn
SCALE: As Noted

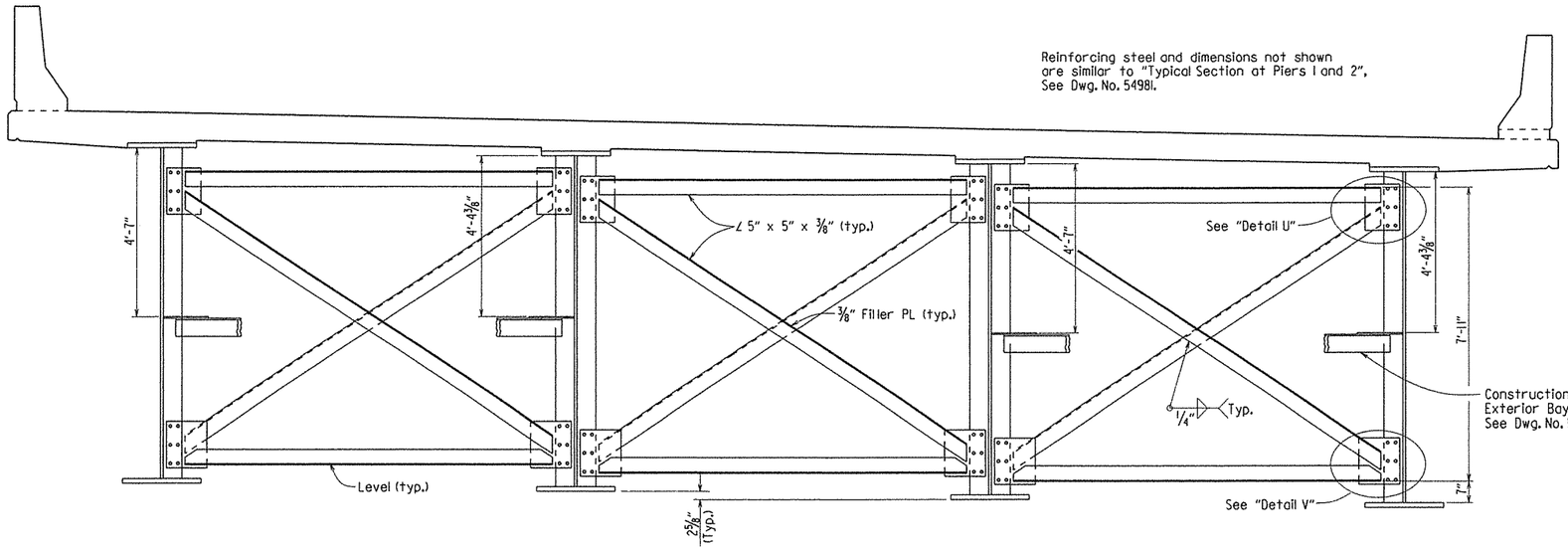
BRIDGE NO. A6362 DRAWING NO. 54982

PRINT DATE: 7/9/2014

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.		070282	110	190
(1) A6362	- 775' CONT. UNIT -		54983	

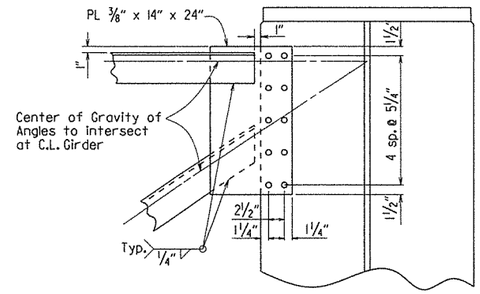
Reinforcing steel and dimensions not shown are similar to "Typical Section at Piers 1 and 2", See Dwg. No. 54981.



TYPICAL SECTION AT INTERMEDIATE CONNECTION

LOOKING AHEAD

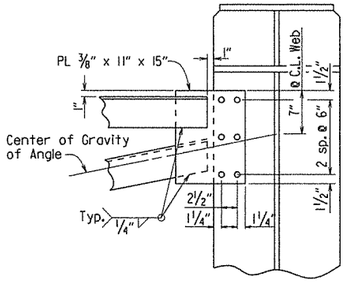
½" = 1'-0"



DETAIL M

(Use with 1½" x 16½" Bearing Stiffener PL

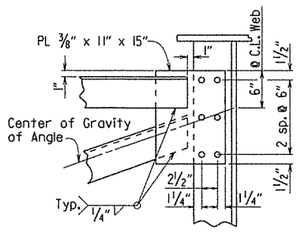
1" = 1'-0"



DETAIL P

(Use with ⅞" x 9⅝" Bearing Stiffener PL

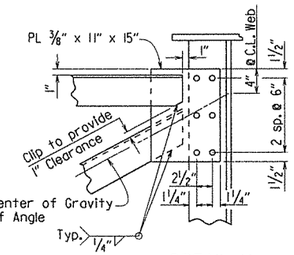
1" = 1'-0"



DETAIL S

(Use with ½" x 6" Connection PL)

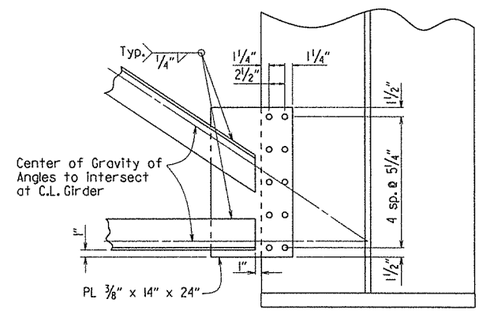
1" = 1'-0"



DETAIL U

(Use with ½" x 6" Connection PL)

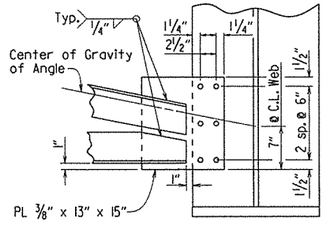
1" = 1'-0"



DETAIL N

(Use with 1½" x 16½" Bearing Stiffener PL

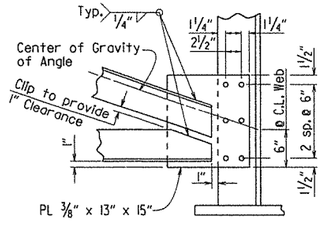
1" = 1'-0"



DETAIL R

(Use with ⅞" x 9⅝" Bearing Stiffener PL

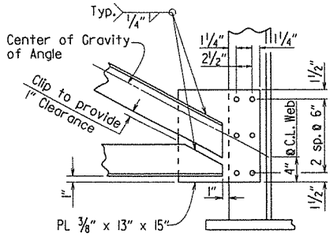
1" = 1'-0"



DETAIL T

(Use with ½" x 6" Connection PL)

1" = 1'-0"



DETAIL V

(Use with ½" x 6" Connection PL)

1" = 1'-0"

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STATE OF ARKANSAS
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SHEET 3 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

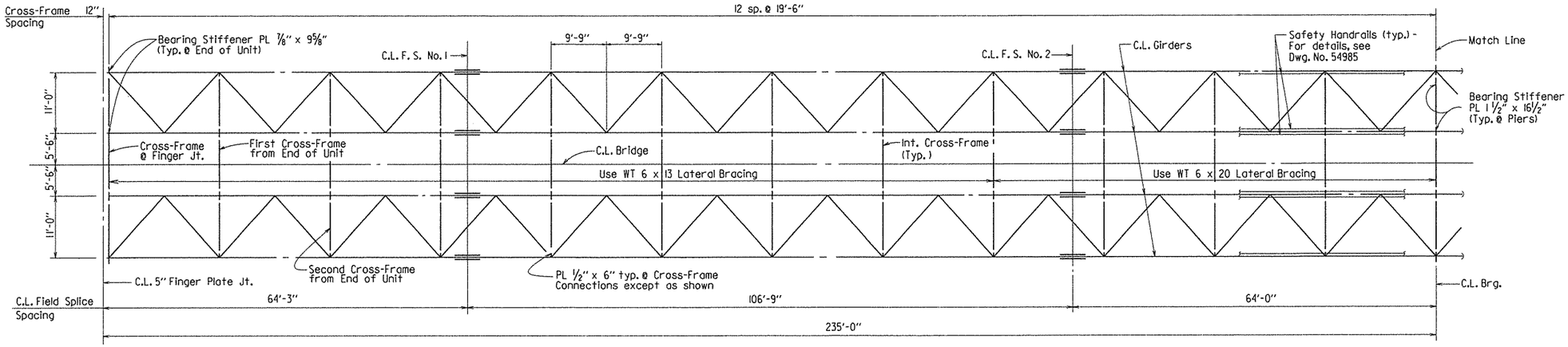
LITTLE ROCK, ARK.

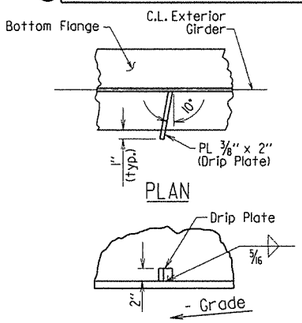
DRAWN BY: A.M.S. DATE: 9/4/12
CHECKED BY: KWY DATE: 7/11/14
DESIGNED BY: PGT DATE: 7/12

FILENAME: b070282_sl.dgn
SCALE: As Noted

BRIDGE NO. A6362 DRAWING NO. 54983

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.		070282	111	190
				(1) A6362	- 775' CONT. UNIT -		54984	

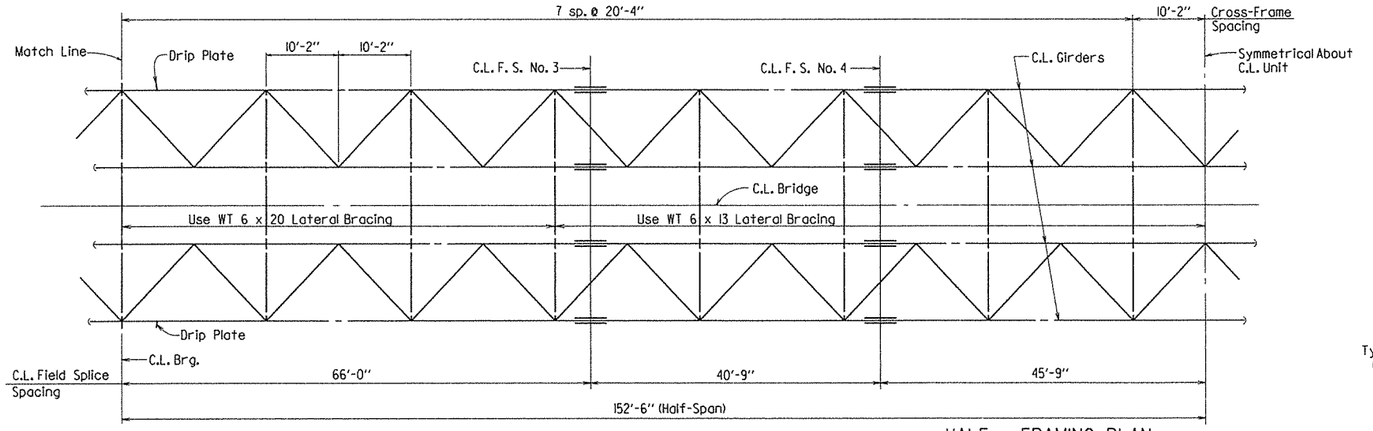




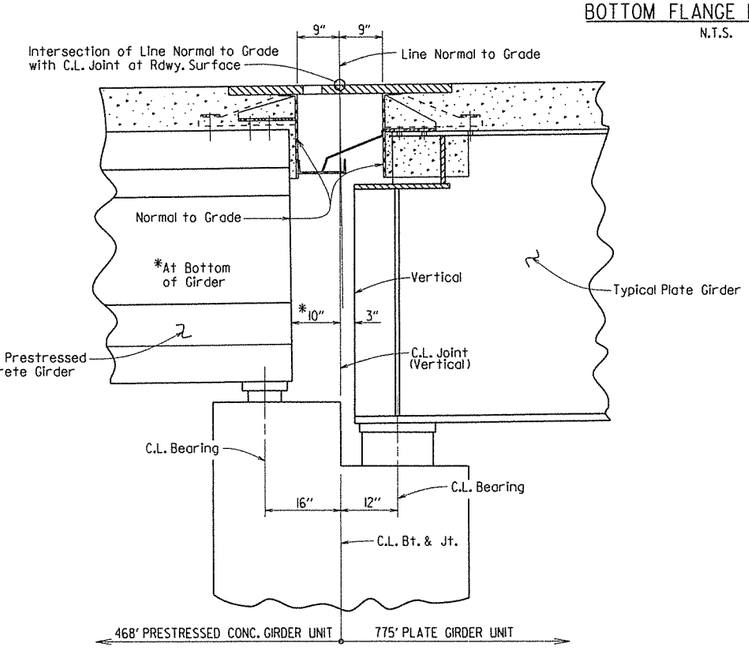
Notes:
Drip Plate to be welded to the outer side of the bottom flange of the exterior girders.

Locate drip plate 5'-0" from C.L. Bearing on high side of each pier.

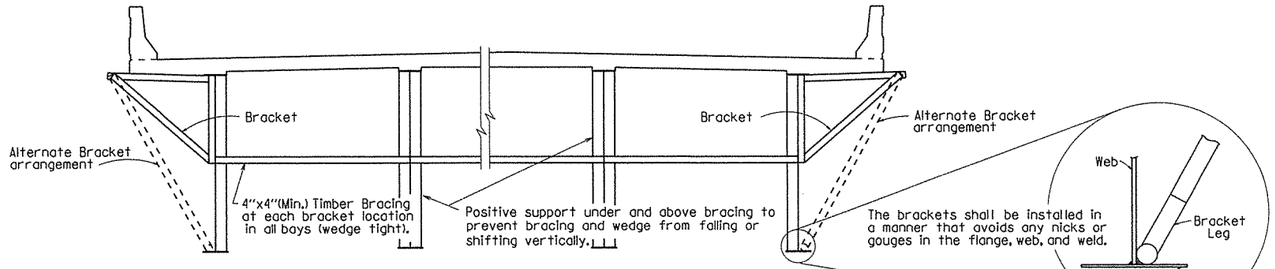
BOTTOM FLANGE DRIP PLATE
N.T.S.



HALF - FRAMING PLAN
3/32" = 1'-0"



TYPICAL JOINT DETAIL AT BENTS 14 AND 15
N.T.S.



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 1/2" x 6" web stiffeners 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 Drawing No. 54981. 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 (M270, Gr. 50W)".

SCREED RAIL SUPPORT
N.T.S.

STATE OF ARKANSAS
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SHEET 4 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9/5/12 FILENAME: b070282_sl.dgn
CHECKED BY: L.W.W. DATE: 7/11/14 SCALE: As Noted
DESIGNED BY: P.G.T. DATE: 7/12

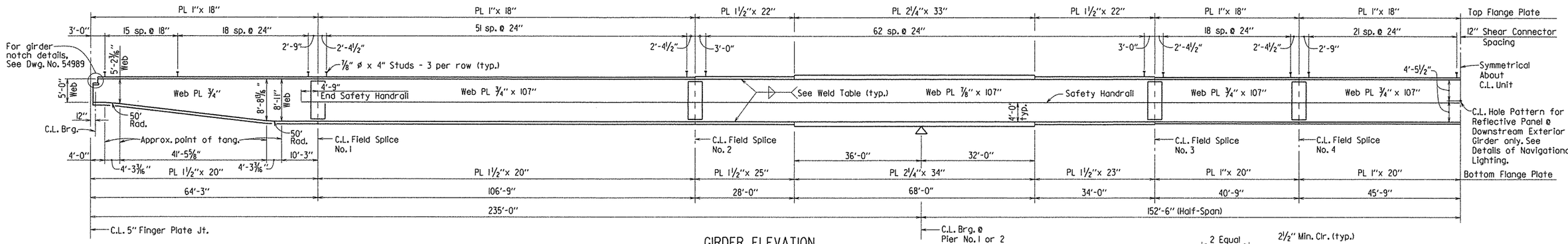
BRIDGE NO. A6362 DRAWING NO. 54984

PRINT DATE: 7/8/2014

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.		070282	112	190
				(1) A6362	-	775' CONT. UNIT -		54985

Notes:
All web and flange plates shall be AASHTO M270, Grade 50W steel.

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



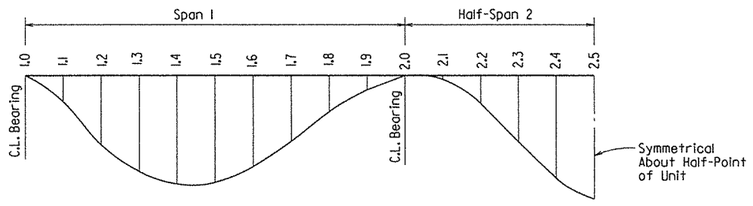
GIRDER ELEVATION

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel	Structural Steel + Slab	Structural Steel + Slab + Parapet
		Interior or Exterior	Interior or Exterior	Interior or Exterior
1	1.0	0	0	0
	1.1	0.752	2.768	2.943
	1.2	1.280	4.697	4.999
	1.3	1.573	5.754	6.129
	1.4	1.640	5.984	6.377
	1.5	1.486	5.414	5.771
	1.6	1.159	4.213	4.491
	1.7	0.738	2.680	2.855
	1.8	0.348	1.268	1.347
	1.9	0.087	0.325	0.341
Half-Span 2	2.0	0	0	0
	2.1	0.244	0.817	0.887
	2.2	0.757	2.608	2.822
	2.3	1.391	4.877	5.265
	2.4	1.899	6.712	7.239
	2.5	2.091	7.405	7.985

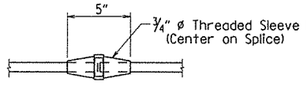
← Half-Point of Unit

Note: Table is symmetrical about the Half-Point of Unit.

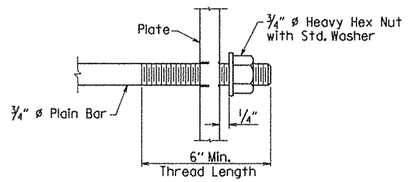


DEAD LOAD DEFLECTION DIAGRAM

Note: Camber for dead load deflection plus Vertical Curve +/- ¼" tolerance. Deflections shown are along C.L. Girder from a chord from C.L. Bearing to C.L. Bearing. Negative sign (-) indicates point above chord. Vertical curve corrections not included.

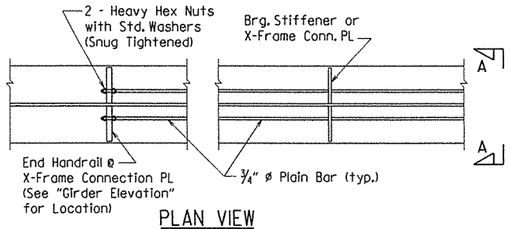


THREADED COUPLING

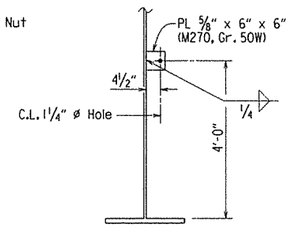


Set gap width after slab has been poured and tack weld nut to bar.

END BAR DETAIL

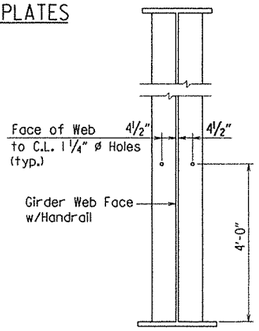


PLAN VIEW

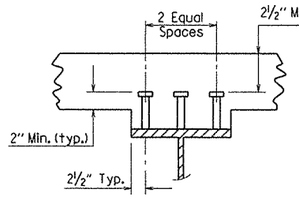


Provide support plates as required to provide a maximum spacing of 12'-0" o.c. to support the handrail.

DETAIL OF SUPPORT PLATES

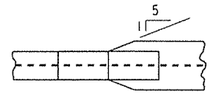


SECTION A-A

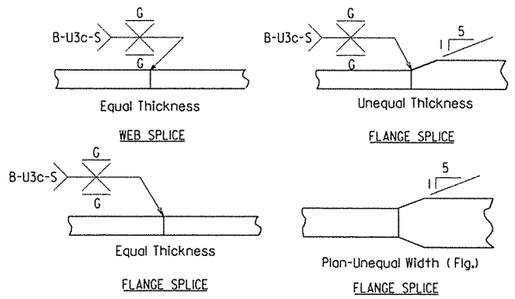


Stud Shear Connectors shown shall be ⅞"ø x 4" automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown at the ratio of 1.361-¾"ø studs in place on one ⅞"ø stud. ⅞"ø studs will be used as the basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL



FIELD SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



DETAILS OF WELDED SPLICES

DETAILS OF FIELD ERECTED SAFETY HANDRAILS

Notes:
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 M270, Grade 36 and Section 807.

Structural steel, including ¾" ø plain bar and support plates are included in the 775' Unit structural steel quantities. Turnbuckles shall not be paid for directly, but shall be subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

The ¾" ø plain bar, turnbuckles and accessories shall be galvanized according to AASHTO M232, Class C or AASHTO M298, Class 50. Galvanizing shall not be paid for directly, but shall be subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

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SHEET 5 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

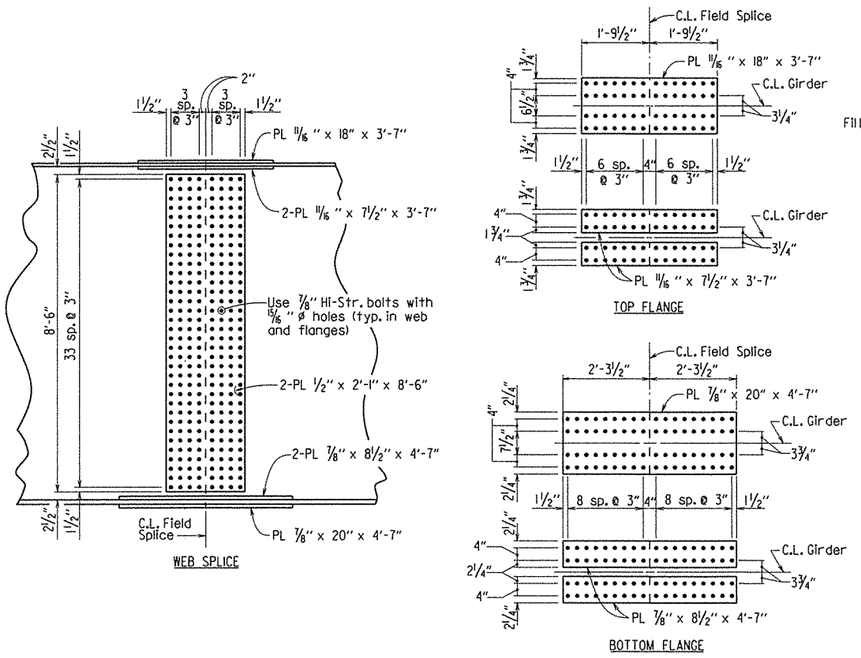
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 9/5/12
CHECKED BY: KWY DATE: 7/11/14
DESIGNED BY: PGT DATE: 7/12
FILENAME: b070282_sl.dgn
SCALE: No Scale

BRIDGE NO. A6362 DRAWING NO. 54985

PRINT DATE: 7/9/2014

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.		070282	113	190
				(1) A6362	-	775' CONT. UNIT -		54986

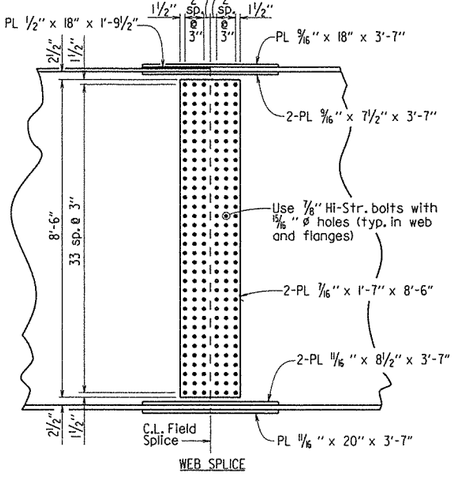


WEB SPLICE

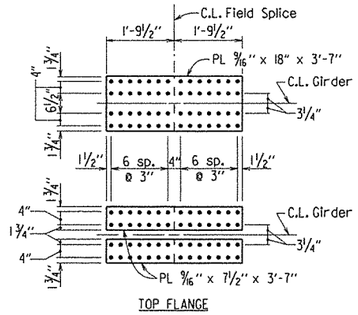
TOP FLANGE

BOTTOM FLANGE

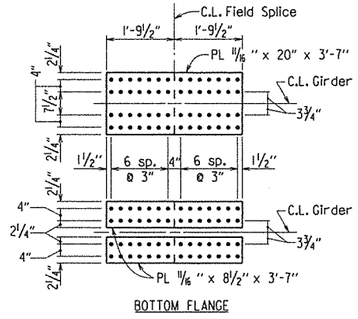
DETAILS OF FIELD SPLICE NO. 1



WEB SPLICE

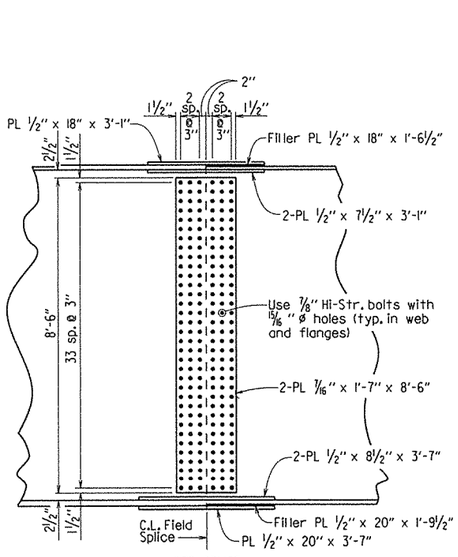


TOP FLANGE

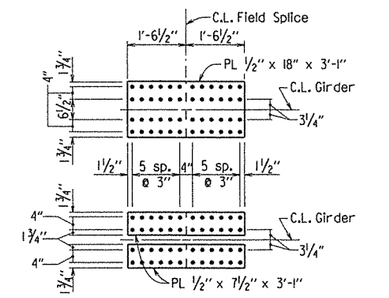


BOTTOM FLANGE

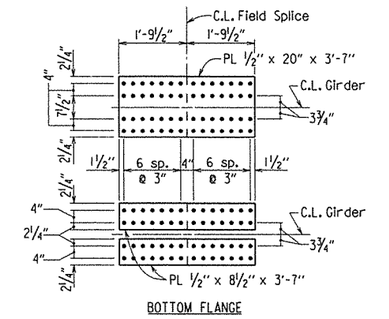
DETAILS OF FIELD SPLICE NO. 2



WEB SPLICE

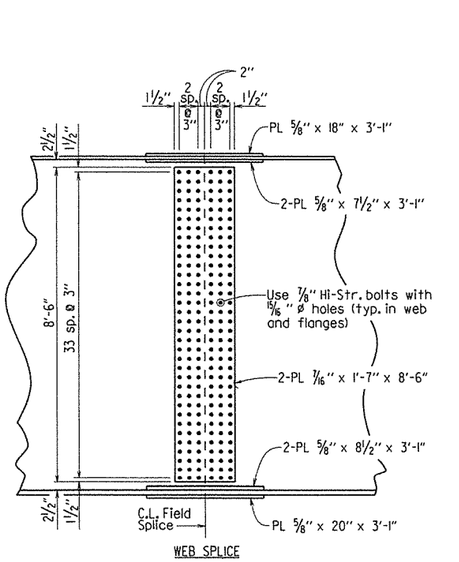


TOP FLANGE

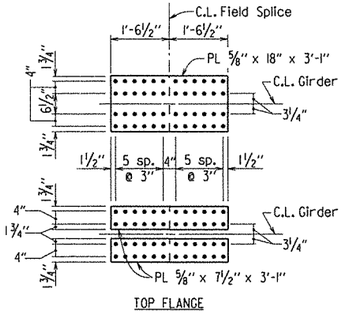


BOTTOM FLANGE

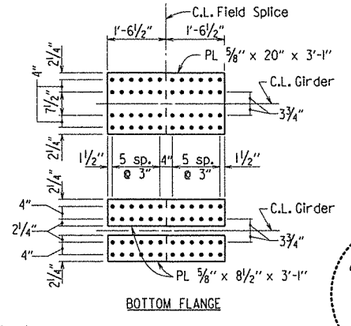
DETAILS OF FIELD SPLICE NO. 3



WEB SPLICE



TOP FLANGE



BOTTOM FLANGE

DETAILS OF FIELD SPLICE NO. 4

Note:
All Field Splice plates shall be AASHTO M270, Grade 50W steel.

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SHEET 6 OF 8
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775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
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BRIDGE NO. A6362 DRAWING NO. 54986

PRINT DATE: 7/9/2014

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				6	ARK.			
				JOB NO.		070282	114	190
				(1) A6362 - 775' CONT. UNIT -			54987	

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition 2012, with 2013 Interim Revisions.

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Gr. 60, AASHTO M31 or M322, Type A)	fy =	60,000 psi
Structural Steel (M 270, Gr. 50W)	Fy =	50,000 psi
Structural Steel (M 270, Gr. 36)	Fy =	36,000 psi

CONCRETE :
Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

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.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing. A minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing.

REINFORCING STEEL :
All reinforcing steel shall be Grade 60 conforming to AASHTO M31 or M322, Type A, with mill test reports. 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 :
All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Plate Girder Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e). Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 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 shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Girder web and flange plates and field splice plates 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. 50W)".

All girders shall be assembled in the shop as specified in Subsection 807.54 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 girder dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

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.

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.

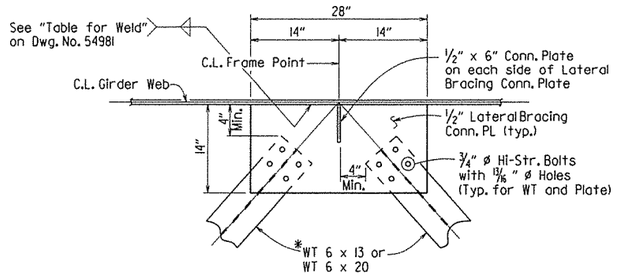
Girder webs may be made by shop splicing with minimum lengths of 25 feet for sections. Flange plates longer than 50 feet may be made by shop splicing with minimum lengths of 25 feet for sections. No additional payment for welds for these splices will be made.

Groove welds in web and flange plates shall be Quality Control (Q.C.) tested by nondestructive testing, as required by the governing specifications in Subsection 807.23(b). Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Quality Control (Q.C.) testing is at the Contractor's expense.

Field connections shall be bolted with high-strength bolts and shall be ¾" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior girder webs and on the bottom of the girder flanges. Holes for ¾" ø high-strength bolts may be 15/16" ø diameter if a washer is supplied for use under both the nut and head of the bolt.

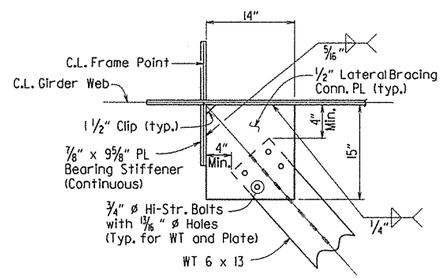
Cross-Frames shall be installed as girders are erected. All bolts in cross-frames and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

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.



** TYPICAL LATERAL BRACE CONNECTION AT EXTERIOR GIRDER

1" = 1'-0"

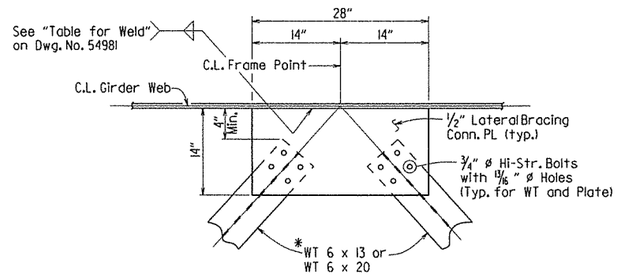


TYPICAL LATERAL BRACE CONNECTION AT BENTS 14 AND 15

1" = 1'-0"

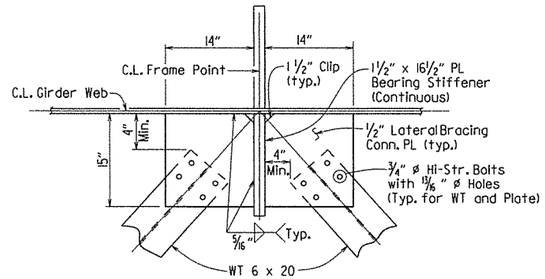
** Excluding lateral bracing @ Piers & Bents

* See Framing Plan on Dwg. No. 54984 for Location of Lateral Bracing Sizes



** TYPICAL LATERAL BRACE CONNECTION AT INTERIOR GIRDER

1" = 1'-0"



TYPICAL LATERAL BRACE CONNECTION AT PIERS 1 AND 2

1" = 1'-0"

Note:
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 1½".

STATE OF ARKANSAS
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No. 9235
7-14-14
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SHEET 7 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

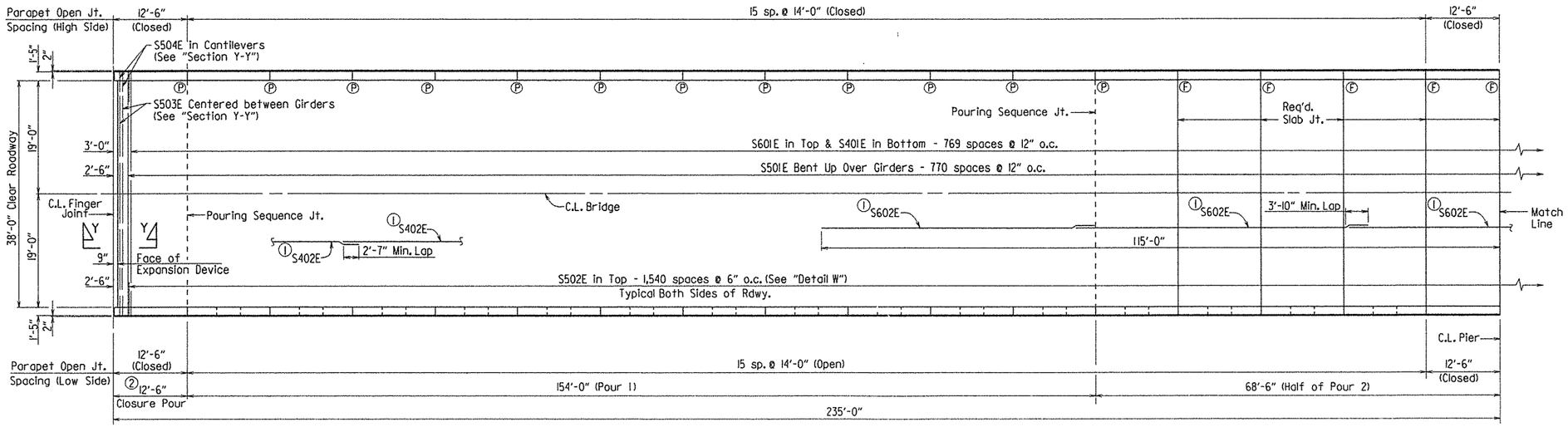
DRAWN BY: A.M.S. DATE: 9/4/12 FILENAME: b070282_sl.dgn
CHECKED BY: KWY DATE: 7/11/14 SCALE: As Noted
DESIGNED BY: RLT DATE: 7/12

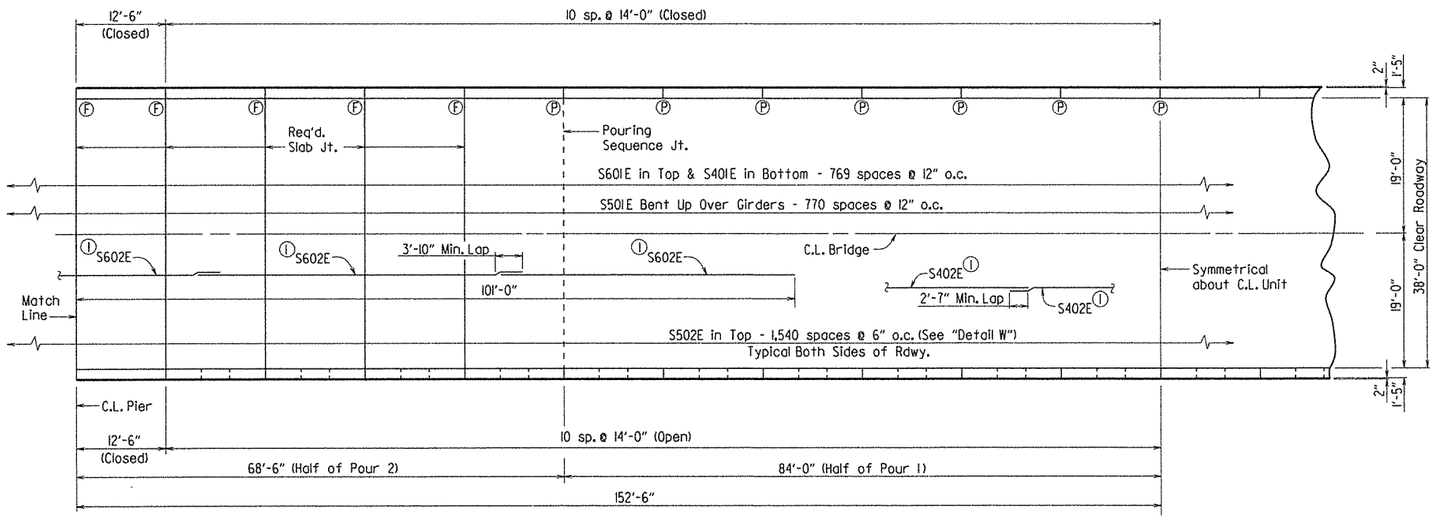
BRIDGE NO. A6362 DRAWING NO. 54987

PRINT DATE: 7/9/2014

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.		070282	115	190
				① A6362		- 775' CONT. UNIT -		54988

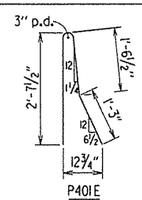
① Placed as Shown in "TYPICAL SECTION AT PIERS 1 AND 2". See Dwg. No. 54981.

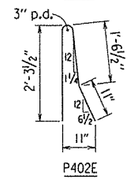


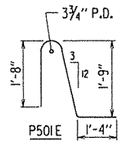


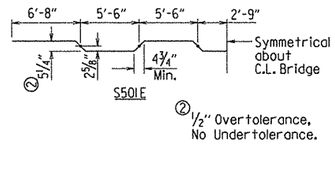
BAR LIST - PER UNIT

Mark	No. Req'd.	Length	Pin Dia.	Bending Diagrams
S401E	770	40'-10"	Str.	
S402E	2184	39'-5"	Str.	
S501E	771	41'-9"	3"	
S502E	3082	5'-10"	Str.	
S503E	30	9'-8"	Str.	
S504E	12	3'-3"	Str.	
S601E	770	40'-10"	Str.	
S602E	600	46'-4"	Str.	
P401E	2700	5'-6"	2"	
P402E	400	4'-10"	2"	
P403E	296	5'-6"	Str.	
P404E	84	12'-2"	Str.	
P405E	700	13'-8"	Str.	
P501E	2700	4'-10"	3¾"	









② ½" Overtolerance, No Undertolerance.

Dimensions are out to out of bars.

All bars designated with an "E" suffix shall be Epoxy Coated.

Notes:
Required slab joints and pouring sequence construction joints shall align with parapet joints at gutterline.

Location of full and partial depth parapet joints are similar for both sides of roadway.

Ⓕ Full depth parapet joint at this location

Ⓟ Partial depth parapet joint at this location

Slab Pouring Sequence Notes:

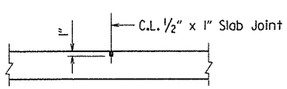
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between adjacent pours. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

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

② After all incremental pours on both Units adjacent to Finger Joint are complete, closure pours on each side of Finger Joint shall be poured simultaneously. A minimum of 48 hours shall elapse between the last incremental pour and the closure pours.

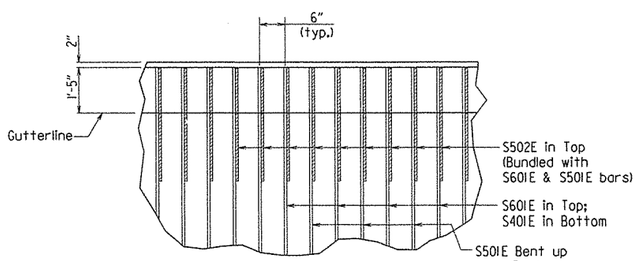
HALF-REINFORCING PLAN & SLAB POURING SEQUENCE - 775' UNIT

3/32" = 1'-0"

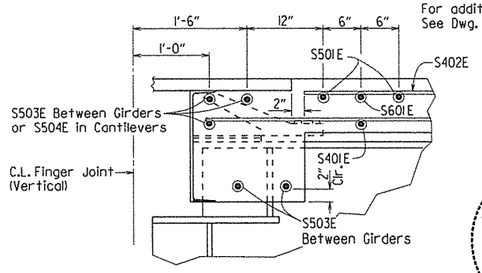


Use ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front 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 damaging 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.

SLAB JOINT DETAIL
No Scale



DETAIL W
No Scale



Note:
For additional details of Finger Joint, See Dwg. No. 54989

SECTION Y-Y
1" = 1'-0"

STATE OF ARKANSAS
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SHEET 8 OF 8
DETAILS OF
775'-0" CONTINUOUS PLATE GIRDER UNIT
OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

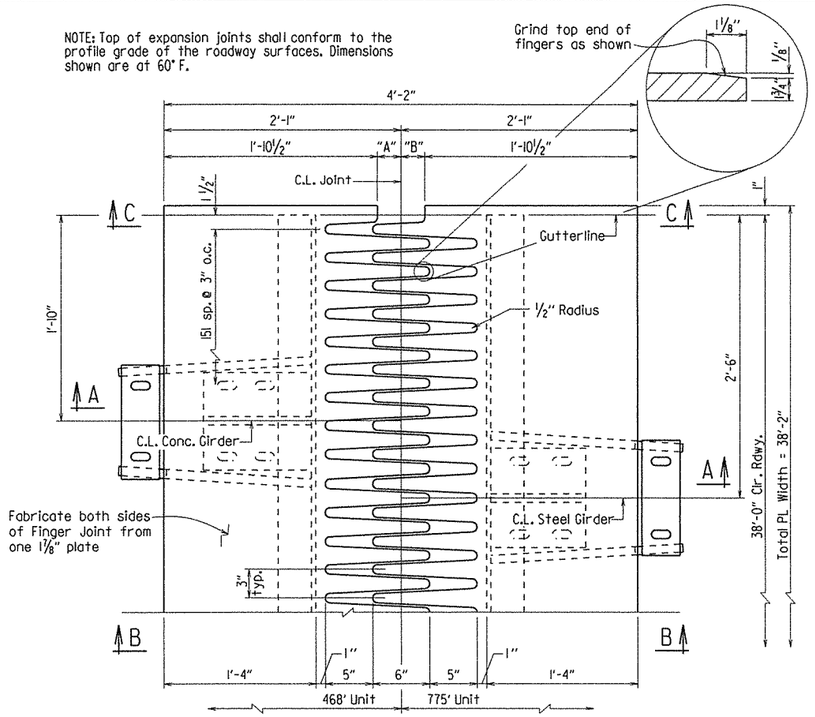
DRAWN BY: A.M.S. DATE: 9/5/12
CHECKED BY: K.W.Y DATE: 8/20/14
DESIGNED BY: P.G.T. DATE: 7/12
FILENAME: b070282_sl.dgn
SCALE: As Noted

BRIDGE NO. A6362 DRAWING NO. 54988

PRINT DATE: 8/20/2014

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.		070282	116	190
				① A6362	- FINGER JOINT -		54989	

NOTE: Top of expansion joints shall conform to the profile grade of the roadway surfaces. Dimensions shown are at 60° F.



EXPANSION PLATE DETAIL

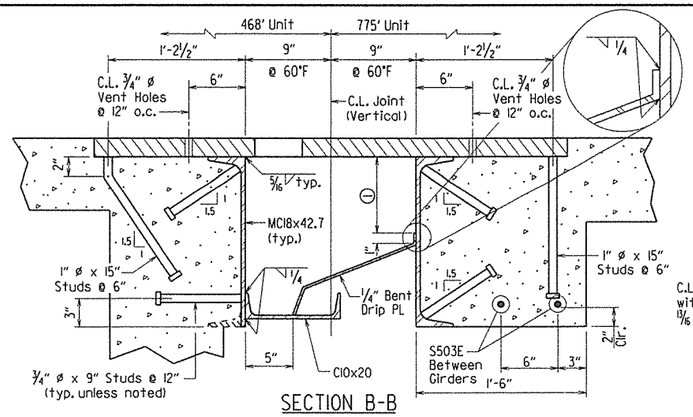
1½" = 1'-0"

NOTES:
The finger joint shall be set and adjusted for grade before closure pours are made.

	468' Unit	775' Unit
Temp.	"A"	"B"
40°F	2 13/16"	3⅛"
60°F	2½"	2½"
80°F	2 3/16"	1⅞"

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

All structural steel in Finger Joints, except parapet slider plates, shall be AASHTO M 270, Gr. 50W and galvanized in accordance with AASHTO M 111 after fabrication. Parapet slider plates shall be AASHTO M 270, Gr. 36. Surfaces of the parapet slider plates which will not be in contact with the concrete shall be cleaned and painted in accordance with Section 638. Only one coat is required and shall be applied in the shop. All structural steel shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)", except as noted, which price shall include galvanizing and painting.

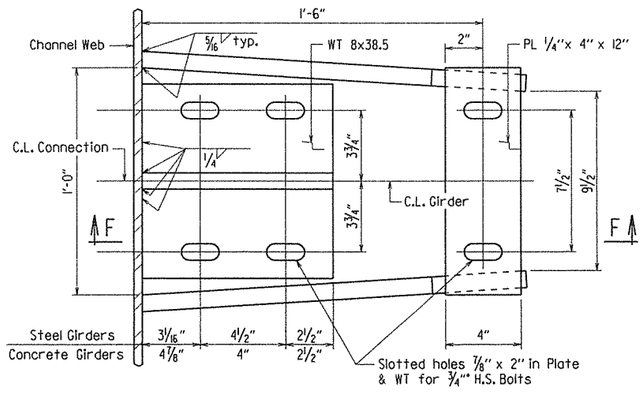


SECTION B-B

1½" = 1'-0"

NOTES:
The Studs shown shall be granular flux filled, solid fluxed, or equal, and automatically end welded to the channel in accordance with the recommendations of the manufacturer.

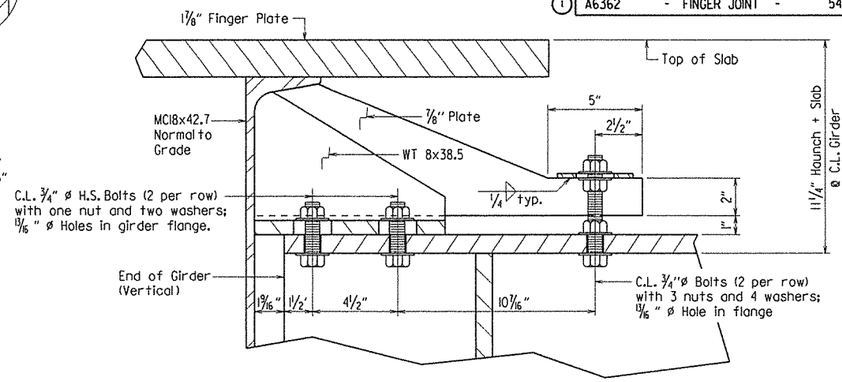
Concrete shall be hand packed under the joint armor.



For Steel Girder Only, detail device ⅛" high and provide ¼" shims for WT using 1- ⅛" PL and 2 - 1/16" PL's.

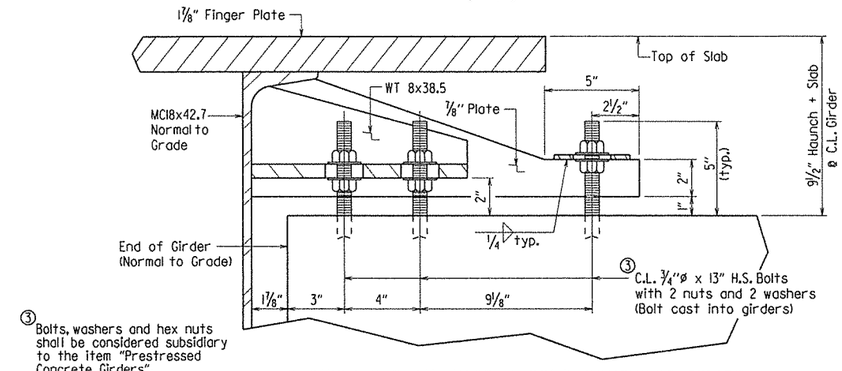
PLAN OF CONNECTION TO GIRDER

3" = 1'-0"



SECTION F-F AT PLATE GIRDER

3" = 1'-0"



③ Bolts, washers and hex nuts shall be considered subsidiary to the item "Prestressed Concrete Girders".

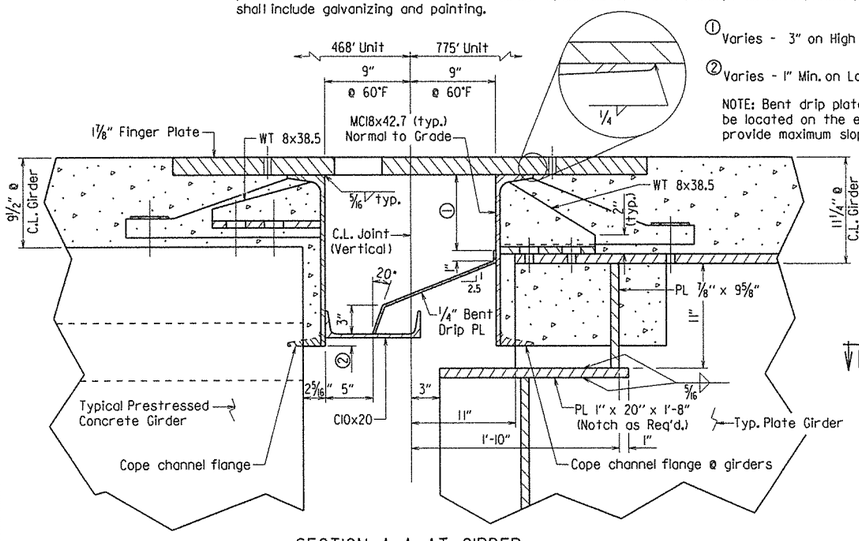
SECTION F-F AT PRESTRESSED CONCRETE GIRDER

3" = 1'-0"

① Varies - 3" on High Side @ Left Gutter

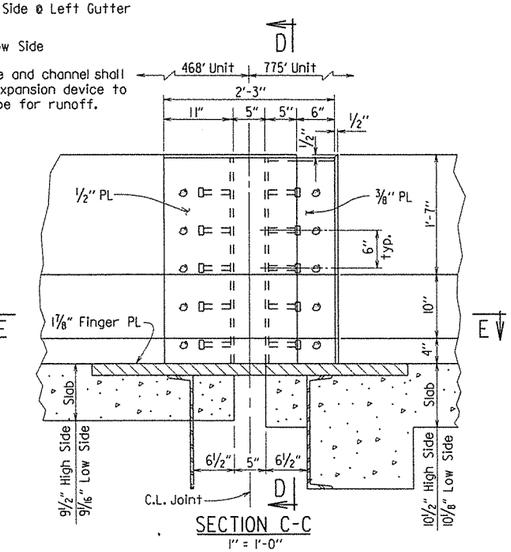
② Varies - 1" Min. on Low Side

NOTE: Bent drip plate and channel shall be located on the expansion device to provide maximum slope for runoff.



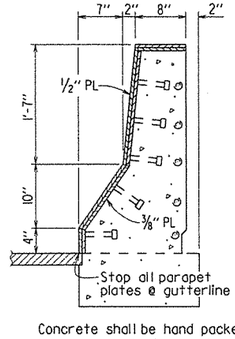
SECTION A-A AT GIRDER

1½" = 1'-0"



SECTION C-C

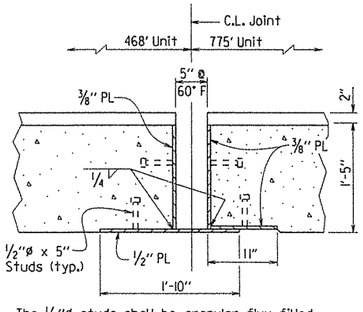
1" = 1'-0"



Concrete shall be hand packed under parapet slider plates.

SECTION D-D

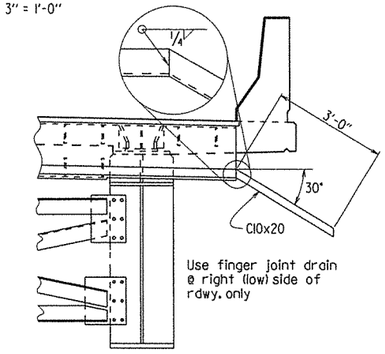
1" = 1'-0"



The ½"ø studs shall be granular flux filled, solid fluxed, or equal and automatically end welded to the PL's in accordance with the recommendations of the manufacturer.

SECTION E-E

1" = 1'-0"



Use finger joint drain @ right (low) side of rdwy. only

DRAIN DETAIL

(Section Shown @ Plate Girder)
No Scale

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8-20-14
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DETAILS OF FINGER JOINTS OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

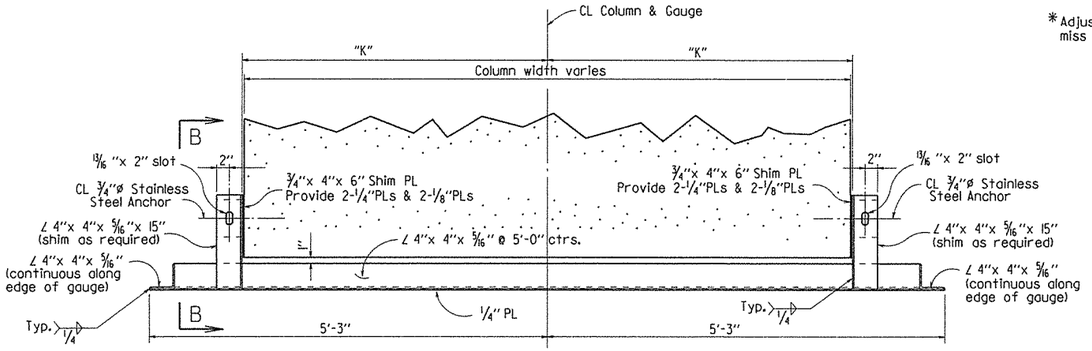
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 8/28/12 FILENAME: b070282_jt.dgn
CHECKED BY: CWY DATE: 8/20/14 SCALE: As Noted
DESIGNED BY: CWY DATE: 11/13

BRIDGE NO. A6362 DRAWING NO. 54989

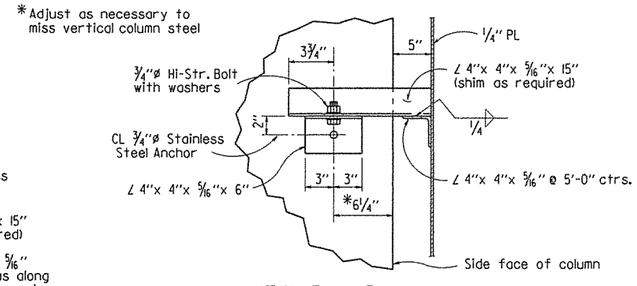
PRINT DATE: 8/20/2014

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.		070282	117	190
				(1)		06362, A6362 - CLR. GAUGES - 54990		



SECTION A - A

1" = 1'-0"

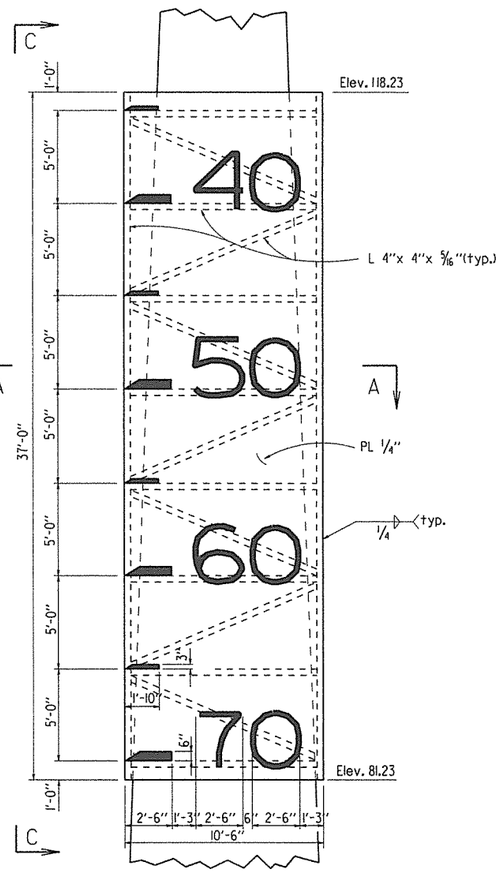


VIEW B - B

1 1/2" = 1'-0"

TABLE OF VARIABLES

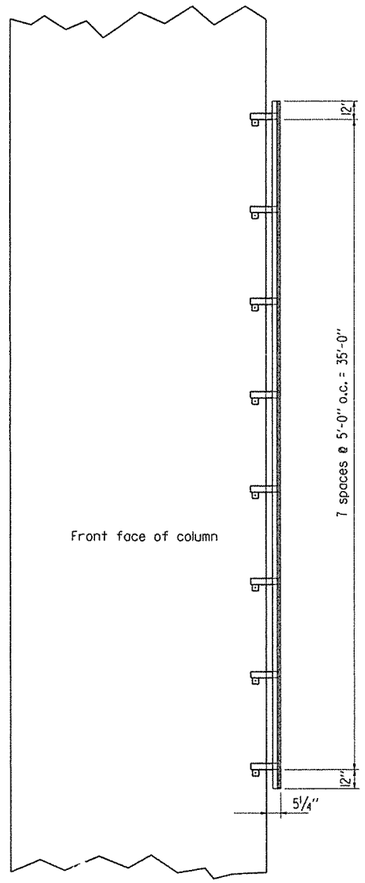
Elev.	Clear	"K" Bridge No. 06362	"K" Bridge No. A6362
117.23	35'	3'-0 1/4"	3'-0 3/8"
112.23	40'	3'-2 7/16"	3'-2 9/16"
107.23	45'	3'-4 5/8"	3'-4 3/4"
102.23	50'	3'-6 13/16"	3'-6 15/16"
97.23	55'	3'-9"	3'-9 1/8"
92.23	60'	3'-11 3/16"	3'-11 5/16"
87.23	65'	4'-1 3/8"	4'-1 1/2"
82.23	70'	4'-3 7/16"	4'-3 11/16"



FRONT ELEVATION

1/4" = 1'-0"

**Bridge No. 06362 - Upstream Side of Pier 1
Bridge No. A6362 - Downstream Side of Pier 2



VIEW C - C

**Existing clearance gauges located on the upstream side of Pier 1 and the downstream side of Pier 2 on Bridge No. 06362 shall be removed. Existing holes in Pier 2 shall be filled with a non-shrink grout that completely fills the holes.

Existing holes in Pier 1 may be reused for the installation of the new clearance gauge if approved by the Engineer. If existing holes cannot be reused, they shall be filled as noted above. New anchors shall be drilled and grouted into place using a QPL approved epoxy or non-shrink grout that completely fills the holes. The Contractor shall locate the existing reinforcing and use care when drilling and grouting to avoid damaging any reinforcing bars.

Payment for removal of existing gauges and backfilling of holes shall be considered subsidiary to the lump sum price bid for "Clearance Gauges".

GENERAL NOTES

Numerals on clearance gauges shall be 36 inches high, Series E, as shown in "Standard Alphabets for Highway Signs" published by the Federal Highway Administration, U.S. Department of Transportation.

All structural steel shall conform to ASTM M270, Grade 36 and shall be fabricated according to Section 807. The 1/4" plate and support bracing shall be cleaned in accordance with Subsection 807.84(b). The finish coat shall be white. The paint for the numerals and the footmarks shall be black. All coats of paint shall be applied in the shop. Painting shall be in conformance with Subsection 807.75. See SP Job 070282 "Clearance Gauges" for method of measurement and payment.

Stainless Steel shall conform to ASTM A193 or A320, GR. B 8.

Anchors shall be installed according to the manufacturer specifications and shall have the following ultimate capacities:

Shear 10,000 lbs.
Tension 9,000 lbs.

Clearance gauges on Bridge No. A6362 shall be installed prior to erection of the superstructure and anchors may be cast into place or drilled and grouted into place. If anchors are drilled and grouted into place, the anchors shall be set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. The Contractor shall locate reinforcing and use care when drilling and grouting to avoid damaging any reinforcing bars.

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No. 9235
7-1-14
CHARLES R. ELLIS
BRIDGE ENGINEER

DETAILS OF CLEARANCE GAUGES OUACHITA RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

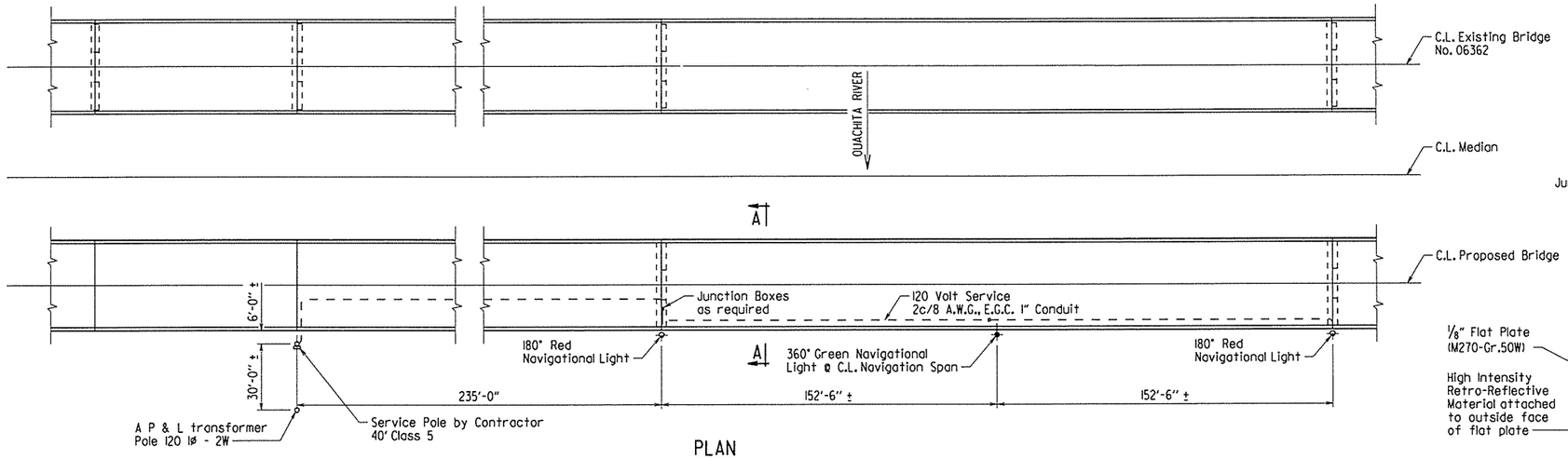
DRAWN BY: PGT DATE: 10/31/12 FILENAME: 070282_CG.dgn
CHECKED BY: AMS DATE: 4/3/14 SCALE: As Shown
DESIGNED BY: STD. DATE:

BRIDGE NO. 06362, A6362 DRAWING NO. 54990

PRINT DATE: 7/9/2014

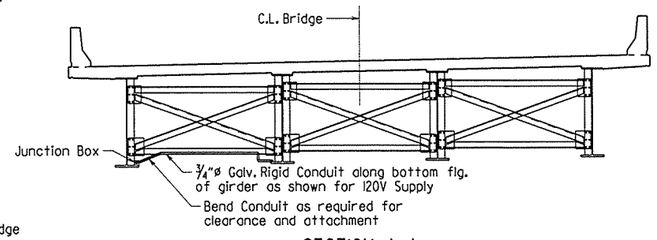
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	118	190
				(2)		- NAV. LIGHTING -		

Note: Navigational Lighting installed on upstream side of existing bridge by State forces.



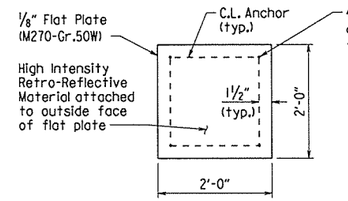
PLAN

No Scale



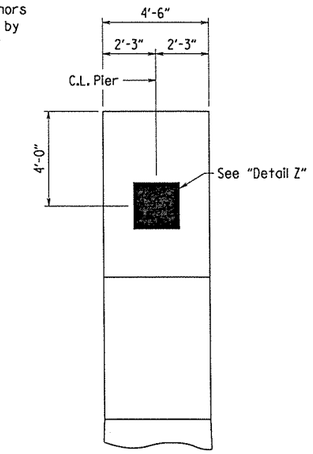
SECTION A-A

No Scale



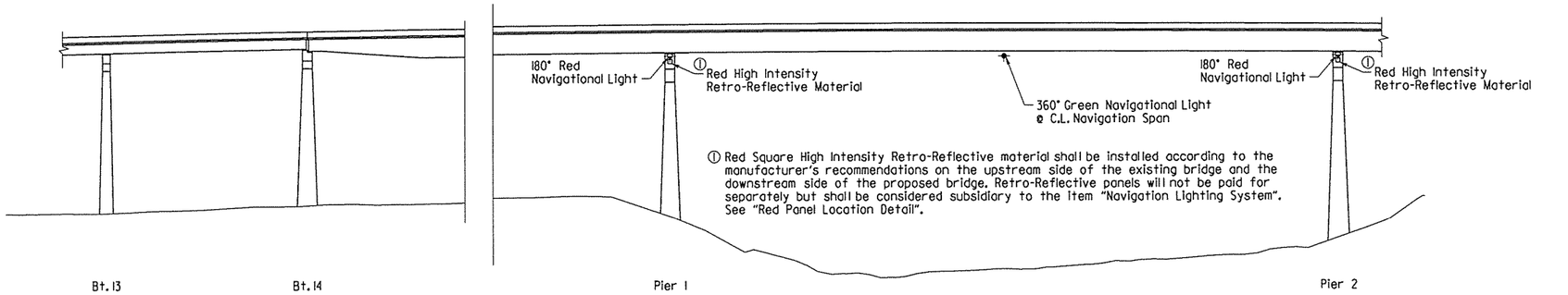
DETAIL Z

No Scale



RED PANEL LOCATION DETAIL

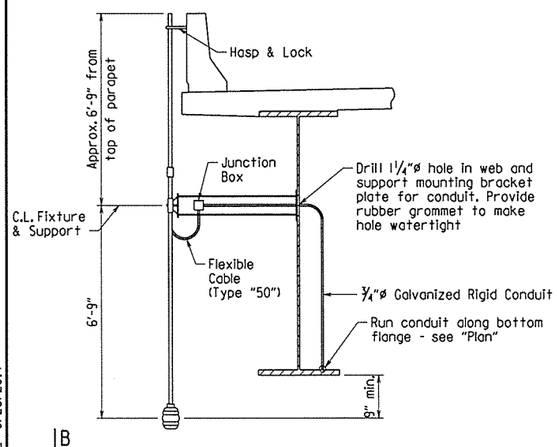
No Scale



① Red Square High Intensity Retro-Reflective material shall be installed according to the manufacturer's recommendations on the upstream side of the existing bridge and the downstream side of the proposed bridge. Retro-Reflective panels will not be paid for separately but shall be considered subsidiary to the item "Navigation Lighting System". See "Red Panel Location Detail".

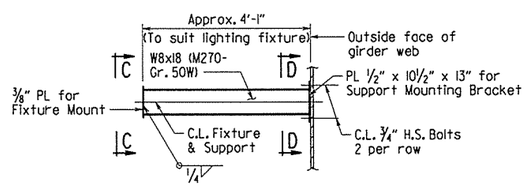
ELEVATION

No Scale



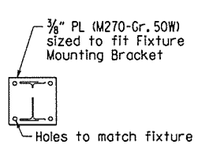
LIGHT MOUNTING DETAIL

No Scale



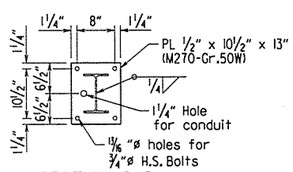
LIGHT SUPPORT DETAIL

No Scale



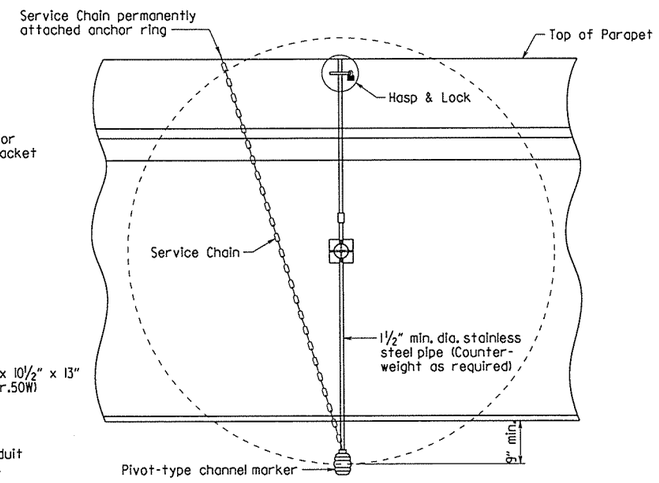
VIEW C-C

¾" = 1'-0"



SECTION D-D

¾" = 1'-0"



VIEW B-B

⅜" = 1'-0"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5851
9/23/14
J. TONY SULLIVAN

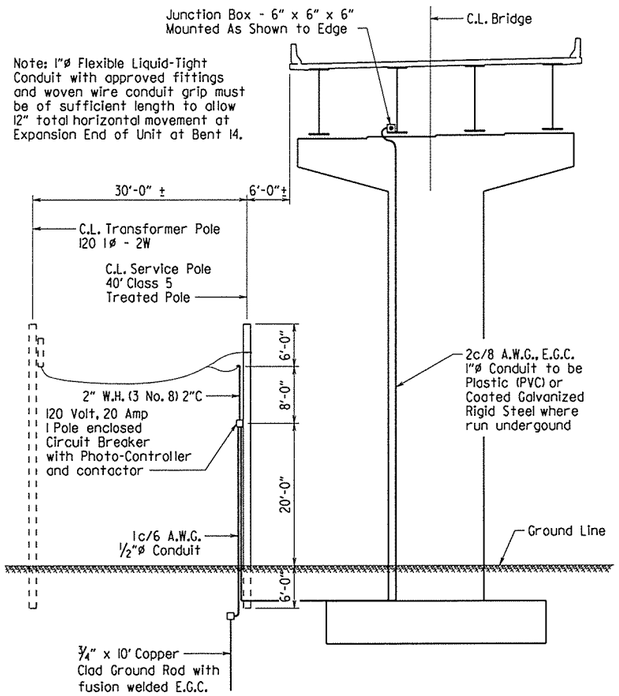
SHEET 1 OF 2

DETAILS OF NAVIGATIONAL LIGHTING
OUACHITA RIVER

PRINT DATE: 9/23/2014

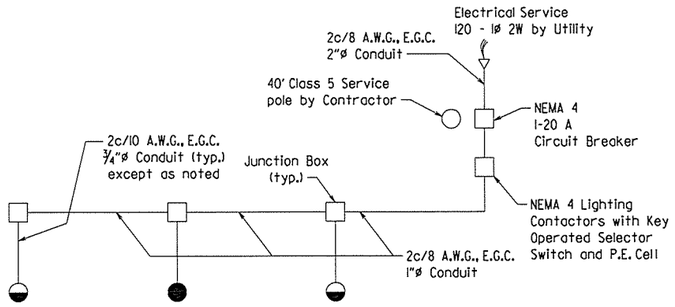
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	119	190

(2) - NAV. LIGHTING -



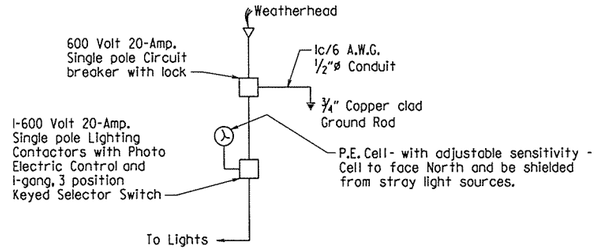
SERVICE ENTRANCE DETAIL

No Scale
(Looking Back)



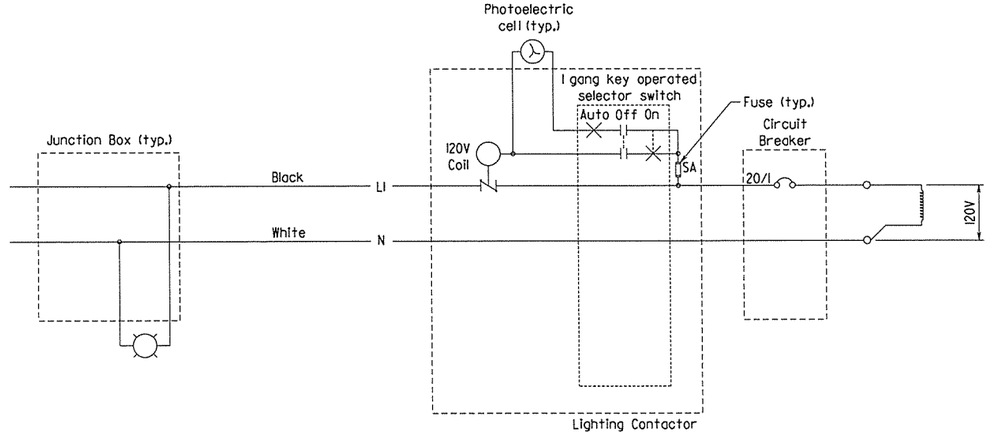
WIRING DIAGRAM FOR NAVIGATION LIGHTS

No Scale



RISER DIAGRAM

No Scale



CONNECTION DIAGRAM

No Scale

Notes:
All wires shall be run in galvanized, rigid steel conduits unless noted otherwise and except where flexible, Liquid-Tight conduit is used.

All conduits and junction boxes shall have weather proof covers.

All conduit runs and all structural steel shall be made electrically continuous by approved grounding.

Expansion Fittings shall be weather proof OZ Electrical Co. Type "EXE" (or approved equal) with external bonding jumper.

For additional information, refer to SP Job 070282 "Navigation Lighting System".

The navigational lighting system shall be Tideland MaxLumina Marine Signal Lantern ML-155 with Tideland MaxiHAL0-60 II with AC adaptor or approved equal.

The use of manufacturer's name is intended to indicate only the type and quality of product to be furnished. Other manufacturer's products providing equal standards of performance and quality will be considered acceptable subject to the approval of the Engineer.

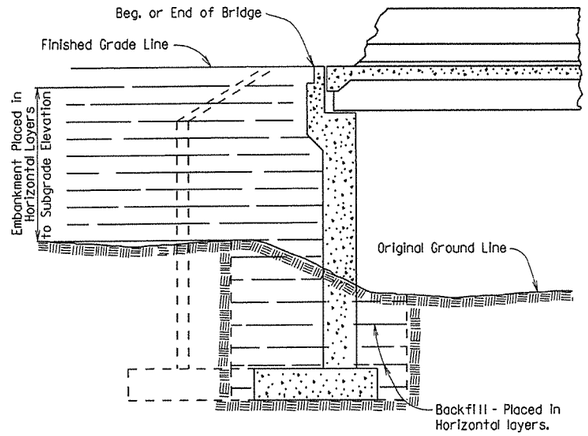
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 5851
TONY SULLIVAN
9/23/14

SHEET 2 OF 2

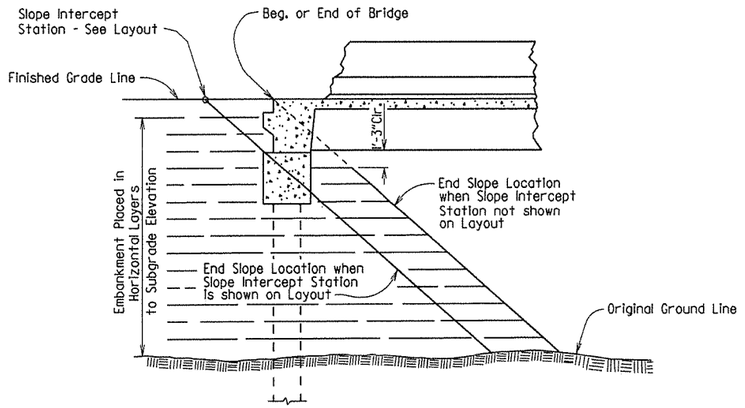
DETAILS OF NAVIGATIONAL LIGHTING
OUACHITA RIVER

PRINT DATE: 9/23/2014

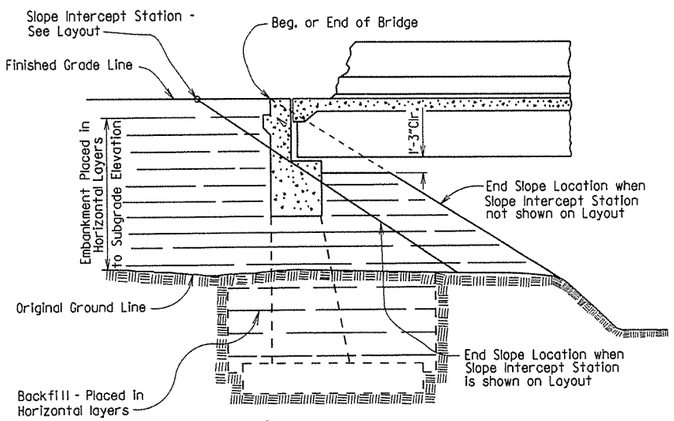
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		130	
				JOB NO.				
				(1) EMBANKMENT & BACKFILL		55000		



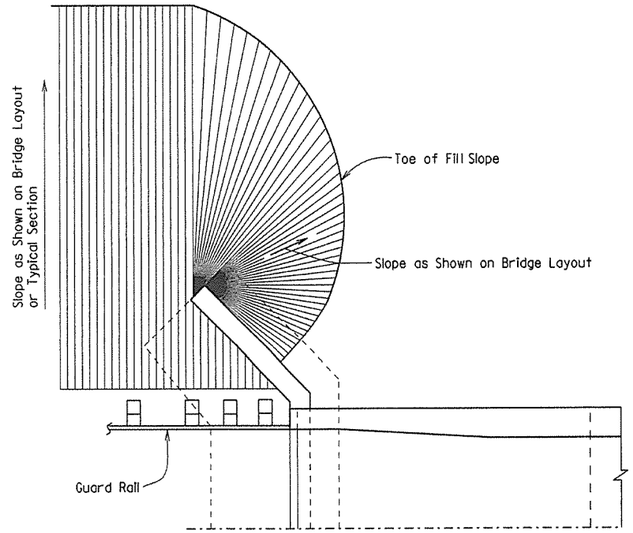
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



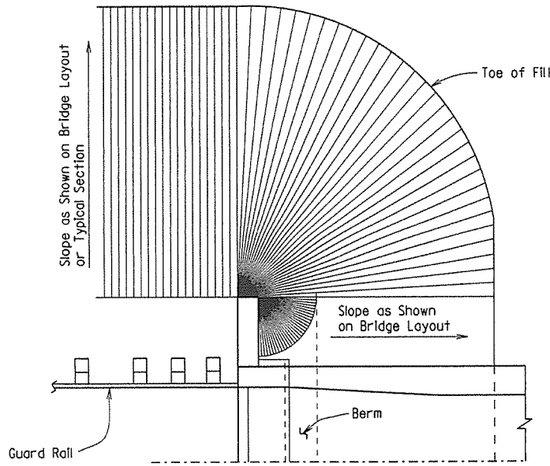
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



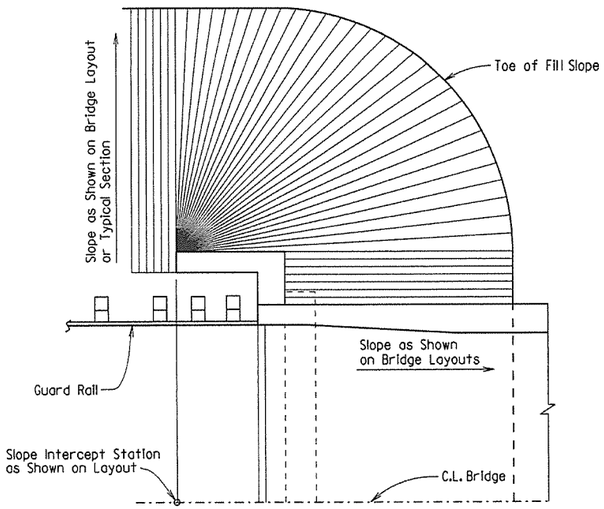
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



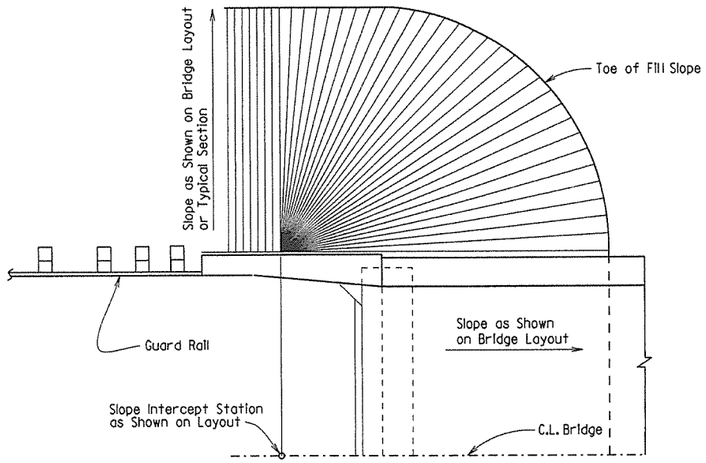
VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING



SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

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

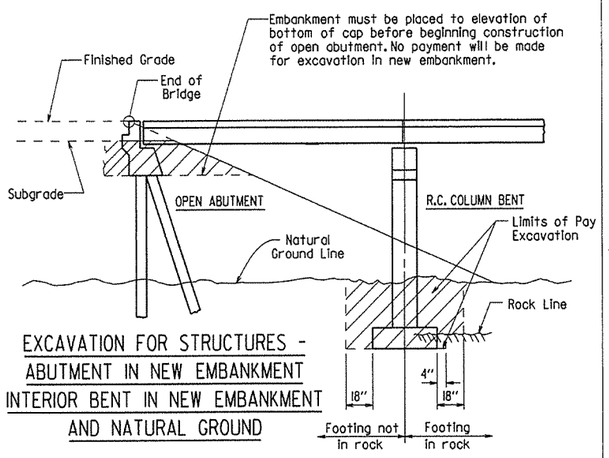
STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

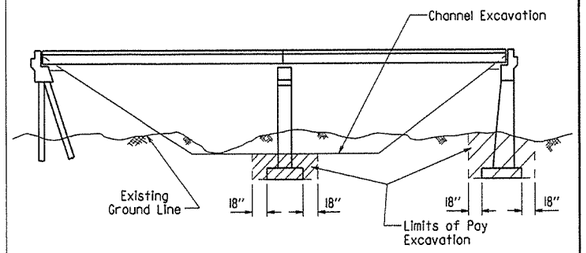
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

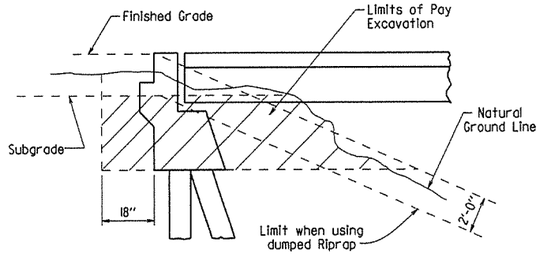
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		121	
				JOB NO.				
				①	RIPRAP & EXCAV. 55001			



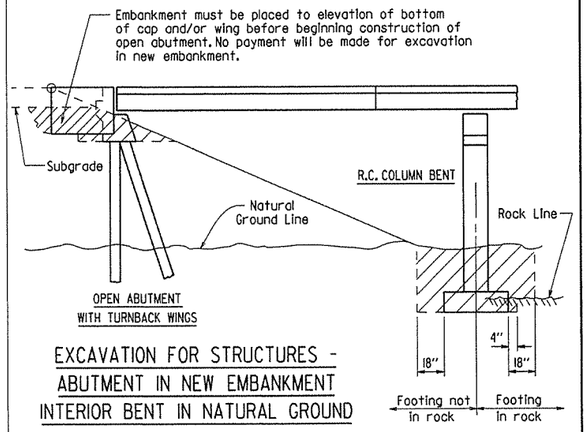
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



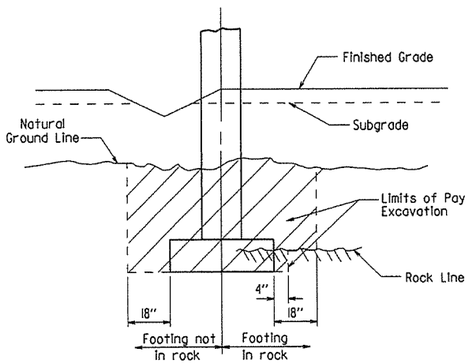
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



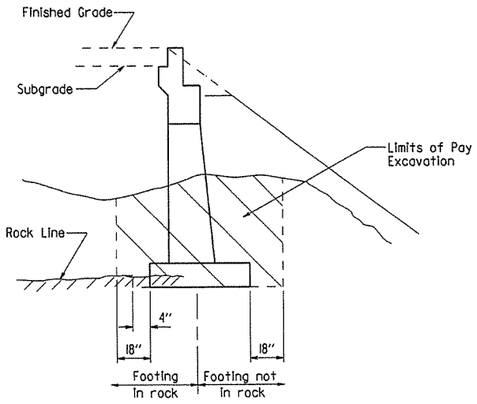
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



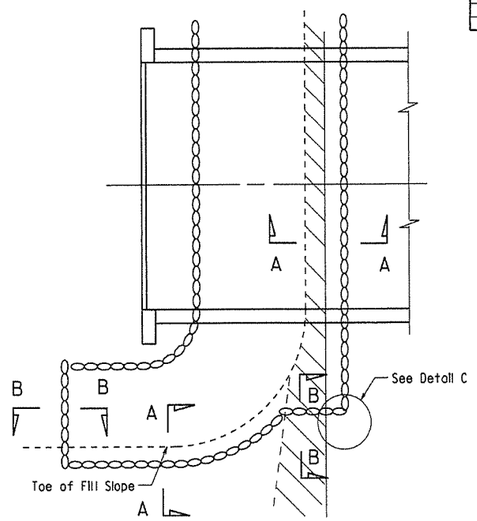
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



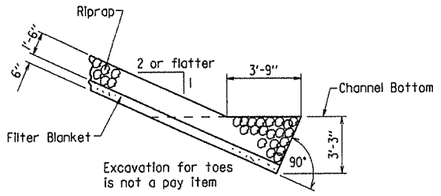
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

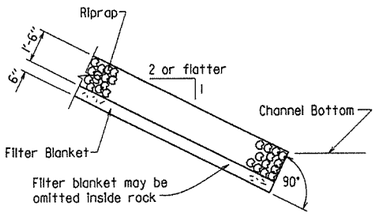


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



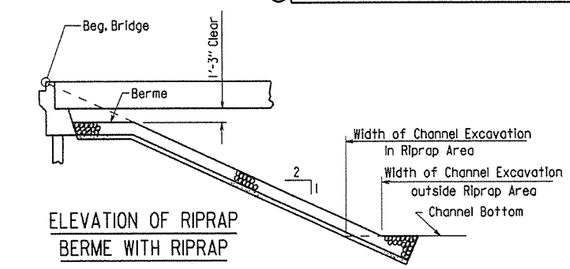
SECTION A-A

(Toe Excavation in Rock)

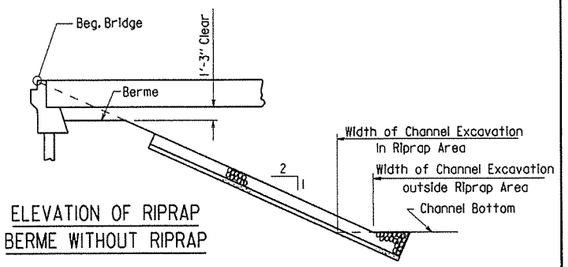
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

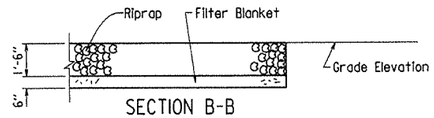
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



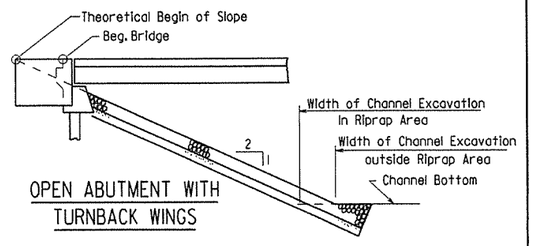
ELEVATION OF RIPRAP BERME WITH RIPRAP



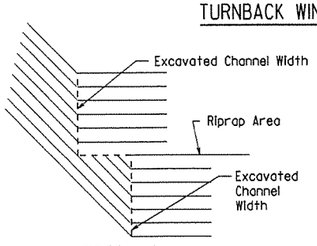
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



DETAIL C

STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

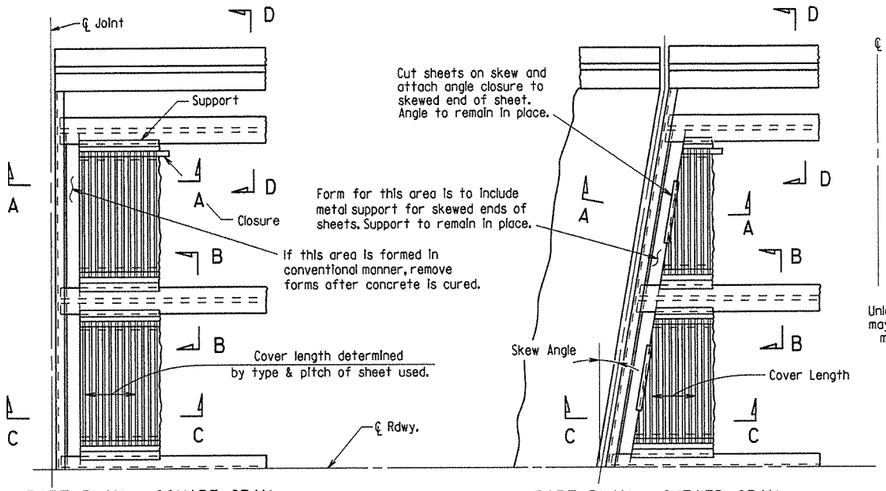
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		122	
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

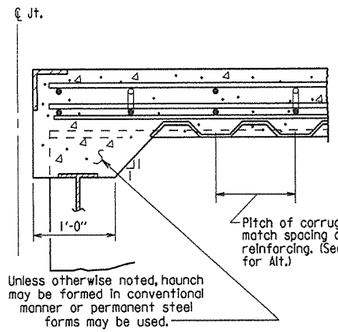


PART PLAN - SQUARE SPAN

⅜" = 1'-0"

PART PLAN - SKEWED SPAN

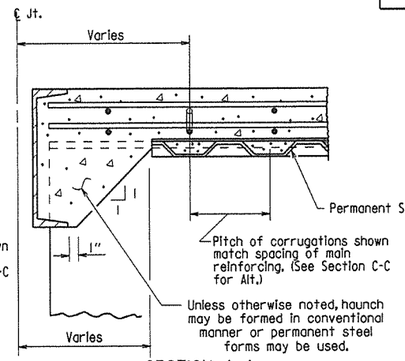
⅜" = 1'-0"



SECTION A-A

N.T.S.

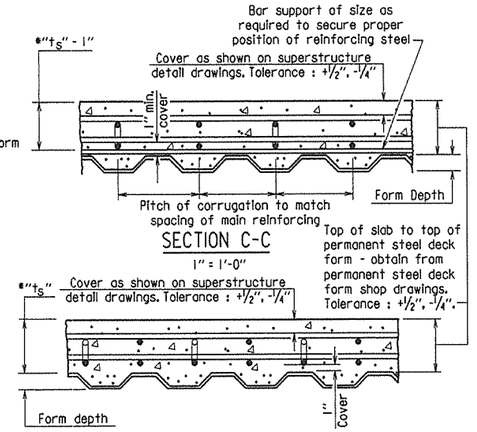
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



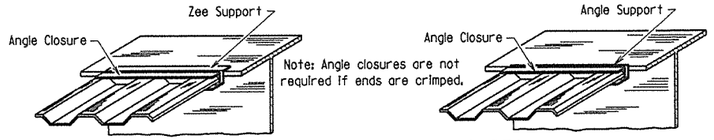
SECTION C-C

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.

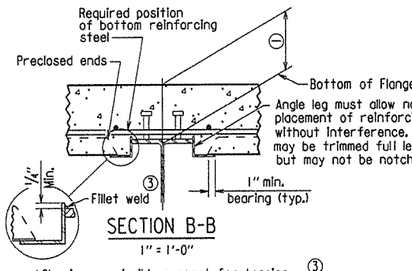
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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.

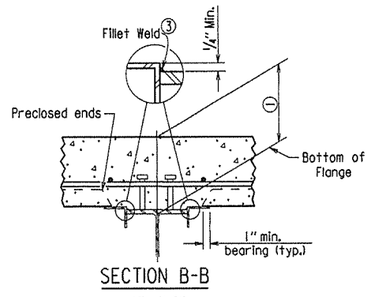


SECTION B-B

1" = 1'-0"

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

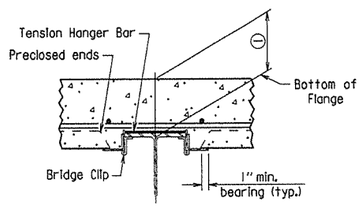
③ Minimum weld: ⅛" x 1' ø 18". More weld may be required; maximum length per weld = 1½" (typ.)



SECTION B-B

1" = 1'-0"

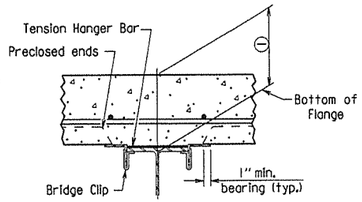
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

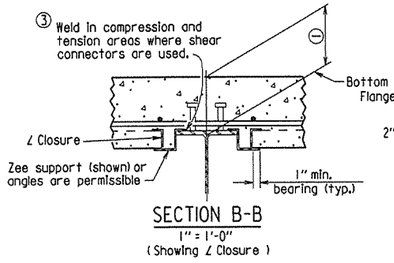
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

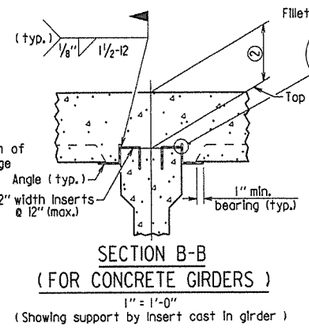
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

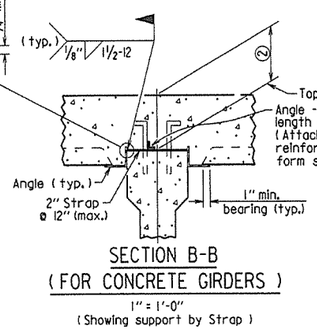


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)



SECTION B-B

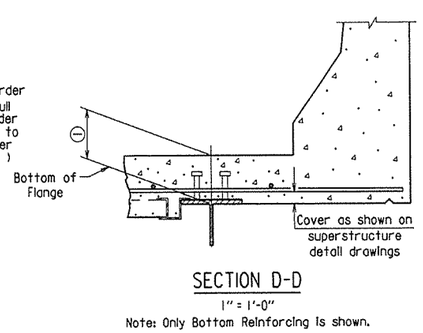
(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)

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 + 1¾" + 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.



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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: —

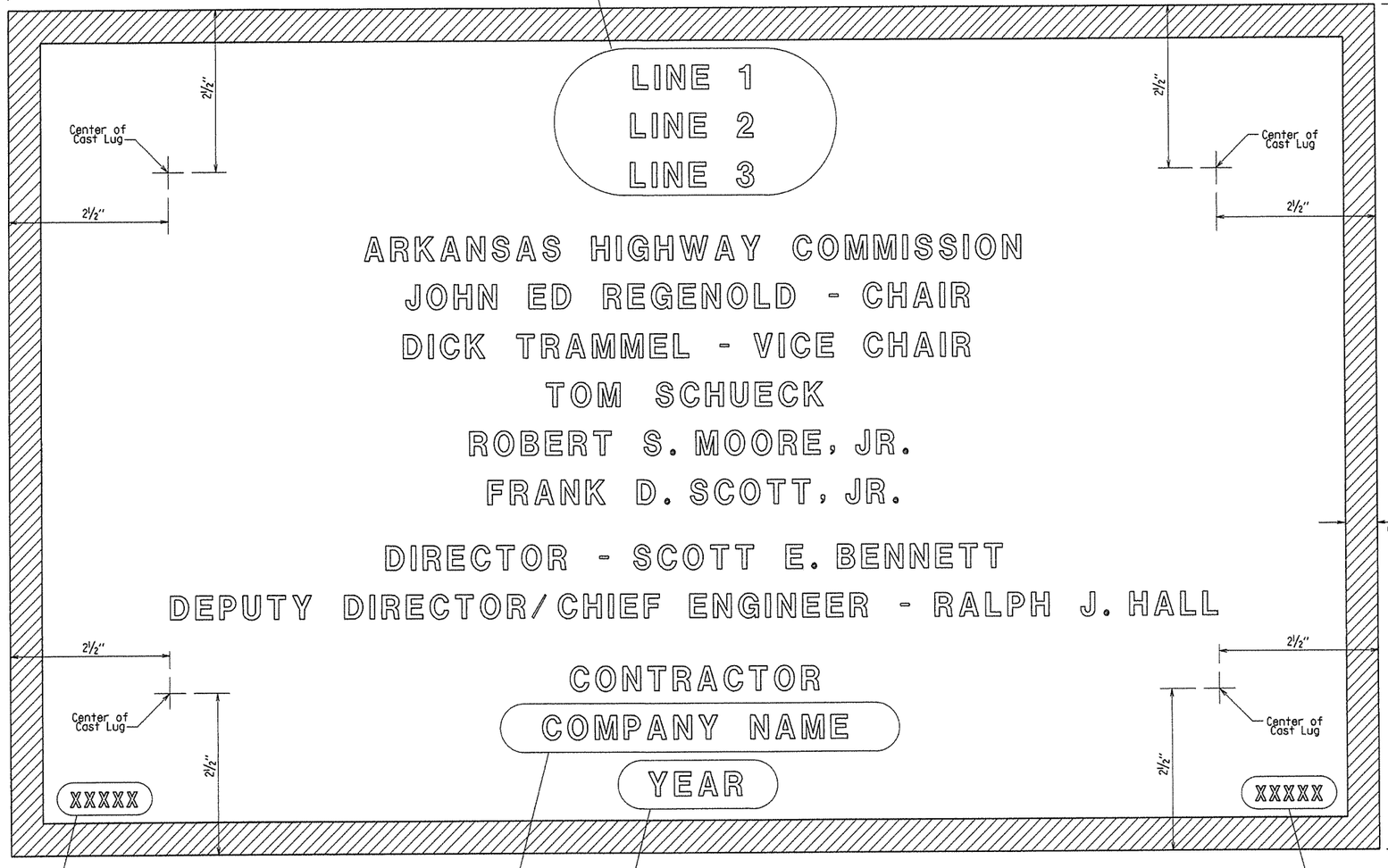
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		123	
				JOB NO.				

① TYPE D NAME PLATE 55010

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using $\frac{1}{8}$" raised letters and numerals $\frac{3}{8}$" 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	



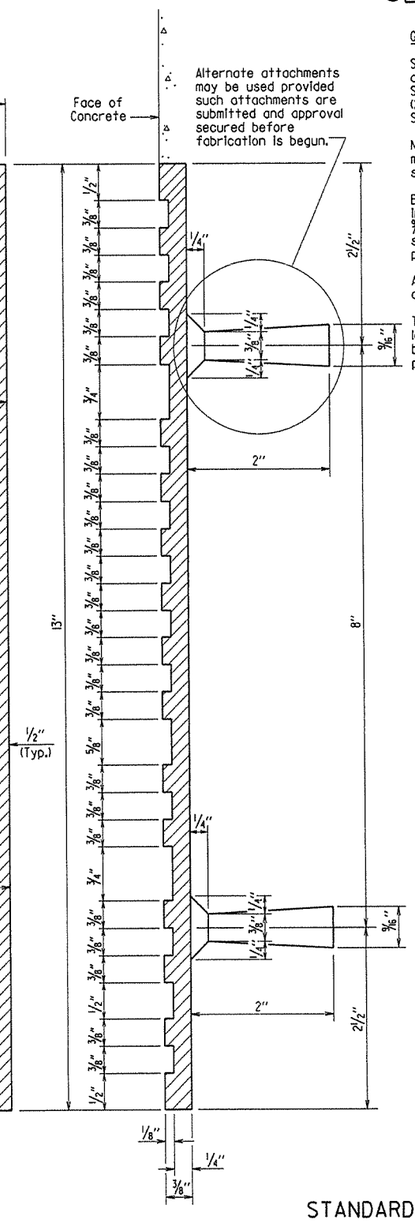
Place the design live loading here using $\frac{1}{8}$" raised letters and numerals $\frac{1}{4}$" high. Examples : HS 20
HL-93

Place the Year in which Contract was awarded here using $\frac{1}{8}$" raised numerals $\frac{3}{8}$" high. Example : 2001

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

Place the Bridge number here using $\frac{1}{8}$" raised letters and numerals $\frac{1}{4}$" high. Examples : A1234
05432

TYPICAL BRIDGE NAME PLATE



Alternate attachments may be used provided such attachments are submitted and approval secured before fabrication is begun.

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 $\frac{1}{4}$" thick and shall include four tapering cone lugs $\frac{3}{8}$" to $\frac{9}{16}$"x 2" long. The border and all lettering shall be raised $\frac{1}{8}$" 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.

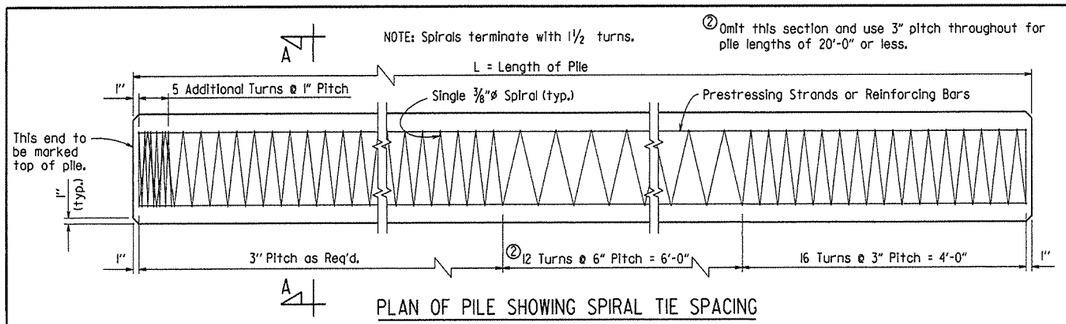
STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

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: —

DRAWING NO. 55010

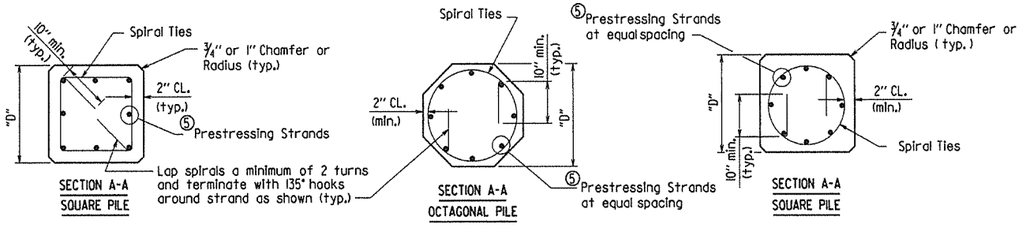
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		124	
				JOB NO.				
				①	CONC. PILES	55022		



PLAN OF PILE SHOWING SPIRAL TIE SPACING

For anchorage of pile to bent, see Bent Details.

NOTE: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.



PRESTRESSED CONCRETE PILES

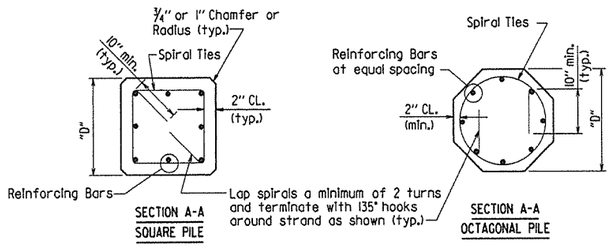
① Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

"B" — 0.75 Low Relaxation; 0.70 Stress-Relieved

⑤ See table "Prestressed Concrete Pile Properties" for actual number of strands per pile size.

PRESTRESSED CONCRETE PILE PROPERTIES

	Grade	Strand Diameter	① Number of Strands per Size "D" 16" Oct.	18" Oct.	④ 14" Sq.	16" Sq.	18" Sq.	Minimum Ultimate Tensile Strength Per Strand (Lbs.)	Initial Prestressing Force Per Strand (Lbs.)
Stress-Relieved	250	7/16"	11	13	10	13	16	27,000	18,900
		½"	8	10	8	10	12	36,000	25,200
	270	7/16"	9	11	8	12	14	31,000	21,700
		½"	7	9	6	8	10	41,300	28,900
Low Relaxation	250	7/16"	9	11	8	11	14	27,000	20,200
		½"	7	9	6	8	10	36,000	27,000
	270	7/16"	8	10	7	9	12	31,000	23,300
		½"	6	8	6	7	9	41,300	31,000

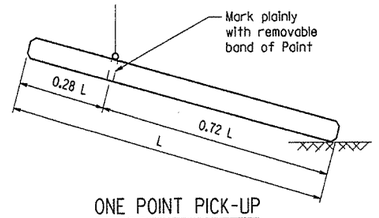


NON-PRESTRESSED PILE REINFORCING

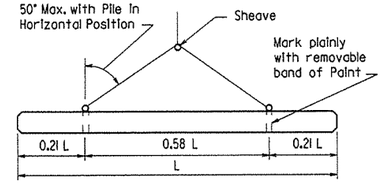
Pile Size	No. Req'd.	Bar Size
16" Oct.	8	# 7
18" Oct.	8	# 7
④ 14" Sq.	8	# 7
16" Sq.	8	# 7
18" Sq.	8	# 8

④ 14" sq. piles to be used in Seismic Performance Zone 1 only.

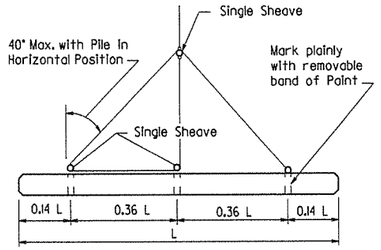
NON-PRESTRESSED CONCRETE PILES



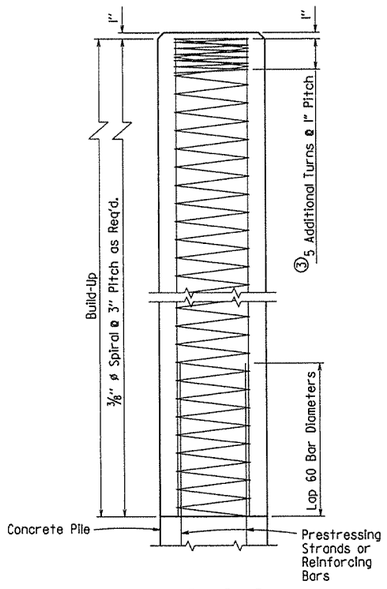
ONE POINT PICK-UP



TWO POINT PICK-UP



THREE POINT PICK-UP



BUILD-UP

③ The five additional turns of spiral reinforcing may be omitted for build-up without additional driving.

MAXIMUM PICKUP LENGTHS "L"

Type of Pick-Up	Prestressed 16" Oct.	18" Oct.	Non-Prestressed 16" or 18" Oct.	Prestressed ④ 14" Sq.	16" Sq.	18" Sq.	Non-Prestressed ④ 14" Sq.	16" Sq.	18" Sq.
One Point	52'	55'	46'	55'	59'	63'	52'	51'	55'
Two Point	75'	80'	67'	79'	84'	90'	75'	74'	79'
Three Point	105'	112'	93'	110'	117'	126'	104'	103'	111'

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, current Edition with Interim Specifications.

SEISMIC PERFORMANCE ZONES: 1 & 2

Unless otherwise noted, the Contractor may use prestressed piles or non-prestressed piles. Either type will be measured and paid for at the contract unit price bid for "Concrete Piling".

SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of Grade 60, AASHTO M31 or M322, Type A.

MANUFACTURE, TRANSPORTATION AND STORAGE: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring the concrete. Prestressed piles may be removed from the casting bed to nearby storage any time after transfer of stress. See Section 802 "Concrete for Structures" for additional information.

Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1" below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's QPL.

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding ¼" per foot.

TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of ⅛" per foot transversely.

The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed ⅛" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles.

INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling".

ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:

CONCRETE: Concrete in prestressed piles shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength at transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.

PRESTRESSING REINFORCING: Seven-wire stress-relieved or low relaxation strands shall conform to the general requirements of AASHTO M 203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:

All concrete shall be Class S(AE) and shall have a minimum compressive strength (f'c) of 4,000 psi at 28 days.

All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of Grade 60, AASHTO M31 or M322, Type A.

This document was originally issued and sealed by Carl J. Fuselier, PE No. 7510, on February 27, 2014. This copy is not a signed and sealed document.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

STANDARD DETAILS FOR CONCRETE PILES

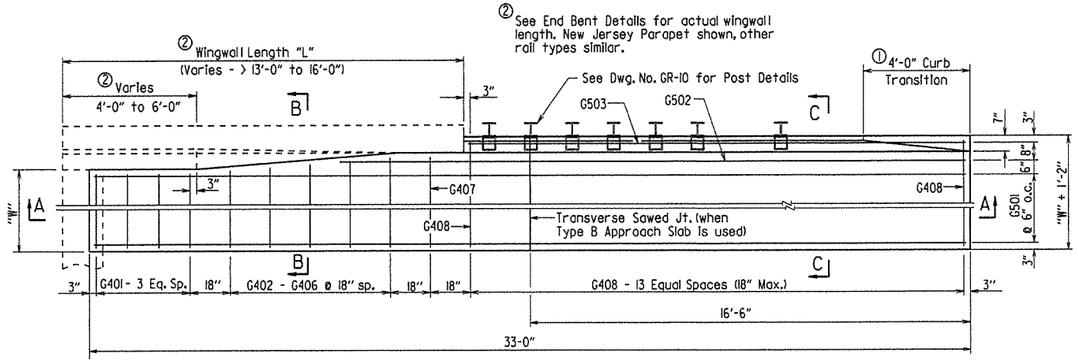
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

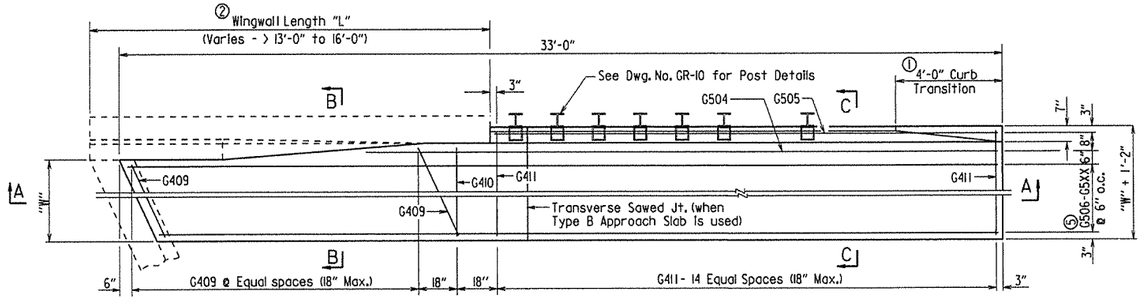
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55022.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: ——

DRAWING NO. 55022

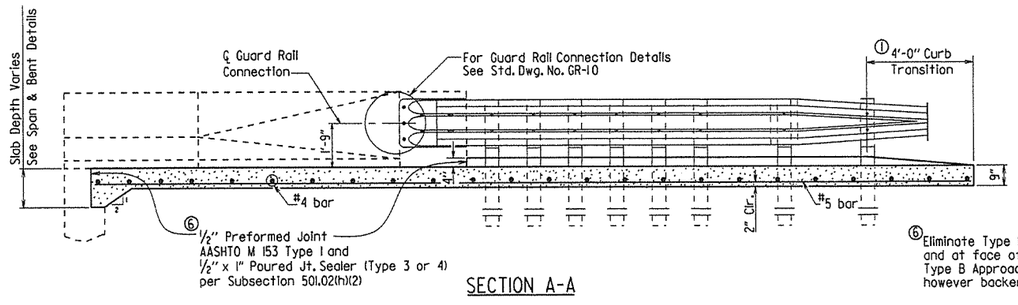
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		125	
				JOB NO.				
				①	TYPE B GUTTERS		55030B	



HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



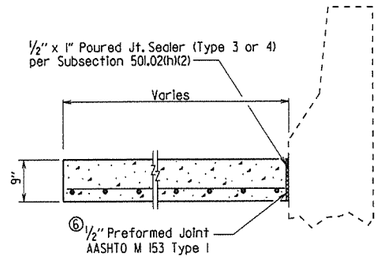
PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



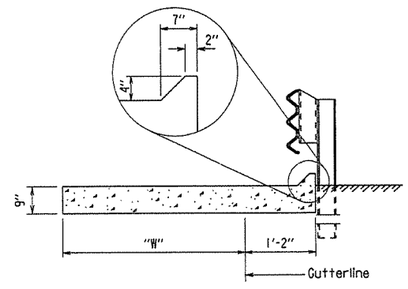
SECTION A-A

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.

BAR LIST FOR ONE TYPE B GUTTER

	Mark	No. Req'd. for Width "W" 3'-0"	4'-0"	6'-0"	8'-0"	Length
Square Bridge	G401	4	4	4	4	"W"-4"
	G402-G406	1 each	1 each	1 each	1 each	"W"-3" to "W"+2"
	G407	1	1	1	1	"W"+3"
	G408	14	14	14	14	"W"+ 10"
	G501	6	8	12	16	32'-8"
	G502	1	1	1	1	(38'-5")-"L"
	G503	1	1	1	1	(33'-8")-"L"
Skewed Bridge	G409	③	③	③	③	④
	G410	1	1	1	1	"W"+3"
	G411	15	15	15	15	"W"+ 10"
	G504	1	1	1	1	④
	G505	1	1	1	1	④
	G506 - G5XX ⑤	1 each	1 each	1 each	1 each	④

③ No. Req'd. varies with Skew and Wingwall length.

④ Bar Lengths vary with Skew and Wingwall Length.

⑤ G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

"W" Width (ft.)	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
3	310	3.60
4	390	4.55
6	560	6.35
8	730	8.20

Quantities are based on "L" = 14'-0".

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.

⑥ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type B Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

GENERAL NOTES

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

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

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

STANDARD DETAILS FOR TYPE B APPROACH GUTTERS

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030b.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

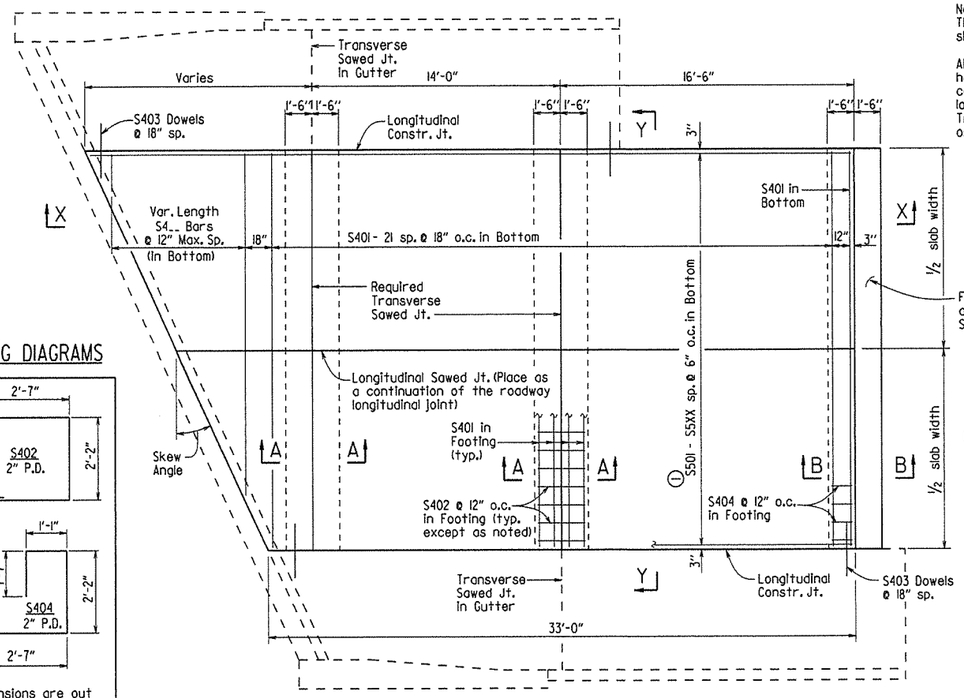
DRAWING NO. 55030B

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		126	
				JOB NO.				

TYPE B APPROACH SLAB 55040B

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

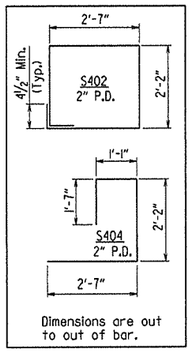
All longitudinal lines within the limits of horizontal curves shall be on curves concentric to C.L. Bridge. Adjustment to longitudinal bar lengths may be required. Transverse reinforcing shall be placed on radial lines to C.L. Bridge.



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

PLAN - SKEWED APPROACH SLAB WITH APPROACH GUTTERS
1/4" = 1'-0"

BENDING DIAGRAMS



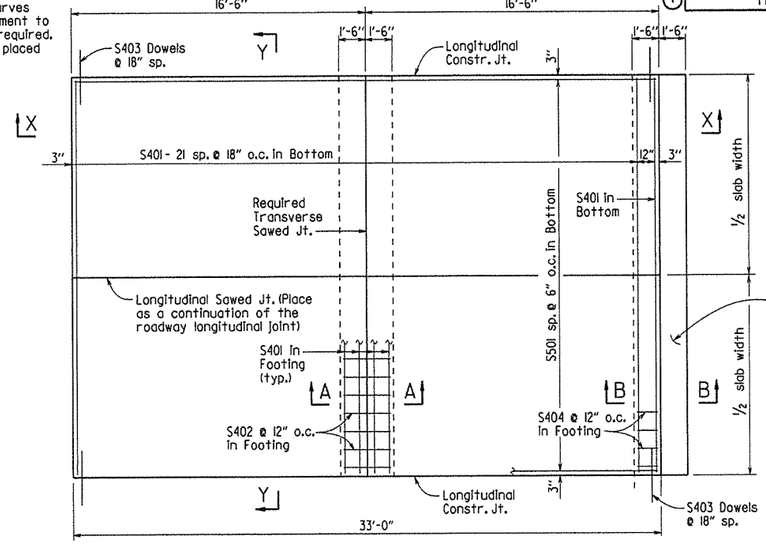
Dimensions are out to out of bar.

BAR LIST

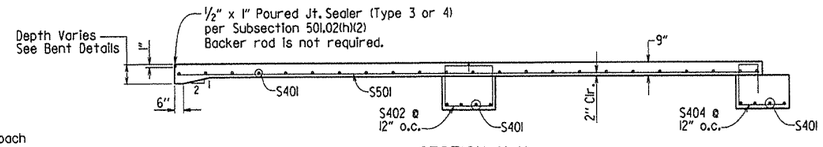
(Square & Skewed Approach Slabs)

		Square		Skewed	
	Mark	No. Req'd.	Length	No. Req'd.	Length
20'-0" Slab Width	S401	31	19'-8"	35	19'-8"
	S402	20	9'-10"	40	9'-10"
	S403	44	3'-0"	*	3'-0"
	S404	20	7'-2"	20	7'-2"
	S4__	—	—	1 Ea.	19.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	40	32'-8"	—	—
	S501 - S540	—	—	1 Ea.	32.6' + 0.25'(tan skew angle) to 32.6' + 19.75'(tan skew angle)
22'-0" Slab Width	S401	31	21'-8"	35	21'-8"
	S402	22	9'-10"	44	9'-10"
	S403	44	3'-0"	*	3'-0"
	S404	22	7'-2"	22	7'-2"
	S4__	—	—	1 Ea.	21.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	44	32'-8"	—	—
	S501 - S544	—	—	1 Ea.	32.6' + 0.25'(tan skew angle) to 32.6' + 21.75'(tan skew angle)
24'-0" Slab Width	S401	31	23'-8"	35	23'-8"
	S402	24	9'-10"	48	9'-10"
	S403	44	3'-0"	*	3'-0"
	S404	24	7'-2"	24	7'-2"
	S4__	—	—	1 Ea.	23.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	48	32'-8"	—	—
	S501 - S548	—	—	1 Ea.	32.6' + 0.25'(tan skew angle) to 32.6' + 23.75'(tan skew angle)
36'-0" Slab Width	S401	31	35'-8"	35	35'-8"
	S402	36	9'-10"	72	9'-10"
	S403	44	3'-0"	*	3'-0"
	S404	36	7'-2"	36	7'-2"
	S4__	—	—	1 Ea.	35.7' - 1.25'/(tan skew angle) to 2'-0" Min.
	S501	72	32'-8"	—	—
	S501 - S572	—	—	1 Ea.	32.6' + 0.25'(tan skew angle) to 32.6' + 35.75'(tan skew angle)

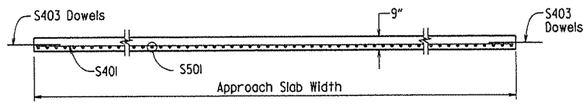
*Varies with skew angle



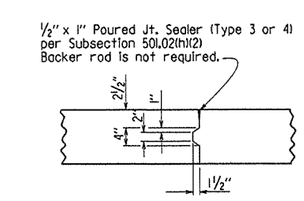
PLAN - SQUARE APPROACH SLAB
1/4" = 1'-0"



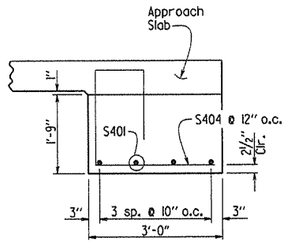
SECTION X-X
SQUARE APPROACH SLAB SHOWN
1/4" = 1'-0"



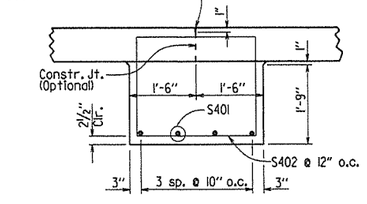
SECTION Y-Y
N.T.S.



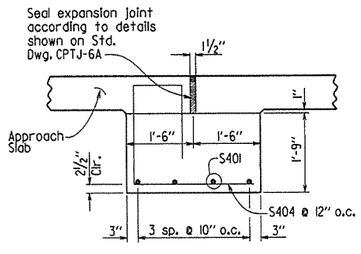
DETAILS OF LONGITUDINAL CONSTRUCTION JOINT
1" = 1'-0"



SECTION B-B
AT ASPHALT APPROACH PAVEMENT
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
AT CONCRETE APPROACH PAVEMENT
N.T.S.

TABLE OF QUANTITIES FOR ONE SQUARE APPROACH SLAB

(FOR INFORMATION ONLY)

Slab Width	Reinforcing Steel (Lbs.)	Concrete (Cu. Yds.)
20'-0"	2085	26.60
22'-0"	2285	29.25
24'-0"	2490	31.90
36'-0"	3690	47.85

GENERAL NOTES

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

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

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

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

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

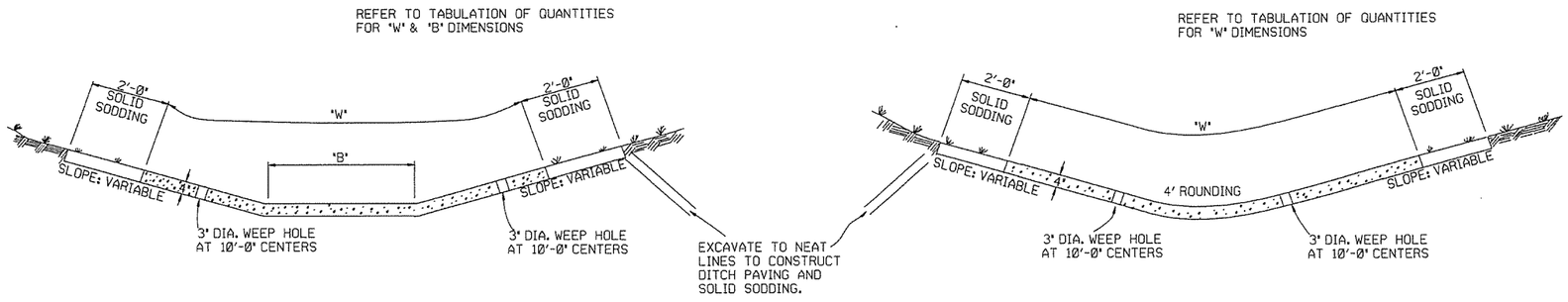
STANDARD DETAILS FOR TYPE B APPROACH SLAB

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55040b.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: STD. DATE:

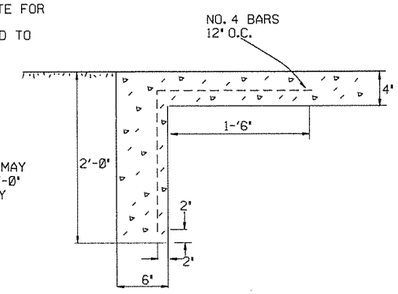
DRAWING NO. 55040B



TYPE A

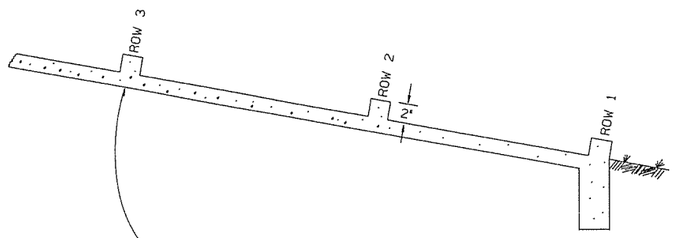
TYPE B

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

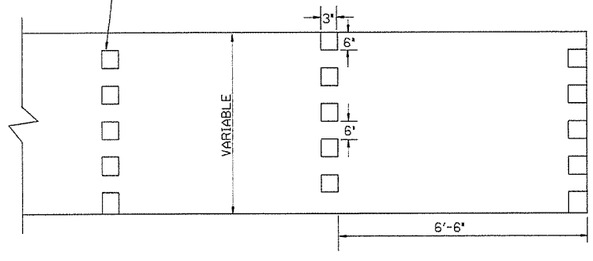


TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING



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



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

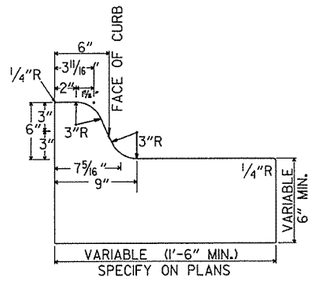
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
11-17-10	ADDED GENERAL NOTE	
6-2-94	ADDED GENERAL NOTE ABOUT SOLID SODDING	
11-30-8	ELIMINATED MIN. ROWS OF ELEMENTS	111-30-89
7-15-88	REVISED DISSIPATOR NOTE	653-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

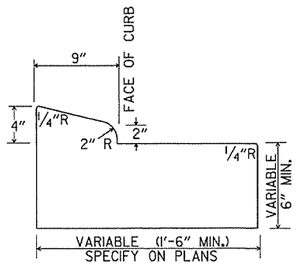
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

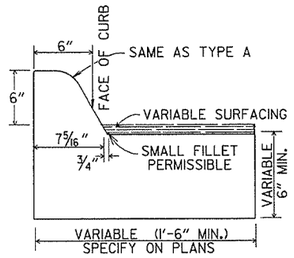
STANDARD DRAWING CDP-1



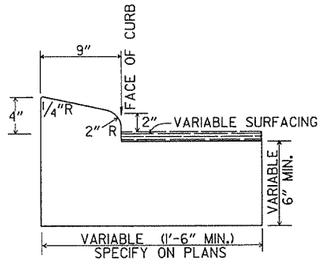
TYPE A



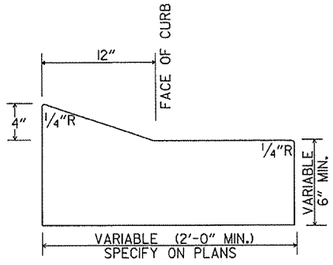
TYPE B-I



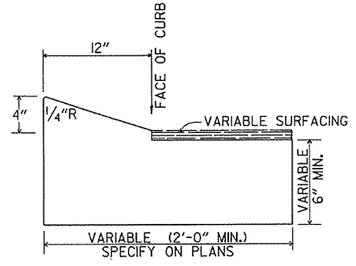
TYPE C



TYPE B-2

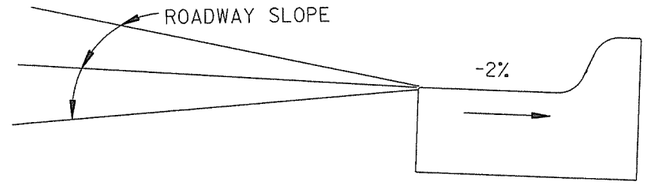


TYPE E-1



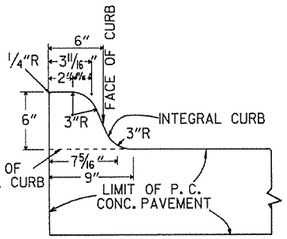
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

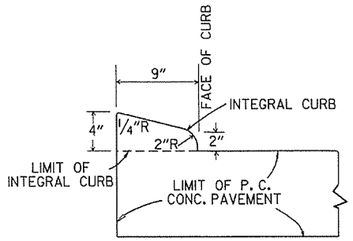


DETAIL OF GUTTER SLOPE

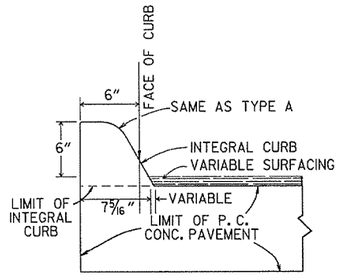
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

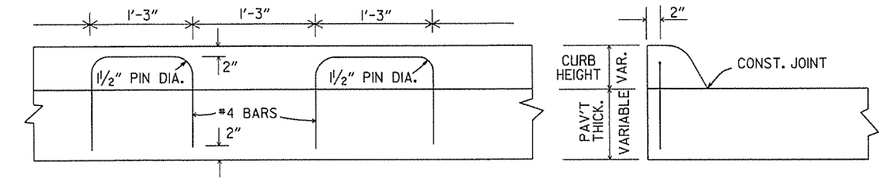


TYPE B

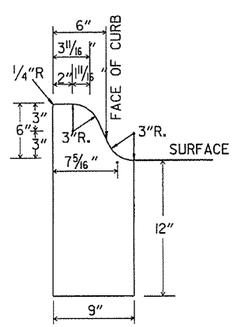


TYPE C

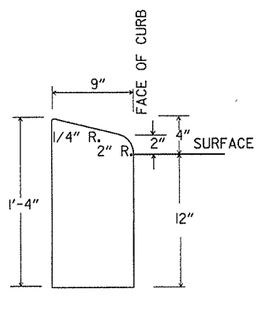
INTEGRAL CURB



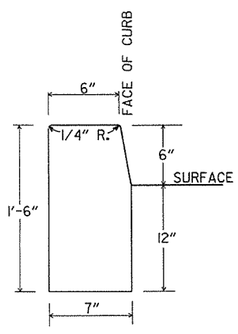
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



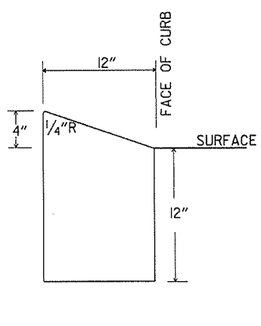
TYPE A



TYPE B

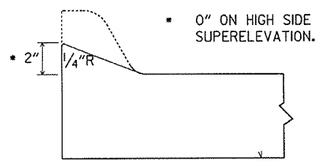


TYPE D



TYPE E

CONCRETE CURB



NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

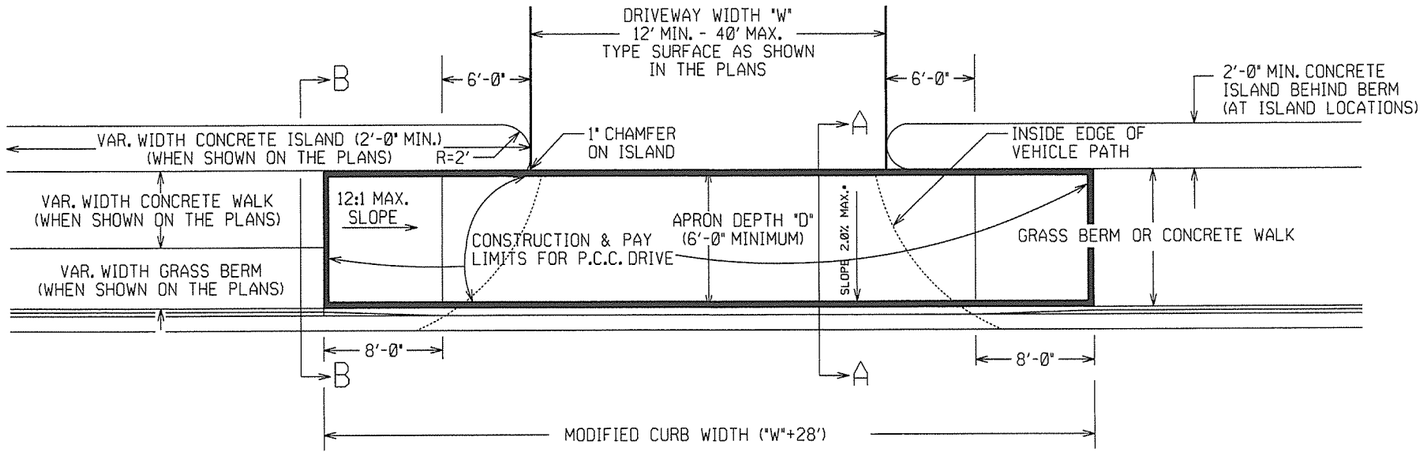
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	500-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

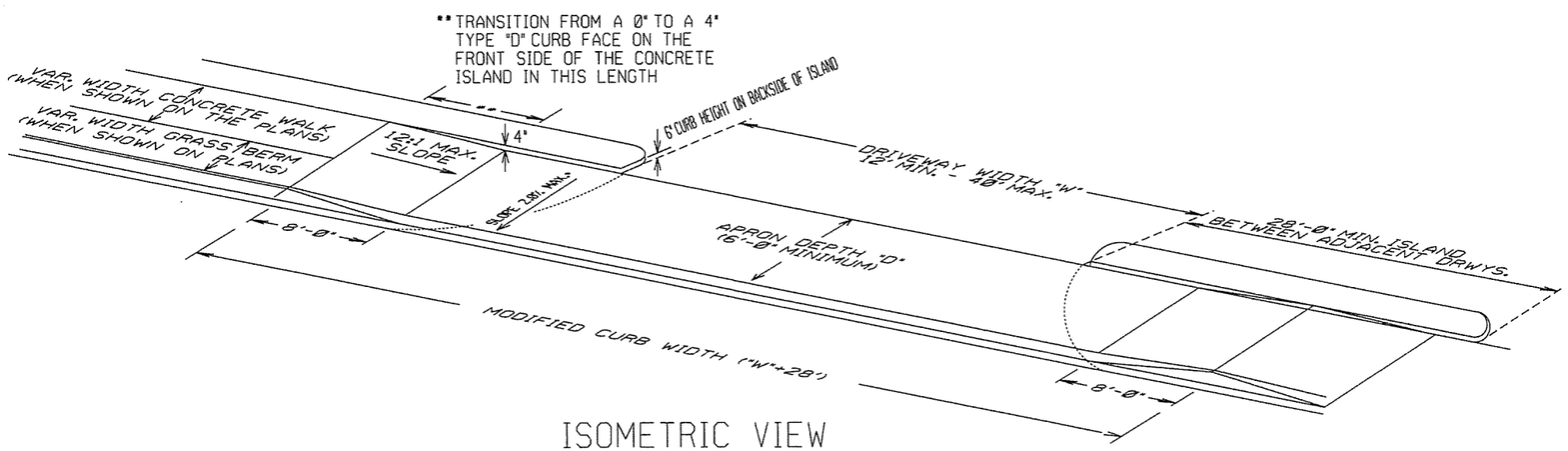
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

STANDARD DRAWING CG-1

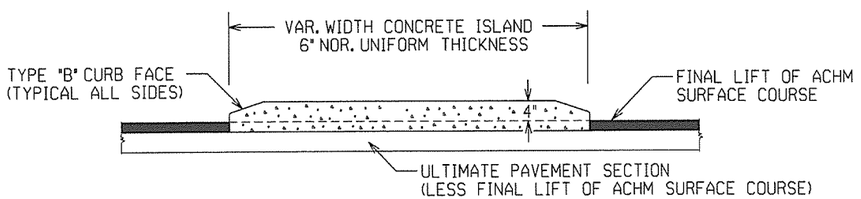


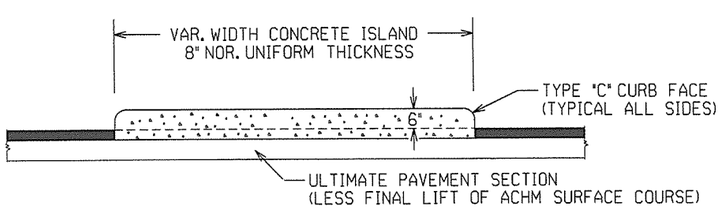
PLAN VIEW



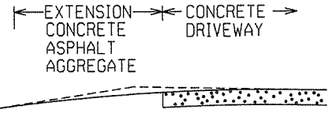
ISOMETRIC VIEW

REFER TO PLANS FOR TYPE OF CURB FACE TO BE USED. NO DIRECT PAYMENT WILL BE MADE FOR THE CURB FACES SHOWN ON THE ISLAND DETAILS. PAYMENT FOR THE CURB FACE WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM "CONCRETE ISLAND".





CURBED ISLANDS FOR CHANNELIZATION



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

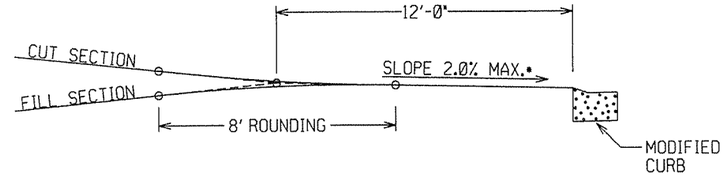
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

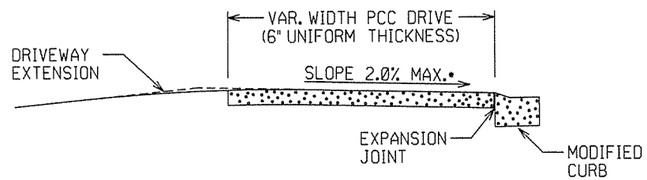
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

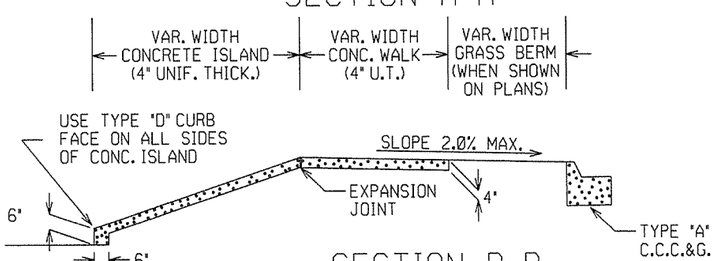


DRIVEWAY VERTICAL ALIGNMENT DETAILS

• NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



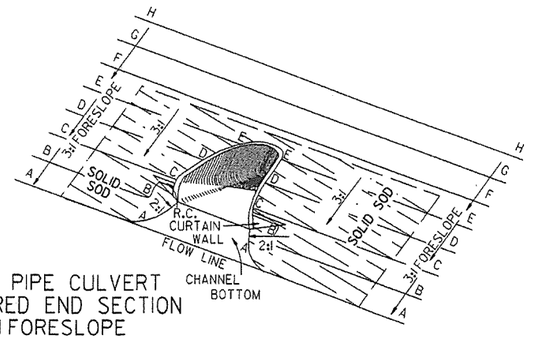
SECTION A-A



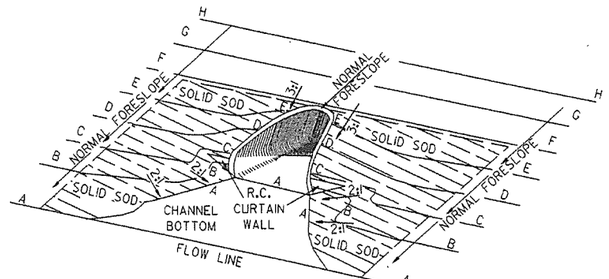
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
2-27-14		REVISED PLAN & ISOMETRIC VIEW
11-29-07		ADDED CHANNELIZATION ISLAND WITH TYPE C CURB FACE & REVISED DRIVEWAY SLOPE NOTE & VERTICAL ALIGNMENT DETAIL
11-10-05		REV. APRON SLOPE & DEPTH OF AGG. BASE.
8-22-02		ADDED ISLAND DETAILS & NOTES
3-30-00		REV. MOD. CURB WIDTH & TRANS. NOTE
11-19-98		REVISED NOTES
11-18-98		REDRAWN AND REISSUED

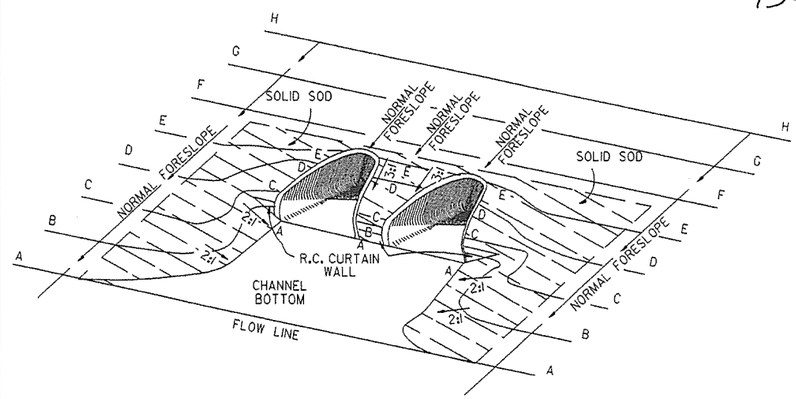
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



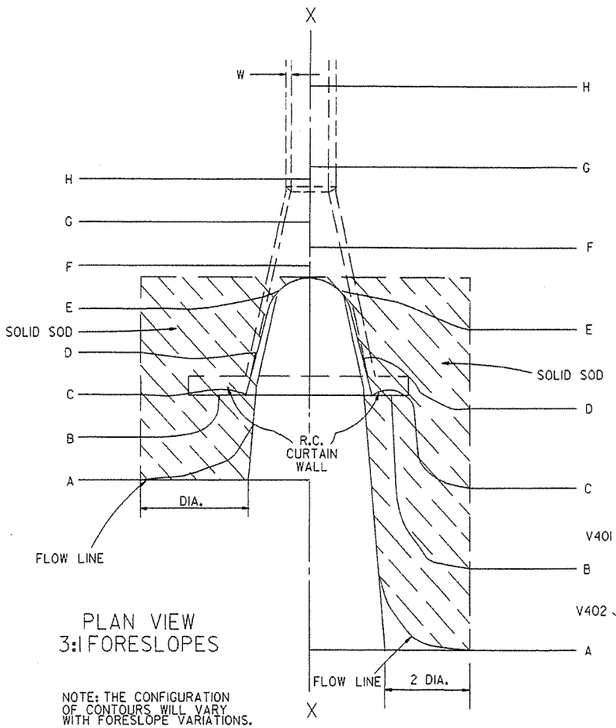
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& FLATTENED ADJACENT SLOPES



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



PLAN VIEW
3:1 FORESLOPES

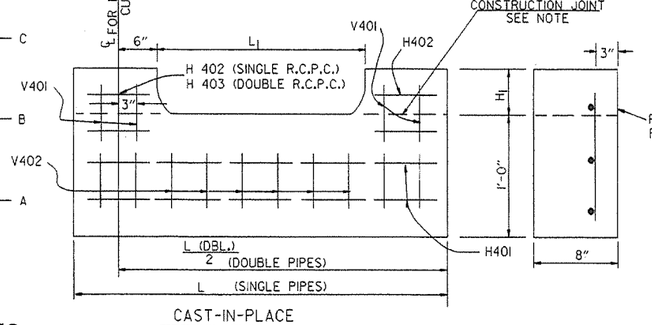
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

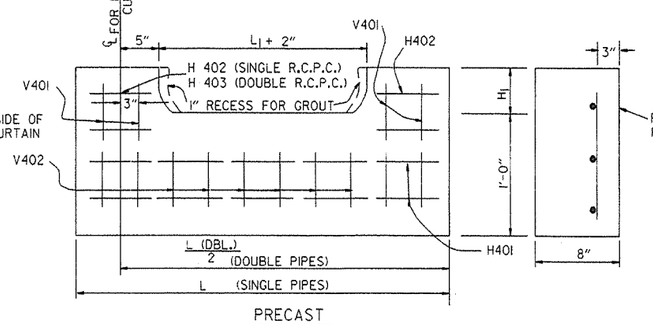
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	13'-0"	10'-6"	0.58	52.6	0.83	73.9
42"	2'-1½"	7'-3"	15'-6"	12'-0"	0.82	77.1	1.10	100.7
48"	2'-5"	7'-10"	17'-0"	13'-0"	0.98	94.9	1.27	120.4
54"	2'-9½"	8'-5"	18'-6"	14'-0"	1.16	115.8	1.47	143.7
60"	3'-4"	9'-0"	20'-6"	15'-6"	1.47	149.7	1.84	180.3
72"	4'-5"	10'-2"	25'-6"	18'-6"	2.31	232.6	2.73	271.0

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



CAST-IN-PLACE

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



PRECAST

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

R.C. CURTAIN WALL DETAILS

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.

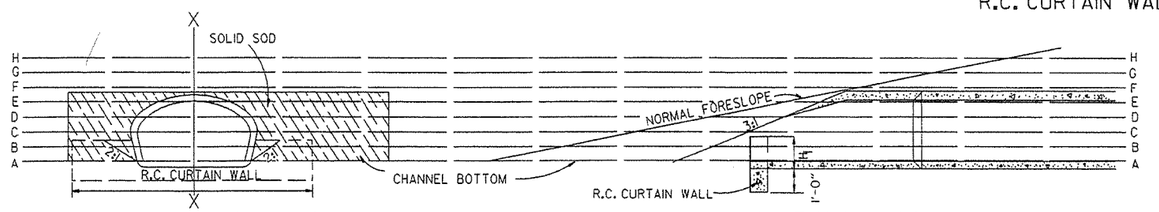
SOLID SODDING

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	19	9	13	20
30"	13	18	29	14	19	30
36"	17	26	41	18	28	43
42"	23	35	55	25	37	57
48"	29	46	68	31	48	70
54"	35	57	85	37	59	87
60"	45	62	104	48	65	107
72"	64	92	156	67	95	159

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 × 3 W10 × W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

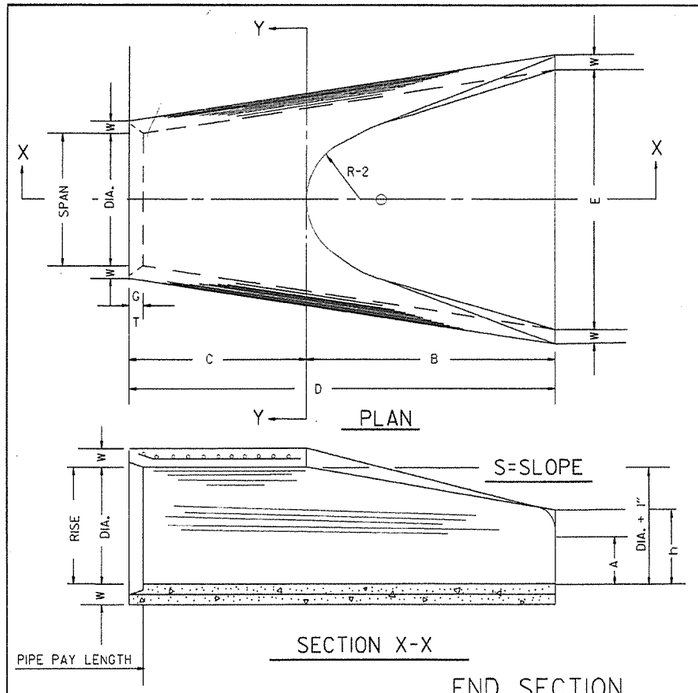
SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96
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

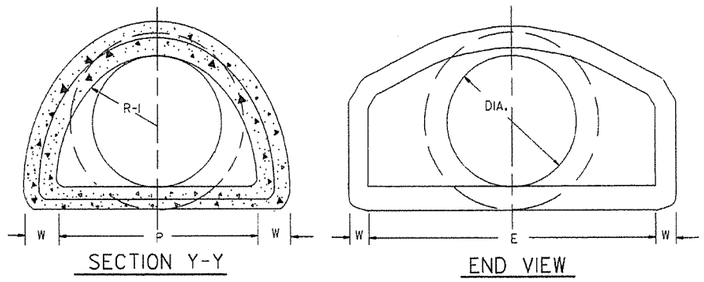
STANDARD DRAWING FES-1



END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33 3/16"	16 13/16"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47 1/16"	24 5/16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅛"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36 1/16"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 13/16"	38 5/16"	24"	5"	13250	4'-6"

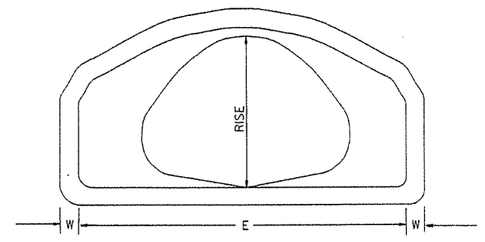


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

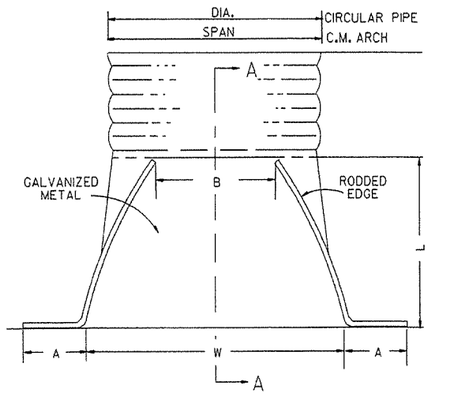
ARCH PIPE

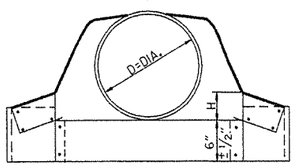
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 1/16"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47 13/16"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅝"	22"	3½"	2½:1
42	51⅛	51	31 5/16	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2¼:1

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



END VIEW
CONCRETE ARCH PIPE

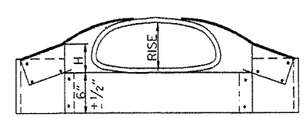




CIRCULAR PIPE

CIRCULAR PIPE

D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1¾:1
66	12	18	36	12	87	120	1½:1
72	12	18	39	12	87	126	1 1/3:1



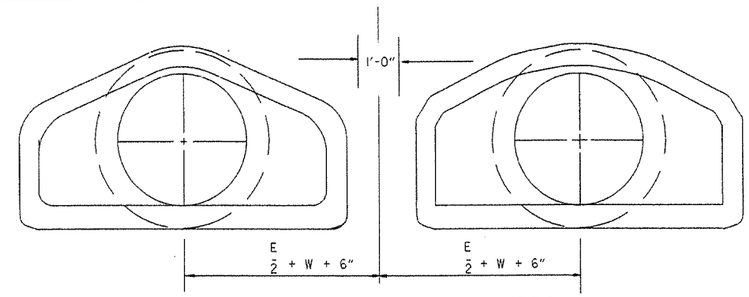
C.M. ARCH PIPE

C.M. ARCH PIPE

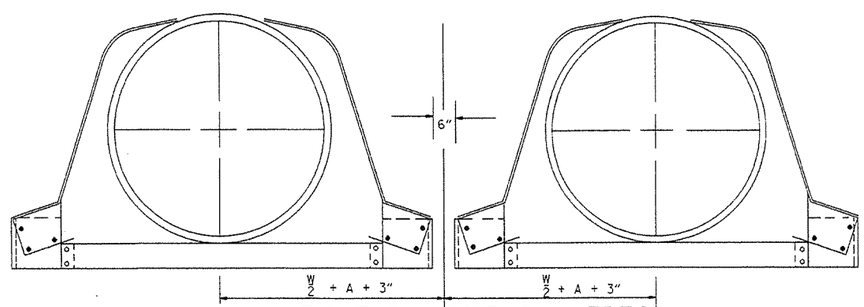
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	12

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



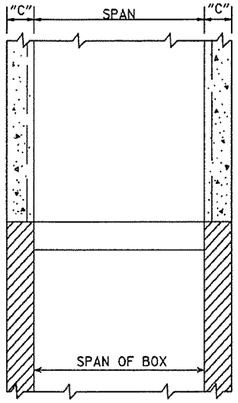
MULTIPLE C.M. PIPE CULVERTS

DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
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

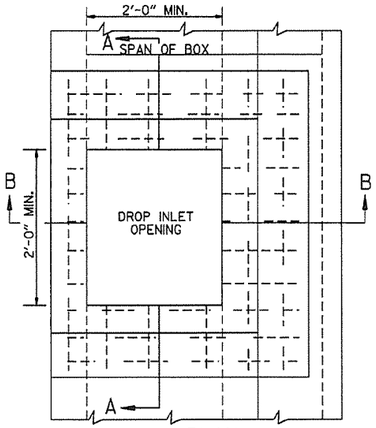
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

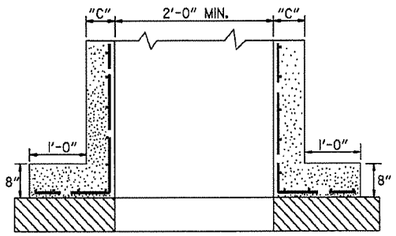
STANDARD DRAWING FES-2



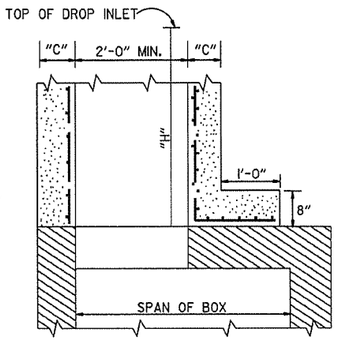
SECTION B-B



PLAN

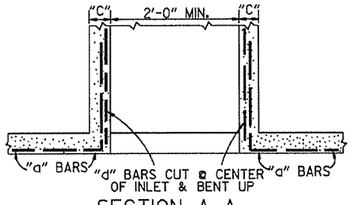


SECTION A-A

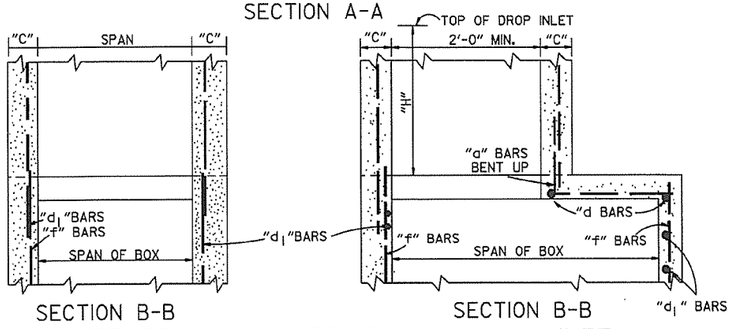


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



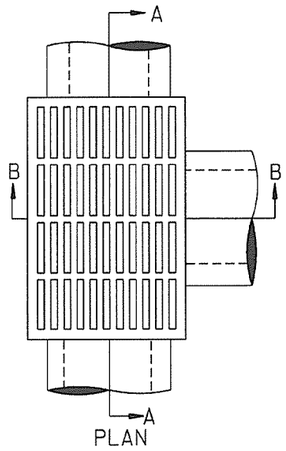
SECTION A-A



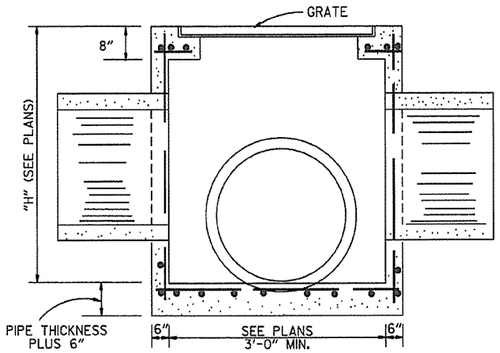
SECTION B-B SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.

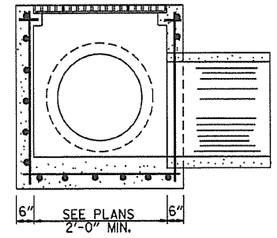


PLAN



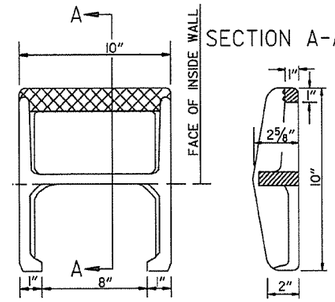
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.



SECTION B-B

DROP INLET (TYPE E)



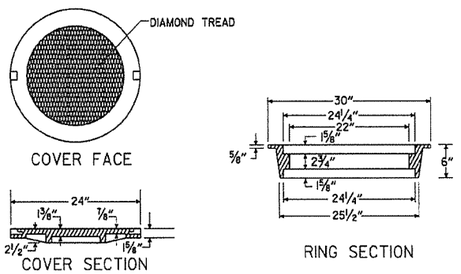
SECTION A-A

APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

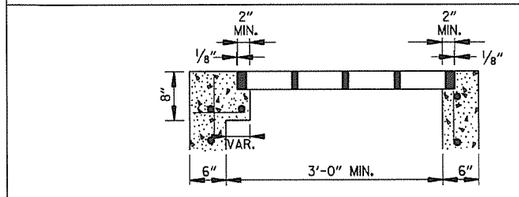
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

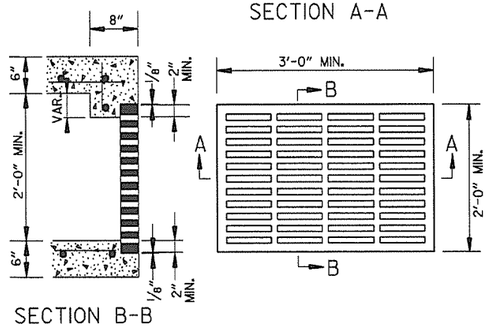


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



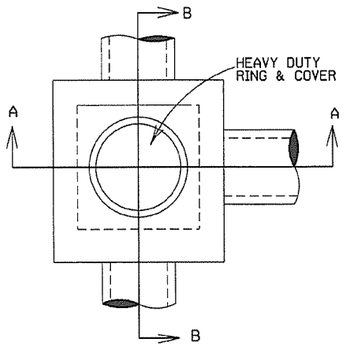
SECTION A-A



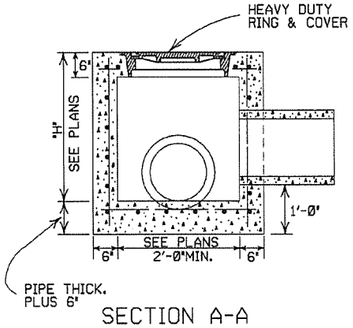
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

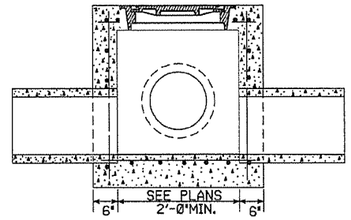


PLAN



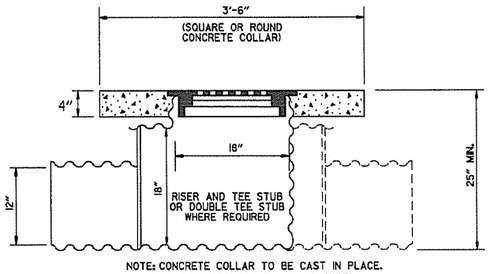
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

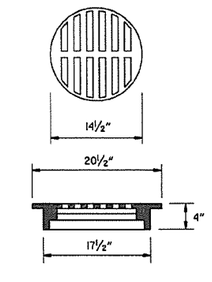


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

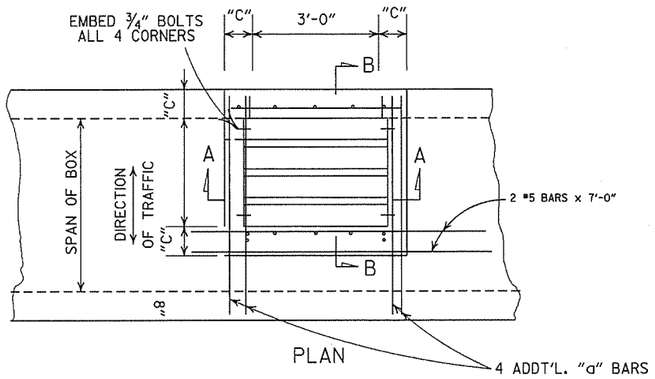
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL, DELETED DI (TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

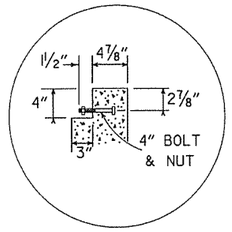
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

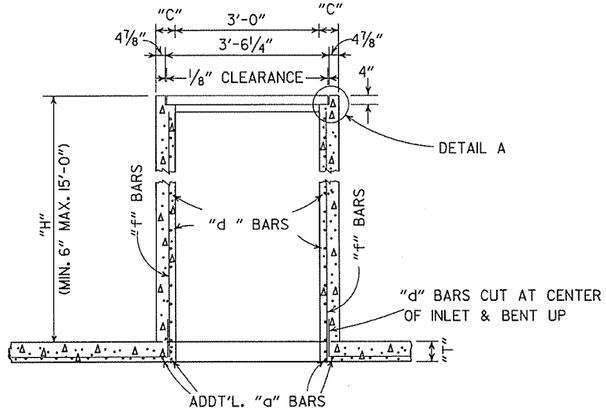
STANDARD DRAWING FPC-9



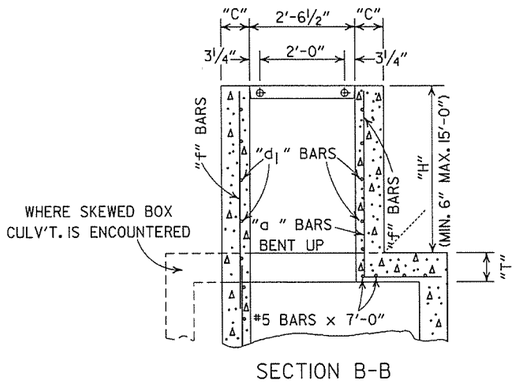
PLAN



DETAIL A



SECTION A-A

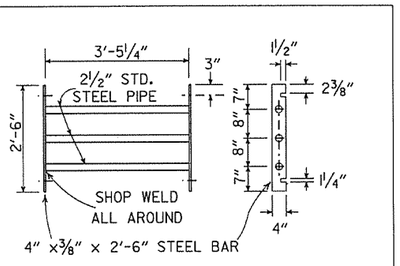


SECTION B-B

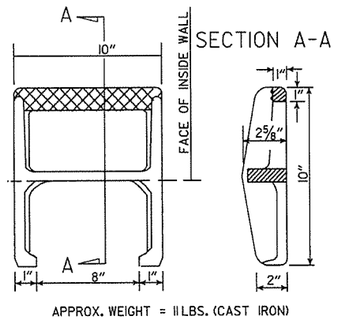
NOTE: ADDT'L.REINF. STEEL TO BE INCLUDED IN UNIT PRICE BID PER TYPE "TM" D.I.

DIMENSIONS & REINF. BARS FOR D.I. TO BE THE SAME AS THOSE SHOWN ON APPLICABLE STD. BARREL DRAWING FOR R.C. BOX CULVERTS.

DROP INLET TYPE "TM" FOR REINFORCED CONC. BOX CULVERTS



GRATE DETAIL



APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

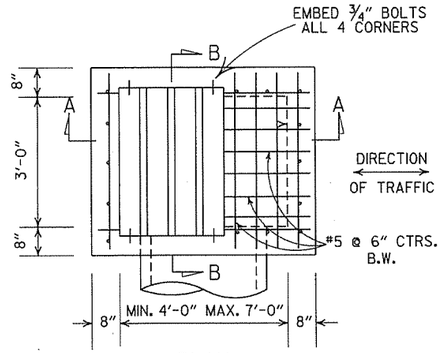
GENERAL NOTES:

1. STEEL PIPE FOR GRATES AND BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 807. BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: ASTM A193, GRADE B8 CLASS 1 OR 2, ASTM A307 OR AASHTO M 164.
2. STEEL PIPE FOR GRATES SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD PIPE.
3. BOLTS, NUTS, WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232 OR AASHTO M 298, CLASS 40 OR 50.
4. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER.
5. ALL #4 AND #5 REINFORCING BARS TO HAVE 1½" COVER. LARGER SIZES TO HAVE 2" COVER.
6. THE COMPLETE PIPE GRATE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

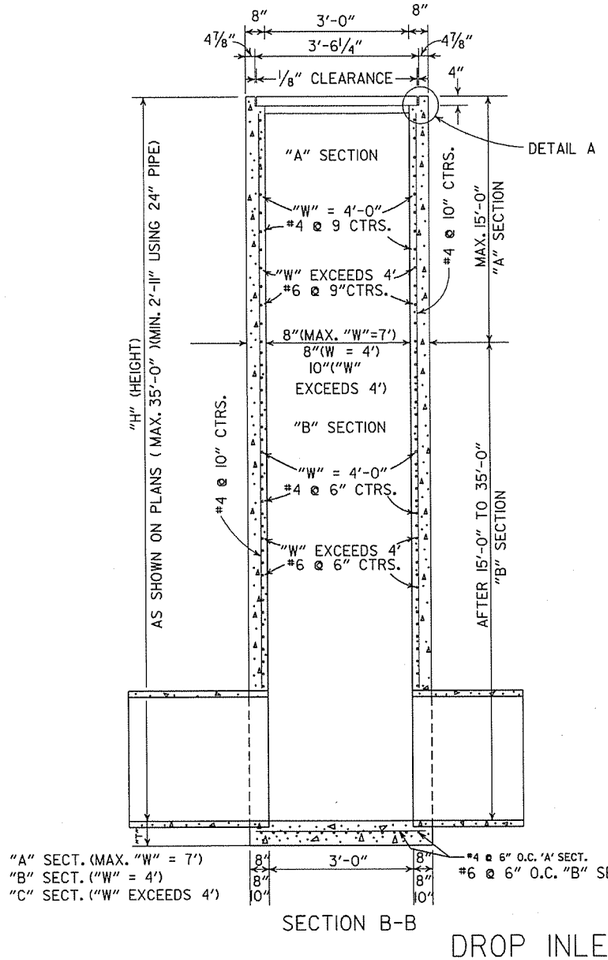
TABLE OF "W" DIMENSIONS

I.D. PIPE	SKEW OF CROSS DRAIN		
	STRAIGHT	30°	45°
	"W"	"W"	"W"
24"	4'-0"	4'-0"	4'-0"
30"	4'-0"	4'-0"	4'-5"
36"	4'-0"	4'-3"	5'-3"
42"	4'-3"	4'-11"	6'-1"
48"	4'-10"	5'-7"	6'-11"

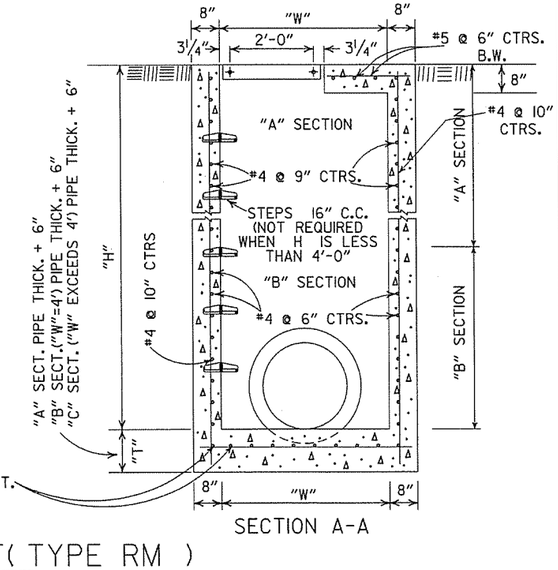
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



PLAN



SECTION B-B



SECTION A-A

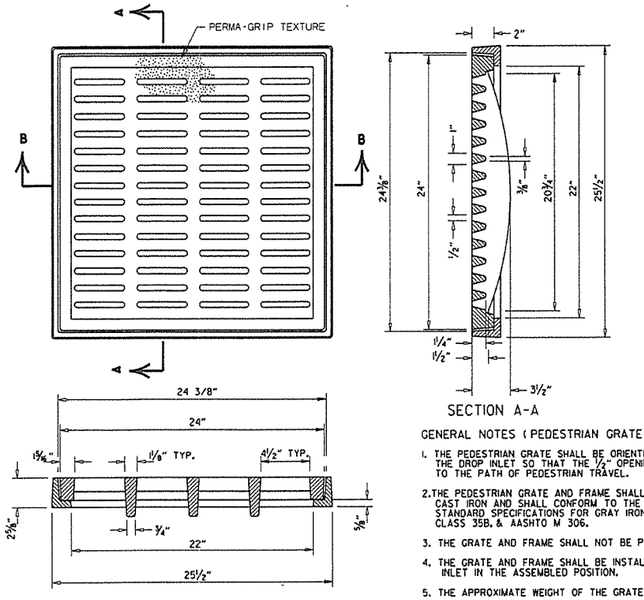
DROP INLET(TYPE RM)

8-22-02	ADDED & REVISED DIMENSION TO SECTION A-A	
1-12-00	CORRECTED DIMENSION ON SECTION B-B	
11-06-97	ADDED DIMENSION TO SECTION A-A	
10-18-96	REVISED ASTM REF. TO AASHTO AND ADDED NOTE TO TABLE OF "W" DIMENSIONS	
10-1-92	ADDED DIRECTION OF TRAFFIC	10-1-92
8-15-91	ADDED NOTE ABOUT PAINTING OF GRATE	8-15-91
11-30-89	ALTERED DETAIL A	11-30-89
7-15-88	REVISED STEP DETAIL,TM & RM D.I. & GRATE DETAIL	719-7-15-88
10-2-72	REVISED AND REDRAWN	542-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

STANDARD DRAWING FBC-9D



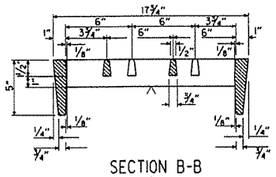
SECTION B-B

SECTION A-A

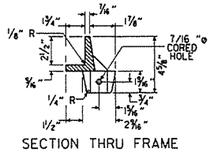
GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE ½" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211 LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.

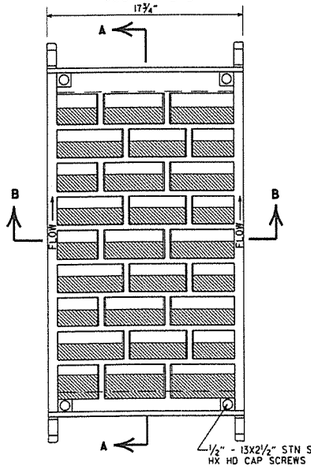
DETAILS OF PEDESTRIAN GRATE AND FRAME

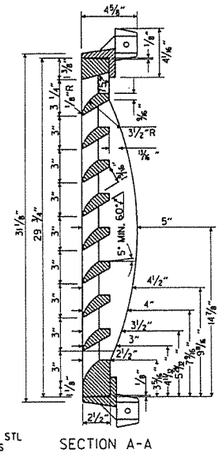


SECTION B-B



SECTION THRU FRAME



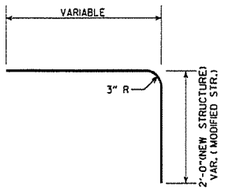


SECTION A-A

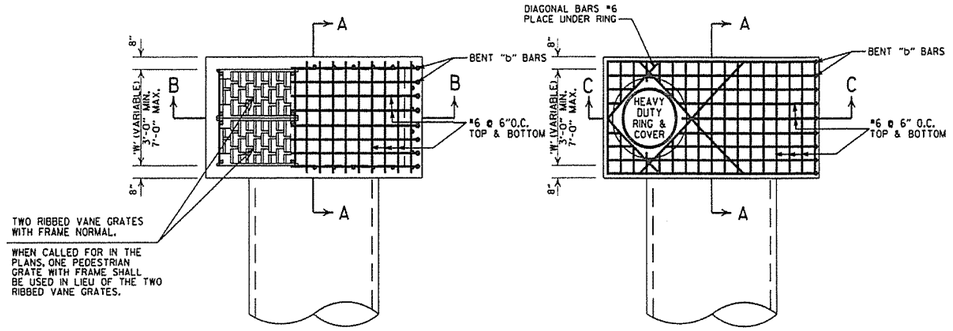
DETAILS OF RIBBED VANE GRATE AND FRAME

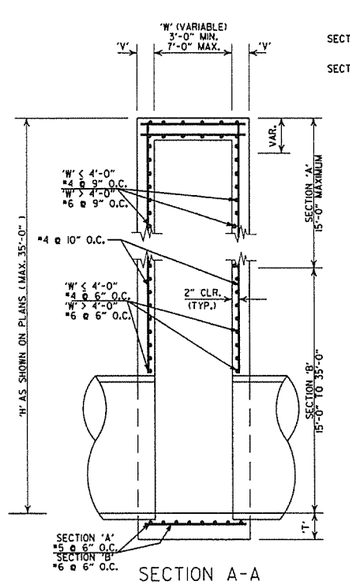
GENERAL NOTES (RIBBED VANE GRATE & FRAME)

1. RIBBED VANE GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.



DETAIL OF BENT "b" BAR





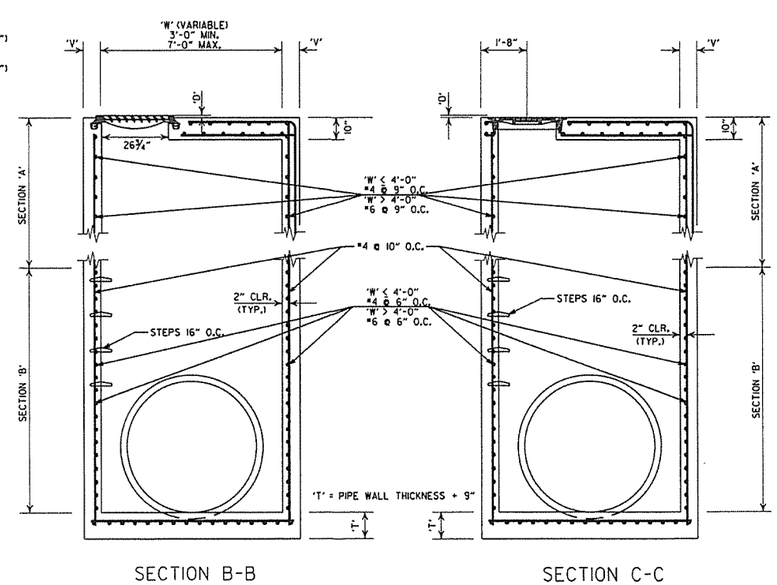
SECTION 'A'
'V' = 8"

SECTION 'B' (W≤4'-0")
'V' = 8"

SECTION 'B' (W>4'-0")
'V' = 10"

SECTION A-A

DETAILS OF DROP INLET (TYPE ST)



SECTION B-B

SECTION C-C

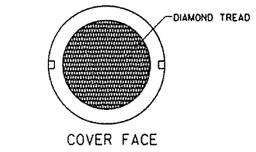
DETAILS OF JUNCTION BOX (TYPE ST)

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

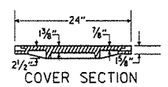
1. THE 'D' DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".
3. ALL EXPOSED CORNERS ARE TO HAVE A ¾" CHAMFER.

GENERAL NOTES (HEAVY DUTY RING & COVER):

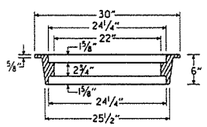
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.



COVER FACE



COVER SECTION



RING SECTION

HEAVY DUTY RING & COVER

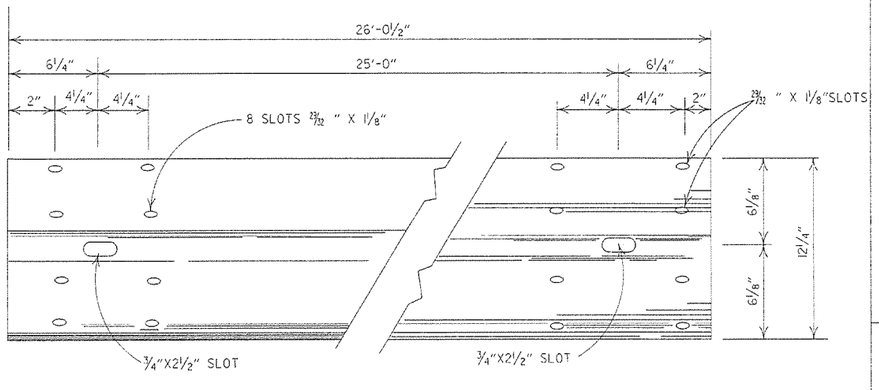
APPROXIMATE TOTAL WEIGHT = 333 LBS.

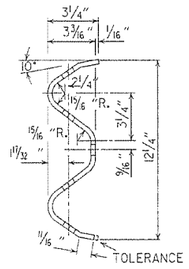
DATE REVISED	DATE FILMED	DESCRIPTION
7-26-12		REMOVED NOTE 4, REVISED 'T', REVISED BOTTOM SLAB REBAR FOR SECTION 'A', SHOWED REBAR CLEARANCE IN SECTIONS
11-16-01		ADDED NOTE 4
1-12-00		REVISED HEAVY DUTY RING & COVER
5-13-99		ADDED PEDESTRIAN FRAME & GRATE
7-02-98		REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
10-1-92		REVISED & REISSUED
8-15-91	8-15-91	REVISED & REISSUED

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)

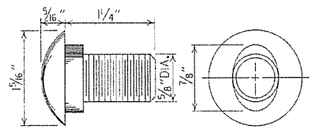
STANDARD DRAWING FPC-9S



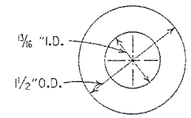


DETAILS OF W-BEAM GUARD RAIL

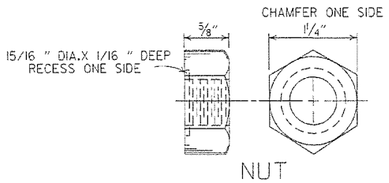
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



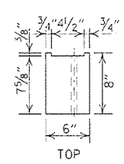
SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH



CUT STEEL WASHER

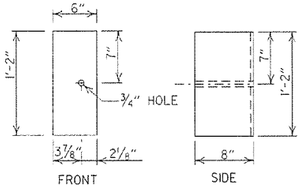


NUT



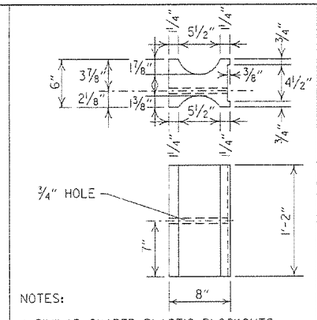
WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



FRONT SIDE

WOOD BLOCKOUT (W-BEAM)

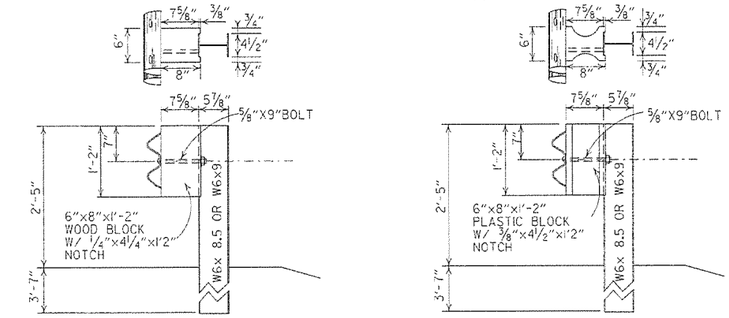


NOTES:

1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

PLASTIC BLOCKOUT (W-BEAM)

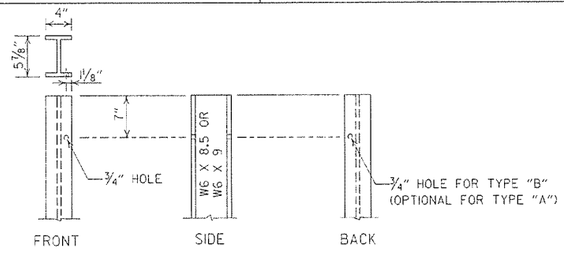
HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



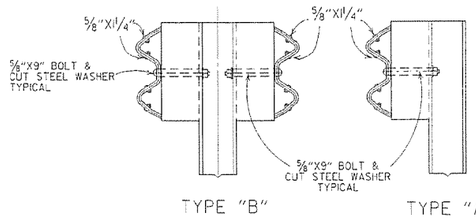
WOOD BLOCKOUT CONNECTIONS

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.

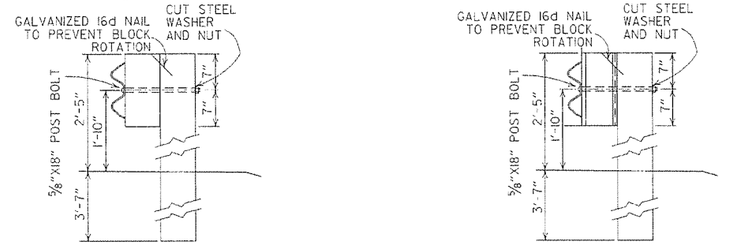
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

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 NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.



POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

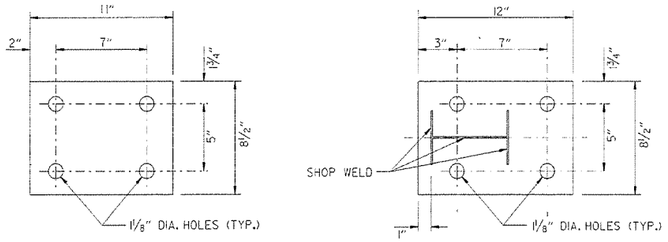
DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
10-15-09	ADDED REFERENCE TO MASH	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST	
11-16-01	REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS	
3-30-00	REMOVED GUARD RAIL AT BRIDGE ENDS	
1-12-00	ADDED PLASTIC BLOCKOUT	
8-12-98	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	
4-3-97	REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS	
10-18-96	REVISED WOOD POST NOTE	
6-2-94	ADDED ALT. STEEL POST SIZE	
8-5-93	REVISED STEEL POST SIZE	8-5-93
10-1-92	REDRAWN & REVISED	10-1-92
8-15-91	REVISED WASHER NOTE	8-5-91
6-2-90	REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK	8-2-90
7-15-88	REVISED SECTION 3 & GENERAL NOTES	
5-4-88	REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK	780-3-4-88
10-30-87	REVISED WOOD LINE POST DETAIL	546-10-30-87
10-9-87	REDRAWN & REVISED	802-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

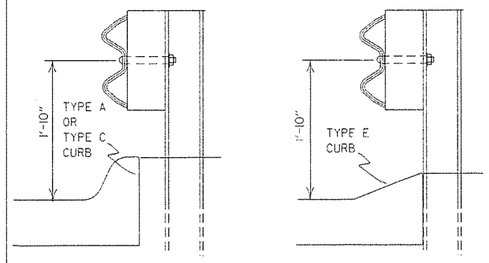
STANDARD DRAWING GR-8



WASHER PLATE

BASE PLATE

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



FOR DESIGN SPEEDS OF 50 MPH OR LESS

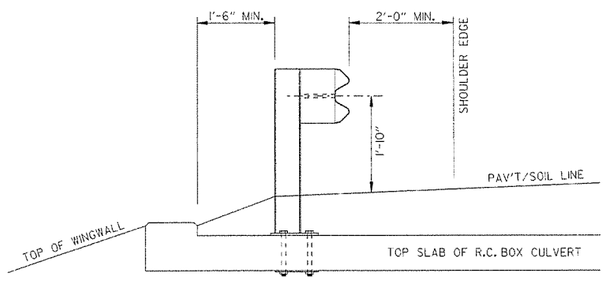
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE

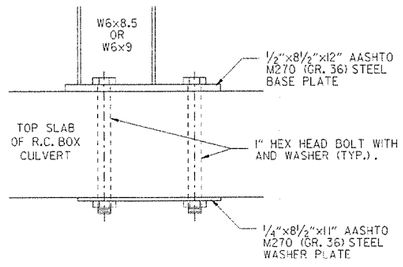
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

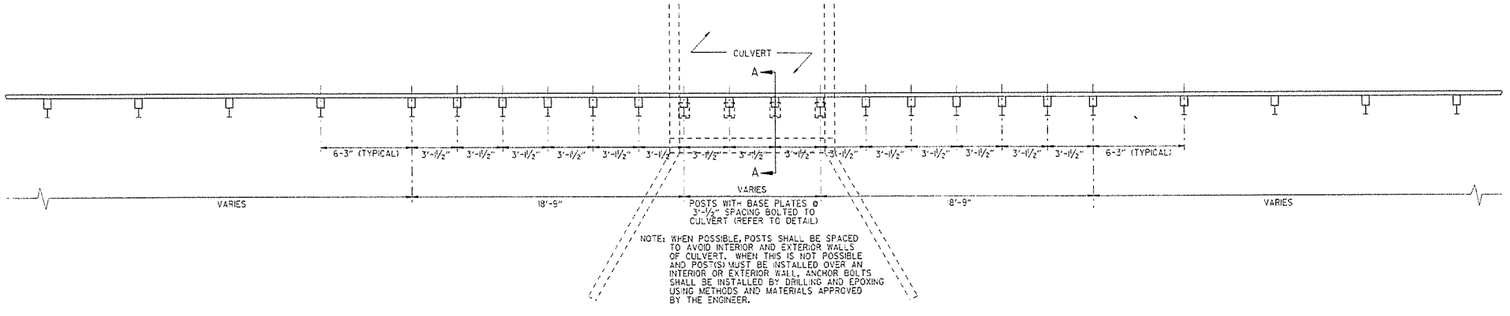
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.



SECTION A-A



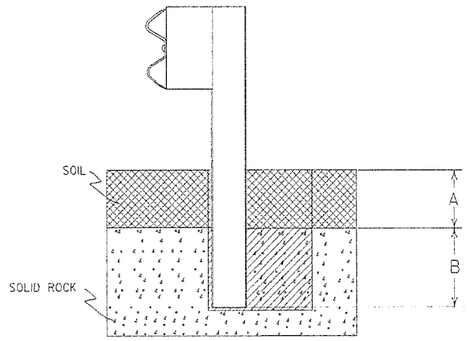
DETAIL OF CONNECTION



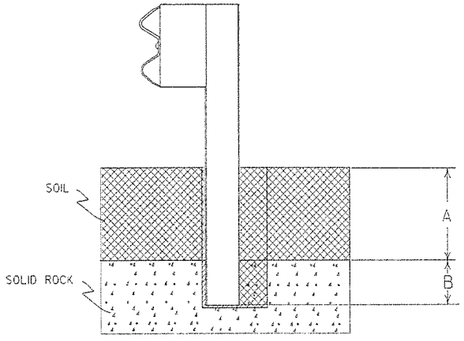
PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

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

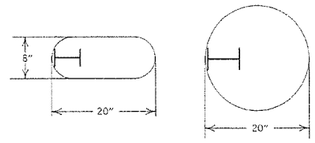


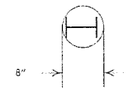
Case 2



Plan View Steel Posts

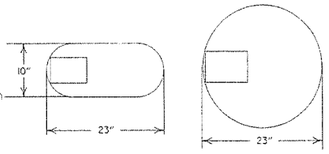
Either hole configuration acceptable

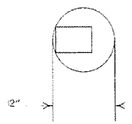




Plan View Wood Posts

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)

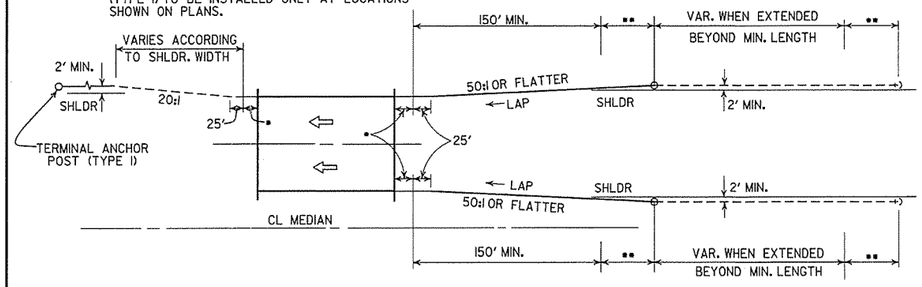
DATE	REVISION	DATE FILM
7-14-10	RAISED HEIGHT OF GUARD RAIL 1"	
4-12-07	REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB	
11-10-05	ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION	
11-18-04	REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS	
3-30-00	REMOVED CONCRETE INSERT ANCHOR	
8-12-98	CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. 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 POST PLACE. IN SOLID ROCK	
4-3-96	PLACED ARROWS AT CUT STEEL WASHERS	4-3-96
10-18-96	REV. ASTM REF. TO AASHTO	
11-22-95	ADDED OPTIONAL HOLES	
6-2-94	REVISED ALTERNATE POST SIZE	
8-5-93	REVISED STEEL POST SIZE	
10-1-92	REDRAWN & REVISED	10-1-92
8-2-90	DEL. WASHER ON ANCHOR ASSEMBLY	8-2-90
7-15-88	CONFORMED TO 1988 SPECS	
3-4-88	REVISED ANCHOR NOTE	
10-30-87	REVISED ANCHOR ASSEMBLY	712-10-30-87
10-30-87	REVISED PLACEMENT BEHIND CURB	547-10-30-87
10-9-87	REDRAWN & REVISED	803-10-9-87

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

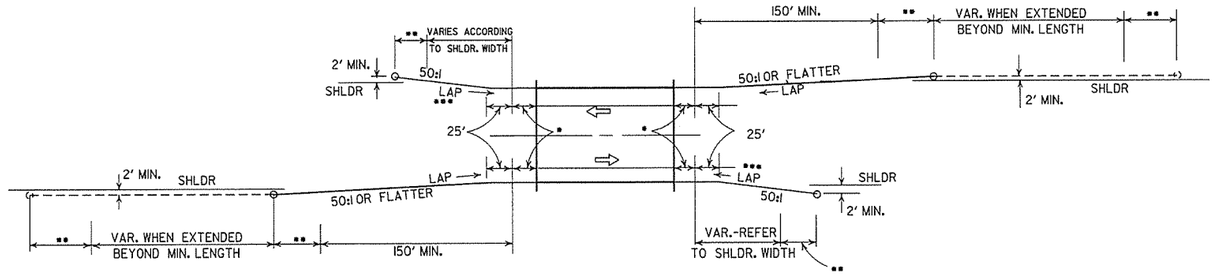
STANDARD DRAWING GR-8A

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



ONE-WAY TRAFFIC

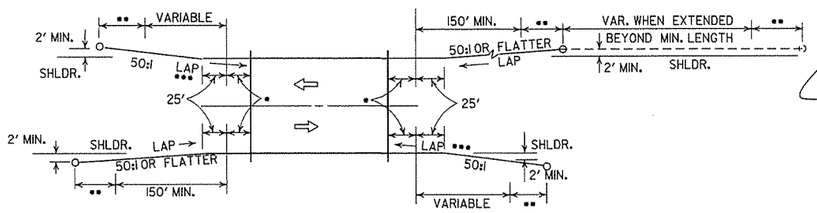
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.



TWO-WAY TRAFFIC

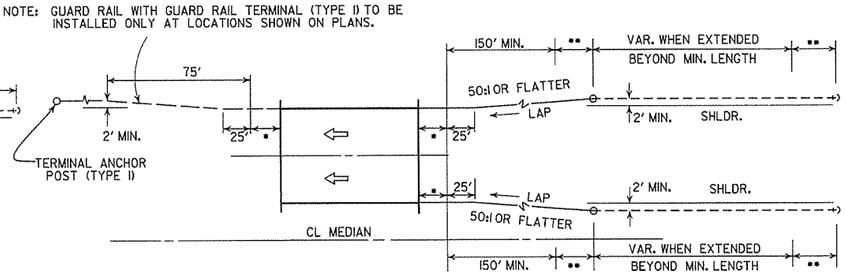
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• 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

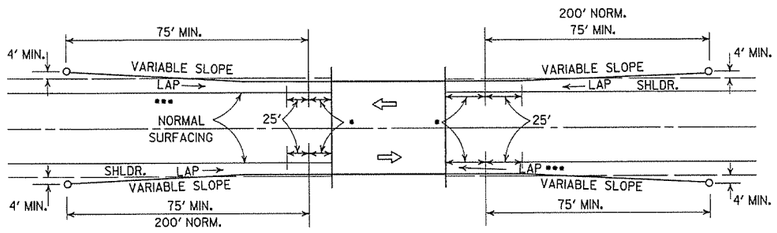
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.



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.



METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

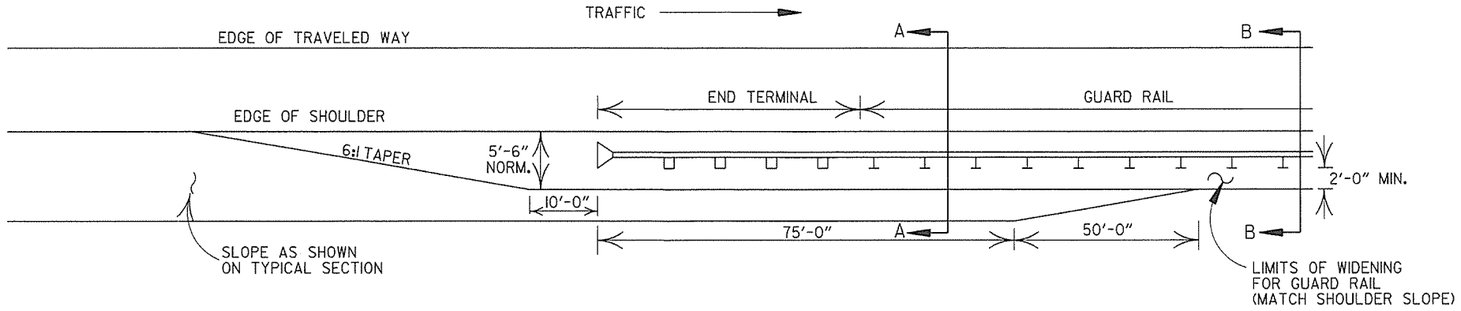
- ▪ THRIE BEAM GUARD RAIL TERMINAL
- ▪▪ GUARD RAIL TERMINAL (TYPE 2)

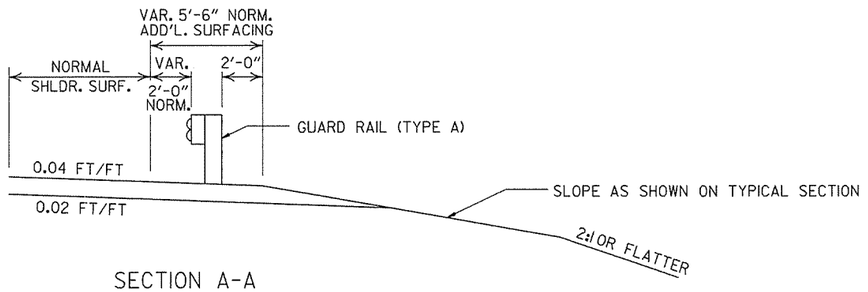
DATE	REVISION	DATE FILM
4-17-08	REVISED LAYOUTS	
11-10-05	REMOVED GUARD RAIL NOTES AND DETAILS	
11-16-01	DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I)	
1-12-00	ADDED CONSTRUCTION NOTE	1-12-00
6-26-97	REVISED LAYOUT	
10-1-92	REDRAWN & REVISED	10-1-92
	ADDED NOTE	
10-9-87	REDRAWN & REVISED	

ARKANSAS STATE HIGHWAY COMMISSION

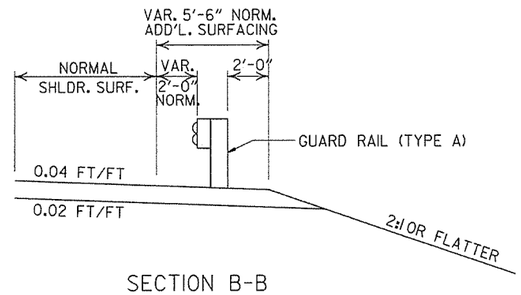
GUARD RAIL DETAILS

STANDARD DRAWING GR-9





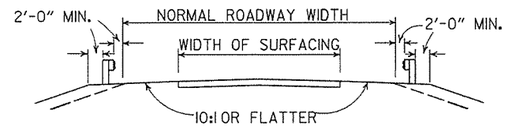
SECTION A-A



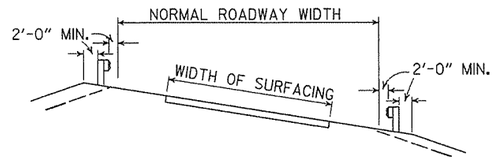
SECTION B-B

DETAILS OF WIDENING FOR GUARD RAIL

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

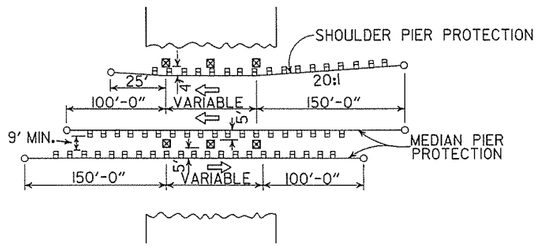


SECTION ON TANGENT



SECTION ON CURVE

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



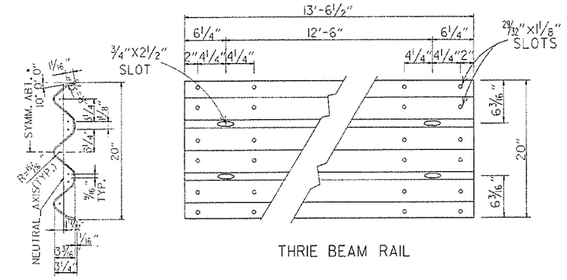
METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

DATE	REVISION	DATE FILM
4-17-08	MINOR REVISION	
11-10-05	DRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

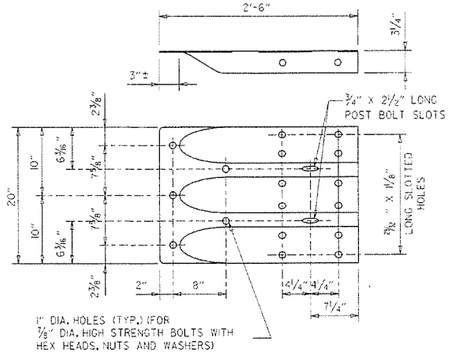
GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



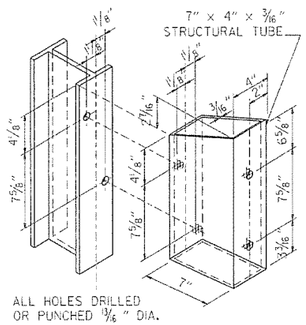
THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL



1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

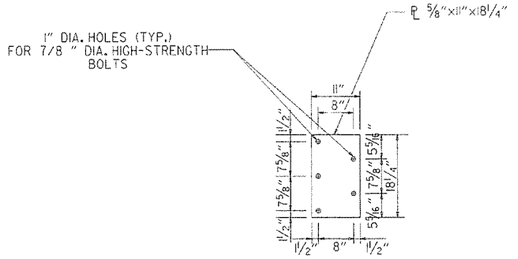
SPECIAL END SHOE



ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

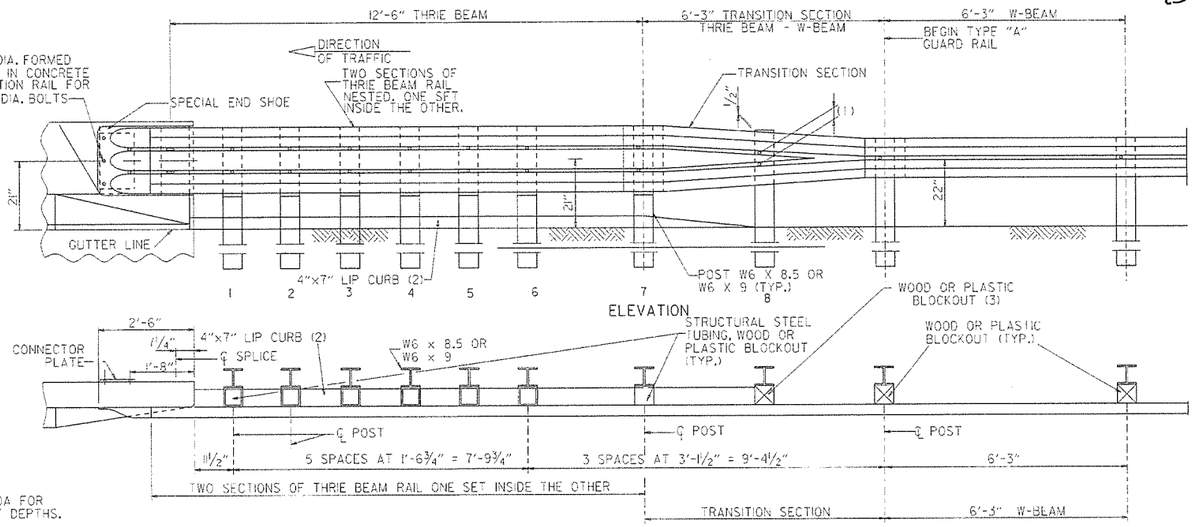
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.



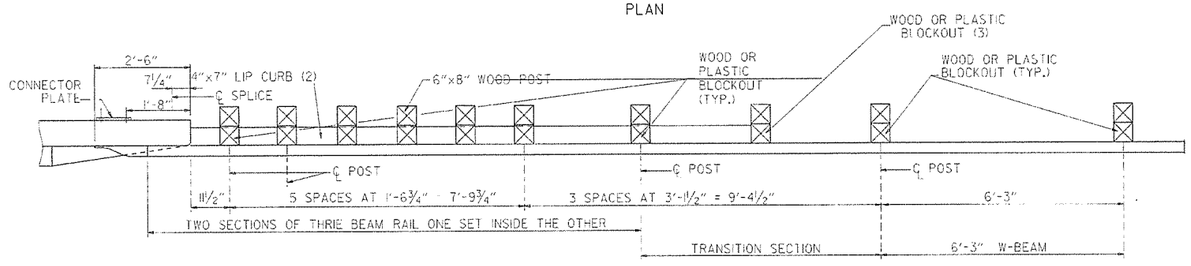
CONNECTOR PLATE

NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



ELEVATION

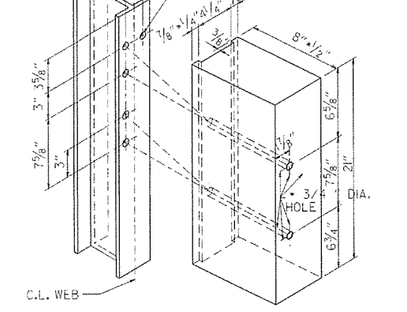
PLAN



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.

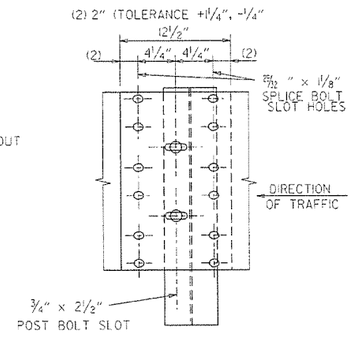
THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS



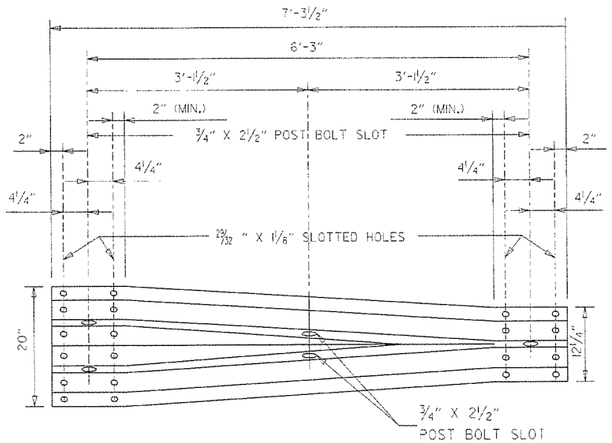
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

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



THRIE BEAM RAIL
SPLICE AT POST



TRANSITION SECTION

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 ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

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

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

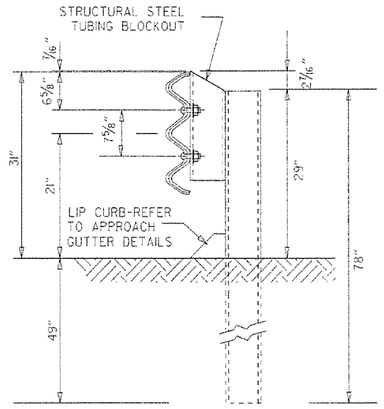
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W-BEAM POSTS FOR ENTIRE JOB.

DATE	REVISION	DATE FILM
7-14-10	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	
4-10-03	REVISED GENERAL NOTES	
8-22-02	REVISED NOTE (2)	
6-29-00	MOVED DIMENSION LINES	
5-18-00	ADDED NOTE	
3-30-00	DRAWN & ISSUED	

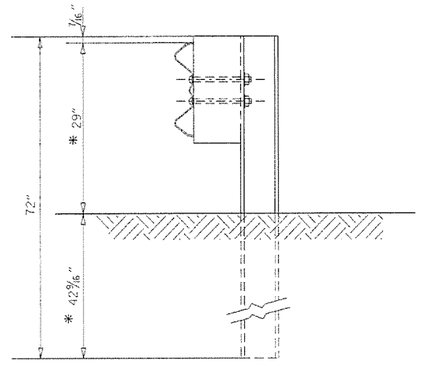
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

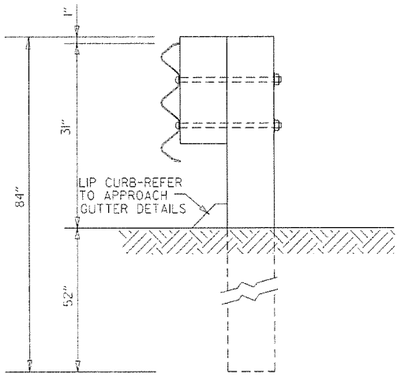


THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

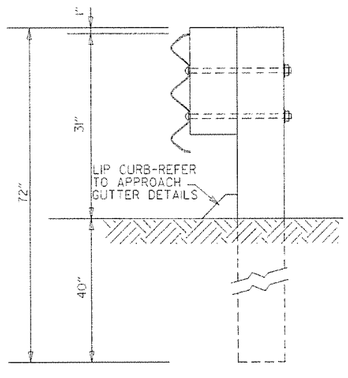


W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

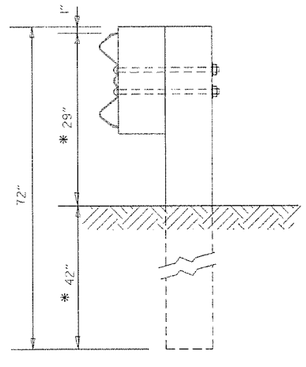
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6



THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7



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

GENERAL NOTES:

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

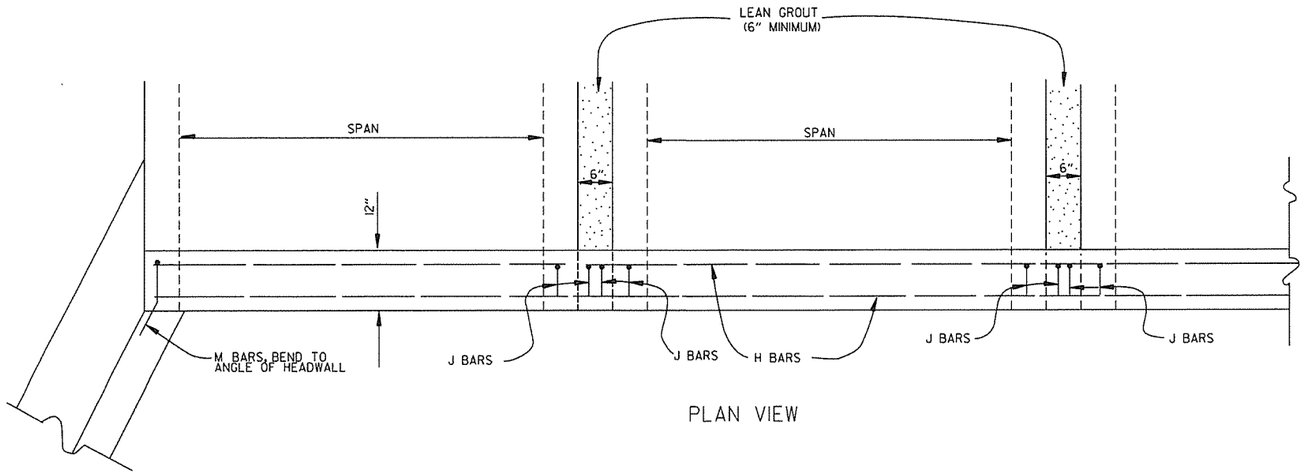
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

DATE	REVISION	DATE FILM
7-14-10	REVISED POST 8 DIMENSIONS	
11-29-07	ADDED PLASTIC BLOCKOUTS	
8-22-02	REVISED LIP CURB NOTE	
3-30-00	DRAWN & ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

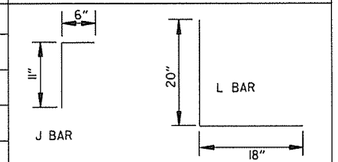
STANDARD DRAWING GR-10A



PLAN VIEW

BAR LIST

BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING. STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE.
THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

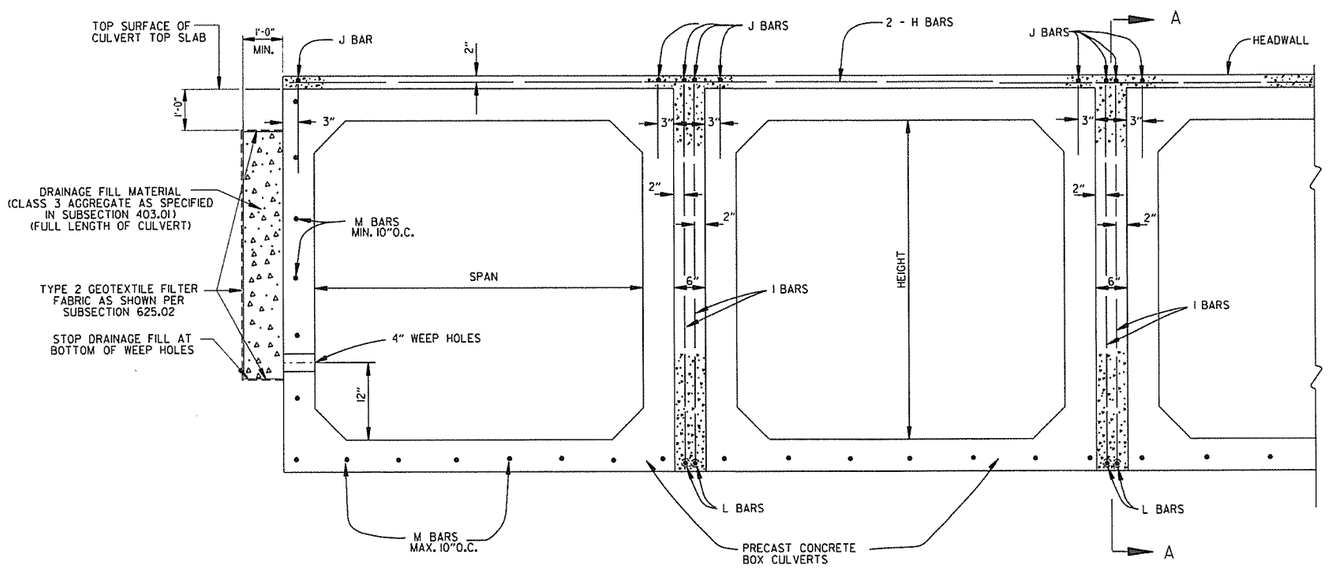
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

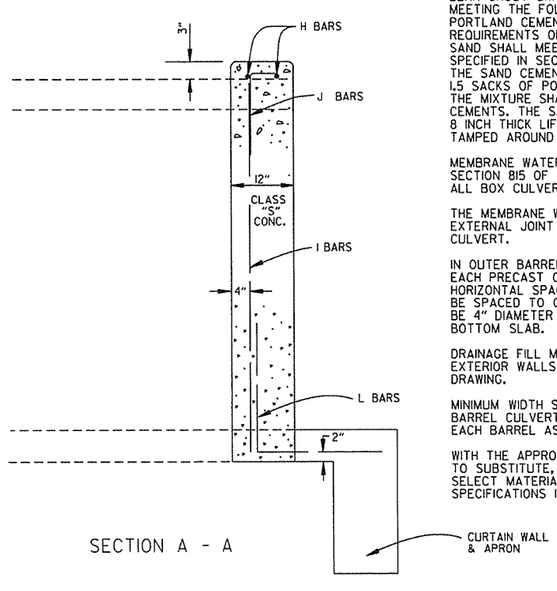
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
12-15-11	ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL	
10-15-09	ADDED GENERAL NOTE	
11-10-05	REVISED SPACING OF "M" BARS	
4-10-03	REVISED GENERAL NOTES	
10-18-96	CORRECTED AASHTO REF.	
10-1-92	ADDED NOTE FOR MEMBRANE WATERPROOFING	
8-15-91	ADDED NOTE FOR LEAN GROUT	
11- 8-90	REVISED FOR 1991 SPECS	
11-30-89	ISSUED; JABE	

ARKANSAS STATE HIGHWAY COMMISSION

PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-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 5/16	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.

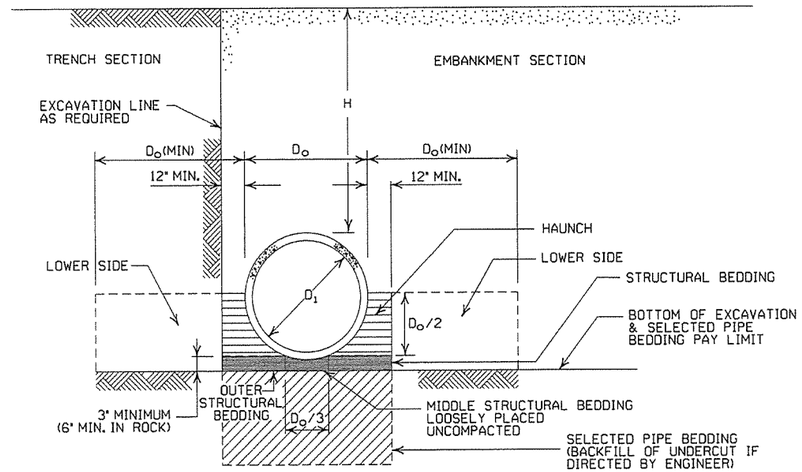
- LEGEND -

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
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CONSTRUCTION SEQUENCE

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

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

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

③ SM-3 WILL NOT BE ALLOWED.

EQUIVALENT METAL THICKNESSES AND GAUGES

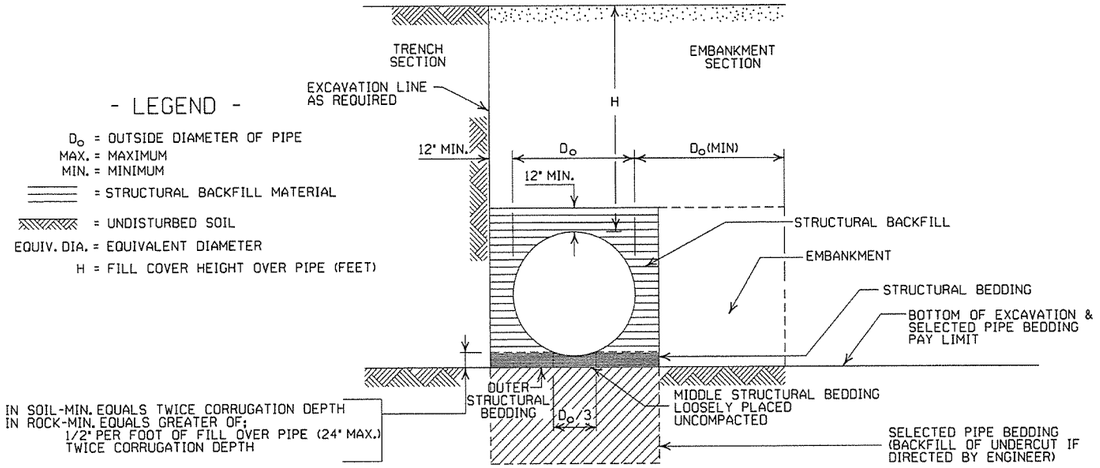
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL			ALUMINUM		
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.) 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
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM		
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM					
				INSTALLATION TYPE 2	INSTALLATION TYPE 1		INSTALLATION TYPE 2	INSTALLATION TYPE 1
36	40x31	5	0.079	3	2	12	15	
42	46x36	6	0.079	3	2	13	15	
48	53x41	7	0.079	3	2	13	15	
54	60x46	8	0.079	3	2	13	15	
60	66x51	9	0.079	3	2	13	15	
66	73x55	12	0.079	3	2	15	15	
72	81x59	14	0.079	3	2	15	15	
78	87x63	14	0.079	3	2	15	15	
84	95x67	16	0.109	3	2	15	15	
90	103x71	16	0.109	3	2	15	15	
96	112x75	18	0.109	3	2	15	15	
102	117x79	18	0.109	3	2	15	15	
108	128x83	18	0.138	3	2	15	15	

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

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.



- LEGEND -

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

EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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."

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

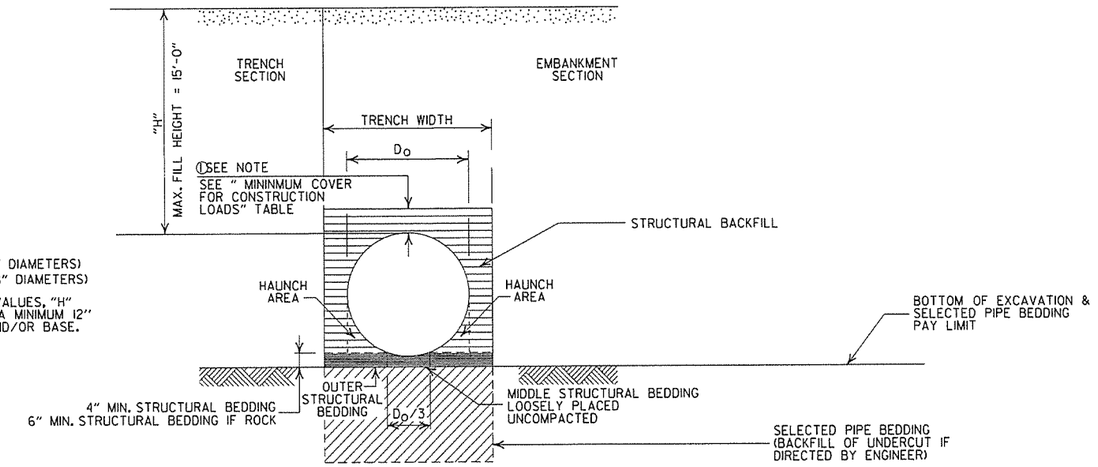
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

PIPE DIAMETER	TRENCH WIDTH (FEET)	
	"H" < 10'-0"	"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.



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)
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.

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

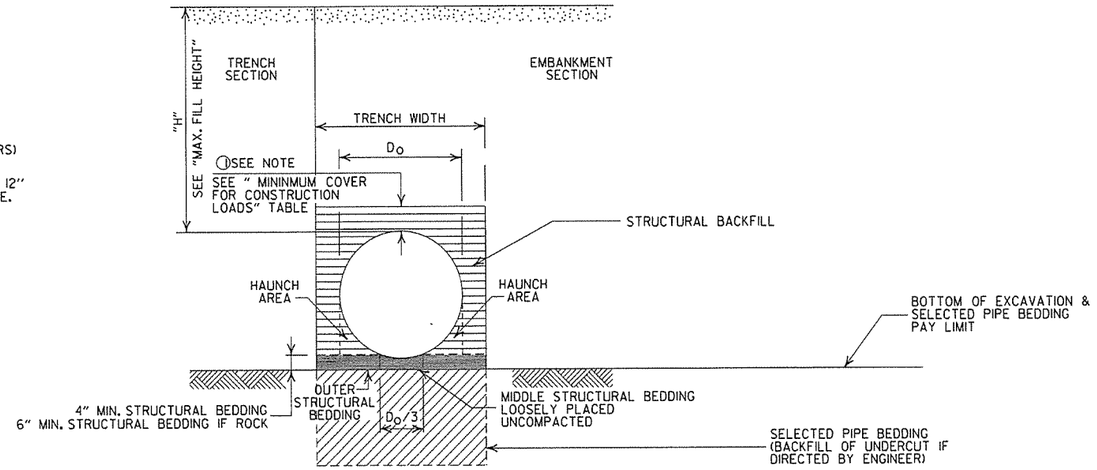
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

PIPE DIAMETER	② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS			
	18.0-50.0 (KIPS)	50.0-75.0 (KIPS)	75.0-110.0 (KIPS)	110.0-175.0 (KIPS)
18" THRU 36"	2'-0"	2'-6"	3'-0"	3'-0"

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL 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	

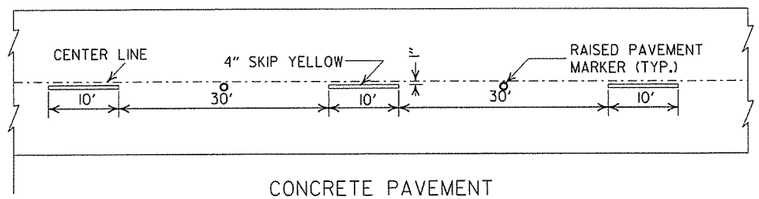
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

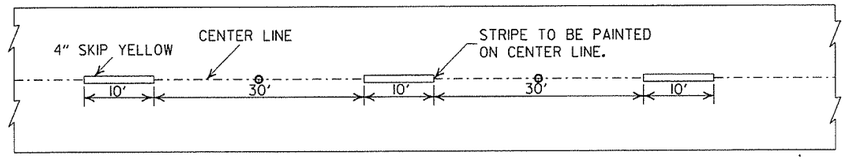
STANDARD DRAWING PCP-2

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.

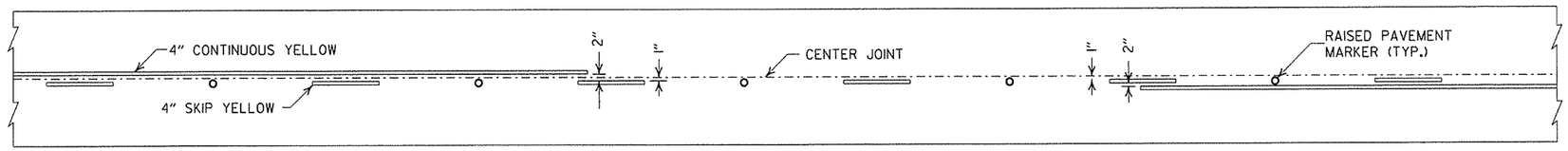


CONCRETE PAVEMENT

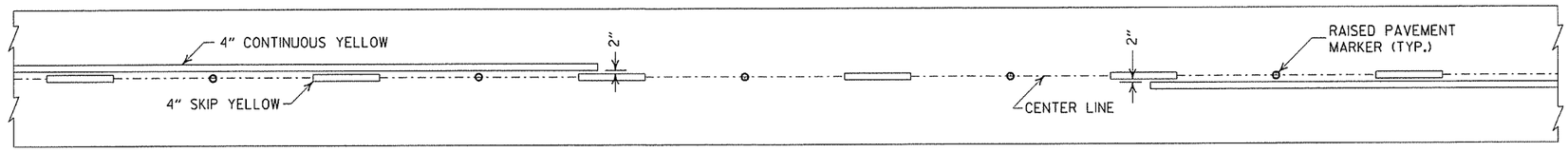


ASPHALT PAVEMENT

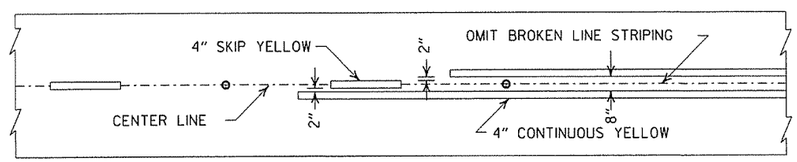
BROKEN LINE STRIPING



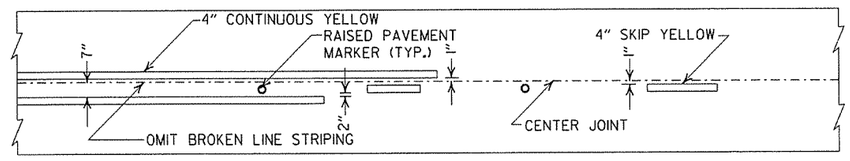
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

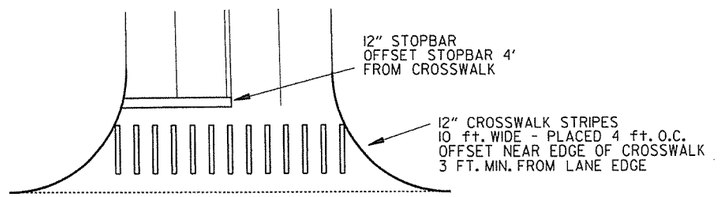


ASPHALT PAVEMENT

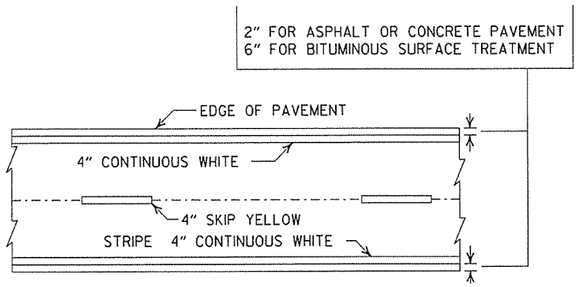


CONCRETE PAVEMENT

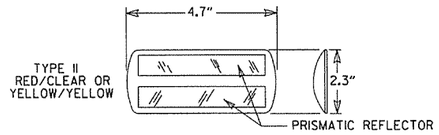
STRIPING AT ADJACENT NO PASSING LANES



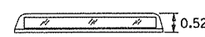
CROSSWALK AND STOPBAR DETAILS



PAVEMENT EDGE LINE MARKING



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

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.

DATE	REVISION	FILMED
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

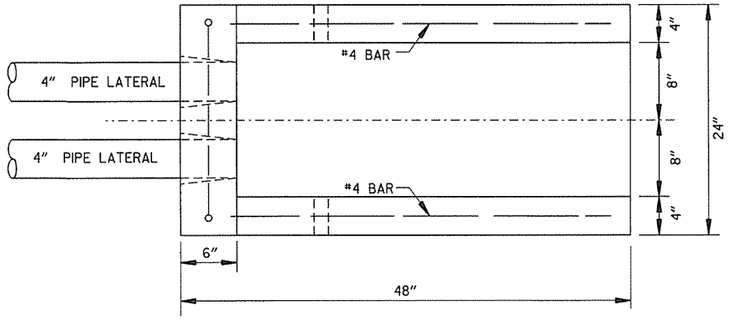
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

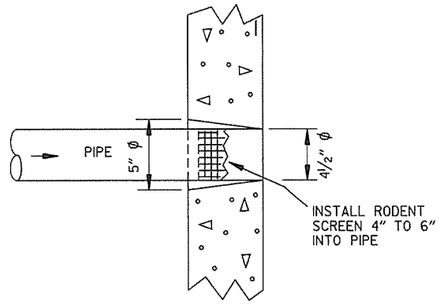
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

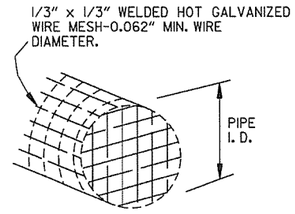
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



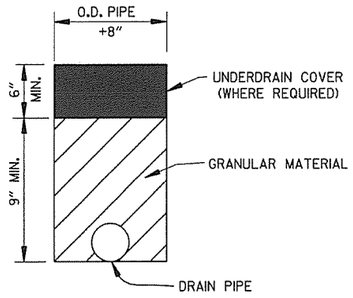
PLAN VIEW

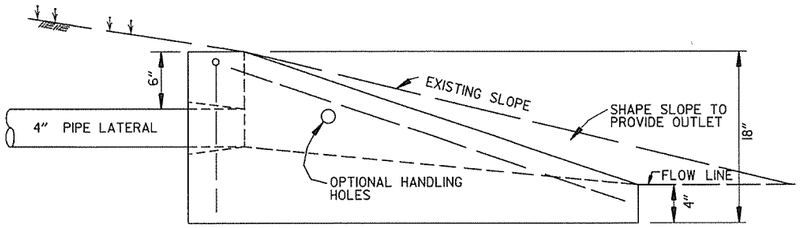


DETAIL OF HOLE FOR 4" PIPE

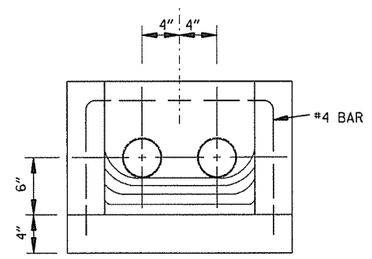


DETAIL OF RODENT SCREEN

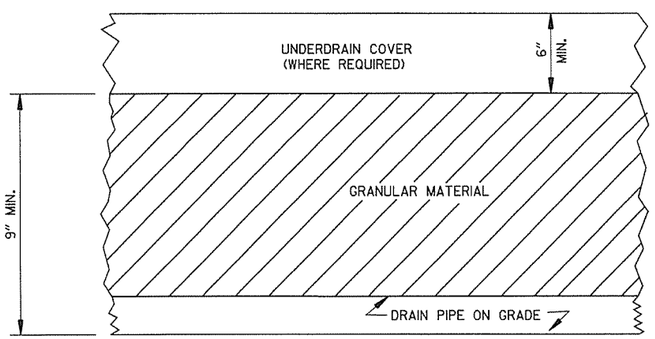




SIDE VIEW

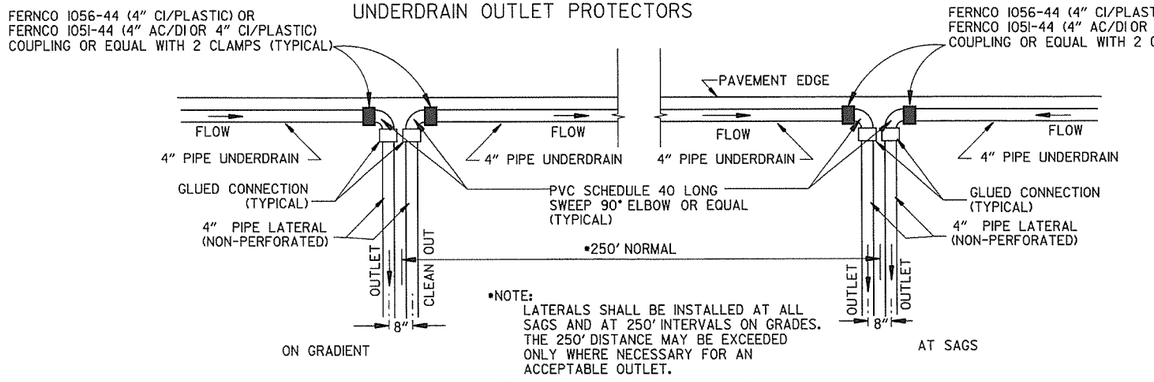


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

DATE	REVISION	DATE FILMED
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

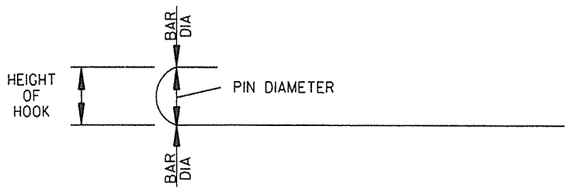
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

STEEL FABRICATION: REINFORCING STEEL FABRICATION SHALL CONFORM TO THE DIMENSIONS LISTED IN THE TABLE BELOW:

BAR SIZE	PIN DIAMETER	HOOK EXTENSION "K"
3	2¼"	4"
4	3 "	4½"
5	3¾"	5"
6	4½"	6"
7	5¼"	7"
8	6"	8"

IF THE OVERALL HEIGHT OF THE HOOK (SEE DIAGRAM BELOW) FOR A "b", "b1", "b2" or "b3" BENT BAR IS GREATER THAN THE CORRESPONDING TOP OR BOTTOM SLAB THICKNESS, LESS 2¾ INCHES, EACH BENT BAR SHALL BE REPLACED WITH ONE HOOKED BAR AND ONE STRAIGHT BAR, USING LENGTHS AS SHOWN IN THE TABLE BELOW. THE TWO BARS SHALL BE THE SAME DIAMETER AS, AND PLACED AT THE SAME SPACING AS, THE "b", "b1", "b2" OR "b3" BENT BARS THEY REPLACE.



NOTE: DIMENSIONS OF BARS ARE MEASURED OUT TO OUT OF BARS.

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

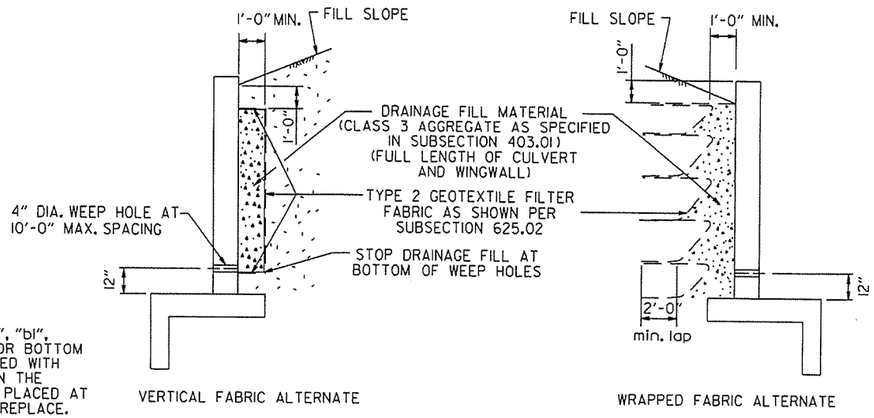
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

FOR SKEWED CULVERTS, THE REPLACEMENT STRAIGHT BAR MAY HAVE TO BE CUT IN FIELD TO FIT.

REPLACEMENT BAR LENGTHS TABLE

BAR SIZE: "b", "b1", "b2" OR "b3"	LENGTH OF HOOKED BAR	LENGTH OF STRAIGHT BAR
#4	L + 1' - 0"	SEE "c" BAR LENGTH
#5	L + 1' - 2"	SEE "c" BAR LENGTH
#6	L + 1' - 4"	SEE "c" BAR LENGTH
#7	L + 1' - 8"	SEE "c" BAR LENGTH
#8	L + 1' - 10"	SEE "c" BAR LENGTH
#9	L + 2' - 6"	SEE "c" BAR LENGTH

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI.

REINFORCING STEEL SHALL BE AASHTO M 31 OR M 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WINGWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDIARY TO THE BID ITEM, "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS.

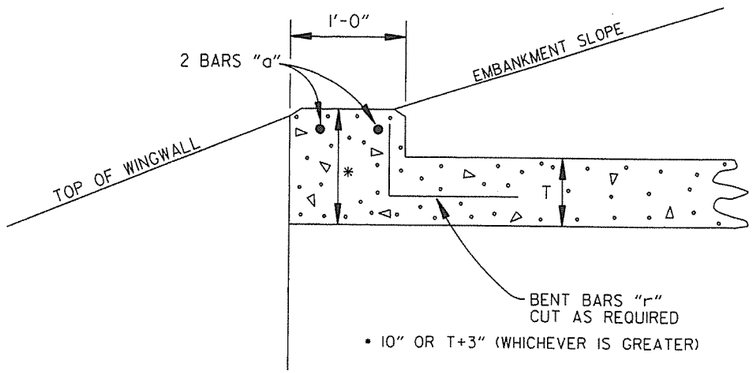
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE (CRSI) EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 ON PAGE 7-4 OF THE CRSI MANUAL SHALL BE MINUS ZERO TO PLUS ½ INCH.

WEEP HOLES IN BOX CULVERT WALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THERE SHALL BE A MINIMUM OF TWO (2) WEEP HOLES IN EACH WINGWALL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE WINGWALL FOOTING.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.



NOTE: FOR ALL SKEWED R.C. BOX CULVERTS THE LENGTH "K" OF THE MODIFIED HEADWALL SHALL BE EQUAL TO THE ROADWAY LENGTH "RL". THE ENDS OF THE HEADWALL SHALL BE CONSTRUCTED PARALLEL TO THE SKEW ANGLE OF THE BOX CULVERT.

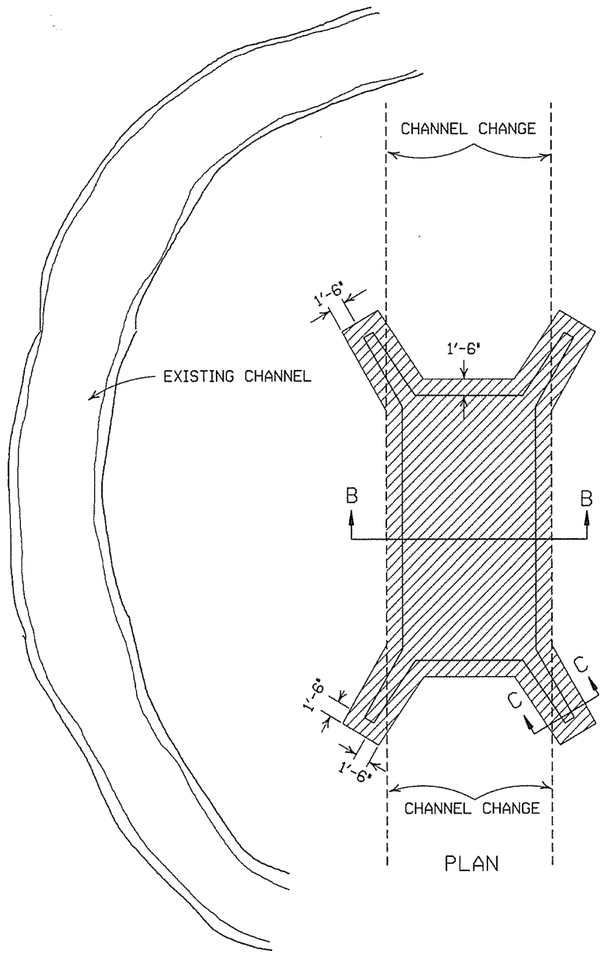
R.C. BOX CULVERT HEADWALL MODIFICATIONS

DATE	REVISION	DATE FILMED
7/26/12	REV. DRAINAGE FILL MATERIAL & DETAIL	
12/15/11	REQUIRE WEEP HOLES IN BOX CULVERT WALLS	
5-25-06	REV. GEN. NOTES AND DETAILS FOR WEEP HOLES; BAR DIAGRAM	
11-16-01	ADDED WINGWALL DRAINAGE DETAIL/EDITED GEN. NOTES	
10-18-96	REV. ASTM REF. TO AASHTO & ADDED BAR DIAGRAM	
10-12-95	MOVED SOLID SODDING DETAIL TO RCB-2	
6-2-94	ADDED SOLID SODDING PLAN DETAIL	
8-5-93	REVISED PIN DIAMETER TO SPECS.	
8-15-91	DRAWN AND ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

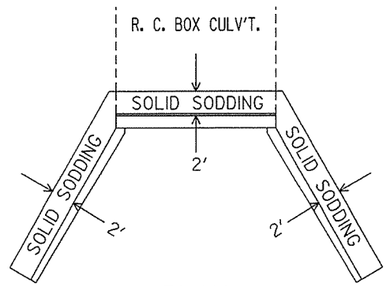
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

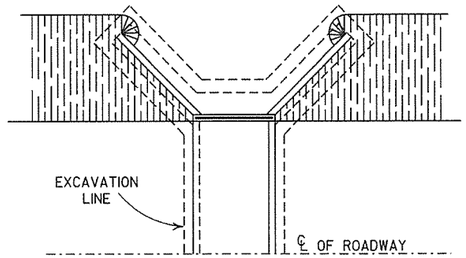
SOLID SODDING



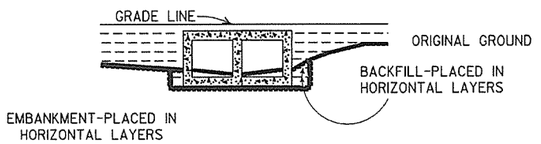
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

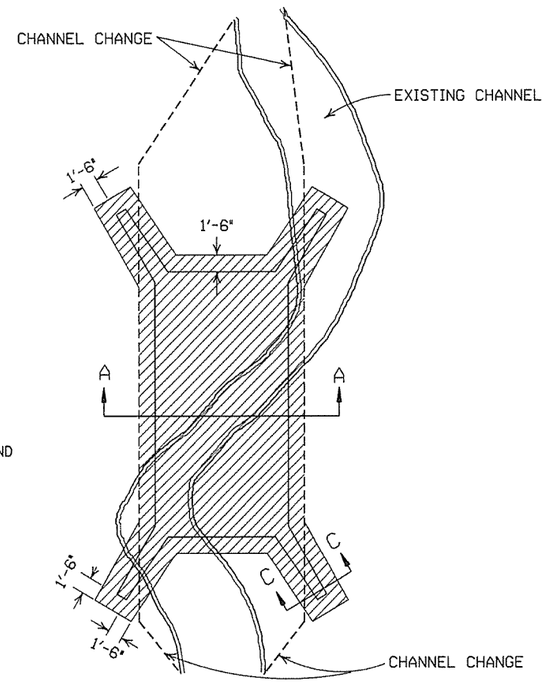


PLAN

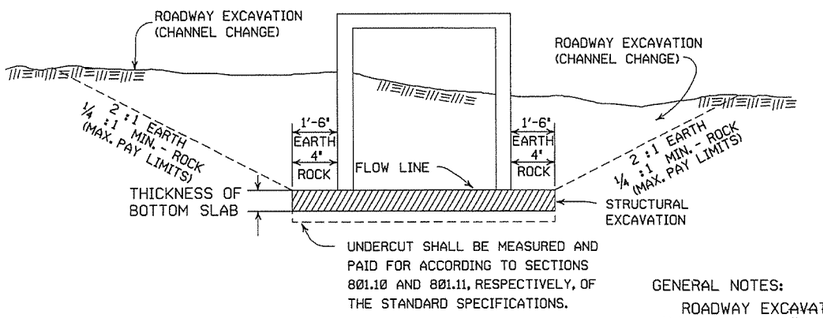


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

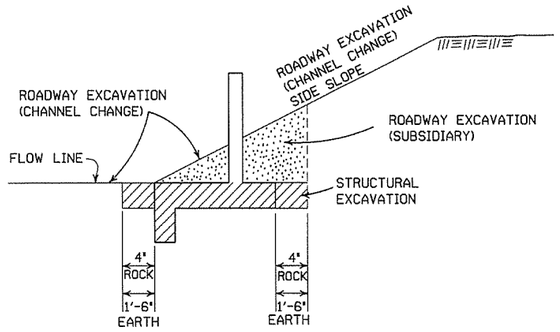


PLAN

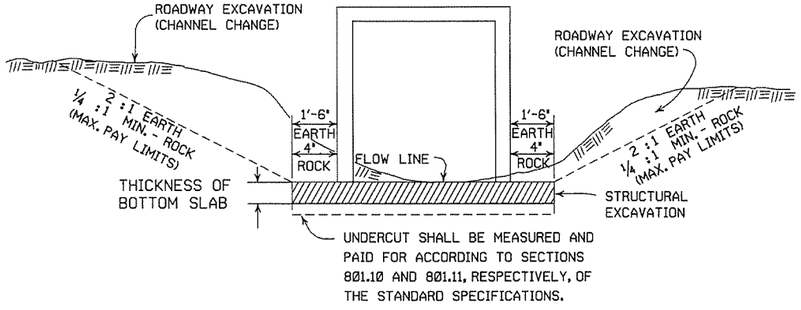


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

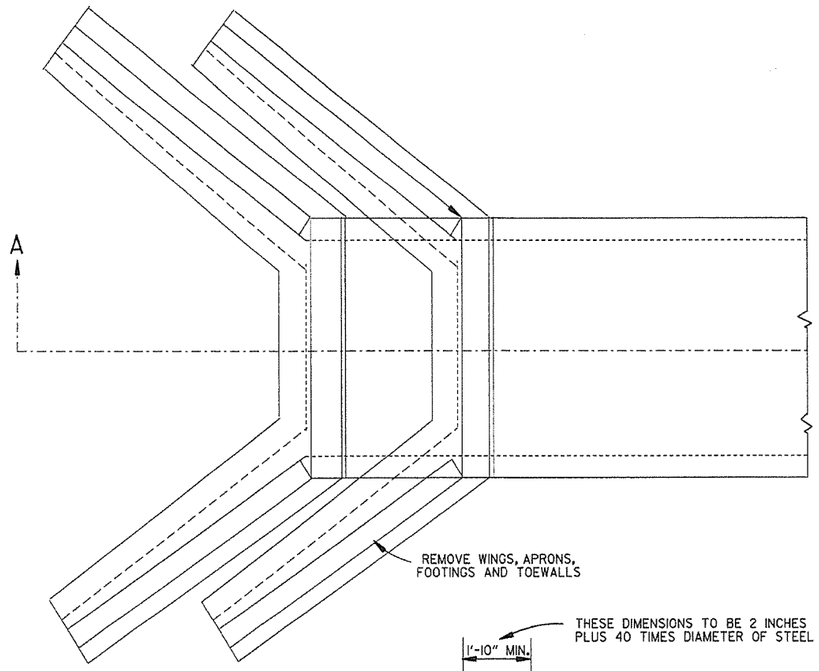
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

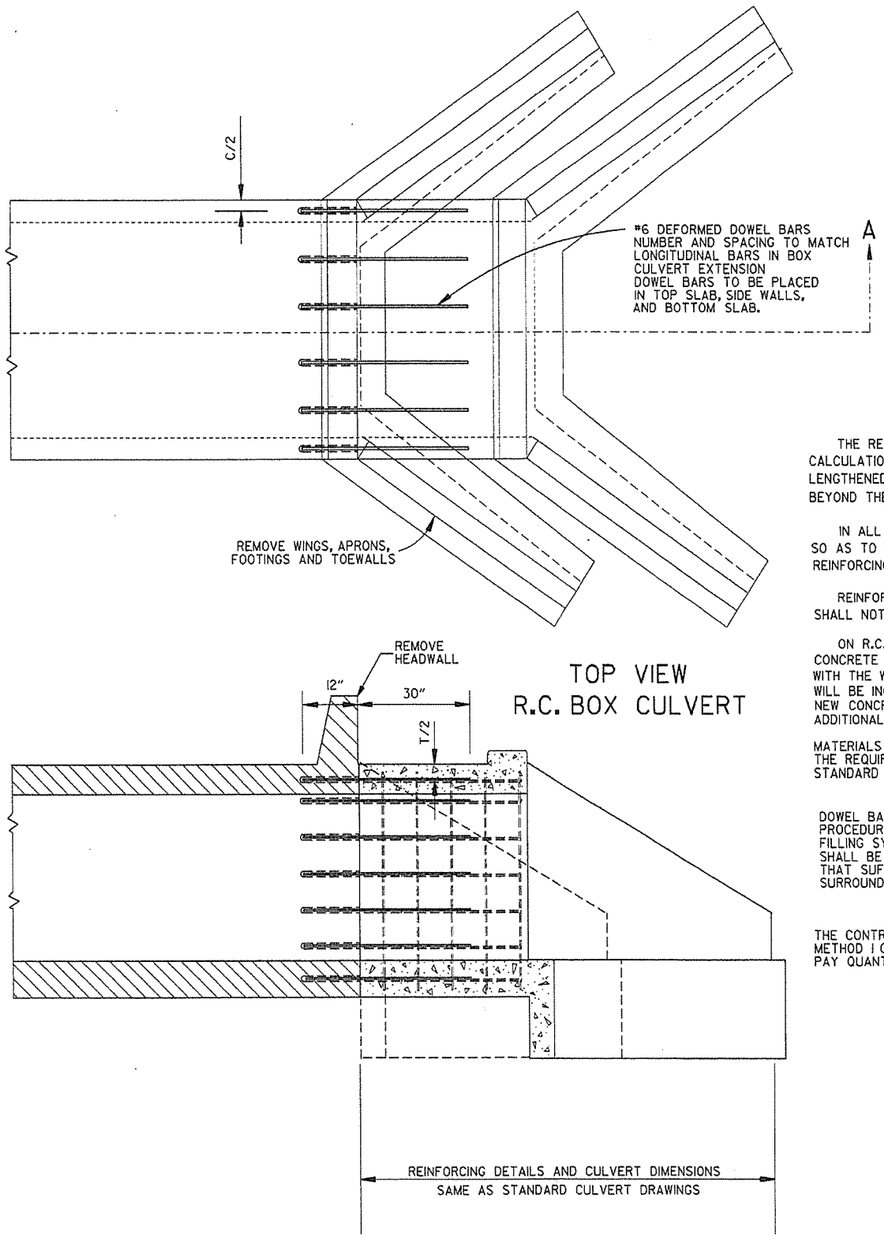
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER, AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

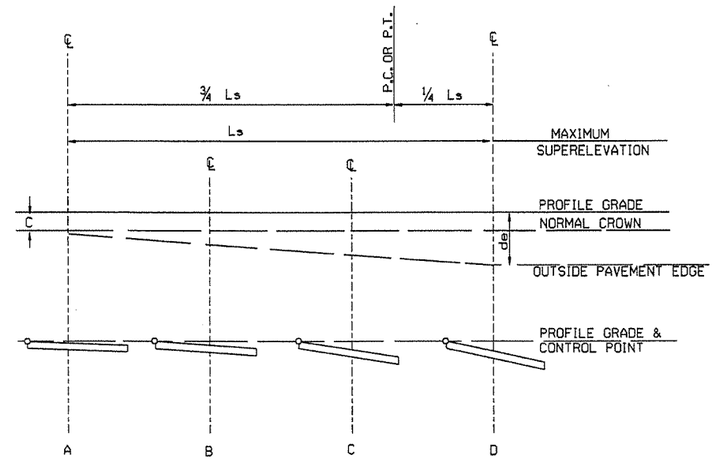
METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

SUPERELEVATION TABLE FOR ONE - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	65 MPH e	65 MPH Ls (FT) MINIMUM	65 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 30′	N. C.			N. C.			N. C.			N. C.			N. C.			N. C.			N. C.		
0° 45′	N. C.			N. C.			R. C.			0.022			0.023			0.025			0.028		
1° 00′	N. C.			N. C.			0.021			0.026			0.030			0.033	250		0.037	275	
1° 15′	N. C.			R. C.			0.026			0.032			0.037			0.041			0.046		
1° 30′	N. C.			0.021			0.031	200		0.037	225		0.043	250		0.048		350	0.054		350
1° 45′	N. C.			0.025	175		0.036			0.043		350	0.049		350	0.055			0.062		
2° 00′	R. C.			0.028			0.040			0.048			0.055			0.062			0.070		
2° 15′	R. C.			0.031			0.045			0.053			0.061			0.069	265		0.078	300	
2° 30′	0.021			0.034			0.049			0.058			0.067			0.075	280		0.085	315	400
2° 45′	0.023			0.037			0.053			0.063			0.072			0.081	300		0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.087	315		0.096	350	
3° 15′	0.027			0.043			0.061			0.072	245		0.082	275		0.090	325	400	0.098	360	450
3° 30′	0.029	150		0.046			0.065	205		0.076	255		0.086	285		0.095	340		0.100	360	
3° 45′	0.031		250	0.049			0.069	215		0.080	265		0.090	295	400	0.097	345				
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305		0.099	350				
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	400									
6° 00′	0.046			0.070	190		0.092	270		0.096	305										
6° 30′	0.050			0.074	200		0.095	280		0.100	315										
7° 00′	0.053			0.078	210		0.098	285	350												
7° 30′	0.056			0.081	215		0.099	290													
8° 00′	0.058			0.084	220	300	0.100	290													
8° 30′	0.061			0.087	225																
9° 00′	0.063			0.089	230																
10° 00′	0.068	160		0.094	235																
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																			
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	300																		
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 = 13° 15′ | D MAX = 8° 15′ | D MAX = 6° 30′ | D MAX = 5° 15′ | D MAX = 4° 15′ | D MAX = 3° 30′



ONE-WAY TRAFFIC
INSIDE LANE

SUPERELEVATION FORMULA = $S = -\frac{L(de-C)}{Ls} - C$

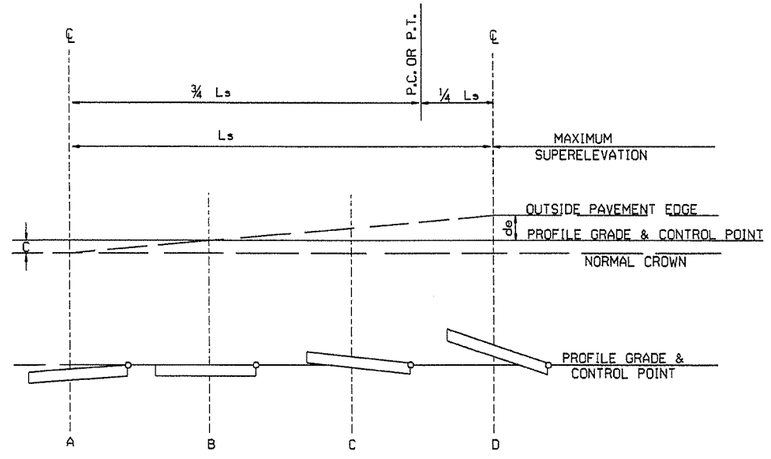
ABBREVIATIONS

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

GENERAL NOTES

1. ON PAVEMENT WITH ONE-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE PROFILE GRADE POINT.
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR Ls MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. MINIMUM Ls VALUES MAY BE USED FOR RAMPS; DESIRABLE VALUES SHALL APPLY TO MAIN LANES.
5. DIVIDED PAVEMENTS WIDER THAN 4 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLOWS:

6 LANE DIVIDED---------+20%
8 LANE DIVIDED---------+50%



ONE-WAY TRAFFIC
OUTSIDE LANE

SUPERELEVATION FORMULA = $S = +\frac{L(de+C)}{Ls} - C$

01-09-87 DATE	ISSUED REVISION	578-1-15-87 DATE FILMED

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

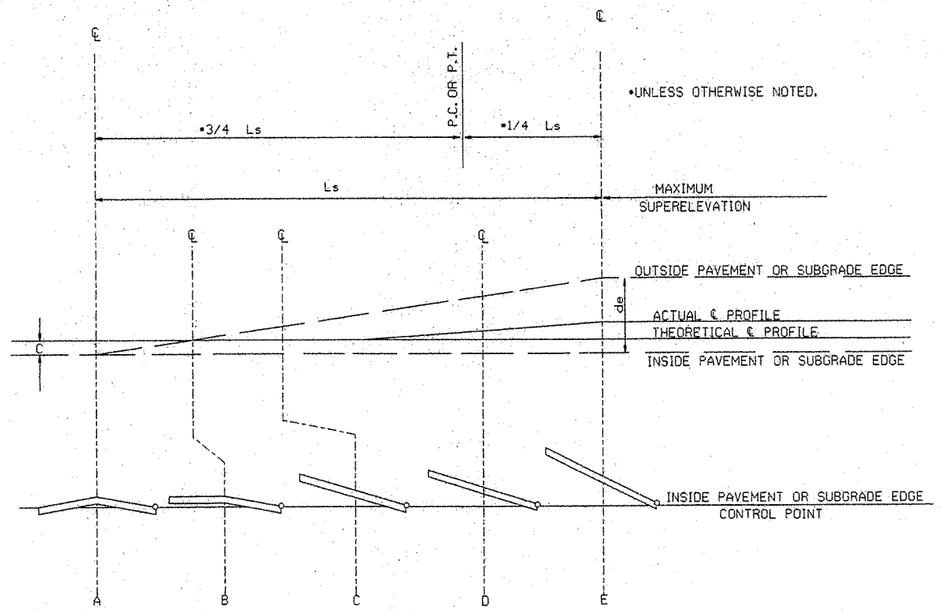
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) 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.			N.C.		
0° 45′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
1° 00′	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 15′	N.C.			R.C.			0.021			0.026			0.030			0.037	275	300
1° 30′	N.C.			0.021			0.026			0.032			0.037			0.046		
1° 45′	N.C.			0.025			0.031	200		0.037	225		0.043	250		0.054		
2° 00′	R.C.			0.028	175		0.036			0.043		300	0.049		300	0.062		
2° 15′	R.C.			0.031			0.040			0.048			0.055			0.070		
2° 30′	0.021			0.034			0.045		250	0.053			0.061			0.078	300	350
2° 45′	0.023			0.037		200	0.049			0.056			0.067			0.085	315	
3° 00′	0.025	150		0.040			0.057			0.063			0.072			0.091	335	
3° 15′	0.027			0.043			0.061			0.067	230		0.077	260		0.096	350	
3° 30′	0.029		200	0.046			0.065	205		0.072	245		0.082	275		0.098	360	400
3° 45′	0.031			0.049			0.069	215		0.076	255		0.086	285		0.100	360	
4° 00′	0.033			0.051			0.072	225		0.080	265		0.090	295				
4° 30′	0.037			0.056			0.078	240		0.083	270		0.093	305	350			
5° 00′	0.040			0.061			0.083	250		0.087	280		0.096	315				
5° 30′	0.043			0.066	185		0.088	260		0.091	295	350	0.098	320				
6° 00′	0.046			0.070	190		0.092	270		0.094	300							
6° 30′	0.050			0.074	200		0.095	280	300	0.096	305							
7° 00′	0.053			0.078	210		0.098	285		0.100	315							
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	235													
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																
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 = 13° 15′ | 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.

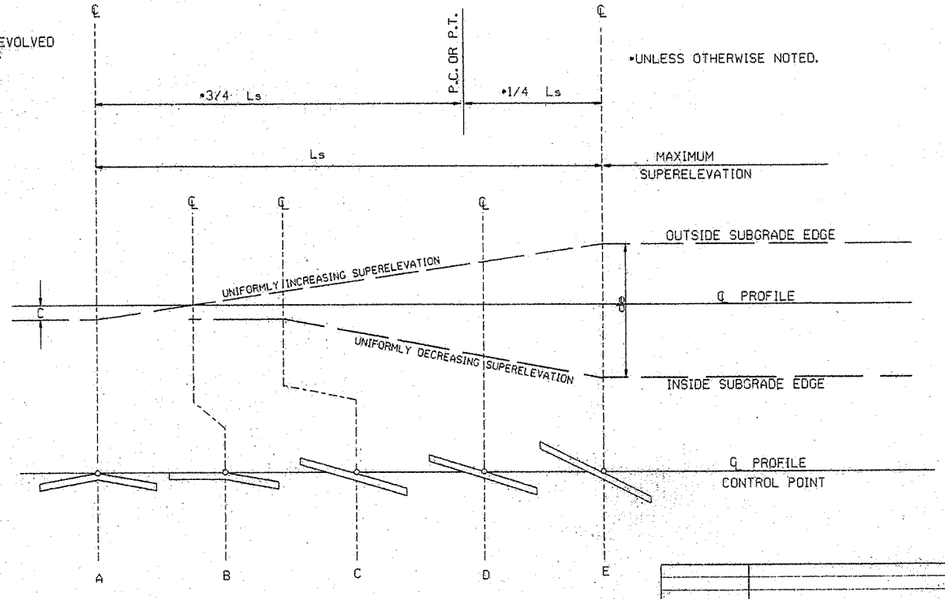
GENERAL NOTES

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

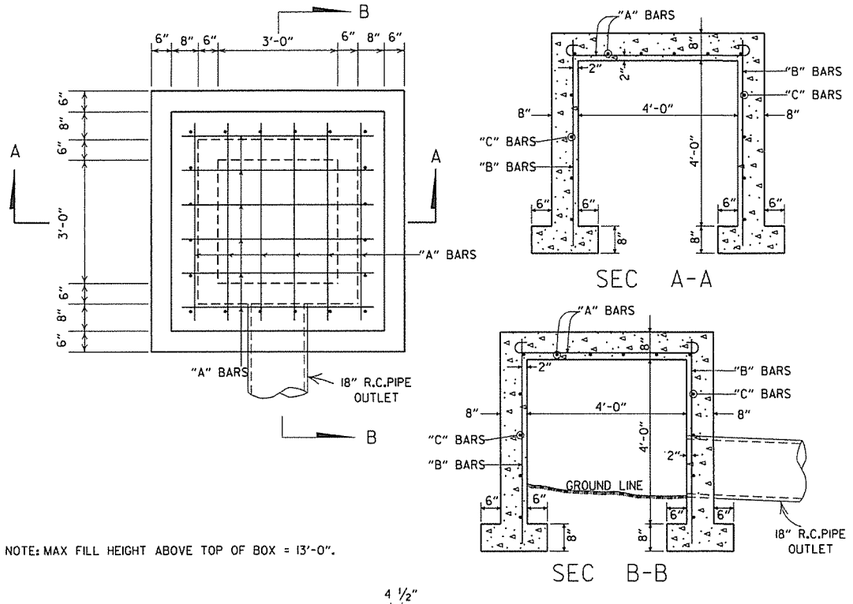
SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
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

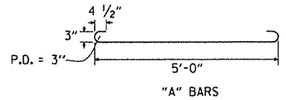


NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

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



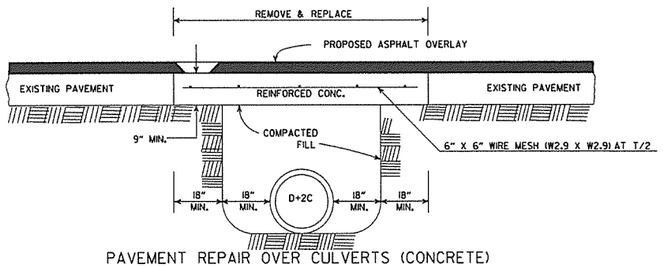
QUANTITIES

CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

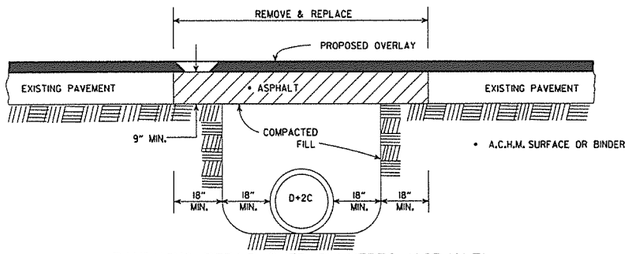
GENERAL NOTE:

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



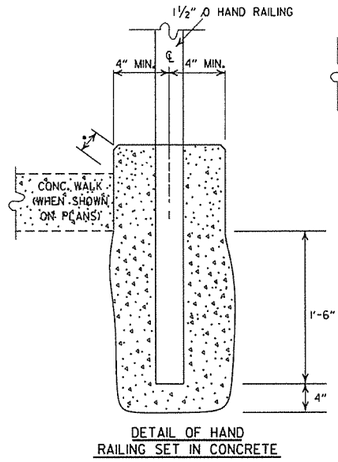
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



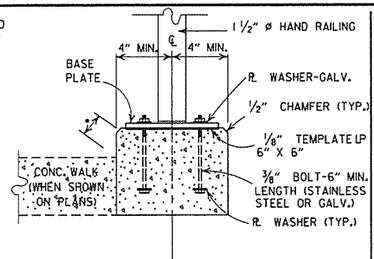
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

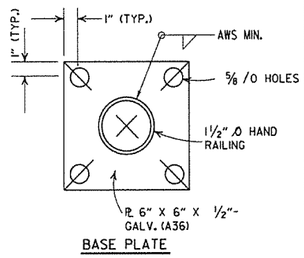
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

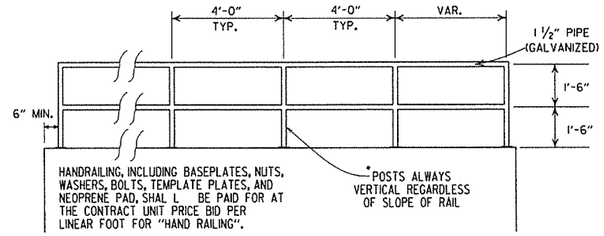


POST CONNECTION TO WALL

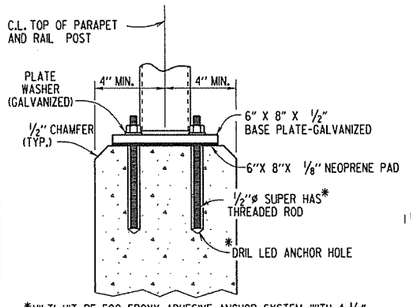


BASE PLATE

POST CONNECTION DETAILS



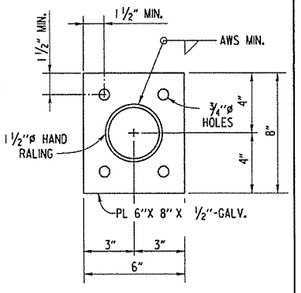
HAND RAILING SHAL L CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHAL L BE INSTAL LED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

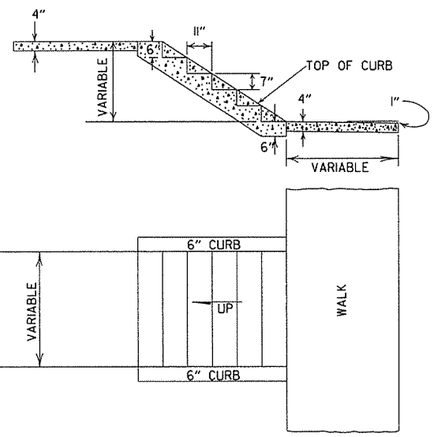
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
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

ARKANSAS STATE HIGHWAY COMMISSION

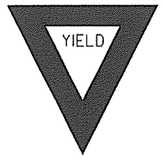
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1

R1-1

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5A

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5C

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

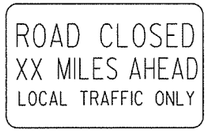
R5-1

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

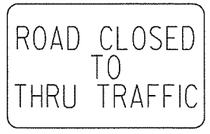
48"X30"

RII-3A



60"X30"

RII-4

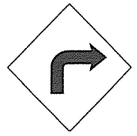


60"X30"

RSP-1

48"X30"

WI-1



STD. 36"X36"
FWY. 48"X48"

WI-2

STD. 36"X36"
FWY. 48"X48"

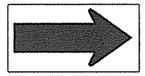
WI-3

STD. 48"X48"

WI-4

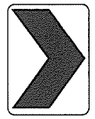
STD. 48"X48"

WI-6



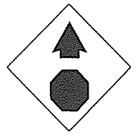
STD. 48"X24"
SPECIAL 60"X30"

WI-8



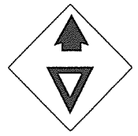
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



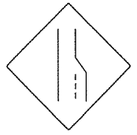
STD. 36"X36"
SPECIAL 48"X48"

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"

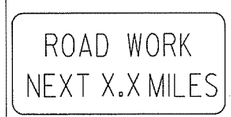
W8-11

STD. 36"X36"
FWY. 48"X48"

W8-9

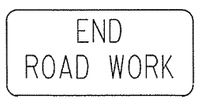
STD. 36"X36"
FWY. 48"X48"

G20-1



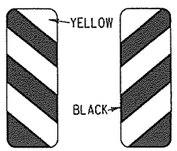
60"X24"

G20-2



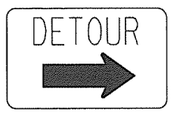
48"X24"

OM-3L OM-3R



12"X36"

M4-9



STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1

FINES DOUBLE
IN WORK ZONES *

WHEN WORKERS
ARE PRESENT **

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.

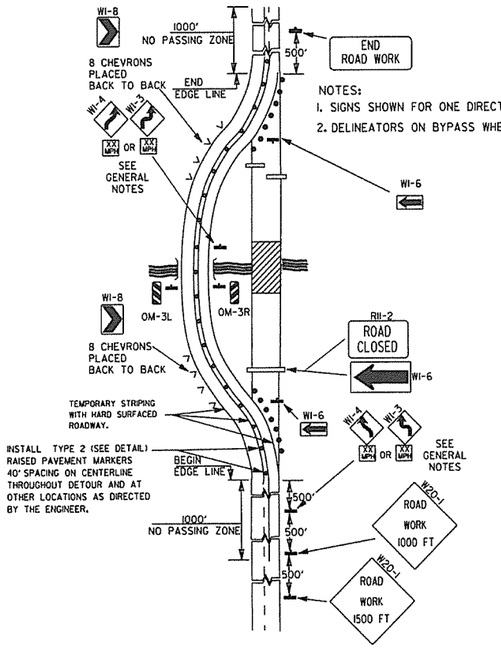
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

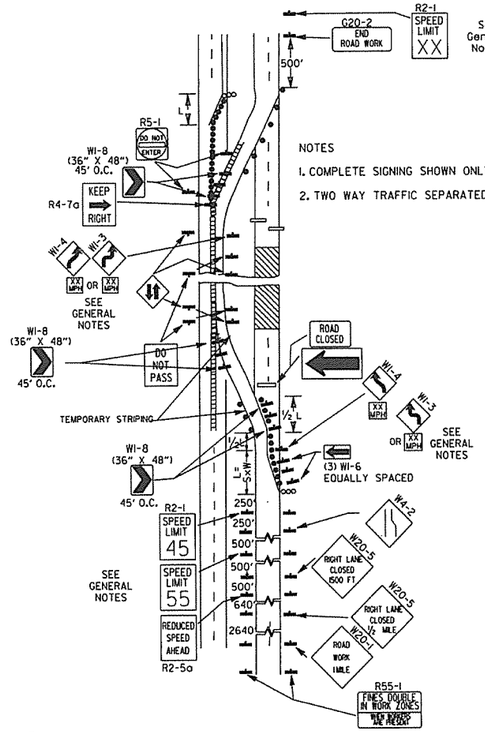
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



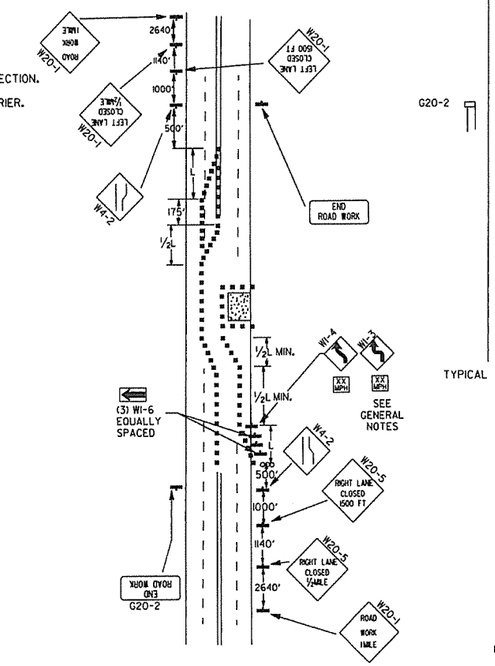
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

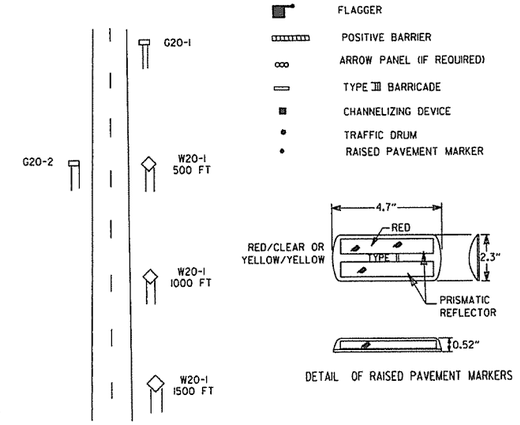


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

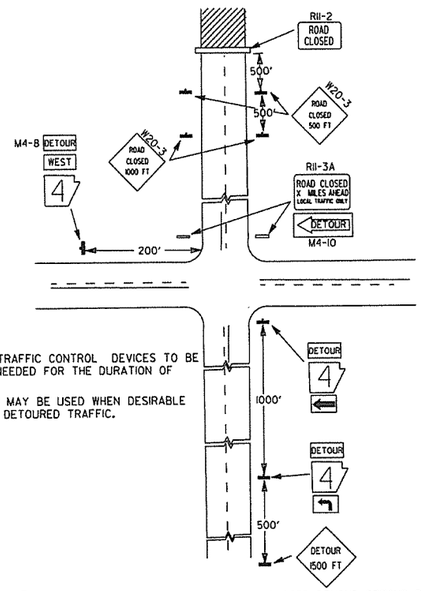
(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



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

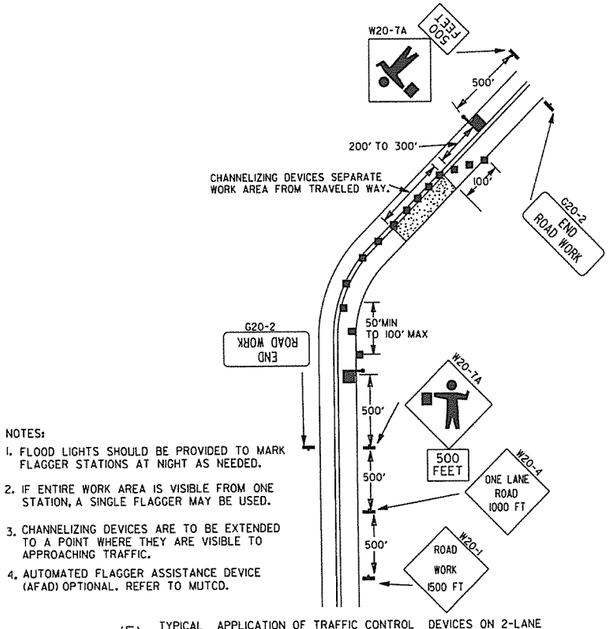


TYPICAL ADVANCE WARNING SIGN PLACEMENT



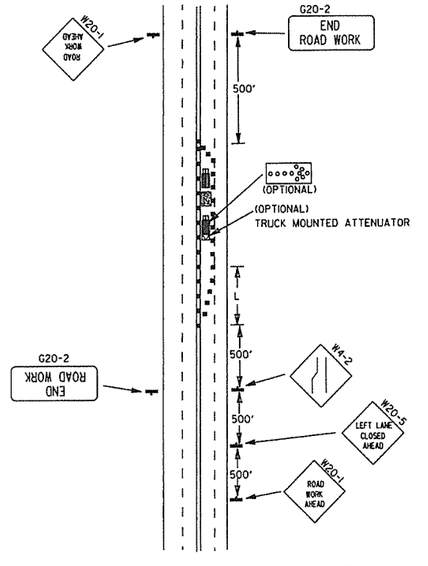
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



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

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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:

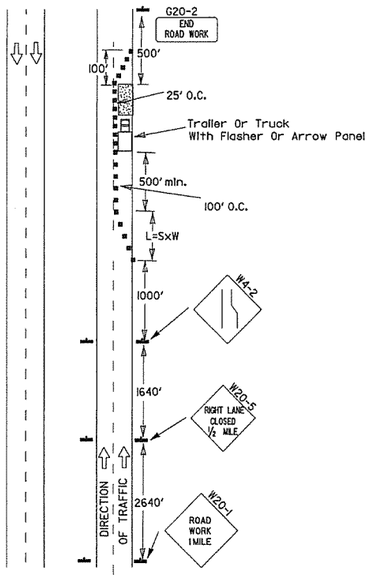
1. ADVISORY SPEED POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-9-10	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 WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

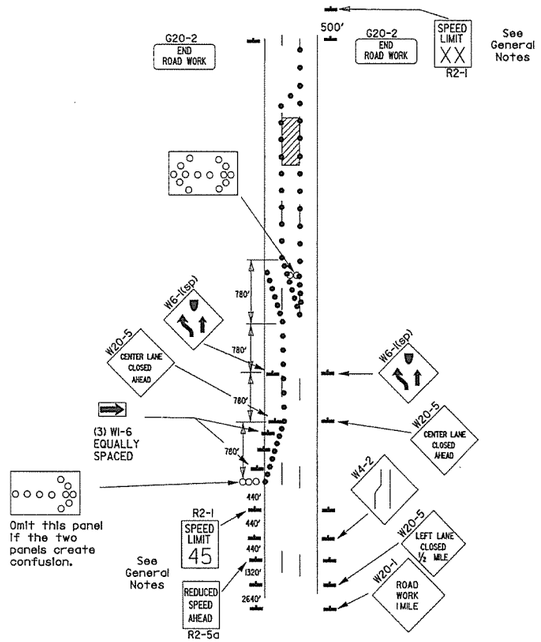
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

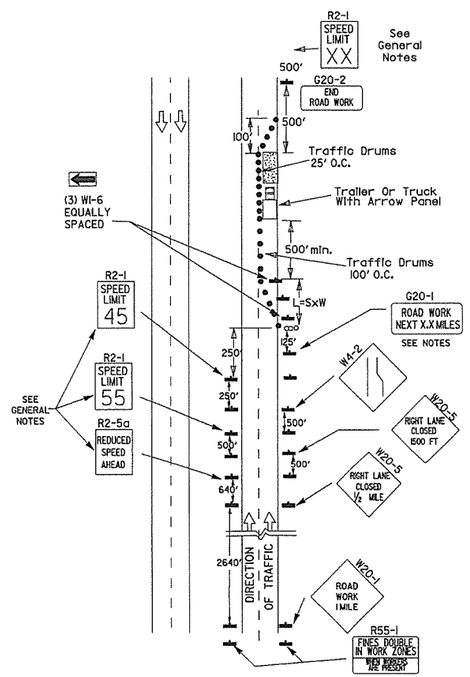
STANDARD DRAWING TC-2



(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.

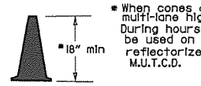
KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

GENERAL NOTES:

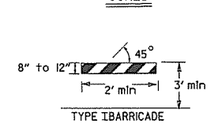
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of 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

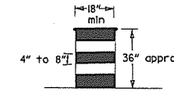


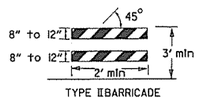
* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

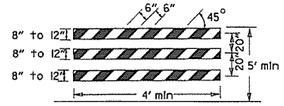
CONES



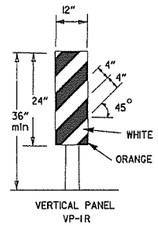
PLASTIC DRUM







NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



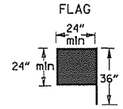
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

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.

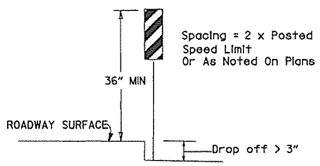
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

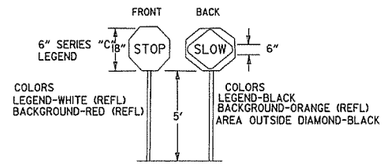


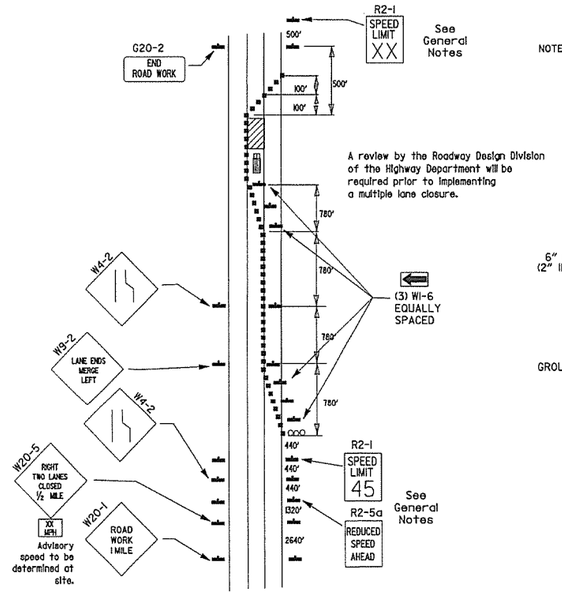
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



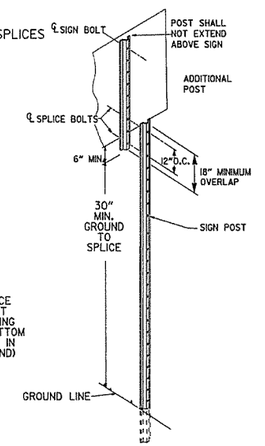
STOP SLOW PADDLE





(D) Typical application - closing multiple lanes of a multilane highway.

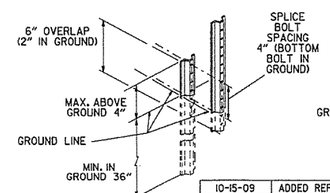
DETAIL OF SPLICES



NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

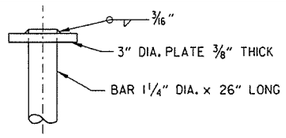
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

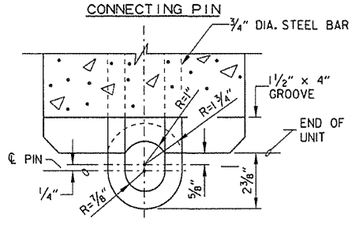
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", 90°, 3 3/8" R, LIFTING HOLE
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9"; 2 3/16" R, 12°, 4 3/8", 2'-1 3/8", 1 1/2", 9"

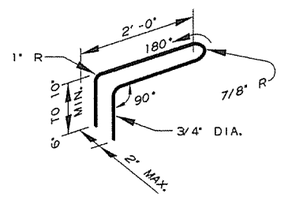


CONNECTING PIN

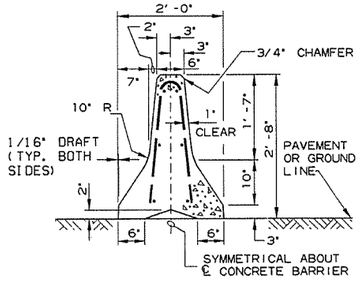


SECTION E-E

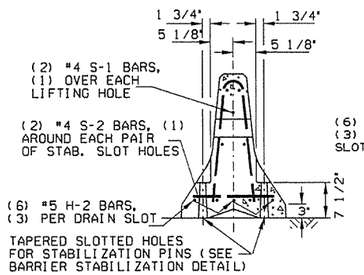
CONNECTION DETAILS



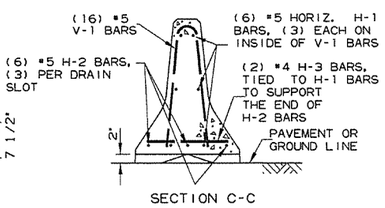
CONNECTION LOOP



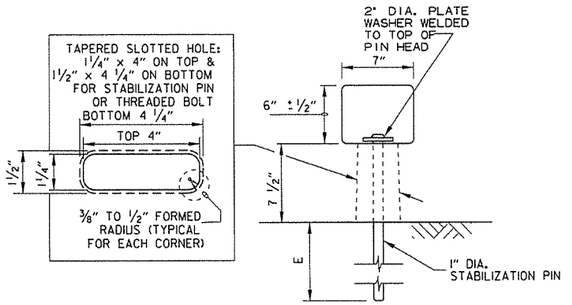
SECTION A-A



SECTION B-B



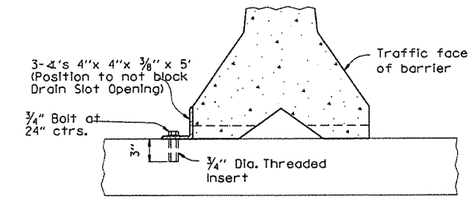
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

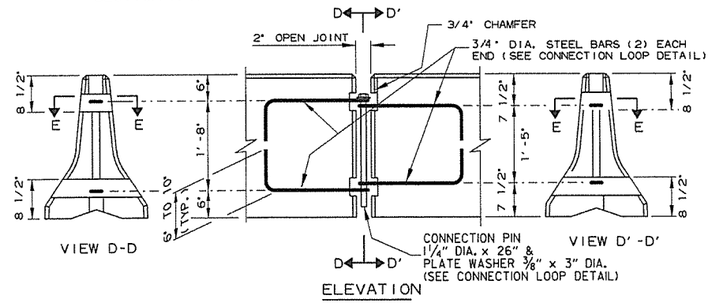
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



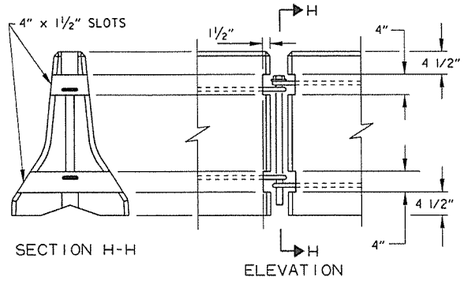
NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

BRIDGE DECKS



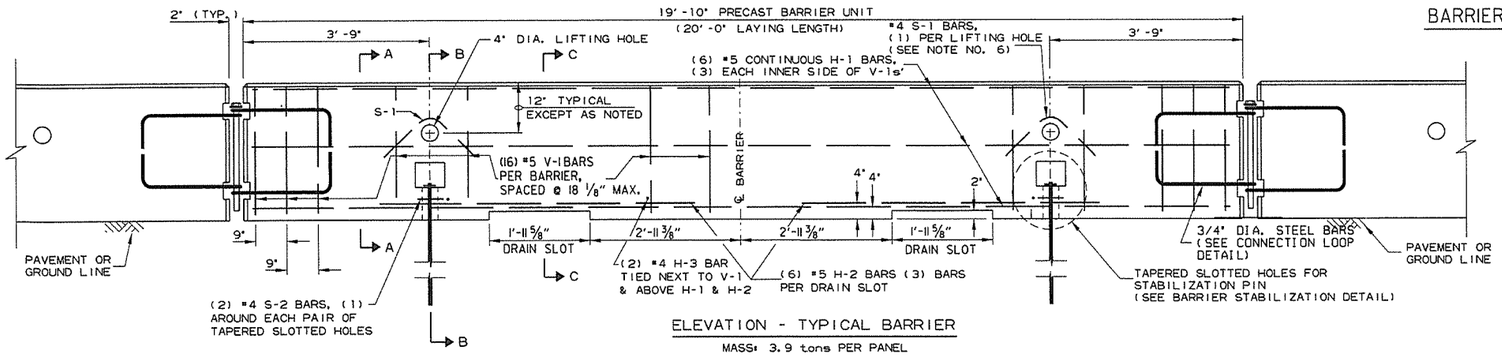
ELEVATION



SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements;
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

(3) Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

(4) Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

(5) Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

(6) A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

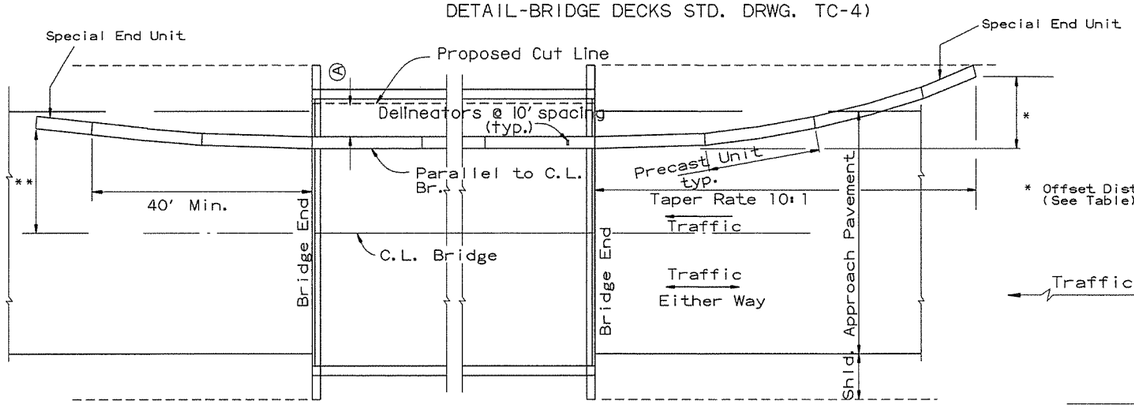
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02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

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

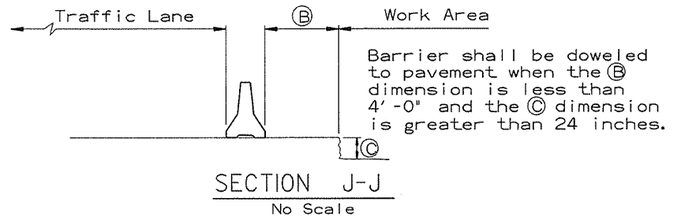
STANDARD DRAWING TC-4

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



BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

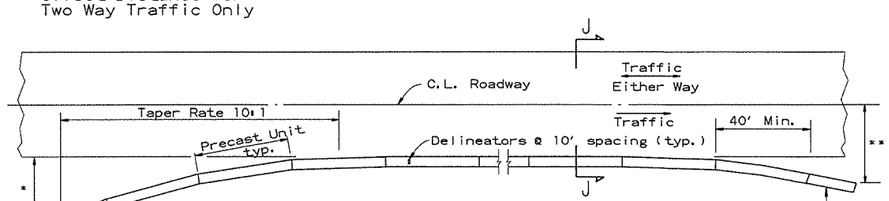


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

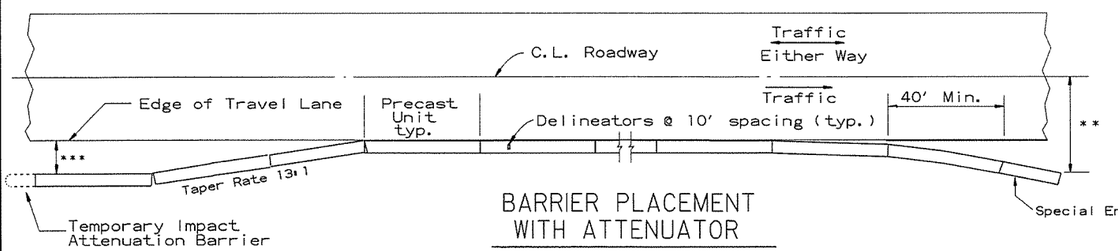
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see 'Barrier Placement With Attenuator' Detail shown below.

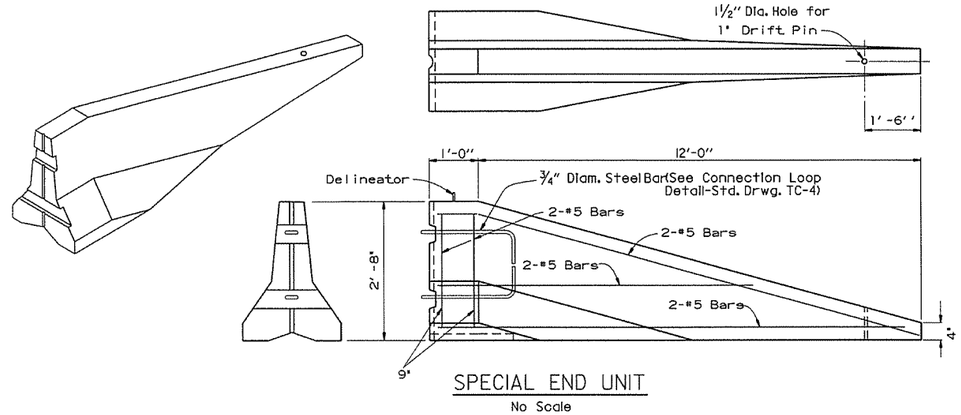


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

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



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

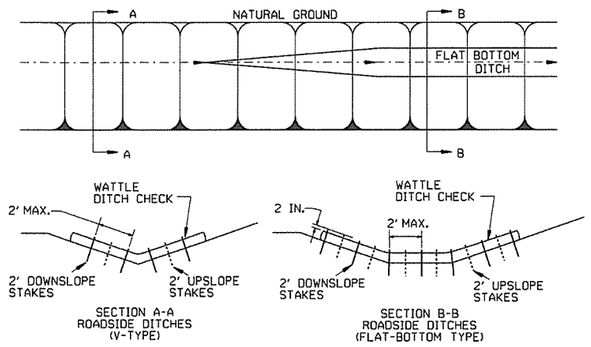
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

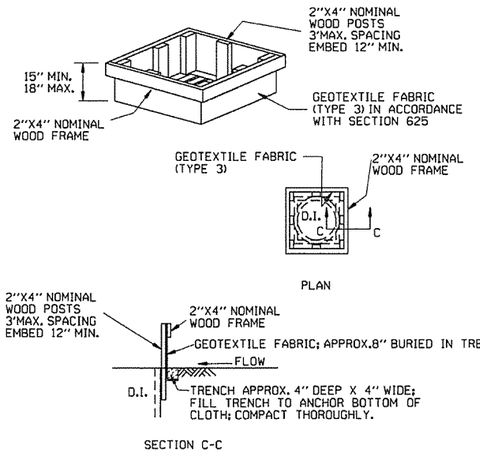
STANDARD DRAWING TC-5

GENERAL NOTES

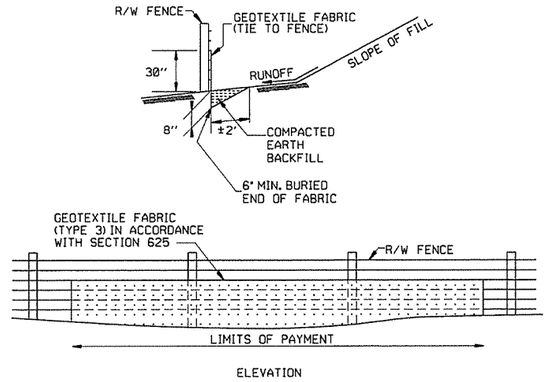
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

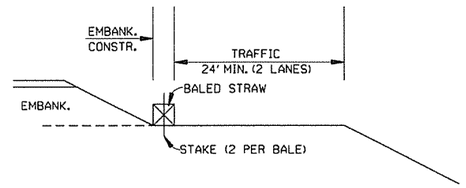
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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.

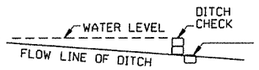
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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.

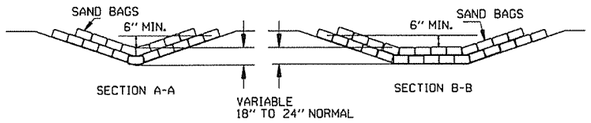


BALED STRAW FILTER BARRIER (E-2)

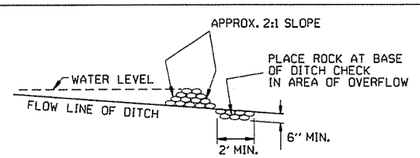
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

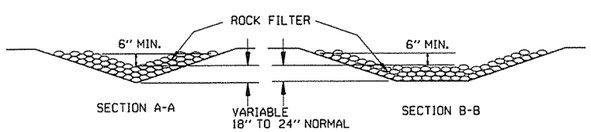


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW

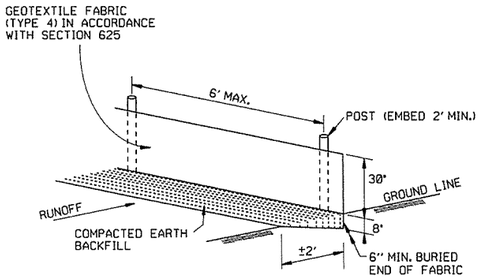


SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

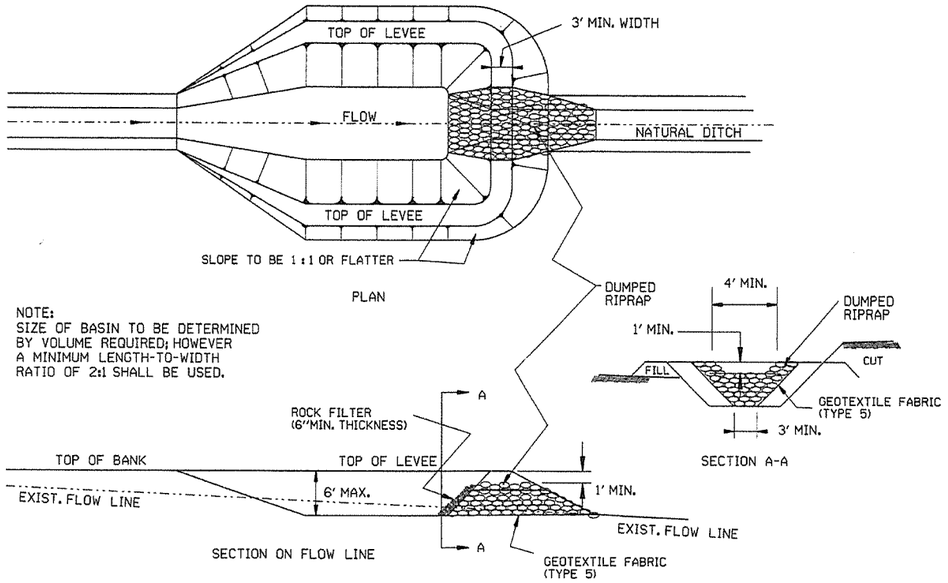
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1,4.7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

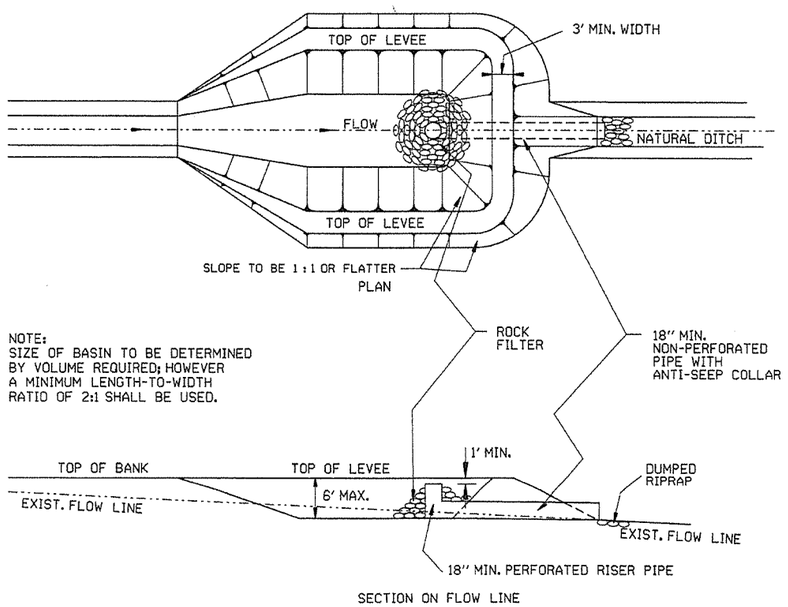
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

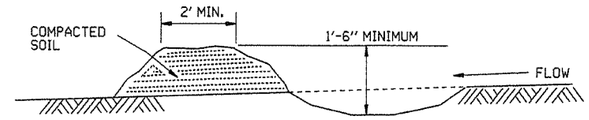
STANDARD DRAWING TEC-1



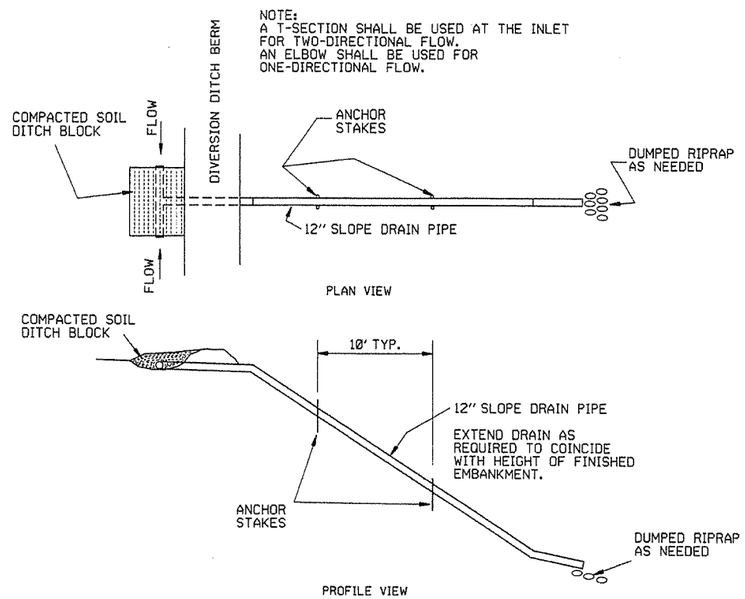
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



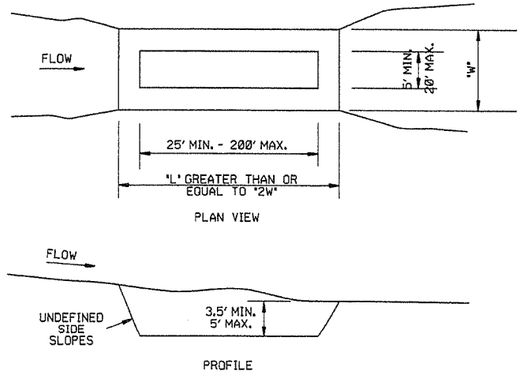
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

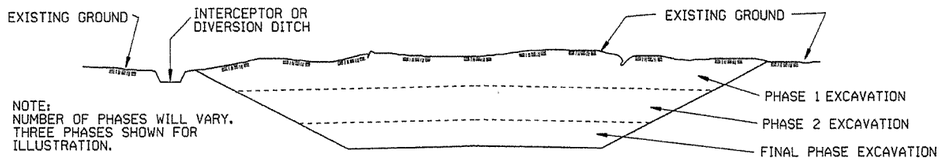
STANDARD DRAWING TEC-2

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



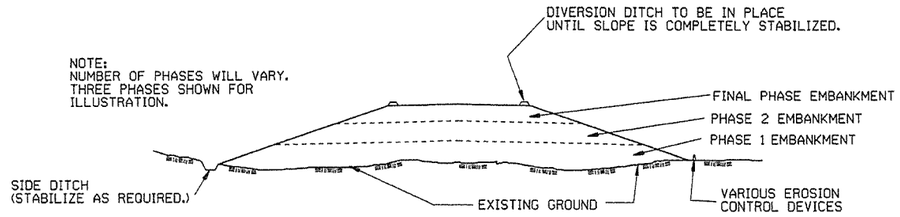
GENERAL NOTE

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.

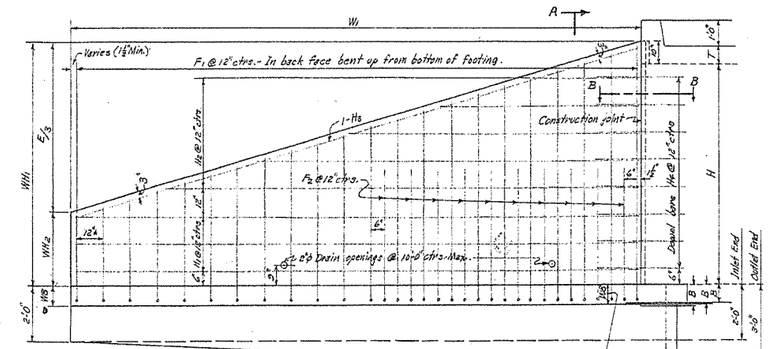
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

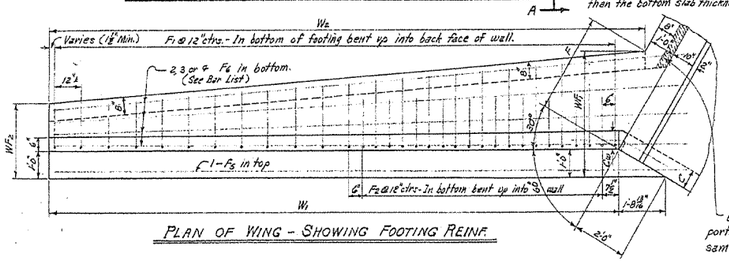
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

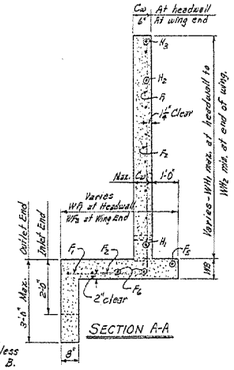
FED. ROAD NO.	STATE	FED. AID PROJECT	SHEET NO.	TOTAL SHEETS
	ARK.		162	
JOB NO.				



REAR ELEVATION OF WING - SHOWING BACK FACE REINF.



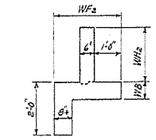
PLAN OF WING - SHOWING FOOTING REINF.



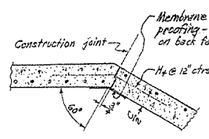
SECTION A-A

WB may be more, equal to, or less than the bottom slab thickness B.

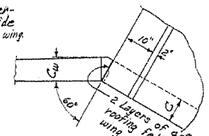
When B is more than WB, the shaded portion of the apron shall be made the same thickness as the barrel base B.



END VIEW OF WING



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

Note:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTINGS	THICKNESS OF WING AT HEADWALL	WINGWALL HEIGHTS		WIDTHS OF WING FOOTINGS		PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HEADWALL TO END OF WING	LENGTH OF WINGWALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE	
			AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING					INLET END	OUTLET END
H	WB	Cw	WH1	WH2	WF1	WF2	F	E	W1	W2	Cu.YD.	Cu.YD.
2'	7"	6"	2'-10"	2'-8"	2'-9"	2'-0"	0'-11½"	6'-6"	7'-6"	7'-1½"	0.889	0.986
3'	7"	6"	3'-10"	3'-0"	2'-8"	2'-1½"	1'-4⅜"	8'-6"	9'-10⅜"	9'-7½"	1,338	1.466
4'	7"	6"	4'-10"	3'-0"	2'-8"	2'-3"	1'-9"	10'-6"	12'-1⅝"	12'-1½"	1,668	2.027
5'	7"	6"	5'-10"	3'-0"	2'-8"	2'-4½"	2'-1⅜"	12'-6"	14'-5¾"	14'-7⅛"	2.278	2.668
		7"	5'-11"	3'-0"	3'-0"	2'-5½"	2'-1⅜"	12'-6"	14'-5⅞"	14'-7⅛"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6½"	14'-6"	16'-9"	17'-1⅝"	3.440	3.661
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6½"	14'-6"	16'-9"	17'-1⅝"	3,511	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6½"	14'-6"	16'-9"	17'-1⅝"	3.582	3.803
7'	8½"	7½"	7'-10"	2'-8"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-8⅝"	9.505	9.758
		8"	7'-10"	2'-6"	4'-2"	2'-7½"	3'-1⅛"	16'-6"	19'-0⅝"	19'-8⅝"	9.597	9.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-3⅝"	18'-6"	21'-4⅝"	22'-1⅝"	5,761	6.049

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.

APRON DIMENSION W3

W3 = (OW - 2F)

CLEAR SPAN	CLEAR HEIGHT	2 × FOOTING DIMENSION	SINGLE BARREL CULVERT		DOUBLE BARREL CULVERT		TRIPLE BARREL CULVERT		QUADRUPLE BARREL CULVERT		QUINTUPLE BARREL CULVERT	
			OW	W3	OW	W3	OW	W3	OW	W3	OW	W3
S	H	2F										
4'	2'	1'-11½"	5'-0"	3'-0½"	9'-8"	7'-8½"	14'-4"	12'-4½"	19'-0"	17'-0½"	23'-8"	21'-8½"
	3'	2'-8⅝"	5'-0"	2'-3¾"	9'-8"	8'-1⅛"	14'-4"	11'-7⅝"	19'-0"	16'-3⅛"	23'-8"	20'-11⅝"
	4'	3'-6"	5'-0"	1'-6"	9'-8"	6'-2"	14'-4"	10'-10"	19'-0"	15'-6"	23'-8"	20'-2"
	5"	4'-3⅜"	5'-0"	0'-8½"	9'-8"	5'-4⅜"	14'-4"	10'-0⅜"	19'-0"	14'-8⅜"	23'-8"	19'-8⅜"
	6'	5'-0⅞"	5'-2"	0'-1½"	9'-11"	4'-10⅛"	14'-9"	9'-7⅝"	19'-5"	14'-0⅛"	24'-2"	19'-1⅝"
5'	3'	2'-8⅝"	6'-0"	3'-3¾"	11'-8"	8'-1⅛"	17'-4"	14'-7⅝"	23'-0"	20'-3⅛"	28'-8"	25'-11⅝"
	4'	3'-6"	6'-0"	2'-6"	11'-8"	8'-2"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-3⅜"	6'-0"	1'-8½"	11'-8"	7'-6⅜"	17'-4"	13'-0⅜"	23'-0"	18'-8⅜"	28'-8"	24'-8⅜"
	6'	5'-0⅞"	6'-2"	1'-1½"	11'-11"	6'-10⅛"	17'-8"	12'-7⅝"	23'-5"	18'-0⅛"	29'-2"	24'-1⅝"
	7'	6'-2⅝"	6'-3"	0'-0½"	12'-1"	5'-10⅝"	17'-11"	11'-8½"	23'-9"	17'-1⅝"	29'-7"	23'-4½"
6'	3'	2'-8⅝"	7'-0"	4'-3½"	13'-8"	10'-1⅛"	20'-4"	17'-7⅝"	27'-0"	24'-3⅛"	33'-8"	30'-11⅝"
	4'	3'-6"	7'-0"	3'-6"	13'-8"	10'-2"	20'-4"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-3⅜"	7'-0"	2'-8⅜"	13'-9"	9'-6⅜"	20'-4"	16'-0⅜"	27'-0"	22'-8⅜"	33'-8"	29'-8⅜"
	6'	5'-0⅞"	7'-2"	2'-1½"	13'-11"	8'-10⅛"	20'-8"	15'-7⅝"	27'-5"	22'-0⅛"	34'-2"	29'-1⅝"
	7'	6'-2⅝"	7'-3"	1'-0½"	14'-1"	7'-10⅝"	20'-11"	14'-8½"	27'-9"	21'-1⅝"	34'-7"	28'-4½"
	8'	7'-4"	7'-4"	0'-0"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-6"	34'-8"	27'-10"
7'	4'	3'-6"	8'-0"	4'-6"	15'-8"	12'-2"	23'-4"	19'-10"	31'-0"	27'-6"	38'-8"	35'-2"
	5'	4'-3⅜"	8'-0"	3'-8½"	15'-8"	11'-4⅜"	23'-4"	19'-0⅜"	31'-0"	26'-8⅜"	38'-8"	34'-8⅜"
	6'	5'-0⅞"	8'-2"	3'-1½"	15'-11"	10'-10⅛"	23'-8"	18'-7⅝"	31'-5"	26'-0⅛"	39'-2"	34'-1⅝"
	7'	6'-2⅝"	8'-3"	2'-0½"	16'-1"	9'-10⅝"	23'-11"	17'-8½"	31'-9"	25'-1⅝"	39'-7"	33'-4½"
	8'	7'-4"	8'-4"	1'-0"	16'-2"	8'-10"	24'-0"	16'-8"	31'-10"	24'-6"	39'-8"	32'-10"
8'	4'	3'-6"	9'-0"	5'-6"	17'-8"	14'-2"	26'-4"	22'-10"	35'-0"	31'-6"	43'-8"	40'-2"
	5'	4'-3⅜"	9'-2"	4'-10⅜"	17'-11"	13'-7⅜"	26'-8"	22'-0⅜"	35'-5"	31'-1⅜"	44'-2"	39'-10⅜"
	6'	5'-0⅞"	9'-2"	4'-1½"	17'-11"	12'-10⅛"	26'-8"	21'-1⅝"	35'-5"	30'-1⅛"	44'-2"	39'-1⅝"
	7'	6'-2⅝"	9'-3"	3'-0½"	18'-1"	11'-10⅝"	26'-11"	20'-0½"	35'-9"	29'-1⅝"	44'-7"	38'-4½"
	8'	7'-4"	9'-4"	2'-0"	18'-2"	10'-10"	27'-0"	19'-8"	35'-10"	28'-6"	44'-8"	37'-10"
9'	5'	4'-3⅜"	10'-2"	5'-10⅜"	19'-11"	15'-7⅜"	29'-8"	25'-10⅜"	39'-5"	35'-1⅜"	49'-2"	44'-10⅜"
	6'	5'-0⅞"	10'-3"	5'-1½"	20'-1"	15'-0⅛"	29'-11"	24'-10⅝"	39'-9"	34'-3⅛"	49'-7"	44'-1⅝"
	7'	6'-2⅝"	10'-3"	4'-0½"	20'-1"	13'-10⅝"	29'-11"	23'-8½"	39'-9"	33'-1⅝"	49'-7"	43'-4½"
	8'	7'-4"	10'-4"	3'-0"	20'-2"	12'-10"	30'-0"	22'-8"	39'-10"	32'-6"	49'-8"	42'-10"
10'	5'	4'-3⅜"	11'-2"	6'-10⅜"	21'-11"	17'-7⅜"	32'-8"	28'-10⅜"	43'-5"	39'-1⅜"	54'-2"	49'-10⅜"
	6'	5'-0⅞"	11'-3"	6'-2⅛"	22'-1"	17'-0⅛"	32'-11"	27'-10⅝"	43'-9"	38'-3⅛"	54'-7"	49'-1⅝"
	7'	6'-2⅝"	11'-3"	5'-0½"	22'-1"	15'-10⅝"	32'-11"	26'-8½"	43'-9"	37'-1⅝"	54'-7"	48'-4½"
	8'	7'-4"	11'-4"	4'-0"	22'-2"	14'-10"	33'-0"	25'-8"	43'-10"	36'-6"	54'-8"	47'-10"
11'	6'	5'-0⅞"	12'-3"	7'-3⅛"	24'-2"	19'-1⅛"	36'-0"	30'-11⅝"	47'-10"	42'-9⅛"		
	7'	6'-2⅝"	12'-4"	6'-1½"	24'-2"	17'-11⅝"	36'-0"	29'-9½"	47'-10"	41'-7⅛"		
	8'	7'-4"	12'-5"	5'-0"	24'-3"	16'-10"	36'-0"	28'-8"	47'-10"	40'-6"		
12'	6'	5'-0⅞"	13'-4"	8'-3⅛"	26'-2"	21'-1⅛"	39'-0"	33'-11⅝"	51'-10"	46'-9⅛"		
	7'	6'-2⅝"	13'-5"	7'-1½"	26'-2"	19'-11⅝"	39'-0"	32'-9½"	51'-10"	45'-7⅛"		
	8'	7'-4"	13'-6"	6'-0"	26'-2"	18'-10"	39'-0"	31'-8"	51'-10"	44'-6"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	REINFORCING STEEL - FOR 4 WINGS @	CLASS S CONCRETE - 4 WINGS HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	108.0	4.50	5.96	6.92	7.36	8.34
	3'	6"	7"	169.8	6.26	7.21	8.17	9.13	10.09
	4'	6"	7"	259.6	8.32	9.28	10.24	11.20	12.16
	5"	6"	7"	357.8	10.72	11.68	12.64	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	169.4	6.47	7.68	8.79	9.96	11.12
	4'	6"	7"	259.6	8.54	9.70	10.87	10.03	12.20
	5'	6"	7"	357.8	10.94	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7½"	8½"	1134.6	18.94	20.15	21.37	22.59	23.80
6'	3'	6"	7"	164.4	6.68	8.06	9.42	10.80	12.18
	4'	6"	7"	259.6	8.75	10.14	11.99	12.87	14.25
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65
	6'	7"	8"	583.1	14.98	16.39	17.78	19.18	20.59
	7'	7½"	8½"	1134.6	19.15	20.58	22.00	23.43	24.86
	8'	8"	9"	1922.6	24.09	25.53	26.96	28.39	29.83
7'	4'	6"	7"	259.6	8.97	10.58	12.15	13.76	15.35
	5'	6"	7"	357.8	11.36	12.97	14.58	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7½"	8½"	1134.6	19.38	21.02	22.69	24.28	25.92
	8'	8"	9"	1925.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	259.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.34
	6'	7"	8"	583.1	15.93	17.27	19.09	20.93	22.75
	7'	7½"	8½"	1134.6	19.59	21.46	23.30	25.16	26.93
	8'	8"	9"	1925.6	24.54	26.41	28.24	30.11	31.96
9'	5'	7"	7"	357.8	12.26	13.89	16.87	18.95	20.47
	6'	7½"	8"	583.1	15.94	18.04	20.09	22.19	24.23
	7'	7½"	8½"	1134.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1925.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.80	17.05	19.26	21.52
	6'	7½"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7½"	8½"	1134.6	20.04	22.37	24.69	26.87	29.15
	8'	8"	9"	1925.6	24.98	27.31	29.58	31.91	34.10
11'	6'	8"	8"	583.1	16.69	19.27	21.76	24.23	
	7'	8"	8½"	1134.6	20.64	23.22	25.71	28.18	
	8'	8"	9"	1925.6	25.19	27.77	30.27	32.74	
12'	6'	8"	8"	583.1	16.92	19.75	22.45	25.18	
	7'	8"	8½"	1134.6	20.87	23.69	26.50	29.13	
	8'	8"	9"	1925.6	25.42	28.25	30.96	33.69	

@ For reinforcing steel in Headwalls and Aprons, See Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

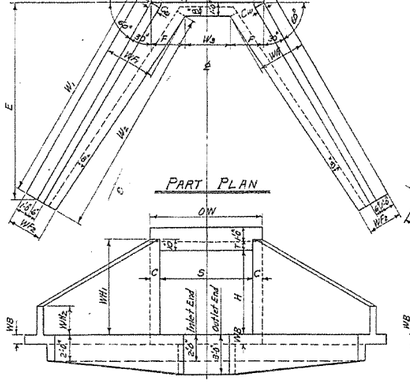
UNIT STRESSES:-

Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

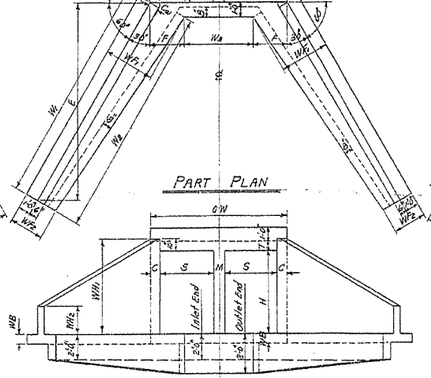
CLASS S CONCRETE



PART PLAN

END ELEVATION

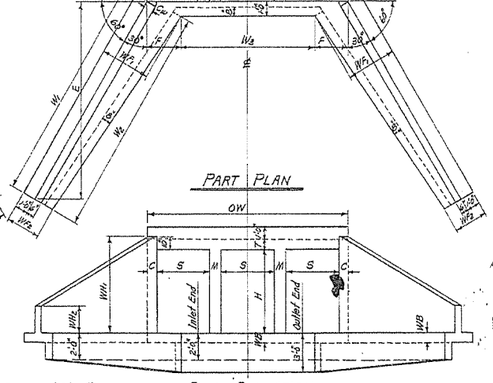
SINGLE BARREL CULVERT



PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

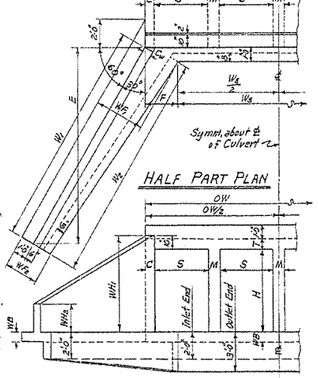


PART PLAN

END ELEVATION

TRIPLE BARREL CULVERT

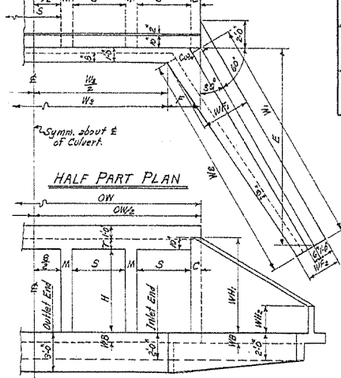
NOTE:- Plans and Elevations are not to scale.



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F1 Bent: In bottom of footing, bent up into back face of wing. One bar of each length.							F2 Bent: In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						F3 Straight: Longitudinal in top of wing footing heel.			F4 Straight: Longitudinal in bottom of wing footing toe.			H1 Straight: Horizontal in back face of wing.				H2 Straight: Horizontal in back face of wing. One bar of each length.						H3 Straight: In back face of wing at top-on slope.			H6 Bent: Dowels thru construction joint at headwall.				QUANTITY REINFORCING STEEL PER WING	BAR BENDING DIAGRAMS
	SIZE	SPACING	NO. REQD	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	X	LB.	
H																																							
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	0'-11"	2'-11"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	8'-6"	#3	12"	1	7'-1"	#3	12"	1	7'-1"	#3	12"	2	2'-8"	1'-4"	#4	12"	2	2'-8"	1'-4"	27.0	
3'	#3	12"	10	2'-2"	5'-2"	0'-10"	1'-3"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-0"	#3	12"	1	9'-4"	#3	12"	2	7'-6"	4'-0"	#3	1	9'-9"	#3	12"	3	2'-8"	1'-6"	41.1	
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	1'-6"	5'-0"	—	—	—	—	—	—	#3	1	14'-9"	#3	3	13'-6"	#3	12"	1	11'-10"	#3	12"	3	10'-11"	4'-0"	#3	1	12'-2"	#3	12"	9	2'-8"	1'-8"	63.7	
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	16'-8"	#3	3	16'-0"	#5	12"	2	14'-2"	#3	12"	3	10'-11"	4'-0"	#3	1	14'-7"	#3	12"	5	2'-8"	1'-8"	89.5	
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	4	4'-2"	1'-4"	2'-3"	#3	1	19'-8"	#3	3	18'-6"	#3	12"	2	16'-4"	#3	12"	4	14'-6"	4'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-8"	145.8	
7'	#4	12"	20	3'-9"	10'-8"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	21'-4"	#4	4	21'-0"	#4	12"	2	18'-9"	#4	12"	5	17'-9"	4'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	263.7	
8'	#4	12"	22	4'-5"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	23'-8"	#4	4	23'-6"	#4	12"	3	21'-1"	#4	12"	5	17'-9"	4'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4	

NOTE:- Dimensions are to bar centers.

REVISIONS:- Membrane added. 5-10-66 W.C.H.

Designed By:- W.C.H. 6-20-62. Checked By:- RHS - 1-9-63
Drawn By:- W.C.H. 12-4-62. Checked By:- RHS - 1-31-63
Quantities By:- W.C.H. 12-14-62. Checked By:- RHS - 3-20-63

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER FOR H = 8'-0" OR LESS

STANDARD DRAWING NO. W-X003-1

RESHOT 3-4-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			163	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

SECTION & BAR GROUP	LENGTH OF SECTIONS	DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars					"b" bars						"d" bars				"d_1" bars				"e" bars				"r" bars				
					STRAIGHT					BENT - See Diagram at Right						STRAIGHT												STRAIGHT				
					In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall-Each.					In Top and Bottom Slabs of Barrel Alternate with "a" bars.						Longitudinal in Top Slab of Barrel				Longitudinal in Sidewalls				Longitudinal in Bottom Slab of Barrel				Verticals in Sidewalls				
		D	S	H	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
SECTION "A" & BAR GROUP "A"	4:1 = 32'-0" 3:1 = 22'-0"	5' TO 10'-0"	1 @ 4'	3'	#4	12"	48	68	4'-9"	#4	12"	44	64	5'-7"	4'-8½"	#4	12"	5	33'-3" for 32'-0" Section.	#4	12"	6	33'-3" for 32'-0" Section.	#4	12"	5	34'-3" for 32'-0" Section	#4	12"	44	64	3'-10"
				4'			48	68	4'-9"			44	64	5'-7"	4'-8½"			5				8				5				44	64	4'-10"
				5'			48	68	4'-9"			44	64	5'-7"	4'-8½"			5				10				5				44	64	5'-10"
				6'			48	68	4'-11"			44	64	5'-9"	4'-10½"			5				12				5				44	64	6'-10"
			1 @ 5'	3'	#5	12"	48	68	5'-9"	#5	12"	44	64	6'-8"	5'-8½"	#4	12"	6		#4	12"	6		#4	12"	6		#4	12"	44	64	3'-11"
				4'			48	68	5'-9"			44	64	6'-8"	5'-8½"			6				8				6				44	64	4'-11"
				5'			48	68	5'-9"			44	64	6'-8"	5'-8½"			6				10				6				44	64	5'-11"
				6'			48	68	5'-11"			44	64	6'-10"	5'-10½"			6				12				6				44	64	6'-11"
				7'			48	68	6'-0"			44	64	6'-11"	5'-11½"			6				14				6			10"	54	78	7'-11"
			1 @ 6'	4'	#5	12"	48	68	6'-9"	#6	12"	44	64	7'-10"	6'-8"	#4	12"	7		#4	12"	8		#4	12"	7		#4	12"	44	64	5'-0"
				5'			48	68	6'-9"			44	64	7'-10"	6'-8"			7				10				7				44	64	6'-0"
				6'			48	68	6'-11"			44	64	8'-0"	6'-10"			7				12				7				44	64	7'-0"
				7'			48	68	7'-0"			44	64	8'-1"	6'-11"			7				14				7			10"	54	78	8'-0"
				8'			48	68	7'-1"			44	64	8'-2"	7'-0"			7				16				7		#5	11"	48	70	9'-0"
SECTION "B" & BAR GROUP "B"	4:1 = 16'-0" 3:1 = 11'-0"	10'-0" TO 15'-0"	1 @ 4'	3'	#4	12"	22	32	4'-9"	#5	12"	22	32	5'-8"	4'-8½"	#4	12"	5		#4	12"	6		#4	12"	5		#4	12"	22	32	3'-10"
				4'			22	32	4'-9"			22	32	5'-8"	4'-8½"			5				8				5				22	32	4'-10"
				5'			22	32	4'-9"			22	32	5'-8"	4'-8½"			5				10				5				22	32	5'-10"
				6'			22	32	4'-11"			22	32	5'-10"	4'-10½"			5				12				5			10"	28	40	6'-10"
			1 @ 5'	3'	#5	12"	22	32	5'-9"	#6	12"	22	32	6'-10"	5'-8"	#4	12"	6		#4	12"	6		#4	12"	6		#4	12"	22	32	3'-11"
				4'			22	32	5'-9"			22	32	6'-10"	5'-8"			6				8				6				22	32	4'-11"
				5'			22	32	5'-9"			22	32	6'-10"	5'-8"			6				10				6				22	32	5'-11"
				6'			22	32	5'-11"			22	32	7'-0"	5'-10"			6				12				6			11"	24	36	6'-11"
				7'			22	32	6'-0"			22	32	7'-1"	5'-11"			6				14				6		#5	12"	22	32	7'-11"
			1 @ 6'	4'	#6	12"	22	32	6'-9"	#6	12"	22	32	7'-10"	6'-8"	#4	12"	7		#4	12"	8		#4	12"	7		#4	12"	22	32	5'-1"
				5'			22	32	6'-9"			22	32	7'-10"	6'-8"			7				10				7				22	32	6'-1"
				6'			22	32	6'-11"			22	32	8'-0"	6'-10"			7				12				7			10"	28	40	7'-1"
				7'			22	32	7'-0"			22	32	8'-1"	6'-11"			7				14				7		#5	11"	24	34	8'-1"
				8'			22	32	7'-1"			22	32	8'-2"	7'-0"			7				16				7		#6	12"	22	32	9'-1"
SECTION "C" & BAR GROUP "C"	4:1 = 16'-0" 3:1 = 11'-0"	15'-0" TO 20'-0"	1 @ 4'	3'	#5	12"	22	32	4'-9"	#5	12"	22	32	5'-8"	4'-8½"	#4	12"	5	34'-3" for 33'-0" Length Section	#4	12"	6	34'-3" for 33'-0" Length Section	#4	12"	5	34'-3" for 33'-0" Length Section.	#4	12"	22	32	3'-10"
				4'			22	32	4'-9"			22	32	5'-8"	4'-8½"			5				8				5				22	32	4'-10"
				5'			22	32	4'-9"			22	32	5'-8"	4'-8½"			5				10				5			10"	28	40	5'-10"
				6'			22	32	4'-11"			22	32	5'-10"	4'-10½"			5				12				5		#5	12"	22	32	6'-10"
			1 @ 5'	3'	#5	11"	24	36	5'-9"	#6	11"	24	34	6'-10"	5'-8"	#4	12"	6		#4	12"	6		#4	12"	6		#4	12"	22	32	4'-0"
				4'			24	36	5'-9"			24	34	6'-10"	5'-8"			6				8				6				22	32	5'-0"
				5'			24	36	5'-9"			24	34	6'-10"	5'-8"			6				10				6			11"	24	36	6'-0"
				6'			24	36	5'-11"			24	34	7'-0"	5'-10"			6				12				6		#5	12"	22	32	7'-0"
				7'			24	36	6'-0"			24	34	7'-1"	5'-11"			6				14				6		#6	12"	22	32	8'-0"
			1 @ 6'	4'	#6	11"	24	36	6'-9"	#6	11"	24	34	7'-10"	6'-8"	#4	12"	7		#4	12"	8		#4	12"	7		#4	12"	22	32	5'-2"
				5'			24	36	6'-9"			24	34	7'-10"	6'-8"			7				10				7				22	32	6'-2"
				6'			24	36	6'-11"			24	34	8'-0"	6'-10"			7				12				7		#5	12"	22	32	7'-2"
				7'			24	36	7'-0"			24	34	8'-1"	6'-11"			7				14				7		#6	12"	22	32	8'-2"
				8'			24	36	7'-1"			24	34	8'-2"	7'-0"			7				16				7			10"	26	38	9'-2"
SECTION "D" & BAR GROUP "D"	4:1 = 16'-0" 3:1 = 11'-0"	20'-0" TO 25'-0"	1 @ 4'	3'	#5	11"	24	36	4'-9"	#5	11"	24	34	5'-8"	4'-8½"	#4	12"	5		#4	12"	6		#4	12"	5		#4	12"	22	32	3'-11"
				4'			24	36	4'-9"			24	34	5'-8"	4'-8½"			5				8				5				22	32	4'-11"
				5'			24	36	4'-9"			24	34	5'-8"	4'-8½"			5				10				5		#5	12"	22	32	5'-11"
				6'			24	36	4'-11"			24	34	5'-10"	4'-10½"			5				12				5			10"	26	38	6'-11"
			1 @ 5'	3'	#6	12"	22	32	5'-9"	#6	12"	22	32	6'-10"	5'-8"	#4	12"	6		#4	12"	6		#4	12"	6		#4	12"	22	32	4'-1"
				4'			22	32	5'-9"			22	32	6'-10"	5'-8"			6				8				6				22	32	5'-1"
				5'			22	32	5'-9"			22	32	6'-11"	5'-9"			6				10				6			11"	24	34	6'-1"
				6'			22	32	5'-11"			22	32	7'-1"	5'-11"			6				12				6		#5	11"	24	34	7'-1"
				7'			22	32	6'-1"			22	32	7'-2"	6'-0"			6				14				6		#6	12"	22	32	8'-1"
			1 @ 6'	4'	#7	12"	22	32	6'-9"	#6	12"	22	32	7'-10"	6'-8"	#4	12"	7		#4	12"	8		#4	12"	7		#4	12"	22	32	5'-4"
				5'			22	32	6'-10"			22	32	7'-11"	6'-9"			7				10				7				22	32	6'-4"
				6'			22	32	6'-11"			22	32	8'-1"	6'-11"			7				12				7		#5	12"	22	32	7'-4"
				7'			22	32	7'-1"			22	32	8'-2"	7'-0"			7				14				7		#6	12"	22	32	8'-4"
				8'			22	32	7'-2"			22	32	8'-4"	7'-2"			7				16				7			10"	26	40	9'-4"
SECTION "E" & BAR GROUP "E"	4:1 = 16'-0" 3:1 = 11'-0"	25'-0" TO 30'-0"	1 @ 4'	3'	#6	12"	22	32	4'-9"	#5	12"	22	32	5'-8"	4'-8½"	#4	12"	5		#4	12"	6		#4	12"	5		#4	12"	22	32	4'-0"
				4'			22	32	4'-9"			22	32	5'-8"	4'-8½"			5				8				5				22	32	5'-0"
				5'			22	32	4'-10"			22	32	5'-9"	4'-9½"			5				10				5		#5	12"	22	32	6'-0"
				6'			22	32	5'-0"			22	32	5'-11"	4'-11½"			5				12				5		#6	12"	22	32	7'-0"
			1 @ 5'	3'	#6	11"	24	34	5'-9"	#6	11"	24	36	6'-10"	5'-8"	#4	12"	6		#4	12"	6		#4	12"	6		#4	12"	22	32	4'-3"
				4'			24	34	5'-9"			24	36	6'-10"	5'-8"			6				8				6				22	32	5'-3"
				5'			24	37	5'-10"			24	36	7'-0"	5'-10"			6				10				6			10"	28	40	6'-3"
				6'			24	34	6'-0"			24	36	7'-2"	6'-0"			6				12				6		#5	11"	24	36	7'-3"
				7'			24	34	6'-2"			24	36	7'-3"	6'-1"			6				14				6		#6	11"	24	34	8'-3"
			1 @ 6'	4'	#7	11"	24	34	6'-9"	#6	11"	24	36	7'-10"	6'-8"	#4	11"	8		#4	12"	8		#4	11"	8		#4	12"	22	32	5'-5"
				5'			24	34	6'-11"			24	36	8'-0"	6'-10"			8				10				8			11"	24	36	6'-5"
				6'			24	34	7'-1"			24	36	8'-2"	7'-0"			8				12				8		#5	12"	22	32	7'-5"
				7'			24	34	7'-2"			24	36	8'-4"	7'-2"			8				14				8		#6	12"	22	32	8'-5"
				8'			24	34	7'-4"			24	36	8'-5"	7'-3"			8				16				8			10"	26	38	9'-5"
SECTION "F" & BAR GROUP "F"	4:1 = 16'-0" 3:1 = 11'-0"	30'-0" TO 35'-0"	1 @ 4'	3'	#6	13"	20	30	4'-9"	#6	13"	20	30	5'-10"	4'-8"	#4	12	5		#4	12"	6		#4	12"	5		#4	12"	22	32	4'-1"
				4'			20	30	4'-9"			20	30	5'-10"	4'-8"			5				8				5				22	32	5'-1"
				5'			20	30	4'-11"			20	30	6'-0"	4'-10"			5				10				5		#5	12"	22	32	6'-1"
				6'			20	30	5'-1"			20	30	6'-2"	5'-0"			5				12				5		#6	12"	22	32	7'-1"
			1 @ 5'	3'	#7	12"	22	32	5'-9"	#6	12"	22	32	6'-10"	5'-8"	#4	10½"	7		#4	12"	6		#4	10½"	7		#4	12"	22	32	4'-4"
				4'			22	32	5'-9"			22	32	6'-11"	5'-9"			7				8				7				22	32	5'-4"
				5'			22	32	5'-11"			22	32	7'-1"	5'-11"			7				10				7			10"	26	36	6'-4"
				6'			22	32	6'-1"			22	32	7'-3"	6'-1"			7				12				7		#5	11"	24	34	7'-4"
				7'			22	32	6'-3"			22	32	7'-4"	6'-2"			7				14				7		#6	11"	24	36	8'-4"
	Varies with Length of Barrel		1 @ 6'	4'	#7	12"	Varies with Length of Barrel	Varies with Length of Barrel	6'-10"	#7	12"	Varies with Length of Barrel	Varies with Length of Barrel	8'-1"	6'-9"	#4	9½"	9	Varies with Length of Barrel	#4	12"	8	Varies with Length of Barrel	#4	9½"	9	Varies with Length of Barrel	#4	12"	Varies with Length of Barrel	Varies with Length of Barrel	5'-7"
				5'					7'-0"					8'-3"	6'-11"			9				10				9			10"			6'-7"
				6'					7'-2"					8'-5"	7'-1"			9				12				9		#5	12"			7'-7"
				7'					7'-4"					8'-7"	7'-3"			9				14				9		#6	12"			8'-7"
				8'					7'-5"					8'-8"	7'-4"			9				16				9			10"			9'-7"
SECTION "G" & BAR GROUP "G"		35'-0" TO 40'-0"	1 @ 4'	3'	#6	12"			4'-9"	#6	12"			5'-10"	4'-8"	#4	10½"	6		#4	12"	6		#4	10½"	6		#4	12"			4'-2"
				4'					4'-10"					5'-11"	4'-9"			6				8				6						5'-2"
				5'					5'-0"					6'-1"	4'-11"			6				10				6		#5	12"			6'-2"
				6'					5'-2"					6'-3"	5'-1"			6				12				6		#6	12"			7'-2"
			1 @ 5'	3'	#7	11"			5'-9"	#6	11"			6'-10"	5'-8"	#4	10½"	7		#4	12"	6		#4	10½"	7		#4	12"			4'-5"
				4'					5'-10"					7'-0"	5'-10"			7				8				7						5'-5"
				5'					6'-0"					7'-2"	6'-0"			7				10				7			10"			6'-5"
				6'					6'-2"					7'-4"	6'-2"			7				12				7		#5	11"			7'-5"
				7'					6'-4"					7'-5"	6'-3"			7				14				7		#6	11"			8'-5"

NOTE:- Bars for each Section to be marked with the Section Letter, thus for Section B, the bars should be marked Ba, Bb, Bd, Bd_1, Be and Br.

Designed By:- W.C.H. 9-5-62 Checked By:- R.H.S. 11-8-62
Drawn By:- W.C.H. 10-10-62 Checked By:- J.E.M. 11-12-62
Quantities By:- W.C.H. 11-7-62 Checked By:- J.E.M. 11-16-62

DIMENSIONS — QUANTITIES

MAX. DESIGN DEPTH OF COVER	BARREL DIMENSIONS: CLEAR SPAN	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	REINFORCING STEEL ADDITIONAL PER LAP	REINFORCING STEEL ADDITIONAL TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	B	OH	CU. YD.	LB.	LB.	LB.
SECTION "A" - 10'-0"	1 @ 4'	3'	12	5'-0"	6½"	6"	6½"	4'-1"	0.312	29.62	13.36	51.44
		4'	16	5'-0"		6"		5'-1"	0.349	32.29	15.03	51.44
		5'	20	5'-0"		6"		6'-1"	0.386	34.96	16.70	51.44
		6'	24	5'-2"		7"		7'-1"	0.467	38.08	18.37	52.33
	1 @ 5'	3'	15	6'-0"	7"	6"	7"	4'-2"	0.370	43.16	15.03	79.37
		4'	20	6'-0"		6"		5'-2"	0.407	45.83	16.70	79.37
		5'	25	6'-0"		6"		6'-2"	0.444	48.50	18.37	79.37
		6'	30	6'-2"		7"		7'-2"	0.526	51.87	20.04	80.77
		7'	35	6'-3"		7½"		8'-2"	0.594	57.00	21.71	81.46
	1 @ 6'	4'	24	7'-0"	7½"	6"	7½"	5'-3"	0.472	58.99	18.37	93.29
		5'	30	7'-0"		6"		6'-3"	0.509	61.66	20.04	93.29
		6'	36	7'-2"		7"		7'-3"	0.591	65.18	21.71	94.68
		7'	42	7'-3"		7½"		8'-3"	0.660	70.41	23.38	95.37
		8'	48	7'-4"		8"		9'-3"	0.735	79.83	25.05	96.07
SECTION "B" - 15'-0"	1 @ 4'	3'	12	5'-0"	6½"	6"	6½"	4'-1"	0.312	33.98	13.36	
		4'	16	5'-0"		6"		5'-1"	0.349	36.65	15.03	
		5'	20	5'-0"		6"		6'-1"	0.386	39.32	16.70	
		6'	24	5'-2"		7"		7'-1"	0.467	44.39	18.37	
	1 @ 5'	3'	15	6'-0"	7"	6"	7"	4'-2"	0.370	49.78	15.03	
		4'	20	6'-0"		6"		5'-2"	0.407	52.45	16.70	
		5'	25	6'-0"		6"		6'-2"	0.444	55.12	18.37	
		6'	30	6'-2"		7"		7'-2"	0.526	59.48	20.04	
		7'	35	6'-3"		7½"		8'-2"	0.594	67.68	21.71	
	1 @ 6'	4'	24	7'-0"	8"	6"	8¼"	5'-4¼"	0.499	65.30	18.37	
		5'	30	7'-0"		6"		6'-4¼"	0.536	66.63	20.04	
		6'	36	7'-2"		7"		7'-4¼"	0.619	73.53	21.71	
		7'	42	7'-3"		7½"		8'-4¼"	0.688	82.41	23.38	
		8'	48	7'-4"		8"		9'-4¼"	0.763	93.14	25.05	
SECTION "C" - 20'-0"	1 @ 4'	3'	12	5'-0"	6½"	6"	6¾"	4'-1¼"	0.316	37.54	13.36	
		4'	16	5'-0"		6"		5'-1¼"	0.353	40.21	15.03	
		5'	20	5'-0"		6"		6'-1¼"	0.390	44.44	16.70	
		6'	24	5'-2"		7"		7'-1¼"	0.471	51.38	18.37	
	1 @ 5'	3'	15	6'-0"	7½"	6"	7¾"	4'-3¼"	0.394	52.85	15.03	
		4'	20	6'-0"		6"		5'-3¼"	0.431	55.52	16.70	
		5'	25	6'-0"		6"		6'-3¼"	0.468	58.92	18.37	
		6'	30	6'-2"		7"		7'-3¼"	0.550	67.04	20.04	
		7'	35	6'-3"		7½"		8'-3¼"	0.618	78.27	21.71	
	1 @ 6'	4'	24	7'-0"	8½"	6"	9"	5'-5½"	0.526	69.39	18.37	
		5'	30	7'-0"		6"		6'-5½"	0.563	72.06	20.04	
		6'	36	7'-2"		7"		7'-5½"	0.646	81.20	21.71	
		7'	42	7'-3"		7½"		8'-5½"	0.716	92.67	23.38	
		8'	48	7'-4"		8"		9'-5½"	0.791	103.06	25.05	
SECTION "D" - 25'-0"	1 @ 4'	3'	12	5'-0"	6¾"	6"	7¼"	4'-2"	0.327	39.63	13.36	
		4'	16	5'-0"		6"		5'-2"	0.364	42.30	15.03	
		5'	20	5'-0"		6"		6'-2"	0.401	49.41	16.70	
		6'	24	5'-2"		7"		7'-2"	0.483	55.14	18.37	
	1 @ 5'	3'	15	6'-0"	8"	6"	8½"	4'-4½"	0.417	55.28	15.03	
		4'	20	6'-0"		6"		5'-4½"	0.454	57.95	16.70	
		5'	25	6'-0½"		6¼"		6'-4½"	0.501	61.61	18.37	
		6'	30	6'-2½"		7¼"		7'-4½"	0.585	71.20	20.04	
		7'	35	6'-4"		8"		8'-4½"	0.668	81.45	21.71	
	1 @ 6'	4'	24	7'-0"	9¼"	6"	9¾"	5'-7"	0.559	72.95	18.37	
		5'	30	7'-1"		6½"		6'-7"	0.616	76.21	20.04	
		6'	36	7'-2½"		7¼"		7'-7"	0.691	85.22	21.71	
		7'	42	7'-4"		8"		8'-7"	0.776	97.23	23.38	
		8'	48	7'-5½"		8¾"		9'-7"	0.869	108.02	25.05	
SECTION "E" - 30'-0"	1 @ 4'	3'	12	5'-0"	7¼"	6"	7¾"	4'-3"	0.343	42.12	13.36	
		4'	16	5'-0"		6"		5'-3"	0.380	44.79	15.03	
		5'	20	5'-1"		6½"		6'-3"	0.436	52.39	16.70	
		6'	24	5'-3"		7½"		7'-3"	0.521	63.09	18.37	
	1 @ 5'	3'	15	6'-0"	8¾"	6"	9¼"	4'-6"	0.444	58.94	15.03	
		4'	20	6'-0"		6"		5'-6"	0.481	61.61	16.70	
		5'	25	6'-1½"		6¾"		6'-6"	0.549	66.77	18.37	
		6'	30	6'-3½"		7¾"		7'-6"	0.637	75.68	20.04	
		7'	35	6'-5"		8½"		8'-6"	0.724	88.37	21.71	
	1 @ 6'	4'	24	7'-0"	10"	6"	10½"	5'-8½"	0.591	79.04	20.04	
		5'	30	7'-2"		7"		6'-8½"	0.669	83.78	21.71	
		6'	36	7'-4"		8"		7'-8½"	0.760	92.53	23.38	
		7'	42	7'-5½"		8¾"		8'-8½"	0.850	104.59	25.05	
		8'	48	7'-7"		9½"		9'-8½"	0.949	115.61	26.72	
SECTION "F" - 35'-0"	1 @ 4'	3'	12	5'-0"	7¾"	6"	8¼"	4'-4"	0.358	45.49	13.36	
		4'	16	5'-0"		6"		5'-4"	0.395	48.16	15.03	
		5'	20	5'-2"		7"		6'-4"	0.471	56.32	16.70	
		6'	24	5'-4"		8"		7'-4"	0.560	67.17	18.37	
	1 @ 5'	3'	15	6'-0"	9¼"	6"	9¾"	4'-7"	0.463	63.18	16.70	
		4'	20	6'-0½"		6¼"		5'-7"	0.509	66.11	18.37	
		5'	25	6'-2½"		7¼"		6'-7"	0.588	71.65	20.04	
		6'	30	6'-4½"		8¼"		7'-7"	0.679	80.70	21.71	
		7'	35	6'-6"		9"		8'-7"	0.770	93.59	23.38	
	1 @ 6'	4'	24	7'-1"	10¾"	6½"	11¼"	5'-10"	0.641	85.81	21.71	
		5'	30	7'-3"		7½"		6'-10"	0.724	91.60	23.38	
		6'	36	7'-5"		8½"		7'-10"	0.818	99.56	25.05	
		7'	42	7'-7"		9½"		8'-10"	0.925	112.23	26.72	
		8'	48	7'-8½"		10¼"		9'-10"	1.030	123.01	28.39	
SECTION "G" - 40'-0"	1 @ 4'	3'	12	5'-0"	8¼"	6"	8¾"	4'-5"	0.373	49.38	15.03	
		4'	16	5'-1"		6½"		5'-5"	0.427	52.56	16.70	
		5'	20	5'-3"		7½"		6'-5"	0.507	60.85	18.37	
		6'	24	5'-5"		8½"		7'-5"	0.599	71.86	20.04	
	1 @ 5'	3'	15	6'-0"	9¾"	6"	10¼"	4'-8"	0.481	67.30	16.70	
		4'	20	6'-1½"		6¾"		5'-8"	0.595	70.89	18.37	
		5'	25	6'-3½"		7¾"		6'-8"	0.628	76.56	20.04	
		6'	30	6'-5½"		8¾"		7'-8"	0.723	85.78	21.71	
		7'	35	6'-7"		9½"		8'-8"	0.817	98.84	23.38	

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1, W-X003-1, and W-X004-1.

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	Bars "b"
#4	2"	4"	0'-10½"	
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	
#7	3½"	5¾"	1'-4"	

NOTE:- Dimensions are to centers of bars.

DOWEL BARS FOR TWO HEADWALLS

SPAN	SIZE	SPACING	No. REQ'D	LENGTH	X	Bars "r" Dowel bars in Headwalls
4'	#4	11"	12	2'-5"	1'-2½"	
5'	#4	11½"	14	2'-6"	1'-3"	
6'	#4	12"	16	2'-7"	1'-3½"	

PART LONGITUDINAL SECTION

TYPICAL SECTION M-M

TYPICAL LONGITUDINAL SECTION-SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections, with Bar Groups to be shown on Cross Section Sheets.

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS: A	B	C	D	E	F	MID-SECTION AND BAR GROUP
5.0' to 9.5'	✓						A
10.0' to 14.5'	✓						B
15.0' to 19.5'	✓	✓					C
20.0' to 24.5'	✓	✓	✓				D
25.0' to 29.5'	✓	✓	✓	✓			E
30.0' to 34.5	✓	✓	✓	✓	✓		F
35.0 to 40.0	✓	✓	✓	✓	✓	✓	G

LENGTH OF SECTIONS FOR SKEWED CULVERTS

SKEW ANGLE	SEC. OF SKEW ANGLE	3:1 SLOPES SECTIONS A	3:1 SLOPES SECTIONS B,C,D,E or F	4:1 SLOPES SECTIONS A	4:1 SLOPES SECTIONS B,C,D,E or F
0°	1.0	22.0'	11.0'	32.0'	16.0'
15°	1.0353	22.776'	11.388'	33.129'	16.564'
30°	1.1547	25.403'	12.702'	36.950'	18.475'
45°	1.4142	31.113'	15.556'	45.255'	22.627'

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.

CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls and slabs shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

DESIGN LIVE LOAD

H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200 #/□"
Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Drawing Nos. W-X002-1, W-X003-1 and W-X004-1.

CLASS S CONCRETE

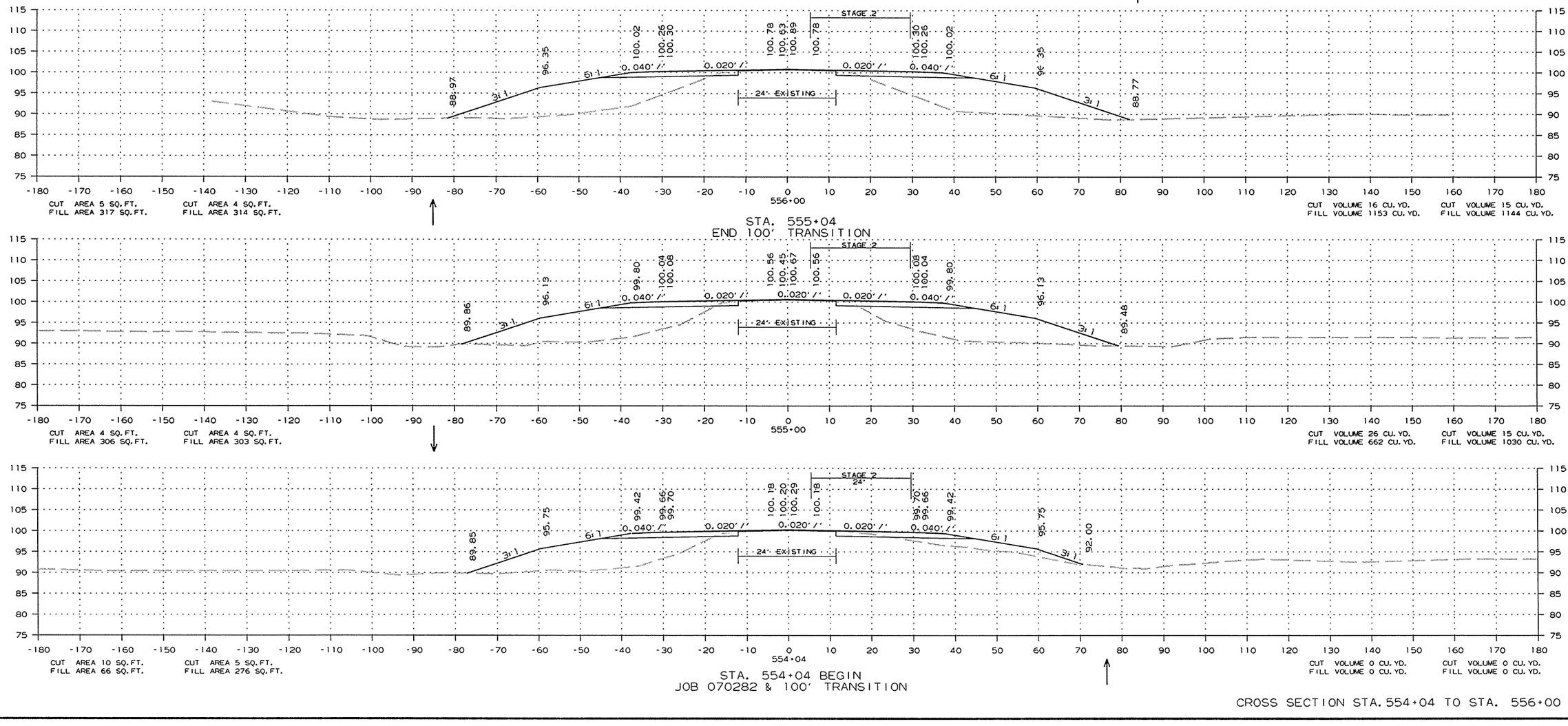
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
4', 5' & 6' SPANS — 3:1 OR 4:1 SLOPES
SINGLES — OVER 5'-0" COVER
STANDARD DRAWING NO. R-100X-X1

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.		070282	164	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 554+04 TO STA. 556+00

7/14/2014

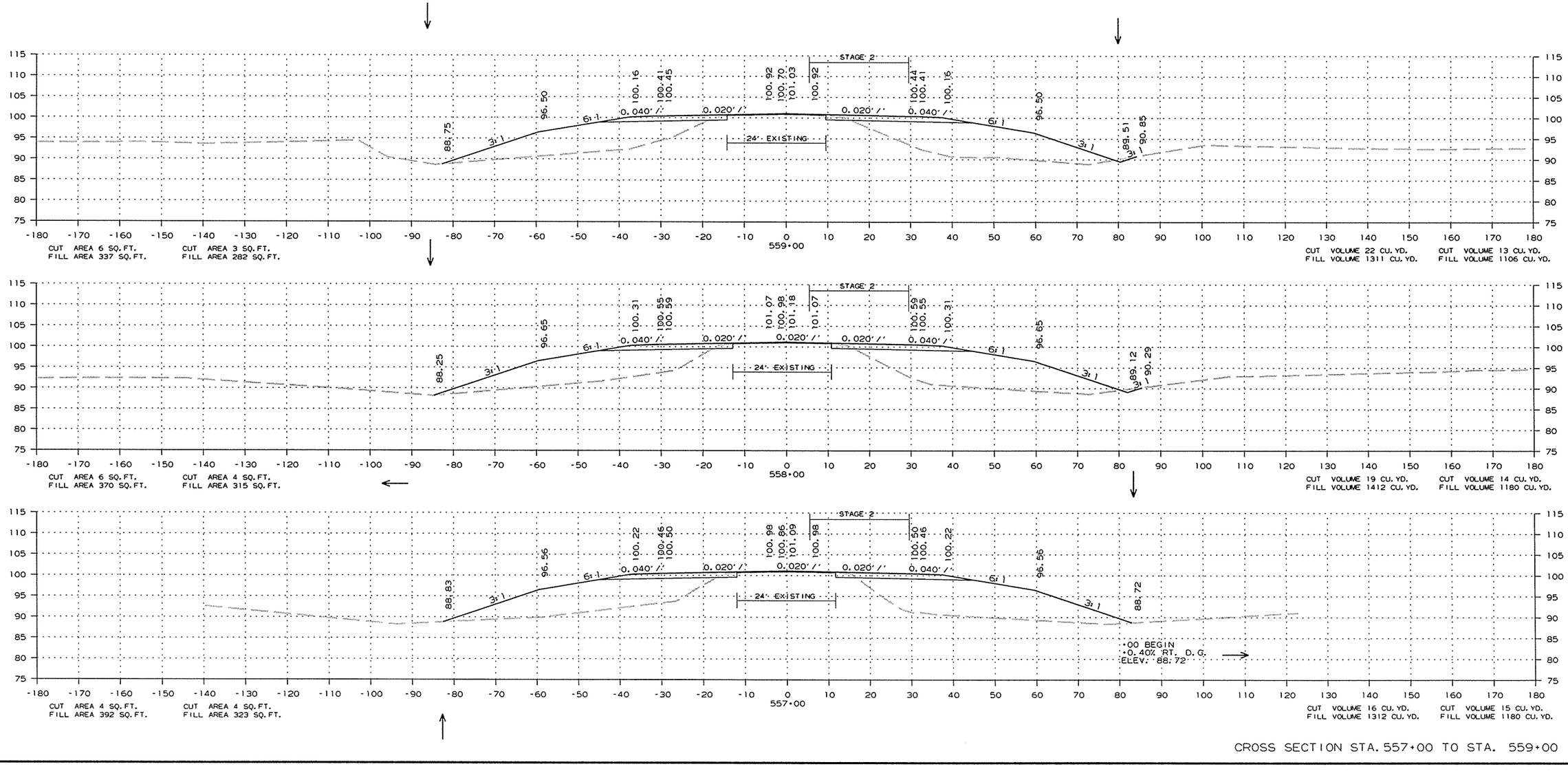
R070282.DGN

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.		070282	165	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



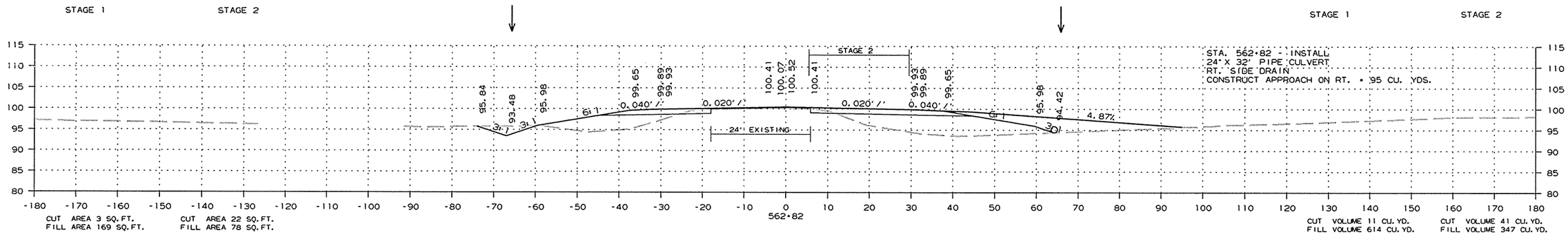
CROSS SECTION STA. 557+00 TO STA. 559+00

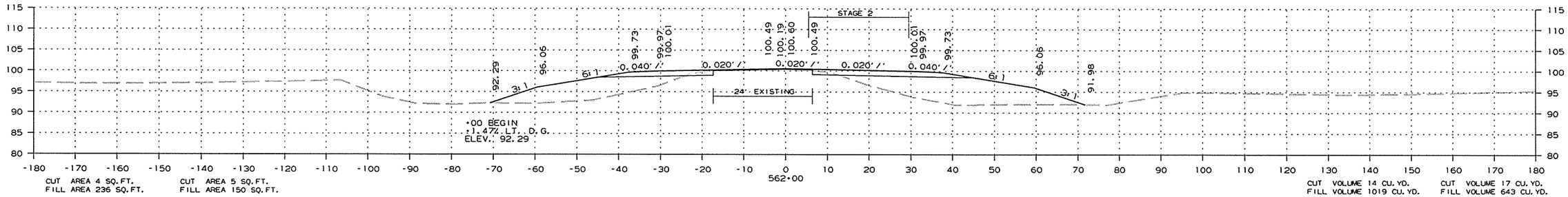
7/14/2014

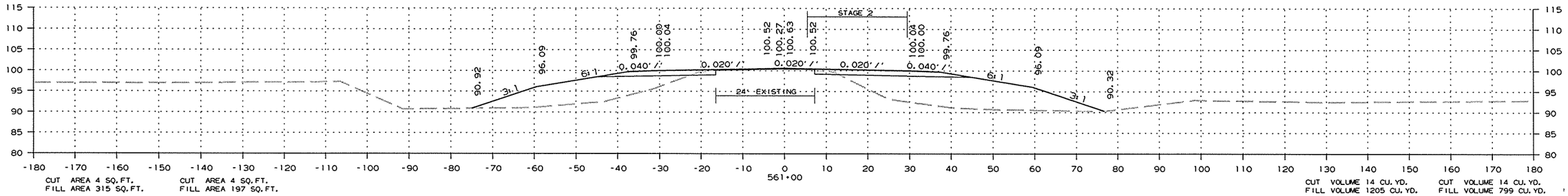
R070282.DGN

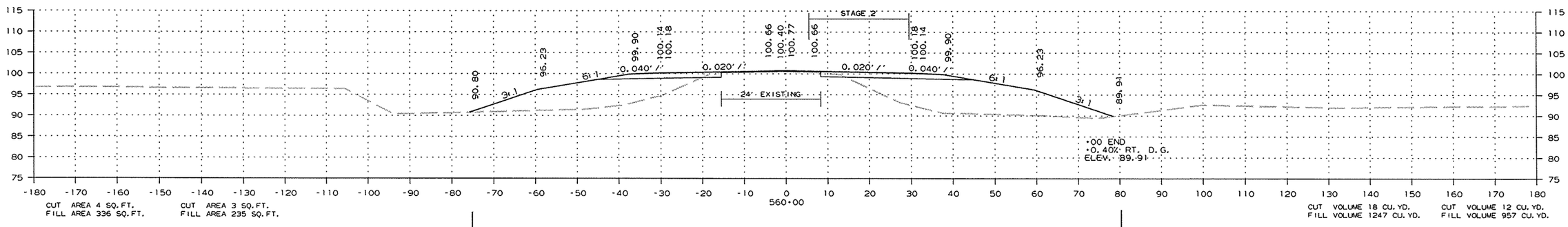
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	166	190

(2) CROSS SECTIONS









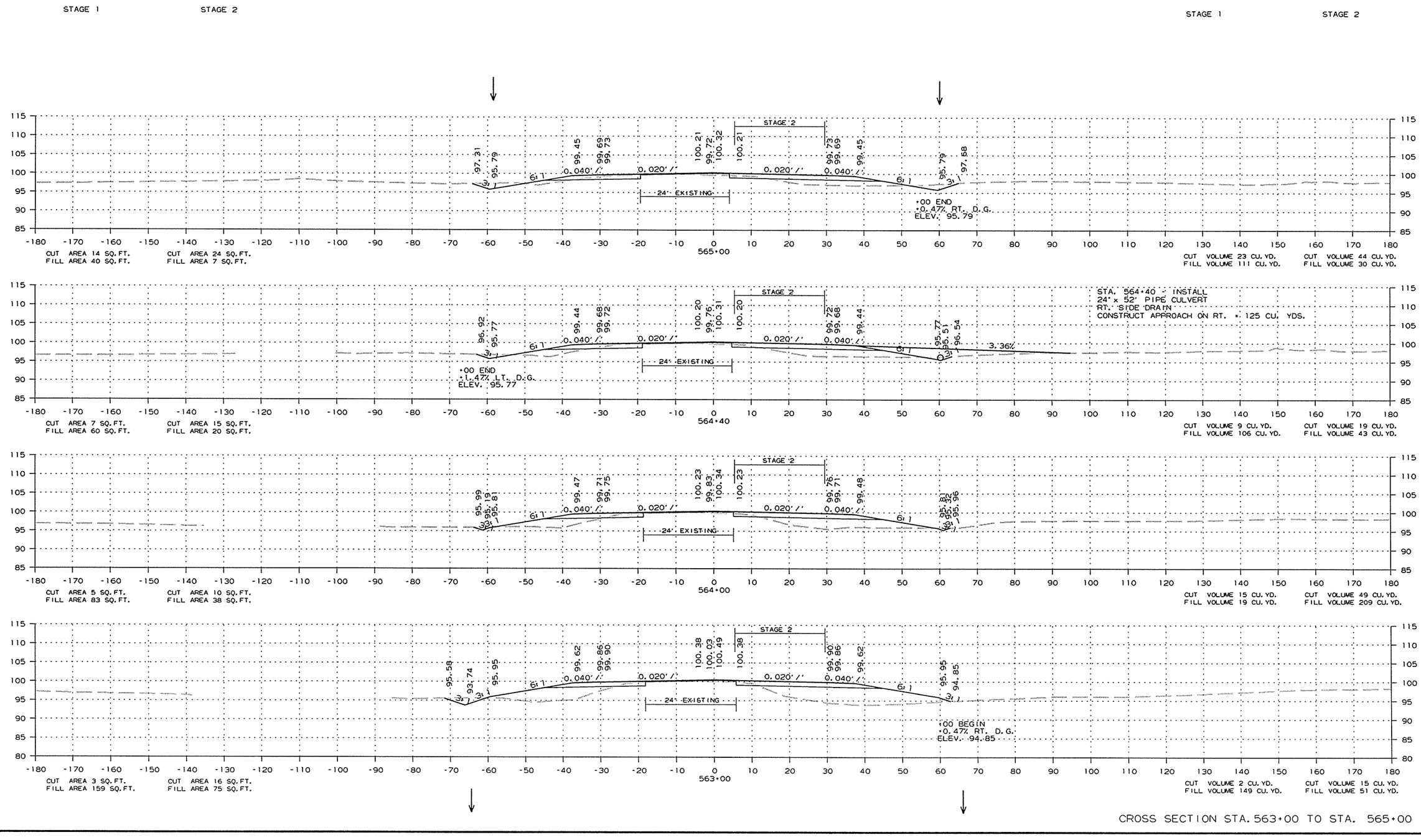
CROSS SECTION STA. 560+00 TO STA. 562+82

7/14/2014

R070282.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.		070282	167	190

(2) CROSS SECTIONS



CROSS SECTION STA. 563+00 TO STA. 565+00

7/14/2014

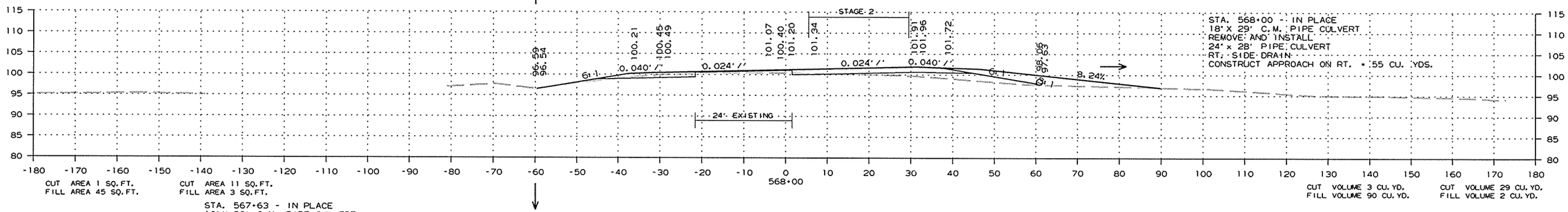
R070282.DGN

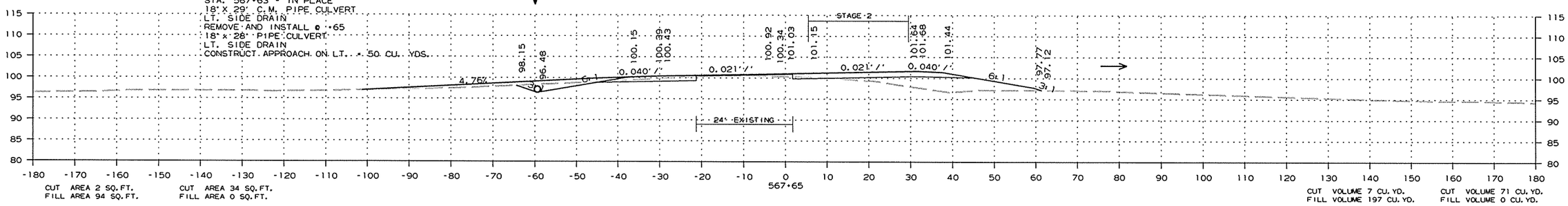
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	168	190

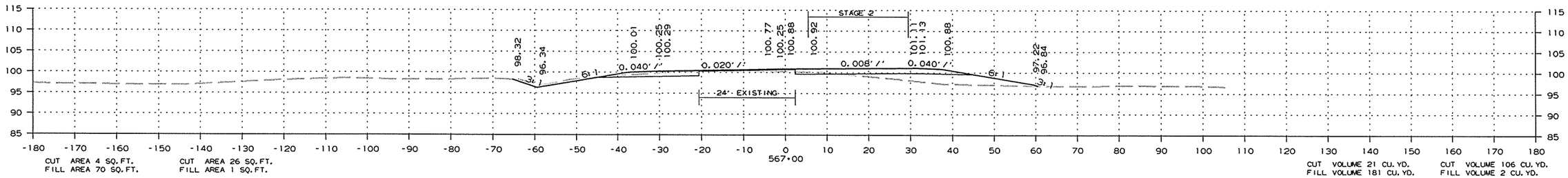
(2) CROSS SECTIONS

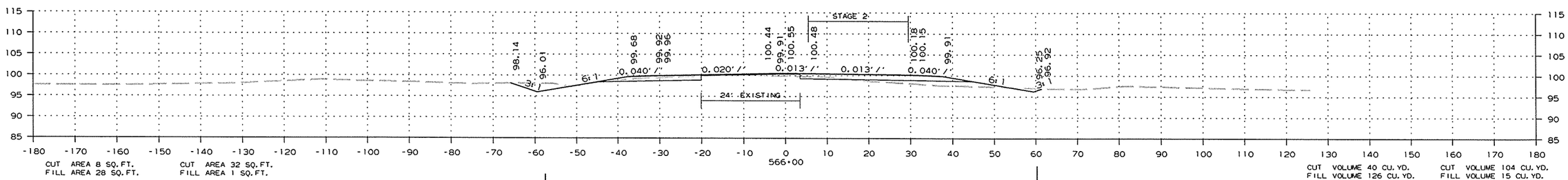
STAGE 1 STAGE 2

STAGE 1 STAGE 2









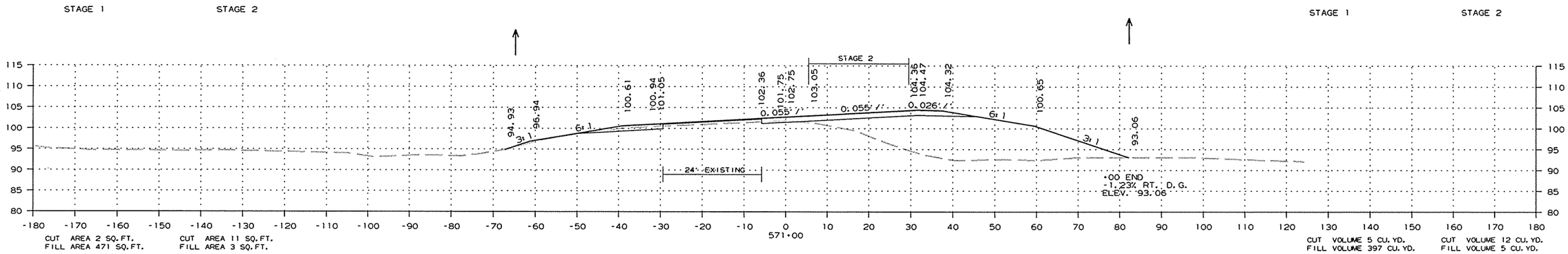
CROSS SECTION STA. 566+00 TO STA. 568+00

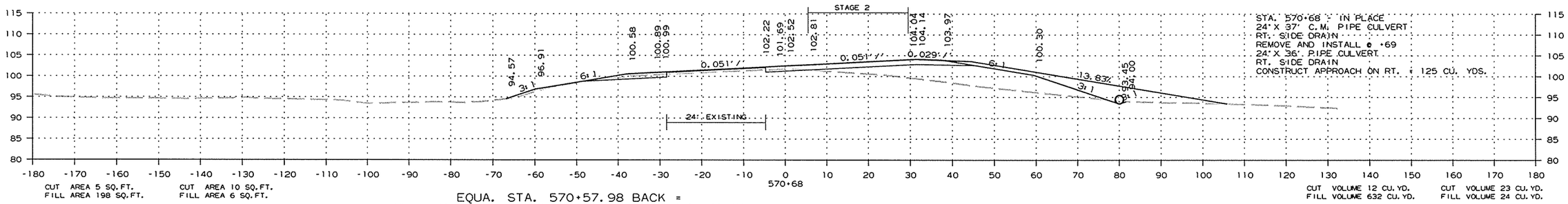
7/14/2014

R070282.DGN

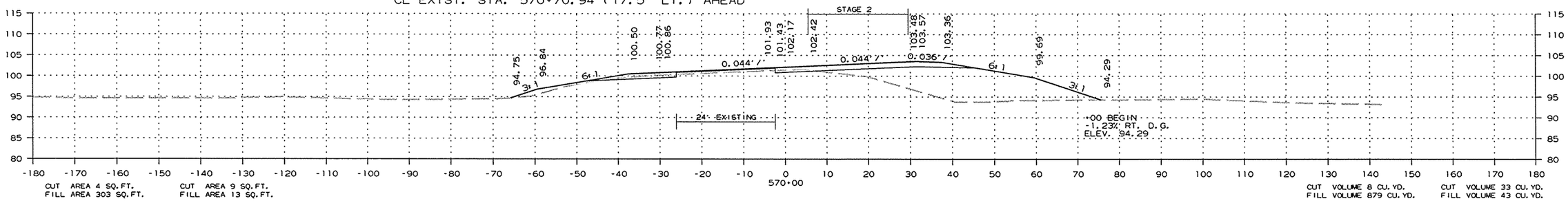
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	169	190

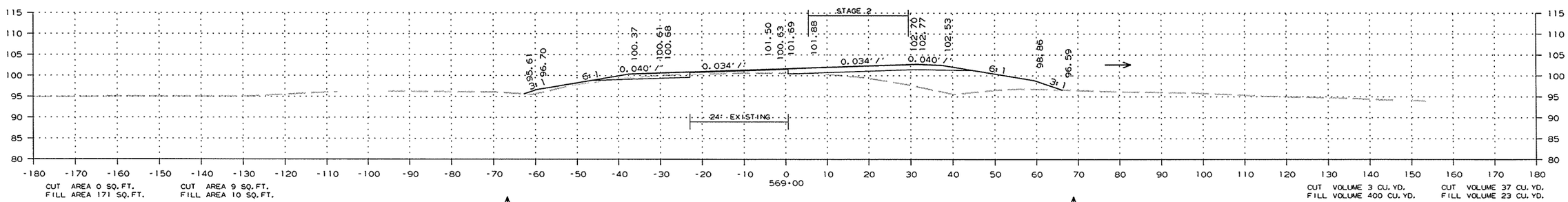
(2) CROSS SECTIONS





EQUA. STA. 570+57.98 BACK =
CL EXIST. STA. 570+70.94 (17.5' LT.) AHEAD





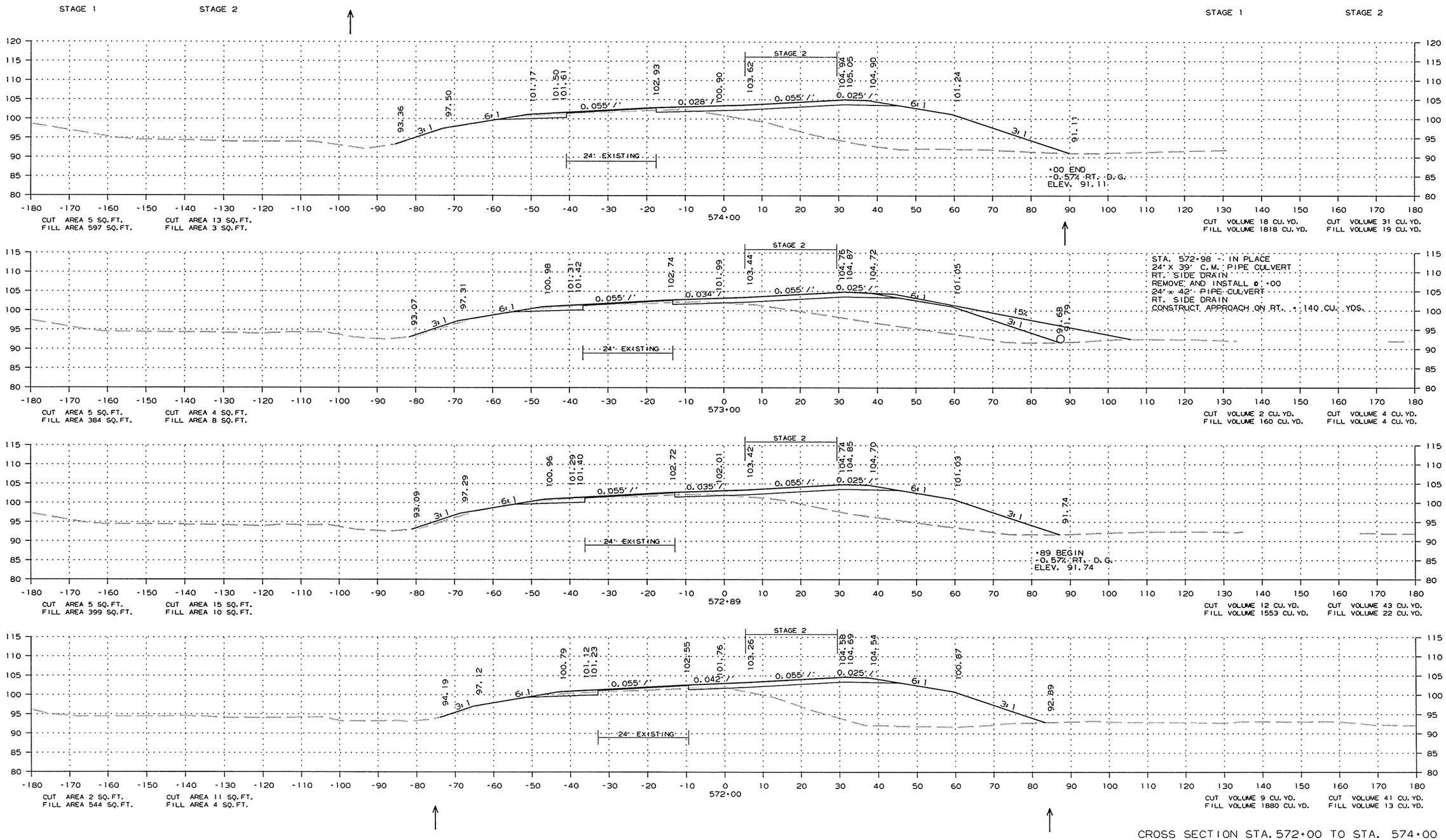
CROSS SECTION STA. 569+00 TO STA. 571+00

7/14/2014

R070282.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.		070282	170	190

(2) CROSS SECTIONS



CROSS SECTION STA. 572+00 TO STA. 574+00

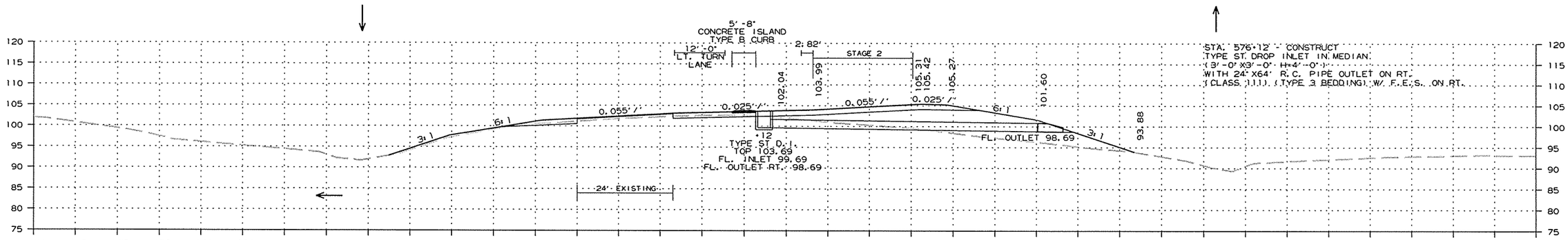
7/14/2014

R070282.DGN

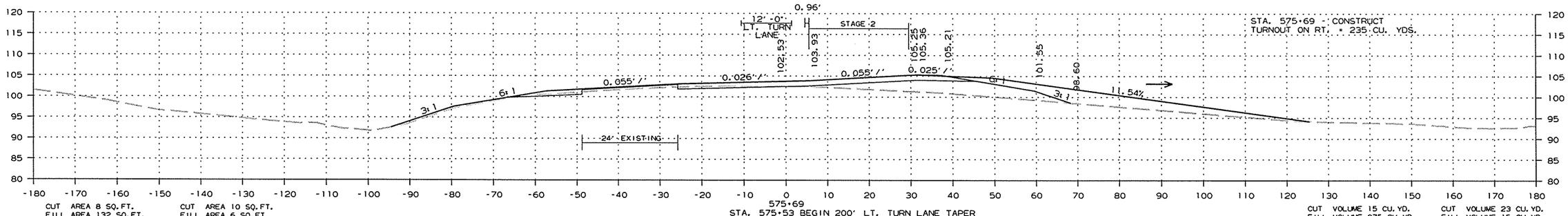
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	171	190

(2) CROSS SECTIONS

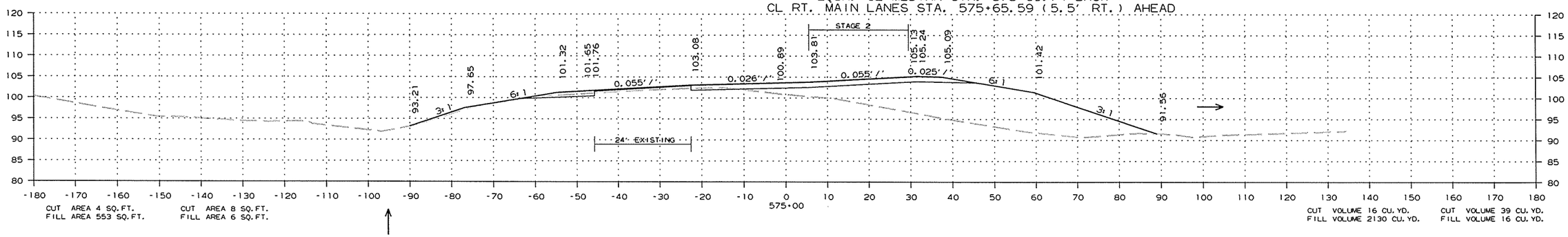
STAGE 1 STAGE 2



STAGE 1 STAGE 2



EQUA. CL MEDIAN STA. 575+69.74 BACK =
CL RT. MAIN LANES STA. 575+65.59 (5.5' RT.) AHEAD



CROSS SECTION STA. 575+00 TO STA. 576+00

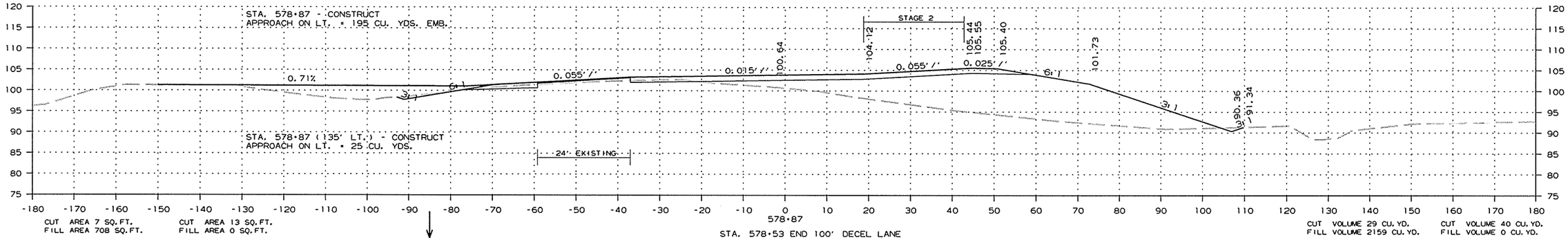
7/14/2014

R070282.DGN

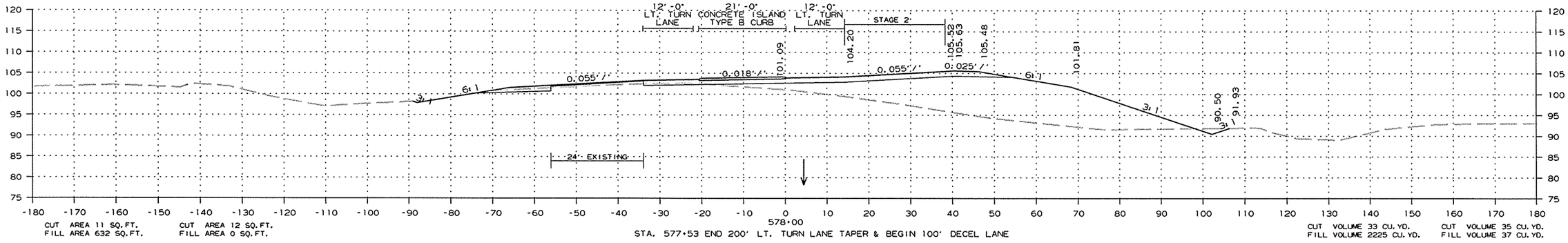
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	172	190

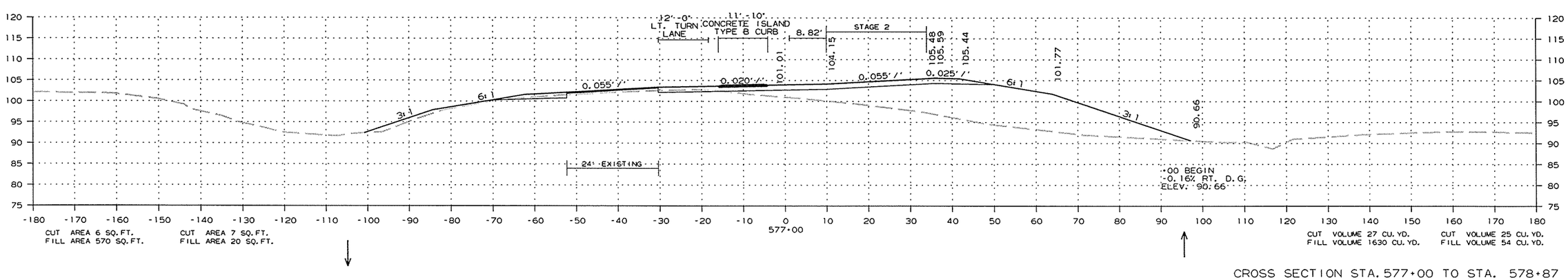
(2) CROSS SECTIONS

STAGE 1 STAGE 2



STAGE 1 STAGE 2





CROSS SECTION STA. 577+00 TO STA. 578+87

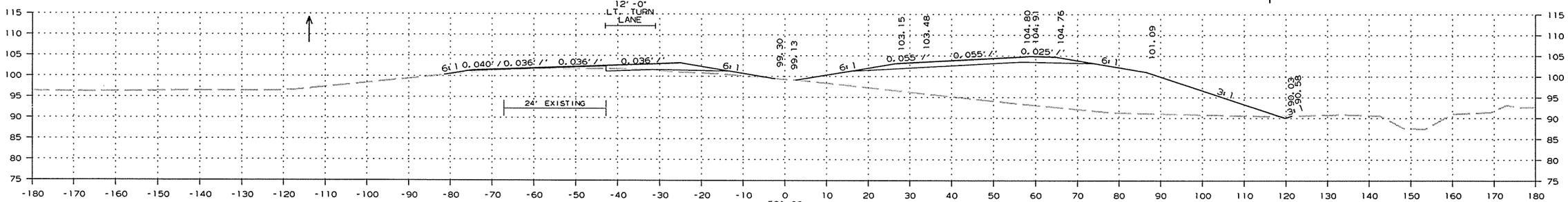
7/14/2014

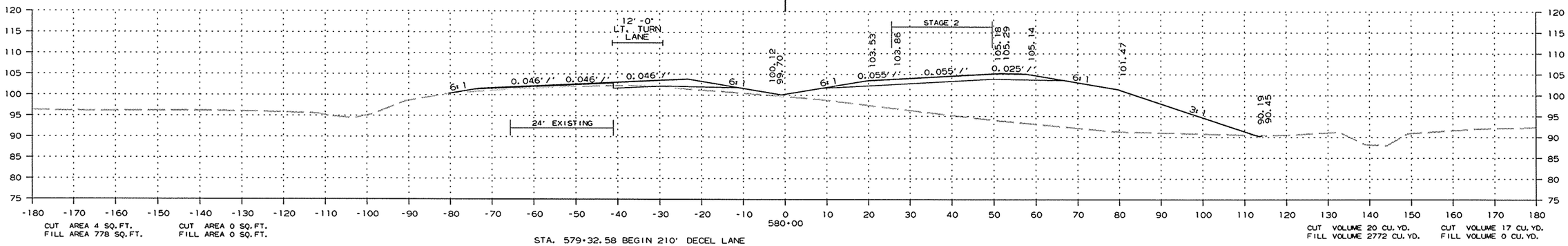
R070282.DGN

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.		070282	173	190

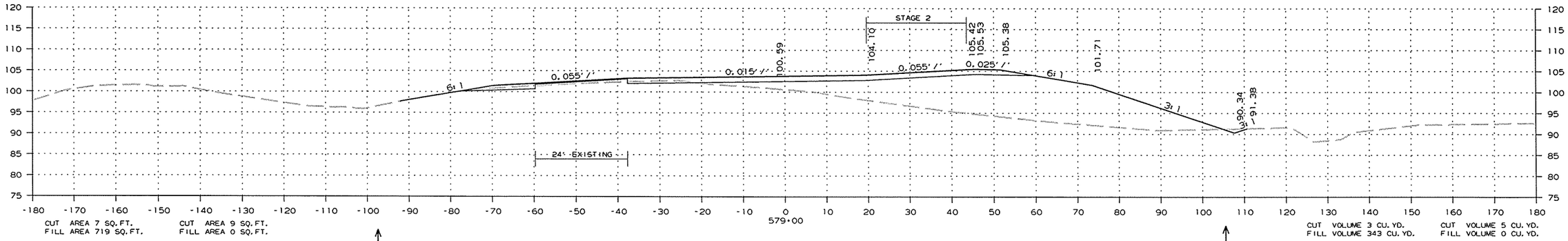
(2) CROSS SECTIONS

STAGE 1 STAGE 2





STA. 579+32.58 BEGIN 210' DECEL LANE



CROSS SECTION STA. 579+00 TO STA. 581+00

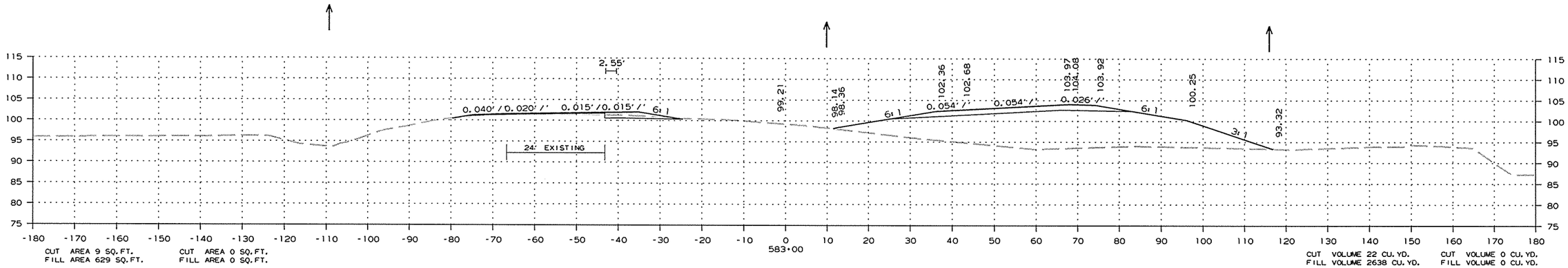
7/14/2014

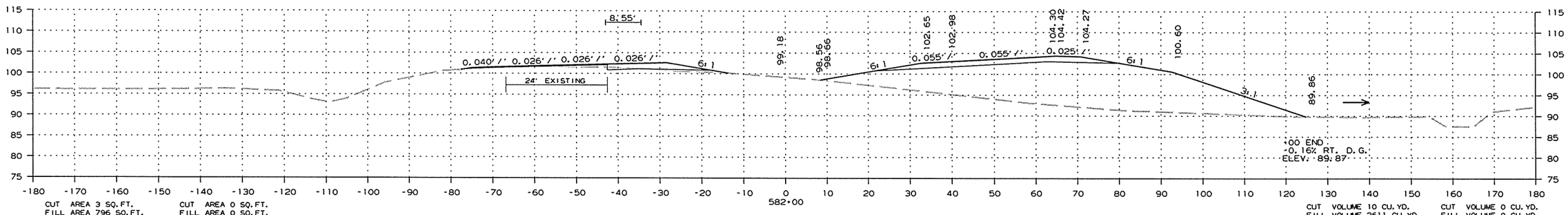
R070282.DGN

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.		070282	174	190

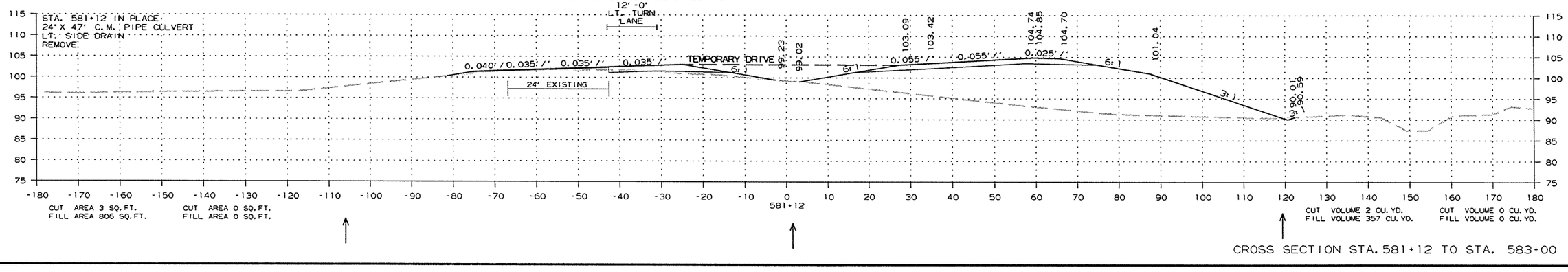
(2) CROSS SECTIONS

STAGE 1 STAGE 2





STA. 581+42.58 END 210' DECEL LANE & BEGIN 200' TAPER



CROSS SECTION STA. 581+12 TO STA. 583+00

7/14/2014

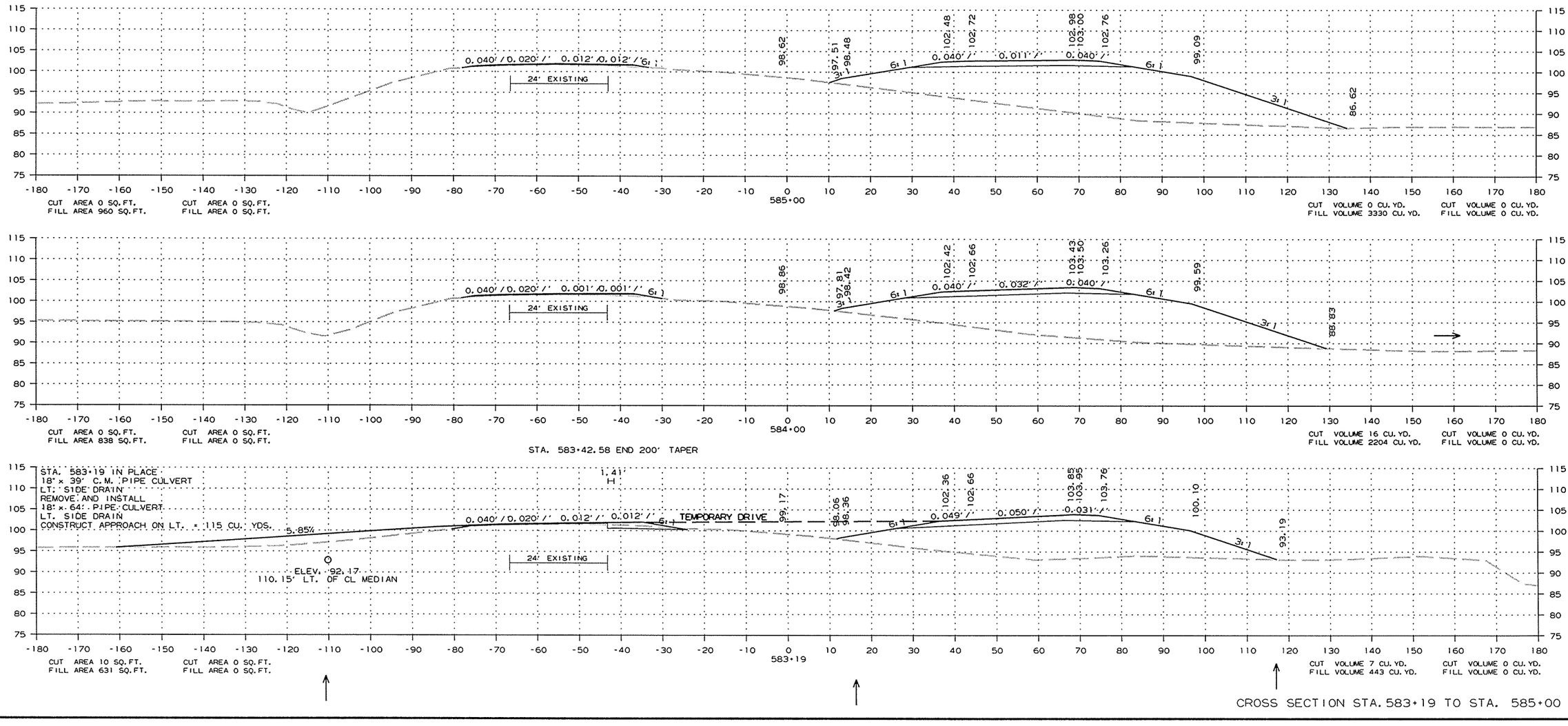
R070282.DGN

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.		070282	175	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 583+19 TO STA. 585+00

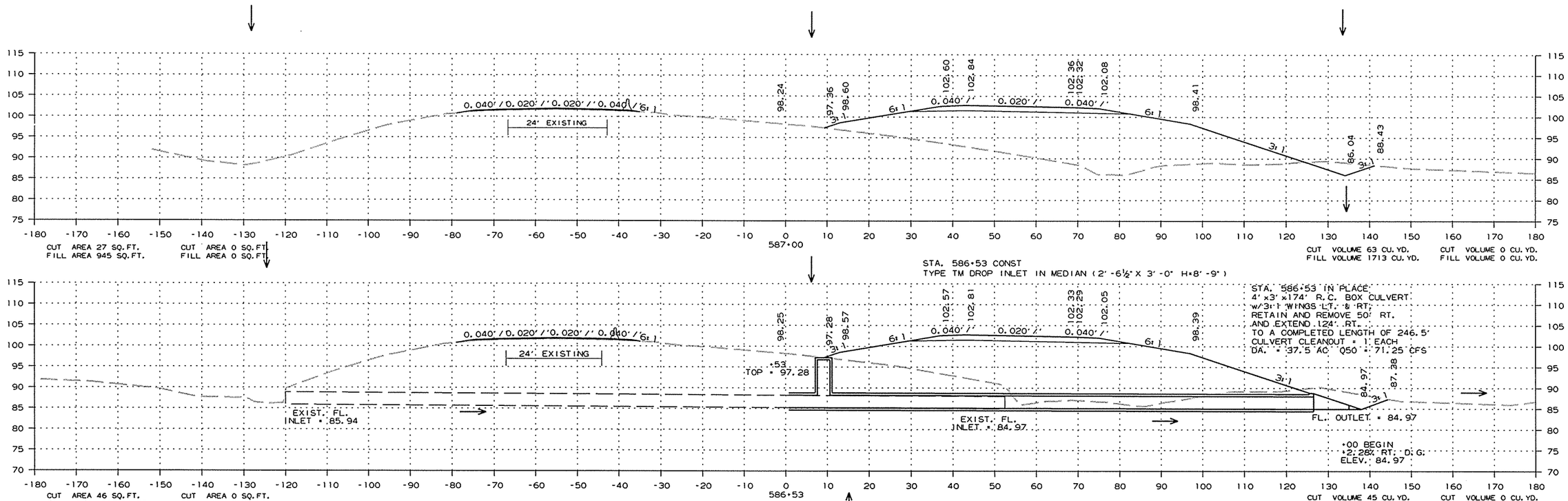
7/14/2014

R070282.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.		070282	176	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 586+00 TO STA. 587+00

7/14/2014

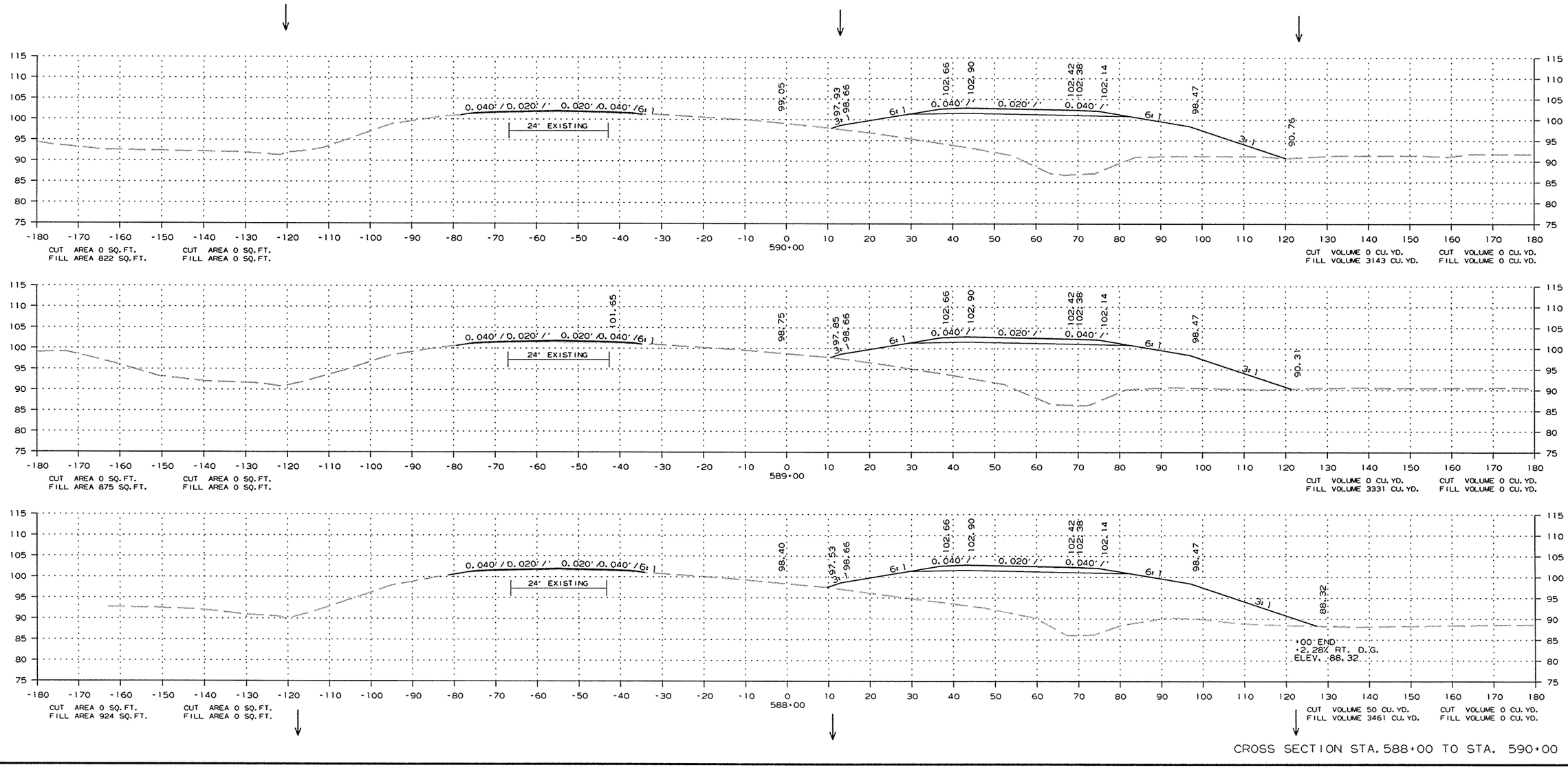
R070282.DGN

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.		070282	177	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 588+00 TO STA. 590+00

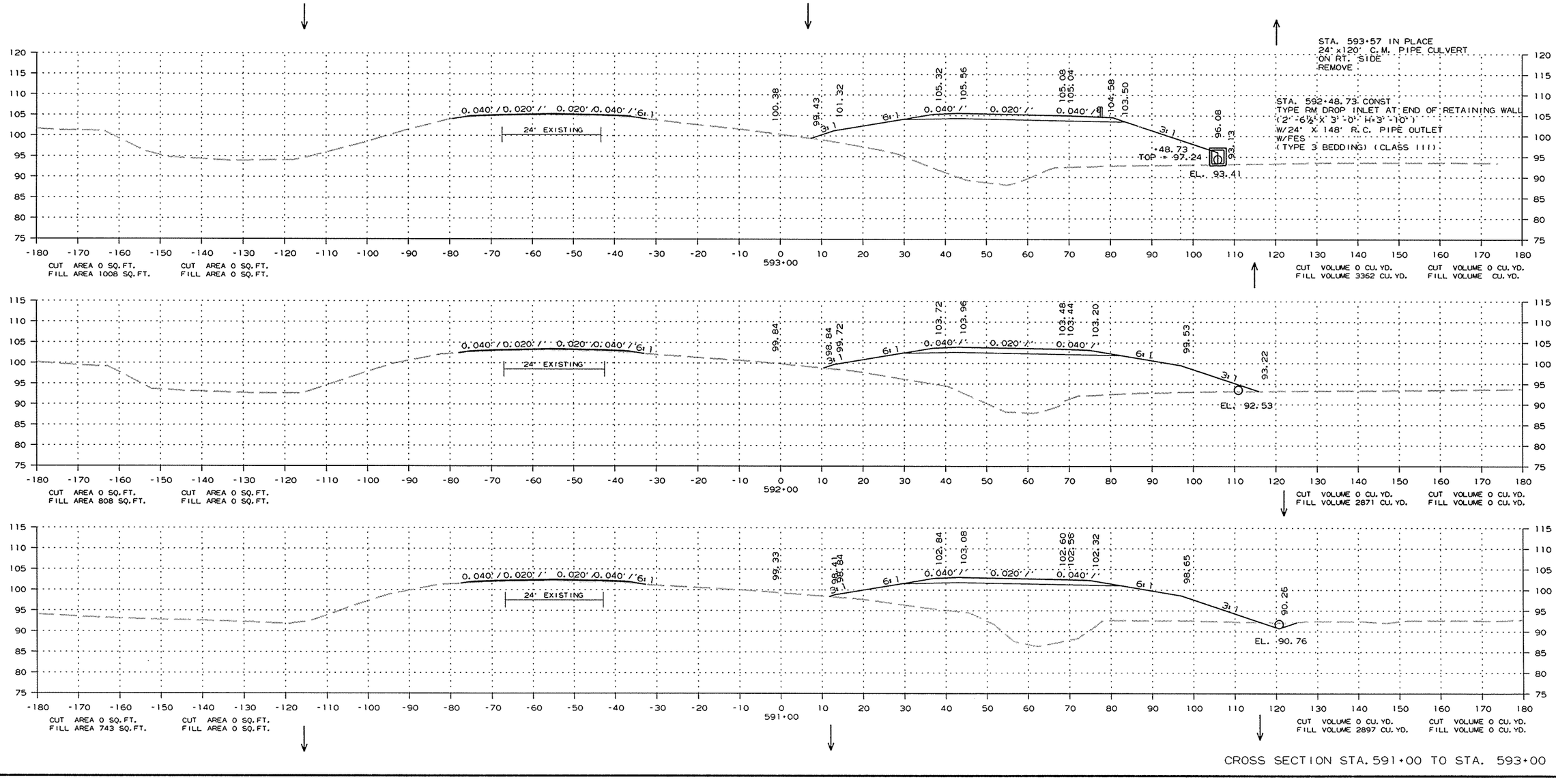
7/14/2014

R070282.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.		070282	178	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2



CROSS SECTION STA. 591+00 TO STA. 593+00

7/14/2014

R070282.DGN

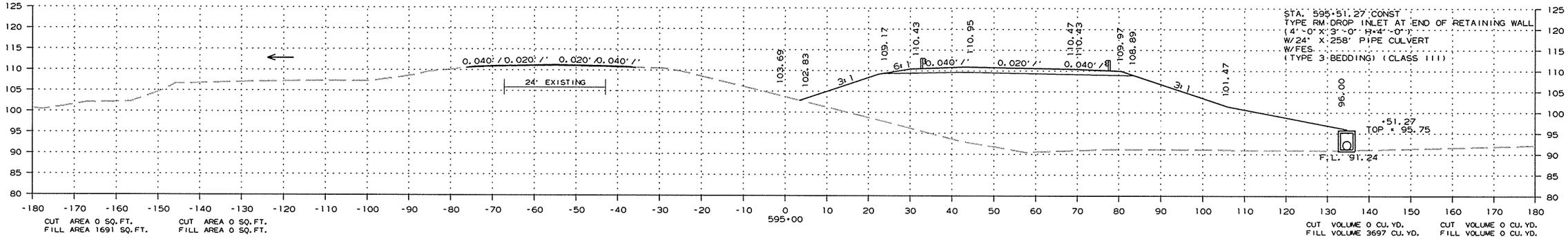
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	179	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2

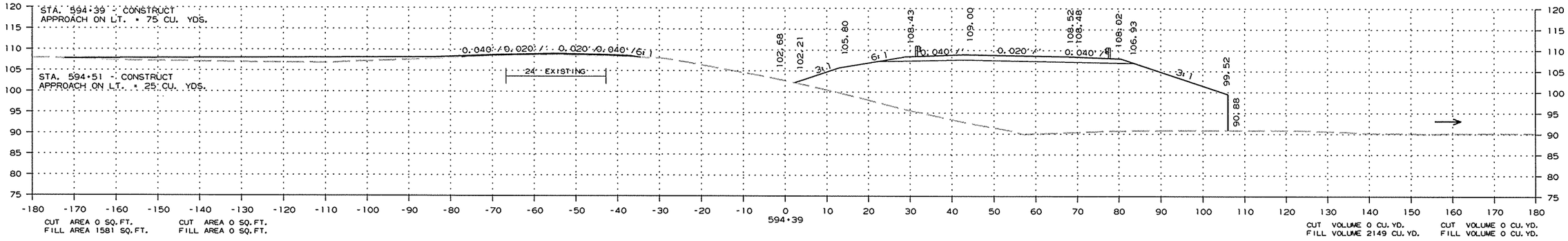
STA. 595+17.67 BEGIN 100' TRANSITION (LT. LANES)

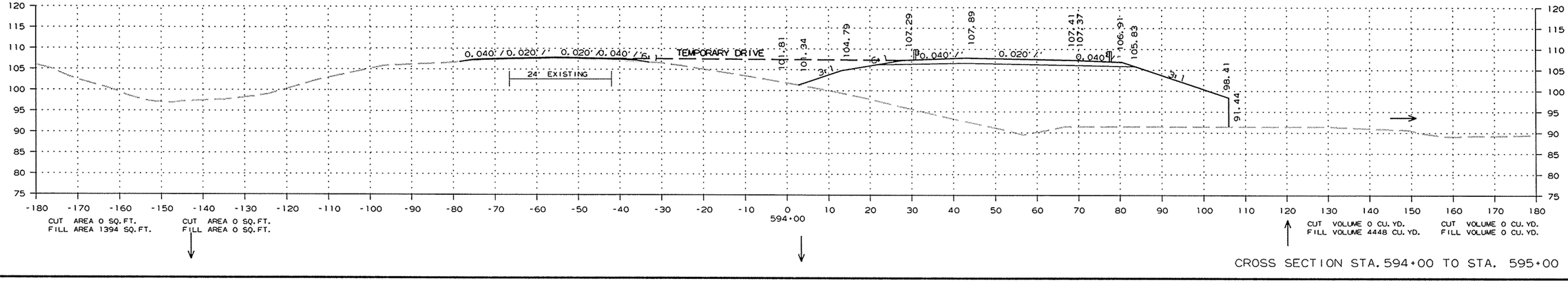
STAGE 1 STAGE 2



STA. 594+39 - CONSTRUCT APPROACH ON LT. = 75 CU. YDS.

STA. 594+51 - CONSTRUCT APPROACH ON LT. = 25 CU. YDS.





CROSS SECTION STA. 594+00 TO STA. 595+00

7/14/2014

R070282.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.		070282	180	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2

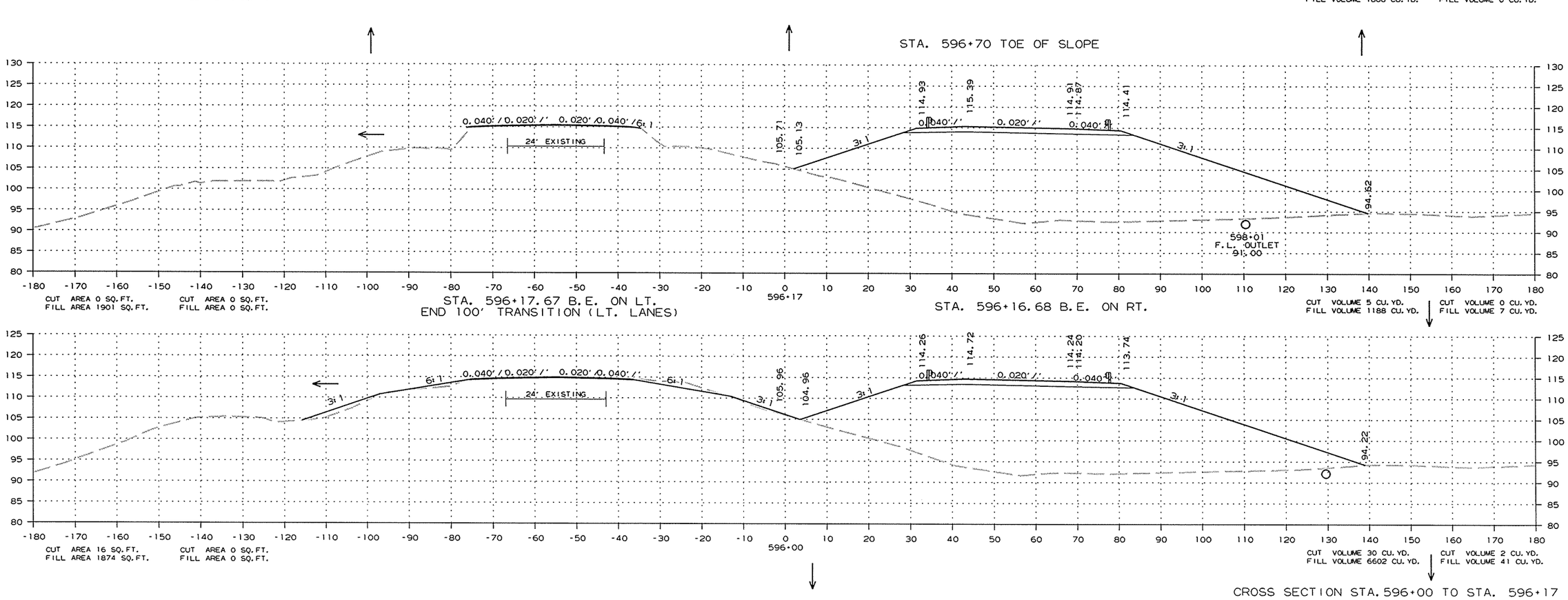
CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.

STAGE 1 STAGE 2

CUT VOLUME 0 CU.YD.
FILL VOLUME 1866 CU.YD.

CUT VOLUME 0 CU.YD.
FILL VOLUME 0 CU.YD.



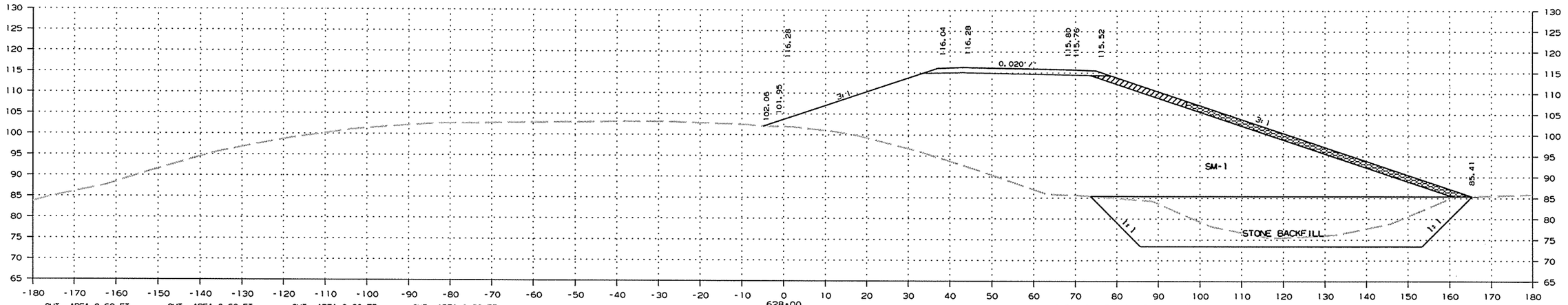
7/14/2014

R070282.DGN

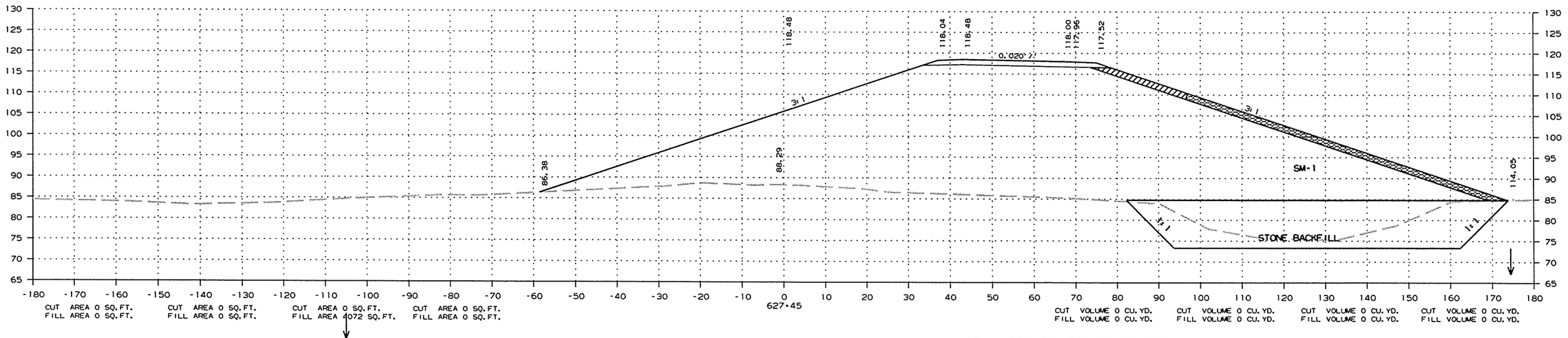
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-27-14				6	ARK.			
				JOB NO.		070282	181	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT



STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT



STA. 627+45 TOE OF SLOPE

CROSS SECTION STA. 627+45 TO STA. 628+00

10/27/2014

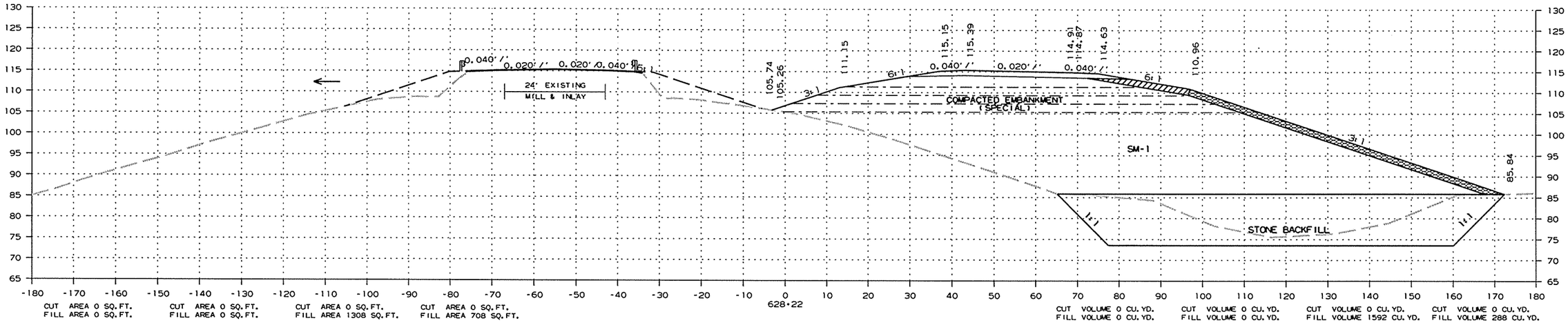
R070282.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-27-14				6	ARK.			
				JOB NO.		070282	182	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT



STA. 628+20.83 B.E. ON LT.

STA. 628+22.30 B.E. ON RT.

CROSS SECTION STA. 628+22 TO STA. 628+22

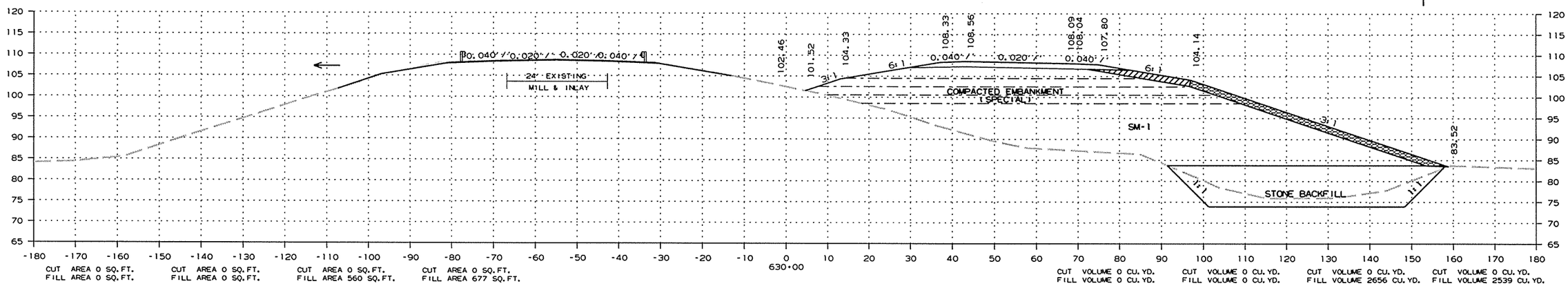
10/27/2014

R070282.DGN

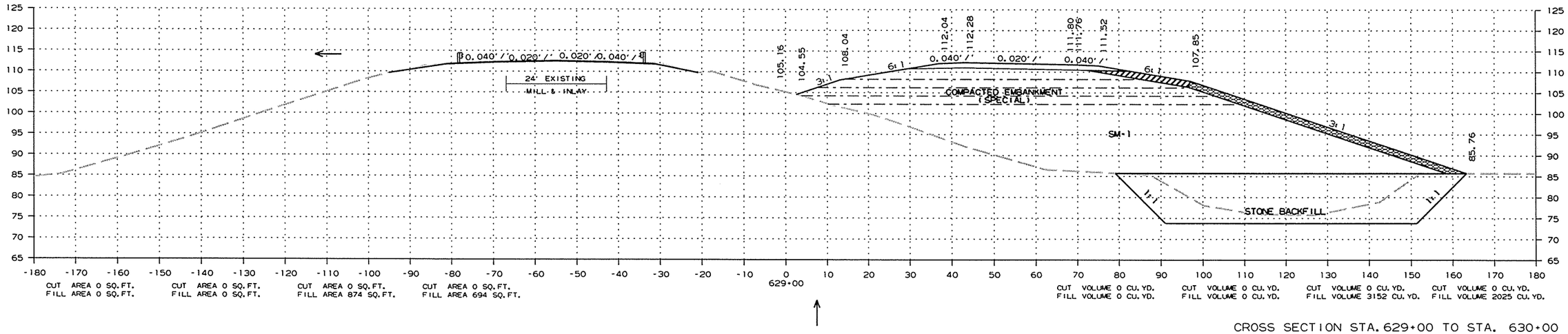
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-27-14				6	ARK.			
				JOB NO.		070282	183	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT



STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT



CROSS SECTION STA. 629+00 TO STA. 630+00

10/27/2014

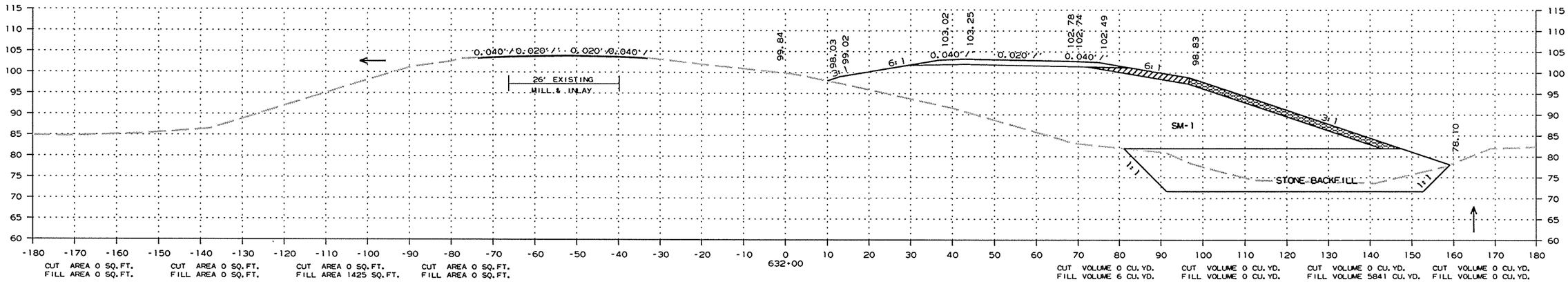
R070282.DGN

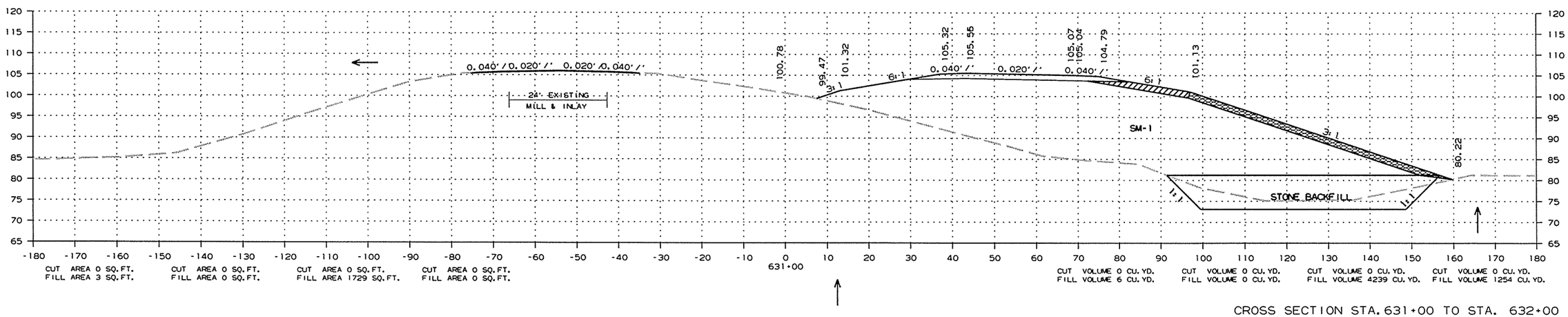
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-27-14				6	ARK.			
				JOB NO.		070282	184	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT





CROSS SECTION STA. 631+00 TO STA. 632+00

10/27/2014

R070282.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.		070282	185	190

(2) CROSS SECTIONS

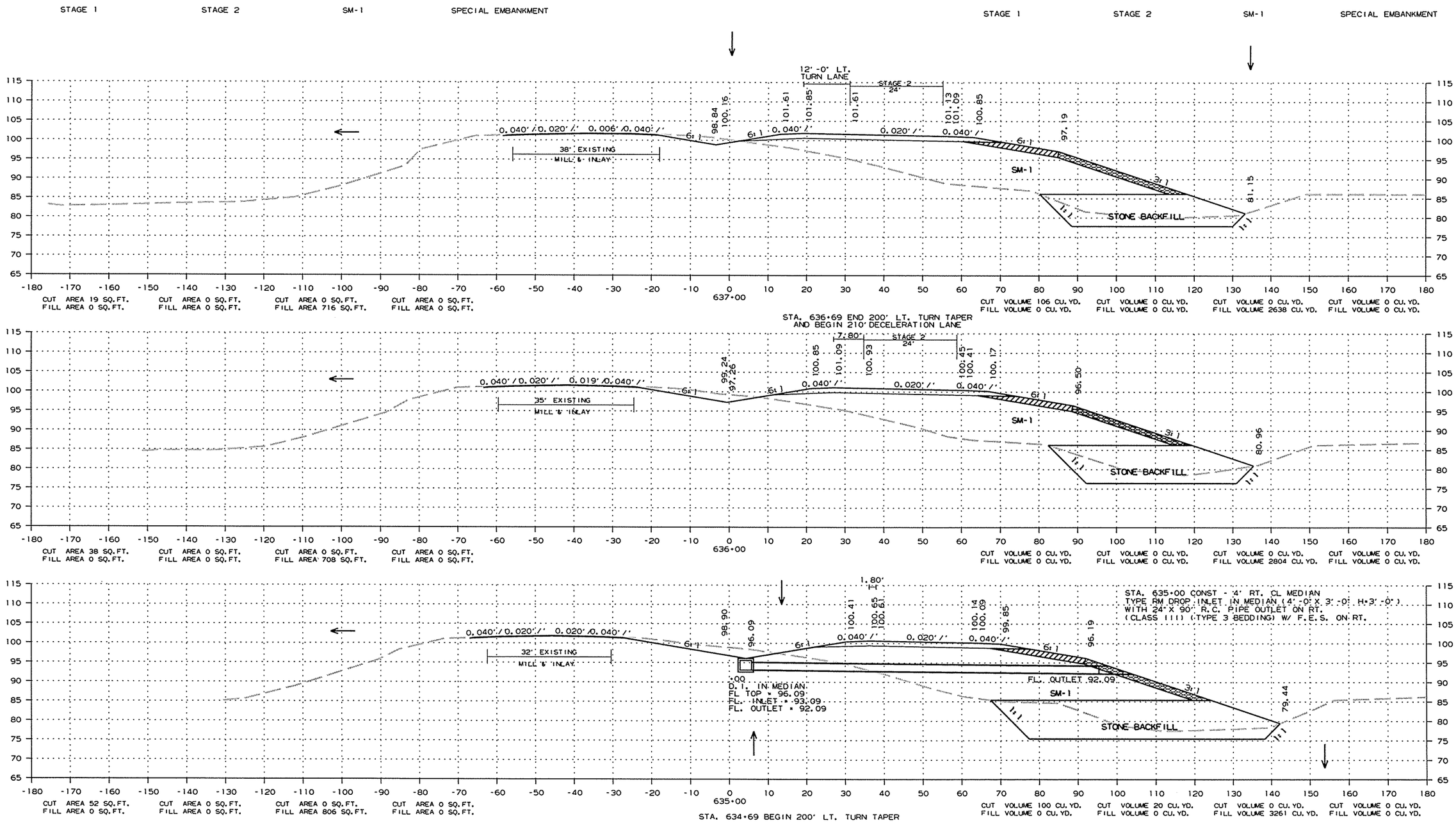
CROSS SECTION STA. 632+58 TO STA. 634+00

7/14/2014

R070282.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
10-27-14				6	ARK.			
				JOB NO.		070282	186	190

(2) CROSS SECTIONS



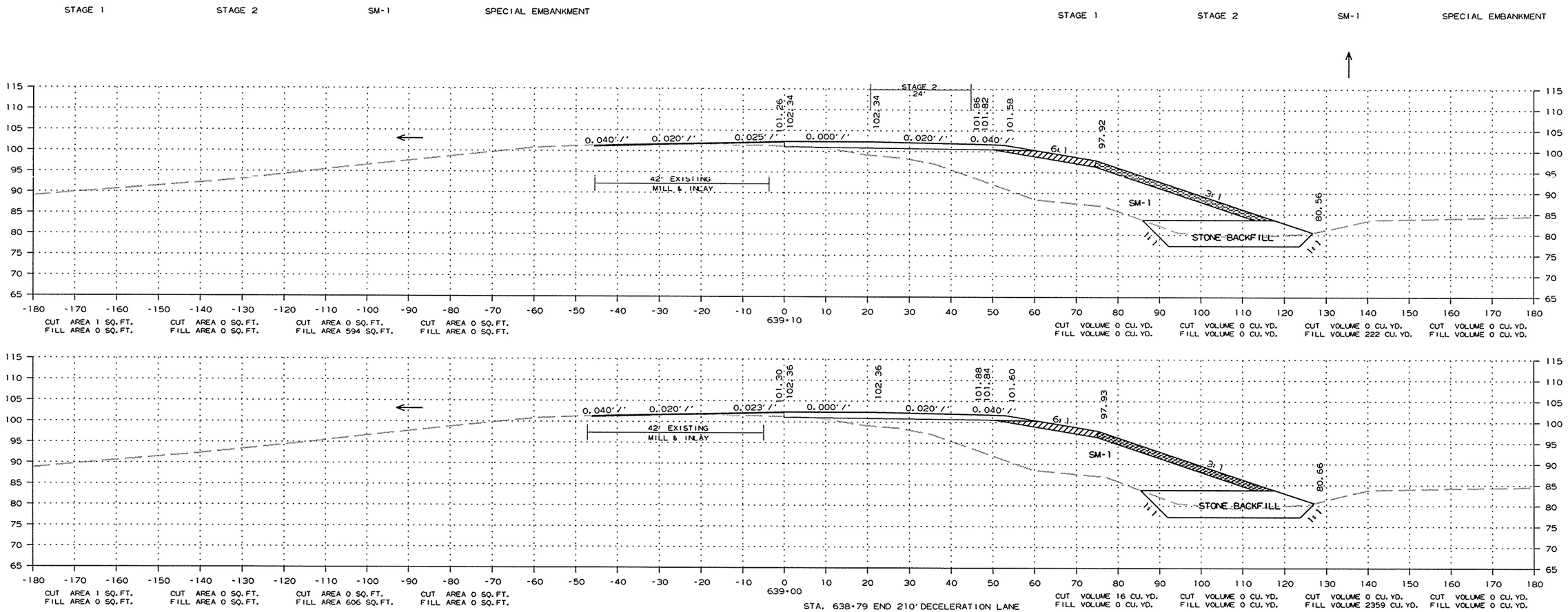
CROSS SECTION STA. 635+00 TO STA. 637+00

10/27/2014

R070282.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.		070282	187	190

(2) CROSS SECTIONS



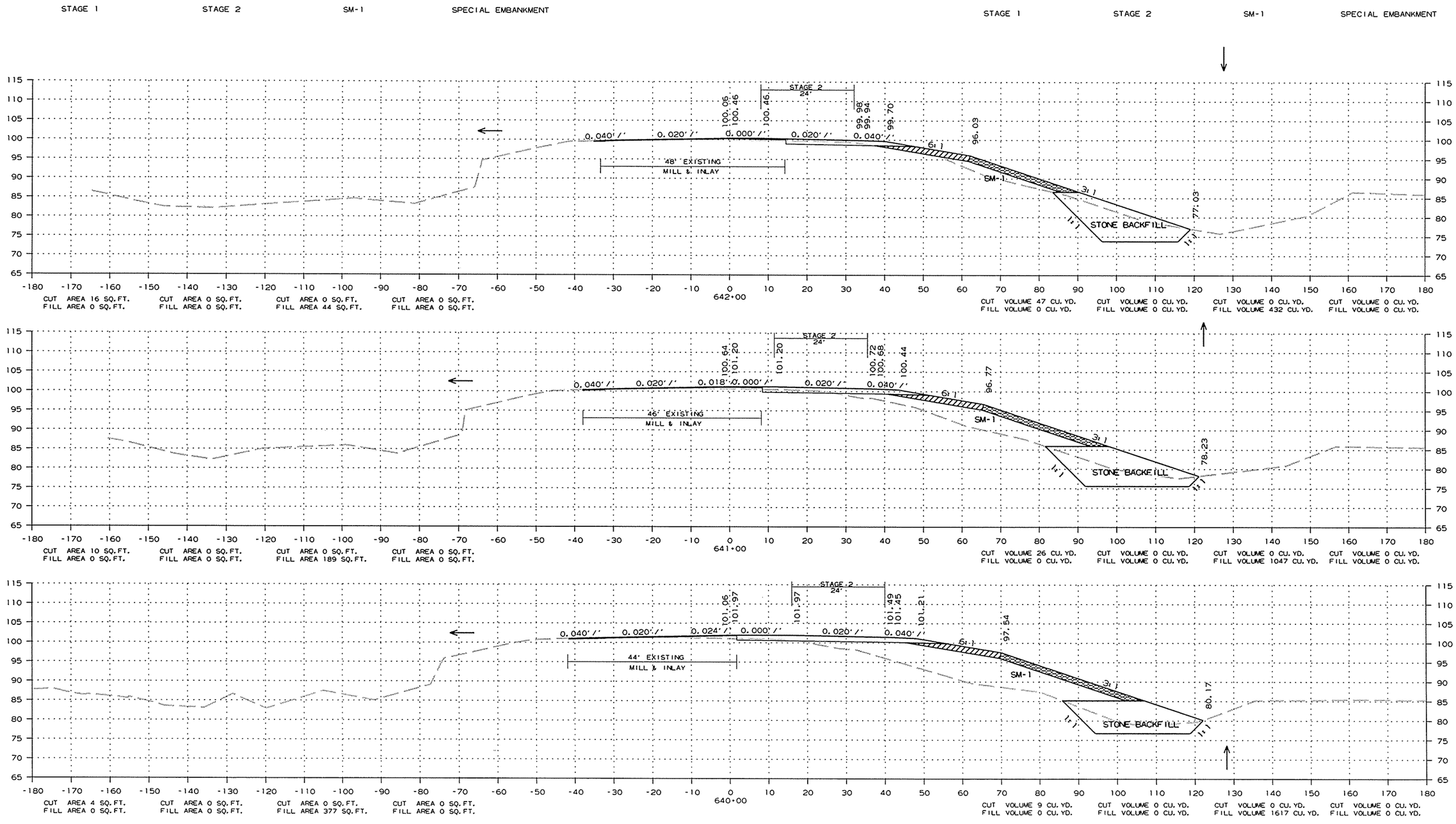
CROSS SECTION STA. 638+00 TO STA. 639+10

7/14/2014

R070282.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.		070282	188	190

(2) CROSS SECTIONS



CROSS SECTION STA. 640+00 TO STA. 642+00

7/14/2014

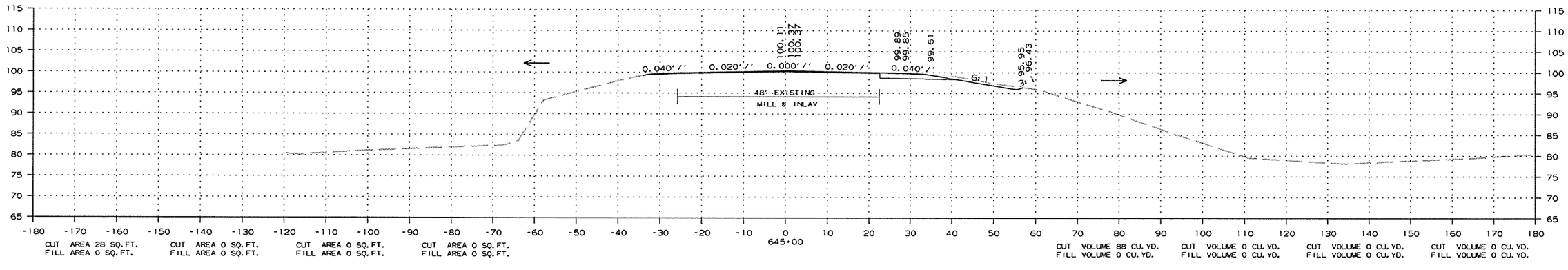
R070282.DGN

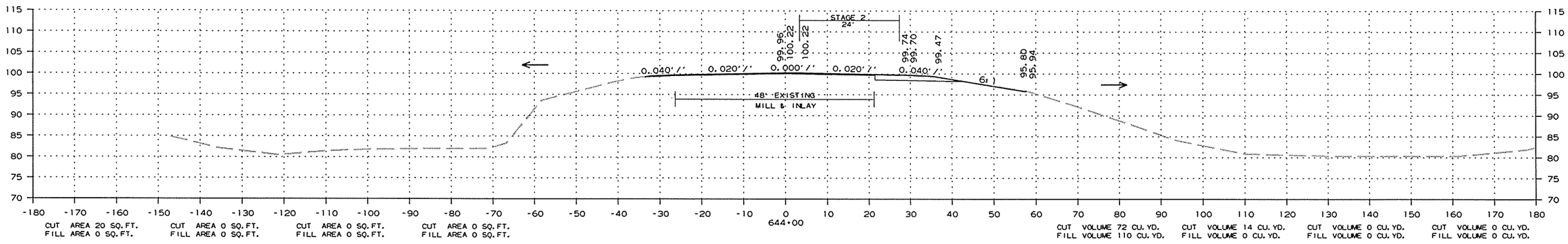
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		070282	189	190

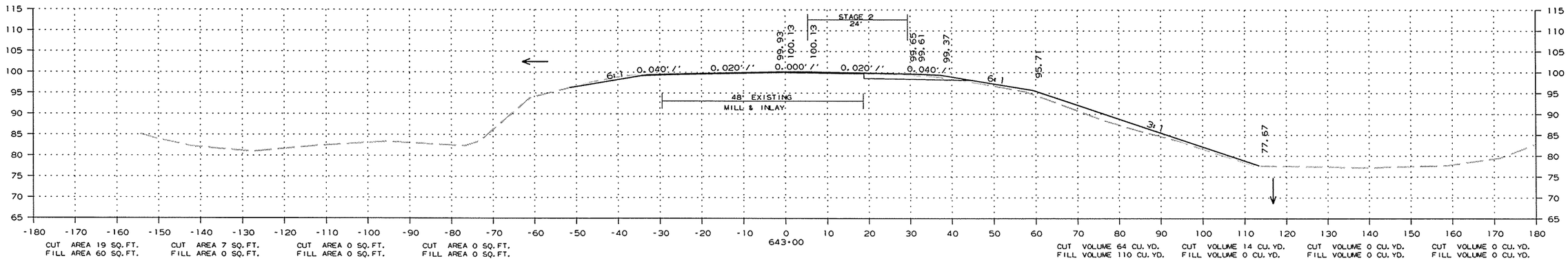
(2) CROSS SECTIONS

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT







CROSS SECTION STA. 643+00 TO STA. 645+00

7/14/2014

R070282.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.		070282	190	190

(2) CROSS SECTIONS

STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT

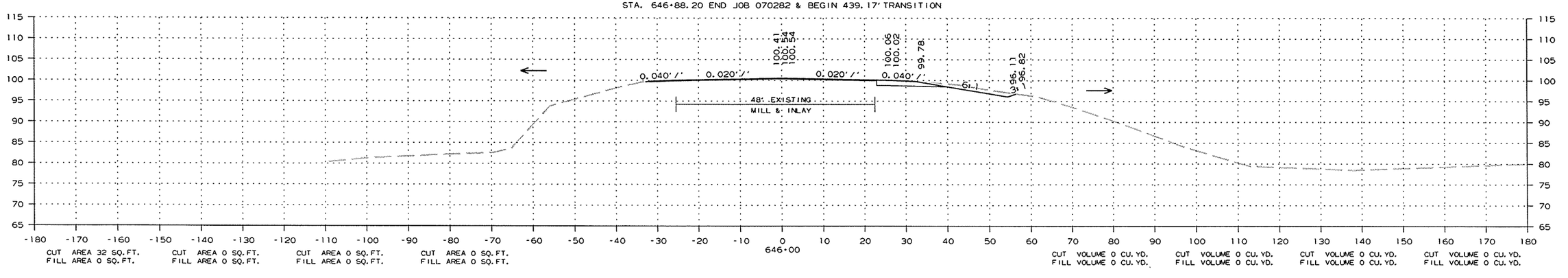
STAGE 1 STAGE 2 SM-1 SPECIAL EMBANKMENT

CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 3 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 3 SQ. FT.

STA. 651+27.37 END 439.17' TRANSITION

STA. 646+88.20 END JOB 070282 & BEGIN 439.17' TRANSITION

CUT VOLUME 60 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD.



CUT AREA 32 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT. | CUT AREA 0 SQ. FT. FILL AREA 0 SQ. FT.

CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD. | CUT VOLUME 0 CU. YD. FILL VOLUME 0 CU. YD.

CROSS SECTION STA. 646+00 TO STA. 646+00

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R070282.DGN