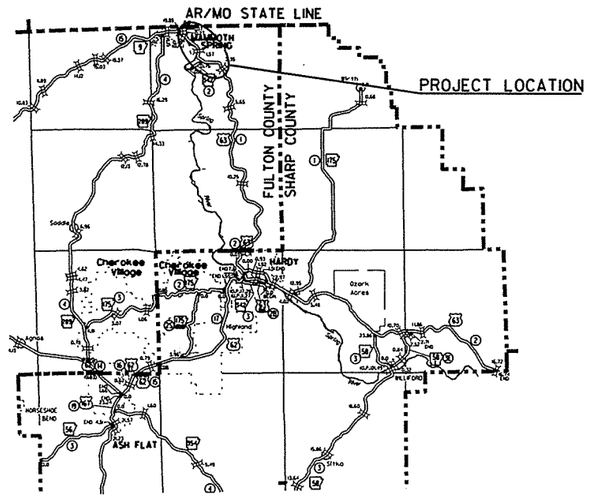
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 1 | 309 |
| | | | | (2) HWY. 9-SO. OF HWY. 342 (MAMMOTH SPRING) (S) | | | | |




VICINITY MAP

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

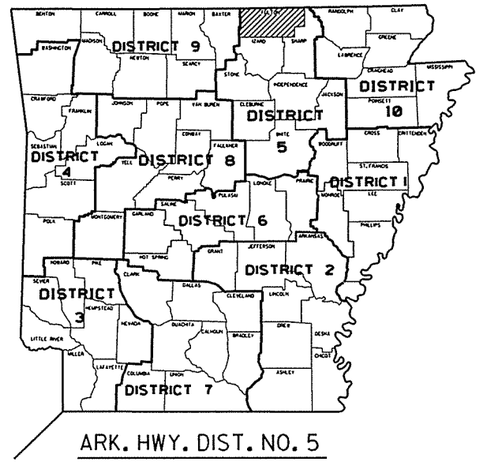
# HWY. 9-SO. OF HWY. 342 (MAMMOTH SPRING) (S)

FULTON COUNTY

ROUTE 63 SECTION 1

# JOB 050230

## FEDERAL AID PROJECT NHPP-0025(14)




ARK. HWY. DIST. NO. 5

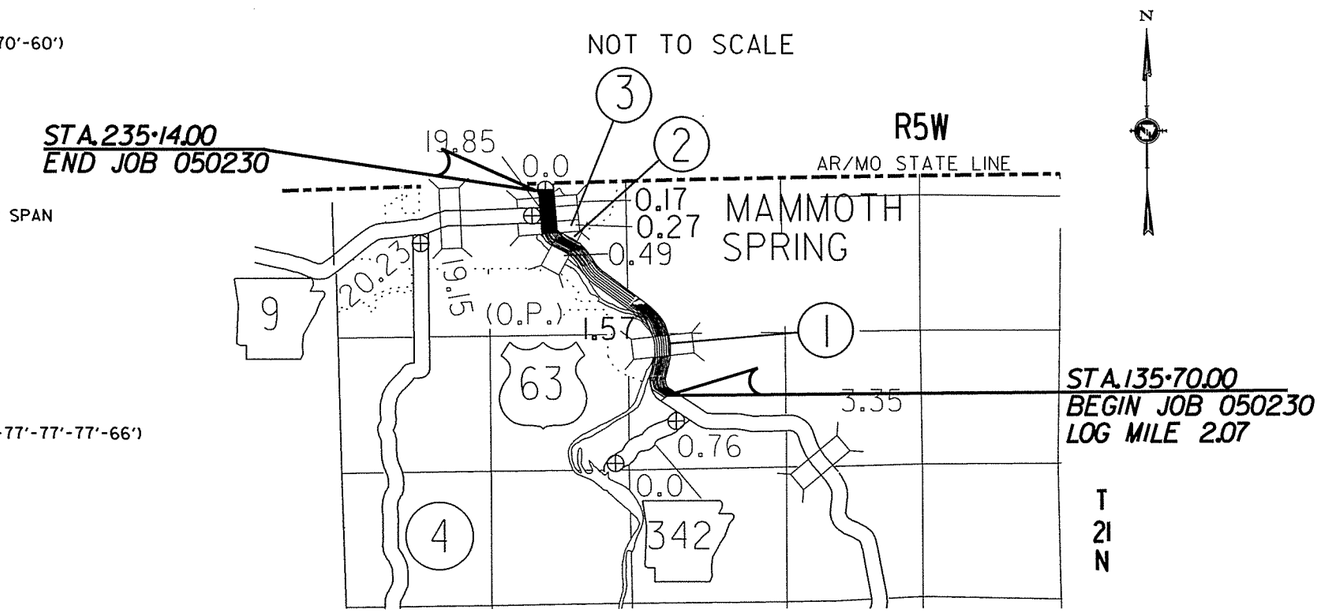
**BRIDGE DATA**

(1) STA. 160+20.89 BRIDGE END
BRIDGE NO. 07299
190'-0" CONT. COMP. W-BEAM UNITS (60'-70'-60')
75' CLEAR ROADWAY
192'-2⅝" BRIDGE LENGTH
15° RT. FWD. SKEW
STA. 162+13.11 BRIDGE END

(2) STA. 217+86.76 BRIDGE END
BRIDGE NO. 07300
150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
58'-0" CLEAR ROADWAY
152'-5¾" BRIDGE LENGTH
30° RT. FWD. SKEW
STA. 219+39.24 BRIDGE END

(3) STA. 226+69.90 BRIDGE END
BRIDGE NO. 07301
363'-0" CONT. COMP. W-BEAM UNITS (66'-77'-77'-77'-66')
58'-0" CLEAR ROADWAY
365'-2½" BRIDGE LENGTH
STA. 230+35.10 BRIDGE END

NOT TO SCALE




• DESIGN TRAFFIC DATA •

| | |
|---|---|
| DESIGN YEAR | 2034 |
| 2014 ADT | 6500 |
| 2034 ADT | 8000 |
| 2034 DHV | 880 |
| DIRECTIONAL DISTRIBUTION | 0.60 |
| TRUCKS | 25% |
| DESIGN SPEED (RURAL) | 60 MPH |
| DESIGN SPEED (URBAN) | 45 MPH |

| | BEG. | MID-POINT | END |
|---|---|---|---|
| LAT. | N 35°47'17" | N 35°47'58" | N 35°48'38" |
| LONG. | N 91°38'27" | N 91°37'20" | N 91°36'12" |

PROJECT LENGTH CALCULATED ALONG C.L. CONSTRUCTION

| | | | |
|---|---|---|---|
| GROSS LENGTH | OF PROJECT | 9944.00 FEET | OR 1.883 MILES |
| NET LENGTH | OF ROADWAY | 9234.10 FEET | OR 1.749 MILES |
| NET LENGTH | OF BRIDGES | 709.90 FEET | OR 0.134 MILES |
| NET LENGTH | OF PROJECT | 9944.00 FEET | OR 1.883 MILES |

P.E. 050230

APPROVED

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 4215 RALPH J. HALL

10-29-14

DEPUTY DIRECTOR
AND CHIEF ENGINEER

9/12/2014

R050230.DGN

050230

| 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. | | 050230 | 2 | 309 |

(2) INDEX OF SHEETS

# INDEX OF SHEETS


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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

7/28/2014

R050230.DGN

INDEX OF SHEETS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 12/2/14 | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 3 | 309 |

(2) GOVERNING SPECIFICATIONS & GENERAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-8-14

## GOVERNING SPECIFICATIONS

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

**NUMBER** **TITLE**

ERRATA____ ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__ REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__ SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__ SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__ SUPPLEMENT - TRAINING PROGRAM - JOB 050230
FHWA-1273__ SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__ SUPPLEMENT - WAGE RATE DETERMINATION
108-1_____ LIQUIDATED DAMAGES
410-1_____ CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
620-1_____ MULCH COVER
JOB 050230__ ARCHITECTURAL FINISH
JOB 050230__ BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 050230__ BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 050230__ CABINET DRAWER ASSEMBLY
JOB 050230__ CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 050230__ DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 050230__ EDGE CARD VIDEO PROCESSOR
JOB 050230__ ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 050230__ ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 050230__ EXTENSION FOR PIPE CULVERTS
JOB 050230__ GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 050230__ HIGH PERFORMANCE PAVEMENT MARKING
JOB 050230__ INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (BNSF)
JOB 050230__ LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 050230__ LED TRAFFIC SIGNAL HEAD
JOB 050230__ LIMITATION OF BLASTING DAMAGES
JOB 050230__ LUMINAIRE ASSEMBLY (CUTOFF TYPE)
JOB 050230__ MANDATORY USE OF INTERNET BIDDING
JOB 050230__ NESTING SITES OF MIGRATORY BIRDS
JOB 050230__ PARTNERING REQUIREMENTS
JOB 050230__ PLASTIC PIPE
JOB 050230__ PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB 050230__ PROSECUTION AND PROGRESS
JOB 050230__ ROCK FILL
JOB 050230__ SECTION 404 INDIVIDUAL PERMIT REQUIREMENTS
JOB 050230__ SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB 050230__ SHORING
JOB 050230__ SHORING FOR CULVERTS
JOB 050230__ SITE USE (A + C METHOD)
JOB 050230__ SOIL STABILIZATION
JOB 050230__ STAGED CHANNEL RELOCATION
JOB 050230__ STORM WATER POLLUTION PREVENTION PLAN
JOB 050230__ STREET NAME SIGN (MAST ARM MOUNTED)
JOB 050230__ SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 050230__ TEXTURED COATING FINISH
JOB 050230__ UTILITY ADJUSTMENTS
JOB 050230__ VALUE ENGINEERING
JOB 050230__ VIDEO DETECTOR (COLOR)
JOB 050230__ WARM MIX ASPHALT
JOB 050230__ WATER POLLUTION CONTROL & RESTRAINING CONDITIONS
JOB 050230__ WELLHEAD PROTECTION

## GENERAL NOTES

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

7/28/2014

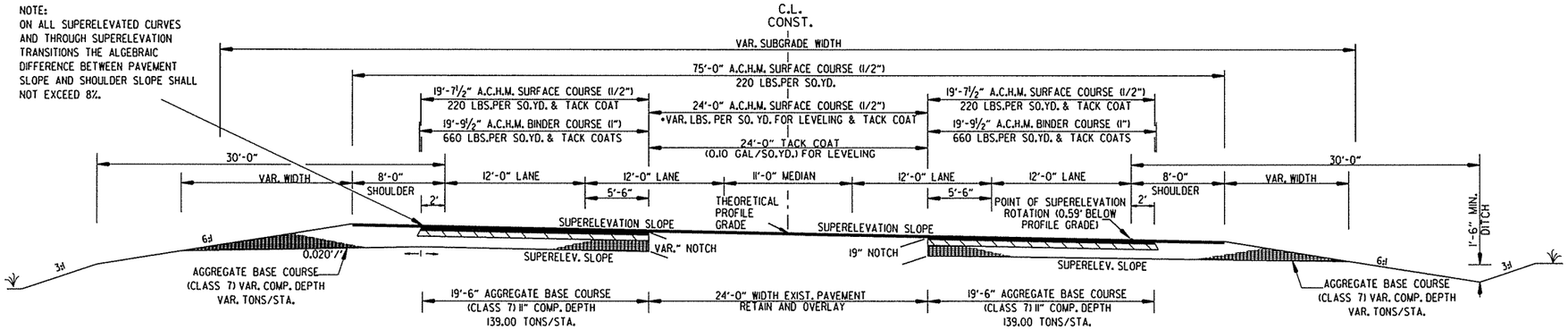
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(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

NOTE:
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8%.




•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

SUPERELEVATION SECTION
OPEN SHOULDER: NOTCH AND WIDENING
HWY. 63
STA. 135+70.00 - STA. 139+40.00
STA. 152+40.00 - STA. 160+22.89 B. E.
STA. 168+10.00 - STA. 180+00.00

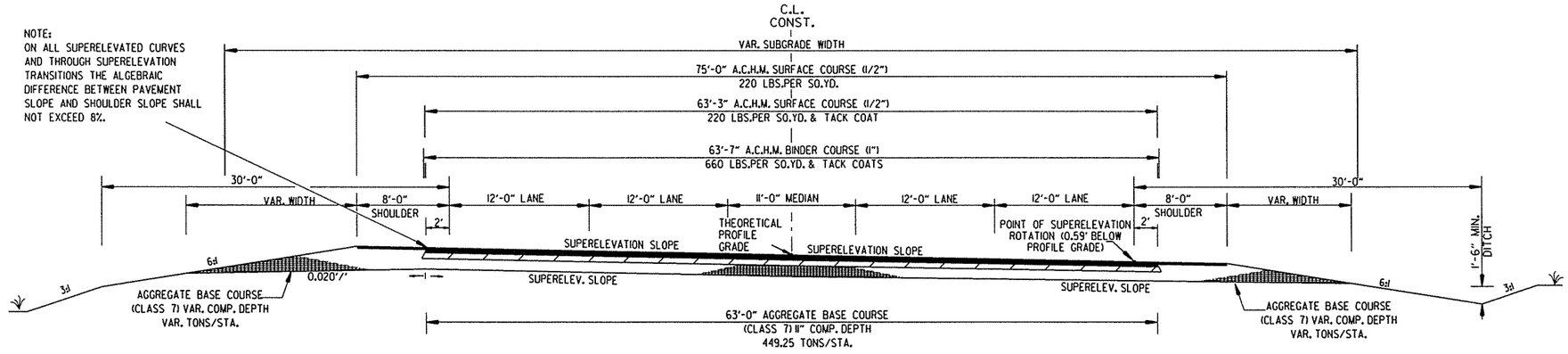
NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

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.

NOTE:
ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8%.




SUPERELEVATION SECTION
OPEN SHOULDER: FULL DEPTH
HWY. 63
STA. 139+40.00 - STA. 152+40.00
STA. 162+13.11 B. E. - STA. 168+10.00

8/1/2014

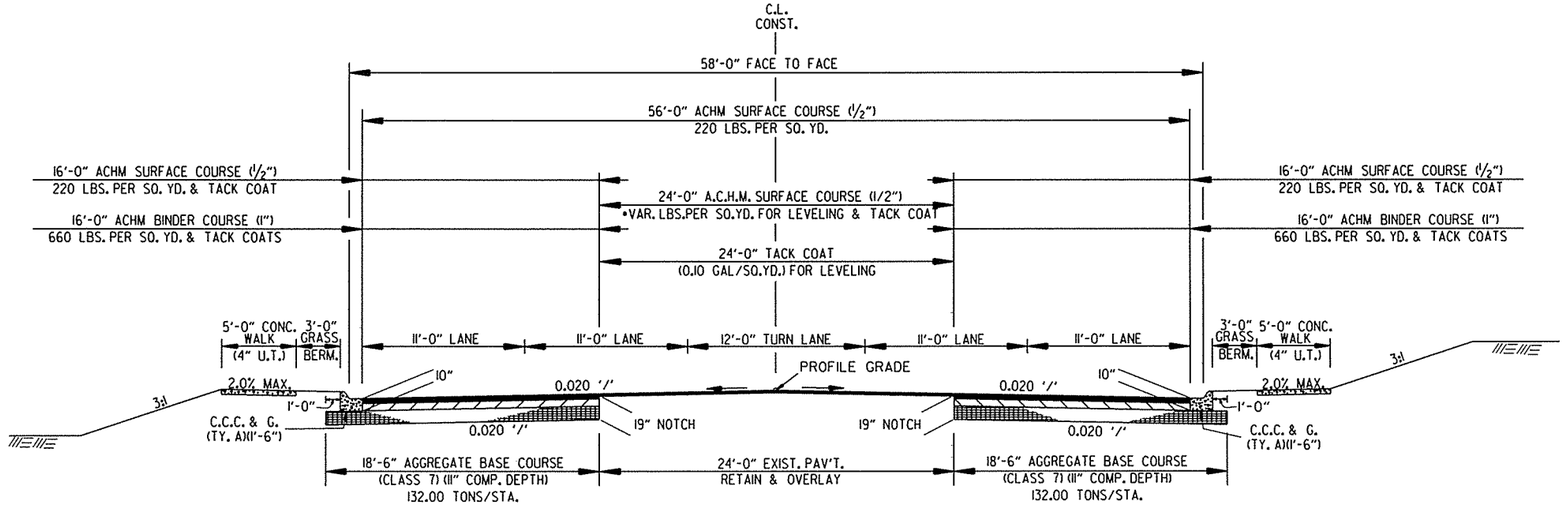
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TYPICAL SECTIONS OF IMPROVEMENT

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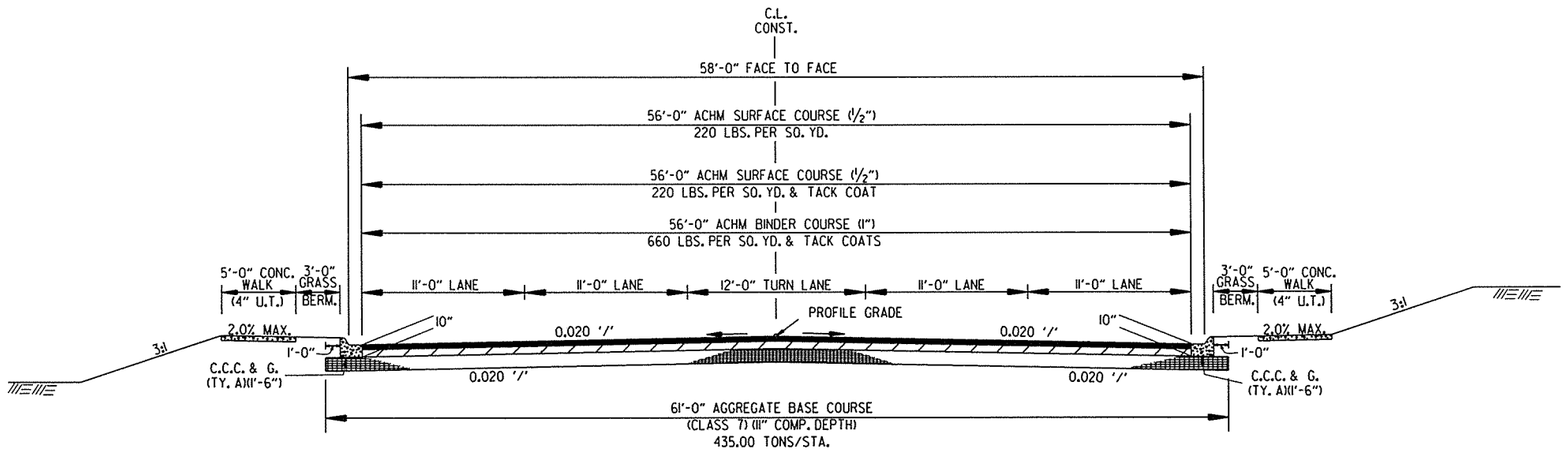
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No. 11425
TRINITY D. SMITH
10-28-14




•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

TANGENT SECTION
CURB & GUTTER: NOTCH AND WIDENING
HWY. 63
STA. 181+00.29 - STA. 195+39.66
STA. 232+73.68 - STA. 235+14.00




TANGENT SECTION
CURB & GUTTER: NOTCH AND WIDENING
HWY. 63

STA. 217+60.90 - STA. 217+86.76 B. E.
STA. 219+39.24 B. E. - STA. 219+45.50

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

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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.

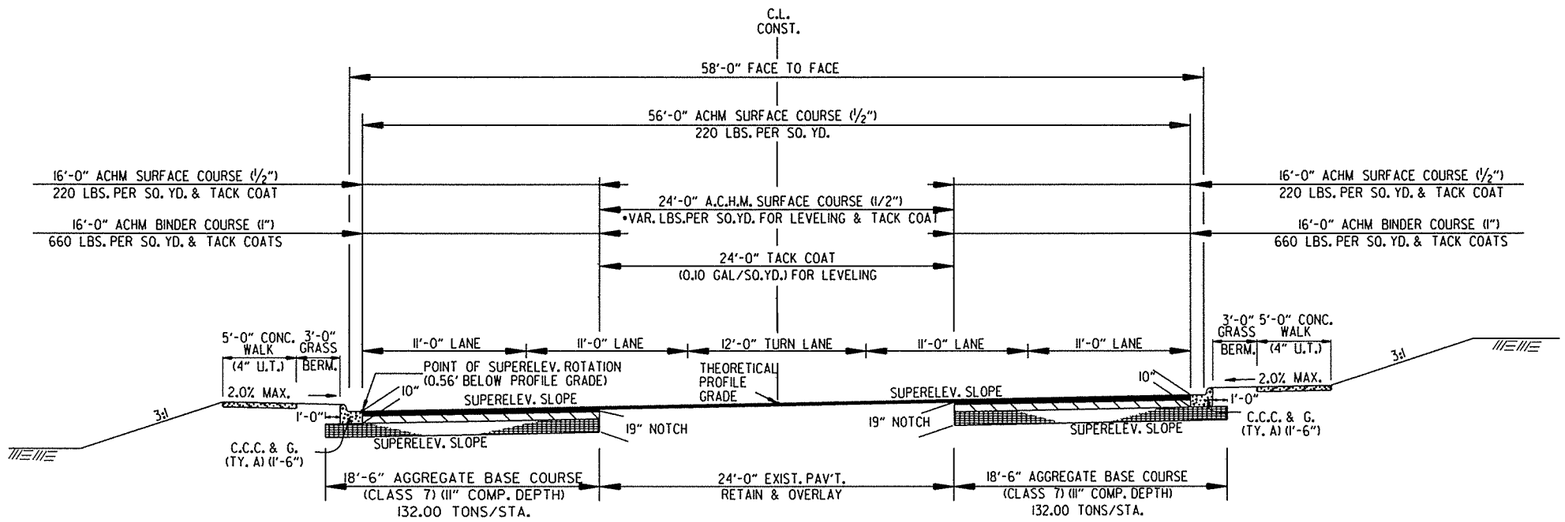
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TYPICAL SECTIONS OF IMPROVEMENT

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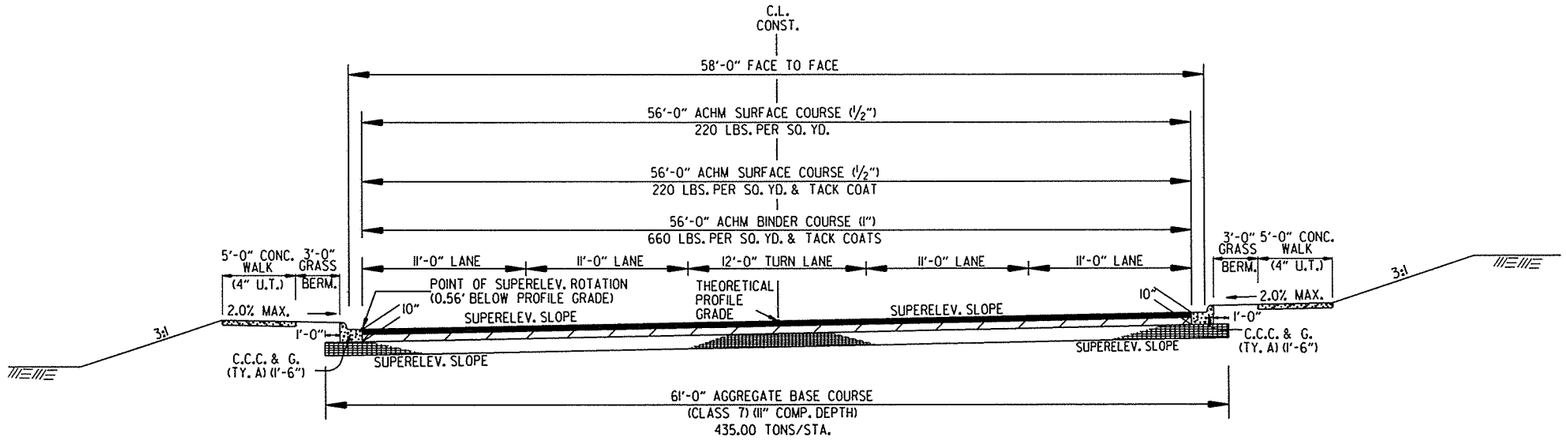
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
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10-28-14




•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

SUPERELEVATION SECTION
CURB & GUTTER: NOTCH AND WIDENING
HWY. 63
STA. 180+00.00 - STA. 181+00.29
STA. 195+39.66 - STA. 215+00.00
STA. 230+35.10 B. E. - STA. 232+73.68




SUPERELEVATION SECTION
CURB & GUTTER: NOTCH AND WIDENING
HWY. 63
STA. 215+00.00 - STA. 217+60.90
STA. 219+45.50 - STA. 226+69.90 B. E.

NOTES:
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8/1/2014

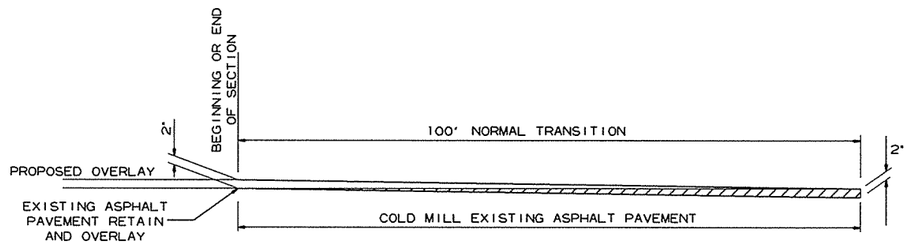
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TYPICAL SECTIONS OF IMPROVEMENT

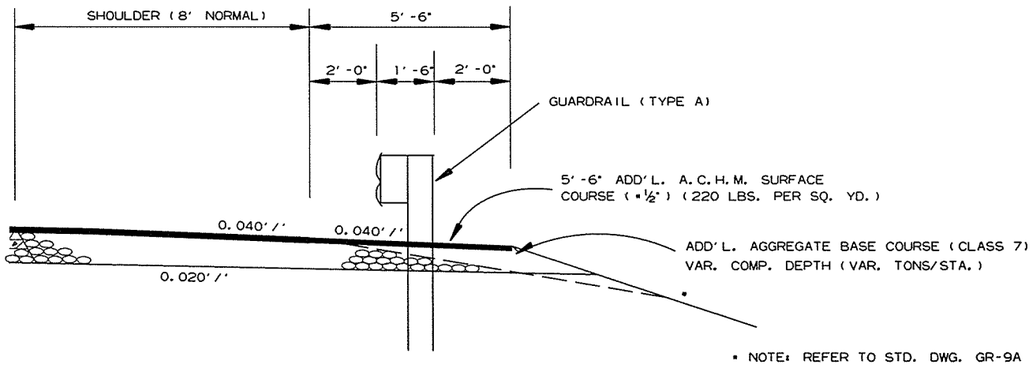
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(2) SPECIAL DETAILS

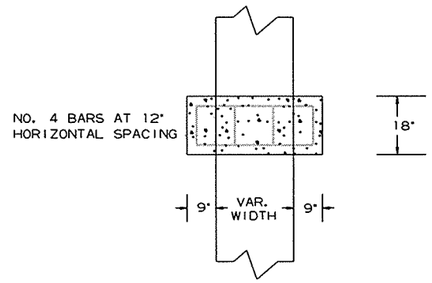
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




DETAIL FOR TRANSITIONS

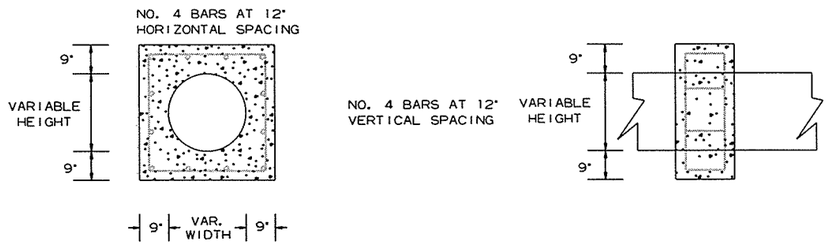



WIDENING FOR GUARDRAIL




TOP VIEW

MIN 3" COVER




FRONT VIEW SIDE VIEW

PIPE EXTENSION
REINFORCED CONCRETE COLLAR DETAIL

SPECIAL DETAILS

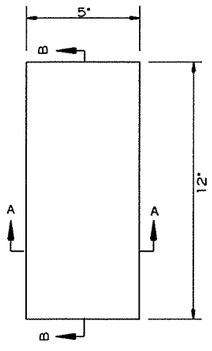
11/8/2011

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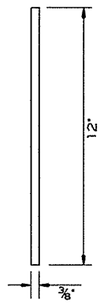
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(2) SPECIAL DETAILS

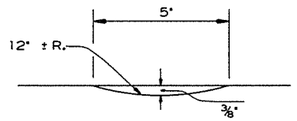
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




PLAN

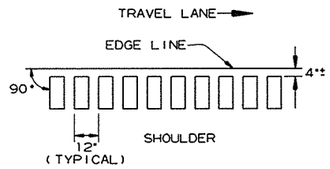



SECTION B-B



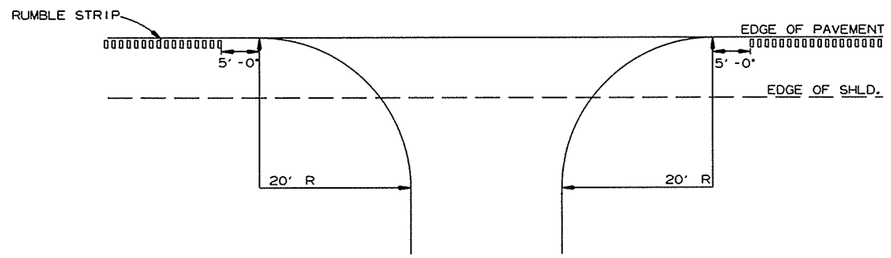

SECTION A-A

DETAILS OF RUMBLE STRIPS

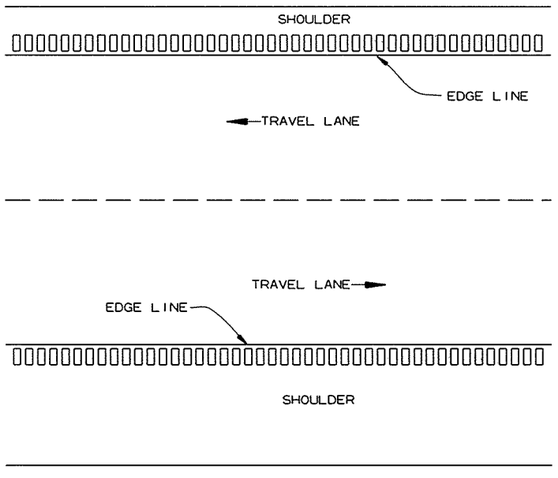



LOCATION PLAN OF RUMBLE STRIPS

LEFT OR RIGHT SHOULDER



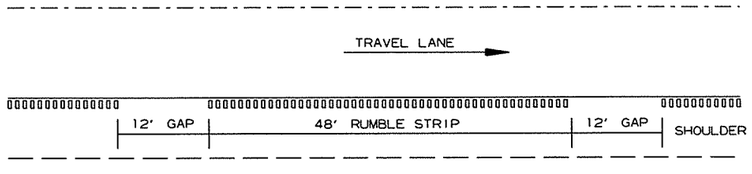

DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS




PLAN VIEW

GENERAL NOTES

1. RUMBLE STRIPS SHALL NOT BE INSTALLED ON CURB SECTIONS, BRIDGE DECKS, APPROACH SLABS, INTERSECTING STREETS OR ROADWAYS, RESIDENTIAL OR COMMERCIAL DRIVEWAYS OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDERS.
2. RUMBLE STRIPS SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DECELERATION LANE FOR THE LENGTH DEEMED APPROPRIATE BY THE ENGINEER.
3. THE 4" OFFSET FROM THE EDGE LINE MAY BE INCREASED TO AVOID LONGITUDINAL JOINTS. IN ALL CASES, THE LATERAL DEVIATION FROM THE PLANNED OFFSET SHOULD BE KEPT TO A MINIMUM.
4. RUMBLE STRIPS SHALL BE MEASURED BY THE LINEAR FOOT LONGITUDINALLY ALONG THE SHOULDER. PAYMENT SHALL ONLY INCLUDE THAT PORTION OF THE SHOULDER ON WHICH RUMBLE STRIPS HAVE BEEN CONSTRUCTED. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR GAPS, DRIVEWAYS, TURNOUTS, OR OTHER PUBLIC ROAD INTERSECTIONS WHERE RUMBLE STRIPS HAVE NOT BEEN CONSTRUCTED.
5. THE 3/8" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 12" LENGTH. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.




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

DETAIL FOR GAP PATTERN RUMBLE STRIP

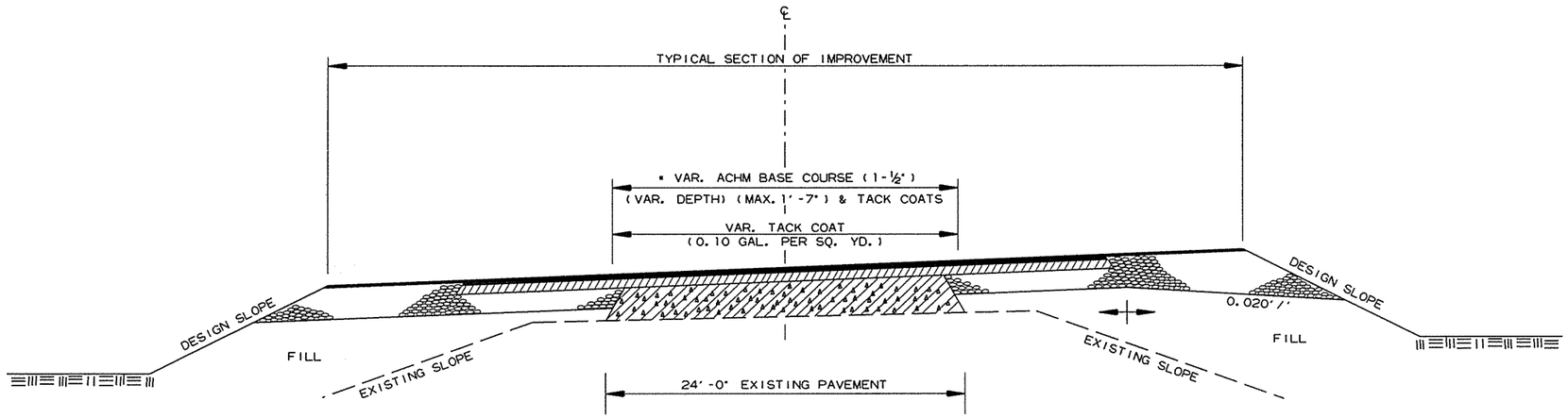
SPECIAL DETAILS

11/8/2011

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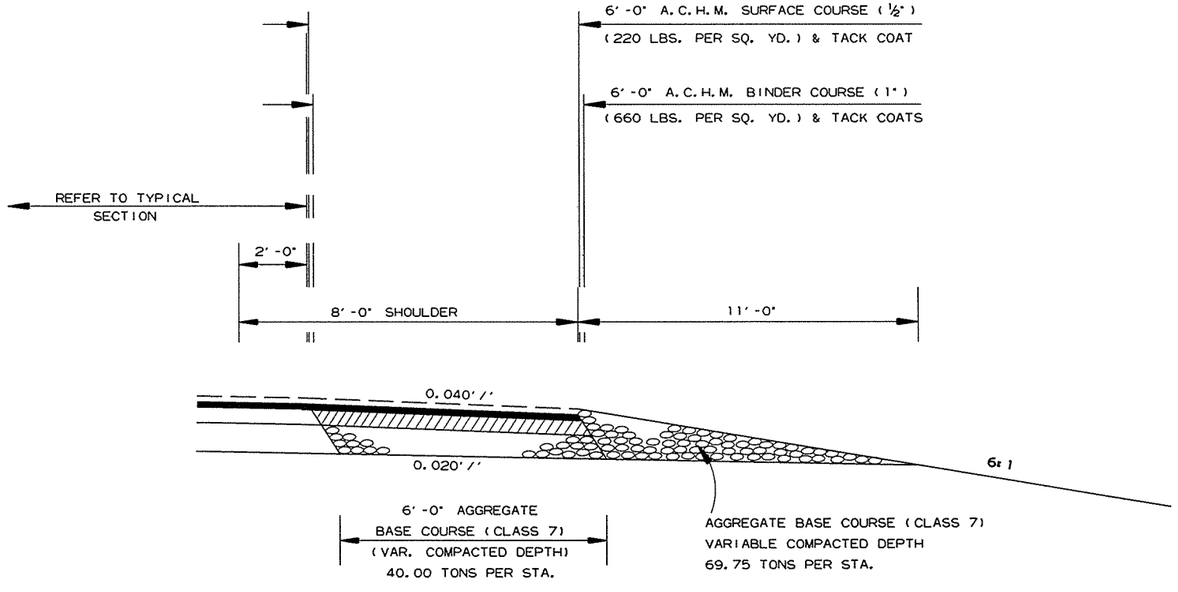
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(2) SPECIAL DETAILS




* 11" AGGREGATE BASE COURSE ( CLASS 7)
TO BE REPLACED WITH A.C.H.M. BASE COURSE ( 1-½" )

## METHOD OF RAISING GRADE




## FULL DEPTH SHOULDER FOR MAINTENANCE OF TRAFFIC

STA. 158+06 - STA. 160+26
STA. 162+22 - STA. 164+44

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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.

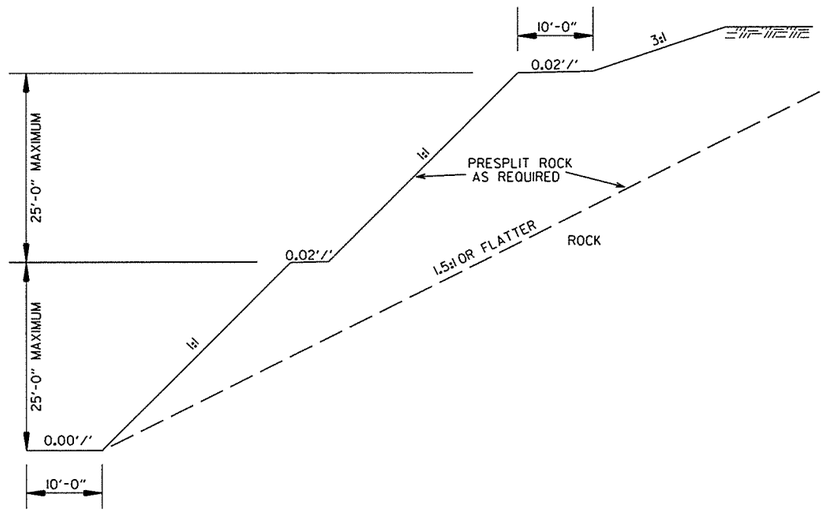
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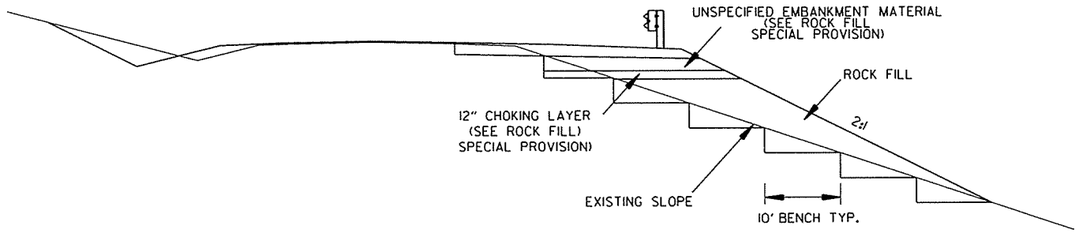
(2) SPECIAL DETAILS

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10-28-14




DETAIL FOR BENCHING IN SOLID ROCK

STA. 154+00 RT. - STA. 160+00 RT.




TYPICAL 2:1 EMBANKMENT CONSTRUCTION

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

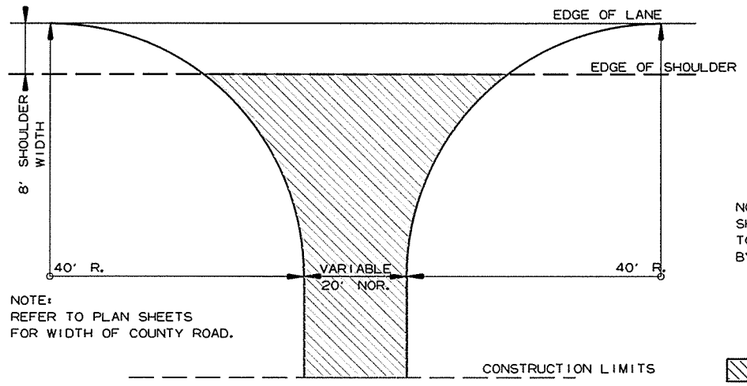
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(2) SPECIAL DETAILS

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REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-29-14

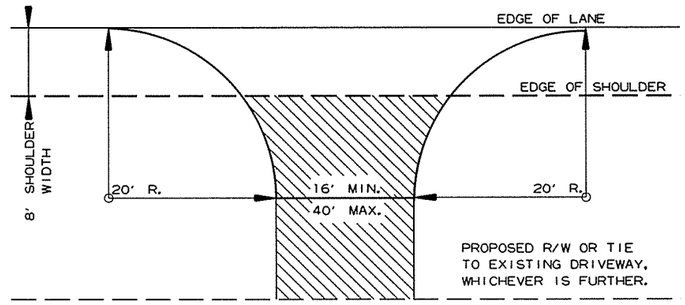



NOTE:
REFER TO PLAN SHEETS
FOR WIDTH OF COUNTY ROAD.

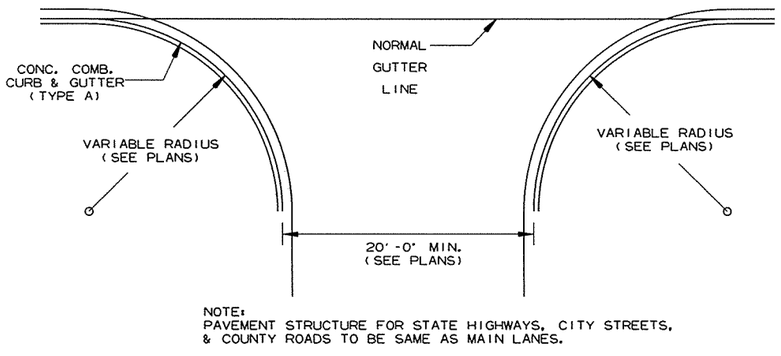
NOTE: TURNOUTS AND PRIVATE DRIVES SHALL BE MODIFIED WHERE NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

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

## DETAIL FOR COUNTY ROAD TURNOUTS OPEN SHOULDER SECTION

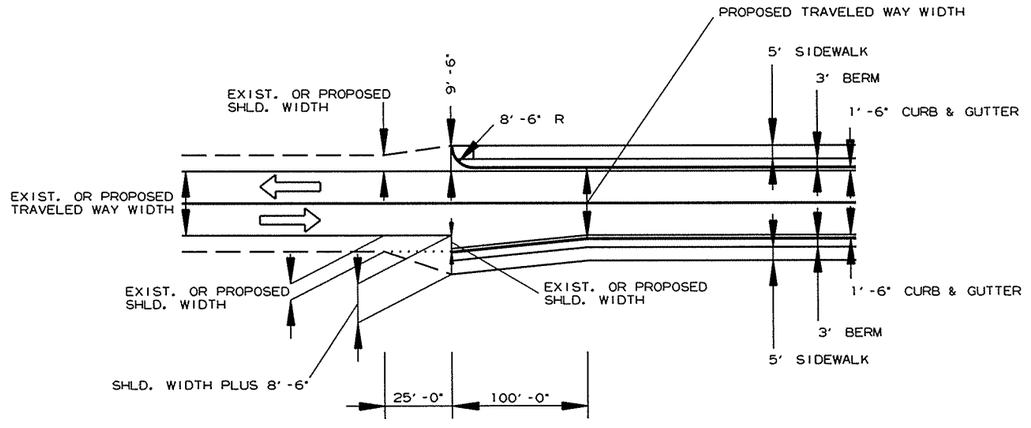



## DETAIL FOR DRIVEWAY TURNOUTS OPEN SHOULDER SECTION (ARTERIALS)




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

## DETAIL OF ASPHALT STREETS & STATE HIGHWAYS CURB & GUTTER SECTION




## TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION

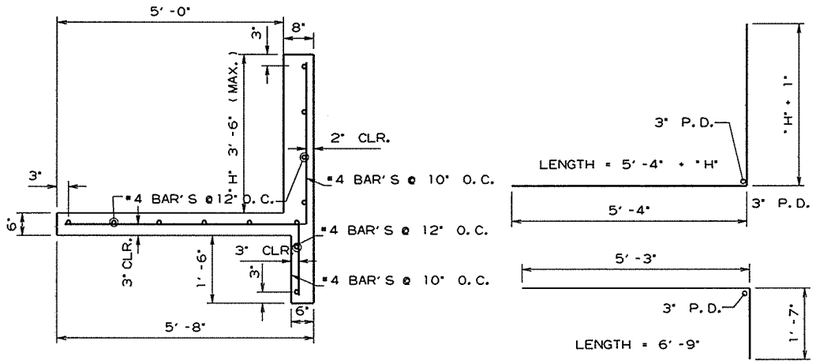
11/8/2011

ZBORDER.CEL

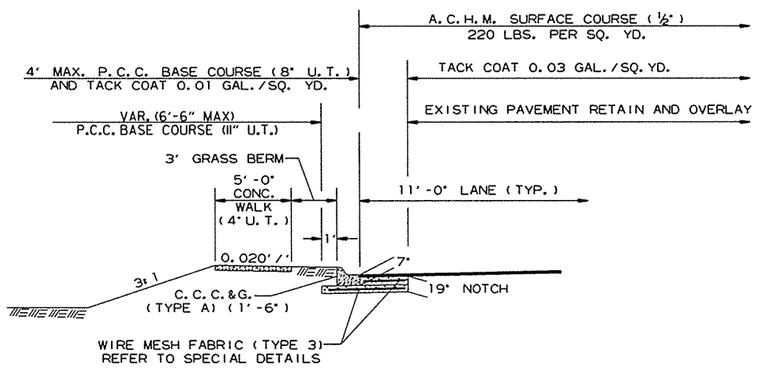
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 12 | 309 |

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

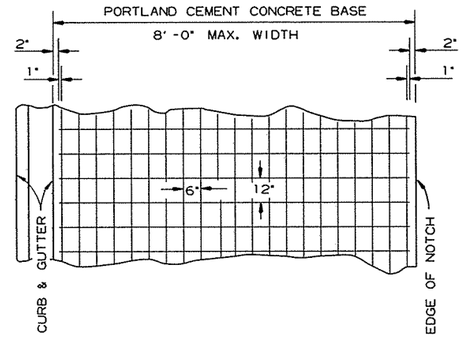



CONCRETE WALK (TYPE SPECIAL) DETAILS
MAX HEIGHT 3' -6"




## P. C. C. BASE WIDENING DETAIL

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




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 (8" U.T. & 11" U.T.)

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

11/8/2011

ZBORDER.CEL

| 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. | | 050230 | 13 | 309 |

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

## BOX CULVERT DIAGRAM STA. 141+08

**CONCRETE:**

| | | | | | |
|---|---|---|---|---|---|
| A SECTION | 29.5 | X | | = | 17.43 |
| B SECTION | 37.29 | X | 0.619 | | 23.08 |
| HEADWALLS, APRONS, & WINGS (ONE SIDE) | | | | = | 7.71 |
| TOTAL C.Y. | | | | = | 48.22 |

**REINFORCING STEEL:**

| | | | | | |
|---|---|---|---|---|---|
| A SECTION | *TOTAL FOR 22'-9.25" SKEWED LENGTH OF BARREL | | | = | 1,602.00 |
| B SECTION | 6.73 | X | 65.18 | = | 438.66 |
| B SECTION | 37.29 | X | 73.53 | | 2,741.93 |
| 2 WINGS | | | | = | 313.00 |
| TOTAL LBS. | | | | = | 5,130.67 |

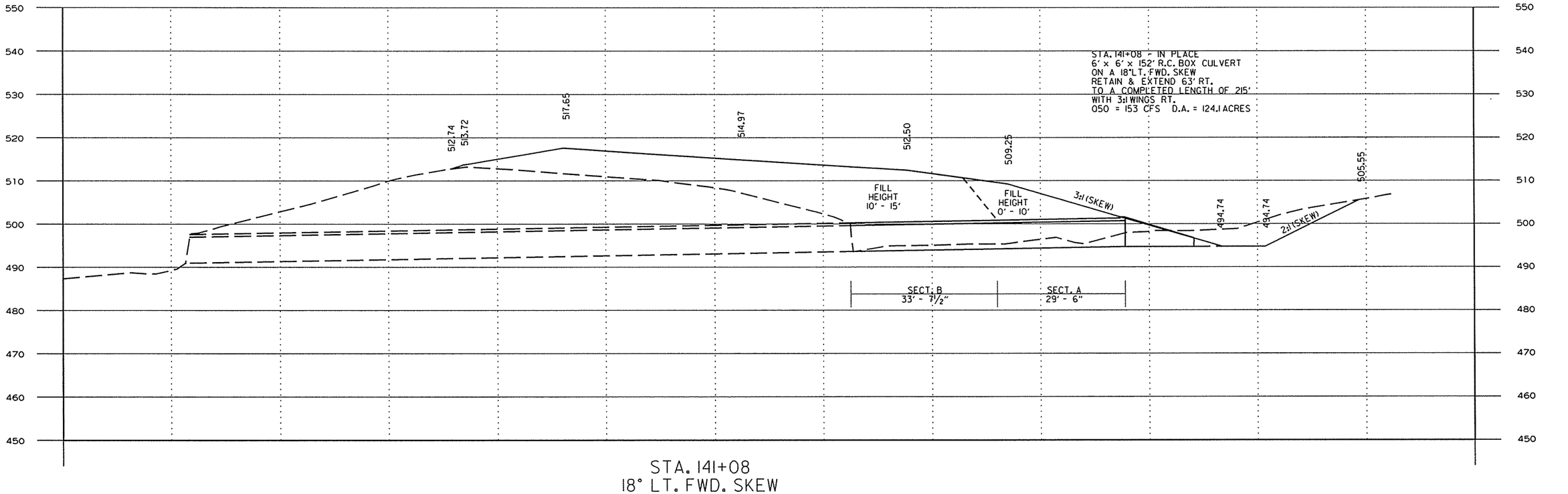
* TOTAL INCLUDES HDWL. & APRONS

**UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY:**

| | | | | | |
|---|---|---|---|---|---|
| A SECTION | 29.5 | x | 0.235 | = | 6.93 |
| B SECTION | 37.29 | | 0.252 | | 9.40 |
| V.I. | | | | = | 7.27 |
| TOTAL C.Y. | | | | = | 23.60 |

**SOLID SODDING:**

OW 7.17 W1 15.02 W2 20.5 = 20.38 SQ. YDS.




STA. 141+08
18° LT. FWD. SKEW

11/8/2011

ZBORDER.CEL

SPECIAL DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 14 | 309 |

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

**BOX CULVERT DIAGRAM STA. 148+08**

**CONCRETE:**

| | | | | | |
|---|---|---|---|---|---|
| A SECTION | 54.7 | X | | = | 77.07 |
| B SECTION | 30.63 | X | 1.499 | = | 45.91 |
| HEADWALLS, APRONS, & WINGS (ONE SIDE) | | | | = | 20.83 |
| TOTAL C.Y. | | | | = | 143.81 |

**REINFORCING STEEL:**

| | | | | | |
|---|---|---|---|---|---|
| A SECTION | *TOTAL FOR 22'-9.25" SKEWED LENGTH OF BARREL | | | = | 3,837.00 |
| B SECTION | 31.93 | X | 155.5 | = | 4,965.12 |
| B SECTION | 30.63 | X | 180.64 | = | 5,533.00 |
| 1 | LAPS @ | 35.07 | LBS. EACH | = | 35.07 |
| 2 Wings | | | | = | 1,466.00 |
| TOTAL LBS. | | | | = | 15,836.19 |

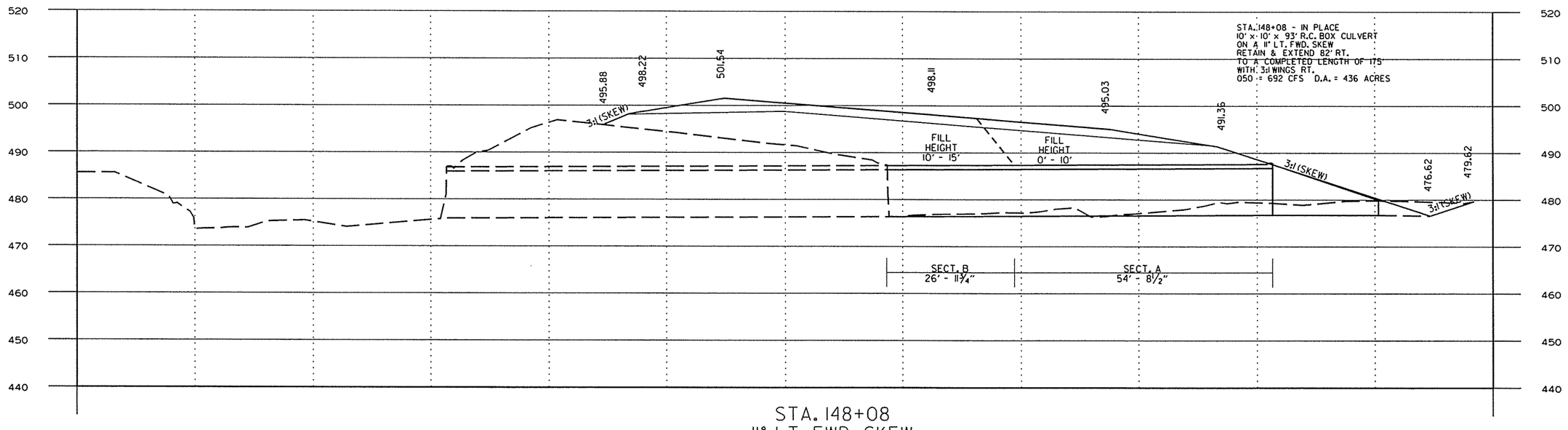
* TOTAL INCLUDES HDWL. & APRONS

**UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY:**

| | | | | | |
|---|---|---|---|---|---|
| A SECTION | 54.7 | x | 0.498 | = | 27.24 |
| B SECTION | 30.63 | | 0.543 | | 16.63 |
| | V.I. | | | = | 16.75 |
| | TOTAL C.Y. | | | = | 60.62 |

**SOLID SODDING:**

| | | | | | |
|---|---|---|---|---|---|
| OW | 11.67 | W1 | 23.29 | = | 31.08 SQ. YDS. |
| | | W2 | 31.81 | | |




STA. 148+08
11° LT. FWD. SKEW

11/8/2011

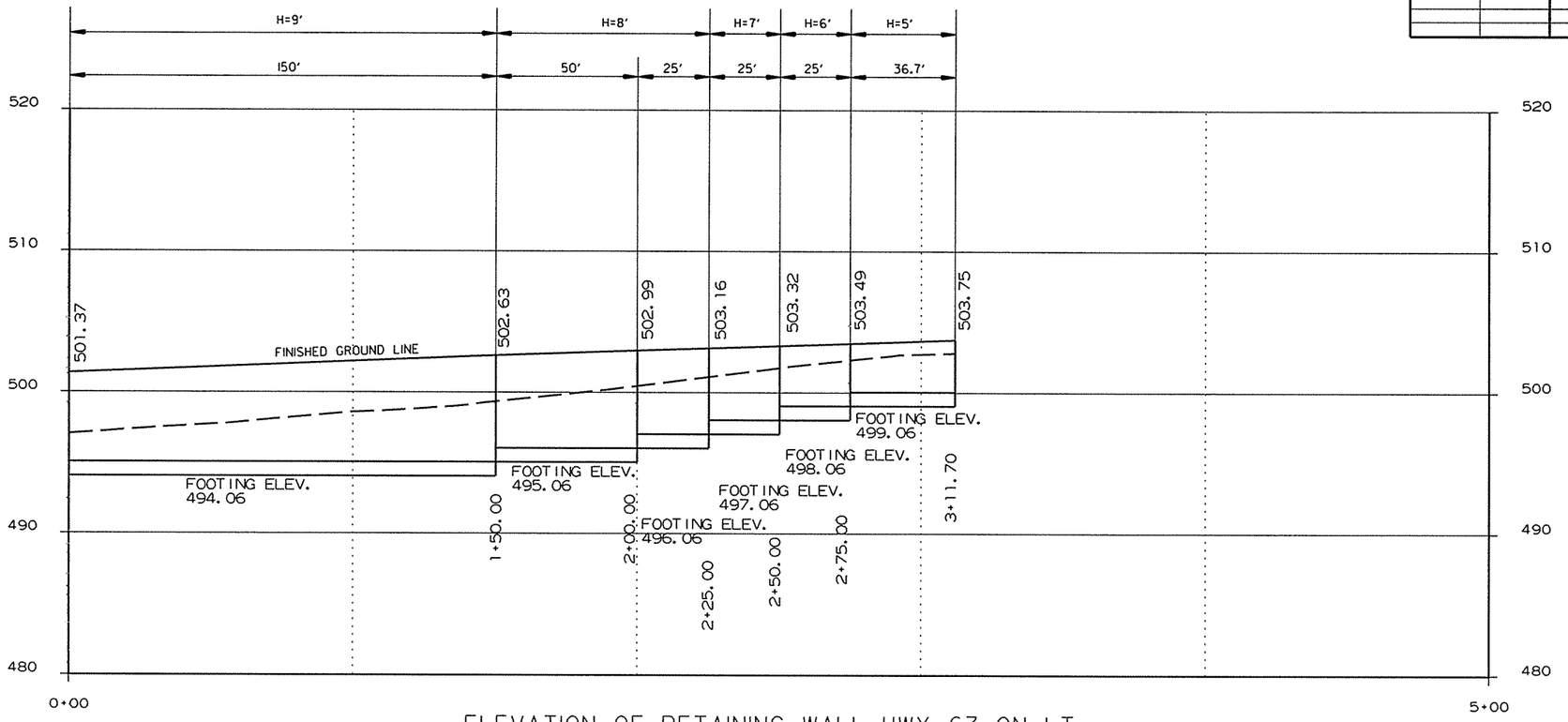
ZBORDER.CEL

SPECIAL DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 15 | 309 |

(2) SPECIAL DETAILS

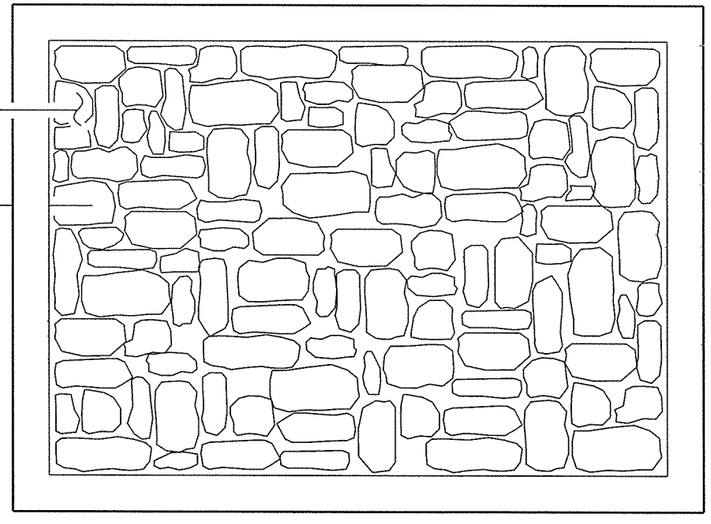
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




ELEVATION OF RETAINING WALL HWY. 63 ON LT.
(STA. 150+43 TO STA. 153+50)

ASHLAR STONE FINISH
SEE ARCHITECTURAL FINISH
SPECIAL PROVISION

6"
(TYP.)



NOTE: FOR WALL COLOR
SEE TEXTURED COATING
FINISH SPECIAL PROVISION

ASHLAR STONE FINISH DETAIL

| CLASS S CONCRETE - ROADWAY | REINFORCING STEEL - ROADWAY (GRADE 60) | UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY | ARCHITECTURAL FINISH | TEXTURED COATING FINISH |
|---|---|---|---|---|
| CU. YD. | POUND | CU. YD. | SQ. FT. | SQ. YD. |
| FOR INFORMATION ONLY | | | | |
| 139.44 | 14605 | 680 | 1898 | 133 |
| | | | | |
| | | | | |

NOTE: REFER TO STANDARD DRAWING SI-2 FOR ADDITIONAL RETAINING WALL DETAILS.

11/8/2011

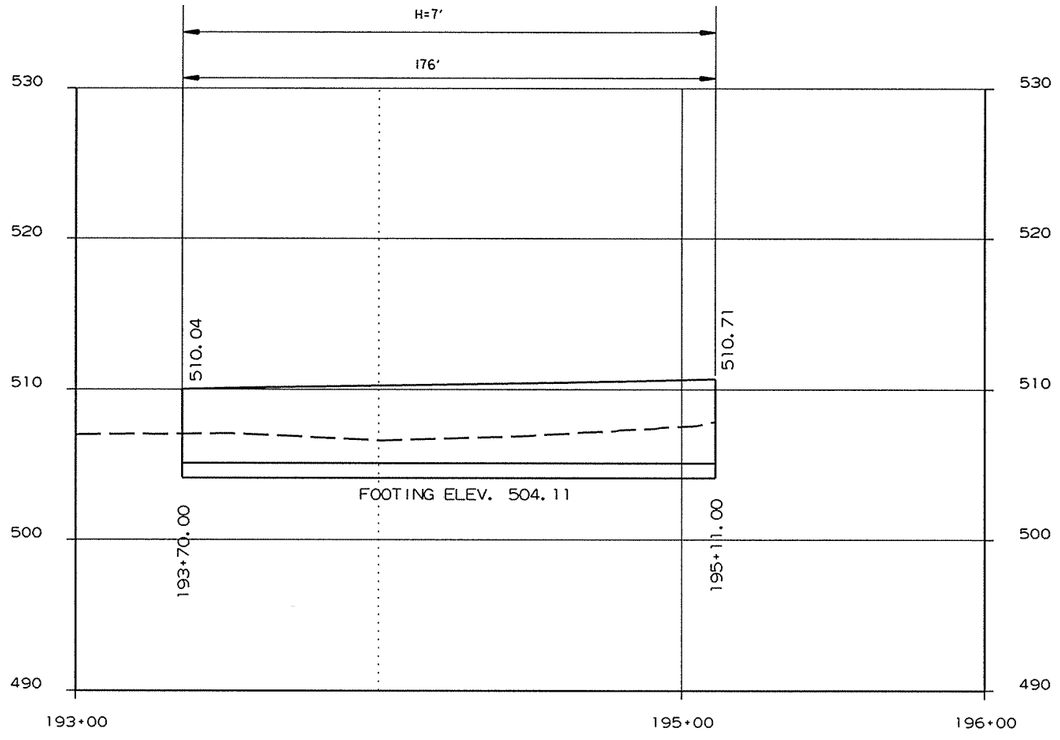
ZBORDER.CEL

SPECIAL DETAILS

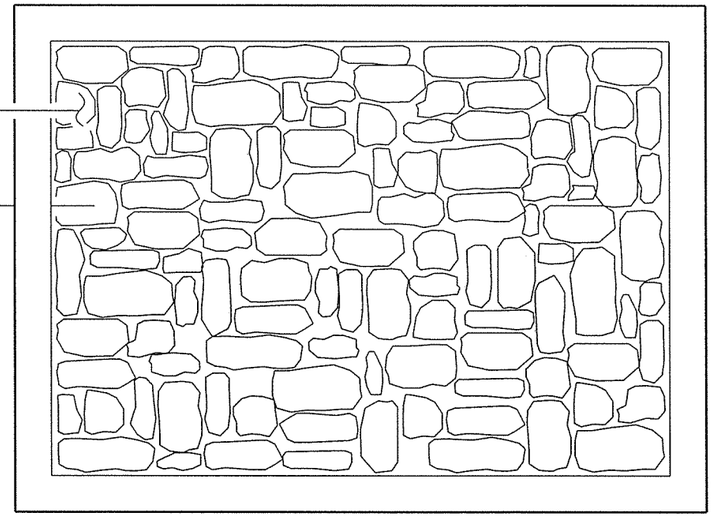
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 16 | 309 |

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




ELEVATION OF RETAINING WALL HWY. 63 ON LT.
(STA. 193+70 TO STA. 195+11)




NOTE: FOR WALL COLOR
SEE TEXTURED COATING
FINISH SPECIAL PROVISION

| CLASS S CONCRETE - ROADWAY | REINFORCING STEEL - ROADWAY (GRADE 60) | UNCLASSIFIED EXCAVATION FOR STRUCTURES - ROADWAY | ARCHITECTURAL FINISH | TEXTURED COATING FINISH |
|---|---|---|---|---|
| CU. YD. | POUND | CU. YD. | SQ. FT. | SQ. YD. |
| FOR INFORMATION ONLY | | | | |
| 70.30 | 6642.69 | 605 | 925 | 86 |
| | | | | |
| | | | | |

NOTE: REFER TO STANDARD DRAWING SI-2 FOR ADDITIONAL RETAINING WALL DETAILS.

ASHLAR STONE FINISH DETAIL

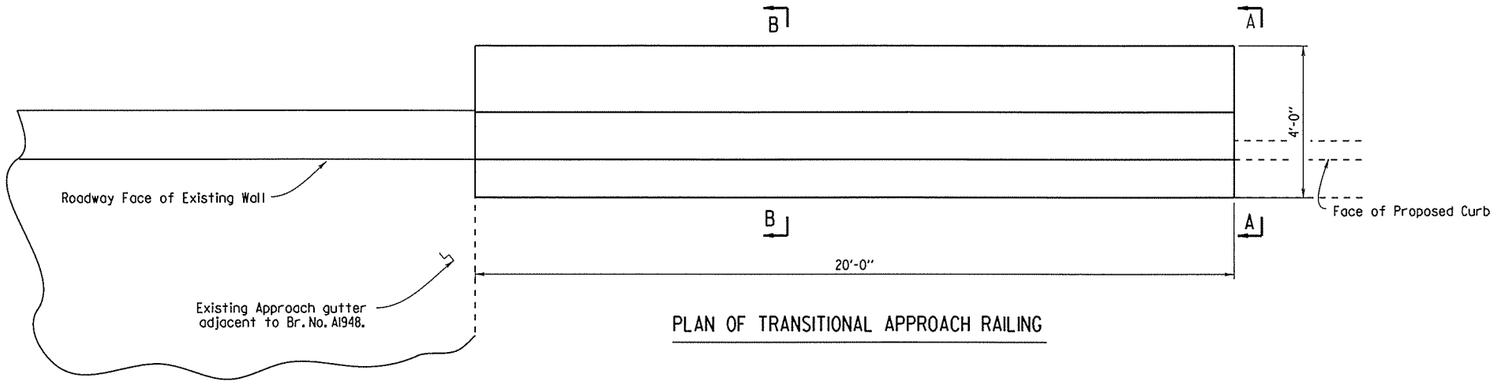
SPECIAL DETAILS

11/8/2011

ZBORDER.CEL

| 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. | | 050230 | 17 | 39 |

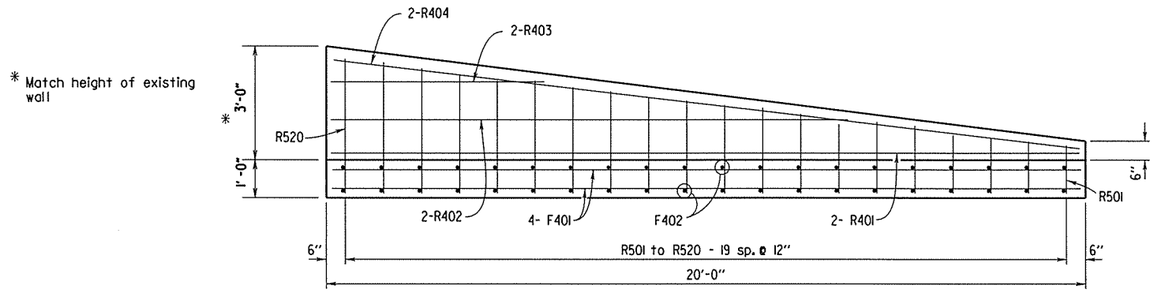
1 SPECIAL DETAIL



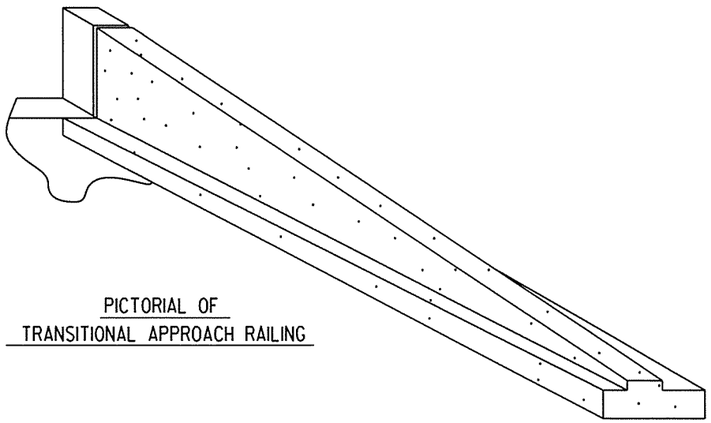

PLAN OF TRANSITIONAL APPROACH RAILING

## BAR LIST - ONE TRANSITIONAL RAIL

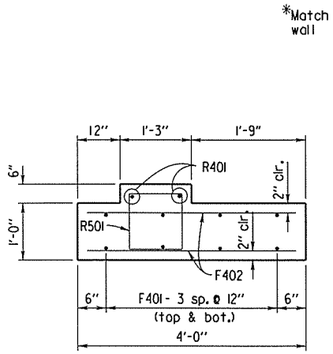
| Mark | No. Req'd. | Length | Pin Dia. | Bending Diagram Dimensions are out to out of bars. |
|---|---|---|---|---|
| F401 | 8 | 19'-8" | Str. | |
| F402 | 40 | 3'-8" | Str. | |
| R401 | 2 | 19'-8" | Str. | |
| R402 | 2 | 13'-7" | Str. | |
| R403 | 2 | 5'-7" | Str. | |
| R404 | 2 | 19'-9" | Str. | |
| R501 to R520 | 1 ea. | 4'-8" to 9'-8" | 2½" | 1'-0" 6" Min. (typ.) 1'-1" to 3'-7" R501 - R520 |



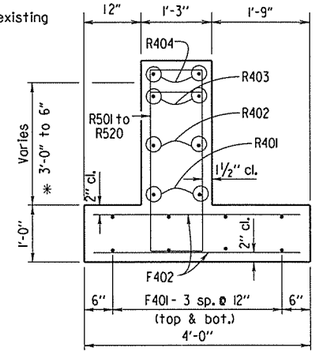

ELEVATION OF TRANSITIONAL APPROACH RAILING



PICTORIAL OF
TRANSITIONAL APPROACH RAILING




VIEW A - A
¾" = 1'-0"




SECTION B - B
¾" = 1'-0"

General Notes

Transitional Approach Railing shall be placed at locations shown on the Roadway Plans.

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

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

Class I Protective Surface Treatment shall be applied to the roadway surface, front face and top of the Transitional Approach Railing.

Transitional Approach Railing shall be paid for at the contract unit price bid per each for "Transitional Approach Railing."

FOR INFORMATION ONLY
SCHEDULE OF QUANTITIES PER RAIL UNIT

| CLASS "S" CONCRETE | REINFORCING STEEL (GRADE 60) | CLASS I PROTECTIVE SURFACE TREATMENT |
|---|---|---|
| 4.60 Cu. Yds. | 380 Lbs. | 0.3 Gal. |

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
8-22-14

# SPECIAL DETAILS

BRIDGE NO. A1948

050230 tr2
PRINT DATE: 8/21/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 18 | 309 |

① SPECIAL DETAILS

## INLET WINGWALL A TABLE ④

| OVER ALL WIDTH | CLEAR HEIGHT | FOOTING THK. | WING WALL THK. | BOX SKEW (DEG.) | SLOPE | HDWL LENGTH | HEEL | WALL HEIGHT AT HDWL | WALL HEIGHT AT WING END | WINGWALL ANGLE (DEGREE) WING A | WINGWALL ANGLE (DEGREE) WING B | FOOTING WIDTH AT WALL END | WIDTH OF WING FOOTINGS AT HDWL WING A | WIDTH OF WING FOOTINGS AT HDWL WING B | FOOTING DIMENSION PARALLEL WITH HDWL WING A | FOOTING DIMENSION PARALLEL WITH HDWL WING B | LENGTH OF WINGWALLS WING A | LENGTH OF WINGWALLS | LENGTH OF FOOTING HEEL WING A | LENGTH OF FOOTING HEEL WING B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OW | H | WB | CW | SK | SL | K | HL | WH1 | WH2 | AF1 | AF2 | WE | WF1 | WF2 | G1 | G2 | W1 | W2 | W3 | W4 |
| 13'-11" | 12'-0" | 1'-1" | 1'-0" | 0 | 3:1 | 12'-0" | 2'-0" | 12-10" | 4'-0" | 30 | | 3'-6" | 6'-6" | | 3'-5 1/2" | | 30'-6" | | 33'-9 3/8" | |

| CLASS "S" CONCRETE (Includes apron) | REINFORCING STEEL (Includes apron and laps if required) | REINFORCING STEEL (Includes apron and laps if required) |
|---|---|---|
| INLET | INLET | INLET |
| CU.YD | LBS. | LBS. |
| 16.83 | 1297 | 1297 |

| WING | F1 BAR SIZE | F1 MAX. SPACING | F1 NO. REQ'D | F1 LENGTHS VARY | F1 | F1 | F2 BAR SIZE | F2 SPACING | F2 NO. REQ'D | F2 LENGTHS | F2 | F3 BAR SIZE | F3 SPACING | F3 NO. REQ'D | F3 LENGTHS | F3 | F4 BAR SIZE | F4 SPACING | F4 NO. REQ'D | F4 LENGTHS VARY | F4 | F5 BAR SIZE | F5 SPACING | F5 NO. REQ'D | F5 LENGTHS | F6 BAR SIZE | F6 SPACING | F6 NO. REQ'D | F6 LENGTHS VARY | F6 | F7 BAR SIZE | F7 NO. REQ'D | F7 LENGTHS | F8 BAR SIZE | F8 SPACING | F8 NO. REQ'D | F8 LENGTHS VARY | F8 | F9 BAR SIZE | F9 SPACING | F9 NO. REQ'D | F9 LENGTHS | F9 | F10 BAR SIZE | F10 NO. REQ'D | F10 LENGTHS | F11 BAR SIZE | F11 NO. REQ'D | F11 LENGTHS | F12 BAR SIZE | F12 SPACING | F12 NO. REQ'D | F12 LENGTHS | F12 | REINF. STEEL QTY. PER WING (LBS) | | REINF. STEEL QTY. PER WING (LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

| 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. | | 050230 | 19 | 30 |

① SPECIAL DETAILS

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
6-22-14

TABULAR DATA BY: JGT DATE: 08/20/2014
CHECKED BY: CWY DATE: 8/20/14

## OUTLET WINGWALL TABLE

| OVER ALL WIDTH | CLEAR HEIGHT | FOOTING THK. | WING WALL THK. | BOX SKEW (DEG.) | SLOPE | HDWL LENGTH | HEEL | WALL HEIGHT AT HDWL | WALL HEIGHT AT WING END | WINGWALL ANGLE (DEGREE) WING A | WINGWALL ANGLE (DEGREE) WING B | FOOTING WIDTH AT WALL END | WIDTH OF WING FOOTINGS AT HDWL WING A | WIDTH OF WING FOOTINGS AT HDWL WING B | FOOTING DIMENSION PARALLEL WITH HDWL WING A | FOOTING DIMENSION PARALLEL WITH HDWL WING B | LENGTH OF WINGWALLS WING A | LENGTH OF WINGWALLS WING B | LENGTH OF FOOTING HEEL WING A | LENGTH OF FOOTING HEEL WING B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OW | H | WB | CW | SK | SL | K | HL | WH1 | WH2 | AF1 | AF2 | WE | WF1 | WF2 | G1 | G2 | W1 | W2 | W3 | W4 |
| 13'-11" | 12'-0" | 1'-1" | 1'-0" | 0 | 3:1 | 12'-0" | 2'-0" | 12'-10" | 4'-0" | 30 | 10 | 3'-6" | 6'-6" | 6'-1 1/2" | 3'-5 1/2" | 2'-11 7/8" | 30'-6" | 26'-6" | 33'-9 3/8" | 38'-0" |

| CLASS "S" CONCRETE (Includes apron) | REINFORCING STEEL (Includes apron and laps if required) |
|---|---|
| OUTLET | OUTLET |
| CU.YD | LBS. |
| 32.22 | 2412 |

| WING | BAR SIZE | F1 MAX. SPACING | F1 NO. REQ'D | F1 LENGTHS VARY | | | F2 BAR SIZE | F2 SPACING | F2 NO. REQ'D | F2 LENGTHS | F3 BAR SIZE | F3 SPACING | F3 NO. REQ'D | F3 LENGTHS | F4 BAR SIZE | F4 SPACING | F4 NO. REQ'D | F4 LENGTHS VARY | F5 BAR SIZE | F5 SPACING | F5 NO. REQ'D | F5 LENGTHS | F6 BAR SIZE | F6 SPACING | F6 NO. REQ'D | F6 LENGTHS VARY | | | F7 BAR SIZE | F7 NO. REQ'D | F7 LENGTHS | F8 BAR SIZE | F8 SPACING | F8 NO. REQ'D | F8 LENGTHS VARY | | | F9 BAR SIZE | F9 SPACING | F9 NO. REQ'D | F9 LENGTHS | F10 BAR SIZE | F10 NO. REQ'D | F10 LENGTHS | F11 BAR SIZE | F11 NO. REQ'D | F11 LENGTHS | F12 BAR SIZE | F12 SPACING | F12 NO. REQ'D | F12 LENGTHS | | REINF. STEEL QTY. PER WING (LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WING A | 4 | 12 | 31 | L | Min | 5'-8" | 6 | 12 | 11 | L 10'-3" | 4 | 12 | 7 | L 6'-1" | 4 | 18 | 10 | Min | 4 | 18 | 6 | 30'-2" | 4 | 18 | 21 | L Min | 7'-3" | 4 | 8 | 34'-7" | 4 | 18 | 21 | Min | | 4 | 18 | 4 | 17'-8" | 4 | 2 | 31'-3" | 4 | 2 | 33'-7" | 6 | 12 | 12 | L | 3'-4" | 1297 |
| | | | | | Max | 17'-3" | | | | | | | | | | | | 5'-7" | | | | | | | | Max | 15'-11" | | | | | | 3'-0" | | | | Max | | | | | | | | | | |
| | | | | X | Min | 1'-1" | | | | X 3'-0" | | | | X 2'-4" | | | | Max | | | | | | | | Max | 2'-8" | | | | | | Max | | | | | | | | | | | | | X | 1'-8" | |
| | | | | | Max | 4'-0" | | | | | | | | | | | | | | | | | | | | Max | 2'-8" | | | | | | 5'-11" | | | | Max | | | | | | | | | | |
| | | | | Y | Min | 4'-8" | | | | Y 7'-4" | | | | Y 3'-10" | | | | 26'-4" | | | | | | | | Min | 4'-8" | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Max | 13'-4" | | | | | | | | | | | | | | | | | | | | Max | 13'-4" | | | | | | | | | | | | | | | | | | | | | |
| WING B | 4 | 12 | 27 | L | Min | 5'-8" | 5 | 12 | 6 | L 10'-2" | 4 | 12 | 9 | L 7'-0" | 4 | 18 | 10 | Min | 4 | 18 | 6 | 26'-2" | 4 | 18 | 18 | L Min | 7'-5" | 4 | 8 | 38'-10" | 4 | 18 | 18 | Min | | 4 | 18 | 4 | 16'-9" | 4 | 2 | 27'-6" | 4 | 2 | 28'-0" | 6 | 12 | 12 | L | 3'-4" | 1115 |
| | | | | | Max | 17'-0" | | | | | | | | | | | | 4'-10" | | | | | | | | Max | 15'-11" | | | | | | 3'-0" | | | | Max | | | | | | | | | | |
| | | | | X | Min | 1'-1" | | | | X 3'-2" | | | | X 2'-3" | | | | Max | | | | | | | | Max | 2'-8" | | | | | | Max | | | | | | | | | | | | | X | 1'-8" | |
| | | | | | Max | 3'-9" | | | | | | | | | | | | | | | | | | | | Max | 2'-8" | | | | | | 5'-7" | | | | Max | | | | | | | | | | |
| | | | | Y | Min | 4'-8" | | | | Y 7'-1" | | | | Y 4'-10" | | | | 22'-10" | | | | | | | | Min | 4'-10" | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Max | 13'-4" | | | | | | | | | | | | | | | | | | | | Max | 13'-4" | | | | | | | | | | | | | | | | | | | | | |

## OUTLET SKEWED END SECTION

| SKEW (DEGREE) | SLOPE | DESIGN FILL DEPTH (FT.) | CLEAR SPAN (FT.) | CLEAR HEIGHT (FT.) | SECTION LENGTH | TOP SLAB THICKNESS | BOTTOM SLAB THK. | SIDE WALL THICKNESS | HEADWALL HEIGHT | OVER ALL WIDTH | OVER ALL HEIGHT | TOP SLAB REINFORCING STEEL "a" SIZE | "a" SPACING | "a" LENGTHS VARY | "a" NO. REQ'D | BOTTOM SLAB REINFORCING STEEL "b" SIZE | "b" SPACING | "b" LENGTHS VARY | "b" NO. REQ'D | SIDE WALL REINFORCING STEEL "f" SIZE | "f" SPACING | "f" NO. REQ'D | "f" LENGTH | TOP SLAB DISTRIBUTION REINFORCING STEEL "d" SIZE | "d" SPACING | "d" NO. REQ'D | "d" LENGTHS VARY | BOTTOM SLAB DISTRIBUTION REINFORCING STEEL "e" SIZE | "e" SPACING | "e" NO. REQ'D | "e" LENGTHS VARY | SIDE WALL DISTRIBUTION REINFORCING STEEL "d1" SIZE | "d1" SPACING | "d1" NO. REQ'D | "d1" LENGTH | HDWL "k1", "k2" & "h" BAR | HDWL SIZE | HDWL NO. REQ'D | HDWL LENGTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SK | SL | D | S | H | LL | T | B | C | HW | OW | OH | SIZE | SPACING | LENGTHS VARY | NO. REQ'D | SIZE | SPACING | LENGTHS VARY | NO. REQ'D | SIZE | SPACING | NO. REQ'D | LENGTH | SIZE | SPACING | NO. REQ'D | LENGTHS VARY | SIZE | SPACING | NO. REQ'D | LENGTHS VARY | SIZE | SPACING | NO. REQ'D | LENGTHS VARY | SIZE | SPACING | NO. REQ'D | LENGTH | BAR | SIZE | NO. REQ'D | LENGTH |
| | | | | | | | | | | | | | | Max | | | | Max | | | | | | | | Max | | | | Max | | | | Max | | | | LONG | k1 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | k2 | | | |
| | | | | | | | | | | | | | | Min | | | | Min | | | | | | | | Min | | | | Min | | | | Min | | | | SHORT | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | h | | | Y |

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

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

## OUTLET SLOPE SECTION(S)

| R.C. BOX SECTION | DESIGN FILL DEPTH (FT.) | CLEAR SPAN (FT.) | CLEAR HEIGHT (FT.) | TOP SLAB THICKNESS | BOTTOM SLAB THK. | SIDE WALL THICKNESS | OVER ALL WIDTH | OVER ALL HEIGHT | SECTION LENGTH (FT.) | TOP SLAB REINFORCING STEEL "a" LENGTH = OW - 4" SIZE | SPACING | NO. REQ'D | LENGTH | BOTTOM SLAB REINFORCING STEEL "b" LENGTH = OW - 4" SIZE | SPACING | NO. REQ'D | LENGTH | SIDE WALL REINFORCING STEEL "f" LENGTH = OH - 4" SIZE | SPACING | NO. REQ'D | LENGTH | TOP SLAB DISTRIBUTION REINF. STEEL "d" LENGTH = SL SIZE | SPACING | NO. REQ'D | BOTTOM SLAB DISTRIBUTION REINF. STEEL "e" LENGTH = SL SIZE | SPACING | NO. REQ'D | SIDE WALL DISTRIBUTION REINF. STEEL "d1" LENGTH = SL SIZE | SPACING | NO. REQ'D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | S | H | T | B | C | OW | OH | SL | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 12 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| HDWL THK. | ADDITIONAL REINF. FOR HDWL | "h" bars SIZE | Y | LENGTH | NO. REQ'D |
|---|---|---|---|---|---|
| HW | LBS | | | | |
| 3" | 41 | 4 | 0'-9" | 1'-9" | 15 |

| CLASS "S" CONCRETE CU. YDS. PER LIN. FT. | REINFORCING STEEL (GR. 50) LBS. PER LIN. FT. | ② ADTL. REINF. PER LONG. LAP LOCATION LBS. | ADDITIONAL CONCRETE FOR HDWL CU. YDS. | TOTAL ADDITIONAL REINF. FOR HDWL LBS. |
|---|---|---|---|---|
| | | | 0.13 | 58 |

② Bar Lap - Add one long. lap for each Slope Section, and one additional long. lap for Slope Sections greater than 40'-0" in length.

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

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

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

Unless otherwise noted, all dimensions are in inches.

SHEET 2 OF 3
DETAILS OF R.C. BOX CULVERT

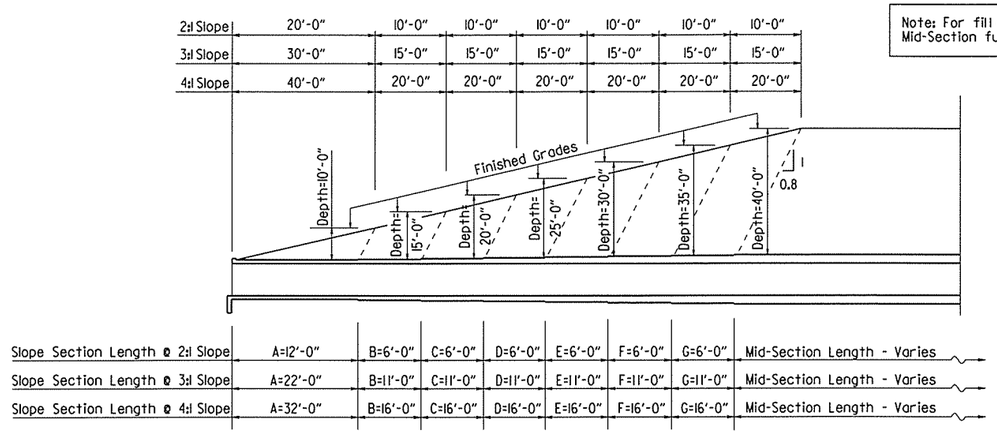
SINGLE BARREL BOX CULVERT
STA. 232+00 RT.

SPECIAL DETAILS

Ver. 1.14 Culvert-Single.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. | | 050230 | 20 | 209 |

1 SPECIAL DETAILS

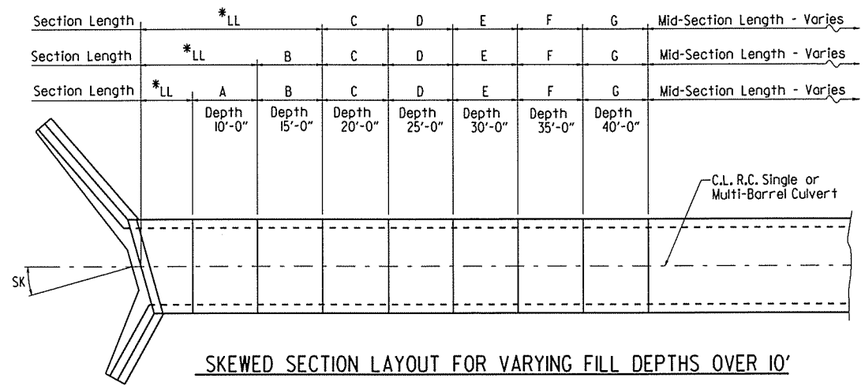



Note: For fill depths 10' and under, use Mid-Section full length of box culvert.

## LONGITUDINAL SECTION LENGTH SCHEDULE FOR VARYING FILL DEPTHS OVER 10'

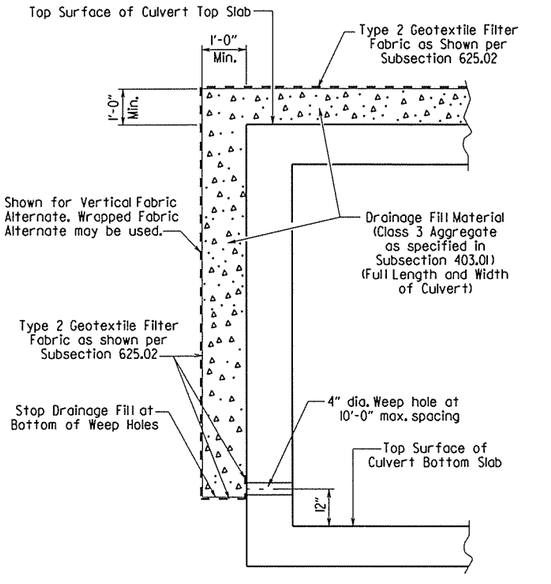
Lengths for Non-Skewed Boxes

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



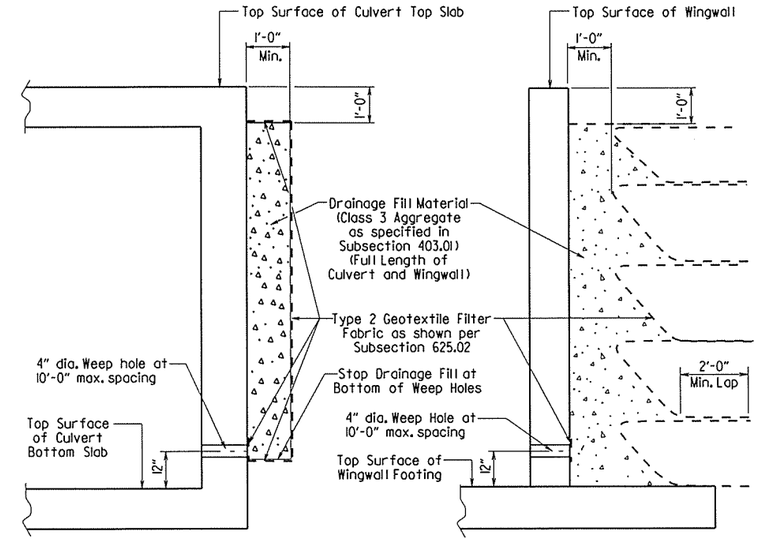

## SKEWED SECTION LAYOUT FOR VARYING FILL DEPTHS OVER 10'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
5-22-14




## CULVERT DRAINAGE DETAIL FOR ROCK FILL

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




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

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

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

## WINGWALL & CULVERT DRAINAGE DETAIL

**GENERAL NOTES:**

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

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

**LIVE LOADING:** HL-93

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

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

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

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

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

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

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

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

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

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

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

SHEET 1 OF 4

# GENERAL DETAILS OF R.C. BOX CULVERT

GENERAL NOTES &
LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS

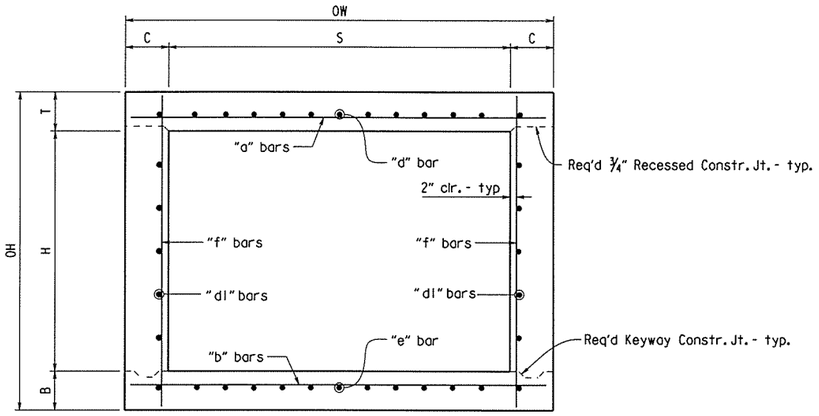
LRFD

v 1.1.4 Culvert-General.dgn

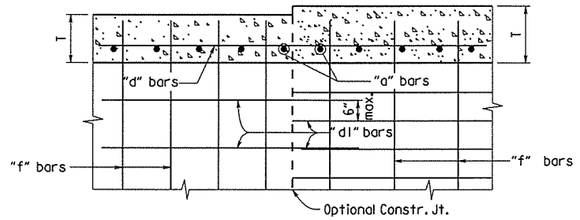
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 21 | 209 |

(1) SPECIAL DETAILS

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



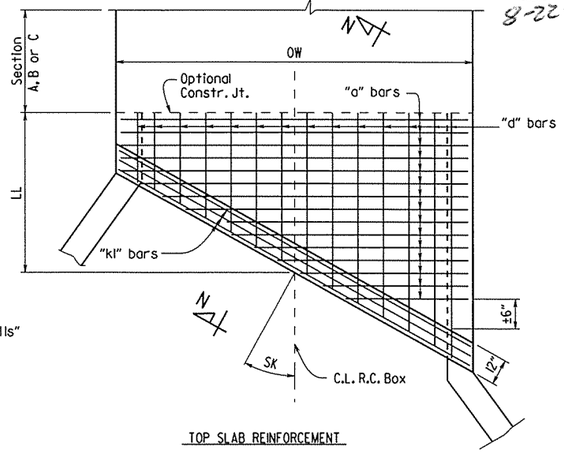

TYPICAL SECTION M-M



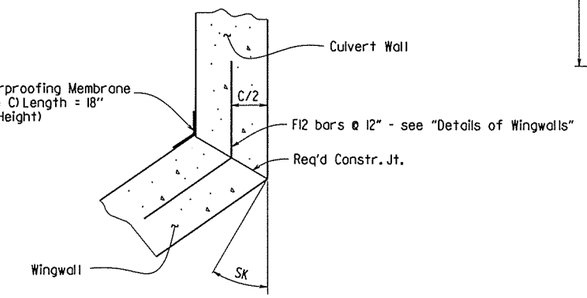

Longitudinal Bar Spacing at individual sections shall be maintained, which may result in noncontact bar laps.

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR

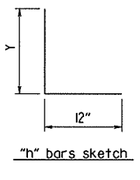



TOP SLAB REINFORCEMENT

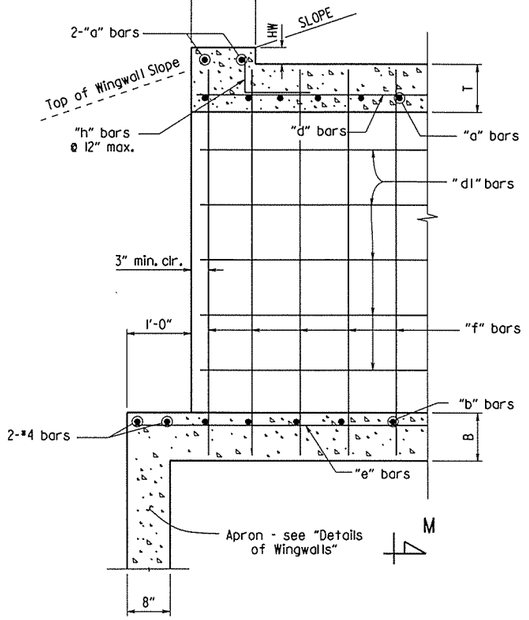



WINGWALL ATTACHMENT

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

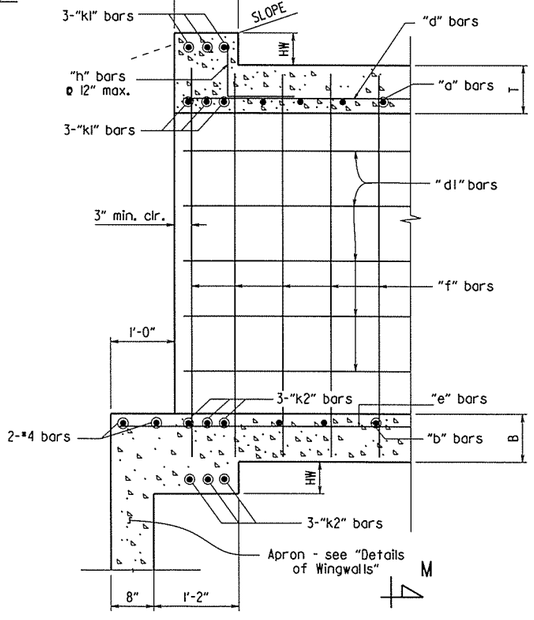



"h" bars sketch



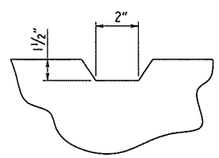

PART LONGITUDINAL SECTION

(Non-Skewed Ends)



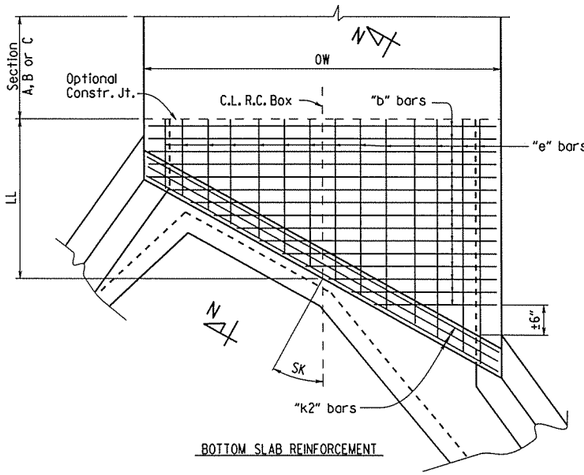

PART LONGITUDINAL SECTION N-N

(Skewed Ends)




TYPICAL KEYWAY DETAIL

(All Construction Joints)




BOTTOM SLAB REINFORCEMENT

SKEWED END SECTION DETAILS

SHEET 2 OF 4

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL R.C. BOX CULVERT

SPECIAL DETAILS

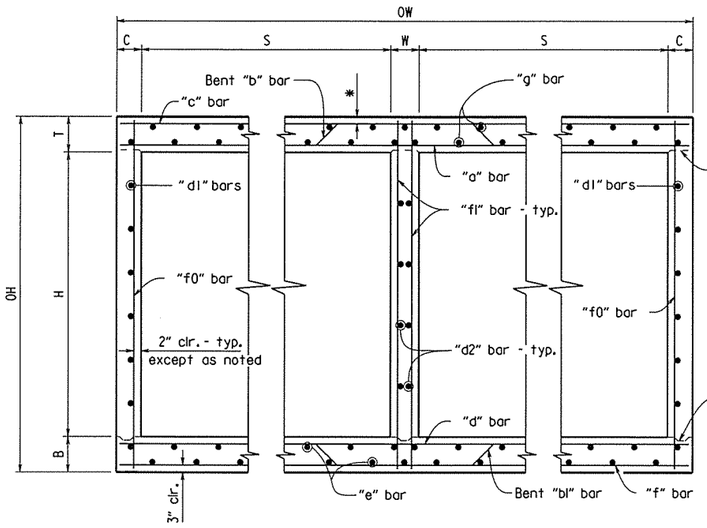
Culvert-General.dgn

| DATE REVISED | DATE FILMED | REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 22 | 309 |

(1) SPECIAL DETAILS

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

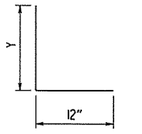
Note: When top slab of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.



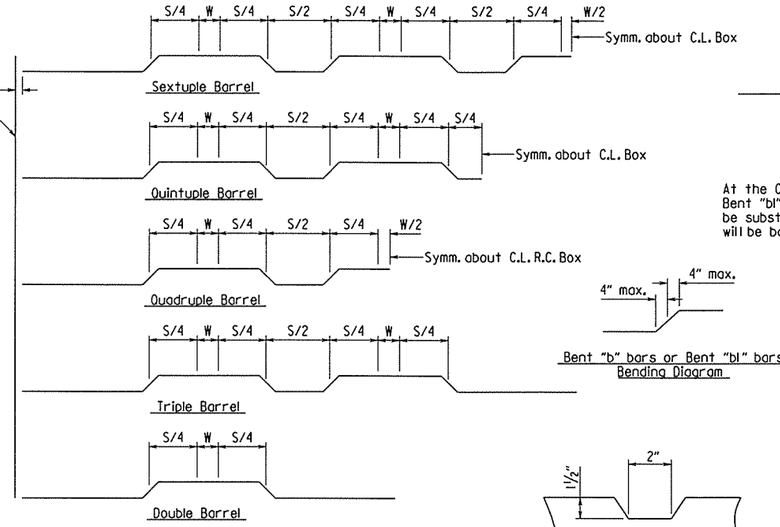

## TYPICAL SECTION M-M

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

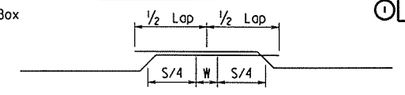
Bottom Slab
Straight "d" bars shall alternate with Bent "bl" bars in top.
Straight "f" bars shall alternate with Bent "bl" bars in bottom.




"h" bars sketch




## Bent "b" bars or Bent "bl" bars sketch

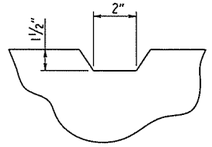



Lap Detail
For Bent "b" bars and Bent "bl" bars

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

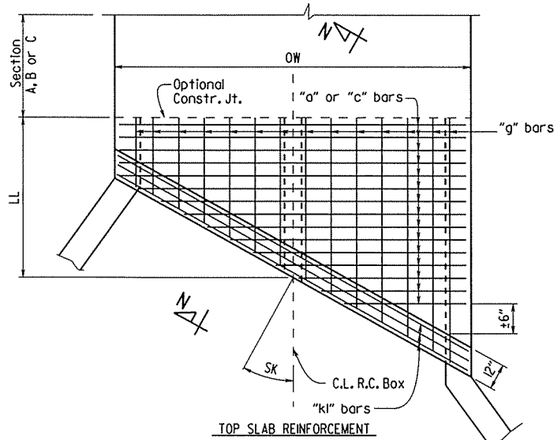



Bent "b" bars or Bent "bl" bars Bending Diagram

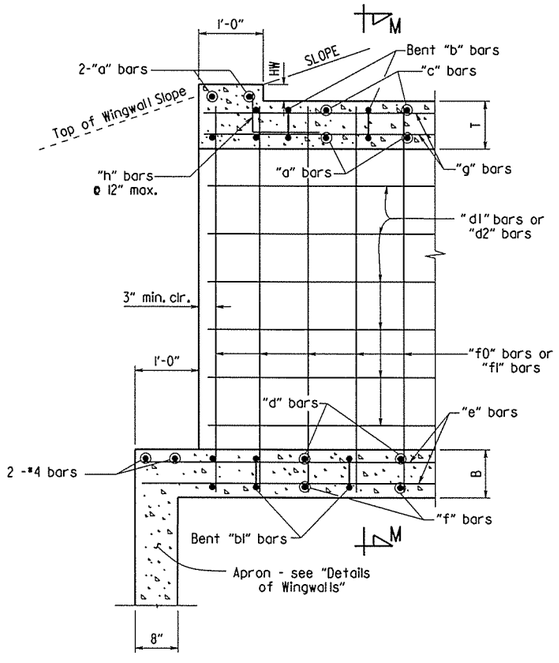



## TYPICAL KEYWAY DETAIL

(All Construction Joints)

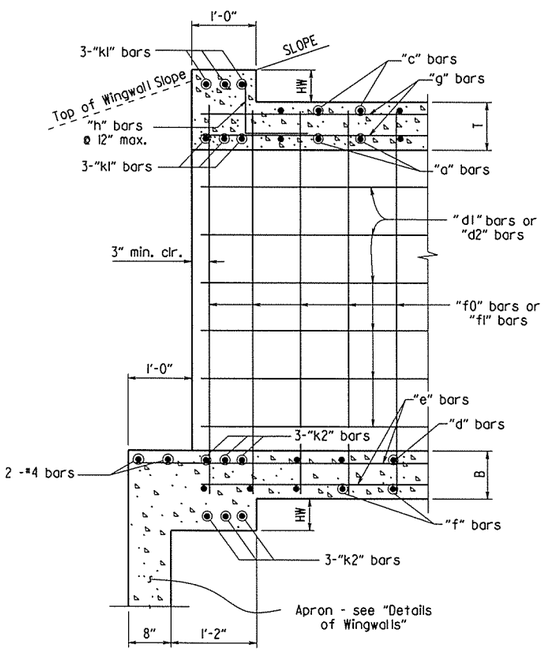



TOP SLAB REINFORCEMENT
Straight "c" bars in top.
Straight "a" bars in bottom.



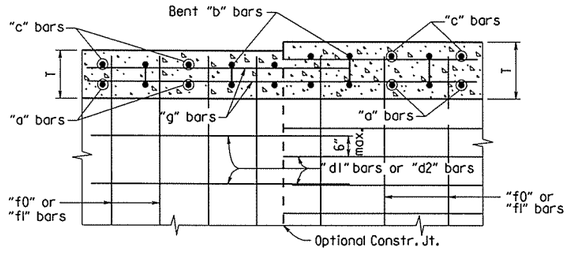

## PART LONGITUDINAL SECTION

(Non-Skewed Ends)




## PART LONGITUDINAL SECTION N-N

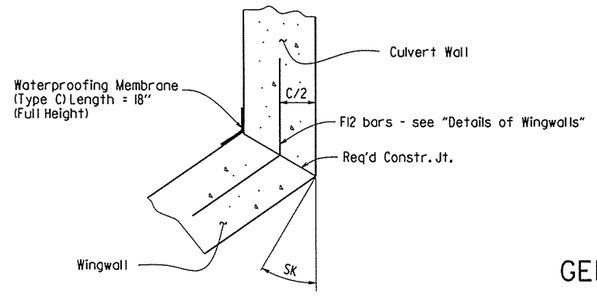
(Skewed Ends)




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

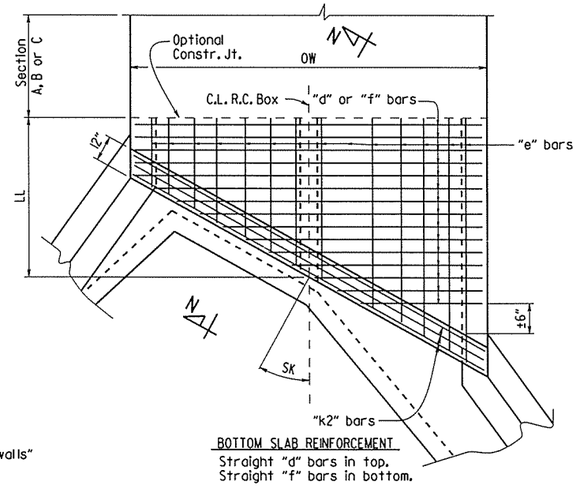
## LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

TOP SLAB SHOWN, BOTTOM SLAB SIMILAR




## WINGWALL ATTACHMENT

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




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

## SKEWED END SECTION DETAILS

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
8-22-14

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

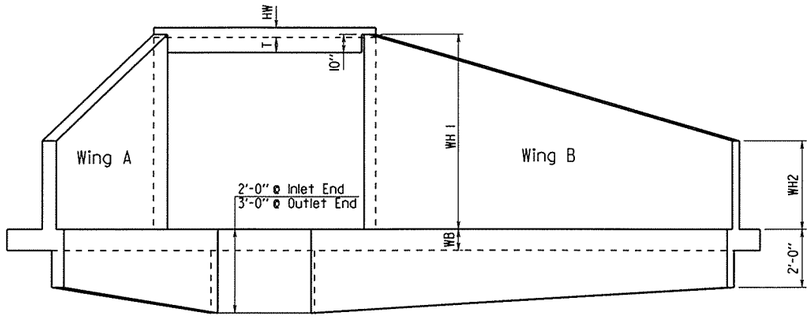
DETAILS OF MULTI-BARREL
R.C. BOX CULVERT

SPECIAL DETAILS

Culvert-General.dgn

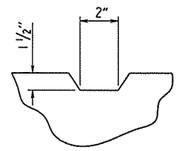
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 23 | 309 |

1 SPECIAL DETAILS



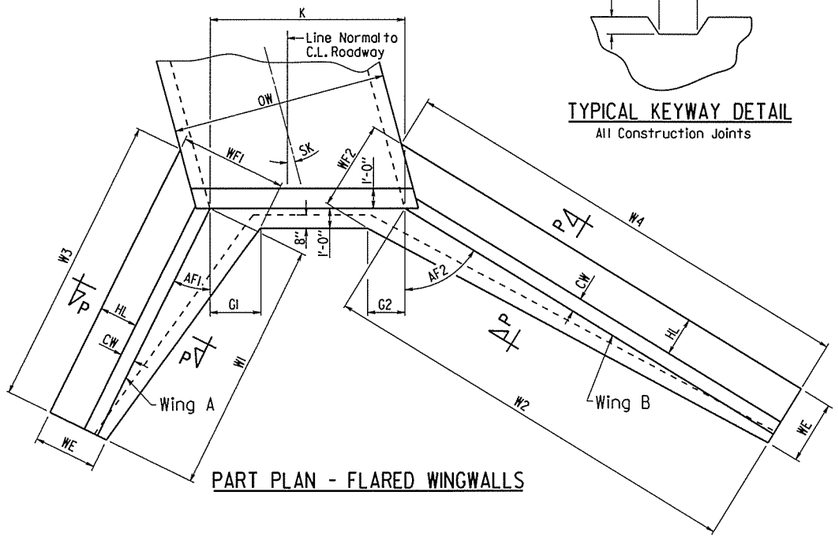

## END ELEVATION

Flared Wingwalls Shown

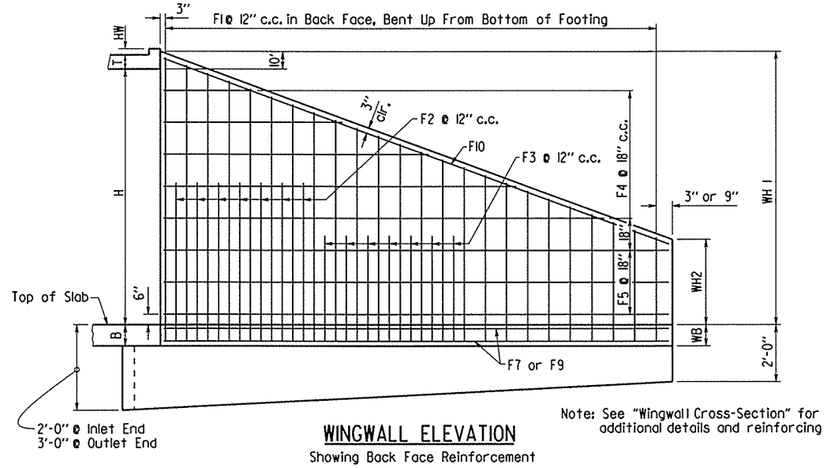



## TYPICAL KEYWAY DETAIL

All Construction Joints



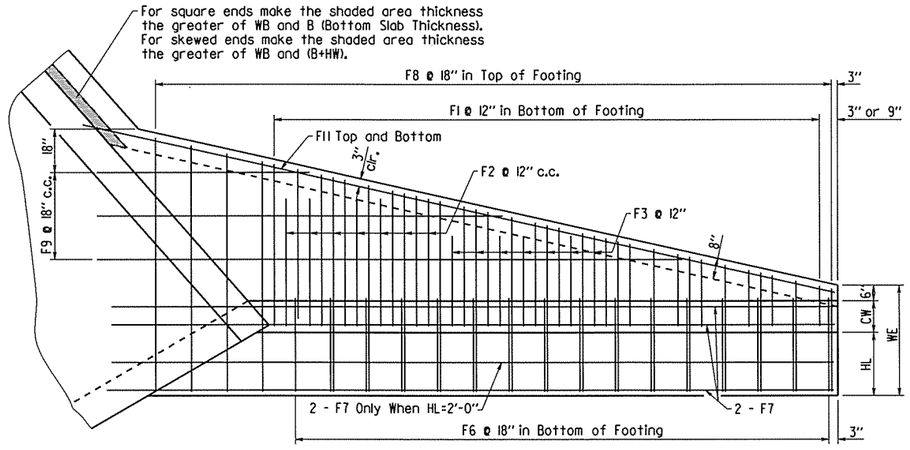

## PART PLAN - FLARED WINGWALLS




## WINGWALL ELEVATION

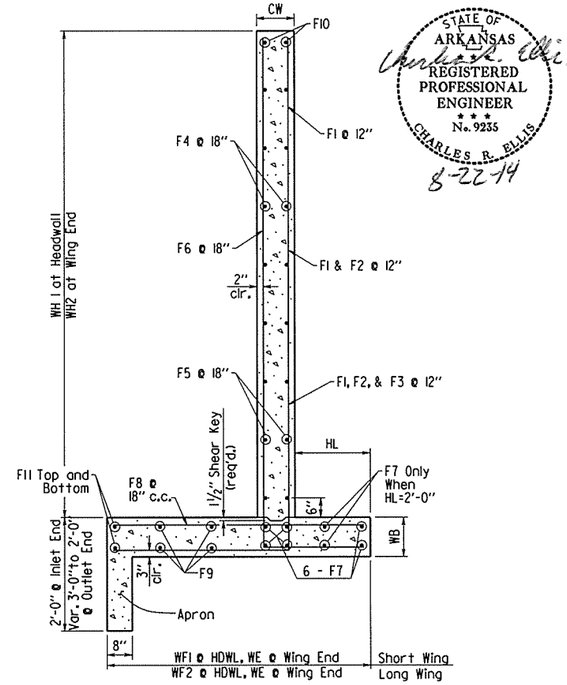
Showing Back Face Reinforcement

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

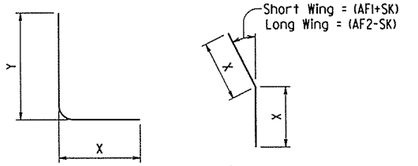



## PLAN - FLARED WINGWALLS

Showing Footing Reinforcement



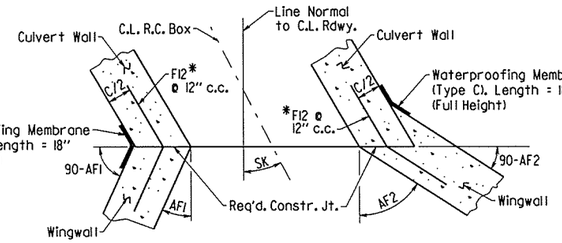

## WINGWALL SECTION P-P




F1, F2, F3, & F6 BARS

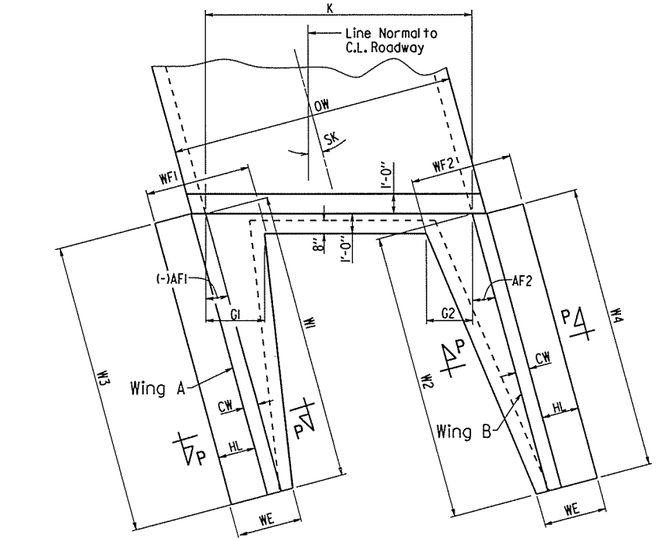
*F12 BAR

*F12 is a straight bar for parallel wingwalls

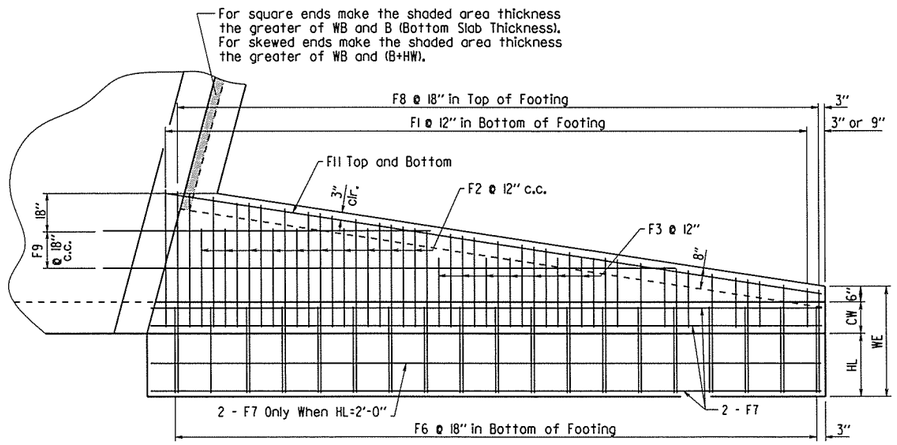



## CONSTRUCTION JOINTS

Flared Wingwalls Shown




## PART PLAN - PARALLEL WINGWALLS




## PLAN - PARALLEL WINGWALLS

Showing Footing Reinforcement

# SHEET 4 OF 4

# GENERAL DETAILS OF R.C. BOX CULVERT

## DETAILS OF WINGWALLS

## SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
CHARLES R. ELLIS
8-22-14

b050230_Culvert.dgn

| 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. 050230 | 24 | 309 |

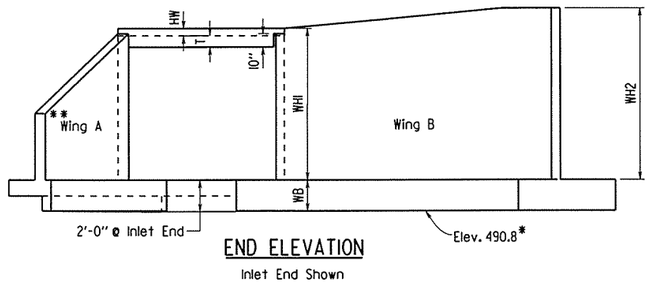
1 SPECIAL DETAILS

## INLET WINGWALL B TABLE

| OVER ALL WIDTH | CLEAR HEIGHT | FOOTING THK. | WING WALL THK. | BOX SKEW (DEGREE) | SLOPE | HEEL | WALL HEIGHT AT HDWL | WALL HEIGHT AT WING END | WINGWALL ANGLE (DEGREE) | FOOTING WIDTH AT WALL END | WIDTH OF WING FOOTINGS AT HDWL | FOOTING DIMENSION PARALLEL WITH HDWL | LENGTH OF WINGWALLS | LENGTH OF FOOTING HEEL | ADDITIONAL FOOTING HEEL | ADDITIONAL FOOTING HEEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OW | H | WB | CW | SK | SL | HL | WH1 | WH2 | AF2 | WE | WF2 | G2 | W2 | W4 | W5 | W6 |
| 13'-11" | 12'-0" | 2'-0" | 1'-0" | 0 | 3:1 | 9'-0 1/2" | 13'-3" | 17'-6" | 0 | 15'-6" | 15'-6" | 4'-0" | 56'-1" | 57'-11" | 5'-4" | 7'-1" |

| CLASS "S" CONCRETE | REINFORCING STEEL (Includes laps if required) |
|---|---|
| INLET | INLET |
| CU.YD | LBS. |
| 134.98 | 20082 |

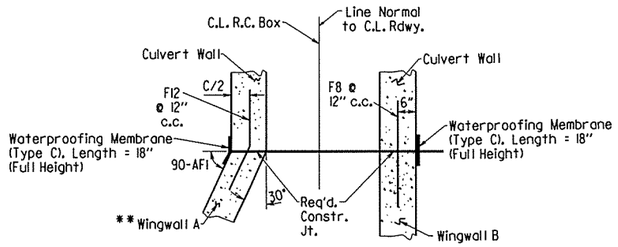
| WING | F1 BAR SIZE | F1 SPACING | F1 NO. REQ'D | F1 LENGTHS | F2 BAR SIZE | F2 SPACING | F2 NO. REQ'D | F2 LENGTHS | F3 BAR SIZE | F3 SPACING | F3 NO. REQ'D | F3 LENGTHS | F4 BAR SIZE | F4 MAX. SPACING | F4 NO. REQ'D | F4 LENGTHS | F5 BAR SIZE | F5 SPACING | F5 NO. REQ'D | F5 LENGTHS | F6 BAR SIZE | F6 SPACING | F6 NO. REQ'D | F6 LENGTHS | F7 BAR SIZE | F7 MAX. SPACING | F7 NO. REQ'D | F7 LENGTHS | F8 BAR SIZE | F8 SPACING | F8 NO. REQ'D | F8 LENGTHS | REINF. STEEL QTY. PER WING (LBS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WING B | 9 | 6 | 126 | Varies 17'-11" to 13'-1" | 4 | 12 | 63 | Varies 17'-11" to 13'-1" | 9 | 6 | 126 | L 9'-2"; X 1'-9"; Y 7'-5" | 4 | 12 | 72 | Varies 31'-11" to 15'-1" | 8 | 6 | 126 | 15'-2" | 5 | 12 | 63 | 15'-2" | 4 | 12 | 64 | 31'-11" | 6 | 12 | 13 | 3'-4" | 20082 |



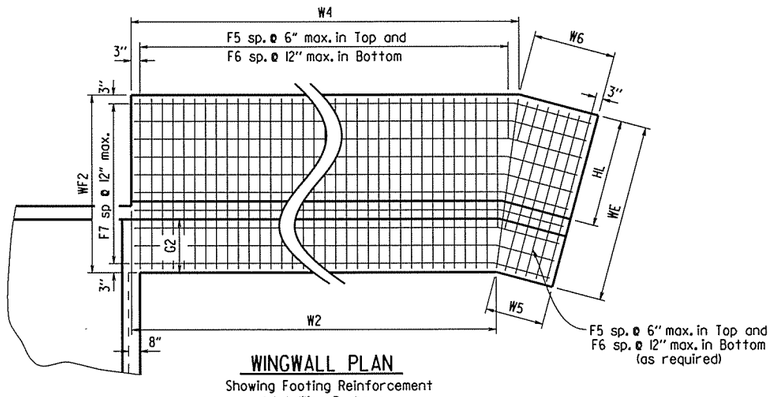

END ELEVATION
Inlet End Shown

STATE OF ARKANSAS
CHARLES R. ELLIS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
8-22-14

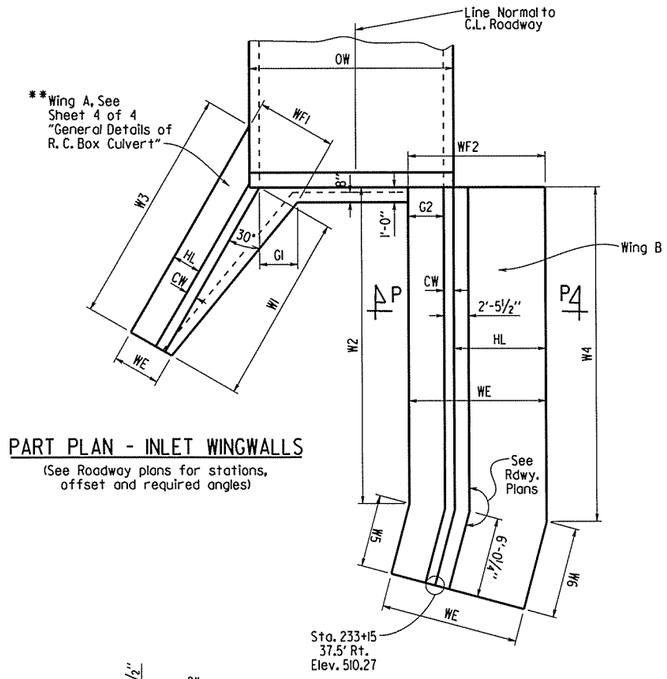
TABULAR DATA BY: CJR DATE: 7/31/14
CHECKED BY: JGT DATE: 8/22/14



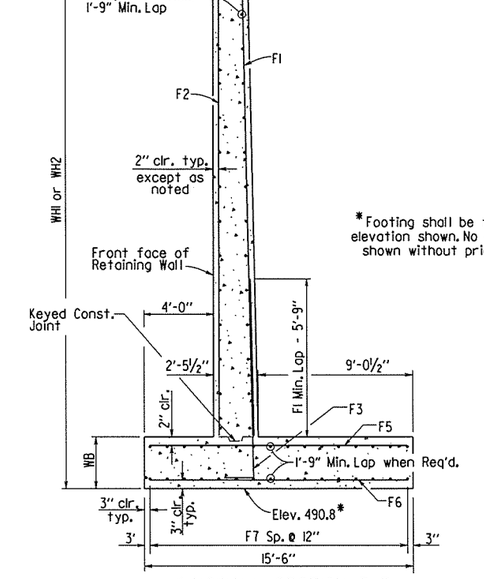

CONSTRUCTION JOINTS
Inlet End Shown




WINGWALL PLAN
Showing Footing Reinforcement
Inlet Wing B shown

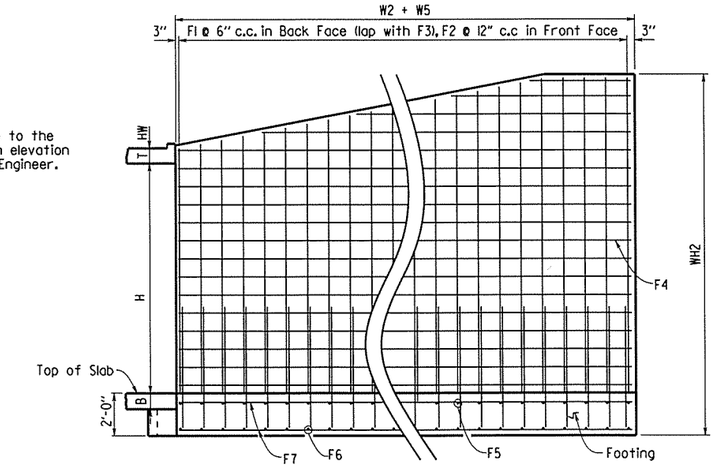



PART PLAN - INLET WINGWALLS
(See Roadway plans for stations, offset and required angles)

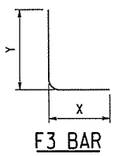



WINGWALL SECTION P-P
N.T.S

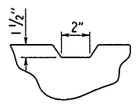
*Footing shall be founded into Dolostone to the elevation shown. No adjustment in the plan elevation shown without prior approval from the Engineer.




WINGWALL ELEVATION
Showing Back Face Reinforcement
Inlet Wing B shown




F3 BAR




TYPICAL KEYWAY DETAIL
(All Construction Joints)

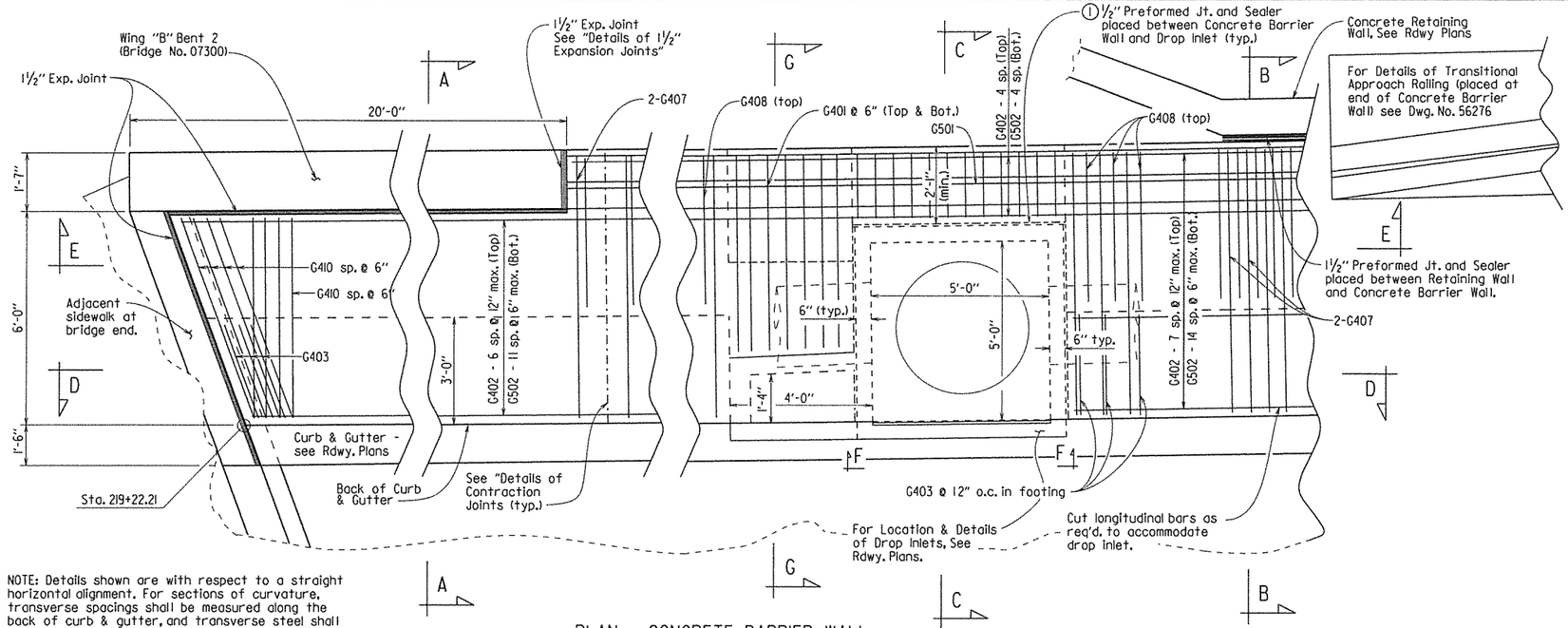
SHEET 3 OF 3
DETAILS OF R.C. BOX CULVERT
SINGLE BARREL BOX CULVERT
STA. 232+00 RT.

SPECIAL DETAILS

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| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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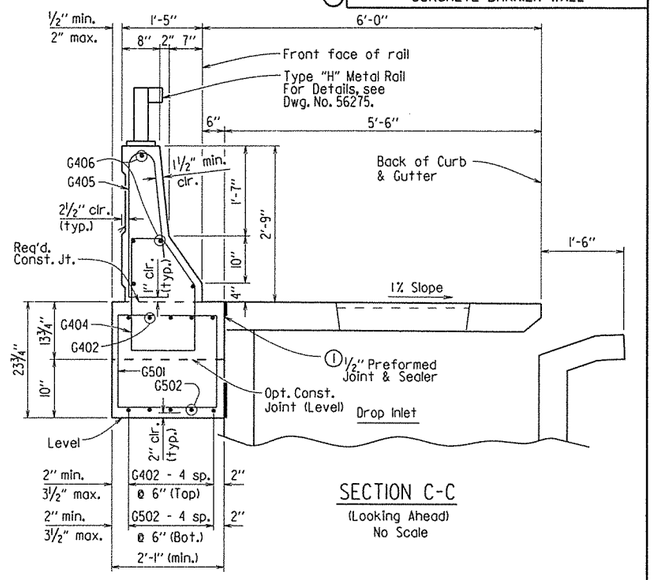
① - CONCRETE BARRIER WALL -



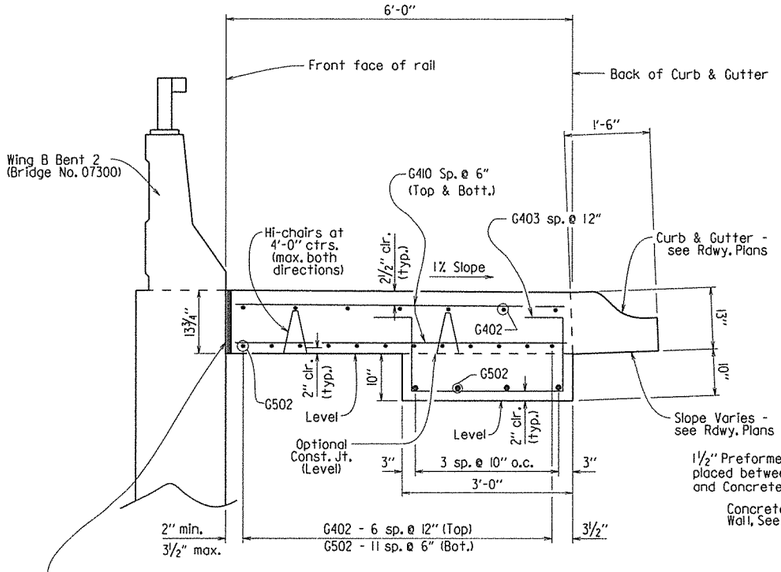

NOTE: Details shown are with respect to a straight horizontal alignment. For sections of curvature, transverse spacings shall be measured along the back of curb & gutter, and transverse steel shall be placed along radial lines.

PLAN - CONCRETE BARRIER WALL
No Scale

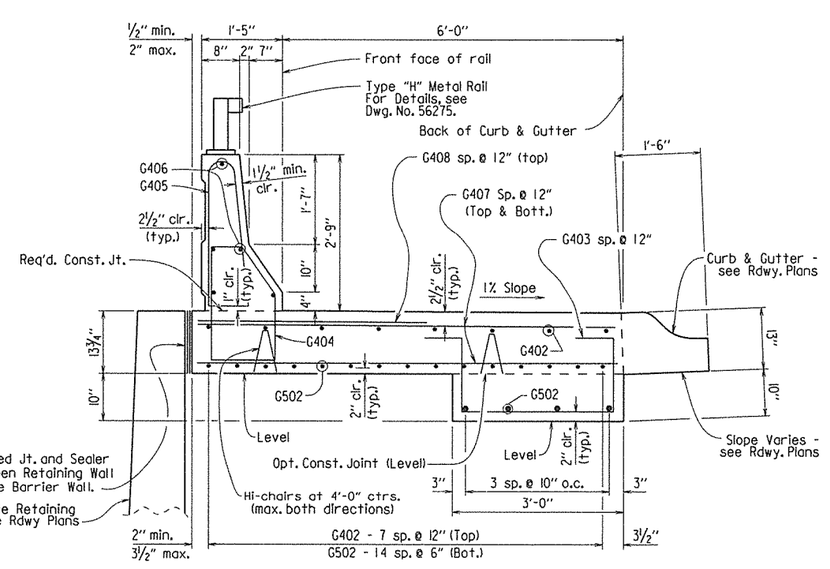
NOTE: Parapet rails may be slipformed.



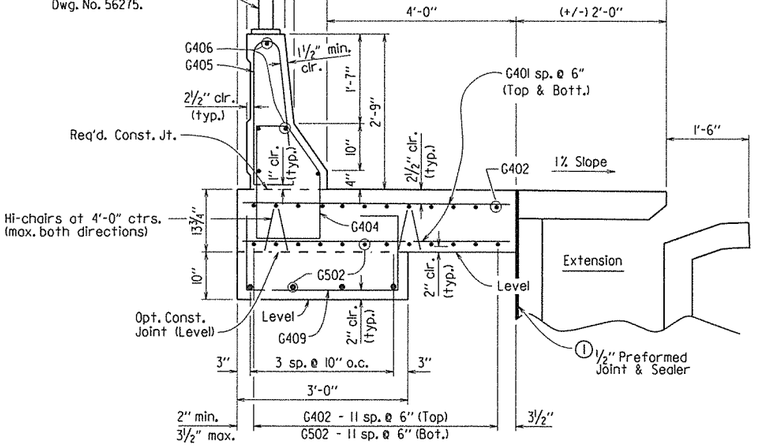

SECTION C-C
(Looking Ahead)
No Scale




SECTION A-A
(Looking Ahead)
No Scale




SECTION B-B
(Looking Ahead)
No Scale




SECTION G-G
(Looking Ahead)
No Scale

① Use ½" Preformed Joint AASHTO M153 Type I and ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02 (h) and 501.05 (j).

② For Rail Enhancement and Details of Optional Slip Forming, see Dwg. No. 56246.

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
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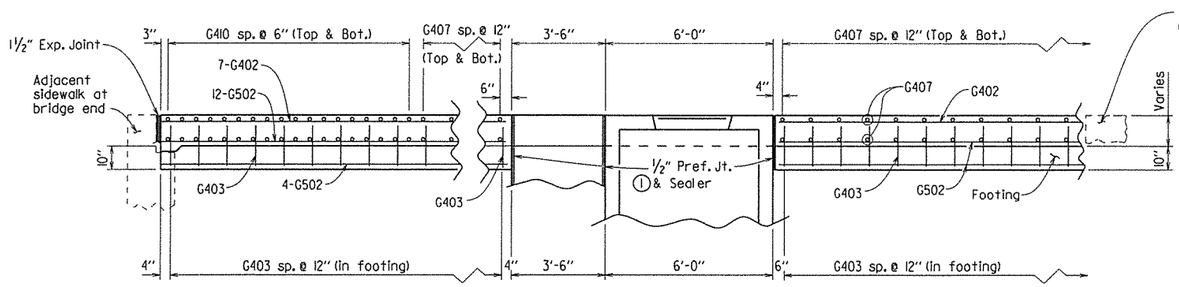
# SHEET 1 OF 2
# DETAILS OF CONCRETE BARRIER WALL
# STA. 219+22.21 TO STA. 221+50.00

SPECIAL DETAILS

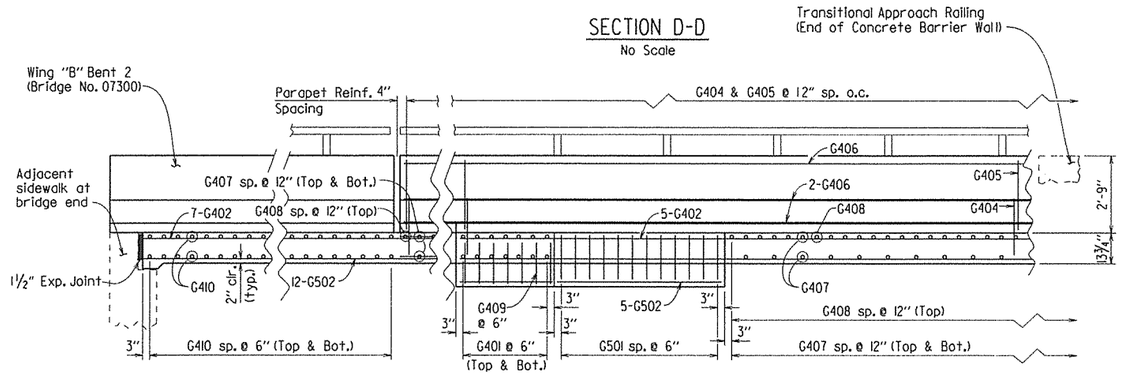
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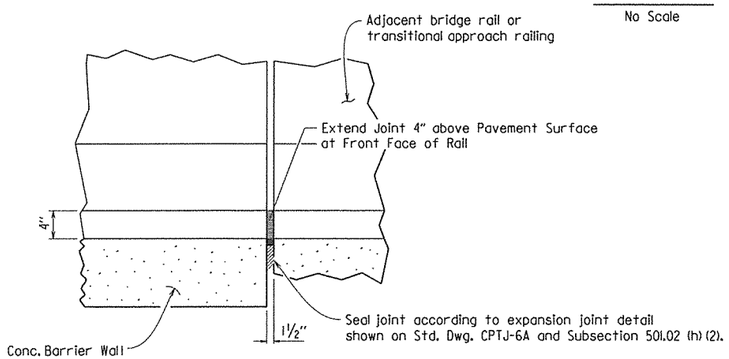
① - CONCRETE BARRIER WALL -



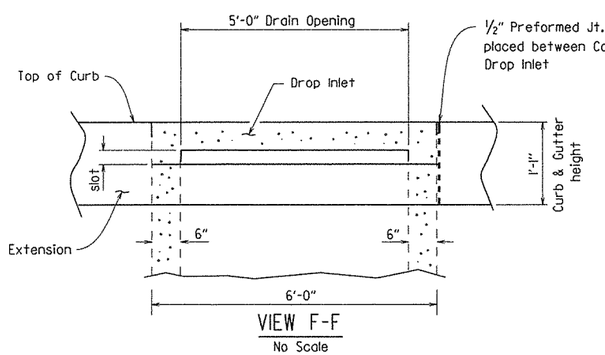

SECTION D-D
No Scale



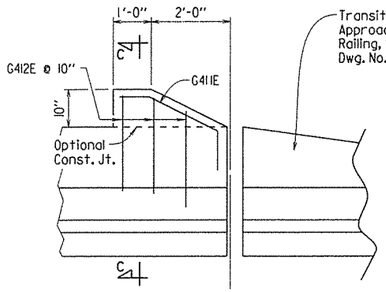

SECTION E-E
No Scale




DETAILS OF 1½" EXPANSION JOINTS
No Scale

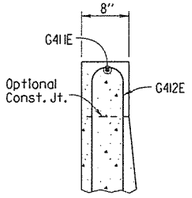



VIEW F-F
No Scale




DETAIL Z
No Scale
Required at end of Concrete Barrier Wall

① Use ½" Preformed Joint AASHTO M153 Type I and ½" x 1" Type 3 or 4 Joint Sealer. See Subsections 501.02 (h) and 501.05 (j).

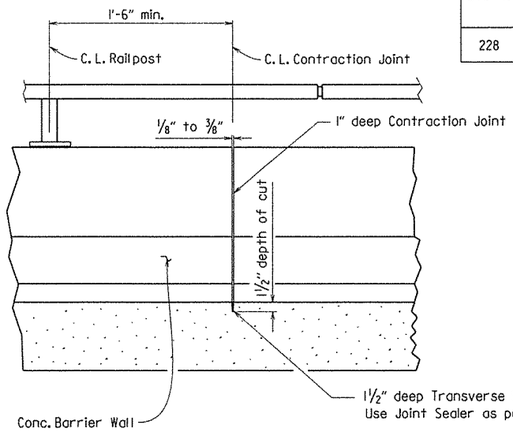



SECTION C-C
No Scale

## TABLE OF QUANTITIES
## (CONCRETE BARRIER WALL TYPE A)

Approximate Quantities For Concrete Barrier Wall Measured along C. L. Bridge Sta. 219+22.21 to 221+50.00
(FOR INFORMATION ONLY)

| Lin. Ft. | Reinforcing Steel - Roadway (Gr. 60) | Class S(AE) Concrete - Roadway | Metal Bridge Railing (Type H) |
|---|---|---|---|
| 228 | 12,260 lbs. | 123 Cu. Yds. | 220 Lin. Ft. |




DETAILS OF CONTRACTION JOINTS
No Scale

NOTE: Contraction Joints shall be constructed at 15'-0" Max. Sp. and coincide with Contraction Joints in Curb & Gutter.

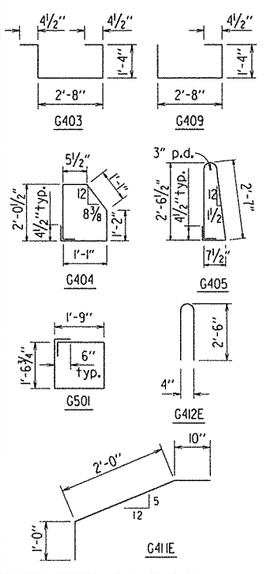
Widths of Contraction Joints in the Concrete Barrier Walls shall match the widths of Contraction Joints used in the Curb & Gutter.

1" depth joints in rail section are not required to be sealed.

## FOR INFORMATION ONLY
## BAR LIST FOR CONC. BARRIER WALL

| Mark | Length | Pin Dia. |
|---|---|---|
| G401 | 5'-3" | Str. |
| G402 | *As Required | Str. |
| G403 | 5'-9" | 2" |
| G404 | 6'-2" | 2" |
| G405 | 6'-4" | 2" |
| G406 | *As Required | Str. |
| G407 | 7'-2" | Str. |
| G408 | 3'-11" | Str. |
| G409 | 5'-6" | 2" |
| G410 | 5'-8" | Str. |
| G411E | 3'-10" | 2" |
| G412E | 5'-2" | 3" |
| | | |
| | | |
| G501 | 7'-2" | 2½" |
| G502 | *As Required | Str. |

Bending Diagram (Dimensions are out to out of bars.)




*Note: Min. Lap Lengths For Longitudinal Bars are as follows:
G404 - 1'-9"
G408 - 1'-9"
G502 - 2'-2"

## GENERAL NOTES

Concrete shall be Class S(AE) (f'c = 4,000 psi)

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

Preformed Joints and Sealer shall not be paid for directly. Expansion Joints and Sealer shall not be paid for directly. Payment for these items shall be considered incidental to the pay items "Concrete Barrier Wall Type A".

Concrete Barrier Wall will be paid for as "Concrete Barrier Wall Type A".

Type "H" Metal Rail shall be paid for as "Metal Bridge Railing (Type H)". See Dwg. No. 56275 for details of Type "H" Metal Rail.

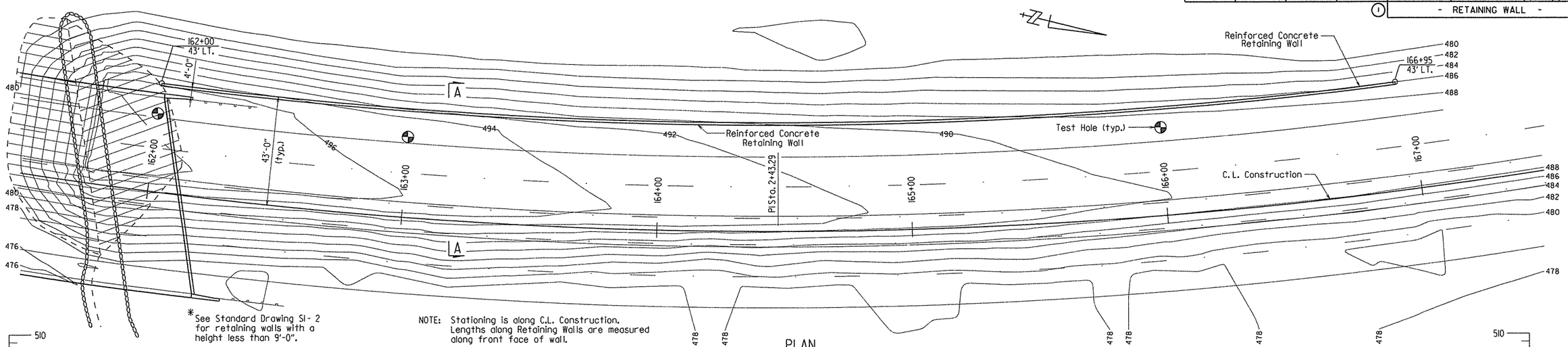
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

# SHEET 2 OF 2
# DETAILS OF CONCRETE BARRIER WALL
# STA. 219+22.21 TO STA. 221+50.00

SPECIAL DETAILS

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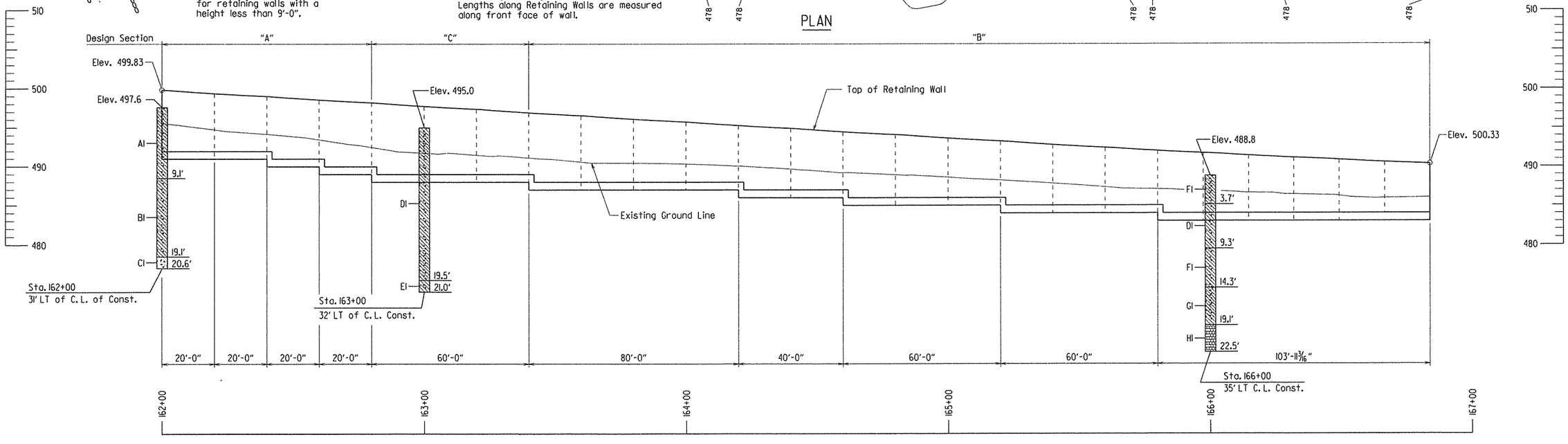
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 27 | 309 |
| | | | | ① | | - RETAINING WALL - | | |




* See Standard Drawing SI-2 for retaining walls with a height less than 9'-0".

NOTE: Stationing is along C.L. Construction. Lengths along Retaining Walls are measured along front face of wall.

PLAN



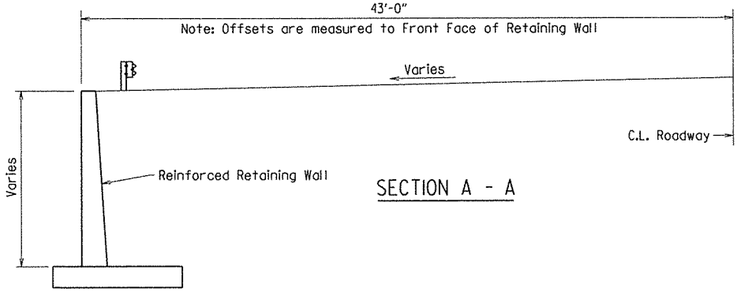

ELEVATION

## BORING LEGEND

A1-Moist, Medium Dense, White Gravel (Chert Fragments) with Brown Clay
B1-Moist, Loose, White Gravel (Chert Fragments) with Brown Clay
C1-Moist to Wet, Dense, White Gravel (Chert Fragments) with Brown Sand
D1-Moist, Medium Dense, Gray Gravel (Chert Fragments) with Reddish Brown Clay
E1-Moist, Medium Stiff, Reddish Brown and Dark Gray Clay with Gravel (Chert Fragments)
F1-Moist, Stiff, Reddish Brown Clay with White Gravel (Chert Fragments)
G1-Wet, Medium Dense, Brown Clayey Sand with White Gravel (Chert Fragments)
H1-DOLOSTONE WITH CHERT LAYERS - Gray, Medium Bedded, Weathered, Moderately Hard, with Slight Dip and Fractured Layers

## "N" VALUES

| Sta. 162+00 - 31' LT of C.L. Const. | Sta. 163+00 - 32' LT C.L. Const. | Sta. 166+00 - 35' LT of C.L. Const. |
|---|---|---|
| 4.6- 5.6, N=12 | 4.5- 5.5, N=19 | 4.8- 5.8, N=15 |
| 9.6- 10.6, N=9 | 9.5- 10.5, N=21 | 9.8- 10.8, N=16 |
| 14.6- 15.6, N=6 | 14.5- 15.5, N=15 | 14.8- 15.8, N=14 |
| 19.6- 20.6, N=31 | 20.0- 21.0, N=5 | 19.1- 19.1, N=60(.01') |




SECTION A - A

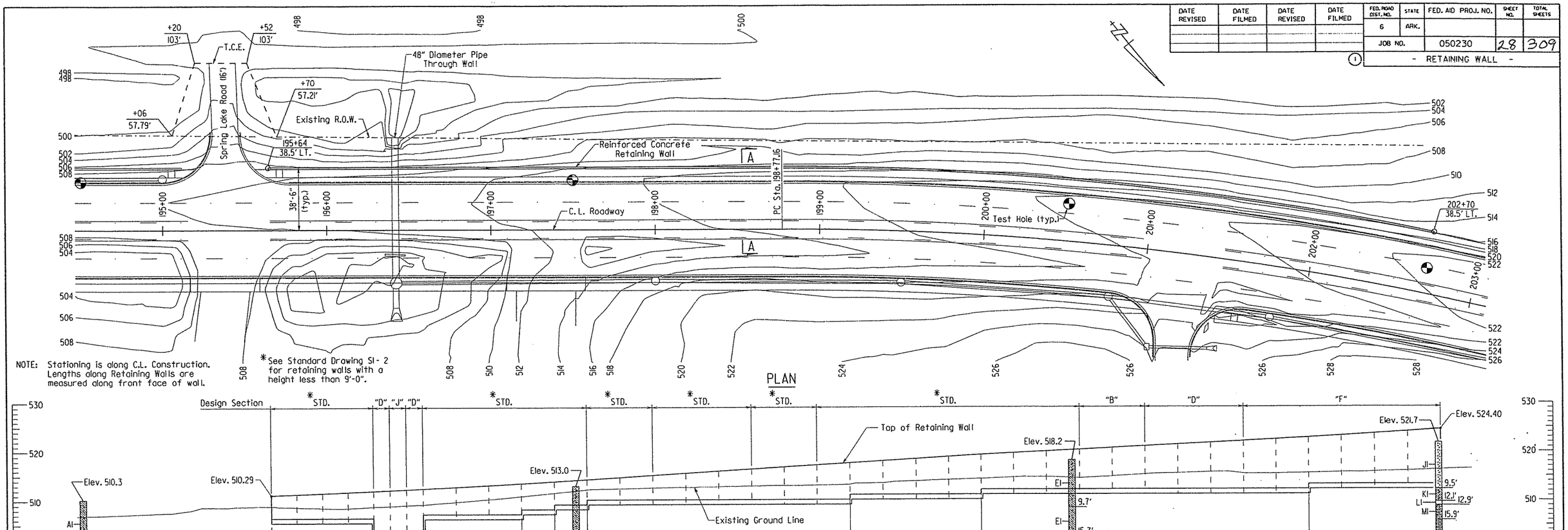
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-24-14
CHARLES R. ELLIS

# SHEET 1 OF 6
# DETAILS OF REINFORCED CONCRETE RETAINING WALL STA. 162+00 TO STA. 166+95

SPECIAL DETAILS

b050230x_rw.dgn

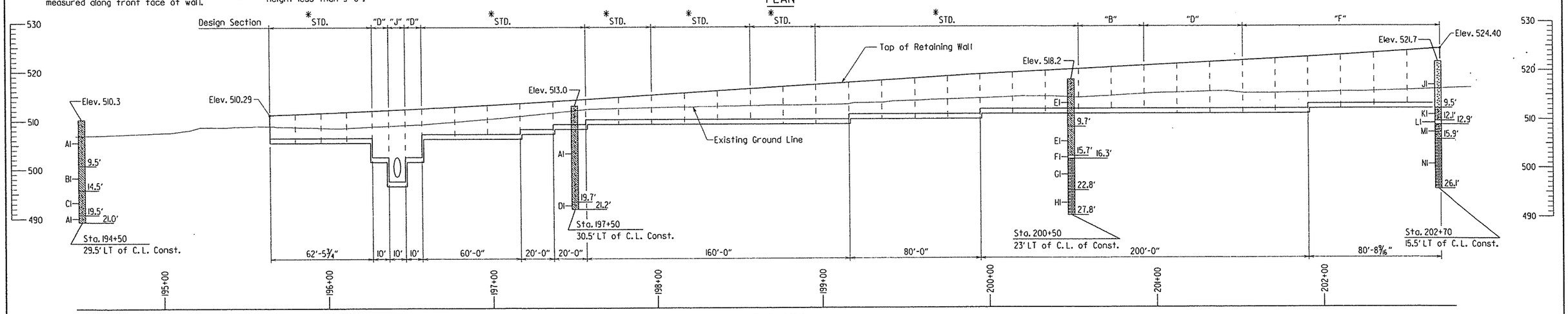
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 28 | 309 |
| | | | | (1) | - RETAINING WALL - | | | |




NOTE: Stationing is along C.L. Construction. Lengths along Retaining Walls are measured along front face of wall.

*See Standard Drawing SI-2 for retaining walls with a height less than 9'-0".

PLAN




ELEVATION

## BORING LEGEND

A1-Moist, Stiff, Reddish Brown Clay with White Gravel (Chert Fragments)
B1-Moist, Medium Stiff, Brown Clay
C1-Moist, Medium Stiff, Reddish Brown Clay with White Gravel (Chert Fragments)
D1-Wet, Soft, Reddish Brown Clay with White Gravel (Chert Fragments)
E1-Moist, Very Stiff, Reddish Brown Clay with White Gravel (Chert Fragments)
F1-Moist, Very Hard, Reddish Brown Clay with Gray Gravel (Cherty Dolostone Fragments)
G1-DOLOSTONE WITH CHERT LAYERS - Gray, Thin Bedded, Weathered, Moderately Hard, with Steep Dip and Fractured Layers
H1-DOLOSTONE WITH CHERT LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Steep Dip and Fractured Layers
J1-Moist, Medium Dense, Gray Gravel (Cherty Dolostone Fragments) with Brown Sand
K1-Moist, Very Stiff, Reddish Brown Sandy Clay with White Gravel (Cherty Dolostone Fragments)
L1-Dolostone Boulders
M1-Soil-filled Cavity (12.9' to 15.9')
N1-DOLOSTONE WITH CHERT LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and Fractured Layers

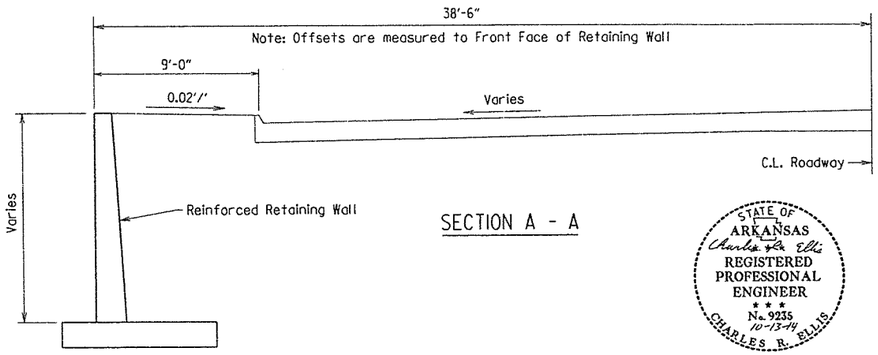
## "N" VALUES

Sta. 194+50 - 29.5' LT of C.L. Const.
5.0- 6.0, N=9
10.0- 11.0, N=8
15.0- 16.0, N=8
20.0- 21.0, N=12

Sta. 197+50 - 30.5' LT C.L. Const.
5.2- 6.2, N=12
10.2- 11.2, N=11
15.2- 16.2, N=9
20.2- 21.2, N=3

Sta. 200+50 - 23' LT of C.L. Const.
5.2- 6.2, N=18
10.2- 11.2, N=16
15.2- 15.8, N=85(7")

Sta. 202+70 - 15.5' LT of C.L. Const.
5.0- 6.0, N=16
10.0- 11.0, N=24
12.6- 12.7, N=60(1")




SECTION A - A

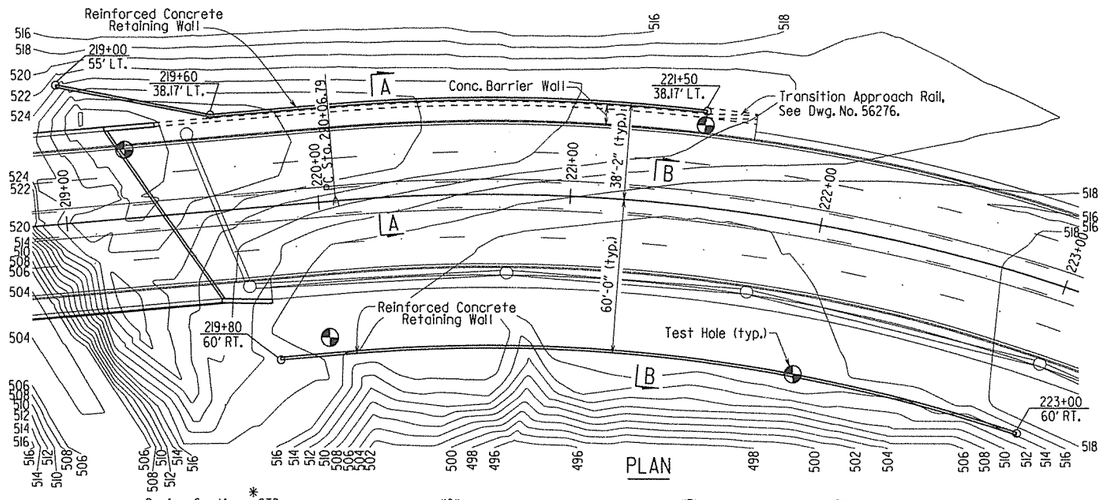
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

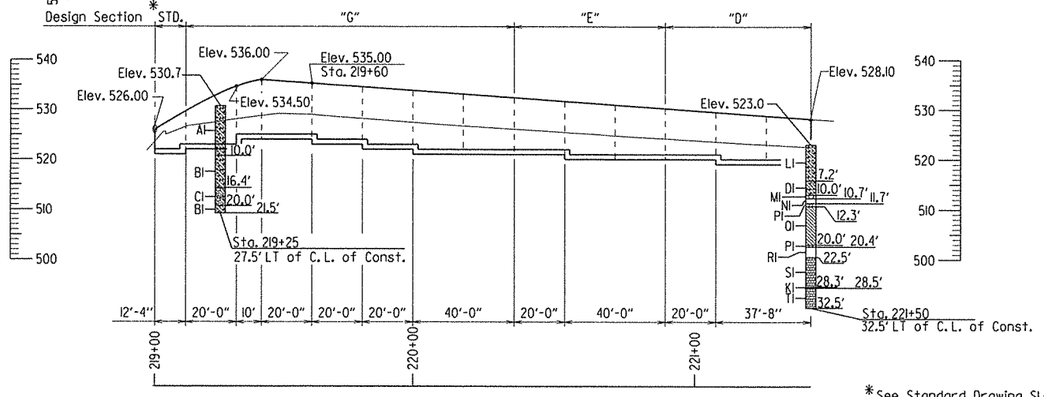
# SHEET 2 OF 6
# DETAILS OF REINFORCED CONCRETE RETAINING WALL
# STA. 195+64 TO STA. 202+70

SPECIAL DETAILS

b050230x_rw.dgn

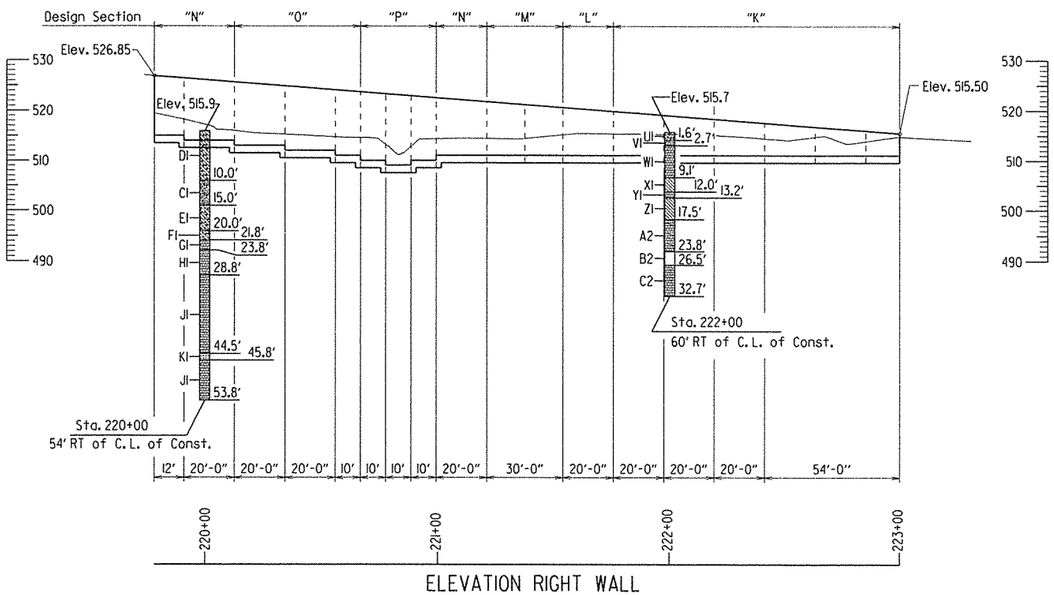
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 29 | 309 |
| | | | | ① | - RETAINING WALL - | | | |




NOTE: Stationing is along C.L. Construction. Lengths along Retaining Walls are measured along front face of wall.

*See Standard Drawing SI-2 for retaining walls with a height less than 9'-0".




## BORING LEGEND

AI-Moist, Stiff, Brown Clay with Gravel (Chert Fragments)
BI-Moist, Very Stiff, Reddish Brown Clay with Gravel (Chert Fragments)
CI-Moist, Very Stiff, Reddish Brown Clay with Gravel (Chert Fragments) and Cobbles
DI-Moist, Stiff, Reddish Brown Clay with Gravel (Chert Fragments)
EI-Moist, Hard, Reddish Brown and Gray Clay with Gravel (Chert Fragments)
FI-Moist, Very Hard, Reddish Brown and Gray Clay with Gravel (Chert and Dolostone Fragments)
GI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Thick Bedded, Weathered, Hard, with Steep Dip and Fractured Layers
HI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Steep Dip and Fractured Layers
JI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Very Thick Bedded, Weathered, Hard, with Steep Dip and Fractured Layers
KI-SHALE - Green, Laminated, Weathered, Medium Hard
LI-Moist, Hard, Reddish Brown Clay with Gravel (Chert Fragments)
MI-Cherty Dolostone Boulder
NI-Cavity (10.7' to 11.7')
PI-Cherty Dolostone Boulder
OI-Soil-Filled Cavity (12.3' to 20.0')
RI-Cavity (20.4' to 22.5')
SI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Medium Bedded, Weathered, Vuggy, Hard, with Slight Dip and Fractured Layers
TI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Medium Bedded, Weathered, Vuggy, Hard, with Slight Dip and occasional Fractured Layers
UI-Moist, Soft, Brown Clay with Gravel
VI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Medium Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip
WI-DOLOSTONE WITH FREQUENT CHERT LAYERS AND TRACE OF CLAY - Light Gray, Medium Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip and Fractured Layers
XI-Soil-Filled Cavity (9.1' to 12.0')
YI-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Medium Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip and Fractured Layers
ZI-Soil-Filled Cavity (13.2' to 17.5')
A2-DOLOSTONE WITH FREQUENT CHERTY CLAY LAYERS - Light Gray, Medium Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip and Fracture
B2-Cavity (23.8' to 26.5')
C2-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip and Fractured Layers

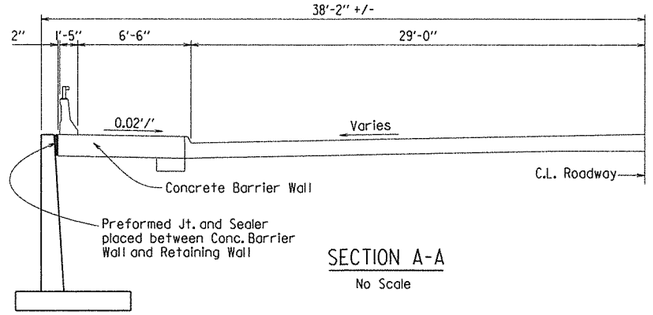
## "N" VALUES

Sta. 219+25 - 27.5' LT of C.L. of Const.
5.5- 6.5, N=14
10.5- 11.5, N=17
15.5- 16.5, N=26
20.5- 21.5, N=16

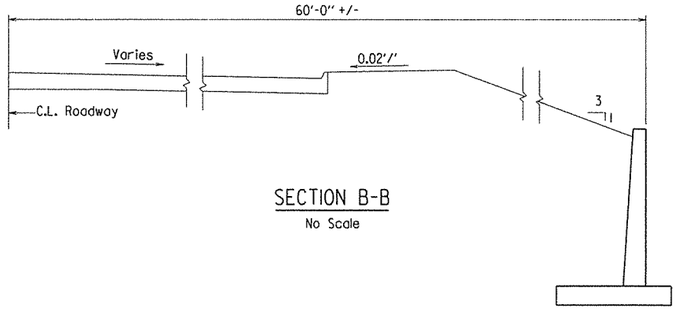
Sta. 220+00 - 54' RT of C.L. of Const.
5.5- 6.5, N=12
10.5- 11.5, N=19
15.5- 16.5, N=40
20.5- 20.8, N=60(3")
21.8- 21.8, N=10(.01")

Sta. 221+50 - 32.5' LT of C.L. of Const.
5.0- 6.0, N=35
7.7- 8.7, N=13
10.0- 10.2, N=60(2")

Sta. 222+00 - 60' RT of C.L. of Const.
1.6- 1.6, N=10(.01")




SECTION A-A
No Scale




SECTION B-B
No Scale

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Charles R. Ellis
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No. 9235
10-13-14
CHARLES R. ELLIS

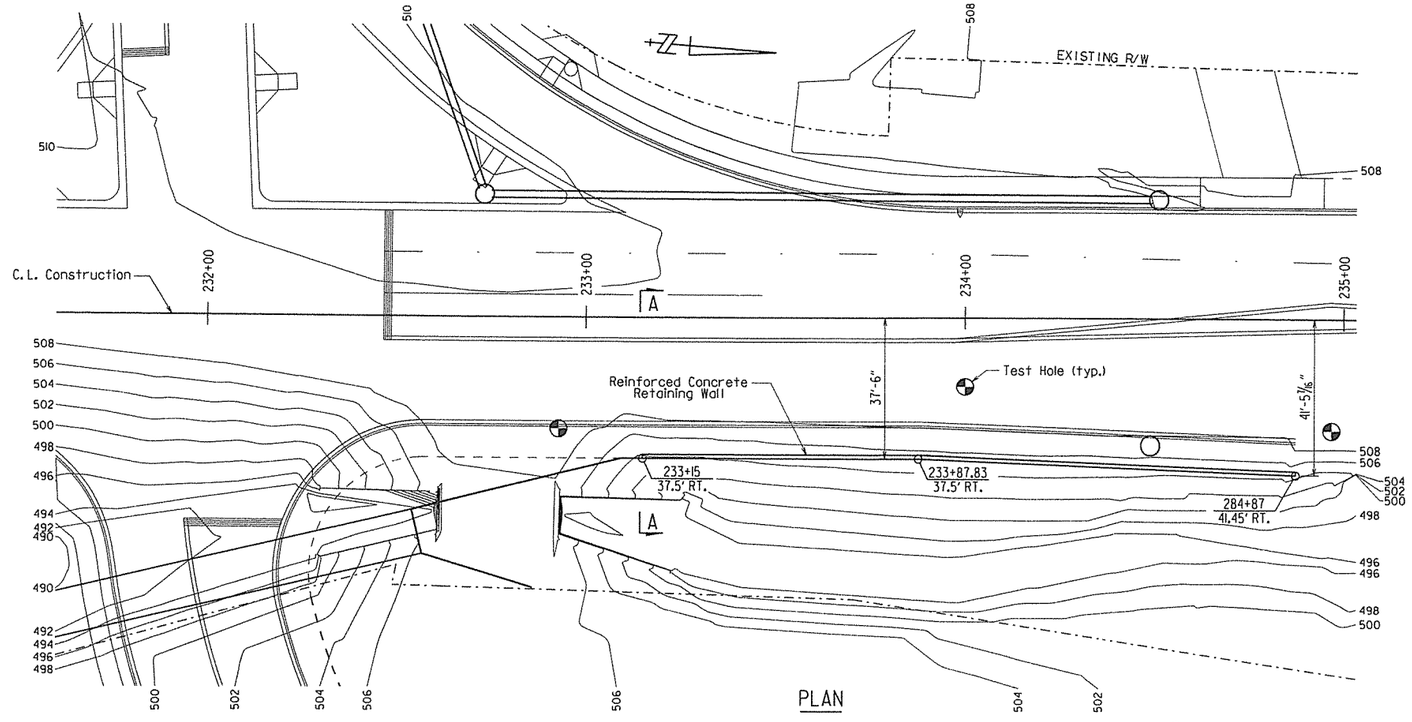
# SHEET 3 OF 6
# DETAILS OF REINFORCED CONCRETE RETAINING WALLS
# STA. 219+00 TO STA. 221+50 LEFT
# STA 219+80 TO STA. 223+00 RIGHT

SPECIAL DETAILS

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| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 30 | 309 |

(1) - SPECIAL DETAILS -




PLAN

NOTE: Stationing is along C.L. Construction.
Lengths along Retaining Walls are measured along front face of wall.

*See Standard Drawing SI-2 for retaining walls with a height less than 9'-0".

## BORING LEGEND

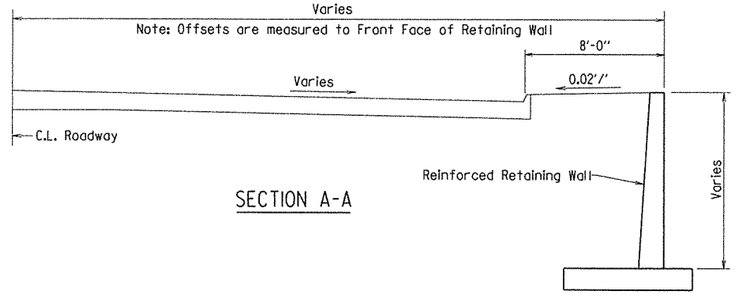
A1-Asphalt Pavement (6")
B1-Moist, Stiff, Reddish Brown Clay with Gravel (Chert Fragments)
C1-Moist, Soft, Reddish Brown Clay with Gravel (Chert Fragments)
D1-Gravel (Dolostone Fragments) with Brown Clay
E1-DOLOSTONE WITH OCCASIONAL CHERT LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and Fractured Layers
F1-Moist, Hard, Brown Clay with Gravel (Chert and Dolostone Fragments)
G1-Moist, Very Dense, White Gravel (Chert Fragments) with Reddish Brown Clay
H1-Dolostone Boulders with Clay Layers
J1-Dolostone Boulder
K1-Soil-filled Cavity (9.2' to 11.9')
L1-Soil-filled Cavity (12.8' to 14.3')
M1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Very Thick Bedded, Weathered, Hard, with Slight Dip
N1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Thin Bedded, Weathered, Hard, with Steep Dip and Fractured Layers
P1-SHALE - Green, Laminated, Weathered, Medium Hard
O1-Concrete Pavement (8")
R1-Moist, Soft to Medium Stiff, Reddish Brown Clay with Gravel (Chert Fragments)

## "N" VALUES

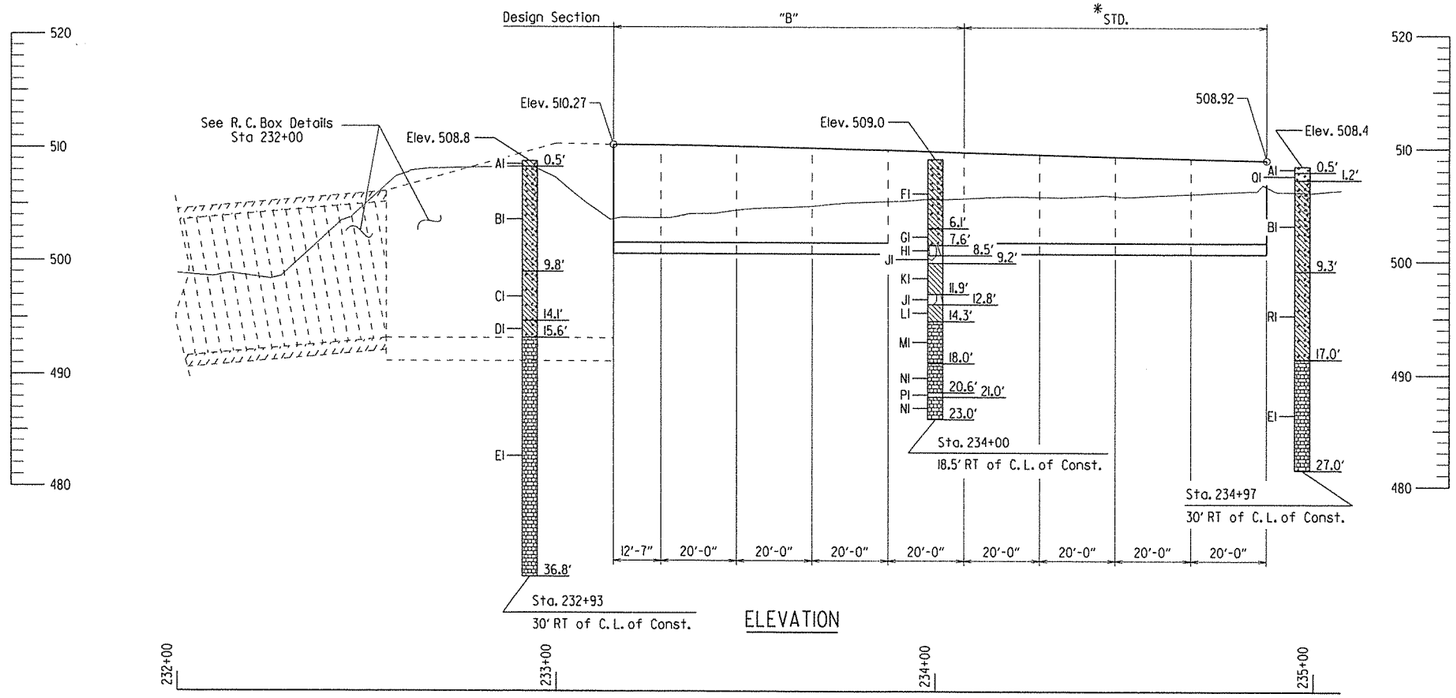
Sta. 232+93 - 30' RT of C.L. of Const.
5.3- 6.3, N=10
10.3- 11.3, N=4
14.6- 15.6, N=5

Sta. 234+00 - 18.5' RT of C.L. of Const.
4.6- 5.6, N=32
6.6- 7.6, N=74

Sta. 234+97 - 30' RT of C.L. of Const.
4.8- 5.8, N=9
9.8- 10.8, N=4
14.8- 15.8, N=6




SECTION A-A




ELEVATION

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
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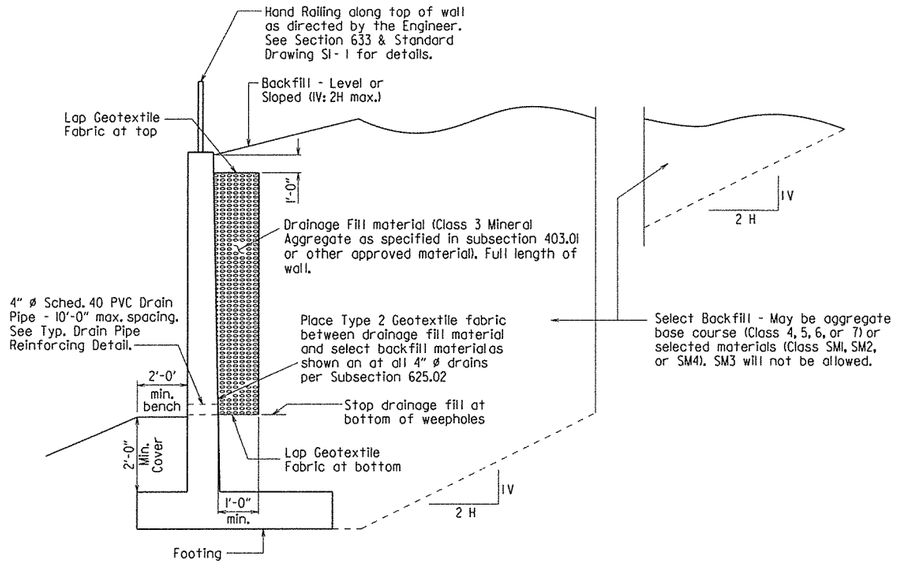
SHEET 4 OF 6
DETAILS OF REINFORCED CONCRETE RETAINING WALL
STA. 233+15 TO STA. 284+87

SPECIAL DETAILS

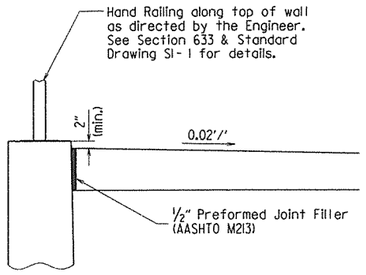
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| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 31 | 309 |

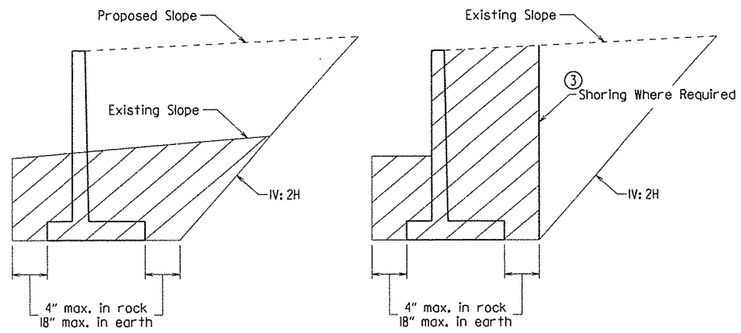
① SPECIAL DETAILS




TYPICAL WALL SECTION
N.T.S




DETAIL OF SIDEWALK JOINT
N.T.S

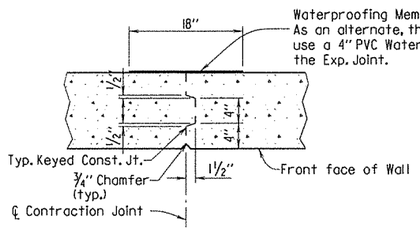



DETAILS OF EXCAVATION
N.T.S

③ The Contractor has the option of using a cut slope and/or shoring to maintain stability of the cut. Any excavation beyond the detailed pay limits or any shoring used will not be paid for directly, but shall be considered incidental to the item "Unclassified Excavation for Structures - Bridge".

NOTE: Hatched area denotes maximum limits of pay excavation.

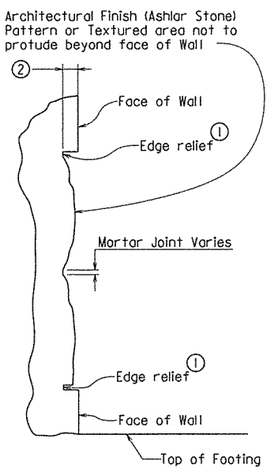
Excavation required for area of Granular Backfill will be paid for under the pay item "Unclassified Excavation".



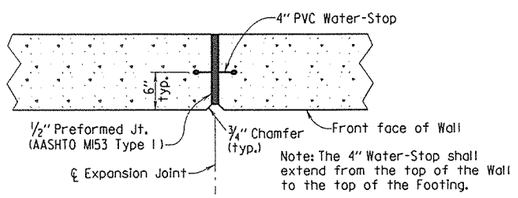

TYPICAL CONTRACTION JOINT DETAIL
N.T.S.
Note: 20'-0" Max Sp. between Contraction Joints. Horizontal reinforcement shall be continuous through Contraction joints.

① Provide edge relief around perimeter of Texture. Edge relief dimensions shall match manufactures edge distance.

② Additional concrete required for architectural finish. See SP Job No. 050230 "Architectural Finish"




SECTION VIEW
N.T.S.




TYPICAL EXPANSION JOINT DETAIL
N.T.S.
Note: 60'-0" Max Sp. between Expansion Joints. Terminate horizontal reinforcement 2" from expansion jt.

## APPROXIMATE QUANTITIES FOR RETAINING WALL

(FOR INFORMATION ONLY)

| WALL | Length of Wall | Hand Railing | Reinforcing Steel - Roadway (Gr. 60) | Class S Concrete - Roadway | Unclassified Excavation for Structures - Roadway | Architectural Finish | Textured Coating Finish |
|---|---|---|---|---|---|---|---|
| STA. 162+00 | 484 ft | - | 28,100 lbs. | 302 Cu. Yds. | 1,131 Cu. Yds. | 3,744 Sq. Ft. | 2,988 Sq. Ft. |
| STA. 195+64 | 694 ft | 694 ft | 38,780 lbs. | 418 Cu. Yds. | 1,313 Cu. Yds. | 5,338 Sq. Ft. | 3,946 Sq. Ft. |
| STA. 219+00 | 260 ft | - | 28,280 lbs. | 246 Cu. Yds. | 729 Cu. Yds. | 2,576 Sq. Ft. | 1,817 Sq. Ft. |
| STA. 219+80 | 296 ft | 296 ft | 22,880 lbs. | 280 Cu. Yds. | 921 Cu. Yds. | 2,875 Sq. Ft. | 2,128 Sq. Ft. |
| STA. 233+15 | 173 ft | 173 ft | 9,700 lbs. | 104 Cu. Yds. | 457 Cu. Yds. | 1,389 Sq. Ft. | 941 Sq. Ft. |

Tabular Data By: TMG Date: 8/19/2014

Checked By: LJB Date: 9/17/2014

Notes:

Wall texture shall be applied to the exposed surfaces of wall in accordance with SP Job No. 050230 "Architectural Finish" and as shown in the plans. Care shall be taken with form liner handling and installation to insure aesthetic quality of the wall texturing is maintained. Where form liner panels require modification to conform to the location, dimensions and lines shown in the plans, the Contractor shall provide edge relief matching that of the unaltered form liner. Payment for wall texturing shall be in accordance with SP Job No. "Architectural Finish".

No adjustments will be made in concrete volume due to the use of "Architectural Finish". Class "S" Concrete shall be measured in accordance with Subsection 802.24(a). Care shall be taken in placing concrete to avoid segregation and to eliminate flow lines.

Class 3 Textured Coating Finish shall be applied to wall surfaces as specified in SP Job No. 050230 "Textured Coating Finish" and in accordance with Subsection 802.19(b)(3).

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

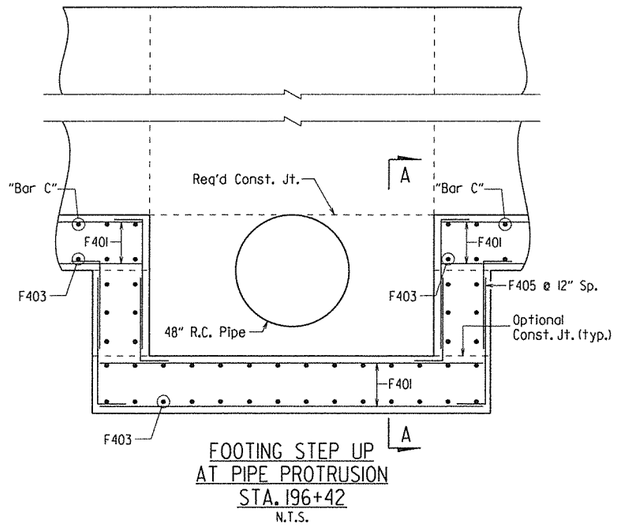
SHEET 5 OF 6
DETAILS OF REINFORCED CONCRETE RETAINING WALLS

SPECIAL DETAILS

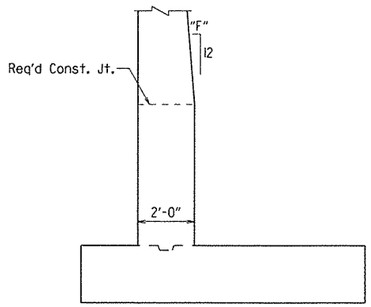
PRINT DATE: 10/13/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 32 | 359 |

(1) SPECIAL DETAILS




FOOTING STEP UP
AT PIPE PROTRUSION
STA. 196+42
N.T.S.




SECTION A - A
N.T.S.

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2014 Edition, with applicable supplemental specifications and special provisions.

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

SEISMIC ZONE: 1

CONCRETE: All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Exposed corners to be chamfered ¾" unless otherwise noted.

REINFORCING STEEL: Reinforcing steel shall conform to AASHTO M31 or M53, Grade 60 (fy = 60,000 psi).

TEXTURE COATING FINISH: All exposed surfaces of the concrete retaining wall shall be given a Class 3 texture coating finish, as specified in SP Job No. 050230 "Texture Coating Finish," and in accordance with Subsection 802.19(3).

FOOTINGS: Top of footings for retaining walls shall be set 2'-0" below finished ground surface or lower. Footings shall be founded into material designated as stiff clay on the borings legend. Foundations for footings shall be prepared in accordance with Section 801.04 concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting.

BACKFILL: Granular backfill for retaining wall shall consist of Class 7 Aggregate Base Course or other approved material and shall be paid for as Aggregate Base Course (Class 7).

MISC. ITEMS: Geotextile fabric, waterstops, preformed joint material, waterproofing membrane, and the drain pipes shall not be paid for directly, but shall be considered subsidiary to other items of the contract.

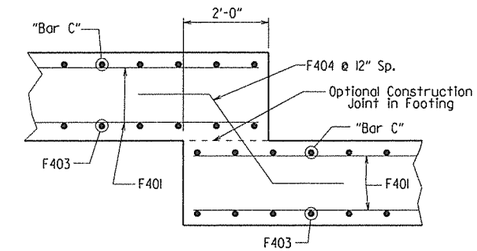
BORING LOGS: Boring logs, including laboratory results, may be obtained from the Programs and Contracts Division.

See Sheets 1 - 4 for retaining wall details, elevation views and additional information.

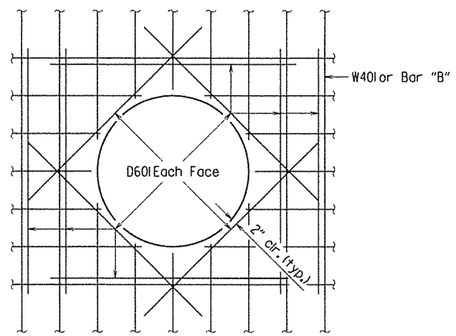
The Engineer shall be notified if changes in footing elevations result in a total wall height greater than 16'-0".

BAR LIST

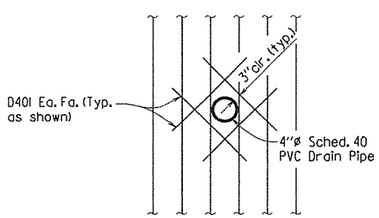
| MARK | LENGTH | A | B | P.D. | BENDING DIAGRAMS |
|---|---|---|---|---|---|
| W401 | ("H"-"D"-3") | | | Str. | Dimensions are out to out of bars. |
| W402 | AS REQUIRED | | | Str. | |
| | | | | | F402 & F405 |
| F401 | AS REQUIRED | | | Str. | |
| F402 | 3'-2" | 8" | 2'-6" | 3" | |
| F403 | ("B"- 6") | | | Str. | |
| F404 | 5'-9" | 1'-6" | 2'-9" | 3" | |
| F405 | 5'-6" | 1'-6" | 5'-0" | 3" | |
| | | | | | F404 |
| D401 | 2'-6" | | | Str. | |
| | | | | | |
| D601 | 5'-6" | | | Str. | |
| | | | | | |
| "Bar A" | ("H"-"D"-3") | | | Str. | |
| | | | | | " Bar B" |
| "Bar B" | 4'-2" | 8" | 3'-6" | 3" | |
| | | | | | |
| "Bar C" | ("B"- 6") | | | Str. | |



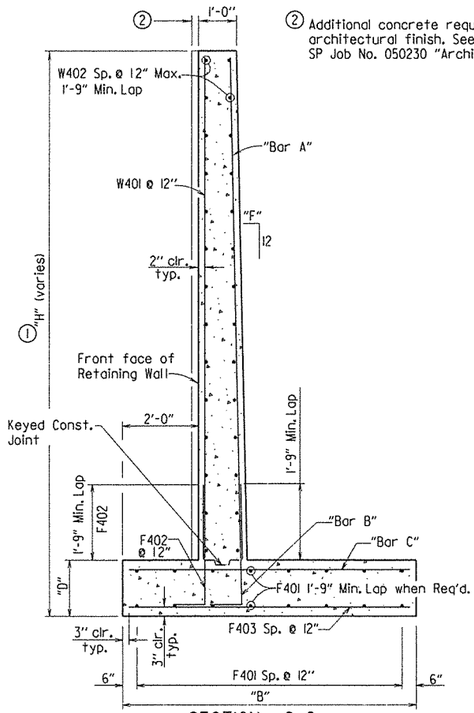

FOOTING STEP DETAIL
N.T.S.




STA. 196+42 48" R.C. PIPE PROTRUSION DETAIL
N.T.S.




TYPICAL DRAIN PIPE REINFORCING DETAIL
N.T.S




SECTION G-G
N.T.S

(2) Additional concrete required for architectural finish. See SP Job No. 050230 "Architectural Finish"

TABLE OF RETAINING WALL VARIABLES

| Section | (1) "H" | "B" | "D" | "Bar A" Size @ Sp. | "Bar B" Size @ Sp. | "Bar C" Size @ Sp. | Batter "F" |
|---|---|---|---|---|---|---|---|
| "A" | 9'-6" | 7'-0" | 1'-0" | #4 @ 12" | #4 @ 12" | #5 @ 8" | 1/4 |
| "B" | 10'-0" | 7'-0" | 1'-0" | #4 @ 12" | #4 @ 12" | #5 @ 8" | 1/4 |
| "C" | 10'-6" | 7'-0" | 1'-0" | #4 @ 12" | #4 @ 12" | #5 @ 8" | 1/4 |
| "D" | 11'-0" | 7'-0" | 1'-0" | #4 @ 12" | #4 @ 12" | #5 @ 9" | 1/2 |
| "E" | 12'-0" | 7'-0" | 1'-6" | #4 @ 12" | #4 @ 12" | #5 @ 12" | 1/2 |
| "F" | 12'-6" | 8'-0" | 1'-6" | #4 @ 10" | #4 @ 10" | #5 @ 9" | 1/2 |
| "G" | 13'-0" | 8'-0" | 1'-6" | #4 @ 9" | #4 @ 9" | #5 @ 9" | 1/2 |
| "H" | 14'-0" | 8'-0" | 1'-6" | #4 @ 7" | #4 @ 7" | #5 @ 9" | 1/2 |
| "I" | 15'-0" | 8'-0" | 1'-6" | #4 @ 6" | #4 @ 6" | #5 @ 9" | 1/2 |
| "J" | 16'-0" | 9'-0" | 1'-6" | #4 @ 6" | #4 @ 6" | #5 @ 7" | 3/4 |
| "K" | 11'-0" | 7'-0" | 1'-6" | #4 @ 9" | #4 @ 9" | #5 @ 9" | 1/2 |
| "L" | 12'-0" | 7'-0" | 1'-6" | #4 @ 6" | #4 @ 6" | #5 @ 9" | 1/2 |
| "M" | 13'-0" | 7'-0" | 1'-6" | #4 @ 6" | #4 @ 6" | #5 @ 9" | 1/2 |
| "N" | 14'-0" | 8'-0" | 1'-6" | #4 @ 6" | #4 @ 6" | #5 @ 7" | 1/2 |
| "O" | 15'-0" | 9'-0" | 1'-6" | #5 @ 7" | #5 @ 7" | #7 @ 7" | 1/2 |
| "P" | 16'-0" | 10'-0" | 1'-6" | #5 @ 7" | #5 @ 7" | #7 @ 6" | 3/4 |

(1) Design height of the Section. Actual heights may vary in the field.

NOTE: See Standard Drawing SI-2 for retaining walls with a height less than 9'-0".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

# SHEET 6 OF 6
# DETAILS OF REINFORCED CONCRETE RETAINING WALLS

## SPECIAL DETAILS

PRINT DATE: 10/13/2014

STAGE 1 QUANTITIES:
TEMPORARY EROSION CONTROL QUANTITIES:

SAND BAG DITCH CHECKS = 132 BAG
ROCK DITCH CHECKS = 126 CU. YD.
DROP INLET SILT FENCE = 800 LIN. FT.
SILT FENCE = 4860 LIN. FT.
SEDIMENT BASIN = 859 CU. YD.

TEMPORARY EROSION CONTROL GENERAL NOTES:

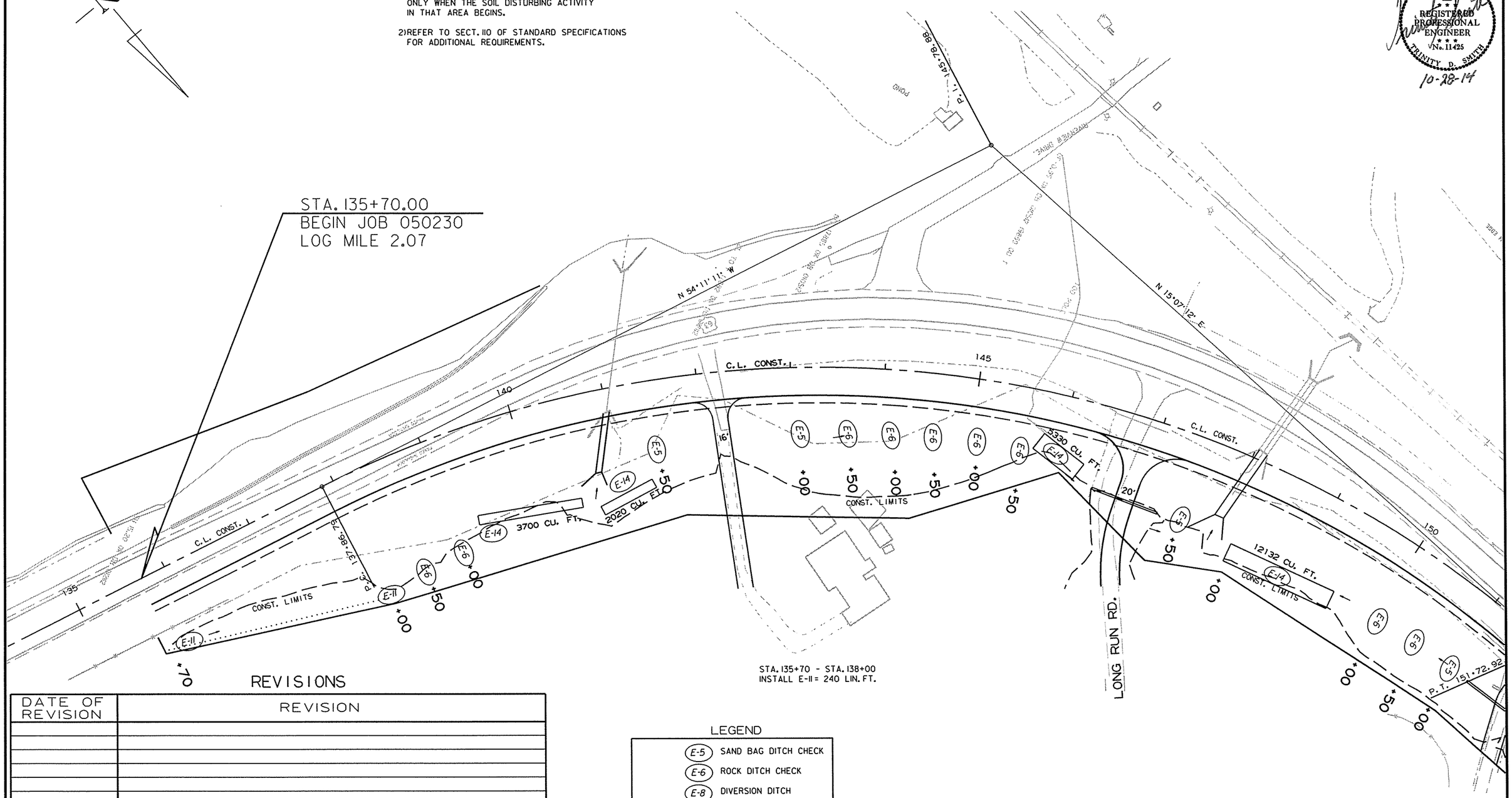
1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

| 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. | | 050230 | 33 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




STA. 135+70 - STA. 138+00
INSTALL E-11 = 240 LIN. FT.

REVISIONS

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LEGEND

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|---|---|
| E-5 | SAND BAG DITCH CHECK |
| E-6 | ROCK DITCH CHECK |
| E-8 | DIVERSION DITCH |
| E-11 | SILT FENCE |
| E-12 | SLOPE DRAIN |
| E-14 | SEDIMENT BASIN |

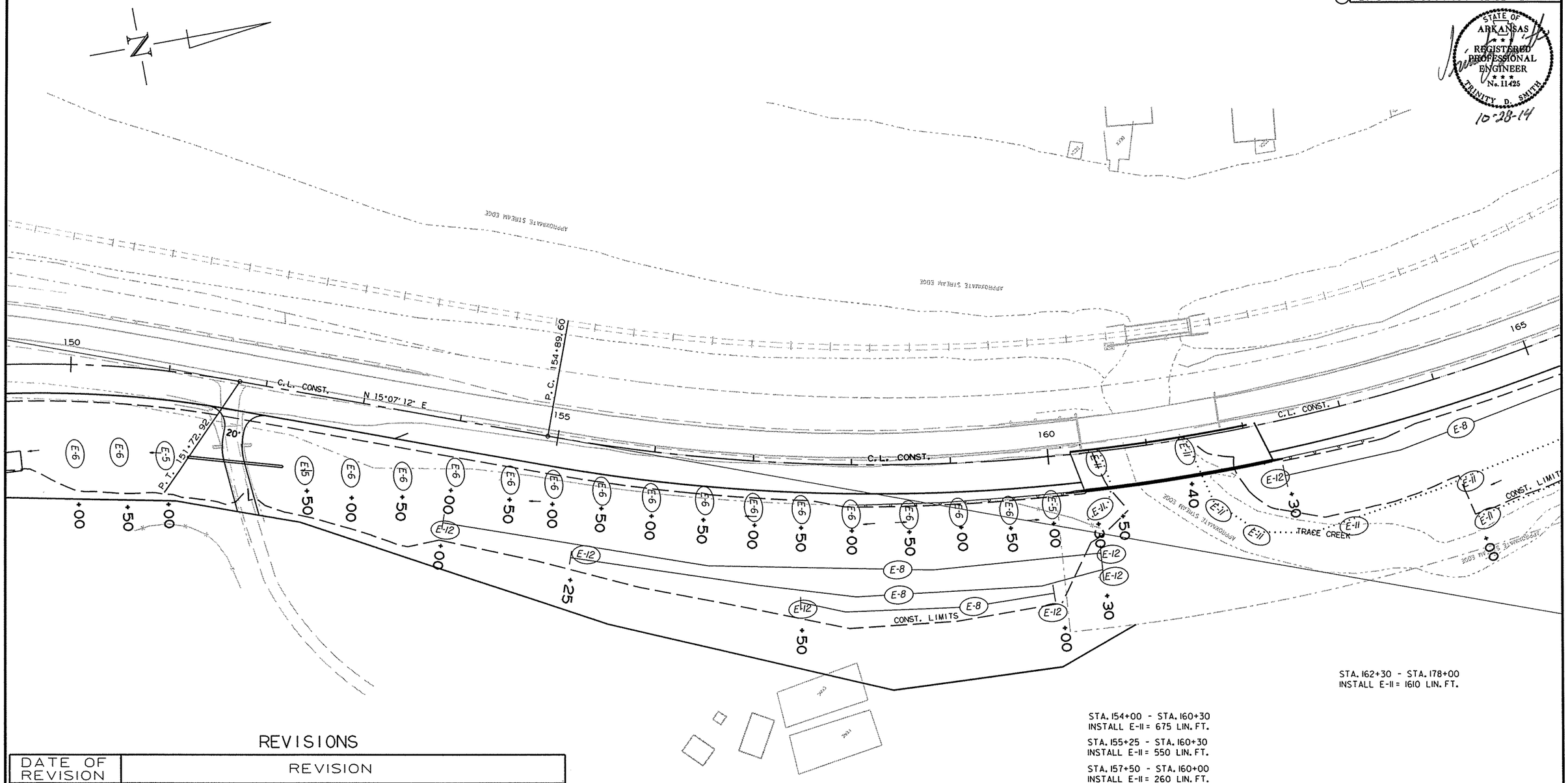
TEMPORARY EROSION CONTROL DETAILS
STAGE 1

8/26/2014
R050230.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. | | 050230 | 34 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




STA. 162+30 - STA. 178+00
INSTALL E-11 = 1610 LIN. FT.

STA. 154+00 - STA. 160+30
INSTALL E-11 = 675 LIN. FT.

STA. 155+25 - STA. 160+30
INSTALL E-11 = 550 LIN. FT.

STA. 157+50 - STA. 160+00
INSTALL E-11 = 260 LIN. FT.

STA. 161+40 - STA. 165+00
DIVERSION DITCH = 545 LIN. FT.

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LEGEND

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

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

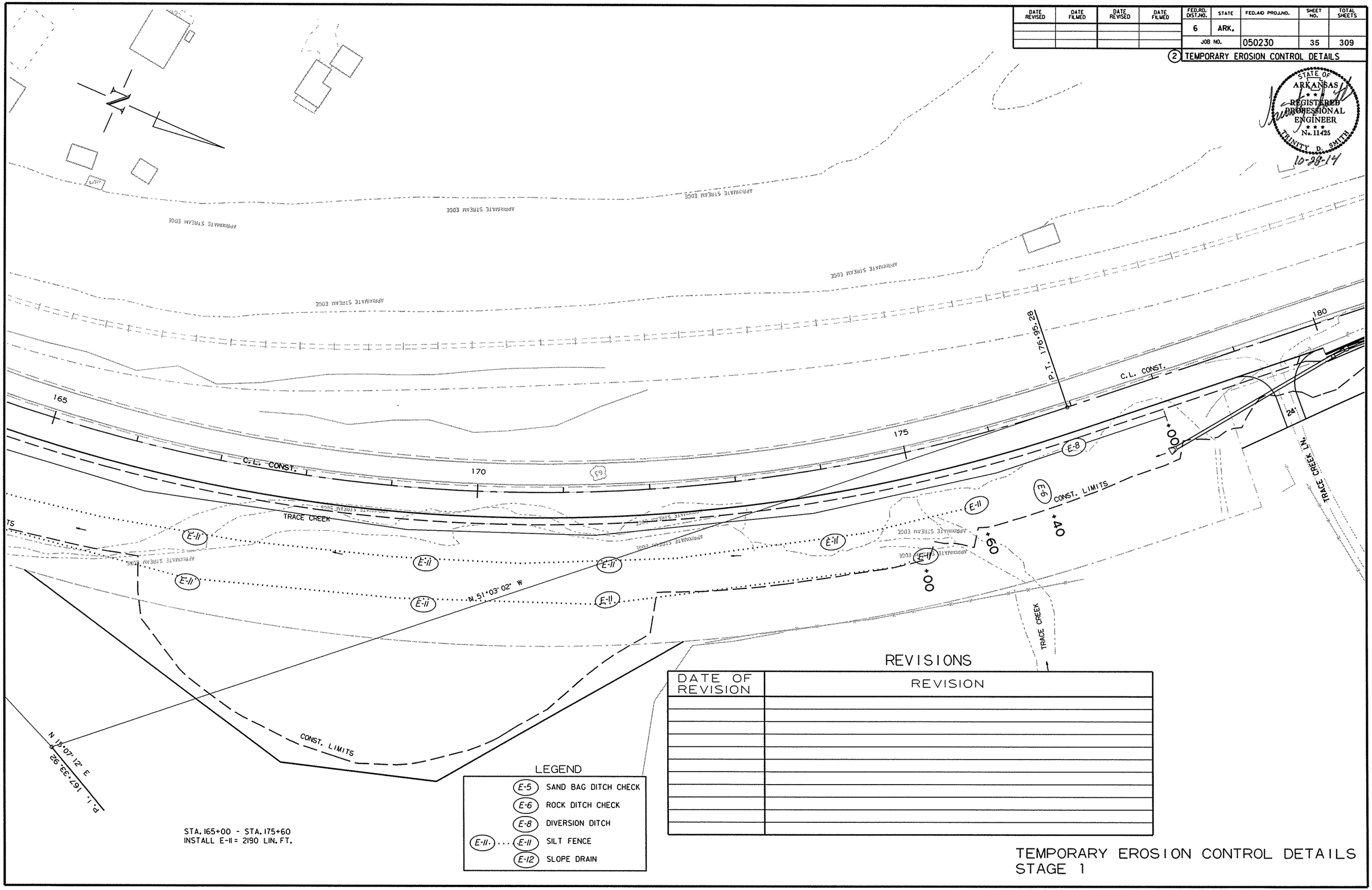
8/26/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 35 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

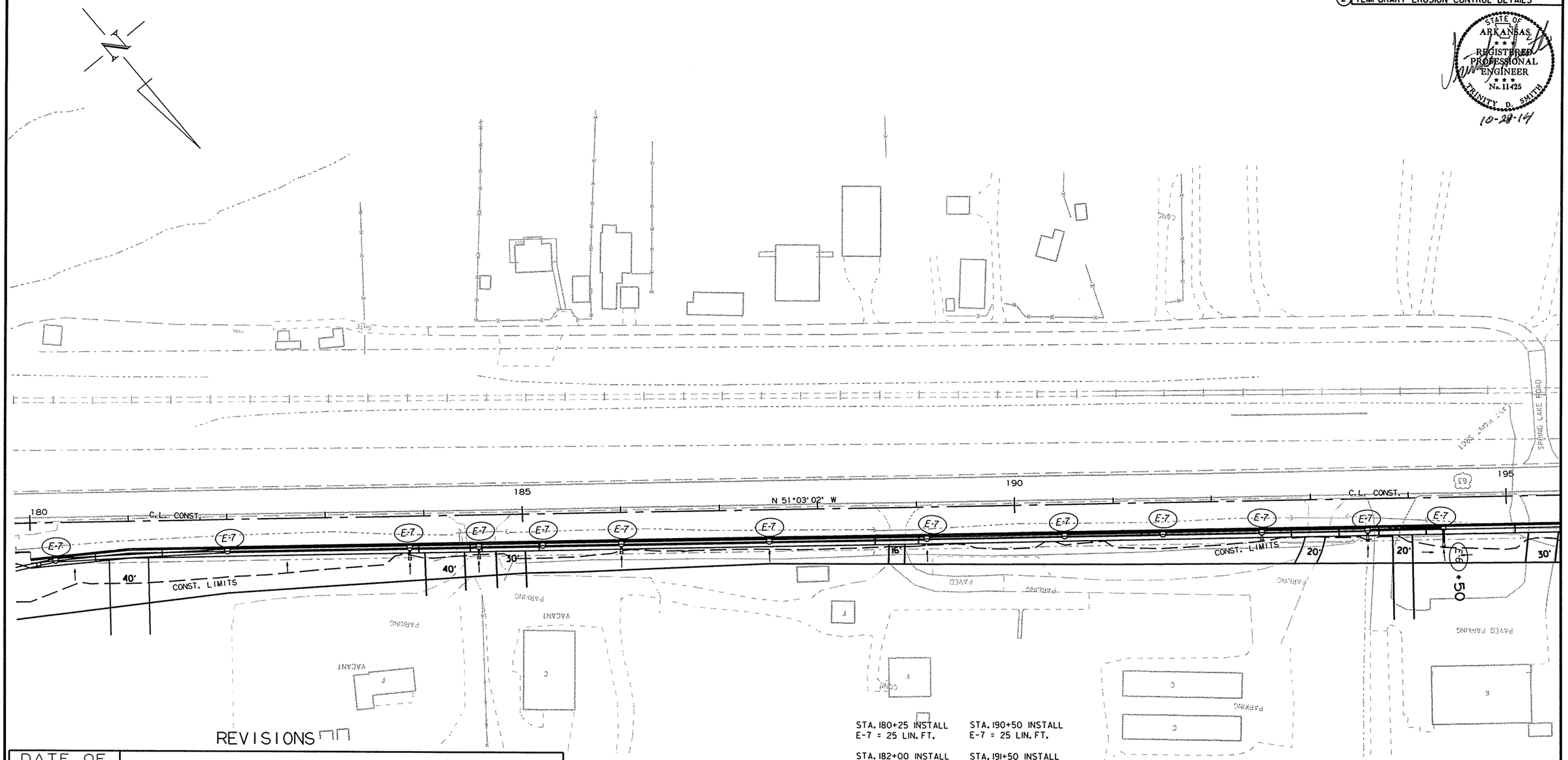
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14


APPROXIMATE STREAM EDGE
APPROXIMATE STREAM EDGE
APPROXIMATE STREAM EDGE

| 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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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 36 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




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LEGEND

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|---|---|
| E-5 | SAND BAG DITCH CHECK |
| E-6 | ROCK DITCH CHECK |
| E-7 | DROP INLET SILT FENCE |

STA. 180+25 INSTALL E-7 = 25 LIN. FT.

STA. 182+00 INSTALL E-7 = 25 LIN. FT.

STA. 184+55 INSTALL E-7 = 25 LIN. FT.

STA. 185+20 INSTALL E-7 = 25 LIN. FT.

STA. 186+00 INSTALL E-7 = 25 LIN. FT.

STA. 187+50 INSTALL E-7 = 25 LIN. FT.

STA. 189+10 INSTALL E-7 = 25 LIN. FT.

STA. 190+50 INSTALL E-7 = 25 LIN. FT.

STA. 191+50 INSTALL E-7 = 25 LIN. FT.

STA. 192+50 INSTALL E-7 = 25 LIN. FT.

STA. 193+58 INSTALL E-7 = 25 LIN. FT.

STA. 194+35 INSTALL E-7 = 25 LIN. FT.

# TEMPORARY EROSION CONTROL DETAILS STAGE 1

8/26/2014

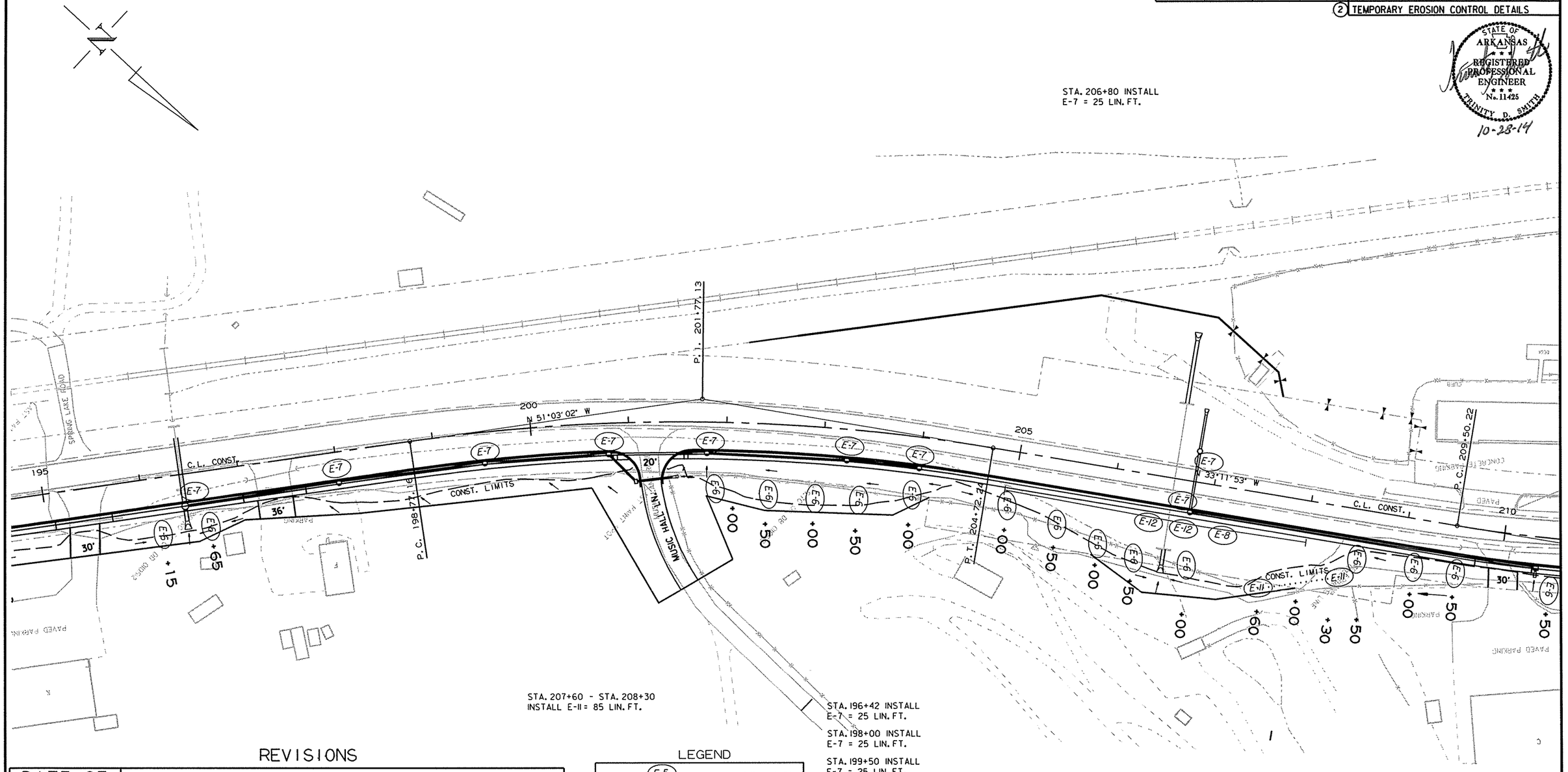
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 37 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 206+80 INSTALL
E-7 = 25 LIN. FT.




STA. 207+60 - STA. 208+30
INSTALL E-11 = 85 LIN. FT.

STA. 196+42 INSTALL
E-7 = 25 LIN. FT.

STA. 198+00 INSTALL
E-7 = 25 LIN. FT.

STA. 199+50 INSTALL
E-7 = 25 LIN. FT.

STA. 200+79 INSTALL
E-7 = 25 LIN. FT.

STA. 201+80 INSTALL
E-7 = 25 LIN. FT.

STA. 203+25 INSTALL
E-7 = 25 LIN. FT.

STA. 204+00 INSTALL
E-7 = 25 LIN. FT.

STA. 206+80 INSTALL
E-7 = 25 LIN. FT.

STA. 205+00 - STA. 208+00
DIVERSION DITCH = 310 LIN. FT.

## REVISIONS

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## 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 |

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

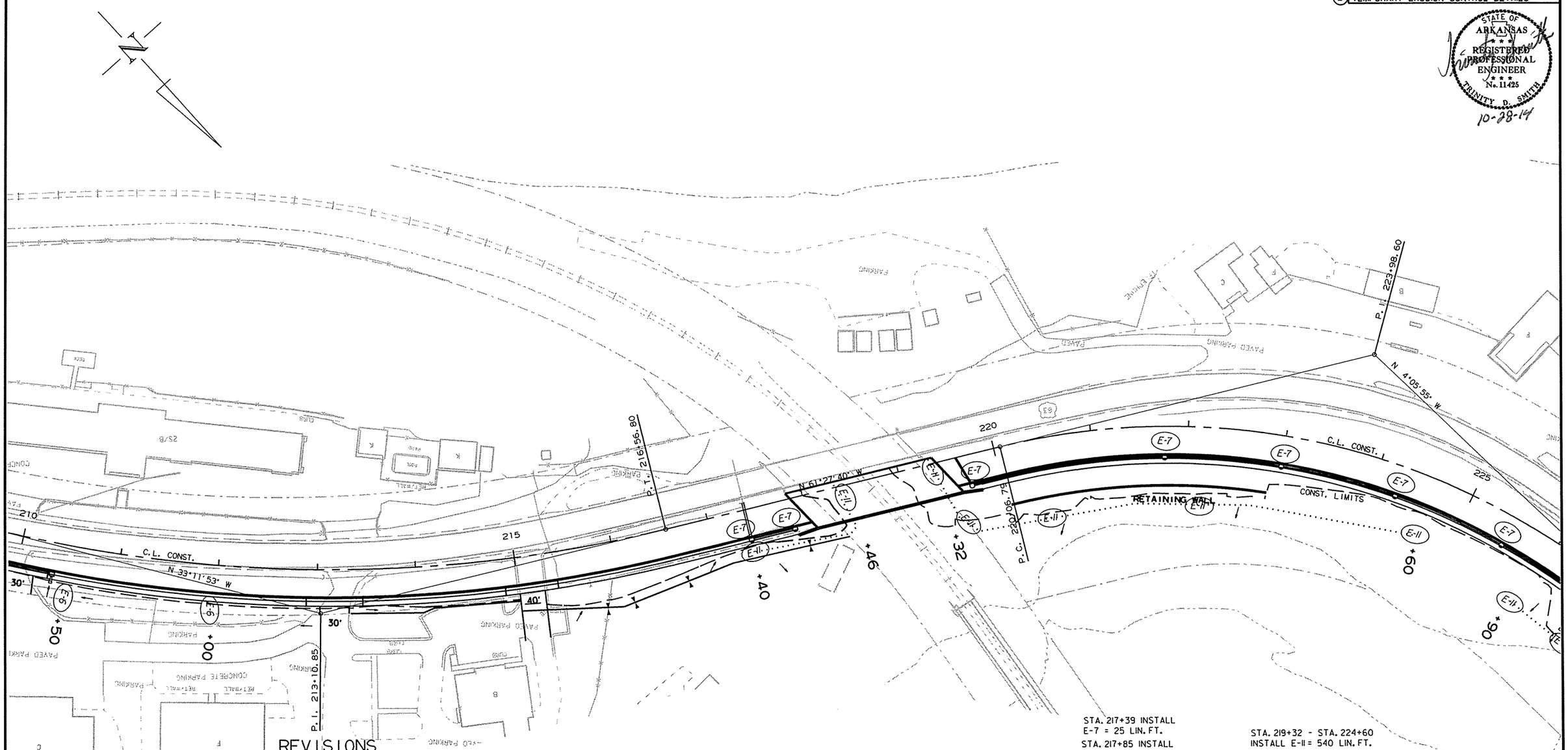
8/26/2014

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 38 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




REVISIONS

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STA. 217+40 - STA. 218+46
INSTALL E-11 = 160 LIN. FT.

LEGEND

| | |
|---|---|
| E-6 | ROCK DITCH CHECK |
| E-7 | DROP INLET SILT FENCE |
| E-11 ... E-11 | SILT FENCE |

STA. 217+39 INSTALL
E-7 = 25 LIN. FT.

STA. 217+85 INSTALL
E-7 = 25 LIN. FT.

STA. 219+70 INSTALL
E-7 = 25 LIN. FT.

STA. 221+75 INSTALL
E-7 = 25 LIN. FT.

STA. 223+00 INSTALL
E-7 = 25 LIN. FT.

STA. 224+25 INSTALL
E-7 = 25 LIN. FT.

STA. 219+32 - STA. 224+60
INSTALL E-11 = 540 LIN. FT.

STA. 205+00 - STA. 208+00
DIVERSION DITCH = 310 LIN. FT.

# TEMPORARY EROSION CONTROL DETAILS
# STAGE 1

8/26/2014

R050230.DGN

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 39 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

P. C. 302+95.08
P. I. 303+52.33
P. T. 304+09.45
N 89°52'08" E
N 83°04'24" E
305
P. C. 232+46.56
P. T. 233+66.87
P. I. 235+56.37
N 4°42'00" W
C. L. CONST.
230
N 4°05'56" W
225
P. T. 227+23.83
+40
+60
+90
+20
+85
+25
+75
P. I. 123+06.72
P. C. 233+86.93
RETAINING WALL
CONST. LIMITS
P. T. 237+25.78
P. I. 307+67.00
N 9°55'18" E
P. T. 308+69.12
40'
E-7
E-11
E-14
E-H
E-J
PAVED PARKING
CONCRETE PARKING
VACANT
STREAM (DRAINAGE DITCH)

STA. 225+90 - STA. 227+40
INSTALL E-11 = 190 LIN. FT.

STA. 230+02 - STA. 231+20
INSTALL E-11 = 415 LIN. FT.

STA. 232+85 - STA. 233+25
INSTALL E-11 = 90 LIN. FT.

STA. 235+14.00
END JOB 050230

STA. 225+50 INSTALL
E-7 = 25 LIN. FT.

STA. 226+55 INSTALL
E-7 = 25 LIN. FT.

STA. 230+50 INSTALL
E-7 = 25 LIN. FT.

STA. 231+24 INSTALL
E-7 = 25 LIN. FT.

STA. 234+51 INSTALL
E-7 = 25 LIN. FT.

REVISIONS

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LEGEND

| | |
|---|---|
| E-5 | SAND BAG DITCH CHECK |
| E-6 | ROCK DITCH CHECK |
| E-7 | DROP INLET SILT FENCE |
| E-11 | SILT FENCE |
| E-14 | SEDIMENT BASIN |

TEMPORARY EROSION CONTROL DETAILS
STAGE 1

8/26/2014

R050230.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. | | 050230 | 40 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STAGE 2 QUANTITIES:
TEMPORARY EROSION CONTROL QUANTITIES:

SAND BAG DITCH CHECKS = 110 BAG
ROCK DITCH CHECKS = 87 CU. YD.
DROP INLET SILT FENCE = 525 LIN. FT.
SILT FENCE = 4860 LIN. FT.

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

STA. 137+30 - STA. 143+89
INSTALL E-11 = 410 LIN. FT.

STA. 144+26 - STA. 150+00
INSTALL E-11 = 655 LIN. FT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 135+70.00
BEGIN JOB 050230
LOG MILE 2.07

RIVERVIEW DR.

P.I. 145+78.88

N 54°11'11" W

N 15°09'12" E

CONST. LIMITS

C.L. CONST.

40'

140

145

150

135

P.C. 137+86.79

3700 CU. FT.

2020 CU. FT.

3230 CU. FT.

121392 CU. FT.

LONG RUN RD.

P.T. 151+72.9

TEMPORARY EROSION CONTROL GENERAL NOTES:

1) THE QUANTITIES AND LOCATIONS OF THE TEMPORARY EROSION CONTROL DEVICES SHOWN IN THE PLANS ARE ESTIMATED AND MAY BE ALTERED IF AND WHERE DIRECTED BY THE ENGINEER TO MAXIMIZE THEIR EFFECTIVENESS. THE DEVICES ARE TO BE INSTALLED IN AN AREA ONLY WHEN THE SOIL DISTURBING ACTIVITY IN THAT AREA BEGINS.

2) REFER TO SECT. 110 OF STANDARD SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

REVISIONS

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LEGEND

- E-5 SAND BAG DITCH CHECK
- E-6 ROCK DITCH CHECK
- E-11 ... E-11 SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

8/26/2014

R050230.DGN

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

| 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. | | 050230 | 41 | 309 |

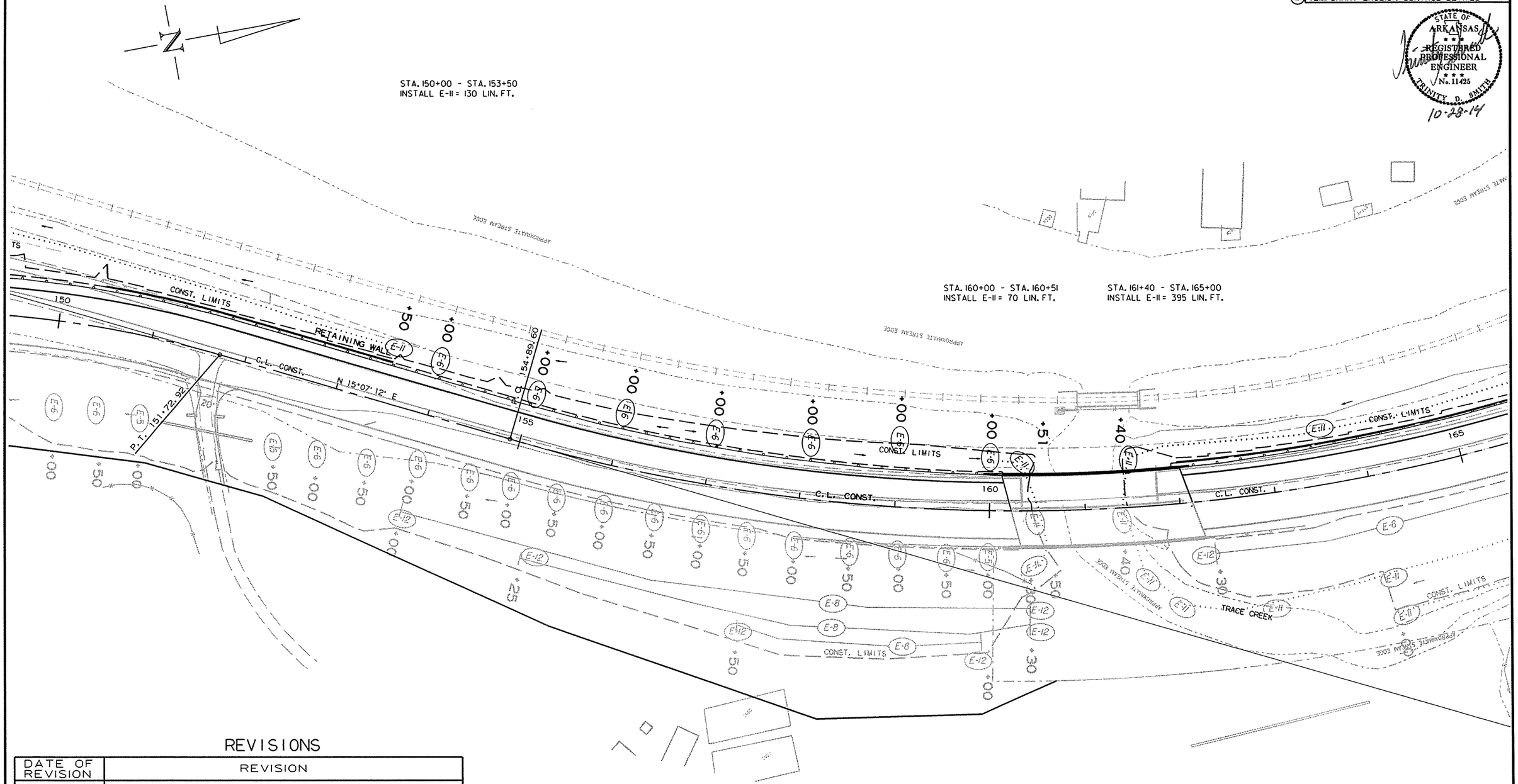
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 150+00 - STA. 153+50
INSTALL E-11 = 130 LIN. FT.

STA. 160+00 - STA. 160+51
INSTALL E-11 = 70 LIN. FT.

STA. 161+40 - STA. 165+00
INSTALL E-11 = 395 LIN. FT.




REVISIONS

| DATE OF REVISION | REVISION |
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LEGEND

- E-5 SAND BAG DITCH CHECK
- E-6 ROCK DITCH CHECK
- E-11 ... E-11 SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

8/26/2014

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

| 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. | | 050230 | 42 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 165+00 - STA. 165+95
INSTALL E-11 = 195 LIN. FT.

STA. 176+00 - STA. 179+00
INSTALL E-11 = 285 LIN. FT.

CONST. LIMITS
C.L. CONST.
TRACE CREEK
APPROXIMATE STREAM EDGE
N 51°03' 02" W
N 15°07' 12" E
P.I. 167+33.92
165
170
175
180
E-5 E-6 E-7 E-8 E-11

LEGEND

| | |
|---|---|
| E-5 | SAND BAG DITCH CHECK |
| E-6 | ROCK DITCH CHECK |
| E-7 | DROP INLET SILT FENCE |
| E-11 | SILT FENCE |

REVISIONS

| DATE OF REVISION | REVISION |
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TEMPORARY EROSION CONTROL DETAILS
STAGE 2

8/26/2014

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

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 43 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 180+25 INSTALL E-7 = 25 LIN. FT.

STA. 182+50 INSTALL E-7 = 25 LIN. FT.

STA. 185+50 INSTALL E-7 = 25 LIN. FT.

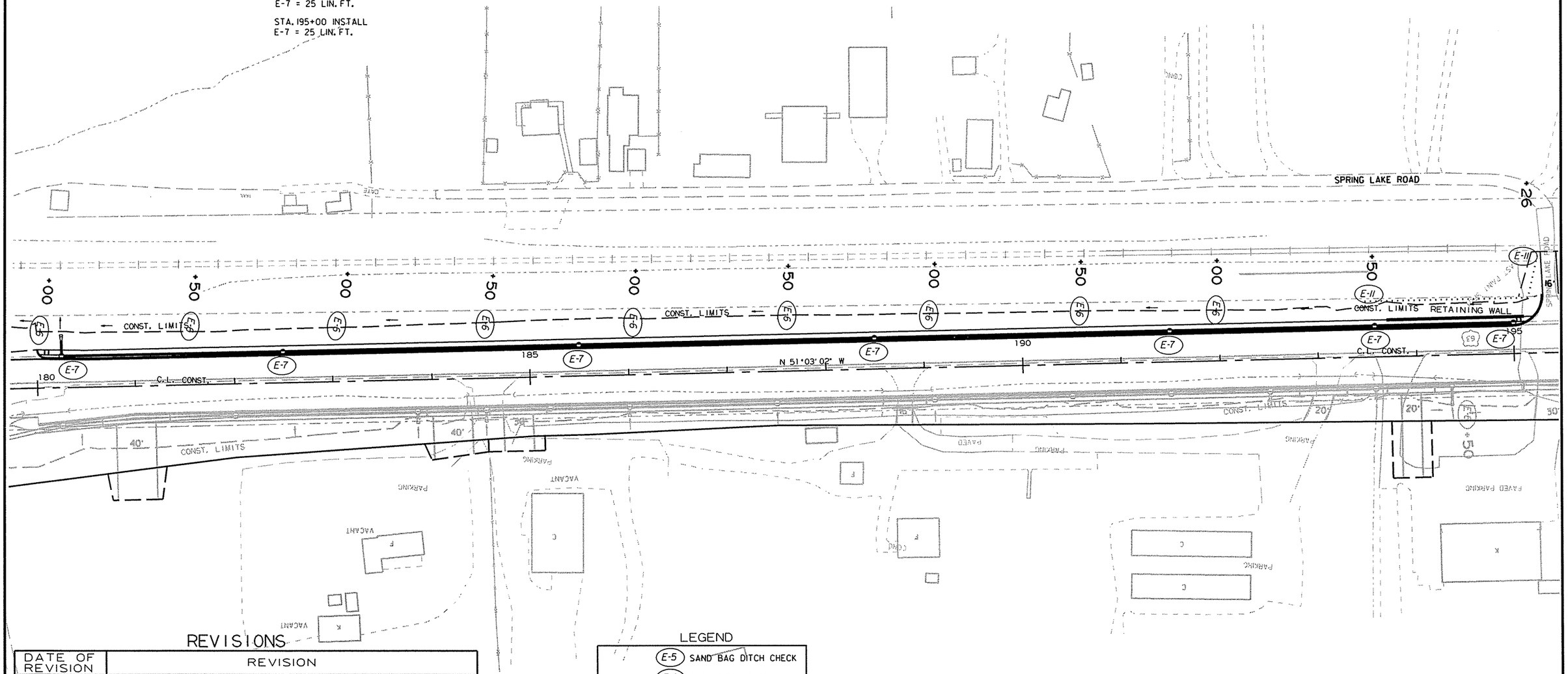
STA. 188+50 INSTALL E-7 = 25 LIN. FT.

STA. 191+50 INSTALL E-7 = 25 LIN. FT.

STA. 193+58 INSTALL E-7 = 25 LIN. FT.

STA. 195+00 INSTALL E-7 = 25 LIN. FT.

STA. 193+50 - STA. 195+26
INSTALL E-11 = 215 LIN. FT.




LEGEND

- E-5 SAND BAG DITCH CHECK
- E-6 ROCK DITCH CHECK
- E-7 DROP INLET SILT FENCE
- E-11 SILT FENCE

REVISIONS

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TEMPORARY EROSION CONTROL DETAILS
STAGE 2

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 44 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

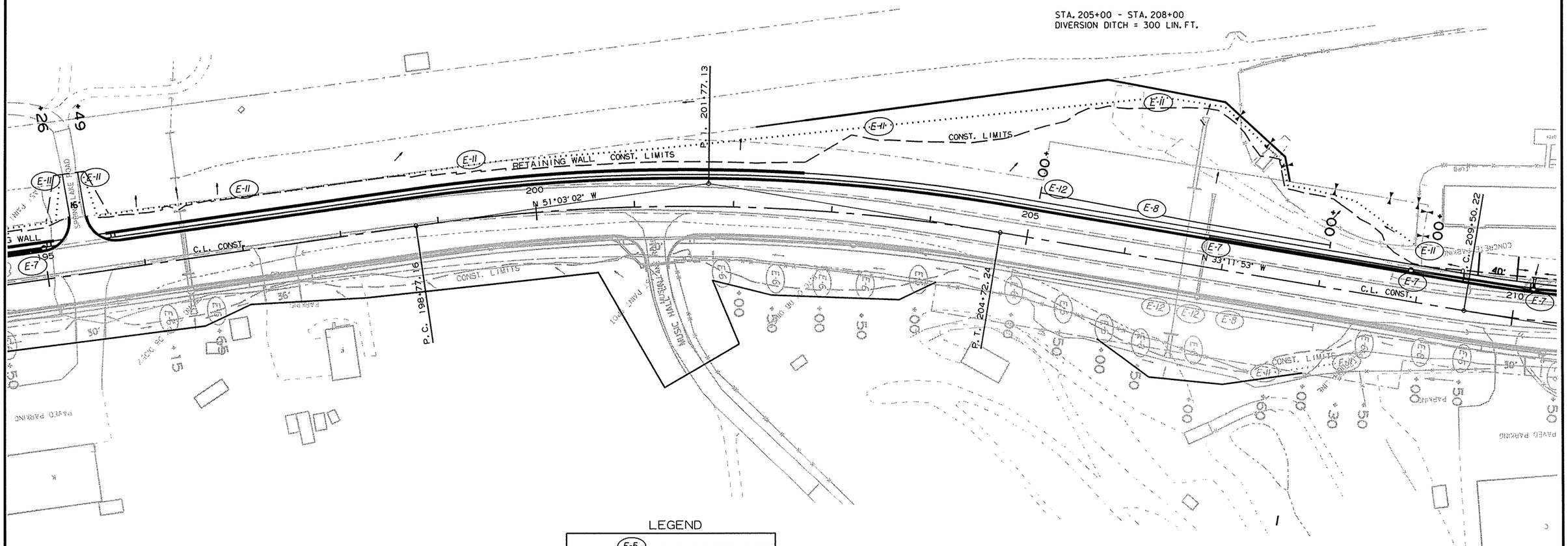
NOTE: RETAIN EROSION CONTROL ITEMS FROM STAGE 1 IF AND WHERE DIRECTED BY THE ENGINEER.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-14

STA. 195+49 - STA. 209+00
INSTALL E-11 = 1465 LIN. FT.

STA. 208+90 INSTALL
E-7 = 25 LIN. FT.

STA. 205+00 - STA. 208+00
DIVERSION DITCH = 300 LIN. FT.




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 |

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TEMPORARY EROSION CONTROL DETAILS
STAGE 2

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 45 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STA. 211+00 - STA. 213+12
INSTALL E-11 = 205 LIN. FT.

STA. 215+50 - STA. 218+33
INSTALL E-11 = 315 LIN. FT.

STA. 219+32 - STA. 222+99
INSTALL E-11 = 495 LIN. FT.

STA. 210+18 INSTALL
E-7 = 25 LIN. FT.

STA. 211+50 INSTALL
E-7 = 25 LIN. FT.

STA. 214+25 INSTALL
E-7 = 25 LIN. FT.

STA. 215+00 INSTALL
E-7 = 25 LIN. FT.

STA. 215+85 INSTALL
E-7 = 25 LIN. FT.

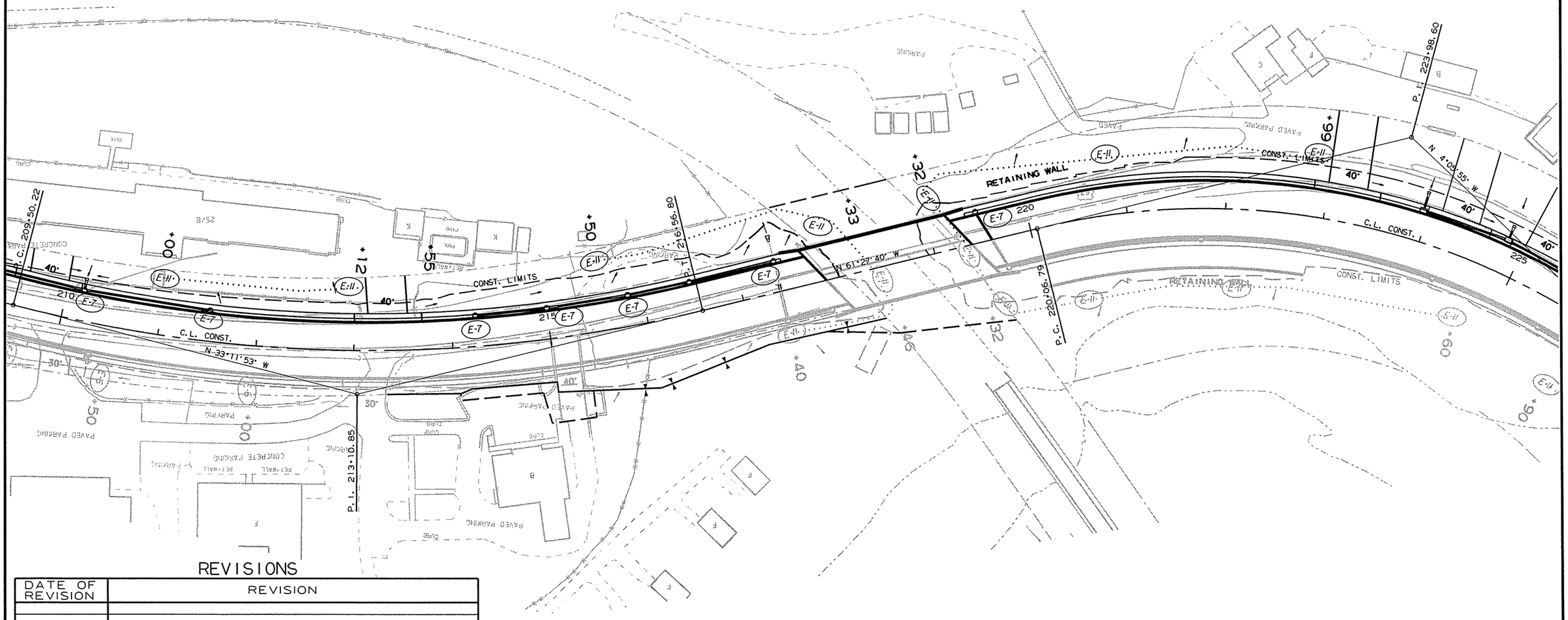
STA. 216+50 INSTALL
E-7 = 25 LIN. FT.

STA. 217+39 INSTALL
E-7 = 25 LIN. FT.

STA. 219+50 INSTALL
E-7 = 25 LIN. FT.

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




REVISIONS

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TEMPORARY EROSION CONTROL DETAILS
STAGE 2

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 46 | 309 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 230+50 INSTALL E-7 = 25 LIN. FT.
STA. 232+73 INSTALL E-7 = 25 LIN. FT.
STA. 234+51 INSTALL E-7 = 25 LIN. FT.
STA. 304+10 INSTALL E-7 = 25 LIN. FT.
STA. 303+45 INSTALL E-7 = 25 LIN. FT.

STA. 230+02 - STA. 231+56
INSTALL E-11 = 330 LIN. FT.

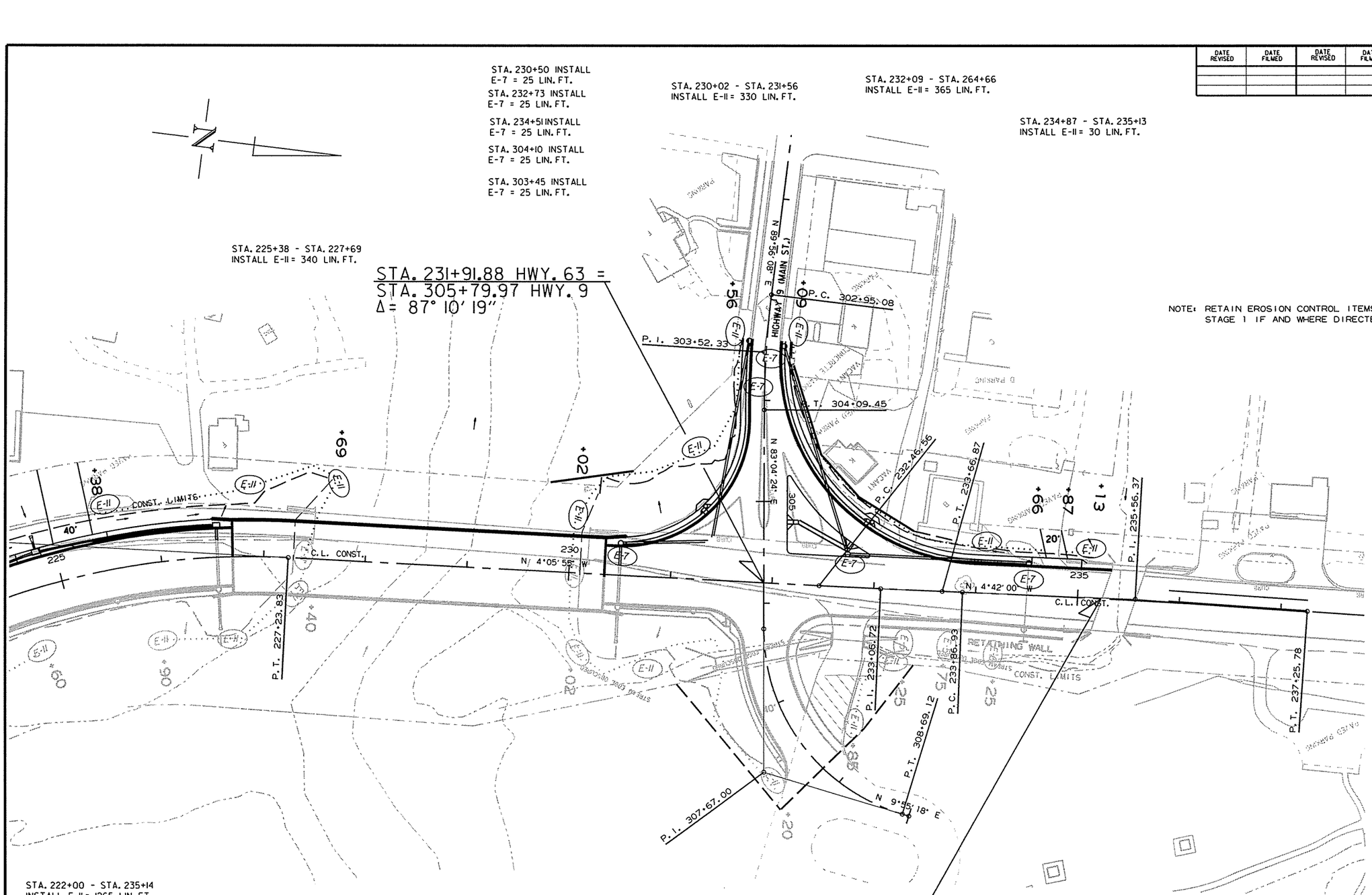
STA. 232+09 - STA. 264+66
INSTALL E-11 = 365 LIN. FT.

STA. 234+87 - STA. 235+13
INSTALL E-11 = 30 LIN. FT.

STA. 225+38 - STA. 227+69
INSTALL E-11 = 340 LIN. FT.

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

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




STA. 222+00 - STA. 235+14
INSTALL E-11 = 1265 LIN. FT.

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LEGEND

E-7 DROP INLET SILT FENCE
E-11 SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 2

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 47 | 309 |

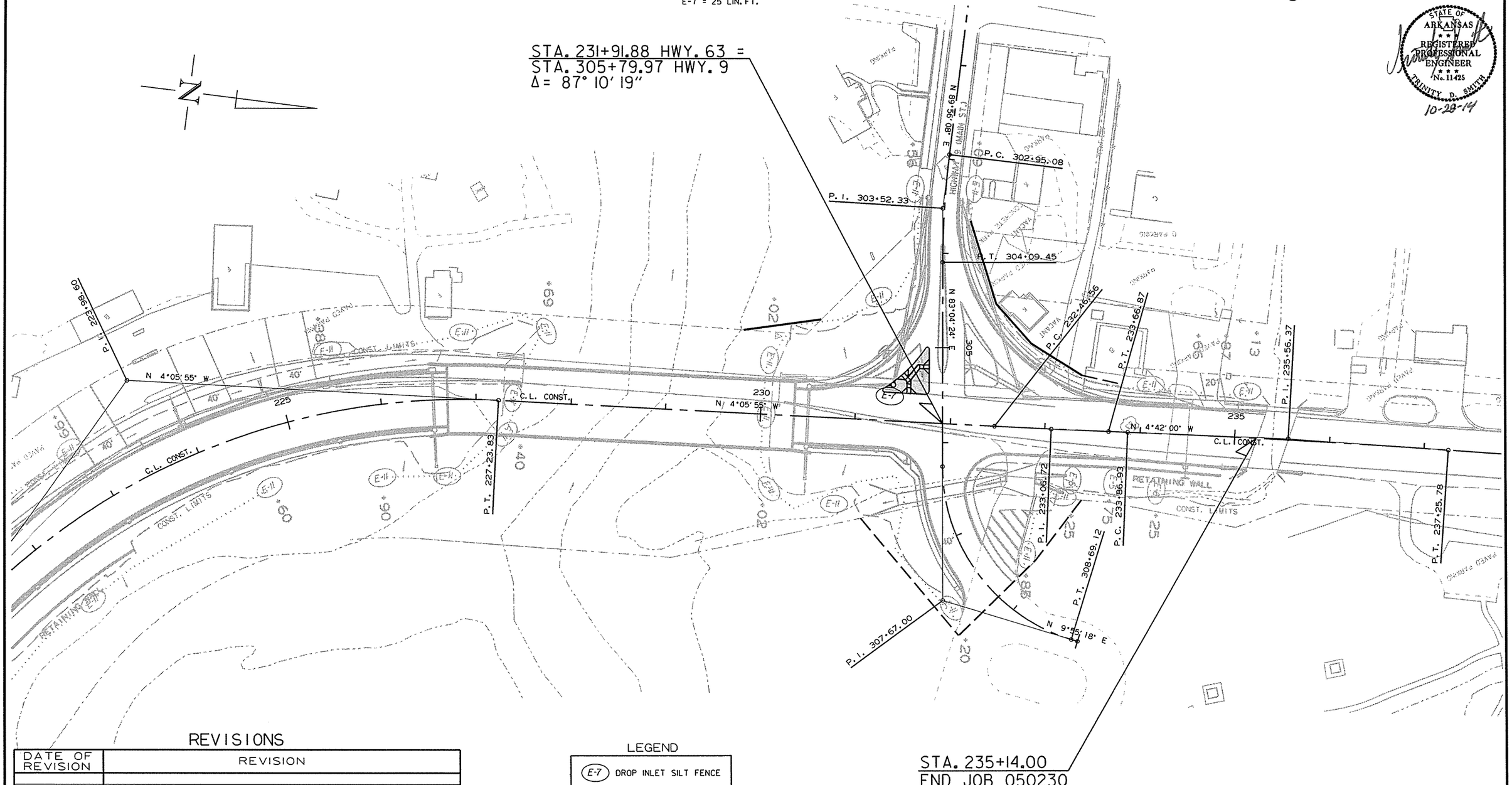
(2) TEMPORARY EROSION CONTROL DETAILS

NOTE: RETAIN EROSION CONTROL ITEMS FROM STAGES 1 AND 2 IF AND WHERE DIRECTED BY THE ENGINEER.

STA. 231+38 INSTALL
E-7 = 25 LIN. FT.

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




STA. 235+14.00
END JOB 050230

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LEGEND

(E-7) DROP INLET SILT FENCE

TEMPORARY EROSION CONTROL DETAILS
STAGE 3

8/26/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 48 | 309 |

(2) MAINTENANCE OF TRAFFIC

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. 135+70 TO STA. 180+00
MAINTAIN TRAFFIC ON EXISTING LANES.
NOTCH AND WIDEN RT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING VERTICAL PANELS AT 50' O.C. ON THE SIDE BEING WIDENED.
INSTALL TEMPORARY BARRIER WALLS.
EXTEND BOX CULVERTS AT STA. 141+08 AND STA. 148+08.
CONSTRUCT RT. SIDE OF BRIDGE OVER TRACE CREEK AS INDICATED ON BRIDGE PLANS.

STA. 180+00 TO STA. 230+35
MAINTAIN TRAFFIC ON EXISTING LANES.
NOTCH AND WIDEN RT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING VERTICAL PANELS AT 35' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALLS AND CONSTRUCT RT. SIDE OF NEW BRIDGE OVER BNSF RAILROAD AND RT. SIDE OF NEW BRIDGE OVER SPRING RIVER AS INDICATED ON BRIDGE PLANS.
CONSTRUCT RETAINING WALLS AS INDICATED ON PLAN SHEETS.

STA. 230+35 TO STA. 232+56
STRIPE THE EXISTING PAVEMENT AS SHOWN.
NOTCH AND WIDEN HWY. 63 ON RT., DELINEATING THE WORK ZONE USING VERTICAL PANELS AT 35' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
CONSTRUCT WELCOME CENTER DRIVE AND WELCOME CENTER DRIVE R.C. BOX CULVERT.

STA. 232+56 TO STA 235+14
CONSTRUCT RETAINING WALL ON RT. AS INDICATED IN PLAN SHEETS.

STAGE IB:
STA. 232+56 TO STA. 235+14
NOTCH AND WIDEN RT. SIDE OF HWY. 65 AND CONSTRUCT STORM DRAIN.
TIE CURB INTO EXISTING BOX CULVERT CURB.

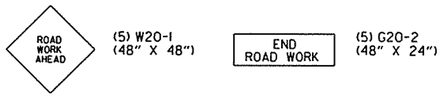
STAGE 2:
STA. 135+70 TO STA. 180+00
STRIPE THE NEW PAVEMENT AS SHOWN, MAINTAIN TRAFFIC ON NEW PAVEMENT.
NOTCH AND WIDEN LT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING TRAFFIC DRUMS AT 50' O.C. AND INSTALL TEMPORARY BARRIER WALL.
CONSTRUCT LT. SIDE OF NEW BRIDGE OVER TRACE CREEK AS INDICATED ON BRIDGE PLANS.
CONSTRUCT RETAINING WALLS AS INDICATED ON PLAN SHEETS.

STA. 180+00 TO STA. 235+14
STRIPE NEW PAVEMENT AS SHOWN, MAINTAIN TRAFFIC ON NEW PAVEMENT.
NOTCH AND WIDEN LT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING TRAFFIC DRUMS AT 35' O.C. AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALL
CONSTRUCT LT. SIDE OF NEW BRIDGE OVER BNSF RAILROAD AND LT. SIDE OF NEW BRIDGE OVER SPRING RIVER AS INDICATED ON BRIDGE PLANS.
CONSTRUCT RETAINING WALLS AS INDICATED ON PLAN SHEETS.
NOTCH AND WIDEN HWY. 9.
CONSTRUCT ISLAND AT STA. 232+41 ON LT.
TIE CURB AND SIDEWALK INTO EXISTING BOX CULVERT CURB AND SIDEWALK.

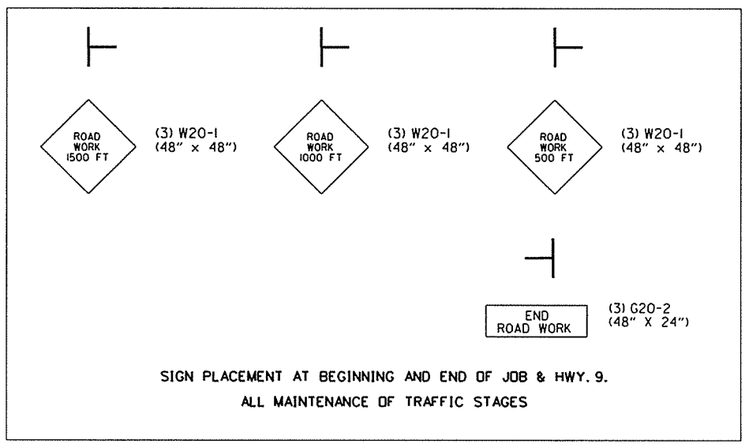
STAGE. 3:
STA. 231+58
CONSTRUCT REMAINING ISLAND ON LT.

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

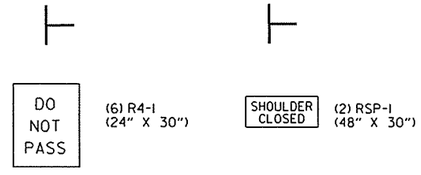
THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.




SIGN PLACEMENT ON ALL CITY STREETS & COUNTY ROADS
ALL STAGES

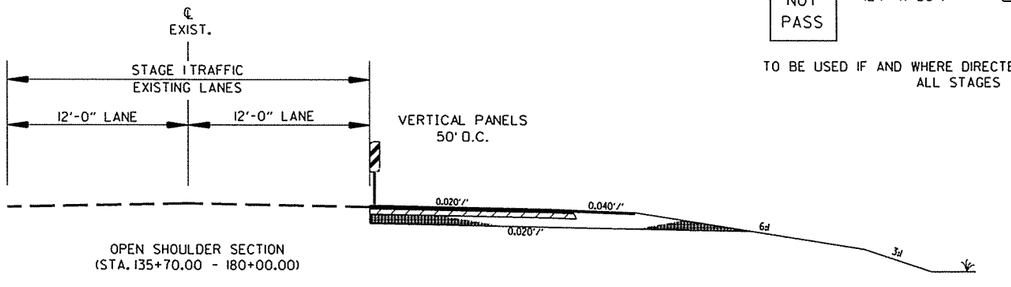



SIGN PLACEMENT AT BEGINNING AND END OF JOB & HWY. 9.
ALL MAINTENANCE OF TRAFFIC STAGES

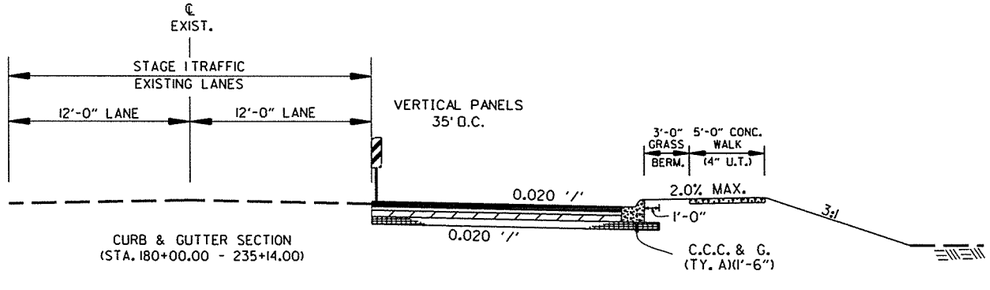



TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER
ALL STAGES

VERTICAL PANELS
TRAFFIC DRUMS




OPEN SHOULDER SECTION
(STA. 135+70.00 - 180+00.00)




CURB & GUTTER SECTION
(STA. 180+00.00 - 235+14.00)

MAINTENANCE OF TRAFFIC
STAGE I

8/26/2014

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| | | | | JOB NO. | | 050230 | 49 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 135+70 TO STA. 150+00 = 5620 LIN. FT.

STA. 135+70.00
BEGIN JOB 050230
LOG MILE 2.07

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

4" DBL SOLID YELLOW
4" SOLID WHITE
SAFETY END UNIT
N 54°11'11" W
C.L. CONST.
140
135
P.T. 137+85.74
CONST. LIMITS
PRECAST BARRIER
SAFETY END UNIT
(4) OM-3R (12"X 36")
(3) OM-3L (12"X 36")

(1) G20-2 (48" X 24")
END ROAD WORK
(1) W20-1 (48" X 48")
ROAD WORK AHEAD
P.I. 145+78.68
N 15°07'12" E
145
C.L. CONST.
16'
CONST. LIMITS
(2) OM-3R (12"X 36")
(3) OM-3L (12"X 36")
SAFETY END UNIT
20'
C.L. CONST.
150
PRECAST BARRIER
CONST. LIMITS
LONG RUN RD.
P.T. 151+72.92

ROAD CLOSED
(1) R11-2 (48" X 30")
32' BARR. TYP. III LT.
(1) G20-2 (48" X 24")
END ROAD WORK
ROAD WORK AHEAD
(1) W20-1 (48" X 48")
32' BARR. TYP. III RT.
ROAD CLOSED
(1) R11-2 (48" X 30")

ROAD WORK 1500 FT
(1) W20-1 (48" X 48")
ROAD WORK 1000 FT
(1) W20-1 (48" X 48")
ROAD WORK 500 FT
(1) W20-1 (48" X 48")

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 266 LIN. FT.

TRAFFIC DRUMS = 24 EACH
20' O.C. TURNOUTS AND DRIVEWAYS

VERTICAL PANELS = 22 EACH
50' O.C. ROADWAY

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

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 113 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH

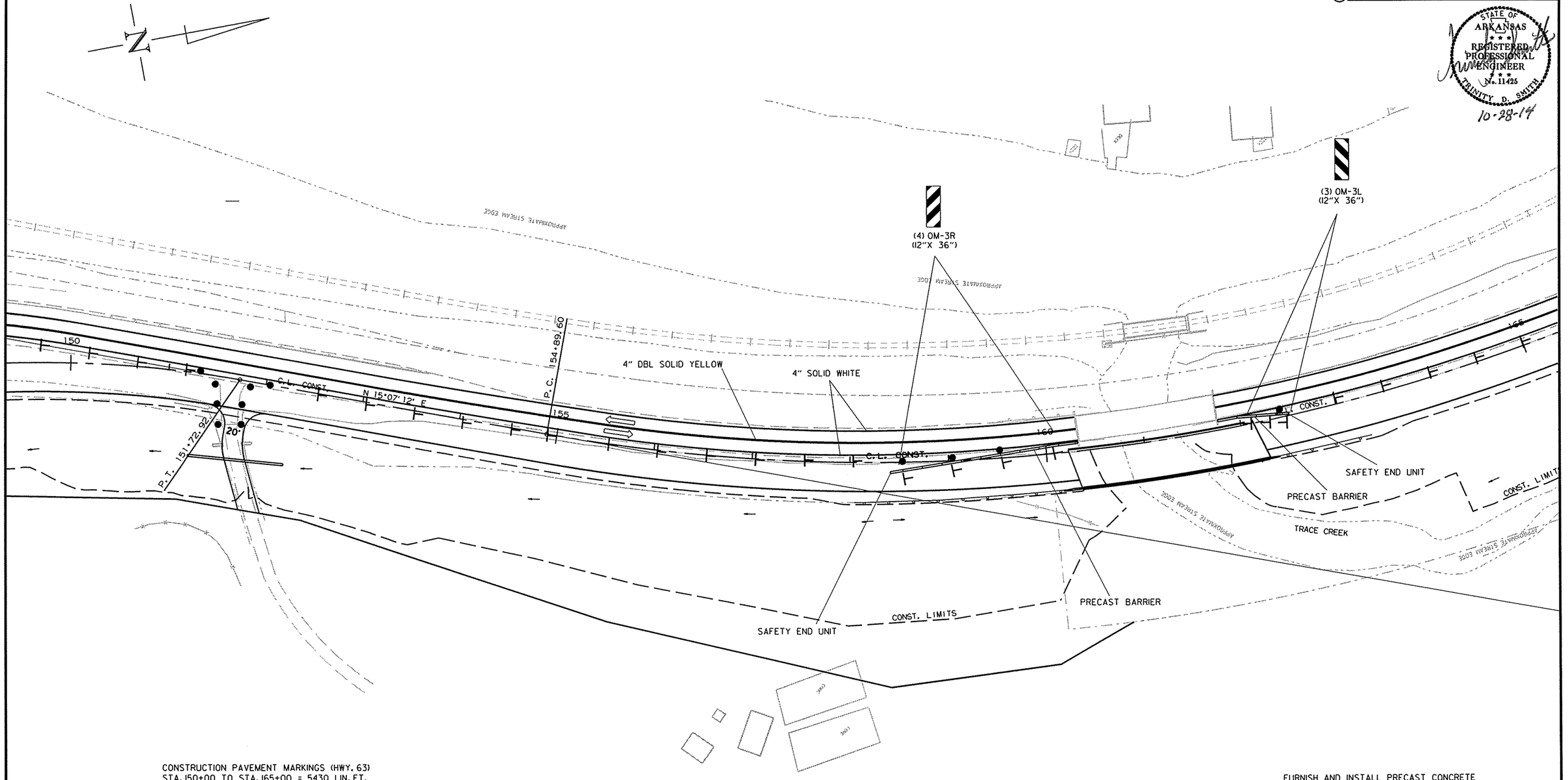
# MAINTENANCE OF TRAFFIC
# STAGE I

8/26/2014
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| | | | | 6 | ARK. | | | |
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(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 150+00 TO STA. 165+00 = 5430 LIN. FT.

TRAFFIC DRUMS = 12 EACH
50' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

VERTICAL PANELS = 20 EACH
50' O.C. ROADWAY

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

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 266 LIN. FT.

# MAINTENANCE OF TRAFFIC STAGE I

8/26/2014

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| | | | | JOB NO. | | 050230 | 51 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

APPROXIMATE STREAM EDGE

4" DBL SOLID YELLOW

4" SOLID WHITE

P.I. 176+95.28

C.L. CONST.

165

170

175

180

24'

TRACE CREEK LN.

CONST. LIMITS

TRACE CREEK

N 51°03'02" W

N 15°07'12" E
167.33.92

P.I.

CONST. LIMITS

ROAD CLOSED

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

32' BARR.
TYP. III L.T.

TRACE CREEK

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

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

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

VERTICAL PANELS = 27 EACH
50' O.C. ROADWAY

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 165+00 TO STA. 180+00 = 5850 LIN. FT.

MAINTENANCE OF TRAFFIC
STAGE I

8/26/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 52 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

TRAFFIC DRUMS = 32 EACH
20' O.C. TURNOUTS AND DRIVEWAYS

VERTICAL PANELS = 29 EACH
50' O.C. ROADWAY (OPEN SHOULDER)
35' O.C. (CURB AND GUTTER)

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 180+00 TO STA. 195+00 = 6000 LIN. FT.

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

4" DBL SOLID YELLOW
4" SOLID WHITE
N 51°03'02" W
180
185
190
195
C.L. CONST.
CONST. LIMITS
40'
30'
16'
20'
VACANT
PARKING
PAVED PARKING
SPRING LAKE ROAD
MT. PLAIN SCHOOL

(1) W20-1 (48" X 48") ROAD WORK AHEAD
END ROAD WORK
(1) G20-2 (48" X 24")
P.I. 201+77.13
N 51°03'02" W
200
205
210
195
C.L. CONST.
CONST. LIMITS
36'
30'
20'
P.C. 198+77.16
P.T. 204+72.24
P.C. 209+50.22
N 33°11'53" W
MUSIC HALL
PAINT
PAVED PARKING
CONCRETE PARKING
ROAD CLOSED
(1) R11-2 (48" X 30")
16' BARR. TYP. III LT.
16' BARR. TYP. III RT.
(1) W20-1 (48" X 48")
ROAD WORK AHEAD
(1) G20-2 (48" X 24") END ROAD WORK
120'
40'
120'
TRAFFIC DRUMS @ 20' O.C. = 15 EACH

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

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 195+00 TO STA. 210+00 = 5700 LIN. FT.
TRAFFIC DRUMS = 33 EACH
20' O.C. TURNOUTS AND DRIVEWAYS

VERTICAL PANELS = 24 EACH
35' O.C. ROADWAY

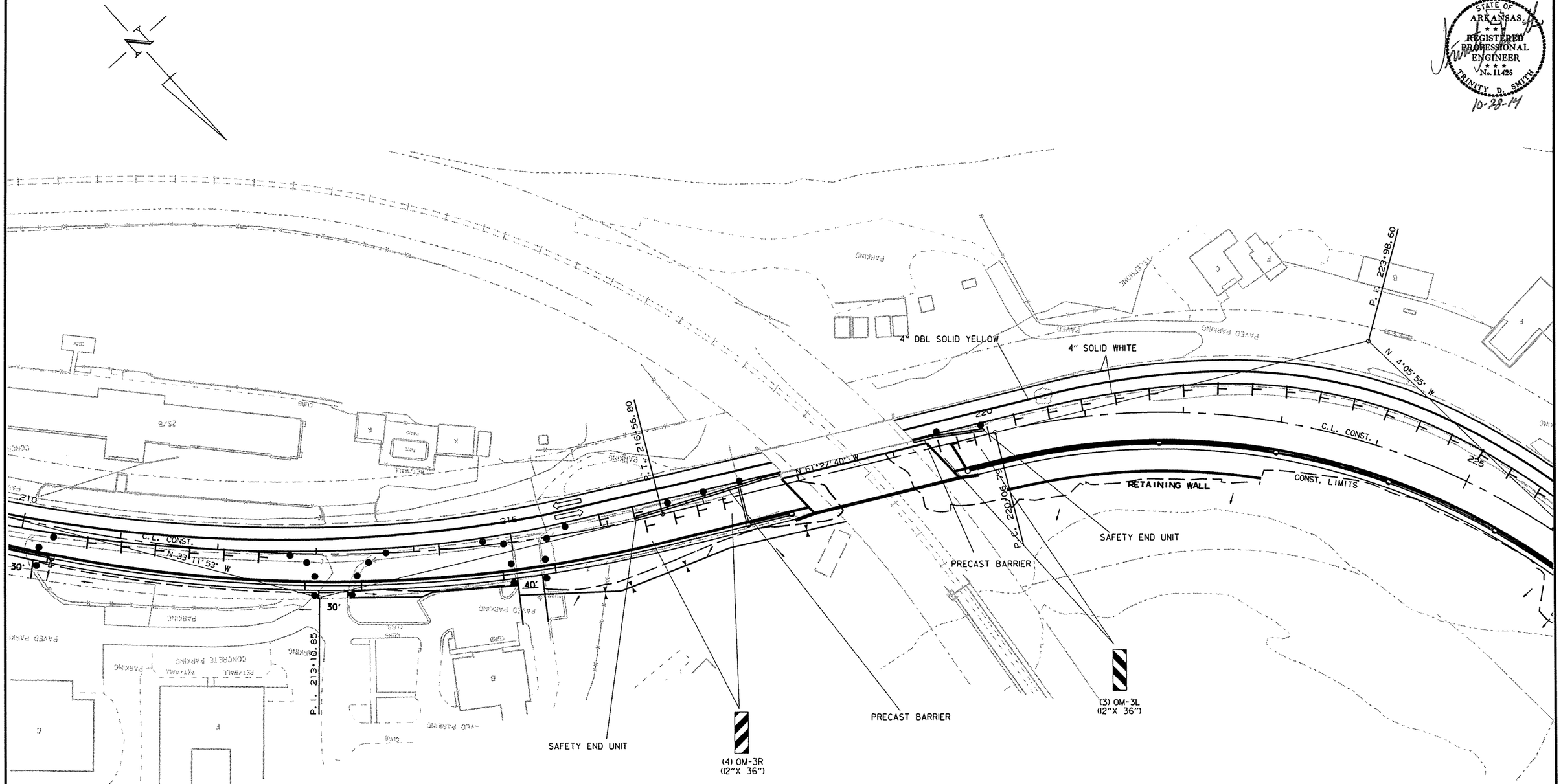
# MAINTENANCE OF TRAFFIC STAGE I

8/26/2014
R050230.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. | | 050230 | 53 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




TRAFFIC DRUMS = 24 EACH
35' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

VERTICAL PANELS = 24 EACH
35' O.C. ROADWAY

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

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 210+00 TO STA. 225+00 = 5450 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 226 LIN. FT.

# MAINTENANCE OF TRAFFIC STAGE I

8/26/2014

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 54 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

(1) W20-1 (48" × 48") ROAD WORK 500 FT
(1) W20-1 (48" × 48") ROAD WORK 1000 FT
(1) W20-1 (48" × 48") ROAD WORK 500 FT

END ROAD WORK (1) G20-2 (48" X 24")

N 8°56'08" E
P.C. 302+95.08
P.I. 303+52.33
P.T. 304+09.45
N 83°04'24" E
305
P.C. 232+46.56
P.T. 233+66.87
P.I. 235+56.37
N 4°43'00" W
235
C.L. CONST.
RETAINING WALL
CONST. LIMITS
100' TAPER
+88
+88
P.I. 433+06.
P.C. 233+86.9
P.T. 308+59.12
P.T. 237+25.78
40'
N 9°55'18" E
P.I. 307+67.00

SAFETY END UNIT
4" DBL SOLID YELLOW
4" SOLID WHITE
225
C.L. CONST.
230
N 4°05'55" W
P.T. 227+23.83
PRECAST BARRIER
(4) OM-3R (12"X 36")
(3) OM-3L (12"X 36")
ROAD CLOSED
(1) RII-2 (48" X 30")
16' BARR. TYP. III LT.
ROAD CLOSED
(1) RII-2 (48" X 30")
16' BARR. TYP. III RT.
16' BARR. TYP. III LT.
ROAD CLOSED
16' BARR. TYP. III RT.
(1) RII-2 (48" X 30")
END ROAD WORK
(1) G20-2 (48" X 24")

STA. 235+14.00
END JOB 050230

TRAFFIC DRUMS = 18 EACH
35' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

VERTICAL PANELS = 3 EACH
35' O.C. ROADWAY

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

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 226 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 225+00 TO STA. 235+14 = 3226 LIN. FT.

MAINTENANCE OF TRAFFIC
STAGE I

8/26/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 55 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

(1) W20-1 (48" × 48") ROAD WORK 1500 FT
(1) W20-1 (48" × 48") ROAD WORK 1000 FT
(1) W20-1 (48" × 48") ROAD WORK 500 FT

END ROAD WORK (1) G20-2 (48" X 24")

N 89°56'08" E
P.C. 302+95.08
P.I. 303+52.33
P.T. 304+09.45
N 83°04'52" E
305
SAFETY END UNIT
4" DBL SOLID YELLOW
4" SOLID WHITE
225
C.L. CONST.
230
N 4°05'55" W
P.C. 232+46.56
P.T. 239+66.87
T.C.E.
P.I. 235+56.37
235
N 4°43'00" W
C.L. CONST.
P.T. 227+23.83
EXISTING R/W
RETAINING WALL
CONST. LIMITS
P.I. 233+06.72
P.C. 233+86.93
100' TAPER
+88
+88
P.T. 237+25.78
40'
21.00'
00'
P.I. 307+67.00
N 9°55'18" E
P.T. 308+69.12
T.C.E.
196.60
138.89
SAFETY END UNIT
(4) OM-3R (12"X 36")
PRECAST BARRIER
(3) OM-3L (12"X 36")
ROAD CLOSED
(1) RII-2 (48" X 30")
16' BARR. TYP. III LT.
16' BARR. TYP. III RT.
ROAD CLOSED
(1) RII-2 (48" X 30")
ROAD CLOSED
(2) RII-2 (48" X 30")
16' BARR. TYP. III RT.
16' BARR. TYP. III LT.
END ROAD WORK
(1) G20-2 (48" X 24")

STA. 235+14.00
END JOB 050230

TRAFFIC DRUMS = 18 EACH
35' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

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

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 226 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 225+00 TO STA. 235+14 = 3226 LIN. FT.

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MAINTENANCE OF TRAFFIC
STAGE IB

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 56 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

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. 135+70 TO STA. 180+00
MAINTAIN TRAFFIC ON EXISTING LANES.
NOTCH AND WIDEN RT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING VERTICAL PANELS AT 50' O.C. ON THE SIDE BEING WIDENED.
INSTALL TEMPORARY BARRIER WALLS.
EXTEND BOX CULVERTS AT STA. 141+08 AND STA. 148+08.
CONSTRUCT RT. SIDE OF BRIDGE OVER TRACE CREEK AS INDICATED ON BRIDGE PLANS.

STA. 180+00 TO STA. 230+35
MAINTAIN TRAFFIC ON EXISTING LANES.
NOTCH AND WIDEN RT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING VERTICAL PANELS AT 35' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALLS AND CONSTRUCT RT. SIDE OF NEW BRIDGE OVER BNSF RAILROAD AND RT. SIDE OF NEW BRIDGE OVER SPRING RIVER AS INDICATED ON BRIDGE PLANS.
CONSTRUCT RETAINING WALLS AS INDICATED ON PLAN SHEETS.

STA. 230+35 TO STA. 232+56
STRIPE THE EXISTING PAVEMENT AS SHOWN.
NOTCH AND WIDEN HWY. 63 ON RT., DELINEATING THE WORK ZONE USING VERTICAL PANELS AT 35' O.C. ON THE SIDE BEING WIDENED, AND CONSTRUCT STORM DRAIN.
CONSTRUCT WELCOME CENTER DRIVE AND WELCOME CENTER DRIVE R.C. BOX CULVERT.

STA. 232+56 TO STA 235+14
CONSTRUCT RETAINING WALL ON RT. AS INDICATED IN PLAN SHEETS.

STAGE 1B:
STA. 232+56 TO STA. 235+14
NOTCH AND WIDEN RT. SIDE OF HWY. 65 AND CONSTRUCT STORM DRAIN.
TIE CURB INTO EXISTING BOX CULVERT CURB.

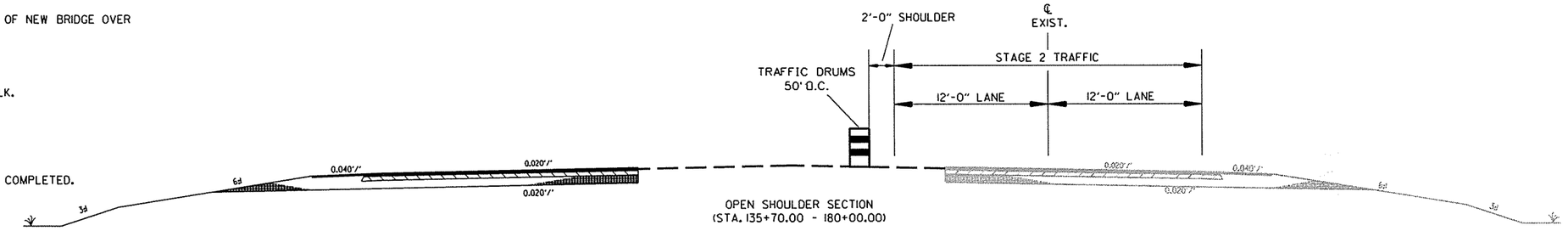
STAGE 2:
STA. 135+70 TO STA. 180+00
STRIPE THE NEW PAVEMENT AS SHOWN, MAINTAIN TRAFFIC ON NEW PAVEMENT.
NOTCH AND WIDEN LT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING TRAFFIC DRUMS AT 50' O.C. AND INSTALL TEMPORARY BARRIER WALL.
CONSTRUCT LT. SIDE OF NEW BRIDGE OVER TRACE CREEK AS INDICATED ON BRIDGE PLANS.
CONSTRUCT RETAINING WALLS AS INDICATED ON PLAN SHEETS.

STA. 180+00 TO STA. 235+14
STRIPE NEW PAVEMENT AS SHOWN, MAINTAIN TRAFFIC ON NEW PAVEMENT.
NOTCH AND WIDEN LT. SIDE OF HWY. 63, DELINEATING THE WORK ZONE USING TRAFFIC DRUMS AT 35' O.C. AND CONSTRUCT STORM DRAIN.
INSTALL TEMPORARY BARRIER WALL
CONSTRUCT LT. SIDE OF NEW BRIDGE OVER BNSF RAILROAD AND LT. SIDE OF NEW BRIDGE OVER SPRING RIVER AS INDICATED ON BRIDGE PLANS.
CONSTRUCT RETAINING WALLS AS INDICATED ON PLAN SHEETS.
NOTCH AND WIDEN HWY. 9.
CONSTRUCT ISLAND AT STA. 232+41 ON LT.
TIE CURB AND SIDEWALK INTO EXISTING BOX CULVERT CURB AND SIDEWALK.

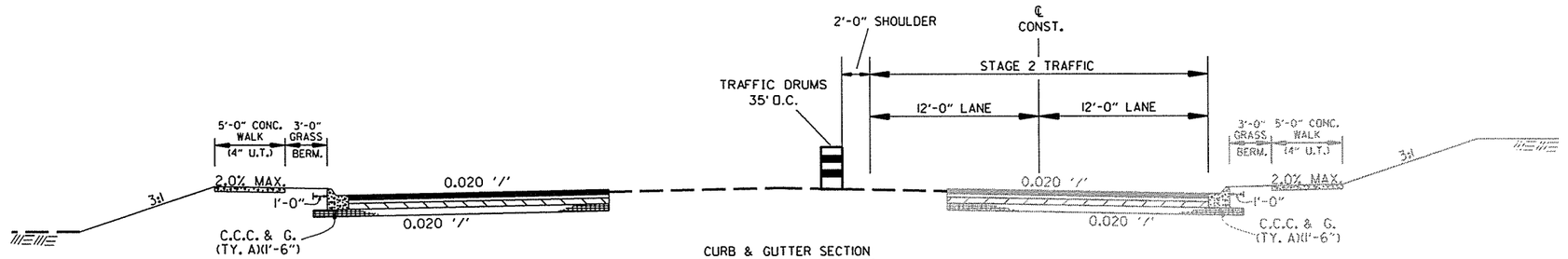
STAGE. 3:
STA. 231+58
CONSTRUCT REMAINING ISLAND ON LT.

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

⊢ VERTICAL PANELS
● TRAFFIC DRUMS




OPEN SHOULDER SECTION
(STA. 135+70.00 - 180+00.00)




CURB & GUTTER SECTION
(STA. 180+00.00 - 235+14.00)

# MAINTENANCE OF TRAFFIC STAGE 2

8/26/2014
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| | | | | JOB NO. | | 050230 | 57 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 135+70.00
BEGIN JOB 050230
LOG MILE 2.07

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

.70 100' TAPER .70

CONST. LIMITS

C.L. CONST.

135

140

145

150

P.C. 137+86.79

P.T. 145+78.88

N 54°11'11" W

N 15°07'12" E

RIVERVIEW DR.

40'

20'

CONST. LIMITS

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

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

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

435' TAPER

50'

70'

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

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

LONG RUN RD.

P.T. 151+72.9

(1) W20-1 (48" X 48")
ROAD WORK 1500 FT

(1) W20-1 (48" X 48")
ROAD WORK 1000 FT

(1) W20-1 (48" X 48")
ROAD WORK 500 FT

TRAFFIC DRUMS = 47 EACH
50' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

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

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 135+70 TO STA. 150+00 = 5368 LIN. FT.

# MAINTENANCE OF TRAFFIC STAGE 2

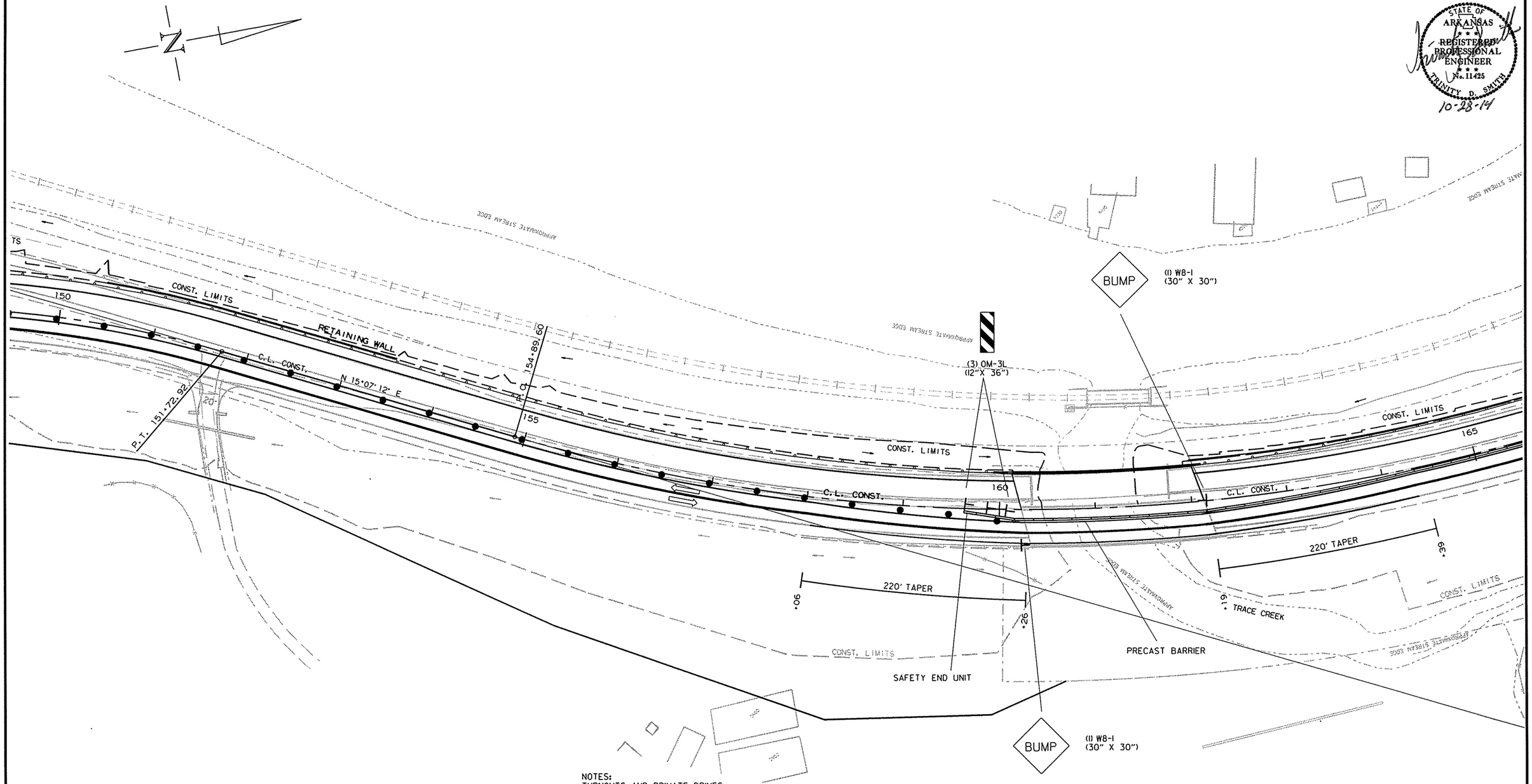
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 58 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




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

TRAFFIC DRUMS = 28 EACH
50' O.C. ROADWAY

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 150+00 TO STA. 165+00 = 5228 LIN. FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS (HWY. 65)
STA. 160+23 TO STA. 162+13 = 772 LIN. FT.

RELOCATE PRECAST CONCRETE BARRIER WALL = 593 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 180 LIN. FT.

# MAINTENANCE OF TRAFFIC STAGE 2

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(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

APPROXIMATE STREAM EDGE

CONST. LIMITS

C.L. CONST.

TRACE CREEK

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

TEMPORARY IMPACT
ATTENUATION BARRIER = 1EACH

N 51°03'02" W

N 15°07'12" E
26.33.92
167.19' P.I.

TRAFFIC DRUMS = 25 EACH
50' O.C. ROADWAY

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

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

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

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 165+00 TO STA. 180+00 = 5850 LIN. FT.

# MAINTENANCE OF TRAFFIC
# STAGE 2

8/26/2014

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| | | | | JOB NO. | | 050230 | 60 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-14

TRAFFIC DRUMS = 44 EACH
50' O.C. ROADWAY (OPEN SHOULDER)
35' O.C. (CURB AND GUTTER)
20' O.C. TURNOUTS AND DRIVEWAYS

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

SPRING LAKE ROAD

CONST. LIMITS
RETAINING WALL
C.L. CONST.
N 51°03'02" W
180
185
190
195
40'
30'
20'
PAVED PARKING
VACANT

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

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 180+00 TO STA. 195+00 = 4500 LIN. FT.

(1) W20-1 (48" X 48")
ROAD WORK AHEAD
END ROAD WORK
(1) G20-2 (48" X 24")
16' BARR. TYP. III LT.
(2) W1-6 (48" X 24")
(2) R11-2 (48" X 30")
ROAD CLOSED

P.I. 201+77.13
P.C. 198+47.19
P.T. 204+72.24
RETAINING WALL
CONST. LIMITS
C.L. CONST.
N 51°03'02" W
N 33°11'53" W
200
205
210
209+50.22
MUSIC HALL
PAVED PARKING
CONCRETE PARKING
DRIVE
DITCH

TRAFFIC DRUMS = 48 EACH
35' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

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

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 195+00 TO STA. 210+00 = 4250 LIN. FT.

# MAINTENANCE OF TRAFFIC STAGE 2

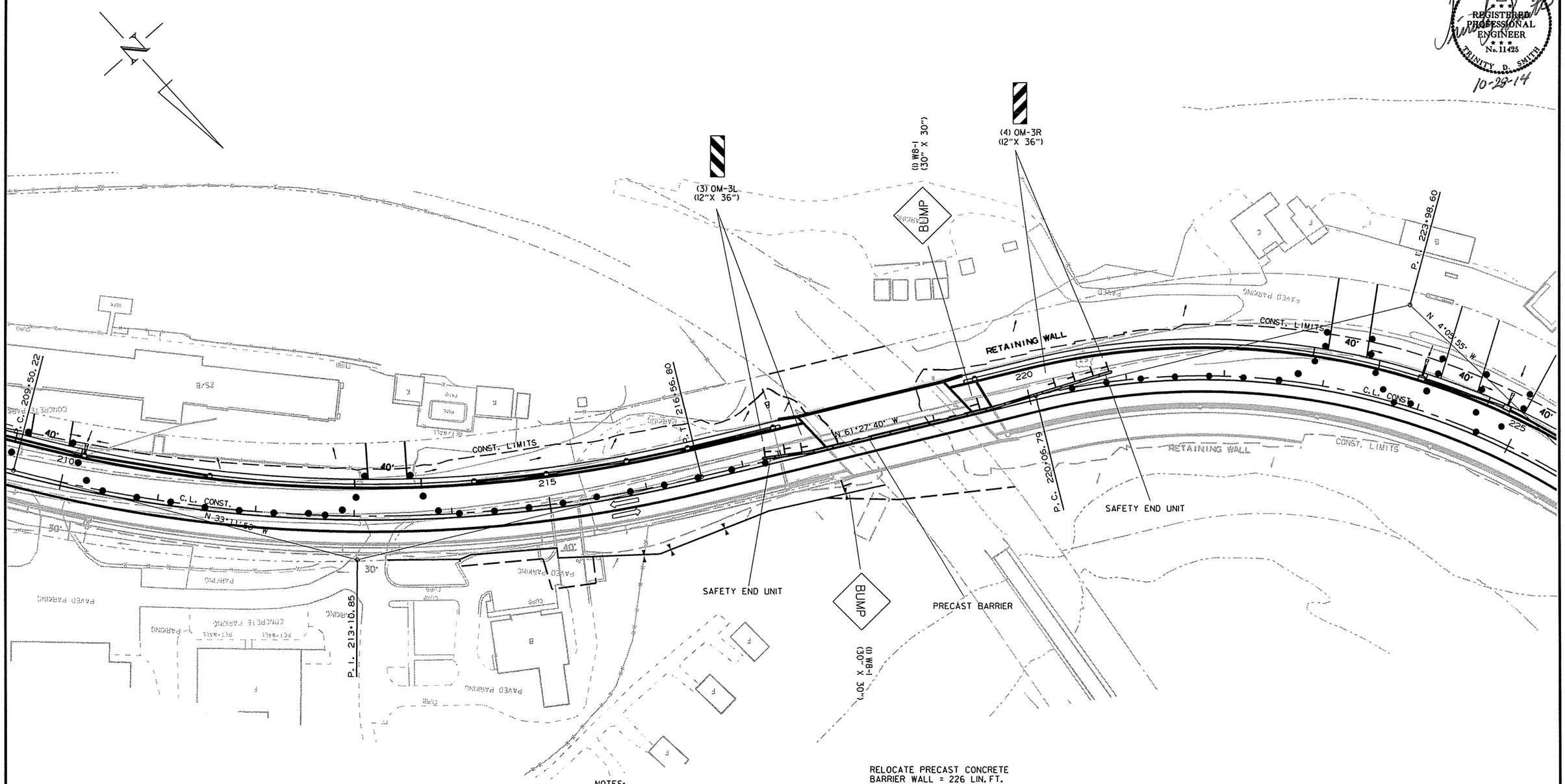
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 61 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




TRAFFIC DRUMS = 54 EACH
35' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

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

RELOCATE PRECAST CONCRETE BARRIER WALL = 226 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 140 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 210+00 TO STA. 225+00 = 4040 LIN. FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 217+87 TO STA. 219+39 = 460 LIN. FT.

# MAINTENANCE OF TRAFFIC STAGE 2

8/26/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 62 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

PI = 5+82.98
Δ = 00° 36' 06" LT.
D = 0°45'
T = 40.10'
L = 80.21'
PC = 5+42.88
PT = 6+23.08
NO SUPERELEVATION

PI = 6+87.66
Δ = 08° 41' 51" LT.
D = 8°30'
T = 51.26'
L = 102.32'
PC = 6+36.40
PT = 7+38.72
NO SUPERELEVATION

PI = 8+05.44
Δ = 10° 23' 30" RT.
D = 8°30'
T = 61.30'
L = 122.26'
PC = 7+44.15
PT = 8+66.40
NO SUPERELEVATION

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

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

(1) W20-1 (48" X 48") ROAD WORK 500 FT
(1) W20-1 (48" X 48") ROAD WORK 1000 FT
(1) W20-1 (48" X 48") ROAD WORK 1500 FT

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

HIGHWAY 9 (MAIN ST.)
N 89° 56' 08" E

P. C. 302+95.08
P. I. 303+52.33
P. T. 304+09.45
P. C. 232+46.56
P. T. 233+66.87
P. I. 6+23.09
P. C. 6+36.40
P. I. 7+38.72
P. I. 8+05.44
P. I. 235+56.37
P. T. 227+23.83
P. I. 233+06.72
P. I. 6+87.66
P. C. 7+44.15
P. T. 8+66.40
P. T. 237+25.78
P. I. 307+67.00
P. T. 308+69.12
N 9° 55' 18" E
N 83° 04' 24" E
N 4° 05' 55" W
N 4° 42' 00" W
N 13° 23' 51" W
N 3°0

(1) W8-1 (30" X 30") BUMP
(2) OM-3R (12"X 36")
(1) W8-1 (30" X 30") BUMP
(1) R11-2 (48" X 30")
(1) W1-6 (48" X 24")
16' BARR. TYP. III RT.
ROAD CLOSED
100' TAPER
END ROAD WORK
(1) G20-2 (48" X 24")

CONST. LIMITS
40'
20'
225
230
C.L. CONST.
MAINT. OF TRAFFIC
SAFETY END UNIT
PRECAST BARRIER
RETAINING WALL
CONST. LIMITS
STAGE 2 CONSTRUCTION
STAGE 1 CONSTRUCTION
EXISTING PAVING
EXISTING CONCRETE PAVING
EXISTING ASPHALT PAVING
EXISTING CONCRETE
EXISTING ASPHALT
EXISTING GRAVEL
EXISTING DIRT
EXISTING BUILDING
EXISTING FENCE
EXISTING GUARDRAIL
EXISTING TREES
EXISTING BRUSH
EXISTING WATER
EXISTING SIGN
EXISTING POWER POLE
EXISTING GUY WIRE
EXISTING MAILBOX
EXISTING CULVERT
EXISTING CATCH BASIN
EXISTING MANHOLE
EXISTING GAS VALVE
EXISTING WATER VALVE
EXISTING FIRE HYDRANT
EXISTING GAS METER
EXISTING TELEPHONE PEDESTAL
EXISTING TELEPHONE MANHOLE
EXISTING TELEPHONE BOOTH
EXISTING TELEPHONE BOX
EXISTING TELEPHONE RISER
EXISTING TELEPHONE MARKER
EXISTING TELEPHONE CABLE
EXISTING TELEPHONE CONDUIT
EXISTING TELEPHONE LINE
EXISTING TELEPHONE POLE
EXISTING TELEPHONE GUY WIRE
EXISTING TELEPHONE ANCHOR
EXISTING TELEPHONE BOX
EXISTING TELEPHONE RISER
EXISTING TELEPHONE MARKER
EXISTING TELEPHONE CABLE
EXISTING TELEPHONE CONDUIT
EXISTING TELEPHONE LINE
EXISTING TELEPHONE POLE
EXISTING TELEPHONE GUY WIRE
EXISTING TELEPHONE ANCHOR

TRAFFIC DRUMS = 53 EACH
35' O.C. ROADWAY
20' O.C. TURNOUTS AND DRIVEWAYS

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

SHOULDER MATERIAL SHALL NOT BE CUT AWAY FROM THE EDGE OF PAVEMENT ON BOTH SIDES OF ANY SECTION OPEN TO TRAFFIC.

STA. 235+14.00
END JOB 050230

CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 225+00 TO STA. 235+14 = 2936 LIN. FT.

RELOCATE PRECAST CONCRETE BARRIER WALL = 213 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER WALL = 240 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 1EACH

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS (HWY. 63)
STA. 226+70 TO STA. 230+35 = 1095 LIN. FT.

MAINTENANCE OF TRAFFIC
STAGE 2

8/26/2014
R050230.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. | | 050230 | 63 | 309 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

N 89°56'08" E
P. C. 302+95.08
P. I. 303+52.33
P. T. 304+09.45
N 83°04'24" E
P. C. 232+46.56
P. T. 233+66.87
P. I. 235+56.37
N 44°32'00" W
N 09°36'22" W
N 4°05'55" W
P. T. 227+23.83
P. I. 233+05.72
P. C. 233+86.93
P. T. 237+25.78
P. T. 308+69.12
P. I. 307+67.00
N 9°55'18" E
STA. 235+14.00
END JOB 050230

TRAFFIC DRUMS = 8 EACH
20' O.C. AROUND ISLANDS

PERMAMENT PAVEMENT MARKINGS (HWY. 65)
STA. 135+70 TO STA. 235+14
SEE PERMENANT PAVEMENT MARKING DETAILS.

MAINTENANCE OF TRAFFIC
STAGE 3

8/26/2014

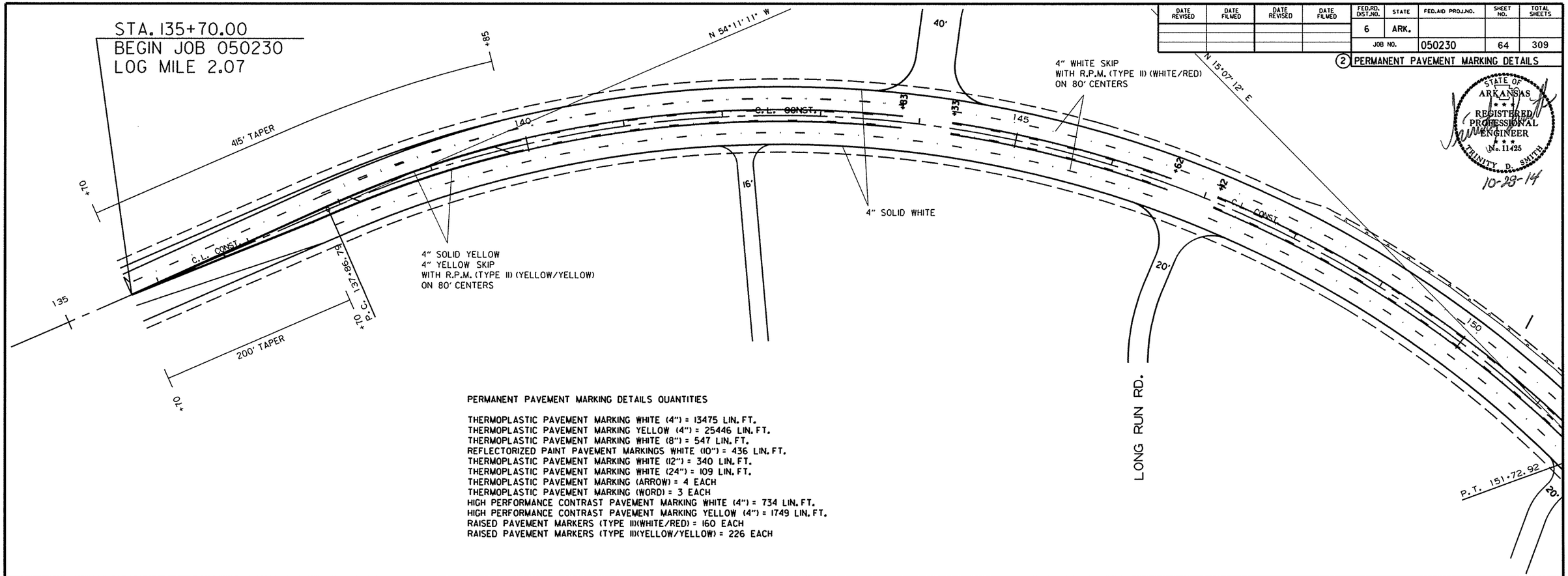
R050230.DGN

| 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. | | 050230 | 64 | 309 |

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 135+70.00
BEGIN JOB 050230
LOG MILE 2.07




PERMANENT PAVEMENT MARKING DETAILS QUANTITIES

THERMOPLASTIC PAVEMENT MARKING WHITE (4") = 13475 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (4") = 25446 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (8") = 547 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (10") = 436 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (12") = 340 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (24") = 109 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING (ARROW) = 4 EACH
THERMOPLASTIC PAVEMENT MARKING (WORD) = 3 EACH
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4") = 734 LIN. FT.
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") = 1749 LIN. FT.
RAISED PAVEMENT MARKERS (TYPE II)(WHITE/RED) = 160 EACH
RAISED PAVEMENT MARKERS (TYPE II)(YELLOW/YELLOW) = 226 EACH

6/12/2014

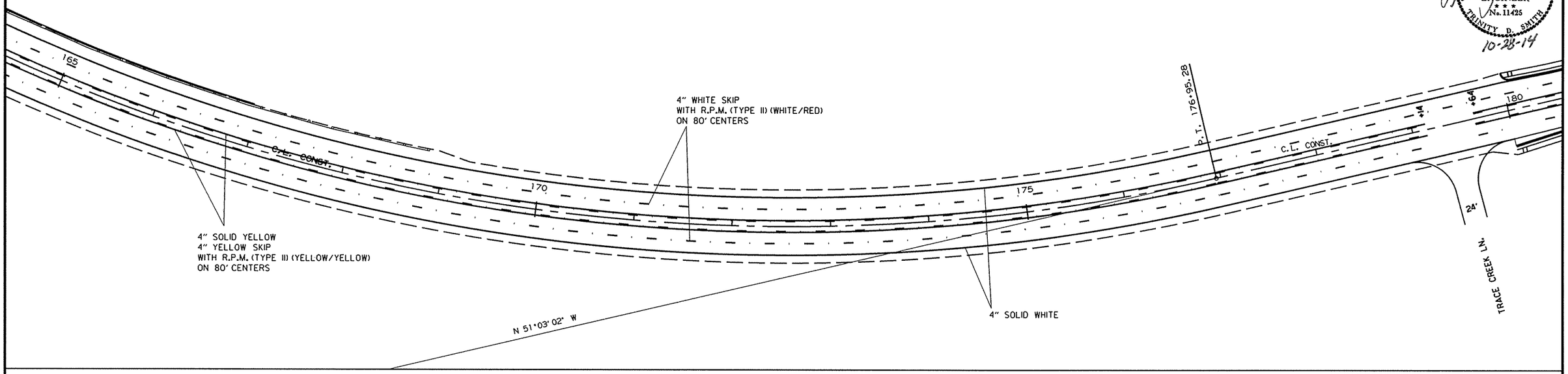
R050230.DGN

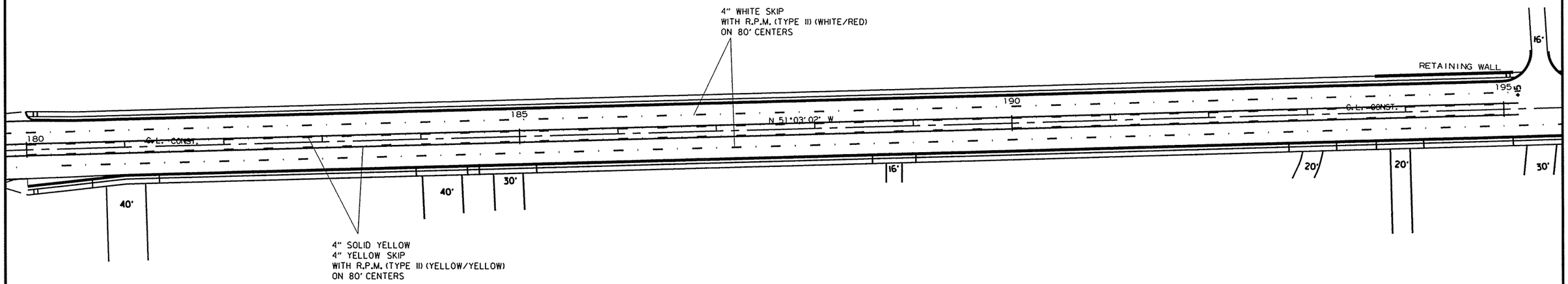
PERMANENT PAVEMENT MARKING DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 65 | 309 |

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




6/12/2014

R050230.DGN

PERMANENT PAVEMENT MARKING DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 66 | 309 |

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

P.I. 213+10.85

4" SOLID YELLOW
4" YELLOW SKIP
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

4" WHITE SKIP
WITH R.P.M. (TYPE II) (WHITE/RED)
ON 80' CENTERS

P.T. 216+56.80

HIGH PERFORMANCE CONTRAST
PAVEMENT MARKING
4" WHITE SKIP
WITH R.P.M. (TYPE II) (WHITE/RED)
ON 80' CENTERS

HIGH PERFORMANCE CONTRAST
PAVEMENT MARKING
4" SOLID YELLOW
4" YELLOW SKIP
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

P.C. 220+06.79

4" WHITE SKIP
WITH R.P.M. (TYPE II) (WHITE/RED)
ON 80' CENTERS

4" SOLID YELLOW
4" YELLOW SKIP
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

P.I. 224

RETAINING WALL

RETAINING WALL

C.L. CONST.

N 33°11'58" W

N 61°27'40" W

N 4°05'55" W

N 4°05'55" W

30'

40'

210

215

220

225

P.I. 303+52.33

HIGH PERFORMANCE CONTRAST
PAVEMENT MARKING
4" WHITE SKIP
WITH R.P.M. (TYPE II) (WHITE/RED)
ON 80' CENTERS

4" DB.. YELLOW
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

+69 RADIUS

+97 RADIUS

+45 RADIUS

+99 RADIUS

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

12" SOLID WHITE

HIGHWAY 9 (MAIN ST.)

N 83°04'24" E

P.T. 304+09.45

4" DB.. YELLOW
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

12" SOLID WHITE

24" SOLID WHITE

P.C. 232+46.56

P.T. 233+66.87

P.I. 235+56.37

20'

18.5'

305

+12

+47

+97

+34

+52

225

230

235

240

N 4°05'55" W

N 11°43'00" W

N 3°00'21" W

C.L. CONST.

P.C.

24" WHITE STOP BAR (TYPICAL)

4" DBL. YELLOW
W/TY. II RAISED
PVM'T. MKRS.
40' O.C.

10" REFLECTORIZED PAINT
PAVEMENT MARKING
WHITE ON ISLAND
(165 LIN. FT.)

10" REFLECTORIZED PAINT
PAVEMENT MARKING
WHITE ON ISLAND
(271 LIN. FT.)

8" WHITE
AROUND
ISLAND
(216 LIN. FT.)

8" WHITE
AROUND
ISLAND
(331 LIN. FT.)

2' MIN.

FINAL STRIPING DETAIL
FOR CONCRETE ISLAND

FOR ISLAND DIMENSIONS SEE SHEET 94.

4" SOLID WHITE
24" SOLID WHITE
12" SOLID WHITE

4" SOLID WHITE

P.I. 233+06.72

P.C. 233+86.93

RETAINING WALL

P.T. 237+25.78

P.I. 240+38.29

P.T. 308+69.12

N 9°55'18" E

P.I. 307+67.00

STA. 235+14.00
END JOB 050230

4" WHITE SKIP
WITH R.P.M. (TYPE II) (WHITE/RED)
ON 80' CENTERS

4" SOLID YELLOW
4" YELLOW SKIP
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

HIGH PERFORMANCE CONTRAST
PAVEMENT MARKING
4" SOLID YELLOW
4" YELLOW SKIP
WITH R.P.M. (TYPE II) (YELLOW/YELLOW)
ON 80' CENTERS

P.T. 227+23.83

6/12/2014

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PERMANENT PAVEMENT MARKING DETAILS

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 67 | 309 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

## ADVANCE WARNING SIGNS AND DEVICES

| SIGN NUMBER | DESCRIPTION | SIGN SIZE | STAGE 1 | STAGE 1B | STAGE 2 | STAGE 3 | MAXIMUM NUMBER REQUIRED | TOTAL SIGNS REQUIRED | | VERTICAL PANELS | TRAFFIC DRUMS | BARRICADES (TYPE III) | | FURNISHING & INSTALLING PRECAST CONC. BARRIER | RELOCATING PRECAST CONCRETE BARRIER | TEMPORARY IMPACT ATTENUATION BARRIER | TEMP. IMPACT ATTEN.BARR. (REPAIR) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | RIGHT | LEFT | | | | |
| | | | LIN. FT. - EACH | | | | | NO. | SQ. FT. | EACH | | | | LIN. FT. | | EACH | |
| W20-1 | ROAD WORK 1500 FT. | 48"x48" | 3 | 3 | 3 | | 3 | 3 | 48.0 | | | | | | | | |
| W20-1 | ROAD WORK 1000 FT. | 48"x48" | 3 | 3 | 3 | | 3 | 3 | 48.0 | | | | | | | | |
| W20-1 | ROAD WORK 500 FT. | 48"x48" | 3 | 3 | 3 | | 3 | 3 | 48.0 | | | | | | | | |
| W20-1 | ROAD WORK AHEAD | 48"x48" | 5 | 5 | 5 | | 5 | 5 | 80.0 | | | | | | | | |
| G20-2 | END ROAD WORK | 48"x24" | 8 | 8 | 8 | | 8 | 8 | 64.0 | | | | | | | | |
| R11-2 | ROAD CLOSED | 48"x30" | 10 | 4 | 7 | | 10 | 10 | 100.0 | | | | | | | | |
| OM-3L | OBJECT MARKER | 12"x36" | 15 | | 9 | | 15 | 15 | 45.0 | | | | | | | | |
| OM-3R | OBJECT MARKER | 12"x36" | 18 | | 11 | | 18 | 18 | 54.0 | | | | | | | | |
| W1-6 | LARGE ARROW | 48"x24" | | | 6 | | 6 | 6 | 48.0 | | | | | | | | |
| R4-1 | DO NOT PASS | 24"x30" | 6 | | 6 | | 6 | 6 | 30.0 | | | | | | | | |
| RSP-1 | SHOULDER CLOSED | 48"x30" | 2 | | 2 | | 2 | 2 | 20.0 | | | | | | | | |
| W8-1 | BUMP | 30"x30" | | | 6 | | 6 | 6 | 37.5 | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | VERTICAL PANELS | | 156 | | | | 156 | | | 156 | | | | | | | |
| | TRAFFIC DRUMS | | 161 | 18 | 311 | 8 | 311 | | | | 311 | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | TYPE III BARRICADE-RT. (16') | | 3 | 3 | 5 | | 5 | | | | | 80 | | | | | |
| | TYPE III BARRICADE-LT. (16') | | 3 | 3 | 2 | | 3 | | | | | | 48 | | | | |
| | TYPE III BARRICADE-RT. (32') | | 1 | | | | 1 | | | | | 32 | | | | | |
| | TYPE III BARRICADE-LT. (32') | | 2 | | | | 2 | | | | | | 64 | | | | |
| | | | | | | | | | | | | | | | | | |
| | FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER | | 1097 | | 560 | | 1657 | | | | | | | 1657 | | | |
| | RELOCATING PRECAST CONCRETE BARRIER | | | | 1032 | | 1032 | | | | | | | | 1032 | | |
| | TEMPORARY IMPACT ATTENUATION BARRIER | | 1 | | 2 | | 3 | | | | | | | | | 3 | |
| | TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) | | 1 | | 2 | | 3 | | | | | | | | | | 3 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| TOTALS: | | | | | | | | | 622.5 | 156 | 311 | 112 | 112 | 1657 | 1032 | 3 | 3 |

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

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

## CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

| DESCRIPTION | STAGE 1 | STAGE 2 | END OF JOB | CONSTRUCTION PAVEMENT MARKINGS | CONSTRUCTION PAVEMENT MARKINGS | | REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS | REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | RAISED PAVEMENT MARKERS | | THERMOPLASTIC PAVEMENT MARKINGS | | | | | | | REFLECTORIZED PAINT PAVEMENT MARKINGS | HIGH PERFORMANCE CONTRAST PAVEMENT MARKING | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | WORDS | ARROWS | | | TYPE II (WHITE/RED | TYPE II (YEL/YEL) | 4" WHITE | 4" YELLOW | 8" WHITE | 12" WHITE | 24" WHITE | WORDS | ARROWS | 10" WHITE | 4" WHITE | 4" YELLOW |
| | LIN. FT. - EACH | | | LIN. FT. | EACH | | LIN. FT. | | EACH | | LIN. FT. | | | | | EACH | | LIN. FT. | LIN. FT. | |
| CONSTRUCTION PAVEMENT MARKINGS | 37276 | 32172 | | 69448 | | | | | | | | | | | | | | | | |
| CONSTRUCTION PAVEMENT MARKINGS (WORDS) | | 2 | | | 2 | | | | | | | | | | | | | | | |
| CONSTRUCTION PAVEMENT MARKINGS (ARROWS) | | 3 | | | | 3 | | | | | | | | | | | | | | |
| REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS | | 3595 | | | | | 3595 | | | | | | | | | | | | | |
| REMOVABLE CONSTRUCTION PAV'T MARKINGS | | 2327 | | | | | | 2327 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) | | | 160 | | | | | | 160 | | | | | | | | | | | |
| RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) | | | 226 | | | | | | | 226 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS WHITE (4") | | | 13625 | | | | | | | | 13625 | | | | | | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4") | | | 25446 | | | | | | | | | 25446 | | | | | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS WHITE (8") | | | 547 | | | | | | | | | | 547 | | | | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS WHITE (12") | | | 340 | | | | | | | | | | | 340 | | | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS WHITE (24") | | | 109 | | | | | | | | | | | | 109 | | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS WORDS | | | 3 | | | | | | | | | | | | | 3 | | | | |
| THERMOPLASTIC PAVEMENT MARKINGS ARROWS | | | 4 | | | | | | | | | | | | | | 4 | | | |
| REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (10") | | | 436 | | | | | | | | | | | | | | | 436 | | |
| HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4") | | | 734 | | | | | | | | | | | | | | | | 734 | |
| HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") | | | 1749 | | | | | | | | | | | | | | | | | 1749 |
| | | | | | | | | | | | | | | | | | | | | |
| TOTALS: | | | | 69448 | 2 | 3 | 3595 | 2327 | 160 | 226 | 13625 | 25446 | 547 | 340 | 109 | 3 | 4 | 436 | 734 | 1749 |

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

7/31/2014

R050230.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. | | 050230 | 68 | 309 |

(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 | 12.14 | 24.28 | 12.14 | 1256.7 | 12.14 | 1461 | 30.00 | 30.00 | 612.0 | 192 | 141 | 800 | 4455 | 3405 | 615 | 18 | 859 | 859 | 1105 |
| ENTIRE | PROJECT | STAGE 2 | 5.28 | 10.56 | 5.28 | 557.4 | 5.28 | 1496 | 14.00 | 14.00 | 285.6 | 110 | 87 | 525 | 5205 | 300 | 85 | 2 | | | 246 |
| ENTIRE | PROJECT | STAGE 3 | | | | | | | | | | | | 25 | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | |
| *ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. | | | | | | | | | | | | 220 | 30 | 200 | 1000 | 900 | 200 | 5 | 1000 | 1000 | 1064 |
| | | | | | | | | | | | | | | | | | | | | | |
| TOTALS: | | | 17.42 | 34.84 | 17.42 | 1814.1 | 17.42 | 2957 | 44.00 | 44.00 | 897.6 | 522 | 258 | 1550 | 10660 | 4605 | 900 | 25 | 1859 | 1859 | 2416 |

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.

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

## EARTHWORK

| STATION | STATION | LOCATION / DESCRIPTION | UNCLASSIFIED EXCAVATION | COMPACTED EMBANKMENT | ROCK FILL | PRE-SPLITTING | * SOIL STABILIZATION |
|---|---|---|---|---|---|---|---|
| | | | CU. YD. | | | SQ. YD. | TON |
| ENTIRE | PROJECT | STAGE 1-MAIN LANES | 162145 | 51280 | 66407 | 4872 | |
| ENTIRE | PROJECT | STAGE 2-MAIN LANES | 9574 | 45743 | 1715 | 1020 | |
| ENTIRE | PROJECT | APPROACHES | 1485 | 4160 | | | |
| | | | | | | | |
| 195+38 | | SPRING LAKE ROAD | | 115 | | | |
| 201+00 | | MUSIC HALL LANE | 365 | | | | |
| 303+70 | 305+52 | HIGHWAY 9 (MAIN STREET) | 15 | 704 | | | |
| 231+94 | | WELCOME CENTER DRIVEWAY | | 2600 | | | |
| | | | | | | | |
| | | TRACE CREEK BRIDGE EARTHWORK | 2290 | | | | |
| | | BNSF RAILROAD BRIDGE EARTHWORK | 1095 | | | | |
| | | SPRINGN RIVER BRIDGE EARTHWORK | 2385 | | | | |
| | | | | | | | |
| 231+92 | | ISLAND EARTHWORK | | 374 | | | |
| 232+63 | | OBLITERATE EXISTING DRIVE | 75 | | | | |
| | | | | | | | |
| ENTIRE | PROJECT | CHANNEL CHANGE - TO BE USED IF AND | 200 | | | | |
| | | WHERE DIRECTED BY THE ENGINEER | | | | | |
| | | | | | | | |
| ENTIRE | PROJECT | TO BE USED IF AND WHERE | | | | | 100 |
| | | DIRECTED BY THE ENGINEER | | | | | |
| | | | | | | | |
| TOTALS: | | | 179629 | 104976 | 68122 | 5892 | 100 |

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

## APPROACH GUTTERS

| STATION | STATION | LOCATION | APPROACH GUTTER (TYPE C) | REINFORCING STEEL RDWY. (GR 60) |
|---|---|---|---|---|
| | | | CU.YD. | POUND |
| 159+74.34 | 160+10.84 | LT. SIDE | 14.80 | 810 |
| 159+94.44 | 160+30.94 | RT. SIDE | 14.80 | 810 |
| 162+03.06 | 162+39.56 | LT. SIDE | 14.80 | 810 |
| 162+23.16 | 162+59.66 | RT. SIDE | 14.80 | 810 |
| | | | | |
| TOTALS: | | | 59.20 | 3240 |

## CLEARING AND GRUBBING

| STATION | STATION | LOCATION | CLEARING | GRUBBING |
|---|---|---|---|---|
| | | | STATION | |
| 135+00 | 209+00 | MAIN LANES | 74 | 74 |
| 215+00 | 228+00 | MAIN LANES | 13 | 13 |
| 229+00 | 236+00 | MAIN LANES | 7 | 7 |
| | | | | |
| | | | | |
| TOTALS: | | | 94 | 94 |

## SOIL LOG

| STATION | LATITUDE DEG | LATITUDE MIN | LATITUDE SEC | LONGITUDE DEG | LONGITUDE MIN | LONGITUDE SEC | LOCATION | DEPTH FEET | LIQUID LIMIT | PLASTICITY INDEX | AASHTO CLASSIFICATION | COLOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 153+00 | 36 | 28 | 42.50 | 91 | 31 | 21.30 | 12' LT | 3.0Z | ND | NP | A-2-4 (0) | BROWN |
| 153+00 | 36 | 28 | 42.60 | 91 | 31 | 21.10 | 19' RT | 1.5Z | 28 | 8 | A-4 (1) | RD/BR |
| 153+00 | 36 | 28 | 42.60 | 91 | 31 | 21.30 | CL | 2.5Z | 16 | 1 | A-1-B | BROWN |
| 161+00 | 36 | 28 | 50.30 | 91 | 31 | 19.20 | 27' LT | 2.5Z | ND | NP | A-4 (0) | BROWN |
| 161+00 | 36 | 28 | 41.60 | 91 | 31 | 21.20 | 15' LT | 3.0Z | ND | NP | A-4 (0) | BROWN |
| 169+00 | 36 | 28 | 58.10 | 91 | 31 | 20.90 | 15' LT | 2.0Z | ND | NP | A-2-4 (0) | BROWN |
| 169+00 | 36 | 28 | 58.10 | 91 | 31 | 20.90 | 24' LT | 3.5Z | ND | NP | A-2-4 (0) | BROWN |
| 169+00 | 36 | 28 | 58.10 | 91 | 31 | 20.80 | 9' RT | 1.0Z | 44 | 22 | A-7-6 (18) | BROWN |
| 177+00 | 36 | 29 | 4.70 | 91 | 31 | 26.40 | 25' LT | 5 | 35 | 22 | A-6 (4) | RED |
| 177+00 | 36 | 29 | 4.50 | 91 | 31 | 26.40 | 34' LT | 5 | 46 | 30 | A-7-6 (16) | RED |
| 177+00 | 36 | 29 | 2.00 | 91 | 31 | 24.10 | CL | 5 | 24 | 7 | A-2-4 (0) | BROWN |
| 208+00 | 36 | 29 | 6.70 | 91 | 31 | 29.10 | 6' RT | 4.0Z | 35 | 22 | A-6 (6) | RED |
| 208+00 | 36 | 29 | 25.10 | 91 | 31 | 54.10 | 14' RT | 5 | 37 | 24 | A-6 (8) | RED |
| 208+00 | 36 | 29 | 25.20 | 91 | 31 | 54.00 | 26' RT | 5 | 36 | 22 | A-6 (5) | RED |
| 216+00 | 36 | 29 | 31.20 | 91 | 32 | 0.20 | 12' RT | 5 | 51 | 35 | A-7-6 (16) | RED |
| 216+00 | 36 | 29 | 31.10 | 91 | 32 | 0.30 | 2' LT | 5 | 47 | 29 | A-7-6 (18) | RED |
| 216+00 | 36 | 29 | 29.00 | 91 | 31 | 58.00 | 22' LT | 5 | 57 | 38 | A-7-6 (27) | RED |
| 224+00 | 36 | 29 | 35.20 | 91 | 32 | 8.60 | 9' RT | 2.2Z | 43 | 24 | A-7-6 (11) | BROWN |
| 224+00 | 36 | 29 | 34.80 | 91 | 32 | 8.60 | 13' LT | 4.2Z | 36 | 23 | A-6 (8) | RED |
| 224+00 | 36 | 29 | 35.20 | 91 | 32 | 8.70 | 21' LT | 3.0Z | 40 | 27 | A-6 (10) | RED |
| 234+00 | 36 | 29 | 39.80 | 91 | 32 | 10.60 | 20' RT | 5 | 52 | 35 | A-7-6 (21) | RED |
| 234+00 | 36 | 29 | 44.50 | 91 | 32 | 12.00 | CL | 5 | 45 | 29 | A-7-6 (15) | RED |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

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

## EROSION CONTROL MATTING

| STATION | STATION | LOCATION | LENGTH | CLASS 3 |
|---|---|---|---|---|
| | | | LIN. FT. | SQ. YD. |
| 155+27 | 156+87 | HWY. 63 RT. | 160.0 | 142.2 |
| 154+00 | 160+22 | HWY. 63 RT. | 622.0 | 552.9 |
| 179+41 | 193+00 | HWY. 63 LT. | 1359.0 | 1208.0 |
| 214+80 | 215+20 | HWY. 63 LT. | 40.0 | 35.6 |
| 223+00 | 225+00 | HWY. 63 LT. | 200.0 | 177.8 |
| | | | | |
| *ENTIRE PROJECT TO BE USED IF AND WHERE | | | 500.0 | 444.4 |
| DIRECTED BY THE ENGINEER. | | | | |
| | | | | |
| TOTAL: | | | | 2560.9 |

NOTE: AVERAGE WIDTH = 8'-0"

## REMOVAL AND DISPOSAL OF FENCE

| STATION | STATION | LOCATION | FENCE |
|---|---|---|---|
| | | | LIN. FT. |
| 135+60 | 136+44 | MAIN LANES ON RT. | 85 |
| 159+48 | 160+44 | MAIN LANES ON RT. | 90 |
| 192+76 | 193+44 | MAIN LANES ON RT. | 41 |
| 201+40 | 207+44 | MAIN LANES ON RT. | 600 |
| 207+18 | 207+50 | MAIN LANES ON LT. | 105 |
| 207+45 | 209+08 | MAIN LANES ON LT. | 215 |
| 208+11 | 208+97 | MAIN LANES ON RT. | 100 |
| 209+48 | 209+51 | MAIN LANES ON LT. | 25 |
| 209+62 | 209+85 | MAIN LANES ON RT. | 25 |
| 210+10 | 213+00 | MAIN LANES ON LT. | 108 |
| 213+02 | 213+04 | MAIN LANES ON LT. | 12 |
| 213+62 | 213+68 | MAIN LANES ON LT. | 15 |
| 215+82 | 218+00 | MAIN LANES ON RT. | 260 |
| | | | |
| TOTAL: | | | 1681 |

7/31/2014

R050230.DGN

QUANTITIES

## REMOVAL AND DISPOSAL ITEMS

| STATION | STATION | LOCATION | CURB | CURB AND GUTTER | CONCRETE PAVEMENT | CONCRETE ISLANDS | CONCRETE DRIVEWAYS | FOUNDATIONS | SIGN FOUNDATIONS | GUARDRAIL | WALLS | SIGNS | BILLBOARDS | COLUMNS | CONCRETE SLABS | GATES | LUMINAIRE POLE & FOUNDATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LIN. FT. | LIN. FT. | SQ. YD. | SQ. YD. | SQ. YD. | SQ. YD. | EACH | LIN. FT. | LIN. FT. | EACH | EACH | EACH | SQ. YD. | EACH | EACH |
| 146+28 | 153+62 | HWY. 63 LT. | | | | | | | | 734 | | | | | | | |
| 151+56 | 151+95 | HWY. 63 RT. | | | | | | | | | 28 | | | 4 | | | |
| 152+28 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 152+28 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 157+80 | | HWY. 63 RT. | | | | | | | | | | | | | 100 | | |
| 158+31 | 160+61 | HWY. 63 RT. | | | | | | | | 230 | | | | | | | |
| 159+51 | 160+59 | HWY. 63 LT. | | | | | | | | 108 | | | | | | | |
| 161+50 | 162+55 | HWY. 63 RT. | | | | | | | | 105 | | | | | | | |
| 161+51 | 163+82 | HWY. 63 LT. | | | | | | | | 231 | | | | | | | |
| 179+20 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 180+61 | | HWY. 63 RT. | | | | | | | 1 | | | 1 | | | | | |
| 181+90 | | HWY. 63 RT. | | | | | | | 3 | | | 1 | | | | | |
| 183+29 | | HWY. 63 RT. | | | | | | | 3 | | | 1 | | | | | |
| 184+93 | | HWY. 63 RT. | | | | | | | | | | 1 | | | | | |
| 187+32 | | HWY. 63 RT. | | | | | | | 3 | | | 1 | | | | | |
| 188+90 | | HWY. 63 RT. | | | | | | | | | | | | | | 2 | |
| 189+00 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 189+34 | | HWY. 63 RT. | | | | | | | | | | | | | | | 1 |
| 191+69 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 193+39 | | HWY. 63 RT. | | | | | | | 3 | | | 1 | | | | | |
| 193+80 | | HWY. 63 RT. | | | | | | | 2 | | | | | | | | |
| 194+69 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 198+17 | | HWY. 63 RT. | | | | | | | 3 | | | | | | | | |
| 200+86 | | HWY. 63 RT. | | | | | | | 3 | | | | | | | | |
| 201+69 | | HWY. 63 RT. | | | | | | | 6 | | | | 1 | | | | |
| 204+15 | | HWY. 63 LT. | | | | | | | 4 | | | | 1 | | | | |
| 204+65 | | HWY. 63 RT. | | | | | | | 3 | | | 1 | | | | | |
| 208+87 | 214+75 | HWY. 63 LT. | | | 1310 | | | | | | | | | | | | |
| 210+07 | 210+14 | HWY. 63 LT. | 15 | | | | | | | | | | | | | | |
| 210+17 | | HWY. 63 LT. | | | | | | | | | | 1 | | | | | |
| 210+22 | 212+94 | HWY. 63 LT. | 299 | | | | | | | | | | | | | | |
| 210+67 | | HWY. 63 RT. | | | | | | | | | | 1 | | | | | |
| 210+92 | | HWY. 63 LT. | | | | | | | | | | 1 | | | | | |
| 213+00 | | HWY. 63 LT. | | | | | | | | | | 1 | | | | | |
| 213+02 | 213+68 | HWY. 63 LT. | 38 | | | | | | | | | | | | | | |
| 213+90 | | HWY. 63 RT. | | | | | | | 2 | | | 1 | | | | | |
| 214+18 | 215+45 | HWY. 63 RT. | | 208 | | | | | | | | | | | | | |
| 214+88 | | HWY. 63 RT. | | | | | | | 1 | | | 1 | | | | | |
| 214+91 | 215+37 | HWY. 63 RT. | | | | | 121 | | | | | | | | | | |
| 215+81 | 218+10 | HWY. 63 RT. | | | | | | | | 229 | | | | | | | |
| 216+79 | | HWY. 63 RT. | | | | | | 5 | | | | 1 | | | | | |
| 216+91 | 217+94 | HWY. 63 LT. | | | | | | | | 103 | | | | | | | |
| 217+99 | | HWY. 63 RT. | | | | | | 4 | | | | 1 | | | | | |
| 218+82 | 221+05 | HWY. 63 LT. | | | | | | | | 223 | | | | | | | |
| 218+98 | 220+02 | HWY. 63 RT. | | | | | | | | 104 | | | | | | | |
| 220+58 | | HWY. 63 LT. | | | | | | 1 | | | | 1 | | | | | |
| 221+78 | | HWY. 63 LT. | | | | | | 2 | | | | 1 | | | | | |
| 225+49 | 227+73 | HWY. 63 RT. | | | | | | | | 224 | | | | | | | |
| 227+21 | 227+43 | HWY. 63 LT. | | | | | | | | 22 | | | | | | | |
| 229+93 | 232+20 | HWY. 63 RT. | | | | | | | | 227 | | | | | | | |
| 230+24 | 230+45 | HWY. 63 LT. | | | | | | | | 21 | | | | | | | |
| 231+17 | 231+70 | HWY. 63 LT. | | | | 111 | | | | | | | | | | | |
| 231+81 | 231+94 | HWY. 63 LT. | | | | 118 | | | | | | | | | | | |
| 232+04 | 232+48 | HWY. 63 LT. | | | | 180 | | | | | | | | | | | |
| 233+11 | 234+90 | HWY. 63 RT. | | | | | | | | 179 | | | | | | | |
| 234+87 | | HWY. 63 LT. | | | | | | | | | | 1 | | | | | |
| 234+89 | 235+06 | HWY. 63 LT. | | | | | | | | 17 | | | | | | | |
| TOTALS: | | | 352 | 208 | 1310 | 409 | 121 | 12 | 49 | 2757 | 28 | 24 | 2 | 4 | 100 | 2 | 1 |

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 69 | 309 |

(2) QUANTITIES

### MAILBOXES

| LOCATION | MAILBOXES | MAILBOX SUPPORTS (SINGLE) |
|---|---|---|
| | | EACH |
| ENTIRE PROJECT | 2 | 2 |
| | | |
| TOTALS: | 2 | 2 |

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

### REMOVAL AND DISPOSAL OF CULVERTS

| STATION | DESCRIPTION | PIPE CULVERTS | BOX CULVERTS |
|---|---|---|---|
| | | EACH | EACH |
| 146+85 | 24" x 70' PIPE CULVERT | 1 | |
| 179+41 | 18" x 24' PIPE CULVERT | 1 | |
| 184+25 | 24" x 48' PIPE CULVERT | 1 | |
| 188+79 | 24" x 48' PIPE CULVERT | 1 | |
| 193+00 | 15" x 55' PIPE CULVERT | 1 | |
| 193+93 | 15" x 61' PIPE CULVERT | 1 | |
| 195+38 | 15" x 68' PIPE CULVERT | 1 | |
| 196+42 | R.C. PIPE CULVERT CROSS DRAIN | 1 | |
| 197+33 | 18" x 49' PIPE CULVERT | 1 | |
| 201+20 | 18" x 47' PIPE CULVERT | 1 | |
| 209+78 | 18" x 55' PIPE CULVERT | 1 | |
| 210+03 | 18" x 54' PIPE CULVERT | 1 | |
| 213+17 | 18" x 52' PIPE CULVERT | 1 | |
| 215+13 | 24" x 56' PIPE CULVERT | 1 | |
| 232+75 | WELCOME CENTER BOX CULVERT | | 1 |
| | | | |
| TOTALS: | | 14 | 1 |

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

### FENCING

| STATION | STATION | LOCATION | WIRE FENCE (TYPE C) |
|---|---|---|---|
| | | | LIN. FT. |
| 206+94 | 208+97 | HWY. 63 LT. | 272 |
| | | | |
| TOTAL: | | | 272 |

### DUMPED RIPRAP AND FILTER BLANKET

| STATION | STATION | LOCATION | DUMPED RIPRAP | FILTER BLANKET |
|---|---|---|---|---|
| | | | CU. YDS. | SQ. YDS. |
| 140+30 | 146+00 | MAIN LANES 2:1 BACKSLOPE | 1510 | |
| 152+00 | 154+00 | MAIN LANES 2:1 BACKSLOPE | 540 | |
| 162+00 | 178+00 | TRACE CREEK SLOPES | 2820 | 3975 |
| | | | | |
| TOTALS: | | | 4870 | 3975 |

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

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

### BENCH MARKS

| STATION | LOCATION | BENCH MARKS |
|---|---|---|
| | | EACH |
| 140+80 | HWY. 63 RT. R.C. BOX HEAD WALL | 1 |
| 162+13 | HWY. 63 RT. CORNER OF BRIDGE | 1 |
| 219+18 | HWY. 63 LT. CORNER OF BRIDGE | 1 |
| | | |
| | | |
| TOTAL: | | 3 |

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

### GUARDRAIL

| STATION | STATION | LOCATION | GUARDRAIL (TYPE A) | THRIE BEAM GUARDRAIL TERMINAL | GUARDRAIL TERMINAL (TYPE 2) | TERMINAL ANCHOR POST (TYPE 1) |
|---|---|---|---|---|---|---|
| | | | LIN. FT. | EACH | | |
| 148+25.00 | 159+93.44 | LT. SIDE | 1150 | 1 | | 1 |
| 157+94.79 | 160+13.54 | RT. SIDE | 150 | 1 | 1 | |
| 162+12.46 | 168+83.25 | LT. SIDE | 602 | 1 | 1 | |
| 162+32.56 | 163+26.31 | RT. SIDE | 75 | 1 | | 1 |
| | | | | | | |
| | | | | | | |
| TOTALS: | | | 1977 | 4 | 2 | 2 |

### WHEELCHAIR RAMPS

| STATION | LOCATION | TYPE 3 | TYPE 4 |
|---|---|---|---|
| | | SQ.YD. | |
| 180+03 | HWY. 63 RT. | 3.3 | |
| 180+10 | HWY. 63 LT. | 3.9 | |
| 195+12 | HWY. 63 LT. | 5.4 | |
| 195+65 | HWY. 63 LT. | 5.4 | |
| 200+92 | HWY. 63 RT. | 5.4 | |
| 201+52 | HWY. 63 RT. | 5.4 | |
| 231+50 | HWY. 63 LT. | | 2.7 |
| 231+55 | HWY. 63 LT. | | 2.7 |
| 231+59 | HWY. 63 RT. | 3.7 | |
| 231+72 | HWY. 63 LT. | | 2.7 |
| 232+15 | HWY. 63 LT. | | 2.7 |
| 232+20 | HWY. 63 RT. | 5.9 | |
| 232+75 | HWY. 63 LT. | | 2.7 |
| 232+91 | HWY. 63 LT. | 2.9 | |
| 321+30 | HWY. 63 LT. | 2.8 | |
| | | | |
| | | | |
| TOTALS: | | 44.1 | 13.5 |

### 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. |
| 135+70 | 140+00 | HWY. 63 LT. | 430.00 | 9 | | | 430.00 | 191.11 | 2.41 |
| 140+25 | 142+10 | HWY. 63 RT. | 185.00 | 15 | 10 | 308.33 | | 82.22 | 1.04 |
| 146+00 | 152+00 | HWY. 63 RT. | 600.00 | 6 | | | 400.00 | 266.67 | 3.36 |
| 152+00 | 155+27 | HWY. 63 RT. | 327.00 | 15 | 10 | 545.00 | | 145.33 | 1.83 |
| 159+00 | 160+23 | HWY. 63 RT. | 123.00 | 15 | | | 205.00 | 54.67 | 0.69 |
| 179+30 | 180+00 | HWY. 63 RT. | 70.00 | 9 | | | 70.00 | 31.11 | 0.39 |
| 194+35 | 195+10 | HWY. 63 RT. | 75.00 | 9 | | | 75.00 | 33.33 | 0.42 |
| 196+42 | 197+00 | HWY. 63 RT. | 58.00 | 6 | | | 38.67 | 25.78 | 0.32 |
| 201+80 | 204+37 | HWY. 63 RT. | 257.00 | 6 | | | 171.33 | 114.22 | 1.44 |
| 206+80 | | HWY. 63 LT. (SIDE SLOPE) | 85.00 | 8 | | | 75.56 | 37.78 | 0.48 |
| 217+39 | | HWY. 63 LT. (SIDE SLOPE) | 20.00 | 8 | | | 17.78 | 8.89 | 0.11 |
| 234+50 | | HWY. 63 RT. (SIDE SLOPE) | 11.00 | 8 | | | 9.78 | 4.89 | 0.06 |
| | | | | | | | | | |
| | | | | | | | | | |
| TOTALS: | | | | | | 853.33 | 1493.12 | 996.00 | 12.55 |

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

7/31/2014

R050230.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. | | 050230 | 70 | 309 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

## CONCRETE WALKS

| STATION | STATION | LOCATION | LENGTH | CONCRETE WALKS | CONCRETE WALKS (TYPE SPECIAL) |
|---|---|---|---|---|---|
| | | | LIN. FT. | SQ.YD. | SQ.YD. |
| 180+10 | 180+66 | HWY. 63 RT. | 56 | 31 | |
| 181+26 | 183+94 | HWY. 63 RT. | 268 | 149 | |
| 184+46 | 184+58 | HWY. 63 RT. | 12 | 7 | |
| 185+16 | 188+57 | HWY. 63 RT. | 341 | 189 | |
| 189+01 | 192+80 | HWY. 63 RT. | 379 | 211 | |
| 193+29 | 193+69 | HWY. 63 RT. | 40 | 22 | |
| 194+17 | 195+09 | HWY. 63 RT. | 92 | 51 | |
| 195+67 | 197+01 | HWY. 63 RT. | 134 | 74 | |
| 197+65 | 200+88 | HWY. 63 RT. | 323 | 179 | |
| 201+56 | 209+74 | HWY. 63 RT. | 818 | 454 | |
| 210+31 | 212+89 | HWY. 63 RT. | 258 | 143 | |
| 213+46 | 214+87 | HWY. 63 RT. | 141 | 78 | |
| 214+08 | 215+01 | HWY. 63 RT. | 93 | | 30 |
| 215+40 | 218+05 | HWY. 63 RT. | 265 | 147 | |
| 219+58 | 226+70 | HWY. 63 RT. | 712 | 396 | |
| 230+35 | 232+16 | HWY. 63 RT. | 265 | 147 | |
| 180+08 | 195+07 | HWY. 63 LT. | 1499 | 833 | |
| 195+69 | 209+45 | HWY. 63 LT. | 1376 | 764 | |
| 210+15 | 213+00 | HWY. 63 LT. | 285 | 158 | |
| 213+70 | 217+68 | HWY. 63 LT. | 398 | 221 | |
| 219+20 | 222+86 | HWY. 63 LT. | 366 | 203 | |
| 223+52 | 223+99 | HWY. 63 LT. | 47 | 26 | |
| 224+64 | 224+87 | HWY. 63 LT. | 23 | 13 | |
| 225+52 | 226+70 | HWY. 63 LT. | 118 | 66 | |
| 230+35 | 231+64 | HWY. 63 LT. | 286 | 159 | |
| 231+56 | | ISLAND WALK | 17 | 8 | |
| 232+03 | 234+54 | HWY. 63 LT. | 375 | 208 | |
| 232+39 | | ISLAND WALK | 54 | 324 | |
| 235+02 | 235+08 | HWY. 63 LT. | 6 | 9 | |
| | | | | | |
| TOTALS: | | | | 5270 | 30 |

## 4" PIPE UNDERDRAIN

| STATION | STATION | LOCATIONS | 4" PIPE UNDERDRAINS | UNDERDRAIN OUTLET PROTECTORS |
|---|---|---|---|---|
| | | | LIN. FT. | EACH |
| 153+31 | 181+00 | | 2769 | 13 |
| 195+40 | 207+11 | | 1171 | |
| 207+11 | 217+61 | | 1050 | |
| 219+40 | 226+55 | | 715 | |
| 230+50 | 232+74 | | 224 | |
| | | | | |
| * ENTIRE PROJECT TO BE USED IF AND | | | | |
| WHERE DIRECTED BY THE ENGINEER | | | 500 | 4 |
| | | | | |
| TOTALS: | | | 6429 | 17 |

* NOTE: QUANTITIES 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.

## COLD MILLING ASPHALT PAVEMENT

| STATION | STATION | LOCATION | AVG. WIDTH | COLD MILLING ASPHALT PAVEMENT |
|---|---|---|---|---|
| | | | FEET | SQ. YD. |
| 134+70 | 136+30 | MAIN LANES | 34 | 604.44 |
| 180+50 | 182+00 | MAIN LANES | 10 | 166.67 |
| 234+60 | 235+60 | MAIN LANES | 48 | 533.33 |
| 302+40 | 303+70 | HWY. 9 | 28 | 404.44 |
| | | | | |
| TOTAL: | | | | 1708.88 |

NOTE: AVERAGE MILLING DEPTH 1".

## SELECTED PIPE BEDDING

| LOCATION | SELECTED PIPE BEDDING |
|---|---|
| | CU.YD. |
| ENTIRE PROJECT TO BE USED IF | |
| AND WHERE DIRECTED BY THE | 600 |
| ENGINEER | |
| | |
| | |
| TOTAL: | 600 |

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

## CONCRETE BASE

| STATION | STATION | LOCATION | LENGTH | PORTLAND CEMENT CONCRETE BASE | | |
|---|---|---|---|---|---|---|
| | | | | AVG. WID. | 8" U.T. | 11" U.T. |
| | | | FEET | FEET | SQ. YD. | |
| 197+75 | 199+96 | HWY. 63 LT. | 221.0 | 2.0 | 49.1 | 110.5 |
| 211+92 | 213+65 | HWY. 63 LT. | 173.0 | 2.0 | 38.4 | 86.5 |
| 234+48 | 235+14 | HWY. 63 LT. | 66.0 | 2.0 | 14.7 | 33.0 |
| 234+87 | 235+52 | HWY. 63 RT. (TRENCH) | 65.0 | 2.0 | 14.4 | 14.4 |
| 305+34 | 305+55 | HWY. 9 LT. | 21.0 | 2.0 | 4.7 | 10.5 |
| | | | | | | |
| TOTALS: | | | | | 121.3 | 254.9 |

## CONCRETE COMBINATION CURB AND GUTTER

| STATION | STATION | LOCATION | TYPE A (1' 6") |
|---|---|---|---|
| | | | LIN. FT. |
| 180+10 | 180+74 | HWY. 63 RT. | 64 |
| 181+26 | 183+94 | HWY. 63 RT. | 268 |
| 184+46 | 184+66 | HWY. 63 RT. | 20 |
| 185+08 | 188+65 | HWY. 63 RT. | 357 |
| 188+93 | 192+88 | HWY. 63 RT. | 395 |
| 193+21 | 193+77 | HWY. 63 RT. | 56 |
| 194+09 | 195+17 | HWY. 63 RT. | 108 |
| 195+59 | 197+09 | HWY. 63 RT. | 150 |
| 197+57 | 201+11 | HWY. 63 RT. | 393 |
| 201+34 | 209+81 | HWY. 63 RT. | 868 |
| 210+23 | 212+97 | HWY. 63 RT. | 274 |
| 213+38 | 214+95 | HWY. 63 RT. | 157 |
| 215+32 | 218+04 | HWY. 63 RT. | 272 |
| 219+56 | 226+70 | HWY. 63 RT. | 714 |
| 230+35 | 232+22 | HWY. 63 RT. | 300 |
| 232+19 | 234+88 | HWY. 63 RT. | 352 |
| 180+00 | 195+29 | HWY. 63 LT. | 1552 |
| 195+47 | 209+53 | HWY. 63 LT. | 1422 |
| 210+06 | 213+08 | HWY. 63 LT. | 302 |
| 213+62 | 217+68 | HWY. 63 LT. | 406 |
| 219+20 | 222+94 | HWY. 63 LT. | 374 |
| 223+44 | 224+07 | HWY. 63 LT. | 63 |
| 224+57 | 224+95 | HWY. 63 LT. | 38 |
| 225+44 | 226+70 | HWY. 63 LT. | 126 |
| 230+35 | 231+68 | HWY. 63 LT. | 292 |
| 231+98 | 234+62 | HWY. 63 LT. | 441 |
| 234+94 | 235+32 | HWY. 63 LT. | 38 |
| | | | |
| | | | |
| TOTAL: | | | 9802 |

## RUMBLE STRIPS IN ASPHALT SHOULDERS

| STATION | STATION | LOCATION | * RUMBLE STRIPS IN ASPHALT SHOULDERS |
|---|---|---|---|
| | | | LIN.FT. |
| 135+70 | 141+87 | MAIN LANES - RT. | 606.41 |
| 142+55 | 146+27 | MAIN LANES - RT. | 362.15 |
| 147+43 | 151+39 | MAIN LANES - RT. | 385.52 |
| 152+11 | 160+31 | MAIN LANES - RT. | 828.26 |
| 162+21 | 178+84 | MAIN LANES - RT. | 1686.53 |
| 135+70 | 143+47 | MAIN LANES - LT. | 791.83 |
| 144+70 | 160+15 | MAIN LANES - LT. | 1554.89 |
| 162+05 | 180+00 | MAIN LANES - LT. | 1771.48 |
| | | | |
| | | | |
| TOTAL: | | | 7987.07 |

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

## ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

| LOCATION | TON | TACK COAT |
|---|---|---|
| | | GALLON |
| ENTIRE PROJECT - TO BE USED IF AND WHERE | 44 | 88 |
| DIRECTED BY THE ENGINEER | | |
| | | |
| TOTALS: | 44 | 88 |

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

## CONCRETE CURB

| STATION | STATION | LOCATION | TYPE C | TYPE D |
|---|---|---|---|---|
| | | | LIN. FT. | LIN. FT. |
| 208+87 | 209+57 | HWY. 63 LT. | | 70 |
| 209+99 | 213+12 | HWY. 63 LT. | | 300 |
| 213+54 | 214+75 | HWY. 63 LT. | | 115 |
| 214+18 | 214+84 | HWY. 63 RT. | | 70 |
| 222+32 | 222+98 | HWY. 63 LT. | | 77 |
| 223+33 | 224+10 | HWY. 63 LT. | | 90 |
| 224+45 | 225+04 | HWY. 63 LT. | | 68 |
| 225+38 | 226+21 | HWY. 63 LT. | | 97 |
| 231+56 | | ISLAND LT. | 272 | |
| 232+10 | 233+22 | HWY. 63 LT. | | 110 |
| 232+39 | | ISLAND LT. | | |
| 233+39 | 234+60 | HWY. 63 LT. | 165 | 105 |
| | | | | |
| TOTALS: | | | 437 | 1102 |

## TRANSITIONAL APPROACH RAILING

| STATION | | TRANSITIONAL APPROACH RAILING |
|---|---|---|
| | | EACH |
| 219+50 | HWY. 63 LT. (NORTH CORNER OF BNSF BRIDGE) | 1 |
| | | |
| TOTAL: | | 1 |

NOTE: REFER TO SPECIAL DETAIL.

## PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

| STATION | LOCATION | WIDTH | LENGTH | CU.YD. |
|---|---|---|---|---|
| | | FEET | | |
| 196+42 | HWY. 63 | 10.83 | 23.76 | 15.1 |
| 206+80 | HWY. 63 | 8.50 | 24.67 | 12.3 |
| 230+50 | HWY. 63 | 7.92 | 14.89 | 6.9 |
| 231+12 | HWY. 63 LT | 7.92 | 52 | 24.2 |
| 231+50 | HWY. 63 LT | 7.92 | 40.5 | 18.8 |
| 232+63 | HWY. 63 LT | 7.92 | 43 | 20.0 |
| 233+15 | HWY. 63 LT | 7.92 | 63 | 29.3 |
| | | | | |
| TOTAL: | | | | 126.6 |

AVG. DEPTH = 19"

## ACHM PATCHING OF EXISTING ROADWAY

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

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

7/31/2014

R050230.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. | | 050230 | 71 | 309 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

## RETAINING WALLS

| STATION | STATION | LOCATION | CLASS S CONCRETE-ROADWAY | REINF. STEEL-ROADWAY (GRADE 60) | UNCL.EXC. FOR STR.-ROADWAY | ARCHITECTURAL FINISH | TEXTURED COATING FINISH | HAND RAILING |
|---|---|---|---|---|---|---|---|---|
| | | | CU.YDS. | POUNDS | CU.YDS. | SQ.FT. | SQ.YD. | LN. FT. |
| 150+43 | 153+50 | MAIN LANES ON LT. | 139.44 | 14605 | 680 | 1898 | 133 | |
| 162+00 | 167+00 | MAIN LANES ON LT. | 302.00 | 16670 | 1331 | 3744 | 332 | |
| 193+70 | 195+11 | MAIN LANES ON LT. | 70.30 | 6643 | 605 | 925 | 86 | 176 |
| 195+64 | 202+70 | MAIN LANES ON LT. | 418.00 | 23430 | 1309 | 5338 | 438 | 694 |
| 219+00 | 221+50 | MAIN LANES ON LT. | 246.00 | 13030 | 729 | 2576 | 202 | |
| 219+80 | 223+00 | MAIN LANES ON RT. | 280.00 | 14830 | 921 | 2875 | 236 | 296 |
| 233+15 | 284+87 | MAIN LANES ON RT. | 104.00 | 5840 | 457 | 1389 | 105 | 173 |
| | | | | | | | | |
| TOTALS: | | | 1559.74 | 95048 | 6032 | 18745 | 1532 | 1339 |

## 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) | SIDE DRAINS 24" | STANDARD DRAWINGS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | FEET | STATION | STATION | SQ. YD. | SQ. YD. | TON | TON | LIN. FT. | |
| 142+22 | RT | MAIN LANES | 16 | | | | 344.7 | 37.9 | 140.8 | | |
| 144+08 | LT | MAIN LANES - RIVERVIEW DRIVE | 40 | | | | 794.1 | 87.4 | 324.3 | | |
| 146+85 | RT | MAIN LANES - LONG RUN ROAD | 20 | | | | 367.5 | 40.4 | 150.1 | 70 | PCC-1, PCM-1, PCP-1, PCP-1 |
| 151+75 | RT | MAIN LANES - TRACE CREEK LANE | 20 | | | | 221.2 | 24.3 | 90.3 | 92 | PCC-1, PCM-1, PCP-1, PCP-2 |
| 179+41 | RT | MAIN LANES | 24 | | | | 218.2 | 24.0 | 89.1 | | |
| 181+00 | RT | MAIN LANES | 40 | 180+66 | 181+34 | 60.40 | 348.9 | 38.4 | 142.5 | | DR-1 |
| 184+25 | RT | MAIN LANES | 40 | 183+91 | 184+59 | 60.40 | 186.7 | 20.5 | 76.2 | | DR-1 |
| 184+88 | RT | MAIN LANES | 30 | 184+59 | 185+17 | 51.60 | 126.7 | 13.9 | 51.7 | | DR-1 |
| 188+79 | RT | MAIN LANES | 16 | 188+57 | 189+01 | 39.10 | 35.6 | 3.9 | 14.5 | | DR-1 |
| 193+00 | RT | MAIN LANES | 20 | 192+76 | 193+24 | 42.70 | 66.7 | 7.3 | 27.2 | | DR-1 |
| 193+93 | RT | MAIN LANES | 20 | 193+69 | 194+17 | 42.70 | 193.3 | 21.3 | 78.9 | | DR-1 |
| 195+38 | RT | MAIN LANES | 30 | 195+09 | 195+67 | 51.60 | 103.3 | 11.4 | 42.2 | | DR-1 |
| 197+33 | RT | MAIN LANES | 36 | 197+01 | 197+65 | 56.90 | 84.0 | 9.2 | 34.3 | | DR-1 |
| 209+78 | LT | MAIN LANES | 40 | 209+44 | 210+12 | 60.40 | 97.8 | 10.8 | 39.9 | | DR-1 |
| 210+03 | RT | MAIN LANES | 30 | 209+74 | 210+32 | 51.60 | 66.7 | 7.3 | 27.2 | | DR-1 |
| 213+17 | RT | MAIN LANES | 30 | 212+88 | 213+46 | 51.60 | 26.7 | 2.9 | 10.9 | | DR-1 |
| 213+34 | LT | MAIN LANES | 40 | 213+00 | 213+68 | 60.40 | 168.9 | 18.6 | 69.0 | | DR-1 |
| 215+13 | RT | MAIN LANES | 40 | 214+79 | 215+47 | 273.70 | | | | | DR-1 |
| 223+17 | LT | MAIN LANES | 40 | 222+83 | 223+51 | 60.40 | 333.3 | 36.7 | 136.1 | | DR-1 |
| 224+25 | LT | MAIN LANES | 40 | 223+91 | 224+59 | 60.40 | 342.2 | 37.6 | 139.7 | | DR-1 |
| 225+20 | LT | MAIN LANES | 40 | 224+86 | 225+54 | 60.40 | 328.9 | 36.2 | 134.3 | | DR-1 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| * ENTIRE PROJECT TEMPORARY DRIVES | | | | | | | | | 2000.0 | | |
| | | | | | | | | | | | |
| TOTALS: | | | | | | 1084.30 | 4455.4 | 490.0 | 3819.2 | 162 | |

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

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

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.

7/31/2014

R050230.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. | | 050230 | 72 | 309 |

(2) QUANTITIES

# STRUCTURES

| STATION | DESCRIPTION | REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18" | (CLASS III) 24" | (CLASS III) 42" | (CLASS IV) 48" | (CLASS IV) 42" | SIDE DRAIN 12" | PIPE CULVERT STORM DRAIN ALTERNATES 1 & 2 18" | 24" | 30" | 36" | 42" | FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18" | 24" | 42" | TEMPORARY CULVERTS 18" | DROP INLETS TYPE MO | EXT. 4' | EXT. 8' | JUNCT. BOX (TYPE E) | YARD DRAIN | 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 | |
| 141+08 | R.C. BOX CULVERT EXTEND 63' RT. | | | | | | | | | | | | | | | | | | | | | 6 | 6 | 65 | 48.22 | 5131 | 24 | 20 | 0.25 | W-X153-1, R-100X-X1, W-X15, R-115X-1 |
| 147+80 | TEMPORARY PIPE CULVERT | | | | | | | | | | | | | | 104 | | | | | | | | | | | | | | PCC-1, PCM-1 |
| 148+08 | R.C. BOX CULVERT EXTEND 82' RT. | | | | | | | | | | | | | | | | | | | | | 10 | 10 | 84 | 143.81 | 15836 | 61 | 31 | 0.39 | W-X153-2, R-100X-X2, W-X15, R-115X-1 |
| 148+25 | TEMPORARY CULVERT | | | | | | | | | | | | | | 95 | | | | | | | | | | | | | | PCC-1, PCM-1 |
| 180+25 | DROP INLET ON LT | 13 | | | | | | | | | | | 1 | | | | 1 | 1 | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, FES-1, FES-2 |
| 180+25 | DROP INLET ON RT | | | 227 | | | | | | | | | | | 1 | | 1 | 1 | | | | | | | | | | 23 | 0.29 | FPC-9M, FPC-9E, PCC-1, FES-1, FES-2 |
| 182+00 | DROP INLET ON RT | | | | | | | | | | | 170 | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 182+50 | DROP INLET ON LT | | | | | | | 221 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 183+85 | DROP INLET ON RT | 3 | | | | | | | | | | 180 | 1 | | | | 1 | | | | | | | | | | | 5 | 0.06 | FPC-9M, PCC-1, PCM-1, FES-1, FES-2 |
| 184+55 | DROP INLET ON RT | 4 | | | | | | | | | | 65 | 1 | | | | 1 | | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2 |
| 185+20 | DROP INLET ON RT | | | | | | | | | | | 60 | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 185+50 | DROP INLET ON LT | | | | | | | 296 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 186+00 | DROP INLET ON RT | 2 | | | | | | | | | | 75 | 1 | | | | 1 | 1 | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2 |
| 187+50 | DROP INLET ON RT | | | | | | | | | | | 145 | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 188+50 | DROP INLET ON LT | | | | | | | 296 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 189+10 | DROP INLET ON RT | | | | | | | | | | 155 | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 190+50 | DROP INLET ON RT | | | | | | | | | 135 | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 191+50 | DROP INLET ON LT | | | | | | | 296 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 191+50 | DROP INLET ON RT | | | | | | | | | 95 | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 192+50 | DROP INLET ON RT | 1 | | | | | | | | 95 | | | 1 | | | | 1 | | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2 |
| 193+58 | DROP INLET ON LT | | | | | | | 204 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 193+58 | DROP INLET ON RT | 3 | | | | | | | | 103 | | | 1 | | | | 1 | | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2 |
| 194+35 | DROP INLET ON RT | 10 | | | | | | 73 | | | | | 1 | | | | 1 | 1 | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2 |
| 195+00 | DROP INLET ON LT | | | | | | | 138 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 196+42 | DROP INLET ON RT | | | 12 | 68 | | | | | | | | | | 1 | | 1 | 1 | | | | | | | | | | 23 | 0.29 | FPC-9M, FPC-9E, PCC-1, FES-1, FES-2 |
| 198+00 | DROP INLET ON RT | | | | | | | | 153 | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 199+50 | DROP INLET ON RT | | | | | | | | 145 | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 200+79 | DROP INLET ON RT | | | | | | | | 123 | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 201+06 | JUNCTION BOX ON RT | 36 | | | | | | 35 | | | | | 1 | | | | | | | 1 | | | | | | | | 5 | 0.06 | FPC-9, PCC-1, PCM-1, FES-1, FES-2 |
| 201+80 | DROP INLET ON RT | | | | | | | | 95 | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 203+25 | DROP INLET ON RT | | | | | | | 139 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 204+00 | DROP INLET ON RT | | | | | | | 70 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 206+59 | R.C. PIPE CULVERT EXTEND 64' LT & 16' RT | | | | | 88 | | | | | | | | | 2 | | | | | | | | | | | | | 46 | 0.58 | PCC-1, FES-1, FES-2 |
| 206+80 | DROP INLET ON LT | | 35 | | | | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | 8 | 0.10 | FPC-9M, FPC-9E, PCC-1, FES-1, FES-2 |
| 206+80 | DROP INLET ON RT | | 40 | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1 |
| 208+90 | DROP INLET ON LT | | | | | | | 206 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 210+18 | DROP INLET ON LT | 4 | | | | | | 122 | | | | | 1 | | | | 1 | | 1 | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, PCM-1, FES-1, FES-2 |
| 210+35 | JUNCTION BOX ON RT | 2 | | | | | | 353 | | | | | 1 | | | | | | | 1 | | | | | | | | 5 | 0.06 | FPC-9, PCC-1, PCM-1, FES-1, FES-2 |
| 211+50 | DROP INLET ON LT | | | | | | | 125 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 214+25 | DROP INLET ON LT | | | | | | | 69 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 215+00 | DROP INLET ON LT | | | | | | | 79 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 215+85 | DROP INLET ON LT | | | | | | | 60 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 216+50 | DROP INLET ON LT | | | | | | | 85 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 217+39 | DROP INLET ON LT | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M |
| 217+39 | DROP INLET ON RT | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | FPC-9M, FPC-9E |
| 217+39 | R.C. PIPE CULVERT EXTEND 2' LT & 36' RT | | 46 | | | | | | | | | | | 1 | | | | | | | | | | | | | | 8 | 0.10 | PCC-1, FES-1, FES-2 |
| 217+85 | DROP INLET ON RT | | | | | | | 42 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 219+50 | DROP INLET ON LT | | | | | | | 62 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 219+70 | DROP INLET ON RT | | | | | | | 193 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 221+75 | DROP INLET ON RT | | | | | | | 115 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 223+00 | DROP INLET ON RT | | | | | | | 115 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 223+95 | JUNCTION BOX ON LT | 12 | | | | | | 86 | | | | | 1 | | | | | | | 1 | | | | | | | | 5 | 0.06 | FPC-9, PCC-1, PCM-1, FES-1, FES-2 |
| 224+25 | DROP INLET ON RT | | | | | | | 115 | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 224+84 | JUNCTION BOX ON LT | 8 | | | | | | 174 | | | | | 1 | | | | | | | 1 | | | | | | | | 5 | 0.06 | FPC-9, PCC-1, PCM-1, FES-1, FES-2 |
| 225+50 | DROP INLET ON RT | | | | | | | | 96 | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 226+55 | JUNCTION BOX ON LT | 59 | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | FPC-9, PCC-1 |
| 226+55 | DROP INLET ON RT | 32 | | | | | | | | | | | 1 | | | | 1 | 1 | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, FES-1, FES-2 |
| 230+50 | DROP INLET ON LT | | | | | | | 59 | | | | | | | | | 1 | | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 230+50 | DROP INLET ON RT | 26 | | | | | | | | | | | 1 | | | | 1 | | | | | | | | | | | 5 | 0.06 | FPC-9M, FPC-9E, PCC-1, FES-1, FES-2 |
| 231+24 | DROP INLET ON RT | | | | | | | 70 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 231+38 | DROP INLET ON LT | | | | | | | 85 | | | | | | | | | 1 | | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 231+94 | R.C. BOX CULVERT ON RT. | | | | | | | | | | | | | | | | | | | | | 12 | 12 | 110 | 391.09 | 59153 | 143 | 35 | 0.44 | SPECIAL DETAILS |
| 232+72 | DROP INLET ON LT | | | | | | | 174 | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1, PCM-1 |
| 234+49 | DROP INLET ON RT | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | FPC-9M, FPC-9E |
| 234+51 | DROP INLET ON LT | | | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | FPC-9M, FPC-9E |
| 303+42 | DROP INLET ON RT. (HWY. 9) | 198 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1 |
| 303+45 | DROP INLET ON LT. (HWY. 9) | 211 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | FPC-9M, FPC-9E, PCC-1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | FPC-9, PCC-1, PCM-1 |
| *ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER | | | | | | | 500 | | | | | | | | | | | | | 5 | | | | | | | | | | |
| TOTALS: | | 624 | 121 | 239 | 68 | 88 | 500 | 4157 | 612 | 428 | 155 | 695 | 14 | 2 | 4 | 199 | 55 | 20 | 25 | 5 | 5 | | | | 583.12 | 80120 | 228 | 264 | 3.28 | |

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 THE STD. SPECS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

7/31/2014

R050230.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. | | 050230 | 73 | 309 |

(2) QUANTITIES

## BASE AND SURFACING (BOX 1 OF 2)

| STATION | STATION | LOCATION | LENGTH | AGGREGATE BASE COURSE (CLASS 7) | | TACK COAT | | | | ACHM BASE COURSE (1 1/2") | | | | ACHM BINDER COURSE (1") | | | | ACHM SURFACE COURSE (1/2") | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TON / STATION | TON | AVG. WID. | SQ.YD. | GALLONS / SQ.YD. | GALLON | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 70-22 | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 70-22 | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 70-22 | PG 76-22 | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 70-22 | PG 76-22 | TOTAL PG 70-22 | TOTAL PG 76-22 |
| | | | FEET | | | FEET | | | | FEET | | | TON | FEET | | | TON | FEET | | | TON | TON | FEET | | | TON | TON | TON | TON |
| MAIN LANES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 135+70.00 | 139+30.00 | HWY. 63 - N&W | 360.00 | 524.00 | 1886.40 | 68.90 | 2756.00 | 0.03 | 82.68 | | | | | 34.60 | 1384.00 | 660.00 | 456.72 | 34.29 | 1371.60 | 220.00 | 150.88 | | 75.00 | 3000.00 | 220.00 | 330.00 | | 480.88 | |
| 139+30.00 | 149+60.00 | HWY. 63 - FULL DEPTH | 1030.00 | 730.75 | 7526.73 | 126.83 | 14514.99 | 0.03 | 435.45 | | | | | 63.58 | 7276.38 | 660.00 | 2401.21 | 63.25 | 7238.61 | 220.00 | 796.25 | | 75.00 | 8583.33 | 220.00 | 944.17 | | 1740.42 | |
| 149+60.00 | 150+43.00 | HWY. 63 - FULL DEPTH | 83.00 | 683.25 | 567.10 | 126.83 | 1169.65 | 0.03 | 35.09 | | | | | 63.58 | 586.35 | 660.00 | 193.50 | 63.25 | 583.31 | 220.00 | 64.16 | | 75.00 | 691.67 | 220.00 | 76.08 | | 140.24 | |
| 150+43.00 | 152+60.00 | HWY. 63 - FULL DEPTH | 217.00 | 661.00 | 1434.37 | 126.83 | 3058.01 | 0.03 | 91.74 | | | | | 63.58 | 1532.98 | 660.00 | 505.88 | 63.25 | 1525.03 | 220.00 | 167.75 | | 75.00 | 1808.33 | 220.00 | 198.92 | | 366.67 | |
| 152+60.00 | 153+50.00 | HWY. 63 - N&W | 90.00 | 496.75 | 447.08 | 80.83 | 808.30 | 0.03 | 24.25 | | | | | 40.58 | 405.80 | 660.00 | 133.91 | 40.25 | 402.50 | 220.00 | 44.28 | | 75.00 | 750.00 | 220.00 | 82.50 | | 126.78 | |
| 153+50.00 | 153+60.00 | HWY. 63 - N&W | 10.00 | 519.00 | 51.90 | 80.83 | 89.81 | 0.03 | 2.69 | | | | | 40.58 | 45.09 | 660.00 | 14.88 | 40.25 | 44.72 | 220.00 | 4.92 | | 75.00 | 83.33 | 220.00 | 9.17 | | 14.09 | |
| 153+60.00 | 159+50.00 | HWY. 63 - FULL DEPTH | 590.00 | 683.25 | 4031.18 | 126.83 | 8314.41 | 0.03 | 249.43 | | | | | 63.58 | 4168.02 | 660.00 | 1375.45 | 63.25 | 4146.39 | 220.00 | 456.10 | | 75.00 | 4916.67 | 220.00 | 540.83 | | 996.93 | |
| 159+50.00 | 160+20.89 | HWY. 63 - N&W | 70.89 | VAR. | 417.25 | VAR. | 685.34 | 0.03 | 20.56 | | | | | VAR. | 347.39 | 660.00 | 114.64 | 344.67 | 2714.85 | 220.00 | 298.63 | | 75.00 | 590.75 | 220.00 | 64.98 | | 363.61 | |
| 162+13.11 | 166+95.00 | HWY. 63 - FULL DEPTH | 481.89 | 661.00 | 3185.29 | 126.83 | 6790.90 | 0.03 | 203.73 | | | | | 63.58 | 3404.29 | 660.00 | 1123.42 | 63.25 | 3386.62 | 220.00 | 372.53 | | 75.00 | 4015.75 | 220.00 | 441.73 | | 814.26 | |
| 166+95.00 | 167+58.25 | HWY. 63 - FULL DEPTH | 63.25 | 683.25 | 432.16 | 126.83 | 891.33 | 0.03 | 26.74 | | | | | 63.58 | 446.83 | 660.00 | 147.45 | 63.25 | 444.51 | 220.00 | 48.90 | | 75.00 | 527.08 | 220.00 | 57.98 | | 106.88 | |
| 167+58.25 | 168+20.00 | HWY. 63 - FULL DEPTH | 61.75 | 730.75 | 451.24 | 126.83 | 870.19 | 0.03 | 26.11 | | | | | 63.58 | 436.23 | 660.00 | 143.96 | 63.25 | 433.97 | 220.00 | 47.74 | | 75.00 | 514.58 | 220.00 | 56.60 | | 104.34 | |
| 168+20.00 | 169+26.30 | HWY. 63 - N&W | 106.30 | VAR. | 589.69 | VAR. | 480.30 | 0.03 | 14.41 | | | | | VAR. | 480.30 | 660.00 | 158.50 | VAR. | 480.30 | 220.00 | 52.83 | | 75.00 | 885.83 | 220.00 | 97.44 | | 150.27 | |
| 169+26.30 | 176+50.00 | HWY. 63 - N&W | 723.70 | 559.50 | 4049.10 | 78.83 | 6338.81 | 0.03 | 190.16 | | | | | 39.58 | 3182.67 | 660.00 | 1050.28 | 39.25 | 3156.14 | 220.00 | 347.18 | | 75.00 | 6030.83 | 220.00 | 663.39 | | 1010.57 | |
| 176+50.00 | 179+75.00 | HWY. 63 - N&W | 325.00 | 556.00 | 1807.00 | 78.00 | 2816.67 | 0.03 | 84.50 | | | | | 39.17 | 1414.47 | 660.00 | 466.78 | 38.84 | 1402.56 | 220.00 | 154.28 | | 75.00 | 2708.33 | 220.00 | 297.92 | | 452.20 | |
| 179+75.00 | 180+00.00 | HWY. 63 - N&W TRANSITION TO C&G | 25.00 | 354.68 | 88.67 | 77.75 | 215.97 | 0.03 | 6.48 | | | | | 39.04 | 108.44 | 660.00 | 35.79 | 38.71 | 107.53 | 220.00 | | 11.83 | 75.00 | 208.33 | 220.00 | | 22.92 | | 34.75 |
| 180+00.00 | 181+00.00 | HWY. 63 - N&W TRANSITION FROM OS | 100.00 | 303.50 | 303.50 | 75.13 | 834.78 | 0.03 | 25.04 | | | | | 37.56 | 417.33 | 660.00 | 137.72 | 37.56 | 417.33 | 220.00 | | 45.91 | 61.00 | 677.78 | 220.00 | | 74.56 | | 120.47 |
| 181+00.00 | 197+75.00 | HWY. 63 - N&W | 1675.00 | 266.75 | 4468.06 | 64.85 | 12069.31 | 0.03 | 362.08 | | | | | 32.40 | 6030.00 | 660.00 | 1989.90 | 32.40 | 6030.00 | 220.00 | | 663.30 | 56.00 | 10422.22 | 220.00 | | 1146.44 | | 1809.74 |
| 197+75.00 | 199+96.00 | HWY. 63 - N&W | 221.00 | 246.25 | 544.21 | 59.08 | 1450.74 | 0.03 | 43.52 | | | | | 29.54 | 725.37 | 660.00 | 239.37 | 29.54 | 725.37 | 220.00 | | 79.79 | 56.00 | 1375.11 | 220.00 | | 151.26 | | 231.05 |
| 199+96.00 | 211+92.00 | HWY. 63 - N&W | 1196.00 | 264.00 | 3157.44 | 64.00 | 8504.89 | 0.03 | 255.15 | | | | | 32.00 | 4252.44 | 660.00 | 1403.31 | 32.00 | 4252.44 | 220.00 | | 467.77 | 56.00 | 7441.78 | 220.00 | | 818.60 | | 1286.37 |
| 211+92.00 | 213+65.00 | HWY. 63 - N&W | 173.00 | 246.25 | 426.01 | 59.00 | 1134.11 | 0.03 | 34.02 | | | | | 29.50 | 567.06 | 660.00 | 187.13 | 29.50 | 567.06 | 220.00 | | 62.38 | 56.00 | 1076.44 | 220.00 | | 118.41 | | 180.79 |
| 213+65.00 | 214+50.00 | HWY. 63 - N&W | 85.00 | 273.75 | 232.69 | 66.76 | 630.51 | 0.03 | 18.92 | | | | | 33.40 | 315.44 | 660.00 | 104.10 | 33.40 | 315.44 | 220.00 | | 34.70 | 56.00 | 528.89 | 220.00 | | 58.18 | | 92.88 |
| 214+50.00 | 217+86.76 | HYW. 63 - FULL DEPTH | 336.76 | 435.00 | 1464.91 | 112.00 | 4190.79 | 0.03 | 125.72 | | | | | 56.00 | 2095.40 | 660.00 | 691.48 | 56.00 | 2095.40 | 220.00 | | 230.49 | 56.00 | 2095.40 | 220.00 | | 230.49 | | 460.98 |
| 219+39.24 | 226+69.90 | HYW. 63 - FULL DEPTH | 730.66 | 435.00 | 3178.37 | 112.00 | 9092.66 | 0.03 | 272.78 | | | | | 56.00 | 4546.33 | 660.00 | 1500.29 | 56.00 | 4546.33 | 220.00 | | 500.10 | 56.00 | 4546.33 | 220.00 | | 500.10 | | 1000.20 |
| 230+35.10 | 231+40.00 | HWY. 63 - N&W | 104.90 | 287.75 | 301.85 | 70.60 | 822.88 | 0.03 | 24.69 | | | | | 35.30 | 411.44 | 660.00 | 135.78 | 35.30 | 411.44 | 220.00 | | 45.26 | 56.00 | 652.71 | 220.00 | | 71.80 | | 117.06 |
| 231+40.00 | 233+40.00 | HWY. 63 - N&W | 200.00 | VAR. | 529.45 | VAR. | 1428.00 | 0.03 | 42.84 | | | | | VAR. | 714.00 | 660.00 | 235.62 | VAR. | 714.00 | 220.00 | | 78.54 | 56.00 | 1244.44 | 220.00 | | 136.89 | | 215.43 |
| 233+40.00 | 233+87.61 | HWY. 63 - N&W | 47.61 | 120.75 | 57.49 | 11.90 | 62.95 | 0.03 | 1.89 | | | | | 11.90 | 62.95 | 660.00 | 20.77 | 11.90 | 62.95 | 220.00 | | 6.92 | 56.00 | 296.24 | 220.00 | | 32.59 | | 39.51 |
| 233+87.61 | 234+48.00 | HWY. 63 - N&W | 60.39 | 109.75 | 66.28 | 20.76 | 139.30 | 0.03 | 4.18 | | | | | 10.40 | 69.78 | 660.00 | 23.03 | 10.40 | 69.78 | 220.00 | | 7.68 | 56.00 | 375.76 | 220.00 | | 41.33 | | 49.01 |
| 234+48.00 | 235+14.00 | HWY. 63 - N&W | 66.00 | VAR. | 47.61 | VAR. | 89.74 | 0.03 | 2.69 | | | | | VAR. | 44.87 | 660.00 | 14.81 | VAR. | 44.87 | 220.00 | | 4.94 | VAR. | 347.22 | 220.00 | | 38.19 | | 43.13 |
| 195+38.00 | | SPRING LANE ROAD | VAR. | VAR. | 204.55 | VAR. | 360.88 | 0.03 | 10.83 | | | | | VAR. | 180.44 | 660.00 | 59.55 | VAR. | 180.44 | 220.00 | | 19.85 | VAR. | 180.44 | 220.00 | | 19.85 | | 39.70 |
| 201+20.00 | | MUSIC HALL LANE | VAR. | VAR. | 443.16 | VAR. | 749.86 | 0.03 | 22.50 | | | | | VAR. | 374.93 | 660.00 | 123.73 | VAR. | 374.93 | 220.00 | | 41.24 | VAR. | 374.93 | 220.00 | | 41.24 | | 82.48 |
| 231+94.00 | | WELCOME CENTER DRIVEWAY | VAR. | VAR. | 495.60 | VAR. | 1368.00 | 0.03 | 41.04 | | | | | VAR. | 684.00 | 660.00 | 225.72 | VAR. | 684.00 | 220.00 | | 75.24 | VAR. | 684.00 | 220.00 | | 75.24 | | 150.48 |
| 303+70.00 | 305+51.93 | HWY. 9 (MAIN ST.) | VAR. | 35.75 | 216.29 | | | | | | | | | | | | | | | | | | VAR. | 1979.19 | 220.00 | | 217.71 | | 217.71 |
| ADDITIONAL FOR LEVELING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 135+70.00 | 139+30.00 | HWY. 63 | 360.00 | | | 24.00 | 960.00 | 0.10 | 96.00 | | | | | | | | | 24.00 | 960.00 | 220.00 | 105.60 | | | | | | 105.60 | | |
| 152+60.00 | 153+60.00 | HWY. 63 | 100.00 | | | 24.00 | 266.67 | 0.10 | 26.67 | | | | | | | | | 24.00 | 266.67 | 220.00 | 29.33 | | | | | | 29.33 | | |
| 159+50.00 | 160+20.89 | HWY. 63 | 70.89 | | | 24.00 | 189.04 | 0.10 | 18.90 | | | | | | | | | 24.00 | 189.04 | 220.00 | 20.79 | | | | | | 20.79 | | |
| 168+20.00 | 214+50.00 | HWY. 63 | 4630.00 | | | 24.00 | 12346.67 | 0.10 | 1234.67 | | | | | | | | | 24.00 | 12346.67 | 220.00 | | 1358.13 | | | | | | | 1358.13 |
| 230+35.10 | 235+14.00 | HWY. 63 | 478.90 | | | VAR. | 2030.00 | 0.10 | 203.00 | | | | | | | | | VAR. | 2030.00 | 220.00 | | 223.30 | | | | | | | 223.30 |
| 303+70.00 | 305+51.93 | HWY. 9 (MAIN ST.) | 181.93 | | | VAR. | 1190.00 | 0.10 | 119.00 | | | | | | | | | VAR. | 1190.00 | 220.00 | | 130.90 | | | | | | | 130.90 |
| ADDITIONAL GRADE RAISE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 136+30.00 | 139+30.00 | HWY. 63 | 300.00 | | | VAR. | 2390.34 | 0.03 | 71.71 | VAR. | 796.78 | 552 | 219.91 | VAR. | 796.78 | 569.17 | 226.75 | VAR. | 796.78 | 214.54 | 85.47 | | | | | | | 85.47 | |
| 152+60.00 | 153+60.00 | HWY. 63 | 100.00 | | | VAR. | 763.00 | 0.03 | 22.89 | VAR. | 254.44 | 319 | 40.58 | VAR. | 254.44 | 660.27 | 84.00 | VAR. | 254.44 | 220.09 | 28.00 | | | | | | | 28.00 | |
| 159+50.00 | 160+22.59 | HWY. 63 | 72.59 | | | VAR. | 581.01 | 0.03 | 17.43 | VAR. | 193.67 | 337 | 32.63 | VAR. | 193.67 | 436.83 | 42.30 | VAR. | 193.67 | 146.74 | 14.21 | | | | | | | 14.21 | |
| 168+20.00 | 214+50.00 | HWY. 63 | 4630.00 | | | VAR. | 32714.34 | 0.03 | 981.43 | VAR. | 8030.38 | 387 | 1553.88 | VAR. | 12341.98 | 479.29 | 2957.69 | VAR. | 12341.98 | 213.30 | | 1316.27 | | | | | | | 1316.27 |
| 230+35.10 | 234+70.00 | HWY. 63 | 434.90 | | | VAR. | 2842.56 | 0.03 | 85.28 | VAR. | 358.52 | 458 | 82.10 | VAR. | 1148.66 | 225.41 | 129.46 | VAR. | 1335.38 | 183.48 | | 122.51 | | | | | | | 122.51 |
| 303+70.00 | 305+51.93 | HWY. 9 (MAIN ST.) | 181.93 | | | VAR. | 1544.00 | 0.03 | 46.32 | VAR. | 386.94 | 448 | 86.67 | VAR. | 1156.86 | 430.00 | 248.72 | VAR. | 1261.96 | 212.00 | | 133.77 | | | | | | | 133.77 |
| ADDITIONAL FOR GUARDRAIL WIDENING | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 147+82.00 | 148+15.00 | LT. SIDE (6:1 TAPER) | 33.00 | 19.50 | 6.44 | | | | | | | | | | | | | | | | | | 2.75 | 10.08 | 220.00 | 1.11 | | 1.11 | |
| 148+15.00 | 158+24.69 | LT. SIDE | 1009.69 | 39.25 | 396.30 | | | | | | | | | | | | | | | | | | 5.50 | 617.03 | 220.00 | 67.87 | | 67.87 | |
| 158+24.69 | 159+49.69 | LT. SIDE (50:1 TAPER) | 125.00 | 32.00 | 40.00 | | | | | | | | | | | | | | | | | | 4.50 | 62.50 | 220.00 | 6.88 | | 6.88 | |
| 159+49.69 | 159+93.44 | LT. SIDE | 43.75 | 25.00 | 10.94 | | | | | | | | | | | | | | | | | | 3.50 | 17.01 | 220.00 | 1.87 | | 1.87 | |
| 157+61.79 | 157+84.79 | RT. SIDE (6:1 TAPER) | 23.00 | 19.50 | 4.49 | | | | | | | | | | | | | | | | | | 2.75 | 7.03 | 220.00 | 0.77 | | 0.77 | |
| 157+84.79 | 157+94.79 | RT. SIDE (10' BEYOND GUARDRAIL) | 10.00 | 39.25 | 3.93 | | | | | | | | | | | | | | | | | | 5.50 | 6.11 | 220.00 | 0.67 | | 0.67 | |
| 157+94.79 | 159+69.79 | RT. SIDE (50:1 TAPER) | 175.00 | 32.00 | 56.00 | | | | | | | | | | | | | | | | | | 4.50 | 87.50 | 220.00 | 9.63 | | 9.63 | |
| 159+69.79 | 160+13.54 | RT. SIDE | 43.75 | 25.00 | 10.94 | | | | | | | | | | | | | | | | | | 3.50 | 17.01 | 220.00 | 1.87 | | 1.87 | |
| 162+12.46 | 162+56.21 | LT. SIDE | 43.75 | 25.00 | 10.94 | | | | | | | | | | | | | | | | | | 3.50 | 17.01 | 220.00 | 1.87 | | 1.87 | |
| 162+56.21 | 163+06.21 | LT. SIDE (50:1 TAPER) | 50.00 | 32.00 | 16.00 | | | | | | | | | | | | | | | | | | 4.50 | 25.00 | 220.00 | 2.75 | | 2.75 | |
| 163+06.21 | 168+93.25 | LT. SIDE | 587.04 | 39.25 | 230.41 | | | | | | | | | | | | | | | | | | 5.50 | 358.75 | 220.00 | 39.46 | | 39.46 | |
| 168+93.25 | 169+16.25 | LT. SIDE (6:1 TAPER) | 23.00 | 19.50 | 4.49 | | | | | | | | | | | | | | | | | | 2.75 | 7.03 | 220.00 | 0.77 | | 0.77 | |
| 162+32.56 | 162+76.31 | RT. SIDE | 43.75 | 25.00 | 10.94 | | | | | | | | | | | | | | | | | | 3.50 | 17.01 | 220.00 | 1.87 | | 1.87 | |
| 162+76.31 | 163+26.31 | RT. SIDE (50:1 TAPER) | 50.00 | 32.00 | 16.00 | | | | | | | | | | | | | | | | | | 4.50 | 25.00 | 220.00 | 2.75 | | 2.75 | |
| 163+26.31 | 163+36.31 | RT. SIDE (10' BEYOND GUARDRAIL) | 10.00 | 39.25 | 3.93 | | | | | | | | | | | | | | | | | | 5.50 | 6.11 | 220.00 | 0.67 | | 0.67 | |
| 163+36.31 | 163+69.31 | RT. SIDE (6:1 TAPER) | 33.00 | 19.50 | 6.44 | | | | | | | | | | | | | | | | | | 2.75 | 10.08 | 220.00 | 1.11 | | 1.11 | |
| **SUBTOTALS:** | | | | | **43930.82** | | **150547.71** | | **5705.21** | | **10020.73** | | **2015.77** | | **62603.41** | | **19103.60** | | **82097.01** | | **3289.83** | **5660.82** | | **70903.95** | | **4003.63** | **3795.80** | **7293.46** | **9456.62** |

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

7/31/2014

R050230.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. | | 050230 | 74 | 309 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

| STATION | STATION | LOCATION | LENGTH | AGGREGATE BASE COURSE (CLASS 7) | | TACK COAT | | | | ACHM BASE COURSE (1 1/2") | | | | ACHM BINDER COURSE (1") | | | | ACHM SURFACE COURSE (1/2") | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | FEET | TON / STATION | TON | AVG. WID. FEET | SQ.YD. | GALLONS / SQ.YD. | GALLON | AVG. WID. FEET | SQ.YD. | POUND / SQ.YD. | PG 70-22 TON | AVG. WID. FEET | SQ.YD. | POUND / SQ.YD. | PG 70-22 TON | AVG. WID. FEET | SQ.YD. | POUND / SQ.YD. | PG 70-22 TON | PG 76-22 TON | AVG. WID. FEET | SQ.YD. | POUND / SQ.YD. | PG 70-22 TON | PG 76-22 TON | TOTAL PG 70-22 TON | TOTAL PG 76-22 TON |
| ADDITIONAL FOR SUPERELEVATION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 135+70.00 | 141+48.57 | HWY. 63 SUPER TRANSITION | 578.57 | 94.75 | 548.20 | | | | | | | | | | | | | | | | | | | | | | | | |
| 141+48.57 | 147+01.26 | HWY. 63 FULL SUPER | 552.69 | 216.50 | 1196.57 | | | | | | | | | | | | | | | | | | | | | | | | |
| 147+01.26 | 153+31.26 | HWY. 63 SUPER TRANSITION | 630.00 | 84.75 | 533.93 | | | | | | | | | | | | | | | | | | | | | | | | |
| 153+31.26 | 158+71.26 | HWY. 63 SUPER TRANSITION | 540.00 | 70.75 | 382.05 | | | | | | | | | | | | | | | | | | | | | | | | |
| 158+71.26 | 175+60.29 | HWY. 63 FULL SUPER | 1689.03 | 157.50 | 2660.22 | | | | | | | | | | | | | | | | | | | | | | | | |
| 175+60.29 | 180+00.00 | HWY. 63 SUPER TRANSITION | 439.71 | 70.75 | 311.09 | | | | | | | | | | | | | | | | | | | | | | | | |
| ADDITIONAL FOR MOT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 158+06.00 | 160+26.00 | FULL DEPTH SHOULDER RT. SIDE | 220.00 | | | 12.00 | 293.33 | 0.03 | 8.80 | | | | | 6.00 | 146.67 | 660.00 | 48.40 | 6.00 | 146.67 | 220.00 | 16.13 | | | | | | | | 16.13 | |
| 162+22.00 | 164+44.00 | FULL DEPTH SHOULDER RT. SIDE | 222.00 | | | 12.00 | 296.00 | 0.03 | 8.88 | | | | | 6.00 | 148.00 | 660.00 | 48.84 | 6.00 | 148.00 | 220.00 | 16.28 | | | | | | | | 16.28 | |
| 232+20.00 | 234+87.00 | ADD'L NOTCH FOR RET. WALL INSTALLATIO | 267.00 | 89.00 | 237.63 | 12.50 | 370.83 | 0.03 | 11.12 | | | | | 12.50 | 370.83 | 660.00 | 122.37 | 12.50 | 370.83 | 220.00 | | 40.79 | | | | | | | | 40.79 |
| SUBTOTALS (BOX 1 OF 2): | | | | | 43930.82 | | 150547.71 | | 5705.21 | | 10020.73 | | 2015.77 | | 62603.41 | | 19103.60 | | 82097.01 | | 3289.83 | 5660.82 | | 70903.95 | | 4003.63 | 3795.80 | 7293.46 | 9456.62 |
| SUBTOTALS (BOX 2 OF 2): | | | | | 5869.69 | | 960.16 | | 28.80 | | | | | | 665.50 | | 219.61 | | 665.50 | | 32.41 | 40.79 | | | | | | 32.41 | 40.79 |
| TOTALS: | | | | | **49800.51** | | **151507.87** | | **5734.01** | | **10020.73** | | **2015.77** | | **63268.91** | | **19323.21** | | **82762.51** | | **3322.24** | **5701.61** | | **70903.95** | | **4003.63** | **3795.80** | **7325.87** | **9497.41** |

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.8% MIN. AGGR.....5.2% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

7/31/2014

R050230.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. | | 050230 | 75 | 309 |

(1) 07299, 07300, - QUANTITIES - 56207
07301

# SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 050230

| BRIDGE NO. | CODE NO. | NAME PLATE TITLE | UNIT OF STRUCTURE | ITEM NO. | 205 | 619 | 801 | 802 | 802 | 803 | 804 | 804 | 805 | 806 | SP & 807 | SP & 807 | 808 | 809 | 812 | 816 | 816 | SP JOB 050230 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 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 1 PROTECTIVE SURFACE TREATMENT | REINFORCING STEEL-BRIDGE (GRADE 60) | EPOXY COATED REINFORCING STEEL (GRADE 60) | STEEL PILING (HP 12X53) | METAL BRIDGE RAILING (TYPE H) | STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W) | STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GRADE 50W) | ELASTOMERIC BEARINGS | SILICONE JOINT SEALANT | BRIDGE NAME PLATE (TYPE D) | FILTER BLANKET | DUMPED RIPRAP | SHORING |
| | | | | UNIT | LUMP SUM | LIN. FT. | CU. YD. | CU. YD. | CU. YD. | GAL. | LB. | LB. | LIN. FT. | LIN. FT. | LB. | LB. | CU. IN. | LIN. FT. | EACH | SQ. YD. | CU. YD. | LUMP SUM |
| 07299 | X071 | TRACE CREEK | BENT NO. 1 | | | | 518 | 274.00 | | 0.5 | 20,802 | | 24 | | 1,620 | | | | | | | |
| | | | BENT NO. 2 | | | | 473 | 248.30 | | | 37,233 | | | | | | | | | | | |
| | | | BENT NO. 3 | | | | 703 | 245.70 | | | 37,233 | | | | | | | | | | | |
| | | | BENT NO. 4 | | | | 24 | 56.90 | | 0.3 | 4,522 | | 315 | | 1,620 | | | | | 340 | 190 | |
| | | | 190'-0" CONT. COMP. W-BEAM UNIT | | | | | | 413.40 | 34.7 | | 96,840 | | | 338,810 | | 12,812 | 162 | 1 | | | |
| | | | EXIST. BRIDGE NO. 02632 (SITE NO. 1) | | 1 | | | | | | | | | | | | | | | | | |
| | | | TOTAL FOR BRIDGE 07299 | | 1 | 0 | 1,718 | 824.90 | 413.40 | 35.5 | 99,790 | 96,840 | 339 | 0 | 342,050 | 0 | 12,812 | 162 | 1 | 340 | 190 | 1 |
| 07300 | X171 | BNSF RAILROAD | BENT NO. 1 | | | | 596 | 289.60 | | 0.4 | 25,340 | | 20 | | | 1,825 | | | | 160 | 89 | |
| | | | BENT NO. 2 | | | | 631 | 317.90 | | 0.5 | 26,660 | | 20 | 20 | | 1,825 | | | | 120 | 66 | |
| | | | 150'-0" SIMPLE COMP. PLATE GIRDER SPAN | | | 298 | | | 369.30 | 26.6 | | 71,770 | | | | 505,980 | 9,529 | 170 | 1 | | | |
| | | | EXIST. BRIDGE NO. 01996 (SITE NO. 2) | | 1 | | | | | | | | | | | | | | | | | |
| | | | TOTAL FOR BRIDGE 07300 | | 1 | 298 | 1,227 | 607.50 | 369.30 | 27.5 | 52,000 | 71,770 | 40 | 20 | 0 | 509,630 | 9,529 | 170 | 1 | 280 | 155 | 1 |
| 07301 | X071 | SPRING RIVER | BENT NO. 1 | | | | 44 | 83.18 | | 0.4 | 7,040 | | 224 | | 1,430 | | | | | 654 | 352 | |
| | | | BENT NO. 2 | | | | 351 | 139.22 | | | 16,012 | | | | | | | | | | | |
| | | | BENT NO. 3 | | | | 109 | 138.65 | | | 15,954 | | | | | | | | | | | |
| | | | BENT NO. 4 | | | | 114 | 138.65 | | | 15,954 | | | | | | | | | | | |
| | | | BENT NO. 5 | | | | 182 | 135.58 | | | 15,480 | | | | | | | | | | | |
| | | | BENT NO. 6 | | | | 53 | 67.42 | | 0.4 | 6,110 | | 191 | | 1,430 | | | | | 582 | 313 | |
| | | | 363'-0" CONT. COMP. W-BEAM UNIT | | | | | | 862.10 | 63.8 | | 178,140 | | 714 | 754,110 | | 24,678 | 148 | 1 | | | |
| | | | EXIST. BRIDGE NO. 02633 (SITE NO. 3) | | 1 | | | | | | | | | | | | | | | | | |
| | | | TOTAL FOR BRIDGE 07301 | | 1 | 0 | 853 | 702.70 | 862.10 | 64.6 | 76,550 | 178,140 | 415 | 714 | 756,970 | 0 | 24,678 | 148 | 1 | 1,236 | 665 | 1 |
| | | | TOTALS FOR JOB NO. 050230 | | | 298 | 3,798(1) | 2,135.10 | 1,644.80 | 127.6 | 228,340 | 346,750 | 794(2) | 734 | 1,099,020 | 509,630 | 47,019 | 480 | 3 | 1,856 | 1,010 | |

(1) Includes approximately 1,789 cu. yds. of rock excavation.

(2) All steel piling shall be Grade 50 and are required to have approved driving points which will not be paid for directly, but shall be considered subsidiary to the item "Steel Piling (HP12x53)".

JIM TRIBO
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-24-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
HWY. 9 - SO. OF HWY. 342
(MAMMOTH SPRING) (S)
FULTON COUNTY
ROUTE 63 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 8/28/14 FILENAME: b050230_ql.dgn
CHECKED BY: JGT DATE: 10/10/14 SCALE: NO SCALE
DESIGNED BY: — DATE: —

BRIDGE NOS. 07299, 07300, 07301 DRAWING NO. 56207

PRINT DATE: 10/24/2014

## SUMMARY OF QUANTITIES (BOX 1 OF 3)

| ITEM NUMBER | ITEM | | QUANTITY | UNIT |
|---|---|---|---|---|
| 201 | CLEARING | | 94 | STATION |
| 201 | GRUBBING | | 94 | STATION |
| 202 | REMOVAL AND DISPOSAL OF CURB | | 352 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF CURB AND GUTTER | | 208 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF FENCE | | 1681 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF GATES | | 2 | EACH |
| 202 | REMOVAL AND DISPOSAL OF WALLS | | 28 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF CONCRETE PAVEMENT | | 1310 | SQ. YD. |
| 202 | REMOVAL AND DISPOSAL OF CONCRETE ISLANDS | | 409 | SQ. YD. |
| 202 | REMOVAL AND DISPOSAL OF COLUMNS | | 4 | EACH |
| 202 | REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS | | 121 | SQ. YD. |
| 202 | REMOVAL AND DISPOSAL OF CONCRETE SLABS | | 100 | SQ. YD. |
| 202 | REMOVAL AND DISPOSAL OF FOUNDATIONS | | 12 | SQ. YD. |
| 202 | REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS | | 49 | EACH |
| 202 | REMOVAL AND DISPOSAL OF PIPE CULVERTS | | 14 | EACH |
| 202 | REMOVAL AND DISPOSAL OF BOX CULVERTS | | 1 | EACH |
| 202 | REMOVAL AND DISPOSAL OF GUARDRAIL | | 2757 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF LUMINAIRE POLE AND FOUNDATION | | 1 | EACH |
| 202 | REMOVAL AND DISPOSAL OF BILLBOARDS | | 2 | EACH |
| 202 | REMOVAL AND DISPOSAL OF SIGNS | | 24 | EACH |
| 210 | UNCLASSIFIED EXCAVATION | | 179629 | CU. YD. |
| SP & 210 | ROCK FILL | | 68122 | CU. YD. |
| 210 | PRESPLITTING | | 5892 | SQ. YD. |
| SP & 210 | COMPACTED EMBANKMENT | | 104976 | CU. YD. |
| SP & 210 | SOIL STABILIZATION | | 100 | TON |
| 303 | AGGREGATE BASE COURSE (CLASS 7) | | 53620 | TON |
| 309 | PORTLAND CEMENT CONCRETE BASE (8" UNIFORM THICKNESS) | | 121 | SQ. YD. |
| 309 | PORTLAND CEMENT CONCRETE BASE (11" UNIFORM THICKNESS) | | 255 | SQ. YD. |
| 401 | TACK COAT | | 5822 | GAL. |
| SP & 405 | MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2") | | 1931 | TON |
| SP & 405 | ASPHALT BINDER (PG 70-22) IN ACHM BASE COURSE (1 1/2") | | 85 | TON |
| SP, SS, & 406 | MINERAL AGGREGATE IN ACHM BINDER COURSE (1") | | 18511 | TON |
| SP, SS, & 406 | ASPHALT BINDER (PG 70-22) IN ACHM BINDER COURSE (1") | | 812 | TON |
| SP, SS, & 407 | MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2") | | 16413 | TON |
| SP, SS, & 407 | ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") | | 25 | TON |
| SP, SS, & 407 | ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2") | | 381 | TON |
| SP, SS, & 407 | ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2") | | 494 | TON |
| 412 | COLD MILLING ASPHALT PAVEMENT | | 1709 | SQ. YD. |
| SP & 414 | ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC | | 44 | TON |
| SP & 415 | ACHM PATCHING OF EXISTING ROADWAY | | 50 | TON |
| 504 | APPROACH GUTTERS | | 59.20 | CU. YD. |
| 505 | PORTLAND CEMENT CONCRETE DRIVEWAY | | 1084.30 | SQ. YD. |
| 601 | MOBILIZATION | | 1.00 | LUMP SUM |
| SP & 602 | FURNISHING FIELD OFFICE | | 1 | EACH |
| 602 | FURNISHING FIELD LABORATORY | | 1 | EACH |
| 603 | MAINTENANCE OF TRAFFIC | | 1.00 | LUMP SUM |
| 603 | 18" TEMPORARY CULVERT | | 199 | LIN. FT. |
| 604 | SIGNS | | 623 | SQ. FT. |
| 604 | BARRICADES | | 224 | LIN. FT. |
| 604 | TRAFFIC DRUMS | | 311 | EACH |
| 604 | FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER | | 1657 | LIN. FT. |
| 604 | RELOCATING PRECAST CONCRETE BARRIER | | 1032 | LIN. FT. |
| 604 | CONSTRUCTION PAVEMENT MARKINGS | | 69448 | LIN. FT. |
| 604 | CONSTRUCTION PAVEMENT MARKINGS (WORDS) | | 2 | EACH |
| 604 | CONSTRUCTION PAVEMENT MARKINGS (ARROWS) | | 3 | EACH |
| 604 | REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | | 2327 | LIN. FT. |
| 604 | REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS | | 3595 | LIN. FT. |
| 604 | VERTICAL PANELS | | 156 | EACH |
| 605 | CONCRETE DITCH PAVING (TYPE A) | | 853 | SQ. YD. |
| 605 | CONCRETE DITCH PAVING (TYPE B) | | 1493 | SQ. YD. |
| 606 | 18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | | 624 | LIN. FT. |
| * 606 | 18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | (ALTERNATE NO. 1) | 4157 | LIN. FT. |
| * 606 | 18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE | (ALTERNATE NO. 2) | 4157 | LIN. FT. |
| 606 | 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | | 121 | LIN. FT. |
| * 606 | 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | (ALTERNATE NO. 1) | 612 | LIN. FT. |
| * 606 | 24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE | (ALTERNATE NO. 2) | 612 | LIN. FT. |
| * 606 | 30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | (ALTERNATE NO. 1) | 428 | LIN. FT. |
| * 606 | 30" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE | (ALTERNATE NO. 2) | 428 | LIN. FT. |
| * 606 | 36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | (ALTERNATE NO. 1) | 155 | LIN. FT. |
| * 606 | 36" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE | (ALTERNATE NO. 2) | 155 | LIN. FT. |
| 606 | 42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | | 239 | LIN. FT. |
| * 606 | 42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | (ALTERNATE NO. 1) | 695 | LIN. FT. |
| * 606 | 42" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE | (ALTERNATE NO. 2) | 695 | LIN. FT. |
| 606 | 42" REINFORCED CONCRETE PIPE CULVERTS (CLASS IV) | | 88 | LIN. FT. |
| 606 | 48" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | | 68 | LIN. FT. |
| 606 | 12" SIDE DRAIN | | 500 | LIN. FT. |
| SP & 606 | 24" SIDE DRAIN | | 162 | LIN. FT. |
| 606 | 18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | | 14 | EACH |
| 606 | 24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | | 2 | EACH |
| 606 | 42" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | | 4 | EACH |
| 606 | SELECTED PIPE BEDDING | | 600 | CU. YD. |
| 609 | DROP INLETS (TYPE MO) | | 55 | EACH |
| 609 | JUNCTION BOXES (TYPE E) | | 5 | EACH |
| 609 | DROP INLET EXTENSIONS (4') | | 20 | EACH |
| 609 | DROP INLET EXTENSIONS (8') | | 25 | EACH |
| 609 | YARD DRAINS | | 5 | EACH |
| 611 | UNDERDRAIN OUTLET PROTECTORS | | 17 | EACH |
| 611 | 4" PIPE UNDERDRAINS | | 6429 | LIN. FT. |
| 615 | PAVEMENT REPAIR OVER CULVERTS (CONCRETE) | | 126.6 | CU. YD. |
| 617 | GUARDRAIL (TYPE A) | | 1977 | LIN. FT. |
| 617 | TERMINAL ANCHOR POSTS (TYPE 1) | | 2 | EACH |
| 617 | GUARDRAIL TERMINAL (TYPE 2) | | 2 | EACH |
| 617 | THRIE BEAM GUARDRAIL TERMINAL | | 4 | EACH |

* DENOTES ALTERNATE BID ITEMS.

| 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. | | 050230 | 76 | 309 |

(2) SUMMARY OF QUANITITIES

## SUMMARY OF QUANTITIES (BOX 2 OF 3)

| ITEM NUMBER | ITEM | | QUANTITY | UNIT |
|---|---|---|---|---|
| 619 | WIRE FENCE (TYPE C) | | 272 | LIN. FT. |
| 620 | LIME | | 35 | TON |
| 620 | SEEDING | | 17.42 | ACRE |
| SS & 620 | MULCH COVER | | 61.42 | ACRE |
| 620 | WATER | | 2727.5 | M.GAL. |
| 621 | TEMPORARY SEEDING | | 44.00 | ACRE |
| 621 | SILT FENCE | | 10660 | LIN. FT. |
| 621 | SAND BAG DITCH CHECKS | | 522 | BAG |
| 621 | DIVERSION DITCH | | 4605 | LIN. FT. |
| 621 | DROP INLET SILT FENCE | | 1550 | LIN. FT. |
| 621 | SEDIMENT BASIN | | 1859 | CU. YD. |
| 621 | OBLITERATION OF SEDIMENT BASIN | | 1859 | CU. YD. |
| 621 | SEDIMENT REMOVAL AND DISPOSAL | | 2416 | CU. YD. |
| 621 | PIPE FOR SLOPE DRAINS | | 900 | LIN. FT. |
| 621 | ROCK DITCH CHECKS | | 258 | CU. YD. |
| 623 | SECOND SEEDING APPLICATION | | 17.42 | ACRE |
| 624 | SOLID SODDING | | 4217 | SQ. YD. |
| 626 | EROSION CONTROL MATTING (CLASS 3) | | 2561 | SQ. YD. |
| 633 | CONCRETE WALKS | | 5270 | SQ. YD. |
| 633 | CONCRETE WALKS (TYPE SPECIAL) | | 30 | SQ. YD. |
| 633 | HAND RAILING | | 1339 | LIN. FT. |
| 634 | CONCRETE CURB (TYPE C) | | 437 | LIN. FT. |
| 634 | CONCRETE CURB (TYPE D) | | 1102 | LIN. FT. |
| 634 | CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6") | | 9802 | LIN. FT. |
| 635 | ROADWAY CONSTRUCTION CONTROL | | 1.00 | LUMP SUM |
| 637 | MAILBOXES | | 2 | EACH |
| 637 | MAILBOX SUPPORTS (SINGLE) | | 2 | EACH |
| 641 | WHEELCHAIR RAMPS (TYPE 3) | | 44 | SQ. YD. |
| 641 | WHEELCHAIR RAMPS (TYPE 4) | | 14 | SQ. YD. |
| 642 | RUMBLE STRIPS IN ASPHALT SHOULDERS | | 7987 | LIN. FT. |
| SP & 701 | ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASES) | | 1 | EACH |
| SP & 706 | TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY) | | 10 | EACH |
| SP & 707 | COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED | | 4 | EACH |
| 708 | TRAFFIC SIGNAL CABLE (5C/14 A.W.G.) | | 1437 | LIN. FT. |
| 708 | TRAFFIC SIGNAL CABLE (7C/14 A.W.G.) | | 258 | LIN. FT. |
| 708 | TRAFFIC SIGNAL CABLE (12C/14 A.W.G.) | | 97 | LIN. FT. |
| 708 | TRAFFIC SIGNAL CABLE (20C/14 A.W.G.) | | 507 | LIN. FT. |
| 709 | GALVANIZED STEEL CONDUIT (1.25") | | 20 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (1.25") | | 20 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (2") | | 20 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (3") | | 365 | LIN. FT. |
| 711 | CONCRETE PULL BOX (TYPE 1 HD) | | 1 | EACH |
| 711 | CONCRETE PULL BOX (TYPE 2) | | 2 | EACH |
| 711 | CONCRETE PULL BOX (TYPE 2 HD) | | 2 | EACH |
| 714 | TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (32'-62') | | 1 | EACH |
| 714 | TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40') | | 2 | EACH |
| 715 | TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION | | 2 | EACH |
| SP | ELECTRICAL CONDUCTORS FOR LUMINAIRES | | 652 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G.) | | 339 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC) | | 145 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.) | | 20 | LIN. FT. |
| SP | LUMINAIRE ASSEMBLY | | 3 | EACH |
| SP | 18" STREET NAME SIGN | | 2 | EACH |
| SP | SERVICE POINT ASSEMBLY (2 CIRCUITS) | | 1 | EACH |
| 718 | REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") | | 436 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (4") | | 13625 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (8") | | 547 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (12") | | 340 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (24") | | 109 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING YELLOW (4") | | 25446 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING (WORDS) | | 3 | EACH |
| 719 | THERMOPLASTIC PAVEMENT MARKING (ARROWS) | | 4 | EACH |
| * SP & 719 | INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4") | (ALTERNATE NO. 1) | 734 | LIN. FT. |
| * SP | HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4") | (ALTERNATE NO. 2) | 734 | LIN. FT. |
| * SP & 719 | INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") | (ALTERNATE NO. 1) | 1749 | LIN. FT. |
| * SP | HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") | (ALTERNATE NO. 2) | 1749 | LIN. FT. |
| 721 | RAISED PAVEMENT MARKERS (TYPE II) | | 386 | EACH |
| 731 | TEMPORARY IMPACT ATTENUATION BARRIER | | 3 | EACH |
| 731 | TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) | | 3 | EACH |
| 733 | VIDEO CABLE | | 1411 | LIN. FT. |
| SP & 733 | VIDEO DETECTOR (CLR) | | 7 | EACH |
| 733 | VIDEO MONITOR (CLR) | | 1 | EACH |
| SP & 733 | VIDEO PROCESSOR, EDGE CARD (2 CAMERA) | | 4 | EACH |
| SP & 733 | VEHICLE DETECTOR RACK (16 CHANNEL) | | 1 | EACH |
| 801 | UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY | | 6260 | CU. YD. |
| 802 | CLASS S CONCRETE-ROADWAY | | 2142.86 | CU. YD. |
| 804 | REINFORCING STEEL-ROADWAY (GRADE 60) | | 178408 | POUND |
| 816 | FILTER BLANKET | | 3975 | SQ. YD. |
| 816 | DUMPED RIPRAP | | 4895 | CU. YD. |
| SP | ARCHITECTURAL FINISH | | 18745 | SQ. FT. |
| SP | TEXTURED COATING FINISH | | 1532 | SQ. YD. |

* DENOTES ALTERNATE BID ITEMS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

7/31/2014

R050230.DGN

SUMMARY OF QUANTITIES

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 12/2/14 | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 77 | 309 |

(2) SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
12-8-14

## SUMMARY OF QUANTITIES (BOX 3 OF 3)

| ITEM NUMBER | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| | STRUCTURES OVER 20' SPAN | | |
| 205 | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1) | 1.00 | LUMP SUM |
| 205 | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 2) | 1.00 | LUMP SUM |
| 205 | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 3) | 1.00 | LUMP SUM |
| 619 | 7' STEEL CHAIN LINK FENCE | 298 | LIN. FT. |
| 636 | BRIDGE CONSTRUCTION CONTROL | 1.00 | LUMP SUM |
| 801 | UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE | 3798 | CU. YD. |
| 802 | CLASS S CONCRETE-BRIDGE | 2135.10 | CU. YD. |
| 802 | CLASS S(AE) CONCRETE-BRIDGE | 1644.80 | CU. YD. |
| 803 | CLASS 1 PROTECTIVE SURFACE TREATMENT | 127.6 | GAL. |
| 804 | REINFORCING STEEL-BRIDGE (GRADE 60) | 228340 | POUND |
| 804 | EPOXY COATED REINFORCING STEEL (GRADE 60) | 346750 | POUND |
| 805 | STEEL PILING (HP 12X53) | 794 | LIN. FT. |
| 806 | METAL BRIDGE RAILING (TYPE H) | 734 | LIN. FT. |
| 806 | TRANSITIONAL APPROACH RAILING | 1 | EACH |
| SP & 807 | STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W) | 1099020 | POUND |
| SP & 807 | STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W) | 509630 | POUND |
| 808 | ELASTOMERIC BEARINGS | 47019 | CU. IN. |
| 809 | SILICONE JOINT SEALANT | 480 | LIN. FT. |
| 812 | BRIDGE NAME PLATE (TYPE D) | 3 | EACH |
| 816 | FILTER BLANKET | 1856 | SQ. YD. |
| 816 | DUMPED RIPRAP | 1010 | CU. YD. |
| SP | SHORING (SITE NO. 1) | 1.00 | LUMP SUM |
| SP | SHORING (SITE NO. 2) | 1.00 | LUMP SUM |
| SP | SHORING (SITE NO. 3) | 1.00 | LUMP SUM |
| | | | |
| | | | |

## REVISIONS

| DATE | REVISION | SHEET NUMBER |
|---|---|---|
| 12/2/2014 | THE SPECIAL PROVISION, "INSURANCE, CONSTRUCTION, AND FLAGGING REQUIREMENTS ON RAILROAD PROPERTY (BNSF)" WAS ADDED. | 3, 77 |
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7/31/2014

R050230.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. | | 050230 | 78 | 309 |

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES
Project Name: s050230
Date: 9/4/2014
Coordinate System: Arkansas State Plane Coordinates
Horizontal Control Based on GPS Points 250001-250001A, 250011-250011A, Vertical Control Based on NGS PNTS: L 308,M 308, N 308
Projected to Ground Coordinates
Units: U.S. Survey Foot

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

| Point No. | Northing | SY | Easting | SX | Elevation | SZ | Feature Code | Point Description |
|---|---|---|---|---|---|---|---|---|
| 1 | 779685.1238 | 0.014 | 1453544.262 | 0.013 | 567.108 | 0.008 | CTL | PD:5/8"REBAR W/2"CAP |
| 2 | 780141.3169 | 0.0100 | 1452848.588 | 0.0090 | 514.828 | 0.008 | CTL | PD:5/8"REBAR W/2"CAP |
| 3 | 780837.7427 | 0.0050 | 1452551.288 | 0.0040 | 496.517 | 0.007 | CTL | PD:5/8"REBAR W/2"CAP |
| 4 | 781700.6311 | 0.0110 | 1452791.969 | 0.0130 | 509.697 | 0.007 | CTL | PD:5/8"REBAR W/2"CAP |
| 5 | 782397.0131 | 0.0050 | 1452773.313 | 0.0050 | 493.547 | 0.006 | CTL | PD:5/8"REBAR W/2"CAP |
| 6 | 783103.6982 | 0.0080 | 1452470.31 | 0.0090 | 488.940 | 0.006 | CTL | PD:5/8"REBAR W/2"CAP |
| 7 | 783711.9436 | 0.0060 | 1451849.199 | 0.0080 | 491.858 | 0.006 | CTL | PD:5/8"REBAR W/2"CAP |
| 8 | 784318.2698 | 0.0080 | 1451092.548 | 0.0100 | 506.211 | 0.005 | CTL | PD:5/8"REBAR W/2"CAP |
| 9 | 784783.7689 | 0.0080 | 1450459.217 | 0.0100 | 513.376 | 0.005 | CTL | PD:5/8"REBAR W/2"CAP |
| 10 | 785438.0222 | 0.0070 | 1449950.203 | 0.0080 | 534.195 | 0.005 | CTL | PD:5/8"REBAR W/2"CAP |
| 11 | 785962.2451 | 0.0070 | 1449564.145 | 0.0080 | 557.358 | 0.004 | CTL | PD:5/8"REBAR W/2"CAP |
| 12 | 786414.1172 | 0.0100 | 1448727.925 | 0.0110 | 521.047 | 0.002 | CTL | PD:5/8"REBAR W/2"CAP |
| 13 | 787652.1094 | 0.0140 | 1448470.244 | 0.0150 | 508.458 | 0.003 | CTL | PD:5/8"REBAR W/2"CAP |
| 14 | 788284.4787 | 0.0040 | 1448496.209 | 0.0050 | 531.216 | 0.004 | CTL | PD:5/8"REBAR W/2"CAP |
| 100 | 779377.9037 | 0.0001 | 1453582.177 | 0.0001 | 604.952 | 0.008 | GPS | PD:AHTD GPS 250001 |
| 101 | 778998.0782 | 0.0001 | 1454713.209 | 0.0001 | 626.226 | 0.009 | GPS | PD:AHTD GPS 250001A |
| 102 | 786828.7757 | 0.0001 | 1448568.919 | 0.0001 | 511.983 | 0.002 | GPS | PD:AHTD GPS 250011 |
| 103 | 788564.3308 | 0.0001 | 1448365.814 | 0.0001 | 553.465 | 0.004 | GPS | PD:AHTD GPS 250011A |
| 900 | 780207.4309 | 30.0000 | 1452899.91 | 30.0000 | 500.429 | 0.008 | TBM | PD:SQ CUT CENTER HEADWALL |
| 901 | 780843.1948 | 30.0000 | 1452622.409 | 30.0000 | 487.409 | 0.007 | TBM | PD:AHTD ALUM DISK |
| 902 | 783119.4936 | 30.0000 | 1452459.314 | 30.0000 | 480.551 | 0.006 | TBM | PD:CPS IN 6" SYCAMORE |
| 903 | 783948.0667 | 30.0000 | 1451650.607 | 30.0000 | 504.306 | 0.006 | TBM | PD:CPS IN LIGHT POLE\PP |
| 904 | 784729.8709 | 30.0000 | 1450605.49 | 30.0000 | 504.577 | 0.005 | TBM | PD:SQ CUT CENTER HEADWALL |
| 905 | 785508.2573 | 30.0000 | 1449969.76 | 30.0000 | 510.701 | 0.005 | TBM | PD:SQ CUT N\E CORNER OF HEADWALL |
| 906 | 787715.3154 | 30.0000 | 1448534.14 | 30.0000 | 508.763 | 0.003 | TBM | PD:SQ CUT S\E CORNER BRIDGE |
| 907 | 788303.3157 | 30.0000 | 1448518.298 | 30.0000 | 528.054 | 0.004 | TBM | PD:SQ CUT IN CENTER HEADWALL |
| 997 | 786547.6312 | 30.0000 | 1448723.961 | 30.0000 | 518.960 | 0.000 | BM | PD:NGS MARK L 308 |
| 998 | 782046.4498 | 30.0000 | 1452778.104 | 30.0000 | 503.236 | 0.006 | BM | PD:NGS MARK M 308 |
| 999 | 779535.7726 | 30.0000 | 1453651.413 | 30.0000 | 580.941 | 0.008 | BM | PD:NGS MARK N 308 |
| 1500 | 784443.238 | 0.0060 | 1449346.285 | 0.0060 | 531.956 | 0.028 | CTL | PD:REBAR/CAP |
| 1501 | 784915.9721 | 0.0100 | 1449604.207 | 0.0100 | 488.136 | 0.028 | CTL | PD:REBAR/CAP |
| 1502 | 782565.331 | 0.0050 | 1452165.642 | 0.0040 | 492.824 | 0.026 | CTL | PD:REBAR/CAP |
| 1503 | 782009.2942 | 0.0050 | 1452181.955 | 0.0050 | 487.820 | 0.026 | CTL | PD:REBAR/CAP |

*Standard Primary Control Monument - Rebar and Cap - Standard - 5/8"x 24" Rebar with 2"Aluminum Cap stamped: "(include all common information here)" plus other markings indicated in the point description of the individual point. AHTD monuments will be stamped "Arkansas Hwy & Trans Dept" with "PN: ###" & "Job ######". Monuments that are set by Consultants will be stamped "Arkansas Hwy & Trans Dept" with "PN:###", "Job#######", & "PS#####". The consultant Professional Surveyor in charge will stamp his/her PS license number on the cap.
**Standard GPS Control Point Monument - 5/8" x 48" Rebar with 2.5"Aluminum Cap stamped: "(include all common information here)" plus other markings indicated in the point description of the individual point. These monuments will be stamped "Ark. State Hwy Trans. Dept.", "GPS Survey", & "Point No. ######".
SX, SY, SZ – Represents the standard error estimate of the coordinate values of each point at the 67% confidence level (one sigma) based on the least squares analysis of the control network. See the AASHTO SDMS Technical Data Guide data tag definition for SX:, SY:, and SZ: for additional information. These values shall be used when control points are added and the entire network is reprocessed using least square analysis. A value of 0.001 is defined as fixed (no adjustment) in the least square analysis process. A value of 30 is defined as location by handheld GPS device or scaled from USGS Quadmap.
Reference Control points (1500 series) shall be used to re-establish horizontal datum if the primary control has been destroyed. These reference control points shall not be used for vertical control unless the elevation has been established from the project datum with 3-wire level techiniques.
All additional project control shall be occupied, measured, and adjusted with direct survey ties to at least two of the control points listed in the table above. New survey control shall not be independent of the survey control listed above. This includes horizontal coordinates and elevations.

Positional Accuracy:
- Horizontal - GPS (1.0 cm± 1PPM) — PN: 1-14 , 100-103
- Horizontal - Primary (2.0cm± 20PPM): — PN: N/A
- Horizontal - Secondary (3 cm ± 50PPM): — PN: N/A
- Vertical - NGS 1st Order (±4mm x Vdist in km) — PN: L 308, M 308, N 308
- Vertical - NGS 2nd Order (±6mm x Vdist in km) — PN: N/A
- Vertical - NGS 3rd Order (±8mm x Vdist in km) — PN: N/A

Horizontal Datum: NAD 1983 (1997) State Plane Zone: 0301-North Zone
The adjustment year is based on metadata in the SDMS Control file
A project CAF of: 1.000043 has been used to compute the above coordinates.
The project CAF shall have a minimum precision of 9 digits right of the decimal.
This CAF is intended for use within the project limits only.
Grid Distance = Ground Distance X CAF
If Coordinates are listed as Ground:
To compute Grid Coordinates, multiply the Ground Coordinates by CAF about the origin of X=0 & Y=0
If Coordinates are listed as Grid:
To compute Ground Coordinates, divide the Grid Coordinates by CAF about the origin of X=0 & Y=0

Vertical Datum: NAVD 1988 based NGS BM:
A project Elevation Factor of: 0.999975910 has been computed and incorporated in the above CAF.
This is based on the average elevation of the project: 503.647 Feet
3-Wire Leveling techniques have been used to establish elevations on
Points:
From NGS BM: L 308, M 308, N 308

Basis of Bearing: Grid Bearings based on GPS Points 230020-230026
Convergence Angle is: 00 16 34.52 RIGHT at PN: 7
LT: 36-26-08 N LG: 091-31-31 W
Grid Azimuth = Astronomical Azimuth - Convergence Angle

8/28/2014

R050230.DGN

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

## HWY. 63 - C.L. CONSTRUCT

| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8000 | POB | 110+69.07 | 779039.6540 | 1455547.3200 |
| 8001 | PC | 119+35.87 | 779057.8409 | 1454680.7062 |
| 8003 | PT | 125+37.81 | 779246.0263 | 1454118.5397 |
| 8004 | PC | 137+86.79 | 779976.8673 | 1453105.7148 |
| 8006 | PT | 151+72.92 | 781205.0220 | 1452670.0041 |
| 8007 | PC | 154+89.60 | 781510.7387 | 1452752.6080 |
| 8009 | PT | 176+95.28 | 783494.2107 | 1452109.4712 |
| 8010 | PC | 198+77.16 | 784865.8133 | 1450412.6285 |
| 8012 | PT | 204+72.24 | 785305.3982 | 1450015.0951 |
| 8013 | PC | 209+50.22 | 785705.3619 | 1449753.3862 |
| 8015 | PT | 216+56.80 | 786179.4271 | 1449239.1138 |
| 8016 | PC | 220+06.79 | 786346.6390 | 1448931.6445 |
| 8018 | PT | 227+23.83 | 786924.6261 | 1448559.4446 |
| 8019 | PC | 232+46.56 | 787446.0246 | 1448522.0838 |
| 8021 | PT | 233+66.87 | 787565.9782 | 1448512.8554 |
| 8022 | PC | 233+86.93 | 787585.9676 | 1448511.2120 |
| 8024 | PT | 237+25.78 | 787924.0464 | 1448488.4431 |
| 8025 | PC | 239+73.77 | 788171.6853 | 1448475.4399 |
| 8027 | PT | 241+02.77 | 788300.1886 | 1448464.3309 |
| 8028 | POE | 243+78.31 | 788573.7482 | 1448431.3429 |

## HWY. 9 - CONSTRUCT

| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8029 | POB | 300+00.00 | 787363.6164 | 1447947.5501 |
| 8030 | PC | 302+95.08 | 787363.9491 | 1448242.6317 |
| 8032 | PT | 304+09.45 | 787370.9182 | 1448356.7190 |
| 8033 | PC | 306+25.28 | 787396.9476 | 1448570.9776 |
| 8035 | PT | 308+69.12 | 787553.6324 | 1448736.0744 |
| 8036 | POE | 308+75.80 | 787560.2087 | 1448737.2248 |

## MAINTENANCE OF TRAFFIC

| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8037 | POB | 0+00.00 | 786925.8411 | 1448576.4011 |
| 8038 | PC | 5+42.88 | 787467.3290 | 1448537.6009 |
| 8040 | PT | 6+23.08 | 787547.2380 | 1448531.4486 |
| 8041 | PC | 6+36.40 | 787560.5683 | 1448530.3576 |
| 8043 | PT | 7+38.72 | 787661.5214 | 1448514.2800 |
| 8044 | PC | 7+44.15 | 787666.8003 | 1448513.0226 |
| 8046 | PT | 8+66.40 | 787787.6404 | 1448495.6057 |
| 8025 | POE | 12+50.98 | 788171.6853 | 1448475.4399 |

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. | | 050230 | 79 | 309 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 135+70.00
BEGIN JOB 050230

N 54°11'11" W
1248.98'

C.L. CONST.

8004

P.C. 137+86.79

135

SURVEY BASELINE N55°44'42"W
831.91'

140

PN2
PDS/8"REBAR W/2"CAP,4"W OF SH HWY.63

P.I. 145+78.88

N 54°11'11" W

145

SURVEY BASELINE N23°07'02"W
757.23'

C.L. CONST.

PN3
PDS/8"REBAR W/2"CAP

N 15°07'12" E

N 15°35'06" E
895.83'

SURVEY BASELINE

150

PI = 145+78.88
Δ = 69° 18' 23.01" RT.
D = 5°00'
T = 792.09'
L = 1386.12'
PC = 137+86.79
PT = 151+72.92
e = 0.098'/'
Ls = 630'

PI = 145+78.88
Δ = 69° 18' 23.01" RT.
D = 5°00'
T = 792.09'
L = 1386.12'
PC = 137+86.79
PT = 151+72.92
e = 0.098'/'
Ls = 630'

P.I. 151+72.92

150

N 15°35'06" E
895.83'

SURVEY BASELINE

C.L. CONST.

8006

N 15°07'12" E
316.68'

P.C. 154+89.60

155

8007

PI = 167+33.92
Δ = 66° 10' 14.12" LT.
D = 3°00'
T = 1244.32'
L = 2205.69'
PC = 154+89.60
PT = 176+95.29
e = 0.077'/'
Ls = 540'

PN4
PDS/8"REBAR W/2"CAP,2'E OF SH HWY.63

160

N 1°32'04" W
696.63'

SURVEY BASELINE

C.L. CONST.

PN5
PDS/8"REBAR W/2"CAP,2'E OF SH HWY.63

165

P.I. 167+33.92

8/28/2014

R050230.DGN

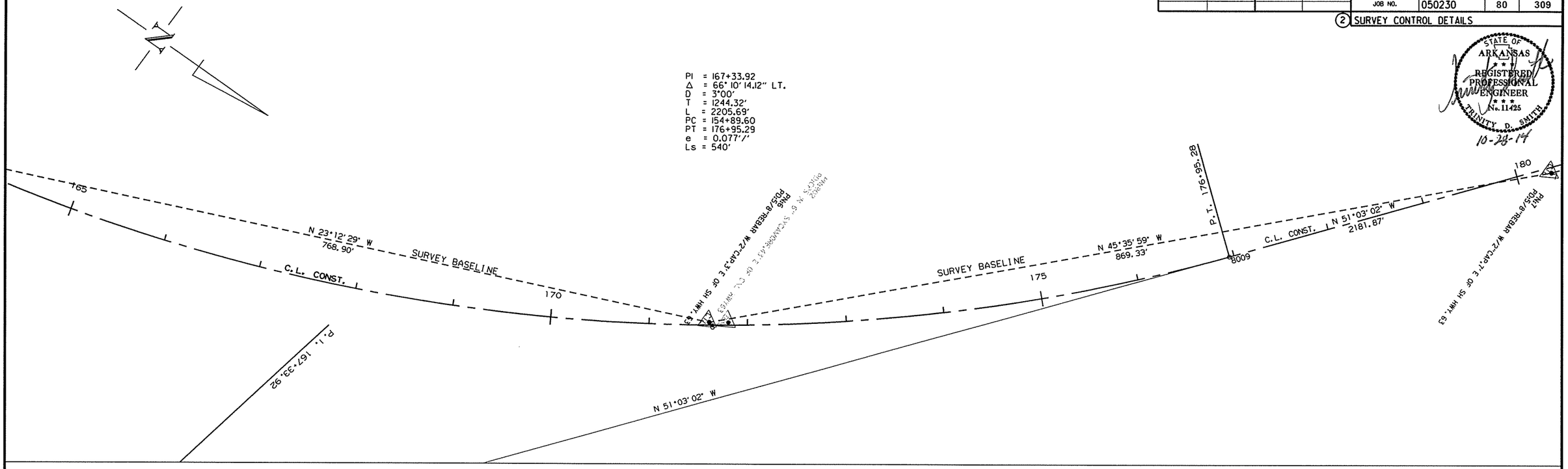
SURVEY CONTROL DETAILS

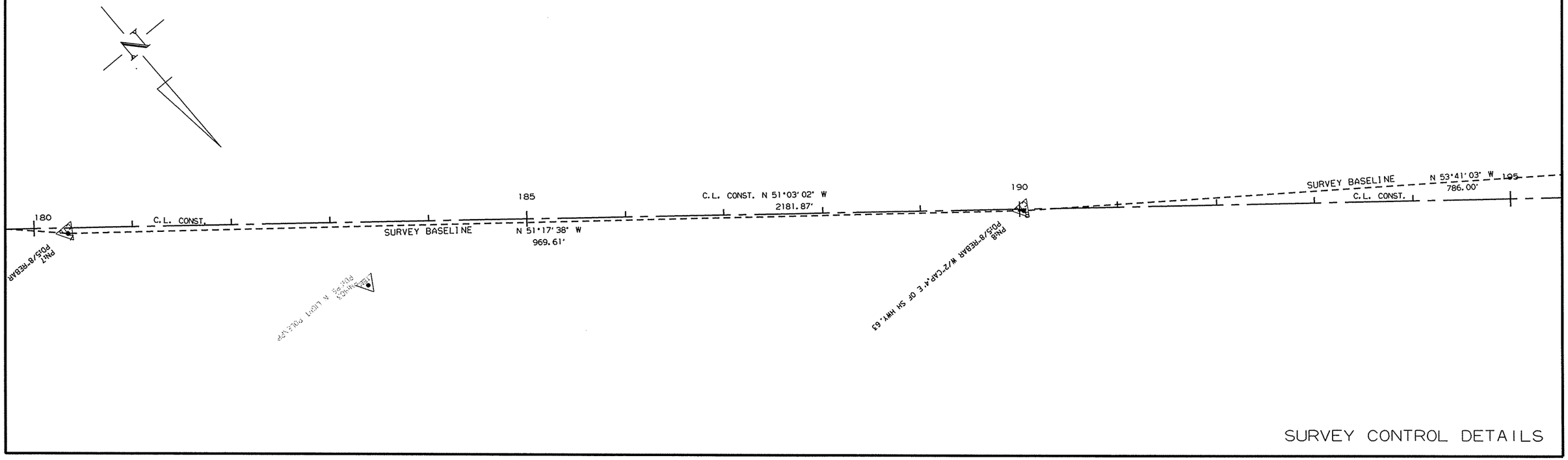
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 80 | 309 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

PI = 167+33.92
Δ = 66° 10' 14.12" LT.
D = 3°00'
T = 1244.32'
L = 2205.69'
PC = 154+89.60
PT = 176+95.29
e = 0.077'/'
Ls = 540'




SURVEY CONTROL DETAILS

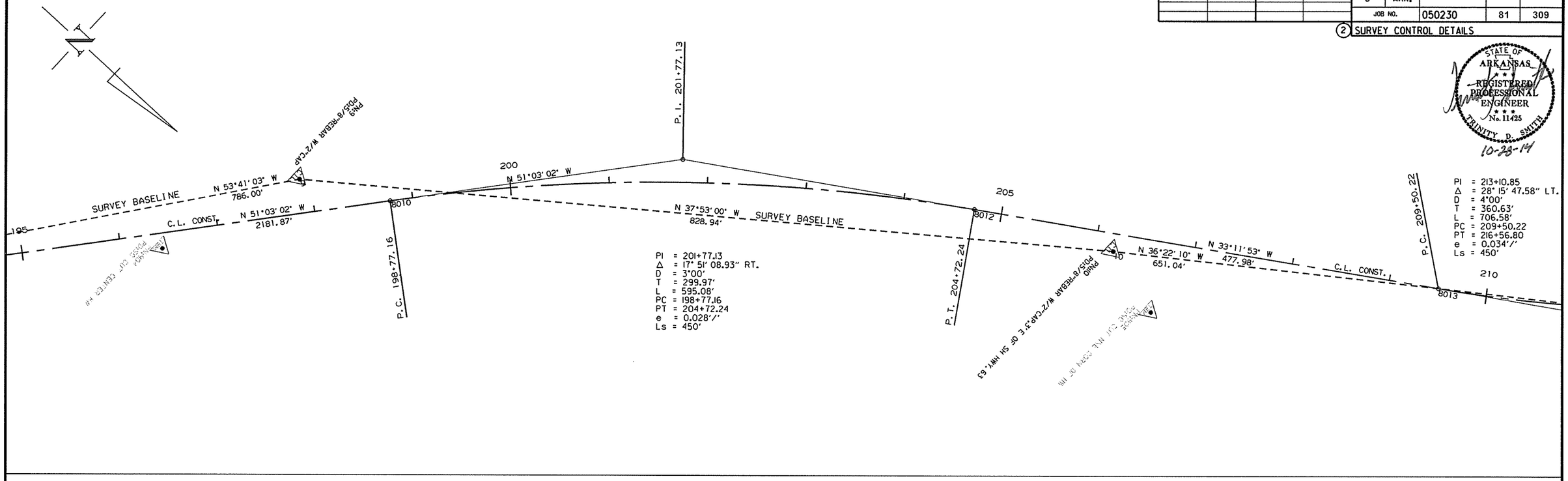
8/28/2014

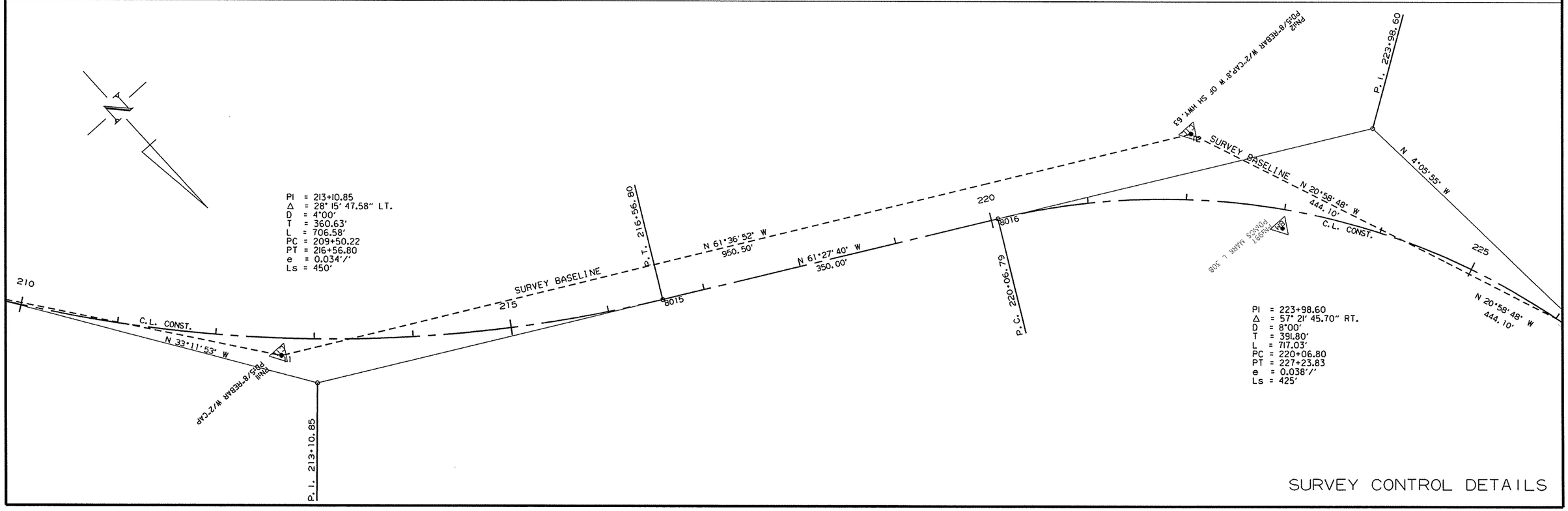
R050230.DGN

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 81 | 309 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




SURVEY CONTROL DETAILS

8/28/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 82 | 309 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

PI = 5+82.98
Δ = 00° 36' 06" LT.
D = 0°45'
T = 40.10'
L = 80.21'
PC = 5+42.88
PT = 6+23.08
NO SUPERELEVATION

POB 300+00.00

PI = 6+87.66
Δ = 08° 41' 51" LT.
D = 8°30'
T = 51.26'
L = 102.32'
PC = 6+36.40
PT = 7+38.72
NO SUPERELEVATION

STA. 303+40
BEGIN JOB HWY. 9

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 18.58"

STA. 230+16.00
END JOB 040518

P.C. 302+95.08

P.I. 303+52.33

PI = 303+52.33
Δ = 06° 51' 44" LT.
D = 6°00'
T = 57.25'
L = 114.37'
PC = 302+95.08
PT = 304+09.45
NO SUPERELEVATION

P.T. 304+09.45

N 69°59'07" E 295.08'

HWY. 9 - CONST.

N 83°04'24" E 215.83'

305

P.T. 227+23.83

P.C. 232+46.56

P.T. 233+66.87

PK NAIL
PD.5'/8"REBAR W/2"CAP.3' W OF BACK OF GB

N 4°42'00" W 13.32'

P.I. 8+05.44

P.I. 235+56.37

N 2°21'05" E 632.90'

SURVEY BASELINE

C.L. CONST.

N 3°00'21" W (MAINT. OF TRAFFIC) 384.57'

N 3°00'21" W 247.98'

P.C. 239+73.77

POE 12+50.98

P.I. 240+38.29

P.T. 237+25.78

P.T. 8+66.40

P.I. 307+67.00

N 9°55'18" E 6.68'

P.T. 308+69.12

P.I. 233+06.72

P.I. 5+82.98

P.C. 5+42.88

P.T. 6+23.08

P.C. 6+36.40

P.C. 233+86.93

P.I. 6+87.66

P.T. 7+38.72

P.C. 7+44.15

N 13°23'51" W 5.43'

PK NAIL
PD.5'/8"REBAR W/2"CAP.3' W OF BACK OF GB

PI = 307+67.00
Δ = 73° 09' 06" LT.
D = 0°30'
T = 141.71'
L = 243.84'
PC = 306+25.28
PT = 308+69.12
NO SUPERELEVATION

PI = 235+56.37
Δ = 01° 41' 39" RT.
D = 0°30'
T = 169.44'
L = 338.86'
PC = 233+86.93
PT = 237+25.79
NO SUPERELEVATION

PI = 8+05.44
Δ = 10° 23' 30" RT.
D = 8°30'
T = 61.30'
L = 122.26'
PC = 7+44.15
PT = 8+66.40
NO SUPERELEVATION

SURVEY BASELINE
N 20°58' 48" W
444.10'

P.T. 227+23.83

POB 0+00.00

SURVEY BASELINE 230 N 6°50'03" W 829.23'

N 4°05'55" W 522.74'

N 4°05'55" W 542.88'

MAINT. OF TRAFFIC

8018 C.L. CONST.

8037

8019

8038

8040

8041

8043

8044

8046

8024

8025

8036

8035

8039

8030

8029

8022

8021

102

PI = 223+98.60
Δ = 57° 21' 46" RT.
D = 8°00'
T = 391.80'
L = 717.03'
PC = 220+06.80
PT = 227+23.83
e = 0.038'/'
Ls = 425'

225

5

10

13

235

240

8/28/2014

R050230.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. | | 050230 | 83 | 309 |

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

CONCRETE DITCH PAVING

| STA. | STA. | SIDE | TYPE | "W" | "B" | SQ. YDS. |
|---|---|---|---|---|---|---|
| 135+70 | 140+00 | LT. | B | 9 | - | 430 |
| 140+25 | 142+10 | RT. | A | 15 | 10 | 308 |
| 146+00 | 152+00 | RT. | B | 6 | - | 400 |

STA. 141+08 - IN PLACE
6' x 6' x 152' R.C. BOX CULVERT
ON A 18°LT. FWD. SKEW
RETAIN & EXTEND 63' RT.
TO A COMPLETED LENGTH OF 215'
WITH 3:1 WINGS RT.
050 = 153 CFS D.A. = 124.1 ACRES

STA. 144+08 CONSTRUCT
APPROACH ON LT. = 585 CU. YDS.

RIVERVIEW DR.
P.I. 145+78.88
N 54°11'11" W
N 15°07'12" E
EXISTING R/W
CONST. LIMITS
PROPOSED R/W
C.L. CONST.
40'
16'
20'
12'-12'-12'-12'-8'
100' TRANSITION
STA. 135+70.00
BEGIN JOB 050230
LOG MILE 2.07

REMOVAL AND DISPOSAL OF FENCE

| STA. | STA. | SIDE | LIN. FT. |
|---|---|---|---|
| 135+60 | 136+44 | RT. | 85 |

STA. 142+22 CONSTRUCT
APPROACH ON RT. = 150 CU. YDS. COMP. EMBANKMENT.
760 CU. YDS. UNCLASSIFIED EXCAVATION

PI = 145+78.88
Δ = 69° 18' 23.01" RT.
D = 5°00'
T = 792.09'
L = 1386.12'
PC = 137+86.79
PT = 151+72.92
e = 0.098'/'
Ls = 630'

T.C.E.

LONG RUN RD.

STA. 148+08 - IN PLACE
10' x 10' x 93' R.C. BOX CULVERT
ON A 11°LT. FWD. SKEW
RETAIN & EXTEND 82' RT.
TO A COMPLETED LENGTH OF 175'
WITH 3:1 WINGS RT.
050 = 692 CFS D.A. = 436 ACRES

STA. 146+85 IN PLACE
24" x 57' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" x 70' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 1145 CU. YDS.

HIGHWAY 63

STA. 135+70.00 MATCH EXIST. SUPERELEVATION (0.008'/')
STA. 141+48.57 MAX. SUPERELEVATION 0.098'/'
STA. 147+01.26 MAX. SUPERELEVATION 0.098'/'
STA. 153+31.26 END SUPERELEVATION

UNNAMED TRIBUTARY:
THIS STREAM IS CLASSIFIED AS INTERMITTENT.
THE TOP OF CHANNEL ELEVATION IS 495 FT. MSL.
REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE
2014 STANDARD SPECIFICATIONS.

P.V.I. 135+70.00
ELEV. 547.84
-6.97%
P.V.C. 138+33.35
ELEV. 529.47
138+00.00 LT.
530.48
LT. DITCH GRADE -10.38%
K 136.51
VC-1225'
e-13.74'
140+00.00 LT.
509.72
140+25.00 RT.
496.98
RT. D. GR. -4.47%
140+78.00 RT.
494.61
RT. D. GR. 5.47%
142+13.00 RT.
502.00
P.V.I. 144+45.85
ELEV. 486.76

UNNAMED TRIBUTARY:
THIS STREAM IS CLASSIFIED AS INTERMITTENT.
THE TOP OF CHANNEL ELEVATION IS 477 FT. MSL.
REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE
2014 STANDARD SPECIFICATIONS.

147+85.00 RT.
475.55
RT. D. GR. 1.85%
149+38.68 RT.
479.39
RT. D. GR. 4.30%

STA. 141+43.00
EXIST. F.L. OUTLET LT. =490.96

STA. 140+75.00
F.L. INLET RT.=494.74

STA. 147+89.00
F.L. INLET RT. =476.62

STA. 148+25.00
EXIST. F.L. OUTLET LT.=475.95

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

550 540 530 520 510 500 490 480 470 460

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

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 84 | 309 |

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 160+34 - STA. 161+76 IN PLACE
143' x 30' BRIDGE CONSISTING OF CONTINUOUS STEEL BEAM SPANS SUPPORTED BY CONCRETE SUBSTRUCTURE.
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM.

PI = 167+33.92
Δ = 66° 10' 14.12" LT.
D = 3°00'
T = 1244.32'
L = 2205.69'
PC = 154+89.60
PT = 176+95.29
e = 0.077'/'
Ls = 540'

STA. 160+20.89 - BRIDGE END
BRIDGE NO. 07299
190'-0" CONT. COMPOSITE W-BEAM UNITS (60'-70'-60')
75'-0" CLEAR ROADWAY
192'-2⅝" BRIDGE LENGTH
15° RT. FWD. SKEW
STA. 162+13.11 - BRIDGE END

STA. 151+75 IN PLACE
24" x 29' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
24" x 92' PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPROACH = 1085 CU. YDS.

PI = 145+78.88
Δ = 69° 18' 23.01" RT.
D = 5°00'
T = 792.09'
L = 1386.12'
PC = 137+86.79
PT = 151+72.92
e = 0.098'/'
Ls = 630'

| STA. | STA. | SIDE | GUARDRAIL (TYPE A) LIN. FT. | THRIE BEAM GUARDRAIL TERMINAL EACH | TERMINAL ANCHOR POST (TYPE 1) EACH | GUARDRAIL TERMINAL (TYPE 2) EACH |
|---|---|---|---|---|---|---|
| 148+25.00 | 159+93.44 | LT. | 1150 | 1 | 1 | |
| 157+94.79 | 160+13.54 | RT. | 150 | 1 | | |
| 162+12.46 | 168+83.25 | LT. | 602 | 1 | | |
| 162+32.56 | 163+26.31 | RT. | 75 | 1 | 1 | |

CONCRETE DITCH PAVING

| STA. | STA. | SIDE | TYPE | "W" | "B" | SQ. YDS. |
|---|---|---|---|---|---|---|
| 152+00 | 155+27 | RT. | A | 15 | 10 | 545 |
| 159+00 | 160+23 | RT. | A | 15 | 10 | 205 |

HIGHWAY 63

STA. 135+70.00 MATCH EXIST. SUPERELEVATION (0.008'/')
STA. 141+48.57 MAX. SUPERELEVATION 0.098'/'
STA. 147+01.26 MAX. SUPERELEVATION 0.098'/'
STA. 153+31.26 END SUPERELEVATION

TRACE CREEK:
THIS STREAM IS CLASSIFIED AS PERENNIAL.
THE TOP OF CHANNEL ELEVATION IS 476 FT. MSL.
REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

STA. 153+31.26 BEGIN SUPERELEVATION
STA. 158+71.26 MAX. SUPERELEVATION 0.077'/'
STA. 175+60.29 MAX. SUPERELEVATION 0.077'/'
STA. 181+00.29 END SUPERELEVATION

K 136.51
VC-1225'
e-13.74'

P.V.T. 150+58.35
ELEV. 499.01

2.00%

RT. DITCH GRADE 4.30%

P.V.C. 153+85.38
ELEV. 505.55

155+26.75 RT.
504.68

RT. DITCH GRADE 1.50%

P.V.I. 156+90.38
ELEV. 511.65

156+87.24 RT.
507.09

RT. DITCH GRADE 0.45%

158+38.89 RT.
507.77

K 152.49
VC-610'
e--3.05'

P.V.T. 159+95.38
ELEV. 505.55

STA. 160+20.89
BR. END

-2.00%

Q50 DESIGN
HIGH WATER
481.70

STA. 162+13.11
BR. END

164+00.00 RT.
474.10

RT. D. GR. 0.30%

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

530 520 510 500 490 480 470

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

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 85 | 309 |

(2) PLAN AND PROFILE SHEETS

PI = 167+33.92
Δ = 66° 10' 14.12" LT.
D = 3°00'
T = 1244.32'
L = 2205.69'
PC = 154+89.60
PT = 176+95.29
e = 0.077'/'
Ls = 540'

CONCRETE DITCH PAVING

| STA. | STA. | SIDE | TYPE | "W" | SQ. YDS. |
|---|---|---|---|---|---|
| 179+30 | 180+00 | RT. | B | 9 | 70 |

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

CONST. LIMITS
EXISTING R/W
C.L. CONST.
TRACE CREEK
APPROXIMATE STREAM EDGE
PROPOSED R/W
P.I. 176+95.28
TRACE CREEK LN.

DURING CONSTRUCTION OF THE TRACE CREEK RELOCATION, ALL TREES THAT DO NOT INTERFERE WITH CONSTRUCTION SHALL BE SAVED.

N 51°03' 02" W

STA. 166+30 - STA. 172+00
IF ROCK IS ENCOUNTERED, THE SLOPE CAN BE CUT TO MATCH THE ROCK CUT SPECIAL DETAIL IN LIEU OF THE 2:1 BACKSLOPE SHOWN.

P.I. 167+33.92
N 15°07' 12" E
115.00 335.00
170.00 340.00
125.00 179.77

STA. 179+41 IN PLACE
18" x 24' C.P. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH = 100 CU. YDS.

HIGHWAY 63

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED.

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

STA. 153+31.26 BEGIN SUPERELEVATION
STA. 158+71.26 MAX. SUPERELEVATION 0.077'/'
STA. 175+60.29 MAX. SUPERELEVATION 0.077'/'
STA. 181+00.29 END SUPERELEVATION

P.V.C. 165+48.74
ELEV. 494.48
-2.00%
K 266.62
VC=600'
e=1.69'
P.V.I. 168+48.74
ELEV. 488.48
RT. DITCH GRADE 0.30%
P.V.T. 171+48.74
ELEV. 489.23
0.25%
P.V.C. 176+50.00
ELEV. 490.48
K 350.83
VC=500'
e=0.89'
42"x 22' @ 2.22%
STA. 180+25.00
F.L. OUTLET
=497.20
RT. D. GR. -1.30%
RT. D. GR. 0.70%
RT. D. GR. 1.40%
175+00.00 RT. 477.40
175+50.00 RT. 476.75
177+00.00 RT. 477.80
178+00.00 RT. 479.20
P.V.I. 179+00.00
ELEV. 491.11

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

500 490 480 470 460
520 510 500 490 480 470 460
165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00 174+00 175+00 176+00 177+00 178+00 179+00 180+00

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| | | | | JOB NO. | | 050230 | 86 | 309 |

(2) PLAN AND PROFILE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 180+10 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 3.9 SQ. YDS.

CONCRETE DITCH PAVING

| STA. | STA. | SIDE | TYPE | "W" | SQ. YDS. |
|---|---|---|---|---|---|
| 194+35 | 195+10 | RT. | B | 9 | 75 |

STA. 180+25 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 13' R.C. STUB OUTLET
WITH FES.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 11"

STA. 182+50 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 221' PIPE OUTLET
CONNECT TO D.I. @ STA. 180+25 LT.
TY C = 4' x 4'
TY MO = 4" I.D.
H = 3' 10"

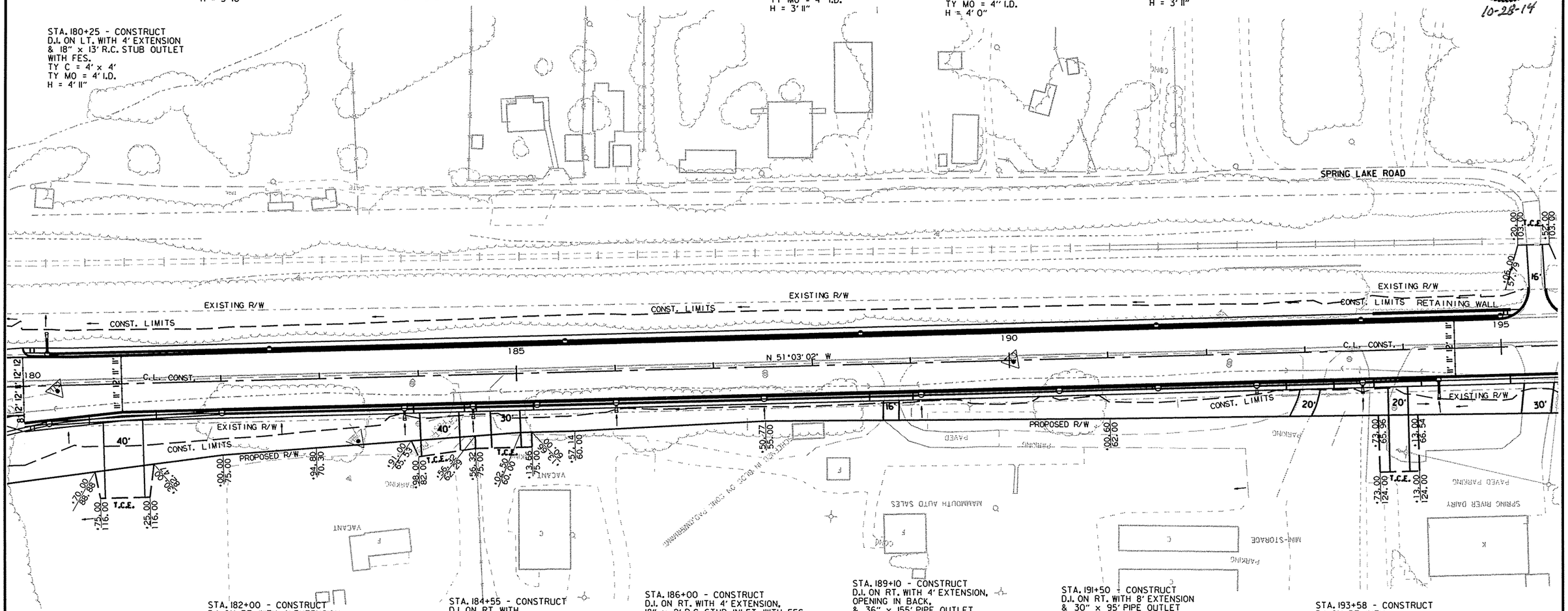
STA. 185+50 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 296' PIPE OUTLET
CONNECT TO D.I. @ STA. 182+50 LT.
TY C = 4' x 4'
TY MO = 4" I.D.
H = 3' 11"

STA. 188+50 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 296' PIPE OUTLET
CONNECT TO D.I. @ STA. 185+50 LT.
TY C = 4' x 4'
TY MO = 4" I.D.
H = 3' 11"

STA. 191+50 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 296' PIPE OUTLET
CONNECT TO D.I. @ STA. 188+50 LT.
TY C = 4' x 4'
TY MO = 4" I.D.
H = 3' 11"

STA. 193+58 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 204' PIPE OUTLET
CONNECT TO D.I. @ STA. 191+50 LT.
TY C = 4' x 4'
TY MO = 4" I.D.
H = 4' 0"

STA. 195+00 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 138' PIPE OUTLET
CONNECT TO D.I. @ STA. 193+58 LT.
TY C = 4' x 4'
TY MO = 4" I.D.
H = 3' 11"




STA. 180+25 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 42" x 227' R.C. STUB OUTLET
WITH FES.
TY MO = 5' I.D.
TY C = 4' x 5'
H = 9' 9"

STA. 180+03 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 3.3 SQ. YDS.

STA. 181+00 CONSTRUCT
APPROACH ON RT. = 425 CU. YDS. UNCLASSIFIED EXCAVATION

PI = 167+33.92
Δ = 66° 10' 14.12" LT.
D = 3°00'
T = 1244.32'
L = 2205.69'
PC = 154+89.60
PT = 176+95.29
e = 0.077'/'
Ls = 540'

STA. 182+00 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 42" x 170' PIPE OUTLET
CONNECT TO D.I. @ STA. 180+25 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 8' 5"

STA. 183+85 - CONSTRUCT
D.I. ON RT. WITH
18" x 3' R.C. STUB INLET WITH FES.
& 42" x 180' PIPE OUTLET
CONNECT TO D.I. @ STA. 182+00 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 7' 11"

STA. 184+25 - IN PLACE
24" x 48' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH = 65 CU. YDS. UNCLASSIFIED EXCAVATION

STA. 184+55 - CONSTRUCT
D.I. ON RT. WITH
18" x 4' R.C. STUB INLET WITH FES.
& 42" x 65' PIPE OUTLET
CONNECT TO D.I. @ STA. 183+85 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 7' 9"

STA. 185+20 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 42" x 60' PIPE OUTLET
CONNECT TO D.I. @ STA. 184+55 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 7' 8"

REMOVAL AND DISPOSAL OF FENCE

| STA. | STA. | SIDE | LIN. FT. |
|---|---|---|---|
| 192+76 | 193+44 | RT. | 41 |

STA. 184+88 CONSTRUCT
APPROACH ON RT. = 70 CU. YDS. UNCLASSIFIED EXCAVATION

STA. 186+00 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION,
18" x 2' R.C. STUB INLET WITH FES.
& 42" x 75' PIPE OUTLET
CONNECT TO D.I. @ STA. 185+20 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 7' 6"

STA. 187+50 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION,
OPENING IN BACK,
& 42" x 145' PIPE OUTLET
TY C = 4' x 5'
TY MO = 5' I.D.
H = 6' 9"

STA. 188+79 - IN PLACE
24" x 48' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH = 10 CU. YDS. UNCLASSIFIED EXCAVATION

STA. 189+10 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION,
OPENING IN BACK,
& 36" x 155' PIPE OUTLET
CONNECT TO D.I. @ STA. 187+50 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 7' 2"

STA. 190+50 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 30" x 135' PIPE OUTLET
CONNECT TO D.I. @ STA. 189+10 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 7' 1"

STA. 193+00 - IN PLACE
15" x 55' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH = 5 CU. YDS. UNCLASSIFIED EXCAVATION

STA. 191+50 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 30" x 95' PIPE OUTLET
CONNECT TO D.I. @ STA. 190+50 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 6' 11"

STA. 192+50 - CONSTRUCT
D.I. ON RT. WITH
18" x 1' R.C. STUB INLET WITH FES.
& 30" x 95' PIPE OUTLET
CONNECT TO D.I. @ STA. 191+50 RT.
TY C = 4' x 5'
TY MO = 5' I.D.
H = 6' 7"

STA. 193+93 - IN PLACE
15" x 61' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH = 85 CU. YDS.

STA. 193+58 - CONSTRUCT
D.I. ON RT. WITH
18" x 3' R.C. STUB INLET WITH FES.
& 30" x 103' PIPE OUTLET
CONNECT TO D.I. @ STA. 192+50 RT.
TY C = 4' x 5'
TY MO = 4' I.D.
H = 6' 0"

STA. 194+35 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 18" x 10" R.C. STUB INLET
WITH FES.
& 18" x 73' PIPE OUTLET
CONNECT TO D.I. @ STA. 193+58 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 6"

6/16/2014

R050230.DGN

# HIGHWAY 63

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED.

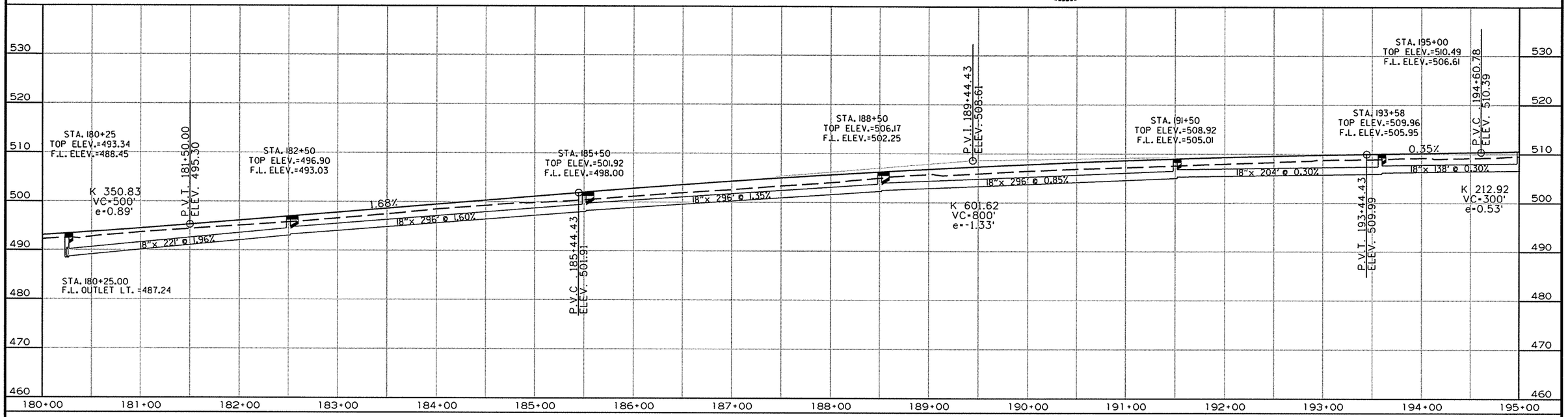
FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-26-14

| 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. | | 050230 | 87 | 309 |

(2) PLAN AND PROFILE

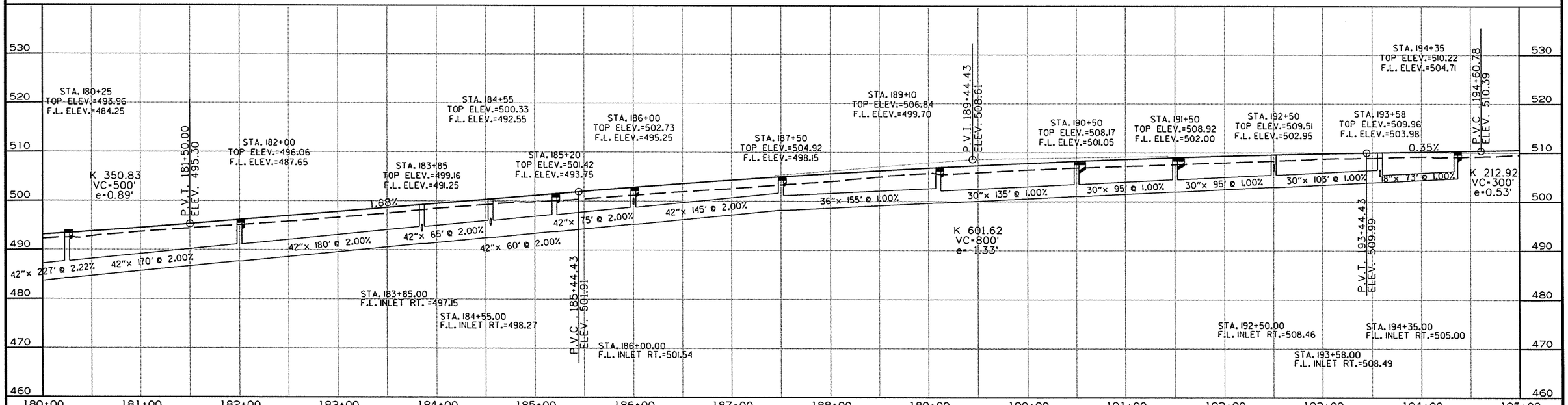
# HWY. 63 LEFT STORM SEWER




STA. 153+31.26 BEGIN SUPERELEVATION
STA. 158+71.26 MAX. SUPERELEVATION 0.077'/'
STA. 175+60.29 MAX. SUPERELEVATION 0.077'/'
STA. 181+00.29 END SUPERELEVATION

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

# HWY. 63 RIGHT STORM SEWER




R050230.DGN 6/16/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 88 | 309 |

(2) PLAN AND PROFILE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-14

STA. 195+38 CONSTRUCT
APPROACH ON LT = 115 CU. YDS.

STA. 195+12 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 5.4 SQ. YDS.

STA. 195+65 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 5.4 SQ. YDS.

STA. 196+42 IN PLACE
42" x 66' R.C. PIPE CULVERT
CROSS DRAIN
REMOVE

WIRE FENCE

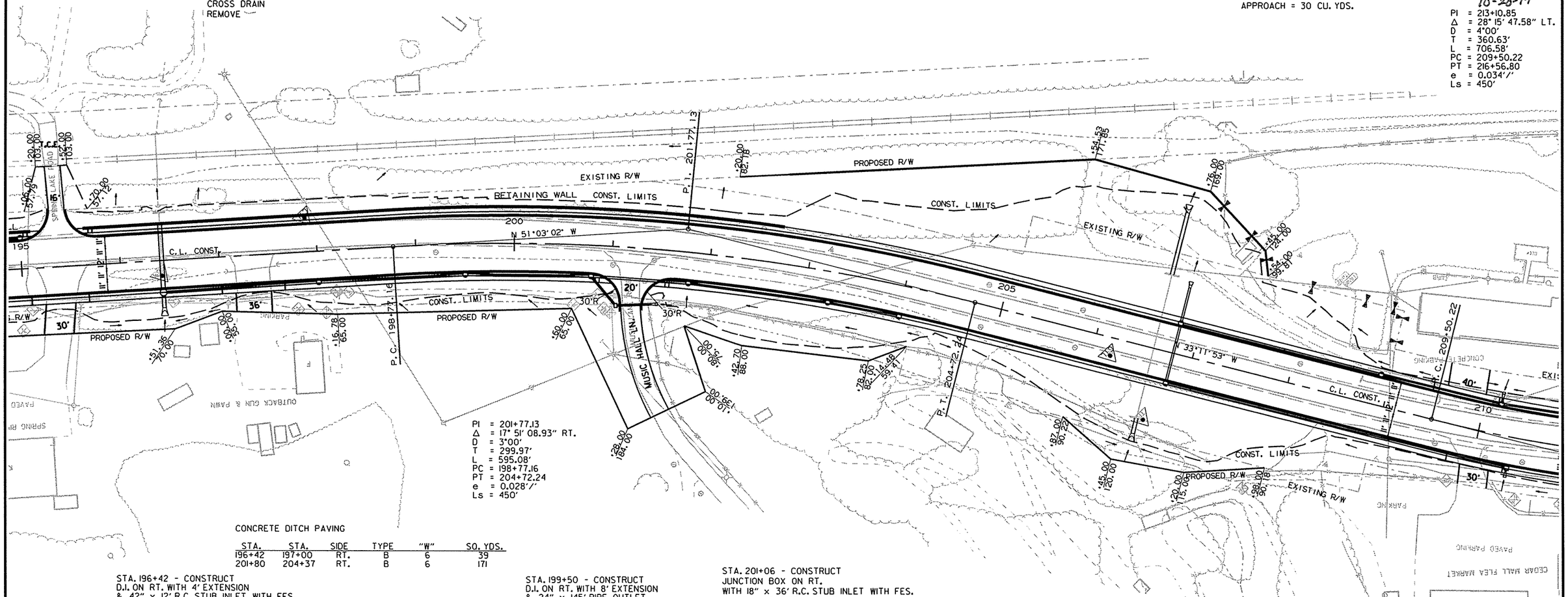
| STA. | STA. | SIDE | TYPE | LIN. FT. |
|---|---|---|---|---|
| 206+94 | 208+97 | LT. | C | 272 |

STA. 206+80 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 24" x 35' R.C. STUB OUTLET
WITH FES.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 0"

STA. 208+90 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 206' PIPE OUTLET
CONNECT TO D.I. @ STA. 206+80 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 7' 1"

STA. 209+78 - IN PLACE
18" x 55' METAL PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND CONSTRUCT
APPROACH = 30 CU. YDS.

PI = 213+10.85
Δ = 28° 15' 47.58" LT.
D = 4°00'
T = 360.63'
L = 706.58'
PC = 209+50.22
PT = 216+56.80
e = 0.034'/'
Ls = 450'




PI = 201+77.13
Δ = 17° 51' 08.93" RT.
D = 3°00'
T = 299.97'
L = 595.08'
PC = 198+77.16
PT = 204+72.24
e = 0.028'/'
Ls = 450'

CONCRETE DITCH PAVING

| STA. | STA. | SIDE | TYPE | "W" | SQ. YDS. |
|---|---|---|---|---|---|
| 196+42 | 197+00 | RT. | B | 6 | 39 |
| 201+80 | 204+37 | RT. | B | 6 | 171 |

STA. 196+42 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 42" x 12' R.C. STUB INLET WITH FES.
& 48" x 68' R.C. STUB OUTLET
TY C = 4' x 5'
TY MO = 6' I.D.
H = 8' 10"

STA. 198+00 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 24" x 153' PIPE OUTLET
CONNECT TO D.I. @ STA. 196+42 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 7' 11"

STA. 199+50 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 24" x 145' PIPE OUTLET
CONNECT TO D.I. @ STA. 198+00 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 6"

STA. 200+79 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 24" x 123' PIPE OUTLET
CONNECT TO D.I. @ STA. 199+50 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 4"

STA. 201+06 - CONSTRUCT
JUNCTION BOX ON RT.
WITH 18" x 36' R.C. STUB INLET WITH FES.
& 18" x 35' PIPE OUTLET
CONNECT TO D.I. @ STA. 200+79 RT.
TYPE E = 3' x 2'
H = 3' 11"

STA. 201+80 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION,
OPENING IN BACK,
& 24" x 95' PIPE OUTLET
CONNECT TO D.I. @ STA. 200+79 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 5"

STA. 200+92 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 5.4 SQ. YDS.

STA. 203+25 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" x 139' PIPE OUTLET
CONNECT TO D.I. @ STA. 201+80 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 11"

STA. 204+00 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" x 70' PIPE OUTLET
CONNECT TO D.I. @ STA. 203+25 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 8"

REMOVAL AND DISPOSAL OF FENCE

| STA. | STA. | SIDE | LIN. FT. |
|---|---|---|---|
| 201+40 | 207+44 | RT. | 41 |
| 206+94 | 208+90 | LT. | 250 |
| 208+11 | 208+97 | RT. | 100 |
| 208+99 | 209+52 | LT. | 63 |
| 209+62 | 209+85 | RT. | 24 |

STA. 206+59 - IN PLACE
42" x 152' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND R.C. PIPE
64' LT. AND 16' RT.
TO A COMPLETED LENGTH OF 232'
(CLASS IV) (TYPE 3 BEDDING) WITH
FES LT. & RT.
Q50 = 115 CFS D.A. = 28.47 ACRES
42" PIPE = 88 LIN. FT.
42" FES = 2 EACH

STA. 206+80 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 24" x 40' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 206+80 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 9"

STA. 195+38 - IN PLACE
15" x 68' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH = 30 CU. YDS.

STA. 197+33 - IN PLACE
18" x 49' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH

STA. 201+20 - IN PLACE
18" x 47' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH = 365 CU. YDS. UNCLASSIFIED EXCAVATION

STA. 201+52 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 5.4 SQ. YDS.

6/16/2014

R050230.DGN

# HIGHWAY 63

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED.

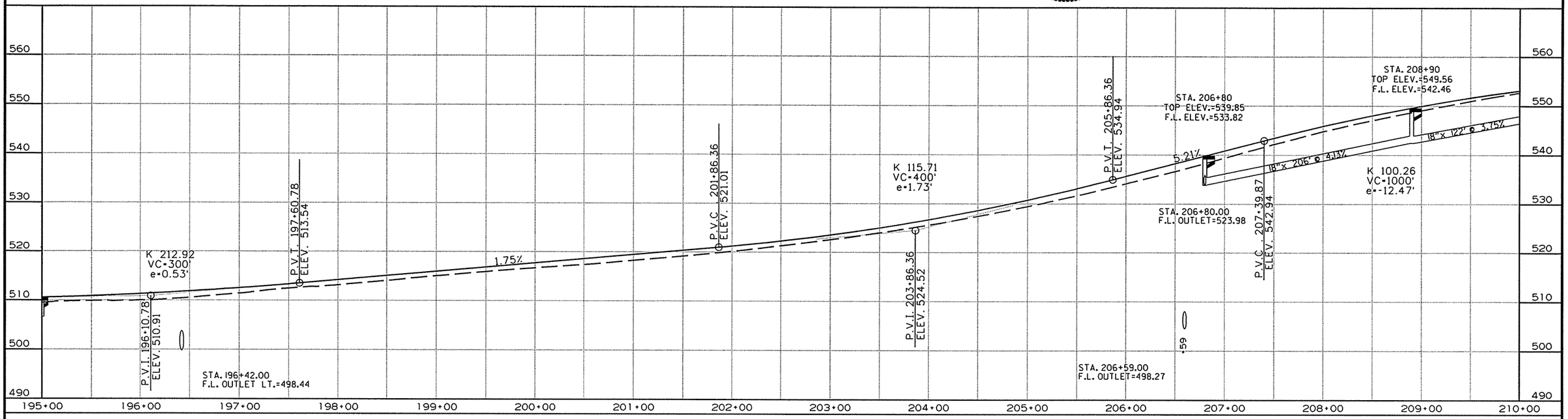
FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-28-13
TRINITY D. SMITH

| 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. | | 050230 | 89 | 309 |

(2) PLAN AND PROFILE

## HWY. 63 LEFT STORM SEWER

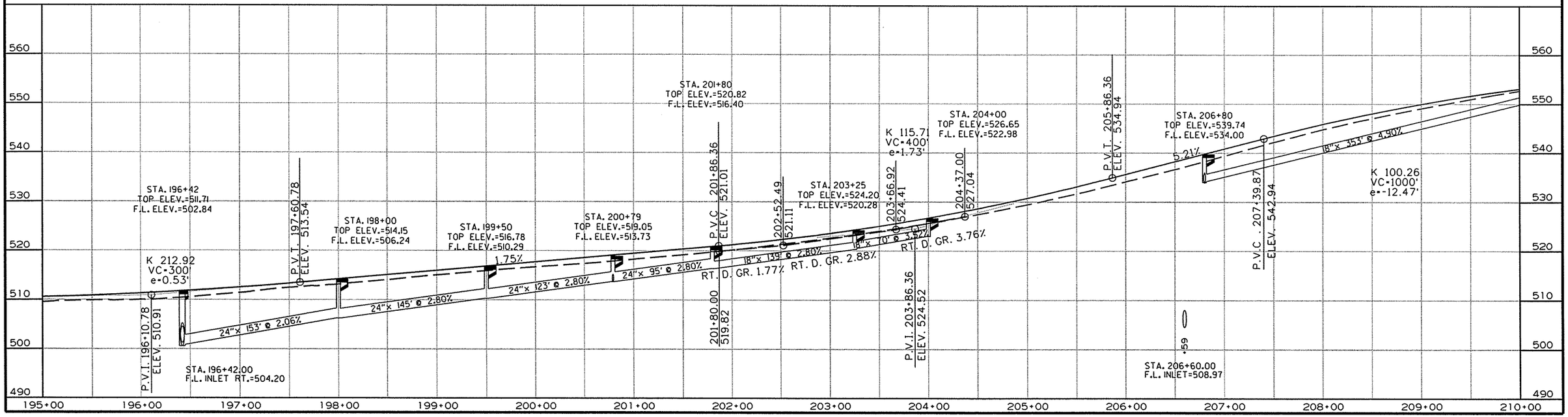



STA. 195+39.66 BEGIN SUPERELEVATION
STA. 199+89.66 MAX. SUPERELEVATION 0.028'/'
STA. 202+61.22 MAX. SUPERELEVATION 0.028'/'
STA. 207+11.22 END SUPERELEVATION

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

STA. 207+11.24 BEGIN SUPERELEVATION
STA. 211+61.24 MAX. SUPERELEVATION 0.034'/'
STA. 213+10.90 MAX. SUPERELEVATION 0.034'/'
STA. 217+60.90 END SUPERELEVATION

## HWY. 63 RIGHT STORM SEWER




R050230.DGN 6/16/2014

| 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. | | 050230 | 90 | 309 |

(2) PLAN AND PROFILE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 213+34 - IN PLACE
18" x 56' METAL PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH = 80 CU. YDS.

STA. 223+17 CONSTRUCT
APPROACH ON LT. = 260 CU. YDS.

STA. 224+25 CONSTRUCT
APPROACH ON LT. = 300 CU. YDS.

STA. 210+18 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 4' STUB INLET WITH FES.
& 18" x 122' PIPE OUTLET
CONNECT TO D.I. @ STA. 208+90 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 5"

STA. 214+25 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 69' PIPE OUTLET
CONNECT TO D.I. @ STA. 215+00 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 9"

STA. 215+00 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 79' PIPE OUTLET
CONNECT TO D.I. @ STA. 215+85 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 6"

STA. 215+85 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 60' PIPE OUTLET
CONNECT TO D.I. @ STA. 216+50 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 10"

STA. 216+50 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 85' PIPE OUTLET
CONNECT TO D.I. @ STA. 217+39 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 8' 8"

STA. 219+50 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
& 18" x 62' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 219+70 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 9"

STA. 211+50 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION,
& 18" x 125' PIPE OUTLET
CONNECT TO D.I. @ STA. 210+18 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 1"

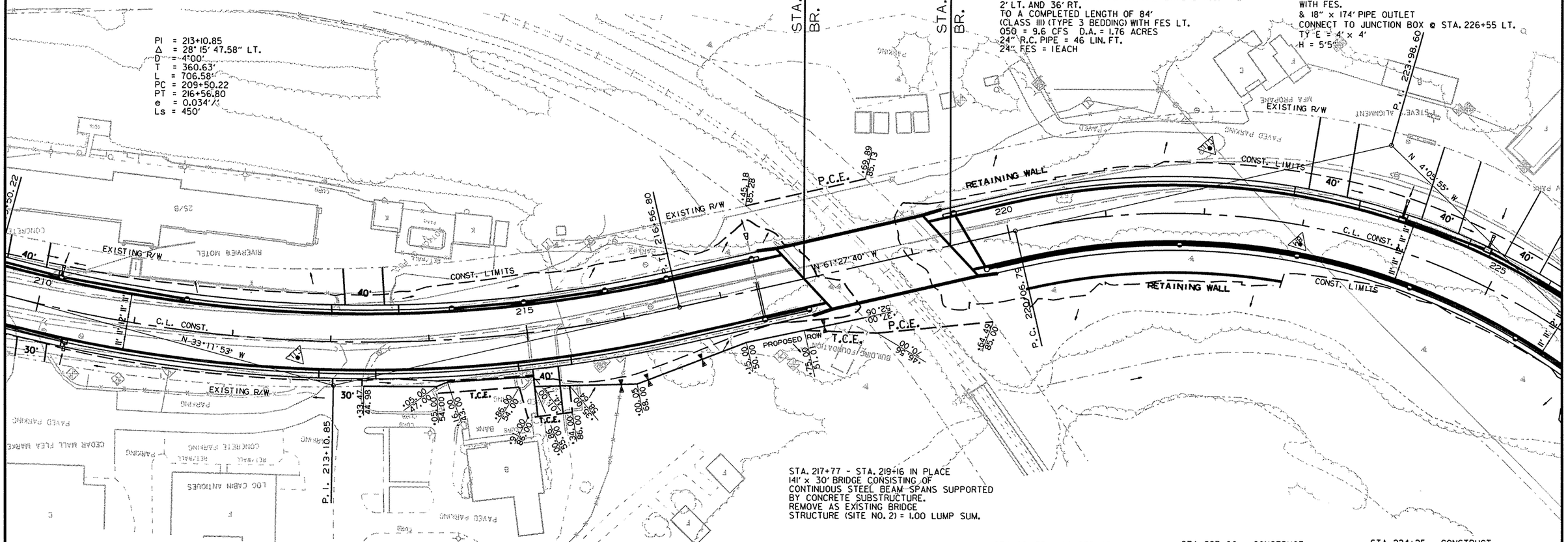
STA. 217+39 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
CONNECT TO EXISTING PIPE
TY MO = 4' I.D.
H = 10' 3"

STA. 223+95 - CONSTRUCT
JUNCTION BOX ON LT. WITH
18" x 12' R.C. STUB INLET
WITH FES.
& 18" x 86' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 224+84 LT.
TY E = 4' x 4'
H = 5' 7"

STA. 217+39 - IN PLACE
24" x 46' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE HEADWALLS LT. & RT. AND EXTEND R.C. PIPE
2' LT. AND 36' RT.
TO A COMPLETED LENGTH OF 84'
(CLASS III) (TYPE 3 BEDDING) WITH FES LT.
Q50 = 9.6 CFS D.A. = 1.76 ACRES
24" R.C. PIPE = 46 LIN. FT.
24" FES = 1 EACH

STA. 224+84 - CONSTRUCT
JUNCTION BOX ON LT. WITH
& 18" x 8' R.C. STUB INLET
WITH FES.
& 18" x 174' PIPE OUTLET
CONNECT TO JUNCTION BOX @ STA. 226+55 LT.
TY E = 4' x 4'
H = 5' 5"

PI = 213+10.85
Δ = 28° 15' 47.58" LT.
D = 4°00'
T = 360.63'
L = 706.58'
PC = 209+50.22
PT = 216+56.80
e = 0.034'/'
Ls = 450'




STA. 217+77 - STA. 219+16 IN PLACE
141' x 30' BRIDGE CONSISTING OF
CONTINUOUS STEEL BEAM SPANS SUPPORTED
BY CONCRETE SUBSTRUCTURE.
REMOVE AS EXISTING BRIDGE
STRUCTURE (SITE NO. 2) = 1.00 LUMP SUM.

STA. 210+35 - CONSTRUCT
JUNCTION BOX ON RT. WITH
18" x 2' R.C. STUB INLET WITH FES.
& 18" x 353' PIPE OUTLET
CONNECT TO D.I. @ STA. 206+80 RT.
TY E = 4' x 3'
H = 3' 11"

STA. 217+39 - CONSTRUCT
D.I. ON RT.
CONNECT TO PIPE EXTENSION
TYPE C = 4' x 4'
TY. MO = 4' I.D.
H = 8' 7"

STA. 217+85 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 18" x 42' PIPE OUTLET
CONNECT TO D.I. @ STA. 217+39 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 7"

STA. 219+70 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" x 193' PIPE OUTLET
CONNECT TO D.I. @ STA. 221+75 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 4' 8"

STA. 221+75 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" x 115' PIPE OUTLET
CONNECT TO D.I. @ STA. 223+00 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 11"

STA. 223+00 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" x 115' PIPE OUTLET
CONNECT TO D.I. @ STA. 224+25 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 11"

STA. 224+25 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 18" x 115' PIPE OUTLET
CONNECT TO D.I. @ STA. 225+50 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 11"

STA. 210+03 - IN PLACE
18" x 54' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH

STA. 213+17 - IN PLACE
18" x 52' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH

STA. 215+13 - IN PLACE
24" x 56' METAL PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND
CONSTRUCT APPROACH =
150 CU. YDS. UNCLASSIFIED EXCAVATION

REMOVAL AND DISPOSAL OF FENCE

| STA. | STA. | SIDE | LIN. FT. |
|---|---|---|---|
| 210+09 | 213+06 | LT. | 313 |
| 210+24 | 210+30 | RT. | 10 |
| 216+32 | 217+74 | RT. | 142 |

STA. 217+86.76 BRIDGE END
BRIDGE NO. 07300
150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
58'-0" CLEAR ROADWAY
152'-5¾" BRIDGE LENGTH
30° RT. FWD. SKEW
STA. 219+39.24 BRIDGE END

PI = 223+98.60
Δ = 57° 21' 45.70" RT.
D = 8°00'
T = 391.80'
L = 717.03'
PC = 220+06.80
PT = 227+23.83
e = 0.038'/'
Ls = 425'

# HIGHWAY 63

6/16/2014

R050230.DGN

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED.

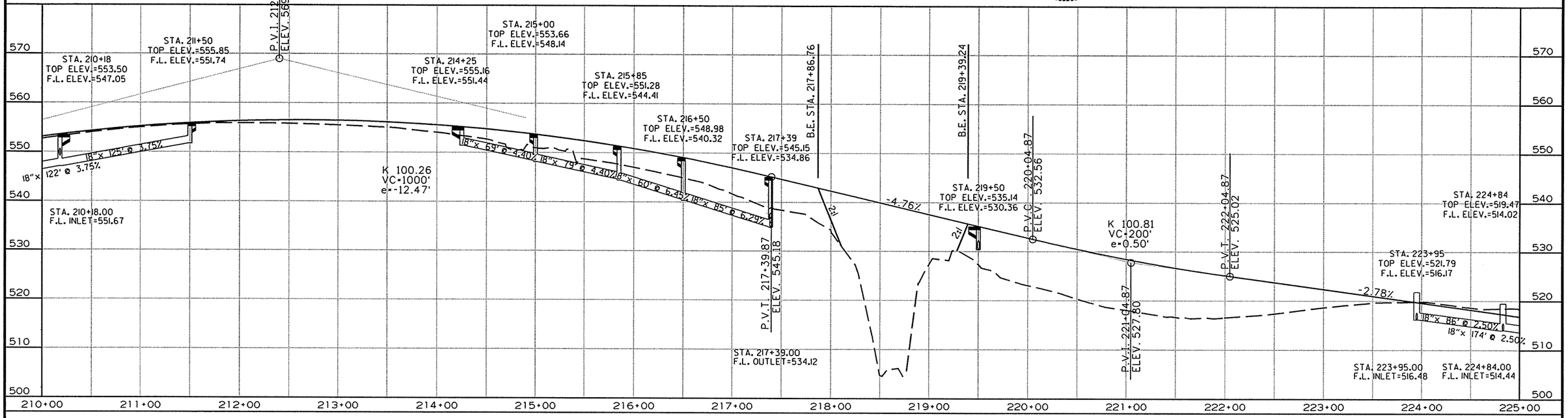
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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-28-14
TRINITY D. SMITH

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 91 | 309 |

(2) PLAN AND PROFILE

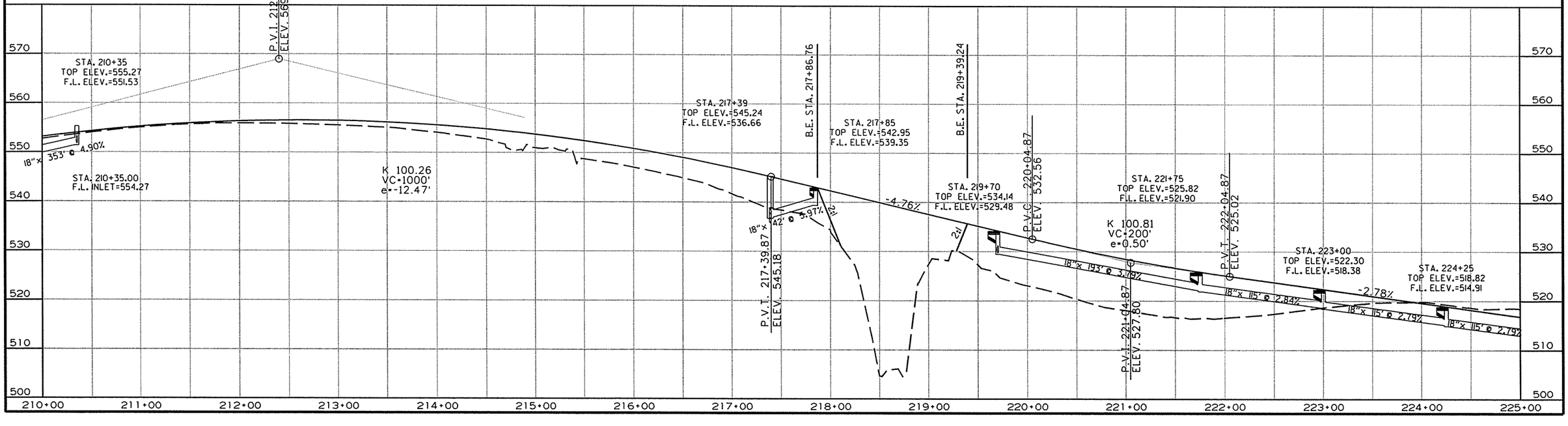
# HWY. 63 LEFT STORM SEWER




STA. 207+11.24 BEGIN SUPERELEVATION
STA. 211+61.24 MAX. SUPERELEVATION 0.034'/'
STA. 213+10.90 MAX. SUPERELEVATION 0.034'/'
STA. 217+60.90 END SUPERELEVATION

STA. 219+40.32 BEGIN SUPERELEVATION
STA. 223+65.32 MAX. SUPERELEVATION 0.038'/'
STA. 226+17.58 MAX. SUPERELEVATION 0.038'/'
STA. 228+18.90 REVERSE CROWN
STA. 230+50.00 REVERSE CROWN
STA. 232+73.68 END SUPERELEVATION

# HWY. 63 RIGHT STORM SEWER




R050230.DGN 6/16/2014

| 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. | | 050230 | 92 | 309 |

(2) PLAN AND PROFILE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

STA. 225+20 CONSTRUCT
APPROACH ON LT. = 310 CU. YDS.

STA. 230+50 - CONSTRUCT
D.I. ON LT. WITH
18" x 59' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 230+50 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 7' 11"

STA. 231+30 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 2.8 SQ. YDS.

STA. 231+50 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 2.7 SQ. YDS.

STA. 231+55 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 2.7 SQ. YDS.

STA. 231+72 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 2.7 SQ. YDS.

STA. 232+15 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 2.7 SQ. YDS.

STA. 231+94 CONSTRUCT
APPROACH ON LT. = 704 CU. YDS. COMP. EMBANKMENT,
15 CU. YDS. UNCLASSIFIED EXCAVATION

REFER TO SHEET 94
FOR INTERSECTION DETAILS

STA. 232+72 - CONSTRUCT
D.I. ON LT. WITH 4' EXTENSION
& 18" x 174' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 234+51 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 10"

STA. 234+51 - CONSTRUCT
D.I. ON LT. WITH 8' EXTENSION
CONNECT TO EXISTING PIPE.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 0"

STA. 231+38 - CONSTRUCT
D.I. ON LT. WITH
18" x 85' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 230+50 LT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 11"

STA. 226+55 - CONSTRUCT
JUNCTION BOX ON LT. WITH
18" x 59' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 226+55 RT.
TY E = 4' x 4'
H = 4'11"

STA. 303+40.00
BEGIN HWY. 9

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"

STA. 232+75 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON LT. = 2.7 SQ. YDS.

STA. 232+91 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT. = 2.9 SQ. YDS.

STA. 235+14.00
END JOB 050230

STA. 235+80 - IN PLACE
CONCRETE WALL ON LT.
RETAIN

STA. 226+69.90 BRIDGE END
BRIDGE NO. 07301
363'-0" CONT. COMP. W-BEAM UNITS (66'-77'-77'-77'-66')
58'-0" CLEAR ROADWAY
365'-2½" BRIDGE LENGTH
STA. 230+35.10 BRIDGE END

STA. 227+48 - STA. 230+18 IN PLACE
273' x 30' BRIDGE CONSISTING OF
CONTINUOUS STEEL BEAM SPANS SUPPORTED
BY CONCRETE SUBSTRUCTURE.
REMOVE AS EXISTING BRIDGE
STRUCTURE (SITE NO. 3) = 1.00 LUMP SUM.

STA. 235+00 - IN PLACE
CONCRETE WALL ON RT.
RETAIN

STA. 305+34 - 305+55 ON RT.
TRENCH EXISTING PAVEMENT.
EXCAVATION TO NOT DISTURB EXIST. BOX CULVERT OR CONC. WALLS.
ANY DAMAGE TO THE BOX CULVERT AND WALLS IS THE RESPONSIBILITY
OF THE CONTRACTOR.
TRENCHING TO BE PAID FOR AS UNCLASSIFIED EXCAVATION.

STA. 225+50 - CONSTRUCT
D.I. ON RT. WITH 8' EXTENSION
& 24" x 96' PIPE OUTLET
CONNECT TO D.I. @ STA. 226+55 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 3' 11"

STA. 226+55 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 18" x 32' R.C. STUB OUTLET
WITH FES.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 9"

STA. 230+50 - CONSTRUCT
D.I. ON RT. WITH
18" x 26' R.C. STUB OUTLET
WITH FES.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 8' 2"

STA. 231+24 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
& 18" x 70' PIPE OUTLET
CONNECT TO D.I. @ STA. 230+50 RT.
TY C = 4' x 4'
TY MO = 4' I.D.
H = 5' 8"

STA. 234+49 - CONSTRUCT
D.I. ON RT. WITH 4' EXTENSION
CONNECT TO EXISTING PIPE
TY C = 4' x 4'
TY MO = 4' I.D.
H = 8' 11"

OBLITERATE EXISTING DRIVEWAY

PI = 223+98.60
Δ = 57° 21' 45.70" RT.
D = 8°00'
T = 391.80'
L = 717.03'
PC = 220+06.80
PT = 227+23.83
e = 0.038'/'
Ls = 425'

LIMITS OF SPECIAL
FLOOD HAZARD AREA
STA. 228+00 TO STA. 235+14

STA. 231+94 IN PLACE
10' x 12' x 32' R.C. BOX CULVERT
SIDE DRAIN
REMOVE

STA. 231+59 CONSTRUCT
TYPE 4 WHEELCHAIR RAMP ON RT. = 3.7 SQ. YDS.

STA. 232+20 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT. = 5.9 SQ. YDS.

STA. 231+94 CONSTRUCT
APPROACH ON RT. = 2600 CU. YDS.

STA. 231+94 - CONSTRUCT
12' x 12' x 110' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
Q50 = 1280 CFS D.A. = 1843.20 ACRES
F.L. INLET = 493.07
F.L. OUTLET = 488.71

PI = 235+56.37
Δ = 01° 41' 39.43" RT.
D = 0°30'
T = 169.44'
L = 338.86'
PC = 233+86.93
PT = 237+25.79
NO SUPERELEVATION

6/16/2014

R050230.DGN

# HIGHWAY 63

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED.

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

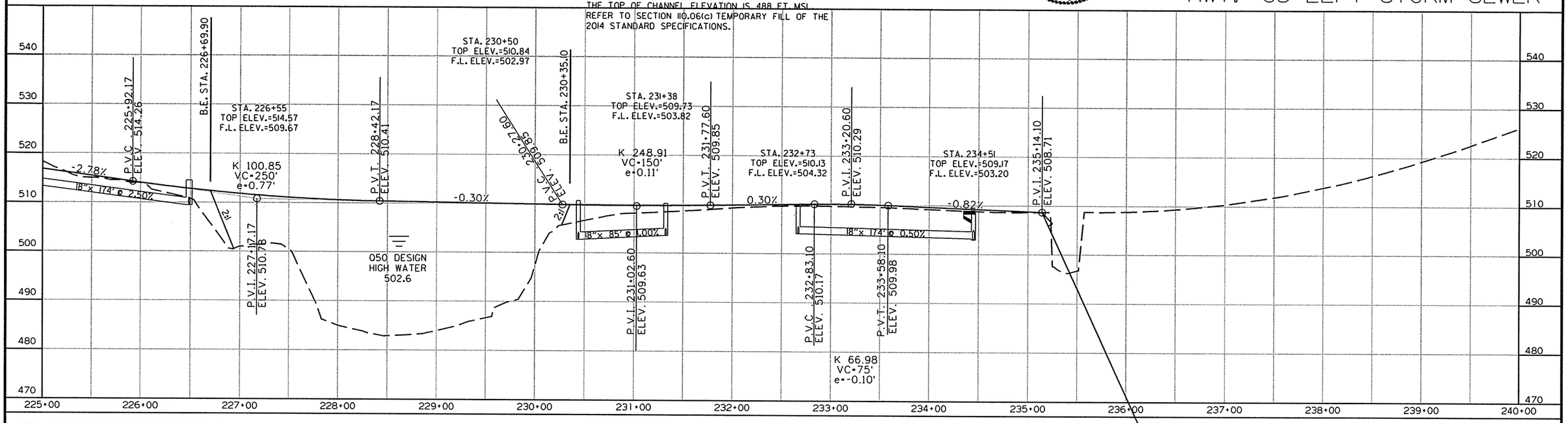
SPRING RIVER:
THIS STREAM IS CLASSIFIED AS 5 CFS.
THE TOP OF CHANNEL ELEVATION IS 488 FT. MSL.
REFER TO SECTION 110.06(c) TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-28-14
TRINITY D. SMITH

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 93 | 309 |

(2) PLAN AND PROFILE

# HWY. 63 LEFT STORM SEWER




STA. 219+40.32 BEGIN SUPERELEVATION
STA. 223+65.32 MAX. SUPERELEVATION 0.038'/'
STA. 226+17.58 MAX. SUPERELEVATION 0.038'/'
STA. 228+18.90 REVERSE CROWN
STA. 230+50.00 REVERSE CROWN
STA. 232+73.68 END SUPERELEVATION

STA. 235+14.00
END JOB 050230

# HWY. 63 RIGHT STORM SEWER

R050230.DGN 6/16/2014

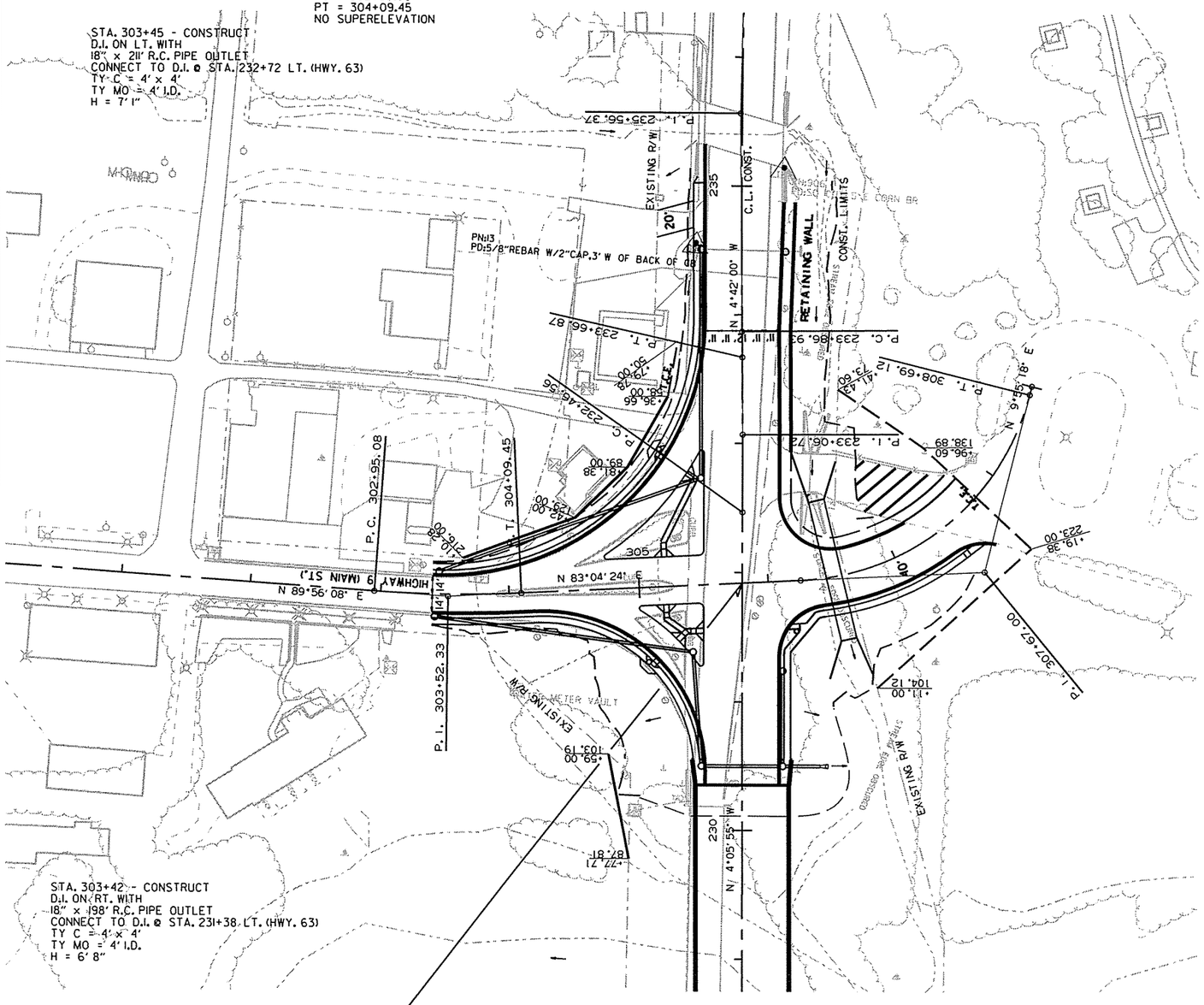
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 94 | 309 |

(2) PLAN AND PROFILE

PI = 303+52.33
Δ = 06° 51' 43.56" LT.
D = 6°00'
T = 57.25'
L = 114.37'
PC = 302+95.08
PT = 304+09.45
NO SUPERELEVATION

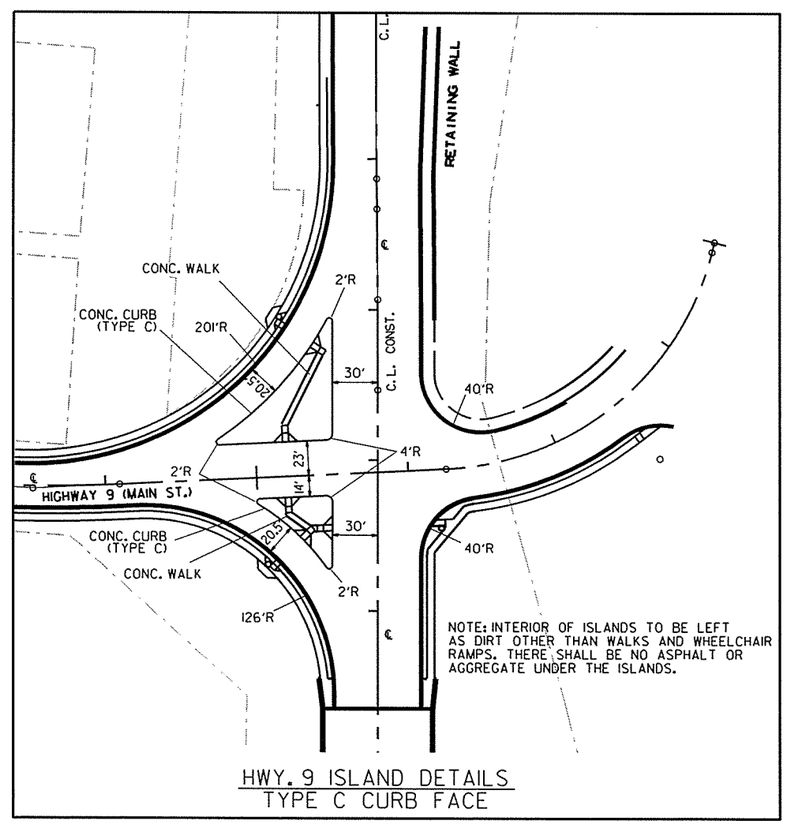
PI = 307+67.00
Δ = 73° 09' 05.88" LT.
D = 0°30'
T = 141.71'
L = 243.84'
PC = 306+25.28
PT = 308+69.12
NO SUPERELEVATION

STA. 303+45 - CONSTRUCT
D.I. ON LT. WITH
18" x 211' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 232+72 LT. (HWY. 63)
TY C = 4' x 4'
TY MO = 4' I.D.
H = 7' 1"




STA. 303+42 - CONSTRUCT
D.I. ON RT. WITH
18" x 198' R.C. PIPE OUTLET
CONNECT TO D.I. @ STA. 231+38 LT. (HWY. 63)
TY C = 4' x 4'
TY MO = 4' I.D.
H = 6' 8"

STA. 231+91.88 HWY. 63 =
STA. 305+79.97 HWY. 9
Δ = 87° 10' 19"




NOTE: INTERIOR OF ISLANDS TO BE LEFT AS DIRT OTHER THAN WALKS AND WHEELCHAIR RAMPS. THERE SHALL BE NO ASPHALT OR AGGREGATE UNDER THE ISLANDS.

HWY. 9 ISLAND DETAILS
TYPE C CURB FACE

STATE OF ARKANSAS
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TRINITY D. SMITH
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6/16/2014

R050230.DGN

ALL R.C. PIPE CULVERTS SHALL BE CLASS III UNLESS OTHERWISE SPECIFIED.

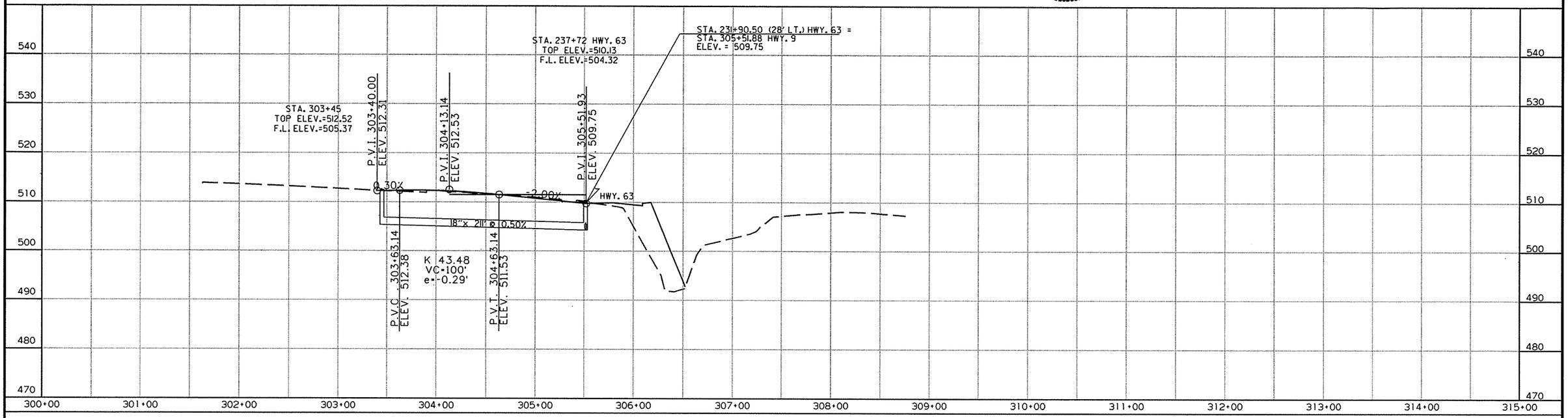
FOR ALL R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED. FOR ALL C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

STATE OF ARKANSAS
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TRINITY D. SMITH

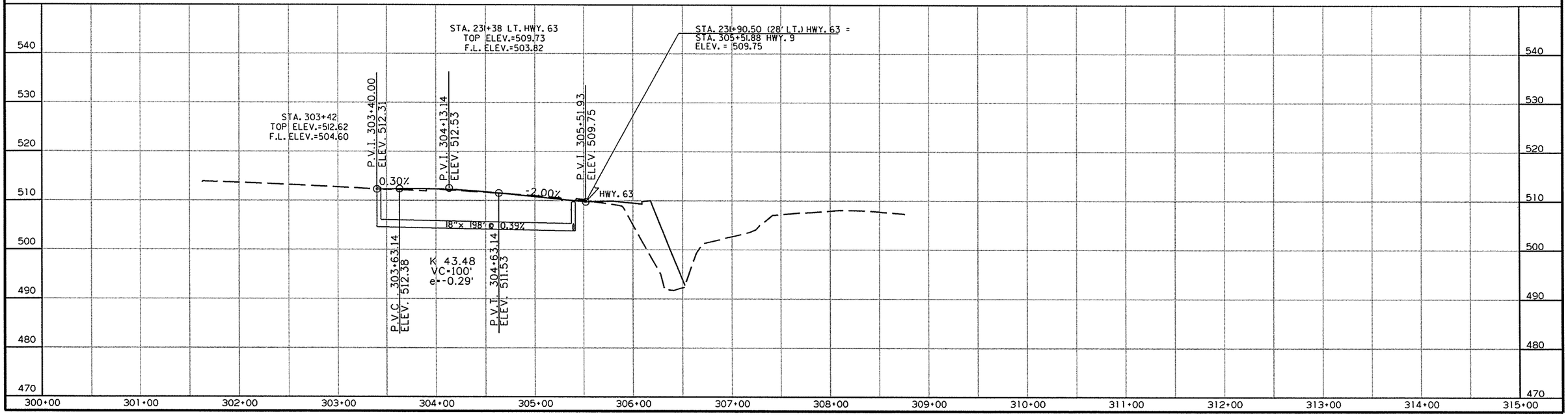
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 95 | 309 |

(2) PLAN AND PROFILE

# HWY. 9 LEFT STORM SEWER




# HWY. 9 RIGHT STORM SEWER




R050230.DGN 6/16/2014

| 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. | | 050230 | 96 | 309 |
| | | | | (2) TRAFFIC SIGNAL QUANTITIES | | | | |

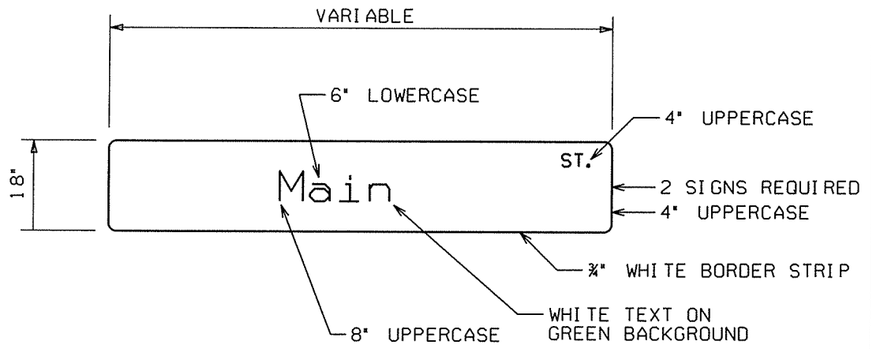
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-22-14

# TRAFFIC SIGNAL QUANTITIES

| ITEM NO. | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| SP&701 | ACTUATED CONTROLLER TS 2 - TYPE 2 (8 PHASES) | 1 | EACH |
| SP&706 | TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY) | 10 | EACH |
| SP&707 | COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED | 4 | EACH |
| 708 | TRAFFIC SIGNAL CABLE (5C/14 A.W.G.) | 1437 | LIN. FT. |
| 708 | TRAFFIC SIGNAL CABLE (7C/14 A.W.G.) | 258 | LIN. FT. |
| 708 | TRAFFIC SIGNAL CABLE (12C/14 A.W.G.) | 97 | LIN. FT. |
| 708 | TRAFFIC SIGNAL CABLE (20C/14 A.W.G.) | 507 | LIN. FT. |
| 709 | GALVANIZED STEEL CONDUIT (1.25") | 20 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (1.25") | 20 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (2") | 20 | LIN. FT. |
| 710 | NON-METALLIC CONDUIT (3") | 365 | LIN. FT. |
| 711 | CONCRETE PULL BOX (TYPE 1 HD) | 1 | EACH |
| 711 | CONCRETE PULL BOX (TYPE 2) | 2 | EACH |
| 711 | CONCRETE PULL BOX (TYPE 2 HD) | 2 | EACH |
| 714 | TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (32'-62') | 1 | EACH |
| 714 | TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40') | 2 | EACH |
| 715 | TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION | 2 | EACH |
| 733 | VIDEO CABLE | 1411 | LIN. FT. |
| • SP&733 | VIDEO DETECTOR (CLR) | 7 | EACH |
| 733 | VIDEO MONITOR (CLR) | 1 | EACH |
| • SP&733 | VIDEO PROCESSOR, EDGE CARD (2 CAMERA) | 4 | EACH |
| SP&733 | VEHICLE DETECTOR RACK (16 CHANNEL) | 1 | EACH |
| SP | ELECTRICAL CONDUCTORS FOR LUMINAIRES | 652 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC) | 339 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC) | 145 | LIN. FT. |
| SP | ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.) | 20 | LIN. FT. |
| SP | LUMINAIRE ASSEMBLY | 3 | EACH |
| SP | 18" STREET NAME SIGN | 2 | EACH |
| SP | SERVICE POINT ASSEMBLY (2 CIRCUITS) | 1 | EACH |

•ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED.

# OVERHEAD STREET NAME MARKER STANDARD MAST ARM MOUNTED




NOTES:

1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM 4956 TYPE 8 OR 9 REFLECTIVE SHEETING. SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE WRINKLE AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIALS DUE TO WORKMANSHIP.

2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H38. THE ALUMINUM SIGN SHALL ALSO BE ANODIZED. THE ALUMINUM SHEETING SHALL BE 0.100 INCH NOMINAL THICKNESS AND OF THE SIZE SHOWN WITH 1.5" CORNER RADII. PRIOR TO FABRICATION OF THE SIGNS, THE LAYOUT SHALL FIRST BE APPROVED BY AN AGENT OF THE CITY.

3. WHEN CROSSROAD HAS TWO NAMES, THE SIGN FOR THE CROSSROAD TO THE LEFT MAY BE INSTALLED ON THE BACKSIDE OF THE MAST ARM OF THE NEARSIDE LEFT POLE.
SEE STD. DETAIL SHEET FOR MORE INFORMATION FOR MOUNTING ON MAST ARM ASSEMBLY.

4. THE CLEARVIEW 5-W-R FONT SHALL BE USED FOR ALL LETTERS.

DATE: 10-24-14 FILE NAME: t050230.dgn

| | | | | | |
|---|---|---|---|---|---|
| LOCATION: | HWY. 63/HWY. 9 (MAIN ST.) | | | | |
| CITY: | MAMMOTH SPRING | | | | |
| COUNTY: | FULTON | | | | |
| DISTRICT: | 5 | SCALE: | N/A | DRAWN BY: | GWE |

| 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. | | 050230 | 97 | 309 |

(2) SIGNALIZATION PLAN SHEET

## PHASING DIAGRAM




## DETECTOR SPACING CHART

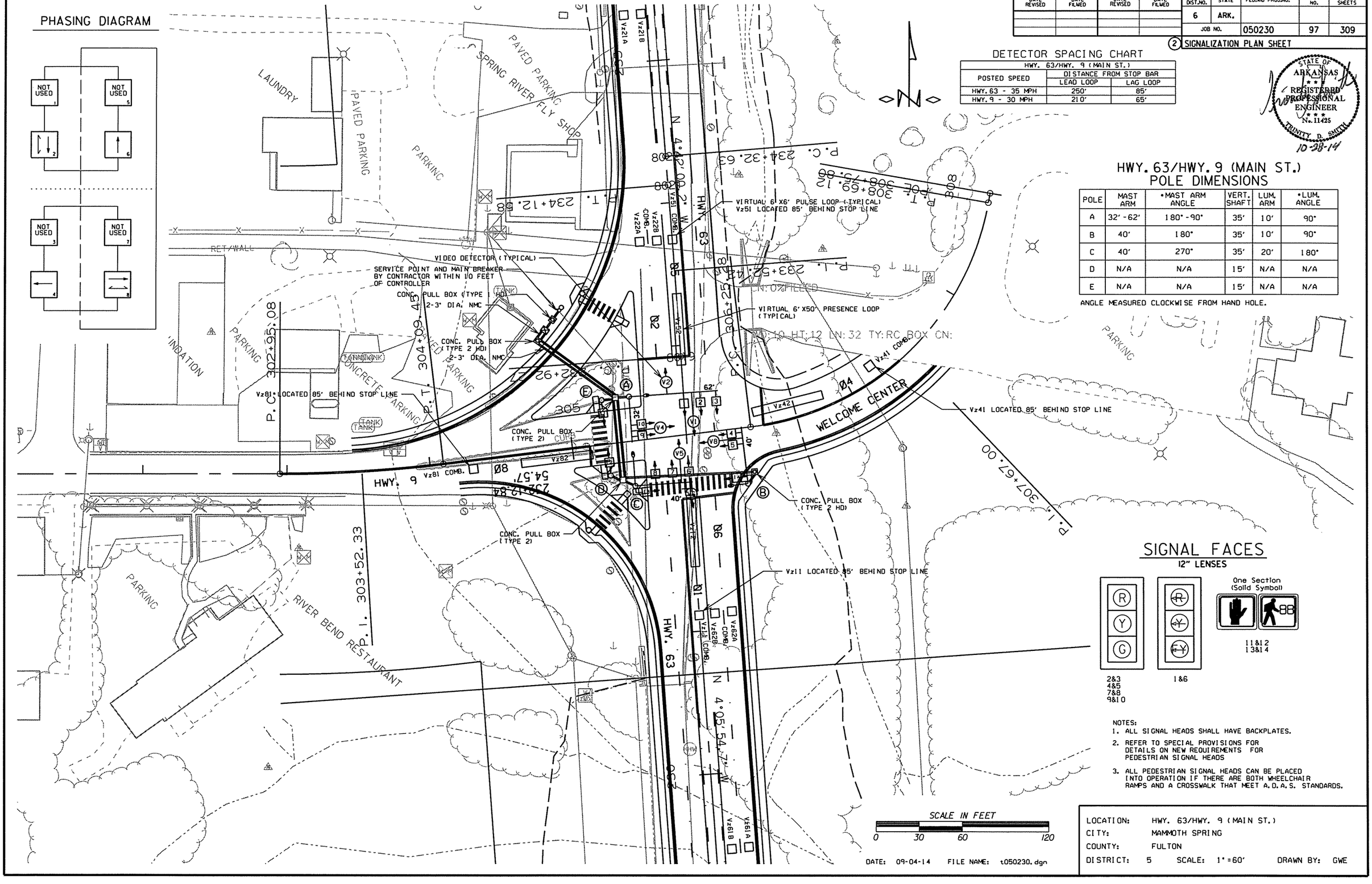
| POSTED SPEED | HWY. 63/HWY. 9 (MAIN ST.) DISTANCE FROM STOP BAR | |
|---|---|---|
| | LEAD LOOP | LAG LOOP |
| HWY. 63 - 35 MPH | 250' | 85' |
| HWY. 9 - 30 MPH | 210' | 65' |

STATE OF ARKANSAS
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10-28-14

## HWY. 63/HWY. 9 (MAIN ST.) POLE DIMENSIONS

| POLE | MAST ARM | •MAST ARM ANGLE | VERT. SHAFT | LUM. ARM | •LUM. ANGLE |
|---|---|---|---|---|---|
| A | 32'-62' | 180°-90° | 35' | 10' | 90° |
| B | 40' | 180° | 35' | 10' | 90° |
| C | 40' | 270° | 35' | 20' | 180° |
| D | N/A | N/A | 15' | N/A | N/A |
| E | N/A | N/A | 15' | N/A | N/A |

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.




## SIGNAL FACES

12" LENSES




NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

SCALE IN FEET
0 30 60 120

DATE: 09-04-14 FILE NAME: t050230.dgn

LOCATION: HWY. 63/HWY. 9 (MAIN ST.)
CITY: MAMMOTH SPRING
COUNTY: FULTON
DISTRICT: 5 SCALE: 1"=60' DRAWN BY: GWE

# HWY. 63/HWY. 9 (MAIN ST.)
## POLE LOCATIONS

| POLE | LOCATION & STATION | OFFSET | X, Y COORDINATES |
|---|---|---|---|
| A | HWY. 63 - STA. 232+66.77 | 38' LT. | 1448486.02, 787417.88 |
| B | HWY. 63 - STA. 232+00.47 | 41' RT. | 1448569.13, 787357.36 |
| C | HWY. 63 - STA. 232+04.40 | 38' LT. | 1448490.51, 787355.67 |
| D | HWY. 63 - STA. 232+12.84 | 55' LT. | 1448473.33, 787362.90 |
| E | HWY. 63 - STA. 232+65.74 | 57' LT. | 1448466.98, 787415.48 |

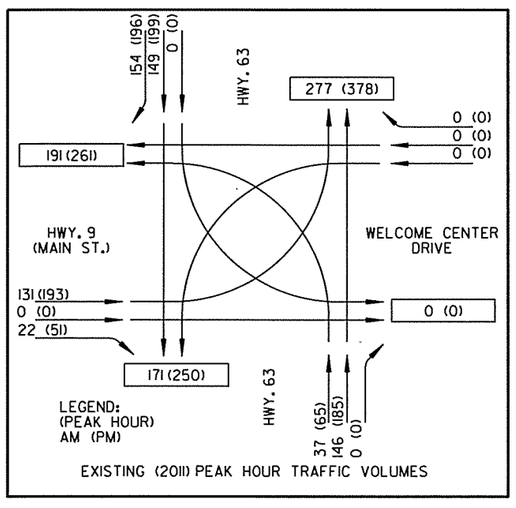
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(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

VIDEO DETECTOR (TYPICAL)
SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITHIN 10 FEET OF CONTROLLER
CONC. PULL BOX (TYPE 1 HD) 2-3" DIA. NMC
CONC. PULL BOX (TYPE 2 HD) 2-3" DIA. NMC
Vz81 LOCATED 85' BEHIND STOP LINE
CONC. PULL BOX (TYPE 2)
CONC. PULL BOX (TYPE 2)
VIRTUAL 6' X6' PULSE LOOP (TYPICAL) Vz51 LOCATED 85' BEHIND STOP LINE
VIRTUAL 6' X50' PRESENCE LOOP (TYPICAL)
Vz41 LOCATED 85' BEHIND STOP LINE
CONC. PULL BOX (TYPE 2 HD)
Vz11 LOCATED 85' BEHIND STOP LINE
HWY. 9
HWY. 63
WELCOME CENTER
PARKING
CONCRETE PARKING
TANK
CURB
CN: 0% FILLED
MD: 10 HT: 12 LN: 32 TY: RC BOX CN:

## TRAFFIC FLOW DIAGRAM




EXISTING (2011) PEAK HOUR TRAFFIC VOLUMES

## DESIGN PARAMETERS

POSTED SPEED LIMIT:
30 MPH EAST AND WEST APPROACH
35 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP BARS SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE
3 FEET BEHIND CURB

SCALE IN FEET
0 20 40 80

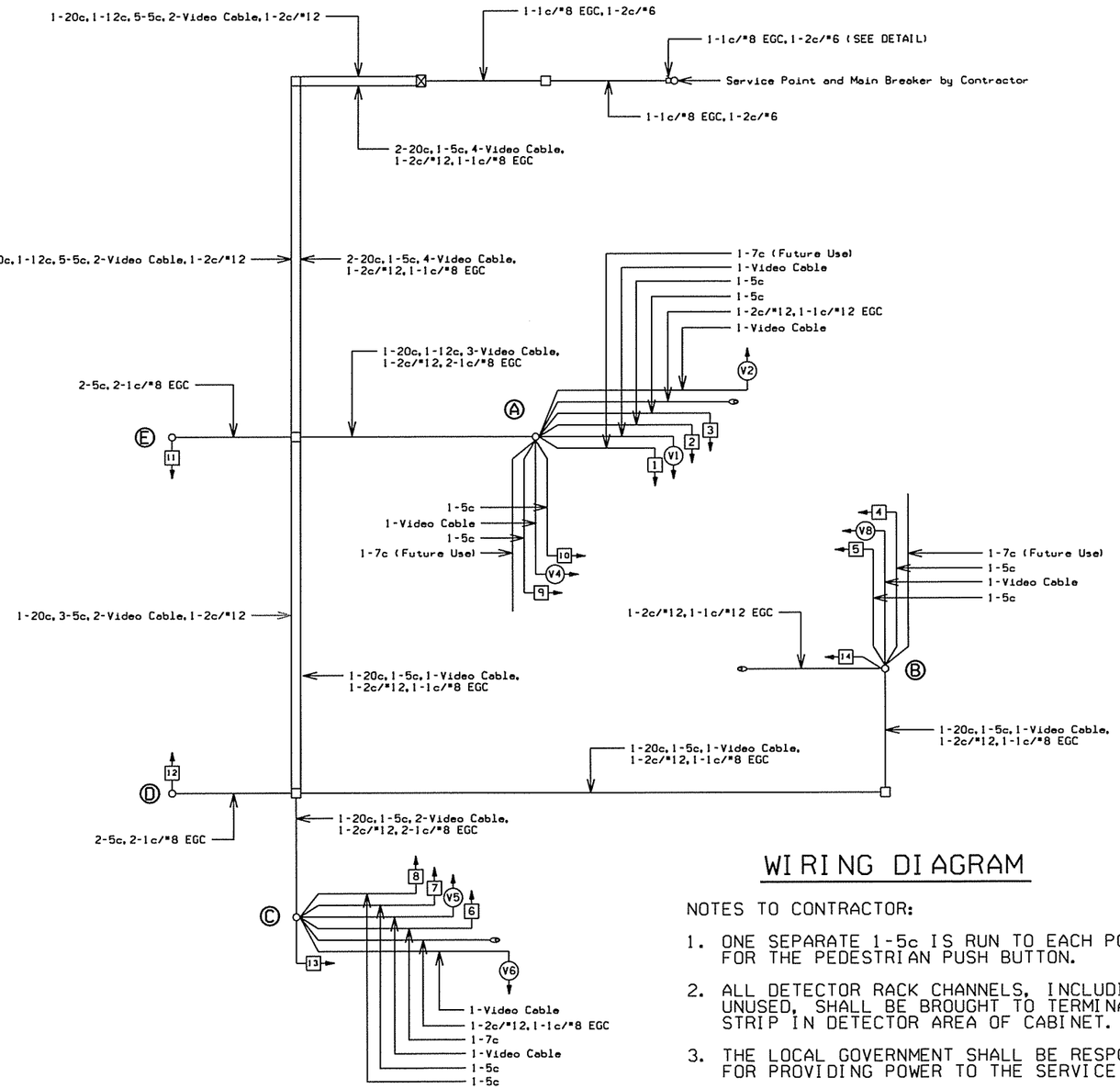
DATE: 09-04-14 FILE NAME: t050230.dgn

| | | | |
|---|---|---|---|
| LOCATION: | HWY. 63/HWY. 9 (MAIN ST.) | | |
| CITY: | MAMMOTH SPRING | | |
| COUNTY: | FULTON | | |
| DISTRICT: | 5 | SCALE: 1"=40' | DRAWN BY: GWE |

| 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. | | 050230 | 99 | 309 |

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14




## WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

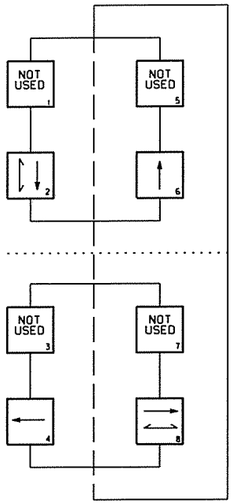
DATE: 09-04-14 FILE NAME: t050230.dgn

LOCATION: HWY. 63/HWY. 9 (MAIN ST.)
CITY: MAMMOTH SPRING
COUNTY: FULTON
DISTRICT: 5 SCALE: N/A DRAWN BY: GWE

| 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. | | 050230 | 100 | 309 |

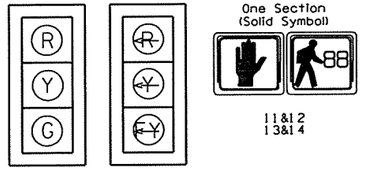
(2) SIGNALIZATION PLAN SHEET

## PHASING DIAGRAM




## SIGNAL FACES

12" LENSES




2&3
4&5
7&8
9&10

1&6

11&12
13&14

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-28-14

DETECTOR SYSTEM DESCRIPTION: JOB 050230

| MAMMOTH SPRING - HWY. 63/HWY. 9 (MAIN ST.) DETECTOR ASSIGNMENTS | | | | HARDWARE INPUTS BY SUPPLIER | | | PROGRAM ASSIGNMENTS LOCAL | | | COMMENTS | TUBE LENGTHS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DET. ID* | LOCATION DIRECTION | TYPE | DET. * | CAB. TRM * | AMP CHN. * | CON. INP.* | PHS | SYSTEM DET. * | MASTER SYSTEM DETECTOR NUMBERS | | |
| Vz11 | NB LEFT TURN FAR | COMB. | | | 1 | V9 | 1 | 1 | | CAMERA V1 | 23' |
| Vz12 | NB LEFT TURN | LOCAL | | | 2 | V1 | 1 | | | CAMERA V1 | 23' |
| | | | | | | | | | | | |
| Vz21A&B | SB FAR ADVANCE | LOCAL | | | 5 | V2 | 2 | | | CAMERA V2 | 23' |
| Vz22A&B | SB NEAR | COMB. | | | 6 | V10 | 2 | 2 | | CAMERA V5 | 23' |
| | | | | | | | | | | | |
| Vz41 | WB LEFT TURN FAR | COMB. | | | 9 | V12 | 4 | 4 | | CAMERA V4 | 23' |
| Vz42 | WB LEFT TURN | LOCAL | | | 10 | V4 | 4 | | | CAMERA V4 | 23' |
| | | | | | | | | | | | |
| Vz51 | SB LEFT TURN FAR | COMB. | | | 7 | V13 | 5 | 5 | | CAMERA V5 | 23' |
| Vz52 | SB LEFT TURN | LOCAL | | | 8 | V5 | 5 | | | CAMERA V5 | 23' |
| | | | | | | | | | | | |
| Vz61A&B | NB FAR ADVANCE | LOCAL | | | 3 | V6 | 6 | | | CAMERA V6 | 23' |
| Vz62A&B | NB NEAR | COMB. | | | 4 | V14 | 6 | 6 | | CAMERA V1 | 23' |
| | | | | | | | | | | | |
| Vz81 | EB LEFT TURN FAR | COMB. | | | 15 | V16 | 8 | 8 | | CAMERA V8 | 23' |
| Vz82 | EB LEFT TURN | LOCAL | | | 16 | V8 | 8 | | | CAMERA V8 | 23' |
| | | | | | | | | | | | |
| PB2A&B | HWY. 9 W. LEG | PED. | | | | P2 | 2 | | | | |
| PB8A&B | HWY. 63 S. LEG | PED. | | | | P8 | 8 | | | | |
| | | | | | | | | | | | |
| | | | | | SPARE 11,12,13 & 14 | | | | | | |

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: "AMP CHN" REFERS TO THE DETECTOR RACK OUTPUT POSITION. THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.

## INTERVAL CHART

| SIGNAL FACES | HWY. 63/HWY. 9 2+6 | CLR. | 4+8 | CLR. | | FLASH SEQ. |
|---|---|---|---|---|---|---|
| 1 | ~~FY~~ | *** | ~~R~~ | ~~R~~ | | ~~R~~ |
| 2&3 | G | ** | R | R | | R |
| 4&5 | R | R | G | ** | | R |
| 6 | ~~FY~~ | *** | ~~R~~ | ~~R~~ | | ~~R~~ |
| 7&8 | G | ** | R | R | | R |
| 9&10 | R | R | G | ** | | R |
| 11&12 | DW | DW | W | FDW | | BLK |
| 13&14 | W | FDW | DW | DW | | BLK |

* DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
** DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
*** DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

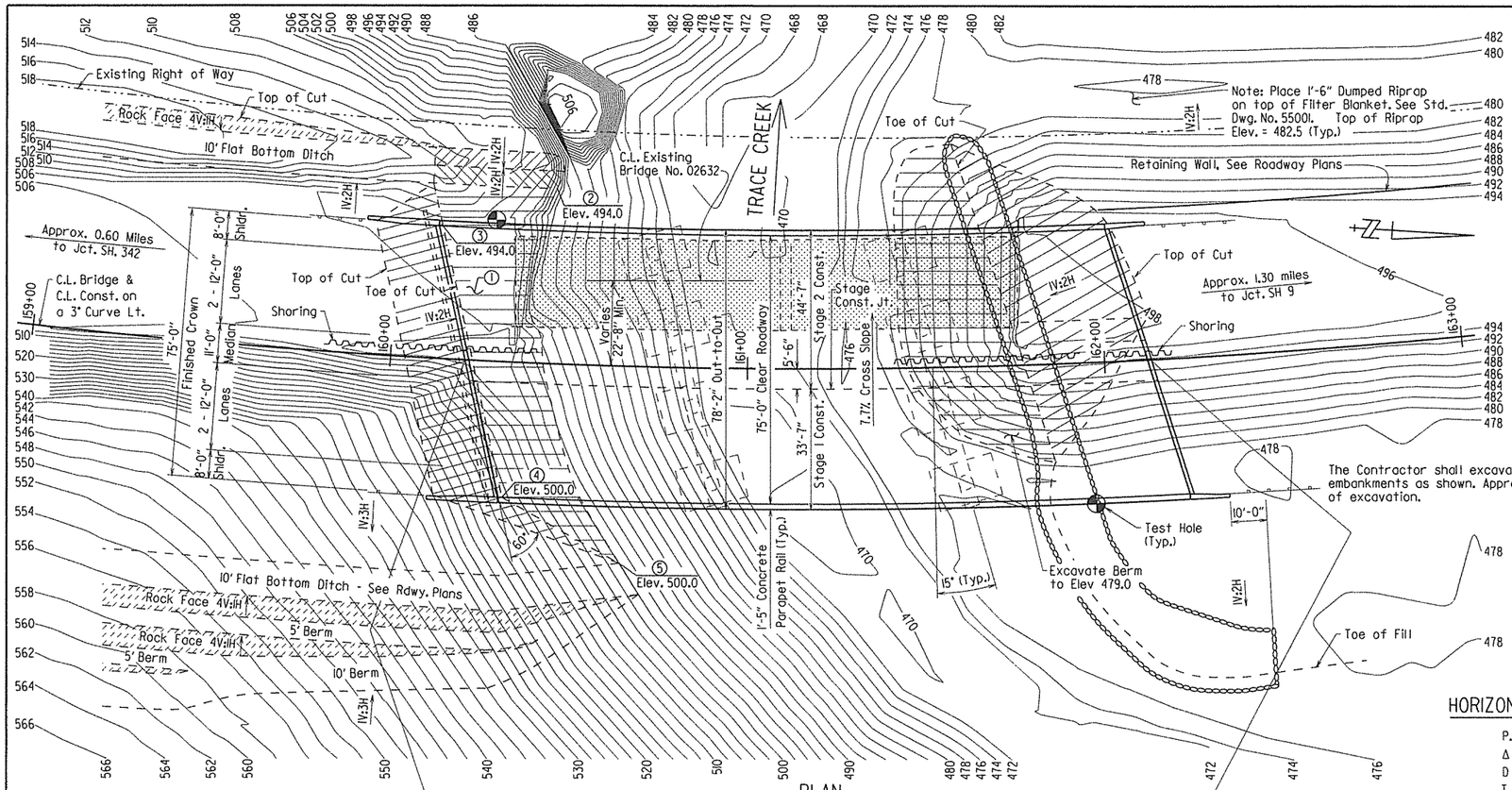
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LOCATION: HWY. 63/HWY. 9 (MAIN ST.)
CITY: MAMMOTH SPRING
COUNTY: FULTON
DISTRICT: 5 SCALE: N/A DRAWN BY: GWE

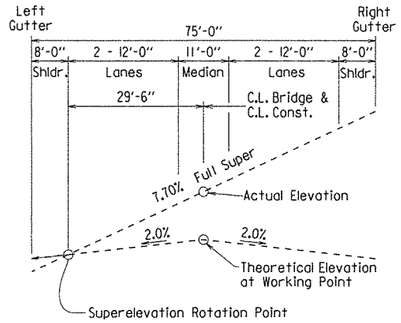
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 101 | 309 |
| | | | | (1) 07299 - | | LAYOUT | | - 56208 |

Note:
For R/W and T.C.E. data, see Rdwy. Plans.

Note:
Use Approach Gutters Type C (W=8'-0").
See Std. Dwg. No. 55030C.




PLAN



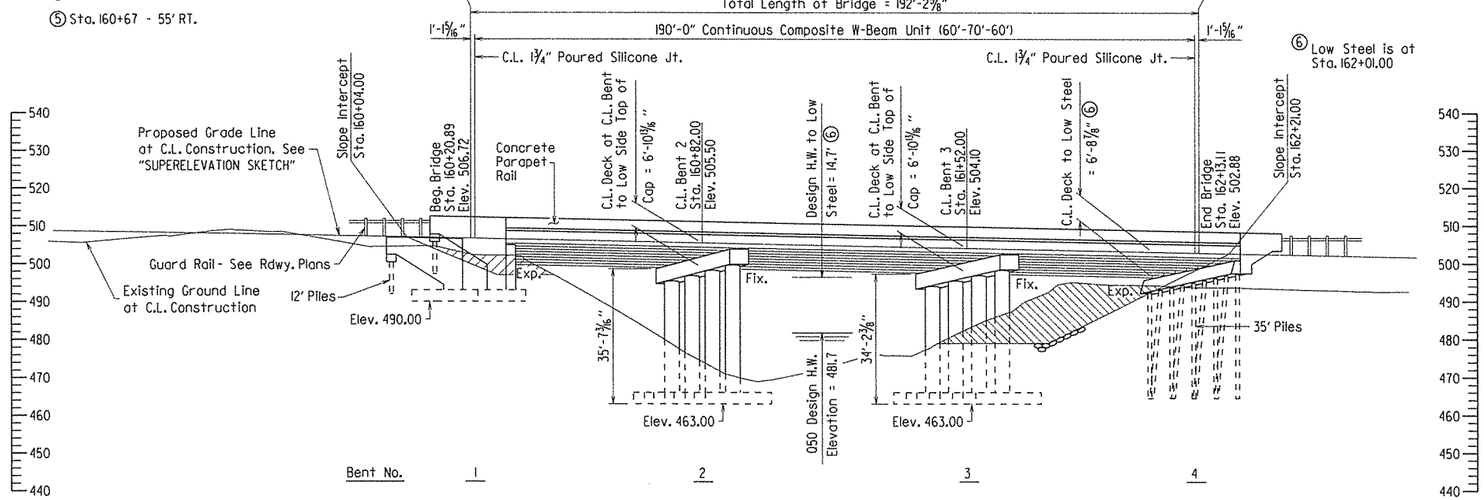

Begin Max Superelevation 158+71.28
End Max Superelevation 175+60.29

## SUPERELEVATION SKETCH

Looking Ahead
(No Scale)

① Excavate Sloped Berm to Elevations Shown.
② Sta. 160+45 - 50' LT.
③ Sta. 160+13 - 38' LT.
④ Sta. 160+33 - 38' RT.
⑤ Sta. 160+67 - 55' RT.

Note: Stations shown are along C.L. Bridge and C.L. Construction. Elevations and vertical dimensions shown are based on Actual Elevations at C.L. Bridge. See "SUPERELEVATION SKETCH". All longitudinal lines are concentric to C.L. Bridge and C.L. Construction. All bents are skewed 15° right forward to a line radial to C.L. Bridge. Skew is measured at C.L. Bent for intermediate bents and at C.L. Joint for end bents.




ELEVATION

Note: See Dwg. No. 56209 for Soil Borings and General Notes.

## HORIZONTAL CURVE DATA

P.I. Sta. 167+33.92
Δ = 66°10'14.12" LT.
D = 3°00'00"
T = 1244.32'
L = 2205.69'

PVT Sta. 159+95.38
Elev. 505.55
-2.00%

## VERTICAL GRADE DATA

Elevations at Theoretical Working Point along C.L. Bridge. See "SUPERELEVATION SKETCH" for Actual Elevations.

## HYDRAULIC DATA

| FLOOD DESCRIPTION | FREQUENCY | DISCHARGE | *NATURAL WATER SURFACE ELEVATION | WATER SURFACE ELEV. WITH BACKWATER |
|---|---|---|---|---|
| | YEARS | CFS | FEET | FEET |
| Design | 50 | 4720 | 481.5 | 482.3 |
| Base | 100 | 5450 | 482.3 | 483.2 |
| Extreme | 500 | 7310 | 484.3 | 485.5 |
| Overtopping | >500 | - | - | - |

*Unconstricted water surface without structure or roadway approaches.
Q100 backwater elevation for existing structure = 483.8
Proposed Low Bridge Chord Elev. = 496.4
Drainage area = 9.7 square miles.
Historical H.W. Elev. = N/A

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# SHEET 1 OF 2
# LAYOUT OF BRIDGE OVER TRACE CREEK
# HWY. 9 - SO. OF HWY. 342
# (MAMMOTH SPRING) (S)
# FULTON COUNTY

ROUTE 63 SEC. 1

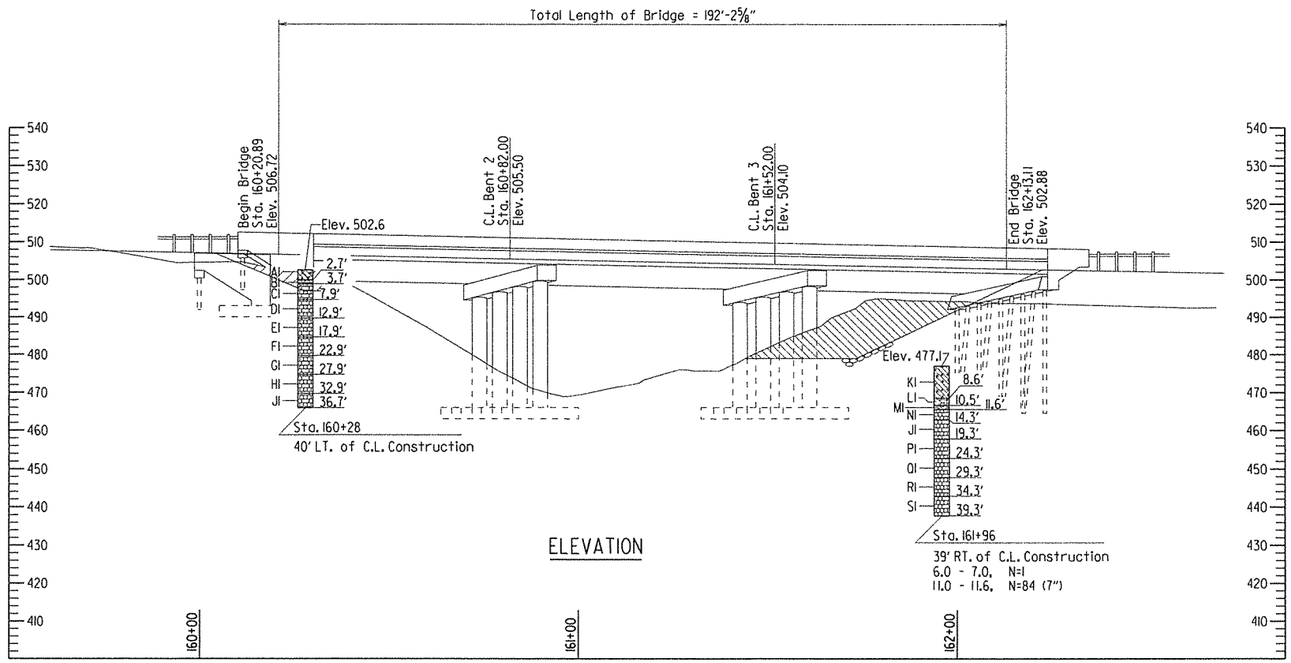
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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CHECKED BY: JCT DATE: 8/28/14 SCALE: 1"=20'-0"
DESIGNED BY: SMP DATE: 6/2012

BRIDGE NO. 07299 DRAWING NO. 56208

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 102 | 309 |
| | | | | 07299 - | | LAYOUT | - 56209 | |




ELEVATION

## BORING LEGEND

AI-Moist, Brown and Gray Clay with Gravel (Dolostone Fragments)
BI-DOLOSTONE - Light Gray, Moderately Hard
CI-DOLOSTONE - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and some Fractured Layers
DI-DOLOSTONE - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
EI-LIMY DOLOSTONE - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip
FI-LIMY DOLOSTONE WITH OCCASIONAL CHERT SEAMS - Light Gray, Very Thick Bedded, Hard, with Slight Dip
GI-LIMY DOLOSTONE WITH OCCASIONAL CHERT SEAMS - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip
HI-LIMY DOLOSTONE - Light Gray, Very Thick Bedded, Hard, with Slight Dip
JI-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
KI-Moist, Very Soft, Dark Gray Sandy Clay with Gravel (Dolostone Fragments)
LI-Moist, Dense, Brown Sand with Clay, Gravel (Dolostone Fragments) and Cobbles
MI-Wet, Dense, Brown Sand with Gravel (Dolostone Fragments) and Cobbles
NI-DOLOSTONE - Light Gray, Medium Bedded, Slightly Weathered, Moderately Hard, with Slight Dip and Fractured Layers
PI-LIMY DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Vuggy, Hard, with Slight Dip
QI-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
RI-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Moderate Dip
SI-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Moderate Dip and Fractured Layers

## GENERAL NOTES

BENCH MARK: NGS MARK M 308; 40.24 LT. STA 160+31.95, EL = 503.24.

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

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

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 (Grade 60,AASHTO M31 or M322, Type A) | fy = 60,000 psi |
| Structural Steel (AASHTO M 270, Gr. 50W) | Fy = 50,000 psi |
| Structural Steel (AASHTO M 270, Gr. 36) | Fy = 36,000 psi |

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL PILING: Piling in Bents 1 and 4 shall be HP12 X 53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 75 tons per pile and into the material designated as Hard Dolostone on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Subsection 805.14. Piling in Bents 1 and 4 shall be driven after embankment to bottom of cap is in place. On all piles, the Contractor shall use approved steel H-Pile driving points.

FOOTINGS: Bent 1 footing shall be set a minimum of 2'-0" into material designated as Hard Dolostone on the boring legend. Intermediate bent footings shall be set a minimum of 3'-0" into material designated as Hard Dolostone on the boring legend. The top of the intermediate bent footings shall be set at or below the channel bottom. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of surrounding ground in accordance with Subsection 801.08.

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

| DETAIL DRAWINGS: | DRAWING NO. |
|---|---|
| Details of End Bents | 56211 - 56214, & 56217 & 56218 |
| Details of Intermediate Bents | 56215 & 56216 |
| 190'-0" Cont. Comp. W-Beam Unit | 56220 - 56227 |
| Elastomeric Bearings | 56219 |
| Steel Piling | 55020 |
| Type C Approach Gutters | 55030C |

EXISTING BRIDGE: Existing Bridge No. 02632 (L.M. 1.57) is143' in length and 29' wide and is comprised of continuous steel beam spans supported by concrete piers. Centerline of existing bridge is located approximately 23.5' downstream of the proposed centerline of construction.

SHORING: Shoring is required at Bridge Ends for Stage 1 Construction. See SP Job No. 050230 "Shoring".

REMOVAL AND SALVAGE: After Stage 1 Construction of the new bridge is open to traffic, existing Bridge No. 02632 shall be removed in accordance with Section 205. All material from the existing bridge shall become property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF BRIDGE OVER TRACE CREEK
HWY. 9 - SO. OF HWY. 342
(MAMMOTH SPRING) (S)
FULTON COUNTY

ROUTE 63 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

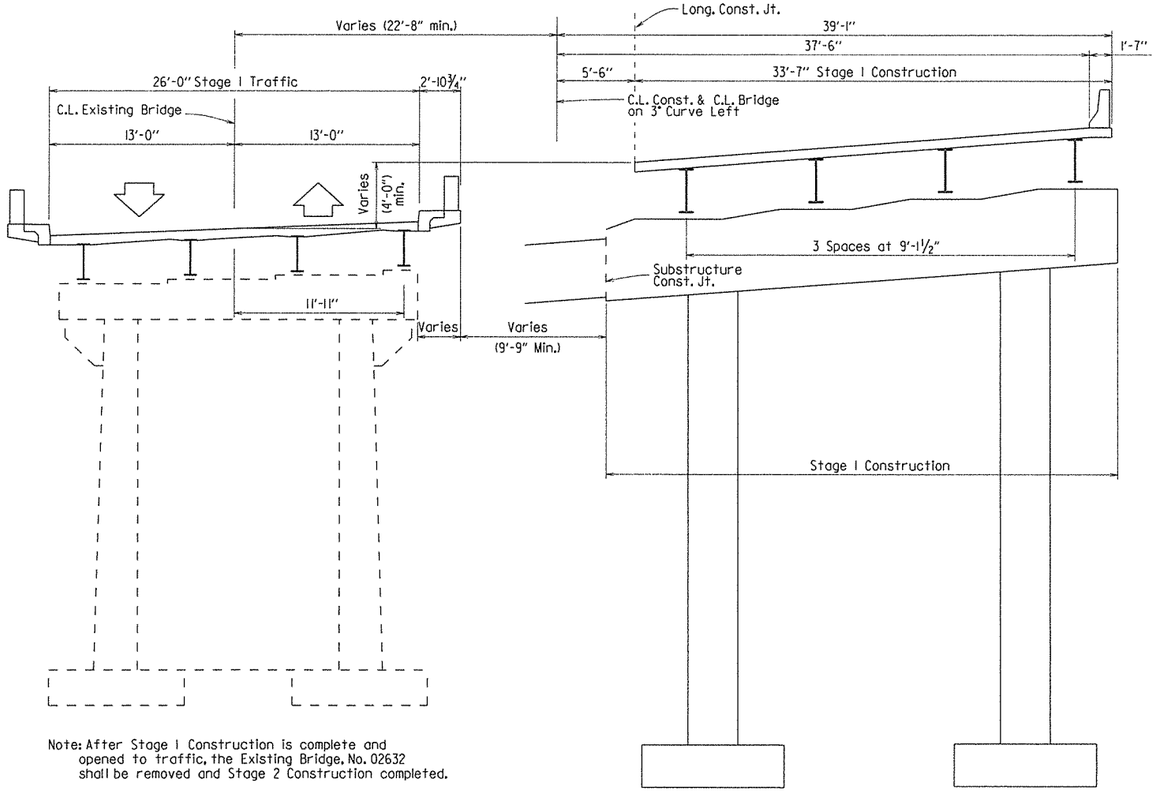
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CHECKED BY: JCT DATE: 9/25/14 SCALE: 1"=20'-0"
DESIGNED BY: SWP DATE: 6/2012

BRIDGE NO. 07299 DRAWING NO. 56209

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 103 | 309 |

(1) 07299 - STAGED CONSTRUCTION - 56210

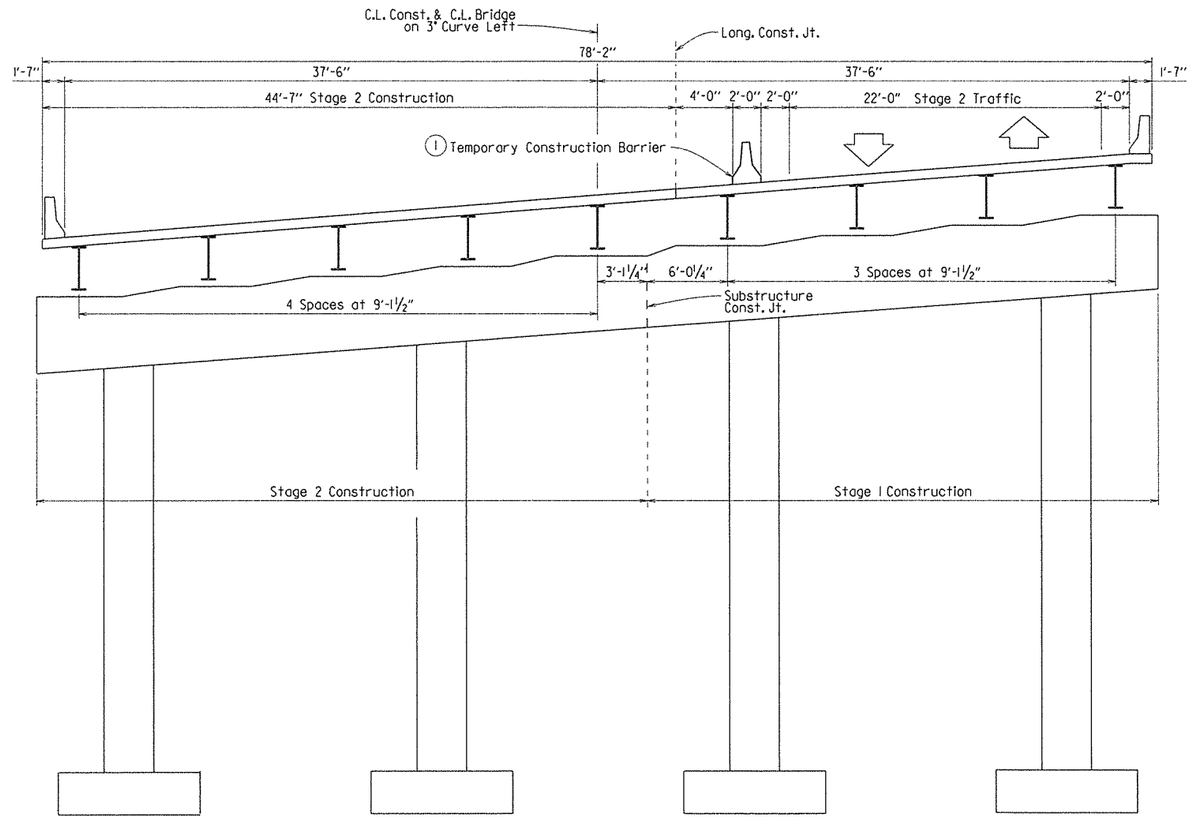



Note: After Stage 1 Construction is complete and opened to traffic, the Existing Bridge, No. 02632 shall be removed and Stage 2 Construction completed.

## STAGE 1 CONSTRUCTION

Looking Ahead

Note: Horizontal dimensions shown are along radial lines.




(1) Do not connect temporary construction barrier to deck. See Std. Dwg. TC-4 for details.

## STAGE 2 CONSTRUCTION

Looking Ahead

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

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9255
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# DETAILS OF STAGED CONSTRUCTION
# TRACE CREEK
# HWY. 9-SO. OF HWY. 342 (MAMMOTH SPRING)(S)
# FULTON COUNTY

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 12/03/2012 FILENAME: b050230x1_sc.dgn
CHECKED BY: JGT DATE: 5/26/14 SCALE: 3/16" = 1'-0"
DESIGNED BY: SWP DATE: 12/2012

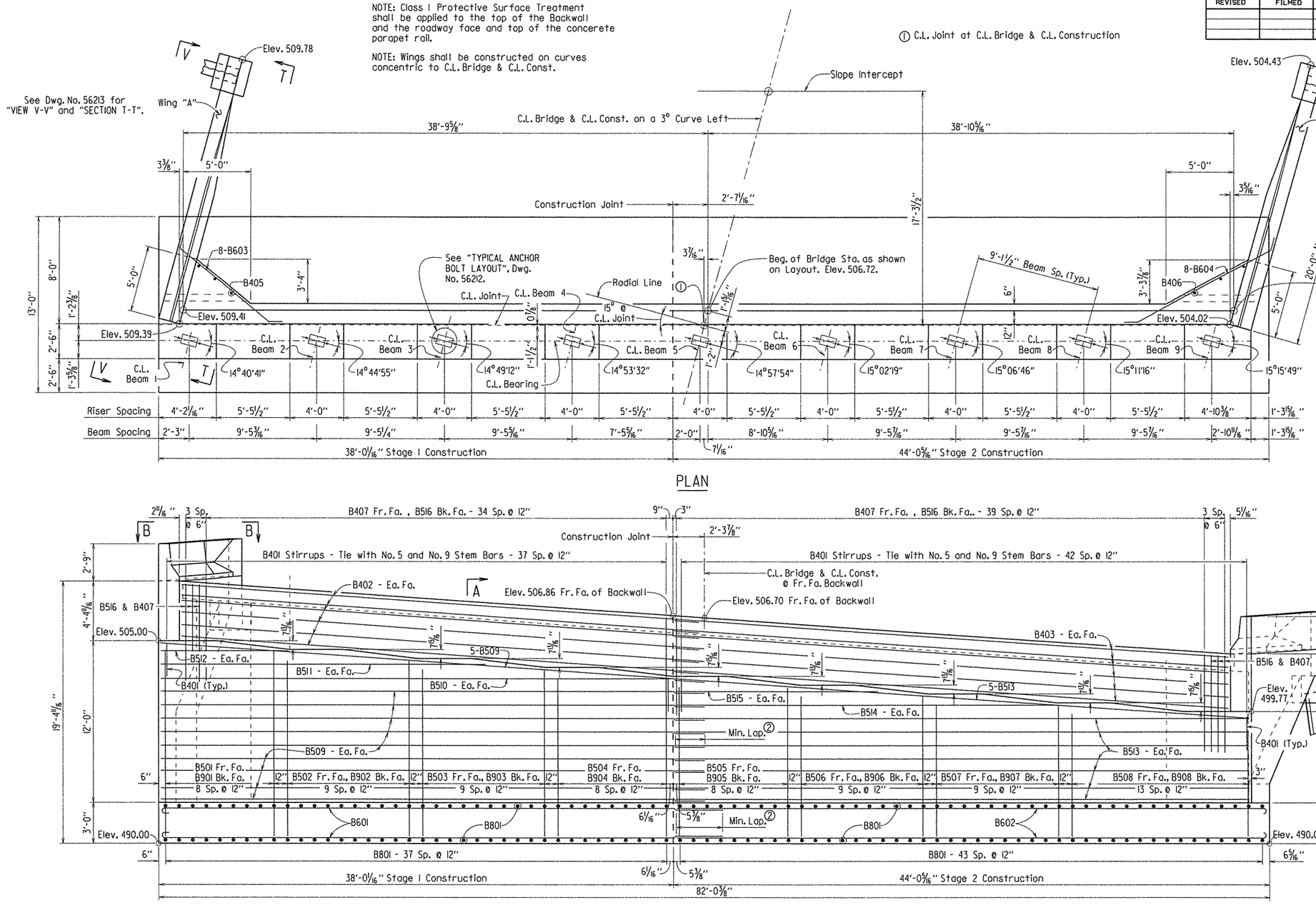
BRIDGE NO. 07299 DRAWING NO. 56210

PRINT DATE: 10-OCT-2014

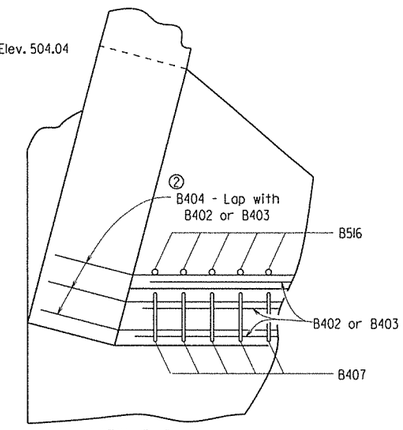
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 104 | 309 |
| | | | | (1) 07299 - END BENT DETAILS - 56211 | | | | |

NOTE: Class I Protective Surface Treatment shall be applied to the top of the Backwall and the roadway face and top of the concerete parapet rail.

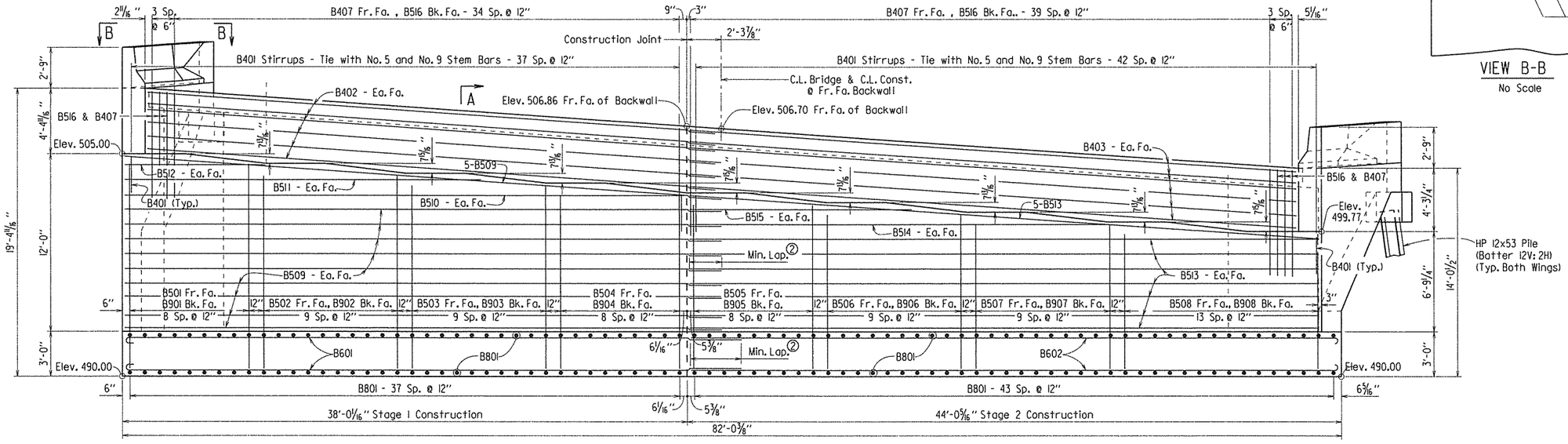
NOTE: Wings shall be constructed on curves concentric to C.L. Bridge & C.L. Const.




PLAN




VIEW B-B
No Scale

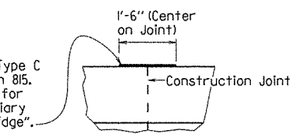



ELEVATION
LOOKING BACK

See Dwg. No. 56212 for "SECTION A-A"

② Lap No. 4 Bars 1'-9" Min.
Lap No. 5 Bars 2'-2" Min.
Lap No. 6 Bars 2'-7" Min.

Membrane Waterproofing System Type C or an approved equal. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".




CONSTRUCTION JOINT DETAIL
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF BENT 1
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 2/10/14
CHECKED BY: JGT DATE: 8/26/14
DESIGNED BY: TMG DATE: 3/2014
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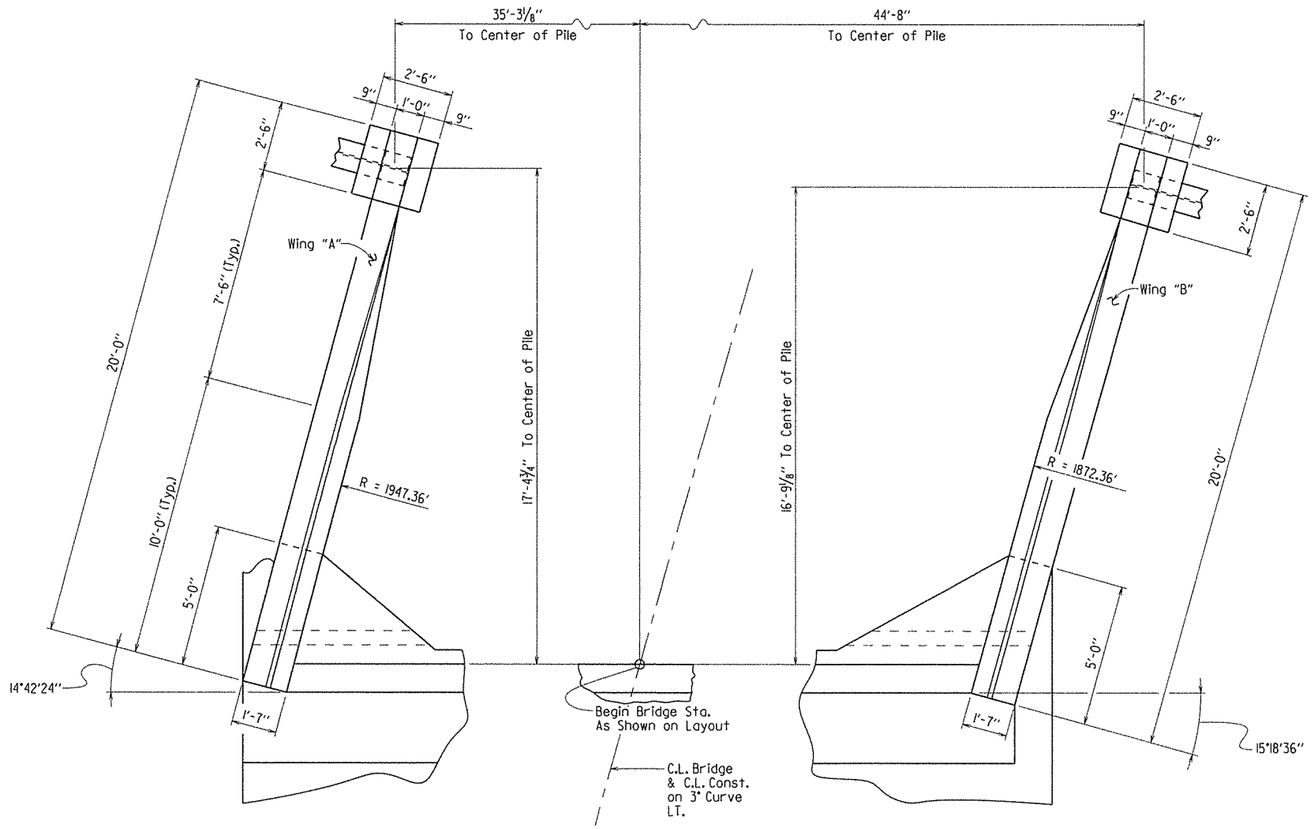
BRIDGE NO. 07299 DRAWING NO. 56211

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 155 | 309 |

(1) 07299 - END BENT DETAILS - 56212

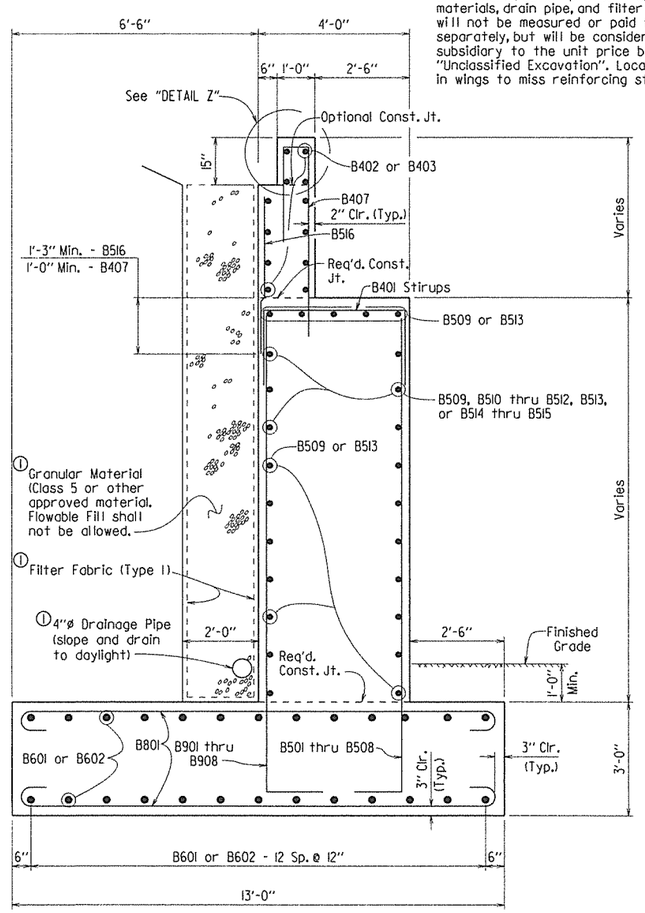
NOTE: Wings shall be constructed on curves concentric to C.L. Bridge & C.L. Const.




PLAN OF WINGS AND LAYOUT OF PILES

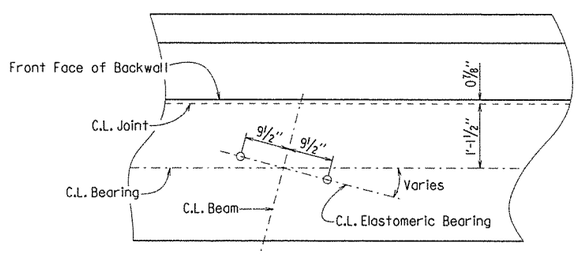
3/8"=1'-0"

(1) For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, and filter fabric will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation". Locate holes in wings to miss reinforcing steel.




SECTION A-A

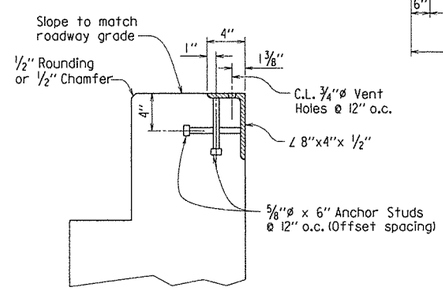
1/2" = 1'-0"




TYPICAL ANCHOR BOLT LAYOUT

3/4"=1'-0"

For Details of Elastomeric Bearings, See Dwg. No. 56219




DETAIL Z

No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56227

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9355
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 4
DETAILS OF BENT 1
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

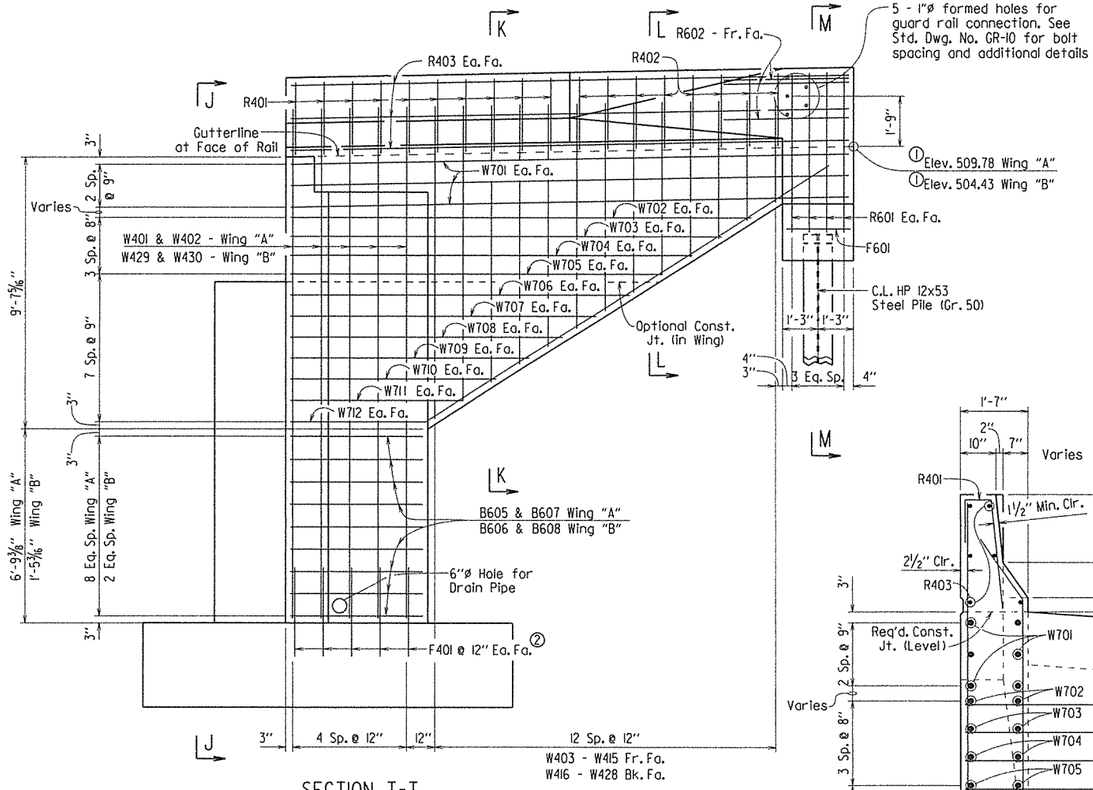
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CHECKED BY: JCT DATE: 8/28/14 SCALE: AS NOTED
DESIGNED BY: TMG DATE: 3/2014

BRIDGE NO. 07299 DRAWING NO. 56212

PRINT DATE: 10/10/2014

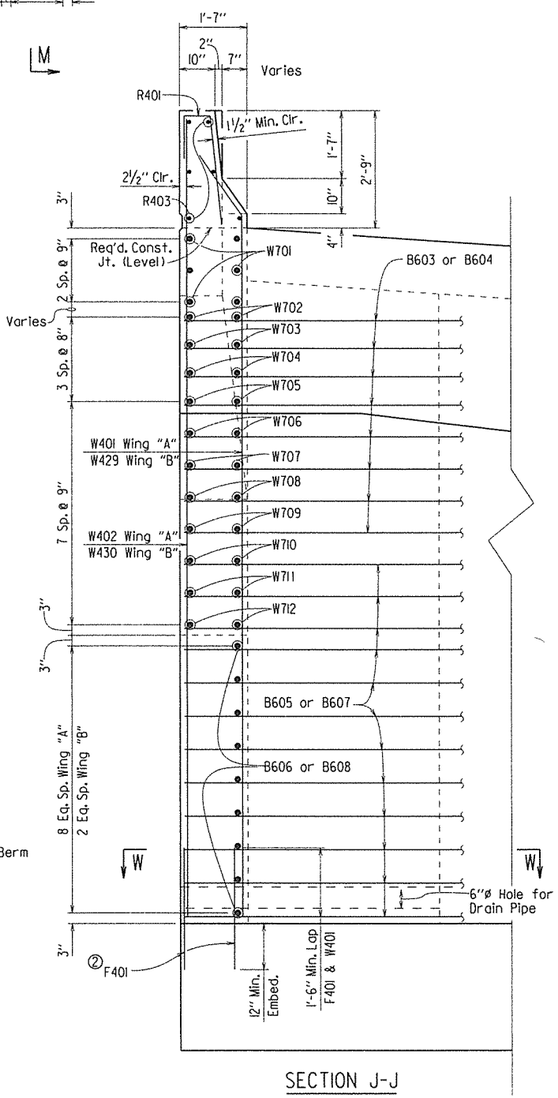
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 106 | 309 |

(1) 07299 - END BENT DETAILS - 56213



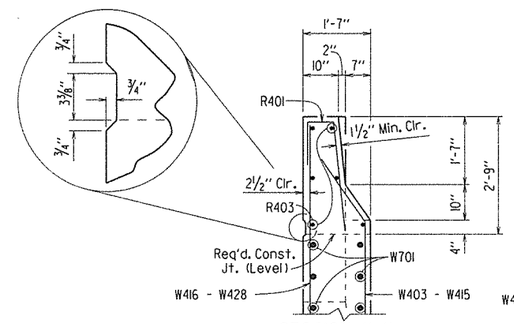

SECTION T-T

⅜" = 1'-0"



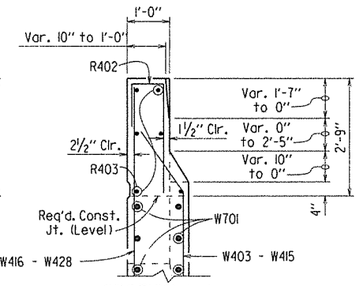

SECTION J-J

No Scale



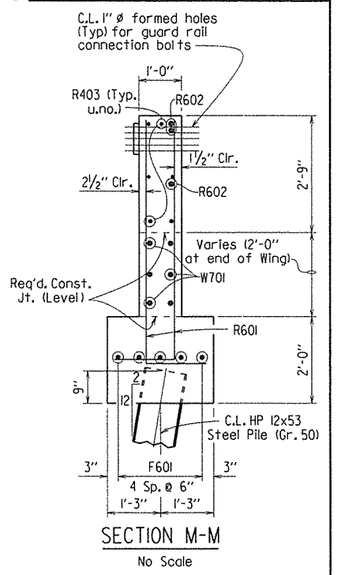

SECTION K-K

No Scale



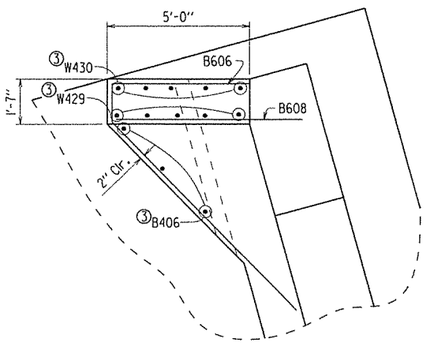

SECTION L-L

No Scale




SECTION M-M

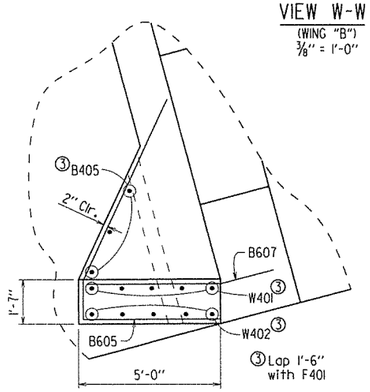
No Scale




VIEW W-W

(WING "B")

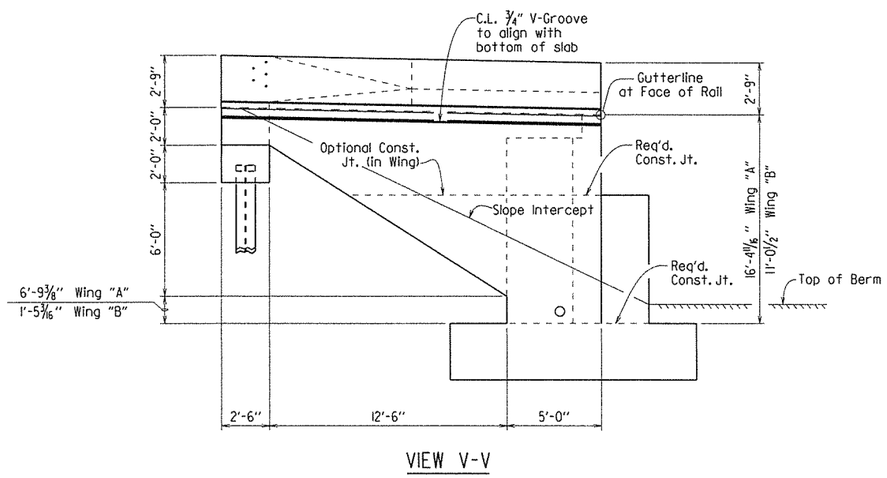
⅜" = 1'-0"




VIEW W-W

(WING "A")

⅜" = 1'-0"




VIEW V-V

¼" = 1'-0"

(1) Elevation at Gutterline

(2) Place Additional F401 Bars to Lap with B405 or B406 in Fillet.

(3) Lap 1'-6"with F401

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9335
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 4
DETAILS OF BENT 1
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 2/10/14 FILENAME: b050230x1_b1.dgn
CHECKED BY: JGT DATE: 3/26/14 SCALE: AS NOTED
DESIGNED BY: TMG DATE: 3/2014

BRIDGE NO. 07299 DRAWING NO. 56213

PRINT DATE: 10/10/2014

# BAR LIST

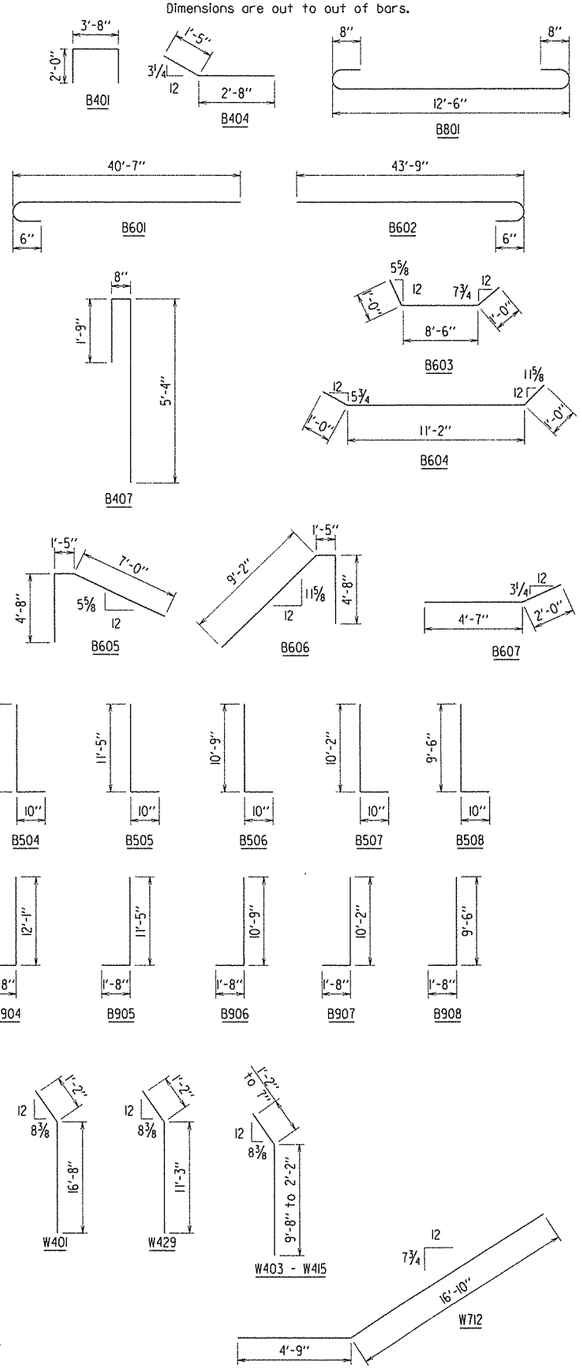
| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| B401 | 38 | 43 | 7'-6" | 2" |
| B402 | 12 | - | 38'-3" | Str. |
| B403 | - | 12 | 41'-3" | Str. |
| B404 | 10 | 10 | 4'-1" | 2" |
| B405 | 3 | - | 15'-3" | Str. |
| B406 | - | 3 | 9'-8" | Str. |
| B407 | 38 | 43 | 7'-7" | 2" |
| | | | | |
| B501 | 9 | - | 14'-9" | 3 3/4" |
| B502 | 10 | - | 14'-1" | 3 3/4" |
| B503 | 10 | - | 13'-5" | 3 3/4" |
| B504 | 9 | - | 12'-10" | 3 3/4" |
| B505 | - | 9 | 12'-2" | 3 3/4" |
| B506 | - | 10 | 11'-6" | 3 3/4" |
| B507 | - | 10 | 10'-11" | 3 3/4" |
| B508 | - | 14 | 10'-3" | 3 3/4" |
| B509 | 23 | - | 40'-4" | Str. |
| B510 | 2 | - | 37'-9" | Str. |
| B511 | 2 | - | 24'-1" | Str. |
| B512 | 2 | - | 9'-5" | Str. |
| B513 | - | 19 | 42'-9" | Str. |
| B514 | - | 2 | 28'-3" | Str. |
| B515 | - | 2 | 14'-11" | Str. |
| B516 | 38 | 43 | 4'-4" | Str. |
| | | | | |
| B601 | 26 | - | 41'-3" | 4 1/2" |
| B602 | - | 26 | 44'-5" | 4 1/2" |
| B603 | 8 | - | 10'-6" | 4 1/2" |
| B604 | - | 8 | 13'-2" | 4 1/2" |
| B605 | 12 | - | 13'-0" | 4 1/2" |
| B606 | - | 6 | 15'-2" | 4 1/2" |
| B607 | 12 | - | 6'-7" | 4 1/2" |
| B608 | - | 6 | 6'-7" | Str. |
| | | | | |
| B801 | 90 | 86 | 11'-6" | 6" |
| | | | | |
| B901 | 9 | - | 15'-5" | 9" |
| B902 | 10 | - | 14'-9" | 9" |
| B903 | 10 | - | 14'-1" | 9" |
| B904 | 9 | - | 13'-6" | 9" |
| B905 | - | 9 | 12'-10" | 9" |
| B906 | - | 10 | 12'-2" | 9" |
| B907 | - | 10 | 11'-7" | 9" |
| B908 | - | 14 | 10'-11" | 9" |
| | | | | |
| F401 | 13 | 13 | 3'-6" | Str. |
| F601 | 5 | 5 | 2'-2" | Str. |

CONTINUED

| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| R401 | 10 | 10 | 3'-11" | 2" |
| R402 | 8 | 8 | 4'-0" | 2" |
| R403 | 6 | 6 | 19'-8" | Str. |
| | | | | |
| R601 | 8 | 8 | 6'-9" | 4 1/2" |
| R602 | 3 | 3 | 5'-0" | Str. |
| | | | | |
| W401 | 5 | - | 17'-10" | 2" |
| W402 | 5 | - | 18'-11" | Str. |
| W403-W415 | 1 Each | 1 Each | 10'-9" to 2'-9" | 2" |
| W416-W428 | 1 Each | 1 Each | 12'-4" to 4'-8"' | Str. |
| W429 | - | 5 | 12'-5" | 2" |
| W430 | - | 5 | 13'-7" | Str. |
| | | | | |
| W701 | 6 | 6 | 19'-8" | Str. |
| W702-W711 | 2 Each | 2 Each | 16'-5" to 6'-3" | Str. |
| W712 | 2 | 2 | 21'-7" | 5 1/4" |

BENDING DIAGRAMS

Dimensions are out to out of bars.




| 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. | | 050230 | 107 | 309 |

1 07299 - END BENT DETAILS - 56214

## GENERAL NOTES

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

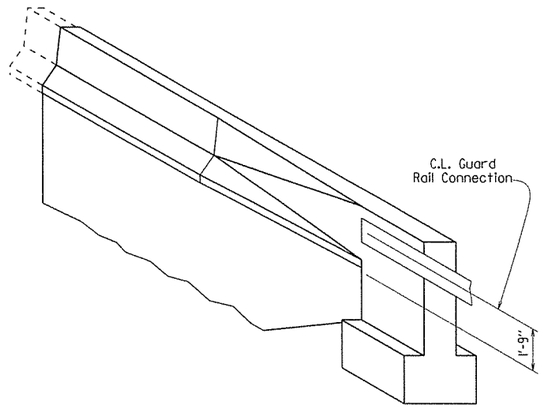
All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note, Dwg. No. 56227.

Concrete shall be hand packed under the joint armor.

For additional information see Layout.




THREE DIMENSIONAL VIEW OF RAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF BENT 1
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

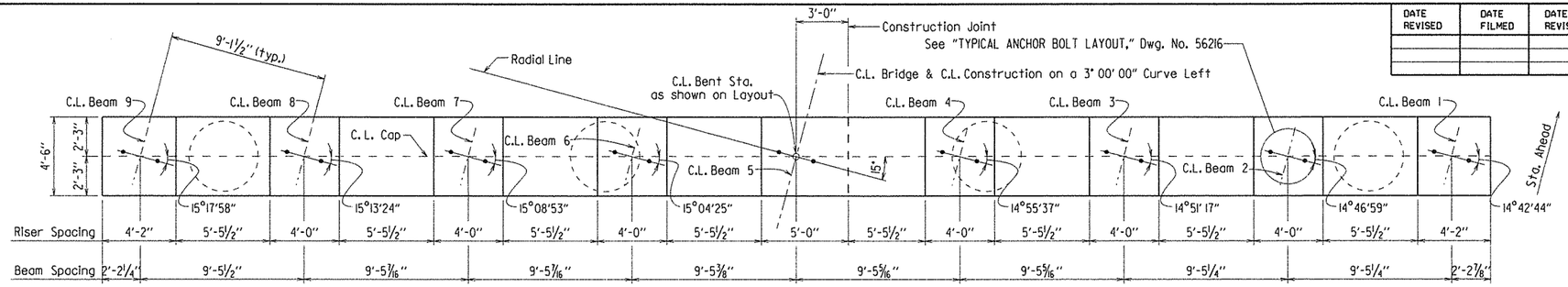
DRAWN BY: LJB DATE: 2/10/14
CHECKED BY: JGT DATE: 8/28/14
DESIGNED BY: TMG DATE: 3/2014

FILENAME: b050230x1_b1.dgn
SCALE: AS NOTED

BRIDGE NO. 07299 DRAWING NO. 56214

PRINT DATE: 10/10/2014

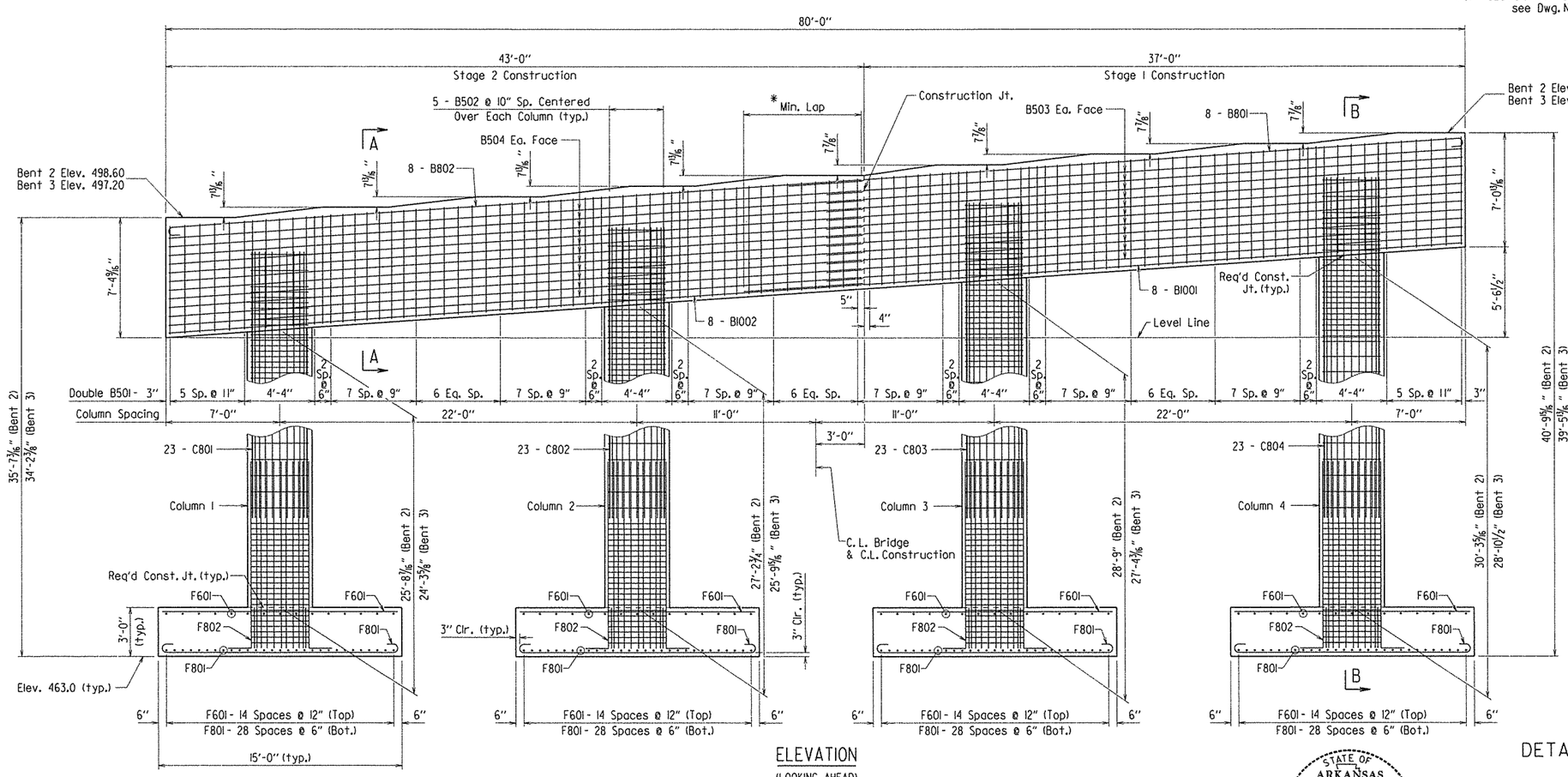
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 108 | 309 |
| | | | | 1 | 07299 - INT. BENT DETAILS - 56215 | | | |




PLAN

*Minimum Bar Laps
No. 5 - 2'-2"
No. 8 - 4'-6"
No. 10 - 7'-3"

For "SECTION A-A" and "SECTION B-B", see Dwg. No. 56216




ELEVATION
(LOOKING AHEAD)

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 2 & 3
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

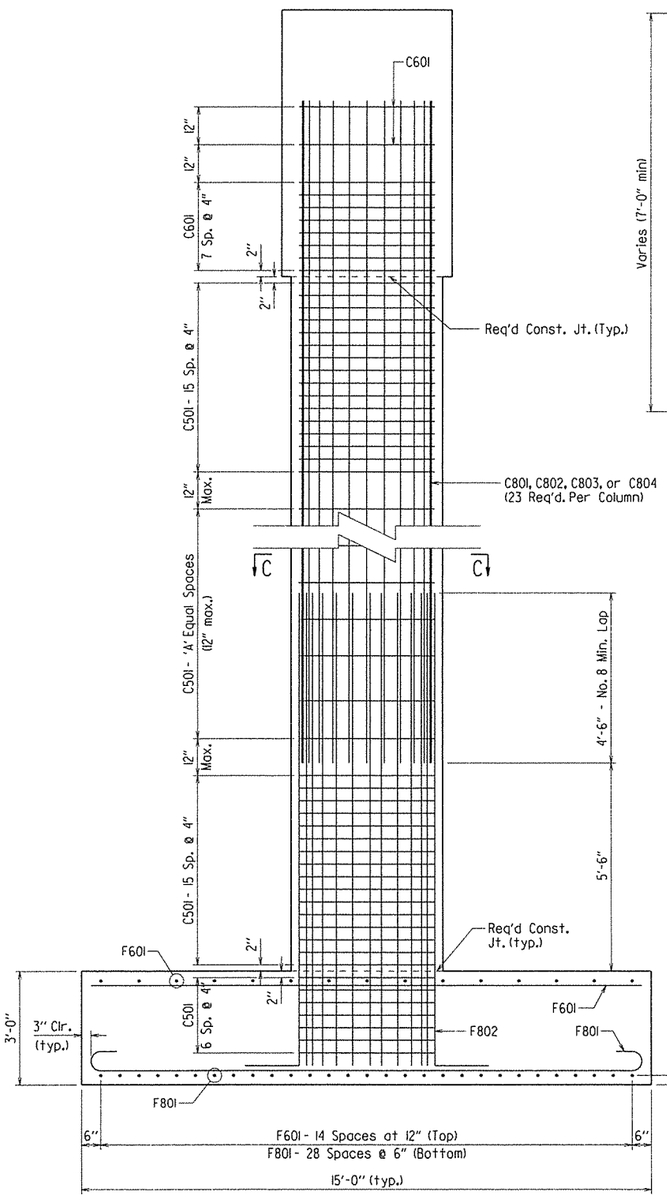
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CHECKED BY: JGT DATE: 8/25/14
DESIGNED BY: TMG DATE: 4/2014
FILENAME: b050230x1_b2.dgn
SCALE: 1/4" = 1'-0"

BRIDGE NO. 07299 DRAWING NO. 56215

PRINT DATE: 10-OCT-2014

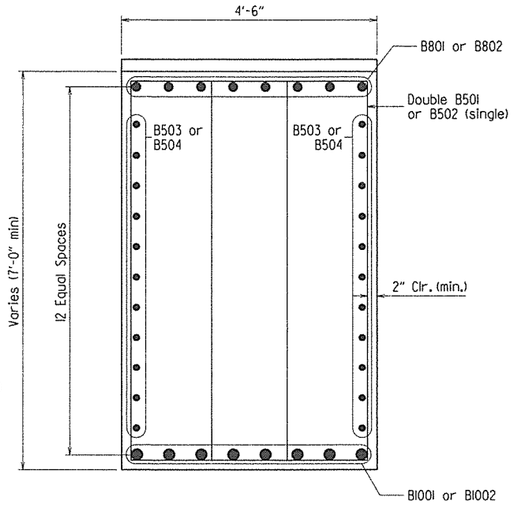
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 109 | 309 |

(1) 07299 - INT. BENT DETAILS - 56216



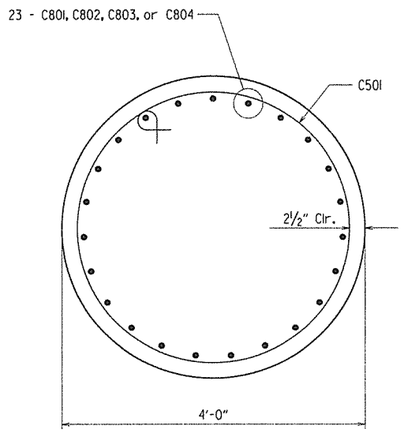

SECTION B - B

1/2" = 1'-0"




SECTION A - A

3/4" = 1'-0"

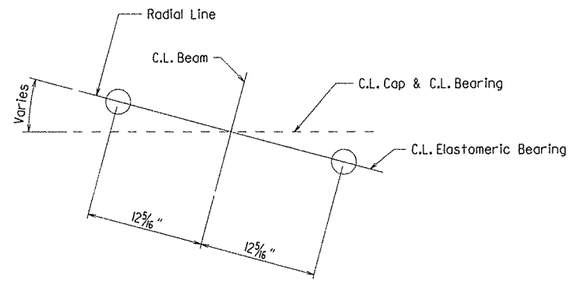



SECTION C - C

1" = 1'-0"

## COLUMN TIE SPACES

| Column | 'A' |
|---|---|
| 1 | 14 |
| 2 | 15 |
| 3 | 17 |
| 4 | 19 |




## TYPICAL ANCHOR BOLT LAYOUT

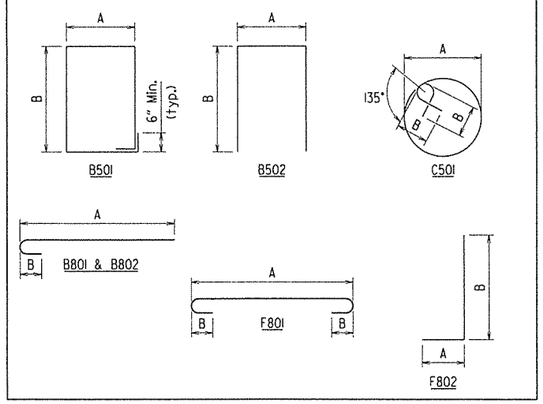
Not to Scale
For Details of Elastomeric Bearings, See Dwg. No. 56219

## BAR LIST - PER BENT

| MARK | STAGE 1 | STAGE 2 | LENGTH | 'A' | 'B' | P.D. |
|---|---|---|---|---|---|---|
| B501 | 80 | 94 | 19'-4" | 2'-9" | 6'-8" | 2 1/2" |
| B502 | 10 | 10 | 17'-4" | 4'-2" | 6'-8" | 2 1/2" |
| B503 | 22 | - | 39'-4" | - | - | Str. |
| B504 | - | 22 | 42'-9" | - | - | Str. |
| | | | | | | |
| B801 | 8 | - | 42'-4" | 41'-6" | 8" | 6" |
| B802 | - | 8 | 43'-8" | 42'-9" | 8" | 6" |
| | | | | | | |
| B1001 | 8 | - | 44'-3" | - | - | Str. |
| B1002 | - | 8 | 42'-9" | - | - | Str. |
| | | | | | | |
| C501 | 136 | 127 | 12'-9" | 3'-7" | 6 1/4" | 3 3/4" |
| | | | | | | |
| C801 | - | 23 | 25'-0" | - | - | Str. |
| C802 | - | 23 | 26'-6" | - | - | Str. |
| C803 | 23 | - | 28'-0" | - | - | Str. |
| C804 | 23 | - | 29'-6" | - | - | Str. |
| | | | | | | |
| F601 | 60 | 60 | 14'-6" | - | - | Str. |
| | | | | | | |
| F801 | 116 | 116 | 16'-4" | 14'-6" | 8" | 6" |
| F802 | 46 | 46 | 15'-8" | 1'-4" | 14'-7" | 6" |

BENDING DIAGRAMS

Dimensions are out to out of bars




### GENERAL NOTES

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

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

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

For additional information, see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9335
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS 2 & 3
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: TMG DATE: 5/8/2014 FILENAME: b050230x1_b2.dgn
CHECKED BY: JGT DATE: 5/28/14 SCALE: AS NOTED
DESIGNED BY: TMG DATE: 4/2014

BRIDGE NO. 07299 DRAWING NO. 56216

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 110 | 309 |

(1) 07299 - END BENT DETAILS - 56217

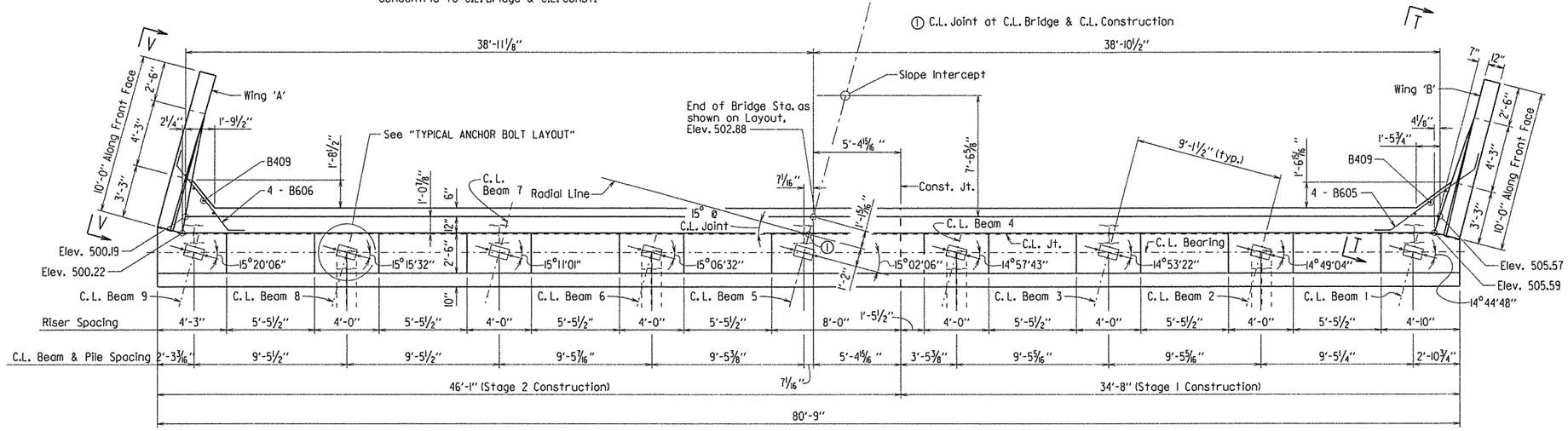
NOTE: Class I Protective Surface Treatment shall be applied to the top of the Backwall and the roadway face and top of the concerete parapet rail.

NOTE: Wings shall be constructed on curves concentric to C.L. Bridge & C.L. Const.

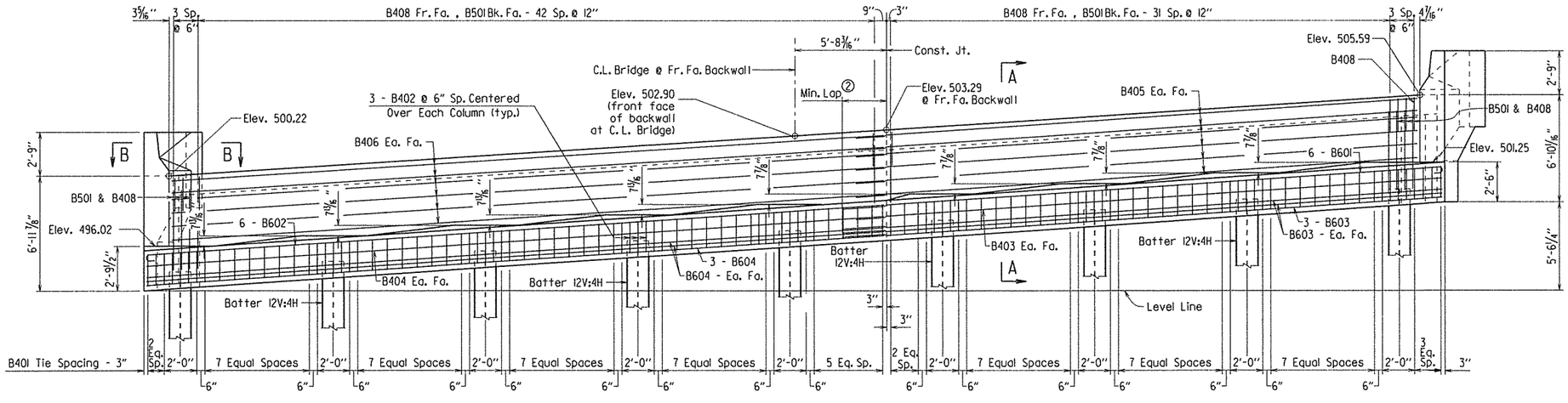
C.L. Bridge & Const. on 3° Curve Lt.

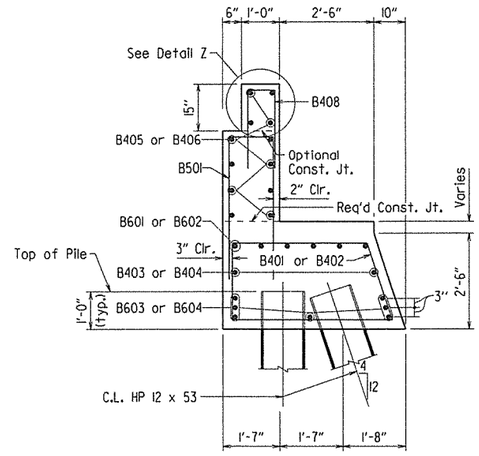
See Dwg. No. 56218 for "VIEW V-V" and "VIEW T-T"

(1) C.L. Joint at C.L. Bridge & C.L. Construction



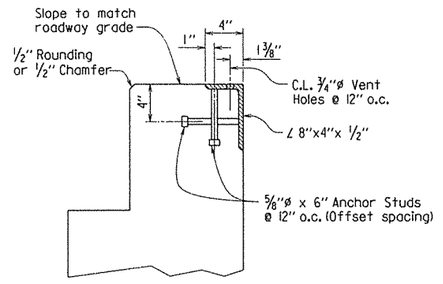

PLAN




SECTION A - A

½" = 1'-0"



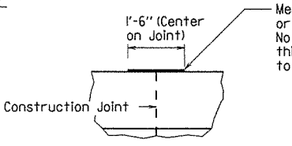

DETAIL Z

No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56227




CONSTRUCTION JOINT DETAIL

No Scale

GENERAL NOTES

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

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

All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

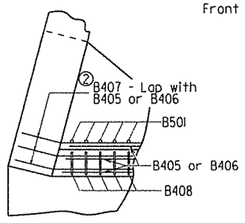
No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note, Dwg. 56227.

Concrete shall be hand packed under the joint armor.

For additional information see Layout.

ELEVATION

LOOKING AHEAD

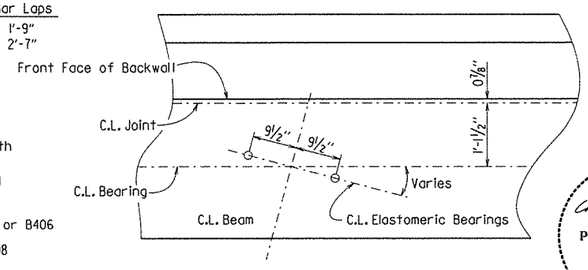



VIEW B - B

No Scale

(2) Minimum Bar Laps

No. 4 - 1'-9"
No. 6 - 2'-7"




TYPICAL ANCHOR BOLT LAYOUT

¾"=1'-0"

For Details of Elastomeric Bearings, See Dwg. No. 56219

STATE OF ARKANSAS
Charles B. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES B. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 4
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

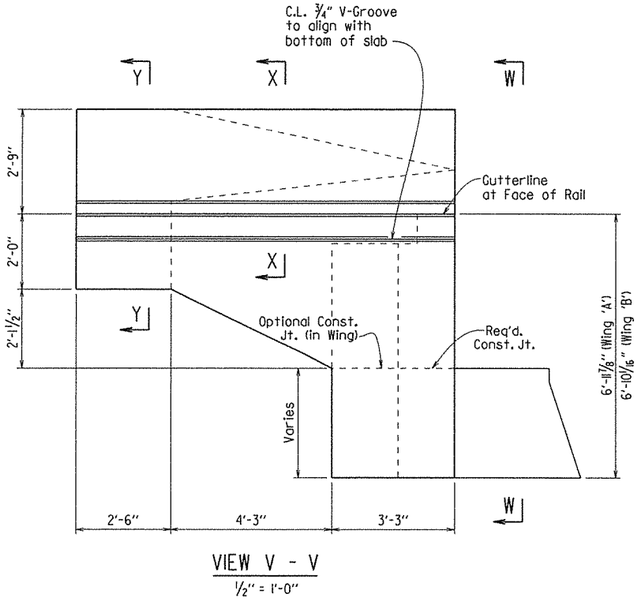
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BRIDGE NO. 07299 DRAWING NO. 56217

PRINT DATE: 10-OCT-2014

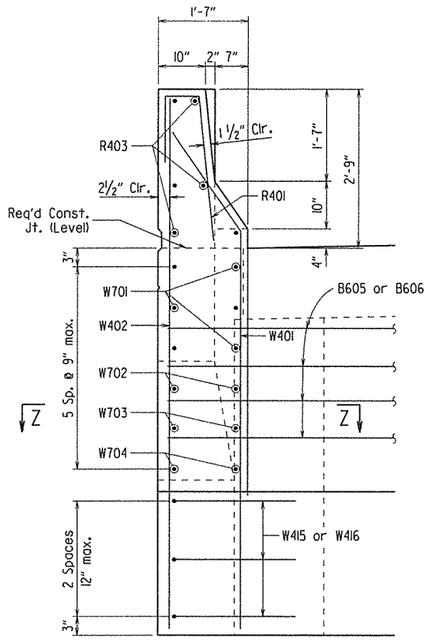
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 111 | 309 |

(1) 07299 - END BENT DETAILS - 56218



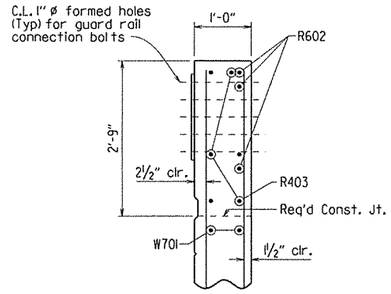

VIEW V - V

½" = 1'-0"



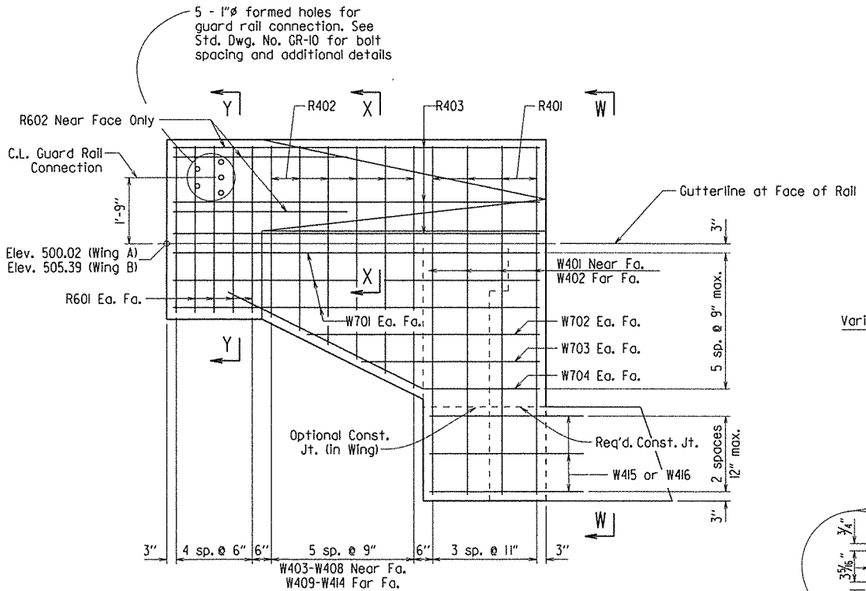

VIEW W - W

No Scale



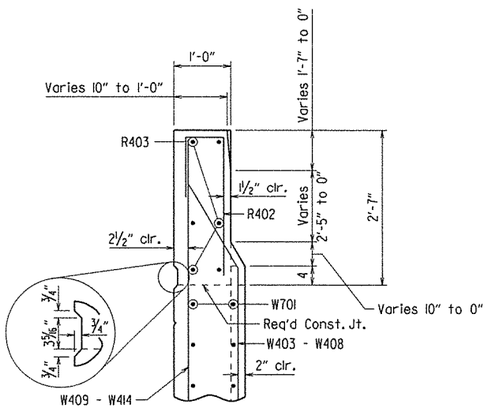

SECTION Y - Y

No Scale




VIEW T - T

½" = 1'-0"



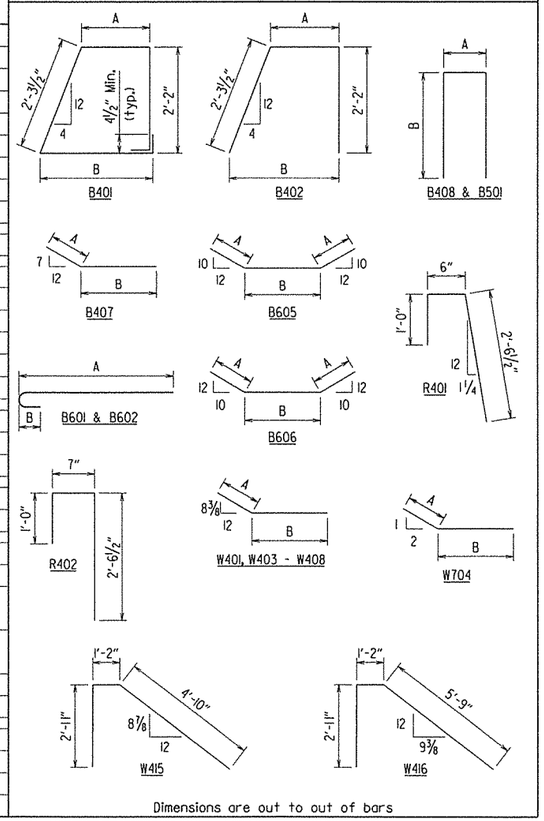

SECTION X - X

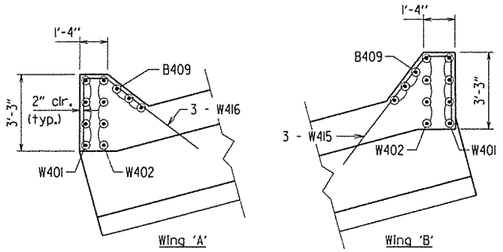
No Scale

## BAR LIST

| MARK | STAGE 1 | STAGE 2 | LENGTH | 'A' | 'B' | P.D. |
|---|---|---|---|---|---|---|
| B401 | 42 | 45 | 12'-11" | 3'-7" | 4'-5" | 2" |
| B402 | 12 | 15 | 8'-0" | 3'-7" | 4'-5" | 2" |
| B403 | 2 | - | 40'-7" | - | - | Str. |
| B404 | - | 2 | 45'-11" | - | - | Str. |
| B405 | 12 | - | 35'-0" | - | - | Str. |
| B406 | - | 12 | 44'-4" | - | - | Str. |
| B407 | 12 | 12 | 4'-1" | 1'-5" | 2'-8" | 2" |
| B408 | 35 | 46 | 4'-4" | 8" | 1'-8" | 2" |
| B409 | 3 | 3 | 5'-11" | - | - | Str. |
| B501 | 35 | 46 | 11'-6" | 1'-2" | 5'-0" | 2½" |
| B601 | 6 | - | 38'-1" | 41'-3" | 6" | 4½" |
| B602 | - | 6 | 46'-7" | 41'-11" | 6" | 4½" |
| B603 | 7 | - | 37'-3" | - | - | Str. |
| B604 | - | 7 | 45'-11" | - | - | Str. |
| B605 | 4 | - | 8'-5" | 1'-0" | 6'-5" | 4½" |
| B606 | - | 4 | 7'-2" | 1'-0" | 5'-2" | 4½" |
| R401 | 4 | 4 | 3'-11" | - | - | 2" |
| R402 | 6 | 6 | 4'-0" | - | - | 2" |
| R403 | 6 | 6 | 9'-8" | - | - | Str. |
| R601 | 5 | 5 | 4'-5" | - | - | Str. |
| R602 | 3 | 3 | 5'-0" | - | - | Str. |
| W401 | 4 | 4 | 8'-1" | 1'-2" | 6'-11" | 2" |
| W402 | 4 | 4 | 9'-5" | - | - | Str. |
| W403-W408 | 1 Each | 1 Each | Var. 3'-5" to 5'-3" | 1'-2" | Var. 2'-3" to 4'-1" | 2" |
| W409-W414 | 1 Each | 1 Each | Var. 4'-6" to 6'-4" | - | - | Str. |
| W415 | 4 | - | 8'-11" | - | - | 2" |
| W416 | - | 4 | 9'-10" | - | - | 2" |
| W701 | 6 | 6 | 9'-8" | - | - | Str. |
| W702 | 2 | 2 | 6'-2" | - | - | Str. |
| W703 | 2 | 2 | 4'-9" | - | - | Str. |
| W704 | 2 | 2 | 8'-7" | 3'-1" | 5'-6" | 5¼" |

BENDING DIAGRAMS




SECTION Z - Z

No Scale

STATE OF ARKANSAS
Charles R. Ellis
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SHEET 2 OF 2
DETAILS OF BENT 4
TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

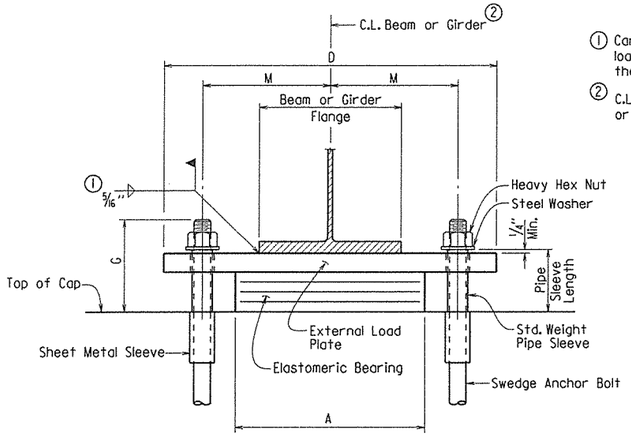
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DESIGNED BY: TMG DATE: 3/2014

BRIDGE NO. 07299 DRAWING NO. 56218

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 112 | 309 |

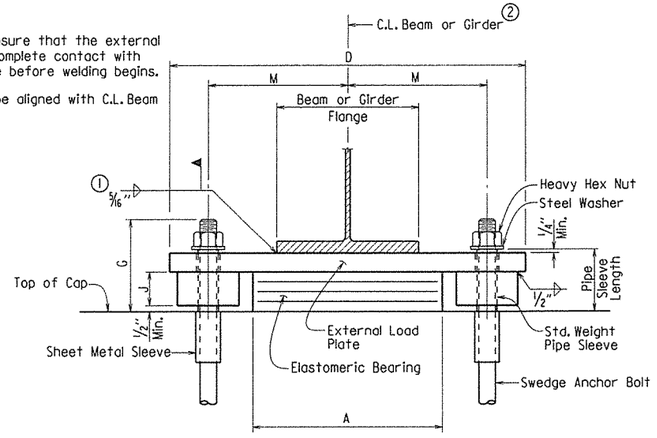
① 07299 - ELASTOMERIC BEARINGS - 56219



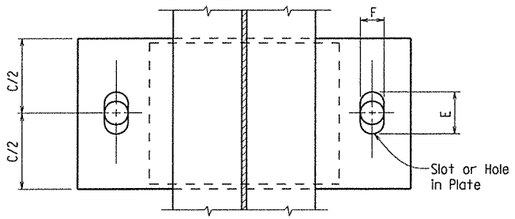

FRONT VIEW - AT BENT NOS. 1 & 4

① 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.

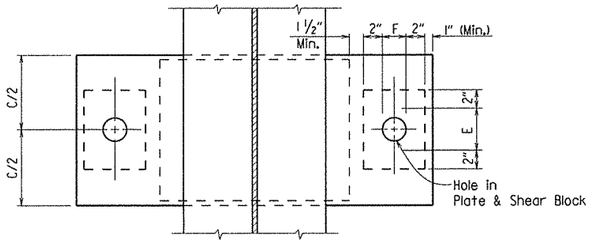
② C.L Elastomeric Pad shall be aligned with C.L. Beam or Girder.



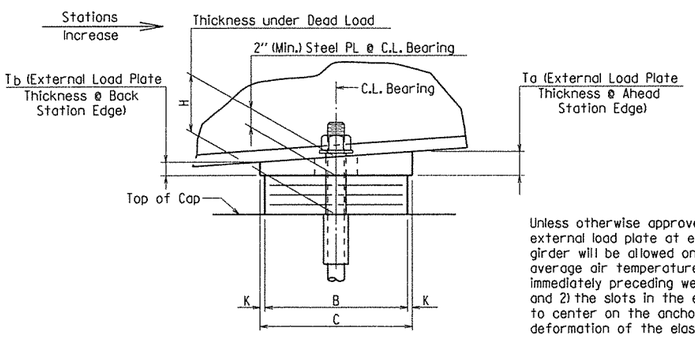

FRONT VIEW - AT BENT NOS. 2 & 3




PLAN VIEW - AT BENT NOS. 1 & 4

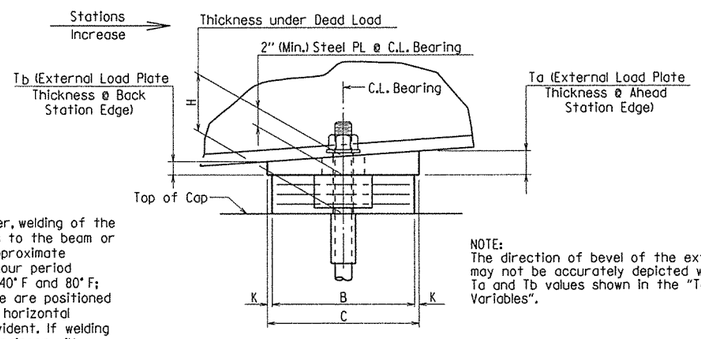



PLAN VIEW - AT BENT NOS. 2 & 3



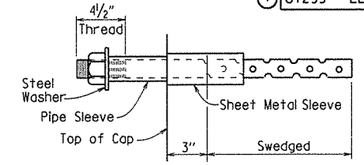

SIDE VIEW - AT BENT NOS. 1 & 4

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.




SIDE VIEW - AT BENT NOS. 2 & 3

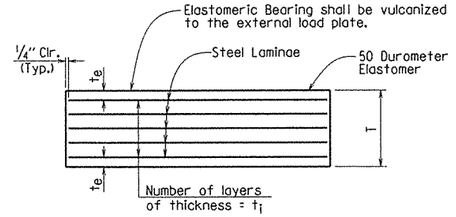
NOTE:
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".




ANCHOR BOLT DETAIL

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

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




$t_e$ = 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, 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 Beam 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.

TABLE OF FABRICATOR VARIABLES

*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 | EXTERNAL LOAD PLATE: C | D | E | F | J | K | M | $T_a$ | $T_b$ | ANCHOR BOLT: ANCHOR BOLT (ø x L) | GRADE | PIPE SLEEVE SIZE (ø x L) | SHEET METAL SLEEVE SIZE (ø x L) | STEEL WASHER SIZE (O.D.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07299 | 1 & 4 | All | Exp. | 9 | 101 | 7 1/2" | 4 3/8" | 14" | 8" | 3 | 1/2" | 1/4" | 4 @ 12 Ga. | 2 1/16" | 9" | 25" | 4 3/8" | 2 5/8" | - | 1/2" | 9 1/2" | 1.91" | 2.09" | 1 3/4"ø x 26" | 55 | 2"ø x 4 3/4" | 4"ø x 5 1/2" | 3 3/8" |
| | 2 & 3 | All | Fix. | 9 | 214 | 7 1/2" | 4 3/8" | 15" | 12" | 3 | 1/2" | 1/4" | 4 @ 12 Ga. | 2 1/16" | 13" | 33 1/4" | 2 5/8" | 2 5/8" | 1 7/8" | 1/2" | 12 5/16" | 1.87" | 2.13" | 1 3/4"ø x 26" | 55 | 2"ø x 4 3/4" | 4"ø x 5 1/2" | 3 3/8" |

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF
ELASTOMERIC BEARINGS
TRACE CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 6/30/14 FILENAME: b050230xl_e.dgn
CHECKED BY: JGT DATE: 5/26/14 SCALE: NONE
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BRIDGE NO. 07299 DRAWING NO. 56219

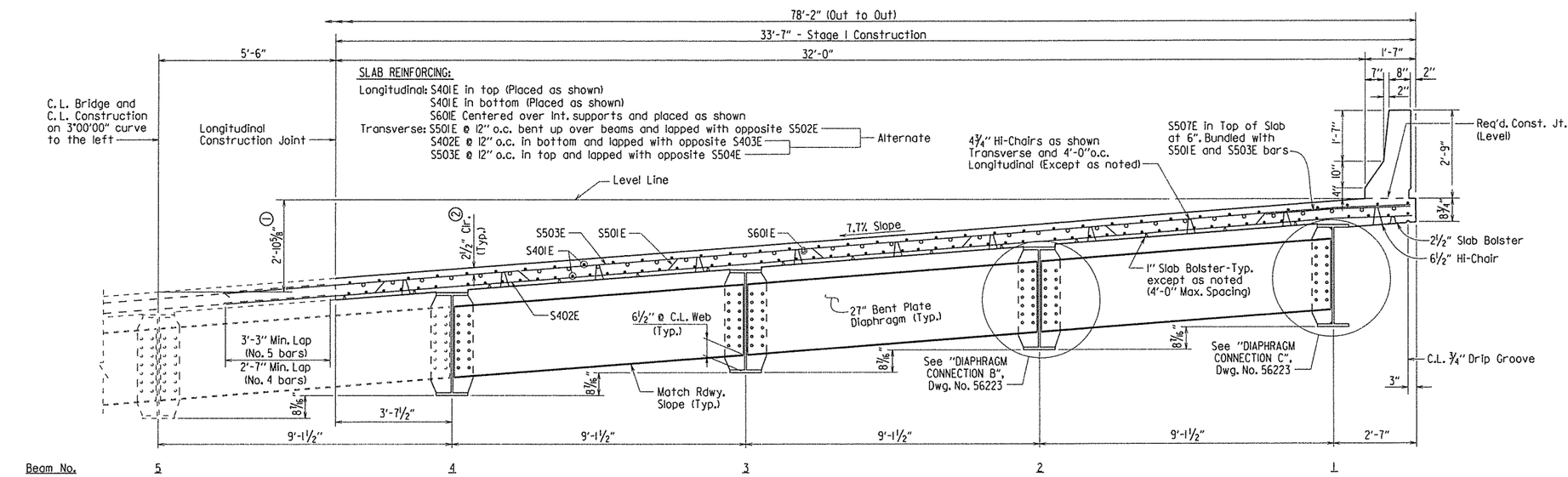
PRINT DATE: 10/10/2014

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

At the Contractor's option, one epoxy coated No. 5 straight bar top and bottom may be substituted for bar S501E and S502E. Payment for reinforcing will be based on the weight of bar S501E and S502E.

All bars designated with a "E" suffix are to be Epoxy Coated.

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 113 | 304 |
| | | | | (1) 07299 | - | SPAN DETAILS - | | 56220 |

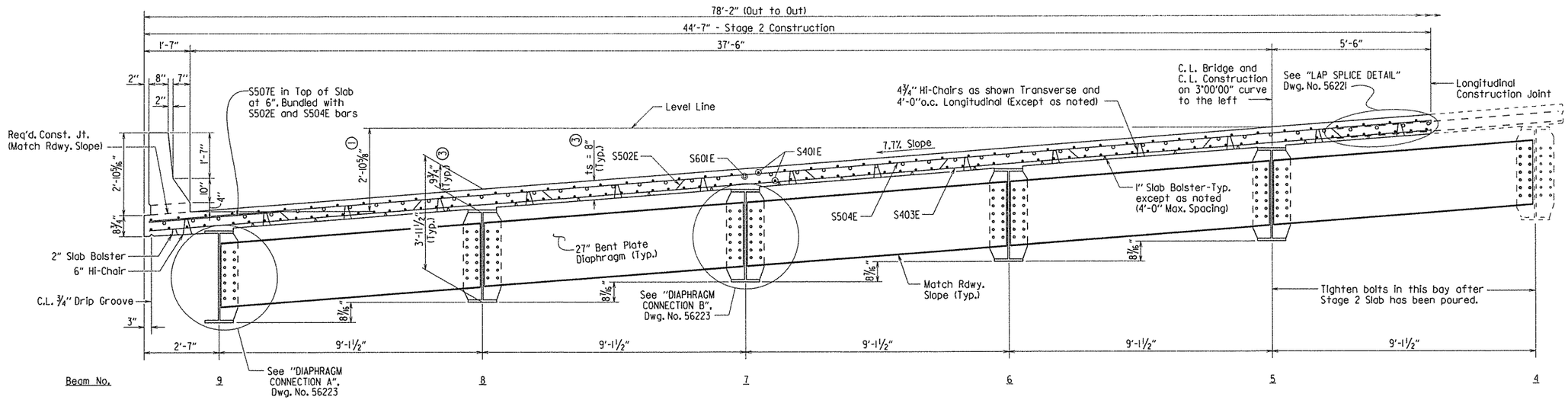



① Top of Deck at C.L. Bridge and C.L. Construction to Gutterline.

② Tolerance: Minus = ¼"
Plus: Equal to amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED."

③ See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", Dwg. No. 56221

## TYPICAL ROADWAY SECTION - STAGE 1
LOOKING AHEAD




## TYPICAL ROADWAY SECTION - STAGE 2
LOOKING AHEAD

PRINT DATE: 10-OCT-2014

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 8
DETAILS OF 190'-0" CONT.
COMP. W-BEAM UNIT
TRACE CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

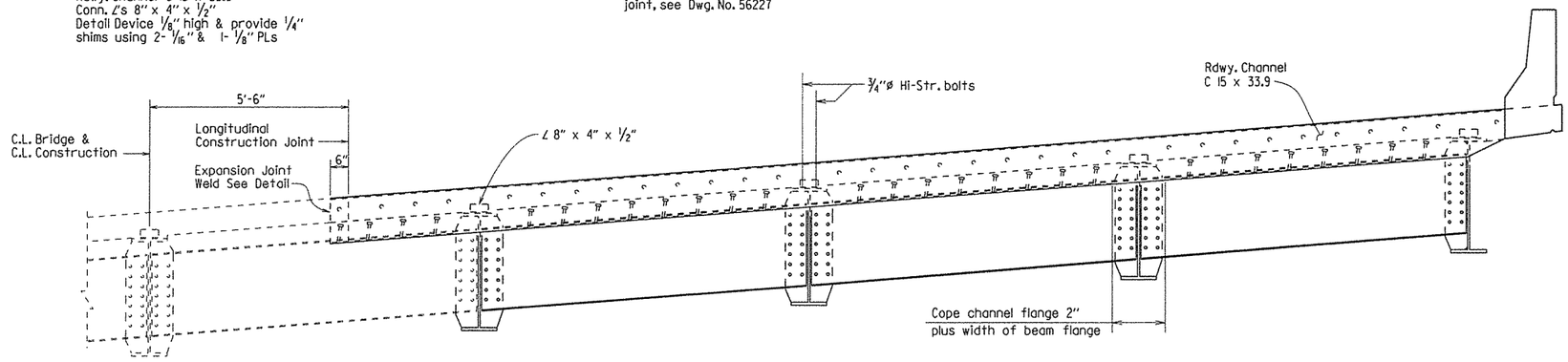
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BRIDGE NO. 07299 DRAWING NO. 56220

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | (1) 07299 - SPAN DETAILS - 56221 | | | | |

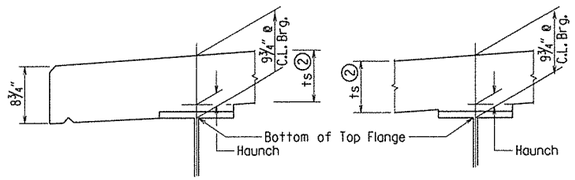
Expansion Device:
Rdwy. Channel - C 15 x 33.9
Conn. ∠'s 8" x 4" x ½"
Detail Device ⅛" high & provide ¼" shims using 2- 1/16" & 1- ⅛" PLs

For details of poured silicone joint, see Dwg. No. 56227




Beam No. 5 4 3 2 1

NOTE:
ts = slab thickness as shown in "TYPICAL ROADWAY SECTION - STAGE I", and "TYPICAL ROADWAY SECTION - STAGE 2", Dwg. No. 56220.




EXTERIOR BEAM INTERIOR BEAM

② 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.

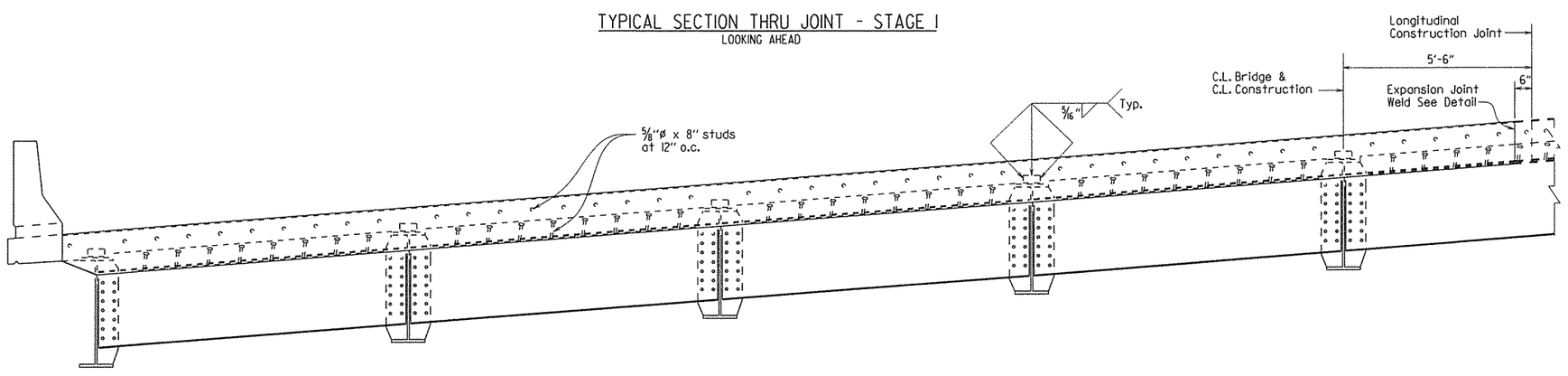
Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

## ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED

No Scale

## TYPICAL SECTION THRU JOINT - STAGE I

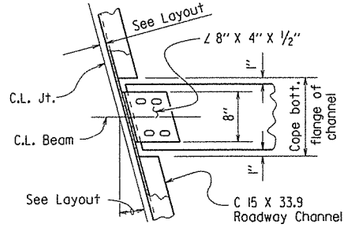
LOOKING AHEAD




Beam No. 9 8 7 6 5

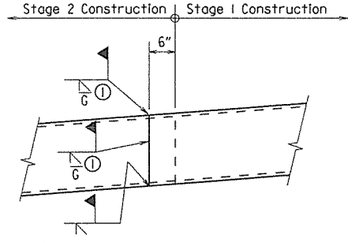
## TYPICAL SECTION THRU JOINT - STAGE 2

LOOKING AHEAD




## CHANNEL CONNECTION DETAIL

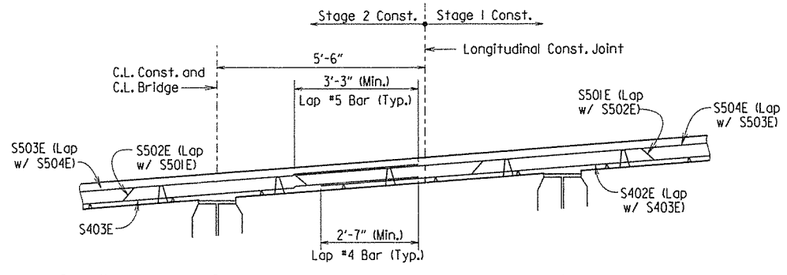
NO SCALE




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

## DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

Looking Ahead
No Scale




Beam No. 5 4

## LAP SPLICE DETAIL

No Scale

NOTE:
For Bars not shown, see Typical Roadway Section, Dwg. No. 56220.

Laps for Transverse Reinforcing between stages of construction shall not be tied.

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 2 OF 8
DETAILS OF 190'-0" CONT. COMP. W-BEAM UNIT
TRACE CREEK
ROUTE SEC.

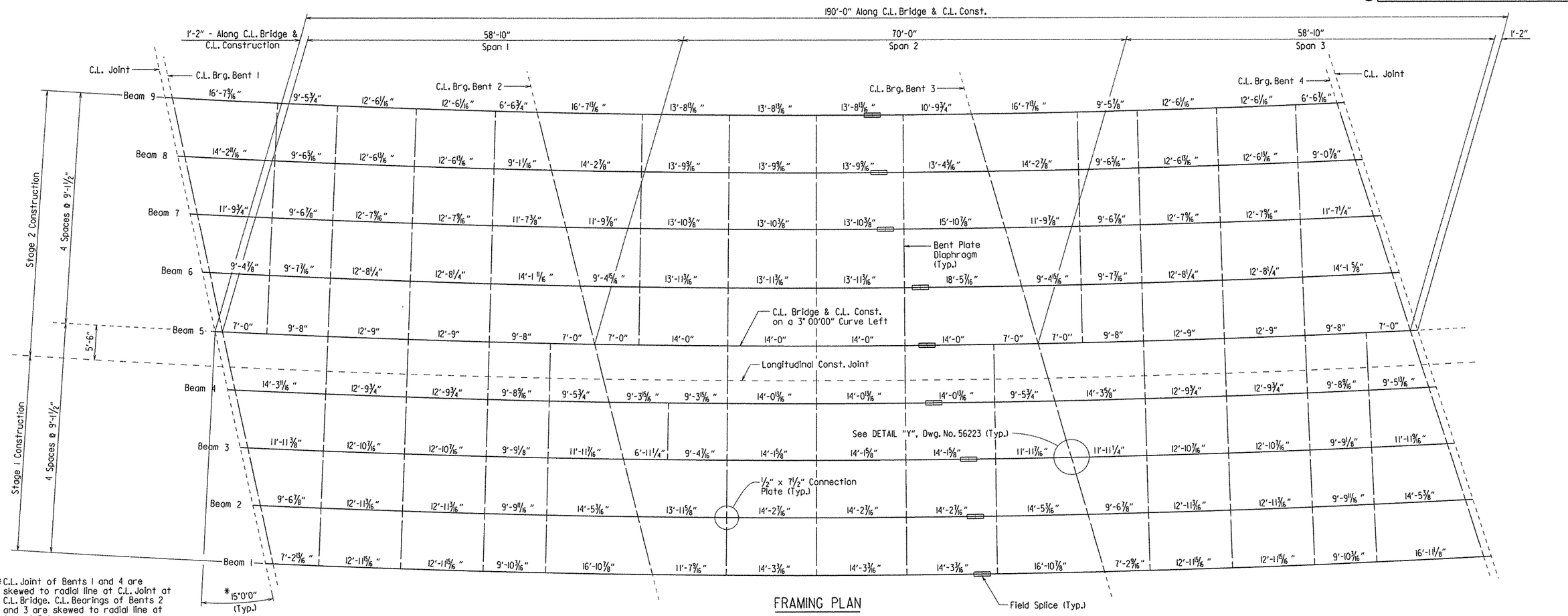
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/30/14
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BRIDGE NO. 07299 DRAWING NO. 56221

PRINT DATE: 10-OCT-2014

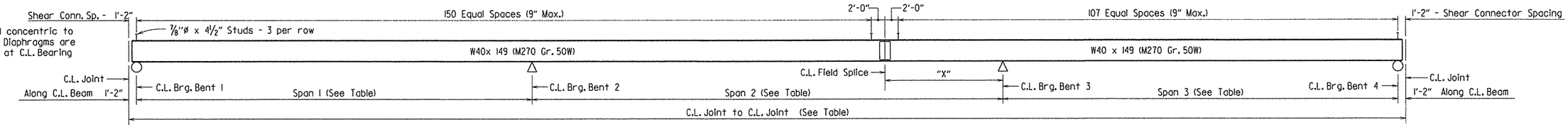
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 115 | 359 |
| | | | | (1) 07299 - SPAN DETAILS - 56222 | | | | |




*C.L. Joint of Bents 1 and 4 are skewed to radial line at C.L. Joint at C.L. Bridge. C.L. Bearings of Bents 2 and 3 are skewed to radial line at C.L. of Bridge.

## FRAMING PLAN

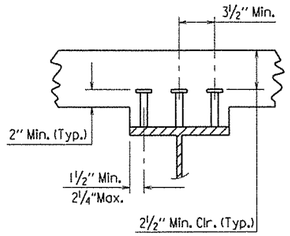
NOTE:
Beams are curved and concentric to C.L. Bridge. Bent Plate Diaphragms are on radial lines, except at C.L. Bearing of Bents.




## BEAM ELEVATION
No Scale

## TABLE OF CURVED BEAM LENGTHS

| | C.L. Joint to C.L. Joint | Bearing 1 to Splice | Bearing to Bearing | | | "X" Measured Along Beam |
|---|---|---|---|---|---|---|
| | | | Span 1 | Span 2 | Span 3 | |
| Beam 9 | 186'-4⅝" | 110'-8⅛" | 57'-8⅜" | 68'-7⅝" | 57'-8⅜" | 15'-8" |
| Beam 8 | 187'-3¼" | 109'-8⅜" | 57'-11⅛" | 68'-11⅞" | 57'-11⅛" | 17'-3" |
| Beam 7 | 188'-2⅛" | 108'-9" | 58'-3⅛" | 69'-3⅞" | 58'-3⅛" | 18'-10" |
| Beam 6 | 189'-0⅝" | 112'-3⅞" | 58'-6½" | 69'-7⅝" | 58'-6½" | 15'-11" |
| Beam 5 | 190'-0" | 111'-4" | 58'-10" | 70'-0" | 58'-10" | 17'-6" |
| Beam 4 | 190'-11⅛" | 110'-4⅜" | 59'-1½" | 70'-4⅛" | 59'-1½" | 19'-1" |
| Beam 3 | 191'-9⅝" | 113'-10⅛" | 59'-4⅛" | 70'-8" | 59'-4⅛" | 16'-2" |
| Beam 2 | 192'-9½" | 112'-11¼" | 59'-8⅛" | 71'-0⅛" | 59'-8⅛" | 17'-9" |
| Beam 1 | 193'-7½" | 111'-11¾" | 59'-11¾" | 71'-4" | 59'-11¾" | 19'-4" |




Stud Shear Connectors shown shall be ⅞"ø x 4½" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown, at the ratio of 1.361 -¾"ø studs in place 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

NOTE:
Bolted Field Splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the Plan Quantities.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

# SHEET 3 OF 8
# DETAILS OF 190'-0" CONT. COMP. W-BEAM UNIT
# TRACE CREEK

ROUTE SEC.

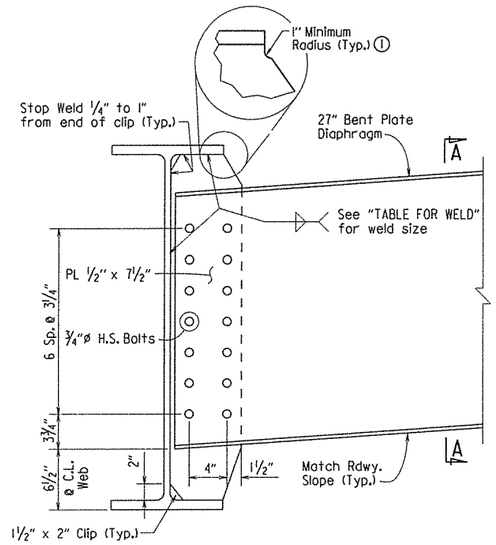
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 01/30/14 FILENAME: b050230xl_sl.dgn
CHECKED BY: SWP DATE: 9/17/14 SCALE: ⅛" = 1'-0"
DESIGNED BY: TMG DATE: 4/2013

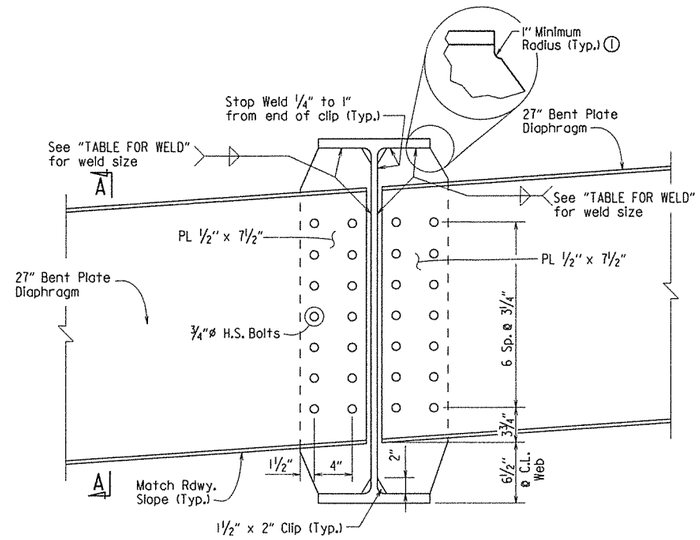
BRIDGE NO. 07299 DRAWING NO. 56222

PRINT DATE: 10-OCT-2014

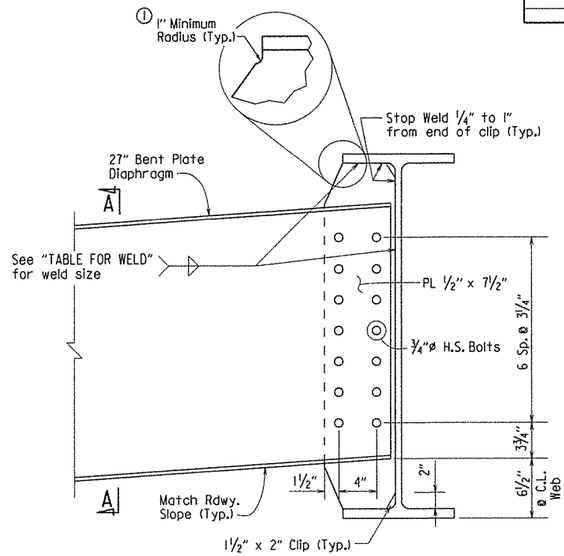
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 1 | 8 |
| | | | | ① | 07299 - | SPAN DETAILS - | 56223 | |




DIAPHRAGM CONNECTION A
No Scale

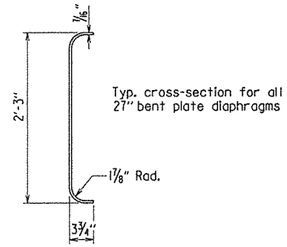



DIAPHRAGM CONNECTION B
No Scale

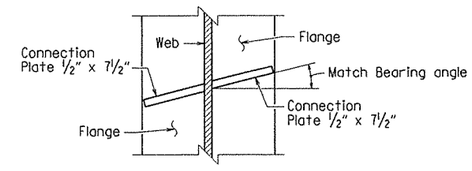



DIAPHRAGM CONNECTION C
No Scale

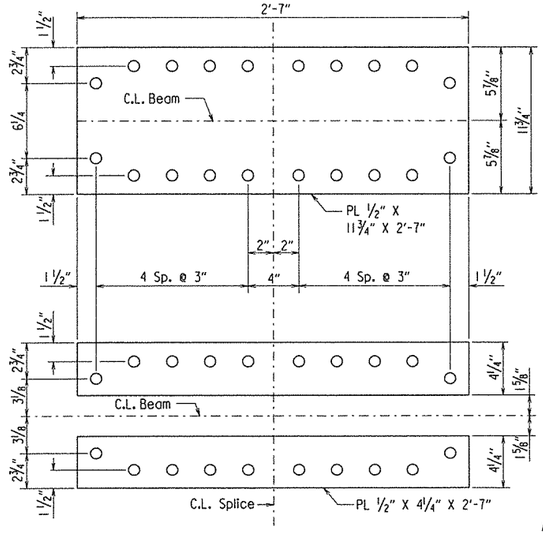
① If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.



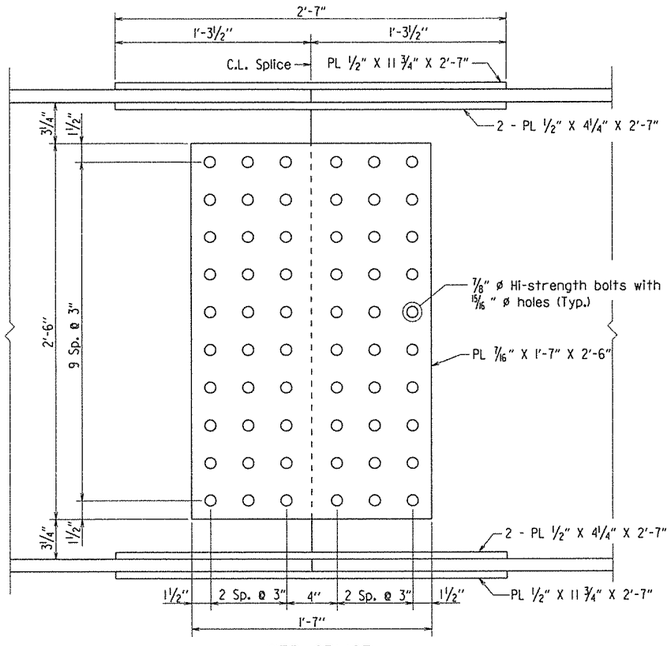

SECTION A-A
No Scale




DETAIL "Y"
No Scale




FLANGE SPLICE




WEB SPLICE

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

FIELD SPLICE DETAILS
No Scale

TABLE FOR WELD

| Material Thickness Of Thicker Part Joined (Inches) | Minimum Size Of Fillet Weld (Inches) | Single Pass Weld Must Be Used |
|---|---|---|
| To 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.

STATE OF ARKANSAS
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No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 8
DETAILS OF 190'-0" CONT.
COMP. W-BEAM UNIT
TRACE CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

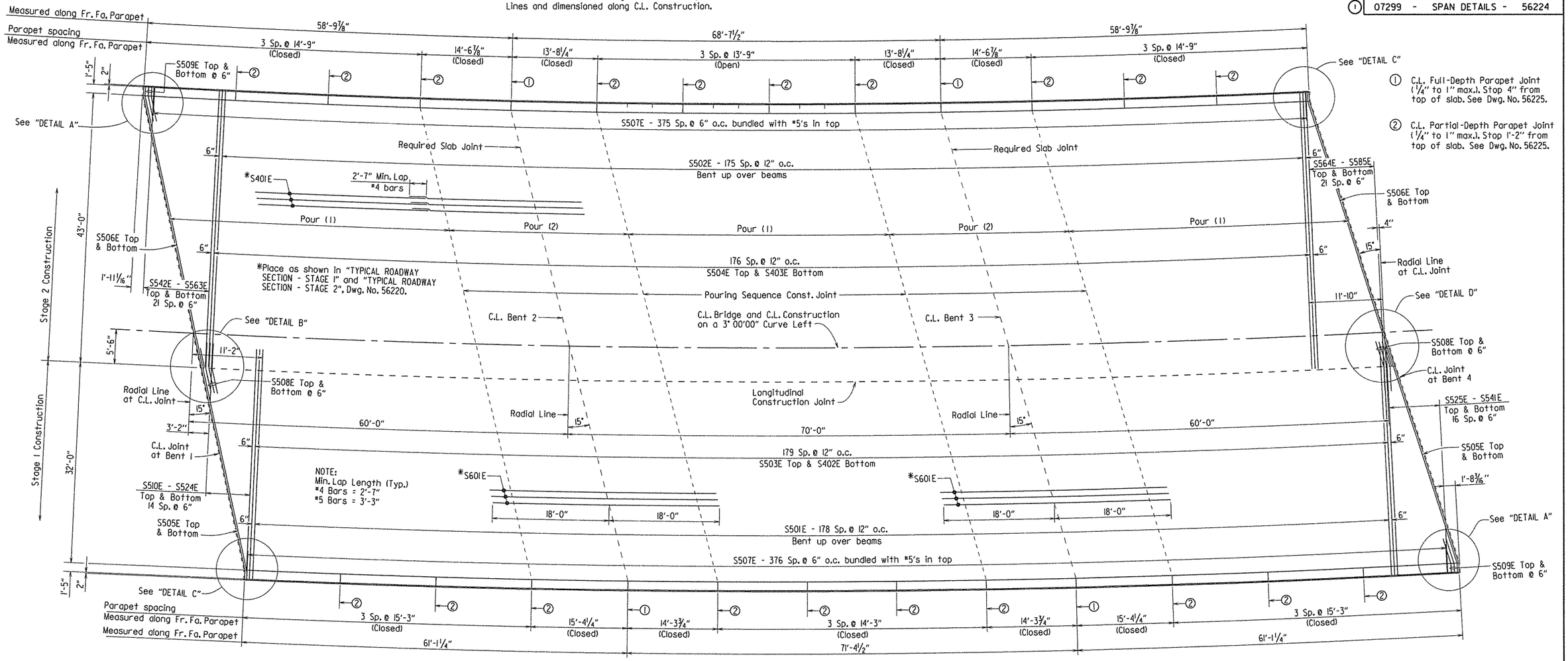
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CHECKED BY: SWD DATE: 9/17/14
DESIGNED BY: TMG DATE: 4/2013
FILENAME: b050230xl_sl.dgn
SCALE: NO SCALE

BRIDGE NO. 07299 DRAWING NO. 56223

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 117 | 309 |
| | | | | (1) 07299 - SPAN DETAILS - 56224 | | | | |

NOTE: All Longitudinal Lines and Longitudinal reinforcing steel shall be placed on curves concentric with C.L. Construction. All transverse reinforcing steel shall be placed on Radial Lines and dimensioned along C.L. Construction.

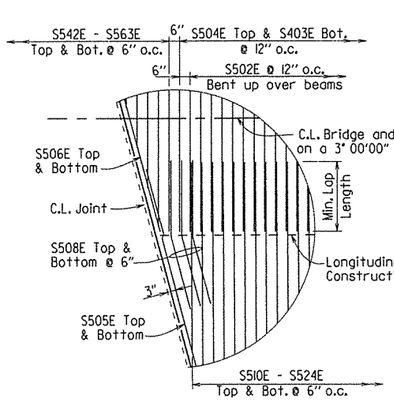



① C.L. Full-Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of slab. See Dwg. No. 56225.

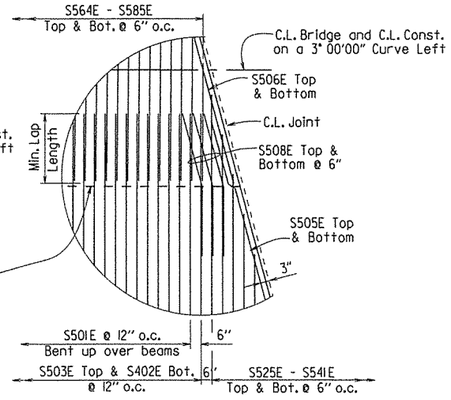
② C.L. Partial-Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of slab. See Dwg. No. 56225.

## REINFORCING PLAN AND POURING SEQUENCE

Scale ⅛" = 1'-0"

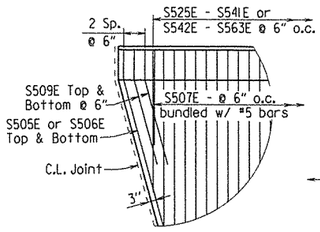



DETAIL B
No Scale

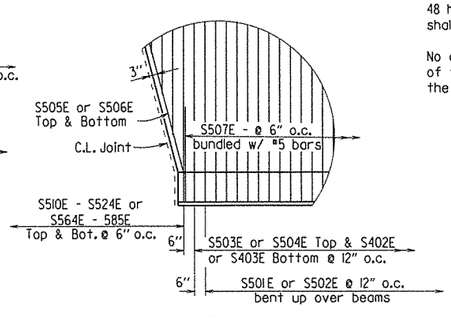



DETAIL D
No Scale

NOTE:
For "CONCRETE PLACEMENT PROCEDURE" Detail, see Dwg. No. 56226.




DETAIL A
No Scale




DETAIL C
No Scale

POURING SEQUENCE NOTE:
For each stage of construction, the deck concrete shall be placed in accordance with the sequence shown. Pours with the same number may be placed simultaneously or seperately. 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 concrete bridge railing pours shall be made until 72 hours have elapsed from the completion of the deck pours for that stage of construction. The Contractor must obtain approval from the Engineer for any deviations from the poring sequences shown.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# SHEET 5 OF 8
# DETAILS OF 190'-0" CONT. COMP. W-BEAM UNIT TRACE CREEK

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

| | | | |
|---|---|---|---|
| DRAWN BY: MRE | DATE: 01/30/14 | FILENAME: b050230x1_s1.dgn | |
| CHECKED BY: SWP | DATE: 9/17/14 | SCALE: 1/8" = 1'-0" | |
| DESIGNED BY: TMG | DATE: 4/2013 | | |

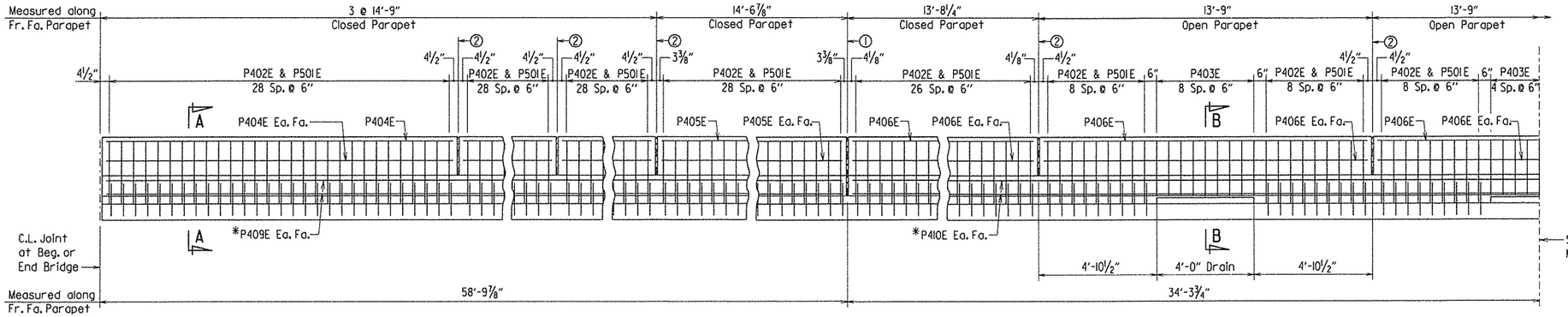
BRIDGE NO. 07299 DRAWING NO. 56224

PRINT DATE: 10/10/2014

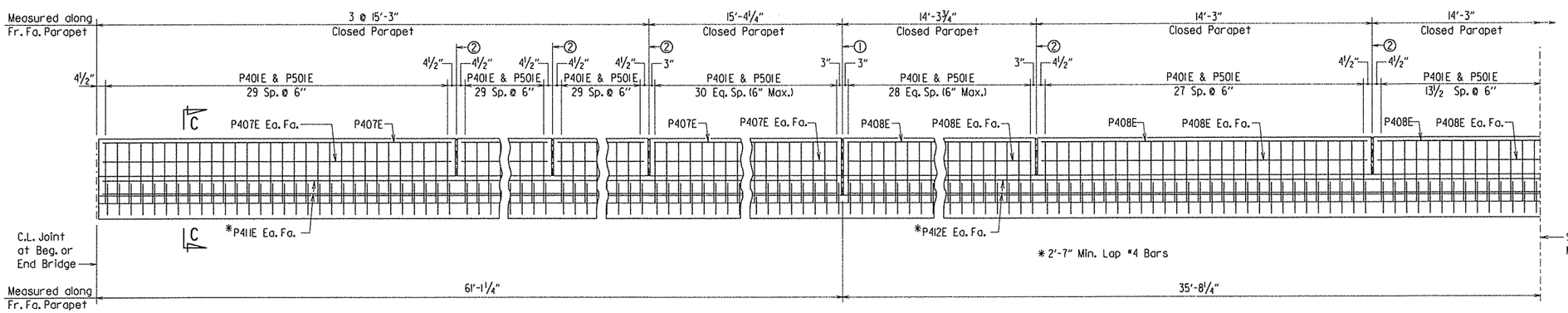
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 118 | 359 |
| | | | | ① | 07299 | - SPAN DETAILS - | | 56225 |

① C.L Full-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan & Pouring Sequence" Dwg. No. 56224. Stop 4" from top of slab.

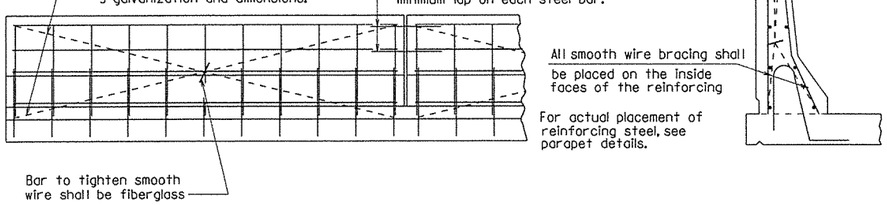
② C.L Partial-Depth Parapet Joint (1/4" to 1" max.) as shown in "Reinforcing Plan & Pouring Sequence" Dwg. No. 56224. Stop 1'-2" from top of slab.




PARAPET RAIL DETAIL - LOW SIDE




PARAPET RAIL DETAIL - HIGH SIDE

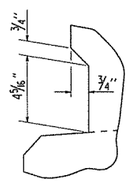



All panels shall be braced as required to prevent racking. All parapet joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved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

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

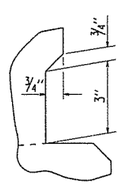
DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

No Scale



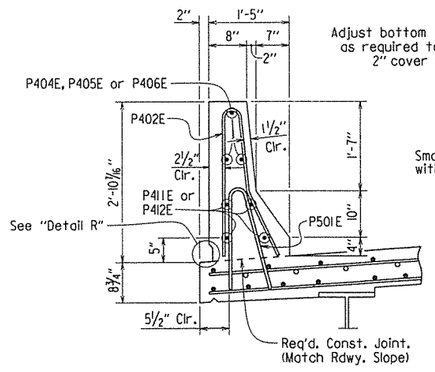

DETAIL R

No Scale




DETAIL S

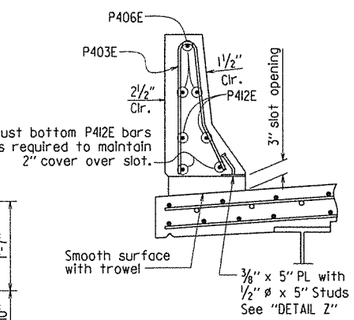
No Scale




SECTION A-A

Low Side

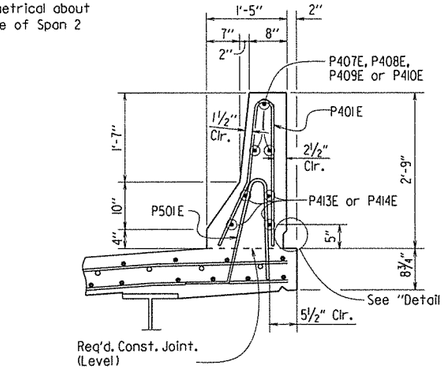
Scale: 3/4" = 1'-0"




SECTION B-B

Low Side

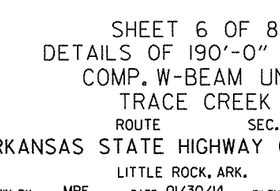
Scale: 3/4" = 1'-0"




SECTION C-C

High Side

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




DETAIL Z

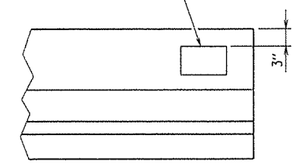
No Scale

NOTE: Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

NAME PLATE DETAIL

No Scale

Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge. (Right side of roadway only)




STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
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10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 6 OF 8
DETAILS OF 190'-0" CONT.
COMP. W-BEAM UNIT
TRACE CREEK
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

| | | | |
|---|---|---|---|
| DRAWN BY: MRE | DATE: 01/30/14 | FILENAME: b050230xl_sl.dgn | |
| CHECKED BY: SWP | DATE: 2/11/14 | SCALE: 3/8" = 1'-0" or as noted | |
| DESIGNED BY: TMG | DATE: 4/2015 | | |

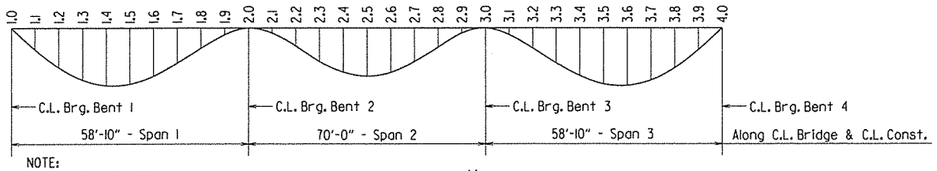
BRIDGE NO. 07299 DRAWING NO. 56225

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 119 | 309 |
| | | | | ① | 07299 | - SPAN DETAILS - | | 56226 |

## TABLE OF DEAD LOAD DEFLECTIONS-INCHES

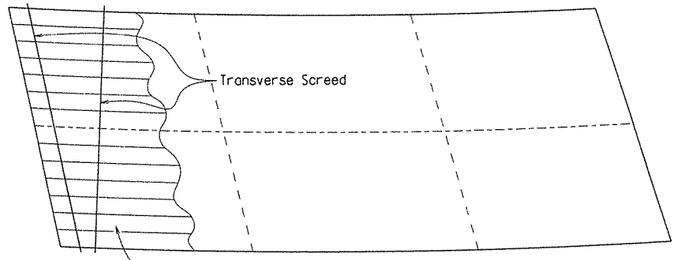
| | Span | Point of Deflection | Structural Steel | Structural Steel+Slab | Str. Steel+Slab +Parapet |
|---|---|---|---|---|---|
| BEAMS 1-9 | 1 | 1.0 | 0 | 0.000 | 0.000 |
| | | 1.1 | 0.030 | 0.196 | 0.201 |
| | | 1.2 | 0.056 | 0.362 | 0.371 |
| | | 1.3 | 0.074 | 0.478 | 0.489 |
| | | 1.4 | 0.082 | 0.529 | 0.541 |
| | | 1.5 | 0.080 | 0.515 | 0.527 |
| | | 1.6 | 0.068 | 0.441 | 0.451 |
| | | 1.7 | 0.050 | 0.320 | 0.328 |
| | | 1.8 | 0.029 | 0.183 | 0.188 |
| | | 1.9 | 0.010 | 0.061 | 0.063 |
| | 2 | 2.0 | 0.000 | 0.000 | 0.000 |
| | | 2.1 | 0.006 | 0.047 | 0.048 |
| | | 2.2 | 0.023 | 0.164 | 0.168 |
| | | 2.3 | 0.044 | 0.307 | 0.314 |
| | | 2.4 | 0.059 | 0.404 | 0.414 |
| | | 2.5 | 0.064 | 0.442 | 0.453 |
| | | 2.6 | 0.059 | 0.407 | 0.417 |
| | | 2.7 | 0.044 | 0.307 | 0.314 |
| | | 2.8 | 0.025 | 0.175 | 0.179 |
| | | 2.9 | 0.006 | 0.047 | 0.048 |
| | 3 | 3.0 | 0.000 | 0.000 | 0.000 |
| | | 3.1 | 0.010 | 0.061 | 0.063 |
| | | 3.2 | 0.029 | 0.183 | 0.188 |
| | | 3.3 | 0.050 | 0.320 | 0.328 |
| | | 3.4 | 0.068 | 0.437 | 0.447 |
| | | 3.5 | 0.080 | 0.515 | 0.527 |
| | | 3.6 | 0.082 | 0.529 | 0.541 |
| | | 3.7 | 0.074 | 0.479 | 0.490 |
| | | 3.8 | 0.056 | 0.364 | 0.373 |
| | | 3.9 | 0.030 | 0.197 | 0.202 |
| | | 4.0 | 0.000 | 0.000 | 0.000 |



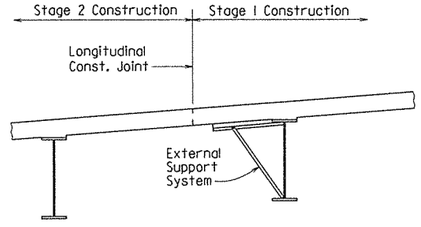

NOTE:
Camber for Dead Load Deflection plus Vertical curve plus/minus 1/4" tolerance. Deflections shown are along C.L. Beam from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

## DEAD LOAD DEFLECTION DIAGRAM
No Scale

NOTE: At the Contractor's option, the transverse screed may be placed parallel to the skew or perpendicular to C.L. Bridge.




## CONCRETE PLACEMENT PROCEDURE
No Scale




Stage 1 external supports in this bay shall remain in place until after completion of the Stage 2 deck pour. See Subsection 802.15 for additional information regarding their removal.

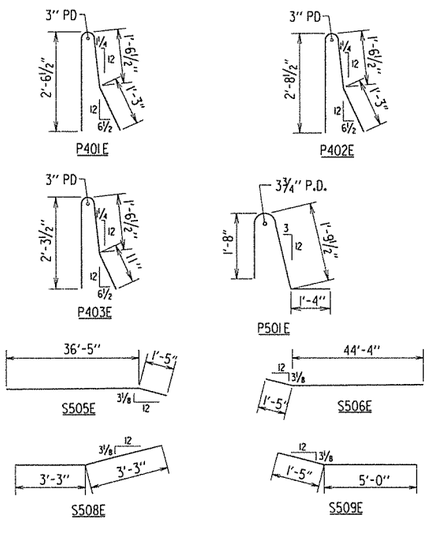
## DECK SUPPORT AT LONGITUDINAL CONSTRUCTION JOINT
LOOKING AHEAD
No Scale

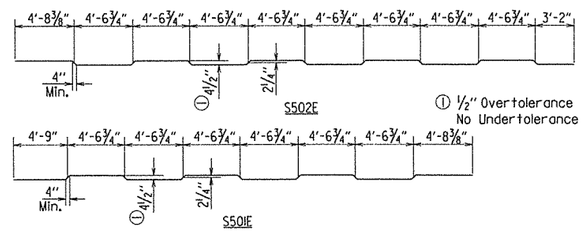
## BAR LIST

| MARK | NO. REQ'D. | LENGTH | P.D. |
|---|---|---|---|
| P401E | 384 | 5'-5" | 3" |
| P402E | 340 | 5'-7" | 3" |
| P403E | 27 | 4'-11" | 3" |
| P404E | 18 | 14'-4" | Str. |
| P405E | 6 | 14'-2" | Str. |
| P406E | 15 | 13'-4" | Str. |
| P407E | 24 | 14'-11" | Str. |
| P408E | 15 | 13'-11" | Str. |
| P409E | 16 | 30'-7" | Str. |
| P410E | 8 | 35'-6" | Str. |
| P411E | 16 | 31'-8" | Str. |
| P412E | 8 | 36'-10" | Str. |
| | | | |
| P501E | 724 | 6'-7" | 3 3/4" |
| | | | |
| S401E | 1,100 | 40'-10" | Str. |
| S402E | 180 | 36'-2" | Str. |
| S403E | 177 | 44'-5" | Str. |
| | | | |
| S501E | 179 | 37'-7" | 3 3/4" |
| S502E | 176 | 45'-4" | 3 3/4" |
| S503E | 180 | 36'-10" | Str. |
| S504E | 177 | 44'-5" | Str. |
| S505E | 4 | 37'-10" | 3 3/4" |
| S506E | 4 | 45'-9" | 3 3/4" |
| S507E | 753 | 4'-6" | Str. |
| S508E | 8 | 6'-6" | 3 3/4" |
| S509E | 12 | 6'-5" | 3 3/4" |
| S510E - S524E | 2 Ea. | 9'-6" to 36'-8" | Str. |
| S525E - S541E | 2 Ea. | 36'-10" to 6'-5" | Str. |
| S542E - S563E | 2 Ea. | 7'-5" to 44'-5" | Str. |
| S564E - S585E | 2 Ea. | 44'-5" to 6'-6" | Str. |
| | | | |
| S601E | 174 | 36'-0" | Str. |
| | | | |

BENDING DIAGRAMS

Dimensions are out to out of bars.




NOTE: Bars designated with an "E" suffix are to be epoxy coated.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 7 OF 8
DETAILS OF 190'-0" CONT.
COMP. W-BEAM UNIT
TRACE CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 03/20/14 FILENAME: b050230xl_sl.dgn
CHECKED BY: SWP DATE: 5/17/14 SCALE: No Scale
DESIGNED BY: TMG DATE: 4/2013
BRIDGE NO. 07299 DRAWING NO. 56226

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 120 | 209 |
| | | | | ① | 07299 | - SPAN DETAILS - | 56227 | |

## 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 (Gr. 60 AASHTO M31 or M322, 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 |

CONCRETE :
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load Use of a longitudinal strike-off is prohibited. For each stage of Construction, a minimum of 72 hours shall elapse between completion of the slab and the pouring of the parapet railing.

REINFORCING STEEL :
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL :
All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams, Diaphragms, Connection Plates and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05.

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 or compressive stresses.

All beams shall be blocked in their true position in the shop with the webs horizontal. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

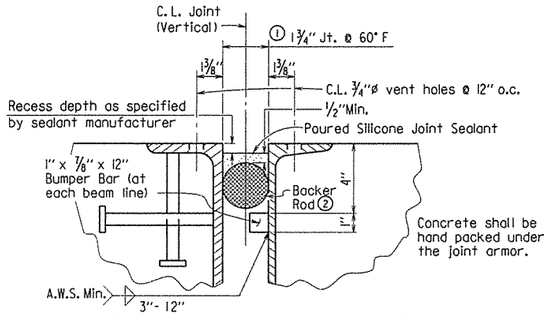
All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer 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.

All field connections shall be bolted with high-strength bolts. Bolts in Field Splices shall be ⅞" diameter bolts with 15/16" open holes at a spacing of 3". Bolts in Diaphragm Connections shall be ¾" diameter bolts with 11/16" open holes at a spacing of 2 ¾" unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the beam flanges.

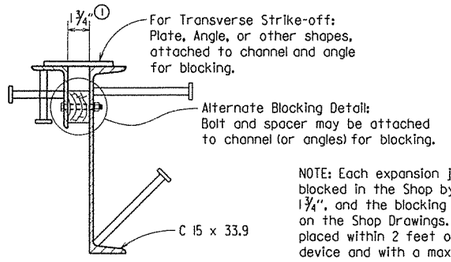
Steel diaphragms shall be installed as beams are erected unless otherwise noted. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the manufacturer.

① Installation is limited to 40° F Min. and 80° F Max. See Table A for installation temperatures other than 60° F




DETAIL OF POURED SILICONE JOINT




DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

TABLE A

| ① Width perpendicular to joint at 24 hour average temperature of: | | |
|---|---|---|
| 40° F | 60° F | 80° F |
| 1⅞" | 1¾" | 1⅝" |

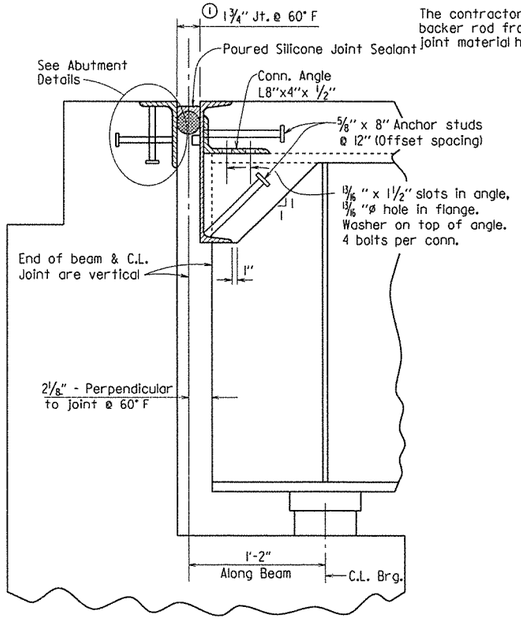
NOTE: Each expansion joint device shall be blocked in the Shop by the Fabricator to 1¾", and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

② BACKER ROD NOTE:

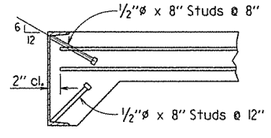
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as 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.

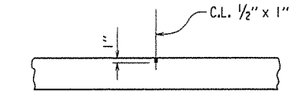



JOINT AT ABUTMENT



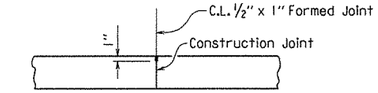

Note: As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS




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. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations.

SLAB JOINT 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.

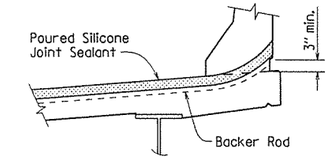
LONGITUDINAL CONSTRUCTION JOINT DETAIL

## EXPANSION DEVICE INSTALLATION AT END BENTS

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

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams 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, the opening adjusted for temperature, and the backwall constructed.

2) The backwall shall be poured to the optional construction joint after beams 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. Backfill shall not be placed behind the backwall until the deck concrete on the adjacent span has been placed.




JOINT SEAL PLACEMENT AT PARAPET

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 8 OF 8
DETAILS OF 190'-0" CONT. COMP. W-BEAM UNIT
TRACE CREEK
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

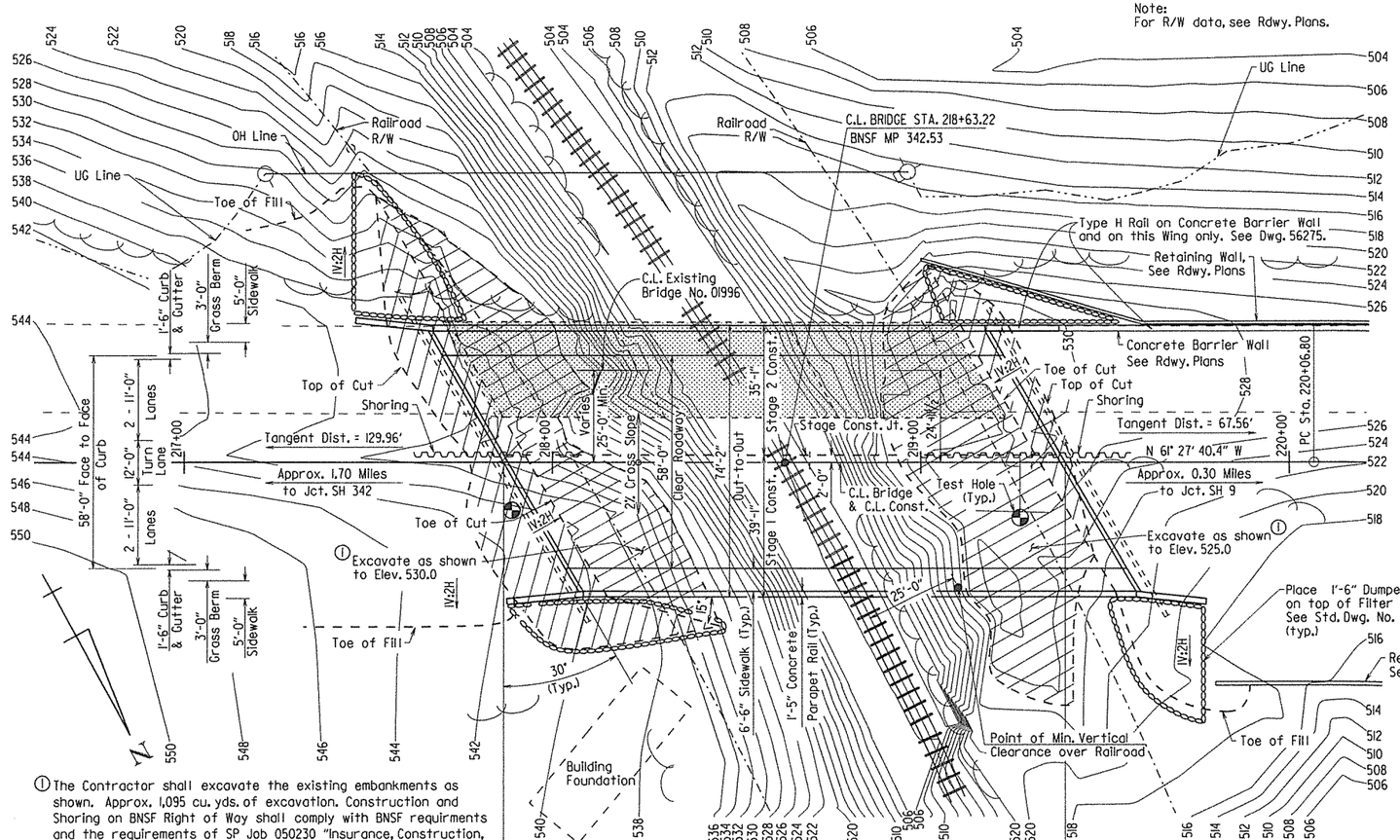
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SCALE: No Scale

BRIDGE NO. 07299 DRAWING NO. 56227

PRINT DATE: 10/10/2014

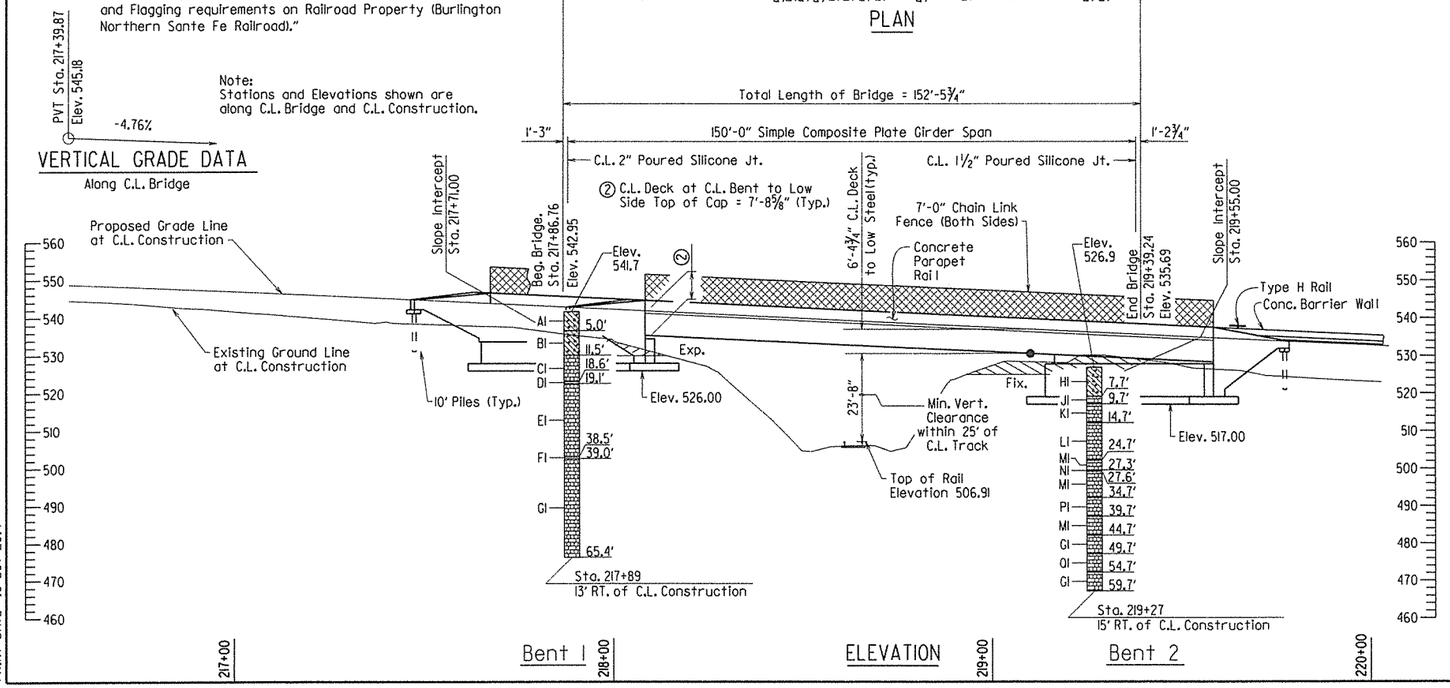
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 121 | 359 |
| | | | | ① | 07300 - | LAYOUT | - 56228 | |

Note:
For R/W data, see Rdwy. Plans.




① The Contractor shall excavate the existing embankments as shown. Approx. 1,095 cu. yds. of excavation. Construction and Shoring on BNSF Right of Way shall comply with BNSF requirments and the requirements of SP Job 050230 "Insurance, Construction, and Flagging requirements on Railroad Property (Burlington Northern Sante Fe Railroad)."

Note:
Stations and Elevations shown are along C.L. Bridge and C.L. Construction.




## GENERAL NOTES

BENCH MARK: NGS MARK L 308; 19.29 RT. STA 223+01.20, EL = 518.96.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2003 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 Interims.

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 (Grade 60, AASHTO M31 or M322, Type A) | fy = 60,000 psi |
| Structural Steel (AASHTO M 270, Gr. 50W) | Fy = 50,000 psi |
| Structural Steel (AASHTO M 270, Gr. 36) | Fy = 36,000 psi |

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL PILING: Piling in Bents 1 and 2 shall be HP12 X 53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 75 tons per pile and into the material designated as Hard Dolostone on the boring legend. Lengths shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with Subsection 805.14. Piling in Bents 1 and 2 shall be driven after embankment is in place. On all piles, the Contractor shall use approved steel H-Pile driving points.

FOOTINGS: Footings shall be set a minimum of 2'-0" into material designated as Hard Dolostone on the boring legend. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavations shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of surrounding ground in accordance with Subsection 801.08.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. The 6'-6" Sidewalk shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6, Broomed Finish.

| DETAIL DRAWINGS: | DRAWING NO. |
|---|---|
| Details of End Bents | 56231 - 56239 |
| Elastomeric Bearings | 56240 |
| 150'-0" Simple Comp. Plate Girder Span | 56241 - 56247 |
| Chain Link fence | 56248 |

EXISTING BRIDGE: Existing Bridge No. 01996 is 141' in length and 29' wide and is comprised of continuous steel beam spans supported by concrete piers. Centerline of existing bridge is located approximately 25' left of the proposed centerline of construction.

SHORING: Shoring is required at Bridge Ends for Stage 1 Construction. See SP Job No. 050230 "Shoring".

REMOVAL AND SALVAGE: After Stage 1 Construction of the new bridge is open to traffic, existing Bridge No. 01996 shall be removed in accordance with Section 205. All material from the existing bridge shall become property of the Contractor. Existing abutment foundations which interfere with new construction shall be removed as directed by the Engineer.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

## BORING LEGEND

A1-Moist, Stiff, Reddish Brown Clay with Gravel(Dolostone Fragments)
B1-Wet, Stiff, Reddish Brown Clay with Gravel(Dolostone Fragments)
C1-DOLOSTONE WITH WEATHERED SEAMS - Light Gray, Medium Bedded, Hard, with Moderate Dip and Fractured Layers
D1-Cavity (18.6' to 19.1')
E1-DOLOSTONE WITH WEATHERED SEAMS - Light Gray, Medium Bedded, Hard, with Moderate Dip and Fractured Layers
F1-Cavity (38.5' to 39.0')
G1-DOLOSTONE WITH WEATHERED SEAMS - Light Gray, Medium Bedded, Hard, with Moderate Dip and Fractured Layers
H1-Moist, Hard, Reddish Brown Clay with Gravel(Dolostone Fragments)
J1-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
K1-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and Vertically Fractured
L1-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip and Vertically Fractured Layers
M1-DOLOSTONE WITH WEATHERED SEAMS - Light Gray, Medium Bedded, Hard, with Moderate Dip and Vertically Fractured Layers
N1-Soil-filled Cavity (27.3' to 27.6')
P1-DOLOSTONE WITH WEATHERED SEAMS - Light Gray, Thick Bedded, Hard, with Moderate Dip and Vertically Fractured Layers
O1-DOLOSTONE WITH WEATHERED SEAMS - Light Gray, Thick Bedded, Hard, with Moderate Dip and Fractured Layers

## "N" VALUES

Sta. 217+89 - 13' RT. of C.L. Construction
5.5- 6.5, N=9
11.5- 11.6, N=60(1")

Sta. 219+27 - 15' RT. of C.L. Construction
4.9- 5.5, N=39(7")

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# LAYOUT OF BRIDGE OVER BNSF RAILROAD HWY. 9 - SO. OF HWY. 342 (MAMMOTH SPRING) (S) FULTON COUNTY

ROUTE 63 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION

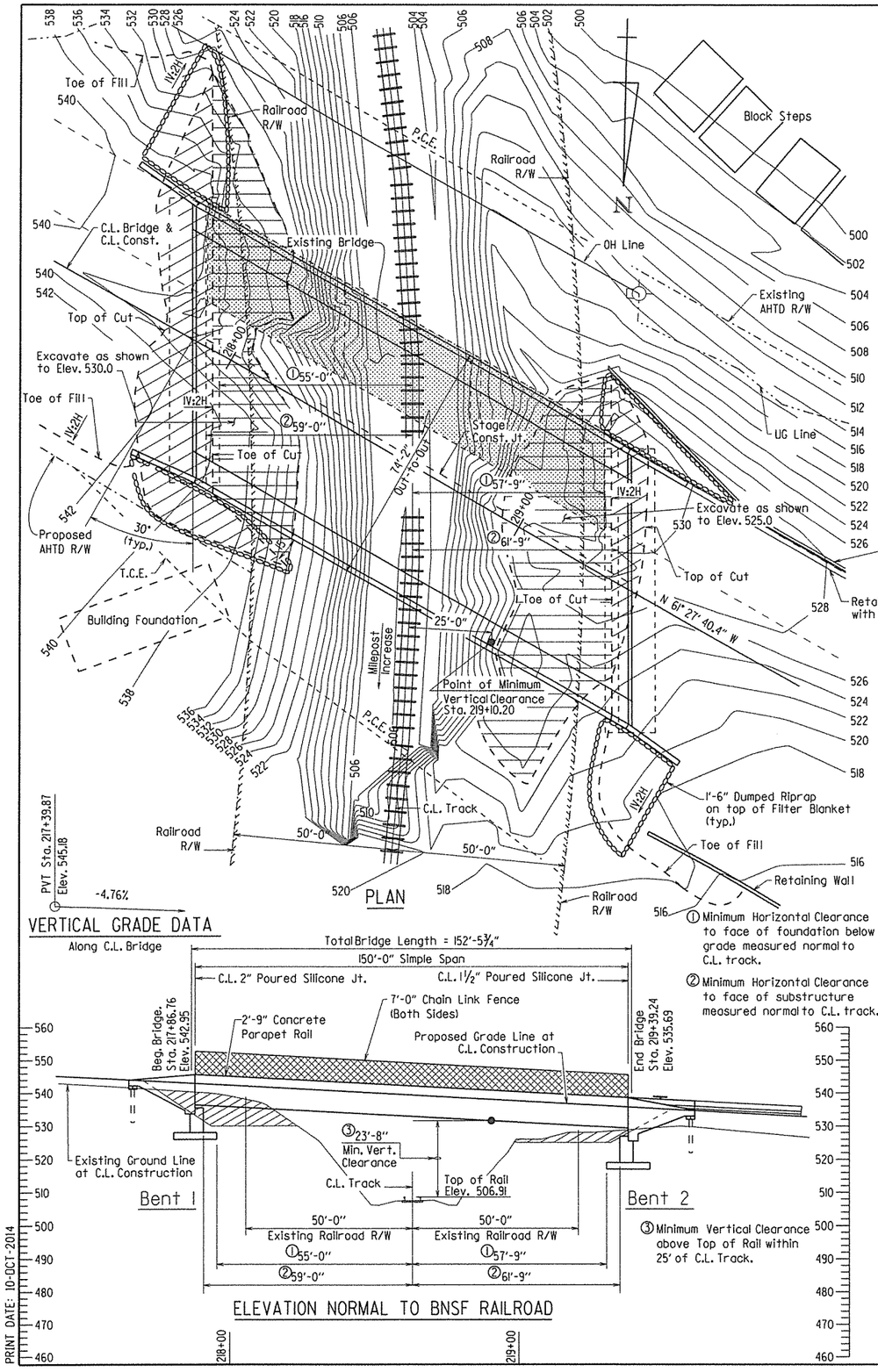
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 3/9/12
CHECKED BY: JGT DATE: 8/25/14
DESIGNED BY: SWP DATE: 2/2012
FILENAME: b050230x2_11.dgn
SCALE: 1"=20'-0"

BRIDGE NO. 07300 DRAWING NO. 56228

PRINT DATE: 10-OCT-2014

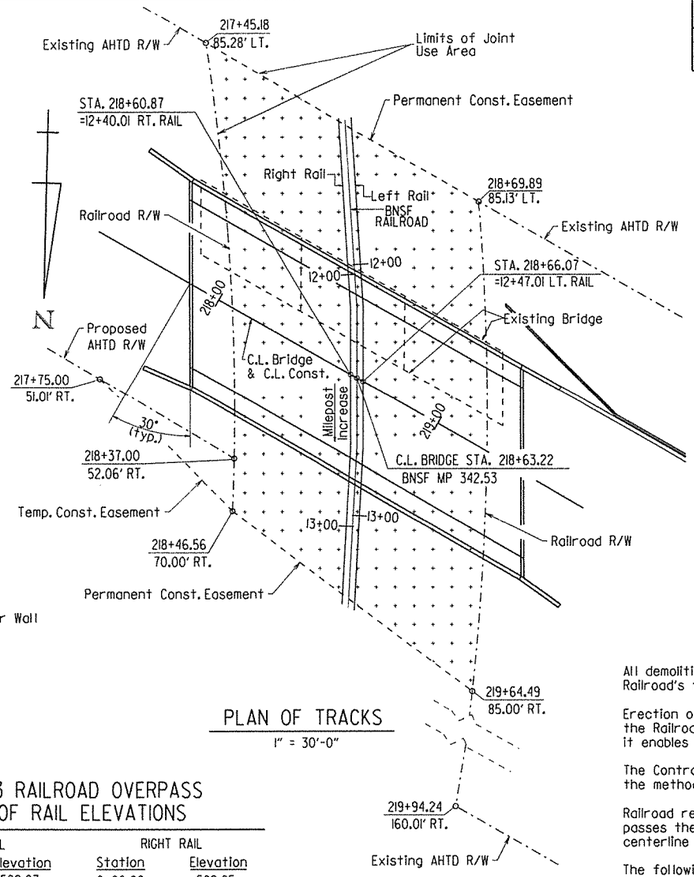
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 122 | 309 |
| | | | | (1) | 07300 - | EXHIBIT A | - 56229 | |




① Minimum Horizontal Clearance to face of foundation below grade measured normal to C.L. track.

② Minimum Horizontal Clearance to face of substructure measured normal to C.L. track.

③ Minimum Vertical Clearance above Top of Rail within 25' of C.L. Track.



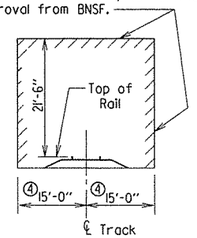

PLAN OF TRACKS
1" = 30'-0"

## HWY. 63 RAILROAD OVERPASS TOP OF RAIL ELEVATIONS

| LEFT RAIL | | RIGHT RAIL | |
|---|---|---|---|
| Station | Elevation | Station | Elevation |
| 0+00.00 | 502.07 | 0+00.00 | 502.05 |
| 1+00.00 | 502.29 | 1+00.00 | 502.29 |
| 2+00.00 | 502.62 | 2+00.00 | 502.62 |
| 3+00.00 | 502.74 | 3+00.00 | 502.71 |
| 4+00.00 | 502.85 | 4+00.00 | 502.73 |
| 5+00.00 | 503.35 | 5+00.00 | 503.13 |
| 6+00.00 | 504.08 | 6+00.00 | 503.78 |
| 7+00.00 | 504.77 | 7+00.00 | 504.46 |
| 8+00.00 | 505.39 | 8+00.00 | 505.08 |
| 9+00.00 | 505.89 | 9+00.00 | 505.58 |
| 10+00.00 | 506.26 | 10+00.00 | 505.93 |
| 11+00.00 | 506.51 | 11+00.00 | 506.19 |
| 12+00.00 | 506.77 | 11+99.91 | 506.46 |
| 12+07.07 | 506.79 | 12+00.00 | 506.46 |
| 12+47.01 | 506.86 | 12+40.01 | 506.54 |
| 12+86.22 | 506.90 | 12+79.30 | 506.60 |
| 12+97.53 | 506.91 | 12+93.08 | 506.64 |
| 13+00.00 | 506.91 | 13+00.00 | 506.66 |
| 14+00.00 | 506.86 | 14+00.00 | 506.72 |
| 15+00.00 | 507.15 | 15+00.00 | 507.09 |
| 16+00.00 | 507.75 | 16+00.00 | 507.68 |
| 17+00.00 | 508.77 | 17+00.00 | 508.56 |
| 18+00.00 | 509.64 | 18+00.00 | 509.35 |
| 19+00.00 | 510.29 | 19+00.00 | 509.97 |
| 20+00.00 | 510.75 | 20+00.00 | 510.45 |
| 21+00.00 | 511.08 | 21+00.00 | 510.79 |
| 22+00.00 | 511.30 | 22+00.00 | 511.02 |
| 23+00.00 | 511.33 | 23+00.00 | 511.10 |
| 24+00.00 | 511.33 | 24+00.00 | 511.22 |
| 25+00.00 | 511.58 | 25+00.00 | 511.61 |
| 26+00.00 | 512.00 | 26+00.00 | 512.03 |

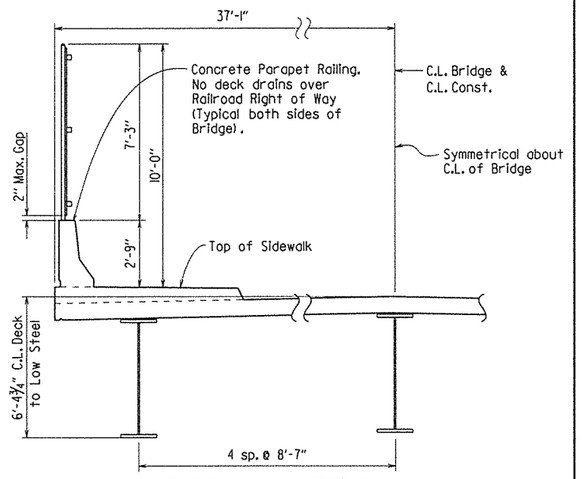
EQUATIONS:
STA. 12+47.01 C.L. LT. RAIL = STA. 218+66.07 C.L. CONSTRUCTION.
STA. 12+40.07 C.L. RT. RAIL = STA. 218+60.37 C.L. CONSTRUCTION.

The elevations of the existing top-of-rail profile shall be verified by the Contractor prior to the beginning of construction.




No construction activities or other obstructions may be placed within these limits without prior written approval from BNSF.

MINIMUM CONSTRUCTION CLEARANCES
SKETCH NORMAL TO TRACK
No Scale
④ Measured normal to track.




TYPICAL HALF SECTION
No Scale

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(s) 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 BNSF Railroad requirements. Construction shall comply with the requirements of SP Job 050230 "Insurance, Construction, and Flagging requirements on Railroad property (Burlington Northern Sante Fe Railroad)." Railroad review and approval of Shoring, Erection, and False work 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 length of the Bridge.

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

Closed Parapet Railing (No Deck Drains). Typical both sides of bridge.

All permanent clearances shall be verified before project closing.

For Railroad coordination refer to the Railroad Minimum Requirements of SP Job 050230 "Insurance, Construction and Flagging Requirments on Railroad Property (Burlington Northern Sante Fe Railroad)".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

# EXHIBIT A
# LAYOUT OF BRIDGE OVER BNSF RAILROAD
# HWY. 9 - SO. OF HWY. 342 (MAMMOTH SPRING) (S) FULTON COUNTY

ROUTE 63 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

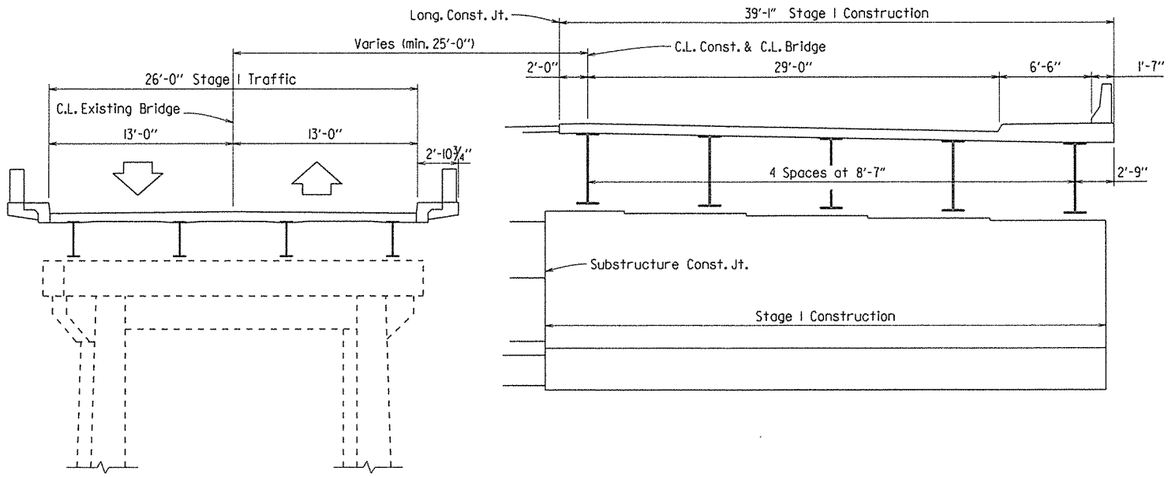
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CHECKED BY: JCT DATE: 6/25/14
DESIGNED BY: SNP DATE: 2/2/2012
FILENAME: b050230x2.11.dgn
SCALE: 1"=20'-0" or as noted.

BRIDGE NO. 07300 DRAWING NO. 56229

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 123 | 309 |

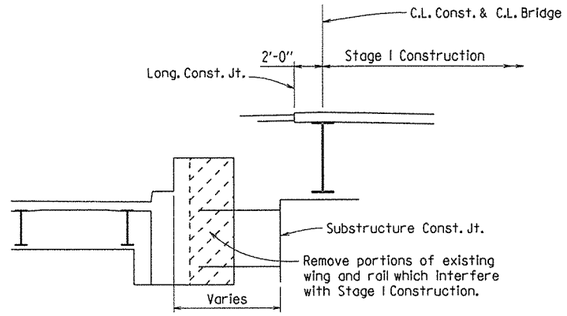
(1) 07300 - STAGED CONSTRUCTION - 56230




Note: After Stage 1 Construction is complete and opened to traffic, the Existing Bridge, No. 01996 shall be removed and Stage 2 Construction completed.

## STAGE 1 CONSTRUCTION

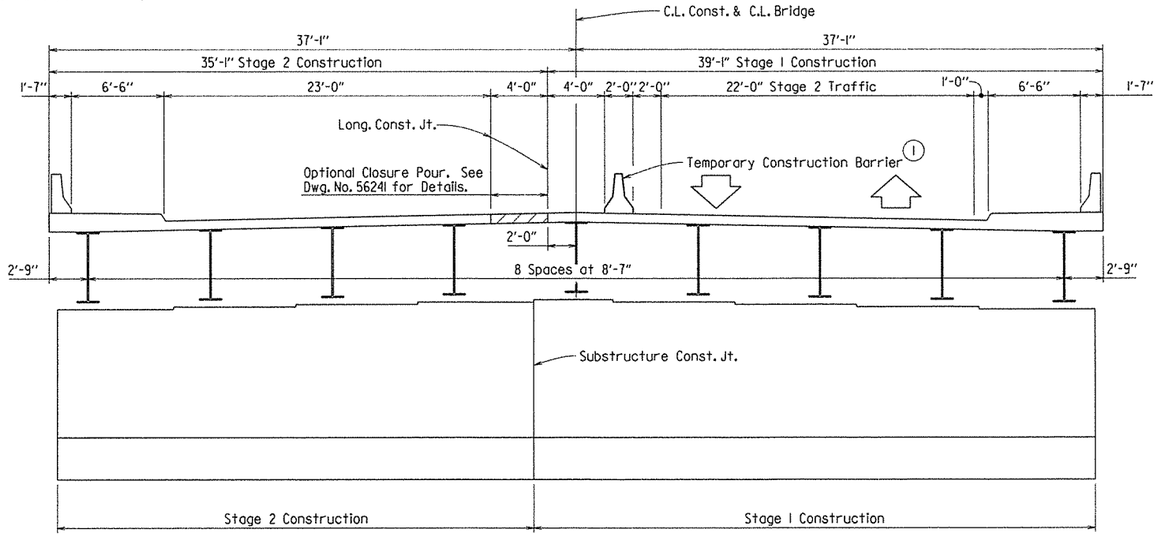
Looking Ahead




## STAGE CONSTRUCTION AT EXISTING END BENTS

Note: Details related to Maintenance of Traffic are shown on Bridge Plans for information only. For Maintenance of Traffic plans and additional information, see Roadway Plans.

(1) Do not connect temporary construction barrier to deck. See Std. Dwg. TC-4 for details.




## STAGE 2 CONSTRUCTION

Looking Ahead

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# DETAILS OF STAGED CONSTRUCTION
# BNSF RAILROAD
# HWY. 9-SO. OF HWY. 342 (MAMMOTH SPRING)(S)
# FULTON COUNTY

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 4/12/2012 FILENAME: b050230x2_sc.dgn
CHECKED BY: NGT DATE: 6/28/14 SCALE: 3/16" = 1'-0"
DESIGNED BY: SWP DATE: 4/2012

BRIDGE NO. 07300 DRAWING NO. 56230

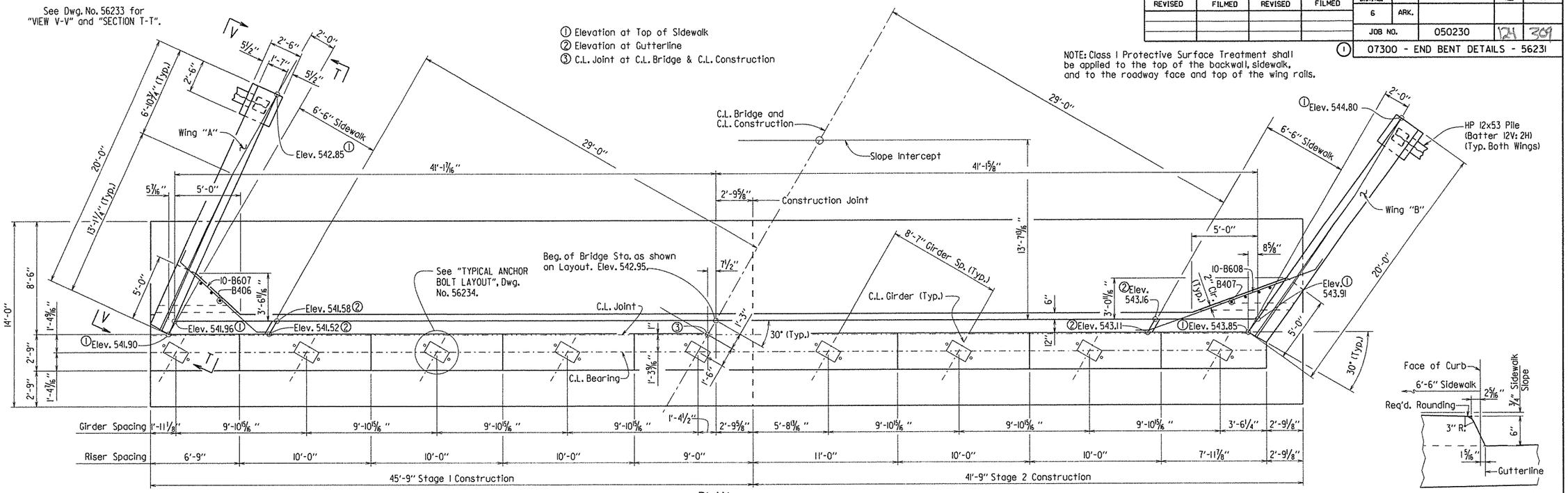
PRINT DATE: 10-OCT-2014

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 124 | 369 |
| | | | | (1) | 07300 - END BENT DETAILS - 56231 | | | |

See Dwg. No. 56233 for "VIEW V-V" and "SECTION T-T".

① Elevation at Top of Sidewalk
② Elevation at Gutterline
③ C.L. Joint at C.L. Bridge & C.L. Construction

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.

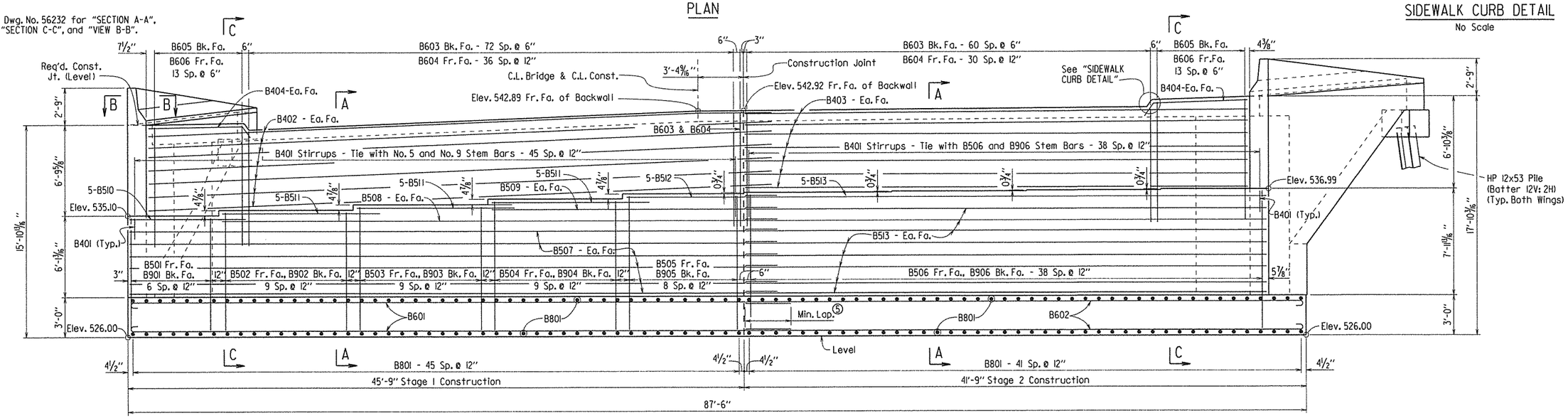



PLAN




SIDEWALK CURB DETAIL
No Scale

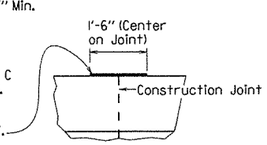
See Dwg. No. 56232 for "SECTION A-A", "SECTION C-C", and "VIEW B-B".




ELEVATION
LOOKING BACK

⑤ Lap No. 4 Bars 1'-9" Min.
Lap No. 5 Bars 2'-2" Min.
Lap No. 6 Bars 2'-7" Min.

Membrane Waterproofing System Type C or an approved equal. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".




CONSTRUCTION JOINT DETAIL
No Scale

STATE OF ARKANSAS
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BRIDGE ENGINEER

SHEET 1 OF 4
DETAILS OF BENT 1
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

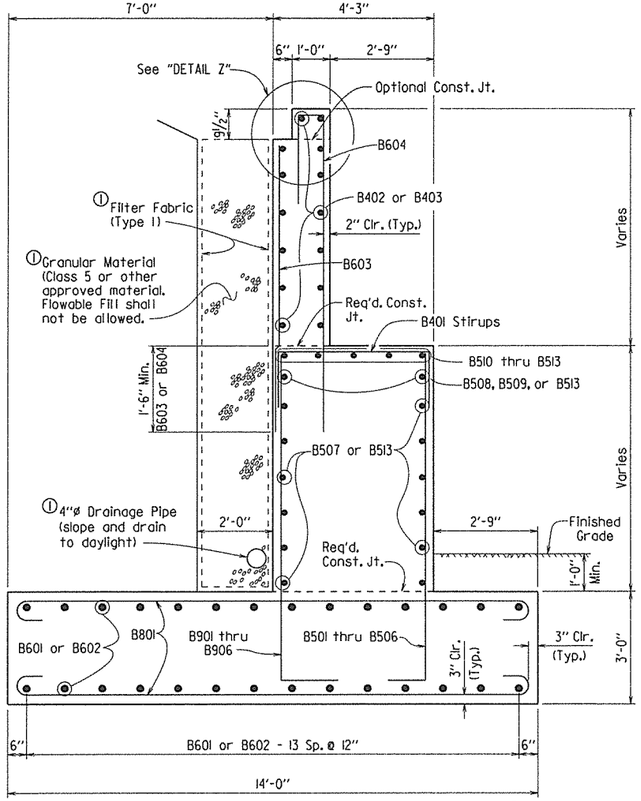
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BRIDGE NO. 07300 DRAWING NO. 56231

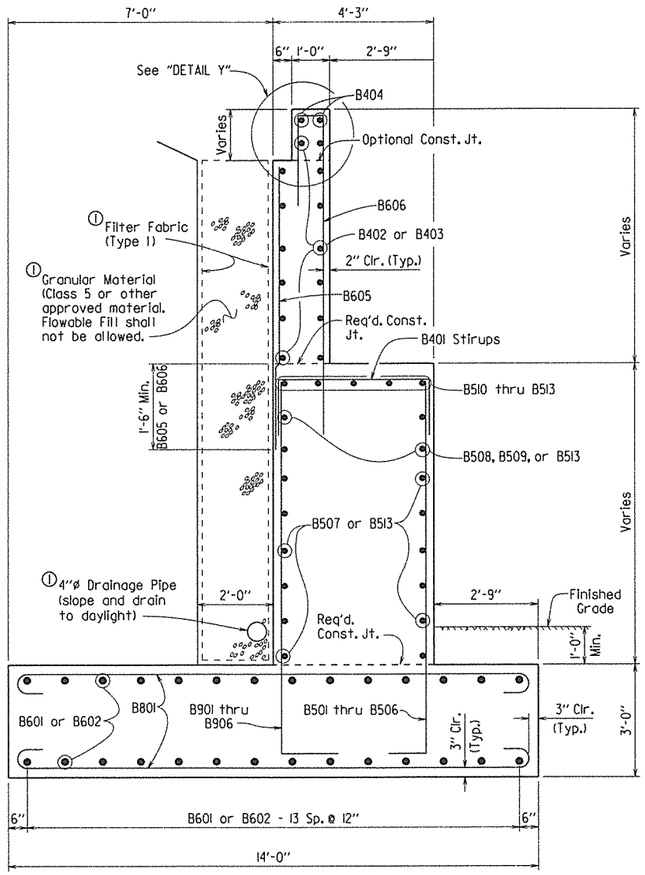
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 125 | 309 |

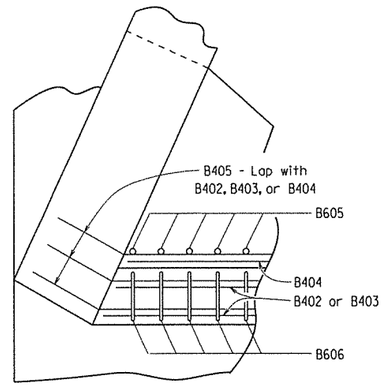
① 07300 - END BENT DETAILS - 56232




SECTION A-A
1/2" = 1'-0"




SECTION C-C
1/2" = 1'-0"

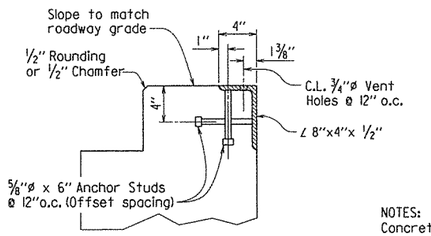



Spacing for No. 6 Bars in backwall measured along Front Face.

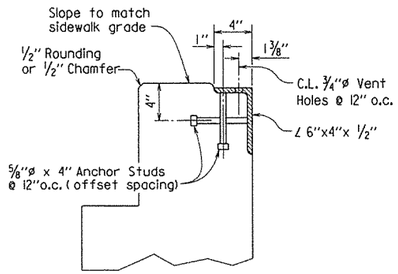
NOTE: Shown for Wing "A". Wing "B" is similar.

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

① For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, and filter fabric will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation". Locate holes in wings to miss reinforcing steel.




DETAIL Z
No Scale




DETAIL Y
No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56247

STATE OF ARKANSAS
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SHEET 2 OF 4
DETAILS OF BENT 1
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

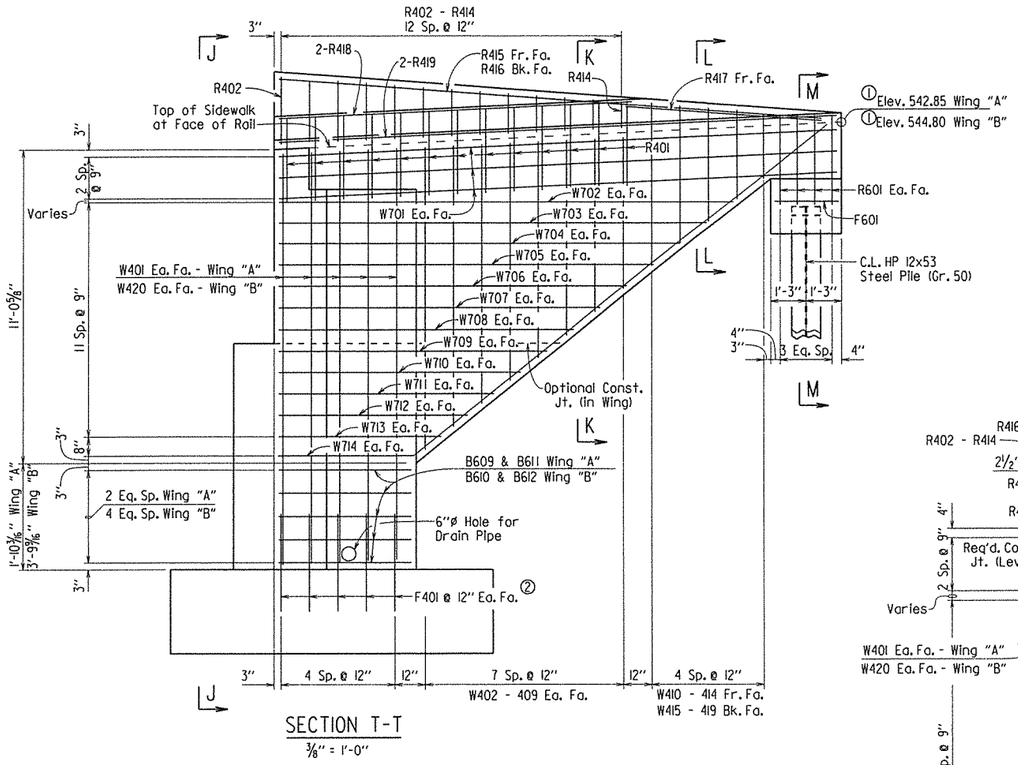
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BRIDGE NO. 07300 DRAWING NO. 56232

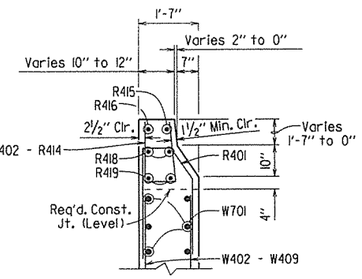
PRINT DATE: 10/10/2014

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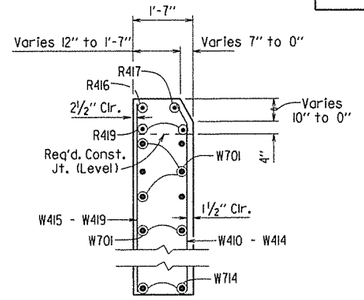
(1) 07300 - END BENT DETAILS - 56233



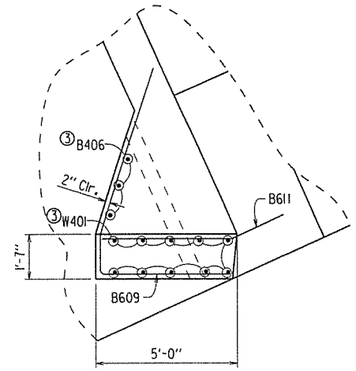

SECTION T-T
3/8" = 1'-0"



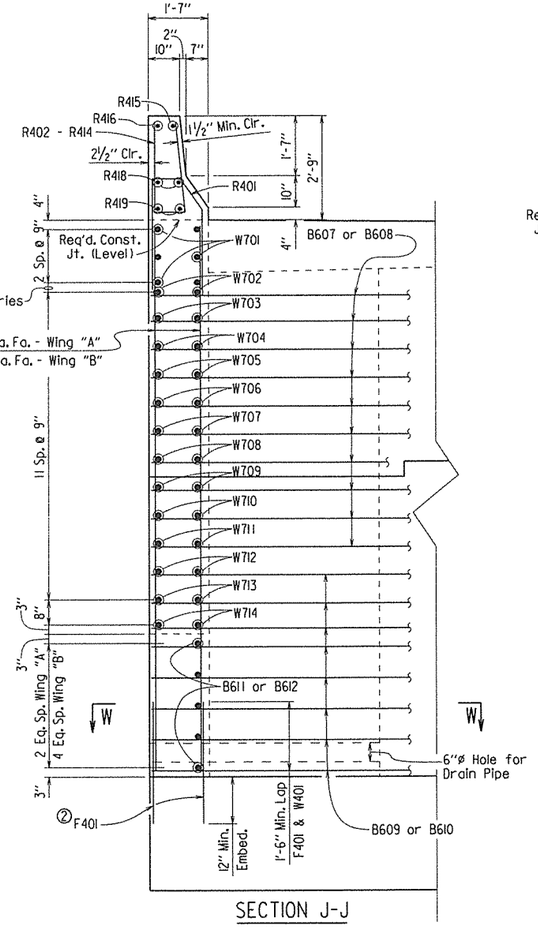

SECTION K-K
1/2" = 1'-0"



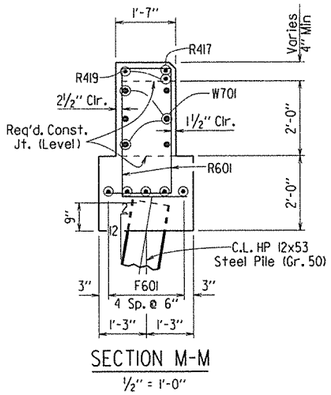

SECTION L-L
1/2" = 1'-0"



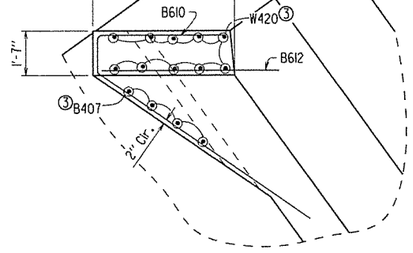

VIEW W-W
(WING "A")
3/8" = 1'-0"



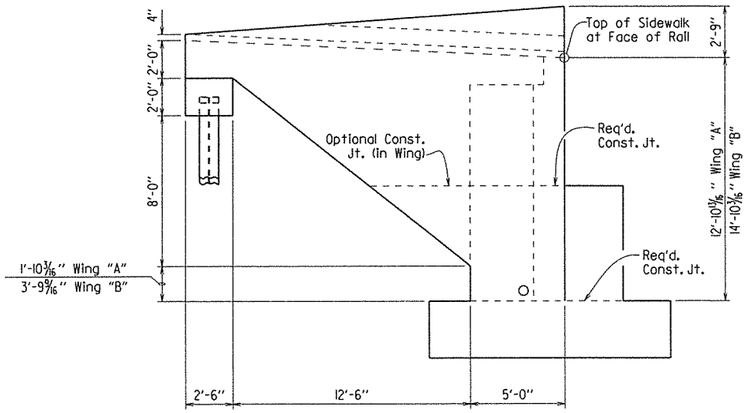

SECTION J-J
1/2" = 1'-0"




SECTION M-M
1/2" = 1'-0"




VIEW W-W
(WING "B")
3/8" = 1'-0"




VIEW V-V
1/4" = 1'-0"

(1) Elevation at Top of Sidewalk
(2) Place Additional F401 Bars to Lap with B406 or B407 in Fillet.
(3) Lap 1'-6" with F401

STATE OF ARKANSAS
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SHEET 3 OF 4
DETAILS OF BENT 1
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 2/10/14 FILENAME: b050230x2_bl.dgn
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BRIDGE NO. 07300 DRAWING NO. 56233

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 127 | 356 |
| | | | | (1) | | 07300 - END BENT DETAILS - 56234 | | |

# BAR LIST

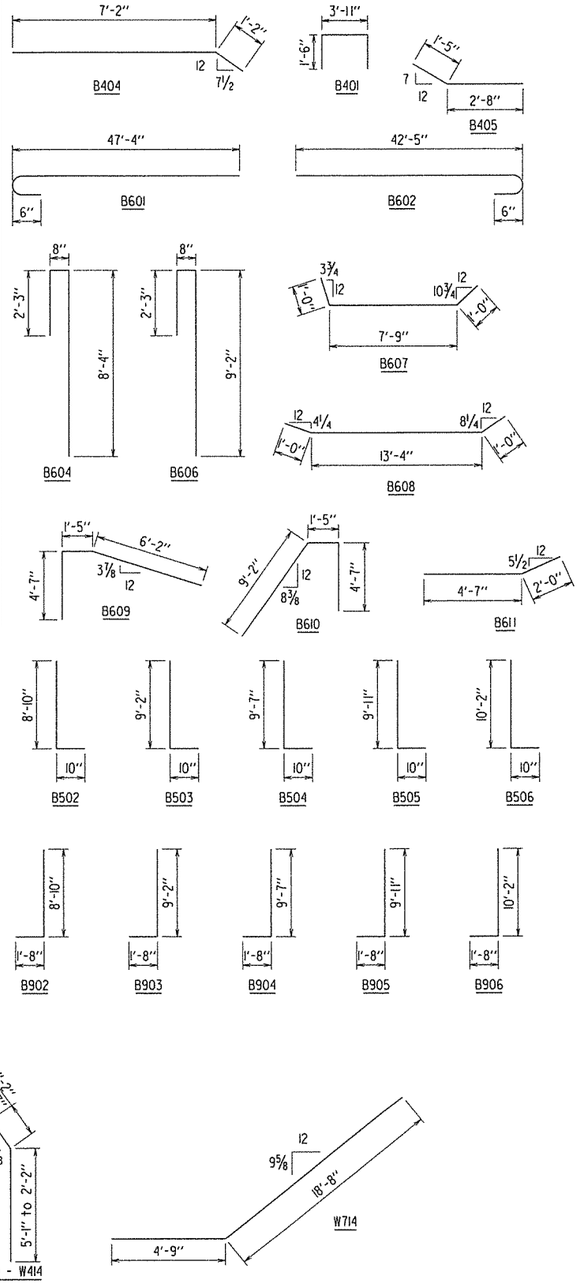
| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| B401 | 46 | 39 | 6'-9" | 2" |
| B402 | 14 | - | 45'-6" | Str. |
| B403 | - | 14 | 37'-8" | Str. |
| B404 | 2 | 2 | 8'-4" | 2" |
| B405 | 16 | 16 | 4'-1" | 2" |
| B406 | 3 | - | 11'-4" | Str. |
| B407 | - | 4 | 13'-2" | Str. |
| | | | | |
| B501 | 7 | - | 9'-2" | 3 3/4" |
| B502 | 10 | - | 9'-7" | 3 3/4" |
| B503 | 10 | - | 9'-11" | 3 3/4" |
| B504 | 10 | - | 10'-4" | 3 3/4" |
| B505 | 9 | - | 10'-8" | 3 3/4" |
| B506 | - | 39 | 10'-11" | 3 3/4" |
| B507 | 12 | - | 47'-11" | Str. |
| B508 | 2 | - | 41'-2" | Str. |
| B509 | 2 | - | 21'-2" | Str. |
| B510 | 5 | - | 8'-11" | Str. |
| B511 | 15 | - | 12'-2" | Str. |
| B512 | 5 | - | 11'-2" | Str. |
| B513 | - | 21 | 38'-8" | Str. |
| | | | | |
| B601 | 28 | - | 49'-0" | 4 1/2" |
| B602 | - | 28 | 42'-1" | 4 1/2" |
| B603 | 74 | 61 | 7'-9" | Str. |
| B604 | 38 | 31 | 10'-11" | 4 1/2" |
| B605 | 14 | 14 | 8'-7" | Str. |
| B606 | 14 | 14 | 11'-9" | 4 1/2" |
| B607 | 10 | - | 9'-9" | 4 1/2" |
| B608 | - | 10 | 15'-4" | 4 1/2" |
| B609 | 6 | - | 12'-0" | 4 1/2" |
| B610 | - | 8 | 15'-0" | 4 1/2" |
| B611 | 3 | - | 6'-7" | 4 1/2" |
| B612 | - | 5 | 6'-7" | Str. |
| | | | | |
| B801 | 92 | 84 | 15'-4" | 6" |
| | | | | |
| B901 | 7 | - | 9'-10" | 9" |
| B902 | 10 | - | 10'-3" | 9" |
| B903 | 10 | - | 10'-7" | 9" |
| B904 | 10 | - | 11'-0" | 9" |
| B905 | 9 | - | 11'-4" | 9" |
| B906 | - | 39 | 11'-7" | 9" |
| | | | | |
| F401 | 13 | 14 | 3'-6" | Str. |
| F601 | 5 | 5 | 2'-2" | Str. |

CONTINUED

| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| R401 | 13 | 13 | 6'-11" | 2" |
| R402 - R414 | 1 Each | 1 Each | 5'-6" to 2'-8" | 2" |
| R415 | 1 | 1 | 12'-3" | Str. |
| R416 | 1 | 1 | 19'-2" | Str. |
| R417 | 1 | 1 | 7'-0" | Str. |
| R418 | 2 | 2 | 12'-5" | Str. |
| R419 | 2 | 2 | 19'-8" | Str. |
| | | | | |
| R601 | 8 | 8 | 4'-8" | 4 1/2" |
| | | | | |
| W401 | 10 | - | 12'-7" | Str. |
| W402-W409 | 2 Each | 2 Each | 10'-8" to 5'-4" | Str. |
| W410-W414 | 1 Each | 1 Each | 6'-3" to 2'-9" | 2" |
| W415-W419 | 1 Each | 1 Each | 5'-9" to 2'-4" | Str. |
| W420 | - | 10 | 14'-7" | Str. |
| | | | | |
| W701 | 6 | 6 | 19'-8" | Str. |
| W702-W713 | 2 Each | 2 Each | 16'-0" to 5'-8" | Str. |
| W714 | 2 | 2 | 23'-5" | 5 1/4" |

BENDING DIAGRAMS

Dimensions are out to out of bars.




GENERAL NOTES

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

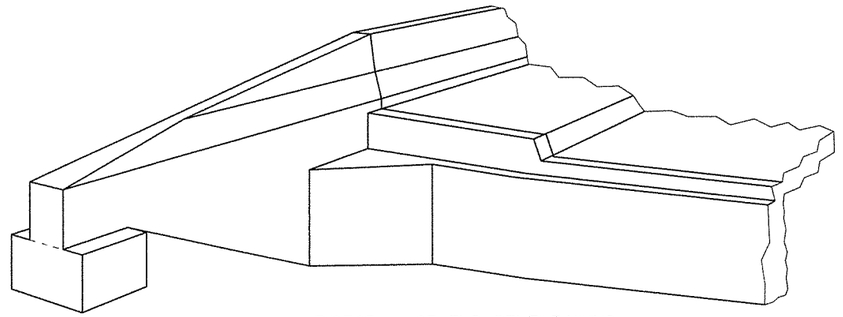
All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note, Dwg. 56247.

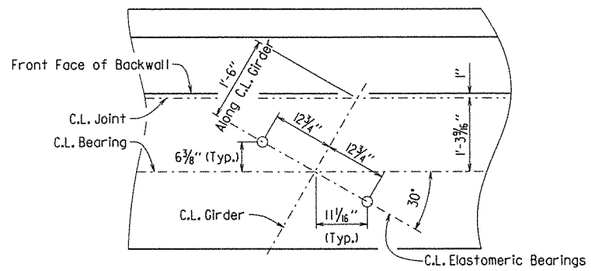
Concrete shall be hand packed under the joint armor.

For additional information see Layout.



PICTORIAL OF END BENT RAILING

No Scale




TYPICAL ANCHOR BOLT LAYOUT

3/4" = 1'-0"

For Details of Elastomeric Bearings, See Dwg. No. 56240

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 4 OF 4
DETAILS OF BENT 1
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 2/10/14 FILENAME: b050230x2_b1.dgn
CHECKED BY: JGT DATE: 6/06/14 SCALE: AS NOTED
DESIGNED BY: LJB DATE: 1/14

BRIDGE NO. 07300 DRAWING NO. 56234

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 128309 | |
| | | | | 1 | 07300 - END BENT DETAILS - 56235 | | | |

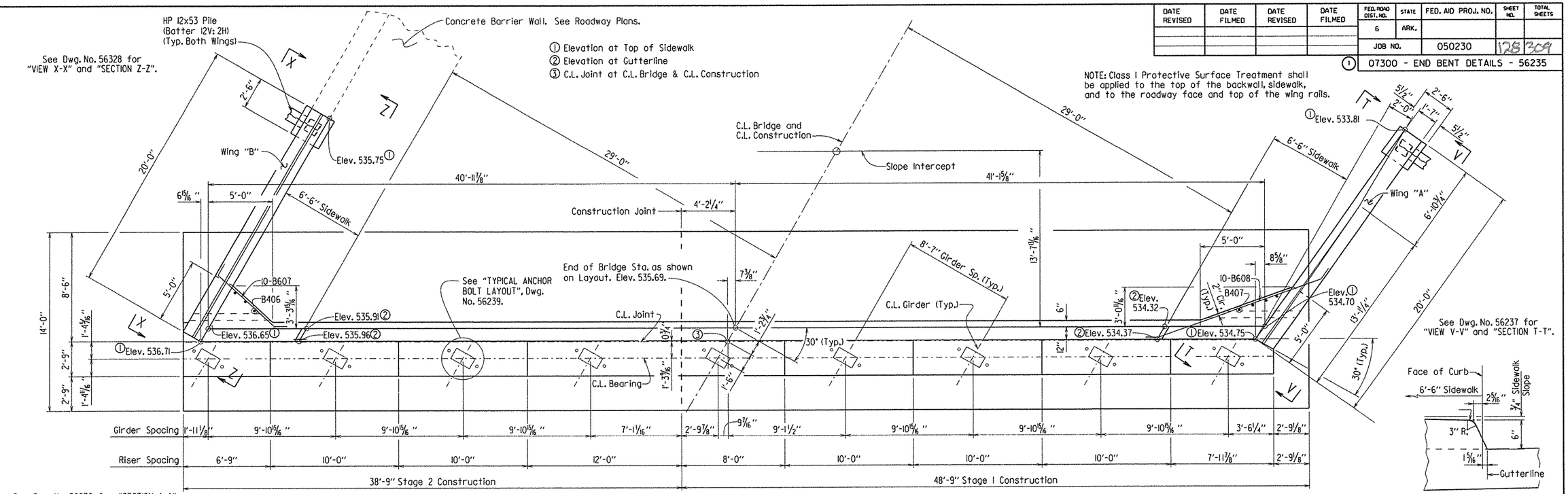
HP 12x53 Pile
(Batter 12V: 2H)
(Typ. Both Wings)

See Dwg. No. 56328 for "VIEW X-X" and "SECTION Z-Z".

Concrete Barrier Wall. See Roadway Plans.

① Elevation at Top of Sidewalk
② Elevation at Gutterline
③ C.L. Joint at C.L. Bridge & C.L. Construction

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.



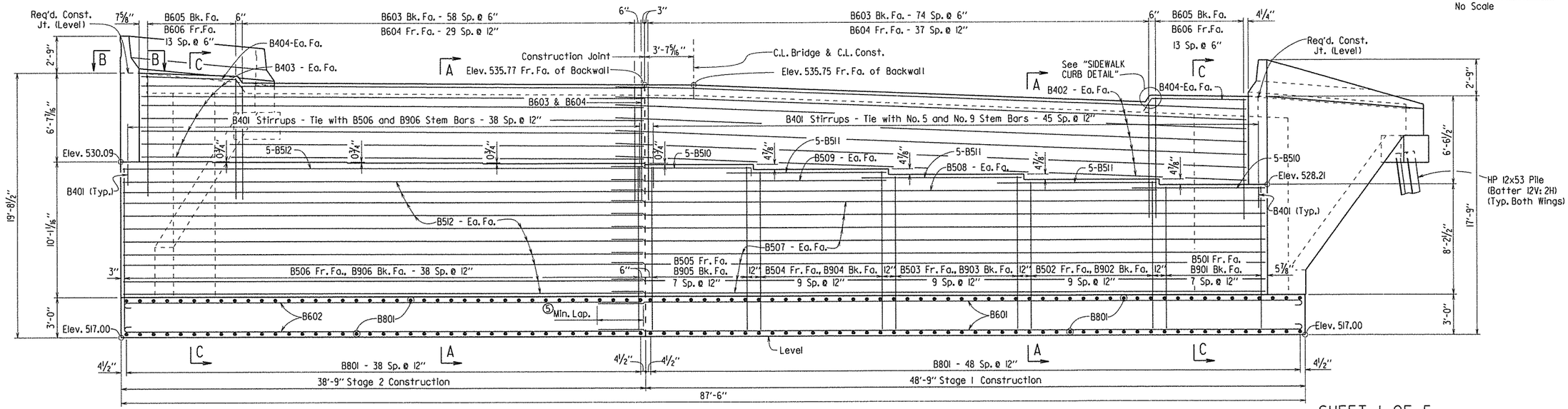

See Dwg. No. 56236 for "SECTION A-A", "SECTION C-C", and "VIEW B-B".

See Dwg. No. 56237 for "VIEW V-V" and "SECTION T-T".

PLAN



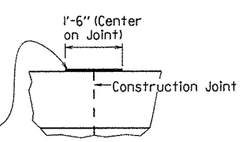

SIDEWALK CURB DETAIL
No Scale




ELEVATION
LOOKING AHEAD

⑤ Lap No. 4 Bars 1'-9" Min.
Lap No. 5 Bars 2'-2" Min.
Lap No. 6 Bars 2'-7" Min.

Membrane Waterproofing System Type C or an approved equal. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the Item "Class S Concrete-Bridge".




CONSTRUCTION JOINT DETAIL
No Scale

STATE OF ARKANSAS
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10-13-14
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SHEET 1 OF 5
DETAILS OF BENT 2
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

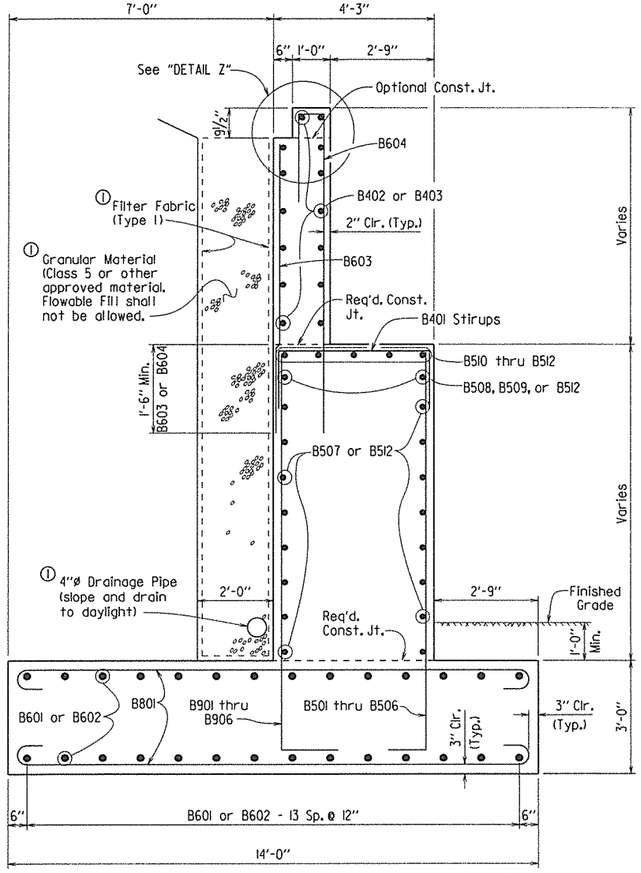
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DESIGNED BY: LJB DATE: 1/14

BRIDGE NO. 07300 DRAWING NO. 56235

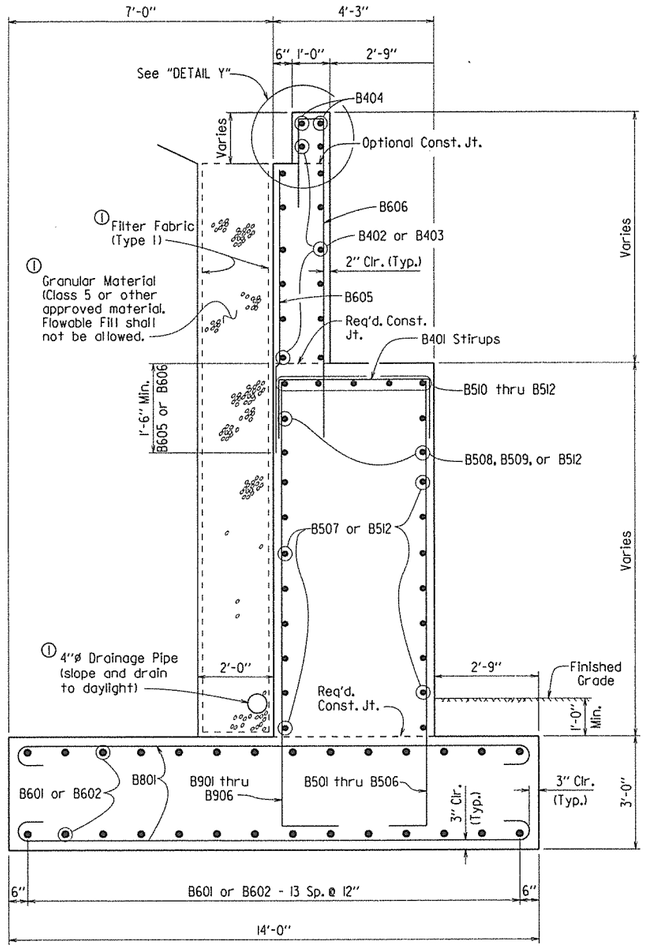
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | JOB NO. | | 050230 | 129 | 209 |

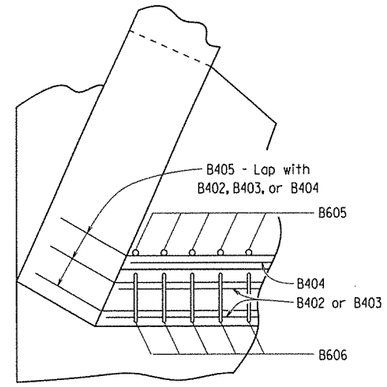
(1) 07300 - END BENT DETAILS - 56236




SECTION A-A
½" = 1'-0"




SECTION C-C
½" = 1'-0"

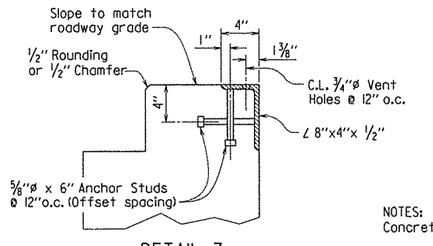



Spacing for No. 6 Bars in backwall measured along Front Face.

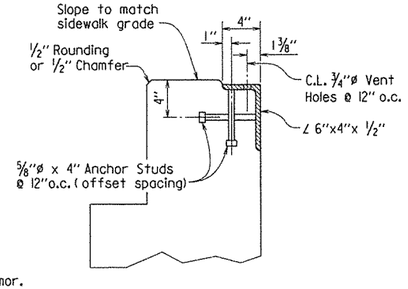
NOTE: Shown for Wing "A". Wing "B" is similar.

VIEW B-B
½" = 1'-0"

(1) For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, and filter fabric will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation". Locate holes in wings to miss reinforcing steel.




DETAIL Z
No Scale




DETAIL Y
No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56247

STATE OF ARKANSAS
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SHEET 2 OF 5
DETAILS OF BENT 2
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

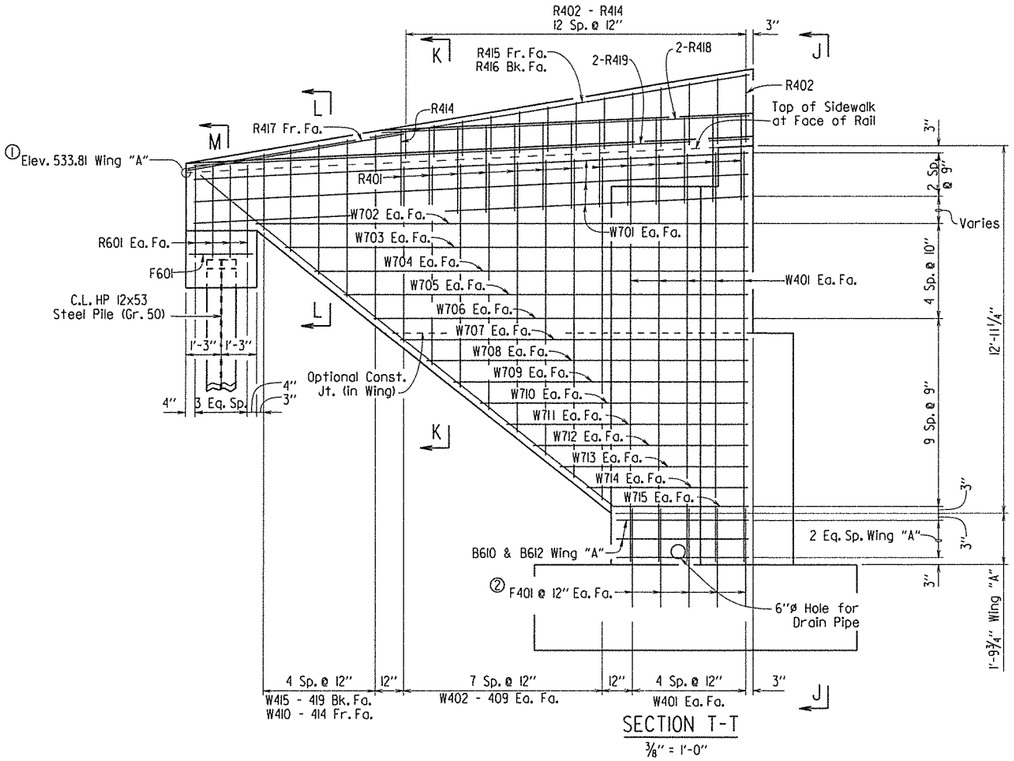
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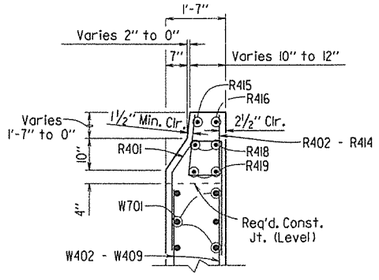
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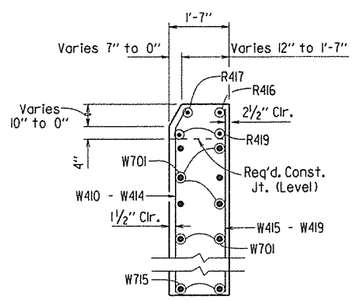
① 07300 - END BENT DETAILS - 56237



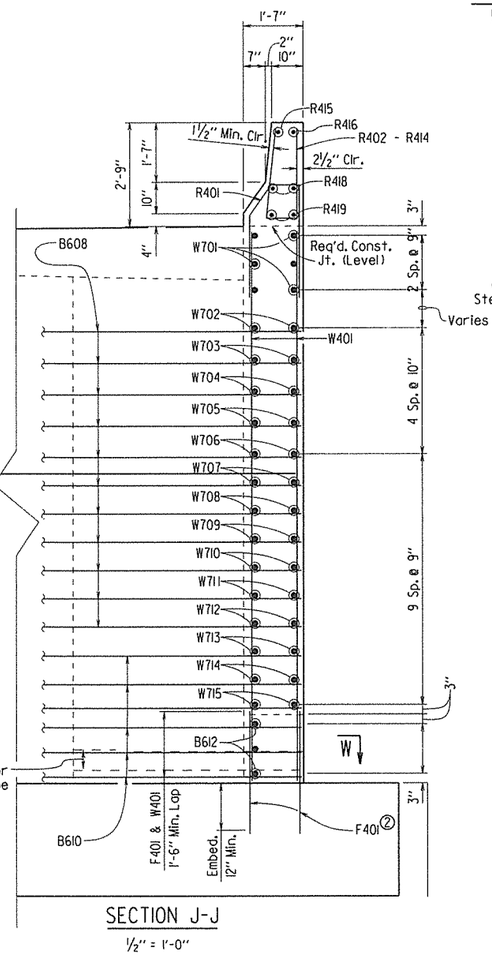

SECTION T-T
3/8" = 1'-0"



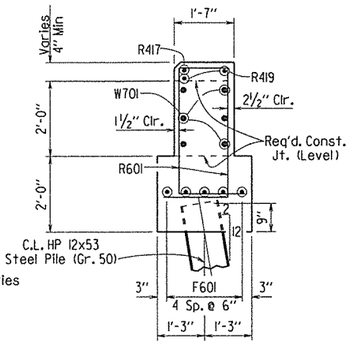

SECTION K-K
1/2" = 1'-0"



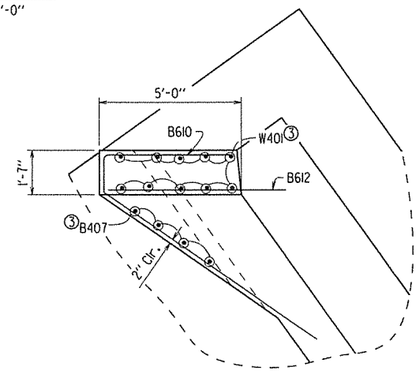

SECTION L-L
1/2" = 1'-0"



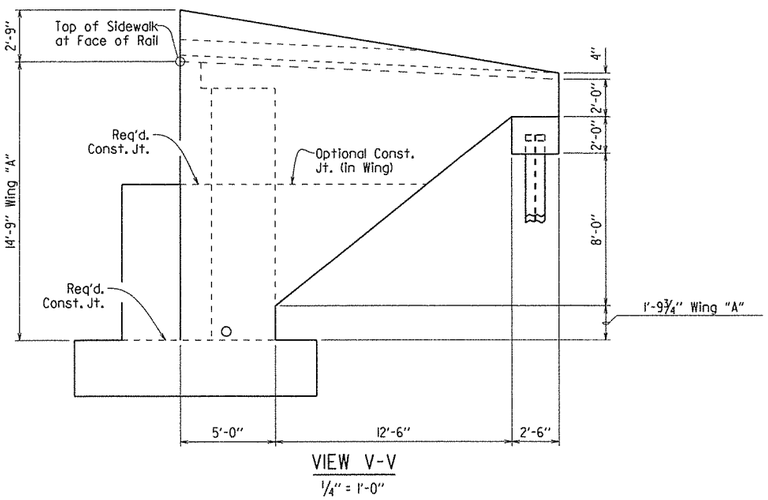

SECTION J-J
1/2" = 1'-0"




SECTION M-M
1/2" = 1'-0"




VIEW W-W
(WING "A")
3/8" = 1'-0"




VIEW V-V
1/4" = 1'-0"

① Elevation at Top of Sidewalk
② Place Additional F401 Bars to Lap with B407 in Fillet.
③ Lap 1'-6" with F401

STATE OF ARKANSAS
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SHEET 3 OF 5
DETAILS OF BENT 2
BNSF RAILROAD

ROUTE SEC.

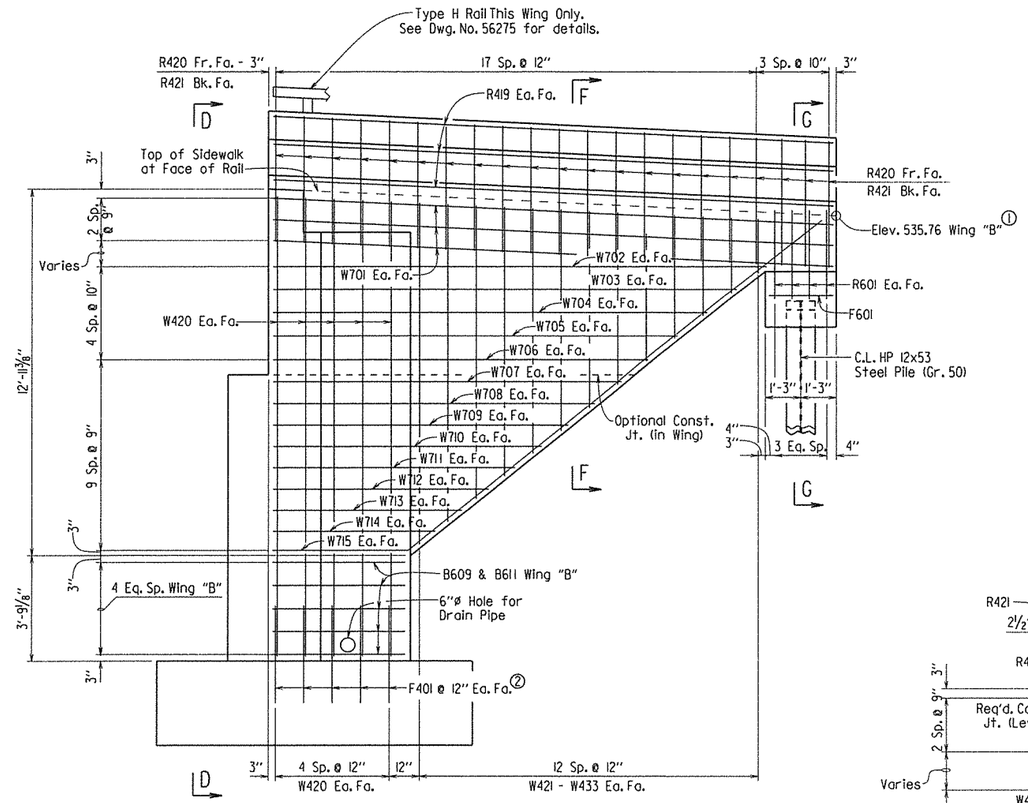
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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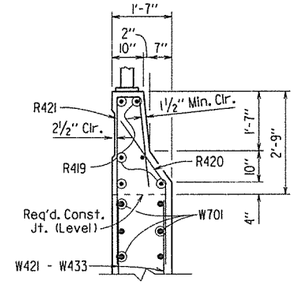
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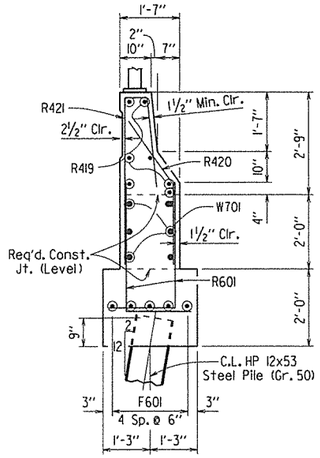
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| | | | | JOB NO. | | 050230 | 131 | 309 |
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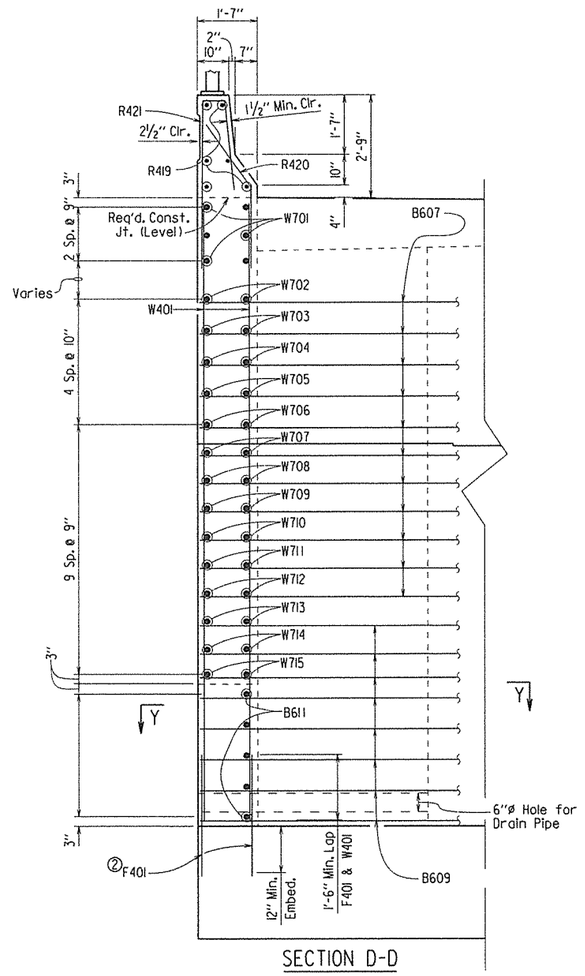

SECTION Z-Z
⅜" = 1'-0"



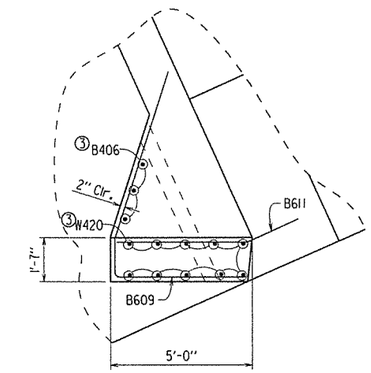

SECTION F-F
½" = 1'-0"



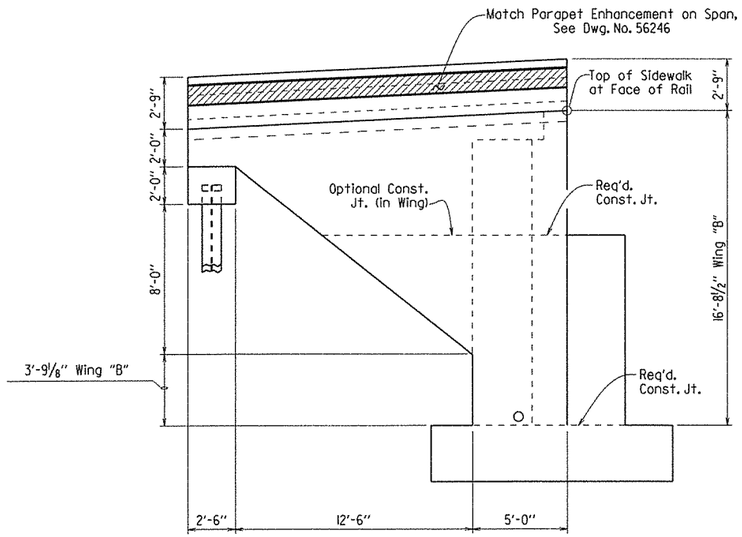

SECTION G-G
½" = 1'-0"




SECTION D-D
½" = 1'-0"




VIEW Y-Y
(WING "B")
⅜" = 1'-0"




VIEW X-X
¼" = 1'-0"

① Elevation at Top of Sidewalk
② Place Additional F401 Bars to Lap with B406 in Fillet.
③ Lap 1'-6" with F401

STATE OF ARKANSAS
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SHEET 4 OF 5
DETAILS OF BENT 2
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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BRIDGE NO. 07300 DRAWING NO. 56238

PRINT DATE: 10/10/2014

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| | | | | 6 | ARK. | | | |
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# BAR LIST

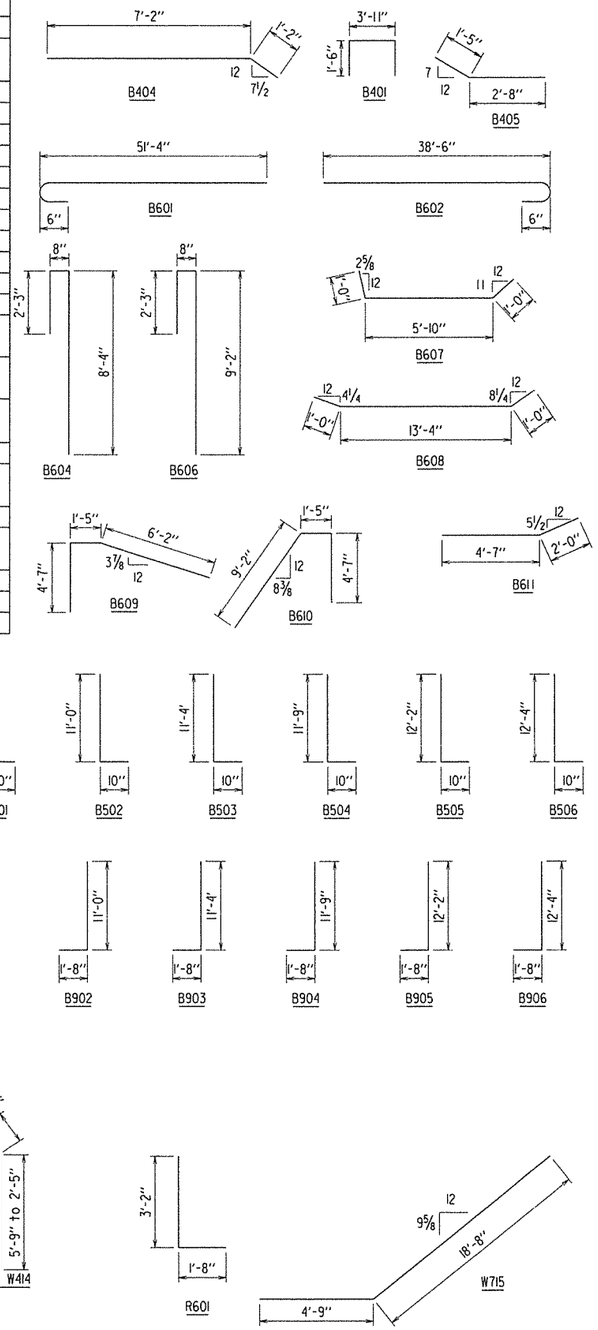
| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| B401 | 46 | 39 | 6'-9" | 2" |
| B402 | 14 | - | 46'-8" | Str. |
| B403 | - | 14 | 37'-5" | Str. |
| B404 | 2 | 2 | 8'-4" | 2" |
| B405 | 16 | 16 | 4'-1" | 2" |
| B406 | - | 3 | 15'-0" | Str. |
| B407 | 4 | - | 13'-0" | Str. |
| | | | | |
| B501 | 8 | - | 11'-4" | 3 3/4" |
| B502 | 10 | - | 11'-9" | 3 3/4" |
| B503 | 10 | - | 12'-1" | 3 3/4" |
| B504 | 10 | - | 12'-6" | 3 3/4" |
| B505 | 8 | - | 12'-11" | 3 3/4" |
| B506 | - | 39 | 13'-1" | 3 3/4" |
| B507 | 16 | - | 48'-2" | Str. |
| B508 | 2 | - | 40'-2" | Str. |
| B509 | 2 | - | 20'-2" | Str. |
| B510 | 10 | - | 10'-2" | Str. |
| B511 | 15 | - | 12'-2" | Str. |
| B512 | - | 25 | 38'-6" | Str. |
| | | | | |
| B601 | 28 | - | 52'-0" | 4 1/2" |
| B602 | - | 28 | 39'-2" | 4 1/2" |
| B603 | 75 | 60 | 7'-9" | Str. |
| B604 | 38 | 31 | 10'-11" | 4 1/2" |
| B605 | 14 | 14 | 8'-7" | Str. |
| B606 | 14 | 14 | 11'-9" | 4 1/2" |
| B607 | - | 10 | 7'-10" | 4 1/2" |
| B608 | 10 | - | 15'-4" | 4 1/2" |
| B609 | - | 5 | 12'-0" | 4 1/2" |
| B610 | 3 | - | 15'-0" | 4 1/2" |
| B611 | - | 5 | 6'-7" | 4 1/2" |
| B612 | 3 | - | 6'-7" | Str. |
| | | | | |
| B801 | 98 | 78 | 15'-4" | 6" |
| | | | | |
| B901 | 8 | - | 12'-0" | 9" |
| B902 | 10 | - | 12'-5" | 9" |
| B903 | 10 | - | 12'-9" | 9" |
| B904 | 10 | - | 13'-2" | 9" |
| B905 | 8 | - | 13'-7" | 9" |
| B906 | - | 39 | 13'-9" | 9" |
| | | | | |
| F401 | 14 | 13 | 3'-6" | Str. |
| F601 | 5 | 5 | 2'-2" | Str. |

CONTINUED

| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| R401 | 13 | - | 6'-11" | 2" |
| R402 - R414 | 1 Each | - | 5'-6" to 2'-8" | 2" |
| R415 | 1 | - | 12'-3" | Str. |
| R416 | 1 | - | 19'-2" | Str. |
| R417 | 1 | - | 7'-0" | Str. |
| R418 | 2 | - | 12'-5" | Str. |
| R419 | 2 | 6 | 19'-8" | Str. |
| R420 | - | 21 | 4'-6" | 2" |
| R421 | - | 21 | 7'-8" | 2" |
| | | | | |
| R601 | 8 | 8 | 4'-8" | 4 1/2" |
| | | | | |
| W401 | 10 | - | 14'-6" | Str. |
| W402 - W409 | 2 Each | - | 12'-0" to 6'-1" | Str. |
| W410 - W414 | 1 Each | - | 6'-11" to 3'-0" | 2" |
| W415 - W419 | 1 Each | - | 6'-5" to 3'-0" | Str. |
| W420 | - | 10 | 16'-5" | Str. |
| W421 - W433 | - | 2 Each | 12'-0" to 2'-0" | Str. |
| W701 | 6 | 6 | 19'-8" | Str. |
| W702 - W714 | 2 Each | 2 Each | 17'-4" to 5'-8" | Str. |
| W715 | 2 | 2 | 23'-5" | 5 1/4" |

BENDING DIAGRAMS

Dimensions are out to out of bars.




GENERAL NOTES

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

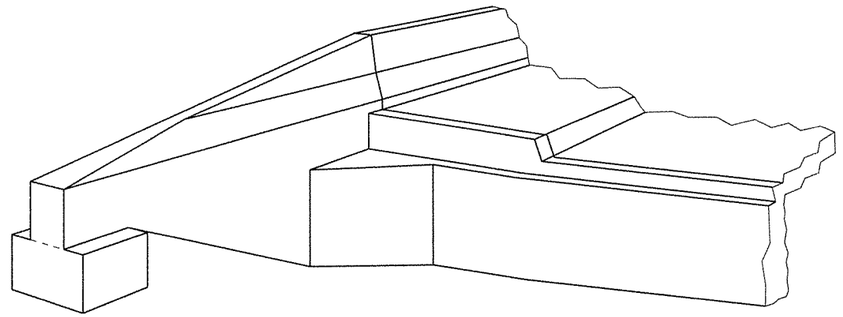
All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note, Dwg. 56247.

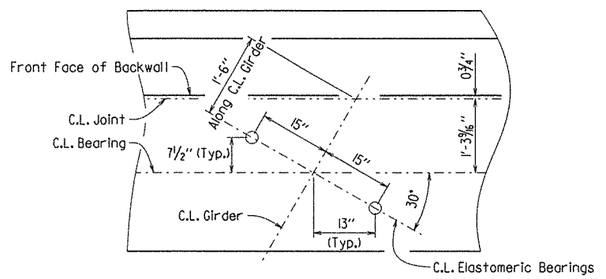
Concrete shall be hand packed under the joint armor.

For additional information see Layout.



PICTORIAL OF END BENT RAILING

Shown for Wing "A"
No Scale




TYPICAL ANCHOR BOLT LAYOUT

3/4" = 1'-0"
For Details of Elastomeric Bearings, See Dwg. No. 56240

STATE OF ARKANSAS
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10-13-14
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SHEET 5 OF 5
DETAILS OF BENT 2
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

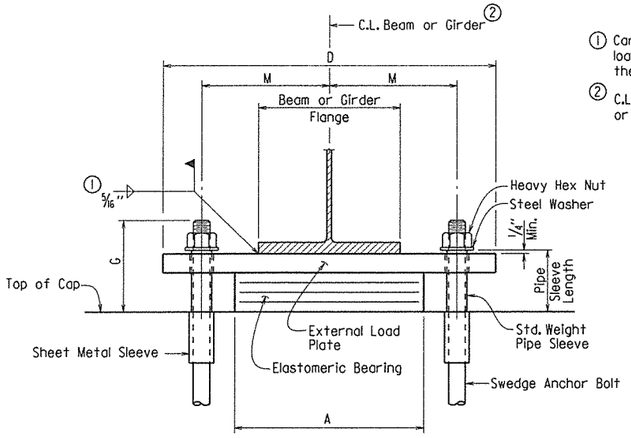
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SCALE: AS NOTED

BRIDGE NO. 07300 DRAWING NO. 56239

PRINT DATE: 10/10/2014

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 133 | 309 |

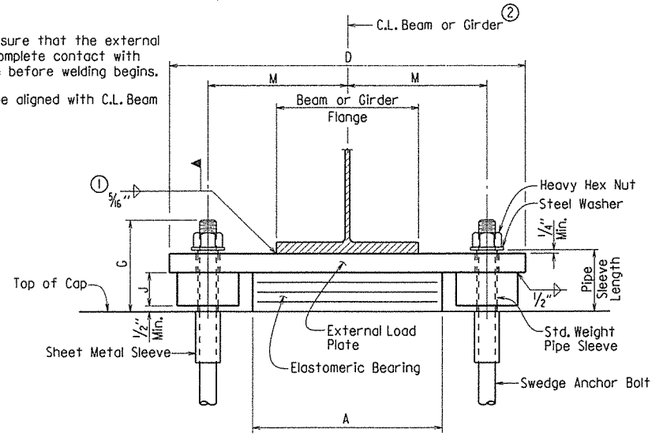
(1) 07300 - ELASTOMERIC BEARINGS - 56240



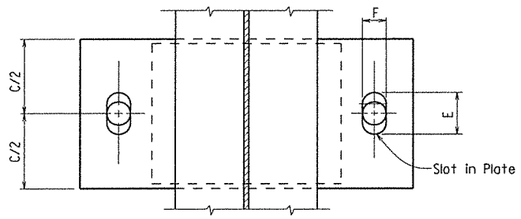

FRONT VIEW - AT BENT NO.1

(1) 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.

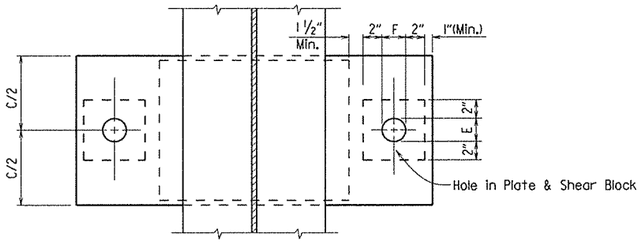
(2) C.L Elastomeric Pad shall be aligned with C.L. Beam or Girder.




FRONT VIEW - AT BENT BENT NO.2




PLAN VIEW - AT BENT BENT NO.1




PLAN VIEW - AT BENT BENT NO.2



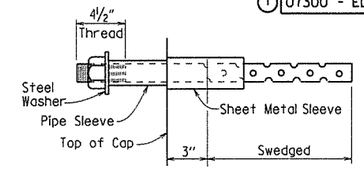

SIDE VIEW - AT BENT BENT NO.1

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.




SIDE VIEW - AT BENT BENT NO.2

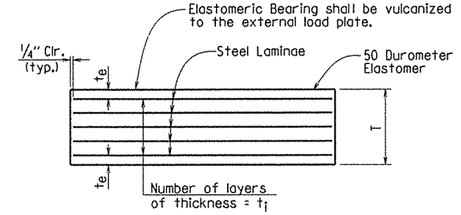
Note:
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".




ANCHOR BOLT DETAIL

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

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




$t_e$ = 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, 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.

TABLE OF FABRICATOR VARIABLES

*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 | EXTERNAL LOAD PLATE C | D | E | F | J | K | M | $T_a$ | $T_b$ | ANCHOR BOLT (ø x L) | GRADE | PIPE SLEEVE SIZE (ø x L) | SHEET METAL SLEEVE SIZE (ø x L) | STEEL WASHER SIZE (O.D.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07300 | 1 | All | Exp. | 9 | 220 | 8 3/4" | 5" | 20" | 11" | 4 | 1/2" | 1/4" | 5 @ 12 Ga. | 3" | 12" | 32" | 5 5/8" | 3 1/8" | - | 1/2" | 12 3/4" | 1.71" | 2.29" | 2 1/4"ø x 32" | 55 | 2 1/2"ø x 5 1/2" | 4"ø x 5 1/2" | 4" |
| | 2 | All | Fix. | 9 | 220 | 7" | 3 13/16" | 20" | 11" | 2 | 1/2" | 1/4" | 3 @ 12 Ga. | 1 13/16" | 12" | 39" | 2 5/8" | 2 5/8" | 2 1/2" | 1/2" | 15" | 1.71" | 2.29" | 1 3/4"ø x 26" | 55 | 2"ø x 5 1/2" | 4"ø x 5 1/2" | 3 3/8" |

STATE OF ARKANSAS
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10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF
ELASTOMERIC BEARINGS
BNSF RAILROAD
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 6/30/14 FILENAME: b050230x2_e.dgn
CHECKED BY: JGT DATE: 9/29/14 SCALE: NONE
DESIGNED BY: LJB DATE: 1/14

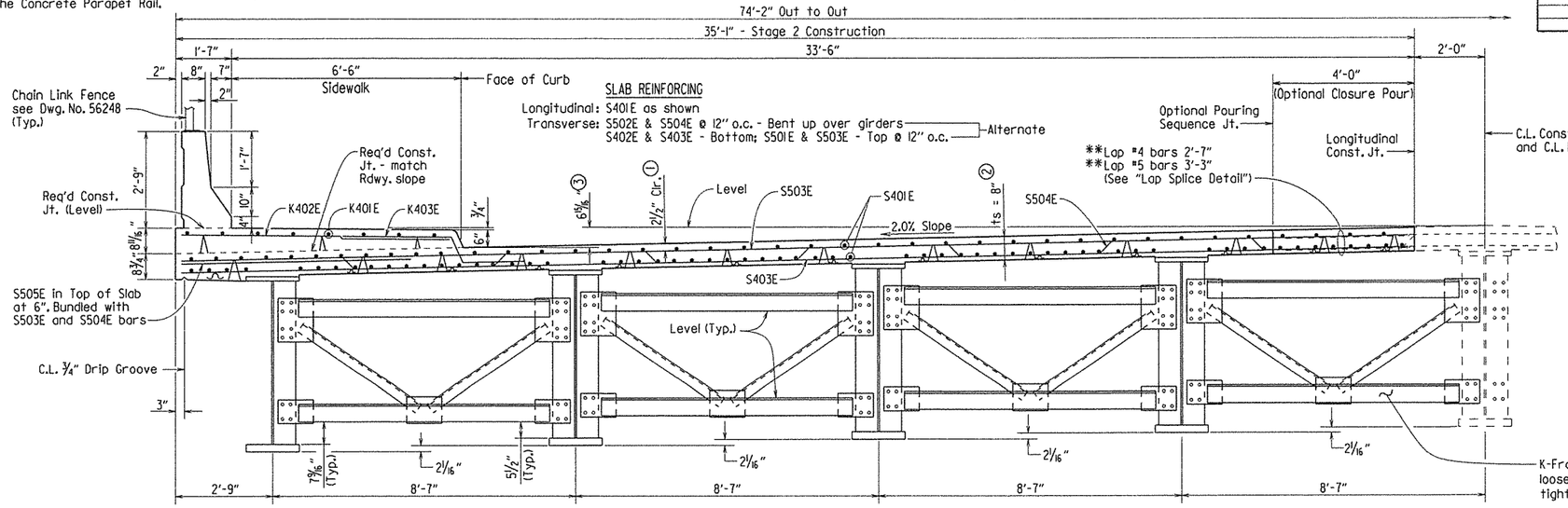
BRIDGE NO. 07300 DRAWING NO. 56240

PRINT DATE: 10/10/2014

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

At the Contractors option, one epoxy coated No. 5 straight bar top and bottom may be substituted for bars S502E and S504E. Payment for reinforcing will be based on the weight of bars S502E and S504E.

| 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. | | 050230 | 131 | 209 |
| | | | | (1) 07300 | - | SPAN DETAILS | - | 56241 |




TYPICAL ROADWAY SECTION - STAGE 2
(Looking Ahead)
1/2" = 1'-0"

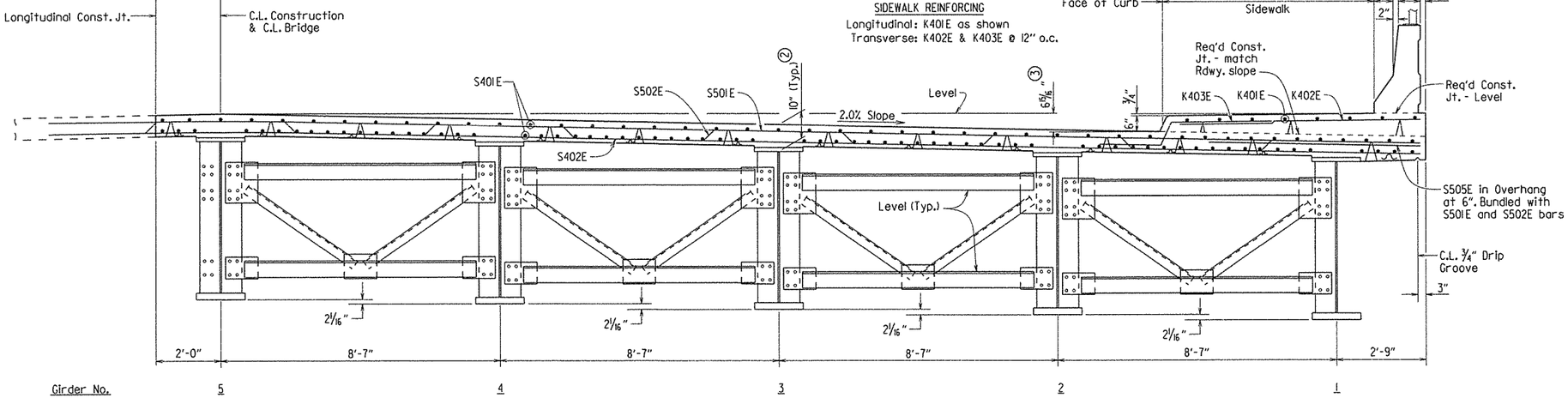
(1) Tolerance: Minus = 1/4"
Plus: Equal to amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED," Dwg. No. 56242.

(2) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED," Dwg. No. 56242.

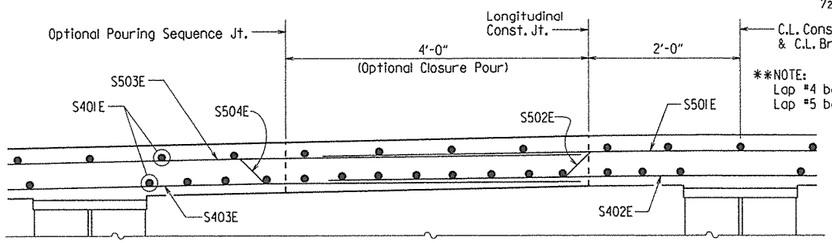
(3) C.L. Bridge to Gutter line

K-Frames between girders 4 & 5 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 crossframes may be field drilled after placing slab in Stage 2.

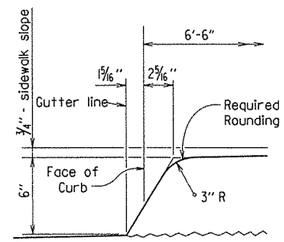



TYPICAL ROADWAY SECTION - STAGE 1
(Looking Ahead)
1/2" = 1'-0"




LAP SPLICE DETAIL
1/4" = 1'-0"

**These bars shall not be tied together in Stage 2




CURB DETAIL
No Scale

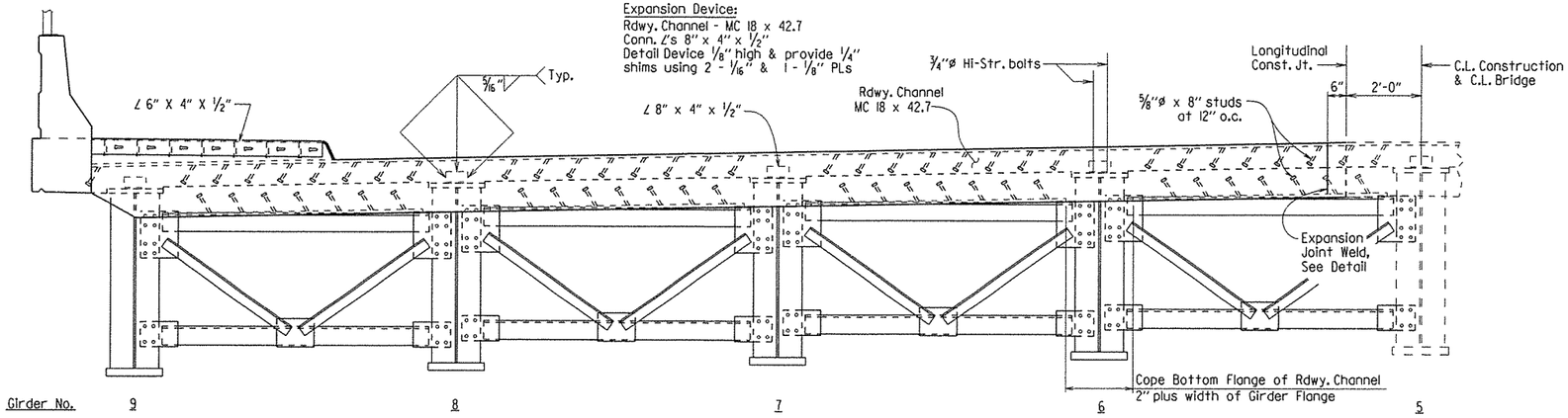
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

# SHEET 1 OF 7
# DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
# BNSF RAILROAD
ROUTE SEC.
## ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 02/22/13 FILENAME: b050230x2_sl.dgn
CHECKED BY: TMG DATE: 10/13/14 SCALE: As Noted
DESIGNED BY: LJB DATE: 2/13
BRIDGE NO. 07300 DRAWING NO. 56241

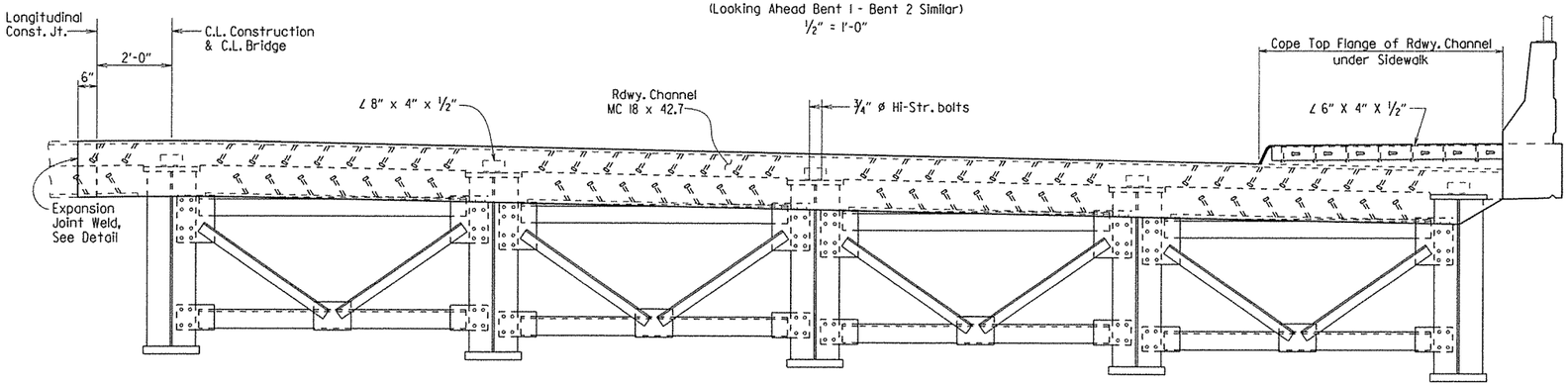
PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 135 | 359 |
| | | | | ① | 07300 - SPAN DETAILS - | | 56242 | |



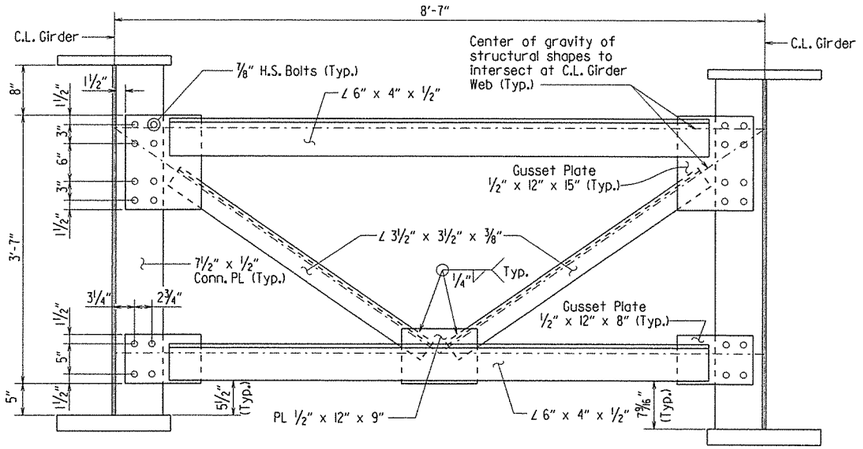

## TYPICAL SECTION THRU JOINT - STAGE 2

(Looking Ahead Bent 1 - Bent 2 Similar)
½" = 1'-0"



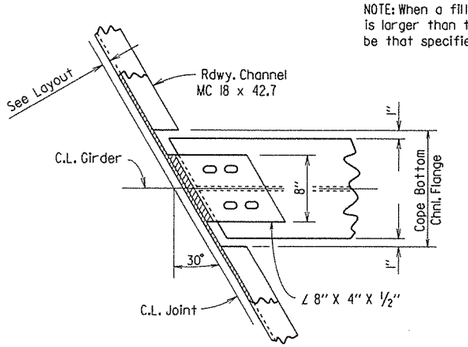

## TYPICAL SECTION THRU JOINT - STAGE 1

(Looking Ahead Bent 1 - Bent 2 Similar)
½" = 1'-0"




## K-FRAME DETAIL

1" = 1'-0"



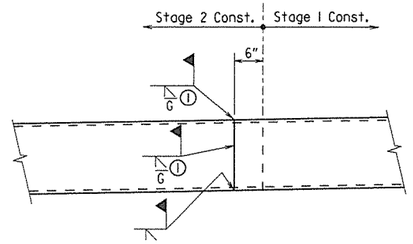

## CHANNEL CONNECTION DETAIL

No Scale

## TABLE FOR WELD

| Material Thickness Of Thicker Part Joined (Inches) | Minimum Size Of Fillet Weld (Inches) | Single Pass Weld Must Be Used |
|---|---|---|
| | | |
| To ¾" Inclusive | ¼" | |
| Over ¾" | 5/16" | |

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

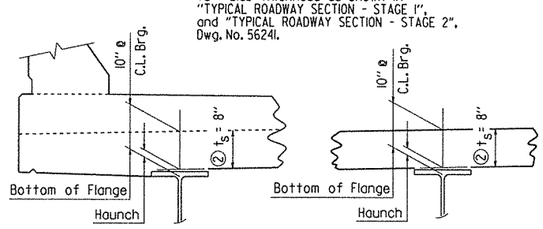



① Grind flush from top of deck to top of bumper plate.

## DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

Looking Ahead
No Scale

NOTE:
ts = slab thickness as shown in "TYPICAL ROADWAY SECTION - STAGE 1", and "TYPICAL ROADWAY SECTION - STAGE 2", Dwg. No. 56241.




② 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 WHEN REMOVABLE DECK FORMING IS USED

No Scale

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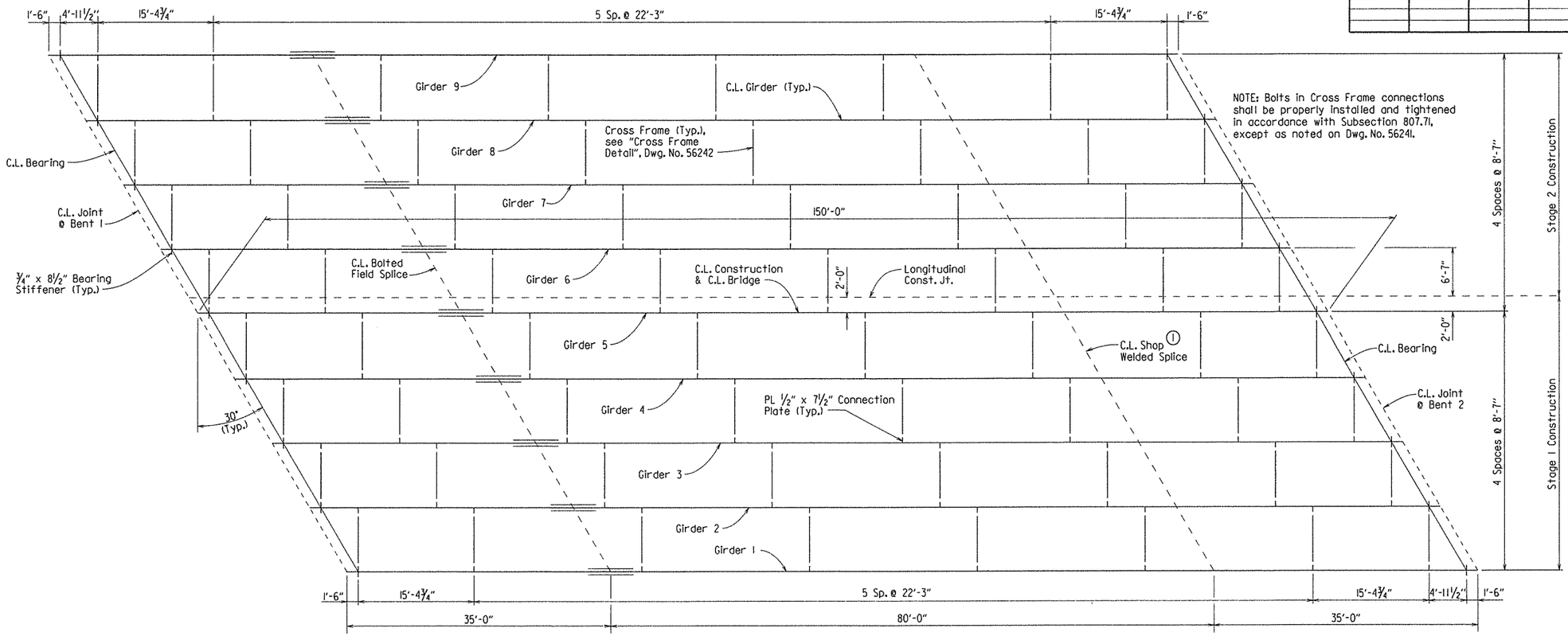
SHEET 2 OF 7
DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
BNSF RAILROAD
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 02/25/13
CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: LJB DATE: 2/13
FILENAME: b050230x2_sl.dgn
SCALE: As Noted

BRIDGE NO. 07300 DRAWING NO. 56242

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 136 | 309 |
| | | | | (1) 07300 - SPAN DETAILS - 56243 | | | | |

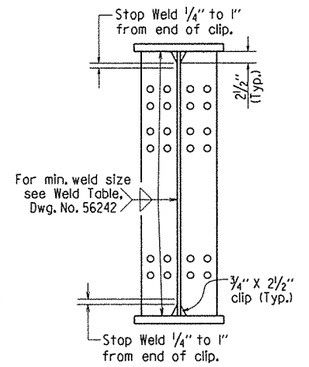



NOTE: Bolts in Cross Frame connections shall be properly installed and tightened in accordance with Subsection 807.71, except as noted on Dwg. No. 56241.

See Dwg. No. 56245 for Deflection Table and "DETAILS OF FIELD SPLICE"

## FRAMING PLAN

⅛" = 1'-0"



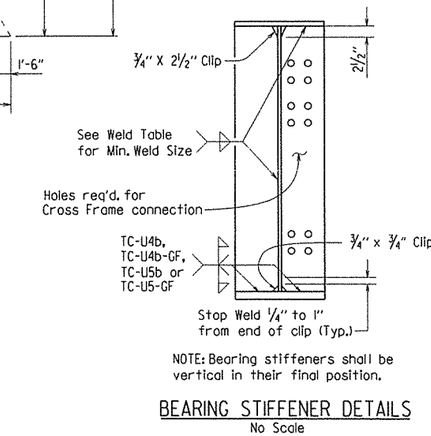

## CONNECTION PLATE DETAILS

No Scale




## TYPICAL GIRDER ELEVATION

No Scale

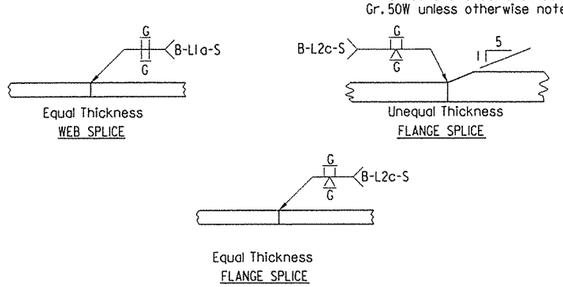



NOTE: Bearing stiffeners shall be vertical in their final position.

## BEARING STIFFENER DETAILS

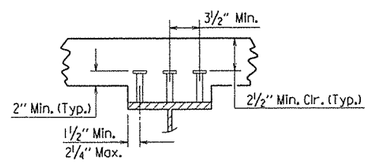
No Scale

NOTE:
All Structural Steel shall be AASHTO M270, Gr. 50W unless otherwise noted.




## DETAILS OF SHOP WELDED SPLICES

No Scale




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. Maximum stud spacing = 24".

## SHEAR CONNECTOR DETAIL

No Scale

NOTE:
Bolted Field Splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the Plan Quantities.

(1) At the Contractor's option, a bolted field splice may be provided at this location. No additional payment will be made for the optional bolted field splice.

(2) If the optional bolted field splice is used, eliminate the shear connectors at this location.

STATE OF ARKANSAS
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# SHEET 3 OF 7
# DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
# BNSF RAILROAD
ROUTE SEC.

## ARKANSAS STATE HIGHWAY COMMISSION

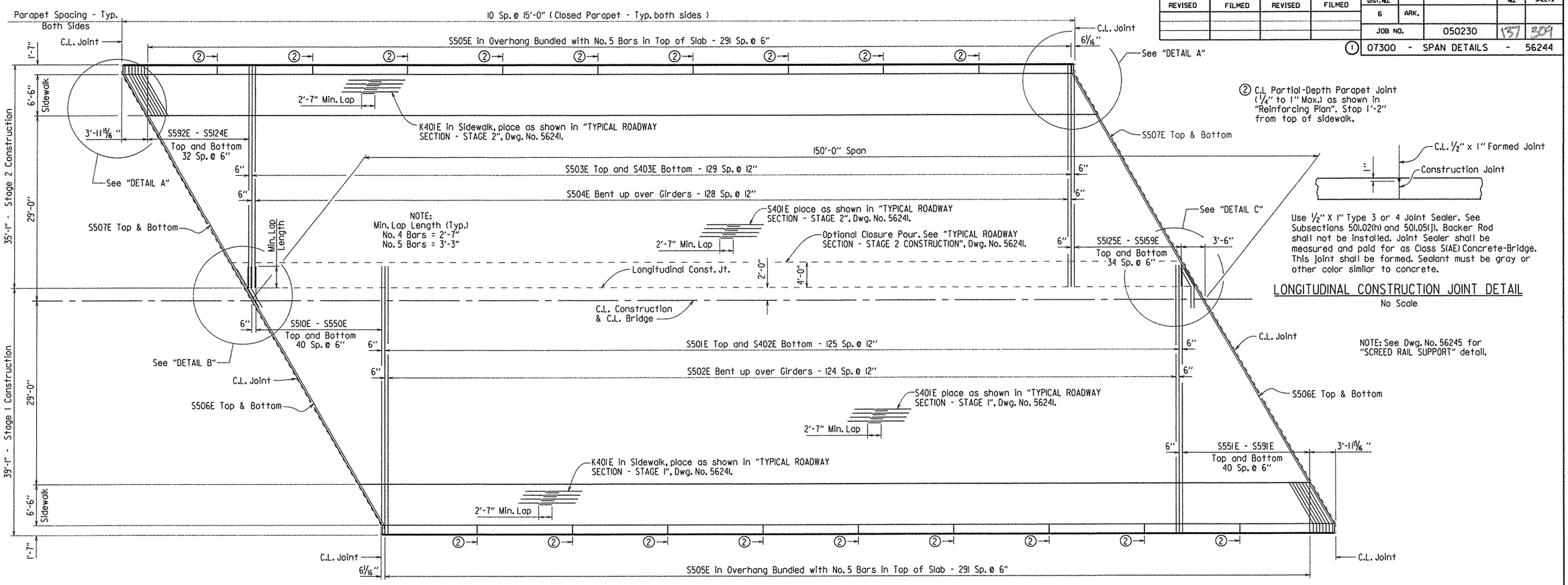
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 02/26/13 FILENAME: b050230x2_sl.dgn
CHECKED BY: TMG DATE: 10/15/14 SCALE: As Noted
DESIGNED BY: LJB DATE: 2/13

BRIDGE NO. 07300 DRAWING NO. 56243

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 137 | 204 |
| | | | | (1) 07300 - SPAN DETAILS - | | | 56244 | |




② C.L Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan", Stop 1'-2" from top of sidewalk.

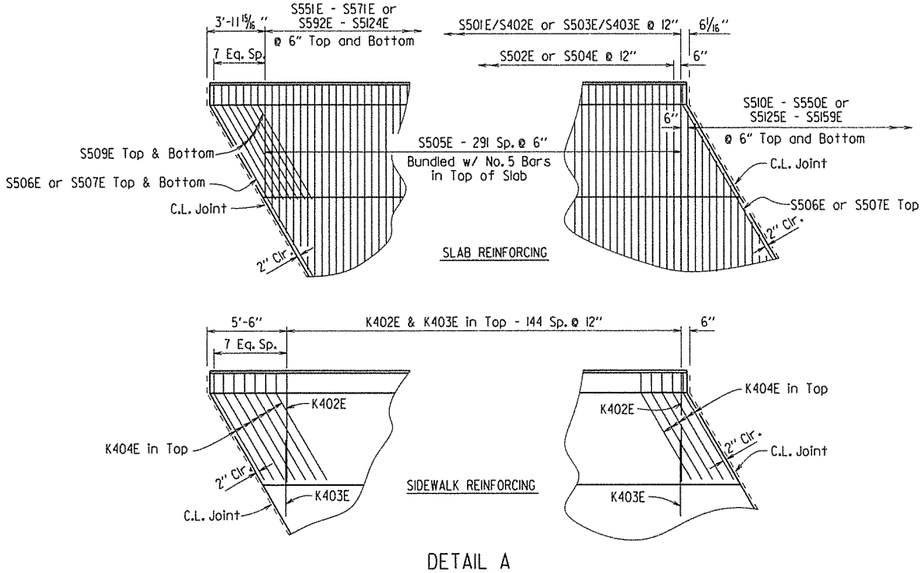



Use 1/2" X 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod shall not be installed. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Sealant must be gray or other color similar to concrete.

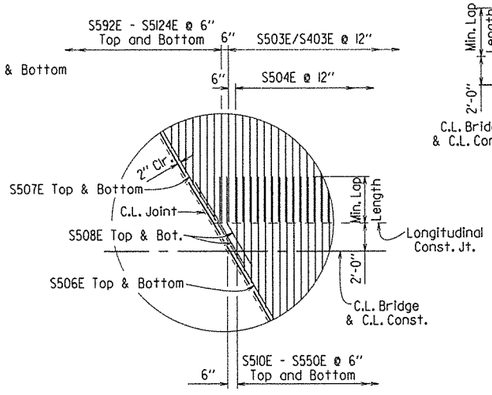
## LONGITUDINAL CONSTRUCTION JOINT DETAIL
No Scale

NOTE: See Dwg. No. 56245 for "SCREED RAIL SUPPORT" detail.

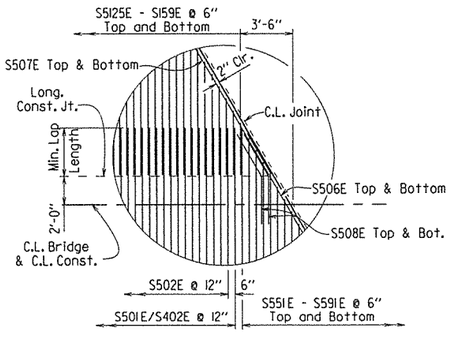
## REINFORCING PLAN



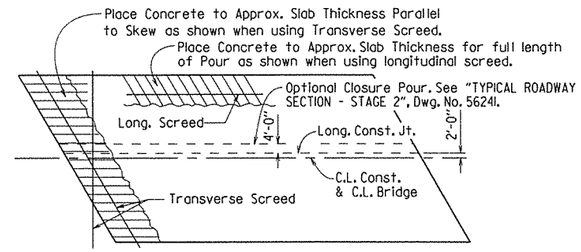

## DETAIL A
No Scale




## DETAIL B
No Scale




## DETAIL C
No Scale




## CONCRETE PLACEMENT PROCEDURE
No Scale

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

STATE OF ARKANSAS
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# SHEET 4 OF 7
# DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
# BNSF RAILROAD
ROUTE SEC.

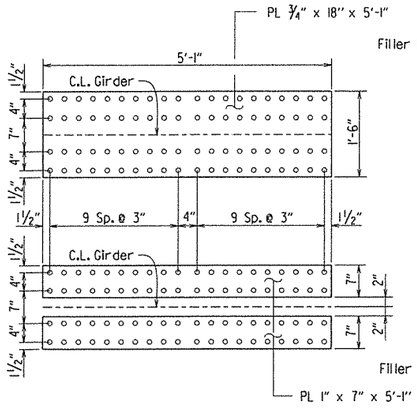
## ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 02/28/13
CHECKED BY: TMG DATE: 10/15/14
DESIGNED BY: LJB DATE: 2/13
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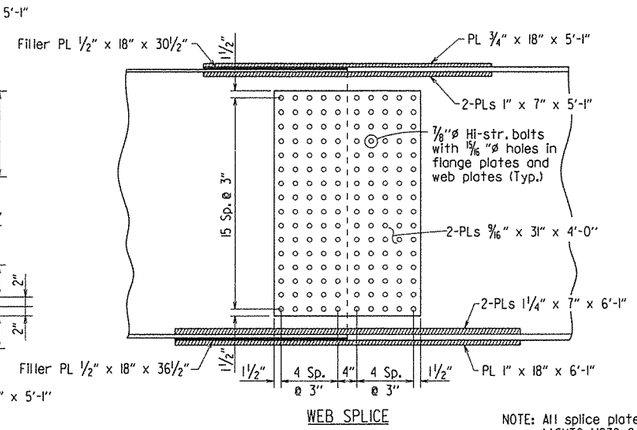
BRIDGE NO. 07300 DRAWING NO. 56244

PRINT DATE: 10-OCT-2014

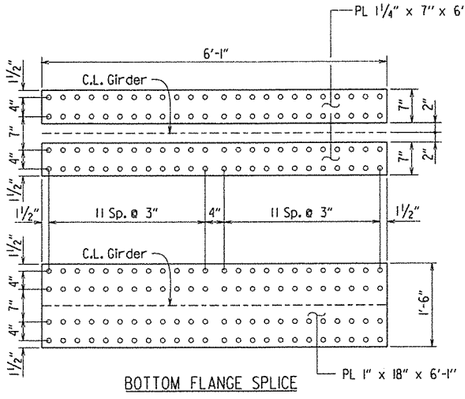
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 138 | 309 |
| | | | | ① 07300 - SPAN DETAILS - | | | 56245 | |




TOP FLANGE SPLICE




WEB SPLICE




BOTTOM FLANGE SPLICE

NOTE: All splice plates shall be AASHTO M270 Gr. 50W.

## DETAILS OF FIELD SPLICE

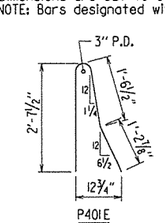
No Scale

## BAR LIST

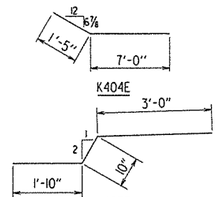
| MARK | NO. REQ'D. | LENGTH | P.D. |
|---|---|---|---|
| K401E | 64 | 39'-6" | Str. |
| K402E | 290 | 7'-6" | Str. |
| K403E | 290 | 5'-8" | 3" |
| K404E | 24 | 8'-5" | 3" |
| | | | |
| P401E | 600 | 5'-6" | 3" |
| P402E | 140 | 14'-8" | Str. |
| P403E | 72 | 5'-8" | Str. |
| | | | |
| P501E | 600 | 6'-4" | 3¾" |
| | | | |
| S401E | 828 | 39'-6" | Str. |
| S402E | 126 | 41'-8" | Str. |
| S403E | 130 | 34'-10" | Str. |
| | | | |
| S501E | 126 | 42'-4" | Str. |
| S502E | 125 | 43'-7" | 3¾" |
| S503E | 130 | 34'-10" | Str. |
| S504E | 129 | 35'-6" | 3¾" |
| S505E | 584 | 4'-8" | Str. |
| S506E | 4 | 48'-8" | 3¾" |
| S507E | 4 | 40'-0" | 3¾" |
| S508E | 8 | 6'-8" | 3¾" |
| S509E | 24 | 9'-2" | 3¾" |
| S510E-S550E | 2 each | 5'-9" to 40'-5" | Str. |
| S551E-S591E | 2 each | 42'-4" to 7'-10" | Str. |
| S592E-S5124E | 2 each | 7'-10" to 34'-10" | Str. |
| S5125E-S5159E | 2 each | 33'-0" to 3'-6" | Str. |

BENDING DIAGRAMS

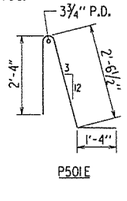
Dimensions are out to out of bars.
NOTE: Bars designated with an "E" suffix are to be epoxy coated.



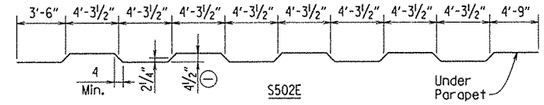

P401E



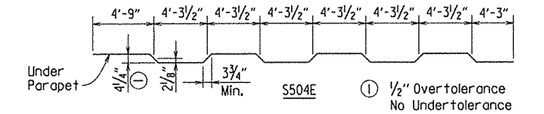

K404E K403E




P501E

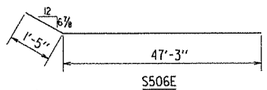



S502E

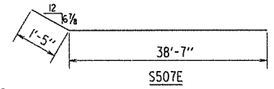



S504E

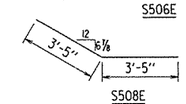
① ½" Overtolerance No Undertolerance



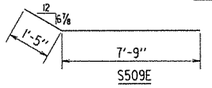

S506E




S507E




S508E



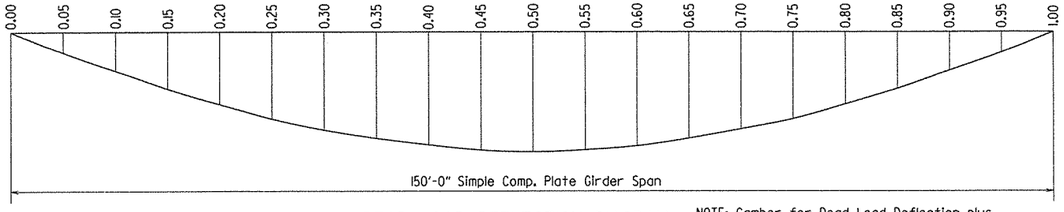

S509E

## TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

| Point of Deflection | STRUCTURAL STEEL | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | G-1 | G-2 | G-3 | G-4 | G-5 | G-6 | G-7 | G-8 | G-9 |
| 0.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.05 | 0.344 | 0.352 | 0.354 | 0.356 | 0.355 | 0.356 | 0.354 | 0.352 | 0.344 |
| 0.10 | 0.667 | 0.682 | 0.688 | 0.690 | 0.689 | 0.690 | 0.687 | 0.682 | 0.669 |
| 0.15 | 0.976 | 0.999 | 1.008 | 1.010 | 1.010 | 1.010 | 1.008 | 0.999 | 0.984 |
| 0.20 | 1.248 | 1.277 | 1.289 | 1.292 | 1.293 | 1.292 | 1.289 | 1.278 | 1.260 |
| 0.25 | 1.485 | 1.520 | 1.534 | 1.537 | 1.538 | 1.537 | 1.534 | 1.520 | 1.500 |
| 0.30 | 1.682 | 1.720 | 1.736 | 1.740 | 1.740 | 1.740 | 1.736 | 1.720 | 1.697 |
| 0.35 | 1.838 | 1.878 | 1.895 | 1.900 | 1.900 | 1.900 | 1.895 | 1.878 | 1.851 |
| 0.40 | 1.954 | 1.993 | 2.012 | 2.017 | 2.017 | 2.017 | 2.012 | 1.994 | 1.962 |
| 0.45 | 2.025 | 2.064 | 2.083 | 2.088 | 2.089 | 2.088 | 2.083 | 2.064 | 2.029 |
| 0.50 | 2.050 | 2.088 | 2.107 | 2.112 | 2.112 | 2.112 | 2.107 | 2.088 | 2.050 |
| 0.55 | 2.029 | 2.063 | 2.082 | 2.087 | 2.088 | 2.087 | 2.082 | 2.063 | 2.024 |
| 0.60 | 1.963 | 1.994 | 2.012 | 2.017 | 2.017 | 2.017 | 2.012 | 1.993 | 1.955 |
| 0.65 | 1.851 | 1.878 | 1.895 | 1.900 | 1.900 | 1.900 | 1.895 | 1.878 | 1.841 |
| 0.70 | 1.697 | 1.720 | 1.736 | 1.740 | 1.740 | 1.740 | 1.736 | 1.720 | 1.685 |
| 0.75 | 1.500 | 1.520 | 1.533 | 1.537 | 1.538 | 1.537 | 1.534 | 1.520 | 1.487 |
| 0.80 | 1.260 | 1.277 | 1.288 | 1.292 | 1.292 | 1.292 | 1.289 | 1.277 | 1.248 |
| 0.85 | 0.979 | 0.990 | 0.999 | 1.001 | 1.002 | 1.001 | 0.999 | 0.990 | 0.969 |
| 0.90 | 0.675 | 0.681 | 0.688 | 0.689 | 0.690 | 0.689 | 0.688 | 0.681 | 0.667 |
| 0.95 | 0.349 | 0.351 | 0.355 | 0.355 | 0.356 | 0.355 | 0.355 | 0.351 | 0.344 |
| 1.00 | 0.000 | 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 | G-9 |
| 0.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.05 | 1.165 | 1.291 | 1.338 | 1.349 | 1.348 | 1.350 | 1.338 | 1.289 | 1.163 |
| 0.10 | 2.256 | 2.501 | 2.593 | 2.615 | 2.614 | 2.616 | 2.595 | 2.497 | 2.260 |
| 0.15 | 3.300 | 3.661 | 3.800 | 3.829 | 3.830 | 3.831 | 3.802 | 3.657 | 3.325 |
| 0.20 | 4.218 | 4.680 | 4.859 | 4.896 | 4.897 | 4.898 | 4.861 | 4.675 | 4.258 |
| 0.25 | 5.016 | 5.563 | 5.777 | 5.821 | 5.823 | 5.823 | 5.779 | 5.557 | 5.066 |
| 0.30 | 5.678 | 6.291 | 6.535 | 6.584 | 6.586 | 6.587 | 6.537 | 6.286 | 5.729 |
| 0.35 | 6.204 | 6.865 | 7.132 | 7.186 | 7.188 | 7.188 | 7.134 | 6.860 | 6.247 |
| 0.40 | 6.593 | 7.283 | 7.569 | 7.627 | 7.628 | 7.629 | 7.570 | 7.280 | 6.619 |
| 0.45 | 6.832 | 7.538 | 7.836 | 7.896 | 7.897 | 7.897 | 7.836 | 7.537 | 6.845 |
| 0.50 | 6.916 | 7.622 | 7.925 | 7.986 | 7.987 | 7.986 | 7.925 | 7.623 | 6.917 |
| 0.55 | 6.844 | 7.533 | 7.833 | 7.893 | 7.894 | 7.892 | 7.832 | 7.535 | 6.830 |
| 0.60 | 6.622 | 7.280 | 7.571 | 7.629 | 7.629 | 7.627 | 7.570 | 7.283 | 6.596 |
| 0.65 | 6.248 | 6.860 | 7.134 | 7.189 | 7.189 | 7.187 | 7.132 | 6.864 | 6.212 |
| 0.70 | 5.729 | 6.285 | 6.536 | 6.587 | 6.586 | 6.584 | 6.534 | 6.291 | 5.688 |
| 0.75 | 5.065 | 5.556 | 5.777 | 5.822 | 5.821 | 5.819 | 5.775 | 5.561 | 5.023 |
| 0.80 | 4.256 | 4.671 | 4.857 | 4.895 | 4.894 | 4.892 | 4.856 | 4.677 | 4.218 |
| 0.85 | 3.308 | 3.623 | 3.768 | 3.796 | 3.796 | 3.794 | 3.767 | 3.628 | 3.274 |
| 0.90 | 2.283 | 2.495 | 2.596 | 2.614 | 2.615 | 2.612 | 2.594 | 2.499 | 2.256 |
| 0.95 | 1.180 | 1.287 | 1.340 | 1.348 | 1.349 | 1.348 | 1.339 | 1.289 | 1.165 |
| 1.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

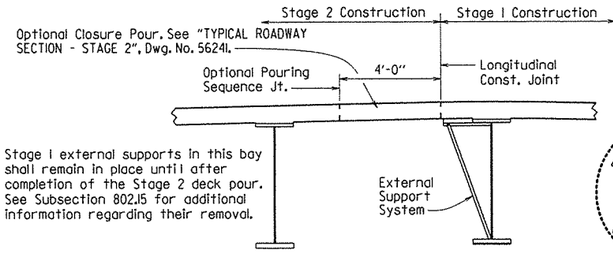
| Point of Deflection | STRUCTURAL STEEL + SLAB + SIDEWALK + PARAPET | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | G-1 | G-2 | G-3 | G-4 | G-5 | G-6 | G-7 | G-8 | G-9 |
| 0.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.05 | 1.375 | 1.442 | 1.459 | 1.458 | 1.455 | 1.465 | 1.472 | 1.461 | 1.384 |
| 0.10 | 2.663 | 2.796 | 2.829 | 2.826 | 2.822 | 2.838 | 2.855 | 2.829 | 2.691 |
| 0.15 | 3.898 | 4.096 | 4.148 | 4.140 | 4.135 | 4.156 | 4.182 | 4.143 | 3.960 |
| 0.20 | 4.983 | 5.240 | 5.306 | 5.295 | 5.288 | 5.315 | 5.347 | 5.296 | 5.074 |
| 0.25 | 5.927 | 6.234 | 6.313 | 6.298 | 6.290 | 6.320 | 6.358 | 6.296 | 6.042 |
| 0.30 | 6.710 | 7.054 | 7.144 | 7.126 | 7.117 | 7.151 | 7.194 | 7.123 | 6.837 |
| 0.35 | 7.330 | 7.702 | 7.800 | 7.780 | 7.770 | 7.805 | 7.852 | 7.774 | 7.458 |
| 0.40 | 7.787 | 8.175 | 8.281 | 8.260 | 8.247 | 8.286 | 8.332 | 8.250 | 7.905 |
| 0.45 | 8.066 | 8.464 | 8.575 | 8.553 | 8.540 | 8.578 | 8.625 | 8.540 | 8.178 |
| 0.50 | 8.161 | 8.559 | 8.673 | 8.651 | 8.638 | 8.676 | 8.723 | 8.636 | 8.266 |
| 0.55 | 8.071 | 8.459 | 8.573 | 8.551 | 8.538 | 8.575 | 8.620 | 8.534 | 8.164 |
| 0.60 | 7.804 | 8.174 | 8.285 | 8.265 | 8.252 | 8.287 | 8.331 | 8.245 | 7.885 |
| 0.65 | 7.355 | 7.700 | 7.806 | 7.788 | 7.777 | 7.809 | 7.847 | 7.767 | 7.426 |
| 0.70 | 6.736 | 7.051 | 7.150 | 7.135 | 7.124 | 7.154 | 7.188 | 7.114 | 6.799 |
| 0.75 | 5.947 | 6.229 | 6.317 | 6.306 | 6.297 | 6.322 | 6.351 | 6.285 | 6.003 |
| 0.80 | 4.988 | 5.232 | 5.309 | 5.301 | 5.294 | 5.315 | 5.339 | 5.282 | 5.039 |
| 0.85 | 3.869 | 4.055 | 4.117 | 4.111 | 4.107 | 4.123 | 4.142 | 4.095 | 3.909 |
| 0.90 | 2.666 | 2.790 | 2.836 | 2.831 | 2.830 | 2.840 | 2.853 | 2.820 | 2.692 |
| 0.95 | 1.376 | 1.438 | 1.463 | 1.460 | 1.460 | 1.466 | 1.473 | 1.454 | 1.389 |
| 1.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |




DEAD LOAD DEFLECTION DIAGRAM

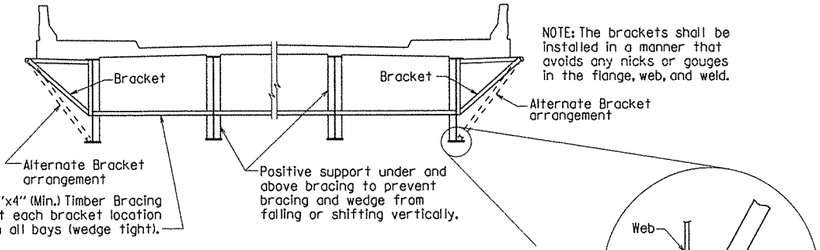
No Scale

NOTE: Camber for Dead Load Deflection plus vertical curve +/- ¼" tolerance. Deflections shown are along C.L. Girder from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included.




DECK SUPPORT AT LONGITUDINAL CONSTRUCTION JOINT

LOOKING AHEAD
No Scale




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 6" web stiffeners are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for crossframe connection plates shown on Dwg. No. 56243. 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

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 7
DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
BNSF RAILROAD
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

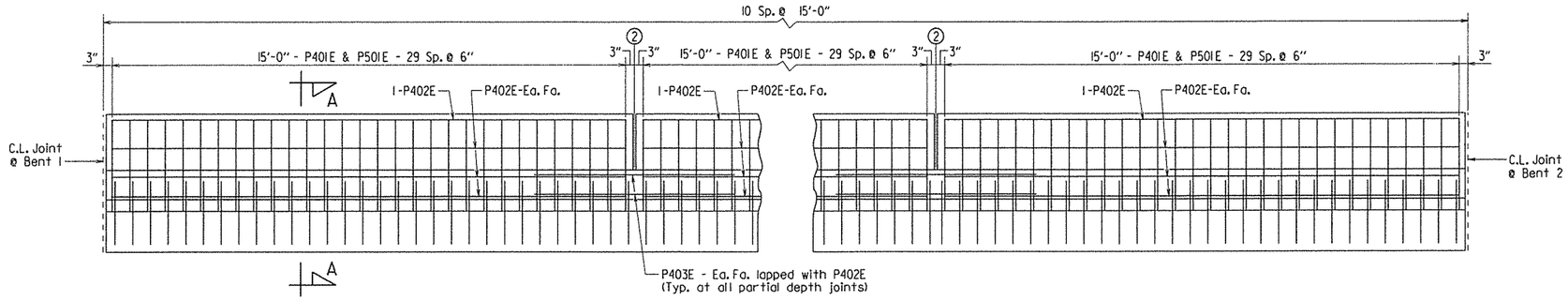
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CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: LJB DATE: 2/13
FILENAME: b050230x2_sl.dgn
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BRIDGE NO. 07300 DRAWING NO. 56245

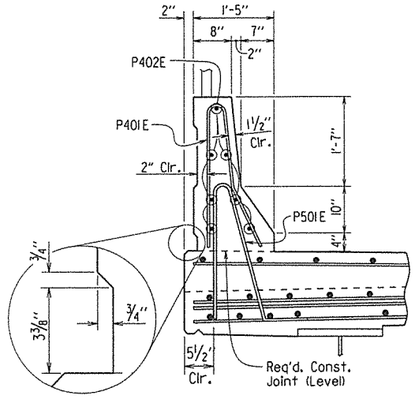
PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 139 | 359 |
| | | | | (1) 07300 - SPAN DETAILS - 56246 | | | | |

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) as shown in "Reinforcing Plan" Dwg. No. 56244. Stop 1'-2" from top of sidewalk.



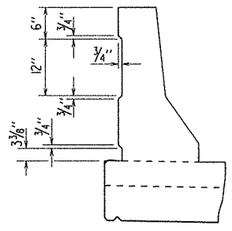

PARAPET RAIL DETAIL
No Scale




SECTION A-A
Scale : ¾" = 1'-0"

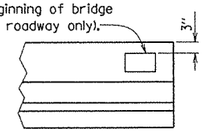



DETAILS OF PARAPET ENHANCEMENT
Outside Face Of Rail
No Scale

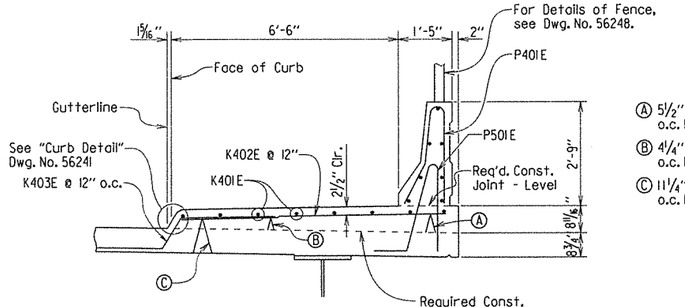



SECTION C-C
No Scale

Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge (Right side of roadway only).

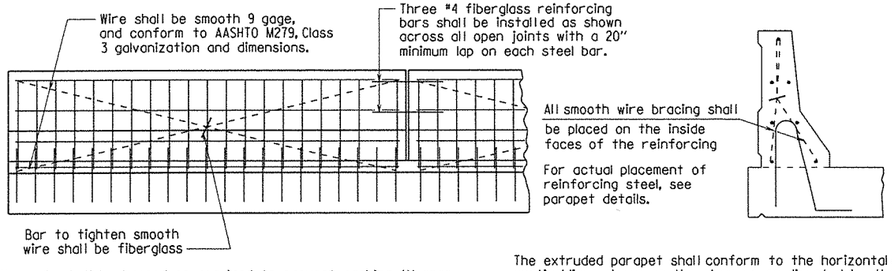



NAME PLATE DETAIL
No Scale




Ⓐ 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.

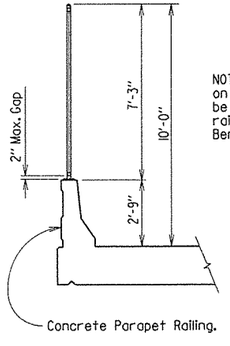
SIDEWALK DETAIL
Scale: ½" = 1'-0"




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 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




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 End Bent to End Bent. For fence details, see Dwg. No. 56248.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9255
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 6 OF 7
DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
BNSF RAILROAD
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 03/01/13
CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: LJB DATE: 2/13
FILENAME: b050230x2_sl.dgn
SCALE: ⅜" = 1'-0" or as noted

BRIDGE NO. 07300 DRAWING NO. 56246

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 140 | 309 |
| | | | | (1) 07300 - SPAN DETAILS - 56247 | | | | |

## 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 M31 or M322, 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)". Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36. All exposed surfaces shall be cleaned in accordance with Subsection 807.84, unless noted otherwise.

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(b)(1). 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 1/4" +/- is allowed for camber.

Field connections shall be bolted with high-strength bolts and shall be 7/8" diameter, except as noted. Holes for 7/8" diameter high-strength bolts 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.

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 the contractor or erector should want to make additional welds, whether temporary or permanent, he shall submit detailed drawings with a formal request to the Engineer for approval. All welding shall conform to Subsection 807.26.

Groove welds in main plate girder members shall be Quality Control (Q.C.) tested by nondestructive testing, as required by the Standard Specifications. 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.

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".

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.

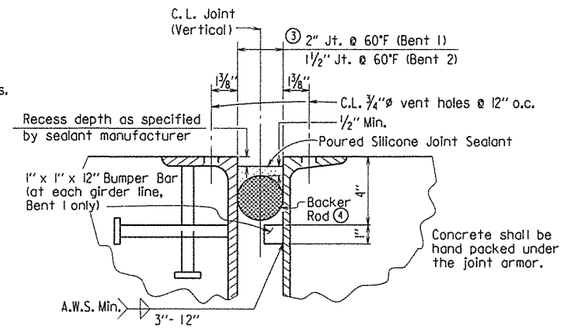
REINFORCING STEEL:
All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports. The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item of "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 3/4" unless otherwise noted.

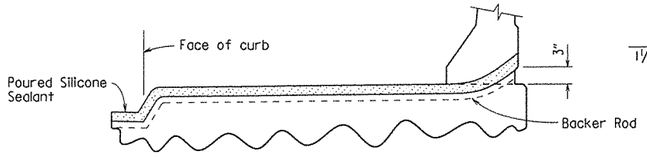
Concrete in bridge superstructure shall be placed, consolidated, and screeded off for the entire pour before any concrete has taken its initial set. This may require the use of a retarding agent.

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.

For each stage of construction, a minimum of 72 hours shall elapse between completion of the slab and the pouring of the sidewalk and a minimum of 72 hours shall elapse between the completion of the sidewalk and the pouring of the parapet railing.




DETAIL OF POURED SILICONE JOINT




JOINT SEAL PLACEMENT AT SIDEWALK & PARAPET

③ Installation is limited to 40° F min. and 80° F max. See "TABLE A" for installation temperatures other than 60° F

④ BACKER ROD NOTE:

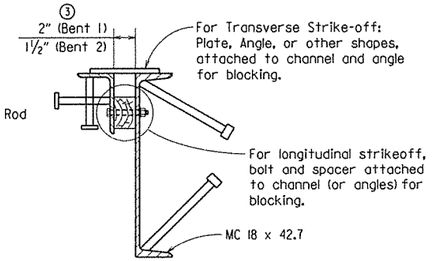
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as 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.

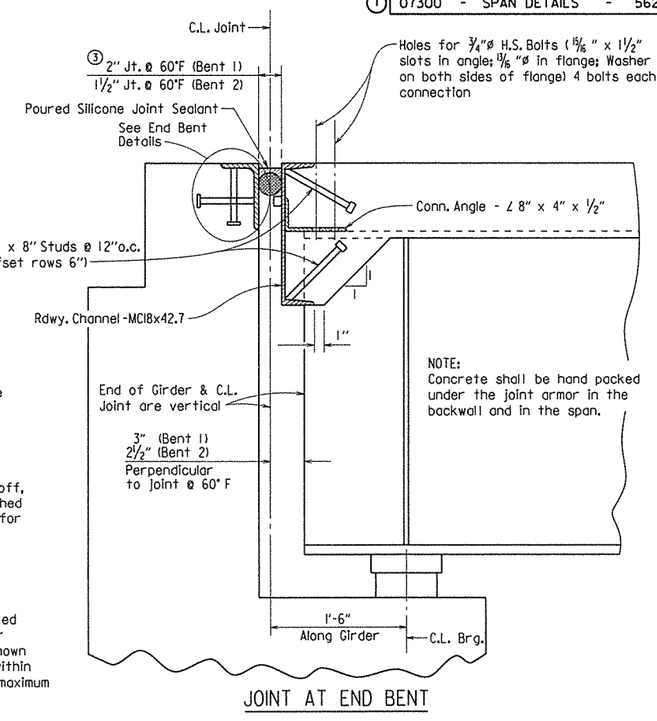
TABLE A

| ③ Width perpendicular to joint at 24 hour average temperature of: | | | |
|---|---|---|---|
| Bent No. | 40° F | 60° F | 80° F |
| 1 | 2 1/8" | 2" | 1 7/8" |
| 2 | 1 1/2" | 1 1/2" | 1 1/2" |




NOTE: Each expansion joint device shall be blocked in the Shop by the Fabricator to 2" (Bent 1) or 1 1/2" (Bent 2) and the blocking details shall be shown in the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

DETAILS FOR BLOCKING EXPANSION JOINT DEVICE



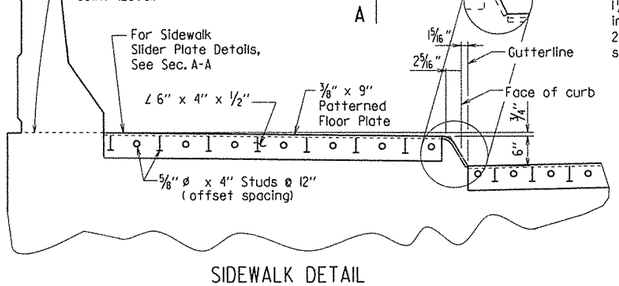

JOINT AT END BENT

## EXPANSION DEVICE INSTALLATION AT END BENTS

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

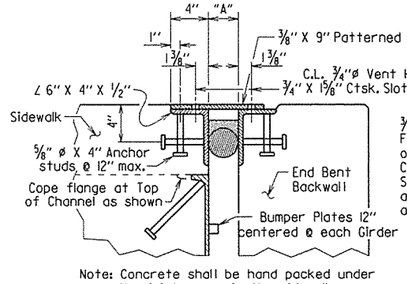
1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the girders erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature, and the backwall constructed.

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. Backfill shall not be placed behind the backwall until the deck concrete on the adjacent span has been placed.




SIDEWALK DETAIL
Show at End Bent - Similar on Span

Note: Concrete shall be Hand Packed Under Joint Armor.




3/4" X 1 5/8" Ctsk. Slots in 3/8" Floor Plates. Top 4" leg of angle for 5/8" ø Flat head Cap Screws @ 12" o.c. Install Screws in the Shop and ship as a unit. Remove screws after erection is complete.

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

SECTION A-A

NOTE:
The surfaces of the 3/8" pattern PL and ∠ 6" X 4" X 1/2" 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)".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

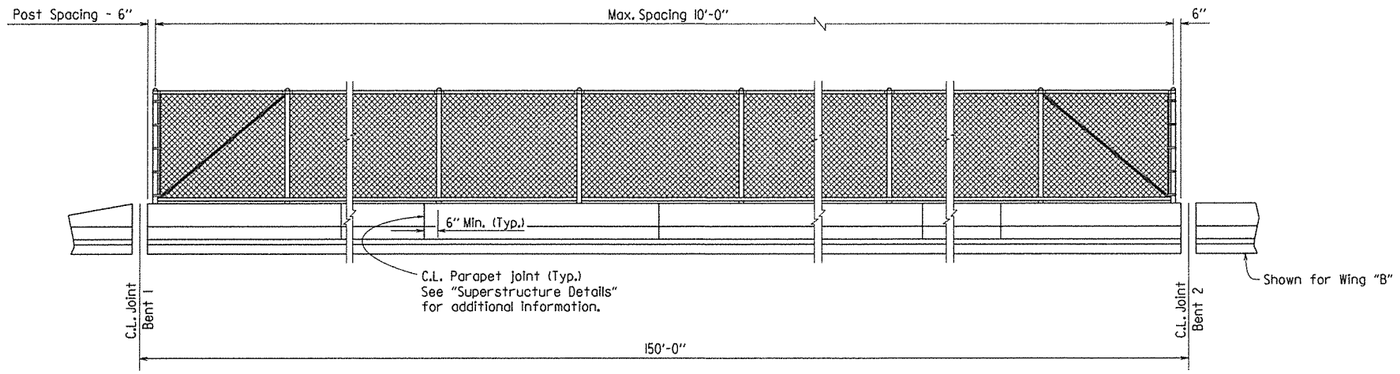
# SHEET 7 OF 7
# DETAILS OF 150'-0" SIMPLE COMPOSITE PLATE GIRDER SPAN
# BNSF RAILROAD
ROUTE SEC.
## ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 03/01/13 FILENAME: b050230x2_sl.dgn
CHECKED BY: TMG DATE: 10/13/14 SCALE: No Scale
DESIGNED BY: LDB DATE: 2/13

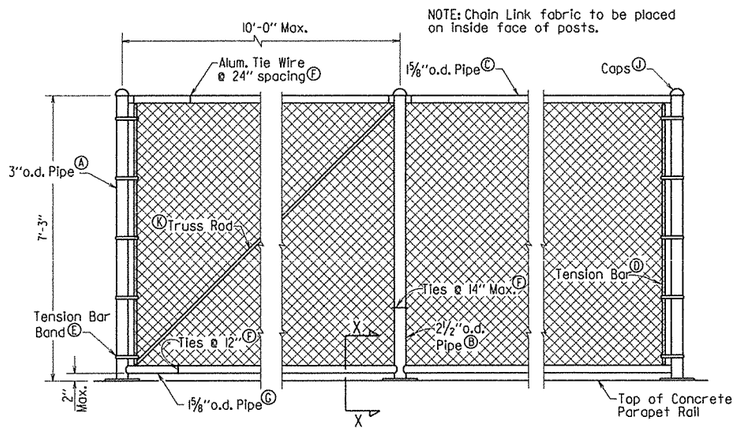
BRIDGE NO. 07300 DRAWING NO. 56247

PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 141 | 309 |
| | | | | (1) | 07300 - CHAIN LINK FENCE - 56248 | | | |



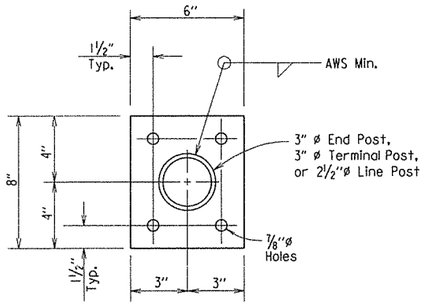

LONGITUDINAL VIEW OF CHAIN LINK FENCE



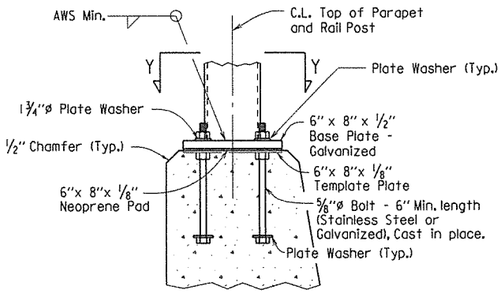

DETAIL OF CHAIN LINK FENCE

(A) END POST: 3" O.D.
(B) LINE POST: 2½" O.D.
(C) TOP RAIL: 1⅝" O.D.
(D) TENSION BAR: ⅜" x ¾" Bar
(E) TENSION BAR BAND: ¾"x .074 w/⅝"ø x 1¼" Bolt
(1 Band Top and Bottom w/15" Max. spaces )
(F) TIE WIRE: 9 Ga. Aluminum
(G) BOTTOM RAIL: 1⅝" O.D.
(H) FABRIC: 9 Ga. 2" Mesh w/Knucklug or Twisting Selvage
(J) CAPS: All Posts shall be Capped and Shall Conform to ASTM F626-84
(K) TRUSS ROD: Min. of 5/16" Round with Tighteners and Fittings

NOTE : Chain Link Fence attached to Bridge and including tapered panel section shall be paid for as "7' Steel Chain Link Fence". For additional details of Chain Link Fence, See Standard Drawing WF-3.




SECTION Y-Y




SECTION X-X

DETAILS OF POST ANCHOR SYSTEM

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, or M298, Class 40 or 50.

Nuts: Nuts shall conform to AASHTO M292, Gr. 8A (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 Course Series, Class 2 Fit, ASA Specification B1.1.

Washers: Washers shall be stainless steel and conform to the requirements of ASTM A276 or A167-Type 302 with dimensions meeting ASTM F436, or high strength steel conforming to AASHTO M293 and galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

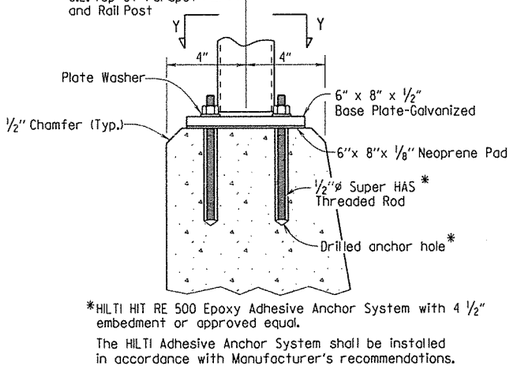
Base plates shall not be placed upon areas that are improperly finished, deformed, or irregular.

Plate Washers shall be stainless steel and conform to the requirements of ASTM A167-Type 302 or AASHTO M270, Gr. 36, galvanized in accordance with AASHTO M232 or M298, Class 40 or 50. Plate Washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series).

Chain Link Fence attached to Bridge and including tapered panel section shall be paid for as "7' Steel Chain Link Fence". For additional details of Chain Link Fence, See Standard Drawing WF-3.

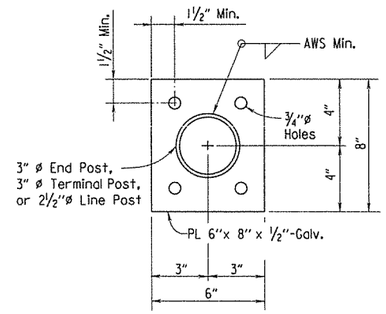
Neoprene pad and template plates shall not be paid for directly, but shall be considered incidental to the unit price bid for item "7' Steel Chain Link Fence".

Mixing of stainless steel and galvanized fasteners will not be permitted.




*HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4 ½" embedment or approved equal.
The HILTI Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.

SECTION X-X




SECTION Y-Y

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

DETAILS OF CHAIN LINK FENCE
BNSF RAILROAD

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 8-20-14 FILENAME: b050230x3.clf.dgn
CHECKED BY: JGT DATE: 8/20/14 SCALE: No Scale
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07300 DRAWING NO. 56248

PRINT DATE: 10-OCT-2014

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 1 of 2 | 2 |
| | | | | (1) 07301 - | | LAYOUT | - 56249 | |

For R/W Data, see Roadway Plans.

The Contractor shall excavate the existing embankment as shown at beginning and end of bridge. Approx. 2,385 Cubic Yards of excavation.

SPRING RIVER

Place 1'-6" Dumped Riprap on top of filter blanket. See Std. Dwg. No. 55001. Top of Riprap Elev. 503.0

Bldg.

Paved Parking

Sta. 227+00.00
76.26' Lt.

Sta. 226+69.80
47.19' Lt.

Excavate to Elev. 504.0

Excavate to Elev. 494.0

Excavate to Elev. 494.0

Exist. Bridge No. 02633

Top of Cut

Shoring

C.L. Exist Br.

C.L. Const. and C.L. Bridge

N 4° 05' 54.67" W

Tangent Dist. = 211.46'

Sta. 230+11 Toe of Cut

Test Hole (Typ.)

Approx. 1.9 Mi. to Jct. S.H. 342

Approx. 0.04 Mi. to Jct. S.H. 9

Toe of Cut

Toe of Fill

Sta. 227+28 Toe of Cut

1'-6" Curb & Gutter
3'-0" Grass Berm
5'-0" Sidewalk

58'-0" Face to Face
11'-0" Lane
11'-0" Lane
11'-0" Lane
10'-0"

Parapet 1'-5"
Sidewalk 6'-6"
Cir. Rdwy. 58'-0"
Out to Out 74'-2"
Stage Const. 35'-1"
Stage I Const. 39'-1"
Varies 28'-0" Min.
2'-0"
Slope Varies (1)

Sta. 226+00
Sta. 228+00
Sta. 229+00
Sta. 230+00
Sta. 231+00

1V:2H
20°
40°
50°

NOTE:
Portion of C.L. Bridge is on an 8° curve right. Longitudinal lines shall be constructed on curves concentric to C.L. Bridge. C.L. Joint at Bent 1 shall be on radial line to C.L. Bridge.

## PLAN

(1) See "Superelevation Transition Sketch"

(2) Low Steel is at Sta. 230+33.00

HORIZONTAL CURVE DATA
P.I. Sta. 223+98.60
Δ = 57°21'45.70" Rt.
D = 8°00'00"
T = 391.80'
$L_S$ = 425'

Total Length of Bridge = 365'-2½"

1'-1 ¼" | 363'-0" Continuous Composite W-Beam Unit (66'-77'-77'-77'-66') | 1'-1 ¼"

C.L. 2½" Poured Silicone Joint

C.L. 2½" Poured Silicone Joint

NOTE:
Stations shown are along C.L. Bridge and C.L. Construction. Elevations and vertical dimensions shown are based on actual elevation at C.L. Bridge. See "SUPER ELEVATION TRANSITION SKETCH"

## TABLE OF VARIABLES

| BENT NO. | C.L. Deck to Low Seat of Cap |
|---|---|
| 2 | 5'-3 1/8" |
| 3 | 5'-0 5/16" |
| 4 | 5'-0 1/8" |
| 5 | 5'-0 1/8" |

Slope Intercept Sta. 226+61.00

Beg. Br. Sta. 226+69.90 Elev. 502.77

Type H Rail See Dwg. No. 56275

C.L. Bent Sta. 227+37.00 Elev. 511.48

C.L. Deck to Low Seat of Cap Int. Bents (See Table of Variables)

C.L. Bent Sta. 228+14.00 Elev. 510.55

Design H. W. to Low Steel = 2.2'

C.L. Bent Sta. 228+91.00 Elev. 510.26

4'-7¾" C.L. Deck (2) to Low Steel

C.L. Bent Sta. 229+68.00 Elev. 510.03

Concrete Parapet Rail

End Br. Sta. 230+35.10 Elev. 509.83

Slope Intercept Sta. 230+44.00

Proposed Grade Line at C.L. Const.

Existing Ground Line at C.L. Const.

Exp. Fix. Exp. Fix. Exp. Exp.

22' Pile
20' Piles
17' Piles
19' Pile

Elev. 493.20
Elev. 478.22
Elev. 477.52
Elev. 492.10
Elev. 489.70
Elev. 477.25
Elev. 479.02
Elev. 494.00

28'-0" | 28'-0" | 28'-0" | 26'-0"

050 Design H. W. Elevation 503.0

| BENT NO. | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| | A1 6.5' | P1 8.5' | C2 4.5' | C3 0.3' | | |
| | B1 8.5' | Q1 13.3' | D2 5.5' | D3 4.7' | | |
| | C1 13.5' | R1 18.3' | E2 13.9' | E3 7.7' | | |
| | D1 18.5' | S1 23.3' | F2 18.9' | E2 9.8' | | |
| | E1 23.5' | T1 28.3' | G2 23.9' | N3 14.2' | | |
| | F1 28.5' | U1 33.3' | H2 33.8' | N2 19.2' | | |
| | G1 33.5' | V1 38.3' | J2 36.5' | F1 29.2' | | |
| | H1 38.5' | W1 43.3' | | P2 34.2' | | |
| | J1 43.5' | X1 48.3' | | Q2 39.2' | | |
| | B1 48.5' | Y1 53.3' | | F1 40.8' | | |
| | K1 53.5' | Z1 58.3' | | | | |
| | L1 58.5' | A2 63.3' | | | | |
| | M1 63.5' | B2 70.8' | | | | |
| | N1 66.9' | | | | | |

Sta. 226+85
35' Rt. of C.L. of Const.

Sta. 227+28
24' Rt. of C.L. of Const.

Sta. 229+82
13' Rt. of C.L. of Const.

Sta. 230+45
34' Rt. of C.L. of Const.

## ELEVATION

(4) See Dwg. No. 56250 for Boring Legend and "N" Values.

28'-0" | Actual Elev. | Edge of Inside Lane
3.80% slope
2% slope
Theo. Working Point | Super Elev. Rotation Point
Sta. 226+17.58 to Sta. 228+18.90
(Super Elev. Transition Begins)

Edge of Inside Lane | Face of Curb 1'-0"
2% slope | Actual Elev.
Theo. Working Point | Super Elev. Rotation Point
Sta. 228+18.90 to Sta. 230+50.00
(Reverse Crown)

Actual Elev. | Edge of Inside Lane
2% slope | 2% slope | Super Elev. Rotation Point
C.L. Bridge | Theo. Working Point
Sta. 230+50.00 to Sta. 232+73.68
(Super Elev. Transition Ends)

## SUPERELEVATION TRANSITION SKETCH

Looking Ahead
No Scale

K 100.85
VC=250'
e=0.77'
-2.78%
-0.30%
P.V.I. 227+17.17
ELEV. 500.78

K 248.91
VC=150'
e=0.11'
-0.30%
0.30%
P.V.I. 231+02.60
ELEV. 509.63

## VERTICAL CURVE DATA

Along C.L. Const. (Theoretical Working Point) See "SUPER ELEVATION TRANSITION SKETCH", for actual elevations.

## HYDRAULIC DATA

| FLOOD DESCRIPTION | FREQUENCY | DISCHARGE THRU BRIDGE OPENING | (3) NATURAL WATER SURFACE ELEVATION | WATER SURFACE ELEVATION W/ BACKWATER |
|---|---|---|---|---|
| | YEARS | CFS | FEET | FEET |
| Design | 050 | 39,500 | 502.6 | 503.0 |
| Base | 0100 | 46,000 | 504.1 | 504.5 |
| Extreme | 0500 | 62,000 | 507.5 | 508.7 |
| Overtopping | >0500 | — | — | — |

(3) Unconstricted water surface elevation without structure and roadway approaches.
Estimated 100-Year backwater elevation with Existing Structures in place is 505.2 ft.
Proposed Low Bridge Member Elevation = 505.2
Drainage area = 268.0 square miles
Historical H.W. Elev. = N/A

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

# SHEET 1 OF 2
# LAYOUT OF BRIDGE OVER SPRING RIVER
# HWY. 9 - SO. OF HWY. 342 (MAMMOTH SPRING) (S)
# FULTON COUNTY
ROUTE 63 SEC. 1

## ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 03/28/12 FILENAME: b050230x3_11.dgn
CHECKED BY: IGT DATE: 9/16/14 SCALE: 1" = 30'-0"
DESIGNED BY: SMP DATE: 2/2012

BRIDGE NO. 07301 DRAWING NO. 56249

| 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. | | 050230 | 143 | 304 |
| | | | | (1) 07301 - | | LAYOUT | - 56250 | |

## BORING LEGEND

A1-Moist, Stiff, Brown Clay with Sand and Light Gray Gravel (Dolostone Fragments)
B1-DOLOSTONE - Light Gray, Medium Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and Vertically Fractured Layers
C1-DOLOSTONE - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Moderate Dip and Vertically Fractured Layers
D1-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip and occasional Fractured Layers
E1-DOLOSTONE WITH CHERT PARTINGS - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
F1-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
G1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Thick Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip
H1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Medium Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and Fractured Layers
J1-DOLOSTONE - Light Gray, Very Thick Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and Vertically Fractured Layers
K1-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and Vertically Fractured Layers
L1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
M1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip and Fractured Layers
N1-DOLOSTONE WITH FREQUENT CHERT LAYERS - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Moderate Dip
P1-Wet, Medium Dense, Reddish Brown Clayey Sand with Gravel (Dolostone Fragments) and Cobbles
Q1-DOLOSTONE - Light Gray, Medium Bedded, Weathered, Hard, with Moderate Dip and Fractured Layers
R1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Medium Bedded, Moderately Hard, with Moderate Dip and Fractured Layers
S1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Thick Bedded, Moderately Hard, with Moderate Dip and Fractured Layers
T1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Thick Bedded, Hard, with Moderate Dip and Vertically Fractured Layers
U1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Thick Bedded, Hard, with Moderate Dip and occasional Fractured Seams
V1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Very Thick Bedded, Hard, with Moderate Dip
W1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Medium Bedded, Moderately Hard, with Moderate Dip and occasional Vertically Fractured Layers
X1-DOLOSTONE WITH OCCASIONAL WEATHERED SEAMS - Light Gray, Thick Bedded, Hard, with Moderate Dip and occasional Vertically Fractured Layers
Y1-DOLOSTONE WITH CHERT LAYERS AND OCCASIONAL WEATHERED SEAMS - Light Gray, Medium Bedded, Hard, with Moderate Dip and occasional Vertically Fractured Layers
Z1-DOLOSTONE WITH CHERT LAYERS - Light Gray, Very Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
A2-DOLOSTONE WITH CHERT LAYERS AND OCCASIONAL WEATHERED SEAMS - Light Gray, Thick Bedded, Hard, with Moderate Dip and occasional Fractured Layers
B2-DOLOSTONE WITH CHERT LAYERS AND OCCASIONAL WEATHERED SEAMS - Light Gray and Brown, Thick Bedded, Moderately Hard, with Moderate Dip and Vertically Fractured Layers
C2-Wet, Medium Dense, Brown Clayey Sand with Gravel (Dolostone Fragments)
D2-DOLOSTONE - Light Gray, Moderately Hard
E2-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
F2-DOLOSTONE - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Moderate Dip
G2-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Hard, with Moderate Dip and Fractured Layers
H2-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and Fractured Layers
J2-DOLOSTONE WITH OCCASIONAL CHERT SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and Fractured Layers
K2-Wet, Medium Dense, Brown Clayey Sand with Gravel (Dolostone Fragments) and Cobbles
L2-Wet, Medium Dense, Brown Clayey Sand with Gravel (Dolostone Fragments)
M2-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Thick Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip
N2-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip
P2-DOLOSTONE WITH OCCASIONAL SHALE SEAMS - Light Gray, Medium Bedded, Slightly Weathered, Moderately Hard, with Moderate Dip and some Fractured Layers
Q2-DOLOSTONE - Light Gray, Thick Bedded, Slightly Weathered, Hard, with Moderate Dip

## "N" VALUES

Sta. 226+85 - 35' Right of C.L. of Construction
5.0- 5.9, N=64( 11" )

Sta. 227+28 - 24' Right of C.L. of Construction
5.0- 6.0, N=20

Sta. 229+82 - 13' Right of C.L. of Construction
4.9- 5.2, N=60( 3" )

Sta. 230+45 - 34' Right of C.L. of Construction
5.2- 6.2, N=26

## GENERAL NOTES

BENCH MARK: NGS Mark L 308, 19.29' Rt. of Sta. 223+01.198 Elev. 518.96.

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

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

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 (Gr. 60, AASHTO M 31 or M 322, Type A) | Fy = 60,000 psi |
| Structural Steel (AASHTO M 270, Gr. 50W) | Fy = 50,000 psi |
| Structural Steel (AASHTO M 270, Gr. 36) | Fy = 36,000 psi |

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL PILING: Piling for Bents 1 and 6 shall be HP12x53 (Grade 50) and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 75 tons per pile and into the material designated as Hard Dolostone 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 Subsection 805.14. Piles in end bents are to be driven after embankment to bottom of cap is in place. On all piling, the Contractor shall use approved steel H-pile driving points.

FOOTINGS: The top of the footings for Bents 2-5 shall be set at or below top of Dolostone. Foundations for footings shall be prepared in accordance with Subsection 801.04. Rock excavation shall be made to neat lines of the concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting. Concrete in footings shall be poured directly against excavated surfaces of rock. Excavations shall be backfilled and compacted to the level of surrounding ground in accordance with Subsection 801.08.

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. The 6'-6" Sidewalk shall receive a broomed finish as specified for final finishing in Subsection 802.19 for Class 6, Broomed Finish.

| DETAIL DRAWINGS: | DRAWING NO. |
|---|---|
| Details of End Bents | 56252 – 56254, 56261 – 56263 |
| Details of Intermediate Bents | 56255 – 56260 |
| Details of Elastomeric Bearings | 56264 |
| 363' Continuous Composite W-Beam Unit | 56265 – 56274 |
| Steel Piling | 55020 |

EXISTING BRIDGE: Existing Bridge No. 02633 (LM 0.27) is 29.8' wide and 273' long consisting of concrete deck on continuous steel stringers supported by concrete substructure. The existing bridge C.L. is approx. 30' downstream of Proposed C.L. Construction.

SHORING: Shoring is required at Bridge Ends for Stage 1 Construction. See SP Job No. 050230 "Shoring".

REMOVAL AND SALVAGE: After Stage 1 Construction of the New Bridge is completed and opened to traffic, existing Bridge No. 02633 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

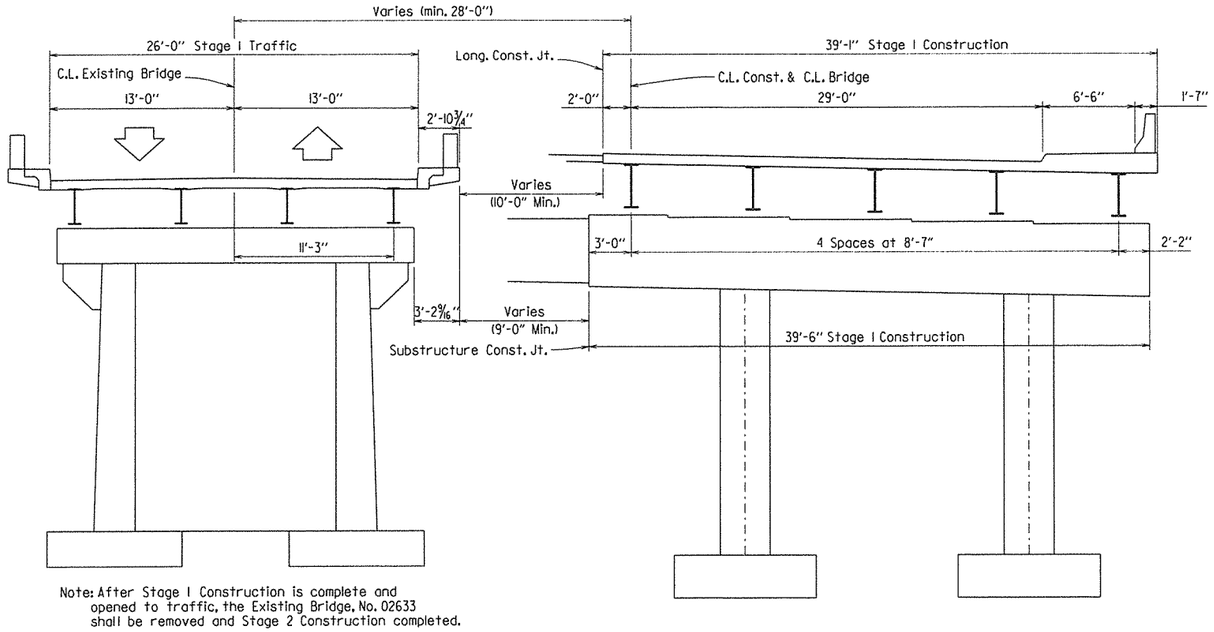
SHEET 2 OF 2
LAYOUT OF BRIDGE OVER SPRING RIVER
HWY. 9 - SO. OF HWY. 342 (MAMMOTH SPRING) (S)
FULTON COUNTY
ROUTE 63 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 03/28/12 FILENAME: b050230x3_11.dgn
CHECKED BY: JCT DATE: 9/11/14 SCALE: NO SCALE
DESIGNED BY: SMD DATE: 2/2012

BRIDGE NO. 07301 DRAWING NO. 56250

| 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. | | 050230 | 144 | 309 |

(1) 07301 - STAGED CONSTRUCTION - 56251



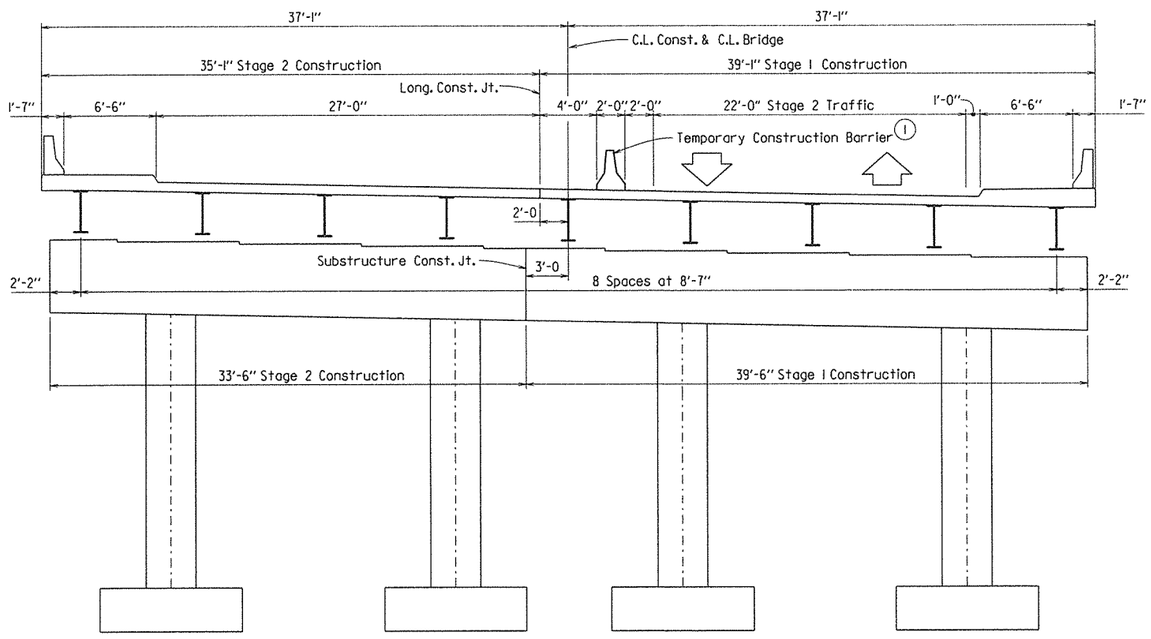

Note: After Stage 1 Construction is complete and opened to traffic, the Existing Bridge, No. 02633 shall be removed and Stage 2 Construction completed.

## STAGE 1 CONSTRUCTION

Looking Ahead

Note: Details related to Maintenance of Traffic are shown on Bridge Plans for information only. For Maintenance of Traffic plans and additional information, see Roadway Plans.

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




## STAGE 2 CONSTRUCTION

Looking Ahead

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# DETAILS OF STAGED CONSTRUCTION
# SPRING RIVER
# HWY. 9-SO. OF HWY. 342 (MAMMOTH SPRING)(S)
# FULTON COUNTY

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 4/10/2012 FILENAME: b050230x3_sc.dgn

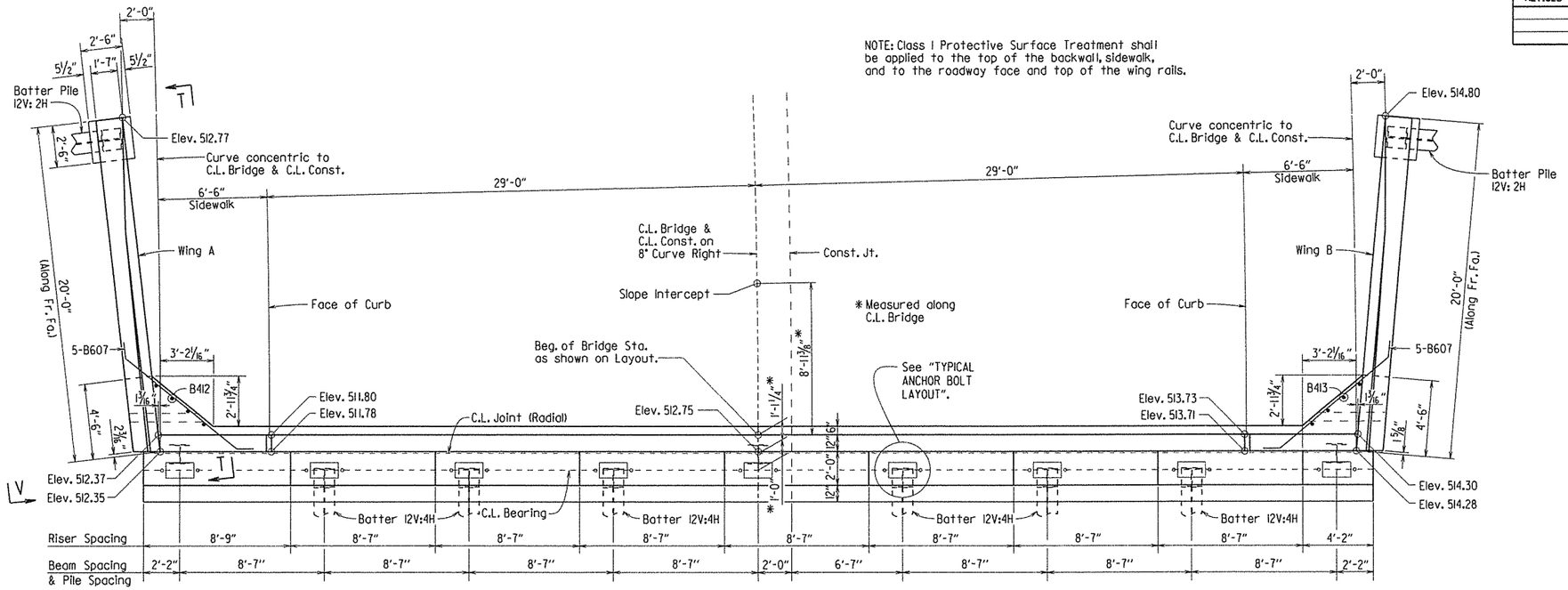
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DESIGNED BY: SWP DATE: 2/2012

BRIDGE NO. 7301 DRAWING NO. 56251

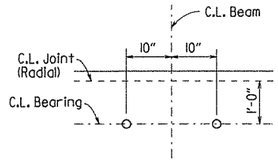
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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 145 | 309 |
| | | | | (1) 07301 - END BENT DETAILS - 56252 | | | | |




PLAN

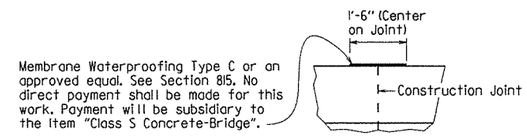
NOTE: See Dwg. No. 56253 for "VIEW V-V" and "SECTION T-T".




NOTE: For Details of Elastomeric Bearings, See Dwg. No. 56264

TYPICAL ANCHOR BOLT LAYOUT

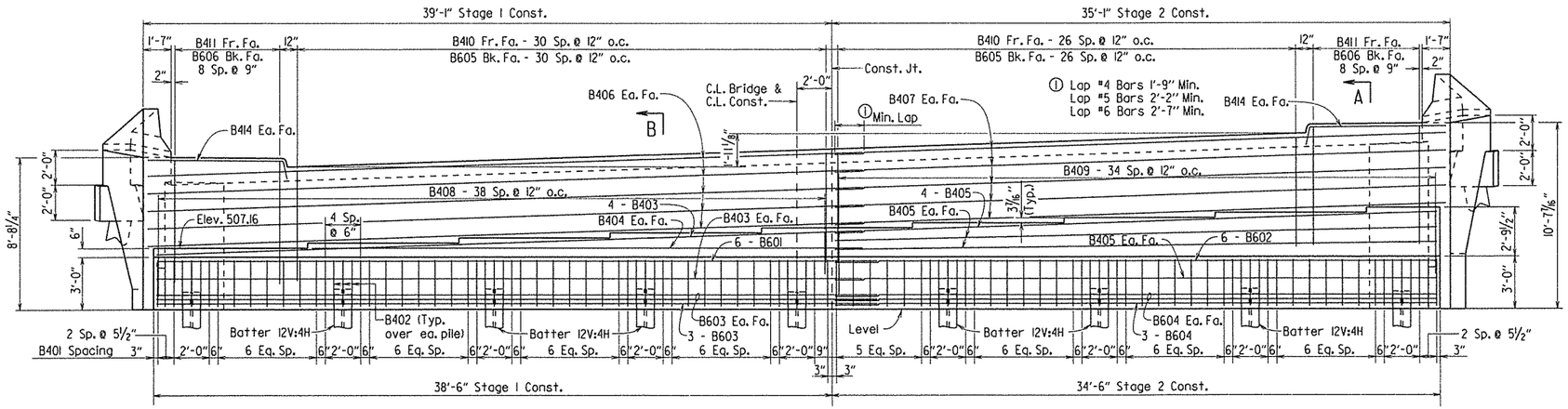
Scale: 3/4" = 1'-0"




Membrane Waterproofing Type C or an approved equal. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".

CONSTRUCTION JOINT DETAIL

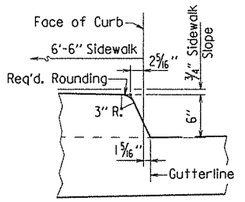
No Scale




NOTE: See Dwg. No. 56253 for "SECTION A-A" and "SECTION B-B".

ELEVATION

Looking Back




SIDEWALK CURB DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
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10-13-14
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BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF BENT 1
SPRING RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

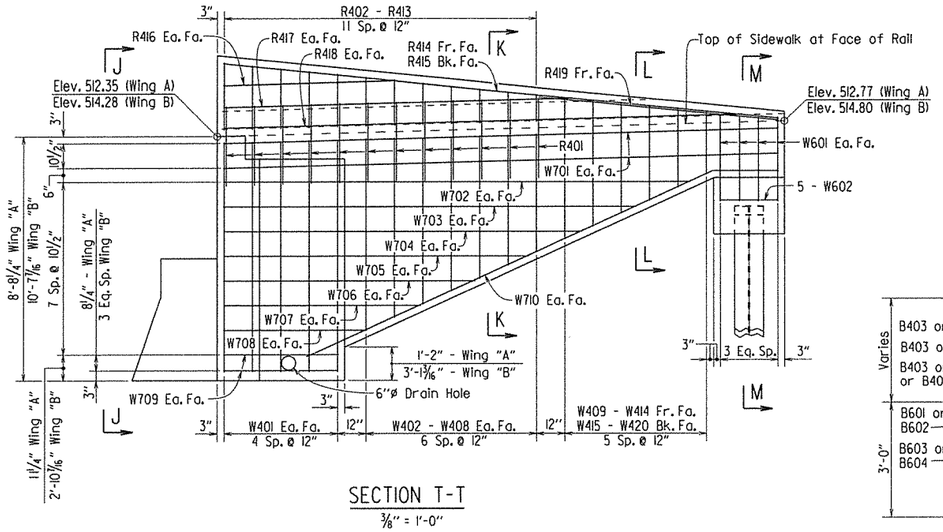
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DESIGNED BY: Engr DATE: 6/2014 or as shown

BRIDGE NO. 07301 DRAWING NO. 56252

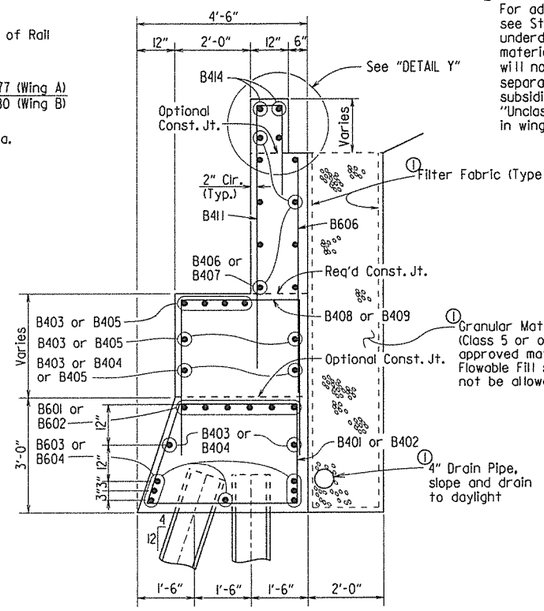
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 146 | 309 |

(1) 07301 - END BENT DETAIL - 56253




SECTION T-T
3/8" = 1'-0"



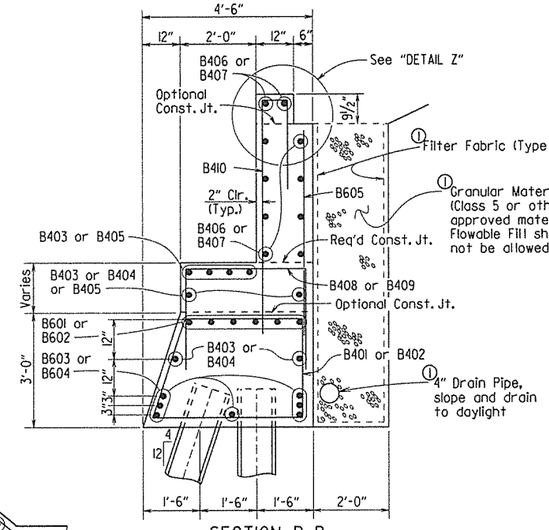

SECTION A-A
1/2" = 1'-0"

① NOTE:
For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, and filter fabric will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation". Locate holes in wings to miss reinforcing steel.

① Filter Fabric (Type 1)

① Granular Material (Class 5 or other approved material. Flowable Fill shall not be allowed.

① 4" Drain Pipe, slope and drain to daylight

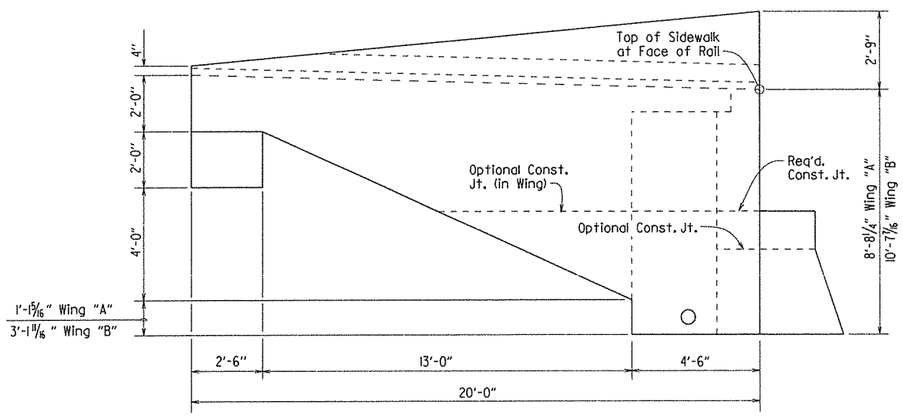



① Filter Fabric (Type 1)

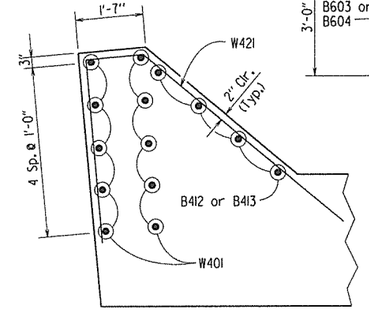
① Granular Material (Class 5 or other approved material. Flowable Fill shall not be allowed.

① 4" Drain Pipe, slope and drain to daylight

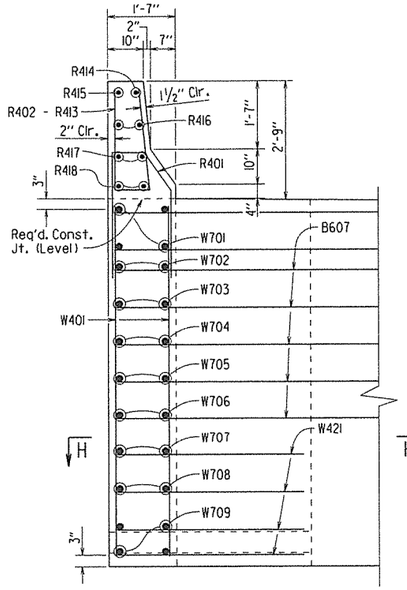
SECTION B-B
1/2" = 1'-0"

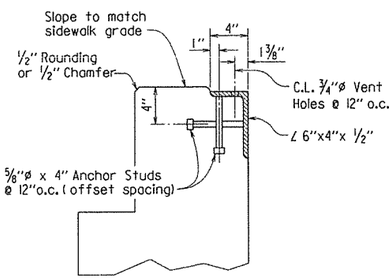



VIEW V-V
3/8" = 1'-0"




SECTION H-H
No Scale



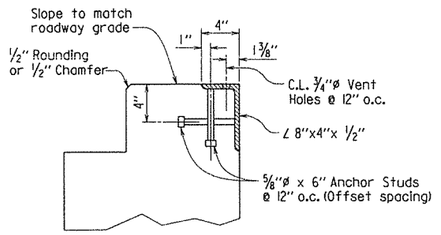




DETAIL Y
No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56274.

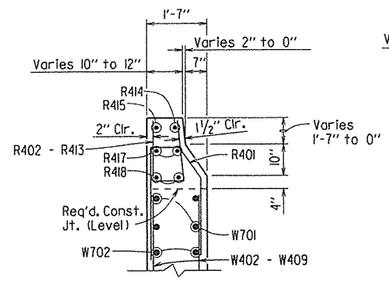



DETAIL Z
No Scale

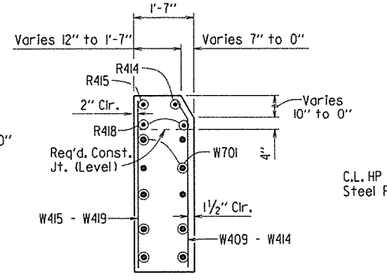
NOTES:
Concrete shall be hand packed under the joint armor.

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

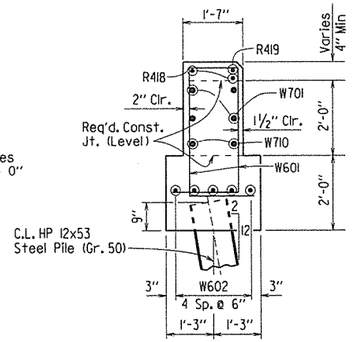
For additional joint details, see Dwg. No. 56274.




SECTION K-K
1/2" = 1'-0"




SECTION L-L
1/2" = 1'-0"




SECTION M-M
1/2" = 1'-0"

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF BENT 1
SPRING RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 07/30/14
CHECKED BY: JGT DATE: 8/18/14
DESIGNED BY: SNP DATE: 6/2014
FILENAME: b050230x3_bl.dgn
SCALE: 3/8" = 1'-0" or as shown

BRIDGE NO. 07301 DRAWING NO. 56253

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 147 | 309 |

(1) 07301 - END BENT DETAILS - 56254

GENERAL NOTES

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

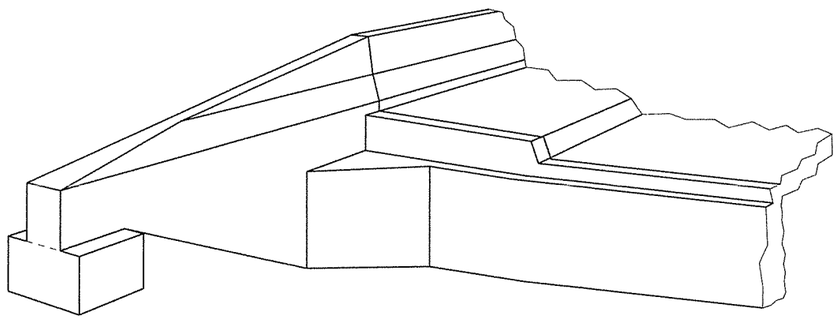
All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note, Dwg. 56274.

Concrete shall be hand packed under the joint armor.

For additional information see Layout.



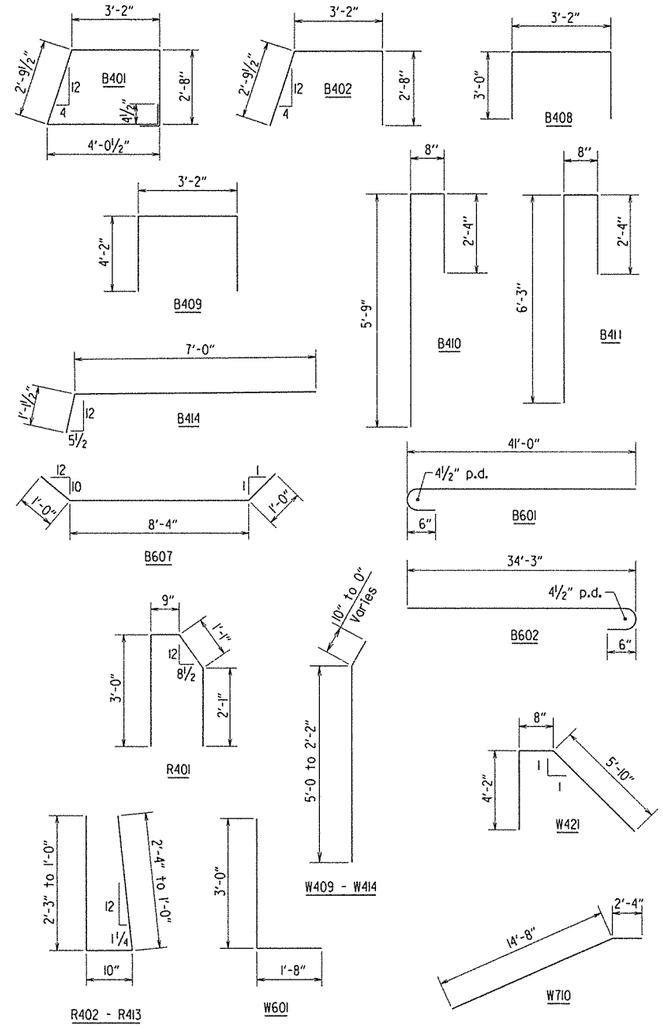
PICTORIAL OF END BENT RAILING

## BAR LIST

| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| B401 | 41 | 37 | 13'-1" | 2" |
| B402 | 15 | 12 | 8'-5" | 2" |
| B403 | 6 | - | 40'-2" | Str. |
| B404 | 2 | - | 31'-5" | Str. |
| B405 | - | 10 | 34'-3" | Str. |
| B406 | 10 | - | 40'-9" | Str. |
| B407 | - | 10 | 34'-10" | Str. |
| B408 | 39 | - | 9'-0" | 2" |
| B409 | - | 35 | 11'-4" | 2" |
| B410 | 31 | 27 | 8'-7" | 2" |
| B411 | 9 | 9 | 9'-1" | 2" |
| B412 | 4 | - | 7'-0" | Str. |
| B413 | - | 4 | 9'-0" | Str. |
| B414 | 2 | 2 | 8'-2" | 2" |
| | | | | |
| B601 | 6 | - | 41'-8" | 4 1/2" |
| B602 | - | 6 | 34'-11" | 4 1/2" |
| B603 | 7 | - | 41'-0" | Str. |
| B604 | - | 7 | 34'-3" | Str. |
| B605 | 31 | 27 | 5'-5" | Str. |
| B606 | 9 | 9 | 6'-3" | Str. |
| B607 | 5 | 5 | 10'-4" | 4 1/2" |
| | | | | |
| R401 | 12 | 12 | 6'-10" | 2" |
| R402-R413 | 1 Ea. | 1 Ea. | 5'-5" - 2'-10" | 2" |
| R414 | 1 | 1 | 12'-3" | Str. |
| R415 | 1 | 1 | 19'-2" | Str. |
| R416 | 2 | 2 | 6'-1" | Str. |
| R417 | 2 | 2 | 12'-4" | Str. |
| R418 | 2 | 2 | 18'-3" | Str. |
| R419 | 1 | 1 | 8'-6" | Str. |
| | | | Wing "A" / Wing "B" | |
| W401 | 10 | 10 | 8'-4" / 10'-2" | Str. |
| W402-W408 | 2 Ea. | 2 Ea. | 6'-9" - 4'-2" | Str. |
| W409-W414 | 1 Ea. | 1 Ea. | 5'-0" - 2'-2" | 2" |
| W415-W420 | 1 Ea. | 1 Ea. | 4'-10" - 2'-1" | Str. |
| W421 | 4 | 6 | 10'-7" | 2" |
| | | | | |
| W601 | 8 | 8 | 4'-6" | 4 1/2" |
| W602 | 5 | 5 | 2'-2" | Str. |
| | | | | |
| W701 | 4 | 4 | 19'-8" | Str. |
| W702-W708 | 2 Ea. | 2 Ea. | 16'-5" - 5'-0" | Str. |
| W709 | 4 | 8 | 4'-2" | Str. |
| W710 | 2 | 2 | 17'-0" | 5 1/4" |

BENDING DIAGRAMS

Dimensions are out to out of bars.




STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF BENT 1
SPRING RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

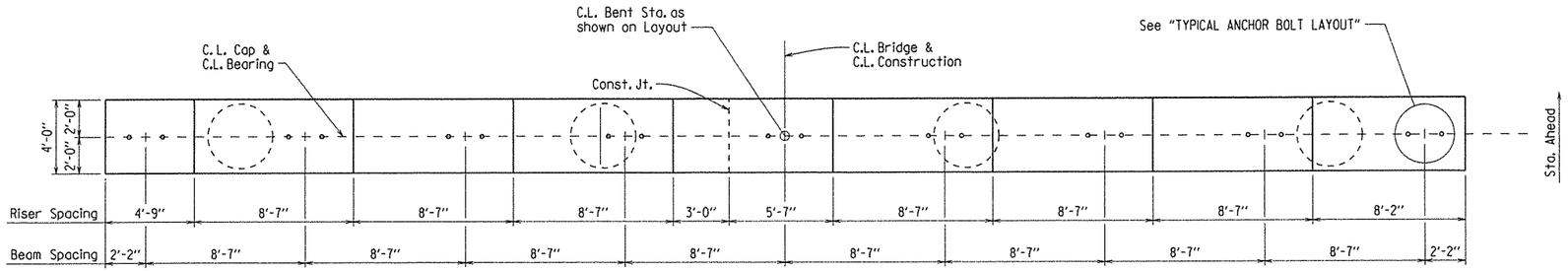
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 07/30/14 FILENAME: b050230x3_bl.dgn
CHECKED BY: JGT DATE: 8/15/14 SCALE: No Scale
DESIGNED BY: SMP DATE: 6/2014

BRIDGE NO. 07301 DRAWING NO. 56254

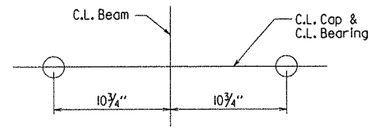
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 148 | 309 |
| | | | | (1) 07301 - BENT 2 - 56255 | | | | |




PLAN

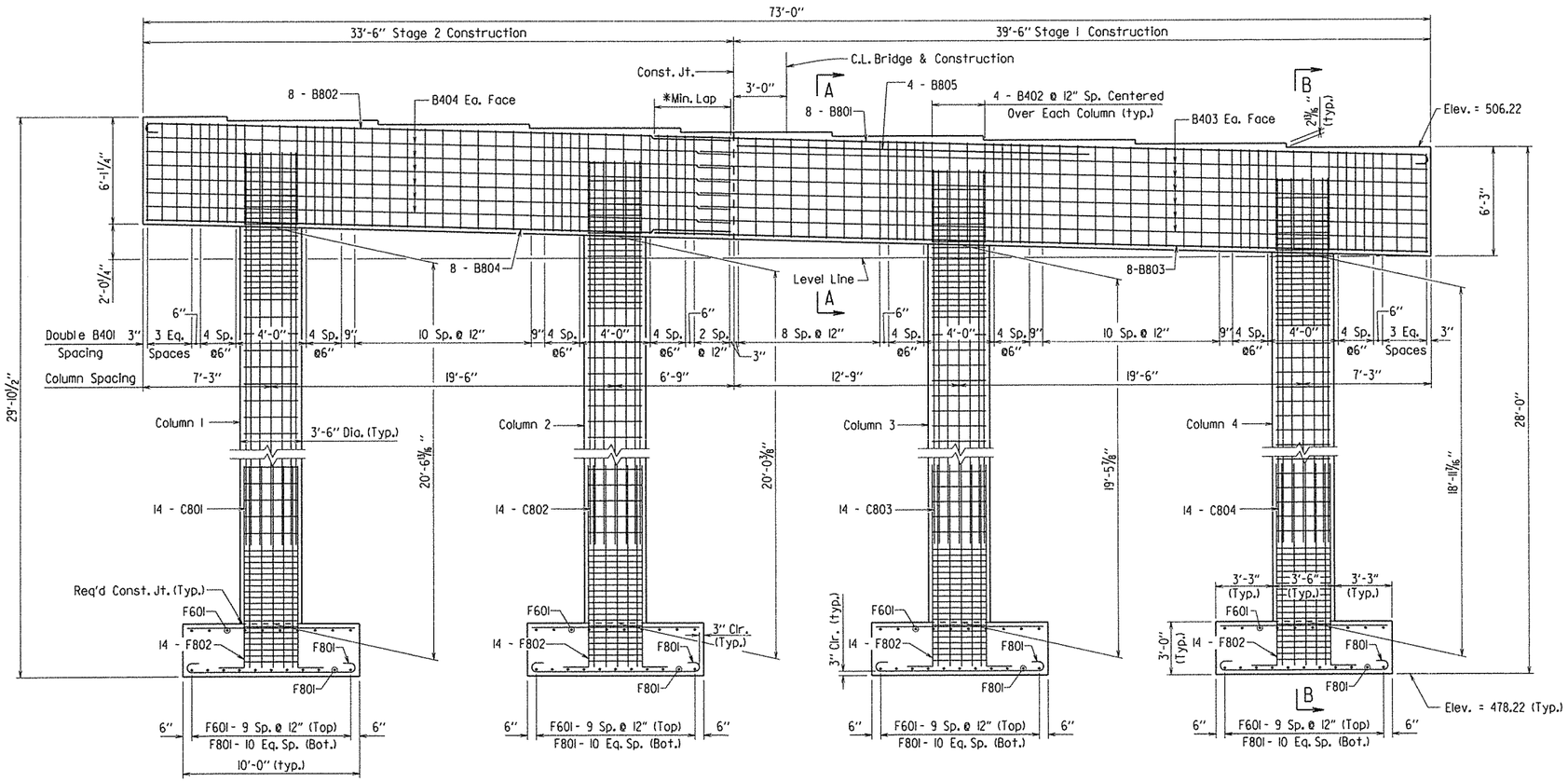
*Minimum Bar Laps
No. 4 - 1'-9"
No. 8 - 4'-6"




TYPICAL ANCHOR BOLT LAYOUT

No Scale

For Details of Elastomeric Bearings, See Dwg. No. 56264




NOTE:
For "SECTION A-A" and "SECTION B-B", see Dwg. No. 56256

ELEVATION

(LOOKING AHEAD)

STATE OF ARKANSAS
Charles Ray Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 2
SPRING RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

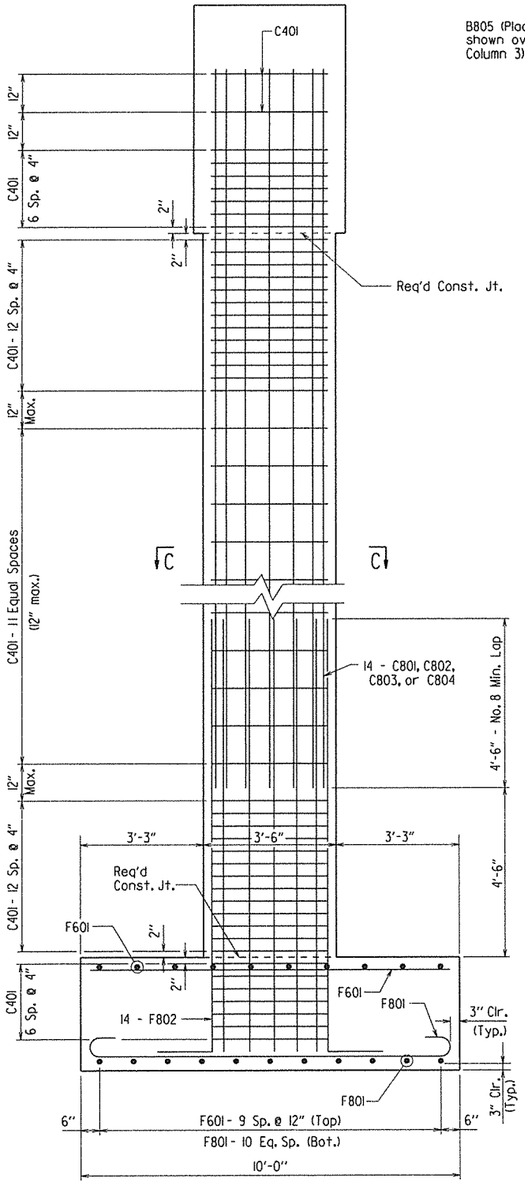
LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 7/22/14
CHECKED BY: JCT DATE: 9/16/14
DESIGNED BY: SWP DATE: 6/2014
FILENAME: b050230x3_b2.dgn
SCALE: 1/4"= 1'-0"

BRIDGE NO. 07301 DRAWING NO. 56255

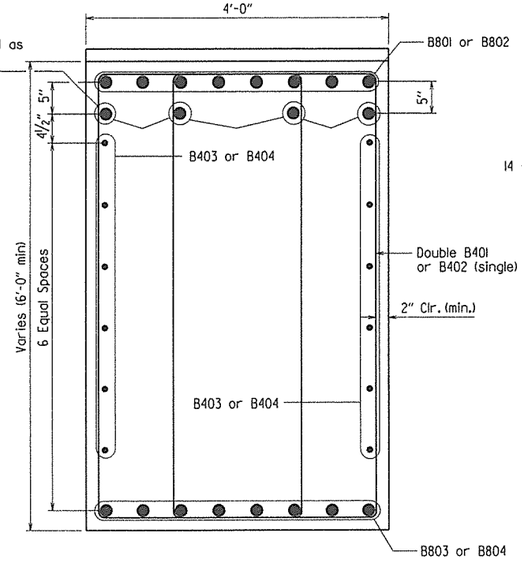
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 149 | 389 |
| | | | | (1) | 07301 | - BENT 2 - | | 56256 |



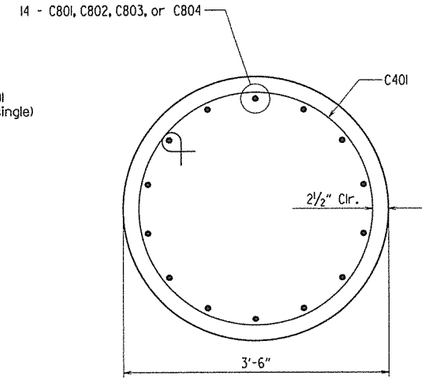

SECTION B - B

½" = 1'-0"




SECTION A - A

1" = 1'-0"



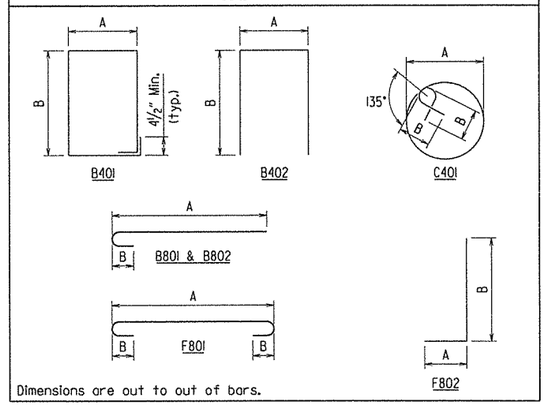

SECTION C - C

1" = 1'-0"

## BAR LIST

| MARK | STAGE 1 | STAGE 2 | LENGTH | 'A' | 'B' | P.D. |
|---|---|---|---|---|---|---|
| B401 | 88 | 76 | 17'-0" | 2'-8" | 5'-8" | 2" |
| B402 | 8 | 8 | 14'-10" | 3'-8" | 5'-8" | 2" |
| B403 | 12 | - | 41'-2" | - | - | Str. |
| B404 | - | 12 | 33'-4" | - | - | Str. |
| | | | | | | |
| B801 | 8 | - | 45'-0" | 44'-1" | 8" | 6" |
| B802 | - | 8 | 34'-3" | 33'-4" | 8" | 6" |
| B803 | 8 | - | 44'-0" | - | - | Str. |
| B804 | - | 8 | 33'-4" | - | - | Str. |
| B805 | 4 | - | 20'-0" | - | - | Str. |
| | | | | | | |
| C401 | 108 | 108 | 10'-9" | 3'-1" | 5" | 3" |
| | | | | | | |
| C801 | - | 14 | 20'-7" | - | - | Str. |
| C802 | - | 14 | 20'-1" | - | - | Str. |
| C803 | 14 | - | 19'-6" | - | - | Str. |
| C804 | 14 | - | 19'-0" | - | - | Str. |
| | | | | | | |
| F601 | 40 | 40 | 9'-6" | - | - | Str. |
| | | | | | | |
| F801 | 44 | 44 | 11'-4" | 9'-6" | 8" | 6" |
| F802 | 28 | 28 | 14'-8" | 1'-4" | 13'-7" | 6" |

BENDING DIAGRAMS




Dimensions are out to out of bars.

GENERAL NOTES

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

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

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

For additional information, see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 2
SPRING RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

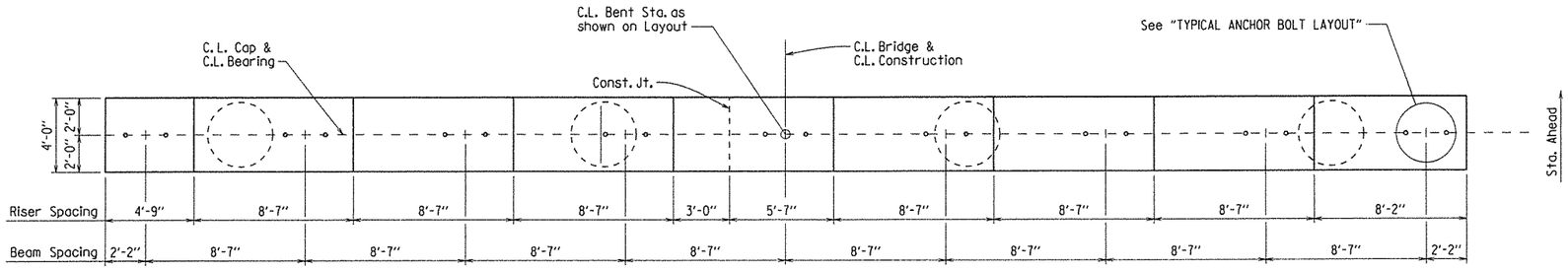
LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 7/22/2014 FILENAME: b050230x3_b2.dgn
CHECKED BY: JGT DATE: 9/16/14 SCALE: ½" = 1'-0"
DESIGNED BY: SWP DATE: 6/2014

BRIDGE NO. 07301 DRAWING NO. 56256

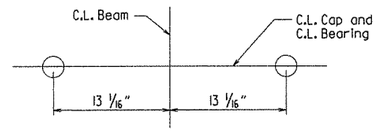
PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 150 | 309 |
| | | | | (1) | 07301 - | BENT 3 & 4 - | | 56257 |



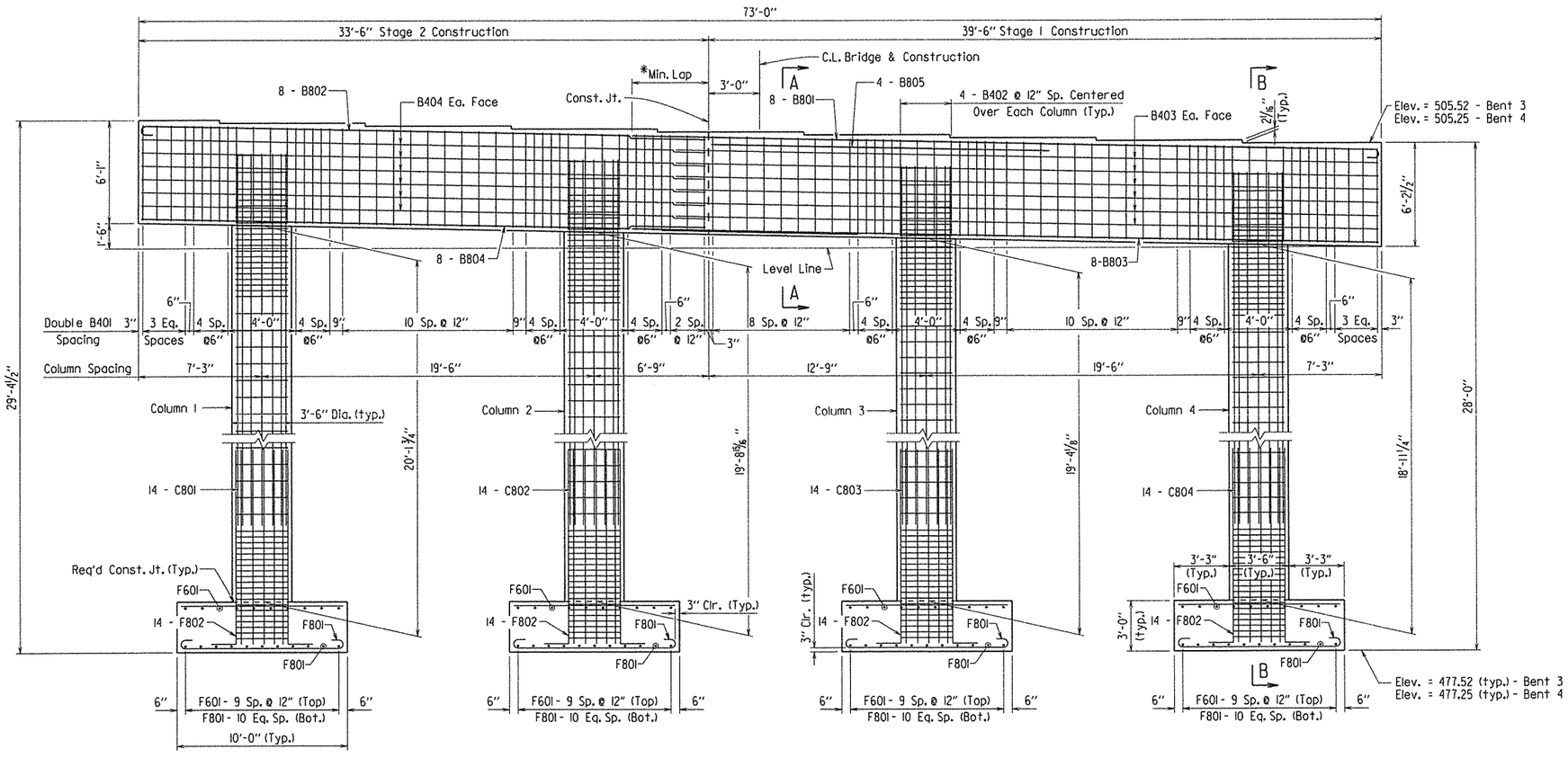

PLAN

*Minimum Bar Laps
No. 4 - 1'-9"
No. 8 - 4'-6"




TYPICAL ANCHOR BOLT LAYOUT

Not to Scale
For Details of Elastomeric Bearings, See Dwg. No. 56264




NOTE:
For "SECTION A-A" and "SECTION B-B", see Dwg. No. 56258

ELEVATION
(LOOKING AHEAD)

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9335
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENTS 3 & 4
SPRING RIVER

ROUTE SEC.

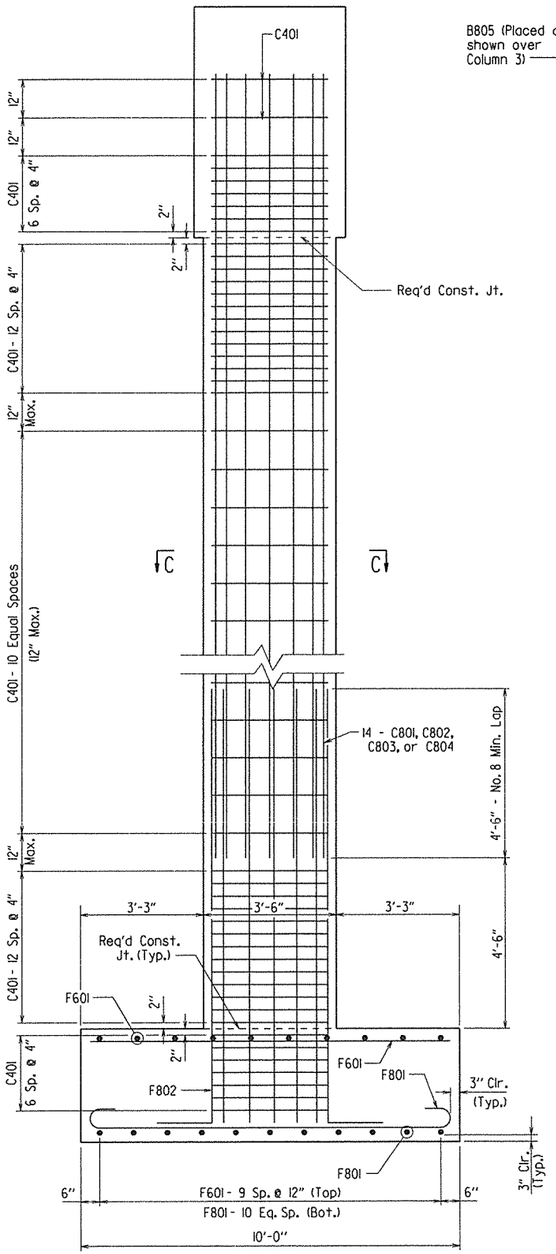
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 7/22/14
CHECKED BY: JGT DATE: 9/16/14
DESIGNED BY: SWP DATE: 6/2014
FILENAME: b050230x3_b2.dgn
SCALE: 1/4"= 1'-0"

BRIDGE NO. 07301 DRAWING NO. 56257

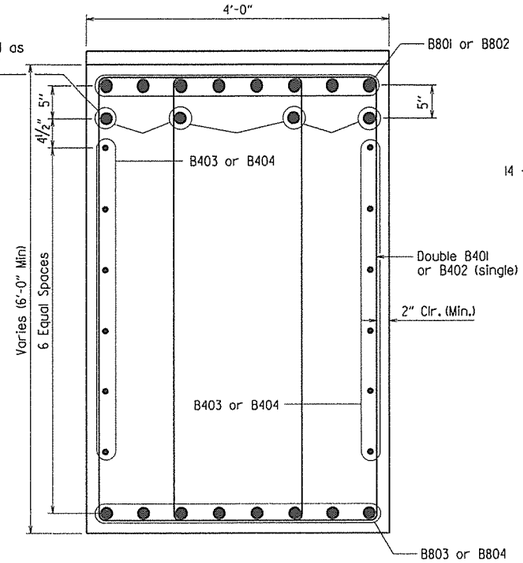
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 151 | 209 |
| | | | | (1) 07301 - BENT 3 & 4 - 56258 | | | | |



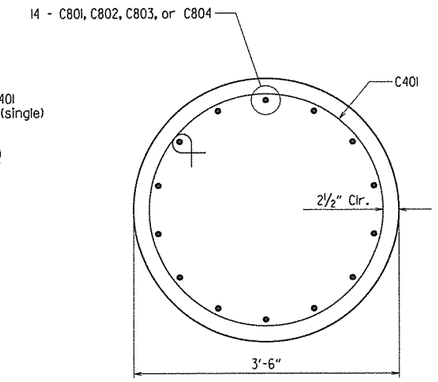

SECTION B - B

1/2" = 1'-0"




SECTION A - A

1" = 1'-0"



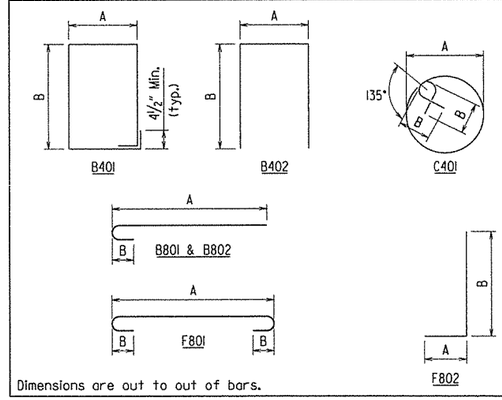

SECTION C - C

1" = 1'-0"

## BAR LIST - PER BENT

| MARK | STAGE 1 | STAGE 2 | LENGTH | 'A' | 'B' | P.D. |
|---|---|---|---|---|---|---|
| B401 | 88 | 76 | 17'-0" | 2'-8" | 5'-8" | 2" |
| B402 | 8 | 8 | 14'-10" | 3'-8" | 5'-8" | 2" |
| B403 | 12 | - | 41'-2" | - | - | Str. |
| B404 | - | 12 | 33'-4" | - | - | Str. |
| | | | | | | |
| B801 | 8 | - | 45'-0" | 44'-1" | 8" | 6" |
| B802 | - | 8 | 34'-3" | 33'-4" | 8" | 6" |
| B803 | 8 | - | 44'-0" | - | - | Str. |
| B804 | - | 8 | 33'-4" | - | - | Str. |
| B805 | 4 | - | 20'-0" | - | - | Str. |
| | | | | | | |
| C401 | 106 | 106 | 10'-9" | 3'-1" | 5" | 3" |
| | | | | | | |
| C801 | - | 14 | 20'-3" | - | - | Str. |
| C802 | - | 14 | 19'-10" | - | - | Str. |
| C803 | 14 | - | 19'-5" | - | - | Str. |
| C804 | 14 | - | 18'-11" | - | - | Str. |
| | | | | | | |
| F601 | 40 | 40 | 9'-6" | - | - | Str. |
| | | | | | | |
| F801 | 44 | 44 | 11'-4" | 9'-6" | 8" | 6" |
| F802 | 28 | 28 | 14'-8" | 1'-4" | 13'-7" | 6" |

BENDING DIAGRAMS




Dimensions are out to out of bars.

GENERAL NOTES

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

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

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

For additional information, see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENTS 3 & 4
SPRING RIVER

ROUTE SEC.

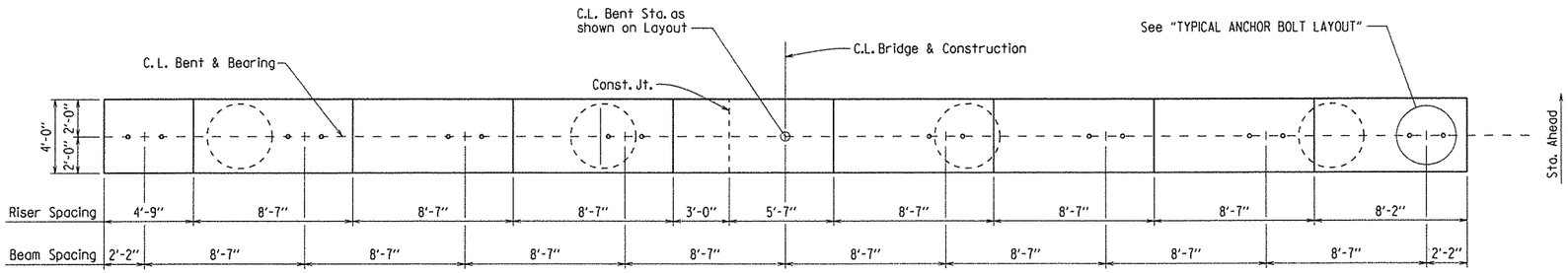
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 7/22/2014 FILENAME: b050230x3_b2.dgn
CHECKED BY: JCT DATE: 9/Oct/14 SCALE: 1/2" = 1'-0"
DESIGNED BY: SWP DATE: 6/20/14

BRIDGE NO. 07301 DRAWING NO. 56258

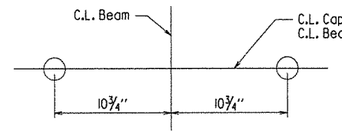
PRINT DATE: 10-OCT-2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 152 | 209 |
| | | | | (1) 07301 | - | BENT 5 | - | 56259 |



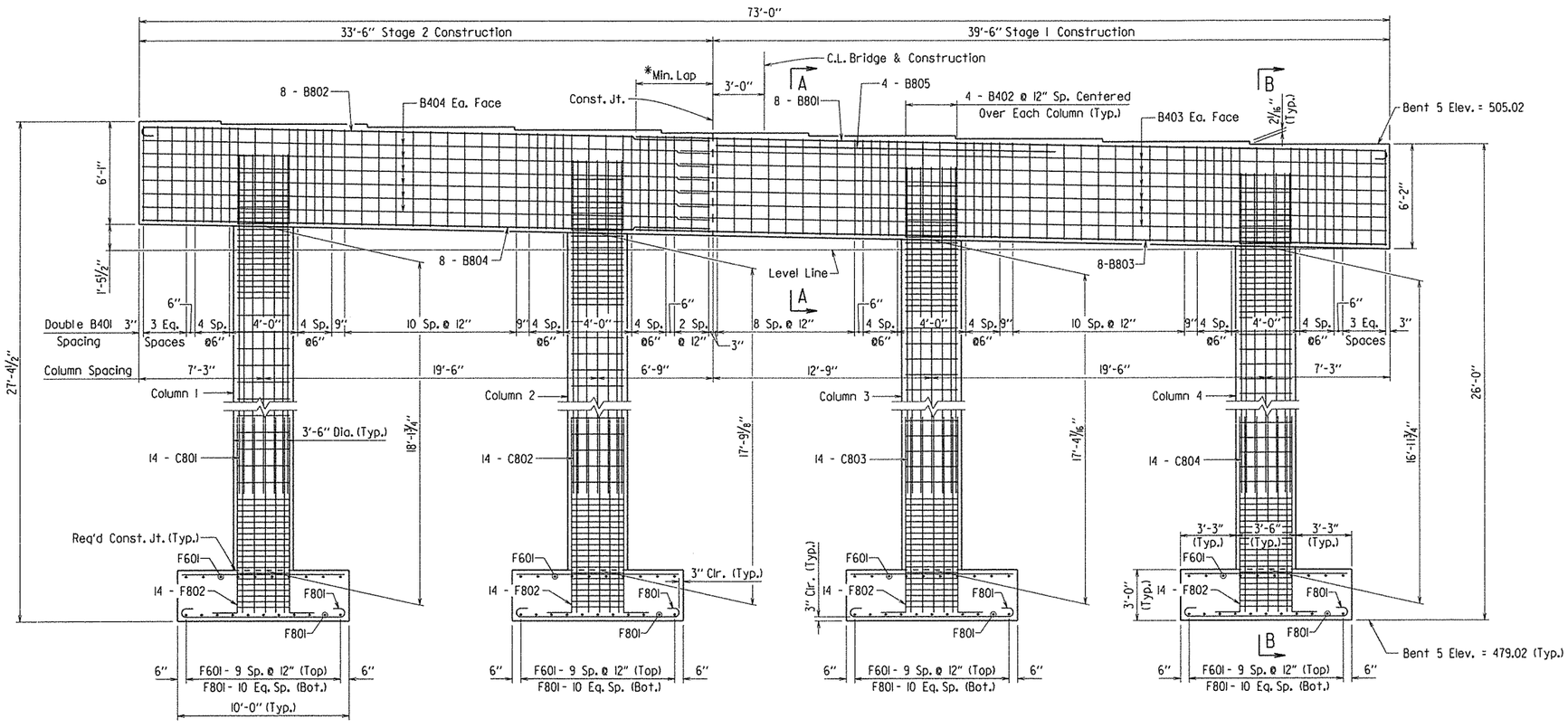

PLAN

*Minimum Bar Laps
No. 4 - 1'-9"
No. 8 - 4'-6"




TYPICAL ANCHOR BOLT LAYOUT

Not to Scale
For Details of Elastomeric Bearings, See Dwg. No. 56264




NOTE:
For "SECTION A-A" and "SECTION B-B", see Dwg. No. 56260

ELEVATION
(LOOKING AHEAD)

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9255
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF BENT 5
SPRING RIVER

ROUTE SEC.

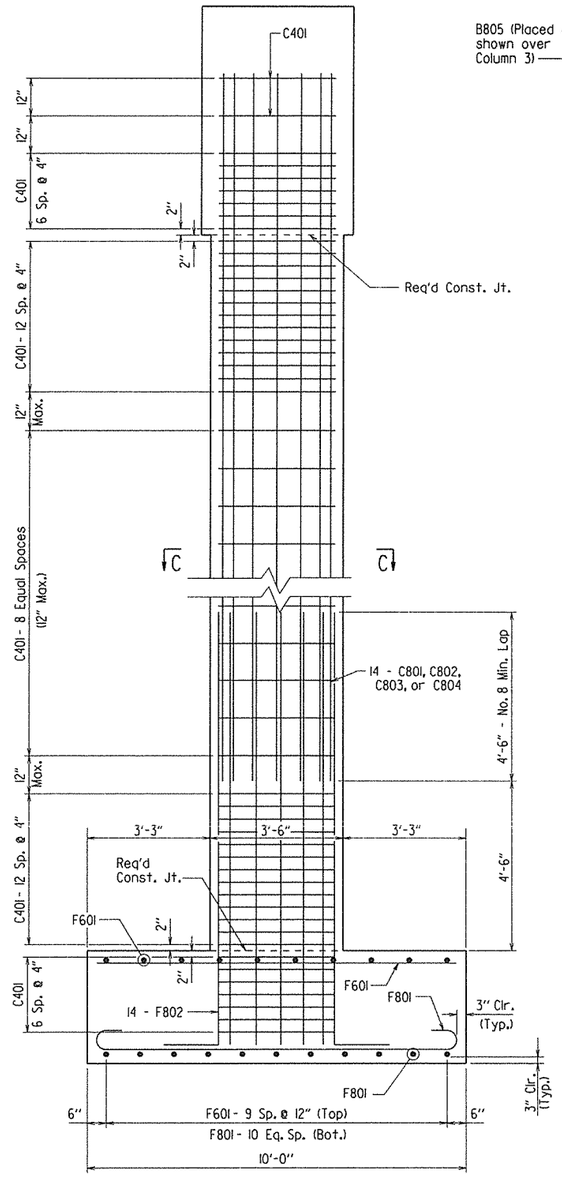
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: SWP DATE: 7/22/14
CHECKED BY: JGT DATE: 9/16/14
DESIGNED BY: SWP DATE: 6/20/14
FILENAME: b050230x3_b2.dgn
SCALE: 1/4"= 1'-0"

BRIDGE NO. 07301 DRAWING NO. 56259

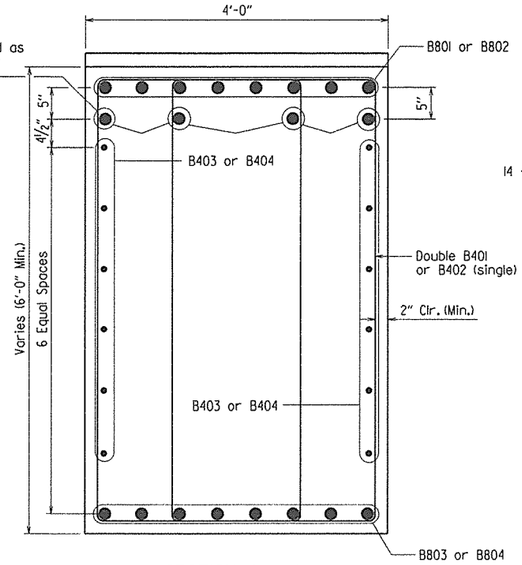
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 153 | 39 |
| | | | | (1) 07301 | - | BENT 5 | - | 56260 |



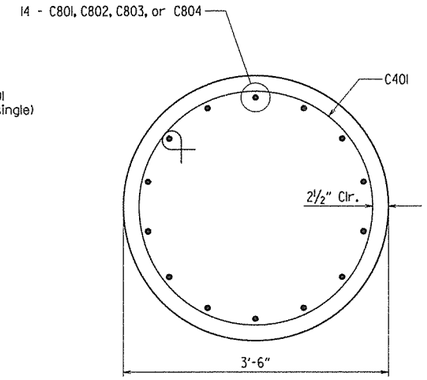

SECTION B - B

½" = 1'-0"




SECTION A - A

1" = 1'-0"



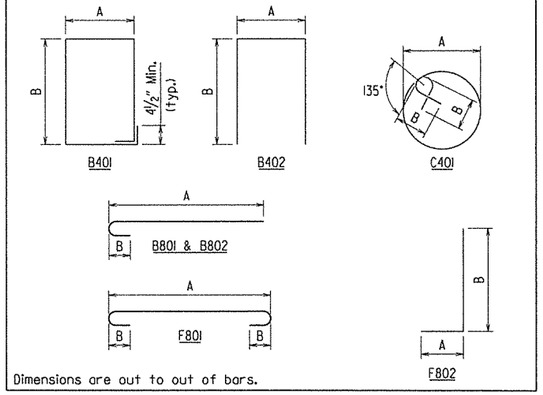

SECTION C - C

1" = 1'-0"

## BAR LIST

| MARK | STAGE 1 | STAGE 2 | LENGTH | 'A' | 'B' | P.D. |
|---|---|---|---|---|---|---|
| B401 | 88 | 76 | 17'-0" | 2'-8" | 5'-8" | 2" |
| B402 | 8 | 8 | 14'-10" | 3'-8" | 5'-8" | 2" |
| B403 | 12 | - | 41'-2" | - | - | Str. |
| B404 | - | 12 | 33'-4" | - | - | Str. |
| | | | | | | |
| B801 | 8 | - | 45'-0" | 44'-1" | 8" | 6" |
| B802 | - | 8 | 34'-3" | 33'-4" | 8" | 6" |
| B803 | 8 | - | 44'-0" | - | - | Str. |
| B804 | - | 8 | 33'-4" | - | - | Str. |
| B805 | 4 | - | 20'-0" | - | - | Str. |
| | | | | | | |
| C401 | 94 | 94 | 10'-9" | 3'-1" | 5" | 3" |
| | | | | | | |
| C801 | - | 14 | 18'-3" | - | - | Str. |
| C802 | - | 14 | 17'-10" | - | - | Str. |
| C803 | 14 | - | 17'-5" | - | - | Str. |
| C804 | 14 | - | 16'-11" | - | - | Str. |
| | | | | | | |
| F601 | 40 | 40 | 9'-6" | - | - | Str. |
| | | | | | | |
| F801 | 44 | 44 | 11'-4" | 9'-6" | 8" | 6" |
| F802 | 28 | 28 | 14'-8" | 1'-4" | 13'-7" | 6" |

BENDING DIAGRAMS




Dimensions are out to out of bars.

### GENERAL NOTES

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

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

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

For additional information, see layout.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF BENT 5
SPRING RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

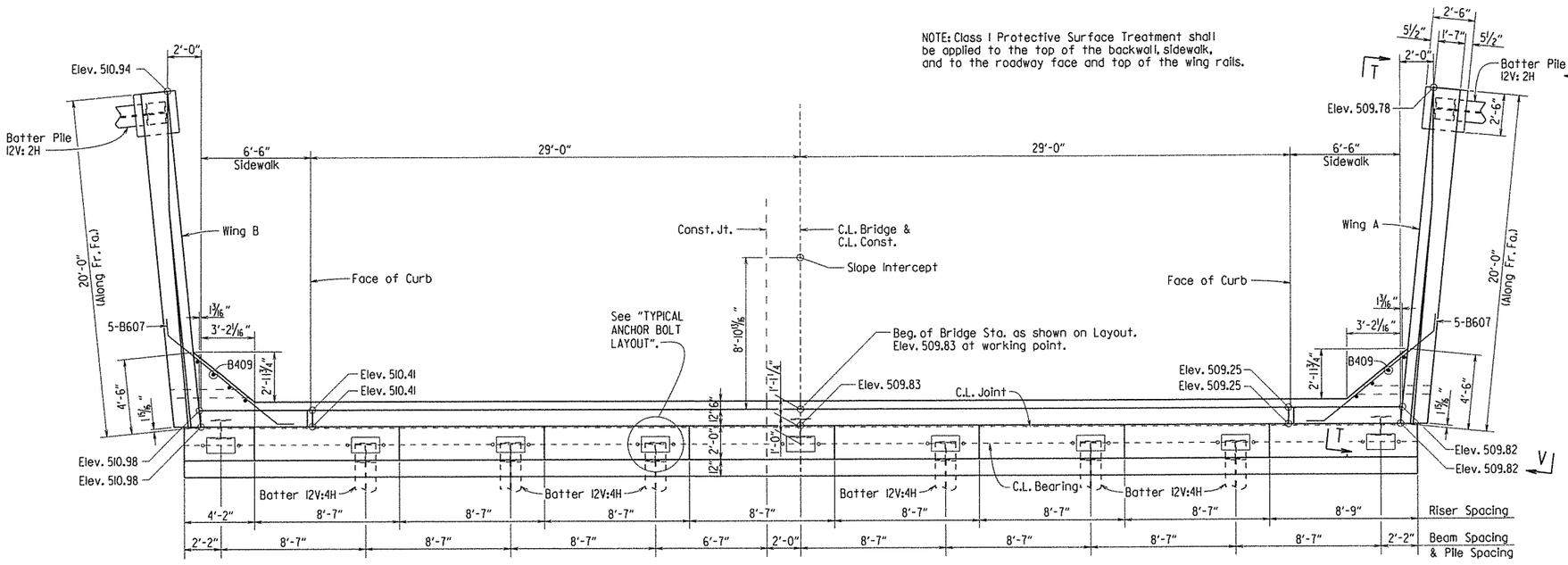
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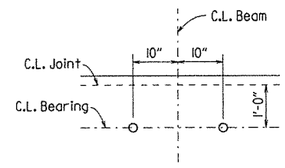
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PRINT DATE: 10-OCT-2014

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(1) 07301 - END BENT DETAILS - 56261

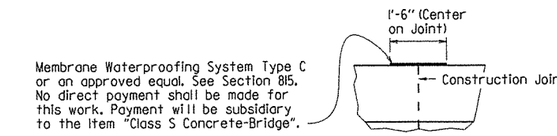



NOTE: For Details of Elastomeric Bearings, See Dwg. No. 56264

TYPICAL ANCHOR BOLT LAYOUT

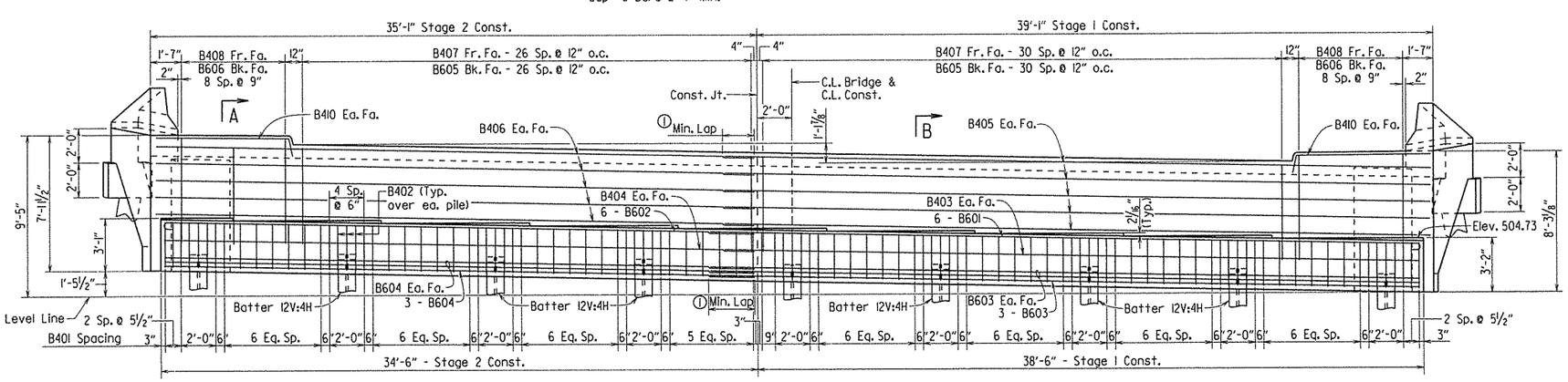
Scale: 3/4" = 1'-0"




Membrane Waterproofing System Type C or an approved equal. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".

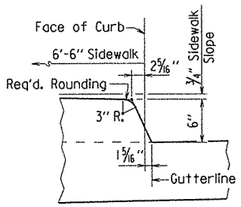
CONSTRUCTION JOINT DETAIL

No Scale




ELEVATION

Looking Forward




SIDEWALK CURB DETAIL

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF BENT 6
SPRING RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

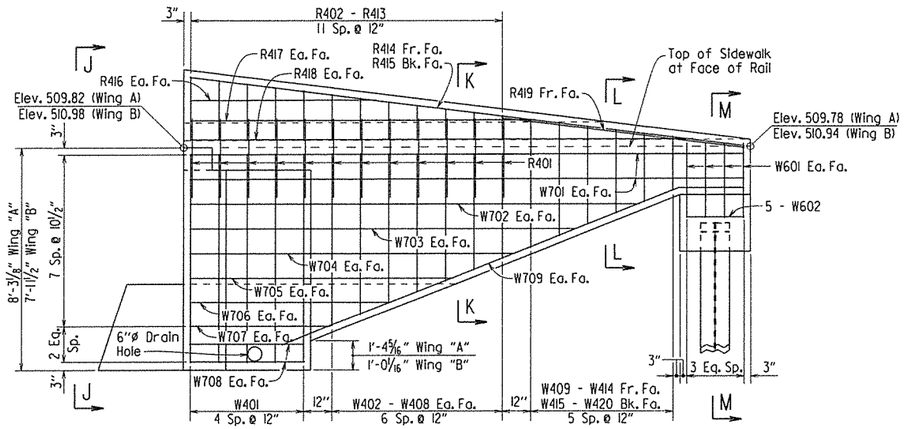
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BRIDGE NO. 07301 DRAWING NO. 56261

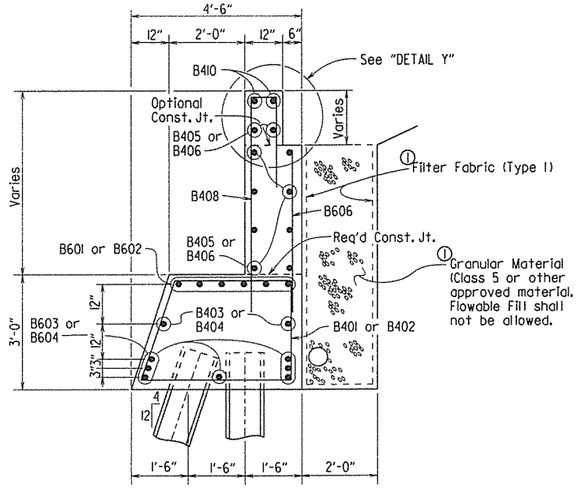
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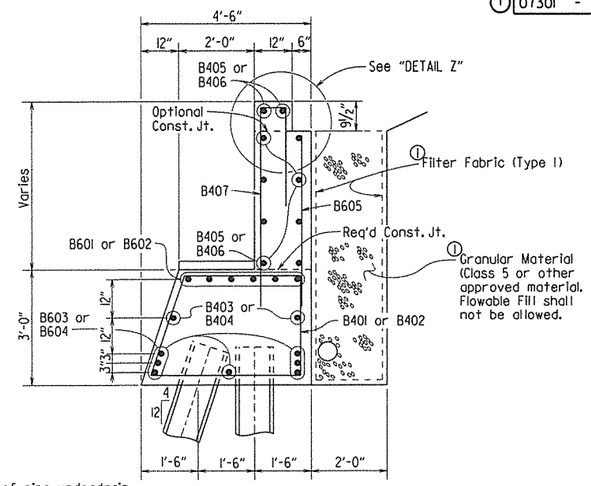
① 07301 - END BENT DETAILS - 56262




SECTION T-T
3/8" = 1'-0"

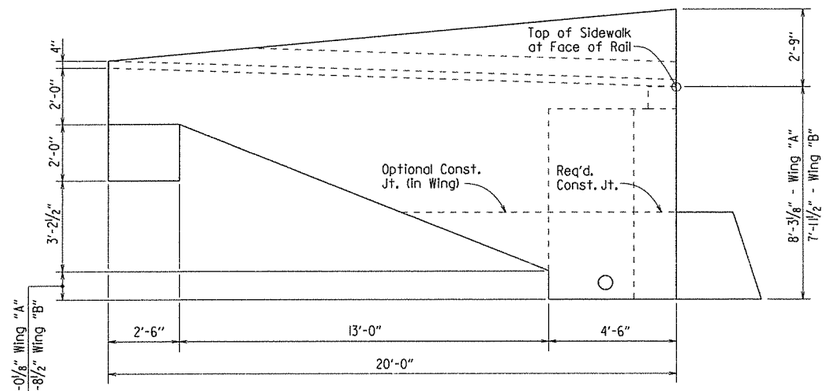



SECTION A-A
1/2" = 1'-0"

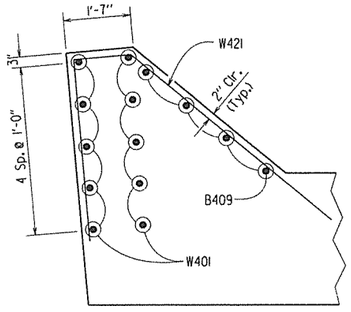



SECTION B-B
1/2" = 1'-0"

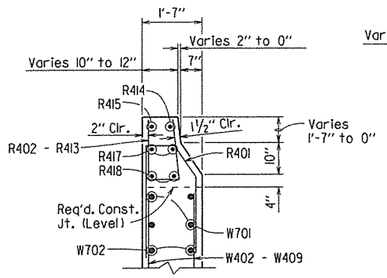
① NOTE:
For additional details of pipe underdrain see Std. Dwg. PU-1 and Section 611. Pipe underdrains, outlet protectors, granular materials, drain pipe, and filter fabric will not be measured or paid for separately, but will be considered subsidiary to the unit price bid for "Unclassified Excavation". Locate holes in wings to miss reinforcing steel.



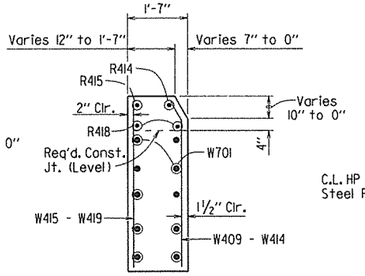

VIEW V-V
3/8" = 1'-0"



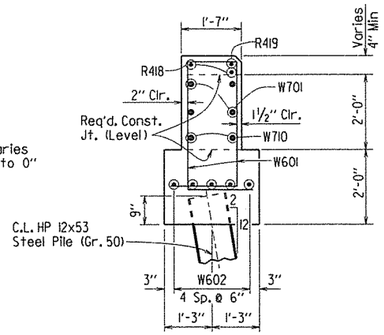

SECTION H-H
No Scale



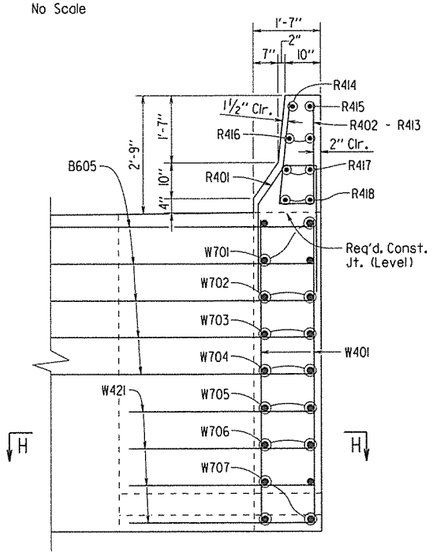

SECTION K-K
1/2" = 1'-0"



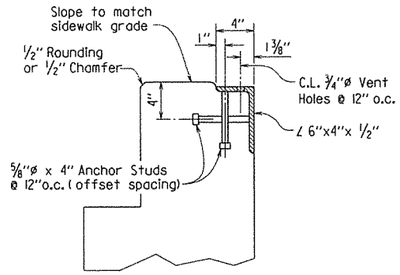

SECTION L-L
1/2" = 1'-0"




SECTION M-M
1/2" = 1'-0"




SECTION J-J
1/2" = 1'-0"

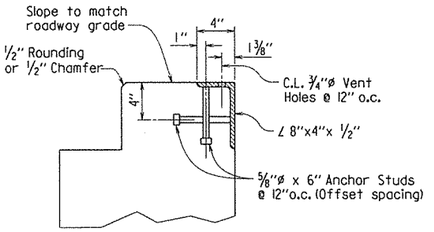



DETAIL Y
No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56274.




DETAIL Z
No Scale

NOTES:
Concrete shall be hand packed under the joint armor.

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

For additional joint details, see Dwg. No. 56274.

STATE OF ARKANSAS
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No. 9235
10-13-14
CHARLES R. ELLIS
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SHEET 2 OF 3
DETAILS OF BENT 6
SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 08/01/14
CHECKED BY: JCT DATE: 9/16/14
DESIGNED BY: SMP DATE: 6/2014
FILENAME: b050230x3_b6.dgn
SCALE: 3/8" = 1'-0" or as shown

BRIDGE NO. 07301 DRAWING NO. 56262

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 150 | 309 |

(1) 07301 - END BENT DETAILS - 56263

GENERAL NOTES

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

All reinforcing steel shall be Grade 60 (Yield Strength = 60,000 psi.) conforming to AASHTO M31 or M322, Type A, with Mill Test Reports.

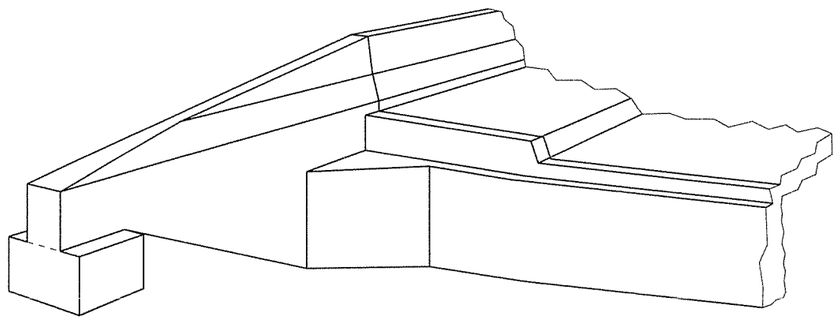
All structural steel shall be AASHTO M270, Gr. 50W. Structural steel in backwall shall be paid for as "Structural Steel in Beam Spans (M270, Gr. 50W)".

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

No portion of the backwall shall be poured before beams are in place. The portion of the backwall above the optional construction joint at the paving bracket shall not be placed until the adjacent deck pour has been made. Refer to the "EXPANSION DEVICE INSTALLATION AT END BENTS" note, Dwg. 56274.

Concrete shall be hand packed under the joint armor.

For additional information see Layout.



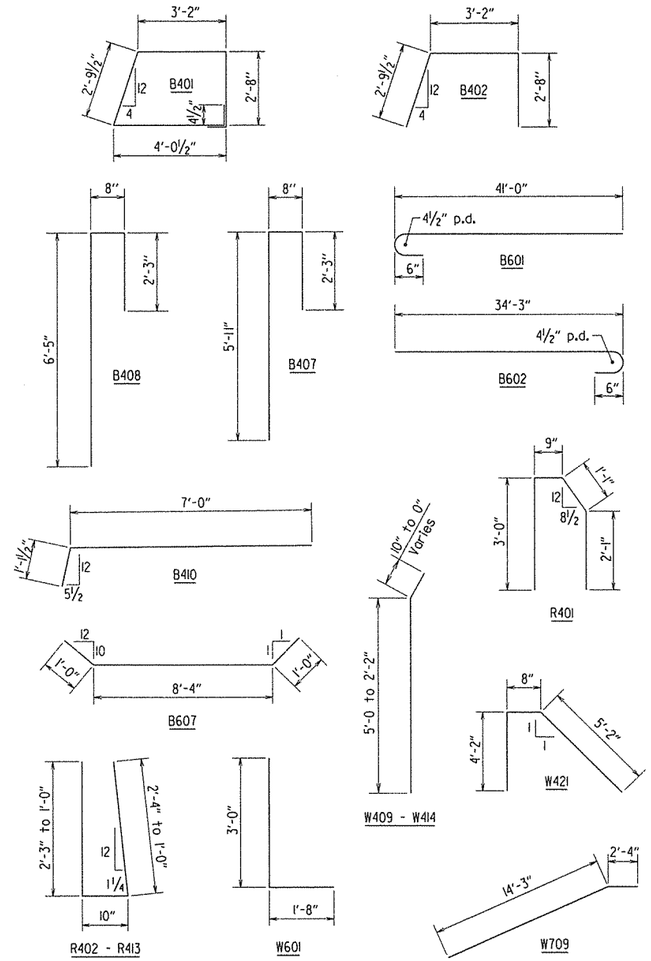
PICTORIAL OF END BENT RAILING

## BAR LIST

| MARK | NUMBER REQUIRED STAGE 1 | NUMBER REQUIRED STAGE 2 | LENGTH | P.D. |
|---|---|---|---|---|
| | | | | |
| B401 | 41 | 37 | 13'-1" | 2" |
| B402 | 15 | 12 | 8'-5" | 2" |
| B403 | 2 | - | 40'-2" | Str. |
| B404 | - | 2 | 34'-3" | Str. |
| B405 | 10 | - | 40'-9" | Str. |
| B406 | - | 10 | 34'-10" | Str. |
| B407 | 31 | 27 | 8'-8" | 2" |
| B408 | 9 | 9 | 9'-2" | 2" |
| B409 | 4 | 4 | 6'-6" | Str. |
| B410 | 2 | 2 | 8'-2" | 2" |
| | | | | |
| B601 | 6 | - | 41'-8" | 4½" |
| B602 | - | 6 | 34'-11" | 4½" |
| B603 | 7 | - | 41'-0" | Str. |
| B604 | - | 7 | 34'-3" | Str. |
| B605 | 31 | 27 | 5'-8" | Str. |
| B606 | 9 | 9 | 6'-4" | Str. |
| B607 | 5 | 5 | 10'-4" | 4½" |
| | | | | |
| R401 | 12 | 12 | 6'-10" | 2" |
| R402-R413 | 1 Ea. | 1 Ea. | 5'-3" - 2'-8" | 2" |
| R414 | 1 | 1 | 12'-3" | Str. |
| R415 | 1 | 1 | 19'-2" | Str. |
| R416 | 2 | 2 | 6'-1" | Str. |
| R417 | 2 | 2 | 12'-4" | Str. |
| R418 | 2 | 2 | 18'-3" | Str. |
| R419 | 1 | 1 | 8'-6" | Str. |
| | | | Wing "A" / Wing "B" | |
| W401 | 10 | 10 | 7'-8" / 7'-11" | Str. |
| W402-W408 | 2 Ea. | 2 Ea. | 6'-2" - 3'-8" | 2" |
| W409-W414 | 1 Ea. | 1 Ea. | 4'-6" - 1'-11" | 2" |
| W415-W420 | 1 Ea. | 1 Ea. | 4'-8"- 2'-0" | Str. |
| W421 | 4 | 4 | 10'-7" | 2" |
| | | | | |
| W601 | 8 | 8 | 4'-6" | 4½" |
| W602 | 5 | 5 | 2'-2" | Str. |
| | | | | |
| W701 | 4 | 4 | 19'-8" | Str. |
| W702-W707 | 2 Ea. | 2 Ea. | 15'-9"- 5'-0" | Str. |
| W708 | 4 | 4 | 4'-6" | Str. |
| W709 | 2 | 2 | 17'-0" | 5¼" |
| | | | | |

BENDING DIAGRAMS

Dimensions are out to out of bars.




STATE OF ARKANSAS
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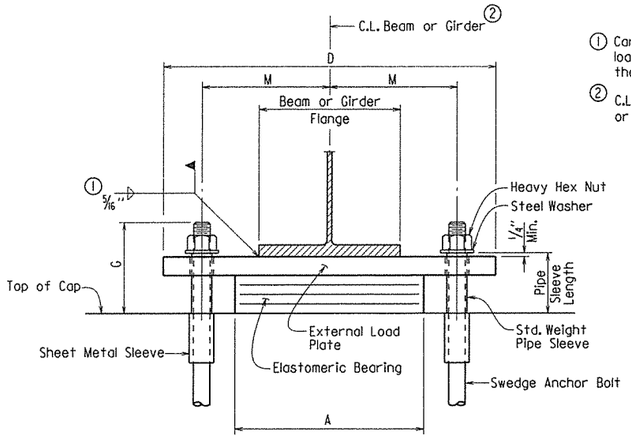
SHEET 3 OF 3
DETAILS OF BENT 6
SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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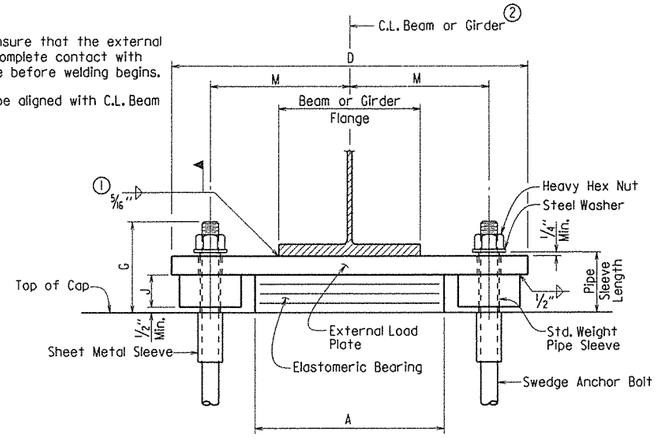
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PRINT DATE: 10/10/2014

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 157 | 309 |
| | | | | ① 07301 - ELASTOMERIC BEARINGS - 56264 | | | | |



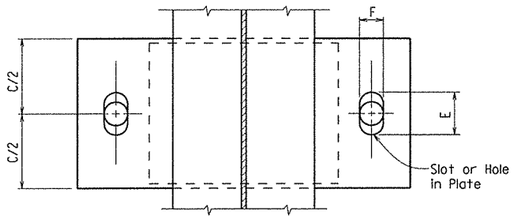

FRONT VIEW - AT BENT NOS. 1, 2, 5 & 6



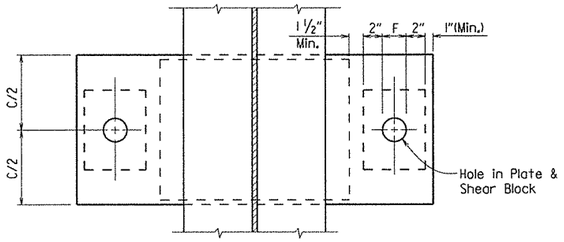

FRONT VIEW - AT BENT NOS. 3 & 4

① 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.

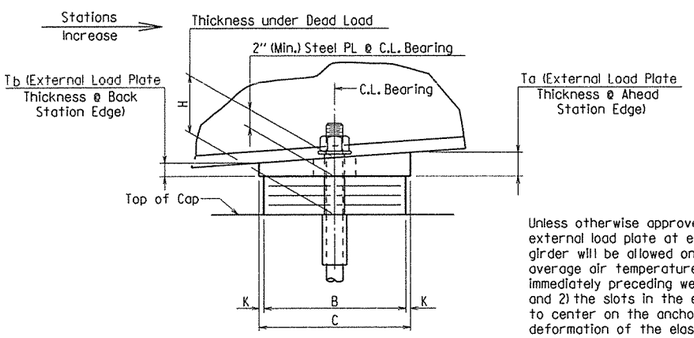
② C.L Elastomeric Pad shall be aligned with C.L. Beam or Girder.




PLAN VIEW - AT BENT NOS. 1, 2, 5 & 6

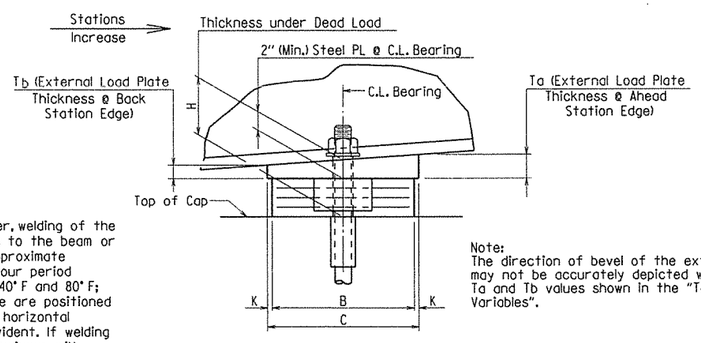



PLAN VIEW - AT BENT NOS. 3 & 4



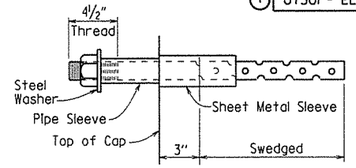

SIDE VIEW - AT BENT NOS. 1, 2, 5 & 6

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.




SIDE VIEW - AT BENT NOS. 3 & 4

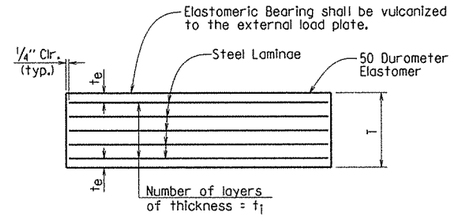
Note:
The direction of bevel of the external load plate may not be accurately depicted with respect to Ta and Tb values shown in the "Table of Fabricator Variables".




ANCHOR BOLT DETAIL

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

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




$t_e$ = 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, 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 Beam 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.

TABLE OF FABRICATOR VARIABLES

*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) | ELASTOMERIC PAD: G | ELASTOMERIC PAD: H | ELASTOMERIC PAD: A | ELASTOMERIC PAD: B | ELASTOMERIC PAD: N | ELASTOMERIC PAD: $t_i$ | ELASTOMERIC PAD: $t_e$ | ELASTOMERIC PAD: NO. & THICKNESS OF STEEL LAMINAE | ELASTOMERIC PAD: T | EXTERNAL LOAD PLATE: C | EXTERNAL LOAD PLATE: D | EXTERNAL LOAD PLATE: E | EXTERNAL LOAD PLATE: F | EXTERNAL LOAD PLATE: J | EXTERNAL LOAD PLATE: K | EXTERNAL LOAD PLATE: M | EXTERNAL LOAD PLATE: $T_a$ | EXTERNAL LOAD PLATE: $T_b$ | ANCHOR BOLT: ANCHOR BOLT (ø x L) | ANCHOR BOLT: GRADE | ANCHOR BOLT: PIPE SLEEVE SIZE (ø x L) | ANCHOR BOLT: SHEET METAL SLEEVE SIZE (ø x L) | ANCHOR BOLT: STEEL WASHER SIZE (O.D.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07301 | 1 | All | Exp. | 9 | 112 | 8¾" | 5 9/16" | 15" | 8" | 5 | 1/2" | 1/4" | 6 @ 12 Ga. | 3⅜" | 9¾" | 26" | 5⅝" | 2⅝" | - | ⅞" | 10" | 1.90" | 2.10" | 1¾" x 27" | 55 | 2" x 6" | 3⅜" x 5½" | 3⅜" |
| | 2 | All | Exp. | 9 | 254 | 8" | 4⅜" | 16" | 12" | 3 | 1/2" | 1/4" | 4 @ 12 Ga. | 2 1/16" | 13" | 28" | 5⅛" | 3⅛" | - | ½" | 10¾" | 1.91" | 2.09" | 2¼" x 32" | 55 | 2½" x 4¾" | 4" x 5½" | 4" |
| | 3 | All | Fix. | 9 | 247 | 8" | 4⅜" | 16" | 12" | 3 | 1/2" | 1/4" | 4 @ 12 Ga. | 2 1/16" | 13" | 35¼" | 3⅛" | 3⅛" | 1⅞" | ½" | 13 13/16" | 1.96" | 2.04" | 2¼" x 32" | 55 | 2½" x 4¾" | 4" x 5½" | 4" |
| | 4 | All | Fix. | 9 | 247 | 8" | 4⅜" | 16" | 12" | 3 | 1/2" | 1/4" | 4 @ 12 Ga. | 2 1/16" | 13" | 35¼" | 3⅛" | 3⅛" | 1⅞" | ½" | 13 13/16" | 1.98" | 2.02" | 2¼" x 32" | 55 | 2½" x 4¾" | 4" x 5½" | 4" |
| | 5 | All | Exp. | 9 | 254 | 8" | 4⅜" | 16" | 12" | 3 | 1/2" | 1/4" | 4 @ 12 Ga. | 2 1/16" | 13" | 28" | 5⅛" | 3⅛" | - | ½" | 10¾" | 1.98" | 2.02" | 2¼" x 32" | 55 | 2½" x 4¾" | 4" x 5½" | 4" |
| | 6 | All | Exp. | 9 | 112 | 8¾" | 5 9/16" | 15" | 8" | 5 | 1/2" | 1/4" | 6 @ 12 Ga. | 3⅜" | 9¾" | 26" | 5⅝" | 2⅝" | - | ⅞" | 10" | 1.99" | 2.01" | 1¾" x 27" | 55 | 2" x 6" | 3⅜" x 5½" | 3⅜" |

PRINT DATE: 10/10/2014

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# DETAILS OF ELASTOMERIC BEARINGS SPRING RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 6/30/14 FILENAME: b050230x2.e.dgn

CHECKED BY: JCT DATE: 9/16/14 SCALE: NONE

DESIGNED BY: SMP DATE: 6/2014

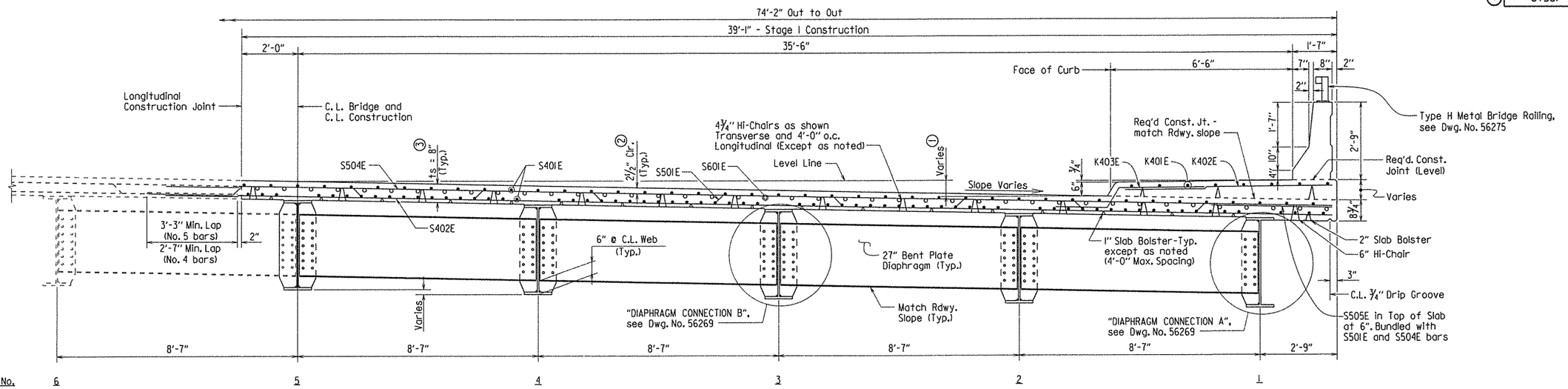
BRIDGE NO. 07301 DRAWING NO. 56264

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

At the Contractor's option, one epoxy coated No. 5 straight bar top and bottom may be substituted for bar S501E and S502E. Payment for reinforcing will be based on the weight of bar S501E and S502E.

NOTE:
All bars designated with a "E" suffix are to be Epoxy Coated.

| 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. | | 050230 | 158 | 307 |
| | | | | (1) | 07301 - SPAN DETAILS - 56265 | | | |

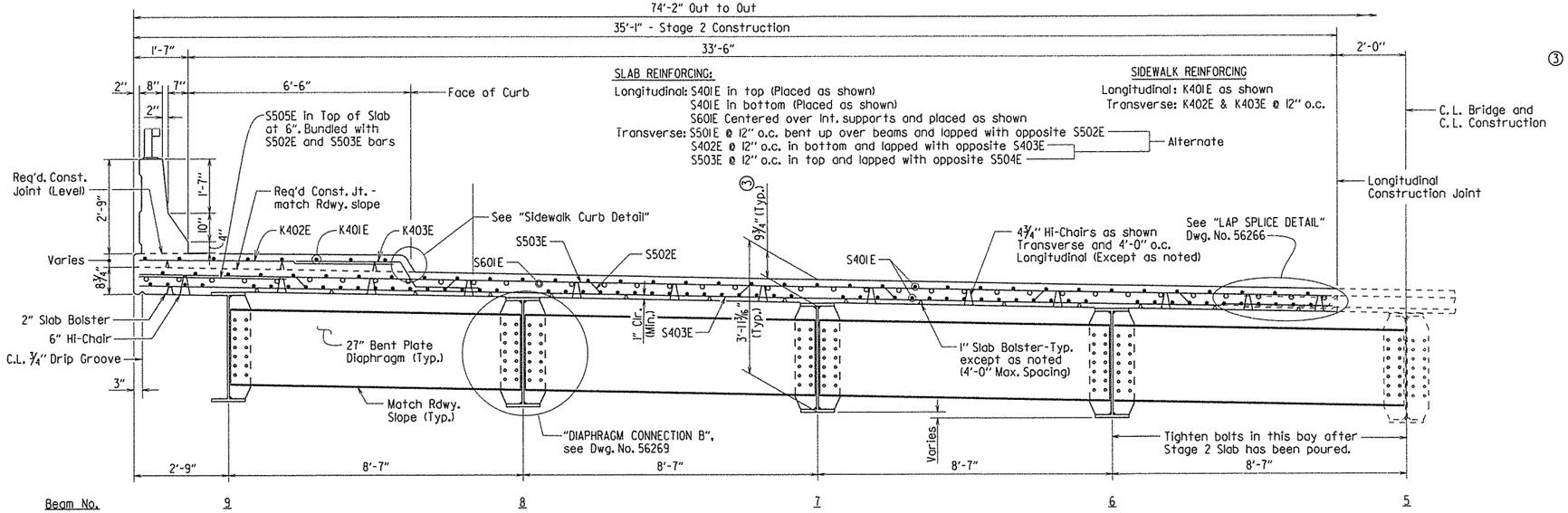



## TYPICAL ROADWAY SECTION - STAGE 1
Looking Ahead Near Bent 1

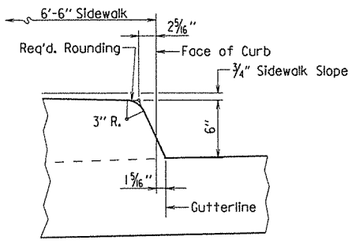
(1) Top of Deck at C.L. Bridge and C.L. Construction to Gutterline.

(2) Tolerance: Minus = ¼"
Plus: Equal to amount of slab thickening used to meet slab thickness tolerance - See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", Dwg. No. 56266.

(3) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE WHEN REMOVABLE DECK FORMING IS USED", Dwg. No. 56266.




## TYPICAL ROADWAY SECTION - STAGE 2
Looking Ahead Near Bent 1




## SIDEWALK CURB DETAIL
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 1 OF 10
DETAILS OF 363'-0" CONT.
COMP. W-BEAM UNIT
SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 05/13/14
CHECKED BY: TMG DATE: 10/15/14
DESIGNED BY: SMP DATE: 9/2014
FILENAME: b050230x3_sl.dgn
SCALE: ½" = 1'-0" or as noted

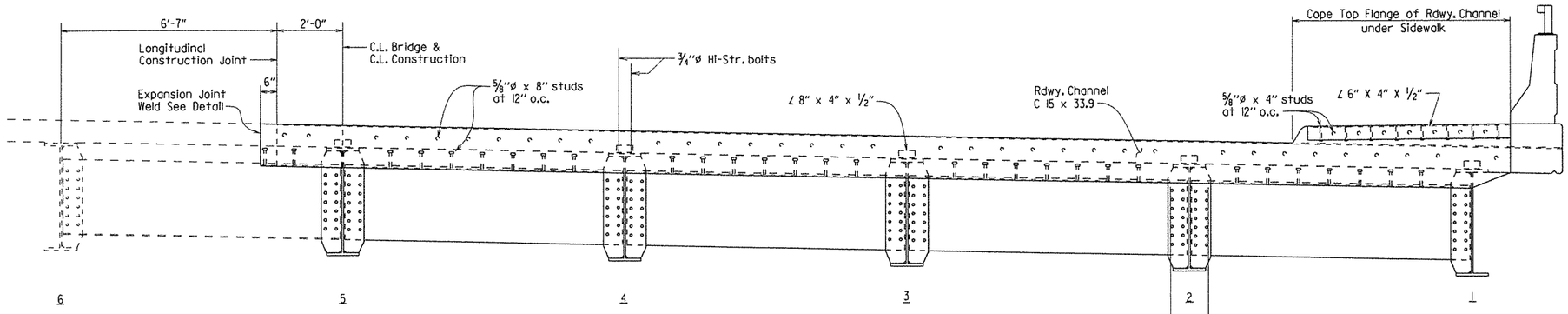
BRIDGE NO. 07301 DRAWING NO. 56265

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 151 | 339 |
| | | | | (1) | | 07301 - SPAN DETAILS - 56266 | | |

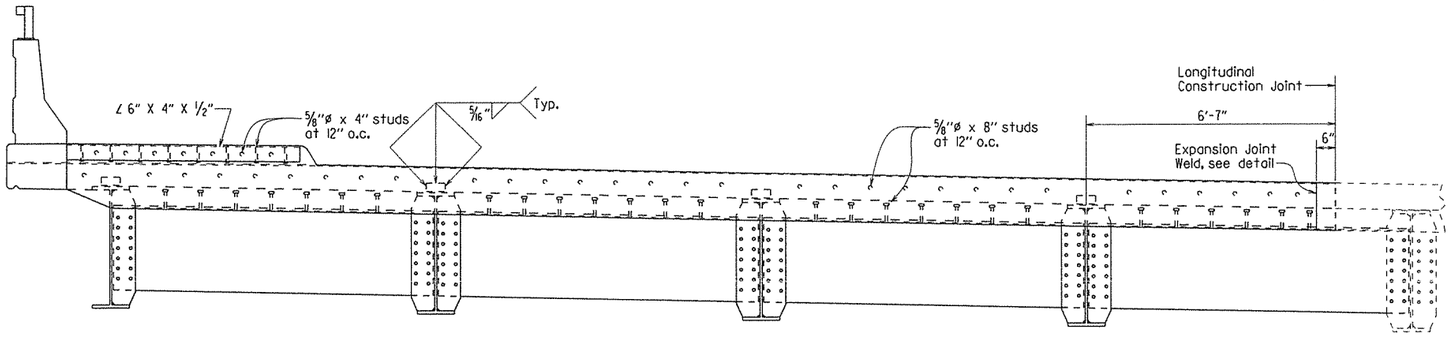
Expansion Device:
Rdwy. Channel - C 15 x 33.9
Conn. ∠'s 8" x 4" x ½"
Detail Device ⅛" high & provide ¼" shims using 2- 1/16" & 1- ⅛" PLs

For details of poured silicone joint, see Dwg. No. 56274.

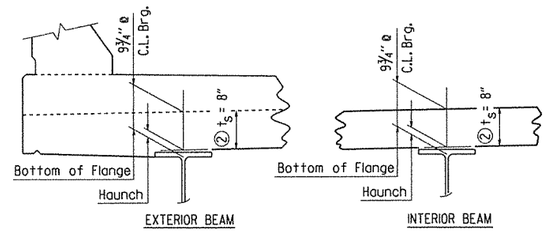



## TYPICAL SECTION THRU JOINT - STAGE 1
Looking Ahead Bent 1 - Bent 6 Similar

NOTE:
ts = slab thickness as shown in "TYPICAL ROADWAY SECTION - STAGE 1", and "TYPICAL ROADWAY SECTION - STAGE 2", Dwg. No. 56265.




## TYPICAL SECTION THRU JOINT - STAGE 2
Looking Ahead Bent 1 - Bent 6 Similar

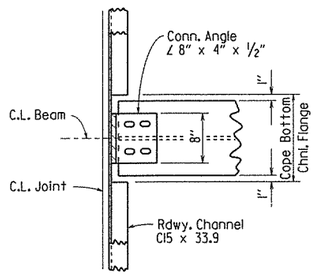



② Tolerance when removable deck forming is used is + ½" , - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

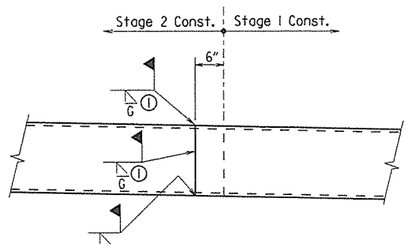
NOTES:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain 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 WHEN REMOVABLE DECK FORMING IS USED
No Scale

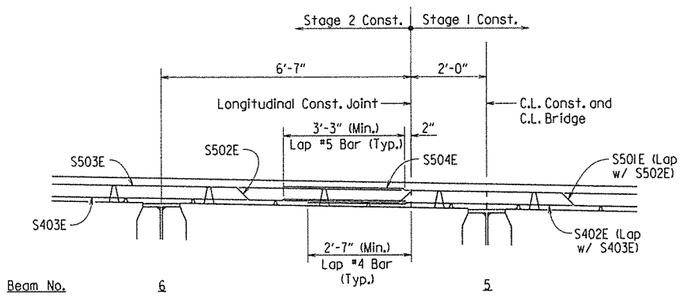



## CHANNEL CONNECTION DETAIL
No Scale




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

## DETAIL OF WELD LOCATION FOR EXPANSION DEVICE
Looking Ahead
No Scale




## LAP SPLICE DETAIL
No Scale

NOTE:
For Bars not shown, see "TYPICAL ROADWAY SECTION", Dwg. No. 56265.

Laps for Transverse Reinforcing between stages of construction shall not be tied.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 2 OF 10
DETAILS OF 363'-0" CONT.
COMP. W-BEAM UNIT
SPRING RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 05/13/14
CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: SWP DATE: 9/2014
FILENAME: b050230x3_sl.dgn
SCALE: ½" = 1'-0" or as noted
BRIDGE NO. 07301 DRAWING NO. 56266

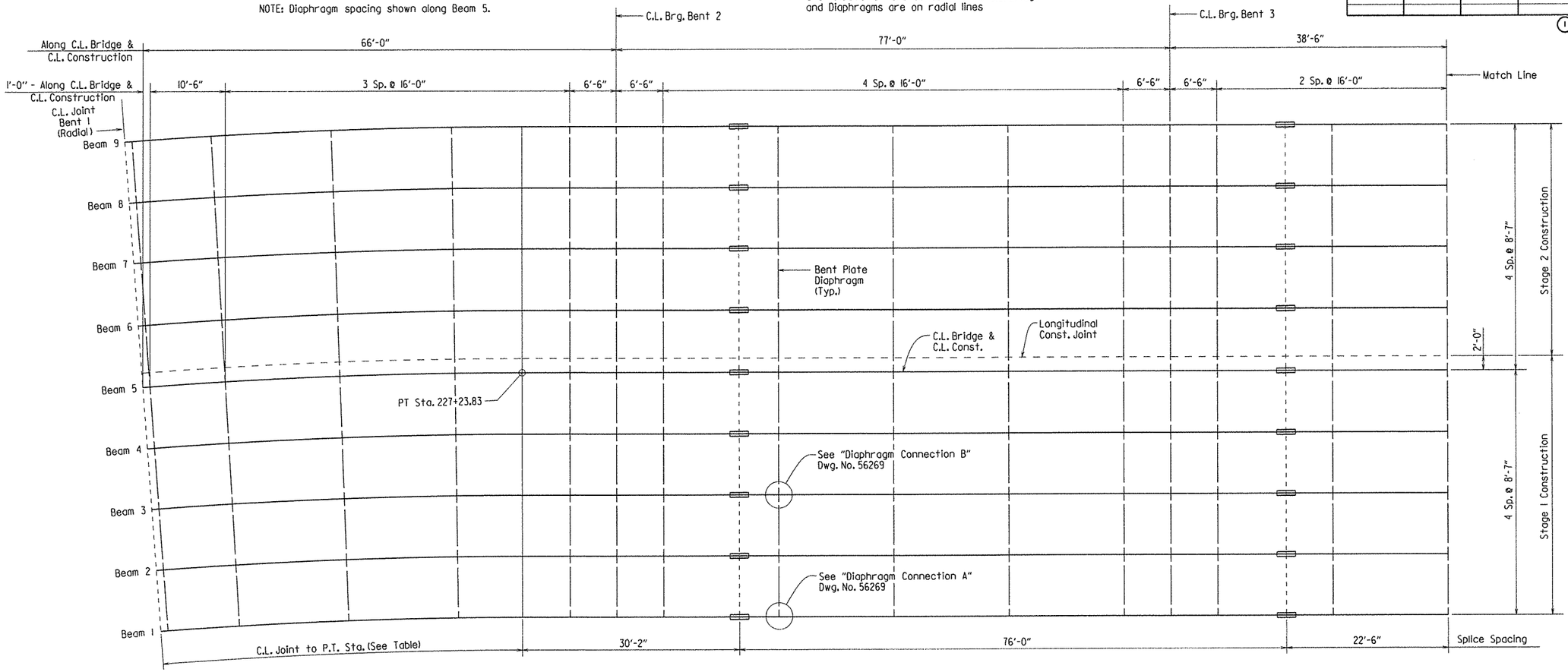
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 160 | 359 |

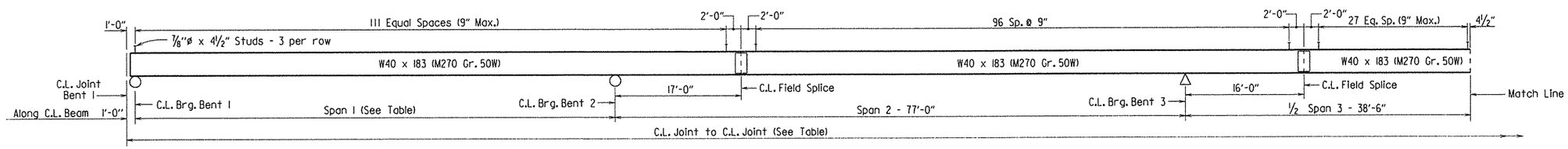
(1) 07301 - SPAN DETAILS - 56267

NOTE: Diaphragm spacing shown along Beam 5.

Note: Beams between Beginning of Bridge and P.T. Station are concentric to C.L. Bridge and Diaphragms are on radial lines




FRAMING PLAN

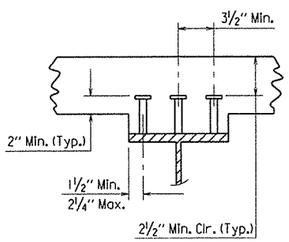



BEAM ELEVATION
No Scale

NOTE:
Bolted Field Splices shown may be eliminated or shop welded splices may be substituted with approval of the Engineer. Payment will be made on the basis of the Plan Quantities.

TABLE OF CURVED BEAM LENGTHS

| Beam No. | C.L. Joint to C.L. Joint | Span 1 Bearing to Bearing | C.L. Joint to PT Sta. |
|---|---|---|---|
| 9 | 365'-6⅜" | 67'-6⅜" | 55'-4⅜" |
| 8 | 364'-10¹³⁄₁₆" | 66'-10¹³⁄₁₆" | 54'-8¹³⁄₁₆" |
| 7 | 364'-3³⁄₁₆" | 66'-3³⁄₁₆" | 54'-1³⁄₁₆" |
| 6 | 363'-7⅝" | 65'-7⅝" | 53'-5⅝" |
| 5 | 363'-0" | 65'-0" | 52'-10" |
| 4 | 362'-4⅜" | 64'-4⅜" | 52'-2⅜" |
| 3 | 361'-8¹³⁄₁₆" | 63'-8¹³⁄₁₆" | 51'-6¹³⁄₁₆" |
| 2 | 361'-1³⁄₁₆" | 63'-1³⁄₁₆" | 50'-11³⁄₁₆" |
| 1 | 360'-5⅝" | 62'-5⅝" | 50'-3⅝" |




Stud Shear Connectors shown shall be ⅞"ø x 4½" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown, at the ratio of 1.361 - ¾"ø studs in place 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

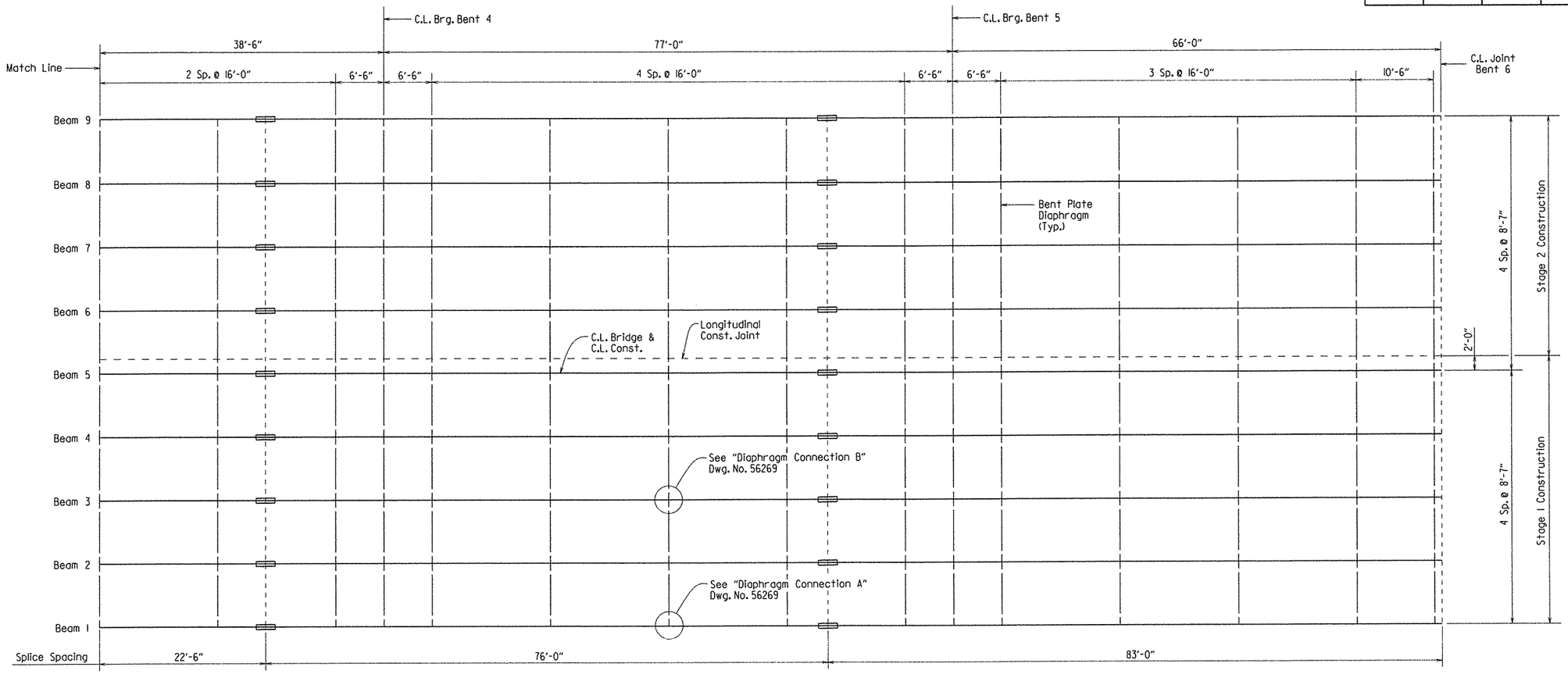
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS
BRIDGE ENGINEER

SHEET 3 OF 10
DETAILS OF 363'-0" CONT. COMP. W-BEAM UNIT
SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

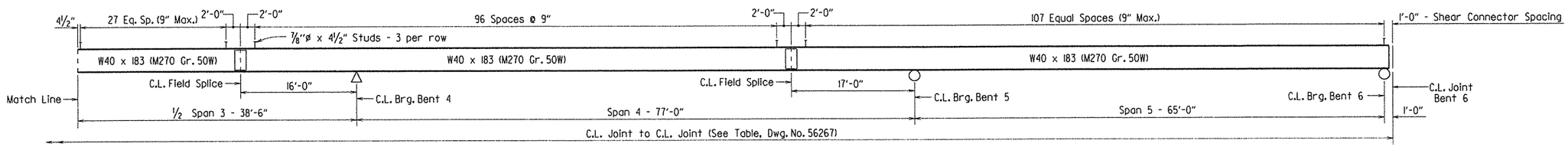
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CHECKED BY: TMG DATE: 10/13/14 SCALE: ⅛" = 1'-0" or as noted
DESIGNED BY: SMP DATE: 9/2014
BRIDGE NO. 07301 DRAWING NO. 56267

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 161 | 309 |
| | | | | (1) 07301 - SPAN DETAILS - 56268 | | | | |




FRAMING PLAN




BEAM ELEVATION
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

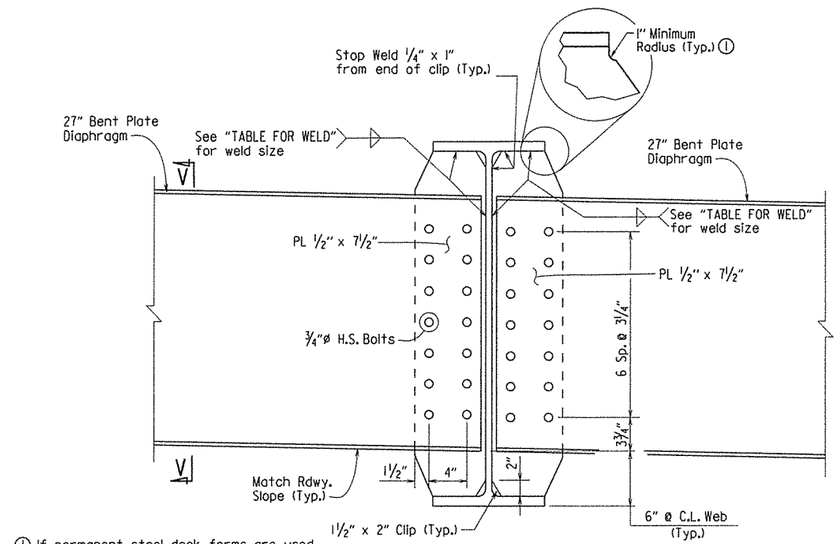
SHEET 4 OF 10
DETAILS OF 363'-0" CONT.
COMP. W-BEAM UNIT
SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 05/13/14
CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: SWP DATE: 9/2014
FILENAME: b050230x3_sl.dgn
SCALE: 1/8" = 1'-0" or as noted

BRIDGE NO. 07301 DRAWING NO. 56268

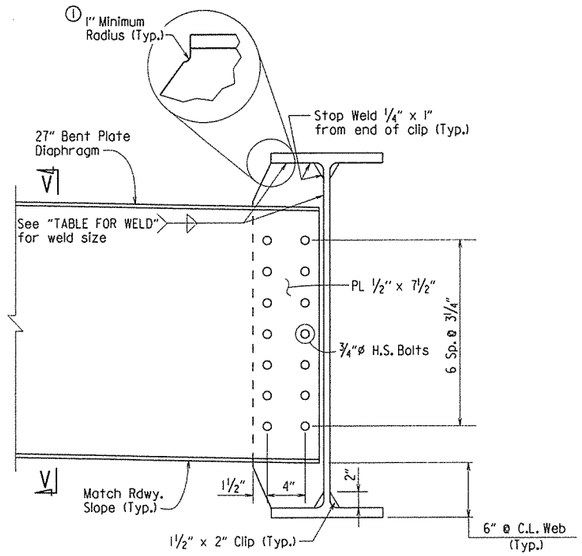
PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 162 | 309 |
| | | | | ① | 07301 - SPAN DETAILS - 56269 | | | |

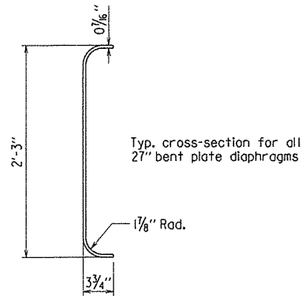



① If permanent steel deck forms are used, the fabricator shall clip the plate as necessary to accommodate the deck form support.

DIAPHRAGM CONNECTION B
No Scale




DIAPHRAGM CONNECTION A
No Scale

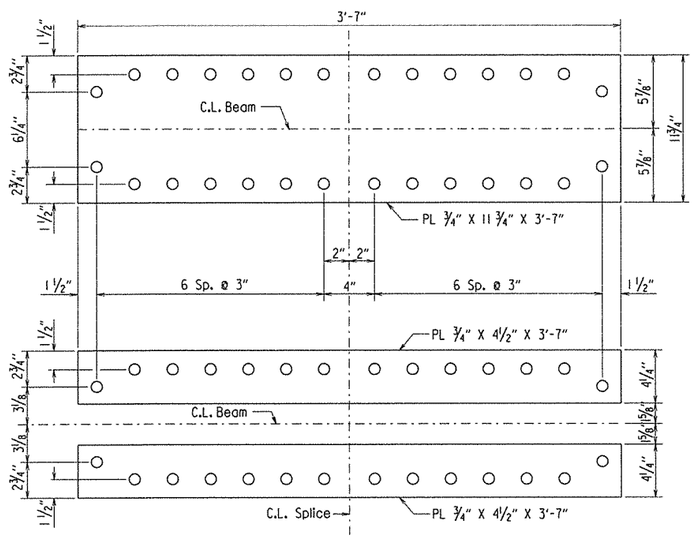



SECTION V-V
No Scale

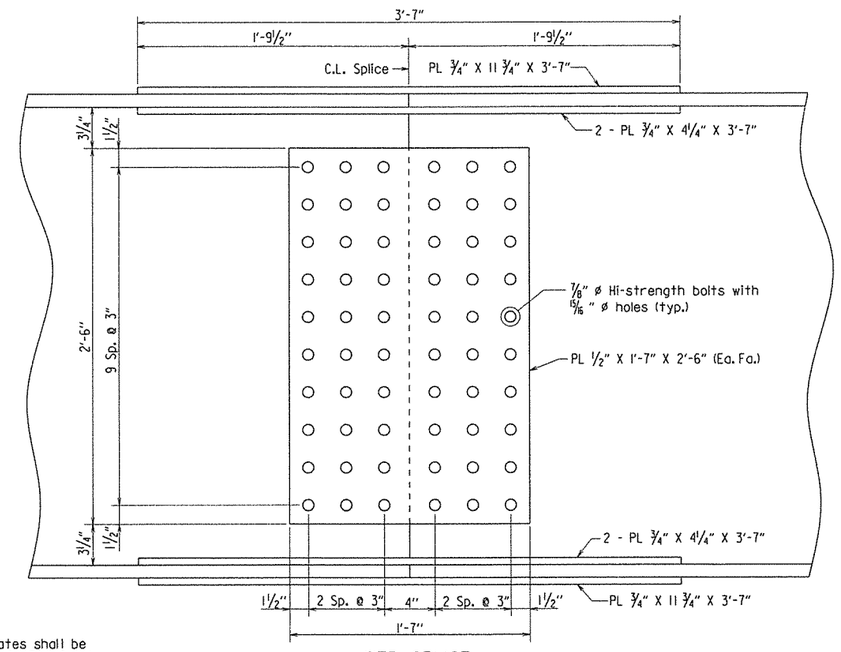
TABLE FOR WELD

| Material Thickness Of Thicker Part Joined (Inches) | Minimum Size Of Fillet Weld (Inches) | Single Pass Weld Must Be Used |
|---|---|---|
| To 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.




FLANGE SPLICE




WEB SPLICE

NOTE: All splice plates shall be AASHTO M270 Gr. 50W Steel.

FIELD SPLICE DETAILS
No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 5 OF 10
DETAILS OF 363'-0" CONT.
COMP. W-BEAM UNIT
SPRING RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

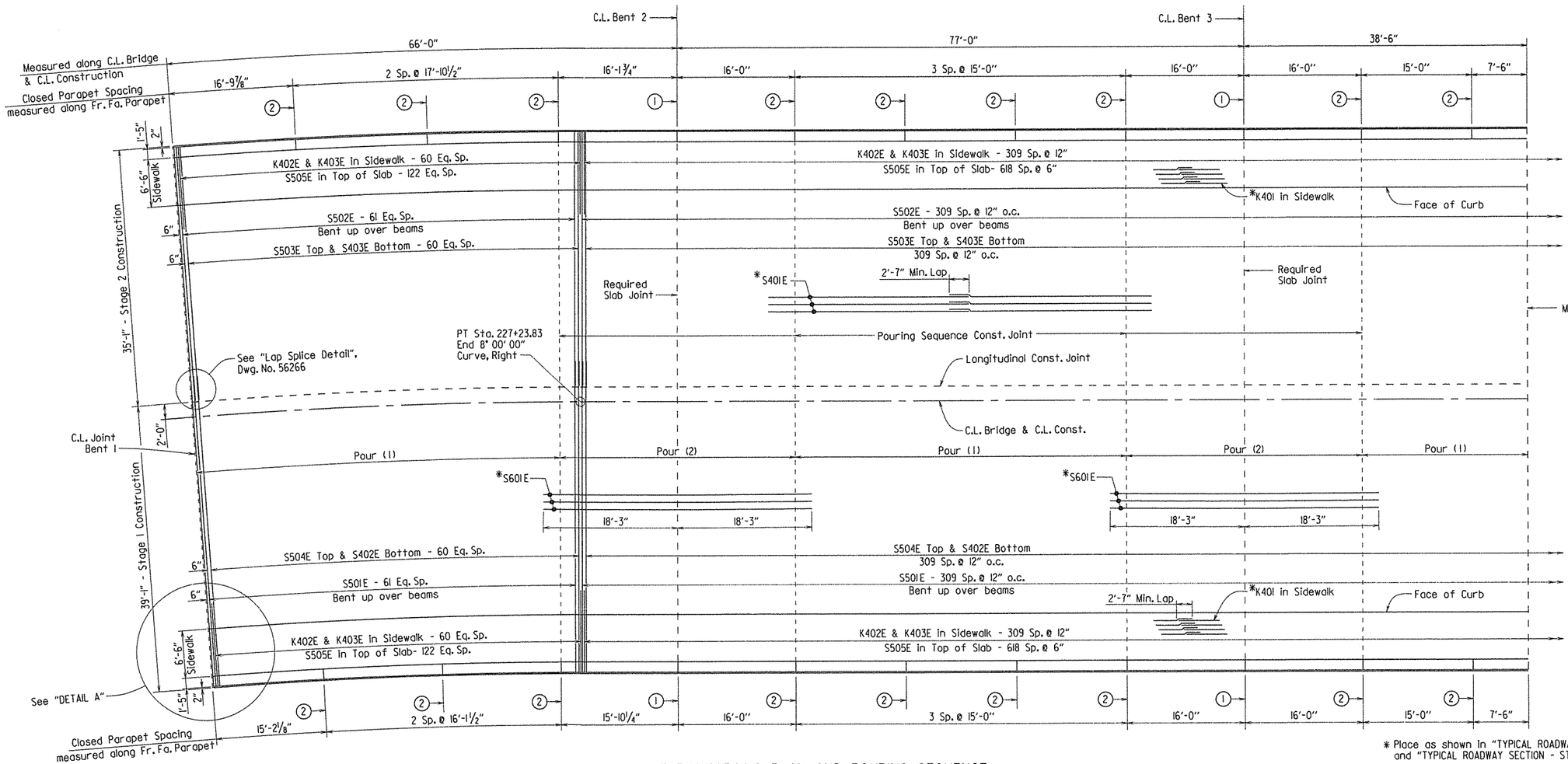
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CHECKED BY: TMG DATE: 10/13/14 SCALE: No Scale
DESIGNED BY: SMP DATE: 4/2014

BRIDGE NO. 07301 DRAWING NO. 56269

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 163 | 309 |
| | | | | (1) 07301 - SPAN DETAILS - 56270 | | | | |

NOTE:
For "CONCRETE PLACEMENT PROCEDURE" Detail, see Dwg. No. 56272.



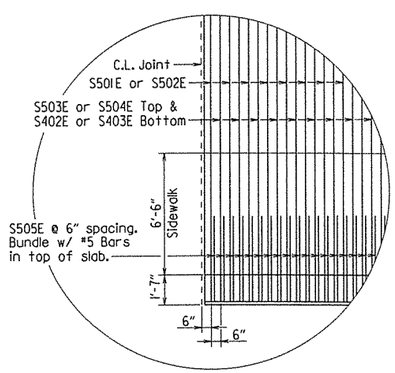

① C.L. Full-Depth Parapet Joint (¼" to 1" max.). Stop 4" from top of sidewalk. See Dwg. No. 56273.

② C.L. Partial-Depth Parapet Joint (¼" to 1" max.). Stop 1'-2" from top of sidewalk. See Dwg. No. 56273.

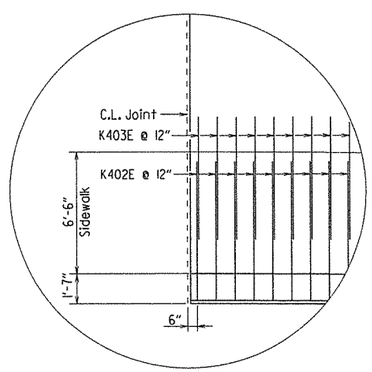
* Place as shown in "TYPICAL ROADWAY SECTION - STAGE 1" and "TYPICAL ROADWAY SECTION - STAGE 2", Dwg. No. 56265

## HALF REINFORCING PLAN AND POURING SEQUENCE

NOTE:
All transverse slab reinforcing steel is measured along C.L. Bridge. All transverse steel between Beginning of Bridge and P.T. Station to be placed on radial lines. All longitudinal reinforcing steel shall be placed concentric to C.L. Bridge. All longitudinal lines shall be concentric to C.L. Bridge.




SLAB REINFORCING




SIDEWALK REINFORCING

NOTE: Stage 1 Construction shown, Stage 2 Construction similar.

DETAIL A
No Scale

POURING SEQUENCE NOTE:
For each stage of construction, the deck concrete shall be placed in accordance with the sequence shown or the alternate sequence shown on Dwg. No. 56271. Pours with the same number may be placed simultaneously or seperately. 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 or railing 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. The Contractor must obtain approval from the Engineer for any deviations from the poring sequences shown.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 6 OF 10
DETAILS OF 363'-0" CONT. COMP. W-BEAM UNIT SPRING RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

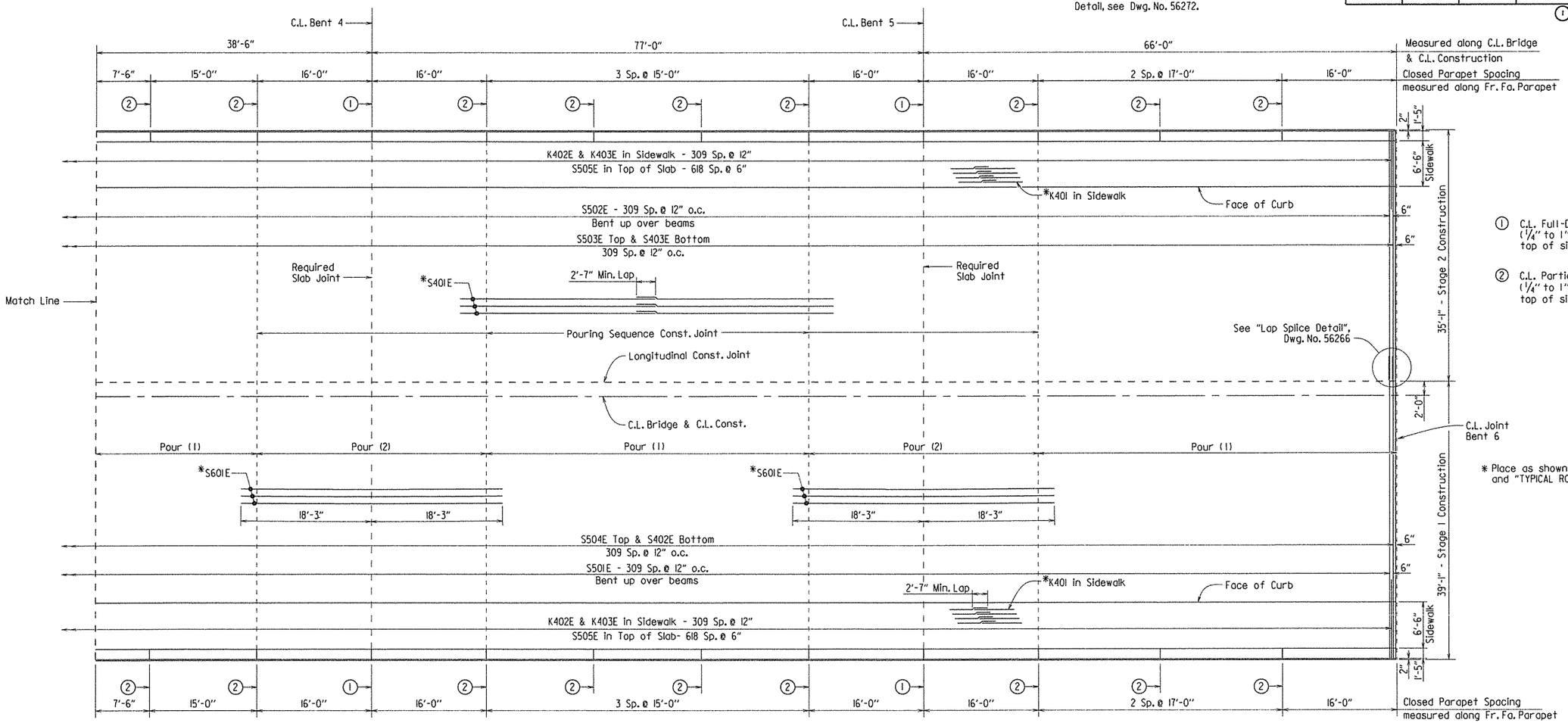
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CHECKED BY: TRG DATE: 10/13/14
DESIGNED BY: SAP DATE: 4/2014
FILENAME: b050230x3_sl.dgn
SCALE: ⅛" = 1'-0" or as noted

BRIDGE NO. 07301 DRAWING NO. 56270

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 164 | 309 |
| | | | | (1) | 07301 - SPAN DETAILS - 56271 | | | |

NOTE:
For "CONCRETE PLACEMENT PROCEDURE" Detail, see Dwg. No. 56272.

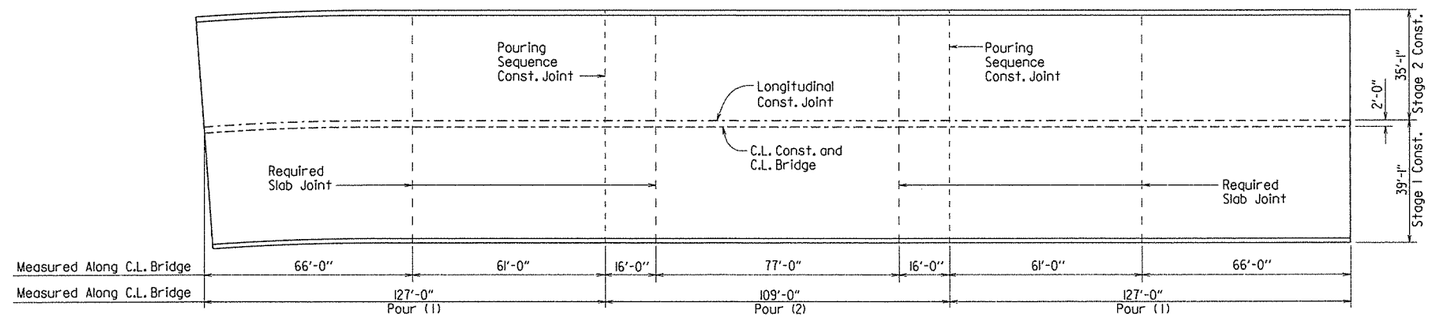



① C.L. Full-Depth Parapet Joint (1/4" to 1" max.). Stop 4" from top of sidewalk. See Dwg. No. 56273.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" max.). Stop 1'-2" from top of sidewalk. See Dwg. No. 56273.

* Place as shown in "TYPICAL ROADWAY SECTION - STAGE 1" and "TYPICAL ROADWAY SECTION - STAGE 2", Dwg. No. 56265

## HALF REINFORCING PLAN AND POURING SEQUENCE




## ALTERNATE DECK POURING SEQUENCE

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 7 OF 10
DETAILS OF 363'-0" CONT. COMP. W-BEAM UNIT SPRING RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 05/13/14 FILENAME: b050230x3_sl.dgn
CHECKED BY: TMG DATE: 10/13/14 SCALE: 1/8" = 1'-0" or as noted
DESIGNED BY: SMP DATE: 10/2014

BRIDGE NO. 07301 DRAWING NO. 56271

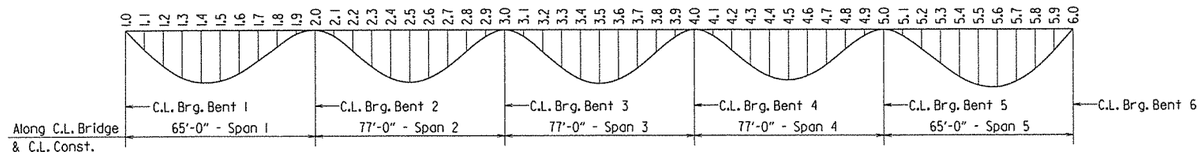
PRINT DATE: 10/13/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 165 | 359 |
| | | | | ① | | 07301 - SPAN DETAILS - 56272 | | |

## TABLE OF DEAD LOAD DEFLECTIONS-INCHES

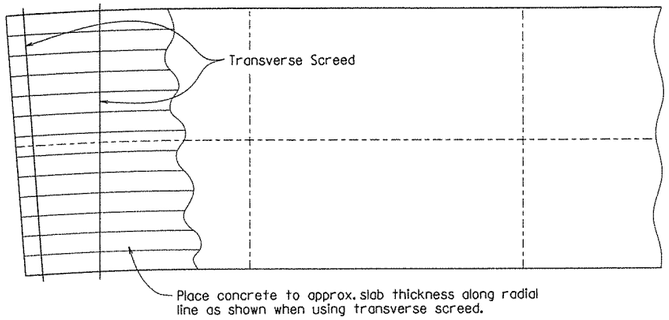
BEAMS 1 - 9

| Span | Point of Deflection | Structural Steel | Structural Steel +Slab | Str. Steel +Slab +Sidewalk+Parapet |
|---|---|---|---|---|
| 1 | 1.0 | 0.000 | 0.000 | 0.000 |
| | 1.1 | 0.142 | 0.174 | 0.207 |
| | 1.2 | 0.261 | 0.320 | 0.381 |
| | 1.3 | 0.345 | 0.424 | 0.506 |
| | 1.4 | 0.380 | 0.467 | 0.557 |
| | 1.5 | 0.368 | 0.452 | 0.540 |
| | 1.6 | 0.312 | 0.384 | 0.459 |
| | 1.7 | 0.221 | 0.272 | 0.326 |
| | 1.8 | 0.122 | 0.150 | 0.179 |
| | 1.9 | 0.038 | 0.047 | 0.056 |
| 2 | 2.0 | 0.000 | 0.000 | 0.000 |
| | 2.1 | 0.045 | 0.055 | 0.067 |
| | 2.2 | 0.152 | 0.187 | 0.227 |
| | 2.3 | 0.264 | 0.324 | 0.392 |
| | 2.4 | 0.347 | 0.426 | 0.513 |
| | 2.5 | 0.377 | 0.462 | 0.557 |
| | 2.6 | 0.348 | 0.426 | 0.513 |
| | 2.7 | 0.267 | 0.327 | 0.395 |
| | 2.8 | 0.154 | 0.188 | 0.228 |
| | 2.9 | 0.051 | 0.062 | 0.075 |
| 3 | 3.0 | 0.000 | 0.000 | 0.000 |
| | 3.1 | 0.050 | 0.061 | 0.073 |
| | 3.2 | 0.161 | 0.197 | 0.238 |
| | 3.3 | 0.275 | 0.337 | 0.405 |
| | 3.4 | 0.359 | 0.441 | 0.529 |
| | 3.5 | 0.389 | 0.478 | 0.573 |
| | 3.6 | 0.359 | 0.441 | 0.529 |
| | 3.7 | 0.277 | 0.340 | 0.409 |
| | 3.8 | 0.162 | 0.198 | 0.239 |
| | 3.9 | 0.055 | 0.068 | 0.081 |
| 4 | 4.0 | 0.000 | 0.000 | 0.000 |
| | 4.1 | 0.045 | 0.055 | 0.067 |
| | 4.2 | 0.150 | 0.184 | 0.223 |
| | 4.3 | 0.258 | 0.316 | 0.382 |
| | 4.4 | 0.338 | 0.414 | 0.499 |
| | 4.5 | 0.365 | 0.447 | 0.539 |
| | 4.6 | 0.333 | 0.409 | 0.493 |
| | 4.7 | 0.252 | 0.309 | 0.374 |
| | 4.8 | 0.141 | 0.173 | 0.211 |
| | 4.9 | 0.042 | 0.052 | 0.064 |
| 5 | 5.0 | 0.000 | 0.000 | 0.000 |
| | 5.1 | 0.048 | 0.059 | 0.070 |
| | 5.2 | 0.144 | 0.177 | 0.211 |
| | 5.3 | 0.249 | 0.306 | 0.365 |
| | 5.4 | 0.348 | 0.427 | 0.509 |
| | 5.5 | 0.408 | 0.500 | 0.596 |
| | 5.6 | 0.420 | 0.515 | 0.613 |
| | 5.7 | 0.379 | 0.465 | 0.553 |
| | 5.8 | 0.289 | 0.355 | 0.422 |
| | 5.9 | 0.155 | 0.191 | 0.227 |
| | 6.0 | 0.000 | 0.000 | 0.000 |

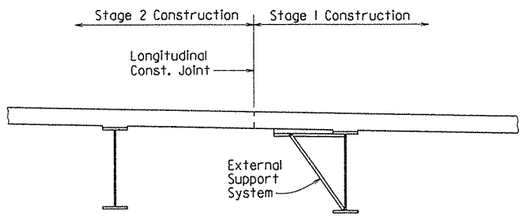



NOTE:
Camber for Dead Load Deflection plus Vertical curve plus/minus 1/4" tolerance. Deflections shown are along C.L. Beam from the plane perpendicular to the web extending from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

DEAD LOAD DEFLECTION DIAGRAM
No Scale




CONCRETE PLACEMENT PROCEDURE
No Scale




Stage 1 external supports in this bay shall remain in place until after completion of the Stage 2 deck pour. See Subsection 802.15 for additional information regarding their removal.

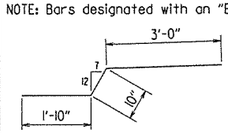
DECK SUPPORT AT LONGITUDINAL CONSTRUCTION JOINT
LOOKING AHEAD
No Scale

## BAR LIST

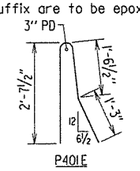
| MARK | NO. REQ'D. | LENGTH | P.D. |
|---|---|---|---|
| K401E | 128 | 39'-2" | Str. |
| K402E | 742 | 7'-5" | Str. |
| K403E | 742 | 5'-8" | 3" |
| | | | |
| P401E | 1,449 | 5'-6" | 3" |
| P402E | 7 | 14'-10" | Str. |
| P403E | 14 | 15'-10" | Str. |
| P404E | 7 | 15'-6" | Str. |
| P405E | 7 | 16'-5" | Str. |
| P406E | 14 | 17'-6" | Str. |
| P407E | 7 | 15'-9" | Str. |
| P408E | 112 | 15'-8" | Str. |
| P409E | 126 | 14'-8" | Str. |
| P410E | 28 | 16'-8" | Str. |
| P411E | 72 | 5'-8" | Str. |
| P412E | 4 | 3'-10" | 2" |
| P413E | 12 | 5'-2" | 2" |
| | | | |
| P501E | 720 | 6'-0" | 3¾" |
| P502E | 729 | 5'-5" | 3¾" |
| | | | |
| S401E | 2,222 | 39'-2" | Str. |
| S402E | 371 | 41'-8" | Str. |
| S403E | 371 | 34'-9" | Str. |
| | | | |
| S501E | 372 | 43'-3" | 3¾" |
| S502E | 372 | 35'-5" | 3¾" |
| S503E | 371 | 34'-9" | Str. |
| S504E | 371 | 42'-5" | Str. |
| S505E | 1,484 | 5'-10" | Str. |
| | | | |
| S601E | 78 | 36'-0" | Str. |
| | | | |

BENDING DIAGRAMS

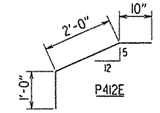
Dimensions are out to out of bars.
NOTE: Bars designated with an "E" suffix are to be epoxy coated.



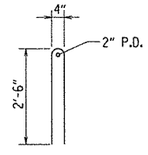
K403E



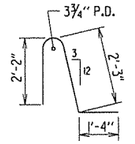
P401E



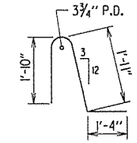
P412E



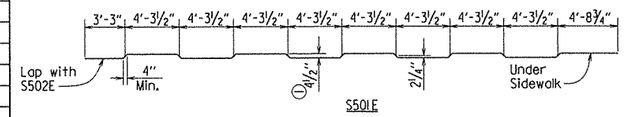
P413E



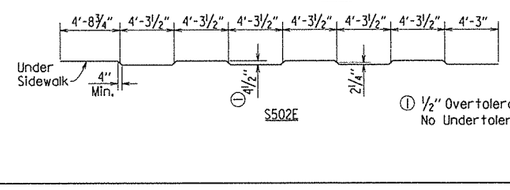
P501E



P502E



S501E



S502E

① ½" Overtolerance
No Undertolerance

STATE OF ARKANSAS
Charles R. Ellis
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No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

SHEET 8 OF 10
DETAILS OF 363'-0" CONT.
COMP. W-BEAM UNIT
SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

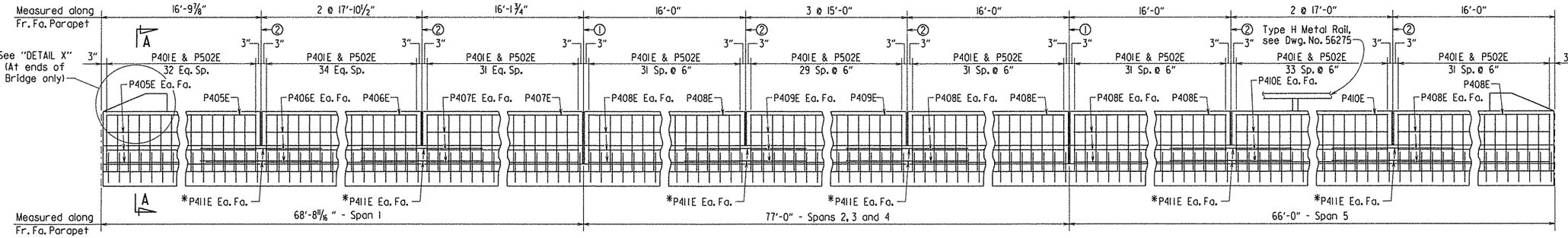
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CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: SP DATE: 9/2014
FILENAME: b050230x3_sl.dgn
SCALE: As Noted

BRIDGE NO. 07301 DRAWING NO. 56272

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 160 | 309 |

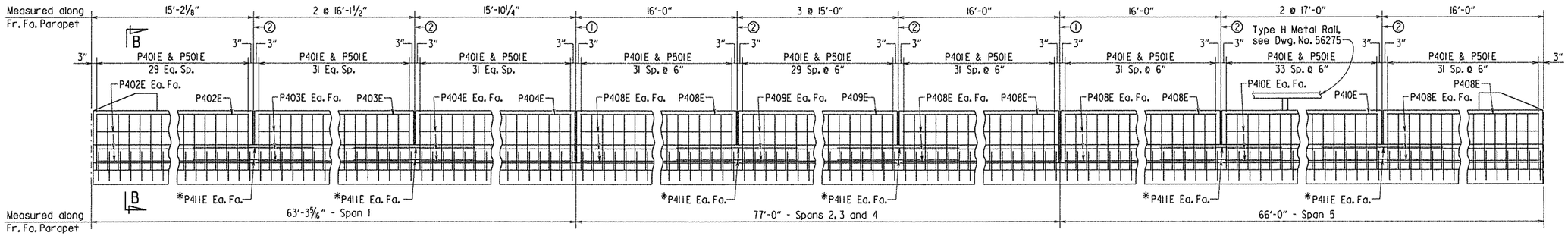
(1) 07301 - SPAN DETAILS - 56273




## PARAPET RAIL DETAIL - HIGH SIDE

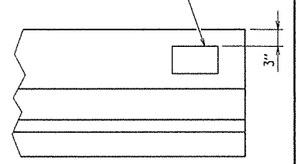
(1) C.L. Full-Depth Parapet Joint (¼" to 1" Max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 56271 & 56272. Stop 4" from top of sidewalk.

(2) C.L. Partial-Depth Parapet Joint (¼" to 1" max.) as shown in "Reinforcing Plan & Deck Pouring Sequence" Dwg. No. 56271 & 56272. Stop 1'-2" from top of sidewalk.



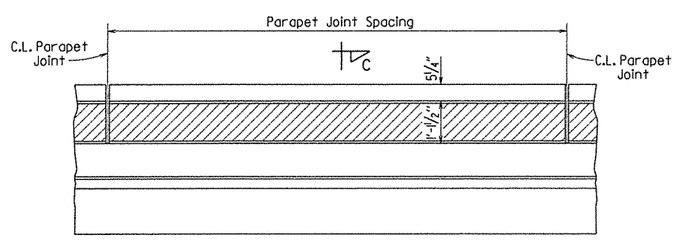

## PARAPET RAIL DETAIL - LOW SIDE

Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from beginning of bridge. (Right side of roadway only)



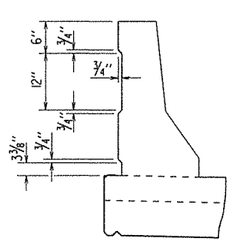

## NAME PLATE DETAIL

No Scale



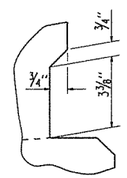

## DETAILS OF PARAPET ENHANCEMENT

Outside Face Of Rail
No Scale




## SECTION C-C

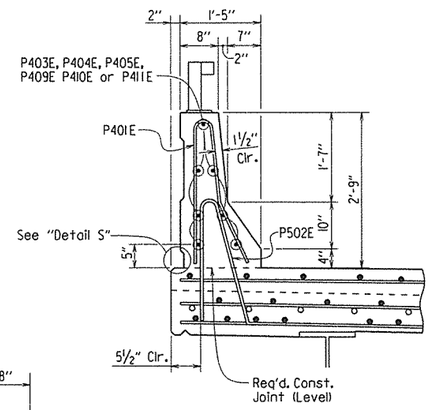
No Scale




## DETAIL S

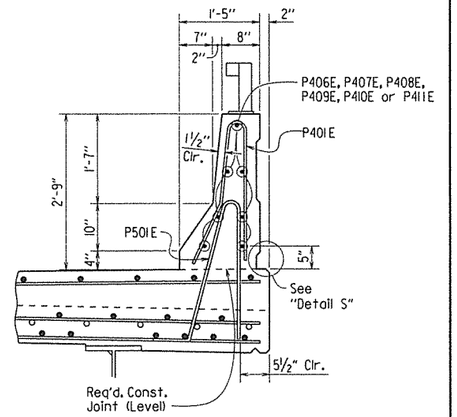
No Scale

* 2'-7" Min. Lap



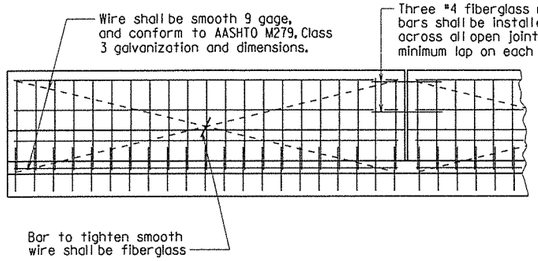

## SECTION A-A

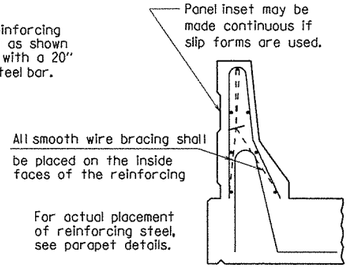
High Side
Scale: ¾" = 1'-0"




## SECTION B-B

Low Side
Scale: ¾" = 1'-0"



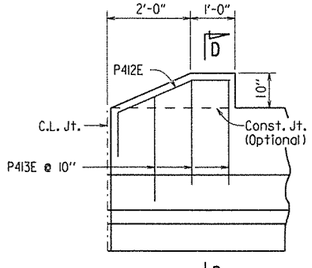




All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practicalto a minimum width of ¼". To control cracking before sawing all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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.

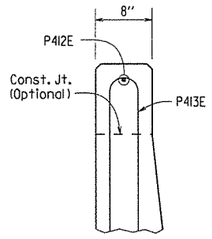
## DETAILS OF OPTIONAL SLIP FORMING OF CONCRETE PARAPET RAIL

No Scale




## DETAIL X

No Scale




## SECTION D-D

No Scale

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

## SHEET 9 OF 10
## DETAILS OF 363'-0" CONT. COMP. W-BEAM UNIT SPRING RIVER

ROUTE SEC.

## ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 05/13/14
CHECKED BY: TMG DATE: 10/13/14
DESIGNED BY: S-P DATE: 6/2014

FILENAME: b050230x3_sl.dgn
SCALE: ⅜" = 1'-0" or as noted

BRIDGE NO. 07301 DRAWING NO. 56273

PRINT DATE: 10/10/2014

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 167 | 363 |

(1) 07301 - SPAN DETAILS - 56274

## 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 6th Edition (2012),with 2013 Interims.

MATERIALS AND STRENGTHS:

| | | |
|---|---|---|
| Class S(AE) Concrete | f'c = | 4,000 psi |
| Reinforcing Steel (Gr. 60 AASHTO M31 or M322, Type A) | fy = | 60,000 psi |
| Structural Steel (AASHTO M 270, Gr. 50W) | Fy = | 50,000 psi |
| Structural Steel (AASHTO M 270, Gr. 36) | Fy = | 36,000 psi |

CONCRETE :
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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 beam. The use of a longitudinal screed is prohibited.

For each stage of construction, a minimum of 72 hours shall elapse between completion of the slab and the pouring of the sidewalk and a minimum of 72 hours shall elapse between the completion of the sidewalk and the pouring of the parapet railing.

REINFORCING STEEL :
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports. The reinforcing steel is to be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item "Epoxy Coated Reinforcing Steel (Grade 60)".

STRUCTURAL STEEL :
All structural steel shall be AASHTO M 270, Grade 50W unless otherwise noted and shall be paid for as "Structural Steel in Beam Spans (M 270, Gr. 50W)". Grade 50W steel shall not be painted. All exposed surfaces shall be cleaned in accordance with Subsection 807.84(e) unless otherwise noted. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes and materials shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams, diaphragms, connection plates and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Beam 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 or compressive stresses.

All beams shall be blocked in their true position in the shop with the webs horizontal. The camber, length of sections, distance between bearings and openings of joints shall be measured with the beams in their true position and this information shall become part of the permanent records for this job. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees 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.

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 Diaphragm Connections shall be ¾" diameter bolts with 13/16" open holes. Bolts shall be placed with heads on the outside face of the exterior beam web and on the bottom of the flange.

Steel diaphragms shall be installed as beams are erected unless otherwise noted. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

All stud shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the manufacturer.

## TABLE A

| (3) Width perpendicular to joint at 24 hour average temperature of: | | |
|---|---|---|
| 40° F | 60° F | 80° F |
| 2⅝" | 2½" | 2⅜" |

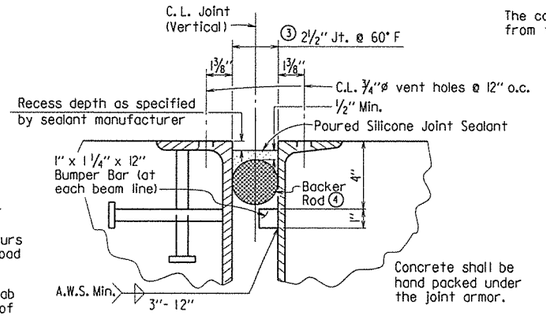
(3) Installation is limited to 40° F min. and 80° F max. See Table A for installation temperatures other than 60° F

(4) BACKER ROD NOTE:

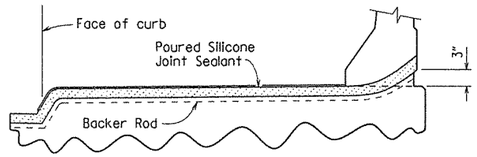
Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod than can be sealed in the same day.

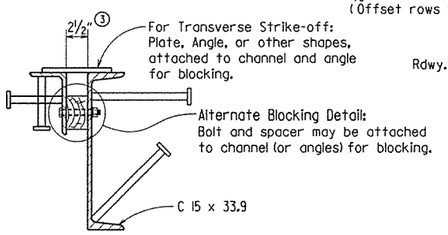
The contractor shall verify separation of the backer rod from the joint material after the joint material has set.




## DETAIL OF POURED SILICONE JOINT

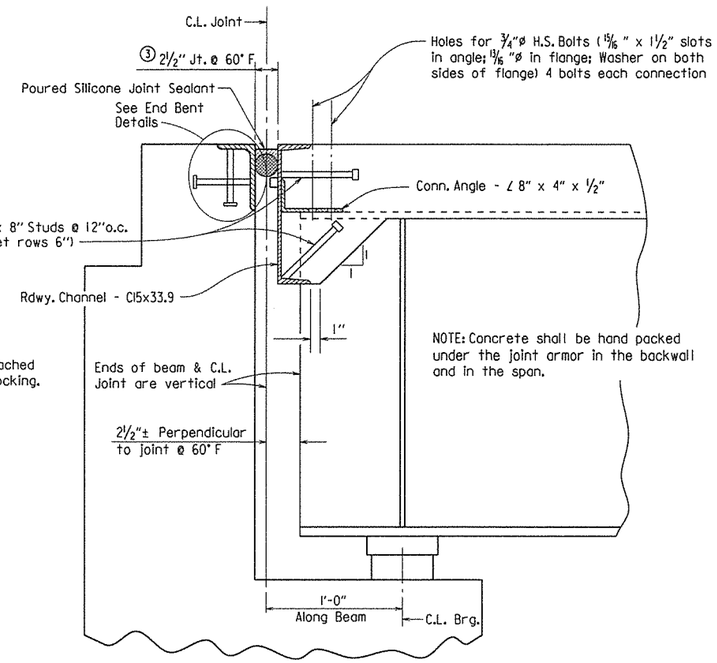



## JOINT SEAL PLACEMENT AT SIDEWALK & PARAPET

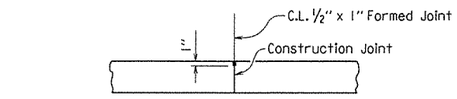



NOTE: Each expansion joint device shall be blocked in the Shop by the Fabricator to 2½", and the blocking details shall be shown on the Shop Drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

## DETAILS FOR BLOCKING EXPANSION JOINT DEVICE




## JOINT AT END BENTS



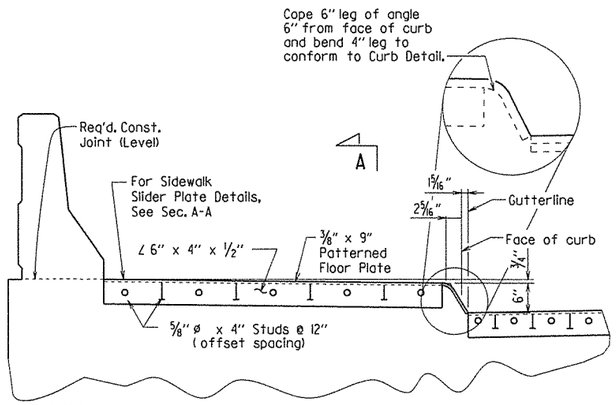

Use ½" X 1" Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod shall not be installed. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed. Sealant must be gray or other color similar to concrete.

## LONGITUDINAL CONSTRUCTION JOINT DETAIL

## EXPANSION DEVICE INSTALLATION AT END BENTS

The Contractor shall install the expansion device as follows:

The concrete span pour adjacent to joint shall be placed before the abutment backwall is placed. After the abutment 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 abutment. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature, and the backwall constructed.

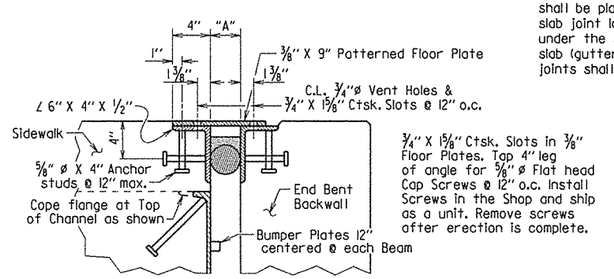



## SIDEWALK DETAIL

Shown at End Bent - Similar on Span

A

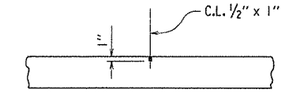
NOTE: Concrete shall be hand packed under joint armor.




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

## SECTION A-A

¾" X 15/8" Ctsk. Slots in ⅜" Floor Plates. Top 4" leg of angle for ⅝" ø Flat head Cap Screws @ 12" o.c. Install Screws in the Shop and ship as a unit. Remove screws after erection is complete.




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

NOTE:
The surfaces of the ⅜" pattern PL and ∠ 6" X 4" X ½" 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 Beam 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 Beam Spans (M270, Gr. 50W)".

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

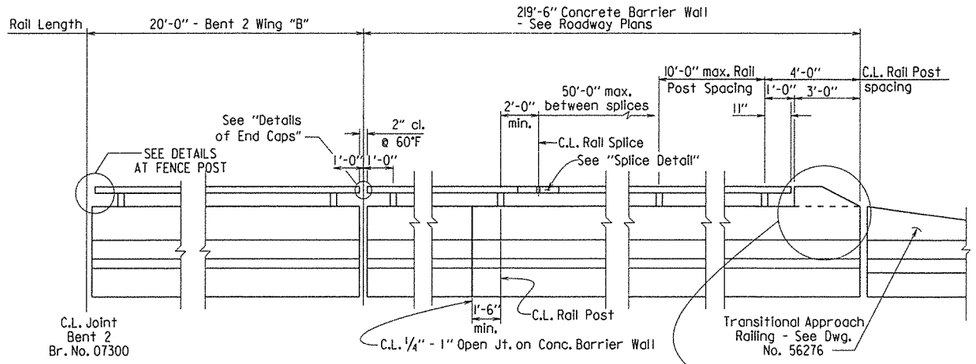
SHEET 10 OF 10
DETAILS OF 363'-0" CONT. COMP. W-BEAM UNIT SPRING RIVER
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: MRE DATE: 05/13/14 FILENAME: b050230x3_sl.dgn
CHECKED BY: TMG DATE: 10/13/14 SCALE: No Scale
DESIGNED BY: SMP DATE: 4/2014

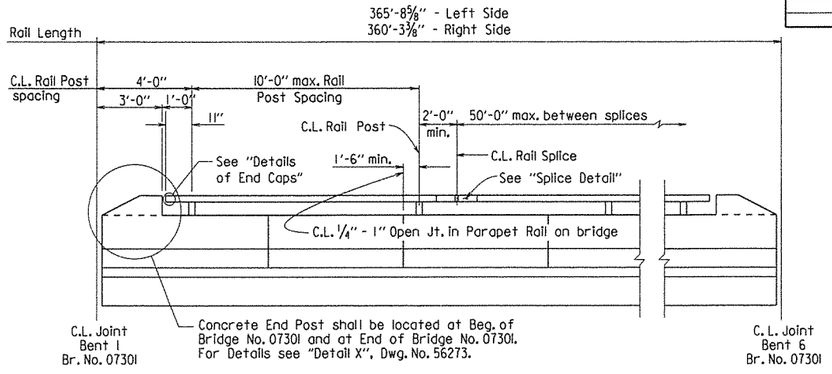
BRIDGE NO. 07301 DRAWING NO. 56274

PRINT DATE: 10/10/2014

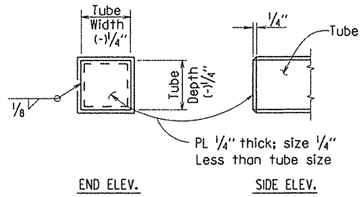
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|---|---|---|---|---|---|---|---|---|
| | | | | | ARK. | | | |
| | | | | JOB NO. | | 050230 | 168 | 369 |
| | | | | 07300 & 07301 | - METAL BRIDGE RAIL - 56275 | | | |



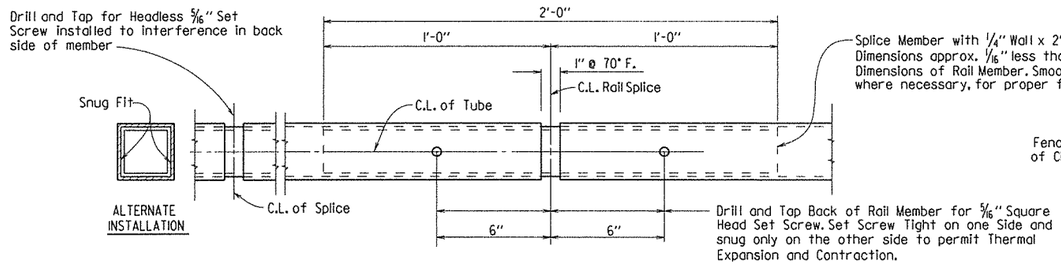

RAIL POST SPACING DETAIL - BRIDGE NO. 07300



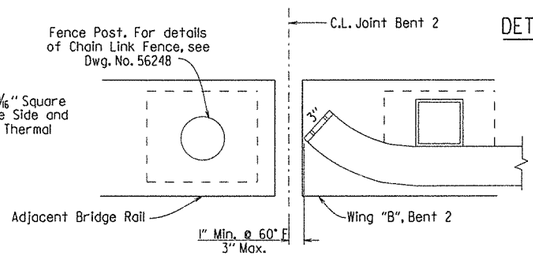

RAIL POST SPACING DETAIL - BRIDGE NO. 07301




DETAILS OF END CAPS

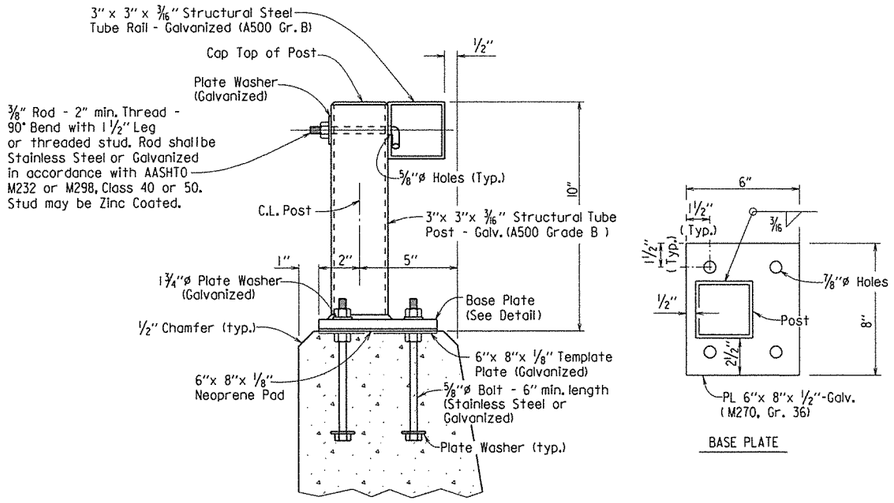



SPLICE DETAIL



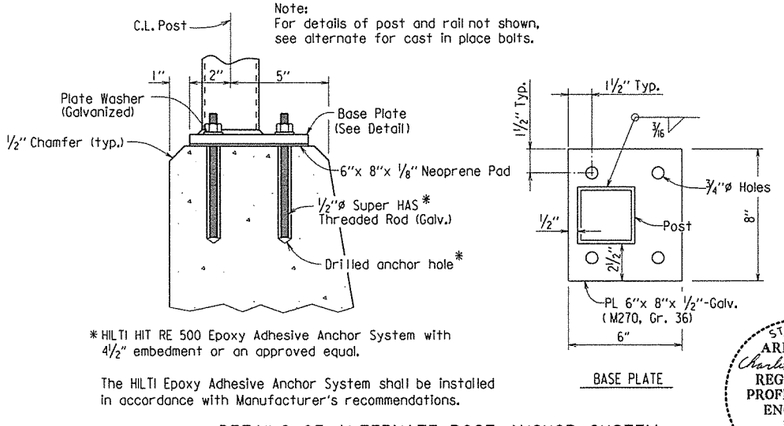

DETAILS AT FENCE POST - BR. NO. 07300

Bend or Mitre as Shown.




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.

DETAILS OF ALTERNATE POST ANCHOR SYSTEM

(EPOXY ADHESIVE ANCHORS)

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 maximum of 2 feet from centerline of post. Rail sections shall be fabricated to attach to at least three posts.

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.

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# DETAILS OF TYPE H METAL BRIDGE RAILING

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: LJB DATE: 8/19/14 FILENAME: b040456_hr.dgn

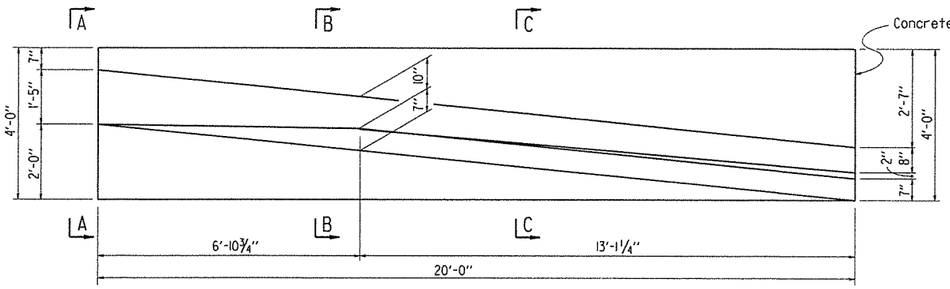
CHECKED BY: JCT DATE: 9/11/14 SCALE: NONE

DESIGNED BY: S.M.P DATE: 6/2014

BRIDGE NO. 07300 & 07301 DRAWING NO. 56275

PRINT DATE: 10/10/2014

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 050230 | 169 | 309 |
| | | | | ① | | - RAIL - 56276 | | |




PLAN OF TRANSITIONAL APPROACH RAILING

General Notes

Transitional Approach Railing shall be placed at end of Concrete Barrier Wall.

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

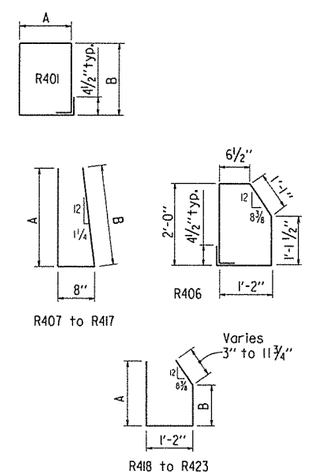
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports.

Transitional Approach Railing shall be paid for at the contract unit price bid per each for "Transitional Approach Railing."

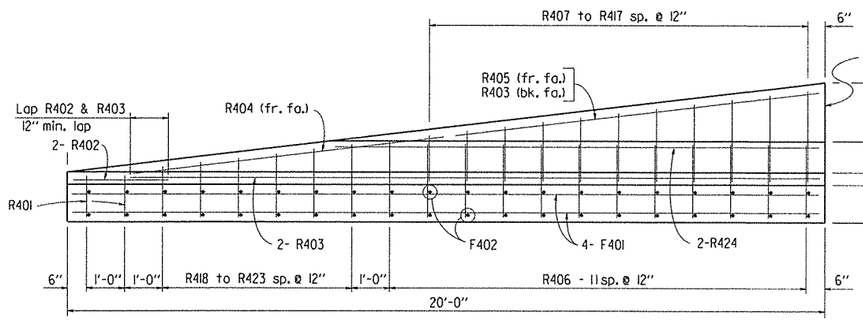
## BAR LIST - ONE TRANSITIONAL RAIL

| Mark | No. Req'd. | Length | A | B | Pin Dia. |
|---|---|---|---|---|---|
| F401 | 8 | 19'-8" | | | str. |
| F402 | 40 | 3'-8" | | | str. |
| | | | | | |
| R401 | 2 | 4'-10" | 1'-2" | 1'-1" | 2" |
| R402 | 2 | 3'-0" | | | str. |
| R403 | 3 | 17'-9" | | | str. |
| R404 | 1 | 5'-0" | | | str. |
| R405 | 1 | 12'-9" | | | str. |
| R406 | 12 | 6'-3" | | | 2" |
| R407-R417 | 1 ea. | 3'-0"-5'-5" | 1'-3"-2'-5½" | 1'-3"-2'-5½" | 2" |
| R418-R423 | 1 ea. | 3'-9"-5'-1" | 1'-4"-1'-11¼" | 1'-1½" | 2" |
| R424 | 2 | 10'-9" | | | str. |
| | | | | | |
| | | | | | |

Bending Diagram



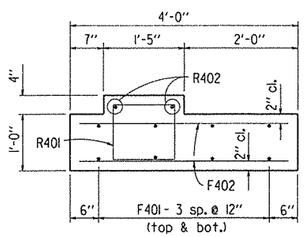

Dimensions are out to out of bars.



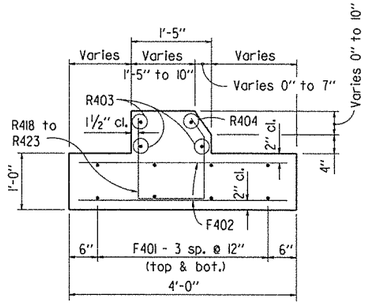

ELEVATION OF TRANSITIONAL APPROACH RAILING

## FOR INFORMATION ONLY
## SCHEDULE OF QUANTITIES PER RAIL UNIT

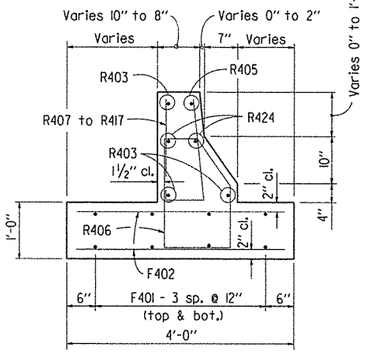
| CLASS "S" CONCRETE | REINFORCING STEEL (GRADE 60) | CLASS 1 PROTECTIVE SURFACE TREATMENT |
|---|---|---|
| 4.20 Cu. Yds. | 374.00 Lbs. | 0.2 gal |



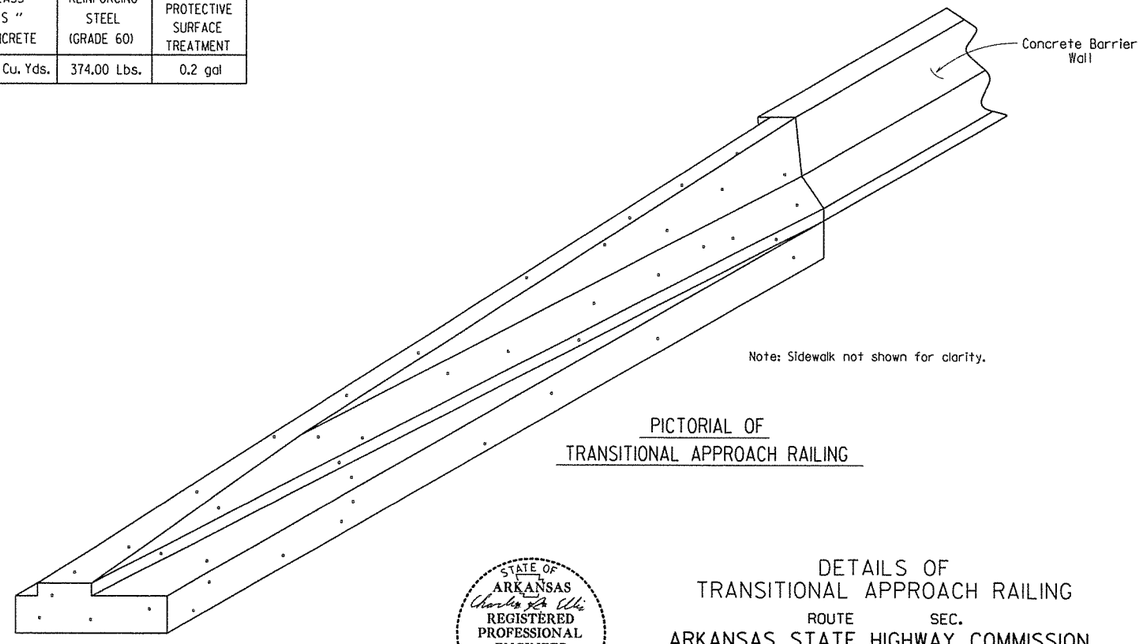

VIEW A - A
¾" = 1'-0"




SECTION B - B
¾" = 1'-0"




SECTION C - C
¾" = 1'-0"




Note: Sidewalk not shown for clarity.

PICTORIAL OF
TRANSITIONAL APPROACH RAILING

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
10-13-14
CHARLES R. ELLIS

BRIDGE ENGINEER

# DETAILS OF TRANSITIONAL APPROACH RAILING

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

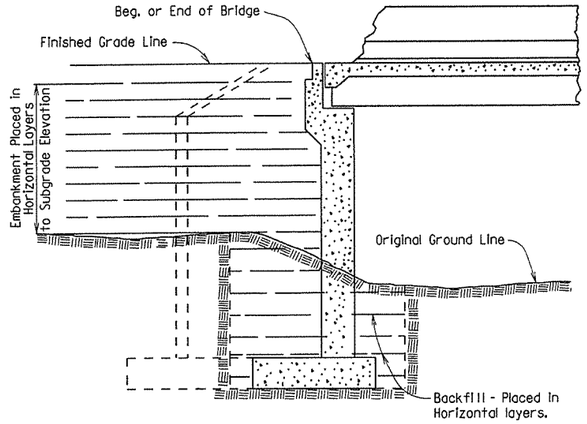
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CHECKED BY: L.J.B DATE: 10/13/2014
DESIGNED BY: Std. DATE: —

FILENAME: b050230_tri.dgn
SCALE: ½" = 1'-0" or as noted

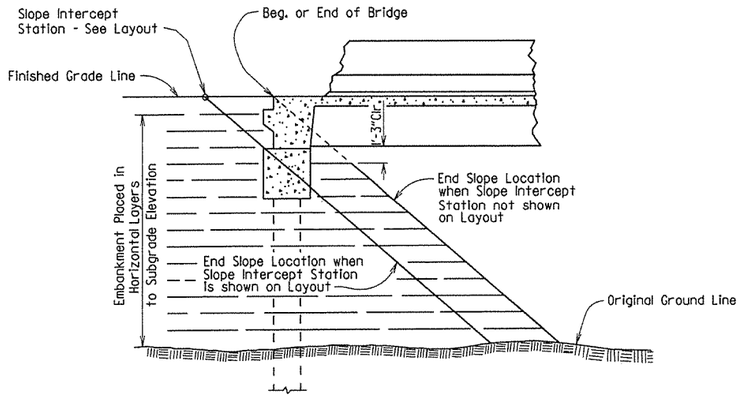
DRAWING NO. 56276

PRINT DATE: 10/10/2014

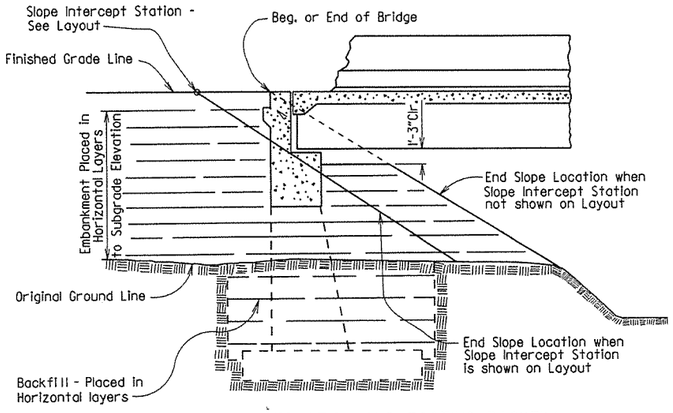
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 170 | |
| | | | | JOB NO. | | | | |
| | | | | (1) EMBANKMENT & BACKFILL | | 55000 | | |



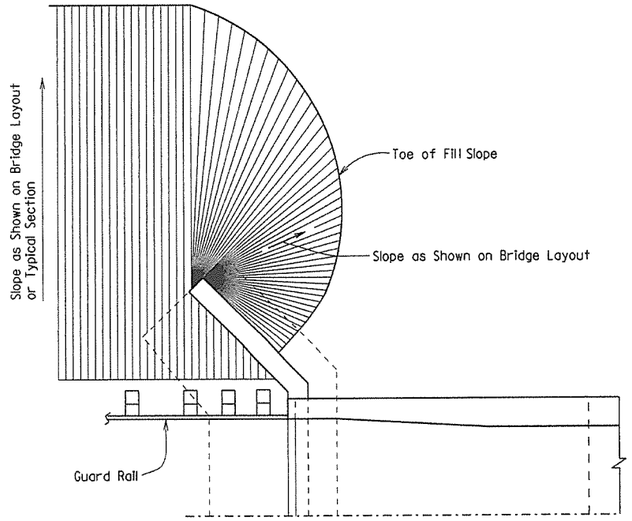

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



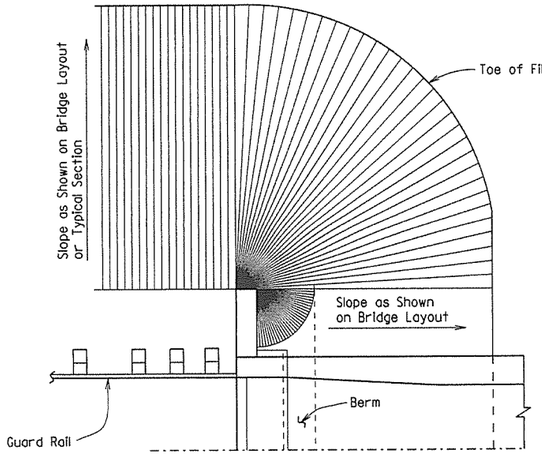

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



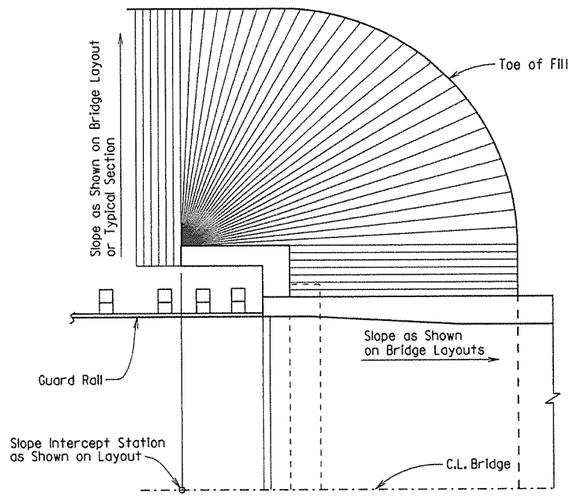

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



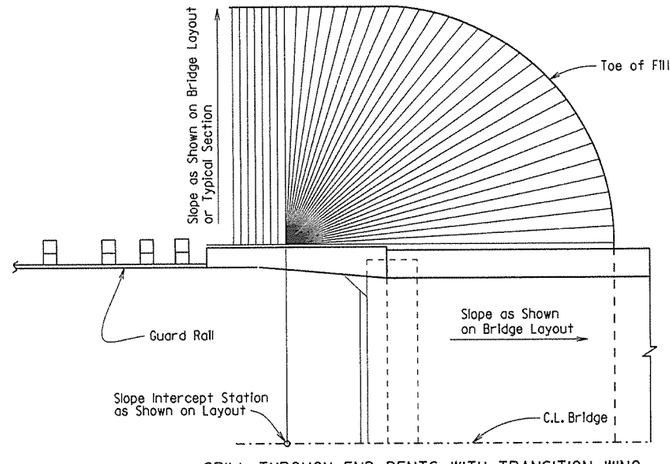

VERTICAL WALL ABUTMENTS




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.

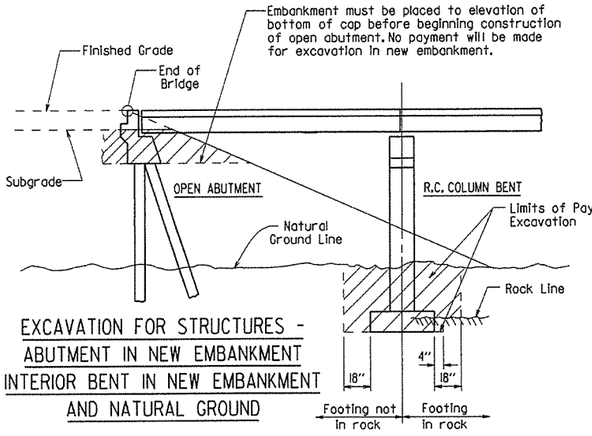
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55000.dgn

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

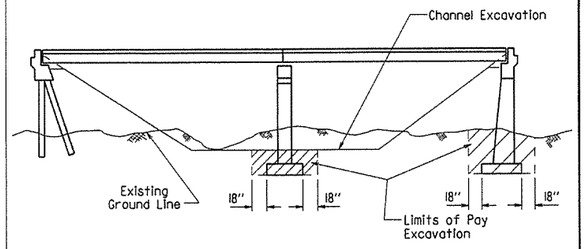
DESIGNED BY: STD. DATE: -

DRAWING NO. 55000

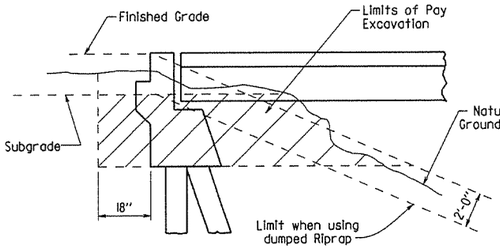
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 171 | |
| | | | | JOB NO. | | | | |
| | | | | ① | RIPRAP & EXCAV. 55001 | | | |



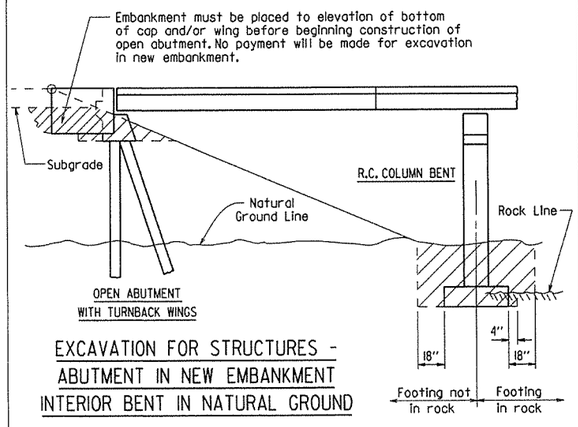

EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



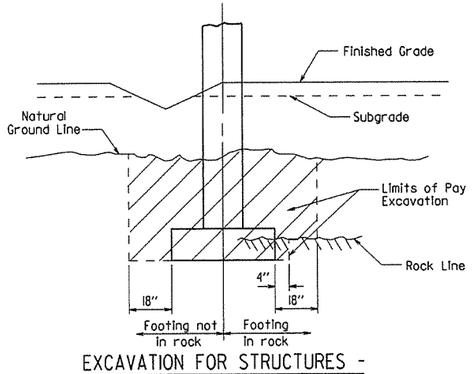

EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



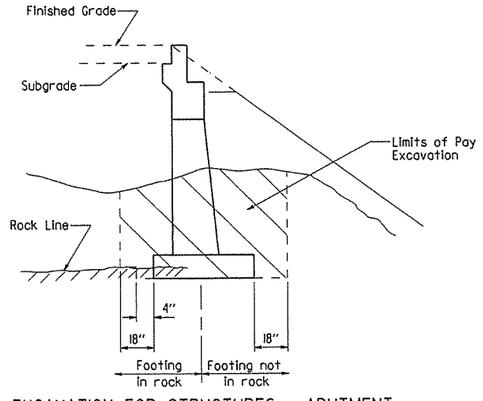

EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



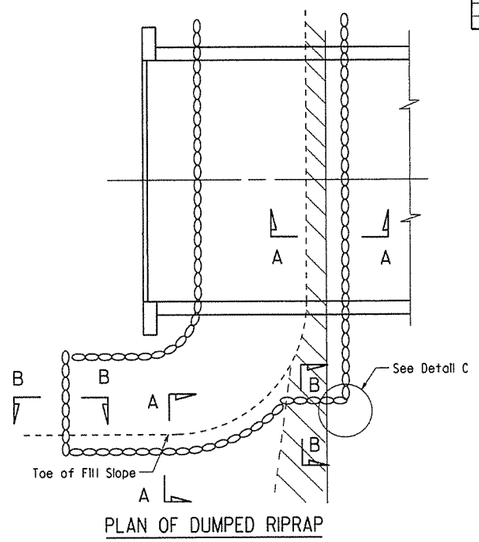

EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



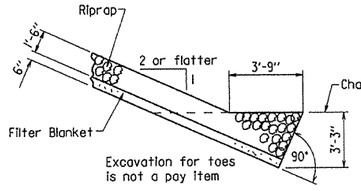

EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



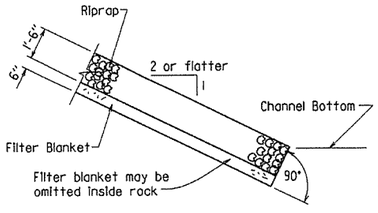

EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT




PLAN OF DUMPED RIPRAP




SECTION A-A
(Toe Excavation in Soil)

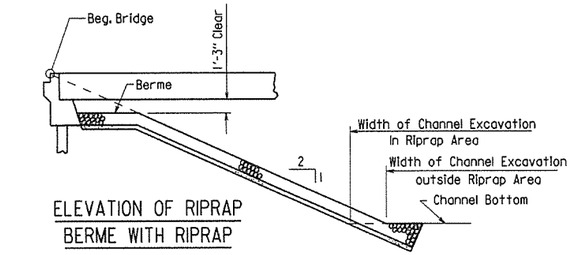



SECTION A-A
(Toe Excavation in Rock)

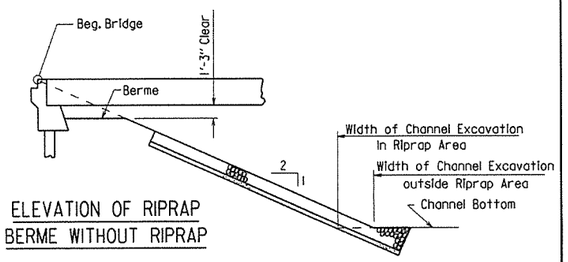
Note : Use this type of toe when rock is encountered which is in a stable condition.

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.

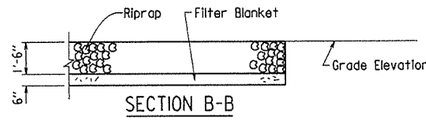
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



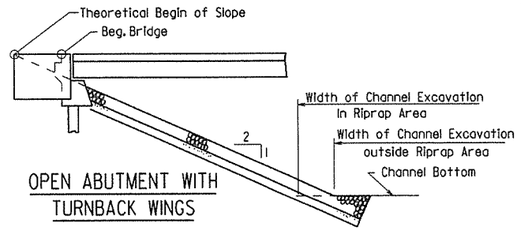

ELEVATION OF RIPRAP BERME WITH RIPRAP



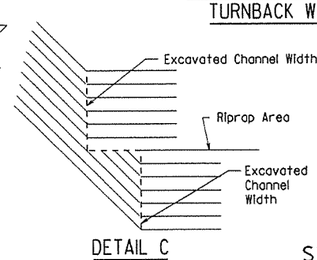

ELEVATION OF RIPRAP BERME WITHOUT RIPRAP




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.

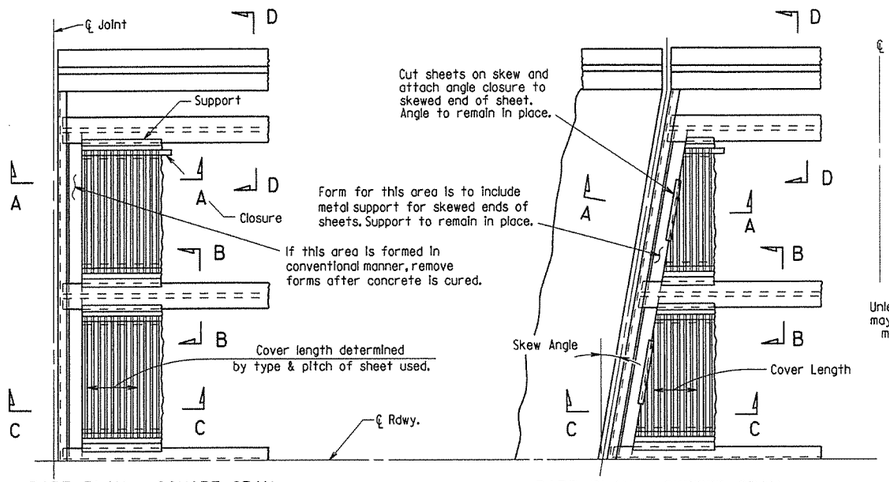
DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

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. | | 172 | |
| | | | | JOB NO. | | | | |
| | | | | ① | BRIDGE DECK FORMS | | 55005 | |



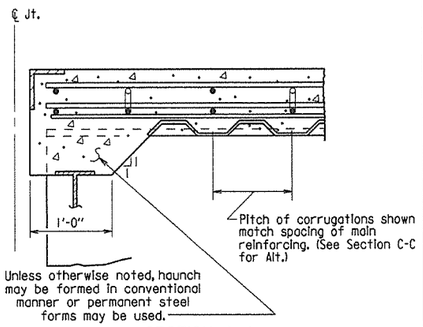

PART PLAN - SQUARE SPAN

3/8" = 1'-0"




PART PLAN - SKEWED SPAN

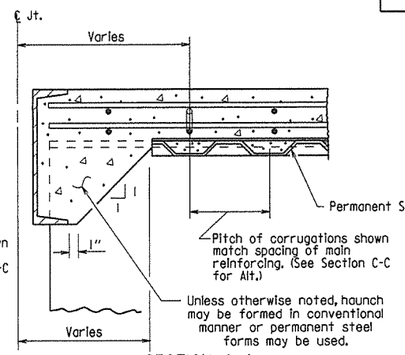
3/8" = 1'-0"




SECTION A-A

N.T.S.

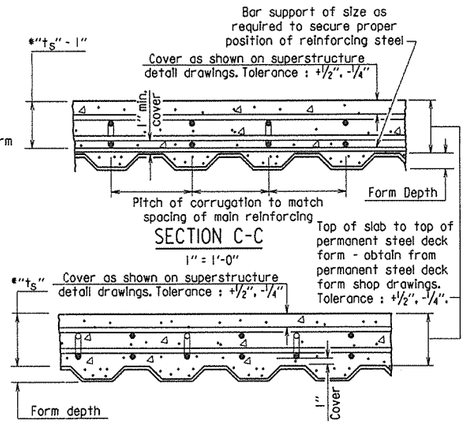
(Angle at end of span)




SECTION A-A

N.T.S.

(Channel at end of span)



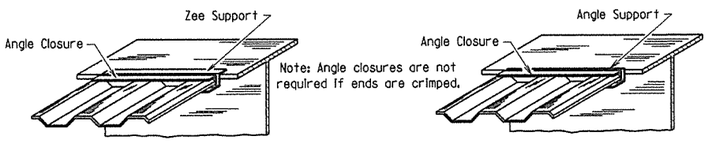

SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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




Note: Angle closures are not required if ends are crimped.

SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

*$t_s$ = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

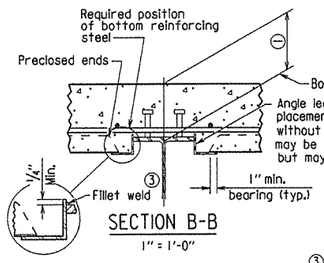
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

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

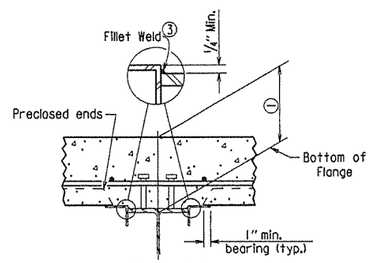



SECTION B-B

1" = 1'-0"

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

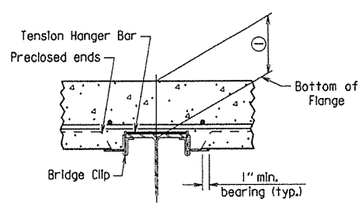
③ Minimum weld: 1/8" x 1' ℄ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)




SECTION B-B

1" = 1'-0"

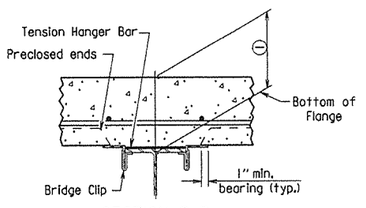
( Showing permissible support for tension flange where shear connectors are used and for all compression flanges )




SECTION B-B

1" = 1'-0"

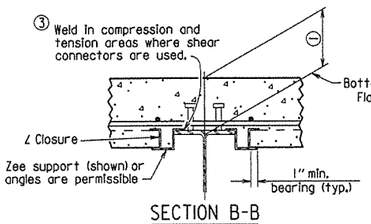
( Showing permissible support for tension flange where shear connectors are not used )




SECTION B-B

1" = 1'-0"

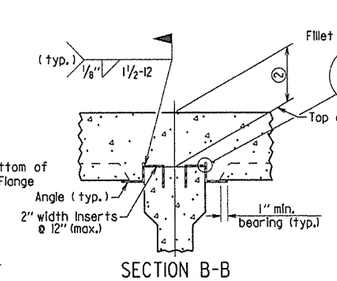
( Showing permissible support for tension flange where shear connectors are not used )




SECTION B-B

1" = 1'-0"

( Showing ∠ Closure )

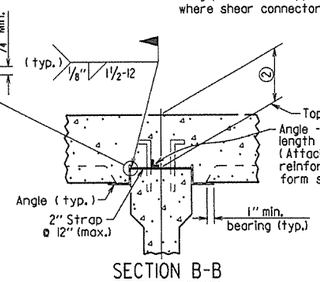



SECTION B-B

( FOR CONCRETE GIRDERS )

1" = 1'-0"

( Showing support by insert cast in girder )

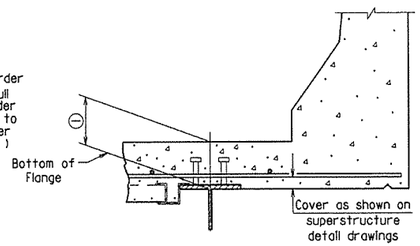



SECTION B-B

( FOR CONCRETE GIRDERS )

1" = 1'-0"

( Showing support by Strap )




SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

# 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

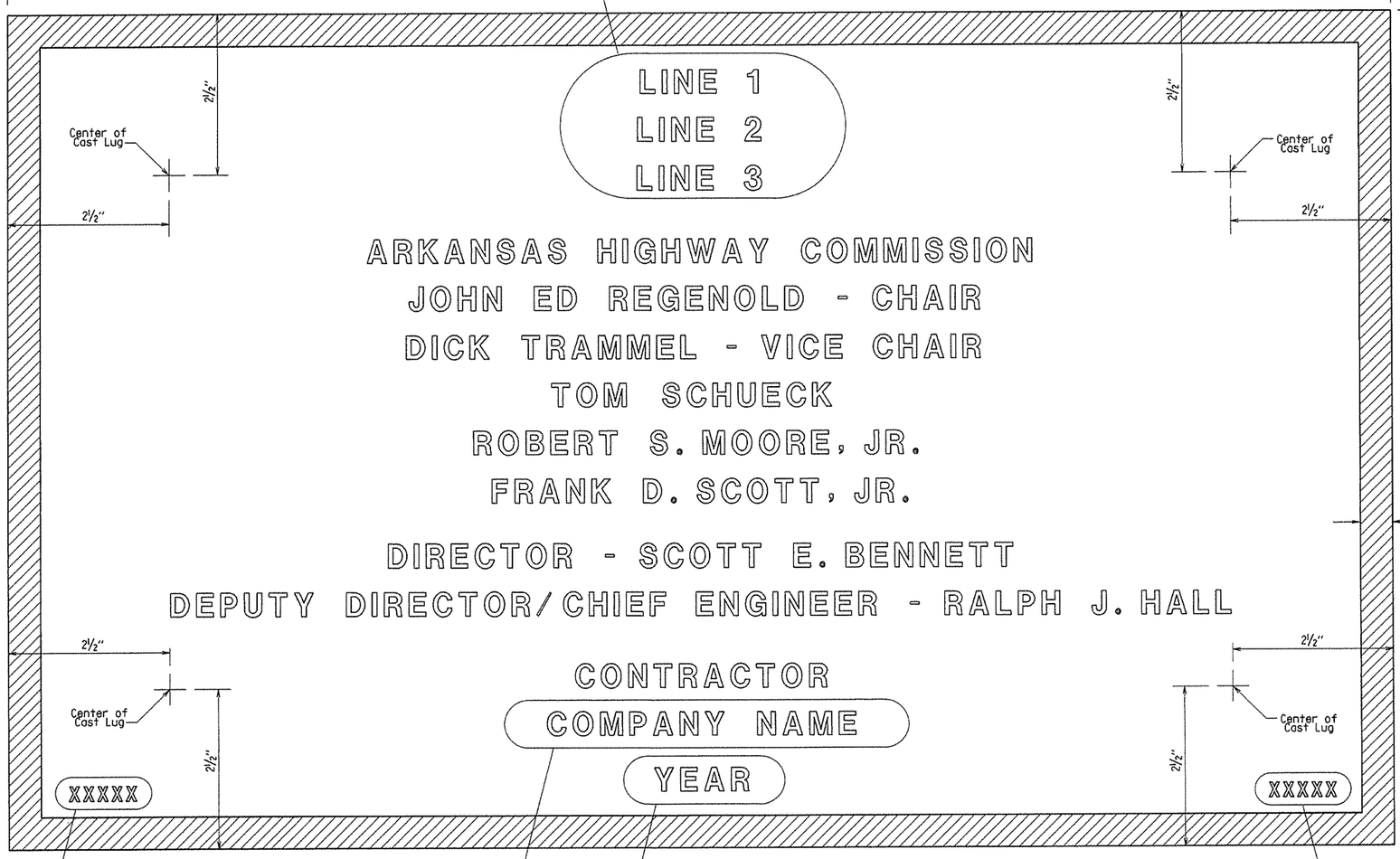
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED |
|---|---|---|---|
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| | | | |

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | 173 | |
| JOB NO. | | | | |

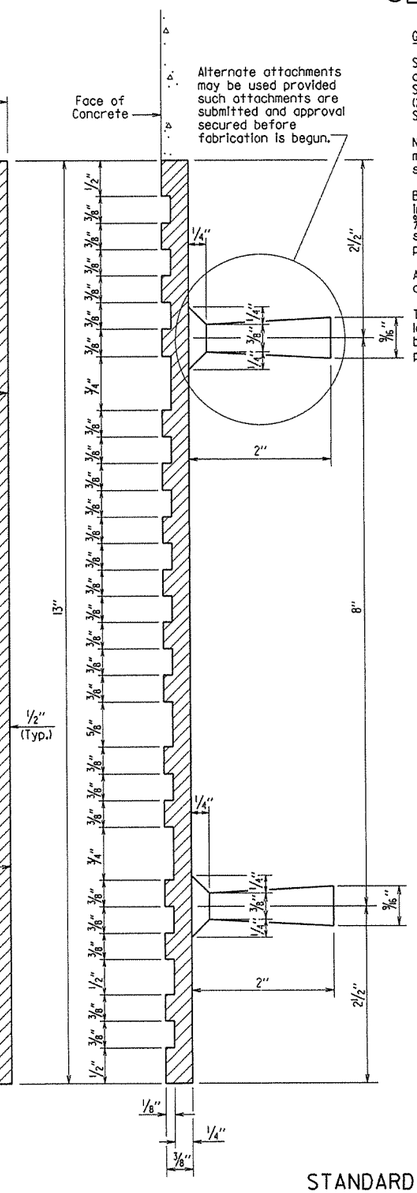
(1) TYPE D NAME PLATE 55010

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 | |




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 5/16" x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

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

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

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. | | 174 | |
| | | | | JOB NO. | | | | |
| | | | | ① | | STEEL H-PILES | | 55020 |

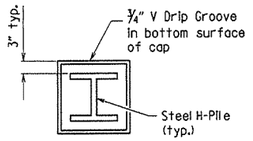
## GENERAL NOTES FOR STEEL H-PILES:

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

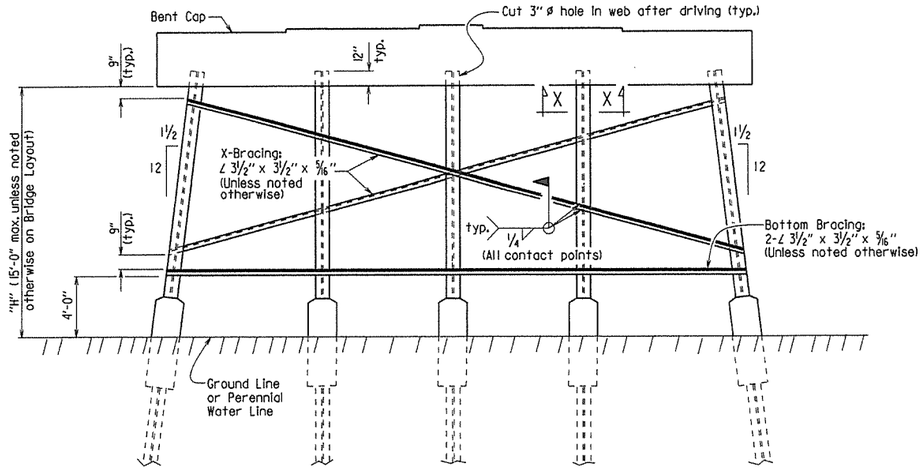
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

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.

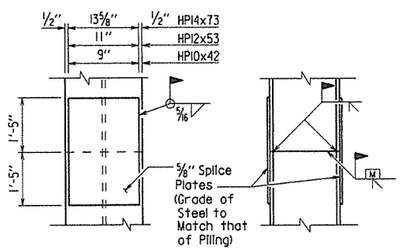
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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)

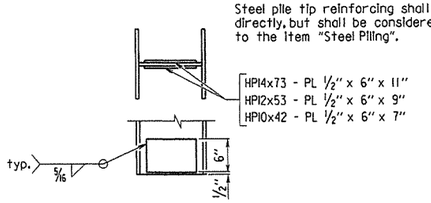



Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

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:

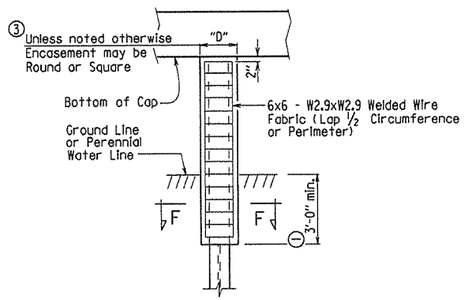
See Bridge Layout for additional notes and required location of pile encasements.

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.

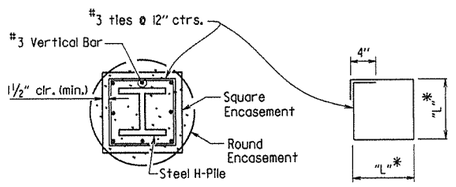
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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)

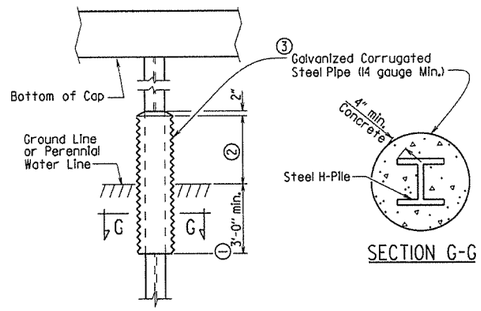



SECTION F-F

*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

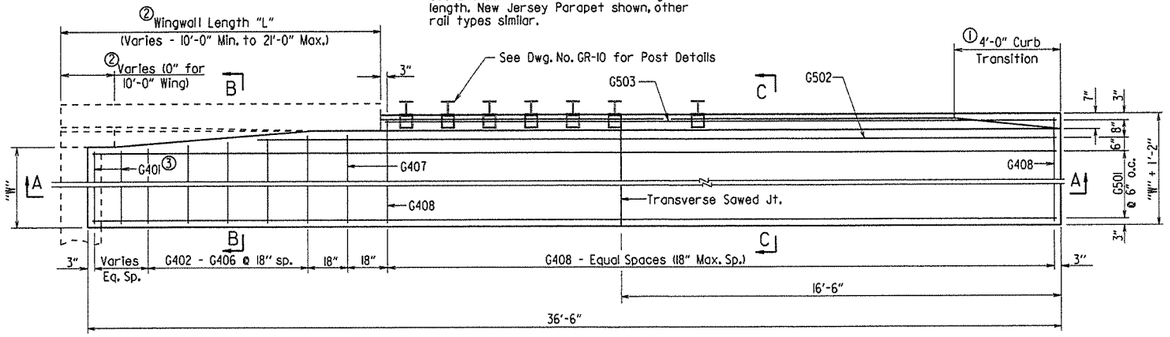
LITTLE ROCK, ARK.

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

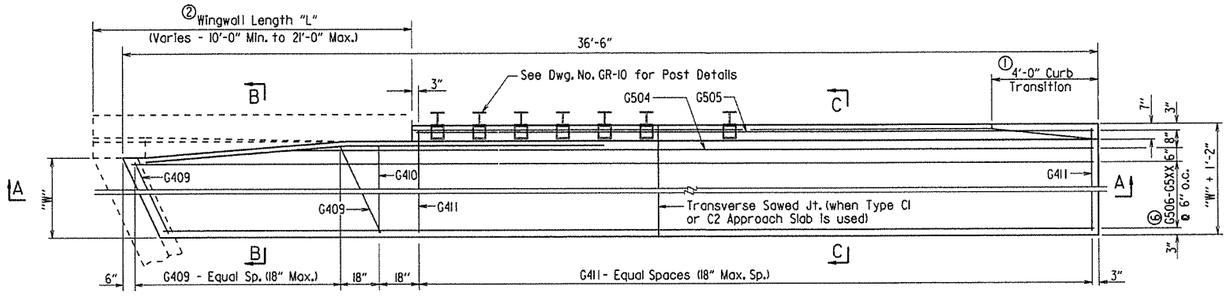
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 175 | |
| | | | | JOB NO. | | | | |
| | | | | ① | TYPE C GUTTERS | | 55030C | |

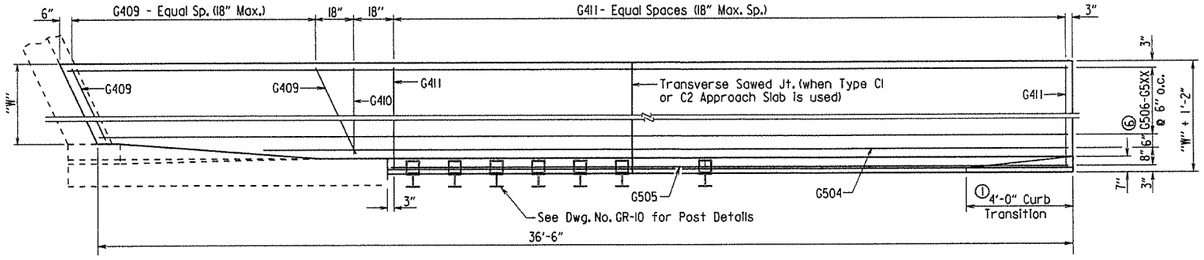
② See End Bent Details for actual wingwall length. New Jersey Parapet shown, other rail types similar.



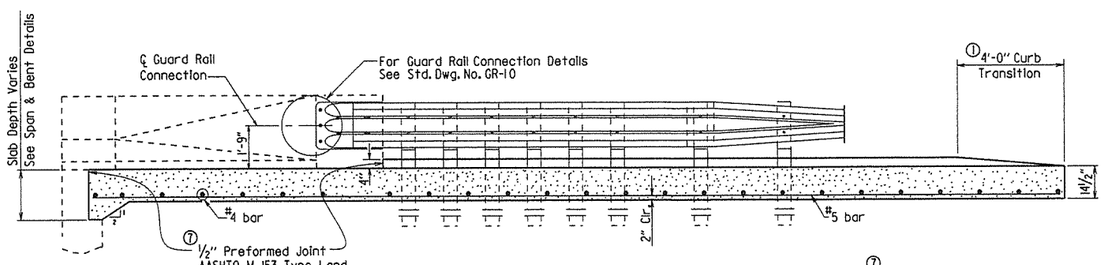

③ Provide G401 bars @ 18" max. spacing. Number of G401 bars vary with wingwall length. No G401 bars required for 10'-0" wingwalls.

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



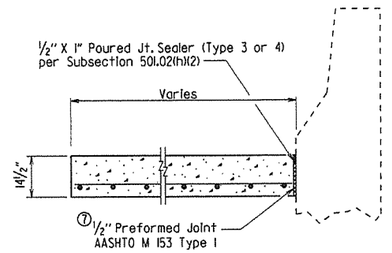

PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



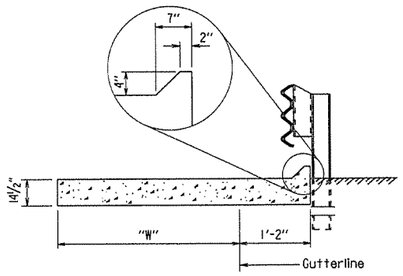

SECTION A-A

① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.




SECTION B-B
N.T.S.




SECTION C-C
N.T.S.

BAR LIST FOR ONE TYPE C GUTTER

| | Mark | No. Req'd. for Width "W" 4'-0" | 6'-0" | 8'-0" | 10'-0" | Length |
|---|---|---|---|---|---|---|
| Square Bridge | G401 | ④ | ④ | ④ | ④ | "W" - 4" |
| | G402-G406 | 1 each | 1 each | 1 each | 1 each | "W"-3" to "W"+2" |
| | G407 | 1 | 1 | 1 | 1 | "W"+3" |
| | G408 | ④ | ④ | ④ | ④ | "W"+ 10" |
| | G501 | 8 | 12 | 16 | 20 | 36'-2" |
| | G502 | 1 | 1 | 1 | 1 | (41'-11") - "L" |
| | G503 | 1 | 1 | 1 | 1 | (37'-2") - "L" |
| Skewed Bridge | G409 | ④ | ④ | ④ | ④ | ⑤ |
| | G410 | 1 | 1 | 1 | 1 | "W"+3" |
| | G411 | ④ | ④ | ④ | ④ | "W"+ 10" |
| | G504 | 1 | 1 | 1 | 1 | ⑤ |
| | G505 | 1 | 1 | 1 | 1 | ⑤ |
| | G506 - G5XX ⑥ | 1 each | 1 each | 1 each | 1 each | ⑤ |

④ No. Req'd. varies with Skew and Wingwall Length.

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'
G525 for "W" = 10'

QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

| "W" Width (ft.) | Reinforcing Steel (Lbs.) | Concrete (Cu. Yds.) |
|---|---|---|
| 4 | 445 | 8.30 |
| 6 | 630 | 11.55 |
| 8 | 810 | 14.80 |
| 10 | 995 | 18.10 |

Quantities are based on "L" = 10'-0".

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

⑦ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type C2 Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

GENERAL NOTES

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

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

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

# STANDARD DETAILS FOR TYPE C APPROACH GUTTERS

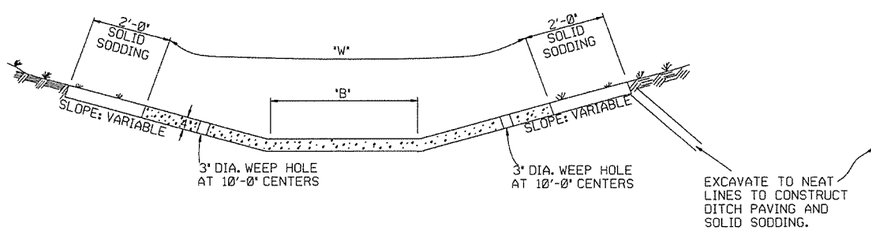
## ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55030c.dgn
CHECKED BY: K.W.Y. DATE: 2/27/2014 SCALE: 3/8" = 1'-0" or As Shown
DESIGNED BY: STD. DATE:

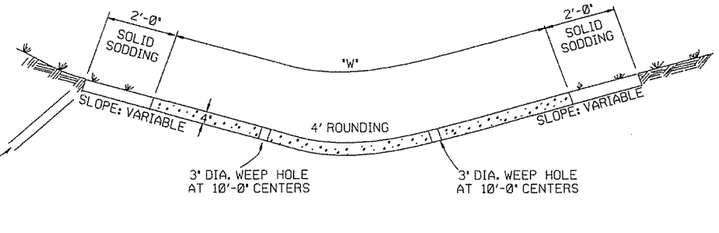
DRAWING NO. 55030C

REFER TO TABULATION OF QUANTITIES FOR 'W' & 'B' DIMENSIONS



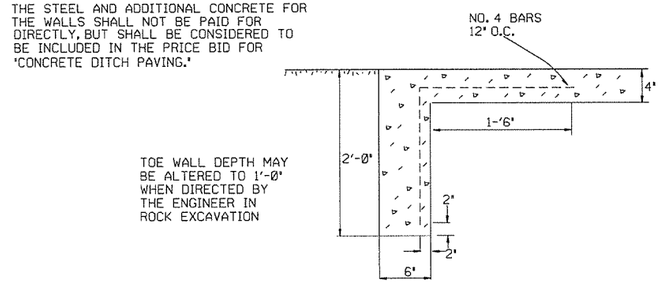

TYPE A

REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



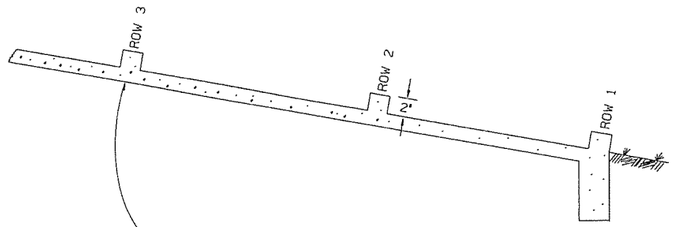

TYPE B

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.'



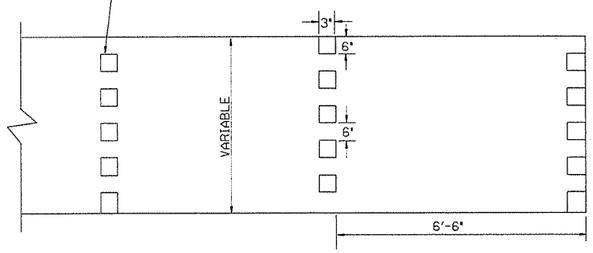

TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION

TOE WALL DETAIL FOR CONCRETE DITCH PAVING




NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 7%. THE DISSIPATORS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO BE UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.




ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING, AND POURED MONOLITHICALLY.

SOLID SOD ALONG DITCH PAVING TO BE PLACED WITHIN 14 DAYS OF DITCH PAVING CONSTRUCTION.

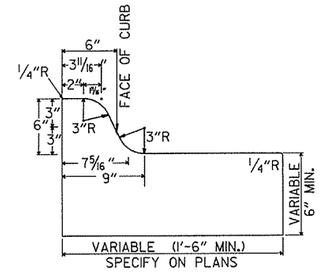
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

| DATE | REVISION | DATE FILM'D |
|---|---|---|
| 11-17-10 | ADDED GENERAL NOTE | |
| 6-2-94 | ADDED GENERAL NOTE ABOUT SOLID SODDING | |
| 11-30-8 | ELIMINATED MIN. ROWS OF ELEMENTS | 111-30-89 |
| 7-15-88 | REVISED DISSIPATOR NOTE | 653-7-15-88 |
| 4-3-87 | REVISED ENERGY DISSIPATOR | 671-4-3-87 |
| 1-9-87 | MODIFIED NOTE ON ENERGY DISS. | 532-1-9-87 |
| 11-3-86 | ADDED NOTE TO ENERGY DISS. | 599-12-1-86 |
| 11-1-84 | ENERGY DISSIPATOR DETAILS ADDED | 508-11-1-84 |
| 11-1-84 | EXCAVATION DETAILS ADDED TYPED A & B | |
| 10-2-72 | REVISED AND REDRAWN | 508-10-2-72 |

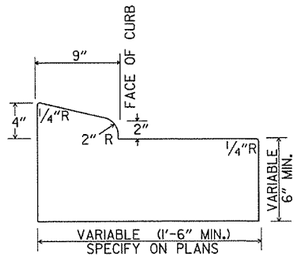
ARKANSAS STATE HIGHWAY COMMISSION

# CONCRETE DITCH PAVING

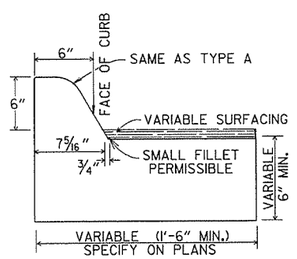
STANDARD DRAWING CDP-1



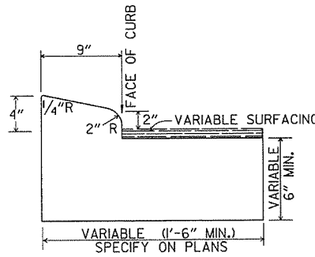

TYPE A



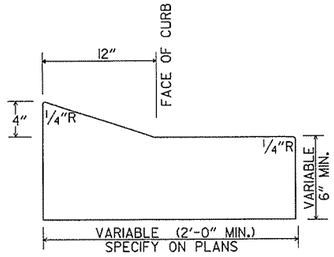

TYPE B-I



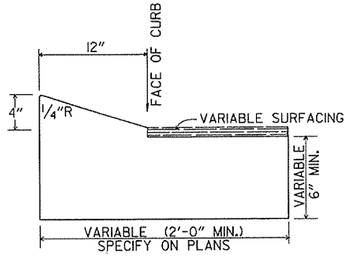

TYPE C




TYPE B-2

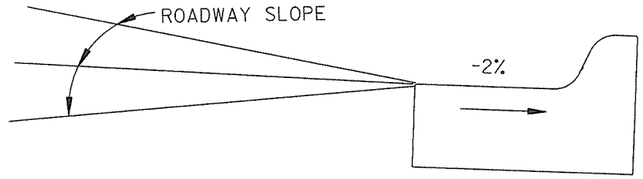



TYPE E-I



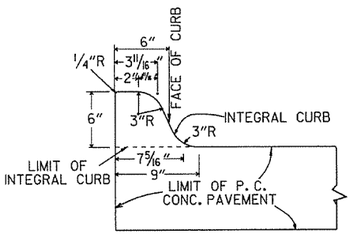

TYPE E-2

# CONCRETE COMBINATION CURB AND GUTTER

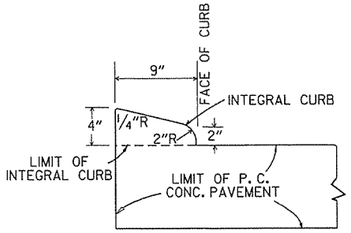



## DETAIL OF GUTTER SLOPE

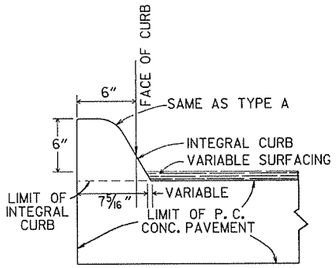
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.




TYPE A

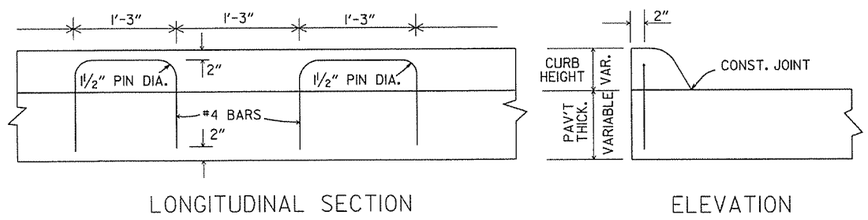



TYPE B

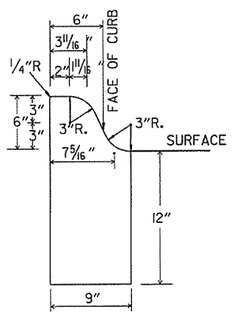



TYPE C

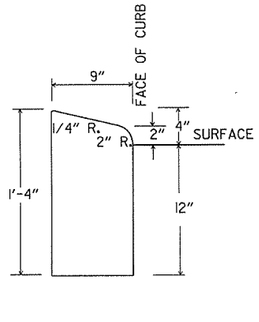
INTEGRAL CURB



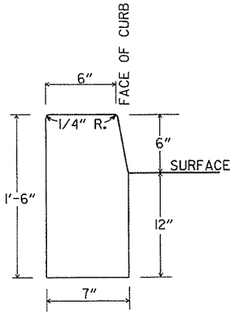

## ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



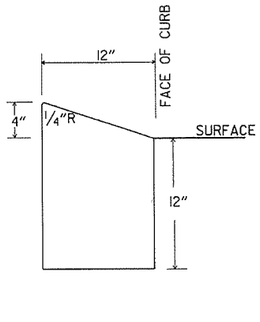

TYPE A




TYPE B

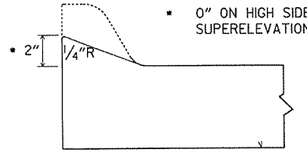



TYPE D




TYPE E

# CONCRETE CURB




NOTE: USE MODIFIED CURB AS SPECIFIED ON STD. DR-1. COMPENSATION FOR MODIFIED CURB WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE TYPE OF CURB OR CURB AND GUTTER SPECIFIED.

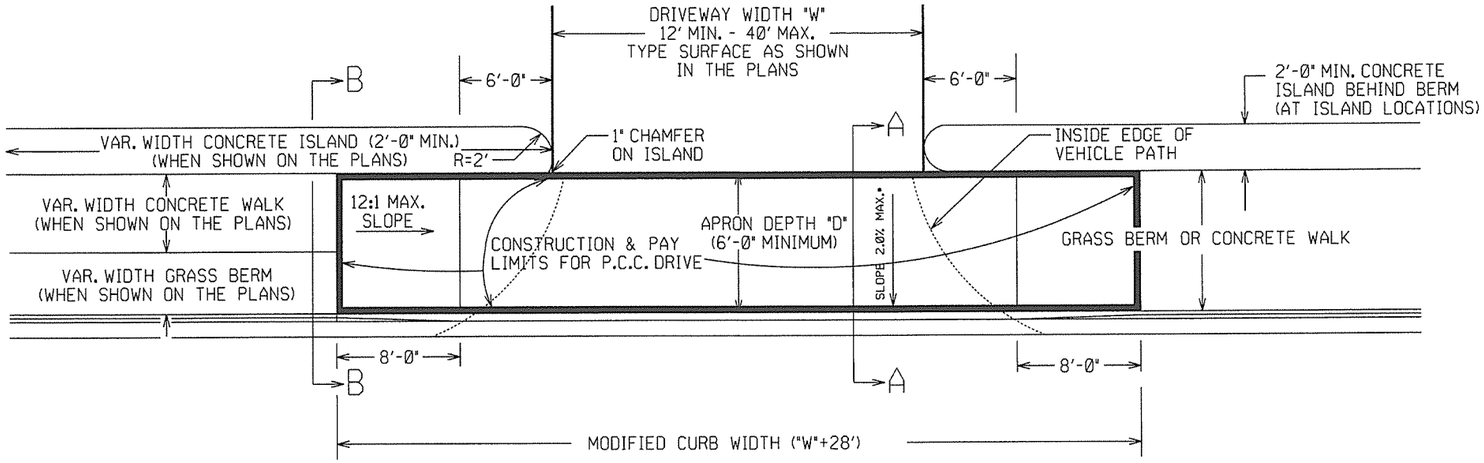
## DETAILS OF MODIFIED CURB

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 11-29-07 | REVISED GUTTER SLOPE & MODIFIED CURB DETAILS | |
| 11-10-05 | ADDED DETAILS OF TYPE E CURBS | |
| 11-16-01 | REVISED CONCRETE CURB TYPE B | |
| 11-18-98 | REVISED MODIFIED CURB | |
| 6-2-94 | ADDED NOTE TO SPECIAL MODIFIED CURB | |
| 8-5-93 | CORRECTED GUTTER SLOPE | 8-5-93 |
| 10-1-92 | ADDED DETAILS OF GUTTER SLOPE | 10-1-92 |
| 5-24-90 | ADDED DETAILS OF MODIFIED CURB | 5-24-90 |
| 11-30-89 | VARIBLE DEPTH TYPE A & B I | 11-30-89 |
| 7-15-88 | REVISED MODIFIED CURB | 630-7-15-88 |
| 11-1-73 | REVISED MODIFIED CURB | 500-11-1-73 |
| 10-2-72 | REVISED AND REDRAWN | 512-10-2-72 |

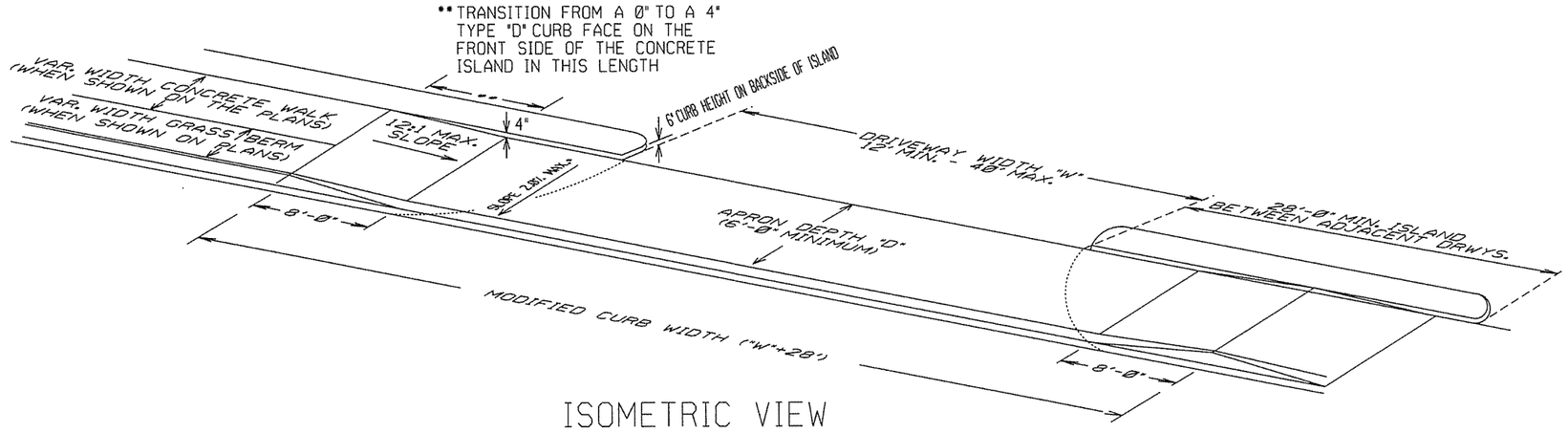
ARKANSAS STATE HIGHWAY COMMISSION

# CURBING DETAILS

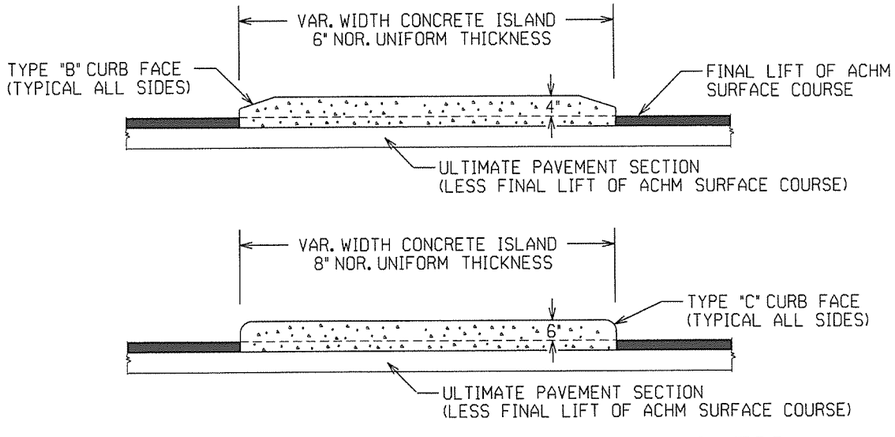
STANDARD DRAWING CG-1




PLAN VIEW

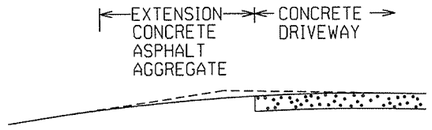



ISOMETRIC VIEW




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

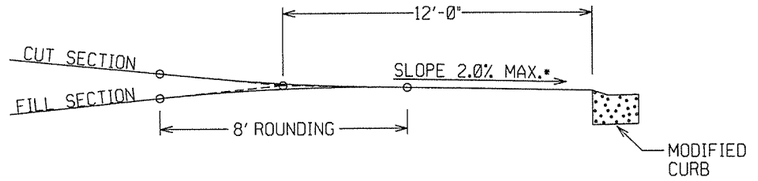
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

3: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
7" AGGREGATE BASE COURSE

4: AGGREGATE - 6" AGGREGATE BASE COURSE

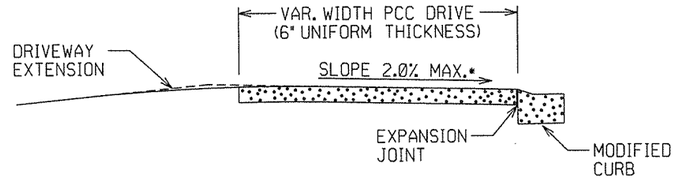
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

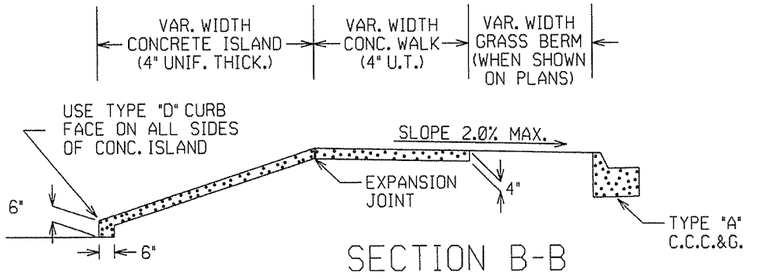



DRIVEWAY VERTICAL ALIGNMENT DETAILS

* NOTE: DRIVEWAYS MAY NOT BE SLOPED AWAY FROM THE ROADWAY UNLESS APPROVED BY THE ENGINEER.



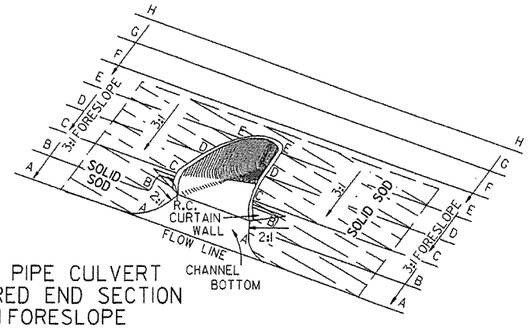

SECTION A-A



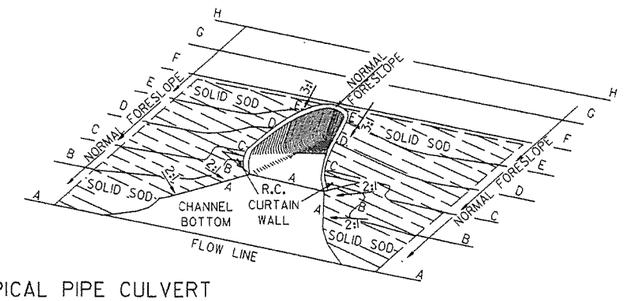

SECTION B-B
CURBED ISLAND BEHIND WALK

| 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 |

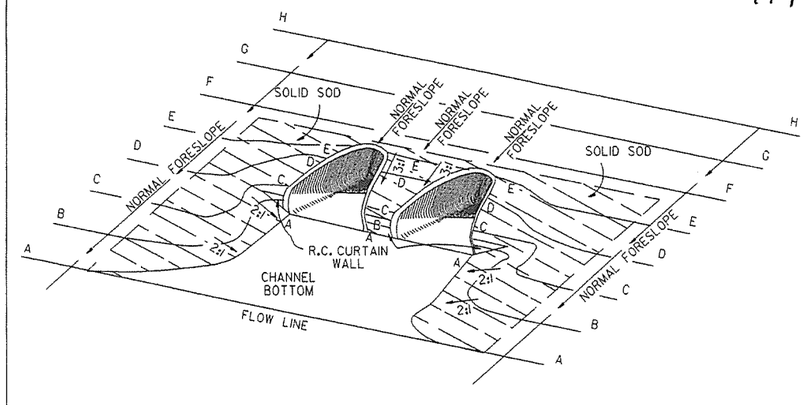
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1




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

## R.C. CURTAIN WALL
## DIMENSIONS & QUANTITIES

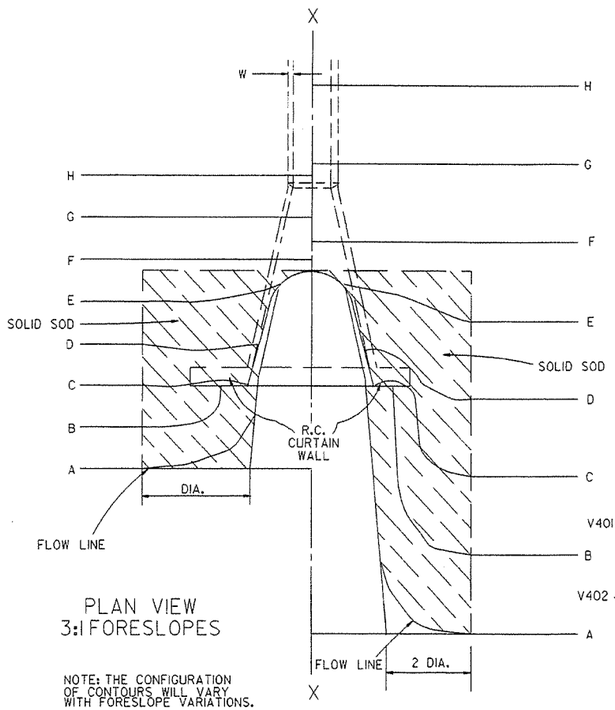
| PIPE DIA. | $H_1$ | $L_1$ | L | L (DBL.)/2 | SINGLE R.C.P.C. CONC. | SINGLE R.C.P.C. REINF. STEEL | DOUBLE R.C.P.C. CONC. | DOUBLE R.C.P.C. REINF. STEEL |
|---|---|---|---|---|---|---|---|---|
| | | | | | CU. YDS. | LBS. | CU. YDS. | LBS. |
| 18" | 11½" | 3'-5" | 8'-0" | 6'-3" | 0.31 | 27.7 | 0.45 | 39.5 |
| 24" | 1'-0½" | 4'-6" | 9'-6" | 7'-6" | 0.37 | 33.4 | 0.53 | 48.0 |
| 30" | 1'-3½" | 5'-7" | 11'-0" | 9'-0" | 0.45 | 39.0 | 0.67 | 59.0 |
| 36" | 1'-7" | 6'-8" | 13'-0" | 10'-6" | 0.58 | 52.6 | 0.83 | 73.9 |
| 42" | 2'-1½" | 7'-3" | 15'-6" | 12'-0" | 0.82 | 77.1 | 1.10 | 100.7 |
| 48" | 2'-5" | 7'-10" | 17'-0" | 13'-0" | 0.98 | 94.9 | 1.27 | 120.4 |
| 54" | 2'-9½" | 8'-5" | 18'-6" | 14'-0" | 1.16 | 115.8 | 1.47 | 143.7 |
| 60" | 3'-4" | 9'-0" | 20'-6" | 15'-6" | 1.47 | 149.7 | 1.84 | 180.3 |
| 72" | 4'-5" | 10'-2" | 25'-6" | 18'-6" | 2.31 | 232.6 | 2.73 | 271.0 |

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

## REINFORCING STEEL SCHEDULE

| PIPE DIA. | SINGLE R.C. PIPE CULVERT H401 L | NO. | H402 L | NO. | V401 L | NO. | V402 L | NO. | DOUBLE R.C. PIPE CULVERT H401 L | NO. | H402 L | NO. | H403 L | NO. | V401 L | NO. | V402 L | NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 7'-8" | 2 | 1'-11½" | 4 | 1'-7½" | 8 | 8" | 8 | 12'-2" | 2 | 1'-11½" | 4 | 8" | 2 | 1'-7½" | 10 | 8" | 14 |
| 24" | 9'-2" | 2 | 2'-2" | 4 | 1'-8½" | 10 | 8" | 9 | 14'-8" | 2 | 2'-2" | 4 | 8" | 2 | 1'-8½" | 12 | 8" | 18 |
| 30" | 10'-8" | 2 | 2'-4½" | 4 | 1'-11½" | 10 | 8" | 12 | 17'-8" | 2 | 2'-4½" | 4 | 8" | 2 | 1'-11½" | 14 | 8" | 22 |
| 36" | 12'-8" | 2 | 2'-10" | 6 | 2'-3" | 12 | 8" | 14 | 20'-8" | 2 | 2'-10" | 6 | 8" | 3 | 2'-3" | 14 | 8" | 28 |
| 42" | 15'-2" | 2 | 3'-9½" | 8 | 2'-9½" | 16 | 8" | 15 | 23'-8" | 2 | 3'-9½" | 8 | 8" | 4 | 2'-9½" | 18 | 8" | 30 |
| 48" | 16'-8" | 2 | 4'-3" | 10 | 3'-1" | 18 | 8" | 16 | 25'-8" | 2 | 4'-3" | 10 | 8" | 5 | 3'-1" | 20 | 8" | 32 |
| 54" | 18'-2" | 2 | 4'-8½" | 12 | 3'-5½" | 20 | 8" | 17 | 27'-8" | 2 | 4'-9" | 12 | 8" | 6 | 3'-5½" | 22 | 8" | 34 |
| 60" | 20'-2" | 2 | 5'-5" | 14 | 4'-0" | 24 | 8" | 18 | 30'-8" | 2 | 5'-5" | 14 | 8" | 7 | 4'-0" | 26 | 8" | 36 |
| 72" | 25'-2" | 2 | 7'-4" | 18 | 5'-1" | 30 | 8" | 20 | 36'-8" | 2 | 7'-4" | 18 | 8" | 9 | 5'-1" | 33 | 8" | 40 |

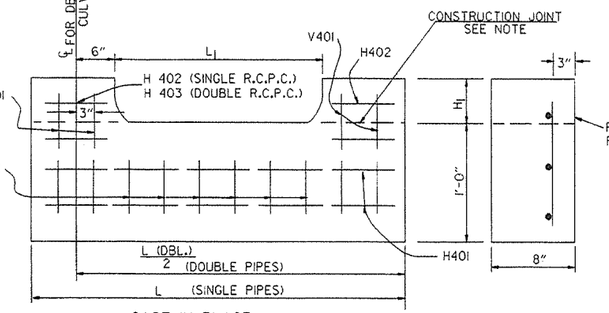
ALL REINFORCING STEEL #4 BARS @ 6" O.C.




PLAN VIEW
3:1 FORESLOPES

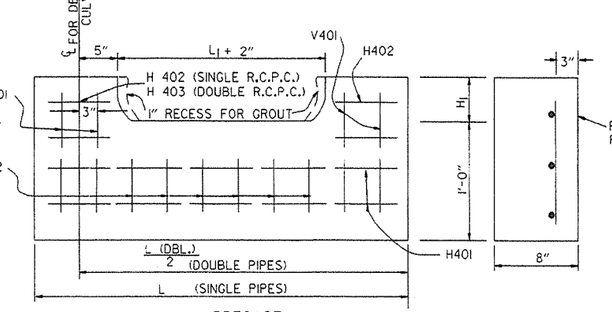
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES




CAST-IN-PLACE

NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.




PRECAST

NOTE: THE PRECAST CURTAIN WALL WILL BE SET AND BACKFILLED WITH COMPACTED MATERIAL. THE FLARED END SECTION SHALL THEN BE SET IN PLACE AND THE 1" RECESS FILLED WITH GROUT. WHERE "L" EXCEEDS 11' THE CURTAIN WALL MAY BE CAST IN TWO (2) OR MORE SECTIONS. THE METHOD OF JOINING THE SECTIONS FOR INSTALLATION SHALL BE APPROVED BY THE ENGINEER.

R.C. CURTAIN WALL DETAILS

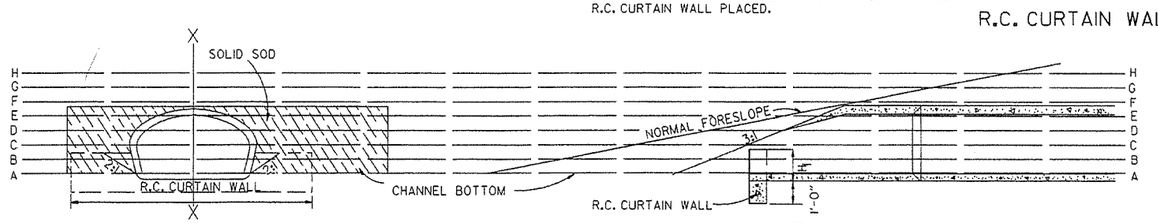
## SOLID SODDING

| PIPE DIA. | SINGLE R.C.P.C. 3:1 | 4:1 | 6:1 | DOUBLE R.C.P.C. 3:1 | 4:1 | 6:1 |
|---|---|---|---|---|---|---|
| | SQ. YDS. | | | SQ. YDS. | | |
| 18" | 5 | 7 | 12 | 6 | 8 | 13 |
| 24" | 8 | 12 | 19 | 9 | 13 | 20 |
| 30" | 13 | 18 | 29 | 14 | 19 | 30 |
| 36" | 17 | 26 | 41 | 18 | 28 | 43 |
| 42" | 23 | 35 | 55 | 25 | 37 | 57 |
| 48" | 29 | 46 | 68 | 31 | 48 | 70 |
| 54" | 35 | 57 | 85 | 37 | 59 | 87 |
| 60" | 45 | 62 | 104 | 48 | 65 | 107 |
| 72" | 64 | 92 | 156 | 67 | 95 | 159 |

NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.




END VIEW

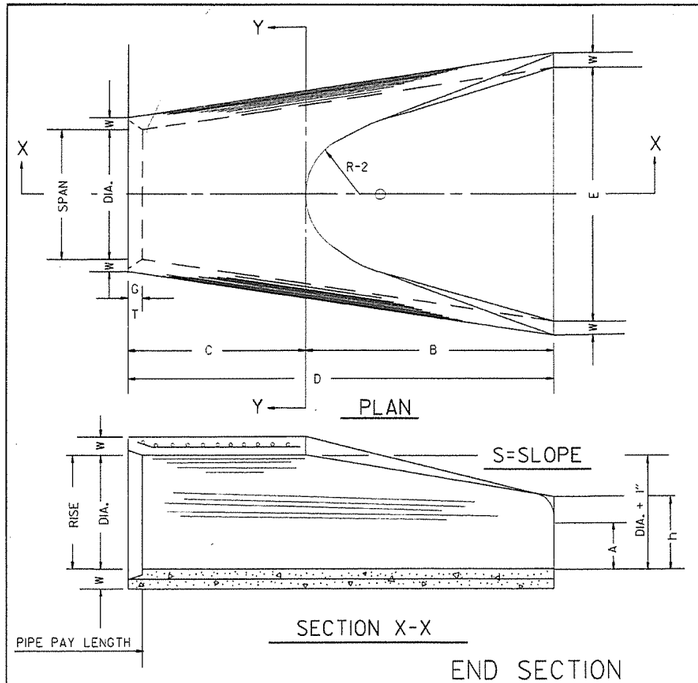
SECTIONAL VIEW "X-X"

| 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 | |
| 8-16-91 | REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT. | |
| 3-2-81 | ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES | |
| 5-15-80 | ADDED PRECAST WALL & GENERAL NOTES | |
| 10-2-72 | REVISED AND REDRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

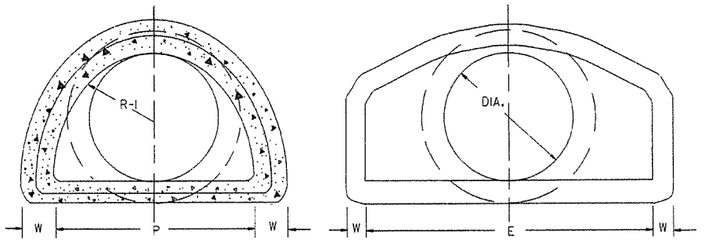
STANDARD DRAWING FES-1




END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

## TABLE OF DIMENSIONS

| DIA. | WALL | A | B | C | D | E | S | DIA. ± 1" | P | R-1 | R-2 | G-T | WT. | h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 2½" | 9" | 2'-3" | 3'-10" | 6'-1" | 3'-0" | 3:1 | 19" | 29" | 15½" | 12" | 2" | 1000 | 1'-0½" |
| 24" | 3" | 9½" | 3'-7½" | 2'-6" | 6'-1½" | 4'-0" | 3:1 | 25" | 33 3/16" | 16 13/16" | 14" | 2½" | 1600 | 1'-1½" |
| 30" | 3½" | 1'-0" | 4'-6" | 1'-7¾" | 6'-1¾" | 5'-0" | 3:1 | 31" | 37" | 18½" | 15" | 3¼" | 1940 | 1'-4⅝" |
| 36" | 4" | 1'-3" | 5'-3" | 2'-10¾" | 8'-1¾" | 6'-0" | 3:1 | 37" | 47 13/16" | 24 5/16" | 20" | 3½" | 4100 | 1'-8" |
| 42" | 4½" | 1'-9" | 5'-3" | 2'-11" | 8'-2" | 6'-6" | 3:1 | 43" | 53⅞" | 27½" | 22" | 3½" | 5380 | 2'-2½" |
| 48" | 5" | 2'-0" | 6'-0" | 2'-2" | 8'-2" | 7'-0" | 3:1 | 49" | 56½" | 28½" | 22" | 3½" | 6550 | 2'-6" |
| 54" | 5½" | 2'-4" | 6'-6" | 1'-10" | 8'-4" | 7'-6" | 3:1 | 55" | 65½" | 33⅛" | 24" | 4" | 8750 | 2'-10½" |
| 60" | 6" | 2'-10" | 6'-6" | 1'-10" | 8'-4" | 8'-0" | 3:1 | 61" | 72½" | 36 11/16" | 24" | 4" | 9270 | 3'-5" |
| 72" | 7" | 3'-10" | 6'-6" | 1'-10" | 8'-4" | 9'-0" | 3:1 | 73" | 77 13/16" | 38 13/16" | 24" | 5" | 13250 | 4'-6" |

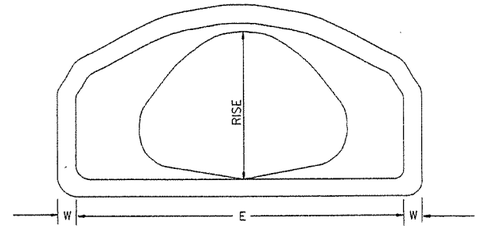



NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

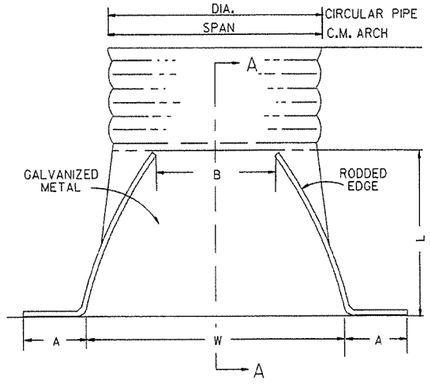
## ARCH PIPE

| EQUIV. DIA. | • SPAN AASHTO M 206 | • SPAN AHD NOMINAL | • RISE AASHTO M 206 | • RISE AHD NOMINAL | W | A | B | C | D | E | P | R2 | G-T | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INCHES | | | | | | | | | | | | | |
| 15 | 18 | 18 | 11 | 11 | 2" | 4" | 2'-0" | 4'-0" | 6'-0" | 3'-0" | 29" | 12" | 1½" | 2½:1 |
| 18 | 22 | 22 | 13½ | 14 | 2½" | 5" | 2'-0" | 4'-1" | 6'-1" | 3'-6" | 32⅛" | 13" | 2½" | 2½:1 |
| 21 | 26 | 26 | 15½ | 16 | 2¾" | 7" | 2'-3" | 3'-10" | 6'-1" | 4'-0" | 34⅛" | 14" | 2½" | 2½:1 |
| 24 | 28½ | 29 | 18 | 18 | 3" | 9" | 2'-3" | 3'-10" | 6'-1" | 5'-0" | 36 11/16" | 15" | 2½" | 2½:1 |
| 30 | 36¼ | 36 | 22½ | 23 | 3½" | 10" | 3'-1" | 3'-0½" | 6'-1½" | 6'-0" | 47 13/16" | 20" | 3" | 2½:1 |
| 36 | 43¾ | 44 | 26⅝ | 27 | 4" | 10½" | 4'-0" | 2'-1½" | 6'-1½" | 6'-6" | 54 5/16" | 22" | 3½" | 2½:1 |
| 42 | 51⅛ | 51 | 31 5/16 | 31 | 4½" | 11½" | 4'-7" | 1'-10¼" | 6'-5¼" | 7'-2" | 59½" | 23" | 3¾" | 2½:1 |
| 48 | 58½ | 59 | 36 | 36 | 5" | 1'-3" | 5'-3" | 2'-10¾" | 8'-1¾" | 7'-10" | 70⅝" | 24" | 4¼" | 2½:1 |
| 54 | 65 | 65 | 40 | 40 | 5½" | 1'-7" | 5'-3" | 2'-11" | 8'-2" | 8'-6" | 72 1/16" | 24" | 4¾" | 2¼:1 |
| 60 | 73 | 73 | 45 | 45 | 6" | 1'-10" | 5'-6" | 2'-8" | 8'-2" | 9'-0" | 77 13/16" | 24" | 5" | 2¼:1 |

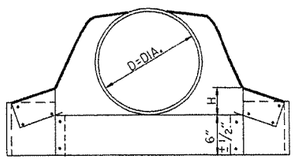
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.




END VIEW
CONCRETE ARCH PIPE



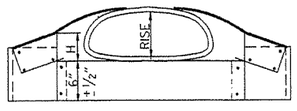

NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.




CIRCULAR PIPE

## CIRCULAR PIPE

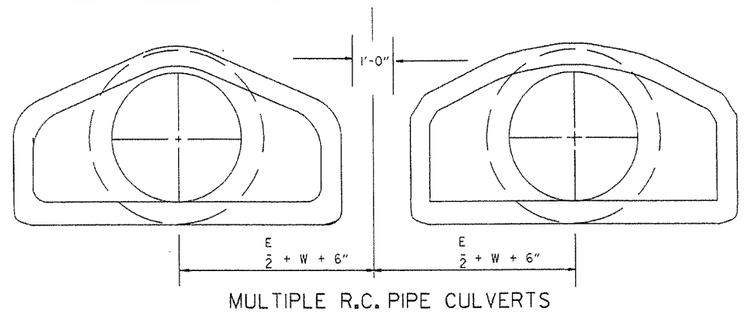
| D. DIA. | GAUGE | A 1" ± | B. MAX. | H 1" ± | L 1½" ± | W 2" ± | S |
|---|---|---|---|---|---|---|---|
| | | INCHES | | | | | |
| 12 | 16 | 6 | 6 | 6 | 21 | 24 | 2½:1 |
| 15 | 16 | 7 | 8 | 6 | 26 | 30 | 2½:1 |
| 18 | 16 | 8 | 10 | 6 | 31 | 36 | 2½:1 |
| 21 | 16 | 9 | 12 | 6 | 36 | 42 | 2½:1 |
| 24 | 16 | 10 | 13 | 6 | 41 | 48 | 2½:1 |
| 30 | 14 | 12 | 16 | 8 | 51 | 60 | 2½:1 |
| 36 | 14 | 14 | 19 | 9 | 60 | 72 | 2½:1 |
| 42 | 12 | 16 | 22 | 11 | 69 | 84 | 2½:1 |
| 48 | 12 | 18 | 27 | 12 | 78 | 90 | 2½:1 |
| 54 | 12 | 18 | 30 | 12 | 84 | 102 | 2:1 |
| 60 | 12 | 18 | 33 | 12 | 87 | 114 | 1¾:1 |
| 66 | 12 | 18 | 36 | 12 | 87 | 120 | 1½:1 |
| 72 | 12 | 18 | 39 | 12 | 87 | 126 | 1 1/3:1 |



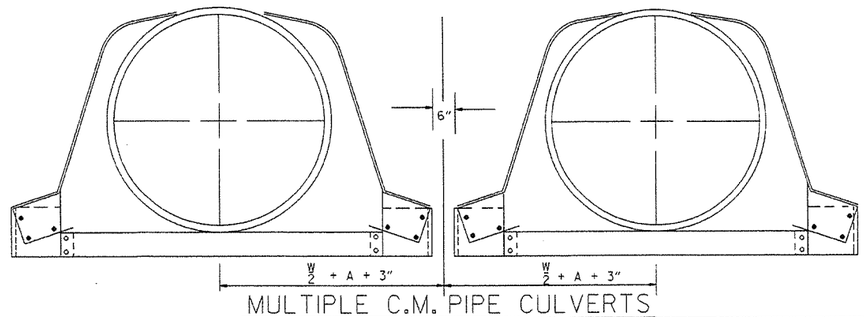

C.M. ARCH PIPE

## C.M. ARCH PIPE

| EQUIV. DIA. | SPAN | RISE | A 1" ± | B MAX. | H 1" ± | L 1½" ± | W 2" ± | S | GAUGE |
|---|---|---|---|---|---|---|---|---|---|
| | INCHES | | | | | | | | |
| 15" | 17 | 13 | 7 | 9 | 6 | 19 | 30 | 2½:1 | 16 |
| 18" | 21 | 15 | 7 | 10 | 6 | 23 | 36 | 2½:1 | 16 |
| 21" | 24 | 18 | 8 | 12 | 6 | 28 | 42 | 2½:1 | 16 |
| 24" | 28 | 20 | 9 | 14 | 6 | 32 | 48 | 2½:1 | 16 |
| 30" | 35 | 24 | 10 | 16 | 6 | 39 | 60 | 2½:1 | 14 |
| 36" | 42 | 29 | 12 | 18 | 8 | 46 | 75 | 2½:1 | 14 |
| 42" | 49 | 33 | 13 | 21 | 9 | 53 | 85 | 2½:1 | 12 |
| 48" | 57 | 38 | 18 | 26 | 12 | 63 | 90 | 2½:1 | 12 |
| 54" | 64 | 43 | 18 | 30 | 12 | 70 | 102 | 2¼:1 | 12 |
| 60" | 71 | 47 | 18 | 33 | 12 | 77 | 114 | 2¼:1 | 12 |



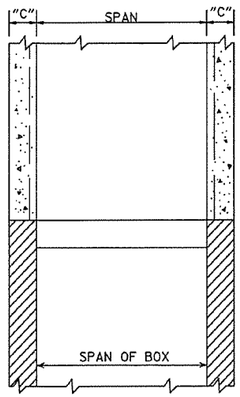

MULTIPLE R.C. PIPE CULVERTS



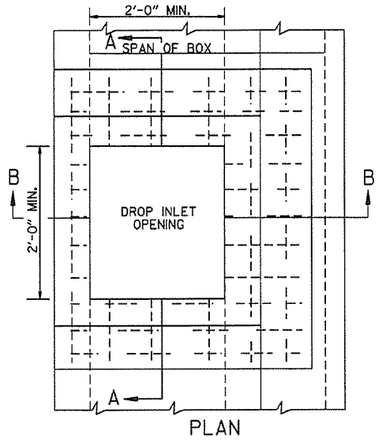

MULTIPLE C.M. PIPE CULVERTS

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

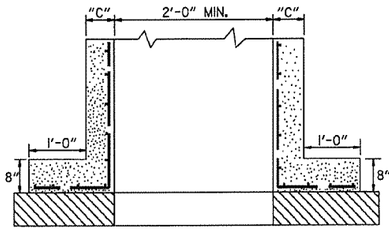
| DATE | REVISION | EILMED | |
|---|---|---|---|
| 10-18-96 | REVISED ASTM REF. TO AASHTO | 10-18-96 | ARKANSAS STATE HIGHWAY COMMISION |
| 5-15-80 | REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S. | 664-5-15-80 | |
| 7-14-78 | C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES | 752-7-14-78 | FLARED END SECTION |
| 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 | STANDARD DRAWING FES-2 |
| 5-24-73 | CMP END SECTION, SHOW PIPE PAY LENGTH | 627-5-24-73 | |
| 10-2-72 | REVISED AND REDRAWN | 760-10-2-72 | |



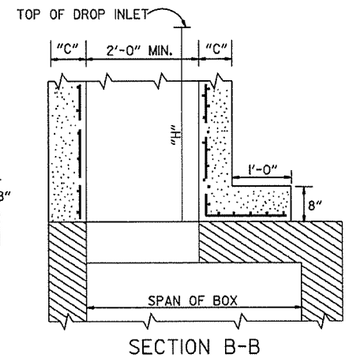

SECTION B-B




PLAN

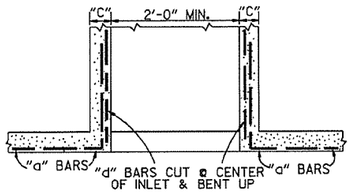



SECTION A-A

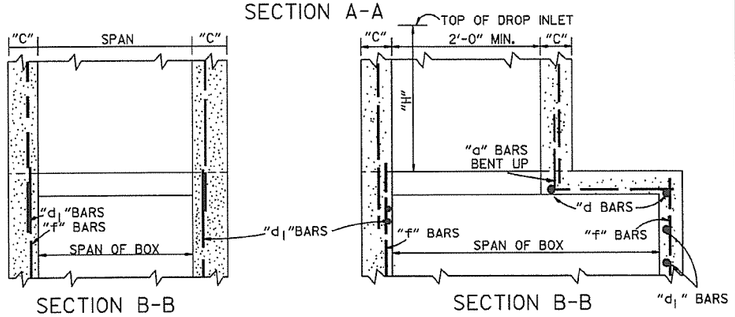



SECTION B-B

## METHOD OF CONSTRUCTING DROP INLET ON EXISTING R.C. BOX CULVERT



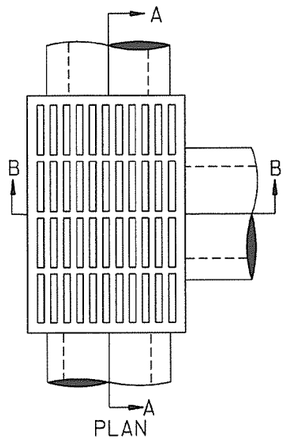

SECTION A-A



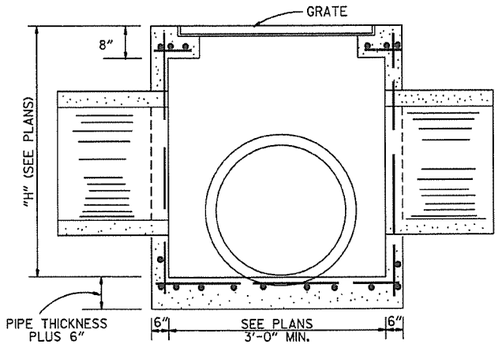

SECTION B-B SECTION B-B

## METHOD OF CONSTRUCTING DROP INLET ON NEW R.C. BOX CULVERT

NOTE: "C" DIMENSIONS AND REINFORCING BAR SIZES, SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWING FOR DROP INLET.

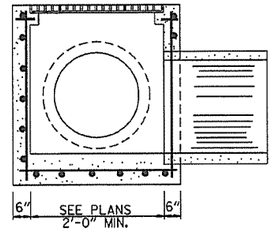



PLAN



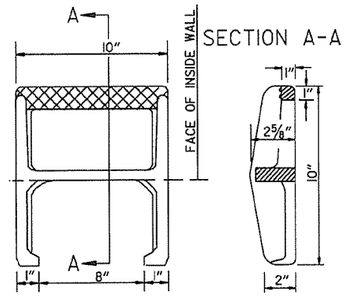

SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.




SECTION B-B

## DROP INLET (TYPE E)



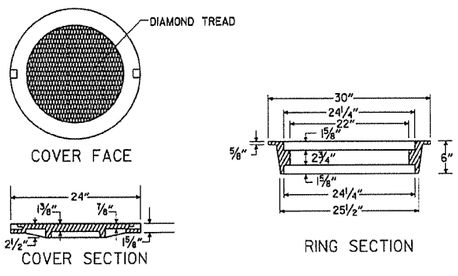

SECTION A-A

APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

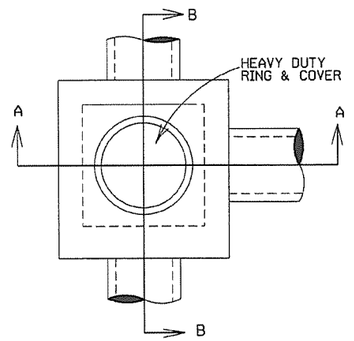
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

## DETAIL OF STEP FOR DROP INLET

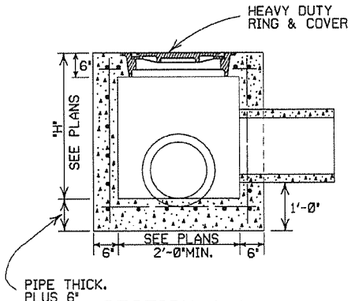



APPROXIMATE TOTAL WEIGHT = 333 LBS.

## HEAVY DUTY RING & COVER

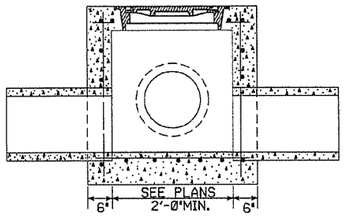



PLAN



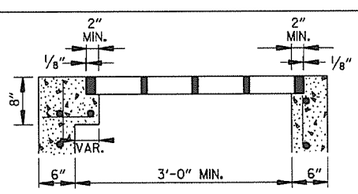

SECTION A-A

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.

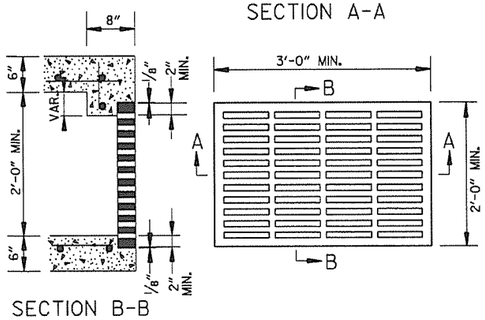



SECTION B-B

## JUNCTION BOX (TYPE E)



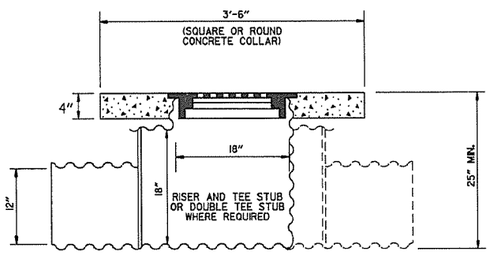

SECTION A-A



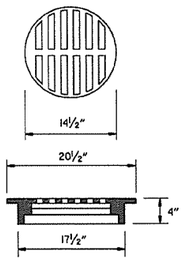

SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

## GRATE FOR TYPE E DROP INLET




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.

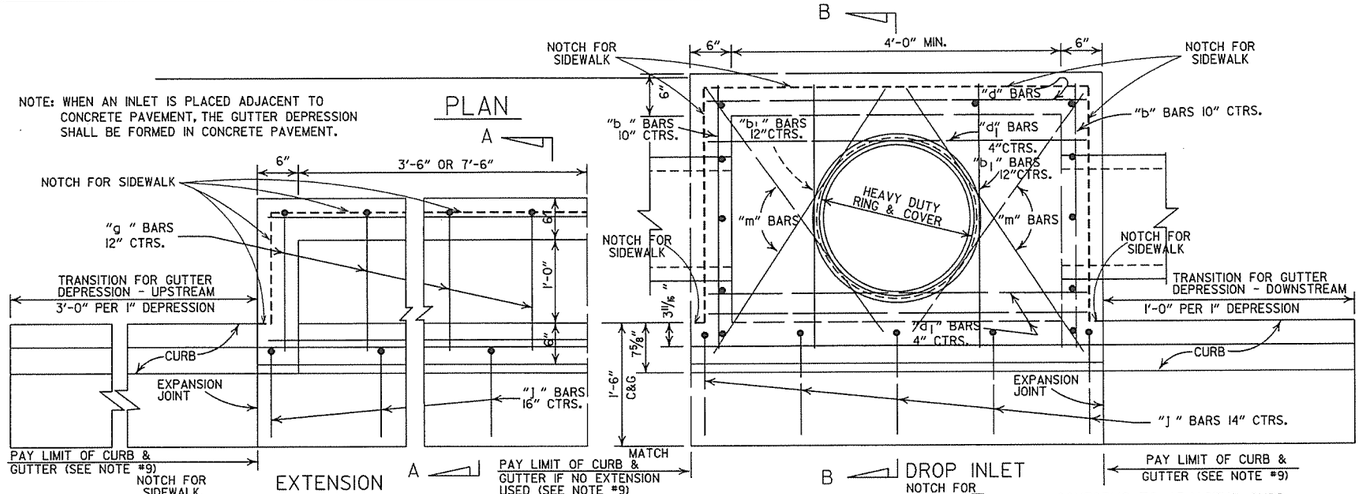
| DATE REV. | REVISION | DATE FILMED |
|---|---|---|
| 11-16-01 | ADDED NOTE 10 | |
| 1-12-00 | REVISED HEAVY DUTY RING & COVER | |
| 7-02-98 | CHANGED GRATE DETAIL, DELETED DI(TYPE D), REPLACED RING & COVER W/HEAVY DUTY RING & COVER, ADDED JUNCTION BOX (TYPE E) | |
| 6-26-97 | ADDED DIMENSION TO TYPE 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 | |

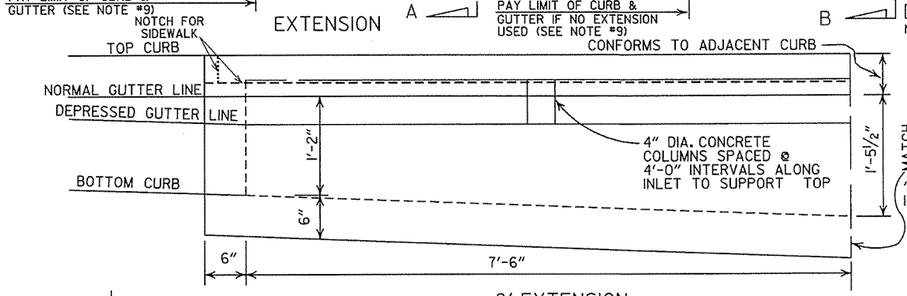
ARKANSAS STATE HIGHWAY COMMISSION

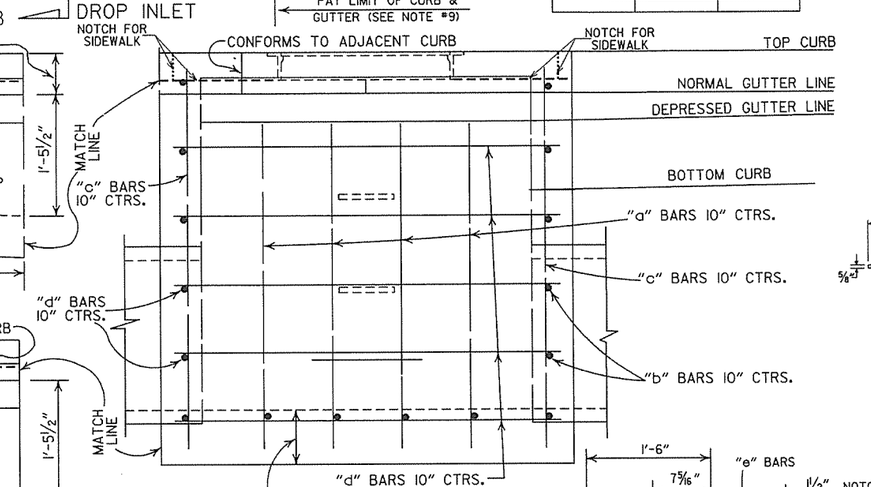
# DETAILS OF DROP INLETS & JUNCTION BOXES

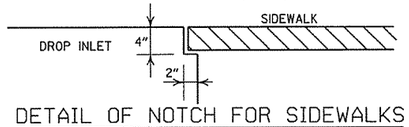
STANDARD DRAWING FPC-9

NOTE: WHEN AN INLET IS PLACED ADJACENT TO CONCRETE PAVEMENT, THE GUTTER DEPRESSION SHALL BE FORMED IN CONCRETE PAVEMENT.

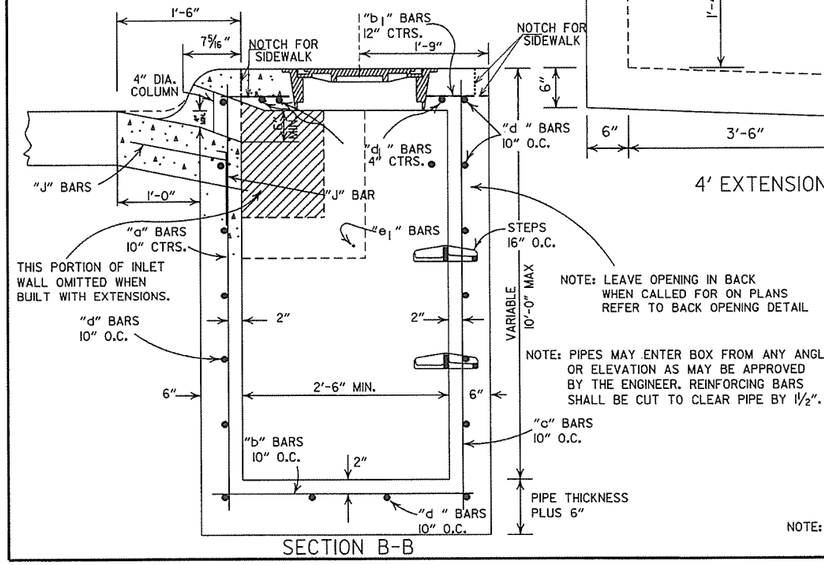


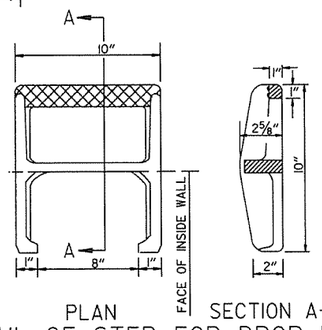




DETAIL OF NOTCH FOR SIDEWALKS




SECTION B-B




PLAN SECTION A-A

DETAIL OF STEP FOR DROP INLET

APPROX. WEIGHT = 11 LBS. (CAST IRON)

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

## 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 |

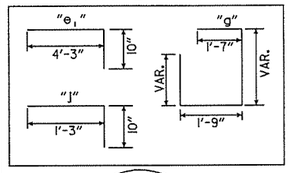
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.

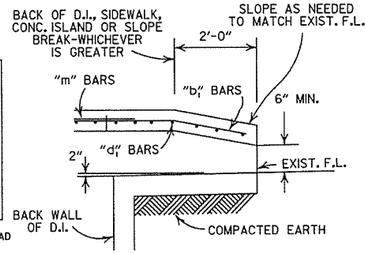
| | | | |
|---|---|---|---|
| 0.04 | 3 | | |

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 |

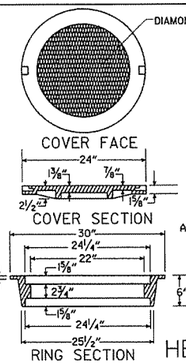
## BAR DIAMOND



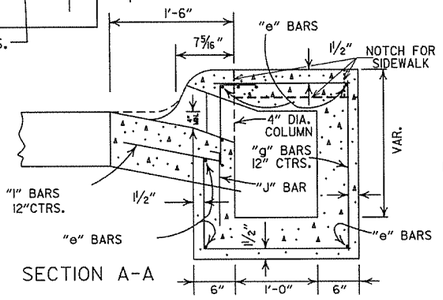

## BACK OPENING

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




SECTION A-A

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"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.

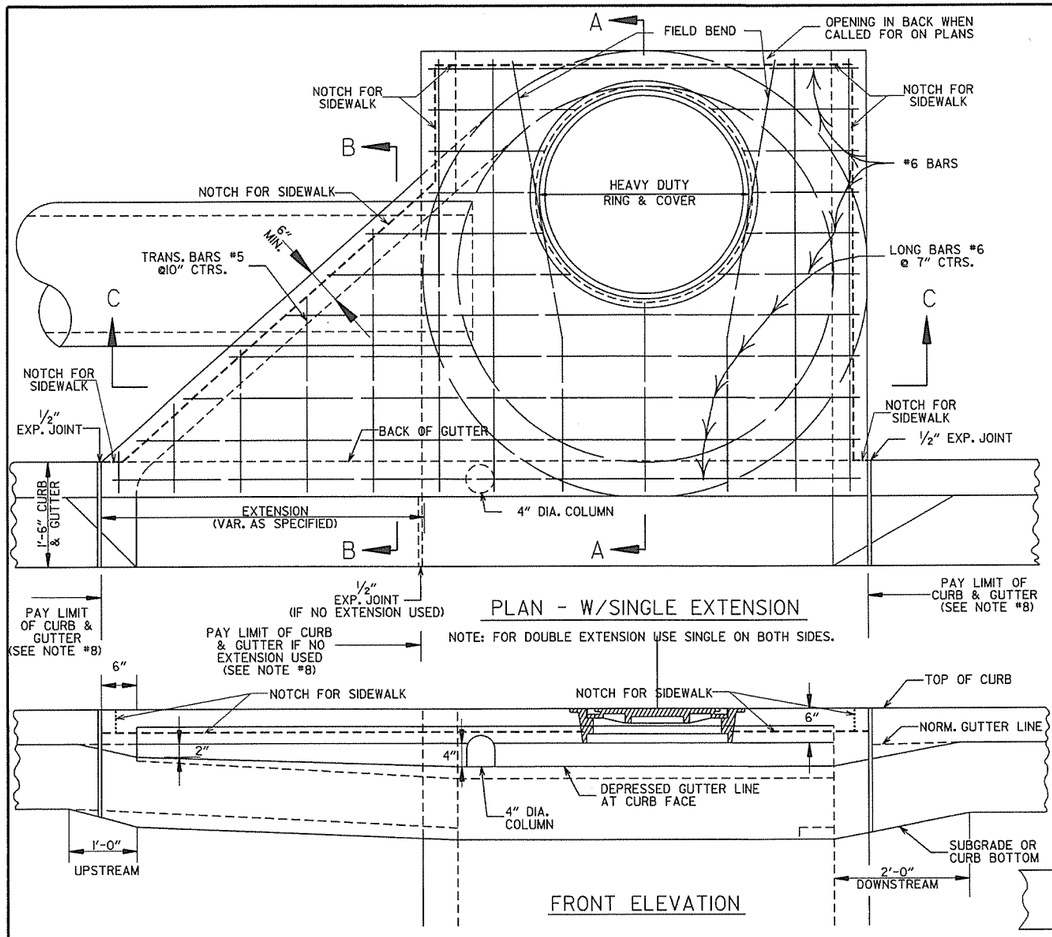
| DATE REV. | REVISION | DATE FILMED |
|---|---|---|
| 8-22-02 | ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B | |
| 11-16-01 | ADDED NOTE 13; REVISED SECTION B-B | |
| 1-12-00 | CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER | |
| 5-13-99 | ADDED DETAIL OF NOTCH FOR SIDEWALKS | |
| 7-02-98 | 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

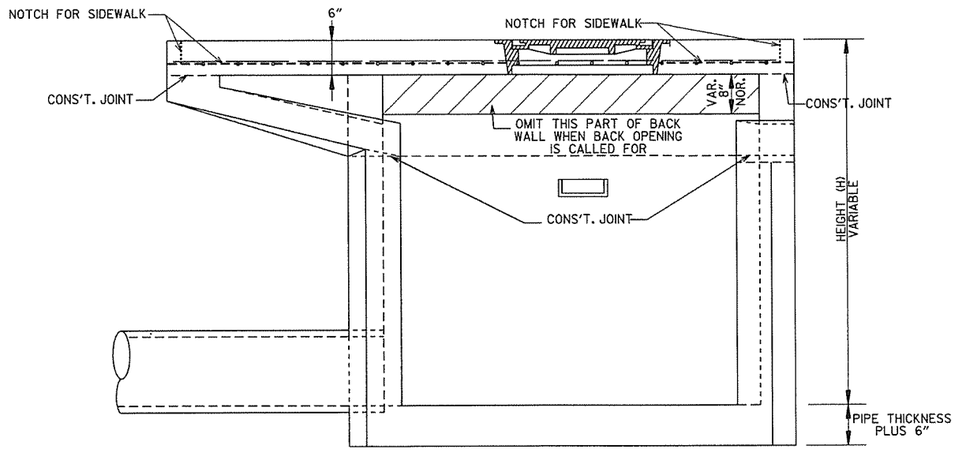



PLAN - W/SINGLE EXTENSION

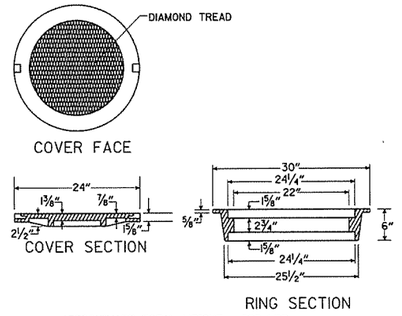
NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.




FRONT ELEVATION



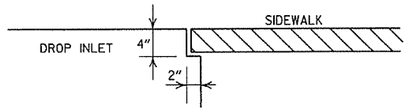

SECTION C-C



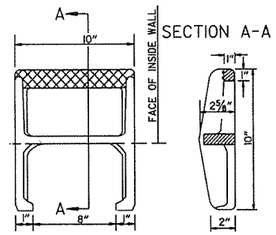

APPROXIMATE TOTAL WEIGHT = 333 LBS.

## 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

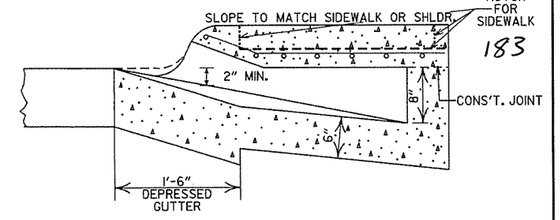



APPROX. WEIGHT = 11 LBS. (CAST IRON)

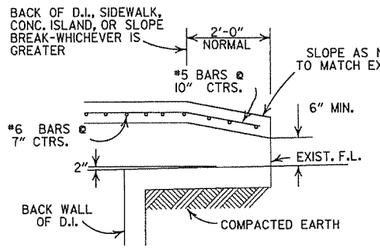
PLAN

NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

## DETAIL OF STEP FOR DROP INLET




SECTION B-B

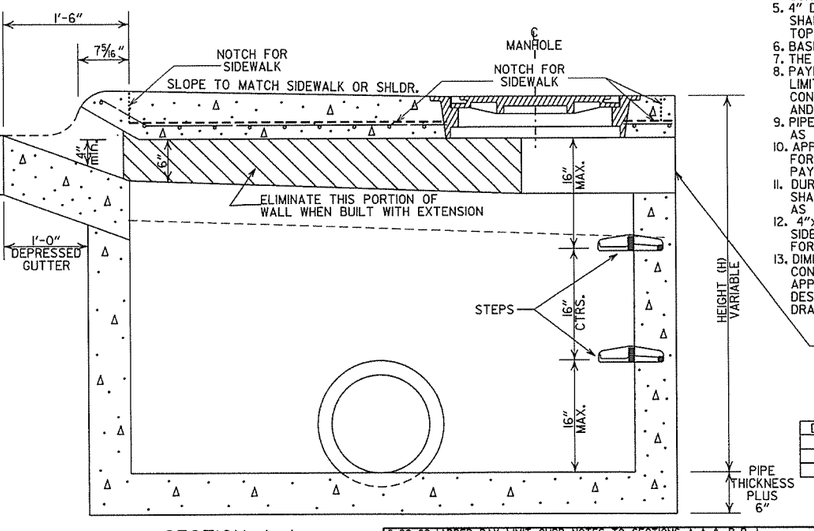



## BACK OPENING

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).

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.




SECTION A-A

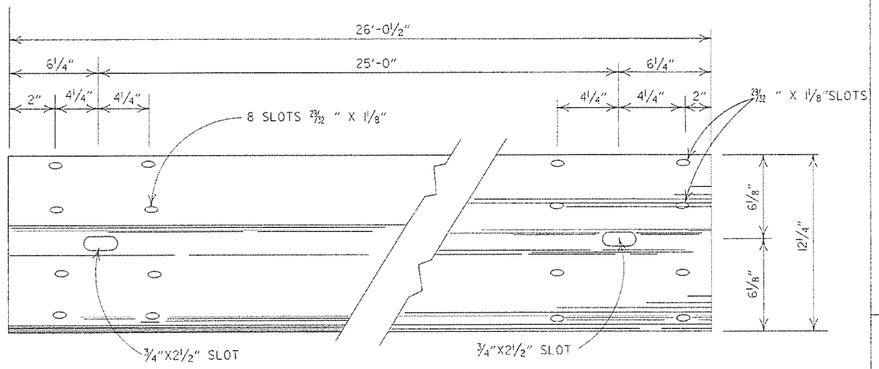
| DIA. OF D.I. | DIA. OF OUTLET PIPE | MINIMUM WALL THICKNESS CAST IN PLACE | MINIMUM WALL THICKNESS PRECAST |
|---|---|---|---|
| 4' I.D. | 12" THRU 27" | 6" | 5" |
| 5' I.D. | 30" THRU 42" | 8" | 6" |
| 6' I.D. | 48" THRU 54" | 8" | 7" |

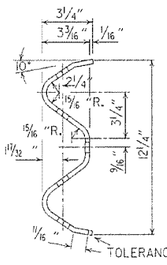
| DATE | REVISIONS | DATE FILMED |
|---|---|---|
| 8-22-02 | ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B | |
| 11-16-01 | ADDED NOTE 13 | |
| 1-12-00 | REVISED HEAVY DUTY RING & COVER | |
| 5-13-99 | ADDED NOTCH DETAIL FOR SIDEWALKS | |
| 7-02-98 | REP. NOTE 8, REM. PLAN DET., REV. PICTURE FOR NEW 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 #6 BAR SPACING | |
| 7-20-95 | CORRECTED DIAMETER OF D.I. IN BOX | |
| 2-2-95 | TYPE C TO MO (OPEN, BACK DETAIL) | |
| 11-2-94 | 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 |
| 12-21-89 | ADDED NOTE & MINIMUM WALL THICKNESS | 513-12-21-89 |
| 7-15-88 | ADDED EXTEND NOTE TO SECTION A-A | 638-7-15-88 |
| 1-14-87 | MODIFIED WALL THICKNESS | 783-1-14-87 |
| 6-12-87 | ISSUED | 4-6-87 |

ARKANSAS STATE HIGHWAY COMMISSION

# DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M



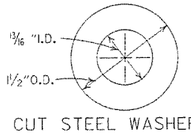




## DETAILS OF W-BEAM GUARD RAIL

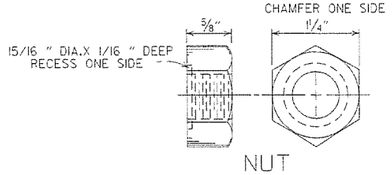
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



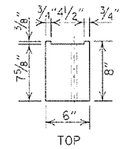

## SPLICE BOLT
POST BOLT - SAME EXCEPT LENGTH




CUT STEEL WASHER

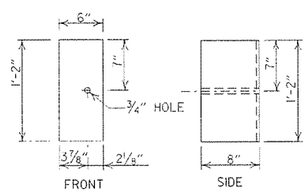



NUT

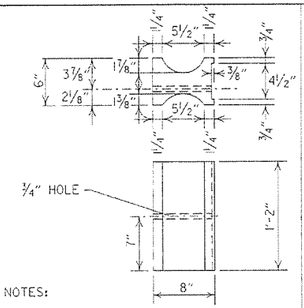



WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

TOP



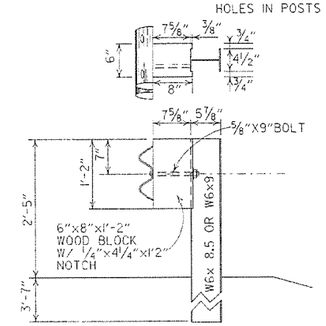

## WOOD BLOCKOUT (W-BEAM)



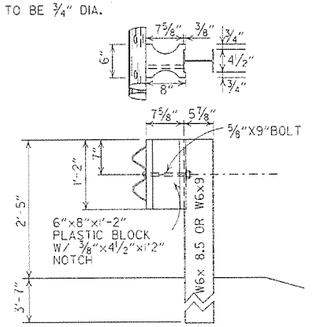

NOTES:
1. SIMILAR SHAPED PLASTIC BLOCKOUTS MAY BE USED AS LONG AS THEY MEET NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.

## PLASTIC BLOCKOUT (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.

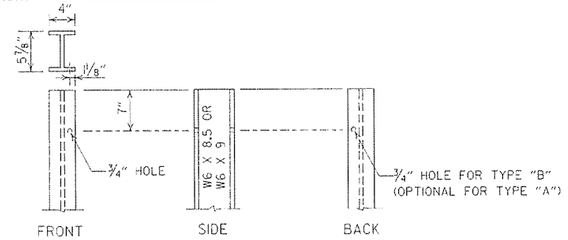



WOOD BLOCKOUT CONNECTIONS

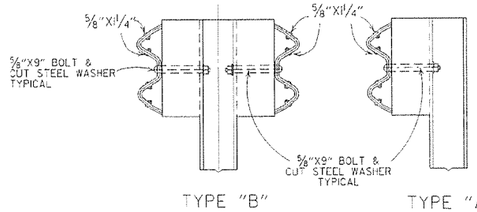



PLASTIC BLOCKOUT CONNECTIONS

## DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)



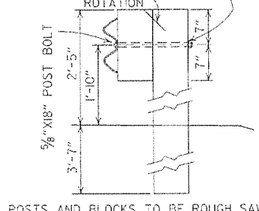

## STEEL POST




TYPE "B" TYPE "A"

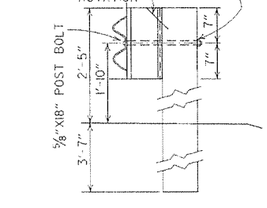
## DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.




POSTS AND BLOCKS TO BE ROUGH SAWN 6"X8" WITH A TOLERANCE OF + OR - ¼".

WOOD BLOCKOUT CONNECTIONS




PLASTIC BLOCKOUT CONNECTIONS

## DETAILS OF WOOD LINE POST CONNECTIONS (W-BEAM)

### -GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

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

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

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

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

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

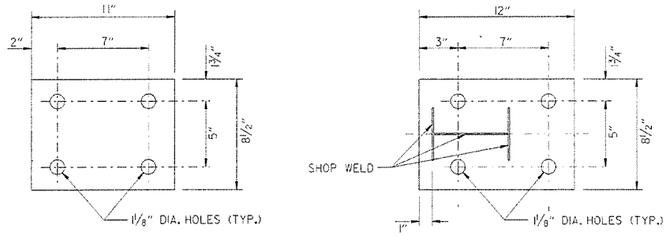
CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-14-10 | RAISED HEIGHT OF GUARD RAIL 1" | |
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 4-10-03 | REVISED GENERAL NOTES | |
| 8-22-02 | REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST | |
| 11-16-01 | REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS | |
| 3-30-00 | REMOVED GUARD RAIL AT BRIDGE ENDS | |
| 1-12-00 | ADDED PLASTIC BLOCKOUT | |
| 8-12-98 | REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES | |
| 4-3-97 | REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS | |
| 10-18-96 | REVISED WOOD POST NOTE | |
| 6-2-94 | ADDED W T. STEEL POST SIZE | |
| 8-5-93 | REVISED STEEL POST SIZE | 8-5-93 |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| 8-15-91 | REVISED WASHER NOTE | 8-15-91 |
| 8-2-90 | REV. GEN. NOTE & DEPHT OF ANC. POST IN ROCK | 8-2-90 |
| 7-15-88 | REVISED SECTION 3 & GENERAL NOTES | |
| 3-4-88 | REV. ANCHOR POST, ELEV. NOTES & POST IN ROCK | 780-3-4-88 |
| 10-30-87 | REVISED WOOD LINE POST DETAIL | 546-10-30-87 |
| 10-9-87 | REDRAWN & REVISED | 802-10-9-87 |

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

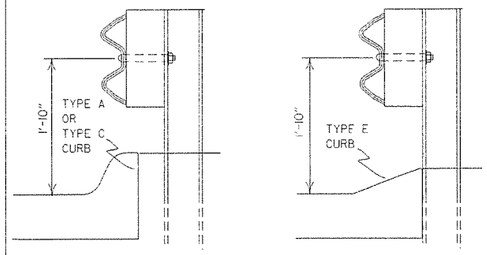
STANDARD DRAWING GR-8




WASHER PLATE

BASE PLATE

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




FOR DESIGN SPEEDS OF 50 MPH OR LESS

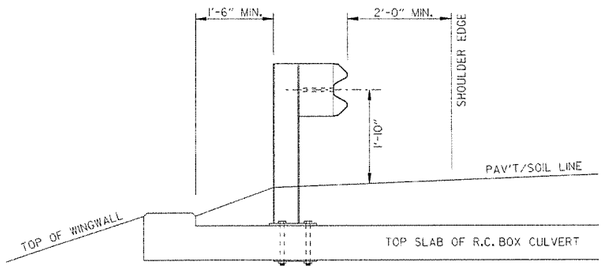
ALIGN FACE OF GUARD RAIL WITH FACE OF CURB.

FOR DESIGN SPEEDS OF 55 MPH OR MORE

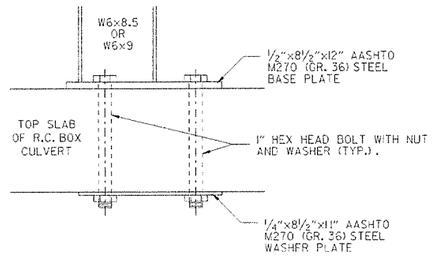
PLACE GUARD RAIL POSTS AGAINST BACK OF CURB.

## DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB (W-BEAM)

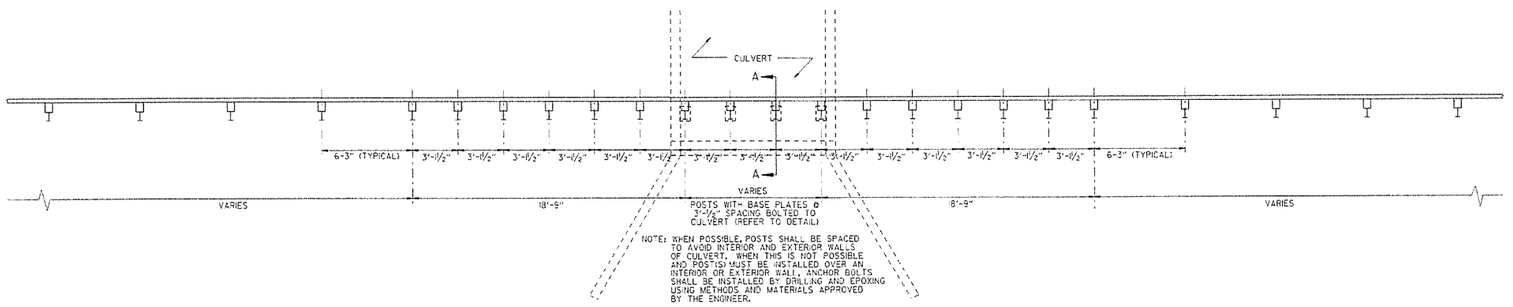
FOR DESIGN SPEEDS OF 50 MPH OR LESS ALL CURB FACES, AS SHOWN ON STD. DRWG. CG-1, MAY BE USED. FOR DESIGN SPEEDS OF 55 MPH OR MORE TYPE "E" CURB FACE SHALL BE USED.




SECTION A-A



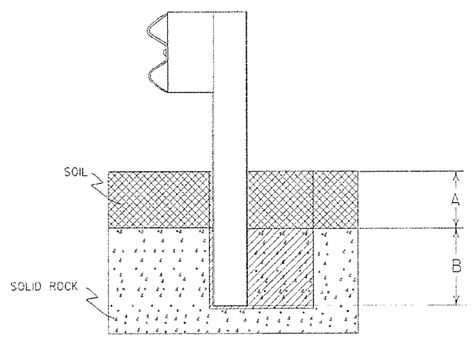

DETAIL OF CONNECTION



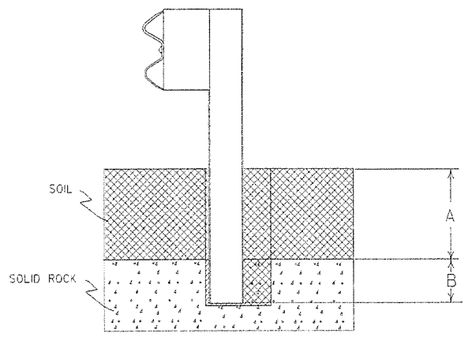

PLAN LAYOUT OF TYPE A GUARD RAIL AT LOW-FILL CULVERTS

NOTE: THIS DETAIL IS TO BE USED ONLY WHEN THE COVER OVER THE CULVERT DOES NOT PERMIT FULL EMBEDMENT OF GUARD RAIL POSTS AS SHOWN ON STD. DWG. GR-8.

Case 1

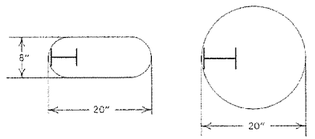


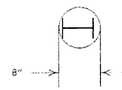

Case 2




Plan View Steel Posts

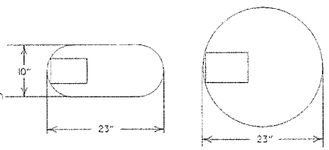
Either hole configuration acceptable

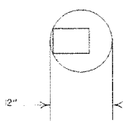



Plan View Wood Posts

Either hole configuration acceptable




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

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

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

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

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

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

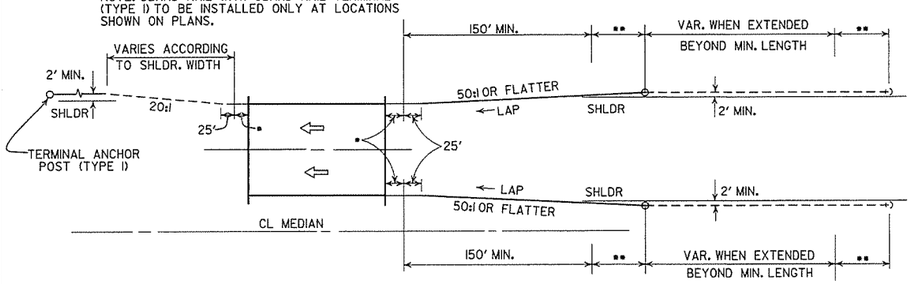
| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-14-10 | RAISED HEIGHT OF GUARD RAIL 1" | |
| 4-12-07 | REVISED DETAIL OF GUARD RAIL PLACEMENT BEHIND CURB | |
| 11-10-05 | ADDED GUARD RAIL PLACEMENT BEHIND CURB; REVISED DETAIL OF CONNECTION | |
| 11-18-04 | REVISED POST PLACEMENT IN ROCK & CULVERT CONNECTION DETAILS. ADDED DETAIL FOR GUARD RAIL PLACEMENT AT LOW-FILL CULVERTS | |
| 3-30-00 | REMOVED CONCRETE INSERT ANCHOR | |
| 8-12-98 | CHANGED STEEL SPACER BLOCK TO WOOD BLOCKOUT, ADD. DET. OF GUARD RAIL CONNECTION TO R.C. BOX CULV'T. DELETED DET. OF STEEL LINE POST CONN.& ADDED DET. OF GUARD RAIL PLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK | |
| 4-3-96 | PLACED ARROWS AT CUT STEEL WASHERS | 4-3-96 |
| 10-18-96 | REV. ASTM REF. TO AASHTO | |
| 11-22-95 | ADDED OPTIONAL HOLES | |
| 6-2-94 | REVISED ALTERNATE POST SIZE | |
| 8-5-93 | REVISED STEEL POST SIZE | |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| 8-2-90 | DEL. WASHER ON ANCHOR ASSEMBLY | 8-2-90 |
| 7-15-88 | CONFORMED TO 1988 SPECS | |
| 3-4-88 | REVISED ANCHOR NOTE | |
| 10-30-87 | REVISED ANCHOR ASSEMBLY | 712-10-30-87 |
| 10-30-87 | REVISED PLACEMENT BEHIND CURB | 547-10-30-87 |
| 10-9-87 | REDRAWN & REVISED | 803-10-9-87 |

ARKANSAS STATE HIGHWAY COMMISSION

# GUARD RAIL DETAILS

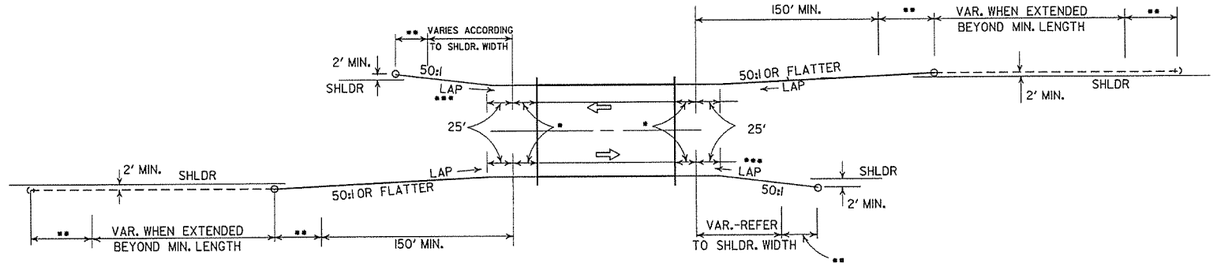
# STANDARD DRAWING GR-8A

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.




ONE-WAY TRAFFIC

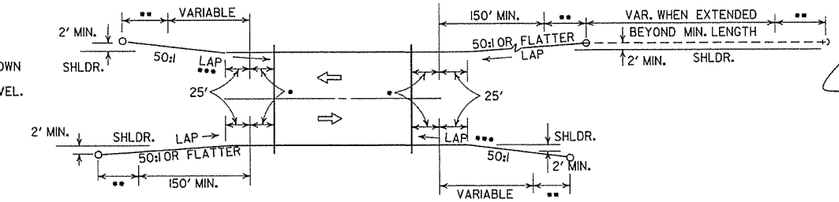
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




TWO-WAY TRAFFIC

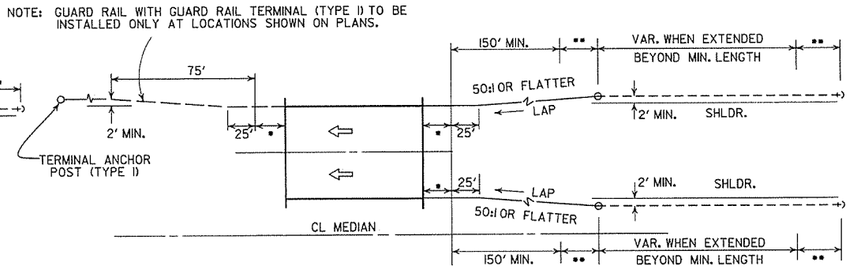
## METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




TWO-WAY TRAFFIC

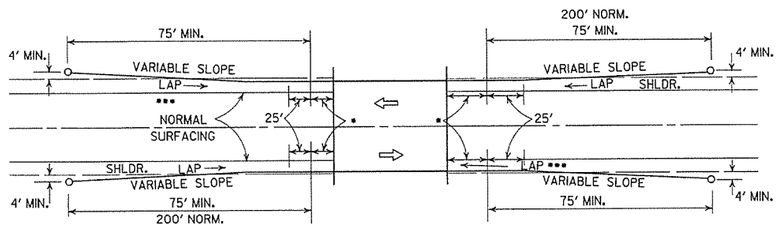
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.




ONE-WAY TRAFFIC

## METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




## METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE I) (FULL SHOULDER WIDTH OR LESS BRIDGES)

LEGEND

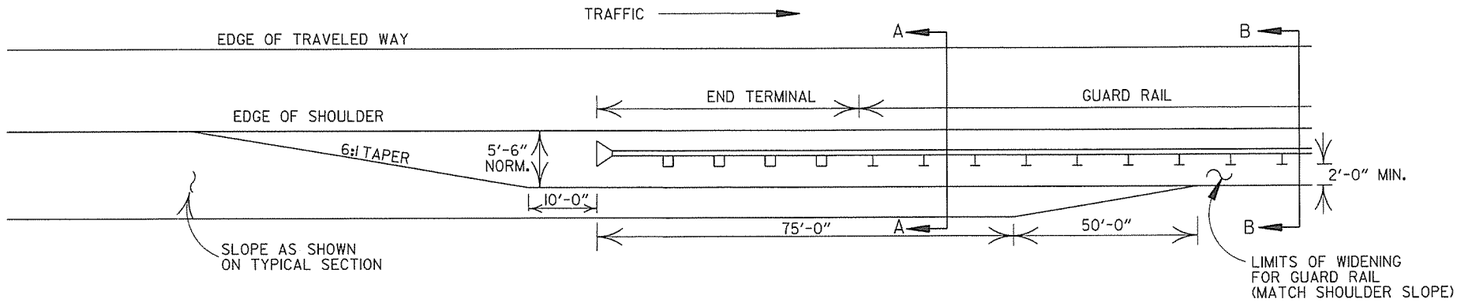
- • THRIE BEAM GUARD RAIL TERMINAL
- •• GUARD RAIL TERMINAL (TYPE 2)

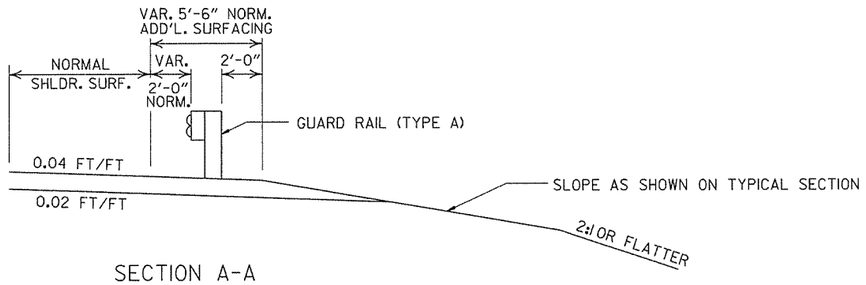
| DATE | REVISION | DATE FILM |
|---|---|---|
| 4-17-08 | REVISED LAYOUTS | |
| 11-10-05 | REMOVED GUARD RAIL NOTES AND DETAILS | |
| 11-16-01 | DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I) | |
| 1-12-00 | ADDED CONSTRUCTION NOTE | 1-12-00 |
| 6-26-97 | REVISED LAYOUT | |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| | ADDED NOTE | |
| 10-9-87 | REDRAWN & REVISED | |

ARKANSAS STATE HIGHWAY COMMISSION

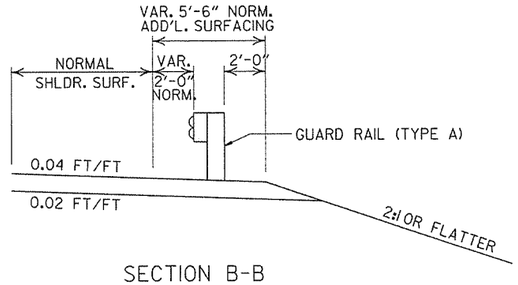
# GUARD RAIL DETAILS

STANDARD DRAWING GR-9



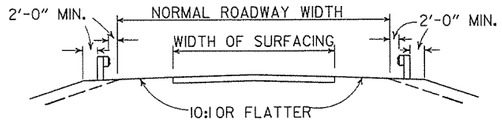

SECTION A-A



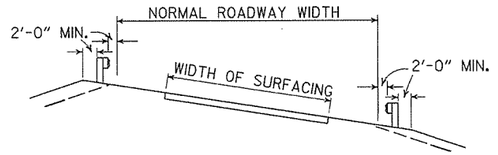

SECTION B-B

## DETAILS OF WIDENING FOR GUARD RAIL

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

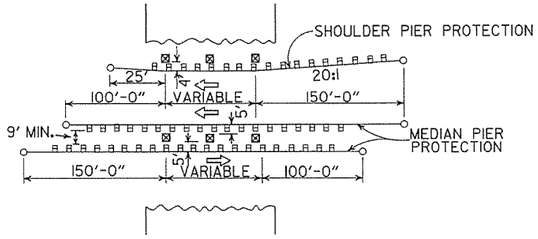



SECTION ON TANGENT




SECTION ON CURVE

## DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



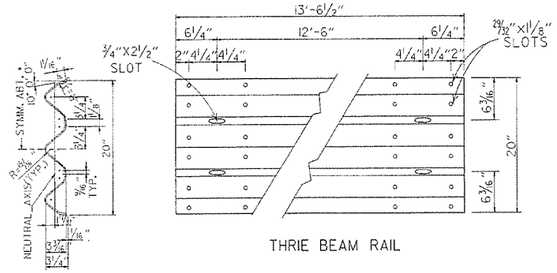

## METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

| DATE | REVISION | DATE FILM |
|---|---|---|
| 4-17-08 | MINOR REVISION | |
| 11-10-05 | DRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

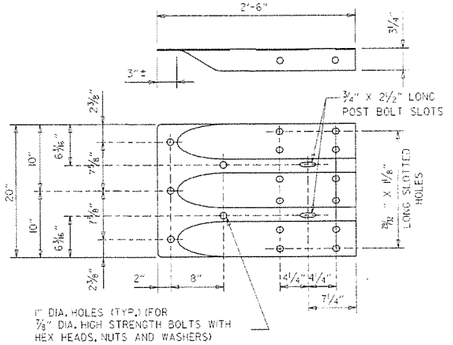
# GUARD RAIL DETAILS

STANDARD DRAWING GR-9A



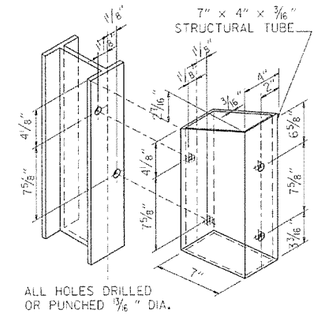

THRIE BEAM RAIL

SECTION THRU
THRIE BEAM RAIL




1" DIA. HOLES (TYP.) (FOR ⅞" DIA. HIGH STRENGTH BOLTS WITH HEX HEADS, NUTS AND WASHERS)

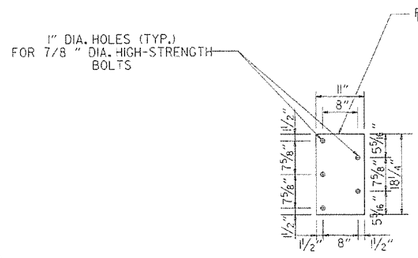
SPECIAL END SHOE




ALL HOLES DRILLED OR PUNCHED ⅜" DIA.

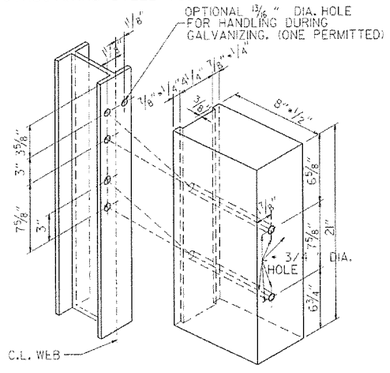
STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

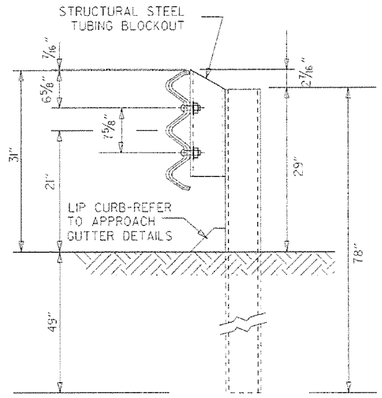
ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.



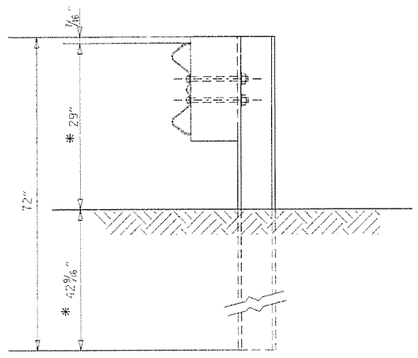

CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.


OPTIONAL 13/16" DIA. HOLE FOR HANDLING DURING GALVANIZING. (ONE PERMITTED)
⅛
1½
7⅛"
¼A
⅛
¼
¼
¼

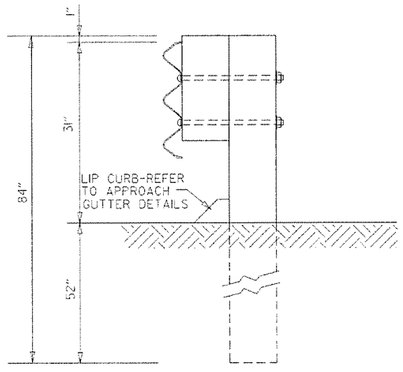



THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

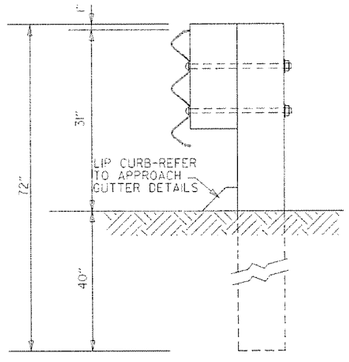



W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

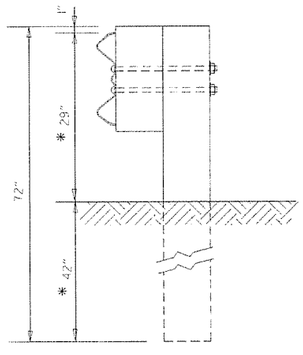
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.




THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6




THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7




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

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

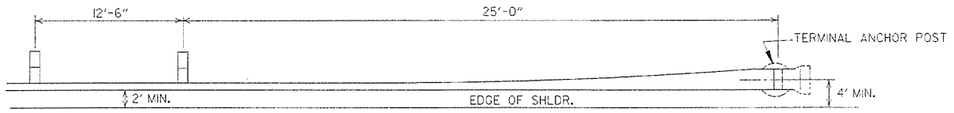
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 3.7 f (1400 f) OR NO. 1 1350 f SOUTHERN PINE.

| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| 7-14-10 | REVISED POST 8 DIMENSIONS | |
| 11-29-07 | ADDED PLASTIC BLOCKOUTS | |
| 8-22-02 | REVISED LIP CURB NOTE | |
| 3-30-00 | DRAWN & ISSUED | |

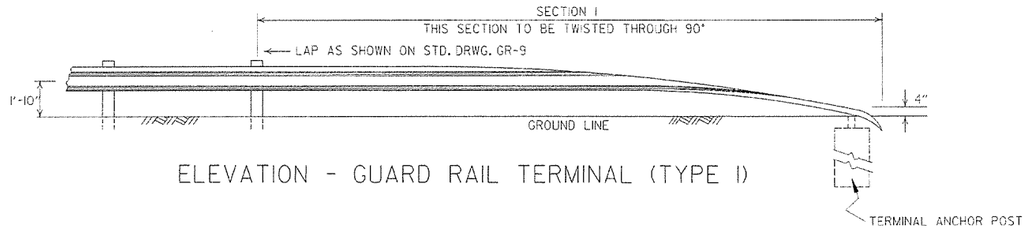
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

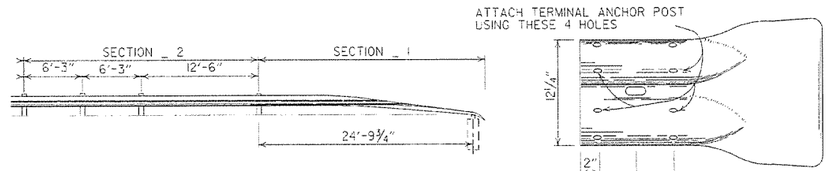



PLAN - GUARD RAIL TERMINAL (TYPE I)

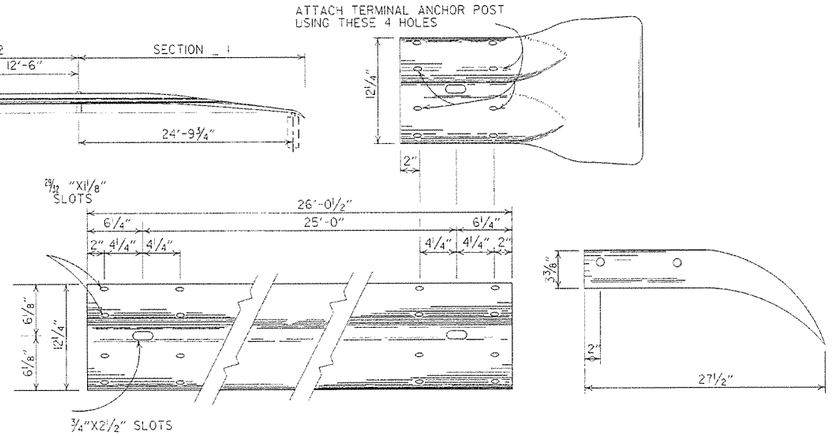



ELEVATION - GUARD RAIL TERMINAL (TYPE I)

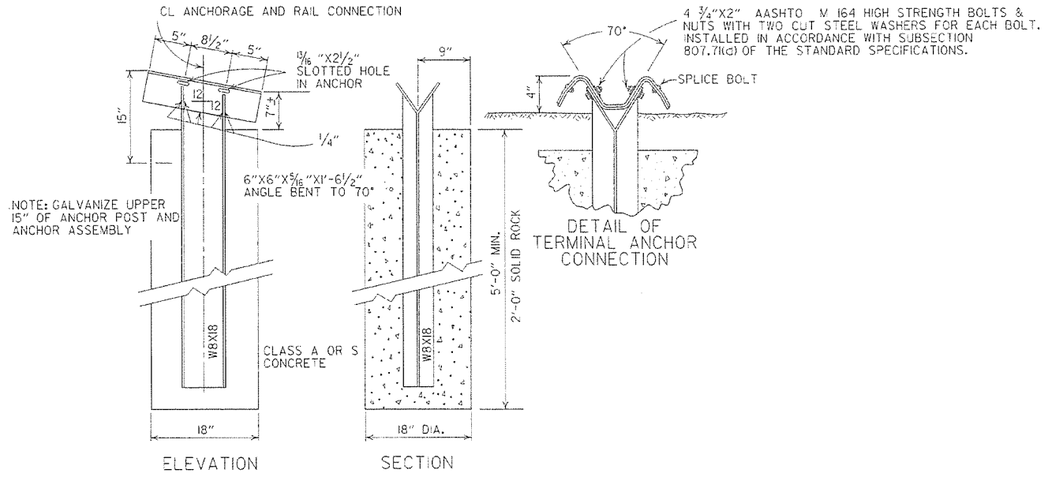
NOTE:
SECTIONS 1 AND 2 OF GUARD RAIL TERMINAL SHALL BE PAID FOR AT THE PRICE BID PER LINEAR FOOT OF THE TYPE OF GUARD RAIL SPECIFIED.




SECTION 1




TERMINAL SECTION




NOTE: RAIL MEMBERS MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE TWO ASSEMBLIES POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST IF CONTRACTOR SO DESIRES.

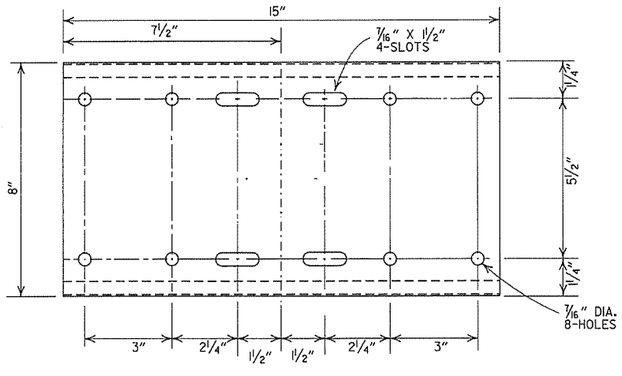
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| 7-14-10 | RAISED HEIGHT OF GUARD RAIL 1" | |
| 6-26-97 | REVISED LAP NOTE | |
| 10-18-96 | REVISED ASTM REF. TO AASHTO | |
| 11-3-94 | DIMENSION TERMINAL DETAIL | |
| 11-11-92 | ADDED NOTE FOR PAYMENT | 11-11-92 |
| 10-1-92 | DRAWN & ISSUED | 10-1-92 |

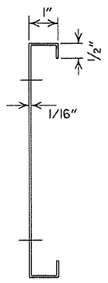
ARKANSAS STATE HIGHWAY COMMISSION

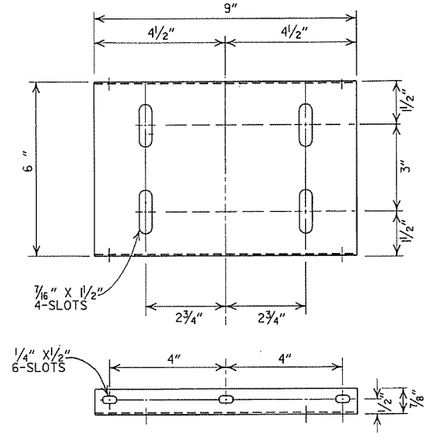
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

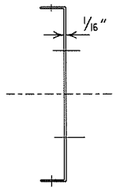


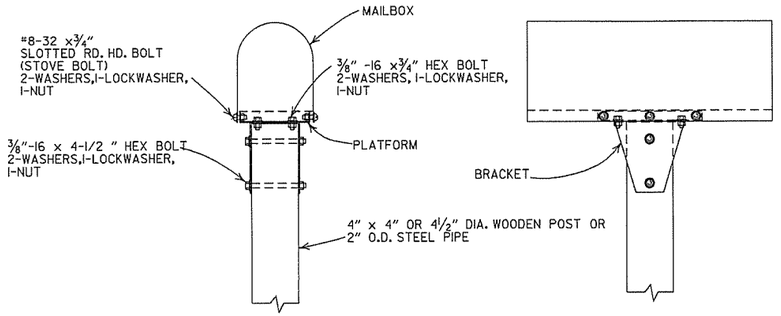

SHELF



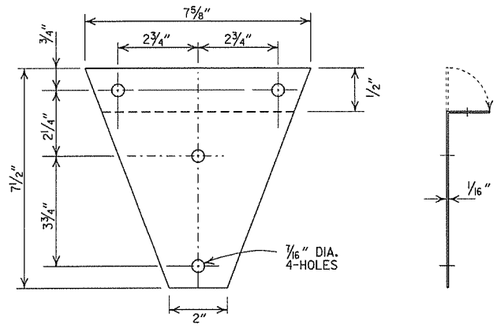




PLATFORM




SINGLE INSTALLATION

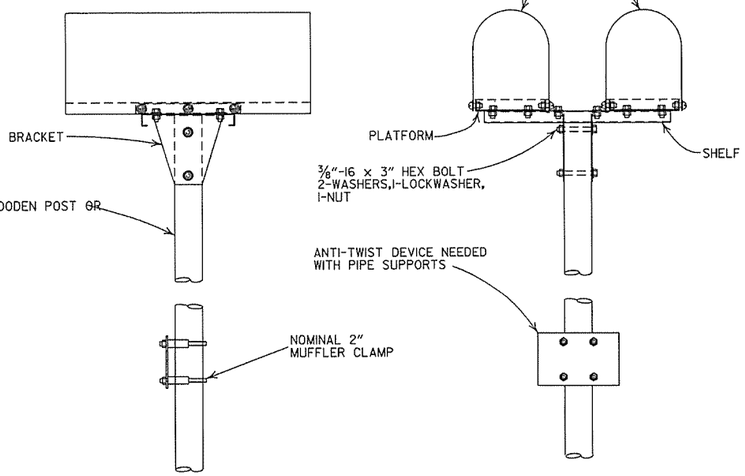



BRACKET

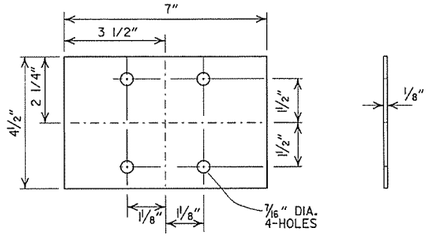



GENERAL NOTES

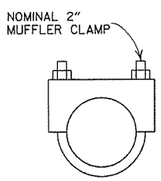
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X¾" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



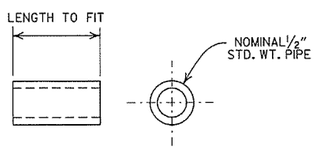

DOUBLE INSTALLATION



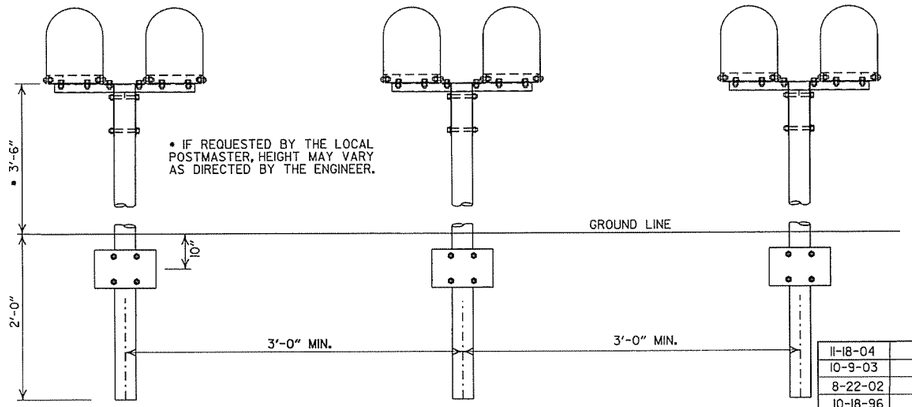

ANTI-TWIST PLATE




CLAMP




SPACER



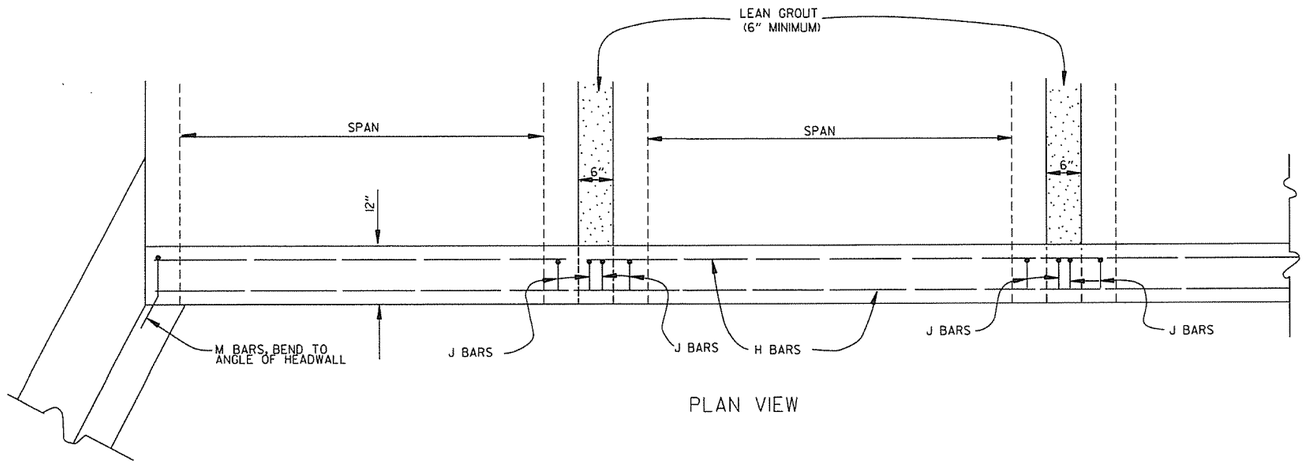

SPACING FOR MULTIPLE POST INSTALLATION

| DATE | FILMED | REVISION |
|---|---|---|
| 11-18-04 | | REVISED NOTES |
| 10-9-03 | | REVISED NOTE 6 |
| 8-22-02 | | REVISED NOTE 6 |
| 10-18-96 | | CORRECTED AASHTO |
| 10-1-92 | | CORRECTED SPELLING |
| 9-26-91 | | NEW PHONE NUMBER |
| 8-15-91 | | ADDED NOTE |
| 11-30-89 | | ADJUSTED HEIGHT & ADDED NOTE |
| 2-16-89 | | DELETED SLOTS FROM SHELF & PLTF |
| 11-17-88 | 10-1-92 | ADJUSTED DIMENSIONS OF STEEL POSTS |
| 7-15-88 | 20-7-15-88 | ISSUED |

ARKANSAS STATE HIGHWAY COMMISSION

# MAILBOX DETAILS

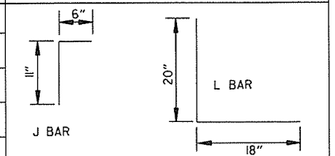
STANDARD DRAWING MB-1




PLAN VIEW

## BAR LIST

| BAR | NO. | SIZE | LENGTH | BAR BENDING DIAGRAM |
|---|---|---|---|---|
| H | 2 | #4 | • | |
| I | • | #4 | • | |
| J | • | #4 | 1'-5" | |
| L | • | #4 | 3'-2" | |
| M | • | #4 | 1'-8" | |




• NOTE: LENGTH AND NUMBER OF BARS VARIES WITH SIZE OF CULVERT

### GENERAL NOTES

WINGS, CURTAIN WALLS AND APRONS SHALL BE TIED TO THE PRECAST CULVERT SECTION BY CASTING BARS IN CULVERT END SECTIONS AS SHOWN OR BY DOWELING AND GROUTING. J BARS AND M BARS SHALL BE EMBEDDED A MINIMUM OF 10" IN PRECAST BOX.

WINGS, FOOTINGS, APRONS AND CURTAIN WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE WING DRAWING, STEEL AND CONCRETE QUANTITIES WILL BE ADJUSTED TO FIT THE IN-PLACE WIDTH & HEIGHT OF THE PRECAST CONCRETE BOX CULVERTS.

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

WINGWALLS AND FOOTINGS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

ALL CONCRETE, REINFORCING STEEL, LEAN GROUT, MEMBRANE WATERPROOFING, DRAINAGE FILL MATERIAL, GEOTEXTILE FILTER FABRIC, LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR INSTALLING PRECAST BOX CULVERTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID FOR THE ITEMS AS SPECIFIED IN SECTION 607 OF THE STANDARD SPECIFICATIONS.

LEAN GROUT SHALL CONSIST OF A SAND CEMENT MIXTURE MEETING THE FOLLOWING REQUIREMENTS:
PORTLAND CEMENT SHALL BE TYPE I AND SHALL MEET THE REQUIREMENTS OF AASHTO M 85.
SAND SHALL MEET THE REQUIREMENTS OF FINE AGGREGATE AS SPECIFIED IN SECTION 802.02 OF THE STANDARD SPECIFICATIONS.
THE SAND CEMENT MIXTURE SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF PORTLAND CEMENT PER TON OF MATERIAL MIXTURE. THE MIXTURE SHALL CONTAIN SUFFICIENT WATER TO HYDRATE THE CEMENTS. THE SAND CEMENT MIXTURE SHALL BE PLACED IN MAXIMUM 8 INCH THICK LIFTS, LOOSE MEASURE, AND THOROUGHLY RODDED AND TAMPED AROUND BOX TO THOROUGHLY FILL ALL VOIDS.

MEMBRANE WATERPROOFING CONFORMING TO THE REQUIREMENTS OF SECTION 815 OF THE STANDARD SPECIFICATIONS SHALL BE APPLIED TO ALL BOX CULVERT JOINTS.

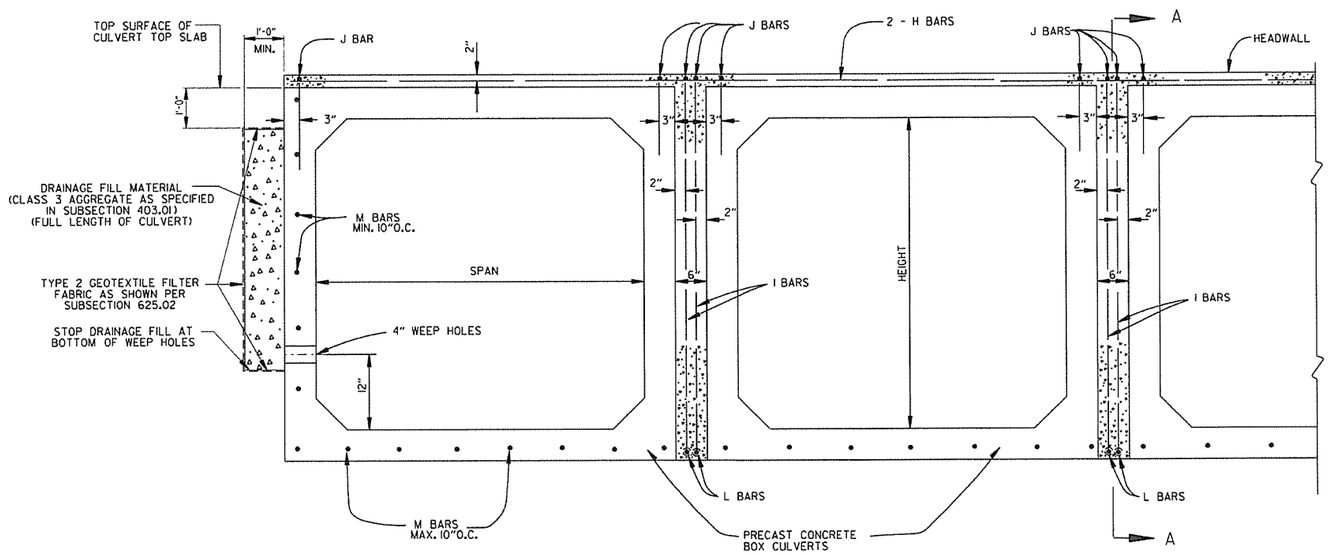
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

IN OUTER BARRELS, ONE WEEP HOLE IS REQUIRED IN EXTERIOR WALLS OF EACH PRECAST CULVERT SECTION. WEEP HOLES SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" IN THE ASSEMBLED CULVERT AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIAMETER AND SHALL BE PLACED 12" ABOVE THE TOP OF THE BOTTOM SLAB.

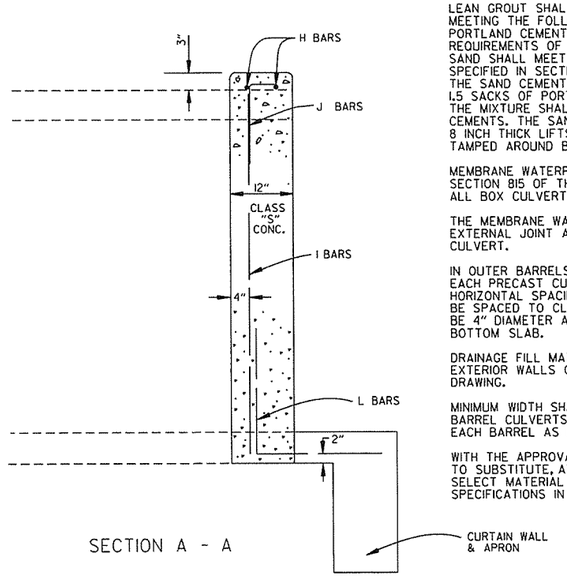
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

MINIMUM WIDTH SHALL BE 12" (6" ON EACH SIDE OF JOINT). ON MULTIPLE BARREL CULVERTS, MEMBRANE WATERPROOFING SHALL BE APPLIED TO EACH BARREL AS DESCRIBED ABOVE.

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, FLOWABLE SELECT MATERIAL CONFORMING TO SECTION 206 OF THE STANDARD SPECIFICATIONS IN LIEU OF LEAN GROUT.




END VIEW




SECTION A - A

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 12-15-11 | ADDED NOTE & DTLS FOR WEEP HOLE AND DRAINAGE FILL | |
| 10-15-09 | ADDED GENERAL NOTE | |
| 11-10-05 | REVISED SPACING OF "M" BARS | |
| 4-10-03 | REVISED GENERAL NOTES | |
| 10-18-96 | CORRECTED AASHTO REF. | |
| 10-1-92 | ADDED NOTE FOR MEMBRANE WATERPROOFING | |
| 8-15-91 | ADDED NOTE FOR LEAN GROUT | |
| 11- 8-90 | REVISED FOR 1991 SPECS | |
| 11-30-89 | ISSUED: JABE | |

ARKANSAS STATE HIGHWAY COMMISSION

# PRECAST CONCRETE BOX CULVERTS

STANDARD DRAWING PBC-1

## REINFORCED CONCRETE ARCH PIPE DIMENSIONS

| EQUIV. DIA. | SPAN | | RISE | |
|---|---|---|---|---|
| | AASHTO M 206 | AHTD NOMINAL | AASHTO M 206 | AHTD NOMINAL |
| INCHES | INCHES | | | |
| 15 | 18 | 18 | 11 | 11 |
| 18 | 22 | 22 | 13½ | 14 |
| 21 | 26 | 26 | 15½ | 16 |
| 24 | 28½ | 29 | 18 | 18 |
| 30 | 36¼ | 36 | 22½ | 23 |
| 36 | 43⅜ | 44 | 26⅝ | 27 |
| 42 | 51⅛ | 51 | 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 | 96⅞ | 97 |
| 132 | 168¾ | 169 | 106½ | 107 |

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

## REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

## CONSTRUCTION SEQUENCE

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

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

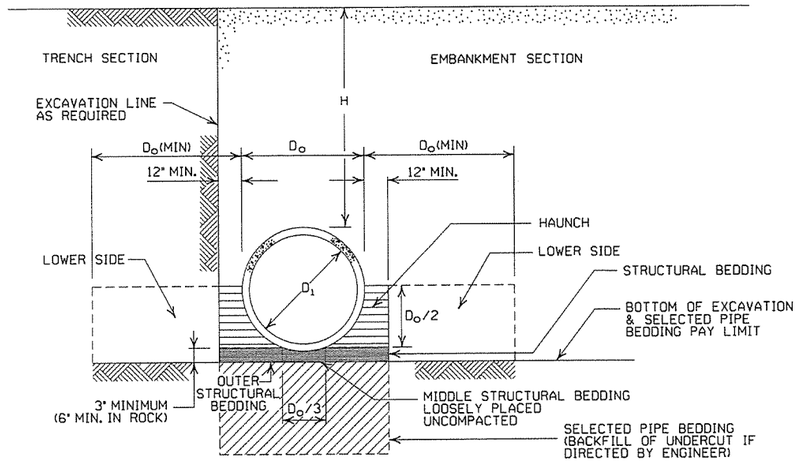
## - LEGEND -

$D_1$ = NORMAL INSIDE DIAMETER OF PIPE
$D_o$ = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

| INSTALLATION TYPE | MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING |
|---|---|
| TYPE 1 | AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7) |
| TYPE 2 | SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL* |
| TYPE 3** | AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL |

*SM-3 WILL NOT BE ALLOWED.

**MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.




## EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

## GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

## MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

| | CLASS OF PIPE | | | |
|---|---|---|---|---|
| | CLASS III | | CLASS IV | CLASS V |
| INSTALLATION TYPE | TYPE 1 OR 2 | TYPE 3 | ALL | ALL |
| PIPE ID (IN.) | FEET | | | |
| 12-15 | 2 | 2.5 | 2 | 1 |
| 18-24 | 2.5 | 3 | 2 | 1 |
| 27-33 | 3 | 4 | 2 | 1 |
| 36-42 | 3.5 | 5 | 2 | 1 |
| 48 | 4.5 | 5.5 | 2 | 1 |
| 54-60 | 5 | 7 | 2 | 1 |
| 66-78 | 6 | 8 | 2 | 1 |
| 84-108 | 7.5 | 8 | 2 | 1 |

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

## MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

| INSTALLATION TYPE | CLASS OF PIPE | | |
|---|---|---|---|
| | CLASS III | CLASS IV | CLASS V |
| | FEET | | |
| TYPE 1 | 21 | 32 | 50 |
| TYPE 2 | 16 | 25 | 39 |
| TYPE 3 | 12 | 20 | 30 |

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

## MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

| INSTALLATION TYPE | CLASS OF PIPE | |
|---|---|---|
| | CLASS III | CLASS IV |
| | FEET | |
| TYPE 2 OR TYPE 3 | 2.5 | 1.5 |

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

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

## MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

| INSTALLATION TYPE | CLASS OF PIPE | |
|---|---|---|
| | CLASS III | CLASS IV |
| | FEET | |
| TYPE 2 | 13 | 21 |
| TYPE 3 | 10 | 16 |

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

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

ARKANSAS STATE HIGHWAY COMMISSION

# CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

## CORRUGATED STEEL PIPE (ROUND)

| PIPE DIAMETER (INCHES) | ① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET) | MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET) | | | | |
|---|---|---|---|---|---|---|
| | | METAL THICKNESS (INCHES) | | | | |
| | | 0.064 | 0.079 | 0.109 | 0.138 | 0.168 |
| 2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | | | | |
| 12 | 1 | 84 | 91 | | | |
| 15 | 1 | 67 | 73 | | | |
| 18 | 1 | 56 | 61 | | | |
| 24 | 1 | 42 | 46 | 59 | | |
| 30 | 2 | 34 | 36 | 47 | | |
| 36 | 2 | | 30 | 39 | 41 | |
| 42 | 2 | | 43 | 67 | 70 | 73 |
| 48 | 2 | | 37 | 58 | 61 | 64 |
| ② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM | | | | | | |
| 36 | 1 | 48 | 60 | 88 | 111 | 118 |
| 42 | 1 | 41 | 51 | 72 | 90 | 102 |
| 48 | 1 | 36 | 45 | 64 | 77 | 85 |
| 54 | 2 | 32 | 40 | 59 | 71 | 79 |
| 60 | 2 | 29 | 36 | 53 | 64 | 71 |
| 66 | 2 | 26 | 33 | 47 | 58 | 64 |
| 72 | 2 | 24 | 30 | 44 | 53 | 59 |
| 78 | 2 | | 28 | 41 | 49 | 54 |
| 84 | 2 | | 26 | 38 | 45 | 51 |
| 90 | 2 | | 24 | 35 | 43 | 45 |
| 96 | 2 | | 22 | 33 | 40 | 44 |
| 102 | 2 | | | 31 | 38 | 42 |
| 108 | 2 | | | 30 | 35 | 39 |
| 114 | 2 | | | 28 | 34 | 37 |
| 120 | 2 | | | 27 | 32 | 35 |

## CORRUGATED ALUMINUM PIPE (ROUND)

| PIPE DIAMETER (INCHES) | ① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET) | MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET) | | | | |
|---|---|---|---|---|---|---|
| | | METAL THICKNESS IN INCHES | | | | |
| | | 0.060 | 0.075 | 0.105 | 0.135 | 0.164 |
| | | 2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM | | | | |
| 12 | 1 | 45 | 45 | | | |
| 18 | 2 | 30 | 30 | 52 | | |
| 24 | 2 | 22 | 22 | 39 | 41 | |
| 30 | 2 | | 18 | 31 | 32 | 34 |
| 36 | 2.5 | | 15 | 26 | 27 | 28 |
| 42 | 2 | | | 43 | 43 | 44 |
| 48 | 2 | | | 40 | 41 | 43 |
| 54 | 2 | | | 35 | 37 | 38 |
| 60 | 2 | | | | 33 | 34 |
| 66 | 2 | | | | | 31 |
| 72 | 2 | | | | | 29 |

## CONSTRUCTION SEQUENCE

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

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

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

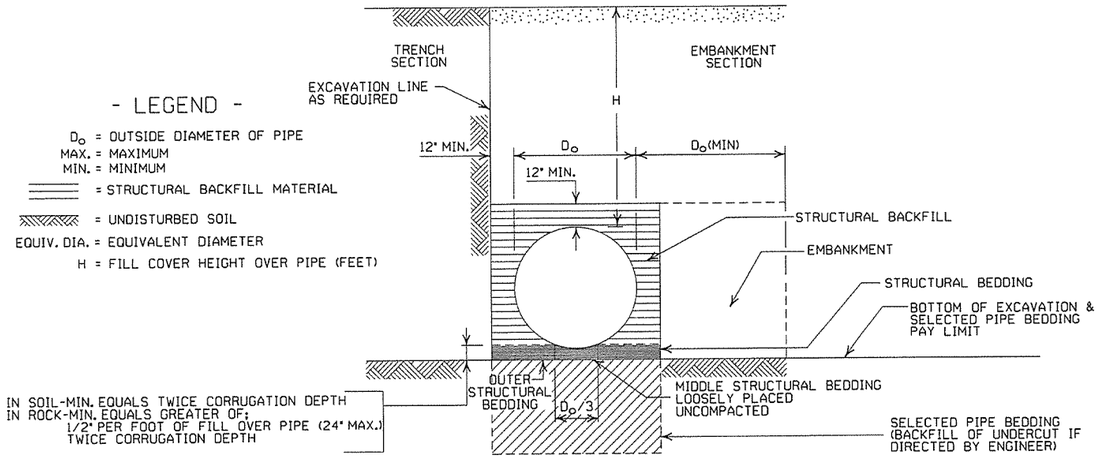
③ SM-3 WILL NOT BE ALLOWED.

## EQUIVALENT METAL THICKNESSES AND GAUGES

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

## CORRUGATED METAL PIPE ARCHES

| EQUIV. DIA. (INCHES) | PIPE DIMENSION SPAN X RISE (INCHES) | MINUMUM CORNER RADIUS (INCHES) | STEEL | | | ALUMINUM | | |
|---|---|---|---|---|---|---|---|---|
| | | | MIN. THICKNESS REQUIRED INCHES | ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MIN. THICKNESS REQUIRED INCHES | ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 |
| | | | 2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | 2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM | | |
| 15 | 17x13 | 3 | 0.064 | 2 | 15 | 0.060 | 2 | 15 |
| 18 | 21x15 | 3 | 0.064 | 2 | 15 | 0.060 | 2 | 15 |
| 21 | 24x18 | 3 | 0.064 | 2.25 | 15 | 0.060 | 2.25 | 15 |
| 24 | 28x20 | 3 | 0.064 | 2.5 | 15 | 0.075 | 2.5 | 15 |
| 30 | 35x24 | 3 | 0.079 | 3 | 12 | 0.075 | 3 | 12 |
| 36 | 42x29 | 3½ | 0.079 | 3 | 12 | 0.105 | 3 | 12 |
| 42 | 49x33 | 4 | 0.079 | 3 | 12 | 0.105 | 3 | 12 |
| 48 | 57x38 | 5 | 0.109 | 3 | 13 | 0.135 | 3 | 13 |
| 54 | 64x43 | 6 | 0.109 | 3 | 14 | 0.135 | 3 | 14 |
| 60 | 71x47 | 7 | 0.138 | 3 | 15 | 0.164 | 3 | 15 |
| 66 | 77x52 | 8 | 0.168 | 3 | 15 | | | |
| 72 | 83x57 | 9 | 0.168 | 3 | 15 | | | |
| | | | ② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | | | |
| | | | | INSTALLATION TYPE 2 | INSTALLATION TYPE 1 | | INSTALLATION TYPE 2 | INSTALLATION TYPE 1 |
| 36 | 40x31 | 5 | 0.079 | 3 | 2 | 12 | | 15 |
| 42 | 46x36 | 6 | 0.079 | 3 | 2 | 13 | | 15 |
| 48 | 53x41 | 7 | 0.079 | 3 | 2 | 13 | | 15 |
| 54 | 60x46 | 8 | 0.079 | 3 | 2 | 13 | | 15 |
| 60 | 66x51 | 9 | 0.079 | 3 | 2 | 13 | | 15 |
| 66 | 73x55 | 12 | 0.079 | 3 | 2 | 15 | | 15 |
| 72 | 81x59 | 14 | 0.079 | 3 | 2 | 15 | | 15 |
| 78 | 87x63 | 14 | 0.079 | 3 | 2 | 15 | | 15 |
| 84 | 95x67 | 16 | 0.109 | 3 | 2 | 15 | | 15 |
| 90 | 103x71 | 16 | 0.109 | 3 | 2 | 15 | | 15 |
| 96 | 112x75 | 18 | 0.109 | 3 | 2 | 15 | | 15 |
| 102 | 117x79 | 18 | 0.109 | 3 | 2 | 15 | | 15 |
| 108 | 128x83 | 18 | 0.138 | 3 | 2 | 15 | | 15 |




## 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

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

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

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

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

## MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

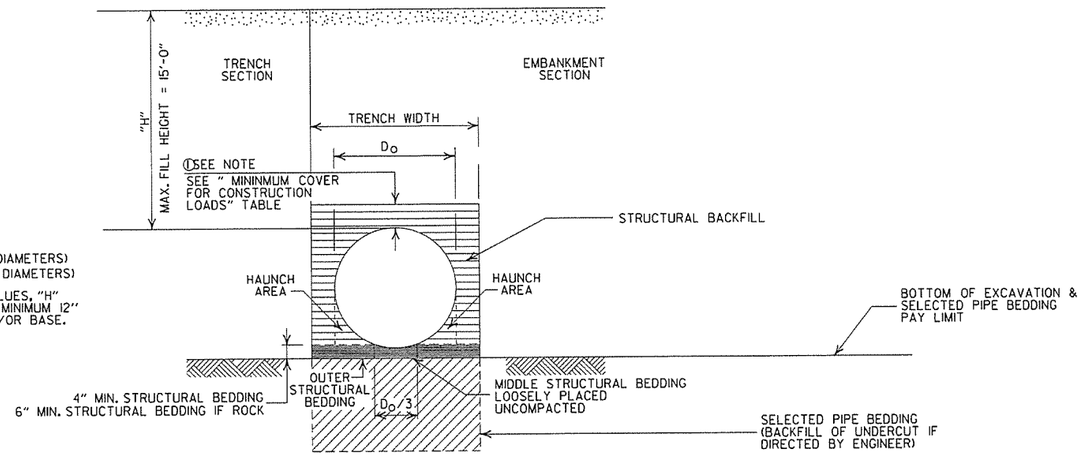
| PIPE DIAMETER | CLEAR DISTANCE BETWEEN PIPES |
|---|---|
| 18" | 1'-6" |
| 24" | 2'-0" |
| 30" | 2'-6" |
| 36" | 3'-0" |
| 42" | 3'-6" |
| 48" | 4'-0" |

## MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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




## TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

## MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

## CONSTRUCTION SEQUENCE

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

## GENERAL NOTES

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

## - LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

ARKANSAS STATE HIGHWAY COMMISSION

# PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

- AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

  SM3 WILL NOT BE ALLOWED.

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

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

## MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

## MULTIPLE INSTALLATION OF PVC PIPES

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

## MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

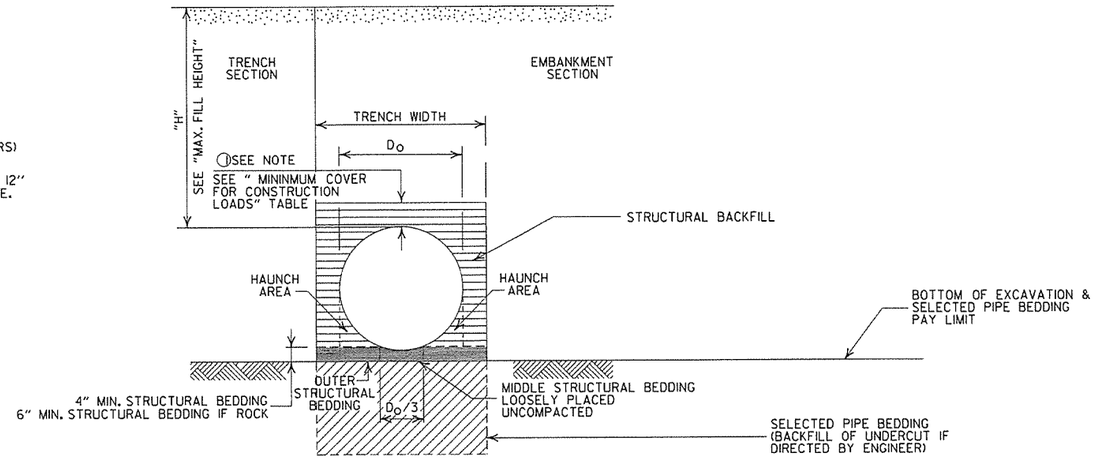
| PIPE DIAMETER | "H" |
|---|---|
| 18" | 45'-0" |
| 24" | 45'-0" |
| 30" | 40'-0" |
| 36" | 40'-0" |

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

## MINIMUM COVER FOR CONSTRUCTION LOADS

| PIPE DIAMETER | ② MIN. COVER (FEET) FOR INDICATED CONSTRUCTION LOADS | | | |
|---|---|---|---|---|
| | 18.0-50.0 (KIPS) | 50.0-75.0 (KIPS) | 75.0-110.0 (KIPS) | 110.0-175.0 (KIPS) |
| 18" THRU 36" | 2'-0" | 2'-6" | 3'-0" | 3'-0" |

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




## TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

## CONSTRUCTION SEQUENCE

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

## GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

## - LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

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

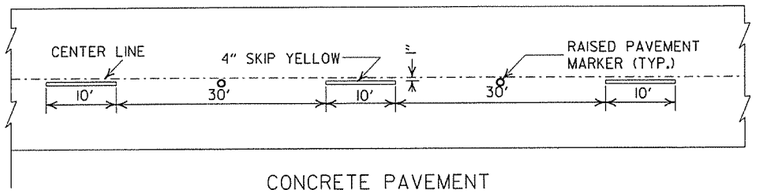
ARKANSAS STATE HIGHWAY COMMISSION

# PLASTIC PIPE CULVERT (PVC F949)

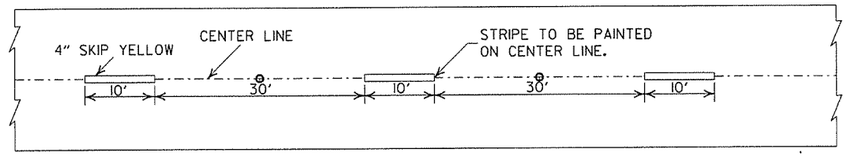
STANDARD DRAWING PCP-2

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.

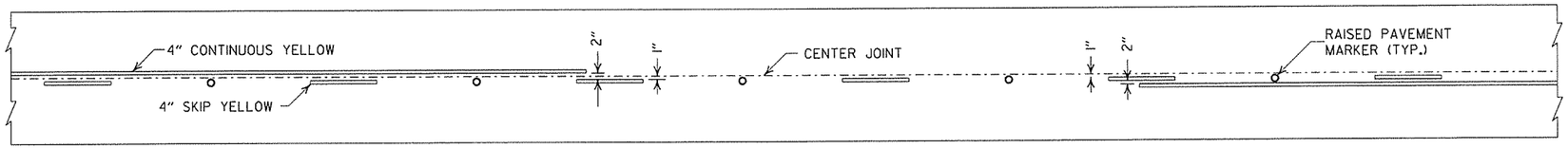



CONCRETE PAVEMENT

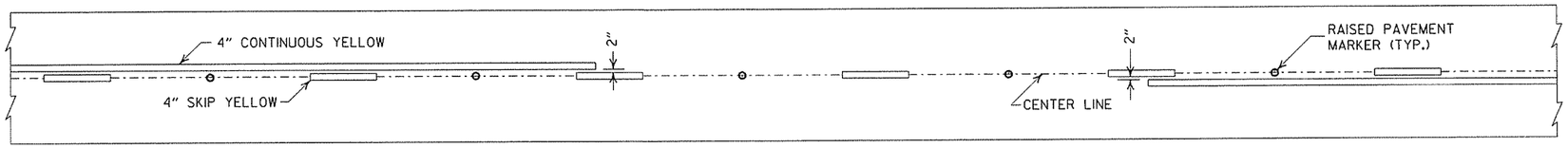



ASPHALT PAVEMENT

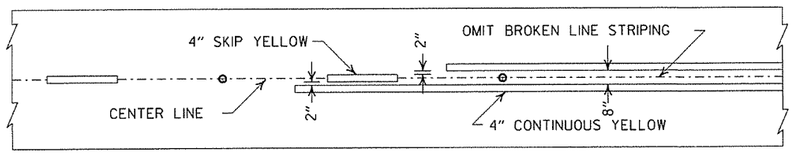
## BROKEN LINE STRIPING



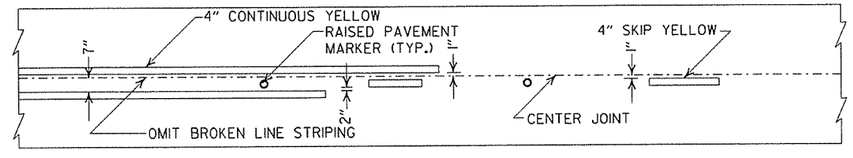

## SOLID LINE STRIPING ON CONCRETE PAVEMENT




## SOLID LINE STRIPING ON ASPHALT PAVEMENT




ASPHALT PAVEMENT




CONCRETE PAVEMENT

GENERAL NOTES:

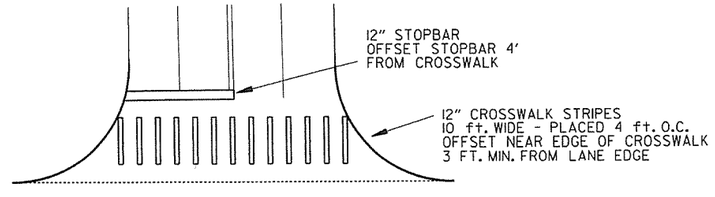
THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

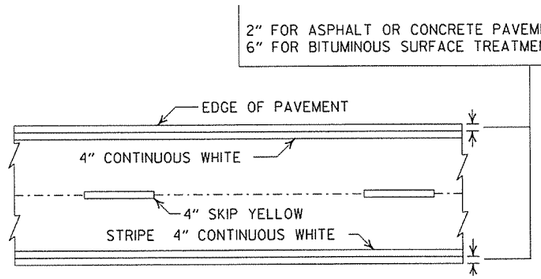
NOTE:

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.

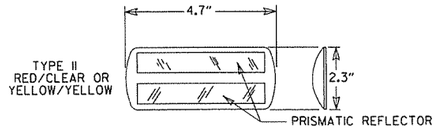
## STRIPING AT ADJACENT NO PASSING LANES



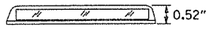

## CROSSWALK AND STOPBAR DETAILS




## 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

| DATE | REVISION | |
|---|---|---|
| 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 |
| | | FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

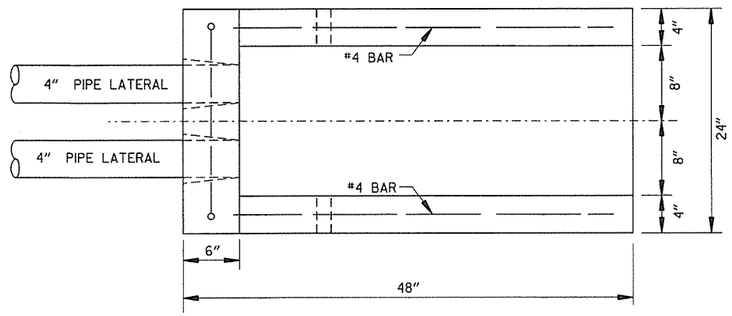
# PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

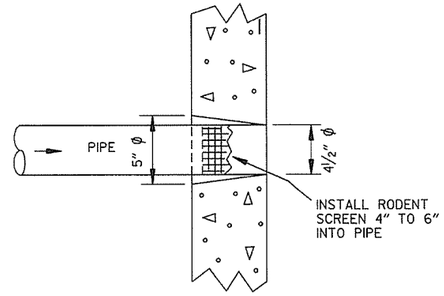
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

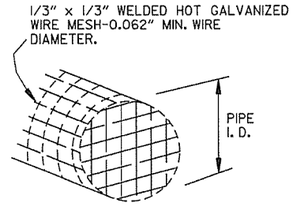
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



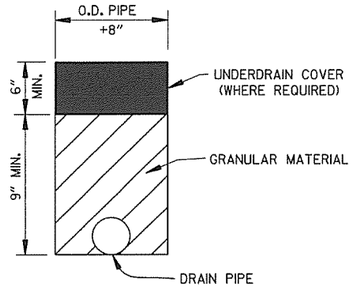

PLAN VIEW

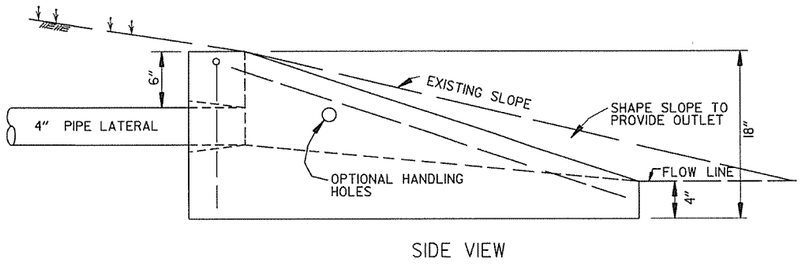



DETAIL OF HOLE FOR 4" PIPE

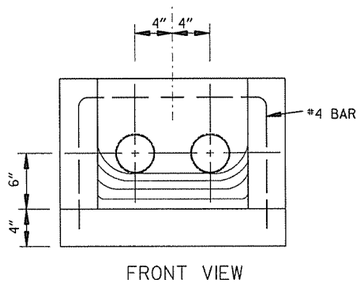



DETAIL OF RODENT SCREEN

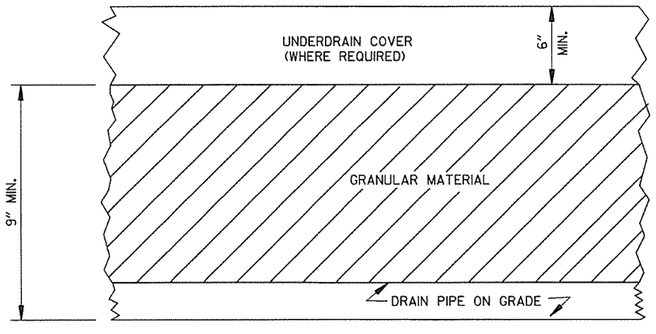



SIDE VIEW

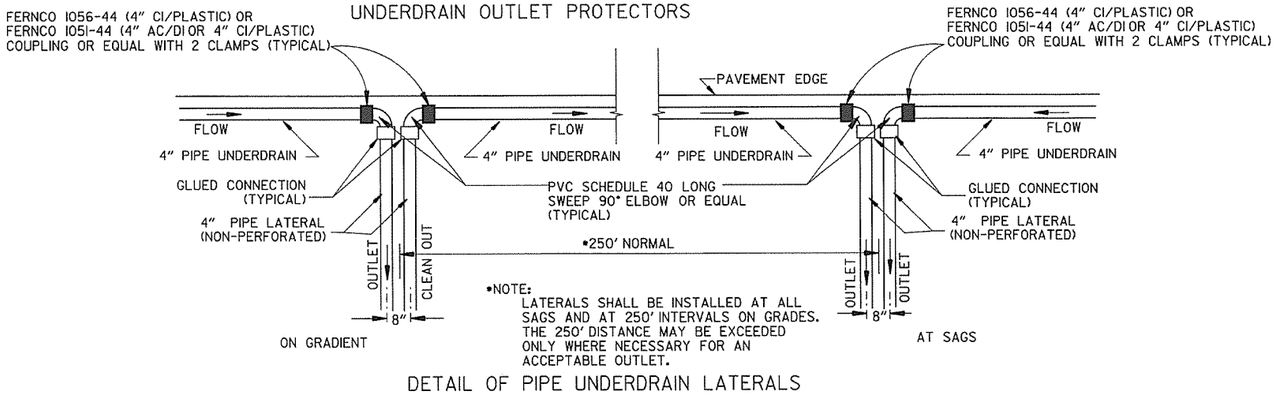



FRONT VIEW




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

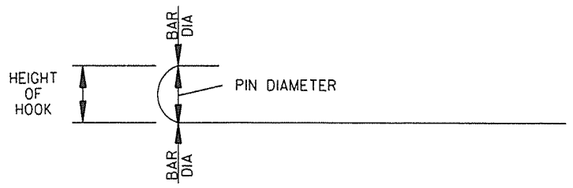
STANDARD DRAWING PU-1

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 | 2 1/4" | 4" |
| 4 | 3 " | 4 1/2" |
| 5 | 3 3/4" | 5" |
| 6 | 4 1/2" | 6" |
| 7 | 5 1/4" | 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 2 3/4 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

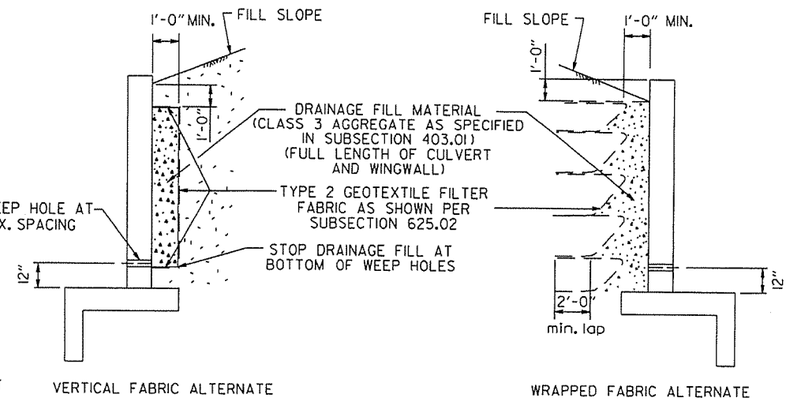
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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.

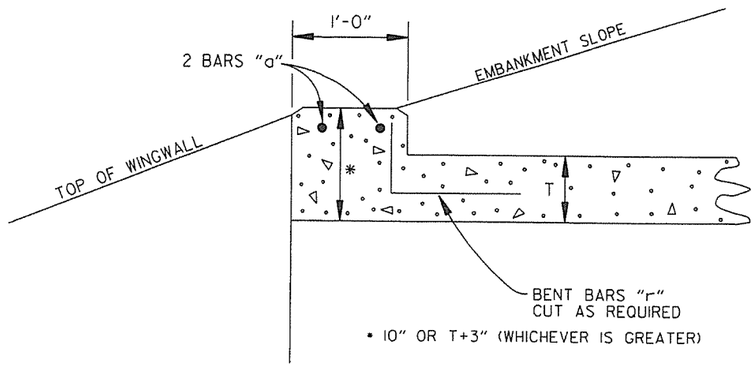
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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 1/2 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.

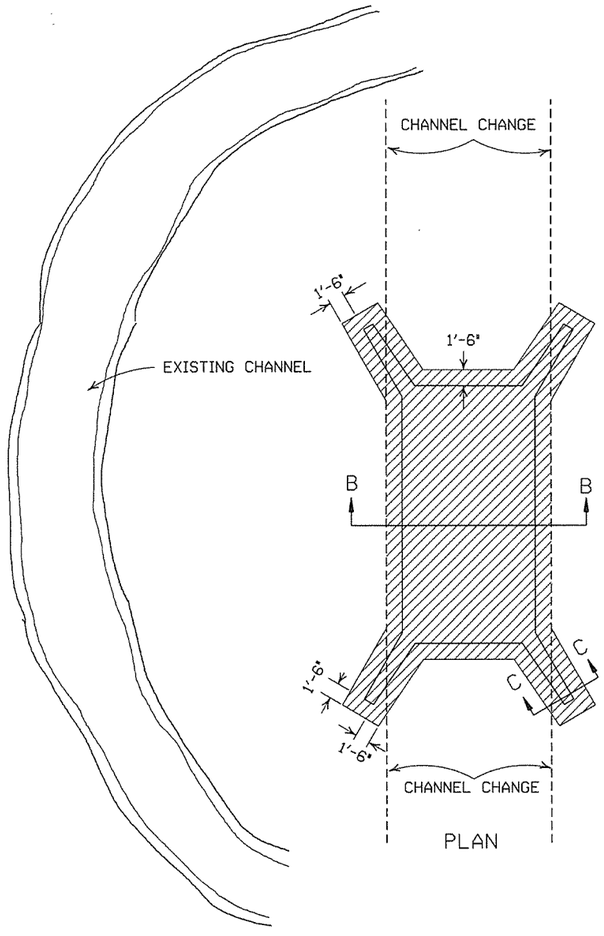
R.C. BOX CULVERT HEADWALL MODIFICATIONS

| 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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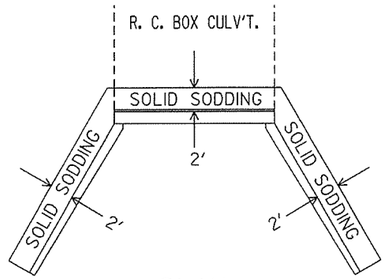
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1




PLAN

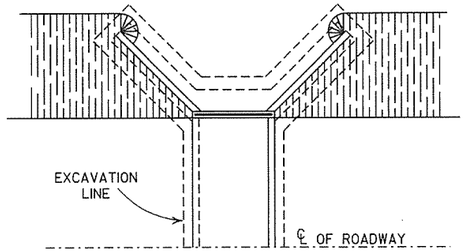
SOLID SODDING



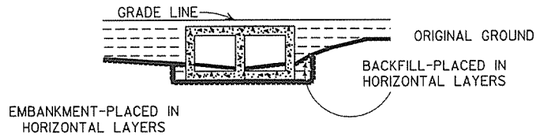

PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

NOTE: LENGTH MEASURED ALONG THE CENTER OF 2' STRIP OF SOLID SODDING.

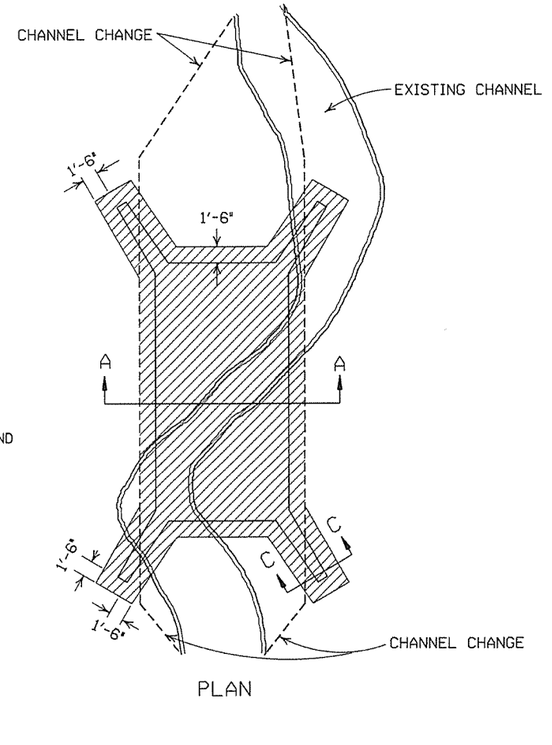



PLAN

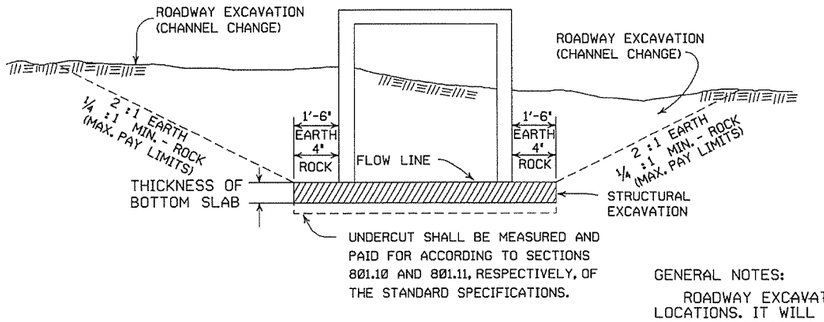



LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

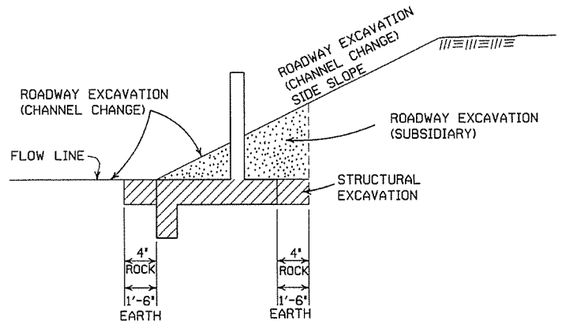



PLAN

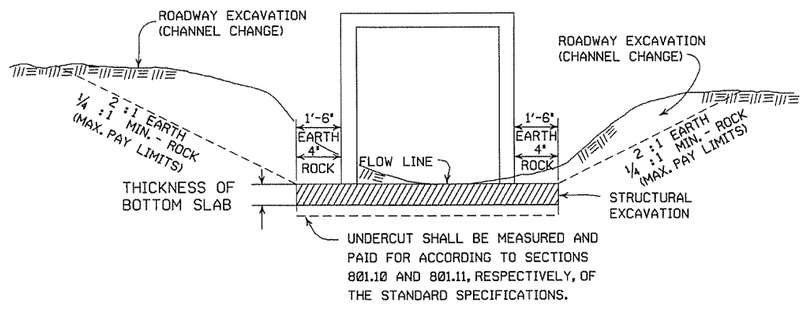



SECTION B-B

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.

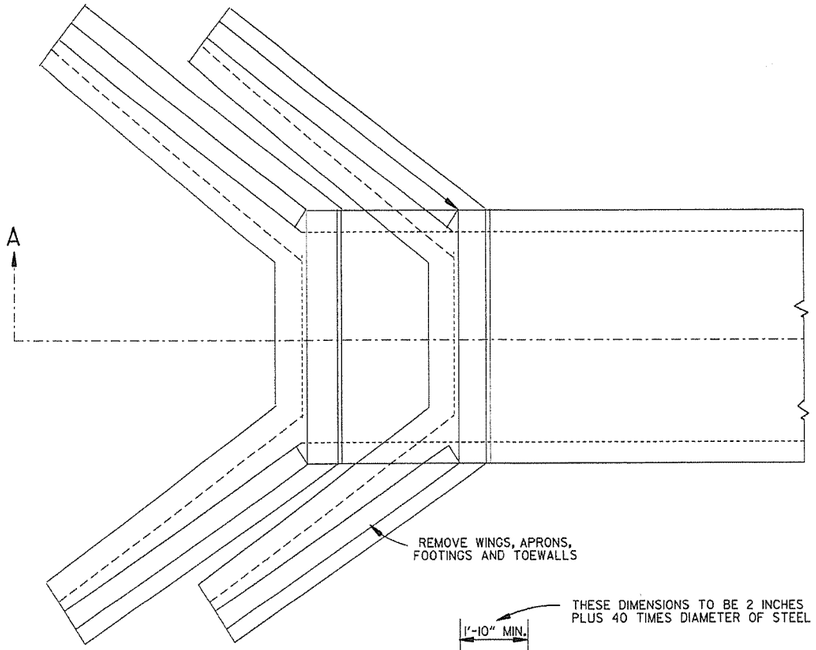
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

| 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 |

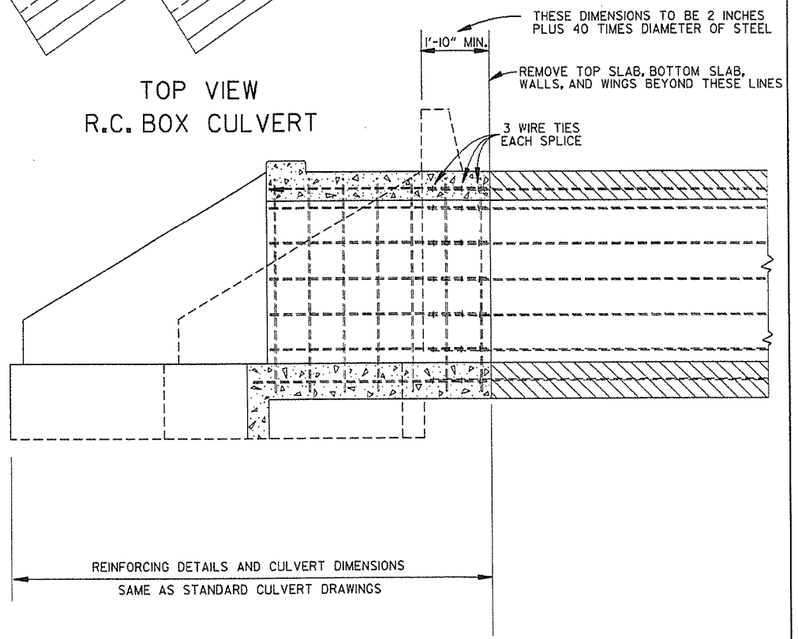
ARKANSAS STATE HIGHWAY COMMISSION

# EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS

STANDARD DRAWING RCB-2

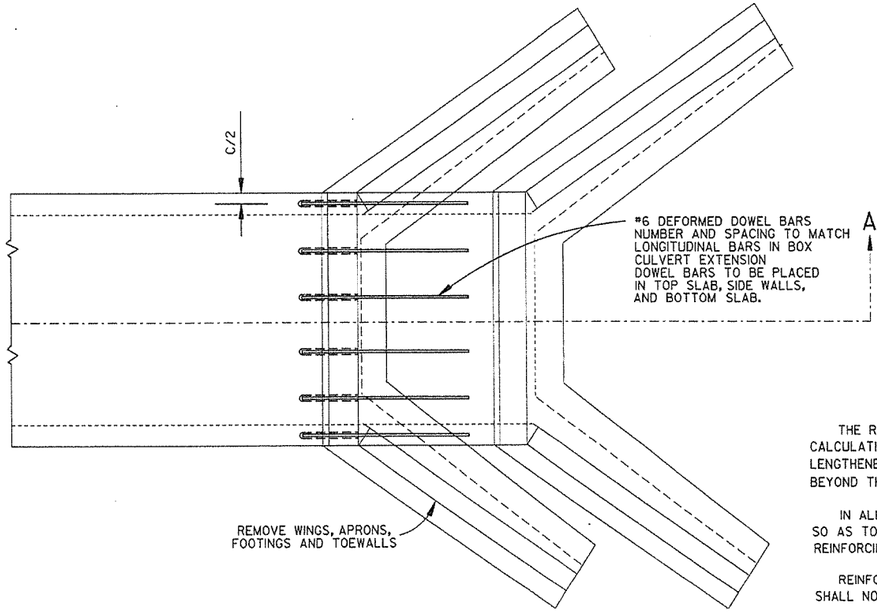



TOP VIEW
R.C. BOX CULVERT

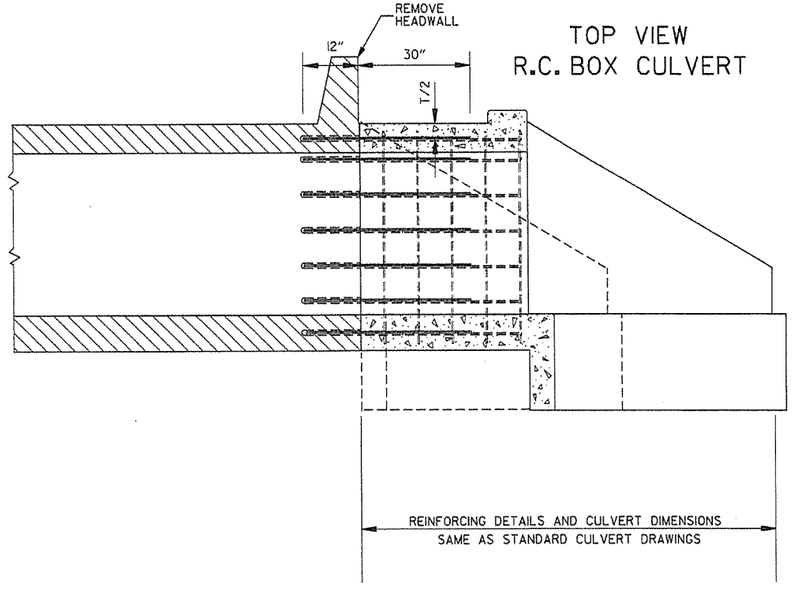



SECTION A-A

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

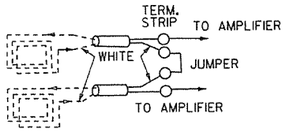
# STANDARD DRAWING RCB-3

# LOOP DETECTOR INSTALLATION AND TESTING

NOTES:

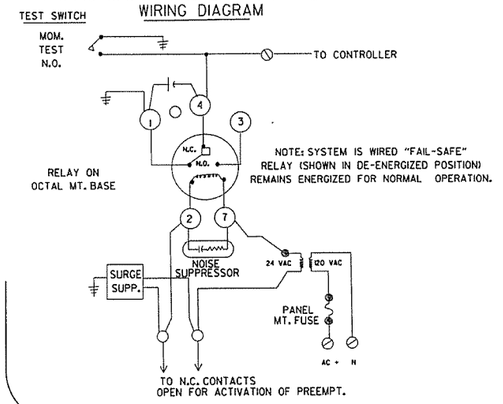
1. LOOPS WITH A PERIMETER GREATER THAN 40' SHALL HAVE TWO TURNS. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. QUADRUPOLE LOOPS SHALL BE TWO TURNS (2-4-2 CONFIGURATION) UNLESS OTHERWISE NOTED.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS WITHOUT SPLICES EXCEPT AT THE LOOP/FEEDER WIRE SPLICE AS SHOWN. SPLICE SHALL BE ROSIN SOLDERED AND WATERPROOFED WITH AN ACCEPTED SPLICE KIT. DRAIN WIRE SHALL BE GROUNDED IN CABINET AND INSULATED AT LOOP TO FEEDER SPLICE.
3. THE LOOP TO FEEDER SPLICE, FEEDER JACKET AND JACKET OF LOOP WIRE IN DUCT SHALL BE COMPLETELY SEALED AND WATERPROOFED.
4. CONTRACTOR MAY MAKE CONNECTIONS TO SIGNAL CABLE AND LOOP TO FEEDER CONNECTION AT TERMINAL STRIPS MOUNTED TO POLE INSIDE HAND HOLD COVER AS SHOWN IN DETAIL. TERMINALS MUST BE EASILY ACCESSIBLE, BUT PROTECTED AGAINST ACCIDENTAL CONTACT. CONNECTION OF POWER CARRYING CIRCUITS MUST BE SEPARATED FROM LOOP OR LOGIC CIRCUITS. ALL CONNECTIONS TO TERMINAL STRIPS SHALL UTILIZE SPADE LUGS OR AS APPROVED BY THE ENGINEER.
5. EACH LOOP SHALL HAVE A SEPARATE "FEEDER WIRE" UNLESS OTHERWISE NOTED. ALL FEEDER WIRES SHALL BE LABELED AS TO LOOP NUMBER AS DESIGNATED ON THE PLANS.
6. ALL LOOP WIRE ENTERING PULL BOXES SHALL BE ENCLOSED IN CONDUIT. EACH LOOP WIRE SHALL ENTER PULL BOX OR POLE BASE THROUGH A SEPARATE PIECE OF ONE INCH (1"Ø) CONDUIT.
7. LOOP WIRE FROM LOOP TO CONDUIT IS NOT TWISTED. LOOP WIRE IN THE CONDUIT MUST BE TWISTED TWO TO FIVE TURNS PER FOOT.
8. WARRANTY PERIOD FOR LOOPS SHALL NOT COMMENCE UNTIL TESTED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. CONTRACTOR SHALL PERFORM TEST AND PROVIDE A RECORD TO THE ENGINEER AS LISTED IN THE DETECTOR LOOP TESTING PROCEDURE.
9. UNLESS OTHERWISE APPROVED BY THE ENGINEER, BACKER ROD SHALL BE INSTALLED IN SHORT SECTIONS SPACED NOT MORE THAN 18" APART AND WEDGED INTO SLOT TO HOLD CABLE IN PLACE. CABLE SHALL BE TOTALLY ENCAPSULATED IN SEALER.
10. "HOT POUR" SEALER SHALL NOT BE ALLOWED WITH 705-LOOP WIRING IN DUCT.
11. WHERE UNDERGROUND SPLICES OF SIGNAL CABLE ARE REQUIRED, CONNECTIONS SHALL BE SOLDERED AND COMPLETELY WATERPROOFED TO THE SATISFACTION OF THE ENGINEER. WATERPROOFING SHALL EXTEND A MINIMUM OF TWO INCHES PAST THE SIGNAL CABLE JACKET AND SHALL COMPLETELY COVER ALL INDIVIDUAL CONDUCTORS OF THE SIGNAL CABLE. WATERPROOFING DOES NOT APPLY TO CONNECTIONS MADE IN POLE BASES.
12. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE. ONLY ONE NEUTRAL IS REQUIRED FOR PEDESTRIAN SIGNALS. A SEPARATE 5C (TYPICAL) IS PROVIDED FOR PEDESTRIAN PUSH BUTTONS.
13. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO CONTROLLER. CONTROLLER CABINET SHALL BE WIRED SUCH POWER TO LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS DURING FLASH OPERATION.

## SERIES CONNECTED LOOPS

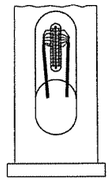



WIND LOOPS COUNTERCLOCKWISE; TAG WIRE EXITING SLOT AND TIE TO WHITE LEAD OF FEEDER WIRE; WHEN LOOPS ARE TIED TO SAME VEHICLE DETECTOR, SERIES CONNECT IN CABINET AS SHOWN.

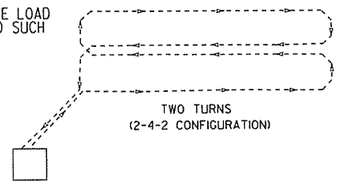
## TRAFFIC SIGNAL PRE-EMPTION INTERFACE WIRING DIAGRAM



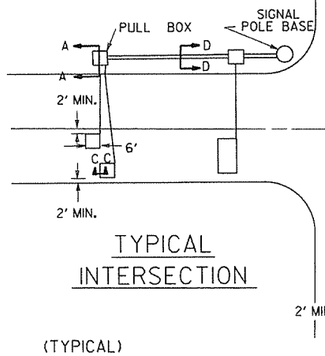

## HANDHOLE TERMINAL

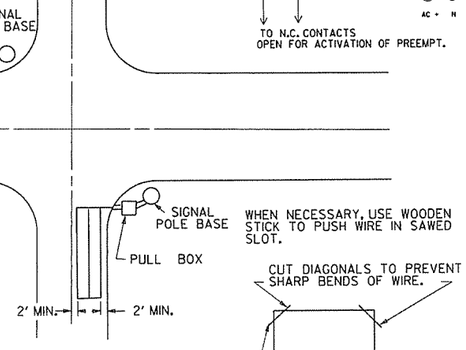


## QUADRUPOLE LOOP



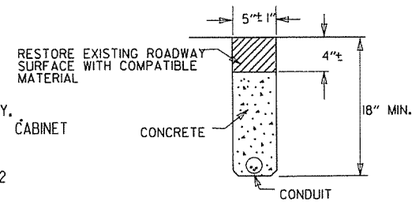

## TYPICAL INTERSECTION




## TRENCHING DETAIL

(FOR SAW CUT TRENCH IN ROADWAY)

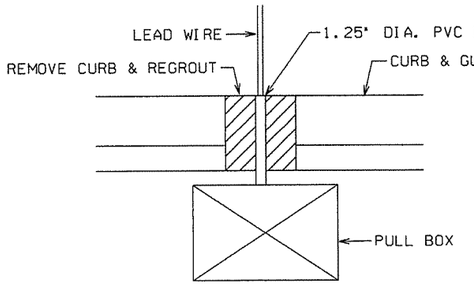


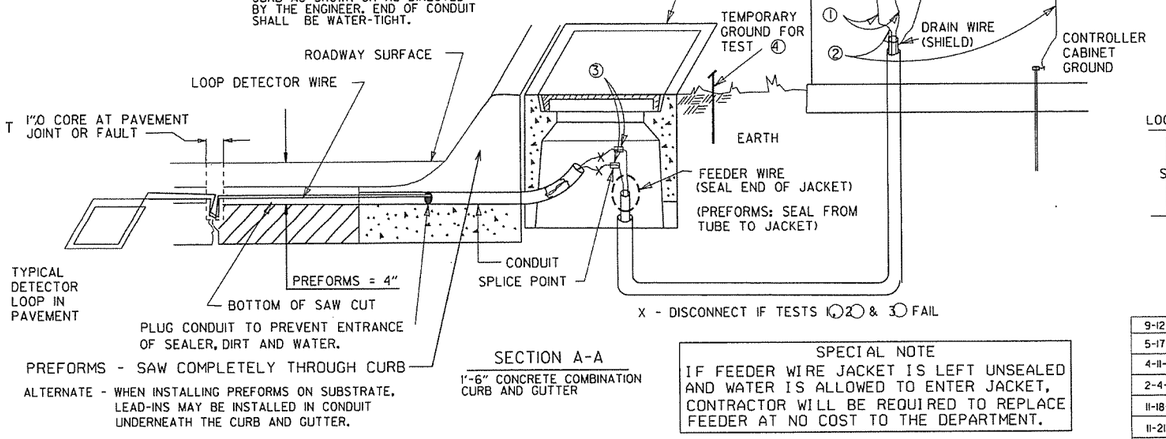

## TYPICAL PROCEDURE FOR DETECTOR LOOP TESTING

1. DISCONNECT AND TEST CONTINUITY (< 10 OHMS) IF CONTINUITY IS BAD, GO TO TEST 3
2. TEST INSULATION (@ 500 VOLT TEST > 10 MEG-OHM)

   IF TESTS 1& 2 ARE GOOD, NO FURTHER TESTING IS NECESSARY. RECORDED RESULTS CONSIST OF TESTS 1& 2 FROM CONTROL CABINET WITH FEEDER WIRE CONNECTED TO LOOP.
3. OPEN SPLICE (DO NOT BREAK CONNECTION) REPEAT TEST 1& 2 IF TEST 3 IS BAD, GO TO TEST 4
4. BREAK SPLICE, INSTALL JUMPER IN CABINET, REPEAT TESTS 1& 2 SEPARATELY FOR FEEDER AND FOR LOOP

FAILURES TYPICALLY RESULT FROM BROKEN WIRE IN PAVEMENT, FAULTY INSULATION OF LOOP OR FEEDER WIRE, OR POORLY INSULATED SPLICE CONNECTION.

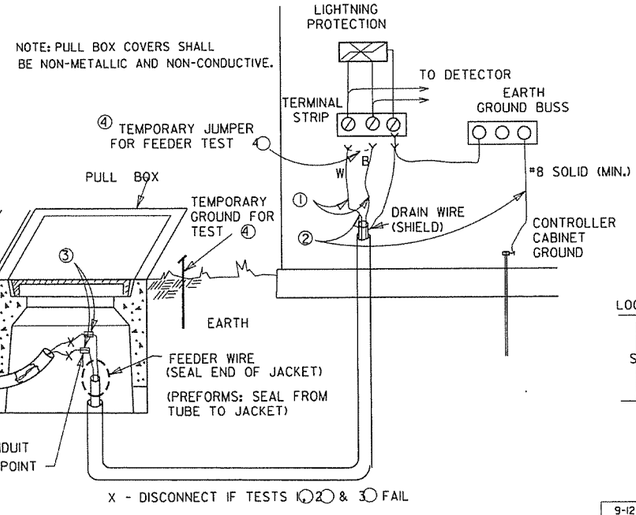



## SECTION A-A

1'-6" CONCRETE COMBINATION CURB AND GUTTER

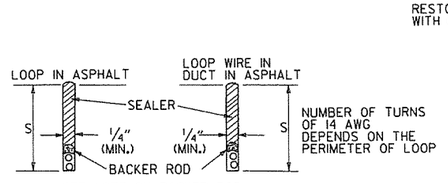
(TYPICAL)




## SPECIAL NOTE

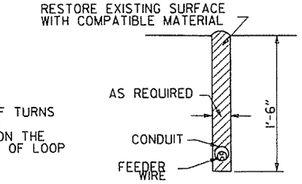
IF FEEDER WIRE JACKET IS LEFT UNSEALED AND WATER IS ALLOWED TO ENTER JACKET, CONTRACTOR WILL BE REQUIRED TO REPLACE FEEDER AT NO COST TO THE DEPARTMENT.

## TYPICAL SECTIONS FOR PULSE AND PRESENCE LOOP DETECTORS




SECTION C-C

S=2 1/2" IN ASPHALT
S=1 1/2" IN CONCRETE




SECTION D-D

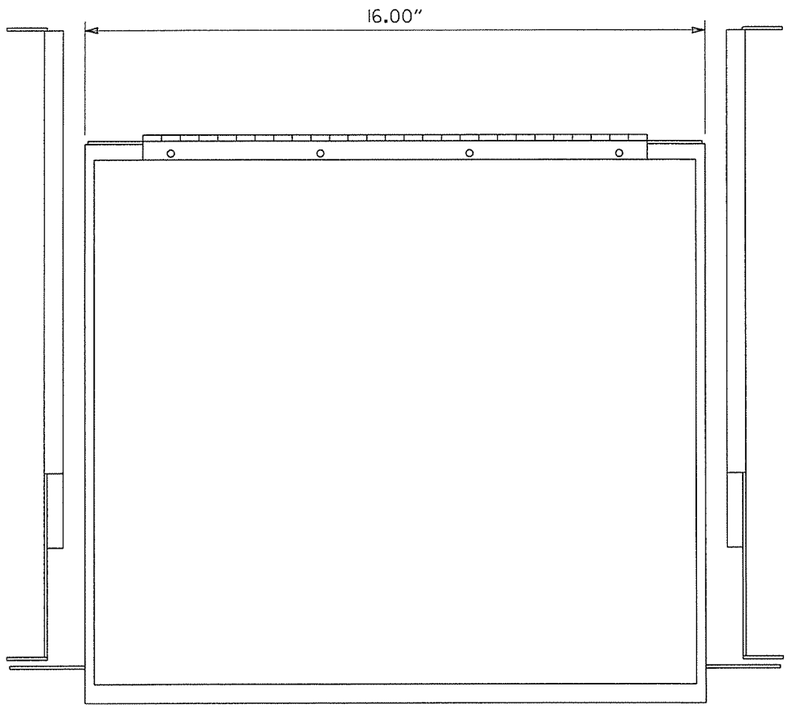
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|---|---|---|
| 9-12-13 | ISSUED AS STANDARD DRAWING | |
| 5-17-01 | REVISED | |
| 4-11-01 | REVISED | |
| 2-4-00 | REVISED PRE-EMPTION TEST SWITCH | |
| 11-18-98 | REVISED NOTES | |
| 11-21-95 | ISSUED | |

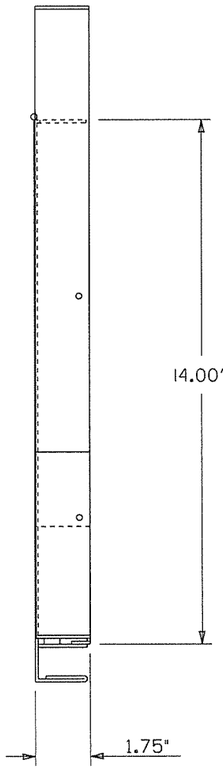
ARKANSAS STATE HIGHWAY COMMISSION

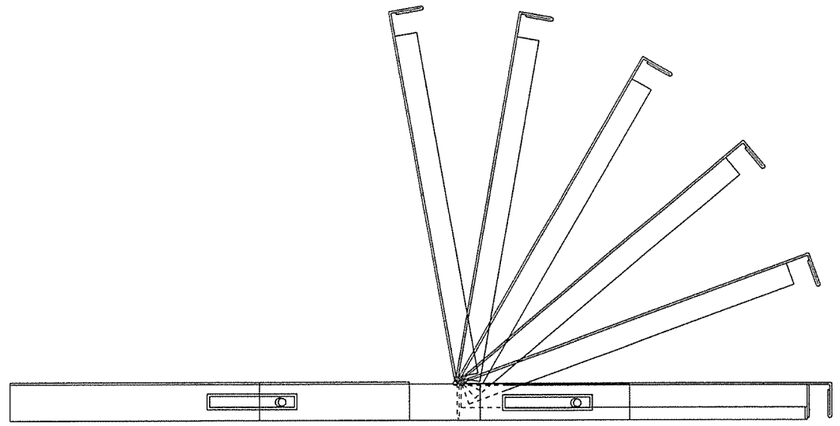
LOOP DETECTOR INSTALLATION

STANDARD DRAWING SD-4

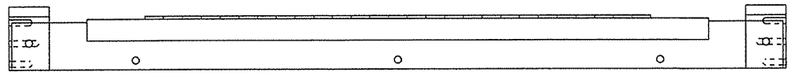
# DRAWER PLAN VIEW



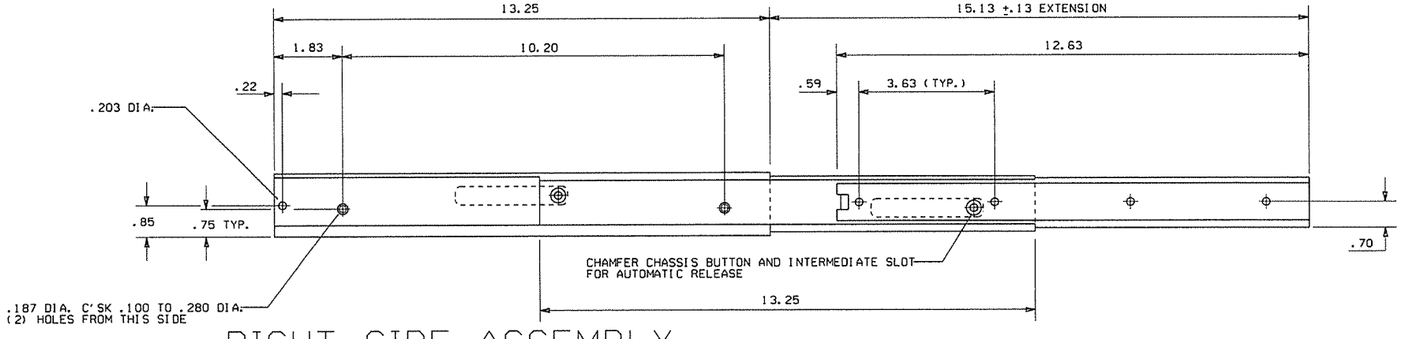



NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW




RIGHT SIDE ASSEMBLY

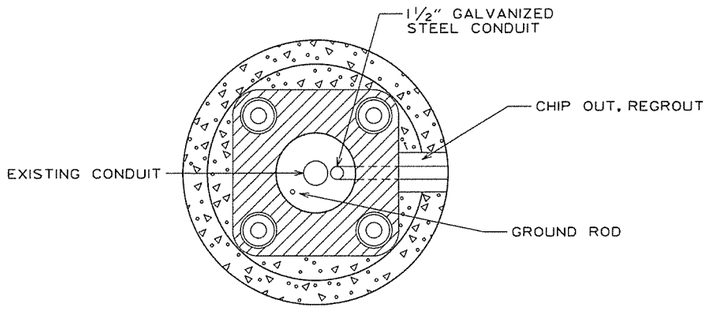
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| 9-12-13 | ISSUED AS STANDARD DRAWING | |
| 6-15-05 | ISSUED | |
| DATE | REVISION | DATE FILM |

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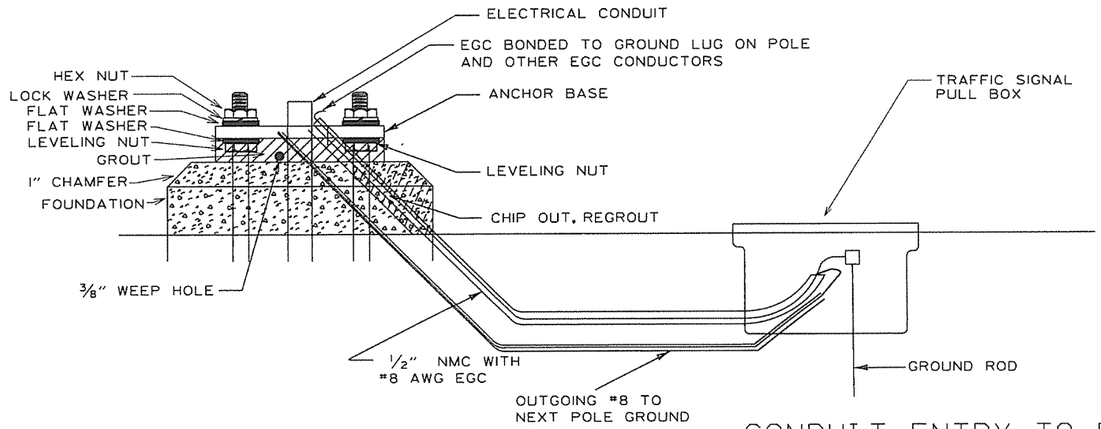
CONTROLLER CABINET
UTILITY DRAWER

STANDARD DRAWING SD-5

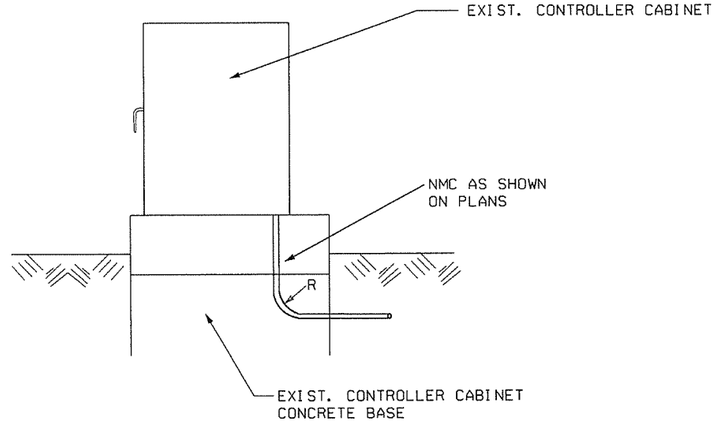
## CONDUIT ENTRY TO EXISTING POLE BASE



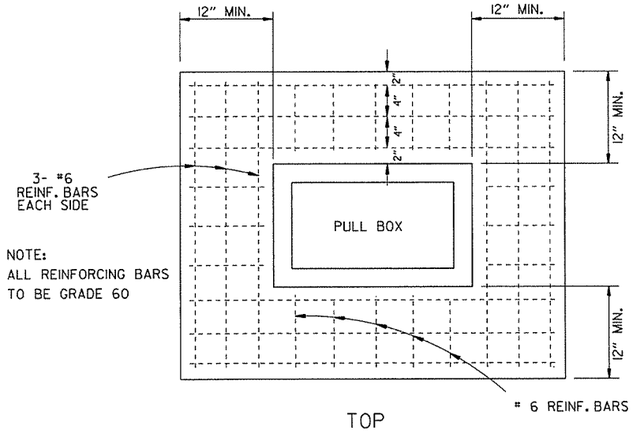

## ANCHOR BASE




## CONDUIT ENTRY TO EXISTING CONTROLLER CABINET

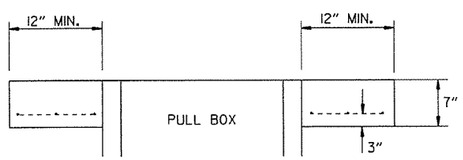



NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



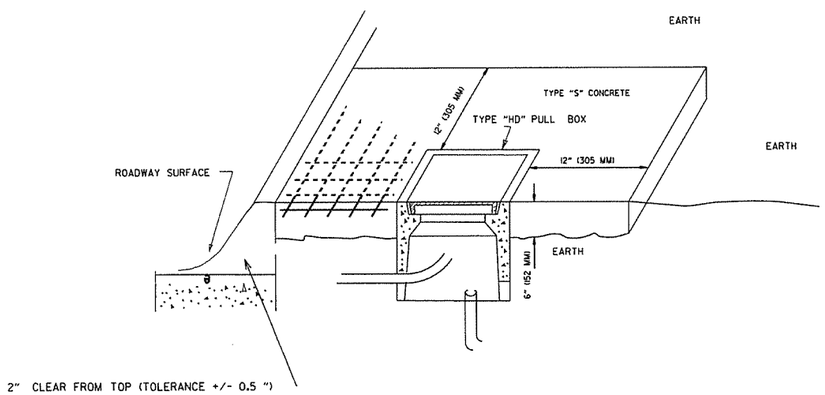

NOTE:
ALL REINFORCING BARS TO BE GRADE 60

TOP




ELEVATION

## TYPE "HD" CONCRETE PULL BOX DETAIL




NOTE: ALL TYPE 1 AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 6" (152 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD PULL BOX. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S." THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE PULL BOX IS REQUIRED IN CONCRETE.

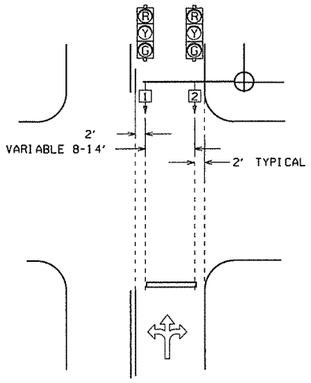
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|---|---|---|
| 9-12-13 | ISSUED AS STANDARD DRAWING | |
| 5-21-09 | REVISED GROUNDING | |
| 7-31-08 | ADDED & REVISED CONDUIT ENTRY | |
| 6-23-04 | REVISED CLEARANCE AT CURB ENTRY | |
| 1-4-02 | ADDED REINFORCING TO BOX APRON | |
| 7-2-01 | REVISED | |
| 12-27-99 | REVISED NOTES | |
| 11-18-98 | ISSUED | |

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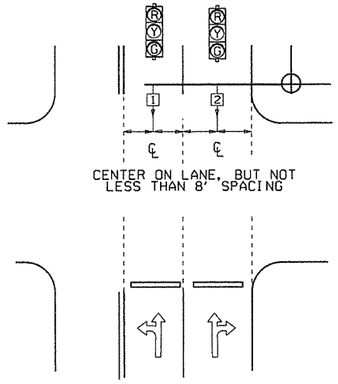
HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6

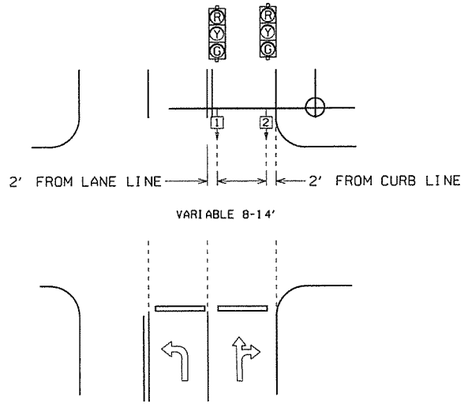
( A )



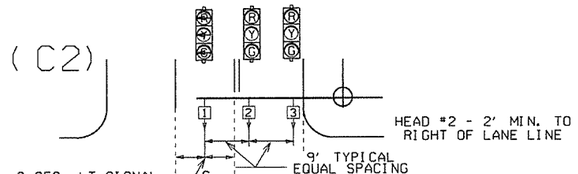

( B )



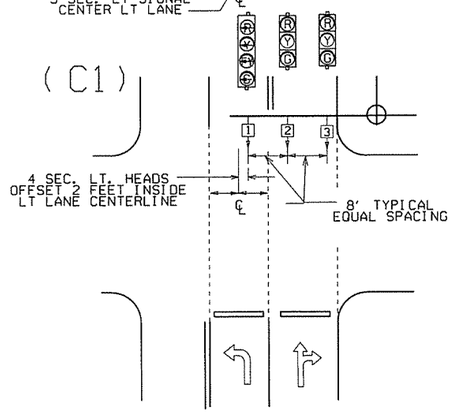

( C )



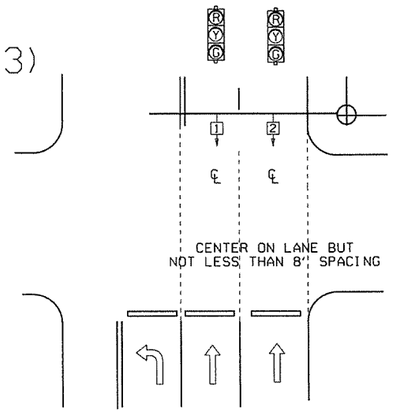

( C2 )



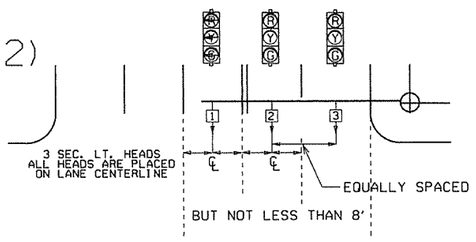

( C1 )



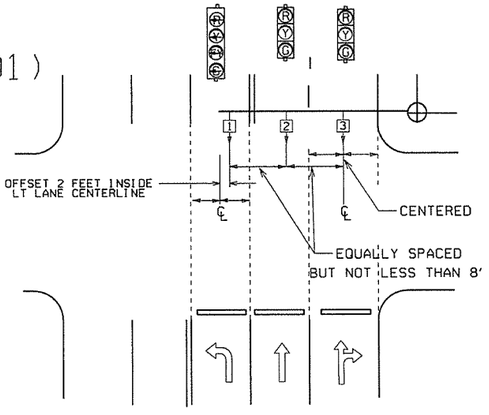

( C3 )




( D2 )

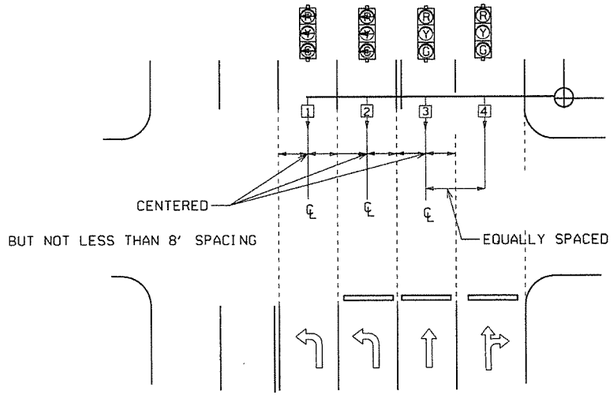



( D1 )




NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.

( E )




℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION 'PROTECTED/PERMISSIVE' LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION 'PROTECTED' LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-1 OF 2009 MUTCD.

| | | |
|---|---|---|
| | | |
| 9-12-13 | ISSUED AS STANDARD DRAWING | |
| 3-11-10 | 2009 MUTCD | |
| 12-9-99 | ISSUED | |
| DATE | REVISION | DATE FILM |

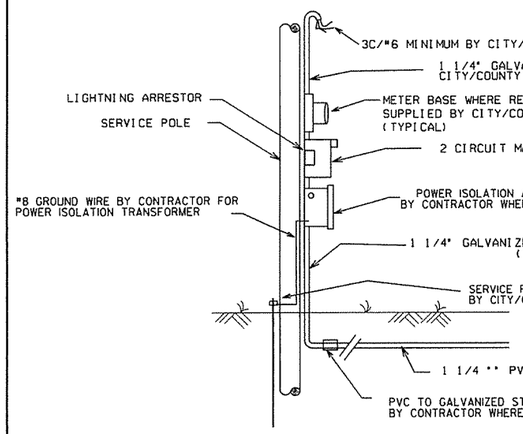
ARKANSAS STATE HIGHWAY COMMISSION

# SIGNAL HEAD PLACEMENT

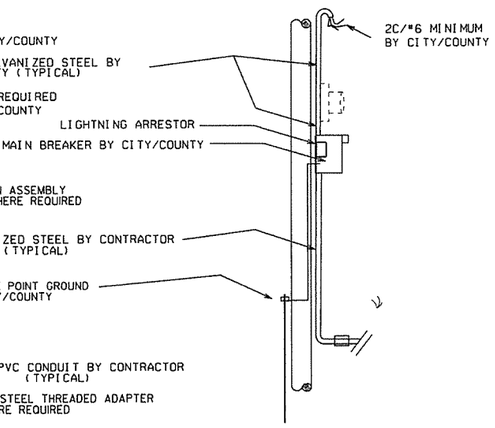
STANDARD DRAWING SD-8

# MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

WITH POWER ISOLATION ASSEMBLY

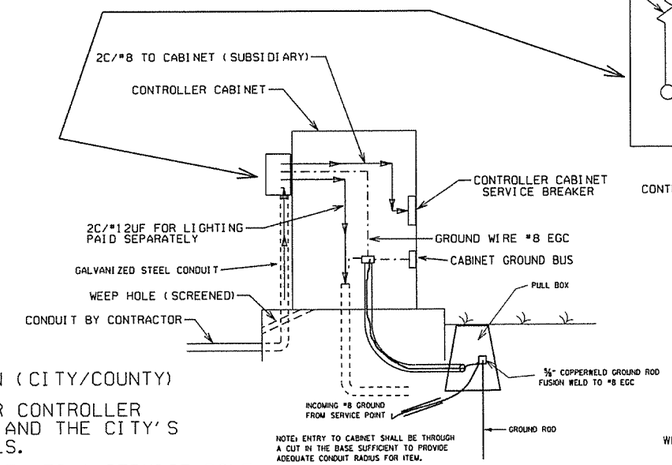


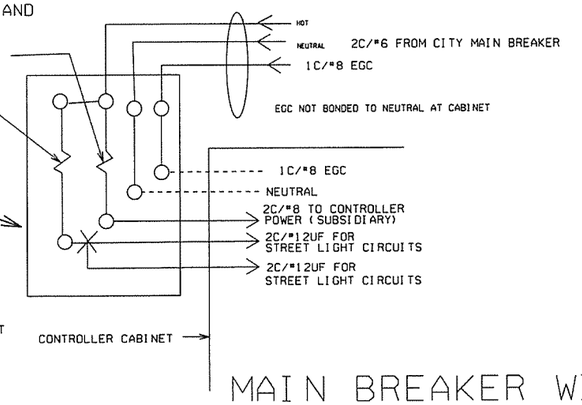

WITHOUT POWER ISOLATION ASSEMBLY




GROUND ROD-A 10' X ⅝" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND ½" NMC SHALL BE INCLUDED IN ITEM 701. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)




## MAIN BREAKER WIRING (TYPICAL)

NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY)

ELECTRICAL SERVICE TYPICALLY FALLS INTO TWO CATEGORIES: MAIN BREAKER NEAR CONTROLLER CABINET; AND MAIN BREAKER NOT NEAR CONTROLLER CABINET. THE CONTRACTOR'S AND THE CITY'S OR COUNTY'S RESPONSIBILITY VARIES ACCORDINGLY AS INDICATED ON THESE DETAILS.

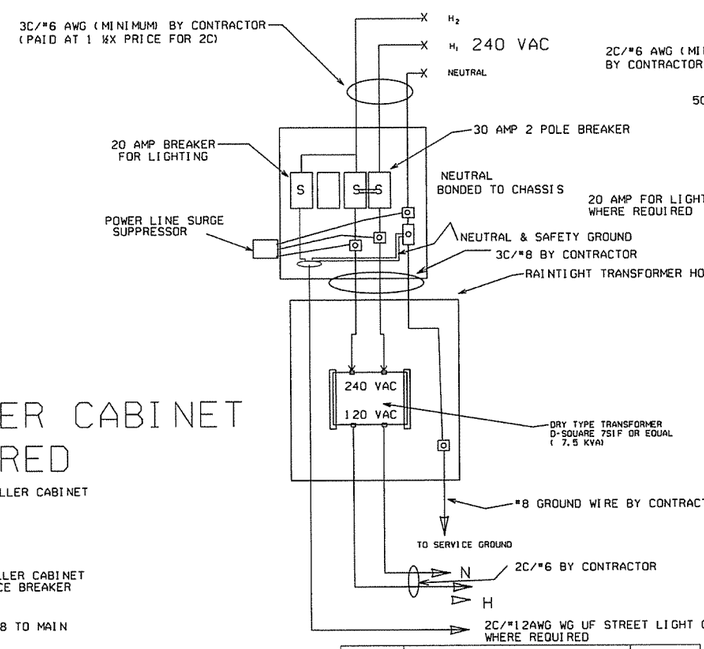
1. ALL SITUATIONS: ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, LIGHTNING ARRESTOR, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER LOOP IF REQUIRED BY LOCAL UTILITY, ELECTRICAL CONDUCTORS AND WEATHERHEAD. WHERE STREET LIGHTING IS INCLUDED AS PART OF SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2C/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT SEPARATE FROM THE CIRCUIT SERVING TRAFFIC SIGNAL. SERVICE WIRE AND WIRING FROM THE CONTROLLER TO MAIN BREAKER IS PROVIDED BY THE CONTRACTOR AS A PART OF THIS CONTRACT. WIRE AND WIRING FROM MAIN BREAKER, AND CONNECTION TO THE UTILITY IS THE RESPONSIBILITY OF THE CITY/COUNTY.

2. MAIN BREAKER NOT NEAR CONTROLLER CABINET: THE MAIN BREAKER ASSEMBLY, GALVANIZED STEEL CONDUIT, WEATHERHEAD AND WIRE ABOVE MAIN BREAKER AND CONNECTION TO THE UTILITY SHALL BE PROVIDED BY CITY/COUNTY. CONTRACTOR SHALL PROVIDE AS PART OF CONTRACT SECONDARY BREAKER, CONDUIT, WIRE AND WIRING TO THE MAIN BREAKER.

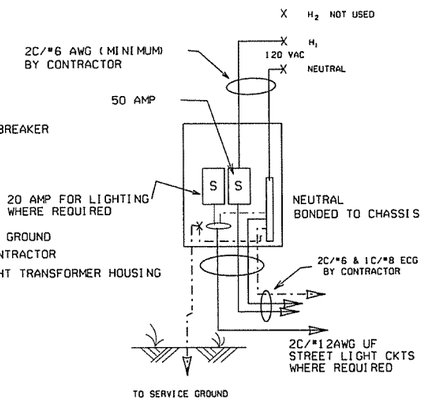
3. MAIN BREAKER NEAR CONTROLLER CABINET: ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER LOOP IS REQUIRED, METER BASE AND HARDWARE IS PROVIDED BY THE CITY/COUNTY AND INSTALLED BY THE CONTRACTOR.

SERVICE GROUND IS TYPICALLY TIED TO NEUTRAL AT THE MAIN BREAKER. AS SUCH, CONTROLLER GROUND IS NOT TIED TO NEUTRAL AT SECONDARY BREAKER OR IN CONTROLLER CABINET.

WITH POWER ISOLATION ASSEMBLY
4 CIRCUIT MAIN BREAKER

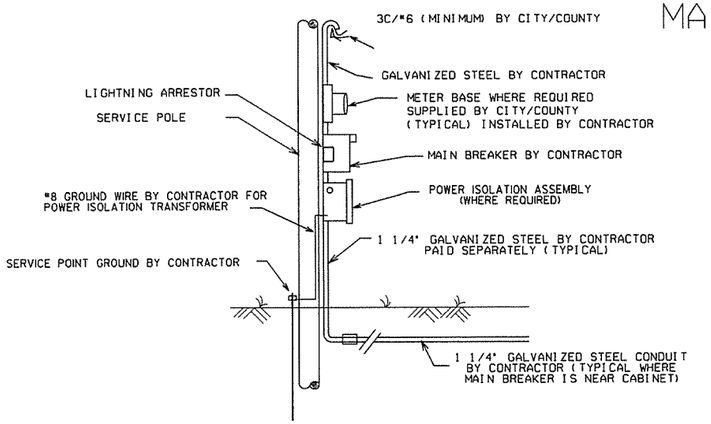


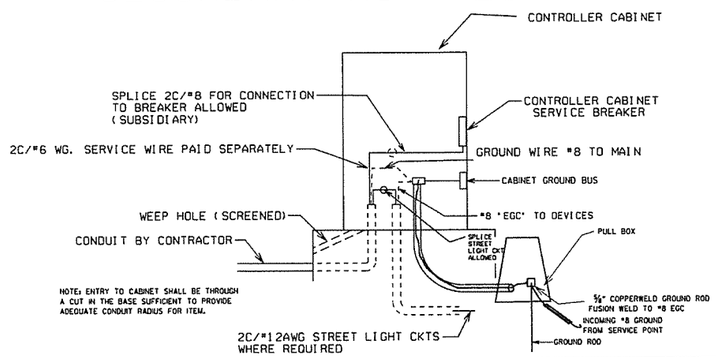

WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER




NOTE: ELECTRICAL GROUND CONDUCTOR (EGC) ADDED 3-3-2003, CONSISTING OF A 1C/#8AWG CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

## MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED




| DATE | REVISION | DATE FILM |
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| | | |
| | | |
| 9-12-13 | ISSUED AS STANDARD DRAWING | |
| 4-18-13 | ADDED LIGHTNING ARRESTOR | |
| 5-21-09 | REVISED GROUNDING | |
| 7-31-08 | REVISED GROUNDING | |
| 3-3-03 | ADDED EGC NOTE | |
| 9-26-01 | REVISED | |
| 12-27-99 | REVISED | |
| 7-28-99 | REVISED | |
| 2-5-99 | ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

SERVICE POINT

STANDARD DRAWING SD-9

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS: EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12' TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12' TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209. ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:

1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS: DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL " 2' X 0" X 2' " 6", 20 LB. REMAINING HEADS SPACED A 8 FT. " 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.,
2 HEADS FOR ARMS 10 TO 16 FT., INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) " VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

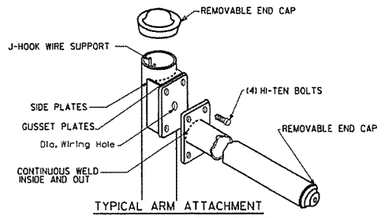
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES, MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

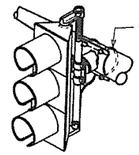
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

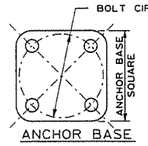
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



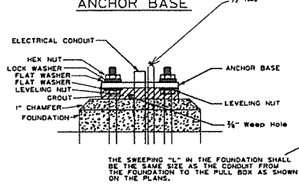

TYPICAL ARM ATTACHMENT

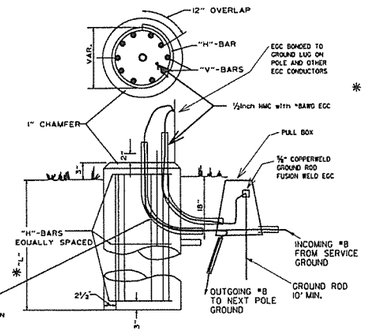



NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.




ANCHOR BASE



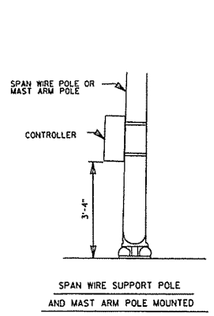




THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

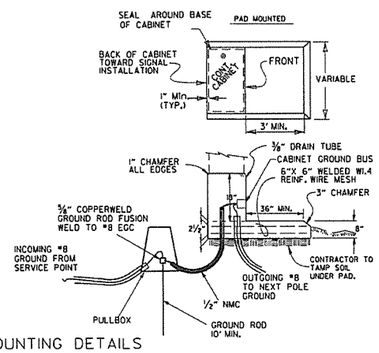
## TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

| ARM LENGTH | FDN. DIAMETER | DEPTH "L" * | STEEL VERT. | STEEL HORZ. | STEEL O/C. |
|---|---|---|---|---|---|
| PED | 30" | 7'-0" | 12-#7 (6'-6") | 10-#4 | 8.44" |
| 2' to 12' | 30" | 10'-6" | 12-#7 (10'-0") | 15-#4 | 8.42" |
| over 12' to 20' | 30" | 11'-6" | 12-#7 (11'-0") | 16-#4 | 8.66" |
| over 20' to 35' | 36" | 12'-6" | 13-#8 (12'-0") | 17-#4 | 8.88" |
| over 35' to 50' | 36" | 13'-6" | 13-#8 (13'-0") | 19-#4 | 8.56" |
| over 50' to 72' | 42" | 14'-6" | 18-#8 (14'-0") | 20-#4 | 8.74" |
| Twins to 20' | 30" | 16'-0" | 12-#6 (15'-6") | 22-#4 | 8.76" |
| Twins over 20' to 44' | 36" | 16'-0" | 13-#8 (15'-6") | 22-#4 | 8.76" |
| Twins over 44' to 50' | 42" | 16'-0" | 18-#8 (15'-6") | 22-#4 | 8.76" |
| Twins over 50' to 72' | 42" | 16'-6" | 18-#8 (16'-0") | 23-#4 | 8.64" |




SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED




## CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

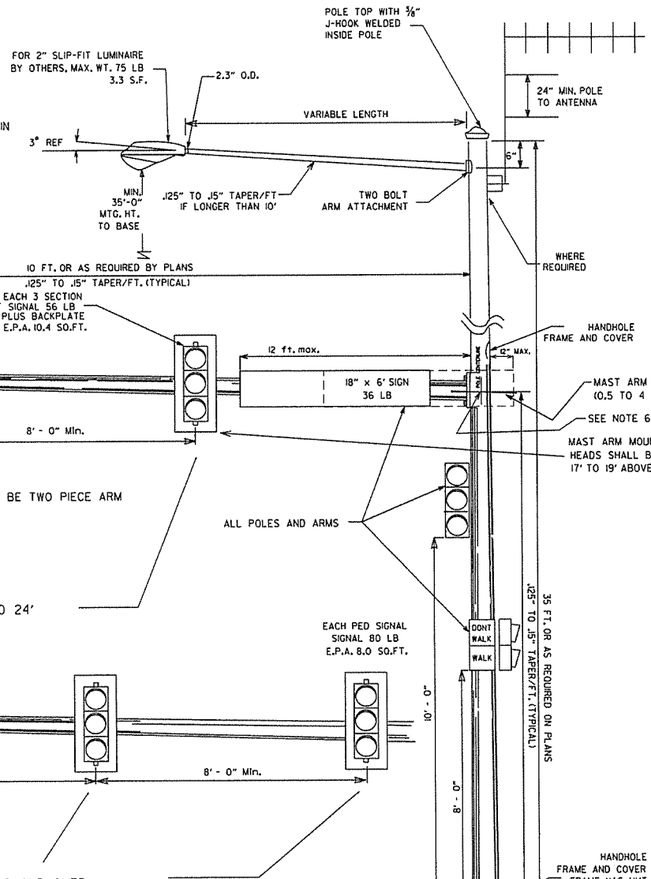
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

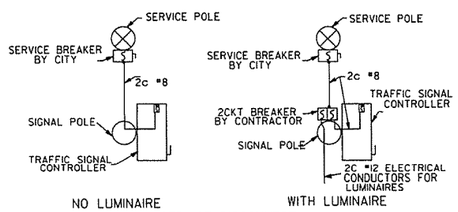
SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

* WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

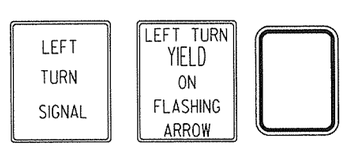
** IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

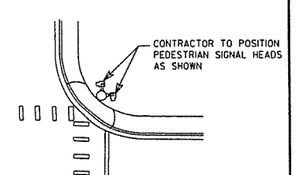
TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.




SERVICE DISCONNECT




PEDESTRIAN SIGNAL HEADS

| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| 2-27-14 | REVISED NOTES. | |
| 9-12-13 | ISSUED AS STANDARD DRAWING | |
| 7-21-11 | REVISED VMD, SIGNAL HEADS | |
| 5-21-09 | REVISED GROUNDING | |
| 7-31-08 | REVISED GROUNDING | |
| 4-25-08 | ADDED VIBRATORY MITIGATION DEVICE & NOTES | |
| 4-18-08 | REVISED AASHTO NOTES | |
| 4-17-08 | REVISED TO 2001 AASHTO STANDARDS | |
| 10-12-04 | REVISED CABINET ORIENTATION | |
| 6-23-04 | REVISED | |
| 5-18-04 | REV. NOTE 3/AASHTO REQUIREMENTS | |
| 6-11-01 | REV. NOTES & POLE MAST ARM SLOPE | |
| 4-18-01 | REVISED POLE TAPERS | |
| 4-25-00 | REV. NOTES & SIGNAL HEAD PLACEMENT | |
| 11-22-99 | REVISED FOUNDATION DETAILS | |
| 11-17-98 | REVISED DETAILS AND NOTES | |
| 11-21-95 | ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

# STEEL POLE WITH MAST ARM

STANDARD DRAWING SD-11

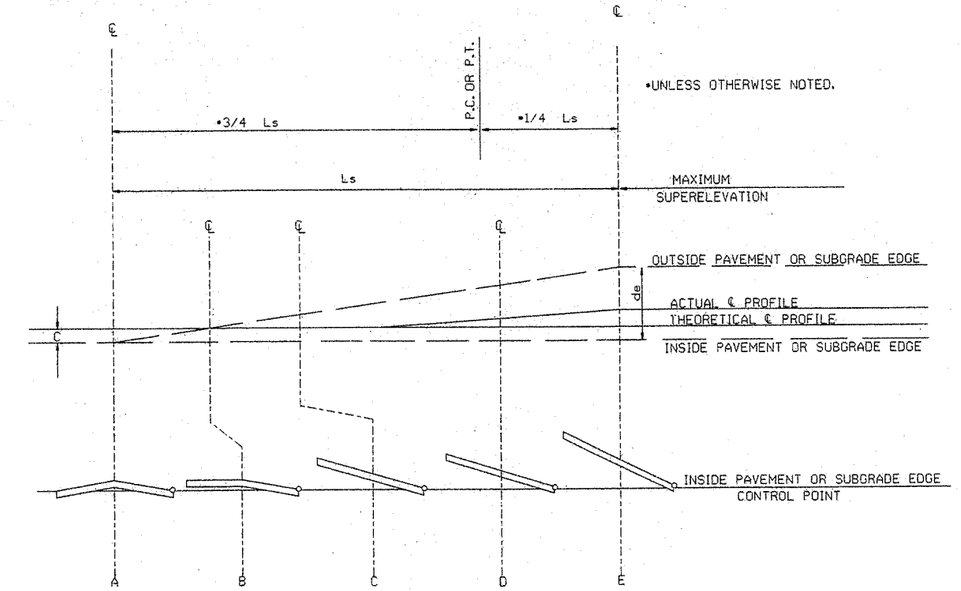
## SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

| 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. | | | 0.022 | | | 0.023 | | | N.C. | | |
| 0° 45′ | N.C. | | | N.C. | | | N.C. | | | 0.026 | | | 0.030 | | | 0.028 | | |
| 1° 00′ | N.C. | | | N.C. | | | R.C. | | | 0.032 | | | 0.037 | | | 0.037 | 275 | 300 |
| 1° 15′ | N.C. | | | R.C. | | | 0.021 | | | 0.037 | | | 0.043 | | | 0.046 | | |
| 1° 30′ | N.C. | | | 0.021 | | | 0.026 | | | 0.043 | | | 0.049 | | | 0.054 | | |
| 1° 45′ | N.C. | | | 0.025 | | | 0.031 | 200 | | 0.048 | | | 0.055 | | | 0.062 | | |
| 2° 00′ | R.C. | | | 0.028 | 175 | | 0.036 | | | 0.053 | 225 | | 0.061 | 250 | | 0.070 | | |
| 2° 15′ | R.C. | | | 0.031 | | | 0.040 | | | 0.058 | | | 0.067 | | | 0.078 | 300 | |
| 2° 30′ | 0.021 | | | 0.034 | | | 0.045 | | 250 | 0.063 | | | 0.072 | | | 0.085 | 315 | 350 |
| 2° 45′ | 0.023 | | | 0.037 | | | 0.049 | | | 0.067 | 230 | | 0.077 | 260 | | 0.091 | 335 | |
| 3° 00′ | 0.025 | | | 0.040 | | | 0.053 | | | 0.072 | 245 | | 0.082 | 275 | | 0.096 | 350 | 400 |
| 3° 15′ | 0.027 | 150 | | 0.043 | | 200 | 0.057 | | | 0.076 | 255 | | 0.086 | 285 | | 0.098 | 360 | |
| 3° 30′ | 0.029 | | | 0.046 | | | 0.061 | | | 0.080 | 265 | | 0.090 | 295 | | 0.100 | 360 | |
| 3° 45′ | 0.031 | | | 0.049 | | | 0.065 | 205 | | 0.083 | 270 | | 0.093 | 305 | 350 | | | |
| 4° 00′ | 0.033 | | | 0.051 | | | 0.069 | 215 | | 0.087 | 280 | | 0.096 | 315 | | | | |
| 4° 30′ | 0.037 | | | 0.056 | | | 0.072 | 225 | | 0.091 | 295 | 350 | 0.098 | 320 | | | | |
| 5° 00′ | 0.040 | | | 0.061 | | | 0.078 | 240 | | 0.094 | 300 | | | | | | | |
| 5° 30′ | 0.043 | | | 0.066 | 185 | | 0.083 | 250 | | 0.096 | 305 | | | | | | | |
| 6° 00′ | 0.046 | | | 0.070 | 190 | | 0.088 | 260 | | 0.100 | 315 | | | | | | | |
| 6° 30′ | 0.050 | | | 0.074 | 200 | | 0.092 | 270 | 300 | | | | | | | | | |
| 7° 00′ | 0.053 | | | 0.078 | 210 | | 0.095 | 280 | | | | | | | | | | |
| 7° 30′ | 0.056 | | | 0.081 | 215 | | 0.098 | 285 | | | | | | | | | | |
| 8° 00′ | 0.058 | | | 0.084 | 220 | | 0.099 | 290 | | | | | | | | | | |
| 8° 30′ | 0.061 | | | 0.087 | 225 | 250 | 0.100 | 290 | | | | | | | | | | |
| 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.)




•UNLESS OTHERWISE NOTED.

STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

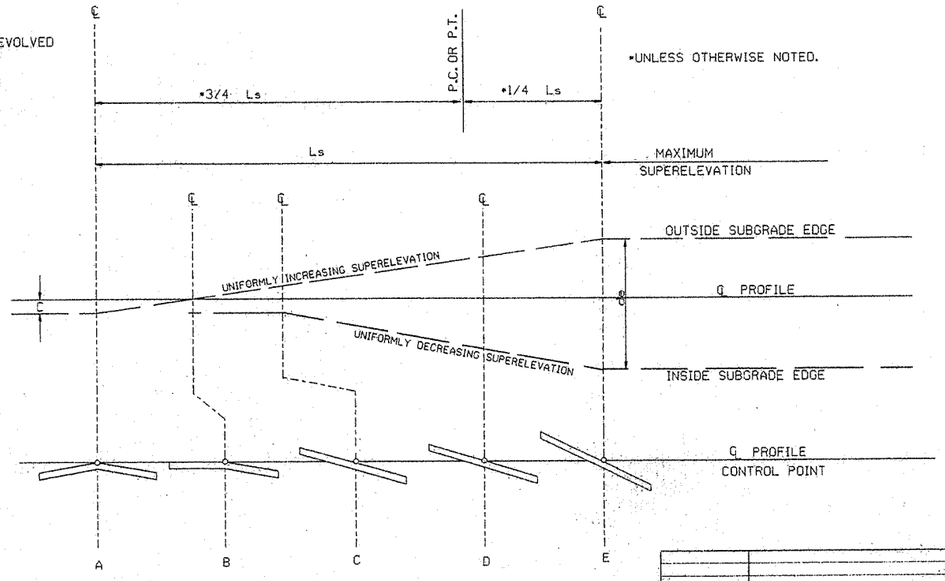
GENERAL NOTES

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.




•UNLESS OTHERWISE NOTED.

STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

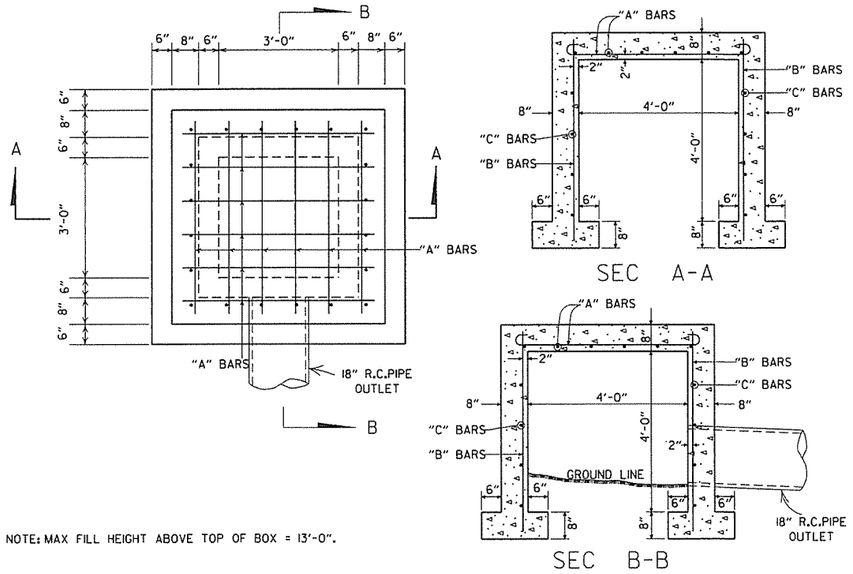
| DATE | REVISION | DATE FILMED |
|---|---|---|
| 10-18-96 | ADDED FORMULA | 10-18-96 |
| 01-09-87 | ISSUED | 534-1-9-87 |

ARKANSAS STATE HIGHWAY COMMISSION

# TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

FILE STDSE2.DGN

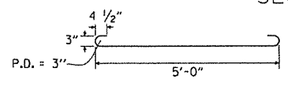



NOTE: MAX FILL HEIGHT ABOVE TOP OF BOX = 13'-0".

STEEL SCHEDULE

| BARS | NUMBER | LENGTH | SPACING |
|---|---|---|---|
| "A" | 12 | 6'-0" | 10" |
| "B" | 20 | 5'-0" | 10 ½" |
| "C" | 16 | 5'-0" | 12" |

ALL STEEL TO BE #4 BARS

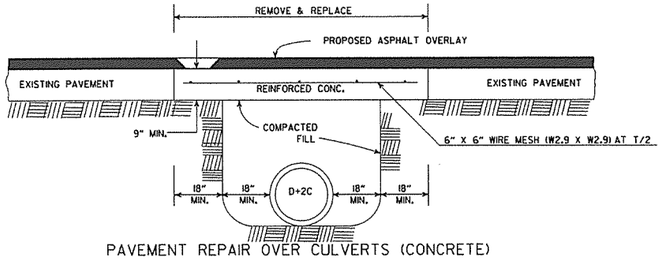



QUANTITIES

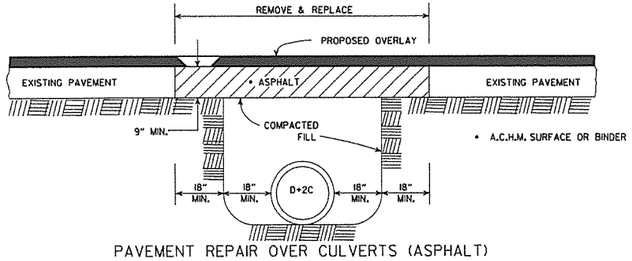
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

GENERAL NOTE:
THE PAY ITEMS FOR REINFORCED CONCRETE SPRING BOXES SHALL BE FOR THE QUANTITTIES OF CONCRETE OF THE CLASS SPECIFIED, REINFORCING STEEL, EXCAVATION FOR STRUCTURES AND 18" R.C. PIPE CULVERT.

## REINFORCED CONCRETE SPRING BOX



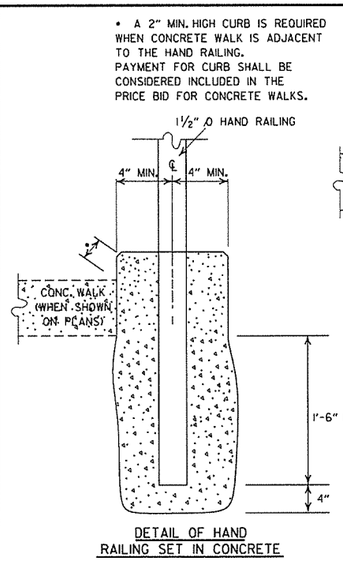

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



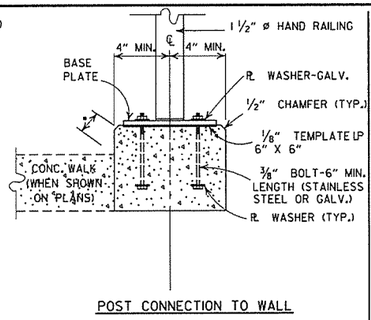

PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

## DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

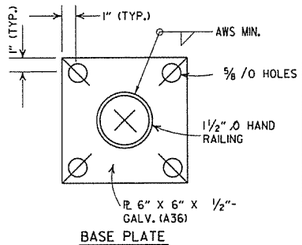
• A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.




DETAIL OF HAND RAILING SET IN CONCRETE

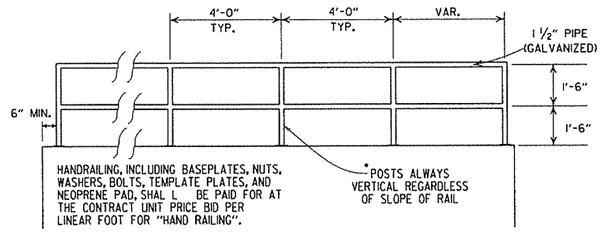



POST CONNECTION TO WALL

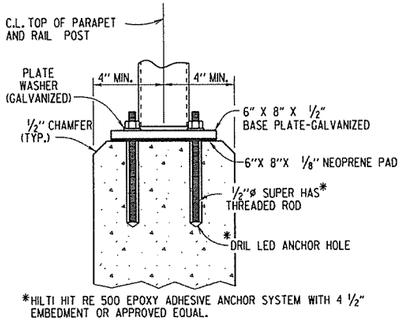



BASE PLATE

## POST CONNECTION DETAILS



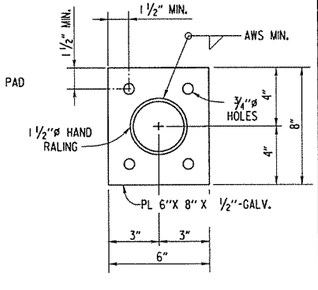

HAND RAILING SHAL L CONFORM TO SECTION 633.




*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 ½" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHAL L BE INSTAL LED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

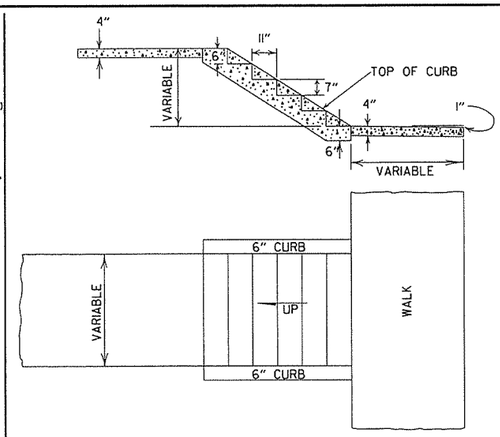
POST CONNECTION TO WALL




BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

## HAND RAILING DETAILS




GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45° INTERVALS.

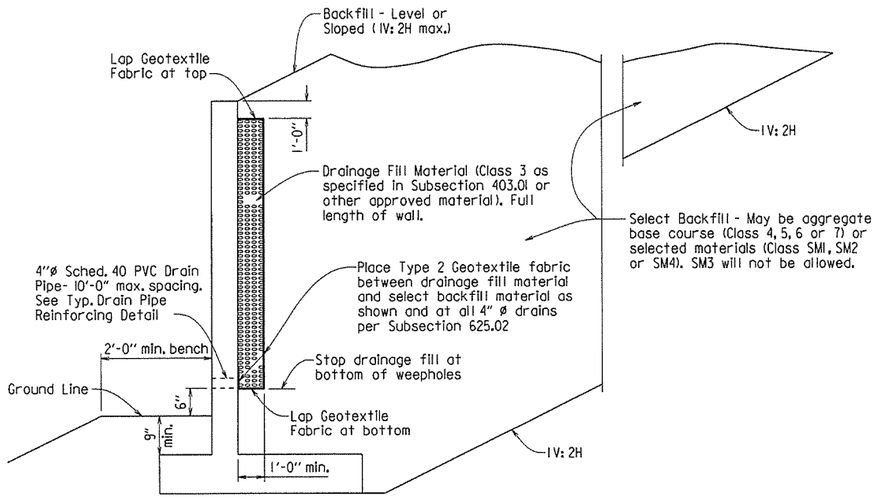
## DETAILS OF CONCRETE STEPS & WALKS

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 9-12-13 | REVISED REINFORCED CONCRETE SPRING BOX | |
| 7-26-12 | REMOVED RETAINING WALL DETAILS & REVISED HAND RAILING DETAILS | |
| 4-17-08 | REV. JOINT & FOOTING STEP DETAILS | |
| 11-29-07 | REVISED RETAINING WALL DRAINAGE | |
| 5-25-06 | REVISED PVMT REPAIR OVER CULVERTS (CONC); REVISED REINFORCED CONC SPRING BOX | |
| 10-9-03 | REVISED PIPE RAILING DETAILS TO HAND RAILING DETAILS | |
| 4-10-03 | REVISED RETAINING WALL DRAWING | |
| 8-22-02 | ADDED HAND RAILING DETAIL | |
| 11-16-01 | REVISED PVMT REPAIR OVER CULVERTS (CONC); CORRECTED SPELLING IN GENERAL NOTES | |
| 11-18-98 | ADDED GENERAL NOTES TO CONCRETE STEPS & WALKS | |
| 7-02-98 | ENLARGED PIPE | |
| 4-03-97 | ADDED NOTE TO STEEL BAR SCHED. | |
| 10-18-96 | CORRECTED SPELLING | |
| 4-26-96 | ADD WEEP HOLE;REV. JOINT SPACING IN RET. WALL | |
| 6-2-94 | CHANGED CONST. TO CONTRACTION JOINT | |
| 10-1-92 | CHANGED MESH FABRIC TO WIRE MESH | 10-1-92 |
| 8-15-91 | DELETED HDWL MODIFICATION DETAIL | 8-15-91 |
| 11-8-90 | DELETED COLD MIX FROM CULV'T. REPAIR | 11-8-90 |
| 11-30-89 | REV. RETAINING WALL STEEL SCHEDULE | 11-30-89 |
| 11-17-88 | V. BARS BEHIND ARROW | 665-11-17-88 |
| 7-15-88 | REV. PAVEMENT REPAIR ADDED HDWL. MODS, DEL. PIPE UNDERDRAINS | 649-7-15-88 |
| 11-1-84 | REV. TRENCH FOR PIPE UNDERDRAIN | 510-11-1-84 |
| 1-4-83 | ELIMINATED CONC. CLASS & ADDED CHAMFER NOTE | 682-1-4-83 |
| 3-2-81 | SPELLING OF "UNDERDRAIN" | 721-3-2-81 |
| 4-20-79 | REV. UNDERDRAIN DET& PAVEMENT REPAIR | 674-4-20-79 |
| 2-2-76 | 12"MIN. GRAN. MAT'L. OVER PIPE | 919-2-2-76 |
| 4-10-75 | REM. SPECS. FOR GRAN. MAT'L. | 568-4-10-75-853 |
| 5-22-74 | GRANULAR MAT'L. TO BE SB-3 | 567-5-22-74-740 |
| 10-2-72 | REVISED AND REDRAWN | 564-10-16-72 |

ARKANSAS STATE HIGHWAY COMMISSION

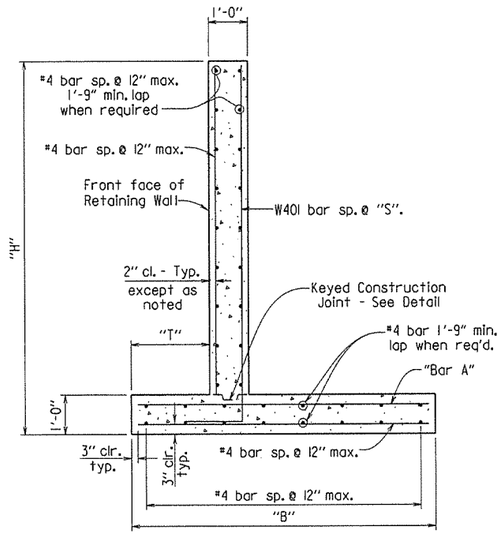
# DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1



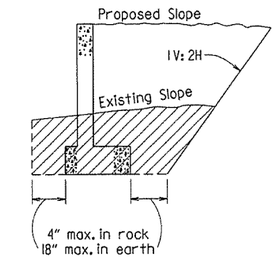

TYPICAL DRAINAGE & BACKFILL DETAILS

N.T.S

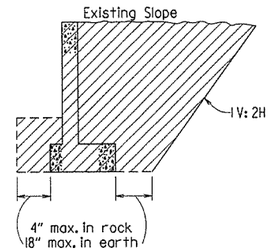



TYPICAL SECTION

N.T.S




In Embankment




In Excavation

NOTE: Hatched area denotes maximum limits of pay excavation.

DETAILS OF EXCAVATION

N.T.S

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: 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.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition (2012).

LIVE LOAD: Live Load Surcharge is not included in the design of these walls. Vehicular Live Load shall not be allowed within a distance equal to one-half the height of the wall.

CONCRETE: Concrete shall be poured in the dry and all exposed corners to be chamfered ½". All concrete shall be Class S with a minimum 28 day compressive strength f'c = 3,500 psi. A Class 2 Surface finish shall be used on all surfaces of the concrete unless otherwise noted.

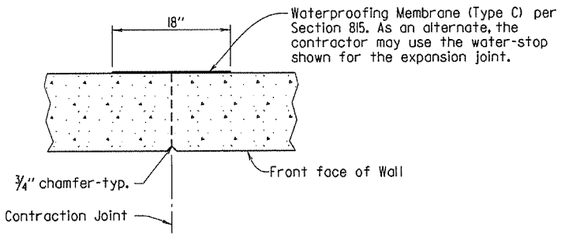
REINFORCING STEEL: All reinforcing steel shall conform to AASHTO M31 orM53, Grade 60.

Foundations for footings shall be prepared in accordance with subsection 801.04. Backfill for retaining walls shall be in accordance with subsection 801.08.

Waterproof Membrane (Type C), waterstops, preformed joints, weep holes & geotextile fabric shall not be paid for directly, but shall be considered subsidiary to Class S Concrete.

Drainage fill material (Class 3) and select backfill shall be measured and paid for as Compacted Embankment.

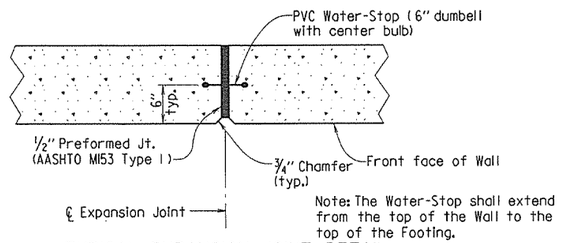
These details are not intended for use along streams or ditches without consideration for scour.




TYPICAL CONTRACTION JOINT DETAIL

N.T.S.

Note: 20'-0" Max. Spacing between Contraction Joints. Horizontal reinforcement shall be continuous through Contraction Joints.

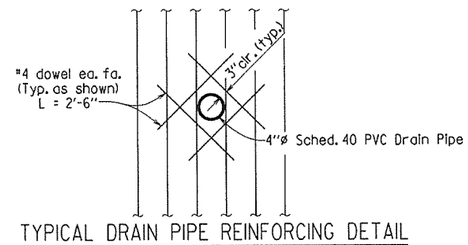



Note: The Water-Stop shall extend from the top of the Wall to the top of the Footing.

TYPICAL EXPANSION JOINT DETAIL

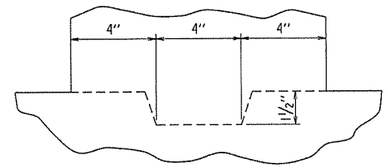
N.T.S.

Note: 60'-0" Max. Spacing between Expansion Joints. Horizontal reinforcing shall stop 2" from ℄ Expansion Joint.




TYPICAL DRAIN PIPE REINFORCING DETAIL

N.T.S




KEYED CONSTRUCTION JOINT DETAIL

N.T.S

SEISMIC ZONE: These walls have been designed for the following site adjusted peak ground accelerations ($A_S$):
Level Backfill - $A_S \leq .40g$
Sloped Backfill (1V: 2H max.) - $A_S \leq .30g$

TABLE OF RETAINING WALL VARIABLES

(LEVEL BACKFILL)

| "H" | "T" | "B" | "S" | "Bar A" Size ø Spacing |
|---|---|---|---|---|
| 3'-0" | 9" | 2'-6" | 12" | #4 ø 12" |
| 4'-0" | 9" | 3'-6" | 12" | #4 ø 12" |
| 5'-0" | 9" | 4'-0" | 12" | #4 ø 12" |
| 6'-0" | 9" | 4'-6" | 12" | #4 ø 12" |
| 7'-0" | 9" | 5'-6" | 12" | #4 ø 10" |
| 8'-0" | 9" | 6'-0" | 12" | #5 ø 10" |
| 9'-0" | 1'-0" | 7'-0" | 12" | #5 ø 6½" |

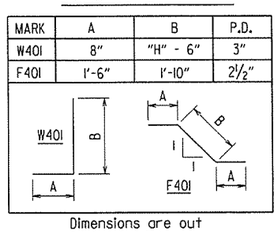
TABLE OF RETAINING WALL VARIABLES

(SLOPED BACKFILL) (1V: 2H MAX.)

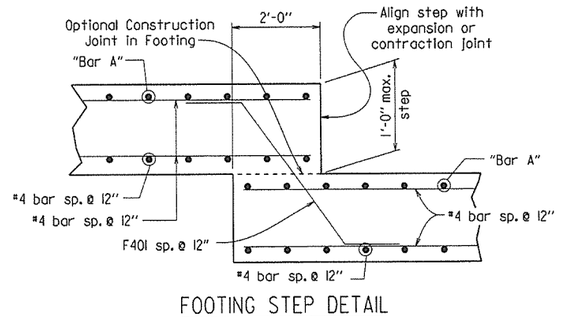
| "H" | "T" | "B" | "S" | "Bar A" Size ø Spacing |
|---|---|---|---|---|
| 3'-0" | 9" | 2'-6" | 12" | #4 ø 12" |
| 4'-0" | 9" | 3'-6" | 12" | #4 ø 12" |
| 5'-0" | 9" | 4'-6" | 12" | #4 ø 12" |
| 6'-0" | 9" | 5'-6" | 12" | #4 ø 6" |
| 7'-0" | 9" | 6'-6" | 12" | #5 ø 6½" |
| 8'-0" | 1'-6" | 8'-0" | 7½" | #6 ø 6" |
| 9'-0" | 1'-11" | 9'-6" | 5" | #8 ø 6" |

BENDING DIAGRAMS

| MARK | A | B | P.D. |
|---|---|---|---|
| W401 | 8" | "H" - 6" | 3" |
| F401 | 1'-6" | 1'-10" | 2½" |




Dimensions are out to out of bars.




FOOTING STEP DETAIL

N.T.S.

| DATE | REVISION | DATE FILMED |
|---|---|---|
| | | |
| | | |
| | | |
| 2-27-14 | REVISED GENERAL NOTES. | |
| 7-26-12 | DRAWING ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

# REINFORCED CONCRETE RETAINING WALL (WITHOUT LIVE LOAD SURCHARGE)

STANDARD DRAWING SI - 2

RI-1



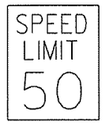

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

RI-2




STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1




STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5A




STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5C




STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-1




STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2




STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1



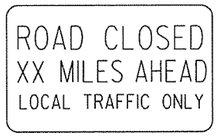

STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2




48"X30"

RII-3A




60"X30"

RII-4



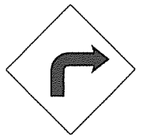

60"X30"

RSP-1




48"X30"

WI-1



STD. 36"X36"
FWY. 48"X48"

WI-2



STD. 36"X36"
FWY. 48"X48"

WI-3



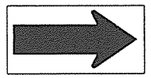
STD. 48"X48"

WI-4



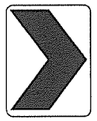
STD. 48"X48"

WI-6



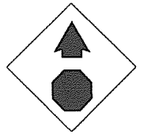
STD. 48"X24"
SPECIAL 60"X30"

WI-8



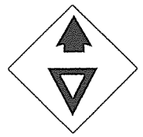
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



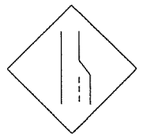
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1




STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7




EXPWY. 36"X36"
FWY. 48"X48"

W9-2




STD. 36"X36"
FWY. 48"X48"

WI3-1




STD. 24"X24"

W20-1




STD. 48"X48"

W20-2




STD. 48"X48"

W20-3




STD. 48"X48"

W20-4




STD. 48"X48"

W20-5




STD. 48"X48"

W20-7a




STD. 36"X36"
FWY. 48"X48"

W21-2




STD. 30"X30"
SPECIAL 36"X36"

W21-5




STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

WI-4b



STD. 48"X48"

R56-1




STD. 18"X18"

W8-11



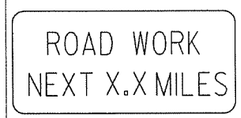

STD. 36"X36"
FWY. 48"X48"

W8-9



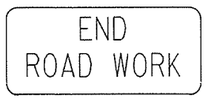

STD. 36"X36"
FWY. 48"X48"

G20-1



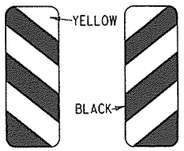

60"X24"

G20-2



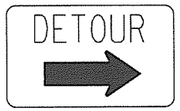

48"X24"

OM-3L OM-3R




12"X36"

M4-9



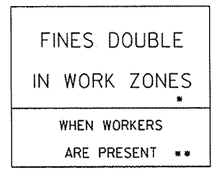

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10




48"X18"

R55-1




36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

| | |
|---|---|
| 500 FT | ½ MILE |
| 1000 FT | ¾ MILE |
| 1500 FT | 1 MILE |
| | AHEAD |

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

• 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

• 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

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

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

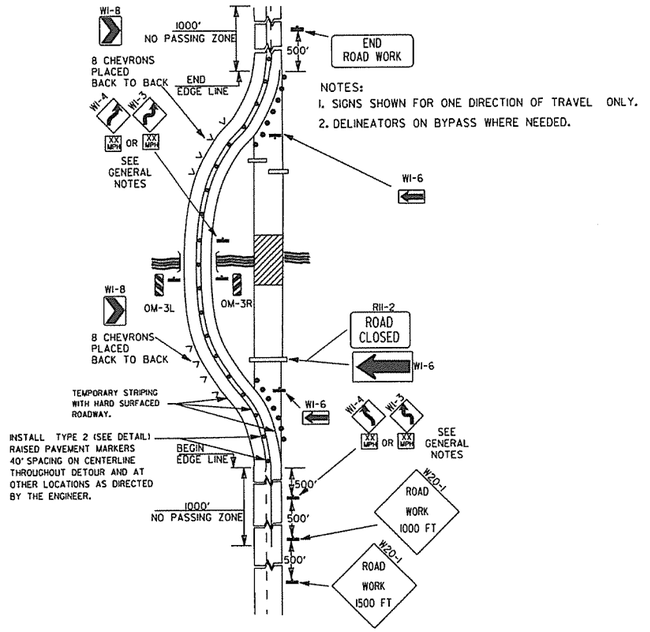
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

| DATE | REVISION | FILMED |
|---|---|---|
| 12-15-11 | REVISED W24-1 | |
| 11-17-10 | DELETED W8-9a & ADDED W8-9 | |
| 10-15-09 | ADDED REFERENCE TO MASH & ADDED SIGN W24-1 | |
| 4-17-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | REVISED NOTES | |
| 10-9-03 | REVISED NOTE 1 | |
| 11-16-01 | REVISED NOTE 7 | |
| 9-28-00 | REVISED NOTE | |
| 11-18-98 | ADDED NOTE | |
| 6-26-97 | REVISED NOTE 5 | |
| 4-03-97 | REVISED NOTE 5 | |
| 10-18-96 | ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7 | |
| 10-12-95 | ADDED R55-1 | |
| 6-8-95 | REVISED TO CORRECT SIGN ILLUSTRATIONS | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

ARKANSAS STATE HIGHWAY COMMISSION

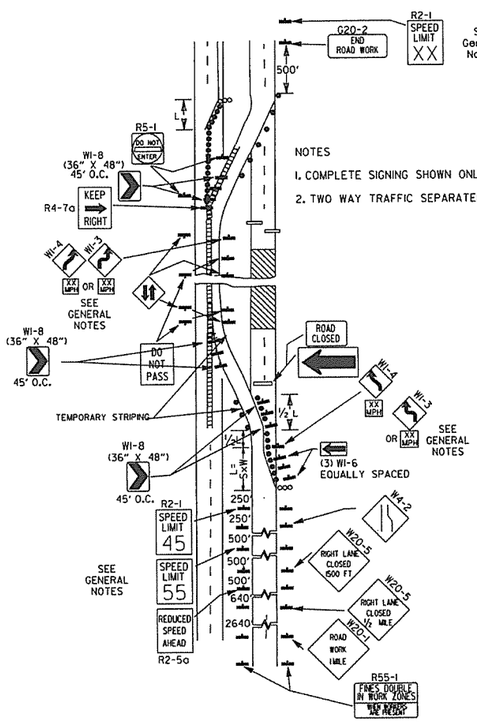
# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



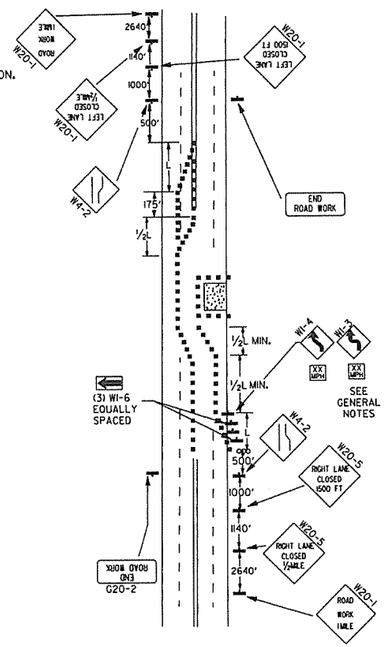

NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

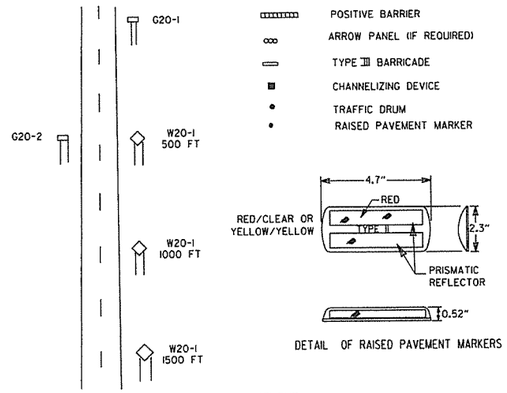



NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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




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




TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

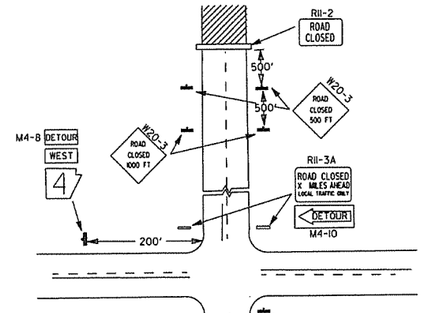
WHERE:
L= MINIMUM LENGTH OF TAPER.

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

W= WIDTH OF OFFSET.

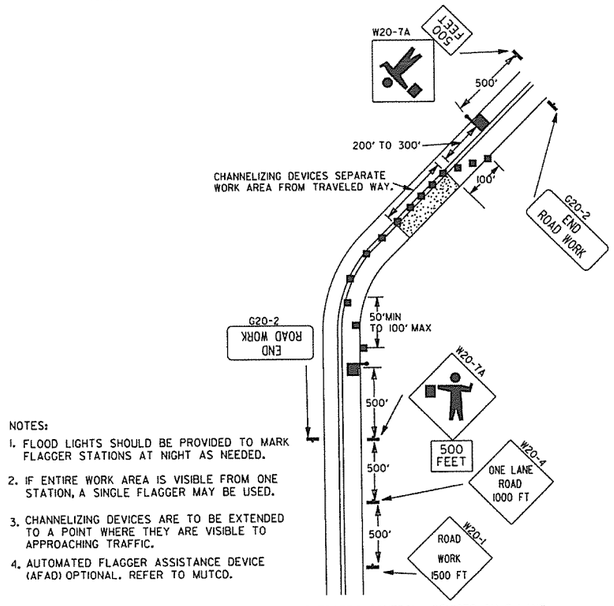
GENERAL NOTES:

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 R2-5A SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.



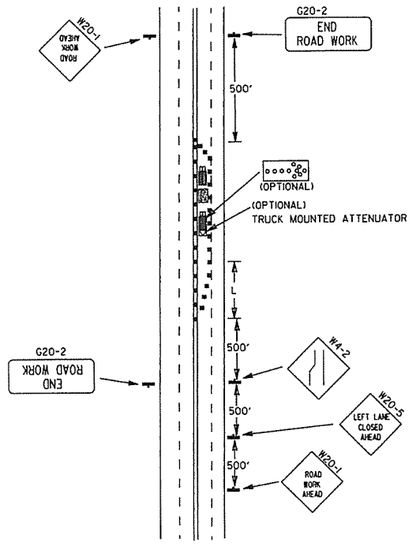

NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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




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

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.



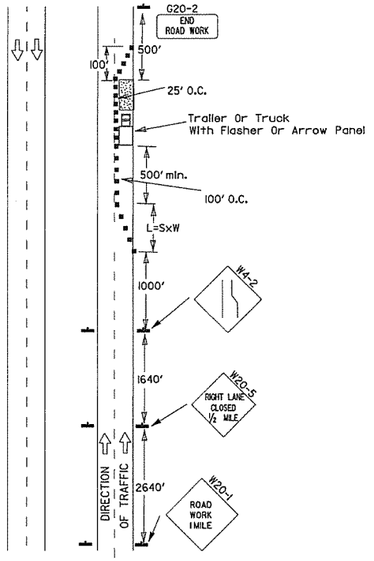

(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

| DATE | REVISION | FILMED |
|---|---|---|
| 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 | |

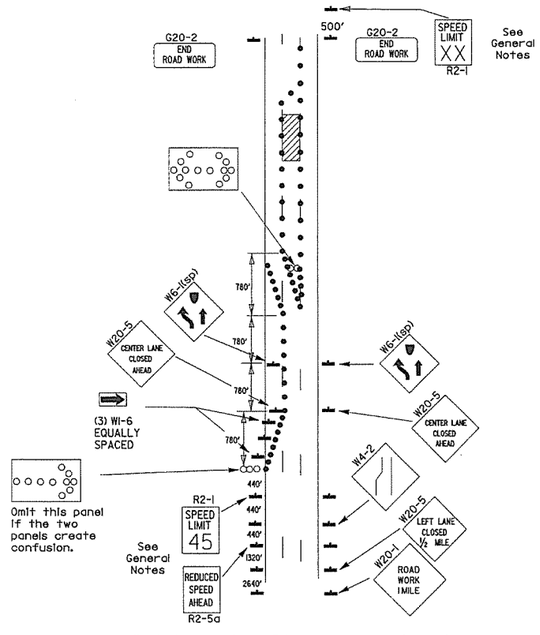
ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

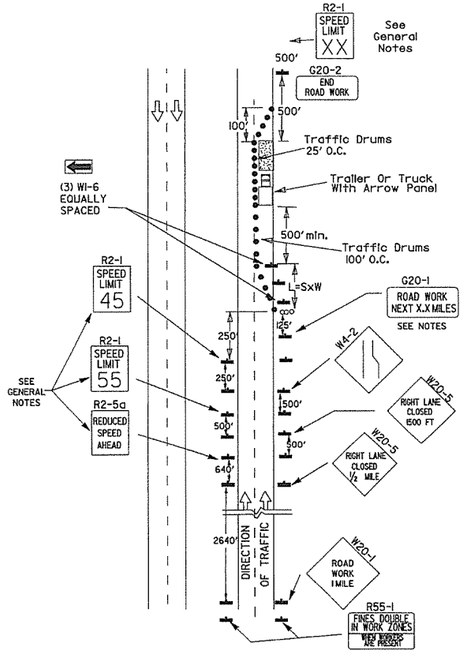
STANDARD DRAWING TC-2




(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 operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

○○○ Arrow Panel (If Required)

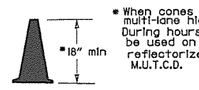
■ Channelizing Device

● Traffic drum

GENERAL NOTES:

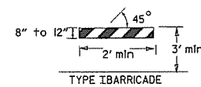
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

Channelizing devices



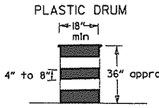

* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

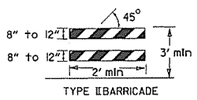
CONES



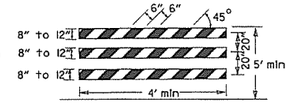

TYPE I BARRICADE

PLASTIC DRUM



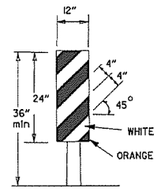




TYPE II BARRICADE



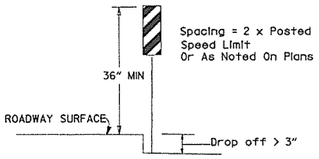

TYPE III BARRICADE

NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.




VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT



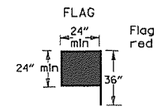

TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

| VERTICAL DIFFERENTIAL | LOCATIONS | TRAFFIC CONTROL |
|---|---|---|
| 1" to 3" | Centerline, lane lines | W8-11 |
| 1" to 3" | Edge of shoulder | W8-9 |
| Greater than 3" | Lane lines | Standard lane closure required |
| Greater than 3" | Edge of traveled lane | *RSP-1 and vertical panels, drums or concrete barrier |
| Greater than 3" | Edge of shoulder | *Vertical panels, drums or concrete barrier |

* When shown on the plans concrete barrier will be used.

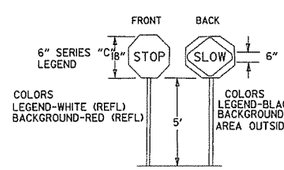
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

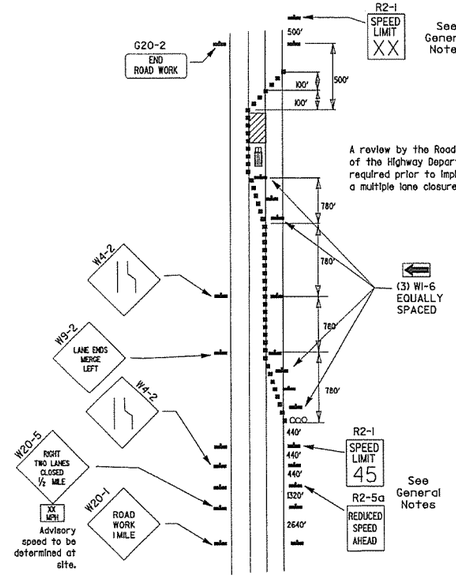
FLAG




Flag shall be of good grade red material

STOP SLOW PADDLE



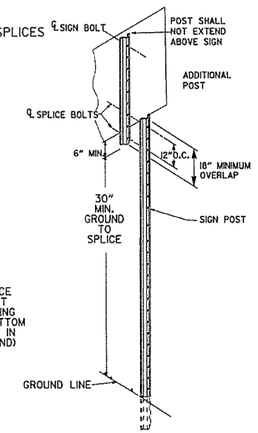

(D) Typical application - closing multiple lanes of a multilane highway.

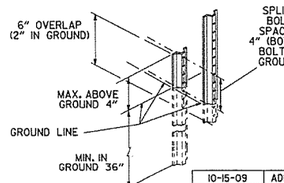
DETAIL OF SPLICES

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.




| DATE | REVISION | FILMED |
|---|---|---|
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 11-20-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | ADDED NOTE | |
| 10-1-98 | ADDED NOTE | |
| 4-03-97 | ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE | |
| 10-18-96 | ADDED R55-1 | |
| 10-12-95 | MOVED UPPER SPLICE | |
| 6-8-95 | REVISED SPLICE DETAIL, TEXT | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD, SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

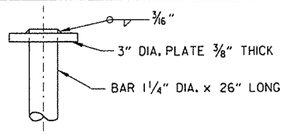
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

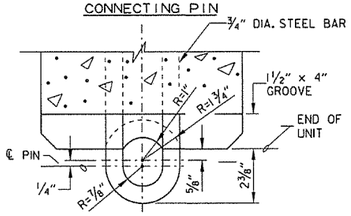
STANDARD DRAWING TC-3

## REINFORCING BAR TABLE PER BARRIER UNIT

| MARK | LOCATION | BAR SIZE | (NO. BARS) | SKETCH |
|---|---|---|---|---|
| H-1 | HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS | #5 | (6) | 19'-3" |
| H-2 | CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY | #5 | (6) | 6'-6" |
| H-3 | TIED ABOVE H-1 BARS TO SUPPORT H-2. TIED TO V-1 | #4 | (2) | 1'-6" |
| S-1 | OVER LIFT HOLES | #4 | (2) | 2'-5", LIFTING HOLE, 90°, 3 3/8" R |
| S-2 | HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS | #4 | (2) | 1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP |
| V-1 | VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS | #5 | (16) | TOTAL LENGTH 4'-9", 2 3/16" R, 12°, ±9 1/2", 2'-1 3/8", 4 3/8" |

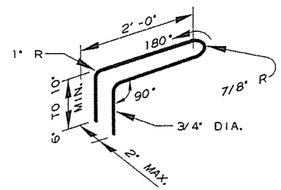



CONNECTING PIN

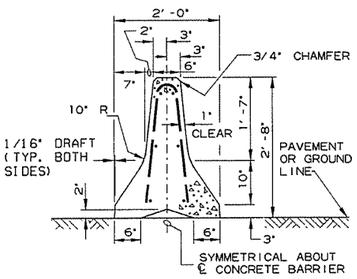



SECTION E-E

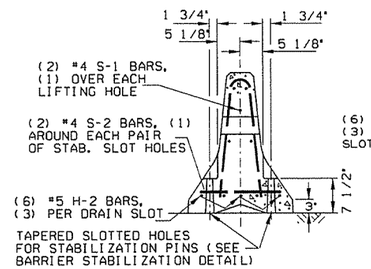
CONNECTION DETAILS



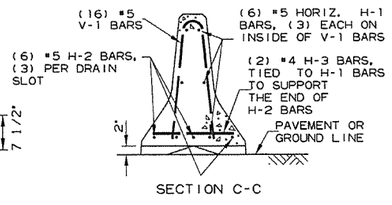

CONNECTION LOOP



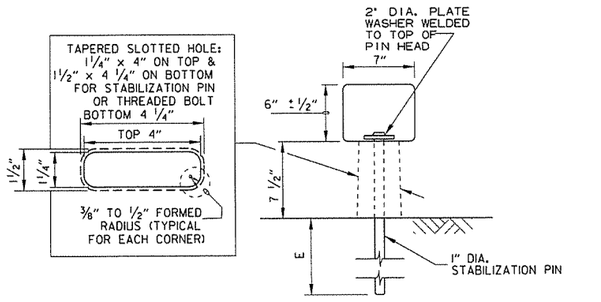

SECTION A-A




SECTION B-B



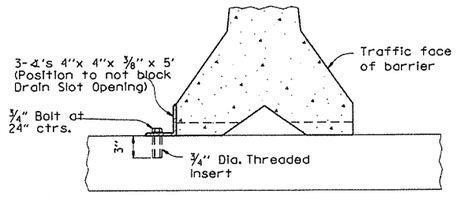

SECTION C-C




BARRIER STABILIZATION DETAIL

ROADWAY SECTION

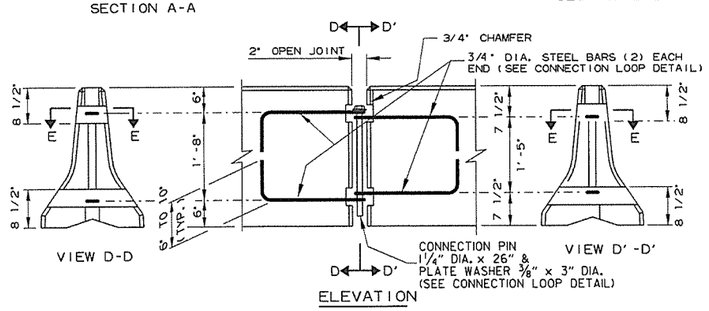
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas




NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

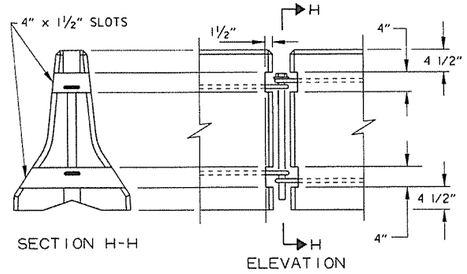
BRIDGE DECKS




VIEW D-D

VIEW D'-D'

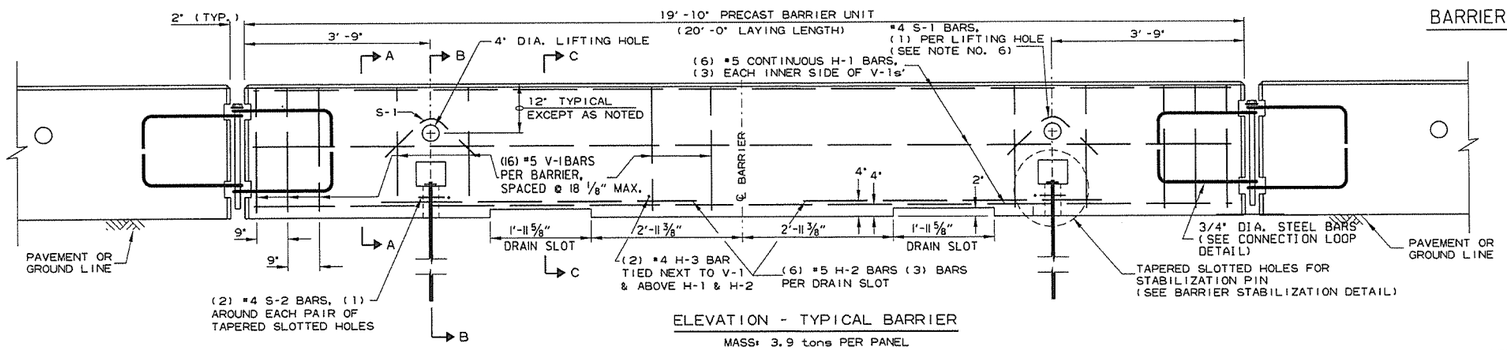
ELEVATION




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.

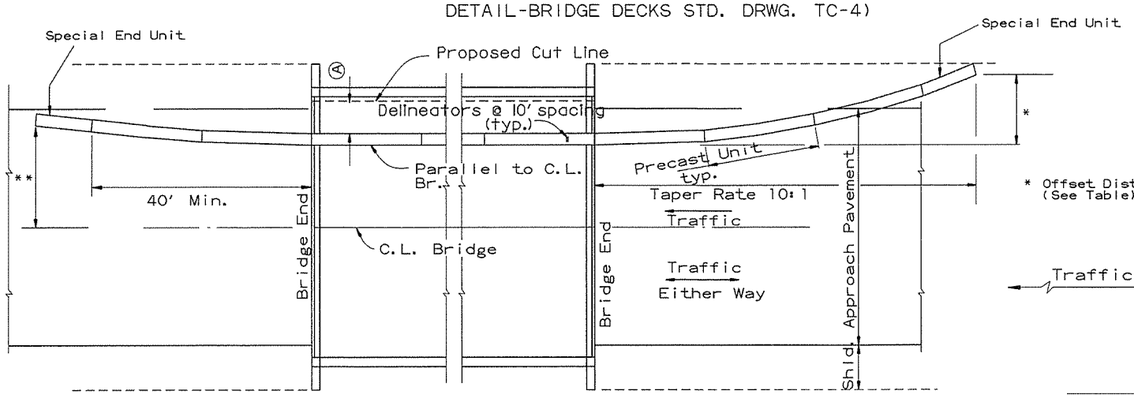
| DATE | REVISION | FILMED |
|---|---|---|
| 2-27-14 | REVISED BARRIER STABILIZATION DETAIL | |
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 8-5-09 | REV. NOTE 3 CONCERNING DRAIN SLOTS | |
| 11-29-07 | REVISED NOTE 3 | |
| 5-25-06 | DELETED GENERAL NOTE 7 | |
| 11-18-04 | REVISED BARRIER STABILIZATION 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

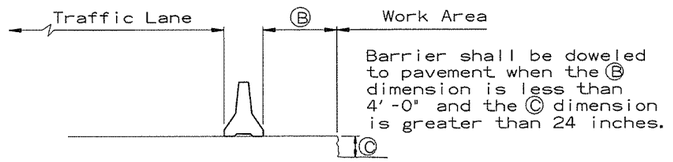
STANDARD DRAWING TC-4

Ⓐ 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

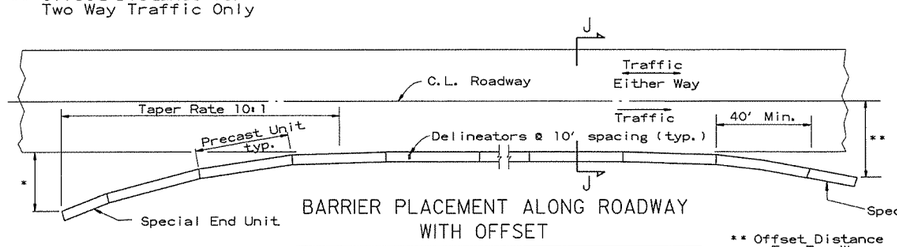



Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only




BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

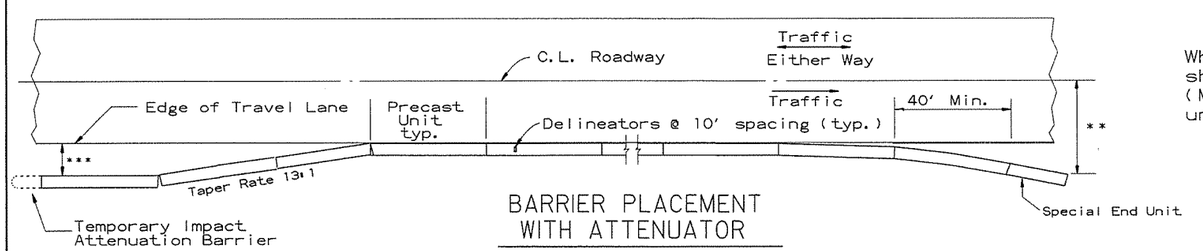
** Offset Distance For Two Way Traffic Only

* Offset Distance (See Table)

Offset Distance Table

| Speed (MPH) | Offset Distance (FT.) |
|---|---|
| ≤ 45 | 12 |
| > 45 | 18 |

If offset distance is not attainable, then see "Barrier Placement With Attenuator" Detail shown below.

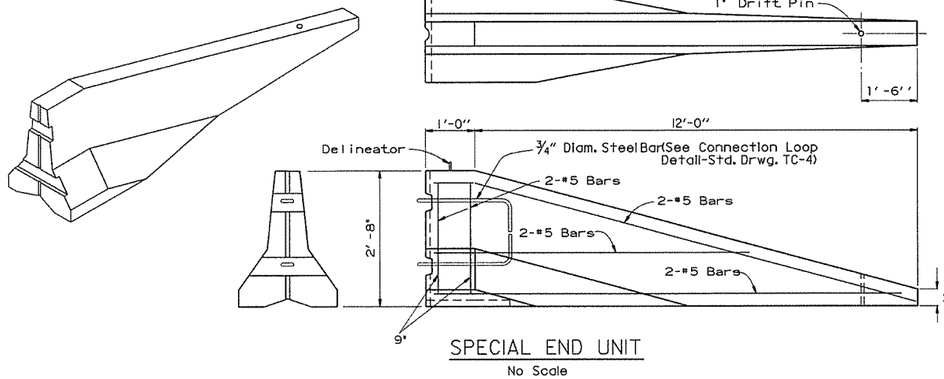



BARRIER PLACEMENT WITH ATTENUATOR

No Scale

*** 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 | |

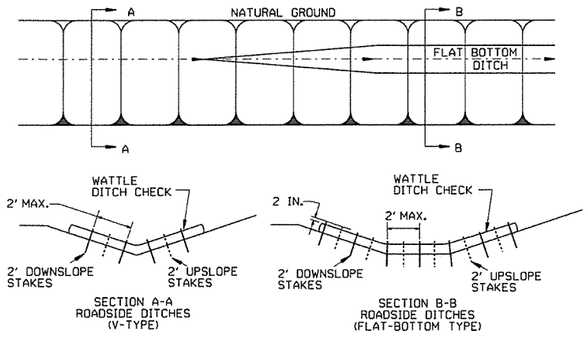
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

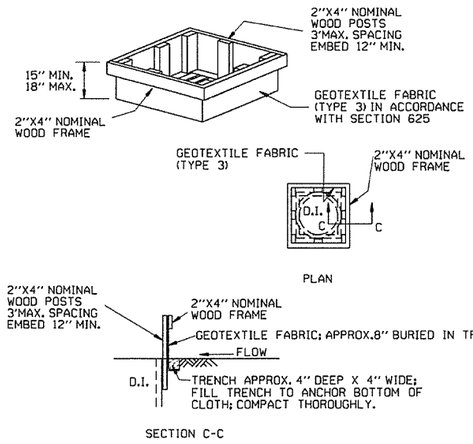
STANDARD DRAWING TC-5

GENERAL NOTES

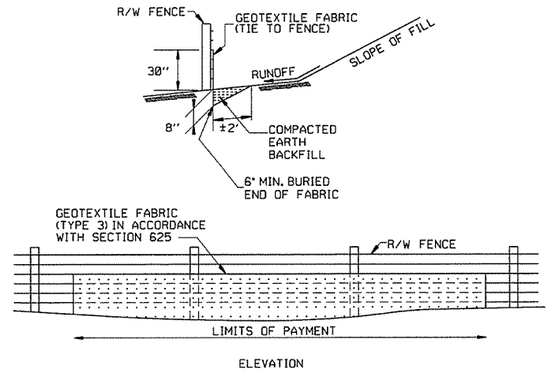
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.




WATTLE DITCH CHECK (E-1)




DROP INLET SILT FENCE (E-7)




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

GENERAL NOTES

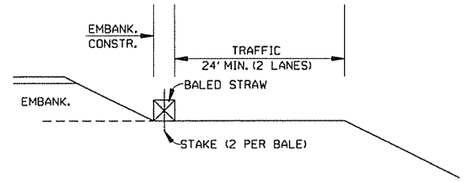
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

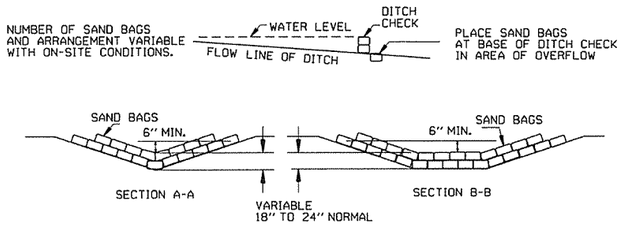
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

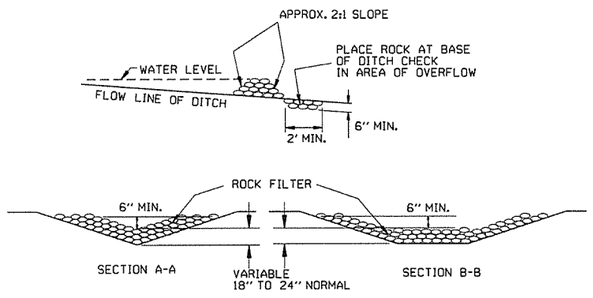
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



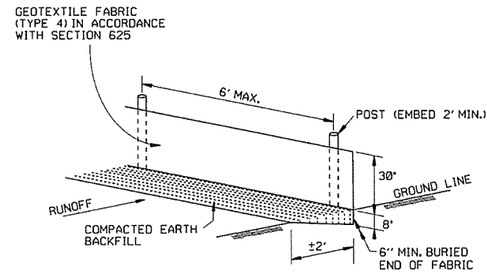

BALED STRAW FILTER BARRIER (E-2)




SAND BAG DITCH CHECK (E-5)




ROCK DITCH CHECK (E-6)




SILT FENCE (E-11)

GENERAL NOTES

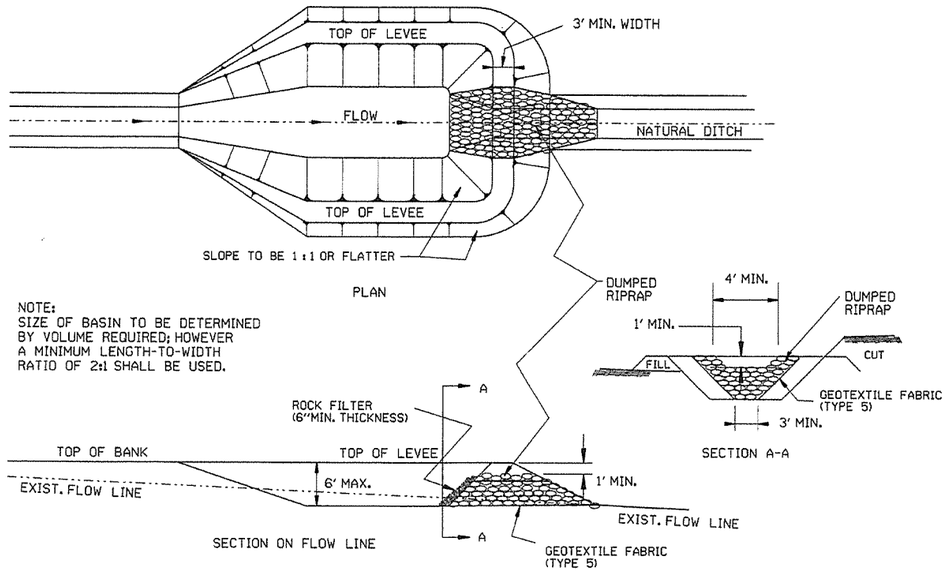
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

| DATE | REVISION | FILMED |
|---|---|---|
| 12-15-11 | DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK | |
| 11-18-98 | ADDED NOTES | |
| 7-02-98 | ADDED BALED STRAW FILTER BARRIER (E-2) | |
| 7-20-95 | REVISED SILT FENCE E-4 AND E-11 | 7-20-95 |
| 7-15-94 | REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC | |
| 6-2-94 | REVISED E-1,4,7 & 11; DELETED E-2 & 3 | 6-2-94 |
| 4-1-93 | REDRAWN | |
| 10-1-92 | REDRAWN | |
| 8-2-76 | ISSUED R.D.M. | 298-7-28-76 |

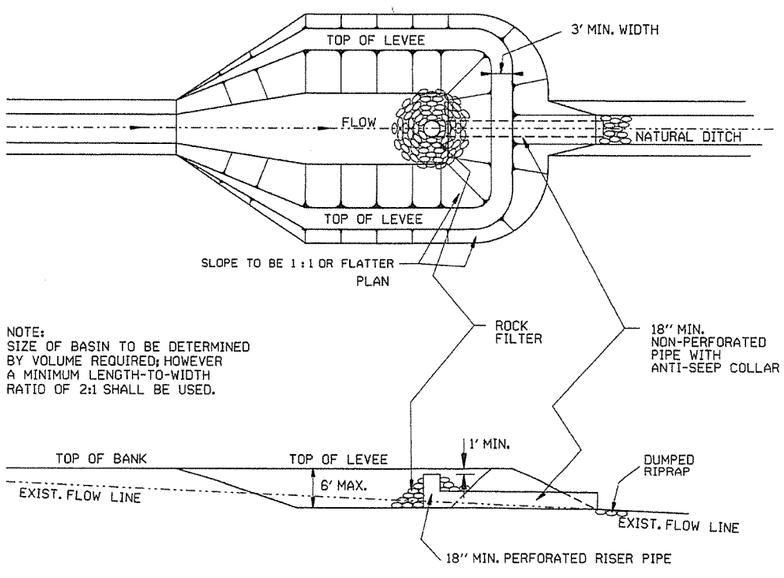
ARKANSAS STATE HIGHWAY COMMISSION

# TEMPORARY EROSION CONTROL DEVICES

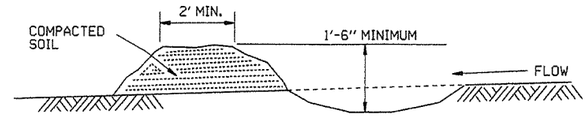
STANDARD DRAWING TEC-1



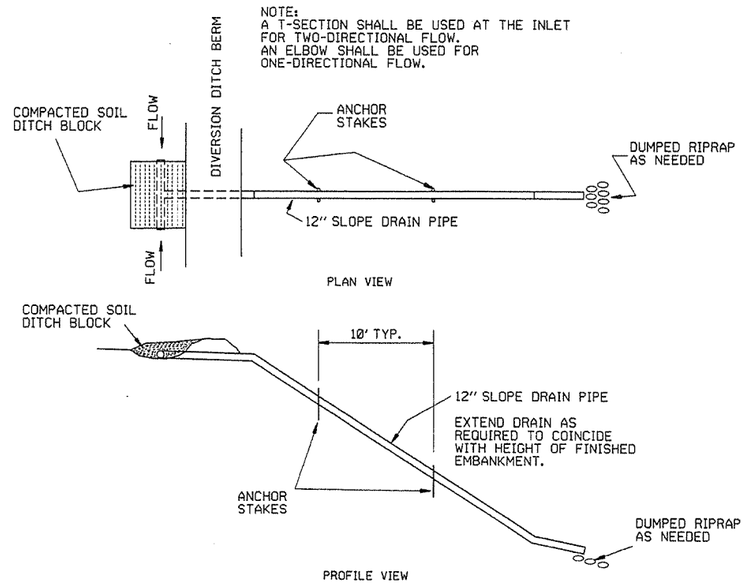

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



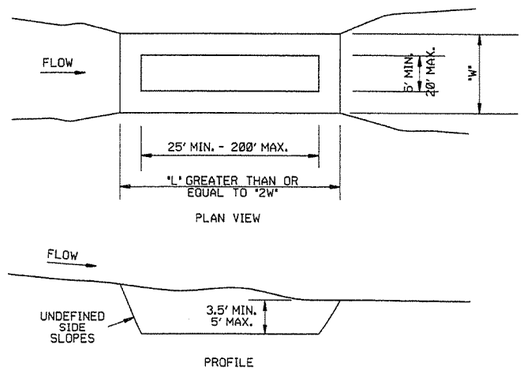

SEDIMENT BASIN WITH PIPE OUTLET (E-10)




DIVERSION DITCH (E-8)




SLOPE DRAIN (E-12)




SEDIMENT BASIN (E-14)

| DATE | REVISION | FILMED |
|---|---|---|
| 6-2-94 | Revised E-8 & E-12; Added E-14 & Deleted E-13 | |
| 4-1-93 | ISSUED | |

ARKANSAS STATE HIGHWAY COMMISSION

# TEMPORARY EROSION CONTROL DEVICES

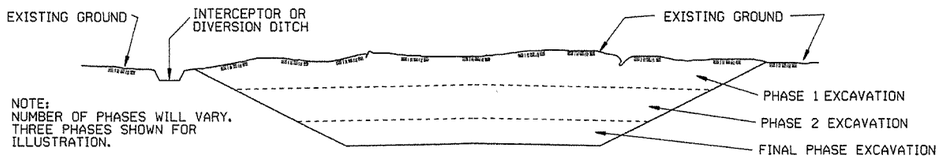
STANDARD DRAWING TEC-2

# CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

# EXCAVATION



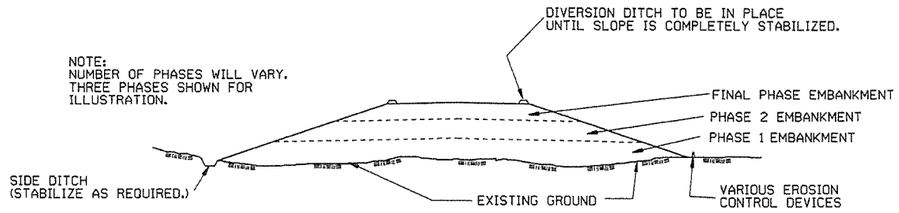

GENERAL NOTE

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

CONSTRUCTION SEQUENCE

1. EXCAVATE AND STABILIZE INTERCEPTOR AND/OR DIVERSION DITCHES.
2. PERFORM PHASE 1 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
3. PERFORM PHASE 2 EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING.
4. PERFORM FINAL PHASE OF EXCAVATION. PLACE PERMANENT OR TEMPORARY SEEDING. STABILIZE DITCHES. CONSTRUCT DITCH CHECKS, DIVERSION DITCHES, SEDIMENT BASINS, OR OTHER EROSION CONTROL DEVICES AS REQUIRED.

# EMBANKMENT




GENERAL NOTE

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

CONSTRUCTION SEQUENCE

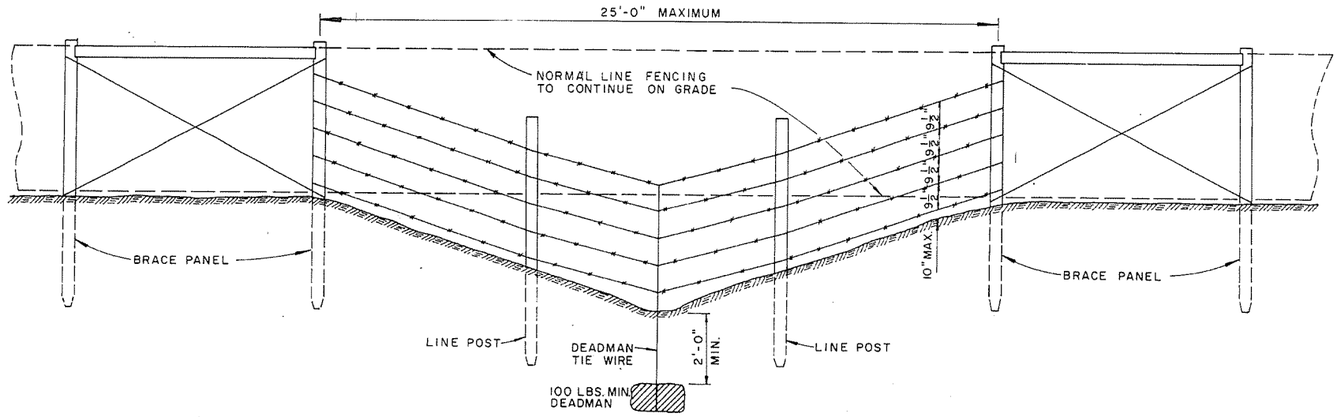
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

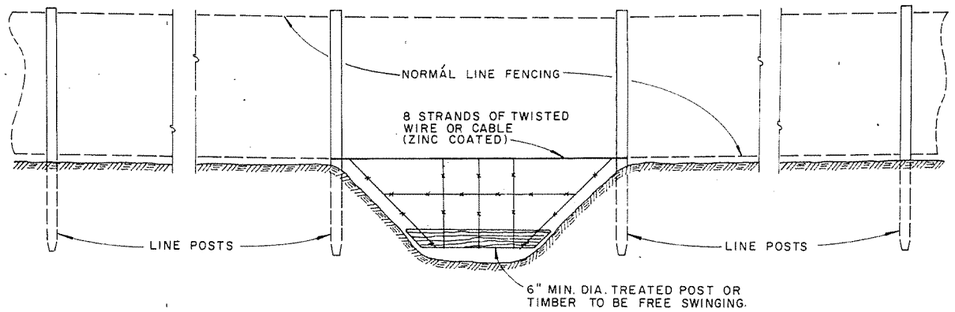
| DATE | REVISION | FILMED |
|---|---|---|
| 11-03-94 | CORRECTED SPELLING | |
| 6-2-94 | Drawn & Issued | 6-2-94 |

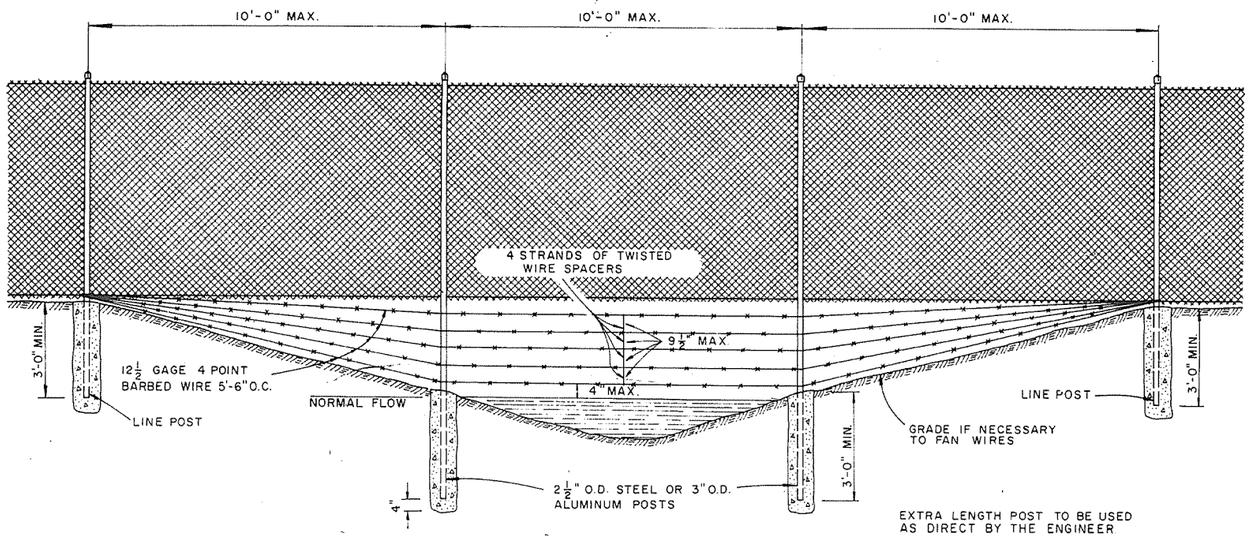
ARKANSAS STATE HIGHWAY COMMISSION

# TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3




GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR WIRE FENCE OR CHAIN LINK FENCE.

| DATE | REVISION | DATE FILM'D. |
|---|---|---|
| 4-20-79 | REVISED TOP RAIL & TENSION WIRE | 696-4-20-79 |
| 10-2-72 | REVISED & REDRAWN | 529-10-2-72 |

ARKANSAS STATE HIGHWAY COMMISSION

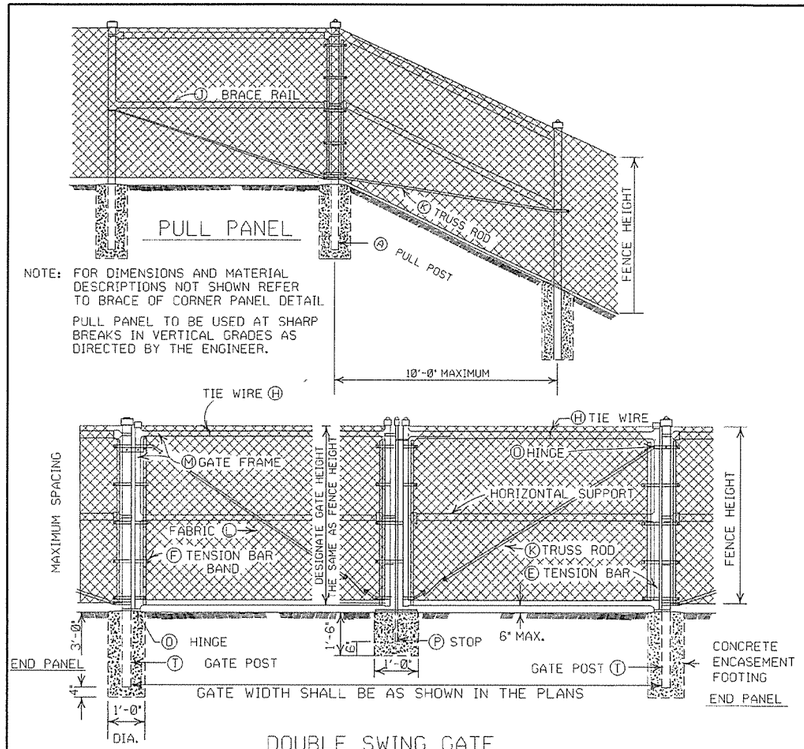
WIRE FENCE WATER GAPS

STANDARD DRAWING

WF-2

73

(M—11-71—4700)—PPASCo

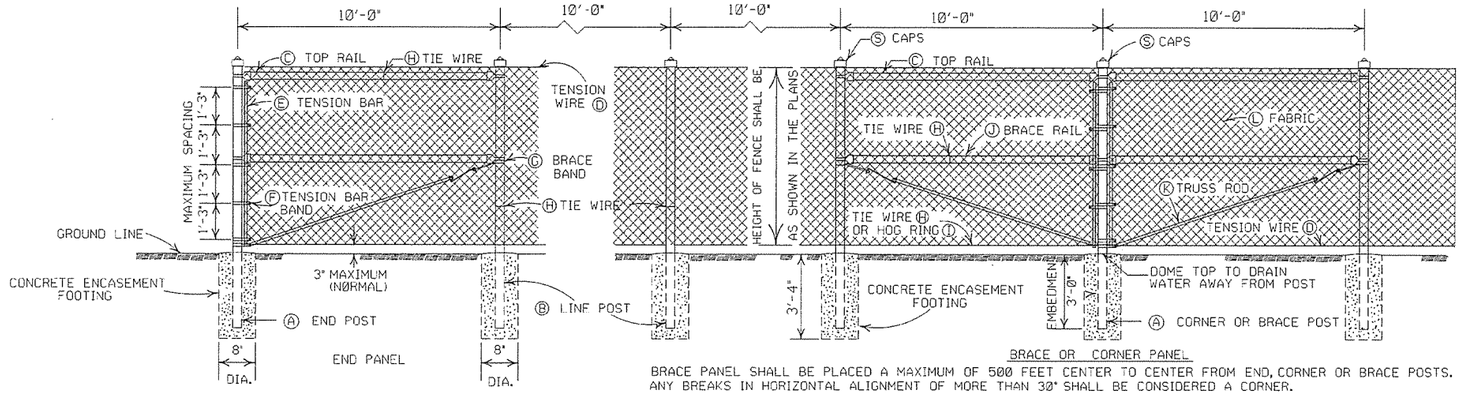



NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL.

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.

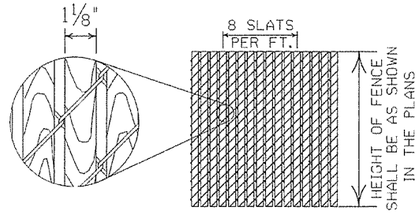
## DOUBLE SWING GATE

## 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.

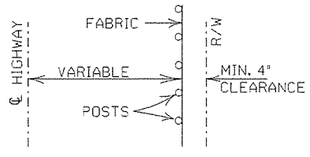
| HEIGHT OF FENCE FABRIC | (A) END, PULL CORNER OR BRACE POST | (B) LINE POSTS SIZE | (B) LINE POSTS TIE SPACING | (C) TOP RAIL SIZE | (C) TOP RAIL TIE SPACING | (C) TOP RAIL MIN. LENGTH | (D) TENSION WIRE SIZE | (D) TENSION WIRE TIE SPACING | (E) TENSION BAR SIZE | (E) TENSION BAR LENGTH | (F) TENSION 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 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" 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 .192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE .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 | 0.122 | 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 |

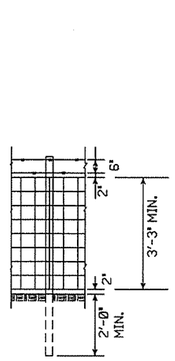
TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181

| 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 |

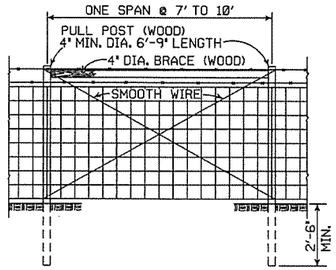
ARKANSAS STATE HIGHWAY COMMISSION

# CHAIN LINK FENCE

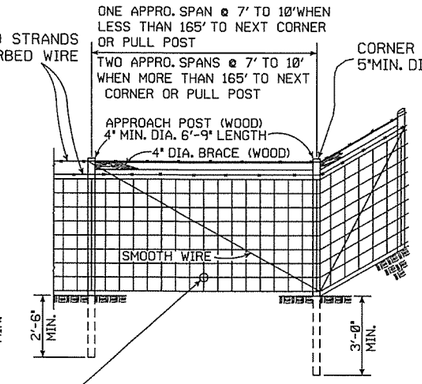
STANDARD DRAWING WF-3

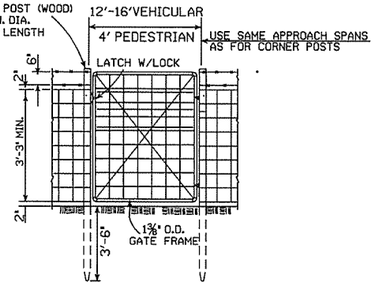



LINE POST
3" MIN. DIA. 6'-3" LENGTH
MAX. SPACING TO BE 10'-0"




LINE BRACE ASSEMBLY
MAX. SPACING TO BE 330'




## GENERAL NOTES:

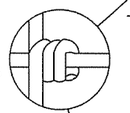
STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK). APPROVED ALTERNATES ARE ACCEPTABLE.
AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE - 1" TO +2".
TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.

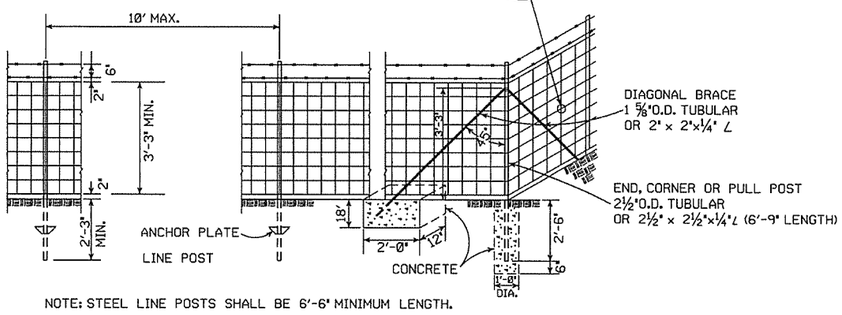
THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF TIMBER LINE POSTS OF 7 FOOT LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

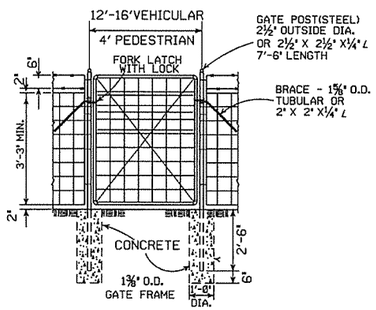
AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

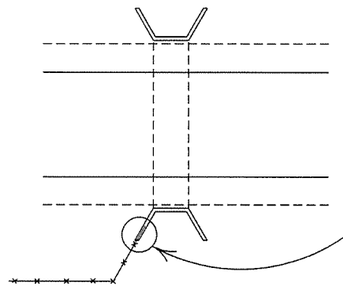
# TYPE C FENCE (WOOD POSTS)

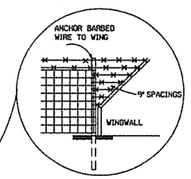



NOTE: STEEL LINE POSTS SHALL BE 6'-6" MINIMUM LENGTH.






NOTE: USE ⅜" X 1½" LAG BOLT & SHIELD OR AS APPROVED BY THE ENGINEER.

DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

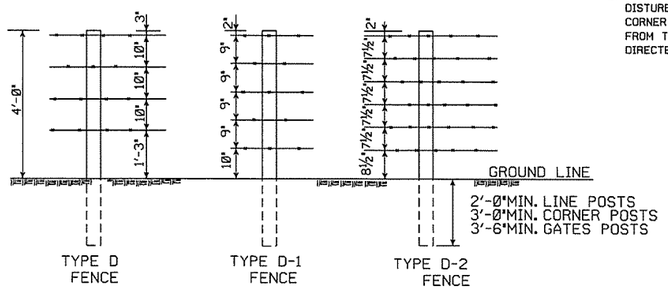
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

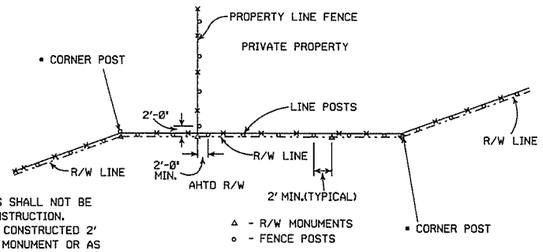
STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

# TYPE C FENCE (STEEL POSTS)

4 STRANDS BARBED WIRE (D)
5 STRANDS BARBED WIRE (D-1)
6 STRANDS BARBED WIRE (D-2)

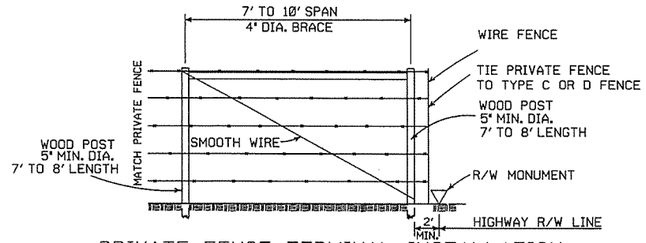



NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



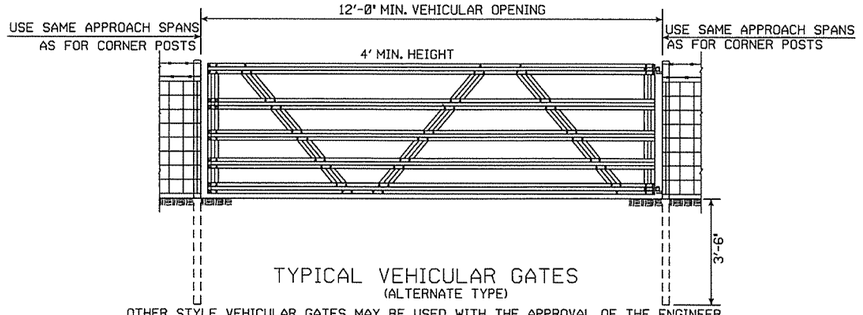

• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

## RIGHT-OF-WAY FENCE LOCATION




## PRIVATE FENCE TERMINAL INSTALLATION

WHERE EXISTING FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN IN TYPE C FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.




## TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

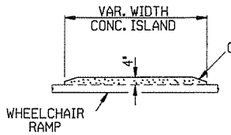
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER. THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

| DATE | REVISION | FILMED |
|---|---|---|
| 8-22-02 | REVISED GENERAL NOTES | |
| 10-18-96 | REVISED AASHTO | |
| 11-22-95 | REVISED R-O-W LOCATION DETAIL | |
| 6-2-94 | REVISED BARB WIRE AND ADDED CORNER POST NOTES | 6-2-94 |
| 8-5-93 | REVISED R/W INSTALLATION FENCE | 8-5-93 |
| 10-1-92 | ADDED STAPLE NOTE | 10-1-92 |
| 8-15-91 | ADDED TYPE D-2 FENCE | 8-15-91 |
| 11-30-89 | DELETED CLASS CONCRETE | 11-30-89 |
| 7-15-88 | ADDED SPLICE NOTE | 700-7-15-88 |
| 10-30-87 | GENERAL REVISIONS | 549-10-30-87 |
| 11-1-84 | MAX. POST SPACING MIN. WIRE GAUGE | 507-11-1-84 |
| 1-4-83 | MIN. DIA. LINE POST | 648-1-4-83 |
| 3-2-81 | TOLERANCE FOR POST LENGTH | 722-3-2-81 |
| 12-1-72 | ADDED D-1 & FENCE INSTALLATION | 564-12-1-72 |
| 10-2-72 | REVISED AND REDRAWN | 540-10-2-72 |

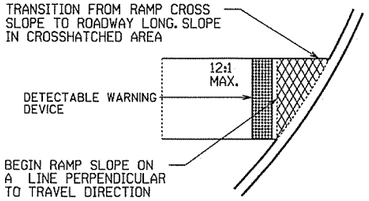
ARKANSAS STATE HIGHWAY COMMISSION

# WIRE FENCE
# TYPE C AND D

STANDARD DRAWING WF-4



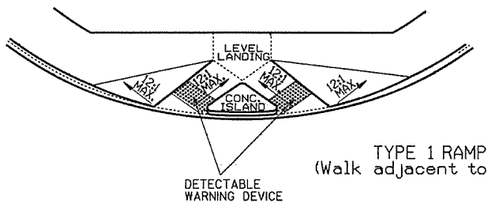

CONCRETE ISLAND DETAIL



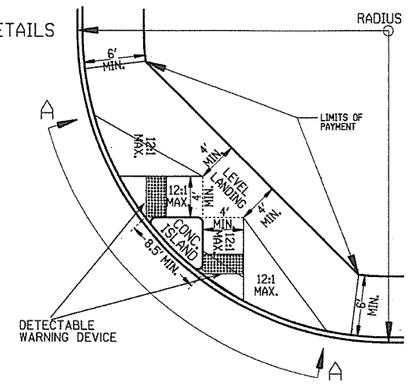

SLOPE TRANSITION DETAILS

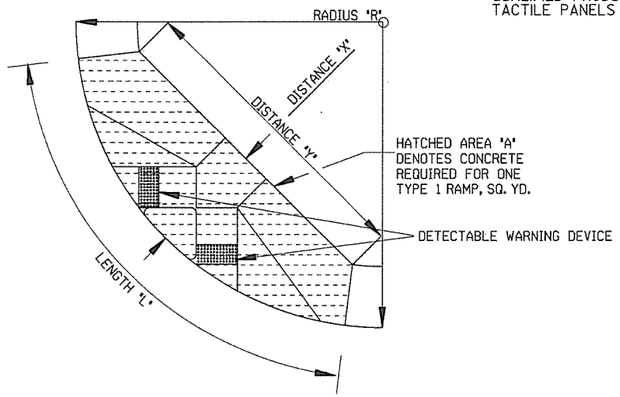
TYPE 1 RAMP DIMENSIONS AND QUANTITIES

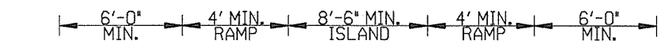
| RADIUS 'R' | DISTANCE 'X' | DISTANCE 'Y' | LENGTH 'L' | RAMP AREA 'A' |
|---|---|---|---|---|
| FEET | FEET | FEET | FEET | SQ. YD. |
| 15 | 11.67 | 18.82 | 32.18 | 26.21 |
| 20 | 11.52 | 22.28 | 35.46 | 30.07 |
| 25 | 11.43 | 26.60 | 38.77 | 33.80 |
| 30 | 11.37 | 30.26 | 40.93 | 36.90 |
| 35 | 11.33 | 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 |




TYPE 1 RAMP
(Walk adjacent to curb)



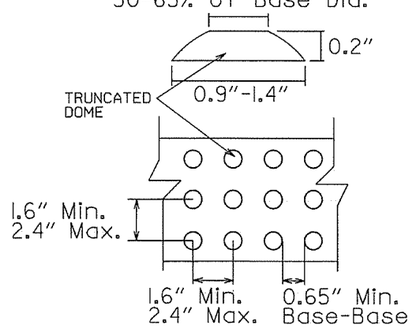




SECTION A-A

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

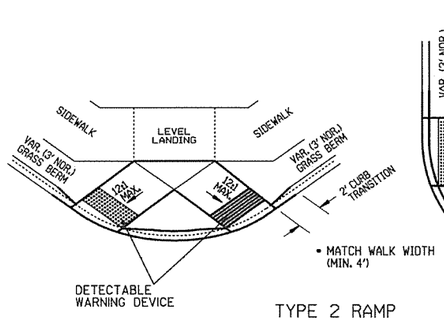
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT 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).



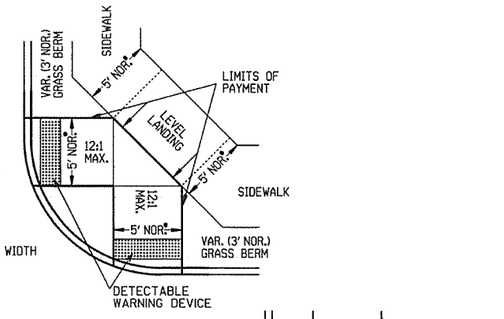

DETECTABLE WARNING DEVICE DETAIL

GENERAL NOTES:

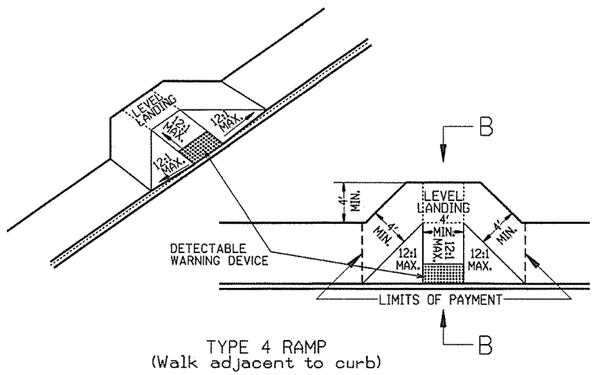
IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK 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.



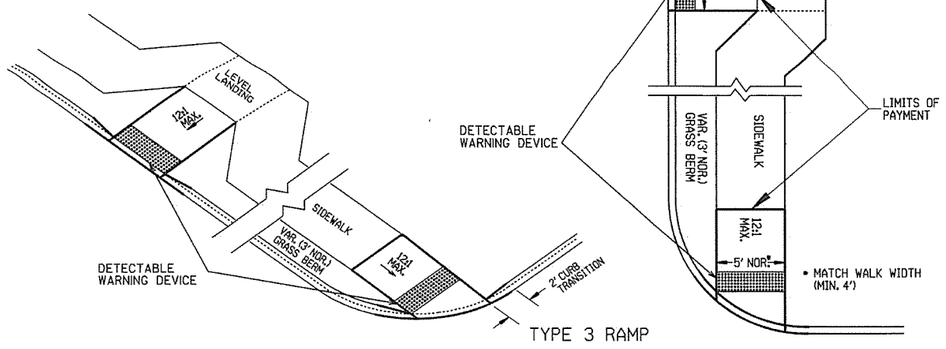

TYPE 2 RAMP



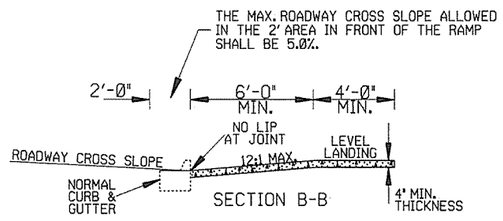

NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.




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.

| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| 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. | |
| 11-18-98 | 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 |

ARKANSAS STATE HIGHWAY COMMISSION

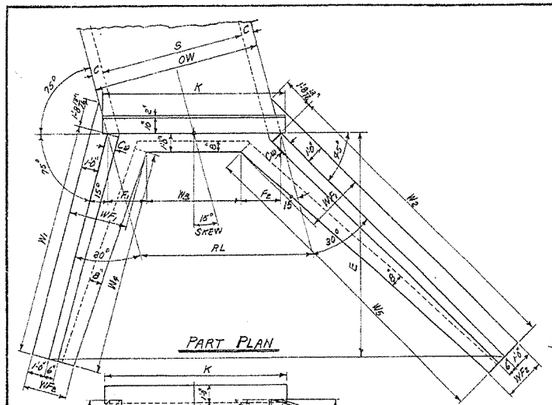
WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

STANDARD DRAWING WR-1

Reshot 3-5-93

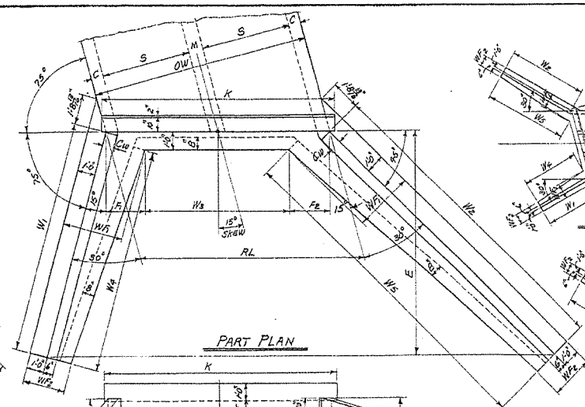
172

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 223 | |
| JOB No. | | | | | |




SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

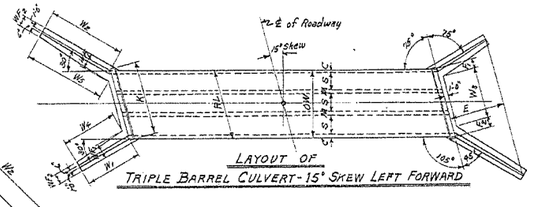
*Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.*



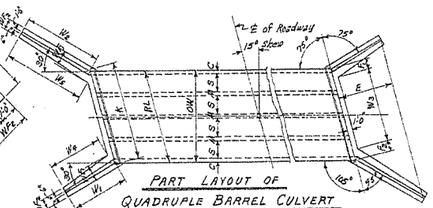

DOUBLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

*Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.*

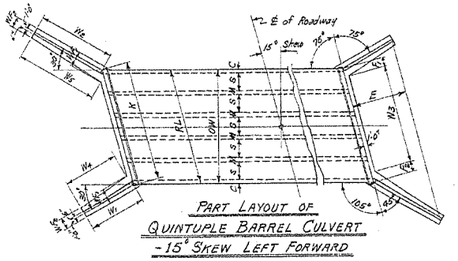
NOTE:- Plans and Elevations are not to scale.



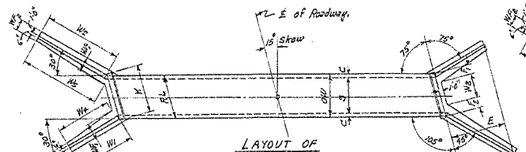

TRIPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



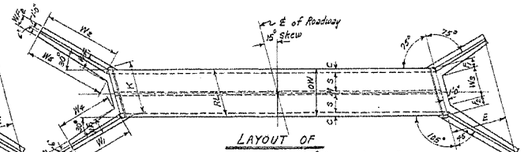

QUADRUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD




QUINTUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD

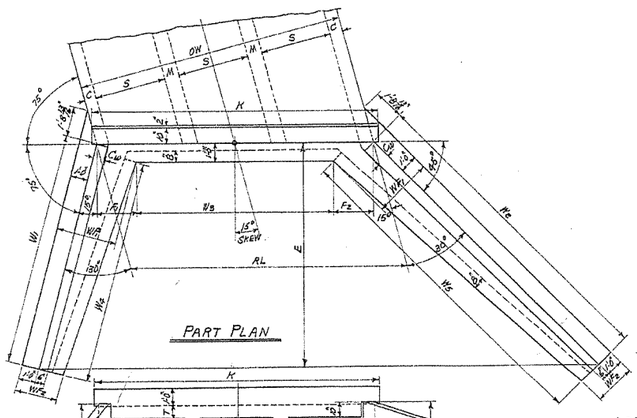



SINGLE BARREL CULVERT - 15° SKEW LEFT FORWARD




DOUBLE BARREL CULVERT - 15° SKEW LEFT FORWARD

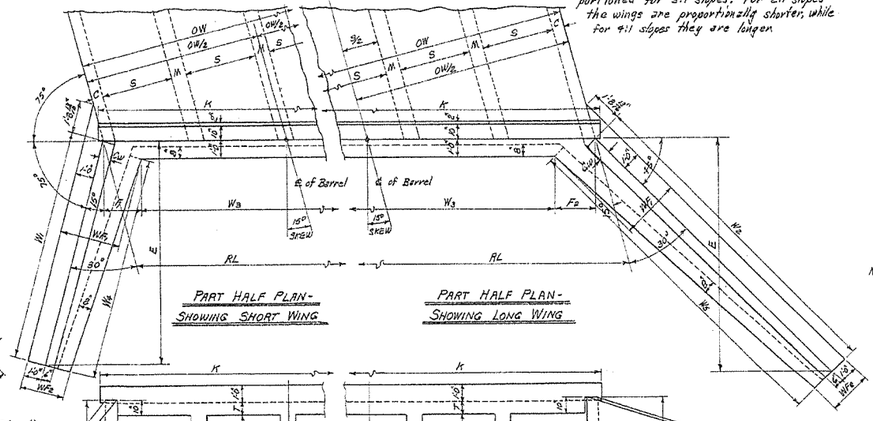
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.




TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

*Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.*

NOTE:- Plans and Elevations are not to scale.




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 x 1.035276 — K = RL - (6½") — $W_3$ = RL - ($F_1$ + $F_2$)

| USE WITH DRAWING No. | CLEAR SPAN | CLEAR HEIGHT | SUM OF FOOTING DIMENSIONS | SINGLE BARREL CULVERT | | | | DOUBLE BARREL CULVERT | | | | TRIPLE BARREL CULVERT | | | | QUADRUPLE BARREL CULVERT | | | | QUINTUPLE BARREL CULVERT | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | H | $F_1$&$F_2$ | OW | RL | K | $W_3$ | OW | RL | K | $W_3$ | OW | RL | K | $W_3$ | OW | RL | K | $W_3$ | OW | RL | K | $W_3$ |
| W-X152-1, W-X153-1 or W-X154-1. (FOR H=8'0" OR LESS) | 4' | 2'-0" | | 5'-0" | 5'-2⅝" | 5'-8⅝" | 3'-2⅝" | 9'-8" | 10'-0" | 10'-6⅝" | 6'-0" | 14'-6" | 14'-10" | 15'-4⅝" | 12'-10" | 19'-0" | 19'-6" | 20'-2½" | 17'-8" | 23'-8" | 24'-6" | 25'-0⅝" | 22'-6" |
| | | 3' | 2'-9⅝" | 5'-10" | " | " | 2'-9⅝" | " | " | " | 7'-2⅝" | 16'-6" | " | " | 12'-0⅝" | 19'-0" | " | " | 16'-10⅝" | 23'-8" | " | " | 21'-8⅝" |
| | | 4' | 3'-7⅝" | 5'-10" | " | " | 1'-6⅝" | 9'-8" | " | " | 6'-0⅝" | 16'-6" | " | " | 11'-2⅝" | 19'-0" | " | " | 14'-10⅝" | 23'-8" | " | " | 20'-10⅝" |
| | | 5' | 4'-5⅝" | 5'-10" | " | " | 0'-0⅝" | 9'-8" | " | " | 5'-0⅝" | 16'-6" | " | " | 10'-4⅝" | 19'-0" | " | " | 15'-2⅝" | 23'-8" | " | " | 20'-0⅝" |
| | | 6' | 5'-3⅝" | 5'-2" | 5'-10⅝" | 5'-10⅝" | 0'-1" | 9'-11" | 10'-3⅝" | 10'-8⅝" | 5'-0" | 14'-8" | 15'-2⅝" | 15'-8⅝" | 9'-11" | 19'-5" | 20'-1⅛" | 20'-7⅝" | 14'-10" | 24'-2" | 25'-0⅛" | 25'-5⅛" | 19'-8" |
| | 5' | 3' | 2'-9⅝" | 6'-10" | 6'-2⅝" | 6'-9" | 3'-9⅝" | 11'-8" | 12'-1" | 12'-7⅛" | 9'-3⅛" | 17'-6" | 17'-11⅜" | 18'-5⅛" | 15'-1⅛" | 23'-0" | 23'-8⅜" | 24'-6⅛" | 21'-0" | 28'-8" | 29'-8⅛" | 30'-2⅛" | 26'-10⅛" |
| | | 4' | 3'-7⅝" | 6'-10" | " | " | 2'-7" | 11'-8" | " | " | 8'-3⅝" | 17'-6" | " | " | 13'-3⅝" | 23'-0" | " | " | 18'-3⅝" | 28'-8" | " | " | 24'-0⅝" |
| | | 5' | 4'-5⅝" | 6'-10" | " | " | 1'-9⅝" | 11'-8" | " | " | 7'-7⅝" | 17'-6" | " | " | 13'-7⅝" | 23'-0" | " | " | 19'-7⅛" | 28'-8" | " | " | 25'-2⅝" |
| | | 6' | 5'-3⅝" | 6'-2" | 6'-10⅝" | 6'-10⅝" | 1'-1⅝" | 11'-11" | 12'-5" | 12'-10⅝" | 7'-10⅝" | 17'-8" | 18'-3½" | 18'-10" | 13'-10⅝" | 23'-5" | 24'-0⅜" | 24'-9⅜" | 18'-11⅝" | 28'-7" | 29'-7" | 30'-2⅜" | 26'-11⅝" |
| | | 7' | 6'-5⅜" | 6'-8" | 6'-5⅜" | 7'-0⅜" | Ⓐ 0" | 12'-1" | 12'-6⅝" | 13'-0⅛" | 6'-0⅝" | 17'-11" | 18'-6⅝" | 19'-1" | 14'-0⅝" | 23'-9" | 24'-1" | 25'-1½" | 19'-1⅛" | 28'-7" | 29'-7" | 30'-2⅝" | 26'-11⅝" |
| | 6' | 3' | 2'-9⅝" | 7'-10" | 7'-5" | 7'-9⅜" | 4'-3⅝" | 13'-8" | 14'-1⅞" | 14'-8⅜" | 11'-4" | 20'-6" | 21'-0⅝" | 21'-7" | 18'-2⅜" | 27'-0" | 27'-6⅜" | 28'-3⅝" | 25'-1⅜" | 33'-8" | 34'-4⅛" | 35'-4⅜" | 32'-0⅝" |
| | | 4' | 3'-7⅝" | 7'-10" | " | " | 3'-7⅝" | 13'-8" | " | " | 10'-6⅝" | 20'-6" | " | " | 17'-1" | 27'-0" | " | " | 23'-7" | 33'-8" | " | " | 31'-2⅝" |
| | | 5' | 4'-5⅝" | 7'-10" | " | " | 2'-9⅝" | 13'-8" | " | " | 9'-8⅝" | 20'-6" | " | " | 16'-7½" | 27'-0" | " | " | 23'-6" | 33'-8" | " | " | 30'-4⅝" |
| | | 6' | 5'-3⅜" | 7'-8" | 7'-5" | 7'-11⅝" | 2'-1½" | 13'-11" | 14'-3" | 14'-11⅝" | 9'-1⅝" | 20'-8" | 21'-2⅛" | 21'-11½" | 16'-11⅝" | 27'-5" | 28'-0⅝" | 28'-11½" | 23'-1½" | 34'-2" | 35'-2⅝" | 35'-11" | 30'-1⅛" |
| | | 7' | 6'-5⅜" | 7'-5" | 7'-1⅝" | 8'-0⅝" | 1'-0⅝" | 14'-1" | 14'-7" | 15'-1⅝" | 8'-1⅛" | 20'-11" | 21'-7⅜" | 22'-2⅝" | 15'-2" | 27'-9" | 28'-5⅜" | 29'-3⅜" | 22'-5" | 34'-7" | 35'-8⅜" | 36'-6" | 29'-3⅝" |
| | | 8' | 7'-1⅜" | 7'-4" | 7'-7⅜" | 8'-1⅝" | Ⓐ 0" | 14'-2" | 14'-8" | 15'-2⅝" | 6'-11⅜" | 21'-0" | 21'-8⅜" | 22'-3⅝" | 14'-0⅝" | 28'-0" | 28'-6⅜" | 29'-4⅜" | 21'-4⅛" | 35'-0" | 36'-0⅛" | 36'-5" | 28'-2" |
| | 7' | 4' | 3'-7⅝" | 8'-0" | 8'-3⅜" | 8'-9⅜" | 4'-7⅜" | 15'-8" | 16'-2⅝" | 16'-9" | 12'-7" | 23'-6" | 24'-1⅜" | 24'-10⅝" | 20'-6⅛" | 31'-0" | 32'-1⅛" | 32'-10⅝" | 26'-5⅛" | 38'-8" | 40'-0⅝" | 40'-0⅝" | 36'-0⅝" |
| | | 5' | 4'-5⅝" | 9'-0" | " | " | 3'-10" | 15'-8" | " | " | 11'-9⅝" | 23'-9" | " | " | 19'-8⅝" | 31'-0" | " | " | 27'-7⅜" | 38'-8" | " | " | 35'-7" |
| | | 6' | 5'-3⅜" | 8'-12" | 8'-5⅝" | 9'-0" | 3'-2⅝" | 15'-11" | 16'-5⅝" | 17'-0⅛" | 11'-2⅝" | 23'-8" | 24'-1" | 25'-0⅝" | 19'-2⅝" | 31'-5" | 32'-4⅛" | 33'-0⅝" | 27'-3" | 39'-2" | 40'-6⅝" | 41'-1" | 35'-3⅝" |
| | | 7' | 6'-5⅜" | 8'-12" | 8'-6⅝" | 9'-11" | 2'-0⅝" | 16'-1" | 16'-7⅜" | 17'-2⅝" | 10'-2" | 23'-11" | 24'-3⅝" | 25'-3½" | 18'-3⅝" | 31'-9" | 32'-10⅛" | 33'-5" | 26'-11⅝" | 39'-7" | 41'-0⅝" | 41'-6" | 35'-9" |
| | | 8' | 7'-1⅜" | 8'-12" | 8'-7⅛" | 9'-2" | 0'-11" | 16'-2" | 16'-8⅝" | 17'-3⅜" | 9'-10⅛" | 24'-0" | 24'-5½" | 25'-5½" | 17'-1½" | 31'-10" | 32'-11½" | 33'-6" | 25'-8" | 39'-10" | 41'-3⅛" | 41'-7½" | 33'-4½" |
| | 8' | 4' | 3'-7⅝" | 9'-10" | 9'-3⅝" | 9'-10⅜" | 5'-8⅝" | 17'-8" | 18'-2⅝" | 18'-10" | 13'-8" | 26'-6" | 27'-1⅜" | 27'-10⅝" | 23'-1⅜" | 35'-0" | 36'-0⅜" | 36'-9⅛" | 32'-7½" | 44'-8" | 45'-8⅜" | 45'-9" | 41'-7" |
| | | 5' | 4'-5⅝" | 9'-12" | 9'-5⅜" | 10'-0⅝" | 5'-0⅝" | 17'-11" | 18'-5⅝" | 19'-1" | 14'-1½" | 26'-8" | 27'-3⅜" | 28'-1⅝" | 23'-2" | 35'-5" | 36'-5" | 37'-2⅝" | 32'-8" | 44'-11" | 45'-9⅝" | 46'-3⅛" | 41'-8" |
| | | 6' | 5'-3⅜" | 9'-12" | " | " | 4'-2½" | 17'-11" | " | " | 13'-3½" | 26'-8" | " | " | 22'-8" | 36'-5" | " | " | 31'-9⅝" | 44'-11" | " | " | 40'-5½" |
| | | 7' | 6'-5⅜" | 9'-13" | 9'-6⅝" | 10'-11⅝" | 3'-1" | 18'-1" | 18'-6⅝" | 19'-2" | 12'-5⅝" | 26'-11" | 27'-4⅝" | 28'-3⅝" | 21'-11⅝" | 36'-9" | 37'-4⅝" | 38'-3⅛" | 30'-6⅝" | 44'-11" | 46'-2⅝" | 46'-9⅝" | 39'-6" |
| | | 8' | 7'-1⅜" | 9'-14" | 9'-8" | 10'-12⅜" | 1'-11⅛" | 18'-2" | 18'-9⅝" | 19'-4⅝" | 11'-1⅛" | 27'-0" | 27'-5½" | 28'-5⅝" | 20'-8⅜" | 36'-10" | 37'-7⅛" | 38'-7⅝" | 29'-4⅝" | 44'-8" | 46'-2⅝" | 46'-9⅝" | 38'-6⅝" |
| | 9' | 5' | 4'-5⅝" | 10'-2" | 10'-6⅝" | 11'-0⅝" | 6'-1" | 19'-1" | 20'-0⅞" | 21'-2" | 16'-2" | 29'-8" | 30'-6⅛" | 31'-6" | 25'-10⅛" | 39'-5" | 40'-3⅝" | 41'-4⅜" | 34'-4½" | 49'-3" | 50'-5⅛" | 51'-5⅝" | 46'-5⅛" |
| | | 6' | 5'-3⅜" | 10'-3" | 10'-7⅝" | 11'-1⅜" | 5'-9⅜" | 20'-1" | 20'-9⅞" | 21'-4" | 15'-6⅝" | 29'-11" | 30'-9⅛" | 31'-6" | 25'-10⅛" | 39'-9" | 40'-7⅛" | 41'-8⅜" | 35'-0⅛" | 49'-7" | 51'-0" | 51'-10⅝" | 46'-10⅛" |
| | | 7' | 6'-5⅜" | 10'-3" | " | " | 5'-1⅝" | 20'-1" | " | " | 14'-9⅝" | 29'-11" | " | " | 25'-2⅝" | 39'-9" | " | " | 34'-8" | 49'-7" | " | " | 44'-1" |
| | | 8' | 7'-1⅜" | 10'-4" | 10'-8⅜" | 11'-2⅝" | 4'-1⅝" | 20'-2" | 20'-10⅛" | 21'-5" | 13'-8" | 30'-0" | 31'-0⅝" | 31'-7½" | 25'-6⅛" | 39'-10" | 41'-0⅜" | 41'-9⅛" | 33'-6⅝" | 49'-8" | 51'-5" | 52'-1½" | 45'-3⅝" |
| | 10' | 5' | 4'-5⅝" | 11'-2" | 11'-6⅝" | 12'-1⅛" | 7'-1⅝" | 21'-11" | 22'-8⅝" | 23'-6⅝" | 18'-3" | 32'-6" | 33'-5⅜" | 34'-6⅛" | 29'-1⅛" | 43'-5" | 44'-5½" | 45'-6" | 38'-0" | 54'-2" | 56'-1" | 56'-7½" | 51'-7½" |
| | | 6' | 5'-3⅜" | 11'-3" | 11'-7⅝" | 12'-2⅛" | 6'-6⅝" | 22'-1" | 22'-10⅛" | 23'-8⅝" | 17'-7⅛" | 32'-11" | 34'-1" | 35'-1⅛" | 28'-5⅜" | 43'-9" | 45'-3⅛" | 45'-10" | 38'-0" | 54'-7" | 56'-6" | 57'-0⅛" | 51'-3" |
| | | 7' | 6'-5⅜" | 11'-3" | " | " | 5'-1⅜" | 22'-1" | " | " | 16'-6⅛" | 32'-11" | " | " | 27'-7" | 43'-9" | " | " | 38'-3⅝" | 54'-7" | " | " | 50'-10⅝" |
| | | 8' | 7'-1⅜" | 11'-4" | 11'-8⅝" | 12'-3⅛" | 4'-1⅝" | 22'-2" | 22'-11⅞" | 23'-10⅝" | 15'-10⅝" | 33'-0" | 34'-2" | 35'-2⅝" | 26'-5⅛" | 43'-10" | 45'-4⅛" | 45'-11" | 37'-8" | 54'-8" | 56'-7⅛" | 57'-1⅛" | 48'-10⅝" |
| | 11' | 6' | 5'-3⅜" | 12'-0" | 12'-4⅝" | 12'-11⅝" | 7'-6" | 24'-2" | 25'-0⅛" | 25'-10⅝" | 19'-7" | 36'-0" | 37'-3⅛" | 38'-3⅝" | 32'-0" | 47'-10" | 49'-4⅝" | 50'-0⅝" | 42'-3" | 59'-3" | 61'-4⅝" | 62'-0⅝" | 53'-8" |
| | | 7' | 6'-5⅜" | 12'-0" | " | " | 6'-3⅜" | 24'-2" | " | " | 18'-6⅝" | 36'-0" | " | " | 30'-9⅝" | 47'-10" | " | " | 41'-9⅜" | 59'-3" | " | " | 49'-8⅝" |
| | | 8' | 7'-1⅜" | 12'-0" | " | " | 5'-0⅝" | 24'-2" | " | " | 17'-5⅝" | 36'-0" | " | " | 29'-6⅛" | 47'-10" | " | " | 41'-3⅝" | 59'-3" | " | " | 49'-3⅛" |
| | 12' | 6' | 5'-3⅜" | 13'-0" | 13'-4⅝" | 13'-11⅝" | 8'-6" | 26'-2" | 27'-1" | 27'-10⅝" | 20'-7" | 39'-0" | " | " | 33'-9" | 51'-10" | " | " | 44'-3" | 64'-3" | " | " | 54'-3" |
| | | 7' | 6'-5⅜" | 13'-0" | " | " | 7'-3⅜" | 26'-2" | " | " | 19'-6⅝" | 39'-0" | " | " | 32'-8" | 51'-10" | " | " | 44'-1⅛" | — | — | — | — |
| | | 8' | 7'-1⅜" | 13'-0" | " | " | 6'-1" | 26'-2" | " | " | 18'-5⅝" | 39'-0" | " | " | 31'-10" | 51'-10" | " | " | 43'-3⅝" | — | — | — | — |
| W-X152-2, W-X153-2 or W-X154-2. (FOR H=9'0" & OVER) | 7' | 9' | 8'-11⅝" | 8'-6" | 8'-10⅝" | 9'-4" | Ⓐ 0" | 16'-5" | 17'-0" | 17'-6⅝" | 8'-0⅝" | 24'-6" | 25'-2⅛" | 25'-8⅝" | 16'-3" | 32'-8" | 33'-4⅝" | 33'-11" | 24'-5⅝" | 40'-8" | 41'-7" | 42'-1⅝" | 32'-7⅝" |
| | 8' | 9' | 8'-11⅝" | 9'-6" | 9'-10" | 10'-4⅝" | 0'-10⅝" | 18'-5" | 19'-0⅝" | 19'-7⅝" | 10'-1⅝" | 27'-4" | 28'-0⅜" | 28'-10" | 19'-0⅜" | 36'-3" | 37'-0⅝" | 38'-0⅝" | 28'-7" | 45'-2" | 46'-3⅜" | 47'-3⅝" | 37'-9⅝" |
| | | 10' | 10'-2" | 9'-8" | 10'-0⅝" | 10'-6⅝" | Ⓐ 0" | 18'-8" | 19'-3⅝" | 19'-10⅝" | 9'-2" | 27'-8" | 28'-7⅜" | 29'-2⅝" | 18'-5⅜" | 36'-8" | 37'-7⅛" | 38'-6" | 27'-9⅝" | 45'-8" | 47'-0⅜" | 48'-0" | 37'-1½" |
| | 9' | 9' | 8'-11⅝" | 10'-6" | 10'-10⅝" | 11'-5" | 1'-11⅝" | 20'-5" | 21'-0⅝" | 21'-8⅝" | 12'-2½" | 30'-9" | 31'-8⅝" | 32'-5⅛" | 21'-10⅝" | 40'-3" | 41'-3" | 42'-2⅝" | 32'-0⅝" | 50'-2" | 51'-11⅝" | 52'-5⅝" | 43'-0" |
| | | 10' | 10'-2" | 10'-8" | 11'-0⅜" | 11'-7" | 0'-10½" | 20'-5" | 21'-0⅝" | 21'-8⅝" | 11'-2⅝" | 30'-8" | 31'-9" | 32'-3½" | 21'-7" | 40'-2" | 41'-3" | 42'-2⅝" | 31'-11⅝" | 50'-1" | 50'-5" | 53'-0" | 42'-3½" |
| | | 11' | 11'-0⅝" | 10'-10" | 11'-2⅝" | 11'-9" | Ⓐ 0" | 20'-5" | 21'-0⅝" | 21'-8⅝" | 10'-2⅝" | 30'-10" | 31'-11" | 32'-5⅝" | 20'-6⅝" | 40'-0" | 42'-3⅛" | 43'-2⅝" | 30'-10⅝" | 50'-1" | 50'-5" | 53'-2" | 41'-2⅝" |
| | 10' | 9' | 8'-11⅝" | 11'-6" | 11'-10⅜" | 12'-5⅝" | 2'-11½" | 22'-5" | 23'-1⅛" | 23'-9" | 14'-3⅜" | 33'-4" | 34'-6⅛" | 35'-6" | 25'-0⅜" | 44'-3" | 45'-5" | 46'-4½" | 36'-1⅝" | 55'-8" | 57'-1⅜" | 58'-0⅝" | 48'-8" |
| | | 10' | 10'-2" | 11'-8" | 12'-1" | 12'-7½" | 1'-11" | 22'-8" | 23'-5⅝" | 24'-0" | 13'-8⅝" | 33'-8" | 34'-10⅛" | 35'-9⅝" | 24'-10⅝" | 44'-8" | 46'-0" | 46'-9⅝" | 36'-1" | 55'-8" | 57'-2⅝" | 58'-1⅝" | 47'-5⅝" |
| | | 11' | 11'-4⅝" | 11'-10" | 12'-3⅝" | 12'-9⅝" | 0'-10⅝" | 22'-10" | 23'-7⅜" | 24'-2" | 12'-3" | 33'-10" | 35'-0⅛" | 35'-10⅝" | 23'-7⅜" | 44'-10" | 46'-1" | 46'-10⅝" | 35'-0⅝" | 55'-10" | 57'-3⅝" | 58'-3" | 46'-5" |
| | | 12' | 12'-1⅞" | 12'-0" | 12'-5⅛" | 12'-11⅝" | Ⓐ 0" | 23'-0" | 23'-9⅛" | 24'-4⅝" | 11'-2⅝" | 34'-0" | 35'-2⅜" | 35'-11⅝" | 22'-7" | 45'-0" | 46'-2" | 47'-1⅛" | 33'-11⅝" | 56'-0" | 57'-4⅛" | 58'-3⅛" | 45'-4⅝" |
| | 11' | 9' | 8'-11⅝" | 12'-6" | 12'-10⅝" | 13'-5⅝" | 4'-0" | 24'-5" | 25'-2⅜" | 25'-9⅝" | 16'-4" | 36'-4" | 37'-7⅜" | 38'-7⅝" | 28'-8" | 48'-3" | 49'-6⅜" | 50'-5⅝" | 40'-0⅝" | 60'-0" | 61'-6" | 62'-5⅝" | 52'-0" |
| | | 10' | 10'-2" | 12'-8" | 13'-1⅜" | 13'-7⅜" | 2'-11⅝" | 24'-8" | 25'-5⅝" | 26'-1" | 15'-11⅝" | 36'-8" | 37'-11⅝" | 38'-11" | 27'-9⅝" | 48'-8" | 50'-0⅝" | 50'-11" | 40'-2⅜" | 60'-5" | 62'-0" | 62'-11" | 52'-4" |
| | | 11' | 11'-4⅝" | 12'-10" | 13'-3⅝" | 13'-10" | 1'-10⅝" | 24'-10" | 25'-8⅝" | 26'-4" | 15'-3⅝" | 36'-10" | 38'-1⅝" | 38'-10" | 26'-9" | 48'-10" | 50'-2⅝" | 51'-1" | 39'-1" | 60'-7" | 62'-2⅝" | 63'-1" | 51'-7" |
| | | 12' | 12'-1⅞" | 13'-0" | 13'-5⅛" | 14'-0" | 0'-10⅝" | 25'-0" | 25'-10⅝" | 26'-5" | 13'-3⅝" | 37'-0" | 38'-3⅜" | 38'-10" | 25'-8⅝" | 49'-0" | 50'-3⅝" | 51'-1⅝" | 38'-1⅝" | 60'-8" | 62'-3⅛" | 63'-1⅛" | 50'-8" |
| | 12' | 9' | 8'-11⅝" | 13'-6" | 13'-10⅝" | 14'-5⅝" | 5'-0⅝" | 26'-5" | 27'-2⅝" | 27'-10⅝" | 18'-5" | 39'-4" | 40'-6⅜" | 41'-5" | 31'-1⅝" | 52'-3" | 53'-6⅛" | 54'-5⅛" | 43'-5⅛" | 64'-5" | 65'-10⅜" | 66'-9⅛" | 55'-4⅝" |
| | | 10' | 10'-2" | 13'-8" | 14'-1⅜" | 14'-8⅜" | 3'-11⅝" | 26'-8" | 27'-5⅝" | 28'-1" | 17'-5⅝" | 39'-8" | 40'-11⅝" | 41'-9⅝" | 30'-10⅝" | 52'-8" | 54'-0⅝" | 54'-11" | 43'-1⅝" | 64'-10" | 66'-3⅜" | 67'-2⅝" | 55'-8" |
| | | 11' | 11'-4⅝" | 13'-10" | 14'-3⅝" | 14'-10⅝" | 2'-11⅝" | 26'-10" | 27'-8⅜" | 28'-3⅝" | 16'-9⅝" | 39'-10" | 41'-2⅜" | 41'-11⅝" | 29'-10⅝" | 52'-10" | 54'-3⅜" | 55'-2⅝" | 42'-3⅝" | 65'-1" | 66'-7⅛" | 67'-6⅛" | 55'-11⅝" |
| | | 12' | 12'-1⅞" | 14'-0" | 14'-5⅝" | 15'-0⅝" | 1'-10⅝" | 27'-0" | 27'-11⅜" | 28'-6" | 15'-9" | 40'-0" | 41'-4⅝" | 42'-1⅝" | 28'-9½" | 53'-0" | 54'-5⅜" | 55'-4⅝" | 41'-3½" | 65'-3" | 66'-9" | 67'-8" | 56'-2" |

Ⓐ Special case for these boxes, See Detail 'A' and Table 'A' for revised values of $F_1$, $F_2$, $W_6$ and $W_5$, when apron width is more than 1'0 and $W_3$=0. For Details '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

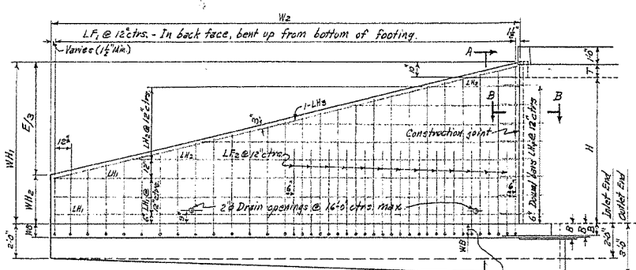
Designed by:- W.C.H. 5-22-63. Checked by:-
Traced by:- W.C.H. 6-13-63 Checked by:- J.E.M. 6-20-63
Quantities by:- Checked by:-

31

RESHOT 3-8-93

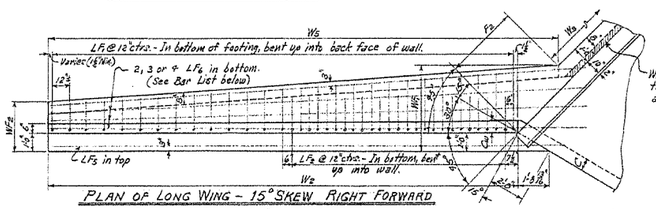
175 3

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 224 | |
| JOB No. | | | | | |



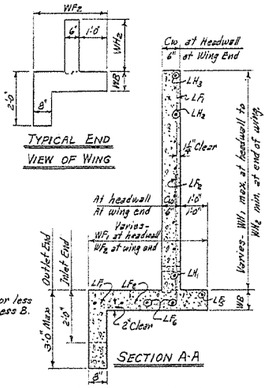

REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD

SHOWING BACK FACE REINFORCING

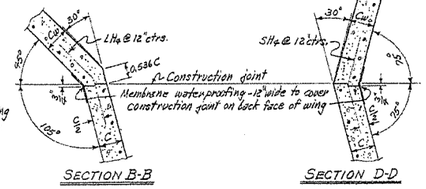



PLAN OF LONG WING - 15° SKEW RIGHT FORWARD

SHOWING FOOTING REINFORCING.

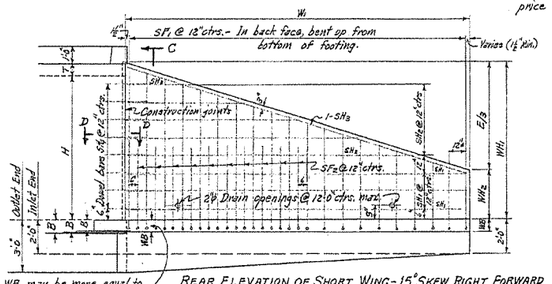



When B is more than W8, the shaded portion of the apron shall be made the same thickness as the bottom slab B.



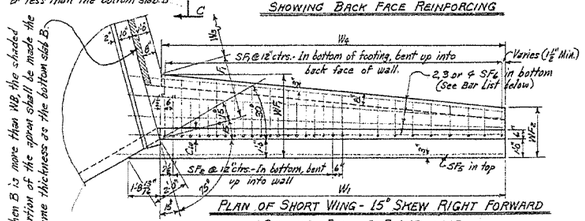

SECTIONS THRU CONSTRUCTION JOINTS

Note:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.



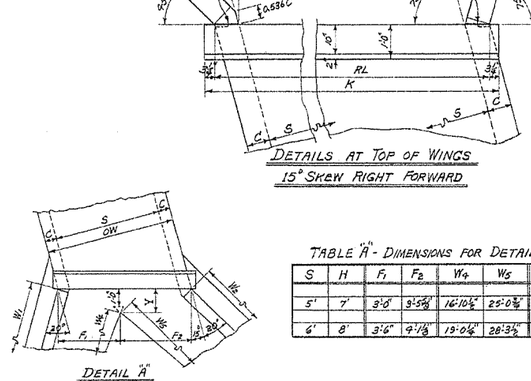

REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD

SHOWING BACK FACE REINFORCING




PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD

SHOWING FOOTING REINFORCING




DETAILS AT TOP OF WINGS

15° SKEW RIGHT FORWARD




TABLE "A" - DIMENSIONS FOR DETAIL "A"

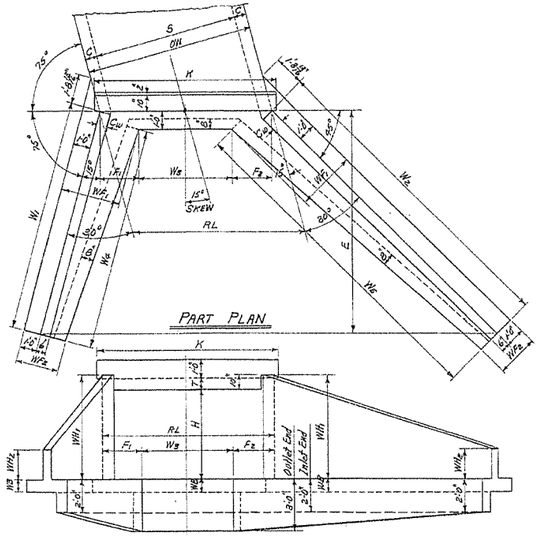
| S | H | $F_1$ | $F_2$ | $W_4$ | $W_5$ | $W_3$ | Y |
|---|---|---|---|---|---|---|---|
| 5' | 7' | 3'-0" | 3'-5⅝" | 16'-10½" | 25'-0⅜" | 0" | 1'-0⅜" |
| 6' | 8' | 3'-6" | 4'-1⅞" | 19'-0⅛" | 28'-3½" | 0" | 1'-1" |

REGULAR WING DIMENSIONS - 3:1 SLOPES

| CLEAR HEIGHT OF BOX | THICKNESS OF WING FOOTING | THICKNESS OF WING AT HEAD = 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 HEAD 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 | $W_1$ | $W_2$ | $W_6$ | $W_{15}$ | CU.YD. | CU.YD. | CU.YD. | CU.YD. |
| 2' | 7" | 6" | 2'-10" | 0'-6" | 2'-9" | 2'-0" | 1'-1⅜" | 0'-10⅝" | 6'-6" | 6'-8⅝" | 9'-2⅛" | 6'-0⅝" | 9'-1⅝" | 0.789 | 1.094 | 0.876 | 1.212 |
| 3' | 7" | 6" | 3'-10" | 1'-0" | 2'-8" | 2'-1½" | 1'-5⅛" | 1'-1½" | 8'-6" | 8'-9½" | 12'-0⅝" | 8'-2⅝" | 12'-3⅝" | 1.186 | 1.650 | 1.300 | 1.808 |
| 4' | 7" | 6" | 4'-10" | 1'-9" | 3'-0" | 2'-3" | 1'-9⅝" | 1'-1⅝" | 10'-6" | 10'-10⅝" | 14'-10⅝" | 10'-2⅝" | 15'-5⅝" | 1.656 | 2.305 | 1.797 | 2.502 |
| 5' | 7" | 6" | 5'-10" | 1'-8" | 3'-6" | 2'-6½" | 2'-1⅜" | 2'-3⅜" | 12'-6" | 12'-11⅛" | 17'-8½" | 12'-6⅛" | 18'-7½" | 2.196 | 3.059 | 2.363 | 3.295 |
| | | 7" | 5'-10" | 1'-8" | 3'-6" | 2'-6½" | 2'-1⅜" | 2'-3⅜" | 12'-6" | 12'-11⅛" | 17'-8½" | 12'-6⅛" | 18'-7½" | 2.287 | 3.188 | 2.955 | 3.428 |
| 6' | 8" | 7" | 6'-10" | 2'-0" | 3'-8" | 2'-6" | 2'-5⅞" | 2'-9⅜" | 14'-6" | 15'-0⅝" | 20'-6" | 14'-8⅝" | 21'-9" | 3.052 | 4.262 | 3.296 | 4.517 |
| | | 7½" | 6'-10" | 2'-0" | 3'-8" | 2'-6" | 2'-5⅞" | 2'-9⅜" | 14'-6" | 15'-0⅝" | 20'-6" | 14'-8⅝" | 21'-9" | 3.114 | 4.329 | 3.309 | 4.605 |
| | | 8" | 6'-10" | 2'-0" | 3'-8" | 2'-6" | 2'-5⅞" | 2'-9⅜" | 14'-6" | 15'-0⅝" | 20'-6" | 14'-8⅝" | 21'-9" | 3.177 | 4.417 | 3.371 | 4.693 |
| * 7' | 8½" | 7½" | 7'-10" | 2'-9" | 4'-2" | 2'-7½" | 3'-0⅛" | 3'-5⅝" | 16'-6" | 17'-1" | 23'-4" | 16'-10⅝" | 25'-1" | 3.998 | 5.560 | 4.220 | 5.877 |
| | | 8" | 7'-10" | 2'-9" | 4'-2" | 2'-7½" | 3'-0⅛" | 3'-5⅝" | 16'-6" | 17'-1" | 23'-4" | 16'-10⅝" | 25'-1" | 4.079 | 5.675 | 4.301 | 5.991 |
| * 8' | 9" | 8" | 8'-10" | 2'-8" | 4'-8" | 2'-9" | 3'-6⅜" | 4'-2⅛" | 18'-6" | 19'-1⅞" | 26'-2" | 19'-1⅛" | 28'-5" | 5.111 | 7.111 | 5.360 | 7.970 |

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W8.

@ See Table "A" for special values of $F_1$ & $F_2$ and W4 & W5 for Single 5'x5' and 6'x8' Box Culverts.




END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Drwg. No. W-X16

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 W8 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.

QUANTITIES

| CLEAR SPAN | CLEAR HEIGHT | THICKNESS OF WING AT HEADWALL | THICKNESS OF WING FOOTING | REINFORCING STEEL - LB. PER 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 | 4.93 | 5.76 | 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 | 9.87 | 10.84 | 11.83 | 12.82 |
| | 5' | 6" | 7" | 379 | 11.40 | 12.38 | 13.38 | 14.37 | 15.36 |
| | 6' | 7" | 8" | 626 | 15.95 | 16.96 | 17.98 | 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 | 11.49 | 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' | 7½" | 8½" | 1210 | 20.11 | 21.36 | 22.62 | 23.88 | 25.14 |
| 6' | 3' | 6" | 7" | 176 | 7.09 | 8.52 | 9.92 | 11.34 | 12.78 |
| | 4' | 6" | 7" | 267 | 9.29 | 10.73 | 12.13 | 13.54 | 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' | 7½" | 8½" | 1210 | 20.33 | 21.81 | 23.28 | 24.76 | 26.24 |
| | 8' | 8" | 9" | 1533 | 25.36 | 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' | 7½" | 8½" | 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 | 12.74 | 14.68 | 16.55 | 18.47 | 20.31 |
| | 6' | 7" | 8" | 626 | 16.38 | 18.26 | 20.14 | 22.06 | 23.90 |
| | 7' | 7½" | 8½" | 1210 | 20.78 | 22.72 | 24.62 | 26.55 | 28.42 |
| | 8' | 8" | 9" | 1533 | 26.08 | 27.96 | 29.86 | 31.80 | 33.71 |
| 9' | 5' | 7" | 7" | 379 | 12.99 | 15.15 | 17.25 | 19.40 | 21.95 |
| | 6' | 7½" | 8" | 626 | 16.89 | 19.07 | 21.19 | 23.36 | 25.42 |
| | 7' | 7½" | 8½" | 1210 | 21.01 | 23.19 | 25.31 | 27.48 | 29.64 |
| | 8' | 8" | 9" | 1533 | 26.25 | 28.42 | 30.55 | 32.72 | 34.78 |
| 10' | 5' | 7" | 7" | 379 | 13.25 | 15.42 | 17.55 | 20.24 | 22.59 |
| | 6' | 7½" | 8" | 626 | 17.13 | 19.34 | 21.89 | 24.20 | 26.56 |
| | 7' | 7½" | 8½" | 1210 | 21.44 | 23.66 | 26.01 | 28.32 | 30.66 |
| | 8' | 8" | 9" | 1533 | 26.46 | 28.89 | 31.25 | 33.56 | 35.92 |
| 11' | 6' | 8" | 8" | 626 | 17.67 | 20.34 | 22.92 | 25.40 | ——— |
| | 7' | 8" | 8½" | 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 | 20.64 | 23.49 | 26.46 | ——— |
| | 7' | 8" | 8½" | 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.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾ chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-

Class S Concrete (n=10) 1200 #/□"

Reinforcing Steel 20,000 #/□"

NOTE:-

This drawing to be used in conjunction with 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

| CLEAR HEIGHT | WING LOCATION | 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 wall. Alt. with F1 bars. | | | | | | | SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing heel. | | | SF4 & LF4 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. | | | | BAR BENDING DIAGRAM | QUANTITY: REINFORCING STEEL PER WING - LBS. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | SHORT or LONG | SIZE | SPACING | NO. REQD | LENGTHS VARY MIN. | LENGTHS VARY MAX. | X MIN. | X MAX. | Y MIN. | Y MAX. | SIZE | SPACING | NO. REQD | LENGTH | X | Y | SIZE | NO. REQD | LENGTH | SIZE | NO. REQD | LENGTH | SIZE | SPACING | NO. REQD | LENGTH | BAR STYLE | SPACING | NO. REQD | LENGTHS VARY MAX. | LENGTHS VARY MIN. | SIZE | NO. REQD | LENGTH | SIZE | SPACING | NO. REQD | LENGTH | X | | SHORT WING | LONG WING |
| 2' | Short | #3 | 12" | 7 | 1'-7" | 3'-11" | 0'-9" | 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'-6" | Y / SF1 & SF2 LF3 & LF2 / 3" Min. / X | 24.9 | 33.4 |
| | Long | #3 | 12" | 10 | 1'-7" | 3'-11" | 0'-9" | 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'-2" | #3 | 12" | 2 | " | " | | | |
| 3' | Short | #3 | 12" | 9 | 2'-2" | 5'-6" | 0'-10" | 1'-4" | 1'-5" | 4'-6" | — | — | — | — | — | — | #3 | 1 | 11'-8" | #3 | 2 | 10'-0" | #3 | 12" | 1 | 8'-6" | #3 | 12" | 2 | 6'-7" | 3'-6" | #3 | 1 | 9'-6" | #3 | 12" | 3 | " | " | | 37.7 | 50.3 |
| | Long | #3 | 12" | 13 | 1'-11" | 5'-2" | 0'-10" | 1'-3" | 1'-2" | 4'-6" | — | — | — | — | — | — | #3 | 1 | 16'-6" | #3 | 2 | 14'-10" | #3 | 12" | 1 | 11'-3" | #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'-8" | #3 | 3 | 12'-2" | #3 | 12" | 1 | 10'-7" | #3 | 12" | 3 | 9'-0" | 5'-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'-8" | #3 | 3 | 17'-2" | #3 | 12" | 1 | 14'-7" | #3 | 12" | 3 | 12'-2" | 6'-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'-6" | #3 | 12" | 2 | 12'-8" | #3 | 12" | 3 | 11'-8" | 8'-4" | #3 | 1 | 13'-6" | #3 | 12" | 5 | " | " | | 81.1 | 108.4 |
| | Long | #3 | 12" | 18 | 3'-6" | 7'-10" | 1'-1" | 2'-0" | 2'-0" | 6'-0" | #3 | 12" | 5 | 3'-6" | 1'-1" | 2'-6" | #3 | 1 | 20'-0" | #3 | 3 | 20'-0" | #3 | 12" | 2 | 17'-5" | #3 | 12" | 3 | 13'-2" | 9'-8" | #3 | 1 | 17'-0" | #3 | 12" | 5 | " | " | | | |
| 6' | Short | #4 | 12" | 16 | 3'-6" | 9'-4" | 1'-2" | 2'-4" | 2'-8" | 7'-1" | #3 | 12" | 6 | 4'-6" | 1'-6" | 3'-3" | #3 | 1 | 17'-4" | #3 | 3 | 16'-6" | #3 | 12" | 2 | 14'-8" | #3 | 12" | 3 | 12'-9" | 9'-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'-8" | 7'-1" | #3 | 12" | 5 | 4'-6" | 1'-6" | 3'-3" | #3 | 1 | 23'-0" | #3 | 3 | 22'-6" | #3 | 12" | 2 | 20'-3" | #3 | 12" | 3 | 17'-5" | 9'-8" | #3 | 1 | 20'-9" | #3 | 12" | 6 | 2'-8" | 1'-6" | | | |
| 7' | Short | #4 | 12" | 18 | 3'-9" | 10'-10" | 1'-3" | 2'-10" | 2'-9" | 8'-1" | #4 | 12" | 7 | 5'-6" | 1'-7" | 4'-0" | #4 | 1 | 19'-7" | #4 | 4 | 18'-9" | #4 | 12" | 2 | 16'-8" | #4 | 12" | 5 | 15'-10" | 11'-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'-9" | 2'-9" | 8'-1" | #4 | 12" | 9 | 5'-6" | 1'-7" | 4'-0" | #4 | 1 | 25'-10" | #4 | 4 | 25'-0" | #4 | 12" | 2 | 23'-1" | #4 | 12" | 5 | 21'-8" | 11'-6" | #4 | 1 | 22'-8" | #4 | 12" | 7 | " | " | | | |
| 8' | Short | #4 | 12" | 22 | 4'-0" | 12'-3" | 1'-5" | 3'-2" | 3'-0" | 9'-2" | #4 | 12" | 10 | 6'-6" | 1'-10" | 4'-9" | #4 | 1 | 22'-3" | #4 | 4 | 21'-8" | #4 | 12" | 2 | 19'-11" | #4 | 12" | 5 | 15'-10" | 11'-6" | #4 | 1 | 19'-10" | #4 | 12" | 8 | " | " | | 328.0 | 438.3 |
| | Long | #4 | 12" | 27 | 4'-4" | 12'-8" | 1'-5" | 3'-2" | 3'-0" | 9'-2" | #4 | 12" | 13 | 6'-6" | 1'-10" | 4'-9" | #4 | 1 | 28'-3" | #4 | 4 | 27'-8" | #4 | 12" | 2 | 25'-11" | #4 | 12" | 5 | 21'-8" | 11'-6" | #4 | 1 | 28'-7" | #4 | 12" | 8 | 3'-6" | 1'-9" | | | |

Note:- Bars for short wing shall be marked with prefix letter 'S', while those for long wing shall be marked with letter 'L'.

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

Designed By- W.C.H. 5-13-63 Checked By- RWS - 8-7-63
Drawn By- W.C.H. 6-20-63 Checked By-
Quantities By- W.C.H. 9-23-63 Checked By-

REVISIONS:- Membrane Added. 5-10-66 W.C.H.

34

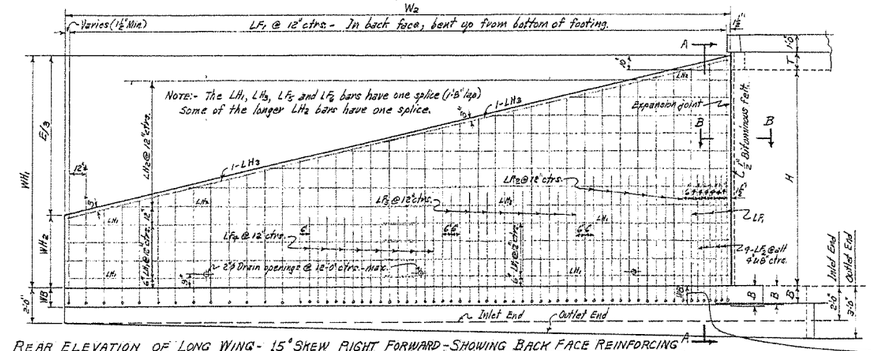
Reshot 3-8-93

393

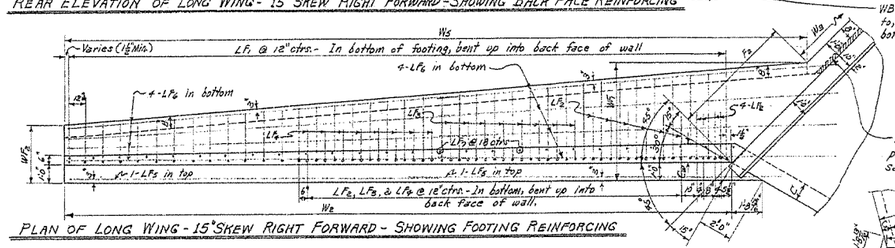
| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 225 | |
| JOB No. | | | | | |

NOTE:- This drawing to be used in conjunction with Std. Barrel Sections, Drawing Nos.

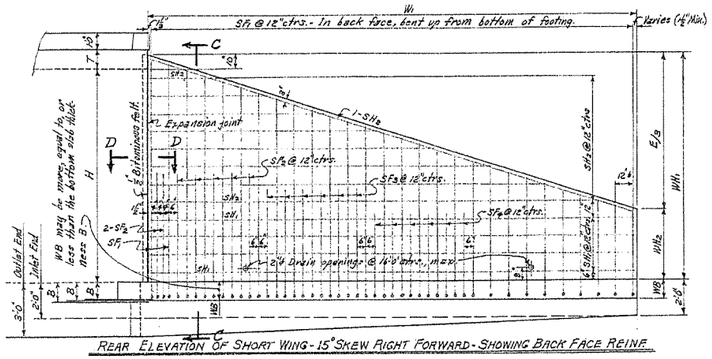
| SINGLES | DOUBLES | TRIPLES | QUADRUPLES | QUINTUPLES |
|---|---|---|---|---|
| R-115X-0 | R-215X-0 | R-315X-0 | R-415X-0 | R-515X-0 |
| R-115X-1 | R-215X-1 | R-315X-1 | R-415X-1 | R-515X-1 |
| | R-215X-2 | R-315X-2 | | |



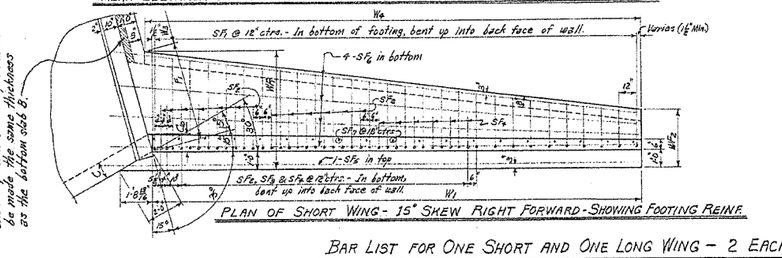

REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING



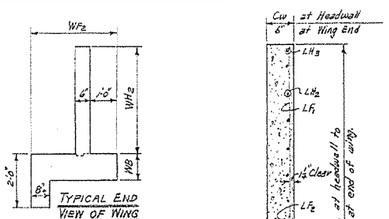

PLAN OF LONG WING - 15° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

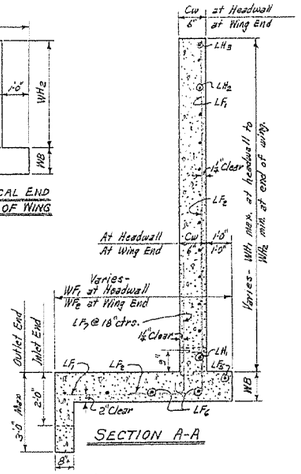



REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD - SHOWING BACK FACE REINF.

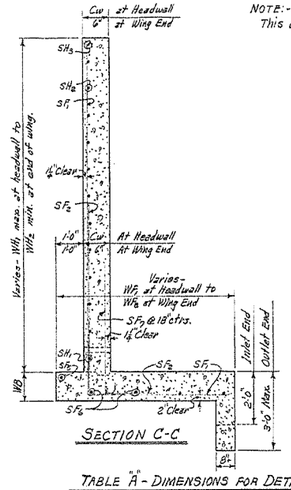



PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD - SHOWING FOOTING REINF.



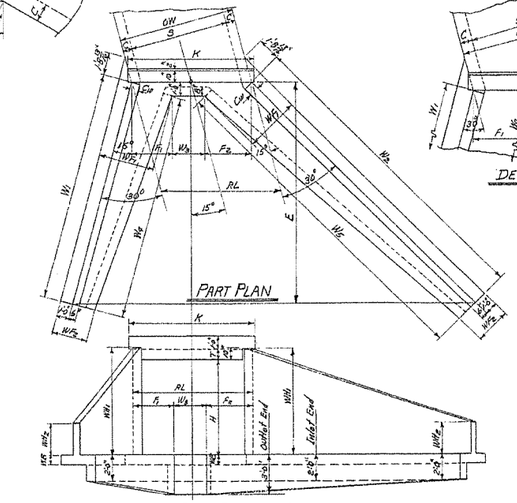




SECTION A-A




SECTION C-C

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.




PART PLAN




END ELEVATION

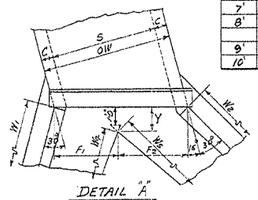
SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

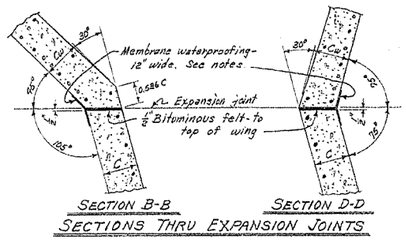
Details of Culvert with 15° Skew Left Forward is reversed. See Drwg. No. W-X15.

TYPICAL WING DETAILS

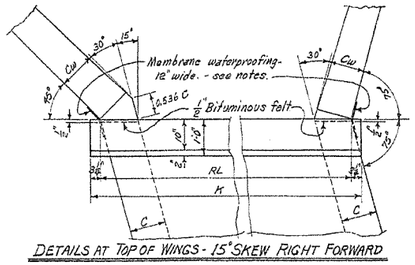
TABLE "A" - DIMENSIONS FOR DETAIL "A"

| S | H | F1 | F2 | W3 | Y | W4 | W5 |
|---|---|---|---|---|---|---|---|
| 7' | 9' | 4'-0 9/16" | 4'-9 5/8" | 0" | 1'-1 5/8" | 21'-2 3/4" | 31'-7 3/4" |
| 8' | 10' | 4'-6 5/8" | 5'-5 3/8" | 0" | 1'-1 5/8" | 23'-3 3/4" | 34'-11" |
| 9' | 11" | 5'-0 1/4" | 6'-2 3/8" | 0" | 1'-1 3/8" | 25'-7 1/2" | 38'-2 3/4" |
| 10' | 12" | 5'-6 7/8" | 6'-10 1/2" | 0" | 1'-1 1/2" | 27'-9 1/2" | 41'-6 1/2" |




SECTIONS THRU EXPANSION JOINTS




DETAILS AT TOP OF WINGS - 15° SKEW RIGHT FORWARD

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 W3 for each box, see above Std. also.

## REGULAR WING DIMENSIONS - 3:1 SLOPES

| CLEAR HEIGHT OF BOX | THICKNESS OF WING FOOTING | THICKNESS OF WING AT HDWL'S. | 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 | | PERPENDICULAR DISTANCE FROM HDWL. TO END OF WING | LENGTHS OF WINGWALLS | | INSIDE FOOTING DIMENSIONS | | * QUANTITY PER WING CLASS S CONCRETE INLET END | | OUTLET END | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | SHORT WING | LONG WING | | SHORT WING | LONG WING | SHORT WING | LONG WING | SHORT WING | LONG WING | SHORT WING | LONG WING |
| H | WB | Cw | WH1 | WH2 | WF1 | WF2 | F1 | F2 | E | W1 | W2 | W4 | W5 | Cu.Yds. | Cu.Yds. | Cu.Yds. | Cu.Yds. |
| 9' × 10' | 9" | 9'-10" | 3'-0" | 5'-2" | 2'-10 5/8" | 4'-0 5/8" | 4'-10 5/8" | 20'-6" | 21'-2 3/4" | 29'-0" | 21'-3 3/8" | 31'-9" | 6.851 | 9.266 | 6.928 | 9.667 |
| 10' × 11' | 10" | 10'-10" | 3'-4" | 5'-8" | 3'-0" | 4'-6 5/8" | 5'-7 1/8" | 22'-6" | 23'-3 1/2" | 31'-9 3/4" | 23'-6" | 35'-0 3/4" | 8.977 | 11.784 | 8.752 | 12.225 |
| 11' × 12' | 11" | 11'-10" | 3'-8" | 6'-2" | 3'-1 1/2" | 5'-1" | 6'-3 1/2" | 24'-6" | 25'-4 1/2" | 34'-7 3/8" | 25'-8 1/2" | 38'-2 3/4" | 10.632 | 14.771 | 10.969 | 15.253 |
| 12' × 13' | 12" | 12'-10" | 4'-0" | 6'-8" | 3'-3" | 5'-7 5/8" | 7'-0 5/8" | 26'-6" | 27'-5 1/2" | 37'-5 3/8" | 27'-11" | 41'-6 3/4" | 13.128 | 18.242 | 13.987 | 18.765 |

* Quantity per wing does not include headwall or that portion of apron or toewall for the length Ws.
× See Table 'A' for special values of F1, F2 and W4 & W5 for Single 9'x8', 8'x10, 9'x11' and 10'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 | Cw | WB | LB. | Cu.Yd. | Cu.Yd. | Cu.Yd. | Cu.Yd. | Cu.Yd. |
| 7' | 9' | 9" | 10" | 2362 | 33.07 | 34.81 | 36.53 | 38.27 | 40.00 |
| 8' | 9' | 9" | 10" | 2362 | 33.30 | 35.26 | 37.21 | 39.17 | 41.11 |
| | 10' | 10" | 11" | 2932 | 41.94 | 43.94 | 45.92 | 47.82 | 49.90 |
| 9' | 9' | 9" | 10" | 2362 | 33.53 | 35.72 | 37.88 | 40.06 | 42.22 |
| | 10' | 10" | 11" | 2932 | 42.18 | 44.39 | 46.60 | 48.81 | 51.02 |
| | 11' | 11" | 12" | 3523 | 52.37 | 54.61 | 56.88 | 59.07 | 61.30 |
| 10' | 9' | 9" | 10" | 2362 | 33.76 | 36.19 | 38.56 | 40.92 | 43.32 |
| | 10' | 10" | 11" | 2932 | 42.41 | 44.86 | 47.27 | 49.70 | 52.13 |
| | 11' | 11" | 12" | 3523 | 52.61 | 55.07 | 57.52 | 59.96 | 62.42 |
| | 12' | 12" | 13" | 4982 | 69.95 | 66.94 | 69.90 | 71.87 | 74.36 |
| 11' | 9' | 9" | 10" | 2362 | 33.99 | 36.67 | 39.28 | 41.86 | —— |
| | 10' | 10" | 11" | 2932 | 42.63 | 45.23 | 47.96 | 50.59 | —— |
| | 11' | 11" | 12" | 3523 | 52.83 | 55.54 | 58.20 | 60.87 | —— |
| | 12' | 12" | 13" | 4982 | 69.68 | 67.90 | 70.09 | 72.78 | —— |
| 12' | 9' | 9" | 10" | 2362 | 34.21 | 37.16 | 39.99 | 42.83 | —— |
| | 10' | 10" | 11" | 2932 | 42.86 | 45.82 | 48.67 | 51.53 | —— |
| | 11' | 11" | 12" | 3523 | 53.07 | 56.02 | 58.88 | 61.78 | —— |
| | 12' | 12" | 13" | 4982 | 69.91 | 67.88 | 70.78 | 73.71 | —— |

@ For reinforcing steel in Headwalls and Aprons, see Drawings listed at top of sheet.

## BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

| CLEAR HEIGHT | WING LOCATION | SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE | SPACING | NO. REQD | LENGTHS VARY MIN. | LENGTHS VARY MAX. | X MIN. | X MAX. | Y MIN. | Y MAX. | SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE | SPACING | NO. REQD | LENGTH | X | Y | SF3 & LF3 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE | SPACING | NO. REQD | LENGTH | X | Y | SF4 & LF4 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars. SIZE | SPACING | NO. REQD | LENGTH | X | Y | SF5 & LF5 STRAIGHT: Longitudinal in top of wing footing heel. SIZE | NO. REQD | LENGTH | SF6 & LF6 STRAIGHT: Longitudinal in bottom of wing footing toe. SIZE | NO. REQD | LENGTH | SF7 & LF7 BENT: Footing dowels extending up into front face of wing. SIZE | SPACING | NO. REQD | LENGTH | X | SH1 & LH1 STRAIGHT: Horizontal in back face of wing. SIZE | SPACING | NO. REQD | LENGTH | SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length. * SIZE | SPACING | NO. REQD | LENGTHS VARY MAX. | LENGTHS VARY MIN. | SH3 & LH3 STRAIGHT: In back face of wing at top - on slope. SIZE | NO. REQD | LENGTH | BAR BENDING DIAGRAMS | QUANTITY REINFORCING STEEL PER WING - LBS. SHORT WING | QUANTITY REINFORCING STEEL PER WING - LBS. LONG WING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

RESHOT 3-4-93

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 6 | ARK. | | | 226 | |
| JOB No. | | | | | |

# BAR LIST FOR VARIOUS SECTIONS OF BARREL

| SECTION & BAR GROUP | LENGTH OF SECTIONS | DEPTH OF COVER | "a" bars STRAIGHT: In Top and Bottom Slabs of Barrel. 2 Add'l in Apron and Headwall - Each. | | | "b" bars BENT - See Diagram at Right. In Top and Bottom Slabs of Barrel Alternate with "a" bars. | | | | | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel | | | "g" bars STRAIGHT Longitudinal in Sidewalls | | | "e" bars. Longitudinal in Bottom Slab of Barrel | | | "f" bars STRAIGHT Vertical in Sidewalls | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | X | SIZE | SPACING | NO. REQ'D | LENGTH | SIZE | SPACING | NO. REQ'D | LENGTH | SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH |
| SECTION "A" & BAR GROUP "A" | 3:1 = 22'-0" 4:1 = 32'-0" | 0' TO 10'-0" | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1' @ | #4 | 12" | 48 | 68 | 4'-1 9" | #4 | 12" | 44 | 64 | 5'-2 4" | 4'-8 1/2" | #4 | 12" | 5 | 4'-8 1/2" | #4 | 12" | 5 | 4'-8 1/2" | #4 | 12" | 44 | 64 | 3'-10 1/2" |
| | | 2' @ | | | 48 | 68 | 4'-1 9" | | | 44 | 64 | 5'-2 4" | 4'-8 1/2" | | | 6 | | | | 5 | | | | 44 | 64 | 4'-10 1/2" |
| | | 3' @ | | | 48 | 68 | 4'-1 9" | | | 44 | 64 | 5'-2 4" | 4'-8 1/2" | | | 8 | | | | 5 | | | | 44 | 64 | 5'-1 0" |
| | | 4' @ | | | 48 | 68 | 4'-2 11" | | | 44 | 64 | 5'-3 8" | 4'-10 1/2" | | | 10 | | | | 5 | | | | 44 | 64 | 5'-10 1/2" |
| | | 5' @ | | | 48 | 68 | 4'-2 11" | | | 44 | 64 | 5'-3 8" | 4'-10 1/2" | | | 12 | | | | 5 | | | | 44 | 64 | 6'-10 1/2" |
| | | 1' @ | #5 | 12" | 48 | 68 | 5'-1 9" | #5 | 12" | 44 | 64 | 6'-0 8" | 5'-8 1/2" | #4 | 12" | 6 | 5'-8 1/2" | #4 | 12" | 6 | 5'-8 1/2" | #4 | 12" | 44 | 64 | 3'-11" |
| | | 2' @ | | | 48 | 68 | 5'-1 9" | | | 44 | 64 | 6'-0 8" | 5'-8 1/2" | | | 8 | | | | 6 | | | | 44 | 64 | 4'-11" |
| | | 3' @ | | | 48 | 68 | 5'-1 9" | | | 44 | 64 | 6'-0 8" | 5'-8 1/2" | | | 10 | | | | 6 | | | | 44 | 64 | 5'-11" |
| | | 4' @ | | | 48 | 68 | 5'-2 11" | | | 44 | 64 | 6'-0 8" | 5'-10 1/2" | | | 12 | | | | 6 | | | | 44 | 64 | 6'-11" |
| | | 5' @ | | | 48 | 68 | 6'-0" | | | 44 | 64 | 6'-1 0" | 5'-11 1/2" | | | 14 | | | | 6 | | | | 44 | 64 | 7'-11" |
| | 0' TO 10'-0" | 1' @ | #6 | 12" | 48 | 68 | 4'-2 9" | #6 | 12" | 44 | 64 | 6'-3 8" | 6'-0" | #4 | 12" | 5 | 6'-0" | #4 | 12" | 5 | 6'-0" | #4 | 12" | 44 | 64 | 5'-0" |
| | | 2' @ | | | 48 | 68 | 6'-1 9" | | | 44 | 64 | 6'-3 8" | 6'-0" | | | 8 | | | | 5 | | | | 44 | 64 | 6'-2" |
| | | 3' @ | | | 48 | 68 | 6'-1 9" | | | 44 | 64 | 6'-3 8" | 6'-0" | | | 10 | | | | 5 | | | | 44 | 64 | 7'-2" |
| | | 4' @ | | | 48 | 68 | 6'-2 11" | | | 44 | 64 | 6'-3 8" | 6'-2 1/2" | | | 12 | | | | 5 | | | | 44 | 64 | 8'-2" |
| | | 5' @ | | | 48 | 68 | 6'-3 11" | | | 44 | 64 | 6'-4 0" | 6'-2 1/2" | | | 14 | | | | 5 | | | | 44 | 64 | 9'-2" |
| | | 6' @ | | | 48 | 68 | 6'-5 0" | | | 44 | 64 | 6'-5 2" | 6'-4 1/2" | | | 16 | | | | 5 | | | | 44 | 64 | 10'-2" |
| | | 1' @ | #6 | 12" | 48 | 68 | 6'-2 9" | #6 | 12" | 44 | 64 | 6'-9 8" | 6'-6" | #4 | 12" | 5 | 6'-6" | #4 | 12" | 5 | 6'-6" | #4 | 12" | 44 | 64 | 5'-3" |
| | | 2' @ | | | 48 | 68 | 6'-3 9" | | | 44 | 64 | 6'-9 8" | 6'-6" | | | 8 | | | | 5 | | | | 44 | 64 | 6'-4" |
| | | 3' @ | | | 48 | 68 | 6'-3 9" | | | 44 | 64 | 6'-9 8" | 6'-6" | | | 10 | | | | 5 | | | | 44 | 64 | 7'-4" |
| | | 4' @ | | | 48 | 68 | 6'-4 11" | | | 44 | 64 | 6'-9 8" | 6'-8 1/2" | | | 12 | | | | 5 | | | | 44 | 64 | 8'-4" |
| | | 5' @ | | | 48 | 68 | 6'-6 0" | | | 44 | 64 | 6'-10 0" | 6'-8 1/2" | | | 14 | | | | 5 | | | | 44 | 64 | 9'-4" |
| | | 6' @ | | | 48 | 68 | 6'-7 1" | | | 44 | 64 | 6'-11 4" | 6'-10 1/2" | | | 16 | | | | 5 | | | | 44 | 64 | 10'-4" |
| | | 1' @ | #7 | 12" | 48 | 68 | 6'-5 9" | #7 | 12" | 44 | 64 | 7'-4 8" | 7'-0" | #4 | 12" | 5 | 7'-0" | #4 | 12" | 5 | 7'-0" | #4 | 12" | 44 | 64 | 5'-5" |
| | | 2' @ | | | 48 | 68 | 6'-6 9" | | | 44 | 64 | 7'-4 8" | 7'-0" | | | 8 | | | | 5 | | | | 44 | 64 | 6'-6" |
| | | 3' @ | | | 48 | 68 | 6'-7 9" | | | 44 | 64 | 7'-4 8" | 7'-0" | | | 10 | | | | 5 | | | | 44 | 64 | 7'-6" |
| | | 4' @ | | | 48 | 68 | 6'-8 11" | | | 44 | 64 | 7'-4 8" | 7'-2 1/2" | | | 12 | | | | 5 | | | | 44 | 64 | 8'-6" |
| | | 5' @ | | | 48 | 68 | 6'-10 0" | | | 44 | 64 | 7'-4 8" | 7'-4 1/2" | | | 14 | | | | 5 | | | | 44 | 64 | 9'-6" |
| | | 6' @ | | | 48 | 68 | 7'-1 1" | | | 44 | 64 | 7'-4 8" | 7'-6 1/2" | | | 16 | | | | 5 | | | | 44 | 64 | 10'-6" |
| SECTION "B" & BAR GROUP "B" | 3:1 = 11'-0" 4:1 = 16'-0" | 10'-0" TO 15'-0" | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1' @ | #4 | 12" | 22 | 32 | 4'-1 9" | #4 | 12" | 22 | 32 | 5'-2 4" | 4'-8 1/2" | #4 | 12" | 5 | 4'-8 1/2" | #4 | 12" | 5 | 4'-8 1/2" | #4 | 12" | 22 | 32 | 3'-10" |
| | | 2' @ | | | 22 | 32 | 4'-1 9" | | | 22 | 32 | 5'-2 4" | 4'-8 1/2" | | | 6 | | | | 5 | | | | 22 | 32 | 4'-10" |
| | | 3' @ | | | 22 | 32 | 4'-1 9" | | | 22 | 32 | 5'-2 4" | 4'-8 1/2" | | | 8 | | | | 5 | | | | 22 | 32 | 5'-10" |
| | | 4' @ | | | 22 | 32 | 4'-2 11" | | | 22 | 32 | 5'-3 8" | 4'-10 1/2" | | | 10 | | | | 5 | | | | 22 | 32 | 6'-10" |
| | | 5' @ | | | 22 | 32 | 4'-2 11" | | | 22 | 32 | 5'-3 8" | 4'-10 1/2" | | | 12 | | | | 5 | | | | 22 | 32 | 7'-10" |
| | | 1' @ | #5 | 12" | 22 | 32 | 5'-1 9" | #5 | 12" | 22 | 32 | 6'-0 8" | 5'-8 1/2" | #4 | 12" | 6 | 5'-8 1/2" | #4 | 12" | 6 | 5'-8 1/2" | #4 | 12" | 22 | 32 | 3'-11" |
| | | 2' @ | | | 22 | 32 | 5'-1 9" | | | 22 | 32 | 6'-0 8" | 5'-8 1/2" | | | 8 | | | | 6 | | | | 22 | 32 | 4'-11" |
| | | 3' @ | | | 22 | 32 | 5'-1 9" | | | 22 | 32 | 6'-0 8" | 5'-8 1/2" | | | 10 | | | | 6 | | | | 22 | 32 | 5'-11" |
| | | 4' @ | | | 22 | 32 | 5'-2 11" | | | 22 | 32 | 6'-0 8" | 5'-10 1/2" | | | 12 | | | | 6 | | | | 22 | 32 | 6'-11" |
| | | 5' @ | | | 22 | 32 | 5'-4 0" | | | 22 | 32 | 6'-1 0" | 5'-11 1/2" | | | 14 | | | | 6 | | | | 22 | 32 | 7'-11" |
| | 0' TO 10'-0" | 1' @ | #6 | 12" | 22 | 32 | 5'-2 9" | #6 | 12" | 22 | 32 | 6'-3 8" | 6'-0" | #4 | 12" | 5 | 6'-0" | #4 | 12" | 5 | 6'-0" | #4 | 12" | 22 | 32 | 5'-0" |
| | | 2' @ | | | 22 | 32 | 5'-3 9" | | | 22 | 32 | 6'-3 8" | 6'-0" | | | 8 | | | | 5 | | | | 22 | 32 | 6'-2" |
| | | 3' @ | | | 22 | 32 | 5'-3 9" | | | 22 | 32 | 6'-3 8" | 6'-0" | | | 10 | | | | 5 | | | | 22 | 32 | 7'-2" |
| | | 4' @ | | | 22 | 32 | 5'-4 11" | | | 22 | 32 | 6'-4 0" | 6'-2 1/2" | | | 12 | | | | 5 | | | | 22 | 32 | 8'-2" |
| | | 5' @ | | | 22 | 32 | 5'-6 0" | | | 22 | 32 | 6'-5 2" | 6'-4 1/2" | | | 14 | | | | 5 | | | | 22 | 32 | 9'-2" |
| | | 6' @ | | | 22 | 32 | 5'-7 1" | | | 22 | 32 | 6'-6 4" | 6'-6 1/2" | | | 16 | | | | 5 | | | | 22 | 32 | 10'-2" |
| | | 1' @ | #7 | 12" | 22 | 32 | 5'-5 9" | #7 | 12" | 22 | 32 | 7'-3 8" | 7'-0" | #4 | 12" | 5 | 7'-0" | #4 | 12" | 5 | 7'-0" | #4 | 12" | 22 | 32 | 5'-5" |
| | | 2' @ | | | 22 | 32 | 5'-6 9" | | | 22 | 32 | 7'-3 8" | 7'-0" | | | 8 | | | | 5 | | | | 22 | 32 | 6'-6" |
| | | 3' @ | | | 22 | 32 | 5'-7 9" | | | 22 | 32 | 7'-3 8" | 7'-0" | | | 10 | | | | 5 | | | | 22 | 32 | 7'-6" |
| | | 4' @ | | | 22 | 32 | 5'-8 11" | | | 22 | 32 | 7'-3 8" | 7'-2 1/2" | | | 12 | | | | 5 | | | | 22 | 32 | 8'-6" |
| | | 5' @ | | | 22 | 32 | 5'-10 0" | | | 22 | 32 | 7'-3 8" | 7'-4 1/2" | | | 14 | | | | 5 | | | | 22 | 32 | 9'-6" |
| | | 6' @ | | | 22 | 32 | 5'-11 1" | | | 22 | 32 | 7'-4 0" | 7'-6 1/2" | | | 16 | | | | 5 | | | | 22 | 32 | 10'-6" |
| SECTION "C" & BAR GROUP "C" | 3:1 = 15'-0" 4:1 = 20'-0" | 15'-0" TO 20'-0" | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1' @ | #4 | 12" | 24 | 36 | 5'-0 9" | #4 | 12" | 24 | 36 | 6'-1 0" | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 24 | 36 | 4'-10" |
| | | 2' @ | | | 24 | 36 | 5'-0 9" | | | 24 | 36 | 6'-1 0" | 5'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 5'-10" |
| | | 3' @ | | | 24 | 36 | 5'-0 9" | | | 24 | 36 | 6'-1 0" | 5'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 6'-10" |
| | | 4' @ | | | 24 | 36 | 5'-1 11" | | | 24 | 36 | 6'-1 0" | 5'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 7'-10" |
| | | 5' @ | | | 24 | 36 | 5'-3 0" | | | 24 | 36 | 6'-1 0" | 6'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 8'-10" |
| | | 1' @ | #5 | 11" | 24 | 36 | 5'-3 9" | #5 | 11" | 24 | 36 | 6'-4 0" | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 24 | 36 | 5'-0" |
| | | 2' @ | | | 24 | 36 | 5'-3 9" | | | 24 | 36 | 6'-4 0" | 5'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 6'-2" |
| | | 3' @ | | | 24 | 36 | 5'-4 9" | | | 24 | 36 | 6'-4 0" | 5'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 7'-2" |
| | | 4' @ | | | 24 | 36 | 5'-5 11" | | | 24 | 36 | 6'-4 0" | 5'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 8'-2" |
| | | 5' @ | | | 24 | 36 | 5'-7 0" | | | 24 | 36 | 6'-4 0" | 6'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 9'-2" |
| | | 1' @ | #6 | 11" | 24 | 36 | 5'-6 9" | #6 | 11" | 24 | 36 | 7'-1 0" | 6'-8" | #4 | 12" | 6 | 6'-8" | #4 | 12" | 6 | 6'-8" | #4 | 12" | 24 | 36 | 5'-5" |
| | | 2' @ | | | 24 | 36 | 5'-6 9" | | | 24 | 36 | 7'-1 0" | 6'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 6'-7" |
| | | 3' @ | | | 24 | 36 | 5'-7 9" | | | 24 | 36 | 7'-1 0" | 6'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 7'-7" |
| | | 4' @ | | | 24 | 36 | 5'-8 11" | | | 24 | 36 | 7'-1 0" | 6'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 8'-7" |
| | | 5' @ | | | 24 | 36 | 5'-10 0" | | | 24 | 36 | 7'-1 0" | 7'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 9'-7" |
| | | 6' @ | | | 24 | 36 | 5'-11 1" | | | 24 | 36 | 7'-2 0" | 7'-2" | | | 16 | | | | 6 | | | | 24 | 36 | 10'-7" |
| | | 1' @ | #7 | 11" | 24 | 36 | 5'-7 9" | #7 | 11" | 24 | 36 | 7'-7 0" | 7'-0" | #4 | 12" | 6 | 7'-0" | #4 | 12" | 6 | 7'-0" | #4 | 12" | 24 | 36 | 5'-7" |
| | | 2' @ | | | 24 | 36 | 5'-8 9" | | | 24 | 36 | 7'-7 0" | 7'-0" | | | 8 | | | | 6 | | | | 24 | 36 | 6'-8" |
| | | 3' @ | | | 24 | 36 | 5'-9 9" | | | 24 | 36 | 7'-7 0" | 7'-0" | | | 10 | | | | 6 | | | | 24 | 36 | 7'-8" |
| | | 4' @ | | | 24 | 36 | 5'-10 11" | | | 24 | 36 | 7'-7 0" | 7'-2" | | | 12 | | | | 6 | | | | 24 | 36 | 8'-8" |
| | | 5' @ | | | 24 | 36 | 6'-0 0" | | | 24 | 36 | 7'-7 0" | 7'-4" | | | 14 | | | | 6 | | | | 24 | 36 | 9'-8" |
| | | 6' @ | | | 24 | 36 | 6'-1 1" | | | 24 | 36 | 7'-8 0" | 7'-6" | | | 16 | | | | 6 | | | | 24 | 36 | 10'-8" |
| SECTION "D" & BAR GROUP "D" | 3:1 = 16'-0" 4:1 = 23'-0" | 20'-0" TO 25'-0" | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1' @ | #4 | 12" | 24 | 36 | 4'-1 9" | #4 | 12" | 24 | 36 | 5'-2 8" | 4'-8 1/2" | #4 | 12" | 6 | 4'-8 1/2" | #4 | 12" | 6 | 4'-8 1/2" | #4 | 12" | 24 | 36 | 3'-11" |
| | | 2' @ | | | 24 | 36 | 4'-1 9" | | | 24 | 36 | 5'-2 8" | 4'-8 1/2" | | | 8 | | | | 6 | | | | 24 | 36 | 4'-11" |
| | | 3' @ | | | 24 | 36 | 4'-1 9" | | | 24 | 36 | 5'-2 8" | 4'-8 1/2" | | | 10 | | | | 6 | | | | 24 | 36 | 5'-11" |
| | | 4' @ | | | 24 | 36 | 4'-2 11" | | | 24 | 36 | 5'-2 8" | 4'-10 1/2" | | | 12 | | | | 6 | | | | 24 | 36 | 6'-11" |
| | | 5' @ | | | 24 | 36 | 4'-4 0" | | | 24 | 36 | 5'-3 0" | 4'-10 1/2" | | | 14 | | | | 6 | | | | 24 | 36 | 7'-11" |
| | | 1' @ | #5 | 11" | 24 | 36 | 4'-3 9" | #5 | 11" | 24 | 36 | 5'-5 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 24 | 36 | 4'-0" |
| | | 2' @ | | | 24 | 36 | 4'-3 9" | | | 24 | 36 | 5'-5 8" | 4'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 5'-2" |
| | | 3' @ | | | 24 | 36 | 4'-4 9" | | | 24 | 36 | 5'-5 8" | 4'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 6'-2" |
| | | 4' @ | | | 24 | 36 | 4'-5 11" | | | 24 | 36 | 5'-5 8" | 4'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 7'-2" |
| | | 5' @ | | | 24 | 36 | 4'-7 0" | | | 24 | 36 | 5'-5 8" | 5'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 8'-2" |
| | | 1' @ | #6 | 11" | 24 | 36 | 4'-6 9" | #6 | 11" | 24 | 36 | 5'-8 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 24 | 36 | 4'-5" |
| | | 2' @ | | | 24 | 36 | 4'-6 9" | | | 24 | 36 | 5'-8 8" | 4'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 5'-7" |
| | | 3' @ | | | 24 | 36 | 4'-7 9" | | | 24 | 36 | 5'-8 8" | 4'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 6'-7" |
| | | 4' @ | | | 24 | 36 | 4'-8 11" | | | 24 | 36 | 5'-8 8" | 4'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 7'-7" |
| | | 5' @ | | | 24 | 36 | 4'-10 0" | | | 24 | 36 | 5'-8 8" | 5'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 8'-7" |
| | | 1' @ | #7 | 11" | 24 | 36 | 4'-9 9" | #7 | 11" | 24 | 36 | 5'-11 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 24 | 36 | 4'-10" |
| | | 2' @ | | | 24 | 36 | 4'-9 9" | | | 24 | 36 | 5'-11 8" | 4'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 5'-10" |
| | | 3' @ | | | 24 | 36 | 4'-10 9" | | | 24 | 36 | 5'-11 8" | 4'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 6'-10" |
| | | 4' @ | | | 24 | 36 | 4'-11 11" | | | 24 | 36 | 5'-11 8" | 4'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 7'-10" |
| | | 5' @ | | | 24 | 36 | 5'-1 0" | | | 24 | 36 | 5'-11 8" | 5'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 8'-10" |
| | | 1' @ | #8 | 10" | 24 | 36 | 5'-0 9" | #8 | 10" | 24 | 36 | 6'-3 8" | 5'-4" | #4 | 12" | 6 | 5'-4" | #4 | 12" | 6 | 5'-4" | #4 | 12" | 24 | 36 | 5'-3" |
| | | 2' @ | | | 24 | 36 | 5'-1 9" | | | 24 | 36 | 6'-3 8" | 5'-4" | | | 8 | | | | 6 | | | | 24 | 36 | 6'-3" |
| | | 3' @ | | | 24 | 36 | 5'-2 9" | | | 24 | 36 | 6'-3 8" | 5'-4" | | | 10 | | | | 6 | | | | 24 | 36 | 7'-3" |
| | | 4' @ | | | 24 | 36 | 5'-3 11" | | | 24 | 36 | 6'-3 8" | 5'-6" | | | 12 | | | | 6 | | | | 24 | 36 | 8'-3" |
| | | 5' @ | | | 24 | 36 | 5'-5 0" | | | 24 | 36 | 6'-3 8" | 5'-8" | | | 14 | | | | 6 | | | | 24 | 36 | 9'-3" |
| | | 1' @ | #9 | 9" | 24 | 36 | 5'-3 9" | #9 | 9" | 24 | 36 | 6'-8 8" | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 24 | 36 | 5'-8" |
| | | 2' @ | | | 24 | 36 | 5'-4 9" | | | 24 | 36 | 6'-8 8" | 5'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 6'-8" |
| | | 3' @ | | | 24 | 36 | 5'-5 9" | | | 24 | 36 | 6'-8 8" | 5'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 7'-8" |
| | | 4' @ | | | 24 | 36 | 5'-6 11" | | | 24 | 36 | 6'-8 8" | 5'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 8'-8" |
| | | 5' @ | | | 24 | 36 | 5'-8 0" | | | 24 | 36 | 6'-8 8" | 6'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 9'-8" |
| | | 1' @ | #10 | 8" | 24 | 36 | 5'-6 9" | #10 | 8" | 24 | 36 | 7'-1 8" | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 24 | 36 | 6'-0" |
| | | 2' @ | | | 24 | 36 | 5'-7 9" | | | 24 | 36 | 7'-1 8" | 5'-8" | | | 8 | | | | 6 | | | | 24 | 36 | 7'-0" |
| | | 3' @ | | | 24 | 36 | 5'-8 9" | | | 24 | 36 | 7'-1 8" | 5'-8" | | | 10 | | | | 6 | | | | 24 | 36 | 8'-0" |
| | | 4' @ | | | 24 | 36 | 5'-9 11" | | | 24 | 36 | 7'-1 8" | 5'-10" | | | 12 | | | | 6 | | | | 24 | 36 | 9'-0" |
| | | 5' @ | | | 24 | 36 | 5'-11 0" | | | 24 | 36 | 7'-1 8" | 6'-0" | | | 14 | | | | 6 | | | | 24 | 36 | 10'-0" |
| SECTION "E" & BAR GROUP "E" | 3:1 = 11'-0" 4:1 = 16'-0" | 0' TO 10'-0" | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1' @ | #4 | 12" | 22 | 32 | 4'-1 9" | #4 | 12" | 22 | 32 | 5'-2 8" | 4'-8 1/2" | #4 | 12" | 5 | 4'-8 1/2" | #4 | 12" | 5 | 4'-8 1/2" | #4 | 12" | 22 | 32 | 3'-10" |
| | | 2' @ | | | 22 | 32 | 4'-1 9" | | | 22 | 32 | 5'-2 8" | 4'-8 1/2" | | | 6 | | | | 5 | | | | 22 | 32 | 4'-10" |
| | | 3' @ | | | 22 | 32 | 4'-1 9" | | | 22 | 32 | 5'-2 8" | 4'-8 1/2" | | | 8 | | | | 5 | | | | 22 | 32 | 5'-10" |
| | | 4' @ | | | 22 | 32 | 4'-2 11" | | | 22 | 32 | 5'-2 8" | 4'-10 1/2" | | | 10 | | | | 5 | | | | 22 | 32 | 6'-10" |
| | | 5' @ | | | 22 | 32 | 4'-4 0" | | | 22 | 32 | 5'-3 0" | 4'-10 1/2" | | | 12 | | | | 5 | | | | 22 | 32 | 7'-10" |
| | | 1' @ | #5 | 12" | 22 | 32 | 4'-3 9" | #5 | 12" | 22 | 32 | 5'-5 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 22 | 32 | 4'-0" |
| | | 2' @ | | | 22 | 32 | 4'-3 9" | | | 22 | 32 | 5'-5 8" | 4'-8" | | | 8 | | | | 6 | | | | 22 | 32 | 5'-2" |
| | | 3' @ | | | 22 | 32 | 4'-4 9" | | | 22 | 32 | 5'-5 8" | 4'-8" | | | 10 | | | | 6 | | | | 22 | 32 | 6'-2" |
| | | 4' @ | | | 22 | 32 | 4'-5 11" | | | 22 | 32 | 5'-5 8" | 4'-10" | | | 12 | | | | 6 | | | | 22 | 32 | 7'-2" |
| | | 5' @ | | | 22 | 32 | 4'-7 0" | | | 22 | 32 | 5'-5 8" | 5'-0" | | | 14 | | | | 6 | | | | 22 | 32 | 8'-2" |
| | | 1' @ | #6 | 11" | 22 | 32 | 4'-6 9" | #6 | 11" | 22 | 32 | 5'-8 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 22 | 32 | 4'-5" |
| | | 2' @ | | | 22 | 32 | 4'-6 9" | | | 22 | 32 | 5'-8 8" | 4'-8" | | | 8 | | | | 6 | | | | 22 | 32 | 5'-7" |
| | | 3' @ | | | 22 | 32 | 4'-7 9" | | | 22 | 32 | 5'-8 8" | 4'-8" | | | 10 | | | | 6 | | | | 22 | 32 | 6'-7" |
| | | 4' @ | | | 22 | 32 | 4'-8 11" | | | 22 | 32 | 5'-8 8" | 4'-10" | | | 12 | | | | 6 | | | | 22 | 32 | 7'-7" |
| | | 5' @ | | | 22 | 32 | 4'-10 0" | | | 22 | 32 | 5'-8 8" | 5'-0" | | | 14 | | | | 6 | | | | 22 | 32 | 8'-7" |
| | | 1' @ | #7 | 11" | 22 | 32 | 4'-9 9" | #7 | 11" | 22 | 32 | 5'-11 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 22 | 32 | 4'-10" |
| | | 2' @ | | | 22 | 32 | 4'-9 9" | | | 22 | 32 | 5'-11 8" | 4'-8" | | | 8 | | | | 6 | | | | 22 | 32 | 5'-10" |
| | | 3' @ | | | 22 | 32 | 4'-10 9" | | | 22 | 32 | 5'-11 8" | 4'-8" | | | 10 | | | | 6 | | | | 22 | 32 | 6'-10" |
| | | 4' @ | | | 22 | 32 | 4'-11 11" | | | 22 | 32 | 5'-11 8" | 4'-10" | | | 12 | | | | 6 | | | | 22 | 32 | 7'-10" |
| | | 5' @ | | | 22 | 32 | 5'-1 0" | | | 22 | 32 | 5'-11 8" | 5'-0" | | | 14 | | | | 6 | | | | 22 | 32 | 8'-10" |
| | | 1' @ | #8 | 10" | 22 | 32 | 5'-0 9" | #8 | 10" | 22 | 32 | 6'-3 8" | 5'-4" | #4 | 12" | 6 | 5'-4" | #4 | 12" | 6 | 5'-4" | #4 | 12" | 22 | 32 | 5'-3" |
| | | 2' @ | | | 22 | 32 | 5'-1 9" | | | 22 | 32 | 6'-3 8" | 5'-4" | | | 8 | | | | 6 | | | | 22 | 32 | 6'-3" |
| | | 3' @ | | | 22 | 32 | 5'-2 9" | | | 22 | 32 | 6'-3 8" | 5'-4" | | | 10 | | | | 6 | | | | 22 | 32 | 7'-3" |
| | | 4' @ | | | 22 | 32 | 5'-3 11" | | | 22 | 32 | 6'-3 8" | 5'-6" | | | 12 | | | | 6 | | | | 22 | 32 | 8'-3" |
| | | 5' @ | | | 22 | 32 | 5'-5 0" | | | 22 | 32 | 6'-3 8" | 5'-8" | | | 14 | | | | 6 | | | | 22 | 32 | 9'-3" |
| | | 1' @ | #9 | 9" | 22 | 32 | 5'-3 9" | #9 | 9" | 22 | 32 | 6'-8 8" | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 22 | 32 | 5'-8" |
| | | 2' @ | | | 22 | 32 | 5'-4 9" | | | 22 | 32 | 6'-8 8" | 5'-8" | | | 8 | | | | 6 | | | | 22 | 32 | 6'-8" |
| | | 3' @ | | | 22 | 32 | 5'-5 9" | | | 22 | 32 | 6'-8 8" | 5'-8" | | | 10 | | | | 6 | | | | 22 | 32 | 7'-8" |
| | | 4' @ | | | 22 | 32 | 5'-6 11" | | | 22 | 32 | 6'-8 8" | 5'-10" | | | 12 | | | | 6 | | | | 22 | 32 | 8'-8" |
| | | 5' @ | | | 22 | 32 | 5'-8 0" | | | 22 | 32 | 6'-8 8" | 6'-0" | | | 14 | | | | 6 | | | | 22 | 32 | 9'-8" |
| | | 1' @ | #10 | 8" | 22 | 32 | 5'-6 9" | #10 | 8" | 22 | 32 | 7'-1 8" | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 6 | 5'-8" | #4 | 12" | 22 | 32 | 6'-0" |
| | | 2' @ | | | 22 | 32 | 5'-7 9" | | | 22 | 32 | 7'-1 8" | 5'-8" | | | 8 | | | | 6 | | | | 22 | 32 | 7'-0" |
| | | 3' @ | | | 22 | 32 | 5'-8 9" | | | 22 | 32 | 7'-1 8" | 5'-8" | | | 10 | | | | 6 | | | | 22 | 32 | 8'-0" |
| | | 4' @ | | | 22 | 32 | 5'-9 11" | | | 22 | 32 | 7'-1 8" | 5'-10" | | | 12 | | | | 6 | | | | 22 | 32 | 9'-0" |
| | | 5' @ | | | 22 | 32 | 5'-11 0" | | | 22 | 32 | 7'-1 8" | 6'-0" | | | 14 | | | | 6 | | | | 22 | 32 | 10'-0" |
| SECTION "F" & BAR GROUP "F" | 3:1 = 11'-0" 4:1 = 16'-0" | 25'-0" TO 30'-0" | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1' @ | #4 | 12" | 20 | 30 | 4'-1 9" | #4 | 12" | 20 | 30 | 5'-2 8" | 4'-8" | #4 | 12" | 5 | 4'-8" | #4 | 12" | 5 | 4'-8" | #4 | 12" | 20 | 30 | 3'-10" |
| | | 2' @ | | | 20 | 30 | 4'-1 9" | | | 20 | 30 | 5'-2 8" | 4'-8" | | | 6 | | | | 5 | | | | 20 | 30 | 4'-10" |
| | | 3' @ | | | 20 | 30 | 4'-1 9" | | | 20 | 30 | 5'-2 8" | 4'-8" | | | 8 | | | | 5 | | | | 20 | 30 | 5'-10" |
| | | 4' @ | | | 20 | 30 | 4'-2 11" | | | 20 | 30 | 5'-2 8" | 4'-10" | | | 10 | | | | 5 | | | | 20 | 30 | 6'-10" |
| | | 5' @ | | | 20 | 30 | 4'-4 0" | | | 20 | 30 | 5'-3 0" | 4'-10" | | | 12 | | | | 5 | | | | 20 | 30 | 7'-10" |
| | | 1' @ | #5 | 12" | 20 | 30 | 4'-3 9" | #5 | 12" | 20 | 30 | 5'-5 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 20 | 30 | 4'-0" |
| | | 2' @ | | | 20 | 30 | 4'-3 9" | | | 20 | 30 | 5'-5 8" | 4'-8" | | | 8 | | | | 6 | | | | 20 | 30 | 5'-2" |
| | | 3' @ | | | 20 | 30 | 4'-4 9" | | | 20 | 30 | 5'-5 8" | 4'-8" | | | 10 | | | | 6 | | | | 20 | 30 | 6'-2" |
| | | 4' @ | | | 20 | 30 | 4'-5 11" | | | 20 | 30 | 5'-5 8" | 4'-10" | | | 12 | | | | 6 | | | | 20 | 30 | 7'-2" |
| | | 5' @ | | | 20 | 30 | 4'-7 0" | | | 20 | 30 | 5'-5 8" | 5'-0" | | | 14 | | | | 6 | | | | 20 | 30 | 8'-2" |
| | | 1' @ | #6 | 13" | 20 | 30 | 4'-6 9" | #6 | 13" | 20 | 30 | 5'-8 8" | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 6 | 4'-8" | #4 | 12" | 20 | 30 | 4'-5" |
| | | 2' @ | | | 20 | 30 | 4'-6 9" | | | 20 | 30 | 5'-8 8" | 4'-8" | | | 8 | | | | 6 | | | | 20 | 30 | 5'-7" |
| | | 3' @ | | | 20 | 30 | 4'-7 9" | | | 20 | 30 | 5'-8 8" | 4'-8" | | | 10 | | | | 6 | | | | 20 | 30 

RESHOT 3-4-93

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 8 | ARK. | | | 227 | |
| JOB No. | | | | | |

# BAR LIST FOR VARIOUS SECTIONS OF BARREL

SECTION "A" & BAR GROUP "A" — 3:1 = 22'-0" — 4:1 = 32'-0" — DEPTH OF COVER: 0' TO 10'-0"

| CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT In Top and Bottom Slabs of Barrel. & Add'l. in Apron and Headwall - Each. SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | "a" bars BENT - See Diagram at Right. In Top and Bottom Slabs of Barrel. Alternate with "d" bars. SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | X | "d" bars Longitudinal in Top Slab of Barrel SIZE | SPACING | No. REQ'D | LENGTH | "d" bars STRAIGHT Longitudinal in Sidewalls SIZE | SPACING | No. REQ'D | LENGTH | "e" bars Longitudinal in Bottom Slab of Barrel SIZE | SPACING | No. REQ'D | LENGTH | "f" bars STRAIGHT Verticals in Sidewalls SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | H | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5' | 5' | | | 48 | 68 | 7'-9" | | | 44 | 64 | 8'-10" | 7'8" | | | 8 | | #4 | 12" | 44 | 64 | 6'-1" | | | | | #4 | 12" | 44 | 64 | 6'-1" |
| | 6' | | | 48 | 68 | 7'-11" | | | 44 | 64 | 9'-0" | 7'10" | | | 8 | | | | 44 | 64 | 7'-1" | | | | | | 11" | 98 | 70 | 8'-1" |
| 7' | 7' | #5 | 12" | 48 | 68 | 8'-0" | #6 | 12" | 44 | 64 | 9'-1" | 7'-11" | #4 | 12" | 8 | | | | 44 | 64 | 8'-1" | | | | | #5 | 12" | 44 | 64 | 9'-1" |
| | 8' | | | 48 | 68 | 8'-1" | | | 44 | 64 | 9'-2" | 8'-0" | | | 8 | | | | 44 | 64 | 9'-2" | | | | | | 11" | 98 | 70 | 10'-1" |
| | 9' | | | 48 | 68 | 8'-3" | | | 44 | 64 | 9'-4" | 8'-2" | | | 8 | | | | 44 | 64 | 9'-4" | | | | | | | | | |
| | 6' | | | 48 | 68 | 8'-11" | | | 44 | 64 | 10'-0" | 8'-10" | | | 9 | | | | 44 | 64 | 7'-8" | | | | | #4 | 12" | 44 | 64 | 7'-8" |
| | 7' | | | 48 | 68 | 9'-0" | | | 44 | 64 | 10'-1" | 8'-11" | | | 9 | | | | 44 | 64 | 8'-3" | | | | | | 11" | 98 | 70 | 10'-3" |
| 8' | 8' | #6 | 12" | 48 | 68 | 9'-1" | #6 | 12" | 44 | 64 | 10'-2" | 9'-0" | #4 | 12" | 9 | | | | 44 | 64 | 8'-4" | | | | | #5 | 11" | 98 | 70 | 10'-3" |
| | 9' | | | 48 | 68 | 9'-3" | | | 44 | 64 | 10'-4" | 9'-2" | | | 9 | | | | 44 | 64 | 8'-5" | | | | | | | | | |
| | 10' | | | 48 | 68 | 9'-5" | | | 44 | 64 | 10'-6" | 9'-4" | | | 9 | | | | 44 | 64 | 8'-5" | | | | | | | | | |
| | 7' | | | 52 | 74 | 10'-0" | | | 48 | 70 | 11'-3" | 9'-11" | | | 10 | | | | 48 | 70 | 9'-5" | | | | | #4 | 12" | 44 | 64 | 8'-5" |
| | 8' | | | 52 | 74 | 10'-1" | | | 48 | 70 | 11'-4" | 10'-0" | | | 10 | | | | 48 | 70 | 9'-6" | | | | | #5 | 11" | 98 | 70 | 10'-5" |
| 9' | 9' | #6 | 11" | 52 | 74 | 10'-3" | #7 | 11" | 48 | 70 | 11'-6" | 10'-2" | #4 | 12" | 10 | | | | 48 | 70 | 9'-8" | | | | | | | | | |
| | 10' | | | 52 | 74 | 10'-5" | | | 48 | 70 | 11'-8" | 10'-4" | | | 10 | | | | 48 | 70 | 9'-9" | | | | | | | | | |
| | 11' | | | 52 | 74 | 10'-7" | | | 48 | 70 | 11'-10" | 10'-6" | | | 10 | | | | 48 | 70 | 9'-11" | | | | | #6 | 12" | 44 | 64 | 12'-5" |
| | 9' | | | 48 | 68 | 11'-1" | | | 44 | 64 | 12'-4" | 11'-0" | | | 11 | | | | 44 | 64 | 9'-7" | | | | | #5 | 12" | 44 | 64 | 10'-7" |
| | 9' | | | 48 | 68 | 11'-3" | | | 44 | 64 | 12'-6" | 11'-2" | | | 11 | | | | 44 | 64 | 9'-8" | | | | | | | | | |
| 10' | 10' | #7 | 12" | 48 | 68 | 11'-5" | #7 | 12" | 44 | 64 | 12'-8" | 11'-4" | #4 | 12" | 11 | | | | 48 | 70 | 9'-10" | | | | | | 10" | 56 | 78 | 11'-7" |
| | 11' | | | 48 | 68 | 11'-7" | | | 44 | 64 | 12'-10" | 11'-6" | | | 11 | | | | 48 | 70 | 9'-11" | | | | | #6 | 12" | 44 | 64 | 12'-7" |
| | 12' | | | 48 | 68 | 11'-8" | | | 44 | 64 | 13'-0" | 11'-8" | | | 11 | | | | 48 | 70 | 10'-1" | | | | | | 11" | 98 | 70 | 13'-7" |
| | 5' | | | 24 | 36 | 7'-9" | | | 24 | 36 | 8'-10" | 7'8" | | | 8 | | | | 22 | 32 | 6'-2" | | | | | #4 | 12" | 22 | 32 | 6'-2" |
| | 6' | | | 24 | 36 | 7'-11" | | | 24 | 36 | 9'-0" | 7'10" | | | 8 | | | | 22 | 32 | 7'-3" | | | | | | 11" | 49 | 35 | 8'-1" |
| 7' | 7' | #6 | 11" | 24 | 36 | 8'-0" | #6 | 11" | 24 | 36 | 9'-1" | 7'-11" | #4 | 12" | 8 | | | | 22 | 32 | 8'-3" | | | | | #5 | 12" | 22 | 32 | 8'-3" |
| | 8' | | | 24 | 36 | 8'-1" | | | 24 | 36 | 9'-2" | 8'-0" | | | 8 | | | | 22 | 32 | 9'-3" | | | | | | 11" | 49 | 35 | 9'-1" |
| | 9' | | | 24 | 36 | 8'-3" | | | 24 | 36 | 9'-4" | 8'-2" | | | 8 | | | | 22 | 32 | 10'-3" | | | | | #6 | 12" | 22 | 32 | 10'-3" |
| | 6' | | | 22 | 32 | 8'-1" | | | 22 | 32 | 10'-0" | 8'-10" | | | 9 | | | | 22 | 32 | 7'-5" | | | | | #4 | 12" | 22 | 32 | 7'-5" |
| | 7' | | | 22 | 32 | 8'-2" | | | 22 | 32 | 10'-1" | 8'-11" | | | 9 | | | | 22 | 32 | 8'-5" | | | | | #5 | 12" | 22 | 32 | 8'-5" |
| 8' | 8' | #7 | 12" | 22 | 32 | 9'-1" | #6 | 12" | 22 | 32 | 10'-2" | 9'-0" | #4 | 12" | 9 | | | | 22 | 32 | 8'-6" | | | | | | 11" | 49 | 35 | 9'-5" |
| | 9' | | | 22 | 32 | 9'-3" | | | 22 | 32 | 10'-4" | 9'-2" | | | 9 | | | | 22 | 32 | 8'-7" | | | | | #6 | 12" | 22 | 32 | 10'-5" |
| | 10' | | | 22 | 32 | 9'-5" | | | 22 | 32 | 10'-6" | 9'-4" | | | 9 | | | | 22 | 32 | 8'-8" | | | | | | 11" | 49 | 35 | 9'-7" |
| | 7' | | | 22 | 32 | 10'-0" | | | 22 | 32 | 11'-3" | 9'-11" | | | 10 | | | | 22 | 32 | 8'-10" | | | | | #5 | 12" | 22 | 32 | 8'-10" |
| | 8' | | | 22 | 32 | 10'-1" | | | 22 | 32 | 11'-4" | 10'-0" | | | 10 | | | | 22 | 32 | 9'-0" | | | | | | 11" | 49 | 35 | 9'-9" |
| 9' | 9' | #7 | 12" | 22 | 32 | 10'-3" | #7 | 12" | 22 | 32 | 11'-6" | 10'-2" | #4 | 12" | 10 | | | | 22 | 32 | 9'-1" | | | | | #6 | 12" | 22 | 32 | 10'-7" |
| | 10' | | | 22 | 32 | 10'-5" | | | 22 | 32 | 11'-8" | 10'-4" | | | 10 | | | | 22 | 32 | 9'-2" | | | | | | 11" | 49 | 35 | 9'-11" |
| | 11' | | | 22 | 32 | 10'-7" | | | 22 | 32 | 11'-10" | 10'-6" | | | 10 | | | | 22 | 32 | 9'-3" | | | | | #7 | 12" | 22 | 32 | 10'-7" |
| | 8' | | | 22 | 32 | 11'-1" | | | 22 | 32 | 12'-1" | 11'-0" | | | 12 | | | | 22 | 32 | 9'-5" | | | | | #5 | 12" | 22 | 32 | 10'-9" |
| | 9' | | | 22 | 32 | 11'-3" | | | 22 | 32 | 12'-3" | 11'-2" | | | 12 | | | | 22 | 32 | 9'-6" | | | | | | 11" | 49 | 35 | 10'-0" |
| 10' | 10' | #7 | 12" | 22 | 32 | 11'-5" | #7 | 12" | 22 | 32 | 12'-6" | 11'-4" | #4 | 12" | 12 | | | | 22 | 32 | 9'-8" | | | | | #6 | 12" | 22 | 32 | 10'-9" |
| | 11' | | | 22 | 32 | 11'-7" | | | 22 | 32 | 12'-8" | 11'-6" | | | 12 | | | | 22 | 32 | 9'-9" | | | | | | 11" | 49 | 35 | 10'-11" |
| | 12' | | | 22 | 32 | 11'-9" | | | 22 | 32 | 12'-10" | 11'-8" | | | 12 | | | | 22 | 32 | 9'-11" | | | | | #7 | 12" | 22 | 32 | 10'-11" |
| | 6' | | | 20 | 30 | 7'-9" | | | 20 | 30 | 9'-0" | 7'-8" | | | 8 | | | | 22 | 32 | 6'-5" | | | | | #4 | 12" | 22 | 32 | 6'-5" |
| | 7' | | | 20 | 30 | 7'-11" | | | 20 | 30 | 9'-2" | 7'-10" | | | 8 | | | | 22 | 32 | 7'-5" | | | | | | 11" | 49 | 35 | 8'-1" |
| 7' | 8' | #7 | 13" | 20 | 30 | 8'-0" | #7 | 13" | 20 | 30 | 9'-3" | 7'-11" | #4 | 12" | 8 | | | | 22 | 32 | 8'-3" | | | | | #5 | 12" | 22 | 32 | 8'-3" |
| | 9' | | | 20 | 30 | 8'-1" | | | 20 | 30 | 9'-4" | 8'-0" | | | 8 | | | | 22 | 32 | 9'-3" | | | | | | 11" | 49 | 35 | 9'-1" |
| | 10' | | | 20 | 30 | 8'-3" | | | 20 | 30 | 9'-6" | 8'-2" | | | 8 | | | | 22 | 32 | 10'-3" | | | | | #6 | 12" | 22 | 32 | 10'-3" |
| | 6' | | | 22 | 32 | 8'-11" | | | 22 | 32 | 10'-2" | 8'-10" | | | 10 | | | | 22 | 32 | 7'-5" | | | | | #4 | 12" | 22 | 32 | 7'-5" |
| | 7' | | | 22 | 32 | 9'-0" | | | 22 | 32 | 10'-3" | 8'-11" | | | 10 | | | | 22 | 32 | 8'-5" | | | | | #5 | 12" | 22 | 32 | 8'-5" |
| 8' | 8' | #8 | 12" | 22 | 32 | 9'-1" | #7 | 12" | 22 | 32 | 10'-4" | 9'-0" | #4 | 11" | 10 | | | | 22 | 32 | 8'-6" | | | | | | 11" | 49 | 35 | 9'-5" |
| | 9' | | | 22 | 32 | 9'-3" | | | 22 | 32 | 10'-6" | 9'-2" | | | 10 | | | | 22 | 32 | 8'-7" | | | | | #6 | 12" | 22 | 32 | 10'-5" |
| | 10' | | | 22 | 32 | 9'-5" | | | 22 | 32 | 10'-8" | 9'-4" | | | 10 | | | | 22 | 32 | 8'-8" | | | | | | 11" | 49 | 35 | 9'-7" |
| | 7' | | | 22 | 32 | 10'-1" | | | 22 | 32 | 11'-4" | 10'-0" | | | 11 | | | | 22 | 32 | 8'-10" | | | | | #5 | 12" | 22 | 32 | 8'-10" |
| | 8' | | | 22 | 32 | 10'-2" | | | 22 | 32 | 11'-5" | 10'-1" | | | 11 | | | | 22 | 32 | 9'-0" | | | | | | 11" | 49 | 35 | 9'-9" |
| 9' | 9' | #8 | 12" | 22 | 32 | 10'-3" | #7 | 12" | 22 | 32 | 11'-6" | 10'-2" | #4 | 11" | 11 | | | | 22 | 32 | 9'-1" | | | | | #6 | 12" | 22 | 32 | 10'-7" |
| | 10' | | | 22 | 32 | 10'-5" | | | 22 | 32 | 11'-8" | 10'-4" | | | 11 | | | | 22 | 32 | 9'-2" | | | | | | 11" | 49 | 35 | 9'-11" |
| | 11' | | | 22 | 32 | 10'-7" | | | 22 | 32 | 11'-10" | 10'-6" | | | 11 | | | | 22 | 32 | 9'-3" | | | | | #7 | 12" | 22 | 32 | 10'-11" |
| | 8' | | | 22 | 32 | 11'-2" | | | 22 | 32 | 12'-1" | 11'-0" | | | 12 | | | | 22 | 32 | 9'-5" | | | | | #5 | 12" | 22 | 32 | 10'-9" |
| | 9' | | | 22 | 32 | 11'-4" | | | 22 | 32 | 12'-3" | 11'-2" | | | 12 | | | | 22 | 32 | 9'-6" | | | | | | 11" | 49 | 35 | 10'-0" |
| 10' | 10' | #8 | 12" | 22 | 32 | 11'-5" | #7 | 12" | 22 | 32 | 12'-6" | 11'-4" | #4 | 11" | 12 | | | | 22 | 32 | 9'-8" | | | | | #6 | 12" | 22 | 32 | 10'-9" |
| | 11' | | | 22 | 32 | 11'-7" | | | 22 | 32 | 12'-8" | 11'-6" | | | 12 | | | | 22 | 32 | 9'-9" | | | | | | 11" | 49 | 35 | 10'-11" |
| | 12' | | | 22 | 32 | 11'-9" | | | 22 | 32 | 12'-10" | 11'-8" | | | 12 | | | | 22 | 32 | 9'-11" | | | | | #7 | 12" | 22 | 32 | 10'-11" |
| | 6' | | | 20 | 30 | 8'-1" | | | 20 | 30 | 9'-2" | 8'-0" | | | 9 | | | | 22 | 32 | 6'-8" | | | | | #4 | 12" | 22 | 32 | 6'-8" |
| | 7' | | | 20 | 30 | 8'-3" | | | 20 | 30 | 9'-4" | 8'-2" | | | 9 | | | | 22 | 32 | 7'-8" | | | | | | 11" | 49 | 35 | 8'-4" |
| 8' | 8' | #8 | 12" | 20 | 30 | 8'-4" | #7 | 12" | 20 | 30 | 9'-5" | 8'-3" | #4 | 11" | 9 | | | | 22 | 32 | 8'-9" | | | | | #5 | 12" | 22 | 32 | 8'-9" |
| | 9' | | | 20 | 30 | 8'-6" | | | 20 | 30 | 9'-7" | 8'-5" | | | 9 | | | | 22 | 32 | 9'-9" | | | | | | 11" | 49 | 35 | 9'-8" |
| | 10' | | | 20 | 30 | 8'-8" | | | 20 | 30 | 9'-8" | 8'-6" | | | 9 | | | | 22 | 32 | 9'-10" | | | | | #6 | 12" | 22 | 32 | 10'-1" |
| | 7' | | | 22 | 32 | 10'-3" | | | 22 | 32 | 11'-6" | 10'-2" | | | 11 | | | | 22 | 32 | 8'-11" | | | | | | 11" | 49 | 35 | 9'-0" |
| | 8' | | | 22 | 32 | 10'-4" | | | 22 | 32 | 11'-7" | 10'-3" | | | 11 | | | | 22 | 32 | 9'-1" | | | | | #5 | 12" | 22 | 32 | 9'-1" |
| 9' | 9' | #8 | 12" | 22 | 32 | 10'-5" | #8 | 12" | 22 | 32 | 11'-9" | 10'-4" | #4 | 10" | 11 | | | | 22 | 32 | 9'-3" | | | | | | 11" | 49 | 35 | 9'-3" |
| | 10' | | | 22 | 32 | 10'-7" | | | 22 | 32 | 11'-10" | 10'-6" | | | 11 | | | | 22 | 32 | 9'-4" | | | | | #6 | 12" | 22 | 32 | 10'-3" |
| | 11' | | | 22 | 32 | 10'-9" | | | 22 | 32 | 12'-0" | 10'-8" | | | 11 | | | | 22 | 32 | 9'-5" | | | | | | 11" | 49 | 35 | 9'-5" |
| | 12' | | | 22 | 32 | 10'-11" | | | 22 | 32 | 12'-2" | 10'-10" | | | 11 | | | | 22 | 32 | 9'-7" | | | | | #7 | 12" | 22 | 32 | 10'-5" |
| | 8' | | | 22 | 32 | 11'-4" | | | 22 | 32 | 12'-3" | 11'-2" | | | 12 | | | | 22 | 32 | 9'-8" | | | | | #5 | 12" | 22 | 32 | 9'-8" |
| | 9' | | | 22 | 32 | 11'-6" | | | 22 | 32 | 12'-5" | 11'-4" | | | 12 | | | | 22 | 32 | 9'-9" | | | | | | 11" | 49 | 35 | 9'-10" |
| 10' | 10' | #8 | 12" | 22 | 32 | 11'-7" | #8 | 12" | 22 | 32 | 12'-7" | 11'-5" | #4 | 10" | 12 | | | | 22 | 32 | 9'-11" | | | | | #6 | 12" | 22 | 32 | 10'-5" |
| | 11' | | | 22 | 32 | 11'-9" | | | 22 | 32 | 12'-9" | 11'-7" | | | 12 | | | | 22 | 32 | 9'-12" | | | | | | 11" | 49 | 35 | 9'-12" |
| | 12' | | | 22 | 32 | 11'-11" | | | 22 | 32 | 13'-0" | 11'-10" | | | 12 | | | | 22 | 32 | 10'-1" | | | | | #7 | 12" | 22 | 32 | 10'-7" |
| | 8' | | | 20 | 30 | 8'-3" | | | 20 | 30 | 9'-4" | 8'-2" | | | 9 | | | | 22 | 32 | 7'-0" | | | | | #4 | 12" | 22 | 32 | 7'-0" |
| | 9' | | | 20 | 30 | 8'-5" | | | 20 | 30 | 9'-6" | 8'-4" | | | 9 | | | | 22 | 32 | 8'-0" | | | | | | 11" | 49 | 35 | 8'-6" |
| 7' | 10' | #8 | 13" | 20 | 30 | 8'-7" | #8 | 13" | 20 | 30 | 9'-7" | 8'-6" | #4 | 11" | 9 | | | | 22 | 32 | 8'-2" | | | | | #5 | 12" | 22 | 32 | 8'-2" |
| | 11' | | | 20 | 30 | 8'-9" | | | 20 | 30 | 9'-9" | 8'-8" | | | 9 | | | | 22 | 32 | 9'-2" | | | | | | 11" | 49 | 35 | 9'-2" |
| | 12' | | | 20 | 30 | 8'-11" | | | 20 | 30 | 9'-11" | 8'-10" | | | 9 | | | | 22 | 32 | 9'-4" | | | | | #6 | 12" | 22 | 32 | 9'-4" |
| | 8' | | | 22 | 32 | 8'-11" | | | 22 | 32 | 10'-2" | 8'-10" | | | 10 | | | | 22 | 32 | 7'-10" | | | | | #4 | 12" | 22 | 32 | 7'-10" |
| | 9' | | | 22 | 32 | 9'-0" | | | 22 | 32 | 10'-3" | 8'-11" | | | 10 | | | | 22 | 32 | 8'-4" | | | | | #5 | 12" | 22 | 32 | 8'-4" |
| 8' | 10' | #8 | 12" | 22 | 32 | 9'-2" | #8 | 12" | 22 | 32 | 10'-5" | 9'-1" | #4 | 10" | 10 | | | | 22 | 32 | 8'-6" | | | | | | 11" | 49 | 35 | 8'-8" |
| | 11' | | | 22 | 32 | 9'-4" | | | 22 | 32 | 10'-7" | 9'-3" | | | 10 | | | | 22 | 32 | 8'-8" | | | | | #6 | 12" | 22 | 32 | 8'-8" |
| | 12' | | | 22 | 32 | 9'-6" | | | 22 | 32 | 10'-9" | 9'-4" | | | 10 | | | | 22 | 32 | 8'-10" | | | | | | 11" | 49 | 35 | 8'-10" |
| | 8' | | | 22 | 32 | 11'-8" | | | 22 | 32 | 12'-7" | 11'-5" | | | 13 | | | | 22 | 32 | 9'-0" | | | | | #4 | 12" | 22 | 32 | 9'-0" |
| | 9' | | | 22 | 32 | 11'-10" | | | 22 | 32 | 12'-9" | 11'-7" | | | 13 | | | | 22 | 32 | 9'-2" | | | | | | 11" | 49 | 35 | 9'-2" |
| 9' | 10' | #8 | 12" | 22 | 32 | 12'-0" | #8 | 12" | 22 | 32 | 12'-11" | 11'-9" | #4 | 9" | 13 | | | | 22 | 32 | 9'-4" | | | | | #5 | 12" | 22 | 32 | 9'-4" |
| | 11' | | | 22 | 32 | 12'-2" | | | 22 | 32 | 13'-1" | 11'-11" | | | 13 | | | | 22 | 32 | 9'-6" | | | | | | 11" | 49 | 35 | 9'-6" |
| | 12' | | | 22 | 32 | 12'-4" | | | 22 | 32 | 13'-3" | 12'-1" | | | 13 | | | | 22 | 32 | 9'-8" | | | | | #6 | 12" | 22 | 32 | 9'-8" |
| | 8' | | | 20 | 30 | 8'-7" | | | 20 | 30 | 9'-8" | 8'-6" | | | 9 | | | | 22 | 32 | 7'-2" | | | | | #4 | 12" | 22 | 32 | 7'-2" |
| | 9' | | | 20 | 30 | 8'-9" | | | 20 | 30 | 9'-10" | 8'-8" | | | 9 | | | | 22 | 32 | 8'-2" | | | | | | 11" | 49 | 35 | 8'-4" |
| 10' | 10' | #8 | 13" | 20 | 30 | 8'-11" | #8 | 13" | 20 | 30 | 10'-0" | 8'-10" | #4 | 9" | 9 | | | | 22 | 32 | 8'-4" | | | | | #5 | 12" | 22 | 32 | 8'-4" |
| | 11' | | | 20 | 30 | 9'-1" | | | 20 | 30 | 10'-2" | 9'-0" | | | 9 | | | | 22 | 32 | 8'-6" | | | | | | 11" | 49 | 35 | 8'-6" |
| | 12' | | | 20 | 30 | 9'-3" | | | 20 | 30 | 10'-4" | 9'-2" | | | 9 | | | | 22 | 32 | 8'-8" | | | | | #6 | 12" | 22 | 32 | 8'-8" |
| | 8' | | | 22 | 32 | 10'-3" | | | 22 | 32 | 11'-8" | 10'-4" | | | 13 | | | | 22 | 32 | 9'-0" | | | | | #4 | 12" | 22 | 32 | 9'-0" |
| | 9' | | | 22 | 32 | 10'-5" | | | 22 | 32 | 11'-10" | 10'-6" | | | 13 | | | | 22 | 32 | 9'-2" | | | | | | 11" | 49 | 35 | 9'-2" |
| 9' | 10' | #8 | 12" | 22 | 32 | 10'-7" | #8 | 12" | 22 | 32 | 12'-0" | 10'-8" | #4 | 9" | 13 | | | | 22 | 32 | 9'-4" | | | | | #5 | 12" | 22 | 32 | 9'-4" |
| | 11' | | | 22 | 32 | 10'-9" | | | 22 | 32 | 12'-2" | 10'-10" | | | 13 | | | | 22 | 32 | 9'-6" | | | | | | 11" | 49 | 35 | 9'-6" |
| | 12' | | | 22 | 32 | 10'-11" | | | 22 | 32 | 12'-4" | 11'-0" | | | 13 | | | | 22 | 32 | 9'-8" | | | | | #6 | 12" | 22 | 32 | 9'-8" |

NOTE:- Bars for each Section to be marked with the Section letter, thus for Section B, the bars should be marked Ba, Bd, Bd, Be and Bf.

SECTION "E" & BAR GROUP "E" — 3:1 = 11'-0" — 4:1 = 16'-0" — DEPTH OF COVER: 2.5'-0" TO 30'-0"

| CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT Varies with Length of Barrel SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | "d" bars Longitudinal in Top Slab of Barrel Varies with Length of Barrel SIZE | SPACING | No. REQ'D | LENGTH | "d" bars Longitudinal in Sidewalls Varies with Length of Barrel SIZE | SPACING | No. REQ'D | LENGTH | "e" bars Longitudinal in Bottom Slab of Barrel Varies with Length of Barrel SIZE | SPACING | No. REQ'D | LENGTH | "f" bars STRAIGHT Verticals in Sidewalls Varies with Length of Barrel SIZE | SPACING | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | H | | | | | | | | | | | | | | | | | | | | | | | |
| | 5' | | | 22 | 32 | 10'-11" | | | 16 | | | | 16 | | | | 16 | | #5 | 9" | 6'-8" | | | |
| | 6' | | | 22 | 32 | 11'-0" | | | 18 | | | | 18 | | | | 18 | | #6 | 9" | 7'-0" | | | |
| 7' | 7' | #9 | 12" | 22 | 32 | 11'-2" | #4 | 12" | 20 | Varies with Length of Barrel | #4 | 11" | 20 | Varies with Length of Barrel | #4 | 12" | 20 | Varies with Length of Barrel | #7 | 9" | 7'-2" | | | |
| | 8' | | | 22 | 32 | 11'-3" | | | 22 | | | | 22 | | | | 22 | | #8 | 9" | 7'-4" | | | |
| | 9' | | | 22 | 32 | 11'-5" | | | 22 | | | | 22 | | | | 22 | | #9 | 9" | 7'-6" | | | |
| | 10' | | | 22 | 32 | 11'-7" | | | 22 | | | | 22 | | | | 22 | | #10 | 9" | 7'-8" | | | |
| | 11' | | | 22 | 32 | 11'-9" | | | 22 | | | | 22 | | | | 22 | | #11 | 9" | 7'-10" | | | |
| | 12' | | | 22 | 32 | 11'-11" | | | 22 | | | | 22 | | | | 22 | | #12 | 9" | 8'-0" | | | |
| | 5' | | | 20 | 30 | 9'-2" | | | 12 | | | | 12 | | | | 12 | | #5 | 10" | 7'-10" | | | |
| | 6' | | | 20 | 30 | 9'-4" | | | 14 | | | | 14 | | | | 14 | | #6 | 10" | 8'-0" | | | |
| 8' | 7' | #9 | 12" | 20 | 30 | 9'-5" | #4 | 12" | 16 | Varies with Length of Barrel | #4 | 11" | 16 | Varies with Length of Barrel | #4 | 12" | 16 | Varies with Length of Barrel | #7 | 10" | 8'-2" | | | |
| | 8' | | | 20 | 30 | 9'-6" | | | 18 | | | | 18 | | | | 18 | | #8 | 10" | 8'-4" | | | |
| | 9' | | | 20 | 30 | 9'-7" | | | 20 | | | | 20 | | | | 20 | | #9 | 10" | 8'-6" | | | |
| | 10' | | | 20 | 30 | 9'-9" | | | 22 | | | | 22 | | | | 22 | | #10 | 10" | 8'-8" | | | |
| | 11' | | | 20 | 30 | 9'-11" | | | 24 | | | | 24 | | | | 24 | | #11 | 10" | 8'-10" | | | |
| | 12' | | | 20 | 30 | 10'-1" | | | 26 | | | | 26 | | | | 26 | | #12 | 10" | 9'-0" | | | |
| | 5' | | | 20 | 30 | 9'-10" | | | 12 | | | | 12 | | | | 12 | | #5 | 11" | 8'-0" | | | |
| | 6' | | | 20 | 30 | 10'-0" | | | 14 | | | | 14 | | | | 14 | | #6 | 11" | 8'-2" | | | |
| 9' | 7' | #9 | 12" | 20 | 30 | 10'-1" | #4 | 12" | 16 | Varies with Length of Barrel | #4 | 11" | 16 | Varies with Length of Barrel | #4 | 12" | 16 | Varies with Length of Barrel | #7 | 11" | 8'-4" | | | |
| | 8' | | | 20 | 30 | 10'-3" | | | 18 | | | | 18 | | | | 18 | | #8 | 11" | 8'-6" | | | |
| | 9' | | | 20 | 30 | 10'-4" | | | 20 | | | | 20 | | | | 20 | | #9 | 11" | 8'-8" | | | |
| | 10' | | | 20 | 30 | 10'-6" | | | 22 | | | | 22 | | | | 22 | | #10 | 11" | 8'-10" | | | |
| | 11' | | | 20 | 30 | 10'-8" | | | 24 | | | | 24 | | | | 24 | | #11 | 11" | 9'-0" | | | |
| | 12' | | | 20 | 30 | 10'-10" | | | 26 | | | | 26 | | | | 26 | | #12 | 11" | 9'-2" | | | |
| | 5' | | | 20 | 30 | 10'-3" | | | 12 | | | | 12 | | | | 12 | | #5 | 12" | 8'-2" | | | |
| | 6' | | | 20 | 30 | 10'-5" | | | 14 | | | | 14 | | | | 14 | | #6 | 12" | 8'-4" | | | |
| 10' | 7' | #9 | 12" | 20 | 30 | 10'-6" | #4 | 12" | 16 | Varies with Length of Barrel | #4 | 11" | 16 | Varies with Length of Barrel | #4 | 12" | 16 | Varies with Length of Barrel | #7 | 12" | 8'-6" | | | |
| | 8' | | | 20 | 30 | 10'-8" | | | 18 | | | | 18 | | | | 18 | | #8 | 12" | 8'-8" | | | |
| | 9' | | | 20 | 30 | 10'-9" | | | 20 | | | | 20 | | | | 20 | | #9 | 12" | 8'-10" | | | |
| | 10' | | | 20 | 30 | 10'-11" | | | 22 | | | | 22 | | | | 22 | | #10 | 12" | 9'-0" | | | |
| | 11' | | | 20 | 30 | 11'-1" | | | 24 | | | | 24 | | | | 24 | | #11 | 12" | 9'-2" | | | |
| | 12' | | | 20 | 30 | 11'-3" | | | 26 | | | | 26 | | | | 26 | | #12 | 12" | 9'-4" | | | |
| | 5' | | | 20 | 30 | 10'-8" | | | 12 | | | | 12 | | | | 12 | | #5 | 13" | 8'-4" | | | |
| | 6' | | | 20 | 30 | 10'-10" | | | 14 | | | | 14 | | | | 14 | | #6 | 13" | 8'-6" | | | |
| 11' | 7' | #9 | 12" | 20 | 30 | 11'-0" | #4 | 12" | 16 | Varies with Length of Barrel | #4 | 11" | 16 | Varies with Length of Barrel | #4 | 12" | 16 | Varies with Length of Barrel | #7 | 13" | 8'-8" | | | |
| | 8' | | | 20 | 30 | 11'-2" | | | 18 | | | | 18 | | | | 18 | | #8 | 13" | 8'-10" | | | |
| | 9' | | | 20 | 30 | 11'-4" | | | 20 | | | | 20 | | | | 20 | | #9 | 13" | 9'-0" | | | |
| | 10' | | | 20 | 30 | 11'-6" | | | 22 | | | | 22 | | | | 22 | | #10 | 13" | 9'-2" | | | |
| | 11' | | | 20 | 30 | 11'-8" | | | 24 | | | | 24 | | | | 24 | | #11 | 13" | 9'-4" | | | |
| | 12' | | | 20 | 30 | 11'-10" | | | 26 | | | | 26 | | | | 26 | | #12 | 13" | 9'-6" | | | |

Designed By: W.C.H. 7-18-62. Checked By:- RMS 7-25-62
Drawn By: W.C.H. 8-3-62. Checked By:- RMS 8-10-62
Quantities By: W.C.H. 8-1-62. Checked By:- RMS 8-10-62

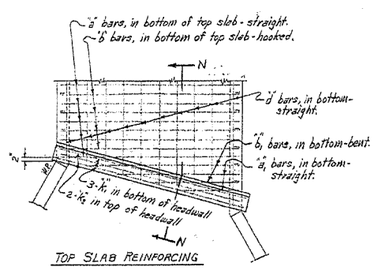
# DIMENSIONS AND QUANTITIES

| MAX. DESIGN DEPTH OF COVER D | S | CLEAR SPAN H | Sq. FT. OPENING A | OVERALL WIDTH OW | THICKNESS OF TOP SLAB T | THICKNESS OF SIDEWALLS C | THICKNESS OF BOTTOM SLAB B | OVERALL HEIGHT OH | CLASS S CONC. PER LIN. FT. OF BARREL CU.YD. | REINFORCING STEEL PER LIN. FT. OF BARREL LB. | REINFORCING STEEL ADDITIONAL PER LAP LB. | REINFORCING STEEL ADDITIONAL TWO HEADWALLS & BRKTS LB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SECTION "A" - 10'-0" | | 5' | 35 | 8'-0" | | 6" | | 6'-4½" | 0.593 | 68.80 | 21.71 | 107.92 |
| | 1 | 6' | 42 | 8'-2" | | 7" | | 7'-4½" | 0.675 | 71.72 | 23.38 | 108.81 |
| | @ | 7' | 49 | 8'-3" | 8" | 7½" | 8½" | 8'-4½" | 0.744 | 75.80 | 25.05 | 109.50 |
| | 7' | 8' | 56 | 8'-4" | | 8" | | 9'-4½" | 0.819 | 84.72 | 26.72 | 110.20 |
| | | 9' | 63 | 8'-5" | | 9" | | 10'-4½" | 0.933 | 90.91 | 28.39 | 111.59 |
| | | 6' | 98 | 9'-2" | | 7" | | 7'-6" | 0.769 | 86.55 | 25.05 | 157.02 |
| | 1 | 7' | 56 | 9'-3" | | 7½" | | 8'-6" | 0.838 | 89.72 | 26.72 | 158.02 |
| | @ | 8' | 64 | 9'-4" | 8½" | 8" | 9½" | 9'-6" | 0.914 | 99.84 | 28.39 | 159.02 |
| | 8' | 9' | 72 | 9'-6" | | 9" | | 10'-6" | 1.028 | 106.20 | 30.06 | 161.03 |
| | | 10' | 80 | 9'-7" | | 10" | | 11'-6" | 1.154 | 113.38 | 31.73 | 163.03 |
| | | 7' | 63 | 10'-3" | | 7½" | | 8'-8" | 0.957 | 116.90 | 28.39 | 177.61 |
| | 1 | 8' | 72 | 10'-4" | | 8" | | 9'-8" | 1.033 | 127.28 | 30.06 | 178.61 |
| | @ | 9' | 81 | 10'-6" | 9½" | 9" | 10½" | 10'-8" | 1.148 | 138.97 | 31.73 | 180.61 |
| | 9' | 10' | 90 | 10'-8" | | 10" | | 11'-8" | 1.276 | 141.46 | 33.40 | 182.62 |
| | | 11' | 99 | 10'-10" | | 11" | | 12'-8" | 1.416 | 152.81 | 35.07 | 184.62 |
| | | 8' | 80 | 11'-4" | | 8" | | 9'-10" | 1.165 | 141.10 | 31.73 | 249.37 |
| | 1 | 9' | 90 | 11'-6" | | 9" | | 10'10" | 1.281 | 145.89 | 33.40 | 252.10 |
| | @ | 10' | 100 | 11'-8" | 10½" | 10" | 11½" | 11'-10" | 1.409 | 155.80 | 35.07 | 254.82 |
| | 10' | 11' | 110 | 11'-10" | | 11" | | 12'-10" | 1.550 | 167.01 | 36.74 | 257.55 |
| | | 12' | 120 | 12'-0" | | 12" | | 13'-10" | 1.704 | 176.42 | 38.41 | 260.27 |
| SECTION "B" - 15'-0" | | 5' | 35 | 8'-8" | | 6" | | 6'-6" | 0.680 |

RESHOT 3-8-93

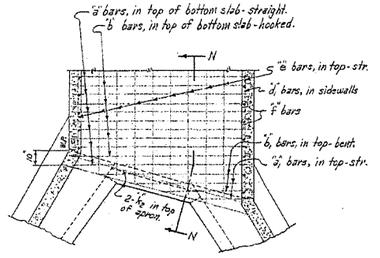
180

| FED. ROAD No. | STATE | FED. AID PROJECT | FISCAL YEAR | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 0 | ARK. | | | 228 | |
| JOB No. | | | | | |




TOP SLAB REINFORCING

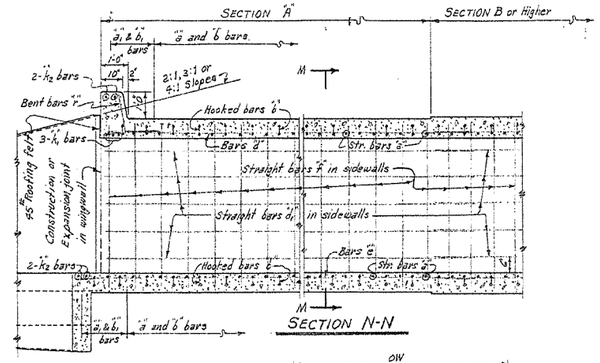
PART PLAN AT END OF CULVERT



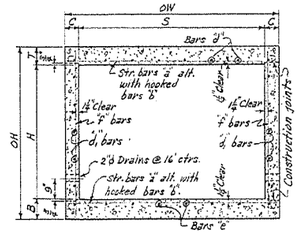

BOTTOM SLAB REINFORCING

PART PLAN AT END OF CULVERT

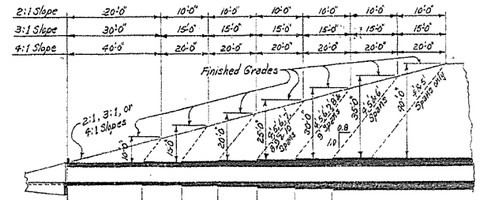
NOTE:- The "d", "a" and "e" bars vary in length. They should extend 1'9" into SECTION B.




SECTION N-N




TYPICAL SECTION M-M

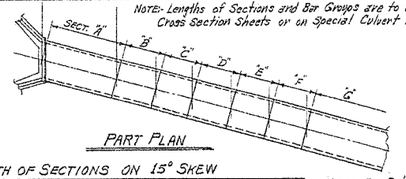



| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2:1 Slope | | 20'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | 10'-0" | | |
| 3:1 Slope | | 30'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | | |
| 4:1 Slope | | 40'-0" | 20'-0" | 20'-0" | 20'-0" | 20'-0" | 20'-0" | 20'-0" | | |
| 2:1 Slope | = SECTIONS | A=12'-0" | B=6'-0" | C=6'-0" | D=6'-0" | E=6'-0" | F=6'-0" | MID-SECTION G-Varies | | |
| | Bar Group | A | B | C | D | E | F | G | | |
| 3:1 Slope | = SECTIONS | A=22'-0" | B=11'-0" | C=6'-0" | D=11'-0" | E=11'-0" | F=11'-0" | MID-SECTION G-Varies | | |
| | Bar Group | A | B | C | D | E | F | G | | |
| 4:1 Slope | = SECTIONS | A=32'-0" | B=16'-0" | C=6'-0" | D=16'-0" | E=16'-0" | F=16'-0" | MID-SECTION G-Varies | | |
| | Bar Group | A | B | C | D | E | F | G | | |

These lengths are perpendicular to ℄ of roadway. See Table of Skew Lengths below.

TYPICAL LONGITUDINAL SECTION - SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

Note:- Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.




PART PLAN

LENGTH OF SECTIONS ON 15° SKEW

| SLOPE | 2:1 | 3:1 | | 4:1 | |
|---|---|---|---|---|---|
| SECTIONS | A | B, C, D, E & F | A | B, C, D, E & F | A | B, C, D, E & F |
| LENGTHS | 12'-5" | 6'-2½" | 22'-9½" | 11'-9⅝" | 33'-1½" | 16'-6¾" |

NOTE:- For Details and Bar Lists for Sections B thru G, see Barrel Drawing Nos. R-100X-X.1 or R-100X-X.2.

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

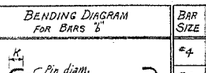
| DEPTHS OF COVER | SECTIONS & BAR GROUPS FOR END SECTIONS | | | | | | MID-SECTION AND BAR GROUP |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| 5.0' to 9.5' | A | | | | | | A |
| 10.0' to 14.5' | A | | | | | | B |
| 15.0' to 19.5' | A | B | | | | | C |
| 20.0' to 24.5' | A | B | C | | | | D |
| 25.0 to 29.5' | A | B | C | D | | | E |
| 30.0 to 34.5' | A | B | C | D | E | | F |
| 35.0 to 40.0' | A | B | C | D | E | F | G |

OR ALT.

| DEPTHS OF COVER | SECTIONS & BAR GROUPS FOR END SECTIONS | | | | | | MID-SECTION AND BAR GROUP |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| 5.0' to 9.5' | A | | | | | | A |
| 10.0' to 14.5' | A | | | | | | B |
| 15.0' to 19.5' | A | B | | | | | C |
| 20.0' to 24.5' | A | 2@C | | | | | D |
| 25.0 to 29.5' | A | B | 2@D | | | | E |
| 30.0 to 34.5' | A | 2@C | | 2@E | | | F |
| 35.0 to 40.0' | A | B | 2@D | | 2@F | | G |

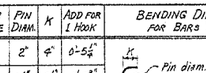
| BAR SIZE | PIN DIAM. | K | ADD FOR 2 HOOKS |
|---|---|---|---|
| #4 | 2" | 4" | 0'-10½" |
| #5 | 2½" | 4½" | 0'-11½" |
| #6 | 3" | 5" | 1'-2" |
| #7 | 3½" | 5⅝" | 1'-4" |

BENDING DIAGRAM FOR BARS "b"




| BAR SIZE | PIN DIAM. | K | ADD FOR 1 HOOK |
|---|---|---|---|
| #4 | 2" | 4" | 0'-5½" |
| #5 | 2½" | 4½" | 0'-5⅝" |
| #6 | 3" | 5" | 0'-7" |
| #7 | 3½" | 5⅝" | 0'-8" |

BENDING DIAGRAM FOR BARS "d", "e"

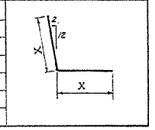



NOTE:- Dimensions are to centers of bars ("b" and "d").

DOWEL BARS FOR ONE HEADWALL

| SPAN | SIZE | SPACING | NO. REQ'D | LENGTH | X |
|---|---|---|---|---|---|
| 4' | #4 | 12" | 6 | 2'-5" | 1'-2½" |
| 5' | #4 | 12" | 7 | 2'-6" | 1'-3" |
| 6' | #4 | 12" | 8 | 2'-7" | 1'-3½" |
| 7' | #4 | 12" | 9 | 2'-8" | 1'-4" |
| 8' | #4 | 12" | 10 | 2'-10" | 1'-5" |
| 9' | #4 | 12" | 11 | 3'-0" | 1'-6" |
| 10' | #4 | 12" | 12 | 3'-2" | 1'-7" |

Dowel bars "f" in One Headwall.




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 #/□"

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.

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.

NOTE:- This drawing to be used in conjunction with Standard Wing 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.
For Barrels of 4', 5' & 6' Spans, See Drawing No. R-100X-X.1.
For Barrels of 7', 8', 9' & 10' Spans, See Drawing No. R-100X-X.2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS

FOR

REINFORCED CONCRETE BOX CULVERTS

15° SKEW ~ SECTIONS "A" ONLY

4', 5', 6', 7', 8', 9' & 10' SPANS — 2:1, 3:1 OR 4:1 SLOPES

SINGLES — OVER 5'-0" COVER

STANDARD DRAWING No. R-115X-1

BAR LIST FOR SECTION "A" ON 15° SKEW - ONE END ONLY.

| SECTION & BAR GROUP | LENGTH OF SECTION | DEPTH OF COVER | CLEAR SPAN | CLEAR HEIGHT | "a" bars STRAIGHT. In Top and Bottom Slabs of Barrel. | | | | | "a" bars STRAIGHT. In Top and Bottom Slab of Barrel - (Two of each Length) | | | | | "b" bars BENT - See Diagrams at Right. In Top and Bottom Slabs of Barrel - hooked. Alternate with "a" bars. | | | | | | | "b" bars BENT - See Diagrams at Right. In Top and Bottom Slabs of Barrel - one end hooked. (Two of each Length.) Alternate with "a" bars. | | | | | | | "d" bars STRAIGHT Longitudinal in Top Slab of Barrel. | | | | "e" bars STRAIGHT Longitudinal in sidewalls | | | "f" bars STRAIGHT Verticals in Sidewalls. | | | | "K1" bars STRAIGHT In Bottom of Headwall | | | "K2" bars STRAIGHT In Top of Headwall and Apron. (2 Each) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SIZE | SPACING | NUMBER REQ'D 2:1 | NUMBER REQ'D 3:1 | NUMBER REQ'D 4:1 | LENGTH | | | | | SIZE | SPACING | NUMBER REQ'D | LENGTH | X | | | SIZE | SPACING | NUMBER REQ'D | LENGTH | X | | | SIZE | SPACING | NUMBER REQ'D | LENGTH | | | SIZE | SPACING | NUMBER REQ'D | LENGTH | | | SIZE | SPACING | NUMBER REQ'D | LENGTH | | | SIZE | NUMBER REQ'D | LENGTH | | | SIZE | NUMBER REQ'D | LENGTH |
| | | | | | | | | | | MAX. | MIN. | MAX. | MIN. | | | | MAX. | MIN. | MAX. | MIN. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3:1 = 33°-½" 4:1 = 33°-½" 0'-0" TO 10'-0" MAXIMUM. | 2:1 = 12'-5" | D | S | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SECTION "A" & BAR GROUP "A" | | 2' | 4 | 5'-0" | #4 | 12" | 25 | 25 | 25 | 4'-9" | — | — | — | — | #4 | 12" | 25 | 23 | 2 | 3'-5" | — | 2'-10" | — | #4 | 12" | 25 | 25 | 2 | 2'-10" | — | 2'-10" | — | #4 | 12" | 25 | 25 | 2 | 2'-10" | — | 2'-10" | — | #4 | 12" | 25 | 25 | 4 | 4'-11" | 4 | 5'-5" | #4 | 12" | 5 |
| | | 3' | 4 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 25 | 23 | 2 | " | — | " | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 4 | " | 4 | " | | | 5 |
| | | 4' | 5 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 25 | 23 | 2 | " | — | " | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 4 | " | 4 | " | | | 8 |
| | | 5' | 6 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 25 | 23 | 2 | " | — | " | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 4 | " | 4 | " | | | 10 |
| | | 6' | 7 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 25 | 23 | 2 | 3'-5" | — | 3'-0" | — | | | 25 | 25 | 2 | 3'-5" | — | 3'-0" | — | | | 25 | 25 | 2 | " | — | " | — | | | 25 | 25 | 4 | " | 4 | " | | | 12 |
| | | 3' | 4 | 5'-9" | | | 25 | 25 | 25 | 5'-9" | — | — | — | — | | | 23 | 23 | 2 | 4'-9" | — | 3'-10" | — | | | 23 | 23 | 2 | 4'-9" | — | 3'-10" | — | | | 23 | 23 | 2 | 4'-6" | — | 3'-7" | — | | | 23 | 23 | 4 | 5'-11" | 4 | 6'-6" | | | 6 |
| | | 4' | 5 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 8 |
| | | 5' | 6 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 6'-10" | — | 5'-10½" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 10 |
| | | 6' | 7 | " | | | 25 | 25 | 25 | 5'-11" | — | — | — | — | | | 23 | 23 | 2 | 6'-11" | — | 5'-11½" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 12 |
| | | 7' | 7 | 6'-0" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 14 |
| | | 3' | 4 | 6'-9" | | | 25 | 25 | 25 | 6'-9" | — | — | — | — | | | 23 | 23 | 2 | 5'-5" | — | 4'-10" | — | | | 23 | 23 | 2 | 5'-5" | — | 4'-10" | — | | | 23 | 23 | 2 | 5'-2" | — | 4'-7" | — | | | 23 | 23 | 4 | 6'-11" | 4 | 7'-6" | | | 6 |
| | | 4' | 5 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 8 |
| | | 5' | 6 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 8'-0" | — | 6'-10" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 10 |
| | | 6' | 7 | " | | | 25 | 25 | 25 | 6'-11" | — | — | — | — | | | 23 | 23 | 2 | 8'-1" | — | 6'-11" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 12 |
| | | 7' | 7 | 7'-0" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 8'-2" | — | 7'-0" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 14 |
| | | 4' | 5 | 7'-9" | | | 25 | 25 | 25 | 7'-9" | — | — | — | — | | | 23 | 23 | 2 | 6'-5" | — | 5'-10" | — | | | 23 | 23 | 2 | 6'-5" | — | 5'-10" | — | | | 23 | 23 | 2 | 6'-2" | — | 5'-7" | — | | | 23 | 23 | 4 | 7'-11" | 4 | 8'-6" | | | 8 |
| | | 5' | 6 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 10 |
| | | 6' | 7 | 7'-11" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 9'-10" | — | 7'-10" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 12 |
| | | 7' | 7 | 8'-0" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 9'-11" | — | 7'-11" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 14 |
| | | 8' | 7 | 8'-1" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 9'-11" | — | 8'-0" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 16 |
| | | 9' | 7 | 8'-3" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 9'-11" | — | 8'-2" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 18 |
| | | 4' | 5 | 8'-9" | | | 25 | 25 | 25 | 8'-9" | — | — | — | — | | | 23 | 23 | 2 | 8'-10" | — | 7'-6" | — | | | 23 | 23 | 2 | 8'-10" | — | 7'-6" | — | | | 23 | 23 | 2 | 8'-7" | — | 7'-3" | — | | | 23 | 23 | 4 | 9'-4" | 4 | 9'-9" | | | 8 |
| | | 5' | 6 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 10 |
| | | 6' | 7 | 9'-0" | | | 25 | 25 | 25 | 9'-0" | — | — | — | — | | | 23 | 23 | 2 | 9'-11" | — | 8'-10" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 12 |
| | | 7' | 7 | 9'-1" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 10'-2" | — | 9'-0" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 14 |
| | | 8' | 7 | 9'-3" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 10'-2" | — | 9'-1" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 16 |
| | | 9' | 7 | 9'-3" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 10'-2" | — | 9'-2" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | " | 4 | " | | | 18 |
| | | 4' | 5 | 9'-11" | | | 25 | 25 | 25 | 9'-11" | — | — | — | — | | | 23 | 23 | 2 | 9'-10" | — | 8'-6" | — | | | 23 | 23 | 2 | 9'-10" | — | 8'-6" | — | | | 23 | 23 | 4 | 7'-5" | 3-9" | 6'-10" | 3'-1" | | | 23 | 23 | 4 | 9'-11" | 4 | 10'-5" | | | 8 |
| | | 5' | 6 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | 7'-7" | 3-10" | 7'-0" | 3'-2" | | | 23 | 23 | 4 | " | 4 | " | | | 10 |
| | | 6' | 7 | 10'-0" | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 10'-10" | — | 9'-9" | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | 7'-8" | 3-11" | 7'-1" | 3'-3" | | | 23 | 23 | 4 | " | 4 | " | | | 12 |
| | | 7' | 7 | " | | | 25 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 2 | " | — | " | — | | | 23 | 23 | 4 | 7'-9" | 4-0" | 7'-2" | 3'-4" | | | 23 | 23 | 4 | " | 4 | " | | | 14 |
| | | 8' | 7 | 10'-1" | | | 25 | 25 | 25 | 10'-1" | — | — | — | — | | | 23 | 23 | 2 | 11'-2" | — | 10'-0" | — | | | 23 | 23 | 2 | 11'-2" | — | 10'-0" | — | | | 23 | 23 | 4 | 7'-9" | 4-0" | 7'-2" | 3'-4" | | | 23 | 23 | 4 | 12'-0" | 4 | 12'-5" | | | 16 |
| | | 9' | 7 | 10'-3" | | | 25 | 25 | 25 | 10'-3" | — | — | — | — | | | 23 | 23 | 2 | 11'-2" | — | 10'-0" | — | | | 23 | 23 | 2 | 11'-2" | — | 10'-0" | — | | | 23 | 23 | 4 | 7'-10" | 4-1" | 7'-3" | 3'-5" | | | 23 | 23 | 4 | " | 4 | " | | | 18 |
| | | 10' | 7 | 10'-5" | | | 25 | 25 | 25 | 10'-5" | — | — | — | — | | | 23 | 23 | 2 | 11'-2" | — | 10'-0" | — | | | 23 | 23 | 2 | 11'-2" | — | 10'-0" | — | | | 23 | 23 | 4 | 7'-10" | 4-2" | 7'-3" | 3'-6" | | | 23 | 23 | 4 | " | 4 | " | | | 20 |
| | | 11' | 7 | 10'-7" | | | 25 | 25 | 25 | 10'-7" | — | — | — | — | | | 23 | 23 | 2 | 11'-10" | — | 10'-6" | — | | | 23 | 23 | 2 | 11'-10" | — | 10'-6" | — | | | 23 | 23 | 4 | 7'-11" | 4-3" | 7'-4" | 3'-7" | | | 23 | 23 | 4 | " | 4 | " | | | 22 |
| | | 5' | 6 | 10'-8" | #4 | 12" | 23 | 25 | 25 | 10'-8" | — | — | — | — | #4 | 12" | 23 | 23 | 2 | 9'-10" | — | 8'-7" | — | #4 | 12" | 23 | 23 | 2 | 9'-10" | — | 8'-7" | — | #4 | 12" | 23 | 23 | 4 | 8'-0" | 4-4" | 7'-5" | 3'-8" | #4 | 12" | 23 | 23 | 4 | 12'-0" | 4 | 12'-5" | #4 | 12" | 10 |
| | | 6' | 7 | " | | | 23 | 25 | 25 | " | — | — | — | — | | | 23 | 23 | 2 | 9'-11" | — | 8'-7" | — | | | 23 | 23 | 2 | 9'-11" | — | 8'-7" | — | | | 23 | 23 | 4 | 8'-0" | 4-4" | 7'-5" | 3'-8" | | | 23 | 23 | 4 | " | 4 | " | | | 12 |
| | | 7' | 7 | 10'-10" | | | 23 | 25 | 25 | 10'-10" | — | — | — | — | | | 23 | 23 | 2 | 12'-2" | — | 10'-10" | — | | | 23 | 23 | 2 | 12'-2" | — | 10'-10" | — | | | 23 | 23 | 4 | 8'-0" | 4-5" | 7'-5" | 3'-9" | | | 23 | 23 | 4 | 12'-5" | 4 | 12'-10" | | | 14 |
| | | 8' | 7 | 11'-0" | | | 23 | 25 | 25 | 11'-0" | — | — | — | — | | | 23 | 23 | 2 | 12'-3" | — | 10'-11" | — | | | 23 | 23 | 2 | 12'-3" | — | 10'-11" | — | | | 23 | 23 | 4 | 8'-0" | 4-5" | 7'-5" | 3'-9" | | | 23 | 23 | 4 | " | 4 | " | | | 16 |
| | | 9' | 7 | 11'-1" | | | 23 | 25 | 25 | 11'-1" | — | — | — | — | | | 23 | 23 | 2 | 12'-4" | — | 11'-0" | — | | | 23 | 23 | 2 | 12'-4" | — | 11'-0" | — | | | 23 | 23 | 4 | 8'-0" | 4-5" | 7'-5" | 3'-9" | | | 23 | 23 | 4 | " | 4 | " | | | 18 |
| | | 10' | 7 | 11'-3" | | | 23 | 25 | 25 | 11'-3" | — | — | — | — | | | 23 | 23 | 2 | 12'-4" | — | 11'-1" | — | | | 23 | 23 | 2 | 12'-4" | — | 11'-1" | — | | | 23 | 23 | 4 | 8'-0" | 4-5" | 7'-5" | 3'-9" | | | 23 | 23 | 4 | " | 4 | " | | | 20 |
| | | 11' | 7 | 11'-5" | | | 23 | 25 | 25 | 11'-5" | — | — | — | — | | | 23 | 23 | 2 | 12'-6" | — | 11'-3" | — | | | 23 | 23 | 2 | 12'-6" | — | 11'-3" | — | | | 23 | 23 | 4 | 8'-0" | 4-5" | 7'-5" | 3'-9" | | | 23 | 23 | 4 | " | 4 | " | | | 22 |
| | | 12' | 7 | 11'-9" | | | 23 | 25 | 25 | 11'-9" | — | — | — | — | | | 23 | 23 | 2 | 12'-8" | — | 11'-5" | — | | | 23 | 23 | 2 | 12'-8" | — | 11'-5" | — | | | 23 | 23 | 4 | 8'-0" | 4-5" | 7'-5" | 3'-9" | | | 23 | 23 | 4 | " | 4 | " | | | 24 |

Designed by:- W.C.H. 9-5-62. Checked by:- A.H.S. 11-8-62.
Drawn by:- W.C.H. 10-29-63. Checked by:-
Quantities by:- W.C.H. 12-6-63. Checked by:-

T These bars are in the skewed portion of barrel only. The length of "a" bars and overall length X. of "b" bars vary by 3'-9" for 12" spacing and 3'-5" for 11" spacing.

| BARREL DIMENSIONS | | | | | | | | | | | | | * QUANTITIES - ONE SECTION "A" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAX. DESIGN DEPTH OF COVER | CLEAR SPANS | CLEAR HEIGHT | SQ. FT. OPENING | OVERALL WIDTH | THICKNESS OF TOP SLAB | THICKNESS OF SIDEWALLS | THICKNESS OF BOTTOM SLAB | OVERALL HEIGHT | ROADWAY LENGTH | LENGTH OF HEADWALL | CLASS S CONCRETE BARREL ONLY | | | REINFORCING STEEL BARREL, APRON AND HEADWALL | | | | | |
| | | | | | | | | | | | 2:1 | 3:1 | 4:1 | 2:1 | 3:1 | 4:1 | | | |
| D | S | H | A | OW | T | C | B | OH | RL | K | CU.YD. | CU.YD. | CU.YD. | LB. | LB. | LB. | | | |
| 1@4' | 4' | 2' | 8 | 5'-0" | 6½" | 6" | 6½" | 3'-1" | 5'-2⅜" | 5'-8⅝" | 3.41 | 6.26 | 9.11 | 410 | 682 | 963 | | | |
| | | 3' | 12 | 5'-0" | | 6" | | 3'-7" | " | " | 3.87 | 7.10 | 10.34 | 446 | 706 | 1054 | | | |
| | | 4' | 16 | 5'-0" | | 6" | | 4'-1" | " | " | 4.33 | 7.95 | 11.56 | 482 | 809 | 1146 | | | |
| | | 5' | 20 | 5'-0" | | 6" | | 4'-7" | " | " | 4.79 | 8.79 | 12.79 | 518 | 878 | 1237 | | | |
| | | 6' | 24 | 5'-2" | | 7" | | 7'-1" | 5'-4⅜" | 5'-10⅝" | 5.80 | 10.63 | 15.47 | 562 | 947 | 1349 | | | |
| 1@5' | 5' | 8' | 15 | 6'-0" | 7" | 6" | 7" | 4'-2" | 6'-2⅝" | 6'-9" | 4.59 | 8.43 | 12.26 | 619 | 1068 | 1518 | | | |
| | | 4' | 20 | 6'-0" | | 6" | | 5'-2" | " | " | 5.05 | 9.27 | 13.48 | 655 | 1132 | 1610 | | | |
| | | 5' | 25 | 6'-0" | | 6" | | 6'-2" | " | " | 5.51 | 10.11 | 14.71 | 691 | 1195 | 1701 | | | |
| | | 6' | 30 | 6'-2" | | 7" | | 7'-2" | 6'-9⅝" | 6'-4½" | 6.53 | 11.98 | 17.42 | 747 | 1287 | 1827 | | | |
| | | 7' | 35 | 6'-3" | | 7½" | | 8'-2" | 6'-5⅝" | 7'-0⅝" | 7.38 | 13.53 | 19.68 | 800 | 1395 | 1989 | | | |
| 1@6' | 6' | 3' | 18 | 7'-0" | 7½" | 6" | 7½" | 4'-3" | 7'-3" | 7'-9⅝" | 5.40 | 9.91 | 14.41 | 800 | 1391 | 1975 | | | |
| | | 4' | 24 | 7'-0" | | 6" | | 5'-3" | " | " | 5.86 | 10.75 | 15.69 | 826 | 1454 | 2066 | | | |
| | | 5' | 30 | 7'-0" | | 6" | | 6'-3" | " | " | 6.32 | 11.59 | 16.86 | 872 | 1518 | 2158 | | | |
| | | 6' | 36 | 7'-2" | | 7" | | 7'-3" | 7'-5" | 7'-11½" | 7.34 | 13.46 | 19.58 | 921 | 1602 | 2279 | | | |
| | | 7' | 42 | 7'-3" | | 7½" | | 8'-3" | 7'-1⅝" | 8'-0⅝" | 8.20 | 15.03 | 21.86 | 974 | 1716 | 2449 | | | |
| | | 8' | 48 | 7'-4" | | 8" | | 9'-3" | 7'-7⅝" | 8'-1⅝" | 9.15 | 16.74 | 24.35 | 1112 | 1943 | 2774 | | | |
| 1@7' | 7' | 4' | 28 | 8'-0" | 8" | 6" | 8½" | 5'-2½" | 8'-3⅜" | 8'-9⅜" | 6.90 | 12.66 | 18.42 | 959 | 1696 | 2310 | | | |
| | | 5' | 35 | 8'-0" | | 6" | | 6'-2½" | " | " | 7.36 | 13.50 | 19.69 | 996 | 1710 | 2402 | | | |
| | | 6' | 42 | 8'-2" | | 7" | | 7'-1½" | 8'-5½" | 9'-0" | 8.38 | 15.37 | 22.36 | 1045 | 1795 | 2523 | | | |
| | | 7' | 49 | 8'-3" | | 7½" | | 8'-1½" | 8'-1⅝" | 9'-1" | 9.24 | 16.94 | 24.65 | 1098 | 1881 | 2662 | | | |
| | | 8' | 56 | 8'-4" | | 8" | | 9'-1½" | 8'-7¾" | 9'-2" | 10.17 | 18.65 | 27.13 | 1218 | 2100 | 2969 | | | |
| | | 9' | 63 | 8'-6" | | 9" | | 10'-1½" | 8'-9⅜" | 9'-5" | 11.59 | 21.25 | 30.91 | 1298 | 2244 | 3173 | | | |
| 1@8' | 8' | 4' | 32 | 9'-0" | 9" | 6" | 9½" | 5'-6" | 9'-3⅜" | 9'-10⅛" | 8.05 | 14.76 | 21.47 | 1177 | 1985 | 2826 | | | |
| | | 5' | 40 | 9'-2" | | 7" | | 6'-6" | 9'-5⅞" | 10'-0⅝" | 9.00 | 16.51 | 24.02 | 1229 | 2074 | 2953 | | | |
| | | 6' | 48 | 9'-2" | | 7" | | 7'-6" | " | " | 9.55 | 17.51 | 25.47 | 1265 | 2137 | 3044 | | | |
| | | 7' | 56 | 9'-3" | | 7½" | | 8'-6" | 9'-6⅜" | 10'-1⅛" | 10.41 | 19.08 | 27.76 | 1309 | 2213 | 3159 | | | |
| | | 8' | 64 | 9'-4" | | 8" | | 9'-6" | 9'-8" | 10'-2⅝" | 11.35 | 20.81 | 30.28 | 1963 | 2649 | 8495 | | | |
| | | 9' | 72 | 9'-6" | | 9" | | 10'-6" | 9'-10" | 10'-4⅝" | 12.76 | 23.91 | 34.05 | 1526 | 2576 | 3669 | | | |
| | | 10' | 80 | 9'-8" | | 10" | | 11'-6" | 10'-0⅝" | 10'-6⅝" | 14.33 | 26.26 | 38.29 | 1613 | 2708 | 3849 | | | |
| 1@9' | 9' | 5' | 45 | 10'-2" | 9½" | 7" | 10½" | 6'-5" | 10'-6⅝" | 11'-0⅝" | 10.98 | 19.22 | 27.96 | 1569 | 2776 | 3893 | | | |
| | | 6' | 54 | 10'-3" | | 7½" | | 7'-8" | 10'-7⅝" | 11'-1⅞" | 11.30 | 20.72 | 30.14 | 1609 | 2796 | 3957 | | | |
| | | 7' | 63 | 10'-3" | | 7½" | | 8'-8" | " | " | 11.88 | 21.79 | 31.70 | 1646 | 2859 | 4048 | | | |
| | | 8' | 72 | 10'-4" | | 8" | | 9'-8" | 10'-8¾" | 11'-2⅝" | 12.84 | 23.52 | 34.22 | 1783 | 3101 | 4398 | | | |
| | | 9' | 81 | 10'-6" | | 9" | | 10'-8" | 10'-10⅝" | 11'-5" | 14.25 | 26.14 | 38.08 | 1870 | 3238 | 4626 | | | |
| | | 10' | 90 | 10'-8" | | 10" | | 11'-8" | 11'-0⅝" | 11'-9" | 15.84 | 29.06 | 42.27 | 1961 | 3435 | 4878 | | | |
| | | 11' | 99 | 10'-10" | | 11" | | 12'-8" | 11'-2⅝" | 11'-9" | 17.58 | 32.24 | 46.91 | 2127 | 3703 | 5267 | | | |
| 1@10' | 10' | 5' | 50 | 11'-2" | 10½" | 7" | 11½" | 6'-10" | 11'-4⅜" | 12'-1⅛" | 12.09 | 22.18 | 32.26 | 1808 | 3105 | 4362 | | | |