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.		061348	1	131
				(2)	UPRR/PARKWAY DR. STR. & APPRS. (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

UPRR / PARKWAY DR. STR. & APPRS. (S)

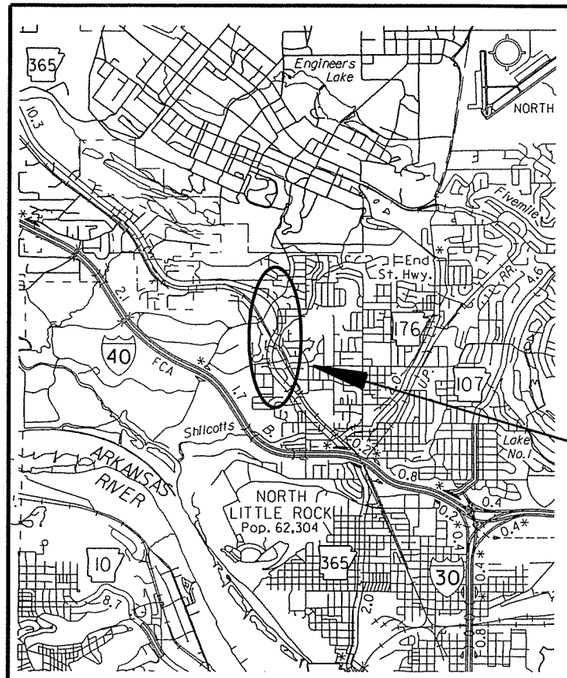
PULASKI COUNTY

ROUTE 365 SECTION 11

F.A.P. NHPP-EBE-9315(38)

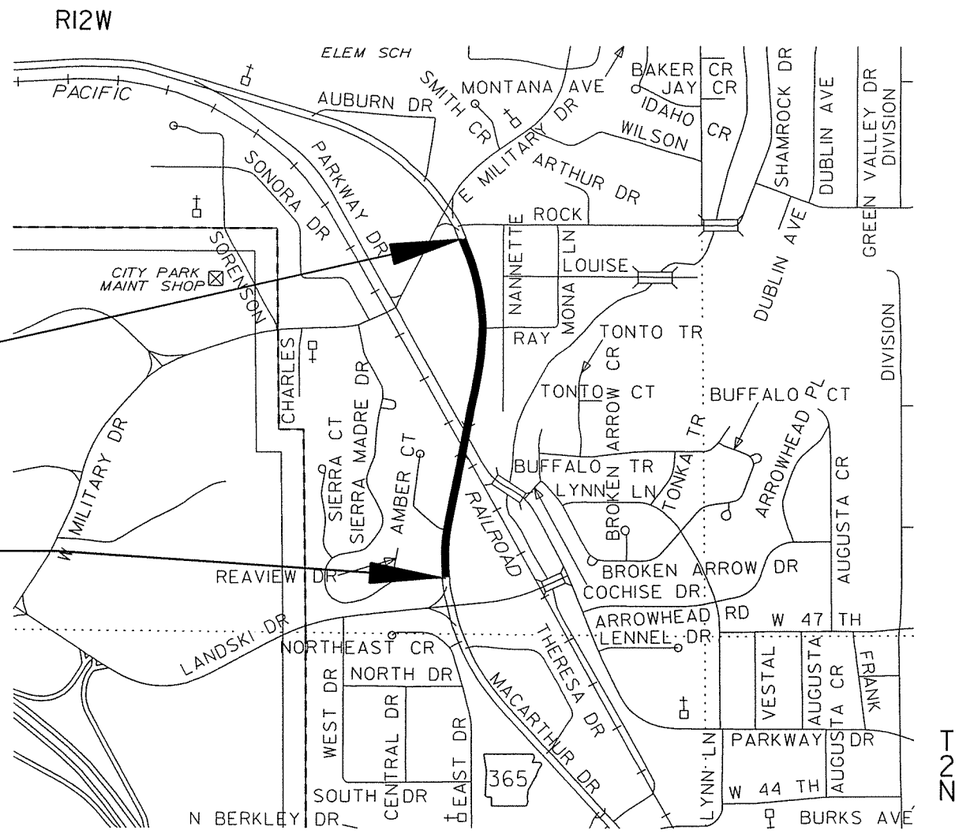
JOB 061348

NOT TO SCALE



PROJECT LOCATION

VICINITY MAP



STA. 121+68.98
END JOB 061348

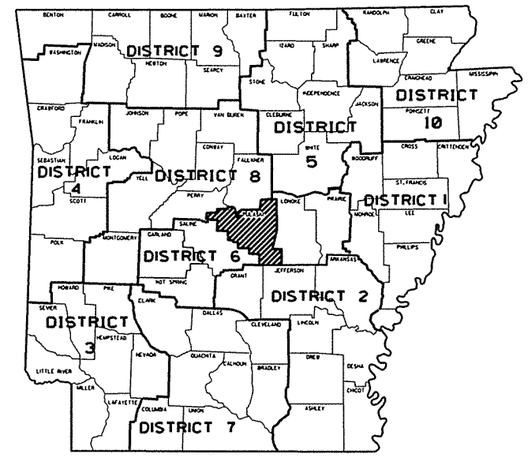
STA. 100+38.81
BEGIN JOB 061348
LOG MILE 13.75

BRIDGE DATA

STA. 106+20.33 BRIDGE END
BRIDGE NO. 07334
438'-0" CONT. COMP. PLATE GIRDER UNITS (98'-98'-121'-121')
98'-0" SIMPLE PLATE GIRDER SPAN
50'-0" CLEAR ROADWAY
539'-4" BRIDGE LENGTH
50° LT. FWD. SKEW
STA. 111+59.67 BRIDGE END

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 34°47'56.4"	N 34°48'07.2"	N 34°48'18.1"
LONGITUDE	W 92°17'31.7"	W 92°17'30.0"	W 92°17'29.3"

PROJECT LENGTH CALCULATED ALONG C.L. CONSTRUCTION
GROSS LENGTH OF PROJECT 2130.17 FEET OR 0.403 MILES
NET LENGTH OF ROADWAY 1590.83 FEET OR 0.301 MILES
NET LENGTH OF BRIDGES 539.34 FEET OR 0.102 MILES
NET LENGTH OF PROJECT 2130.17 FEET OR 0.403 MILES



ARKANSAS HWY. DIST. 6

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2035
2015 ADT	9500
2035 ADT	12900
2035 DHV	1419
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	3%
DESIGN SPEED	40 MPH

P.E. JOB 061348

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7836
M. E. BANKS

6-30-15

DEPUTY DIRECTOR
AND CHIEF ENGINEER

5/14/2015

R061348.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.		061348	2	131

(2) INDEX OF SHEETS, GOV. SPECS., & GEN. NOTES

INDEX OF SHEETS

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

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 061348
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
108-1	LIQUIDATED DAMAGES
400-1	TACK COATS
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1	PIPE CULVERTS FOR SIDE DRAINS
620-1	MULCH COVER
JOB 061348	AIRPORT CLEARANCE REQUIREMENTS
JOB 061348	BIDDING REQUIREMENTS AND CONDITIONS
JOB 061348	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 061348	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 061348	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 061348	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 061348	DRILLED SHAFT FOUNDATIONS
JOB 061348	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 061348	HIGH PERFORMANCE PAVEMENT MARKING
JOB 061348	INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (UPRR)
JOB 061348	MAINTENANCE OF TRAFFIC
JOB 061348	MANDATORY ELECTRONIC CONTRACT
JOB 061348	NESTING SITES OF MIGRATORY BIRDS
JOB 061348	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB 061348	PARTNERING REQUIREMENTS
JOB 061348	PROSECUTION AND PROGRESS
JOB 061348	SHORING
JOB 061348	SHORING FOR CULVERTS
JOB 061348	SITE USE (A+C METHOD)
JOB 061348	SOIL STABILIZATION
JOB 061348	SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB 061348	STORM WATER POLLUTION PREVENTION PLAN
JOB 061348	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 061348	UTILITY ADJUSTMENTS
JOB 061348	VALUE ENGINEERING
JOB 061348	WARM MIX ASPHALT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-29-15

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. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 14 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

INDEX OF SHEETS, GOV. SPECS., & GEN. NOTES

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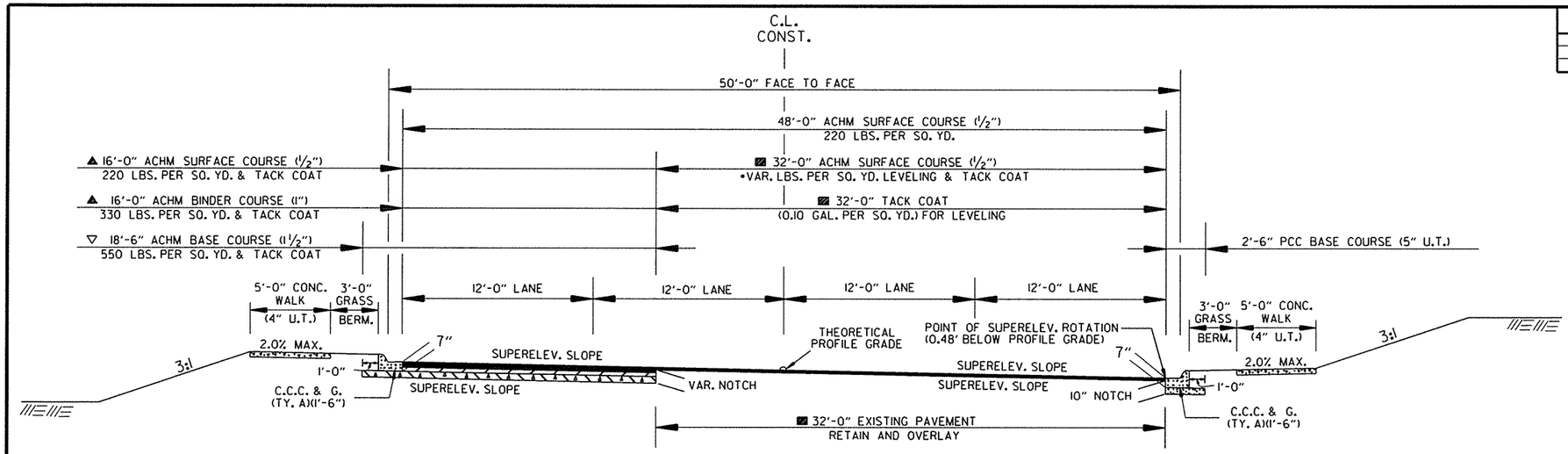
				6	ARK.			
				JOB NO.		061348	3	131

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-29-15



•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

▨ TRANSITION FROM 32'-0" AT STA. 100+38.81 TO 0'-0" AT STA. 103+45.00

▲ TRANSITION FROM 16'-0" AT STA. 100+38.81 TO 48'-0" AT STA. 103+45.00

▽ TRANSITION FROM 18'-6" AT STA. 100+38.81 TO 50'-6" AT STA. 103+45.00

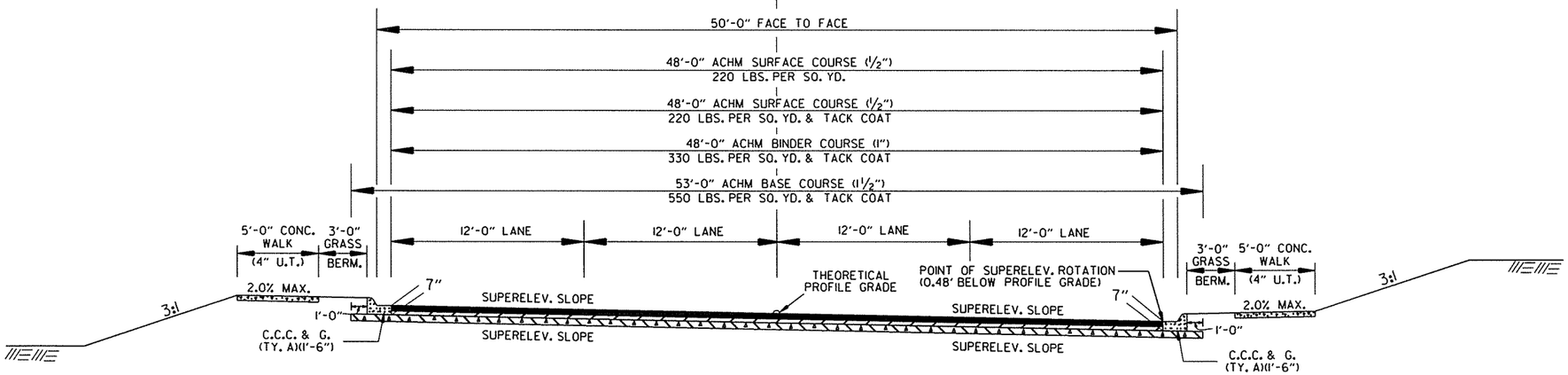
SUPERELEVATION SECTION
HWY. 365 NOTCH AND WIDENING
STA. 100+38.81 - STA. 103+45.00

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

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 SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS PAY ITEMS.

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

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



SUPERELEVATION SECTION
(REVERSE FOR LT. HAND CURVE)
HWY. 365 FULL DEPTH
STA. 103+45.00 - STA. 105+34.00
STA. 112+49.65 - STA. 121+00.00

TAPER RT. SIDE FROM 25'-0" CENTERLINE-CURB FACE OFFSET AT STA. 118+98.98 TO 17'-5" CENTERLINE-CURB FACE OFFSET AT STA. 121+00.00

TAPER LT. SIDE FROM 25'-0" CENTERLINE-CURB FACE OFFSET AT STA. 120+33.94 TO 25'-3" CENTERLINE-CURB FACE OFFSET AT STA. 121+00.00

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TYPICAL SECTIONS OF IMPROVEMENT

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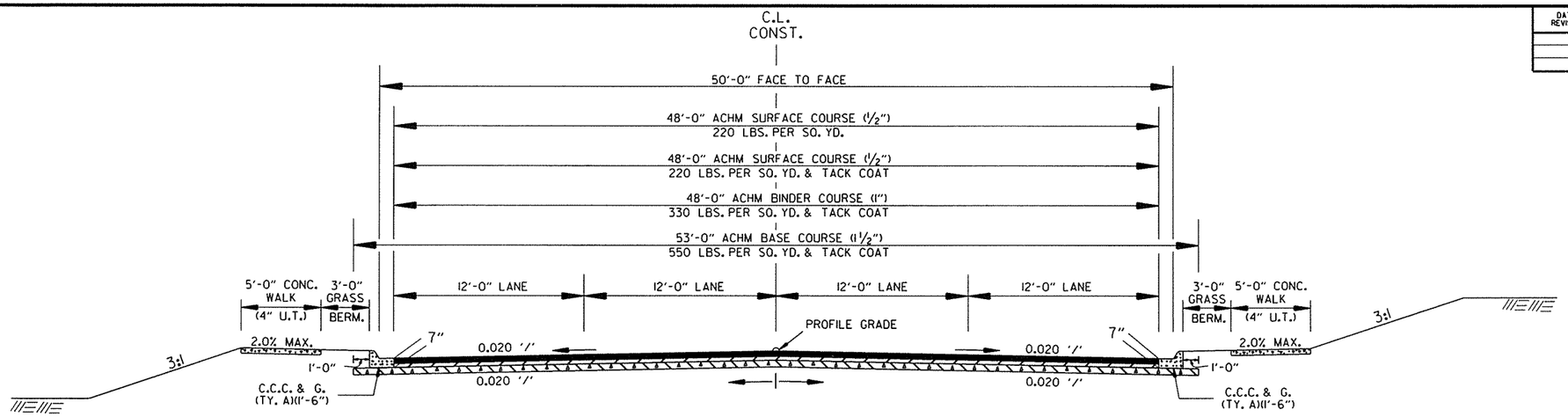
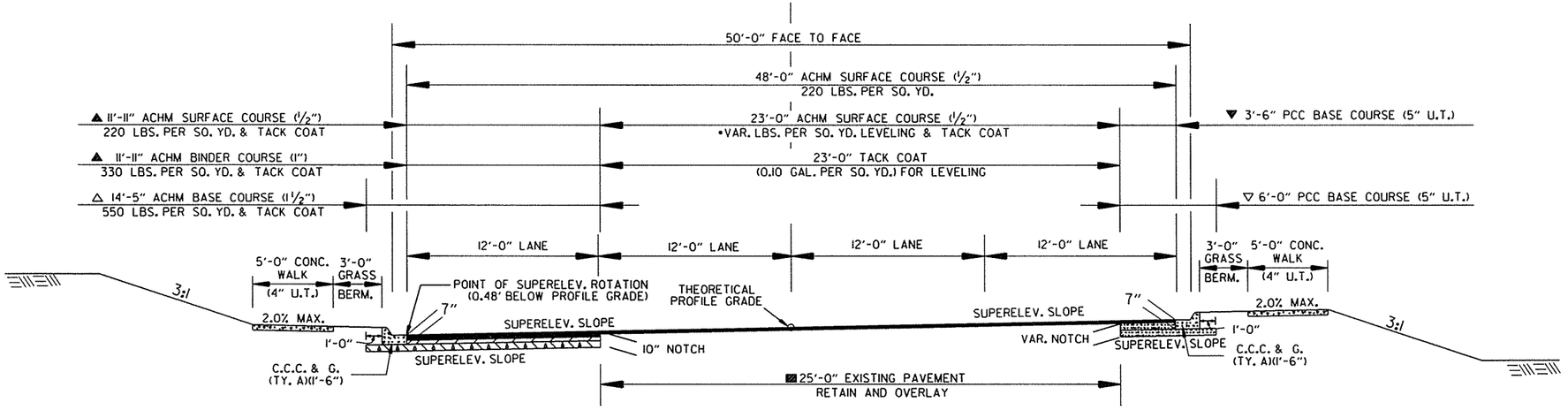
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-29-15



TANGENT SECTION
HWY. 365 FULL DEPTH
STA. 105+34.00 - STA. 106+20.33 B.E.
STA. 111+59.67 B.E. - STA. 112+49.65



•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

SUPERELEVATION SECTION
HWY. 365 NOTCH AND WIDENING
STA. 121+00.00 - STA. 121+68.98

▩ TRANSITION FROM 25'-0" AT STA. 121+00.00 TO 27'-7" AT STA. 121+68.98

▲ TRANSITION FROM 11'-11" AT STA. 121+00.00 TO 10'-9" AT STA. 121+68.98

△ TRANSITION FROM 14'-5" AT STA. 121+00.00 TO 13'-3" AT STA. 121+68.98

▼ TRANSITION FROM 3'-6" AT STA. 121+00.00 TO 0'-0" AT STA. 121+68.98

▽ TRANSITION FROM 6'-0" AT STA. 121+00.00 TO 2'-6" AT STA. 121+68.98

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

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 SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS PAY ITEMS.

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

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

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TYPICAL SECTIONS OF IMPROVEMENT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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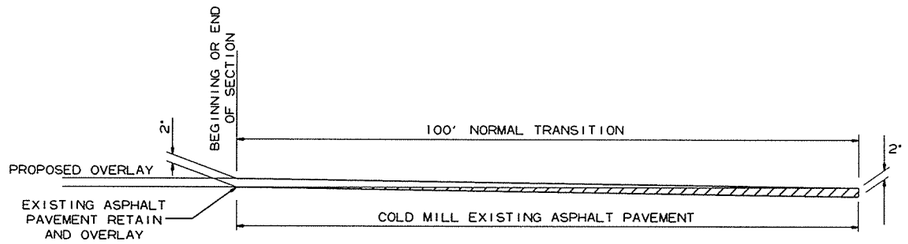
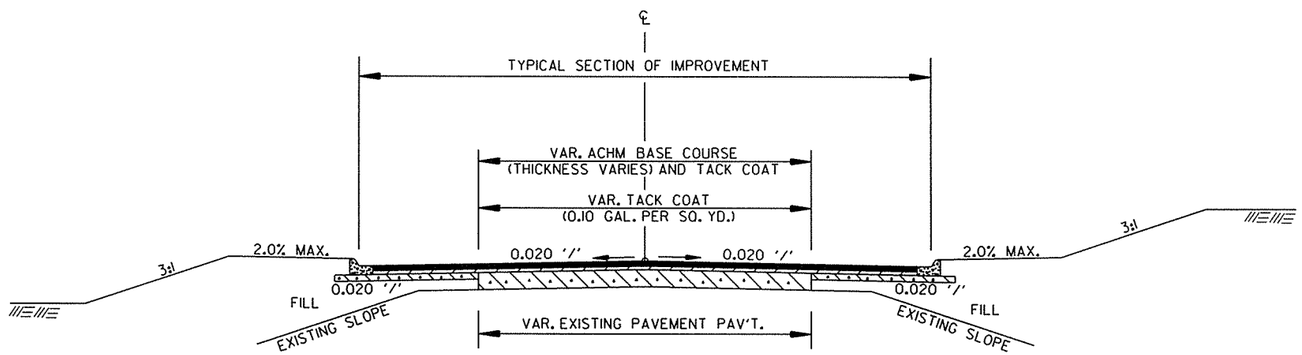
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-29-15



DETAIL FOR TRANSITIONS



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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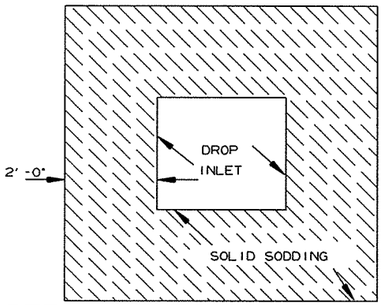
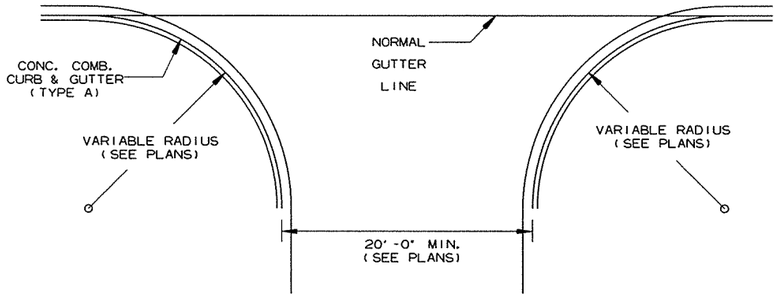
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-29-15

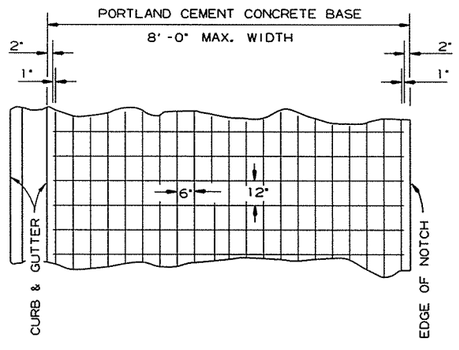


DETAIL FOR SOLID SODDING
AROUND DROP INLETS
(TYPE E INLETS)



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

DETAIL OF ASPHALT STREETS
CURB & GUTTER SECTION

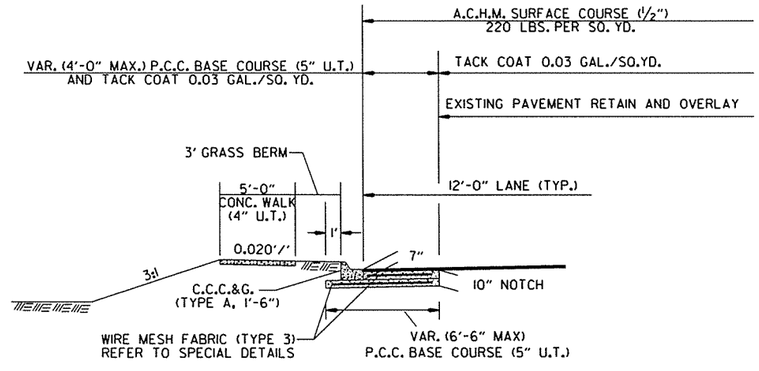


6" X 12" MESH FABRIC (TYPE 3) (W5.5 X W2.9) = 4.26 LBS./SQ. YD.

NOTES:

1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6" TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (5" U.T.)

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



P.C.C. BASE WIDENING DETAIL

P.C.C. BASE WIDENING TO BE USED AS SHOWN ON THE PLANS.

5/20/2015

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(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

STA. 106+31 - STA. 106+55
INSTALL E-11 = 125 LIN. FT.

STA. 100+38.81
BEGIN JOB 061348
LOG MILE 13.75

STA. 103+19.00 HWY. 365 =
STA. 202+49.47 AMBER LANE
Δ= 75° 00' 00"

STA 110+74 - STA. 111+60
INSTALL E-11 = 180 LIN. FT.

STA 117+33 - STA. 118+22
INSTALL E-11 = 86 LIN. FT.

STA. 121+68.98
END JOB 061348

LEGEND

- E-5 SAND BAG DITCH CHECK
- E-6 ROCK DITCH CHECK
- E-7 DROP INLET SILT FENCE
- E-8 DIVERSION DITCH
- E-11 SILT FENCE
- E-12 SLOPE DRAIN

REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

5/20/2015

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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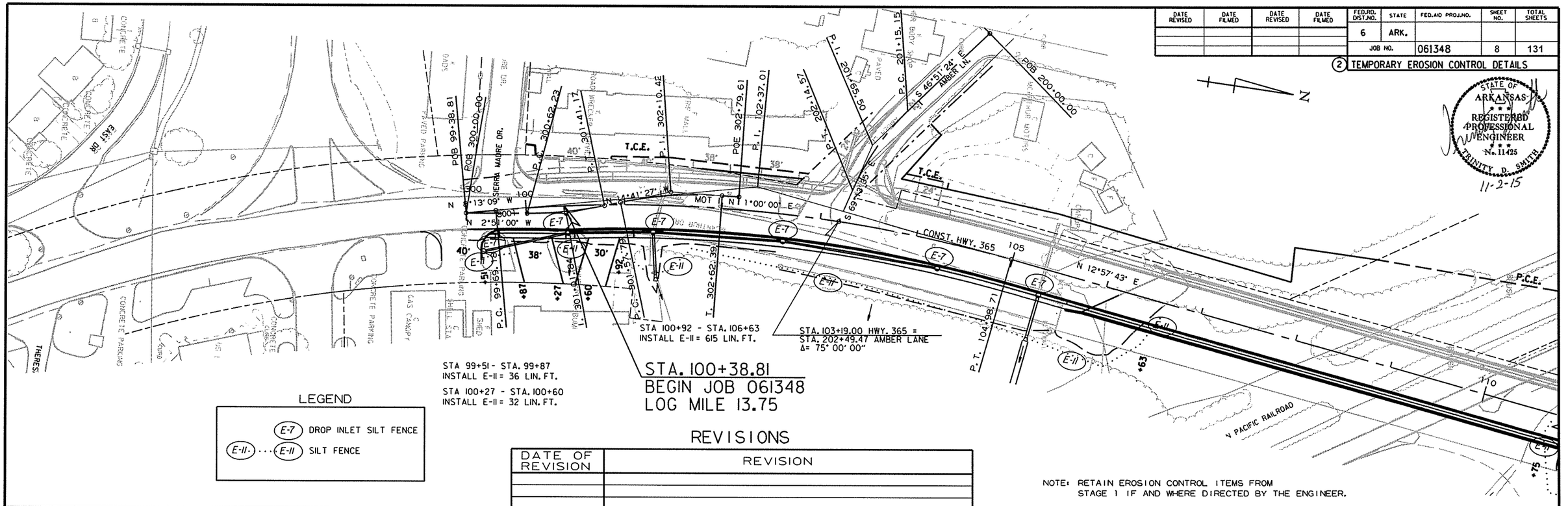
(2) TEMPORARY EROSION CONTROL DETAILS

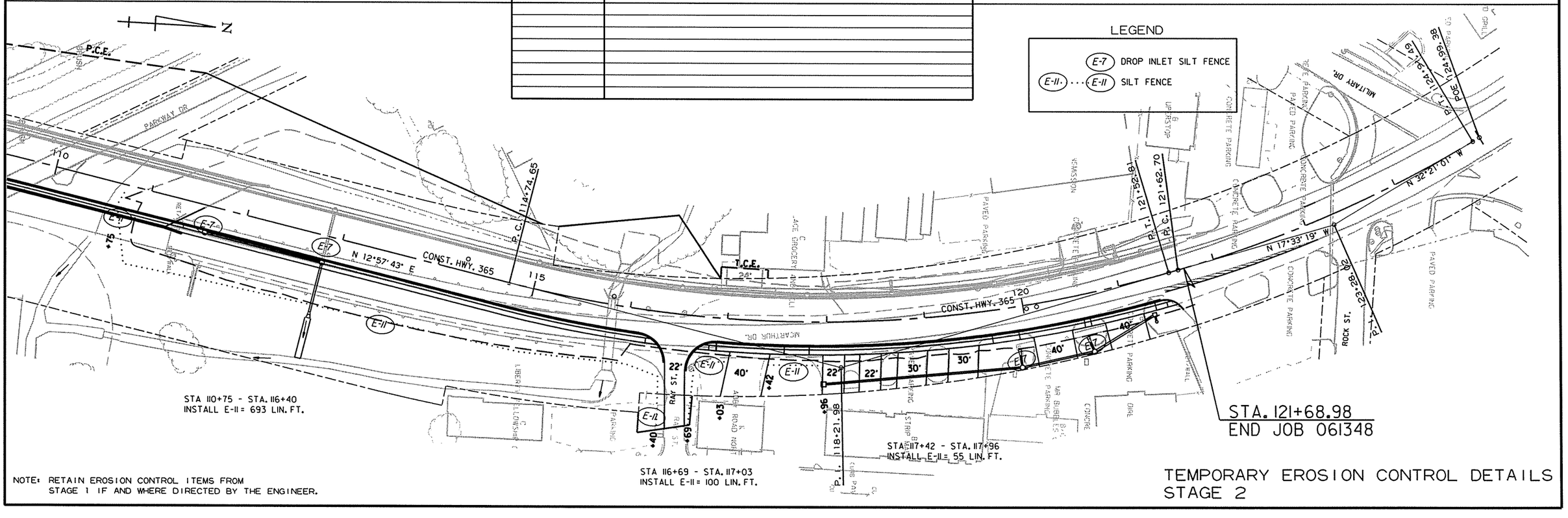
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15



NOTE: RETAIN EROSION CONTROL ITEMS FROM STAGE 1 IF AND WHERE DIRECTED BY THE ENGINEER.

REVISIONS

DATE OF REVISION	REVISION



NOTE: RETAIN EROSION CONTROL ITEMS FROM STAGE 1 IF AND WHERE DIRECTED BY THE ENGINEER.

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

5/20/2015

R061348.DGN

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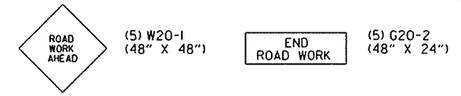
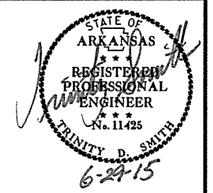
				6	ARK.			
				JOB NO.		061348	9	131

(2) MAINTENANCE OF TRAFFIC





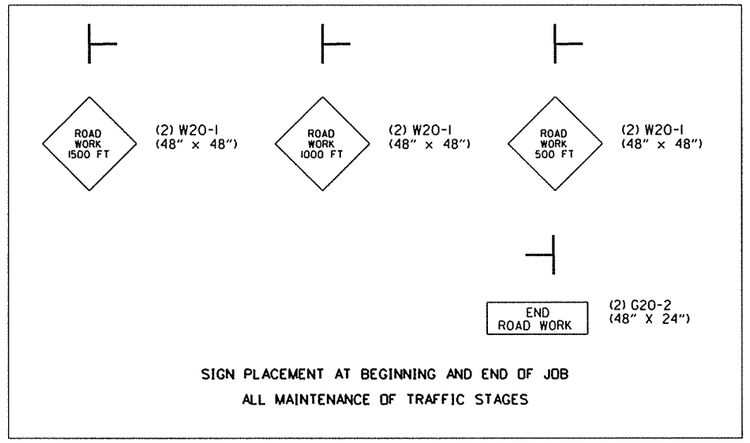
SIGN PLACEMENT ON ALL CITY STREETS @ 5 LOCATIONS
ALL STAGES

FOR ALL STAGES
INSTALL THE ADVANCE WARNING SIGNS AT THE BEGINNING AND END
OF THE PROJECT ALONG WITH SIGNS INDICATED FOR SIDE STREETS.

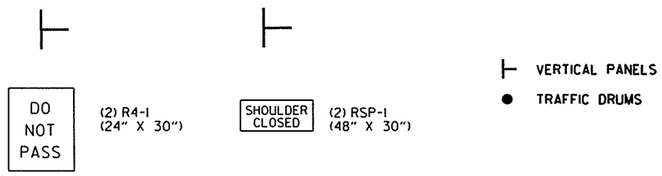
STAGE I:
STA. 99+38.81 TO STA 121+68.98
MAINTAIN TRAFFIC ON EXISTING LANES.
NOTCH AND WIDEN LT. SIDE OF HWY. 365, DELINEATING THE WORK ZONE USING
VERTICAL PANELS AT 30' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALLS.
CONSTRUCT LT. SIDE OF BRIDGE OVER UP RAILROAD AND PARKWAY DRIVE AS
INDICATED ON BRIDGE PLANS. EXTEND BOX CULVERT AT STA. 115+82.

STAGE 2:
STA. 99+38.81 TO STA 121+68.98
STRIPE THE NEW PAVEMENT AS SHOWN. MAINTAIN TRAFFIC ON NEW PAVEMENT.
REMOVE EXISTING BRIDGE.
NOTCH AND WIDEN RT. SIDE OF HWY. 365, DELINEATING THE WORK ZONE USING TRAFFIC DRUMS
AT 30' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALL.
CONSTRUCT RT. SIDE OF NEW BRIDGE OVER UP RAILROAD AND PARKWAY DRIVE AS
INDICATED ON BRIDGE PLANS.

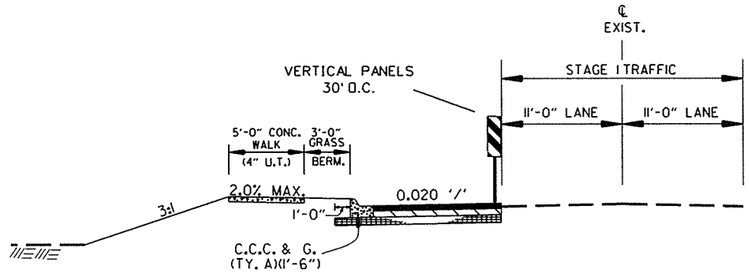
APPLY THE FINAL 2" OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETED.



SIGN PLACEMENT AT BEGINNING AND END OF JOB
ALL MAINTENANCE OF TRAFFIC STAGES



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



MAINTENANCE OF TRAFFIC
STAGE I

5/20/2015

R061348.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.		061348	10	131

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

STA. 100+38.81
BEGIN JOB 061348
LOG MILE 13.75

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

STA. 101+30 - INSTALL
24" x 34' TEMPORARY PIPE CULVERT

TRAFFIC DRUMS = 44 EACH
20' O.C. TURNOUTS AND DRIVEWAYS

CONSTRUCTION PAVEMENT MARKINGS
STA. 99+38.81 TO STA. 105+61 = 2650 LIN. FT.

VERTICAL PANELS = 4 EACH
30' O.C. ROADWAY

STA. 105+35 - INSTALL
24" x 48' TEMPORARY PIPE CULVERT

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 73 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 113 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 146 LIN. FT.

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

CONSTRUCTION PAVEMENT MARKINGS
STA. 111+29 TO STA. 121+68.98 = 4400 LIN. FT.

STA. 112+85 - INSTALL
24" x 56' TEMPORARY PIPE CULVERT

VERTICAL PANELS = 12 EACH
30' O.C. ROADWAY

TRAFFIC DRUMS = 22 EACH
20' O.C. TURNOUTS AND DRIVEWAYS

TRAFFIC DRUMS = 11 EACH
30' O.C. ROADWAY

STA. 121+68.98
END JOB 061348

MAINTENANCE OF TRAFFIC
STAGE I

5/20/2015

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				6	ARK.			
				JOB NO.		061348	11	131

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-29-15

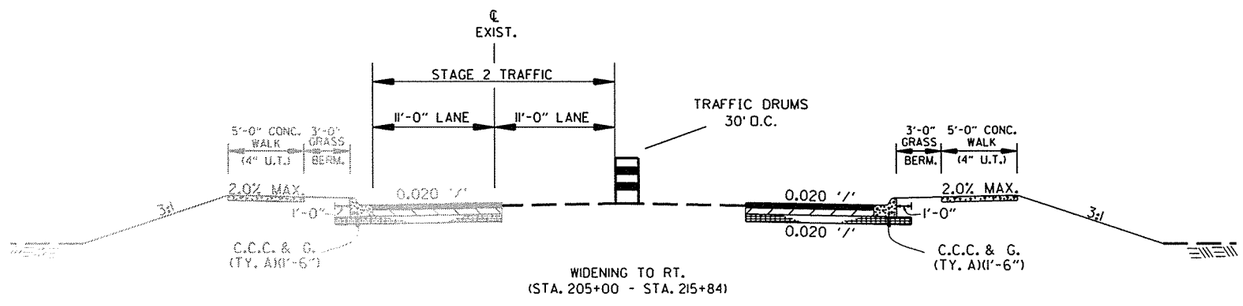
FOR ALL STAGES
INSTALL THE ADVANCE WARNING SIGNS AT THE BEGINNING AND END
OF THE PROJECT ALONG WITH SIGNS INDICATED FOR SIDE STREETS.

STAGE 1:
STA. 99+38.81 TO STA 121+68.98
MAINTAIN TRAFFIC ON EXISTING LANES.
NOTCH AND WIDEN LT. SIDE OF HWY. 365, DELINEATING THE WORK ZONE USING
VERTICAL PANELS AT 30' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALLS.
CONSTRUCT LT. SIDE OF BRIDGE OVER UP RAILROAD AND PARKWAY DRIVE AS
INDICATED ON BRIDGE PLANS. EXTEND BOX CULVERT AT STA. 115+82.

STAGE 2:
STA. 99+38.81 TO STA 121+68.98
STRIPE THE NEW PAVEMENT AS SHOWN. MAINTAIN TRAFFIC ON NEW PAVEMENT.
REMOVE EXISTING BRIDGE.
NOTCH AND WIDEN RT. SIDE OF HWY. 365, DELINEATING THE WORK ZONE USING TRAFFIC DRUMS
AT 30' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALL.
CONSTRUCT RT. SIDE OF NEW BRIDGE OVER UP RAILROAD AND PARKWAY DRIVE AS
INDICATED ON BRIDGE PLANS.

APPLY THE FINAL 2" OF ACHM SURFACE AFTER ALL WIDENING HAS BEEN COMPLETED.

⊢ VERTICAL PANELS
● TRAFFIC DRUMS



MAINTENANCE OF TRAFFIC
STAGE 2

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				6	ARK.			
				JOB NO.		061348	12	131

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS
STA. 106+36 TO STA. 111+75 = 1620 LIN. FT.

RELOCATE PRECAST CONCRETE
BARRIER WALL = 306 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE
BARRIER WALL = 420 LIN. FT.

PI = 301+01.84
Δ = 11° 50' 27" LT.
D = 15°00'
T = 39.61
L = 78.94'
PC = 300+62.23
PT = 301+41.17
NO SUPERELEVATION

PI = 302+10.42
Δ = 15° 41' 27" RT.
D = 15°00'
T = 52.63'
L = 104.60'
PC = 301+57.79
PT = 302+62.39
NO SUPERELEVATION

TRAFFIC DRUMS = 39 EACH
30' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
STA. 99+82 TO STA. 101+42 = 355 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS
STA. 99+82 TO STA. 106+36 = 1805 LIN. FT.

STA. 100+38.81
BEGIN JOB 061348
LOG MILE 13.75

STA. 103+19.00 HWY. 365 =
STA. 202+49.47 AMBER LANE
Δ = 75° 00' 00"

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

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
STA. 116+72 TO STA. 120+14 = 1370 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS
STA. 111+75 TO STA. 121+68.98 = 3880 LIN. FT.

TRAFFIC DRUMS = 101 EACH
30' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

PI = 403+67.19
Δ = 25° 20' 43" LT.
D = 6°00'
T = 214.72'
L = 422.42'
PC = 401+52.47
PT = 405+74.89
NO SUPERELEVATION

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

STA. 121+68.98
END JOB 061348

MAINTENANCE OF TRAFFIC
STAGE 2

5/20/2015

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PERMANENT PAVEMENT MARKING DETAILS QUANTITIES

THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 4556 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 4280 LIN. FT.
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") = 1348 LIN. FT.
RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) = 42 EACH

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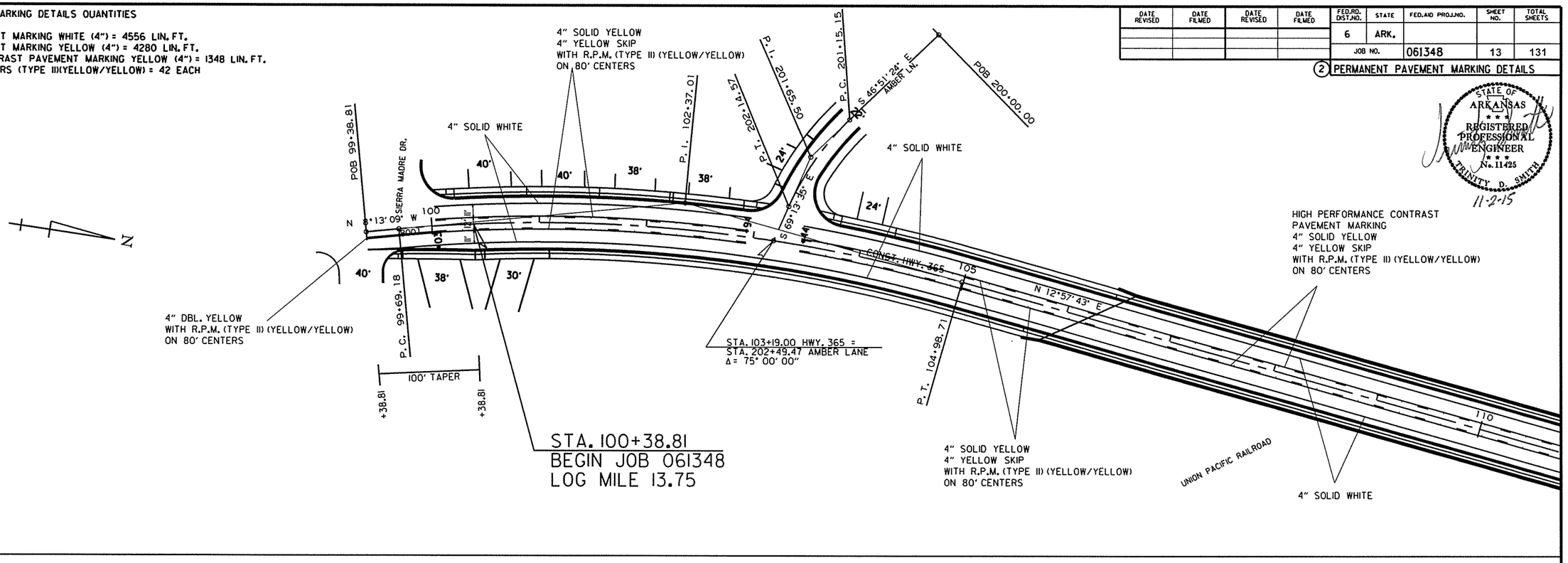
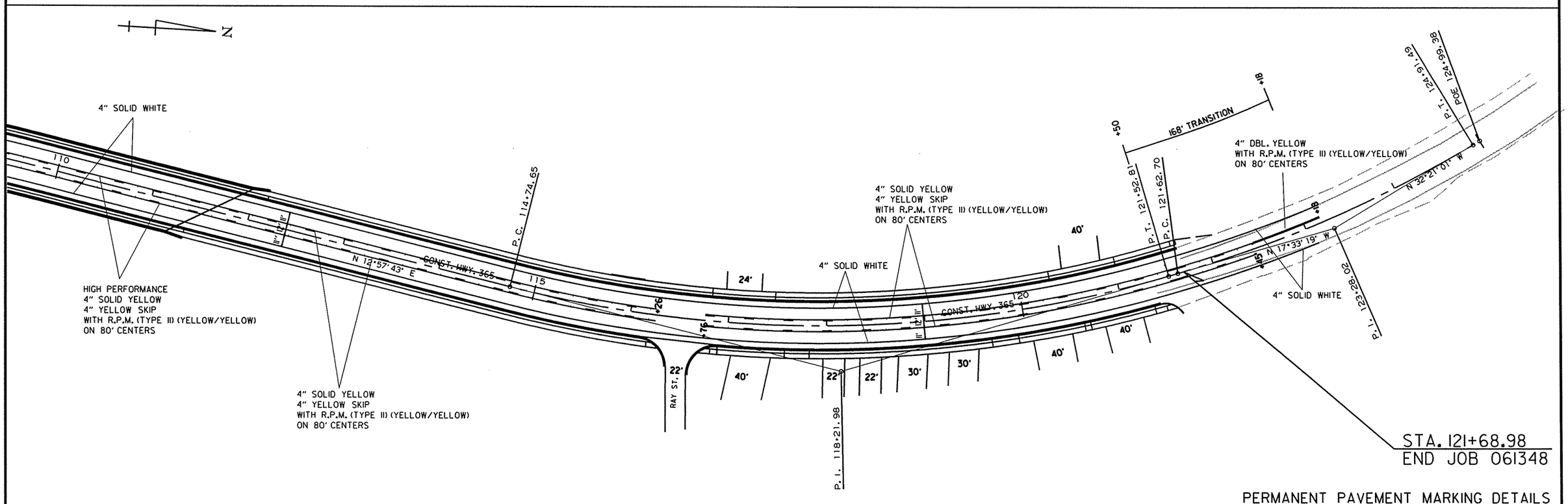
(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15





PERMANENT PAVEMENT MARKING DETAILS

5/20/2015

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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.		061348	14	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS	THERMOPLASTIC PAVEMENT MARKINGS		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING
							TYPE II (YEL/YEL)	4"		4"
								WHITE	YELLOW	YELLOW
	LIN. FT. - EACH			LIN. FT.	LIN. FT.		EACH	LIN. FT.		LIN. FT.
CONSTRUCTION PAVEMENT MARKINGS	7050	5685		12735						
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		1725			1725					
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		1620				1620				
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			42				42			
THERMOPLASTIC PAVEMENT MARKING WHITE (4")			4556					4556		
THERMOPLASTIC PAVEMENT MARKING YELLOW (4")			4280						4280	
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")			1348							1348
TOTALS:				12735	1725	1620	42	4556	4280	1348

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

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER
										RIGHT	LEFT		
			LIN. FT. - EACH			NO.	SQ. FT.	EACH				LIN. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	2	2	32.0						
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	32.0						
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	32.0						
W20-1	ROAD WORK AHEAD	48"x48"	5	5	5	5	80.0						
G20-2	END ROAD WORK	48"x24"	7	7	7	7	56.0						
R11-2	ROAD CLOSED	48"x30"	2	3	3	3	30.0						
OM-3L	OBJECT MARKER	12"x36"	6	3	6	6	18.0						
OM-3R	OBJECT MARKER	12"x36"	8	4	8	8	24.0						
W1-6	LARGE ARROW	48"x24"		2	2	2	16.0						
R4-1	DO NOT PASS	24"x30"	2	2	2	2	10.0						
RSP-1	SHOULDER CLOSED	48"x30"	2	2	2	2	20.0						
W8-1	BUMP	30"x30"		2	2	2	12.5						
	VERTICAL PANELS		16		16			16					
	TRAFFIC DRUMS		77	140	140				140				
	TYPE III BARRICADE-RT. (16')		1	1	1					16			
	TYPE III BARRICADE-LT. (16')		1	1	1						16		
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		332	420	752							752	
	RELOCATING PRECAST CONCRETE BARRIER			306	306								306
TOTALS:							362.5	16	140	16	16	752	306

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	390	15371	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	1059	1539	
ENTIRE	PROJECT	EXCAV. N. END OF BRIDGE	470		
ENTIRE	PROJECT	APPROACHES	10	685	
103+19		AMBER LANE	5	100	
116+50		RAY STREET		60	
ENTIRE	PROJECT	TO BE USED IF AND WHERE			50
		DIRECTED BY THE ENGINEER			
TOTALS:			1934	17755	50

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

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

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
111+94	HWY. 365 LT. CORNER OF BRIDGE	1
115+90	HWY. 365 LT. RC. BOX HEAD WALL	1
TOTAL:		2

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
101+00	111+00	HWY. 365	10	10
111+00	112+00	HWY. 365	1	1
113+00	117+00	HWY. 365	4	4
TOTALS:			15	15

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
103+66	106+35	HWY. 365 LT.	296
103+66	104+01	HWY. 365 LT.	86
111+81	115+08	HWY. 365 LT.	377
119+68	119+72	HWY. 365 RT.	11
TOTAL:			770

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	DROP INLETS
		EACH	EACH
100+35	HWY. 365 ON LT.	1	1
101+36	HWY. 365 ON LT.	1	1
103+27	HWY. 365 ON LT.	1	1
103+79	HWY. 365 ON RT.	1	1
104+19	HWY. 365 ON RT.	1	1
118+34	HWY. 365 ON RT.	1	1
119+90	HWY. 365 ON RT.	1	1
120+38	HWY. 365 ON RT.	1	1
121+14	HWY. 365 ON RT.	1	1
TOTALS:		9	9

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

SOIL LOG

STATION	LATITUDE			LONGITUDE			LOCATION	DEPTH	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
	DEG	MIN	SEC	DEG	MIN	SEC		FEET				
109+00	34	47	53.30	92	17	30.80	6' RT	5	28	12	A-6 (1)	BR/GR
109+00	34	47	53.30	92	17	30.70	12' RT	5	26	10	A-2-4 (0)	BR/GR
116+00	34	48	0.40	92	17	31.80	15' RT	5	21	7	A-4 (0)	GRAY
128+00	34	48	11.60	92	17	28.70	25' RT	5	25	8	A-4 (2)	BR/GR
135+00	34	48	18.50	92	17	29.70	7' LT	5	29	12	A-6 (6)	BROWN
135+00	34	48	18.50	92	17	29.80	12' LT	5	34	15	A-6 (10)	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.

5/20/2015

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				6	ARK.			
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(2) QUANTITIES

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL						TEMPORARY EROSION CONTROL													
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	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	SQ.YD.	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	STAGE 1	0.75	1.50	0.75	89.1	0.75	999	0.06	0.06	1.2	110	18	350	391	86	75	2			38
ENTIRE	PROJECT	STAGE 2	0.88	1.76	0.88	94.4	0.88	367						250	1531						66
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.						2.5		200	6.20	6.20	126.5	110	15	100	200	50	50	2	200	200	221
TOTALS:			1.63	3.26	1.63	186.0	1.63	1566	6.26	6.26	127.7	220	33	700	2122	136	125	4	200	200	325

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

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

STATE OF ARKANSAS, REGISTERED PROFESSIONAL ENGINEER, No. 11425, TRINITY D. SMITH, 6-29-15

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CURB	CURB AND GUTTER	CONCRETE SLABS	CONCRETE DITCH PAVING	CONCRETE PAVEMENT	CONCRETE ISLANDS	CONCRETE DRIVEWAYS	SIGN FOUNDATIONS	GUARDRAIL	BRICK WALLS	SIGNS
			LIN. FT.	LIN. FT.	SQ. YD.			SQ. YD.	SQ. YD.	EACH	LIN. FT.	LIN. FT.	EACH
99+39		MAIN LANES - RT.							262				
99+50	99+85	MAIN LANES - RT.	130										
99+93		MAIN LANES - LT.						4					
100+20	100+62	MAIN LANES - RT.	132										
100+40		MAIN LANES - RT.								1			1
100+65		MAIN LANES - LT.						19					
100+84	101+12	MAIN LANES - RT.	75										
101+29		MAIN LANES - RT.				17							
101+47		MAIN LANES - LT.						10					
102+08		MAIN LANES - LT.						8					
102+58	102+76	MAIN LANES - LT.										28	
102+58		MAIN LANES - LT.								2			1
102+67	105+54	MAIN LANES - RT.									278		
103+18	103+78	MAIN LANES - LT.		106									
103+30	103+59	MAIN LANES - LT.		51									
103+48		MAIN LANES - LT.								2			1
103+68		MAIN LANES - LT.								2			1
104+63	105+55	MAIN LANES - RT.									91		
105+55		MAIN LANES - LT.			520								
105+56		MAIN LANES - LT.			540								
111+36	111+50	MAIN LANES - RT.									415		
111+40	115+50	MAIN LANES - RT.									414		
111+62		MAIN LANES - RT.				18							
117+99		MAIN LANES - LT.								2			1
118+14	118+31	MAIN LANES - RT.	64										
118+51	118+70	MAIN LANES - RT.	87										
118+96	119+21	MAIN LANES - RT.	103										
119+47	119+61	MAIN LANES - RT.	50										
119+68	120+05	MAIN LANES - RT.					37						
119+87	120+06	MAIN LANES - RT.				16							
119+94	120+62	MAIN LANES - RT.							231				
120+32	121+10	MAIN LANES - LT.							171				
120+45	120+78	MAIN LANES - RT.				23							
120+62	121+29	MAIN LANES - RT.							222				
TOTALS:			641	157	1060	74	37	41	886	9	1198	28	5

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

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
104+15	106+32	MAIN LANES LT.	217.0	192.9
112+52	115+80	MAIN LANES LT.	328.0	291.6
118+05	120+49	MAIN LANES LT.	244.0	216.9
120+91	121+68	MAIN LANES LT.	77.0	68.4
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			150.0	133.3
TOTAL:				903.1

NOTE: AVERAGE WIDTH = 8'-0"

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	"B"	CONC. DITCH PAVING (TYPE A)	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	FEET	SQ. YD.	SQ. YD.	SQ. YD.	M. GAL.
105+35		HWY. 365 ON RT.	66.00	6			44.00	29.33	0.37
112+85		HWY. 365 ON RT.	45.00	6			30.00	20.00	0.25
115+80	116+42	HWY. 365 ON LT. - R.C. BOX CULVERT INLET	75.00	17	7.5	141.67		33.33	0.42
TOTALS:						141.67	74.00	82.66	1.04

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

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS
			LIN. FT.
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER			500
TOTAL:			500

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

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

5/20/2015

R061348.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.		061348	16	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

CONCRETE WALKS

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS
			LIN. FT.	SQ.YD.
99+66	99+71	MAIN LANES RT.	5	3
100+15	100+22	MAIN LANES LT.	7	4
100+39	100+48	MAIN LANES RT.	9	5
101+10	105+66	MAIN LANES RT.	456	253
102+19	102+23	MAIN LANES LT.	4	2
102+87	102+99	MAIN LANES LT.	12	7
103+70	103+77	MAIN LANES LT.	7	4
104+28	106+41	MAIN LANES LT.	213	118
105+66	105+87	MAIN LANES RT.	21	16
106+41	106+54	MAIN LANES LT.	13	10
111+26	111+39	MAIN LANES RT.	13	10
111+39	116+19	MAIN LANES RT.	480	267
111+93	112+14	MAIN LANES LT.	21	16
112+14	116+82	MAIN LANES LT.	468	260
116+83	116+91	MAIN LANES RT.	8	4
117+47	120+32	MAIN LANES LT.	285	158
117+58	117+82	MAIN LANES RT.	24	13
119+65	119+92	MAIN LANES RT.	27	15
120+58	120+64	MAIN LANES RT.	6	3
121+02	121+63	MAIN LANES LT.	61	34
121+31	121+43	MAIN LANES RT.	12	7
TOTAL:				1209

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
99+50	99+71	MAIN LANES RT.	41
99+95	100+22	MAIN LANES LT.	54
100+39	100+48	MAIN LANES RT.	9
101+10	105+91	MAIN LANES RT.	481
102+87	103+20	MAIN LANES LT.	33
103+40	103+49	AMBER LANE LT.	40
103+50	103+78	AMBER LANE RT.	60
103+50	103+77	MAIN LANES LT.	58
104+28	106+50	MAIN LANES LT.	222
111+30	116+40	MAIN LANES RT.	524
111+89	116+82	MAIN LANES LT.	493
116+62	116+91	MAIN LANES RT.	50
117+47	120+32	MAIN LANES LT.	285
117+58	117+83	MAIN LANES RT.	25
119+65	119+92	MAIN LANES RT.	27
120+59	120+64	MAIN LANES RT.	5
121+02	121+69	MAIN LANES LT.	67
121+31	121+57	MAIN LANES RT.	33
TOTAL:			2507

CONCRETE CURB

STATION	STATION	LOCATION	TYPE D
			LIN. FT.
99+50	99+93	MAIN LANES RT.-CURB PARKING LOT AT ROW	43
100+04	100+36	MAIN LANES LT.-CURB PARKING LOT AT ROW	44
100+35	100+47	MAIN LANES RT.-CURB PARKING LOT AT ROW	12
100+74	101+02	MAIN LANES LT.-CURB PARKING LOT AT ROW	28
100+80	100+89	MAIN LANES RT.-CURB PARKING LOT AT ROW	9
101+41	101+68	MAIN LANES LT.-CURB PARKING LOT AT ROW	27
102+05	102+36	MAIN LANES LT.-CURB PARKING LOT AT ROW	31
102+73	103+02	MAIN LANES LT.-CURB PARKING LOT AT ROW	46
103+17	103+50	MAIN LANES LT.-CURB PARKING LOT AT ROW	60
103+83	104+03	MAIN LANES LT.-CURB PARKING LOT AT ROW	9
116+80	116+98	MAIN LANES RT.-CURB PARKING LOT AT ROW	18
117+33	118+02	MAIN LANES LT.-CURB PARKING LOT AT ROW	69
118+16	118+31	MAIN LANES RT.-CURB PARKING LOT AT ROW	15
118+52	118+67	MAIN LANES RT.-CURB PARKING LOT AT ROW	15
118+96	119+17	MAIN LANES RT.-CURB PARKING LOT AT ROW	21
119+46	119+53	MAIN LANES RT.-CURB PARKING LOT AT ROW	7
119+68	120+06	MAIN LANES RT.-CURB PARKING LOT AT ROW	38
120+44	120+79	MAIN LANES RT.-CURB PARKING LOT AT ROW	35
121+17	121+27	MAIN LANES RT.-CURB PARKING LOT AT ROW	10
TOTAL:			537

HAND RAILING

STATION	STATION	LOCATION	HAND RAILING
			LIN. FT.
115+74	116+10	HWY. 365 LT.	36
TOTAL:			36

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3
		SQ.YD.
99+63	MAIN LANES RT.	4.9
100+10	MAIN LANES LT.	5.4
103+03	MAIN LANES LT.	5.3
103+65	MAIN LANES LT.	5.4
116+23	MAIN LANES RT.	5.4
116+97	MAIN LANES RT.	5.4
121+46	MAIN LANES RT.	3.3
121+65	MAIN LANES LT.	3.3
TOTAL:		38.4

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
99+38.81	100+38.81	MAIN LANES	33	366.67
121+50.00	121+68.98	MAIN LANES	28	59.05
121+68.98	123+18.00	MAIN LANES	32	529.85
TOTAL:				955.57

NOTE: AVERAGE MILLING DEPTH 1".

DRIVEWAYS & TURNOUTS

STATION	SIDE	LOCATION	WIDTH	**MODIFIED CURB		PORTLAND CEMENT CONCRETE DRIVEWAY	ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22)		AGGREGATE BASE COURSE (CLASS 7)	STANDARD DRAWINGS
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	
99+39	RT.	MAIN LANES	40	99+05	99+73	260.40				DR-1
100+00	RT.	MAIN LANES	38	99+67	100+33	58.70	198.40	21.82	81.01	DR-1
100+55	LT.	MAIN LANES	40	100+21	100+89	60.40	71.10	7.82	29.03	DR-1
100+78	RT.	MAIN LANES	30	100+49	101+07	51.60	163.30	17.96	66.68	DR-1
101+20	LT.	MAIN LANES	40	100+86	101+54	60.40	67.60	7.44	27.60	DR-1
101+87	LT.	MAIN LANES	38	101+54	102+20	58.70	52.80	5.81	21.56	DR-1
102+55	LT.	MAIN LANES	38	102+22	102+88	58.70	44.30	4.87	18.09	DR-1
201+78	RT.	AMBER LANE	24	201+52	202+04	46.20	32.80	3.61	13.39	DR-1
104+02	LT.	MAIN LANES	24	103+76	104+28	46.20	69.90	7.69	28.54	DR-1
117+15	LT.	MAIN LANES	24	116+89	117+41	46.20	48.70	5.36	19.89	DR-1
117+25	RT.	MAIN LANES	40	116+91	117+59	60.40	197.80	21.76	80.77	DR-1
118+04	RT.	MAIN LANES	22	117+79	118+29	44.40	97.80	10.76	39.94	DR-1
118+40	RT.	MAIN LANES	22	118+15	118+65	44.40	92.90	10.22	37.93	DR-1
118+84	RT.	MAIN LANES	30	118+55	119+13	51.60	116.70	12.84	47.65	DR-1
119+36	RT.	MAIN LANES	30	119+07	119+65	51.60	90.00	9.90	36.75	DR-1
120+25	RT.	MAIN LANES	40	119+91	120+59	207.10				DR-1
120+70	LT.	MAIN LANES	40	120+36	121+04	176.00				DR-1
121+00	RT.	MAIN LANES	40	120+66	121+34	229.30				DR-1
* ENTIRE PROJECT TEMPORARY DRIVES									200.00	
TOTALS:						1612.30	1344.10	147.86	748.83	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.9% MIN. AGGR.....5.1% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, WILL BE ALLOWED TO SUBSTITUTE A HIGHER PERFORMANCE GRADE ASPHALT SURFACE COURSE FOR DRIVEWAYS AND MINOR SIDE STREET CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.

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

** FOR INFORMATION ONLY

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	8	16
DIRECTED BY THE ENGINEER		
TOTALS:	8	16

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

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	20
DIRECTED BY THE ENGINEER	
TOTAL:	20

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

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	200
ENGINEER	
TOTAL:	200

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

PORTLAND CEMENT CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	PORTLAND CEMENT CONCRETE BASE	
				AVG. WID.	5" U.T.
			FEET	FEET	SQ. YD.
99+38.81	100+38.81	MAIN LANES - RT.	100.00	0.50	5.56
99+38.91	100+38.81	MAIN LANES - RT.	99.90	3.00	33.30
100+38.81	103+45	MAIN LANES - RT.	306.19	2.50	85.05
121+44.00	123+06.39	MAIN LANES - RT. (SHOULDER TRENCHING)	162.39	3.25	58.64
121+44.00	123+06.39	MAIN LANES - RT. (SHOULDER TRENCHING)	162.39	3.25	58.64
121+68.98	123+18.00	MAIN LANES - LT. (SHOULDER TRENCHING)	149.02	3.10	51.33
121+68.98	123+18.00	MAIN LANES - LT. (SHOULDER TRENCHING)	149.02	3.10	51.33
TOTALS:					343.85

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
101+37	MAIN LANES	9.08	33	9.2
105+35	MAIN LANES	9.08	24	6.7
112+85	MAIN LANES	9.08	24	6.7
TOTAL:				22.6

AVG. DEPTH = 10"

5/20/2015

R061348.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	061348		17	131

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18"	(CLASS III) 24"	(CLASS V) 24"	SIDE DRAIN 12"	PIPE CULVERT STORM DRAIN ALTERNATES 1 & 2 18"	24"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18"	24"	TEMPORARY CULVERTS 24"	DROP INLETS TYPE MO	EXT. 4'	EXT. 8'	JUNCTION BOXES (TYPE E)	(TYPE ST)	YARD DRAINS	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.						EACH		LIN. FT.	EACH						LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL	
99+53	DROP INLET ON RT.					84					1														FPC-9M, FPC-9E, PCC-1, PCM-1
100+19	DROP INLET ON LT.					16					1	1													FPC-9M, FPC-9E, PCC-1, PCM-1
100+38	JUNCTION BOX ON LT.					39									1										FPC-9S, PCC-1, PCM-1
100+42	DROP INLET ON RT.					82					1														FPC-9M, FPC-9E, PCC-1, PCM-1
100+79	DROP INLET ON LT.					66					1	1													FPC-9M, FPC-9E, PCC-1, PCM-1
101+30	DROP INLET ON RT.		42						1	34	1		1										8	0.10	FPC-9M, FPC-9E, PCC-1, FES-1, FES-2
101+47	DROP INLET ON LT.		65								1	1													FPC-9M, FPC-9E, PCC-1
102+12	DROP INLET ON LT.					63					1	1													FPC-9M, FPC-9E, PCC-1, PCM-1
102+65	DROP INLET ON RT.					128					1		1												FPC-9M, FPC-9E, PCC-1, PCM-1
102+76	JUNCTION BOX ON LT.					62									1										FPC-9S, PCC-1, PCM-1
102+81	DROP INLET ON LT.					5					1	1													FPC-9M, FPC-9E, PCC-1, PCM-1
103+73	JUNCTION BOX ON LT.						160							1											FPC-9, PCC-1, PCM-1
104+28	DROP INLET ON RT.					156					1	1													FPC-9M, FPC-9E, PCC-1, PCM-1
105+35	DROP INLET ON LT.	13	52					1		48	1	1											5	0.06	FPC-9M, FPC-9E, PCC-1, FES-1, FES-2
105+35	DROP INLET ON RT.		40						1		1	1											8	0.10	FPC-9M, FPC-9E, PCC-1, FES-1, FES-2
111+62	DROP INLET ON RT.					119					1		1												FPC-9M, FPC-9E, PCC-1, PCM-1
112+85	DROP INLET ON LT.			51							1		1												FPC-9M, FPC-9E, PCC-1
112+85	DROP INLET ON RT.		50						1	56	1	1											8	0.10	FPC-9M, FPC-9E, PCC-1, FES-1, FES-2
115+00	DROP INLET ON LT.					79					1		1												FPC-9M, FPC-9E, PCC-1, PCM-1
115+82	R.C. BOX CULVERT EXTEND 38' LT.																10	5	40	45.47	5740	25	10	0.13	RCB-1, RCB-2, RCB-3, W-X15, W-X153-1, R-115X-0
116+51	DROP INLET ON LT.						57				1		1												FPC-9M, FPC-9E, PCC-1, PCM-1
117+80	DROP INLET ON LT.						122				1														FPC-9M, FPC-9E, PCC-1, PCM-1
117+96	JUNCTION BOX ON RT.														1										FPC-9S, PCC-1, PCM-1
118+68	DROP INLET ON LT.	5					82	1			1	1											5	0.06	FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2
119+75	DROP INLET ON LT.					101					1	1													FPC-9M, FPC-9E, PCC-1, PCM-1
119+90	DROP INLET ON RT.	10				199		1			1		1										5	0.06	FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2
120+62	DROP INLET ON RT.	10				71		1			1		1										5	0.06	FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2
121+05	DROP INLET ON LT.	6				123		1			1	1											5	0.06	FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2
121+28	JUNCTION BOX ON RT.					68								1									5	0.06	FPC-9, PCC-1, PCM-1
121+28	YARD DRAIN ON RT.				5											1									FPC-9, PCC-1, PCM-1
201+63	JUNCTION BOX ON RT.						42							1											FPC-9, PCC-1, PCM-1
201+73	DROP INLET ON LT.						38				1		1										4	0.05	FPC-9M, FPC-9E, PCC-1, PCM-1
202+04	DROP INLET ON RT.						57				1														FPC-9M, FPC-9E, PCC-1, PCM-1
* ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER					500											5									FPC-9, PCC-1, PCM-1
TOTALS:		44	249	51	505	1461	558	5	3	138	25	12	9	3	3	6				45.47	5740	25	68	0.84	

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

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

*QUANTITIES ESTIMATED. SEE SECTION 104.03 OF STANDARD SPECIFICATIONS.

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	TACK COAT AVG. WID.	TACK COAT SQ.YD.	TACK COAT GALLONS / SQ.YD.	TACK COAT GALLON	ACHM BASE COURSE (1 1/2") AVG. WID.	ACHM BASE COURSE (1 1/2") SQ.YD.	ACHM BASE COURSE (1 1/2") POUND / SQ.YD.	ACHM BASE COURSE (1 1/2") PG 64-22	ACHM BINDER COURSE (1") AVG. WID.	ACHM BINDER COURSE (1") SQ.YD.	ACHM BINDER COURSE (1") POUND / SQ.YD.	ACHM BINDER COURSE (1") PG 64-22	ACHM SURFACE COURSE (1/2") AVG. WID.	ACHM SURFACE COURSE (1/2") SQ.YD.	ACHM SURFACE COURSE (1/2") POUND / SQ.YD.	ACHM SURFACE COURSE (1/2") PG 70-22	ACHM SURFACE COURSE (1/2") AVG. WID.	ACHM SURFACE COURSE (1/2") SQ.YD.	ACHM SURFACE COURSE (1/2") POUND / SQ.YD.	ACHM SURFACE COURSE (1/2") PG 70-22	TOTAL PG 70-22
			FEET	FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																								
99+38.81	100+38.81	MAIN LANES-N&W LT.	100.00	VAR.	886.00	0.03	26.58	VAR.	122.00	550.00	33.55	VAR.	103.00	330.00	17.00	VAR.	103.00	220.00	11.33	VAR.	680.00	220.00	74.80	86.13
100+38.81	103+45.00	MAIN LANES-N&W LT.	306.19	107.00	3640.26	0.03	109.21	32.00	1088.68	550.00	299.39	29.50	1003.62	330.00	165.60	29.50	1003.62	220.00	110.40	48.00	1633.01	220.00	179.63	290.03
103+45.00	106+20.33	MAIN LANES-FULL DEPTH	275.33	144.00	4405.28	0.03	132.16	53.00	1621.39	550.00	445.88	48.00	1468.43	330.00	242.29	48.00	1468.43	220.00	161.53	48.00	1468.43	220.00	161.53	323.06
111+59.67	120+33.98	MAIN LANES-FULL DEPTH	874.31	144.00	13988.96	0.03	419.67	53.00	5148.71	550.00	1415.90	48.00	4662.99	330.00	769.39	48.00	4662.99	220.00	512.93	48.00	4662.99	220.00	512.93	1025.86
120+33.98	121+00.00	MAIN LANES-FULL DEPTH (LT. TAPER)	66.02	144.45	1059.62	0.03	31.79	53.15	389.88	550.00	107.22	48.15	353.21	330.00	58.28	48.15	353.21	220.00	38.85	48.15	353.21	220.00	38.85	77.70
121+00.00	121+44.00	MAIN LANES-N&W LT. & RT. (LT. TAPER)	44.00	93.50	457.11	0.03	13.71	27.58	134.84	550.00	37.08	11.33	22.58	330.00	3.73	22.58	110.39	220.00	12.14	48.39	236.57	220.00	26.02	38.16
121+44.00	121+68.98	MAIN LANES-N&W LT. (LT. TAPER)	24.98	60.85	168.89	0.03	5.07	13.75	38.16	550.00	10.49	11.25	22.58	330.00	3.73	11.25	31.23	220.00	3.44	45.50	126.29	220.00	13.89	17.33
121+68.98	123+18.00	MAIN LANES-TRANSITION	149.02	36.00	596.08	0.10	59.61													36.00	596.08	220.00	65.57	65.57
201+13.16	202+24.64	AMBER LANE	VAR.	VAR.	1005.00	0.03	30.15	VAR.	405.00	550.00	111.38	VAR.	335.00	330.00	55.28	VAR.	335.00	220.00	36.85	VAR.	335.00	220.00	36.85	73.70
116+50.00		RAY STREET	VAR.	VAR.	768.00	0.03	23.04	VAR.	281.00	550.00	77.28	VAR.	256.00	330.00	42.24	VAR.	256.00	220.00	28.16	VAR.	256.00	220.00	28.16	56.32
ADDITIONAL FOR LEVELING																								
99+38.83	100+38.81	MAIN LANES	99.98	33.00	366.59	0.10	36.66									13.00	144.42	220.00	15.89					15.89
100+38.81	103+45.00	MAIN LANES	306.19	16.00	544.34	0.10	54.43									16.00	544.34	220.00	59.88					59.88
116+50.00	117+98.00	MAIN LANES	148.00	11.50	189.11	0.10	18.91									11.50	189.11	220.00	20.80					20.80
117+98.00	121+68.98	MAIN LANES	370.98	25.50	1051.11	0.10	105.11									25.50	1051.11	220.00	115.62					115.62
ADDITIONAL FOR GRADE RAISE																								
100+00.00	103+45.00	MAIN LANES	345.00	VAR.	1998.00	0.03	59.94	VAR.	404.00	188.12	38.00	VAR.	718.00	300.84	108.00	VAR.	876.00	228.31	100.00					100.00
116+50.00	121+86.98	MAIN LANES	536.98	VAR.	2154.00	0.03	64.62	VAR.	1214.00	144.98	88.00	VAR.	470.00	165.96	39.00	VAR.	470.00	110.64	26.00					26.00
TOTALS:					33278.35		1190.66		10847.66		2664.17		9415.41		1504.54		11598.85		1253.82		10347.58		1138.23	2392.05

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.9% MIN. AGGR.....5.1% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% 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
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22

5/20/2015

R061348.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.		061348	13	131
① 07334 -		QUANTITIES	- 57015	

SCHEDULE OF BRIDGE QUANTITIES - JOB 061348

BRIDGE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	619	801	802	802	803	804	804	805	806	SP & 807	808	809
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO.)	7' STEEL CHAIN LINK FENCE	UNCLASSIFIED EXCAVATION FOR STRUCTURES - BRIDGE	CLASS S CONCRETE - BRIDGE	CLASS S(AE) CONCRETE - BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL - BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	①STEEL PILING (HP 12X53)	METAL BRIDGE RAILING (TYPE H)	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270, GRADE 50W)	ELASTOMERIC BEARINGS	SILICONE JOINT SEALANT
		UNIT	LUMP SUM	LIN. FT.	CU. YD.	CU. YD.	CU. YD.	GAL.	LB.	LB.	LIN. FT.	LIN. FT.	LB.	CU. IN.	LIN. FT.
07334 UPRR & PARKWAY DRIVE	END BENT 1					104.69		0.5	10,833		435		1,943		
	INT. BENT 2					123.34			22,342						
	INT. BENT 3				220	375.54			38,747						
	INT. BENT 4				155	358.81			37,295						
	INT. BENT 5					170.07			27,262						
	END BENT 6				70	101.45		0.5	10,701		520		1,943		
	196'-0" CONT. PLATE GIRDER UNIT			172			447.25	27.5		95,253		214	405,532	10,626.0	103
	242'-0" CONT. PLATE GIRDER UNIT			314			548.08	34.0		155,723		170	593,577	12,855.0	206
	98'-0" SIMPLE PLATE GIRDER SPAN						225.37	13.8		46,514		190	196,385	5,577.0	103
	EXISTING BR. NO. 02199 (SITE NO. 1)		1												
	TOTALS FOR JOB NO. 061348		1	486	445	1,233.90	1,220.70	76.3	147,180	297,490	955	574	1,199,380	29,058.0	412

BRIDGE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	812	816	SP JOB 061348	SP JOB 061348	SP JOB 061348	SP JOB 061348	SP JOB 061348
		ITEM	BRIDGE NAME PLATE (TYPE D)	CONCRETE RIPRAP	SHORING (SITE NO. 1)	DRILLED SHAFT (72" DIA.)	PERMANENT STEEL CASING (72" DIA.)	CROSSHOLE SONIC LOGGING (72" DIA.)	CORING DRILLED SHAFT
		UNIT	EACH	CU. YD.	LUMP SUM	LIN. FT.	LIN. FT.	EACH	LIN. FT.
07334 UPRR & PARKWAY DRIVE	END BENT 1			88					
	INT. BENT 2					170	70	1	34
	INT. BENT 3					150	50	1	30
	INT. BENT 4					175	55	1	35
	INT. BENT 5					200	100	1	40
	END BENT 6			127					
	196'-0" CONT. PLATE GIRDER UNIT		1						
	242'-0" CONT. PLATE GIRDER UNIT								
	98'-0" SIMPLE PLATE GIRDER SPAN								
	EXISTING BR. NO. 02199 (SITE NO. 1)								
	TOTALS FOR JOB NO. 061348		1	215	1	695	275	4	139

①All piling to be AASHTO M270, Gr. 50.

JEFF COVAY
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
6-29-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
UPRR/PARKWAY DR. STR. & APPRS. (S)
PULASKI COUNTY

ROUTE 365 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 3/24/2015 FILENAME: b061348_ql.dgn
CHECKED BY: TMG DATE: 6/24/15 SCALE: NONE
DESIGNED BY: Std. DATE: —

BRIDGE NO. 07334 DRAWING NO. 57015

PRINT DATE: 24-JUN-2015

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.		061348	19	131

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		15	STATION
201	GRUBBING		15	STATION
202	REMOVAL AND DISPOSAL OF CURB		641	LIN. FT.
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER		157	LIN. FT.
202	REMOVAL AND DISPOSAL OF FENCE		770	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE SLABS		1060	SQ. YD.
202	REMOVAL AND DISPOSAL OF BRICK WALLS		28	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE PAVEMENT		37	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS		41	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		886	SQ. YD.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		9	EACH
202	REMOVAL AND DISPOSAL OF DROP INLETS		9	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		9	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE DITCH PAVING		74	SQ. YD.
202	REMOVAL AND DISPOSAL OF GUARDRAIL		1198	LIN. FT.
202	REMOVAL AND DISPOSAL OF SIGNS		5	EACH
210	UNCLASSIFIED EXCAVATION		1934	CU. YD.
210	COMPACTED EMBANKMENT		17755	CU. YD.
SP & 210	SOIL STABILIZATION		50	TON
303	AGGREGATE BASE COURSE (CLASS 7)		749	TON
309	PORTLAND CEMENT CONCRETE BASE (5" UNIFORM THICKNESS)		344	SQ. YD.
SS & 401	TACK COAT		1207	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		2560	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		104	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		1440	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		65	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		2410	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		8	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")		122	TON
412	COLD MILLING ASPHALT PAVEMENT		956	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		8	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY		20	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		1612.30	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SP & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
603	24" TEMPORARY CULVERT		138	LIN. FT.
SS & 604	SIGNS		363	SQ. FT.
SS & 604	BARRICADES		32	LIN. FT.
SS & 604	TRAFFIC DRUMS		140	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		752	LIN. FT.
604	RELOCATING PRECAST CONCRETE BARRIER		306	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS		12735	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		1620	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		1725	LIN. FT.
SS & 604	VERTICAL PANELS		16	EACH
605	CONCRETE DITCH PAVING (TYPE A)		142	SQ. YD.
605	CONCRETE DITCH PAVING (TYPE B)		74	SQ. YD.
606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		44	LIN. FT.
* 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1461	LIN. FT.
* 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1461	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		249	LIN. FT.
* 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	558	LIN. FT.
* 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	558	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS V)		51	LIN. FT.
SS & 606	12" SIDE DRAIN		505	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		5	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		3	EACH
606	SELECTED PIPE BEDDING		200	CU. YD.
609	DROP INLETS (TYPE MO)		25	EACH
609	JUNCTION BOXES (TYPE E)		3	EACH
609	JUNCTION BOXES (TYPE ST)		3	EACH
609	DROP INLET EXTENSIONS (4')		12	EACH
609	DROP INLET EXTENSIONS (8')		9	EACH
609	YARD DRAINS		6	EACH
611	4" PIPE UNDERDRAINS		500	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		22.6	CU. YD.
620	LIME		3	TON
620	SEEDING		1.63	ACRE
SS & 620	MULCH COVER		7.89	ACRE
620	WATER		315.6	M.GAL.
621	TEMPORARY SEEDING		6.26	ACRE
621	SILT FENCE		2122	LIN. FT.
621	SAND BAG DITCH CHECKS		220	BAG
621	DIVERSION DITCH		136	LIN. FT.
621	DROP INLET SILT FENCE		700	LIN. FT.
621	SEDIMENT BASIN		200	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		200	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		325	CU. YD.
621	PIPE FOR SLOPE DRAINS		125	LIN. FT.
621	ROCK DITCH CHECKS		33	CU. YD.
623	SECOND SEEDING APPLICATION		1.63	ACRE
624	SOLID SODDING		1717	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)		903	SQ. YD.

* DENOTES ALTERNATE BID ITEMS.

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
633	CONCRETE WALKS		1209	SQ. YD.
633	HAND RAILING		36	LIN. FT.
634	CONCRETE CURB (TYPE D)		537	LIN. FT.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")		2507	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
641	WHEELCHAIR RAMPS (TYPE 3)		38	SQ. YD.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		4556	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		4280	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	1348	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	1348	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		42	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY		25	CU. YD.
802	CLASS S CONCRETE-ROADWAY		45.47	CU. YD.
804	REINFORCING STEEL-ROADWAY (GRADE 60)		5740	POUND
816	DUMPED RIPRAP		4	CU. YD.
	STRUCTURES OVER 20' SPAN			
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)		1.00	LUMP SUM
619	7' STEEL CHAIN LINK FENCE		486	LIN. FT.
636	BRIDGE CONSTRUCTION CONTROL		1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE		445	CU. YD.
802	CLASS S CONCRETE-BRIDGE		1233.90	CU. YD.
802	CLASS S(AE) CONCRETE-BRIDGE		1220.70	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT		76.3	GAL.
804	REINFORCING STEEL-BRIDGE (GRADE 60)		147180	POUND
804	EPOXY COATED REINFORCING STEEL (GRADE 60)		297490	POUND
805	STEEL PILING (HP 12X53)		955	LIN. FT.
SP	CORING DRILLED SHAFT		139	LIN. FT.
SP	DRILLED SHAFT (72" DIAMETER)		695	LIN. FT.
SP	PERMANENT STEEL CASING (72" DIAMETER)		275	LIN. FT.
SP	CROSSHOLE SONIC LOGGING (72" DIAMETER)		4	EACH
806	METAL BRIDGE RAILING (TYPE H)		574	LIN. FT.
SP & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)		1199380	POUND
808	ELASTOMERIC BEARINGS		29058.0	CU. IN.
809	SILICONE JOINT SEALANT		412	LIN. FT.
812	BRIDGE NAME PLATE (TYPE D)		1	EACH
816	CONCRETE RIPRAP		215	CU. YD.
SP	SHORING (SITE NO. 1)		1.00	LUMP SUM

* DENOTES ALTERNATE BID ITEMS.

REVISIONS

DATE	REVISION	SHEET NUMBER

5/20/2015

R061348.DGN

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.		061348	20	131

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

SURVEY CONTROL COORDINATES

Project Name: 061348
Date: 9/21/2012
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	168883.3867	1224912.4510	298.94	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
2	169425.2552	1224590.2053	314.64	CTL	20. FROM B-O-CB MACARTHUR 21.5. 365
3	170191.1860	1224641.4946	320.49	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
4	170801.4755	1224788.3896	310.55	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
5	171435.0082	1224919.3199	293.34	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
6	172091.7300	1224733.5574	305.32	CTL	5/8" REBAR W/ 2" ALUM. CAP 7' E OF EP 365 365
7	172612.6069	1224159.4722	315.55	CTL	5/8" REBAR W/ 2" ALUM. CAP 365
8	169386.0296	1223673.4077	371.76	CTL	5/8" REBAR W/ 2" ALUM. CAP 4' W OF CH BOYER DR 365
9	169606.3718	1225397.6804	279.47	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
10	170059.4166	1225191.6262	283.52	CTL	5/8" REBAR W/ 2" ALUM. CAP 2' S OF EP PARKWAY 365
11	170601.8001	1224723.1095	289.43	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
12	171413.7469	1224297.2253	297.88	CTL	5/8" REBAR W/ 2" ALUM. CAP 365 NORTH LITTLE ROCK
13	172030.8141	1224048.0167	299.90	CTL	5/8" REBAR W/ 2" ALUM. CAP 6.5'N OF EP PARKWAY 365
14	171287.6913	1223480.4154	312.16	CTL	5/8" REBAR W/ 2" ALUM. CAP 17' W OF EP MILITARY DR 365
15	172522.2484	1225068.0839	309.41	CTL	5/8" REBAR W/ 2" ALUM. CAP 12' W OF EP MLILATRY DR 365
101	172378.2892	1223788.0592	305.42	GPS	AHTD GPS 600057A 20.5'E OF EP 1 365
102	178135.9113	1215513.9493	298.54	GPS	AHTD GPS 600048 102+600048 35'S 365
903	172657.3779	1224101.7919	316.07	BM	CHISELED SQUARE 365 NORTH LITTLE ROCK
904	169341.7519	1223556.1663	376.19	BM	CHISELED SQUARE 365 NORTH LITTLE ROCK
905	169612.8873	1225271.4331	284.26	BM	CHISELED SQUARE 365 NORTH LITTLE ROCK
906	170230.7954	1225013.2266	285.87	BM	CHISELED SQUARE 365 NORTH LITTLE ROCK
907	171572.7507	1224206.3975	294.49	BM	CHL /SQ 365 NORTH LITTLE ROCK
998	171956.6363	1224820.5092	301.82	BM	STAINLESS STEEL ROD 365 NORTH LITTLE ROCK
999	169242.3309	1224767.3729	308.28	BM	STAINLESS STEEL ROD 365 NORTH LITTLE ROCK

*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 1.0000135471 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. s061348gi.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS STAINLESS STEEL SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 600057A & 600048
CONVERGENCE ANGLE: 00 10 11.18 LEFT AT LT: 34-48-06.0 LG: 092-17-30.3 (POINT 11)
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CONST. HWY. 365

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	99+38.81	169620.9657	1224604.6214
8001	PC	99+69.18	169651.0282	1224600.2790
8003	PT	104+98.71	170177.0942	1224622.0645
8004	PC	114+74.65	171128.1632	1224840.9705
8006	PT	121+52.81	171797.7942	1224814.1151
8007	PC	121+62.70	171807.2323	1224811.1293
8009	PT	124+91.49	172104.4985	1224672.8100
8010	POE	124+99.38	172111.1686	1224668.5851

AMBER LANE

POINT NO.	TYPE	STATION	NORTHING	EASTING
8011	POB	200+00.00	170143.3080	1224392.3624
8012	PC	201+15.15	170064.5664	1224476.3798
8014	PT	202+14.57	170012.2756	1224560.1978
8015	POE	202+49.47	169999.8962	1224592.8322

MOT 1

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	300+00.00	169620.9657	1224604.6214
8016	PC	300+62.23	169683.1177	1224601.5273
8018	PT	301+41.17	169760.9949	1224589.5126
8019	PC	301+57.79	169777.0729	1224585.2973
8021	PT	302+62.39	169880.6077	1224572.8683
8022	POE	302+79.61	169897.8211	1224573.1688

MOT 2

POINT NO.	TYPE	STATION	NORTHING	EASTING
8023	POB	400+00.00	171086.0319	1224817.9333
8024	PC	401+52.47	171234.6165	1224852.1328
8026	PT	405+74.89	171653.5963	1224854.2484
8027	POE	405+85.23	171663.6907	1224852.0321

5/20/2015

R061348.DGN

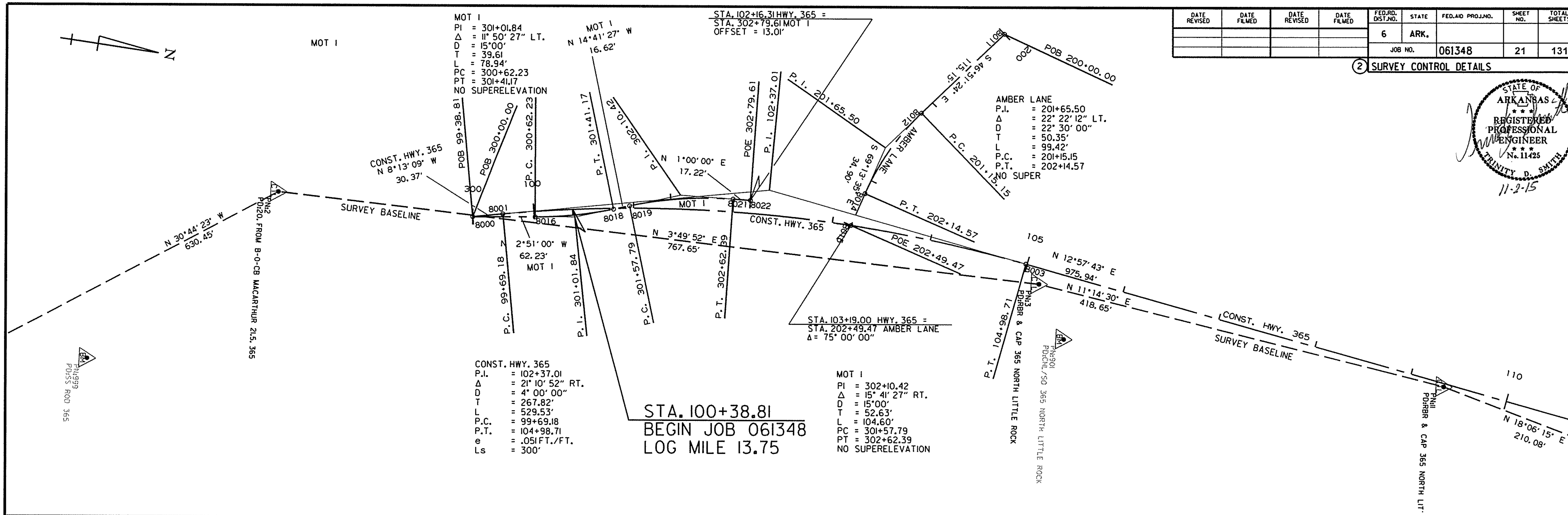
SURVEY CONTROL DETAILS

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.		061348	21	131

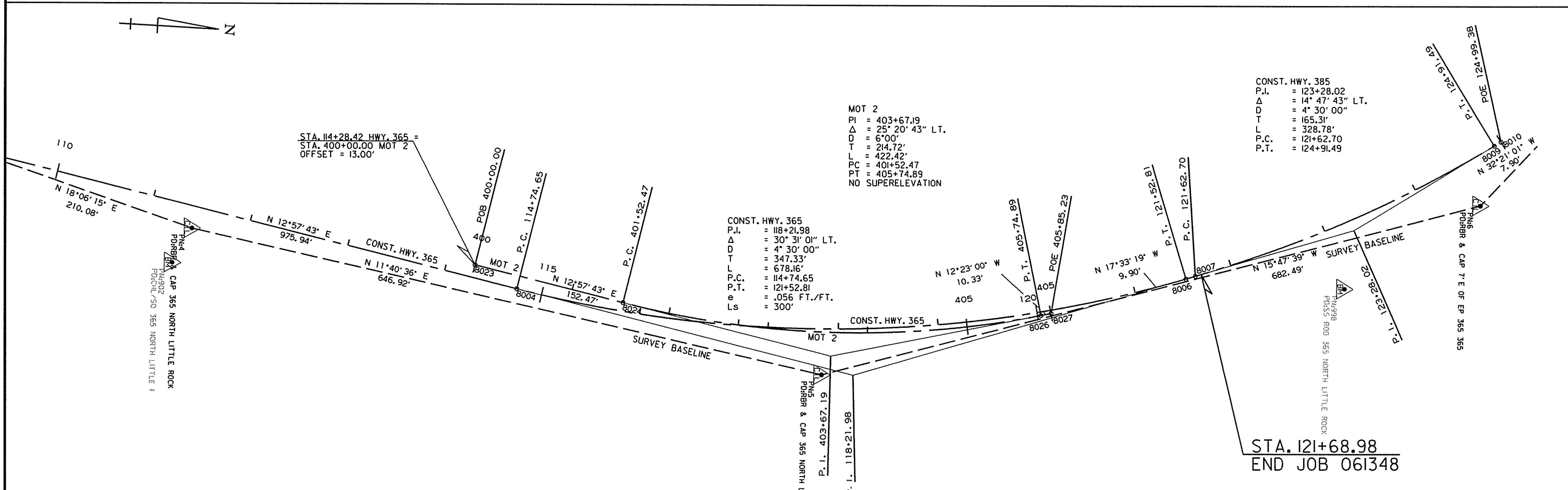
② SURVEY CONTROL DETAILS

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

11-2-15



MOT 1
MOT 1
PI = 301+01.84
Δ = 11° 50' 27" LT.
D = 15°00'
T = 39.61
L = 78.94'
PC = 300+62.23
PT = 301+41.17
NO SUPERELEVATION
MOT 1
N 14°41' 27" W
16.62'
STA. 102+16.31 HWY. 365 =
STA. 302+79.61 MOT 1
OFFSET = 13.01'
AMBER LANE
P.I. = 201+65.50
Δ = 22° 22' 12" LT.
D = 22° 30' 00"
T = 50.35'
L = 99.42'
P.C. = 201+15.15
P.T. = 202+14.57
NO SUPER
POB 200+00.00
S 46°51' 24" E
115.15'
P.I. 201+65.50
P.C. 201+15.15
AMBER LANE
S 69°13' 35" E
34.90'
P.T. 202+14.57
POE 202+49.47
CONST. HWY. 365
N 8°13' 09" W
30.37'
POB 99+38.81
POB 300+00.00
P.C. 300+62.23
P.T. 301+41.17
302+10.42
N 1°00' 00" E
17.22'
POE 302+79.61
P.I. 102+37.01
SURVEY BASELINE
N 30°44' 23" W
630.45'
PN2
PD:20. FROM B-O-CB MACARTHUR 21.5 365
N 2°51' 00" W
62.23'
MOT 1
N 3°49' 52" E
767.65'
CONST. HWY. 365
P.C. 99+69.18
P.I. 301+01.84
P.C. 301+57.79
P.T. 302+62.39
N 12°57' 43" E
975.94'
N 11°14' 30" E
418.65'
CONST. HWY. 365
SURVEY BASELINE
N 18°06' 15" E
210.08'
STA. 103+19.00 HWY. 365 =
STA. 202+49.47 AMBER LANE
Δ = 75° 00' 00"
P.T. 104+98.71
PN3
PD:RBR & CAP 365 NORTH LITTLE ROCK
PN901
PD:CHL/SO 365 NORTH LITTLE ROCK
PN11
PD:RBR & CAP 365 NORTH LIT.
PN999
PD:SS ROD 365
CONST. HWY. 365
P.I. = 102+37.01
Δ = 21° 10' 52" RT.
D = 4° 00' 00"
T = 267.82'
L = 529.53'
P.C. = 99+69.18
P.T. = 104+98.71
e = .051 FT./FT.
Ls = 300'
STA. 100+38.81
BEGIN JOB 061348
LOG MILE 13.75
MOT 1
PI = 302+10.42
Δ = 15° 41' 27" RT.
D = 15°00'
T = 52.63'
L = 104.60'
PC = 301+57.79
PT = 302+62.39
NO SUPERELEVATION



STA. 114+28.42 HWY. 365 =
STA. 400+00.00 MOT 2
OFFSET = 13.00'
MOT 2
PI = 403+67.19
Δ = 25° 20' 43" LT.
D = 6°00'
T = 214.72'
L = 422.42'
PC = 401+52.47
PT = 405+74.89
NO SUPERELEVATION
CONST. HWY. 385
P.I. = 123+28.02
Δ = 14° 47' 43" LT.
D = 4° 30' 00"
T = 165.31'
L = 328.78'
P.C. = 121+62.70
P.T. = 124+91.49
N 18°06' 15" E
210.08'
N 12°57' 43" E
975.94'
CONST. HWY. 365
N 11°40' 36" E
646.92'
POB 400+00.00
P.C. 114+74.65
P.C. 401+52.47
MOT 2
N 12°57' 43" E
152.47'
PN4
PD:RBR & CAP 365 NORTH LITTLE ROCK
PN902
PD:CHL/SO 365 NORTH LITTLE R
CONST. HWY. 365
P.I. = 118+21.98
Δ = 30° 31' 01" LT.
D = 4° 30' 00"
T = 347.33'
L = 678.16'
P.C. = 114+74.65
P.T. = 121+52.81
e = .056 FT./FT.
Ls = 300'
SURVEY BASELINE
MOT 2
CONST. HWY. 365
PN5
PD:RBR & CAP 365 NORTH LITTLE
P.I. 403+67.19
P.I. 118+21.98
N 12°23' 00" W
10.33'
P.T. 405+74.89
POE 405+85.23
N 17°33' 19" W
9.90'
P.T. 121+52.81
P.C. 121+62.70
N 15°47' 39" W SURVEY BASELINE
682.49'
P.I. 124+91.49
POE 124+99.38
N 32°21' 01" W
7.90'
PN6
PD:RBR & CAP 7' E OF EP 365 365
PN998
PD:SS ROD 365 NORTH LITTLE ROCK
P.I. 123+28.02
STA. 121+68.98
END JOB 061348

SURVEY CONTROL DETAILS

5/20/2015

R061348.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.		061348	22	131

(2) PLAN SHEET

STA. 100+55 CONSTRUCT
APPROACH ON LT. = 15 CU. YDS.

STA. 101+20 CONSTRUCT
APPROACH ON LT. = 20 CU. YDS.

STA. 101+87 CONSTRUCT
APPROACH ON LT. = 10 CU. YDS.

STA. 102+55 CONSTRUCT
APPROACH ON LT. = 5 CU. YDS.

STA. 103+65 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 5.4 SQ. YDS.

STA. 100+10 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 5.4 SQ. YDS.

STA. 104+02 CONSTRUCT
APPROACH ON LT. = 40 CU. YDS.

STA. 100+19 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION & BACK OPENING
& 18" x 16' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 100+38 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 8"

STA. 101+36 IN PLACE
DROP INLET ON LT. WITH
24" x 74' R.C. PIPE OUTLET
REMOVE

STA. 102+12 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 63' PIPE OUTLET
CONNECT TO D.I. @ STA. 101+47 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 11"

STA. 102+81 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& BACK OPENING
& 18" x 5' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 102+76 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 9"

STA. 103+27 IN PLACE
DROP INLET ON LT. WITH
15" x 106' PIPE OUTLET
REMOVE

STA. 105+35 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 13' R.C. STUB INLET WITH FES.
& 24" x 52' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 105+35 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 7' 1"
050 5 CFS D.A. = 1.84 ACRES

STA. 100+35 IN PLACE
DROP INLET ON LT. WITH
18" x 101' R.C. PIPE OUTLET
REMOVE

STA. 101+47 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 24" x 65' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 101+30 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 9"

STA. 102+76 - CONSTRUCT
JUNCTION BOX ON LT. WITH
18" x 62' PIPE OUTLET
CONNECT TO D.I. @ STA. 102+12 LT.
TY ST = 4' x 4'
H = 4' 3"

STA. 103+03 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 5.3 SQ. YDS.

STA. 103+73 - CONSTRUCT
JUNCTION BOX ON LT. WITH
24" x 160' PIPE OUTLET
CONNECT TO D.I. @ STA. 105+35 LT.
TY E = 4' x 4'
H = 3' 10"

STA. 106+20.33 BRIDGE END
BRIDGE NO. 07334
438'-0" CONT. COMP. PLATE GIRDER UNITS (98'-98'-121'-121')
98'-0" SIMPLE PLATE GIRDER SPAN
50'-0" CLEAR ROADWAY
539'-4" BRIDGE LENGTH
50° LT. FWD. SKEW
STA. 111+59.67 BRIDGE END

STA. 100+00 CONSTRUCT
APPROACH ON RT. = 40 CU. YDS.

STA. 100+78 CONSTRUCT
APPROACH ON RT. = 75 CU. YDS.

STA. 100+79 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION & BACK OPENING
& 18" x 66' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 101+47 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 4"

STA. 99+39 CONSTRUCT
APPROACH ON RT. = 10 CU. YDS.
UNCLASSIFIED EXCAVATION

STA. 99+53 - CONSTRUCT
D.I. ON RT. WITH
18' x 84' PIPE OUTLET
CONNECT TO D.I. @ STA. 100+42 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 3"

STA. 99+63 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 4.9 SQ. YDS.

STA. 100+42 - CONSTRUCT
D.I. ON RT. WITH
18' x 82' PIPE OUTLET
CONNECT TO D.I. @ STA. 101+30 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 9"

STA. 101+30 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 24" x 42' R.C. STUB OUTLET
WITH FES.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 9' 3"

STA. 102+65 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18' x 128' PIPE OUTLET
CONNECT TO D.I. @ STA. 101+30 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 7' 0"

STA. 103+79 IN PLACE
DROP INLET ON RT. WITH
18" x 39' PIPE OUTLET
REMOVE

STA. 104+19 IN PLACE
DROP INLET ON RT. WITH
18" x 138' PIPE OUTLET
REMOVE

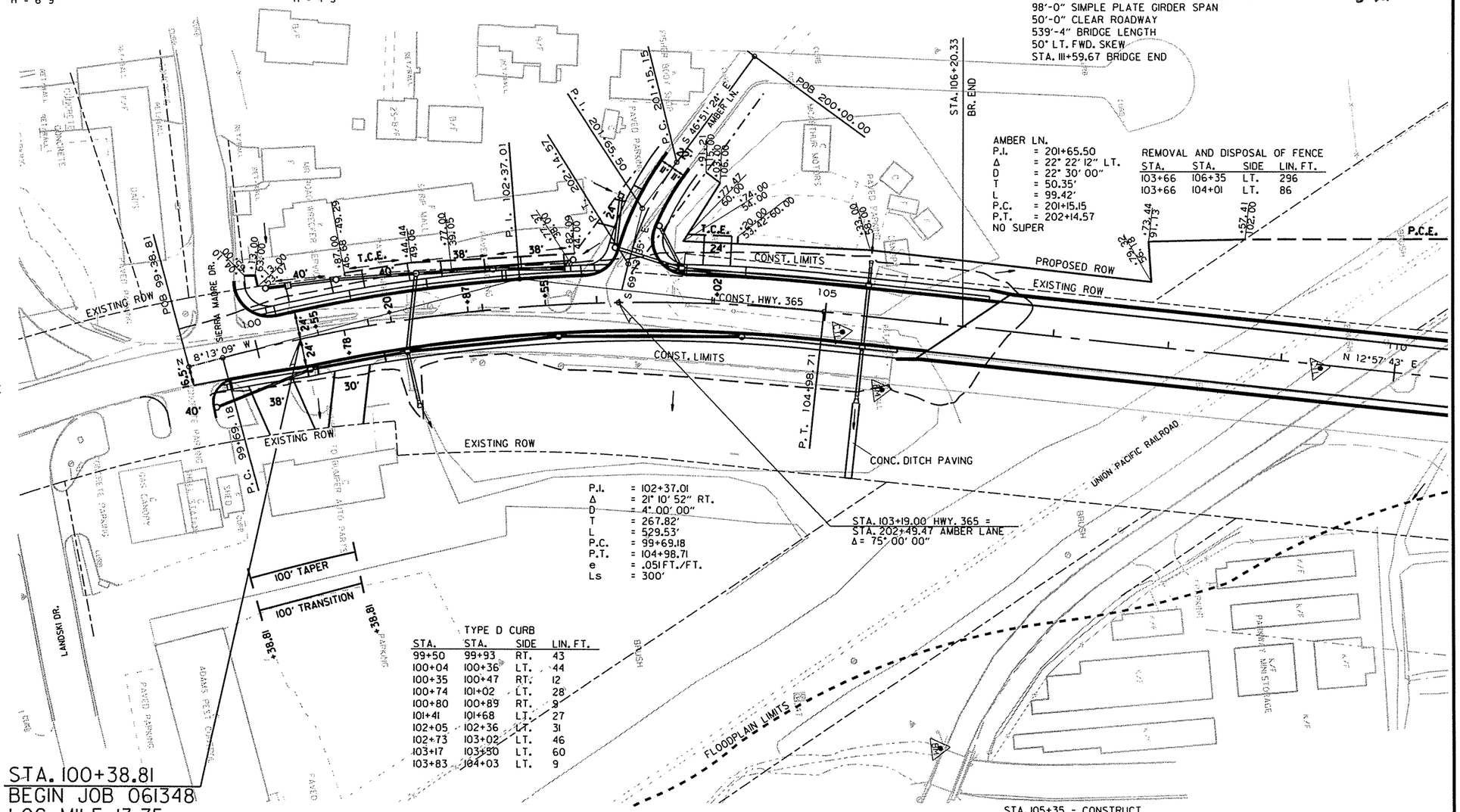
STA. 104+28 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 18' x 156' PIPE OUTLET
CONNECT TO D.I. @ STA. 102+65 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 5"

STA. 105+35 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 24' x 40' R.C. STUB OUTLET
WITH FES.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 8' 4"

STA. 105+62 - STA. 111+29 IN PLACE
(570' x 36') BR. NO. 01299
REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM.

LIMITS OF SPECIAL
FLOOD HAZARD AREA
STA. 109+61 TO STA. 115+52

FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE CLASS III AND TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.



HWY. 365

12/20/2012

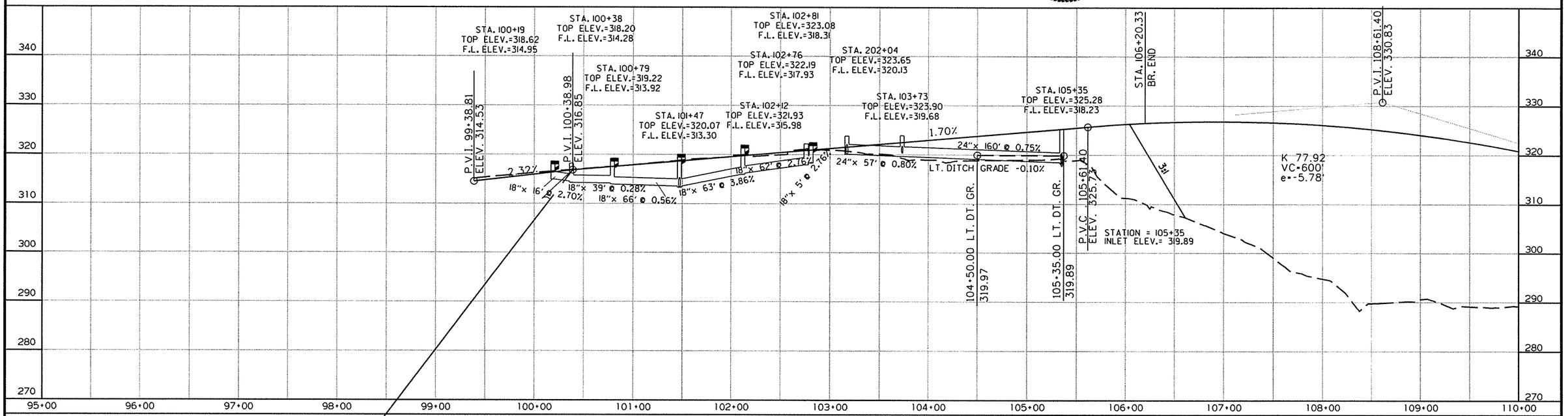
R061348.DGN

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.	061348		23	131

(2) PROFILE SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
2-24-12
TRINITY D. SMITH

HWY. 365 LT. SIDE STORM SEWER

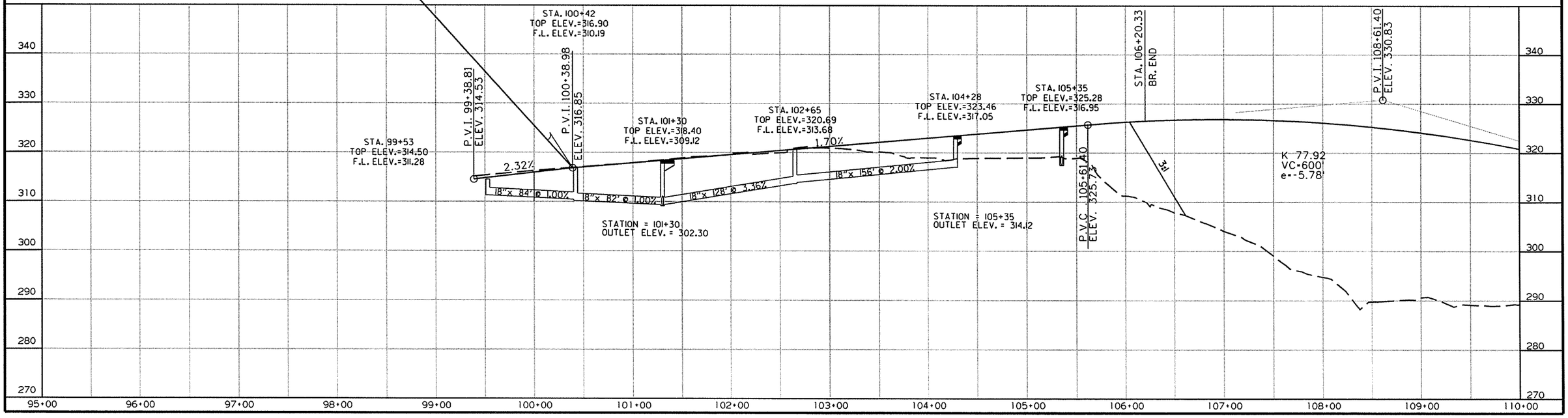


STA. 100+38.81
BEGIN JOB 061348
LOG MILE 13.75

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

STA. 99+38.81 MATCH EXISTING SUPERELEVATION (0.058'/')
STA. 99+79.99 MAX SUPERELEVATION 0.051'/'
STA. 102+34.00 MAX SUPERELEVATION 0.051'/'
STA. 105+34.00 END SUPERELEVATION

HWY. 365 RT. SIDE STORM SEWER



R061348.DGN 12/20/2012

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.	061348		24	131

(2) PLAN SHEET

REMOVAL AND DISPOSAL OF FENCE

STA.	STA.	SIDE	LIN. FT.
111+81	115+08	LT.	377
119+68	119+72	RT.	11

STA. 112+85 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 24" × 51' R.C. PIPE OUTLET
(CLASS V) (TYPE 3 BEDDING)
CONNECT TO D.I. @ STA. 112+85 RT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 3' 11"

STA. 115+00 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" × 79' PIPE OUTLET
CONNECT TO R.C. BOX CULVERT
TY C = 4' × 4'
TY MO = 4' I.D.
H = 3' 9"

STA. 115+82 IN PLACE
10' × 5' × 73' R.C. BOX CULVERT
RETAIN AND EXTEND 38' LT. ON 15° L.F.S.
WITH 3:1 WINGS LT.
Q50 = 541 CFS. D.A. = 164 ACRES

STA. 116+51 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 24" × 57' PIPE OUTLET
CONNECT TO R.C. BOX CULVERT
TY C = 4' × 4'
TY MO = 4' I.D.
H = 6' 5"

STA. 117+15 CONSTRUCT
APPROACH ON LT. = 15 CU. YDS.

STA. 117+80 - CONSTRUCT
D.I. ON LT. WITH
24" × 122' PIPE OUTLET
CONNECT TO D.I. @ STA. 116+51 LT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 4' 4"

STA. 118+68 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" × 5' R.C. STUB INLET WITH FES.
& 24" × 82' PIPE OUTLET
CONNECT TO D.I. @ STA. 117+80 LT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 4' 0"

STA. 119+75 - CONSTRUCT
D.I. WITH 4' EXTENSION
& 18" × 101' PIPE OUTLET
CONNECT TO D.I. @ STA. 118+68 LT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 4' 0"

STA. 120+70 CONSTRUCT
APPROACH ON LT. = 35 CU. YDS.

STA. 121+05 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" × 6' R.C. STUB INLET WITH FES
& 18" × 123' PIPE OUTLET
CONNECT TO D.I. @ STA. 119+75 LT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 3' 6"

P.I. = 123+28.02
Δ = 14° 47' 43" LT.
D = 4° 30' 00"
T = 165.31'
L = 328.78'
P.C. = 121+62.70
P.T. = 124+91.49

STA. 121+65 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 3.3 SQ. YDS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
11-2-15

TYPE D CURB

STA.	STA.	SIDE	LIN. FT.
116+80	116+98	RT.	18
117+33	118+02	LT.	69
118+16	118+31	RT.	15
118+52	118+67	RT.	15
118+96	119+17	RT.	21
119+46	119+53	RT.	7
119+68	120+06	RT.	38
120+44	120+79	RT.	35
121+17	121+27	RT.	10

STA. 121+68.98 - 123+18.00 ON LT. &
STA. 121+44.00 - 123+06.39 ON RT.
TRENCH EXISTING SHOULDER TO BE FILLED WITH P.C.C.
BASE (TWO 5" LAYERS) AS SHOWN IN SPECIAL DETAIL.
TRENCHING TO BE PAID FOR AS UNCLASSIFIED EXCAVATION.

P.I. = 118+21.98
Δ = 30° 31' 01" LT.
D = 4° 30' 00"
T = 347.33'
L = 678.16'
P.C. = 114+74.65
P.T. = 121+52.81
e = .056 FT./FT.
Ls = 300'

STA. 111+62 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" × 119' PIPE OUTLET
CONNECT TO D.I. @ STA. 112+85 RT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 3' 8"

STA. 112+85 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 24" × 50' R.C. STUB OUTLET
WITH FES.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 4' 8"

STA. 116+23 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 5.4 SQ. YDS.

FOR ALL R.C. PIPE CULVERT INSTALLATIONS
USE CLASS III AND TYPE 3 BEDDING UNLESS OTHERWISE
SPECIFIED. FOR ALL C.M. PIPE CULVERT
INSTALLATIONS USE TYPE 2 BEDDING UNLESS
OTHERWISE SPECIFIED

STA. 116+50 CONSTRUCT
APPROACH ON RT. = 60 CU. YDS.

STA. 116+79 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 5.4 SQ. YDS.

STA. 117+96 - CONSTRUCT
JUNCTION BOX ON RT.
CONNECT TO EXISTING STORM SEWER
TY ST = 4' × 4'
H = 3' 2"

STA. 117+96 IN PLACE
12" × 82' R.C. PIPE CULVERT
CONNECT TO JUNCTION BOX @ 117+96 RT.

STA. 118+34 IN PLACE
DROP INLET ON RT. WITH
15" × 37' R.C. PIPE OUTLET
REMOVE

STA. 117+25 CONSTRUCT
APPROACH ON RT. = 70 CU. YDS.

STA. 119+90 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" × 10' R.C. STUB INLET WITH FES.
& 18" × 199' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 117+96 RT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 5' 1"

STA. 119+90 IN PLACE
DROP INLET ON RT. WITH
15" × 162' R.C. PIPE OUTLET
REMOVE

STA. 118+04 CONSTRUCT
APPROACH ON RT. = 40 CU. YDS.

STA. 118+40 CONSTRUCT
APPROACH ON RT. = 40 CU. YDS.

STA. 120+62 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" × 10' R.C. STUB INLET WITH FES.
& 18" × 71' PIPE OUTLET
CONNECT TO D.I. @ STA. 119+90 RT.
TY C = 4' × 4'
TY MO = 4' I.D.
H = 4' 9"

STA. 120+38 IN PLACE
DROP INLET ON RT. WITH
15" × 47' R.C. PIPE OUTLET
REMOVE

STA. 118+84 CONSTRUCT
APPROACH ON RT. = 45 CU. YDS.

STA. 119+36 CONSTRUCT
APPROACH ON RT. = 35 CU. YDS.

STA. 121+14 IN PLACE
DROP INLET ON RT. WITH
15" × 76' R.C. PIPE OUTLET
REMOVE

STA. 121+28 - CONSTRUCT
JUNCTION BOX ON RT. WITH
18" × 68' PIPE OUTLET
CONNECT TO D.I. @ STA. 120+62 RT.
TY E = 4' × 4'
H = 4' 11"

STA. 121+28 - CONSTRUCT
YARD DRAIN ON RT. WITH
12" × 5' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 121+28 RT.
H = 2' 1"
12" SIDE DRAIN = 5 LIN. FT.

STA. 121+00 CONSTRUCT
APPROACH ON RT. = 125 CU. YDS.

STA. 121+46 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 3.3 SQ. YDS.

STA. 121+36 IN PLACE
18" × 43' R.C. PIPE CULVERT
REMOVE 15' & CONNECT TO J.B. @ 121+28 RT.

STA. 121+68.98
END JOB 061348

HWY. 365

12/20/2012

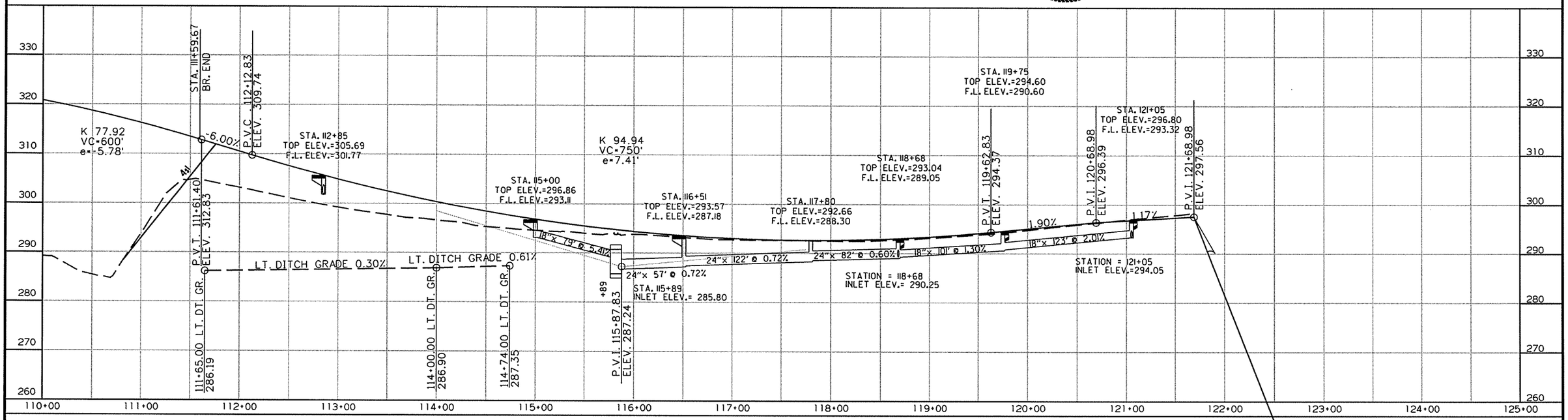
R061348.DGN

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.	061348		25	131

(2) PROFILE SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
11-2-15
TRINITY D. SMITH

HWY. 365 LT. SIDE STORM SEWER



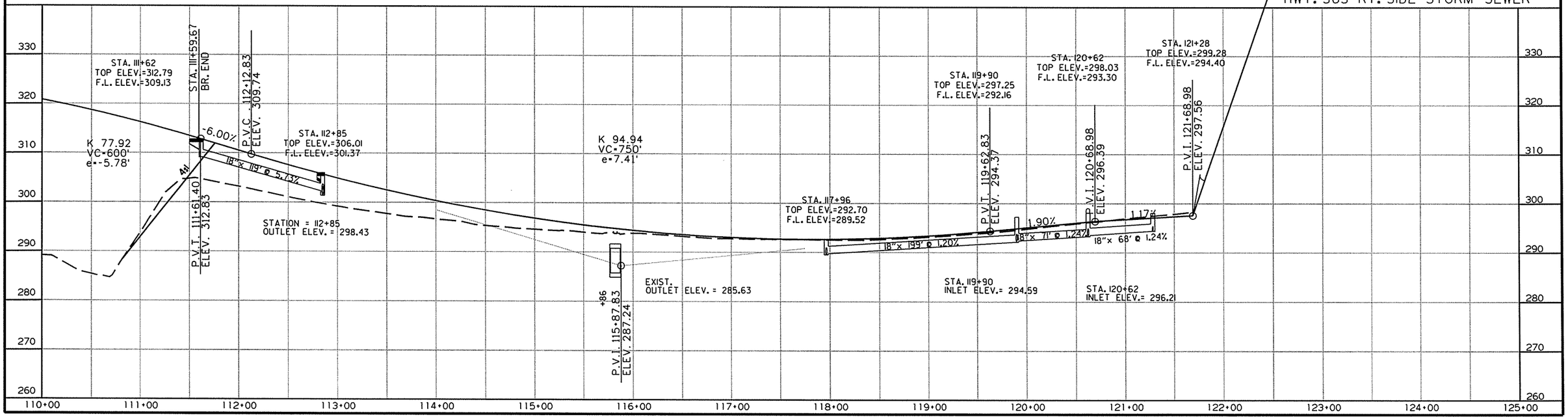
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

UNNAMED TRIBUTARY:
THIS STREAM IS CLASSIFIED AS INTERMEDIATE.
THE TOP OF CHANNEL ELEVATION IS 288 FT. MSL.
REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

STA. 112+49.65 BEGIN SUPERELEVATION
STA. 115+49.65 MAX SUPERELEVATION 0.056'/'
STA. 121+36.84 MAX SUPERELEVATION 0.056 '/'
STA. 121+68.98 MATCH EXISTING SUPERELEVATION (0.050)

STA. 121+68.98
END JOB 061348

HWY. 365 RT. SIDE STORM SEWER



12/20/2012

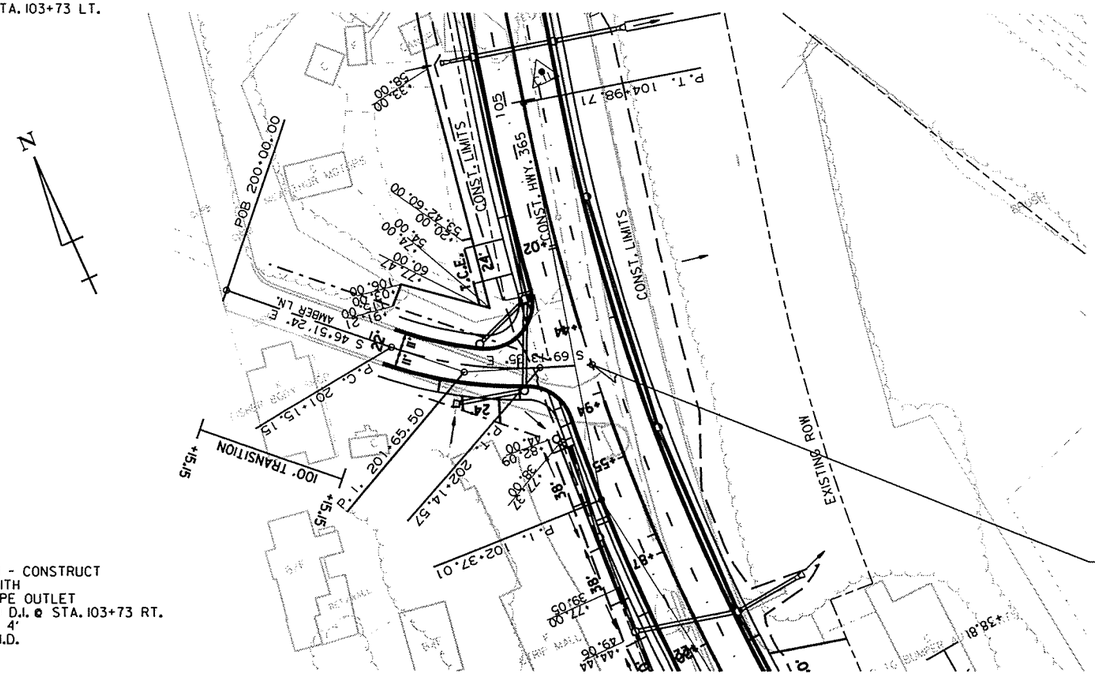
R061348.DGN

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.		061348	26	131
				(2) PLAN SHEET				

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
6-29-15

AMBER LN.
P.I. = 201+65.50
Δ = 22° 22' 12" LT.
D = 22° 30' 00"
T = 50.35'
L = 99.42'
P.C. = 201+15.15
P.T. = 202+14.57
NO SUPER

STA. 201+73 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 24" x 38' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 103+73 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 6"



STA. 202+04 - CONSTRUCT
D.I. ON RT. WITH
24" x 57' PIPE OUTLET
CONNECT TO D.I. @ STA. 103+73 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 6"

STA. 201+63 - CONSTRUCT
J.B. ON RT. WITH
EXISTING 15" PIPE INLET
& 24" x 42' PIPE OUTLET
CONNECT TO D.I. @ STA. 202+04 RT.
TY E = 3' x 3'
H = 3' 8"

STA. 201+78 CONSTRUCT
APPROACH ON LT. = 5 CU. YDS.

12/20/2012

R061348.DGN

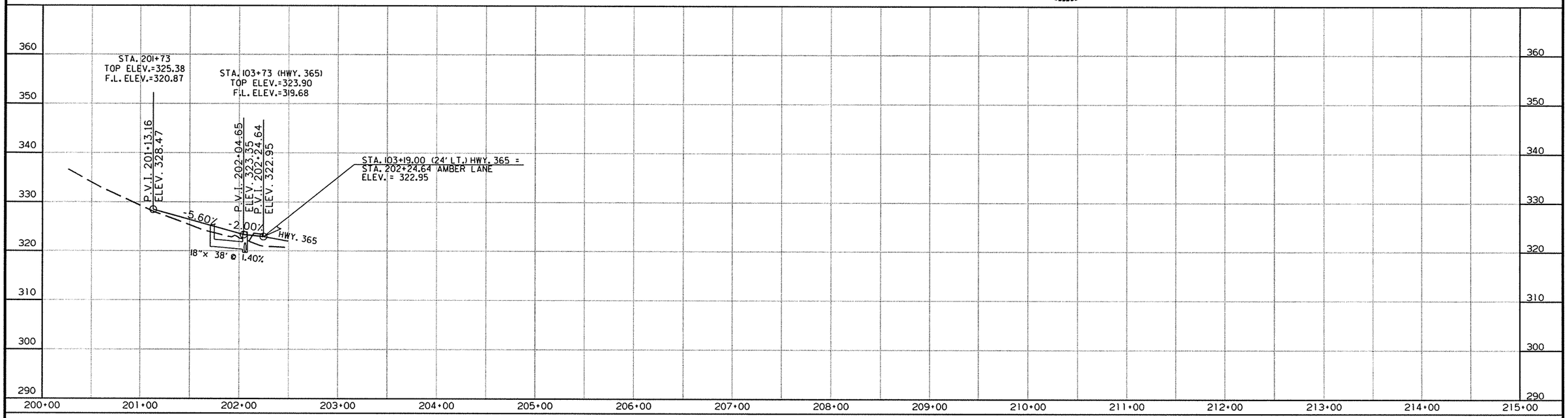
AMBER LANE

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.		061348	27	131

(2) PROFILE SHEET

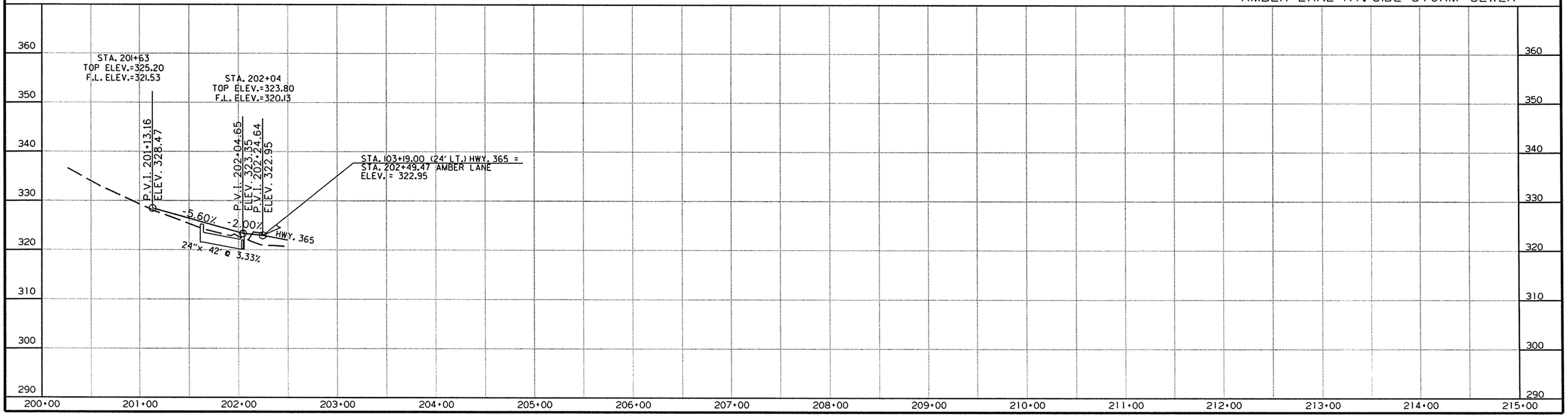
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH

AMBER LANE LT. SIDE STORM SEWER



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

AMBER LANE RT. SIDE STORM SEWER



R061348.DGN 12/20/2012

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.		061348	28	131
				07334 - LAYOUT - 57016				

For R/W Data, see Roadway Plans.

PLAN

Total Length of bridge = 539'-4"

196'-0" Cont. Comp. Plate Girder Unit (98'-98')

242'-0" Cont. Comp. Plate Girder Unit (121'-121')

98'-0" Simple Comp. Pl. Girder Span

Note: Excavate as required at Bents. Excavation for Drilled Shafts shall be considered subsidiary to item "Drilled Shafts". Contractor shall backfill to the natural ground elevation.

ELEVATION

PVC Sta. 105+61.40, Elev. 325.73 — 1.70% — PVI Sta. 108+61.40, Elev. 330.83 — -6.00% — PVT Sta. 111+61.40, Elev. 312.83

VC=600.00'

VERTICAL CURVE DATA

Stations and Elevations shown are along C.L. Bridge and C.L. Construction. Elevations are at working point.

① Low Steel to top of Union Pacific RR Rail at point of Minimum Vertical Clearance.

② Low Steel to top of existing Parkway Drive at point of Minimum Vertical Clearance.

③ Top of Deck at C.L. Bridge and C.L. Bent to Low Side Top of Cap.

④ Top of Deck at C.L. Bridge to Low Steel at point of Minimum Vertical Clearance over Union Pacific RR.

⑤ Top of Deck at C.L. Bridge to Low Steel at point of Minimum Vertical Clearance over Parkway Drive.

⑥ Minimum Horizontal Clearance to face of Crash Wall.

NOTE:
See Dwg. No. 57018 for Boring Details.

See Dwg. No. 57017 for Details of Stage Construction and General Notes.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF BRIDGE OVER UNION PACIFIC RAILROAD UPRR/PARKWAY DR. STR. & APPRS. (S)
PULASKI COUNTY

ROUTE 365 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

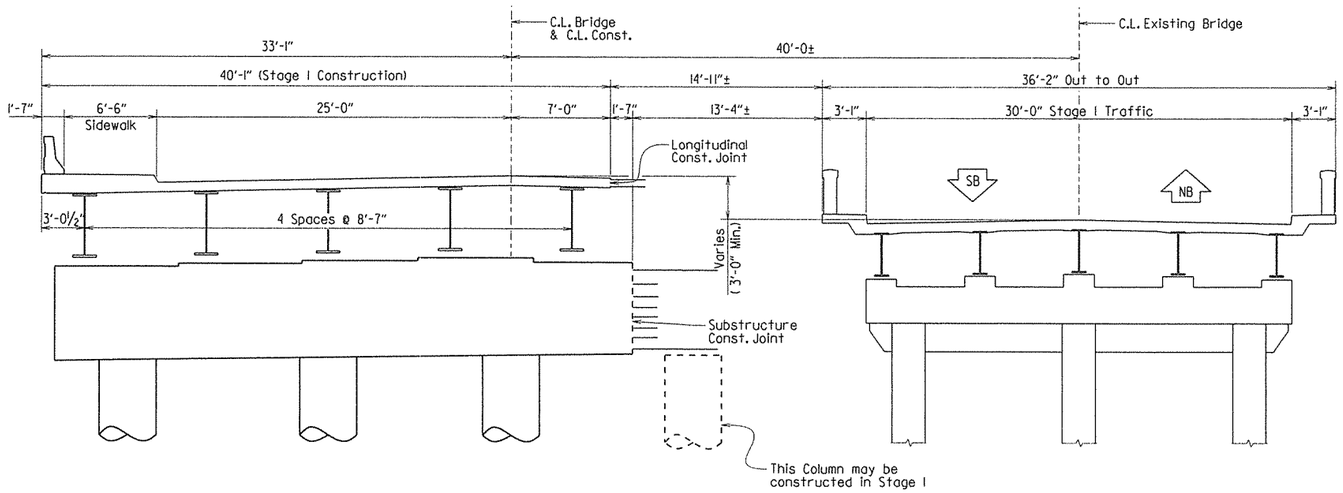
DRAWN BY: MRE DATE: 11/12/13
CHECKED BY: JAC DATE: 5-27-15
DESIGNED BY: SWP DATE: 9/2013

FILENAME: b061348_11.dgn
SCALE: 1" = 30'-0"

BRIDGE NO. 07334 DRAWING NO. 57016

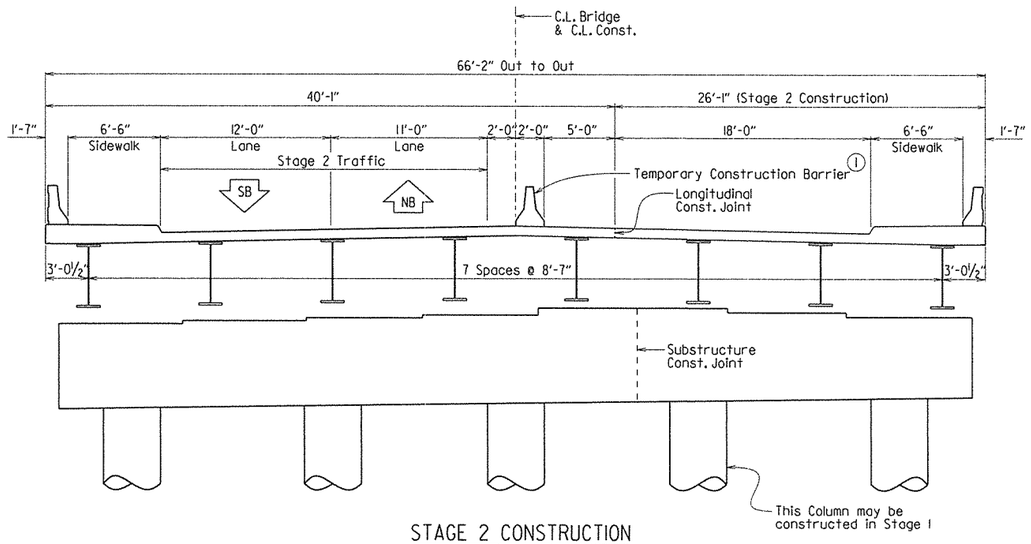
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	29	131
				①	07334	- LAYOUT -	57017	



STAGE 1 CONSTRUCTION
Looking Ahead

NOTE:
After Stage 1 Construction is complete and open to traffic, the Existing Bridge No. 02199 shall be removed and Stage 2 Construction completed.



STAGE 2 CONSTRUCTION
Looking Ahead

NOTE:
For Maintenance of Traffic plans and additional information, see Roadway Plans.

GENERAL NOTES

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

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2013 edition, with applicable Supplemental Specifications and Special Provisions. Unless otherwise noted in the plans, Section and Subsection refer to the Standard Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition (2012), with 2013 interim revisions.

LIVE LOADING: HL-93

SEISMIC ZONE: 1

MATERIALS AND STRENGTHS:

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

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

STEEL PILING: Piling at Bent 1 shall be HP 12x53 (Gr. 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 70 tons and into material designated as Sandstone on the boring legend. Piling at Bent 6 shall be HP 12x53 (Gr. 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 70 tons and into material designated as Shale on the boring legend. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Section 805. Piles in end bents are to be driven after embankment to bottom of cap is in place. The Contractor shall use approved steel H-Pile driving points.

DRILLED SHAFTS: Drilled shafts in Bent Nos. 2, 3, and 5 shall be founded a minimum of 20 feet into material designated as Shale or Sandstone on the boring legend, with an RQD of 18 or greater (see Boring Logs). Drilled shafts in Bent No. 4 shall be founded a minimum of 24 feet into material designated as Shale or Sandstone on the boring legend, with an RQD of 18 or greater (see Boring Logs). No adjustments in plan tip elevation shall be made without prior approval from the Engineer. Methods of construction of the drilled shafts shall be in accordance with SP Job 061348 "Drilled Shaft Foundations." Any casing used as a means for construction of the drilled shafts, such as to prevent caving, to exclude groundwater, or to provide shoring, shall not extend below the elevation shown. The Contractor must obtain approval from the Engineer for any deviation from this requirement.

SHORING: Shoring is required at bridge ends for Stage Construction. See SP Job 061348 "Shoring". Actual location of shoring is to be determined by Contractor.

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. The sidewalk shall be given a Class 6 Broomed Finish.

DETAIL DRAWINGS:	DRAWING NO.
Details of End Bent 1	57021-57024
Details of Intermediate Bents	57025-57032
Details of End Bent 6	57033-57036
196' Continuous Plate Girder Unit	57042-57045
242' Continuous Plate Girder Unit	57046-57049
98' Simple Plate Girder Span	57050-57053
Steel Piling	55020

EXISTING BRIDGE: Existing Bridge No.02199 is 36' wide x 570' long with a concrete deck on steel beam spans on multi-column concrete bents. The existing bridge is located approximately 40'-0" right of proposed bridge.

REMOVAL AND SALVAGE: After Stage 1 of the new bridge is open to traffic, Existing Bridge No. 002199 shall be removed in accordance with Section 205. Existing bridge foundations shall be removed, as directed by the Engineer, where they interfere with new foundations. Foundations on railroad right of way shall be removed as required by the Railroad. All materials from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: For details of maintenance of traffic, see Roadway Plans.

① Do not connect Temporary Construction Barrier to deck. See Std. Dwg. TC-4 for details.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

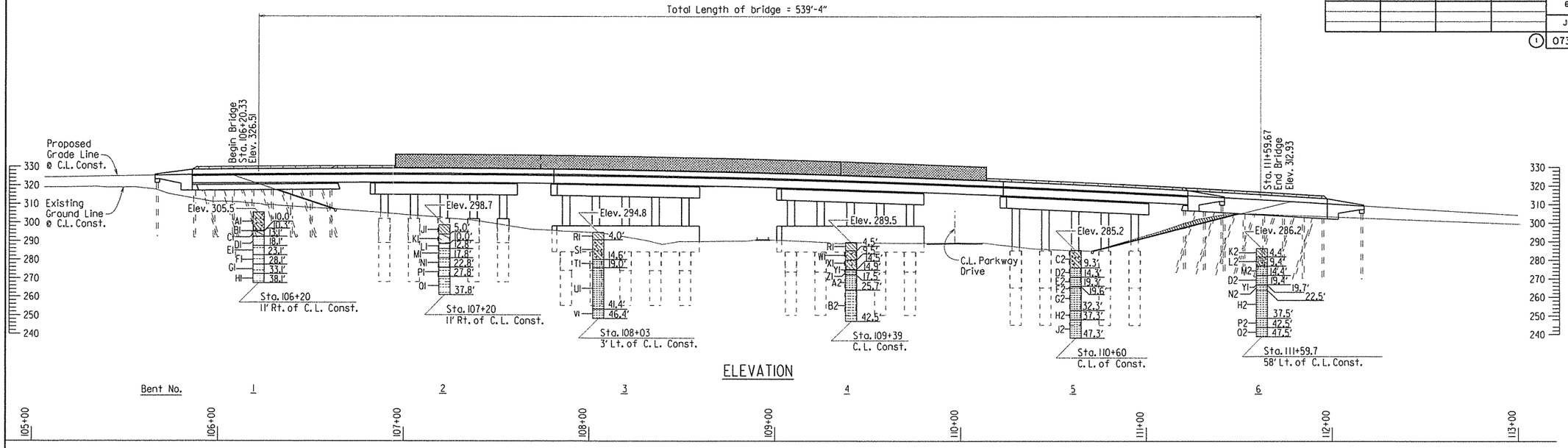
SHEET 2 OF 2
LAYOUT OF BRIDGE OVER UNION PACIFIC RAILROAD
UPRR/PARKWAY DR. STR. & APPRS. (S)
PULASKI COUNTY
ROUTE 365 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/10/14
CHECKED BY: JAC DATE: 5-27-15
DESIGNED BY: SWP DATE: 9/2013
FILENAME: b061348_11.dgn
SCALE: NO SCALE

BRIDGE NO. 07334 DRAWING NO. 57017

PRINT DATE: 5/27/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	30	131
				(1) 07334	-	SOIL BORINGS	-	57018



ELEVATION

ELEVATION - SOIL BORINGS

BORING LEGEND

AI-Moist, Hard, Reddish Brown and Dark Gray Clay with Gravel (Sandstone Fragments) and some Organic Matter
BI-Very Dense, Gravel (Sandstone Fragments) and Cobbles with Sand
CI-SANDSTONE WITH CLAY LAYERS - Light Gray and Brown, Medium Bedded, Weathered, Cemented, with Moderate Dip and Fractured Layers
DI-SANDSTONE WITH OCCASIONAL DARK GRAY WEATHERED SHALE SEAMS - Light Gray, Very Thick Bedded, Weathered, Poorly-Cemented, with Moderate Dip and Vertically Fractured Layers
EI-SANDSTONE WITH OCCASIONAL DARK GRAY WEATHERED SHALE SEAMS - Light Gray, Thick Bedded, Weathered, Cemented, with Moderate Dip and Vertically Fractured Layers
FI-SANDSTONE WITH FREQUENT DARK GRAY SHALE SEAMS AND QUARTZ PARTINGS - Light Gray, Very Thick Bedded, Slightly Weathered, Well-Cemented, with Moderate Dip
GI-SANDSTONE WITH OCCASIONAL DARK GRAY SHALE SHALE SEAMS AND QUARTZ PARTINGS - Gray, Very Thick Bedded, Slightly Weathered, Well-Cemented, with Moderate Dip and Vertically Fractured Layers
HI-SANDSTONE WITH FREQUENT DARK GRAY SHALE SEAMS - Gray, Very Thick Bedded, Slightly Weathered, Well-Cemented, with Moderate Dip
JI-Moist, Hard, Light Brown Clay with some Organic Matter
KI-SANDSTONE WITH CLAY SEAMS - Light Brown, Poorly-Cemented
LI-SANDSTONE INTERBEDDED WITH DARK GRAY WEATHERED SHALE - Gray, Thick Bedded, Slightly Weathered, Cemented, with Moderate Dip and Fractured Layers (Sandstone); Dark Gray, Laminated, Medium Hard, with Moderate Dip (Shale)
MI-SHALE INTERBEDDED WITH SANDSTONE - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip and Fractured Layers (Shale); Gray, Thin Bedded, Cemented, with Moderate Dip (Sandstone)
NI-SHALE INTERBEDDED WITH SANDSTONE AND QUARTZ PARTINGS - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip and Fractured Layers (Shale); Gray, Thin Bedded, Cemented, with Moderate Dip (Sandstone)
PI-SHALE INTERBEDDED WITH SANDSTONE - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip (Shale); Gray, Thin Bedded, Cemented, with Moderate Dip (Sandstone)
QI-SHALE INTERBEDDED WITH SANDSTONE - Dark Gray, Laminated, Slightly Weathered, Hard, with Moderate Dip and occasional Fractured Layers (Shale); Gray, Thin Bedded, Cemented, with Moderate Dip (Sandstone)
RI-Moist, Very Stiff, Reddish Brown Clay
SI-Moist, Very Stiff to Hard, Reddish Brown and Gray Clay with Gravel (Sandstone Fragments)
TI-SHALE - Gray and Brown, Weathered, Medium Hard
UI-SHALE WITH OCCASIONAL WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard to Hard, with Moderate Dip *
VI-SHALE WITH OCCASIONAL WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard to Hard, with Moderate Dip and Slickensides
WI-Moist, Hard, Reddish Brown and Gray Clay with Gravel (Sandstone Fragments)
XI-Moist, Very Hard, Reddish Brown and Gray Clay with Gravel (Sandstone Fragments)
YI-SHALE - Dark Gray, Weathered, Medium Hard
ZI-SHALE WITH FREQUENT WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard, with Moderate Dip and Slickensides
A2-SHALE WITH FREQUENT WEATHERED SHALE LAYERS AND QUARTZ PARTINGS - Dark Gray, Laminated, Medium Hard, with Moderate Dip and Slickenside
B2-SHALE WITH FREQUENT WEATHERED SHALE LAYERS, SANDSTONE SEAMS AND QUARTZ PARTINGS - Dark Gray, Laminated, Hard, with Moderate Dip
C2-Moist, Hard, Brown Clay with Gravel (Sandstone Fragments) and some Organic Matter
D2-SHALE - Brown and Gray, Highly Weathered, Medium Hard
E2-SHALE - Brown and Dark Gray, Highly Weathered, Soft
F2-SHALE - Dark Gray, Highly Weathered, Medium Hard
G2-SHALE WITH OCCASIONAL WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard to Hard, with Moderate Dip
H2-SHALE WITH FREQUENT WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard to Hard, with Moderate Dip
J2-SHALE WITH OCCASIONAL WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard to Hard, with Moderate Dip
K2-Moist, Very Stiff, Brown Clay with some Organic Matter
L2-Sandstone Cobbles with Brown Clay
M2-SHALE - Brown and Gray, Highly Weathered, Soft
N2-SHALE WITH FREQUENT WEATHERED SHALE LAYERS - Dark Gray, Laminated, Medium Hard, with Slight Dip
P2-SHALE - Dark Gray, Laminated, Slightly Weathered, Medium Hard to Hard, with Moderate Dip
Q2-SHALE WITH QUARTZ PARTINGS - Dark Gray, Laminated, Slightly Weathered, Medium Hard to Hard, with Moderate Dip

* Total water loss was encountered at 30.0'.

"N" VALUES

Sta. 106+20 - 11' Right of Center Line of Construction
5.5- 6.5, N=43
10.0- 10.2, N=60(3")

Sta. 107+20 - 11' Right of Center Line of Construction
5.0- 5.2, N=60(3")
10.0- 10.0, N=10(.01")

Sta. 108+03 - 3' Left of Center Line of Construction
4.5- 5.5, N=24
9.5- 10.5, N=49
14.5- 14.8, N=60(3")
19.0- 19.0, N=60(.01")

Sta. 109+39 - Center Line of Construction
5.0- 6.0, N=31
10.0- 11.0, N=79
14.5- 14.9, N=60(5")

Sta. 110+60 - Center Line of Construction
4.8- 5.8, N=60
9.8- 10.8, N=100
14.8- 15.8, N=58
19.3- 19.5, N=60(3")

Sta. 111+59.7 - 58' Left of Center Line of Construction
4.9- 5.9, N=37
9.9- 10.9, N=91
14.9- 15.9, N=92
19.4- 19.7, N=60(4")

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SOIL BORINGS
UPRR/PARKWAY DR. STR. & APPRS. (S)
PULASKI COUNTY
ROUTE 365 SEC. 11
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 11/12/13 FILENAME: b061348_11.dgn
CHECKED BY: JAC DATE: 5-27-15 SCALE: 1"=30'-0"
DESIGNED BY: SWP DATE: 9/2013
BRIDGE NO. 07334 DRAWING NO. 57018

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	31	131
				①	07334	- EXHIBIT A -	57019	

TOP OF RAIL ELEVATIONS

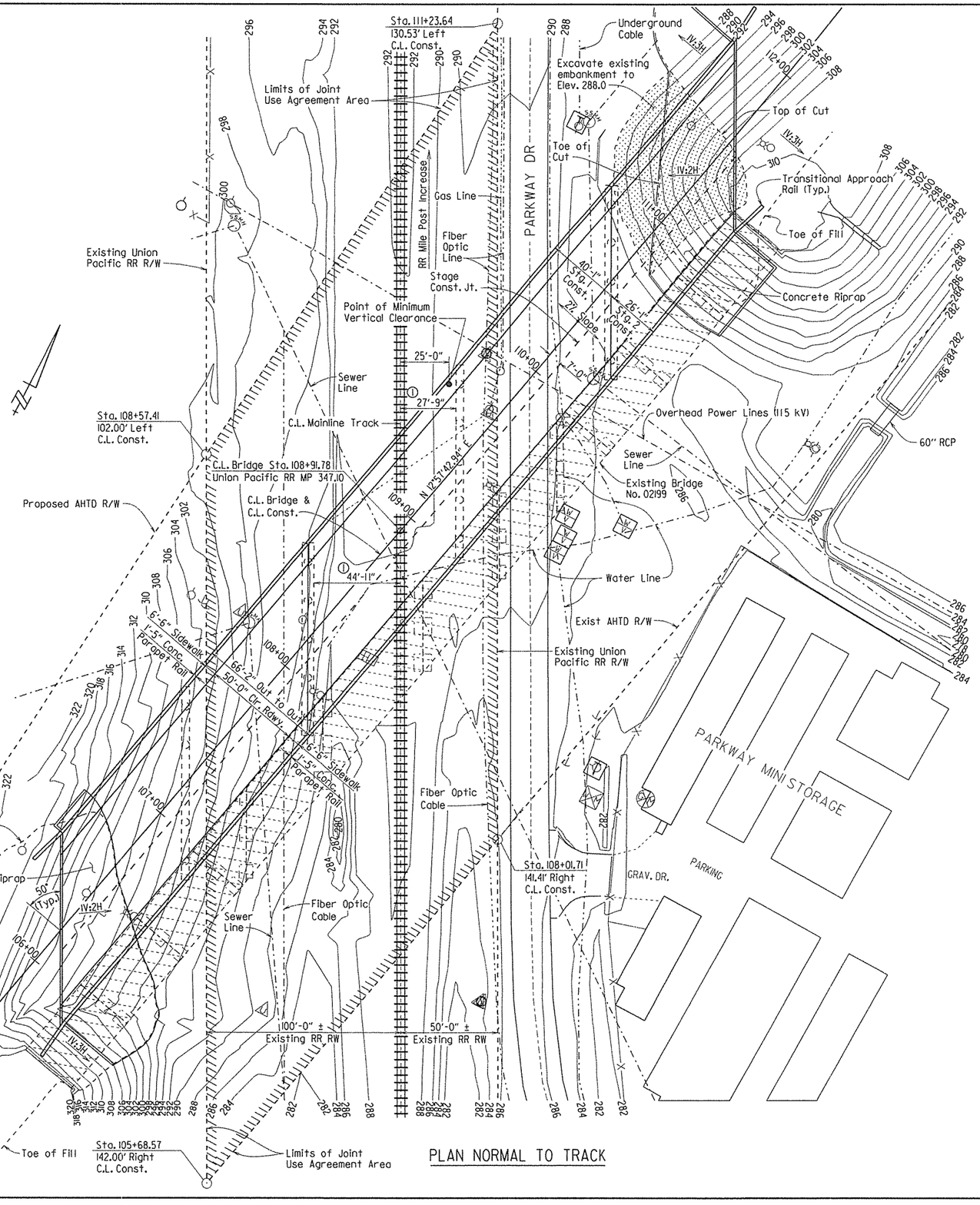
UNION PACIFIC RR MAIN LINE TRACK

(Stations increase in direction of Mile Post increase)

LEFT RAIL		RIGHT RAIL	
Station	Elevation	Station	Elevation
0+00.00	285.60	0+00.00	285.60
1+00.00	285.99	1+00.00	285.99
2+00.00	286.60	2+00.00	286.57
3+00.00	287.25	3+00.00	287.27
4+00.00	287.90	4+00.00	287.91
5+00.00	288.50	5+00.00	288.49
6+00.00	289.01	6+00.00	288.97
7+00.00	289.45	7+00.00	289.44
8+00.00	289.83	8+00.00	289.80
9+00.00	290.34	9+00.00	290.35
10+00.00	290.99	10+00.00	290.99
11+00.00	291.71	11+00.00	291.71
12+00.00	292.41	12+00.00	292.39
13+00.00	292.99	13+00.00	293.01
14+00.00	293.62	14+00.00	293.59
15+00.00	294.21	15+00.00	294.21
16+00.00	294.96	16+00.00	294.96
17+00.00	295.65	17+00.00	295.69
18+00.00	296.52	18+00.00	296.52
19+00.00	297.38	19+00.00	297.35
19+90.00	298.09	19+90.00	298.09

LEFT RAIL
C.L. Rail Sta. 10+80.33 = C.L. Const. Sta. 108+87.92
RIGHT RAIL
C.L. Rail Sta. 10+86.39 = C.L. Const. Sta. 108+95.62

The elevations of the existing top-of-rail profile shall be verified by the Contractor prior to beginning of construction. Any discrepancies shall be brought to the attention of the Railroad prior to construction.



PLAN NORMAL TO TRACK

① Minimum Horizontal Clearance to face of Crash Wall.

GENERAL NOTES

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

Erection over the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operation. Erection over the Railroad's track shall be developed such that it enables the track to remain open to traffic per the Railroad's requirements.

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

Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment when trains are present.

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

Shoring shall comply with the Union Pacific Railroad requirements. Construction shall comply with the requirements of SP Job 061348 "Insurance, Construction, and Flagging requirements on Railroad property (UPRR)." Railroad review and approval of Shoring, Erection, and Falsework is required. Allow a minimum of four weeks for the review and approval of each submittal.

Currently there are no known utilities on the Railroad right-of-way other than shown.

A Chain Link Fence is required on both sides of the Bridge. The Fence is to be mounted on top of the concrete parapet rail and shall extend the full width of the Railroad R/W.

The proposed bridge construction will not change the quantity and/or characteristics of the flow within the Railroad right-of-way.

The bridge shall have Closed Parapet Rail without openings or deck drains on both sides over Railroad right-of-way.

All permanent clearances shall be verified before project closing.

For Railroad coordination refer to the Railroad Minimum Requirements of SP Job 061348 "Insurance, Construction, and Flagging Requirements on Railroad Property (UPRR)".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9255
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
EXHIBIT A
LAYOUT OF BRIDGE OVER
UNION PACIFIC RAILROAD
UPRR/PARKWAY DR. STR. & APPRS. (S)
PULASKI COUNTY

ROUTE 365 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 12/16/13 FILENAME: b061348_11.dgn
CHECKED BY: JAC DATE: 5/27/15 SCALE: 1"=30'-0"
DESIGNED BY: DATE:

BRIDGE NO. 07334 DRAWING NO. 57019

PRINT DATE: 5/26/2015

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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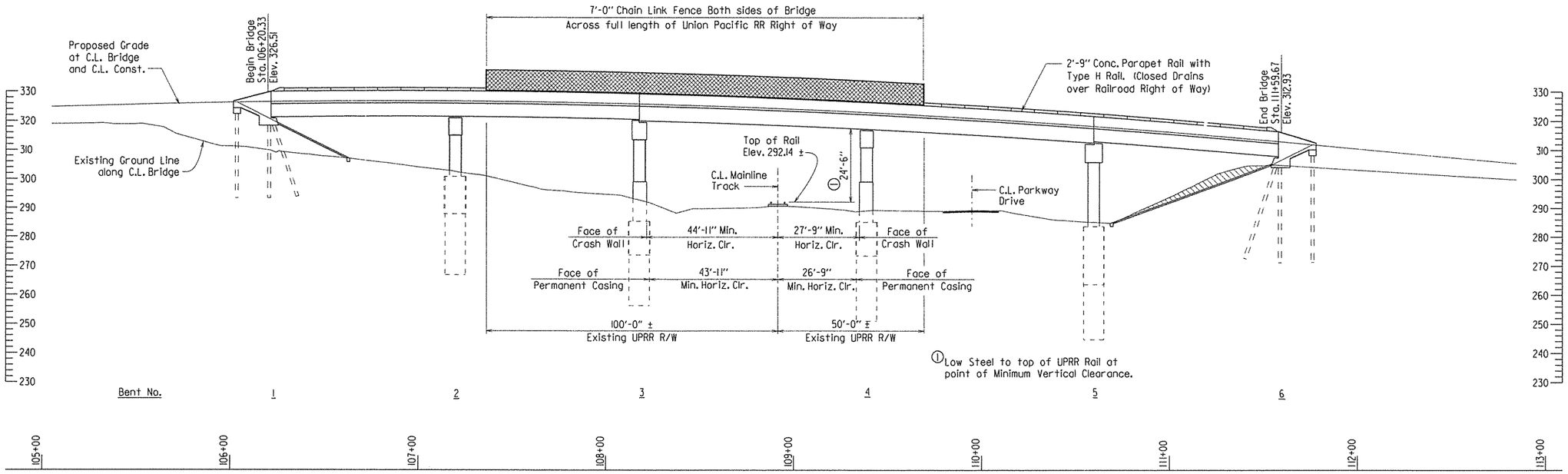
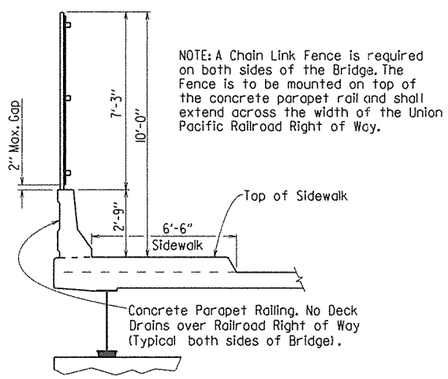
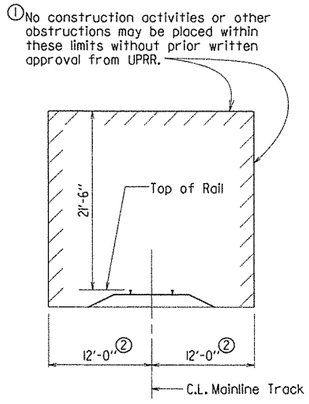
				JOB NO.		061348	32	131
				① 07334	-	EXHIBIT A	-	57020



ELEVATION SECTION NORMAL TO TRACK
Scale 1" = 20'-0"



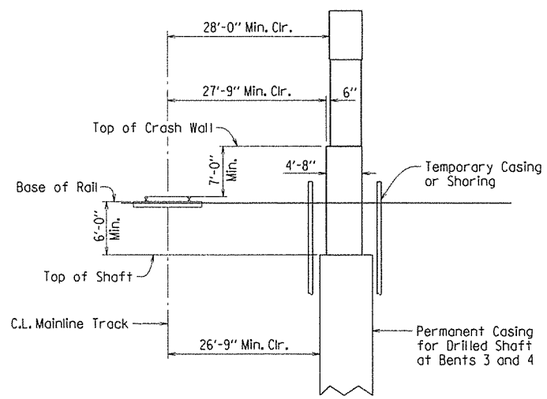
TYPICAL SECTION SHOWING CHAIN LINK FENCE
No Scale



MINIMUM CONSTRUCTION CLEARANCES
No Scale

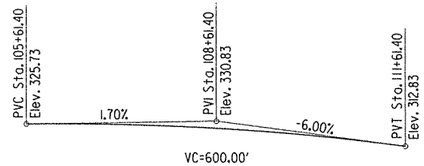
① Removal of existing bents adjacent to tracks will require excavation within 6 feet of C.L. track. These existing bents shall be removed to a depth of 6 feet below base of rail or as required by UPRR.

② Measured normal to the track.



PIER PROTECTION DETAILS
No Scale
Bent 4 shown, Bent 3 similar

NOTE: Crash Wall designed according to AREMA Ch. 8, part 2.1.5.1.



VERTICAL CURVE DATA
Stations and Elevations shown are along C.L. Bridge and C.L. Construction.
Elevations are at working point.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
EXHIBIT A
LAYOUT OF BRIDGE OVER UNION PACIFIC RAILROAD
UPRR/PARKWAY DR. STR. & APPRS. (S)
PULASKI COUNTY

ROUTE 365 SEC. 11

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 12/16/13 FILENAME: b061348_11.dgn
CHECKED BY: JAC DATE: 5/27/15 SCALE: 1" = 20'-0" or as noted
DESIGNED BY: DATE:

BRIDGE NO. 07334 DRAWING NO. 57020

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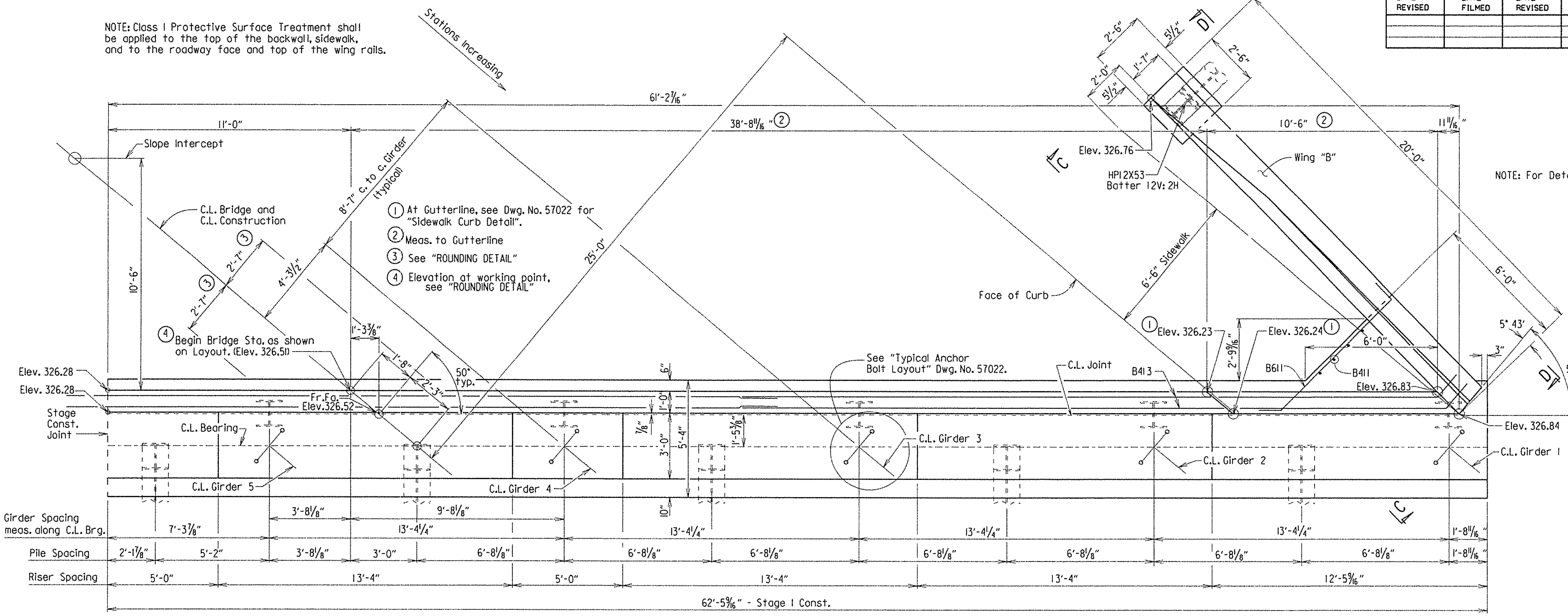
				6	ARK.			
				JOB NO.		061348	33	131

① 07334 - END BENT DETAILS - 57021

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

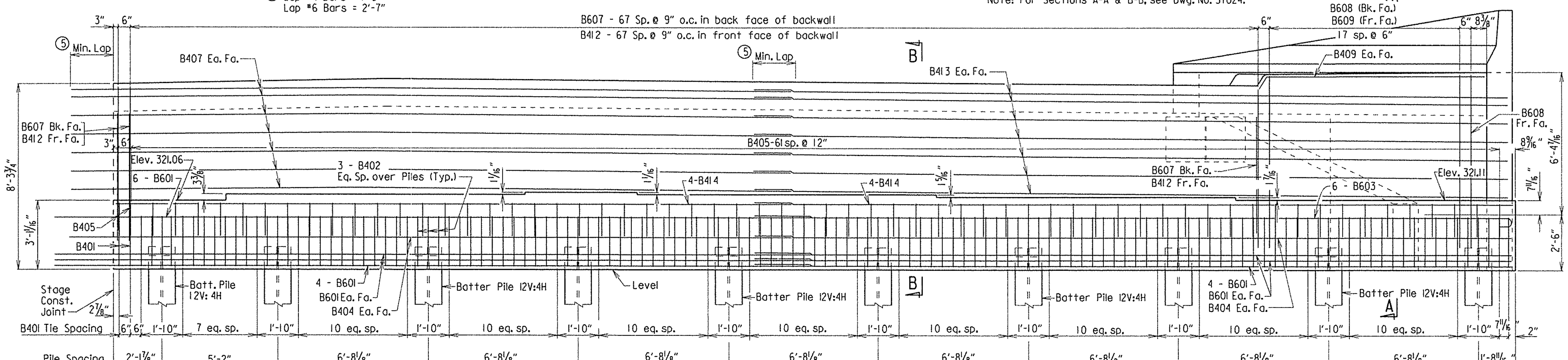
NOTE: For Details of Wing & Rail, see Dwg. No. 57023.



PLAN - STAGE I

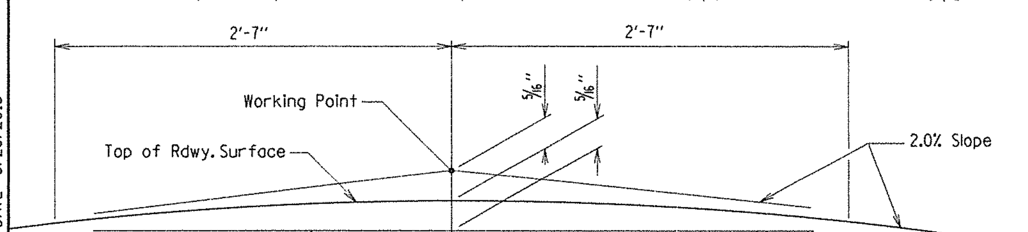
⑤ Lap #4 Bars = 1'-9"
Lap #6 Bars = 2'-7"

Note: For Sections A-A & B-B, see Dwg. No. 57024.



ELEVATION- STAGE I

Looking Back



ROUNDING DETAIL

No Scale

NOTE: Working Point matches Theoretical Roadway Grade.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9235 5-27-15 CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF BENT NO. 1

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

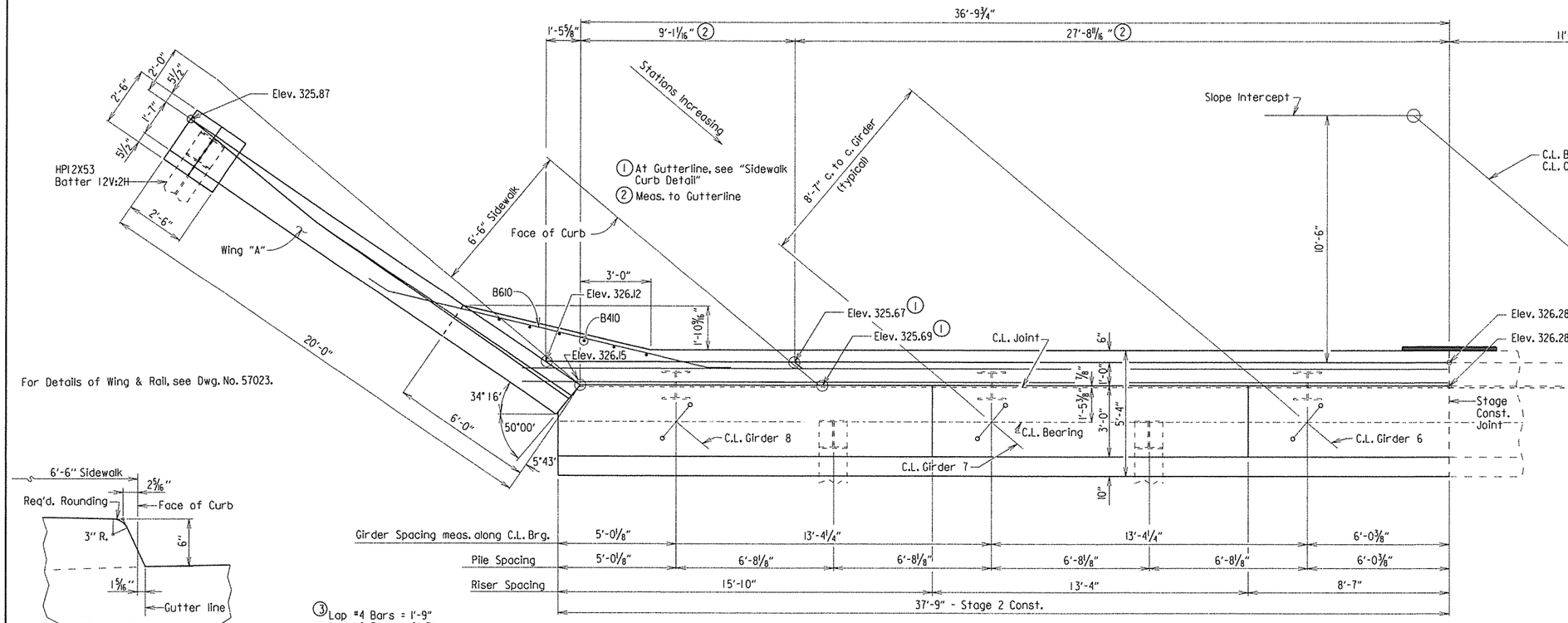
DRAWN BY: JAC DATE: 3-25-15 FILENAME: b061348_b1.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: 3/8" = 1'-0" or as shown
DESIGNED BY: TMG DATE: 1/2015

BRIDGE NO. 07334 DRAWING NO. 57021

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	31	131
				(1) 07334 - END BENT DETAILS - 57022				

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



For Details of Wing & Rail, see Dwg. No. 57023.

SIDEWALK CURB DETAIL

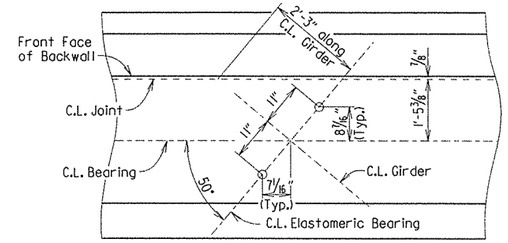
No Scale

For related details, see Dwg. No. 57024.

(3) Lap #4 Bars = 1'-9"
Lap #6 Bars = 2'-7"

Note: For Sections A-A & B-B, see Dwg. No. 57024.

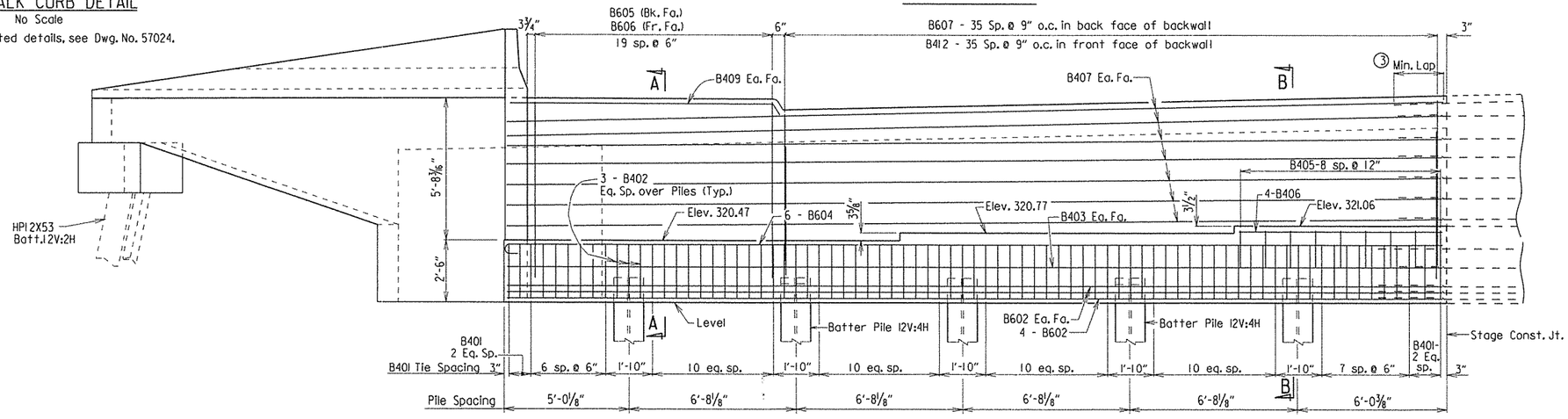
PLAN - STAGE 2



TYPICAL ANCHOR BOLT LAYOUT

No Scale

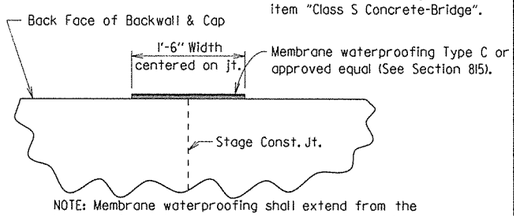
For Details of Elastomeric Bearings, see Dwg. Nos. 57037 & 57038.



ELEVATION - STAGE 2

Looking Back

NOTE: Membrane waterproofing will not be paid for directly but shall be subsidiary to the item "Class S Concrete-Bridge".



NOTE: Membrane waterproofing shall extend from the bottom of cap to the top of the paving bracket.

CONSTRUCTION JOINT DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4

DETAILS OF BENT NO. 1

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 3-25-15 FILENAME: b061348_bl.dgn

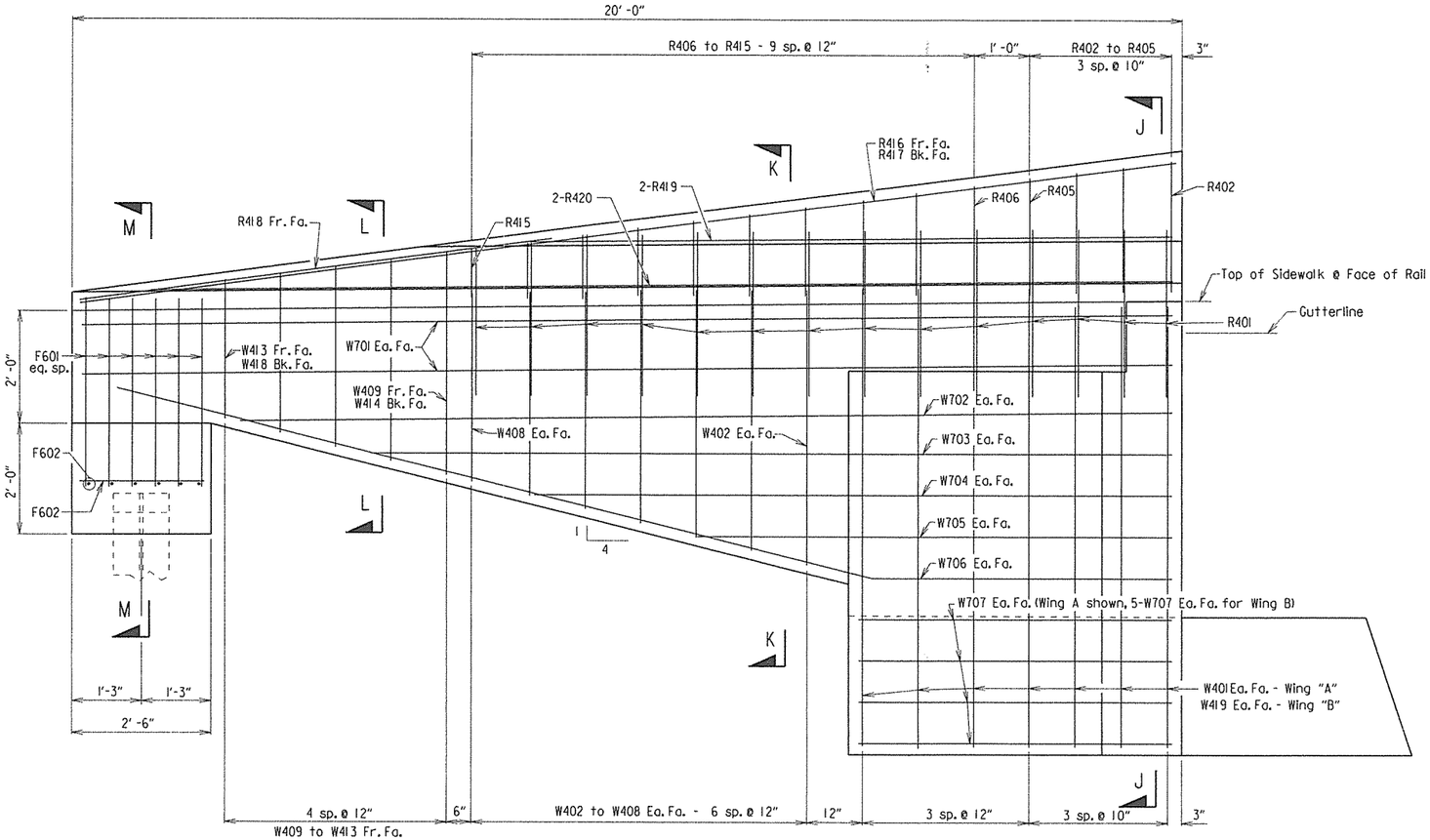
CHECKED BY: PGT DATE: 4/30/15 SCALE: 3/8" = 1'-0" or as shown

DESIGNED BY: TMG DATE: 1/2015

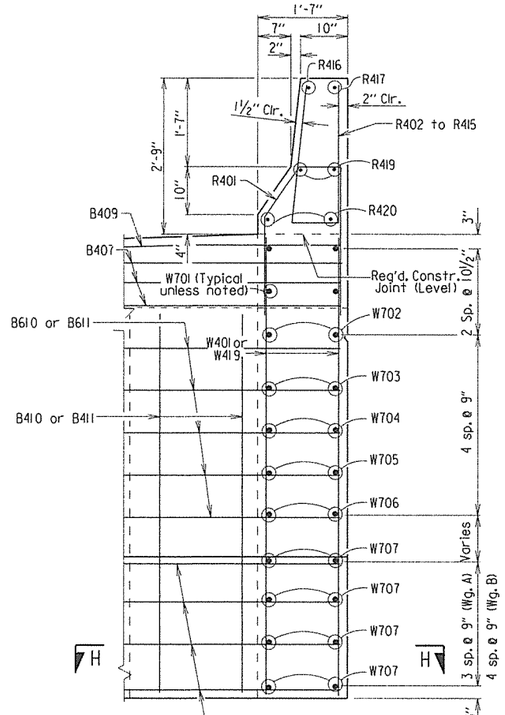
BRIDGE NO. 07334 DRAWING NO. 57022

PRINT DATE: 5/26/2015

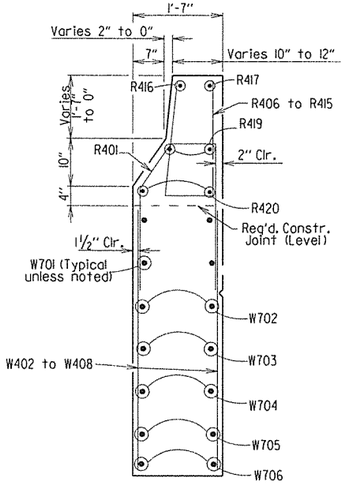
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	35	121
				(1)	07334 - END BENT DETAILS - 57023			



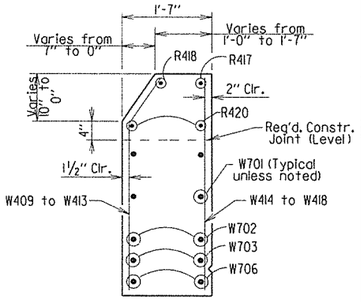
SECTION C-C
3/4" = 1'-0"



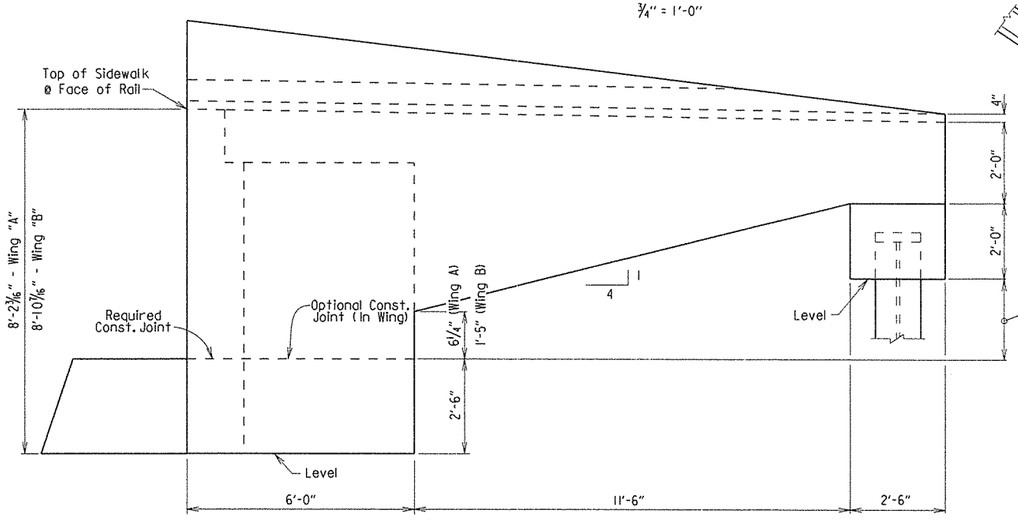
SECTION J-J
3/4" = 1'-0"



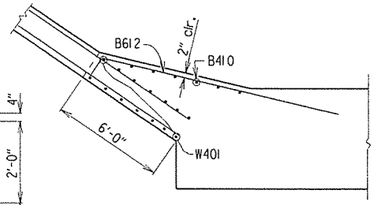
SECTION K-K
3/4" = 1'-0"



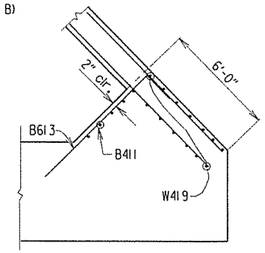
SECTION L-L
3/4" = 1'-0"



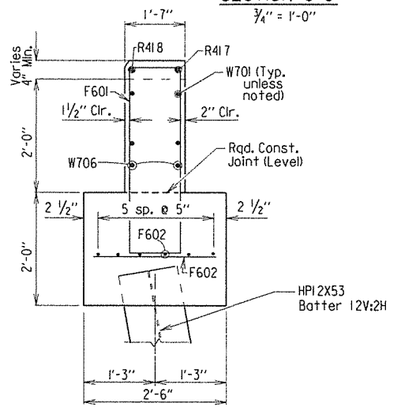
VIEW D-D
1/2" = 1'-0"



SECTION H-H (WING A)
1/4" = 1'-0"



SECTION H-H (WING B)
1/4" = 1'-0"



SECTION M-M
3/4" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF BENT NO. 1

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 3-25-15 FILENAME: b061348_bl.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: As shown
DESIGNED BY: TMG DATE: 1/2015

BRIDGE NO. 07334 DRAWING NO. 57023

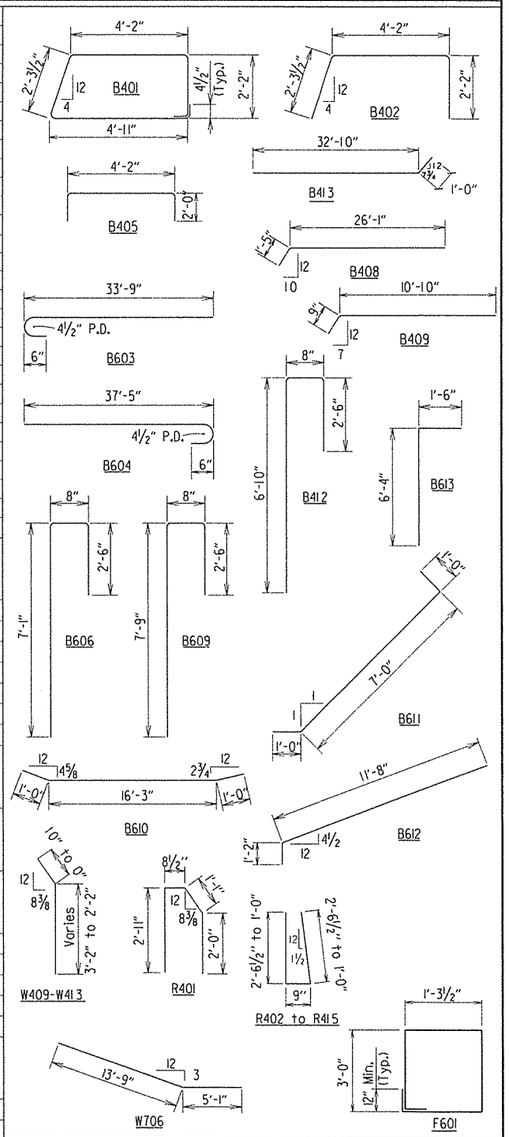
PRINT DATE: 5/26/2015

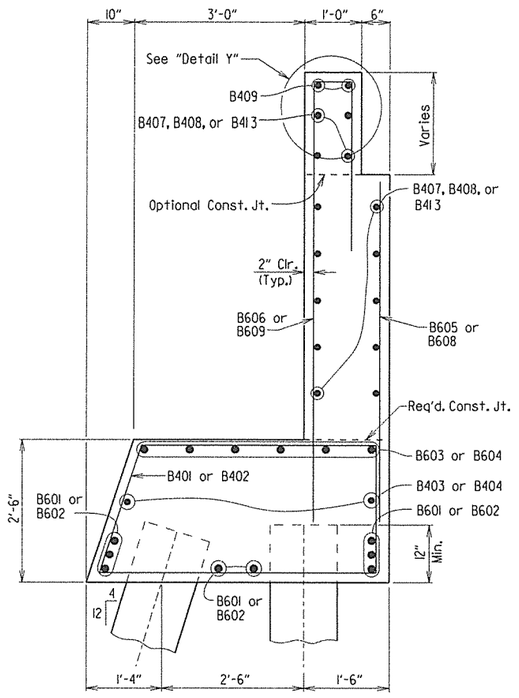
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	36	131

BAR LIST (1) 07334 - END BENT DETAILS - 57024

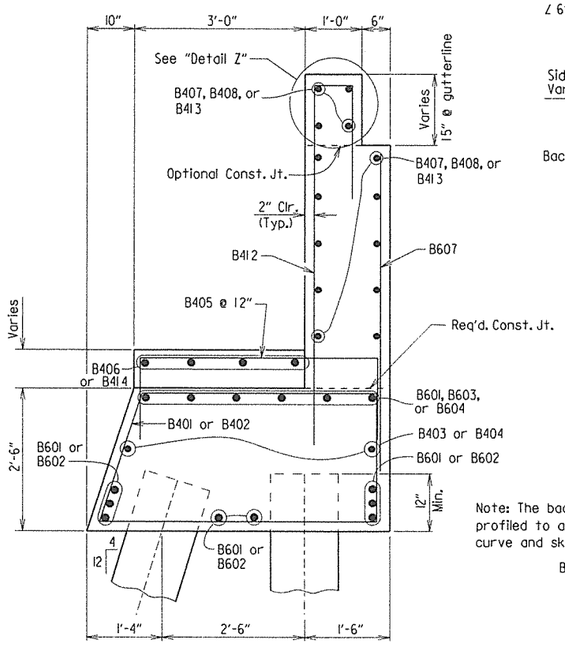
MARK	NO. REQ'D. STAGE 1	NO. REQ'D. STAGE 2	LENGTH	PIN. DIA.
B401	101	63	14'-0"	2"
B402	30	15	8'-6"	2"
B403	-	2	37'-5"	Str.
B404	4	-	33'-0"	Str.
B405	62	9	8'-0"	2"
B406	4	-	8'-3"	Str.
B407	14	14	38'-9"	Str.
B408	14	-	27'-6"	2"
B409	1	1	11'-7"	2"
B410	-	6	6'-6"	Str.
B411	4	-	6'-6"	Str.
B412	68	36	9'-10"	2"
B413	14	-	33'-10"	2"
B414	-	8	32'-1"	Str.
B601	22	-	33'-9"	Str.
B602	-	8	37'-6"	Str.
B603	6	-	34'-5"	4½"
B604	-	6	38'-1"	4½"
B605	-	20	5'-3"	Str.
B606	-	20	10'-1"	4½"
B607	68	36	5'-8"	Str.
B608	18	-	5'-11"	Str.
B609	18	-	10'-8"	4½"
B610	-	5	18'-1"	4½"
B611	5	-	8'-9"	4½"
B612	-	4	12'-10"	4½"
B613	5	-	7'-9"	4½"
R401	14	14	6'-8"	2"
R402 to R415	1 Each	1 Each	5'-8" to 2'-7"	2"
R416	1	1	12'-0"	Str.
R417	1	1	18-8"	Str.
R418	1	1	9'-0"	Str.
R419	2	2	11'-6"	Str.
R420	2	2	18'-5"	Str.
W401	-	14	7'-8"	Str.
W402 to W408	2 Each	2 Each	4'-8" to 3'-0"	Str.
W409 to W413	1 Each	1 Each	4'-1" to 2'-2"	2"
W414 to W418	1 Each	1 Each	3'-11" to 2'-6"	Str.
W419	14	-	8'-6"	Str.
W701	4	4	19'-8"	Str.
W702 to W705	2 Each	2 Each	16'-9" to 8'-1"	Str.
W706	2	2	18'-10"	5¼"
W707	10	8	5'-8"	Str.
F601	6	6	9'-8"	4½"
F602	12	12	2'-2"	Str.

BENDING DIAGRAMS (DIMENSIONS ARE OUT TO OUT OF BARS)

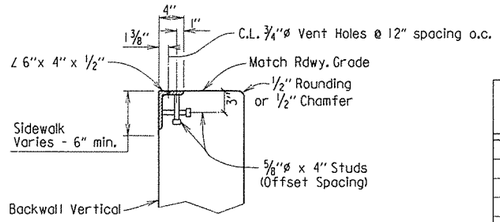




SECTION A-A
No Scale
Shown for Stage 2, Stage 1 similar.



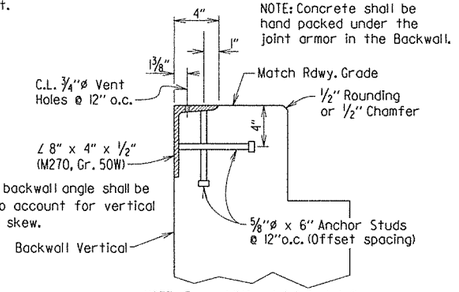
SECTION B-B
No Scale



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

DETAIL Y
No Scale

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

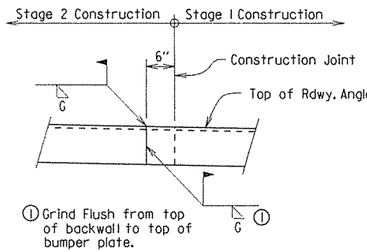


NOTE: Concrete shall be hand packed under the joint armor in the Backwall.

Note: The backwall angle shall be profiled to account for vertical curve and skew.

NOTE: For additional joint details, see Dwg. No. 57054.

DETAIL Z
No Scale



DETAIL OF WELD LOCATION FOR EXPANSION DEVICE
Looking Back Bent No. 1
No Scale

GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength fc' = 3500 psi, and shall be poured in the dry. All 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.

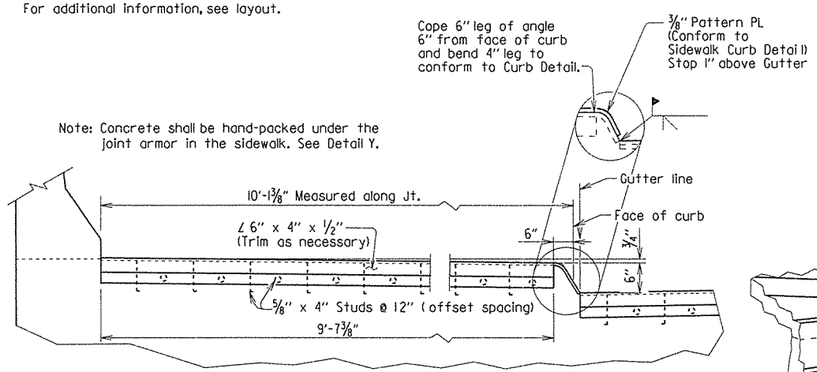
All piles shall be HP12X53 (AASHTO M270, Gr. 50).

Structural Steel in End Bents shall be AASHTO M270, Gr. 50W and shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

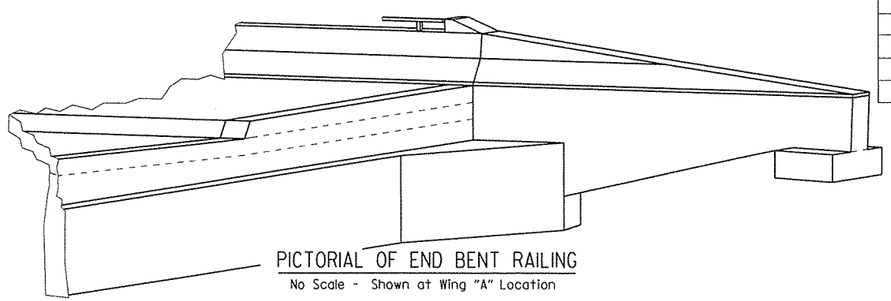
No Portion of the Backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint shall not be placed until the adjacent deck pour has been made.

If anchor bolts are drilled into cap, top reinforcing bars shall be placed to avoid damage.

For additional information, see layout.



SIDEWALK DETAIL
No Scale



PICTORIAL OF END BENT RAILING
No Scale - Shown at Wing "A" Location

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF BENT NO. 1
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 3-25-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 1/2015
FILENAME: b061348_bl.dgn
SCALE: As shown

BRIDGE NO. 07334 DRAWING NO. 57024

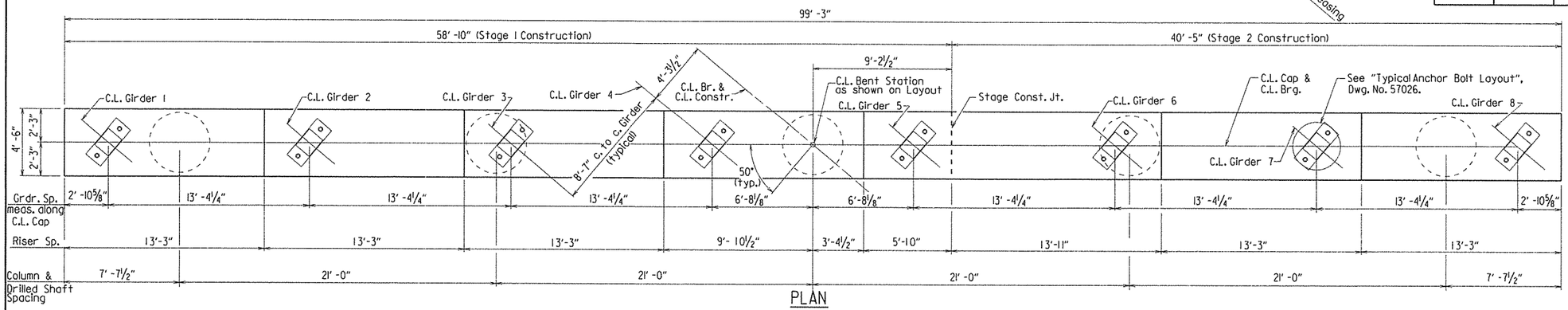
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	37	131

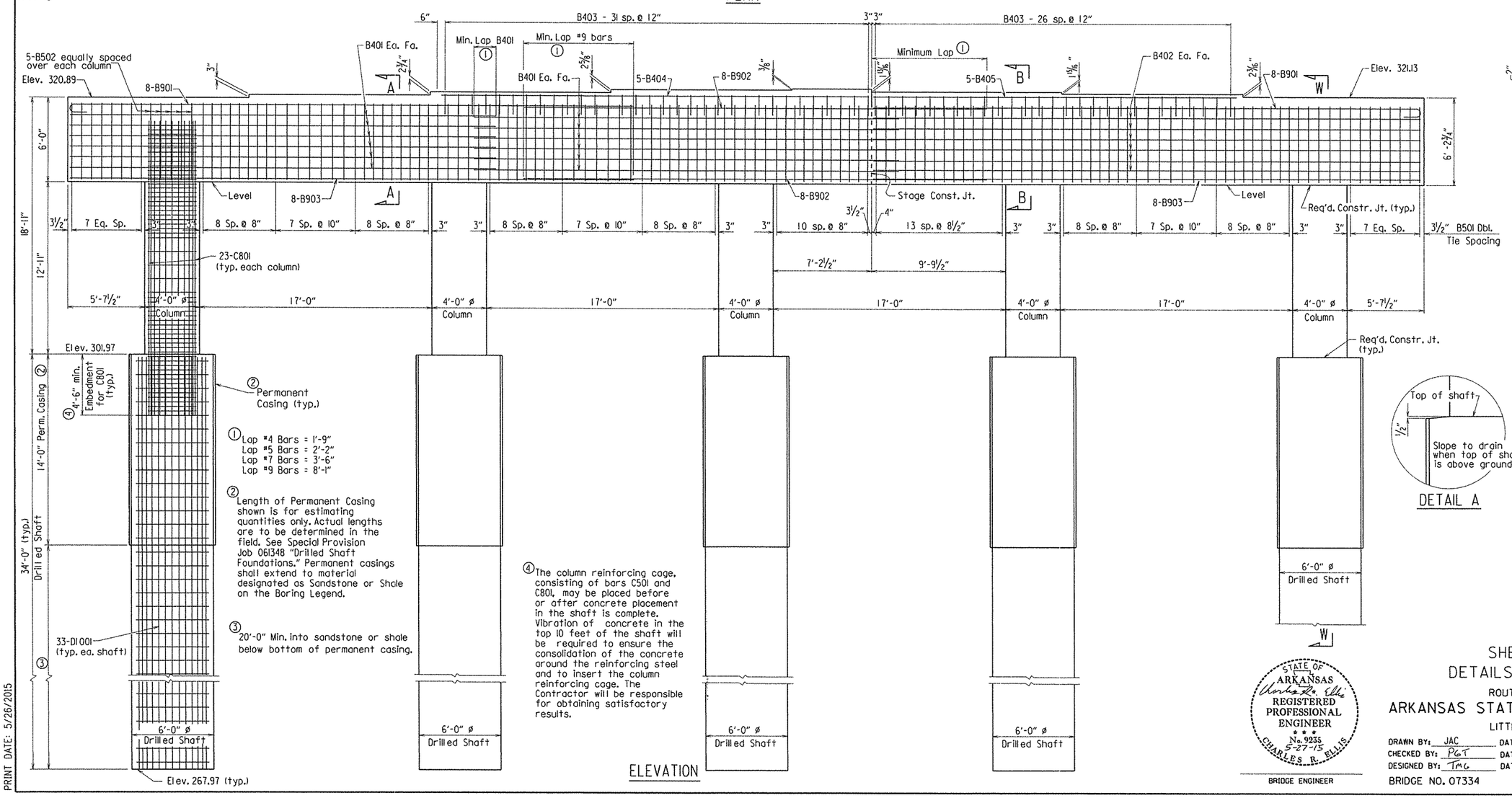
(1) 07334 - INT. BENT DETAILS - 57025

For General Notes, Addtl. Cross-Sections, & Bar List, see Dwg. No. 57026.

Stations increasing



PLAN



(1) Lap #4 Bars = 1'-9"
Lap #5 Bars = 2'-2"
Lap #7 Bars = 3'-6"
Lap #9 Bars = 8'-1"

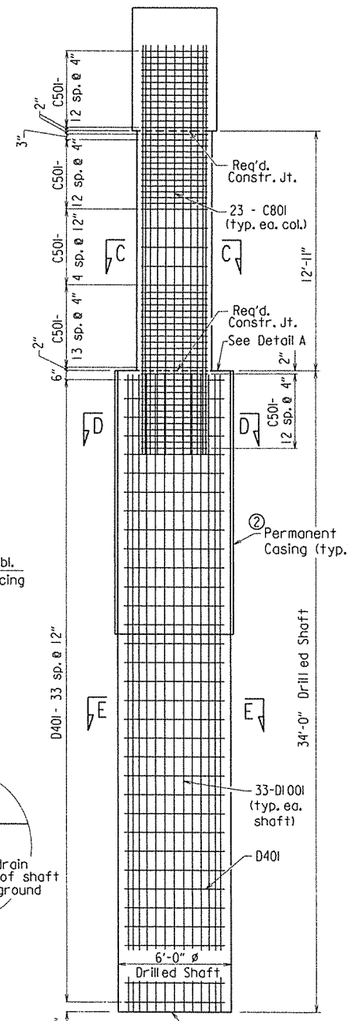
(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job 061348 "Drilled Shaft Foundations." Permanent casings shall extend to material designated as Sandstone or Shale on the Boring Legend.

(3) 20'-0" Min. into sandstone or shale below bottom of permanent casing.

(4) The column reinforcing cage, consisting of bars C501 and C801, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be required to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

ELEVATION

DETAIL A



SECTION W-W

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT NO. 2

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

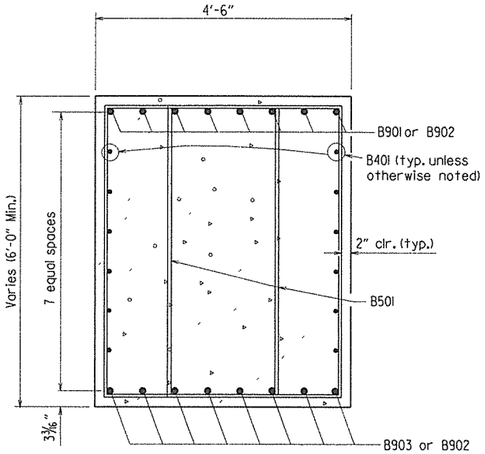
DRAWN BY: JAC DATE: 1-23-2015 FILENAME: b061348x1_b2.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: 1/4" = 1'-0" or as shown
DESIGNED BY: TMG DATE: 2/2014

BRIDGE NO. 07334 DRAWING NO. 57025

PRINT DATE: 5/26/2015

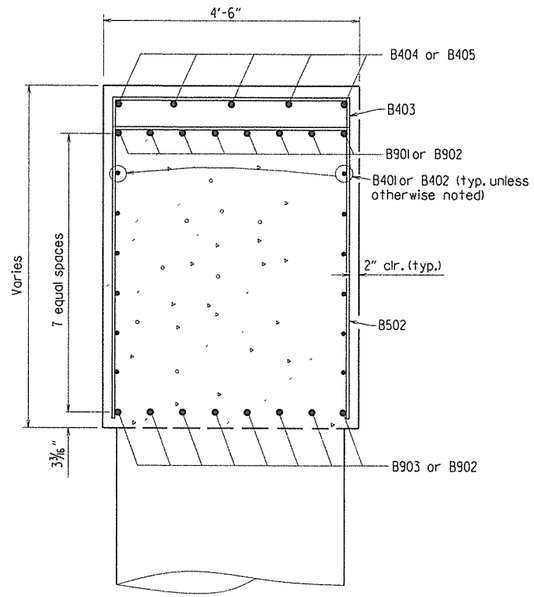
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	38	131

(1) 07334 - INT. BENT DETAILS - 57026



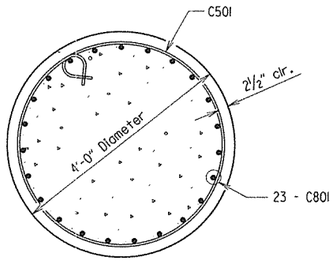
SECTION A-A

3/4" = 1'-0"



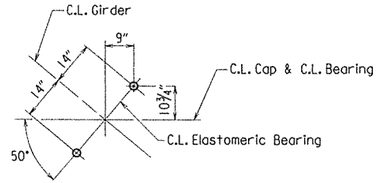
SECTION B-B

3/4" = 1'-0"



SECTION C-C

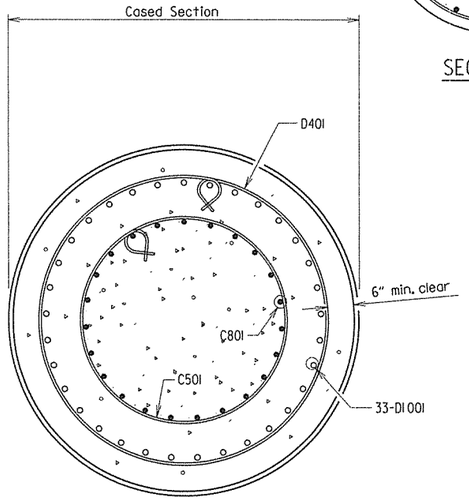
3/4" = 1'-0"



For Details of Elastomeric Bearings, see Dwg. Nos. 57037 & 57038.

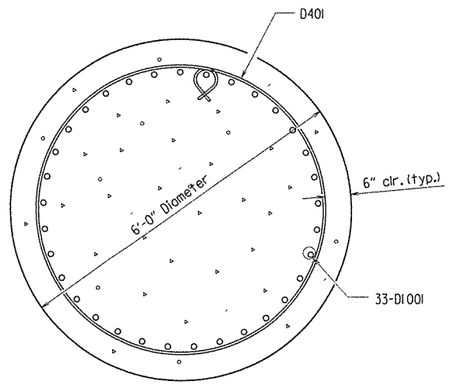
TYPICAL ANCHOR BOLT LAYOUT

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



SECTION D-D

3/4" = 1'-0"



SECTION E-E

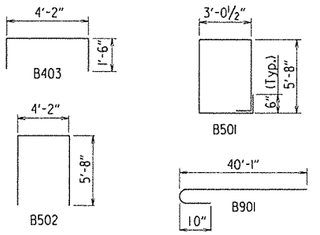
3/4" = 1'-0"

BAR LIST

MARK	NO. REQ'D. Stage 1	NO. REQ'D. Stage 2	LENGTH	P.D.
B401	24	-	31'-2"	Str.
B402	-	12	40'-1"	Str.
B403	32	27	7'-0"	2"
B404	5	-	31'-6"	Str.
B405	-	5	26'-8"	Str.
B501	134	92	17'-11"	2 1/2"
B502	15	10	15'-3 1/2"	2 1/2"
B901	8	8	41'-4"	9"
B902	16	-	34'-0"	Str.
B903	8	8	40'-1"	Str.
C501	171	114	12'-9"	3 3/4"
C801	69	46	21'-8"	Str.
(4) D401	102	68	16'-11"	3"
(4) D1001	99	66	33'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.



(4) D401 and D1001 are non-pay items and are subsidiary to SP Job 061348 "Drilled Shaft Foundations".

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3,500 psi. and shall be poured in the dry. Concrete in the Drilled Shafts shall be Class S as modified by SP Job 061348 "Drilled Shaft Foundations". All exposed corners sha ll be chamfered 3/4" unless otherwise noted.

Reinforcing Steel: Unless otherwise noted, reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60 (yield strength = 60,000 psi.), 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.

Drilled shafts shall conform to SP Job 061348 "Drilled Shaft Foundations" and shall be paid for at the unit price bid for "Drilled Shaft (72" Dia.)"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF BENT NO. 2

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 1-23-2015 FILENAME: b061348x1_b2.dgn

CHECKED BY: PGT DATE: 4/30/15 SCALE: As Shown

DESIGNED BY: TMC DATE: 12/2014

BRIDGE NO. 07334 DRAWING NO. 57026

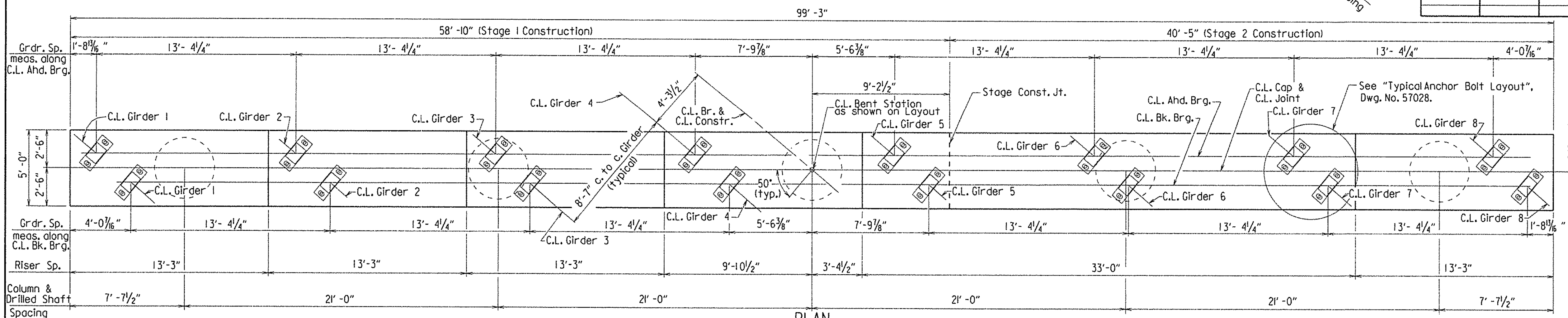
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	39	131

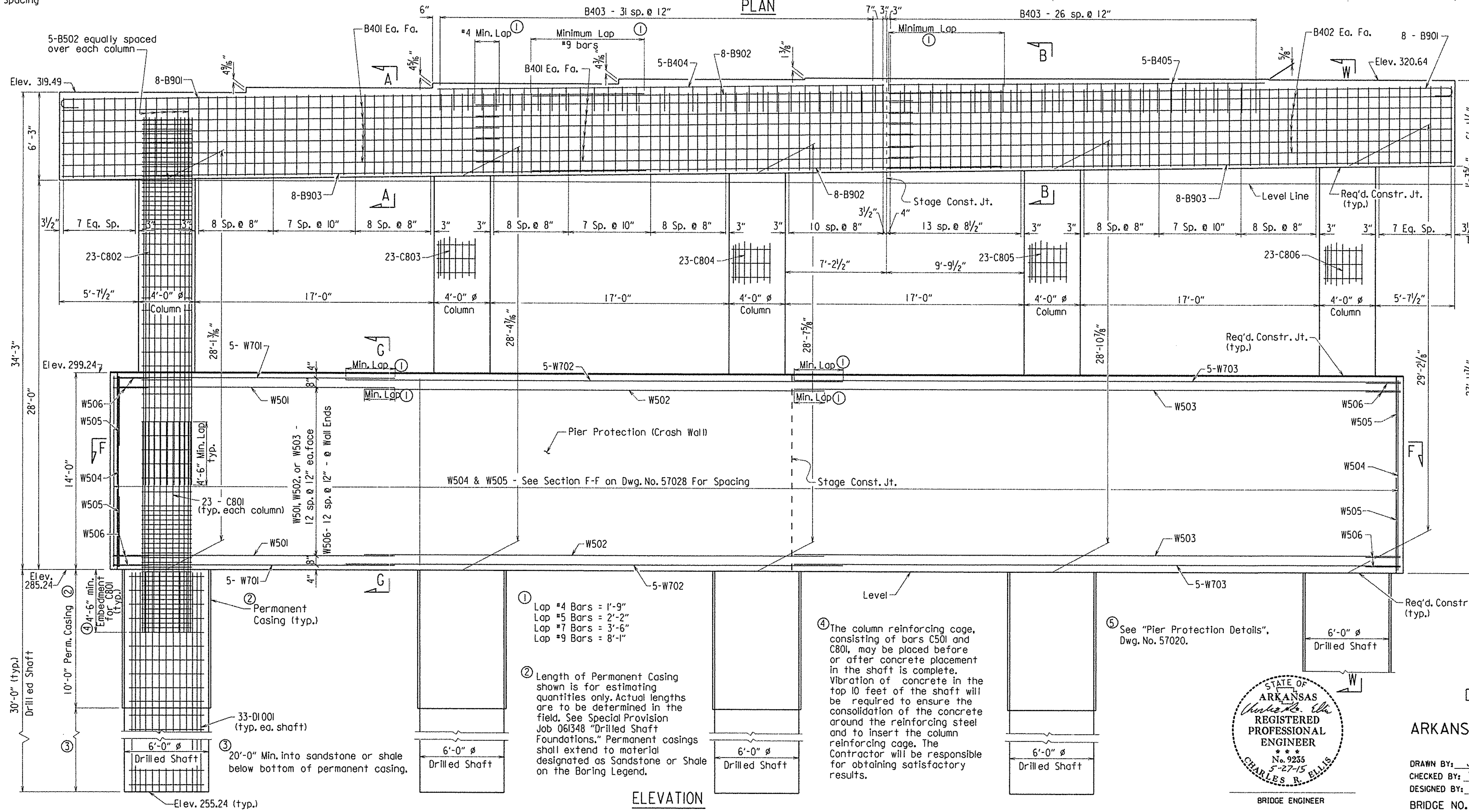
(1) 07334 - INT. BENT DETAILS - 57027

For General Notes, Addtl. Cross-Sections, & Bar List, see Dwg. No. 57028.

PLAN



ELEVATION



(1) Lap #4 Bars = 1'-9"
Lap #5 Bars = 2'-2"
Lap #7 Bars = 3'-6"
Lap #9 Bars = 8'-1"

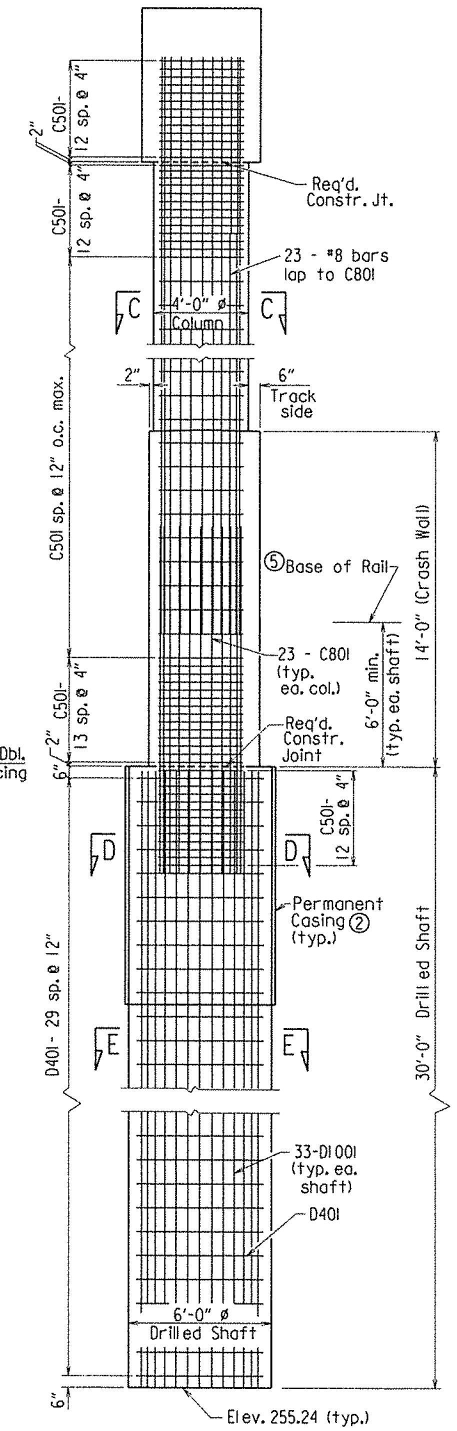
(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job 061348 "Drilled Shaft Foundations." Permanent casings shall extend to material designated as Sandstone or Shale on the Boring Legend.

(3) 20'-0" Min. into sandstone or shale below bottom of permanent casing.

(4) The column reinforcing cage, consisting of bars C501 and C801, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be required to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

(5) See "Pier Protection Details", Dwg. No. 57020.

SECTION W-W



STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9235 CHARLES R. ELLIS 5-27-15

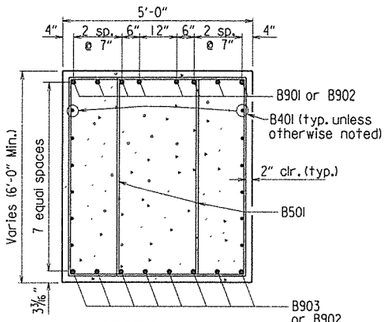
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT NO. 3
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 1-23-2015 FILENAME: b061348x1.b3.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: 1/4" = 1'-0" or as shown
DESIGNED BY: TMG DATE: 12/2014
BRIDGE NO. 07334 DRAWING NO. 57027

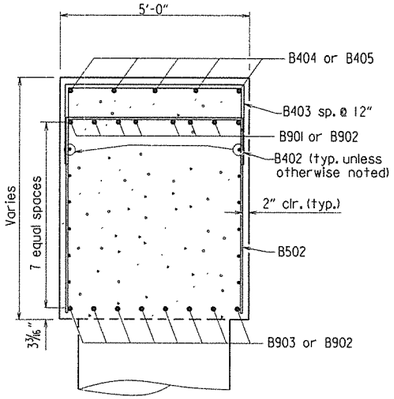
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	40	131
				(1) 07334 - INT. BENT DETAILS - 57028				



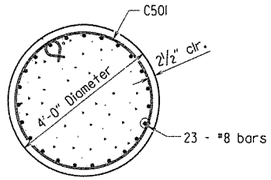
SECTION A-A

½" = 1'-0"



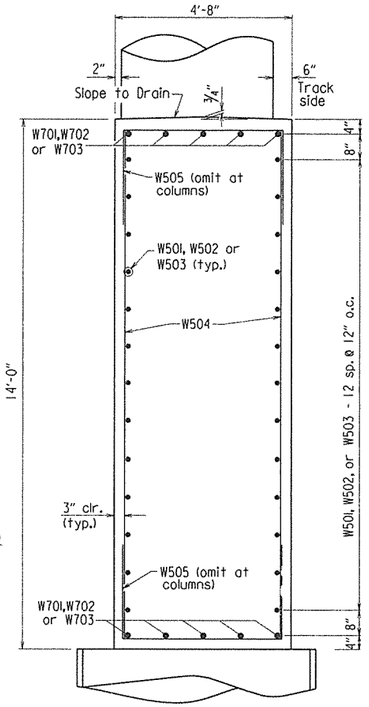
SECTION B-B

½" = 1'-0"



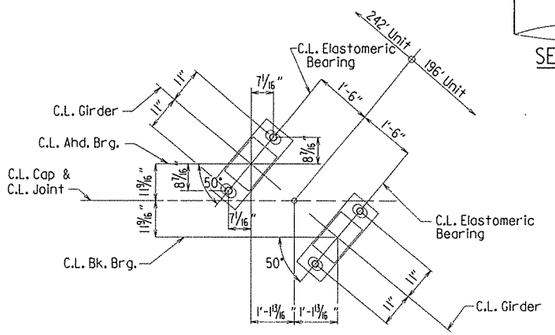
SECTION C-C

½" = 1'-0"



SECTION G-G

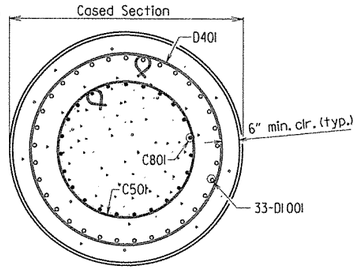
½" = 1'-0"



For Details of Elastomeric Bearings, see Dwg. Nos. 57037 & 57038.

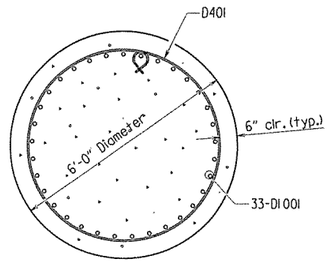
TYPICAL ANCHOR BOLT LAYOUT

Scale: ½" = 1'-0"



SECTION D-D

½" = 1'-0"



SECTION E-E

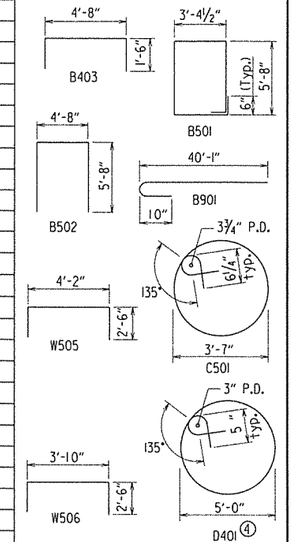
½" = 1'-0"

BAR LIST

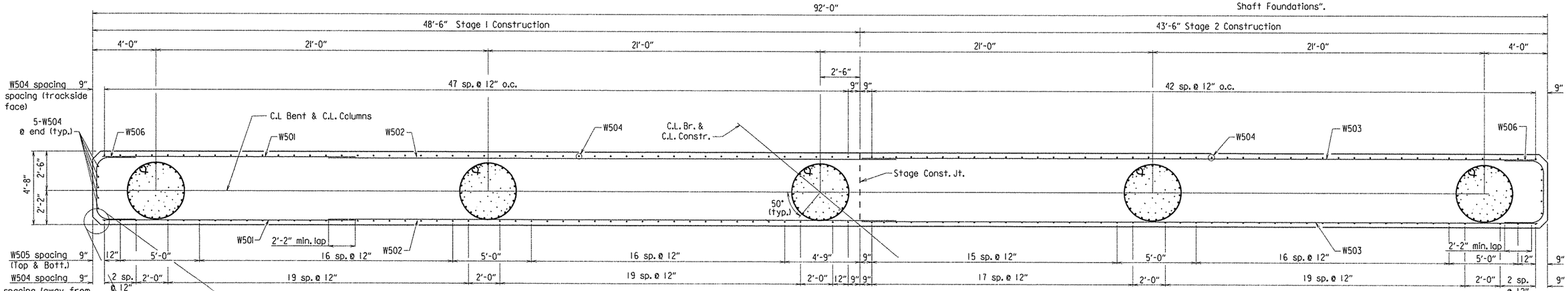
MARK	NO. REQ'D. Stage 1	NO. REQ'D. Stage 2	LENGTH	P.D.
B401	24	-	31'-2"	Str.
B402	-	12	40'-1"	Str.
B403	32	27	7'-6"	2"
B404	5	-	31'-10"	Str.
B405	-	5	26'-8"	Str.
B501	134	92	18'-7"	2½"
B502	15	10	15'-10½"	2½"
B901	8	8	41'-4"	9"
B902	16	-	34'-0"	Str.
B903	8	8	40'-1"	Str.
C501	215	146	12'-9"	3¾"
C801	69	46	15'-0"	Str.
C802	23	-	26'-6"	Str.
C803	23	-	26'-10"	Str.
C804	23	-	27'-2"	Str.
C805	-	23	27'-6"	Str.
C806	-	23	27'-10"	Str.
(4) D401	90	60	16'-9"	3"
(4) DI001	99	66	29'-8"	Str.
W501	26	-	20'-0"	Str.
W502	26	-	32'-6"	Str.
W503	-	26	42'-10"	Str.
W504	98	89	13'-6"	Str.
W505	72	70	8'-11½"	2½"
W506	15	15	8'-7½"	2½"
W701	10	-	20'-0"	Str.
W702	10	-	35'-2"	Str.
W703	-	10	42'-10"	Str.

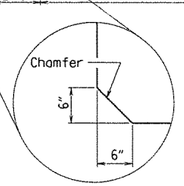
BENDING DIAGRAMS

Dimensions are out to out of bars.



(4) D401 and DI001 are non-pay items and are subsidiary to SP Job 061348 "Drilled Shaft Foundations".





SECTION F-F

5/16" = 1'-0"

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3,500 psi. and shall be poured in the dry. Concrete in the Drilled Shafts shall be Class S as modified by SP Job 061348 "Drilled Shaft Foundations". All exposed corners shall be chamfered ¾" unless otherwise noted.

Reinforcing Steel: Unless otherwise noted, reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60 (yield strength = 60,000 psi.), 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.

Drilled shafts shall conform to SP Job 061348 "Drilled Shaft Foundations" and shall be paid for at the unit price bid for "Drilled Shaft (72" Dia.)"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF BENT NO. 3

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 1-23-2015 FILENAME: b061348xl_b3.dgn

CHECKED BY: PGT DATE: 4/30/15 SCALE: As Shown

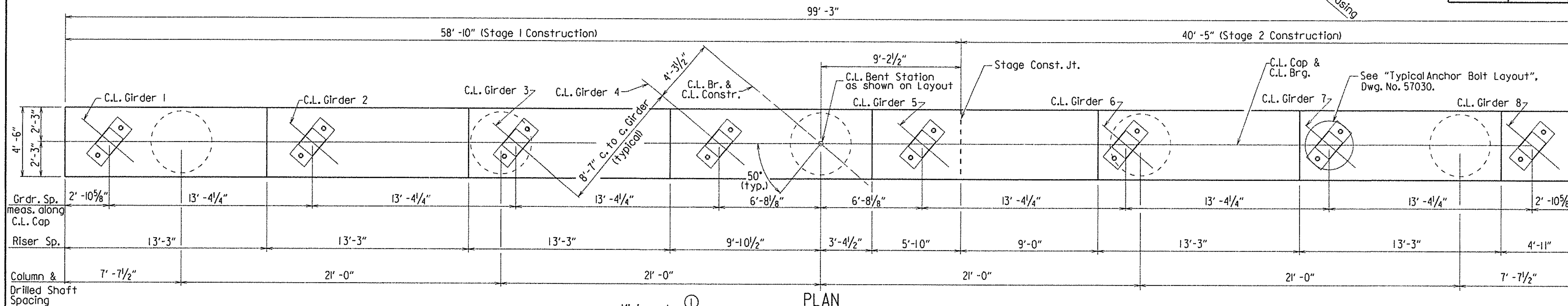
DESIGNED BY: TMG DATE: 12/2014

BRIDGE NO. 07334 DRAWING NO. 57028

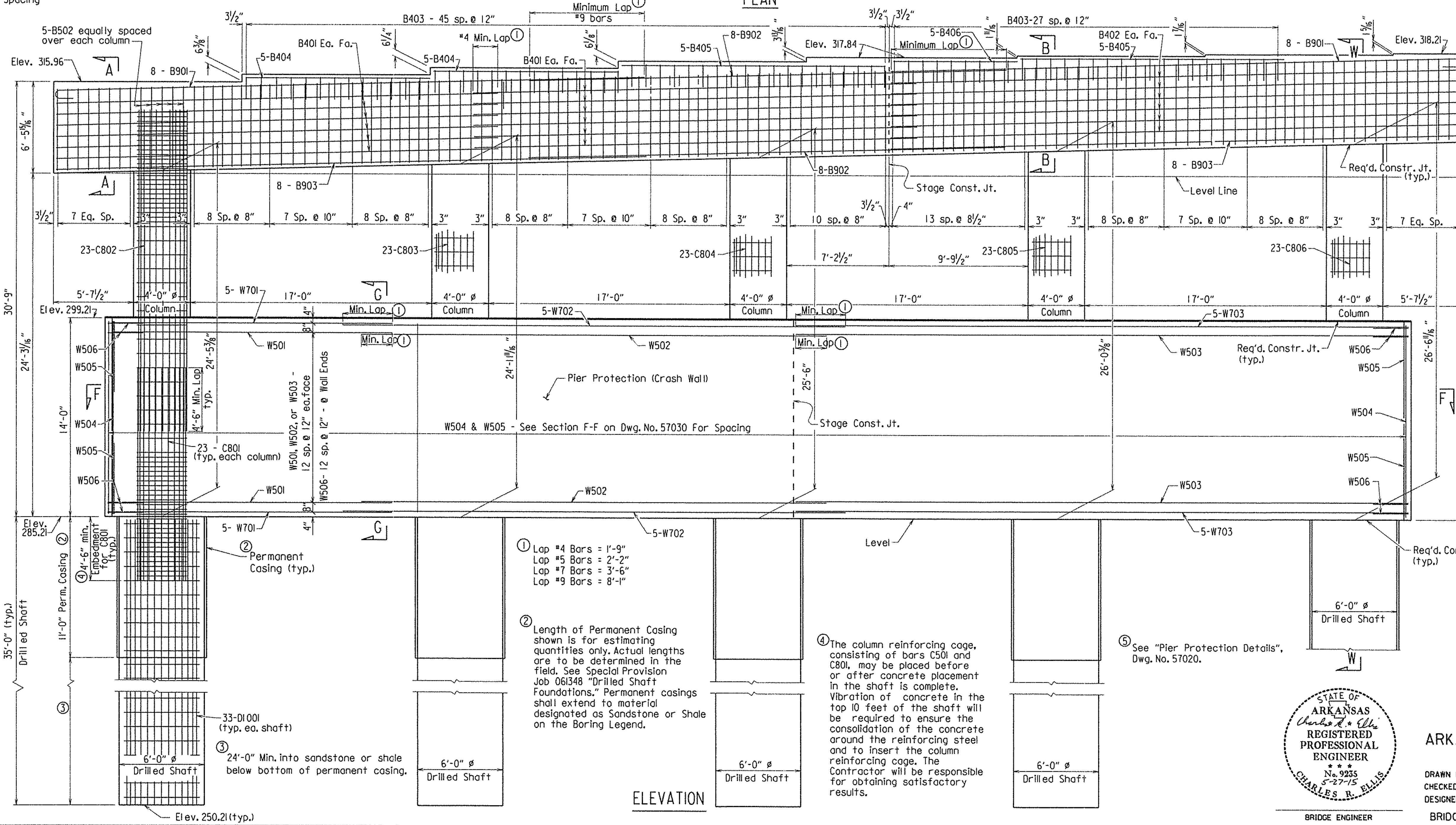
PRINT DATE: 5/26/2015

(1) 07334 - INT. BENT DETAILS - 57029

For General Notes, Addtl. Cross-Sections, & Bar List, see Dwg. No. 57030.



Stations Increasing
99'-3"
58'-10" (Stage I Construction)
40'-5" (Stage 2 Construction)
C.L. Girder 1
C.L. Girder 2
C.L. Girder 3
C.L. Girder 4
C.L. Br. & C.L. Constr.
C.L. Bent Station as shown on Layout
C.L. Girder 5
Stage Const. Jt.
C.L. Girder 6
C.L. Cap & C.L. Brg.
C.L. Girder 7
See "Typical Anchor Bolt Layout", Dwg. No. 57030.
C.L. Girder 8
8'-7" C. to c. Girder (typical)
50° (typ.)
Grdr. Sp. meas. along C.L. Cap
Riser Sp.
Column & Drilled Shaft Spacing
PLAN



5-B502 equally spaced over each column
B403 - 45 sp. @ 12"
B403-27 sp. @ 12"
Minimum Lap (1) #9 bars
#4 Min. Lap (1)
Elev. 315.96
Elev. 317.84
Elev. 318.21
8 - B901
8 - B902
8 - B903
B401 Ea. Fa.
B402 Ea. Fa.
Stage Const. Jt.
Level Line
Req'd. Constr. Jt. (typ.)
B501 Dbl. Tie Spacing
23-C802
23-C803
23-C804
23-C805
23-C806
Column
Elev. 299.21
Min. Lap (1)
5-W701
5-W702
5-W703
W501
W502
W503
W504
W505
W506
Pier Protection (Crash Wall)
W504 & W505 - See Section F-F on Dwg. No. 57030 For Spacing
W501, W502, or W503 - 12 sp. @ 12" ea. face
W506 - 12 sp. @ 12" - @ Wall Ends
23 - C801 (typ. each column)
4'-6" Min. Lap typ.
Elev. 285.21
(4) 4'-6" min. Embedment for C801 (typ.)
(2) Permanent Casing (typ.)
11'-0" Perm. Casing (2)
35'-0" (typ.) Drilled Shaft
33-D1001 (typ. ea. shaft)
6'-0" ø Drilled Shaft
Elev. 250.21 (typ.)
Level
ELEVATION

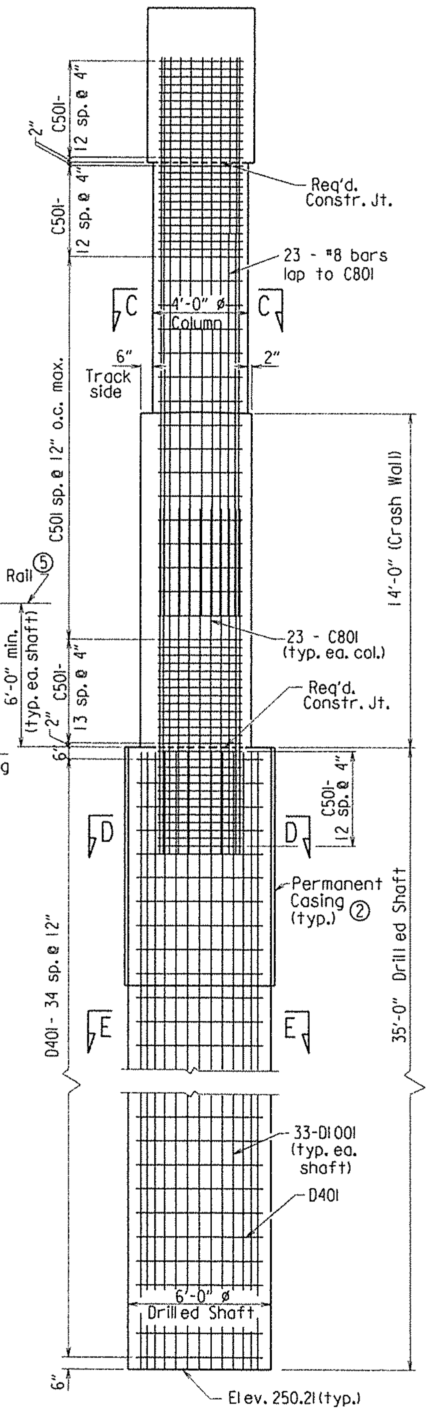
(1) Lap #4 Bars = 1'-9"
Lap #5 Bars = 2'-2"
Lap #7 Bars = 3'-6"
Lap #9 Bars = 8'-1"

(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job 061348 "Drilled Shaft Foundations." Permanent casings shall extend to material designated as Sandstone or Shale on the Boring Legend.

(3) 24'-0" Min. into sandstone or shale below bottom of permanent casing.

(4) The column reinforcing cage, consisting of bars C501 and C801, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be required to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

(5) See "Pier Protection Details", Dwg. No. 57020.



SHEET 1 OF 2

DETAILS OF BENT NO. 4

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 9235 CHARLES R. ELLIS 5-27-15

BRIDGE ENGINEER

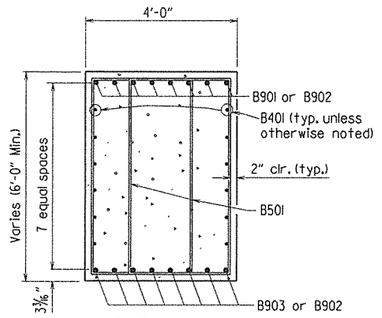
DRAWN BY: JAC	DATE: 1-23-2015	FILENAME: b061348xl.b4.dgn	
CHECKED BY: PGT	DATE: 4/30/15	SCALE: 1/4" = 1'-0" or as shown	
DESIGNED BY: TMG	DATE: 12/2014		

BRIDGE NO. 07334 DRAWING NO. 57029

PRINT DATE: 5/26/2015

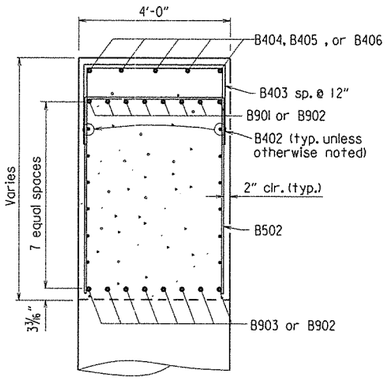
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	42	131

(1) 07334 - INT. BENT DETAILS - 57030



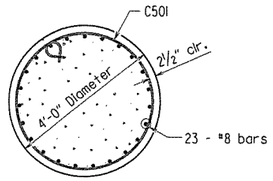
SECTION A-A

½" = 1'-0"



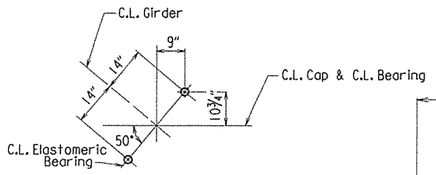
SECTION B-B

½" = 1'-0"



SECTION C-C

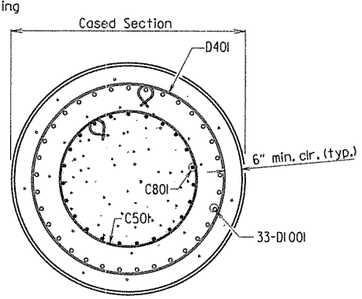
½" = 1'-0"



For Details of Elastomeric Bearings, see Dwg. Nos. 57037 & 57038.

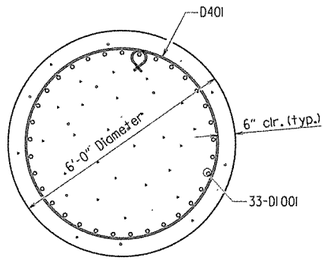
TYPICAL ANCHOR BOLT LAYOUT

Scale: ½" = 1'-0"



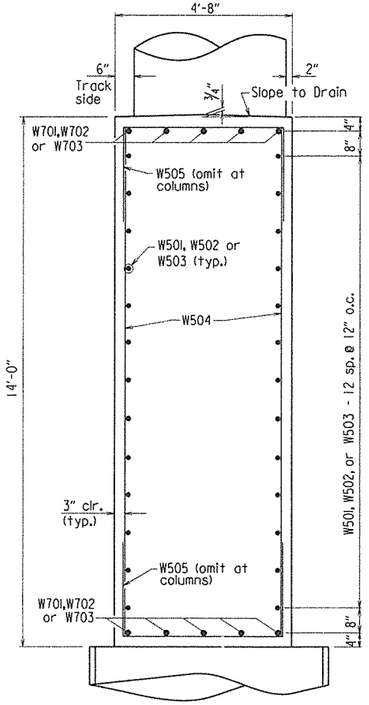
SECTION D-D

½" = 1'-0"



SECTION E-E

½" = 1'-0"



SECTION G-G

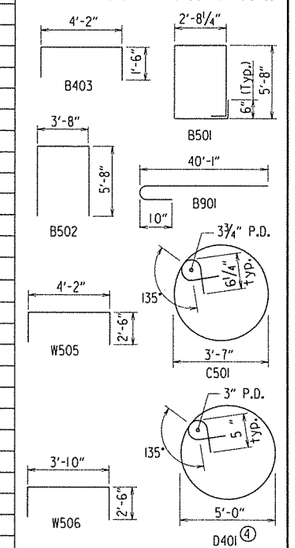
½" = 1'-0"

BAR LIST

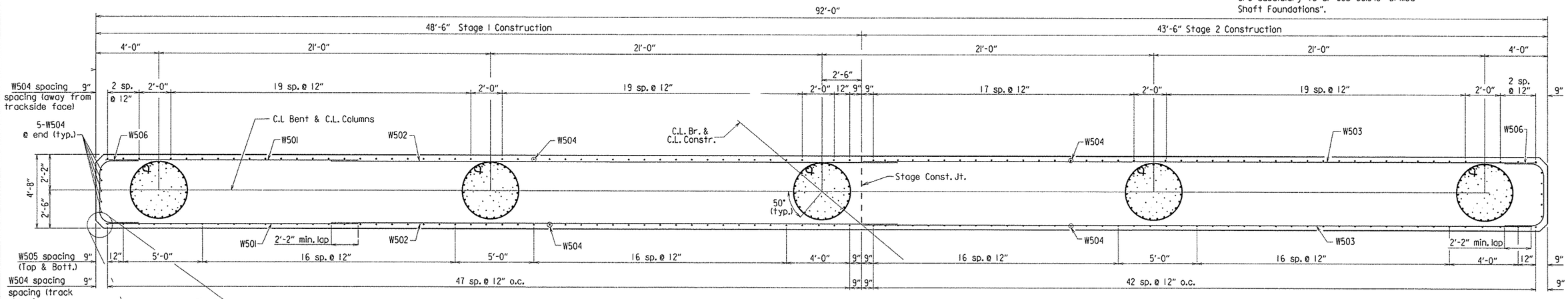
MARK	NO. REQ'D. Stage 1	NO. REQ'D. Stage 2	LENGTH	P.D.
B401	24	-	31'-2"	Str.
B402	-	12	40'-1"	Str.
B403	46	28	7'-0"	2"
B404	10	-	13'-0"	Str.
B405	5	5	18'-6"	Str.
B406	-	5	9'-0"	Str.
B501	134	92	17'-3"	2½"
B502	15	10	14'-10½"	2½"
B901	8	8	41'-4"	9"
B902	16	-	34'-0"	Str.
B903	8	8	40'-1"	Str.
C501	205	139	12'-7"	3¾"
C801	69	46	15'-0"	Str.
C802	23	-	23'-0"	Str.
C803	23	-	23'-7"	Str.
C804	23	-	24'-2"	Str.
C805	-	23	24'-9"	Str.
C806	-	23	25'-4"	Str.
(4) D401	105	70	16'-9"	3"
(4) D1001	99	66	34'-8"	Str.
W501	26	-	20'-0"	Str.
W502	26	-	32'-6"	Str.
W503	-	26	42'-10"	Str.
W504	98	89	13'-6"	Str.
W505	72	70	8'-11½"	2½"
W506	15	15	8'-7½"	2½"
W701	10	-	20'-0"	Str.
W702	10	-	35'-2"	Str.
W703	-	10	42'-10"	Str.

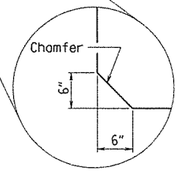
BENDING DIAGRAMS

Dimensions are out to out of bars.



(4) D401 and D1001 are non-pay items and are subsidiary to SP Job 061348 "Drilled Shaft Foundations".





SECTION F-F

5/16" = 1'-0"

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3,500 psi. and shall be poured in the dry. Concrete in the Drilled Shafts shall be Class S as modified by SP Job 061348 "Drilled Shaft Foundations". All exposed corners shall be chamfered ¾" unless otherwise noted.

Reinforcing Steel: Unless otherwise noted, reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60 (yield strength = 60,000 psi.), 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.

Drilled shafts shall conform to SP Job 061348 "Drilled Shaft Foundations" and shall be paid for at the unit price bid for "Drilled Shaft (72" Dia.)"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF BENT NO. 4

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 1-23-2015 FILENAME: b061348xl.b4.dgn

CHECKED BY: PGT DATE: 4/30/15 SCALE: As Shown

DESIGNED BY: TMG DATE: 12/2014

BRIDGE NO. 07334 DRAWING NO. 57030

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	43	131
				(1) 07334 -		INT. BENT DETAILS	-	57031

For General Notes, Addtl. Cross-Sections, & Bar List, see Dwg. No. 57032.

Stations increasing

99'-3"

58'-10" (Stage 1 Construction) | 40'-5" (Stage 2 Construction)

Grdr. Sp. meas. along C.L. Ahd. Brg.: 1'-8 9/16" | 13'-4 1/4" | 13'-4 1/4" | 13'-4 1/4" | 7'-9 7/8" | 5'-6 3/8" | 13'-4 1/4" | 13'-4 1/4" | 13'-4 1/4" | 4'-0 7/16"

9'-2 1/2" | Stage Const. Jt.

C.L. Girder 1 | C.L. Girder 2 | C.L. Girder 3 | C.L. Girder 4 | C.L. Girder 5 | C.L. Girder 6 | C.L. Girder 7 | C.L. Girder 8

4'-3 1/2" | C.L. Br. & C.L. Constr. | C.L. Bent Station as shown on Layout | C.L. Ahd. Brg. | C.L. Bk. Brg. | C.L. Cap & C.L. Joint | See "Typical Anchor Bolt Layout", Dwg. No. 57032.

8'-7" c. to c. Girder (typical) | 50° (typ.)

5'-0" | 2'-6" | 2'-6"

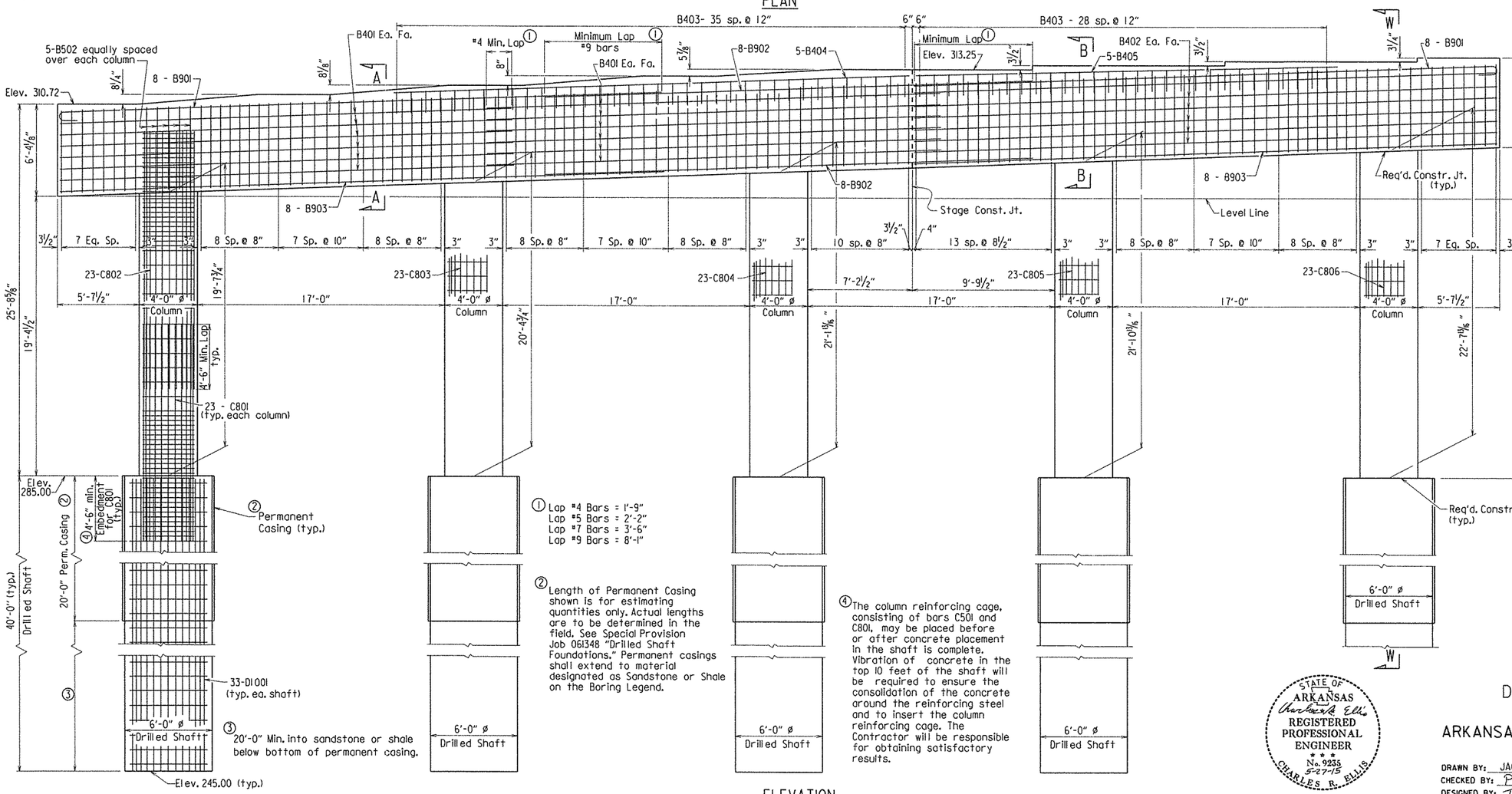
98' Span | 242' Unit

Grdr. Sp. meas. along C.L. Bk. Brg.: 4'-0 7/16" | 13'-4 1/4" | 13'-4 1/4" | 13'-4 1/4" | 5'-6 3/8" | 7'-9 7/8" | 13'-4 1/4" | 13'-4 1/4" | 13'-4 1/4" | 1'-8 9/16"

Riser Sp.: 5'-6" | 8'-3" | 5'-0" | 8'-3" | 5'-0" | 8'-3" | 5'-0" | 4'-4 1/2" | 3'-10 1/2" | 5'-4" | 8'-3" | 13'-3" | 13'-3" | 5'-8"

Column & Drilled Shaft Spacing: 7'-7 1/2" | 21'-0" | 21'-0" | 21'-0" | 21'-0" | 7'-7 1/2"

PLAN



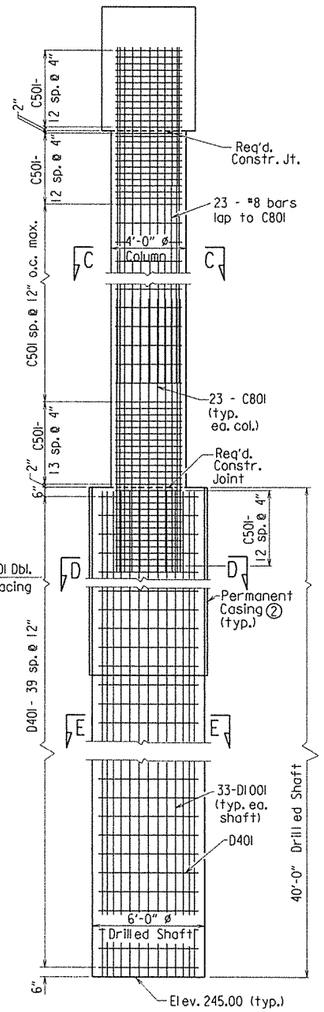
(1) Lap #4 Bars = 1'-9"
Lap #5 Bars = 2'-2"
Lap #7 Bars = 3'-6"
Lap #9 Bars = 8'-1"

(2) Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field. See Special Provision Job 061348 "Drilled Shaft Foundations." Permanent casings shall extend to material designated as Sandstone or Shale on the Boring Legend.

(3) 20'-0" Min. into sandstone or shale below bottom of permanent casing.

(4) The column reinforcing cage, consisting of bars C501 and C801, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be required to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The Contractor will be responsible for obtaining satisfactory results.

ELEVATION



SECTION W-W

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

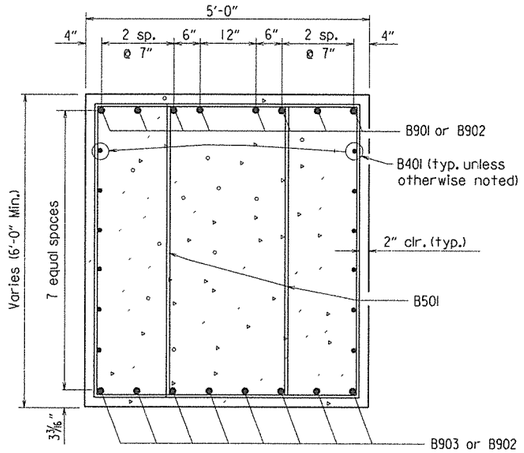
SHEET 1 OF 2
DETAILS OF BENT NO. 5
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 2-23-2015 FILENAME: b061348x1_b5.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: 1/4" = 1'-0" or as shown
DESIGNED BY: TMC DATE: 12/2014

BRIDGE NO. 07334 DRAWING NO. 57031

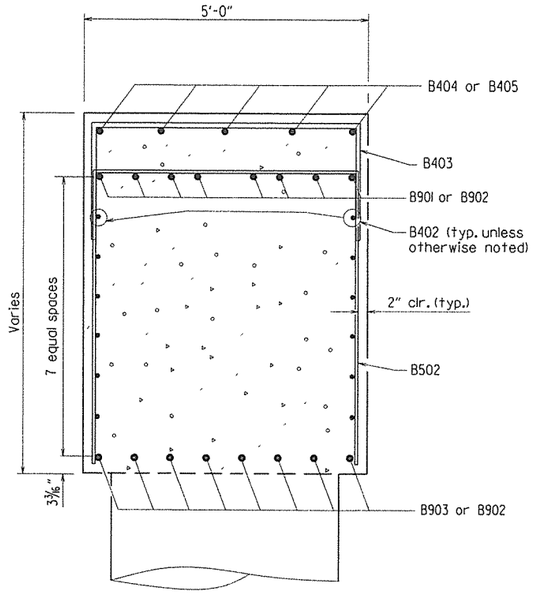
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	44	131
				(1) 07334 - INT. BENT DETAILS - 57032				



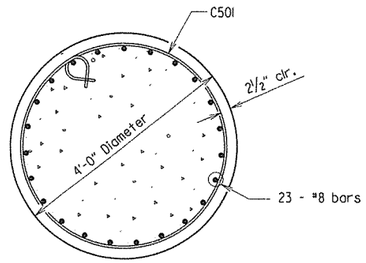
SECTION A-A

¾" = 1'-0"



SECTION B-B

¾" = 1'-0"



SECTION C-C

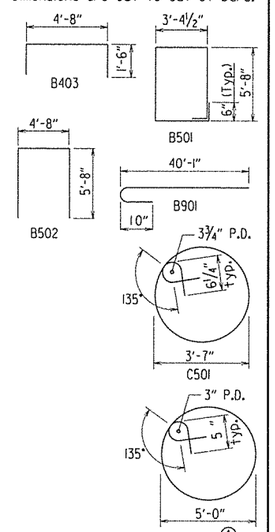
¾" = 1'-0"

BAR LIST

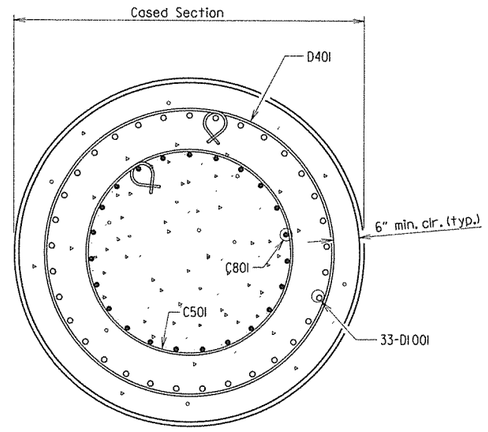
MARK	NO. REQ'D. Stage 1	NO. REQ'D. Stage 2	LENGTH	P.D.
B401	24	-	31'-2"	Str.
B402	-	12	40'-1"	Str.
B403	36	29	7'-6"	2"
B404	5	-	35'-6"	Str.
B405	-	5	29'-0"	Str.
B501	134	92	18'-7"	2½"
B502	15	10	15'-9½"	2½"
B901	8	8	41'-4"	9"
B902	16	-	34'-0"	Str.
B903	8	8	40'-1"	Str.
C501	193	133	12'-9"	3¾"
C801	69	46	15'-0"	Str.
C802	23	-	18'-4"	Str.
C803	23	-	19'-1"	Str.
C804	23	-	19'-10"	Str.
C805	-	23	20'-7"	Str.
C806	-	23	21'-4"	Str.
(4) D401	120	80	16'-9"	3"
(4) D1001	99	66	39'-8"	Str.

BENDING DIAGRAMS

Dimensions are out to out of bars.

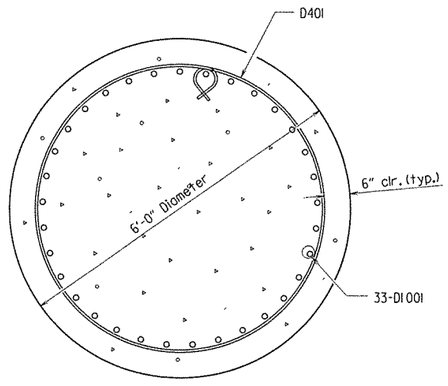


(4) D401 and D1001 are non-pay items and are subsidiary to SP Job 061348 "Drilled Shaft Foundations".



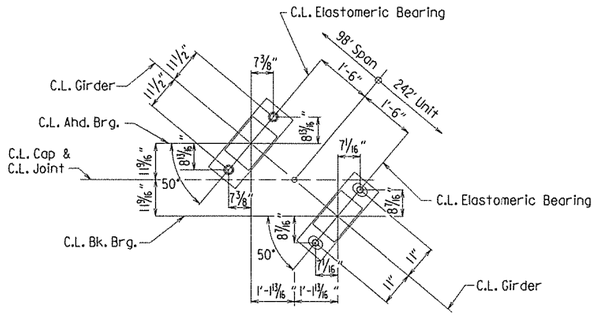
SECTION D-D

¾" = 1'-0"



SECTION E-E

¾" = 1'-0"



For Details of Elastomeric Bearings, see Dwg. Nos. 57037 & 57038.

TYPICAL ANCHOR BOLT LAYOUT

Scale: ½" = 1'-0"

GENERAL NOTES

Concrete in the cap and column shall be Class S with a minimum 28 day compressive strength, f'c = 3,500 psi. and shall be poured in the dry. Concrete in the Drilled Shafts shall be Class S as modified by SP Job 061348 "Drilled Shaft Foundations". All exposed corners shall be chamfered ¾" unless otherwise noted.

Reinforcing Steel: Unless otherwise noted, reinforcing steel shall conform to AASHTO M31 or M322, Type A, Grade 60 (yield strength = 60,000 psi.), 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.

Drilled shafts shall conform to SP Job 061348 "Drilled Shaft Foundations" and shall be paid for at the unit price bid for "Drilled Shaft (72" Dia.)"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2

DETAILS OF BENT NO. 5

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 2-23-2015 FILENAME: b061348xl_b5.dgn

CHECKED BY: PGT DATE: 4/30/15 SCALE: As Shown

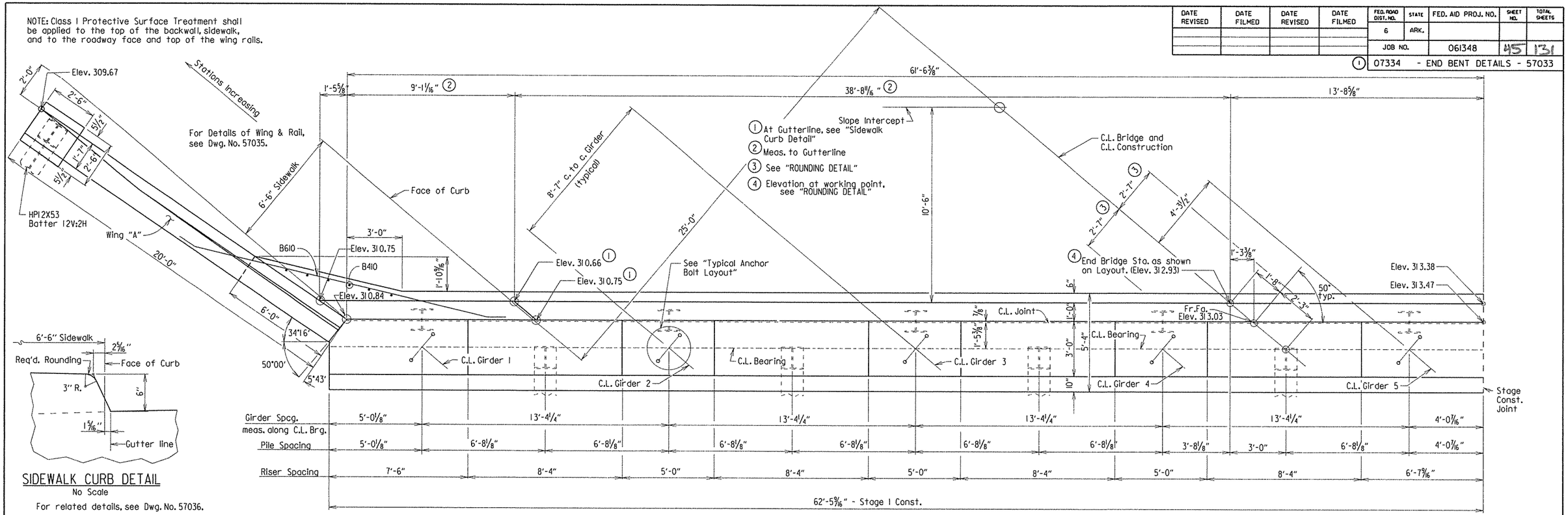
DESIGNED BY: TMG DATE: 12/2014

BRIDGE NO. 07334 DRAWING NO. 57032

PRINT DATE: 5/26/2015

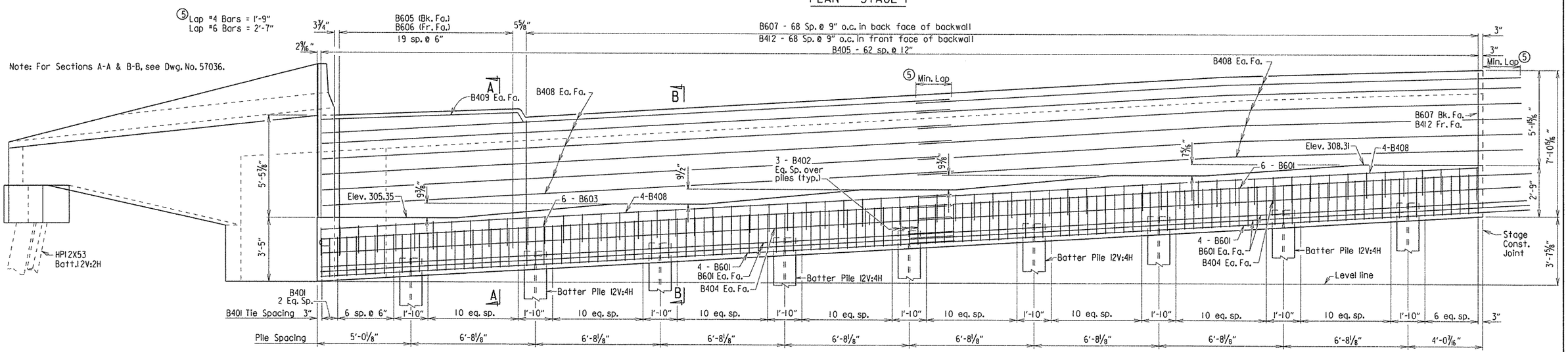
NOTE: Class I Protective Surface Treatment shall be applied to the top of the backwall, sidewalk, and to the roadway face and top of the wing rails.

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.		061348	45	131
				(1) 07334 - END BENT DETAILS - 57033				

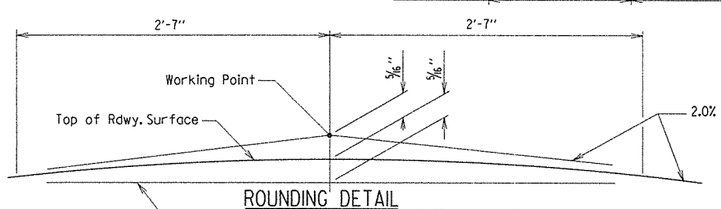


SIDEWALK CURB DETAIL
No Scale
For related details, see Dwg. No. 57036.

PLAN - STAGE I



ELEVATION - STAGE I
Looking Ahead



ROUNDING DETAIL
No Scale
NOTE: Working Point matches Theoretical Roadway Grade.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF BENT NO. 6
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

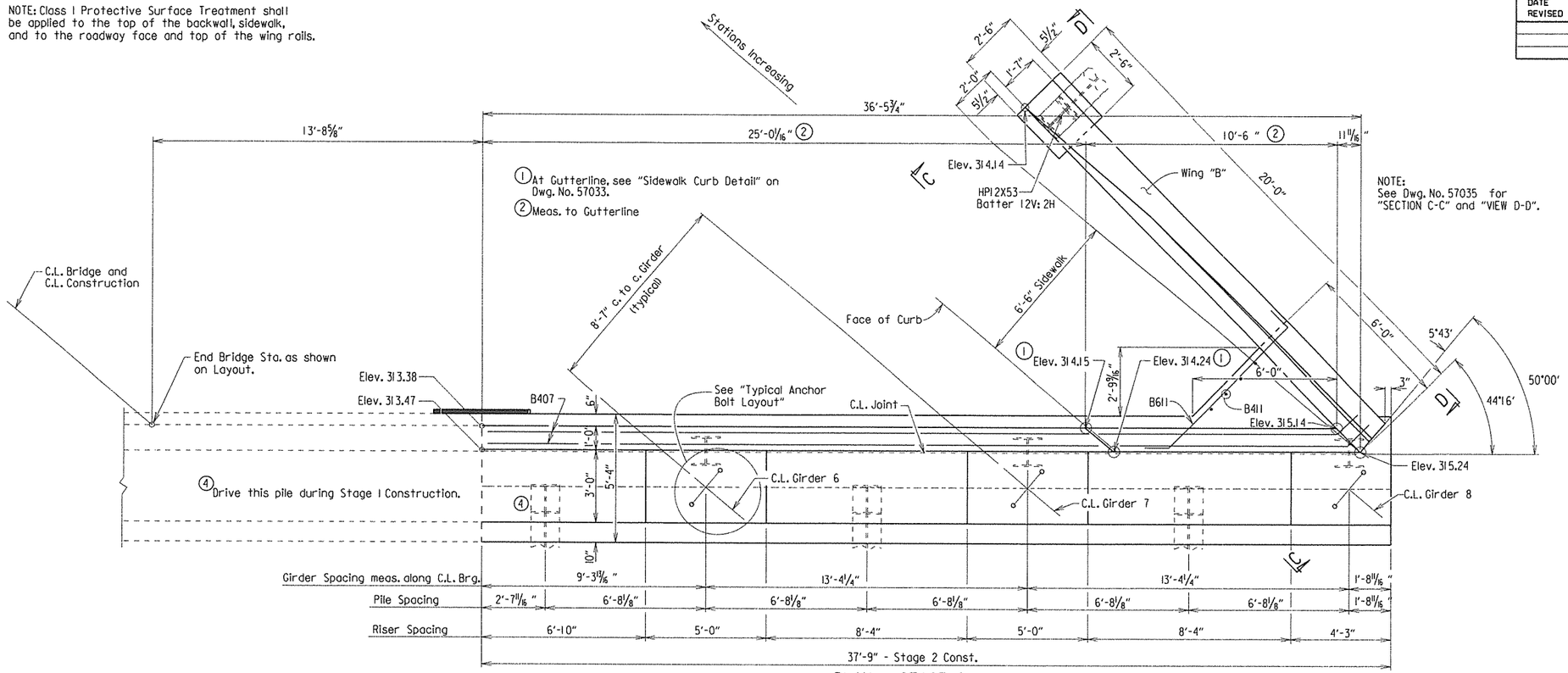
DRAWN BY: JAC DATE: 3-25-15 FILENAME: b061348_b1.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: 3/8" = 1'-0" or as shown
DESIGNED BY: TMG DATE: 1/2015
BRIDGE NO. 07334 DRAWING NO. 57033

PRINT DATE: 5/26/2015

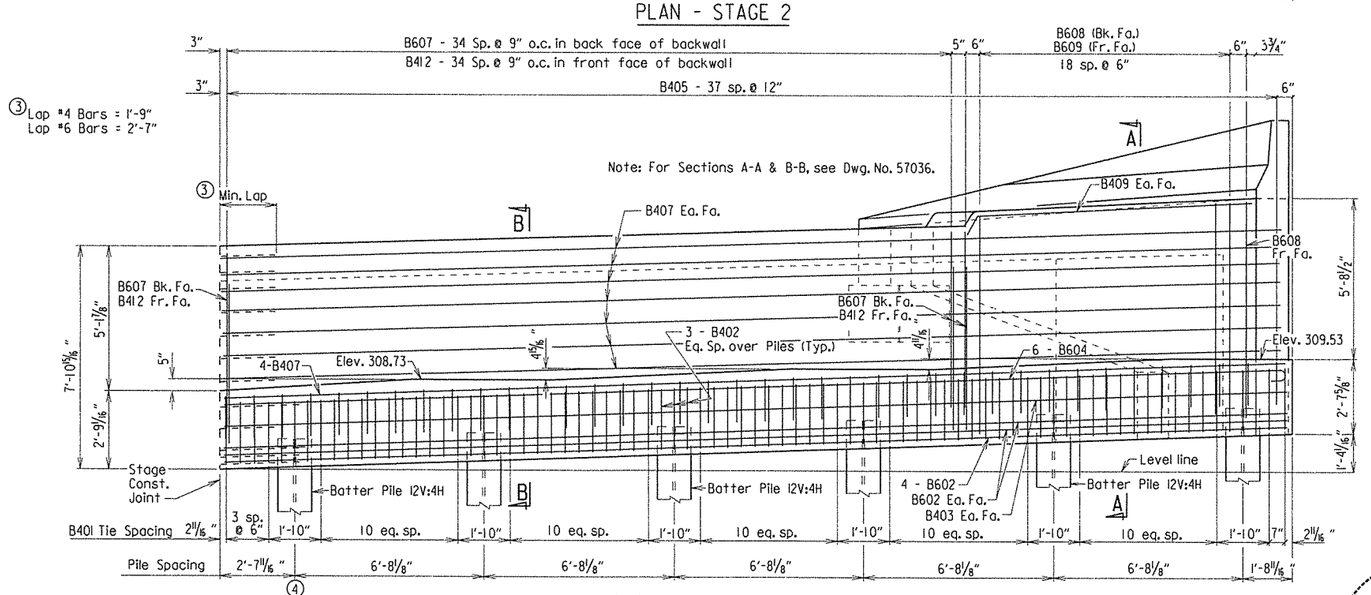
NOTE: Class I Protective Surface Treatment shall be applied to the top of the backwall, sidewalk, and to the roadway face and top of the wing rails.

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.		061348	40	131

(1) 07334 - END BENT DETAILS - 57034

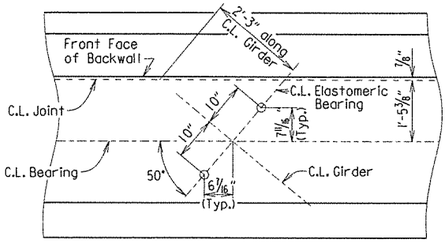


PLAN - STAGE 2



ELEVATION- STAGE 2

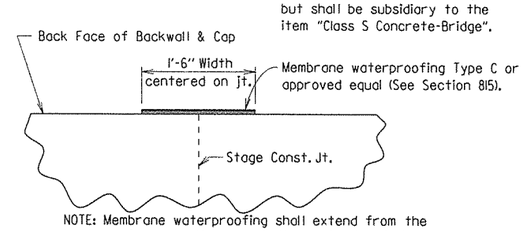
Looking Ahead



TYPICAL ANCHOR BOLT LAYOUT

No Scale

For Details of Elastomeric Bearings, see Dwg. Nos. 57037 & 57038.



NOTE: Membrane waterproofing will not be paid for directly but shall be subsidiary to the item "Class S Concrete-Bridge".

NOTE: Membrane waterproofing shall extend from the bottom of cap to the top of the paving bracket.

CONSTRUCTION JOINT DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF BENT NO. 6

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

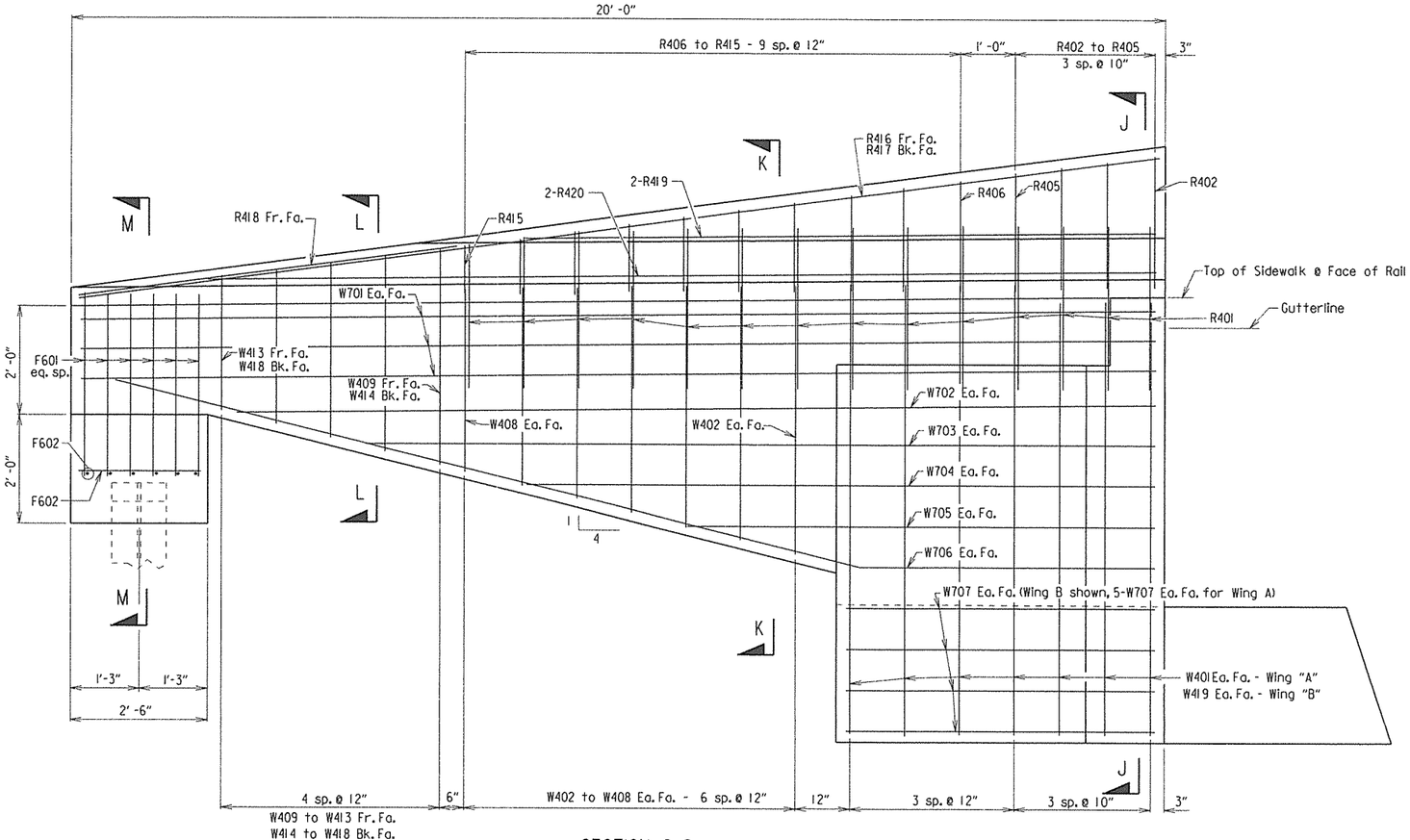
DRAWN BY: JAC DATE: 3-25-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 1/2015
FILENAME: b061348_bl.dgn
SCALE: ⅜" = 1'-0" or as shown

BRIDGE NO. 07334 DRAWING NO. 57034

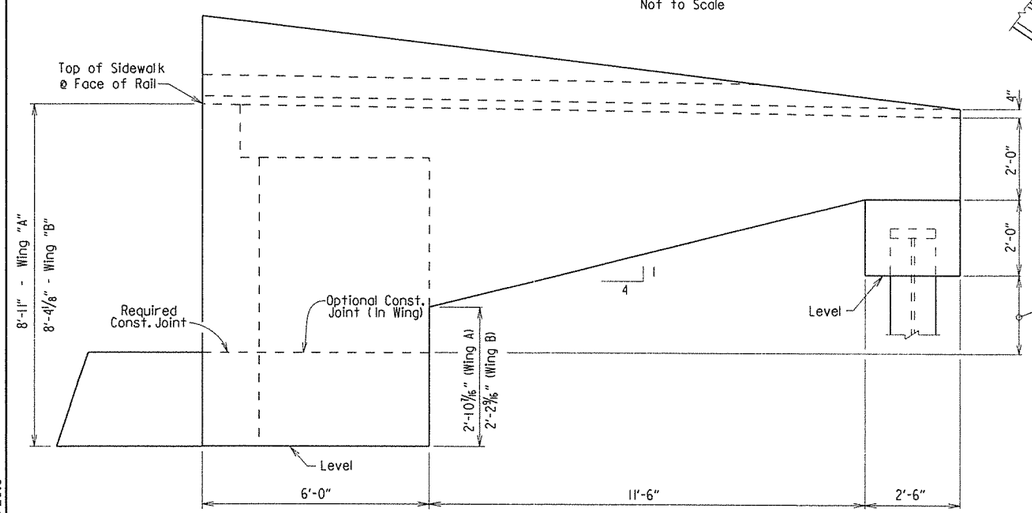
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	47	131

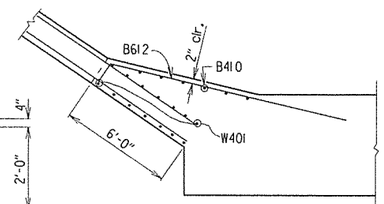
(1) 07334 - END BENT DETAILS - 57035



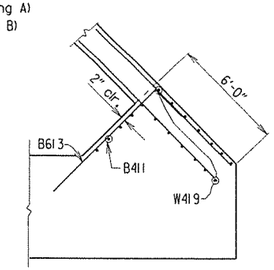
SECTION C-C
Not to Scale



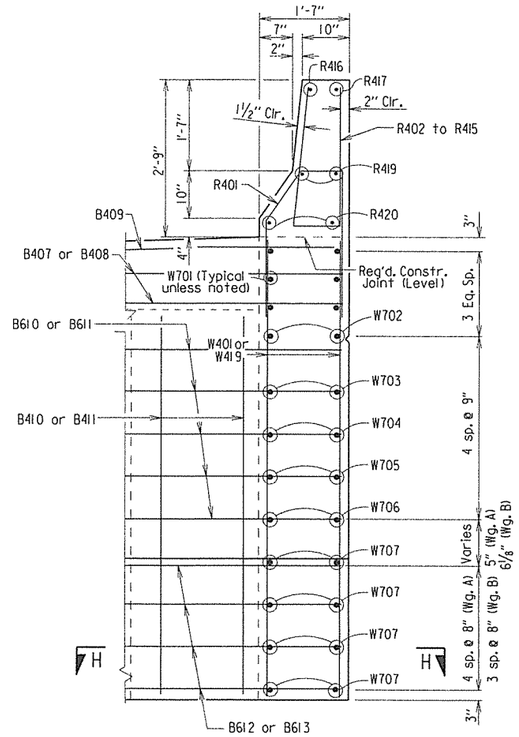
VIEW D-D
Not to Scale



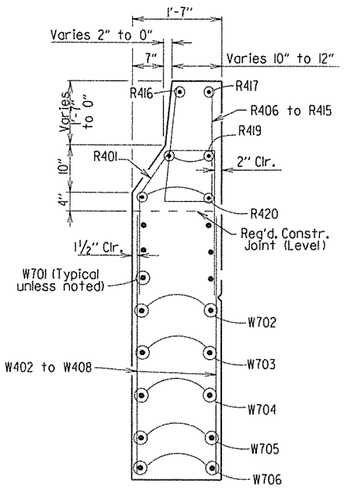
SECTION H-H (WING A)
1/4" = 1'-0"



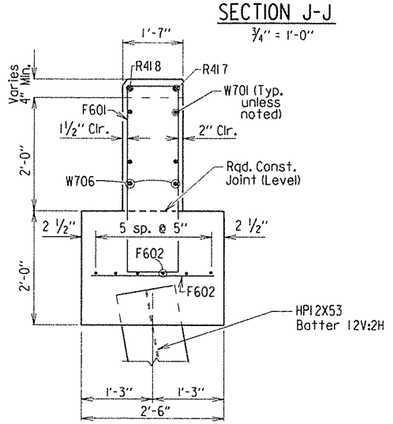
SECTION H-H (WING B)
1/4" = 1'-0"



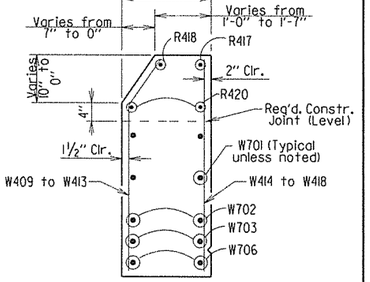
SECTION J-J
3/4" = 1'-0"



SECTION K-K
3/4" = 1'-0"



SECTION M-M
3/4" = 1'-0"



SECTION L-L
3/4" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF BENT NO. 6

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 3-25-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 1/2015
FILENAME: b061348_bl.dgn
SCALE: As shown

BRIDGE NO. 07334
DRAWING NO. 57035

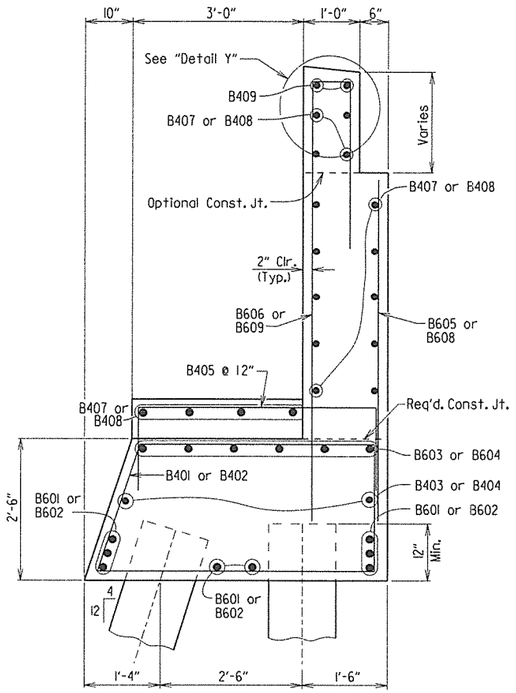
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	48	131

BAR LIST

① 07334 - END BENT DETAILS - 57036

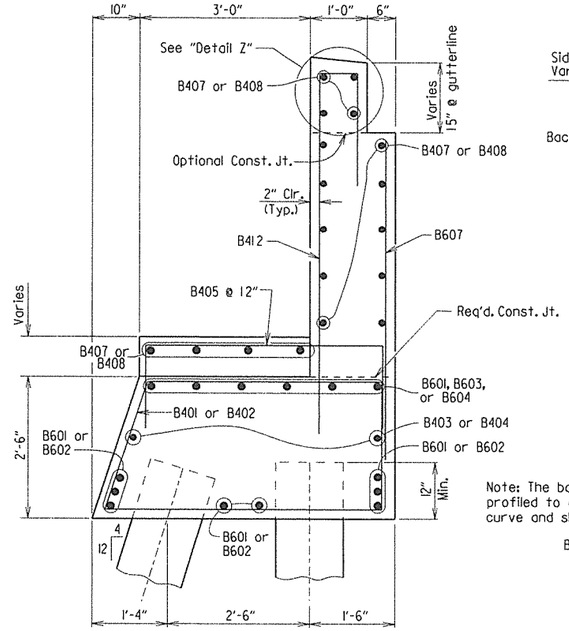
MARK	NO. REQ'D. STAGE 1	NO. REQ'D. STAGE 2	LENGTH	PIN. DIA.	BENDING DIAGRAMS (DIMENSIONS ARE OUT TO OUT OF BARS)
B401	104	61	14'-0"	2"	
B402	27	18	8'-6"	2"	
B403	-	6	37'-5"	Str.	
B404	4	-	33'-0"	Str.	
B405	63	38	8'-0"	2"	
B406	-	-	-	-	
B407	-	14	36'-8"	2"	
B408	32	-	33'-10"	Str.	
B409	1	1	11'-7"	2"	
B410	6	-	6'-7"	Str.	
B411	-	4	6'-0"	Str.	
B412	69	35	9'-10"	2"	
B601	22	-	33'-10"	Str.	
B602	-	8	37'-5"	Str.	
B603	6	-	34'-6"	4½"	
B604	-	6	38'-1"	4½"	
B605	20	-	5'-3"	Str.	
B606	20	-	10'-1"	4½"	
B607	69	35	5'-8"	Str.	
B608	-	18	5'-11"	Str.	
B609	-	18	10'-8"	4½"	
B610	5	-	18'-1"	4½"	
B611	-	5	8'-9"	4½"	
B612	4	-	12'-10"	4½"	
B613	-	5	7'-9"	4½"	
R401	14	14	6'-8"	2"	
R402 to R415	1 Each	1 Each	5'-8" to 2'-7"	2"	
R416	1	1	12'-0"	Str.	
R417	1	1	18-8"	Str.	
R418	1	1	9'-0"	Str.	
R419	2	2	11'-6"	Str.	
R420	2	2	18'-5"	Str.	
W401	14	-	8'-3"	Str.	
W402 to W408	2 Each	2 Each	5'-1" to 3'-0"	Str.	
W409 to W413	1 Each	1 Each	4'-3" to 2'-3"	2"	
W414 to W418	1 Each	1 Each	4'-1" to 2'-7"	Str.	
W419	-	14	7'-8"	Str.	
W701	6	6	19'-8"	Str.	
W702 to W705	2 Each	2 Each	15'-4" to 8'-1"	Str.	
W706	2	2	19'-1"	5¼"	
W707	10	8	5'-8"	Str.	
F601	6	6	9'-8"	4½"	
F602	12	12	2'-2"	Str.	



SECTION A-A

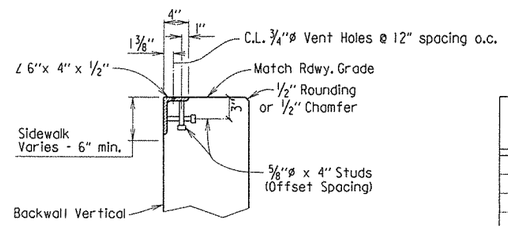
No Scale

Shown for Stage 2, Stage 1 similar.



SECTION B-B

No Scale

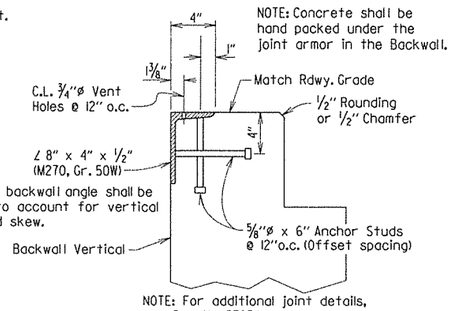


NOTE: Concrete shall be hand packed under joint armor in the sidewalk.

DETAIL Y

No Scale

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



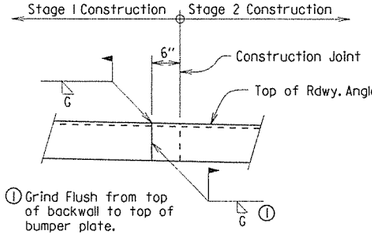
NOTE: Concrete shall be hand packed under the joint armor in the Backwall.

Note: The backwall angle shall be profiled to account for vertical curve and skew.

NOTE: For additional joint details, see Dwg. No. 57054.

DETAIL Z

No Scale



DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

Looking Ahead Bent No. 6

No Scale

GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength fc' = 3500 psi, and shall be poured in the dry. All 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.

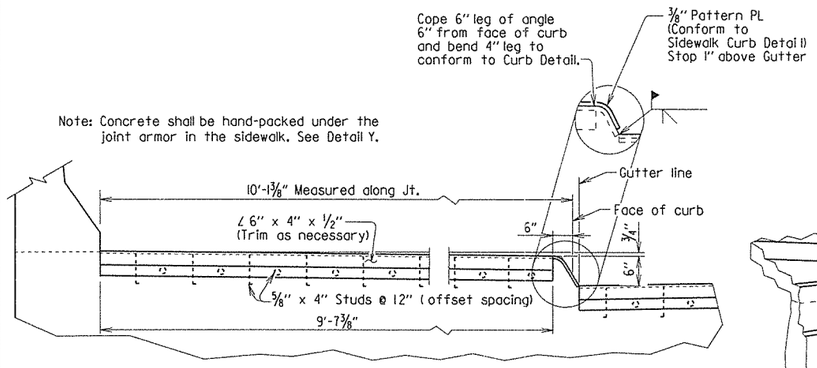
All piles shall be HP12X53 (AASHTO M270, Gr. 50).

Structural Steel in End Bents shall be AASHTO M270, Gr. 50W and shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

No Portion of the Backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint shall not be placed until the adjacent deck pour has been made.

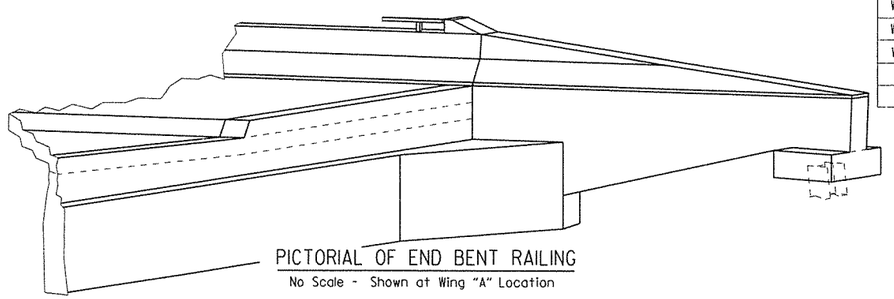
If anchor bolts are drilled into cap, top reinforcing bars shall be placed to avoid damage.

For additional information, see layout.



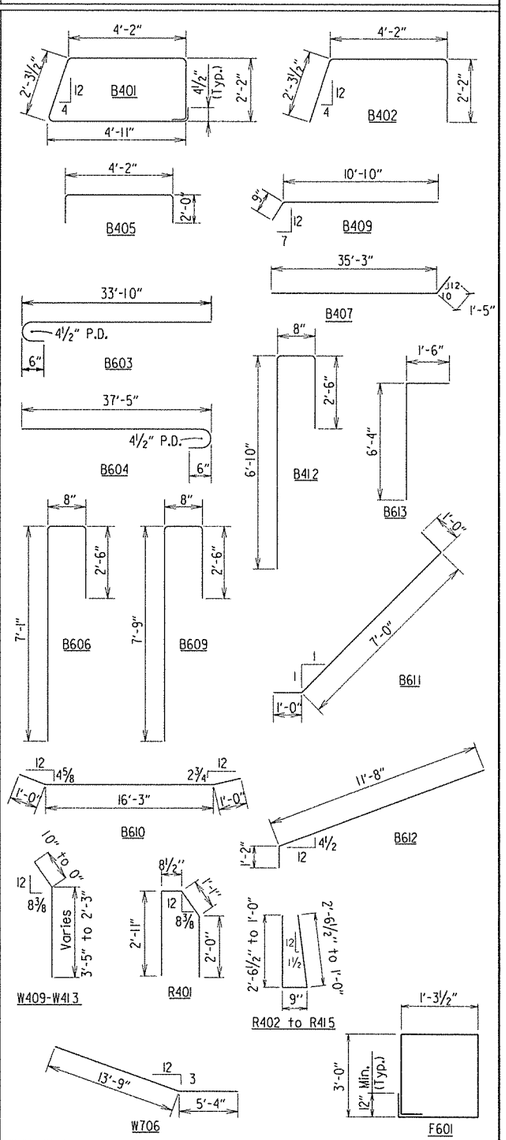
SIDEWALK DETAIL

No Scale



PICTORIAL OF END BENT RAILING

No Scale - Shown at Wing "A" Location



STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

PRINT DATE: 5/26/2015

SHEET 4 OF 4
DETAILS OF BENT NO. 6

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

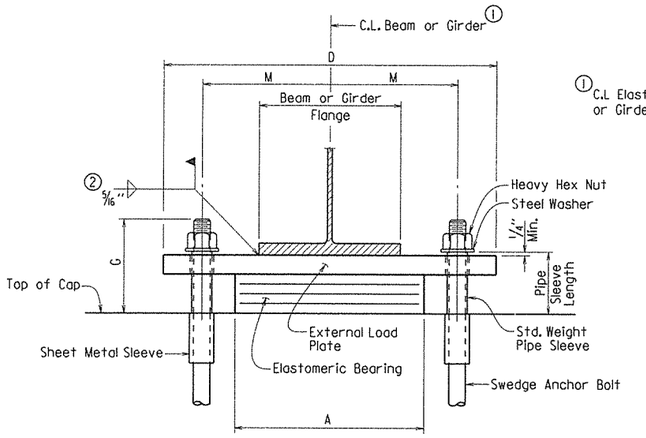
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 3-25-15 FILENAME: b061348_bl.dgn

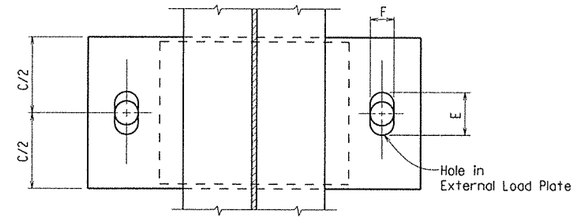
CHECKED BY: PGT DATE: 4/30/15 SCALE: As shown

DESIGNED BY: TMG DATE: 1/2015

BRIDGE NO. 07334 DRAWING NO. 57036

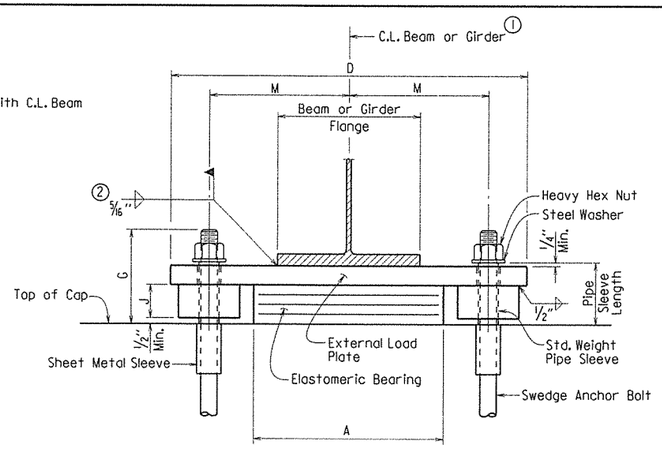


FRONT VIEW - AT BENT NOS. 1, 3 Back, 3 Ahead, 5 Back, & 6

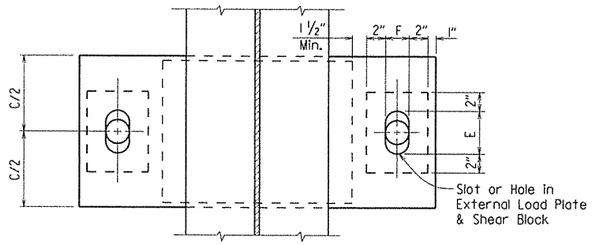


PLAN VIEW - AT BENT NOS. 1, 3 Back, 3 Ahead, 5 Back, & 6

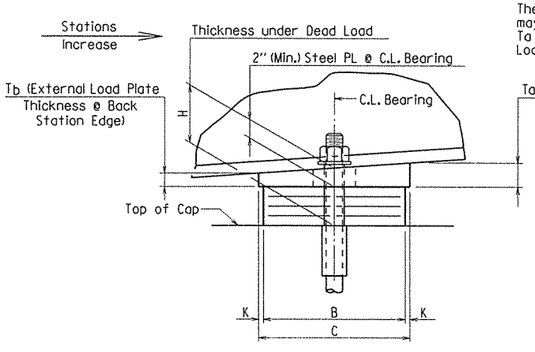
① C.L Elastomeric Pad shall be aligned with C.L. Beam or Girder.



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



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



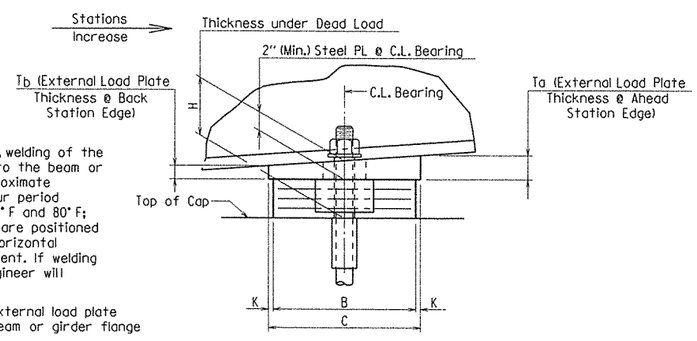
SIDE VIEW - AT BENT NOS. 1, 3 Bk., 3 Ahd., 5 Bk., & 6

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 External Load Plate Thicknesses."

Ta (External Load Plate Thickness @ Ahead Station Edge)

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

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



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

TABLE OF FABRICATOR VARIABLES

③ See Sheet 2 of 2 for "Table of External Load Plate Thicknesses".

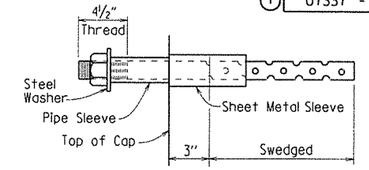
*Maximum Design Load = Service I Limit State

BRIDGE NO.	LOCATION: BENT NO(S).	LOCATION: BEAM OR GIRDER NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD: A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T
07334	1	All	Exp.	8	135	7¾"	4⅜"	14"	9"	3	½"	¼"	4 @ 12 Ga.	2 7/16"
	2	All	Fix	8	364	9"	4 15/16"	17"	14"	4	½"	¼"	5 @ 12 Ga.	3"
	3 Bk.	All	Exp.	8	135	7¾"	4⅜"	14"	9"	3	½"	¼"	4 @ 12 Ga.	2 7/16"
	3 Ahd.	All	Exp.	8	150	7¾"	4⅜"	14"	10"	3	½"	¼"	4 @ 12 Ga.	2 7/16"
	4	All	Fix	8	436	9½"	5 9/16"	17"	15"	5	½"	¼"	6 @ 12 Ga.	3⅝"
	5 Bk.	All	Exp.	8	150	7¾"	4⅜"	14"	10"	3	½"	¼"	4 @ 12 Ga.	2 7/16"
	5 Ahd.	All	Fix	8	168	7¾"	4⅜"	13"	11"	3	½"	¼"	4 @ 12 Ga.	2 7/16"
	6	All	Exp.	8	168	7¾"	4⅜"	13"	11"	3	½"	¼"	4 @ 12 Ga.	2 7/16"

BRIDGE NO.	EXTERNAL LOAD PLATE: C	D	E	F	J	K	M	③ T_a	③ 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.)
07334	10"	28½"	4⅞"	3⅛"	-	½"	11"	See Table		2"ø x 28"	55	2½"ø x 4¾"	4"ø x 6"	3¾"
	16"	37½"	3¾"	3¾"	2 1/16"	½"	14"	See Table		2½"ø x 35"	55	3"ø x 5½"	4"ø x 6"	4½"
	10"	28½"	4⅞"	3⅛"	-	½"	11"	See Table		2"ø x 28"	55	2½"ø x 4¾"	4"ø x 6"	3¾"
	11"	28½"	5¼"	3⅛"	-	½"	11"	See Table		2"ø x 28"	55	2½"ø x 4¾"	4"ø x 6"	3¾"
	16"	37½"	3¾"	3¾"	3"	½"	14"	See Table		2½"ø x 35"	55	3"ø x 6"	4"ø x 6"	4½"
	11"	28½"	5¼"	3⅛"	-	½"	11"	See Table		2"ø x 28"	55	2½"ø x 4¾"	4"ø x 6"	3¾"
	12"	32¼"	3⅛"	3⅛"	1⅛"	½"	11½"	See Table		2"ø x 28"	55	2½"ø x 4¾"	4"ø x 6"	3¾"
	12"	26½"	4⅛"	3⅛"	-	½"	10"	See Table		2"ø x 28"	55	2½"ø x 4¾"	4"ø x 6"	3¾"

PRINT DATE: 5/26/2015

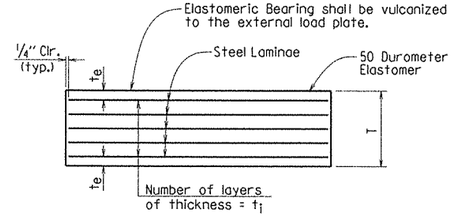
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	49	131
				①	07337 -	ELASTO. BRGS.	-	57037



ANCHOR BOLT DETAIL

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

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



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

t_i = Thickness of elastomer between steel laminae

N = Number of elastomer layers of thickness t_i

ELASTOMERIC BEARING

GENERAL NOTES

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

External load plates and shear blocks shall conform to AASHTO M 270, Grade 50W. Pipe sleeves shall be ASTM A53, Grade B, or A500 Gr. 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. The anchor bolt grade of steel shall be as specified in the "Table of Fabricator Variables". Indentations shall be circular with rounded bottoms and staggered as shown in the details.

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

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

STATE OF ARKANSAS
Charles R. Ellis
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No. 9335
5-27-15
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SHEET 1 OF 2

DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 12-1-2014 FILENAME: b061348x1_brg.dgn

CHECKED BY: TMG DATE: 5/27/15 SCALE: None

DESIGNED BY: Std. DATE: -

BRIDGE NO. 07334 DRAWING NO. 57037

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.		061348	50	131
				(1) 07334		ELASTO BRGS.	57038	

TABLE OF EXTERNAL LOAD PLATE THICKNESSES

Note: Girders are numbered left to right, looking in the direction of increasing stations.

BENT	GIRDER NO.	NO. OF BEARINGS	T_a	T_b
1	1	1	2.02"	1.98"
1	2	1	2.03"	1.97"
1	3	1	2.03"	1.97"
1	4	1	2.04"	1.96"
1	5	1	2.05"	1.95"
1	6	1	2.05"	1.95"
1	7	1	2.06"	1.94"
1	8	1	2.07"	1.93"
2	1	1	1.94"	2.06"
2	2	1	1.95"	2.05"
2	3	1	1.96"	2.04"
2	4	1	1.97"	2.03"
2	5	1	1.98"	2.02"
2	6	1	1.99"	2.01"
2	7	1	2.00"	2.00"
2	8	1	2.01"	1.99"
3 Bk.	1	1	1.98"	2.18"
3 Bk.	2	1	1.98"	2.17"
3 Bk.	3	1	1.99"	2.16"
3 Bk.	4	1	1.99"	2.15"
3 Bk.	5	1	2.55"	2.70"
3 Bk.	6	1	2.30"	2.44"
3 Bk.	7	1	2.00"	2.12"
3 Bk.	8	1	2.00"	2.11"
3 Ahd.	1	1	1.89"	2.11"
3 Ahd.	2	1	1.89"	2.11"
3 Ahd.	3	1	1.90"	2.10"
3 Ahd.	4	1	1.91"	2.09"
3 Ahd.	5	1	2.47"	2.65"
3 Ahd.	6	1	2.23"	2.39"
3 Ahd.	7	1	1.93"	2.07"
3 Ahd.	8	1	1.94"	2.06"

BENT	GIRDER NO.	NO. OF BEARINGS	T_a	T_b
4	1	1	1.70"	2.29"
4	2	1	1.72"	2.28"
4	3	1	1.73"	2.27"
4	4	1	1.74"	2.26"
4	5	1	1.75"	2.25"
4	6	1	1.76"	2.24"
4	7	1	1.77"	2.23"
4	8	1	1.79"	2.22"
5 Bk.	1	1	1.85"	2.42"
5 Bk.	2	1	1.85"	2.41"
5 Bk.	3	1	1.86"	2.40"
5 Bk.	4	1	1.86"	2.38"
5 Bk.	5	1	1.86"	2.37"
5 Bk.	6	1	1.87"	2.36"
5 Bk.	7	1	1.88"	2.35"
5 Bk.	8	1	1.88"	2.34"
5 Ahd.	1	1	1.69"	2.31"
5 Ahd.	2	1	1.70"	2.30"
5 Ahd.	3	1	1.71"	2.29"
5 Ahd.	4	1	1.71"	2.29"
5 Ahd.	5	1	1.72"	2.28"
5 Ahd.	6	1	1.73"	2.27"
5 Ahd.	7	1	1.74"	2.26"
5 Ahd.	8	1	1.74"	2.26"
6	1	1	1.64"	2.36"
6	2	1	1.64"	2.36"
6	3	1	1.64"	2.36"
6	4	1	1.64"	2.36"
6	5	1	1.65"	2.35"
6	6	1	1.66"	2.34"
6	7	1	1.66"	2.34"
6	8	1	1.67"	2.33"

STATE OF ARKANSAS
Charles R. Ellis
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5-27-15
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SHEET 2 OF 2

DETAILS OF
ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 12-1-2014 FILENAME: b061348x1_brg.dgn
CHECKED BY: TMG DATE: 5/27/15 SCALE: None
DESIGNED BY: Std. DATE: -

BRIDGE NO. 07334 DRAWING NO. 57038

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	51	131
				(1) 07334 - SPAN DETAILS - 57039				

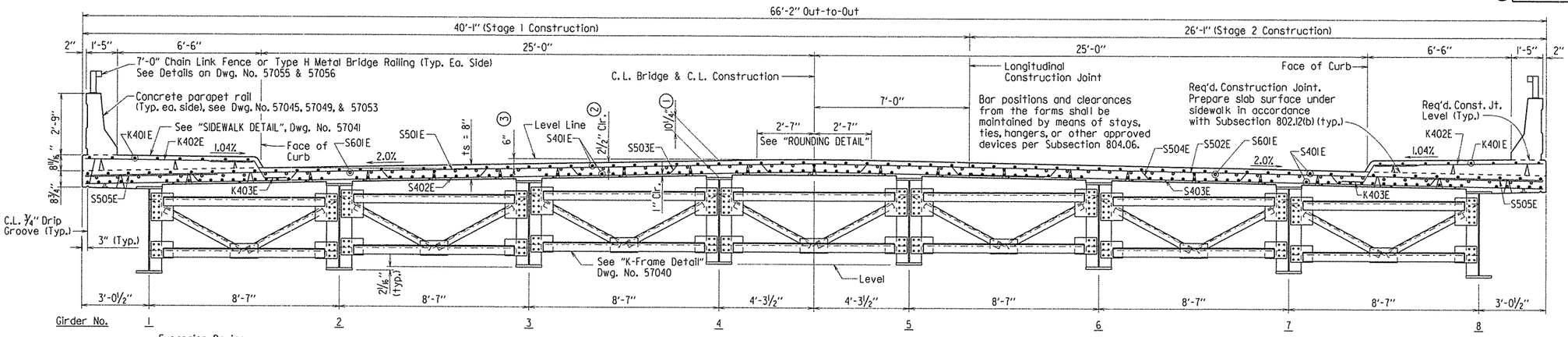
SLAB REINFORCING

Longitudinal: S401E as shown
Transverse : S503E & S504E @ 12" O.C. - Bent Up Over Girders ——— Alternate
S402E & S403E - Bottom: S501E & S502E - Top @ 12" O.C. ———
S505E @ 6" O.C. - Top Bundled With No. 5 Bars

NOTE:
At Contractor's Option, in lieu of providing bar S503E & S504E, Two straight #5 bars placed in top and bottom may be substituted. Payment for reinforcing will be based on the weight of bar S503E & S504E.

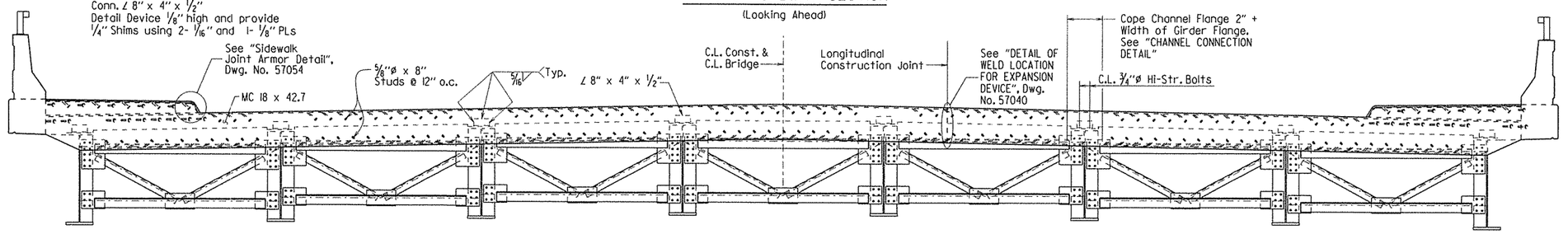
Class I Protective Surface Treatment shall be applied to the Roadway and Sidewalk Surfaces and the Face and Top of the Concrete Parapet Rail.

The Superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete.



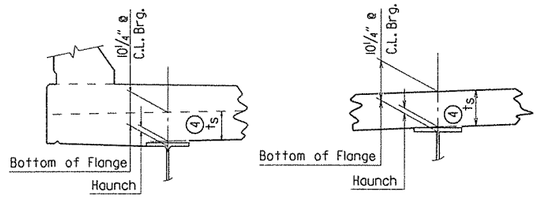
TYPICAL ROADWAY SECTION

(Looking Ahead)



SECTION THRU JOINT

(Looking Ahead)



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

EXTERIOR BEAM OR GIRDER — INTERIOR BEAM OR GIRDER

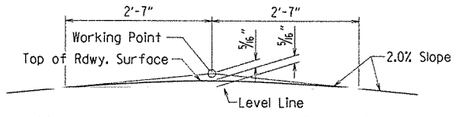
(4) Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance: Minimum occurs when top flange contacts bottom reinforcing steel; Maximum = top flange thickness plus 1¾". 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

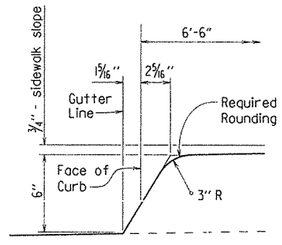
No Scale



NOTE: Working Point matches Theoretical Roadway Grade

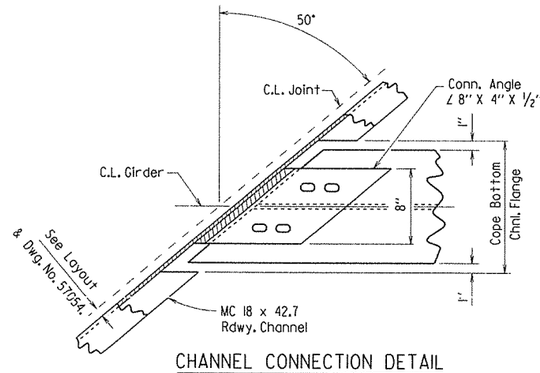
ROUNDING DETAIL

No Scale



CURB DETAIL

NO SCALE



CHANNEL CONNECTION DETAIL

No Scale

(1) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."
(2) Tolerance: Minus = ¼"; Plus equal to the amount of slab thickening used to meet slab thickness tolerance. See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE."
(3) Working Point to the Curb Line, See "ROUNDING DETAIL"

STATE OF ARKANSAS
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SHEET 1 OF 3
COMMON DETAILS OF SUPERSTRUCTURE

ROUTE SEC.

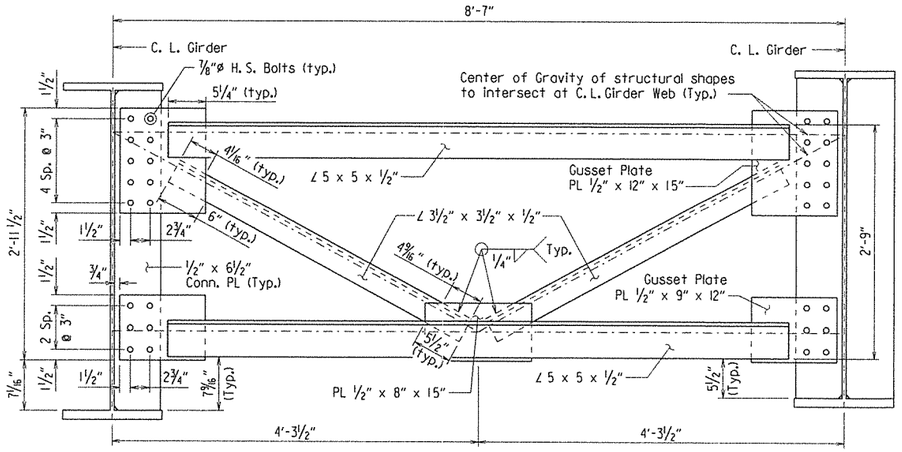
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15 FILENAME: b061348x_sl.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: 3/8" = 1'-0"
DESIGNED BY: TMG DATE: 9/2014

BRIDGE NO. 07334 DRAWING NO. 57039

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	52	131
				(1)	07334 - SPAN DETAILS - 57040			



K-FRAME DETAIL

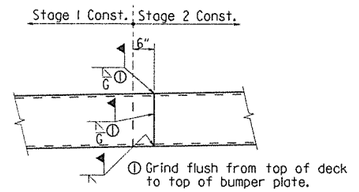
K-Frames between girders 5 & 6 shall be installed with bolts loose when girders are erected in Stage 2. Bolts shall be fully tightened immediately after placing slab in Stage 2.

Alternatively, the holes in the connection plate of one side of these K-Frames may be field drilled after placing slab in Stage 2.

TABLE FOR WELD

Material Thickness Of Thicker Part Joined (Inches)	Minimum Size Of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To 3/4" Inclusive	1/4"	
Over 3/4"	5/16"	

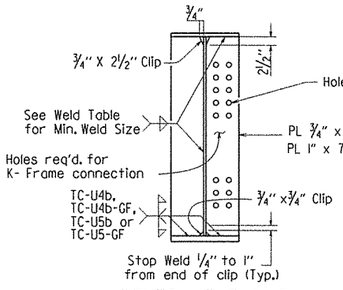
NOTE:
When a fillet weld size, as shown on the Plans, is larger than the minimum, the First Pass shall be that specified for minimum size of fillet weld.



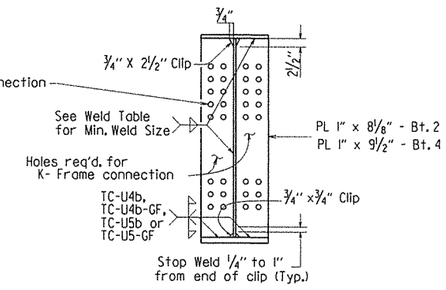
① Grind flush from top of deck to top of bumper plate.

DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

Looking Ahead



BENTS 1, 3, 5 & 6

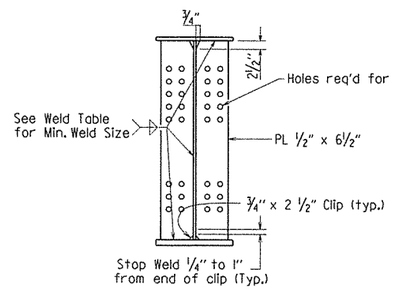


BENTS 2 & 4

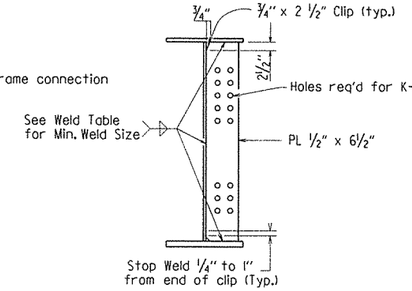
Note: No holes in stiffener on outside of exterior girders.

BEARING STIFFENER DETAILS

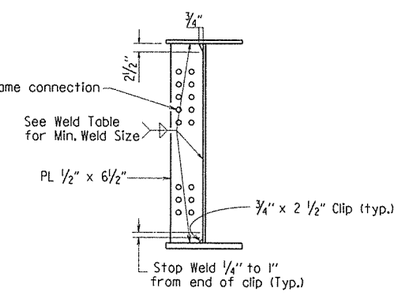
NOTE: Bearing stiffeners shall be vertical in their final position.



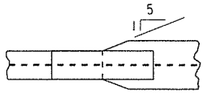
DETAIL W
Looking Ahead



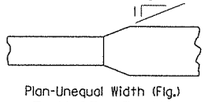
DETAIL Y
Looking Ahead



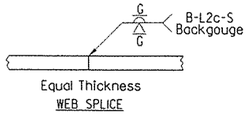
DETAIL X
Looking Ahead



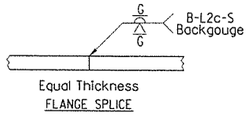
SPLICE AT UNEQUAL BOTTOM FLANGE WIDTHS



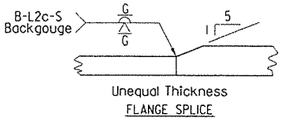
Plan-Unequal Width (Flg.)
FLANGE SPLICE



Equal Thickness
WEB SPLICE



Equal Thickness
FLANGE SPLICE



Unequal Thickness
FLANGE SPLICE

DETAILS OF SHOP WELDED SPLICES

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 3
COMMON DETAILS OF SUPERSTRUCTURE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15 FILENAME: b061348x_sl.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: No Scale
DESIGNED BY: TMG DATE: 9/2014

BRIDGE NO. 07334 DRAWING NO. 57040

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	53	131
				(1)	07334 - SPAN DETAILS - 57041			

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 Interims.

MATERIALS AND STRENGTHS:

Class S(AE) Concrete	f'c =	4,000 psi
Reinforcing Steel (Grade 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

STRUCTURAL STEEL:

Structural Steel shall be AASHTO M270, Gr. 50W, unless otherwise noted and shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)". Grade 50W steel shall not be painted. Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36 or Gr. 50 unless noted otherwise. All exposed surfaces shall 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.

Longitudinal girders and all 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 will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

Steel 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.

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted and approval secured before fabrication is begun. Girder webs may be made by shop splicing with minimum lengths of 25'-0" for sections. Flange plates longer than 50'-0" may be made by shop splicing with minimum lengths of 25'-0" for sections. Material specifications and location of shop-welded splices, if any, shall be shown on the shop drawings. No additional payment for welds for these splices will be made.

All girders shall be blocked in their true position in the shop as specified in Subsection 807.54. The camber, length of sections, distance between bearings and openings of joints shall be measured with the girder in their true position. This information shall become part of the permanent records of this job. 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°F. A tolerance of ¼" +/- is allowed for camber.

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.

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.

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.

All field connections shall be bolted with high-strength bolts. Bolts in Field Splices shall be ⅞" diameter bolts with 15/16" open holes. Bolts in K-Frame connections shall be ⅞" diameter bolts with ⅞" open holes. Holes for K-Frame connections may be 1 1/16" diameter if a washer is supplied for use under both the nut and head of the bolt. Bolts shall be placed with heads on the outside face of the exterior girder web and on the bottom of the girder flanges.

K-Frames shall be installed as girders are erected unless noted otherwise. All bolts in K-Frames and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring of the concrete deck, unless otherwise noted.

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

REINFORCING STEEL :

All reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, 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)."

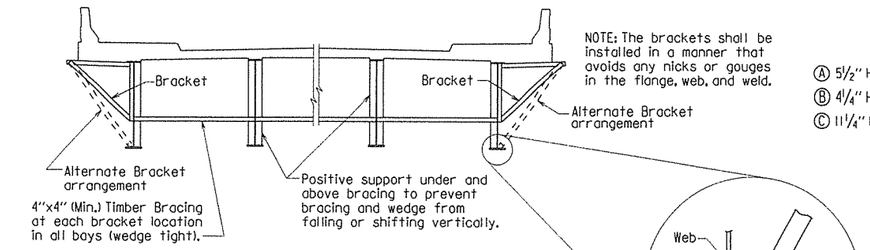
CONCRETE:

All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

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. The sidewalk shall receive a Broomed Finish as specified for final finishing in Subsection 802.19 for Class 6, Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the 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 sidewalk and parapet railing.

PRINT DATE: 26-MAY-2015

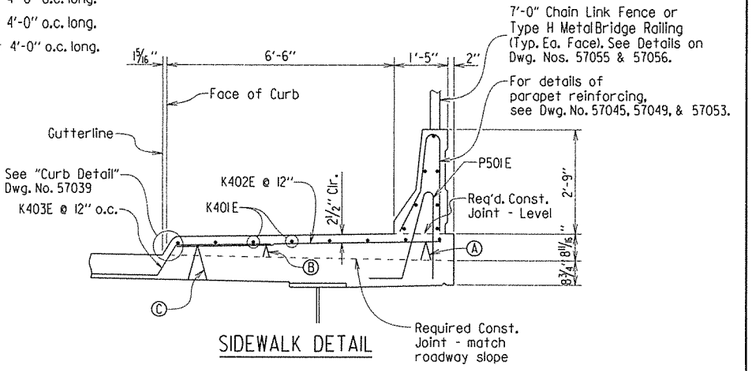


NOTE: The brackets shall be installed in a manner that avoids any nicks or gouges in the flange, web, and weld.

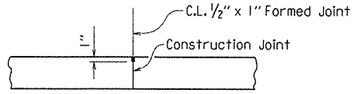
NOTE: Using a transverse finishing machine, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if ½" x 6½" web stiffeners are welded to the insides 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 K-frame connection plates shown on Dwg. No. 57040. 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

Ⓐ 5½" Hi-chairs at 4'-0" o.c. long.
Ⓑ 4¼" Hi-chairs at 4'-0" o.c. long.
Ⓒ 11¼" Hi-chairs at 4'-0" o.c. long.

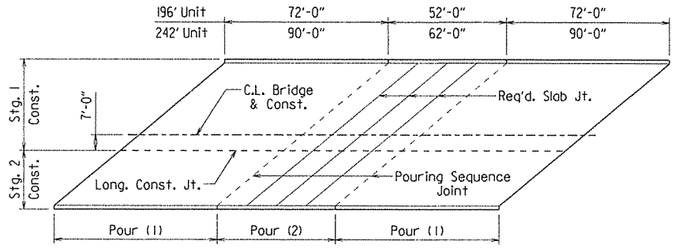


SIDEWALK DETAIL

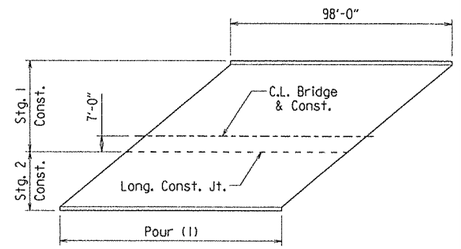


Use ½" X 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod shall not be installed. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Sealant must be gray or other color similar to concrete.

LONGITUDINAL CONSTRUCTION JOINT DETAIL



196' & 242' Units



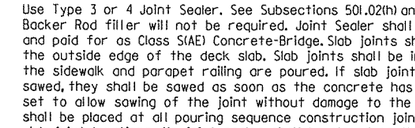
98' SPAN

POURING SEQUENCE

POURING SEQUENCE NOTE:
For each stage of construction, the deck concrete shall be placed in accordance with the sequences shown. Pours with the same number may be placed simultaneously or separately. All Pours (1) for a stage of construction must be placed before Pours (2) may be placed.

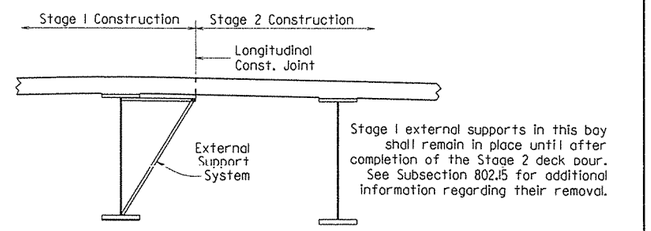
48 hours shall elapse between the end of one pour and the start of the next pour. 72 hours shall elapse between adjacent pours.

No sidewalk pours shall be made until 72 hours have elapsed from the completion of the deck pours for that stage of construction. A minimum of 72 hours shall elapse between the completion of the sidewalk pour and pouring of the concrete bridge rail. For the 196' and 242' units, any sidewalk or railing pours made before the entire slab has been place for each stage must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequences shown.



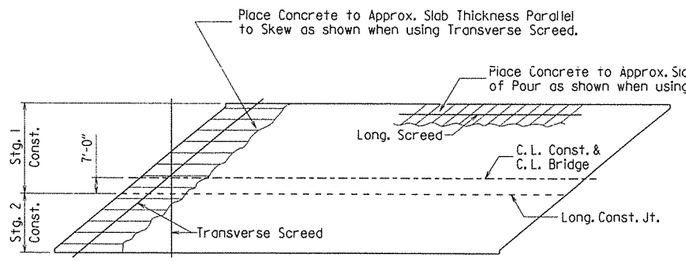
Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the sidewalk and parapet railing are poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. No joint sealer shall be placed on the deck slab under the sidewalk area. The joint sealer shall extend across the deck slab (gutterline to gutterline) and across the top of the sidewalk. Slab joints shall align with parapet open joints.

SLAB JOINT DETAIL



DECK SUPPORT AT LONGITUDINAL CONSTRUCTION JOINT

LOOKING AHEAD



CONCRETE PLACEMENT PROCEDURE

At the Contractor's Option, the Transverse Screed may be placed parallel to the skew or perpendicular to C.L. Bridge.

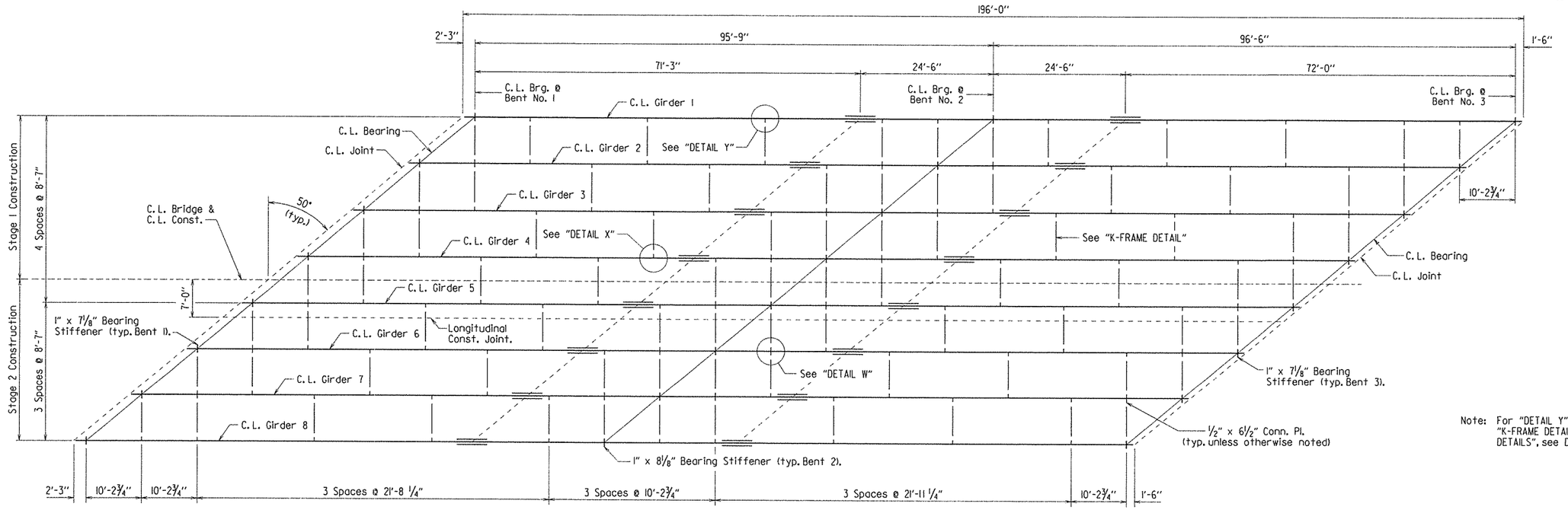
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 3
COMMON DETAILS OF SUPERSTRUCTURE
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: No Scale

BRIDGE NO. 07334
DRAWING NO. 57041

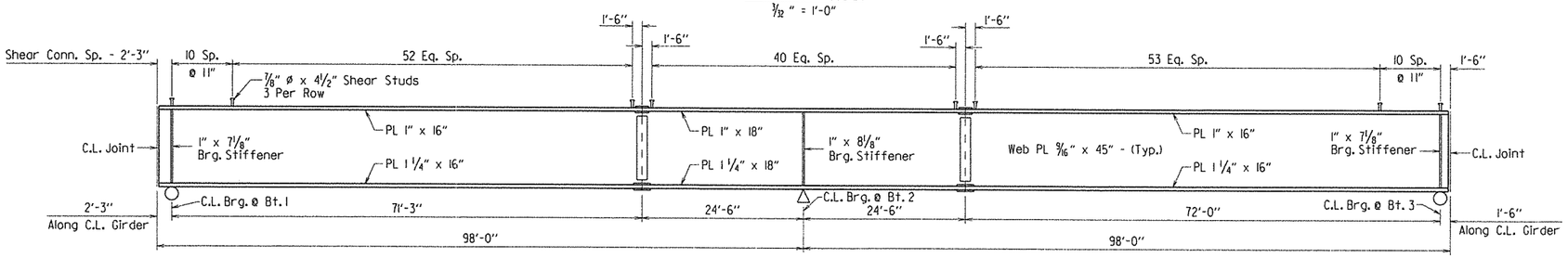
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	54	131
				1	07334 -	SPAN DETAILS	- 57042	



Note: For "DETAIL Y", "DETAIL X", "DETAIL W", "K-FRAME DETAIL", & "BEARING STIFFENER DETAILS", see Dwg. No. 57040.

FRAMING PLAN

3/32 " = 1'-0"



TYPICAL GIRDER ELEVATION

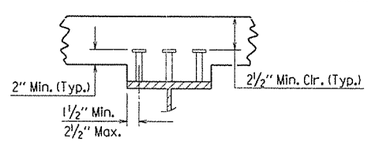
NO SCALE

Notes: See "DETAILS OF SHOP WELDED SPLICES," Dwg. No. 57040.

See "DETAILS OF FIELD SPLICE", Dwg. No. 57044

Notes: All web and flange plates shall be AASHTO M270, Gr. 50W.

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



Stud Shear Connectors shown shall be ⅞"ø x 4½" long, granular flux filled, solid fluxed or equal, and automatically end welded to the girder 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 of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF 196'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

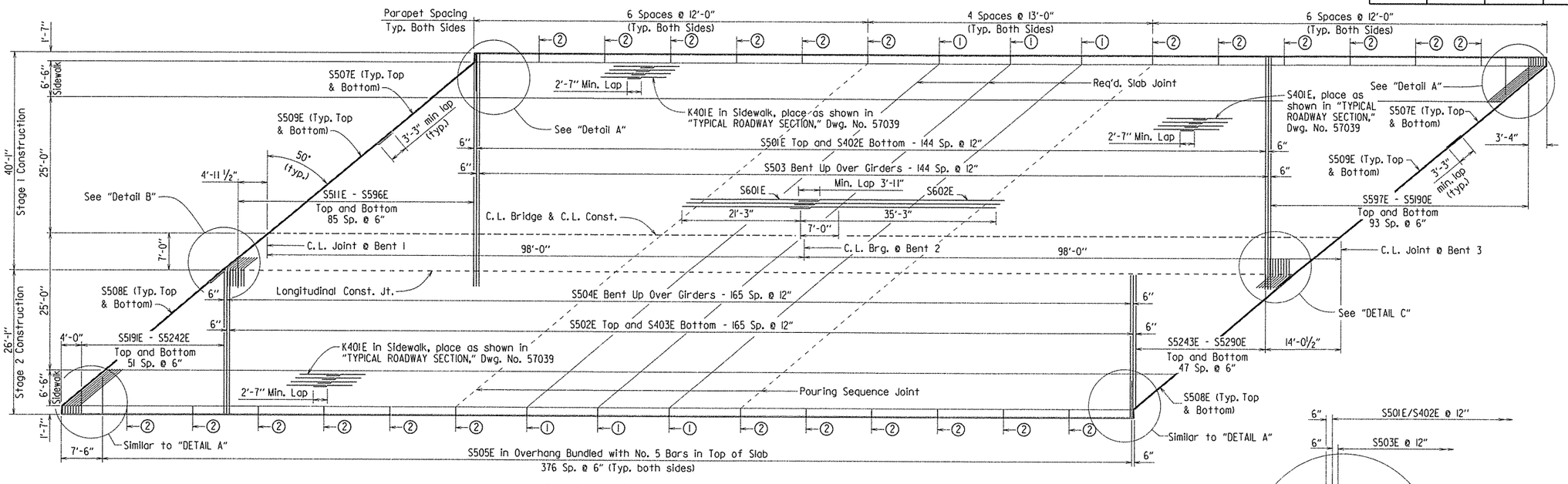
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: As Shown

BRIDGE NO. 07334 DRAWING NO. 57042

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	55	131
				① 07334 - SPAN DETAILS - 57043				



① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab. See Dwg. No. 57045.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 57045.

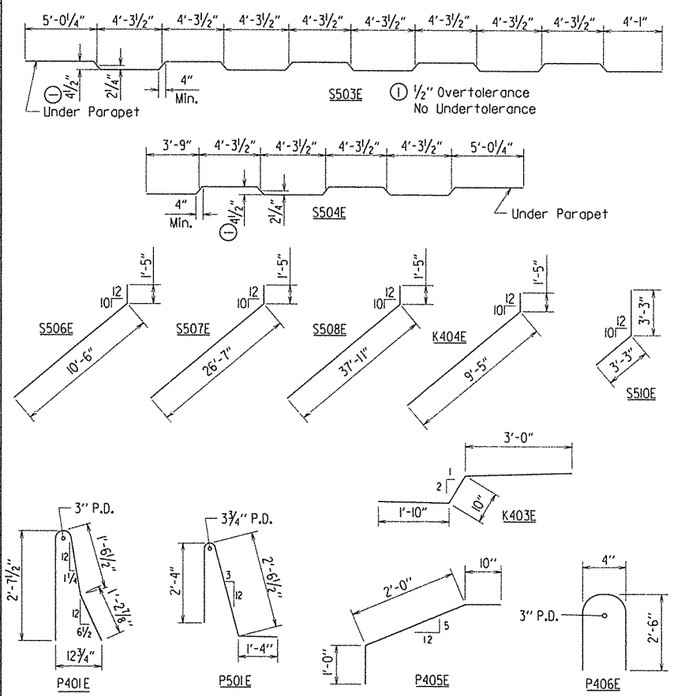
BAR LIST - 196'-0" UNIT

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

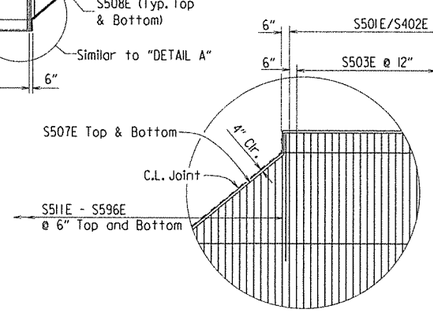
MARK	NUMBER REQUIRED STAGE 1	NUMBER REQUIRED STAGE 2	LENGTH	P.D.
S401E	660	444	34'-9"	Str.
S402E	145	-	42'-7"	Str.
S403E	-	166	25'-9"	Str.
S501E	145	-	43'-5"	Str.
S502E	-	166	25'-9"	Str.
S503E	145	-	44'-5"	3"
S504E	-	166	26'-6"	3"
S505E	377	377	6'-9"	Str.
S506E	12	12	11'-11"	3 3/4"
S507E	4	-	28'-0"	3 3/4"
S508E	-	4	39'-4"	3 3/4"
S509E	4	-	40'-0"	Str.
S510E	28	-	6'-6"	3 3/4"
S511E-S596E	2 Ea.	-	5'-6" to 41'-2"	Str.
S597E-S5190E	2 Ea.	-	43'-1" to 4'-1"	Str.
S5191E-S5242E	-	2 Ea.	4'-1" to 25'-7"	Str.
S5243E-S5290E	-	2 Ea.	23'-9" to 4'-0"	Str.
S601E	42	27	23'-3"	Str.
S602E	42	27	37'-3"	Str.
K401E	48	48	34'-9"	Str.
K402E	186	186	7'-6"	Str.
K403E	186	186	5'-8"	3"
K404E	18	18	10'-10"	3"
P401E	392	392	5'-6"	3"
P402E	84	84	11'-8"	Str.
P403E	28	28	12'-8"	Str.
P404E	48	48	5'-8"	Str.
P405E	1	1	3'-10"	3"
P406E	3	3	5'-2"	3"
P501E	392	392	6'-4"	3 3/4"

BENDING DIAGRAMS

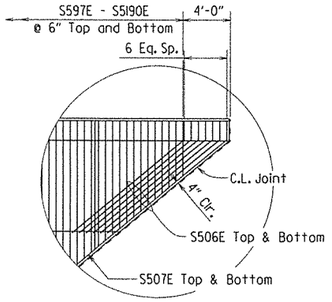
Dimensions are out to out of bars.

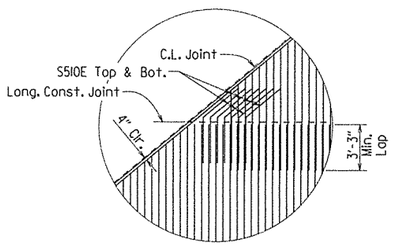


REINFORCING PLAN - 196'-0" UNIT

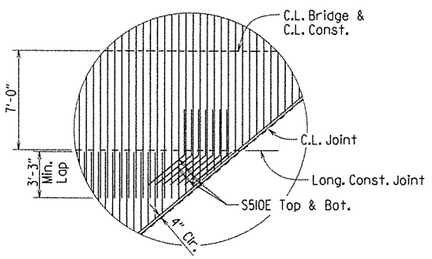


SLAB REINFORCING

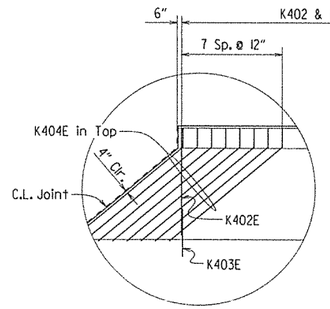


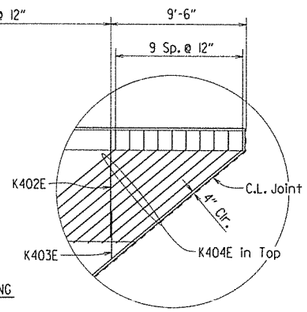


DETAIL B
No Scale



DETAIL C
No Scale





SIDEWALK REINFORCING

DETAIL A
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF 196'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07334
DRAWING NO. 57043

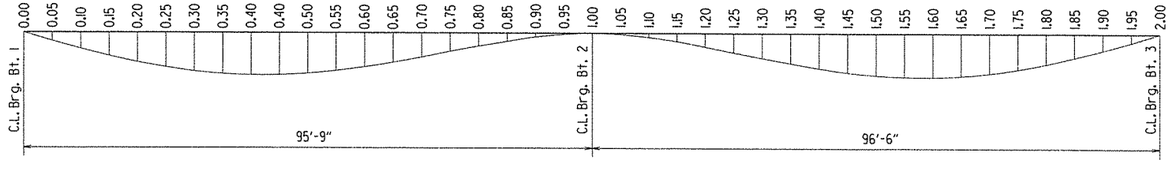
PRINT DATE: 5/26/2015

TABLE OF DEAD LOAD DEFLECTION (INCHES)

Point of Deflection	STRUCTURAL STEEL							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.043	0.046	0.048	0.049	0.050	0.051	0.052	0.054
0.10	0.083	0.088	0.092	0.094	0.095	0.098	0.101	0.103
0.15	0.120	0.127	0.133	0.136	0.139	0.142	0.147	0.149
0.20	0.151	0.160	0.168	0.172	0.175	0.179	0.186	0.189
0.25	0.177	0.188	0.197	0.202	0.206	0.210	0.219	0.222
0.30	0.196	0.209	0.220	0.225	0.230	0.235	0.245	0.249
0.35	0.208	0.223	0.235	0.241	0.246	0.251	0.263	0.266
0.40	0.213	0.229	0.241	0.248	0.253	0.259	0.273	0.274
0.45	0.210	0.227	0.240	0.246	0.252	0.258	0.273	0.274
0.50	0.200	0.217	0.230	0.237	0.243	0.249	0.265	0.265
0.55	0.184	0.201	0.214	0.221	0.227	0.233	0.250	0.250
0.60	0.163	0.179	0.192	0.198	0.204	0.210	0.227	0.226
0.65	0.137	0.153	0.165	0.171	0.177	0.182	0.199	0.198
0.70	0.108	0.123	0.134	0.140	0.145	0.150	0.166	0.166
0.75	0.078	0.090	0.101	0.106	0.110	0.115	0.130	0.129
0.80	0.052	0.062	0.070	0.075	0.078	0.082	0.095	0.095
0.85	0.029	0.036	0.043	0.047	0.050	0.053	0.063	0.063
0.90	0.010	0.014	0.019	0.021	0.024	0.026	0.033	0.033
0.95	0.001	0.003	0.006	0.007	0.008	0.009	0.013	0.013
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.05	0.014	0.014	0.010	0.009	0.008	0.007	0.004	0.002
1.10	0.036	0.035	0.028	0.026	0.024	0.022	0.017	0.013
1.15	0.065	0.064	0.054	0.051	0.048	0.045	0.038	0.031
1.20	0.102	0.101	0.088	0.084	0.080	0.076	0.067	0.058
1.25	0.138	0.138	0.123	0.119	0.114	0.109	0.099	0.088
1.30	0.173	0.174	0.157	0.152	0.147	0.141	0.130	0.118
1.35	0.207	0.207	0.189	0.184	0.178	0.172	0.160	0.146
1.40	0.239	0.238	0.220	0.214	0.208	0.202	0.189	0.172
1.45	0.263	0.262	0.245	0.239	0.233	0.227	0.213	0.196
1.50	0.279	0.278	0.262	0.256	0.250	0.243	0.230	0.213
1.55	0.287	0.286	0.271	0.265	0.259	0.253	0.239	0.223
1.60	0.287	0.286	0.272	0.266	0.261	0.254	0.242	0.226
1.65	0.278	0.276	0.264	0.258	0.253	0.247	0.235	0.220
1.70	0.260	0.258	0.247	0.242	0.237	0.232	0.221	0.208
1.75	0.234	0.231	0.222	0.218	0.213	0.209	0.199	0.188
1.80	0.198	0.195	0.189	0.185	0.181	0.177	0.169	0.160
1.85	0.155	0.152	0.147	0.144	0.142	0.138	0.132	0.125
1.90	0.108	0.105	0.102	0.100	0.098	0.096	0.092	0.087
1.95	0.056	0.055	0.053	0.052	0.051	0.050	0.048	0.045
2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Point of Deflection	STRUCTURAL STEEL + SLAB							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.220	0.253	0.265	0.271	0.276	0.281	0.285	0.282
0.10	0.423	0.486	0.509	0.522	0.530	0.541	0.550	0.541
0.15	0.613	0.704	0.739	0.757	0.771	0.786	0.802	0.784
0.20	0.772	0.889	0.934	0.958	0.975	0.994	1.018	0.993
0.25	0.901	1.042	1.096	1.124	1.145	1.168	1.201	1.166
0.30	0.998	1.161	1.224	1.255	1.280	1.306	1.347	1.304
0.35	1.059	1.237	1.306	1.341	1.368	1.396	1.448	1.392
0.40	1.083	1.269	1.342	1.380	1.408	1.440	1.501	1.436
0.45	1.068	1.257	1.335	1.372	1.403	1.435	1.505	1.435
0.50	1.015	1.202	1.281	1.320	1.351	1.384	1.462	1.388
0.55	0.934	1.113	1.192	1.230	1.262	1.295	1.379	1.306
0.60	0.824	0.988	1.066	1.102	1.133	1.166	1.253	1.182
0.65	0.694	0.844	0.918	0.953	0.983	1.014	1.102	1.037
0.70	0.543	0.675	0.744	0.777	0.804	0.833	0.919	0.866
0.75	0.391	0.495	0.559	0.587	0.611	0.638	0.718	0.674
0.80	0.258	0.336	0.389	0.414	0.434	0.457	0.528	0.496
0.85	0.142	0.195	0.239	0.258	0.275	0.293	0.349	0.329
0.90	0.045	0.074	0.105	0.118	0.131	0.143	0.182	0.174
0.95	0.002	0.014	0.031	0.037	0.044	0.050	0.071	0.069
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.05	0.076	0.078	0.057	0.051	0.045	0.038	0.021	0.009
1.10	0.191	0.197	0.158	0.146	0.134	0.121	0.090	0.061
1.15	0.343	0.357	0.302	0.285	0.268	0.249	0.205	0.154
1.20	0.534	0.559	0.489	0.467	0.445	0.421	0.366	0.289
1.25	0.724	0.766	0.685	0.660	0.635	0.606	0.543	0.446
1.30	0.906	0.962	0.874	0.846	0.818	0.785	0.716	0.597
1.35	1.082	1.144	1.054	1.024	0.993	0.958	0.883	0.740
1.40	1.250	1.314	1.226	1.193	1.162	1.125	1.047	0.875
1.45	1.377	1.449	1.365	1.332	1.301	1.263	1.182	0.998
1.50	1.462	1.537	1.460	1.427	1.395	1.356	1.276	1.085
1.55	1.505	1.579	1.510	1.477	1.446	1.409	1.329	1.136
1.60	1.507	1.575	1.514	1.483	1.454	1.417	1.342	1.152
1.65	1.460	1.520	1.469	1.439	1.412	1.377	1.307	1.125
1.70	1.366	1.417	1.375	1.349	1.324	1.293	1.229	1.062
1.75	1.228	1.267	1.235	1.213	1.190	1.163	1.107	0.959
1.80	1.042	1.070	1.048	1.029	1.010	0.987	0.940	0.817
1.85	0.815	0.832	0.817	0.802	0.789	0.770	0.735	0.640
1.90	0.566	0.574	0.566	0.556	0.546	0.534	0.511	0.446
1.95	0.294	0.298	0.294	0.289	0.284	0.278	0.266	0.232
2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Point of Deflection	STRUCTURAL STEEL + SLAB + SIDEWALK + PARAPET							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.272	0.279	0.287	0.292	0.298	0.308	0.326	0.344
0.10	0.523	0.537	0.551	0.562	0.573	0.593	0.628	0.659
0.15	0.758	0.780	0.800	0.816	0.832	0.860	0.912	0.955
0.20	0.956	0.986	1.011	1.032	1.052	1.086	1.156	1.209
0.25	1.116	1.158	1.187	1.210	1.235	1.275	1.360	1.421
0.30	1.237	1.292	1.325	1.351	1.380	1.424	1.522	1.591
0.35	1.313	1.379	1.414	1.444	1.475	1.521	1.633	1.701
0.40	1.343	1.416	1.453	1.486	1.518	1.568	1.690	1.758
0.45	1.325	1.405	1.446	1.477	1.512	1.561	1.691	1.760
0.50	1.259	1.346	1.387	1.421	1.456	1.505	1.640	1.707
0.55	1.160	1.248	1.291	1.324	1.360	1.407	1.544	1.608
0.60	1.025	1.110	1.155	1.186	1.221	1.267	1.400	1.458
0.65	0.863	0.950	0.995	1.026	1.059	1.101	1.229	1.282
0.70	0.675	0.762	0.807	0.837	0.867	0.904	1.023	1.074
0.75	0.486	0.561	0.607	0.632	0.659	0.692	0.797	0.836
0.80	0.322	0.383	0.423	0.446	0.468	0.496	0.584	0.615
0.85	0.179	0.224	0.260	0.278	0.297	0.318	0.385	0.408
0.90	0.060	0.088	0.115	0.128	0.142	0.155	0.200	0.215
0.95	0.005	0.018	0.034	0.040	0.048	0.054	0.078	0.085
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.05	0.093	0.085	0.062	0.056	0.049	0.042	0.026	0.013
1.10	0.235	0.217	0.172	0.158	0.145	0.132	0.105	0.078
1.15	0.423	0.395	0.328	0.308	0.289	0.271	0.236	0.193
1.20	0.660	0.619	0.531	0.504	0.480	0.458	0.417	0.358
1.25	0.896	0.851	0.744	0.712	0.685	0.658	0.615	0.552
1.30	1.120	1.071	0.950	0.912	0.882	0.852	0.809	0.738
1.35	1.334	1.276	1.145	1.104	1.070	1.039	0.995	0.916
1.40	1.538	1.469	1.333	1.286	1.252	1.220	1.177	1.084
1.45	1.692	1.623	1.484	1.436	1.401	1.369	1.326	1.235
1.50	1.794	1.724	1.588	1.538	1.502	1.469	1.429	1.342
1.55	1.844	1.775	1.644	1.592	1.557	1.527	1.486	1.406
1.60	1.843	1.773	1.649	1.599	1.566	1.535	1.498	1.425
1.65	1.782	1.714	1.601	1.552	1.521	1.492	1.457	1.393
1.70	1.664	1.601	1.500	1.455	1.426	1.401	1.368	1.314
1.75	1.494	1.434	1.349	1.309	1.282	1.260	1.231	1.186
1.80	1.267	1.214	1.146	1.111	1.088	1.069	1.043	1.009
1.85	0.991	0.947	0.895	0.866	0.850	0.834	0.814	0.790
1.90	0.689	0.655	0.621	0.601	0.589	0.578	0.565	0.550
1.95	0.358	0.341	0.323	0.313	0.306	0.301	0.294	0.286
2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

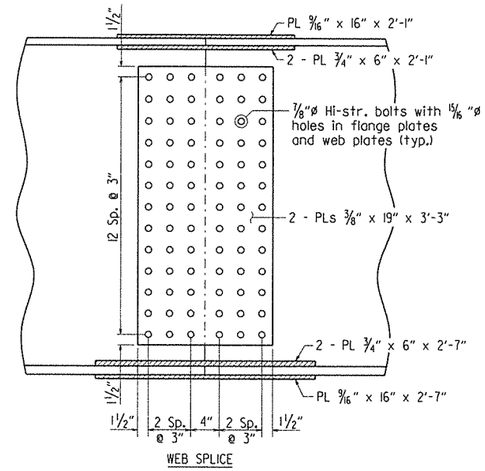


NOTE:
Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance. Deflections shown are along C.L. Girder from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

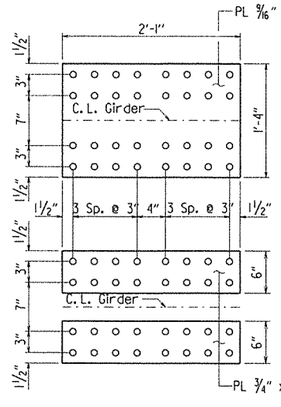
DEAD LOAD DEFLECTION DIAGRAM
NO SCALE

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.		061348	50	131

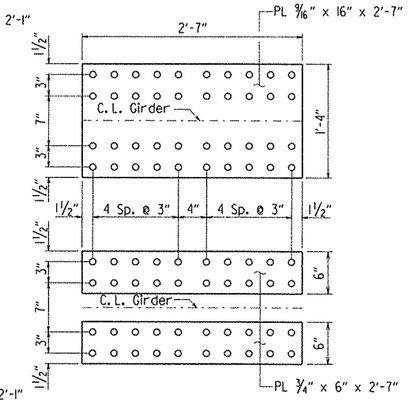
(1) 07334 - SPAN DETAILS - 57044



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICE

NO SCALE

All field splice plates shall be AASHTO M270, Gr. 50W

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF 196'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: 3/8" = 1'-0"

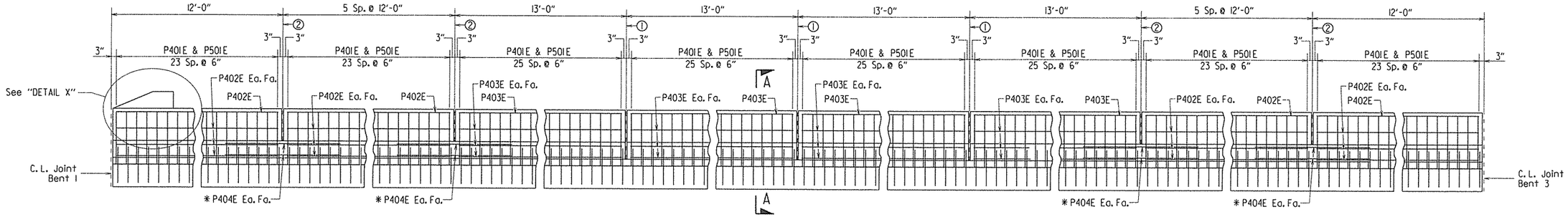
BRIDGE NO. 07334 DRAWING NO. 57044

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	57	131
				07334 - SPAN DETAILS - 57045				

① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab.

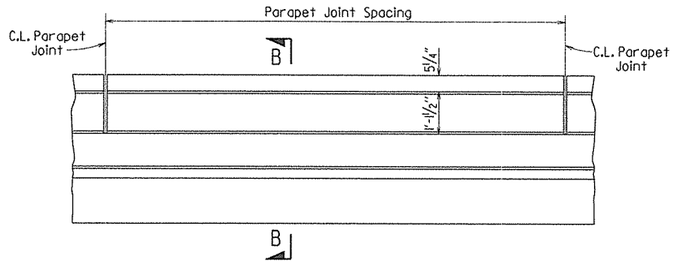
② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab.



* 2'-7" Min. Lap #4 Bars

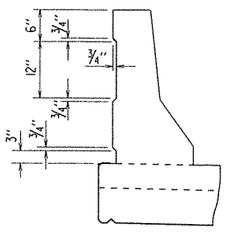
PARAPET RAIL DETAIL

No Scale



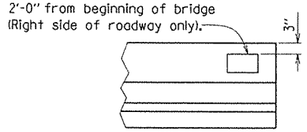
DETAILS OF PARAPET ENHANCEMENT

Outside Face Of Rail
No Scale



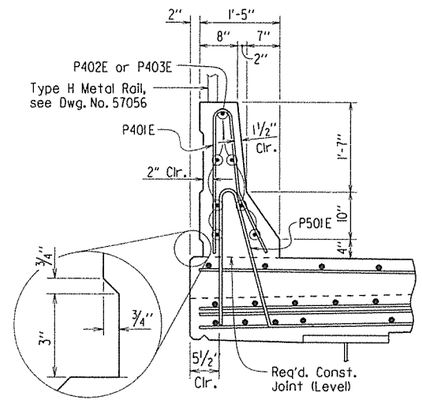
SECTION B-B

No Scale



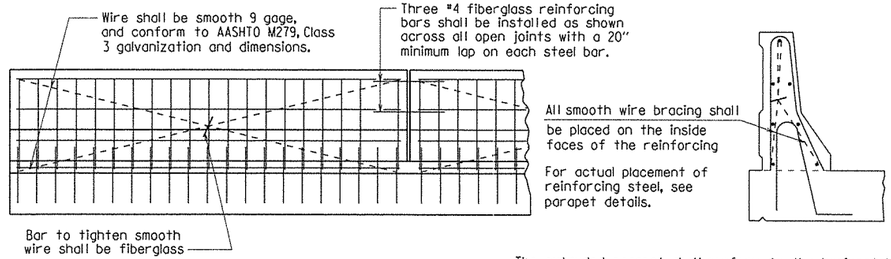
NAME PLATE DETAIL

No Scale



SECTION A-A

Scale: ¾" = 1'-0"

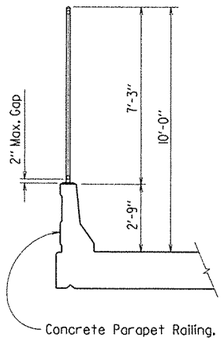


All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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. Exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed Finish.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

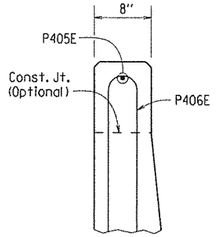
No Scale



TYPICAL SECTION - CHAIN LINK FENCE

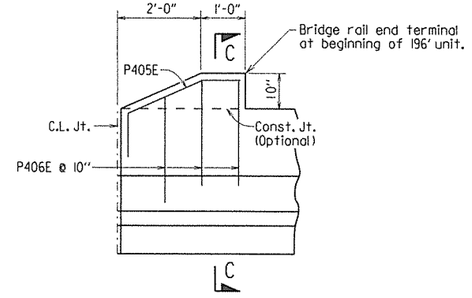
No Scale

NOTE: A 7'-0" Chain Link Fence is required on both sides of the Bridge. The Fence is to be mounted on top of the concrete parapet rail and shall extend from Sta. 107+70 to Sta 110+13 on the left rail and Sta. 106+95 to Sta. 109+38 on the right rail. For fence details, see Dwg. No. 57055.



SECTION C-C

No Scale



DETAIL X

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF 196'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

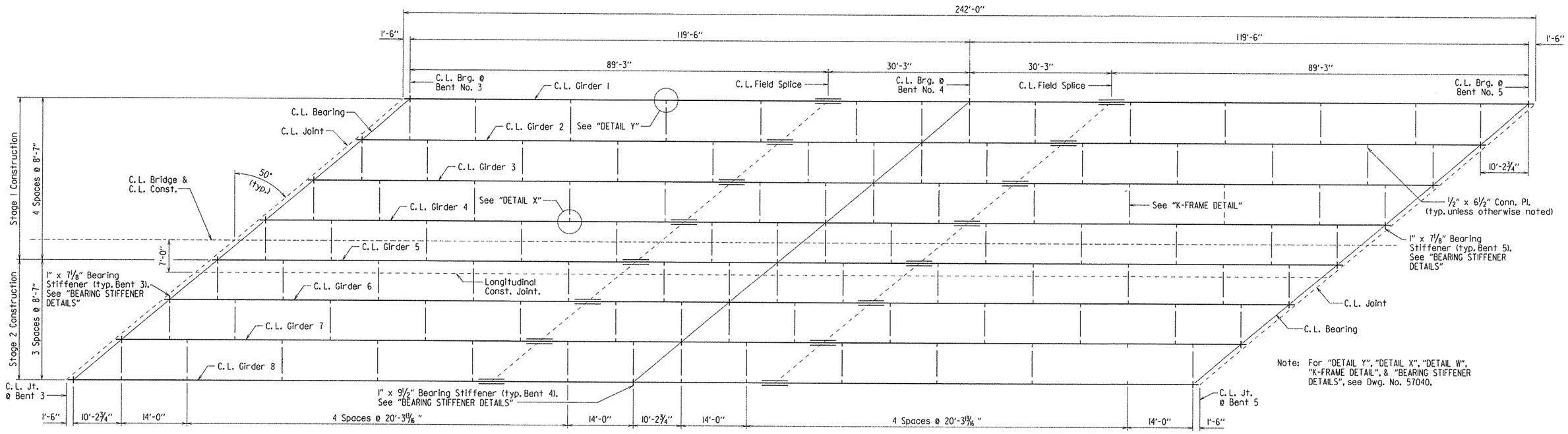
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15 FILENAME: b061348x_sl.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: No Scale
DESIGNED BY: TMG DATE: 9/2014

BRIDGE NO. 07334 DRAWING NO. 57045

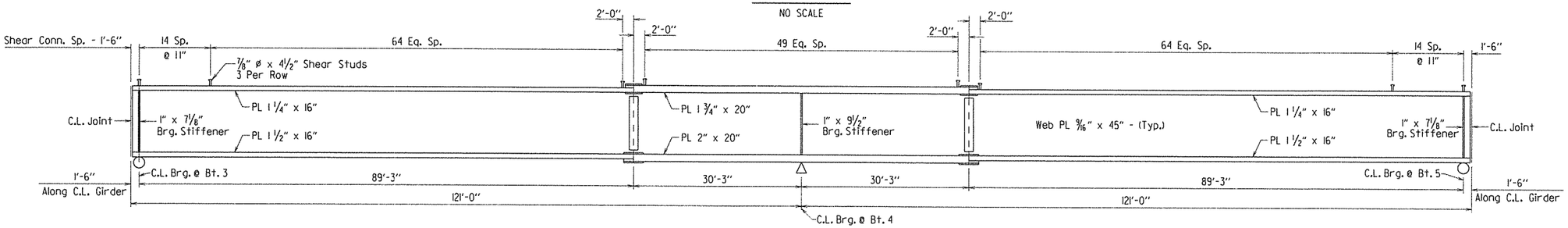
PRINT DATE: 26-MAY-2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	58	131
				(1) 07334 - SPAN DETAILS - 57046				



FRAMING PLAN

NO SCALE



TYPICAL GIRDER ELEVATION

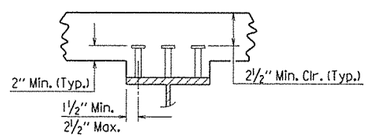
NO SCALE

Notes: See "DETAILS OF SHOP WELDED SPLICES," Dwg. No. 57040.

See "DETAILS OF FIELD SPLICE", Dwg. No. 57048

Notes: All web and flange plates shall be AASHTO M270, Gr. 50W.

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



Stud Shear Connectors shown shall be ⅞"ø x 4½" long, granular flux filled, solid fluxed or equal, and automatically end welded to the girder 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 of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF 242'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15 FILENAME: b061348x_sl.dgn

CHECKED BY: PGT DATE: 4/30/15 SCALE: 3/32" = 1'-0"

DESIGNED BY: TMG DATE: 9/2014

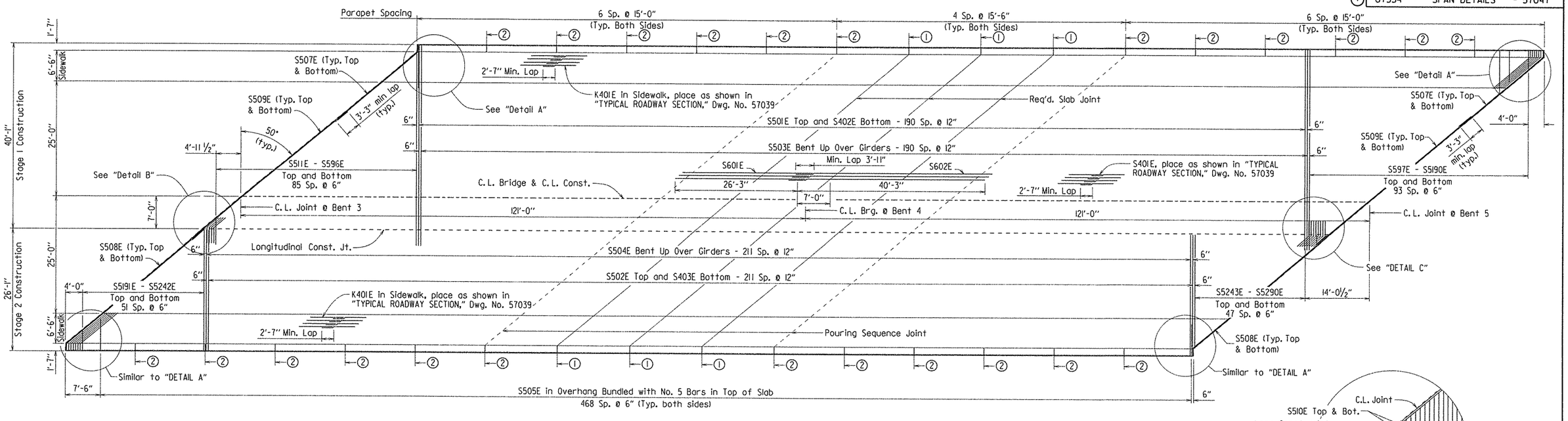
BRIDGE NO. 07334 DRAWING NO. 57046

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	59	131
				① 07334 - SPAN DETAILS - 57047				

① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab. See Dwg. No. 57049.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 57049.



REINFORCING PLAN - 242'-0" UNIT

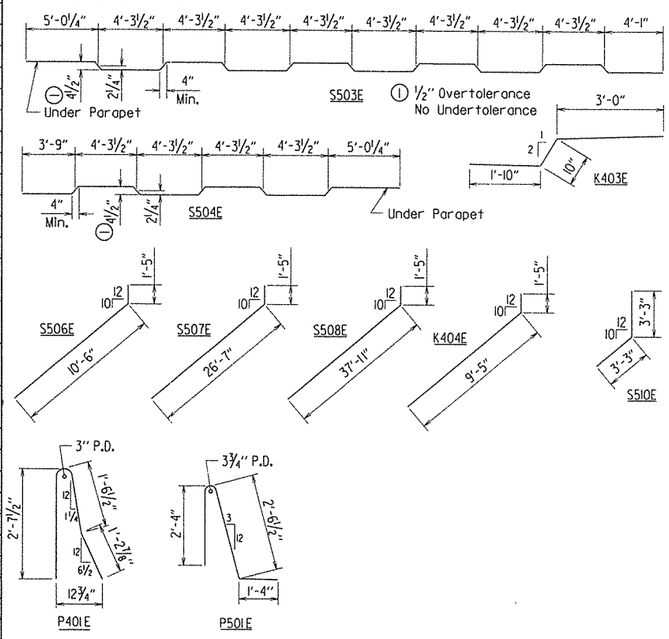
Note: Bars with an "E" suffix shall be epoxy-coated.

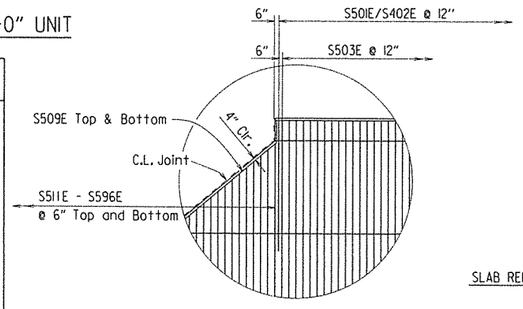
BAR LIST - 242'-0" UNIT

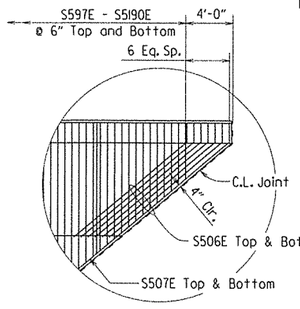
MARK	NUMBER REQUIRED STAGE 1	NUMBER REQUIRED STAGE 2	LENGTH	P.D.
S401E	660	444	42'-6"	Str.
S402E	191	-	42'-7"	Str.
S403E	-	212	25'-9"	Str.
S501E	191	-	43'-5"	Str.
S502E	-	212	25'-9"	Str.
S503E	191	-	44'-5"	3"
S504E	-	212	26'-6"	3"
S505E	469	469	6'-9"	Str.
S506E	12	12	11'-11"	3 3/4"
S507E	4	-	28'-0"	3 3/4"
S508E	-	4	39'-4"	3 3/4"
S509E	4	-	40'-0"	Str.
S510E	28	-	6'-6"	3 3/4"
S511E-S596E	2 Ea.	-	5'-5" to 41'-2"	Str.
S597E-S5190E	2 Ea.	-	43'-1" to 4'-1"	Str.
S5191E-S5242E	-	2 Ea.	4'-1" to 25'-7"	Str.
S5243E-S5290E	-	2 Ea.	23'-9" to 4'-0"	Str.
S601E	42	27	28'-3"	Str.
S602E	42	27	42'-3"	Str.
K401E	48	48	42'-6"	Str.
K402E	232	232	7'-6"	Str.
K403E	232	232	5'-8"	3"
K404E	18	18	10'-10"	3"
P401E	484	484	5'-6"	3"
P402E	84	84	14'-8"	Str.
P403E	28	28	15'-2"	Str.
P404E	48	48	5'-8"	Str.
P501E	484	484	6'-4"	3 3/4"

BENDING DIAGRAMS

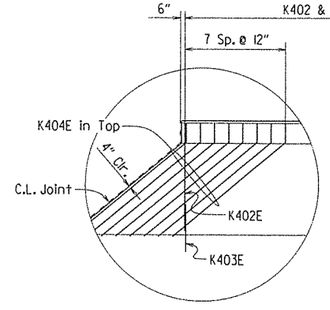
Dimensions are out to out of bars.

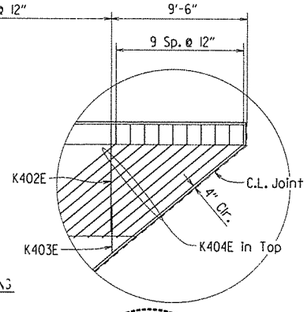






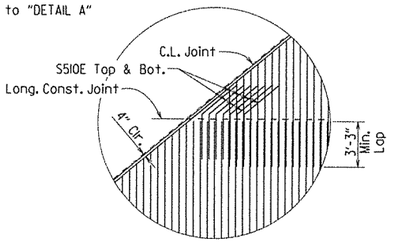
SLAB REINFORCING



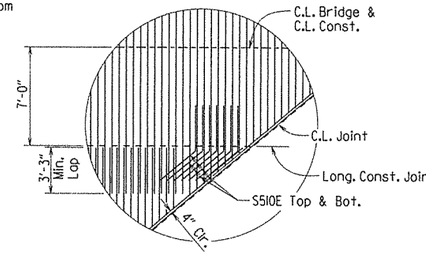


SIDEWALK REINFORCING

DETAIL A
No Scale



DETAIL B
No Scale



DETAIL C
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9255
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

PRINT DATE: 5/26/2015

SHEET 2 OF 4

DETAILS OF 242'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07334 DRAWING NO. 57047

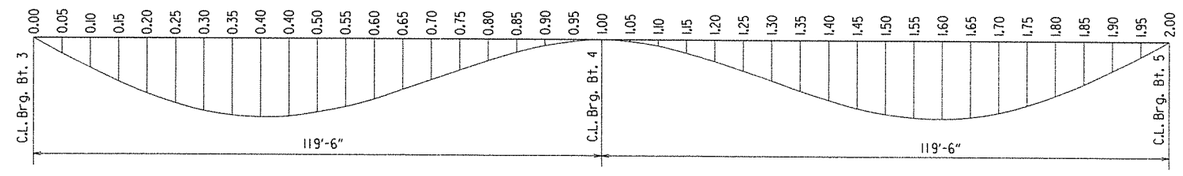
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	(3D)	(13)
				(1)	07334 -	SPAN DETAILS	- 57048	

TABLE OF DEAD LOAD DEFLECTION (INCHES)

Point of Deflection	STRUCTURAL STEEL							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.099	0.102	0.105	0.105	0.106	0.106	0.108	0.105
0.10	0.189	0.197	0.202	0.202	0.203	0.204	0.207	0.202
0.15	0.273	0.285	0.293	0.293	0.294	0.296	0.300	0.294
0.20	0.344	0.360	0.370	0.370	0.371	0.374	0.380	0.372
0.25	0.402	0.421	0.433	0.433	0.434	0.438	0.445	0.436
0.30	0.446	0.467	0.481	0.481	0.483	0.487	0.495	0.485
0.35	0.472	0.495	0.511	0.511	0.513	0.517	0.526	0.517
0.40	0.482	0.506	0.523	0.523	0.525	0.530	0.540	0.531
0.45	0.476	0.500	0.518	0.518	0.520	0.525	0.536	0.528
0.50	0.454	0.477	0.495	0.495	0.497	0.502	0.515	0.508
0.55	0.416	0.437	0.456	0.456	0.458	0.463	0.476	0.469
0.60	0.369	0.389	0.407	0.407	0.409	0.414	0.428	0.422
0.65	0.308	0.327	0.345	0.345	0.347	0.351	0.365	0.362
0.70	0.247	0.265	0.281	0.281	0.283	0.287	0.300	0.299
0.75	0.186	0.201	0.216	0.216	0.217	0.221	0.233	0.233
0.80	0.125	0.136	0.148	0.148	0.150	0.153	0.164	0.165
0.85	0.072	0.079	0.088	0.088	0.090	0.092	0.101	0.103
0.90	0.033	0.037	0.044	0.044	0.045	0.046	0.052	0.055
0.95	0.009	0.011	0.014	0.014	0.015	0.015	0.019	0.021
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.05	0.019	0.019	0.015	0.015	0.014	0.013	0.010	0.008
1.10	0.052	0.052	0.044	0.044	0.043	0.042	0.037	0.031
1.15	0.106	0.105	0.094	0.094	0.093	0.091	0.083	0.074
1.20	0.165	0.163	0.150	0.150	0.148	0.146	0.136	0.124
1.25	0.232	0.232	0.217	0.217	0.215	0.212	0.200	0.186
1.30	0.297	0.299	0.282	0.282	0.280	0.277	0.264	0.246
1.35	0.364	0.367	0.349	0.349	0.347	0.344	0.330	0.310
1.40	0.421	0.426	0.408	0.408	0.406	0.402	0.387	0.364
1.45	0.470	0.477	0.459	0.459	0.457	0.453	0.439	0.412
1.50	0.504	0.513	0.496	0.496	0.494	0.490	0.475	0.447
1.55	0.524	0.534	0.518	0.518	0.516	0.512	0.498	0.470
1.60	0.529	0.540	0.525	0.525	0.523	0.519	0.506	0.481
1.65	0.516	0.526	0.513	0.513	0.511	0.508	0.495	0.472
1.70	0.485	0.495	0.483	0.483	0.481	0.479	0.467	0.445
1.75	0.435	0.445	0.434	0.434	0.433	0.431	0.421	0.401
1.80	0.372	0.380	0.372	0.372	0.371	0.368	0.360	0.344
1.85	0.295	0.301	0.294	0.294	0.294	0.292	0.286	0.273
1.90	0.203	0.207	0.203	0.203	0.202	0.201	0.197	0.189
1.95	0.106	0.108	0.106	0.106	0.105	0.105	0.103	0.099
2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Point of Deflection	STRUCTURAL STEEL + SLAB							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.441	0.499	0.515	0.515	0.518	0.522	0.525	0.469
0.10	0.843	0.958	0.989	0.989	0.995	1.003	1.008	0.903
0.15	1.219	1.389	1.436	1.436	1.443	1.456	1.463	1.314
0.20	1.535	1.752	1.812	1.812	1.821	1.838	1.849	1.662
0.25	1.790	2.045	2.118	2.118	2.129	2.150	2.164	1.947
0.30	1.985	2.269	2.352	2.352	2.366	2.389	2.408	2.167
0.35	2.100	2.403	2.496	2.496	2.510	2.535	2.559	2.306
0.40	2.141	2.454	2.553	2.553	2.568	2.595	2.625	2.367
0.45	2.111	2.421	2.525	2.525	2.540	2.568	2.603	2.351
0.50	2.008	2.305	2.410	2.410	2.425	2.453	2.496	2.258
0.55	1.837	2.110	2.215	2.215	2.231	2.258	2.305	2.084
0.60	1.625	1.873	1.974	1.974	1.989	2.016	2.067	1.871
0.65	1.351	1.571	1.668	1.668	1.682	1.706	1.760	1.601
0.70	1.078	1.267	1.355	1.355	1.368	1.390	1.443	1.321
0.75	0.806	0.958	1.036	1.036	1.047	1.066	1.118	1.028
0.80	0.537	0.646	0.710	0.710	0.720	0.735	0.782	0.726
0.85	0.306	0.372	0.421	0.421	0.430	0.441	0.480	0.454
0.90	0.140	0.173	0.208	0.208	0.213	0.220	0.249	0.242
0.95	0.037	0.049	0.066	0.066	0.070	0.073	0.089	0.091
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.05	0.083	0.088	0.069	0.069	0.066	0.062	0.047	0.031
1.10	0.231	0.247	0.211	0.211	0.206	0.200	0.172	0.130
1.15	0.466	0.498	0.448	0.448	0.443	0.433	0.391	0.315
1.20	0.725	0.779	0.719	0.719	0.711	0.699	0.646	0.533
1.25	1.022	1.111	1.042	1.042	1.034	1.020	0.955	0.806
1.30	1.312	1.434	1.360	1.360	1.352	1.336	1.263	1.075
1.35	1.613	1.767	1.691	1.691	1.683	1.667	1.586	1.359
1.40	1.869	2.054	1.979	1.979	1.970	1.953	1.867	1.604
1.45	2.089	2.306	2.233	2.233	2.225	2.208	2.119	1.818
1.50	2.244	2.484	2.416	2.416	2.408	2.391	2.301	1.979
1.55	2.334	2.588	2.525	2.525	2.519	2.502	2.414	2.085
1.60	2.357	2.618	2.562	2.562	2.556	2.540	2.456	2.138
1.65	2.302	2.554	2.506	2.506	2.500	2.486	2.407	2.097
1.70	2.167	2.404	2.363	2.363	2.358	2.346	2.273	1.982
1.75	1.945	2.161	2.126	2.126	2.123	2.112	2.049	1.787
1.80	1.662	1.847	1.820	1.820	1.817	1.807	1.755	1.533
1.85	1.317	1.462	1.441	1.441	1.440	1.433	1.393	1.218
1.90	0.909	1.007	0.994	0.994	0.992	0.987	0.961	0.842
1.95	0.474	0.524	0.518	0.518	0.517	0.515	0.501	0.440
2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

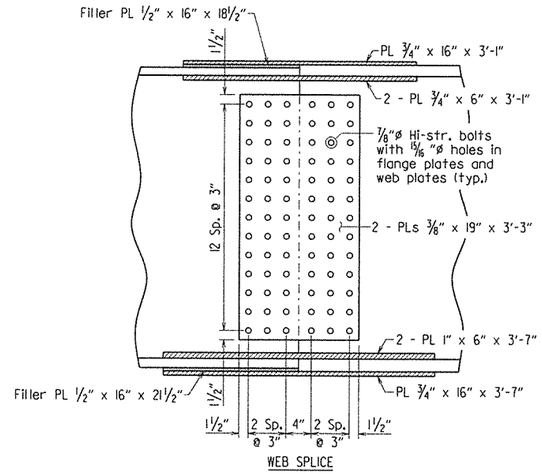
Point of Deflection	STRUCTURAL STEEL + SLAB + SIDEWALK + PARAPET							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.542	0.557	0.557	0.557	0.562	0.577	0.605	0.585
0.10	1.036	1.070	1.070	1.070	1.080	1.107	1.160	1.126
0.15	1.498	1.554	1.553	1.553	1.566	1.606	1.681	1.637
0.20	1.886	1.963	1.960	1.960	1.975	2.026	2.122	2.071
0.25	2.199	2.294	2.291	2.291	2.309	2.368	2.481	2.427
0.30	2.437	2.549	2.545	2.545	2.566	2.629	2.757	2.704
0.35	2.577	2.703	2.701	2.701	2.722	2.789	2.927	2.881
0.40	2.625	2.764	2.763	2.763	2.785	2.853	3.000	2.962
0.45	2.587	2.730	2.733	2.733	2.754	2.823	2.972	2.947
0.50	2.460	2.603	2.609	2.609	2.630	2.695	2.847	2.836
0.55	2.249	2.386	2.398	2.398	2.420	2.481	2.627	2.625
0.60	1.989	2.120	2.138	2.138	2.158	2.214	2.354	2.363
0.65	1.652	1.781	1.807	1.807	1.825	1.874	2.002	2.027
0.70	1.317	1.438	1.468	1.468	1.485	1.527	1.640	1.677
0.75	0.982	1.089	1.123	1.123	1.137	1.171	1.270	1.310
0.80	0.651	0.735	0.770	0.770	0.782	0.808	0.887	0.929
0.85	0.369	0.424	0.456	0.456	0.468	0.485	0.544	0.584
0.90	0.167	0.198	0.225	0.225	0.232	0.243	0.282	0.314
0.95	0.043	0.056	0.071	0.071	0.076	0.081	0.101	0.119
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.05	0.109	0.100	0.075	0.075	0.071	0.067	0.054	0.035
1.10	0.300	0.280	0.230	0.230	0.223	0.218	0.196	0.155
1.15	0.600	0.565	0.488	0.488	0.480	0.473	0.445	0.379
1.20	0.928	0.884	0.782	0.782	0.770	0.764	0.735	0.646
1.25	1.302	1.262	1.132	1.132	1.120	1.115	1.085	0.982
1.30	1.666	1.631	1.477	1.477	1.464	1.460	1.432	1.313
1.35	2.042	2.011	1.836	1.836	1.822	1.821	1.796	1.662
1.40	2.360	2.340	2.148	2.148	2.133	2.133	2.112	1.963
1.45	2.630	2.629	2.423	2.423	2.408	2.411	2.394	2.226
1.50	2.819	2.835	2.621	2.621	2.606	2.609	2.597	2.424
1.55	2.926	2.956	2.739	2.739	2.726	2.730	2.721	2.556
1.60	2.950	2.993	2.779	2.779	2.765	2.770	2.765	2.622
1.65	2.876	2.922	2.718	2.718	2.704	2.710	2.706	2.573
1.70	2.704	2.753	2.563	2.563	2.551	2.557	2.552	2.434
1.75	2.425	2.478	2.307	2.307	2.296	2.301	2.297	2.195
1.80	2.071	2.120	1.975	1.975	1.965	1.968	1.965	1.884
1.85	1.641	1.680	1.564	1.564	1.557	1.560	1.558	1.497
1.90	1.133	1.159	1.079	1.079	1.073	1.074	1.073	1.035
1.95	0.591	0.604	0.562	0.562	0.559	0.560	0.559	0.541
2.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



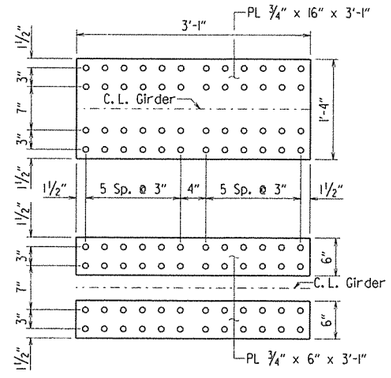
NOTE:
Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance.
Deflections shown are along C.L. Girder from C.L. Bearing to C.L. Bearing.
Vertical curve corrections not included. Negative sign (-) indicates point above chord.

DEAD LOAD DEFLECTION DIAGRAM

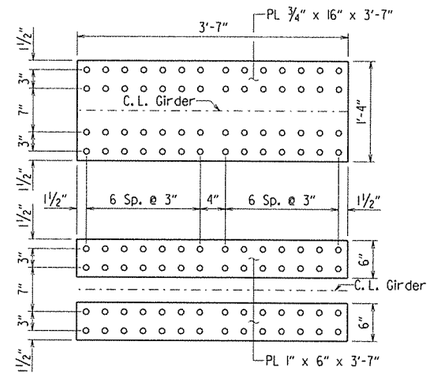
NO SCALE



WEB SPLICE



TOP FLANGE SPLICE



BOTTOM FLANGE SPLICE

DETAILS OF FIELD SPLICE

NO SCALE

All field splice plates shall be AASHTO M270, Gr. 50W

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF 242'-0" CONT. PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: 3/8" = 1'-0"

BRIDGE NO. 07334

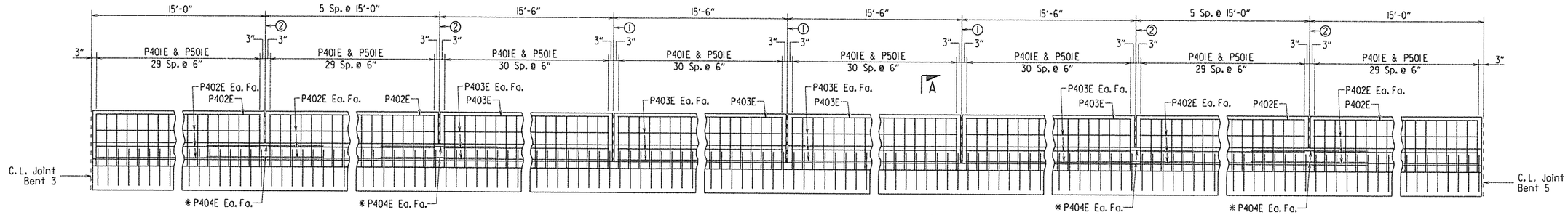
DRAWING NO. 57048

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	(61)	(63)
				(1) 07334 - SPAN DETAILS			-	57049

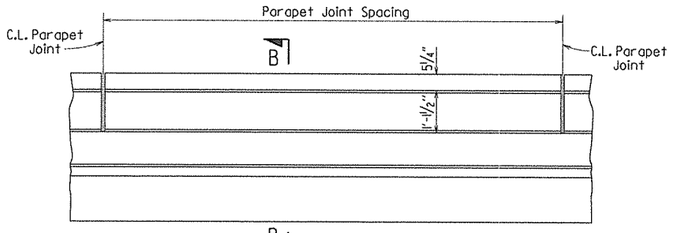
① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab.

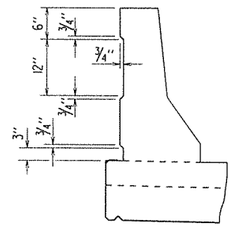


* 2'-7" Min. Lap #4 Bars

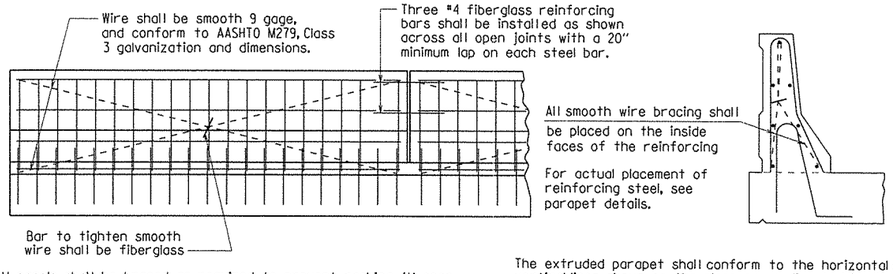
PARAPET RAIL DETAIL
No Scale



DETAILS OF PARAPET ENHANCEMENT
Outside Face Of Rail
No Scale



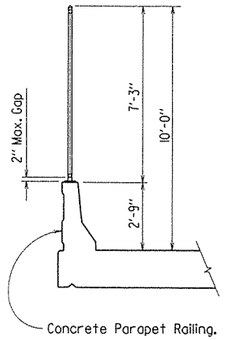
SECTION B-B
No Scale



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 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

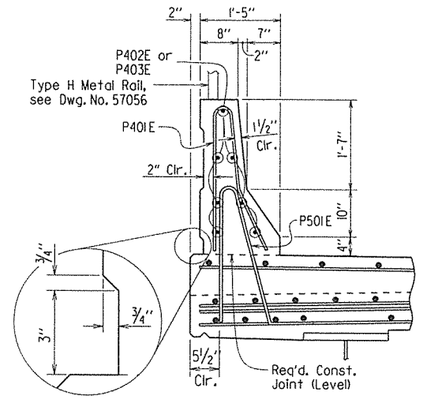
The extruded parapet shall conform to the horizontal and vertical lines shown on the plans or as directed by the Engineer and shall present a smooth, uniform appearance and texture. Exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed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

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
No Scale



TYPICAL SECTION - CHAIN LINK FENCE
No Scale

NOTE: A 7'-0" Chain Link Fence is required on both sides of the Bridge. The Fence is to be mounted on top of the concrete parapet rail and shall extend from Sta. 107+70 to Sta 110+13 on the left rail and Sta. 106+95 to Sta. 109+38 on the right rail. For fence details, see Dwg. No. 57055.



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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF 242'-0" CONT. PLATE GIRDER UNIT
ROUTE SEC.

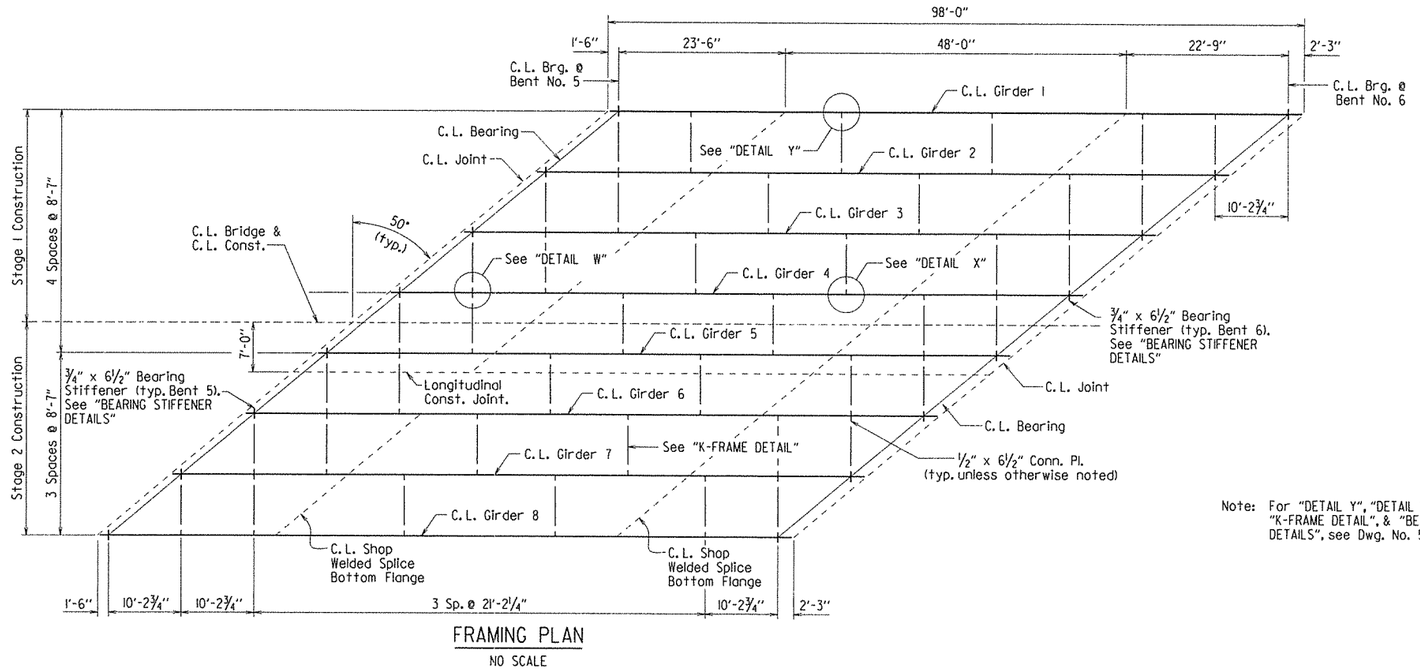
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: 3/8" = 1'-0" or as noted

BRIDGE NO. 07334 DRAWING NO. 57049

PRINT DATE: 26-MAY-2015

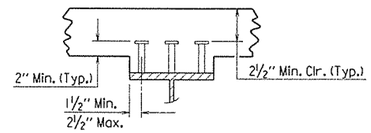
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	62	131
				(1) 07334 - SPAN DETAILS - 57050				



FRAMING PLAN

NO SCALE

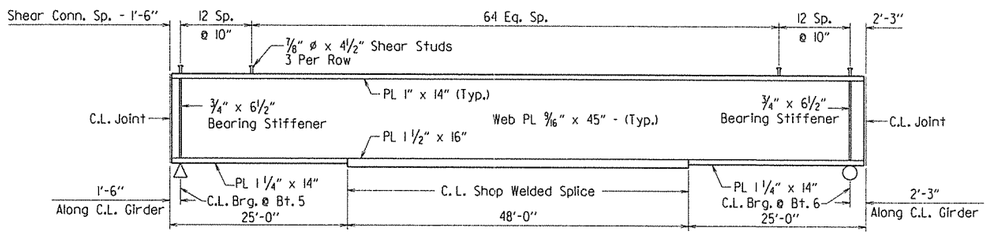
Note: For "DETAIL Y", "DETAIL X", "DETAIL W", "K-FRAME DETAIL", & "BEARING STIFFENER DETAILS", see Dwg. No. 57040.



Stud Shear Connectors shown shall be ⅞"ø x 4½" long, granular flux filled, solid fluxed or equal, and automatically end welded to the girder 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 of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors.

SHEAR CONNECTOR DETAIL

No Scale



TYPICAL GIRDER ELEVATION

NO SCALE

Notes: See "DETAILS OF SHOP WELDED SPLICES," Dwg. No. 57040.

STATE OF ARKANSAS
Charles R. Ellis
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5-27-15
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BRIDGE ENGINEER

SHEET 1 OF 4

DETAILS OF 98'-0" SIMPLE PLATE GIRDER SPAN

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

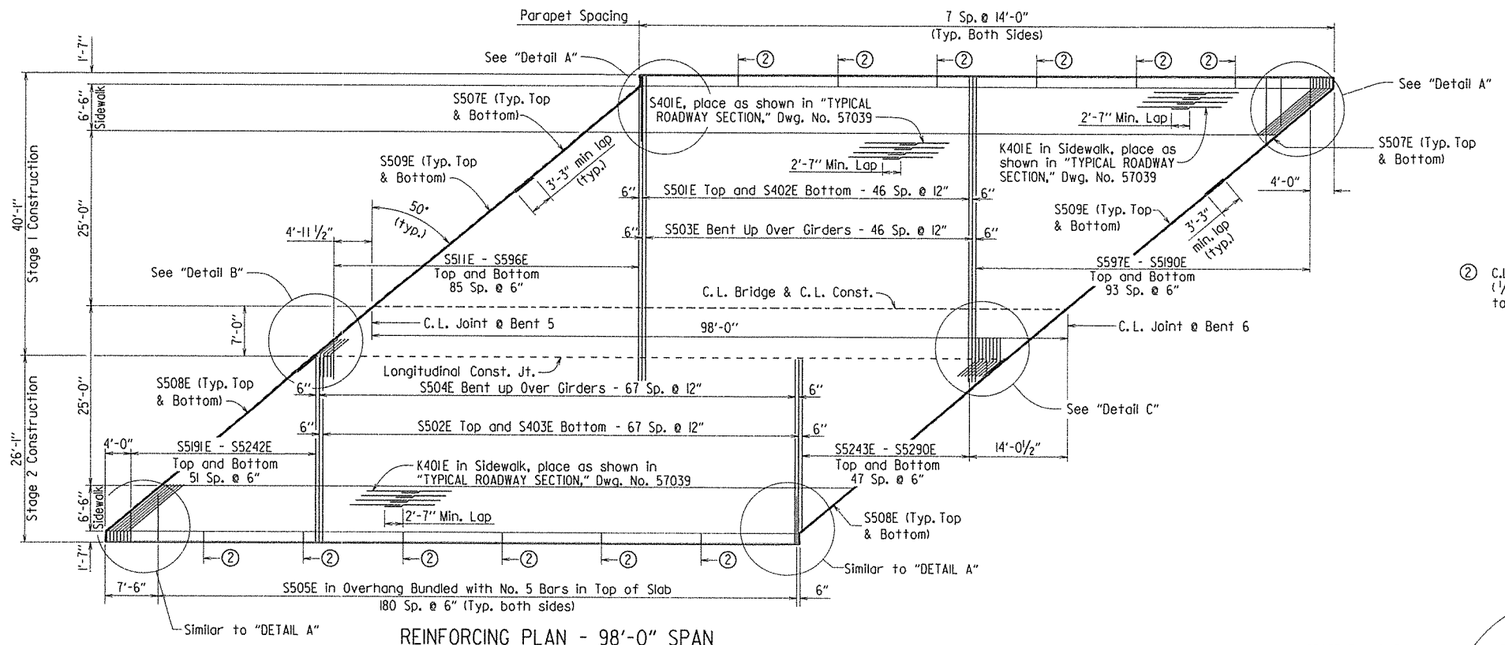
DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014

FILENAME: b061348x_sl.dgn
SCALE: 3/32 " = 1'-0"

BRIDGE NO. 07334

DRAWING NO. 57050

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.		061348	03	13
				(1)	07334 - SPAN DETAILS - 57051			



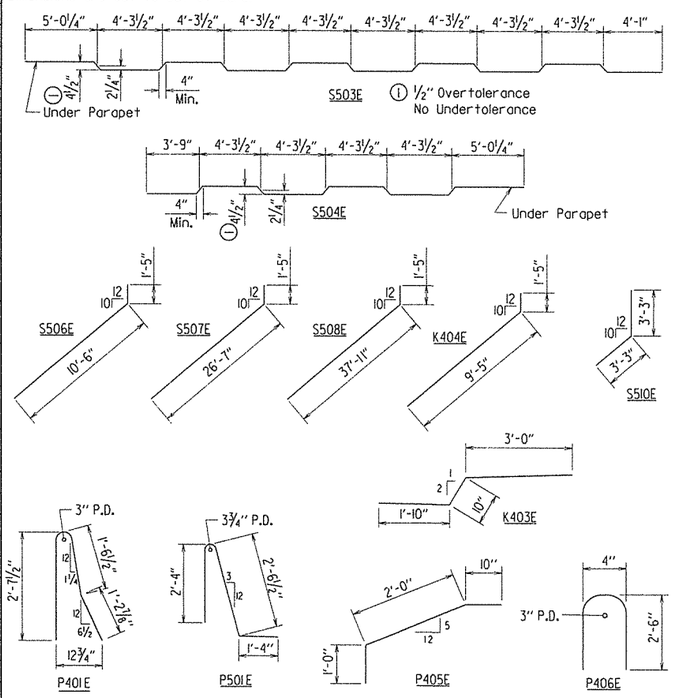
REINFORCING PLAN - 98'-0" SPAN

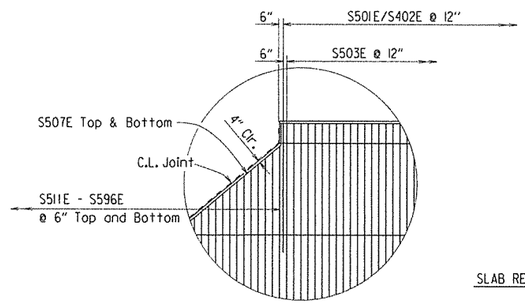
(2) C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 57053.

BAR LIST - 98'-0" SPAN

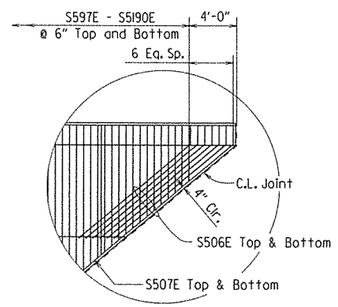
Note: Bars with an "E" suffix shall be epoxy-coated.

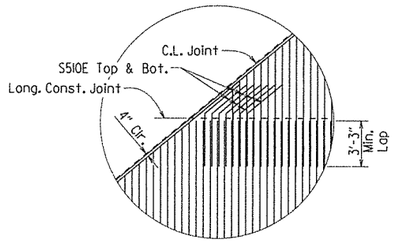
MARK	NUMBER REQUIRED STAGE 1	NUMBER REQUIRED STAGE 2	LENGTH	P.D.	BENDING DIAGRAMS
S401E	330	222	34'-4"	Str.	Dimensions are out to out of bars.
S402E	47	-	42'-7"	Str.	
S403E	-	68	25'-9"	Str.	
S501E	47	-	43'-5"	Str.	
S502E	-	68	25'-9"	Str.	
S503E	47	-	44'-5"	3"	
S504E	-	68	26'-6"	3"	
S505E	181	181	6'-9"	Str.	
S506E	12	12	11'-11"	3 3/4"	
S507E	4	-	28'-0"	3 3/4"	
S508E	-	4	39'-4"	3 3/4"	
S509E	4	-	40'-0"	Str.	
S510E	28	-	6'-6"	3 3/4"	
S511E-S596E	2 Eq.	-	5'-6" to 41'-2"	Str.	
S597E-S5190E	2 Eq.	-	43'-1" to 4'-1"	Str.	
S5191E-S5242E	-	2 Eq.	4'-1" to 25'-7"	Str.	
S5243E-S5290E	-	2 Eq.	23'-9" to 4'-0"	Str.	
K401E	24	24	34'-4"	Str.	
K402E	88	88	7'-6"	Str.	
K403E	88	88	5'-8"	3"	
K404E	18	18	10'-10"	3"	
P401E	196	196	5'-6"	3"	
P402E	49	49	13'-8"	Str.	
-	-	-	-	-	-
P404E	24	24	5'-8"	Str.	
P405E	1	1	3'-10"	3"	
P406E	3	3	5'-2"	3"	
P501E	196	196	6'-4"	3 3/4"	



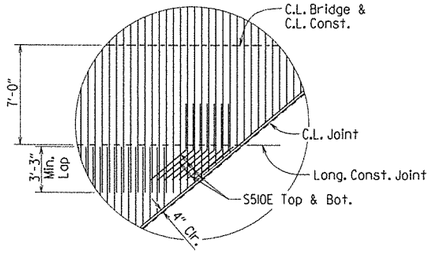


SLAB REINFORCING

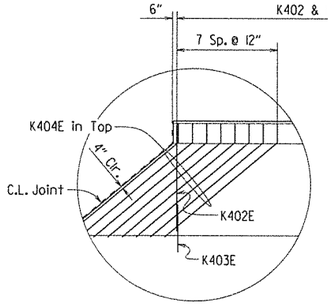


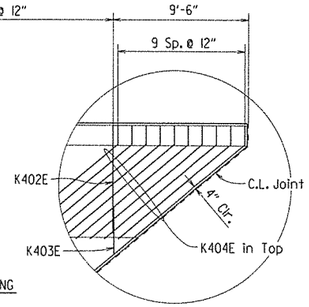


DETAIL B
No Scale



DETAIL C
No Scale





SIDEWALK REINFORCING

DETAIL A
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF 98'-0" SIMPLE PLATE GIRDER SPAN

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: 3/32" = 1'-0"

BRIDGE NO. 07334 DRAWING NO. 57051

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

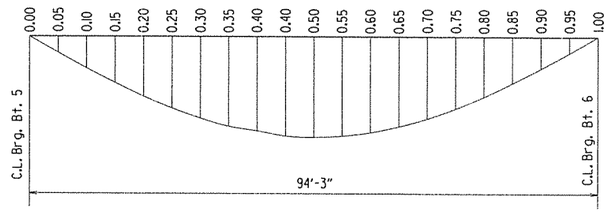
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		061348	64	131
1	07334 -	SPAN DETAILS	-	57052

TABLE OF DEAD LOAD DEFLECTION (INCHES)

Point of Deflection	STRUCTURAL STEEL							
	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.05	0.099	0.095	0.095	0.096	0.096	0.096	0.096	0.099
0.10	0.191	0.185	0.185	0.187	0.187	0.186	0.187	0.191
0.15	0.278	0.269	0.269	0.272	0.272	0.271	0.271	0.278
0.20	0.358	0.348	0.348	0.351	0.352	0.351	0.350	0.358
0.25	0.429	0.418	0.418	0.422	0.422	0.421	0.420	0.429
0.30	0.487	0.476	0.476	0.480	0.481	0.479	0.477	0.487
0.35	0.534	0.523	0.523	0.527	0.527	0.526	0.523	0.534
0.40	0.568	0.558	0.558	0.562	0.562	0.561	0.556	0.568
0.45	0.589	0.580	0.580	0.583	0.584	0.582	0.577	0.589
0.50	0.596	0.587	0.587	0.591	0.591	0.589	0.583	0.596
0.55	0.588	0.580	0.580	0.584	0.584	0.581	0.575	0.588
0.60	0.567	0.560	0.560	0.563	0.563	0.561	0.553	0.567
0.65	0.533	0.526	0.526	0.528	0.528	0.526	0.518	0.533
0.70	0.486	0.480	0.480	0.482	0.482	0.479	0.472	0.486
0.75	0.428	0.422	0.422	0.423	0.423	0.421	0.414	0.428
0.80	0.356	0.352	0.352	0.353	0.353	0.351	0.345	0.356
0.85	0.276	0.271	0.271	0.272	0.272	0.271	0.266	0.276
0.90	0.189	0.186	0.186	0.187	0.187	0.186	0.182	0.189
0.95	0.098	0.096	0.096	0.096	0.096	0.095	0.094	0.098
1.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

STRUCTURAL STEEL + SLAB							
G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.524	0.525	0.525	0.533	0.534	0.531	0.524	0.524
1.014	1.020	1.020	1.036	1.038	1.031	1.019	1.014
1.472	1.484	1.484	1.508	1.511	1.501	1.482	1.472
1.895	1.918	1.918	1.948	1.953	1.942	1.916	1.895
2.268	2.302	2.302	2.338	2.343	2.330	2.298	2.268
2.575	2.622	2.622	2.662	2.669	2.654	2.615	2.575
2.817	2.879	2.879	2.921	2.928	2.912	2.868	2.817
2.993	3.073	3.073	3.115	3.123	3.106	3.055	2.993
3.101	3.192	3.192	3.234	3.242	3.224	3.169	3.101
3.136	3.232	3.232	3.275	3.282	3.263	3.205	3.136
3.094	3.194	3.194	3.235	3.242	3.222	3.163	3.094
2.983	3.083	3.083	3.121	3.127	3.109	3.047	2.983
2.801	2.895	2.895	2.928	2.934	2.917	2.857	2.801
2.555	2.641	2.641	2.670	2.676	2.659	2.603	2.555
2.247	2.321	2.321	2.346	2.351	2.336	2.285	2.247
1.872	1.936	1.936	1.956	1.961	1.948	1.905	1.872
1.449	1.493	1.493	1.509	1.513	1.504	1.470	1.449
0.995	1.024	1.024	1.035	1.038	1.032	1.008	0.995
0.513	0.526	0.526	0.532	0.533	0.530	0.519	0.513
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

STRUCTURAL STEEL + SLAB + SIDEWALK + PARAPET							
G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.604	0.579	0.579	0.582	0.581	0.580	0.585	0.604
1.170	1.124	1.124	1.130	1.129	1.126	1.138	1.170
1.702	1.635	1.635	1.644	1.642	1.639	1.654	1.702
2.196	2.112	2.112	2.123	2.121	2.120	2.138	2.196
2.634	2.534	2.534	2.547	2.544	2.542	2.564	2.634
2.996	2.885	2.885	2.898	2.897	2.894	2.917	2.996
3.284	3.167	3.167	3.179	3.177	3.175	3.197	3.284
3.496	3.379	3.379	3.389	3.388	3.385	3.405	3.496
3.629	3.509	3.509	3.518	3.516	3.513	3.530	3.629
3.675	3.554	3.554	3.562	3.559	3.555	3.568	3.675
3.630	3.513	3.513	3.519	3.516	3.510	3.520	3.630
3.505	3.392	3.392	3.396	3.392	3.387	3.390	3.505
3.296	3.188	3.188	3.187	3.183	3.178	3.177	3.296
3.010	2.910	2.910	2.907	2.904	2.898	2.893	3.010
2.649	2.560	2.560	2.555	2.552	2.546	2.538	2.649
2.208	2.138	2.138	2.132	2.130	2.124	2.114	2.208
1.708	1.651	1.651	1.646	1.644	1.639	1.629	1.708
1.173	1.134	1.134	1.130	1.128	1.125	1.116	1.173
0.604	0.583	0.583	0.581	0.579	0.578	0.574	0.604
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



NOTE:
Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance.
Deflections shown are along C.L. Girder from C.L. Bearing to C.L. Bearing.
Vertical curve corrections not included.

DEAD LOAD DEFLECTION DIAGRAM

NO SCALE

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF 98'-0" SIMPLE PLATE GIRDER SPAN

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
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FILENAME: b061348x_sl.dgn
SCALE: 3/8" = 1'-0"

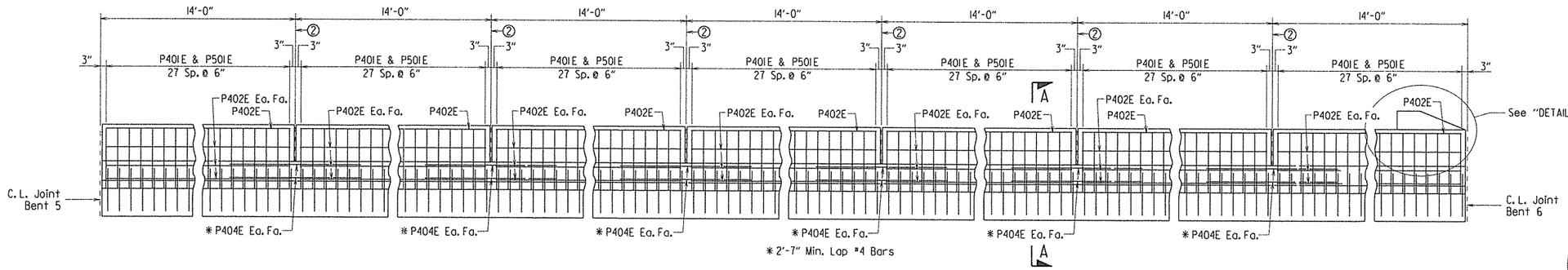
BRIDGE NO. 07334

DRAWING NO. 57052

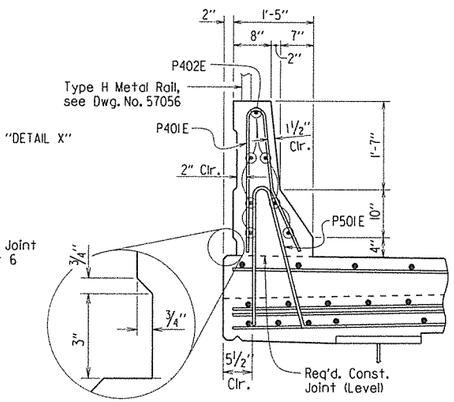
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	65	131
				(1) 07334 - SPAN DETAILS			-	57053

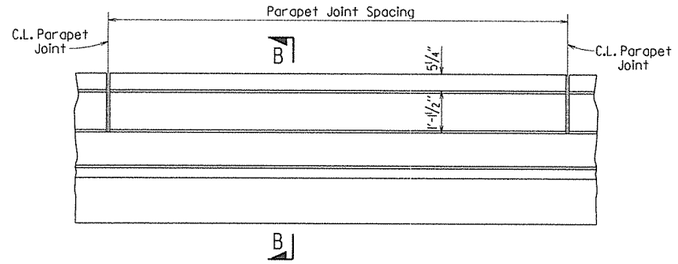
② C.L Partial-Depth Parapet Joint (1¼" to 1" Max.). Stop 1'-2" from top of sidewalk.



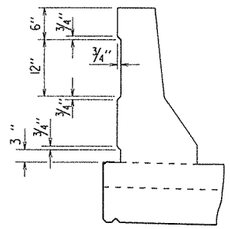
PARAPET RAIL DETAIL
No Scale



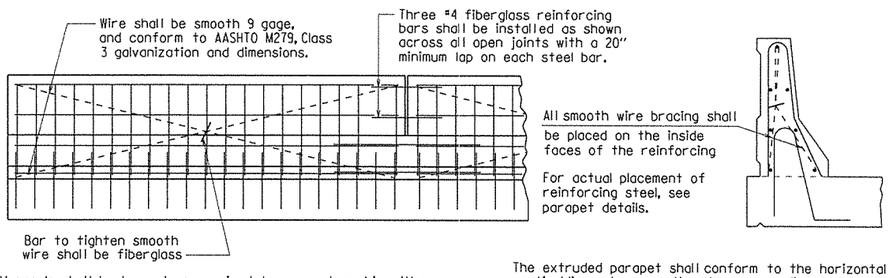
SECTION A-A
Scale : ¾" = 1'-0"



DETAILS OF PARAPET ENHANCEMENT
Outside Face Of Rail
No Scale



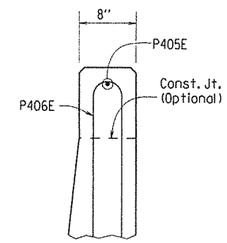
SECTION B-B
No Scale



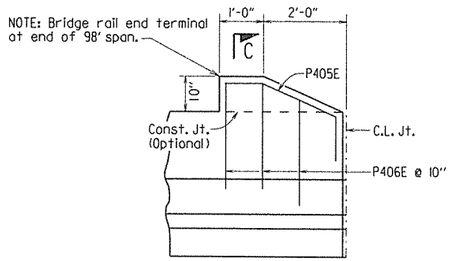
All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of ¼". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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. Exposed surfaces may be given a light brush finish or a Class 3, Textured Coating Finish, in place of the Class 2, Rubbed Finish.

DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL
No Scale



SECTION C-C
No Scale



DETAIL X
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF 98'-0" SIMPLE PLATE GIRDER SPAN

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

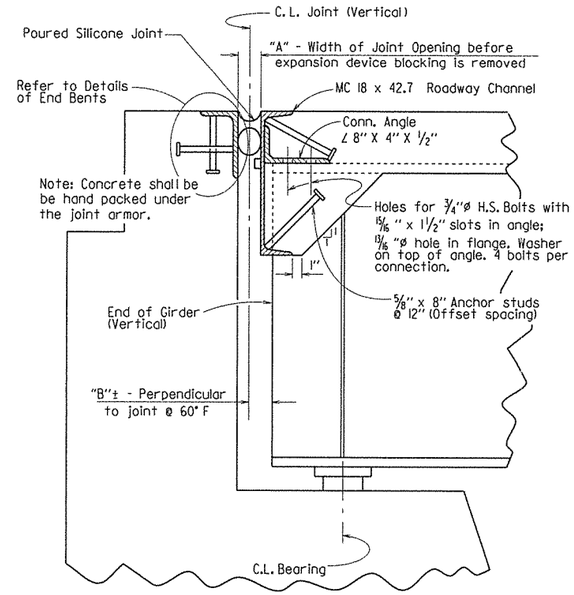
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 1-7-15
CHECKED BY: PGT DATE: 4/30/15
DESIGNED BY: TMG DATE: 9/2014
FILENAME: b061348x_sl.dgn
SCALE: ⅜" = 1'-0" or as noted

BRIDGE NO. 07334 DRAWING NO. 57053

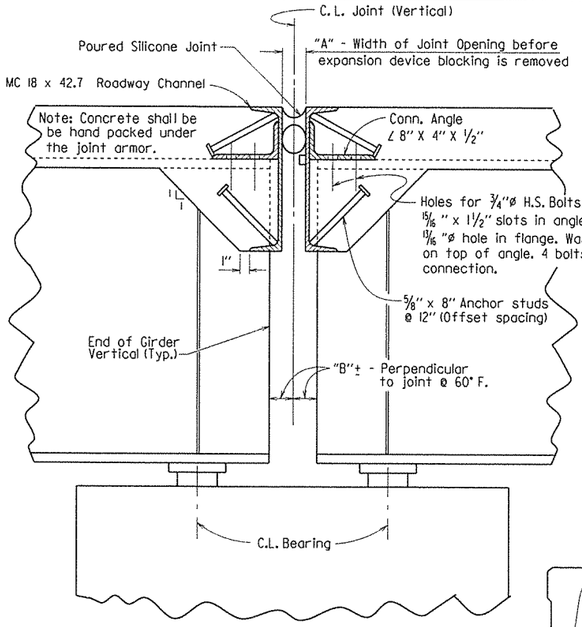
PRINT DATE: 26-MAY-2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	Note 131	
				① 07334 - JOINT DETAILS - 57054				



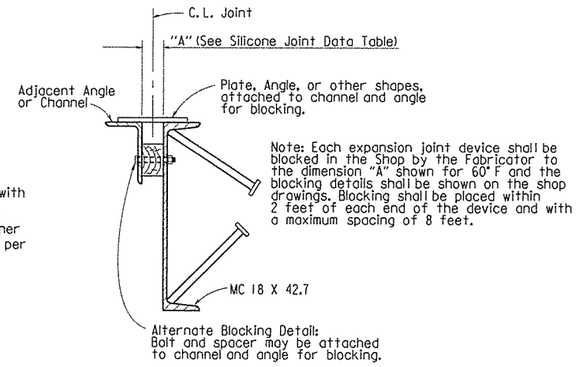
Note: Section taken perpendicular to C.L. Joint

SECTION THRU JOINT AT END BENT



Note: Section taken perpendicular to C.L. Joint

SECTION THRU JOINT AT INT. BENT



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

Shown at End Bent. Intermediate Bent similar.

EXPANSION DEVICE INSTALLATION AT END BENTS:

The Contractor may elect to install the expansion device using one of the following two alternatives:

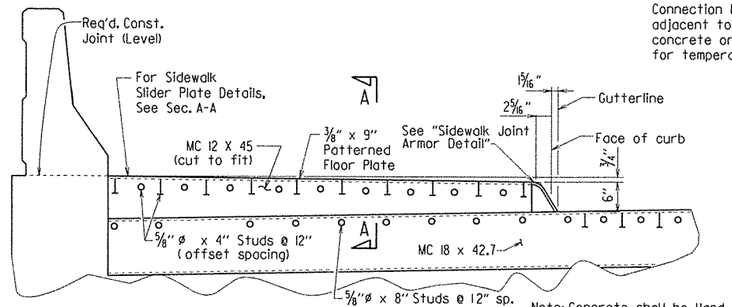
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing 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.
No backfill may be placed behind the backwall until the deck concrete on the adjacent spans has been placed.

EXPANSION DEVICE INSTALLATION AT INTERMEDIATE BENTS:

After all girders on each side of the joint are erected the blocked expansion device shall be installed and adjusted for grade. Deck concrete shall be placed for the entire unit or span on one side of the joint before deck concrete on the other side is placed. Connection bolts for the first side to have deck concrete placed shall be completely bolted. Bolts on the other side shall be loosely installed so that thermal and rotational movements will not be restricted during concrete placement on the first side.

Connection bolts on the second side shall remain loose until the concrete pour adjacent to the joint is to be placed. Immediately prior to pouring the span concrete on the second side, the blocking shall be removed, the joint adjusted for temperature and grade, and the connection bolts tightened.



SIDEWALK DETAIL

Shown at Span

Note: Concrete shall be Hand Packed Under Joint Armor.

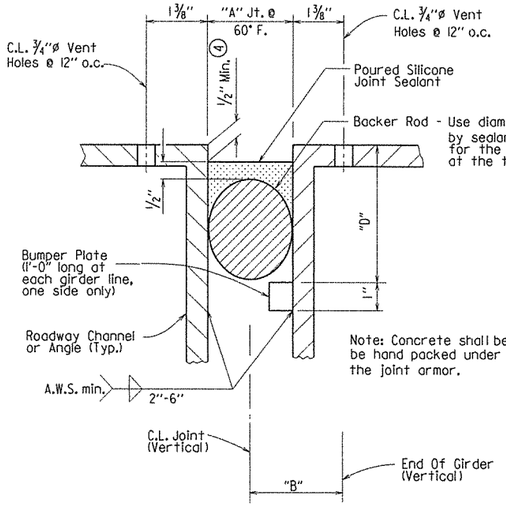
① Countersink 11/16 " dia. holes in ⅜" Patterned Plate. Tap the 4" leg of angles or channel for ASTM A449 5/8" ø screw @ 12" o.c. Install screws in the shop and ship as a unit. For the end bent locations, screws on the span side are to be removed, while the screws on the backwall side are to remain in place after erection. For exp. devices at int. bent locations, screws on only one of the span sides are to be removed, while the screws on the other span side are to remain in place after erection. See notes for Expansion Device Installation.

② Remove bottom flange and trim web of MC 12X45 as needed.

③ Dimensions shown @ 60° F

④ Recess depth as recommended by the sealant Manufacturer

Note:
Backer rods shall be extended beyond length of poured joint in Stage I so that the two pieces can be properly spliced together prior to installing sealant for Stage 2. Manufacturer's recommendations shall be followed to prevent sealant from "running out of the joint" during stage construction.



DETAIL OF POURED SILICONE JOINT

SILICONE JOINT DATA

Bent No.	"A" Width Perpendicular to Joint at 24 Hour Average Temperature ⑤ Of:			"B" Perpendicular to Joint at 60°F	"D"	Bumper Plate Size
	40°F	60°F	80°F			
1 or 6	1 7/8"	1¾"	1 5/8"	2¼" ±	4¼"	1" x ⅞"
3 or 5	2"	1 7/8"	1¾"	2¼" ±	4¼"	1" x 1"

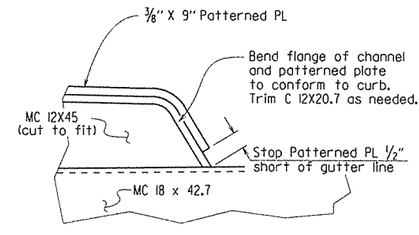
⑤ The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

Notes:
The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

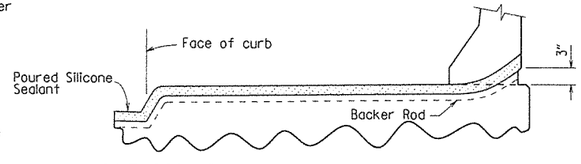
Use an appropriately sized backer rod at the depth shown in the Manufacturer's literature based on the joint width at the time of sealing. Unless otherwise noted, do not install more backer rod than can be sealed in the same day.

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

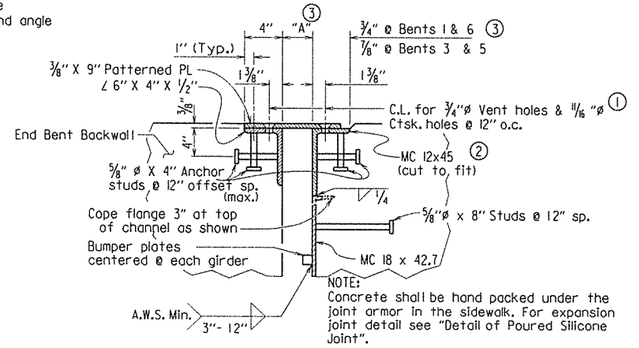
NOTE:
The surfaces of the ⅜" pattern PL and C12X20.7 not in contact with concrete shall be painted in accordance with Section 638 or as approved by the Engineer. Only one coat is required and shall be applied in the Fabricator's shop. Painting will not be paid for directly, but shall be considered subsidiary to "Structural Steel in Plate Girder Spans (M270, Gr. 50W)". Pattern Plate and angle shall be M270, Gr. 36 or as approved by the Engineer and shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".



SIDEWALK JOINT ARMOR DETAIL



JOINT SEAL PLACEMENT AT SIDEWALK & PARAPET



NOTE:
Concrete shall be hand packed under the joint armor in the sidewalk. For expansion joint detail see "Detail of Poured Silicone Joint".

SECTION A-A

Shown at End Bent. Intermediate Bent similar.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS
BRIDGE ENGINEER

POURED SILICONE JOINT DETAILS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

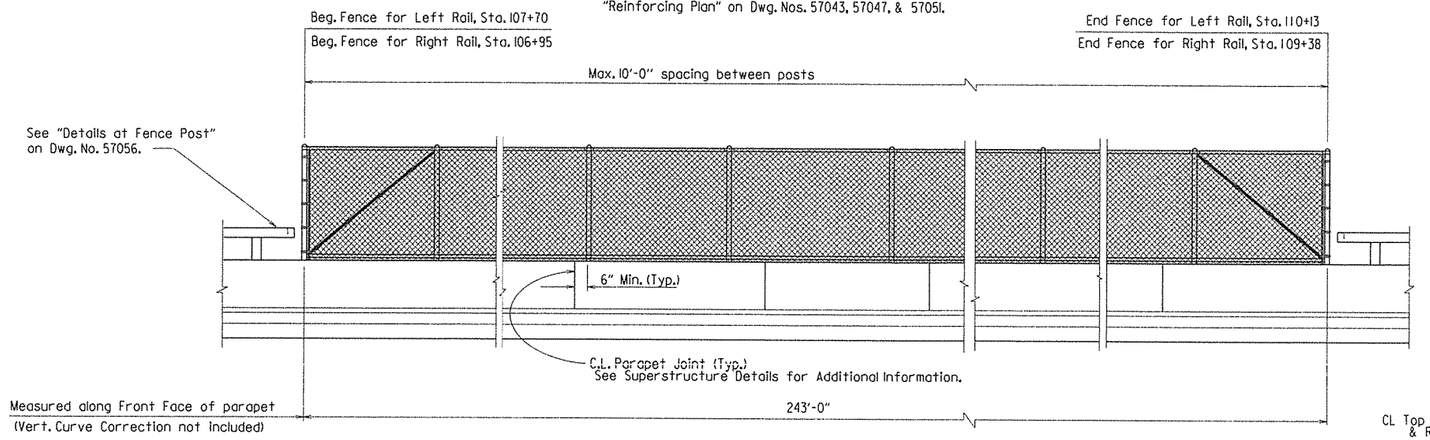
DRAWN BY: JAC DATE: 11-24-2014 FILENAME: B061348xl_PSJt.dgn
CHECKED BY: PLT DATE: 4/30/15 SCALE: No Scale
DESIGNED BY: Std. DATE: -

BRIDGE NO. 07334 DRAWING NO. 57054

PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	67	131
				1 07334		CHAIN LINK FENCE		57055

Stations and post spacing are referenced to CL Construction.
For parapet open joint spacing along face of parapet, see "Reinforcing Plan" on Dwg. Nos. 57043, 57047, & 57051.



LONGITUDINAL VIEW OF CHAIN LINK FENCE

Notes:

Fence layout shall conform to the vertical and horizontal bridge alignments Fence posts shall be set plumb (true vertical position). Parapet rail concrete shall be at least 7 days old before stretching and securing fabric to posts.

Cast in place anchor Bolts shall be of stainless steel or High Strength Steel. Stainless steel anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi. High Strength Steel Anchor Bolts shall conform to AASHTO M164 or ASTM A354-Grade BC Galvanized in accordance with AASHTO M232.

Nuts: Nuts shall conform to ASTM A194-Gr. 8 (Stainless Steel) or AASHTO M164 Galvanized in accordance with AASHTO M232.

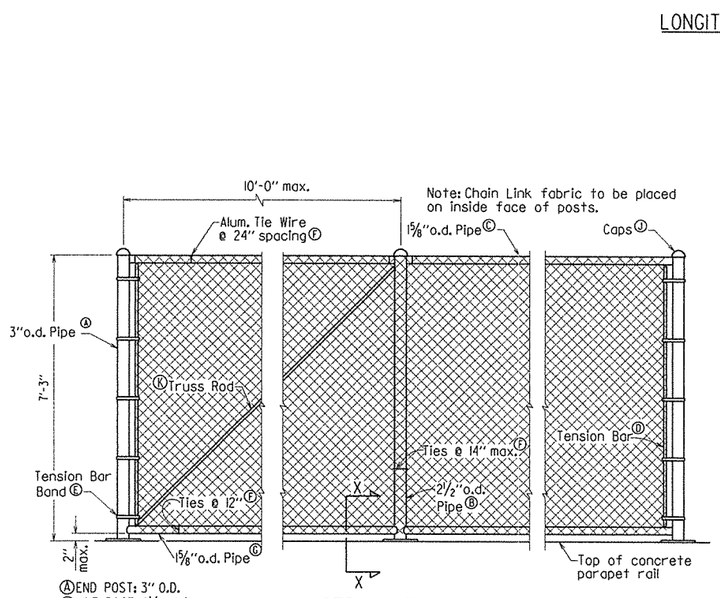
Threads: Threads on bolts, Screws, and Nuts shall conform to American Standard Course Series, Class 2 Fit, ASA Specification B1.1.

Washers shall be of High-Strength Steel conforming to AASHTO M270, GR. 36 Galvanized in accordance with AASHTO M232 or of Stainless Steel conforming to ASTM A276 or A167-Type 302.

Shop drawings showing details of the fence shall be submitted and approval secured before fabrication is begun.

Base plates shall not be placed upon areas that are improperly finished, deformed, or irregular.

Neoprene pad and template plates shall not be paid for directly, but shall be considered incidental to the unit price bid for item "7' Steel Chain Link Fence".

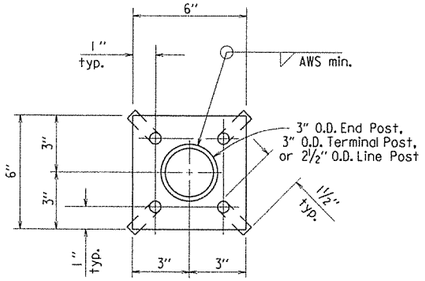


DETAIL OF CHAIN LINK FENCE

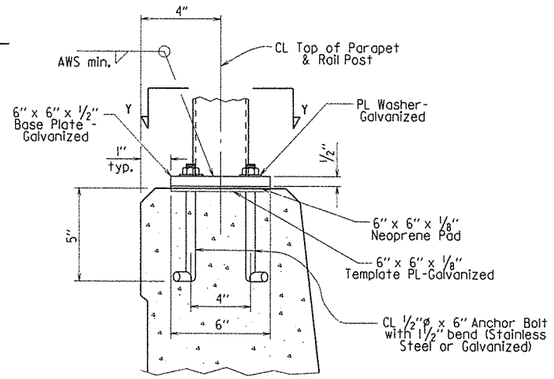
Ⓐ END POST: 3" O.D.
Ⓑ LINE POST: 2½" O.D.
Ⓒ TOP RAIL: 1⅝" O.D.
Ⓓ TENSION BAR: 3/16" x ¾" Bar
Ⓔ TENSION BAR BAND: ¾"x .074 w/⅝"ø x 1¼" Bolt (1 Band Top & Bottom w/15" max. spaces)
Ⓕ TIE WIRE: 9 Ga. Aluminum
Ⓖ BOTTOM RAIL: 1⅝" O.D.
Ⓗ FABRIC: 9 Ga. 2" Mesh w/Knucklug or Twisting Selvage
Ⓙ CAPS: All Posts shall be Capped & Shall Conform to ASTM F626-84
Ⓚ TRUSS ROD: Min. of ⅝" Round with Tightners and Fittings

Notes : Chain Link Fence attached to Bridge shall be paid for as "7' Steel Chain Link Fence". For additional details of Chain Link Fence see Standard Drawing WF-3.

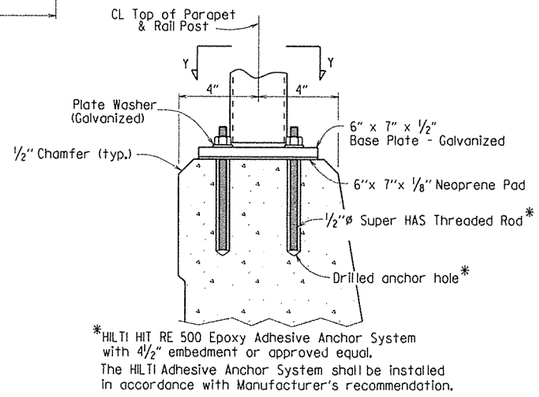
See also "Detail at Expansion Joint".



SECTION Y-Y

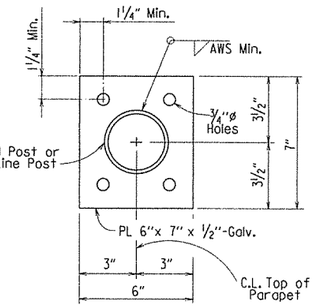


SECTION X-X



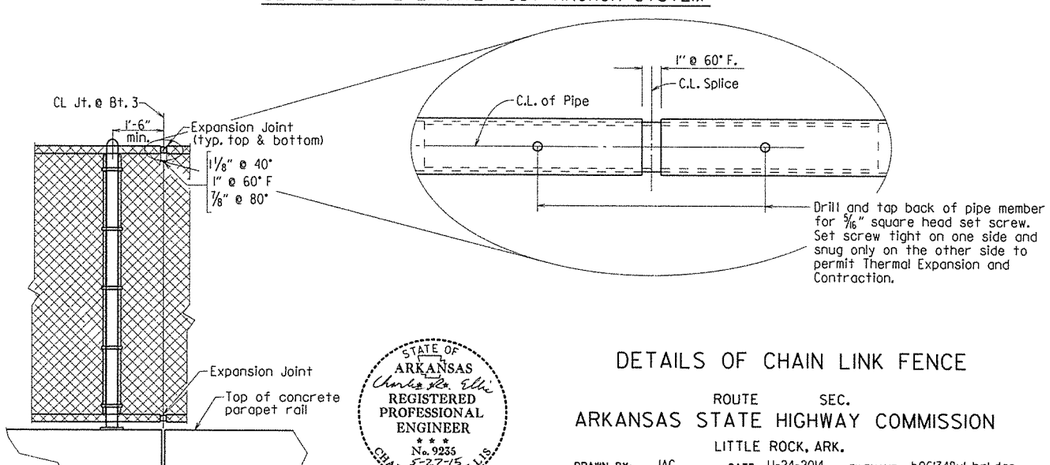
*HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or approved equal.
The HILTI Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendation.

SECTION X-X



SECTION Y-Y

DETAILS OF ALTERNATE POST ANCHOR SYSTEM



DETAIL OF EXPANSION JOINT AT BENT 3

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF CHAIN LINK FENCE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

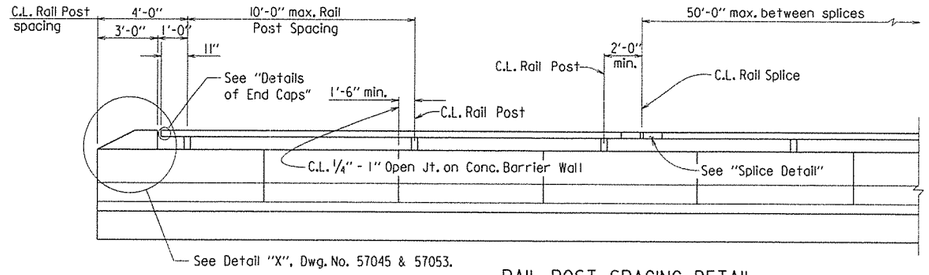
LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 11-24-2014 FILENAME: b061348xl_hrl.dgn
CHECKED BY: PGT DATE: 4/30/15 SCALE: No Scale
DESIGNED BY: Std. DATE: —

BRIDGE NO. 07334 DRAWING NO. 57055

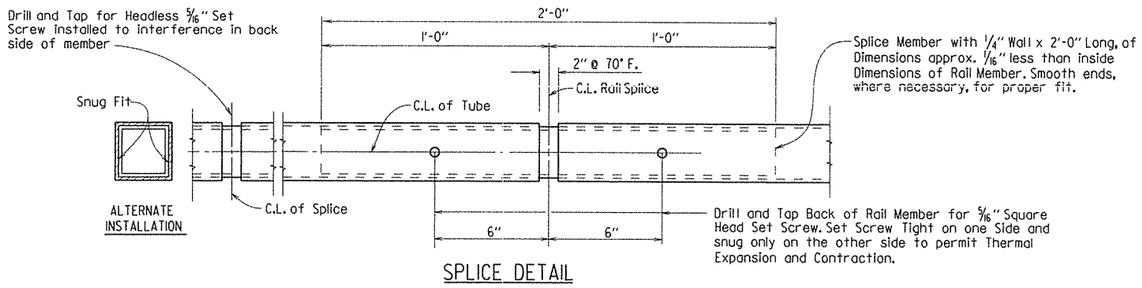
PRINT DATE: 5/26/2015

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	108	131
				07334		TYPE "H" RAIL DETAIL		57056



RAIL POST SPACING DETAIL

(Horizontal dimensions are along face of Rail and do not include a vertical curve correction.)



SPLICE DETAIL

NOTES FOR BRIDGE RAILING:

Rail layout shall conform to vertical and horizontal alignment of bridge.

Maximum post spacing = 10'-0"

Minimum distance from centerline post to centerline open or contraction joints in parapet = 1'-6".

Rail splices shall be at 50' maximum spacing. Centerline splices shall be located at a minimum of 2 feet from centerline of post. Rail sections shall be fabricated to attach to at least three posts. A rail splice is required at the Bent 5 joint location, both sides of roadway.

Base plates shall not be placed upon areas that are improperly finished, deformed or irregular.

Bridge railing, including posts, fasteners, template plates, and neoprene pad shall be paid for at the contract unit price bid per linear foot for "Metal Bridge Railing (Type H)".

Shop drawings showing details of railing shall be submitted and approval secured before fabrication is begun.

MATERIALS:

Tubing, Posts, and Accessories: AASHTO M270, Gr. 36 or ASTM A500-Grade B.

Railing End Caps: AASHTO M270, Grade 36, galvanized.

Steel Rail Members shall be galvanized in accordance with AASHTO M 111 after fabrication.

Cast in place anchor bolts shall be of stainless steel or high strength steel. Stainless steel anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi. High strength steel anchor bolts shall conform to AASHTO M164 or A354-Grade BC galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

Splice Set Screws: Stainless steel, ASTM Specifications A193 or A320-Grade B8, or AASHTO M270, Grade 36, galvanized.

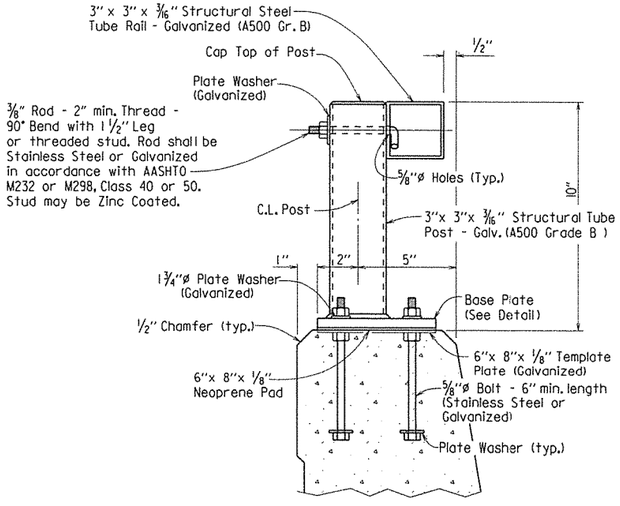
Nuts: Nuts shall conform to AASHTO M292, Gr. 8 (Stainless steel) or galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

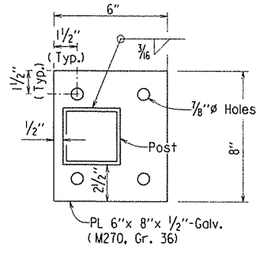
Threads: Threads on bolts, screws, and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1.

Washers shall conform to AASHTO M293, galvanized in accordance with AASHTO M232 or M298, Class 40 or 50, or of stainless steel conforming to ASTM A276 or A167-Type 302.

END ELEV. SIDE ELEV.

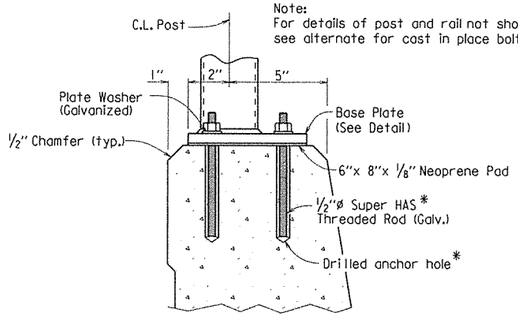
DETAILS OF END CAPS





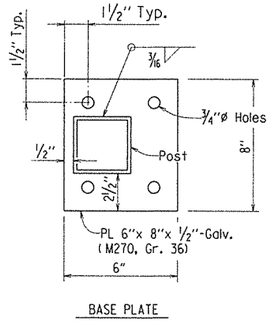
BASE PLATE

DETAILS OF POST ANCHOR SYSTEM (CAST IN PLACE BOLTS)



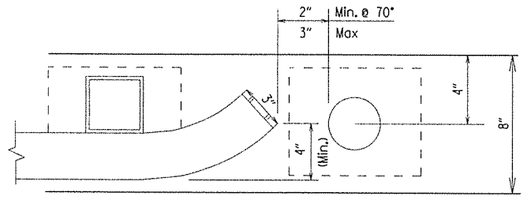
*HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4 1/2" embedment or an approved equal.

The HILTI Epoxy Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM (EPOXY ADHESIVE ANCHORS)



DETAILS AT FENCE POST

Bend or Mitre as Shown.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
5-27-15
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF TYPE "H" RAIL

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: JAC DATE: 11-24-2014 FILENAME: b061348xl_hrl.dgn

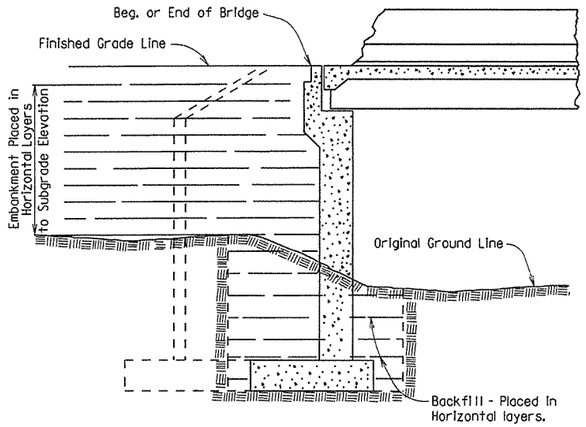
CHECKED BY: PGT DATE: 4/30/15 SCALE: No Scale

DESIGNED BY: Std. DATE: -

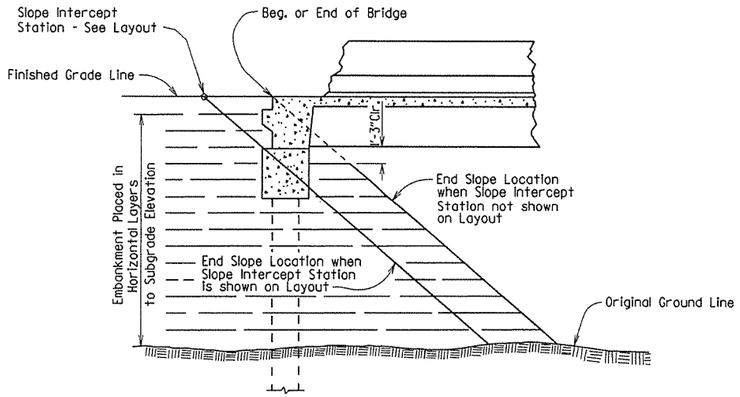
BRIDGE NO. 07334 DRAWING NO. 57056

PRINT DATE: 5/26/2015

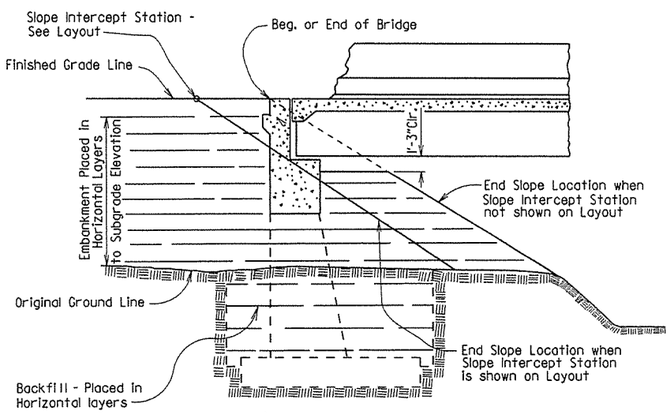
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		69	
				JOB NO.				
				①	EMBANKMENT & BACKFILL		55000	



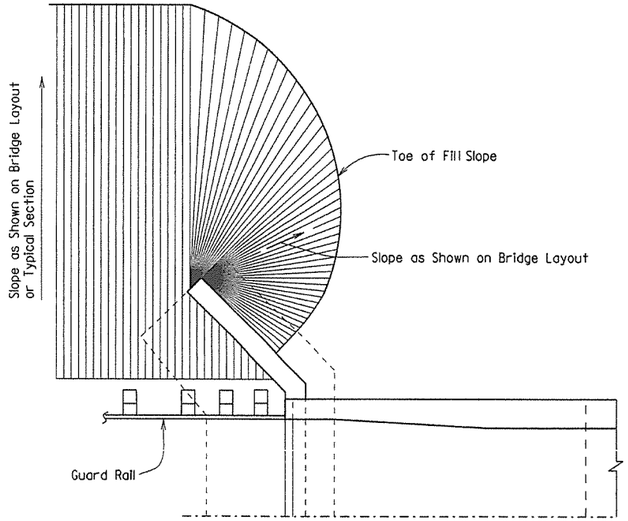
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



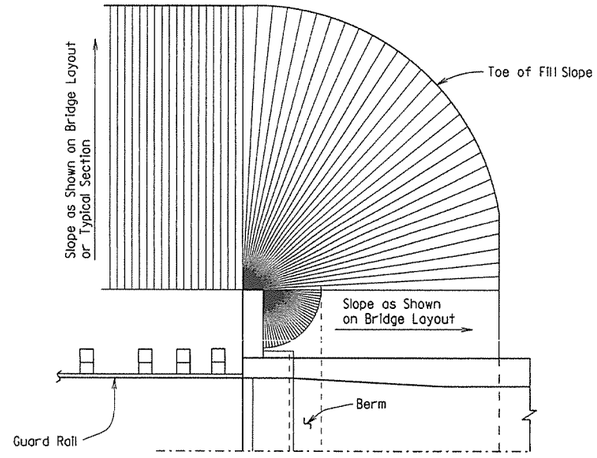
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



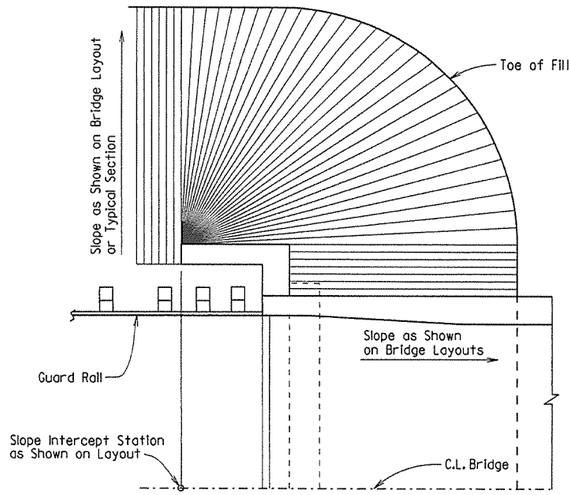
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



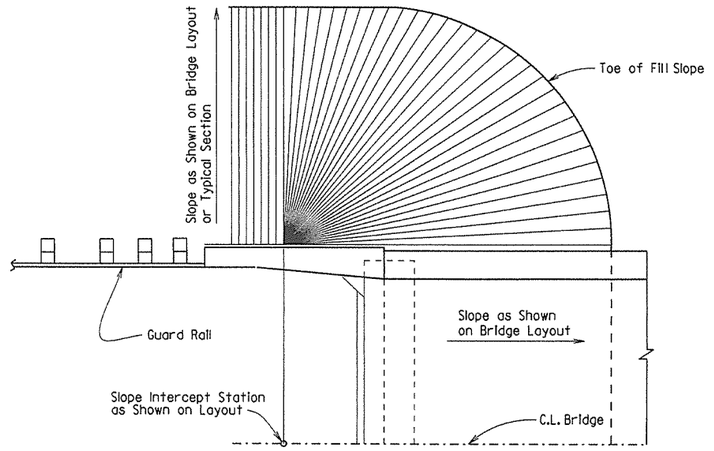
VERTICAL WALL ABUTMENTS



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

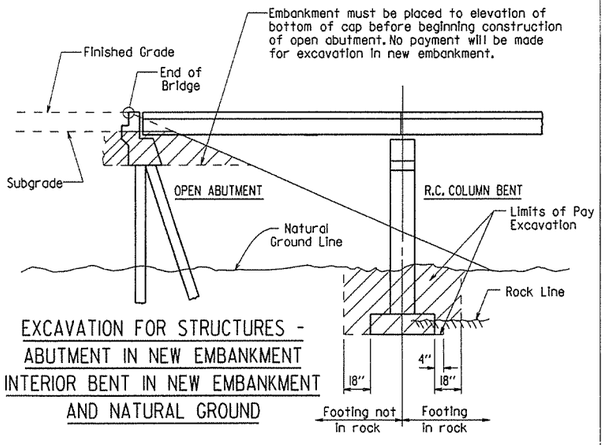
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: -

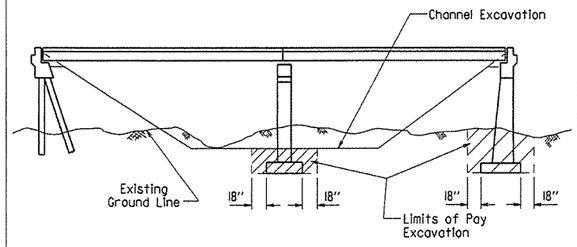
DRAWING NO. 55000

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

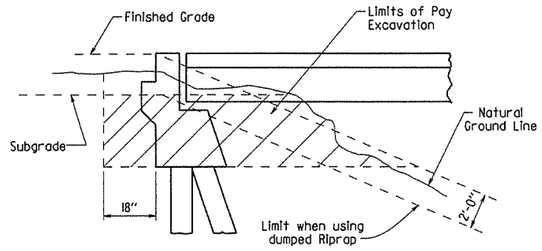
(1) RIPRAP & EXCAV. 55001



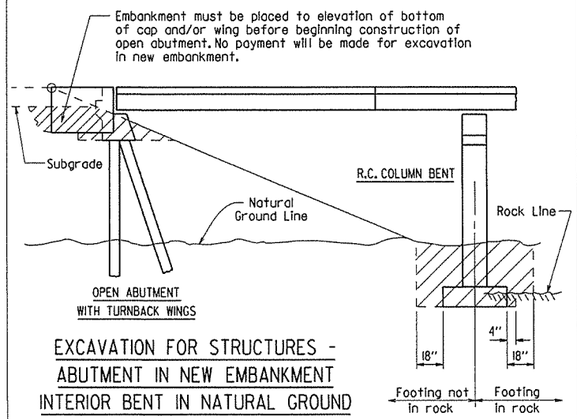
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



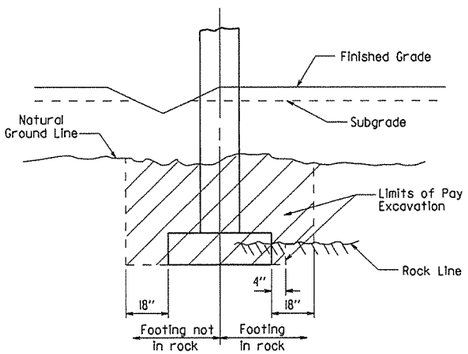
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



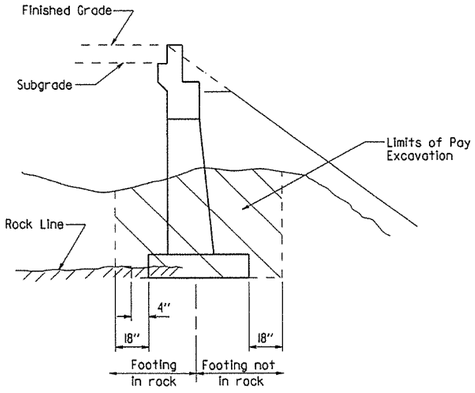
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



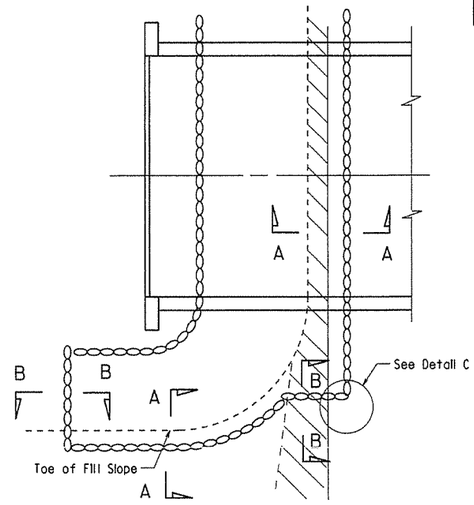
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



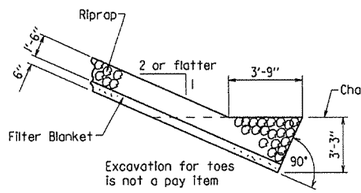
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

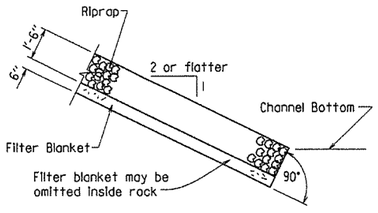


PLAN OF DUMPED RIPRAP



SECTION A-A

(Toe Excavation in Soil)



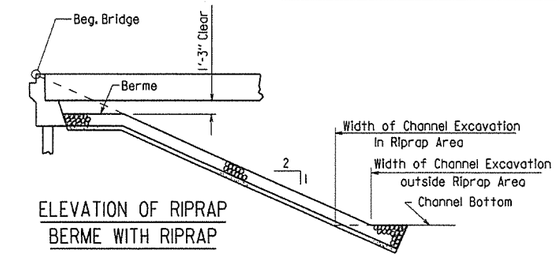
SECTION A-A

(Toe Excavation in Rock)

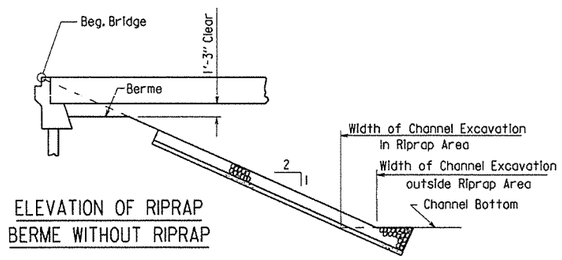
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

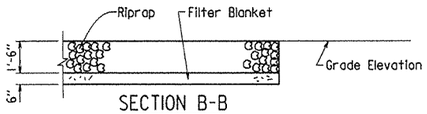
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



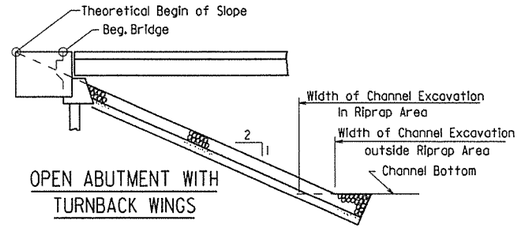
ELEVATION OF RIPRAP BERME WITH RIPRAP



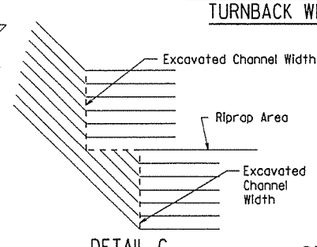
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



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

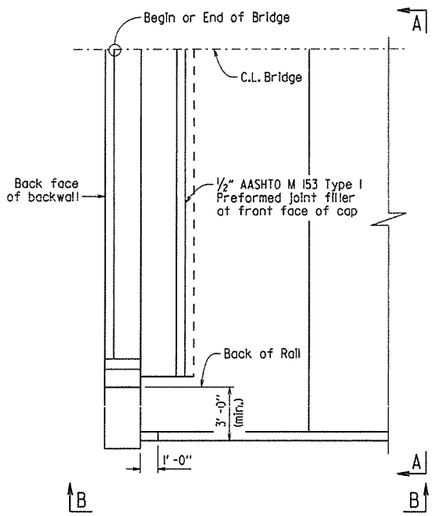
DESIGNED BY: STD. DATE:

DRAWING NO. 55001

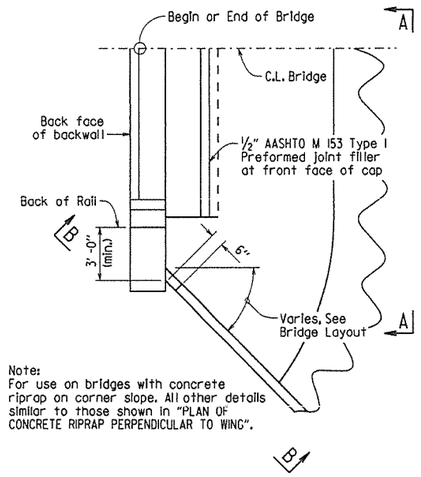
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		71	
				JOB NO.				

① CONCRETE RIPRAP 55002

Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



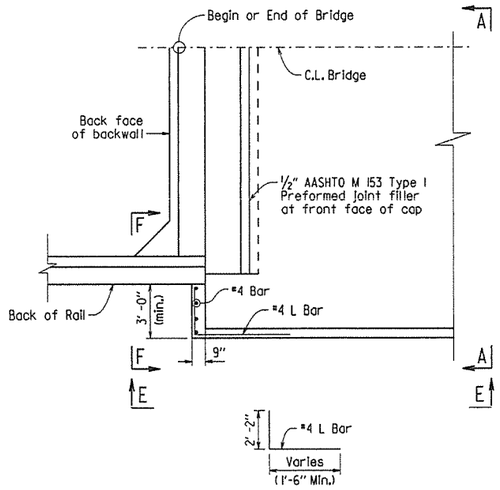
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO WING
¼" = 1'-0"



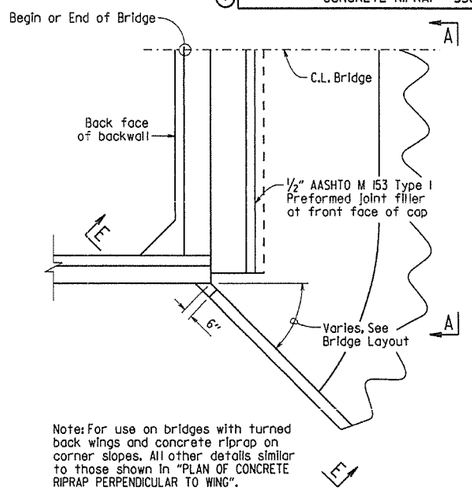
Note:
For use on bridges with concrete riprap on corner slope. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP
AT ANGLE TO WING
¼" = 1'-0"

Note:
For use on bridges with turned back wings. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".



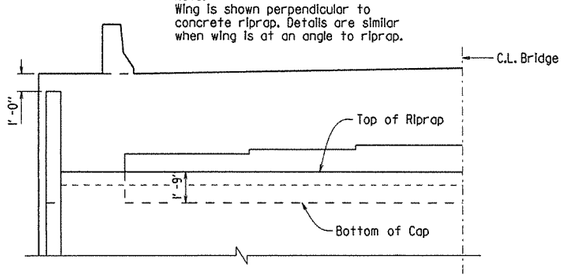
PLAN OF CONCRETE RIPRAP
PERPENDICULAR TO TURNED BACK WING
¼" = 1'-0"



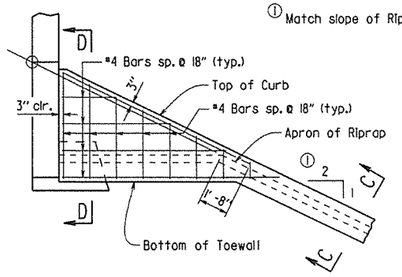
Note: For use on bridges with turned back wings and concrete riprap on corner slopes. All other details similar to those shown in "PLAN OF CONCRETE RIPRAP PERPENDICULAR TO WING".

PLAN OF CONCRETE RIPRAP
AT ANGLE FROM TURNED BACK WING
¼" = 1'-0"

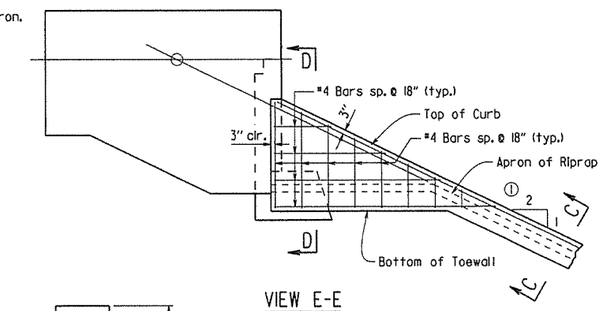
Note:
Wing is shown perpendicular to concrete riprap. Details are similar when wing is at an angle to riprap.



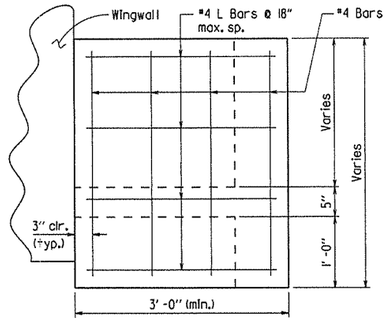
VIEW A-A
¼" = 1'-0"



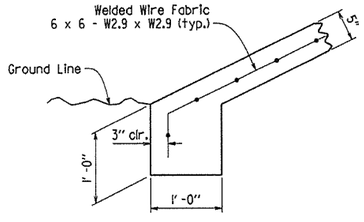
VIEW B-B
¼" = 1'-0"



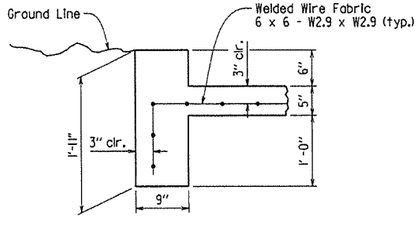
VIEW E-E
¼" = 1'-0"



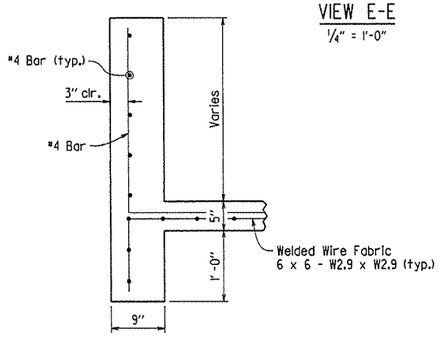
VIEW F-F
1" = 1'-0"



TOE OF CONCRETE RIPRAP
1" = 1'-0"



SECTION C-C
1" = 1'-0"



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

GENERAL NOTES

All concrete shall be Class A with a minimum compressive strength, f'c = 2,100 psi.

Welded wire fabric shall conform to AASHTO M55 or M221.

STANDARD DETAILS FOR CONCRETE RIPRAP

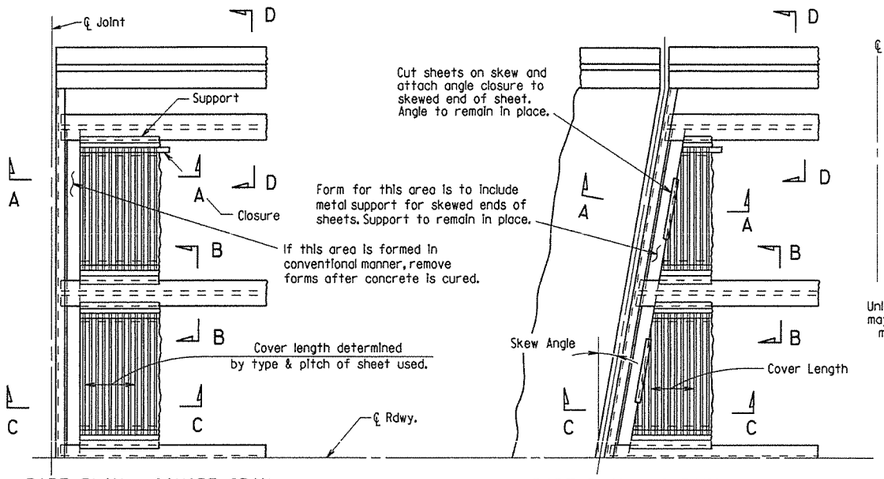
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 2/27/2014 FILENAME: b55002.dgn
CHECKED BY: BEF DATE: 2/27/2014 SCALE: AS SHOWN
DESIGNED BY: Std. DATE: ---

DRAWING NO. 55002

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		12	
				JOB NO.				
				①	BRIDGE DECK FORMS		55005	

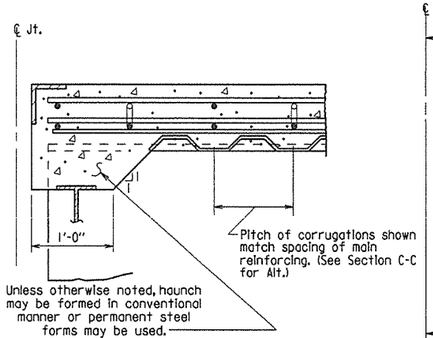


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

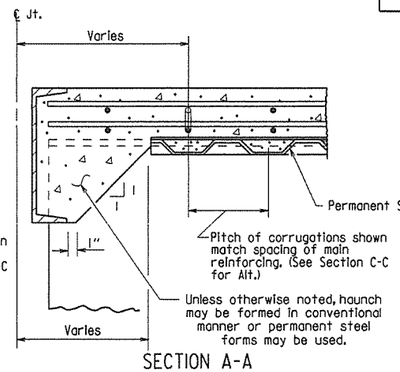
3/8" = 1'-0"



SECTION A-A

N.T.S.

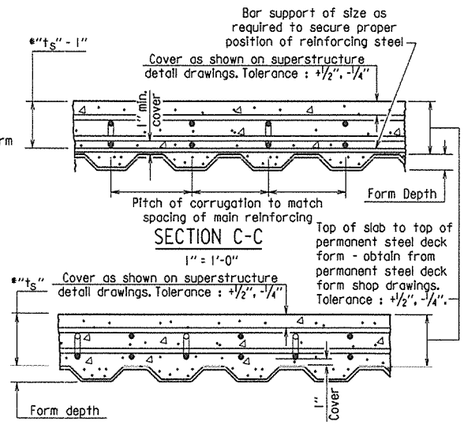
(Angle at end of span)



SECTION A-A

N.T.S.

(Channel at end of span)



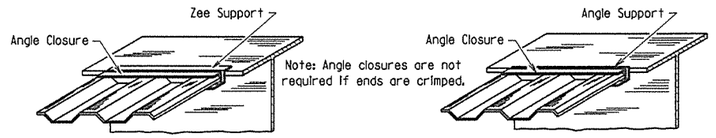
SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

*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.

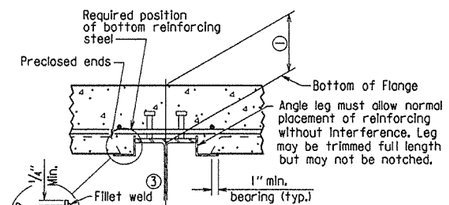
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

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.

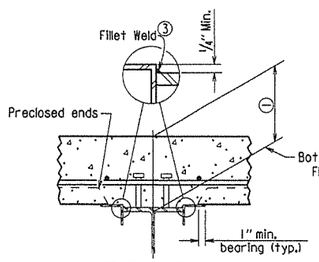
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.



SECTION B-B

1" = 1'-0"

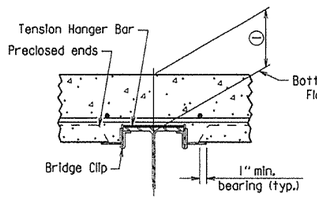
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

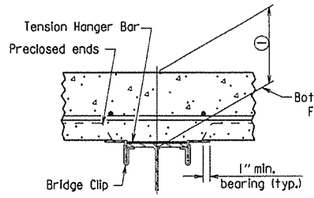
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

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

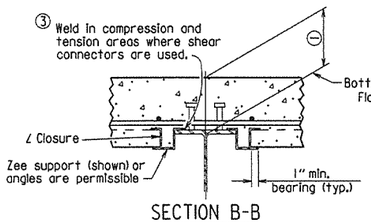


SECTION B-B

1" = 1'-0"

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

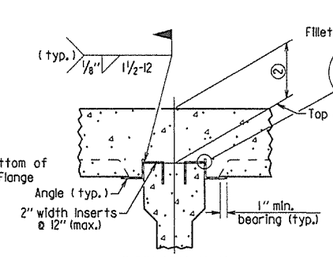
③ Minimum weld: 1/8" x 1' @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)



SECTION B-B

1" = 1'-0"

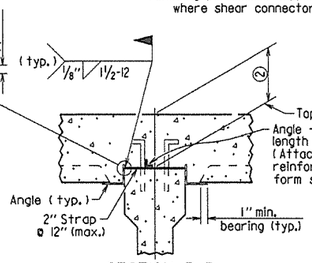
(Showing ∠ Closure)



SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"

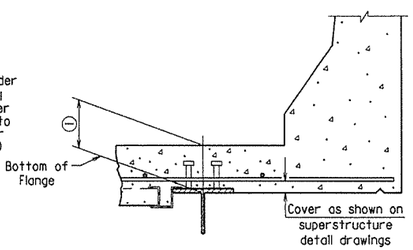
(Showing support by insert cast in girder)



SECTION B-B (FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

① Distance from top of slab to bottom of top flange as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top flange or the support angle leg contacts the bottom reinforcing steel; Maximum = t_s + 1 3/4" + flange thickness. See Section C-C for slab thickness tolerance between adjacent girder flanges.

② Distance from top of slab to top of girder as measured at centerline girder and as shown on superstructure detail drawings. This dimension may vary within the following limits to maintain the grade and slab thickness tolerances : Minimum - occurs when either the top of girder or the support angle leg contacts the bottom reinforcing steel; Maximum - value shown on the superstructure detail drawings when removable forms are used. See Section C-C for slab thickness tolerance between adjacent girder flanges.

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: —

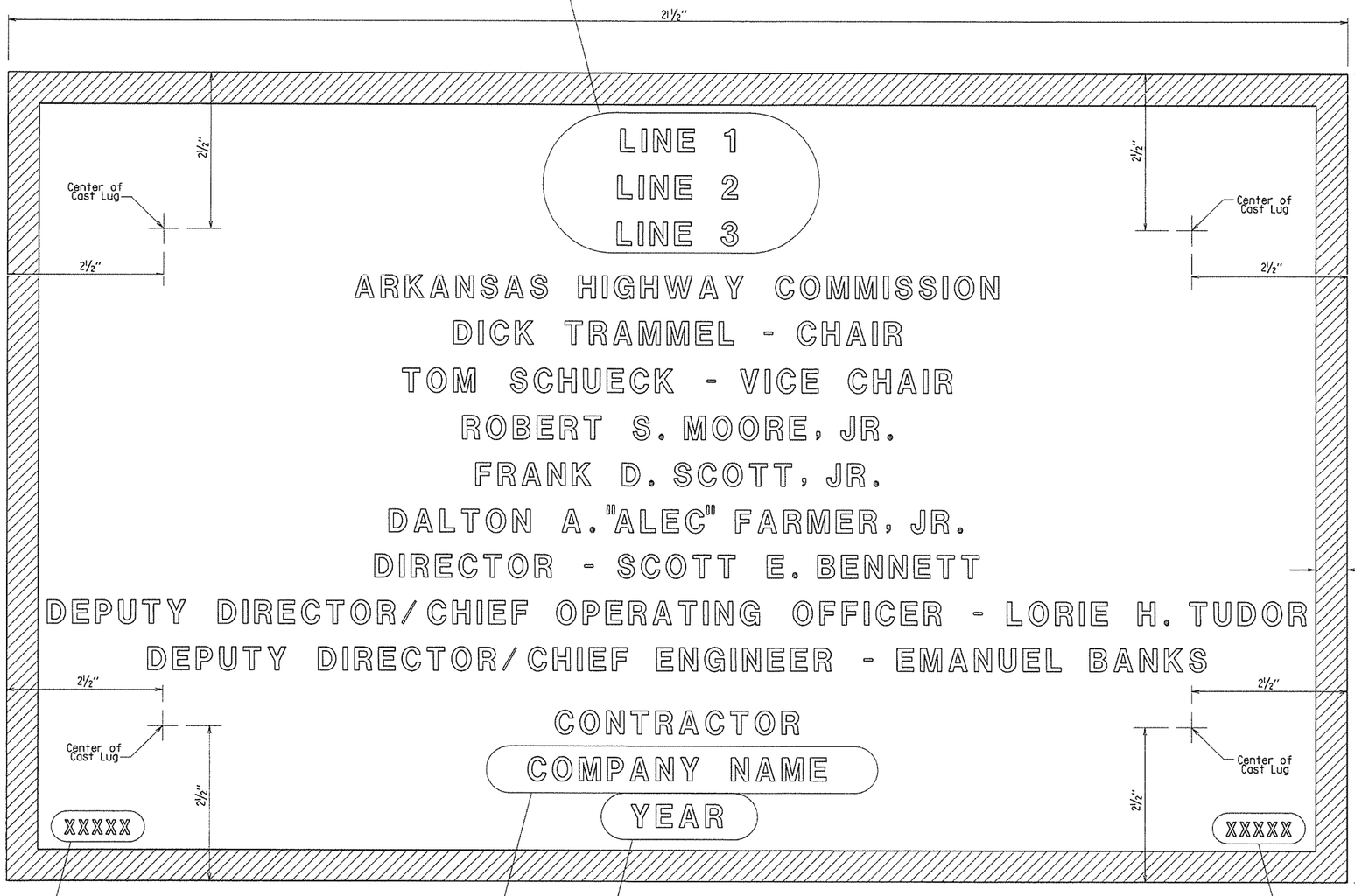
DRAWING NO. 55005

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-1-14				6	ARK.		13	
1-14-15				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 1/8" raised letters and numerals 3/8" high.

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



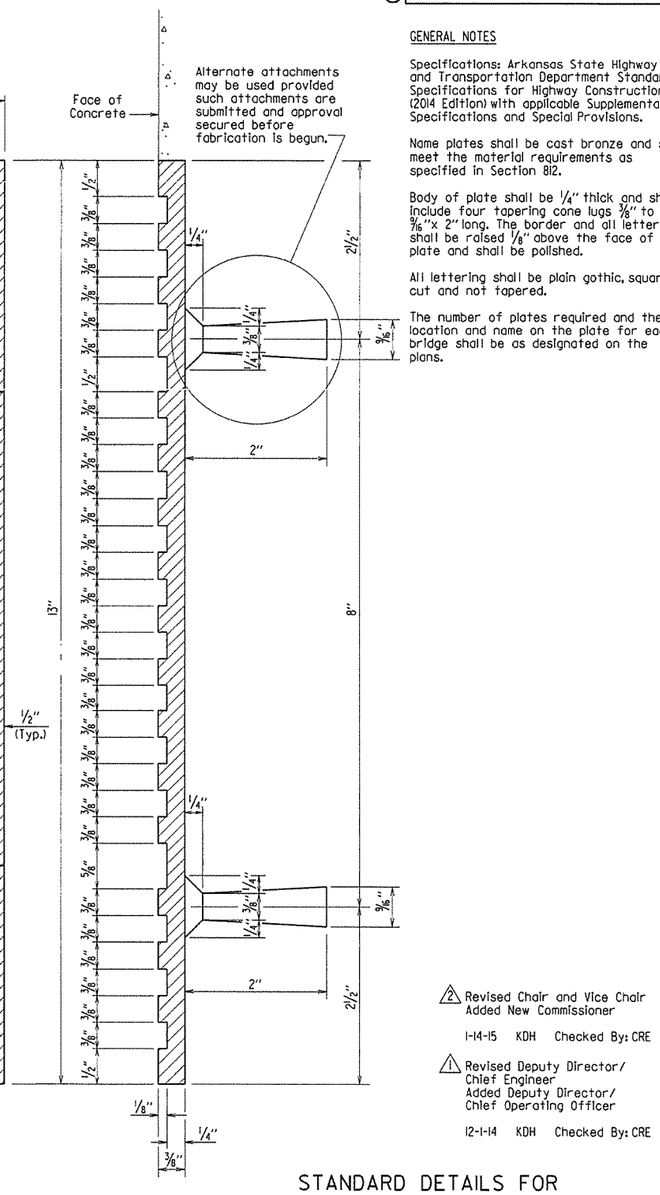
Place the design live loading here using 1/8" raised letters and numerals 1/4" high. Examples : HS 20
HL-93

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

Place the Year in which Contract was awarded here using 1/8" raised numerals 3/8" high. Example : 2001

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

TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2014 Edition) with applicable Supplemental Specifications and Special Provisions.

Name plates shall be cast bronze and shall meet the material requirements as specified in Section 812.

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 9/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered.

The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

② Revised Chair and Vice Chair Added New Commissioner
1-14-15 KDH Checked By: CRE

① Revised Deputy Director/ Chief Engineer Added Deputy Director/ Chief Operating Officer
12-1-14 KDH Checked By: CRE

STANDARD DETAILS FOR
TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55010.dgn
CHECKED BY: BEF DATE: 2-27-2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

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.		74	
				JOB NO.				
				①		STEEL H-PILES		55020

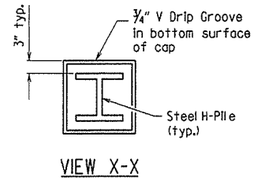
GENERAL NOTES FOR STEEL H-PILES:

Steel H-Piles shall conform to AASHTO M 270, Grade 36 or greater.

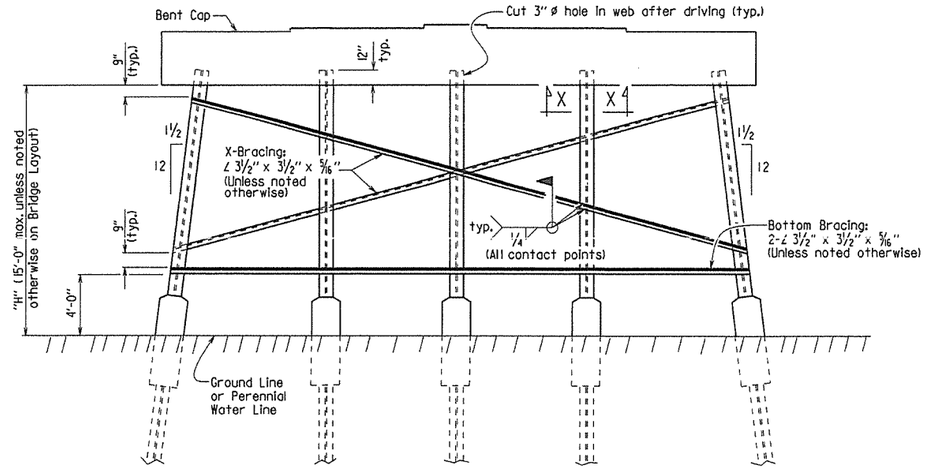
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

Steel H-Piles that extend above the ground and are not protected by pile encasement shall be painted in accordance with Subsection 805.02.

Brackets, lugs, cap plates, pile tips, driving points, pile painting, splicing and welding shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



VIEW X-X



Notes:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Unless noted otherwise, omit X-Bracing when "H" is less than 8 feet.

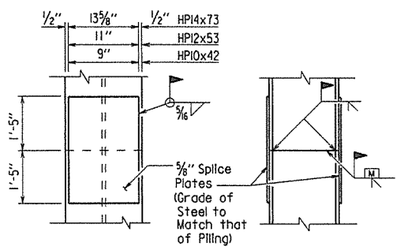
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

When required on the Bridge Layout sheet, pile encasements shall be constructed. See Notes and Details for H-Pile Encasements.

Omit all bracing (and V-groove in cap) when pile encasement is extended to bottom of bent cap.

TYPICAL DETAILS OF H-PILE TRESTLE INTERMEDIATE BENT

(Shown with Partial Height Encasement)

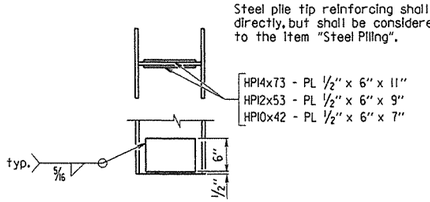


Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

TYPICAL SPLICE DETAILS

Notes:
Steel pile tip reinforcing not required when approved H-Pile driving points are used.

Steel pile tip reinforcing shall not be paid for directly, but shall be considered subsidiary to the item "Steel Piling".



REINFORCING DETAIL FOR STEEL H-PILE TIP

GENERAL NOTES FOR H-PILE ENCASEMENTS:

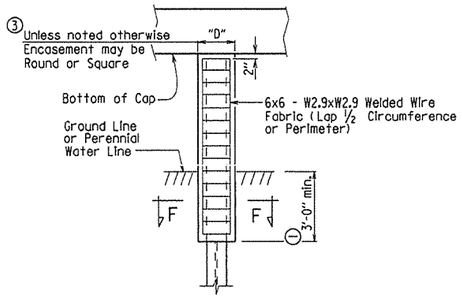
See Bridge Layout for additional notes and required location of pile encasements.

All concrete shall be Class S with a minimum 28-day compressive strength, f'c = 3,500 psi. If concrete cannot be placed in the dry, Seal Concrete may be used from top to bottom of encasement.

Reinforcing steel shall be Grade 60 conforming to AASHTO M 31 or M 322, Type A.

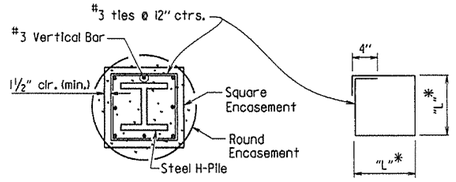
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

Concrete, welded wire fabric or reinforcing steel and galvanized pipe shall not be paid for directly, but shall be considered subsidiary to the item "Pile Encasement".



PILE ENCASEMENT DETAIL FOR STEEL H-PILES

④ (Shown with Encasement to Bottom of Cap)

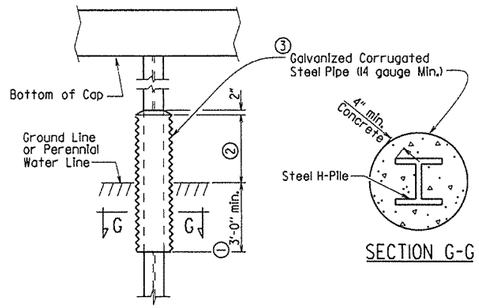


SECTION F-F

*Measured out-to-out of bar.

TABLE OF VARIABLES FOR PILE ENCASEMENT

Pile Size	"D" Square Encsmt.	"D" Round Encsmt.	"L"*
HP10x42	1'-7"	2'-0"	1'-4"
HP12x53	1'-8"	2'-2"	1'-5"
HP14x73	1'-11"	2'-6"	1'-8"



SECTION G-G

⑤ ALTERNATE PILE ENCASEMENT DETAIL FOR STEEL H-PILES

(Shown with Partial Height Encasement)

① Unless otherwise noted on Bridge Layout.

② 3'-0" minimum or as shown on Bridge Layout.

③ Encasement dimensions shall be sized to maintain a minimum concrete cover of 4" from the H-Pile. Reinforcement shall be sized to provide a minimum concrete cover of 1½" and a minimum clearance of 1¼" from the pile.

④ Alternate pile encasement, when not extended to bottom of cap, shall have 2" concrete taper for water runoff as shown in the Partial Height Encasement detail.

⑤ Alternate pile encasement may not be allowed. See Bridge Layout.

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 STEEL H-PILES AND PILE ENCASEMENTS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

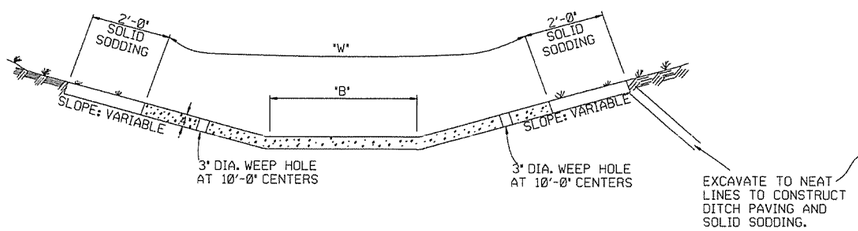
DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn

CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE

DESIGNED BY: STD. DATE: —

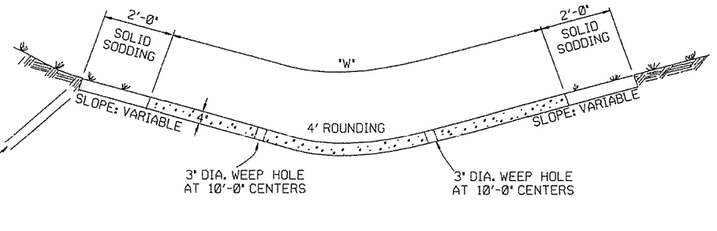
DRAWING NO. 55020

REFER TO TABULATION OF QUANTITIES FOR 'W' & 'B' DIMENSIONS



TYPE A

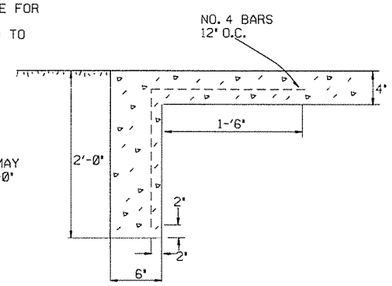
REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



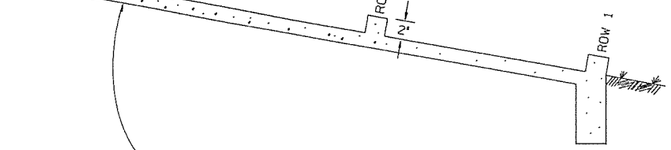
TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR 'CONCRETE DITCH PAVING.'

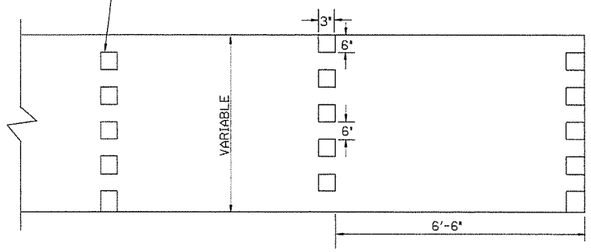
TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION



TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED



ENERGY DISSIPATORS
(NO SCALE)

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

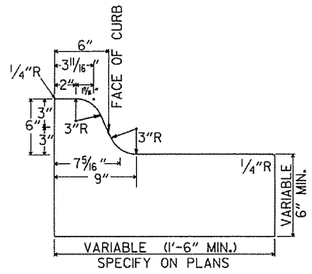
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
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	693-7-15-88
4-3-87	REVISED ENERGY DISSIPATOR	671-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	532-1-9-87
11-3-86	ADDED NOTE TO ENERGY DISS.	599-12-1-86
11-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-11-1-84
11-1-84	EXCAVATION DETAILS ADDED TYPED A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

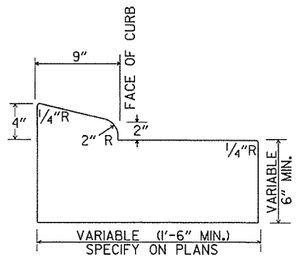
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

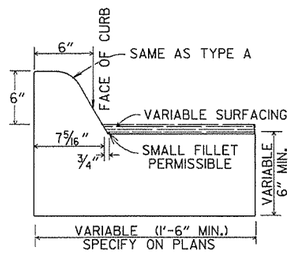
STANDARD DRAWING CDP-1



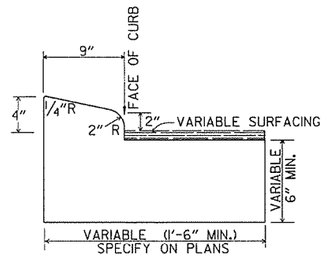
TYPE A



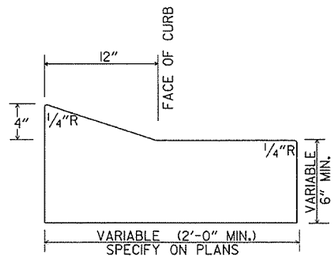
TYPE B-1



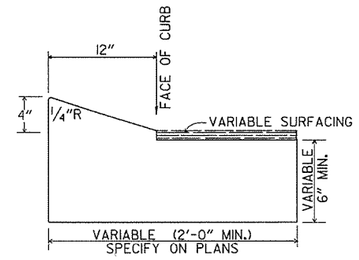
TYPE C



TYPE B-2

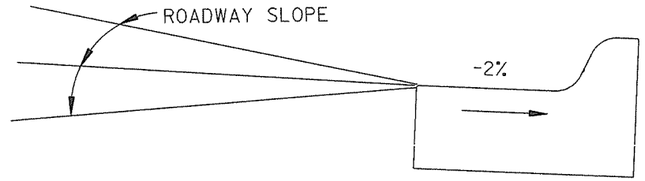


TYPE E-1



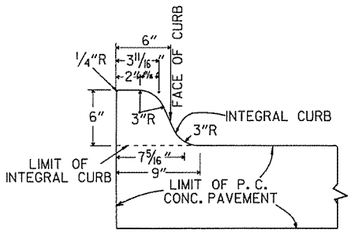
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

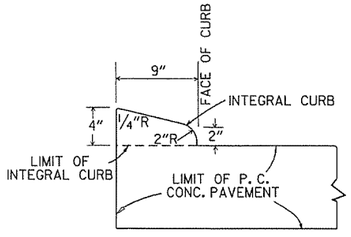


DETAIL OF GUTTER SLOPE

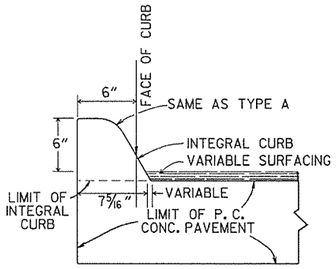
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

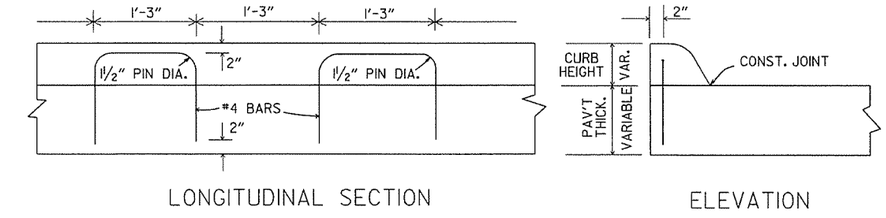


TYPE B

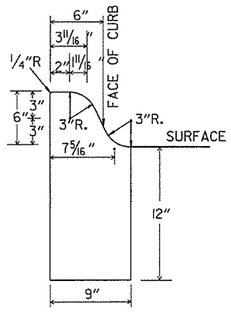


TYPE C

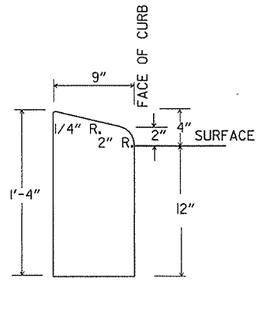
INTEGRAL CURB



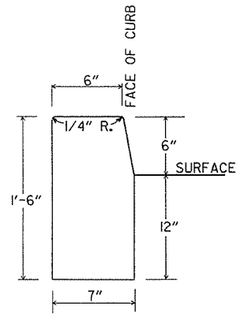
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



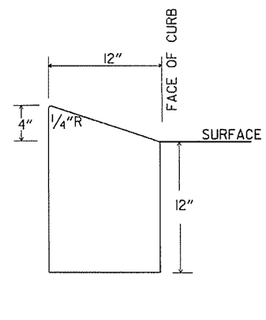
TYPE A



TYPE B

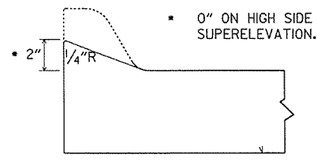


TYPE D



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.

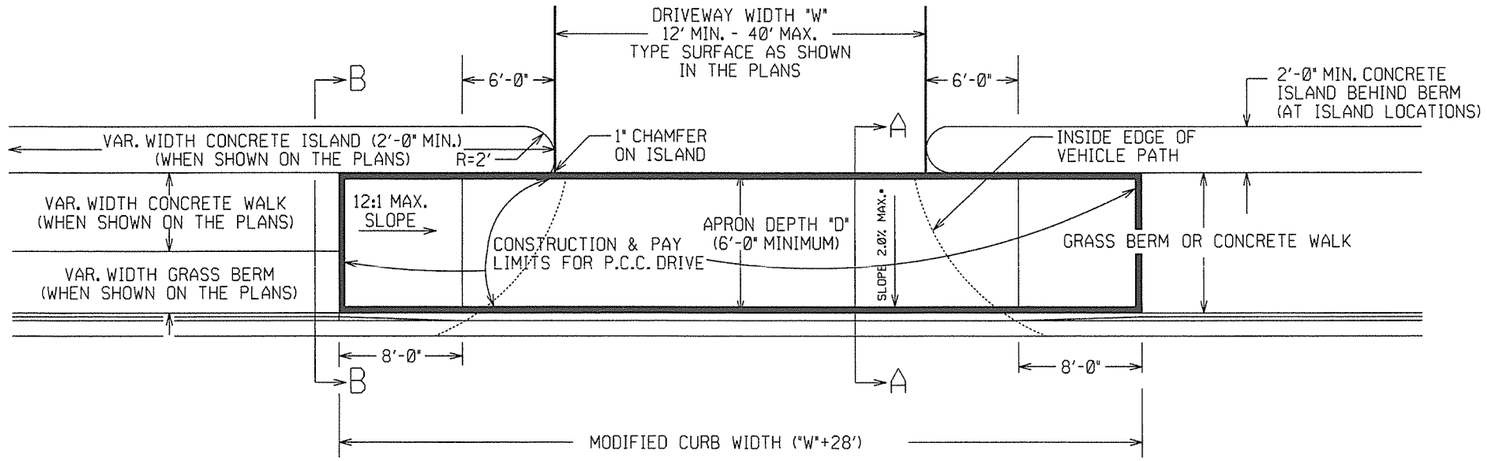
DETAILS OF MODIFIED CURB

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 1	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

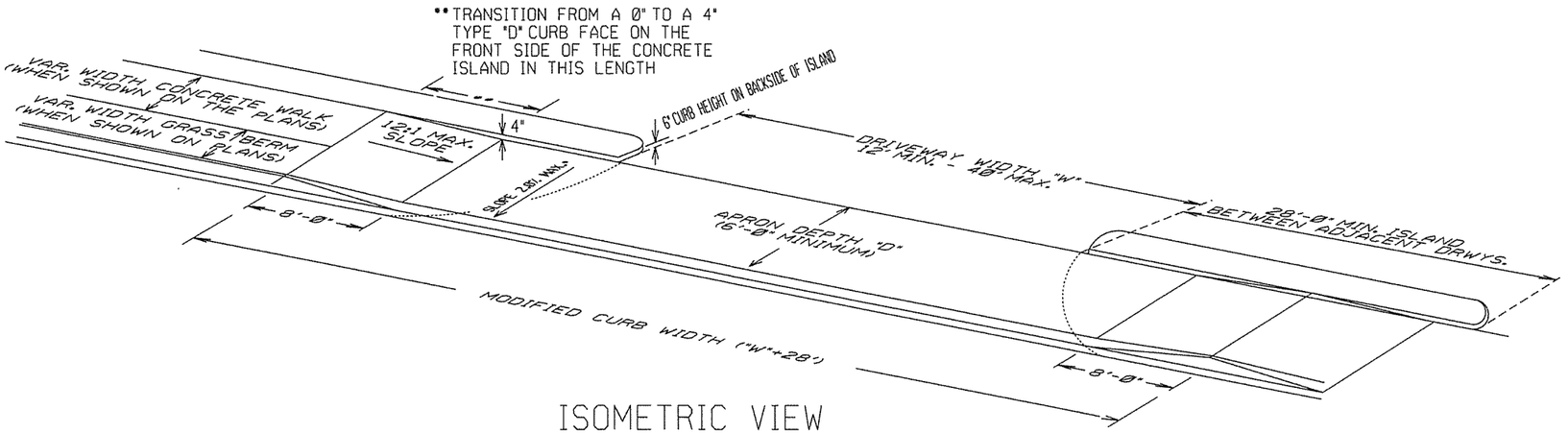
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

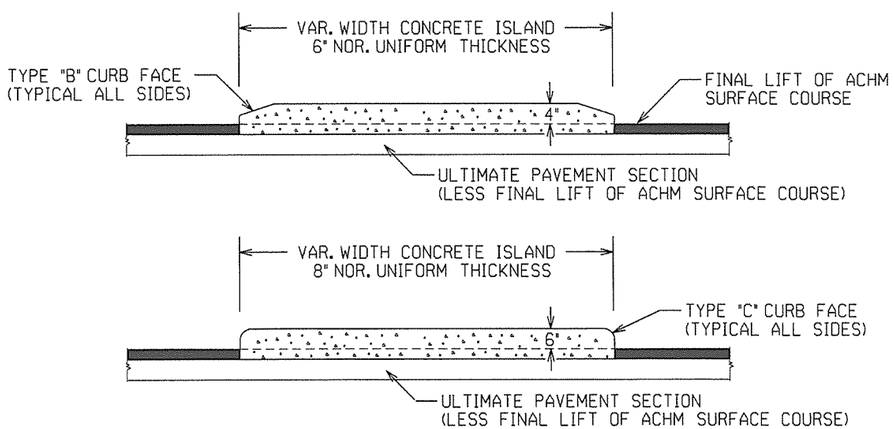
STANDARD DRAWING CG-1



PLAN VIEW

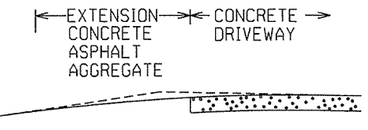


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

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".



EXTENSION TYPICAL SECTIONS

1: CONCRETE - 6" P.C. CONCRETE DRIVEWAY

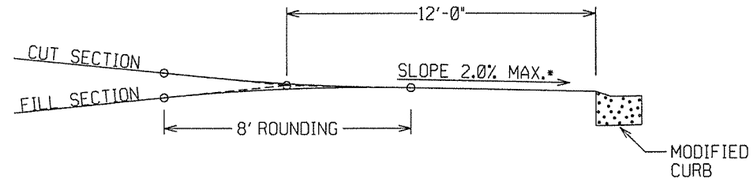
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

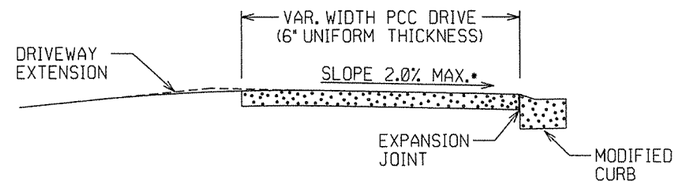
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

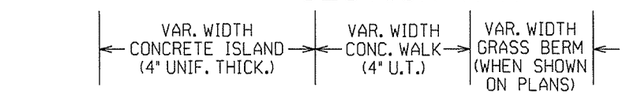


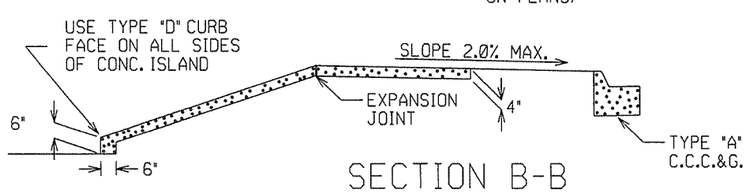
DRIVEWAY VERTICAL ALIGNMENT DETAILS

* NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



SECTION A-A

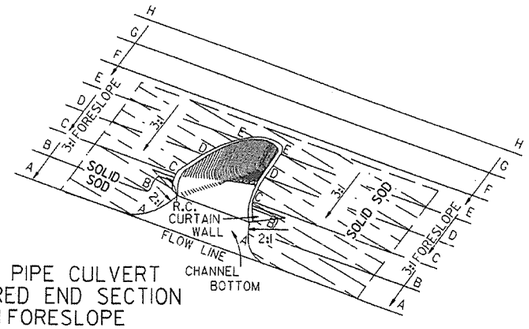




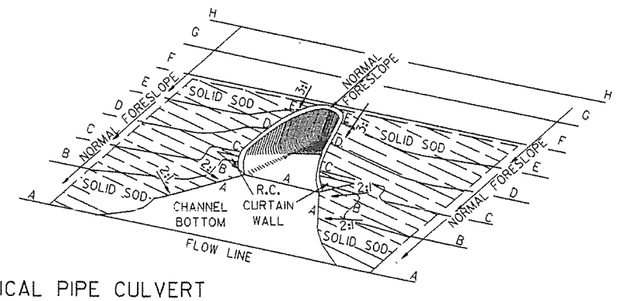
SECTION B-B
CURBED ISLAND BEHIND WALK

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

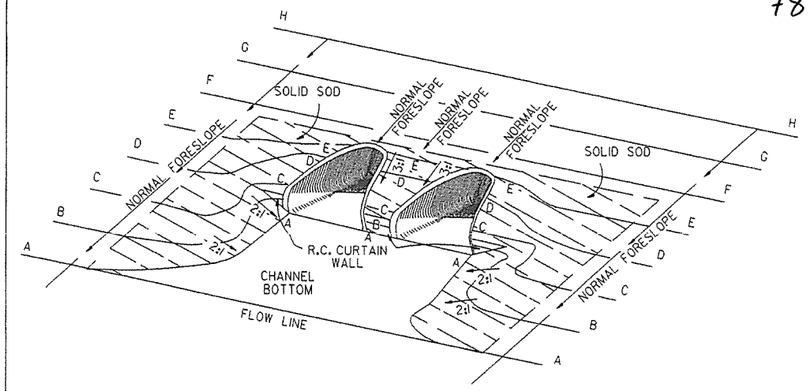
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



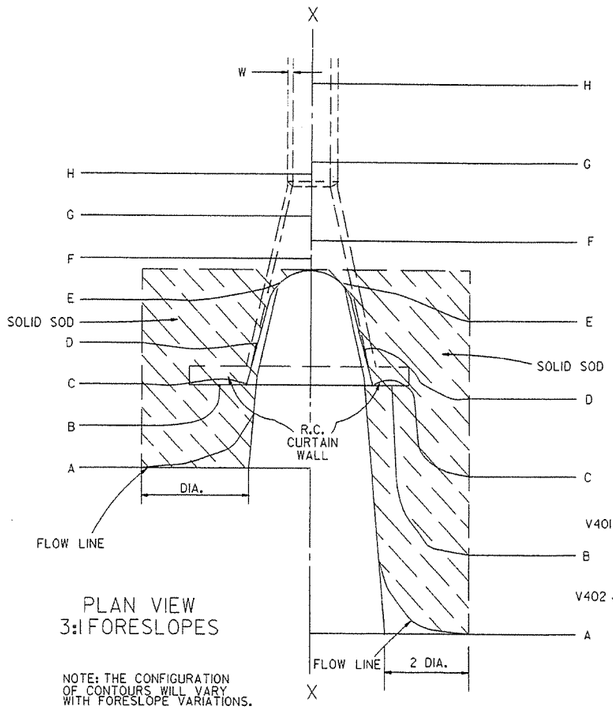
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

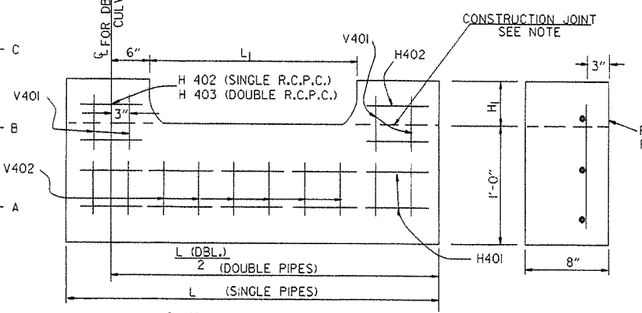
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

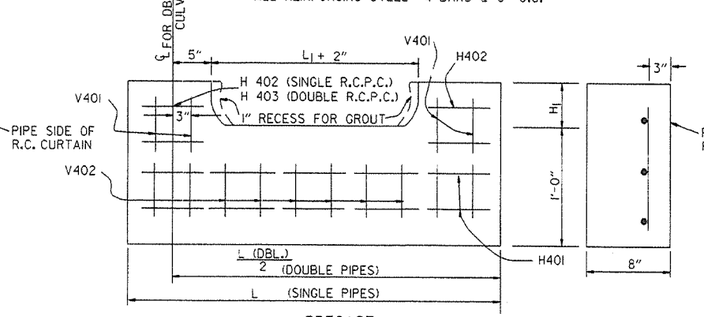
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"	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.

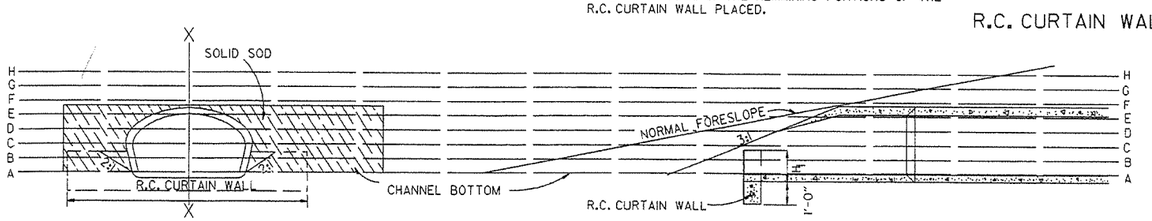
SOLID SODDING

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 x 3 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

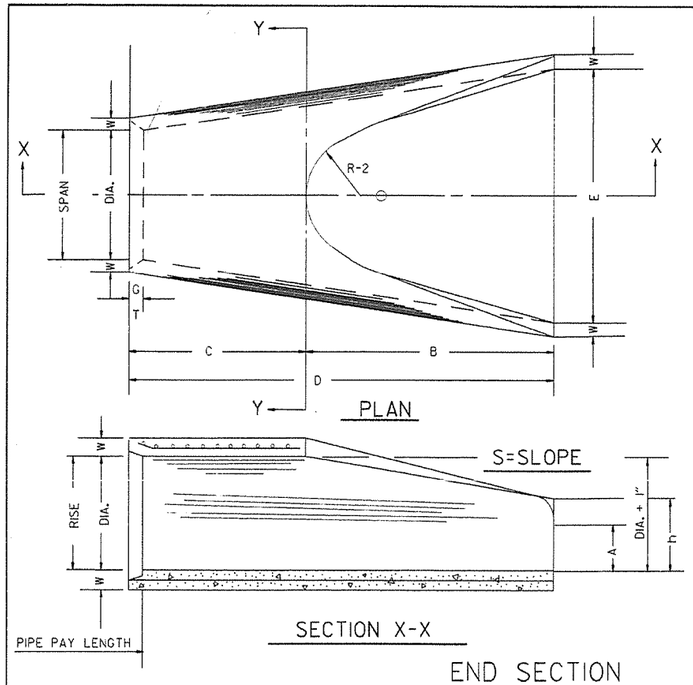
SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96
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

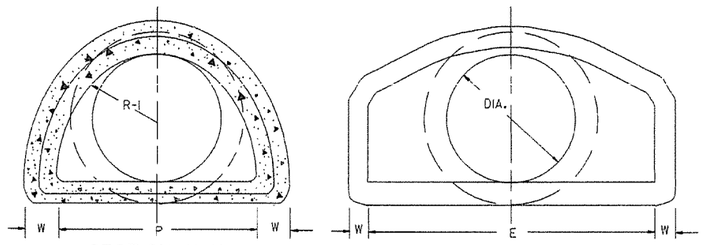
TABLE OF DIMENSIONS

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"	33⅜16"	16Ⅼ16"	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"	47¹³⁄₁₆"	24⅝16"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36¹¹⁄₁₆"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77¹³⁄₁₆"	38¹⁵⁄₁₆"	24"	5"	13250	4'-6"

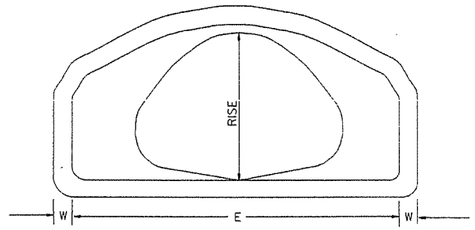
ARCH PIPE

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"	36¹³⁄₁₆"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47¹³⁄₁₆"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10⅛"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅝16"	22"	3½"	2½:1
42	51⅛	51	31⅝16	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"	72¹⁵⁄₁₆"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77¹⁵⁄₁₆"	24"	5"	2¼:1

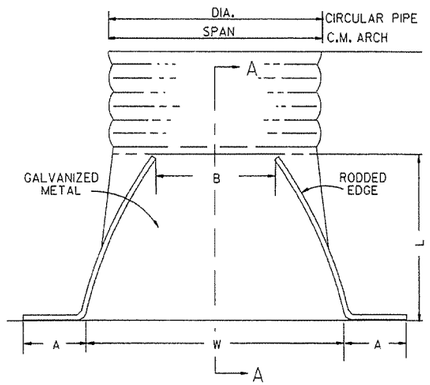
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.

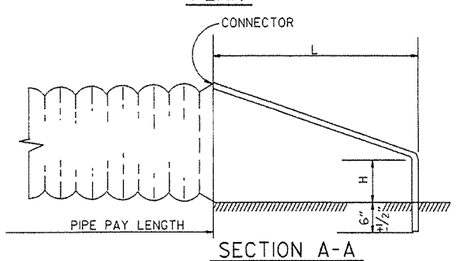


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

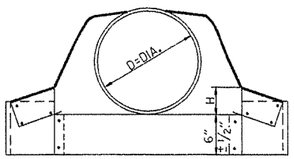


END VIEW
CONCRETE ARCH PIPE

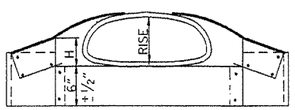




NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.



CIRCULAR PIPE



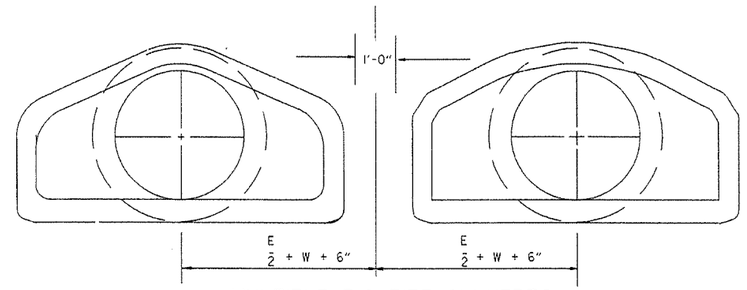
C.M. ARCH PIPE

CIRCULAR PIPE

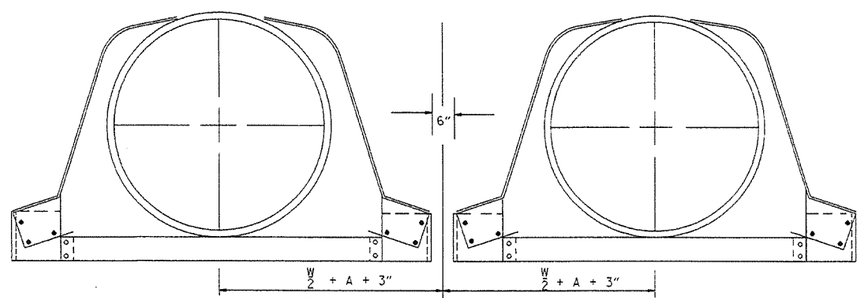
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1¾:1
66	12	18	36	12	87	120	1½:1
72	12	18	39	12	87	126	1 1/3:1

C.M. ARCH PIPE

EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12
48"	57	38	18	26	12	63	90	2½:1	12
54"	64	43	18	30	12	70	102	2¼:1	12
60"	71	47	18	33	12	77	114	2¼:1	12



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

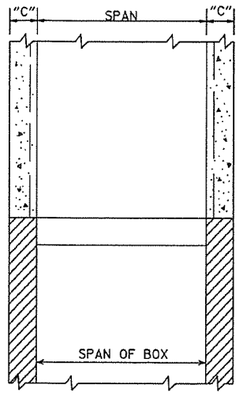
END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

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

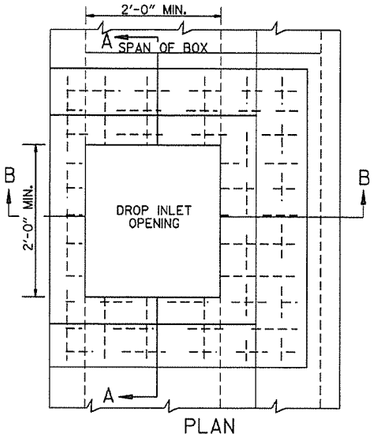
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

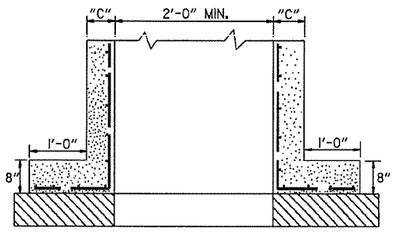
STANDARD DRAWING FES-2



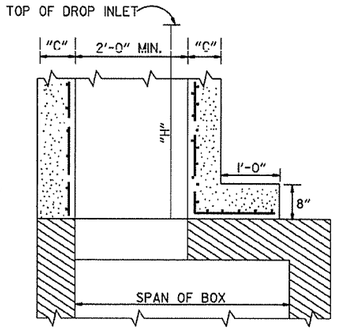
SECTION B-B



PLAN

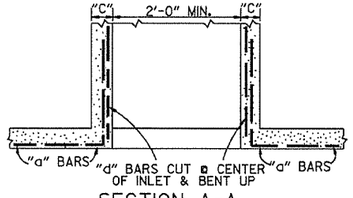


SECTION A-A

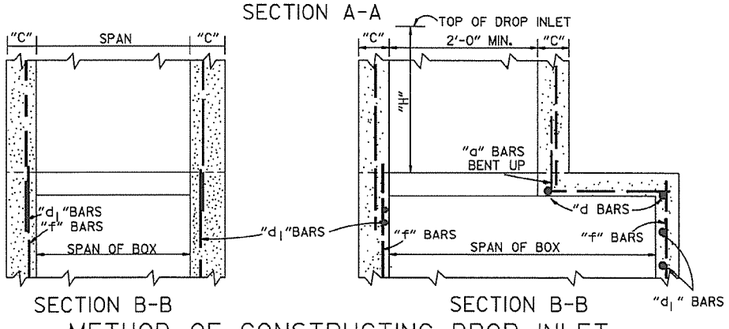


SECTION B-B

METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



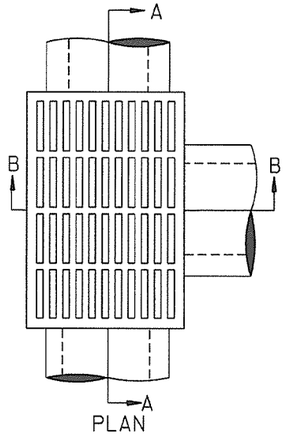
SECTION A-A



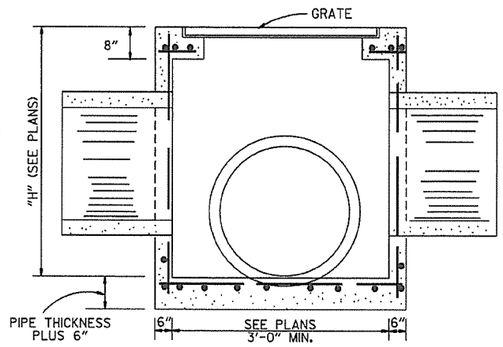
SECTION B-B SECTION B-B

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.

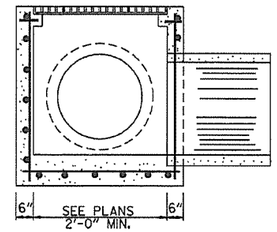


PLAN



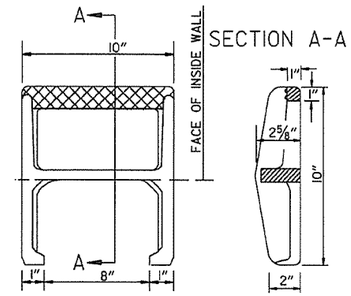
SECTION A-A

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)

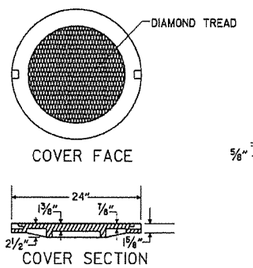


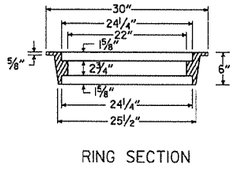
APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

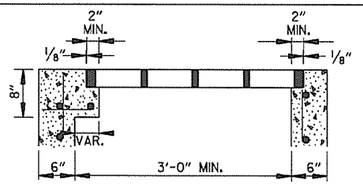




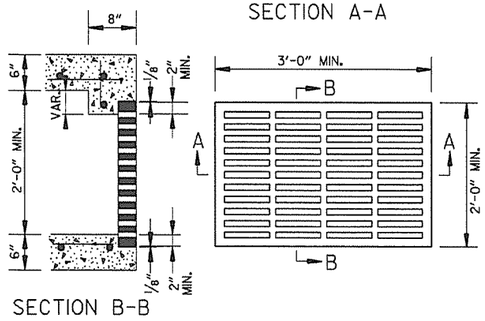
RING SECTION

APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



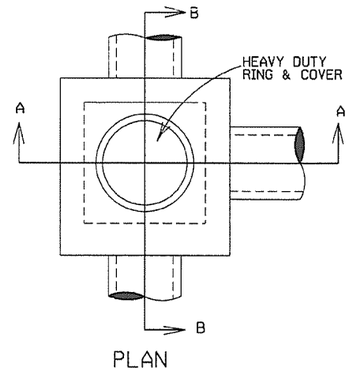
SECTION A-A



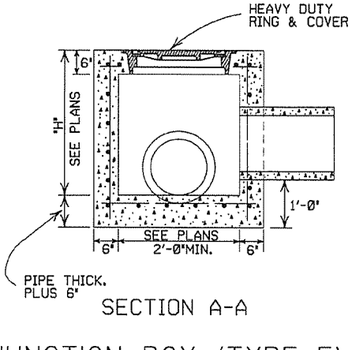
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

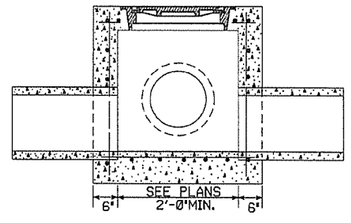


PLAN



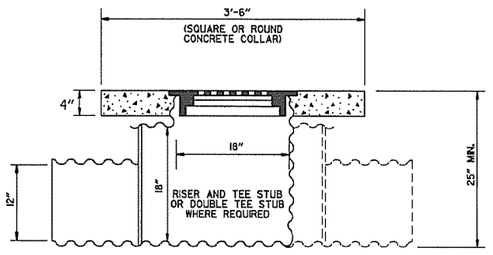
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

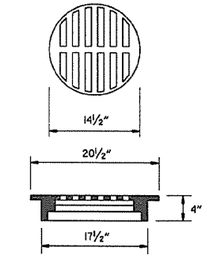


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

DETAIL OF YARD DRAIN

GENERAL NOTES:

1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105 CLASS 35B. GRATE MAY BE USED WITHOUT FRAME.
5. GRATE AND FRAME SHALL NOT BE PAINTED.
6. GRATE SHALL BE BICYCLE SAFE.
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
9. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
10. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

DATE REV.	REVISION	DATE FILMED
11-16-01	ADDED NOTE 10	
1-12-00	REVISED HEAVY DUTY RING & COVER	
7-02-98	CHANGED GRATE DETAIL, DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E)	
6-26-97	ADDED DIMENSION TO TYPE IV-A	
10-18-96	ADDED DETAIL OF YARD DRAIN	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS & JUNCTION BOXES

STANDARD DRAWING FPC-9

4′-0″ LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5′-0″ CLASS A CONC. CU. YDS.	HEIGHT 5′-0″ REINF. STEEL POUNDS	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC. CU. YDS.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL POUNDS
18″	2′-6″	1.77	156	0.28	22
24″	2′-6″	1.79	156	0.28	22
30″	3′-2″	2.39	205	0.30	26
36″	3′-8″	2.63	236	0.32	28
42″	4′-4″	2.95	250	0.34	30
48″	4′-10″	3.21	265	0.36	32

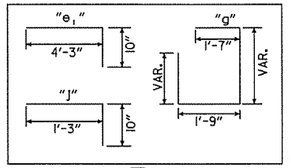
NOTE: QUANTITIES ARE APPROXIMATE AND ARE SHOWN FOR BIDDER INFORMATION ONLY.

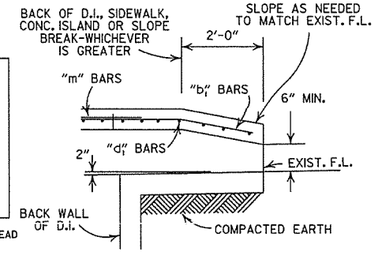
DROP INLET EXTENSION

4′-0″ CLASS A CONC. CU. YDS.	4′-0″ REINF. STEEL POUNDS	8′-0″ CLASS A CONC. CU. YDS.	8′-0″ REINF. STEEL POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET		
INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

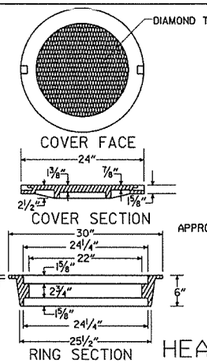
BAR DIAMETER





BACK OPENING

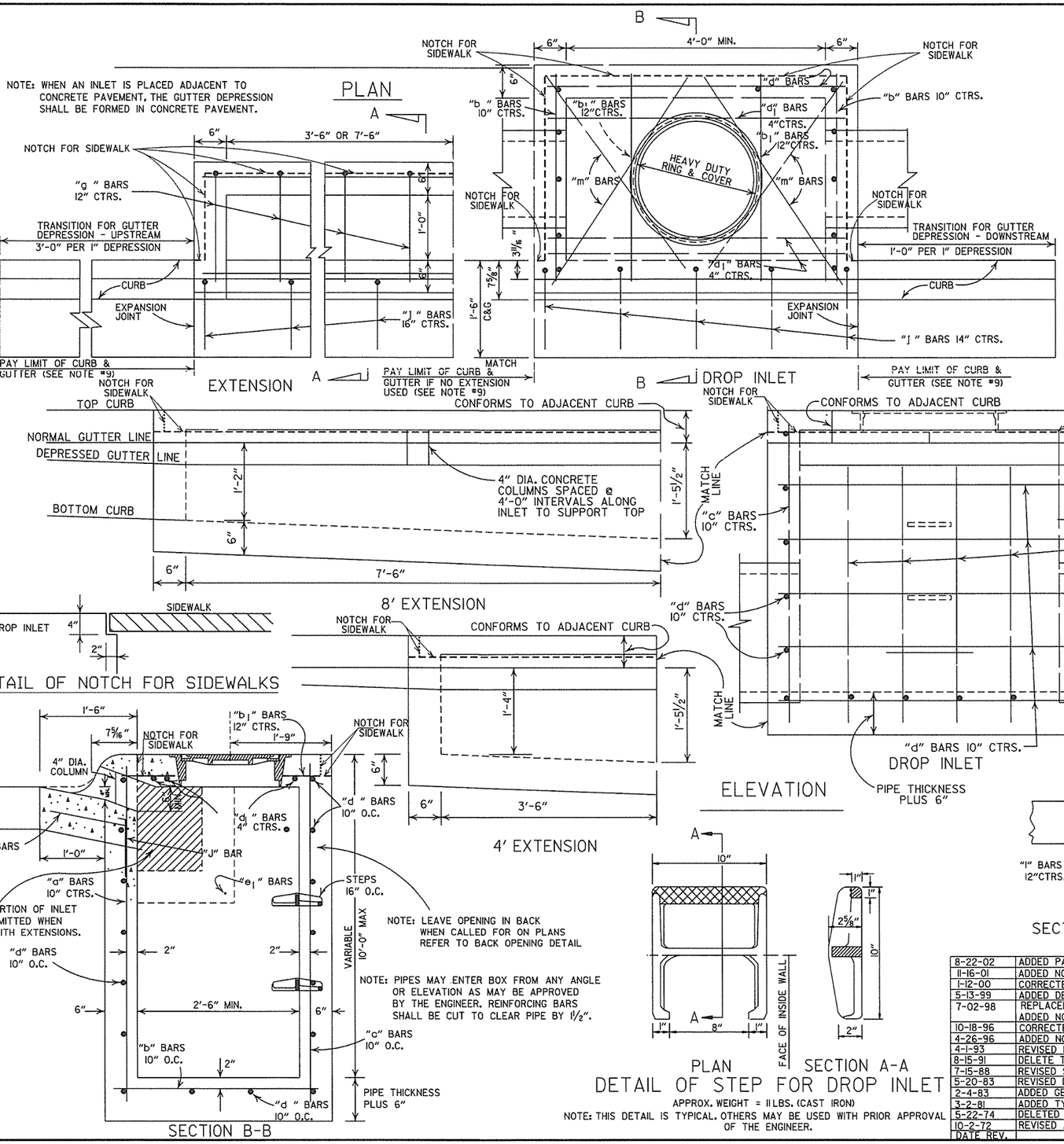
WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).



APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE ¾″ CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4′-0″ HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1½″ COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10′-0″ HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (F.P.C.-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4″×2″ NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.



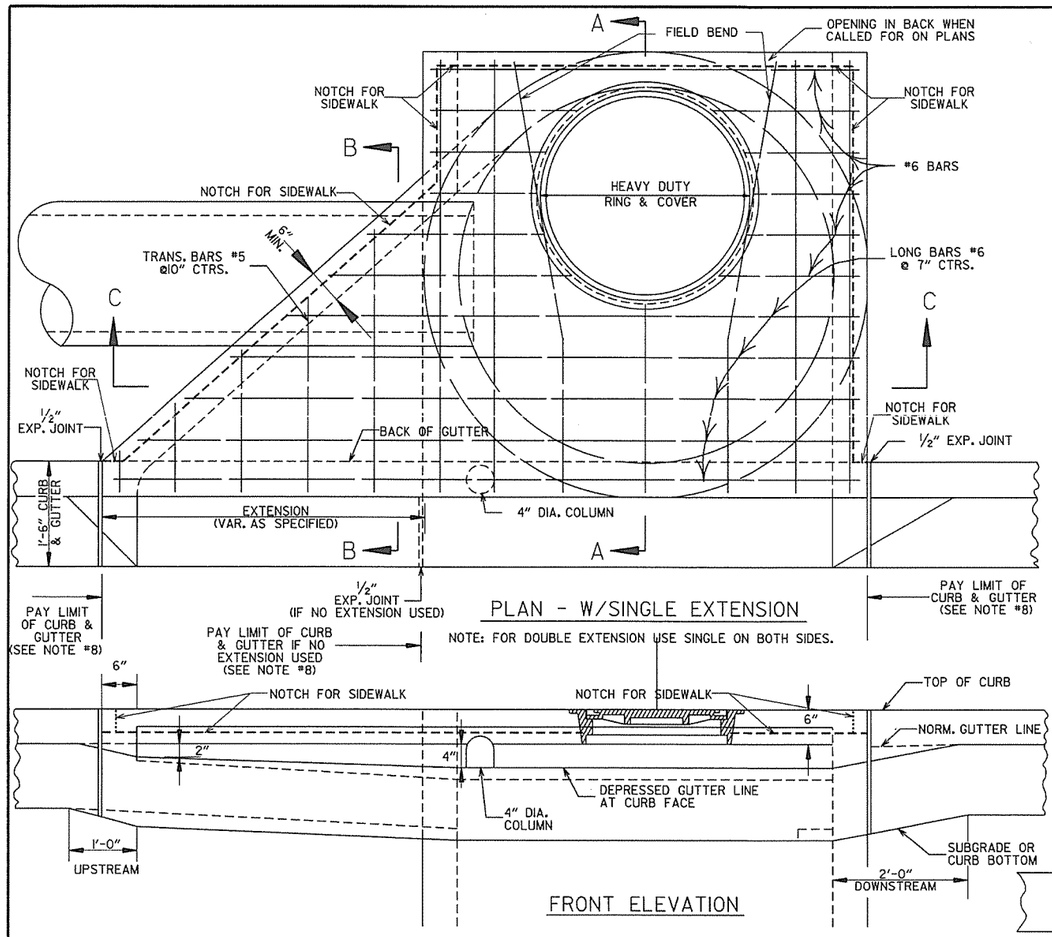
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER ADDED NOTES 9,10,&11	
10-18-96	CORRECTED SPELLING	
4-26-96	ADDED NOTE 8 & REVISED (4′)(8′) EXTENSION TITLES	10-18-96
4-1-93	REVISED BACK OPENING & NOTE	
8-15-91	DELETE TYPE IV GRATE	
7-15-88	REVISED STEP DETAIL	
5-20-83	REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83	ADDED GENERAL NOTE NO. 4	
3-2-81	ADDED TYPE IV-A GRATE	
5-22-74	DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72	REVISED AND REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

(TYPE C)

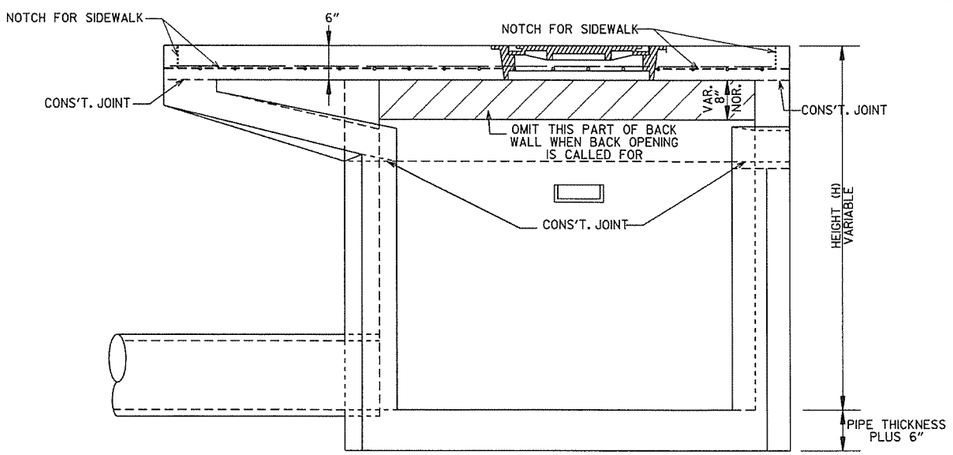
STANDARD DRAWING FPC-9E



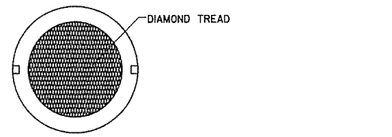
PLAN - W/SINGLE EXTENSION

NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.

FRONT ELEVATION



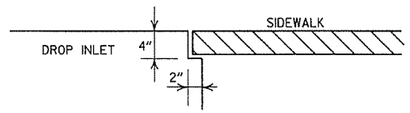
SECTION C-C



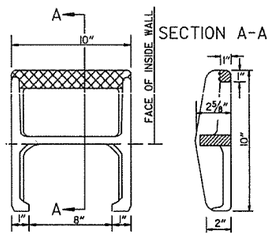
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.



DETAIL OF NOTCH FOR SIDEWALKS

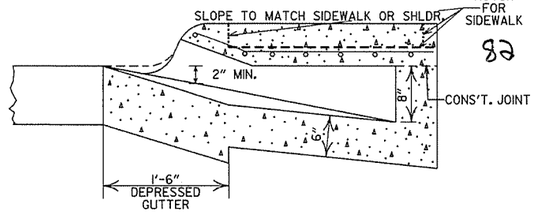


APPROX. WEIGHT = 11 LBS. (CAST IRON)

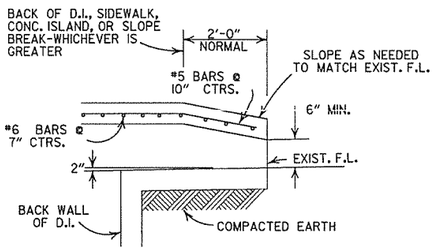
PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

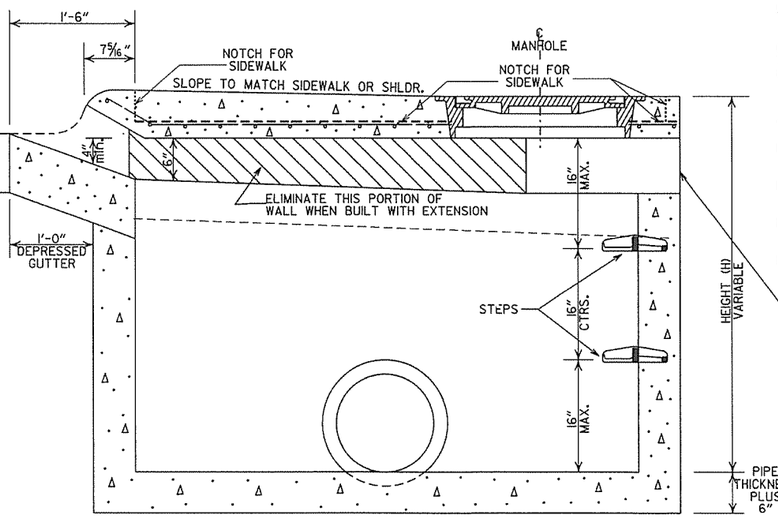


SECTION B-B



BACK OPENING

WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE MO).



SECTION A-A

GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OR AS DIRECTED BY THE ENGINEER.
3. ALL REINFORCING BARS SHALL BE GRADE 60 AND HAVE MIN. 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. 4" DIA. COLUMNS SPACED AT MAX. 4'-0" INTERVALS SHALL BE INSTALLED ALONG INLET AND EXTENSION TO SUPPORT TOP.
6. BASE AND INLET WALLS SHALL BE CAST MONOLITHICALLY.
7. THE THROAT SHALL BE CAST INTEGRALLY WITH THE GUTTER.
8. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
9. PIPES MAY ENTER DROP INLET FROM ANY ANGLE OR ELEVATION AS MAY BE APPROVED BY THE ENGINEER.
10. APPROPRIATE SIZE TYPE C DROP INLETS MAY BE SUBSTITUTED FOR TYPE MO DROP INLETS AS APPROVED BY THE ENGINEER. PAYMENT TO BE AS DROP INLET (TYPE MO).
11. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

LEAVE OPENING IN BACK WHEN CALLED FOR ON PLANS REFER TO BACK OPENING DETAIL

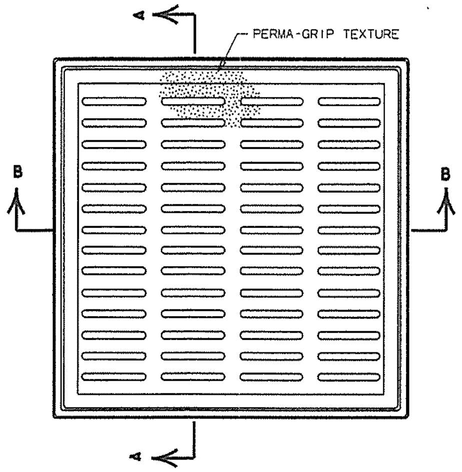
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS	
		CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

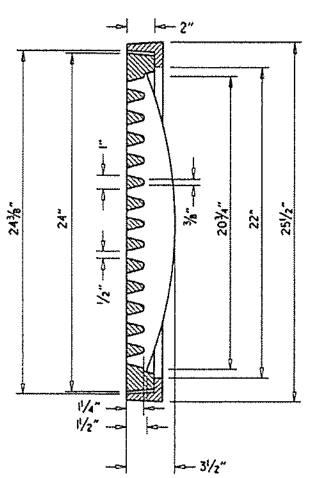
DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 11 ADJ. OPENING DIMENSION	
10-12-95	CORRECTED #5 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
2-2-95	TYPE C TO MO (OPEN, BACK DETAIL)	
11-3-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN. DETAIL & NOTE	4-1-93
8-15-91	REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL	8-15-91
11-30-89	ADDED NOTE NO. 12	11-30-89
5-23-89	ADDED NOTE & MINIMUM WALL THICKNESS	513-5-23-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	639-7-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-12-87

ARKANSAS STATE HIGHWAY COMMISSION

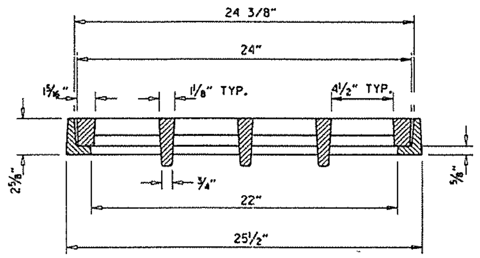
DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M





SECTION A-A

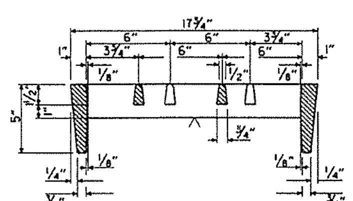


SECTION B-B

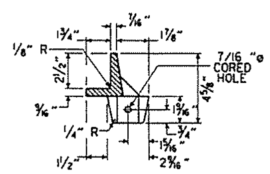
GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE 1/2" 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 211LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.

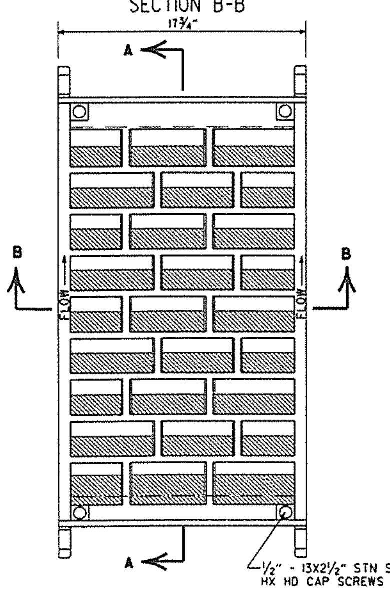
DETAILS OF PEDESTRIAN GRATE AND FRAME

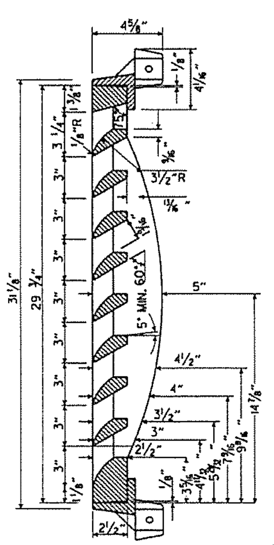


SECTION B-B



SECTION THRU FRAME



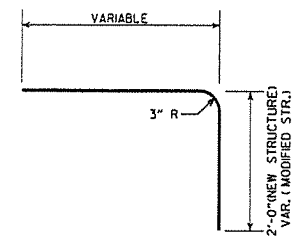


SECTION A-A

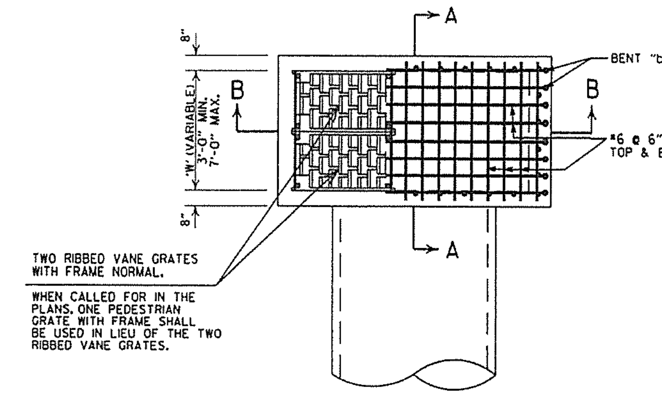
DETAILS OF RIBBED VANE GRATE AND FRAME

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.

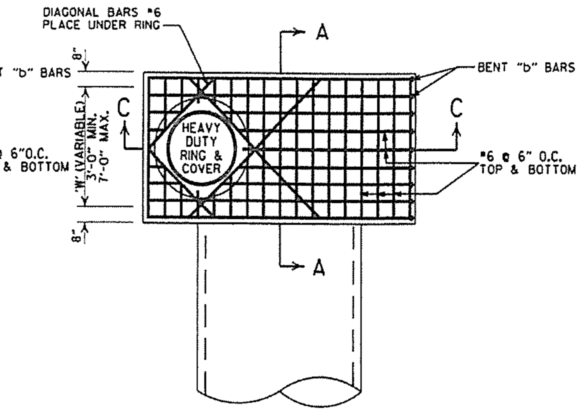


DETAIL OF BENT "b" BAR



TWO RIBBED VANE GRATES WITH FRAME NORMAL.

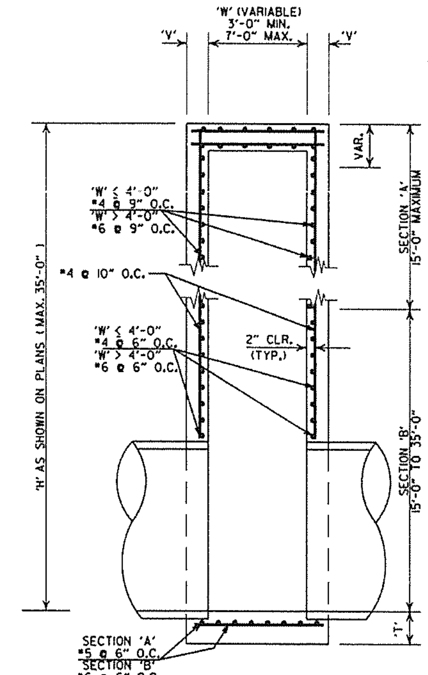
WHEN CALLED FOR IN THE PLANS, ONE PEDESTRIAN GRATE WITH FRAME SHALL BE USED IN LIEU OF THE TWO RIBBED VANE GRATES.



SECTION 'A'
'V' = 8"

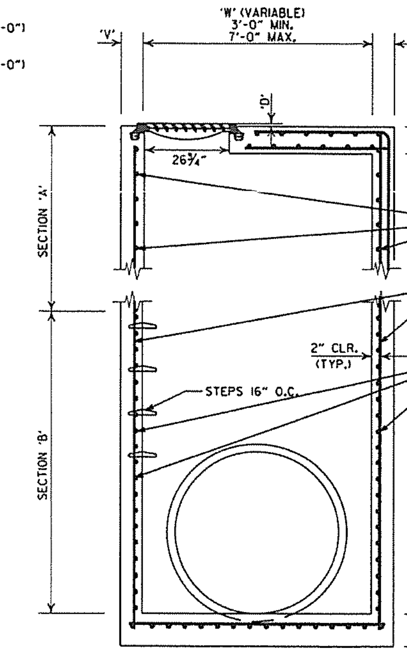
SECTION 'B' (W≤4'-0")
'V' = 8"

SECTION 'B' (W>4'-0")
'V' = 10"

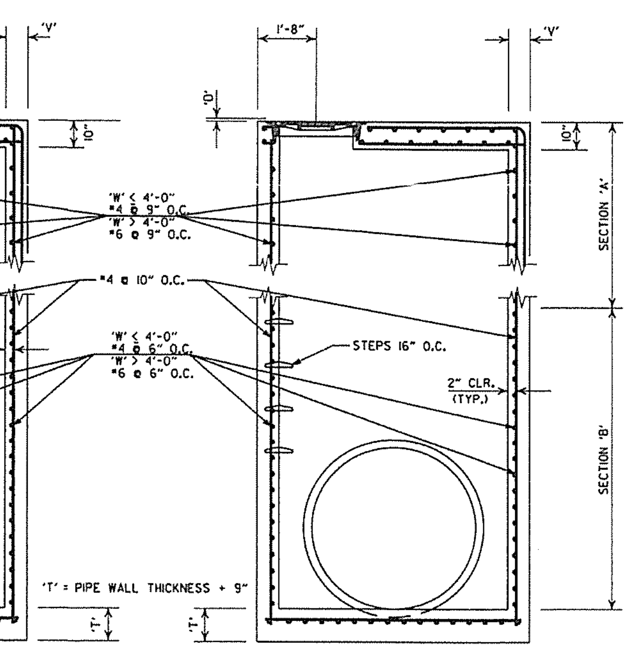


SECTION A-A

DETAILS OF DROP INLET (TYPE ST)

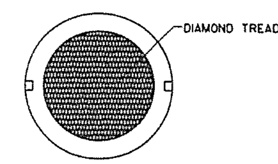


SECTION B-B

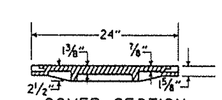


SECTION C-C

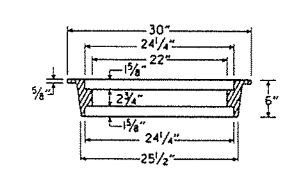
DETAILS OF JUNCTION BOX (TYPE ST)



COVER FACE



COVER SECTION



RING SECTION

HEAVY DUTY RING & COVER

APPROXIMATE TOTAL WEIGHT = 333 LBS.

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 3/4" CHAMFER.

GENERAL NOTES (HEAVY DUTY RING & COVER):

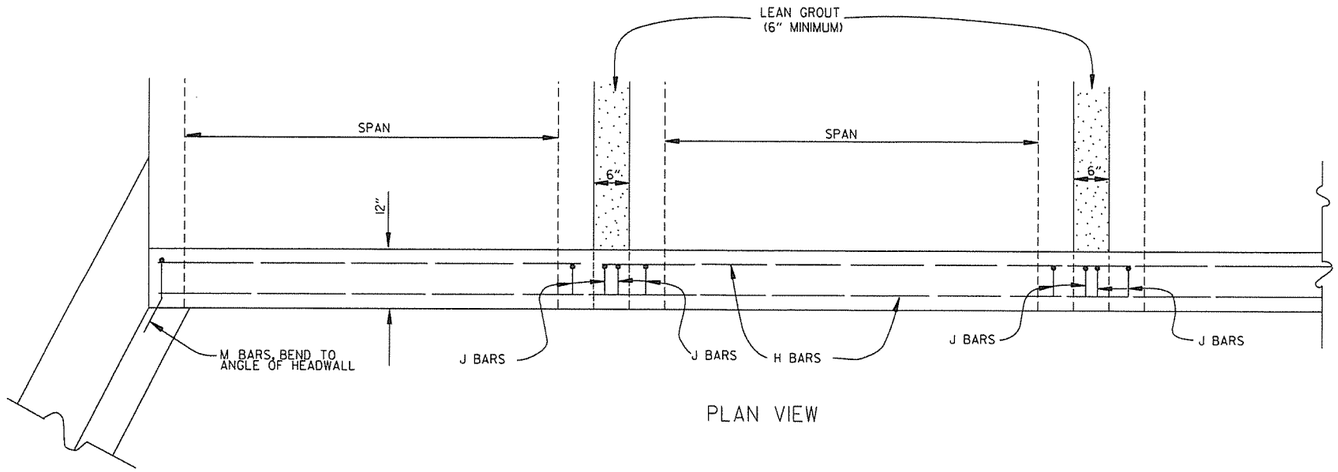
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE 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.

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)

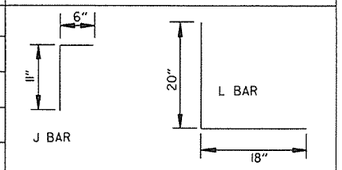
STANDARD DRAWING FPC-9S



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.

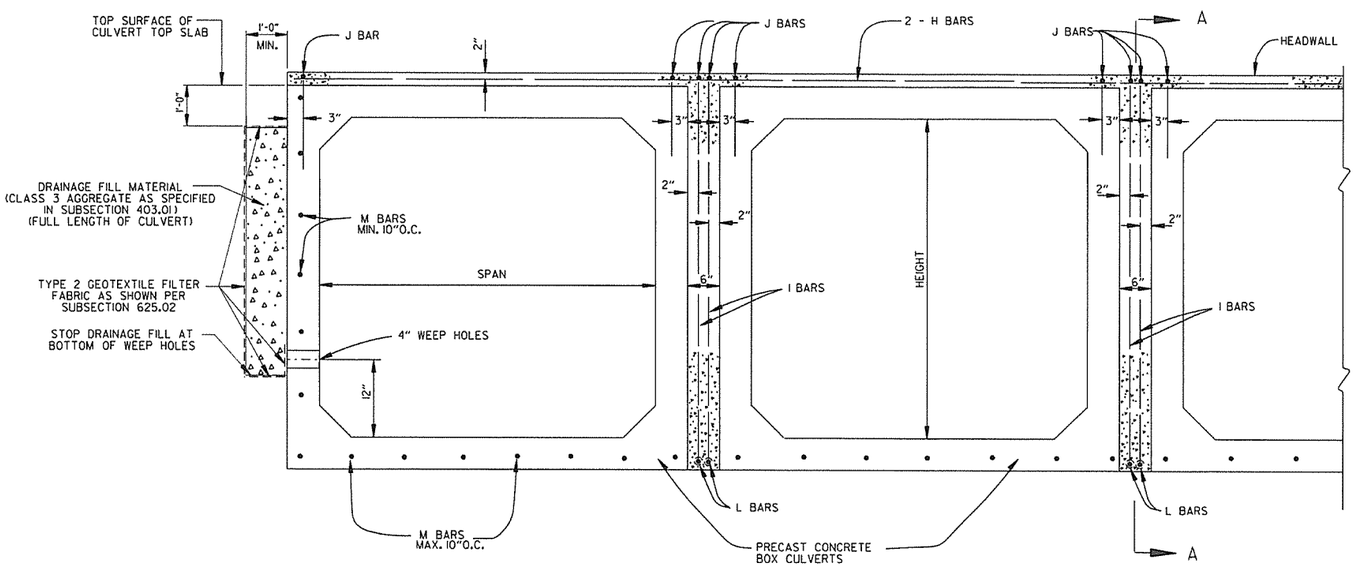
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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.

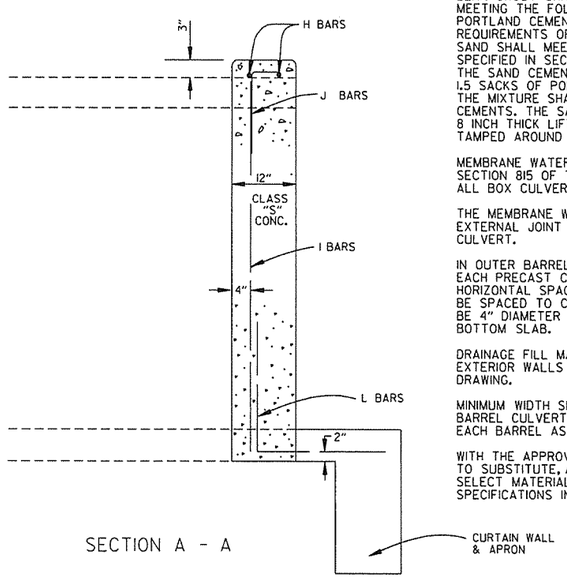
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT, SEE DETAILS ON THIS DRAWING.

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
1-28-15	REVISED GEOTEXTILE FABRIC PLACEMENT	
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	31⅝	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	96⅜	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)(ii).

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

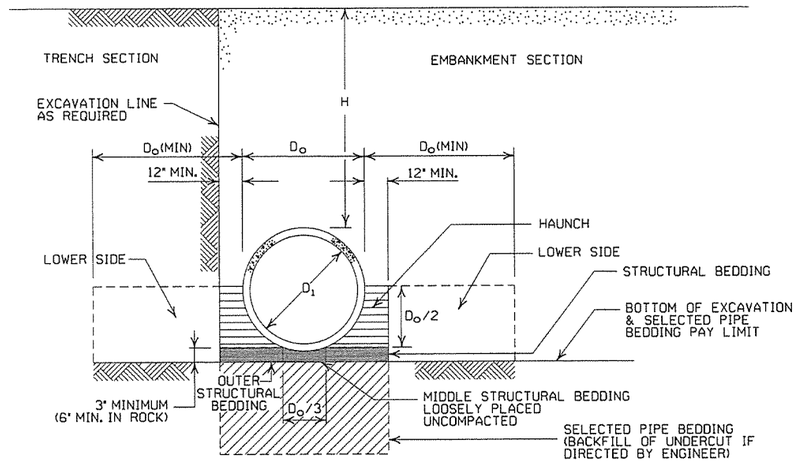
- LEGEND -

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

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	

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

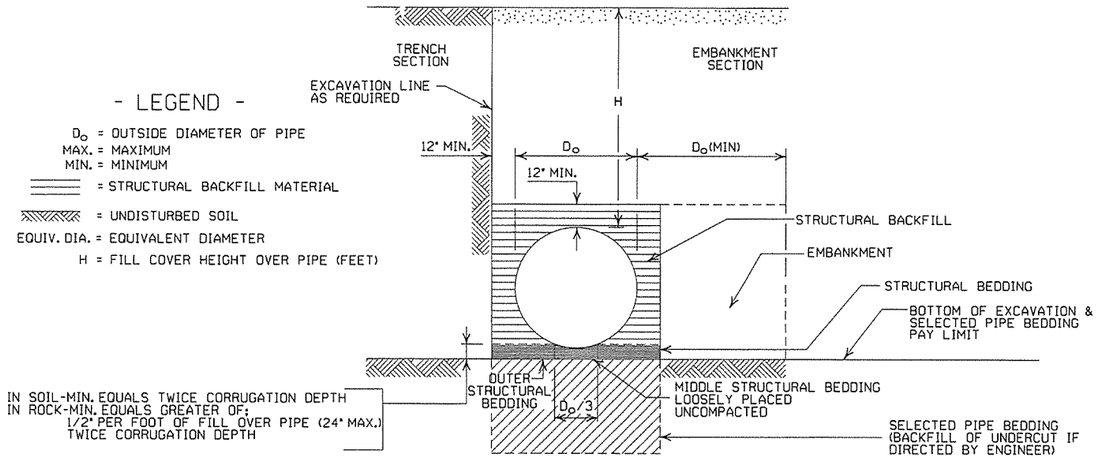
③ SM-3 WILL NOT BE ALLOWED.

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

- 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."

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

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

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

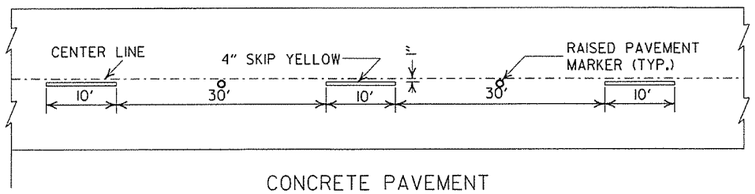
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

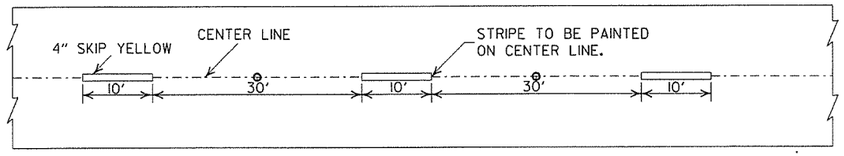
STANDARD DRAWING PCM-1

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.

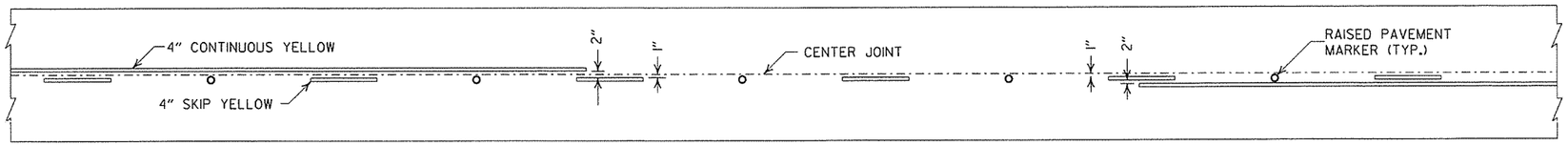


CONCRETE PAVEMENT

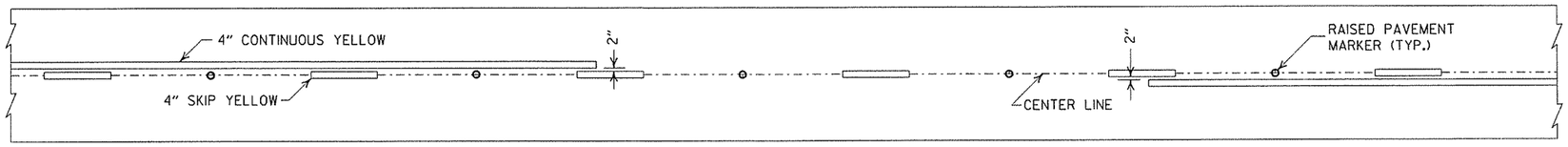


ASPHALT PAVEMENT

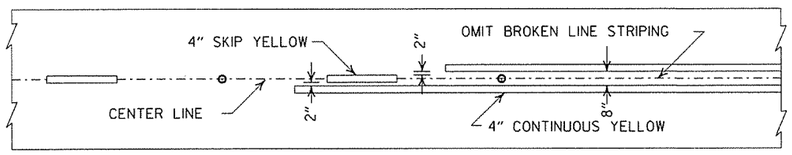
BROKEN LINE STRIPING



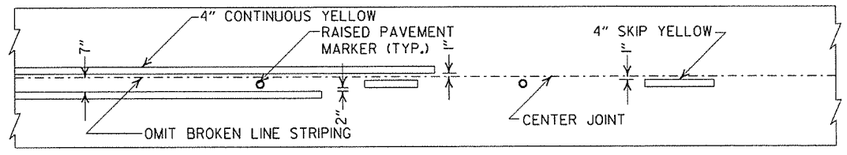
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

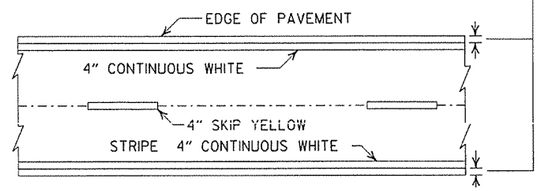


ASPHALT PAVEMENT

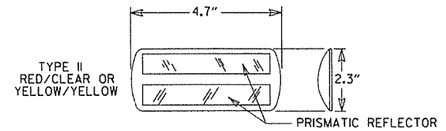


CONCRETE PAVEMENT

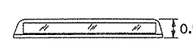
2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT



PAVEMENT EDGE LINE MARKING



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

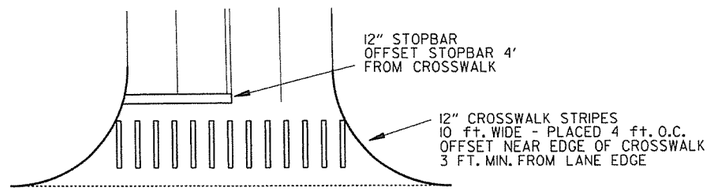
GENERAL NOTES:

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.

STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS

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

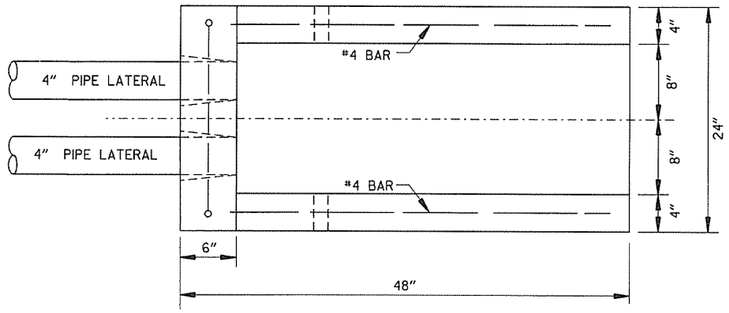
PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

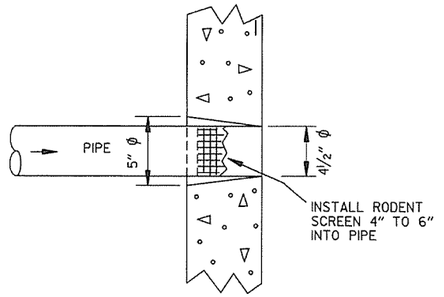
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

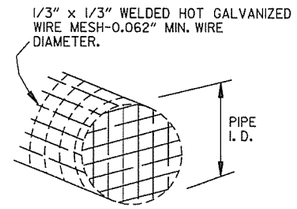
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



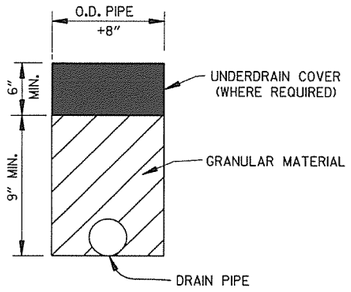
PLAN VIEW

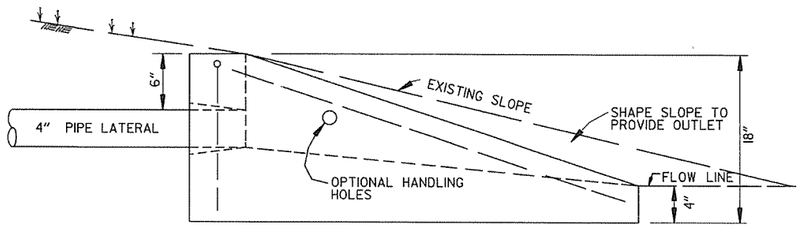


DETAIL OF HOLE FOR 4" PIPE

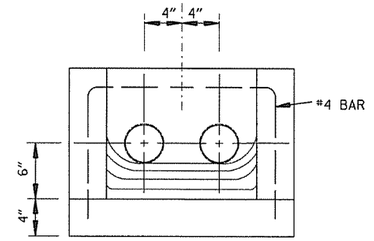


DETAIL OF RODENT SCREEN

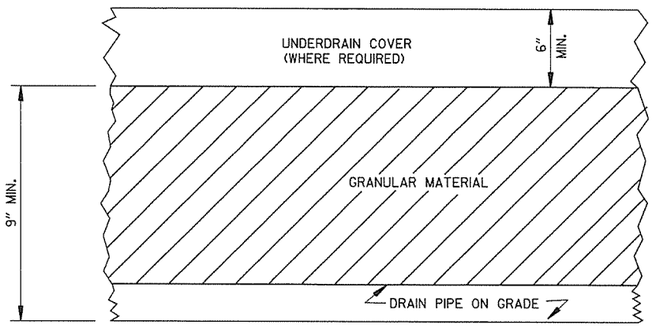




SIDE VIEW

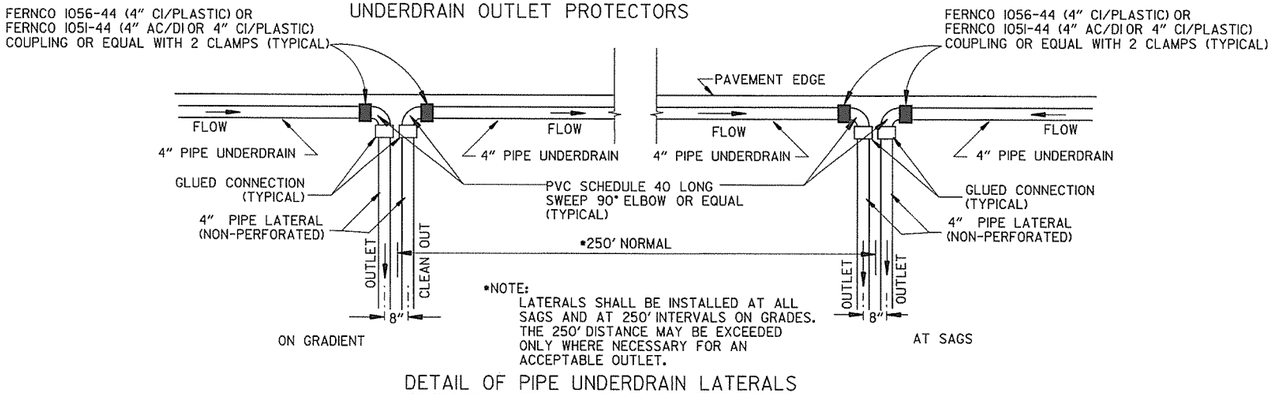


FRONT VIEW



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

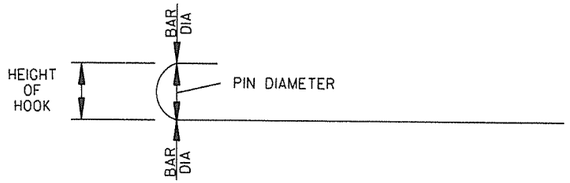
STANDARD DRAWING PU-1

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

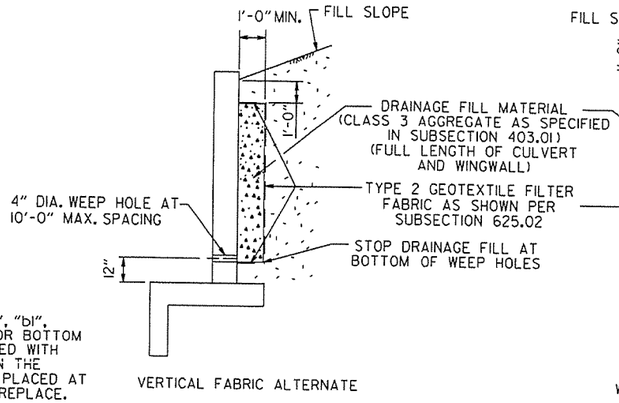
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

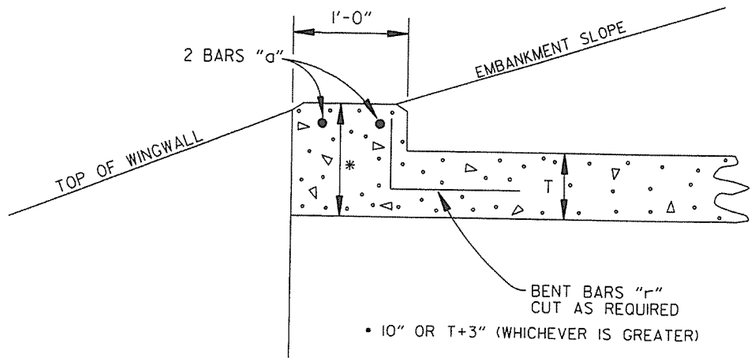
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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	

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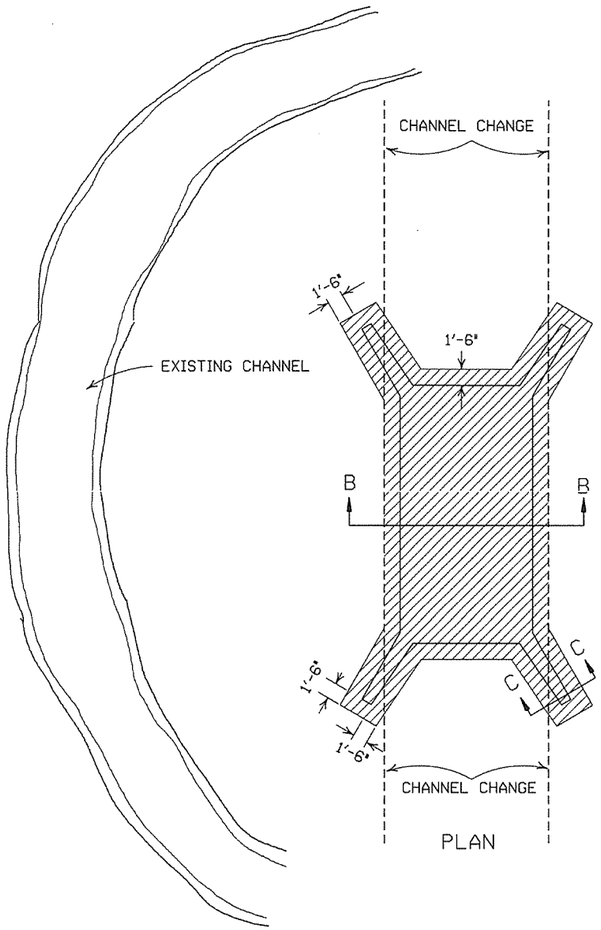
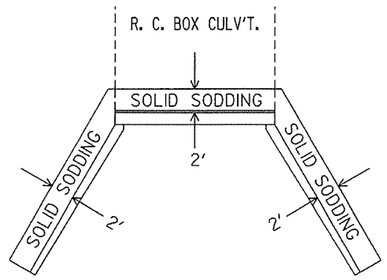
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

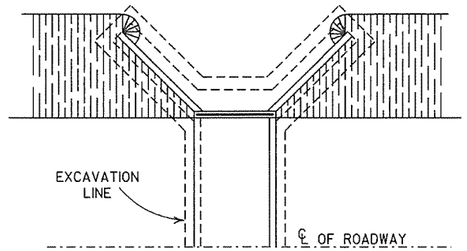
SOLID SODDING



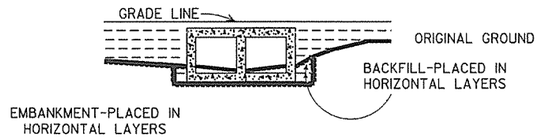
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

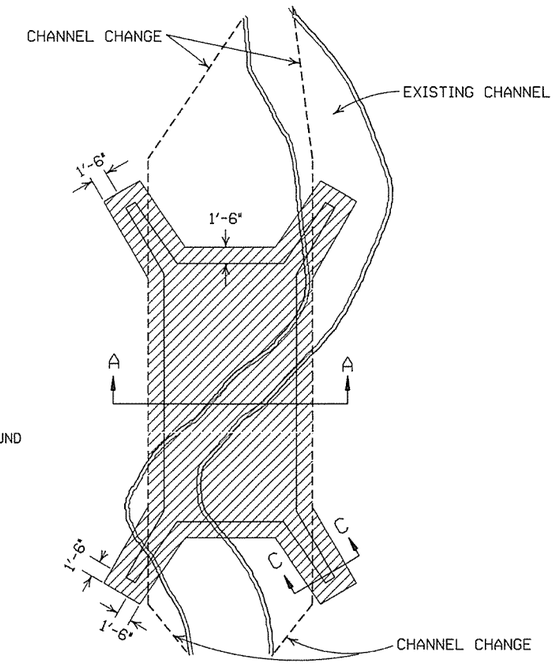


PLAN

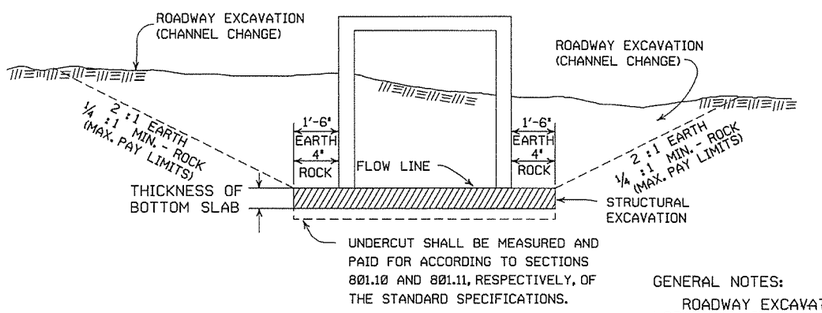


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

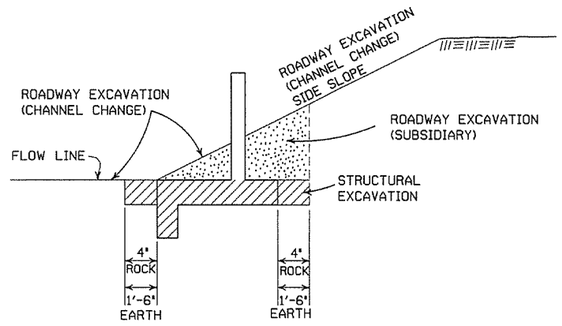


PLAN

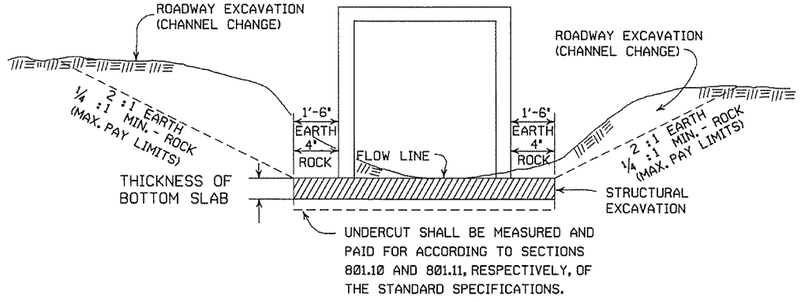


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

ROADWAY EXCAVATION (CHANNEL CHANGE) WILL BE PAID FOR AT R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS ACTUALLY CUT AND WILL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS ABOVE THE FLOW LINE. ROADWAY EXCAVATION (CHANNEL CHANGE) SHALL BE MEASURED BY CROSS SECTIONS AND VOLUMES COMPUTED BY AVERAGE END AREA METHOD. ALL CHANNEL CHANGES SHALL BE BROUGHT TO GRADE PRIOR TO MAKING ANY EXCAVATION FOR STRUCTURES.

EXCAVATION FOR STRUCTURES WILL BE PAID FOR AT ALL R.C. BOX CULVERT LOCATIONS. IT WILL BE PAID TO THE LIMITS SHOWN AND SHALL BE CONFINED TO THAT PORTION OF THE INDICATED AREA THAT IS BELOW THE CHANNEL FLOW LINE.

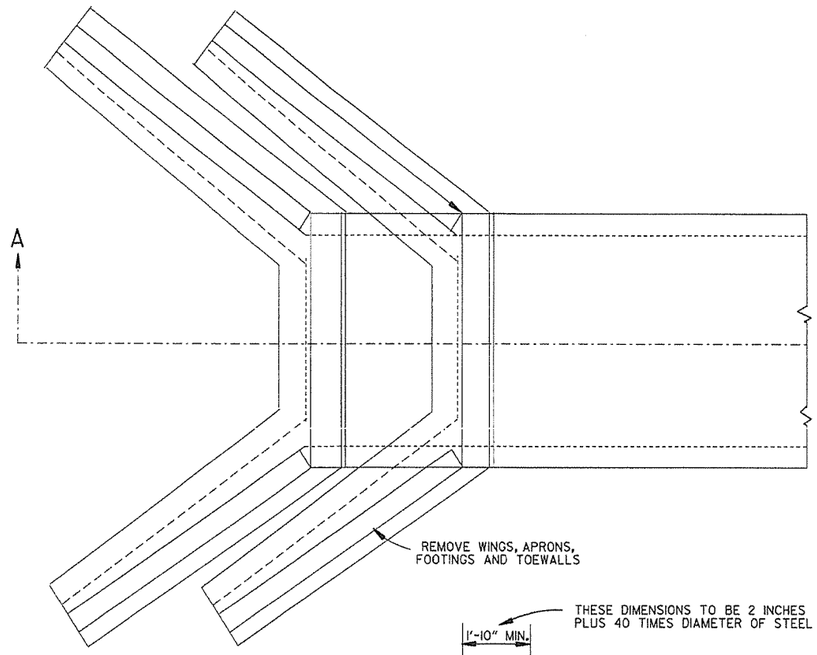
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

DATE	REVISION	FILMED
11-20-03	REVISED SECTION A-A NOTE	
8-22-02	REVISED SECTION B-B NOTE	
10-12-95	COMBINED 1891B AND 1888A	
1-4-83	REVISED GENERAL NOTES	674-1-4-83
	AND ADDED MAXIMUM PAY	
	LIMIT NOTES.	
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

ARKANSAS STATE HIGHWAY COMMISSION

EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

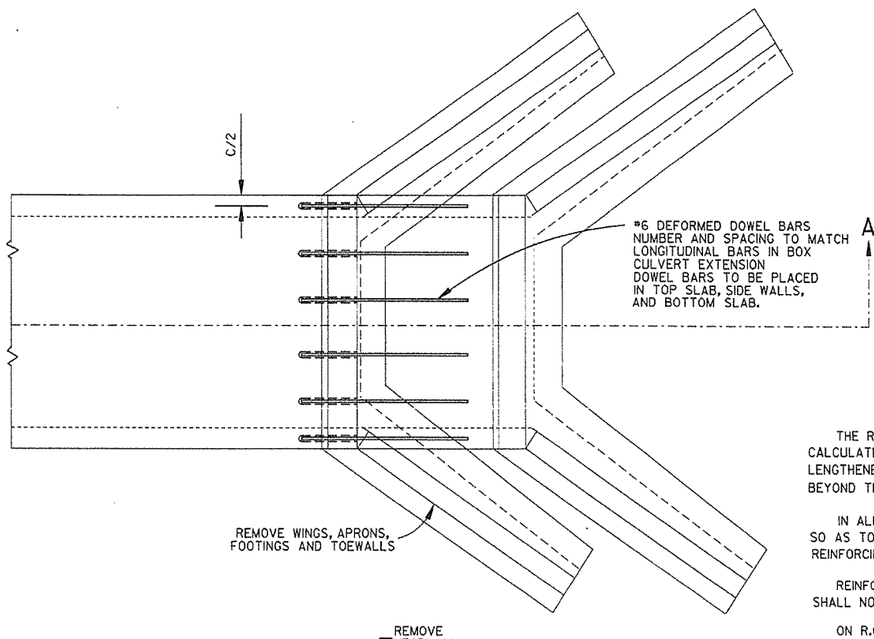
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 2

GENERAL NOTES

	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS: THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER. AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

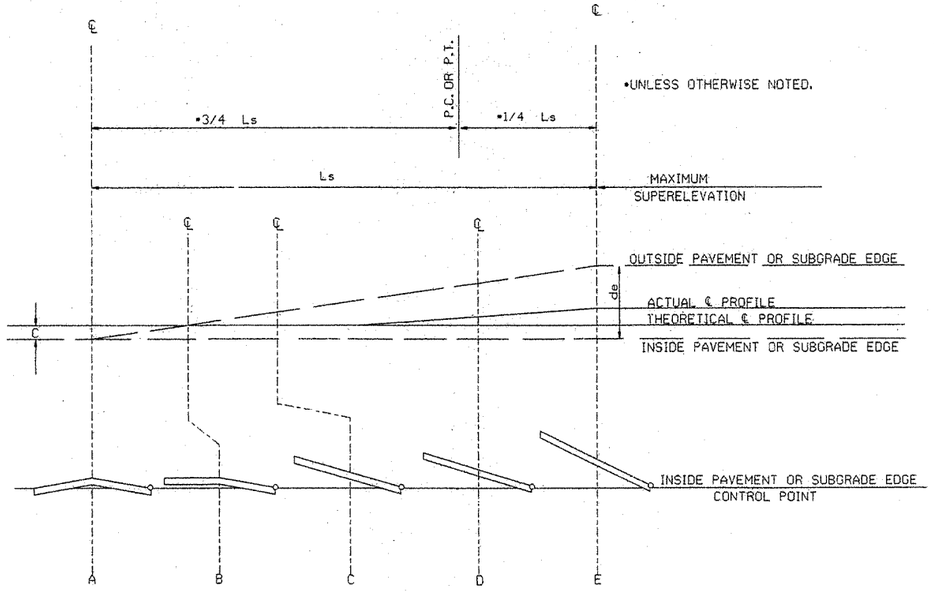
STANDARD DRAWING RCB-3

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH 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.			R.C.			0.022			0.023			0.028		
1° 00′	N.C.			N.C.			0.021			0.026			0.030			0.037	275	300
1° 15′	N.C.			R.C.			0.026			0.032			0.037	250	300	0.046		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.043			0.054		
1° 45′	N.C.			0.025	175		0.036			0.043		300	0.049			0.062		
2° 00′	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	350	400
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.098	360	
3° 30′	0.029			0.046			0.065	205		0.076	255		0.086	285	350	0.100	360	
3° 45′	0.031		200	0.049			0.069	215		0.080	265		0.090	296				
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30′	0.037			0.056			0.078	240		0.087	280	350	0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300							
6° 00′	0.046			0.070	190		0.092	270	300	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										
7° 30′	0.056			0.081	215		0.099	290										
8° 00′	0.058			0.084	220	250	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	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.

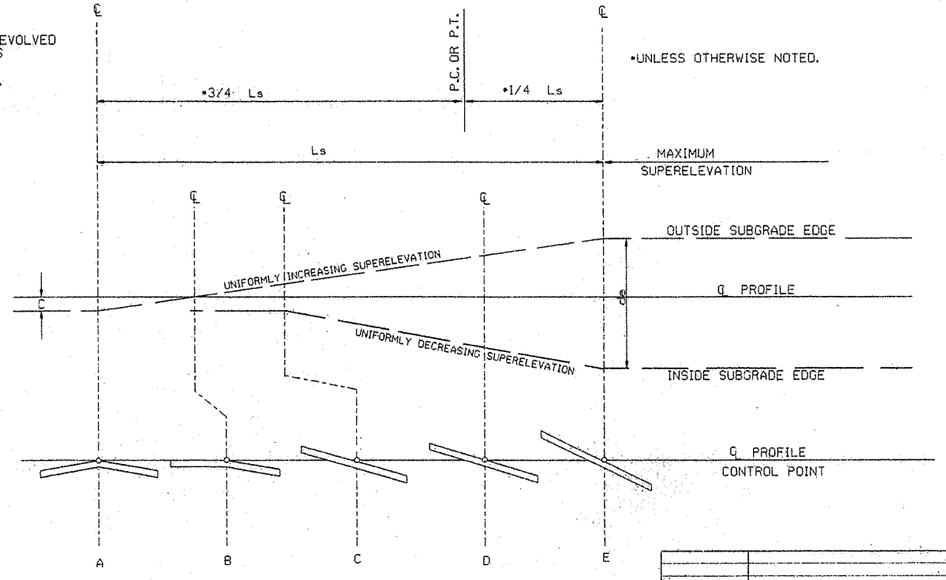
GENERAL NOTES

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 = $\frac{Lde}{Ls}$

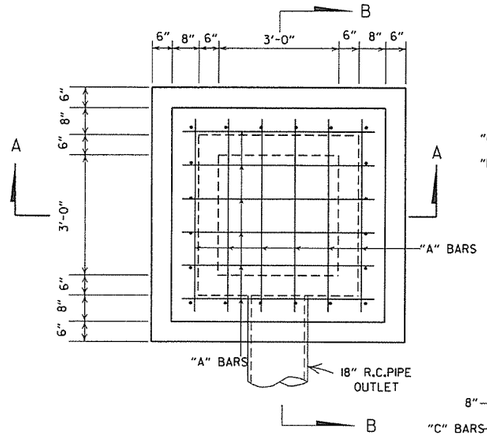
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

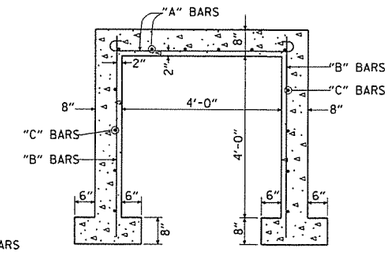
ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

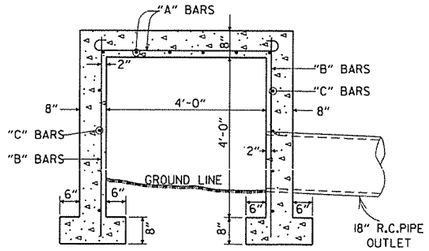
STANDARD DRAWING SE-2

FILE STDSE2.DGN





SEC A-A



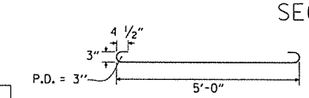
SEC B-B

NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 ½"
"C"	16	5'-0"	12"

ALL STEEL TO BE #4 BARS



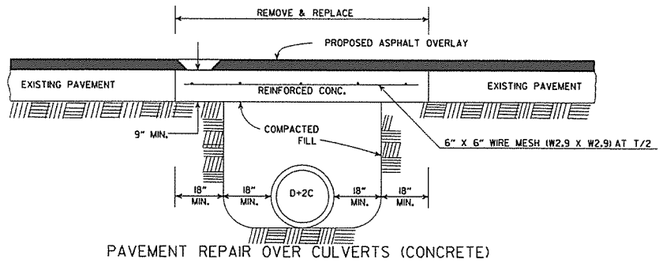
"A" BARS

QUANTITIES

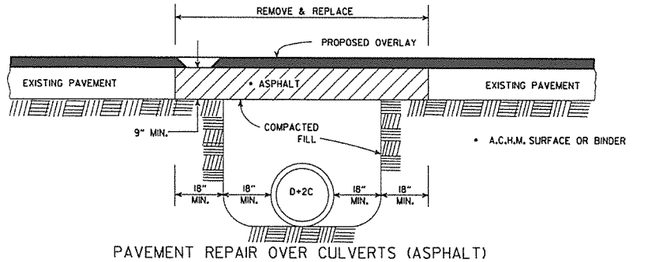
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

REINFORCED CONCRETE SPRING BOX



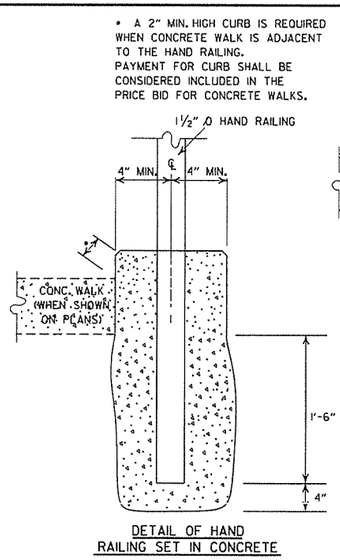
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



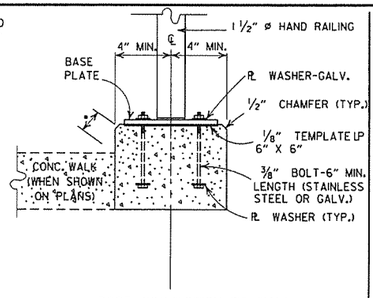
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

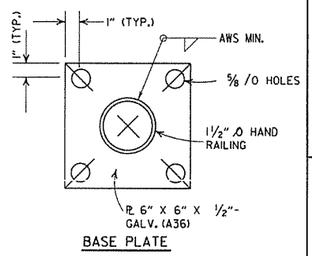
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

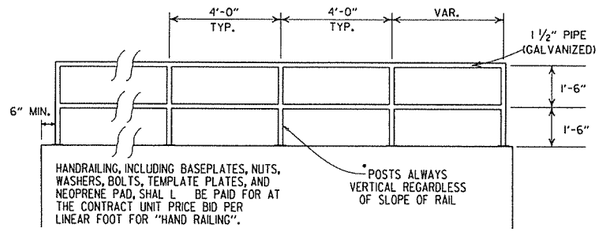


POST CONNECTION TO WALL

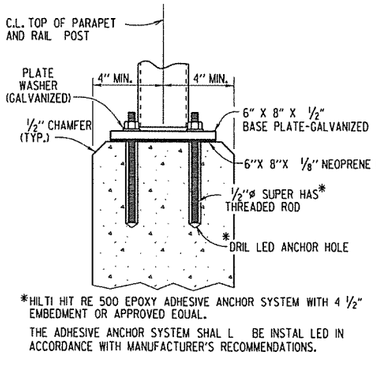


BASE PLATE

POST CONNECTION DETAILS



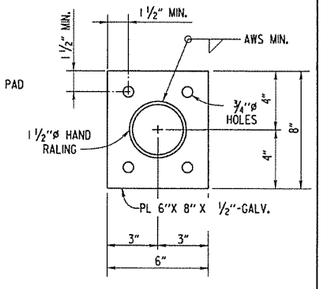
HAND RAILING SHALL CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

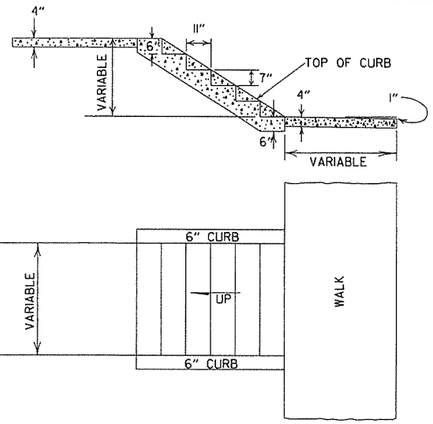
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
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

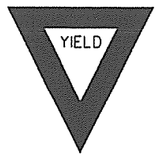
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI - 1

R1-1

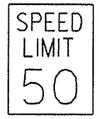
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

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"

W3-5

STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

W3-5a

STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

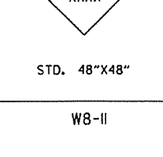
R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

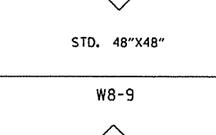
STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



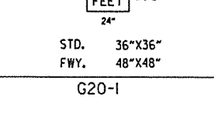
STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2



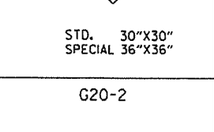
48"X30"

RII-3A



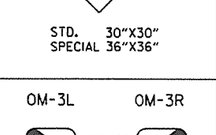
60"X30"

RII-4



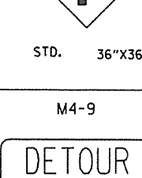
60"X30"

RSP-1



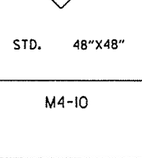
48"X30"

WI-1



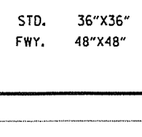
STD. 36"X36"
FWY. 48"X48"

WI-2



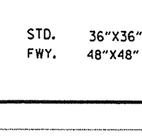
STD. 36"X36"
FWY. 48"X48"

WI-3



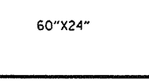
STD. 48"X48"

WI-4



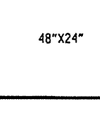
STD. 48"X48"

WI-6



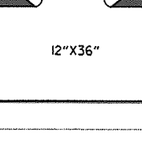
STD. 48"X24"
SPECIAL 60"X30"

WI-8



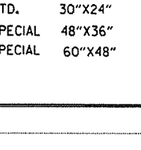
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



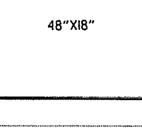
STD. 36"X36"
SPECIAL 48"X48"

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"

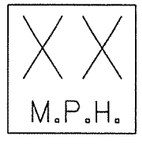
W8-7

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"

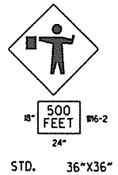
W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

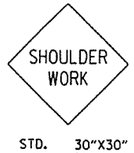


STD. 36"X36"
FWY. 48"X48"

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"

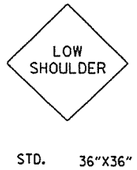
R56-1

STD. 18"X18"

W8-11

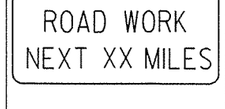
STD. 36"X36"
FWY. 48"X48"

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

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.

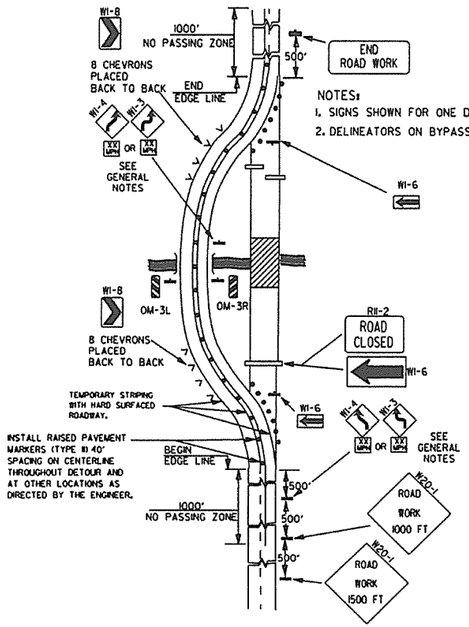
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
8-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
8-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
8-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	G-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-94	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

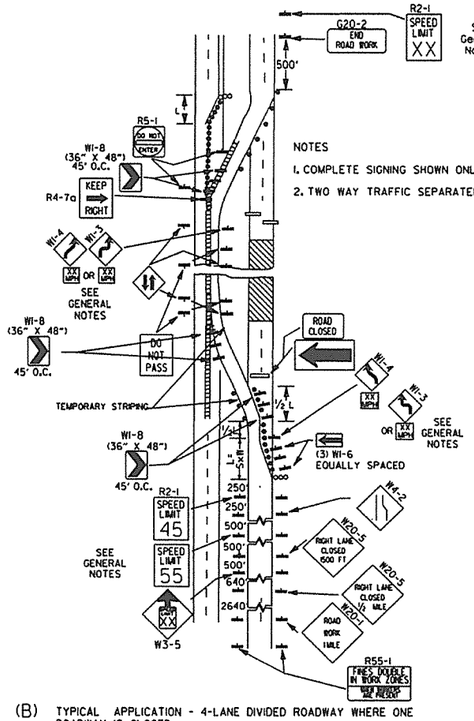
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



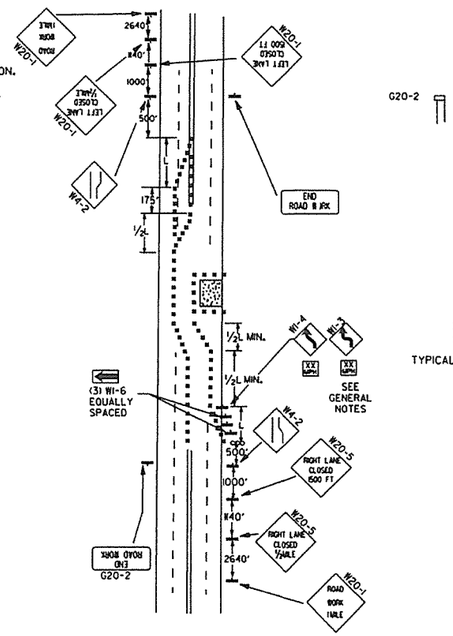
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.

NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

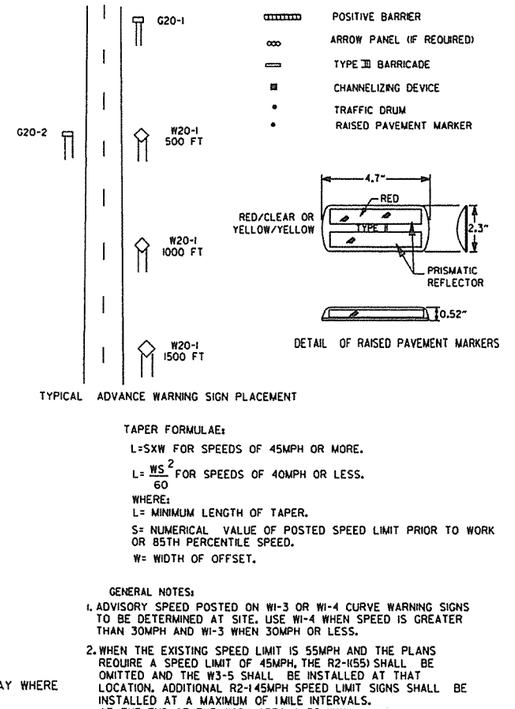


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

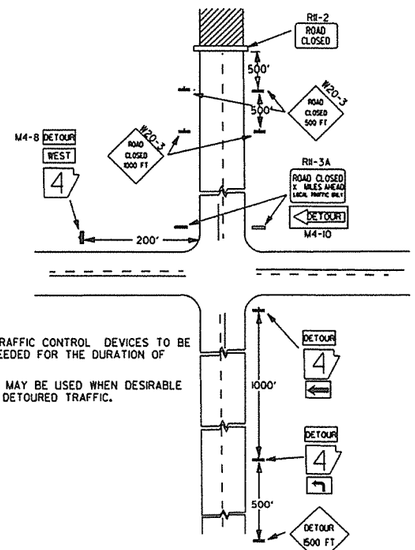


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



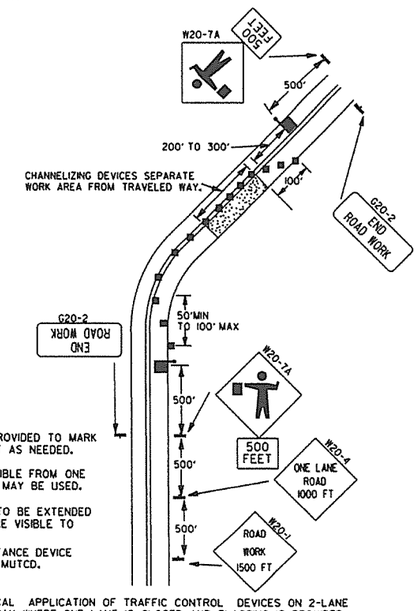
TYPICAL ADVANCE WARNING SIGN PLACEMENT

DETAIL OF RAISED PAVEMENT MARKERS



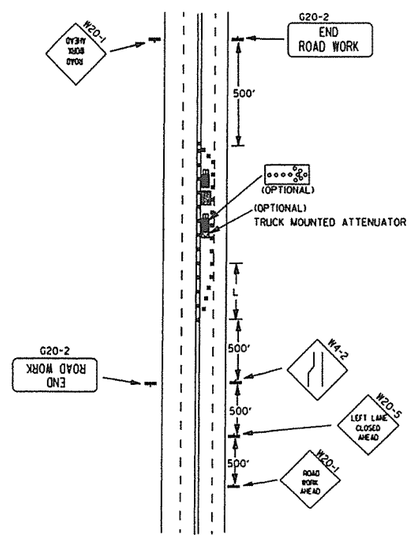
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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:

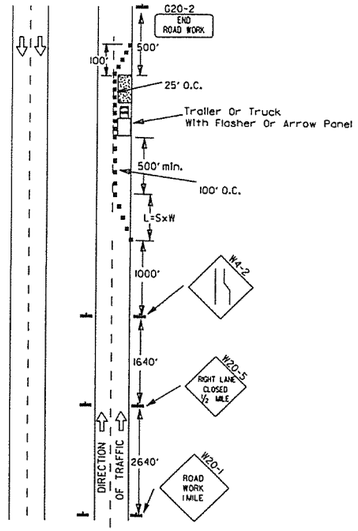
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH R3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-8-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

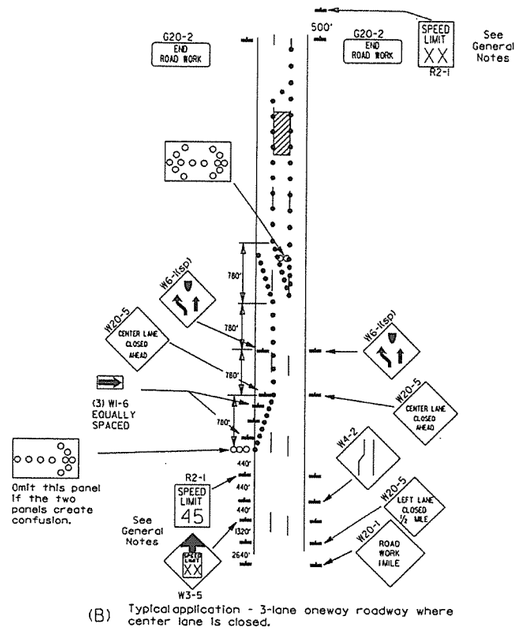
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

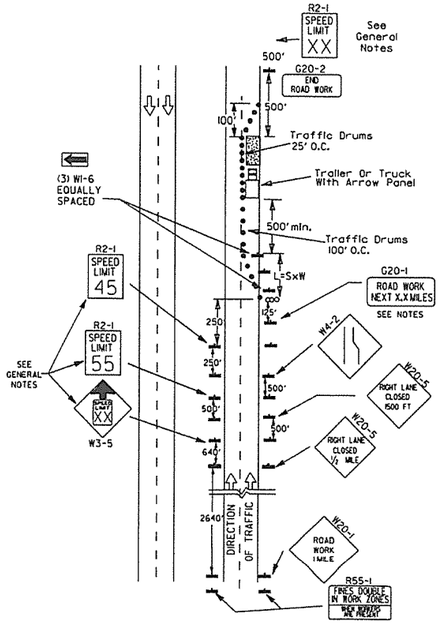
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operatipns of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

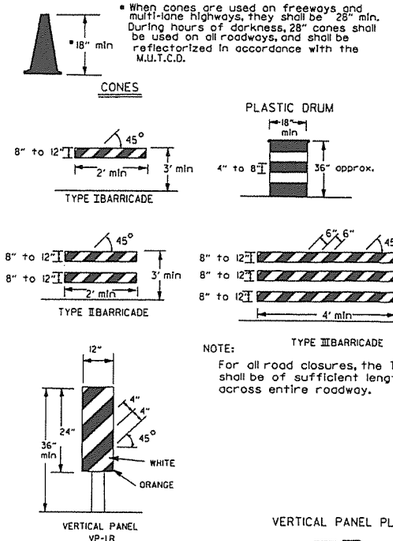
KEY:

- ooo Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

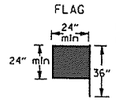
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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.

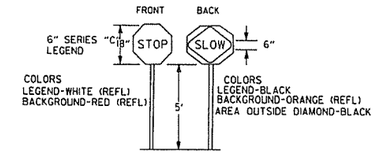
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

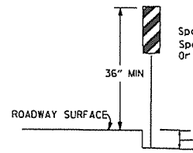


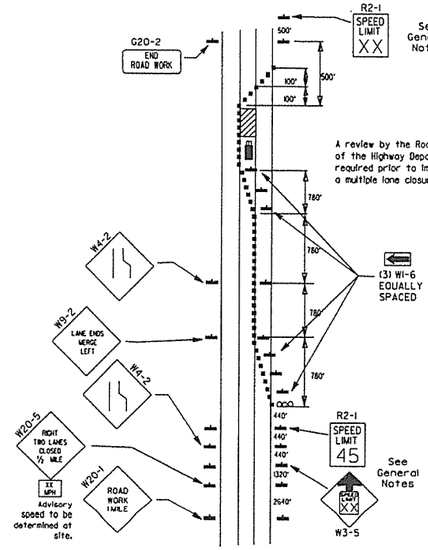
Flag shall be of good grade red material

STOP SLOW PADDLE



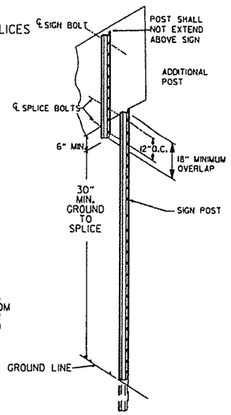
VERTICAL PANEL PLACEMENT





(D) Typical application - closing multiple lanes of a multilane highway.

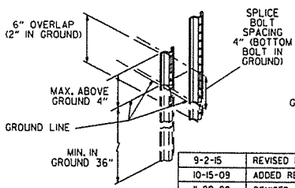
DETAIL OF SPLICES



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
8-15-91	DRAWN AND PLACED IN USE	
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
10-12-95	MOVED UPPER SPLICE	
10-18-96	ADDED R55-1	
4-03-97	ADDED (SP) TO W6-1& REVISED TRAFFIC CONTROL DEVICES NOTE	
10-1-98	ADDED NOTE	
11-18-04	ADDED NOTE	
11-20-08	REVISED SIGN DESIGNATIONS	
10-15-09	ADDED REFERENCE TO MASH	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	

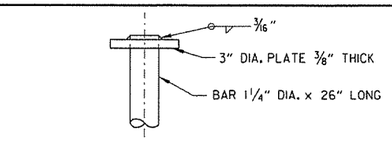
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

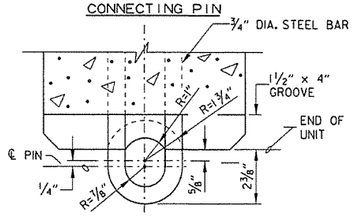
STANDARD DRAWING TC-3

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°, 9 1/2", 2'-1 3/8", 4 3/8"

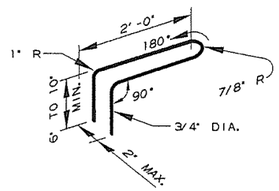


CONNECTING PIN

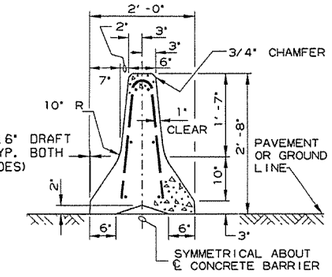


SECTION E-E

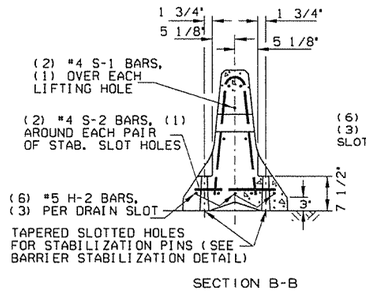
CONNECTION DETAILS



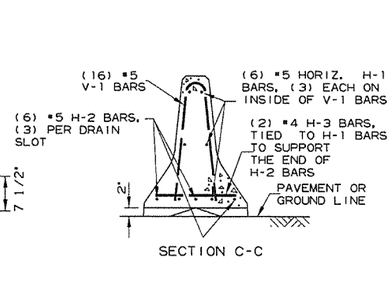
CONNECTION LOOP



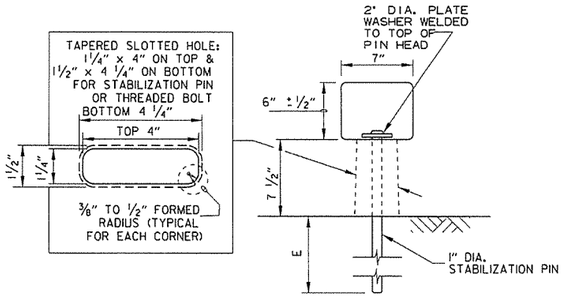
SECTION A-A



SECTION B-B



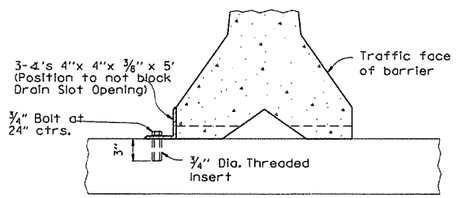
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

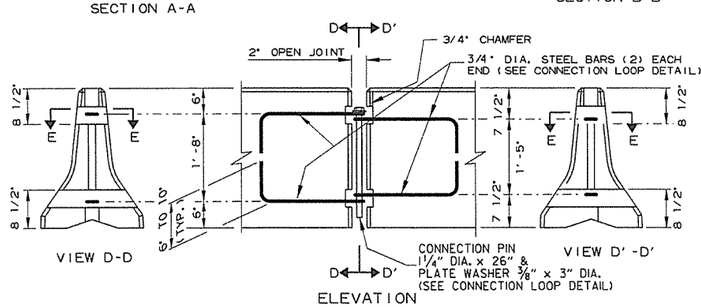
Ⓔ 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



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

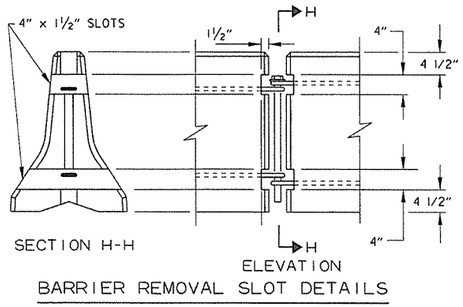
BRIDGE DECKS



VIEW D-D

VIEW D'-D'

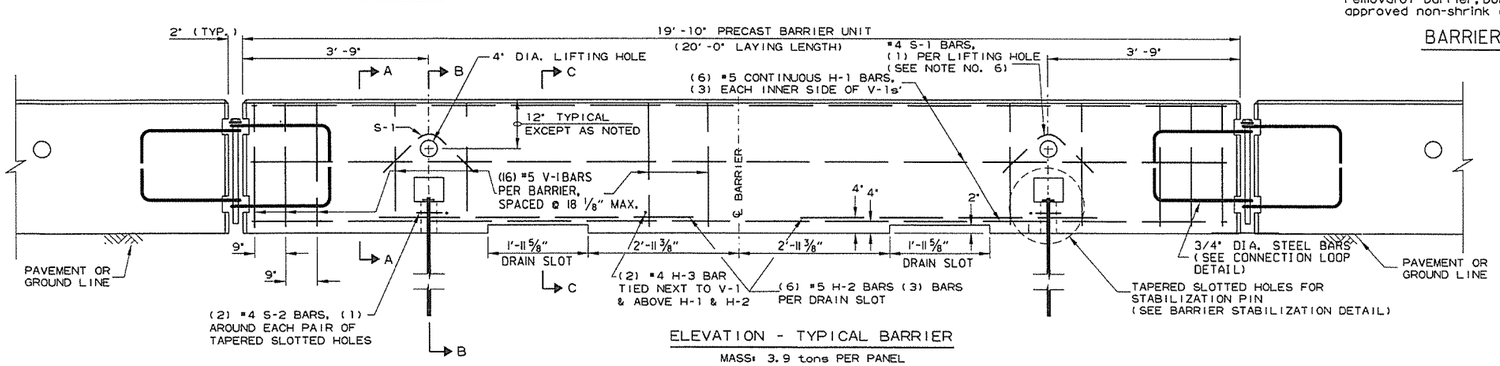
ELEVATION



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.

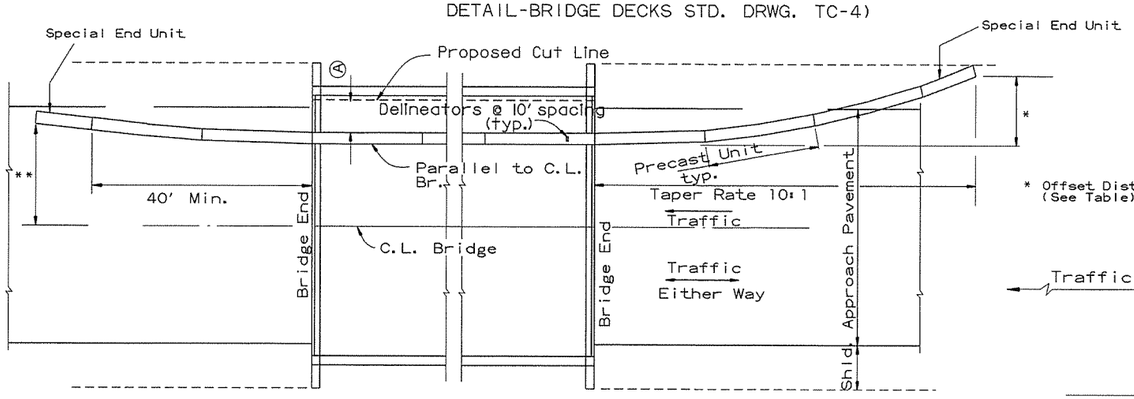
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	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)

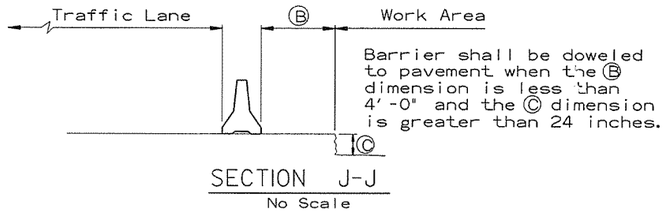


BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

** Offset Distance for Two Way Traffic Only

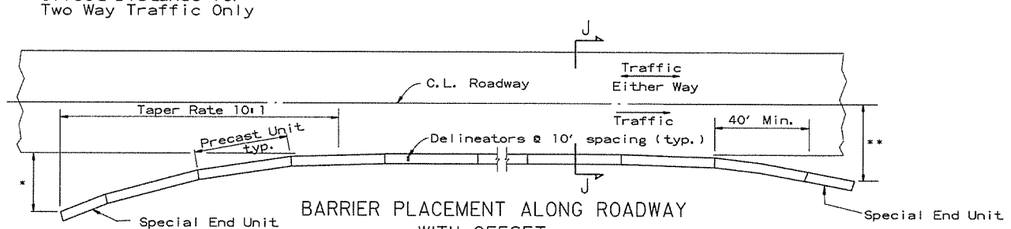
* Offset Distance (See Table)



Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

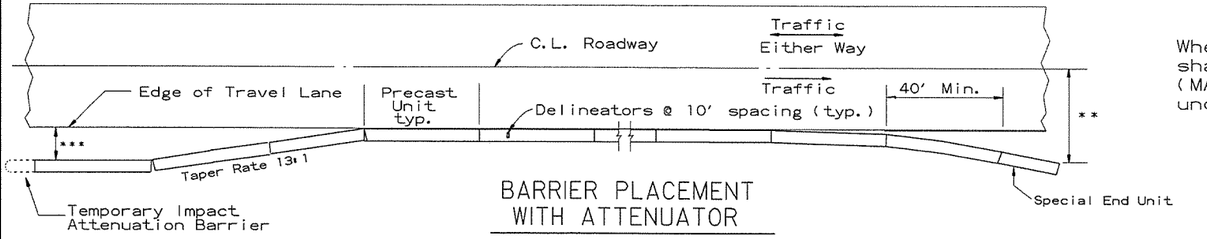
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see 'Barrier Placement With Attenuator' Detail shown below.

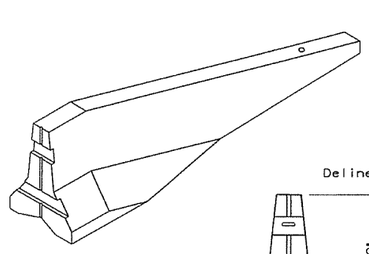


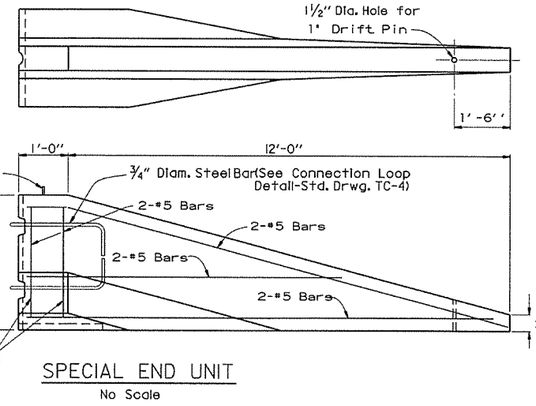
BARRIER PLACEMENT WITH ATTENUATOR

No Scale

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

** Offset Distance For Two Way Traffic Only





SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with 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	

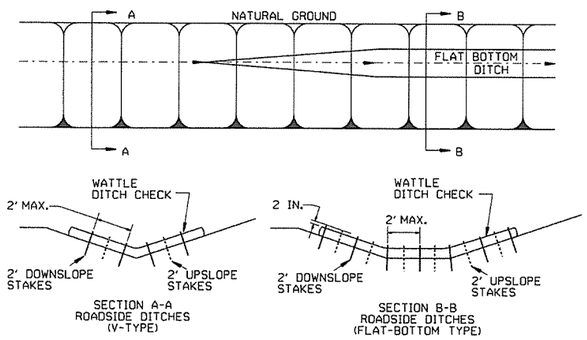
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

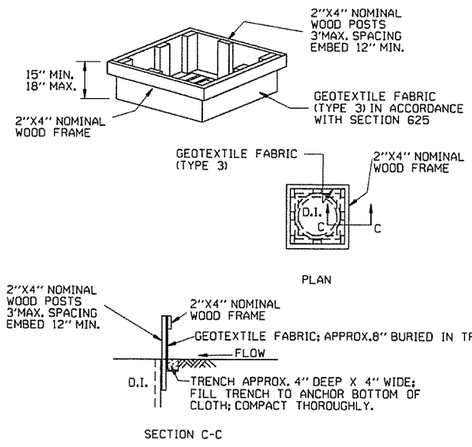
STANDARD DRAWING TC-5

GENERAL NOTES

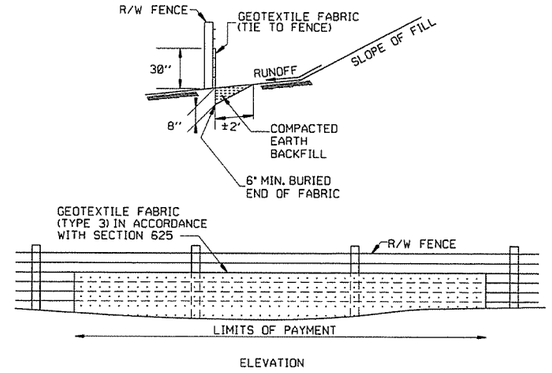
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

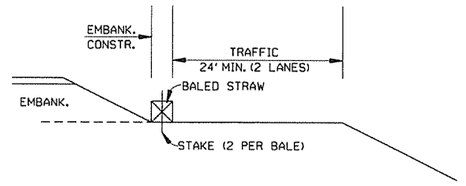
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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.

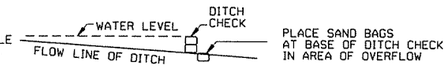
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

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.

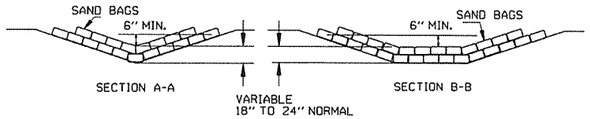


BALED STRAW FILTER BARRIER (E-2)

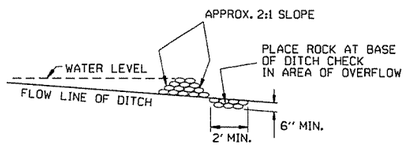
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.

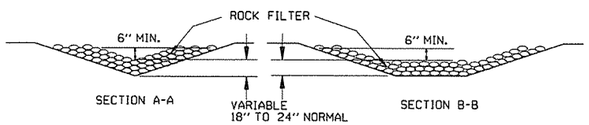


PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW



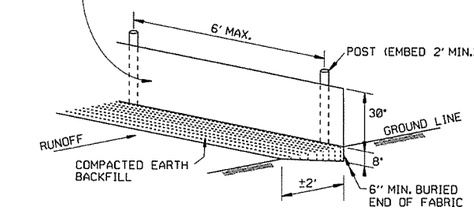
SAND BAG DITCH CHECK (E-5)





ROCK DITCH CHECK (E-6)

GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625



SILT FENCE (E-11)

GENERAL NOTES

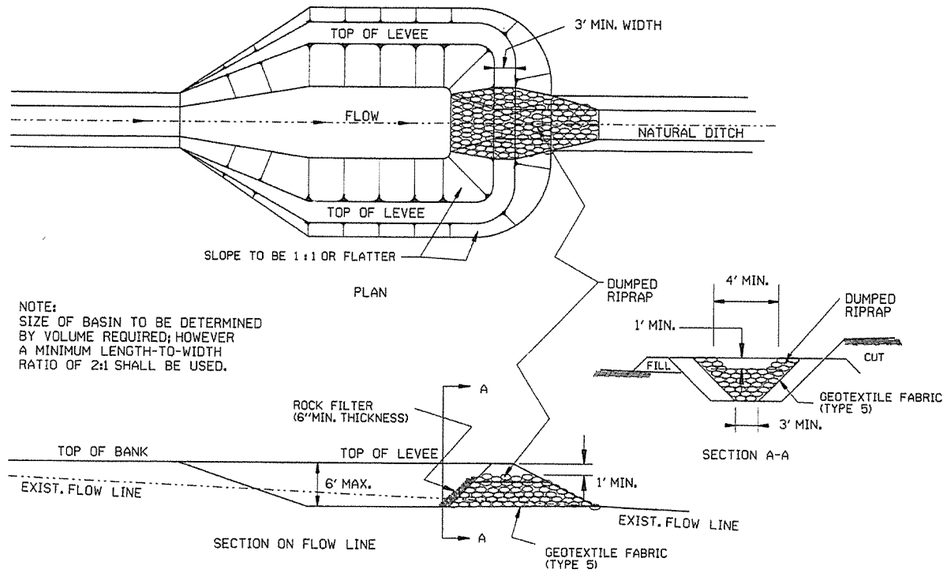
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

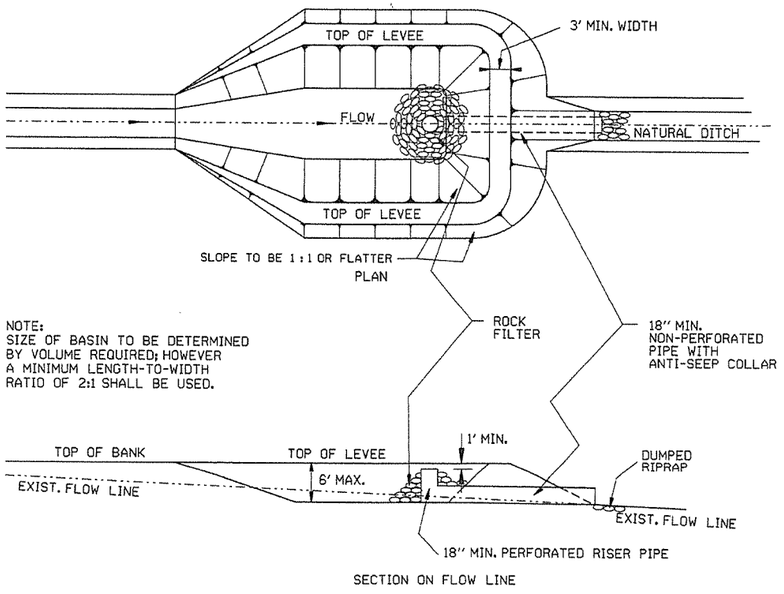
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

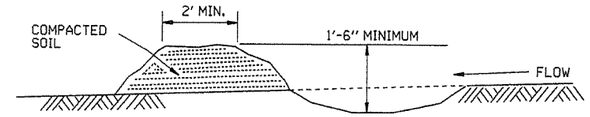
STANDARD DRAWING TEC-1



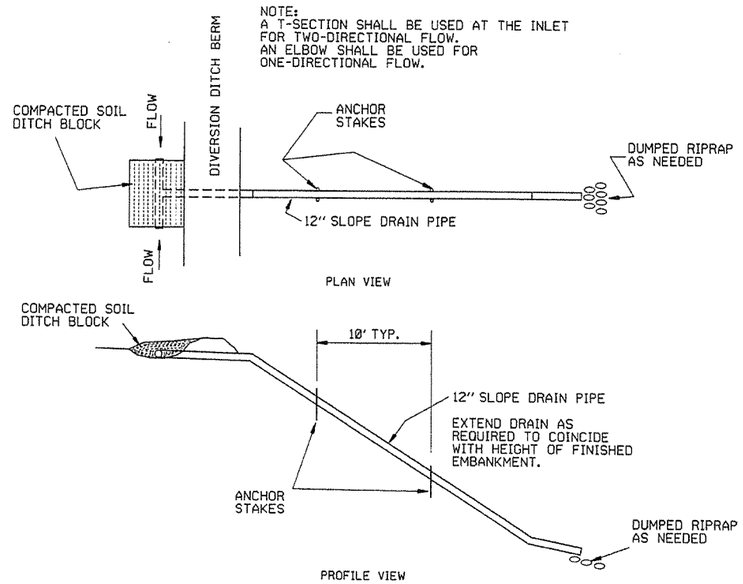
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



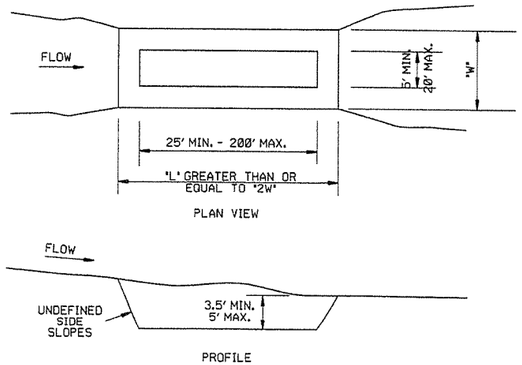
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

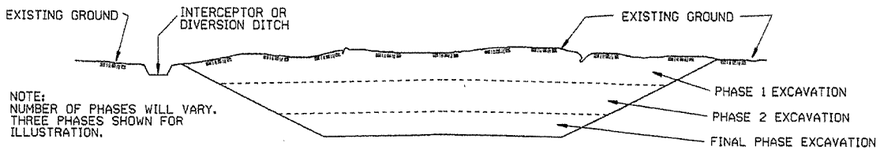
STANDARD DRAWING TEC-2

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



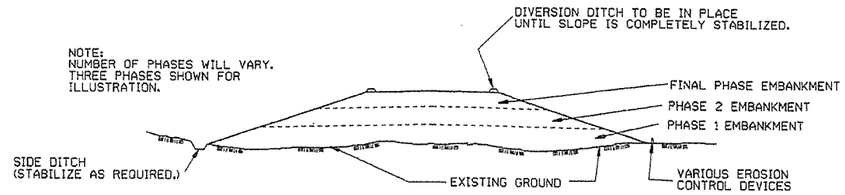
GENERAL NOTE

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.

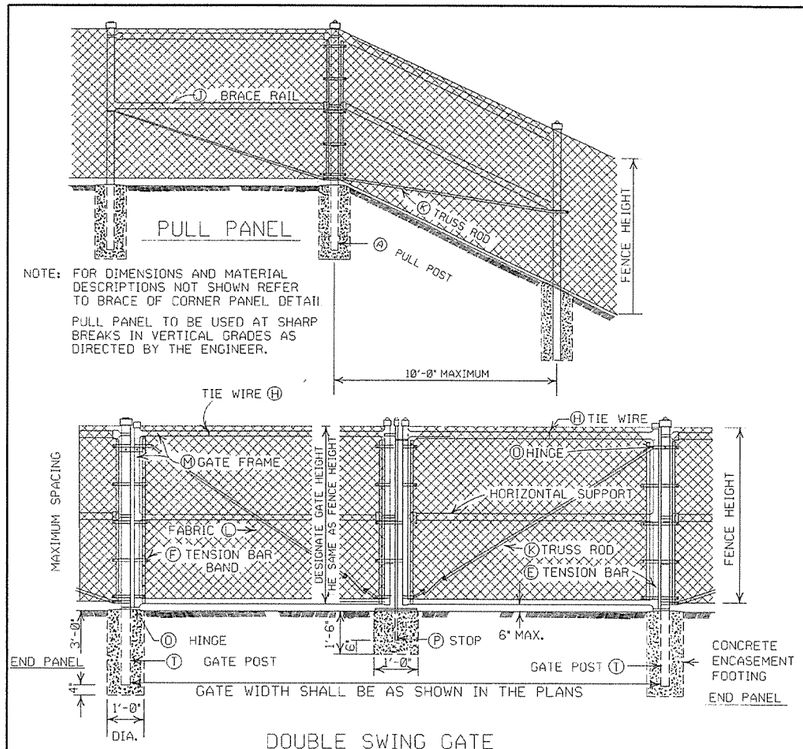
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

stdtec3.dgn

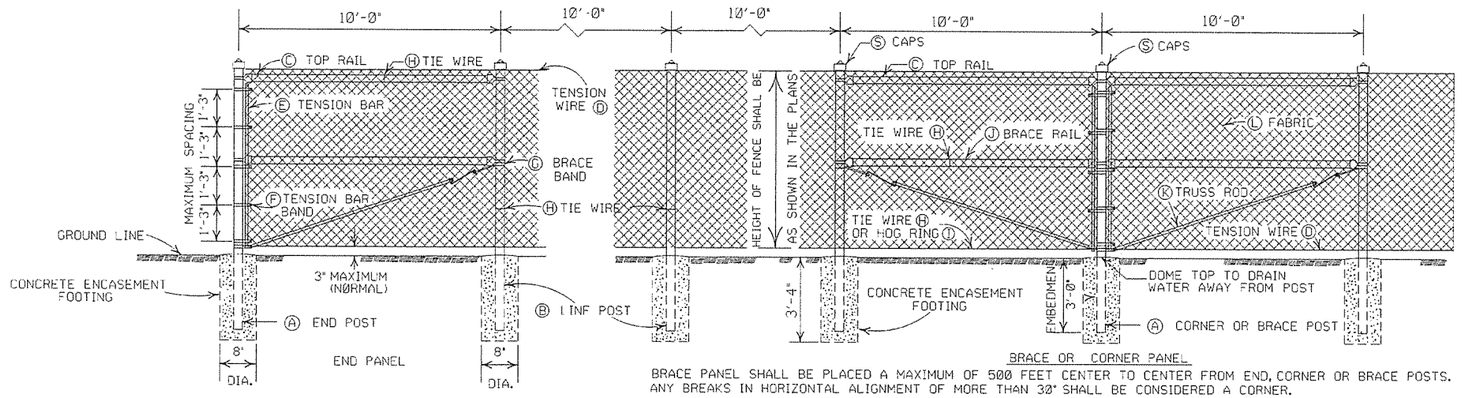


NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.

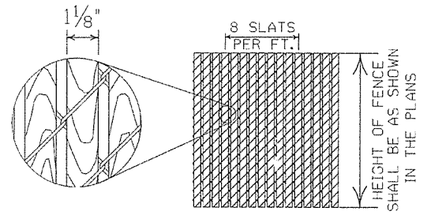
DOUBLE SWING GATE

POST SPACING DETAIL



BRACE OR CORNER PANEL

BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30° SHALL BE CONSIDERED A CORNER.



1⅛" X ¼" REDWOOD SLATS(LENGTH TO MATCH HEIGHT OF FENCE)

DETAIL OF REDWOOD SLAT INSTALLATION

(WHERE APPLICABLE)

GENERAL NOTES:

(C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.

(D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.

(J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.

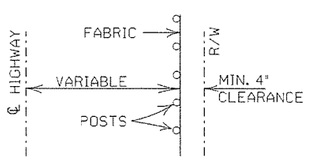
HEIGHT OF FENCE FABRIC	(A) END, PULL CORNER OR BRACE POST	(B) LINE POSTS SIZE	(B) LINE POSTS TIE SPACING	(C) TOP RAIL SIZE	(C) TOP RAIL TIE SPACING	(C) TOP RAIL MIN. LENGTH	(D) TENSION WIRE SIZE	(D) TENSION WIRE TIE SPACING	(E) TENSION BAR SIZE	(E) TENSION BAR LENGTH	(F) TENSION BAR BAND SIZE	(F) TENSION BAR BAND BOLT SIZE	(F) TENSION BAR BAND SPACING	(G) BRACE BAND SIZE	(G) BRACE BAND BOLT SIZE
6' AND LESS	2½" O.D.	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1⅝" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF ⅜" X ¾"	MIN. OF 2" LESS THAN FABRIC HEIGHT	MIN. OF ¾" X 0.074	⅝" X 1¼"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF ¾" X 0.105	⅝" X 1¼"
OVER 6' TO 12' INCL.	3" O.D.	2½" O.D.													

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL SIZE	(J) BRACE RAIL TIE SPACING	(K) TRUSS ROD	(L) FABRIC SIZE	(L) FABRIC MESH	(L) FABRIC SELVAGE	(M) GATE FRAME SIZE	(M) GATE FRAME TIE SPACING	(N) HORIZONTAL SUPPORT SIZE	(N) HORIZONTAL SUPPORT TIE SPACING	(O) HINGE TYPE 180° SWING	(T) GATE POST GATE WIDTH UP TO 12' AND LESS	(T) GATE POST GATE WIDTH OVER 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1⅝" O.D.	1 TIE EVERY 2'-0"	MIN. OF ⅜" Ø ROUND WITH TIGHTNERS AND FITTINGS	9 GA.	2"	KNUCK-ING AND/OR TWIST-ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	3" O.D.	4" O.D.
OVER 6' TO 12' INCL.														4" O.D.	

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2½" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

TYPICAL INSTALLATION DIAGRAM

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT. STEEL	LBS. PER LINEAR FT. ALUMINUM	GRADE 2 O.D. INCHES	WALL THICKNESS	LBS. PER LINEAR FT.
1⅝	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2½	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3	2.875	0.203	5.79	2.004	2.875	0.160	4.64
3½	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4	4.000	0.226	9.11	3.151	4.000	0.160	6.56

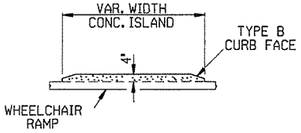
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91 8-15-91
11-30-89	DELETED CLASS CONCRETE	11 30 89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72

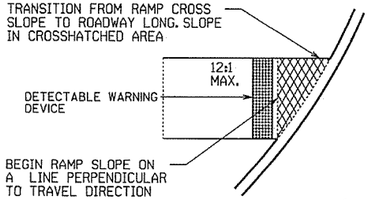
ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

STANDARD DRAWING WF-3



CONCRETE ISLAND DETAIL



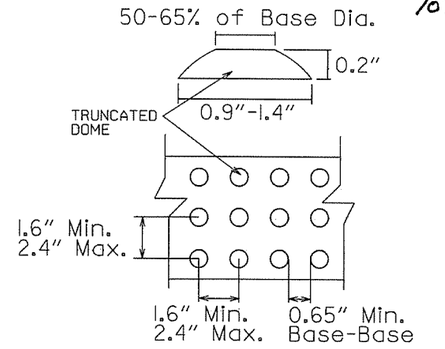
SLOPE TRANSITION DETAILS

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

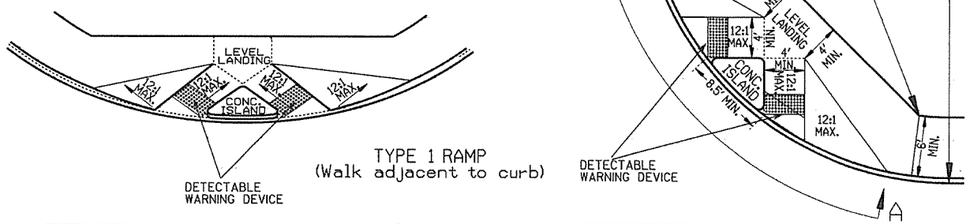
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

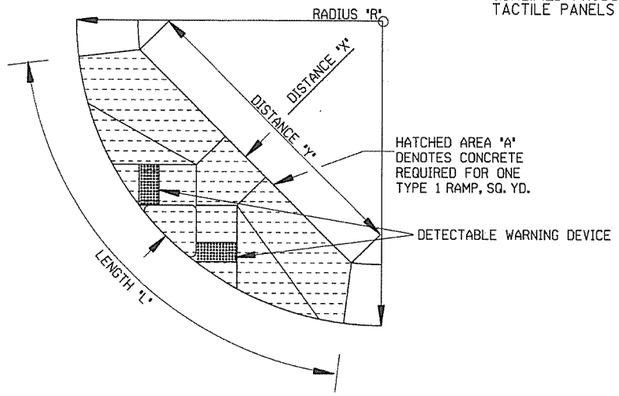
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

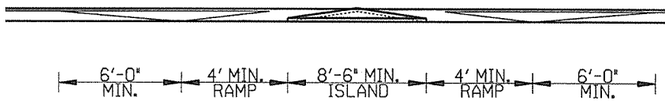


DETECTABLE WARNING DEVICE DETAIL



TYPE 1 RAMP
(Walk adjacent to curb)



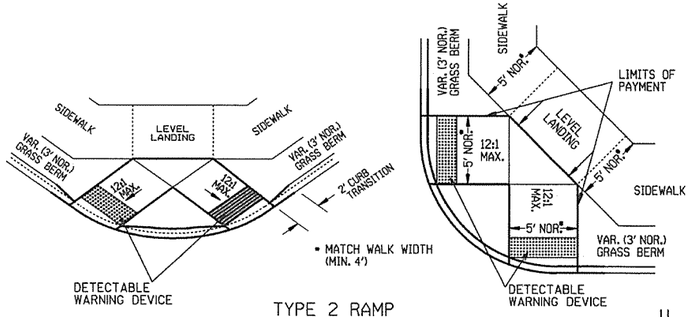


SECTION A-A

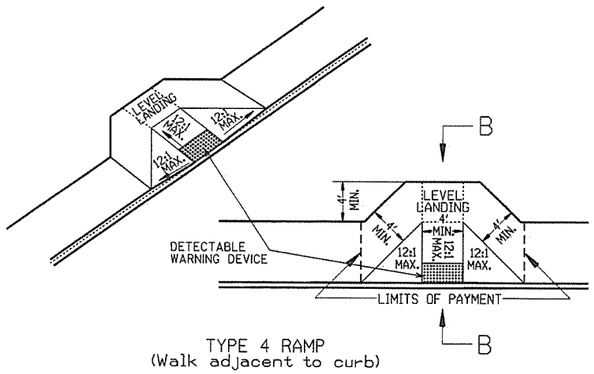
NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.

GENERAL NOTES:

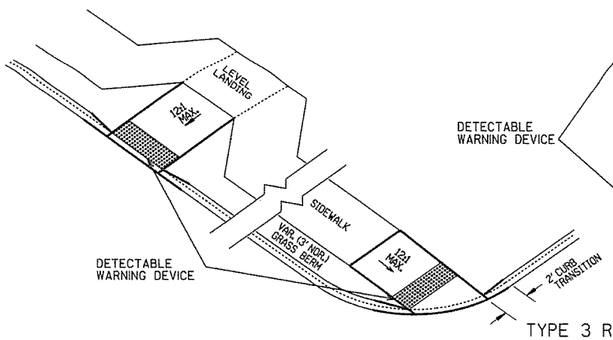
IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS.
THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19.
THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4".
THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER.
RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION.
THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.

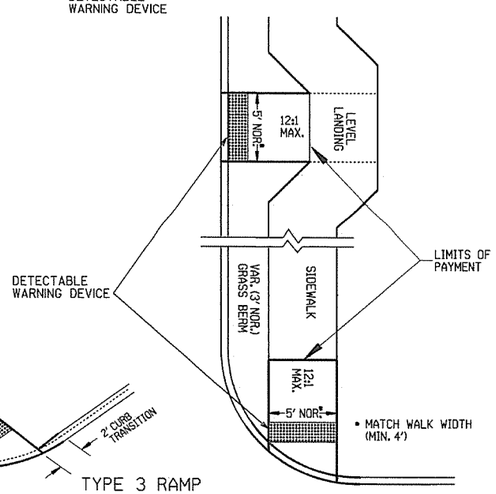


TYPE 2 RAMP

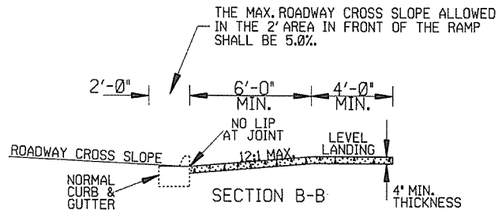


TYPE 4 RAMP
(Walk adjacent to curb)





TYPE 3 RAMP



SECTION B-B

RAMP SELECTION CRITERIA

FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY). THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

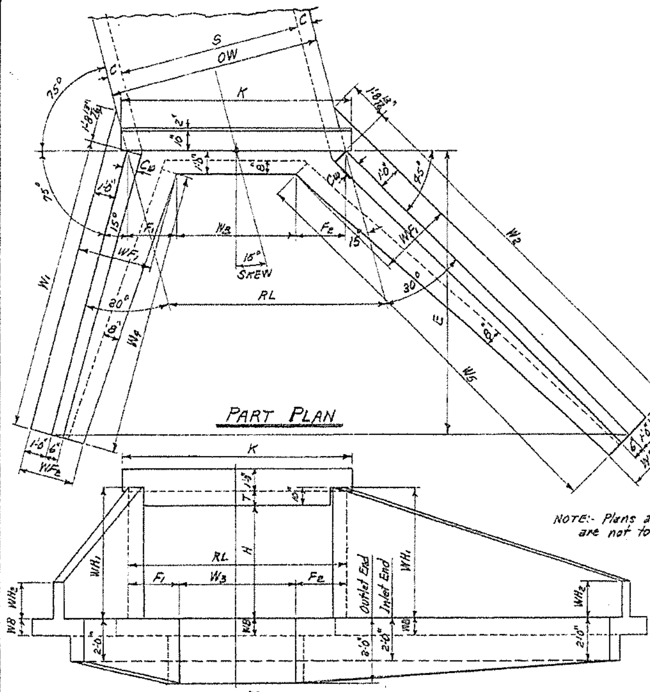
11-10-05	REVISED TO NEW SIDEWALK POLICY		
10-9-03	REVISED GEN. NOTES & ADDED NOTE		
4-10-03	REV. DETECTABLE WARNING DEVICES		
8-22-02	ADD DETECTABLE WARNING DEVICES		
3-30-00	ADD. SLOPE TRANS. & REV. ISL. DIMS.		
8-18-98	REVISED NOTES		
8-12-98	REVISED TEXTURE		
7-02-98	REDRAWN & REISSUED		
10-18-96	CORRECTED DIMENSIONS	10-18-96	
5-24-90	FROM8:1TO12:1MAX.SLOPES	5-24-90	
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88	
7-14-88	INCLUD."CONC. ISLD."IN PAY ITEM	------	
6-02-76	ISSUED-P.H.D.	299-7-28-76	
DATE	REVISION	DATE FILM	

ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

STANDARD DRAWING WR-1

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			104	
JOB No.					



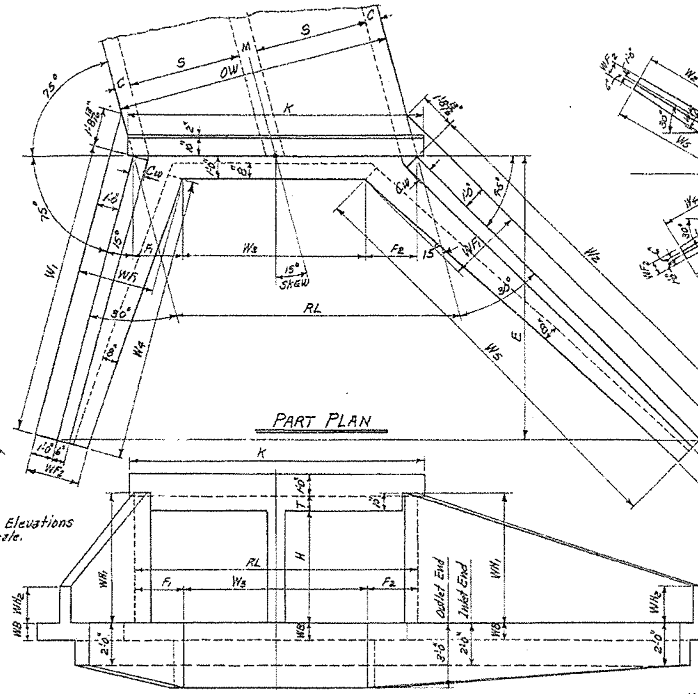
PART PLAN

END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.

NOTE:- Plans and Elevations are not to scale.

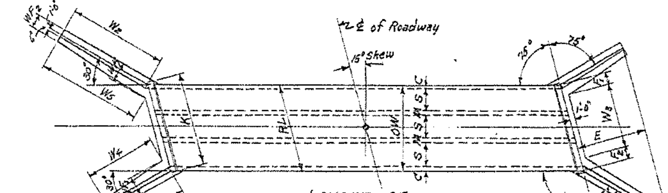


PART PLAN

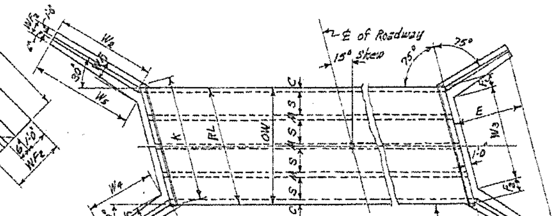
END ELEVATION

DOUBLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

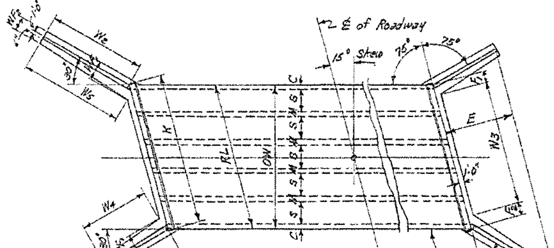
Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



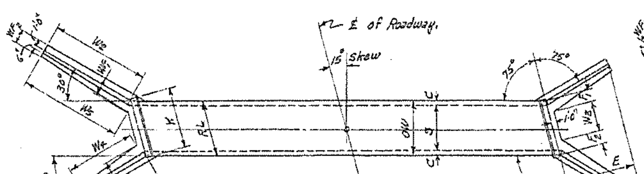
LAYOUT OF TRIPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



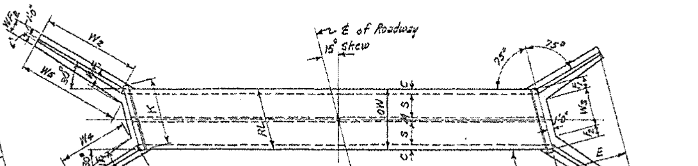
PART LAYOUT OF QUADRUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



PART LAYOUT OF QUINTUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD

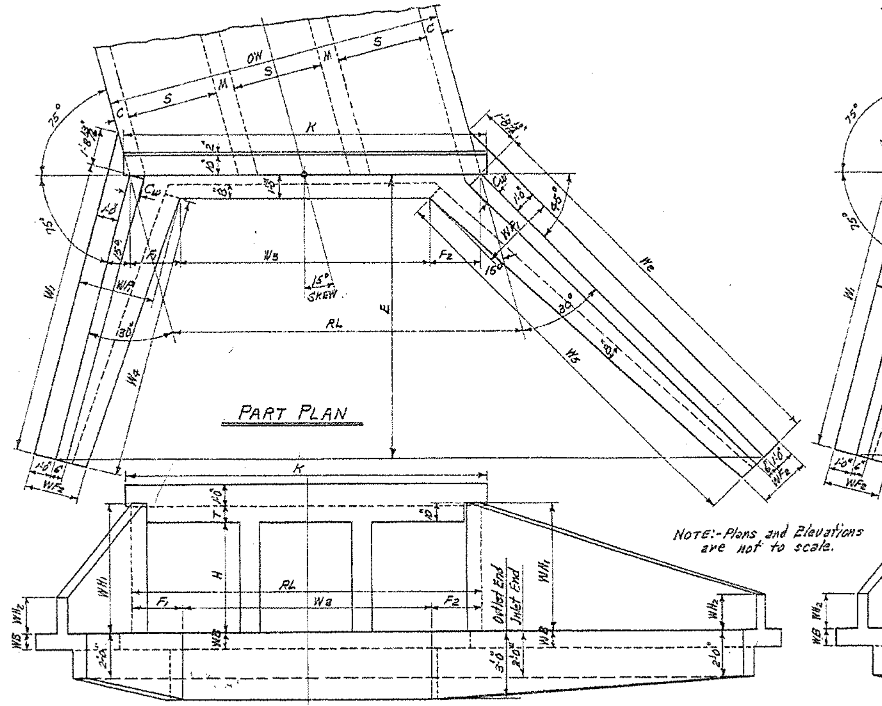


LAYOUT OF SINGLE BARREL CULVERT - 15° SKEW LEFT FORWARD



LAYOUT OF DOUBLE BARREL CULVERT - 15° SKEW LEFT FORWARD

NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



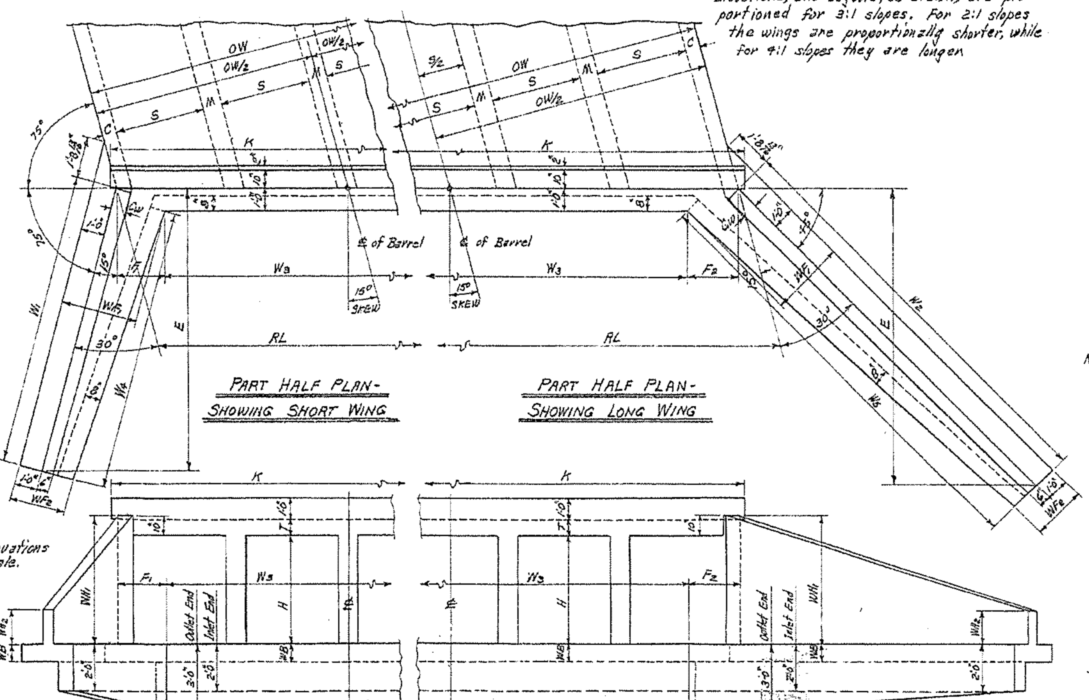
PART PLAN

NOTE:- Plans and Elevations are not to scale.

END ELEVATION

TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.



PART HALF PLAN - SHOWING SHORT WING

PART HALF PLAN - SHOWING LONG WING

PART END ELEVATION

QUADRUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at above center.

PART END ELEVATION

QUINTUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout above.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.035276$ — $K = RL + (6\frac{1}{2}")$ — $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING No.	CLEAR SPAN S	CLEAR HEIGHT H	SUM OF FOOTING DIMENSIONS F_1 & F_2	SINGLE BARREL CULVERT OW	RL	K	W_3	DOUBLE BARREL CULVERT OW	RL	K	W_3	TRIPLE BARREL CULVERT OW	RL	K	W_3	QUADRUPLE BARREL CULVERT OW	RL	K	W_3	QUINTUPLE BARREL CULVERT OW	RL	K	W_3
W-X152-1, W-X153-1 or W-X154-1. (FOR H = 8'-0" OR LESS)	4'	2'	2'-0"	5'-0"	5'-2 1/8"	5'-8 5/8"	3'-2 1/8"	9'-8"	10'-0"	10'-6 1/2"	8'-0"	14'-4"	14'-10"	15'-4 1/2"	12'-10"	19'-0"	19'-8"	20'-2 1/2"	17'-8"	23'-8"	24'-6"	25'-0 1/2"	22'-6"
		3'	2'-9 3/4"	5'-0"	"	"	2'-4 3/8"	9'-8"	"	"	7'-2 1/4"	14'-4"	"	"	12'-0 1/4"	19'-0"	"	"	16'-10 1/4"	23'-8"	"	"	21'-8 1/4"
		4'	3'-7 5/8"	5'-0"	"	"	1'-6 1/2"	9'-8"	"	"	6'-4 1/8"	14'-4"	"	"	11'-2 1/2"	19'-0"	"	"	16'-0 1/8"	23'-8"	"	"	20'-10 1/2"
		5'	4'-5 3/8"	5'-0"	"	"	0'-6 3/4"	9'-8"	"	"	5'-6 3/4"	14'-4"	"	"	10'-4 3/4"	19'-0"	"	"	15'-2 3/4"	23'-8"	"	"	20'-0 3/4"
		6'	5'-3 1/8"	5'-2"	5'-4 1/8"	5'-10 5/8"	0'-1"	9'-11"	10'-3 1/8"	10'-9 5/8"	5'-0"	14'-8"	15'-2 1/4"	15'-8 3/4"	9'-11"	19'-5"	20'-1 1/4"	20'-7 3/4"	14'-10"	24'-2"	25'-0 1/4"	25'-6 3/4"	19'-9"
	5'	3'	2'-9 3/4"	6'-0"	6'-2 1/2"	6'-9"	3'-4 3/4"	11'-8"	12'-1"	12'-7 1/2"	9'-3 1/4"	17'-4"	17'-11 3/8"	18'-5 3/4"	15'-1 1/2"	23'-0"	23'-9 3/4"	24'-4 1/4"	21'-0"	28'-8"	29'-8 1/8"	30'-2 1/2"	26'-10 1/4"
		4'	3'-7 5/8"	6'-0"	"	"	2'-7"	11'-8"	"	"	8'-5 3/8"	17'-4"	"	"	14'-3 3/4"	23'-0"	"	"	20'-2 1/8"	28'-8"	"	"	26'-0 1/8"
		5'	4'-5 3/8"	6'-0"	"	"	1'-9 1/8"	11'-8"	"	"	7'-7 5/8"	17'-4"	"	"	13'-6"	23'-0"	"	"	19'-4 1/2"	28'-8"	"	"	25'-2 3/4"
		6'	5'-3 1/8"	6'-2"	6'-4 5/8"	6'-11 1/8"	1'-1 1/8"	11'-11"	12'-4"	12'-10 1/2"	7'-0 7/8"	17'-8"	18'-3 1/2"	18'-10"	13'-0 1/4"	23'-5"	24'-2 7/8"	24'-9 1/4"	18'-11 3/4"	29'-2"	30'-2 3/8"	30'-8 3/4"	24'-11 1/4"
		7'	6'-5 7/8"	6'-3"	6'-5 5/8"	7'-0 1/8"	Ⓐ 0"	12'-1"	12'-6 1/8"	13'-0 1/2"	6'-0 1/4"	17'-11"	18'-6 5/8"	19'-1"	12'-0 3/4"	23'-9"	24'-7"	25'-1 1/2"	18'-1 1/4"	29'-7"	30'-7 1/4"	31'-2"	24'-1 3/4"
	6'	3'	2'-9 3/4"	7'-0"	7'-3"	7'-9 1/2"	4'-5 1/4"	13'-8"	14'-1 3/4"	14'-8 1/4"	11'-4"	20'-4"	21'-0 5/8"	21'-7"	18'-2 3/4"	27'-0"	27'-11 3/8"	28'-5 3/4"	25'-1 3/4"	33'-8"	34'-10 1/4"	35'-4 3/4"	32'-0 1/2"
		4'	3'-7 5/8"	7'-0"	"	"	3'-7 3/8"	13'-8"	"	"	10'-6 1/2"	20'-4"	"	"	17'-5"	27'-0"	"	"	24'-3 3/4"	33'-8"	"	"	31'-2 3/4"
		5'	4'-5 3/8"	7'-0"	"	"	2'-9 5/8"	13'-8"	"	"	9'-8 3/4"	20'-4"	"	"	16'-7 1/4"	27'-0"	"	"	23'-6"	33'-8"	"	"	30'-4 7/8"
		6'	5'-3 1/8"	7'-2"	7'-5"	7'-11 1/2"	2'-1 7/8"	13'-11"	14'-5"	14'-11 1/2"	9'-1 3/4"	20'-8"	21'-4 3/4"	21'-11 1/4"	16'-1 1/2"	27'-5"	28'-4 5/8"	28'-11"	23'-1 1/2"	34'-2"	35'-4 1/2"	35'-11"	30'-1 1/4"
		7'	6'-5 7/8"	7'-3"	7'-6"	8'-0 1/2"	1'-0 1/4"	14'-1"	14'-7"	15'-1 1/2"	8'-1 1/8"	20'-11"	21'-7 3/4"	22'-2 1/4"	15'-2"	27'-9"	28'-8 3/4"	29'-3 1/4"	22'-3"	34'-7"	35'-9 5/8"	36'-4"	29'-3 3/4"
		8'	7'-8 5/8"	7'-4"	7'-7 1/2"	8'-1 5/8"	Ⓐ 0"	14'-2"	14'-8"	15'-2 1/2"	6'-11 3/4"	21'-0"	21'-8 7/8"	22'-3 1/4"	14'-0 1/2"	27'-10"	28'-9 3/4"	29'-4 1/4"	21'-1 1/4"	34'-8"	35'-10 5/8"	36'-5"	28'-2"
	7'	4'	3'-7 5/8"	8'-0"	8'-3 3/4"	8'-9 7/8"	4'-7 3/4"	15'-8"	16'-2 5/8"	16'-9"	12'-7"	23'-4"	24'-1 3/8"	24'-8 1/4"	20'-6 1/2"	31'-0"	32'-1 1/4"	32'-7 1/2"	28'-5 1/2"	38'-8"	40'-0 3/8"	40'-6 3/8"	36'-4 3/4"
		5'	4'-5 3/8"	8'-0"	"	"	3'-10"	15'-8"	"	"	11'-9 1/4"	23'-4"	"	"	19'-8 1/2"	31'-0"	"	"	27'-7 3/4"	38'-8"	"	"	35'-7"
		6'	5'-3 1/8"	8'-2"	8'-5 1/2"	9'-0"	3'-2 1/8"	15'-11"	16'-5 3/4"	17'-0 1/4"	11'-2 1/2"	23'-8"	24'-6"	25'-0 1/2"	19'-2 3/4"	31'-5"	32'-6 1/4"	33'-0 3/4"	27'-3"	39'-2"	40'-6 3/8"	41'-1"	35'-3 1/2"
		7'	6'-5 7/8"	8'-3"	8'-6 1/2"	9'-1"	2'-0 3/8"	16'-1"	16'-7 3/4"	17'-2 1/4"	10'-2"	23'-11"	24'-9 1/8"	25'-3 1/2"	18'-3 1/2"	31'-9"	32'-10 1/2"	33'-5"	26'-4 1/2"	39'-7"	40'-11 3/4"	41'-6 1/4"	34'-6"
		8'	7'-8 5/8"	8'-4"	8'-7 1/2"	9'-2"	0'-11"	16'-2"	16'-8 7/8"	17'-3 1/4"	9'-0 1/2"	24'-0"	24'-10 3/8"	25'-4 1/2"	17'-1 1/2"	31'-10"	32'-11 1/2"	33'-6"	25'-3"	39'-8"	41'-0 1/4"	41'-7 1/4"	33'-4 1/2"
	8'	4'	3'-[illegible] 5/8"	9'-0"	9'-3 3/4"	9'-10 1/8"	5'-8 1/4"	17'-8"	18'-3 1/2"	18'-10"	14'-8"	26'-4"	27'-3 1/8"	27'-9 1/2"	23'-7 1/2"	35'-0"	36'-2 3/8"	36'-9 1/4"	32'-7 1/2"	43'-8"	45'-2 1/8"	45'-9"	41'-7"
		5'	4'-[illegible] 3/8"	9'-2"	9'-5 7/8"	10'-0 1/2"	5'-0 1/2"	17'-11"	18'-6 5/8"	19'-1"	14'-1 1/4"	26'-8"	27'-7 1/4"	28'-1 3/4"	23'-2"	35'-5"	36'-8"	37'-2 1/4"	32'-2 3/4"	44'-2"	45'-8 3/4"	46'-3 1/4"	41'-3 1/4"
		6'	5'-3 1/8"	9'-2"	"	"	4'-2 3/4"	17'-11"	"	"	13'-3 1/2"	26'-8"	"	"	22'-4"	36'-5"	"	"	31'-4 3/4"	44'-2"	"	"	40'-5 1/2"
		7'	6'-5 7/8"	9'-3"	9'-6 7/8"	10'-1 1/4"	3'-1"	18'-1"	18'-8 3/4"	19'-3"	12'-2 3/4"	26'-11"	27'-10 3/8"	28'-4 3/4"	21'-4 1/2"	35'-9"	37'-0 1/8"	37'-6 1/2"	30'-6 1/2"	44'-7"	46'-1 7/8"	46'-8 1/4"	39'-8"
		8'	7'-8 5/8"	9'-4"	9'-8"	10'-2 1/2"	1'-11 1/2"	18'-2"	18'-9 3/4"	19'-4 1/4"	11'-1 1/4"	27'-0"	27'-11 3/8"	28'-5 3/4"	20'-2 3/4"	35'-10"	37'-1 1/4"	37'-7 1/2"	29'-4 1/2"	44'-8"	46'-2 7/8"	46'-9 1/4"	38'-6 1/2"
	9'	5'	4'-5 3/8"	10'-2"	10'-6 1/2"	11'-0 3/4"	6'-1"	19'-11"	20'-7 1/2"	21'-2"	16'-2"	29'-8"	30'-8 1/2"	31'-3"	26'-3 1/2"	39'-5"	40'-9 3/4"	41'-4 1/4"	36'-4 1/2"	49'-2"	50'-10 3/4"	51'-5 1/4"	46'-5 1/2"
		6'	5'-3 1/8"	10'-3"	10'-7 3/8"	11'-1 3/4"	5'-4 1/2"	20'-1"	20'-9 1/2"	21'-4"	15'-6 1/2"	29'-11"	30'-11 5/8"	31'-6"	25'-8 1/2"	39'-9"	41'-1 3/4"	41'-8 1/4"	35'-10 3/4"	49'-7"	51'-4"	51'-10 1/2"	46'-0 3/4"
		7'	6'-5 7/8"	10'-3"	"	"	4'-1 1/2"	20'-1"	"	"	14'-3 3/4"	29'-11"	"	"	24'-5 3/4"	39'-9"	"	"	34'-8"	49'-7"	"	"	44'-10"
		8'	7'-8 5/8"	10'-4"	10'-8 3/8"	11'-2 3/4"	2'-11 3/4"	20'-2"	20'-10 1/2"	21'-5"	13'-2"	30'-0"	31'-0 3/4"	31'-7 1/4"	23'-4 1/4"	39'-10"	41'-2 7/8"	41'-9 1/2"	33'-6 1/2"	49'-8"	51'-5"	51'-11 1/2"	43'-8 1/2"
	10'	5'	4'-5 3/8"	11'-2"	11'-6 3/4"	12'-1 1/4"	7'-1 3/8"	21'-11"	22'-8 1/4"	23'-2 3/4"	18'-3"	32'-8"	33'-9 3/4"	34'-4 1/4"	29'-4 1/2"	43'-5"	44'-11 1/8"	45'-6"	40'-6"	54'-2"	56'-1"	56'-7 1/2"	51'-7 1/2"
		6'	5'-3 1/8"	11'-3"	11'-7 3/4"	12'-2 1/4"	6'-4 5/8"	22'-1"	22'-10 3/8"	23'-4 7/8"	17'-7 1/4"	32'-11"	34'-1"	34'-7 1/2"	28'-9 3/4"	43'-9"	45'-3 1/2"	45'-10"	40'-0 1/4"	54'-7"	56'-6"	57'-0 1/2"	51'-3"
		7'	6'-5 7/8"	11'-3"	"	"	5'-1 7/8"	22'-1"	"	"	16'-4 1/2"	32'-11"	"	"	27'-7"	43'-9"	"	"	38'-9 3/4"	54'-7"	"	"	50'-0 1/4"
		8'	7'-8 5/8"	11'-4"	11'-8 3/4"	12'-3 1/4"	4'-0 1/4"	22'-2"	22'-11 3/8"	23'-5 3/4"	15'-2 3/4"	33'-0"	34'-2"	34'-8 1/2"	26'-5 1/2"	43'-10"	45'-4 1/8"	45'-11"	37'-8"	54'-8"	56'-7 1/8"	57'-1 1/2"	48'-10 1/2"
	11'	6'	5'-3 1/8"	12'-4"	12'-9 1/4"	13'-3 3/4"	7'-6"	24'-2"	25'-0 1/4"	25'-6 3/4"	19'-9"	36'-0"	37'-3 1/8"	37'-9 3/4"	32'-0"	47'-10"	49'-6 1/8"	50'-0 3/4"	44'-3"	—	—	—	—
		7'	6'-5 7/8"	12'-4"	"	"	6'-3 3/8"	24'-2"	"	"	18'-6 1/4"	36'-0"	"	"	30'-9 1/4"	47'-10"	"	"	43'-0 1/2"	—	—	—	—
		8'	7'-8 5/8"	12'-4"	"	"	5'-0 5/8"	24'-2"	"	"	17'-3 3/4"	36'-0"	"	"	29'-6 3/4"	47'-10"	"	"	41'-9 3/4"	—	—	—	—
	12'	6'	5'-3 1/8"	13'-4"	13'-9 5/8"	14'-4"	8'-6 1/2"	26'-2"	27'-1"	27'-7 1/2"	21'-10"	39'-0"	40'-4 1/2"	40'-11"	35'-1 1/4"	51'-10"	53'-8"	54'-2 1/2"	48'-4 3/4"	—	—	—	—
		7'	6'-5 7/8"	13'-4"	"	"	7'-3 3/4"	26'-2"	"	"	20'-7 1/4"	39'-0"	"	"	33'-10 3/4"	51'-10"	"	"	47'-2"	—	—	—	—
		8'	7'-8 5/8"	13'-4"	"	"	6'-1"	26'-2"	"	"	19'-4 1/2"	39'-0"	"	"	32'-8"	51'-10"	"	"	45'-11 1/2"	—	—	—	—
W-X152-2, W-X153-2 or W-X154-2. (FOR H = 9'-0" & OVER)	7'																						
		9'	8'-11 1/8"	8'-6"	8'-9 3/8"	9'-4"	Ⓐ 0"	16'-5"	17'-0"	17'-6 1/2"	8'-0 3/4"	24'-4"	25'-2 1/2"	25'-8 3/4"	16'-3"	32'-3"	33'-4 5/8"	33'-11"	24'-5 1/2"	40'-2"	41'-7"	42'-1 1/2"	32'-7 3/4"
	8'	9'	8'-11 1/8"	9'-6"	9'-10"	10'-4 1/2"	0'-10 3/4"	18'-5"	19'-0 3/4"	19'-7 1/4"	10'-1 1/2"	27'-4"	28'-3 3/8"	28'-10"	19'-4 1/4"	36'-3"	37'-6 3/4"	38'-0 3/4"	28'-7"	45'-2"	46'-9 1/8"	47'-3 1/2"	37'-9 3/4"
		10'	10'-2"	9'-8"	10'-0 1/2"	10'-6 1/2"	Ⓐ 0"	18'-8"	19'-3 3/4"	19'-10 1/4"	9'-2"	27'-8"	28'-7 3/4"	29'-2 1/4"	18'-5 3/4"	36'-8"	37'-11 1/2"	38'-6"	27'-9 1/2"	45'-8"	47'-3 3/4"	47'-9 3/4"	37'-1 1/2"
	9'	9'	8'-11 1/8"	10'-6"	10'-10 1/2"	11'-5"	1'-11 1/4"	20'-5"	21'-1 5/8"	21'-8 1/4"	12'-2 1/2"	30'-4"	31'-4 7/8"	31'-11 1/4"	22'-5 1/2"	40'-3"	41'-8"	42'-2 1/4"	32'-8 3/4"	50'-2"	51'-11 1/4"	52'-5 3/4"	43'-0"
		10'	10'-2"	10'-8"	11'-0 1/2"	11'-7"	0'-10 1/8"	20'-8"	21'-4 3/4"	21'-11 1/4"	11'-2 3/4"	30'-8"	31'-9"	32'-3 1/2"	21'-7"	40'-8"	42'-1 1/2"	42'-7 3/4"	31'-11 1/4"	50'-8"	52'-5 1/4"	53'-0"	42'-3 1/2"
		11'	11'-4 5/8"	10'-10"	11'-2 5/8"	11'-9"	Ⓐ 0"	20'-10"	21'-6 3/8"	22'-1 1/8"	10'-2 1/4"	30'-10"	31'-11"	32'-5 1/2"	20'-6 1/2"	40'-10"	42'-3 1/8"	42'-9 3/4"	30'-10 3/4"	50'-10"	52'-7 1/4"	53'-2"	41'-2 3/4"
	10'	9'	8'-11 1/8"	11'-6"	11'-10 7/8"	12'-5 1/4"	2'-11 5/8"	22'-5"	23'-2 1/2"	23'-9"	14'-3 1/4"	33'-4"	34'-6 1/8"	35'-0 1/2"	25'-6 3/4"	44'-3"	45'-9 1/8"	46'-4 1/4"	36'-10 1/2"	55'-2"	57'-1 3/8"	57'-7 3/4"	48'-2"
		10'	10'-2"	11'-8"	12'-1"	12'-7 1/2"	1'-11"	22'-8"	23'-5 5/8"	24'-0"	13'-2 3/4"	33'-8"	34'-10 1/8"	35'-4 3/4"	24'-8 1/4"	44'-8"	46'-2 3/4"	46'-9 1/4"	36'-1"	55'-8"	57'-7 5/8"	58'-2"	47'-5 1/4"
		11'	11'-4 5/8"	11'-10"	12'-3"	12'-9 1/2"	0'-10 3/8"	22'-10"	23'-7 3/4"	24'-2"	12'-3"	33'-10"	35'-0 3/8"	35'-6 3/4"	23'-7 3/4"	44'-10"	46'-5"	46'-11 1/2"	35'-0 1/4"	55'-10"	57'-9 3/4"	58'-4"	46'-5"
		12'	12'-7 3/4"	12'-0"	12'-5 1/8"	12'-11 1/2"	Ⓐ 0"	23'-0"	23'-9 3/4"	24'-4 1/4"	11'-2 1/2"	34'-0"	35'-2 3/8"	35'-8 3/4"	22'-7"	45'-0"	46'-7"	47'-1 1/2"	33'-11 3/4"	56'-0"	57'-11 3/8"	58'-6"	45'-4 1/2"
	11'	9'	8'-11 1/8"	12'-6"	12'-11 1/4"	13'-5 3/4"	4'-0"	24'-5"	25'-3 3/8"	25'-9 3/4"	16'-4"	36'-4"	37'-7 3/8"	38'-1 3/4"	28'-8"	48'-3"	49'-11 3/8"	50'-5 3/4"	41'-0 1/4"	—	—	—	—
		10'	10'-2"	12'-8"	13'-1 3/8"	13'-7 3/4"	2'-11 3/8"	24'-8"	25'-6 1/2"	26'-1"	15'-4 1/2"	36'-8"	37'-11 1/2"	38'-6"	27'-9 1/2"	48'-8"	50'-4 5/8"	50'-11"	40'-2 3/4"	—	—	—	—
		11'	11'-4 5/8"	12'-10"	13'-3 3/4"	13'-10"	1'-10 3/4"	24'-10"	25'-8 1/2"	26'-3"	14'-3 3/4"	36'-10"	38'-1 5/8"	38'-8"	26'-9"	48'-10"	50'-6 5/8"	51'-1"	39'-2"	—	—	—	—
		12'	12'-7 3/4"	13'-0"	13'-5 1/8"	14'-0"	0'-10 1/2"	25'-0"	25'-10 5/8"	26'-5"	13'-3 1/4"	37'-0"	38'-3 5/8"	38'-10"	25'-8 1/4"	49'-0"	50'-8 3/4"	51'-3 1/2"	38'-1 1/2"	—	—	—	—
	12'	9'	8'-11 1/8"	13'-6"	13'-11 3/4"	14'-6 1/4"	5'-0 1/2"	26'-5"	27'-4 1/4"	27'-10 3/8"	18'-5"	39'-4"	40'-8 3/8"	41'-3"	31'-9 1/4"	52'-3"	54'-1 1/8"	54'-7 1/2"	45'-1 3/4"	—	—	—	—
		10'	10'-2"	13'-8"	14'-1 3/8"	14'-8 1/2"	3'-11 3/4"	26'-8"	27'-7 1/4"	28'-1 3/4"	17'-5 1/4"	39'-8"	41'-0 3/4"	41'-7 1/4"	30'-10 3/4"	52'-8"	54'-6 1/4"	55'-0 3/4"	44'-4 1/2"	—	—	—	—
		11'	11'-4 5/8"	13'-10"	14'-3 7/8"	14'-10 1/4"	2'-11 1/4"	26'-10"	27'-9 3/4"	28'-3 1/4"	16'-4 3/4"	39'-10"	41'-2 7/8"	41'-9 1/4"	29'-10 1/4"	52'-10"	54'-8 3/4"	55'-2 3/4"	43'-3 3/4"	—	—	—	—
		12'	12'-7 3/4"	14'-0"	14'-5 7/8"	15'-0 1/2"	1'-10 1/2"	27'-0"	27'-11 3/4"	28'-6"	15'-4"	40'-0"	41'-4 3/4"	41'-11 1/4"	28'-9 1/2"	53'-0"	54'-10 3/4"	55'-4 3/4"	42'-3"	—	—	—	—

Ⓐ Special case for these boxes, See Detail "A" and Table "A" for revised values of F_1, F_2, W_4 and W_5, when apron width is more than 1'-0" and W_3 = 0". For Detail "A" and Tables "A" for each slope, see Drawing Nos. W-X152-1, W-X152-2, or W-X153-1, W-X153-2, or W-X154-1, W-X154-2.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings for 15° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X152-1 or W-X152-2	W-X153-1 or W-X153-2	W-X154-1 or W-X154-2.

This drawing to be used in conjunction with Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 15° SKEW

4, 5, 6, 7, 8, 9, 10, 11 & 12 SPANS — 2:1, 3:1 & 4:1 SLOPES

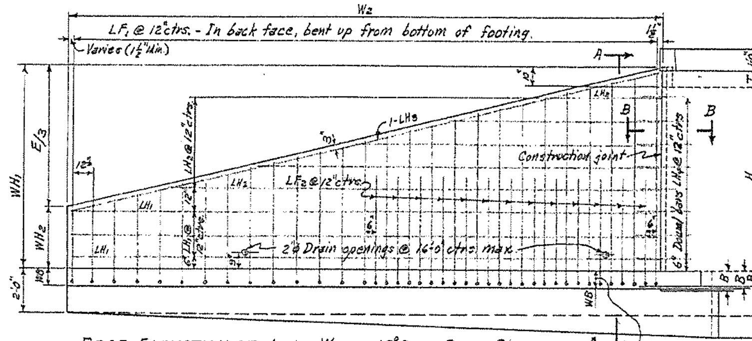
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER — H = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 12.

STANDARD DRAWING NO. W-X15

Designed by:- W.C.H. 5-22-63. Checked by:-
Traced by:- W.C.H. 6-13-63 Checked by:- J.E.M. 6-20-63
Quantities by:- Checked by:-

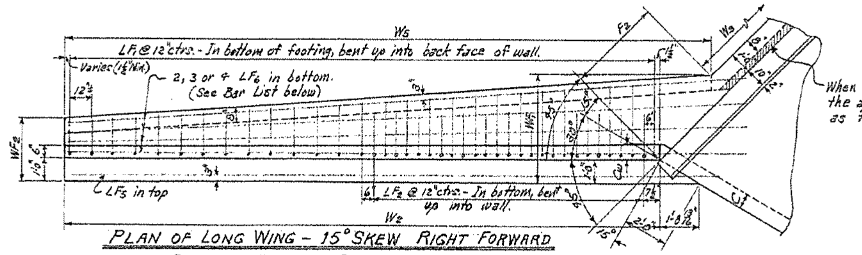
RESHOT 3-8-93 175 3

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			105	
JOB No.					



REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

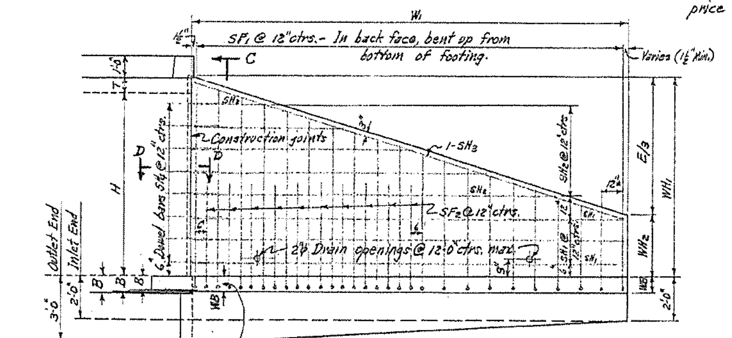
WB may be more, equal to, or less than the bottom slab thickness B.



PLAN OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING.

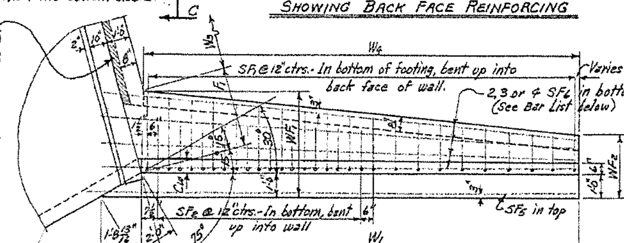
When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

Note:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



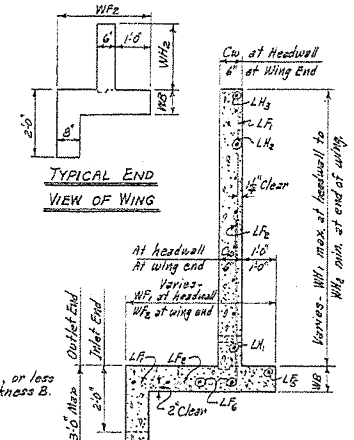
REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab B.



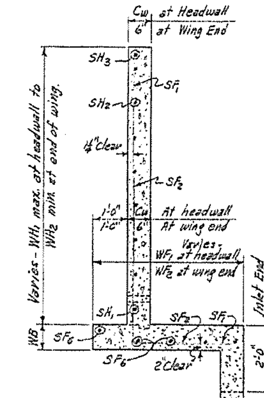
When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING

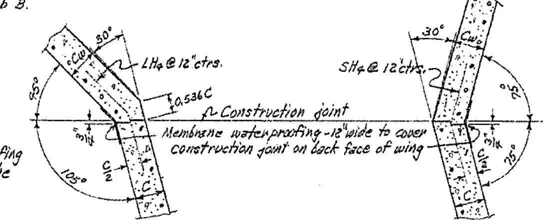


TYPICAL END VIEW OF WING

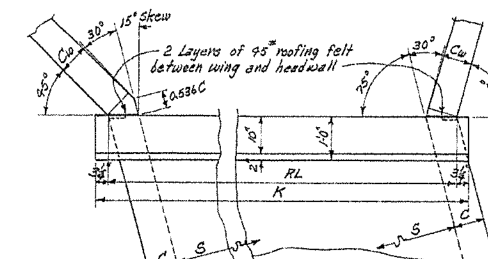
SECTION A-A



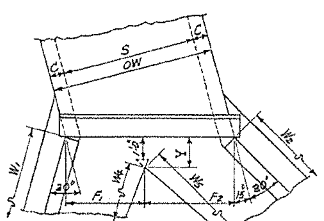
SECTION C-C



SECTION B-B   SECTION D-D
SECTIONS THRU CONSTRUCTION JOINTS



DETAILS AT TOP OF WINGS
15° SKEW RIGHT FORWARD



DETAIL "A"

TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F_1	F_2	W_4	W_5	W_3	Y
5'	7'	3'-0"	3'-5 5/8"	16'-10 1/2"	25'-0 3/8"	0"	1'-0 1/2"
6'	8'	3'-6"	4'-1 1/8"	19'-0 1/4"	28'-3 1/2"	0"	1'-1"

REGULAR WING DIMENSIONS - 3:1 SLOPES

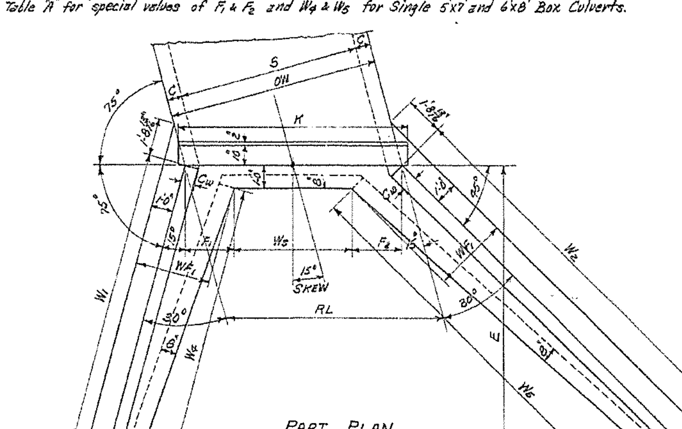
Clear Height of Box	Thickness of Wing Footing	Thickness of Wing at Hdwl.=C	Wingwall Heights: At Headwall	Wingwall Heights: At End of Wing	Widths of Wing Footings: At Headwall	Widths of Wing Footings: At End of Wing	Footing Dimension-Parallel with Headwall: Short Wing	Footing Dimension-Parallel with Headwall: Long Wing	Perpendicular Dist. from Hdwl. to End of Wing	Lengths of Wingwalls: Short Wing	Lengths of Wingwalls: Long Wing	Inside Footing Dimensions: Short Wing	Inside Footing Dimensions: Long Wing	* Quantity per Wing, Class S Concrete, Inlet End: Short Wing	Inlet End: Long Wing	Outlet End: Short Wing	Outlet End: Long Wing
H	WB	C_w	WH_1	WH_2	WF_1	WF_2	F_1	F_2	E	W_1	W_2	W_4	W_5	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
2'	7"	6"	2'-10"	0'-8"	2'-4"	2'-0"	1'-1 3/8"	0'-10 5/8"	6'-6"	6'-8 3/4"	9'-2 1/4"	6'-0 1/2"	9'-1 1/4"	0.789	1.094	0.876	1.212
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1 1/2"	1'-5 1/2"	1'-4 1/2"	8'-6"	8'-9 1/2"	12'-0 1/4"	8'-2 1/2"	12'-3 1/4"	1.186	1.650	1.300	1.808
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-9 5/8"	1'-10"	10'-6"	10'-10 1/2"	14'-10 1/4"	10'-4 1/2"	15'-5 1/4"	1.656	2.305	1.797	2.502
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4 1/2"	2'-1 3/4"	2'-3 5/8"	12'-6"	12'-11 1/4"	17'-8 1/4"	12'-6 1/2"	18'-7 1/4"	2.196	3.059	2.363	3.295
		7"	5'-10"	1'-8"	3'-4"	2'-4 1/2"	2'-1 3/4"	2'-3 5/8"	12'-6"	12'-11 1/4"	17'-8 1/4"	12'-6 1/2"	18'-7 1/4"	2.287	3.188	2.455	3.429
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5 7/8"	2'-9 1/4"	14'-6"	15'-0 1/4"	20'-6"	14'-8 1/4"	21'-9"	3.052	4.242	3.246	4.517
		7 1/2"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5 7/8"	2'-9 1/4"	14'-6"	15'-0 1/4"	20'-6"	14'-8 1/4"	21'-9"	3.114	4.329	3.309	4.605
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5 7/8"	2'-9 1/4"	14'-6"	15'-0 1/4"	20'-6"	14'-8 1/4"	21'-9"	3.177	4.417	3.371	4.693
⊕ 7'	8 1/2"	7 1/2"	7'-10"	2'-4"	4'-2"	2'-7 1/2"	3'-0 1/8"	3'-5 3/4"	16'-6"	17'-1"	23'-4"	16'-10 3/4"	25'-1"	3.998	5.560	4.220	5.877
		8"	7'-10"	2'-4"	4'-2"	2'-7 1/2"	3'-0 1/8"	3'-5 3/4"	16'-6"	17'-1"	23'-4"	16'-10 3/4"	25'-1"	4.079	5.675	4.301	5.931
⊕ 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-6 3/8"	4'-2 1/2"	18'-6"	19'-1 3/4"	26'-2"	19'-1 1/4"	28'-5"	5.111	7.111	5.360	7.470

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.
⊕ See Table "A" for special values of F_1 & F_2 and W_4 & W_5 for Single 5'x7' and 6'x8' Box Culverts.

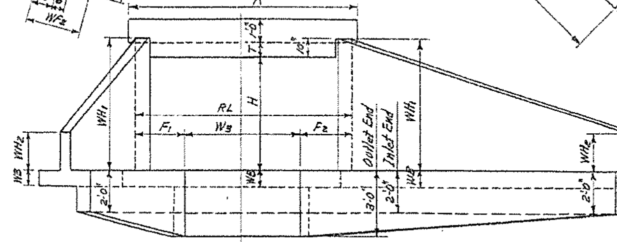
QUANTITIES

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	C_w	WB	LB.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.	Cu.Yd.
4'	2'	6"	7"	117	4.79	5.78	6.77	7.77	8.76
	3'	6"	7"	176	6.65	7.64	8.63	9.63	10.62
	4'	6"	7"	267	8.85	9.84	10.84	11.83	12.82
	5'	6"	7"	379	11.40	12.38	13.38	14.37	15.36
	6'	7"	8"	626	15.45	16.46	17.48	18.51	19.53
5'	3'	6"	7"	176	6.87	8.07	9.28	10.48	11.69
	4'	6"	7"	267	9.08	10.28	11.48	12.69	13.90
	5'	6"	7"	379	11.61	12.81	14.02	15.23	16.44
	6'	7"	8"	626	15.67	16.90	18.14	19.38	20.61
	7'	7 1/2"	8 1/2"	1210	20.11	21.36	22.62	23.88	25.14
6'	3'	6"	7"	176	7.09	8.52	9.92	11.36	12.78
	4'	6"	7"	267	9.29	10.73	12.13	13.56	14.98
	5'	6"	7"	379	11.83	13.26	14.67	16.10	17.53
	6'	7"	8"	626	15.89	17.35	18.79	20.25	21.70
	7'	7 1/2"	8 1/2"	1210	20.33	21.81	23.28	24.76	26.24
	8'	8"	9"	1533	25.56	27.05	28.53	30.02	31.50
7'	4'	6"	7"	267	9.52	11.18	12.81	14.47	16.09
	5'	6"	7"	379	12.05	13.72	15.35	17.01	18.63
	6'	7"	8"	626	16.12	17.80	19.45	21.13	22.78
	7'	7 1/2"	8 1/2"	1210	20.56	22.26	23.94	25.64	27.33
	8'	8"	9"	1533	25.80	27.50	29.20	30.90	32.60
8'	4'	6"	7"	267	9.75	11.65	13.51	15.41	17.23
	5'	7"	7"	379	12.76	14.68	16.55	18.47	20.31
	6'	7"	8"	626	16.39	18.26	20.14	22.06	23.90
	7'	7 1/2"	8 1/2"	1210	20.78	22.72	24.62	26.55	28.42
	8'	8"	9"	1533	26.03	27.96	29.86	31.80	33.71
9'	5'	7"	7"	379	12.99	15.15	17.25	19.40	21.45
	6'	7 1/2"	8"	626	16.89	19.07	21.19	23.36	25.42
	7'	7 1/2"	8 1/2"	1210	21.01	23.19	25.31	27.48	29.54
	8'	8"	9"	1533	26.25	28.42	30.55	32.72	34.78
10'	5'	7"	7"	379	13.25	16.62	17.95	20.24	22.59
	6'	7 1/2"	8"	626	17.13	19.54	21.89	24.20	26.56
	7'	7 1/2"	8 1/2"	1210	21.44	23.66	26.01	28.32	30.68
	8'	8"	9"	1533	26.48	28.89	31.25	33.56	35.92
11'	6'	8"	8"	626	17.67	20.34	22.92	25.48	——
	7'	8"	8 1/2"	1210	21.88	24.55	27.13	29.69	——
	8'	8"	9"	1533	26.70	29.37	31.96	34.52	——
12'	6'	8"	8"	626	17.91	20.84	23.64	26.46	——
	7'	8"	8 1/2"	1210	22.11	25.04	27.85	30.67	——
	8'	8"	9"	1533	26.93	29.86	32.67	35.49	——

⊕ For reinforcing steel in Headwalls and Aprons, see Drawings listed below.



PART PLAN



END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD
Details of Culvert with 15° Skew Left Forward is reversed, see Drwg. No. W-X15
TYPICAL WING DETAILS

Note:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X15. For values of RL, K, and W_3 for each box, see the above Std. also.

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.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have 3/4" 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 Std. Barrel Sections, Drawing Nos.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-115X-0	R-215X-0	R-315X-0	R-415X-0	R-515X-0
R-115X-1	R-215X-1	R-315X-1	R-415X-1	R-515X-1
	R-215X-2	R-315X-2		

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

SF1 & LF1: Bent — In bottom of footing, bent up into back face of wing. One bar of each length.
SF2 & LF2: Bent — In bottom of footing, bent up into back face of wing. Alt. with F1 bars.
SF5 & LF5: Straight — Longitudinal in top of wing footing heel.
SF6 & LF6: Straight — Longitudinal in bottom of wing footing toe.
SH1 & LH1: Straight — Horizontal in back face of wing.
SH2 & LH2: Straight — Horizontal in back face of wing. One bar of each length.
SH3 & LH3: Straight — In back face of wing at top - on slope.
SH4 & LH4: Bent — Dowels thru construction joint at headwall.

H	Short or Long	SF1 Size	SF1 Spacing	SF1 No. Req'd	SF1 Lengths Vary Min.	SF1 Lengths Vary Max.	SF1 X Min.	SF1 X Max.	SF1 Y Min.	SF1 Y Max.	SF2 Size	SF2 Spacing	SF2 No. Req'd	SF2 Length	SF2 X	SF2 Y	SF5 Size	SF5 No. Req'd	SF5 Length	SF6 Size	SF6 No. Req'd	SF6 Length	SH1 Size	SH1 Spacing	SH1 No. Req'd	SH1 Length	SH2 Size	SH2 Spacing	SH2 No. Req'd	SH2 Lengths Vary Max.	SH2 Lengths Vary Min.	SH3 Size	SH3 No. Req'd	SH3 Length	SH4 Size	SH4 Spacing	SH4 No. Req'd	SH4 Length	SH4 X	Reinforcing Steel per Wing - Lbs.: Short Wing	Long Wing
2'	Short	#3	12"	7	1'-7"	3'-11"	0'-8"	1'-0"	1'-0"	3'-0"	—	—	—	—	—	—	#3	1	9'-2"	#3	2	7'-10"	#3	12"	1	6'-5"	#3	12"	1	—	3'-6"	#3	1	6'-10"	#3	12"	2	2'-8"	1'-4"	24.9	33.4
	Long	#3	12"	10	1'-7"	3'-11"	0'-8"	1'-0"	0'-10"	3'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-10"	#3	12"	1	8'-11"	#3	12"	1	—	4'-8"	#3	1	9'-1"	#3	12"	2	"	"		
3'	Short	#3	12"	9	2'-2"	5'-3"	0'-10"	1'-4"	1'-5"	4'-0"	—	—	—	—	—	—	#3	1	11'-3"	#3	2	10'-0"	#3	12"	1	8'-6"	#3	12"	2	6'-7"	3'-6"	#3	1	9'-0"	#3	12"	3	"	"	37.7	50.3
	Long	#3	12"	13	1'-11"	5'-2"	0'-10"	1'-3"	1'-2"	4'-0"	—	—	—	—	—	—	#3	1	14'-6"	#3	2	14'-0"	#3	12"	1	11'-9"	#3	12"	2	8'-11"	4'-8"	#3	1	12'-0"	#3	12"	3	"	"		
4'	Short	#3	12"	11	2'-7"	6'-7"	0'-11"	1'-8"	1'-9"	5'-0"	—	—	—	—	—	—	#3	1	13'-4"	#3	3	12'-2"	#3	12"	1	10'-7"	#3	12"	3	9'-8"	3'-6"	#3	1	11'-2"	#3	12"	4	"	"	57.3	76.4
	Long	#3	12"	15	2'-6"	6'-6"	0'-11"	1'-7"	1'-8"	5'-0"	—	—	—	—	—	—	#3	1	17'-4"	#3	3	17'-2"	#3	12"	1	14'-7"	#3	12"	3	13'-2"	4'-8"	#3	1	14'-11"	#3	12"	4	"	"		
5'	Short	#3	12"	13	3'-1"	7'-11"	1'-1"	2'-0"	2'-1"	6'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	15'-5"	#3	3	14'-4"	#3	12"	2	12'-8"	#3	12"	3	3'-8"	3'-6"	#3	1	13'-4"	#3	12"	5	"	"	81.1	108.4
	Long	#3	12"	18	3'-0"	7'-10"	1'-1"	1'-11"	2'-0"	6'-0"	#3	12"	5	3'-6"	1'-1"	2'-6"	#3	1	20'-2"	#3	3	20'-4"	#3	12"	2	17'-5"	#3	12"	3	13'-2"	4'-8"	#3	1	17'-10"	#3	12"	5	"	"		
6'	Short	#4	12"	16	3'-4"	9'-4"	1'-2"	2'-4"	2'-3"	7'-1"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	17'-6"	#3	3	16'-6"	#3	12"	2	14'-9"	#3	12"	4	12'-9"	3'-6"	#3	1	15'-6"	#3	12"	6	"	"	134.8	178.1
	Long	#4	12"	21	3'-5"	9'-3"	1'-2"	2'-3"	2'-4"	7'-1"	#3	12"	5	4'-6"	1'-4"	3'-3"	#3	1	23'-0"	#3	3	23'-6"	#3	12"	2	20'-3"	#3	12"	4	17'-5"	4'-8"	#3	1	20'-9"	#3	12"	6	2'-8"	1'-4"		
7'	Short	#4	12"	18	3'-9"	10'-10"	1'-3"	2'-10"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	19'-7"	#4	4	18'-9"	#4	12"	2	16'-10"	#4	12"	5	15'-10"	3'-6"	#4	1	17'-8"	#4	12"	7	3'-6"	1'-9"	259.5	345.2
	Long	#4	12"	24	3'-10"	10'-8"	1'-3"	2'-8"	2'-8"	8'-1"	#4	12"	9	5'-6"	1'-7"	4'-0"	#4	1	25'-10"	#4	4	26'-10"	#4	12"	2	23'-1"	#4	12"	5	21'-8"	4'-8"	#4	1	23'-8"	#4	12"	7	"	"		
8'	Short	#4	12"	20	4'-4"	12'-5"	1'-5"	3'-4"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	21'-8"	#4	4	21'-0"	#4	12"	3	18'-11"	#4	12"	5	15'-10"	3'-6"	#4	1	19'-10"	#4	12"	8	"	"	328.0	438.3
	Long	#4	12"	27	4'-4"	12'-3"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	13	6'-6"	1'-10"	4'-9"	#4	1	28'-3"	#4	4	30'-3"	#4	12"	3	25'-11"	#4	12"	5	21'-8"	4'-8"	#4	1	26'-7"	#4	12"	8	3'-6"	1'-9"		

Bar Bending Diagram: SF_1 & SF_2, LF_1 & LF_2 (Y, X, 3" Pin); SH_4 & LH_4 (X, X, 7/12).

Note:- Dimensions are to bar centers.

NOTE:- Bars for short wing shall be marked with prefix letter "S", while those for long wing shall be marked with letter "L".

Revisions:- Membrane Added. 5-10-66 W.C.H.

Designed By- W.C.H. 5-13-63 Checked By-
Drawn By- W.C.H. 6-20-63 Checked By- BHS 8-7-63
Quantities By- W.C.H. 9-23-63 Checked By-

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 15° SKEW

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-X153-1

34

RESHOT 3-8-93 179

Fed. Road No.	State	Fed. Aid Project	Fiscal Year	Sheet No.	Total Sheets
6	ARK.			106	
Job No.					

Bar List for Barrel Section 60'-0" in Length

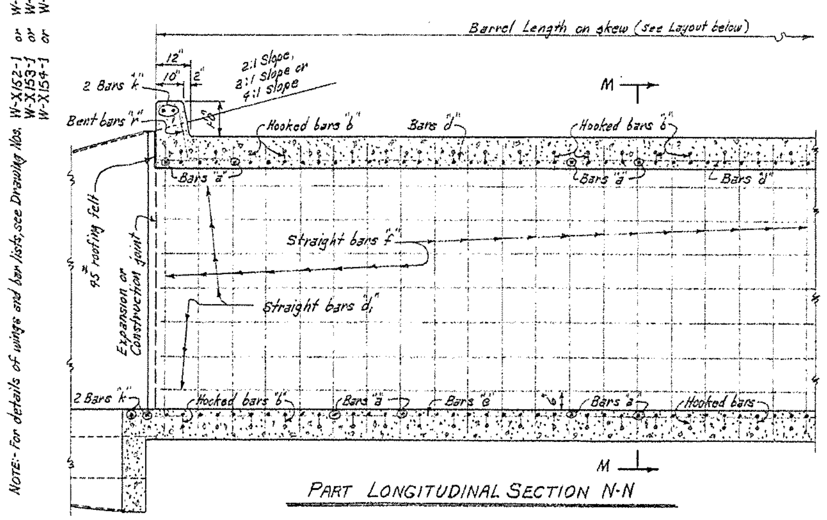
Depth of Cover	Clear Span	Clear Height	"a" bars				"b" bars					"d" bars				"d1" bars				"e" bars				"f" bars				"k" bars		
			Straight				Bent - See Diagram.					Straight												Straight				Straight		
			In Top and Bottom Slabs of Barrel.				In Top and Bottom Slabs of Barrel. Alternate with "a" bars					Longitudinal in Top Slab of Barrel.				Longitudinal in Sidewalls				Longitudinal in Bottom Slab of Barrel				Verticals in Sidewalls				2 in Top of Headwalls and Aprons - Each.		
D	S	H	Size	Spacing	No. Req'd	Length	Size	Spacing	No. Req'd	Length	X	Size	Spacing	No. Req'd	Length	Size	Spacing	No. Req'd	Length	Size	Spacing	No. Req'd	Length	Size	Spacing	No. Req'd	Length	Size	No. Req'd	Length
0'-0" to 5'-0" Maximum	1 @ 4'	2'	#5	13"	112	4'-11"	#6	13"	110	6'-0"	4'-10"	#5	10½"	6	2 @ 30'-8" for 60'-0" Length Barrel (1'-8" Lap)	#4	12"	4	2 @ 30'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	5	2 @ 31'-6" for 60'-0" Length Barrel (1'-3" Lap)	#4	12"	120	2'-11"	#5	8	5'-5"
		3'			112	4'-11"			110	6'-0"	4'-10"			6				6				5				120	3'-11"		8	5'-5"
		4'			112	4'-11"			110	6'-0"	4'-10"			6				8				5				120	4'-11"		8	5'-5"
		5'			112	4'-11"			110	6'-0"	4'-10"			6				10				5				120	5'-11"		8	5'-5"
		6'			112	5'-1"			110	6'-2"	5'-0"			6				12				5				120	6'-11"		8	5'-7"
	1 @ 5'	3'	#6	13"	112	5'-11"	#6	13"	110	7'-1"	5'-11"	#5	10½"	7		#4	12"	6		#4	12"	6		#4	12"	120	4'-0"	#6	8	6'-6"
		4'			112	5'-11"			110	7'-1"	5'-11"			7				8				6				120	5'-0"		8	6'-6"
		5'			112	5'-11"			110	7'-1"	5'-11"			7				10				6				120	6'-0"		8	6'-6"
		6'			112	6'-1"			110	7'-3"	6'-1"			7				12				6				120	7'-0"		8	6'-8"
		7'			112	6'-2"			110	7'-4"	6'-2"			7				14				6				120	8'-0"		8	6'-9"
	1 @ 6'	3'	#6	12"	120	7'-0"	#6	12"	118	8'-1"	6'-11"	#5	10½"	8		#4	12"	6		#4	12"	7		#4	12"	120	4'-1"	#6	8	7'-6"
		4'			120	7'-0"			118	8'-1"	6'-11"			8				8				7				120	5'-1"		8	7'-6"
		5'			120	7'-0"			118	8'-1"	6'-11"			8				10				7				120	6'-1"		8	7'-6"
		6'			120	7'-2"			118	8'-3"	7'-1"			8				12				7				120	7'-1"		8	7'-8"
		7'			120	7'-3"			118	8'-4"	7'-2"			8				14				7				120	8'-1"		8	7'-9"
		8'			120	7'-4"			118	8'-5"	7'-3"			8				16				7		#5	12"	120	9'-1"		8	7'-10"
	1 @ 7'	4'	#6	11"	132	8'-0"	#6	11"	130	9'-1"	7'-11"	#5	10½"	9		#4	12"	8		#4	12"	8		#4	12"	120	5'-2"	#6	8	8'-7"
		5'			132	8'-0"			130	9'-1"	7'-11"			9				10				8				120	6'-2"		8	8'-7"
		6'			132	8'-2"			130	9'-3"	8'-1"			9				12				8				120	7'-2"		8	8'-9"
		7'			132	8'-3"			130	9'-4"	8'-2"			9				14				8				120	8'-2"		8	8'-10"
		8'			132	8'-4"			130	9'-5"	8'-3"			9				16				8			10"	144	9'-2"		8	8'-11"
		9'			132	8'-6"			130	9'-7"	8'-5"			9				18				8		#5	12"	120	10'-2"		8	9'-1"
	1 @ 8'	4'	#7	12"	120	9'-1"	#6	12"	118	10'-2"	9'-0"	#5	10"	11		#4	12"	8		#4	12"	9		#4	12"	120	5'-4"	#7	8	9'-7"
		5'			120	9'-3"			118	10'-4"	9'-2"			11				10				9				120	6'-4"		8	9'-9"
		6'			120	9'-3"			118	10'-4"	9'-2"			11				12				9				120	7'-4"		8	9'-9"
		7'			120	9'-4"			118	10'-5"	9'-3"			11				14				9				120	8'-4"		8	9'-10"
		8'			120	9'-5"			118	10'-6"	9'-4"			11				16				9			10"	144	9'-4"		8	9'-11"
		9'			120	9'-7"			118	10'-8"	9'-6"			11				18				9		#5	12"	120	10'-4"		8	10'-1"
		10'			120	9'-9"			118	10'-10"	9'-8"			11				20				9			11"	132	11'-4"		8	10'-3"
	1 @ 9'	5'	#7	11"	132	10'-3"	#6	11"	130	11'-4"	10'-2"	#5	10"	12		#4	12"	10		#4	12"	10		#4	12"	120	6'-5"	#7	8	10'-9"
		6'			132	10'-4"			130	11'-5"	10'-3"			12				12				10				120	7'-5"		8	10'-10"
		7'			132	10'-4"			130	11'-5"	10'-3"			12				14				10				120	8'-5"		8	10'-10"
		8'			132	10'-5"			130	11'-6"	10'-4"			12				16				10			10"	144	9'-5"		8	10'-11"
		9'			132	10'-7"			130	11'-8"	10'-6"			12				18				10		#5	12"	120	10'-5"		8	11'-2"
		10'			132	10'-9"			130	11'-10"	10'-8"			12				20				10			11"	132	11'-5"		8	11'-4"
		11'			132	10'-11"			130	12'-0"	10'-10"			12				22				10			10"	144	12'-5"		8	11'-6"
	1 @ 10'	5'	#7	12"	120	11'-3"	#7	12"	118	12'-7"	11'-3"	#5	10"	13		#4	12"	10		#4	12"	11		#4	12"	120	6'-6"	#7	8	11'-10"
		6'			120	11'-4"			118	12'-8"	11'-4"			13				12				11				120	7'-6"		8	11'-11"
		7'			120	11'-4"			118	12'-8"	11'-4"			13				14				11				120	8'-6"		8	11'-11"
		8'			120	11'-5"			118	12'-9"	11'-5"			13				16				11			10"	144	9'-6"		8	12'-0"
		9'			120	11'-8"			118	12'-11"	11'-7"			13				18				11		#5	12"	120	10'-6"		8	12'-2"
		10'			120	11'-10"			118	13'-1"	11'-9"			13				20				11			11"	132	11'-6"		8	12'-4"
		11'			120	12'-0"			118	13'-3"	11'-11"			13				22				11			10"	144	12'-6"		8	12'-6"
		12'			120	12'-2"			118	13'-5"	12'-1"			13				24				11		#6	12"	120	13'-6"		8	12'-8"
	1 @ 11'	6'	#7	11"	132	12'-6"	#7	11"	130	13'-9"	12'-5"	#5	9½"	15		#4	12"	12		#4	12"	12		#4	12"	120	7'-7"	#7	8	13'-0"
		7'			132	12'-6"			130	13'-9"	12'-5"			15				14				12				120	8'-7"		8	13'-0"
		8'			132	12'-6"			130	13'-9"	12'-5"			15				16				12			10"	144	9'-7"		8	13'-0"
		9'			132	12'-8"			130	13'-11"	12'-7"			15				18				12		#5	12"	120	10'-7"		8	13'-2"
		10'			132	12'-10"			130	14'-1"	12'-9"			15				20				12			11"	132	11'-7"		8	13'-4"
		11'			132	13'-0"			130	14'-3"	12'-11"			15				22				12			10"	144	12'-7"		8	13'-7"
		12'			132	13'-2"			130	14'-5"	13'-1"			15				24				12		#6	12"	120	13'-7"		8	13'-9"
	1 @ 12'	6'	#8	12"	120	13'-6"	#7	12"	118	14'-10"	13'-6"	#5	9½"	16		#4	12"	12		#4	12"	13		#4	12"	120	7'-9"	#8	8	14'-1"
		7'			120	13'-6"			118	14'-10"	13'-6"			16				14				13				120	8'-9"		8	14'-1"
		8'			120	13'-6"			118	14'-10"	13'-6"			16				16				13			10"	144	9'-9"		8	14'-1"
		9'			120	13'-8"			118	15'-0"	13'-8"			16				18				13		#5	12"	120	10'-9"		8	14'-3"
		10'			120	13'-10"			118	15'-2"	13'-10"			16				20				13			11"	132	11'-9"		8	14'-5"
		11'			120	14'-0"			118	15'-4"	14'-0"			16				22				13			10"	144	12'-9"		8	14'-7"
		12'			120	14'-2"			118	15'-6"	14'-2"			16				24				13		#6	12"	120	13'-9"		8	14'-9"

NOTE:- The "a" and "b" bars are to be placed parallel with the headwalls, spacing to be parallel with barrel.

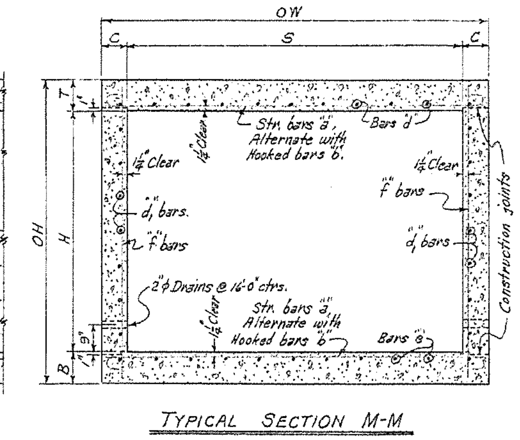
Dimensions / Quantities

Max. Design Depth of Cover	Clear Span	Clear Height	Sq. Ft. of Opening	Overall Width	Thickness of Top Slab	Thickness of Sidewalls	Thickness of Bottom Slab	Overall Height	Roadway Length	Length of Headwall	Class S Conc. per Lin. Ft. of Barrel	Reinforcing Steel per Lin. Ft. of Barrel	Additional per Lap	Additional Two Headwalls & Aprons
D	S	H	A	OW	T	C	B	OH	RL	K	Cu.Yd.	Lb.	Lb.	Lb.
5'-0"	1 @ 4'	2'	8	5'-0"	7"	6"	6½"	3'-1½"	5'-2⅝"	5'-8⅜"	0.262	42.27	17.95	71.92
		3'	12	5'-0"		6"		4'-1½"	"	"	0.319	44.94	19.62	71.92
		4'	16	5'-0"		6"		5'-1½"	"	"	0.356	47.62	21.29	71.92
		5'	20	5'-0"		6"		6'-1½"	"	"	0.394	50.29	22.96	71.92
		6'	24	5'-2"		7"		7'-1½"	5'-4⅛"	5'-10⅝"	0.474	53.74	24.63	73.31
	1 @ 5'	3'	15	6'-0"	7½"	6"	7"	4'-2½"	6'-2½"	6'-9"	0.380	56.71	22.19	110.28
		4'	20	6'-0"		6"		5'-2½"	"	"	0.417	59.38	23.86	110.28
		5'	25	6'-0"		6"		6'-2½"	"	"	0.454	62.05	25.53	110.28
		6'	30	6'-2"		7"		7'-2½"	6'-4⅝"	6'-11⅛"	0.535	65.65	27.20	112.28
		7'	35	6'-3"		7½"		8'-2½"	6'-5⅝"	7'-0⅛"	0.604	68.78	28.87	113.28
	1 @ 6'	3'	18	7'-0"	8"	6"	7½"	4'-3½"	7'-3"	7'-9½"	0.446	67.79	24.76	127.97
		4'	24	7'-0"		6"		5'-3½"	"	"	0.483	70.47	26.43	127.97
		5'	30	7'-0"		6"		6'-3½"	"	"	0.520	73.14	28.10	127.97
		6'	36	7'-2"		7"		7'-3½"	7'-5"	7'-11½"	0.602	76.81	29.77	129.98
		7'	42	7'-3"		7½"		8'-3½"	7'-6"	8'-0½"	0.671	79.99	31.44	130.98
		8'	48	7'-4"		8"		9'-3½"	7'-7⅛"	8'-1⅝"	0.746	83.97	33.11	131.98
	1 @ 7'	4'	28	8'-0"	8½"	6"	8½"	5'-5"	8'-3⅜"	8'-9⅜"	0.568	82.96	29.01	146.89
		5'	35	8'-0"		6"		6'-5"	"	"	0.605	85.63	30.68	146.89
		6'	42	8'-2"		7"		7'-5"	8'-5½"	9'-0"	0.688	89.40	32.35	148.89
		7'	49	8'-3"		7½"		8'-5"	8'-6½"	9'-1"	0.757	92.62	34.02	149.90
		8'	56	8'-4"		8"		9'-5"	8'-7½"	9'-2"	0.832	98.28	35.69	150.90
		9'	63	8'-6"		9"		10'-5"	8'-9⅜"	9'-4"	0.946	107.22	37.36	152.90
	1 @ 8'	4'	32	9'-0"	9½"	6"	9½"	5'-7"	9'-3⅜"	9'-10½"	0.676	97.69	33.32	207.70
		5'	40	9'-2"		7"		6'-7"	9'-5⅞"	10'-0½"	0.754	101.48	34.99	210.42
		6'	48	9'-2"		7"		7'-7"	"	"	0.797	104.15	36.66	210.42
		7'	56	9'-3"		7½"		8'-7"	9'-6⅞"	10'-1½"	0.867	107.42	38.33	211.79
		8'	64	9'-4"		8"		9'-7"	9'-8"	10'-2½"	0.942	113.17	40.00	213.15
		9'	72	9'-6"		9"		10'-7"	9'-10"	10'-4½"	1.057	122.28	41.67	215.87
		10'	80	9'-8"		10"		11'-7"	10'-0⅛"	10'-6½"	1.184	129.04	43.34	218.60
	1 @ 9'	5'	45	10'-2"	10"	7"	10"	6'-8"	10'-6⅛"	11'-0⅜"	0.844	117.30	37.56	233.23
		6'	54	10'-3"		7½"		7'-8"	10'-7⅜"	11'-1¾"	0.910	120.62	39.23	234.60
		7'	63	10'-3"		7½"		8'-8"	"	"	0.957	123.29	40.90	234.60
		8'	72	10'-4"		8"		9'-8"	10'-8⅜"	11'-2⅜"	1.033	129.12	42.57	235.96
		9'	81	10'-6"		9"		10'-8"	10'-10⅛"	11'-5"	1.148	139.38	44.29	240.05
		10'	90	10'-8"		10"		11'-8"	11'-0⅛"	11'-7"	1.276	145.26	45.91	242.77
		11'	99	10'-10"		11"		12'-8"	11'-2⅝"	11'-9"	1.416	152.98	47.58	245.50
	1 @ 10'	5'	50	11'-2"	10½"	7"	11"	6'-9½"	11'-6¾"	12'-1¼"	0.957	133.70	40.13	257.63
		6'	60	11'-3"		7½"		7'-9½"	11'-7¾"	12'-2¼"	1.024	137.06	41.80	258.99
		7'	70	11'-3"		7½"		8'-9½"	"	"	1.071	139.73	43.47	258.99
		8'	80	11'-4"		8"		9'-9½"	11'-8¾"	12'-3¼"	1.147	145.62	45.14	260.35
		9'	90	11'-6"		9"		10'-9½"	11'-10⅞"	12'-5¼"	1.263	155.33	46.81	263.08
		10'	100	11'-8"		10"		11'-9½"	12'-1"	12'-7½"	1.391	162.30	48.48	265.80
		11'	110	11'-10"		11"		12'-9½"	12'-3"	12'-9½"	1.532	170.12	50.15	268.53
		12'	120	12'-0"		12"		13'-9½"	12'-5⅛"	12'-11½"	1.685	182.08	51.82	271.25
	1 @ 11'	6'	66	12'-4"	11"	8"	11½"	7'-10½"	12'-9¼"	13'-3¾"	1.153	158.87	46.12	283.61
		7'	77	12'-4"		8"		8'-10½"	"	"	1.202	161.55	47.79	283.61
		8'	88	12'-4"		8"		9'-10½"	"	"	1.252	166.78	49.46	283.61
		9'	99	12'-6"		9"		10'-10½"	12'-11¼"	13'-5¾"	1.368	176.31	51.13	286.33
		10'	110	12'-8"		10"		11'-10½"	13'-1⅜"	13'-7¾"	1.497	183.42	52.80	289.06
		11'	121	12'-10"		11"		12'-10½"	13'-3⅜"	13'-10"	1.638	191.38	54.47	293.15
		12'	132	13'-0"		12"		13'-10½"	13'-5½"	14'-0"	1.792	203.51	56.14	295.87
	1 @ 12'	6'	72	13'-4"	11¾"	8"	12¼"	8'-0"	13'-9⅝"	14'-4"	1.284	176.47	48.69	378.98
		7'	84	13'-4"		8"		9'-0"	"	"	1.333	179.14	50.36	378.98
		8'	96	13'-4"		8"		10'-0"	"	"	1.383	184.42	52.03	378.98
		9'	108	13'-6"		9"		11'-0"	13'-11¾"	14'-6½"	1.500	194.12	53.70	382.54
		10'	120	13'-8"		10"		12'-0"	14'-1¾"	14'-8½"	1.630	201.34	55.37	386.10
		11'	132	13'-10"		11"		13'-0"	14'-3⅞"	14'-10½"	1.772	209.48	57.04	389.66
		12'	144	14'-0"		12"		14'-0"	14'-5⅞"	15'-0½"	1.926	221.72	58.71	393.22

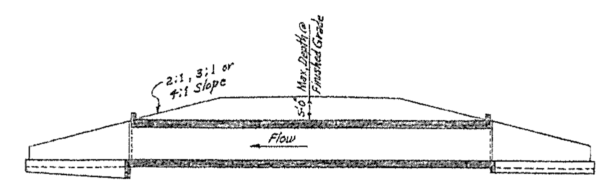
Note:- For details of wings and bar lists, see Drawing Nos. W-X152-1 or W-X152-2 and W-X15, W-X153-1 or W-X153-2, W-X154-1 or W-X154-2.



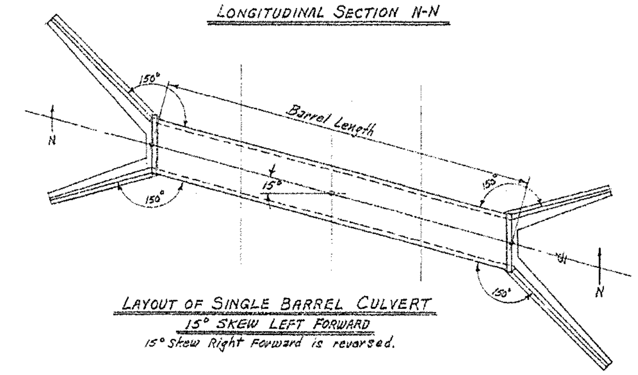
PART LONGITUDINAL SECTION N-N



TYPICAL SECTION M-M



LONGITUDINAL SECTION N-N

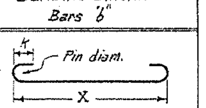


LAYOUT OF SINGLE BARREL CULVERT
15° SKEW LEFT FORWARD
15° Skew Right Forward is reversed.

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.

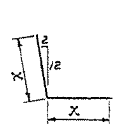
DESIGN LIVE LOAD
H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

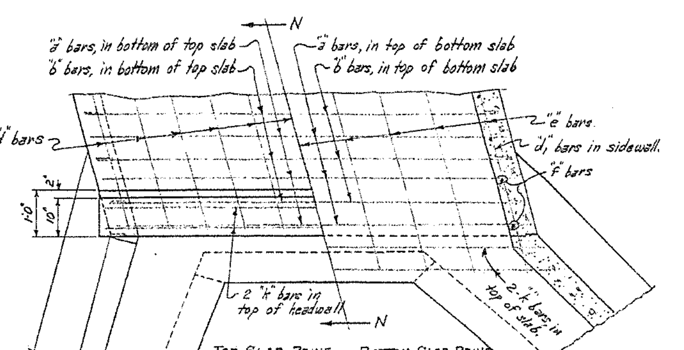
UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

Bar Size	Pin Diam.	K	Add for 2 Hooks	Bending Diagram Bars "b"
#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'-6"	1'-3"	
5'	#4	11"±	14	2'-7"	1'-3½"	
6'	#4	11"±	16	2'-8"	1'-4"	
7'	#4	11½"±	18	2'-9"	1'-4½"	
8'	#4	11½"±	20	2'-11"	1'-5½"	
9'	#4	11½"±	22	3'-0"	1'-6"	
10'	#4	12"±	24	3'-1"	1'-6½"	
11'	#4	12"±	26	3'-2"	1'-7"	
12'	#4	12"±	28	3'-3"	1'-7½"	



PART PLAN AT CULVERT END

NOTE:- This drawing to be used in conjunction with Standard Drawing Nos. W-X152-1 or W-X152-2, W-X153-1 or W-X153-2 and W-X154-1 or W-X154-2. Also W-X15.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW

4,5,6,7,8,9,10,11 & 12 SPANS — 2:1, 3:1 OR 4:1 SLOPES
SINGLES — UNDER 5'-0" COVER

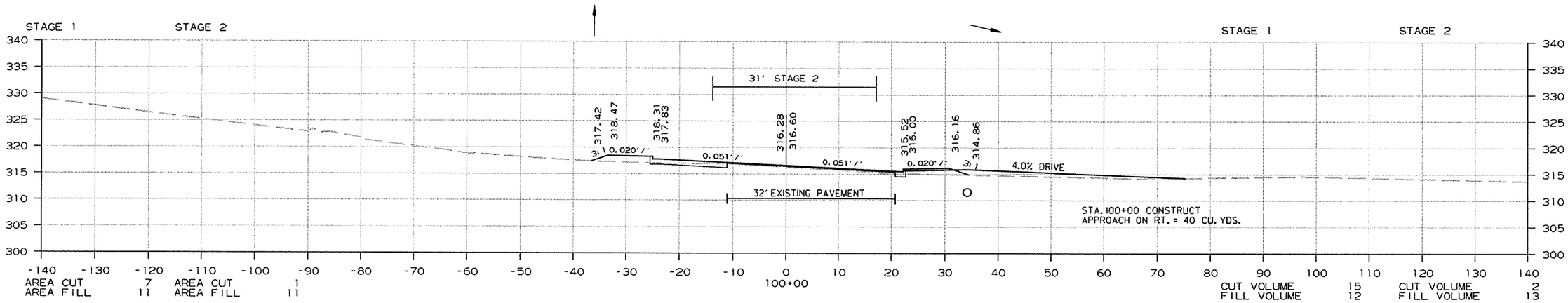
STANDARD DRAWING NO. R-115X-O

Designed By:- W.C.H. 1-23-63 Checked By:- R.H.S. 5-8-63
Drawn By:- W.C.H. 8-14-63 Checked By:- F.H.S. 10-7-63
Quantities By:- W.C.H. 8-21-63 Checked By:- R.G. 12-10-63

(38)

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.		061348	107	131

(2) CROSS SECTIONS



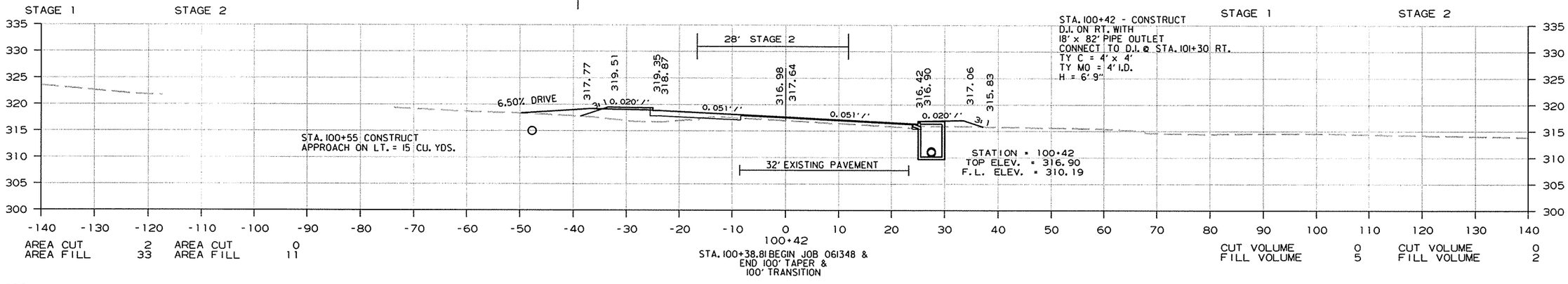
CROSS SECTION STA. 99+38.81 TO STA. 100+00

11/24/2014

R061348.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.		061348	108	131

(2) CROSS SECTIONS



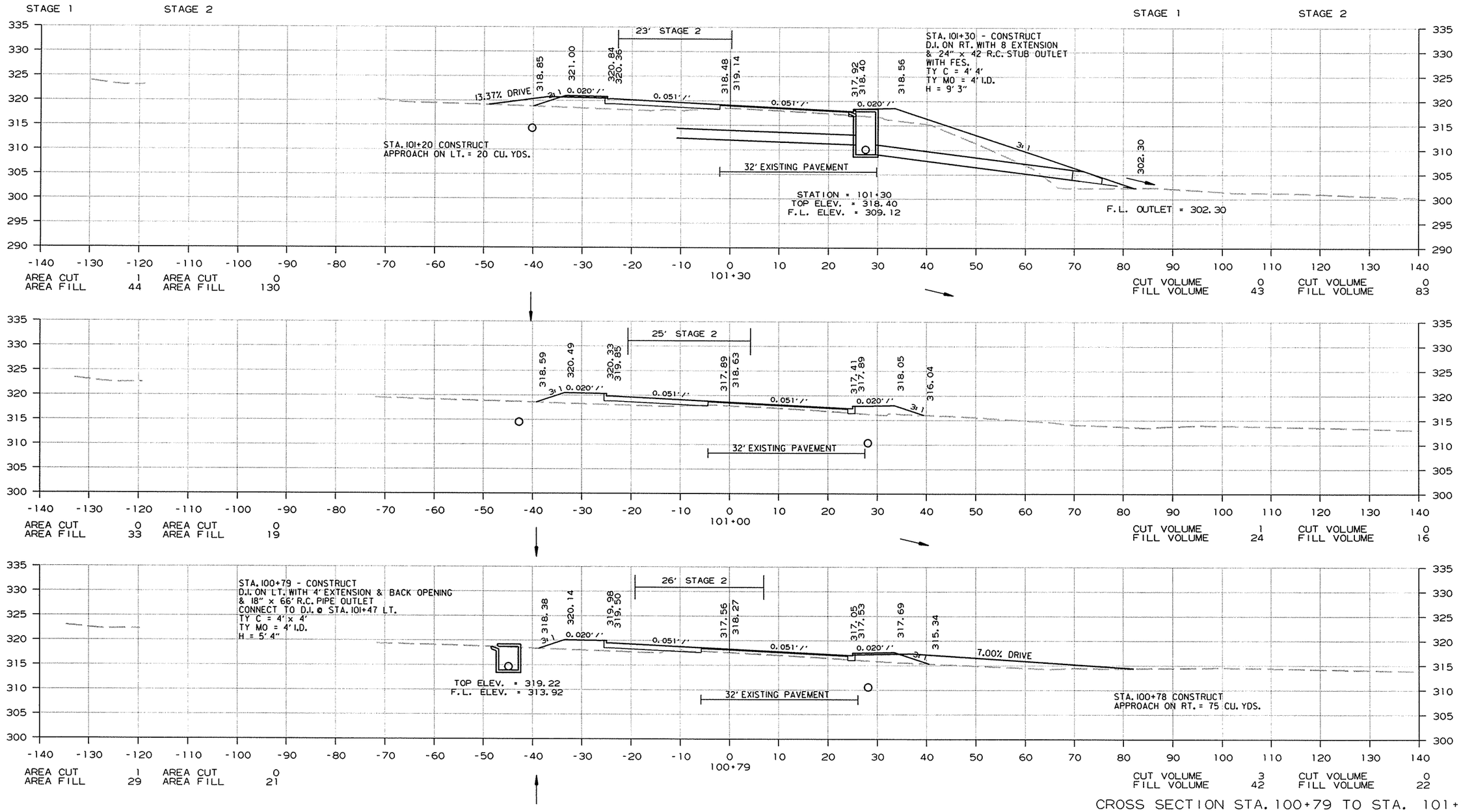
CROSS SECTION STA. 100+19 TO STA. 100+42

11/24/2014

R061348.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.		061348	109	131

(2) CROSS SECTIONS



CROSS SECTION STA. 100+79 TO STA. 101+30

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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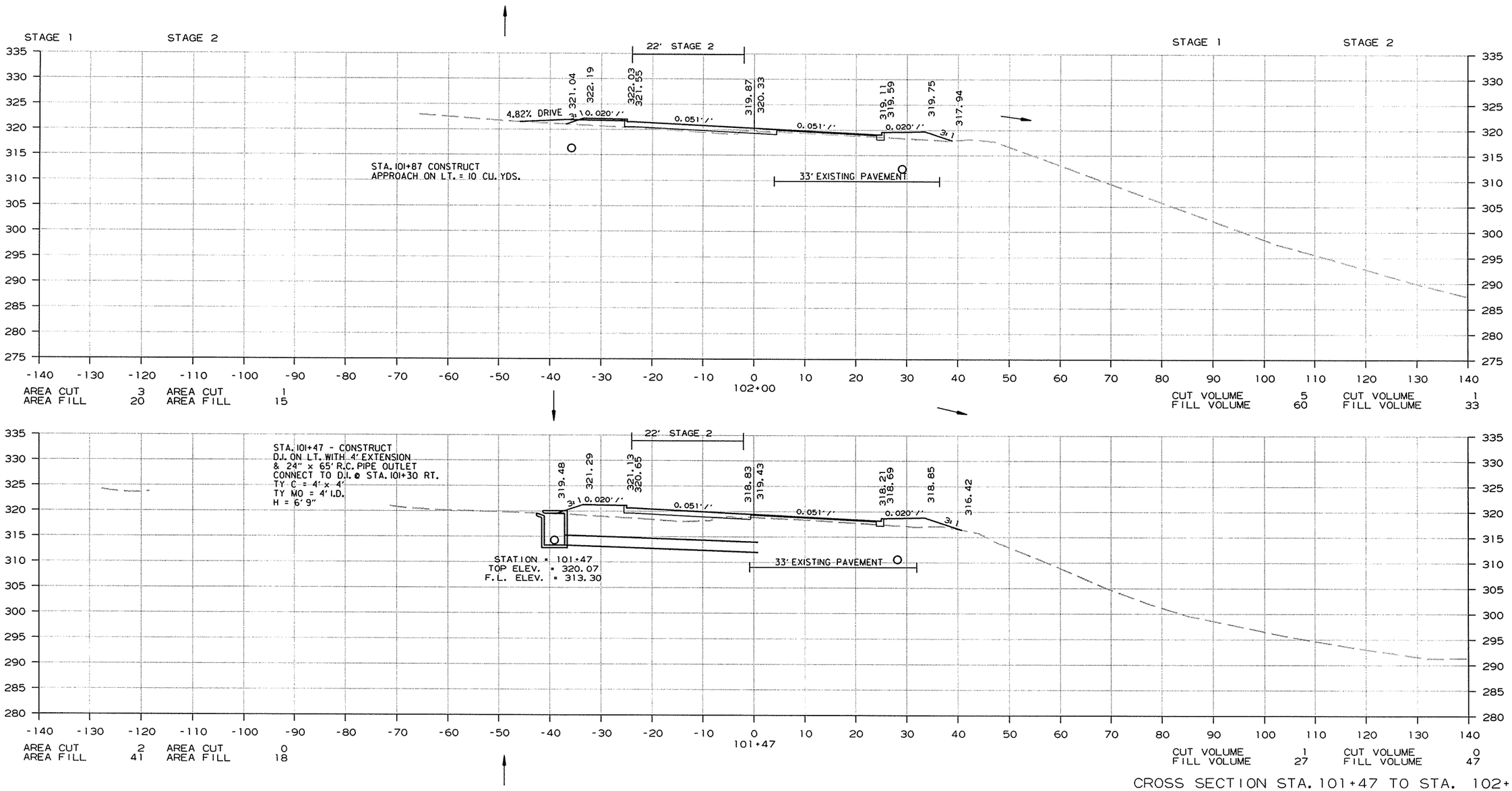
				JOB NO.		061348	110	131

(2) CROSS SECTIONS



CROSS SECTION STA. 101+47 TO STA. 102+00

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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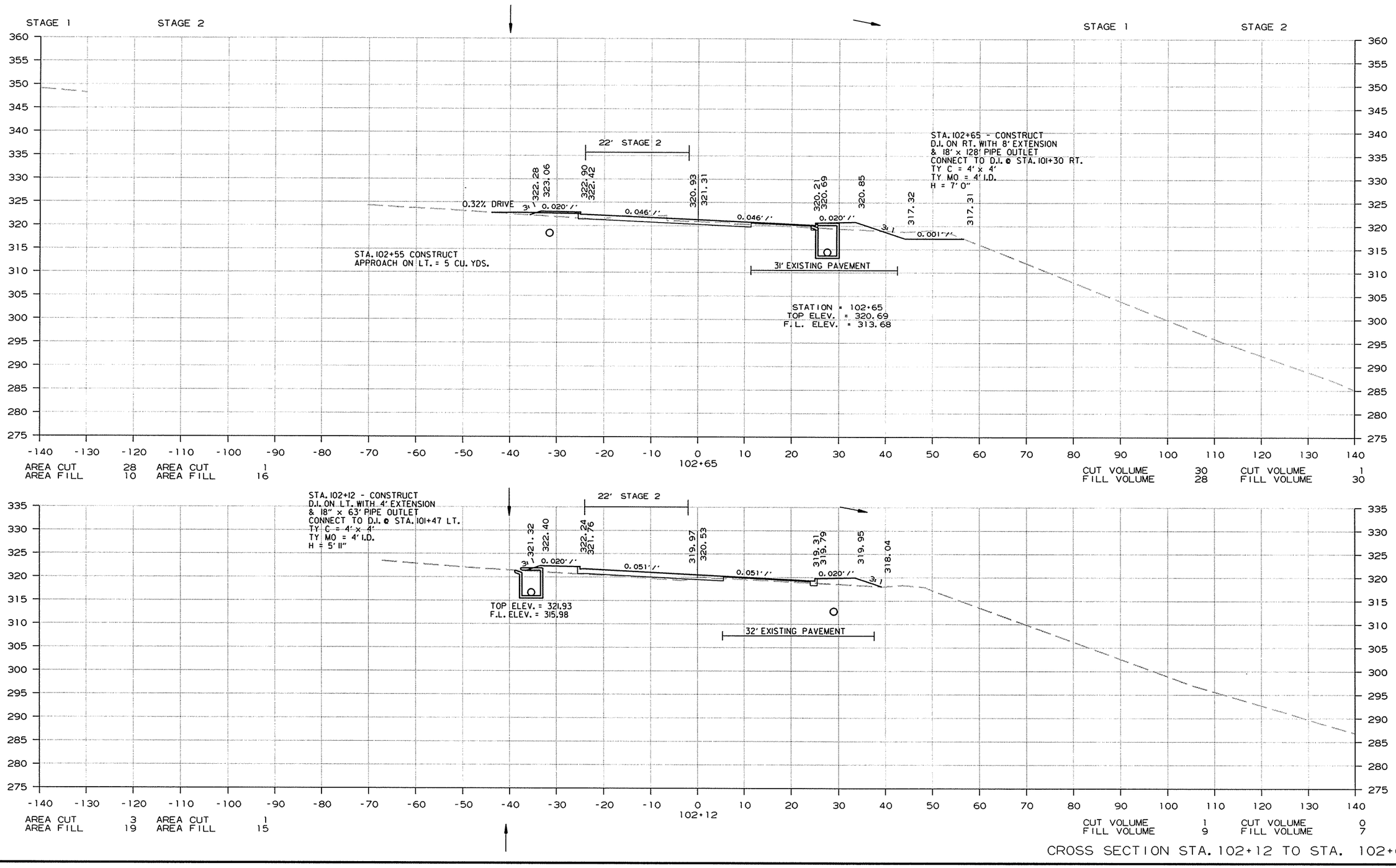
				JOB NO.		061348	111	131

(2) CROSS SECTIONS



CROSS SECTION STA. 102+12 TO STA. 102+65

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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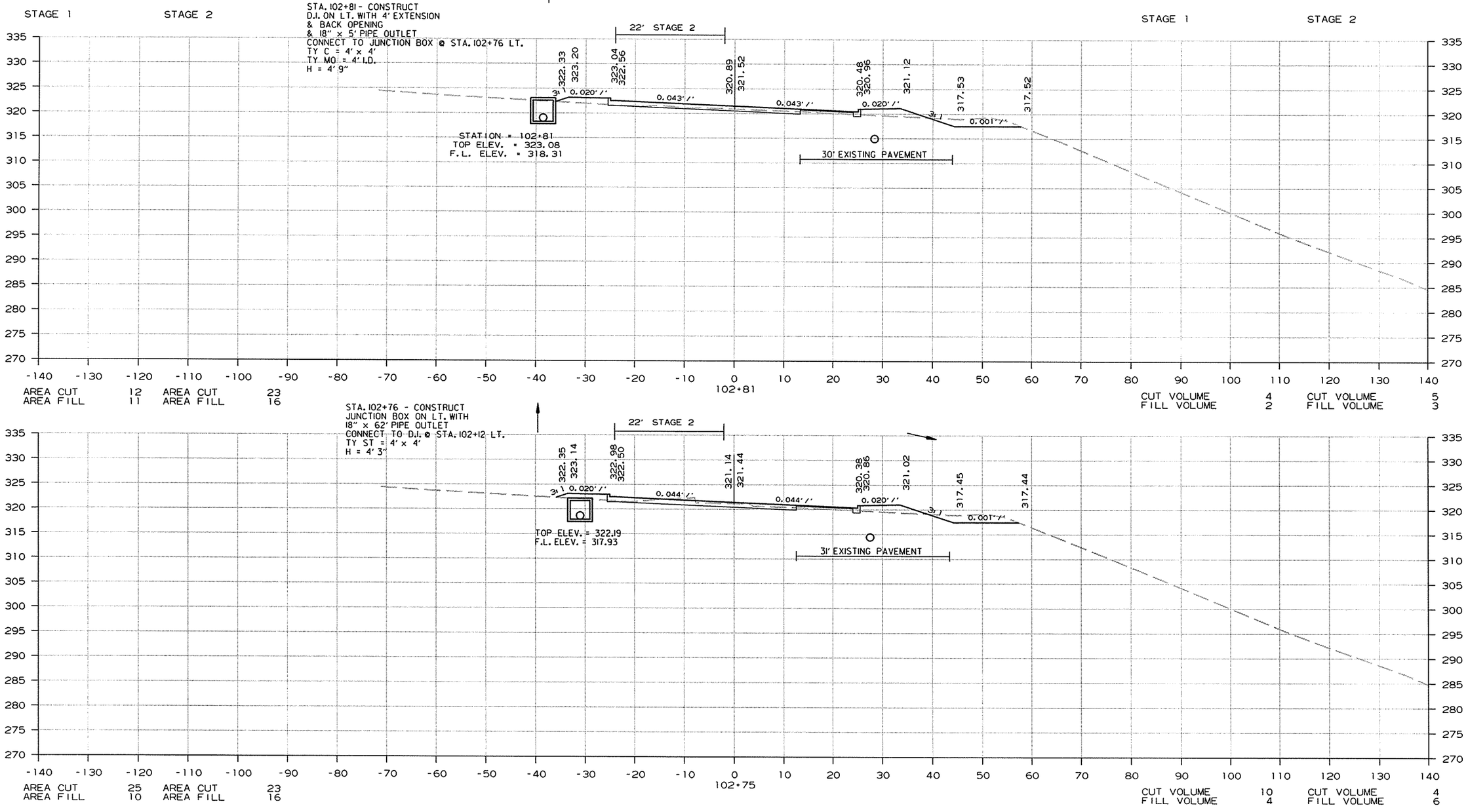
				JOB NO.		061348	112	131

(2) CROSS SECTIONS



CROSS SECTION STA. 102+75 TO STA. 102+81

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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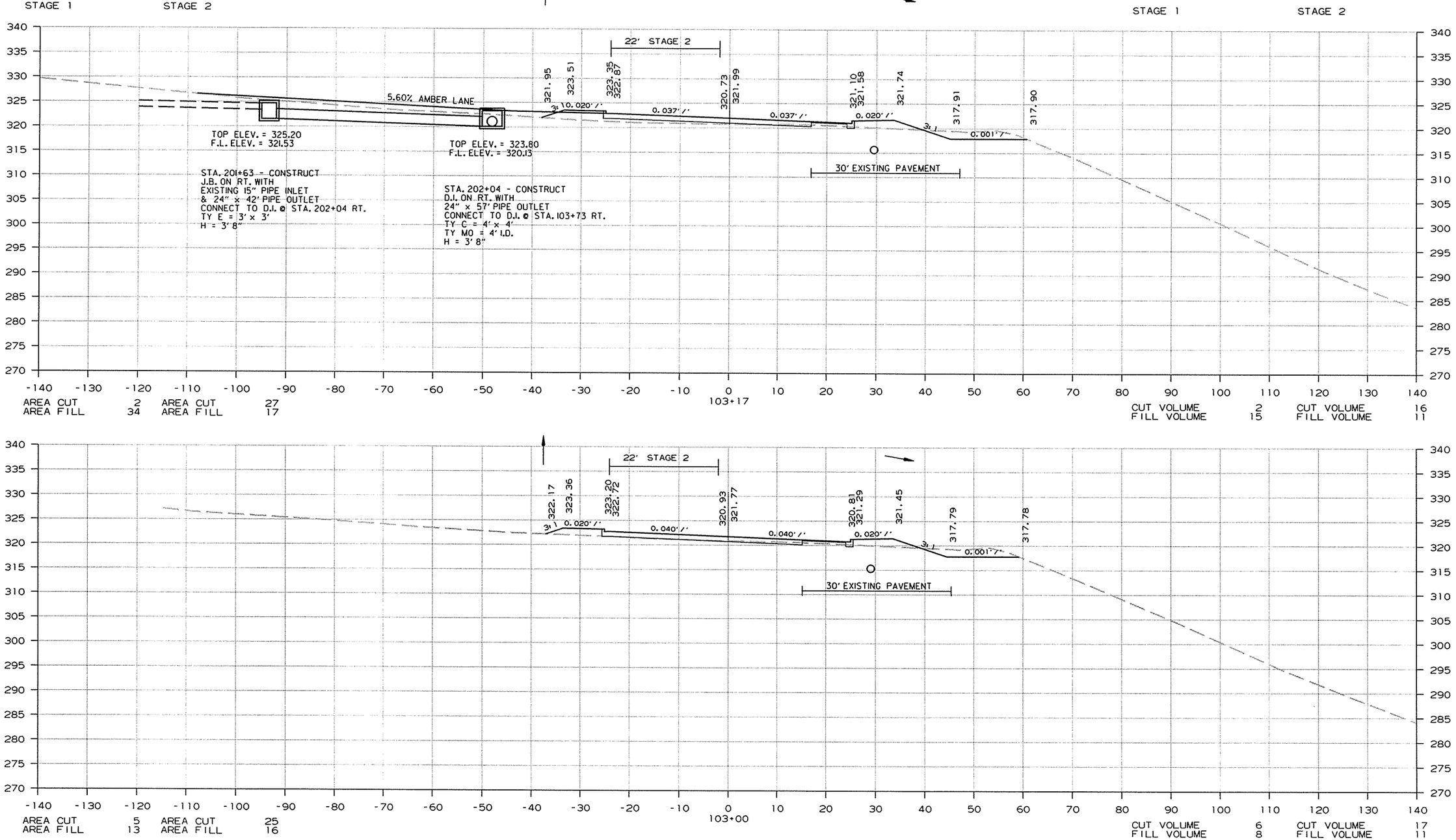
				JOB NO.		061348	113	131

(2) CROSS SECTIONS



CROSS SECTION STA. 103+00 TO STA. 103+17

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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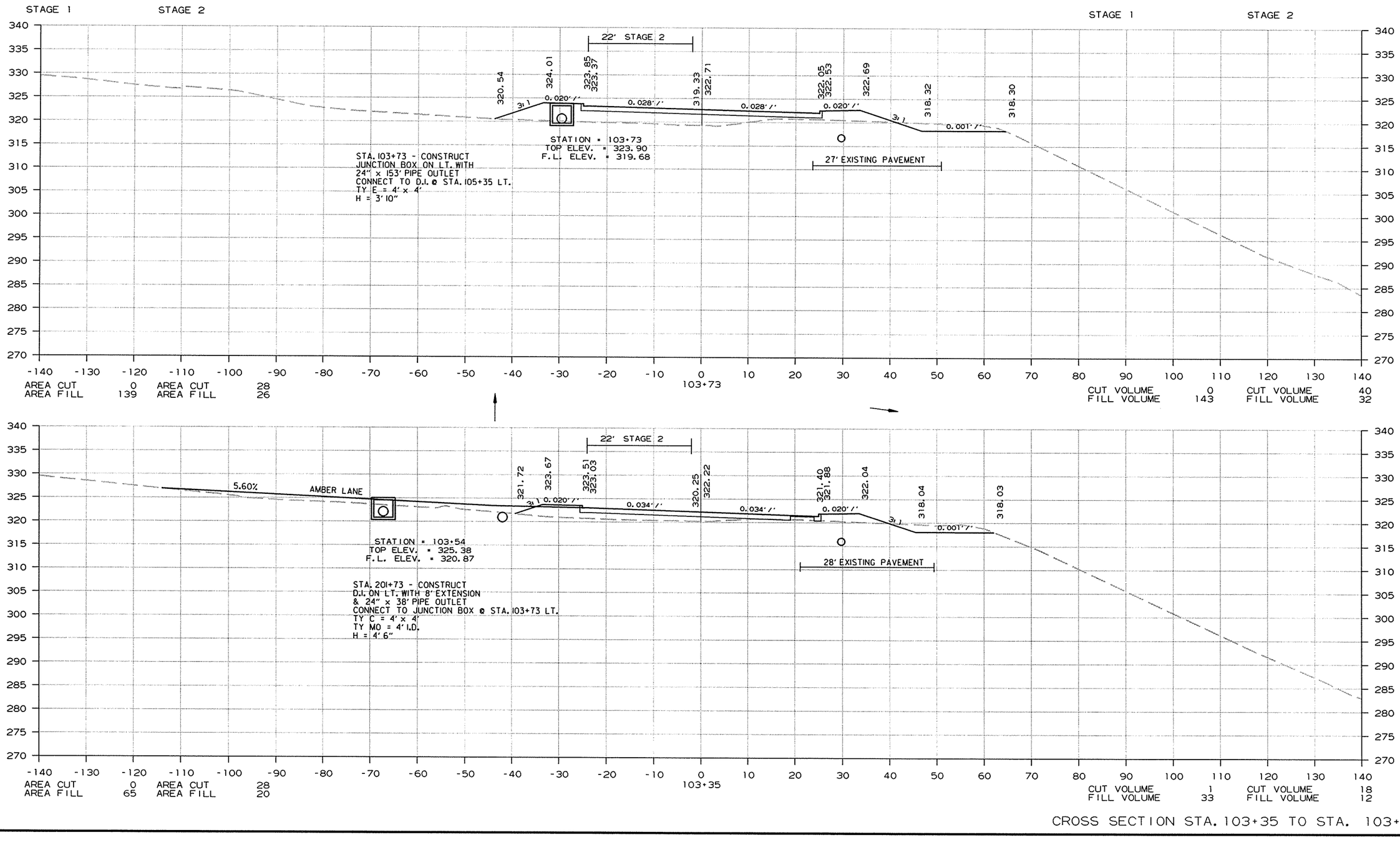
				JOB NO.		061348	114	131

(2) CROSS SECTIONS



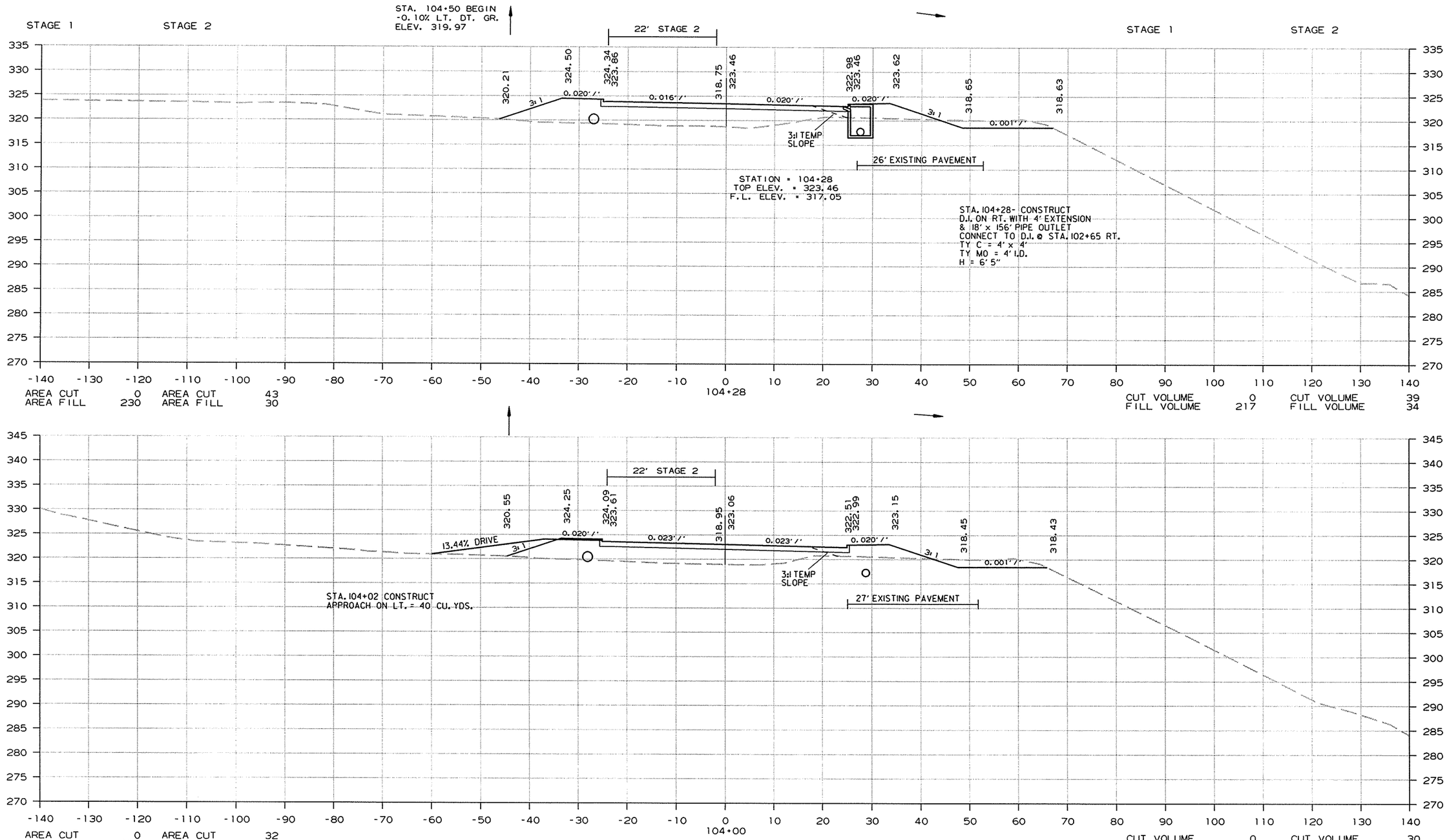
CROSS SECTION STA. 103+35 TO STA. 103+73

11/24/2014

R061348.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.		061348	115	131

(2) CROSS SECTIONS



CROSS SECTION STA. 104+00 TO STA. 104+28

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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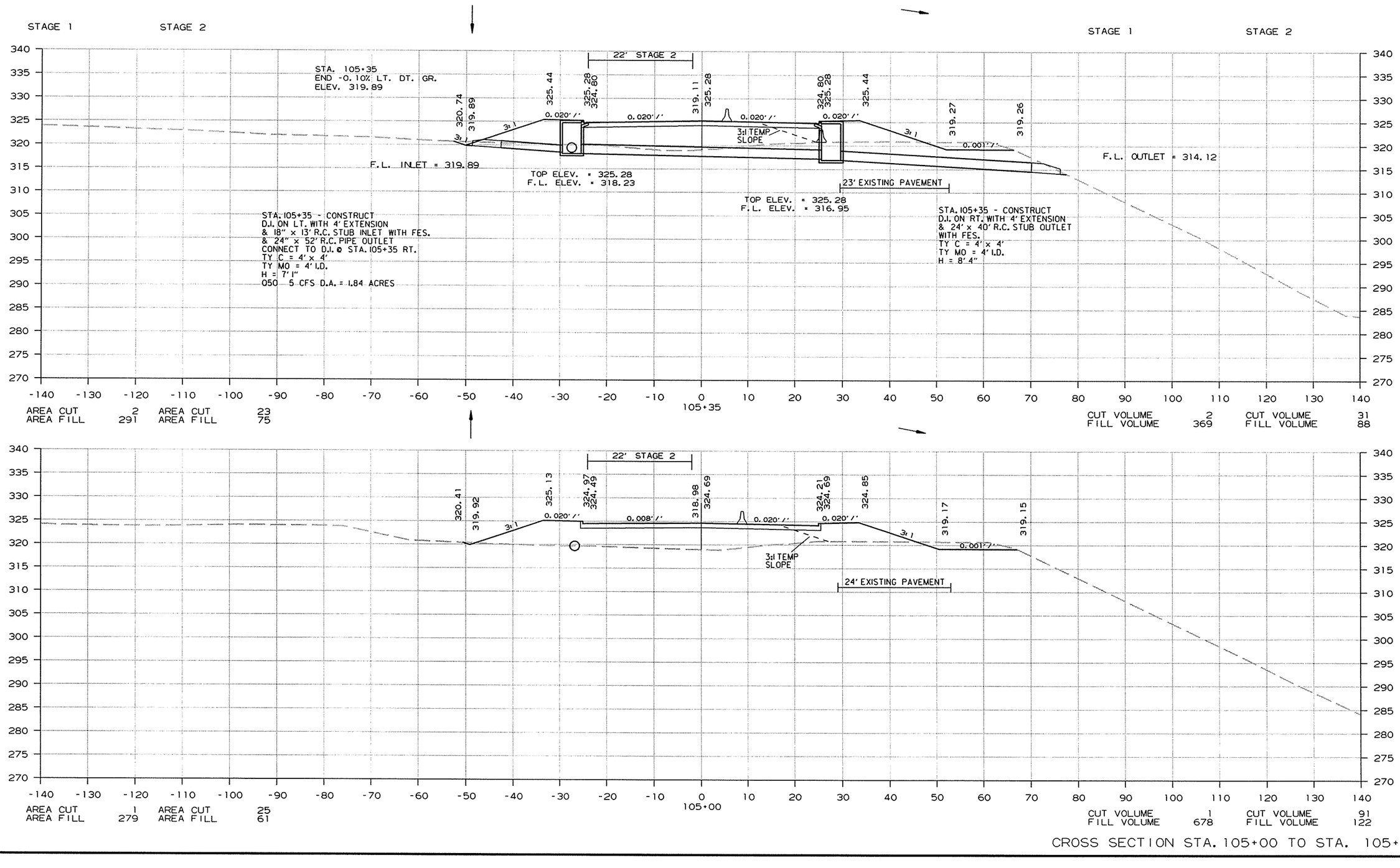
				JOB NO.		061348	116	131

(2) CROSS SECTIONS



CROSS SECTION STA. 105+00 TO STA. 105+35

11/24/2014

R061348.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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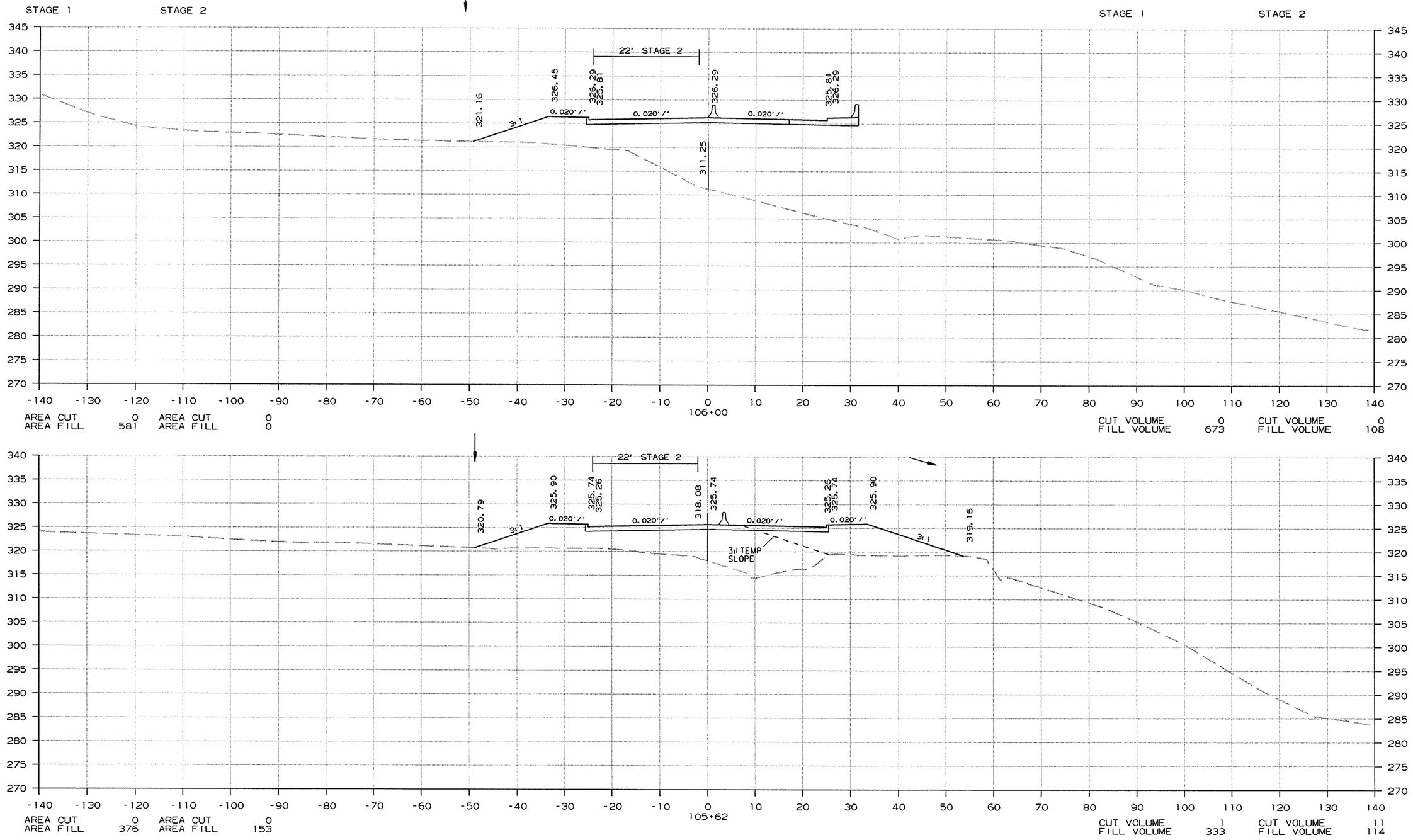
				JOB NO.		061348	117	131

(2) CROSS SECTIONS



CROSS SECTION STA. 105+62 TO STA. 106+00

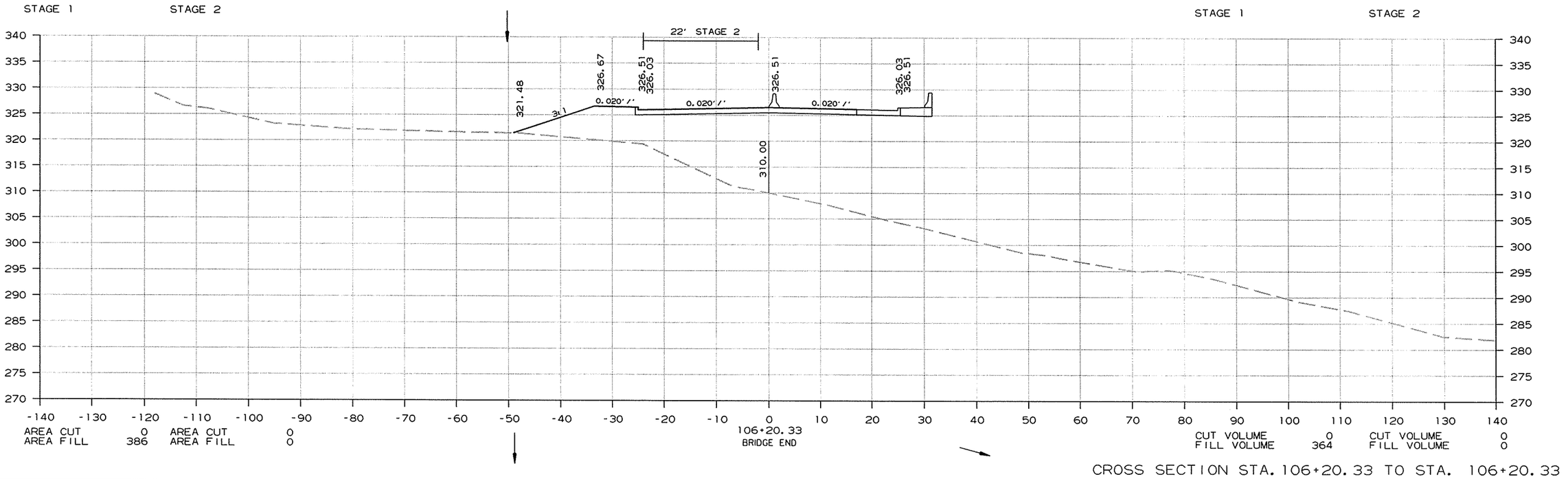
11/24/2014

R061348.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.		061348	118	131

(2) CROSS SECTIONS



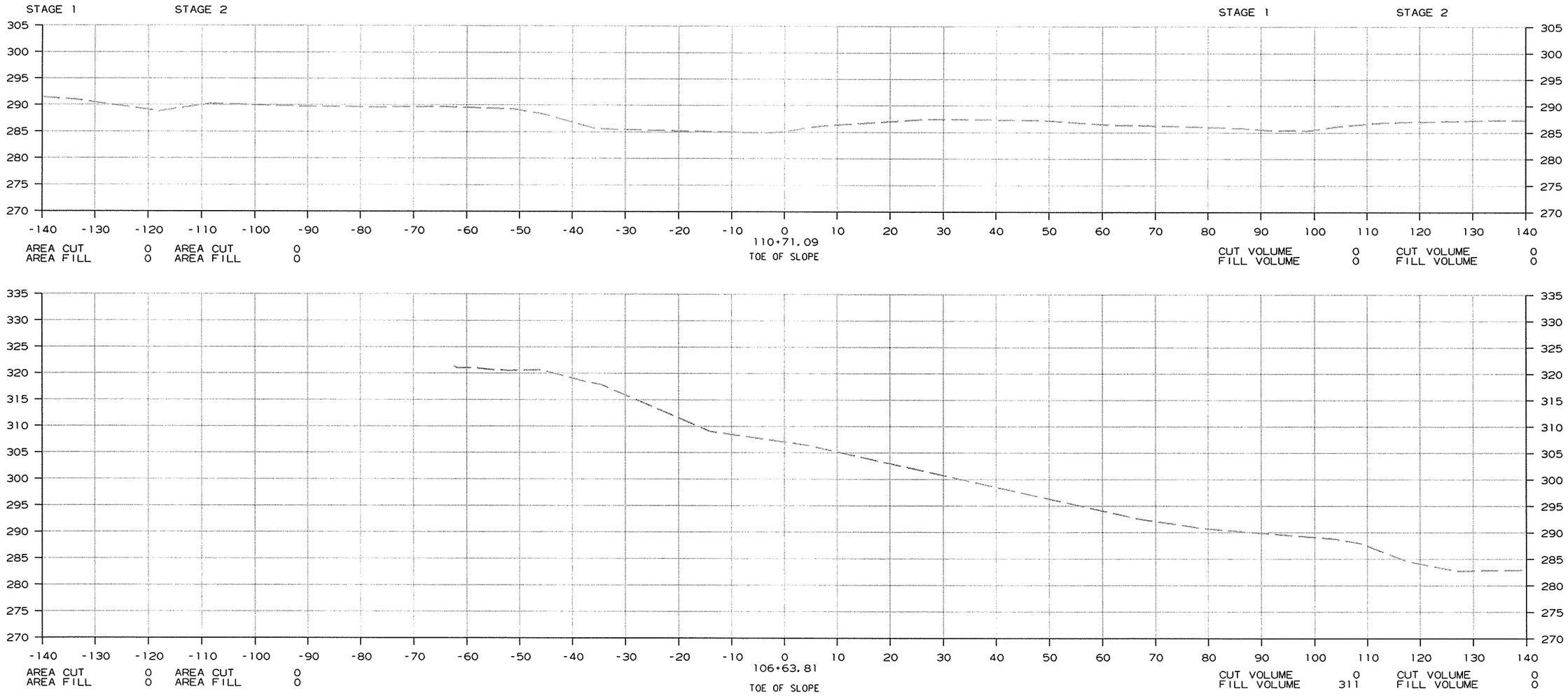
CROSS SECTION STA. 106+20.33 TO STA. 106+20.33

11/24/2014

R061348.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.		061348	119	131

(2) CROSS SECTIONS



CROSS SECTION STA. 106+63.81 TO STA. 110+71.09

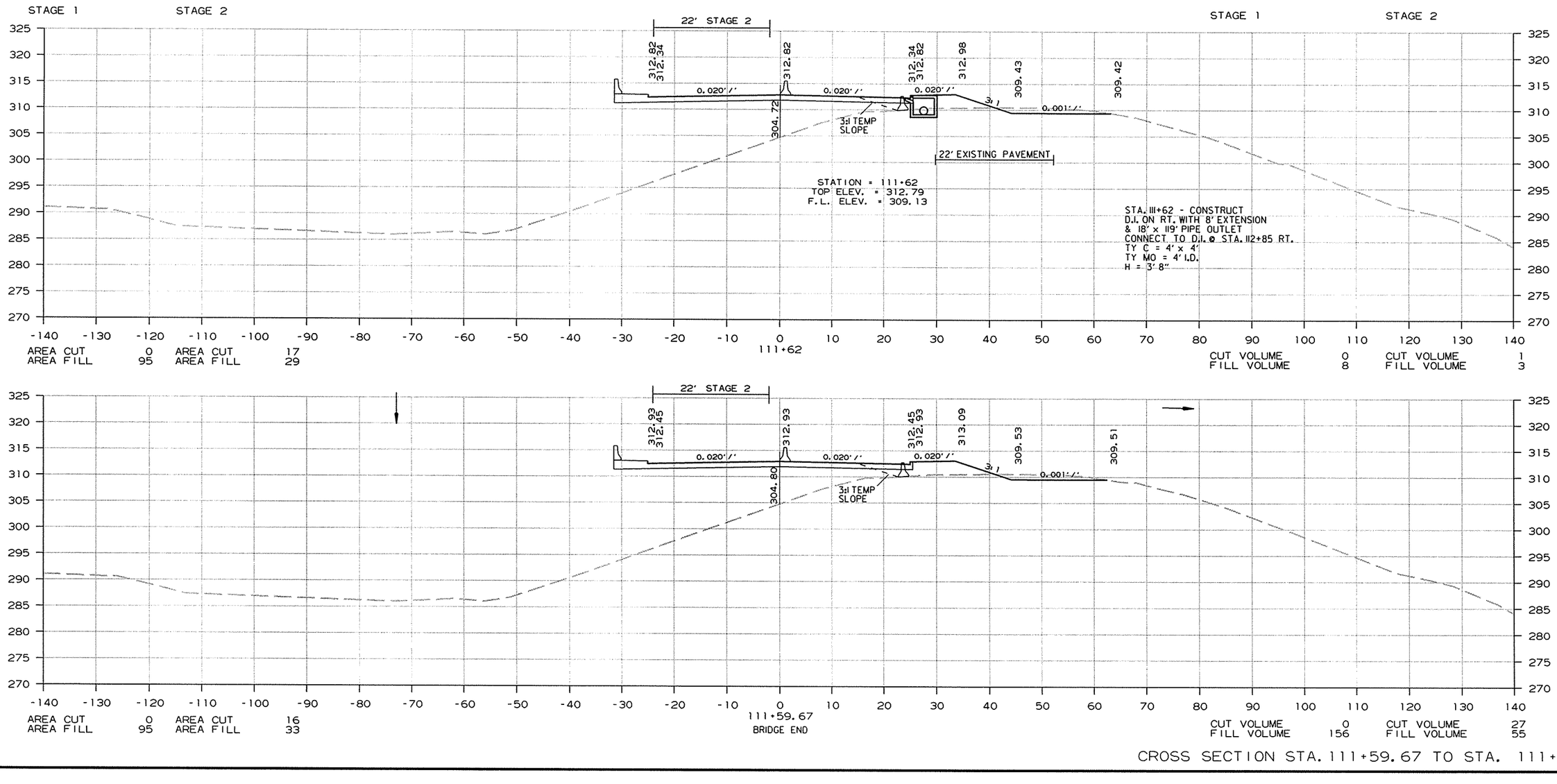
11/24/2014

R061348.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.		061348	120	131

(2) CROSS SECTIONS

STA. 111+65
BEGIN 0.30% LT. DT. GR.
ELEV. 286.19



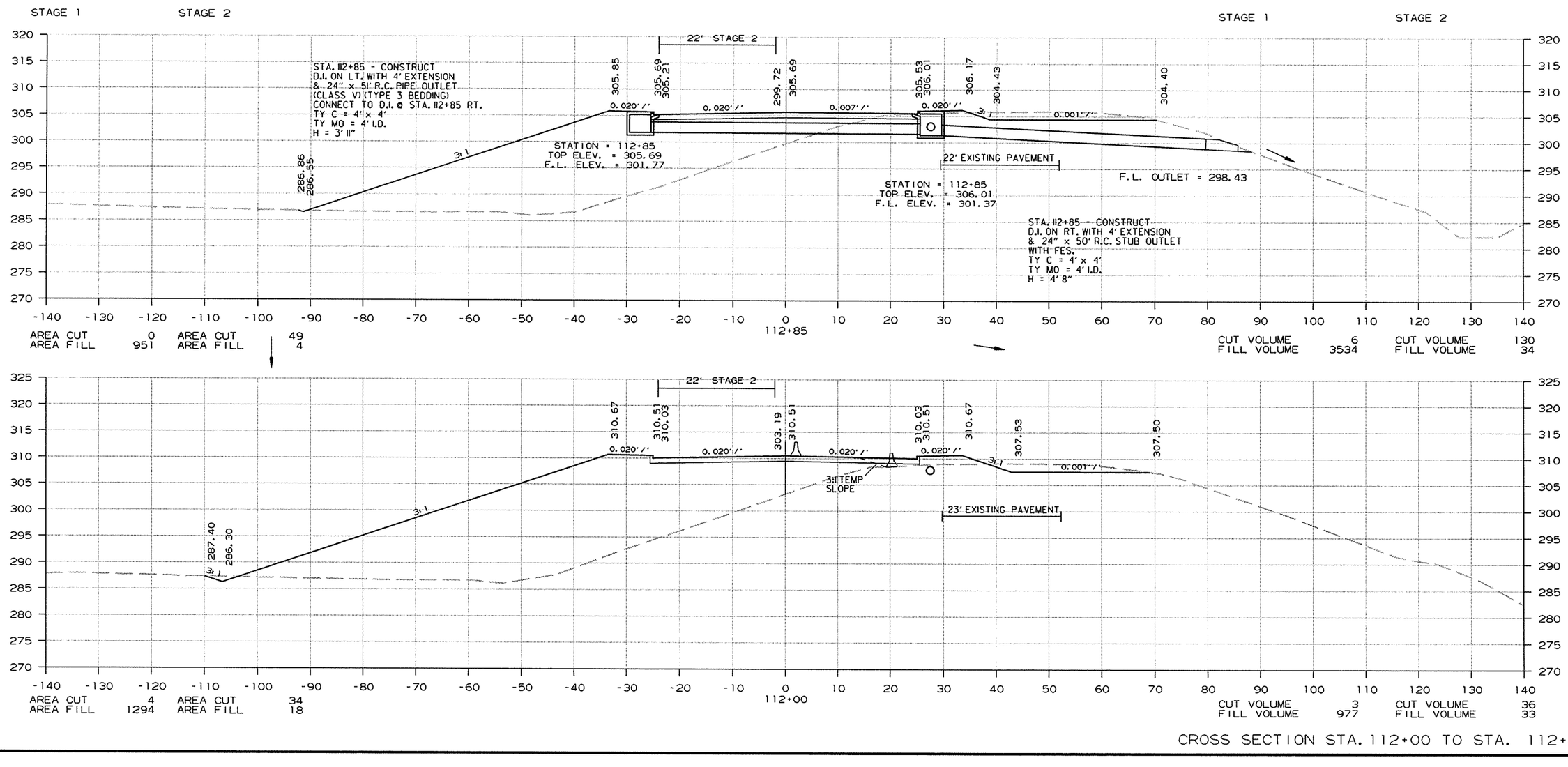
CROSS SECTION STA. 111+59.67 TO STA. 111+62

11/24/2014

R061348.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.		061348	121	131

(2) CROSS SECTIONS



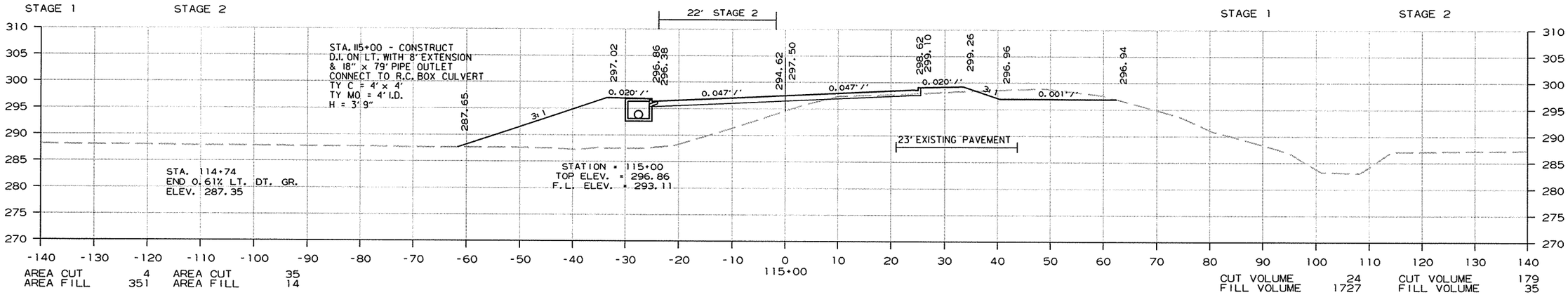
CROSS SECTION STA. 112+00 TO STA. 112+85

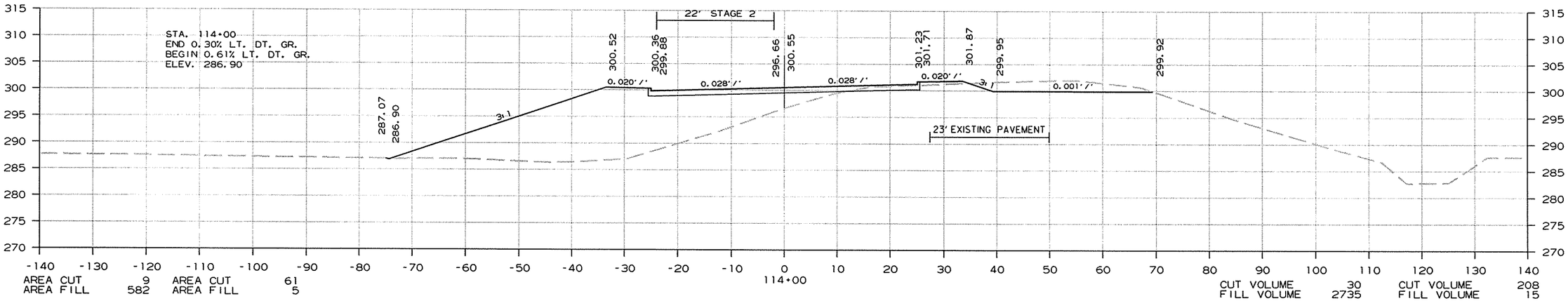
11/24/2014

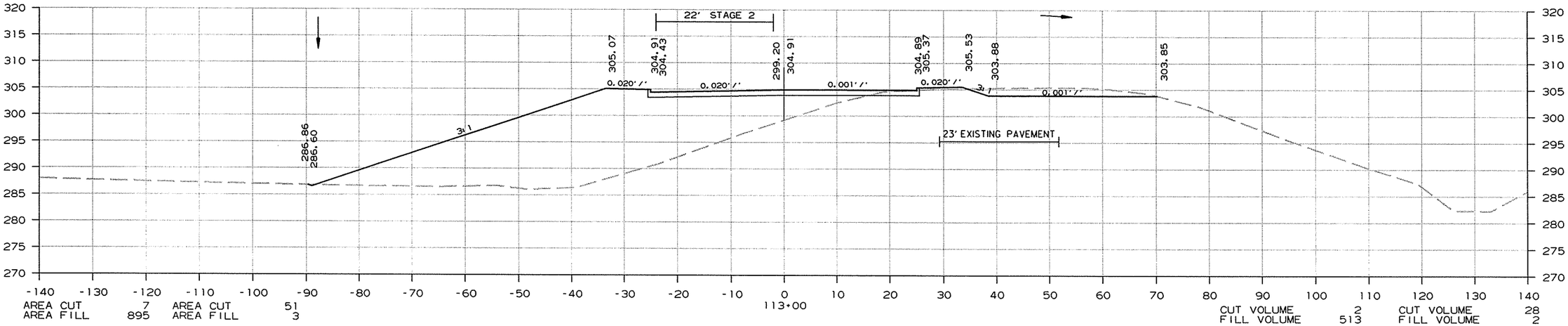
R061348.DGN

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.		061348	122	131

(2) CROSS SECTIONS







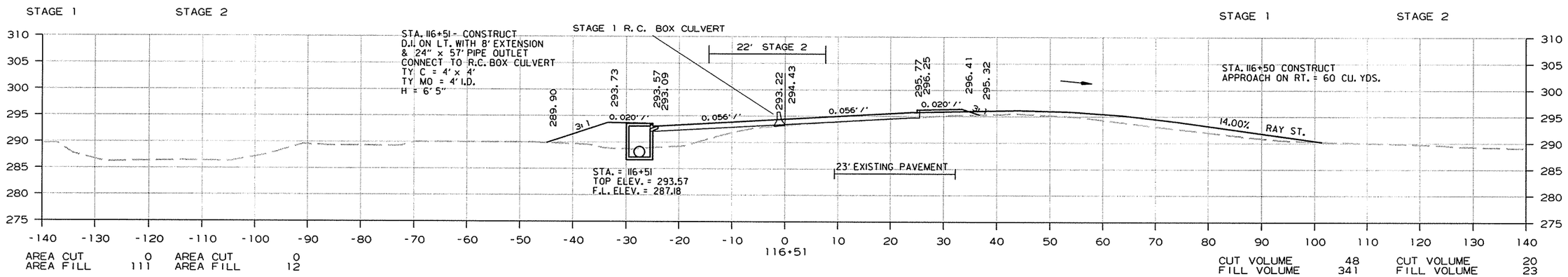
CROSS SECTION STA. 113+00 TO STA. 115+00

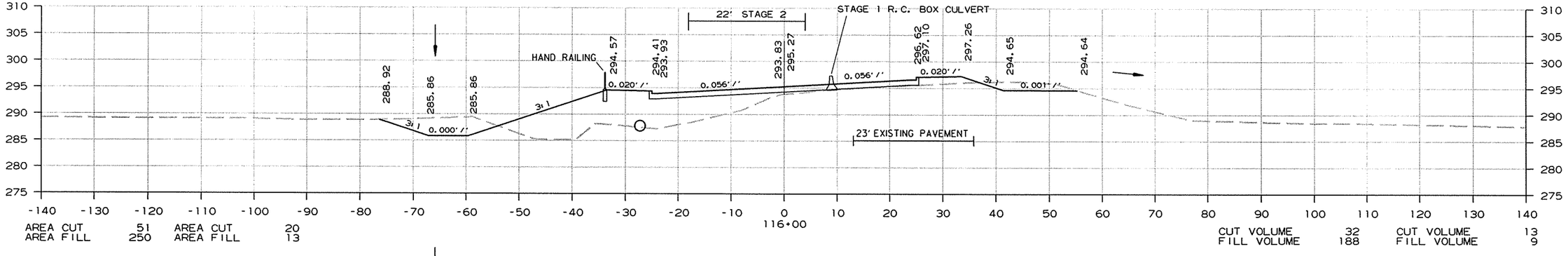
11/24/2014

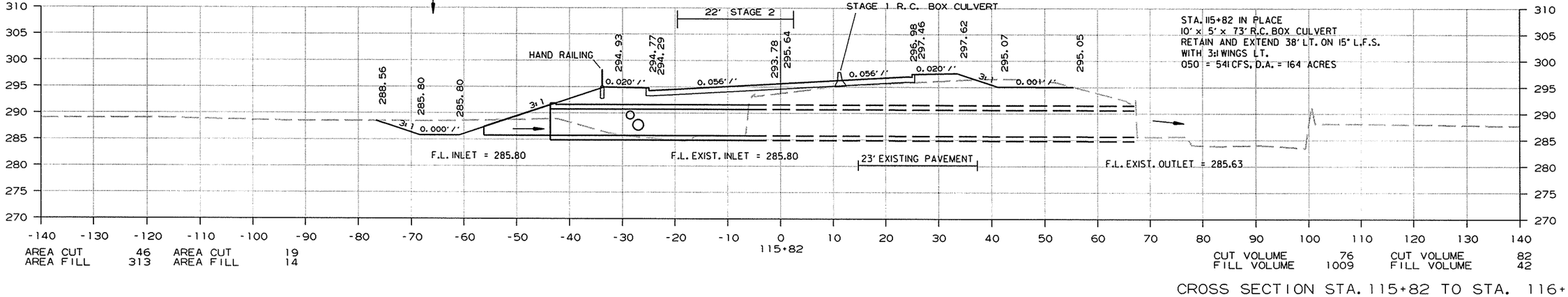
R061348.DGN

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.		061348	123	131

(2) CROSS SECTIONS







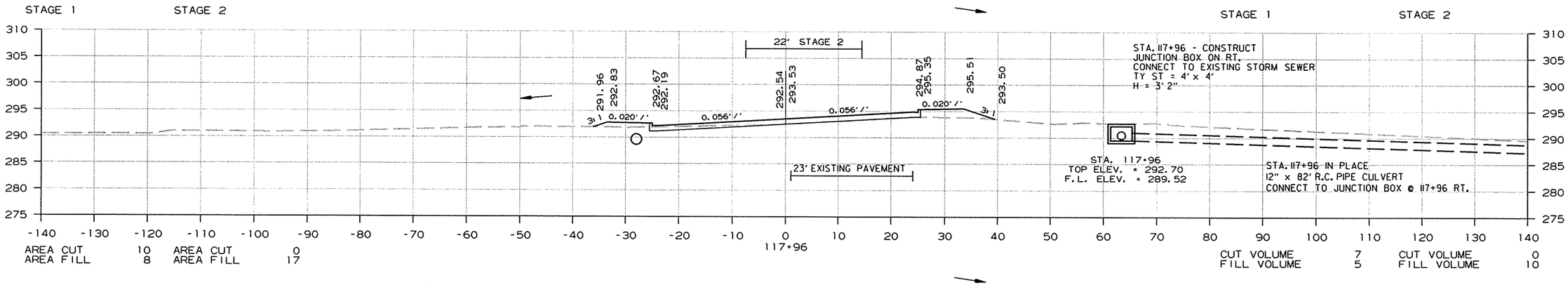
CROSS SECTION STA. 115+82 TO STA. 116+51

11/24/2014

R061348.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.		061348	124	131

(2) CROSS SECTIONS



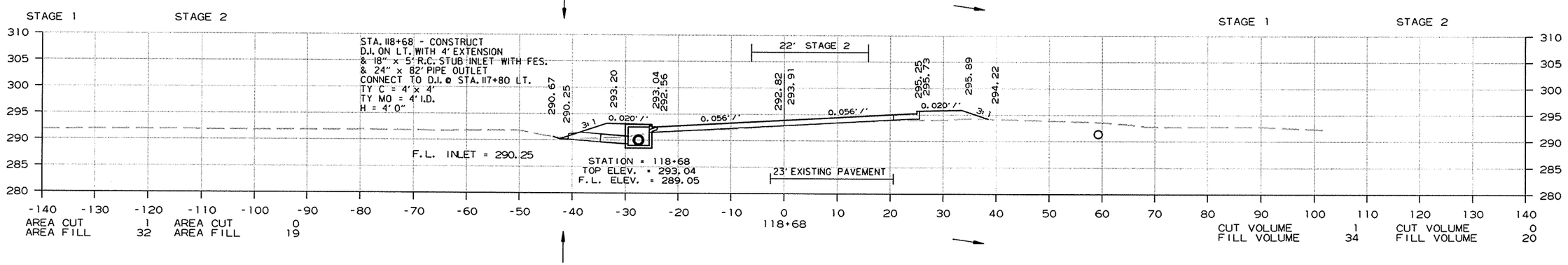
CROSS SECTION STA. 117+00 TO STA. 117+96

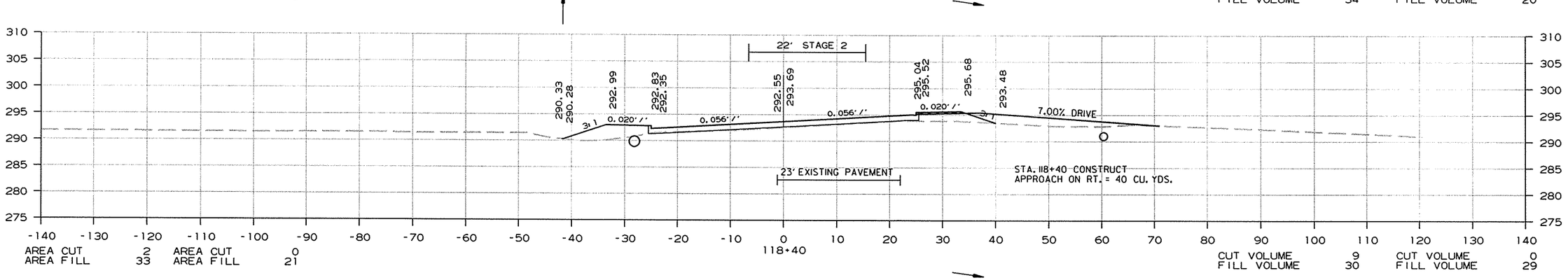
11/24/2014

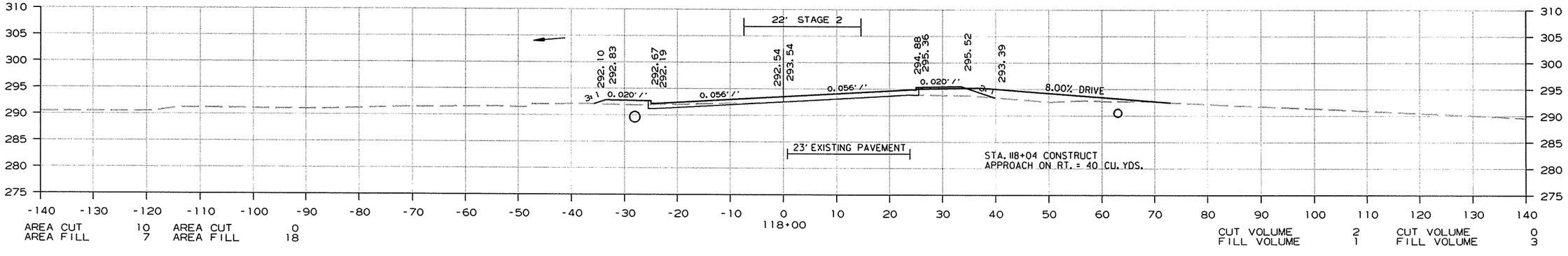
R061348.DGN

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.		061348	125	131

(2) CROSS SECTIONS







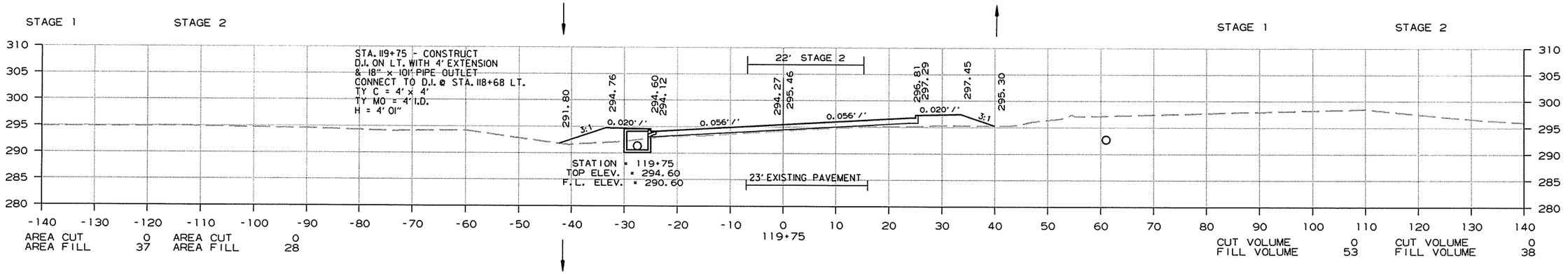
CROSS SECTION STA. 118+00 TO STA. 118+68

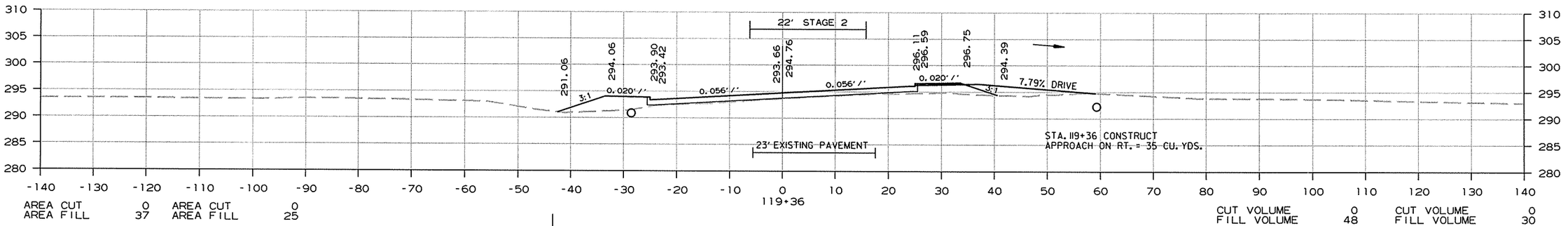
11/24/2014

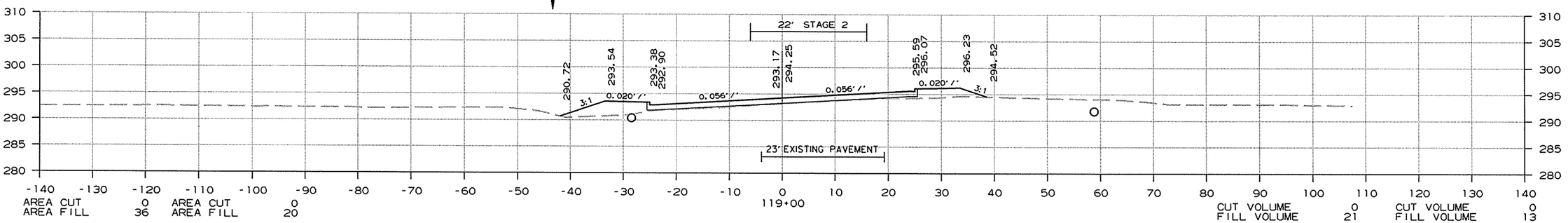
R061348.DGN

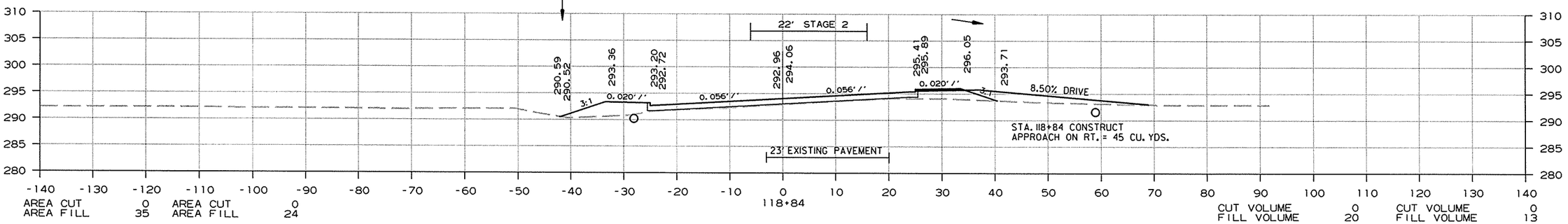
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	126	131

(2) CROSS SECTIONS









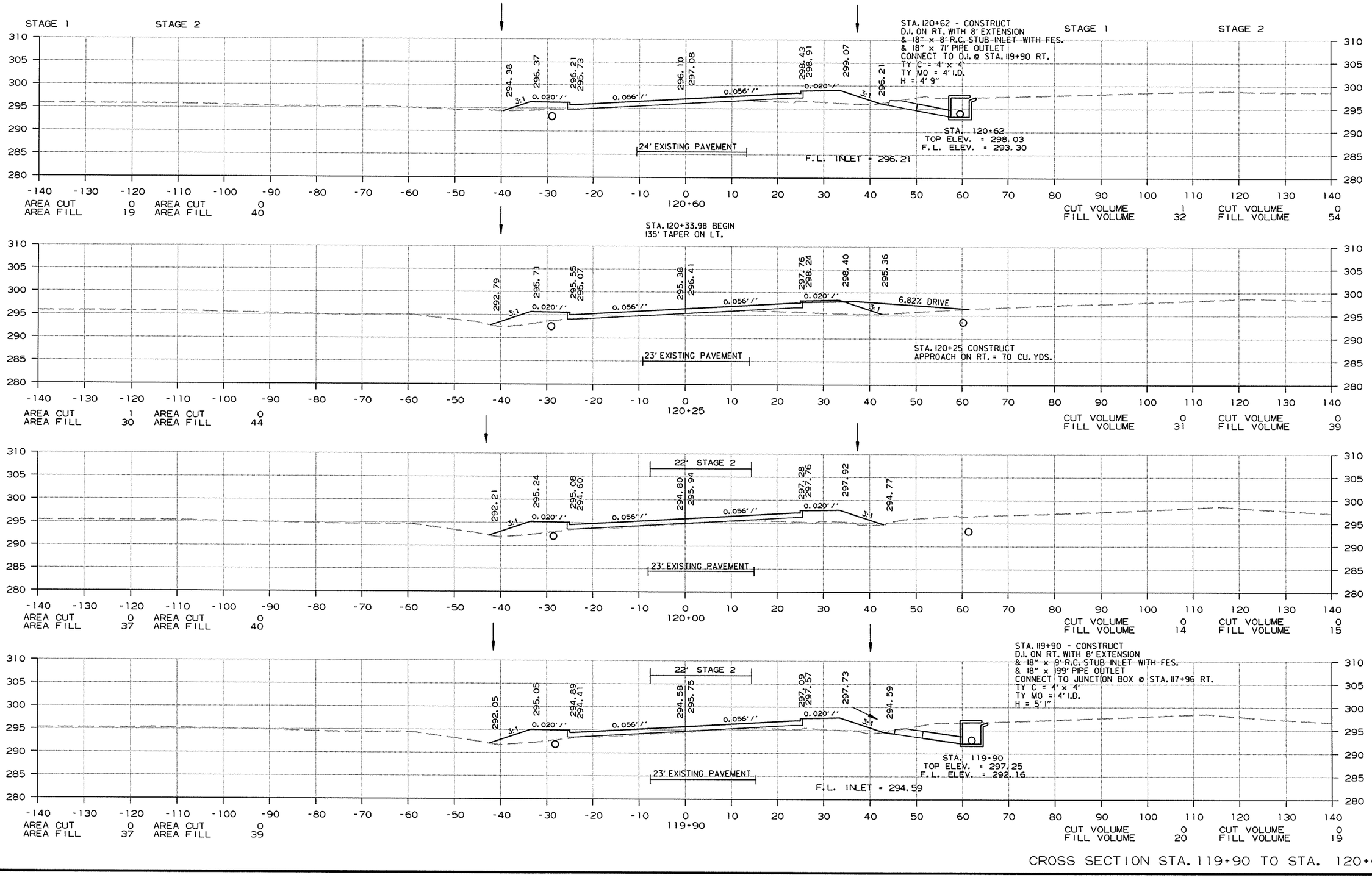
CROSS SECTION STA. 118+84 TO STA. 119+75

10/9/2015

R061348.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.		061348	127	131

(2) CROSS SECTIONS



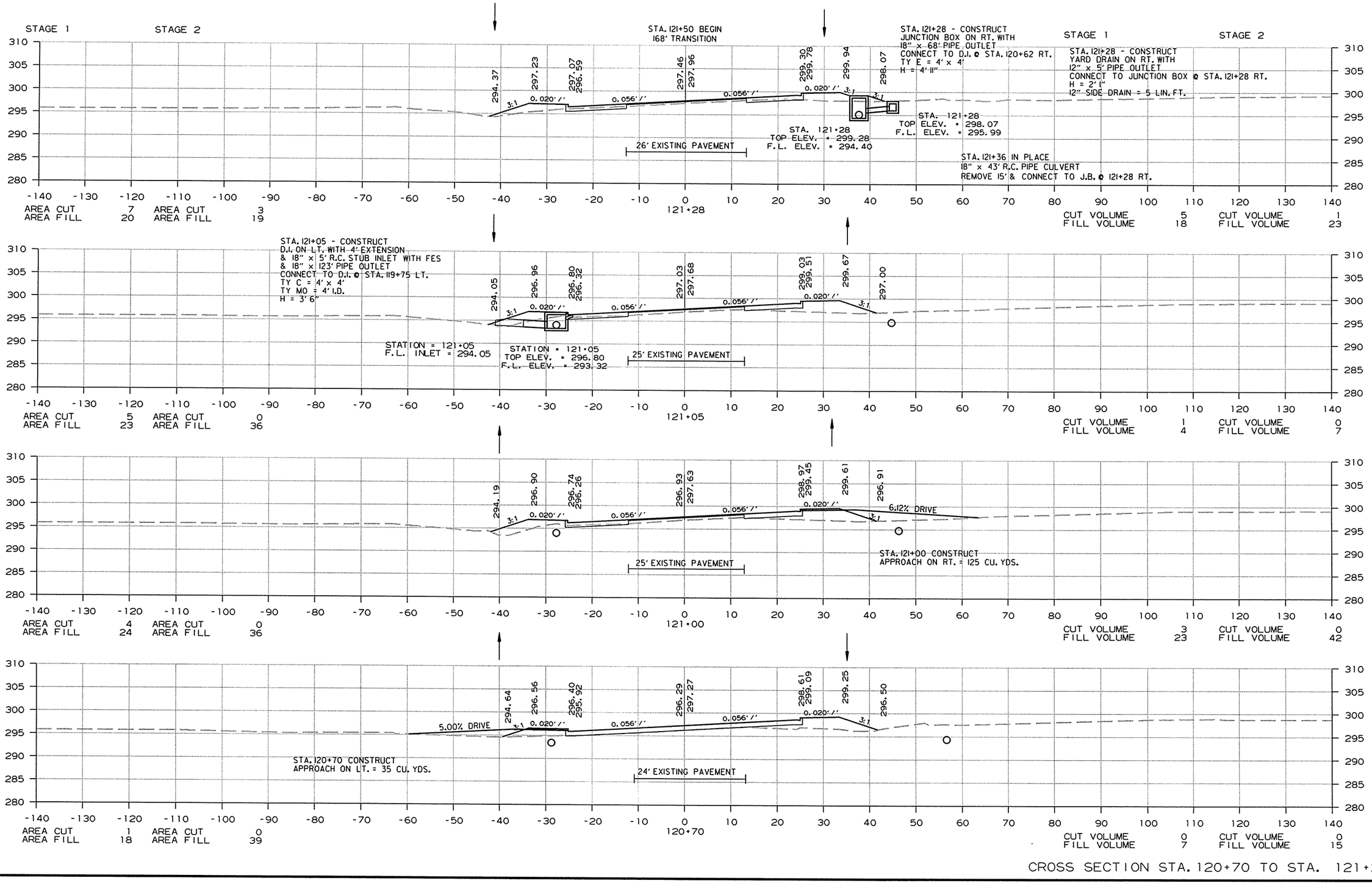
CROSS SECTION STA. 119+90 TO STA. 120+60

10/9/2015

R061348.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.		061348	128	131

(2) CROSS SECTIONS



CROSS SECTION STA. 120+70 TO STA. 121+28

10/9/2015

R061348.DGN

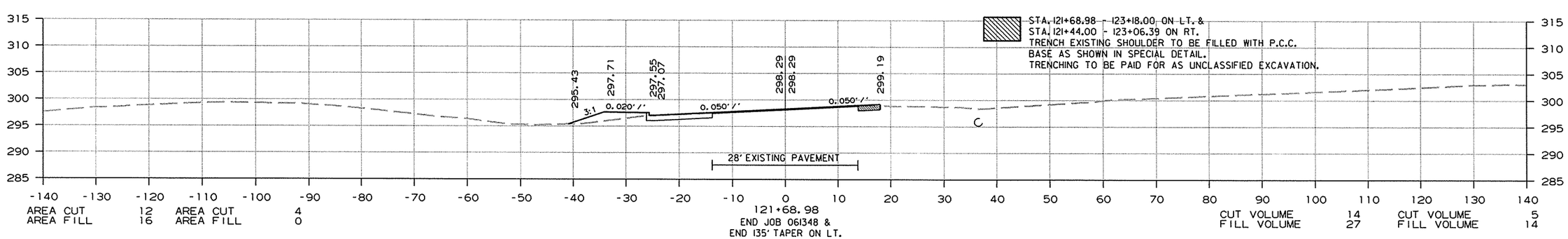
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		061348	129	131

(2) CROSS SECTIONS

STAGE 1		STAGE 2	
STA. 123+18 AREAS			
AREA CUT	2	AREA CUT	2
AREA FILL	0	AREA FILL	0
STA. 121+70 AREAS			
AREA CUT	4	AREA CUT	4
AREA FILL	0	AREA FILL	0

STA. 123+18
END 168' TRANSITION

STAGE 1		STAGE 2	
STA. 123+18 VOLUMES			
CUT VOLUME	16	CUT VOLUME	16
FILL VOLUME	0	FILL VOLUME	0
STA. 121+70 VOLUMES			
CUT VOLUME	0	CUT VOLUME	0
FILL VOLUME	0	FILL VOLUME	0



AREA CUT	12	AREA CUT	4
AREA FILL	16	AREA FILL	0

121+68.98
END JOB 061348 &
END 135' TAPER ON LT.

CUT VOLUME	14	CUT VOLUME	5
FILL VOLUME	27	FILL VOLUME	14

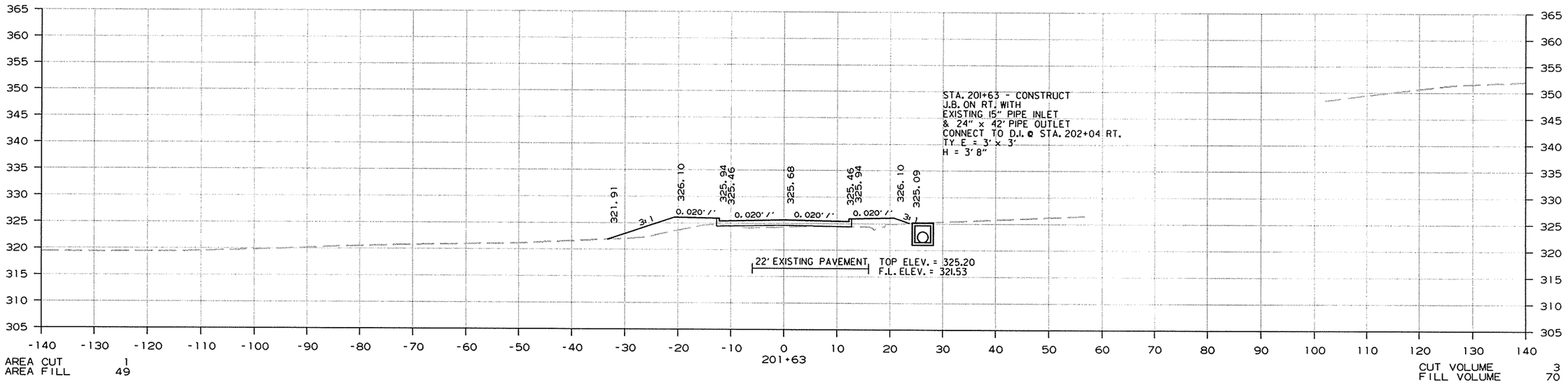
CROSS SECTION STA. 121+68.98 TO STA. 121+68.98

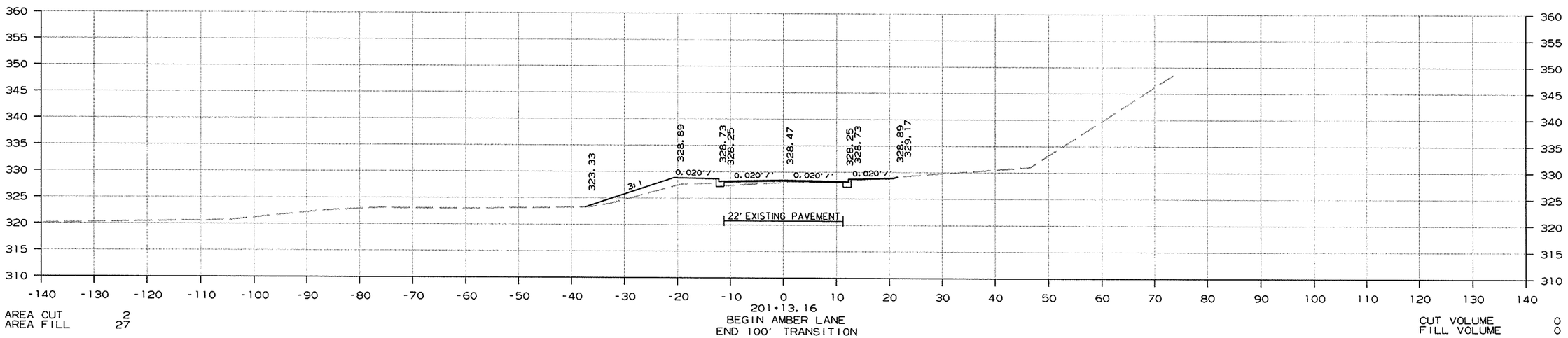
10/9/2015

R061348.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.		061348	130	131

(2) CROSS SECTIONS





STA. 200+13.16 - BEGIN 100' TRANSITION

CROSS SECTION STA. 201+13.16 TO STA. 201+63

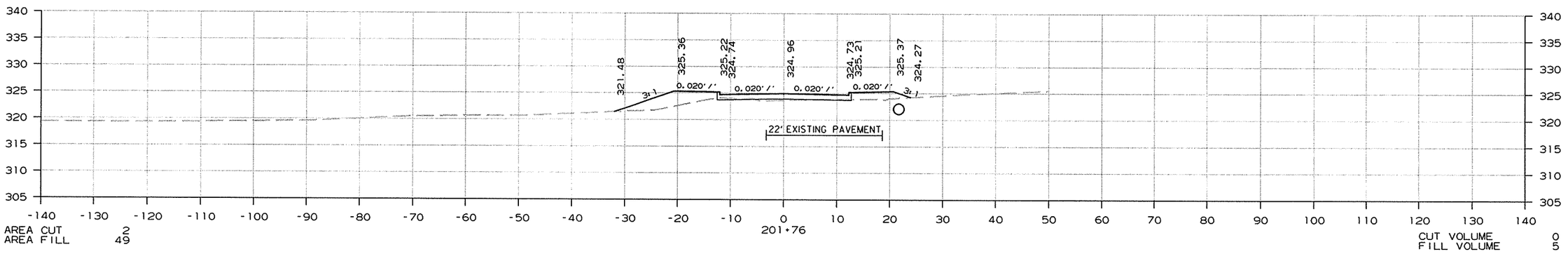
1/12/2015

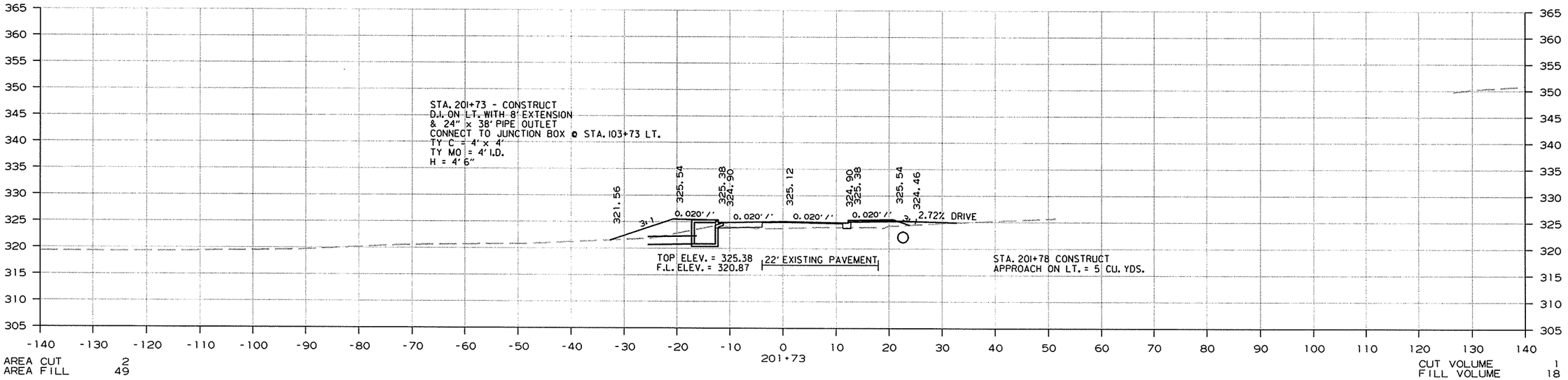
R061348.DGN

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.		061348	131	131

(2) CROSS SECTIONS

STA. 202+24.64
END AMBER LANE





CROSS SECTION STA. 201+73 TO STA. 201+76

1/12/2015

R061348.DGN