| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AND PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 1 | 90 |
| | | | | (2) ILLINOIS RIVER STR. & APPRS. (S) | | | | |

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

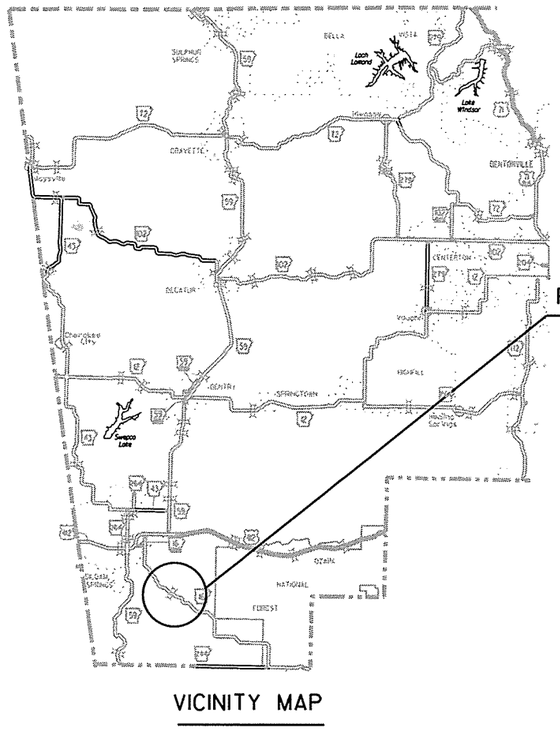
# ILLINOIS RIVER
# STR. & APPRS. (S)

BENTON COUNTY
ROUTE 16 SECTION 1

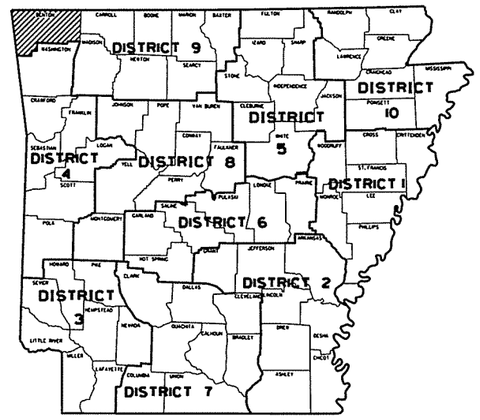
## JOB 090282

FED. AID PROJ. BRN-STPF-0004(44)

NOT TO SCALE




VICINITY MAP




ARK. HWY. DIST. NO. 9

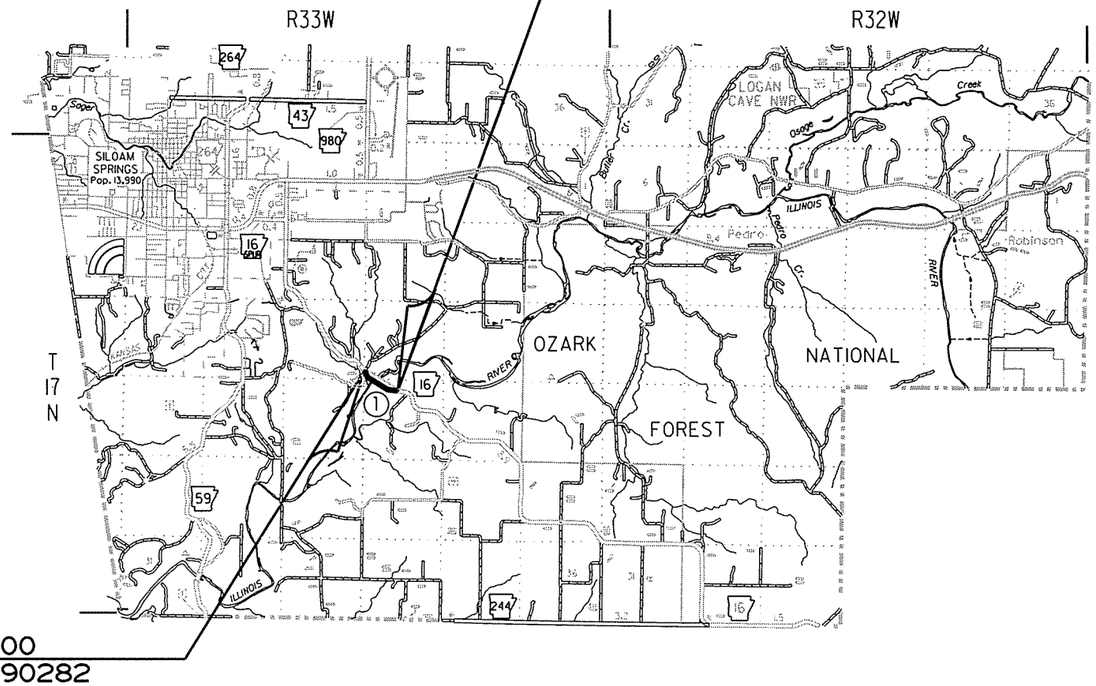
## BRIDGE DATA

(1) BR. END STA. 120+50.92
BRIDGE NO. 07265
40'-0" CLEAR ROADWAY
962'-2" TOTAL LENGTH
ONE (1) 240'-0" CONTINUOUS
COMPOSITE W-BEAM (70', 100', 70')
THREE (3) 240'-0" CONTINUOUS
COMPOSITE W-BEAM (4 @ 60')
BR. END STA. 130+13.08

| | | | |
|---|---|---|---|
| BEGINNING: | | | |
| LAT: N36° | 08' | 48" | |
| LONG: W94° | 29' | 52" | |
| MID POINT: | | | |
| LAT: N36° | 08' | 39" | |
| LONG: W94° | 29' | 38" | |
| ENDING: | | | |
| LAT: N36° | 08' | 32" | |
| LONG: W94° | 29' | 19" | |

STA. 141+09.17
END JOB 090282

STA. 111+00.00
BEGIN JOB 090282
L.M. 2.83




| | | | |
|---|---|---|---|
| GROSS LENGTH OF PROJECT | 3009.17 | FEET | 0.570 MILES |
| NET " " ROADWAY | 2047.01 | " | 0.388 " |
| NET " BRIDGES | 962.16 | " | 0.182 " |
| NET " " PROJECT | 3009.17 | " | 0.570 " |

P.E. 090282

• DESIGN TRAFFIC DATA •

| | |
|---|---|
| DESIGN YEAR | 2035 |
| 2015 ADT | 2900 |
| 2035 ADT | 4000 |
| 2035 DHV | 440 |
| DIRECTIONAL DISTRIBUTION | 60 % |
| TRUCKS | 12 % |
| DESIGN SPEED | 60 MPH |

N

APPROVED

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

9-20-15

DEPUTY DIRECTOR
AND CHIEF ENGINEER

R090282.DGN 07/20/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 9-30-2015 | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 2 | 90 |

(2) INDEX, GOVERN. SPECS., AND GENERAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-1-15

## INDEX OF SHEETS

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| 1 | TITLE SHEET | | | |
| 2 | INDEX OF SHEETS, GOVERNING SPECIFICATIONS, AND GENERAL NOTES | | | |
| 3 - 4 | TYPICAL SECTIONS OF IMPROVEMENT | | | |
| 5 - 6 | SPECIAL DETAILS | | | |
| 7 - 12 | TEMPORARY EROSION CONTROL DETAILS | | | |
| 13 - 18 | MAINTENANCE OF TRAFFIC | | | |
| 19 | PERMANENT PAVEMENT MARKING DETAILS | | | |
| 20 - 24 | QUANTITIES | | | |
| 25 | SCHEDULE OF BRIDGE QUANTITIES | 07265 | 53199 | |
| 26 | SUMMARY OF QUANTITIES AND REVISIONS | | | |
| 27 - 29 | SURVEY CONTROL DETAILS | | | |
| 30 - 32 | PLAN AND PROFILE SHEETS | | | |
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| 34 | LAYOUT OF BRIDGE OVER ILLINOIS RIVER (SHEET 2 OF 4) | 07265 | 53201 | |
| 35 | LAYOUT OF BRIDGE OVER ILLINOIS RIVER (SHEET 3 OF 4) | 07265 | 53202 | |
| 36 | LAYOUT OF BRIDGE OVER ILLINOIS RIVER (SHEET 4 OF 4) | 07265 | 53203 | |
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| 38 | DETAILS OF BENT 1 ( SHEET 2 OF 2) | 07265 | 53205 | |
| 39 | DETAILS OF BENTS 2 AND 3 | 07265 | 53206 | |
| 40 | DETAILS OF BENTS 4 | 07265 | 53207 | |
| 41 | DETAILS OF BENTS 5, 6, 7, 9, 10, 11, 13, 14 AND 15 | 07265 | 53208 | |
| 42 | DETAILS OF BENTS 8 AND 12 | 07265 | 53209 | |
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| 47 | DETAILS OF UNIT 1 240'-0" CONTINUOUS W-BEAM (SHEET 2 OF 4) | 07265 | 53214 | |
| 48 | DETAILS OF UNIT 1 240'-0" CONTINUOUS W-BEAM (SHEET 3 OF 4) | 07265 | 53215 | |
| 49 | DETAILS OF UNIT 1 240'-0" CONTINUOUS W-BEAM (SHEET 4 OF 4) | 07265 | 53216 | |
| 50 | DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM (SHEET 1 OF 4) | 07265 | 53217 | |
| 51 | DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM (SHEET 2 OF 4) | 07265 | 53218 | |
| 52 | DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM (SHEET 3 OF 4) | 07265 | 53219 | |
| 53 | DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM (SHEET 4 OF 4) | 07265 | 53220 | |
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| 57 | STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES | | 55001 | 2-27-14 |
| 58 | STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS | | 55005 | 2-27-14 |
| 59 | STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE | | 55010 | 1-14-15 |
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| 63 | FLARED END SECTION | | FES-2 | 10-18-96 |
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| 65 | GUARD RAIL DETAILS | | GR-9 | 4-17-08 |
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| 67 | GUARD RAIL DETAILS | | GR-10 | 7-14-10 |
| 68 | GUARD RAIL DETAILS | | GR-10A | 7-14-10 |
| 69 | GUARD RAIL DETAILS | | GRT-1 | 7-14-10 |
| 70 | MAILBOX DETAILS | | MB-1 | 11-18-04 |
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| 72 | PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE) | | PCP-1 | 2-27-14 |
| 73 | PLASTIC PIPE CULVERT (PVC F949) | | PCP-2 | 2-27-14 |
| 74 | METAL PIPE CULVERT FILL HEIGHTS & BEDDING | | PCM-1 | 2-27-14 |
| 75 | PAVEMENT MARKING DETAILS | | PM-1 | 9-12-13 |
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| 77 | TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC | | SE-2 | 10-18-96 |
| 78 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | | TC-1 | 9-02-15 |
| 79 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | | TC-2 | 9-02-15 |
| 80 | STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION | | TC-3 | 9-02-15 |
| 81 | TEMPORARY EROSION CONTROL DEVICES | | TEC-1 | 12-15-11 |
| 82 | TEMPORARY EROSION CONTROL DEVICES | | TEC-2 | 6-02-94 |
| 83 | TEMPORARY EROSION CONTROL DEVICES | | TEC-3 | 11-03-94 |
| 84 - 90 | CROSS SECTIONS | | | |

## GOVERNING SPECIFICATIONS

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

| NUMBER | TITLE |
|---|---|
| ERRATA | ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS |
| FHWA-1273 | REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS |
| FHWA-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS |
| FHWA-1273 | SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140) |
| FHWA-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES |
| FHWA-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS |
| FHWA-1273 | SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS |
| FHWA-1273 | SUPPLEMENT - WAGE RATE DETERMINATION |
| 108-1 | LIQUIDATED DAMAGES |
| 410-1 | CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES |
| 604-1 | RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES |
| 606-1 | PIPE CULVERTS FOR SIDE DRAINS |
| 620-1 | MULCH COVER |
| JOB 090282 | AIRPORT CLEARANCE REQUIREMENTS |
| JOB 090282 | BIDDING REQUIREMENTS AND CONDITIONS |
| JOB 090282 | BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT |
| JOB 090282 | BROADBAND INTERNET SERVICE FOR FIELD OFFICE |
| JOB 090282 | CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS |
| JOB 090282 | DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES |
| JOB 090282 | DRILLED SHAFT FOUNDATIONS |
| JOB 090282 | GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION |
| JOB 090282 | HIGH PERFORMANCE PAVEMENT MARKING |
| JOB 090282 | MANDATORY ELECTRONIC CONTRACT |
| JOB 090282 | NESTING SITES OF MIGRATORY BIRDS |
| JOB 090282 | NONDESTRUCTIVE TESTING OF DRILLED SHAFTS |
| JOB 090282 | OFF-SITE RESTRAINING CONDDITIONS FOR BATS |
| JOB 090282 | PARTNERING REQUIREMENTS |
| JOB 090282 | PLASTIC PIPE |
| JOB 090282 | SECTION 404 NATIONWIDE 14 PERMIT REQUIREMENTS |
| JOB 090282 | SHORING FOR CULVERTS |
| JOB 090282 | SOIL STABILIZATION |
| JOB 090282 | SPECIAL CLEARING REQUIREMENTS |
| JOB 090282 | STORM WATER POLLUTION PREVENTION PLAN |
| JOB 090282 | SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS |
| JOB 090282 | UTILITY ADJUSTMENTS |
| JOB 090282 | VALUE ENGINEERING |
| JOB 090282 | VEGETATED BUFFER ZONE |
| JOB 090282 | WARM MIX ASPHALT |
| JOB 090282 | WATER POLLUTION CONTROL |

### 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.

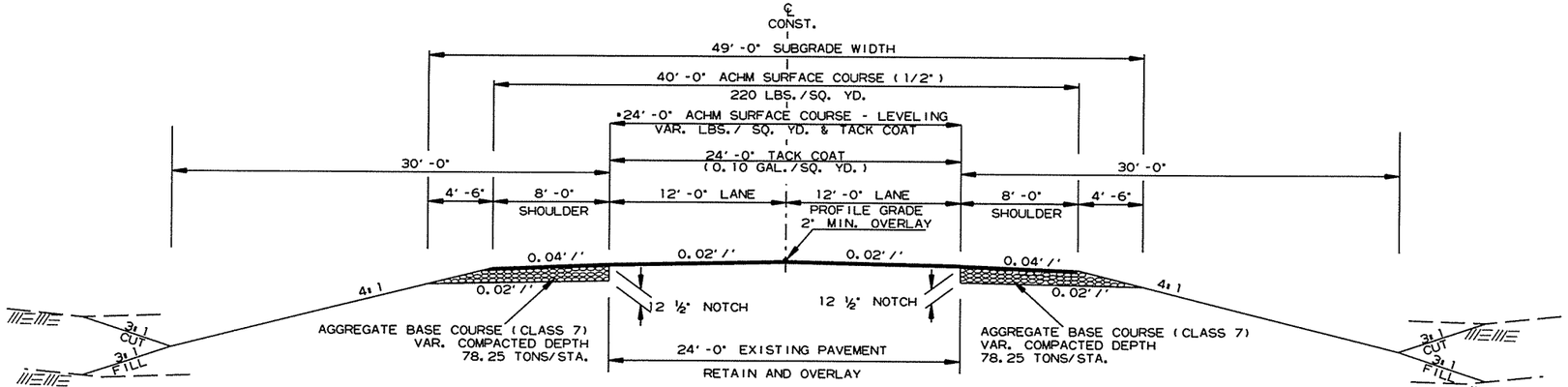
r090282.dgn 9/30/2015

INDEX OF SHEETS, GOVERNING SPECIFICATIONS, & GENERAL NOTES

| 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. | | 090282 | 3 | 90 |

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15




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

## TYPICAL SECTION OF IMPROVEMENT NOTCH & WIDENING

STA. 111+00.00 TO STA. 112+71.05
STA. 137+57.18 TO STA. 141+09.17

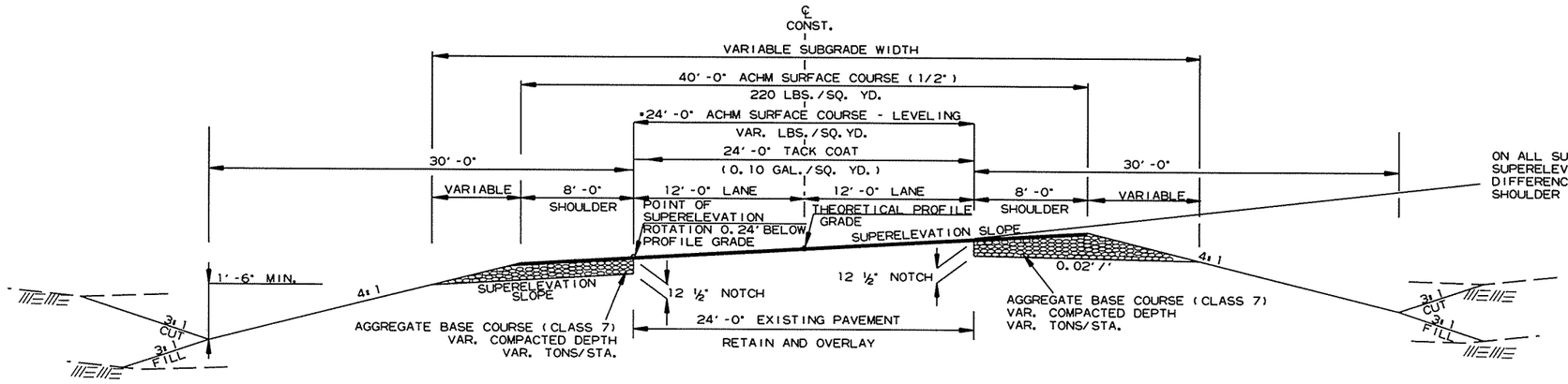
NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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 WILL BE CONSIDERED TO BE INCLUDED IN 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.

AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.




ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

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

## TYPICAL SECTION OF IMPROVEMENT NOTCH & WIDENING SUPERELEVATION

8/20/2015

R090282.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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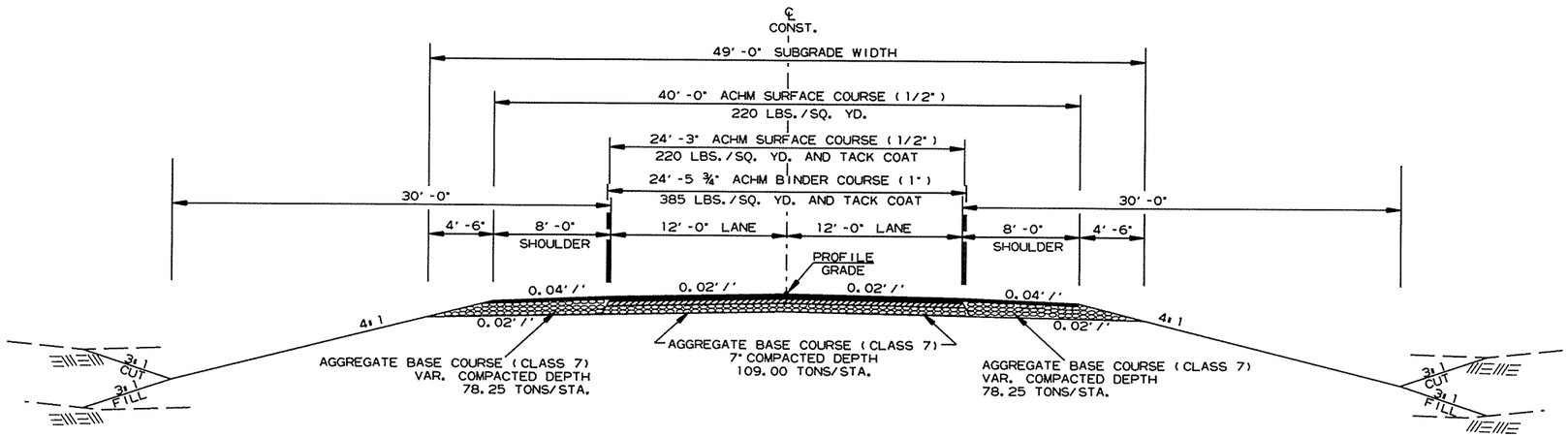
| | | | | JOB NO. | | 090282 | 4 | 90 |

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15




TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH
STA. 112+71.05 TO STA. 120+50.92
STA. 130+13.08 TO STA. 137+57.18

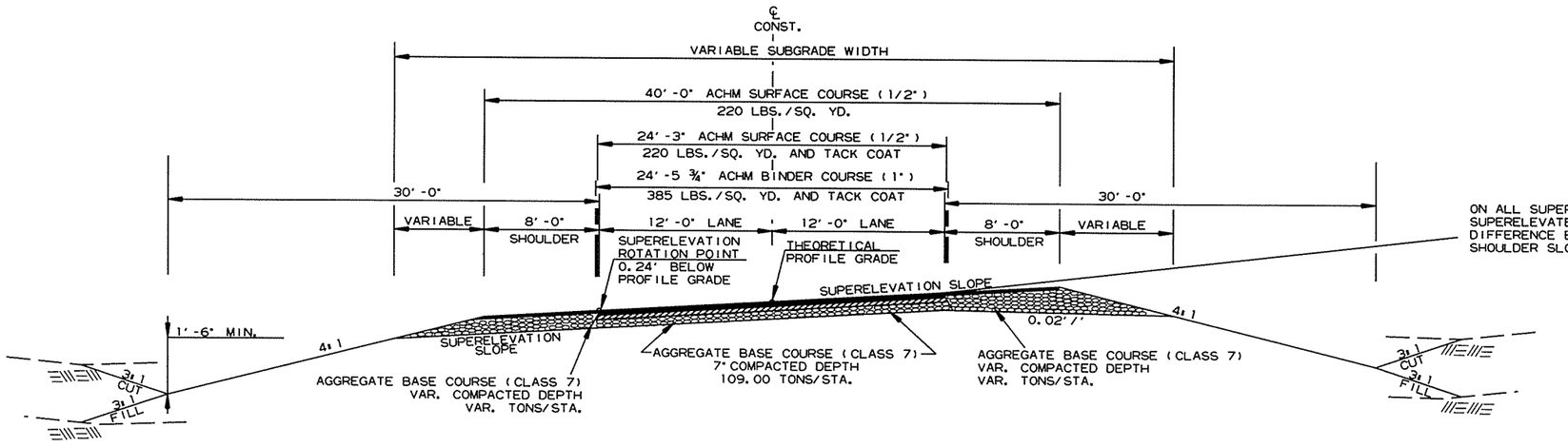
NOTES:
REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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 WILL BE CONSIDERED TO BE INCLUDED IN 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.

AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.




ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATED TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 0.08'/'.

TYPICAL SECTION OF IMPROVEMENT
FULL DEPTH
SUPERELEVATION

8/17/2015

R090282.DGN

TYPICAL SECTIONS OF IMPROVEMENT

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
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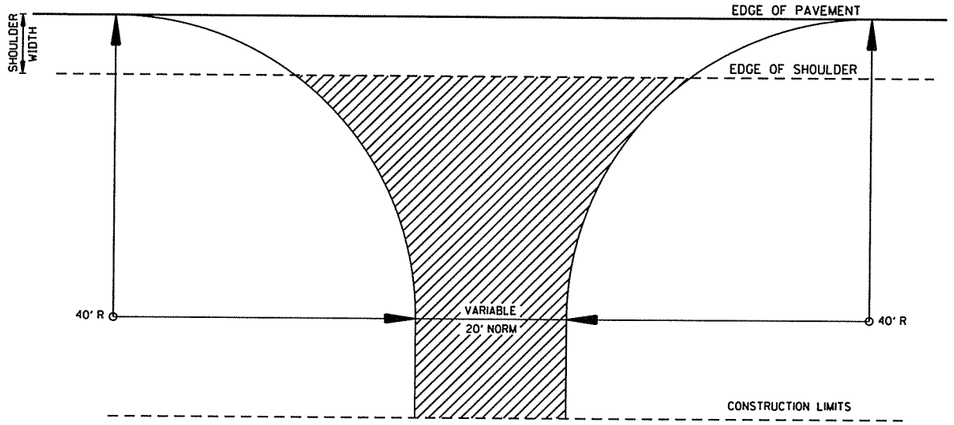
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 5 | 90 |

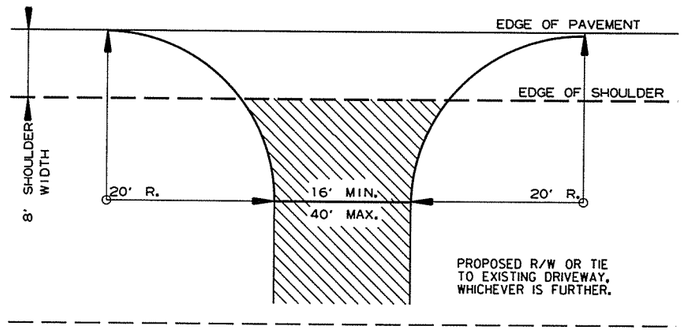
(2) SPECIAL DETAILS




ASPHALT CONCRETE HOT MIX SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH)

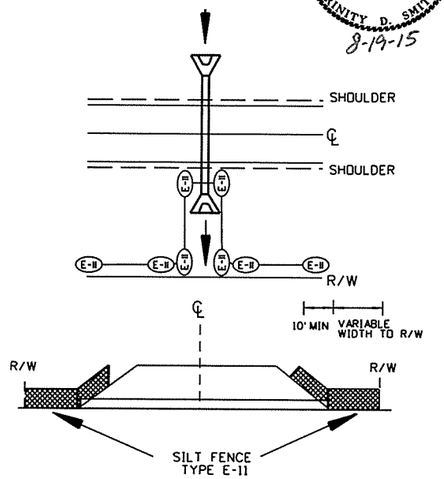
NOTE: REFER TO PLAN SHEETS FOR WIDTH OF COUNTY ROADS.

## DETAIL FOR COUNTY ROAD TURNOUT

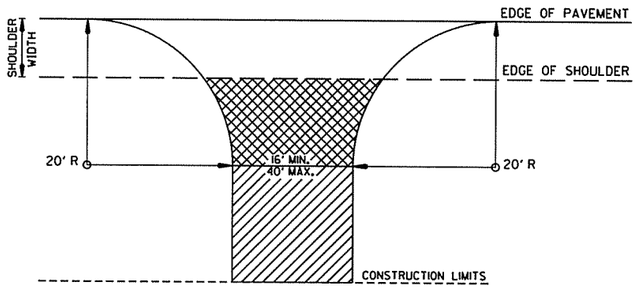



A.C.H.M. SURFACE COURSE (1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 7" COMP. DEPTH. OR 6" CONCRETE IF CONCRETE DRIVE EXIST.

## DETAIL FOR HWY. 16 DRIVEWAY TURNOUTS




## DETAIL OF SILT FENCE AT CROSS DRAINS

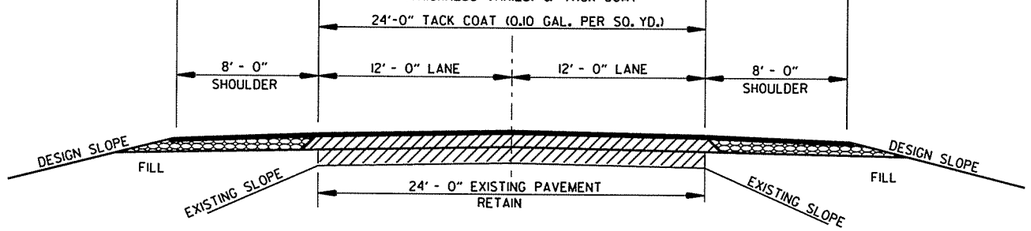



A.C.H.M. SURFACE COURSE (1/2") (220 LBS./SQ. YD.) & AGGREGATE BASE COURSE (CLASS 7) (7" COMPACTED DEPTH)

AGGREGATE BASE COURSE (CLASS 7) (9" COMPACTED DEPTH)

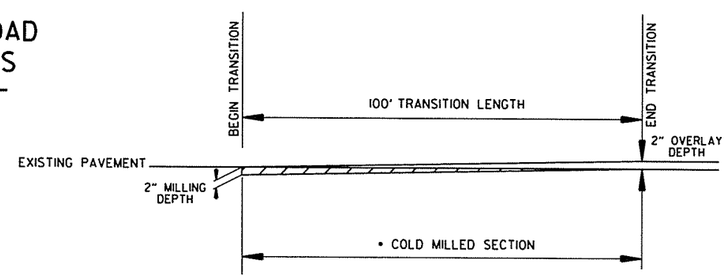
TURNOUTS SHALL BE MODIFIED AS NECESSARY TO MEET LOCAL CONDITIONS AS DIRECTED BY THE ENGINEER.

## DETAIL FOR LOCAL ROAD DRIVEWAY TURNOUTS



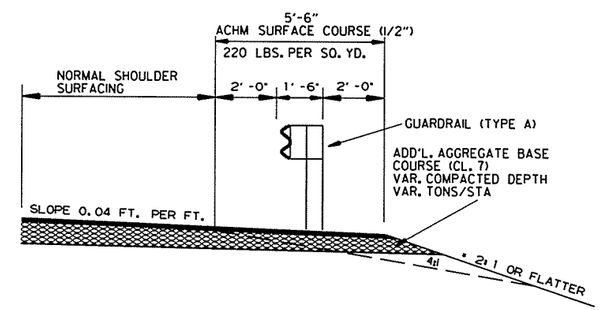

## METHOD OF RAISING GRADE

NOTES:
(1) THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.
(2) QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
(3) IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014.




## DETAIL SHOWING TAPER TO EXISTING PAVEMENT

• TO BE USED AS DIRECTED BY THE ENGINEER




## DETAIL OF WIDENING FOR GUARDRAIL

• REFER TO STD. DWG. GR-9A FOR SLOPE REQUIREMENTS BEHIND GUARDRAIL.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

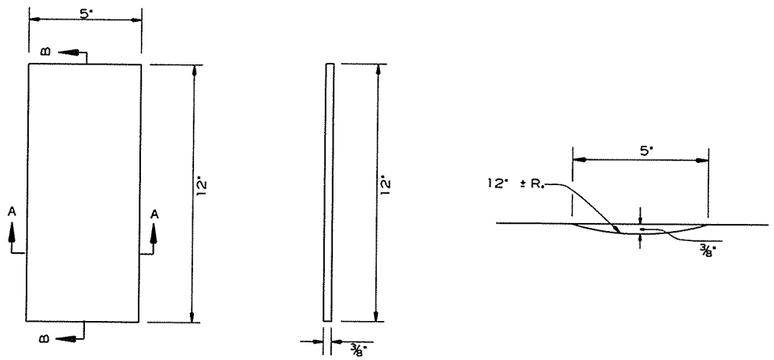
8/12/2015

R090282.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. | | 090282 | 6 | 90 |

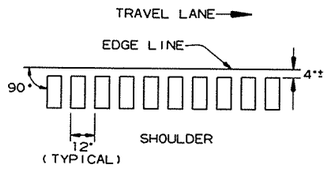
(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

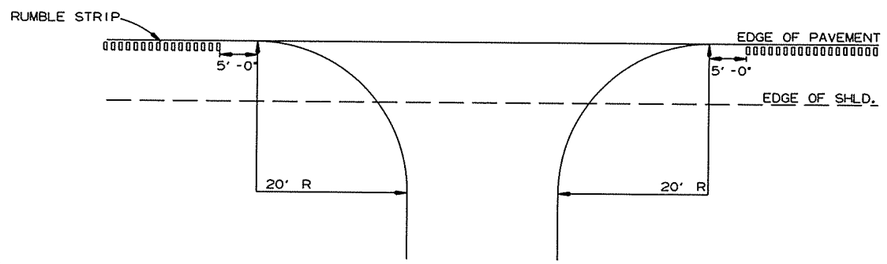



PLAN SECTION B-B SECTION A-A

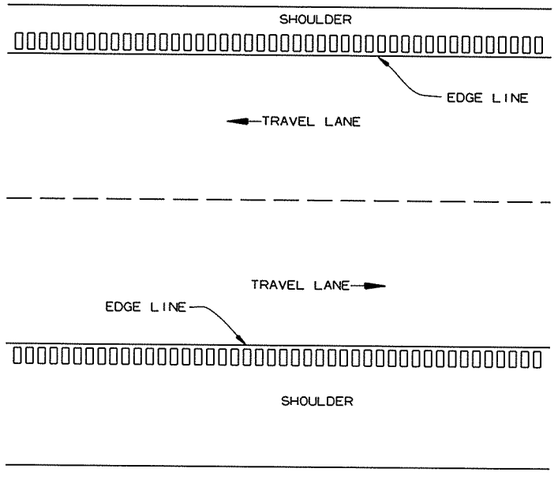
DETAILS OF RUMBLE STRIPS




LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER



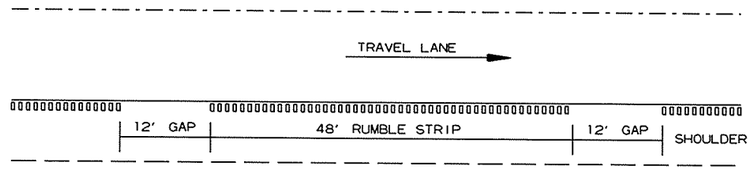

DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS




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

8/12/2015

R090282.DGN

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 7 | 90 |

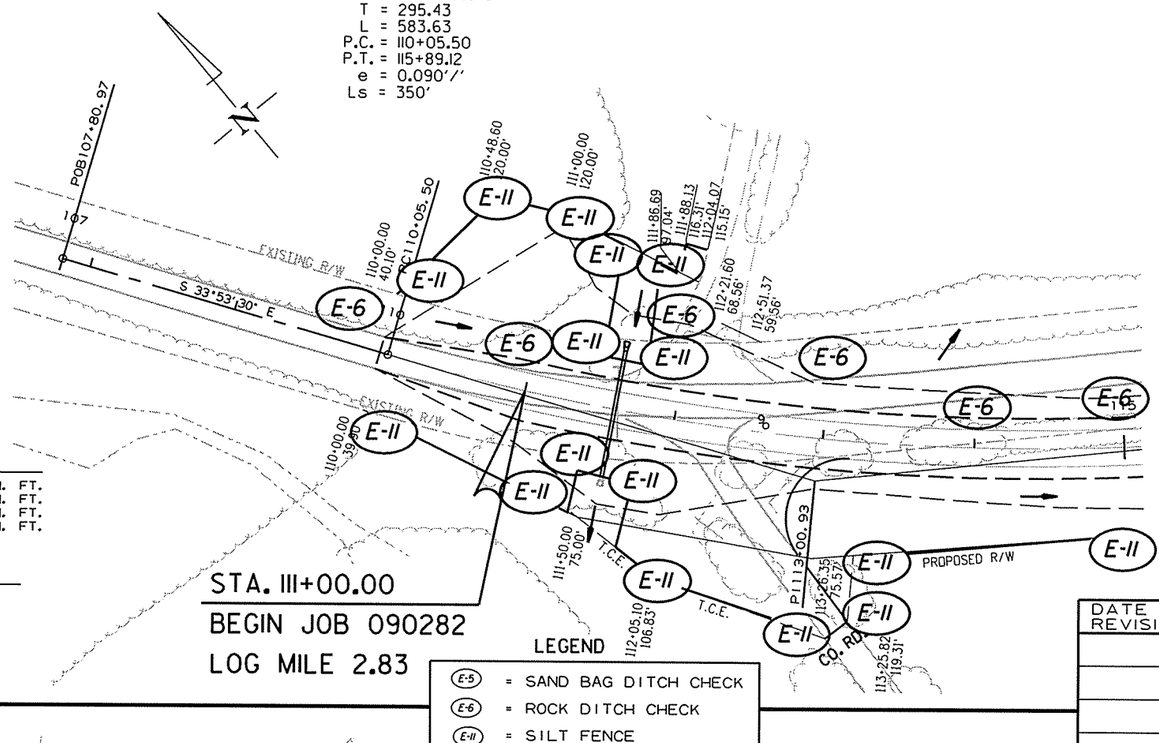
(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

## CLEARING AND GRUBBING

STA. 111+00.00 - STA. 141+09.17 LT. & RT. 31 STA.

P.I. = 113+00.93
Δ = 21°56'07.40"LT.
D = 03°45'30.49"
T = 295.43
L = 583.63
P.C. = 110+05.50
P.T. = 115+89.12
e = 0.090'/'
Ls = 350'




STA. 111+00.00
BEGIN JOB 090282
LOG MILE 2.83

### SILT FENCE (E-11)

| | | | |
|---|---|---|---|
| STA. 110+00 - STA. 112+00 | LT. OF C.L. CONST. | 400 LIN. FT. |
| STA. 110+00 - STA. 115+00 | RT. OF C.L. CONST. | 668 LIN. FT. |
| STA. 115+00 - STA. 121+00 | LT. OF C.L. CONST. | 630 LIN. FT. |
| STA. 115+00 - STA. 121+00 | RT. OF C.L. CONST. | 790 LIN. FT. |

### ROCK DITCH CHECKS (E-6)

| | | | |
|---|---|---|---|
| STA. 110+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 111+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 112+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 113+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 114+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 115+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |

### LEGEND

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

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

### REVISIONS

| DATE OF REVISION | REVISION |
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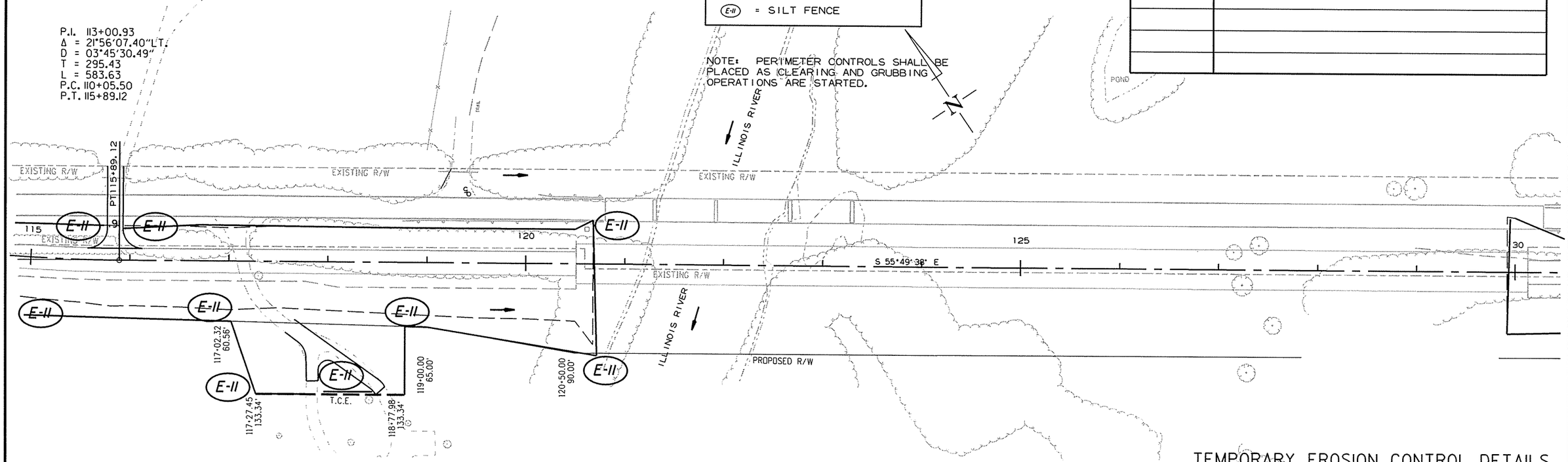



TEMPORARY EROSION CONTROL DETAILS
CLEARING & GRUBBING

R090282.DGN 8/19/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 8 | 90 |

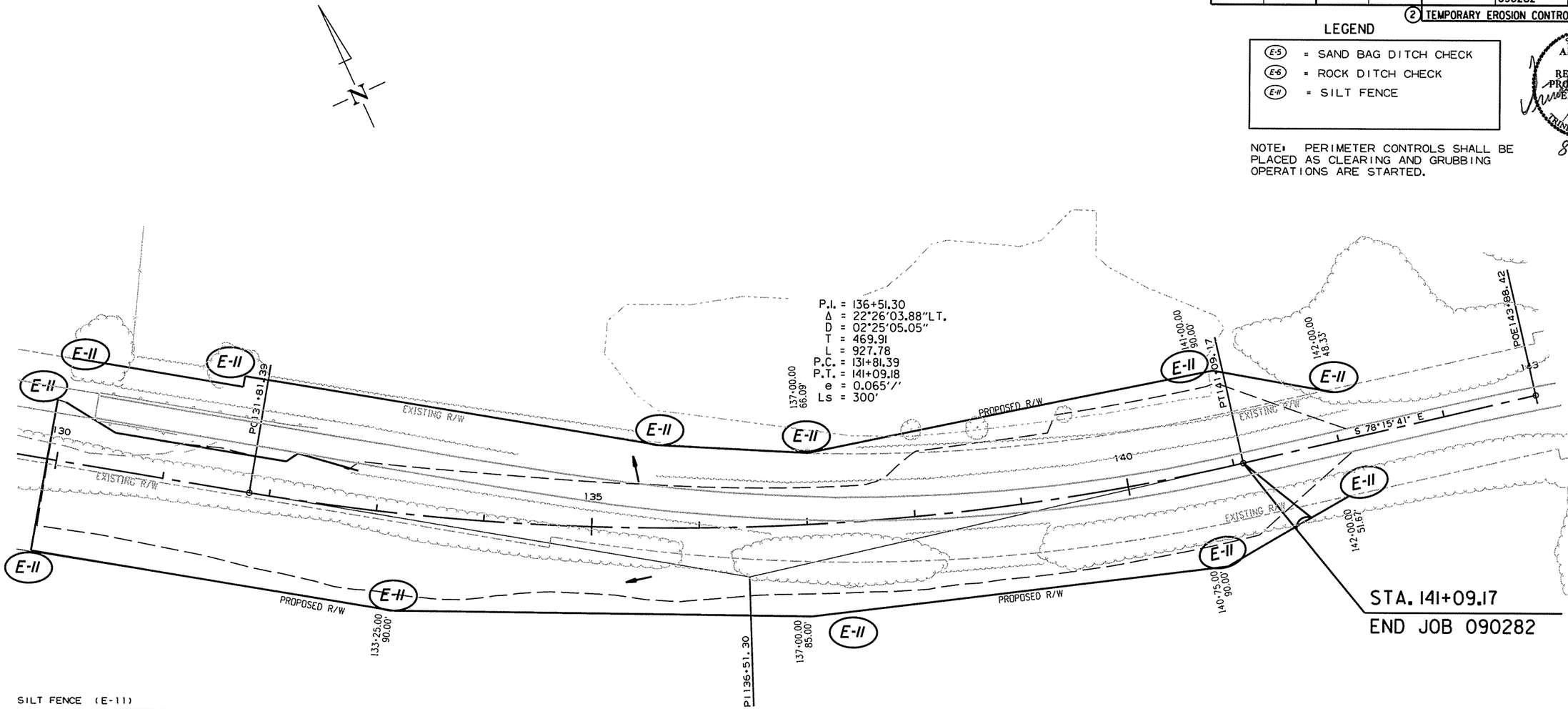
(2) TEMPORARY EROSION CONTROL DETAILS

## LEGEND

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

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15




SILT FENCE (E-11)

| | |
|---|---|
| STA. 130+00 - STA. 151+09.17 LT. OF C.L. CONST. | 1535 LIN. FT. |
| STA. 130+00 - STA. 151+09.17 RT. OF C.L. CONST. | 1335 LIN. FT. |

SAND BAG DITCH CHECKS (E-5)

| | | | |
|---|---|---|---|
| ENTIRE PROJECT | IF AND WHERE DIRECTED BY THE ENGINEER | 5 INSTALLATIONS | 125 BAG |

REVISIONS

| DATE OF REVISION | REVISION |
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TEMPORARY EROSION CONTROL DETAILS
CLEARING & GRUBBING

R090282.DGN 8/17/2015

| 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. | | 090282 | 9 | 90 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

CLEARING AND GRUBBING

STA. 111+00.00 - STA. 141+09.17 LT. & RT. 31 STA.

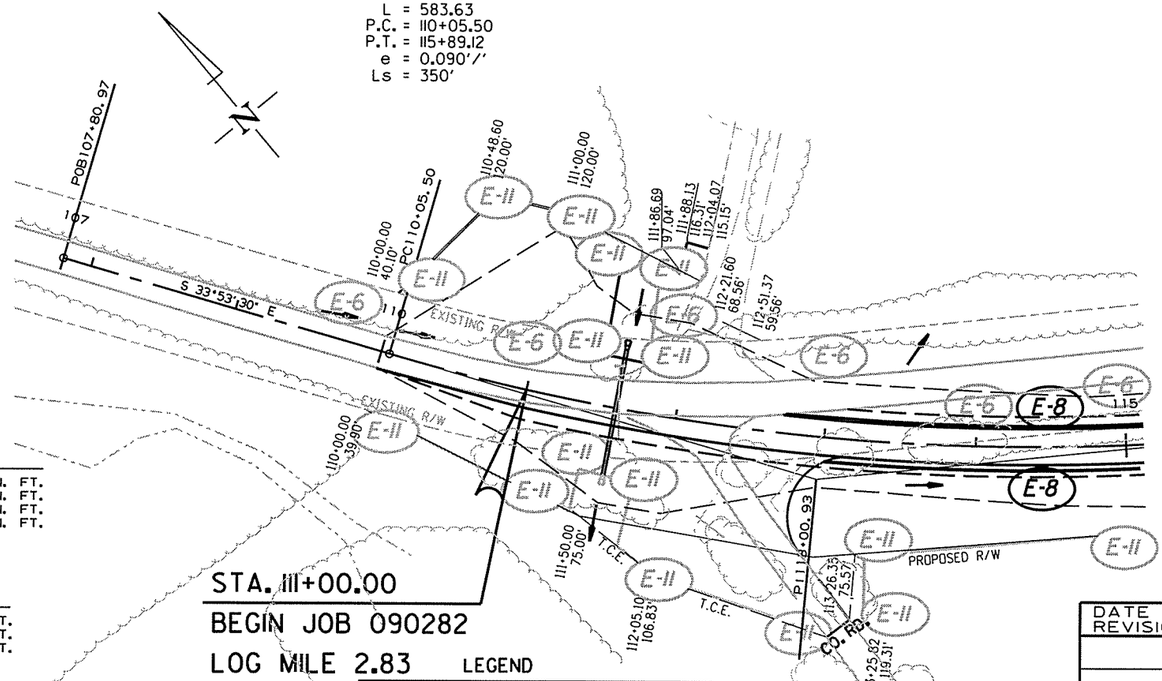
SILT FENCE (E-11)

| | | |
|---|---|---|
| STA. 110+00 - STA. 112+00 | LT. OF C.L. CONST. | 400 LIN. FT. |
| STA. 110+00 - STA. 115+00 | RT. OF C.L. CONST. | 668 LIN. FT. |
| STA. 115+00 - STA. 121+00 | LT. OF C.L. CONST. | 630 LIN. FT. |
| STA. 115+00 - STA. 121+00 | RT. OF C.L. CONST. | 790 LIN. FT. |

DIVERSION DITCH (E-8)

| | | |
|---|---|---|
| STA. 113+00 - STA. 120+50 | LT. & RT. OF C.L. CONST. | 1500 LIN. FT. |
| STA. 130+00 - STA. 136+00 | LT. OF C.L. CONST. | 587 LIN. FT. |
| STA. 130+13 - STA. 137+00 | RT. OF C.L. CONST. | 687 LIN. FT. |

P.I. = 113+00.93
Δ = 21°56'07.40"LT.
D = 03°45'30.49"
T = 295.43
L = 583.63
P.C. = 110+05.50
P.T. = 115+89.12
e = 0.090'/'
Ls = 350'




STA. 111+00.00
BEGIN JOB 090282
LOG MILE 2.83

LEGEND

| | |
|---|---|
| (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 |

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

REVISIONS

| DATE OF REVISION | REVISION |
|---|---|
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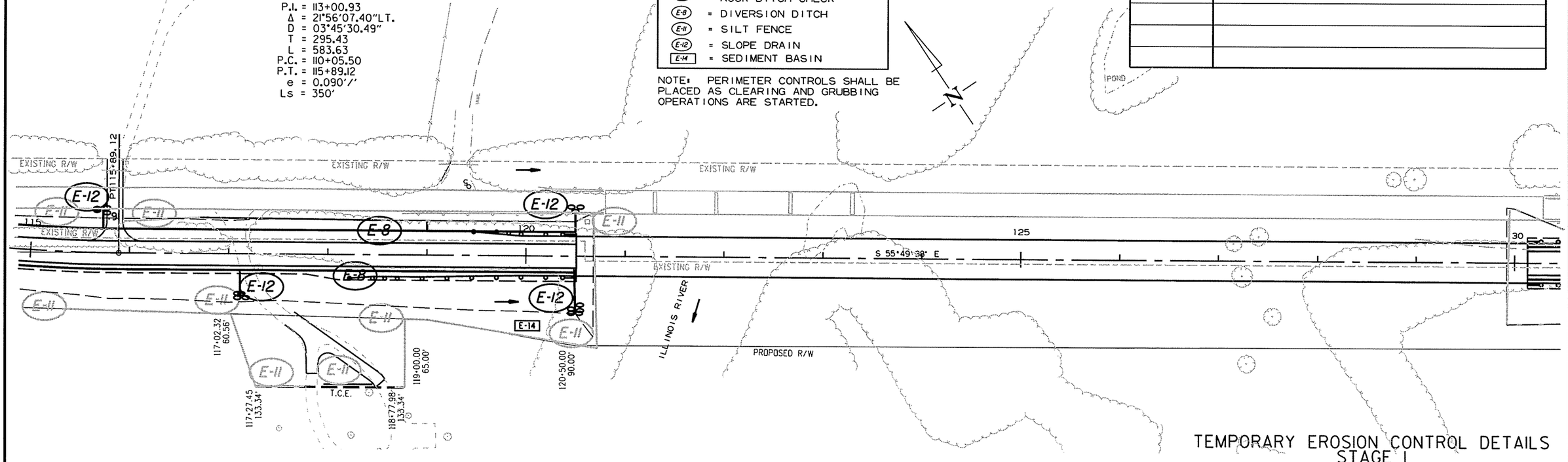



TEMPORARY EROSION CONTROL DETAILS
STAGE I

R090282.DGN 8/17/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 10 | 90 |

(2) TEMPORARY EROSION CONTROL DETAILS

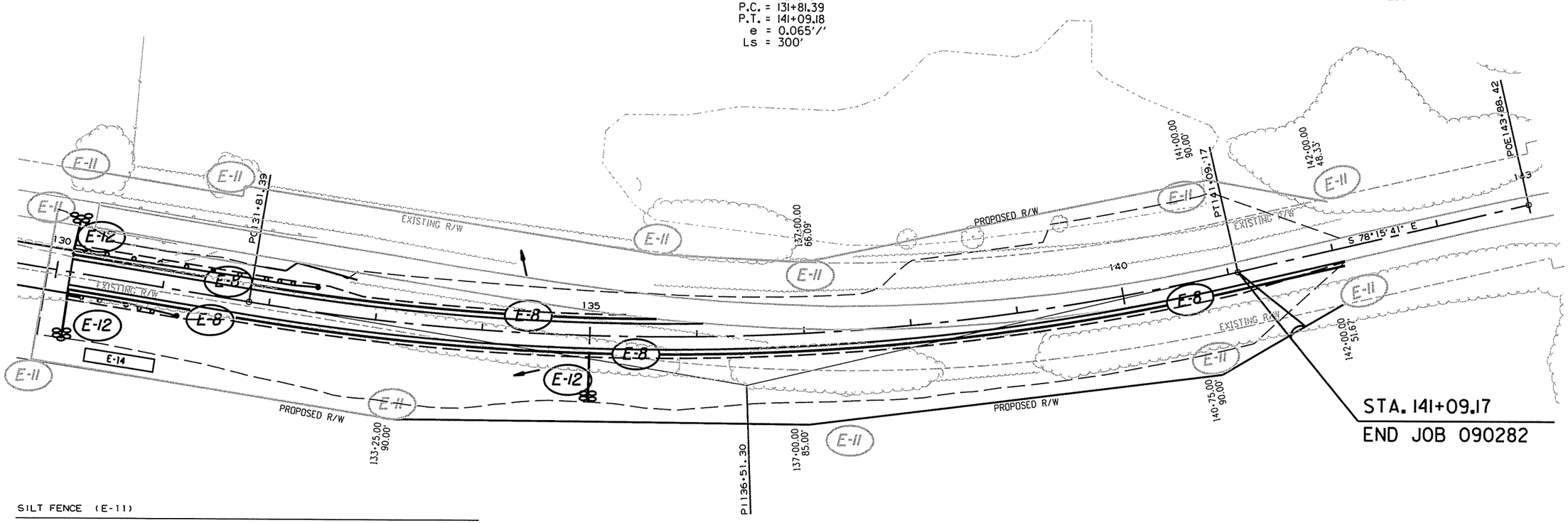
## LEGEND

| | |
|---|---|
| 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 |

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

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

P.I. = 136+51.30
Δ = 22°26'03.88"LT.
D = 02°25'05.05"
T = 469.91
L = 927.78
P.C. = 131+81.39
P.T. = 141+09.18
e = 0.065'/'
Ls = 300'




SILT FENCE (E-11)

| | | | |
|---|---|---|---|
| STA. 110+00 - STA. 112+00 | LT. OF C.L. CONST. | | 400 LIN. FT. |
| STA. 110+00 - STA. 115+00 | RT. OF C.L. CONST. | | 668 LIN. FT. |
| STA. 115+00 - STA. 121+00 | LT. OF C.L. CONST. | | 630 LIN. FT. |
| STA. 115+00 - STA. 121+00 | RT. OF C.L. CONST. | | 790 LIN. FT. |
| STA. 130+00 - STA. 151+09.17 | LT. OF C.L. CONST. | | 1535 LIN. FT. |
| STA. 130+00 - STA. 151+09.17 | RT. OF C.L. CONST. | | 1335 LIN. FT. |

ROCK DITCH CHECKS (E-6)

| | | | |
|---|---|---|---|
| STA. 110+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 111+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 112+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 113+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 114+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |
| STA. 115+00 | LT. OF C.L. CONST. | 1 INSTALLATION | 3 CU. YD. |

SAND BAG DITCH CHECKS (E-5)

| | | | |
|---|---|---|---|
| ENTIRE PROJECT | IF AND WHERE DIRECTED BY THE ENGINEER | 5 INSTALLATIONS | 125 BAG |

DIVERSION DITCH (E-8)

| | | |
|---|---|---|
| STA. 113+00 - STA. 120+50 | LT. & RT. OF C.L. CONST. | 1500 LIN. FT. |
| STA. 130+00 - STA. 136+00 | LT. OF C.L. CONST. | 587 LIN. FT. |
| STA. 130+13 - STA. 137+00 | RT. OF C.L. CONST. | 687 LIN. FT. |

PIPE FOR SLOPE DRAINS (E-12)

| | | | DUMPED RIPRAP |
|---|---|---|---|
| STA. 115+50 | LT. OF C.L. CONST. | 20 LIN. FT. | 5 CU. YD. |
| STA. 117+20 | RT. OF C.L. CONST. | 35 LIN. FT. | 5 CU. YD. |
| STA. 119+00 | LT. OF C.L. CONST. | 25 LIN. FT. | 5 CU. YD. |
| STA. 120+50 | LT. OF C.L. CONST. | 20 LIN. FT. | 5 CU. YD. |
| STA. 120+50 | RT. OF C.L. CONST. | 40 LIN. FT. | 5 CU. YD. |
| STA. 130+20 | LT. OF C.L. CONST. | 30 LIN. FT. | 5 CU. YD. |
| STA. 130+20 | RT. OF C.L. CONST. | 45 LIN. FT. | 5 CU. YD. |
| STA. 135+00 | RT. OF C.L. CONST. | 45 LIN. FT. | 5 CU. YD. |

REVISIONS

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

R090282.DGN 8/17/2015

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 11 | 90 |

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

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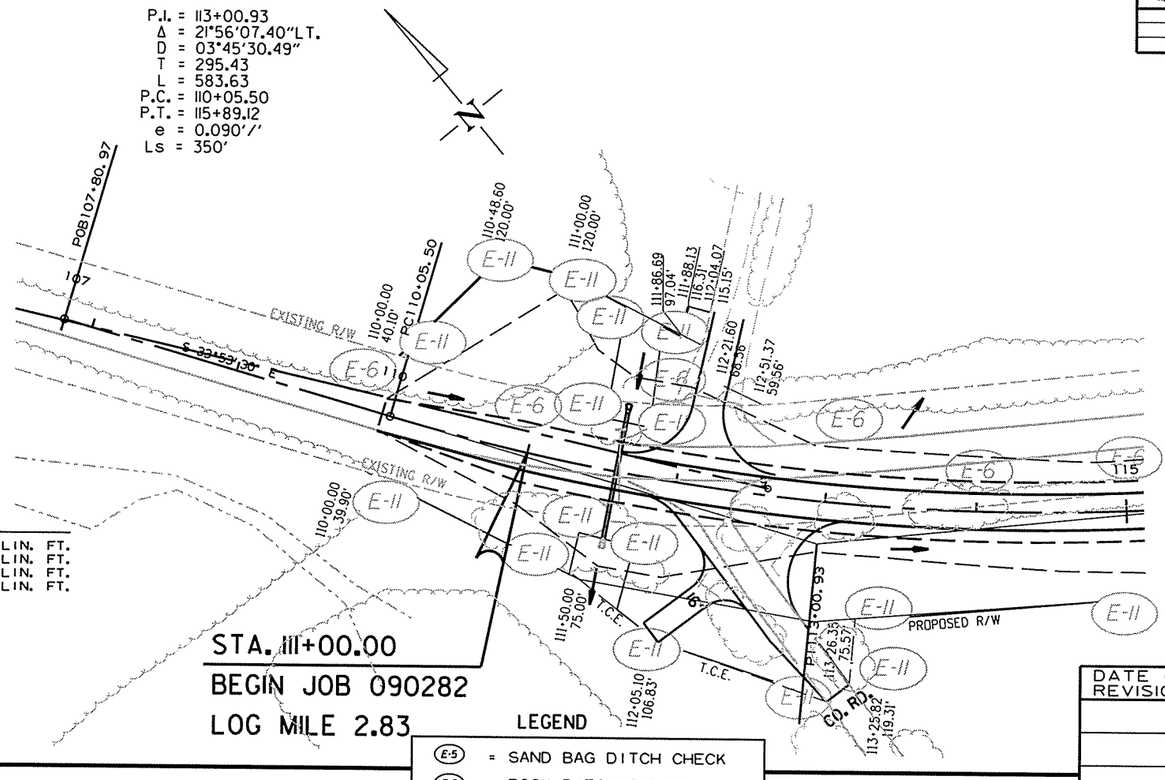
D = 03°45'30.49"
T = 295.43
L = 583.63
P.C. = 110+05.50
P.T. = 115+89.12
e = 0.090'/'
Ls = 350'

SILT FENCE (E-11)

| | | | |
|---|---|---|---|
| STA. 110+00 - STA. 112+00 | LT. OF C.L. CONST. | 400 LIN. FT. |
| STA. 110+00 - STA. 115+00 | RT. OF C.L. CONST. | 668 LIN. FT. |
| STA. 115+00 - STA. 121+00 | LT. OF C.L. CONST. | 630 LIN. FT. |
| STA. 115+00 - STA. 121+00 | RT. OF C.L. CONST. | 790 LIN. FT. |




LEGEND

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

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

REVISIONS

| DATE OF REVISION | REVISION |
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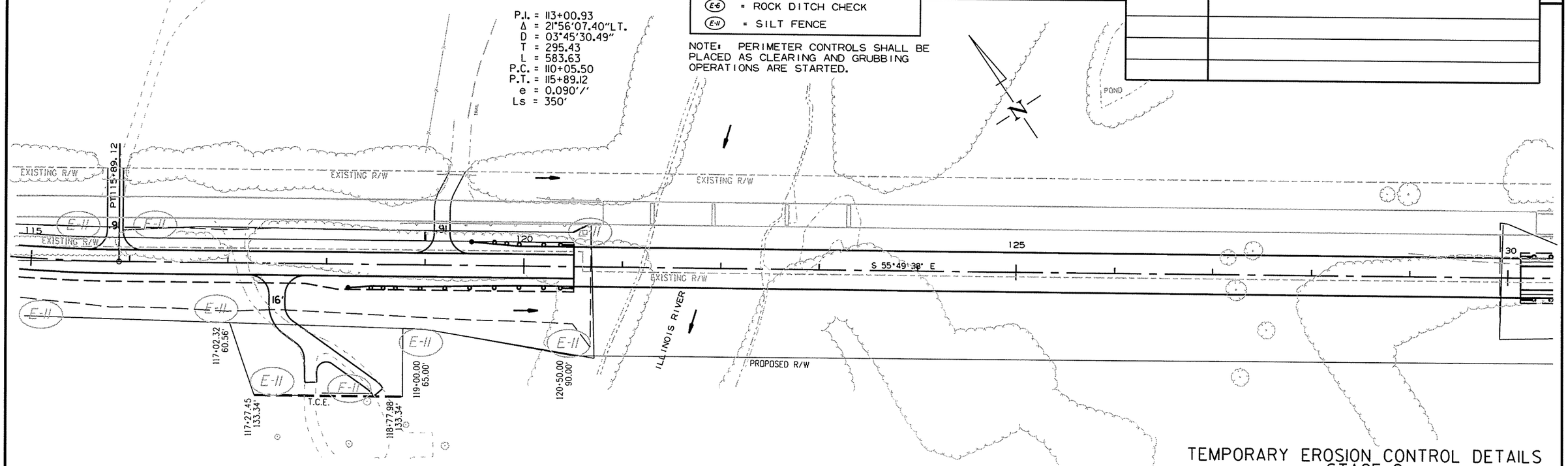


TEMPORARY EROSION CONTROL DETAILS
STAGE 2

R090282.DGN 8/17/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 12 | 90 |

(2) TEMPORARY EROSION CONTROL DETAILS

## LEGEND

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

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

P.I. = 136+51.30
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T = 469.91
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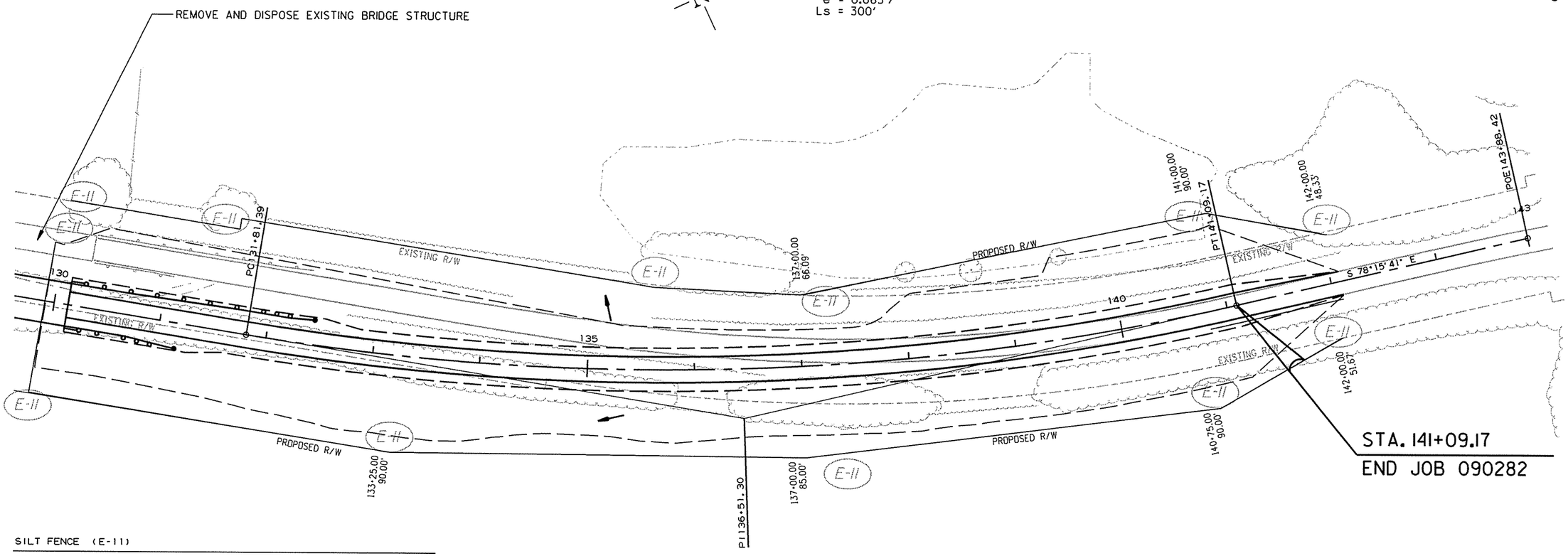


### SILT FENCE (E-11)

| | | | |
|---|---|---|---|
| STA. 110+00 - STA. 112+00 | LT. OF C.L. CONST. | | RETAIN |
| STA. 110+00 - STA. 115+00 | RT. OF C.L. CONST. | | RETAIN |
| STA. 115+00 - STA. 121+00 | LT. OF C.L. CONST. | | RETAIN |
| STA. 115+00 - STA. 121+00 | RT. OF C.L. CONST. | | RETAIN |
| STA. 130+00 - STA. 151+09.17 | LT. OF C.L. CONST. | | RETAIN |
| STA. 130+00 - STA. 151+09.17 | RT. OF C.L. CONST. | | RETAIN |

### ROCK DITCH CHECKS (E-6)

| | | | |
|---|---|---|---|
| STA. 110+00 | LT. OF C.L. CONST. | 1 INSTALLATION | RETAIN |
| STA. 111+00 | LT. OF C.L. CONST. | 1 INSTALLATION | RETAIN |
| STA. 112+00 | LT. OF C.L. CONST. | 1 INSTALLATION | RETAIN |
| STA. 113+00 | LT. OF C.L. CONST. | 1 INSTALLATION | RETAIN |
| STA. 114+00 | LT. OF C.L. CONST. | 1 INSTALLATION | RETAIN |
| STA. 115+00 | LT. OF C.L. CONST. | 1 INSTALLATION | RETAIN |

## REVISIONS

| DATE OF REVISION | REVISION |
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| | |

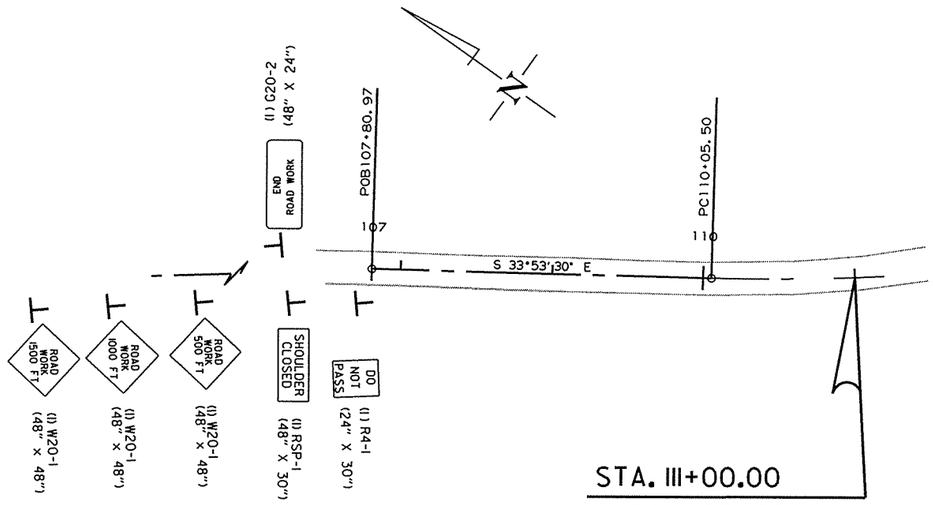
TEMPORARY EROSION CONTROL DETAILS
STAGE 2

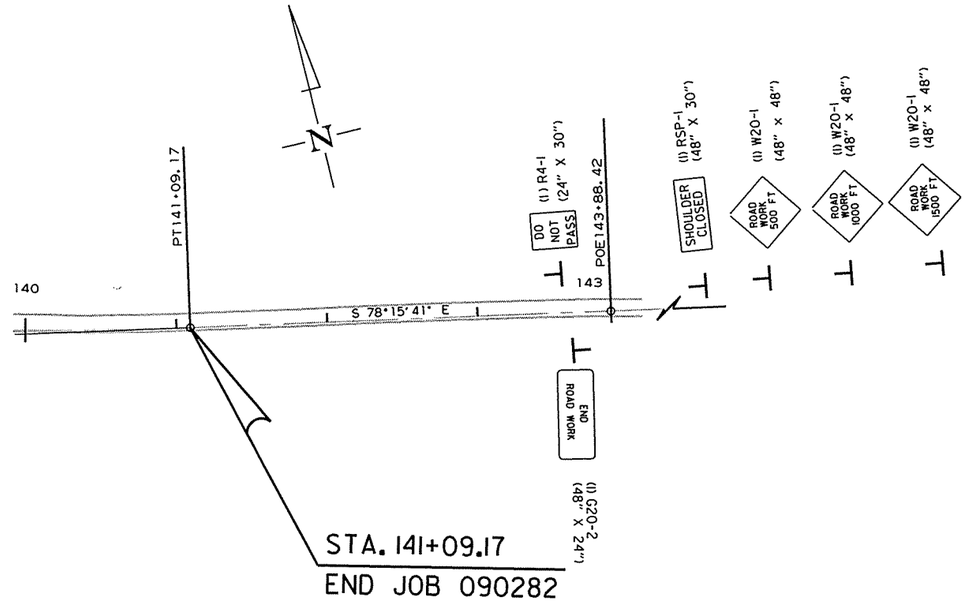
R090282.DGN 8/12/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 13 | 90 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



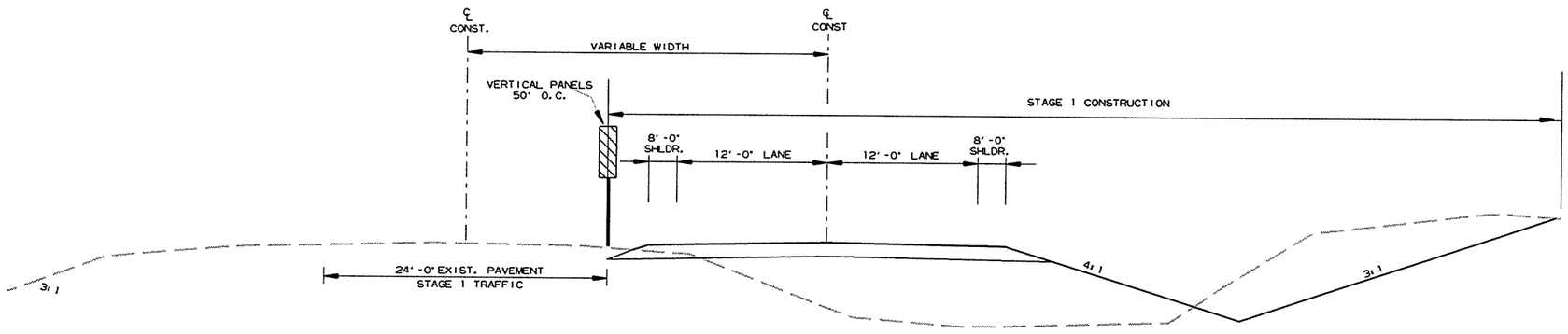

8/12/2015

R090282.DGN

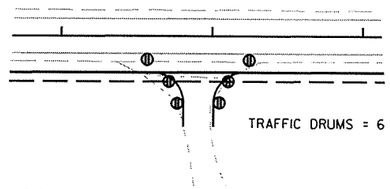
ADVANCE WARNING SIGNS
MAINTENANCE OF TRAFFIC

| 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. | | 090282 | 14 | 90 |

(2) MAINTENANCE OF TRAFFIC




TYPICAL PLACEMENT OF VERTICAL PANELS



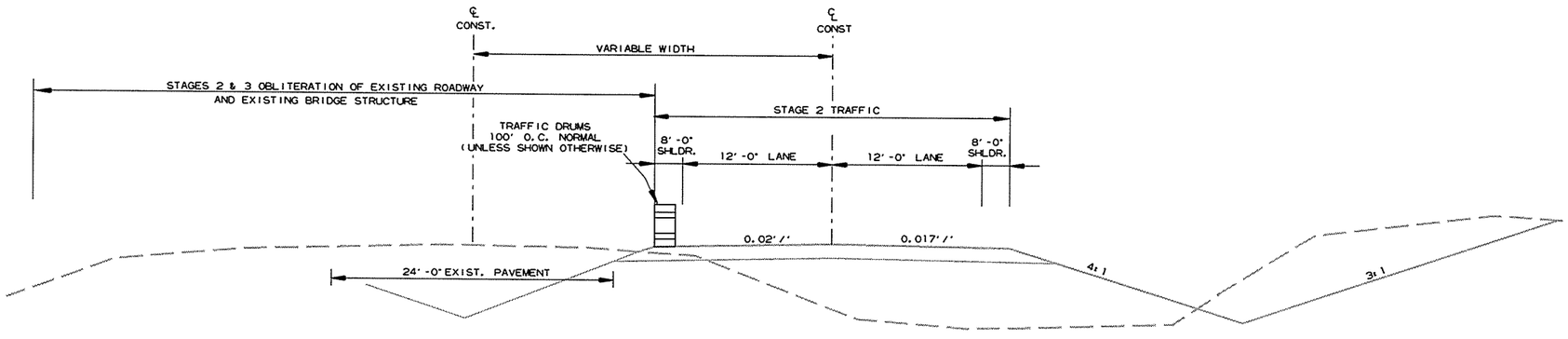

TYPICAL PLACEMENT OF TRAFFIC DRUMS AT DRIVEWAY DETAIL

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT PROPOSED ROADWAY. BRIDGE, DRIVES, AND INSTALL PIPE CULVERTS. PERFORM NOTCH & WIDENING BEGIN AND END OF PROJECT. PLACE CONSTRUCTION MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ON TO NEW CONSTRUCTION. REMOVE EXISTING BRIDGE STRUCTURE. NOTCH AND WIDEN AT BEGIN AND END OF PROJECT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE OLD ROADWAY.




TYPICAL PLACEMENT OF TRAFFIC DRUMS

CONSTRUCTION PAVEMENT MARKINGS:

MAIN LANES:
RT. AND LT. EDGE LINES = 4494 LIN. FT.
DBL. CENTERLINE = 4494 LIN. FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS = 3848 LIN. FT.

FINAL STRIPING:

THERMOPLASTIC PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 6418 LIN. FT. WHITE (4")
DBL. CENTERLINE = 4494 LIN. FT. YELLOW (4")

HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS:
DBL. CENTERLINE = 1924 LIN. FT. YELLOW (4")

RAISED PAVEMENT MARKERS (TY. II) (YEL.YEL.) (40' O.C.)= 80 EA.

8/12/2015

R090282.DGN

MAINTENANCE OF TRAFFIC

| 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. | | 090282 | 15 | 90 |

(2) MAINTENANCE OF TRAFFIC

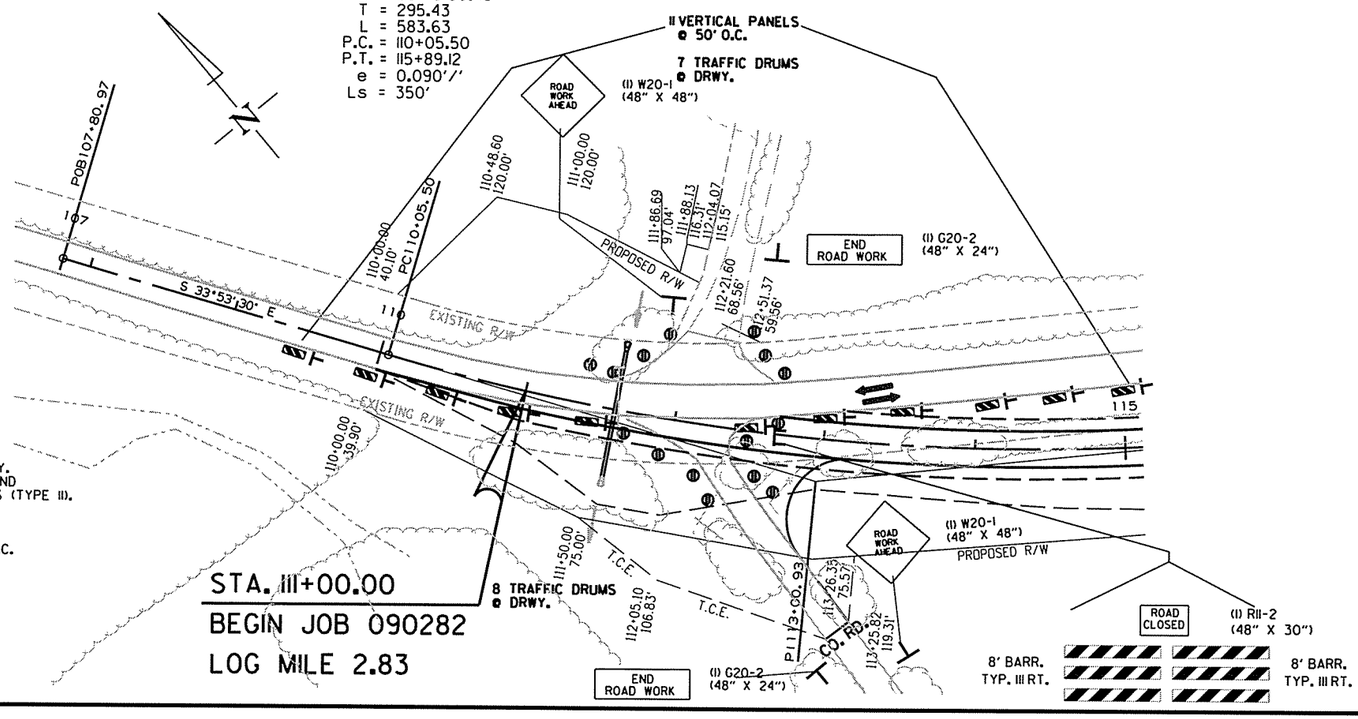
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

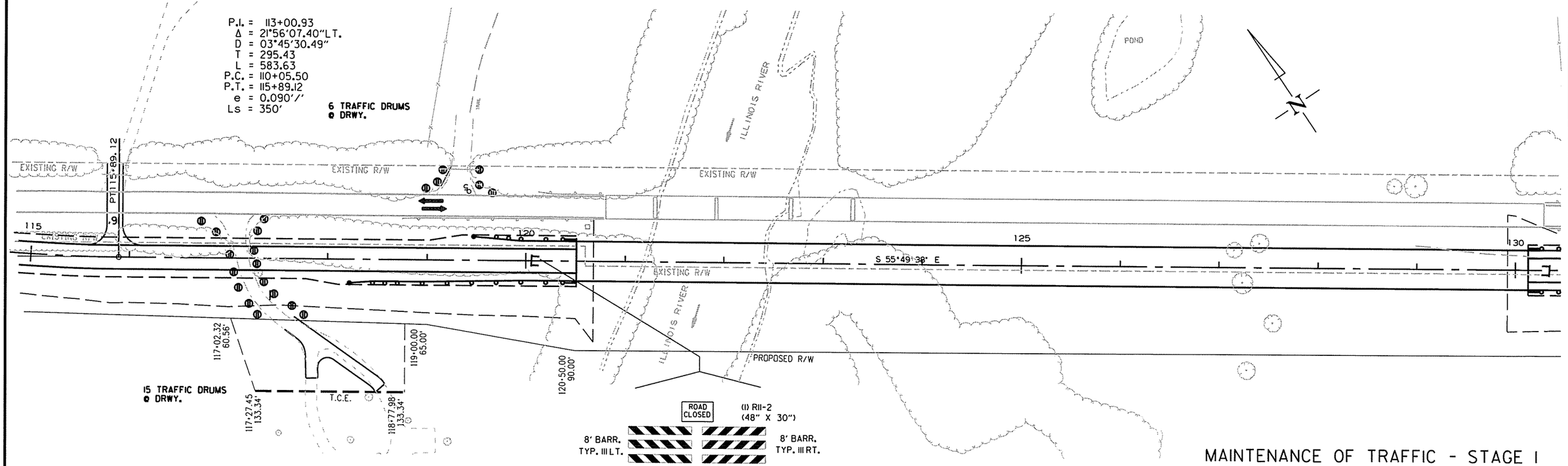
SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT PROPOSED ROADWAY, BRIDGE, DRIVES, AND INSTALL PIPE CULVERTS. PERFORM NOTCH & WIDENING BEGIN AND END OF PROJECT. PLACE CONSTRUCTION MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ON TO NEW CONSTRUCTION. REMOVE EXISTING BRIDGE STRUCTURE. NOTCH AND WIDEN AT BEGIN AND END OF PROJECT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE OLD ROADWAY.



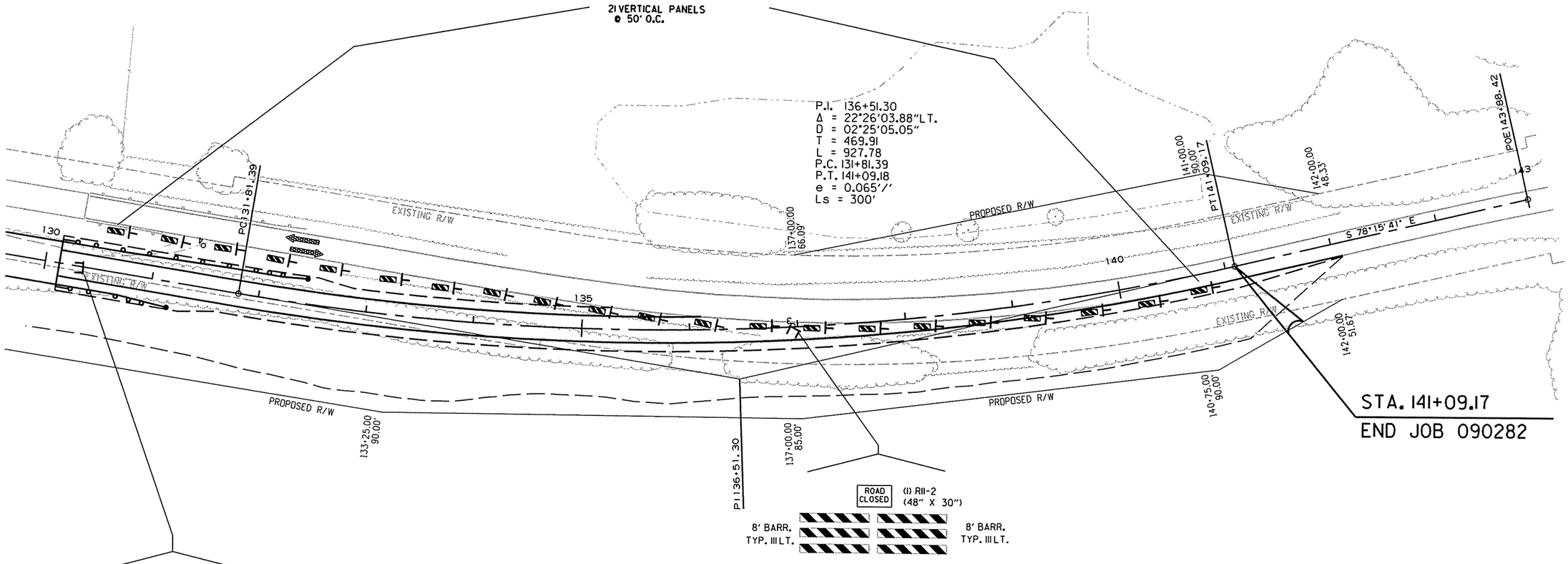

MAINTENANCE OF TRAFFIC - STAGE I

R090282.DGN 8/17/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 16 | 90 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15




SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT PROPOSED ROADWAY. BRIDGE, DRIVES, AND INSTALL PIPE CULVERTS. PERFORM NOTCH & WIDENING BEGIN AND END OF PROJECT. PLACE CONSTRUCTION MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ON TO NEW CONSTRUCTION. REMOVE EXISTING BRIDGE STRUCTURE. NOTCH AND WIDEN AT BEGIN AND END OF PROJECT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE OLD ROADWAY.

R090282.DGN 8/12/2015

MAINTENANCE OF TRAFFIC - STAGE 1

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 17 | 90 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

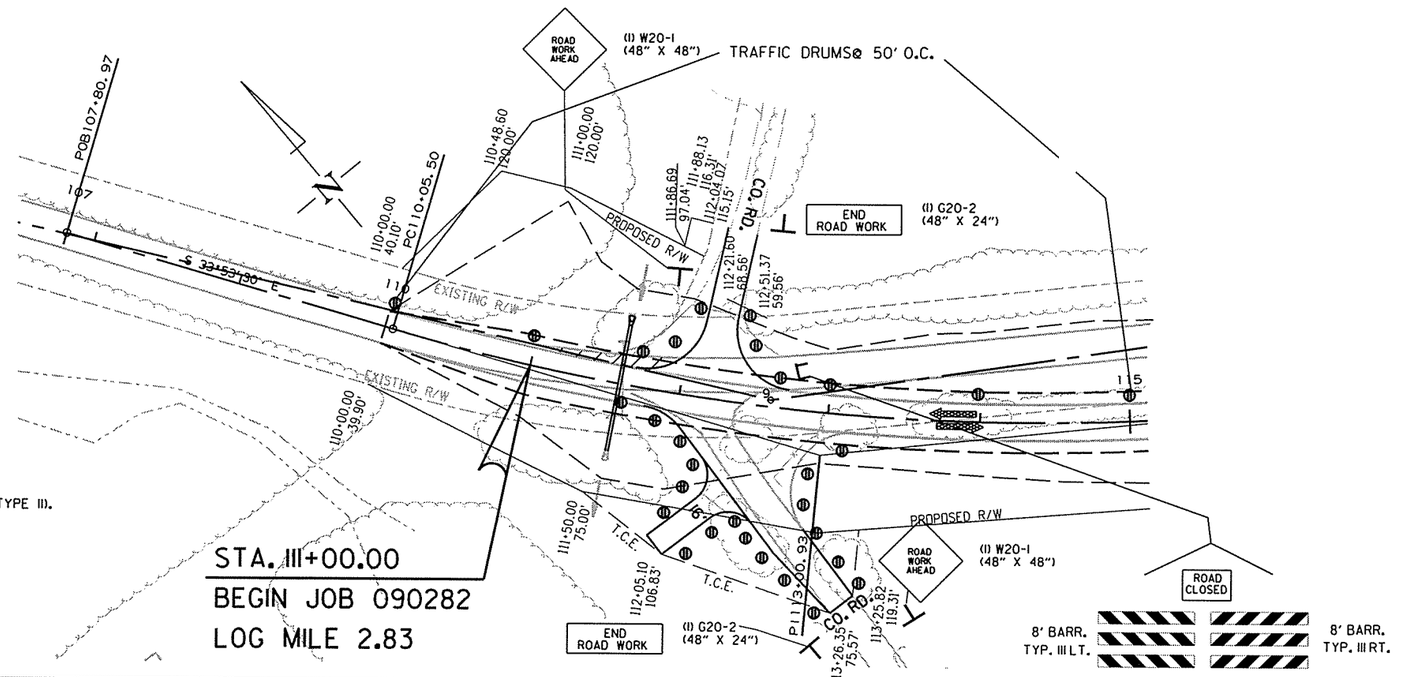
P.I. = 113+00.93
Δ = 21°56'07.40"LT.
D = 03°45'30.49"
T = 295.43
L = 583.63
P.C. = 110+05.50
P.T. = 115+89.12
e = 0.090'/'
Ls = 350'

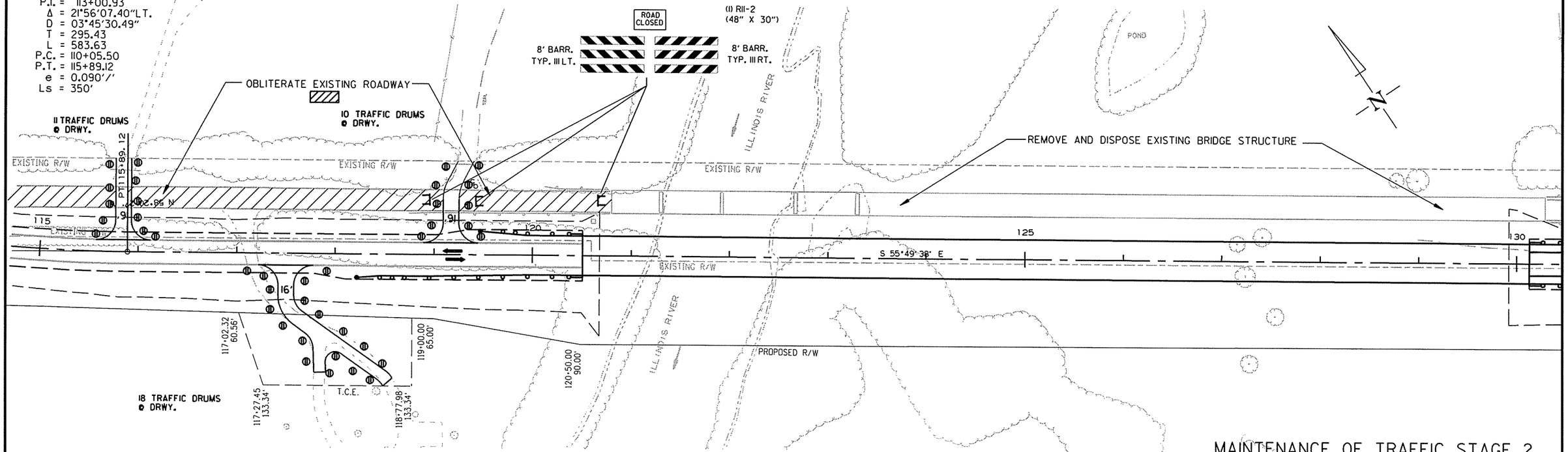
SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT PROPOSED ROADWAY. BRIDGE, DRIVES, AND INSTALL PIPE CULVERTS. PERFORM NOTCH & WIDENING BEGIN AND END OF PROJECT. PLACE CONSTRUCTION MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ON TO NEW CONSTRUCTION. REMOVE EXISTING BRIDGE STRUCTURE. NOTCH AND WIDEN AT BEGIN AND END OF PROJECT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE OLD ROADWAY.




MAINTENANCE OF TRAFFIC STAGE 2

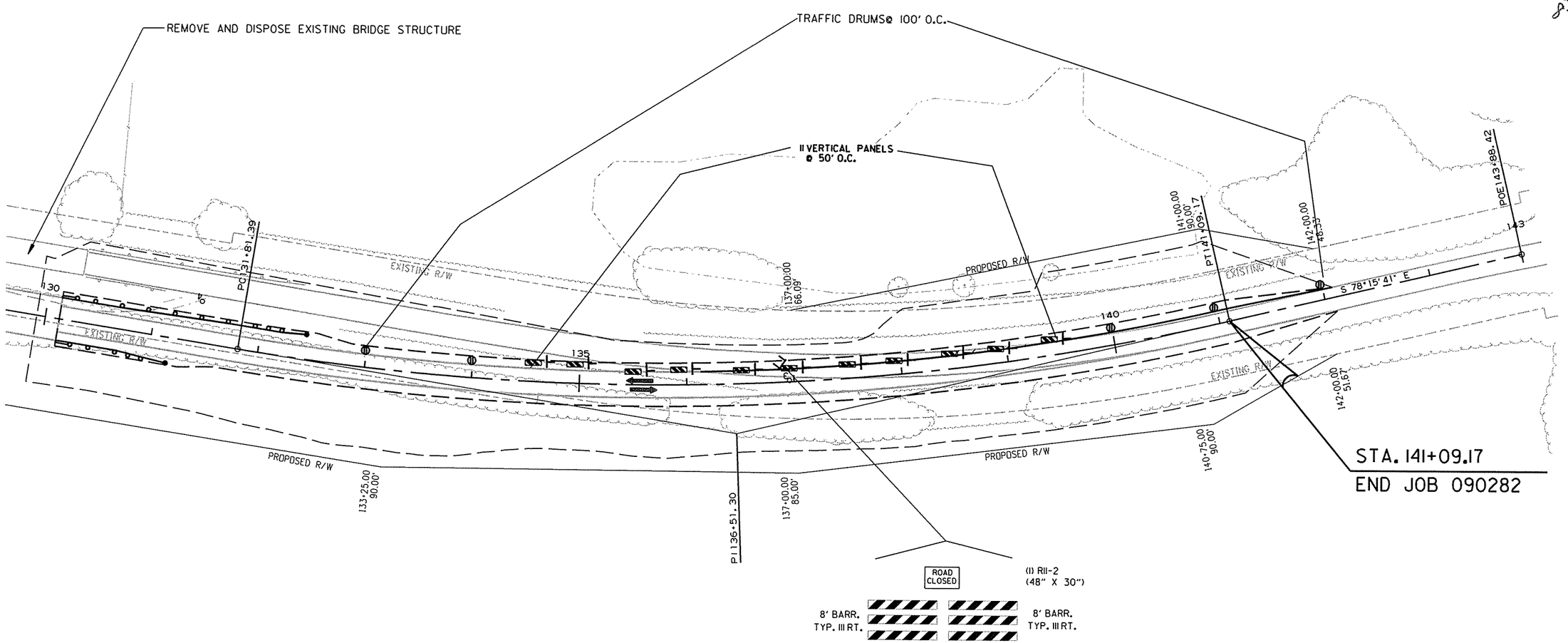
R090282.DGN 8/12/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 18 | 90 |

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-14-15

P.I. 136+51.30
Δ = 22°26'03.88"LT.
D = 02°25'05.05"
T = 469.91
L = 927.78
P.C. 131+81.39
P.T. 141+09.18
e = 0.065'/'
Ls = 300'




SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT PROPOSED ROADWAY, BRIDGE, DRIVES, AND INSTALL PIPE CULVERTS. PERFORM NOTCH & WIDENING BEGIN AND END OF PROJECT. PLACE CONSTRUCTION MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ON TO NEW CONSTRUCTION. REMOVE EXISTING BRIDGE STRUCTURE. NOTCH AND WIDEN AT BEGIN AND END OF PROJECT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE OLD ROADWAY.

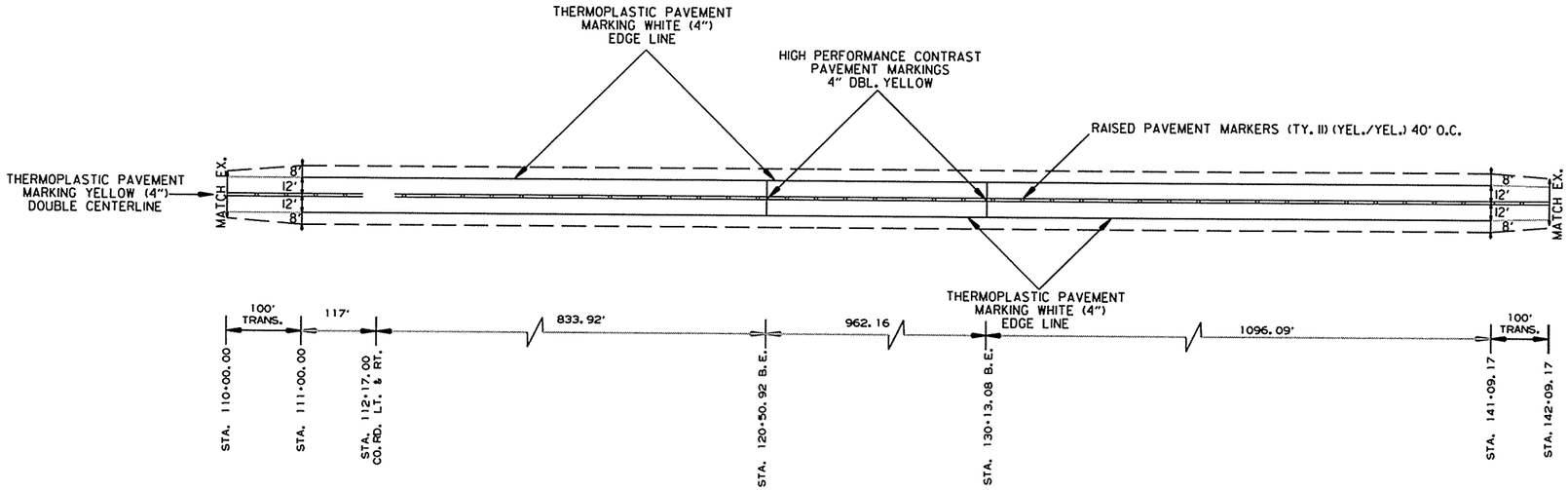
## MAINTENANCE OF TRAFFIC - STAGE 2

R090282.DGN 8/19/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 19 | 90 |

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15




FINAL STRIPING DETAIL

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

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY. CONSTRUCT PROPOSED ROADWAY. BRIDGE. DRIVES. AND INSTALL PIPE CULVERTS. PERFORM NOTCH & WIDENING BEGIN AND END OF PROJECT. PLACE CONSTRUCTION MARKINGS AND RAISED PAVEMENT MARKERS (TYPE II).

STAGE 2: SHIFT TRAFFIC ON TO NEW CONSTRUCTION. REMOVE EXISTING BRIDGE STRUCTURE. NOTCH AND WIDEN AT BEGIN AND END OF PROJECT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 50' O.C. SPACING ON LT. AND TRAFFIC DRUMS AT 100' O.C. SPACING AT LANE EDGE ON RT. PERFORM LEVELING OPERATIONS.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING. OBLITERATE OLD ROADWAY.

CONSTRUCTION PAVEMENT MARKINGS:

RT. AND LT. EDGE LINES = 2247 LIN. FT.
DBL. CENTERLINE = 2247 LIN. FT.

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS = 3848 LIN. FT.

FINAL STRIPING:

THERMOPLASTIC PAVEMENT MARKINGS:
RT. AND LT. EDGE LINES = 4494 LIN. FT. WHITE
DBL. CENTERLINE = 4494 LIN. FT. YELLOW

HIGH PERFORMANCE PAVEMENT MARKINGS:
DBL. CENTERLINE = 1926 LIN. FT. YELLOW

RAISED PAVEMENT MARKERS (TY. II) (YEL.YEL.) (40' O.C.) = 80 EA.

# PERMANENT PAVEMENT MARKING DETAILS

8/19/2015

R090282.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. | | 090282 | 20 | 90 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

## CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

| DESCRIPTION | REMOVAL OF PERMANENT PAVEMENT MARKINGS | REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | CONSTRUCTION PAVEMENT MARKINGS | RAISED PAVEMENT MARKERS | THERMOPLASTIC PAVEMENT MARKING | | HIGH PERFORMANCE CONTRAST PAVEMENT MARKING |
|---|---|---|---|---|---|---|---|
| | | | | TYPE II | 4" | | 4" |
| | | | | (YEL/YEL) | WHITE | YELLOW | YELLOW |
| | LIN. FT. | | | EACH | LIN. FT. | | LIN. FT. |
| REMOVAL OF PERMANENT PAVEMENT MARKINGS | 2325 | | | | | | |
| REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | | 3848 | | | | | |
| CONSTRUCTION PAVEMENT MARKINGS | | | 4494 | | | | |
| | | | | | | | |
| RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) | | | | 80 | | | |
| | | | | | | | |
| THERMOPLASTIC PAVEMENT MARKING WHITE (4") | | | | | 6418 | | |
| THERMOPLASTIC PAVEMENT MARKING YELLOW (4") | | | | | | 4494 | |
| HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4") | | | | | | | 1924 |
| | | | | | | | |
| | | | | | | | |
| **TOTALS:** | **2325** | **3848** | **4494** | **80** | **6418** | **4494** | **1924** |

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

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

## ADVANCE WARNING SIGNS AND DEVICES

| SIGN NUMBER | DESCRIPTION | SIGN SIZE | STAGE 1 | STAGE 2 | END OF JOB | MAXIMUM NUMBER REQUIRED | TOTAL SIGNS REQUIRED | | VERTICAL PANELS | TRAFFIC DRUMS | BARRICADES (TYPE III) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LIN. FT. - EACH | | | | NO. | SQ. FT. | EACH | | RIGHT | LEFT |
| | | | | | | | | | | | LIN. FT. | |
| W20-1 | ROAD WORK 1500 FT. | 48"x48" | 2 | 2 | | 2 | 2 | 32.0 | | | | |
| W20-1 | ROAD WORK 1000 FT. | 48"x48" | 2 | 2 | | 2 | 2 | 32.0 | | | | |
| W20-1 | ROAD WORK 500 FT. | 48"x48" | 2 | 2 | | 2 | 2 | 32.0 | | | | |
| W20-1 | ROAD WORK AHEAD | 48"x48" | 2 | 3 | | 3 | 3 | 48.0 | | | | |
| G20-2 | END ROAD WORK | 48"x24" | 4 | 4 | | 4 | 4 | 32.0 | | | | |
| R11-2 | ROAD CLOSED | 48"x30" | 4 | | | 4 | 4 | 40.0 | | | | |
| R4-1 | DO NOT PASS | 24"x30" | 2 | | | 2 | 2 | 10.0 | | | | |
| RSP-1 | SHOULDER CLOSED | 48"x30" | 2 | | | 2 | 2 | 20.0 | | | | |
| | | | | | | | | | | | | |
| | VERTICAL PANELS | | 32 | 11 | 32 | 32 | | | 32 | | | |
| | TRAFFIC DRUMS | | 36 | 74 | 74 | 74 | | | | 74 | | |
| | | | | | | | | | | | | |
| | TYPE III BARRICADE-RT. (8') | | 4 | 6 | | 6 | | | | | 48 | |
| | TYPE III BARRICADE-LT. (8') | | 4 | 4 | | 4 | | | | | | 32 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| **TOTALS:** | | | | | | | | **246.0** | **32** | **74** | **48** | **32** |

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

8/12/2015

R090282.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. | | 090282 | 21 | 90 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

## SOIL LOG

| STATION | LOCATION | DEPTH | LIQUID LIMIT | PLASTICITY INDEX | AASHTO CLASSIFICATION | COLOR |
|---|---|---|---|---|---|---|
| | | FEET | | | | |
| 110+00 | 5' RT. | 0-5 | 23 | 7 | A-4(1) | RD/BR |
| 110+00 | 15' RT. | 0-3 | 38 | 10 | A-4(2) | RD/BR |
| 118+00 | 4' LT. | 0-5 | 24 | 7 | A-4(2) | BROWN |
| 132+00 | 25' LT. | 0-5 | 27 | 7 | A-4(1) | BROWN |
| 140+00 | 5' LT. | 0-5 | 22 | 7 | A-4(1) | BROWN |
| 140+00 | 15' LT. | 0-5 | 44 | 5 | A-5(0) | BROWN |
| 118+00 | 4' LT. | 0-5 | 25 | 9 | A-4(4) | RD/BR |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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

## CLEARING AND GRUBBING

| STATION | STATION | CLEARING | GRUBBING |
|---|---|---|---|
| | | STATION | |
| 111+00 | 141+09 | 31 | 31 |
| | | | |
| | | | |
| | | | |
| TOTALS: | | 31 | 31 |

## BENCH MARKS

| STATION | LOCATION | BENCH MARKS |
|---|---|---|
| | | EACH |
| 120+50.92 | BRIDGE END ON RT. | 1 |
| | | |
| | | |
| | | |
| | | |
| TOTAL: | | 1 |

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

## REMOVAL AND DISPOSAL OF FENCE

| STATION | STATION | LOCATION | FENCE |
|---|---|---|---|
| | | | LIN. FT. |
| 112+71 | 113+00 | FENCE ON RT. | 29 |
| 112+75 | | SPLIT RAIL FENCE ON RT. | 50 |
| | | | |
| | | | |
| | | | |
| TOTAL: | | | 79 |

## DUMPED RIPRAP AND FILTER BLANKET

| STATION | STATION | SIDE | DUMPED RIPRAP | FILTER BLANKET |
|---|---|---|---|---|
| | | | CU. YDS. | SQ. YDS. |
| 117+90 | 118+50 | RT. | 107 | 213 |
| 118+11 | 118+53 | LT. | 42 | 84 |
| 119+11 | 119+35 | RT. | 28 | 56 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTALS: | | | 177 | 353 |

*NOTE: QUANTITY ESTIMATED.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

## 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.

## COLD MILLING ASPHALT PAVEMENT

| STATION | STATION | LOCATION | AVG. WIDTH | COLD MILLING ASPHALT PAVEMENT |
|---|---|---|---|---|
| | | | FEET | SQ. YD. |
| 110+00.00 | 111+00.00 | MAIN LANES | 24.00 | 266.67 |
| 141+09.17 | 142+09.17 | MAIN LANES | 24.00 | 266.67 |
| | | | | |
| | | | | |
| TOTAL: | | | | 533.34 |

NOTE: AVERAGE MILLING DEPTH 1".

## ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

| LOCATION | TON | TACK COAT |
|---|---|---|
| | | GALLON |
| ENTIRE PROJECT - TO BE USED IF AND WHERE | 10 | 20 |
| DIRECTED BY THE ENGINEER | | |
| | | |
| TOTALS: | 10 | 20 |

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

## REMOVAL AND DISPOSAL OF PIPE CULVERTS

| STATION | DESCRIPTION | PIPE CULVERTS |
|---|---|---|
| | | EACH |
| 111+60 | 24" X 50' R.C. PIPE CULVERT W/ HDWLS. LT. & RT. | 1 |
| 112+33 | 18" X 24' C.M. PIPE CULVERT RT. SIDE DRAIN | 1 |
| 115+86 | 18" X 30' C.M. PIPE CULVERT LT. SIDE DRAIN | 1 |
| 119+16 | 18" X 41' C.M. PIPE CULVERT LT. SIDE DRAIN | 1 |
| | | |
| | | |
| | | |
| | | |
| TOTAL: | | 4 |

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

## REMOVAL AND DISPOSAL OF ITEMS

| STATION | SIDE | LOCATION | SIGNS | PLANTERS |
|---|---|---|---|---|
| | | | EACH | EACH |
| 112+53 | RT. | WOOD SIGN WITH PLANTER (ENCROACHING) | 1 | 1 |
| | | | | |
| | | | | |
| | | | | |
| TOTALS: | | | 1 | 1 |

8/19/2015

R090282.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. | | 090282 | 22 | 90 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

## MAILBOXES

| LOCATION | MAILBOXES | MAILBOX SUPPORTS (SINGLE) |
|---|---|---|
| | EACH | |
| ENTIRE PROJECT | 5 | 5 |
| | | |
| | | |
| TOTALS: | 5 | 5 |

## REMOVAL AND DISPOSAL OF GUARDRAIL

| STATION | STATION | SIDE | LOCATION | GUARDRAIL |
|---|---|---|---|---|
| | | | | LIN. FT. |
| 118+75 | 120+78 | RT. | EXISTING ROADWAY | 205 |
| 120+11 | 120+77 | LT. | EXISTING ROADWAY | 76 |
| 130+30 | 131+06 | RT. | EXISTING ROADWAY | 76 |
| 130+30 | 132+35 | LT. | EXISTING ROADWAY | 205 |
| TOTAL: | | | | 562 |

NOTE: PAYMENT FOR REMOVAL AND DISPOSAL OF GUARDRAIL INCLUDES REMOVAL AND DISPOSAL OF ANY TERMINAL ANCHOR POSTS.

## 4" PIPE UNDERDRAIN

| STATION | STATION | LOCATIONS | 4" PIPE UNDERDRAINS | UNDERDRAIN OUTLET PROTECTORS |
|---|---|---|---|---|
| | | | LIN. FT. | EACH |
| * ENTIRE PROJECT TO BE USED IF AND | | | 1000 | 8 |
| WHERE DIRECTED BY THE ENGINEER | | | | |
| | | | | |
| TOTALS: | | | 1000 | 8 |

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

## GUARDRAIL

| STATION | STATION | LOCATION | GUARDRAIL (TYPE A) | THRIE BEAM GUARDRAIL TERMINAL | TERMINAL ANCHOR POST (TYPE 1) |
|---|---|---|---|---|---|
| | | | LIN. FT. | EACH | |
| 118+20.77 | 120+39.52 | RT. SIDE | 200 | 1 | 1 |
| 119+45.77 | 120+39.52 | LT. SIDE | 75 | 1 | 1 |
| 130+24.48 | 132+43.23 | LT. SIDE | 200 | 1 | 1 |
| 130+24.48 | 131+18.23 | RT. SIDE | 75 | 1 | 1 |
| | | | | | |
| | | | | | |
| | | | | | |
| TOTALS: | | | 550 | 4 | 4 |

## SELECTED PIPE BEDDING

| LOCATION | SELECTED PIPE BEDDING |
|---|---|
| | CU.YD. |
| ENTIRE PROJECT TO BE USED IF | |
| AND WHERE DIRECTED BY THE | 16 |
| ENGINEER | |
| | |
| | |
| TOTAL: | 16 |

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

## APPROACH GUTTERS

| STATION | STATION | LOCATION | APPROACH GUTTER (TYPE A) W= 8'-0" | REINFORCING STEEL-RDWY. (GR. 60) |
|---|---|---|---|---|
| | | | CU.YD. | POUND |
| 120+38.92 | 120+50.92 | LT. SIDE | 7.55 | 665 |
| 120+38.92 | 120+50.92 | RT. SIDE | 7.55 | 665 |
| 130+13.08 | 130+25.08 | LT. SIDE | 7.55 | 665 |
| 130+13.08 | 130+25.08 | RT. SIDE | 7.55 | 665 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTALS: | | | 30.20 | 2660 |

NOTE: USE T =14.5" FOR 8' SHOULDER.

## EARTHWORK

| STATION | STATION | LOCATION / DESCRIPTION | UNCLASSIFIED EXCAVATION | COMPACTED EMBANKMENT | * SOIL STABILIZATION |
|---|---|---|---|---|---|
| | | | CU. YD. | | TON |
| 111+00.00 | 120+63.46 | STAGE 1 - MAIN LANES | 153 | 14465 | |
| 129+92.00 | 141+09.17 | STAGE 1 - MAIN LANES | | 30052 | |
| 111+00.00 | 120+63.46 | STAGE 2 - MAIN LANES | 7502 | 21 | |
| 129+92.00 | 141+09.17 | STAGE 2 - MAIN LANES | 5660 | 1507 | |
| ENTIRE | PROJECT | CONSTRUCT DRIVEWAYS | | 1435 | |
| ENTIRE | PROJECT | BRIDGE EXCAVATION | 510 | | |
| | | | | | |
| | | | | | |
| * ENTIRE | PROJECT | TO BE USED IF AND WHERE | | | 150 |
| | | DIRECTED BY THE ENGINEER | | | |
| | | | | | |
| TOTALS: | | | 13825 | 47480 | 150 |

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

8/17/2015

R090282.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. | | 090282 | 23 | 90 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

## STRUCTURES

| STATION | DESCRIPTION | R.C. PIPE CULVERT (CLASS III) 24" LIN. FT. | F.E.S. FOR R.C. PIPE CULVERTS 24" EACH | SOLID SODDING SQ.YD. | WATER M.GAL | STD. DWG. NOS. |
|---|---|---|---|---|---|---|
| 111+60 | CONSTRUCT 24" X 85' R.C. PIPE CULVERT W\ F.E.S. LT. & RT. | 104 | 2 | 24 | 0.3 | PCC-1, FES-1, FES-2 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| TOTALS: | | 104 | 2 | 24 | 0.3 | |

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.

## RUMBLE STRIPS IN ASPHALT SHOULDERS

| STATION | STATION | LOCATION | * RUMBLE STRIPS IN ASPHALT SHOULDERS LIN.FT. |
|---|---|---|---|
| ENTIRE | PROJECT | MAIN LANES | 708 |
| | | | |
| | | | |
| | | | |
| TOTAL: | | | 708 |

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

## EROSION CONTROL

| STATION | STATION | LOCATION | PERMANENT EROSION CONTROL | | | | | TEMPORARY EROSION CONTROL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEEDING | LIME | MULCH COVER | WATER | SECOND SEEDING APPLICATION | TEMPORARY SEEDING | MULCH COVER | WATER | SAND BAG DITCH CHECKS (E-5) | ROCK DITCH CHECKS (E-6) | SILT FENCE (E-11) | DIVERSION DITCH (E-8) | SLOPE DRAIN (E-12) PIPE FOR SLOPE DRAINS | SLOPE DRAIN (E-12) DUMPED RIPRAP | SEDIMENT BASIN (E-14) | OBLITERATION OF SEDIMENT BASIN | *SEDIMENT REMOVAL & DISPOSAL |
| | | | ACRE | TON | ACRE | M.GAL. | ACRE | ACRE | ACRE | M.GAL. | BAG | CU.YD. | LIN. FT. | LIN. FT. | LIN. FT. | CU.YD. | CU.YD. | CU.YD. | CU. YD. |
| ENTIRE | PROJECT | CLEARING AND GRUBBING | | | | | | 3.20 | 3.20 | 65.3 | | 18 | 5358 | | | | | | |
| ENTIRE | PROJECT | STAGE 1 | 3.20 | 6.40 | 3.20 | 326.4 | 3.20 | 3.20 | 3.20 | 65.3 | | | | 2774 | 260 | 40 | 195 | 195 | 200 |
| ENTIRE | PROJECT | STAGE 2 | 0.86 | 1.72 | 0.86 | 87.7 | 0.86 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| *ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER. | | | 1.00 | 2.00 | 1.00 | 102.0 | 1.00 | | | | 125 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| TOTALS: | | | 5.06 | 10.12 | 5.06 | 516.1 | 5.06 | 6.40 | 6.40 | 130.6 | 125 | 18 | 5358 | 2774 | 260 | 40 | 195 | 195 | 200 |

BASIS OF ESTIMATE:
LIME .....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G. / ACRE OF SEEDING
WATER.....20.4 M.G. / ACRE OF TEMPORARY SEEDING

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

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

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

8/19/2015

R090282.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. | | 090282 | 24 | 90 |

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

## DRIVEWAYS & TURNOUTS

| STATION | SIDE | LOCATION | WIDTH | PORTLAND CEMENT CONCRETE DRIVEWAY | ACHM SURFACE COURSE (1/2") 220 LBS. PER SQ. YD. (PG 64-22) | | AGGREGATE BASE COURSE (CLASS 7) | SIDE DRAINS | STANDARD DRAWINGS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 18" | |
| | | | FEET | SQ. YD. | SQ. YD. | TON | TON | LIN. FT. | |
| 112+21 | LT. | CONSTRUCT COUNTY RD. TURNOUT | 20 | | 127.48 | 14.02 | 52.05 | | |
| 112+17 | RT. | CONSTRUCT COUNTY RD. TURNOUT | 20 | | 416.37 | 45.80 | 170.02 | | |
| 112+33 | RT. | INSTALL 18" X 54' PIPE CULVERT SIDE DRAIN | 16 | | 37.01 | 4.07 | 52.45 | 54 | PCC-1, PCM-1, PCP-1, PCP-2 |
| 115+86 | LT. | INSTALL 18" X 38' PIPE CULVERT SIDE DRAIN | 16 | | 136.73 | 15.04 | 55.83 | 38 | PCC-1, PCM-1, PCP-1, PCP-2 |
| 117+50 | RT. | CONSTRUCT APPROACH ON RT. | 16 | 243.40 | | | | | |
| 119+16 | LT. | INSTALL 18" X 40' PIPE CULVERT SIDE DRAIN | 16 | | 92.29 | 10.15 | 37.69 | 40 | PCC-1, PCM-1, PCP-1, PCP-2 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| * ENTIRE PROJECT TEMPORARY DRIVES | | | | | | | 500.00 | | |
| | | | | | | | | | |
| TOTALS: | | | | 243.40 | 809.88 | 89.08 | 868.04 | 132 | |

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

* QUANTITY ESTIMATED
SEE SECTION 104.03 OF THE STD. SPECS.
TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.
NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.
NOTE: FOR C.M. PIPE CULVERT INSTALLATIONS USE TYPE 2 BEDDING UNLESS OTHERWISE SPECIFIED.

## BASE AND SURFACING

| STATION | STATION | LOCATION | LENGTH | AGGREGATE BASE COURSE (CLASS 7) | | TACK COAT | | | | ACHM BINDER COURSE (1") | | | | ACHM SURFACE COURSE (1/2") | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TON / STATION | TON | AVG. WID. | SQ.YD. | GALLONS / SQ.YD. | GALLON | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 64-22 | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 64-22 | AVG. WID. | SQ.YD. | POUND / SQ.YD. | PG 64-22 | TOTAL PG 64-22 |
| | | | FEET | | | FEET | | | | FEET | | | TON | FEET | | | TON | FEET | | | TON | TON |
| MAIN LANES | | | | | | | | | | | | | | | | | | | | | | |
| 110+00.00 | 111+00.00 | 100' TRANSITION | 100.00 | 78.25 | 78.25 | 24.00 | 266.67 | 0.10 | 26.67 | | | | | | | | | 32.00 | 355.56 | 220.00 | 39.11 | 39.11 |
| 111+00.00 | 112+71.05 | MAIN LANES - NOTCH AND WIDEN | 171.05 | 156.50 | 267.69 | 24.00 | 456.13 | 0.10 | 45.61 | | | | | | | | | 40.00 | 760.22 | 220.00 | 83.62 | 83.62 |
| 112+71.05 | 120+50.92 | MAIN LANES - FULL DEPTH | 779.87 | 265.50 | 2070.55 | 48.73 | 4222.56 | 0.03 | 126.68 | 24.48 | 2121.25 | 385.00 | 408.34 | 24.25 | 2101.32 | 220.00 | 231.15 | 40.00 | 3466.09 | 220.00 | 381.27 | 612.42 |
| 130+13.08 | 137+57.18 | MAIN LANES - FULL DEPTH | 744.10 | 265.50 | 1975.59 | 48.73 | 4028.89 | 0.03 | 120.87 | 24.48 | 2023.95 | 385.00 | 389.61 | 24.25 | 2004.94 | 220.00 | 220.54 | 40.00 | 3307.11 | 220.00 | 363.78 | 584.32 |
| 137+57.18 | 141+09.17 | MAIN LANES - NOTCH AND WIDEN | 351.99 | 156.50 | 550.86 | 24.00 | 938.64 | 0.10 | 93.86 | | | | | | | | | 40.00 | 1564.40 | 220.00 | 172.08 | 172.08 |
| 141+09.17 | 142+09.17 | 100' TRANSITION | 100.00 | 78.25 | 78.25 | 24.00 | 266.67 | 0.10 | 26.67 | | | | | | | | | 32.00 | 355.56 | 220.00 | 39.11 | 39.11 |
| | | | | | | | | | | | | | | | | | | | | | | |
| 117+77.77 | 118+10.77 | ADD'L. GUARDRAIL WIDENING TAPER RT. | 33.00 | 21.38 | 7.06 | | | | | | | | | | | | | 2.75 | 10.08 | 220.00 | 1.11 | 1.11 |
| 118+10.77 | 120+50.92 | ADD'L. GUARDRAIL WIDENING RT. | 240.15 | 42.75 | 102.66 | | | | | | | | | | | | | 5.50 | 146.76 | 220.00 | 16.14 | 16.14 |
| 119+02.77 | 119+35.77 | ADD'L. GUARDRAIL WIDENING TAPER LT. | 33.00 | 21.38 | 7.06 | | | | | | | | | | | | | 2.75 | 10.08 | 220.00 | 1.11 | 1.11 |
| 119+35.77 | 120+50.92 | ADD'L. GUARDRAIL WIDENING LT. | 115.15 | 42.75 | 49.23 | | | | | | | | | | | | | 5.50 | 70.37 | 220.00 | 7.74 | 7.74 |
| 130+13.08 | 131+28.23 | ADD'L. GUARDRAIL WIDENING RT. | 115.15 | 42.75 | 49.23 | | | | | | | | | | | | | 5.50 | 70.37 | 220.00 | 7.74 | 7.74 |
| 131+28.23 | 131+61.23 | ADD'L. GUARDRAIL WIDENING TAPER RT. | 33.00 | 21.38 | 7.06 | | | | | | | | | | | | | 2.75 | 10.08 | 220.00 | 1.11 | 1.11 |
| 130+13.08 | 132+53.23 | ADD'L. GUARDRAIL WIDENING LT. | 240.15 | 42.75 | 102.66 | | | | | | | | | | | | | 5.50 | 146.76 | 220.00 | 16.14 | 16.14 |
| 132+53.23 | 132+86.23 | ADD'L. GUARDRAIL WIDENING TAPER LT. | 33.00 | 21.38 | 7.06 | | | | | | | | | | | | | 2.75 | 10.08 | 220.00 | 1.11 | 1.11 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| ADDITIONAL | | | | | | | | | | | | | | | | | | | | | | |
| ENTIRE | PROJECT | LEVELING | 523.00 | | | 24.00 | 1394.67 | 0.03 | 41.84 | | | | | | | | | 24.00 | 1394.67 | 220.00 | 153.41 | 153.41 |
| ENTIRE | PROJECT | ADDITIONAL - GRADE RAISED | 250.00 | | | 24.00 | 666.67 | 0.03 | 20.00 | | | | 256.67 | | | | | | | | | |
| 111+00.00 | 118+51.62 | ADDITIONAL - SUPERELEVATION | | | 385.00 | | | | | | | | | | | | | | | | | |
| 135+00.00 | 142+09.17 | ADDITIONAL - SUPERELEVATION | | | 385.00 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| TOTALS: | | | | | 6123.21 | | 12240.90 | | 502.20 | | 4145.20 | | 1054.62 | | 4106.26 | | 451.69 | | 11678.19 | | 1284.58 | 1736.27 |

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.5% MIN. AGGR.....5.5% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.3% MIN. AGGR.....4.7% ASPHALT BINDER

MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

8/12/2015

R090282.DGN

QUANTITIES

| 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. | | 090282 | 25 | 90 |
| (1) 07265 | | QUANTITIES | | 53199 |

# SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 090282

| BRIDGE NO. | CODE NO. | NAME PLATE TITLE | UNIT OF STRUCTURE | ITEM NO. | 205 | 801 | 802 | 802 | 803 | 804 | 804 | 805 | 805 | 807 | 808 | 809 | 812 | 816 | 816 | SPJOB 090282 | SPJOB 090282 | SPJOB 090282 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ITEM / UNIT | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1) | UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE | CLASS S CONCRETE-BRIDGE | CLASS S(AE) CONCRETE-BRIDGE | CLASS 2 PROTECTIVE SURFACE TREATMENT | REINFORCING STEEL-BRIDGE (GRADE 60) | EPOXY COATED REINFORCING STEEL (GRADE 60) | (2) STEEL PILING (HP 12X53) | PREBORING | STRUCTURAL STEEL IN BEAM SPANS (M 270, GRADE 50W) | ELASTOMERIC BEARINGS | SILICONE JOINT SEALANT | BRIDGE NAME PLATE (TYPE D) | FILTER BLANKET | DUMPED RIPRAP | (3) DRILLED SHAFT (48" DIA.) | CROSSHOLE SONIC LOGGING (48" DIA.) | CORING DRILLED SHAFT |
| | | | | | LUMP SUM | CU. YD. | CU. YD. | CU. YD. | SQ. YD. | LB. | LB. | LIN. FT. | LIN. FT. | LB. | CU. IN. | LIN. FT. | EACH | SQ. YD. | CU. YD. | LIN. FT. | EACH | LIN. FT. |
| 07265 | X071 | ILLINOIS RIVER | BENT 1 | | | | 34.95 | | 14.5 | 3,394 | | 90 | 85 | 756 | 1,800.0 | | | | | | | |
| | | | BENT 2 | | | 99 | 111.56 | | | 18,116 | | | | | 1,993.8 | | | 184 | 105 | | | |
| | | | BENT 3 | | | 114 | 111.56 | | | 18,116 | | | | | 1,993.8 | | | | | | | |
| | | | BENT 4 | | | 156 | 112.91 | | | 18,224 | | | | | 3,420.0 | | | | | | | |
| | | | BENT 5 | | | | 31.43 | | | 6,022 | | | | | 1,631.3 | | | | | 48 | | 24 |
| | | | BENT 6 | | | | 31.37 | | | 6,022 | | | | | 1,631.3 | | | | | 48 | 1 | |
| | | | BENT 7 | | | | 31.30 | | | 6,022 | | | | | 1,631.3 | | | | | 48 | | |
| | | | BENT 8 | | | | 31.18 | | | 6,022 | | | | | 3,240.0 | | | | | 48 | | |
| | | | BENT 9 | | | | 31.17 | | | 5,988 | | | | | 1,631.3 | | | | | 48 | | |
| | | | BENT 10 | | | | 31.10 | | | 5,988 | | | | | 1,631.3 | | | | | 48 | 1 | |
| | | | BENT 11 | | | | 31.06 | | | 5,988 | | | | | 1,631.3 | | | | | 48 | | |
| | | | BENT 12 | | | | 30.92 | | | 5,988 | | | | | 3,240.0 | | | | | 48 | | |
| | | | BENT 13 | | | | 30.93 | | | 5,954 | | | | | 1,631.3 | | | | | 48 | | |
| | | | BENT 14 | | | | 30.84 | | | 5,954 | | | | | 1,631.3 | | | | | 48 | 1 | |
| | | | BENT 15 | | | | 30.77 | | | 5,954 | | | | | 1,631.3 | | | | | 48 | | |
| | | | BENT 16 | | | | 33.35 | | 14.5 | 3,288 | | 165 | | 756 | 1,620.0 | | | 320 | 177 | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | 240' CONT. W-BEAM UNIT NO. 1 | | | | | 308.63 | 1,258.2 | | 76,649 | | | 275,596 | | 86 | 1 | | | | | |
| | | | 240' CONT. W-BEAM UNIT NO. 2 | | | | | 306.79 | 1,258.1 | | 76,797 | | | 192,044 | | 43 | | | | | | |
| | | | 240' CONT. W-BEAM UNIT NO. 3 | | | | | 306.79 | 1,258.1 | | 76,797 | | | 192,044 | | 43 | | | | | | |
| | | | 240' CONT. W-BEAM UNIT NO. 4 | | | | | 306.79 | 1,258.2 | | 76,797 | | | 192,044 | | 43 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| TOTALS FOR JOB NO. 090282 | | | | | 1 | (1) 369 | 746.40 | 1,229.00 | 5,061.6 | 127,040 | 307,040 | 255 | 85 | 853,240 | 31,989.3 | 215 | 1 | 504 | 282 | 528 | 3 | 24 |

(1) INCLUDES APPROX. 102 CU. YDS. OF ROCK EXCAVATION

(2) THESE STEEL PILES ARE REQUIRED TO HAVE SPECIAL PILE TIPS WHICH WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERERED SUBSIDIARY TO THE ITEM 'STEEL PILING (HP 12X53)'.

(3) ALL DRILLED SHAFTS SHALL BE CONSTRUCTED WITH PIPES FOR POSSIBLE NONDESTRUCTIVE TESTING. SEE SPECIAL PROVISION JOB 090282 'NONDESTRUCTIVE TESTING OF DRILLED SHAFTS'.

AILEEN SCHUBEL
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/18/14
CARL J. FUSELIER
BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
ILLINOIS RIVER STR. & APPRS. (S)
BENTON COUNTY
ROUTE 16 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 10/10/11 FILENAME: b090282_ql.dgn
CHECKED BY: PGT DATE: 6-13 SCALE: None
DESIGNED BY: DATE:
BRIDGE NO. 07265 DRAWING NO. 53199

PRINT DATE: 4/18/2014

## SUMMARY OF QUANTITIES

| ITEM NUMBER | ITEM | | QUANTITY | UNIT |
|---|---|---|---|---|
| SP & 201 | CLEARING | | 31 | STATION |
| 201 | GRUBBING | | 31 | STATION |
| 202 | REMOVAL AND DISPOSAL OF FENCE | | 79 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF PIPE CULVERTS | | 4 | EACH |
| 202 | REMOVAL AND DISPOSAL OF GUARDRAIL | | 562 | LIN. FT. |
| 202 | REMOVAL AND DISPOSAL OF SIGNS | | 1 | EACH |
| 202 | REMOVAL AND DISPOSAL OF PLANTERS | | 1 | EACH |
| 210 | UNCLASSIFIED EXCAVATION | | 13825 | CU. YD. |
| 210 | COMPACTED EMBANKMENT | | 47480 | CU. YD. |
| SP & 210 | SOIL STABILIZATION | | 150 | TON |
| 303 | AGGREGATE BASE COURSE (CLASS 7) | | 6991 | TON |
| 401 | TACK COAT | | 522 | GAL. |
| SP, SS, & 406 | MINERAL AGGREGATE IN ACHM BINDER COURSE (1") | | 1005 | TON |
| SP, SS, & 406 | ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1") | | 50 | TON |
| SP, SS, & 407 | MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2") | | 1725 | TON |
| SP, SS, & 407 | ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") | | 100 | TON |
| 412 | COLD MILLING ASPHALT PAVEMENT | | 533 | SQ. YD. |
| SP & 414 | ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC | | 10 | TON |
| SP & 415 | ACHM PATCHING OF EXISTING ROADWAY | | 50 | TON |
| 504 | APPROACH GUTTERS | | 30.20 | CU. YD. |
| 505 | PORTLAND CEMENT CONCRETE DRIVEWAY | | 243.40 | SQ. YD. |
| 601 | MOBILIZATION | | 1.00 | LUMP SUM |
| SP & 602 | FURNISHING FIELD OFFICE | | 1 | EACH |
| 603 | MAINTENANCE OF TRAFFIC | | 1.00 | LUMP SUM |
| SS & 604 | SIGNS | | 246 | SQ. FT. |
| SS & 604 | BARRICADES | | 80 | LIN. FT. |
| SS & 604 | TRAFFIC DRUMS | | 74 | EACH |
| 604 | CONSTRUCTION PAVEMENT MARKINGS | | 4494 | LIN. FT. |
| 604 | REMOVABLE CONSTRUCTION PAVEMENT MARKINGS | | 3848 | LIN. FT. |
| 604 | REMOVAL OF PERMANENT PAVEMENT MARKINGS | | 2325 | LIN. FT. |
| SS & 604 | VERTICAL PANELS | | 32 | EACH |
| 606 | 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III) | | 104 | LIN. FT. |
| 606 | 24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS | | 2 | EACH |
| SP, SS, & 606 | 18" SIDE DRAIN | | 132 | LIN. FT. |
| 606 | SELECTED PIPE BEDDING | | 16 | CU. YD. |
| 611 | UNDERDRAIN OUTLET PROTECTORS | | 8 | EACH |
| 611 | 4" PIPE UNDERDRAINS | | 1000 | LIN. FT. |
| 617 | GUARDRAIL (TYPE A) | | 550 | LIN. FT. |
| 617 | TERMINAL ANCHOR POSTS (TYPE 1) | | 4 | EACH |
| 617 | THRIE BEAM GUARDRAIL TERMINAL | | 4 | EACH |
| 620 | LIME | | 10 | TON |
| 620 | SEEDING | | 5.06 | ACRE |
| SS & 620 | MULCH COVER | | 11.46 | ACRE |
| 620 | WATER | | 647.0 | M.GAL. |
| 621 | TEMPORARY SEEDING | | 6.40 | ACRE |
| 621 | SILT FENCE | | 5358 | LIN. FT. |
| 621 | SAND BAG DITCH CHECKS | | 125 | BAG |
| 621 | DIVERSION DITCH | | 2774 | LIN. FT. |
| 621 | SEDIMENT BASIN | | 195 | CU. YD. |
| 621 | OBLITERATION OF SEDIMENT BASIN | | 195 | CU. YD. |
| 621 | SEDIMENT REMOVAL AND DISPOSAL | | 200 | CU. YD. |
| 621 | PIPE FOR SLOPE DRAINS | | 260 | LIN. FT. |
| 621 | ROCK DITCH CHECKS | | 18 | CU. YD. |
| 623 | SECOND SEEDING APPLICATION | | 5.06 | ACRE |
| 624 | SOLID SODDING | | 24 | SQ. YD. |
| 635 | ROADWAY CONSTRUCTION CONTROL | | 1.00 | LUMP SUM |
| 637 | MAILBOXES | | 5 | EACH |
| 637 | MAILBOX SUPPORTS (SINGLE) | | 5 | EACH |
| 642 | RUMBLE STRIPS IN ASPHALT SHOULDERS | | 708 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING WHITE (4") | | 6418 | LIN. FT. |
| 719 | THERMOPLASTIC PAVEMENT MARKING YELLOW (4") | | 4494 | LIN. FT. |
| * SP & 719 | INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4") | (ALTERNATE NO. 1) | 1924 | LIN. FT. |
| * SP | HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4") | (ALTERNATE NO. 2) | 1924 | LIN. FT. |
| 721 | RAISED PAVEMENT MARKERS (TYPE II) | | 80 | EACH |
| 804 | REINFORCING STEEL-ROADWAY (GRADE 60) | | 2660 | POUND |
| 816 | FILTER BLANKET | | 353 | SQ. YD. |
| 816 | DUMPED RIPRAP | | 217 | CU. YD. |
| | | | | |
| | | | | |
| | **STRUCTURES OVER 20' SPAN** | | | |
| 205 | REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1) | | 1.00 | LUMP SUM |
| 636 | BRIDGE CONSTRUCTION CONTROL | | 1.00 | LUMP SUM |
| 801 | UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE | | 369 | CU. YD. |
| 802 | CLASS S CONCRETE-BRIDGE | | 746.40 | CU. YD. |
| 802 | CLASS S(AE) CONCRETE-BRIDGE | | 1229.00 | CU. YD. |
| 803 | CLASS 2 PROTECTIVE SURFACE TREATMENT | | 5061.6 | SQ. YD. |
| 804 | REINFORCING STEEL-BRIDGE (GRADE 60) | | 127040 | POUND |
| 804 | EPOXY COATED REINFORCING STEEL (GRADE 60) | | 307040 | POUND |
| 805 | STEEL PILING (HP 12X53) | | 255 | LIN. FT. |
| 805 | PREBORING | | 85 | LIN. FT. |
| 807 | STRUCTURAL STEEL IN BEAM SPANS (M270-GR50W) | | 853240 | POUND |
| 808 | ELASTOMERIC BEARINGS | | 31989.3 | CU. IN. |
| 809 | SILICONE JOINT SEALANT | | 215 | LIN. FT. |
| 812 | BRIDGE NAME PLATE (TYPE D) | | 1 | EACH |
| 816 | FILTER BLANKET | | 504 | SQ. YD. |
| 816 | DUMPED RIPRAP | | 282 | CU. YD. |
| SP | DRILLED SHAFT (48" DIAMETER) | | 528 | LIN. FT. |
| SP | CROSSHOLE SONIC LOGGING (48" DIAMETER) | | 3 | EACH |
| SP | CORING DRILLED SHAFT | | 24 | LIN. FT. |

* DENOTES ALTERNATE BID ITEMS.

## REVISIONS

| DATE | REVISION | SHEET NUMBER |
|---|---|---|
| 9/30/2015 | ADDED SPECIAL PROVISIONS "OFF-SITE RESTRAINING CONDITIONS FOR BATS" AND " SPECIAL CLEARING REQUIREMENTS" AND ADDED SP & TO PAY ITEM CLEARING | 2,26 |
| | | |
| | | |
| | | |
| | | |

SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11765 TIMOTHY D. SMITH 10-1-15

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED |
|---|---|---|---|
| 9-30-2015 | | | |

(2) SUMMARY OF QUANTITIES AND REVISIONS

| FED.AID DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 6 | ARK. | | 26 | 90 |

JOB NO. 090282

| 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. | | 090282 | 27 | 90 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

SURVEY CONTROL COORDINATES

Project Name: s090282
Date: 12/15/2010
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

| Point Name | Northing | Easting | Elev | Feature | Description |
|---|---|---|---|---|---|
| 1 | 667508.2930 | 578148.1393 | 992.406 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 2 | 667731.6875 | 577861.7409 | 968.446 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 3 | 667918.2440 | 577107.0250 | 962.367 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 4 | 668211.4460 | 576641.7629 | 963.975 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 5 | 668911.3137 | 575666.5175 | 964.309 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 6 | 669267.2323 | 575089.3183 | 967.277 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 7 | 669966.7448 | 574560.8012 | 978.188 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 8 | 670013.1496 | 574086.7173 | 1005.591 | CTL | *5/8" Rebar with 2" Aluminum Cap |
| 100 | 665558.6636 | 580397.8518 | 1102.816 | GPS | *AHTD GPS 040103 |
| 101 | 664808.5189 | 581198.0875 | 1112.552 | GPS | *AHTD GPS 3 SEM 1968 |
| 900 | 666719.8013 | 578422.7975 | 1047.379 | TBM | *CHLSD SQ CETR HW NE SIDE |
| 901 | 809694.3483 | 581543.2246 | 971.150 | TBM | *CHLSD SQ CNT HEADWALL |
| 902 | 668283.9477 | 576575.1118 | 965.530 | TBM | *CHLSD SQ SE CORNER OF |
| 903 | 669332.3240 | 575124.7756 | 966.944 | TBM | *CHLSD SQ CNT HEADWALL |
| 904 | 668808.1263 | 575849.9307 | 965.572 | TBM | *CHLSD SQ NW COR BRIDGE, ILLINOS RIVER |
| 905 | 669849.4621 | 574678.4286 | 977.044 | TBM | *CHLSD SQ SW COR BRIDGE |

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.9999281762 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME 090282.CTL
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 040103 - 3 SEM 1968
CONVERGENCE ANGLE: 01-27-00.3 LEFT AT LT: 36-08-36.3 LG: 094-29-31.1
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

CONST

| POINT NO. | TYPE | STATION | NORTHING | EASTING |
|---|---|---|---|---|
| 8003 | POB | 107+80.97 | 669649.6156 | 574801.3064 |
| 8004 | PC | 110+05.50 | 669463.2376 | 574926.5080 |
| 8005 | PT | 115+89.12 | 669052.0626 | 575335.6701 |
| 8006 | PC | 131+81.39 | 668157.6968 | 576653.0292 |
| 8007 | PT | 141+09.17 | 667798.1513 | 577501.8896 |
| 8008 | POE | 143+88.42 | 667741.3400 | 577775.2963 |

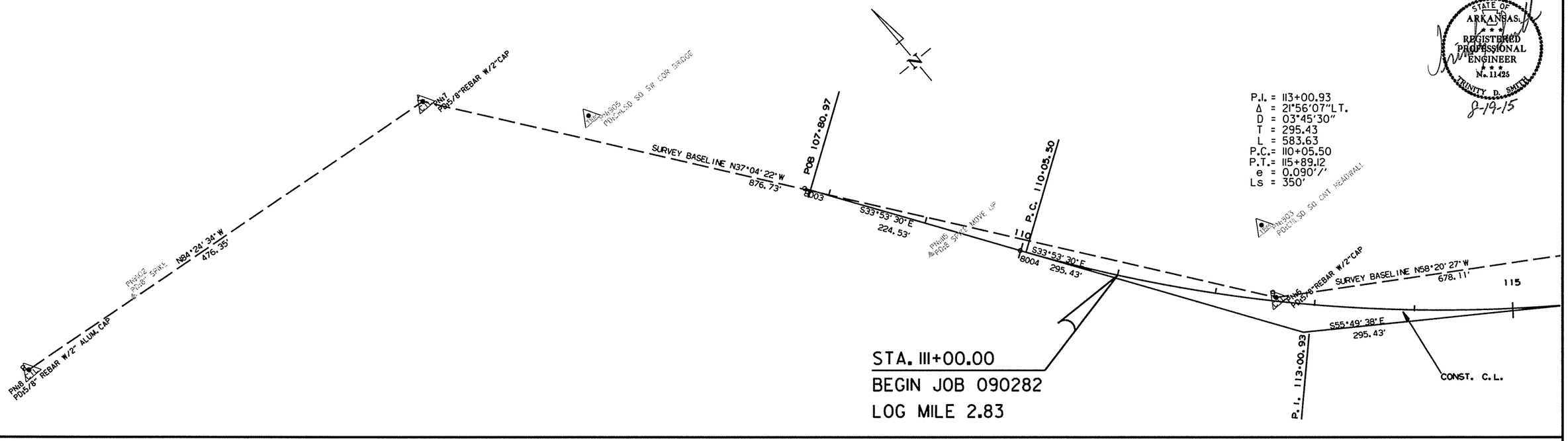
r090282.dgn 8/2/2011

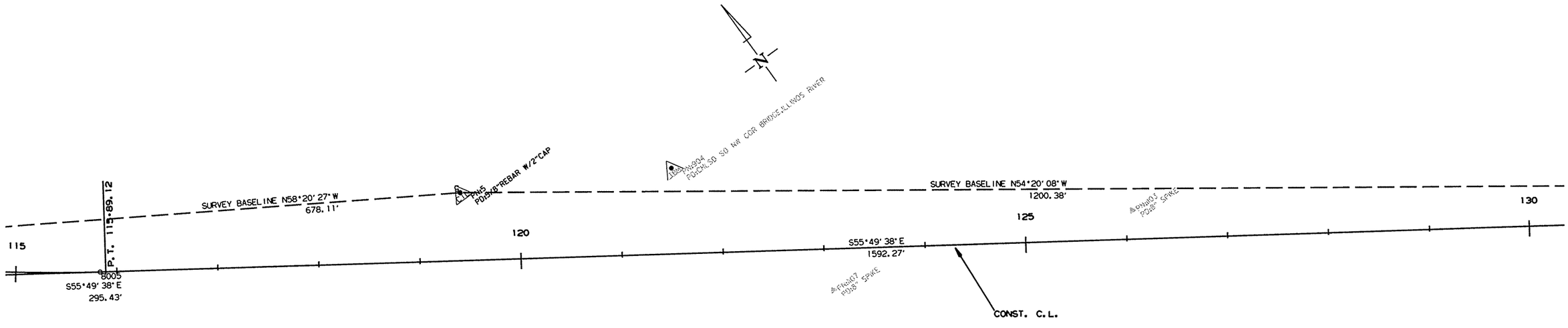
SURVEY CONTROL DETAILS

| 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. | | 090282 | 28 | 90 |

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15



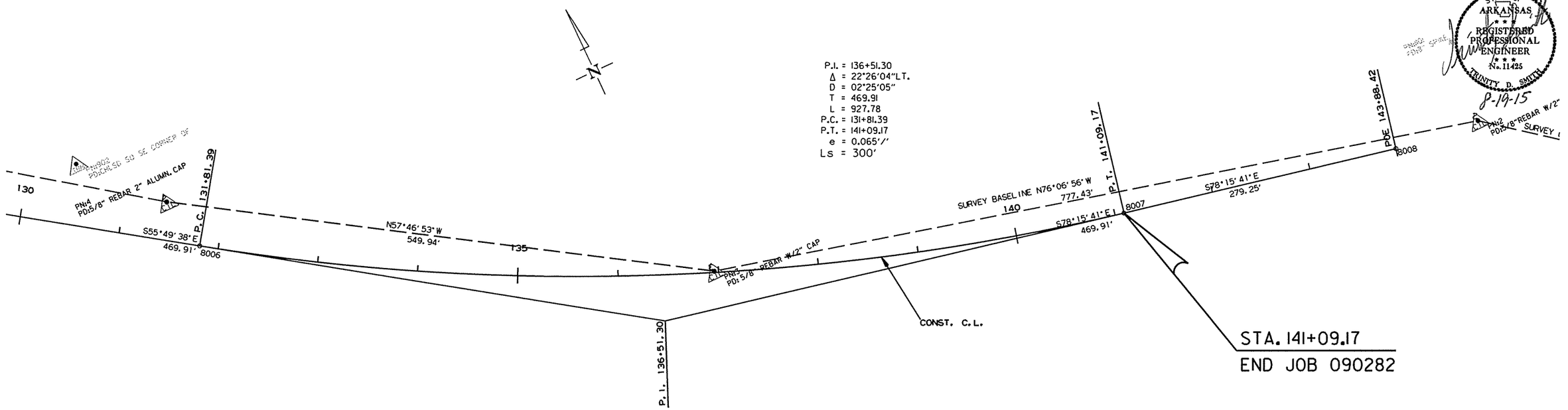



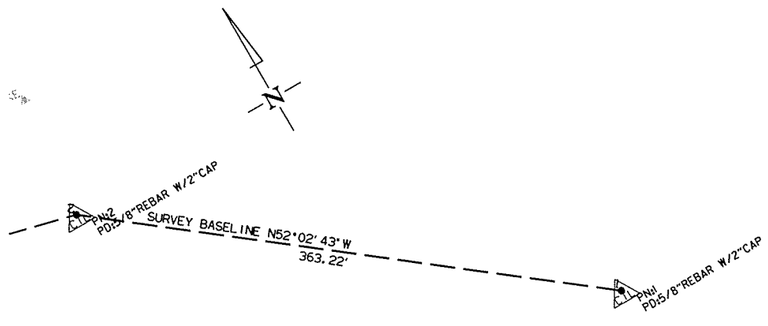

SURVEY CONTROL DETAILS

r090282.dgn 8/2/2011

| 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. | | 090282 | 29 | 90 |

(2) SURVEY CONTROL DETAILS




SURVEY CONTROL DETAILS

r090282.dgn 8/2/2011

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 30 | 90 |

## (2) PLAN & PROFILE STA. 107+80.97-STA. 115+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

P.I. = 113+00.93
Δ = 21°56'07"LT.
D = 03°45'30"
T = 295.43
L = 583.63
P.C. = 110+05.50
P.T. = 115+89.12
e = 0.090'/'
Ls = 350'

REMOVAL AND DISPOSAL OF FENCE

STA. 112+71 - STA. 113+00 RT. 51 FT.

STA. 111+60 IN PLACE
24" X 50' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE AND CONSTRUCT R.C. PIPE
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 16.3 CFS D.A. = 4.31 ACRES
24" R.C. PIPE = 85 LIN. FT.
24" FES = 2 EACH

STA. 111+00.00
BEGIN JOB 090282
LOG MILE 2.83

STA. 112+21 CONST. CO. RD.
TURNOUT ON LT. = 105 CU. YD.

STA. 112+21 CONST. CO. RD.
TURNOUT ON RT. = 745 CU. YD.

PROPOSED R/W
STA. 112+33 IN PLACE
18"x24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL
18" X 54' PIPE CULVERT
RT. SIDE DRAIN
CONST. APPR. = 10 CU. YD.

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

STA. 110+00.00 MATCH EXIST. SUPERELEVATION
STA. 110+93.00 MAX. SUPERELEVATION (0.090'/')
STA. 115+01.62 MAX. SUPERELEVATION (0.090'/')
STA. 118+51.62 END SUPERELEVATION

P.V.I. 110+00.00
ELEV. 970.63
P.V.C. 110+36.83
ELEV. 970.31
STA. 110+00.00
ELEV. 969.81
VC=300'
K = 454
e=0.25'
P.V.T. 113+36.83
ELEV. 968.70
-0.87%
-0.21%
INLET = 960.97 LT. =60
OUTLET = 960.54 RT.
P.V.I. 111+86.83
ELEV. 969.01

1010 1000 990 980 970 960 950 940 930 920

107+80.97 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00

8/18/2015

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| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 31 | 90 |

(2) PLAN & PROFILE STA. 115+00-STA. 130+00

GUARDRAIL (TYPE A)

| | | | THRIE BEAM GUARDRAIL | TERMINAL ANCHOR POST |
|---|---|---|---|---|
| STA. 118+20.77 - STA. 120+39.52 | RT. | 200 LIN. FT. | 1 EACH | 1 EACH |
| STA. 119+45.75 - STA. 120+39.52 | LT. | 75 LIN. FT. | 1 EACH | 1 EACH |
| STA. 130+24.48 - STA. 131+18.23 | RT. | 75 LIN. FT. | 1 EACH | 1 EACH |
| STA. 130+24.48 - STA. 132+43.23 | LT. | 200 LIN. FT. | 1 EACH | 1 EACH |

STA. 120+80 TO STA. 130+30 - IN PLACE
952' X 28.5' CLEAR ROADWAY BRIDGE NO. 02497 CONSISTING OF
AN 18-SPAN CONCRETE DECK WITH STEEL PILINGS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

P.I. = 113+00.93
Δ = 21°56'07"LT.
D = 03°45'30"
T = 295.43
L = 583.63
P.C. = 110+05.50
P.T. = 115+89.12
e = 0.090'/'
Ls= 350'

STA. 115+86 IN PLACE
18"x30' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18"x 38' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 65 CU YD.

STA. 119+16 IN PLACE
18"x41' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18"x 40' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. = 155 CU. YD.

STATE OF ARKANSAS
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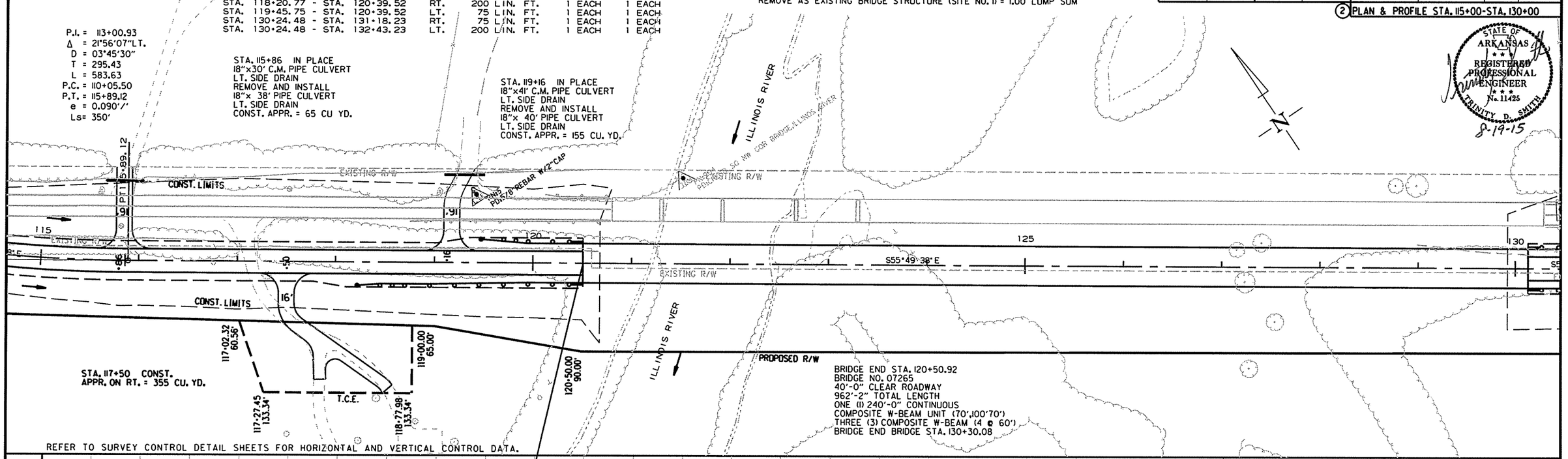
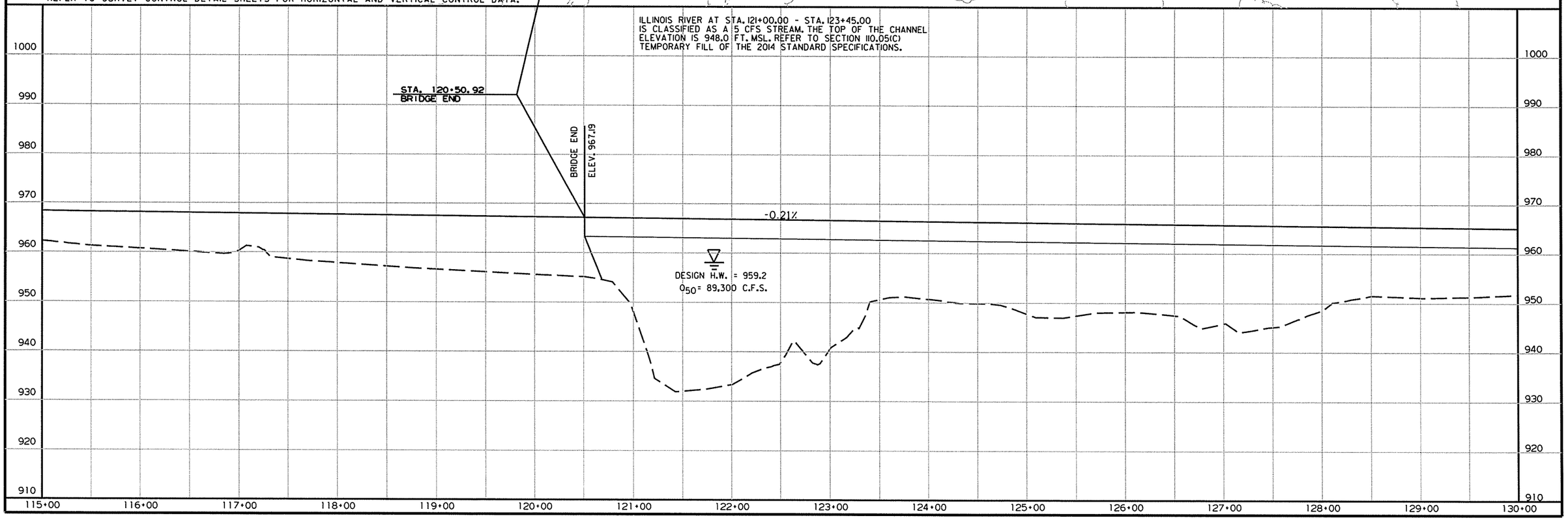



STA. 117+50 CONST.
APPR. ON RT. = 355 CU. YD.

BRIDGE END STA. 120+50.92
BRIDGE NO. 07265
40'-0" CLEAR ROADWAY
962'-2" TOTAL LENGTH
ONE (1) 240'-0" CONTINUOUS
COMPOSITE W-BEAM UNIT (70',100'70')
THREE (3) COMPOSITE W-BEAM (4 @ 60')
BRIDGE END BRIDGE STA. 130+30.08

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

ILLINOIS RIVER AT STA. 121+00.00 - STA. 123+45.00
IS CLASSIFIED AS A 5 CFS STREAM. THE TOP OF THE CHANNEL
ELEVATION IS 948.0 FT. MSL. REFER TO SECTION 110.05(C)
TEMPORARY FILL OF THE 2014 STANDARD SPECIFICATIONS.




8/18/2015

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| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 32 | 90 |

(2) PLAN & PROFILE STA. 130+00-STA. 143+88.42

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
8-19-15

FLOODPLAIN BOUNDARY
STA. 136+80 SFHA

P.I. = 136+51.30
Δ = 22°26'04" LT.
D = 02°25'05"
T = 469.91
L = 927.78
P.C. = 131+81.39
P.T. = 141+09.17
e = 0.065'/'
Ls = 300'

PROPOSED R/W
CONST. LIMITS
EXISTING R/W
EXISTING R/W
CONST. LIMITS
PROPOSED R/W

P.C. 131+81.39
PNH PDS/8" REBAR w/ ALUMN. CAP
PNH PDS/8" REBAR w/2" CAP
S55°49'38"E
S78°15'41"E
P.T. 141+09.17
POE 143+88.42
141.00.00 90.00'
142.00.00 48.33'
142.00.00 51.67'
137.00.00 66.09'
133.25.00 90.00'
136.51.30
137.00.00 85.00'
140.75.00 90.00'
100' TRANSITION
STA. 141+09.17
END JOB 090282

130
135
140
12'
8'

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

STA. 130+35.00 BEGIN SUPERELEVATION
STA. 133+35.00 MAX. SUPERELEVATION (0.065'/')
STA. 140+34.17 MAX. SUPERELEVATION (0.065'/')
STA. 142+09.17 MATCH EXIST. SUPERELEVATION (0.027'/')

BRIDGE END
STA. 130+13.08
BRIDGE END
ELEV. 965.16

P.V.C. 136+07.18
ELEV. 963.90
P.V.I. 137+57.18
ELEV. 963.59
P.V.I. 139+50.00
ELEV. 963.13
P.V.I. 141+09.17
ELEV. 962.85
P.V.T. 139+07.18
ELEV. 963.23

-0.21%
-0.24%
-0.18%

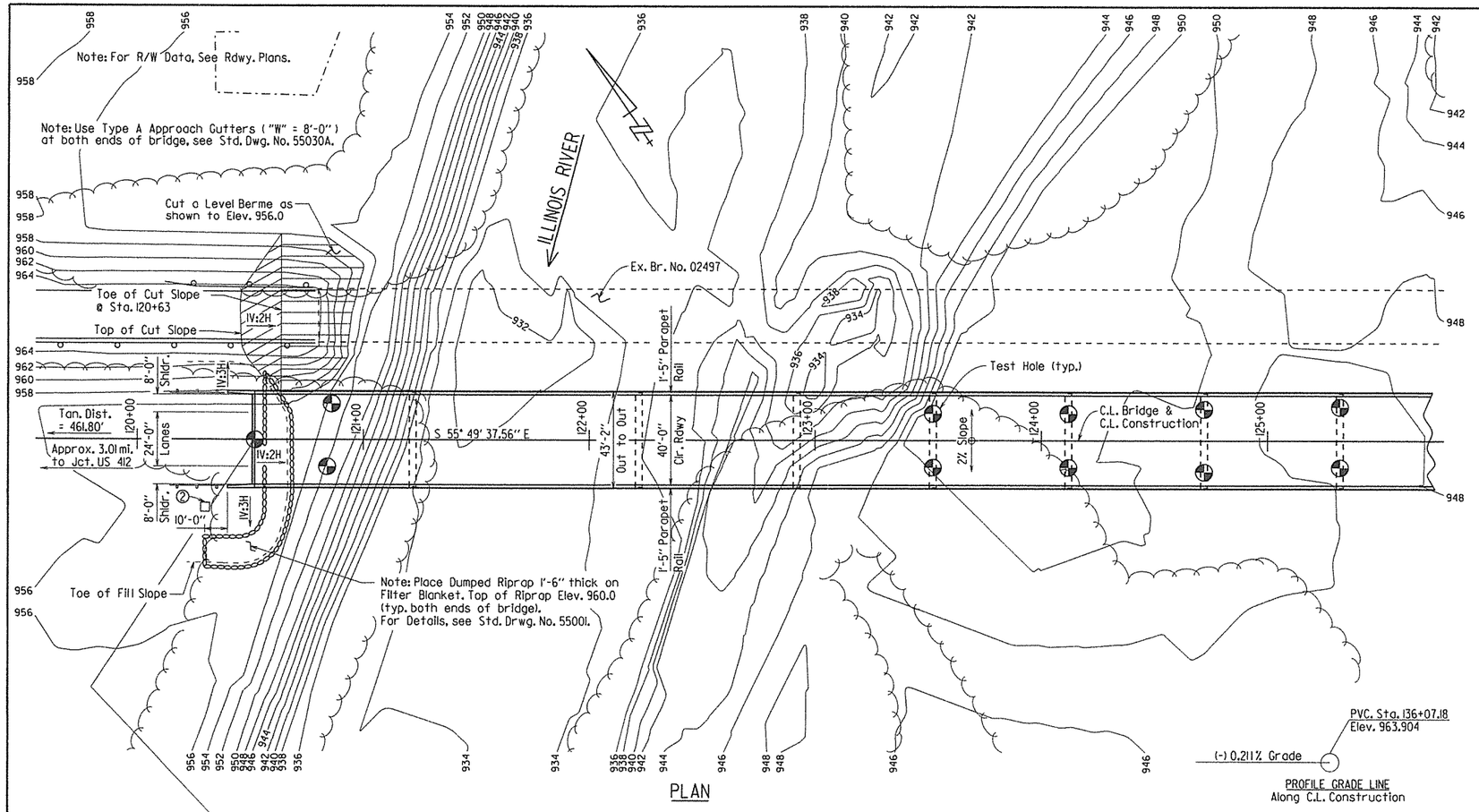
VC=300'
K= 10000
e=-0.01'

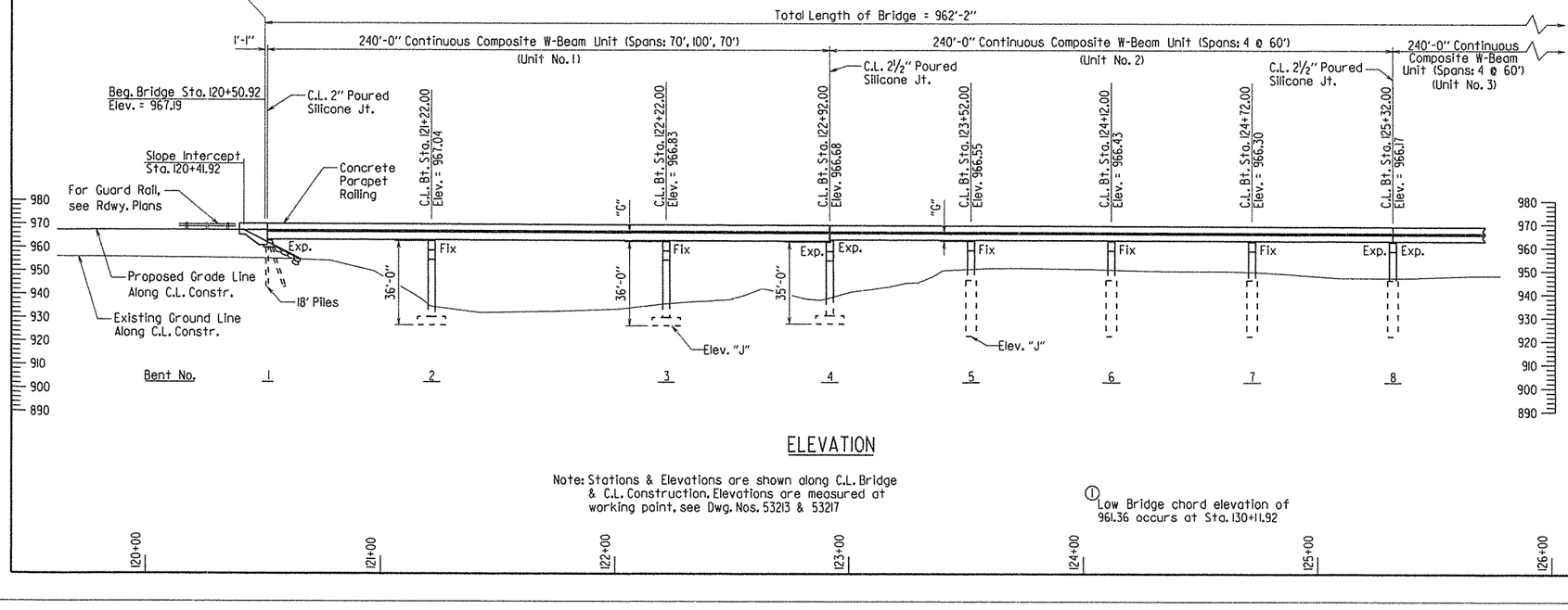
1000
990
980
970
960
950
940
930
920
910

130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 143+88.42

8/18/2015
R090282.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. | | 090282 | 33 | 90 |
| | | | | ① 07265 | | LAYOUT | | 53200 |




## ELEVATION

Note: Stations & Elevations are shown along C.L. Bridge & C.L. Construction. Elevations are measured at working point, see Dwg. Nos. 53213 & 53217

① Low Bridge chord elevation of 961.36 occurs at Sta. 130+11.92

Note: Contractor shall remove a portion of the existing approach embankment at Bent 1 as shown using 1V:2H cut slope. Approximately 510 cubic yards of excavation.

## HYDRAULIC DATA

| FLOOD DESCRIPTION | FREQUENCY | DISCHARGE | *NATURAL WATER SURFACE ELEVATION | WATER SURFACE ELEV. WITH BACKWATER |
|---|---|---|---|---|
| | YEARS | CFS | FEET | FEET |
| Design | 50 | 89,300 | 958.1 | 959.2 |
| Base | 100 | 107,600 | 959.4 | 960.6 |
| Extreme | 500 | 128,100 | 960.7 | 963.8 |
| Overtopping | 160 | 110,500 | 959.6 | 963.7 |

* Unconstricted water surface without structure or roadway approaches.

① Q100 backwater elevation for existing structure = 962.8
Proposed Low Bridge Chord Elev. = 961.4
Drainage area = 509.0 square miles.
Historical H.W. Elev. = 960.5

② Construct a 4'x4'x4" thick level Class "S" concrete pad 30' Right of Sta. 120+30 for relocation of U.S. Geological Survey (USGS) gaging equipment. This work and materials shall not be paid for directly, but shall be considered incidental to the various bid items. The Contractor shall notify the following USGS contact a minimum of 30 days prior to removal of the existing bridge:
Mr. Kevin Hubbs
Supervisory Hydrologic Technician
(479) 442-4888 Ext. 206
kmhubbs@usgs.gov

Note: New construction and removal of the existing structure may be affected by existing dumped riprap located in the floodplain. No additional compensation shall be made for this site condition.

## TABLE OF VARIABLES

| Bent No. | C.L. Deck @ C.L. Bent to Low Seat of Cap | Bottom of Ftg. or Shaft Elevation |
|---|---|---|
| | "G" | "J" |
| 2 | 4'-7 5/16" | 926.43 |
| 3 | 4'-7 5/16" | 926.22 |
| 4 Back | 4'-8 1/2" | 926.97 |
| 4 Ahead | 4'-2 9/16" | 926.97 |
| 5 | 4'-1 3/8" | 922.00 |
| 6 | 4'-1 3/8" | 922.00 |
| 7 | 4'-1 3/8" | 922.00 |
| 8 | 4'-2 9/16" | 922.00 |

STATE OF ARKANSAS
Carl E. Fueller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/18/14
CARL E. FUELLER

BRIDGE ENGINEER

## SHEET 1 OF 4

# LAYOUT OF BRIDGE OVER ILLINOIS RIVER
# ILLINOIS RIVER STR. & APPRS. (S)
# BENTON COUNTY

ROUTE 16 SEC. 1

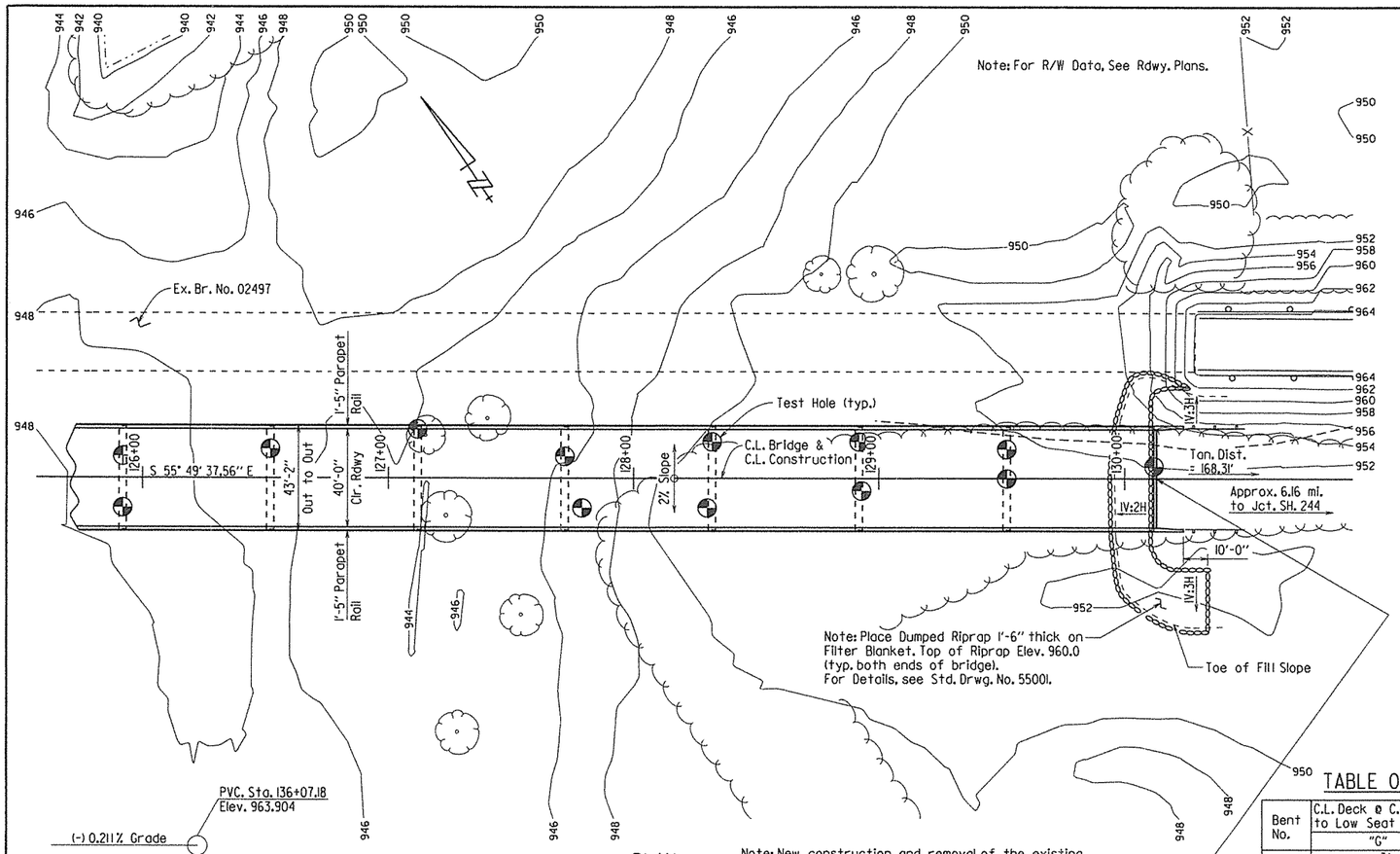
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 4-11
CHECKED BY: JHP DATE: 6-20-13
DESIGNED BY: PGT DATE: 4-11
FILENAME: b090282_11.dgn
SCALE: 1" = 30'

BRIDGE NO. 07265 DRAWING NO. 53200

| 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. | | 090282 | 34 | 90 |
| | | | | ① 07265 | | LAYOUT | | 53201 |

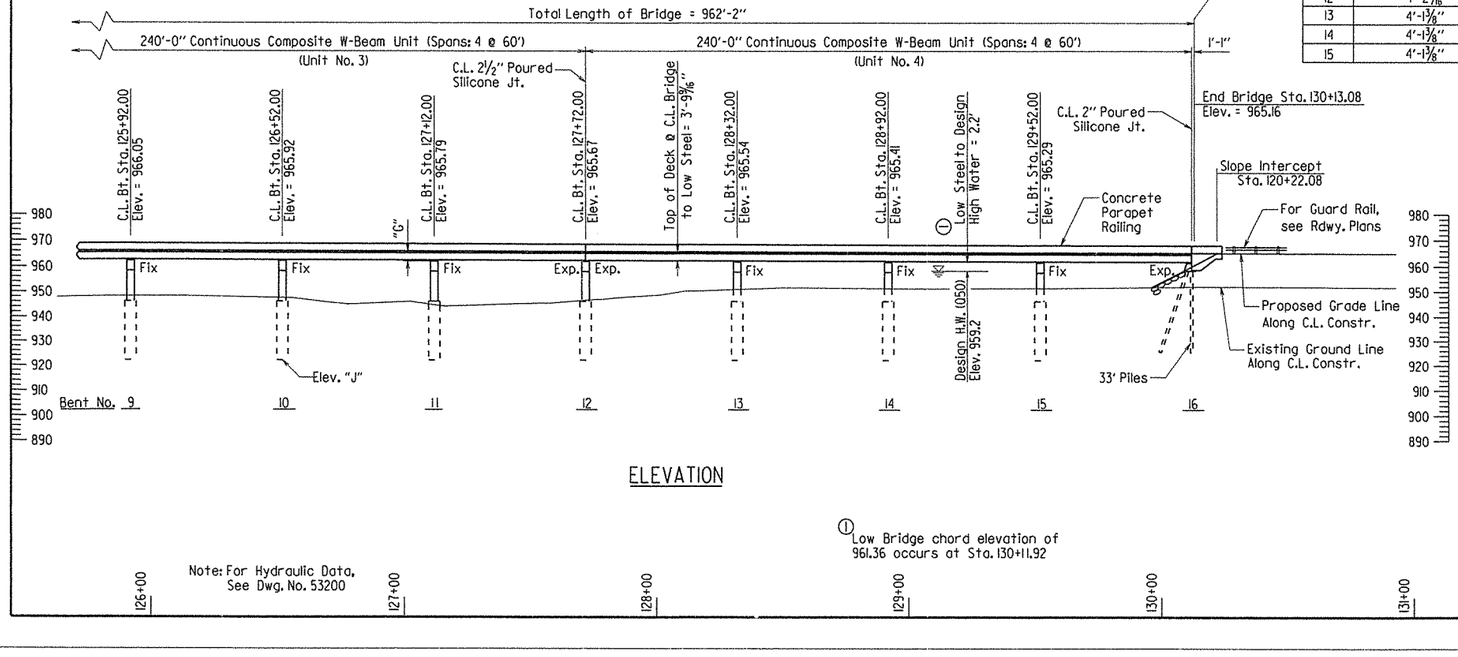



PLAN

Note: New construction and removal of the existing structure may be affected by existing dumped riprap located in the floodplain. No additional compensation shall be made for this site condition.

## TABLE OF VARIABLES

| Bent No. | C.L. Deck @ C.L. Bent to Low Seat of Cap "G" | Bottom of Ftg. or Shaft Elevation "J" |
|---|---|---|
| 9 | 4'-1 3/16" | 922.00 |
| 10 | 4'-1 3/16" | 922.00 |
| 11 | 4'-1 3/16" | 922.00 |
| 12 | 4'-2 9/16" | 922.00 |
| 13 | 4'-1 3/16" | 922.00 |
| 14 | 4'-1 3/16" | 922.00 |
| 15 | 4'-1 3/16" | 922.00 |




ELEVATION

① Low Bridge chord elevation of 961.36 occurs at Sta. 130+11.92

Note: For Hydraulic Data, See Dwg. No. 53200

## GENERAL NOTES

BENCH MARK: 5/8" REBAR 2" ALUMN. CAP, 38.14' Lt. of Sta. 131+41.88, Elevation = 963.98

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) with 2010 interim revisions.

LIVE LOADING: HL93
SEISMIC PERFORMANCE 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 M31 or M322, Type A) | fy = 60,000 psi |
| Structural Steel (AASHTO M270, Gr. 36) | Fy = 36,000 psi |
| Structural Steel (AASHTO M270, Gr. 50W) | Fy = 50,000 psi |

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL PILING: Piling in End Bents 1 and 16 shall be HP 12x53 (Grade 50) and shall be driven with an approved air,steam or diesel hammer to a minimum safe bearing capacity of 95 tons per pile and into the material designated as Hard Limestone with Chert Layers and Seams on the boring legend. Piling in end bents shall be driven to a minimum penetration of 10' below natural ground after embankment to bottom of cap is in place. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the Section 805. Actual pile lengths to be determined in the field. The Contractor shall use approved steel H-pile driving points on all piles.

PREBORING: Preboring is required for all piling in Bent 1. The depth of preboring shall be sufficient to provide the specified minimum penetration and to set pile tips into the above designated material. Quantities of preboring shown are for bidding purposes only. The actual size and depths of preboring are to be determined in the field by the Engineer. The Contractor shall be responsible for keeping prebored holes free from debris prior to backfilling which may require casings or other methods. After driving is completed, the prebored hole shall be backfilled with Class S Concrete to completely fill voids. The backfill and any required casing will not be paid for directly, but shall be considered subsidiary to the item "Preboring".

FOOTINGS: Footings shall be set a minimum of 3'-6" into material designated as Hard Limestone with Chert Layers and Seams on the boring legend, and shall have a minimum cover above the top of the footing of 2'-0". 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 surface of rock. Excavations shall be backfilled and compacted to the level of the existing ground in accordance with subsection 801.08.

DRILLED SHAFTS: Drilled shafts in Bents 5 thru 15 shall be constructed in accordance with Special Provision Job No. 090282 "Drilled Shaft Foundations". Drilled shafts shall be socketed a minimum of 8' into material designated as Hard Limestone with Chert Layers and Seams on the boring legend. No adjustment to plan tip elevations shall be made without prior approval from the Engineer. Temporary casing may be required.

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.

CLASS 2 PROTECTIVE SURFACE TREATMENT: Class 2 Protective Surface Treatment shall be applied to the roadway surface and to the face and top of the concrete parapet rail.

| DETAIL DRAWINGS: | DRAWING NO. |
|---|---|
| End Bents | 53204-53205, 53210-53211 |
| Int. Bents | 53206-53209 |
| Elastomeric Bearings | 53212 |
| 240'-0" Cont. Comp. W-Beam Unit 1 | 53213-53216 |
| 240'-0" Cont. Comp. W-Beam Units 2, 3 and 4 | 53217-53220 |
| Common Details of W-Beam Units | 53221-53222 |
| Steel Piling | 55020 |
| Type A Approach Gutters | 55030A |

EXISTING BRIDGE: The existing 18-span bridge, no. 02497, (L.M. 3.01) is 28.5' wide and 952' long. The superstructure consists of a concrete deck on steel W-beams. The substructure consists of columns on spread footings in the channel and steel H-Pile bents in the floodplain.

REMOVAL AND SALVAGE: After the new bridge is open to traffic, existing bridge No. 02497 shall be removed in accordance with Section 205. All material from the existing bridge shall become the property of the Contractor except for all steel beams between bents 8 and 11 (3 spans) on the existing bridge, which shall remain property of the State.

The Contractor shall provide temporary storage and on site loading onto AHTD equipment for removal of salvaged items from the site. Payment for this work shall be considered incidental to "Removal of Existing Bridge Structure".

MAINTENANCE OF TRAFFIC: See Roadway Plans.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/18/14
CARL J. FUSELIER

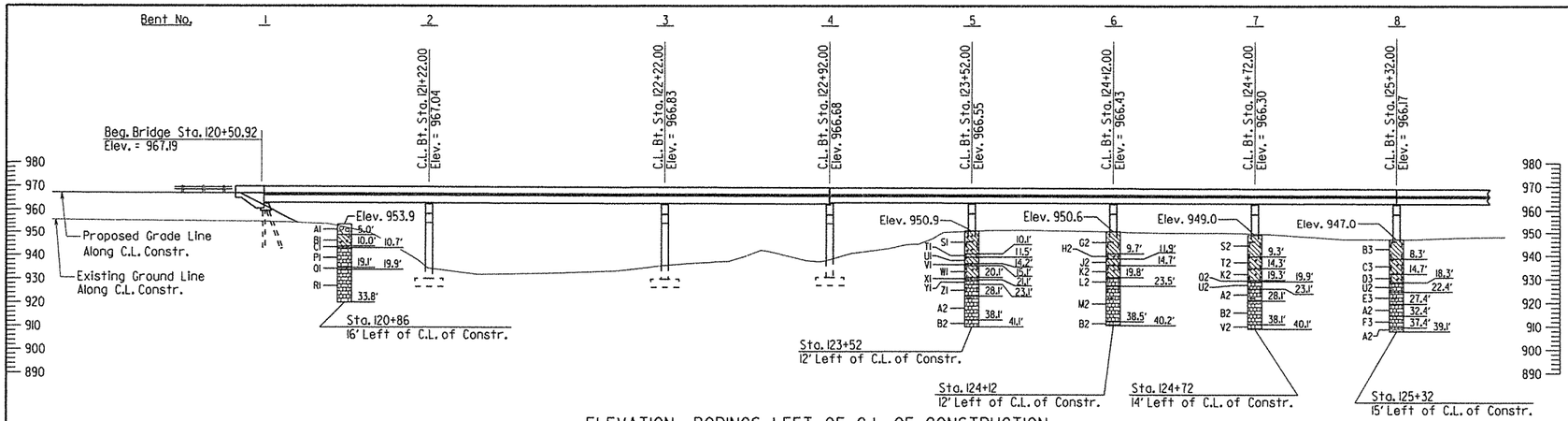
BRIDGE ENGINEER

SHEET 2 OF 4

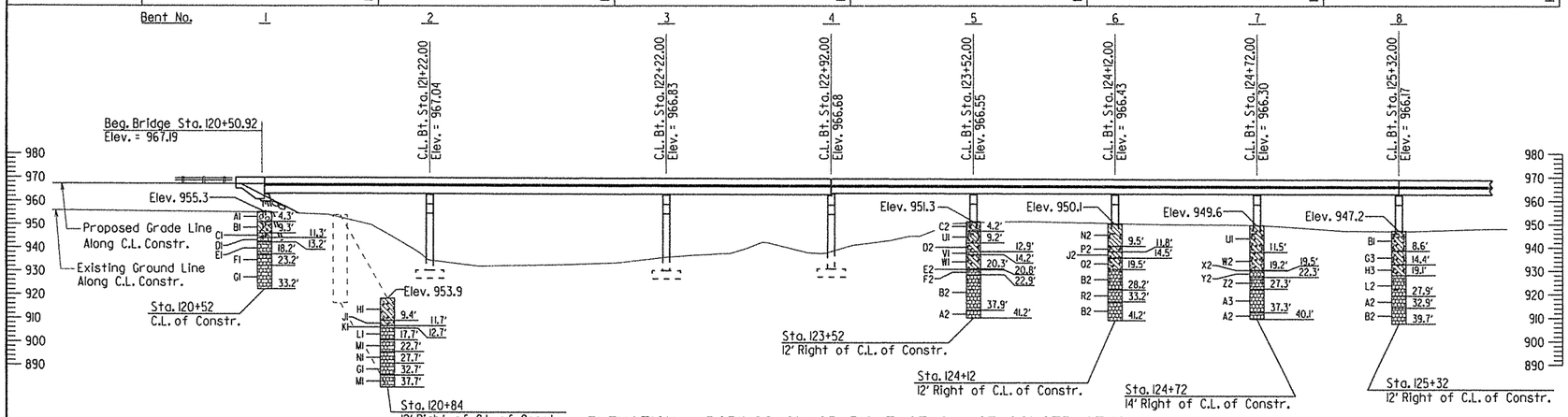
# LAYOUT OF BRIDGE OVER ILLINOIS RIVER
# ILLINOIS RIVER STR. & APPRS. (S)
# BENTON COUNTY
ROUTE 16 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 4-11 FILENAME: b090282_11.dgn
CHECKED BY: JNP DATE: 6-20-13 SCALE: 1" = 30'
DESIGNED BY: PGT DATE: 4-11
BRIDGE NO. 07265 DRAWING NO. 53201

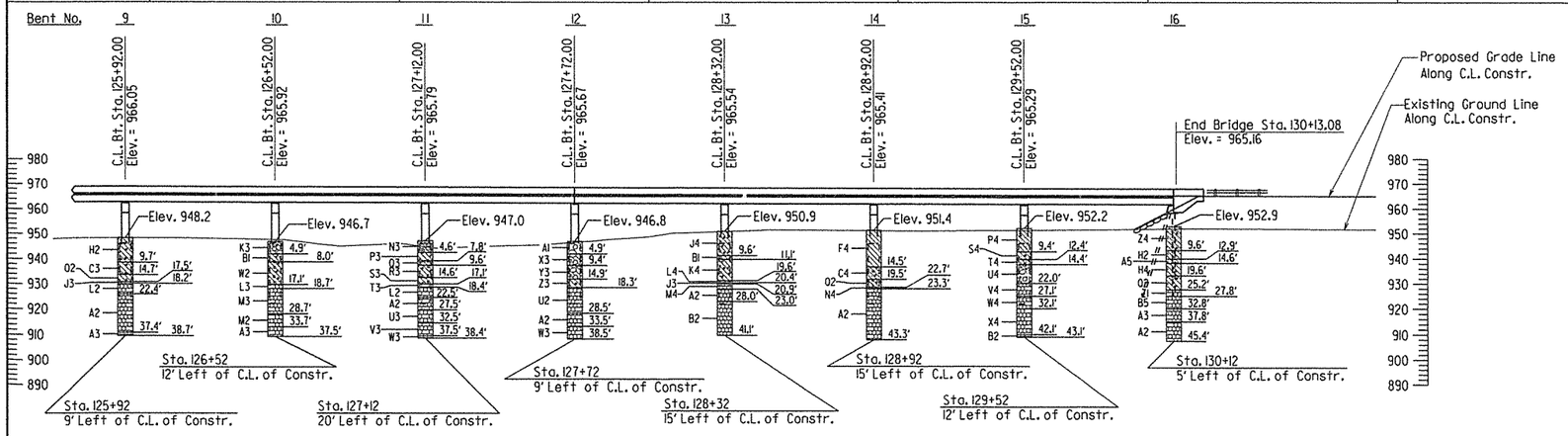
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 35 | 90 |
| | | | | (1) 07265 | | LAYOUT | | 53202 |




ELEVATION- BORINGS LEFT OF C.L. OF CONSTRUCTION




ELEVATION - BORINGS ON OR RIGHT OF C.L. OF CONSTRUCTION




ELEVATION- BORINGS LEFT OF C.L. OF CONSTRUCTION

## "N" VALUES

Sta. 120+52 - C.L. of Constr.
4.8- 5.8, N=13
9.8- 10.7, N=73(11")
11.3- 11.3, N=25(.01")

Sta. 120+84 - 12' Right of C.L. of Constr.
4.9- 5.9, N=31
9.9- 10.9, N=51
11.7- 11.7, N=60(.01")

Sta. 120+86 - 16' Left of C.L. of Constr.
5.5- 6.5, N=16
10.0- 10.3, N=60(4")
10.7- 10.7, N=15(.01")

Sta. 123+52 - 12' Left of C.L. of Constr.
5.6- 6.6, N=7
10.6- 11.6, N=12
15.6- 16.6, N=13
20.1- 20.3, N=21(2")

Sta. 123+52 - 12' Right of C.L. of Constr.
4.7- 5.7, N=13
9.7- 10.7, N=14
14.7- 15.7, N=12
19.7- 20.3, N=18(7")

Sta. 124+12 - 12' Left of C.L. of Constr.
5.2- 6.2, N=8
10.2- 11.2, N=16
15.2- 16.2, N=8

Sta. 124+72 - 14' Left of C.L. of Constr.
4.8- 5.8, N=2
9.8- 10.8, N=18
14.8- 15.8, N=9
19.8- 19.9, N=12(1")

Sta. 124+72 - 14' Right of C.L. of Constr.
4.7- 5.7, N=2
9.7- 10.7, N=17
14.7- 15.7, N=11
19.2- 19.5, N=24(4")

Sta. 125+32 - 15' Left of C.L. of Constr.
5.2- 6.2, N=3
10.2- 11.2, N=10
15.2- 15.9, N=33(8")

Sta. 125+32 - 12' Right of C.L. of Constr.
4.9- 5.9, N=13
9.9- 10.9, N=4
14.9- 15.1, N=25(3")

Sta. 125+92 - 9' Left of C.L. of Constr.
5.2- 6.2, N=21
10.2- 11.2, N=9
15.2- 16.2, N=12

Sta. 126+52 - 12' Left of C.L. of Constr.
5.4- 6.4, N=16
10.4- 11.4, N=15
15.4- 16.4, N=11

Sta. 127+12 - 20' Left of C.L. of Constr.
5.1- 6.1, N=30
10.1- 11.1, N=4
15.1- 16.1, N=3

Sta. 127+72 - 9' Left of C.L. of Constr.
5.4- 6.4, N=6
10.4- 11.4, N=18
15.4- 16.4, N=18

Sta. 128+32 - 15' Left of C.L. of Constr.
5.1- 6.1, N=7
10.1- 11.1, N=14
15.1- 16.1, N=23
20.1- 20.4, N=20(3")

Sta. 128+92 - 15' Left of C.L. of Constr.
5.0- 6.0, N=15
10.0- 11.0, N=12
15.0- 16.0, N=17
20.0- 21.0, N=15

Sta. 129+52 - 12' Left of C.L. of Constr.
4.9- 5.9, N=16
9.9- 10.9, N=27
14.9- 15.9, N=13
19.9- 20.9, N=17

Sta. 129+52 - C.L. of Constr.
4.8- 5.8, N=15
9.8- 10.8, N=20
14.8- 15.8, N=13
19.8- 20.8, N=13

Sta. 130+12 - 5' Left of C.L. of Constr.
5.1- 6.1, N=12
10.1- 11.1, N=30
15.1- 16.1, N=4
20.1- 21.1, N=22
25.0- 25.1, N=13(1")

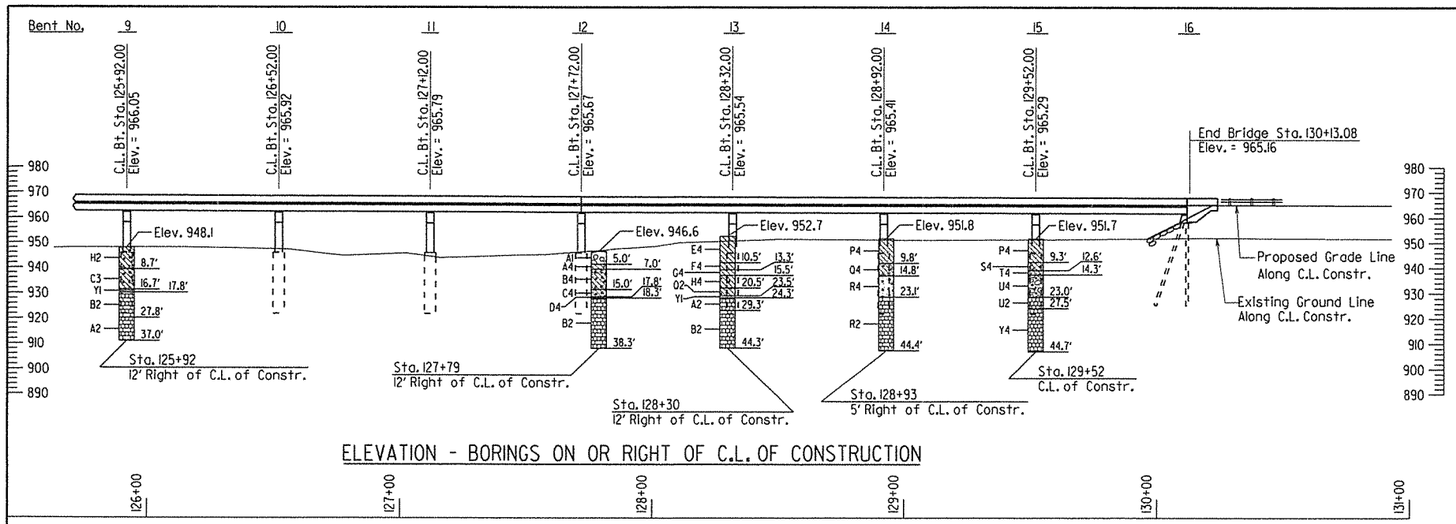
STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
5/18/14
CARL J. FUSSELIER
BRIDGE ENGINEER

## SHEET 3 OF 4
## LAYOUT OF BRIDGE OVER ILLINOIS RIVER
## ILLINOIS RIVER STR. & APPRS. (S)
## BENTON COUNTY

ROUTE 16 SEC. 1
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 4-11 FILENAME: b090282_ll.dgn
CHECKED BY: JNP DATE: 6-20-13 SCALE: 1" = 30'
DESIGNED BY: PGT DATE: 4-11
BRIDGE NO. 07265 DRAWING NO. 53202

| 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. | | 090282 | 36 | 90 |
| | | | | ① 07265 | | LAYOUT | | 53203 |




ELEVATION - BORINGS ON OR RIGHT OF C.L. OF CONSTRUCTION

## "N" VALUES

Sta. 125+92 - 12' Right of C.L. of Constr.
5.0- 6.0, N=19
10.0- 11.0, N=8
15.0- 16.0, N=9

Sta. 127+79 - 12' Right of C.L. of Constr.
5.5- 6.5, N=5
10.5- 11.5, N=4
15.5- 16.5, N=14

Sta. 128+30 - 12' Right of C.L. of Constr.
6.0- 7.0, N=18
11.0- 12.0, N=12
16.0- 17.0, N=4
21.0- 22.0, N=26

Sta. 128+93 - 5' Right of C.L. of Constr.
5.3- 6.3, N=14
10.3- 11.3, N=34
15.3- 16.3, N=13
20.3- 21.3, N=11

Sta. 129+52 - C.L. of Constr.
4.8- 5.8, N=15
9.8- 10.8, N=20
14.8- 15.8, N=13
19.8- 20.8, N=13

## BORING LEGEND

A1-Cobbles and Boulders
B1-Moist, Medium Dense, White Gravel (Chert Fragments) with Brown Clay
C1-Moist, Very Dense, White Gravel (Chert Fragments) with Brown Clay
D1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
E1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip and Fractured Layers
F1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
G1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
H1-Moist, Dense, White Gravel (Chert Fragments) with Brown Sand and Clay
J1-Moist, Hard, Brown Clay with Gravel (Chert Fragments)
K1-LIMESTONE WITH CHERT LAYERS - Gray, Thin Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
L1-LIMESTONE WITH CHERT LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
M1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
N1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Hard, with Slight to Moderate Dip
P1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip with Fractured Layers
Q1-Soil-filled Cavity (19.1' to 19.8')
R1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight to Moderate Dip
S1-Moist, Medium Stiff, Brown Clay with Gravel (Limestone and Chert Fragments)
T1-Moist, Stiff, Brown Clay
U1-Moist, Stiff, Brown Clay with Gravel (Chert Fragments)
V1-Wet, Stiff, Brown Clay with Gravel (Chert Fragments)
W1-Wet, Medium Dense, White Gravel (Chert Fragments) with Clay
X1-Wet, Very Dense, White Gravel (Chert Fragments) with Clay
Y1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thin Bedded, Slightly Weathered, Hard, with Slight Dip
Z1-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
A2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
B2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
C2-Moist, Stiff, Brown Clay with Gravel (Chert Fragments), Cobbles and Boulders
D2-Moist, Stiff, Brown Clay with Gravel (Chert Fragments)
E2-LIMESTONE - Gray and Brown, Hard
F2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and Highly Fractured Seams
G2-Moist, Medium Stiff, Brown Clay
H2-Moist, Very Stiff, Brown Clay with Gravel (Chert Fragments)
J2-Wet, Very Stiff, Brown Clay with Gravel (Chert Fragments)
K2-Wet, Loose, White Gravel (Chert Fragments) with Brown Clay
L2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
M2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
N2-Moist, Medium Stiff, Brown Clay with Trace of Organic Matter
P2-Moist, Very Stiff, Brown Clay with Gravel (Chert Fragments)
Q2-Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay
R2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
S2-Moist, Soft, Brown Clay
T2-Moist to Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay
U2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
V2-LIMESTONE WITH CHERT SEAMS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
W2-Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay
X2-Wet, Dense, White Gravel (Chert Fragments) with Brown and Gray Clay
Y2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and Vertically Fractured Seams
Z2-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip, Vertically Fractured Seams and a Gravel Layer
A3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
B3-Moist, Soft, Brown Clay with some Gravel (Chert Fragments)
C3-Wet, Loose, White Gravel (Chert Fragments) with Brown Clay
D3-Wet, Dense, White and Gray Gravel (Chert and Limestone Fragments) with Brown Clay
E3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip and some Fractured and Vertically Fractured Layers
F3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip and some Vertically Fractured Layers
G3-Wet, Very Loose, White Gravel (Chert Fragments) with Brown Clay
H3-Wet, Dense, White Gravel (Chert and Limestone Fragments) with Brown Clay
J3-LIMESTONE - Gray, Hard
K3-Moist, Medium Dense, White Gravel (Chert Fragments) with Brown Clay, Cobbles and Boulders
L3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thin Bedded, Slightly Weathered, Hard, with Slight Dip
M3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
N3-Moist, Medium Dense, White Gravel (Chert and Limestone Fragments) with Brown Clay, Cobbles and Boulders
P3-Moist, Medium Dense, White Gravel (Chert and Limestone Fragments) with Brown Clay
Q3-Wet, Medium Dense, White Gravel (Chert and Limestone Fragments) with Brown Clay
R3-Wet, Very Loose, White Gravel (Chert Fragments) with Brown Clay and some Sand
S3-Wet, Very Loose, White Gravel (Chert and Limestone Fragments) with Brown Clay and some Sand
T3-LIMESTONE - Gray, Soft
U3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip and some Vertically Fractured Layers
V3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip with Vertically Fractured Layers
W3-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
X3-Moist, Loose, White Gravel (Chert Fragments) with Brown Clay, Cobbles and some Sand
Y3-Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay, Cobbles and some Sand
Z3-Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay and some Sand
A4-Moist to Wet, Loose, White Gravel (Chert Fragments) with Brown Clay and Sand
B4-Wet, Very Loose, White Gravel (Chert Fragments) with Brown Clay and Sand
C4-Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay and Sand
D4-LIMESTONE WITH CHERT LAYERS - Gray, Thin Bedded, Slightly Weathered, Hard, with Slight Dip
E4-Moist, Very Stiff, Brown Clay with some Sand
F4-Moist, Stiff, Brown Clay with some Sand
G4-Wet, Stiff, Brown Clay with some Sand
H4-Wet, Very Loose, White Gravel (Chert Fragments) with Brown Clay
J4-Moist, Medium Stiff, Brown Clay with Gravel (Chert Fragments)
K4-Wet, Medium Dense, White Gravel (Chert Fragments) with Brown Clay and some Sand
L4-Wet, Dense, White Gravel (Chert Fragments) with Brown Clay
M4-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip with Fractured Layers
N4-LIMESTONE WITH CHERT SEAMS - Gray, Thin Bedded, Slightly Weathered, Hard, with Slight Dip
P4-Moist, Stiff, Brown Clay with Sand
Q4-Dry, Hard, Brown and Gray Clay with Sand and Gravel (Chert Fragments)
R4-Moist to Wet, Medium Dense, White Gravel (Chert Fragments) with Sand and some Clay
S4-Moist, Very Stiff, Brown Clay with Sand and Gravel (Chert Fragments)
T4-Wet, Very Stiff, Brown Clay with Sand and Gravel (Chert Fragments)
U4-Wet, Medium Dense, Brown Sand, White Gravel (Chert Fragments) and Cobbles
V4-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Medium Bedded, Slightly Weathered, Hard, with Slight Dip
W4-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
X4-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Very Thick Bedded, Slightly Weathered, Hard, with Slight Dip
Y4-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip
Z4-Moist, Stiff, Brown Clay with Sand and Gravel (Chert Fragments)
A5-Wet, Very Stiff, Brown Clay with Gravel (Chert Fragments)
B5-LIMESTONE WITH CHERT SEAMS AND LAYERS - Gray, Thick Bedded, Slightly Weathered, Hard, with Slight Dip

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 4/8/14

BRIDGE ENGINEER

SHEET 4 OF 4

# LAYOUT OF BRIDGE OVER ILLINOIS RIVER
# ILLINOIS RIVER STR. & APPRS. (S)
# BENTON COUNTY

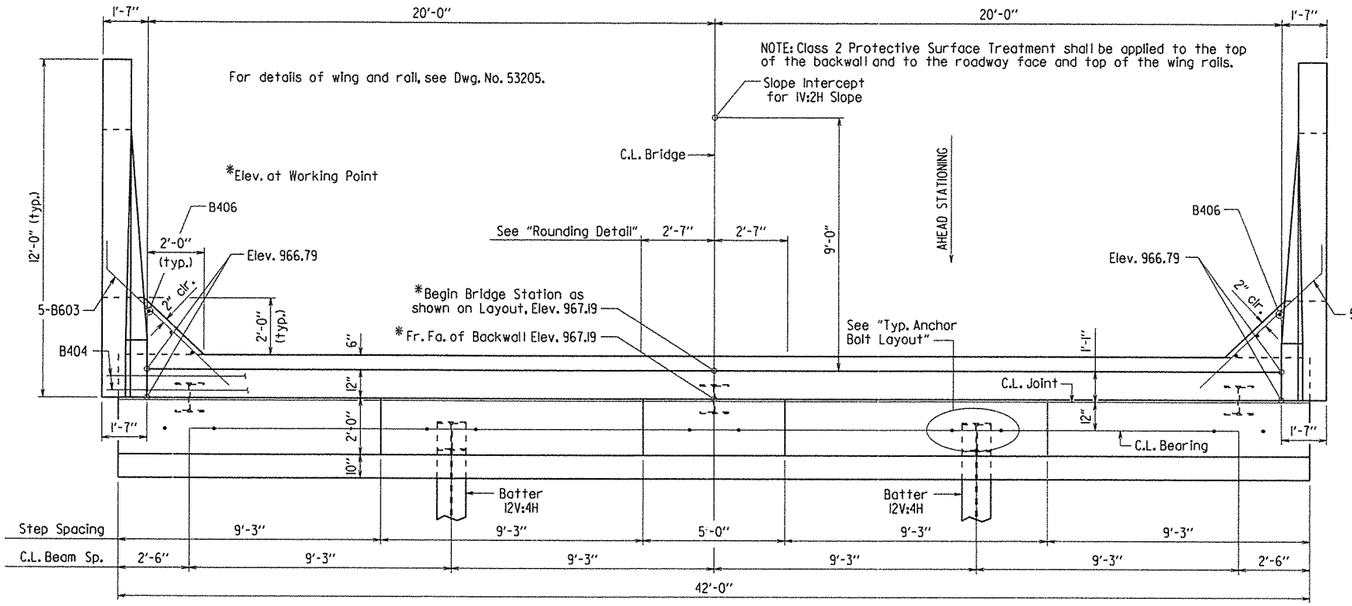
ROUTE 16 SEC. 1

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: PGT DATE: 4-11 FILENAME: b090282.11.dgn
CHECKED BY: JNP DATE: 6-20-13 SCALE: 1" = 30'
DESIGNED BY: PGT DATE: 4-11

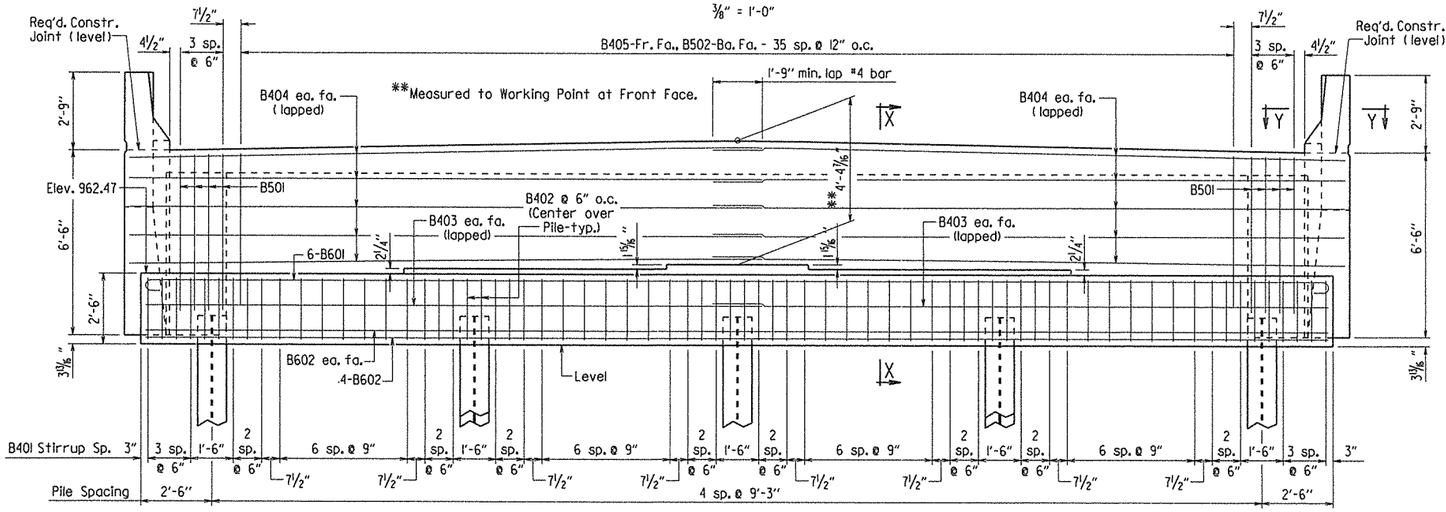
BRIDGE NO. 07265 DRAWING NO. 53203

| 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. | | 090282 | 37 | 90 |
| | | | | (1) 07265 | | END BENTS | | 53204 |




PLAN

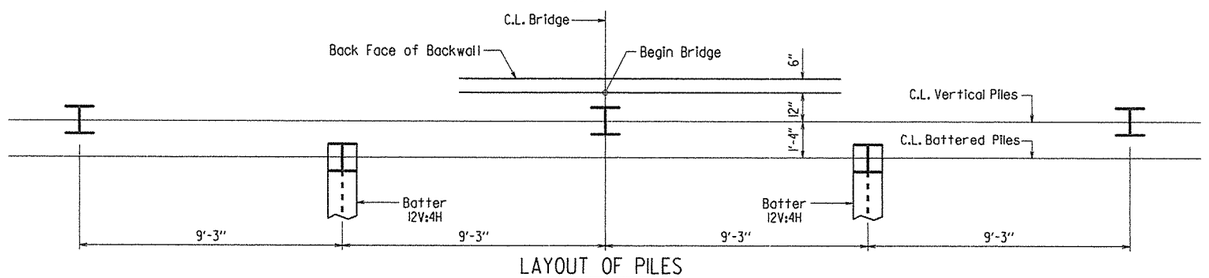
3/8" = 1'-0"




ELEVATION

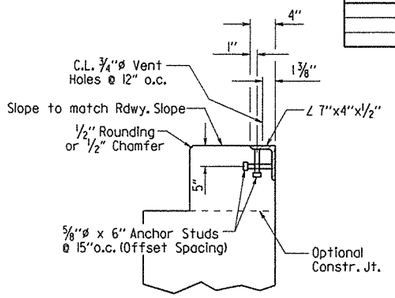
Looking Back

3/8" = 1'-0"




LAYOUT OF PILES

3/8" = 1'-0"

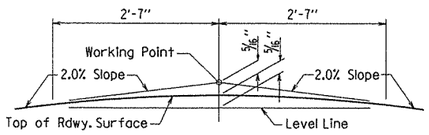



NOTE: For additional joint details, see Dwg. No. 53222.

DETAIL Z

No Scale

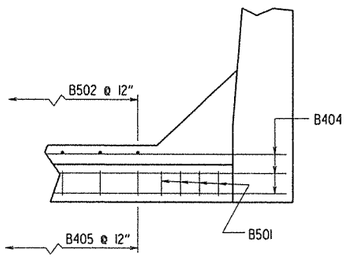
NOTE: Concrete shall be hand packed under the joint armor in the backwall.




NOTE: Working Point matches Theoretical Roadway Grade.

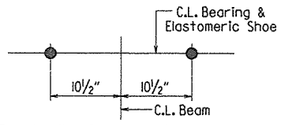
ROUNDING DETAIL

No Scale




SECTION Y-Y

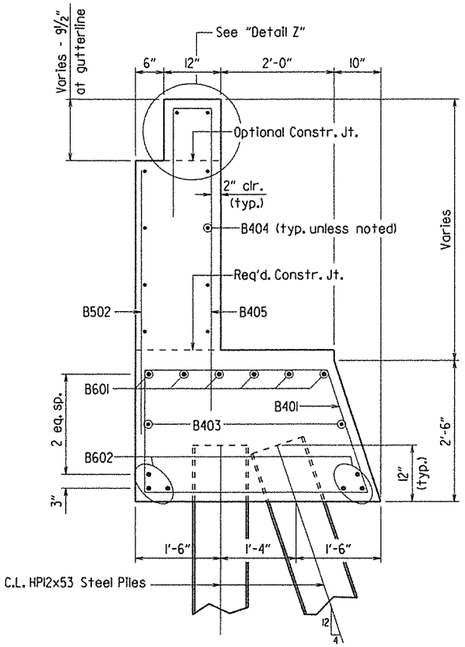
½" = 1'-0"




For details of elastomeric bearings, see Dwg. No. 53212.

TYP. ANCHOR BOLT LAYOUT

No Scale




SECTION X-X

¾" = 1'-0"

NOTE: The Backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 53222, "Expansion Device Installation at End Bents" for additional information.

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 piling shall be Grade 50.

Structural steel in end bents shall be M270, Gr. 50W and 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.

For additional information, see Layout.

STATE OF ARKANSAS
Carl L. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
6/24/13
CARL L. FUSELIER

BRIDGE ENGINEER

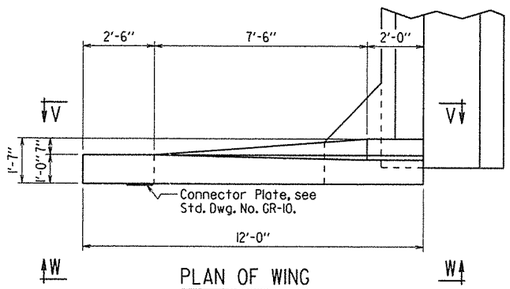
# SHEET 1 OF 2
# DETAILS OF BENT 1
# ILLINOIS RIVER
ROUTE SEC.

## ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 2-14-12 FILENAME: b090282_b1.dgn
CHECKED BY: PGT DATE: 8-12 SCALE: as noted
DESIGNED BY: ACP DATE: 5-11

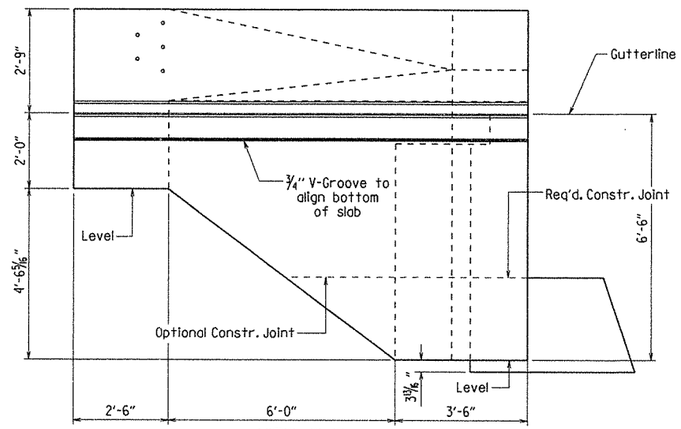
BRIDGE NO. 07265 DRAWING NO. 53204

| 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. | | 090282 | 38 | 40 |
| | | | | 07265 | | END BENTS | | 53205 |



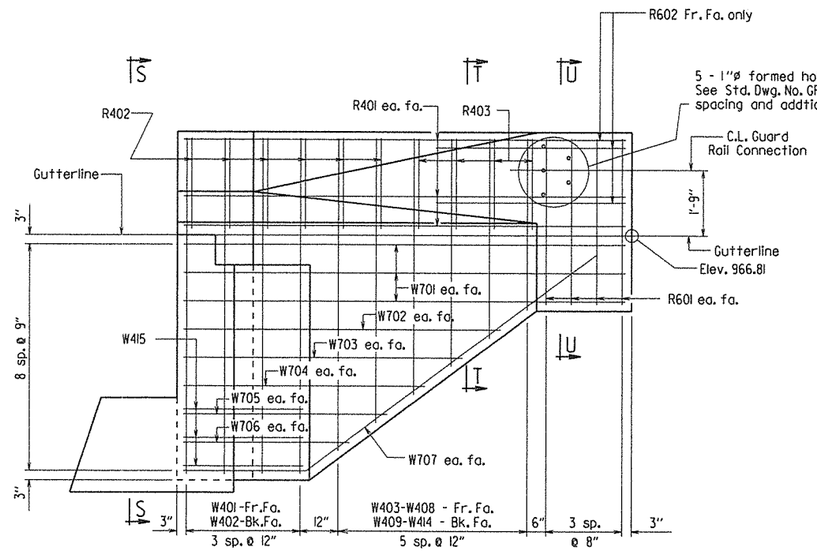

PLAN OF WING

3/8" = 1'-0"



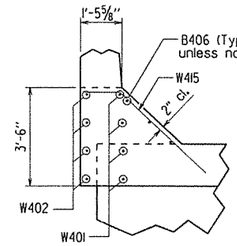

VIEW W-W

1/2" = 1'-0"




VIEW V-V

1/2" = 1'-0"



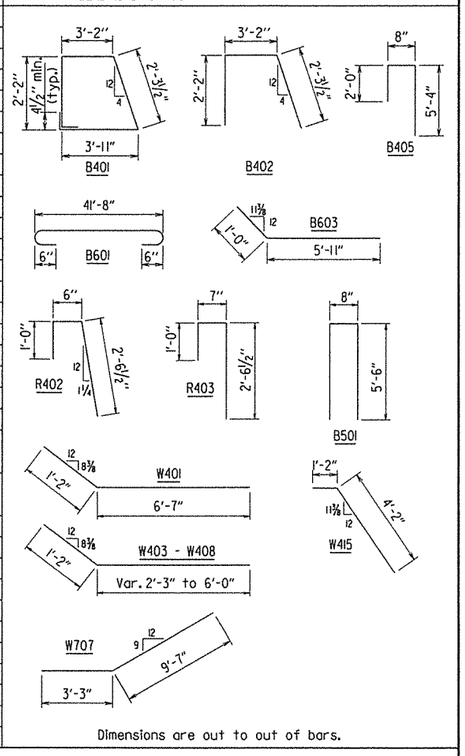

SECTION R-R

3/8" = 1'-0"

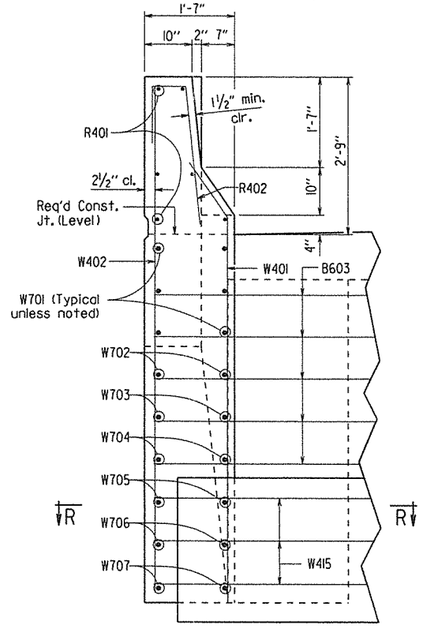
## BAR LIST

| MARK | NO. REQ'D. | LENGTH | P.D. |
|---|---|---|---|
| B401 | 60 | 11'-11" | 2" |
| B402 | 10 | 7'-6" | 2" |
| B403 | 4 | 21'-9" | Str. |
| B404 | 20 | 22'-4" | Str. |
| B405 | 36 | 7'-10" | 2" |
| B406 | 6 | 5'-4" | Str. |
| B501 | 8 | 11'-6" | 2 1/2" |
| B502 | 36 | 4'-10" | Str. |
| B601 | 6 | 43'-0" | 4 1/2" |
| B602 | 6 | 41'-8" | Str. |
| B603 | 10 | 6'-11" | 4 1/2" |
| | | | |
| R401 | 12 | 11'-8" | Str. |
| R402 | 12 | 3'-11" | 2" |
| R403 | 8 | 4'-0" | 2" |
| R601 | 16 | 4'-5" | Str. |
| R602 | 6 | 5'-0" | Str. |
| | | | |
| W401 | 8 | 7'-9" | 2" |
| W402 | 8 | 8'-11" | Str. |
| W403-W408 | 2 each | Var. 3'-5" to 7'-2" | 2" |
| W409-W414 | 2 each | Var. 4'-7" to 8'-4" | Str. |
| W415 | 6 | 5'-4" | 2" |
| | | | |
| W701 | 12 | 11'-8" | Str. |
| W702 | 4 | 8'-5" | Str. |
| W703 | 4 | 7'-5" | Str. |
| W704 | 4 | 6'-5" | Str. |
| W705 | 4 | 5'-5" | Str. |
| W706 | 4 | 4'-5" | Str. |
| W707 | 4 | 12'-10" | 5 1/4" |
| | | | |
| | | | |

BENDING DIAGRAMS

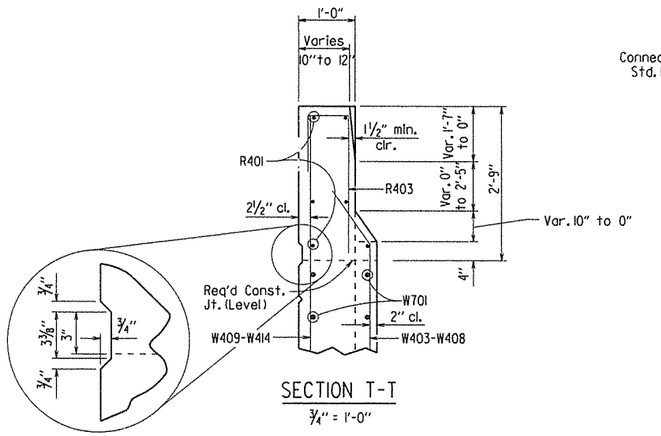



Dimensions are out to out of bars.



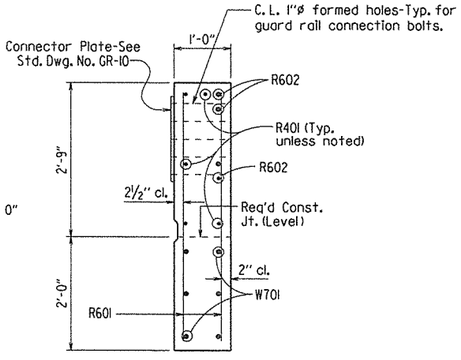

VIEW S-S

3/4" = 1'-0"



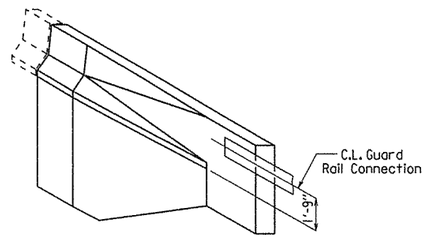

SECTION T-T

3/4" = 1'-0"




SECTION U-U

3/4" = 1'-0"




THREE DIMENSIONAL VIEW OF RAIL

No Scale

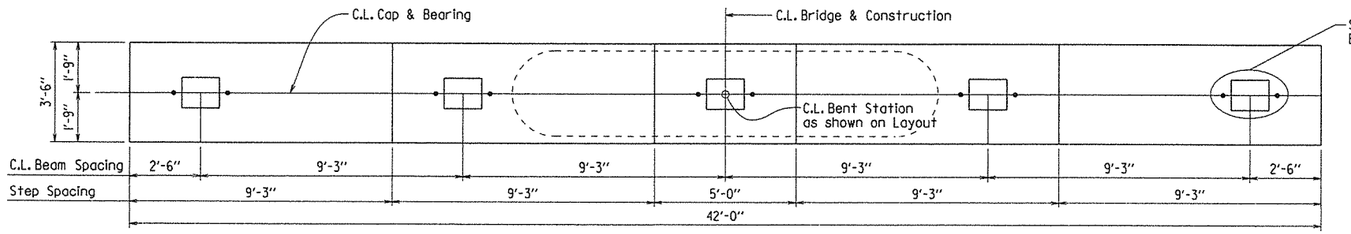
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL T. FUSELIER
BRIDGE ENGINEER

# SHEET 2 OF 2
# DETAILS OF BENT 1
# ILLINOIS RIVER
ROUTE SEC.

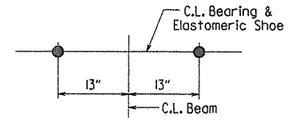
## ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KWY DATE: 2-14-12 FILENAME: b090282_bl.dgn
CHECKED BY: PGT DATE: 8-12 SCALE: as noted
DESIGNED BY: ACP DATE: 5-11
BRIDGE NO. 07265 DRAWING NO. 53205

| 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. | | 090282 | 39 | 90 |
| | | | | ① 07265 | | INT. BENTS | | 53206 |




PLAN
3/8" = 1'-0"




For details of elastomeric bearings, see Dwg. No. 53212.

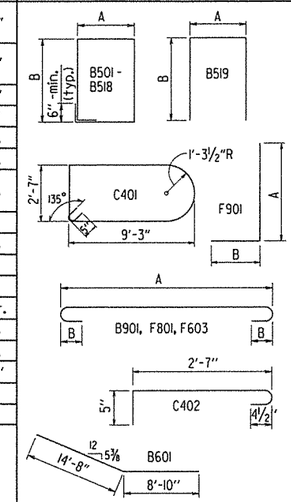
## TYP. ANCHOR BOLT LAYOUT

N.T.S.

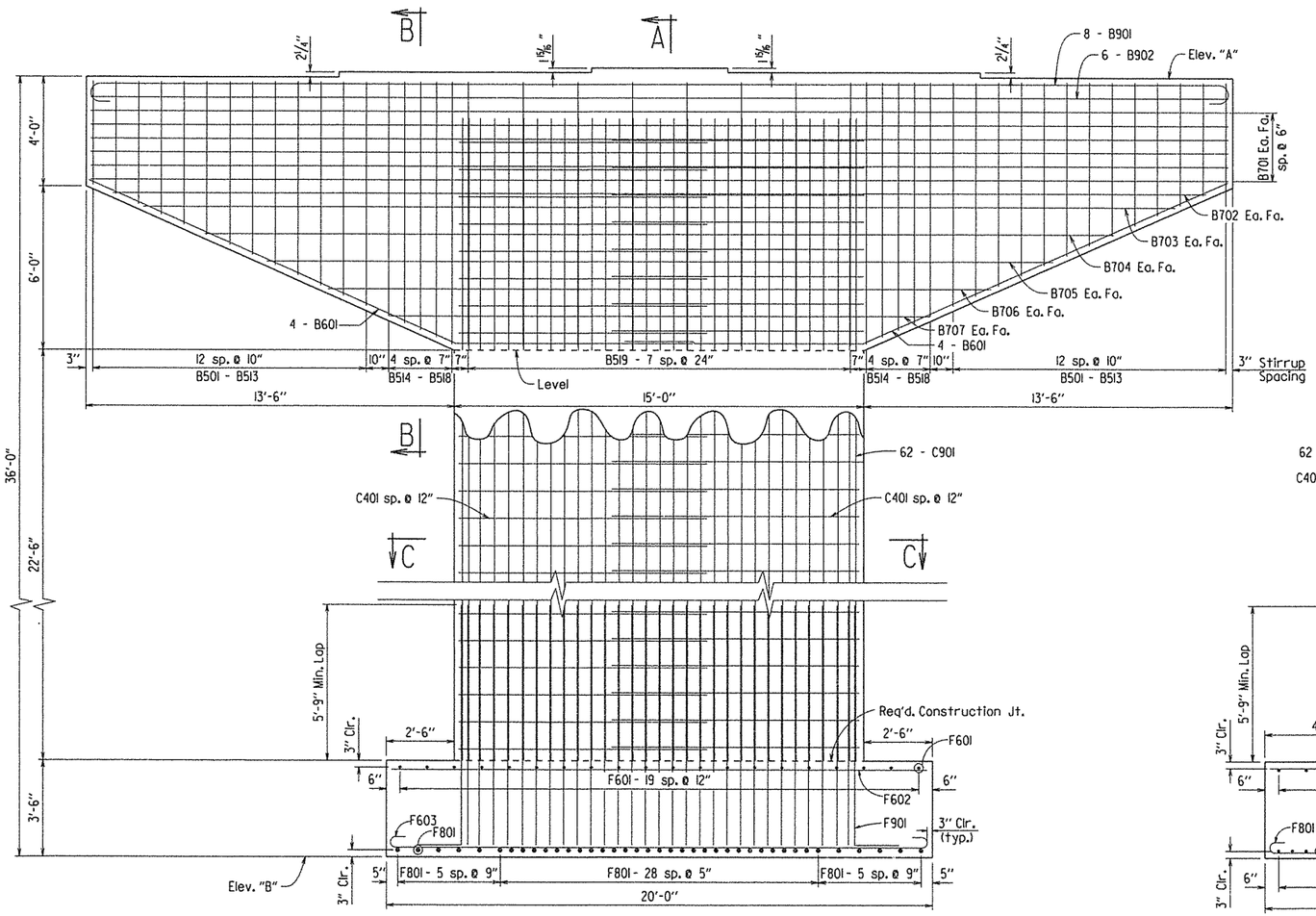
## BAR LIST PER BENT

| Mark | No. Req'd. | Length | A | B | Pin Dia. |
|---|---|---|---|---|---|
| B501 - B513 | 2 ea. | 14'-4" to 23'-2" | 3'-2" | 3'-9"to 8'-2" | 2½" |
| B514 - B518 | 2 ea. | 24'-0" to 26'-0" | 3'-2" | 8'-7" to 9'-7" | 2½" |
| B519 | 8 | 22'-3" | 3'-2" | 9'-8" | 2½" |
| B601 | 8 | 23'-6" | | | 4½" |
| B701 | 12 | 41'-8" | | | Str. |
| B702 | 2 | 40'-0" | | | Str. |
| B703 - B707 | 2 ea. | 37'-9" to 19'-9" | | | Str. |
| B901 | 8 | 44'-2" | 41'-8" | 10" | 9" |
| B902 | 6 | 41'-8" | | | Str. |
| C401 | 62 | 23'-2" | | | 3" |
| C402 | 62 | 3'-5" | | | 3" |
| C901 | 62 | 31'-0" | | | Str. |
| F601 | 20 | 11'-8" | | | Str. |
| F602 | 12 | 19'-8" | | | Str. |
| F603 | 23 | 21'-0" | 19'-8" | 6" | 4½" |
| F801 | 39 | 13'-6" | 11-8" | 8" | 6" |
| F901 | 62 | 12'-3" | 10'-10" | 1'-8" | 9" |

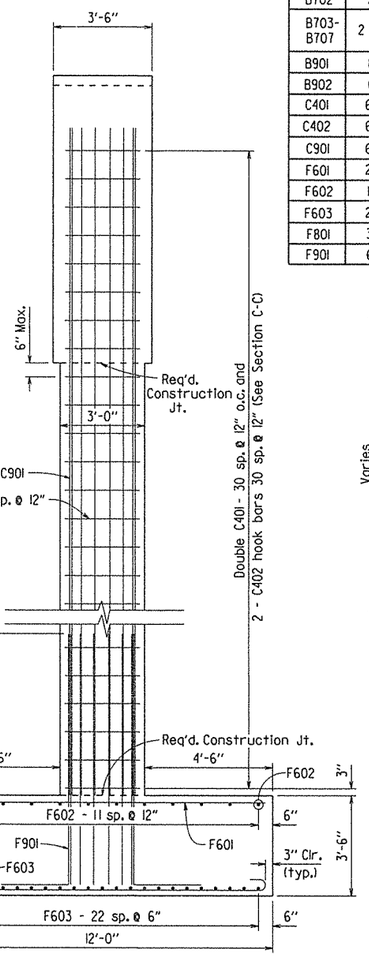
Bending Diagrams



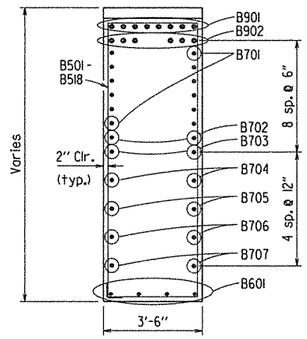

Dimensions are out to out of bars.



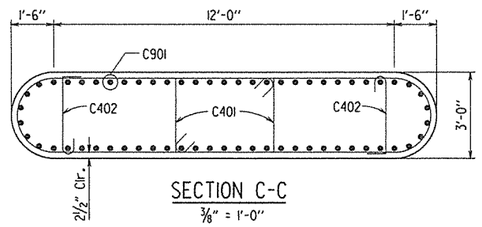

ELEVATION
3/8" = 1'-0"




SECTION A-A
3/8" = 1'-0"




SECTION B-B
3/8" = 1'-0"




SECTION C-C
3/8" = 1'-0"

**GENERAL NOTES**

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

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

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

## TABLE OF VARIABLES

| Bent | Elev. "A" | Elev. "B" |
|---|---|---|
| 2 | 962.43 | 926.43 |
| 3 | 962.22 | 926.22 |

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
BRIDGE ENGINEER

# DETAILS OF BENTS 2 AND 3 ILLINOIS RIVER

ROUTE SEC.

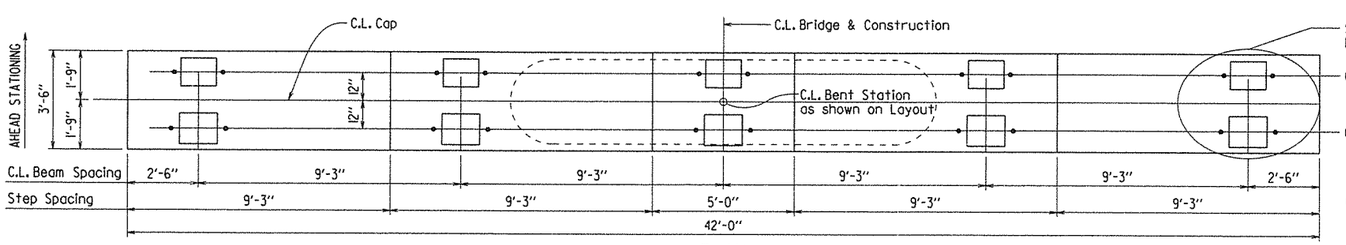
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 08-14-12 FILENAME: b090282_b2.dgn
CHECKED BY: PGT DATE: 8-12 SCALE: As Shown
DESIGNED BY: PGT DATE: 5-11

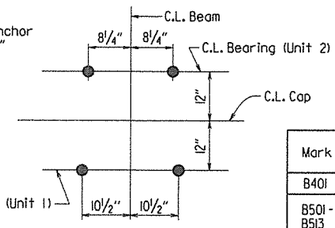
BRIDGE NO. 07265 DRAWING NO. 53206

| 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. | | 090282 | 40 | 90 |
| | | | | (1) 07265 | | INT. BENTS | | 53207 |




PLAN

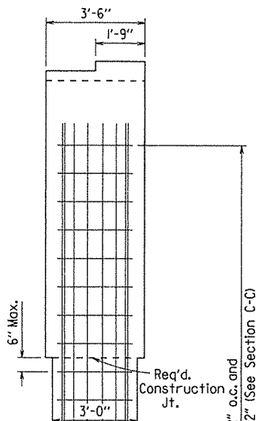
3/8" = 1'-0"




For details of elastomeric bearings, see Dwg. No. 53212.

## TYP. ANCHOR BOLT LAYOUT

N.T.S.



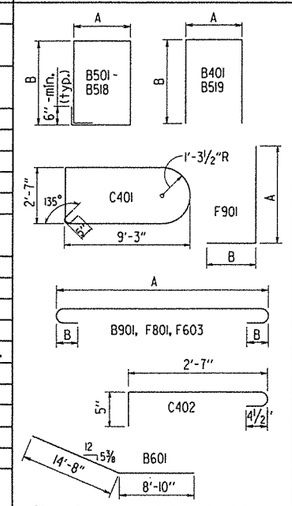

SECTION A-A

3/8" = 1'-0"

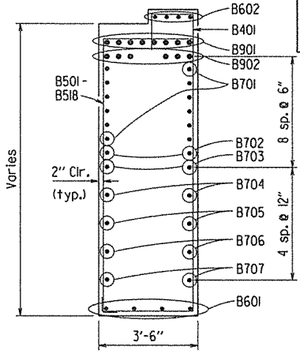
## BAR LIST

| Mark | No. Req'd. | Length | A | B | Pin Dia. |
|---|---|---|---|---|---|
| B401 | 42 | 3'-9" | 1'-5" | 1'-3" | 2" |
| B501 - B513 | 2 ea. | 14'-4" to 23'-2" | 3'-2" | 3'-9"to 8'-2" | 2½" |
| B514 - B518 | 2 ea. | 24'-0" to 26'-0" | 3'-2" | 8'-7" to 9'-7" | 2½" |
| B519 | 8 | 22'-3" | 3'-2" | 9'-8" | 2½" |
| B601 | 8 | 23'-6" | | | 4½" |
| B602 | 4 | 41'-8" | | | Str. |
| B701 | 12 | 41'-8" | | | Str. |
| B702 | 2 | 40'-0" | | | Str. |
| B703 - B707 | 2 ea. | 37'-9" to 19'-9" | | | Str. |
| B901 | 8 | 44'-2" | 41'-8" | 10" | 9" |
| B902 | 6 | 41'-8" | | | Str. |
| C401 | 60 | 23'-2" | | | 3" |
| C402 | 60 | 3'-5" | | | 3" |
| C901 | 62 | 30'-0" | | | Str. |
| F601 | 20 | 11'-8" | | | Str. |
| F602 | 12 | 19'-8" | | | Str. |
| F603 | 23 | 21'-0" | 19'-8" | 6" | 4½" |
| F801 | 39 | 13'-6" | 11-8" | 8" | 6" |
| F901 | 62 | 12'-3" | 10'-10" | 1'-8" | 9" |

Bending Diagrams

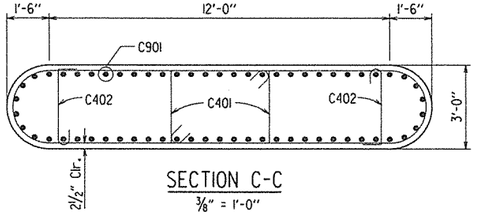



Dimensions are out to out of bars.



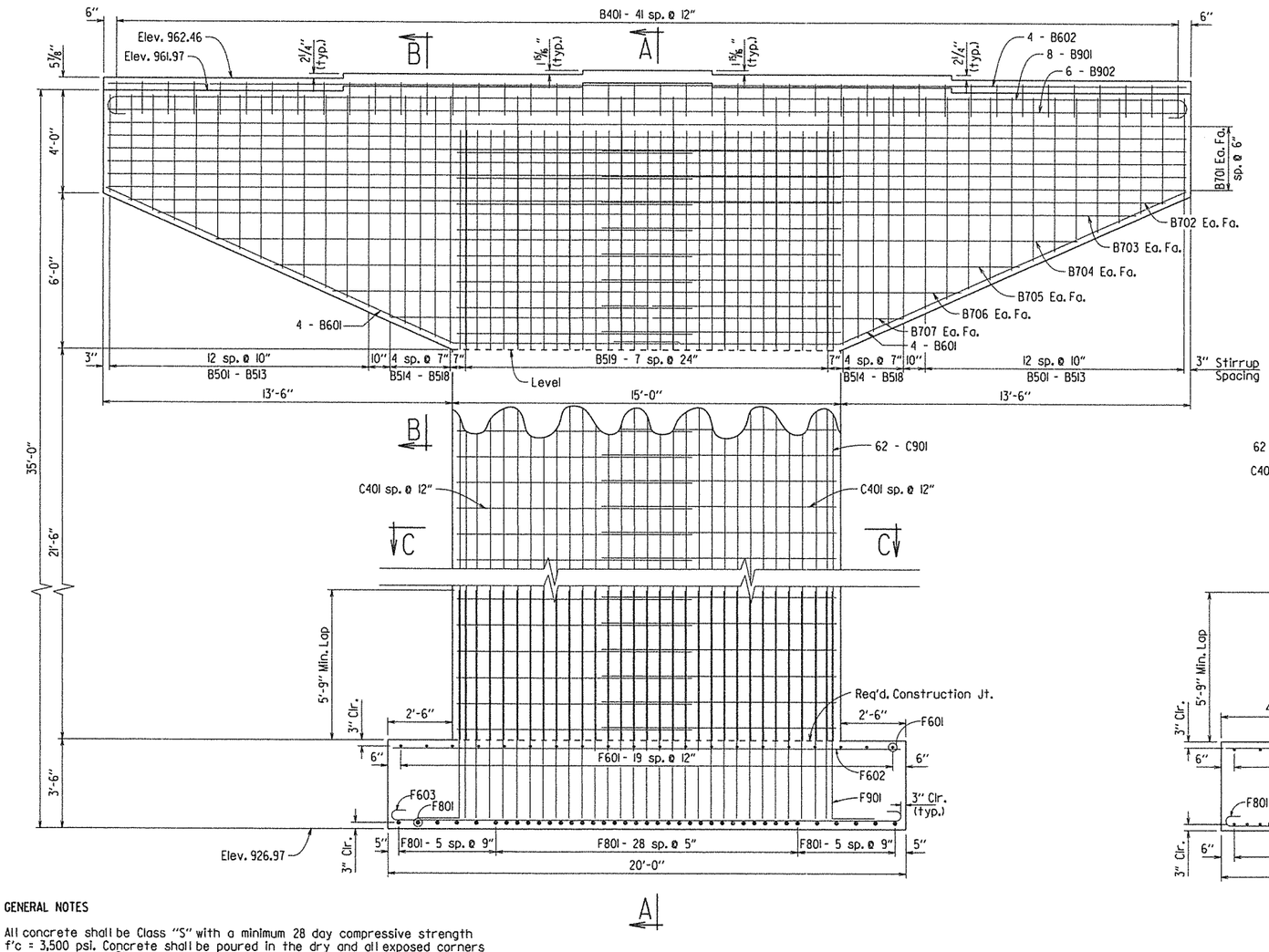

SECTION B-B

3/8" = 1'-0"




SECTION C-C

3/8" = 1'-0"




ELEVATION

LOOKING AHEAD

3/8" = 1'-0"

### GENERAL NOTES

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

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

Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

For additional information, see Layout.

STATE OF ARKANSAS
Carl T. Fussell
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL T. FUSSELL

BRIDGE ENGINEER

# DETAILS OF BENT 4
# ILLINOIS RIVER

ROUTE SEC.

## ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

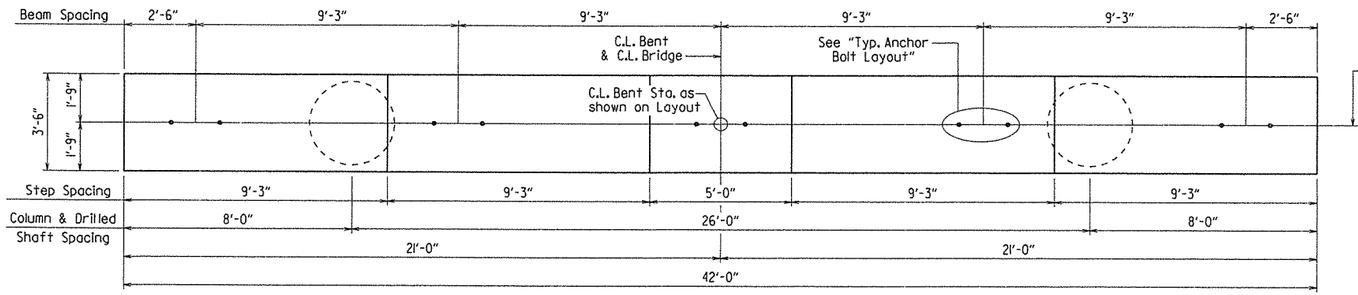
DRAWN BY: ACP DATE: 08-14-12 FILENAME: b090282_b2.dgn

CHECKED BY: PGT DATE: 8-12 SCALE: As Shown

DESIGNED BY: PGT DATE: 5-11

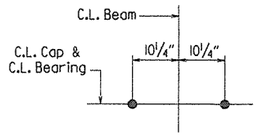
BRIDGE NO. 07265 DRAWING NO. 53207

| 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. | | 090282 | 41 | 90 |
| | | | | ① 07265 | | INT. BENTS | | 53208 |




PLAN

3/8" = 1'-0"




NOTE: For Details of Elastomeric Bearings, see Dwg. No. 53212.

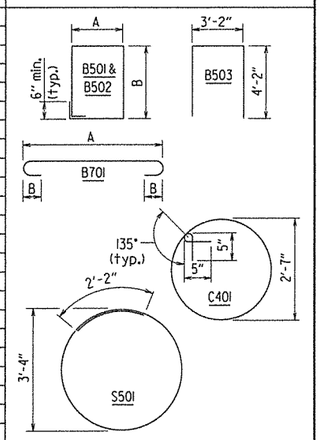
## TYPICAL ANCHOR BOLT LAYOUT

No Scale

## BAR LIST - PER BENT

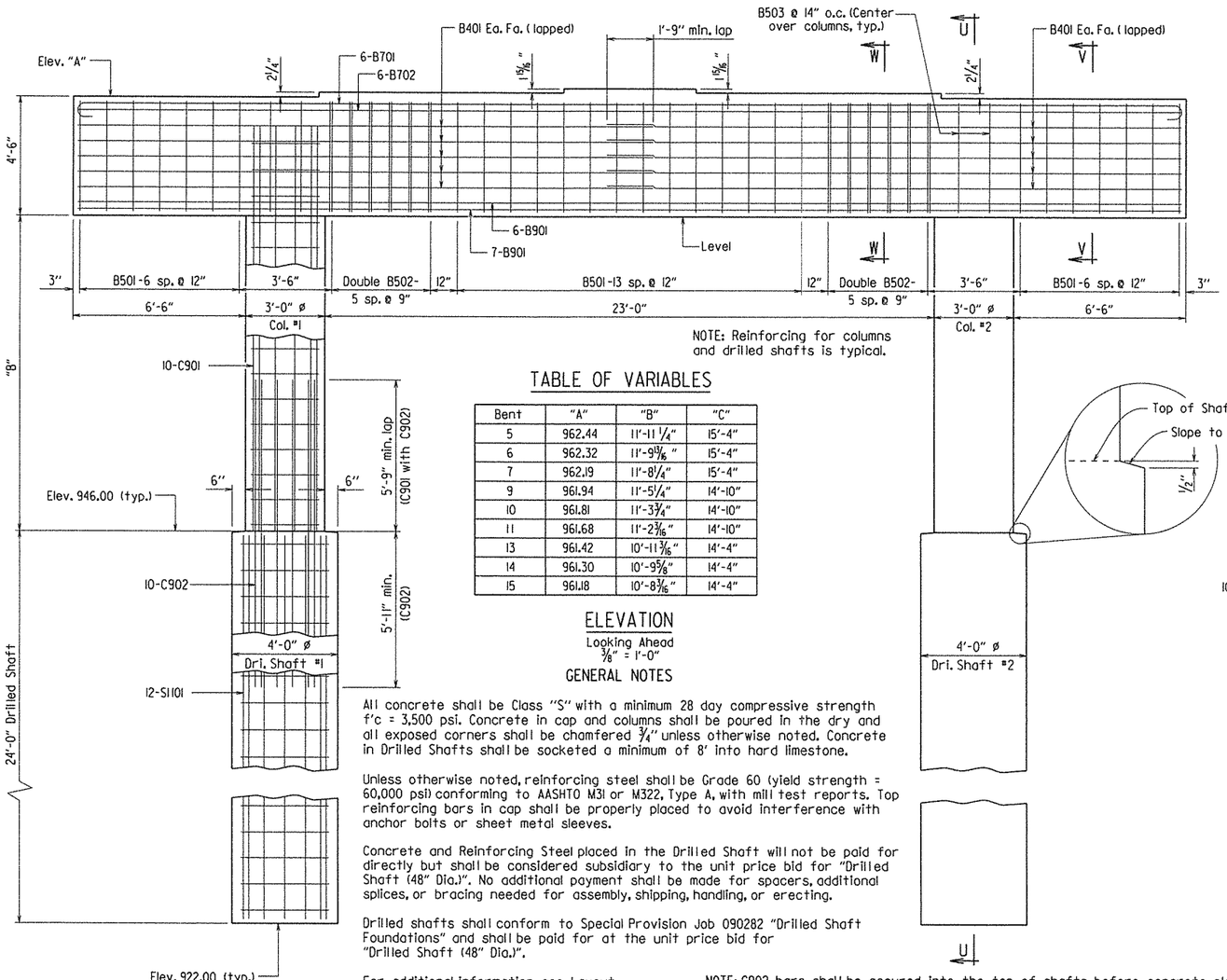
| Mark | No. Req'd. | Length | A | B | Pin Dia. |
|---|---|---|---|---|---|
| B401 | 20 | 21'-9" | | | Str. |
| B501 | 28 | 15'-2" | 3'-2" | 4'-2" | 2½" |
| B502 | 24 | 12'-10" | 2'-0" | 4'-2" | 2½" |
| B503 | 4 | 11'-4" | | | 2½" |
| B701 | 6 | 43'-4" | 41'-8" | 7" | 5¼" |
| B702 | 6 | 41'-8" | | | Str. |
| B901 | 13 | 41'-8" | | | Str. |
| | | | | | |
| C401 | 32 | 9'-4" | | | 3" |
| C901 | 20 | "C" | | | Str. |
| C902 | 20 | 11'-8" | | | Str. |
| | | | | | |
| *S501 | 48 | 12'-8" | | | Cir. |
| *S1101 | 24 | 23'-8" | | | Str. |

Bending Diagrams




(Dimensions are out to out of bars.)

*No direct payment for bars in drilled shafts. See SP Job No 090282 "Drilled Shaft Foundations".




NOTE: Reinforcing for columns and drilled shafts is typical.

## TABLE OF VARIABLES

| Bent | "A" | "B" | "C" |
|---|---|---|---|
| 5 | 962.44 | 11'-11 1/4" | 15'-4" |
| 6 | 962.32 | 11'-9 9/16" | 15'-4" |
| 7 | 962.19 | 11'-8 1/4" | 15'-4" |
| 9 | 961.94 | 11'-5 1/4" | 14'-10" |
| 10 | 961.81 | 11'-3 3/4" | 14'-10" |
| 11 | 961.68 | 11'-2 7/16" | 14'-10" |
| 13 | 961.42 | 10'-11 3/16" | 14'-4" |
| 14 | 961.30 | 10'-9 5/8" | 14'-4" |
| 15 | 961.18 | 10'-8 3/16" | 14'-4" |

## ELEVATION

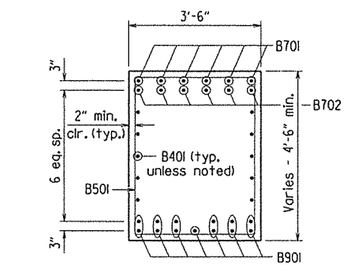
Looking Ahead

3/8" = 1'-0"



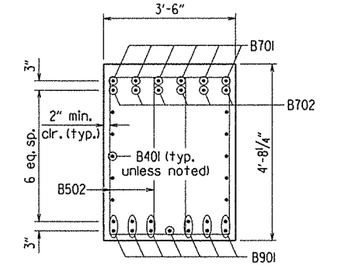

## SECTION U-U

3/8" = 1'-0"



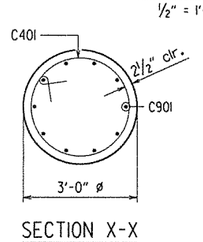

## SECTION V-V

½" = 1'-0"



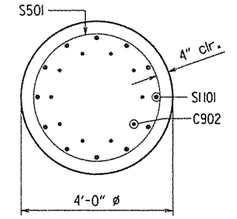

## SECTION W-W

½" = 1'-0"



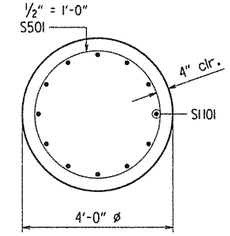

## SECTION X-X

½" = 1'-0"




## SECTION Y-Y

½" = 1'-0"




## SECTION Z-Z

½" = 1'-0"

### GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete in cap and columns shall be poured in the dry and all exposed corners shall be chamfered ¾" unless otherwise noted. Concrete in Drilled Shafts shall be socketed a minimum of 8' into hard limestone.

Unless otherwise noted, reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports. Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Concrete and Reinforcing Steel placed in the Drilled Shaft will not be paid for directly but shall be considered subsidiary to the unit price bid for "Drilled Shaft (48" Dia.)". No additional payment shall be made for spacers, additional splices, or bracing needed for assembly, shipping, handling, or erecting.

Drilled shafts shall conform to Special Provision Job 090282 "Drilled Shaft Foundations" and shall be paid for at the unit price bid for "Drilled Shaft (48" Dia.)".

For additional information, see Layout.

NOTE: C902 bars shall be secured into the top of shafts before concrete placement is complete. The column reinforcing cage consisting of No. 9 bars tied with C401 ties may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel.

STATE OF ARKANSAS
CARL 4/18/14 FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7510

BRIDGE ENGINEER

# DETAILS OF BENTS 5, 6, 7, 9, 10, 11, 13, 14 AND 15 ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

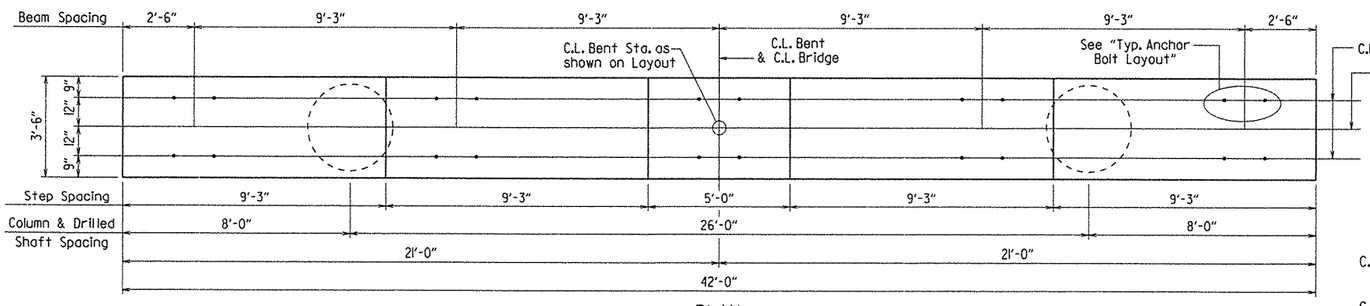
DRAWN BY: KWY DATE: 2-10-12 FILENAME: b090282_b5.dgn

CHECKED BY: PGT DATE: 8-12 SCALE: as noted

DESIGNED BY: PGT DATE: 1-12

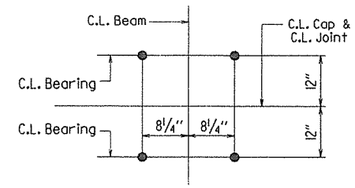
BRIDGE NO. 07265 DRAWING NO. 53208

| 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. | | 090282 | 42 | 90 |
| | | | | 07265 | | INT. BENTS | | 53209 |




PLAN

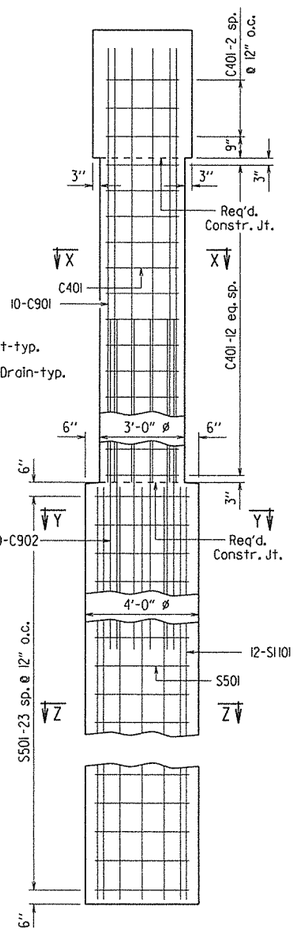
3/8" = 1'-0"




NOTE: For Details of Elastomeric Bearings, see Dwg. No. 53212.

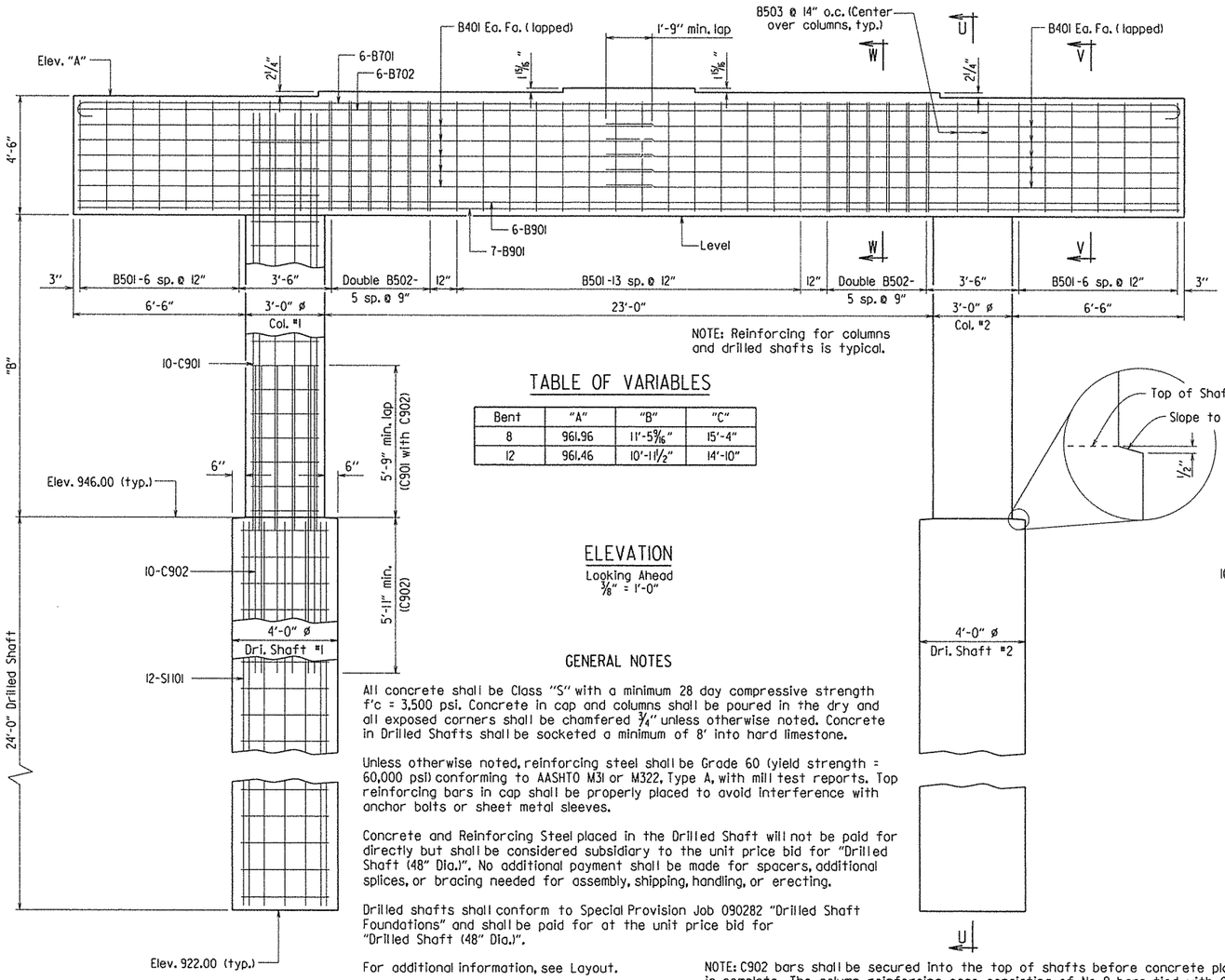
## TYPICAL ANCHOR BOLT LAYOUT

No Scale




SECTION U-U

3/8" = 1'-0"




ELEVATION

Looking Ahead

3/8" = 1'-0"

## TABLE OF VARIABLES

| Bent | "A" | "B" | "C" |
|---|---|---|---|
| 8 | 961.96 | 11'-5 5/16" | 15'-4" |
| 12 | 961.46 | 10'-11 1/2" | 14'-10" |

## GENERAL NOTES

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Concrete in cap and columns shall be poured in the dry and all exposed corners shall be chamfered 3/4" unless otherwise noted. Concrete in Drilled Shafts shall be socketed a minimum of 8' into hard limestone.

Unless otherwise noted, reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports. Top reinforcing bars in cap shall be properly placed to avoid interference with anchor bolts or sheet metal sleeves.

Concrete and Reinforcing Steel placed in the Drilled Shaft will not be paid for directly but shall be considered subsidiary to the unit price bid for "Drilled Shaft (48" Dia.)". No additional payment shall be made for spacers, additional splices, or bracing needed for assembly, shipping, handling, or erecting.

Drilled shafts shall conform to Special Provision Job 090282 "Drilled Shaft Foundations" and shall be paid for at the unit price bid for "Drilled Shaft (48" Dia.)".

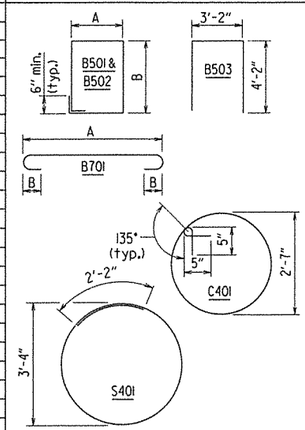
For additional information, see Layout.

NOTE: Reinforcing for columns and drilled shafts is typical.

NOTE: C902 bars shall be secured into the top of shafts before concrete placement is complete. The column reinforcing cage consisting of No. 9 bars tied with C401 ties may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel.

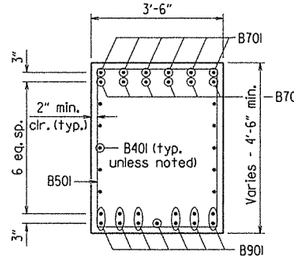
## BAR LIST - PER BENT

| Mark | No. Req'd. | Length | A | B | Pin Dia. | Bending Diagrams |
|---|---|---|---|---|---|---|
| B401 | 20 | 21'-9" | | | Str. | |
| B501 | 28 | 15'-2" | 3'-2" | 4'-2" | 2 1/2" | |
| B502 | 24 | 12'-10" | 2'-0" | 4'-2" | 2 1/2" | |
| B503 | 4 | 11'-4" | | | 2 1/2" | |
| B701 | 6 | 43'-4" | 41'-8" | 7" | 5 1/4" | |
| B702 | 6 | 41'-8" | | | Str. | |
| B901 | 13 | 41'-8" | | | Str. | |
| | | | | | | |
| C401 | 32 | 9'-4" | | | 3" | |
| C901 | 20 | "C" | | | Str. | |
| C902 | 20 | 11'-8" | | | Str. | |
| | | | | | | |
| *S501 | 48 | 12'-8" | | | Cir. | |
| *S1101 | 24 | 23'-8" | | | Str. | |



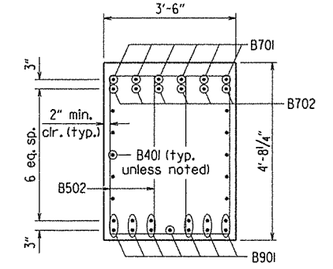

(Dimensions are out to out of bars.)

* No direct payment for bars in drilled shafts. See SP Job No 090282 "Drilled Shaft Foundations".



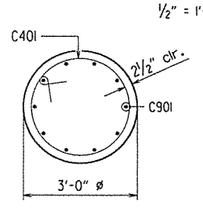

SECTION V-V

1/2" = 1'-0"



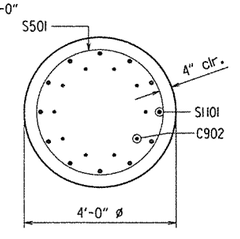

SECTION W-W

1/2" = 1'-0"



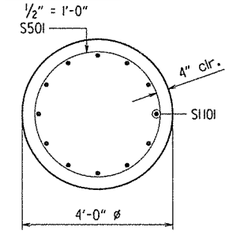

SECTION X-X

1/2" = 1'-0"




SECTION Y-Y

1/2" = 1'-0"




SECTION Z-Z

1/2" = 1'-0"

STATE OF ARKANSAS
Carl J. Fusselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/18/14
CARL J. FUSSELIER

BRIDGE ENGINEER

# DETAILS OF BENTS 8 AND 12
## ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

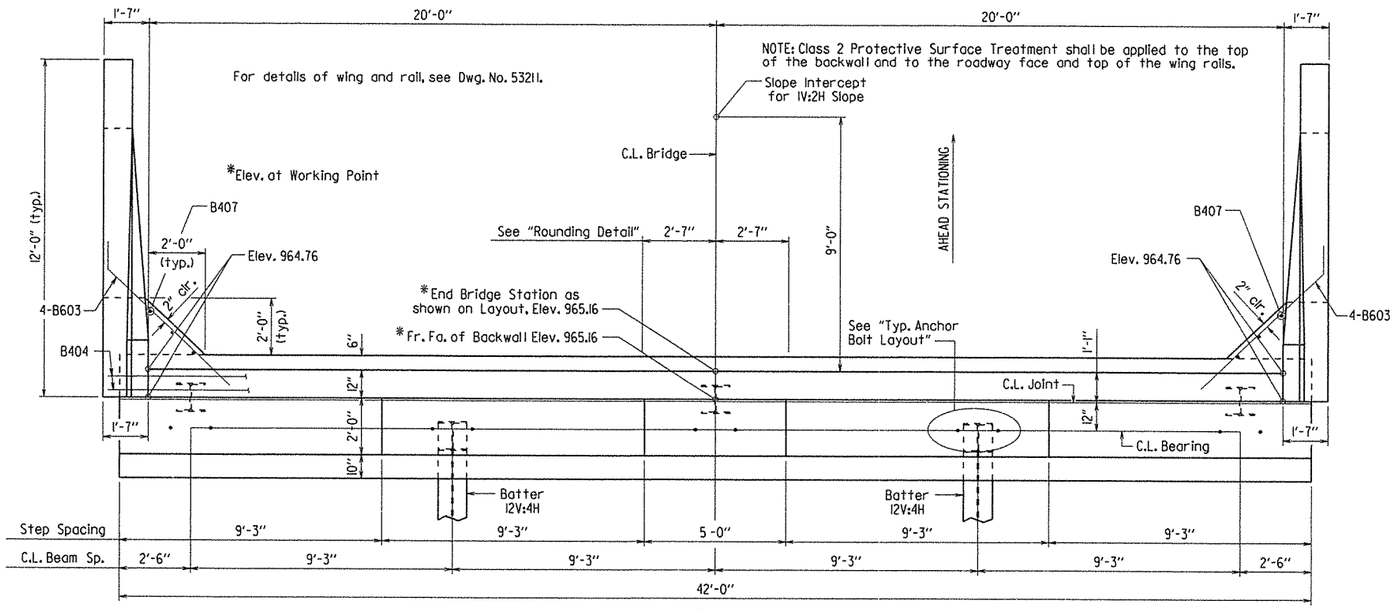
DRAWN BY: KWY DATE: 2-13-12 FILENAME: b090282_b5.dgn

CHECKED BY: PGT DATE: 8-12 SCALE: as noted

DESIGNED BY: PGT DATE: 1-12

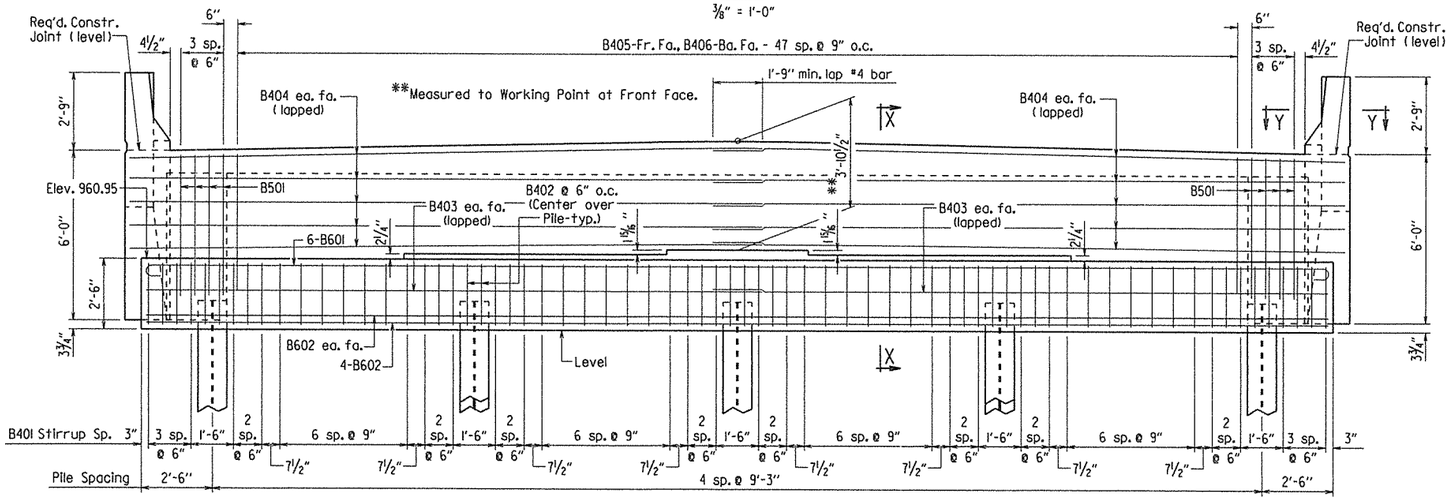
BRIDGE NO. 07265 DRAWING NO. 53209

| 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. | | 090282 | 43 | 90 |
| | | | | ① | 07265 | END BENTS | | 53210 |




PLAN

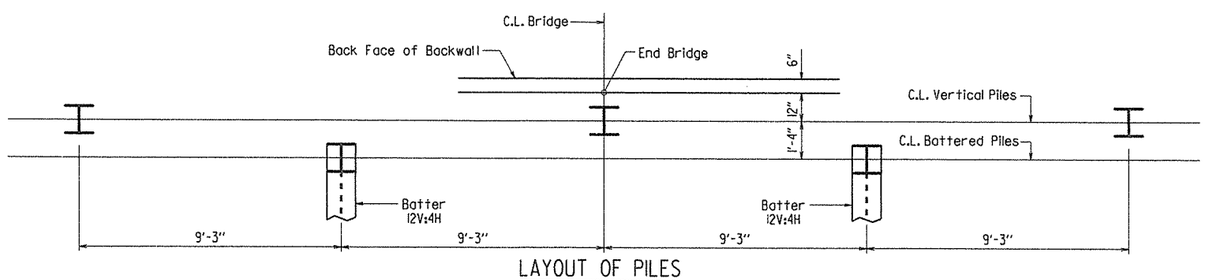
3/8" = 1'-0"




ELEVATION

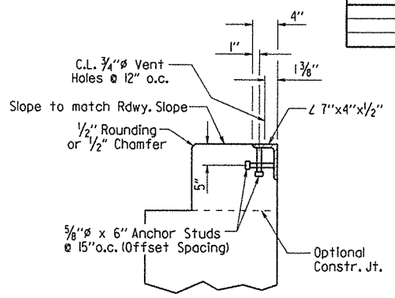
Looking Ahead

3/8" = 1'-0"




LAYOUT OF PILES

3/8" = 1'-0"

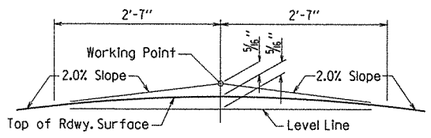



NOTE: For additional joint details, see Dwg. No. 53222.

DETAIL Z

No Scale

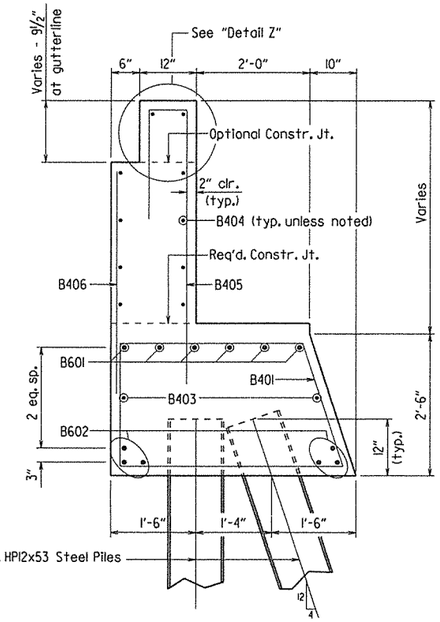
NOTE: Concrete shall be hand packed under the joint armor in the backwall.




NOTE: Working Point matches Theoretical Roadway Grade.

ROUNDING DETAIL

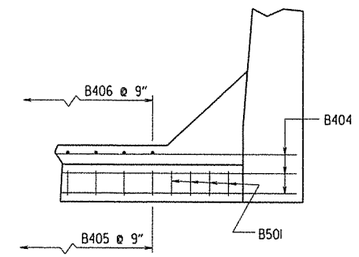
No Scale




SECTION X-X

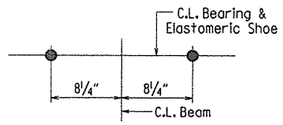
¾"= 1'-0"

NOTE: The Backwall above the required construction joint shall not be poured until the beams are in place. Backwall may be placed prior to placing the adjacent concrete deck only if the optional backwall construction joint is used. See Dwg. No. 53222, "Expansion Device Installation at End Bents" for additional information.




SECTION Y-Y

½" = 1'-0"




For details of elastomeric bearings, see Dwg. No. 53212.

TYP. ANCHOR BOLT LAYOUT

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 piling shall be Grade 50.

Structural steel in end bents shall be M270, Gr. 50W and 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.

For additional information, see Layout.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
4/24/13

BRIDGE ENGINEER

SHEET 1 OF 2

DETAILS OF BENT 16

ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

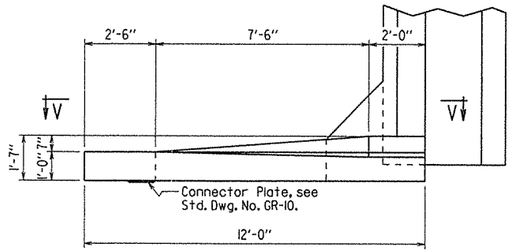
DRAWN BY: KWY DATE: 2-15-12 FILENAME: b090282_bl6.dgn

CHECKED BY: PGT DATE: 3-12 SCALE: as noted

DESIGNED BY: ACP DATE: 5-11

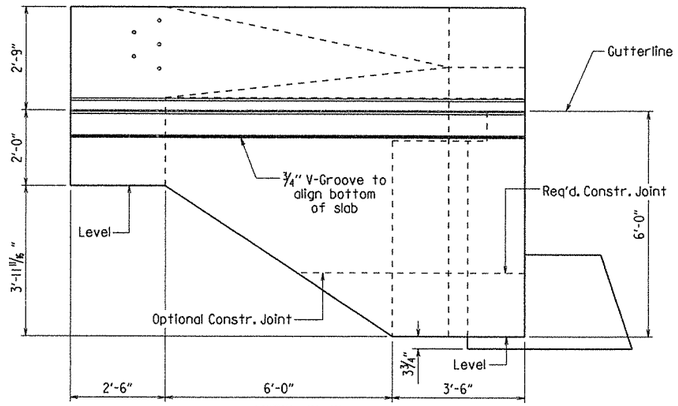
BRIDGE NO. 07265 DRAWING NO. 53210

| 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. | | 090282 | 44 | 90 |
| | | | | (1) 07265 | | END BENTS | | 53211 |



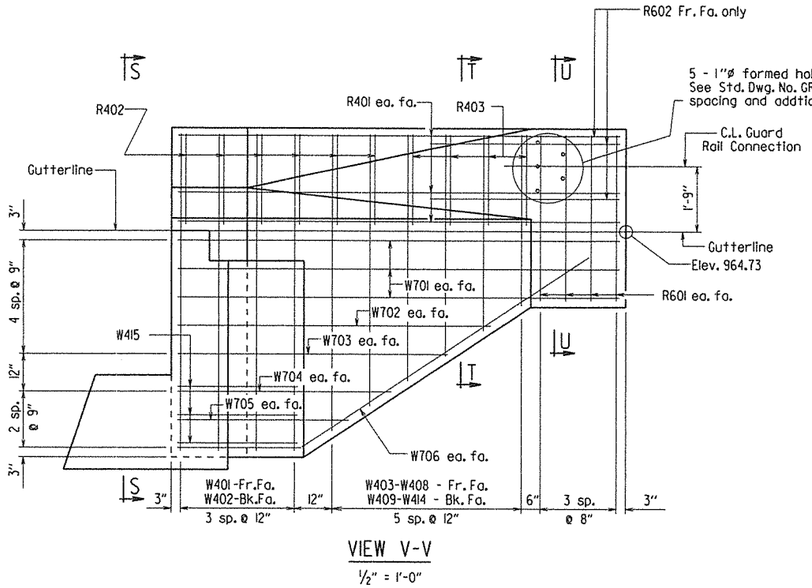

PLAN OF WING

3/8" = 1'-0"



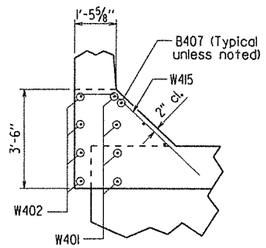

VIEW W-W

1/2" = 1'-0"




VIEW V-V

1/2" = 1'-0"



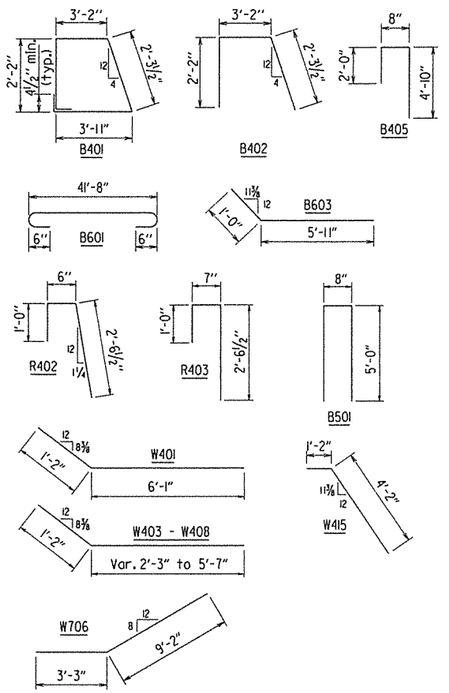

SECTION R-R

3/8" = 1'-0"

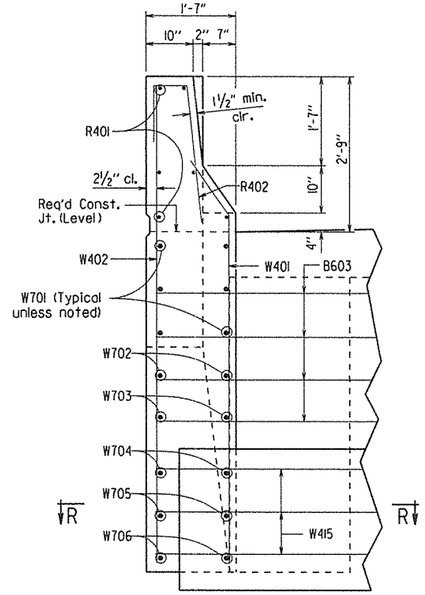
## BAR LIST

| MARK | NO. REQ'D. | LENGTH | P.D. |
|---|---|---|---|
| B401 | 60 | 11'-11" | 2" |
| B402 | 10 | 7'-6" | 2" |
| B403 | 4 | 21'-9" | Str. |
| B404 | 20 | 22'-4" | Str. |
| B405 | 48 | 7'-4" | 2" |
| B406 | 48 | 3'-11" | Str. |
| B407 | 6 | 4'-10" | Str. |
| B501 | 8 | 10'-6" | 2 1/2" |
| B601 | 6 | 43'-0" | 4 1/2" |
| B602 | 6 | 41'-8" | Str. |
| B603 | 8 | 6'-11" | 4 1/2" |
| | | | |
| R401 | 12 | 11'-8" | Str. |
| R402 | 12 | 3'-11" | 2" |
| R403 | 8 | 4'-0" | 2" |
| R601 | 16 | 4'-5" | Str. |
| R602 | 6 | 5'-0" | Str. |
| | | | |
| W401 | 8 | 7'-3" | 2" |
| W402 | 8 | 8'-5" | Str. |
| W403-W408 | 2 each | Var. 3'-5" to 6'-9" | 2" |
| W409-W414 | 2 each | Var. 4'-7" to 7'-11" | Str. |
| W415 | 6 | 5'-4" | 2" |
| | | | |
| W701 | 12 | 11'-8" | Str. |
| W702 | 4 | 8'-3" | Str. |
| W703 | 4 | 7'-2" | Str. |
| W704 | 4 | 5'-8" | Str. |
| W705 | 4 | 4'-6" | Str. |
| W706 | 4 | 12'-5" | 5 1/4" |

BENDING DIAGRAMS

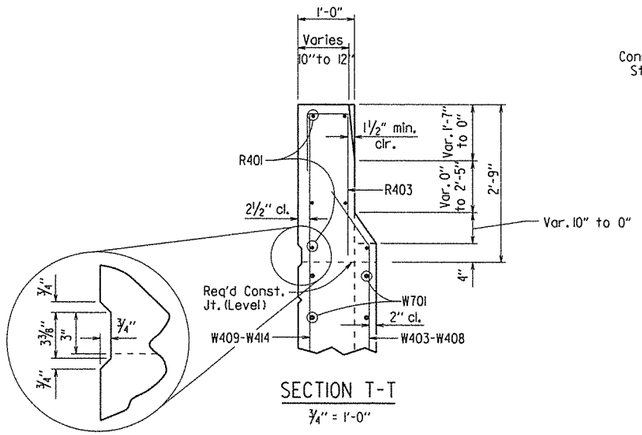



Dimensions are out to out of bars.



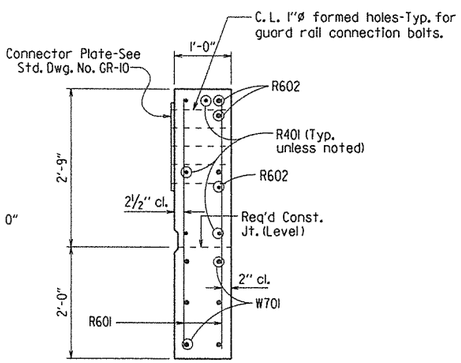

VIEW S-S

3/4" = 1'-0"



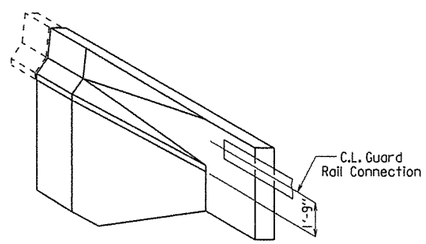

SECTION T-T

3/4" = 1'-0"




SECTION U-U

3/4" = 1'-0"




THREE DIMENSIONAL VIEW OF RAIL

No Scale

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
6/24/13

BRIDGE ENGINEER

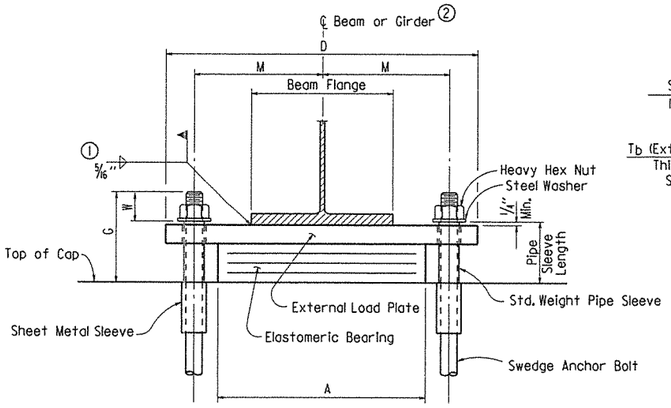
SHEET 2 OF 2
DETAILS OF BENT 16
ILLINOIS RIVER
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

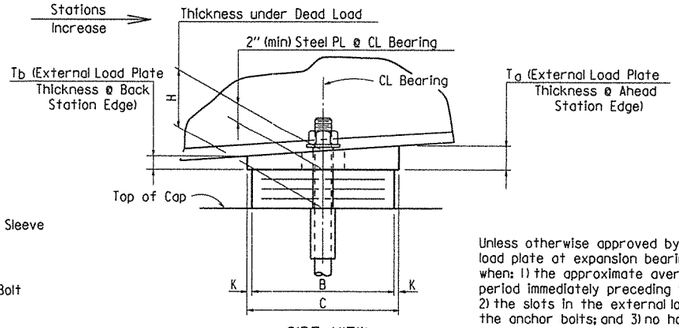
DRAWN BY: KWY DATE: 2-15-12 FILENAME: b090282_bl6.dgn
CHECKED BY: PGT DATE: 3-12 SCALE: as noted
DESIGNED BY: ACP DATE: 5-11

BRIDGE NO. 07265 DRAWING NO. 53211

| 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. | | 090282 | 45 | 90 |
| | | | | (1) | 07265 | Elasto. Bearings | | 53212 |




FRONT VIEW



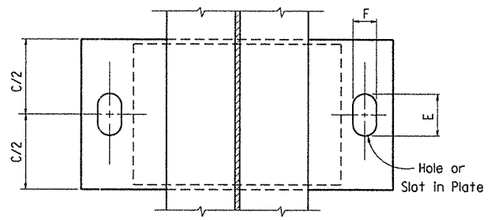

SIDE VIEW

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".

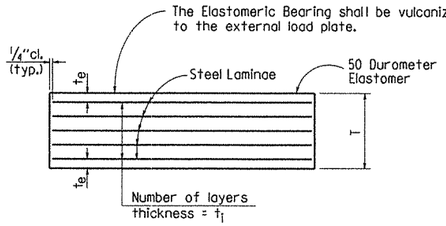
Unless otherwise approved by the Engineer, welding of the external load plate at expansion bearings to the girder will be allowed only when: 1) the approximate average air temperature during the 24 hour period immediately preceding welding is between 40° F and 80° F; and 2) the slots in the external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

(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.




PLAN VIEW

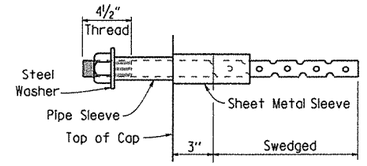



$t_e$ = thickness of elastomer cover on top and bottom of pad

$t_i$ = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness $t_i$

ELASTOMERIC BEARING




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)."

## TABLE OF FABRICATOR VARIABLES

* Maximum Design Load = Service I Limit State

| BRIDGE NO. | UNIT(S) | 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 | 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.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07265 | 1 | 1 & 4 Bk. | All | Exp. | 5 | 113 | 7 3/4" | 5" | 16" | 7 1/2" | 4 | 1/2" | 1/4" | 5 @ 12 Ga. | 3" | 8 1/2" | 26 1/2" | 4 1/4" | 2 1/4" | 1/2" | 10 1/2" | 2.00" | 2.00" | 1 1/2" x 27" | 55 | 1 1/2" x 5 1/4" | 3" x 8" | 3" |
| | | 2 & 3 | All | Fix | 5 | 287 | 7 5/8" | 3 13/16" | 20" | 11" | 2 | 1/2" | 1/4" | 3 @ 12 Ga. | 1 13/16" | 12" | 33" | 3 3/4" | 3 3/4" | 1/2" | 13" | 1.98" | 2.02" | 2 1/2" x 36" | 55 | 3" x 4 1/8" | 4" x 10" | 4 1/2" |
| | 2, 3, & 4 | 4 Ahead & 16 | All | Exp. | 5 | 105 | 7 3/4" | 5" | 12" | 9" | 4 | 1/2" | 1/4" | 5 @ 12 Ga. | 3" | 10" | 22" | 4 1/4" | 2 1/4" | 1/2" | 8 1/4" | 2.00" | 2.00" | 1 1/2" x 27" | 55 | 1 1/2" x 5 1/4" | 3" x 14" | 3" |
| | | 8 & 12 | All | Exp. | 10 | 105 | 7 3/4" | 5" | 12" | 9" | 4 | 1/2" | 1/4" | 5 @ 12 Ga. | 3" | 10" | 22" | 4 1/4" | 2 1/4" | 1/2" | 8 1/4" | 2.00" | 2.00" | 1 1/2" x 27" | 55 | 1 1/2" x 5 1/4" | 3" x 14" | 3" |
| | | 5, 7, 9, 11, 13, 15 | All | Fix | 5 | 211 | 7 1/8" | 3 13/16" | 15" | 12" | 2 | 1/2" | 1/4" | 3 @ 12 Ga. | 1 13/16" | 13" | 27" | 3 1/8" | 3 1/8" | 1/2" | 10 1/4" | 1.98" | 2.02" | 2" x 30" | 55 | 2 1/2" x 4 1/8" | 4" x 10" | 3 3/4" |
| | | 6, 10, 14 | All | Fix | 5 | 189 | 7 1/8" | 3 13/16" | 15" | 12" | 2 | 1/2" | 1/4" | 3 @ 12 Ga. | 1 13/16" | 13" | 27" | 3 1/8" | 3 1/8" | 1/2" | 10 1/4" | 2.00" | 2.00" | 2" x 30" | 55 | 2 1/2" x 4 1/8" | 4" x 10" | 3 3/4" |

GENERAL NOTES

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

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

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Beam Spans (M270, Gr. 50W)."

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

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
6/28/13
CARL J. FUSELIER

BRIDGE ENGINEER

# DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 08-24-12 FILENAME: b090282.el.dgn

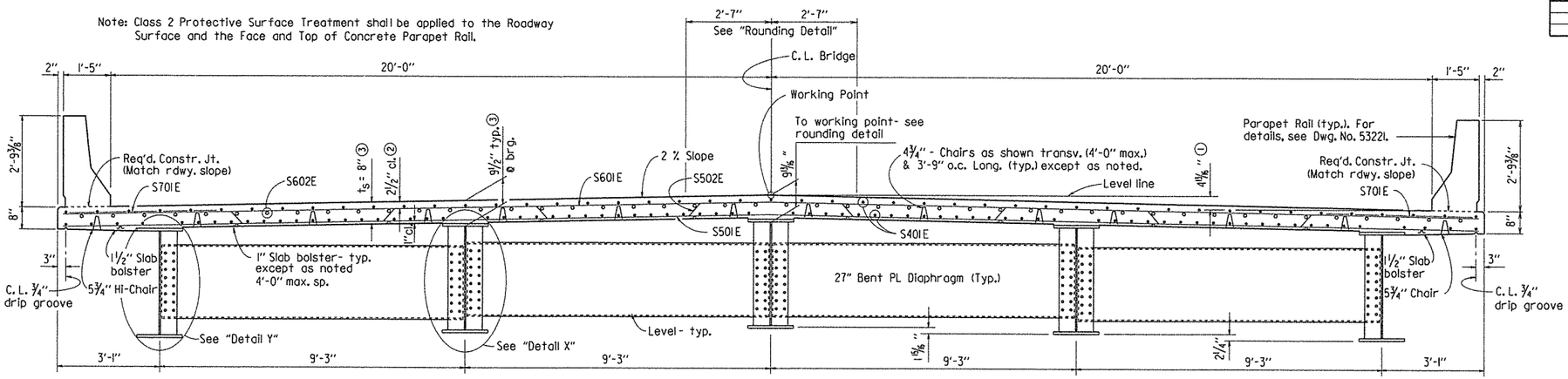
CHECKED BY: PGT DATE: 8-12 SCALE: NONE

DESIGNED BY: ACP DATE: 8-12

BRIDGE NO. 07265 DRAWING NO. 53212

| 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. | | 090282 | 46 | 90 |
| | | | | (1) 07265 | | CONT. UNIT | | 53213 |

Note: Class 2 Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of Concrete Parapet Rail.




## TYPICAL ROADWAY SECTION

LOOKING AHEAD
½" = 1'-0"

Slab Reinforcing:

Longitudinal: S401E Top & Bottom placed as shown
S602E placed as shown over interior supports
(See "Half Reinforcing Plan", Dwg. No. 53215)

Transverse: S502E @ 15"o.c. bent up over beams — Alternate
S601E @ 15"o.c. in top, S501E @ 15"o.c. in bottom,
S701E @ 15"o.c. in top (Overhangs)

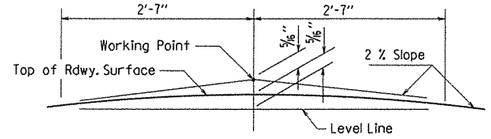
Note: At the Contractor's option, two straight epoxy coated #5 bars, top and bottom, may be substituted for bar S502E. Payment will be based on weight of S502E.

Note: Bars with an "E" suffix are epoxy coated.

① Working point 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"

③ See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"



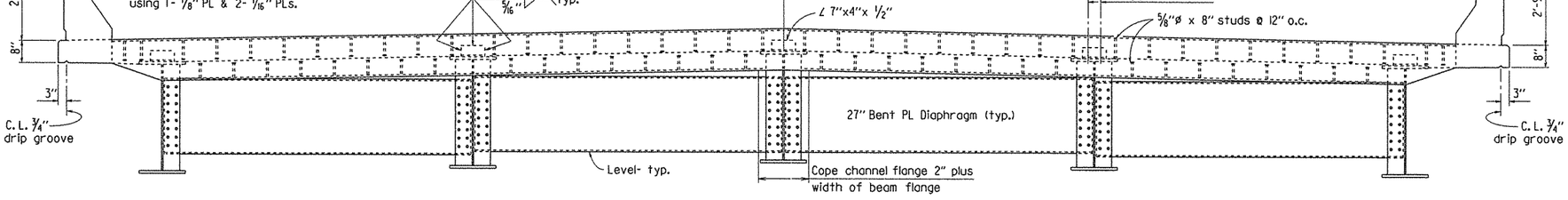

NOTE: Working Point matches Theoretical Roadway Grade.

## ROUNDING DETAIL

N.T.S.

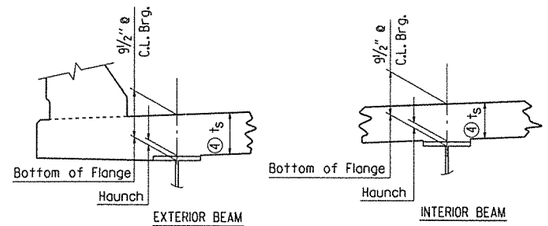
Expansion Device :
Rdwy. Channel- C15x33.9
Conn. Angle- ∠ 7"x4"x½"
Detail Device ⅛" high & provide ¼" Shims using 1- ⅛" PL & 2- 1⁄16" PLs.

For details of poured Silicone Joint, See Dwg. No. 53222.




## TYPICAL ROADWAY SECTION

LOOKING AHEAD
½" = 1'-0"




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

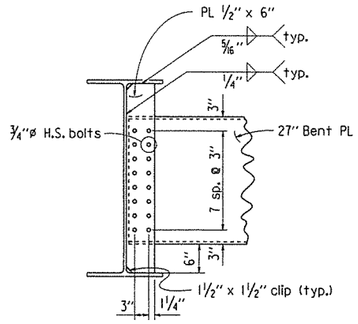
Notes:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

## ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

NTS

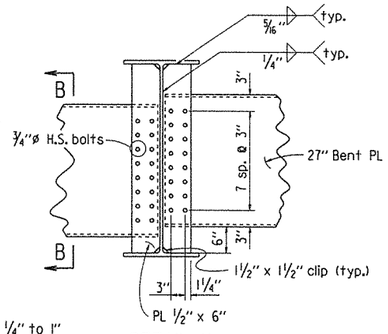
Note: Bolts in connection shall be properly installed and tightened in accordance with Subsection 807.71.




## DETAIL Y

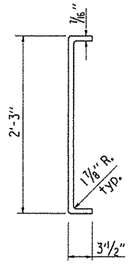
NTS

Note: Stop weld ¼" to 1" from end of clip (typ.)




## DETAIL X

NTS



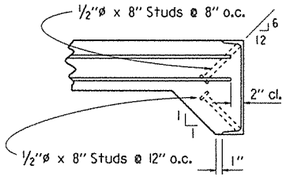

Typ. cross-section for all 27" bent plate diaphragms.

## SECTION B-B

NTS

STATE OF ARKANSAS
Carl J. Pusellier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/18/11
CARL J. PUSELLIER

BRIDGE ENGINEER




Note: As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

## DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT

NTS

SHEET 1 OF 4

# DETAILS OF UNIT 1
# 240'-0" CONTINUOUS W-BEAM
# ILLINOIS RIVER

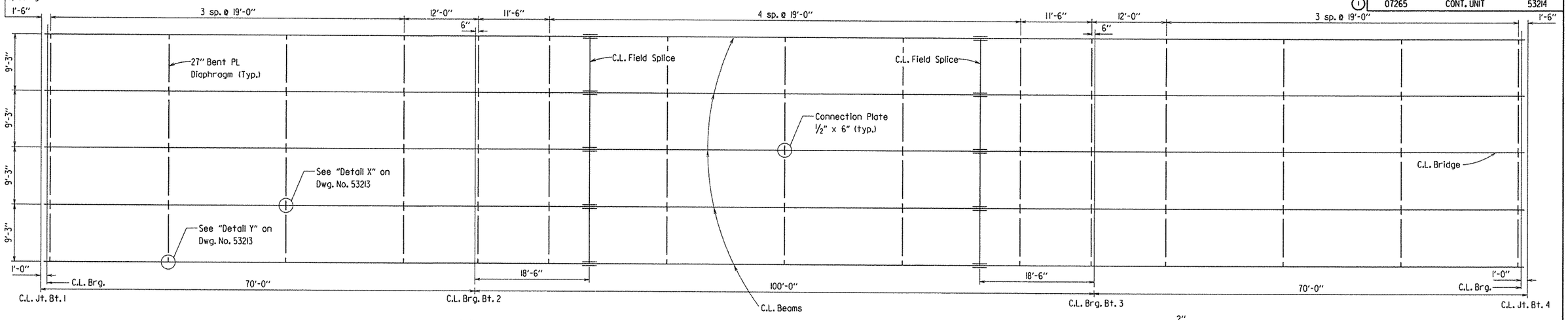
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/29/11 FILENAME: b090282_sl.dgn
CHECKED BY: PGT DATE: 12-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 4-11

BRIDGE NO. 07265 DRAWING NO. 53213

| 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. | | 090282 | 47 | 90 |
| | | | | 07265 | | CONT. UNIT | | 53214 |

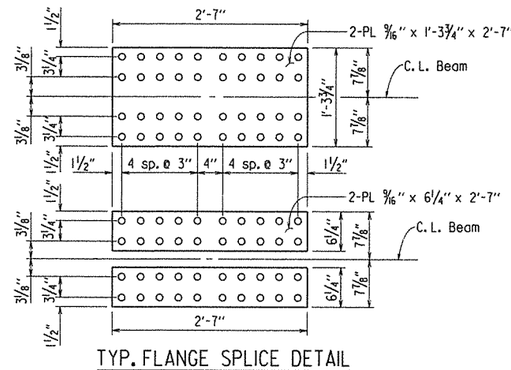



## FRAMING PLAN
1/8" = 1'-0"

## 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" | |

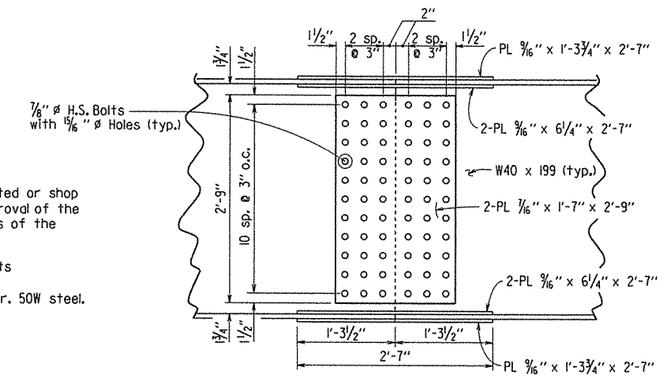
Note: When a fillet weld size, as shown on the plans, is larger than the minimum, the First Pass shall be that specified for minimum size of fillet weld.



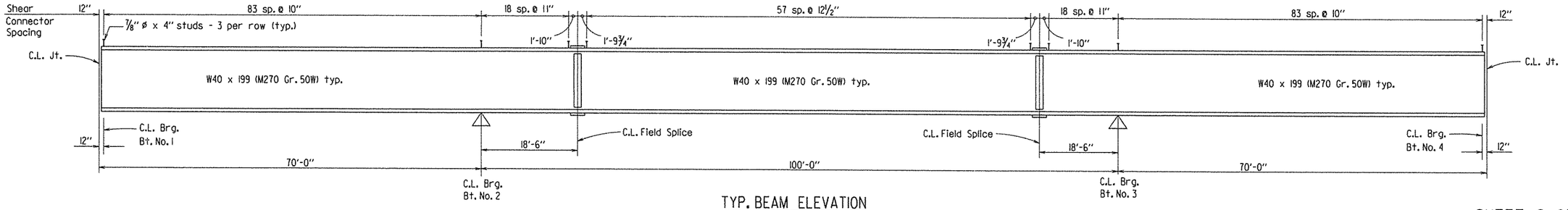

## TYP. FLANGE SPLICE DETAIL
1"= 1'-0"

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.

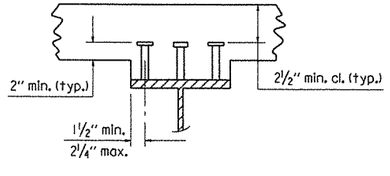
All field splice bolts shall be 7/8"ø Hi-str. bolts
All holes for splice bolts shall be 15/16"ø
All field splice plates shall be AASHTO M270 Gr. 50W steel.




## TYP. WEB SPLICE DETAIL
1"= 1'-0"




## TYP. BEAM ELEVATION
NTS




Stud Shear Connectors shown shall be 7/8"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown, at the ratio of 1.361 - 3/4"ø studs in place of one 7/8"ø stud. 7/8"ø studs will be used as basis for measurement of structural steel in shear connectors.

## SHEAR CONNECTOR DETAIL
NTS

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER

BRIDGE ENGINEER

## SHEET 2 OF 4

# DETAILS OF UNIT 1
# 240'-0" CONTINUOUS W-BEAM
# ILLINOIS RIVER

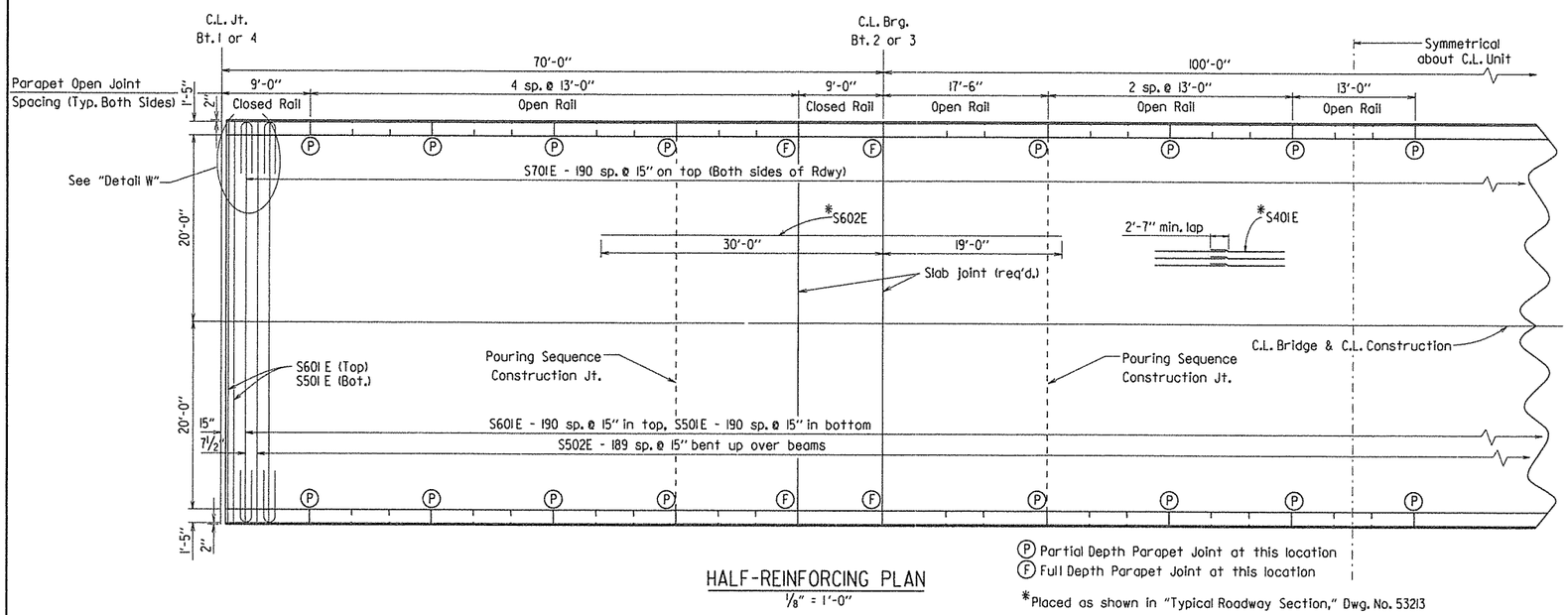
ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/29/11 FILENAME: b090282_sl.dgn
CHECKED BY: PGT DATE: 12-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 4-11

BRIDGE NO. 07265 DRAWING NO. 53214

| 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. | | 090282 | 48 | 90 |
| | | | | ① | 07265 | CONT. UNIT | 53215 | |




Ⓟ Partial Depth Parapet Joint at this location
Ⓕ Full Depth Parapet Joint at this location

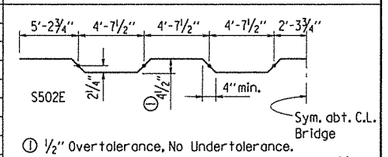
*Placed as shown in "Typical Roadway Section," Dwg. No. 53213

## HALF-REINFORCING PLAN
⅛" = 1'-0"

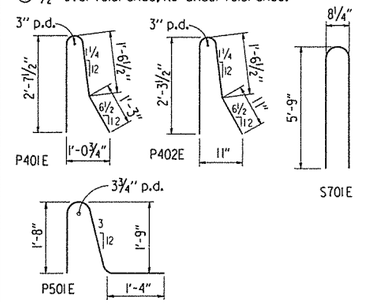
## BAR LIST

| Mark | No. Req'd. | Length | Pin Dia. |
|---|---|---|---|
| S401E | 861 | 36'-7" | Str. |
| S501E | 195 | 42'-10" | Str. |
| S502E | 190 | 43'-8" | 3" |
| S601E | 195 | 42'-8" | Str. |
| S602E | 92 | 49'-0" | Str. |
| S701E | 382 | 11'-11" | 6½" |
| P401E | 724 | 5'-6" | 3" |
| P402E | 240 | 4'-10" | 3" |
| P403E | 112 | 5'-7" | Str. |
| P404E | 56 | 8'-7" | Str. |
| P405E | 182 | 12'-7" | Str. |
| P406E | 28 | 17'-1" | Str. |
| P501E | 724 | 4'-10" | 3¾" |

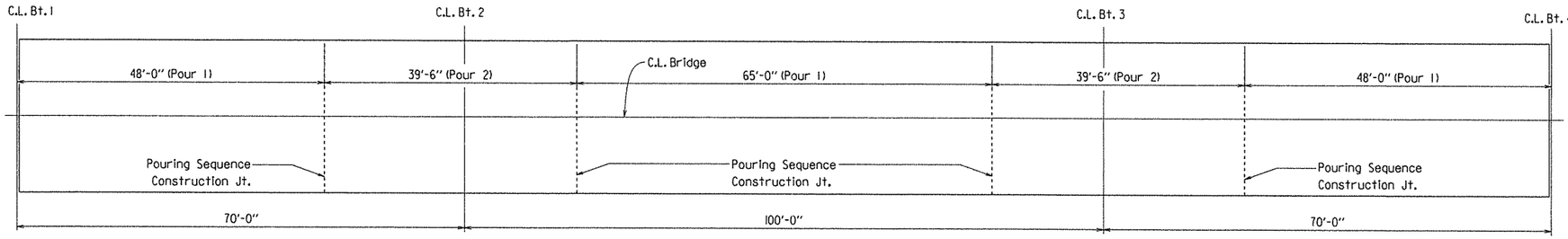
Bending Diagrams (Dimensions are out to out of bars.)



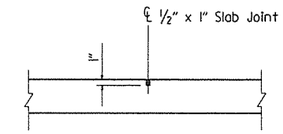

① ½" Overtolerance, No Undertolerance.




Notes:
Bars with "E" designation shall be epoxy coated.

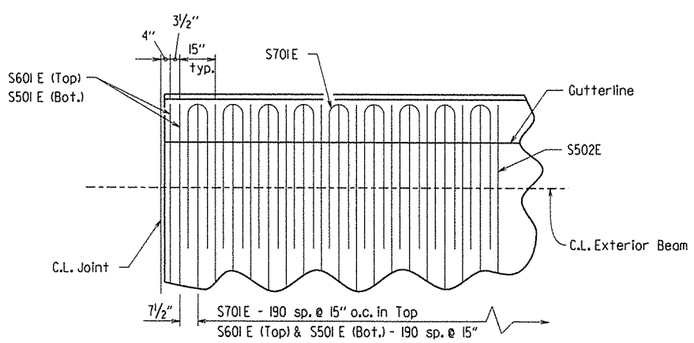



## SLAB POURING SEQUENCE
3/32 " = 1'-0"




Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

## SLAB JOINT DETAIL




## DETAIL W
NTS

Notes:
Req'd. slab joints and pouring sequence joints shall align with open joints in parapet rail at the gutterline.

Parapet rail spacing, drain opening and reinforcing are the same on both sides.

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between adjacent pours. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER 4/17/14

BRIDGE ENGINEER

SHEET 3 OF 4

# DETAILS OF UNIT 1
# 240'-0" CONTINUOUS W-BEAM
# ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/29/11 FILENAME: b090282_sl.dgn
CHECKED BY: PGT DATE: 12-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 4-11

BRIDGE NO. 07265 DRAWING NO. 53215

| 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. | | 090282 | 49 | 90 |
| | | | | (1) 07265 | | CONT. UNIT | | 53216 |

# 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, Fifth Edition, 2010.

**MATERIALS AND STRENGTHS:**

| | | |
|---|---|---|
| Class S(AE) Concrete | f'c = | 4,000 psi |
| Reinforcing Steel (Gr. 60, AASHTO M31 or M322, Type A) | fy = | 60,000 psi |
| Structural Steel (M 270, Gr. 50W) | Fy = | 50,000 psi |
| Structural Steel (M 270, Gr. 36) | Fy = | 36,000 psi |

**CONCRETE :**
Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing. A minimum of 72 hours shall elapse between the completion of the slab and the pouring of the railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

**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. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

All beams shall be assembled in the shop as specified in Subsection 807.54 and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shall be measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of 1/4" +/- is allowed for camber.

Flange field splice plates for main members shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Field connections shall be bolted with high-strength bolts and shall be 3/4" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for 3/4" ø high-strength bolts may be 15/16" ø diameter if a washer is supplied for use under both the nut and head of the bolt.

Diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

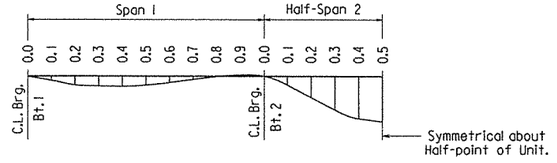
All shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the Manufacturer.

# DEAD LOAD DEFLECTIONS (INCHES)

| Span | Point of Deflection | Structural Steel | | Structural Steel + Slab | | Structural Steel + Slab + Rail | |
|---|---|---|---|---|---|---|---|
| | | Ext. Beam | Int. Beam | Ext. Beam | Int. Beam | Ext. Beam | Int. Beam |
| 1 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 0.1 | 0.028 | 0.030 | 0.141 | 0.172 | 0.153 | 0.183 |
| | 0.2 | 0.051 | 0.054 | 0.254 | 0.311 | 0.276 | 0.331 |
| | 0.3 | 0.065 | 0.069 | 0.322 | 0.394 | 0.349 | 0.420 |
| | 0.4 | 0.067 | 0.072 | 0.335 | 0.410 | 0.364 | 0.437 |
| | 0.5 | 0.059 | 0.063 | 0.295 | 0.361 | 0.320 | 0.385 |
| | 0.6 | 0.043 | 0.045 | 0.213 | 0.260 | 0.231 | 0.277 |
| | 0.7 | 0.022 | 0.023 | 0.107 | 0.131 | 0.116 | 0.140 |
| | 0.8 | 0.002 | 0.002 | 0.009 | 0.011 | 0.010 | 0.012 |
| | 0.9 | -0.009 | -0.090 | -0.043 | -0.053 | -0.047 | -0.056 |
| 2 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 0.1 | 0.057 | 0.061 | 0.286 | 0.350 | 0.310 | 0.373 |
| | 0.2 | 0.142 | 0.151 | 0.706 | 0.864 | 0.766 | 0.921 |
| | 0.3 | 0.223 | 0.237 | 1.112 | 1.361 | 1.207 | 1.451 |
| | 0.4 | 0.281 | 0.298 | 1.399 | 1.711 | 1.518 | 1.824 |
| | 0.5 | 0.301 | 0.320 | 1.501 | 1.837 | 1.629 | 1.958 |

Symmetrical about Half-point of Unit.

Note: Camber for Dead Load Deflection ± 1/4" tolerance.
Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign ( - ) indicates point above chord.




DEAD LOAD DEFLECTION DIAGRAM
No Scale

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
4/18/14
BRIDGE ENGINEER

SHEET 4 OF 4

DETAILS OF UNIT 1
240'-0" CONTINUOUS W-BEAM
ILLINOIS RIVER

ROUTE SEC.

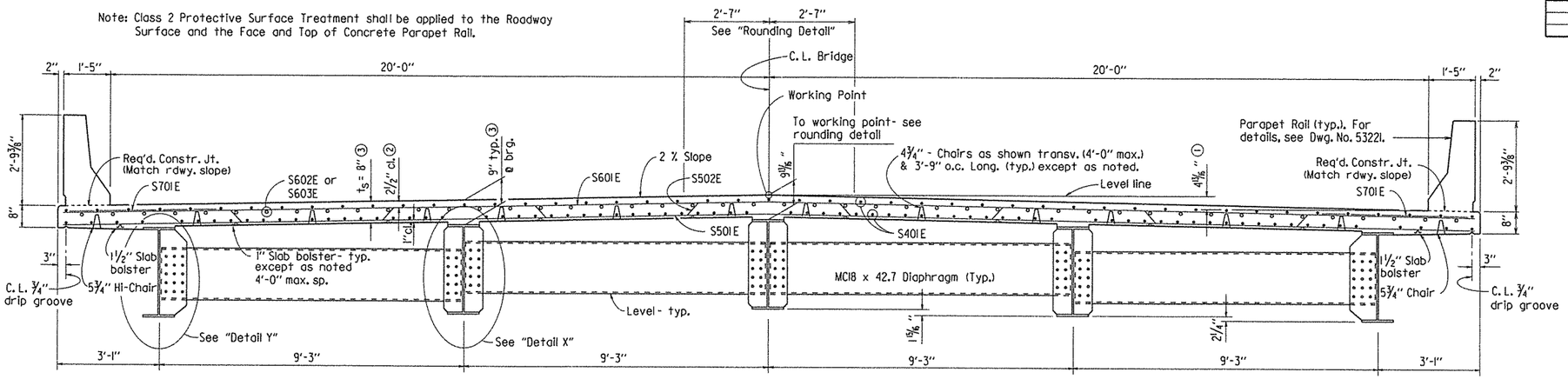
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/29/11 FILENAME: b090282_sl.dgn
CHECKED BY: PGT DATE: 12-11 SCALE: As Noted
DESIGNED BY: PGT DATE: 4-11

BRIDGE NO. 07265 DRAWING NO. 53216

| 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. | | 090282 | 50 | 90 |
| | | | | (1) 07265 | | CONT. UNIT | | 53217 |

Note: Class 2 Protective Surface Treatment shall be applied to the Roadway Surface and the Face and Top of Concrete Parapet Rail.




## TYPICAL ROADWAY SECTION

LOOKING AHEAD
½" = 1'-0"

Slab Reinforcing:

Longitudinal: S401E Top & Bottom placed as shown
S602E and S603E placed as shown over interior supports
(See "Half Reinforcing Plan", Dwg. No. 53219)

Transverse: S502E @ 15"o.c. bent up over beams — Alternate
S601E @ 15"o.c. in top, S501E @ 15"o.c. in bottom,
S701E @ 15"o.c. in top (Overhangs)

Note: At the Contractor's option, two straight epoxy coated #5 bars, top and bottom, may be substituted for bar S502E. Payment will be based on weight of S502E.

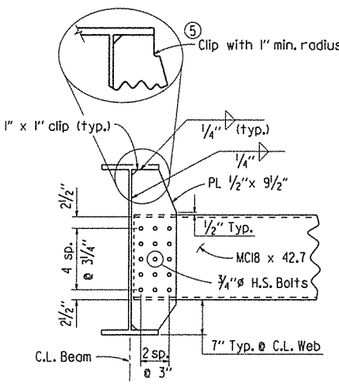
Note: Bars with an "E" suffix are epoxy coated.

(1) Working point 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"

(3) See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE"

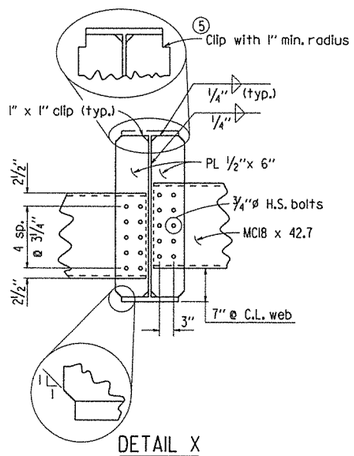
(5) If permanent steel bridge deck forms are used, the Fabricator shall clip the plate as necessary to accomodate the deck form support.




## DETAIL Y

No Scale

Notes: Stop Welds ¼"to 1" from end of clips (Typ.).
Bolts in connection shall be properly installed and tightened in accordance with Subsection 807.71.



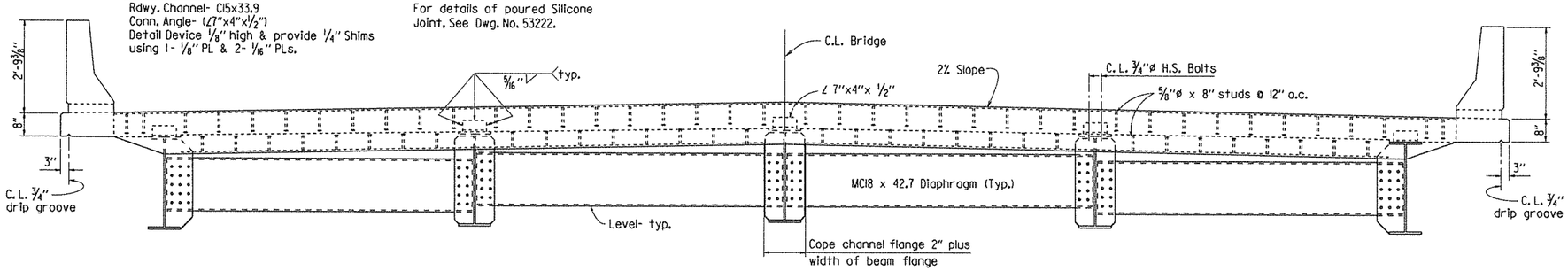

## DETAIL X

No Scale

Expansion Device

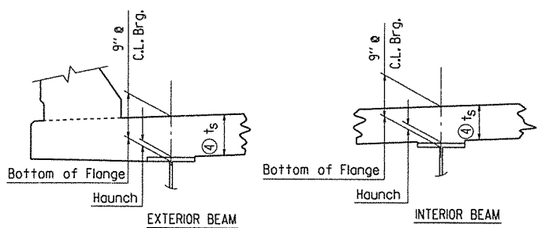
Rdwy. Channel- C15x33.9
Conn. Angle- L7"x4"x½")
Detail Device ⅛" high & provide ¼" Shims using 1- ⅛" PL & 2- 1/16" PLs.

For details of poured Silicone Joint, See Dwg. No. 53222.




## TYPICAL ROADWAY SECTION

LOOKING AHEAD
½" = 1'-0"



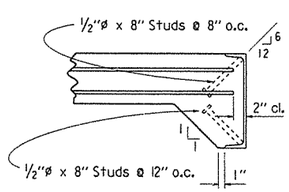

(4) Tolerance when removable deck forming is used is + ½" , - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.

Notes:
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Std. Dwg. No. 55005 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

## ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

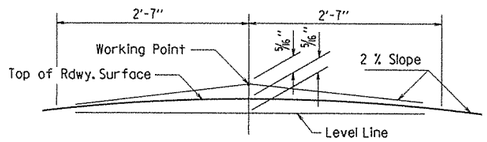
NTS




Note: As an alternate to ⅝"ø studs, ½"ø x 8" studs spaced as shown may be used. Use weight of ⅝"ø stud as basis of measurement of structural steel in anchors.

## DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT

NTS




NOTE: Working Point matches Theoretical Roadway Grade.

## ROUNDING DETAIL

N.T.S.

STATE OF ARKANSAS
Carl Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
4/8/14
CARL FUSELIER

BRIDGE ENGINEER

# SHEET 1 OF 4

# DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM ILLINOIS RIVER

ROUTE SEC.

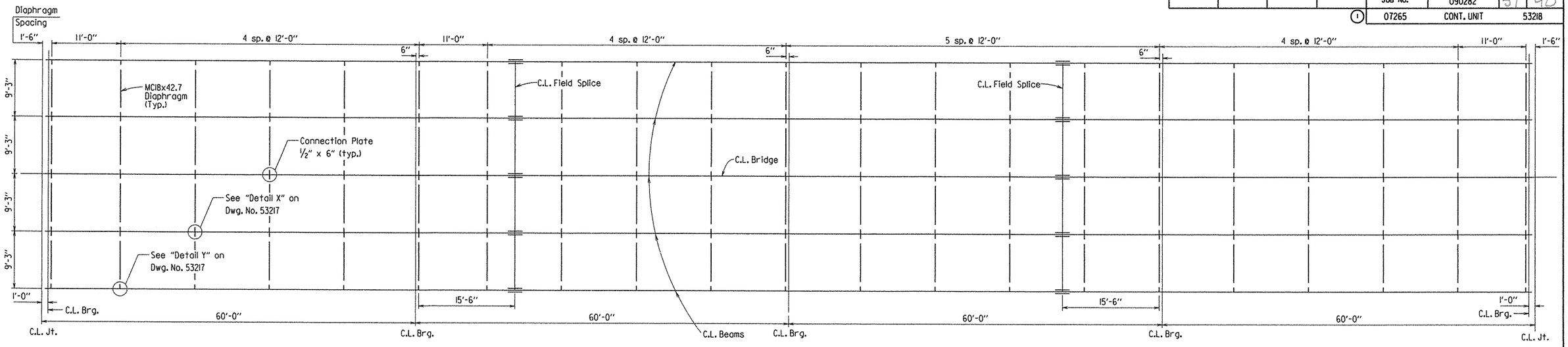
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

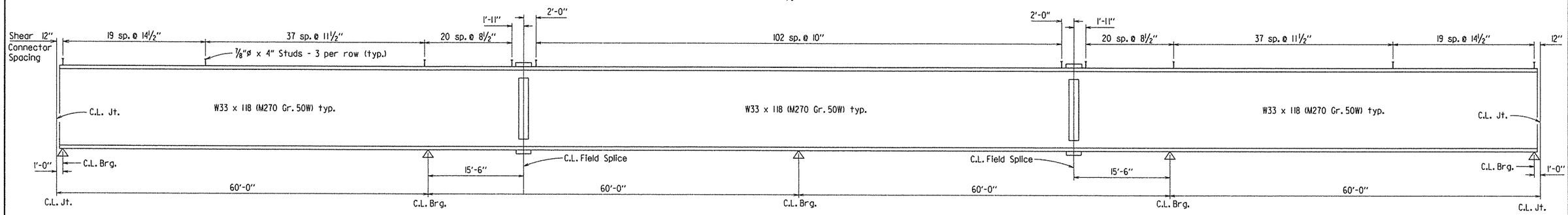
| | | | |
|---|---|---|---|
| DRAWN BY: ACP | DATE: 04/29/11 | FILENAME: b090282_sl.dgn | |
| CHECKED BY: PGT | DATE: 12-11 | SCALE: As Noted | |
| DESIGNED BY: ACP | DATE: 04-11 | | |

BRIDGE NO. 07265 DRAWING NO. 53217

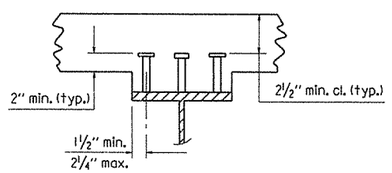
| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 51 | 90 |
| | | | | (1) 07265 | | CONT. UNIT | | 53218 |




## FRAMING PLAN
1/8" = 1'-0"

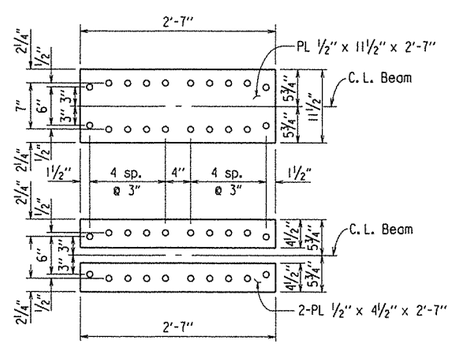



## BEAM ELEVATION
NTS

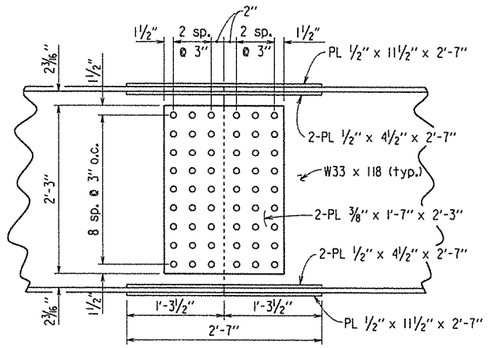



Stud Shear Connectors shown shall be 7/8"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the beam flange in accordance with the recommendations of the Manufacturer. 3/4"ø studs may be used in place of the 7/8"ø studs shown, at the ratio of 1.361 - 3/4"ø studs in place of one 7/8"ø stud. 7/8"ø studs will be used as basis for measurement of structural steel in shear connectors.

## SHEAR CONNECTOR DETAIL
NTS




## TYP. FLANGE SPLICE DETAIL
1"= 1'-0"




## TYP. WEB SPLICE DETAIL
1"= 1'-0"

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.

All field splice bolts shall be 7/8"ø Hi-str. bolts
All holes for splice bolts shall be 15/16 "ø
All field splice plates shall be AASHTO M270 Gr. 50W steel.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
6/24/12
CARL J. FUSELIER
BRIDGE ENGINEER

## 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.

SHEET 2 OF 4

# DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM ILLINOIS RIVER

ROUTE SEC.

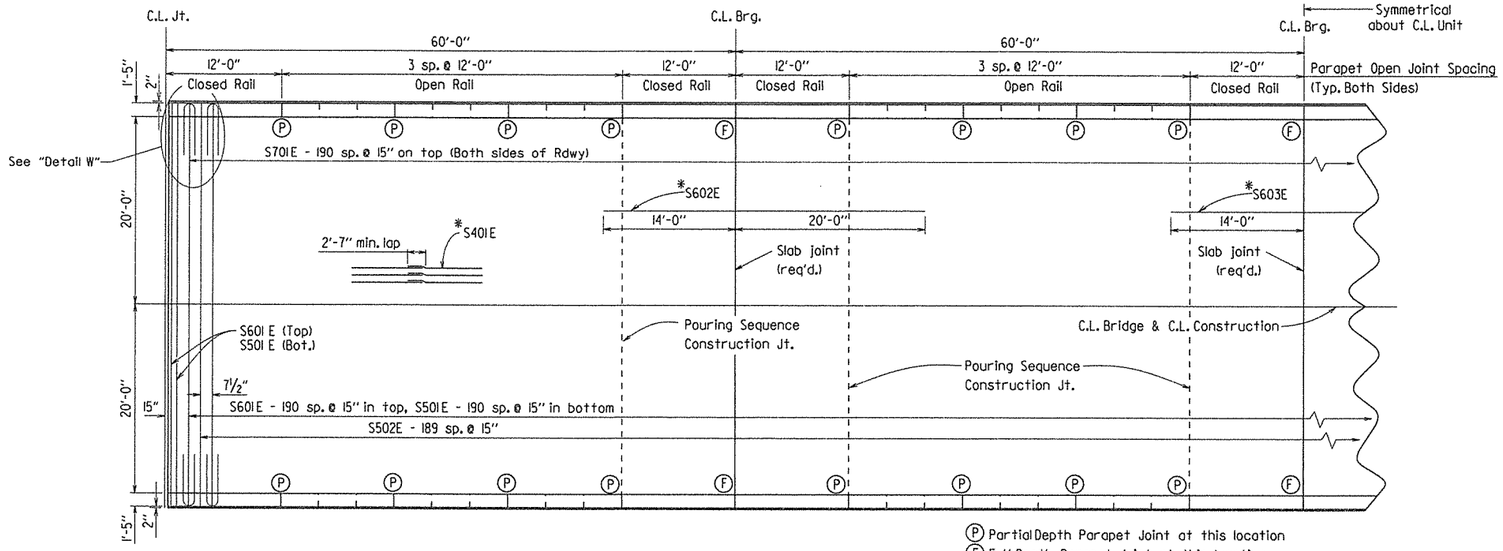
ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 05/04/11 FILENAME: b090282.sl.dgn
CHECKED BY: PGT DATE: 12-11 SCALE: As Noted
DESIGNED BY: ACP DATE: 04-11

BRIDGE NO. 07265 DRAWING NO. 53218

| 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. | | 090282 | 52 | 90 |
| | | | | ① 07265 | | CONT. UNIT | 53219 | |




Ⓟ Partial Depth Parapet Joint at this location
Ⓕ Full Depth Parapet Joint at this location

*Placed as shown in "Typical Roadway Section," Dwg. No. 53217

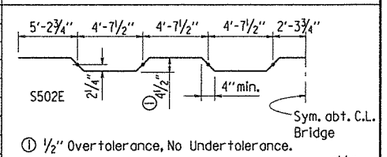
## HALF-REINFORCING PLAN

⅛" = 1'-0"

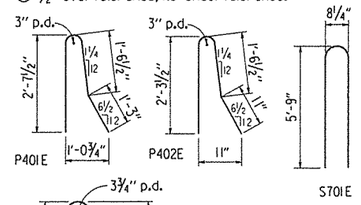
## BAR LIST - PER UNIT

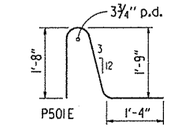
| Mark | No. Req'd. | Length | Pin Dia. |
|---|---|---|---|
| S401E | 861 | 36'-7" | Str. |
| S501E | 195 | 42'-10" | Str. |
| S502E | 190 | 43'-8" | 3" |
| S601E | 195 | 42'-8" | Str. |
| S602E | 92 | 34'-0" | Str. |
| S603E | 46 | 28'-0" | Str. |
| S701E | 382 | 11'-11" | 6½" |
| | | | |
| P401E | 768 | 5'-6" | 3" |
| P402E | 192 | 4'-10" | 3" |
| P403E | 128 | 5'-7" | Str. |
| P404E | 280 | 11'-7" | Str. |
| P501E | 768 | 4'-10" | 3¾" |

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

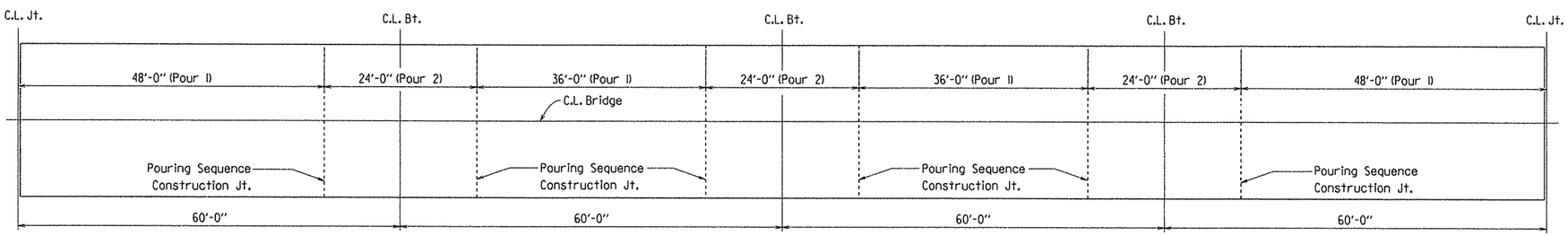



① ½" Overtolerance, No Undertolerance.



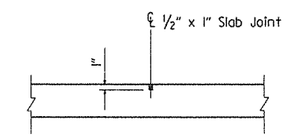




Notes: Bars with "E" designation shall be epoxy coated.



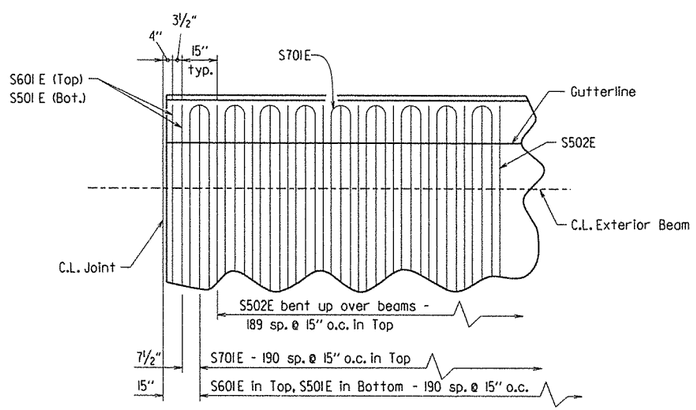

## SLAB POURING SEQUENCE

3/32" = 1'-0"




Use Type 3 or 4 Joint Sealer. See Subsections 501.02(h) and 501.05(j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab Joints shall extend to the outside edge of the deck slab and shall align with open joints at the front face of the parapet. Slab joints shall be installed before the parapet railing is poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck from gutterline to gutterline.

## SLAB JOINT DETAIL




## DETAIL W

NTS

Notes:
Req'd. slab joints and pouring sequence joints shall align with open joints in parapet rail at the gutterline.

Parapet rail spacing, drain opening and reinforcing are the same on both sides.

Slab Pouring Sequence Notes:
Pours with the same number may be placed simultaneously or separately. All Pours (1) must be placed before Pours (2) can be placed. 48 hours shall elapse between the end of a pour and the start of the next pour. 72 hours shall elapse between adjacent pours. Any railing pours made before the entire slab unit has been placed must be approved by the Engineer. The Contractor must obtain approval from the Engineer for any deviations from the pouring sequence shown.

STATE OF ARKANSAS
CARL J. FUSELIER
REGISTERED PROFESSIONAL ENGINEER
No. 7310
4/18/14
BRIDGE ENGINEER

## SHEET 3 OF 4

# DETAILS OF UNITS 2, 3 AND 4 240'-0" CONTINUOUS W-BEAM ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/18/11
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BRIDGE NO. 07265 DRAWING NO. 53219

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|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 53 | 90 |
| | | | | (1) 07265 | | CONT. UNIT | | 53220 |

# 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, Fifth Edition, 2010.

**MATERIALS AND STRENGTHS:**

| | |
|---|---|
| Class S(AE) Concrete | f'c = 4,000 psi |
| Reinforcing Steel (Gr. 60, AASHTO M31 or M322, Type A) | fy = 60,000 psi |
| Structural Steel (M 270, Gr. 50W) | Fy = 50,000 psi |
| Structural Steel (M 270, Gr. 36) | Fy = 36,000 psi |

**CONCRETE :**
Concrete shall be poured in the dry and all exposed corners to be chamfered ¾" unless otherwise noted. All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete. See Standard Drawing No. 55005 for allowable modifications and for tolerances when Permanent Steel Bridge Deck Forms are used.

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

The concrete deck shall be given a tine finish in accordance with Subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the beam. If a longitudinal strike-off is used, a vertical camber adjustment must be made in the strike-off to account for the future dead load deflection due to the railing. A minimum of 72 hours shall elapse between the completion of the slab and the pouring of the railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

**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. Structural steel completely embedded in concrete may be AASHTO M 270, Grade 36 unless otherwise noted.

Drawings show general features of design only. Shop drawings shall be made in accordance with the specifications, submitted and approval secured before fabrication is begun.

Requests for substitution of structural steel shapes shown with shapes of greater size must be submitted by the Contractor to the Engineer for approval. Steels of equal or greater strengths will be accepted only when shown on the approved shop drawings. Payment will be based on the basis of shapes shown in the plans, and no additional compensation will be made for any adjustments due to substitutions.

Beams and field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test specified in Subsection 807.05. This work and material will not be paid for directly, but shall be considered subsidiary to the item "Structural Steel in Beam Spans (M270, Gr. 50W)".

All beams shall be assembled in the shop as specified in Subsection 807.54 and blocked in their true position with webs horizontal. The camber, length of sections, distance between bearings, and openings of joints shallbe measured and this information shall become part of the permanent records. The component parts shall be match marked in this assembly and these marks shall be shown on the erection diagram. All beam dimensions are based on a temperature of 60 degrees F. A tolerance of ¼" +/- is allowed for camber.

Flange field splice plates for main members shall be cut and fabricated so that the primary direction of rolling is parallel to the direction of the main tensile and/or compressive stresses.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether permanent or temporary, a formal request with detailed drawings shall be submitted to the Engineer for approval; however, additional welds used for attaching falsework support devices or screed rail supports to the structural steel that do not exceed the limitations of Subsection 802.13 will not require approval prior to construction. All welding shall conform to Subsection 807.26.

Field connections shall be bolted with high-strength bolts and shall be ¾" ø bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior beam webs and on the bottom of the beam flanges. Holes for ¾" ø high-strength bolts may be 15/16" ø diameter if a washer is supplied for use under both the nut and head of the bolt.

Diaphragms shall be installed as beams are erected. All bolts in diaphragms and field splices shall be installed and tightened in accordance with Subsection 807.71 prior to pouring the concrete deck unless otherwise noted.

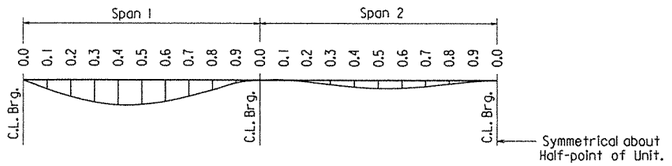
All shear connectors shall be granular flux filled, solid fluxed, or equal and shall be automatically end welded in accordance with recommendations of the Manufacturer.

# DEAD LOAD DEFLECTIONS (INCHES)

| Span | Point of Deflection | Structural Steel | | Structural Steel + Slab | | Structural Steel + Slab + Rail | |
|---|---|---|---|---|---|---|---|
| | | Ext. Beam | Int. Beam | Ext. Beam | Int. Beam | Ext. Beam | Int. Beam |
| 1 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 0.1 | 0.039 | 0.044 | 0.277 | 0.346 | 0.307 | 0.365 |
| | 0.2 | 0.072 | 0.081 | 0.514 | 0.641 | 0.552 | 0.677 |
| | 0.3 | 0.095 | 0.108 | 0.681 | 0.850 | 0.732 | 0.898 |
| | 0.4 | 0.106 | 0.120 | 0.762 | 0.951 | 0.819 | 1.005 |
| | 0.5 | 0.105 | 0.119 | 0.752 | 0.939 | 0.808 | 0.992 |
| | 0.6 | 0.092 | 0.104 | 0.658 | 0.821 | 0.707 | 0.867 |
| | 0.7 | 0.070 | 0.079 | 0.499 | 0.623 | 0.536 | 0.658 |
| | 0.8 | 0.043 | 0.048 | 0.305 | 0.381 | 0.328 | 0.402 |
| | 0.9 | 0.017 | 0.019 | 0.121 | 0.151 | 0.130 | 0.159 |
| 2 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 0.1 | -0.020 | -0.020 | -0.013 | -0.015 | -0.013 | -0.016 |
| | 0.2 | 0.007 | 0.008 | 0.049 | 0.062 | 0.053 | 0.065 |
| | 0.3 | 0.019 | 0.021 | 0.135 | 0.169 | 0.145 | 0.179 |
| | 0.4 | 0.029 | 0.033 | 0.210 | 0.262 | 0.226 | 0.277 |
| | 0.5 | 0.035 | 0.039 | 0.249 | 0.311 | 0.267 | 0.328 |
| | 0.6 | 0.034 | 0.038 | 0.242 | 0.303 | 0.260 | 0.320 |
| | 0.7 | 0.027 | 0.030 | 0.193 | 0.241 | 0.207 | 0.255 |
| | 0.8 | 0.016 | 0.018 | 0.115 | 0.144 | 0.124 | 0.152 |
| | 0.9 | 0.005 | 0.006 | 0.037 | 0.046 | 0.040 | 0.049 |
| | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Symmetrical about Half-point of Unit.

Note: Camber for Dead Load Deflection ± ¼" tolerance.
Deflections shown are along C.L. Beam from a chord from C.L. Bearing to C.L. Bearing. Negative sign ( - ) indicates point above chord.




DEAD LOAD DEFLECTION DIAGRAM
No Scale

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No. 7510
4/18/14
CARL J. FUSELIER
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SHEET 4 OF 4

DETAILS OF UNITS 2, 3 AND 4
240'-0" CONTINUOUS W-BEAM
ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/18/11 FILENAME: b090282_sl.dgn
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BRIDGE NO. 07265 DRAWING NO. 53220

| 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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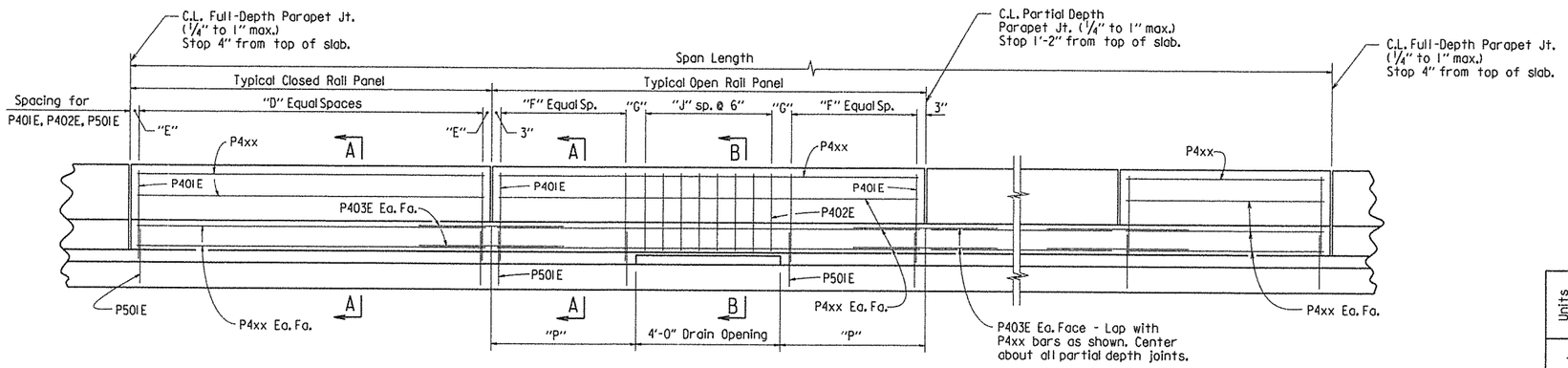
| | | | | JOB NO. | | 090282 | 54 | 90 |
| | | | | ① | 07265 | CONT. UNIT | | 53221 |

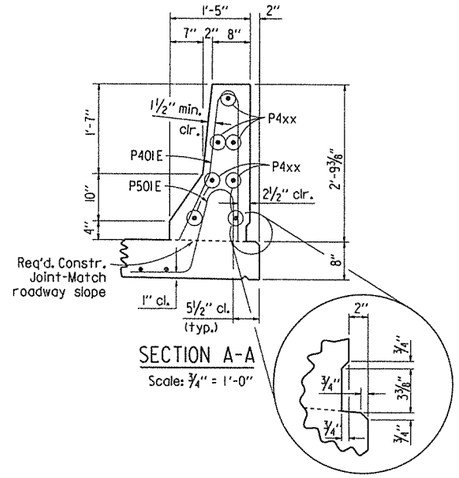



## ELEVATION - CONCRETE PARAPET RAIL

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

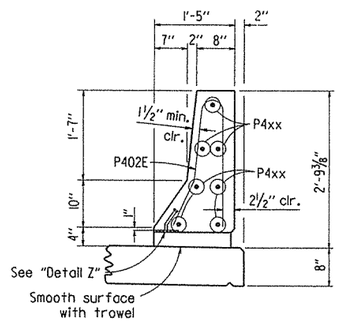
## TABLE OF VARIABLES

| | Closed Rail Panels | | | | Open Rail Panels | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Panel Length | "D" | "E" | P4xx Bar | Panel Length | "F" | "G" | "J" | "P" | P4xx Bar |
| Units 2, 3, & 4 | 12'-0" | 23 | 3" | P404E | 12'-0" | 7 | 6" | 7 | 4'-0" | P404E |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Unit 1 | 9'-0" | 17 | 3" | P404E | 13'-0" | 8 | 6" | 7 | 4'-6" | P405E |
| | | | | | 17'-6" | 13 | 6" | 7 | 6'-9" | P406E |
| | | | | | | | | | | |



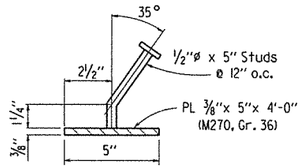

## SECTION A-A

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




## SECTION B-B

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

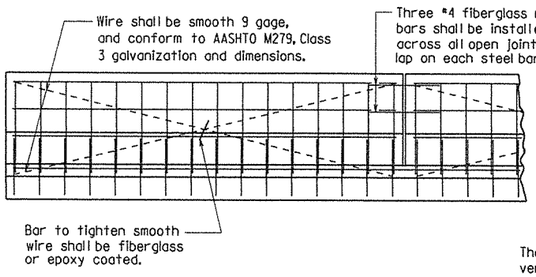


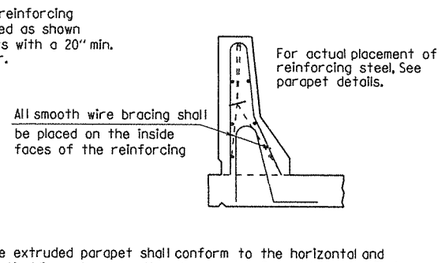

**Note:**
Parapet Studs shall be 5" long, granular flux filled, solid fluxed, or equal, and automatically end welded to the plate. Studs and plate shall meet the requirements of Section 807. Studs and plate shall be measured and paid for as Structural Steel in Beam Spans (M270, Gr. 50W).

The surfaces of the 3/8" Plates which will not be 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 will be considered subsidiary to Structural Steel in Beam Spans (M270, Gr. 50W).

## DETAIL Z

NTS



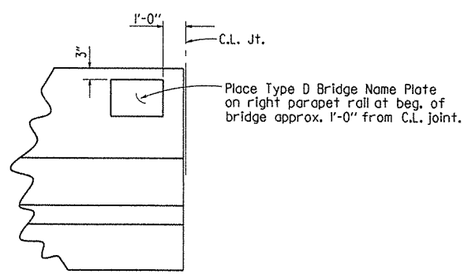




All panels shall be braced as required to prevent racking. All open joints shall be sawed as soon as practical to a minimum width of 1/4". To control cracking before sawing, all joints must be grooved before the concrete is set. Sawing of the joints must be controlled so it will follow the grooved joint.

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

## DETAILS OF OPTIONAL SLIPFORMING OF CONCRETE PARAPET RAIL

NTS




## VIEW SHOWING LOCATION OF NAME PLATE

NTS

STATE OF ARKANSAS
Carl J. Fusselier
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No. 7510
CARL J. FUSSELIER
4/24/13

BRIDGE ENGINEER

## SHEET 1 OF 2

# COMMON DETAILS OF W-BEAM UNITS ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/28/11 FILENAME: b090282_sl.dgn

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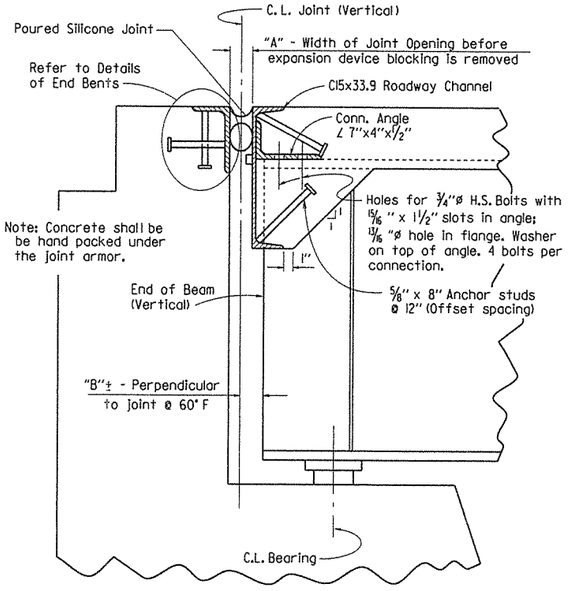
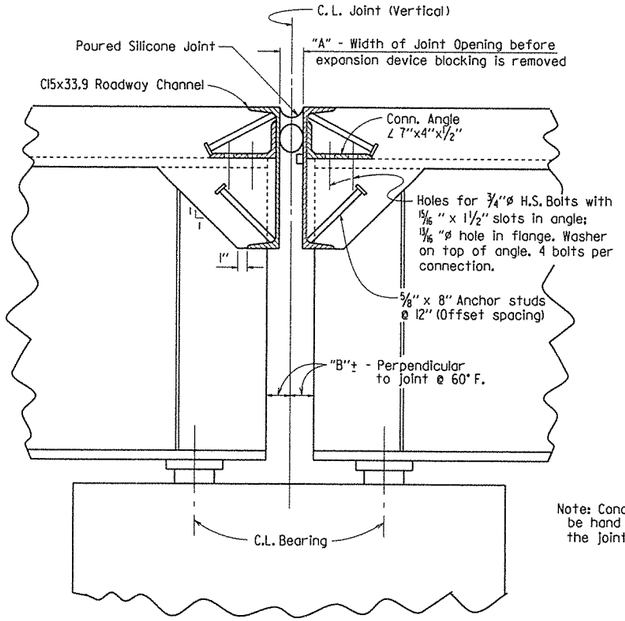
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 55 | 90 |
| | | | | ① | 07265 | CONT. UNIT | 53222 | |




Note: Concrete shall be be hand packed under the joint armor.

Note: Section taken perpendicular to C.L. Joint

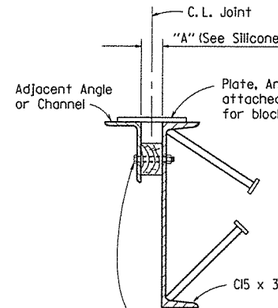
## SECTION THRU JOINT AT END BENT




Note: Concrete shall be be hand packed under the joint armor.

Note: Section taken perpendicular to C.L. Joint

## SECTION THRU JOINT AT INTERIOR BENT




Note: Each expansion joint device shall be blocked in the Shop by the Fabricator to the dimension "A" shown for 60° F and the blocking details shall be shown on the shop drawings. Blocking shall be placed within 2 feet of each end of the device and with a maximum spacing of 8 feet.

## DETAILS FOR BLOCKING EXPANSION JOINT DEVICE

EXPANSION DEVICE INSTALLATION AT END BENTS:

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

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, and the opening adjusted for temperature and grade.

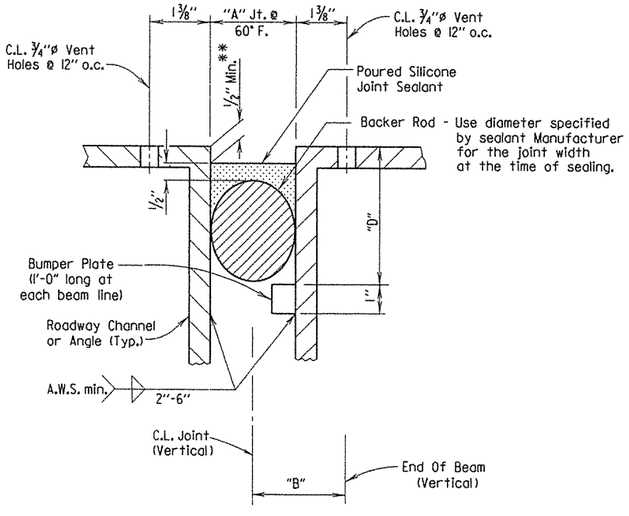
2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature and grade.

EXPANSION DEVICE INSTALLATION AT INTERIOR BENTS:

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

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

** Recess depth as recommended by the sealant Manufacturer




## DETAIL OF POURED SILICONE JOINT

## SILICONE JOINT DATA

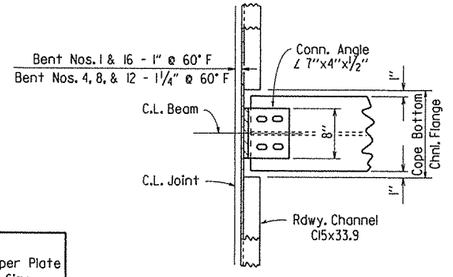
| Bent No. | "A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of: | | | "B" Perpendicular to Joint at 60°F | "D" | Bumper Plate Size |
|---|---|---|---|---|---|---|
| | 40°F | 60°F | 80°F | | | |
| 1 & 16 | 2 3/16" | 2" | 1 13/16" | 2 1/4" ± | 4 1/2" | 1" x 1" |
| | | | | | | |
| 4, 8, & 12 | 2 7/8" | 2 1/2" | 2 1/8" | 2 1/2" ± | 5" | 1 1/4" x 1" |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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

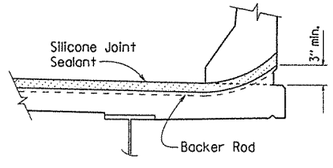
Notes:
The temperature limitations recommended by the sealant Manufacturer shall be observed. The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80° F.

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

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




## CHANNEL CONNECTION DETAIL




## JOINT SEAL PLACEMENT AT CURB

STATE OF ARKANSAS
Carl J. Fussellier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSSELLIER

BRIDGE ENGINEER

## SHEET 2 OF 2

# COMMON DETAILS OF W-BEAM UNITS ILLINOIS RIVER

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

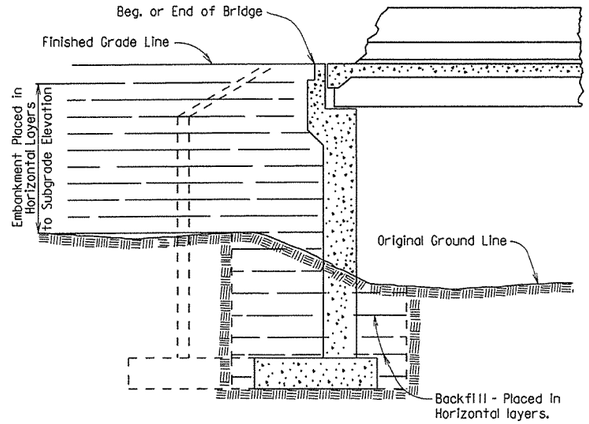
LITTLE ROCK, ARK.

DRAWN BY: ACP DATE: 04/28/11 FILENAME: b090282_sl.dgn
CHECKED BY: PGT DATE: 12-11 SCALE: No Scale
DESIGNED BY: ACP DATE: 04-11

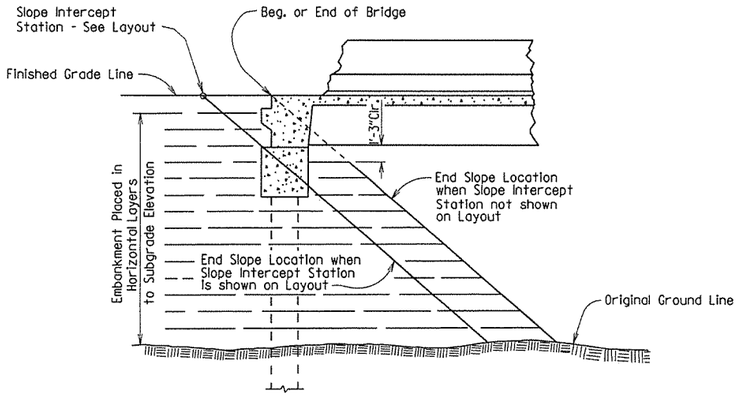
BRIDGE NO. 07265 DRAWING NO. 53222

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 56 | |
| | | | | JOB NO. | | | | |

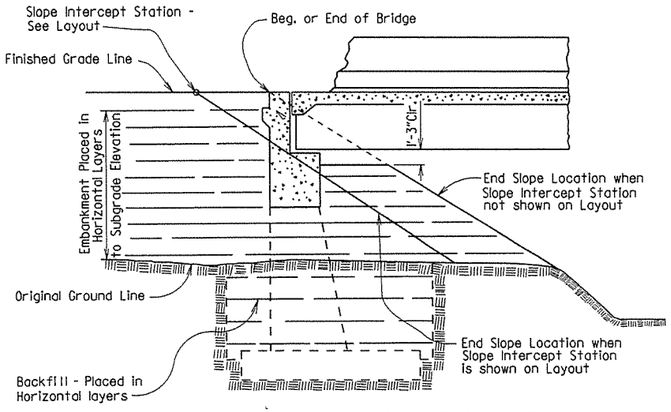
1 EMBANKMENT & BACKFILL 55000



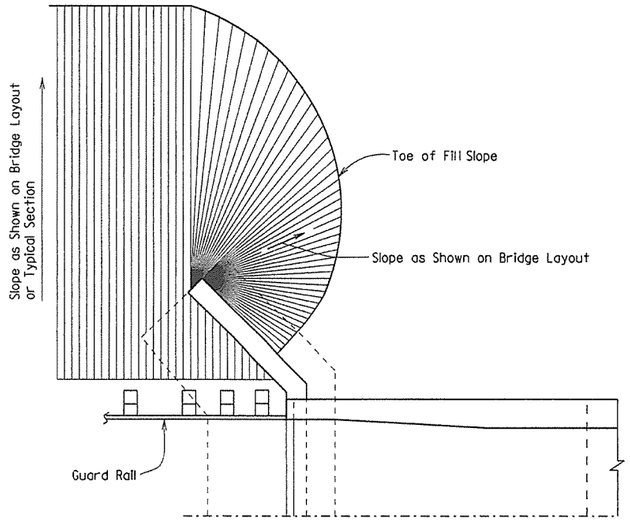

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



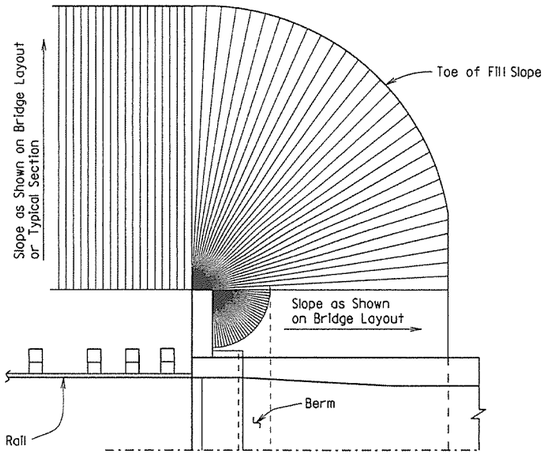

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



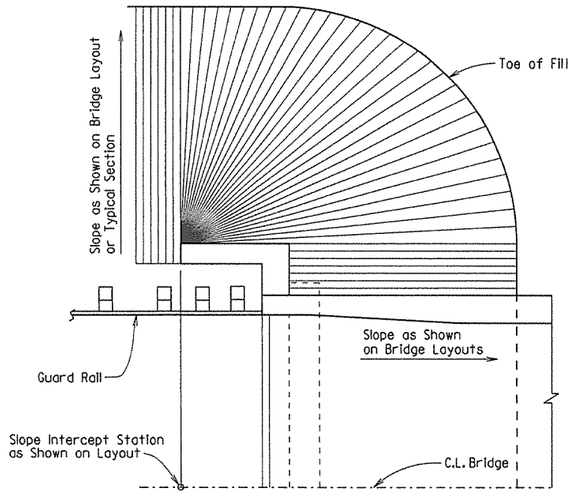

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



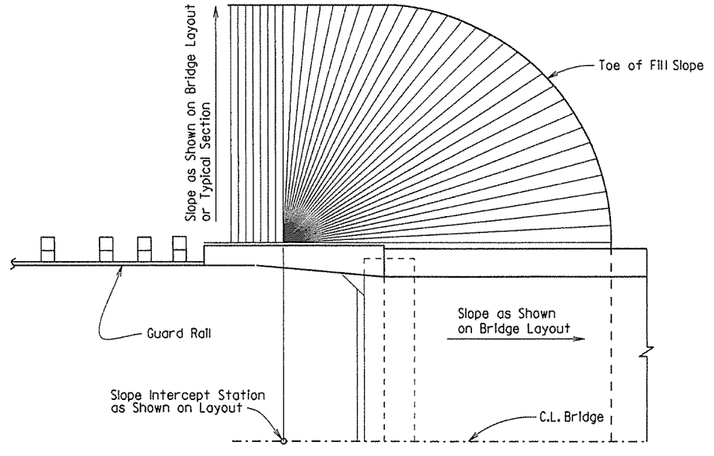

VERTICAL WALL ABUTMENTS




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

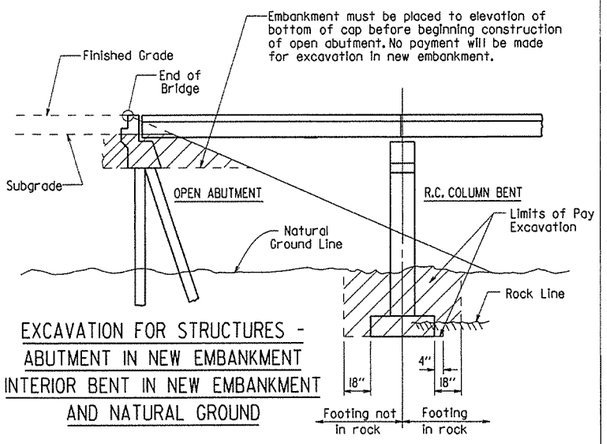
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

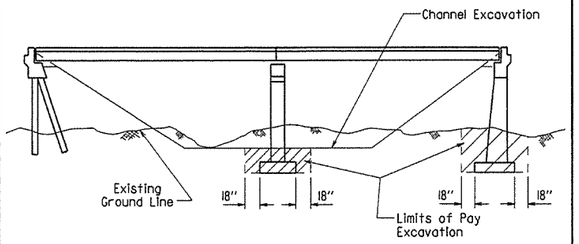
DRAWING NO. 55000

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 57 | |
| | | | | JOB NO. | | | | |

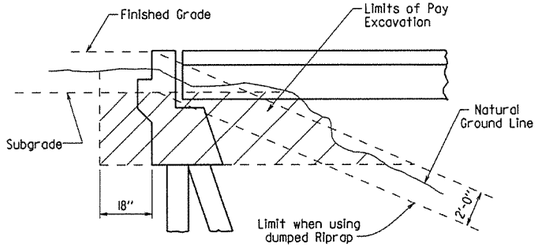
(1) RIPRAP & EXCAV. 55001



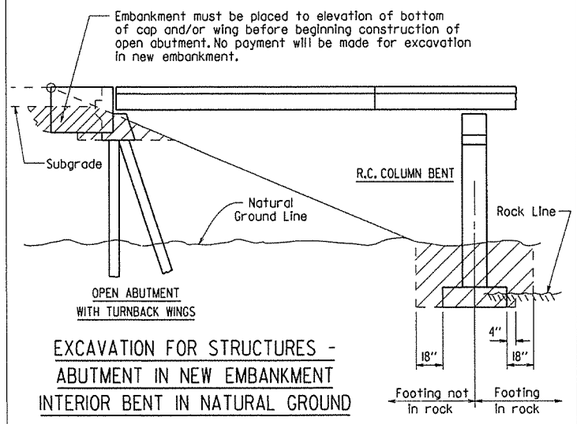

EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



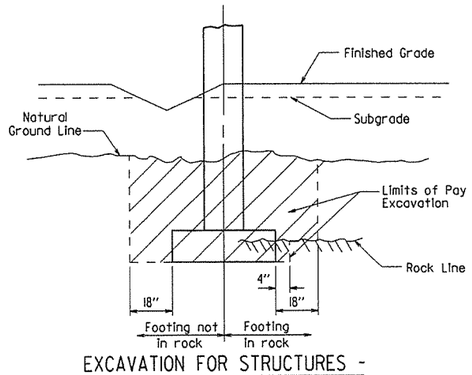

EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



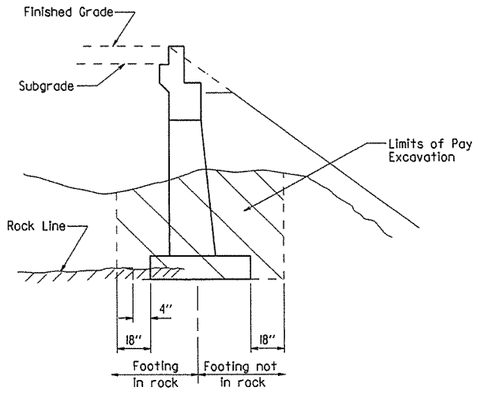

EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



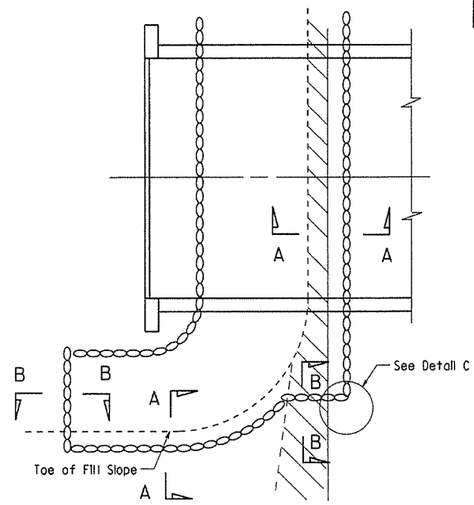

EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



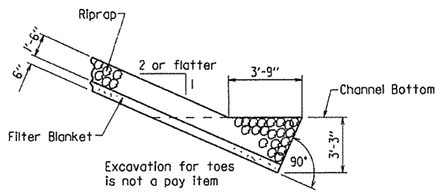

EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND




EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT

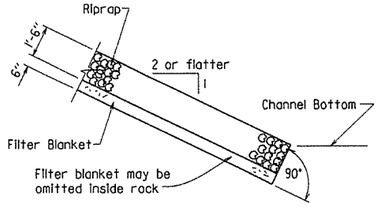



PLAN OF DUMPED RIPRAP




SECTION A-A

(Toe Excavation in Soil)



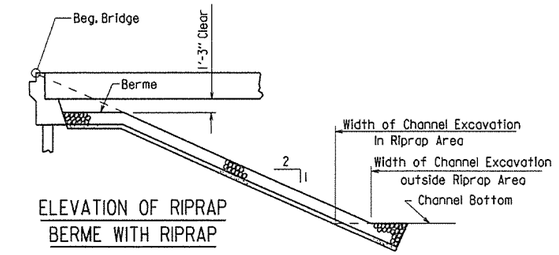

SECTION A-A

(Toe Excavation in Rock)

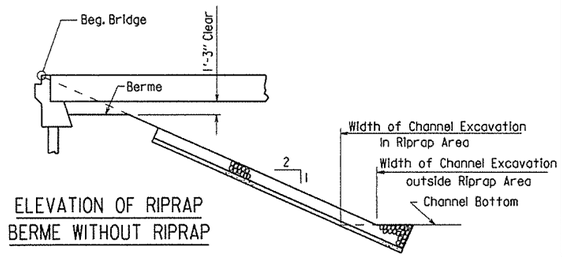
Note : Use this type of toe when rock is encountered which is in a stable condition.

Note : In lieu of an aggregate filter blanket, a synthetic fiber geotextile fabric complying with the requirements of Subsection 816.02(e) may be used.

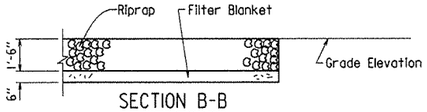
Note : Details for computing excavation for structures are included for information as to how plan quantities were calculated and for use when adjusting quantities when changing footing elevation.



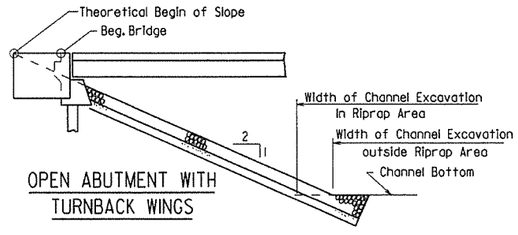

ELEVATION OF RIPRAP BERME WITH RIPRAP



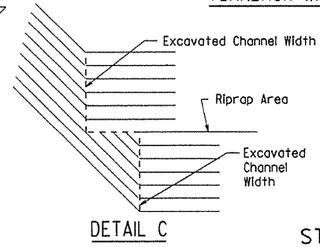

ELEVATION OF RIPRAP BERME WITHOUT RIPRAP




SECTION B-B




OPEN ABUTMENT WITH TURNBACK WINGS




DETAIL C

# STANDARD DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND COMPUTING EXCAVATION FOR STRUCTURES

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55001.dgn

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

DESIGNED BY: STD. DATE:

DRAWING NO. 55001

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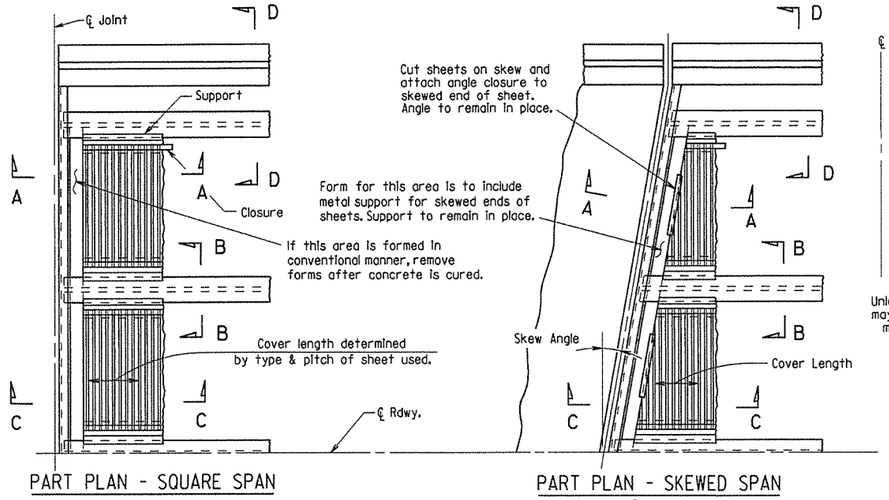
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 58 | |
| | | | | JOB NO. | | | | |
| | | | | ① | BRIDGE DECK FORMS | | 55005 | |



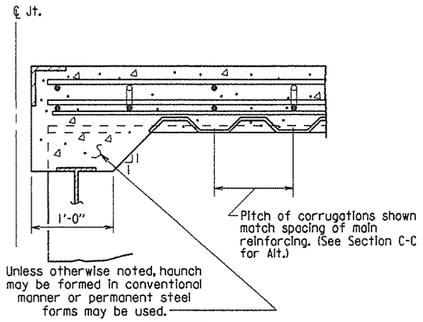

PART PLAN - SQUARE SPAN

3/8" = 1'-0"




PART PLAN - SKEWED SPAN

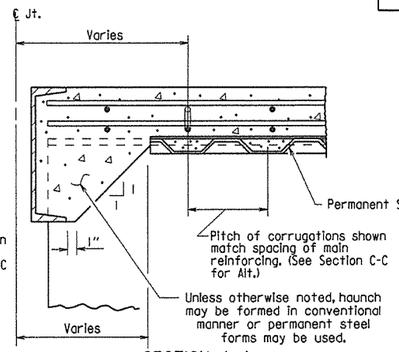
3/8" = 1'-0"




SECTION A-A

N.T.S.

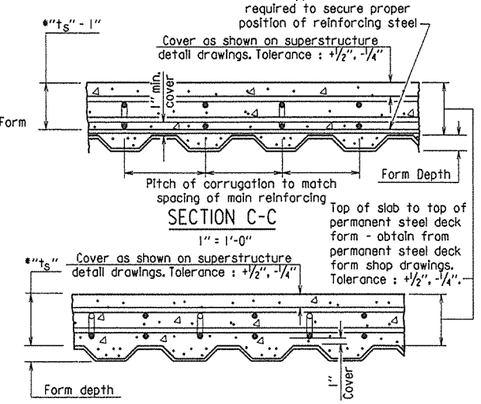
(Angle at end of span)




SECTION A-A

N.T.S.

(Channel at end of span)



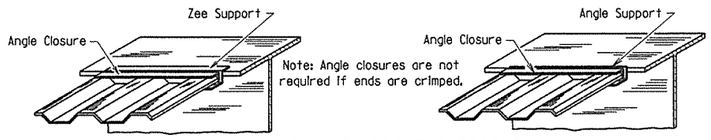

SECTION C-C

1" = 1'-0"

SECTION C-C - ALTERNATE

1" = 1'-0"

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




SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

*$t_s$ = slab thickness as shown on superstructure detail drawings.

GENERAL NOTES

Permanent steel deck forms may be used at the Contractor's option and shall be at no additional cost to the Department. Such use may result in changes to the dead load deflection of the girder. Any cost for adjustments due to a change in the dead load deflection will be borne by the Contractor. Payment for deck concrete and structural steel will not be increased due to use of permanent steel deck forms.

Permanent steel deck forms shall conform to Subsection 802.14(b). Detailed plans, including detailed calculations and manufacturer's technical brochure, shall be submitted to and approved by the Engineer before work of forming the bridge deck is started.

Welding of form supports to the tension flange of steel girders will be permitted only in areas where shear connectors are used. When welding is not allowed, the method of fastening Z or ∠ supports to the flange must be approved by the Engineer.

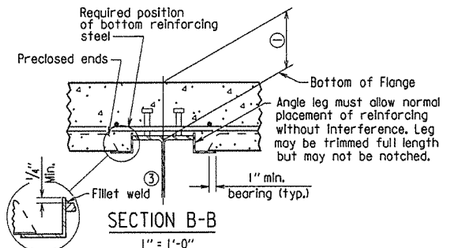
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Engineer.

When the pitch of form corrugations match the reinforcing spacing, transversely align form sheets across the bridge to maintain the correct orientation of continuous reinforcing bars in the corrugations.

Bar support rods, when used, shall be sized and spaced to adequately support the bottom reinforcing mat at the required position.

High chairs shall be sized to support the top mat of reinforcing at the proper position. High chairs shall be placed at locations shown on the detail drawings.

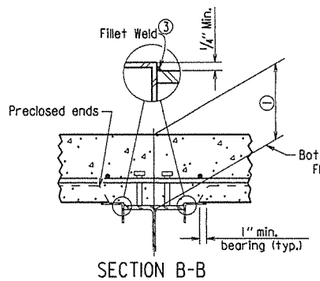
Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition), with applicable Supplemental Specifications and Special Provisions.




SECTION B-B

1" = 1'-0"

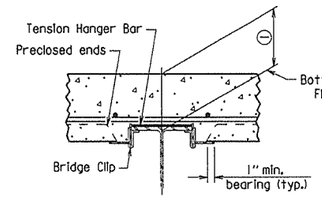
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)




SECTION B-B

1" = 1'-0"

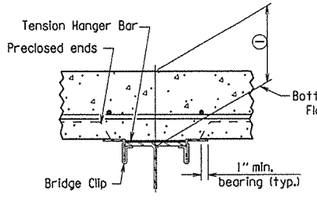
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)




SECTION B-B

1" = 1'-0"

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

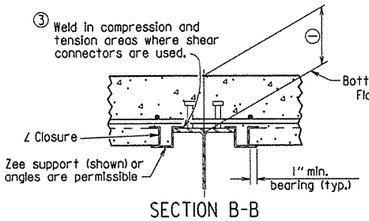



SECTION B-B

1" = 1'-0"

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

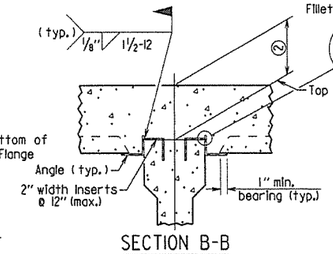
③ Minimum weld: 1/8" x 1' @ 18". More weld may be required; maximum length per weld = 1 1/2" (typ.)




SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

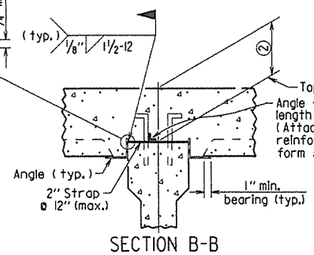



SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

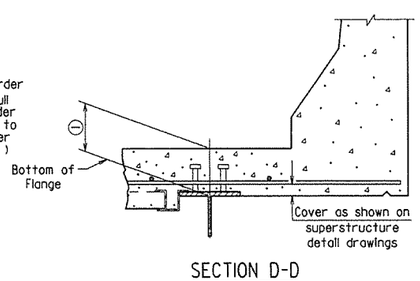



SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)




SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

# STANDARD DETAILS FOR PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 2-27-2014 FILENAME: b55005.dgn

CHECKED BY: BEF DATE: 2-27-2014 SCALE: NONE

DESIGNED BY: STD. DATE: —

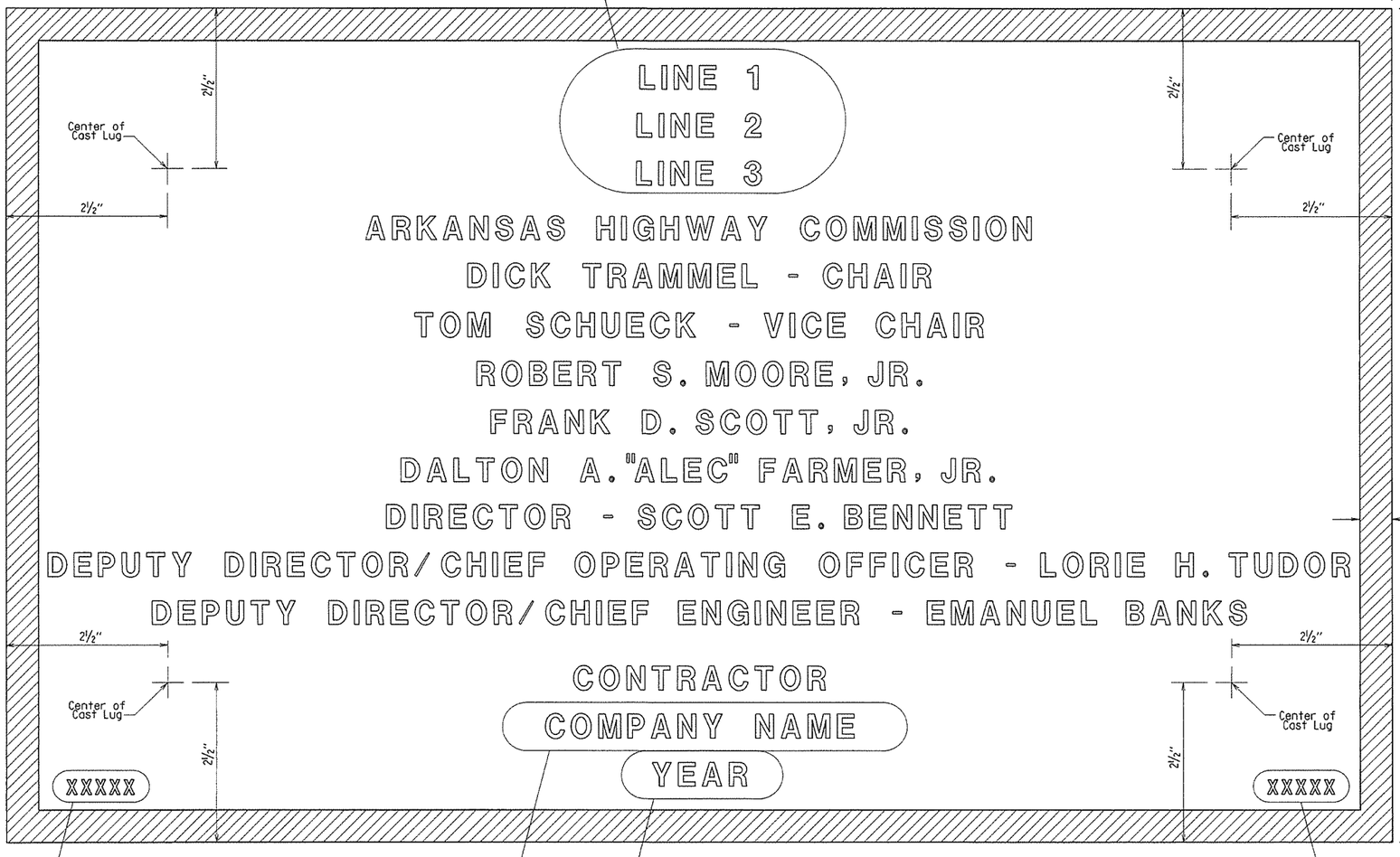
DRAWING NO. 55005

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| 12-1-14 | | | | 6 | ARK. | | 59 | |
| 1-14-15 | | | | JOB NO. | | | | |

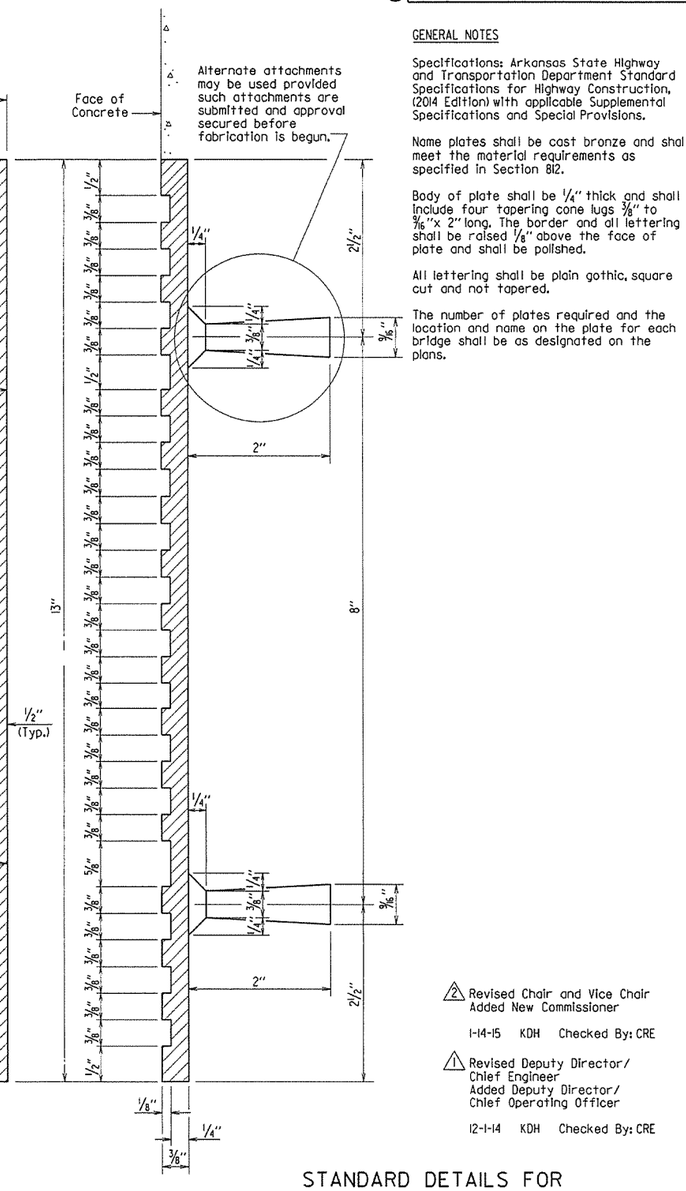
(1) TYPE D NAME PLATE 55010

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

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




TYPICAL BRIDGE NAME PLATE




GENERAL NOTES

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

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

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

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

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

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

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

STANDARD DETAILS FOR TYPE D BRIDGE NAME PLATE

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

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

DRAWING NO. 55010

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | 60 | |
| | | | | JOB NO. | | | | |
| | | | | ① | STEEL H-PILES | | | 55020 |

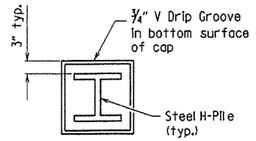
## GENERAL NOTES FOR STEEL H-PILES:

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

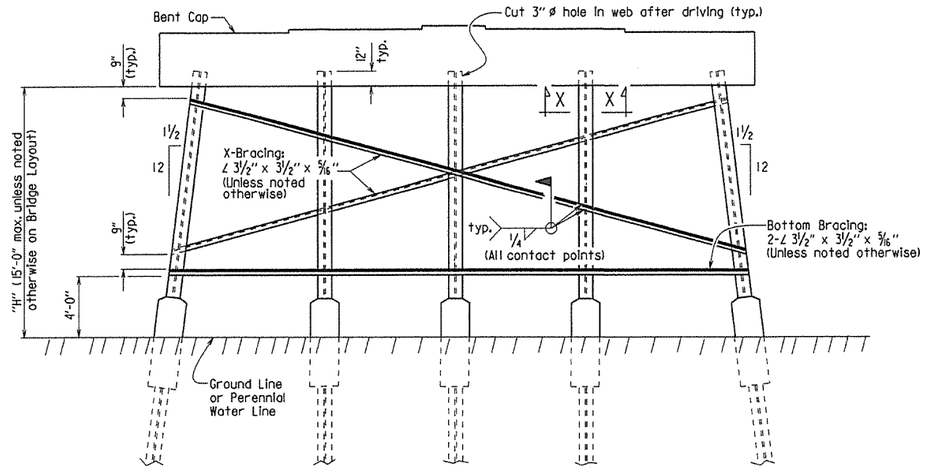
See Bridge Layout and Bent Details for pile size, estimated length, spacing, pile anchorage (if required) and for driving information.

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.

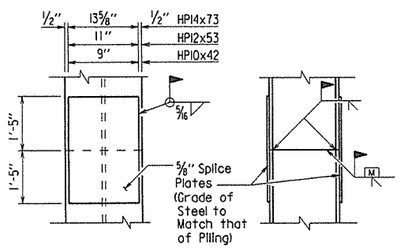
Omit X-Bracing and Bottom Bracing when "H" is 5 feet or less.

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)

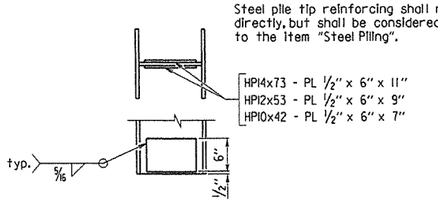



Note:
The Contractor may for his own convenience and at his own expense provide as many as three splices per pile. Minimum spacing between splices shall be 5 feet.

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:

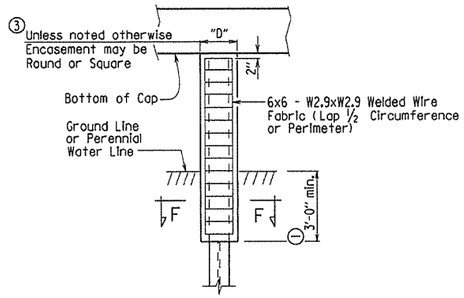
See Bridge Layout for additional notes and required location of pile encasements.

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.

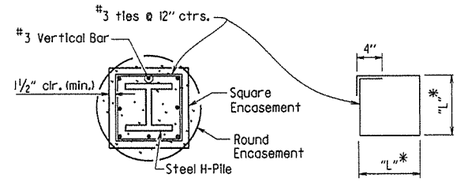
Welded Wire Fabric shall conform to AASHTO M 55 or M 221. Galvanized Corrugated Steel Pipe shall conform to AASHTO M 36 and M 218.

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)

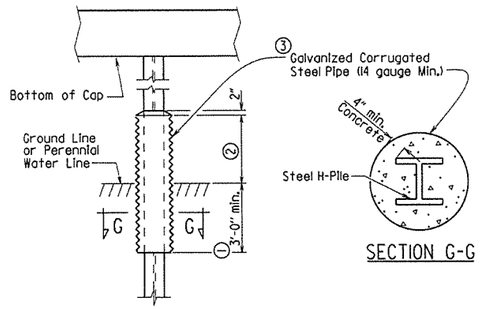



SECTION F-F

*Measured out-to-out of bar.

## TABLE OF VARIABLES FOR PILE ENCASEMENT

| Pile Size | "D" Square Encsmt. | "D" Round Encsmt. | "L"* |
|---|---|---|---|
| HPI0x42 | 1'-7" | 2'-0" | 1'-4" |
| HPI2x53 | 1'-8" | 2'-2" | 1'-5" |
| HPI4x73 | 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.

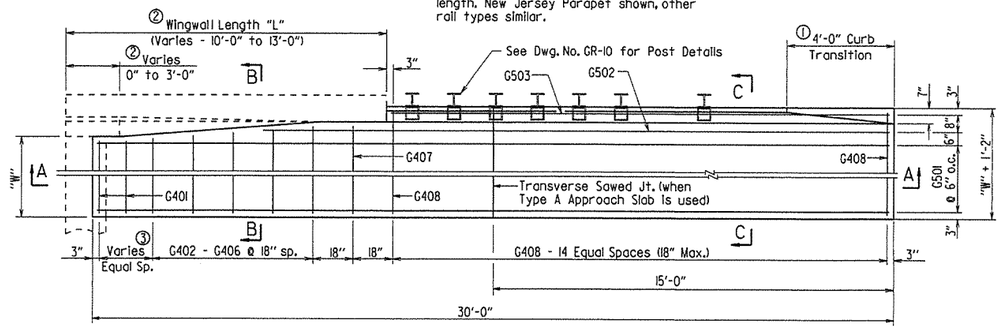
DRAWN BY: A.M.S. DATE: 2/27/2014 FILENAME: b55020.dgn
CHECKED BY: B.E.F. DATE: 2/27/2014 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

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. | | 61 | |
| | | | | JOB NO. | | | | |

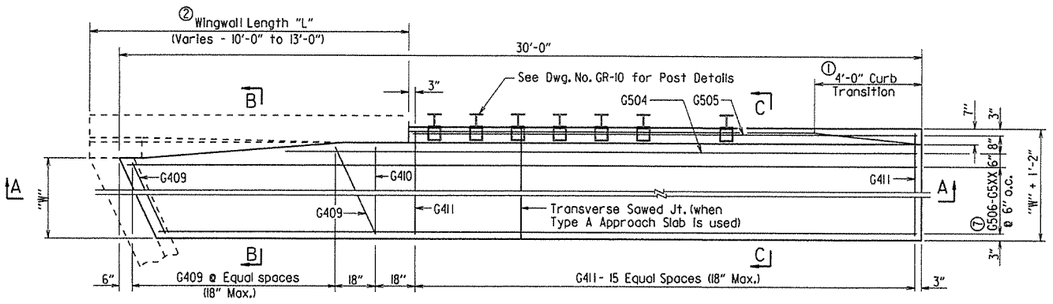
① TYPE A GUTTERS 55030A

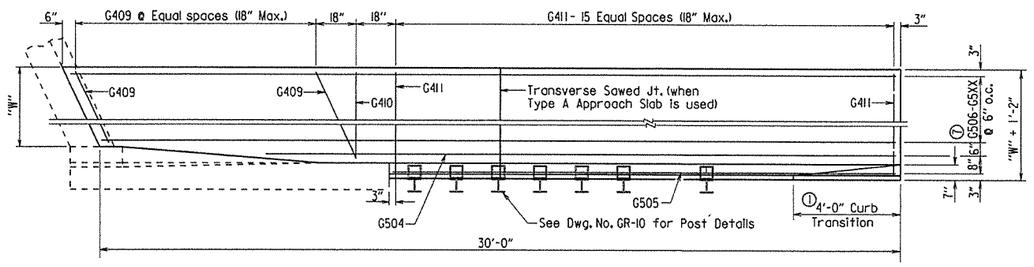
② See End Bent Details for actual wingwall length. New Jersey Parapet shown, other rail types similar.



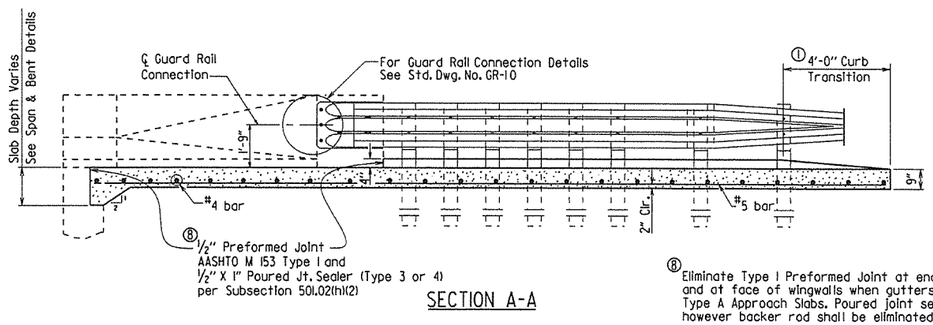

③ Number of G401 bars vary with wingwall length - See Bar List

HALF PLAN OF APPROACH GUTTERS FOR SQUARE BRIDGE



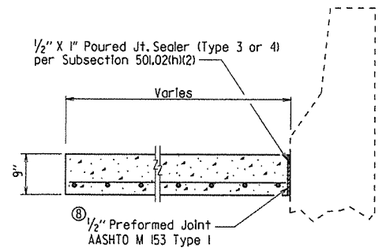

PLAN OF APPROACH GUTTERS FOR SKEWED BRIDGE



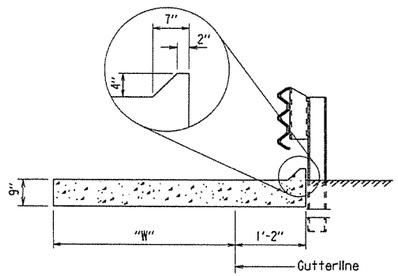

SECTION A-A

① Construct gutter curb with height-transition as shown if drop inlet is not placed at end of gutter.

Construct gutter curb full height (no height-transition) if drop inlet is placed at end of gutter. Curb height transition placed on drop inlet. See drop inlet details.




SECTION B-B
N.T.S.




SECTION C-C
N.T.S.

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

⑧ Eliminate Type I Preformed Joint at end bent backwall and at face of wingwalls when gutters used with Type A Approach Slabs. Poured joint sealer is required, however backer rod shall be eliminated.

## BAR LIST FOR ONE TYPE A GUTTER

| | Mark | No. Req'd. for Width "W" 3'-0" | 4'-0" | 6'-0" | 8'-0" | Length |
|---|---|---|---|---|---|---|
| Square Bridge | G401 | ④ | ④ | ④ | ④ | "W"- 4" |
| | G402-G406 | 1 each | 1 each | 1 each | 1 each | "W"-3" to "W"+2" |
| | G407 | 1 | 1 | 1 | 1 | "W"+3" |
| | G408 | 15 | 15 | 15 | 15 | "W"+ 10" |
| | G501 | 6 | 8 | 12 | 16 | 29'-8" |
| | G502 | 1 | 1 | 1 | 1 | (35'-5") - "L" |
| | G503 | 1 | 1 | 1 | 1 | 30'-8"-"L" |
| Skewed Bridge | G409 | ⑥ | ⑥ | ⑥ | ⑥ | ⑤ |
| | G410 | 1 | 1 | 1 | 1 | "W"+3" |
| | G411 | 16 | 16 | 16 | 16 | "W"+ 10" |
| | G504 | 1 | 1 | 1 | 1 | ⑤ |
| | G505 | 1 | 1 | 1 | 1 | ⑤ |
| | G506 - G5XX ⑦ | 1 each | 1 each | 1 each | 1 each | ⑤ |

④ 0 for "L" = 10'
1 for "L" = 11'
2 for "L" = 12'
2 for "L" = 13'

⑦ G511 for "W" = 3'
G513 for "W" = 4'
G517 for "W" = 6'
G521 for "W" = 8'

⑤ Bar Lengths vary with Skew and Wingwall Length.

⑥ No. Req'd. varies with Skew and Wingwall length.

## QUANTITIES FOR ONE SQUARE APPROACH GUTTER

(FOR INFORMATION ONLY)

| "W" Width (ft.) | Reinforcing Steel (Lbs.) | Concrete (Cu. Yds.) |
|---|---|---|
| 3 | 285 | 3.40 |
| 4 | 360 | 4.25 |
| 6 | 515 | 5.90 |
| 8 | 665 | 7.55 |

Quantities are based on "L" = 10'-0".

GENERAL NOTES

All concrete shall be Class S or Class S(AE) or mixture used for Portland Cement Concrete Pavement and shall be poured in the dry.

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

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

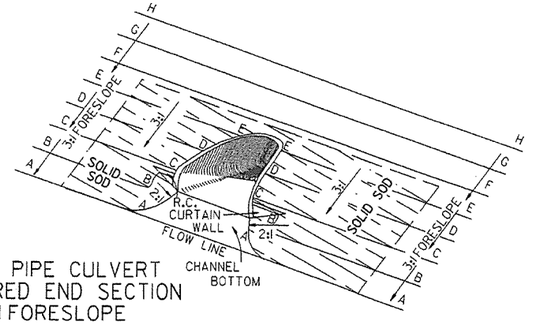
# STANDARD DETAILS FOR TYPE A APPROACH GUTTERS

## ARKANSAS STATE HIGHWAY COMMISSION

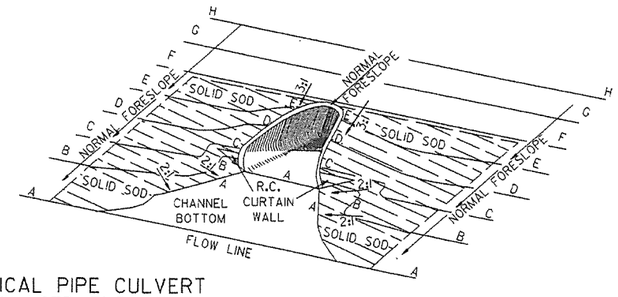
LITTLE ROCK, ARK.

DRAWN BY: A.M.S. DATE: 2/27/2014
CHECKED BY: K.W.Y. DATE: 2/27/2014
DESIGNED BY: STD. DATE:
FILENAME: b55030a.dgn
SCALE: 3/8" = 1'-0" or As Shown

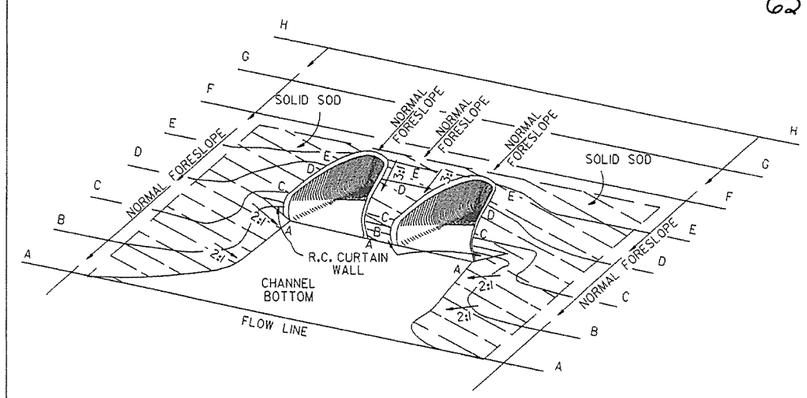
DRAWING NO. 55030A




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

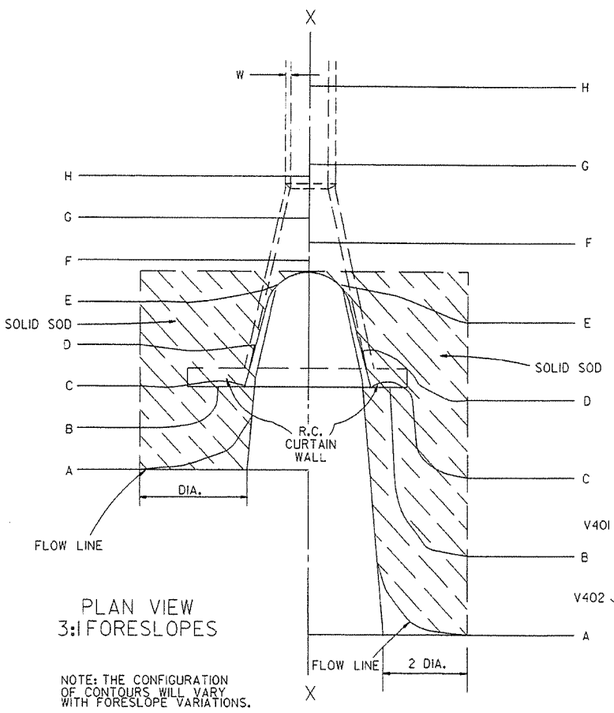
| PIPE DIA. | SINGLE R.C. PIPE CULVERT H401 L | H401 NO. | H402 L | H402 NO. | V401 L | V401 NO. | V402 L | V402 NO. | DOUBLE R.C. PIPE CULVERT H401 L | H401 NO. | H402 L | H402 NO. | H403 L | H403 NO. | V401 L | V401 NO. | V402 L | V402 NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 7'-8" | 2 | 1'-11½" | 4 | 1'-7½" | 8 | 8" | 8 | 12'-2" | 2 | 1'-11½" | 4 | 8" | 2 | 1'-7½" | 10 | 8" | 14 |
| 24" | 9'-2" | 2 | 2'-2" | 4 | 1'-8½" | 10 | 8" | 9 | 14'-8" | 2 | 2'-2" | 4 | 8" | 2 | 1'-8½" | 12 | 8" | 18 |
| 30" | 10'-8" | 2 | 2'-4½" | 4 | 1'-11½" | 10 | 8" | 12 | 17'-8" | 2 | 2'-4½" | 4 | 8" | 2 | 1'-11½" | 14 | 8" | 22 |
| 36" | 12'-8" | 2 | 2'-10" | 6 | 2'-3" | 12 | 8" | 14 | 20'-8" | 2 | 2'-10" | 6 | 8" | 3 | 2'-3" | 14 | 8" | 28 |
| 42" | 15'-2" | 2 | 3'-9½" | 8 | 2'-9½" | 16 | 8" | 15 | 23'-8" | 2 | 3'-9½" | 8 | 8" | 4 | 2'-9½" | 18 | 8" | 30 |
| 48" | 16'-8" | 2 | 4'-3" | 10 | 3'-1" | 18 | 8" | 16 | 25'-8" | 2 | 4'-3" | 10 | 8" | 5 | 3'-1" | 20 | 8" | 32 |
| 54" | 18'-2" | 2 | 4'-8½" | 12 | 3'-5½" | 20 | 8" | 17 | 27'-8" | 2 | 4'-9" | 12 | 8" | 6 | 3'-5½" | 22 | 8" | 34 |
| 60" | 20'-2" | 2 | 5'-5" | 14 | 4'-0" | 24 | 8" | 18 | 30'-8" | 2 | 5'-5" | 14 | 8" | 7 | 4'-0" | 26 | 8" | 36 |
| 72" | 25'-2" | 2 | 7'-4" | 18 | 5'-1" | 30 | 8" | 20 | 36'-8" | 2 | 7'-4" | 18 | 8" | 9 | 5'-1" | 33 | 8" | 40 |

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

## SOLID SODDING

| PIPE DIA. | SINGLE R.C.P.C. 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 |

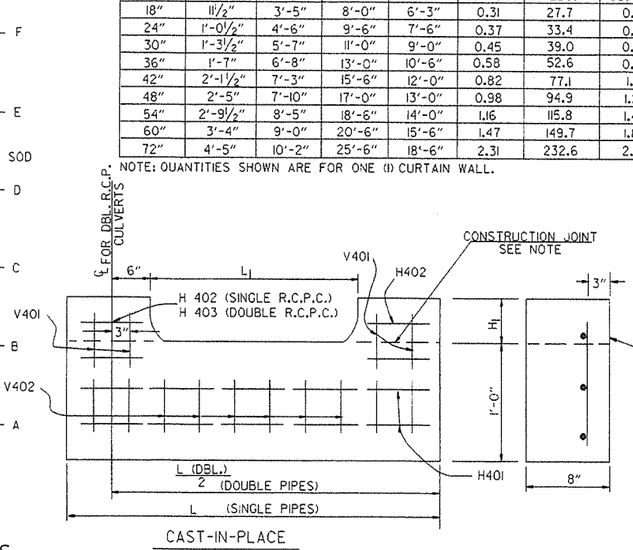
NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.




PLAN VIEW
3:1 FORESLOPES

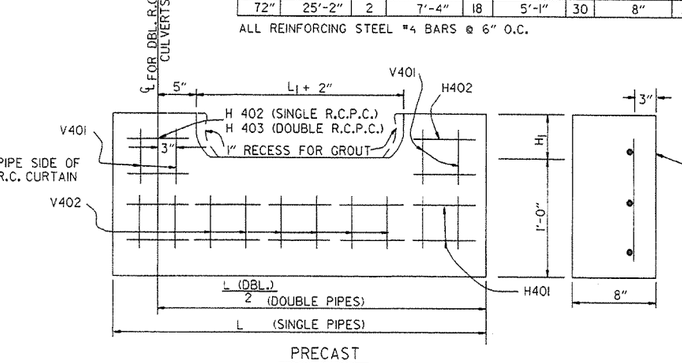
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES




CAST-IN-PLACE

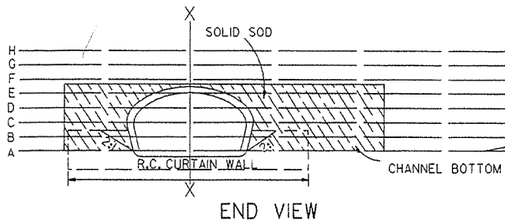
NOTE: THE PORTION OF THE R.C. CURTAIN WALL BENEATH THE FLARED END SECTION (LOWER 1'-0") SHALL BE PLACED MONOLITHICALLY. THE FLARED END SECTION SHALL THEN BE SET IN PLACE & THE REMAINING PORTIONS OF THE R.C. CURTAIN WALL PLACED.



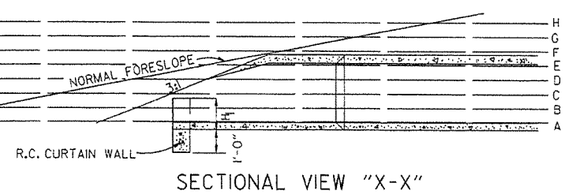

PRECAST

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




END VIEW




SECTIONAL VIEW "X-X"

### GENERAL NOTES

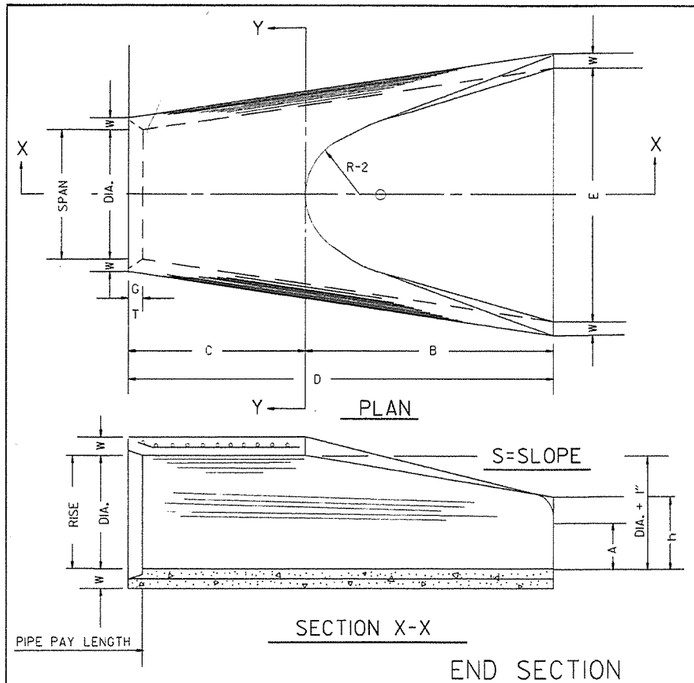
1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; 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.

| DATE | REVISION | FILMED |
|---|---|---|
| 10-18-96 | ADDED NOTE TO SOLID SODDING | 10-18-96 |
| 10-12-95 | CORRECTED SPELLING | |
| 11- 3-94 | ADDED GENERAL NOTE NO. 4 | |
| 8-15-91 | REV. CURTAIN WALL QUANT. STEEL SCH. & SOLID SOD QUANT. | |
| 3-2-81 | ALLOW PRECAST IN 2 OR MORE PIECES CHAMFER EDGES | |
| 5-15-80 | ADDED PRECAST WALL & GENERAL NOTES | |
| 10-2-72 | REVISED AND REDRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

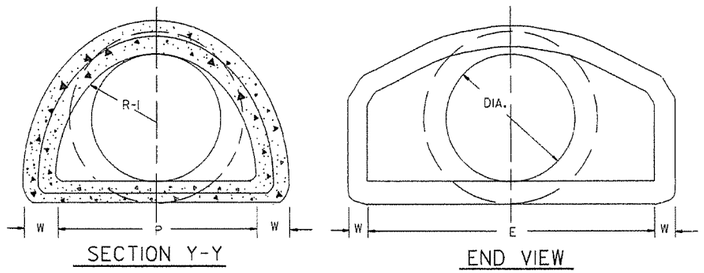
STANDARD DRAWING FES-1




# END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

## TABLE OF DIMENSIONS

| DIA. | WALL | A | B | C | D | E | S | DIA. ± 1" | P | R-1 | R-2 | G-T | WT. | h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18" | 2½" | 9" | 2'-3" | 3'-10" | 6'-1" | 3'-0" | 3:1 | 19" | 29" | 15½" | 12" | 2" | 1000 | 1'-0½" |
| 24" | 3" | 9½" | 3'-7½" | 2'-6" | 6'-11½" | 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'-4⅜" |
| 36" | 4" | 1'-3" | 5'-3" | 2'-10¾" | 8'-1¼" | 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" | 53⅜" | 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 15/16" | 24" | 5" | 13250 | 4'-6" |

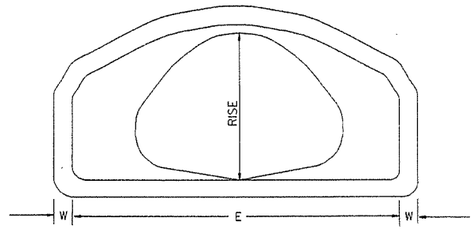



NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

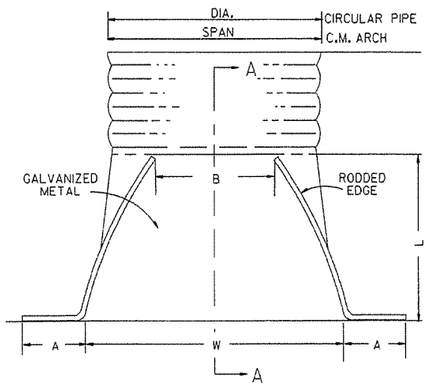
## ARCH PIPE

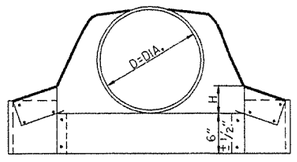
| EQUIV. DIA. | • SPAN AASHTO M 206 | • SPAN AHD NOMINAL | • RISE AASHTO M 206 | • RISE AHD NOMINAL | W | A | B | C | D | E | P | R2 | G-T | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INCHES | | | | | | | | | | | | | |
| 15 | 18 | 18 | 11 | 11 | 2" | 4" | 2'-0" | 4'-0" | 6'-0" | 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 13/16" | 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" | 70 5/16" | 24" | 4¼" | 2½:1 |
| 54 | 65 | 65 | 40 | 40 | 5½" | 1'-7" | 5'-3" | 2'-11" | 8'-2" | 8'-6" | 72 1/16" | 24" | 4¾" | 2¼:1 |
| 60 | 73 | 73 | 45 | 45 | 6" | 1'-10" | 5'-6" | 2'-8" | 8'-2" | 9'-0" | 77 13/16" | 24" | 5" | 2¼:1 |

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




END VIEW
CONCRETE ARCH PIPE

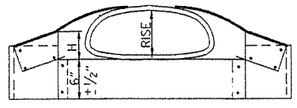



CIRCULAR PIPE

## CIRCULAR PIPE

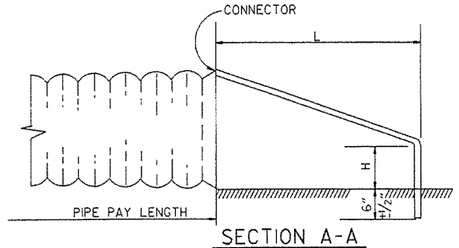
| D. DIA. | GAUGE | A 1" ± | B. MAX. | H 1" ± | L 1½" ± | W 2" ± | S |
|---|---|---|---|---|---|---|---|
| | | INCHES | | | | | |
| 12 | 16 | 6 | 6 | 6 | 21 | 24 | 2½:1 |
| 15 | 16 | 7 | 8 | 6 | 26 | 30 | 2½:1 |
| 18 | 16 | 8 | 10 | 6 | 31 | 36 | 2½:1 |
| 21 | 16 | 9 | 12 | 6 | 36 | 42 | 2½:1 |
| 24 | 16 | 10 | 13 | 6 | 41 | 48 | 2½:1 |
| 30 | 14 | 12 | 16 | 8 | 51 | 60 | 2½:1 |
| 36 | 14 | 14 | 19 | 9 | 60 | 72 | 2½:1 |
| 42 | 12 | 16 | 22 | 11 | 69 | 84 | 2½:1 |
| 48 | 12 | 18 | 27 | 12 | 78 | 90 | 2½:1 |
| 54 | 12 | 18 | 30 | 12 | 84 | 102 | 2:1 |
| 60 | 12 | 18 | 33 | 12 | 87 | 114 | 1¾:1 |
| 66 | 12 | 18 | 36 | 12 | 87 | 120 | 1½:1 |
| 72 | 12 | 18 | 39 | 12 | 87 | 126 | 1 1/3:1 |




C.M. ARCH PIPE

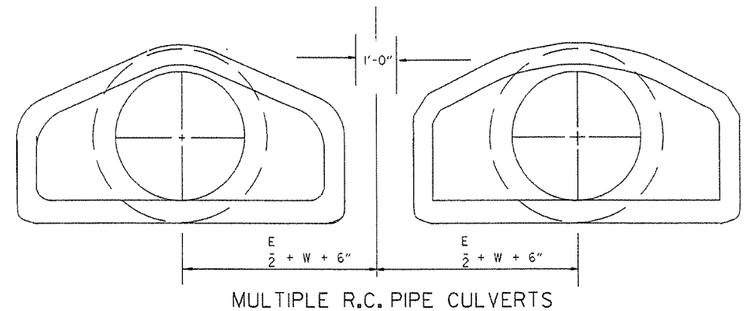
## C.M. ARCH PIPE

| EQUIV. DIA. | SPAN | RISE | A 1" ± | B MAX. | H 1" ± | L 1½" ± | W 2" ± | S | GAUGE |
|---|---|---|---|---|---|---|---|---|---|
| | INCHES | | | | | | | | |
| 15" | 17 | 13 | 7 | 9 | 6 | 19 | 30 | 2½:1 | 16 |
| 18" | 21 | 15 | 7 | 10 | 6 | 23 | 36 | 2½:1 | 16 |
| 21" | 24 | 18 | 8 | 12 | 6 | 28 | 42 | 2½:1 | 16 |
| 24" | 28 | 20 | 9 | 14 | 6 | 32 | 48 | 2½:1 | 16 |
| 30" | 35 | 24 | 10 | 16 | 6 | 39 | 60 | 2½:1 | 14 |
| 36" | 42 | 29 | 12 | 18 | 8 | 46 | 75 | 2½:1 | 14 |
| 42" | 49 | 33 | 13 | 21 | 9 | 53 | 85 | 2½:1 | 12 |
| 48" | 57 | 38 | 18 | 26 | 12 | 63 | 90 | 2½:1 | 12 |
| 54" | 64 | 43 | 18 | 30 | 12 | 70 | 102 | 2¼:1 | 12 |
| 60" | 71 | 47 | 18 | 33 | 12 | 77 | 114 | 2¼:1 | 12 |

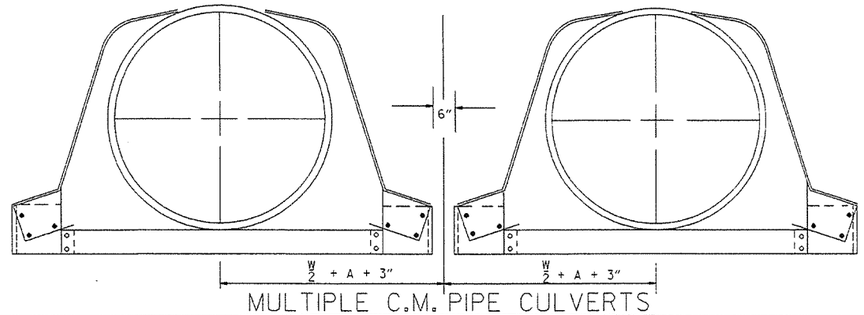



NOTE: ALTERNATE CONNECTIONS TO THE PIPE CULVERTS, IN ACCORDANCE WITH MANUFACTURER'S STANDARD PRACTICES, MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

# END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS




MULTIPLE R.C. PIPE CULVERTS




MULTIPLE C.M. PIPE CULVERTS

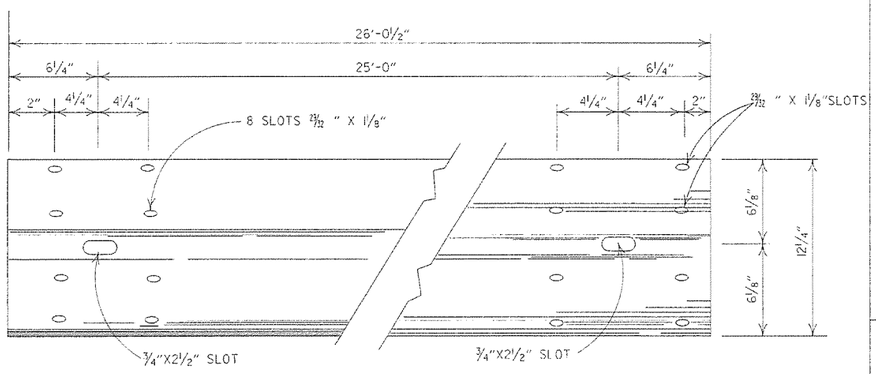
| DATE | REVISION | FILMED |
|---|---|---|
| 10-18-96 | REVISED ASTM REF. TO AASHTO | 10-18-96 |
| 5-15-80 | REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S. | 664-5-15-80 |
| 7-14-78 | C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES | 752-7-14-78 |
| 8-22-75 | ADDED MULTIPLE PIPE CULVERTS | 517-8-22-75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

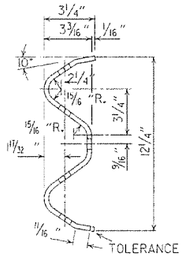
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

STANDARD DRAWING FES-2

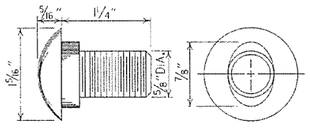
stdfes2.dgn



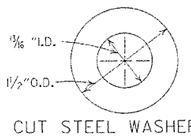




## DETAILS OF W-BEAM GUARD RAIL

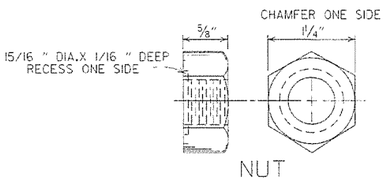
RAIL SECTION OF CLOSELY SIMILAR DIMENSIONS AND COMPARABLE STRENGTH MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.



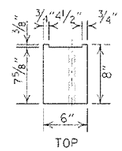

## SPLICE BOLT
## POST BOLT - SAME EXCEPT LENGTH



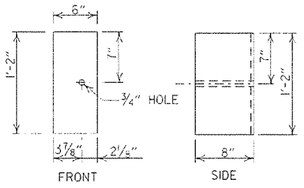

CUT STEEL WASHER




NUT

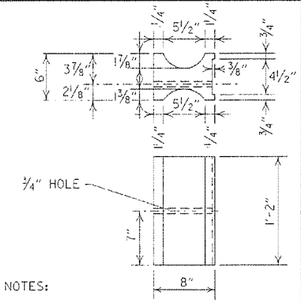



TOP




WOOD BLOCKOUT USED WITH WOOD POSTS SHALL BE 6"x8"x1'-2" WITH NO NOTCH REQUIRED.

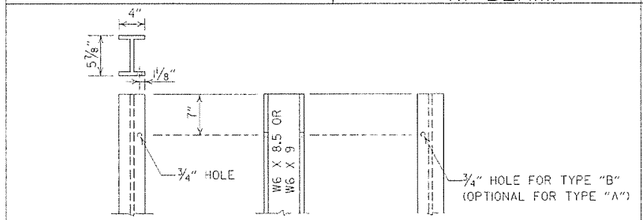
## WOOD BLOCKOUT (W-BEAM)



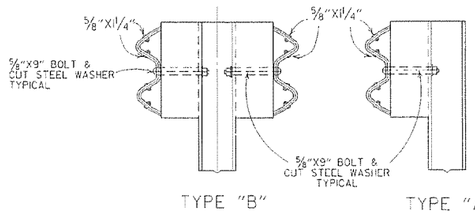

NOTES:

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)




## STEEL POST




## DETAILS OF STEEL LINE POST CONNECTIONS (W-BEAM)

-GENERAL NOTES-

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

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

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

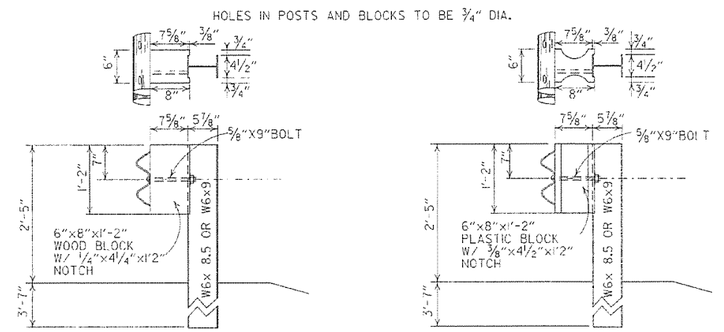
USE W-BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB. FOR EXTENSIONS OR MODIFICATION OF EXISTING GUARD RAIL, W-BEAM GUARD RAIL COMPONENTS OF THE SAME TYPE AS THOSE EXISTING SHALL BE USED.

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

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

CONTRACTOR SHALL HAVE THE OPTION OF USING WOOD BLOCKOUTS FOR W-BEAM GUARD RAIL OR PLASTIC BLOCKOUTS, AS LONG AS BLOCKOUT USED MEETS NCHRP-350 TEST LEVEL 3 SPECIFICATIONS OR REQUIREMENTS FOR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) FOR W-BEAM GUARD RAIL.

HOLES IN POSTS AND BLOCKS TO BE ¾" DIA.

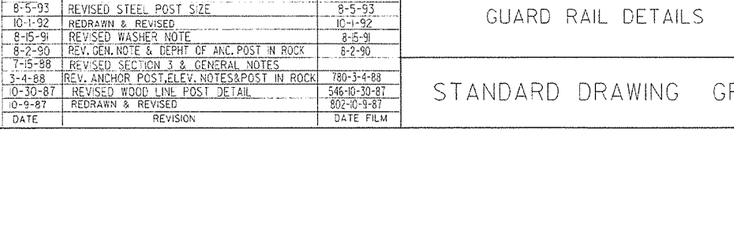



WOOD BLOCKOUT CONNECTIONS

PLASTIC BLOCKOUT CONNECTIONS

## 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)

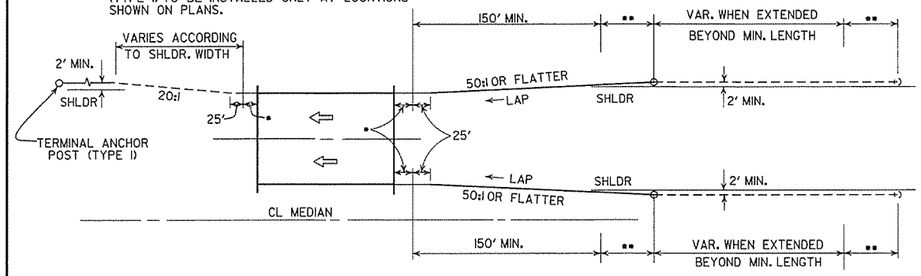
| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-4-10 | RAISED HEIGHT OF GUARD RAIL 1" | |
| 01-15-09 | ADDED REFERENCE TO MASH | |
| 4-10-03 | REVISED GENERAL NOTES | |
| 8-22-02 | REVISED DIMENSION ON WOOD & PLASTIC BLOCKOUT CONNECTIONS & ON STEEL POST | |
| 11-16-01 | REVISED WOOD BLOCKOUT & DETAILS OF WOOD LINE POST CONNECTIONS | |
| 3-30-00 | REMOVED GUARD RAIL AT BRIDGE ENDS | |
| 1-12-00 | ADDED PLASTIC BLOCKOUT | |
| 8-12-98 | REV. BLOCKOUTS TO WOOD, DELETED CONC. POST & REV. GENERAL NOTE, DELETED DET. OF GUARD RAIL REPLACE. BEHIND CURB & DET. OF POST PLACE. IN SOLID ROCK, & ADDED DETAILS OF STEEL LINE POST CONN. REMOVED BACK-UP PLATE, REVISED HOLES IN STEEL POLES | |
| 4-3-97 | REMOVED "LAP IN DIRECTION OF TRAFFIC" NOTE & PLACED ARROWS ON WASHERS | |
| 10-18-96 | REVISED WOOD POST NOTE | |
| 6-2-94 | ADDED ALT. STEEL POST SIZE | |
| 8-5-93 | REVISED STEEL POST SIZE | 8-5-93 |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| 8-15-91 | REVISED WASHER NOTE | 8-15-91 |
| 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

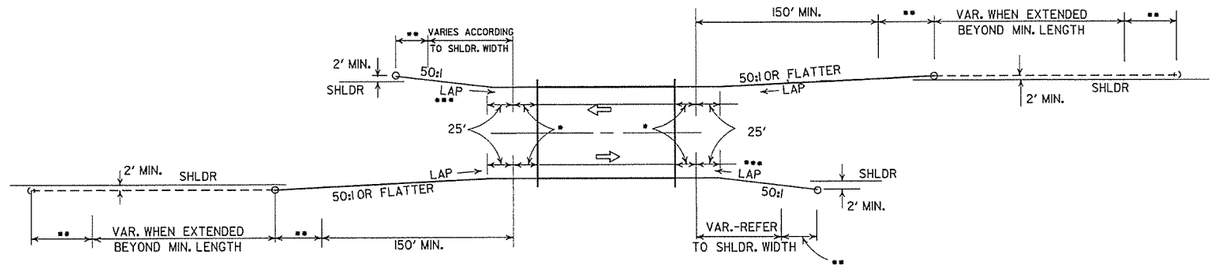
STANDARD DRAWING GR-8

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.




ONE-WAY TRAFFIC

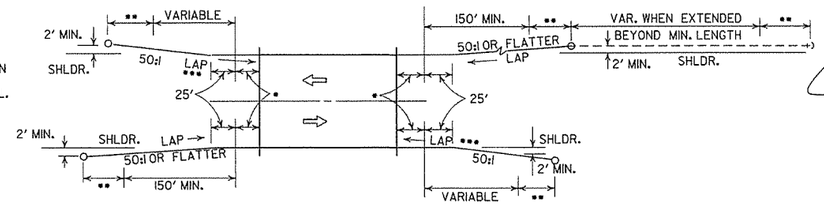
••• LAP OF GUARD RAIL SHALL BE AS SHOWN FOR A DISTANCE OF UP TO 200', CHANGE TO LAP IN DIRECTION OF TRAVEL.




TWO-WAY TRAFFIC

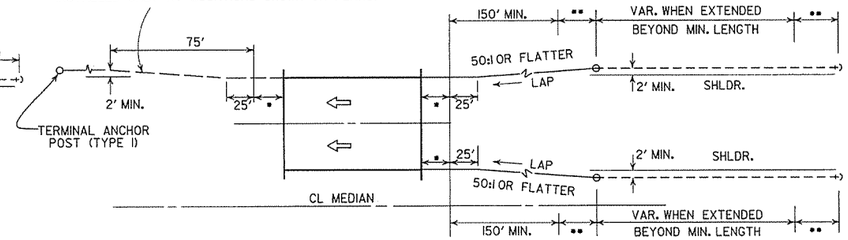
## METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

••• 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

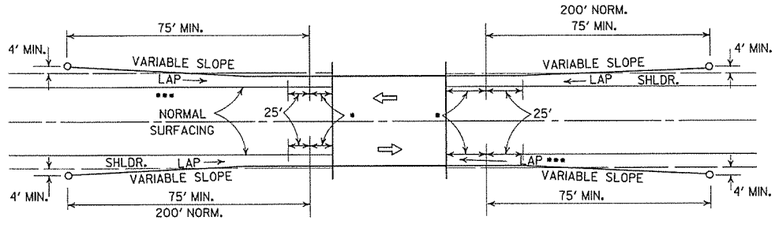
NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL (TYPE I) TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.




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

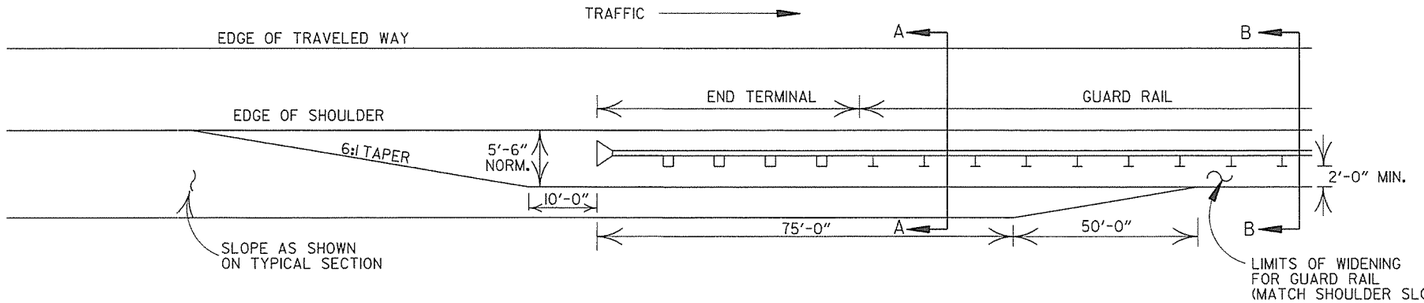
- ▪ THRIE BEAM GUARD RAIL TERMINAL
- ▪▪ GUARD RAIL TERMINAL (TYPE 2)

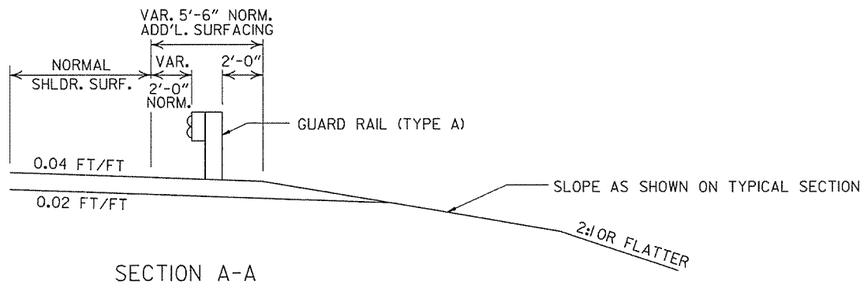
| DATE | REVISION | DATE FILM |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 4-17-08 | REVISED LAYOUTS | |
| 11-10-05 | REMOVED GUARD RAIL NOTES AND DETAILS | |
| 11-16-01 | DELETED NOTE-METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERM. (TY. I) | |
| 1-12-00 | ADDED CONSTRUCTION NOTE | 1-12-00 |
| 6-26-97 | REVISED LAYOUT | |
| 10-1-92 | REDRAWN & REVISED | 10-1-92 |
| | ADDED NOTE | |
| 10-9-87 | REDRAWN & REVISED | |

ARKANSAS STATE HIGHWAY COMMISSION

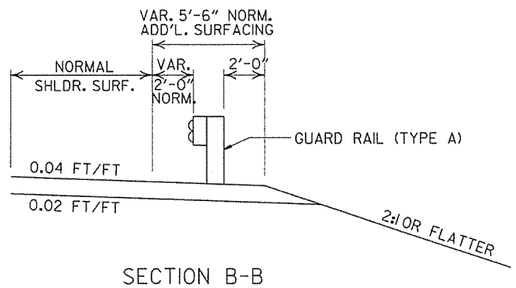
# GUARD RAIL DETAILS

STANDARD DRAWING GR-9



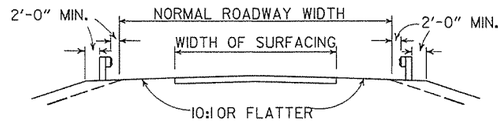

SECTION A-A



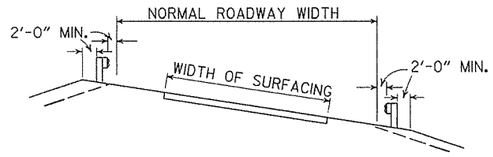

SECTION B-B

## DETAILS OF WIDENING FOR GUARD RAIL

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

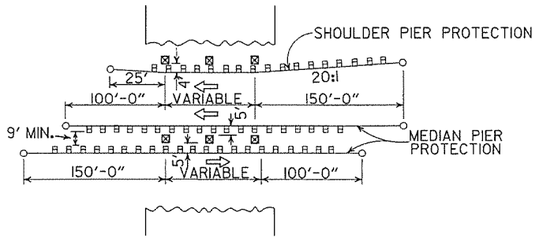



SECTION ON TANGENT




SECTION ON CURVE

## DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY



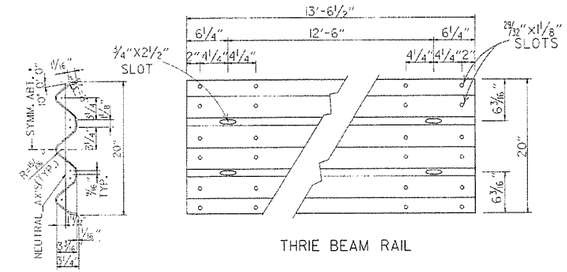

## METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

| DATE | REVISION | DATE FILM |
|---|---|---|
| 4-17-08 | MINOR REVISION | |
| 11-10-05 | DRAWN | |

ARKANSAS STATE HIGHWAY COMMISSION

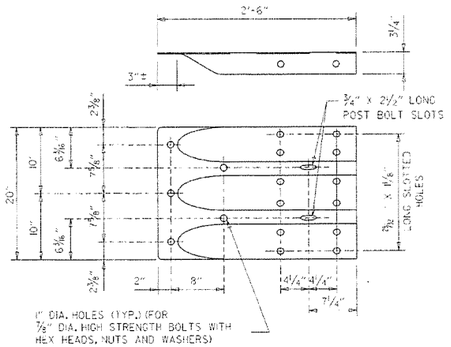
# GUARD RAIL DETAILS

STANDARD DRAWING GR-9A

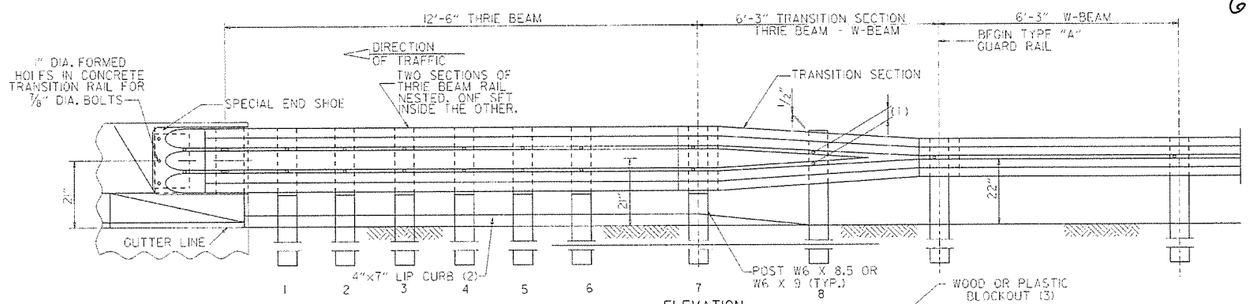



THRIE BEAM RAIL

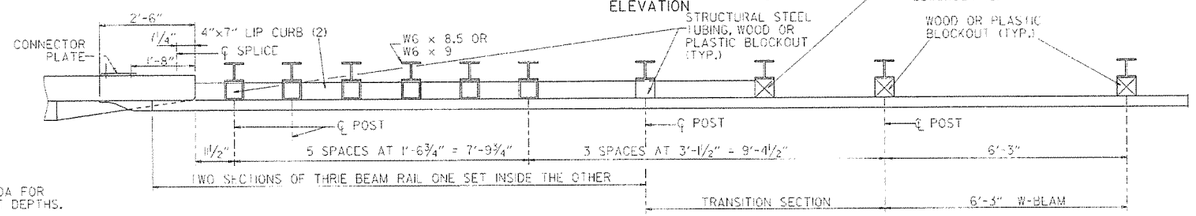
SECTION THRU
THRIE BEAM RAIL



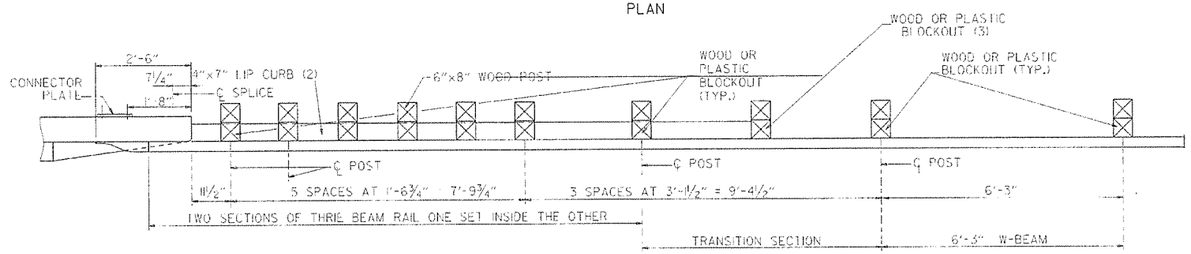

SPECIAL END SHOE




ELEVATION



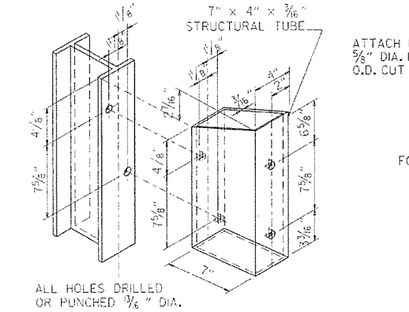

PLAN




PLAN

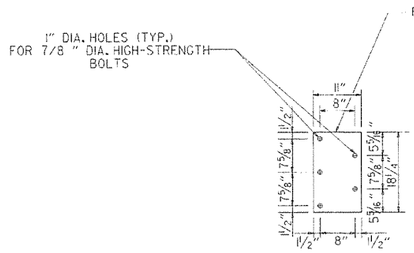
(1) VERIFY BOLT SPACING FROM RAIL TRANSITION PRODUCER.
(2) REFER TO APPROACH GUTTER DETAILS.
(3) LENGTH OF BLOCKOUT ON POST 8 TO BE MODIFIED TO FIT RAIL WIDTH.

## THRIE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS



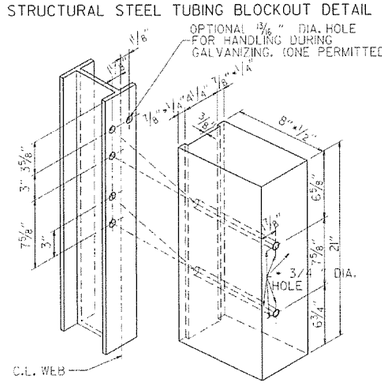

STRUCTURAL STEEL TUBING BLOCKOUT DETAIL

ATTACH BLOCKOUT TO POST USING ⅝" DIA. HEX HEAD BOLTS WITH 1½" O.D. CUT STEEL WASHERS AND NUT.




CONNECTOR PLATE

NOTE:
SEE STANDARD DRAWING GR-10A FOR GUARD RAIL POST EMBEDMENT DEPTHS.



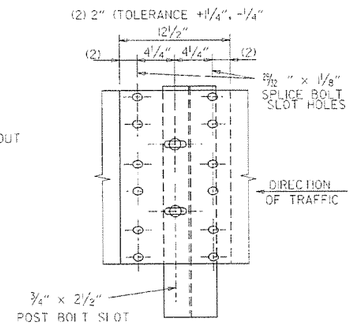

ALL HOLES 13/16 " DIAMETER EXCEPT AS NOTED

HOLE PUNCHING DETAIL
FOR STEEL POST & WOOD
OR PLASTIC BLOCKOUTS

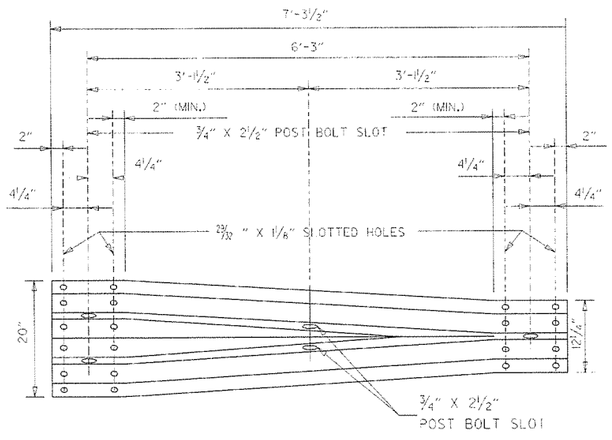
NOTE: BLOCKS SHALL BE THE SAME TYPE THROUGHOUT THE PROJECT LIMITS.

### CONNECTOR PLATE

CONNECTOR PLATE SHALL BE AASHTO M270, GR. 36 AND SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZING SHALL CONFORM TO SUBSECTION 807.19 OF THE STANDARD SPECIFICATIONS. CONNECTOR PLATE TO BE BOLTED TO SPECIAL END SHOE USING ⅞" DIA. HIGH STRENGTH BOLTS, WITH THE HEADS PLACED ON THE TRAFFIC FACE. WASHERS SHALL BE USED UNDER THE HEAD AND NUT. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AND SHALL CONFORM TO SUBSECTION 807.06.




THRIE BEAM RAIL
SPLICE AT POST




TRANSITION SECTION

GENERAL NOTES:

THE THRIE BEAM RAIL, SPECIAL END SHOE, AND THE TRANSITION SECTION SHALL BE MADE OF STEEL AND SHALL BE 12 GAGE. ZINC COATING SHALL BE TYPE I.

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

ALL BOLTS SHALL BE SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

ALL LAP SPLICES, INCLUDING SPECIAL END SHOES, SHALL BE MADE IN THE DIRECTION SHOWN ON STANDARD DRAWINGS GR-9 & GR-11.

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

REFER TO STD. DRWG. GR-10A FOR POST DETAILS.

USE THRIE BEAM GUARD RAIL COMPONENTS OF SAME MATERIAL FOR ENTIRE JOB.

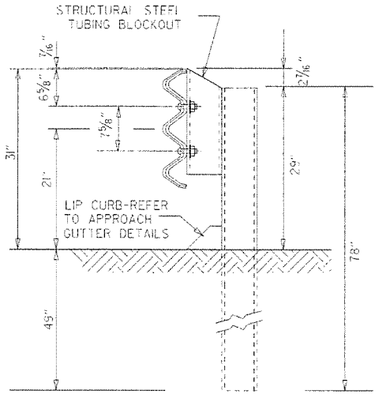
THRIE BEAM POSTS SHALL BE SAME MATERIAL AS W BEAM POSTS FOR ENTIRE JOB.

| DATE | REVISION | DATE FILM |
|---|---|---|
| 7-14-10 | RAISED HEIGHT OF W-BEAM 1" | |
| 11-29-07 | ADDED PLASTIC BLOCKOUTS | |
| 11-10-05 | ADDED NOTE FOR ATTACHING STEEL BLOCKOUT | |
| 11-18-04 | REVISED GENERAL NOTES | |
| 10-9-03 | REVISED GENERAL NOTES | |
| 4-10-03 | REVISED GENERAL NOTES | |
| 8-22-02 | REVISED NOTE (2) | |
| 6-29-00 | MOVED DIMENSION LINES | |
| 5-18-00 | ADDED NOTE | |
| 3-30-00 | DRAWN & ISSUED | |

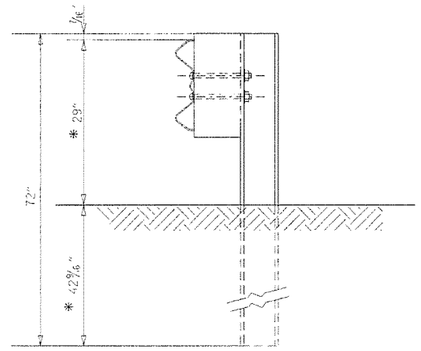
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10

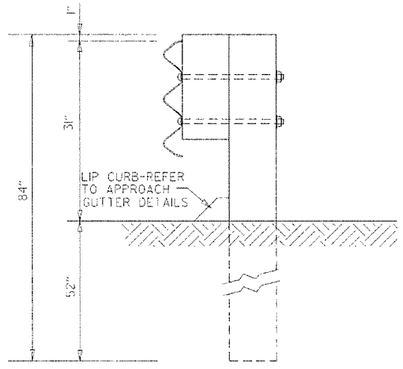



THRIE BEAM RAIL WITH STEEL TUBING BLOCKOUT
AND STEEL POST
POSTS 1-7

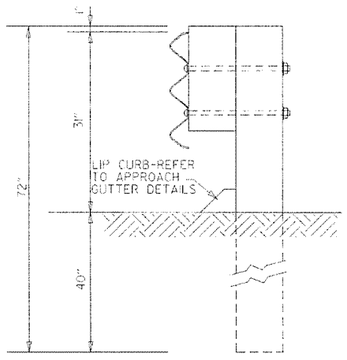



W-BEAM TO THRIE BEAM TRANSITION RAIL
WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST
POST 8

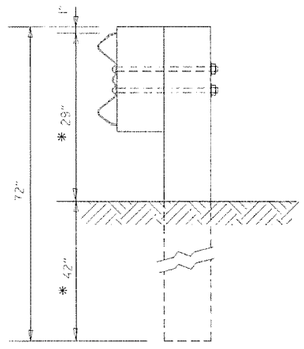
* NOTE:
THESE DIMENSIONS WILL NEED TO BE ADJUSTED IN THE FIELD TO MAKE THE TRANSITION FROM 21" MID POINT OF THRIE BEAM TO 22" MID POINT OF W-BEAM.




THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUTS & WOOD POSTS
POSTS 1-6




THRIE BEAM RAIL
WITH WOOD OR PLASTIC
BLOCKOUT & WOOD POST
POST 7




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

GENERAL NOTES:

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

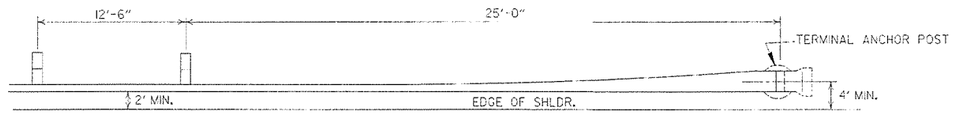
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER 9.7f (1400 f) OR NO. 1 1350 # SOUTHERN PINE.

| 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 | |

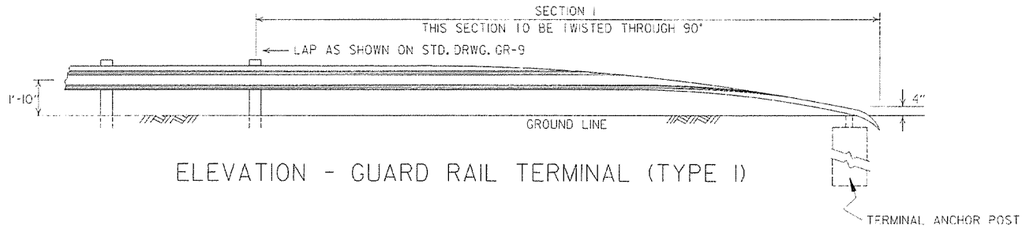
ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-10A

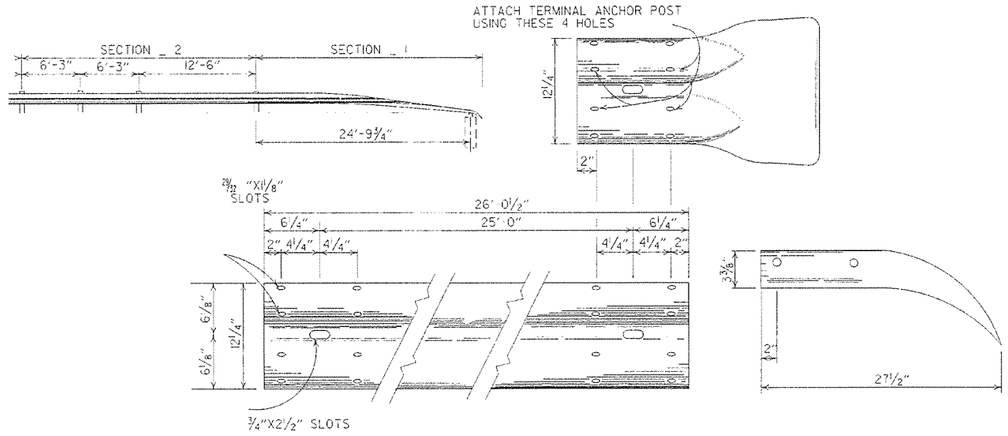



PLAN - GUARD RAIL TERMINAL (TYPE I)



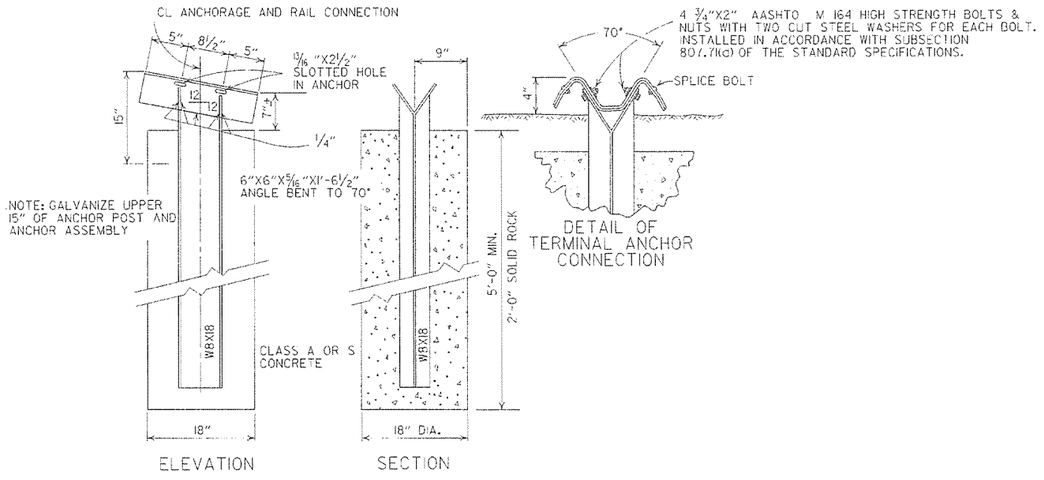

ELEVATION - GUARD RAIL TERMINAL (TYPE I)

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.

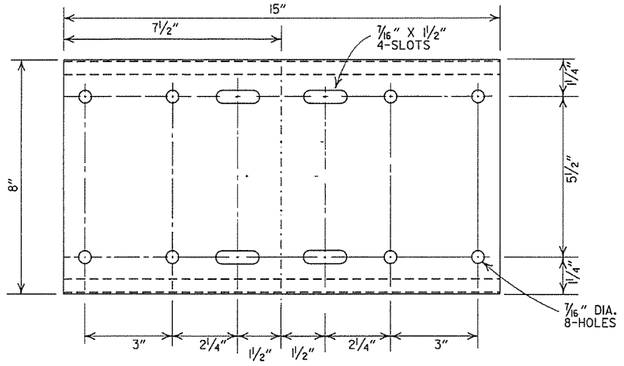
DETAIL OF TERMINAL ANCHOR POST (TYPE I)

| 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 |

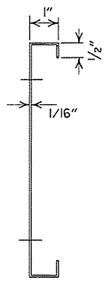
ARKANSAS STATE HIGHWAY COMMISSION

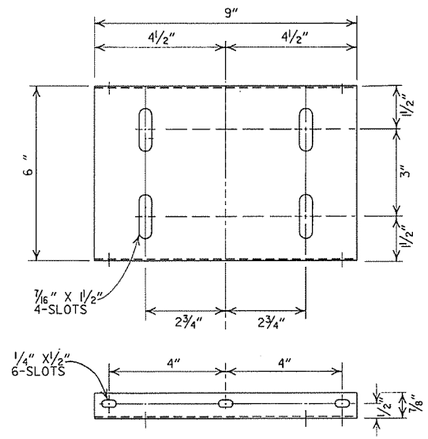
GUARD RAIL DETAILS

STANDARD DRAWING GRT-1

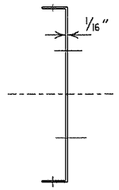


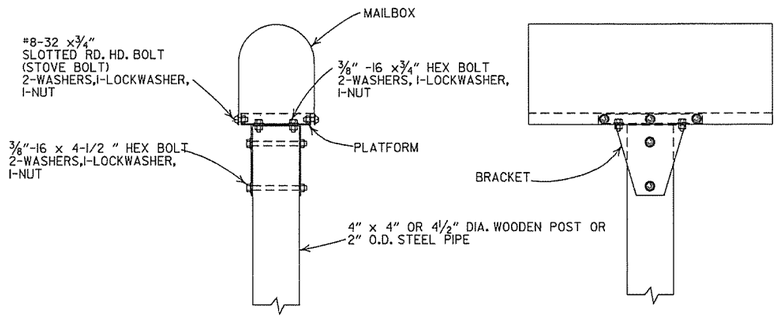

SHELF



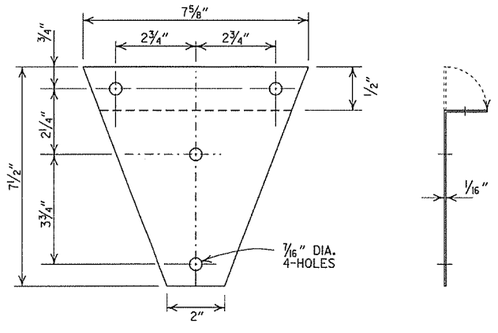




PLATFORM




SINGLE INSTALLATION

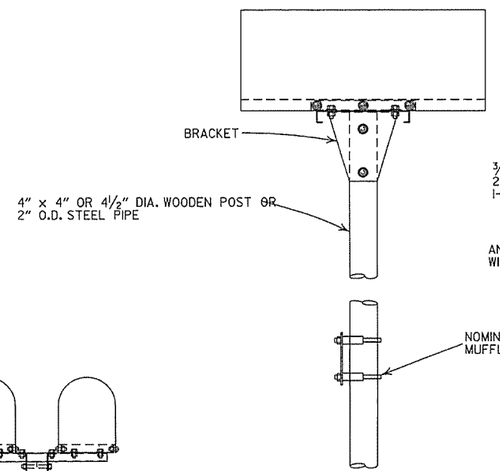


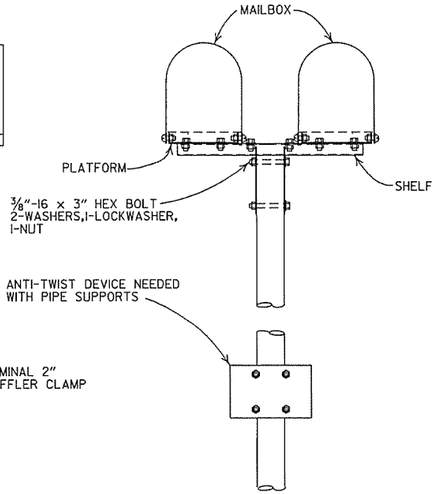

BRACKET



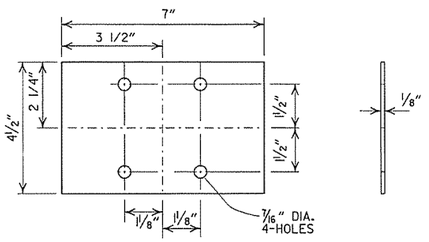

GENERAL NOTES

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.

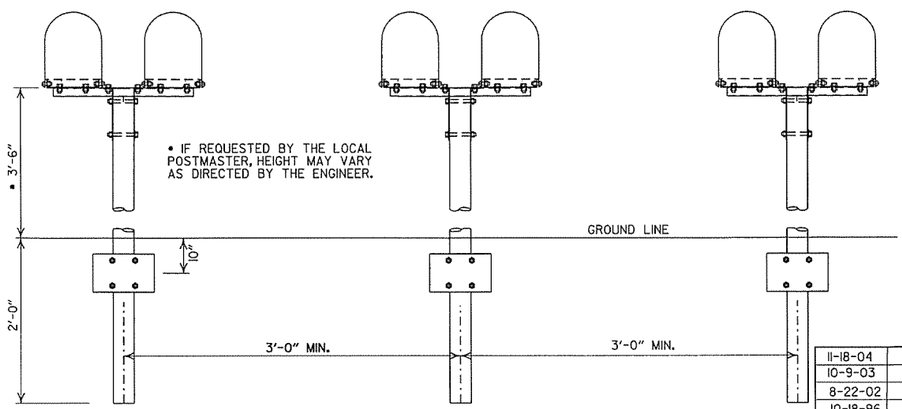


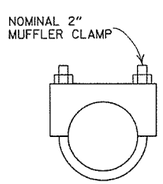

DOUBLE INSTALLATION



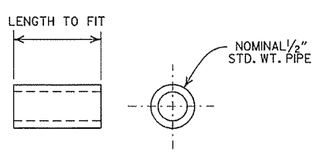

ANTI-TWIST PLATE




SPACING FOR MULTIPLE POST INSTALLATION




CLAMP




SPACER

| DATE | FILMED | REVISION |
|---|---|---|
| 11-18-04 | | REVISED NOTES |
| 10-9-03 | | REVISED NOTE 6 |
| 8-22-02 | | REVISED NOTE 6 |
| 10-18-96 | | CORRECTED AASHTO |
| 10-1-92 | | CORRECTED SPELLING |
| 9-26-91 | | NEW PHONE NUMBER |
| 8-15-91 | | ADDED NOTE |
| 11-30-89 | | ADJUSTED HEIGHT & ADDED NOTE |
| 2-16-89 | | DELETED SLOTS FROM SHELF & PLTF |
| 11-17-88 | 10-1-92 | ADJUSTED DIMENSIONS OF STEEL POSTS |
| 7-15-88 | 20-7-15-88 | ISSUED |

ARKANSAS STATE HIGHWAY COMMISSION

# MAILBOX DETAILS

STANDARD DRAWING MB-1

## REINFORCED CONCRETE ARCH PIPE DIMENSIONS

| EQUIV. DIA. | SPAN | | RISE | |
|---|---|---|---|---|
| | AASHTO M 206 | AHTD NOMINAL | AASHTO M 206 | AHTD NOMINAL |
| INCHES | INCHES | | | |
| 15 | 18 | 18 | 11 | 11 |
| 18 | 22 | 22 | 13½ | 14 |
| 21 | 26 | 26 | 15½ | 16 |
| 24 | 28½ | 29 | 18 | 18 |
| 30 | 36¼ | 36 | 22½ | 23 |
| 36 | 43⅞ | 44 | 26⅝ | 27 |
| 42 | 51⅛ | 51 | 31 7/16 | 31 |
| 48 | 58½ | 59 | 36 | 36 |
| 54 | 65 | 65 | 40 | 40 |
| 60 | 73 | 73 | 45 | 45 |
| 72 | 88 | 88 | 54 | 54 |
| 84 | 102 | 102 | 62 | 62 |
| 90 | 115 | 115 | 72 | 72 |
| 96 | 122 | 122 | 77½ | 77 |
| 108 | 138 | 138 | 87⅛ | 87 |
| 120 | 154 | 154 | 96⅞ | 97 |
| 132 | 168¾ | 169 | 106½ | 107 |

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

## REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

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

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

## CONSTRUCTION SEQUENCE

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

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

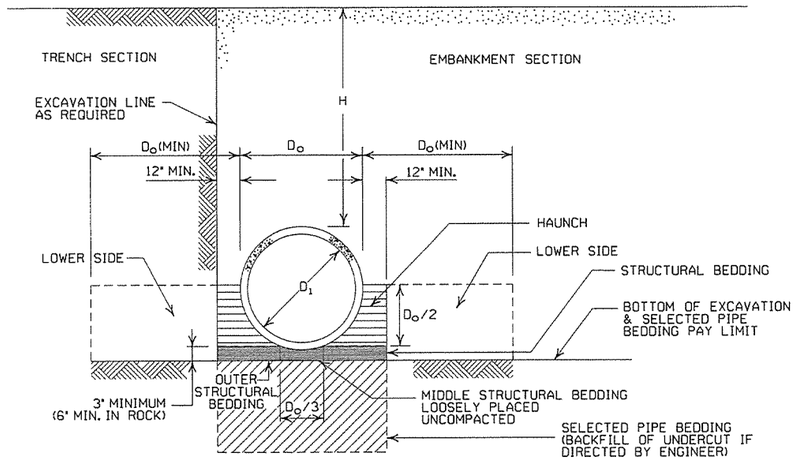
## - LEGEND -

$D_i$ = NORMAL INSIDE DIAMETER OF PIPE
$D_o$ = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

| INSTALLATION TYPE | MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING |
|---|---|
| TYPE 1 | AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7) |
| TYPE 2 | SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL* |
| TYPE 3** | AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL |

*SM-3 WILL NOT BE ALLOWED.

**MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.




## EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

## GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

## MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

| | CLASS OF PIPE | | | |
|---|---|---|---|---|
| | CLASS III | | CLASS IV | CLASS V |
| INSTALLATION TYPE | TYPE 1 OR 2 | TYPE 3 | ALL | ALL |
| PIPE ID (IN.) | FEET | | | |
| 12-15 | 2 | 2.5 | 2 | 1 |
| 18-24 | 2.5 | 3 | 2 | 1 |
| 27-33 | 3 | 4 | 2 | 1 |
| 36-42 | 3.5 | 5 | 2 | 1 |
| 48 | 4.5 | 5.5 | 2 | 1 |
| 54-60 | 5 | 7 | 2 | 1 |
| 66-78 | 6 | 8 | 2 | 1 |
| 84-108 | 7.5 | 8 | 2 | 1 |

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

## MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

| INSTALLATION TYPE | CLASS OF PIPE | | |
|---|---|---|---|
| | CLASS III | CLASS IV | CLASS V |
| | FEET | | |
| TYPE 1 | 21 | 32 | 50 |
| TYPE 2 | 16 | 25 | 39 |
| TYPE 3 | 12 | 20 | 30 |

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

## MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

| INSTALLATION TYPE | CLASS OF PIPE | |
|---|---|---|
| | CLASS III | CLASS IV |
| | FEET | |
| TYPE 2 OR TYPE 3 | 2.5 | 1.5 |

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

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

## MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

| INSTALLATION TYPE | CLASS OF PIPE | |
|---|---|---|
| | CLASS III | CLASS IV |
| | FEET | |
| TYPE 2 | 13 | 21 |
| TYPE 3 | 10 | 16 |

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

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

ARKANSAS STATE HIGHWAY COMMISSION

# CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCC-1

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

• AGGREGATE BASE COURSE (CLASS 4, 5, 6, OR 7) MAY BE USED IN LIEU OF SELECTED MATERIAL.

SM3 WILL NOT BE ALLOWED.

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

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

## MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

## MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

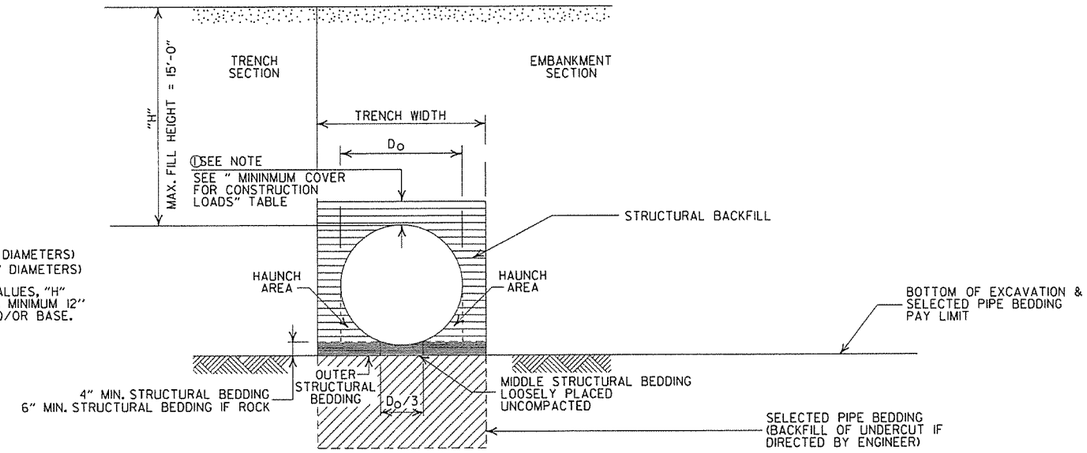
## MINIMUM COVER FOR CONSTRUCTION LOADS

| 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.

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.

## 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.)
$B_c$ = 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

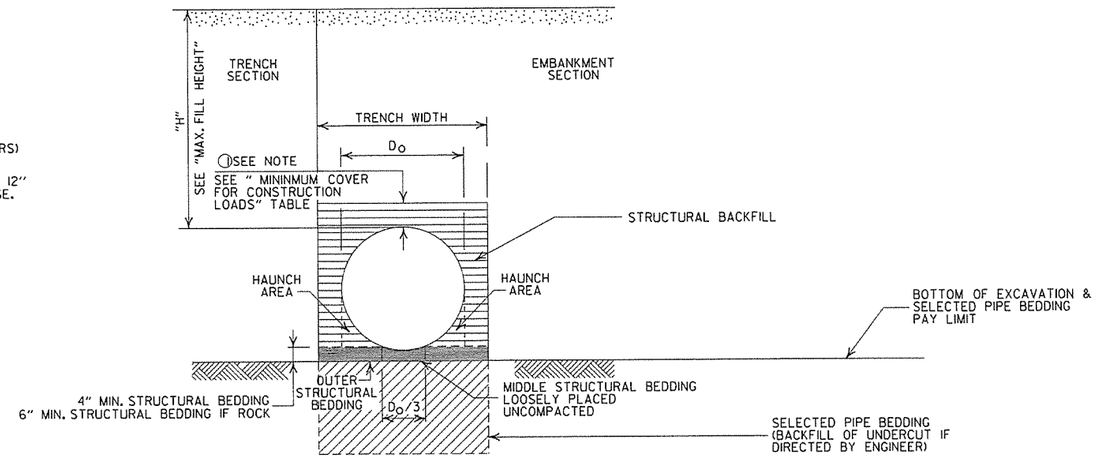
| PIPE DIAMETER | "H" |
|---|---|
| 18" | 45'-0" |
| 24" | 45'-0" |
| 30" | 40'-0" |
| 36" | 40'-0" |

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

## CORRUGATED STEEL PIPE (ROUND)

| PIPE DIAMETER (INCHES) | ① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET) | MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET) | | | | |
|---|---|---|---|---|---|---|
| | | METAL THICKNESS (INCHES) | | | | |
| | | 0.064 | 0.079 | 0.109 | 0.138 | 0.168 |
| 2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | | | | |
| 12 | 1 | 84 | 91 | | | |
| 15 | 1 | 67 | 73 | | | |
| 18 | 1 | 56 | 61 | | | |
| 24 | 1 | 42 | 46 | 59 | | |
| 30 | 2 | 34 | 36 | 47 | | |
| 36 | 2 | | 30 | 39 | 41 | |
| 42 | 2 | | 43 | 67 | 70 | 73 |
| 48 | 2 | | 37 | 58 | 61 | 64 |
| ② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, BOLTED, OR HELICAL LOCK-SEAM | | | | | | |
| 36 | 1 | 48 | 60 | 88 | 111 | 118 |
| 42 | 1 | 41 | 51 | 72 | 90 | 102 |
| 48 | 1 | 36 | 45 | 64 | 77 | 85 |
| 54 | 2 | 32 | 40 | 59 | 71 | 79 |
| 60 | 2 | 29 | 36 | 53 | 64 | 71 |
| 66 | 2 | 26 | 33 | 47 | 58 | 64 |
| 72 | 2 | 24 | 30 | 44 | 53 | 59 |
| 78 | 2 | | 28 | 41 | 49 | 54 |
| 84 | 2 | | 26 | 38 | 45 | 51 |
| 90 | 2 | | 24 | 35 | 43 | 45 |
| 96 | 2 | | 22 | 33 | 40 | 44 |
| 102 | 2 | | | 31 | 38 | 42 |
| 108 | 2 | | | 30 | 35 | 39 |
| 114 | 2 | | | 28 | 34 | 37 |
| 120 | 2 | | | 27 | 32 | 35 |

## CORRUGATED ALUMINUM PIPE (ROUND)

| PIPE DIAMETER (INCHES) | ① MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET) | MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET) | | | | |
|---|---|---|---|---|---|---|
| | | METAL THICKNESS IN INCHES | | | | |
| | | 0.060 | 0.075 | 0.105 | 0.135 | 0.164 |
| | | 2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM | | | | |
| 12 | 1 | 45 | 45 | | | |
| 18 | 2 | 30 | 30 | 52 | | |
| 24 | 2 | 22 | 22 | 39 | 41 | |
| 30 | 2 | | 18 | 31 | 32 | 34 |
| 36 | 2.5 | | 15 | 26 | 27 | 28 |
| 42 | 2 | | | 43 | 43 | 44 |
| 48 | 2 | | | 40 | 41 | 43 |
| 54 | 2 | | | 35 | 37 | 38 |
| 60 | 2 | | | | 33 | 34 |
| 66 | 2 | | | | | 31 |
| 72 | 2 | | | | | 29 |

## CORRUGATED METAL PIPE ARCHES

| EQUIV. DIA. (INCHES) | PIPE DIMENSION SPAN X RISE (INCHES) | MINUMUM CORNER RADIUS (INCHES) | STEEL | | | ALUMINUM | | |
|---|---|---|---|---|---|---|---|---|
| | | | MIN. THICKNESS REQUIRED INCHES | ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MIN. THICKNESS REQUIRED INCHES | ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 | MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1 |
| | | | 2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | 2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM | | |
| 15 | 17x13 | 3 | 0.064 | 2 | 15 | 0.060 | 2 | 15 |
| 18 | 21x15 | 3 | 0.064 | 2 | 15 | 0.060 | 2 | 15 |
| 21 | 24x18 | 3 | 0.064 | 2.25 | 15 | 0.060 | 2.25 | 15 |
| 24 | 28x20 | 3 | 0.064 | 2.5 | 15 | 0.075 | 2.5 | 15 |
| 30 | 35x24 | 3 | 0.079 | 3 | 12 | 0.075 | 3 | 12 |
| 36 | 42x29 | 3½ | 0.079 | 3 | 12 | 0.105 | 3 | 12 |
| 42 | 49x33 | 4 | 0.079 | 3 | 12 | 0.105 | 3 | 12 |
| 48 | 57x38 | 5 | 0.109 | 3 | 13 | 0.135 | 3 | 13 |
| 54 | 64x43 | 6 | 0.109 | 3 | 14 | 0.135 | 3 | 14 |
| 60 | 71x47 | 7 | 0.138 | 3 | 15 | 0.164 | 3 | 15 |
| 66 | 77x52 | 8 | 0.168 | 3 | 15 | | | |
| 72 | 83x57 | 9 | 0.168 | 3 | 15 | | | |
| | | | ② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM | | | | | |
| | | | | INSTALLATION TYPE 2 | INSTALLATION TYPE 1 | INSTALLATION TYPE 2 | INSTALLATION TYPE 1 | |
| 36 | 40x31 | 5 | 0.079 | 3 | 2 | 12 | 15 | |
| 42 | 46x36 | 6 | 0.079 | 3 | 2 | 13 | 15 | |
| 48 | 53x41 | 7 | 0.079 | 3 | 2 | 13 | 15 | |
| 54 | 60x46 | 8 | 0.079 | 3 | 2 | 13 | 15 | |
| 60 | 66x51 | 9 | 0.079 | 3 | 2 | 13 | 15 | |
| 66 | 73x55 | 12 | 0.079 | 3 | 2 | 15 | 15 | |
| 72 | 81x59 | 14 | 0.079 | 3 | 2 | 15 | 15 | |
| 78 | 87x63 | 14 | 0.079 | 3 | 2 | 15 | 15 | |
| 84 | 95x67 | 16 | 0.109 | 3 | 2 | 15 | 15 | |
| 90 | 103x71 | 16 | 0.109 | 3 | 2 | 15 | 15 | |
| 96 | 112x75 | 18 | 0.109 | 3 | 2 | 15 | 15 | |
| 102 | 117x79 | 18 | 0.109 | 3 | 2 | 15 | 15 | |
| 108 | 128x83 | 18 | 0.138 | 3 | 2 | 15 | 15 | |

## CONSTRUCTION SEQUENCE

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

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

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

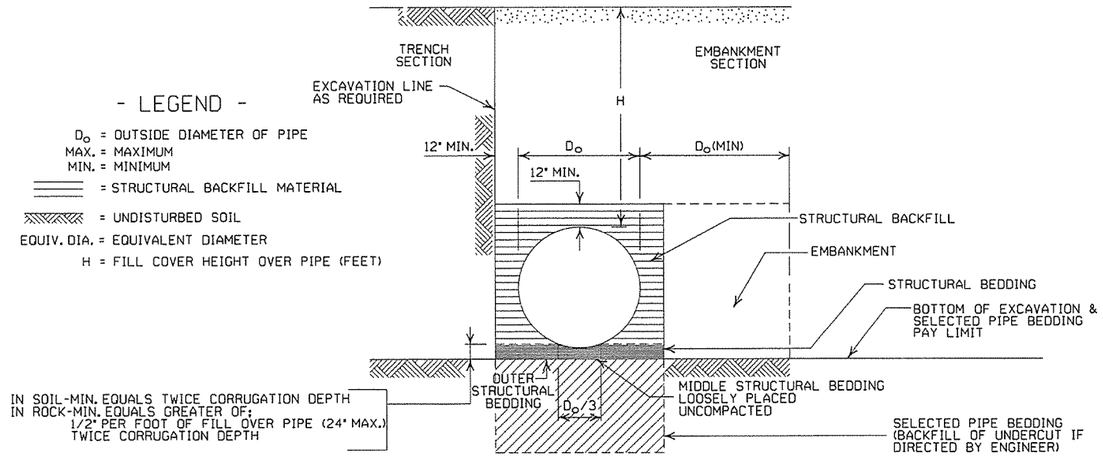
③ SM-3 WILL NOT BE ALLOWED.

## EQUIVALENT METAL THICKNESSES AND GAUGES

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

- LEGEND -

$D_o$ = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)




## EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

## GENERAL NOTES

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

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

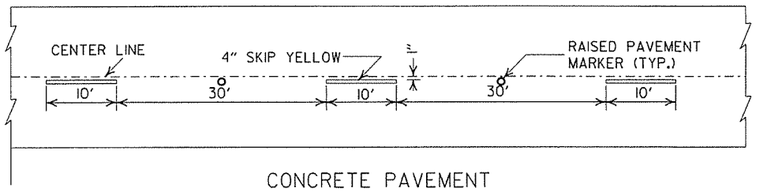
② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

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

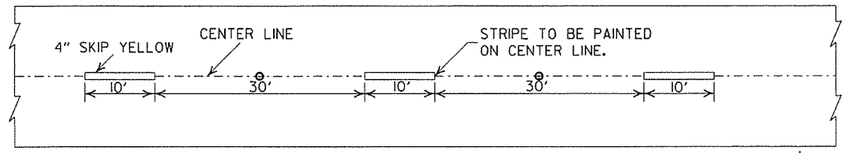
ARKANSAS STATE HIGHWAY COMMISSION

# METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

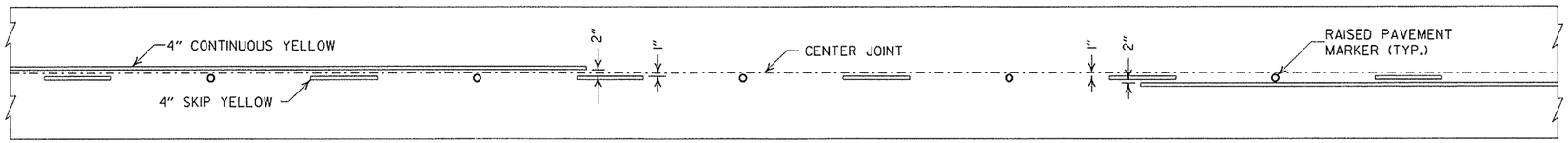



CONCRETE PAVEMENT

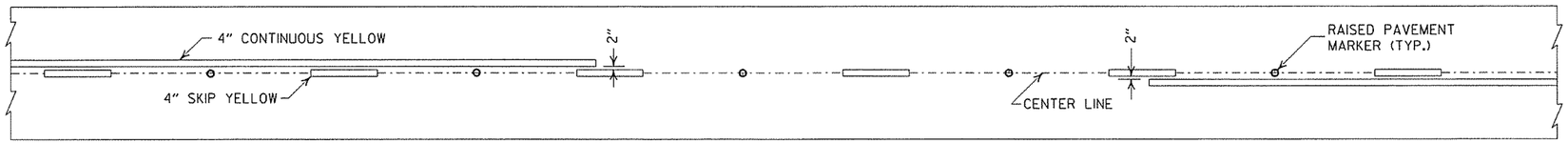



ASPHALT PAVEMENT

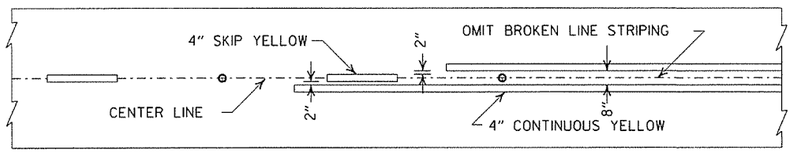
## BROKEN LINE STRIPING



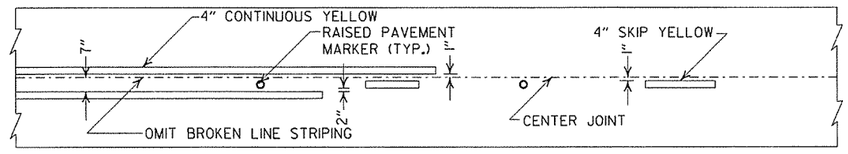

## SOLID LINE STRIPING ON CONCRETE PAVEMENT




## SOLID LINE STRIPING ON ASPHALT PAVEMENT

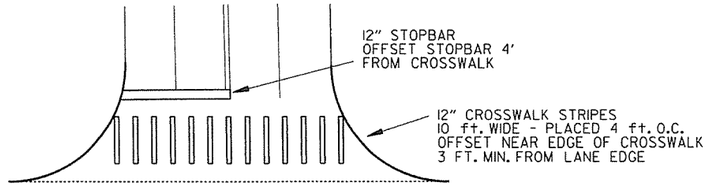



ASPHALT PAVEMENT




CONCRETE PAVEMENT

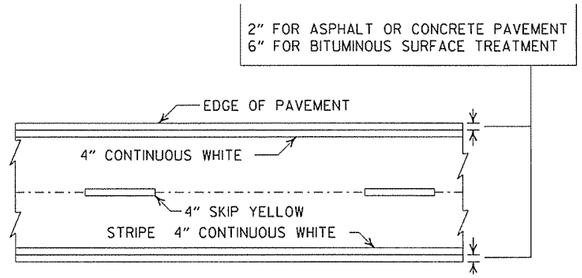
## STRIPING AT ADJACENT NO PASSING LANES



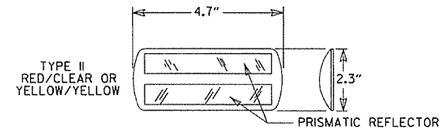

## CROSSWALK AND STOPBAR DETAILS

NOTES:

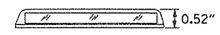
1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.




## PAVEMENT EDGE LINE MARKING




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




## DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

NOTE:

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

| DATE | REVISION | |
|---|---|---|
| 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 |
| DATE | REVISION | FILMED |

ARKANSAS STATE HIGHWAY COMMISSION

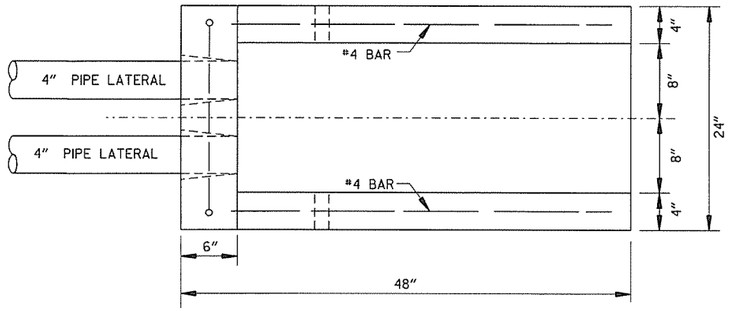
# PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

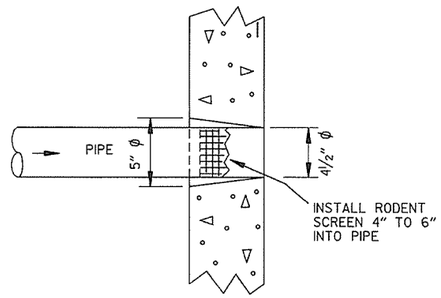
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

2. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

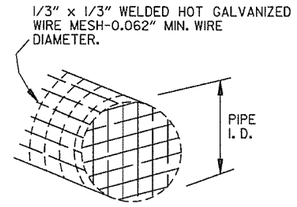
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



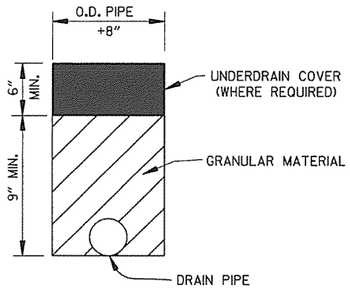

PLAN VIEW

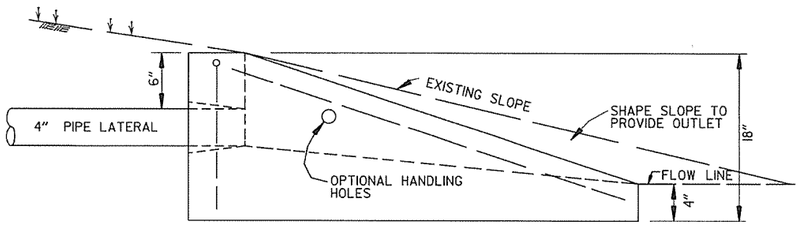



DETAIL OF HOLE FOR 4" PIPE

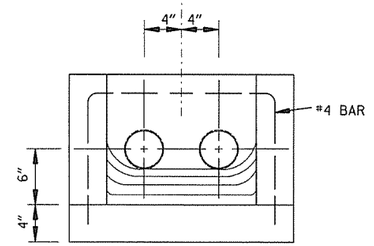



DETAIL OF RODENT SCREEN

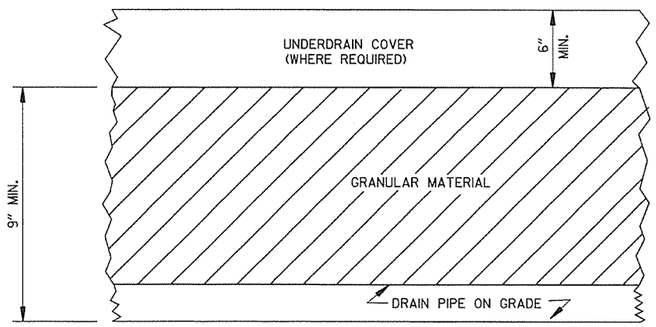



SIDE VIEW

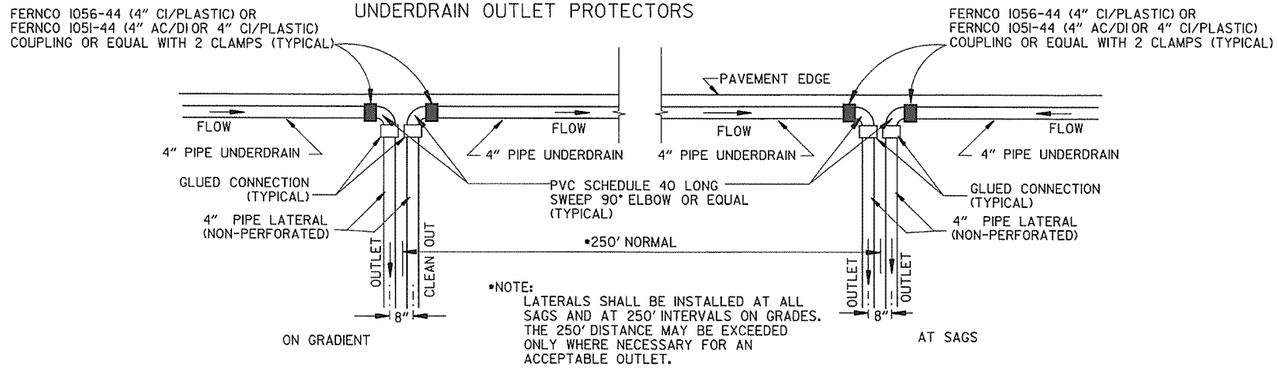



FRONT VIEW




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

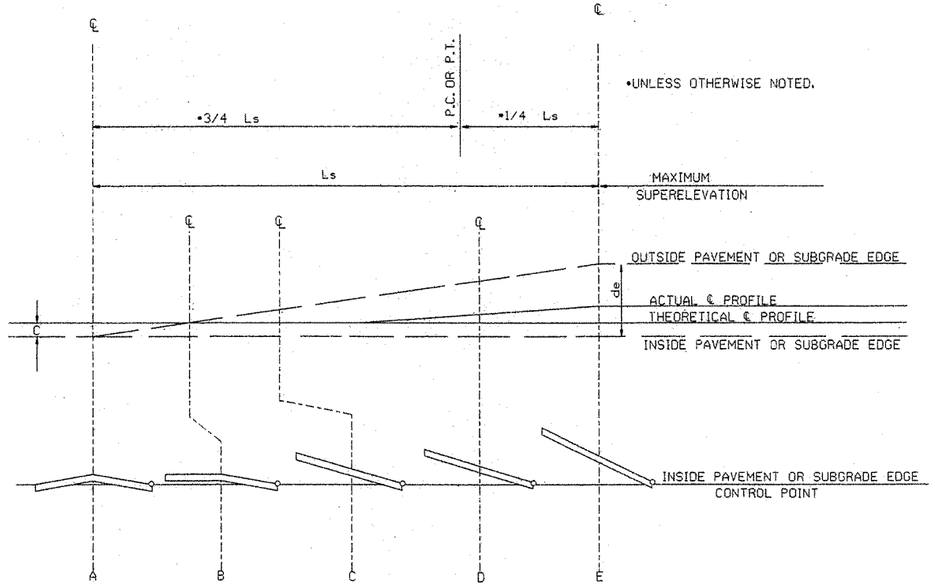
## SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

| DEGREE OF CURVE | 30 MPH | | | 40 MPH | | | 50 MPH | | | 55 MPH | | | 60 MPH | | | 70 MPH | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | e | Ls (FT) | | e | Ls (FT) | | e | Ls (FT) | | e | Ls (FT) | | e | Ls (FT) | | e | Ls (FT) | |
| | | MINIMUM | DESIRABLE | | MINIMUM | DESIRABLE | | MINIMUM | DESIRABLE | | MINIMUM | DESIRABLE | | MINIMUM | DESIRABLE | | MINIMUM | DESIRABLE |
| 0° 15' | N.C. | | | N.C. | | | N.C. | | | N.C. | | | N.C. | | | N.C. | | |
| 0° 30' | N.C. | | | N.C. | | | N.C. | | | N.C. | | | N.C. | | | N.C. | | |
| 0° 45' | N.C. | | | N.C. | | | R.C. | | | 0.022 | | | 0.023 | | | 0.028 | | |
| 1° 00' | N.C. | | | N.C. | | | 0.021 | | | 0.026 | | | 0.030 | | | 0.037 | 275 | 300 |
| 1° 15' | N.C. | | | R.C. | | | 0.026 | | | 0.032 | | | 0.037 | 250 | 300 | 0.046 | | |
| 1° 30' | N.C. | | | 0.021 | | | 0.031 | 200 | | 0.037 | 225 | 300 | 0.043 | | | 0.054 | | |
| 1° 45' | N.C. | | | 0.025 | 175 | | 0.036 | | | 0.043 | | | 0.049 | | | 0.062 | | |
| 2° 00' | R.C. | | | 0.028 | | | 0.040 | | | 0.048 | | | 0.055 | | | 0.070 | | |
| 2° 15' | R.C. | | | 0.031 | | | 0.045 | | 250 | 0.053 | | | 0.061 | | | 0.078 | 300 | 350 |
| 2° 30' | 0.021 | | | 0.034 | | | 0.049 | | | 0.058 | | | 0.067 | | | 0.085 | 315 | |
| 2° 45' | 0.023 | | | 0.037 | | 200 | 0.053 | | | 0.063 | | | 0.072 | | | 0.091 | 335 | |
| 3° 00' | 0.025 | 150 | | 0.040 | | | 0.057 | | | 0.067 | 230 | | 0.077 | 260 | | 0.096 | 350 | 400 |
| 3° 15' | 0.027 | | | 0.043 | | | 0.061 | | | 0.072 | 245 | | 0.082 | 275 | | 0.098 | 360 | |
| 3° 30' | 0.029 | | | 0.046 | | | 0.065 | 205 | | 0.076 | 255 | | 0.086 | 285 | | 0.100 | 360 | |
| 3° 45' | 0.031 | | | 0.049 | | | 0.069 | 215 | | 0.080 | 265 | | 0.090 | 295 | 350 | | | |
| 4° 00' | 0.033 | | 200 | 0.051 | | | 0.072 | 225 | | 0.083 | 270 | | 0.093 | 305 | | | | |
| 4° 30' | 0.037 | | | 0.056 | | | 0.078 | 240 | | 0.087 | 280 | | 0.096 | 315 | | | | |
| 5° 00' | 0.040 | | | 0.061 | | | 0.083 | 250 | | 0.091 | 295 | 350 | 0.098 | 320 | | | | |
| 5° 30' | 0.043 | | | 0.066 | 185 | | 0.088 | 260 | | 0.094 | 300 | | | | | | | |
| 6° 00' | 0.046 | | | 0.070 | 190 | | 0.092 | 270 | 300 | 0.096 | 305 | | | | | | | |
| 6° 30' | 0.050 | | | 0.074 | 200 | | 0.095 | 280 | | 0.100 | 315 | | | | | | | |
| 7° 00' | 0.053 | | | 0.078 | 210 | | 0.098 | 285 | | | | | | | | | | |
| 7° 30' | 0.056 | | | 0.081 | 215 | | 0.099 | 290 | | | | | | | | | | |
| 8° 00' | 0.058 | | | 0.084 | 220 | 250 | 0.100 | 290 | | | | | | | | | | |
| 8° 30' | 0.061 | | | 0.087 | 225 | | | | | | | | | | | | | |
| 9° 00' | 0.063 | | | 0.089 | 230 | | | | | | | | | | | | | |
| 10° 00' | 0.068 | 160 | | 0.094 | 235 | | | | | | | | | | | | | |
| 11° 00' | 0.072 | 170 | | 0.097 | 250 | | | | | | | | | | | | | |
| 12° 00' | 0.076 | 175 | | 0.099 | 250 | | | | | | | | | | | | | |
| 13° 00' | 0.080 | 180 | | 0.100 | 250 | | | | | | | | | | | | | |
| 14° 00' | 0.083 | 190 | | | | | | | | | | | | | | | | |
| 15° 00' | 0.086 | 195 | | | | | | | | | | | | | | | | |
| 16° 00' | 0.089 | 200 | | | | | | | | | | | | | | | | |
| 17° 00' | 0.091 | 200 | | | | | | | | | | | | | | | | |
| 18° 00' | 0.093 | 205 | | | | | | | | | | | | | | | | |
| 19° 00' | 0.095 | 210 | | | | | | | | | | | | | | | | |
| 20° 00' | 0.097 | 215 | 250 | | | | | | | | | | | | | | | |
| 21° 00' | 0.098 | 215 | | | | | | | | | | | | | | | | |
| 22° 00' | 0.099 | 215 | | | | | | | | | | | | | | | | |
| 23° 00' | 0.099 | 215 | | | | | | | | | | | | | | | | |
| 24° 00' | 0.100 | 220 | | | | | | | | | | | | | | | | |

D MAX = 24° 45' | D MAX = 13° 15' | D MAX = 8° 15' | D MAX = 6° 30' | D MAX = 5° 15' | D MAX = 3° 30'

ABBREVIATIONS

NC - NORMAL CROWN
RC - REVERSE CROWN, SUPERELEVATION AT NORMAL CROWN SLOPE
e - RATE OF SUPERELEVATION (FT. PER FT.)
Ls - LENGTH OF SUPERELEVATION TRANSITION (FT.)
L - DISTANCE FROM BEGINNING OF SUPERELEVATION TRANSITION TO ANY POINT (FT.)
d - WIDTH OF PAVEMENT (FT.) OR WIDTH OF SUBGRADE (FT.)
C - NORMAL CROWN (FT.)




STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND INNER SUBGRADE POINT OR INNER PAVEMENT EDGE

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

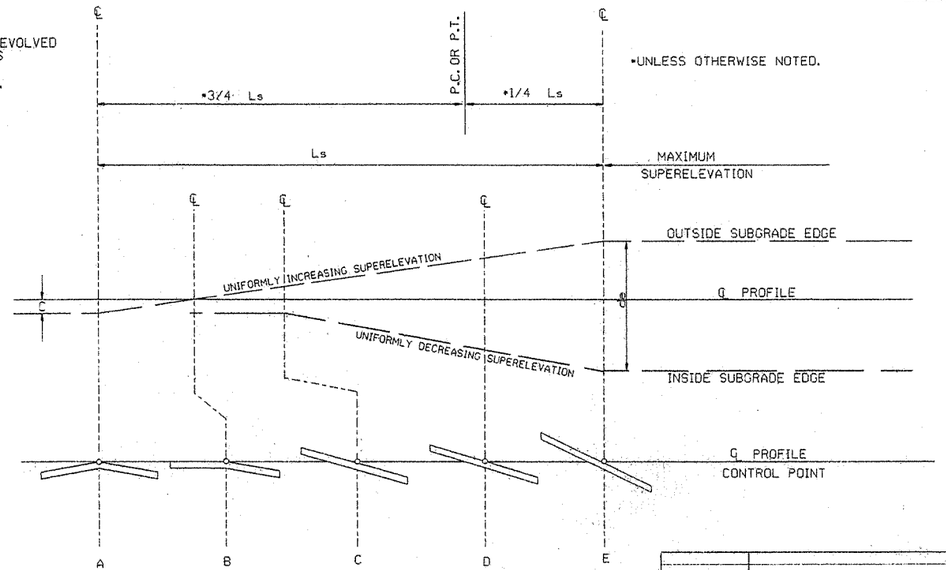
GENERAL NOTES

1. ON PAVEMENT WITH TWO-WAY TRAFFIC, THE SUPERELEVATION SHALL BE REVOLVED ON THE INSIDE PAVEMENT EDGE UNLESS OTHERWISE NOTED ON THE PLANS
2. SUPERELEVATION VALUES SHOWN ON THE CROSS SECTIONS ARE VALUES (+) OR (-) TO BE ADDED TO OR SUBTRACTED FROM THE POINT OF CONTROL.
3. LENGTHS FOR L MAY BE ROUNDED IN MULTIPLES OF 25 FT. OR 50 FT. TO PERMIT SIMPLER CALCULATIONS.
4. PAVEMENTS WIDER THAN 2 LANES SHALL HAVE ADDITIONAL TRANSITION LENGTHS AS FOLLOWS:

3 LANE UNDIVIDED - - - - - +20%
4 LANE UNDIVIDED - - - - - +50%
5 LANE UNDIVIDED - - - - - +80%
6 LANE UNDIVIDED - - - - - +100%

NOTE: MAINTAIN NORMAL CROWN ON INSIDE UNTIL SUPERELEVATION EXCEEDS 2C.

RATE OF SUPERELEVATION SHALL BE COMPUTED ON STRAIGHT LINE METHOD USING APPLICABLE Ls.




STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE

SUPERELEVATION FORMULA = $\frac{Lde}{Ls}$

| DATE | REVISION | DATE FILMED |
|---|---|---|
| 10-18-96 | ADDED FORMULA | 10-18-96 |
| 01-09-87 | ISSUED | 534-1-9-87 |

ARKANSAS STATE HIGHWAY COMMISSION

# TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

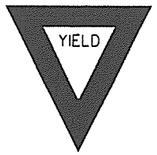
STANDARD DRAWING SE-2

FILE STDSE2.DGN

RI-1

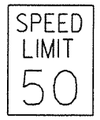

STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

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"

W3-5


STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

W3-5a


STD. 36"X36"
EXPWY. 48"X48"
FWY. 48"X48"

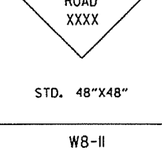
R4-1


STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

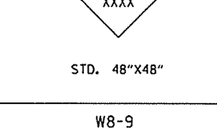

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R5-1




STD. 30"X30"
EXPWY. 36"X36"
SPECIAL 48"X48"

RII-2

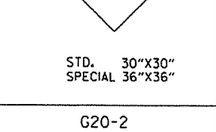



48"X30"

RII-3A

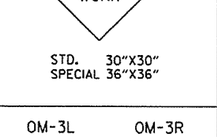

60"X30"

RII-4



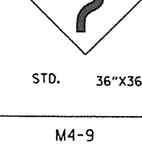

60"X30"

RSP-1



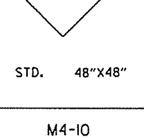

48"X30"

WI-1



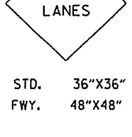
STD. 36"X36"
FWY. 48"X48"

WI-2



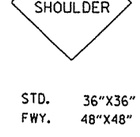
STD. 36"X36"
FWY. 48"X48"

WI-3



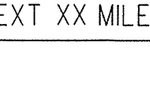
STD. 48"X48"

WI-4



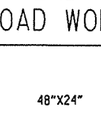
STD. 48"X48"

WI-6



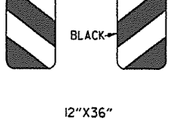
STD. 48"X24"
SPECIAL 60"X30"

WI-8



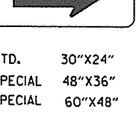
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2

STD. 36"X36"
FWY. 48"X48"

W5-1


STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7


EXPWY. 36"X36"
FWY. 48"X48"

W9-2


STD. 36"X36"
FWY. 48"X48"

WI3-1


STD. 24"X24"

W20-1


STD. 48"X48"

W20-2


STD. 48"X48"

W20-3


STD. 48"X48"

W20-4




STD. 48"X48"

W20-5


STD. 48"X48"

W20-7a


STD. 36"X36"
FWY. 48"X48"

W21-2


STD. 30"X30"
SPECIAL 36"X36"

W21-5


STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1


STD. 18"X18"

W8-11




STD. 36"X36"
FWY. 48"X48"

W8-9




STD. 36"X36"
FWY. 48"X48"

G20-1




60"X24"

G20-2




48"X24"

OM-3L OM-3R




12"X36"

M4-9




STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10




48"X18"

R55-1




36"X60"

• USE 6" C LETTERS
•• USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

| | |
|---|---|
| 500 FT | ½ MILE |
| 1000 FT | ¾ MILE |
| 1500 FT | 1 MILE |
| | AHEAD |

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

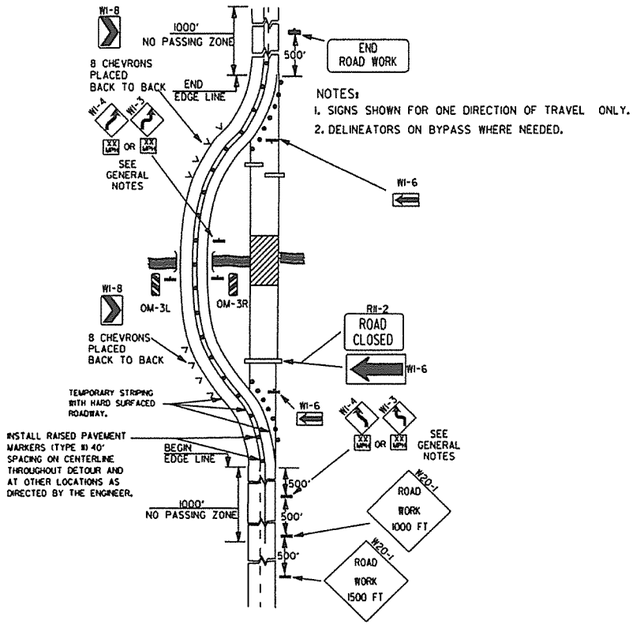
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

| DATE | REVISION | FILMED |
|---|---|---|
| 9-2-15 | REVISED REDUCED SPEED LIMIT AHEAD SIGNS<br>REVISED ROAD WORK NEXT XX MILES | |
| 12-15-11 | REVISED W24-1 | |
| 11-17-10 | DELETED W8-9a & ADDED W8-9 | |
| 10-15-09 | ADDED REFERENCE TO MASH & ADDED SIGN W24-1 | |
| 4-17-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | REVISED NOTES | |
| 10-9-03 | REVISED NOTE 1 | |
| 8-16-01 | REVISED NOTE 7 | |
| 9-28-00 | REVISED NOTE | |
| 8-18-98 | ADDED NOTE | |
| 6-26-97 | REVISED NOTE 5 | |
| 4-03-97 | REVISED NOTE 5 | |
| 10-18-96 | ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7 | |
| 10-12-95 | ADDED R55-1 | |
| 6-8-95 | REVISED TO CORRECT SIGN ILLUSTRATIONS | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD SEPT. 3, 1993 | |
| 8-15-9 | DRAWN AND PLACED IN USE | |

ARKANSAS STATE HIGHWAY COMMISSION

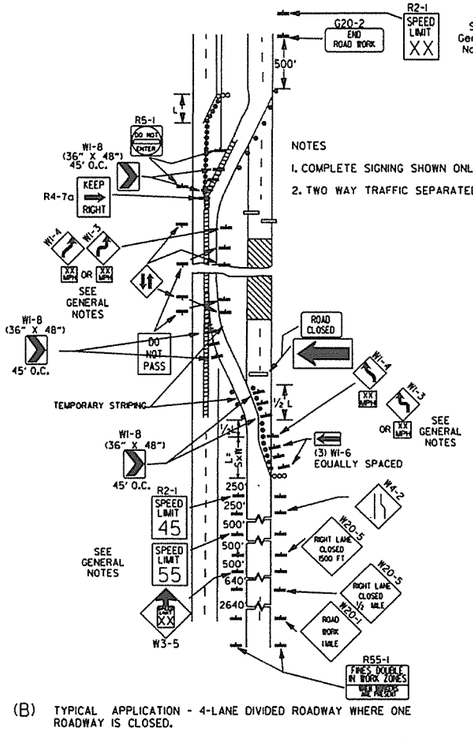
# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



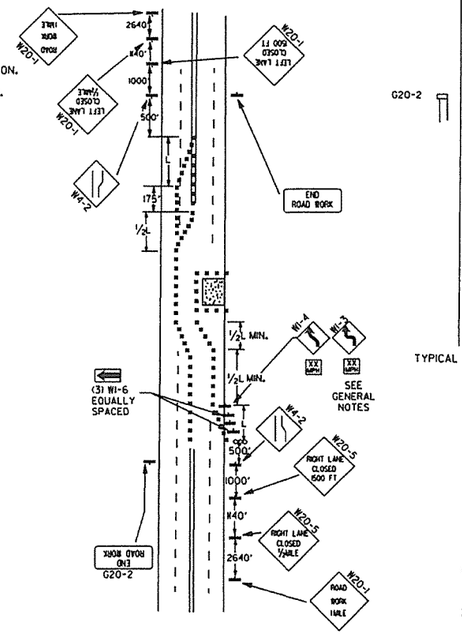

NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

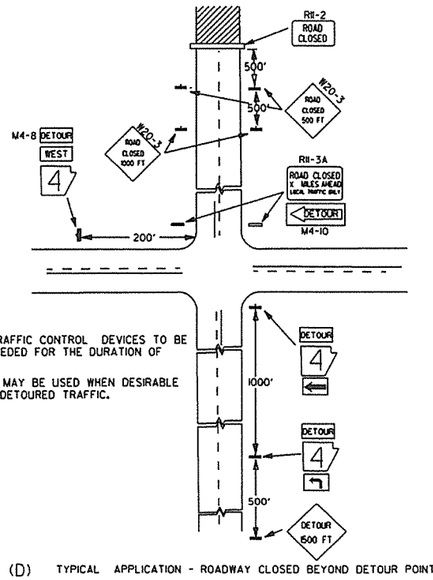



NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

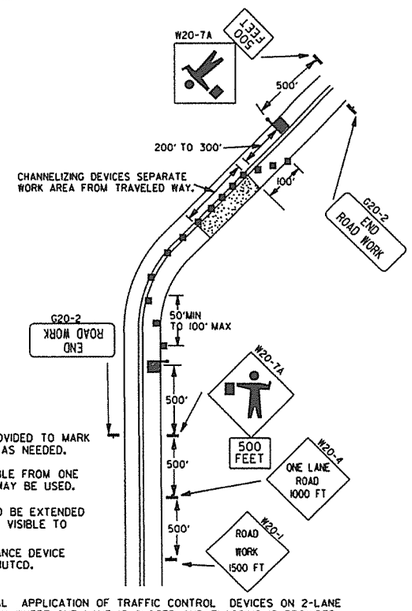



(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



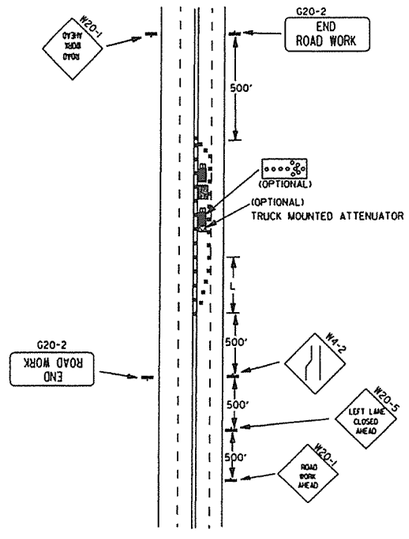

NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



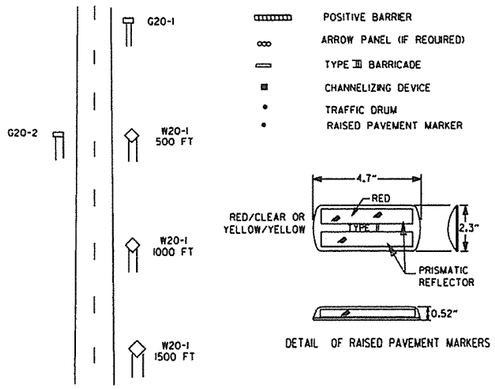

NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE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

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.




(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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




DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

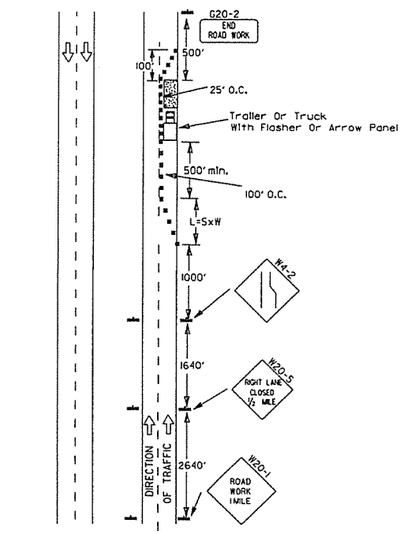
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.

| DATE | REVISION | FILMED |
|---|---|---|
| 9-2-15 | REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5 | |
| 9-12-13 | REVISED DETAIL OF RAISED PAVEMENT MARKERS | |
| 3-8-10 | ADDED (AFAD) | |
| 8-20-08 | REVISED SIGN DESIGNATIONS | |
| 8-18-04 | ADDED GENERAL NOTE | |
| 10-18-96 | ADDED R55-1 | |
| 4-26-96 | CORRECTED (a) BEHIND G20-2 | |
| 6-8-95 | CORRECTED SIGN IDENT. ON W1-4A | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD, SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

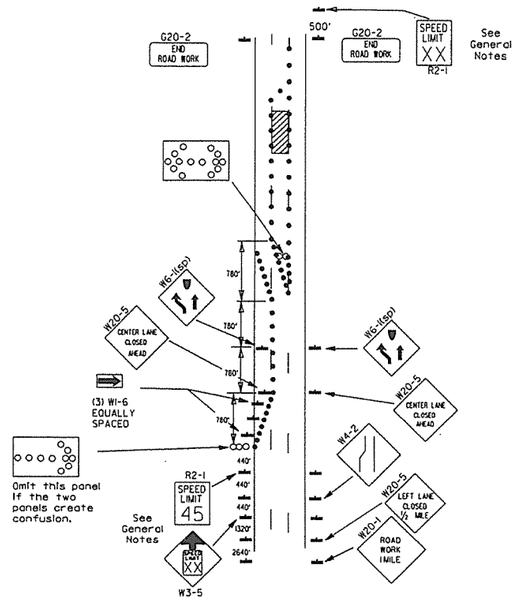
ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

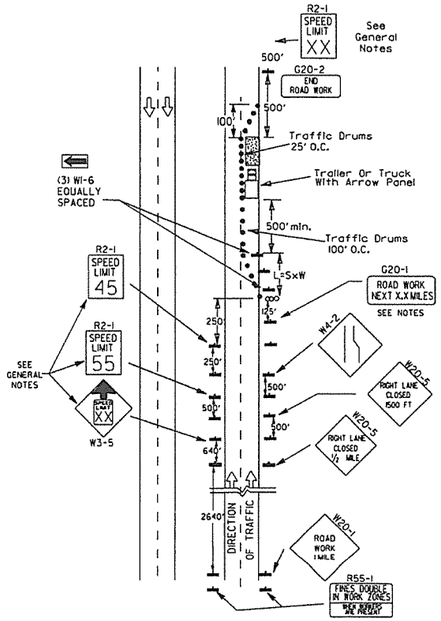
STANDARD DRAWING TC-2




(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.




(B) Typical application - 3-lane oneway roadway where center lane is closed.




(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

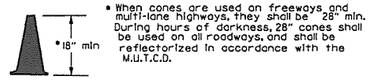
KEY:

- Arrow Panel (If Required)
- Channelizing Device
- Traffic drum

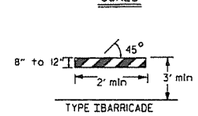
GENERAL NOTES:

1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

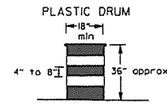
## Channelizing devices

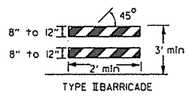


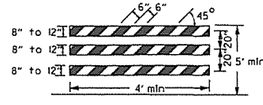

CONES

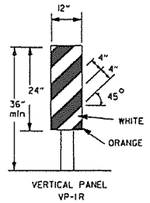



PLASTIC DRUM



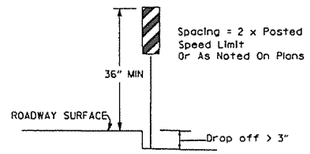




NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

VERTICAL PANEL PLACEMENT



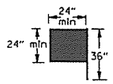

TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

| 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.

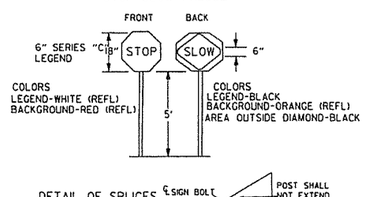
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

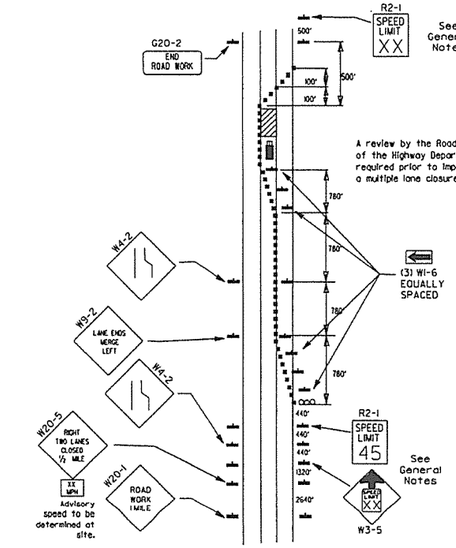
FLAG




Flag shall be of good grade red material

STOP SLOW PADDLE



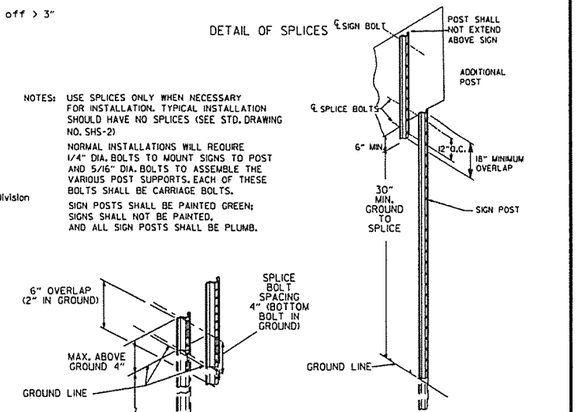

(D) Typical application - closing multiple lanes of a multilane highway.

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.

DETAIL OF SPLICES




| DATE | REVISION | FILMED |
|---|---|---|
| 9-2-15 | REVISED NOTE 2 & REPLACED R2-5A WITH W3-5 | |
| 10-15-09 | ADDED REFERENCE TO MASH | |
| 11-20-08 | REVISED SIGN DESIGNATIONS | |
| 11-18-04 | ADDED NOTE | |
| 10-1-98 | ADDED NOTE | |
| 4-03-97 | ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE | |
| 10-18-96 | ADDED R55-1 | |
| 10-12-95 | MOVED UPPER SPLICE | |
| 6-8-95 | REVISED SPLICE DETAIL, TEXT | 6-8-95 |
| 2-2-95 | REVISED PER PART VI, MUTCD, SEPT. 3, 1993 | |
| 8-15-91 | DRAWN AND PLACED IN USE | |

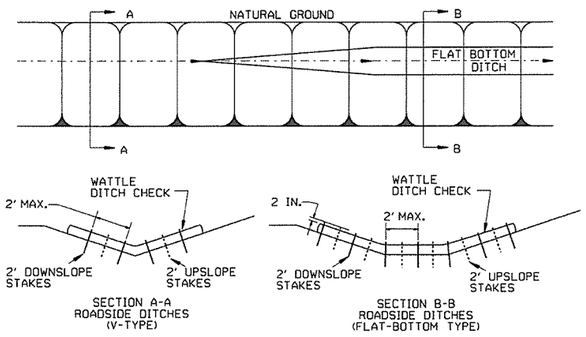
ARKANSAS STATE HIGHWAY COMMISSION

# STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

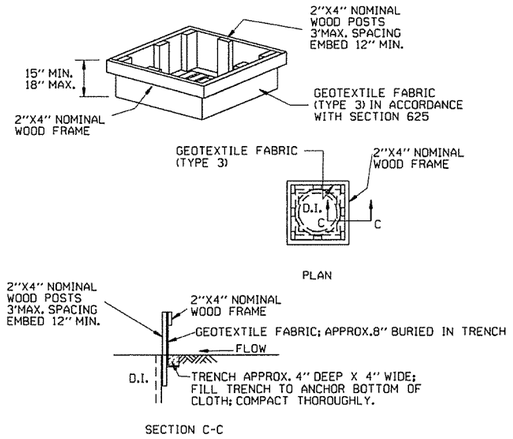
STANDARD DRAWING TC-3

GENERAL NOTES

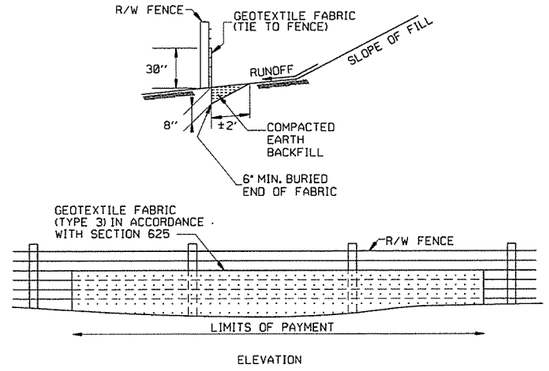
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.




WATTLE DITCH CHECK (E-1)




DROP INLET SILT FENCE (E-7)




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

GENERAL NOTES

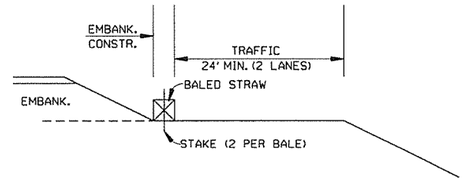
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

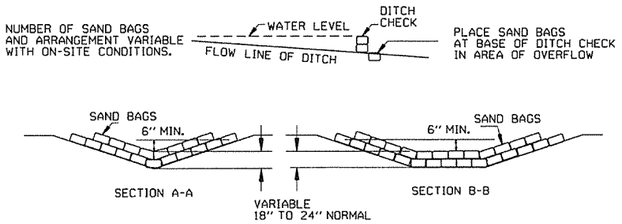
2. NO GAPS SHALL BE LEFT BETWEEN BALES.

3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

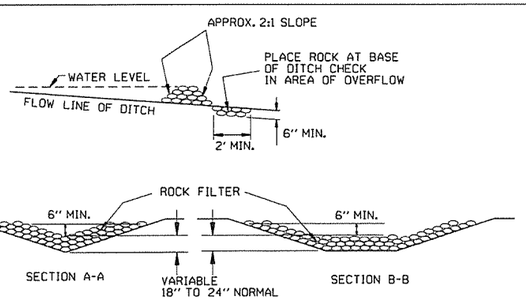



BALED STRAW FILTER BARRIER (E-2)

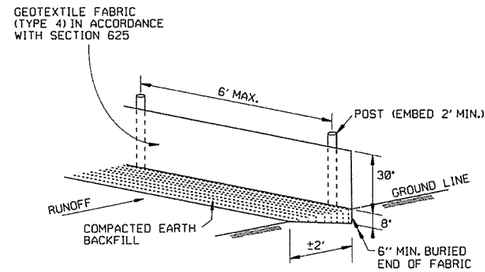
NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS.




SAND BAG DITCH CHECK (E-5)




ROCK DITCH CHECK (E-6)




SILT FENCE (E-11)

GENERAL NOTES

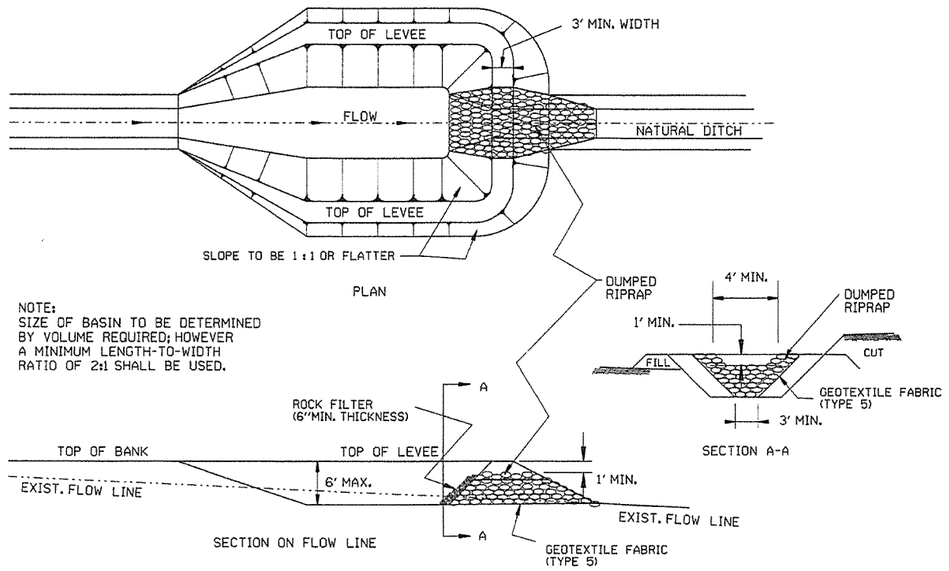
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

| 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 |

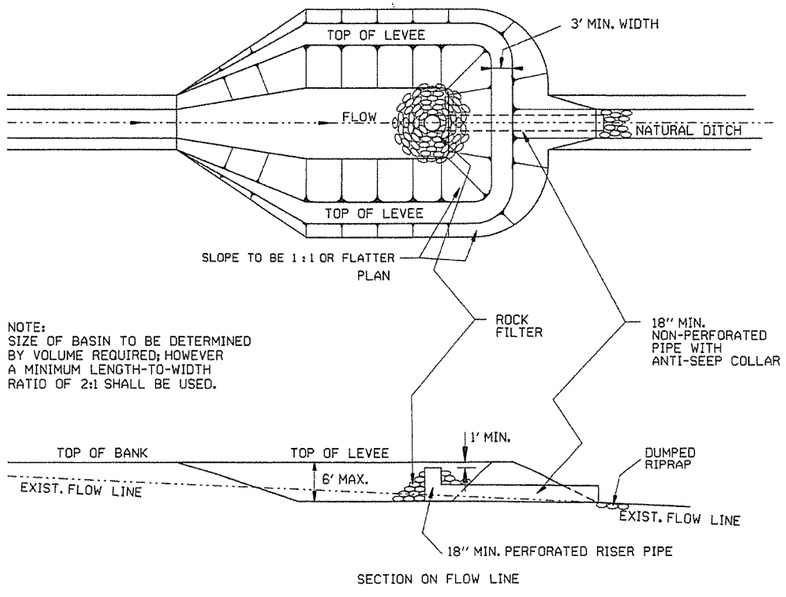
ARKANSAS STATE HIGHWAY COMMISSION

# TEMPORARY EROSION CONTROL DEVICES

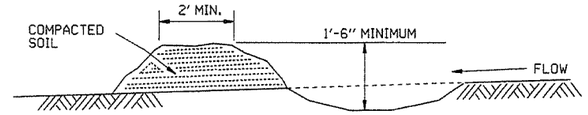
STANDARD DRAWING TEC-1



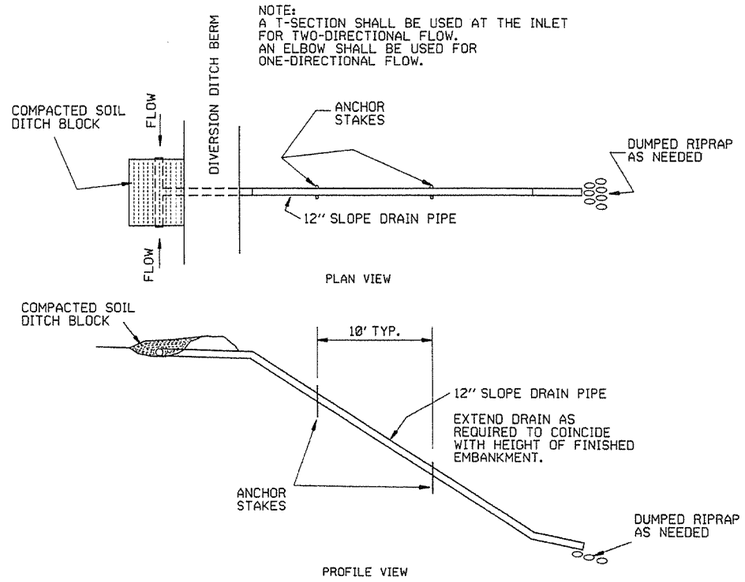

SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



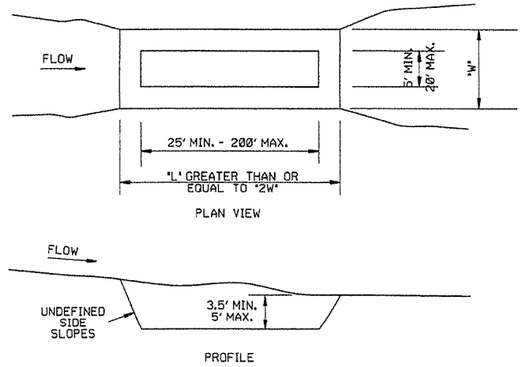

SEDIMENT BASIN WITH PIPE OUTLET (E-10)




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

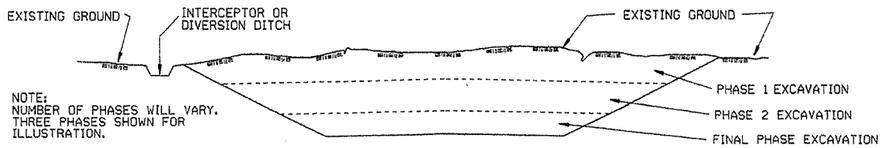
STANDARD DRAWING TEC-2

# 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



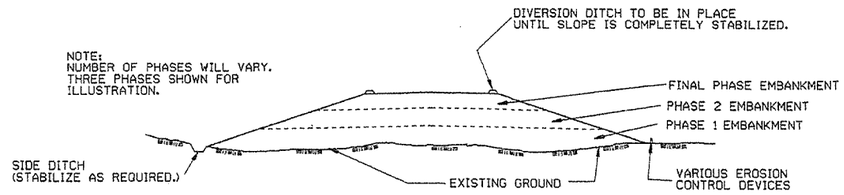

GENERAL NOTE

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

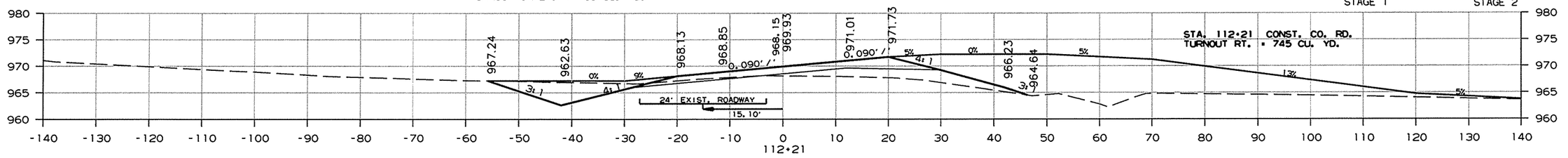
stdtec3.dgn

| 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. | | 090282 | 84 | 90 |

(2) CROSS SECTIONS

STAGE 1 STAGE 2

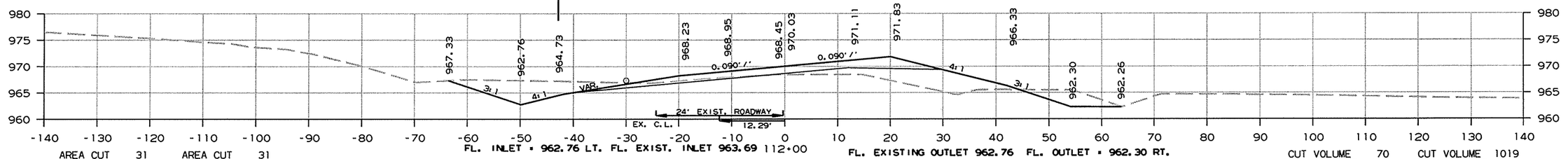
STA. 112+21 CONST. CO. RD.
TURNOUT ON LT. = 105 CU. YD.




AREA CUT 0 AREA CUT 73
AREA FILL 66 AREA FILL 0

CUT VOLUME 12 CUT VOLUME 58
FILL VOLUME 59 FILL VOLUME 0

STA. 112+21 CONST. CO. RD.
TURNOUT RT. = 745 CU. YD.

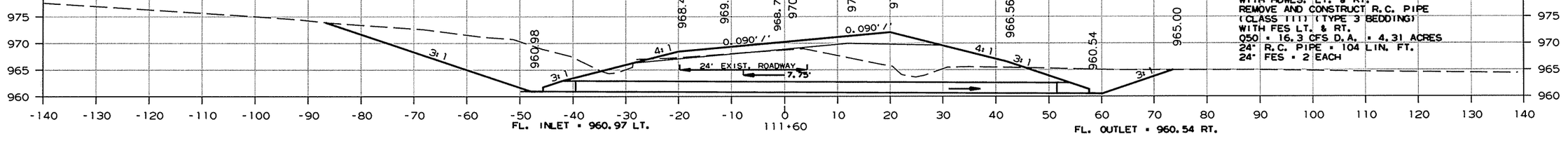



AREA CUT 31 AREA CUT 31
AREA FILL 85 AREA FILL 85

FL. INLET = 962.76 LT. FL. EXIST. INLET 963.69 112+00

FL. EXISTING OUTLET 962.76 FL. OUTLET = 962.30 RT.

CUT VOLUME 70 CUT VOLUME 1019
FILL VOLUME 157 FILL VOLUME 9



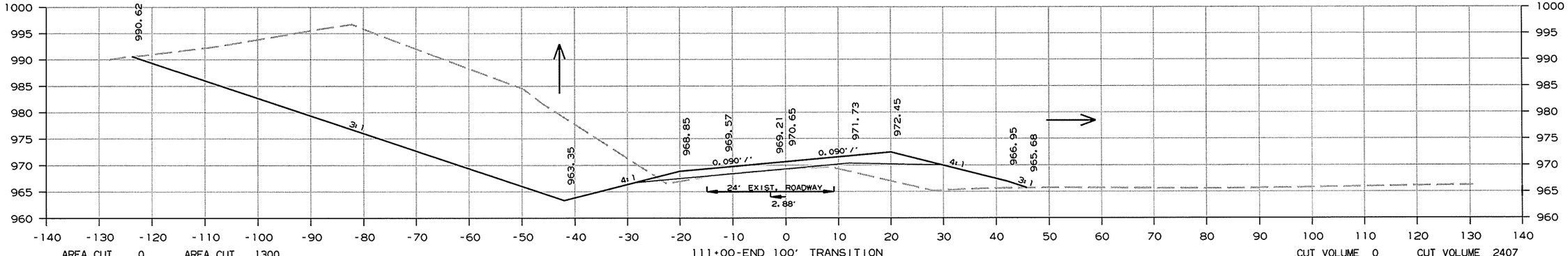

AREA CUT 64 AREA CUT 247
AREA FILL 127 AREA FILL 4

FL. INLET = 960.97 LT.

FL. OUTLET = 960.54 RT.

STA. 111+60 IN PLACE
24" X 50' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE AND CONSTRUCT R.C. PIPE
(CLASS III) (TYPE 3 BEDDING)
WITH FES LT. & RT.
Q50 = 16.3 CFS D.A. = 4.31 ACRES
24" R.C. PIPE = 104 LIN. FT.
24" FES = 2 EACH

CUT VOLUME 71 CUT VOLUME 1719
FILL VOLUME 257 FILL VOLUME 5




AREA CUT 0 AREA CUT 1300
AREA FILL 104 AREA FILL 4

111+00-END 100' TRANSITION
BEGIN JOB 090282

CUT VOLUME 0 CUT VOLUME 2407
FILL VOLUME 193 FILL VOLUME 7

STA. 110+00.00 BEGIN 100' TRANSITION

CROSS SECTION STA. 111+00 TO STA. 112+21

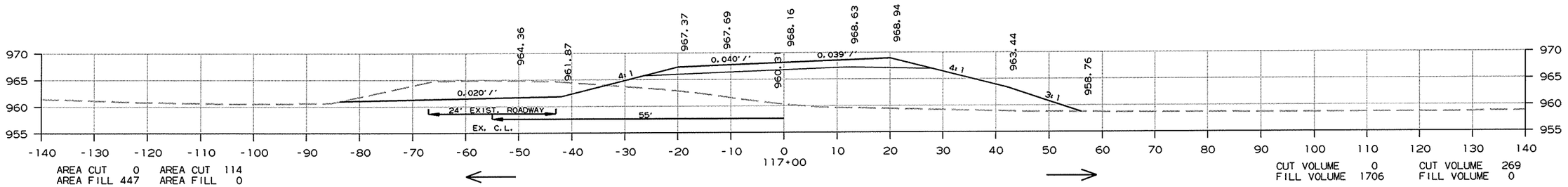
R090282.DGN 8/17/2015

| DATE REVISED | DATE FILMED | DATE REVISED | DATE FILMED | FED.RD. DIST.NO. | STATE | FED.AID PROJ.NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 85 | 90 |

(2) CROSS SECTIONS

STAGE 1 STAGE 2

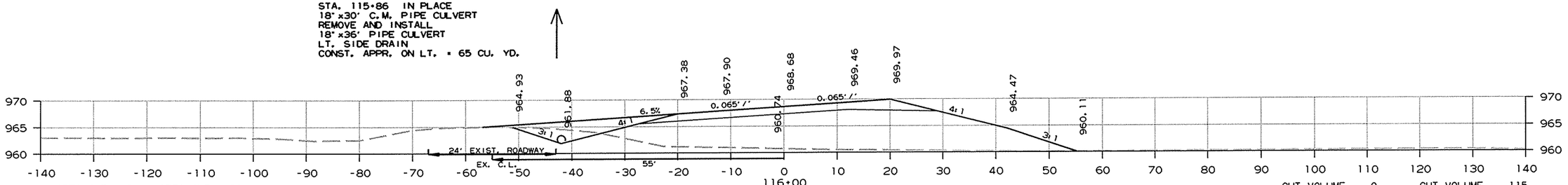
STAGE 1 STAGE 2




AREA CUT 0 AREA CUT 114
AREA FILL 447 AREA FILL 0

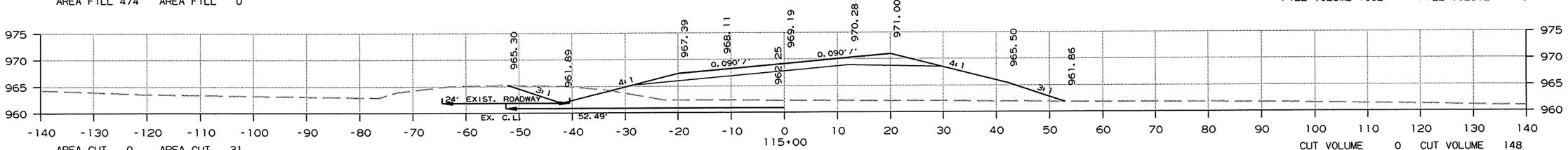
CUT VOLUME 0 CUT VOLUME 269
FILL VOLUME 1706 FILL VOLUME 0

STA. 115+86 IN PLACE
18" x30' C.M. PIPE CULVERT
REMOVE AND INSTALL
18" x36' PIPE CULVERT
LT. SIDE DRAIN
CONST. APPR. ON LT. = 65 CU. YD.



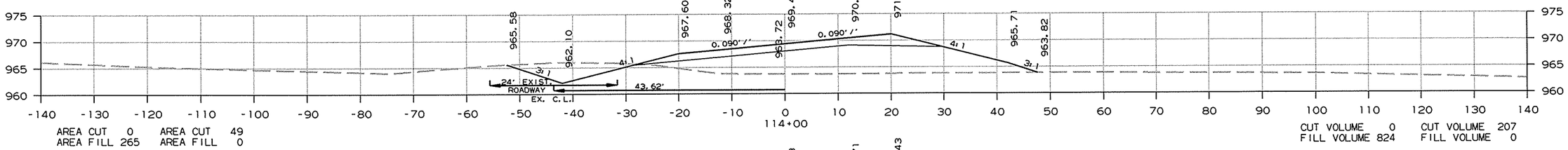

AREA CUT 0 AREA CUT 31
AREA FILL 474 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 115
FILL VOLUME 1602 FILL VOLUME 0



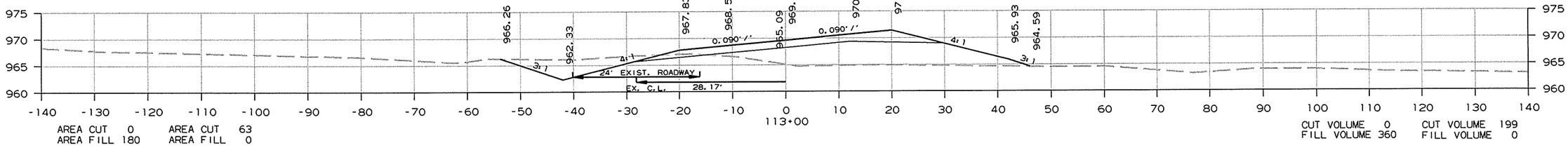

AREA CUT 0 AREA CUT 31
AREA FILL 391 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 148
FILL VOLUME 1215 FILL VOLUME 0




AREA CUT 0 AREA CUT 49
AREA FILL 265 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 207
FILL VOLUME 824 FILL VOLUME 0




AREA CUT 0 AREA CUT 63
AREA FILL 180 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 199
FILL VOLUME 360 FILL VOLUME 0

CROSS SECTION STA. 113+00 TO STA. 117+00

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| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 86 | 90 |

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

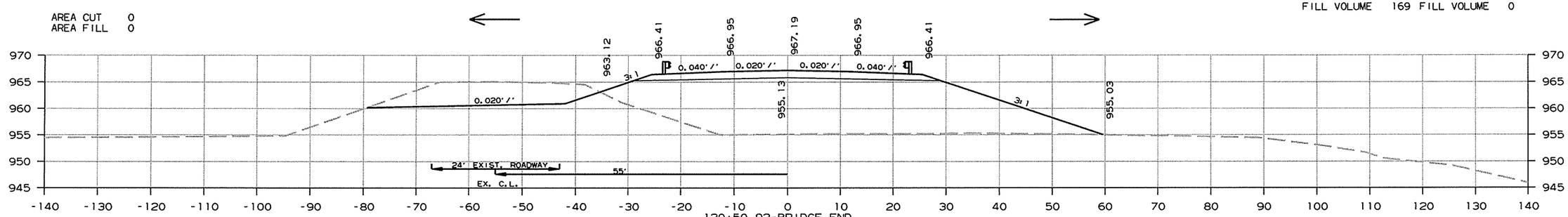
STA. 120+80 - STA. 130+30 IN PLACE
952'x28.5' CLEAR ROADWAY BRIDGE NO. 02497 CONSISTING OF
A 18-SPAN CONCRETE DECK WITH STEEL PILINGS
REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

STA. 120+50.92 - STA. 130+30.08
CONSTRUCT 962'-2"x40'-0" CLEAR ROADWAY
CONTINUOUS COMPOSITE BRIDGE

120+63.46 TOE OF SLOPE

CUT VOLUME 0 CUT VOLUME 34
FILL VOLUME 169 FILL VOLUME 0

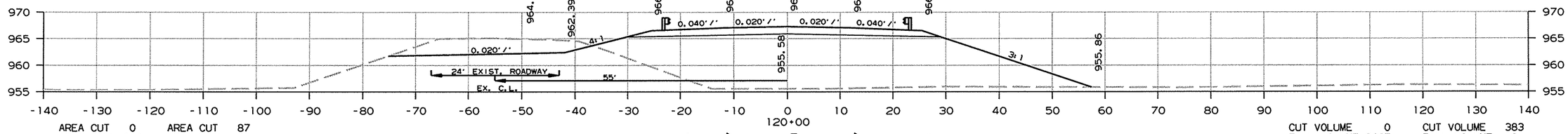
AREA CUT 0
AREA FILL 0




120+50.92-BRIDGE END

AREA CUT 0 AREA CUT 147
AREA FILL 726 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 82
FILL VOLUME 1335 FILL VOLUME 0

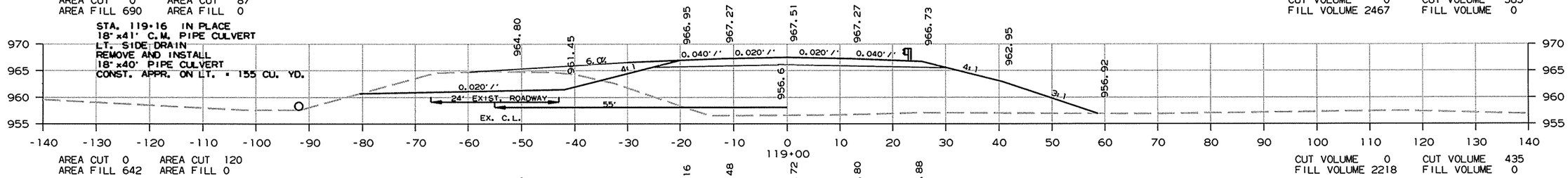



120+00

AREA CUT 0 AREA CUT 87
AREA FILL 690 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 383
FILL VOLUME 2467 FILL VOLUME 0

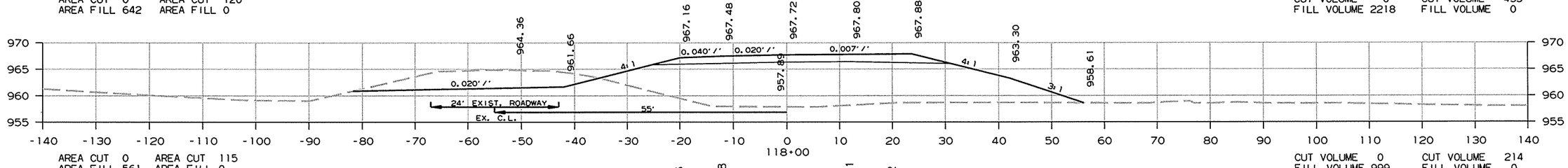
STA. 119+16 IN PLACE
18"x41' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE AND INSTALL
18"x40' PIPE CULVERT
CONST. APPR. ON LT. = 155 CU. YD.




119+00

AREA CUT 0 AREA CUT 120
AREA FILL 642 AREA FILL 0

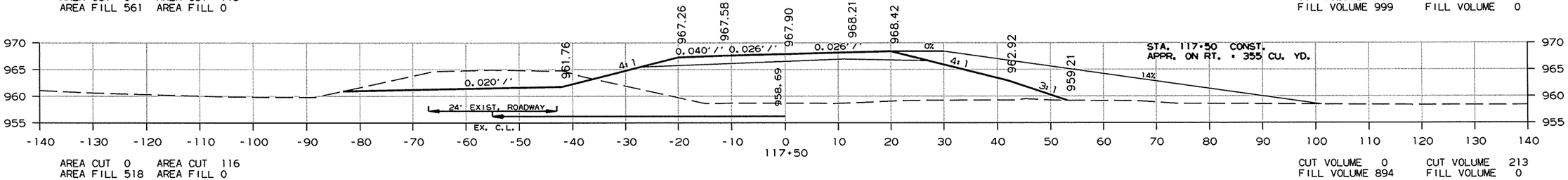
CUT VOLUME 0 CUT VOLUME 435
FILL VOLUME 2218 FILL VOLUME 0




118+00

AREA CUT 0 AREA CUT 115
AREA FILL 561 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 214
FILL VOLUME 999 FILL VOLUME 0




117+50

AREA CUT 0 AREA CUT 116
AREA FILL 518 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 213
FILL VOLUME 894 FILL VOLUME 0

CROSS SECTION STA. 117+50 TO STA. 120+51

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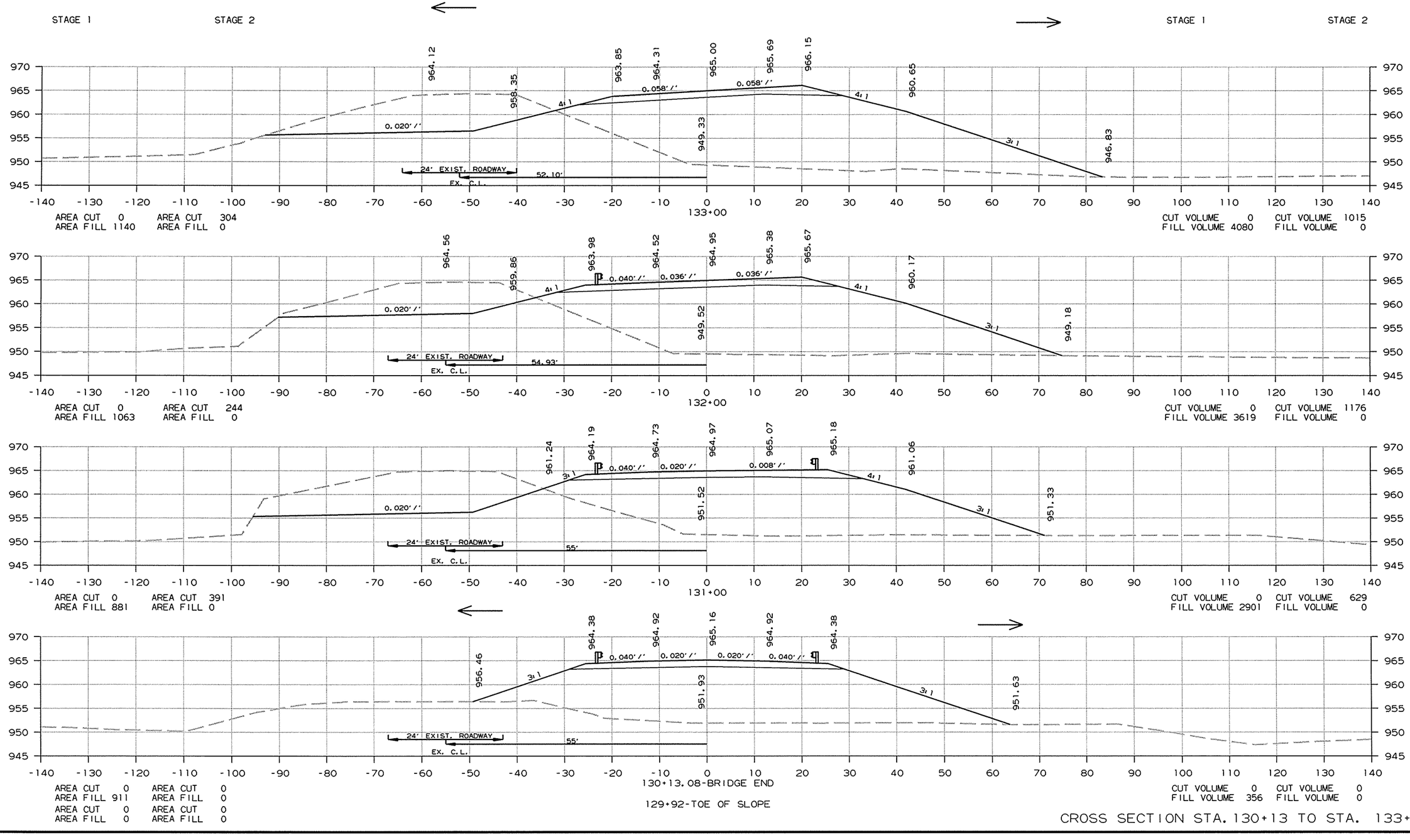
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 87 | 90 |

(2) CROSS SECTIONS




CROSS SECTION STA. 130+13 TO STA. 133+00

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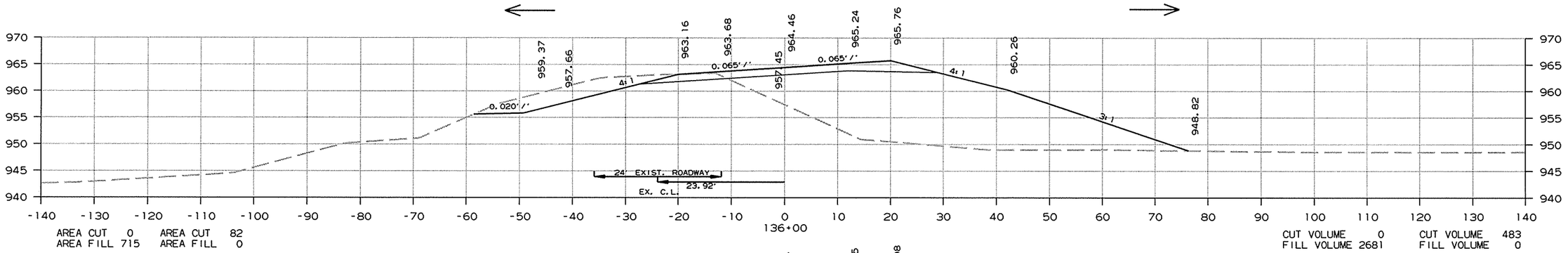
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 88 | 90 |

(2) CROSS SECTIONS

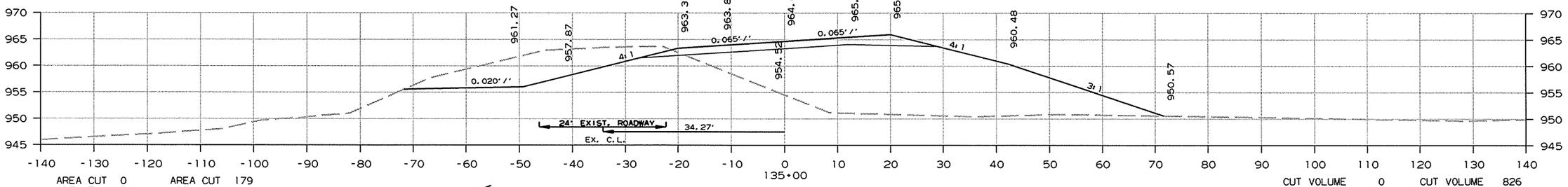
STAGE 1 STAGE 2




AREA CUT 0 AREA CUT 82
AREA FILL 715 AREA FILL 0

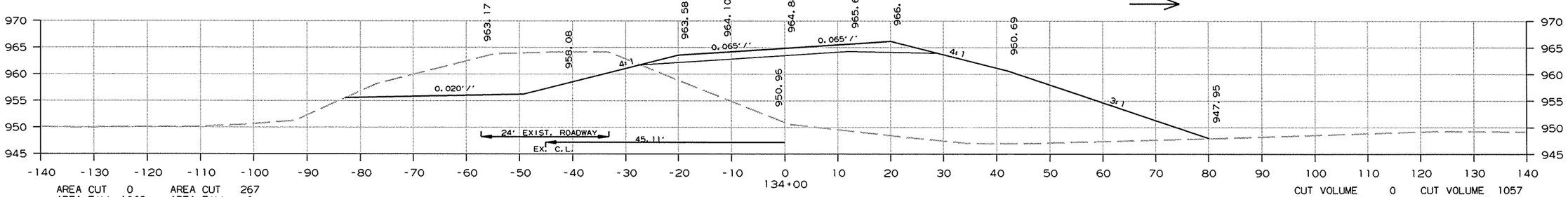
CUT VOLUME 0 CUT VOLUME 483
FILL VOLUME 2681 FILL VOLUME 0

STAGE 1 STAGE 2




AREA CUT 0 AREA CUT 179
AREA FILL 733 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 826
FILL VOLUME 3326 FILL VOLUME 0




AREA CUT 0 AREA CUT 267
AREA FILL 1063 AREA FILL 0

CUT VOLUME 0 CUT VOLUME 1057
FILL VOLUME 4080 FILL VOLUME 0

CROSS SECTION STA. 134+00 TO STA. 136+00

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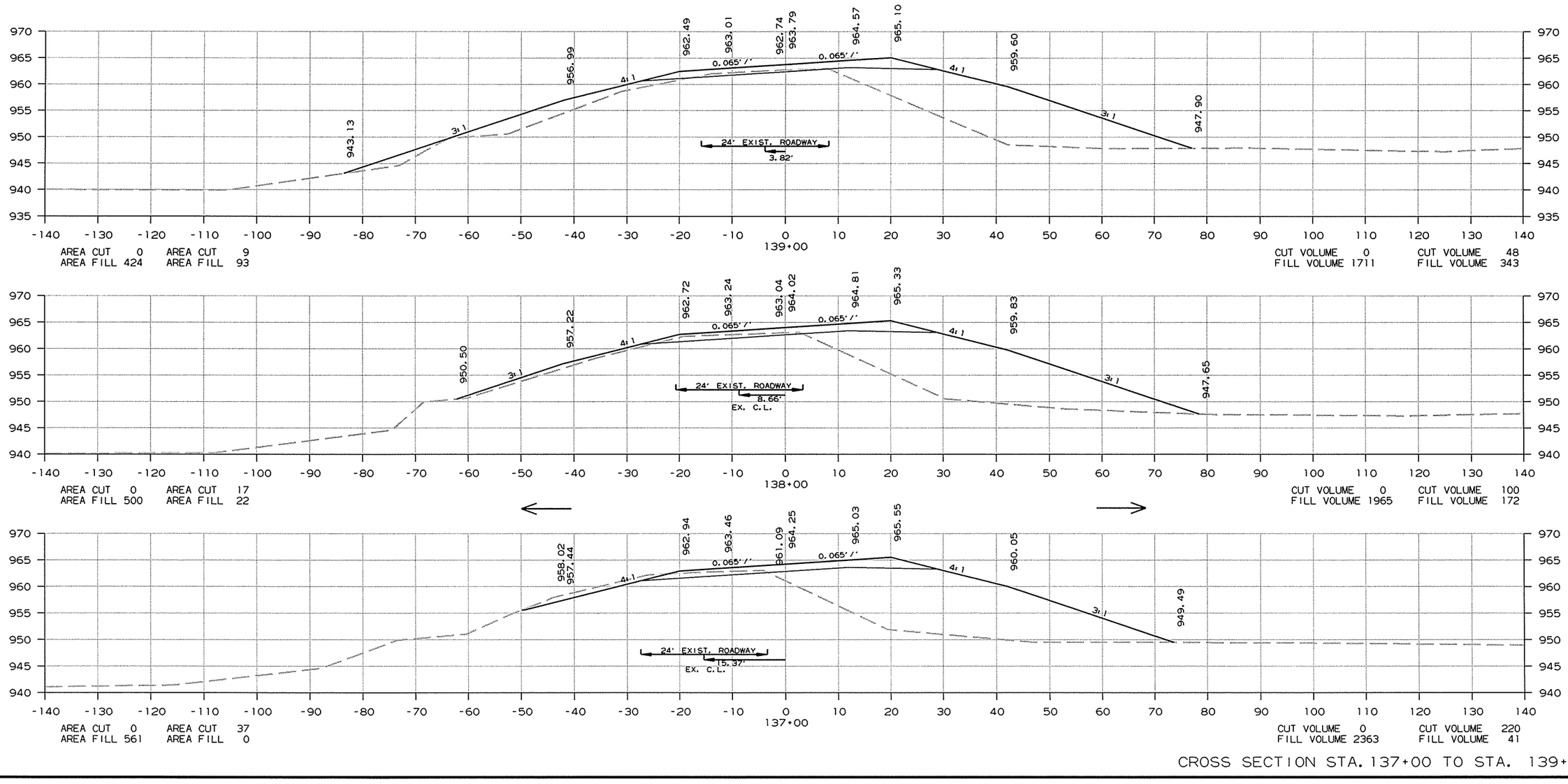
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 89 | 90 |

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2




CROSS SECTION STA. 137+00 TO STA. 139+00

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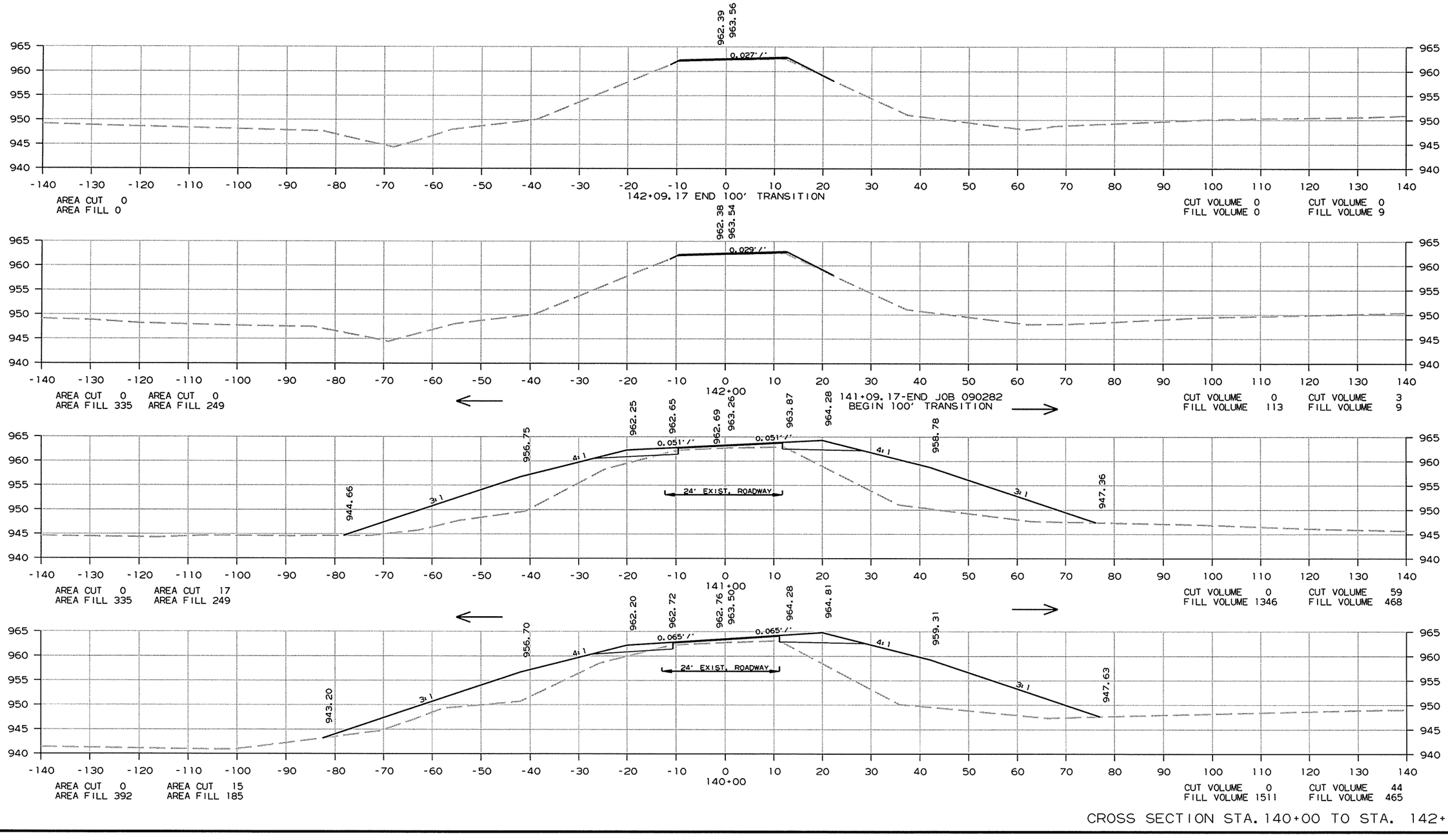
|---|---|---|---|---|---|---|---|---|
| | | | | 6 | ARK. | | | |
| | | | | JOB NO. | | 090282 | 90 | 90 |

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2




CROSS SECTION STA. 140+00 TO STA. 142+09

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